



Enterprise: Common

Solution Integration Guide for Communication Server 1000/Multimedia Communication Server 5100

Document status: Standard
Document version: 02.01
Document date: 29 March 2007

Copyright © 2007, Nortel Networks
All Rights Reserved.

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Nortel Networks.

Nortel, the Nortel logo and the Globemark are trademarks of Nortel Networks.
Microsoft, MS, MS-DOS, Windows, and Windows NT are registered trademarks of Microsoft Corporation.
All other trademarks and registered trademarks are the property of their respective owners.

Sourced in Canada.

Contents

How to get help	5
Finding the latest updates on the Nortel Web site	5
Getting help from the Nortel Web site	6
Getting help over the phone from a Nortel Solutions Center	7
Getting help from a specialist by using an Express Routing Code	7
Getting help through a Nortel distributor or reseller	7
About this document	9
Audience	9
Overview	11
Prerequisites	17
Knowledge requirements	17
Capturing integration parameters	18
Establishing the system baseline	20
IP Peer Networking and Call Server configuration	23
IP Peer Networking and Call Server configuration procedures	23
IP Peer Networking configuration	24
Defining LDN0	25
Defining customer to support ISDN	26
Configuring the SIP Gateway	29
Enabling the SIP Virtual Trunk application	31
Configuring the SIP Redirect Server and URI map	33
Creating the virtual D-channel	36
Configuring zones (LD 117)	38
Creating the virtual route (LD 16)	41
Creating the virtual trunks (LD 14)	43
Creating the Network Control Block (NCTL) for network access (LD 87)	46
Creating the ESN data block for CDP	49
Creating the RLB for the virtual trunk route (LD 86)	51
Creating the CDP steering codes (LD 87)	53
Checking CODEC and QoS settings	55
Call Server configuration	57
Configuring Application Module Link (LD 17)	57

Configuring Value Added Server (LD 17)	58
Configuring the Automatic Call Distribution Directory Number (LD 23)	59
Configuring a Control Directory Number (LD 23)	60
Configuring Service DN for Converged Desktop (LD 90)	61
Configuring Personal Call Assistant (LD 11)	62
Configuring the Signaling Server	64
Configuring Converged Desktop users (LDs 10/11)	69
MCS 5100 configuration	70
Adding IP addresses of IP telephony nodes to the application server as authenticated servers	71
Logging on to the MCS Provisioning Client	74
Configuring the Signaling Server service nodes and routes	75
Configuring the NRS service nodes and routes	76
Configuring a new service node route	77
Assigning a domain to a logical entity	79
Configuring Number Qualifiers	80
Configuring Telephony Route Class of Service (COS)	81
Configuring telephony routes for each dialing plan	83
Configuring a new route list	85
Configuring the pretranslation table	86
Converged desktop user configuration	87
Configuring a service package	87
Configuring a converged desktop user	88

NRS configuration **93**

NRS configuration procedures	93
Launching NRS Manager	93
Verifying and adjusting system-wide settings	95
Configuring the NRS server settings (H.323 Gatekeeper or SIP)	97
Configuring the service domain	100
Configuring the L1 domain (UDP)	102
Configuring the L0 domain (CDP)	104
Configuring Gateway endpoints	107
Configuring routing entries	111
Configuring collaborative servers	113
Updating the database	115
Checking the status of registered endpoints	116
Checking the status of virtual D-channels	117
Checking the status of virtual trunks	118

Integration example **121**

How to get help

This chapter explains how to get help for Nortel products and services.

Finding the latest updates on the Nortel Web site

The content of this documentation is current at the time of product release. To check for updates to the latest documentation and software for Communication Server 1000 (CS 1000) and Multimedia Communication Server 5100 (MCS 5100), click one of the following links:

For the...	Go to...
Latest CS 1000E software	Nortel page for CS 1000E software located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=SOFTWARE&resetFilter=1&poid=14261
Latest CS 1000M Cabinet/Chassis software	Nortel page for CS 1000M Cabinet/Chassis software located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=SOFTWARE&resetFilter=1&poid=12515
Latest CS 1000M Half Group/Single Group/Multi-Group software	Nortel page for CS 1000M Half Group/Single Group/Multi-Group software located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=SOFTWARE&resetFilter=1&poid=12516
Latest CS 1000S software	Nortel page for CS 1000S software located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=SOFTWARE&resetFilter=1&poid=12514
Latest MCS 5100 software	Nortel page for MCS 5100 software located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=SOFTWARE&resetFilter=1&poid=12482

For the...	Go to...
Latest CS 1000E documentation	Nortel page for CS 1000E documentation located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=DOCUMENTATION&resetFilter=1&poid=14261
Latest CS 1000M Cabinet/Chassis documentation	Nortel page for CS 1000M Cabinet/Chassis documentation located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=DOCUMENTATION&resetFilter=1&poid=12515
Latest CS 1000M Half Group/Single Group/Multi-Group documentation	Nortel page for CS 1000M Half Group/Single Group/ Multi-Group documentation located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=DOCUMENTATION&resetFilter=1&poid=12516
Latest CS 1000S documentation	Nortel page for CS 1000S documentation located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=DOCUMENTATION&resetFilter=1&poid=12514
Latest MCS 5100 documentation	Nortel page for MCS 5100 documentation located at: http://www130.nortelnetworks.com/go/main.jsp?cscat=DOCUMENTATION&resetFilter=1&poid=12482

Getting help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support Web site:

www.nortel.com/support

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products. From this site, you can:

- download software, documentation, and product bulletins
- search the Technical Support Web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

Getting help over the phone from a Nortel Solutions Center

If you do not find the information you require on the Nortel Technical Support Web site, and you have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).

