Nortel Communication Server 1000M Release 4.0 using H.323 Trunk to Cisco Unified CallManager Release 4.1(2)

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(2)SR1 via H.323 trunk.
- The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Nortel CS1000 PBX configured as a H323 gateway with the Cisco CallManager 4.1(2)SR1 release.
- On Cisco CallManager H323 Gateway Configuration web page defined for the Nortel PBX, please ensure the following “Media Termination Point Required”, “Enable Inbound FastStart” and “Enable Outbound FastStart” boxes are all checked.

Network Topology

Draw a diagram of the network topology or test setup.

Figure 1. Network Topology or Test Setup

H.323 Call Setup End-to-End Configuration
Limitations

- Alerting/Connected Name and Number are supported by both PBX. However, they do not interoperate with one another. Cisco CallManager use "Display IE" and "Connected Number" field within the H.225 message to pass these information across the H.323 session. Nortel on the other hand, use a proprietary method of passing these information across using the "nonStandardData" field within the H.225 message.

- Call Transfer and Call Forward features work without any phone’s name or number display update capability.

- Call Completion (Callback) Feature is not supported on both Cisco CallManager and Nortel CS1000 using standard H.323 protocol. However, it is supported on between their own system using each proprietary tunneling method.

- MWI ON/OFF messages doesn’t work across the H.323 connection between the two PBX systems.

- End-to-end DTMF relay signaling doesn’t work for Nortel phone when calling Cisco IP Phone which have Nortel Call Pilot as a voice mail system. DTMF relays is not negotiated for the H323 call session

- On the Cisco CallManager H323 Gateway Configuration for the Nortel PBX, “Media Termination Point Required”, “Enable Inbound FastStart” and “Enable Outbound FastStart” boxes all must be checked.

- Both CCM and Nortel currently do not support H.450 Supplementary Services.

System Components

Hardware Requirements

- Cisco CallManager MCS server, Unity server, and Cisco 7960 phones

- Nortel Communication System 1000 (which includes Call Server, Signaling Server and Media gateway) and Nortel’s i2004/i2000 IP phones

Software Requirements

- Cisco CallManager Release 4.1(2)

- Nortel Succession 4.0 Release

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)

- CT-Call Transfer by Join  (Please see the Limitation section)

- CFU-Call Forwarding Unconditional  (Please see the Limitation section)

- CFB-Call Forwarding Busy  (Please see the Limitation section)

- CFB-Call Forwarding Busy  (Please see the Limitation section)

- COLP-Connected Line (Number) Identification Presentation  (Please see the Limitation section)

- COLR- Connected Line (Number) Identification Restriction  (Please see the Limitation section)

- CONP-Connected Name Identification Presentation  (Please see the Limitation section)

- End-to-End DTMF signaling  (Please see the Limitation section)
Features Not Supported

- MWI- Message Waiting Indication (lamp ON, lamp OFF) across the H.323 Trunk
- Call Completion (Callback; Automatic Callback)
- Alerting Name
- CT-Call Transfer with Path Replacement
- Call Completion

Configuration

Nortel Communication Server 1000 PBX Configuration Sequence and Tasks

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 11 – Configure for the Virtual lines for the Nortel IP phone (i200x series)
6. LD 16 – Configure the H.323 route
7. LD 86 – Configure the Route List Block for the Virtual Trunk route
8. LD 87 – Configure CDP steering codes

Signaling Server Setup via 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 H323 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 H.323 gateway
24. Configure the Routing Entries

Cisco CallManager Setup
25. Create the Media Resource Group and Media Resource Group List for the MTP requirement
26. Add an H323 gateway for the Nortel CS1000 PBX under the Device pull-down menu
27. Add a Route Pattern to reach the Nortel’s phone DN extensions
28. Configure Cisco 7960 phone and line DN
Configuration Menus and Commands

Nortel Communication Server 1000 (CS1000) Configuration

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 -- - -
3. LD 14 – Configure the H.323 Virtual Trunks to the Signaling Server (One trunk = one line connection)

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

⇒ H323 Virtual trunk to Signaling Server
```

```plaintext
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)

```plaintext
>ld 20
REQ: prt
TYPE: tnb
TN 3
```
5. LD 11 – Configure for the Virtual lines for the Nortel IP phones (phone A and phone B)

