



Avaya Solution & Interoperability Test Lab

Application notes for Qwest Communication System with Avaya™ Communication Server 1000 release 6.0

Abstract

These Application Notes describe a solution comprised of Avaya™ Communication Server 1000E Release 6.0 and Qwest Communication SIP Trunk Product. The Primary focus of testing is the system verification of SIP trunk interoperability which includes the call scenarios such as basic call, call forward (all calls, busy, no answer), call transfer (blind and consult) and conference. Calls should be placed in both directions and should involve various set types

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

NN10000-130 Revision 1.0
May 26, 2010

1. Introduction

This document provides a typical network deployment of Communication Server 1000 (CS1000) utilizing the Qwest Communication SIP Trunking product offering. This document should serve as general guideline only, since it is not possible to document every possible variation of configuration. Further information may be obtained from your Nortel support representative. The CS1000E system is configured as a SIP gateway endpoint on the Qwest Communication network. **The enterprise customer will require an additional signaling server for each SIP gateway that will be deployed as SIP trunking to the carrier.** In the diagram shown below, the signaling server is shown as the onboard CPPM Cores option, but it can also be the outboard, rack-mounted 1U server.

The CS1000, in this configuration, does not use SIP Redirect or Proxy for Carrier SIP trunking, the SIP Virtual Gateway is simply provisioned with the SBC as the static SIP endpoint of the SIP Trunk.

1.1. Interoperability Compliance Testing

System verification testing of SIP Trunking between CS1000 Rel. 6.0 and Carrier switch

- General call processing between systems including:
 - Codec/ptime negotiation and transcoding (G.711 u-law and G.729 verification / 20ms)
 - Hold/Retrieve on both ends
 - CLID displayed
 - Ringback tone
 - Speech path
 - Dialing plan support
 - Advanced features (Call on Mute, Call Park, Call Waiting, use Feature Access Code)
 - Abandoned Call
- Call redirection verification: all supported methods (blind transfer, consultative transfer, call forward, and conference) including CLID. Call redirection is performed from both ends
- FAX T38; Fax G711 Pass Through
- DTMF on both direction
- SIP Transport UDP
- Thru dialing via PBX Call Pilot
- Voice Mail Server (hosted on Nortel system)
- Early Media Transmission
- Inter-office tandem Call

1.2. Caveats

- The Fax/Modem pass through feature provides a modem pass through allowed (MPTA) class of service (CLS) for an analog phone TN. MPTA CLS dedicates an analog phone TN to a

modem or a Fax machine terminal. A connection that initiates from the dedicated TN, and/or calls that terminate at the dedicated TN through a Digital Signal Processor (DSP), use a G711 NO VAD codec on the Call Server. To ensure proper functioning of the MPTA CLS, the Enable Modem/Fax pass through mode check box must be selected in the Gateways section of Element Manager. This check box is selected by default in Element Manager.

- The packet interval for G.711 codec is set to 20 ms in MPT. The maximum speed supported for modem and fax is 33.6 Kb/s. This limit is imposed by the analogue line card. When MPTA CLS is configured on a TN, the T.38 protocol is no longer supported for that particular TN.

1.3. Dependencies

- . CS1000 R6.0 software and implementation of latest patches
- . Qwest Communications provides support to setup, configure, and troubleshoot on carrier switch for the duration of the testing.

1.4. Support

For technical support on Qwest Communication system, please contact Qwest technical support at:

- Toll Free: (866) 861-3113
- E-mail: support@sipera.com

2. Reference Configuration

Figure 1 illustrates the test configuration used during the compliant testing event between the Communication Server 1000E and Qwest Communication System. This configuration is for a single Communication Server1000E deployment

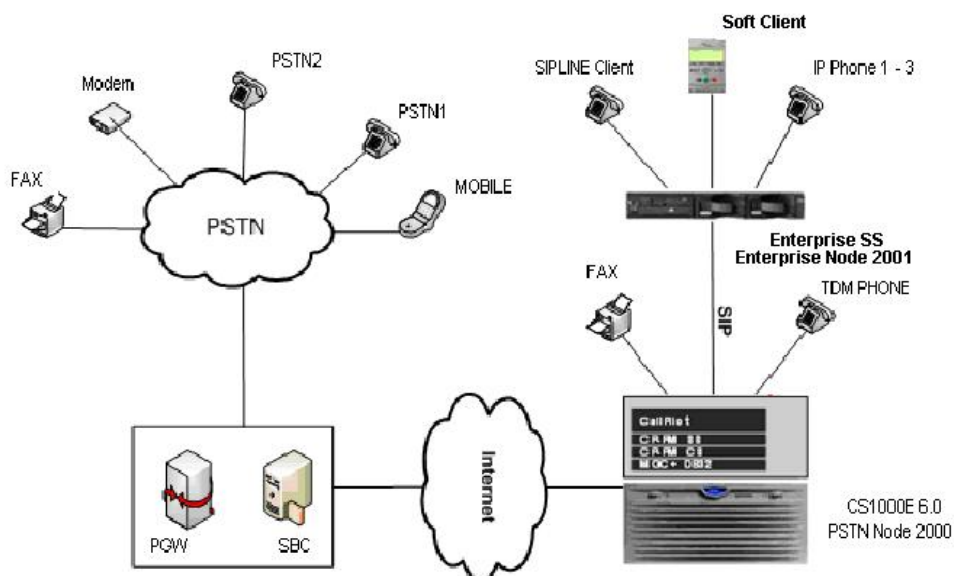


Figure 1- Network diagram for Nortel-Qwest LAB setup

Figure 2 is the deployment option for 2 or more Communication Server of 1000E with the Qwest communication system.

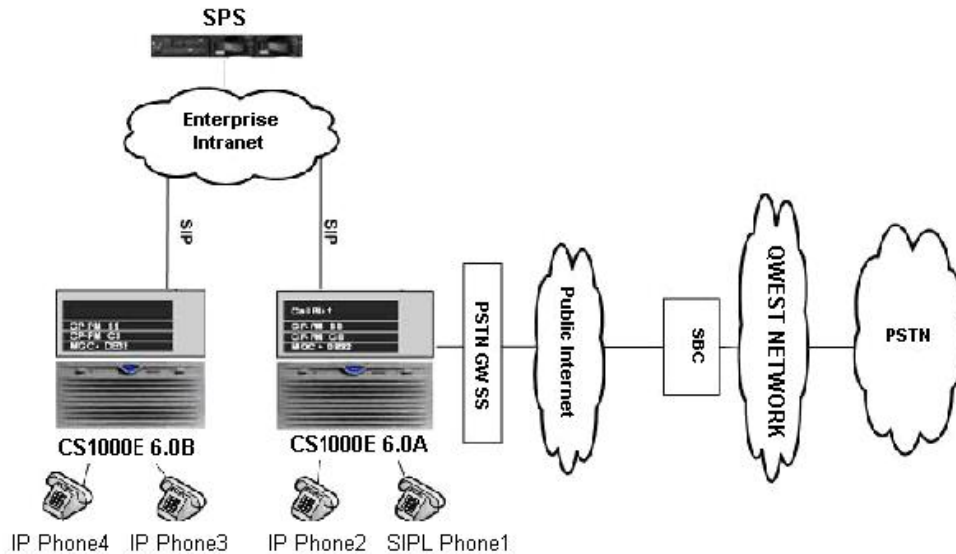


Figure 2 - Network topology for Multi-System configuration for Tandem Calls

The following assumptions were made for this lab test configuration:

1. CS1000 R6.0 software and implementation of latest patches
2. Qwest Communications provides support to setup, configure, and troubleshoot on carrier switch for the duration of the testing.

All test scenarios involving the establishment of calls will assume the following activities:

1. Calls will be checked for the correct call progress tones and cadences.
2. During the ringing state the ring back tone and destination ringing will be checked.
3. Calls will be checked in both hands-free and handset mode due to internal Nortel requirement.
4. Calls will be checked for speech path in both directions using spoken words to ensure clarity of speech.
5. The display(s) of the sets/clients involved will be checked for consistent and expected CLID, name and redirection information both prior to answer and after call establishment.
6. The speech path and messaging system will be observed for timely and quality End to End tone audio path generation and application responses.
7. The call server maintenance terminal window will be open during the test cases execution for the monitoring of BUG(s), ERR and AUD messages.
8. Speech path and display checked before and after calls are put on/off hold from each end.
9. Applicable of files will be screened on an hourly basis during the testing for message that may indicate technical issues. This refers to Nortel PBX files.

10. Calls will be checked to ensure that all resources such as Virtual trunks, TDM trunks, Sets and VGWs are released when a call scenario ends

3. Equipment and Software Validated

Additional software and patch lineup for the configuration is as follows:

Call Server: 6.00R plus latest DEPLIST

Signaling Server: SSE 6.00.18 plus latest DEPLIST

Patch ID	Issue	Title	Notes
MPLR28774	1	Delete element removes all elements-services mapping of associate roles	
MPLR28797	1	Unable to access overlays on inactive core when in split mode with UCM	
MPLR27408	1	SIP: Disable SIP Session Timer on CS1K.	
MPLR25946	1	SIP GW patch to remove outbound MCDN from SIP messaging	
MPLR22968	1	Replace domain population in the FROM field	
MPLR25529	1	PI: SIP: Partial support of DIVERSION	
MGCBP002	1	CS1KFax stops sending anytime if pages are sent more than 1	
MPLR28415	1	Ringback tone and speech path support in slow start CFNA scenarios	
MPLR27159	1	Mandatory parameter "T38FaxRateManagement" isn't present in T38 SDP	

Hardware system requirement and theirs soft/loadware version

System	Software/Loadware Version
Nortel CS1000E 6.0 (CPPM)	<ul style="list-style-type: none"> ● Call Server: 6.00R ● Signaling Server: 6.00.18
Nortel phones	<ul style="list-style-type: none"> ● 2002 p2: 0604DCJ (Unistim) ● 2004 p2: 0604DCJ (Unistim) ● 1140: 0625C6O (Unistim) ● 1120: 0624C6O (Unistim) ● 2007: 0621C6M (Unistim) ● 1220: 062AC6O (Unistim) ● SIP 1140 i00v142 ● SIP 1120 ● SMC3456: Version 2.6 - RC14 build 53715
Sonus version	<ul style="list-style-type: none"> ● V06.05.07 R001

4. Configure the Avaya Communication Server 1000E

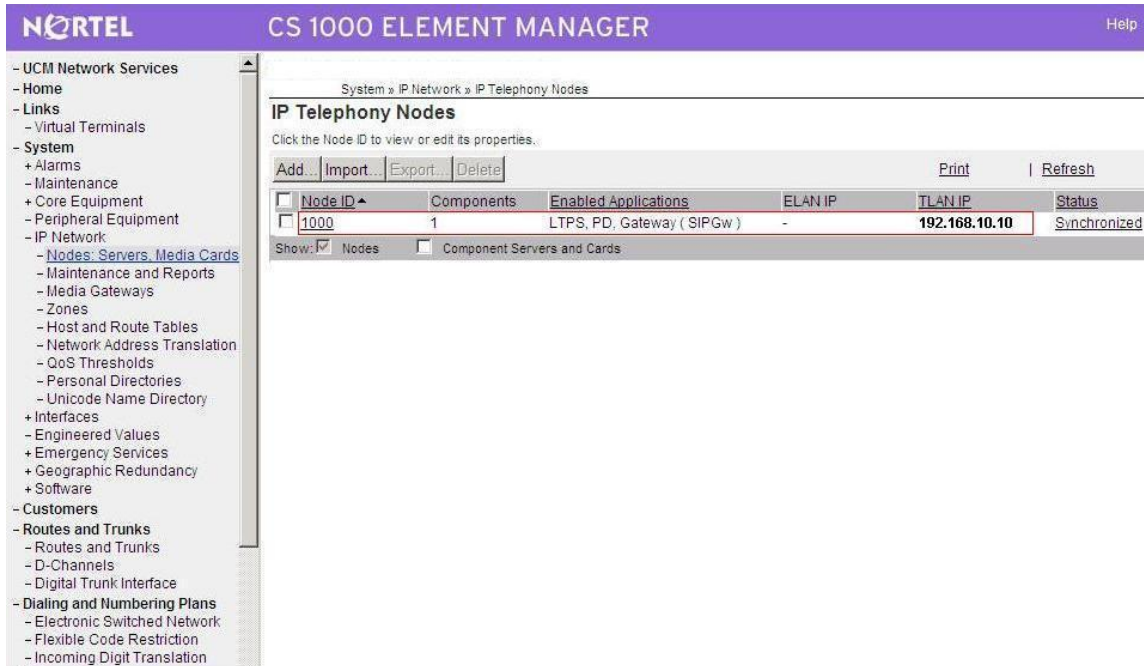
4.1. Element Manager Configuration

4.1.1. Configure IP in CS1000 network

This section describes the steps for creating Node ID (1000) in CS 1000 network. Enter Element Manager through the IE browser (in IE address bar, type IP address of the Node IP or TLAN of Signalling Server).

- Input Node ID and press Save...
- Enter TLAN, ELAN IP address of Signalling Server.

Node 1000 was added to be configured as the SIP gateway to the carrier services.



The screenshot shows the Avaya Element Manager interface for CS 1000. The main content area displays the 'IP Telephony Nodes' configuration page. A table lists the nodes, with Node ID 1000 highlighted. The table has columns for Node ID, Components, Enabled Applications, ELAN IP, TLAN IP, and Status. The TLAN IP for Node 1000 is 192.168.10.10, and its status is Synchronized.

Node ID	Components	Enabled Applications	ELAN IP	TLAN IP	Status
1000	1	LTPS, PD, Gateway (SIPGw)	-	192.168.10.10	Synchronized

Figure 3 – Adding a node

Figure 4 describes the Call server IP configuration:

The screenshot displays the 'Node Details' configuration page in the CS 1000 Element Manager. The breadcrumb trail is 'System > IP Network > IP Telephony Nodes > Node Details'. The main title is 'Node Details (ID: 1000 - LTPS, PD, Gateway (SIPGw))'. The configuration fields are as follows:

- Node ID: 1000 (range 0-9999)
- Call Server IP Address: 192.168.10.5
- Telephony LAN (TLAN) IP Address: 192.168.10.10
- Subnet Mask: 255.255.255.0
- Embedded LAN (ELAN) Gateway IP address: 192.168.100.1
- Subnet Mask: 255.255.255.0

Below the configuration fields, there are sections for 'IP Telephony Node Properties/Applications' and 'Associated Signaling Servers & Cards'. The 'Associated Signaling Servers & Cards' section includes a table with the following data:

Hostname	Type	Deployed Applications	ELAN IP	TLAN IP	Role
<input type="checkbox"/> nd1-car1	Signaling Server	LTPS, Gateway, PD	192.168.100.149	192.168.10.245	Leader

Note: Only server(s) that are not part of any other IP telephony node and deployed application(s) that match the service(s) selected for this node are available in the servers list.

Figure 4 - Call Server IP Configuration

Since the carrier does not support TLS or sRTP, we have them disabled in our CS1K configuration. For the primary proxy enter the IP address of the Session Border Controller (SBC). Use UDP SIP transport, port 5060 for SIP communication. The NRS is not enabled as all calls are routed by the SBC.

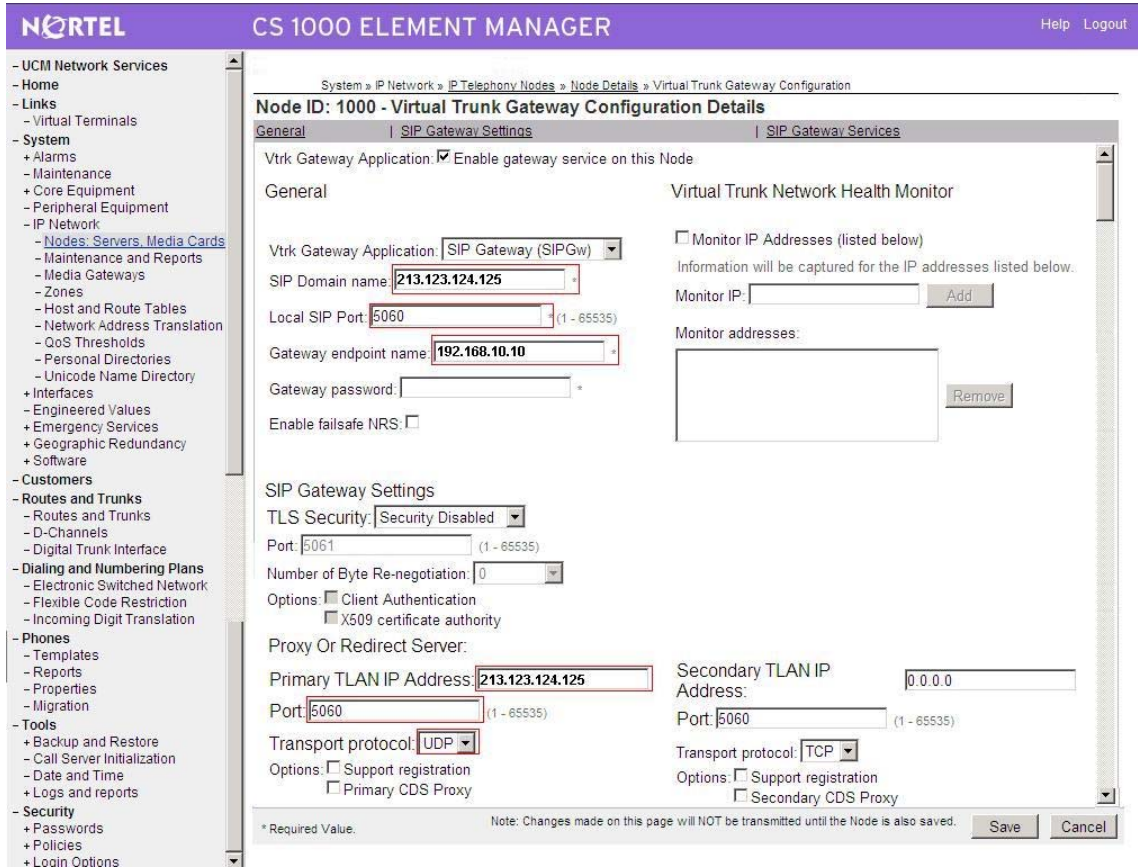


Figure 5 – Virtual Trunk Gateway configuration

4.1.2. Configure Voice Codec for Nortel IP Phone

This section describes the steps for administering a set of codecs in CS1000. This set of codecs is used in IP network for communication between Nortel IP Phones.

- Access EM by IE browser.
- Choose "IP Network", then choose "Nodes: Servers, Media Cards", select proper Node and press "Edit".

Figure 6 and 7 are showing how to change Codec profile for IP Phone, select "VGW and IP phone codec profile".

Enable Modem FAX pass through mode for G711 and check V.21 Fax tone Detection for T.38 TN of sets with class of service = MPTD (Modem Pass Through Denied)

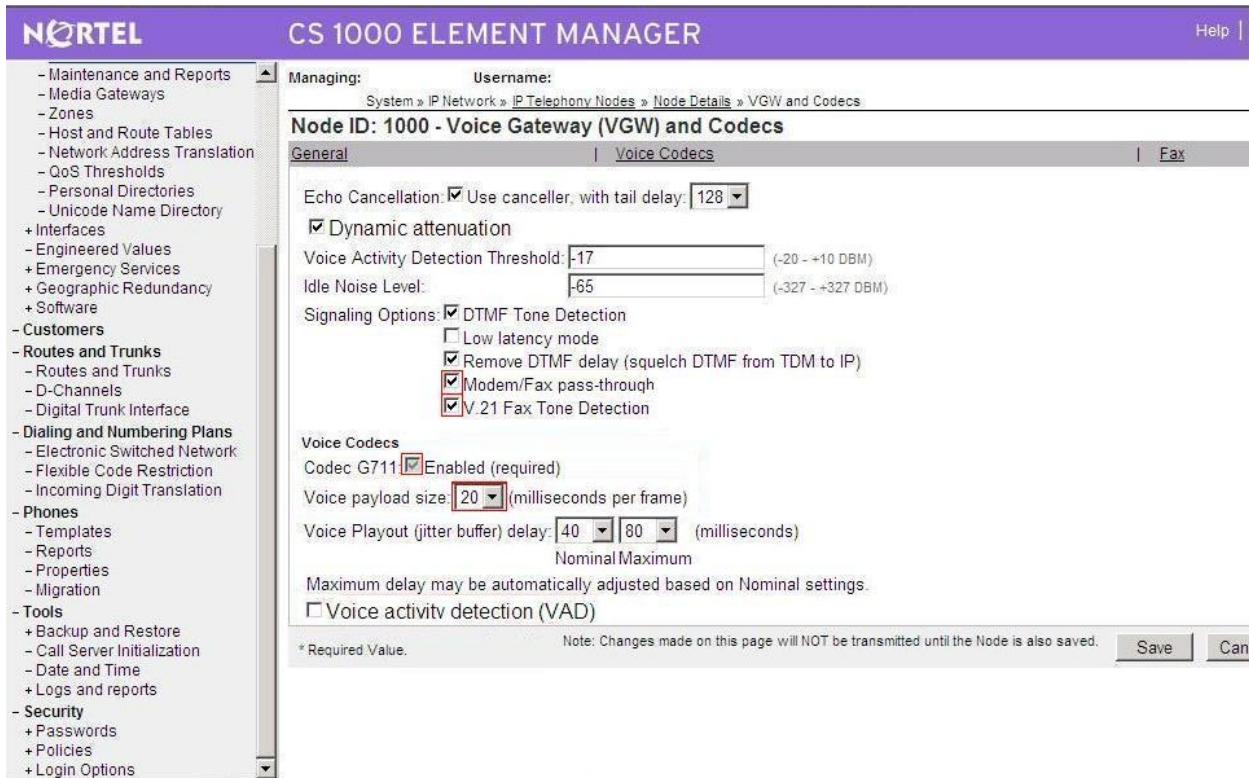


Figure 6 – Voice Gateway and Codec settings

Figure 7 shows how to configure the Voice gateway and IP phone codec settings. The Qwest Communication network supports both G.711 and G.729. The packet size is set to 20 to match the network also.