Outside North America, go to the following Web site to obtain the phone number for your region:

www.nortel.com/callus

Getting help from a specialist by using an Express Routing Code

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to:

www.nortel.com/erc

Getting help through a Nortel distributor or reseller

If you purchase a service contract for your Nortel product from a distributor or authorized reseller, you can contact the technical support staff for that distributor or reseller.

About this document

This document describes the Session Initiated Protocol Converged Desktop System (SIP CDS) and the planning, configuration, and troubleshooting steps required for the Multimedia Communication Server 5100 (MCS 5100) and Communication Server 1000 (CS 1000) systems. Use this document as a reference tool to design or configure a converged desktop environment between the MCS 5100 and CS 1000 systems.

The following systems and software releases are covered in this guide:

- Communication Server 1000 Release 5.0
- Multimedia Communication Server 5100 Release 4.0

This document is intended to be a stand-alone guide, covering the prerequisites to and implementation of a successful MCS 5100/CS 1000 integration. A minimum skill set and level of understanding is assumed.

The screen printouts shown in this document are taken from a configured system and may vary from your system. ["Integration example" \(page 121\)](#) summarizes the configuration parameters used as examples in the screen printouts throughout this document.

Audience

The intended audience for this document includes network planners, installers, and maintenance personnel.

Overview

An example of a Communication Server 1000 (CS 1000)/Multimedia Communication Server 5100 (MCS 5100) systems integration is shown in Figure 1 "CS 1000/MCS 5100 architecture" (page 12).