Phone A (i2004)
>ld 11
SL1000
MEM AVAIL: (U/P): 2854769 USED U P: 182454 59352 TOT: 3096575
DISK RECS AVAIL: 1152
DIGITAL TELEPHONES AVAIL: 6 USED: 2 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: 2405 USED: 95 TOT: 2500
DATA PORTS AVAIL: 2500 USED: 0 TOT: 2500

REQ:prt
TYPE:tnb

TN 61 0 0 02
DATE
PAGE
DES

DES I2004
TN 061 0 00 02 VIRTUAL
TYPE I2004
CDEN 8D
CUST 0
ZONE 000
FDN 3019
TGAR 1
LDN NO
NCOS 0
SGRP 0
Phone B (i2002):
REQ: prt
TYPE: tn

**TN 61 0 0 1**

**DATE**

**PAGE**

**DES**

DES I2002
TN 061 0 00 01 VIRTUAL

**TYPE I2002**

CDEN 8D
CUST 0

**ZONE 000**

**FDN 2500**

TGAR 1
LDN NO
NCOS 0
SGRP 0
RNPG 0
SCI 0
SSU
LNRS 16

**XLST**

CLS CTD FBD WTA LPR MTD FNA HTA TDD HFD CRPD
MWA LMPN RMMD SMWD AAD IMD XHD IRA NID OLD VCE DRG1
POD DSX VMD CMSD SLKD CCSD SWD LNA CNDA
CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCBD
ICDD CDMD LLCN MCTD CLBD AUTU
GPUD DPUD DNDA CFYA 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
VOLA VOID CDMR
CPND_LANG ENG
RCO 0
HUNT 2500
LHK 0
LPK 1
PLEV 02
CSDN
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
DNDR 0
KEY 00 SCR 2102 0 MARP
  CPND
  NAME ZEUS2_L1
  XPLN 8
  DISPLAY_FMT FIRST,LAST
01 SCR 2202 0 MARP
  CPND
  NAME ZEUS2_L2
  XPLN 8
  DISPLAY_FMT FIRST,LAST
02
03
04
05
06
07
08
09
10
11
12
13
14
15
16 MWK 2500
17 TRN
18 AO6
19 CFW 16 2500
20 RGA
21 PRK
22 RNP
23
24 PRS
25 CHG
26 CPN
27
28
6. 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
7. 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

8. LD 87 – Configure CDP steering codes

>ld 87
ESN000
MEM AVAIL: (U/P): 2854769  USED U P: 182454 59352  TOT: 3096575
DISK RECS AVAIL: 1152
REQ prt
CUST 0
FEAT cdp
TYPE dsc
dsc

DSC  30  ➔ Dial 30xx send it via H323 route
FLEN 0
DSP  LSC
RLI  11  ➔ H323 Route
NPA
NXX

DSC  31  ➔ Dial 30xx send it via SIP route
FLEN 0
DSP  LSC
RLI  10  ➔ SIP Route
NPA
NXX

Signaling Server Setup:

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 QoS section
14. Configure LAN Configuration section

15. Configure the H323 GW Setting section
16. Configure the Card section for the MC-32 VGMC card section

17. Configure the Signaling Server section
Network Routing Server Setup:

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 H.323 gateway
24. Configure the Routing Entries
25. Create the Media Resource Group and Media Resource Group List for the MTP requirement
26. Add an H323 gateway for the Nortel CS1000 PBX under the Device pull-down menu.
27. Add a Route Pattern to reach the Nortel’s phone DN extensions
28. Configure Cisco 7960 phones with 3012 and 3013 DN.
### Directory Number Configuration

**Directory Number:** 2013

**Status:** Ready

**Note:** Any updates to this Directory Number automatically resets the associated devices.

<table>
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<tr>
<th>Directory Number</th>
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<td>2013</td>
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**Partition**

**2013**

**Directory Number Settings**

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<thead>
<tr>
<th>Voice Mail Profile</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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<tbody>
<tr>
<td>2000,Call-in</td>
<td></td>
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<table>
<thead>
<tr>
<th>Calling Search Space</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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<tbody>
<tr>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>User Hold Audio Source</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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<th>Network Hold Audio Source</th>
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<table>
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<tr>
<th>Auto Answer</th>
<th>Auto Answer Off</th>
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**Call Forward and Pickup Settings**

