Application Note

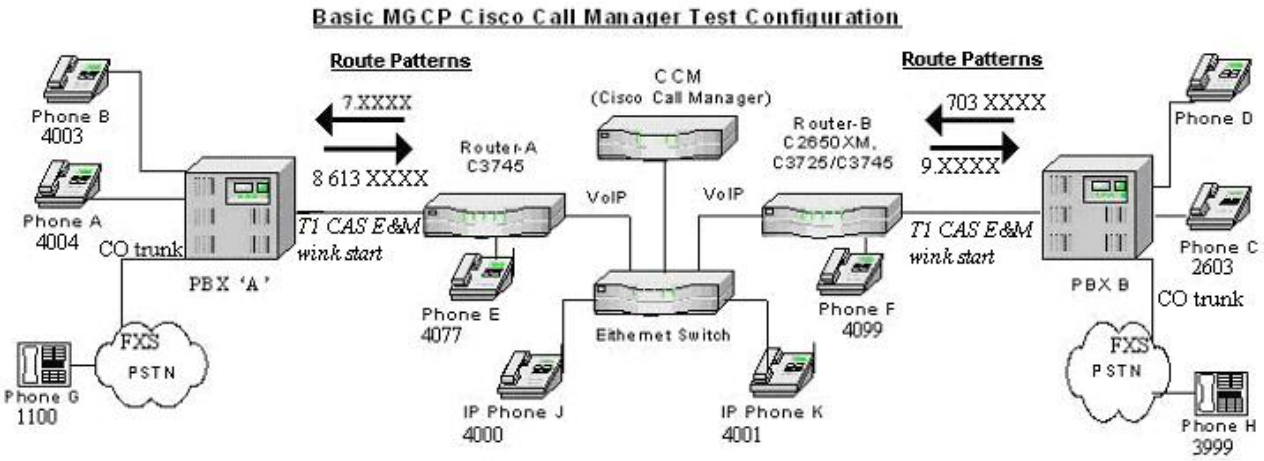
Cisco Unified CallManager 4.01-PBX Interoperability: Nortel Meridian 1 to a Cisco 2611XM Gateway using NM-HDV2-T1 CAS, E&M, Wink-Start with MGCP

Introduction

- This application note contains the test results of Nortel Meridian 1 PBX interoperability testing via digital trunk (T1 CAS, E&M, wink start) interfaces under test to a Cisco C2611XM Voice Router via NM-HDV2-T1/E1 Voice Interface Modules.
- This application note is directed toward testing interoperability of the NM-HDV2-T1/E1 Voice Interface Modules with a Nortel Meridian 1 PBX.
- The application note is for Connectivity/Interoperability testing of the Nortel Meridian 1 PBX connected via the NM-HDV2-T1/E1 Voice Interface Modules to a C2611XM Voice Router. The Cisco C2611XM Voice Router under test is connected via Ethernet to an Ethernet switch which also has a Cisco Unified CallManager and IP Phones in the Network Topology.
- Figure 1 shows the test set-up for a Cisco Voice Router connected through an Ethernet switch and controlled via MGCP by a Cisco Unified CallManager.

Network Topology

Figure 1. Network Topology or Test Setup



The above diagram is representative of the configuration used for testing. As shown in the diagram above, a PBX is connected via an interface to a Cisco router, which in turn, is connected to an Ethernet switch which also has the CCM (cisco call manager) IP Phones and a second Cisco router. The second Cisco router is connected to a second PBX. The interoperability testing involved signaling and audio path confirmation on the voice interfaces under test between each Cisco router and it's associated PBX.