Figure 1
CS 1000/MCS 5100 architecture

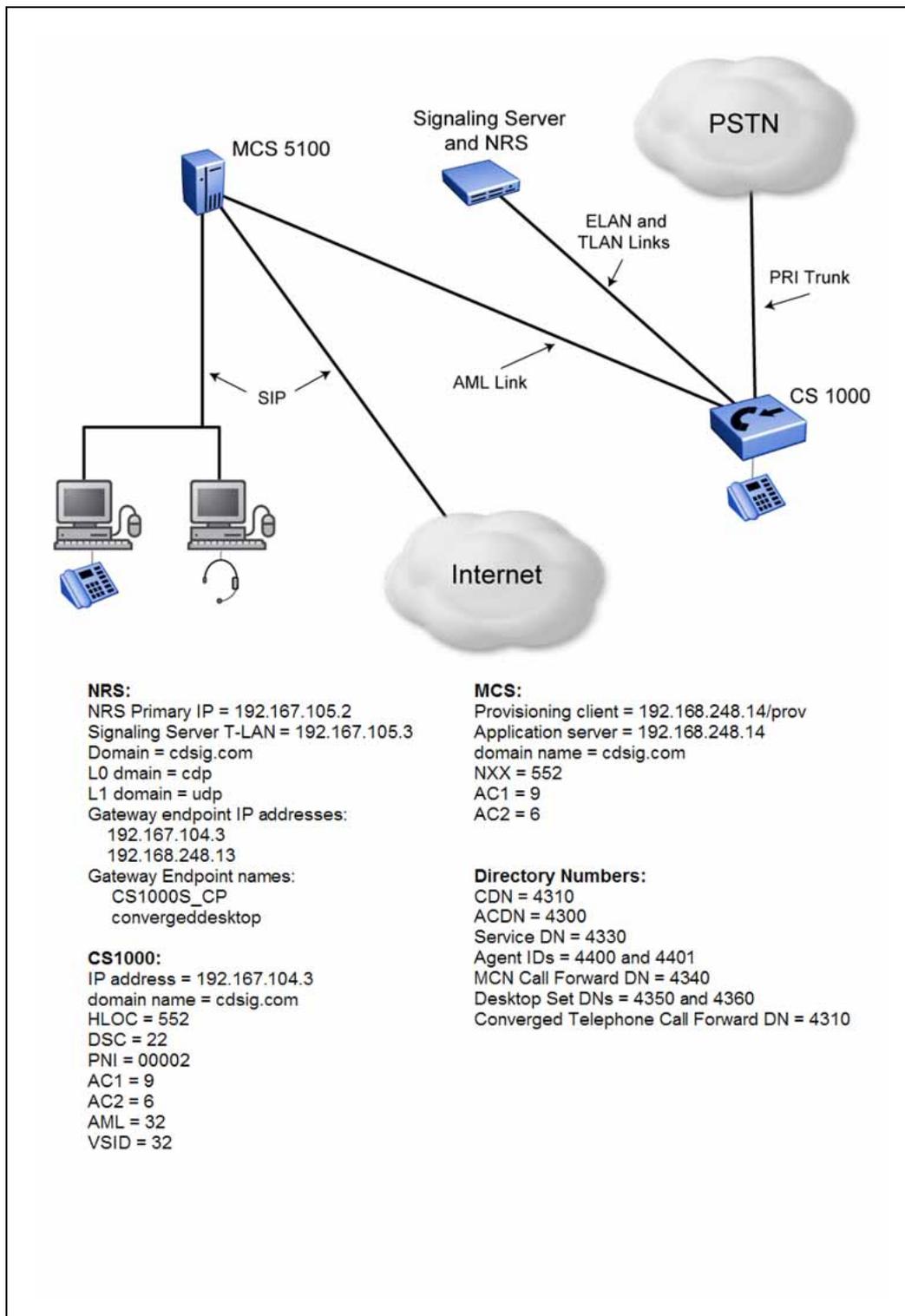
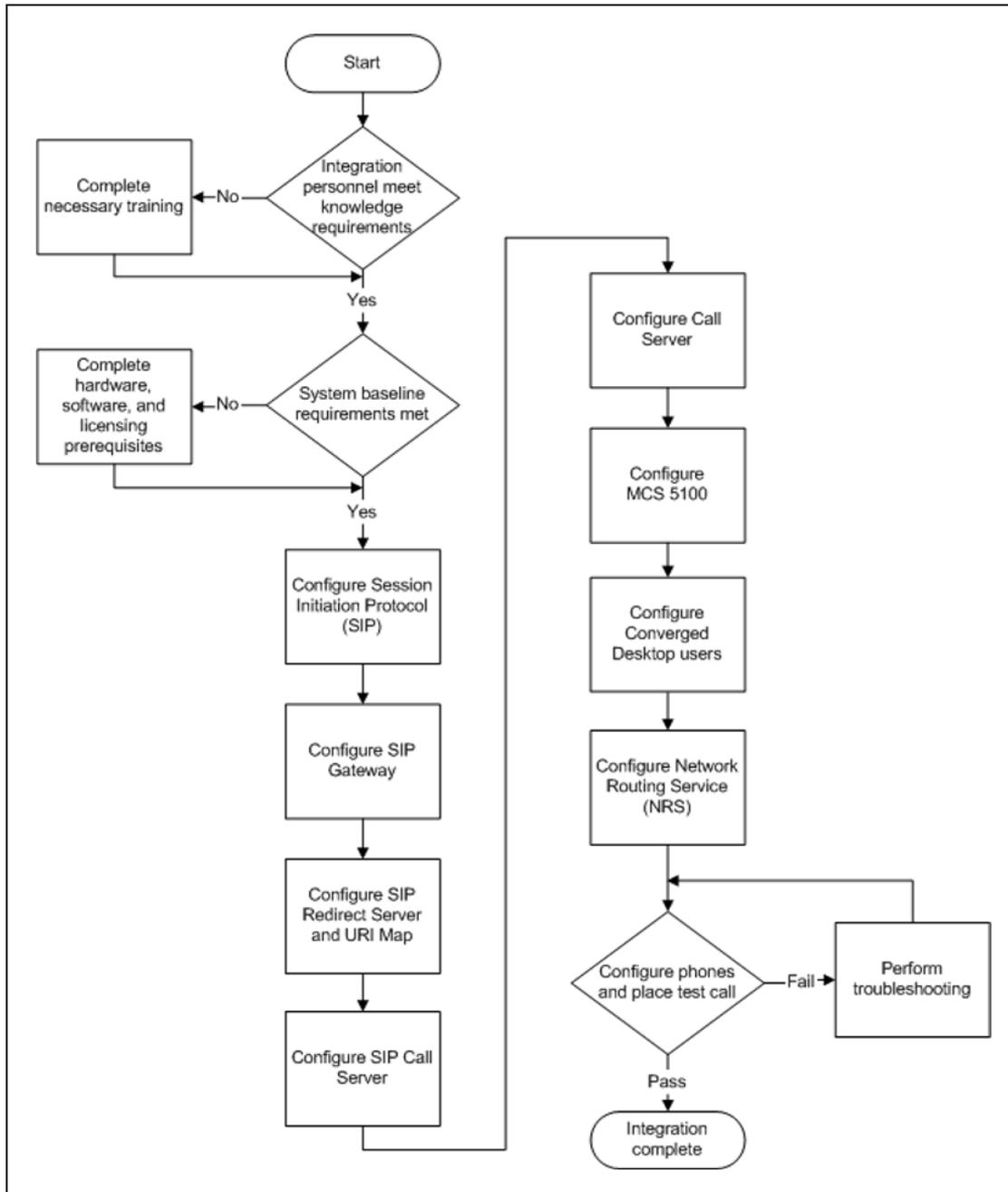


Figure 2 "CS 1000/MCS 5100 integration process" (page 13) shows the sequence of procedures you perform to integrate the CS 1000 and MCS 5100 systems.

