Introduction

- This is an application note for interoperability connectivity of Nortel Communication Server 1000 (formerly known as Succession 1000) PBX with Cisco CallManager Release 4.1(3) using a Cisco 2851 MGCP Gateway configured with T1 PRI NI-2 switch-type.

- The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability between the Nortel CS1000 PBX and Cisco CallManager using ISDN PRI NI-2 switch-type protocol.

- Nortel use the Facility IE with the ISDN signaling messages to pass the calling name information across T1 PRI trunk. Please ensure the Send Calling Name In Facility IE box is checked and uncheck the Display IE Delivery box. Nortel doesn’t support the sending or receiving of the Display IE within the ISDN SETUP or NOTIFY messages. CCM supports both Display IE and Facility IE methods.

- CCM supports calling name delivery using Facility IE in the forward direction (ISDN SETUP) of the call only. There is currently no support for alerting name or connected party name for NI-2 switch-type for CCM.

- Both CCM and Nortel have the ability to support either ISDN Network-side or ISDN user-side signaling. For this application note, Cisco CallManager is configured as ISDN network-side signaling and Nortel CS1000 PBX as ISDN user-side signaling for PRI NI-2 switch-type protocol.

- Nortel does not support ISDN Overlapping Sending/Receiving feature for ISDN PRI NI-2 switch-type protocol.
Network Topology

Figure 1. Network Topology or Test Setup

Basic Call Setup End-to-End Configuration

Limitations

- Nortel use the Facility IE with the ISDN signaling messages to pass the calling name information across T1 PRI trunk. Nortel doesn’t support the sending or receiving of the Display IE within the ISDN SETUP or NOTIFY messages. CCM supports both Display IE and Facility IE methods. Therefore, please ensure the Send Calling Name In Facility IE box is checked and uncheck the Display IE Delivery box.

- CCM supports calling name delivery using Facility IE in the forward direction (ISDN SETUP) of the call only. There is currently no support for alerting name or connected party name for NI-2 switch-type for CCM.

- For CNIR features, Nortel PBX send out a Facility IE without any calling name information within it. CCM, on the other hand, send out the Facility IE with the actually calling name information with the presentation bit set to be RESTRICTED.

- Nortel does not support ISDN Overlapping Sending/Receiving feature for ISDN PRI NI-2 switch-type protocol

- Tandem calls through the Nortel PBX is not possible for NI-2 trunk type configured as Direct-Inward-Dial (DID).

System Components

Hardware Requirements

- Cisco CallManager MCS server, Cisco 2851 ISR router and Cisco 7960 IP phones

- Nortel Communication System 1000 (which includes Call Server, Signaling Server and Media gateway) and Nortel’s 2616 digital phones
Software Requirements

- Cisco CallManager Release 4.1(3)

- Nortel Succession 4.0 Release

  >ld 22
  PT2000

  REQ iss

  CALL SERVER/MAIN CAB
  VERSION 2121
  RELEASE 4
  ISSUE 00 T +
  IDLE_SET_DISPLAY NORTEL

- Cisco IOS Software for 2851 ISR Router: c2800nm-ipvoicek9-mz.124-1a.bin
Features

- CLIP-Calling Line (Number) Identification Presentation (Please see the Limitation section)
- CLIR-Calling Line (Number) Identification Restriction (Please see the Limitation section)
- CNIP-Calling Name Identification Presentation (Please see the Limitation section)
- CNIR-Calling Name Identification Restriction (Please see the Limitation section)
- Alerting Name

Not Supported Features

- COLP-Connected Line (Number) Identification Presentation
- COLR-Connected Line (Number) Identification Restriction
- CONP-Connected Name Identification Presentation
- CONR-Connected Name Identification Presentation
- MWI-Message Waiting Indication (lamp ON, lamp OFF) across the T1 PRI NI-2 Trunk

Configuration

Nortel Communication Server 1000 PBX Configuration Sequence and Tasks

Call Server Setup via SSC card console
1. LD 17 – Configure the Common Equipment (CEQU) on the Call Server
2. LD 17 – Configure the D-channel signaling for T1 PRI and PSTN PRI
3. LD 16 – Configure the Route Data Block for the T1 PRI and PSTN PRI
4. LD 14 – Configure the Trunks Data Block for the PRI and PSTN PRI
5. LD 86 – Configure the Route List Block for the T1 PRI and PSTN PRI
6. LD 87 – Configure CDP steering codes
7. LD 90 – Configure AC1 for Tandem Trunk calls
8. LD 11 – Configure the Nortel 2616 digital phones