The screenshot displays the Nortel CS 1000 Element Manager interface. The top header shows 'NORTEL CS 1000 ELEMENT MANAGER' and 'Help | .logout'. The left navigation pane lists various system components like Maintenance and Reports, Media Gateways, and Customers. The main area is titled 'Node ID: 1000 - Voice Gateway (VGW) and Codecs' and is divided into three tabs: 'General', 'Voice Codecs', and 'Fax'. The 'Voice Codecs' tab is selected, showing configuration for two codecs: G729 and G723.1. For G729, 'Voice activity detection (VAD)' is checked, 'Codec G729' is checked as 'Enabled', and 'Voice payload size' is set to 20 milliseconds per frame. For G723.1, 'Voice activity detection (VAD)' is unchecked, and 'Voice payload size' is set to 30 milliseconds per frame. The 'Fax' tab shows 'Codec name: T.38 FAX', 'Maximum rate: 14400 (bps)', 'Fax TCF method: 2', 'Fax Playout Nominal Delay: 100 (0 - 300 milliseconds)', 'FAX No Activity Timeout: 20 (10 - 32000 milliseconds)', and 'Packet size: 30 (bps)'. A note at the bottom states: '* Required Value. Note: Changes made on this page will NOT be transmitted until the Node is also saved.' There are 'Save' and 'Cancel' buttons at the bottom right.

Figure 7 – Voice Gateway and codec settings

4.1.3. Configure Voice Codec for Media Gateways

This section describes the steps for administering a set of codecs in CS1000. This set of codec is used in IP network for communication through Media gateways.

- Access EM by IE browser.
- Choose "IP Network", then choose "Media gateways", select proper voice gateways
- To change Codec profile for IP Phone, select "VGW and IP phone codec profile".

Figure 8 shows how to configure the Voice Gateway and IP phone codec profile

Checked Modem FAX pass through mode

TN of sets with class of service = MPTD (Modem Pass Through Denied)

Voice gateway and IP phone codec settings.

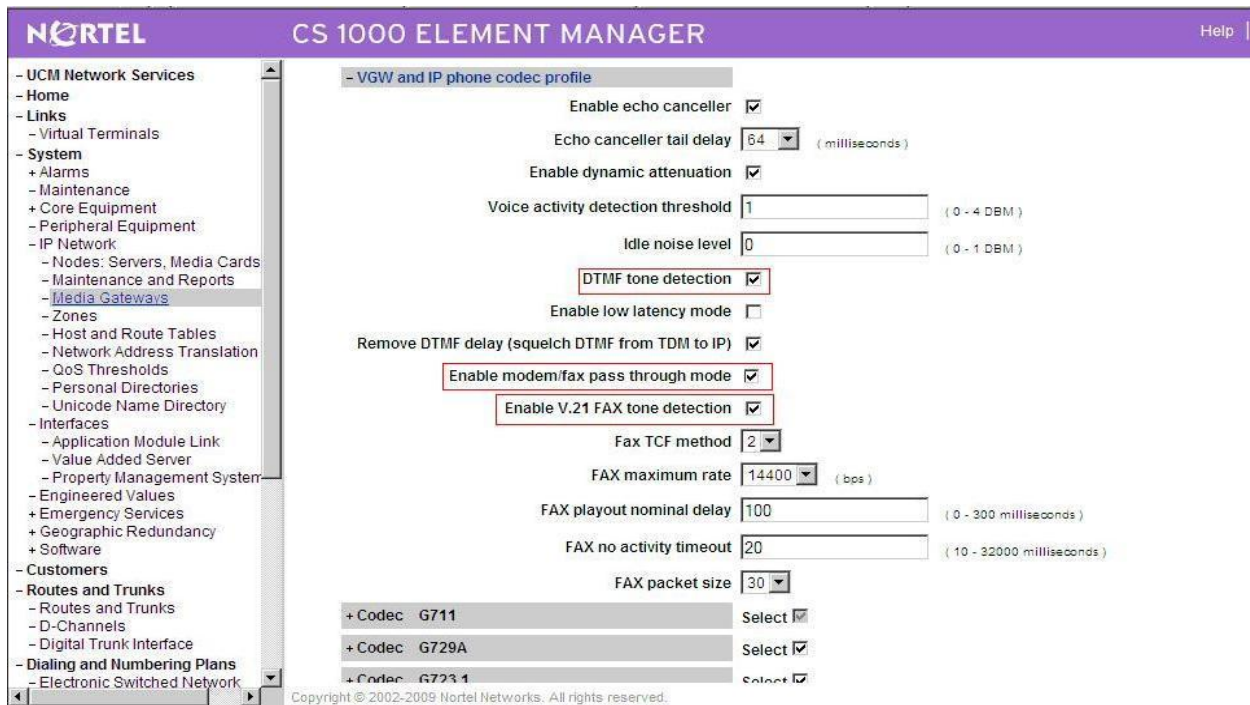


Figure 8 – Voice Gateway and IP phone codec profile settings

4.1.4. Configure Quality of Service

This section describes the steps for administering QoS in CS1000.

- Access EM by IE browser
- Choose "IP Network", then choose "Nodes: Servers, Media Cards", select proper Node and press "Edit".
- To change Quality of Service, select "QoS".

The default Diffserv values are correct in figure 9.



Figure 9 – Quality of Service settings.

4.1.5. Configure SIP URI

This section describes the steps for administering SIP URI configuration in CS1000.

- Access EM by IE browser
- Choose "IP Network", then choose "Nodes: Servers, Media Cards", select proper Node and press "Edit".
- To change SIP URI, select "SIP URI Map".

In figure 10, leave the SIP URI fields blank for E.164.

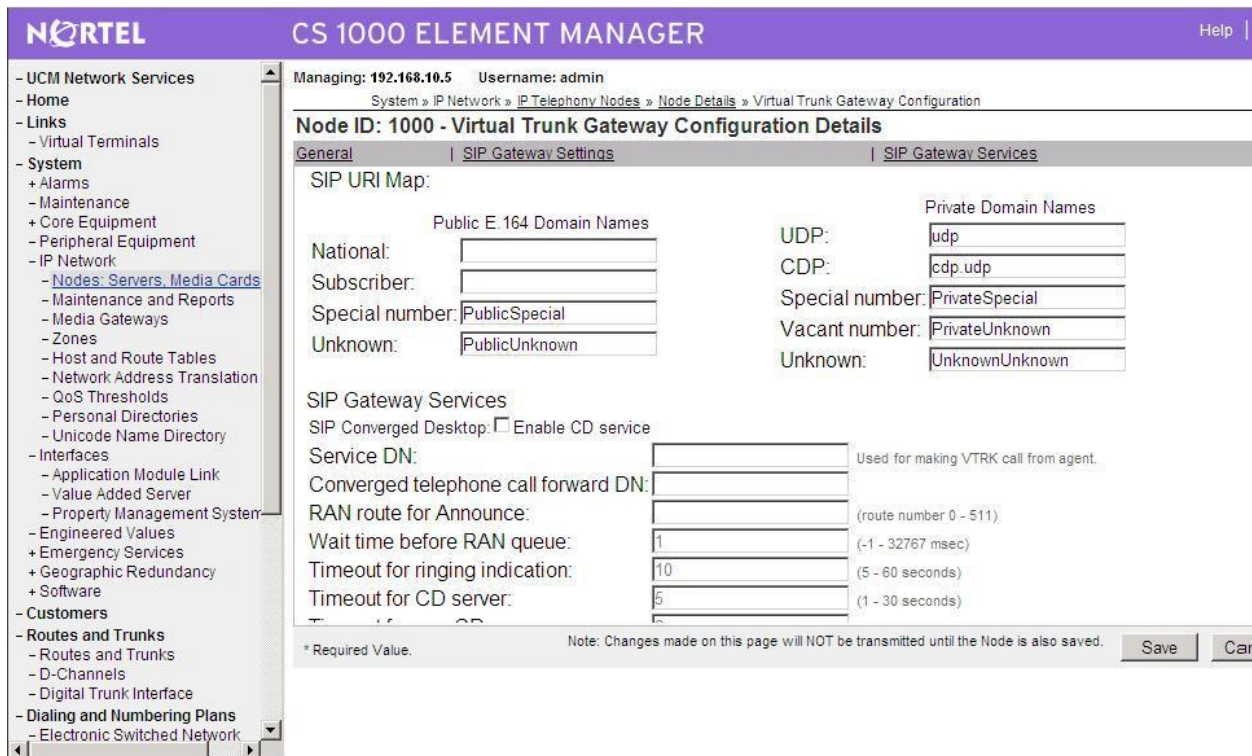


Figure 10 – SIP Gateway Services Settings

4.1.6. Configure Zones and Bandwidth Management

This section describes the steps for administering Zone configuration in CS1000.

- Access EM by IE browser
- Choose "IP Network", then choose "Zones", select proper "Zone Basic Property and Bandwidth Management"

Figure 11 shows how to configure a zone for IP sets and bandwidth management. If it does not already exist, create a zone for IP sets. The bandwidth strategy can be adjusted to preference.

Figure 12 shows how to configure a zone for new created SIP trunks.

NORTEL CS 1000 ELEMENT MANAGER Help |

System » IP Network » Zones » Bandwidth Zones » Bandwidth Zones 10 » Zone Basic Property and Bandwidth Management

Zone Basic Property and Bandwidth Management

Input Description	Input Value
Zone Number (ZONE):	10
Intrazone Bandwidth (INTRA_BW):	100000
Intrazone Strategy (INTRA_STGY):	Best Quality (BQ)
Interzone Bandwidth (INTER_BW):	100000
Interzone Strategy (INTER_STGY):	Best Quality (BQ)
Resource Type (RES_TYPE):	Shared (SHARED)
Zone Intent (ZBRN):	MO (MO)
Description (ZDES):	

Submit Refresh Delete Cancel

Figure 11 – Zone Basic Property Setting for IP phones

NORTEL CS 1000 ELEMENT MANAGER Help |

System » IP Network » Zones » Bandwidth Zones » Bandwidth Zones 255 » Zone Basic Property and Bandwidth Management

Zone Basic Property and Bandwidth Management

Input Description	Input Value
Zone Number (ZONE):	255
Intrazone Bandwidth (INTRA_BW):	1000000
Intrazone Strategy (INTRA_STGY):	Best Quality (BQ)
Interzone Bandwidth (INTER_BW):	1000000
Interzone Strategy (INTER_STGY):	Best Quality (BQ)
Resource Type (RES_TYPE):	Shared (SHARED)
Zone Intent (ZBRN):	VTRK (VTRK)
Description (ZDES):	

Submit Refresh Delete Cancel

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Figure 12 – Zone Basic Property Settings for (virtual) SIP trunk

4.1.7. Configure SIP trunk

This section describes the steps for establishing a SIP connection between CS 1000 switch and Carrier system.

1. Create D-channel (DCH)

- Launch Element Manager of CS 1000 6.0
- Choose D-Channels, enter D-channel number (i.e.: 100), select DCH for type

Click Add to create DCH 100

Input Description	Input Value
Action Device And Number (ADAN) (TYPE)	DCH
D channel Card Type (CTYP)	DCIP
Designator (DES)	VoIP
Recovery to Primary (RCVP)	<input type="checkbox"/>
PRI loop number for Backup D-channel (BCHL)	
User (USR)	Integrated Services Signaling Link Dedicated (ISLD)
Interface type for D-channel (IFC)	Meridian Meridian1 (SL1)
Country (CNTY)	ETS 300 =102 basic protocol (ETS)
D-Channel PRI loop number (DCHL)	
Primary Rate Interface (PRI)	<input type="text"/> <input type="button" value="more PRI"/>
Secondary PRI2 loops (PRI2)	<input type="text"/>
Meridian 1 node type (SIDE)	Slave to the controller (USR)
Release ID of the switch at the far end (RLS)	6
Central Office switch type (CO_TYPE)	100% compatible with Bellcore standard (STD)
Integrated Services Signaling Link Maximum (ISLM)	4000 Range: 1 - 4000
Signaling Server Resource Capacity (SSRC)	1800 Range: 0 - 4000

+ Basic options (BSCOPT)
+ Advanced options (ADVOPT)

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Figure 13 – D-Chanel Configurations

Also click on Basic Options and edit the Remote Capabilities (RCAP). Enable MWI if CS1K hosted voice mail will be used.

2. Create route: Create route 100 using DCH 100 for SIP trunks with figures 14 and 15

Managing: 192.168.10.5
Routes and Trunks > Routes and Trunks > Customer 0, Route 100 Property Configuration

Customer 0, Route 100 Property Configuration

- Basic Configuration

Input Description	Input Value
Route Data Block (RDB) (TYPE)	RDB
Customer number (CUST)	00
Route Number (ROUT)	100
Designator field for trunk (DES)	CARRIER
Trunk Type (TKTP)	TIE
Incoming and Outgoing trunk (ICOG)	Incoming and Outgoing (IAO)
Access Code for the trunk route (ACOD)	8100
Trunk type M911P (M911P)	<input type="checkbox"/>
The route is for a virtual trunk route (VTRK)	<input checked="" type="checkbox"/>
Zone for codec selection and bandwidth management (ZONE)	255 <small>Range: 0 - 255</small>
Node ID of signaling server of this route (NODE)	2000 <small>Range: 0 - 9999</small>
Protocol ID for the route (PCID)	SIP (SIP)
Print Correlation ID in CDR for the route (CRID)	<input type="checkbox"/>
Integrated Services Digital Network option (ISDN)	<input checked="" type="checkbox"/>
Mode of operation (MODE)	Route uses ISDN Signaling Link (ISLD)
D channel number (DCH)	100 <small>Range: 0 - 254</small>
Interface type for route (IFC)	Meridian M1 (SL1)

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Figure 14 – Route Property Configuration

- D channel number (DCH) 100 Range: 0 - 254

- Interface type for route (IFC) Meridian M1 (SL1)

- Private network identifier (PNI) 00001 Range: 0 - 32700

- Network calling name allowed (NCNA)

- Network call redirection (NCRD)

- Trunk route optimization (TRO)

- Recognition of DT12 ABCD FALT signal for ISL (FALT)

- Channel type (CHTY) B-channel (BCH)

- Call type for outgoing direct dialed TIE route (CTYP) Unknown Call type (UKWN)

- Insert ESN access code (INAC)

- Integrated service access route (ISAR)

- Display of access prefix on CLID (DAPC)

- Basic Route Options

Attendant announcement (ATAN) No Attendant Announcement (NO)

Billing number required (BILN)

Call detail recording (CDR)

North American toll scheme (NATL)

Controls or timers (CNTL)

Conventional (Tie trunk only) (CNVT)

Incoming DID digit conversion on this route (IDC)

- Day IDC tree number (DCNO) 1 Range: 0 - 254

- Night IDC tree number (NDNO) 1 Range: 0 - 254

- Display external dialed digits (DEXT)

Multifrequency compelled or MFC signaling (MFC) No MFC (NO)

Process notification networked calls (PNNC)

Figure 15 – Route Property Configuration (Cont..)

3. Create trunk: To create trunk using basic configuration in figure 16

Managing: **192.168.10.5**
 Routes and Trunks » Routes and Trunks » Customer 0, Route 100, Trunk 1 Property Configuration

Customer 0, Route 100, Trunk 1 Property Configuration

- Basic Configuration

Input Description	Input Value
Trunk data block (TYPE)	IPTI
Terminal Number (TN)	100 0 00 00
Designator field for trunk (DES)	VOIP
Extended Trunk (XTRK)	VTRK
Route number, Member number (RTMB)	100 1
Level 3 Signaling (SIGL)	
Card Density (CDEN)	BD
Start arrangement Incoming (STRI)	Immediate (IMM)
Start arrangement Outgoing (STRO)	Immediate (IMM)
Trunk Group Access Restriction (TGAR)	0
Channel ID for this trunk. (CHID)	1
Increase or decrease the member numbers (INC)	Increase channel and member number (YES)
Class of Service (CLS)	Edit

+ Advanced Trunk Configurations

Save Delete Cancel

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Figure 16 – Basic Trunk Configuration

Disable Media Security (sRTP) at the trunk level using figure 17 by editing the Class of Service (CLS) at the bottom basic trunk configuration page show in figure 17

The screenshot displays the 'Class of Service Configuration' page in the Nortel CS 1000 Element Manager. The interface includes a navigation menu on the left and a main configuration area. The 'Media Security (CLS)' dropdown menu is highlighted with a red box, indicating the selected value 'Media Security Never (MSNV)'.

Input Description	Input Value
- ACD Priority (CLS)	ACD Priority not required (APN)
- Analog Semi-Permanent Connections (CLS)	Analog Semi-Permanent Connections Denied (SPCD)
- ARF Supervised COT (CLS)	
- Barring (CLS)	
- Battery Supervised COT (CLS)	
- Busy Tone Supervised COT (CLS)	
- Calling Line Identification (CLS)	
- Calling party (CLS)	Calling party Denied (CND)
- Central Office Ringback (CLS)	
- Centrex Switchhook Flash (CLS)	Centrex Switchhook Flash Denied (THFD)
- Dial Pulse (CLS)	Digitone (DTN)
- DTR PAD value (CLS)	
- Echo Canceling (CLS)	Echo Canceling Denied (ECD)
- Hong Kong DTI (CLS)	
- Loop Break Supervised COT (CLS)	
- Make-break ratio for dial pulse (CLS)	10 pulses per second (P10)
- Manual Incoming (CLS)	Manual Incoming Denied (MID)
- Media Security (CLS)	Media Security Never (MSNV)
- Network Hook Flash Over M911P (CLS)	
- Polarity (CLS)	

Figure 17 – Class of Service

4. Create Dialing Plan:

Create Special number list:

Create special number list for outgoing dialing plan using figure 18

Launch Element Manager of CS 1000 6.0

Select “Dialing and Numbering plans → Electronic Switched Network → Number Plan (Net) → Access Code 1 (2) → Special Number (SPN).”

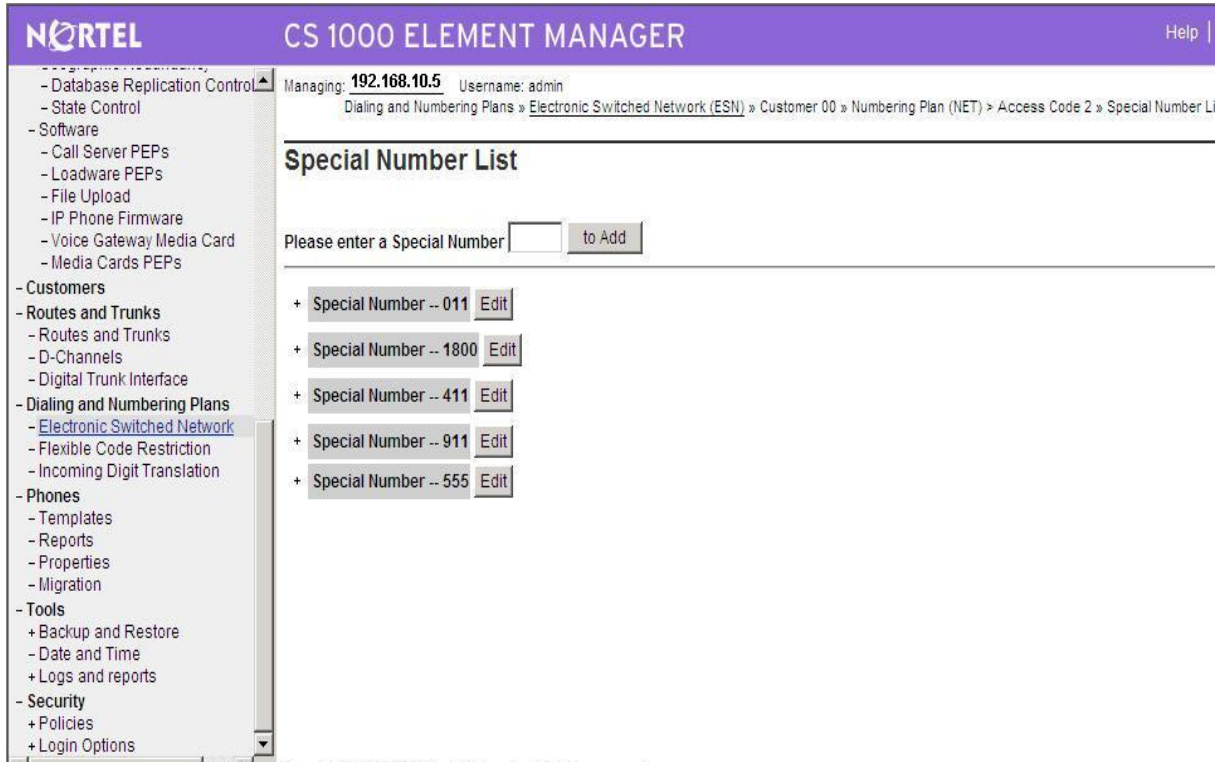


Figure 18 – Special Number List

Create special number SPN 011 (Use RLI_10) for outgoing dialing plan to International calls

Managing: 192.168.10.5
 Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Numbering Plan (NET) » Access Code 1 » Special Number
 List » Special Number

Special Number

Input Description	Input Value
Special Number translation (SPN):	011
Flexible Length (FLEN):	15 (0 - 24)
International Dialing Plan (INPL):	<input type="checkbox"/>
Inhibit Time-out Handler (ITOH):	<input type="checkbox"/>
Route List Index (RLI):	10
Type of call that is defined by the special number (CLTP):	No call type (NONE)
Number to be Denied (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

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Figure 19 – Special Number for International Calls

Create special number SPN 1800 (Use RLI_10) for outgoing dialing plan to toll free calls

Managing: 192.168.10.5
 Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Numbering Plan (NET) » Access Code 1 » Special Number
 List » Special Number

Special Number

Input Description	Input Value
Special Number translation (SPN):	1800
Flexible Length (FLEN):	12 (0 - 24)
International Dialing Plan (INPL):	<input type="checkbox"/>
Inhibit Time-out Handler (ITOH):	<input type="checkbox"/>
Route List Index (RLI):	10
Type of call that is defined by the special number (CLTP):	No call type (NONE)
Number to be Denied (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

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Figure 20 – Special Number for Toll Free Call

Create special number SPN 411 (Use RLI_10) for outgoing dialing plan to 411 service calls in figure 21

The screenshot shows the 'Special Number' configuration page in the Nortel CS 1000 Element Manager. The breadcrumb trail is: Managing: 192.168.10.5 > Dialing and Numbering Plans > Electronic Switched Network (ESN) > Customer 00 > Numbering Plan (NET) > Access Code 1 > Special Number. The main heading is 'Special Number'. Below this is a table with two columns: 'Input Description' and 'Input Value'. The table contains the following entries:

Input Description	Input Value
Special Number translation (SPN):	411
Flexible Length (FLEN):	4 (0 - 24)
International Dialing Plan (INPL):	<input type="checkbox"/>
Inhibit Time-out Handler (ITOH):	<input type="checkbox"/>
Route List Index (RLI):	10
Type of call that is defined by the special number (CLTP):	No call type (NONE)
Number to be Denied (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
Local DID number to be recognized (LDID): (Items separated by a space)	

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Figure 21 – Special Number for 411 Service Call

Create special number 911 (use RLI_10) to dial to Emergency service in figure 22

The screenshot shows the 'Special Number' configuration page in the Nortel CS 1000 Element Manager. The breadcrumb trail is: Managing: 192.168.10.5 > Dialing and Numbering Plans > Electronic Switched Network (ESN) > Customer 00 > Numbering Plan (NET) > Access Code 1 > Special Number. The main heading is 'Special Number'. Below this is a table with two columns: 'Input Description' and 'Input Value'. The table contains the following entries:

Input Description	Input Value
Special Number translation (SPN):	911
Flexible Length (FLEN):	4 (0 - 24)
International Dialing Plan (INPL):	<input type="checkbox"/>
Inhibit Time-out Handler (ITOH):	<input type="checkbox"/>
Route List Index (RLI):	10
Type of call that is defined by the special number (CLTP):	No call type (NONE)
Number to be Denied (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
Local DID number to be recognized (LDID): (Items separated by a space)	

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Figure 22 – Special Number for Emergency 911 dialing

Create special number 555 (use RLI_10) to dial to 555 services, figure 23.