Figure 2
CS 1000/MCS 5100 integration process



The tasks in the MCS 5100/CS 1000 systems integration process are listed in [Table 1 "Task Completion Checklist"](#) (page 14). Use this checklist to implement the integration.

Table 1
Task Completion Checklist

	Task	Reference
	Configure the SIP protocol	<ol style="list-style-type: none"> 1. "Defining LDN0" (page 25) 2. "Defining customer to support ISDN" (page 26)
	Configure the SIP Gateway	<p>"Configuring the SIP Gateway" (page 29)</p> <p>"Enabling the SIP Virtual Trunk application" (page 31)</p>
	Configure the SIP Redirect Server and URI Map	"Configuring the SIP Redirect Server and URI map" (page 34)
	Configure the SIP Call Server	<ol style="list-style-type: none"> 1. "Creating the virtual D-channel" (page 36) 2. "Configuring zones (LD 117)" (page 38) 3. "Creating the virtual route (LD 16)" (page 41) 4. "Creating the virtual trunks (LD 14)" (page 44) 5. "Creating the Network Control Block (NCTL) for network access (LD 87)" (page 46) 6. "Creating the ESN data block for CDP" (page 49) 7. "Creating the RLB for the virtual trunk route (LD 86)" (page 51) 8. "Creating the CDP steering codes (LD 87)" (page 53) 9. "Checking CODEC and QoS settings" (page 55)
	Configure CS 1000 users	<ol style="list-style-type: none"> 1. "Configuring Application Module Link (LD 17)" (page 58) 2. "Configuring Value Added Server (LD 17)" (page 58) 3. "Configuring the Automatic Call Distribution Directory Number (LD 23)" (page 59) 4. "Configuring a Control Directory Number (LD 23)" (page 60) 5. "Configuring Service DN for Converged Desktop (LD 90)" (page 61) 6. "Configuring Personal Call Assistant (LD 11)" (page 63) 7. "Configuring the Signaling Server" (page 64) 8. "Configuring Converged Desktop users (LDs 10/11)" (page 69)

	Task	Reference
	Configure MCS 5100 users	<ol style="list-style-type: none"> 1. "Adding IP addresses of IP telephony nodes to the application server as authenticated servers" (page 71) 2. "Logging on to the MCS Provisioning Client" (page 74) 3. "Configuring the Signaling Server service nodes and routes" (page 75) 4. "Configuring the NRS service nodes and routes" (page 76) 5. "Configuring a new service node route" (page 77) 6. "Assigning a domain to a logical entity" (page 79) 7. "Configuring Number Qualifiers" (page 80) 8. "Configuring Telephony Route Class of Service (COS)" (page 82) 9. "Configuring telephony routes for each dialing plan" (page 83) 10. "Configuring a new route list" (page 85) 11. "Configuring the pretranslation table" (page 86)
	Configure Converged Desktop users	<ol style="list-style-type: none"> 1. "Configuring a service package" (page 87) 2. "Configuring a converged desktop user" (page 89)
	Configure NRS	<ol style="list-style-type: none"> 1. "Launching NRS Manager" (page 94) 2. "Verifying and adjusting system-wide settings" (page 96) 3. "Configuring the NRS server settings (H.323 Gatekeeper or SIP)" (page 98) 4. "Configuring the service domain" (page 101) 5. "Configuring the L1 domain (UDP)" (page 102) 6. "Configuring the L0 domain (CDP)" (page 104) 7. "Configuring Gateway endpoints" (page 107) 8. "Configuring routing entries" (page 111) 9. "Configuring collaborative servers" (page 113) 10. "Updating the database" (page 115) 11. "Checking the status of registered endpoints" (page 116) 12. "Checking the status of virtual D-channels" (page 117)

16 Overview

	Task	Reference
		13. "Checking the status of virtual trunks" (page 118)

Prerequisites

Before you begin to integrate the Communication Server 1000 (CS 1000) and Multimedia Communication Server 5100 (MCS 5100) systems, ensure that you complete the following prerequisites:

- Knowledge requirements
- Capturing integration parameters
- Establishing the system baseline

Knowledge requirements

A working knowledge of the following systems and principles is required to implement a CS 1000/MCS 5100 systems integration:

- MCS 5100 system
- MCS provisioning client
- CS 1000 system
- Element Manager
- NRS Manager
- various operating systems including UNIX/Linux, VxWorks, and Windows
- Voice over IP (VoIP) theory and principles
- networking principles

Capturing integration parameters

Table 2 "Integration parameters" (page 18) provides a list of parameters required to successfully complete the integration. Record these parameters during the initial planning phase of the integration.