Cisco CallManager Setup
1. Add an MGCP gateway for the Cisco 2851 ISR router with T1 PRI to Nortel CS1000 PBX under the Device pull-down menu
2. Add a Route Pattern to reach the Nortel’s phone DN extensions and to access the PSTN via the Nortel PBX
3. Configure Cisco 7960 phone and line DN
4. Configure the Cisco 2851 ISR router to communicate with Cisco CallManager using MGCP protocol

Configuration Menus and Commands

Nortel Communication Server 1000 (CS1000) Call Server Configuration
1. LD 17 – Configure the Common Equipment (CEQU) on the Call Server

> ld 22
PT2000

REQ  prt
TYPE  cequ

CEQU
MPED 8D
LD 17 – Configure the D-channel Signaling for T1 PRI and PSTN PRI

REQ prt

TYPE adan dch 7

ADAN     DCH 7 ➔ Assign tag 7 to the dchannel
CTYP MSDL ➔ MSDL card type
CARD 07 ➔ MSDL card located in slot 7
PORT 1
DES T1_NI2
USR PRI
DCHL 7 ➔ Slot7, D-channel to Cisco CallManager
OTBF 32
PARM RS422 DTE
DRAT 64KC ➔ 64K clear channel for the d-channel
CLOK EXT
IFC NI2 ➔ NI-2 Switchtype
ISDN_MCNT 300
CLID OPT0
CO_TYPE STD ➔ Central Office switch type, Bellcore standard
SIDE USR ➔ user-side signaling
CNEG 1
RLS ID **
RCAP COLP NDS ➔ Connection Line Presentation (COLP), NI-2 Name Display (NDS)
MBGA NO
OVLR NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7
BSRV NO

REQ prt
TYPE adan dch 12

ADAN DCH 12 ➔ Assign tag 12 to the d-channel
CTYP MSDL ➔ MSDL card type
CARD 02 ➔ MSDL card located in slot 2
PORT 1
DES T1_NI2
USR PRI
DCHL 2 ➔ Slot2, D-channel to the PSTN
OTBF 32
PARM RS422 DTE
DRAT 64KC ➔ 64K clear channel
CLOK EXT
IFC NI2 ➔ NI-2 switchtype protocol
ISDN_MCNT 300
CLID OPT0
CO_TYPE STD ➔ Central Office switch type, Bellcore standard
SIDE USR ➔ user-side signaling
CNEG 1
RLS ID **
RCAP COLP NDS ➔ Connection Line Presentation (COLP), NI-2 Name Display (NDS)
MBGA NO
OVLR NO

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OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7
BSRV NO

REQ

3. LD 16 – Configure the Route Data Block for the T1 PRI and PSTN PRI

>ld 21
PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 107

TYPE RDB
CUST 00
DMOD
ROUT 107 ➔ Route Data Block to Cisco CallManager
DES T1_NI2
TKTP DID ➔ Direct-Inward-Dial (DID) trunk type
NPID_TBL_NUM 0
SAT NO
RCLS EXT
VTRK NO
NODE
DTRK YES ➔ Digital Trunk
BRIP NO
DGTP PRI ➔ ISDN PRI Digital Trunk Type for the route
ISDN YES
MODE PRA
IFC NI2 ➔ ISDN NI-2 switchtype
CBCR NO
NCOS 0
SBN NO
PNI 00000
NCNA YES ➔ Network Calling Name Allow
NCRD YES ➔ Network Redirecting Name Allow
CHTY BCH ➔ Channel Type = B-channel
CPFXS YES
CPUB OFF
DAPC NO
BCOT 0
INTC NO

disel vod ➔ Data Select = Voice or Data (VOD)
ptyp pri
auto no
dnis no
dcdr no
icog iao ➔ Incoming and Outgoing Trunk
ranx no
srcr rrb ➔ Round-ribbon search order
trmb yes ➔ Trombone call allow
step
acod 207 ➔ Trunk Access code
tcpp no
pii no	
targ 01
clen 1
biln no
oabs
inst
icis yes
timr icf 512
ogf 512
eod 13952
nrd 10112
ddl 70
odt 4096
RGV  640
FLH  510
GRD  896
SFB  3
NBS  2048
NBL  4096

IENB  5
VSS  0

VGD  6

DRNG NO
CDR  NO
VRAT NO
MUS  NO
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
TTBL  0
ATAN NO
PLEV 2
MCTS NO
ALRM NO
ART  0
SGRP  0
AACR NO
REQ:
>ld 21