EDCS# 393284

Limitations

- It was found that the correct position of J7 was critical to establish Layer 1 connectivity with the Nortel T1 PBX interface. Looking into the NM-HDV2-T1/E1 Voice Interface Modules in the direction of insertion into the Cisco Voice Router, the jumper should be placed to connect the left and middle pins.
- When phone A calls phone C and phone C answers the call or not, the actual call was placed from phone A to phone K, and then forwarded to phone C (see Figure 1).
- When phone C calls phone A and phone A answers the call or not, the actual call was placed from phone C to phone K, and then forwarded to phone A (see Figure 1).
- When phone G calls phone H and phone H answers the call, it may take a few seconds for this call to be torn down before it can be repeated (see Figure 1).
- When phone G calls phone H and phone H answers the call or not, it may takes a few seconds for this call to be torn down before it can be repeated.
- When phone K calls phone H and phone H answers the call or not, the actual call was placed from phone K to phone C, and then forwarded to phone H (see Figure 1).

System Components

Hardware Requirements

- Cisco C2611XM Voice Router with NM-HDV2-T1/E1 Voice Interface Modules
- Nortel Meridian 1 PBX

Software Requirements

- Cisco Unified CallManager Release 4.01
- Nortel Meridian: Release 24, Issue 24
- Cisco C2611XM Voice Router: Cisco IOS Software, C2600 Software (C2600-ADVENTERPRISEK9-M), Version 12.3(7)T, RELEASE SOFTWARE(fc1)

Configuration

Configuration Menus and Commands

Configuring the Nortel Meridian 1 PBX

COMMON EQUIPMENT CONFIGURATION

```
> LD 22PT2000

MARP NOT ACTIVATED

REQ  PRTTYPE CEQU

CEQU

  MPED 8D

  SUPL  000  004  008  012

        016  032  036  040

        044  048  064  068
```

```
        072
  XCT   000
  CONF  029  030  031  062
        094  095
  DLOP  NUM DCH FRM LCMT YALM T1TE TRSH
   PRI  003 23  ESF B8S  FDL  -    00
        004 23  ESF B8S  FDL  -    00
  PRI2 06 07 08 09
  DTI2  05
  MISP
REQ  ****
>
```

ROUTE DATA BLOCK CONFIGURATION

```
>LD 21PT1000
REQ: PRTTYPE: RDBCUST 0ROUT 103
TYPE RDB
CUST 00
DMOD
ROUT 103
DES  T1_CAS
TKTP TIE
ESN  NO
CNVT NO
SAT  NO
RCLS EXT
DTRK YES
BRIP NO
DGTP DTI
ISDN NO
DSEL VCE
PTYP DTT
```

```
AUTO NO
DNIS NO
ICOG IAO
SRCH RRB
TRMB YES
STEP
ACOD 703
TARG 01
CLEN 1
BILN NO
OABS
INST
ANTK
SIGO STD
STYP SDAT
TIMR ICF 512
     OGF 512
     EOD 13952
     DSI 34944
     NRD 10112
     DDL 70
     ODT 4096
     RGV 640
     GRD 896
     SFB 3
     TFD 0
SST  5 0
NEDC ETH
FEDC ETH
CPDC NO
DLTN NO
HOLD 02 02 40
```

SEIZ 02 02

SVFL 02 02

DRNG NO

CDR NO

MUS NO

MANO NO

EQAR NO

OHQ NO

OHQT 00

CBQ NO

AUTH NO

TTBL 0

OHTD NO

PLEV 2

ALRM NO

PAGE 002

ART 0

SGRP 0

AACR NO

REQ: ****

TRUNK DATA BLOCK CONFIGURATION

>LD 20

PT0000

MARP NOT ACTIVATED

REQ PRTTYPE: TNBTN   3 1DATE PAGE DES

TN   003 01

TYPE TIE

CUST 0

TRK DTI

PDCA 1

```
PCML MU
NCOS 0
RTMB 103 1
A/B BIT SIGNALING
TGAR 0
SIGL EM4 STRI/STRO WNK WNK
SUPN YES
AST  NO
IAPG 0
CLS  UNR DTN CND ECD WTA LPR APN THFD HKD
     P10 VNL
TKID
DATE 23 MAR 2004
NACT ****
```