Table 2
Integration parameters

Parameter	Value
User IDs and passwords	
Call Server user ID	
Call Server password	
Element Manager user ID	
Element Manager password	
Signaling Server SIP Gateway authentication password	
MCS provisioning client username	
MCS provisioning client password	
System Management Console username	
System Management Console password	
IP addresses and URLs	
Management LAN (ELAN) Gateway	
Call Server	
Element Manager	
Signaling Server management LAN (ELAN)	
Signaling Server voice LAN (TLAN) Gateway	
Session Initiation Protocol (SIP) Gateway primary proxy/redirect IP address	
Network Routing Service (NRS) primary IP address	
Signaling Server voice LAN (TLAN)	
TLAN of the Signaling Server	
Voice LAN (TLAN) node	
MCS 5100 application server	
MCS 5100 provisioning client	
Management LAN subnet mask	
Voice LAN subnet mask	
Gateway endpoint static IP addresses	

Parameter	Value
Names	
NRS host name	
L0 domain name	
L1 domain name	
MCS 5100 domain name	
Service domain	
Signaling Server SIP domain name	
Signaling Server H.323 ID	
Signaling Server host name	
Signaling Server SIP Gateway endpoint name(s)	
H.323 alias name	
Terminal Numbers (TN)	
Trunk TN(s)	
PCA TN(s)	
Converged Desktop set TN(s)	
Directory Numbers (DN)	
Special DN (SPN)	
Service DN used for making VTRK calls	
Default ACD DN (DFDN)	
ACD DN	
CLID	
Agent position IDs	
MCN Converged telephone call forward DN	
Converged telephone call forward DN	
Control Directory Number (CDN)	
Desktop User or SCR DN(s)	
Miscellaneous	
Customer number	
CUST	
Private Network Identifier (PNI)	
CS 1000 IP Peer Gateway protocol(s)	
Access Code for trunk route (ACOD)	
Trunk route number(s)	

Parameter	Value
Trunk member number(s)	
Trunk channel ID	
NARS/BARS Access Code 1 (AC1)	
NARS/BARS Access Code 2 (AC2)	
Type of data block (telephones)	
HLOC	
NXX (the NXX on the MCS 5100 system is the same as the HLOC on the CS 1000)	
Distant Steering Code (DSC)	
D-channel number(s) (DCH)	
Zone(s) for IP Phones	
Zone(s) for voice Gateway channels	
Zone used for codec selection and BW management	
Node ID of the Signaling Server	
Channel ID (CHID) for the trunk	
AML ELAN link number	
VAS Identifier (VSID)	
Maximum number of agent positions (MAXP)	
Route List Index (RLI)	
Flexible Number of Digits (FLEN)	
CLID	
Agent position ID(s)	
Comprehensive dial plan between the MCS 5100 and CS 1000 systems	

Establishing the system baseline

To successfully integrate voice services, you must first establish the system baseline for the CS 1000 and MCS 5100 systems so that the systems are configured and working in a stand-alone environment.

Use the following table to complete system baselines prior to integration.

	Task	Reference	Comments
	CS 1000 software is Release 5.0.		To check the CS 1000 software release: 1 Log on to Element Manager. 2 On the left navigation pane, select Home. 3 In the Call Server section, the software release is referred to as Release.
	Nortel Symposium Call Center (NGCC) package 311 is installed.		To check that a package is installed: 1 Connect to the Call Server. 2 Enter LD 22 . 3 Enter PRT . 4 Enter PKG <package number> . 5 The package is loaded if you do not receive a "package is restricted" message.
	SIP Gateway and Converged Desktop package 406 is installed.		To check that a package is installed: 1 Connect to the Call Server. 2 Enter LD 22 . 3 Enter PRT . 4 Enter PKG <package number> . 5 The package is loaded if you do not receive a "package is restricted" message.

22 Prerequisites

	Task	Reference	Comments
	ACD and PCA licenses for PCA agents are loaded.		To check that a package is installed: 1 Connect to the Call Server. 2 Enter LD 22 . 3 Enter SLT . 4 For ACD licenses, check that ACDN is present. 5 For PCA licenses, check that TNS is present.
	SIP access ports for the CDS applications are open.		
	ESN Access Code (INAC) is configured for incoming LOC calls on SIP trunk.		
	MCS 5100 software is Release 4.0.		
	Converged Desktop keycode is loaded.		

IP Peer Networking and Call Server configuration

IP Peer Networking and Call Server configuration procedures

The sequence of IP Peer Networking and Call Server configuration procedures is as follows:

- "IP Peer Networking configuration" (page 24)
 - "Defining LDN0" (page 25)
 - "Defining customer to support ISDN" (page 26)
 - "Configuring the SIP Gateway" (page 29)
 - "Enabling the SIP Virtual Trunk application" (page 31)
 - "Configuring the SIP Redirect Server and URI map" (page 34)
 - "Creating the virtual D-channel" (page 36)
 - "Configuring zones (LD 117)" (page 38)
 - "Creating the virtual route (LD 16)" (page 41)
 - "Creating the virtual trunks (LD 14)" (page 44)
 - "Creating the Network Control Block (NCTL) for network access (LD 87)" (page 46)
 - "Creating the ESN data block for CDP" (page 49)
 - "Creating the RLB for the virtual trunk route (LD 86)" (page 51)
 - "Creating the CDP steering codes (LD 87)" (page 53)
 - "Checking CODEC and QoS settings" (page 55)
- "Call Server configuration" (page 57)
 - "Configuring Application Module Link (LD 17)" (page 58)
 - "Configuring Value Added Server (LD 17)" (page 58)
 - "Configuring the Automatic Call Distribution Directory Number (LD 23)" (page 59)