PT1000

REQ: prt
TYPE: rdb
CUST 0
ROUT 102

TYPE RDB
CUST 00
DMOD

ROUT 102
DES T1_NI2
TKTP DID
NPID_TBL_NUM 0
SAT NO
RCLS EXT
VTRK NO
NODE

DTRK YES
BRIP NO
DGTP PRI
ISDN YES

MODE PRA
IFC NI2
CBCR NO
NCOS 0
SBN NO
PNI 00000

NCNA YES
NCRD YES
CHTY BCH
CPPFXS YES
CPUB OFF
DAPC NO

Route Data Block to the PSTN Switch
Direct-Inward-Dial trunk type
Digital Trunk
ISDN PRI Digital Trunk type
ISDN NI-2 switchtype
Network Calling Name Allow
Network Redirecting Name Allow
Channel Type = B-channel
BCOT 0
INTC NO

DSEL VOD ➔ Data Selection = Voice or Data (VOD)

PTYP PRI
AUTO NO
DNIS NO
DCDR NO

ICOG IAO ➔ Incoming and Outgoing Trunk

RANX NO

SRCH RRB ➔ Round-ribbon search order

TRMB YES ➔ Trombone call allow

STEP

ACOD 202 ➔ Trunk Access code

TCPP NO
PII NO
TARG 01
CLEN 1
BILN NO
OABS
INST
ICIS YES

TIMR ICF 512
OGF 512
EOD 13952
NRD 10112
DDL 70
ODT 4096
RGV 640
FLH 510
GRD 896
SFB 3
NBS 2048
NBL 4096

IENB 5
VSS 0
4. LD 14 – Configure the Trunk Data Block for the T1 PRI and PSTN PRI

>ld 20

PT0000
REQ: prt
TYPE: tnbl

TN  7 1  ➤ Trunk Data Block for T1 PRI to Cisco CallManager
DES  T1_NI2

TN   007 01 ➔ Terminal Number, need to configure 23 TNs (one for each b-ch)

TYPE DID ➔ Direct-Inward-Dial (DID) Trunk Type

CDEN SD
CUS 0

TRK PRI ➔ PRI Trunk

PDCA 1

PCML MU ➔ u-law encoding scheme

NCOS 0

RTMB 107 1 ➔ Route Number and Member number

B-CHANNEL SIGNALING

NITE

STRI/STRO OWK OWK

AST NO

IAPG 0

CLS UNR DTN WTA LPR APN THFD HKD ➔ UNR = Unrestricted Digital, DTN = DigiTone

P10 VNL

TKID

AACR NO

DATE 16 JUN 2005

NACT

>ld 20

PT0000

REQ: prt

TYPE: tnb

TN   2 1 ➔ Trunk Data Block for T1 PRI to the PSTN

DATE

PAGE

DES
DES T1_NI2

TN   002 01 ➔ Terminal Number, need to configure 23 TNs (one for each b-ch)

TYPE DID ➔ Direct-Inward-Dial Trunk Type

CDEN SD

CUST 0

TRK PRI ➔ PRI Trunk

PDCA 1

PCML MU

NCOS 0

RTMB 102 1 ➔ Route Number and Member number

B-CHANNEL SIGNALING

NITE

STRI/STRO OWK OWK

AST NO

IAPG 0

CLS UNR DTN WTA LPR APN THFD HKD ➔ UNR = Unrestricted Digital, DTN = DigiTone

P10 VNL

TKID

AACR NO

DATE 10 JUN 2005

NACT
5. LD 86 – Configure the Route List Block for the T1 PRI and PSTN PRI

> ld 86
ESN000

MEM AVAIL: (U/P): 2821735    USED U P: 206155 68685    TOT: 3096575
DISK RECS AVAIL: 1152
REQ  prt
CUST 0
FEAT rlb
RLI  7

RLI  7
ENTR 0
LTER NO
ROUTE 107
TOD  0 ON  1 ON  2 ON  3 ON
4 ON 5 ON 6 ON 7 ON
VNS  NO
CNV  NO
EXP  NO
FRL 0
DMI 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): 2821735    USED U P: 206155 68685    TOT: 3096575
6. LD 87 – Configure the CDP DSC steering codes

>ld 87
ESN000
CUST 0
FEAT cdp
TYPE dsc
DSC 34
DSC 34
FLEN 0
DSP LSC
RLI 7

MEM AVAIL: (U/P): 2821735 USED U P: 206155 68685 TOT: 3096575
DISK RECS AVAIL: 1152
REQ

7. LD 90 – Configure the AC1 for the Tandem Trunk calls
>ld 90
ESN000

MEM AVAIL: (U/P): 2821735 USED U P: 206155 68685 TOT: 3096575
DISK RECS AVAIL: 1152
REQ prt
CUST 0
FEAT net
TRAN acl
TYPE npa