NORTEL CS 1000 ELEMENT MANAGER Help

Special Number

Input Description	Input Value
Special Number translation (SPN):	555
Flexible Length (FLEN):	4 (0 - 24)
International Dialing Plan (INPL):	<input type="checkbox"/>
Inhibit Time-out Handler (ITOH):	<input type="checkbox"/>
Route List Index (RLI):	10
Type of call that is defined by the special number (CLTP):	No call type (NONE)
Number to be Denied (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
- Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

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Figure 23 – 555 Service Special Number

Create Numbering Plan Area Code:

Create NPA numbers for outgoing.

NPA_303: Create NPA_303 for outgoing calls to numbers beginning with 303; Figure 24

NORTEL CS 1000 ELEMENT MANAGER Help

Numbering Plan Area Code

Input Description	Input Value
Numbering Plan Area code translation (NPA):	303
Route List Index (RLI):	10
Number to be denied within the NPA (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
- Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

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Figure 24 – Create NPA_303 for outgoing calls to numbers beginning with 303

Configuration is similar for DID numbers beginning with 214 figure 25 and 612 figure 26

The screenshot shows the 'Numbering Plan Area Code' configuration page in the Nortel CS 1000 Element Manager. The interface includes a left-hand navigation menu with categories like 'Peripheral Equipment', 'IP Network', 'Interfaces', 'Engineered Values', 'Emergency Services', 'Geographic Redundancy', 'Software', 'Customers', 'Routes and Trunks', 'Dialing and Numbering Plans', 'Phones', and 'Tools'. The main content area is titled 'Numbering Plan Area Code' and contains a table with two columns: 'Input Description' and 'Input Value'. The table entries are as follows:

Input Description	Input Value
Numbering Plan Area code translation (NPA):	214
Route List Index (RLI):	10
Number to be denied within the NPA (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
- Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

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Figure 25 – Create NPA_214 for outgoing calls to numbers beginning with 214

The screenshot shows the 'Numbering Plan Area Code' configuration page in the Nortel CS 1000 Element Manager, similar to Figure 25 but with the NPA value set to 612. The interface and navigation menu are identical. The main content area is titled 'Numbering Plan Area Code' and contains a table with two columns: 'Input Description' and 'Input Value'. The table entries are as follows:

Input Description	Input Value
Numbering Plan Area code translation (NPA):	612
Route List Index (RLI):	10
Number to be denied within the NPA (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
- Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

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Figure 26 – Create NPA_612 for outgoing calls to numbers beginning with 612

NPA_1613: Create NPA 1613 to dial to national DID numbers beginning with 613; Figure 27

Input Description	Input Value
Numbering Plan Area code translation (NPA):	1613
Route List Index (RLI):	10
Number to be denied within the NPA (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
- Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

Figure 27 – Create NPA number 1613 (use RLI_10) to dial to national numbers

Create Local Steering Code

Create LSC_303 to terminate the incoming calls (Use DMI_3); Figure 28

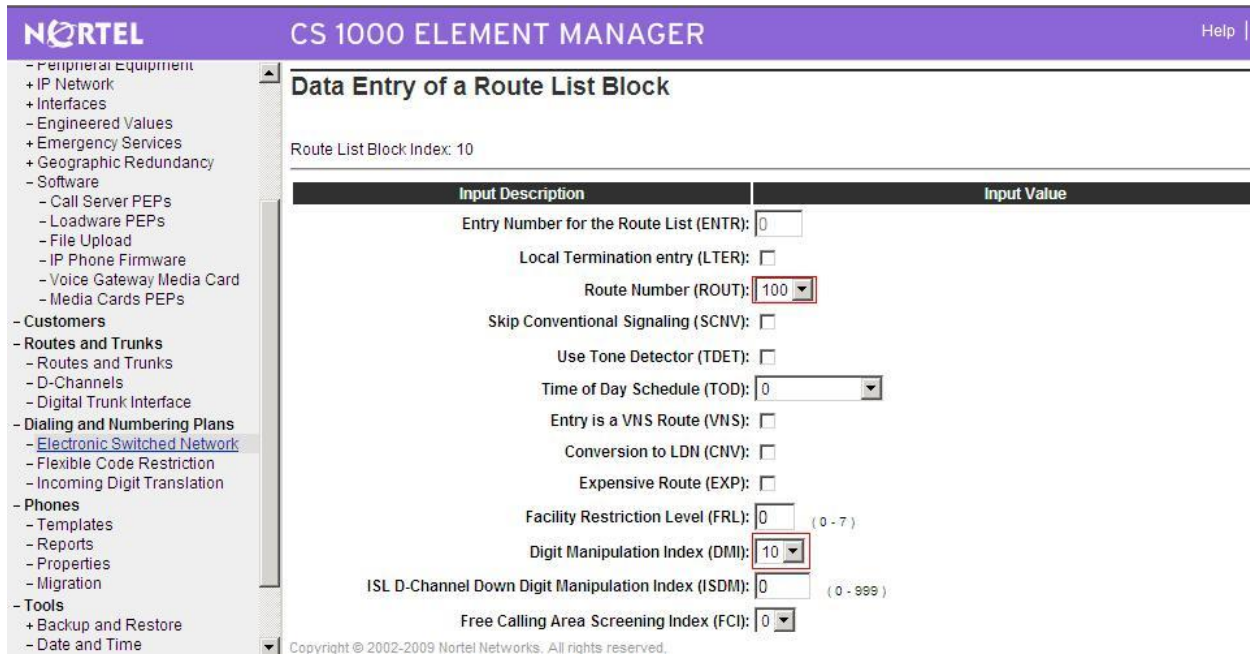
Configuration is similar for incoming calls numbers beginning with 214 and 612

Input Description	Input Value
Local Steering Code (LSC):	303
Digit Manipulation Index for LSC (DMI):	3
Number of digits to be deleted (DEL):	(1-7)

Figure 28 – Create LCS_303 for incoming call

Create Route List Block

Create RLI_10 for outgoing calls (Use route_100 and DMI_10), figure 29

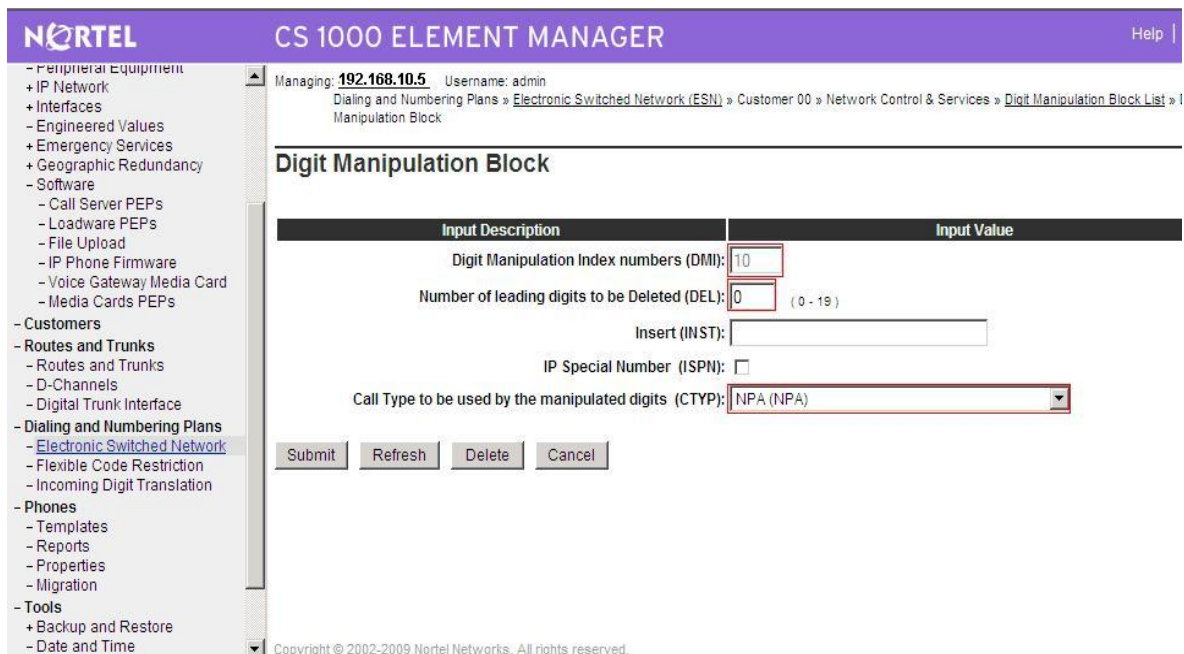


Input Description	Input Value
Entry Number for the Route List (ENTR):	0
Local Termination entry (LTER):	<input type="checkbox"/>
Route Number (ROUT):	100
Skip Conventional Signaling (SCNV):	<input type="checkbox"/>
Use Tone Detector (TDET):	<input type="checkbox"/>
Time of Day Schedule (TOD):	0
Entry is a VNS Route (VNS):	<input type="checkbox"/>
Conversion to LDN (CNV):	<input type="checkbox"/>
Expensive Route (EXP):	<input type="checkbox"/>
Facility Restriction Level (FRL):	0 (0 - 7)
Digit Manipulation Index (DMI):	10
ISL D-Channel Down Digit Manipulation Index (ISDM):	0 (0 - 999)
Free Calling Area Screening Index (FCI):	0

Figure 29 – Create RLB for Outgoing calls

Create Digit Manipulation Block

DMI_10: Digit Manipulation Block configuration for Outgoing calls; figure 30



Input Description	Input Value
Digit Manipulation Index numbers (DMI):	10
Number of leading digits to be Deleted (DEL):	0 (0 - 19)
Insert (INST):	
IP Special Number (ISP):	<input type="checkbox"/>
Call Type to be used by the manipulated digits (CTYP):	NPA (NPA)

Figure 30 – Digit Manipulation for Outgoing calls

NORTEL CS 1000 ELEMENT MANAGER Help |

Managing: 192.168.10.5 Username: admin
 Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Network Control & Services » Digit Manipulation Block List » Digit Manipulation Block

Digit Manipulation Block

Input Description	Input Value
Digit Manipulation Index numbers (DMI):	3
Number of leading digits to be Deleted (DEL):	6 (0 - 19)
Insert (INST):	
IP Special Number (ISPN):	<input type="checkbox"/>
Call Type to be used by the manipulated digits (CTYP):	NPA (NPA)

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Figure 31 – Digit Manipulation for Incoming calls

4.2. Configure on CS1000 Voicemail System (Call Pilot)

4.2.1. Configuration Details on CallPilot Manager

Configure CS1000E switch on Call Pilot configuration by entering:

- CS1000 Call Server IP address
- Create Multimedia Chanel for communication between CS1000 and Callpilot system

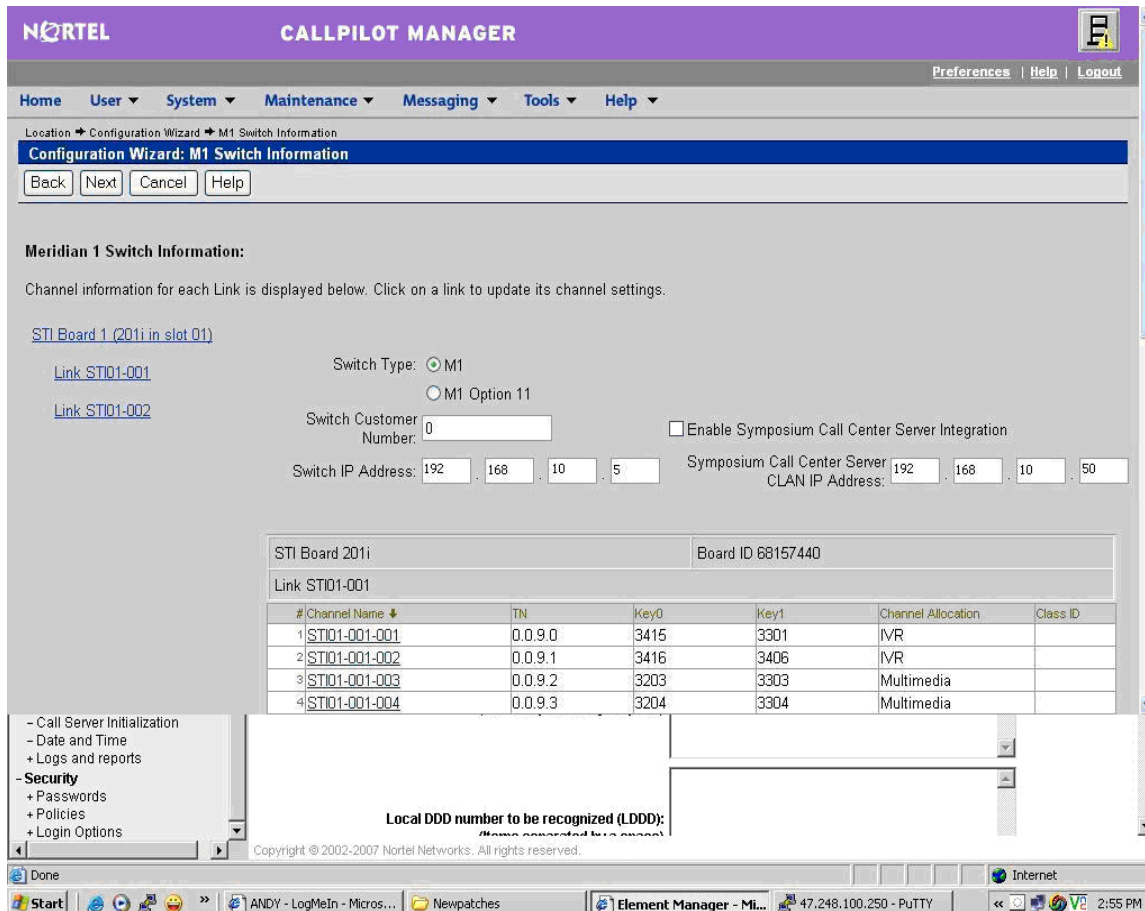


Figure 32 – CS1000 switch configuration on CallPilot Manager

Go to Maintenance pull down menu, select Channel Monitor to check status of the newly created multimedia channels on Call Pilot to see if the communication between Callpilot and CS1000 has been established, Figure 33.



Figure 33 – Channel Monitor

Create Service DN for Voice Messaging system, Figure 34



Figure 34 – Service Directory Number Page

4.2.2. Voicemail System (CallPilot) configuration detail on CS1000E Call Server

Configure CS1000E for voicemail system Call Pilot

Configure Voice messaging service DN 3111 on CS1000E

>ld 23

ACD DNS

REQ prt

TYPE CDN

CUST 0

CDN 3111

FRRT

SRRT

FROA NO

UUI NO

MURT

CDSQ NO

DFDN 3109

NAME NO

CMB NO

CEIL 2047

OVFL NO

TDNS NO

AACQ NO

CNTL NO

VSID

HSID

Configure ACD Agent #1 3110:

>ld 23

ACD DNS

REQ prt

TYPE ACD

CUST 0

ACDN 3110

MWC YES

MAXP 12

SDNB NO

BSCW NO

ISAP NO

AACQ YES

ASID 16

SFNB

USFB 1 3 4 5 6

CALB 1 3 4 5 6 8 11

RGAI NO

ACAA NO
FRRT
SRRT
NRRT
FROA NO
CALP POS
ICDD NO
NCFW
FNCF NO
CWTT NONE
HMSB YES
ACPQ NO
FORC NO
RTQT 0
SPCP NO
OBTN NO
RAO NO
CWTH 1
NCWL NO
BYTH 0
OVTH 2047
TOFT NONE
HPQ NO
OCN NO
OVDN
IFDN
OVBU LNK LNK LNK LNK
EMRT
MURT
RTPC NO
NRAC NO
RAGT 4
DURT 30
RSND 4
FCTH 20
CRQS 100
CCBA NO
IVR YES
TRDN NONE
ABR NO
OBSC NO
OBPT 5
CWNT NONE
Configure ACD Agent#2
>ld 23

REQ prt
TYPE acd
CUST 0
ACDN 3109
TYPE ACD
CUST 0
ACDN 3109
MWC NO
DSAC NO
MAXP 1
SDNB NO
BSCW NO
ISAP NO
AACQ NO
RGAI NO
ACAA NO
FRRT
SRRT
NRRT
FROA NO
CALP POS
ICDD NO
NCFW
FNCF NO
CWTT NONE
HMSB YES
ACPQ NO
FORC NO
RTQT 0
SPCP NO
OBTN NO
RAO NO
CWTH 1
NCWL NO
BYTH 0
OVTH 2047
TOFT NONE
HPQ NO
OCN NO
OVDN
IFDN
OVBU LNK LNK LNK LNK
EMRT
MURT
RTPC NO

NRAC NO
RAGT 4
DURT 30
RSND 4
FCTH 20
CRQS 100
CCBA NO
IVR NO
ABR NO
OBSC NO
OBPT 5
CWNT NONE

4.3. Output configuration details from CS1000 and Callpilot

Using the command line interface to output some of configured Customer Data Block and configuration record details, which have been created in section 4.2, for your reference

4.3.1. Overlay 15 - Customer Data Block

REQ: PRT
TYPE CDB
CUST 00
AML_DATA
OPT DNX
VSID
GP02
GP03
GP04
GP05
GP06
GP07
GP08
GP09
GP10
GP11
GP12
GP13
GP14
GP15
ANI_DATA
ANAT 4227
ANLD 123
M911_PANI NO
ATT_DATA
OPT ABDD AHD BIND BIXA BLA BOHD DNCA DRE

DNX DRE FACD IC1 XTG XDP XLF XBL
FKA MCTD NCD CUI MWUD LOD PSD RECA
REA SYD SLD SIAD THPD ATDA

ATDN 7
NCOS 0
CWUP NO
CWCL 0 0
CWTM 0 0
CWBZ NO NO
EFLL 0
MATT NO
RTIM 30 30 30
ATIM 0
AQTT 30
AODN
SPVC 00
SBLF NO
RTSA RSAD
SACP NO
ABDN NO
IRFR NO
XRFR NO
ADHT 0
AFNT 0
AFBT 0
IDBZ NO
PBUZ 02 10
ICI 00
ICI 01
ICI 02
ICI 03
ICI 04
ICI 05
ICI 06
ICI 07
ICI 08
ICI 09
RICI
PAGE 002
AWU_DATA
AWU NO
CAS_DATA
CAS NO
CCS_DATA
CCRS UNR

ECC1 UNR
ECC2 UNR
CNCS 0
PELK NO
CDR_DATA
CDR YES
IMPH NO
OMPH YES
AXID YES
TRCR NO
CDPR NO
ECDR NO
BDI YES
OTCR NO
PORT
CNI DGTS
BCAP NO
CHLN 1
FCAF NO
FCR_DATA
NFCR YES
MAXT 100
OCB1 255
OCB2 255
OCB3 255
IDCA YES
DCMX 100
FFC_DATA
CCRS UNR
SCPL 0
FFCS NO
STRL 0
STRG
ADLD 0
MFAC *
FTR_DATA
DAPCPREFIX TABLE NO: 00 **
UNKN**INTL**NATL**ESPN**LOCL**ELOC**ECDP**
UNKN*
E164* 00 0
PRIV*
E163* 00 0
TELX*
X121*
NATL*

OPT ABDD AHD BIND BIXA BLA BOHD CFO CFRD
COX CPA CTD DBD DNCA DNX DSX DRE
DSTD FACD HTU HVD XBL IC1 XDP XLF
IHD XTG FKA LOD LRA MCI MCTD CUI
MWUD NCD PCMD PSD PVCA RECA REA RND
RTR RTD ROX SBD SDDE SIAD SLD SYD
THPD TTAD VOBD CCB D CWRD HLPD HRLD
CXOD BWTD

DGRP 0
IRNG NO
PKND 1
DNDL NO
SPRE
PREO 0
BPSS NO
SRCD 0000
EEST NO
EESD NO
TTBL 0
MUS YES

PAGE 003
MUSR 50
HCC NO
ALDN
RECD NO
PORT 0
STCB NO
NSCP NO
TFDR NO
RPA NO
MCDC NO
NAUT NO
IDEF NO
MTAR NO
LEND NO
MSCD NO
CPCI NO
ARDL_ATTEMPT 30
CONF_DSP
CNFFIELD NO
CNF_NAME CONF
INTFIELD NO
INT_NAME I