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<tr>
<th>Voice Mail Coverage</th>
<th>Voice Mail Destination</th>
<th>Calling Search Space</th>
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<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Forward All</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Forward Busy Internal</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Forward Busy External</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
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<table>
<thead>
<tr>
<th>Forward No Answer Internal</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Forward No Answer External</th>
<th>(Choose &lt;Voice&gt; to use default)</th>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting</td>
<td>Value</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Forward No Coverage Internal</td>
<td></td>
</tr>
<tr>
<td>Forward No Coverage External</td>
<td></td>
</tr>
<tr>
<td>No Answer Ring Duration</td>
<td>(seconds)</td>
</tr>
<tr>
<td>Call Pickup Group</td>
<td></td>
</tr>
<tr>
<td>H.323 Alternate Party Settings</td>
<td></td>
</tr>
<tr>
<td>Target (Destination)</td>
<td></td>
</tr>
<tr>
<td>Calling Search Space</td>
<td></td>
</tr>
<tr>
<td>No Answer Ring Duration</td>
<td>(seconds)</td>
</tr>
<tr>
<td>Line Settings for all Devices</td>
<td></td>
</tr>
<tr>
<td>Alerting Name</td>
<td></td>
</tr>
<tr>
<td>Line Settings for this Device</td>
<td></td>
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<tr>
<td>Display (Internal Caller ID)</td>
<td>ME113_C</td>
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<tr>
<td>Line Text Label</td>
<td>ME113</td>
</tr>
<tr>
<td>External Phone Number Mask</td>
<td></td>
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<tr>
<td>Message Waiting Lamp Policy</td>
<td>Use System Policy</td>
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<tr>
<td>Ring Setting (Phone Idle)</td>
<td>Use System Default</td>
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<tr>
<td>Ring Setting (Phone Active)**</td>
<td>Use System Default</td>
</tr>
<tr>
<td>Multiple Call / Call Waiting Settings</td>
<td></td>
</tr>
<tr>
<td>Maximum Number of Calls*</td>
<td>(1 - 199)</td>
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<tr>
<td>Busy Trigger*</td>
<td>(&lt;= Max. Calls)</td>
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<td>Forwarded Call Information Display</td>
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</tr>
<tr>
<td>Caller Name</td>
<td>Caller Number</td>
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<tr>
<td>Redirected Number</td>
<td>Dialed Number</td>
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## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definitions</th>
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<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>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>
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<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>
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<table>
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<tr>
<th>Corporate Headquarters</th>
<th>European Headquarters</th>
<th>Americas Headquarters</th>
<th>Asia Pacific Headquarters</th>
</tr>
</thead>
<tbody>
<tr>
<td>170 West Tasman Drive</td>
<td>BV Haarlerbergpark</td>
<td>170 West Tasman Drive</td>
<td>Capital Tower</td>
</tr>
<tr>
<td>San Jose, CA 95134-1706</td>
<td>Haarlerbergweg 13-19</td>
<td>San Jose, CA 95134-1706</td>
<td>168 Robinson Road</td>
</tr>
<tr>
<td>USA</td>
<td>1101 CH Amsterdam</td>
<td>USA</td>
<td>#22-01 to #29-01</td>
</tr>
<tr>
<td><a href="http://www.cisco.com">www.cisco.com</a></td>
<td>The Netherlands</td>
<td><a href="http://www.cisco.com">www.cisco.com</a></td>
<td>Singapore 068912</td>
</tr>
<tr>
<td>Tel: 408 526-4000</td>
<td>www-europe.cisco.com</td>
<td>Tel: 408 526-7660</td>
<td><a href="http://www.cisco.com">www.cisco.com</a></td>
</tr>
<tr>
<td>800 553-NETS (6387)</td>
<td>Tel: 31 0 20 357 1000</td>
<td>Fax: 408 527-0883</td>
<td>Tel: +65 317 7777</td>
</tr>
<tr>
<td>Fax: 408 526-4100</td>
<td>Fax: 31 0 20 357 1100</td>
<td></td>
<td>Fax: +65 317 7799</td>
</tr>
</tbody>
</table>

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