NPA

NPA 1408
RLI 2
SDRR NONE
ITEI NONE

MEM AVAIL: (U/P): 2821735 USED U P: 206155 68685 TOT: 3096575
8. LD 11 – Configure the Route Nortel 2616 Digital Phones

>>ld 11
SL1000
MEM AVAIL: (U/P): 2821735 USED U P: 206155 68685 TOT: 3096575
DISK RECS AVAIL: 1152
DIGITAL TELEPHONES AVAIL: 4 USED: 4 TOT: 8
IP USERS AVAIL: 6 USED: 2 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: 2304 USED: 196 TOT: 2500
DATA PORTS AVAIL: 2500 USED: 0 TOT: 2500

REQ: prt
TYPE: 2616

TN 1 0 0 2
DATE
 PAGE
 DES

DES CS101A
TN 001 0 00 02
TYPE 2616
CDEN 8D
CUST 0
AOM 0
FDN 2321
TGAR 1
LDN NO
NCOS 0
SGRP 0
RNPG 0
SCI 0
SSU
XLST

CLS CTD FBA WTA LPR MTD FNA HTA ADD HFD
MWD LMPN RMM Defense SMWD AAD IMD XHD IRD NID OLD VCE DRG1
POD DSX VMD CMSD SLKD CCSD SWD LND CNDA
FUD FPU DND DDV CNIA CDCA MSID DAPA BFED RCBD
ICDD CDMA LLCN MCTD CLBD AUTU
GPUD DPUD DND ACFX ARHD CLTD ASCD
CPF ACPA ADD CFHD FICD NAID BUZZ AGRD MOAD AHED

LOOK LAMBDA
DRDD EXR0

USERD ULAD RTDD RBDD RBHD PGND OCBBD FLXD FTTC DNY DNO3 MCBN CDMR

CPND_LANG EN
RCO 0
HUNT 2321
LHK 0
PLEV 02
CSDN
AST
IAPG 0
AACS NO
ITNA NO

DGRP
MLWU_LANG 0
DNDR 0

KEY 00 SCR 2320 0 MARP

CPND

NAME ZEUS20
XPLN 6
DISPLAY_FMT FIRST, LAST

01
02
03 CFW 4 3415
04 AO6
05 TRN
06
CFTD SFD MRD DDV CNIA CDCA MSID DAPA BFED RCBD
ICDD CDMD LLCN MCTD CLBD AUTU
GPUD DPUD DNDA CFXA ARHD CLTD ASCD
CPFA CPTA ABDD CFHD FICD NAID BUZZ AGRD MOAD AHD

DDGA NAMA

CPND LANG ENG
HUNT
PLEV 02
CSDN
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
DNDR 0

KEY 00 SCR 2321 0 MARP

CPND

NAME ZEUS21
XPLN 6
DISPLAY_FMT FIRST,LAST

01
02
03 CFW 4
04 AO6
05 TRN
06
07
08
09
10
11
12
13
14
15 RGA
Cisco CallManager Configuration

Add an MGCP gateway for the Cisco 2851 ISR router with T1 PRI
### Media Resource Group List
- Location: <None>
- AAR Group: <None>
- Load Information: <None>
- V150 (subset): <None>

### Multilevel Precedence and Preemption (MLPP) Information
- MLPP Domain: <None>
- MLPP Indication: Default
- MLPP Preemption: Default

### Interface Information
- PRI Protocol Type: PRI1D
- PRI Protocol Side: Network
- Channel Selection Order: Trip Down
- Channel IE Type: IleNumberwhen1B
- PCM Type: PRI
  - Delay for first restart (1/8 sec ticks): 0
  - Delay between restarts (1/8 sec ticks): 1
  - Inhibit restarts at PRI initialization
  - Enable status poll

### Call Routing Information

#### Inbound Calls
- Significant Digits: All
- Calling Search Space: <None>
- AAR Calling Search Space: <None>
- Profil DN: <None>

#### Outbound Calls
- Calling Line ID Presentation: Default
- Calling Party Presentation: Originator
- Called party IE number type unknown: Cisco CallManager
- Called party IE number type unknown: Cisco CallManager
- Called Numbering Plan: Cisco CallManager
- Calling Numbering Plan: Cisco CallManager
- Number of digits to strip: 0
- CDR 3.0, 4.1: <None>
- SME: Basic PDI: 0