EXTFIELD NO
EXT_NAME E
BSFE NO
ASPCT 000
FXS NO
DFLT_LANG ENG
STS_MSG
MSG01 Please leave message
MSG02 Back to work
MSG03 In a meeting
MSG04 On a conference call
MSG05 At lunch
MSG06 Busy call
MSG07 Out of the office today
MSG08 On a business trip
MSG09 Project deadline today
MSG10 Will reply after
VO_ALO NO
PCA ON
TPDN
BFS_CFW YES
VO_CUR_ZONE_ZDM NO
VO_CUR_ZONE_TD NO
ICP_DATA
ICP NO
IMS_DATA
IMS NO
INT_DATA
ACCD OVF OVF OVF ATN
CTVN OVF OVF OVF ATN
MBNR OVF OVF OVF ATN
CTRC OVF NAP OVF NAP
CLDN NAP OVF NAP NAP
NINV OVF OVF OVF ATN
NITR OVF OVF OVF ATN
NRES OVF OVF OVF ATN
NBLK OVF OVF OVF ATN
MFVOOVF OVF OVF ATN
MFVN OVF OVF OVF ATN
MFCG OVF OVF OVF ATN
PAGE 004
LCKT BSY BSY BSY BSY
RCLE ATN OVF ATN ATN
CONG OVF
DLT OVF

LLT OVF
DNDT BSY
ESAM OVF
LDN_DATA
OPT XLDN
DLDN YES
LDN0 2000
LDA0
LDN1
LDA1
LDN2
LDA2
LDN3
LDA3
LDN4
LDA4
LDN5
LDA5
LDBZ
ICI 00
ICI 01
ICI 02
ICI 03
ICI 04
ICI 05
ICI 06
ICI 07
ICI 08
ICI 09
MON_DATA
USBM NO
MPO_DATA
FMOP
RGNA STD STD
AOCS DIS ATN
RCY1 06
RCY2 04
RALL NO
CDTO 14
IFLS NO
MHLD NO
PCDS
CNFD 1
TGLD 2
DISD 3

CCDO NO
AFCO NO
ACNS NO
NET_DATA
OPT RTD
AC1 NPA SPN LOC
AC2 INTL NXX
FNP YES
ISDN YES
VPNI 1
PNI 1
PINX_DN
MBG 0

PAGE 005
BSGC 65535
PFX1
PFX2
HLOC 521
LSC
RCNT 5
PSTN NO
TNDM 15
PCMC 15
SATD 1
OCLI NO
TIDM NO
DASC
ROPT NRO
DITI YES
TRNX NO
EXTT NO
FTOP FRES
APAD 0 0
VNR NO
NIT 8
NAS_ATCL YES
NAS_ACTV NO
FOPT 6
CNDN
CNAT
PCAT
CNIP YES
DMWM NO
MWNS NO

CNTC
NATC
INTC
NIT_DATA
NIT1
TIM1
NIT2
TIM2
NIT3
TIM3
NIT4
TIM4
RPNS NO
ENS NO
OAS_DATA
ODN0
ODN1
ODN2
ODN3
ODN4
ODN5
ODN6
ODN7
ODN8
ODN9
ASTM 30
HDOPT 0
HDTM 30
RDR_DATA
OPT CFO CFRD DSTD PVCA CWRD MCI
FNAD HNT
FNAT HNT
PAGE 006
FNAL HNT
CFTA NO
CCFWDN
CFN0 3
CFN1 3
CFN2 3
DFN0 3
DFN1 3
DFN2 3
DNDH NO
MDID NO
NDID NO

MWFB NO
TRCL 0
DFNR 0
CRT0 00 00 00 00
CRT1 00 00 00 00
CRT2 00 00 00 00
CRT3 00 00 00 00
DAY0
DAY1
DAY2
DAY3
HOLIDAY0
HOLIDAY1
HOLIDAY2
HOLIDAY3
ROA_DATA
OPT ROX
RICI
TIM_DATA
FLSH 45 896
PHDT 30
DIND 30 32 30
DIDT 14 16 14
LDTT 6
DLAT 0
BOTO 14
DBRC 60
RTIM 30 30 30
ATIM 0
AQTT 30
ADLD 0
AFNT 0
NFNA 0
ADHT 0
HWTT 300
NIT 8
FOPT 6
ARDL_ACCEPT 20
ARDL_RETRY 30
TST_DATA

4.3.2. Overlay 17 – Configuration Record

REQ PRT

TYPE CFN
ADAN HIST
SIZE 25000
USER MTC BUG
ADAN TTY 0
CTYP PTY
DNUM 0
PORT 0
DES PTY0
FLOW NO
USER MTC TRF SCH BUG OSN
XSM NO
TTYLOG 0
BANR NO
ADAN TTY 1
CTYP PTY
DNUM 1
PORT 1
DES PTY1
FLOW NO
USER MTC TRF SCH BUG OSN
XSM NO
TTYLOG 0
BANR NO
ADAN TTY 2
CTYP PTY
DNUM 2
PORT 2
DES PTY2
FLOW NO
USER MTC TRF SCH BUG OSN
XSM NO
TTYLOG 0
BANR NO
ADAN TTY 3
CTYP PTY
DNUM 3
PORT 3
DES PTY3
FLOW NO
USER MTC TRF SCH BUG OSN
XSM NO
TTYLOG 0
BANR NO
ADAN TTY 4

CTYP CPSI
DNUM 4
PORT 0
DES
BPS 9600
BITL 8
STOP 1
PARY NONE
FLOW NO
USER MTC TRF SCH BUG OSN
XSM NO
TTYLOG 0
BANR NO
ADAN TTY 5

CTYP CPSI
DNUM 5
PAGE 001
PORT 1
DES
BPS 9600
BITL 8
STOP 1
PARY NONE
FLOW NO
USER MTC TRF SCH BUG OSN
XSM NO
TTYLOG 0
BANR YES

ADAN ELAN 16 (Configuration for CallPilot)

CTYP ELAN
DES CPilot
N1 512
ADAN DCH 100
CTYP DCIP
DES VoIP
USR ISLD
ISLM 4000
SSRC 1800
OTBF 32
NASA YES
IFC SL1
CNEG 1
RLS ID 5

RCAP ND2 MWI (Configuration for CallPilot)

MBGA NO

H323
OVLN NO
OVLS NO
ADAN DCH 101
CTYP DCIP
DES Enterprise
USR ISLD
ISLM 4000
SSRC 1800
OTBF 32
NASA NO
IFC SL1
CNEG 1
RLS ID 25
RCAP ND2 MWI
MBGA NO
H323
PAGE 002
OVLN NO
OVLS NO
PARM
LPIB 3500
HPIB 3500
500B 2000
SL1B 255
DTIB 35
DFOB 4
NCR 20000
MGCR 25
CSQI 255
CSQO 255
TUBO NO
NCPU 2
CFWS NO
PCML A
ALRM YES
ERRM ERR BUG AUD
DTRB 100
ABCD NO
TMRK 128
FCDR OLD
PCDR NO
TPO NO
TSO NO
CLID NO

DUR5 NO
MLDN NO
MARP YES
IPIE NO
FRPT NEFR
DCUS NULL
DTDT NO
MSCL 0
PMSI
 MANU PMS1
 PMCR 0
 PORT NONE
NDIS 20
OCAC NO
MTRO MR
SBA_ADM_INS 000
SBA_USER 512
BCAP SPEECH
IDLE_SET_DISPLAY
ICON NO
MSEC ON
 MSSD MSBT
 NKEY 31
 TKEY 24
CEQU
MPED 8D
TERM
REMO
TERD
REMD
TERQ
REMQ
SUPL V000 V096 V100 V200
SUPC
PAGE 003
SUPF
DDCS MG_CARD
DTCS
XCT
CONF
MGTDSD IPMG IPMG_TYPE
 126 000 0 MGC
MGCONF IPMG PORTS IPMG_TYPE
 127 000 0 30 MGC
MFSD * 126

APVL
MISP MG_CARD
SYNM 0
EXT0 3PE
EXT1 3PE
MCFN 011 MB
OVLY
SID 0
BKGD 044
PBXH X
TODR 00
DROL 030 032 045 135 137
MID_SCPU NO
CY45 00
MULTI_USER OFF
VAS
VSID 016
DLOP
ELAN 016
SECU NO
INTL 0001
MCNT 9999
VSID 022
DLOP
ELAN 022
SECU YES
INTL 0001
MCNT 9999
VSID 034
DLOP
ELAN 034
SECU YES
INTL 0001
MCNT 9999

VSID 035
DLOP
ELAN 035
SECU NO
INTL 0001
MCNT 9999

VSID 038
DLOP
ELAN 038

SECU YES
INTL 0001
MCNT 9999
PAGE 004
ATRN
CODE 0
SOLR 12
ROLR +45.00
AOLR +45.00
TOLR -45.00
AGCD NO
VOLR NO
HRLR +42.00
HTLR -44.00
ESA
LIS EXT/DM
DYNAMIC_ELIN_TIMEOUT 180
DYNAMIC_ELIN_REUSE YES
EXT_DM_UPDT_TIMEOUT 15

4.4. CS1K Tandem Configuration

This configuration is for the deployment model of 2 or more CS1000 with Qwest communication system. Represent here is for 2 CS1000s configuration.

4.4.1. Configure CS1000E A

1. Create IP on CS1000E

This section describes the steps for creating Node ID (1001) in CS 1000 network.

Enter Element Manager through the IE browser (in IE address bar, type IP address of the Node IP or TLAN of Signalling Server).

- Input Node ID and press Add...
- Enter TLAN, ELAN IP address of Signalling Server.

Node 1001 was added to be configured as the SIP gateway to the Enterprise services.

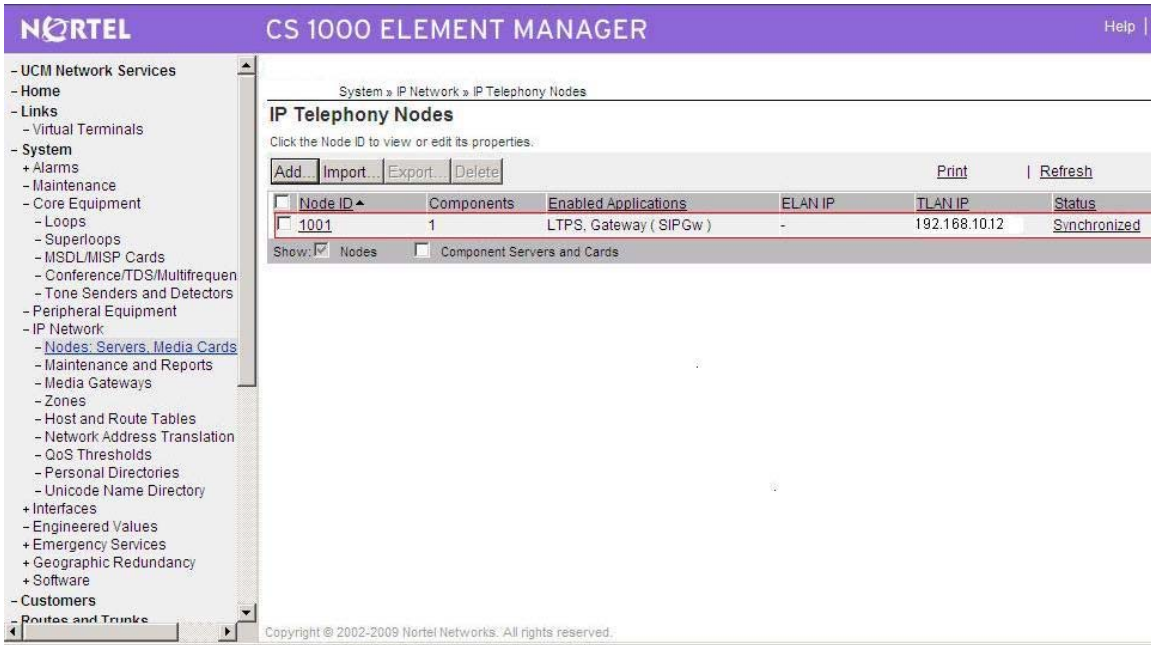


Figure 35 – Creating a node on CS1000 A

The node IP information is added. For the primary proxy enter the IP address of the SIP Proxy Server (SPS). Use UDP port 5060 for SIP communication, figure 36 Support registration

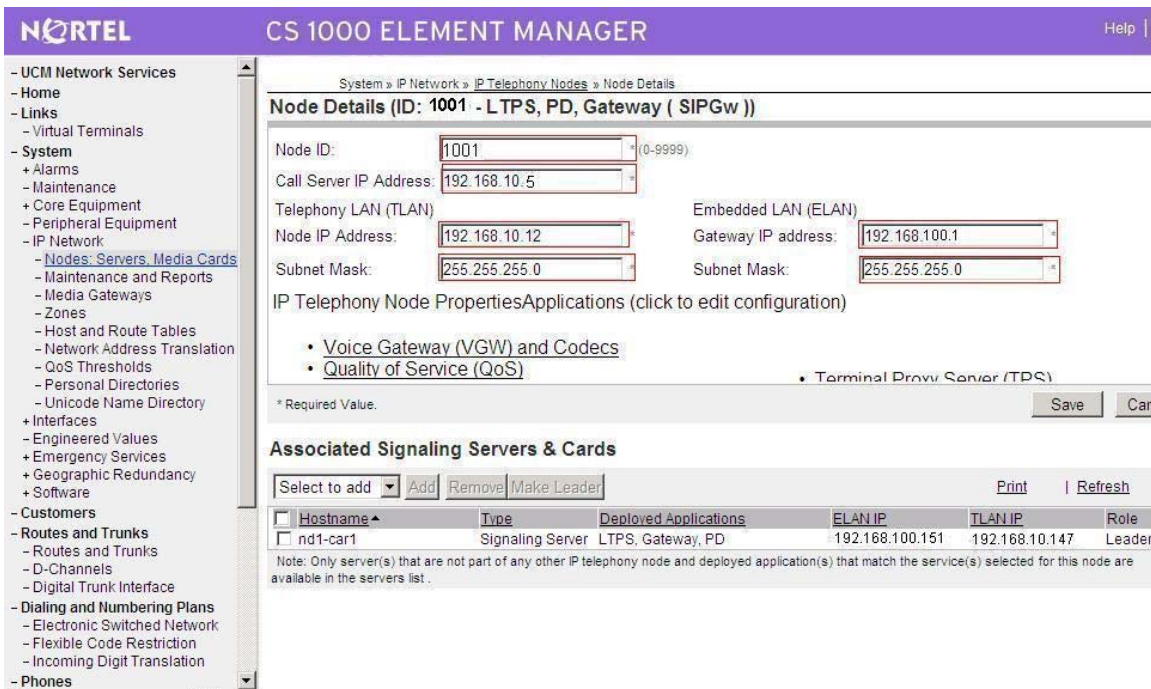


Figure 36 – CS1000 Node Detail Settings

In the signaling server properties, the Line TPS will be enabled if this signalling server will be used for IP set registration. If the role of this server is SIP gateway only then this can be left unchecked, figure 37.

The screenshot displays the 'SIP Gateway Settings' configuration page for Node ID 1001. The 'SIP Gateway Settings' tab is selected, showing various parameters for the SIP gateway. Key settings include the Vtrk Gateway Application set to 'SIP Gateway (SIPGw)', the SIP Domain name 'interop.com', and the Local SIP Port '5060'. The Gateway endpoint name is 'car1_ss2'. The TLS Security is set to 'Security Disabled'. The Port is '5061'. The Number of Byte Re-negotiation is '0'. The Options section includes 'Client Authentication' and 'X509 certificate authority'. The Proxy Or Redirect Server section includes the Primary TLAN IP Address '192.168.10.60' and the Secondary TLAN IP Address '0.0.0.0'. The Port for the Proxy Or Redirect Server is '5060'. The Transport protocol is 'UDP'. The Options section includes 'Support registration', 'Primary CDS Proxy', and 'Secondary CDS Proxy'. The 'Support registration' option is checked. The 'Save' and 'Cancel' buttons are visible at the bottom right.

Figure 37 – SIP Gateway Settings

2. Create D-channel (DCH)

- Launch Element Manager of CS 1000 6.0
- Choose D-Channels, enter D-channel number (i.e.: 101), select DCH for type
- Click Add to create DCH 101 in figure 38; Also click on Options and edit the Remote Capabilities (RCAP). Enable MWI if CS1K hosted voice mail will be used.

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

Managing: **192.168.10.5**
Routes and Trunks > D-Channels > D-Channels 101 Property Configuration

D-Channels 101 Property Configuration

- Basic Configuration

Input Description	Input Value
Action Device And Number (ADAN) (TYPE)	DCH
D channel Card Type (CTYP)	DCIP
Designator (DES)	VoIP
Recovery to Primary (RCVP)	<input type="checkbox"/>
PRI loop number for Backup D-channel (BCHL)	
User (USR)	Integrated Services Signaling Link Dedicated (ISLD)
Interface type for D-channel (IFC)	Meridian Meridian1 (SL1)
Country (CNTY)	ETS 300 =102 basic protocol (ETSI)
D-Channel PRI loop number (DCHL)	
Primary Rate Interface (PRI)	<input type="text"/> <input type="button" value="more PRI"/>
Secondary PRI2 loops (PRI2)	<input type="text"/>
Meridian 1 node type (SIDE)	Slave to the controller (USR)
Release ID of the switch at the far end (RLS)	25
Central Office switch type (CO_TYPE)	100% compatible with Bellcore standard (STD)
Integrated Services Signaling Link Maximum (ISLM)	4000 Range: 1 - 4000
Signaling Server Resource Capacity (SSRC)	1800 Range: 0 - 4000

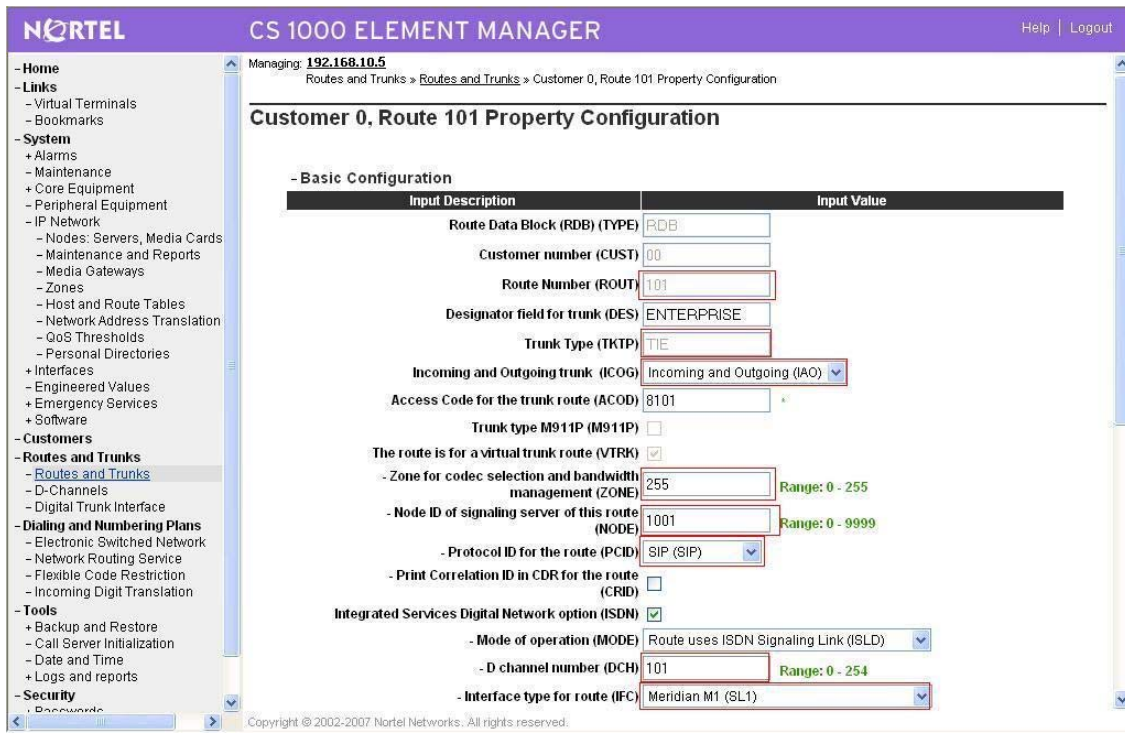
+ Basic options (BSCOPT)
+ Advanced options (ADVOPT)

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Figure 38 – D-Channels Property Configuration

3. Create Route

Create route 101 using DCH 101 for SIP trunks figure 39



NORTEL CS 1000 ELEMENT MANAGER Help | Logout

Managing **192.168.10.5**
Routes and Trunks > Routes and Trunks > Customer 0, Route 101 Property Configuration

Customer 0, Route 101 Property Configuration

- Basic Configuration

Input Description	Input Value
Route Data Block (RDB) (TYPE)	RDB
Customer number (CUST)	00
Route Number (ROUT)	101
Designator field for trunk (DES)	ENTERPRISE
Trunk Type (TKTP)	TIE
Incoming and Outgoing trunk (ICOG)	Incoming and Outgoing (AO)
Access Code for the trunk route (ACOD)	8101
Trunk type M911P (M911P)	<input type="checkbox"/>
The route is for a virtual trunk route (VTRK)	<input checked="" type="checkbox"/>
- Zone for codec selection and bandwidth management (ZONE)	255 Range: 0 - 255
- Node ID of signaling server of this route (NODE)	1001 Range: 0 - 9999
- Protocol ID for the route (PCID)	SIP (SIP)
- Print Correlation ID in CDR for the route (CRID)	<input type="checkbox"/>
Integrated Services Digital Network option (ISDN)	<input checked="" type="checkbox"/>
- Mode of operation (MODE)	Route uses ISDN Signaling Link (ISLD)
- D channel number (DCH)	101 Range: 0 - 254
- Interface type for route (IFC)	Meridian M1 (SL1)

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Figure 39 – Route Property Configuration

Configure Route 101 for SIP trunks continue, figure 40

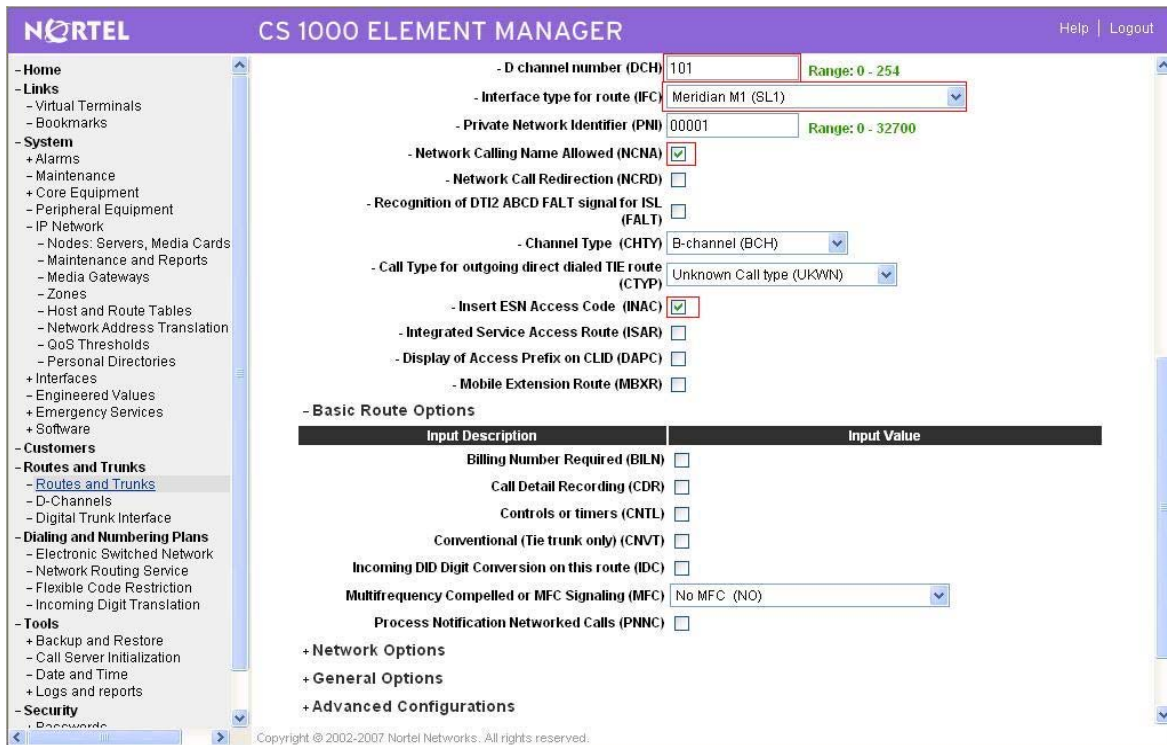


Figure 40 – Route Property Configuration Details (cont.)