DIGITAL STATION PHONE CONFIGURATION

```
>LD 11SL1000
MARP NOT ACTIVATED
MEM AVAIL: (U/P): 1336728    USED U P: 107267 30564    TOT: 1474559
DISK RECS AVAIL: 479
TNS     AVAIL:    76    USED:   124    TOT:   200
ACD AGENTS AVAIL:   300    USED:     0    TOT:   300
AST     AVAIL:   100    USED:     0    TOT:   100
DIGITAL TELEPHONES AVAIL:  2497    USED:     3    TOT:  2500
REQ: PRTTYPE: 2616
MARP NOT ACTIVATED
TN   001 0 0 4DATE PAGE DES
DES  TEST1
TN   001 0 00 04
TYPE 2616
CDEN 8D
CUST 0
```

```
AOM  0
FDN
TGAR 0
LDN  NO
NCOS 0
SGRP 0
RNPG 0
SCI  0
SSU
LNRS 16
XLST
CLS  CTD FBD WTA LPR MTD FND HTD ADD HFA
     MWD LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
     POD DSX VMD CMSD CCSD SWD LNA CNDA
     CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCBD
     ICDD CDMD LLCN MCTD CLBD AUTU
     GPUD DPUD DNDA CFXA ARHD CLTD ASCD
     CPFA CPTA ABDD CFHD FICD NAID BUZZ AHD
     DDGA NAMA
     DRDD EXR0
     USMD USRD ULAD RTDD RBDD RBHD PGND FLXD FTTC DNDY DNO3
CPND_LANG ENG
HUNT
PLEV 02
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
DNDR 0
KEY  00 SCR 2603 0     MARP
```

```
         CPND
           NAME PHONE A
           XPLN 27
           DISPLAY_FMT FIRST,LAST
      01 SCR 2610 0
      02
      03 CFW 12  7103999
      04 AO6
      05 TRN
      06 DSP
      07
      08 ADL 16
      09 ADL 16
      10 ADL 16
      11 ADL 16
      12 ADL 16
      13 ADL 16
      14 ADL 16
      15
DATE 13 MAR 2004
NACT ****
```

PBX SOFTWARE RELEASE/VERSION

```
>LD 22PT2000
MARP NOT ACTIVATED
REQ  ISS
VERSION 2111
RELEASE 24
ISSUE 24
```

FEATURES/PACKAGES INSTALLED

```
REQ  PRTTYPE PKGOPTF   1
CUST   2
```

CDR	4
CTY	5
RAN	7
TAD	8
DNDI	9
EES	10
INTR	11
ANI	12
ANIR	13
BRTE	14
DNDG	16
MSB	17
SS25	18
DDSP	19
ODAS	20
DI	21
CHG	23
CAB	24
BAUT	25
CASM	26
CASR	27
BQUE	28
NTRF	29
NCOS	32
CPRK	33
SSC	34
IMS	35
UST	35
UMG	35
ROA	36
NSIG	37
MCBQ	38

```
NSC     39
BACD    40
ACDB    41
ACDC    42
LMAN    43
MUS     44
ACDA    45
MWC     46
AAB     47
GRP     48
NFCR    49
ACDD    50
LNK     51
FCA     52
SR      53
AA      54
HIST    55
AOP     56
BARS    57
NARS    58
CDP     59
PQUE    60
FCBQ    61
OHQ     62
NAUT    63
SNR     64

PAGE 001
NXFR    67
HOT     70
DHLD    71
LSEL    72
```

SS5	73
DRNG	74
PBXI	75
DLDN	76
CSL	77
OOD	79
SCI	80
CCOS	81
CDRQ	83
TENS	86
FTDS	87
DSET	88
TSET	89
LNR	90
DLT2	91
PXLT	92
SUPV	93
CPND	95
DNIS	98
BGD	99
RMS	100
MR	101
AWU	102
PMSI	103
LLC	105
MCT	107
ICDR	108
APL	109
TVS	110
TOF	111
IDC	113
AUXS	114