### PRI Protocol Type Specific Information
- Display IE Delivery
- Redirecting Number IE Delivery - Outbound
- Redirecting Number IE Delivery - Inbound
- Send Extra Leading Character in DisplayIE***
<table>
<thead>
<tr>
<th><strong>Setup Non-ISDN Progress Indicator IE Enable</strong>*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MCDN Channel Number Extension Bit Set to Zero</strong>*</td>
</tr>
<tr>
<td><strong>Send Calling Name in Facility IE</strong>*</td>
</tr>
<tr>
<td><strong>Interface Identifier Present</strong>*</td>
</tr>
<tr>
<td>Interface Identifier Value**</td>
</tr>
<tr>
<td>Connected Line ID Presentation (Q850 Inbound Call)*</td>
</tr>
</tbody>
</table>

### UIUE Configuration

- **Passing Precedence Level Through UIUE**
- **Security Access Level**

### Product Specific Configuration

<table>
<thead>
<tr>
<th>Line Coding*</th>
<th>E163</th>
</tr>
</thead>
<tbody>
<tr>
<td>Framing*</td>
<td>E163</td>
</tr>
<tr>
<td>Clock*</td>
<td>Extnd</td>
</tr>
<tr>
<td>Input Gain (-6..14 dB)*</td>
<td>0</td>
</tr>
<tr>
<td>Output Attenuation (-6..14 dB)*</td>
<td>0</td>
</tr>
<tr>
<td>Echo Cancellation Enable*</td>
<td>Enable</td>
</tr>
<tr>
<td>Echo Cancellation Coverage (ms)*</td>
<td>Default</td>
</tr>
</tbody>
</table>

* Indicates required item
** Applicable to DMG-160 only
*** Applicable to DMG-560 protocol and DMG-160 protocol only
Add a Route Pattern to reach Nortel’s digital phone DN extensions and to access the PSTN via the Nortel PBX
## Route Pattern Configuration

**Route Pattern:** 9.@

**Status:** Ready

*Note: Any update to this Route Pattern automatically resets the associated gateway or Route List*

### Pattern Definition

- **Route Pattern:** 9.@
- **Partition:** Not selected
- **Description:**
- **Numbering Plan:** North-American-Numbering-Plan
- **Route Filter:** Not selected
- **NLPF Precedence:** Default
- **Gateway or Route List:** SATUSIU001-1.Route961
- **Route Option:**
  - Block this pattern: Not selected
- **Call Classification:** Default
  - Provide Outside Dial Tone
  - Allow Overlap Sending
  - Urgent Priority
- **Require Forced Authorization Code**
- **Require Client Matter Code**

### Calling Party Transformations

- **Use Calling Party's External Phone Number Mask**
- **Calling Party Transform Mask**
- **Prefix Digits (Outgoing Calls)**
- **Calling Line ID Presentation:** Default
- **Calling Name Presentation:** Default

### Connected Party Transformations

- **Connected Line ID Presentation:** Default
- **Connected Name Presentation:** Default

### Called Party Transformations

- **Discard Digits:** Not selected
- **Called Party Transform Mask**
- **Prefix Digits (Outgoing Calls)**

### H.323 Network-Specific Facilities Information Element

- **Carrier Identification Code**
- **Network Service Protocol:** Not selected
- **Network Service:**
  - Service Parameter Name: Not selected
  - Service Parameter Value: Not selected

* indicates required item.
Add an Cisco 7960 IP phones and assigned the DN extension (3414 and 3415)

```
<table>
<thead>
<tr>
<th>Associated With</th>
<th>SEP001243628F79</th>
<th>(Line 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directory Number</td>
<td>3414</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>Ready</td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td>Any updates to the Directory Number automatically resets the associated device.</td>
<td></td>
</tr>
</tbody>
</table>

**Directory Number Settings**

- Voice Mail Profile: Default
- Calling Search Space: Default
- AAI Group: Default
- User Hold Audio Source: Default
- Network Hold Audio Source: Default
- Auto Answer: Auto Answer/Off

**Call Forward and Pickup Settings**

- Voice Mail Coverage/Calling Search Space
- Forward All
- Forward Busy Internal
- Forward Busy External
- Forward No Answer Internal
- Forward No Answer External
- Forward No Coverage Internal
- Forward No Coverage External
- No Answer Ring Duration (seconds)

**NPIP Alternate Party Settings**

- Target (Destination)
- Calling Search Space: Default
- No Answer Ring Duration (seconds)

**Line Settings for all Devices**

- Default name: Phone14_A

**Line Settings for this Device**

- Default name: Phone14_C
- Line T1 Label
- External Phone Number Mask
- Message Waiting Lamps Policy: Using System Policy
```
Configure the Cisco 2851 ISR router to communicate with Cisco CallManager using MGCP protocol

Router2851>en
Password:
Router2851#sh version
Cisco IOS Software, 2800 Software (C2800NM-IPVOICEK9-M), Version 12.4(1a), RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Fri 27-May-05 21:02 by hqluong

ROM: System Bootstrap, Version 12.3(8r)T7, RELEASE SOFTWARE (fc1)

Router2851 uptime is 6 days, 5 hours, 45 minutes
System returned to ROM by reload at 10:07:59 PST Tue Jun 7 2005
System restarted at 10:08:49 PST Tue Jun 7 2005
System image file is "flash:c2800nm-ipvoicek9-mz.124-1a.bin"

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

If you require further assistance please contact us by sending email to export@cisco.com.