4. Create Trunk (figure 41)

Since Media security is not support under Qwest system, Disable Media Security (SRTP) at the Trunk level as show in figure 41

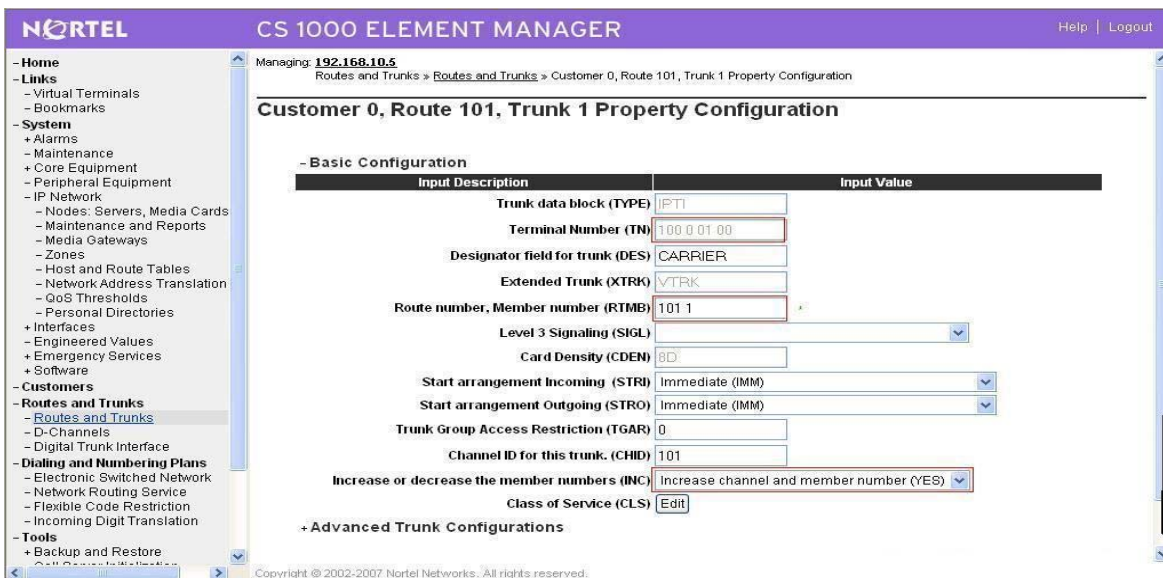


Figure 41 – Trunk Property Configuration

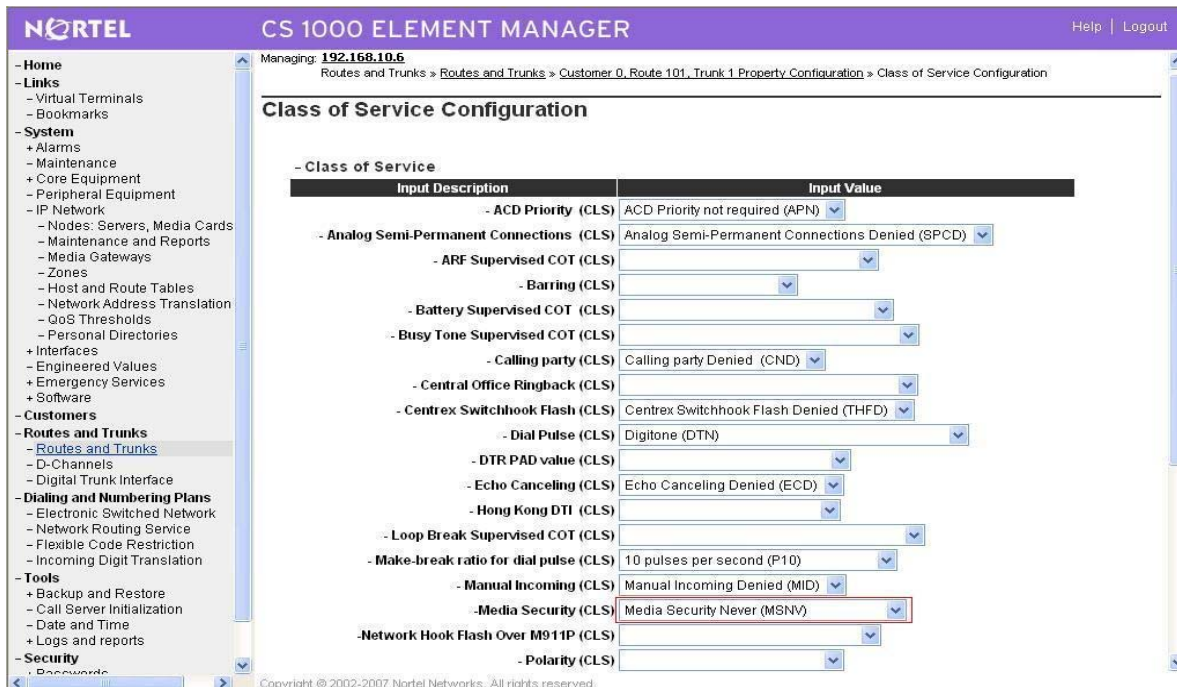


Figure 42 – Class of Service Configuration

5. Configure Dialing Plan for CS1000E_A

Create Location Code:

Create LOC 521 for basic outgoing calls to CS1000E_B (Use RLI_5; DMI_0); Figure 43

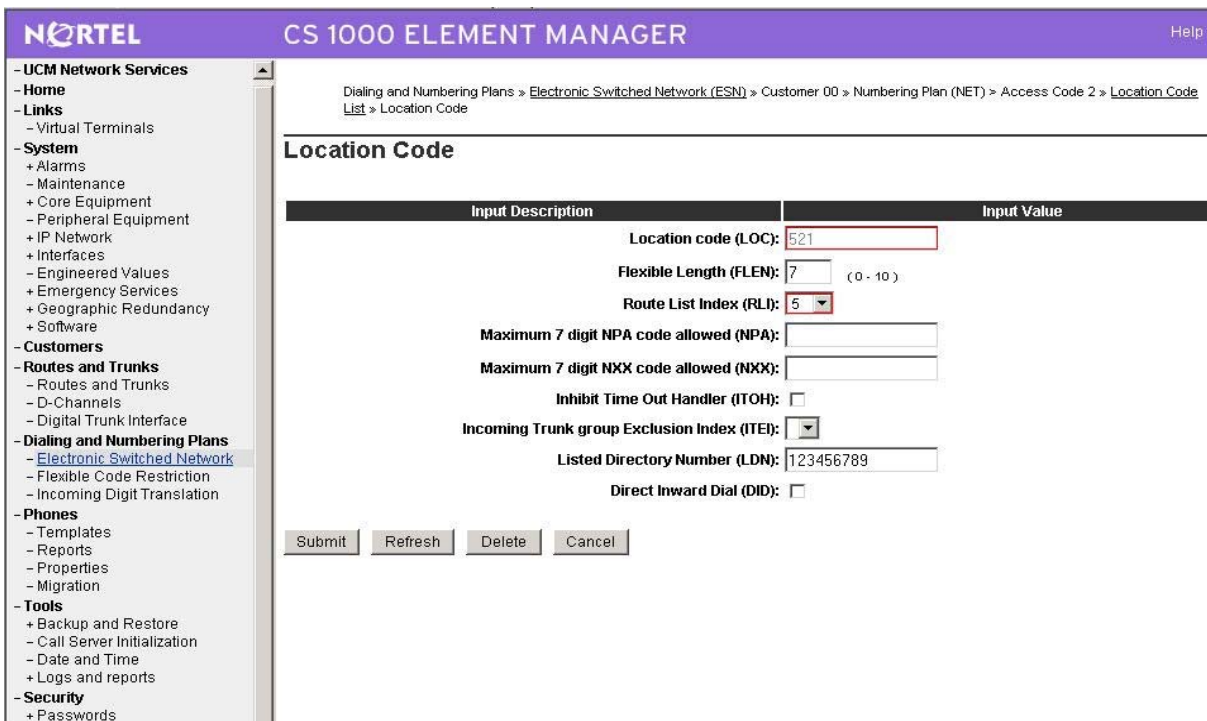


Figure 43 – LOC_521 for basic outgoing calls to CS1000EB

Create Home Location Code

Create HLOC_613 for incoming calls from CS1000E_B and outgoing calls to PSTN; Figure 44

The screenshot shows the Nortel CS 1000 Element Manager interface. The breadcrumb trail is: Dialing and Numbering Plans > Electronic Switched Network (ESN) > Customer 00 > Numbering Plan (NET) > Access Code 2 > Home Location Code List > Home Location Code. The main content area is titled "Home Location Code" and contains a table with two columns: "Input Description" and "Input Value".

Input Description	Input Value
Home Location code (HLOC):	613
Digit Manipulation Index (DMI):	13

Below the table are four buttons: Submit, Refresh, Delete, and Cancel. The footer of the page reads: Copyright © 2002-2009 Nortel Networks. All rights reserved.

Figure 44 – HLOC: 613 to tandem calls from CS1000B to PSTN

Create HLOC_511 for basic incoming call from CS1000E_B (DMI_4); Figure 45

The screenshot shows the Nortel CS 1000 Element Manager interface. The breadcrumb trail is: Managing: 192.168.10.5 > Dialing and Numbering Plans > Electronic Switched Network (ESN) > Customer 00 > Numbering Plan (NET) > Access Code 1 > Home Location Code List > Home Location Code. The main content area is titled "Home Location Code" and contains a table with two columns: "Input Description" and "Input Value".

Input Description	Input Value
Home Location code (HLOC):	511
Digit Manipulation Index (DMI):	4

Below the table are four buttons: Submit, Refresh, Delete, and Cancel.

Figure 45 – HLOC_511 to terminate calls from CS1000E_B

Create Distant Steering Code

Create DSC_303 (RLI_6) to receive Calls from PSTN and tandem to CS1000E_B; Figure 46

The screenshot shows the Nortel CS 1000 Element Manager interface. The breadcrumb trail is: Dialing and Numbering Plans » [Electronic Switched Network \(ESN\)](#) » Customer 00 » Coordinated Dialing Plan (CDP) » [Distant Steering Code List](#) » Distant Steering Code.

Distant Steering Code

Input Description	Input Value
Distant Steering Code (DSC):	303
Flexible Length number of digits (FLEN):	10 (0 - 10)
Display (DSP):	Local Steering Code (LSC)
Remote Radio Paging Access (RRPA):	<input type="checkbox"/>
Route List to be accessed for trunk steering code (RLI):	6
Collect Call Blocking (CCBA):	<input type="checkbox"/>
maximum 7 digit NPA code allowed (NPA):	
maximum 7 digit NXX code allowed (NXX):	

Buttons: Submit, Refresh, Delete, Cancel

Figure 46 – DSC_303 to receive calls from PSTN and tandem to CS1000E_B

Create DSC_711 to tandem calls from CS1000E_A to CS1000E_B; Figure 47

Dialing and Numbering Plans » [Electronic Switched Network \(ESN\)](#) » Customer 00 » Coordinated Dialing Plan (CDP) » [Distant Steering Code List](#) » Distant Steering Code

Distant Steering Code

Input Description	Input Value
Distant Steering Code (DSC):	711
Flexible Length number of digits (FLEN):	7 (0 - 10)
Display (DSP):	Local Steering Code (LSC)
Remote Radio Paging Access (RRPA):	<input type="checkbox"/>
Route List to be accessed for trunk steering code (RLI):	6
Collect Call Blocking (CCBA):	<input type="checkbox"/>
maximum 7 digit NPA code allowed (NPA):	
maximum 7 digit NXX code allowed (NXX):	

Submit Refresh Delete Cancel

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Figure 47 – DSC_711 to tandem calls to CS1000E_B.

Create Route List Block

Create RLI_5 for basic outgoing call to CS1000E_B (Use route 101, DMI_0); Figure 48

The screenshot shows the 'Data Entry of a Route List Block' configuration page in the Nortel CS 1000 Element Manager. The left sidebar contains a navigation tree with categories like UCM Network Services, Links, System, Customers, Routes and Trunks, Dialing and Numbering Plans, Phones, Tools, and Security. The main content area is titled 'Data Entry of a Route List Block' and includes a 'Route List Block Index: 5' field. Below this is a table with two columns: 'Input Description' and 'Input Value'. The table contains the following entries:

Input Description	Input Value
Entry Number for the Route List (ENTR):	0
Local Termination entry (LTER):	<input type="checkbox"/>
Route Number (ROUT):	101
Skip Conventional Signaling (SCNV):	<input type="checkbox"/>
Use Tone Detector (TDET):	<input type="checkbox"/>
Time of Day Schedule (TOD):	0
Entry is a VNS Route (VNS):	<input type="checkbox"/>
Conversion to LDN (CNV):	<input type="checkbox"/>
Expensive Route (EXP):	<input type="checkbox"/>
Facility Restriction Level (FRL):	0 (0 - 7)
Digit Manipulation Index (DMI):	0
ISL D-Channel Down Digit Manipulation Index (ISDM):	0 (0 - 999)
Free Calling Area Screening Index (FCI):	0
Free Special Number Screening Index (FSNI):	0
Business Network Extension Route (BNE):	<input type="checkbox"/>
Strategy on Congestion (SBOC):	No Reroute (NRR)
OSIG Alternate Routing Causes (COPT):	OSIG Alternate Routing Cause 1
ISDN Drop Back Busy (IDBB):	Drop Back Disabled (DBD)

Figure 48 – Create RLI_5 for basic outgoing calls to CS1000E_B

Create RLI_6 for incoming calls from PSTN and outgoing calls to CS1000E_B (Use route 101, DMI_6); Figure 49

The screenshot shows the 'Data Entry of a Route List Block' configuration page in the Nortel CS 1000 Element Manager. The breadcrumb trail is: Dialing and Numbering Plans » Electronic Switched Network (ESN) » Customer 00 » Network Control & Services » Route List Blocks » Route List Block » Data Entry of a Route List Block. The 'Route List Block Index' is set to 6. The configuration table below lists various parameters and their values.

Input Description	Input Value
Entry Number for the Route List (ENTR):	0
Local Termination entry (LTER):	<input type="checkbox"/>
Route Number (ROUT):	101
Skip Conventional Signaling (SCNV):	<input type="checkbox"/>
Use Tone Detector (TDET):	<input type="checkbox"/>
Time of Day Schedule (TOD):	0
Entry is a VNS Route (VNS):	<input type="checkbox"/>
Conversion to LDN (CNV):	<input type="checkbox"/>
Expensive Route (EXP):	<input type="checkbox"/>
Facility Restriction Level (FRL):	0 (0 - 7)
Digit Manipulation Index (DMI):	6
ISL D-Channel Down Digit Manipulation Index (ISDM):	0 (0 - 999)
Free Calling Area Screening Index (FCI):	0
Free Special Number Screening Index (FSNI):	0
Business Network Extension Route (BNE):	<input type="checkbox"/>
Strategy on Congestion (SBOC):	No Reroute (NRR)

Figure 49 – RLI_6 to tandem calls from PSTN to CS1000E_B

Create Digit Manipulation Block

DMI_13 for Incoming calls from CS1000EB and Outgoing to PSTN; Figure 50

Managing: [47.248.100.138](#) Username: admin
Dialing and Numbering Plans » [Electronic Switched Network \(ESN\)](#) » Customer 00 » Network Control & Services » [Digit Manipulation Block List](#) » Digit Manipulation Block

Digit Manipulation Block

Input Description	Input Value
Digit Manipulation Index numbers (DMI):	13
Number of leading digits to be Deleted (DEL):	0 (0 - 19)
Insert (INST):	91
IP Special Number (ISPN):	<input type="checkbox"/>
Call Type to be used by the manipulated digits (CTYP):	Unknown call type (UKWN)

Submit Refresh Delete Cancel

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Figure 50 – DMI_13 for incoming from CS1000E_B and outgoing calls to PSTN

Create DMI_4 for incoming calls from CS1000E_B; Figure 51

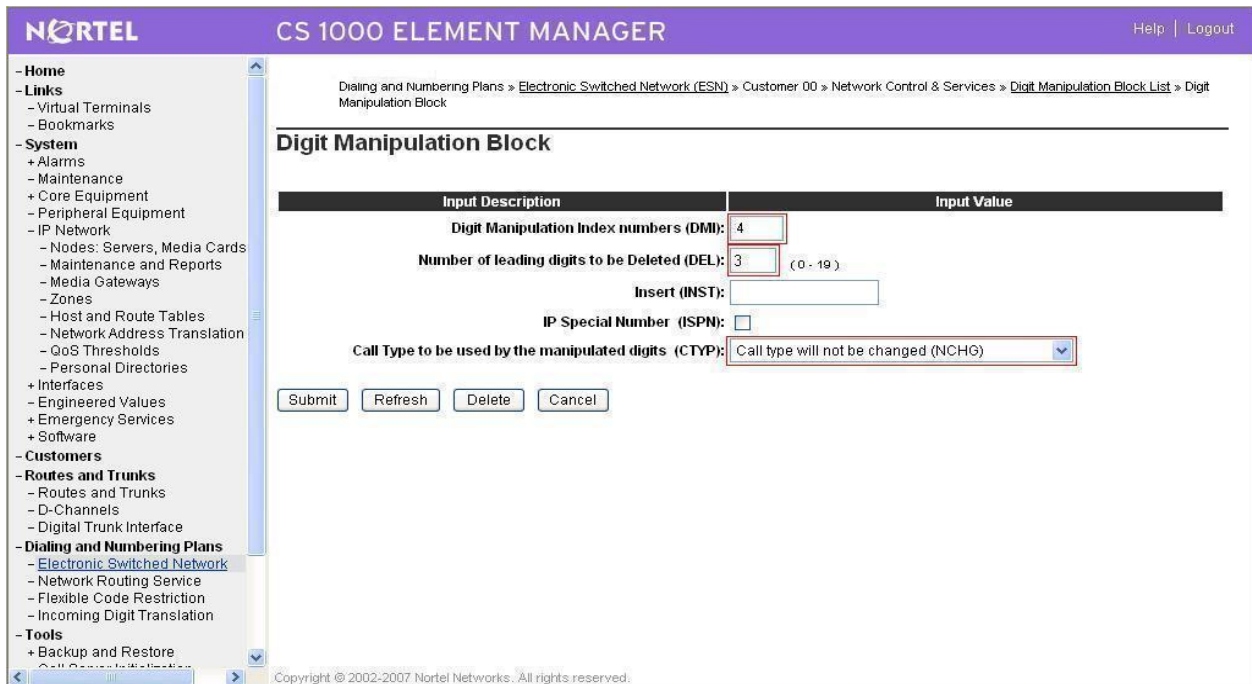


Figure 51 – DMI_4 to terminate calls from CS1000E_B

Create DMI_6: (Delete: 6) for incoming calls from PSTN and tandem calls to CS1000E_B; Figure 52

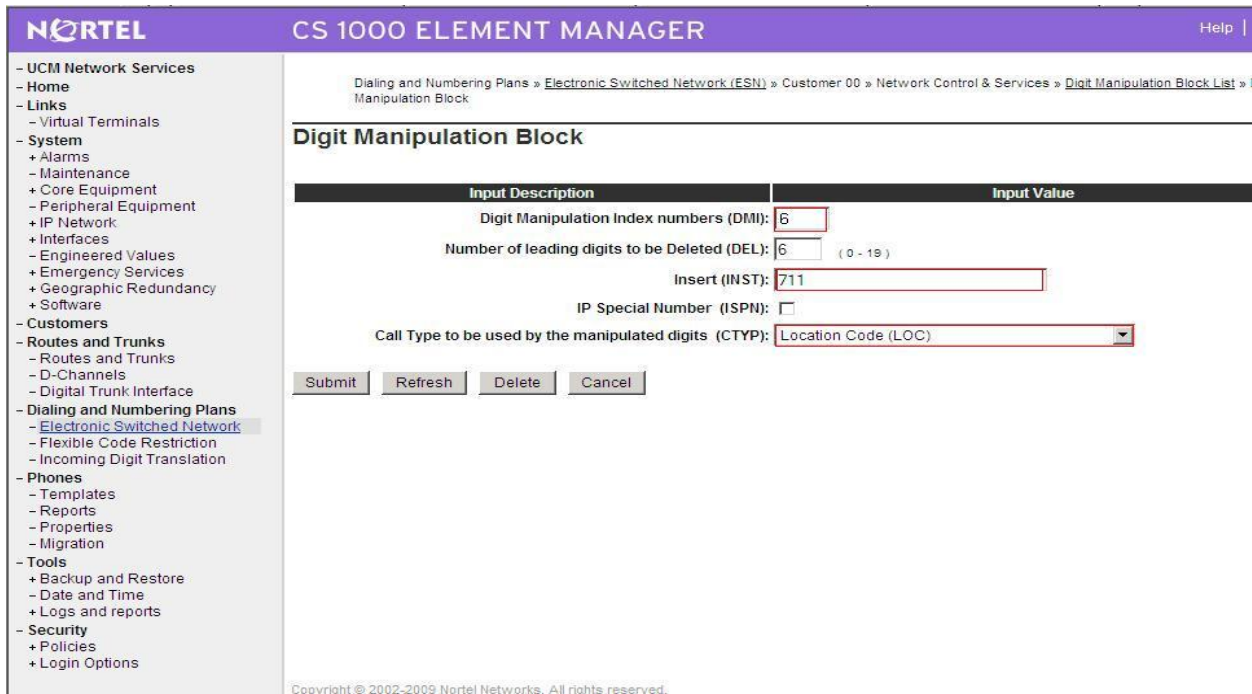


Figure 52 – DMI_6 for incoming calls from PSTN and tandem to CS1000E_B

4.4.2. Configure CS1000E 6.0 B:

1. Create IP on CS1000E

This section describes the steps for creating Node ID (2001) in CS 1000 network. Enter Element Manager through the IE browser (in IE address bar, type IP address of the Node IP or TLAN of Signalling Server).