DCP 115

PAGT 116

CBC 117

CCDR 118

EMUS 119

SCMP 121

FTC 125

BKI 127

DTI2 129

TBAR 132

ENS 133

FFC 139

DCON 140

MPO 141

ISDN 145

PRA 146

ISL 147

NTWK 148

IEC 149

DNXP 150

CDRE 151

IAP3P 153

PRI2 154

ACNT 155

THF 157

PAGE 002

FGD 158

FNP 160

ISDN INTL SUP 161

SAR 162

LAPW 164

```
GPRI    167
ARIE    170
CPGS    172
ECCS    173
AAA     174
NMS     175
EOVF    178
HVS     179
DKS     180
SACP    181
OVLP    184
EDRG    185
POVR    186
SECL    191
ORC-RVQ  192
AINS    200
IPRA    202
XPE     203
XCT0    204
XCT1    205
MLWU    206
NACD    207
HSE     208
MLM     209
MAID    210
VAWU    212
EAR     214
ECT     215
BRI     216
IVR     218
MWI     219
MSDL    222
```

FC68 223

M911 224

CWNT 225

SSAU 229

BRIT 233

FCDR 234

BRIL 235

MCMO 240

MULTI_USER 242

ALRM_FILTER 243

VMBA 246

CALL ID 247

DPNA 250

SCDR 251

ARFW 253

PHTN 254

ADMINSET 256

ATX 258

QSIG 263

NI-2 291

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MQA 297

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NGCC 311

TATO 312

OPEN ALARM 315

QSIG-SS 316

QTN 321

NGEN 324

RANBRD 327

MUSBRD 328

ESA 329

ESA_SUPP 330

ESA_CLMP 331

CNUMB 332

CNAME 333

NI-2 CBC 334

MEET 348

MC32 350

DBA 351

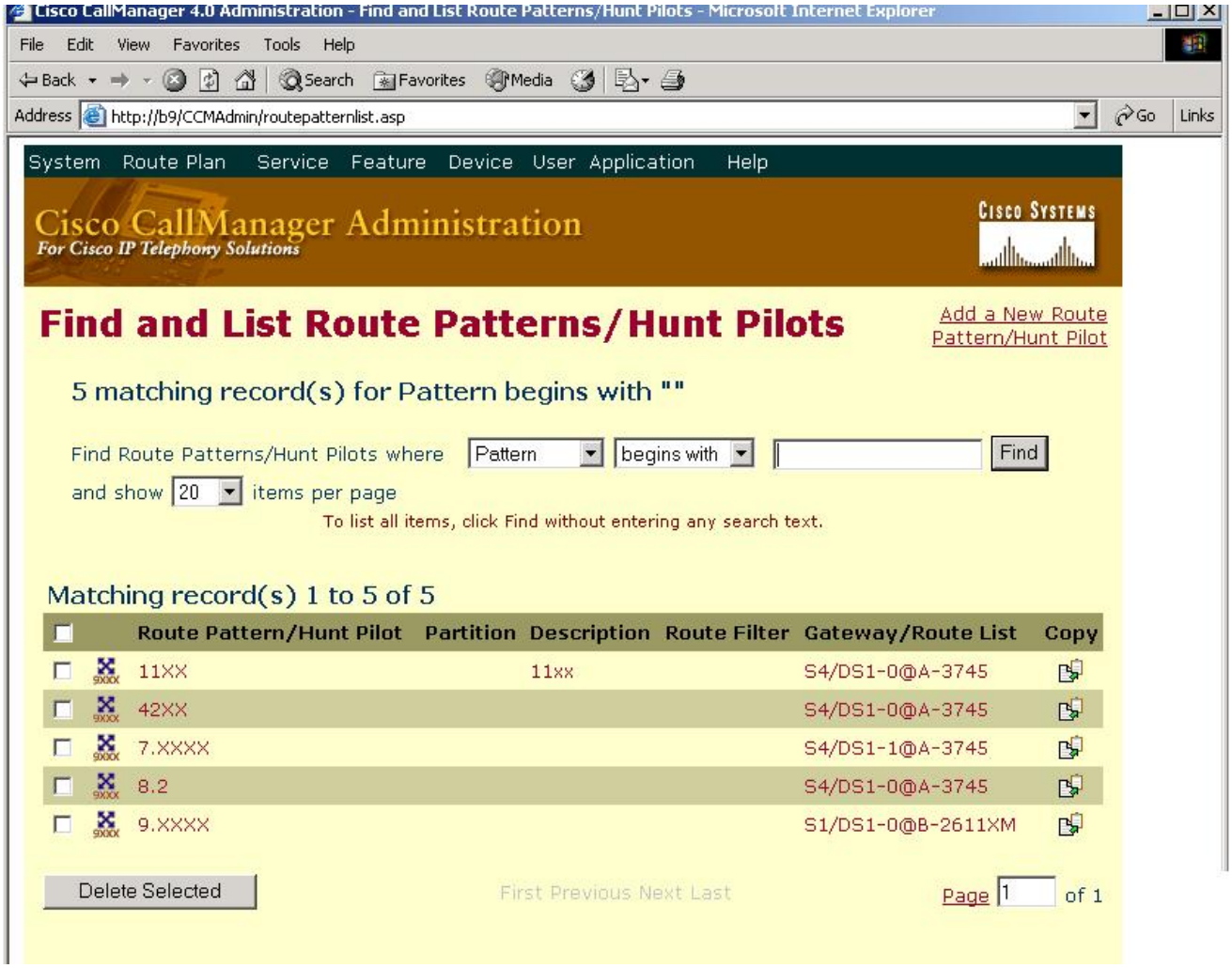
FDID 362

NMCE 364

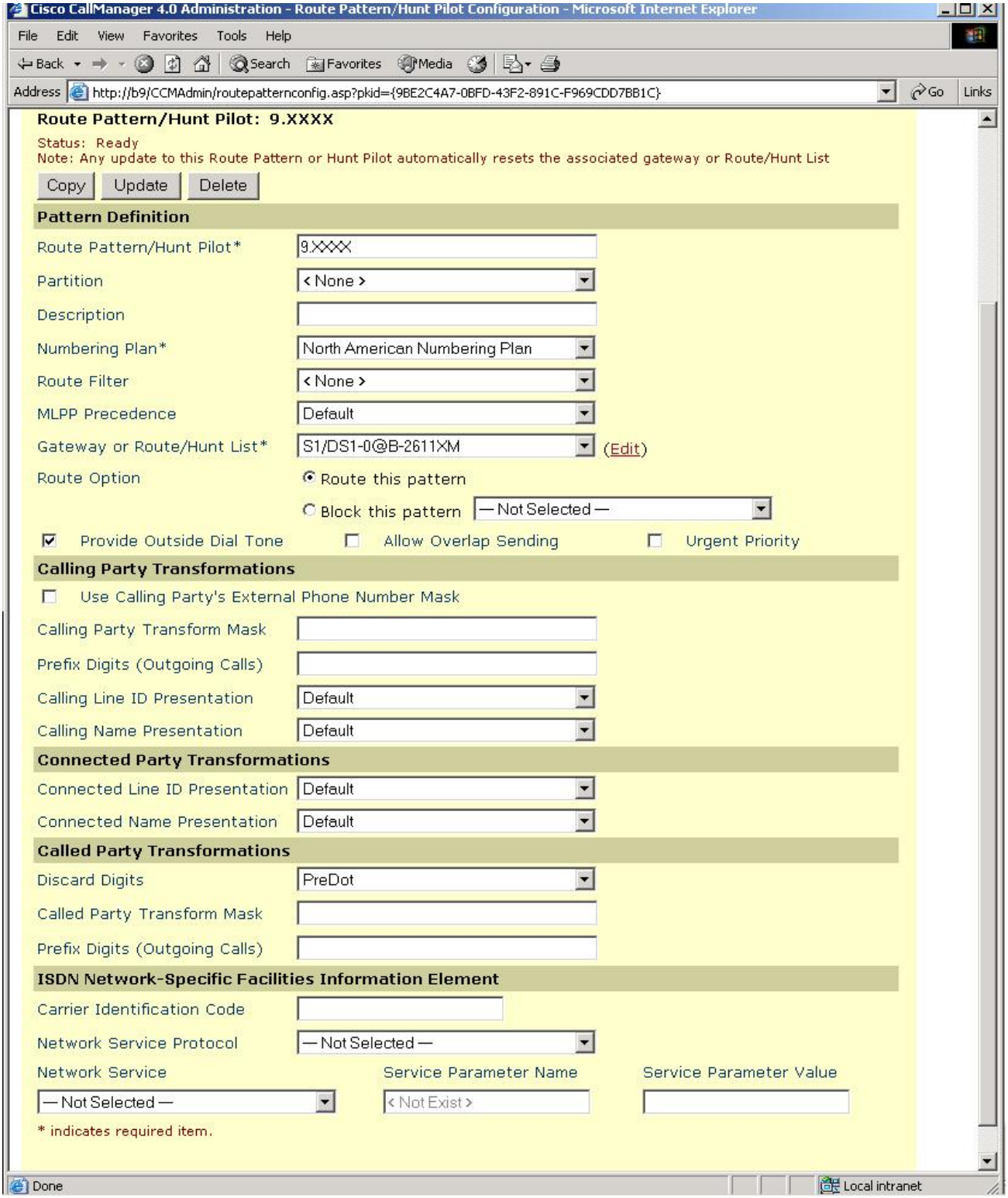
REQ

Route Patterns

Screenshot for Cisco Unified CallManager Route Patterns (Overview)