- "Configuring a Control Directory Number (LD 23)" (page 60)
- "Configuring Service DN for Converged Desktop (LD 90)" (page 61)
- "Configuring Personal Call Assistant (LD 11)" (page 63)
- "Configuring the Signaling Server" (page 64)
- "Configuring Converged Desktop users (LDs 10/11)" (page 69)
- "MCS 5100 configuration" (page 70)
 - "Adding IP addresses of IP telephony nodes to the application server as authenticated servers" (page 71)
 - "Logging on to the MCS Provisioning Client" (page 74)
 - "Configuring the Signaling Server service nodes and routes" (page 75)
 - "Configuring the NRS service nodes and routes" (page 76)
 - "Configuring a new service node route" (page 77)
 - "Assigning a domain to a logical entity" (page 79)
 - "Configuring Number Qualifiers" (page 80)
 - "Configuring Telephony Route Class of Service (COS)" (page 82)
 - "Configuring telephony routes for each dialing plan" (page 83)
 - "Configuring a new route list" (page 85)
 - "Configuring the pretranslation table" (page 86)
- "Converged desktop user configuration" (page 87)
 - "Configuring a service package" (page 87)
 - "Configuring a converged desktop user" (page 89)

IP Peer Networking configuration

The procedures in this section are as follows:

- "Defining LDN0" (page 25)
- "Defining customer to support ISDN" (page 26)
- "Configuring the SIP Gateway" (page 29)
- "Enabling the SIP Virtual Trunk application" (page 31)
- "Configuring the SIP Redirect Server and URI map" (page 34)
- "Creating the virtual D-channel" (page 36)
- "Configuring zones (LD 117)" (page 38)
- "Creating the virtual route (LD 16)" (page 41)

- "Creating the virtual trunks (LD 14)" (page 44)
- "Creating the Network Control Block (NCTL) for network access (LD 87)" (page 46)
- "Creating the ESN data block for CDP" (page 49)
- "Creating the RLB for the virtual trunk route (LD 86)" (page 51)
- "Creating the CDP steering codes (LD 87)" (page 53)
- "Checking CODEC and QoS settings" (page 55)

Defining LDN0

Before you begin the integration, perform the following procedure to check that LDN0 is defined.

If LDN0 is not defined, complete the procedure "Defining LDN0" (page 25).

Checking that LDN0 is defined

Step	Action
1	Connect to the Call Server.
2	Enter LD 21 .
3	At the REQ prompt, enter PRT .
4	At the TYPE prompt, enter ldn_data .
5	At the CUST prompt, enter the customer number.
6	Check that LDN0 is defined. If LDN0 is not defined, complete the following procedure.

—End—

Defining LDN0

Step	Action
1	Connect to the Call Server.
2	Enter LD 15 .
3	At the REQ prompt, enter CHG .
4	At the TYPE prompt, enter ldn_data .
5	At the CUST prompt, enter the customer number.
6	At the LDN0 prompt, enter the published directory number.

—End—

Defining customer to support ISDN

Complete the following procedure to define the customer to support ISDN.

Defining customer to support ISDN

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log on to Element Manager. |
| 2 | Select the Customers heading. |
| 3 | Click the customer number of the customer you are integrating with the MCS 5100.
The Edit page appears. See Figure 3 "Edit" (page 27) . |

Figure 3
Edit

Managing: **192.167.102.3**
[Customers](#) » Customer 00 » Edit

Edit

- Basic Configuration
- Application Module Link
- Call Detail Recording
- Call Party Name Display
- Call Redirection
- Centralized Attendant Service
- Controlled Class of Service
- Feature Options
- Feature Packages
- Flexible Feature Codes
- Intercept Treatments
- ISDN and ESN Networking
- Listed Directory Numbers
- Multi-Party Operations
- Night Service
- Options
- Recorded Overflow Announcement
- Timers

- 4 Click the **Feature Packages** link.
- 5 Scroll down through the list of available features and expand the **Integrated Services Digital Network Package 145** heading. See Figure 4 "Feature Packages" (page 28).

Figure 4
Feature Packages

Help | Log

CS 1000 ELEMENT MANAGER

Managing: [192.167.102.3](#)
[Customers](#) » [Customer 00](#) » [Edit](#) » Feature Packages

Feature Packages

+ Do Not Disturb Individual  **Package: 9**

+ Enhanced Night Service **Package: 133**

- Integrated Services Digital Network **Package: 145**

+ Dial Access Prefix on CLID table entry option

Integrated Services Digital Network:

- Virtual Private Network Identifier: (1 - 10383)

- Private Network Identifier: (1 - 10383)

- Node DN:

- Multi-location Business Group: (0 - 65535)

- Business Sub Group Consult-only: (0 - 65535)

- Prefix 1:

- Prefix 2:

- Home Number Plan Area code: (200 - 999)

- Prefix for Central Office: (100 - 9999)

- Home location code: (100 - 99999999)

- Local steering code:

- Calling Number Type:

- Redirection Count for ISDN calls:

- CLID information for incoming/outgoing calls:

- Public Service Telephone Networks:

+ Flexible Services  **Package: 152**

+ M3900 Product Enhancement **Package: 386**

6 Select the **Integrated Services Digital Network** check box.

- 7 Type a **Private Network Identifier**.
- 8 Type a **Home location code** if it is not already present.
- 9 Click **Save**.