Cisco 2851 (revision 53.51) with 249856K/12288K bytes of memory.
Processor board ID FHK0847F03X
16 FastEthernet interfaces
2 Gigabit Ethernet interfaces
48 Serial interfaces
2 Channelized T1/PRI ports
4 Voice FXO interfaces
2 Voice FXS interfaces
DRAM configuration is 64 bits wide with parity enabled.
239K bytes of non-volatile configuration memory.
62592K bytes of ATA CompactFlash (Read/Write)

Configuration register is 0x2102

Router2851#
Router2851#
Router2851#term len 0
Router2851#show running-config
Building configuration...

Current configuration : 3526 bytes
!
! Last configuration change at 14:52:45 PST Mon Jun 20 2005
! NVRAM config last updated at 14:07:57 PST Mon Jun 20 2005
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname Router2851
!
boot-start-marker
boot system flash:c2800nm-ipvoicek9-mz.124-1a.bin
boot-end-marker
!
logging buffered 500000 debugging
enable secret 5 $1$v0tv$DYoywWasCG5us.lpzy6Th.
! no aaa new-model
!
resource policy
!
clock timezone PST -8
network-clock-participate wic 0
network-clock-select 1 T1 0/0/0
ip subnet-zero
!
!
ip cef
no ip dhcp use vrf connected
!
!
no ip ftp passive
ip ftp username cisco
ip ftp password 7 01100F175804575D72
no ip domain lookup
isdn switch-type primary-ni
!
voice-card 0
  no dspfarm
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
! username chinh password 7 104D000A0618!

! controller T1 0/0/0
  shutdown
  framing esf
  linecode b8zs
  cablelength short 133
  pri-group timeslots 1-24 service mgcp
!
controller T1 0/0/1
  framing esf
  linecode b8zs
  cablelength short 133
  pri-group timeslots 1-24 service mgcp
!
translation-rule 1
!
!
!
interface GigabitEthernet0/0
  ip address 172.20.150.201 255.255.255.0
duplex auto
speed auto
!
interface GigabitEthernet0/1
  no ip address
  shutdown
duplex auto
speed auto
!
interface Serial0/0/0:23
  no ip address
  isdn switch-type primary-qsig
isdn incoming-voice voice
isdn bind-13 ccm-manager
no cdp enable
!
interface Serial0/0/1:23
  no ip address
  isdn switch-type primary-ni
  isdn protocol-emulate network
  isdn incoming-voice voice
  isdn bind-13 ccm-manager
  no cdp enable
!
interface FastEthernet1/0
  shutdown
!
interface FastEthernet1/1
  shutdown
!
interface FastEthernet1/2
  shutdown
!
interface FastEthernet1/3
  shutdown
!
interface FastEthernet1/4
  shutdown
!
interface FastEthernet1/5
  shutdown
!
interface FastEthernet1/6
  shutdown
!
interface FastEthernet1/7
  shutdown
!
interface FastEthernet1/8
    shutdown
!
interface FastEthernet1/9
    shutdown
!
interface FastEthernet1/10
    shutdown
!
interface FastEthernet1/11
    shutdown
!
interface FastEthernet1/12
    shutdown
!
interface FastEthernet1/13
    shutdown
!
interface FastEthernet1/14
    shutdown
!
interface FastEthernet1/15
    shutdown
!
interface Vlan1
    no ip address
!
ip classless
ip route 0.0.0.0 0.0.0.0 172.20.150.1
!
ip http server
no ip http secure-server
!
!
tftp-server flash:c2800nm-ipvoice-mz.123-12.11.T1
! control-plane
!
!
voice-port 0/0/0:23
!
voice-port 0/1/0
  station-id name FXS_PhoneE
  station-id number 14085232200
  caller-id enable
!
voice-port 0/1/1
!
voice-port 0/0/1:23
!
voice-port 0/2/0
!
voice-port 0/2/1
!
voice-port 0/2/2
!
voice-port 0/2/3
!
ccm-manager mgcp
  ccm-manager music-on-hold
  ccm-manager config server 172.20.150.253
  ccm-manager config
!
mgcp
  mgcp call-agent 172.20.150.253 2427 service-type mgcp version 0.1
  mgcp dtmf-relay voip codec all mode out-of-band
  mgcp rtp unreachable timeout 1000 action notify
  mgcp modem passthrough voip mode nse
  mgcp package-capability rtp-package
  no mgcp package-capability res-package
mgcp package-capability sst-package
no mgcp package-capability fxr-package
mgcp package-capability pre-package
no mgcp timer receive-rtcp
mgcp sdp simple
mgcp fax t38 inhibit
mgcp rtp payload-type g726r16 static
!
mgcp profile default
!
!
!
!
line con 0
line aux 0
line vty 0 4
  exec-timeout 0 0
  password 7 0822455D0A16
  login
line vty 5 10
  exec-timeout 0 0
  password 7 0822455D0A16
  login
!
scheduler allocate 20000 1000
ntp clock-period 17179608
ntp server 171.68.10.80
ntp server 171.68.10.150
!
end