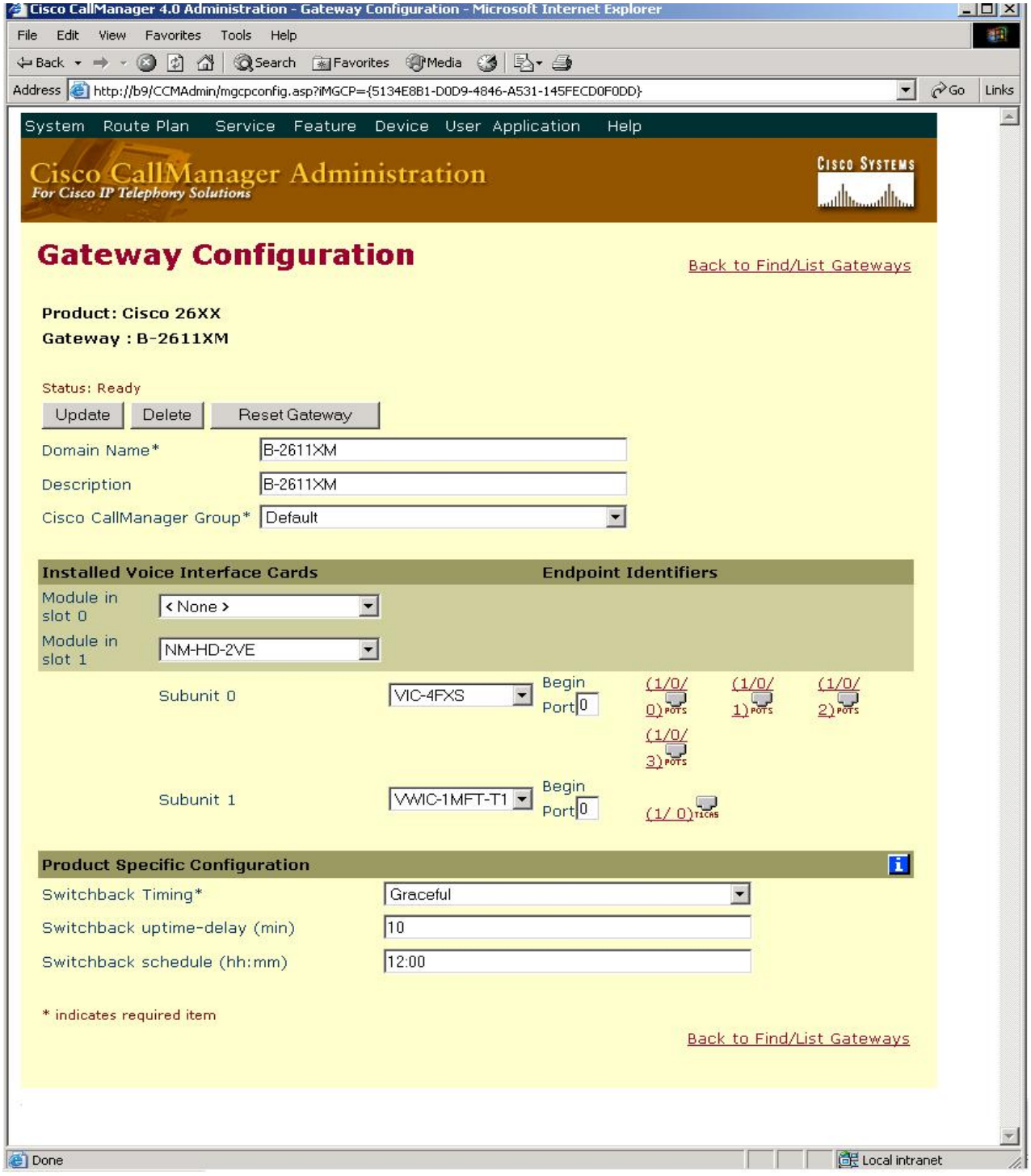


Screenshot for Cisco Unified CallManager Route Patterns (Pattern 9.XXXX to Nortel PBX)