—End—

Configuring the SIP Gateway

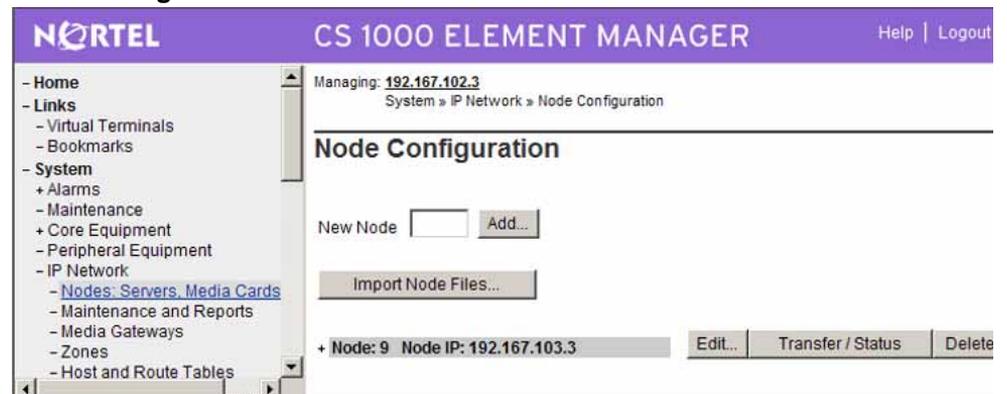
Before you configure the SIP Gateway, check which route is configured as a SIP route in LD 16. You must configure this route later.

Configuring the SIP Gateway

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log on to Element Manager. |
| 2 | Select System > IP Network > Nodes: Servers, Media Cards .
The Node Configuration page appears. See Figure 5 "Node Configuration" (page 29). |

Figure 5
Node Configuration



- | | |
|---|---|
| 3 | Click the Edit button next to the node you are configuring. |
| 4 | Expand the SIP GW Settings heading.
See Figure 6 "SIP GW Settings" (page 30). |

Figure 6
SIP GW Settings

Help | Logout

CS 1000 ELEMENT MANAGER

+ Firmware

- SIP GW Settings

TLS Security

Security Policy Security Disabled

TLS Security Port 5061 (1 - 65535)

Client Authentication

Re-negotiation

X.509 Certificate Authentication

Primary Proxy or Re-direct Server

Primary Proxy or Redirect (TLAN) IP address 192.167.103.2

Port 5060

Supports Registration

Primary CDS Proxy or Re-direct server flag

Transport Protocol UDP

Secondary Proxy or Re-direct Server

Secondary Proxy or Redirect (TLAN) IP address 0.0.0.0

Port 5060

Supports Registration

Secondary CDS Proxy or Re-direct server flag

Transport Protocol TCP

CLID Parameters

Country Code (CCC)

Area Code (AreaCode) Note: The NPA in North America

# Digits to Strip	Prefix to Insert	Format of CLID
0		+<CCC><AreaCode><SN>
0		+<CCC><NN>
		International number
		+<International number>

5 Type the **Primary Proxy or Re-direct (TLAN) IP address**.

You can use the TLAN IP address of the alternate NRS for the Secondary Proxy or Re-direct (TLAN) IP address.

- 6 For the **Port** of the Primary Proxy or Re-direct Server, use the default port value of 5060.
- 7 Select the **Supports Registration** check box.
- 8 Click **Save and transfer**.
- 9 A confirmation message appears. Click **OK**.
- 10 When the transfer is complete, click **OK**.

—End—

Enabling the SIP Virtual Trunk application

Perform the following procedure to enable SIP functionality in Element Manager. You must reboot the system during this procedure.

Enabling the SIP Virtual Trunk application

Step	Action
1	Log on to Element Manager.
2	Select System > IP Network > Nodes: Servers, Media Cards . See Figure 5 "Node Configuration " (page 29).
3	Click Edit .
4	Expand the Signaling Servers heading.
5	Expand the Signaling Server Properties heading. See Figure 7 "Signaling Server Properties" (page 32).

Figure 7
Signaling Server Properties

- 6 For **Enable IP Peer Gateway (Virtual Trunk TPS)**, select a SIP option (**SIP only** or **H.323 and SIP**).
- 7 Select the **Enable SIP Proxy/Redirect Server** check box.
- 8 Verify the **Local SIP TCP/UDP Port to Listen to**. The default is 5060.
- 9 Enter the **SIP Domain name**. The SIP Domain Name must be less than 128 characters in length. Valid characters are a-z, 0-9, period, hyphen, comma, and underscore. This string builds all SIP messages and appears in the URI phone context. If you enable the SIP Gateway application, specify this field. This name must match the Service Domain name configured in NRS.
- 10 Enter the **SIP Gateway Endpoint Name** and **SIP Gateway Authentication Password**. These values must match the data in NRS. The SIP Gateway Endpoint Name becomes the Gateway's user ID. The user ID and

password helps authenticate the Gateway with the MCS 5100 proxy server if you configure Converged Desktop.