Router2851#
Router2851#
Router2851#sh mgcp
MGCP Admin State ACTIVE, Oper State ACTIVE - Cause Code NONE
MGCP call-agent: 172.20.150.253 2427 Initial protocol service is MGCP 0.1
MGCP validate call-agent source-ipaddr DISABLED
MGCP block-newcalls DISABLED
MGCP send SGCP RSIP: forced/restart/graceful/disconnected DISABLED
MGCP quarantine mode discard/step
MGCP quarantine of persistent events is ENABLED
MGCP dtmf-relay voip codec all mode out-of-band
MGCP dtmf-relay for voAAL2 is SDP controlled
MGCP voip modem passthrough mode: NSE, codec: g711ulaw, redundancy: DISABLED,
MGCP voaal2 modem passthrough disabled
MGCP voip modem relay: Disabled.
MGCP TSE payload: 100
MGCP T.38 Named Signalling Event (NSE) response timer: 200
MGCP Network (IP/AAL2) Continuity Test timer: 200
MGCP 'RTP stream loss' timer disabled
MGCP request timeout 500
MGCP maximum exponential request timeout 4000
MGCP rtp unreachable timeout 1000 action notify
MGCP gateway port: 2427, MGCP maximum waiting delay 3000
MGCP restart delay 0, MGCP vad DISABLED
MGCP rtrcac DISABLED
MGCP system resource check DISABLED
MGCP xpc-codec: DISABLED, MGCP persistent hookflash: DISABLED
MGCP persistent offhook: ENABLED, MGCP persistent onhook: DISABLED
MGCP piggyback msg ENABLED, MGCP endpoint offset DISABLED
MGCP simple-sdp ENABLED
MGCP undotted-notation DISABLED
MGCP codec type g711ulaw, MGCP packetization period 20
MGCP JB threshold lwm 30, MGCP JB threshold hwm 150
MGCP LAT threshold lwm 150, MGCP LAT threshold hwm 300
MGCP PL threshold lwm 1000, MGCP PL threshold hwm 10000
MGCP CL threshold lwm 1000, MGCP CL threshold hwm 10000
MGCP playout mode is adaptive 60, 40, 200 in msec
MGCP Fax Playout Buffer is 300 in msec
MGCP media (RTP) dscp: ef, MGCP signaling dscp: af31
MGCP default package: trunk-package
MGCP supported packages: gm-package dtmf-package trunk-package line-package
hs-package rtp-package atm-package ms-package dt-package
mo-package mt-package sst-package pre-package

MGCP Digit Map matching order: shortest match
SGCP Digit Map matching order: always left-to-right
MGCP VoAAL2 ignore-lco-codec DISABLED
MGCP T.38 Max Fax Rate is DEFAULT
MGCP T.38 Fax is DISABLED
MGCP T.38 Fax ECM is ENABLED
MGCP T.38 Fax NSF Override is DISABLED
MGCP T.38 Fax Low Speed Redundancy: 0
MGCP T.38 Fax High Speed Redundancy: 0
MGCP control bind :DISABLED
MGCP media bind :DISABLED
MGCP Upspeed payload type for G711ulaw: 0, G711alaw: 8
MGCP Static payload type for G.726-16K codec
MGCP Dynamic payload type for G.726-24K codec
MGCP Dynamic payload type for G.Clear codec
MGCP Guaranteed scheduler time is disabled