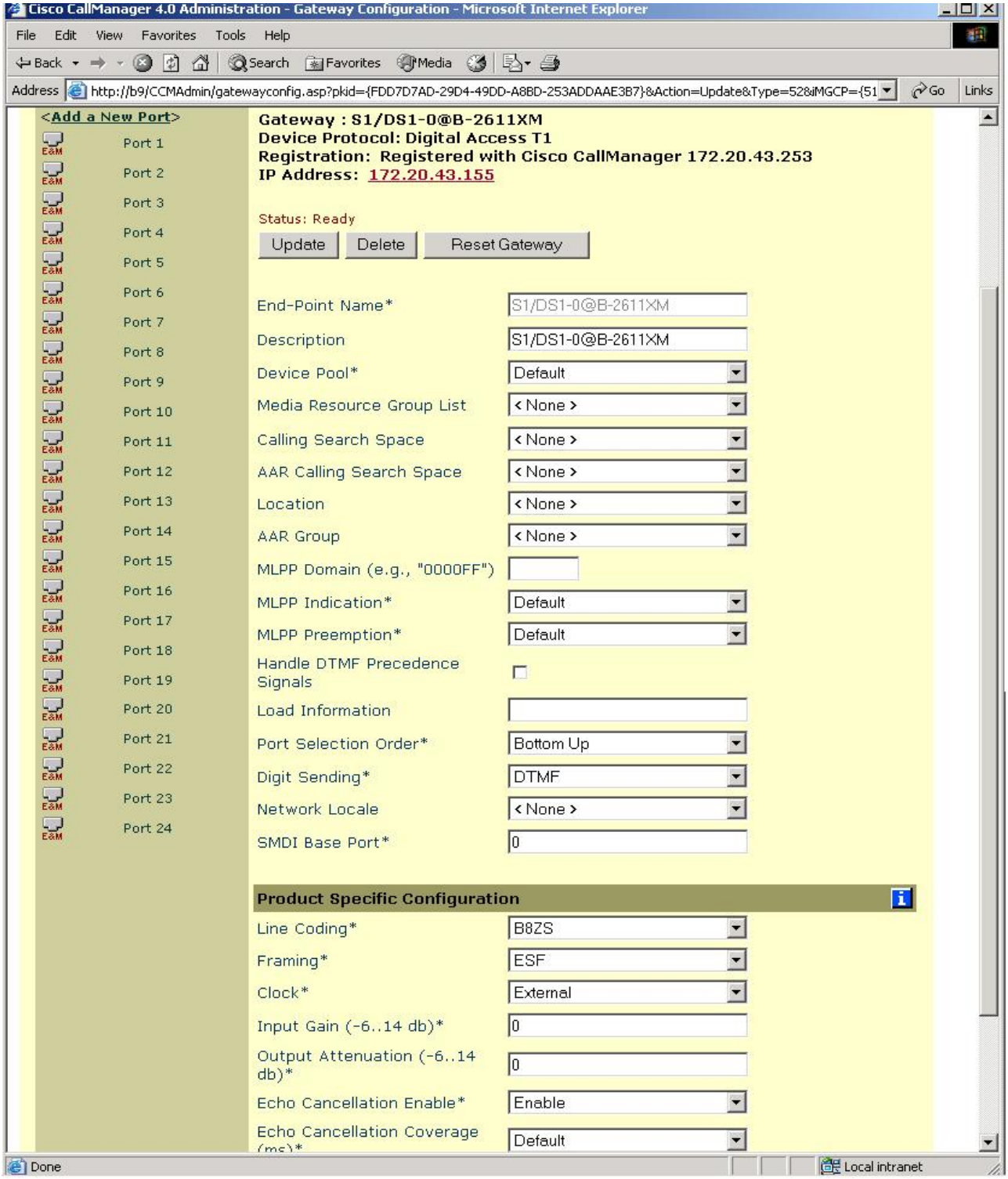


Cisco Unified CallManager Configuration for Cisco C2611XM Voice Router

Screenshot for Cisco Unified CallManager – Cisco C2611XM Voice Router Configuration



Screenshot for Cisco Unified CallManager – Cisco C2611XM Voice Router T1 Trunk Configuration



```
B-2611XM# sho run
Building configuration...
Current configuration : 2172 bytes
!
version 12.3
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname B-2611XM
!
boot-start-marker
boot-end-marker
!
card type t1 1 1
enable secret 5 $1$1lIo$rrTZbWb3xci/uuEvYELWI.
enable password cisco
!
no network-clock-participate slot 1
no network-clock-participate wic 0
ip subnet-zero
!
ip cef
no ip domain lookup
ip host B9 172.20.43.253
ip audit po max-events 100
no aaa new-model
no ftp-server write-enable
isdn switch-type primary-qsig
voice-card 1
```

```
!
!
fax interface-type fax-mail
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 172.20.43.253
ccm-manager config
!
controller T1 1/0
 framing esf
 linecode b8zs
 ds0-group 1 timeslots 1-24 type e&m-wink-start
!
no crypto isakmp enable
!
interface FastEthernet0/0
 ip address 172.20.43.155 255.255.255.0
 no ip mroute-cache
 speed auto
 full-duplex
 no mop enabled
!
interface FastEthernet0/1
 no ip address
 no ip mroute-cache
 shutdown
 duplex auto
 speed auto
!
ip classless
!
no ip http server
```

```
no ip http secure-server
!
control-plane
!
voice-port 1/0/0
!
voice-port 1/0/1
!
voice-port 1/0/2
!
voice-port 1/0/3
!
voice-port 1/0:1
!
mgcp
mgcp call-agent 172.20.43.253 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
no mgcp timer receive-rtcp
mgcp sdp simple
mgcp fax t38 inhibit
mgcp rtp payload-type g726r16 static
!
mgcp profile default
!
dial-peer cor custom
!
```

```
dial-peer voice 999111 pots
 application mgcpapp
!
dial-peer voice 3000 voip
!
dial-peer voice 999100 pots
 application mgcpapp
 port 1/0/0
!
dial-peer voice 999101 pots
 application mgcpapp
 port 1/0:1
!
dial-peer voice 999102 pots
 application mgcpapp
 port 1/0/2
!
dial-peer voice 999103 pots
 application mgcpapp
 port 1/0/3
!
line con 0
line aux 0
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
B-2611XM#
```

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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

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