- Input Node ID and press Add...
- Enter TLAN, ELAN IP address of Signalling Server.

Node 2001 was added to be configured as the SIP gateway to the Enterprise services, figure 53

The screenshot shows the Nortel CS 1000 Element Manager interface. The left sidebar contains a navigation tree with categories like UCM Network Services, Home, Links, System, Alarms, Maintenance, Core Equipment, Loops, Superloops, MSDLMISP Cards, Conference/TDS/Multifrequen, Tone Senders and Detectors, Peripheral Equipment, IP Network, Interfaces, Emergency Services, Geographic Redundancy, Software, Customers, and Routes and Trunks. The main content area is titled 'IP Telephony Nodes' and includes a table with the following data:

Node ID	Components	Enabled Applications	ELAN IP	TLAN IP	Status
2001	1	LTPS, Gateway (SIPGw)	-	192.168.10.11	Synchronized

Buttons for 'Add...', 'Import...', 'Export...', and 'Delete' are visible above the table. The 'Show:' section at the bottom of the table has 'Nodes' checked and 'Component Servers and Cards' unchecked. The footer of the interface reads 'Copyright © 2002-2009 Nortel Networks. All rights reserved.'

Figure 53 – Node Configured as Enterprise Service SIP Gateway

The node IP information is added. For the primary proxy enter the IP address of the SIP Proxy Server (SPS). Use UDP port 5060 for SIP communication. Support registration, figure 54

NORTEL CS 1000 ELEMENT MANAGER

System » IP Network » IP Telephony Nodes » Node Details

Node Details (ID: 2001 - LTPS, PD, Gateway (SIPGw))

Node ID: (0-9999)

Call Server IP Address:

Telephony LAN (TLAN) Node IP Address: Gateway IP address:

Subnet Mask: Subnet Mask:

IP Telephony Node Properties Applications (click to edit configuration)

- Voice Gateway (VGW) and Codecs
- Quality of Service (QoS)
- Terminal Proxy Server (TPS)

* Required Value.

Associated Signaling Servers & Cards

Select to add

Hostname	Type	Deployed Applications	ELAN IP	TLAN IP	Role
nd1-car1	Signaling Server	LTPS, Gateway, PD	192.168.100.150	192.168.10.246	Leader

Note: Only server(s) that are not part of any other IP telephony node and deployed application(s) that match the service(s) selected for this node are available in the servers list.

Figure 54 – Node Details Configuration

NORTEL CS 1000 ELEMENT MANAGER

System » IP Network » IP Telephony Nodes » Node Details » Virtual Trunk Gateway Configuration

Node ID: 2001 - Virtual Trunk Gateway Configuration Details

General | SIP Gateway Settings | SIP Gateway Services

Vtrk Gateway Application: Enable gateway service on this Node

General

Vtrk Gateway Application:

SIP Domain name:

Local SIP Port: *(1 - 65535)

Gateway endpoint name:

Gateway password:

Enable failsafe NRS:

SIP Gateway Settings

TLS Security:

Port: (1 - 65535)

Number of Byte Re-negotiation:

Options: Client Authentication X509 certificate authority

Proxy Or Redirect Server:

Primary TLAN IP Address: Secondary TLAN IP Address:

Port: (1 - 65535) Port: (1 - 65535)

Transport protocol: Transport protocol:

Options: Support registration Secondary CDS Proxy Primary CDS Proxy

* Required Value. Note: Changes made on this page will NOT be transmitted until the Node is also saved.

Virtual Trunk Network Health Monitor

Monitor IP Addresses (listed below)

Information will be captured for the IP addresses listed below.

Monitor IP:

Monitor addresses:

Figure 55 – Trunk Gateway Configuration Details

In the signalling server properties, the Line TPS will be enabled if this signalling server will be used for IP set registration. If the role of this server is SIP gateway only then this can be left unchecked.

2. Create D-channel (DCH)

- Launch Element Manager of CS 1000 6.0
- Choose D-Channels, enter D-channel number (i.e.: 101), select DCH for type

Click Add to create DCH 101, figure 56

Input Description	Input Value
Action Device And Number (ADAN) (TYPE)	DCH
D channel Card Type (CTYP)	DCIP
Designator (DES)	Enterprise
Recovery to Primary (RCVP)	<input type="checkbox"/>
PRI loop number for Backup D-channel (BCHL)	
User (USR)	Integrated Services Signaling Link Dedicated (ISLD)
Interface type for D-channel (IFC)	Meridian Meridian1 (SL1)
Country (CNTY)	ETS 300 =102 basic protocol (ETSI)
D-Channel PRI loop number (DCHL)	
Primary Rate Interface (PRI)	<input type="text"/> <input type="button" value="more PRI"/>
Secondary PRI2 loops (PRI2)	<input type="text"/>
Meridian 1 node type (SIDE)	Slave to the controller (USR)
Release ID of the switch at the far end (RLS)	25
Central Office switch type (CO_TYPE)	100% compatible with Bellcore standard (STD)
Integrated Services Signaling Link Maximum (ISLM)	4000 Range: 1 - 4000
Signaling Server Resource Capacity (SSRC)	1800 Range: 0 - 4000

+ Basic options (BSCOPT)
 + Advanced options (ADVOPT)

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Figure 56 – D-Channel Property Configuration

Also click on Basic Options and edit the Remote Capabilities (RCAP). Enable MWI if CS1K hosted voice mail will be used.

3. Create Route

Create route 101 using DCH 101 for SIP trunks, figure 57

Managing: 192.168.10.6
Routes and Trunks > Routes and Trunks > Customer 0, Route 101 Property Configuration

Customer 0, Route 101 Property Configuration

- Basic Configuration

Input Description	Input Value
Route Data Block (RDB) (TYPE)	RDB
Customer number (CUST)	00
Route Number (ROUT)	101
Designator field for trunk (DES)	ENTERPRISE
Trunk Type (TKTP)	TIE
Incoming and Outgoing trunk (ICOG)	Incoming and Outgoing (IAO)
Access Code for the trunk route (ACOD)	8101
Trunk type M911P (M911P)	<input type="checkbox"/>
The route is for a virtual trunk route (VTRK)	<input checked="" type="checkbox"/>
Zone for codec selection and bandwidth management (ZONE)	255 Range: 0 - 255
Node ID of signaling server of this route (NODE)	2001 Range: 0 - 9999
Protocol ID for the route (PCID)	SIP (SIP)
Print Correlation ID in CDR for the route (CRID)	<input type="checkbox"/>
Integrated Services Digital Network option (ISDN)	<input checked="" type="checkbox"/>
Mode of operation (MODE)	Route uses ISDN Signaling Link (ISLD)
D channel number (DCH)	101 Range: 0 - 254
Interface type for route (IFC)	Meridian M1 (SL1)

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Figure 57 – Route Property Configuration

Configure Route 101 for SIP trunks, figure 58

Managing: 192.168.10.6
Routes and Trunks > Routes and Trunks > Customer 0, Route 101 Property Configuration

Customer 0, Route 101 Property Configuration

- D channel number (DCH) 101 Range: 0 - 254

- Interface type for route (IFC) Meridian M1 (SL1)

- Private Network Identifier (PNI) 00001 Range: 0 - 32700

- Network Calling Name Allowed (NCNA)

- Network Call Redirection (NCRD)

- Trunk Route Optimization (TRO)

- Recognition of DTI2 ABCD FALT signal for ISL (FALT)

- Channel Type (CHTY) B-channel (BCH)

- Call Type for outgoing direct dialed TIE route (CTYP) Unknown Call type (UKWV)

- Insert ESN Access Code (INAC)

- Integrated Service Access Route (ISAR)

- Display of Access Prefix on CLID (DAPC)

- Mobile Extension Route (MBXR)

- Basic Route Options

Input Description	Input Value
Billing Number Required (BILN)	<input type="checkbox"/>
Call Detail Recording (CDR)	<input type="checkbox"/>
Controls or timers (CNTL)	<input type="checkbox"/>
Conventional (Tie trunk only) (CNVT)	<input type="checkbox"/>
Incoming DID Digit Conversion on this route (IDC)	<input type="checkbox"/>
Multifrequency Compelled or MFC Signaling (MFC)	No MFC (NO)
Process Notification Networked Calls (PNNC)	<input type="checkbox"/>

- Network Options

- General Options

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Figure 58 – Route Configuration

4. Create Trunk (figure 59)

Managing: **192.168.10.6**
Routes and Trunks > Routes and Trunks > Customer 0, Route 101, Trunk 1 Property Configuration

Customer 0, Route 101, Trunk 1 Property Configuration

- Basic Configuration

Input Description	Input Value
Trunk data block (TYPE)	IPTI
Terminal Number (TN)	100 0 01 00
Designator field for trunk (DES)	ENTERPRISE
Extended Trunk (XTRK)	VTRK
Route number, Member number (RTMB)	101 1
Level 3 Signaling (SIGL)	
Card Density (CDEN)	8D
Start arrangement Incoming (STRI)	Wink or Fast Flash (WNK)
Start arrangement Outgoing (STRO)	Wink or Fast Flash (WNK)
Trunk Group Access Restriction (TGAR)	0
Channel ID for this trunk. (CHID)	1
Increase or decrease the member numbers (INC)	Increase channel and member number (YES)
Class of Service (CLS)	Edit

+ Advanced Trunk Configurations

Save Delete Cancel

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Figure 59 – Trunk Property Configuration

Disable Media Security (sRTP) at the trunk level, figure 60

The screenshot shows the Nortel CS 1000 Element Manager interface. The main content area is titled "Class of Service Configuration" and displays a list of configuration items for a Class of Service. The items are organized into a table with two columns: "Input Description" and "Input Value".

Input Description	Input Value
- ACD Priority (CLS)	ACD Priority not required (APN)
- Analog Semi-Permanent Connections (CLS)	Analog Semi-Permanent Connections Denied (SPCD)
- ARF Supervised COT (CLS)	
- Barring (CLS)	
- Battery Supervised COT (CLS)	
- Busy Tone Supervised COT (CLS)	
- Calling Line Identification (CLS)	
- Calling party (CLS)	Calling party Denied (CND)
- Central Office Ringback (CLS)	
- Centrex Switchhook Flash (CLS)	Centrex Switchhook Flash Denied (THFD)
- Dial Pulse (CLS)	Digitone (DTN)
- DTR PAD value (CLS)	
- Echo Canceling (CLS)	Echo Canceling Denied (ECD)
- Hong Kong DTI (CLS)	
- Loop Break Supervised COT (CLS)	
- Make-break ratio for dial pulse (CLS)	10 pulses per second (P10)
- Manual Incoming (CLS)	
- Media Security (CLS)	Media Security Never (MSNV)
- Network Hook Flash Over M911P (CLS)	

The "Media Security (CLS)" row is highlighted with a red box, indicating that the "Media Security Never (MSNV)" option is selected. The interface also shows a navigation menu on the left and a breadcrumb trail at the top: "Managing: 192.168.10.6 > Routes and Trunks > Routes and Trunks > Customer 0, Route 101, Trunk 1 Property Configuration > Class of Service Configuration".

Figure 60 – Class of Service Configuration

5. Create Dialing Plan

Create Location Code

Create LOC 511 (Use RLI_5) for outgoing calls to CS1000E_A; Figure 61

Input Description	Input Value
Location code (LOC):	511
Flexible Length (FLEN):	7 (0-10)
Route List Index (RLI):	5
Maximum 7 digit NPA code allowed (NPA):	
Maximum 7 digit NXX code allowed (NXX):	
Inhibit Time Out Handler (ITOH):	<input type="checkbox"/>
Incoming Trunk group Exclusion Index (ITEI):	
Listed Directory Number (LDN):	12345678
Direct Inward Dial (DID):	<input type="checkbox"/>

Figure 61 – LOC_511 for out going calls to CS1000E_A

Create Numbering Plan Area Code

Create NPA_613 (RLI_70) for Outgoing calls to PSTN through CS1000E_A; Figure 62

Input Description	Input Value
Numbering Plan Area code translation (NPA):	613
Route List Index (RLI):	70
Number to be denied within the NPA (DENY): (Items separated by a space)	
Digit Manipulation Index for LDID Numbers (DMI):	1
- Local DID number to be recognized (LDID): (Items separated by a space)	
Local DDD number to be recognized (LDDD): (Items separated by a space)	

Figure 62 – NPA_613 for Outgoing calls to PSTN

Create Home Location Code

Create HLOC_521 (Use DMI_4) for incoming calls from CS1000E_A; Figure 63

NORTEL CS 1000 ELEMENT MANAGER Help

Dialing and Numbering Plans » [Electronic Switched Network \(ESN\)](#) » Customer 00 » Numbering Plan (NET) » Access Code 2 » [Home Location Code List](#) » Home Location Code

Home Location Code

Input Description	Input Value
Home Location code (HLOC):	521
Digit Manipulation Index (DMI):	4

Submit Refresh Delete Cancel

Figure 63 – Create HLOC 521 for incoming calls from CS1000E_A

Create Route List Block

Create RLI_5 for outgoing calls to CS1000E_A (Use DMI_0)

The screenshot shows the 'Data Entry of a Route List Block' configuration page in the CS 1000 Element Manager. The page title is 'Data Entry of a Route List Block' and the 'Route List Block Index' is 5. The configuration is organized into a table with two columns: 'Input Description' and 'Input Value'.

Input Description	Input Value
Entry Number for the Route List (ENTR):	0
Local Termination entry (LTER):	<input type="checkbox"/>
Route Number (ROUT):	101
Skip Conventional Signaling (SCNV):	<input type="checkbox"/>
Use Tone Detector (TDET):	<input type="checkbox"/>
Time of Day Schedule (TOD):	0
Entry is a VNS Route (VNS):	<input type="checkbox"/>
Conversion to LDN (CNV):	<input type="checkbox"/>
Expensive Route (EXP):	<input type="checkbox"/>
Facility Restriction Level (FRL):	(0 - 7)
Digit Manipulation Index (DMI):	0
ISL D-Channel Down Digit Manipulation Index (ISDM):	0 (0 - 999)
Free Calling Area Screening Index (FCI):	0
Free Special Number Screening Index (FSNI):	0
Business Network Extension Route (BNE):	<input type="checkbox"/>
Strategy on Congestion (SBOC):	No Reroute (NRR)
- QSIG Alternate Routing Causes (COPT):	QSIG Alternate Routing Cause 1
ISDN Drop Back Busy (IDBB):	Drop Back Disabled (DBD)

Figure 64 – RLI_5 (use DMI_0) for Outgoing calls to CS1000E_A

4.4.3. Configure SIP Proxy Server (SPS)

Create gateway endpoints on SPS

Managing: Active database **192.168.10.60**
 Standby database [Numbering Plan > Endpoints](#)

Search for Endpoints Hide

Enter an endpoint ID (use * for all) and click Search. You may narrow the search by specifying a particular domain.

Endpoint ID:

Limit results to Domain: / /

Results per page:

Gateway Endpoints (5) | User Endpoints (0)

<input type="checkbox"/>	ID	Supported Protocols	Call Signaling IP	Description	# of Routing Entries	Context
<input type="checkbox"/>	BCM50r2	Static SIP endpoint / NCS	47.248.100.215	BCM50r2	2	interop.com / udp / cdp
<input type="checkbox"/>	OCS-MCM	Dynamic SIP endpoint / NCS	47.248.100.123	OCS	1	interop.com / udp / cdp
<input type="checkbox"/>	car1_ss2	Dynamic SIP endpoint / NCS	192.168.10.12	car1_ss2	1	interop.com / udp / cdp
<input type="checkbox"/>	car2_ss2	Dynamic SIP endpoint / NCS	192.168.10.11	car2_ss2	2	interop.com / udp / cdp
<input type="checkbox"/>	mn118_mcs_usr	Dynamic SIP endpoint	Not registered	hnh	1	interop.com / udp / cdp

1 - 5 of 5 Gateway Endpoint(s) Page 1 of 1

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Figure 65 – SIP Gateway Endpoint Creation

Create routing entries for each of gateway endpoints on SPS, figure 65

Managing: Active database **192.168.10.60**
 Standby database [Numbering Plan > Routes](#)

Search for Routing Entries

Enter a DnPrefix and Dn Type (use * for all) and click Search. You may narrow the search by specifying a particular domain.

DN Prefix: DN Type:

Limit results to Domain: / /

Endpoint Name:

Results per page:

Routing Entries (7) | Default Routes (0)

<input type="checkbox"/>	DN Prefix	DN Type	Route Cost	SIP URI Phone Context	Context
<input type="checkbox"/>	521	Private level 1 regional (UDP location code)	1	udp	interop.com / udp / cdp / car2_ss2
<input type="checkbox"/>	613	Private level 1 regional (UDP location code)	1	udp	interop.com / udp / cdp / car2_ss2
<input type="checkbox"/>	511	Private level 1 regional (UDP location code)	1	udp	interop.com / udp / cdp / car1_ss2

1 - 7 of 7 Routing Entry(ies) Page 1 of 1

Figure 66 – Routing Entries for Gateway Endpoints

4.4.4. CS1000E SIPLINE CONFIGURATION

In this section, it shows how to configure a SIP LINE system on CS1000E. Follow the bellow steps to set up the SIP LINE server.

4.4.4.1 Configure SIP LINE CS1000E in Element Manager

Figure 66 show hot to add SIP LINE Node 1002 under System -> IP Network -> IP Telephony Nodes



Figure 67 – IP Telephony Nodes

Figure 67, 68 and 69 show how to set up the SIP LINE Node 1002 configuration details
SAVE and SYNC are required – And then APPSTART RESTART on SLG server.

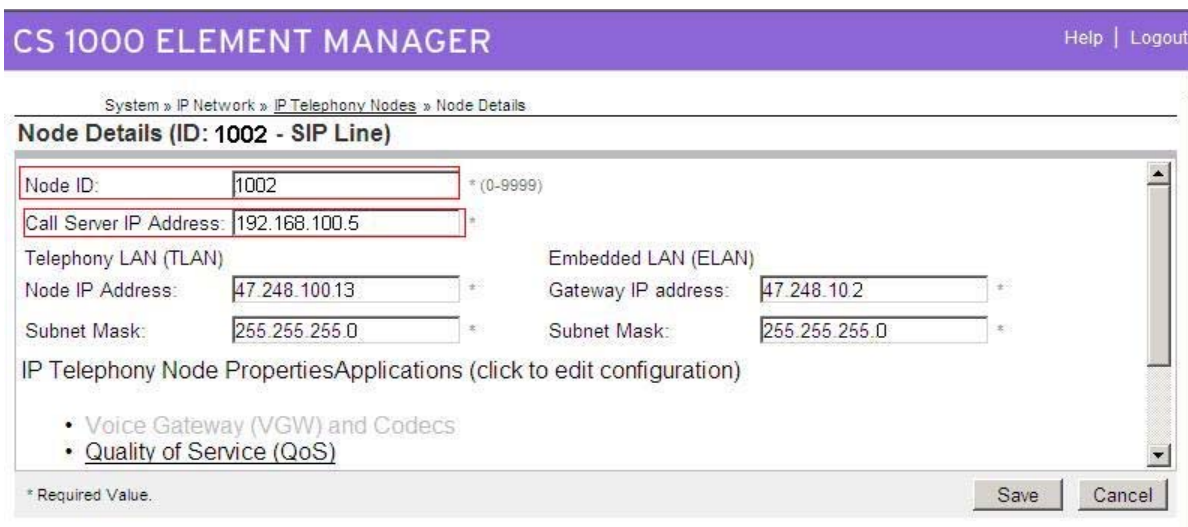


Figure 68 – Node Configuration Details

CS 1000 ELEMENT MANAGER Help | Logout

System » IP Network » IP Telephony Nodes » Node Details » SIP Line Configuration

Node ID: 1002 - SIP Line Configuration Details

General | SIP Line Gateway Settings | SIP Line Gateway Service

SIP Line Gateway Application: Enable gateway service on this Node

General

SIP Domain name:

SLG endpoint name:

SLG Group ID:

SLG Local Sip Port: (1 - 65535)

SLG Local Tls Port: (1 - 65535)

Virtual Trunk Network Health Monitor

Monitor IP Addresses (listed below)
Information will be captured for the IP addresses listed below.