Router2851#
Router2851#
Router2851#sh ccm
MGCP Domain Name: Router2851
<table>
<thead>
<tr>
<th>Priority</th>
<th>Status</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Registered</td>
<td>172.20.150.253</td>
</tr>
<tr>
<td>First Backup</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Second Backup</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Current active Call Manager: 172.20.150.253
Backhaul/Redundant link port: 2428
Failover Interval: 30 seconds
Keepalive Interval: 15 seconds
Last keepalive sent: 15:54:11 PST Jun 13 2005 (elapsed time: 00:00:12)
Last MGCP traffic time: 15:54:11 PST Jun 13 2005 (elapsed time: 00:00:12)
Last failover time: None
Last switchback time: None
Switchback mode: Graceful
MGCP Fallback mode: Not Selected
Last MGCP Fallback start time: None
Last MGCP Fallback end time: None
MGCP Download Tones: Disabled

Backhaul Link info:
   Link Protocol: TCP
   Remote Port Number: 2428
   Remote IP Address: 172.20.150.253
   Current Link State: OPEN

Statistics:
   Packets recv: 520
   Recv failures: 0
   Packets xmitted: 424
   Xmit failures: 0

PRI Ports being backhauled:
   Slot 0, port 1
   Slot 0, port 0

Configuration Auto-Download Information
=======================================
Current version-id: (DF50D6DF-A27D-4AFD-AAAD-2967DFD1DDBA)
Last config-downloaded: 00:00:00
Current state: Waiting for commands

Configuration Download statistics:
   Download Attempted : 13
   Download Successful : 13
   Download Failed : 0
   Configuration Attempted : 1
   Configuration Successful : 1
   Configuration Failed(Parsing): 0
   Configuration Failed(config) : 0

Last config download command: New Registration

Configuration Error History:

FAX mode: cisco
Router2851#
Router2851#
Router2851#show isdn stat serial 0/0/1:23
Global ISDN Switchtype = primary-ni

%Q.931 is backhauled to CCM MANAGER 0x0003 on DSL 1. Layer 3 output may not apply

ISDN Serial0/0/1:23 interface
    ******* Network side configuration *******
    dsl 1, interface ISDN Switchtype = primary-ni
    L2 Protocol = Q.921 0x0000  L3 Protocol(s) = CCM MANAGER 0x0003
Layer 1 Status:
    ACTIVE
Layer 2 Status:
    TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
Layer 3 Status:
    0 Active Layer 3 Call(s)
    Active dsl 1 CCBs = 0
    The Free Channel Mask:  0x807FFFFF
    Number of L2 Discards = 0, L2 Session ID = 25
    Total Allocated ISDN CCBs = 0

Router2851#

**Acronyms**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANF-PR</td>
<td>Additional Network Feature Path Replacement</td>
</tr>
<tr>
<td>CCM</td>
<td>Cisco CallManager</td>
</tr>
<tr>
<td>CCBS</td>
<td>Call Completion to Busy Subscriber</td>
</tr>
<tr>
<td>CCNR</td>
<td>Call Completion on No Reply</td>
</tr>
<tr>
<td>CFB</td>
<td>Call Forwarding on Busy</td>
</tr>
<tr>
<td>CFNR</td>
<td>Call Forwarding No Reply</td>
</tr>
<tr>
<td>CFU</td>
<td>Call Forwarding Unconditional</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>CLIP</td>
<td>Calling Line (Number) Identification Presentation</td>
</tr>
<tr>
<td>CLIR</td>
<td>Calling Line (Number) Identification Restriction</td>
</tr>
<tr>
<td>CMM</td>
<td>Communication Media Module (CMM) is a Cisco Catalyst® 6500 Series and Cisco 7600 Series line card that provides flexible and high-density T1/E1 gateways</td>
</tr>
<tr>
<td>CNIP</td>
<td>Calling Name Identification Presentation</td>
</tr>
<tr>
<td>CNIR</td>
<td>Calling Name Identification Restriction</td>
</tr>
<tr>
<td>COLP</td>
<td>Connected Line (Number) Identification Presentation</td>
</tr>
<tr>
<td>COLR</td>
<td>Connected Line (Number) Identification Restriction</td>
</tr>
<tr>
<td>CONP</td>
<td>Connected Name Identification Presentation</td>
</tr>
<tr>
<td>CONR</td>
<td>Connected Name Identification Restriction</td>
</tr>
<tr>
<td>CT</td>
<td>Call Transfer</td>
</tr>
<tr>
<td>MWI</td>
<td>Message Waiting Indicator</td>
</tr>
<tr>
<td>PSTN</td>
<td>Public Switched Telephone Network</td>
</tr>
</tbody>
</table>
Important Information

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