Monitor IP:

Monitor addresses:

SIP Line Gateway Settings

Security Policy:

Number of Byte Re-negotiation:

Options: Client Authentication
 x509 Certificate Authentication Enabled

SIP Line Gateway Service

Branch / GR Office Settings:

* Required Value. Note: Changes made on this page will NOT be transmitted until the Node is also saved.

Figure 69 – Node Configuration Details (Cont...)

CS 1000 ELEMENT MANAGER Help | Logout

System » IP Network » IP Telephony Nodes » Node Details » SIP Line Configuration

Node ID: 1002 - SIP Line Configuration Details

Branch / GR Office Settings:

SLG Role:

SLG Mode:

MO SLG IP:

MO SLG Port: (1 - 65535)

MO SLG Transport:

GR SLG IP:

GR SLG Port: (1 - 65535)

GR SLG Transport:

* Required Value. Note: Changes made on this page will NOT be transmitted until the Node is also saved.

Figure 70 – Node Configuration Details (Cont...)

4.4.4.2 Configure CS1000E Call Server

For the configuration of SIP Line on Call Server, one needs to use command line to set it up. Follow the bellow steps to accomplish that.

Packages Required for SIP line on Call Server of CS1000E, these are keycode enablement

1. SLS_Package – 417 - SIP Line Service
2. FFC- 139 - Flexible Feature Codes
3. SIP_LINE_NT_PKG – 415 - Nortel SIP Line Package
4. SIP_LINE_3P_PKG – 416 - 3rdParty SIP Line Package

4.4.4.2.1 Configure SIPL service in LD15

LD 15
REQ CHG
TYPE SLS
CUST 0
SIPL_ON YES
SIPD **INTEROP.COM**
UAPR **222** - DN prefix used to auto-generate UADN for all SIPL clients of this customer
NMME NO

4.4.4.2.2 Configure DCH for SIPL in LD 17

LD 17
REQ CHG
TYPE ADAN
ADAN new dch 11
ADAN DCH 11
CTYP **DCIP**
DES **SIPL**
USR **ISLD**
ISLM 4000
SSRC 1800
OTBF 32
NASA NO
IFC **SL1**
CNEG 1
RLS ID 25
RCAP
MBGA NO
H323
OVLN NO
OVLS NO

4.4.4.2.3 Configure ELAN AML link in LD 17

LD 17
REQ CHG
TYPE ADAN
ADAN new elan 32
ADAN ELAN **32** – new AML ELAN link, link number should be bigger or equal to 32
CTYP **ELAN**
DES **SIPL**
N1 512

4.4.4.2.4 Configure VAS ID for AML link in LD 17

LD 17
REQ CHG

TYPE VAS
VAS new
VSID **32** – VAS ID number
ELAN **32** – Defined in step 3

4.4.4.2.5 Configure SIPL route

LD 16
REQ new
TYPE rdb
CUST 0
ROUTE 11
DES **SIPL**
TKTP **TIE**
...
VTRK **YES**
ZONE **10** – virtual trunk zone defined in LD117
PCID **SIPL**
...
NODE **1002** – node ID of SIPL node
DTRK NO
ISDN YES
MODE **ISLD**
DCH **11** – DCH defined in step 2
IFC **SL1**
PNI **00001**
NCNA **YES**
NCRD **YES**
TRO NO
FALT NO
CTYP UKWN
INAC **YES**
ISAR NO
DAPC NO
...
ICOG **IAO**
...
ACOD **8011** – route access code

4.4.4.2.6 Configure SIPL trunks

LD 14
REQ **NEW 256** – e.g. create 256 trunks
TYPE **IPTI**
TN **124 0 0 0** - starting TN for virtual trunks
DES **SIPL**
CUST 0
RTMB **11 1** – route number and member
CHID 1
TGAR **0**
STRI **IMM**
STRO **IMM**
CLS **UNR**

4.4.4.2.7 Check status of the details configuration SIPL link is up on Call Server and SIP line Gateway

On Call Server

```
>*ld 96
DCH 011 : OPER    EST  ACTV AUTO    DES : SIPL_N1402
```

On SLG

```
[nortel@vrf14-sls ~]$ slgShow
=== VTRK ===
```

```
===== General =====
```

```
SLG State      = AppReady
Total User Registered = 1
```

```
===== AML Info =====
```

```
hAppBlk  TaskName  Tid  LinkState  NumRetry  LinkNum  Trace
0x1226c80  SLG          0xfb00  Up          0         32       0
```

4.4.4.2.8 Configure SIP Line Client

Setting password length for SIP line client using LD15

```
LD 15
REQ CHG
TYPE: FFC
TYPE FFC_DATA
CUST 0
```

SCPL 4 – password length is 4

4.4.4.2.9 Configure UEXT for SIPL client

```
LD 11
REQ NEW
TYPE UEXT
```

```
TN 104 0 00 11 - Virtual TN for SIPL client
CUST 0
UXTY SIPL – UEXT type must be SIPL
MCCL YES
SIPN 1
SIP3 1
FMCL 0
TLSV 0
```

** Begin Note:

```
Sigma phone: SIPN-SIP3-FMCL-TLSV = 1-0-0-0
SMC3456: SIPN-SIP3-FMCL-TLSV = 1-0-0-0
```

SipToneV: SIPN-SIP3-FMCL-TLSV = 0-1-0-0

***End Note

SIPU **4861** – SIPL userID, often set equal to DN of the phone

NDID **1002** – NodeID of the SIPL node

ZONE **001** – MO zone configured in LD 117

TGAR **0** – should be 0, if not we can dial to SipToneV

...

SCPW **1234** – password for SIPL client to login

...

CLS **UNR**

...

KEY 00 SCR **4861** – DN of the phone

CPND **NEW** – in case you want to set CLID for phone

NAME **set4861**

XPLN 20

DISPLAY_FMT FIRST, LAST

01 HOT U **2224861** – autogenerate when you enter information for KEY 0

4.4.4.2.10 Check current status set registration on SLG

```
[nortel@vrf14-sls ~]$ slgSetShowAll
```

```
=== VTRK ===
```

UserID	TN	Clients	Calls	SetHandle
4861	104-00-00-11	1	0	0xb7d8a0c8

4.4.5. SMC3456 softphone

After installation on the PC and apply the Licence key which is required for activate the SMC to be used. Run the SMC3456, you will see figure

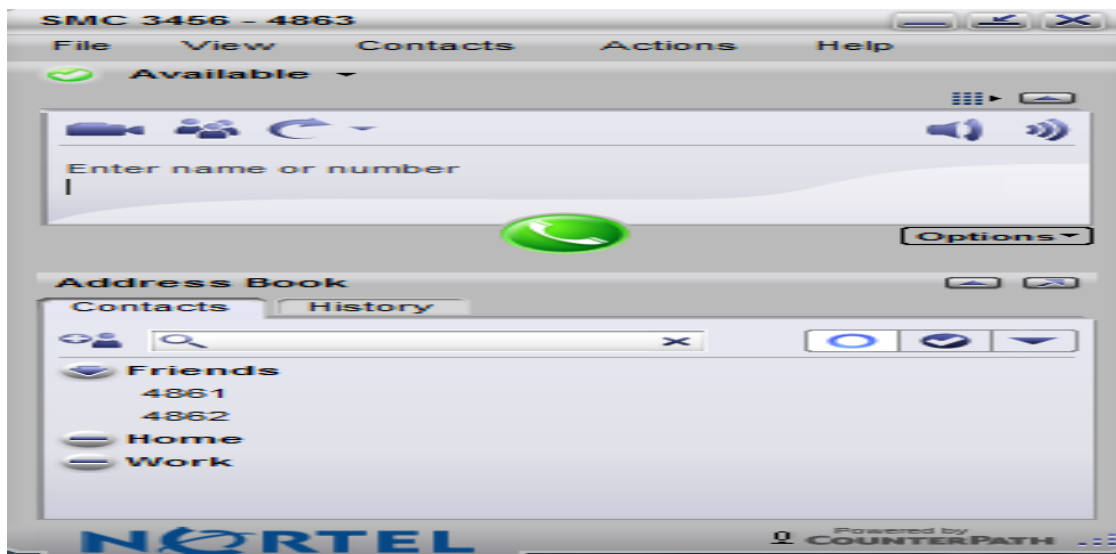


Figure 71 SMC Client

On the top menu bar, go to FILE -> PREFERENCES -> ADVANCED -> LOGIN SERVER
→ No login server available

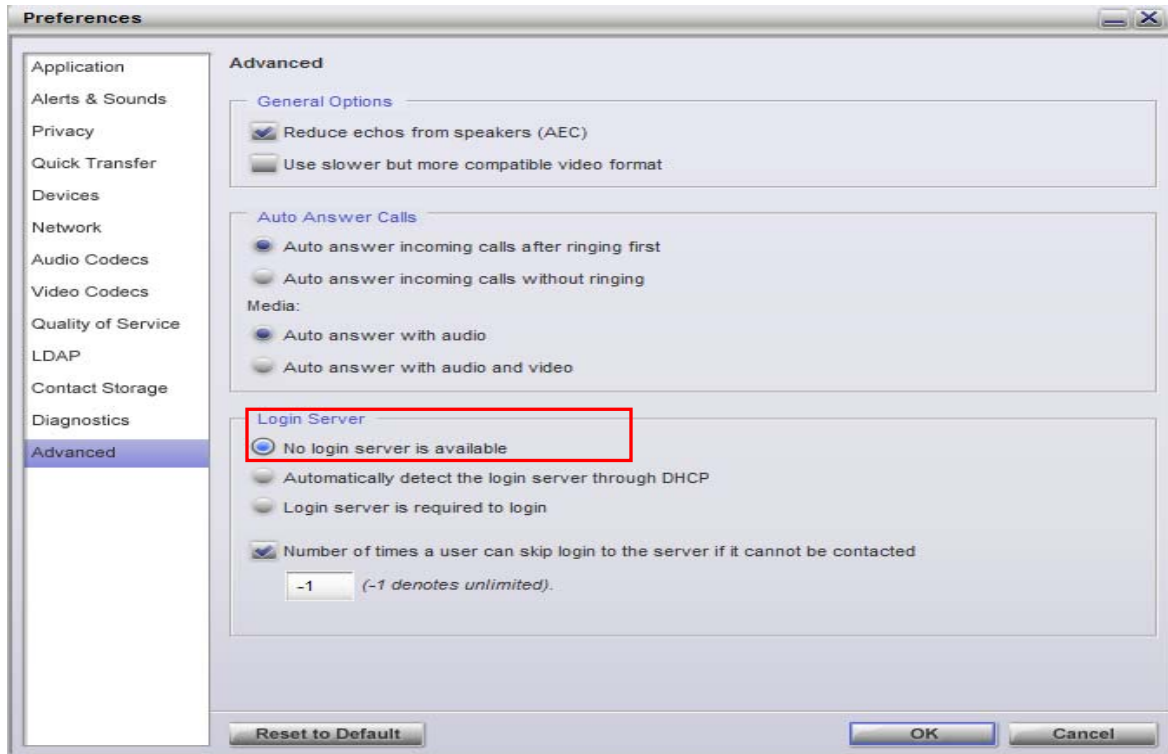


Figure 72 – Advanced Options Menu

4.4.5.1 Add a SIP Account on SMC3456

In order to create a SIP account for SMC3456 to be able to register to CS1000E SIP line server, From the top menu bar go to FILE -> ACCOUNT SETTINGS -> Add New SIP Account, see figure 72.



Figure 73 – Accounting Settings

The created account is appeared as figure 73.

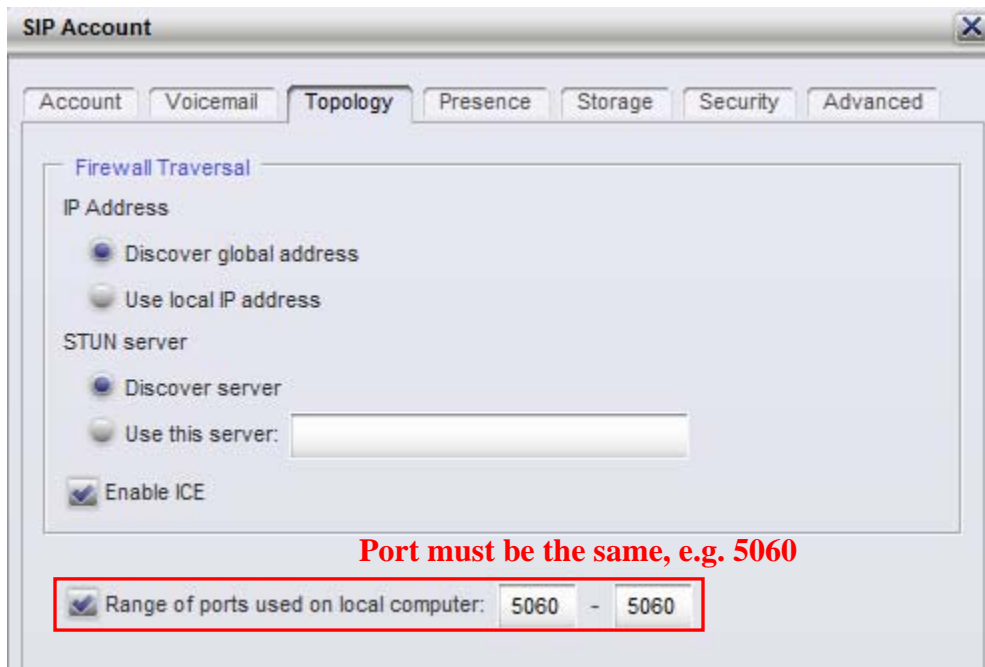


Figure 74 – Topology SIP Account Settings

Figure 74 shows how to set SIP account details by clicking on the Account menu tap.

The screenshot displays the 'SIP Account' configuration window with the following details:

- Account name:** 4863
- Protocol:** SIP
- User Details:**
 - User ID:** 4863@interop.com (highlighted with a red box)
 - Password:** **** (highlighted with a red box)
 - Display name:** 4863
 - Authorization name:** 4863
- Domain Proxy:**
 - Register with domain and receive calls
 - Send outbound via:**
 - Domain
 - Proxy Address: 192.168.100.13:5070 (highlighted with a red box)
- Dial plan:** #1\|a.T;match=1;prestrip=2;

Figure 75 – SIP Account Details Setting

Figure 75 shows the newly created SIP account

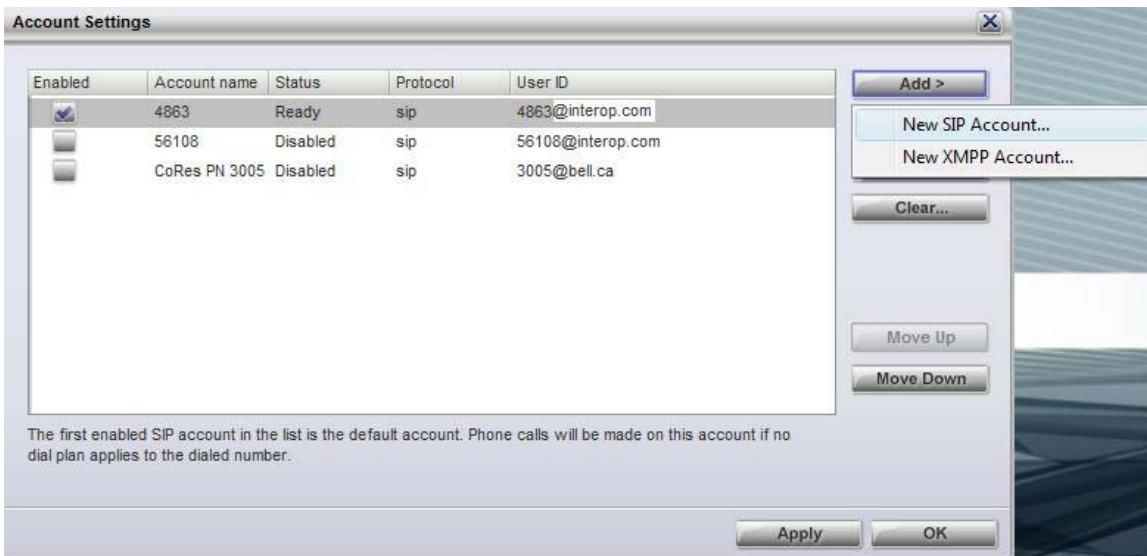


Figure 76 – New Created SIP Account

4.4.6. Provisioning SIP Phone Sets 1140 and 1120 on CS1000E Call Server

On CS1000E Call Server, use Command Line interface to configure the 1120 and 1140 phone sets.

```
TN 104 0 0 0
UXTY
DATE
PAGE
DES

DES SIPL
TN 104 0 00 00 VIRTUAL
TYPE UEXT
CDEN 8D
CTYP XDLC
CUST 0
UXTY SIPL
MCCL YES
SIPN 1
SIP3 0
SIPU 4861
NDID 1002
SUPR NO
SUBR DFLT MWI RGA CWI MSB
UXID
NUID
NHTN
CFG_ZONE 010
```

CUR_ZONE 010
ERL 0
ECL 0
FDN
TGAR 0
LDN NO
NCOS 7
SGRP 0
RNPG 0
SCI 0
SSU
XLST
SCPW 1234
SFLT NO
CAC_MFC 0
CLS_UNR FBD WTA LPR MTD FND HTD TDD HFD CRPD
MWD LMPN RMMD SMWD AAD IMD XHD IRD NID OLD VCE DRG1
POD DSX VMD SLKD CCSD SWD LND CNDD
CFTD SFD MRD DDV CNID CDCA MSID DAPA BFED RCBD
ICDD CDMD LLCN MCTD CLBD AUTU
GPUD DPUD DNDD CFXD ARHD CLTD ASCD
CPFA CPTA ABDD CFHD FICD NAID BUZZ AGRD MOAD
UDI RCC HBTD AHA IPND DDGA NAMA MIND PRSD NRWD NRCD NROD
DRDD EXR0
USMD USRD ULAD CCBD RTDD RBDD RBHD PGND OCBF FLXD FTTC DNDY DNO3 MCBN
FDSD NOVD VOLA VOUD CDMR ICRD MCDD T87D MSNV FRA PKCH
CPND_LANG ENG
HUNT
PLEV 02
DANI NO
AST
IAPG 0
AACS NO
ITNA NO
DGRP
MLWU_LANG 0
MLNG ENG
DNDR 0
KEY 00 SCR 496855 0 MARP
01 HOT U 2224861 MARP 0

5. Qwest Communication System configuration

Qwest will have to provide this configuration notes.

6. General Test Approach and Test Results

The focus of this interoperability compliant testing was to verify the SIP trunk connectivity between the Qwest Communication systems and Avaya Communication Server 1000E release 6.0. The testing verified SIP signaling and media of the basic telephony features are communicating correctly. The following features were covered; basic calls, busy, music on hold, blind and consultative transfers, DTMF, MWI, codec negotiations, conference.

6.1. General test approach

The general test approach was to have Qwest Sonus system connected to CS1000E SIP Gateway using Sonus IP address. The SIP trunk communication should be established between CS1000E and Qwest Sonus system. Calls can be made from end to end, i.e. PSTN phone can call through created route from Qwest Communication system to CS1000Es' analog, IP, SIP phones via SIP trunk. The main objectives were to verify the basic SIP trunk features:

- Basic call from PSTN phone to CS1000E phones
- Perform basic call operation: DTMF transmission, voicemail with MWI notification, busy, hold.
- Redirect call between users/clients/endpoints: blind/consultative transfers, call forward all call, busy and no answer.
- Perform codec negotiation
- Perform conferencing

6.2. Test Results

The objectives outlined in section 6.1 were verified and met. The following observations were made during the compliance testing:

- Dial to telephone number which begins with “*”, i.e. *xxxxx does not match required format on Avaya CS1000E.
- CPND, Call Party Name Display, does not support on test set up. Telephone number is displayed instead.
- Music on hold is not enabled on CS1000E. i.e. User won't hear music when call is put on hold.
- If on hold is used during call, telephone number of PSTN or CS1000E will display incorrectly after retrieving on hold call from PSTN or CS1000E phones.
- Media Security is not enabled on this test configuration.
- Service 999 is not available on Qwest; CS1000E calls Service 555 and 711 on Qwest. Qwest responds with “404 Not Found” in both cases. Please refer traces Qwest_5.1.2.10_Servive_555 and Qwest_5.1.2.10_Servive_711.
- PSTN sends more than one fax pages to CS1000E in fax G711 Modem Pass Through mode, Blank fax pages are inserted between content pages. Issue was on Sonus Qwest system which has not been addressed and CR has opened to keep track of the issue, Q02089389.

- Call forward no answer and call forward busy are not available on local Qwest's phones so CS1000E calls to Qwest's phone which is not able call forward no answer or call forward busy to another phone is located on Qwest or Avaya CS1000E phone.
- CS1000E sends 5 fax pages to PSTN in fax G711 Modem Pass Through mode, CS1000E_fax could stop sending anytime after finishing 2/3/4/5 pages with Transmit Error or Line Error displayed on Fax machine. This issue has been fixed with MGCBP002 load. Please refer to CR Q02089454
- After ringing 6 times, CS1K_IP_PHONE starts to call forward no answer instead of after ringing 3 times as expected. This issue also occurs between local CS1000E systems Rls 6.0 with details scenario as bleow:
 CS1K_PH0---call---CS1K_PH1---cfb--CS1K_PH2--- cfna---CS1K_PH3
 Please refer to CR Q02111563 which is investigating by CS1000E designers.
- PSTN calls to a busy CS1000E_SIPLINE phone which has voice mail set up. PSTN does not hear greeting from call pilot although this PSTN is called forward busy to voice mail by CS1000E_SIPLINE phone. The issue has been addressed on the CS1000, CR Q02090889.
- At this moment, SIPLINE clients testing result based on SU nortel-cs1000-vtrk-6.00.18.065-016.i386.001.ntl is installed on SS_Carrier and nortel-cs1000-vtrk-6.00.18.63-06.i386.001.ntl is installed on SLG, as CS1000E designer's suggestion. Please refer to Appendix B for details of patches installation.
 If SU "nortel-cs1000-vtrk-6.00.18.065-016.i386.001.ntl" is installed on both SS_carrier and SLG, all basic calls relate to SIPLINE will be failed between Unistim calls SIPLINE, PSTN calls SIPLINE, SIPLINE1 calls SIPLINE2 as one hangs up call. Another is NOT released. Please refer to CR Q02129692. 80% SIPLINE test cases are also failed with this patch as basic SIPLINE features do not work such as conference, blind transfer, consult transfer, call forward no answer.

7. Verification Steps

This section includes some steps that can be followed to verify the solution is working.

7.1. Verify that calls are established with two-way voice path when making calls from one CS1000E phone to another on the local CS1000E.

Verify that IP phones, digital, analog (Fax) register successfully show as below:

Verify status of IP phone registered

```
[nortel@nd1-car1 ~]$ isetShow
=== TPS ===
```

1. Set Information

IP Address	NAT	Model Name	Type	RegType	State	Regd-TN	FWVsn
47.248.101.117		IP Phone 1120E		1120	Regular online	096-00-01-24	C60
47.248.101.120		IP Phone 2002 Phase 2		2002P2	Regular online	096-00-01-06	DCJ

```

47.248.101.116      IP Phone 1140E      1140      Regular online 096-00-01-26 C60
47.248.101.115      IP Phone 1220      1220      Regular online 096-00-01-05 C60

```

Verify status of digital phone registred:

```

LD 32
Stat 4 0 7
>ld 32
.stat 4 0 7
00 = UNIT 00 = IDLE (3904)
01 = UNIT 01 = IDLE (3902)

```

.....

Verify status of Analog (Fax machine registered):

```

LD 32
.stat 4 0 8
00 = UNIT 00 = IDLE (L500)
01 = UNIT 01 = IDLE (L500)

```

Verify the following basic calls in local CS1000E:

```

IP phone-----call-----IP phone
IP phone -----call-----SIP Line Client
IP Phone -----call-----Analog/Fax phone
IP Phone -----call-----Digital phone
SIP Line Client-----call-----Analog/Fax phone
SIP Line Client-----call-----Digital Phone
Analog/Fax phone-----call-----Digital Phone
User can verify the same for calls from oposite direction.

```

Verify that calls are established with two-way voice path and busy status under CS1000E call server as below:

Verify status of IP phones which are busy

```

[nortel@nd1-car1 ~]$ isetShow
=== TPS ===

```

Set Information

```

-----
  IP Address   NAT Model Name      Type RegType  State      Regd-TN      UNIStimVsn
-----
47.248.101.117  IP Phone 1120E      1120  Regular busy  096-00-01-24  C6O
47.248.101.120  IP Phone 2002 Phase 2    2002P2  Regular busy  096-00-01-06  DCJ

```

```
47.248.101.116    IP Phone 1140E    1140    Regular busy    096-00-01-26    C6O
47.248.101.115    IP Phone 1220    1220    Regular busy    096-00-01-05    C6O
```

Verify status of digital phone is busy

```
LD 32 .stat 4 0 7 000 = UNIT 00 = BUSY (3904)
01 = UNIT 01 = BUSY (3902)
```

.....

Verify status analog phone is busy

```
LD 32
.stat 4 0 8
00 = UNIT 00 = BUSY (L500)
01 = UNIT 01 = BUSY (L500)
```

Verify status of voice gateway if calls are established between IP phone/SIP line Clients to Analog/Digital phones or call to voice message

```
>>ld 32
NPR000
.stat 4 0 11
00 = UNIT 00 = BUSY      (TRK)(IPTN REG  )
01 = UNIT 01 = BUSY      (TRK)(IPTN REG  )
02 = UNIT 02 = BUSY      (TRK)(IPTN REG  )
03 = UNIT 03 = BUSY      (TRK)(IPTN REG  )
```

During the call, use pcap tool (ethereal/wireshark) at the TLAN media gateway card, RTP streams are going for call relate to analog, digital or voice message.

7.2. Verify that calls are established with two-way voice path when making calls from PSTN phone to Avaya phones on the CS1000 through Qwest Communication system via configured SIP trunk.

- Verify basic call between PSTN phones and Avaya phones. At the CS1000E SIP Gateway during the call, use pcap tool (ethereal/wireshark) to make sure that all SIP request/response messages
- Verify Codec, SIP trunk status when call is established under CS1000E call server by tracing DID number

```
LD 80
.trac 0 496856
```

ACTIVE VTN 096 0 01 06
ORIG VTN 096 0 01 06 KEY 0 SCR MARP CUST 0 DN 496856 TYPE 2002P2
SIGNALLING ENCRYPTION: INSEC
MEDIA ENDPOINT IP: 47.248.101.120 PORT: 5200
TERM VTN 100 0 00 31 VTRK IPTI RMBR 100 32 OUTGOING VOIP GW CALL
FAR-END SIP SIGNALLING IP: 217.110.230.98
FAR-END MEDIA ENDPOINT IP: 217.110.230.97 PORT: 6478
FAR-END VendorID: Not available
MEDIA PROFILE: **CODEC G.711 A-LAW** PAYLOAD 20 ms VAD OFF
RFC2833: RXPT 101 TXPT 101 DIAL DN 916139675258
MAIN_PM ESTD
TALKSLOT ORIG 21 TERM 53
QUEU NONE
CALL ID 511 941

---- ISDN ISL CALL (TERM) ----

CALL REF # = 416

BEARER CAP = VOICE

HLC =

CALL STATE = 10 ACTIVE

CALLING NO = 442033496856 NUM_PLAN:E164 TON:INTERNATIONAL

ESN:UNKNOWN

CALLED NO = 16139675258 NUM_PLAN:E164 TON:INTERNATIONAL

ESN:UNKNOWN

- Verify SIP Trunk is released when DID number is released the call by tracing that DID number under CS1000E call server

LD 80

.trac 0 496856 (DID number)

- **IDLE** VTN 096 0 01 06 MARP

8. Conclusion

All of the executed test cases have passed and met the objectives outlined in **Section 6.1**, with some exceptions outlined in **Section 6.2**. The outstanding issues are being investigated by Qwest and Avaya design teams. Some of these issues are considered as exceptions. The Qwest Communication System is considered compliant with Communication Server 1000E release 6.0.

9. Additional References

Product documentation for Avaya products may be found at:

<http://support.nortel.com/go/main.jsp>

[1] *Communication Server 1000E Overview Release 6.0, Revision 03.04, October 2009, Document Number NN43041-110*

[2] *Product Compatibility Matrix release 5.0/5.5/6.0, Revision 01.07, February 2010, Document Number NN43001-140*

[3] *Communication Server 1000 Network Routing Service Fundamentals, Release 6.0, Revision 01.04, Jun 2009, Document Number NN43001-130*

[4] *Communication Server 1000 Unified Communications Management Common Services Fundamentals, Revision 03.05, February 2010, Document Number NN43001-116*

[5] *Communication Server 1000 SIP Line Fundamentals, Release 6.0, Revision 01.08, February 10, Document Number NN43001-508*

[6] *Communication Server 1000 Dialing Plans Reference, Release 6.0, Revision 03.09, June 2009, Document Number NN43001-283*

10. Appendixes

Appendix A: CS1000E CPPM Call Server RIs 6.00R Patches Installed

>ld 143

CCBR000

.mdp issp

VERSION 4021

RELEASE 6

ISSUE 00 R +

DepList 1: core Issue: 01 (created: 2009-07-14 16:05:05 (est)) ALTERED

IN-SERVICE PEPS

PAT#	CR #	PATCH REF #	NAME	DATE	FILENAME	SPECIN
000	Q00349046-03	ISS1:1OF1	p17588_1	05/01/2010	p17588_1.cpm	NO
001	Q01680019	ISS1:1OF1	p24307_1	05/01/2010	p24307_1.cpm	NO
002	Q01900523	ISS1:1OF1	p26666_1	05/01/2010	p26666_1.cpm	NO
003	Q01983521-04	ISS1:1OF1	p27616_1	05/01/2010	p27616_1.cpm	NO
004	Q01849803	ISS1:1OF1	p28064_1	05/01/2010	p28064_1.cpm	YES

005	Q01976701-01	ISS1:1OF1	p28211_1	05/01/2010	p28211_1.cpm	NO
006	Q02017013-01	ISS1:1OF1	p28313_1	05/01/2010	p28313_1.cpm	NO
007	Q02024135-04	ISS1:1OF1	p28381_1	05/01/2010	p28381_1.cpm	YES
008	Q02014044	ISS1:1OF1	p28461_1	05/01/2010	p28461_1.cpm	NO
009	Q02029209	ISS1:1OF1	p28469_1	05/01/2010	p28469_1.cpm	NO
010	Q02023636	ISS1:1OF1	p28475_1	05/01/2010	p28475_1.cpm	NO
011	Q02022264	ISS1:1OF1	p28486_1	05/01/2010	p28486_1.cpm	NO
012	Q02030977	ISS1:1OF1	p28507_1	05/01/2010	p28507_1.cpm	NO
013	Q02020526	ISS1:1OF1	p28537_1	05/01/2010	p28537_1.cpm	NO
014	Q02031323-01	ISS1:1of1	p28546_1	05/01/2010	p28546_1.cpm	NO
015	Q02034083	ISS1:1OF1	p28553_1	05/01/2010	p28553_1.cpm	YES
016	Q02030235	ISS1:1OF1	p28557_1	05/01/2010	p28557_1.cpm	NO
017	Q02028560-04	ISS1:1OF1	p28564_1	05/01/2010	p28564_1.cpm	NO
018	Q02034835	ISS1:1OF1	p28569_1	05/01/2010	p28569_1.cpm	YES
019	Q02034040	ISS1:1OF1	p28577_1	05/01/2010	p28577_1.cpm	NO
020	Q02033951	ISS1:1OF1	p28579_1	05/01/2010	p28579_1.cpm	NO
021	Q02033139	ISS1:1OF1	p28582_1	05/01/2010	p28582_1.cpm	NO
022	Q02032850	p28472	p28592_1	05/01/2010	p28592_1.cpm	NO
023	Q02018384	ISS1:1OF1	p28598_1	05/01/2010	p28598_1.cpm	NO
025	Q02033201	ISS1:1OF1	p28631_1	05/01/2010	p28631_1.cpm	YES
026	Q02032155	p28538	p28638_1	05/01/2010	p28638_1.cpm	YES
027	Q02040712	ISS1:1OF1	p28653_1	05/01/2010	p28653_1.cpm	NO
028	Q02040015	ISS1:1OF1	p28657_1	05/01/2010	p28657_1.cpm	NO
029	Q02038675	ISS1:1OF1	p28665_1	05/01/2010	p28665_1.cpm	YES
030	Q02020734-02	ISS1:1OF1	p28668_1	05/01/2010	p28668_1.cpm	NO
031	Q02038440	ISS1:1OF1	p28674_1	05/01/2010	p28674_1.cpm	NO
032	Q02035396	ISS1:1OF1	p28675_1	05/01/2010	p28675_1.cpm	NO
033	Q02031118	ISS1:1OF1	p28680_1	05/01/2010	p28680_1.cpm	NO
034	Q02029228-01	ISS1:1OF1	p28681_1	05/01/2010	p28681_1.cpm	YES
035	Q02038482	ISS1:1OF1	p28682_1	05/01/2010	p28682_1.cpm	NO
036	Q02039994	ISS1:1OF1	p28690_1	05/01/2010	p28690_1.cpm	NO
037	Q02024455-01	ISS1:1OF1	p28717_1	05/01/2010	p28717_1.cpm	NO
038	Q02041981	p28695_1	p28719_1	05/01/2010	p28719_1.cpm	NO
039	Q02043226	ISS1:1OF1	p28722_1	05/01/2010	p28722_1.cpm	NO
040	Q02031359	p28679	p28725_1	05/01/2010	p28725_1.cpm	YES
041	Q02031959	ISS1:1OF1	p28728_1	05/01/2010	p28728_1.cpm	NO

042 Q02033000 ISS1:1of1 p28736_1 05/01/2010 p28736_1.cpm NO
 043 Q02039217-03 ISS1:1OF1 p28760_1 05/01/2010 p28760_1.cpm NO
 044 Q02043669 ISS1:1OF1 p28771_1 05/01/2010 p28771_1.cpm NO
 045 Q02033321 ISS1:1OF1 p28801_1 05/01/2010 p28801_1.cpm NO
 046 Q02035555 p28544 p28813 p28814_1 05/01/2010 p28814_1.cpm NO
 047 Q02038393 ISS1:1OF1 p28820_1 05/01/2010 p28820_1.cpm NO
 048 BV12345 67890 tstpatch 05/01/2010 vcm_diag.cpm NO

Appendix B: CS1000E CPPM Signaling Server Carrier and SLG RIs 6.00.18 Patches Installed

[nortel@nd2-carrier2 ~]\$ pstat

Product Release: 6.00.18.00

In system patches: 9

PATCH#	NAME	IN_SERVICE	DATE	SPECINS	TYPE	RPM
21	p28774_1	Yes	02/03/10	NO	FRU	nortel-cs1000-Jboss-Quantum-6.00.18.00-00.i386
22	p28797_1	Yes	02/03/10	NO	FRU	nortel-cs1000-Jboss-Quantum-6.00.18.00-00.i386
23	p29407_1	Yes	23/03/10	NO	FRU	nortel-cs1000-cs-6.00.R.100-00.i386
24	p27408_1	Yes	19/03/10	NO	FRU	nortel-cs1000-pi-control-1.00.00.00-00.noarch
25	p25946_1	Yes	23/03/10	NO	FRU	nortel-cs1000-pi-control-1.00.00.00-00.noarch
26	p22968_1	Yes	23/03/10	NO	FRU	nortel-cs1000-pi-control-1.00.00.00-00.noarch
27	p25529_1	Yes	26/03/10	NO	FRU	nortel-cs1000-pi-control-1.00.00.00-00.noarch
28	p28415_1	Yes	25/03/10	NO	FRU	nortel-cs1000-pi-control-1.00.00.00-00.noarch
29	p27159_1	Yes	24/03/10	NO	FRU	nortel-cs1000-pi-control-1.00.00.00-00.noarch

In System service updates: 21

PATCH#	IN_SERVICE	DATE	SPECINS	REMOVABLE	NAME
0	Yes	22/03/10	YES	YES	nortel-cs1000-linuxbase-6.00.18.63-02.i386.000
1	Yes	02/03/10	YES	YES	nortel-cs1000-patchWeb-6.00.18.63-01.i386.000
2	Yes	02/03/10	NO	YES	submgr-2.00.02.00-01.i386.000
3	Yes	02/03/10	NO	YES	nortel-cs1000-gk-6.00.18.63-00.i386.000
4	Yes	02/03/10	NO	YES	nortel-cs1000-sps-6.00.18.63-00.i386.000
5	Yes	02/03/10	NO	YES	nortel-cs1000-tps-6.00.18.63-00.i386.000
6	Yes	02/03/10	NO	YES	nortel-cs1000-bcc_6-0-6.00.18.63-01.i386.000
7	Yes	02/03/10	NO	YES	nortel-cs1000-cs1000WebService_6-0-6.00.18.63-01.i386.000
8	Yes	24/03/10	NO	YES	nortel-cs1000-shared-general-6.00.18.62-00.i386.000

9	Yes	25/03/10	NO	YES	nortel-cs1000-shared-pbx-6.00.18.62-00.i386.000
10	Yes	02/03/10	NO	YES	nortel-cs1000-emWeb_6-0-06.00.18.63-01.i386.001
11	Yes	02/03/10	NO	YES	nortel-cs1000-pd-6.00.18.62-00.i386.000
12	Yes	02/03/10	NO	YES	nortel-cs1000-nrsm-6.00.18.62-00.i386.000
13	Yes	02/03/10	NO	YES	nortel-cs1000-ftrpkg-6.00.18.62-00.i386.000
14	Yes	02/03/10	NO	YES	nortel-cs1000-dmWeb-6.00.18.62-00.i386.001
15	Yes	02/03/10	NO	YES	nortel-cs1000-csv-6.00.18.62-00.i386.000
16	Yes	02/03/10	NO	YES	nortel-cs1000-csmWeb-6.00.18.62-00.i386.001
17	Yes	02/03/10	NO	YES	nortel-cs1000-auth-6.00.18.62-00.i386.000
18	Yes	02/03/10	NO	YES	nortel-cs1000-ISECSH-6.00.18.62-00.i386.000
20	Yes	02/03/10	NO	YES	nortel-cs1000-dbcom-6.00.18.65-01.i386.001
30	Yes	26/03/10	NO	YES	nortel-cs1000-vtrk-6.00.18.065-016.i386.001

[admin@sl-node1 ~]\$ pstat

Product Release: 6.00.18.00

In system patches: 2

PATCH#	NAME	IN_SERVICE	DATE	SPECINS	TYPE	RPM
9	p28774_1	Yes	25/03/10	NO	FRU	nortel-cs1000-Jboss-Quantum-6.00.18.00-00.i386
10	p28797_1	Yes	25/03/10	NO	FRU	nortel-cs1000-Jboss-Quantum-6.00.18.00-00.i386

In System service updates: 9

PATCH#	IN_SERVICE	DATE	SPECINS	REMOVABLE	NAME
0	Yes	25/03/10	YES	YES	nortel-cs1000-linuxbase-6.00.18.63-02.i386.000
1	Yes	25/03/10	YES	YES	nortel-cs1000-patchWeb-6.00.18.63-01.i386.000
2	Yes	25/03/10	NO	YES	nortel-cs1000-shared-general-6.00.18.62-00.i386.000
3	Yes	25/03/10	NO	YES	nortel-cs1000-shared-pbx-6.00.18.62-00.i386.000
4	Yes	25/03/10	NO	YES	nortel-cs1000-dmWeb-6.00.18.62-00.i386.001
5	Yes	25/03/10	NO	YES	nortel-cs1000-csv-6.00.18.62-00.i386.000
6	Yes	25/03/10	NO	YES	nortel-cs1000-auth-6.00.18.62-00.i386.000
7	Yes	25/03/10	NO	YES	nortel-cs1000-ISECSH-6.00.18.62-00.i386.000
11	Yes	07/04/10	YES	yes	nortel-cs1000-vtrk-6.00.18.63-06.i386.001

Appendix C: Configure SIP trunk in CS1000 using overlays

Procedure summary

This information is provided as a simple summary of tasks to complete when configuring IP Peer Networking, but it does not replace the full details provided in the IP Peer Networking Guide.

No.	Overlay	Element Management	Action
1	LD 97		Define a virtual super loop
2	LD 17	Select Configuration/D-Channel link	Create a virtual D-channel
3	LD 15	Select Configuration/Customer Explorer link	Define the customer to support ISDN
4	LD 16	Select Configuration/Customer Explorer /Add Route	Create a virtual service route
5	LD 14	Select Configuration/Customer Explorer /Add Trunk	Create virtual trunks

Define a virtual superloop

Use Overlay 97

Prompt	Response	Description
REQ	CHG	
TYPE	SUPL	Configuration data block
SUPL	V100	Virtual superloop number (96 - 112 and multiple of 4 for 11C systems.)//CS 1000E not vloop100

Create a virtual D-channel

Use Overlay 17

Prompt	Response	Description
REQ	CHG	
TYPE	ADAN	Configuration data block
ADAN	NEW DCH 100	Add a primary D-Channel port 100
CTYP	DCIP	D-channel is over IP
DES	VIRTUAL_TRK	Description
USR	ISLD	Integrated services signaling link dedicated
IFC	SL1	Interface type is Meridian 1 – Meridian 1
ISLM	4000	Integrated services signaling link maximum
SIDE	USR	Slave to the controller (USR).

RLS	25	X11 software release of far-end.//not need
RCAP	ND2	Name display format 2//not need

Define a customer with ISDN support

Use Overlay 15

Prompt	Response	Description
REQ	NEW	
TYPE	CDB	Customer data block
CUST	0	Customer number
ANAT	1111	ANI Attendant billing number for making ANI calls
ANLD	111	ANI listed directory number
ISDN	YES	Customer is equipped with ISDN.
VPNI	1	Virtual private network identifier//important
PNI	1	Private network identifier.//important

Define a virtual service route

Use Overlay 16

Prompt	Response	Description
REQ	NEW	
TYPE	RDB	Route data block
CUST	0	Customer number
ROUT	100	Route number
DES	VTRK	Designator field for trunk
TKTP	TIE	TIE trunk only, allowed between SL-1
ICOG	IAO	Incoming and outgoing
VTRK	YES	Virtual trunk route
ZONE	0	Zone for codec selection and bandwidth management
NODE	2000	Node ID of signaling server of this route.
PCID	SIP	Protocol ID for this route

ISDN	YES	ISDN option
MODE	ISLD	Route uses ISDN signaling link
DCH	100	D-channel number for this route
PNI	1	Customer private network identifier.
IFC	SL 1	Interface type : Meridian 1 to Meridian 1
NCNA	YES	Network calling name allowed.
NCRD	YES	Network call redirection.
CHTY	BCH	B-channel type.
CTYP	CDP	Coordinated dialing plan

Define virtual trunks

Use Overlay 14

Prompt	Response	Description
REQ	NEW 32	
TYPE	IPTI	IP trunk
TN	100 0 0 0	Virtual card and channel number
DES	VTRK	Designator field for trunk
CUST	0	Customer number
RTMB	100 1	Route number and member number.
STRI	IMM	Start arrangement incoming
STRO	IMM	Start arrangement outgoing
TGAR	1	Trunk group access restriction.
CHID	1	Channel ID for trunk

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