- 11 Select the **Enable Gatekeeper** check box.
- 12 For **Network Routing Service Role**, select **Primary**, **Alternate**, or **Failsafe**.
- 13 Click **Save and Transfer**.
A message appears prompting you to reboot the system.
- 14 Click **OK**.
- 15 When a successful transfer message appears, indicating that the system is done transferring data, click **OK**.
- 16 Select **System > IP Network > Maintenance and Reports**.
- 17 Expand the **Node ID**.
See [Figure 8 "Node Maintenance and Reports"](#) (page 33).

Figure 8
Node Maintenance and Reports

CS 1000 ELEMENT MANAGER Help | Logout

Managing: [192.167.102.3](#)
System > IP Network > Node Maintenance and Reports

Node Maintenance and Reports

- Node ID: 9		Node IP: 192.167.103.3		Total elements: 2	
Index	ELAN IP	Type	TN	ELAN	
CS1000E_PIV	192.167.102.4	Signaling Server-ISP1100	NO		

- 18 Click **Reset**.
A confirmation message appears.
- 19 Click **OK**.

—End—

Configuring the SIP Redirect Server and URI map

Use this procedure to configure your SIP numbering plan mapping. You can use this mapping to interpret TON/NPI numbers and map them to the associated context (to or from SIP). The TON/NPI field explicitly maps to the SIP phone-context attribute in the URI address.

Configuring the SIP Redirect Server and URI map

Step	Action
1	Log on to Element Manager.
2	Select System > IP Network > Nodes:Servers, Media Cards .
3	Select Edit beside the node to be edited.
4	Expand the SIP URI Map heading. See Figure 9 "Edit SIP URI Map" (page 35) .

Figure 9
Edit SIP URI Map

CS 1000 ELEMENT MANAGER

Managing: [192.167.104.3](#)
 IP Telephony » Nodes: Servers, Media Cards » [Node Configuration](#) » IP Telephony: Node ID 5 » Edit

Edit

Save and Transfer Cancel

+ Node ● ● ●

- SIP URI Map

Public E.164/National domain name *

Public E.164/Subscriber domain name *

Public E.164/Unknown domain name

Public E.164/Special Number domain name

Private/UDP domain name

Private/CDP domain name

Private/Special Number domain name

Private/Unknown (vacant number routing) domain name

Unknown/Unknown domain name

+ SIP CD Services ● ● ●

Save and Transfer Cancel

* Mandatory fields of current configuration

- 5 In the **Private/UDP domain name** field, type the L1 domain.
- 6 In the Private/CDP domain name field, type the L0 and L1 domains in the format <L0 domain.L1 domain>.
- 7 Enter the values for your SIP numbering plan in the appropriate fields.
- 8 Click **Save and Transfer**.

- 9 Click **OK** when the system is done transferring data and the successful transfer message appears.

—End—

Creating the virtual D-channel

Perform the following procedure to create the virtual D-channel.

Creating the virtual D-channel

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log on to Element Manager. |
| 2 | Select Routes and Trunks > D-Channels .
The D-Channels page appears. See Figure 10 "D-Channels" (page 36).
A message appears if a D-channel is not configured. Click OK . |

Figure 10
D-Channels

CS 1000 ELEMENT MANAGER Help | Logout

Managing: 192.167.104.3
Routes and Trunks » D-Channels

D-Channels

Maintenance

- [D-Channel Diagnostics \(LD 96\)](#)
- [Network and Peripheral Equipment \(LD 32, Virtual D-Channels\)](#)
- [MSDL Diagnostics \(LD 96\)](#)
- [TMDI Diagnostics \(LD 96\)](#)
- [D-Channel Expansion Diagnostics \(LD 48\)](#)

Configuration

Choose a D-Channel Number: and type:

-	Channel: 5	Type: DCH	Card Type: DCIP	Description: VDCH	<input type="button" value="Edit"/>
---	------------	-----------	--------------------	-------------------	-------------------------------------

- 3 From the **Choose a D-Channel Number** menu, select the D-Channel number.

D-channels 0,1, and 2 are usually used or shared with other applications. It is recommended that you begin configuring virtual D-channels on channel 3.

- 4 From the **Type** menu, select **DCH**.
- 5 Click to **Add**.
The D-Channels Property Configuration page appears. See [Figure 11 "D-Channels Property Configuration"](#) (page 37).

Figure 11
D-Channels Property Configuration

CS 1000 ELEMENT MANAGER

Managing: [192.167.104.3](#)
Routes and Trunks » [D-Channels](#) » D-Channels 5 Property Configuration

D-Channels 5 Property Configuration

- Basic Configuration

Input Description	Input Value
Action Device And Number (ADAN) (TYPE)	DCH
D channel Card Type (CTYP)	DCIP
Designator (DES)	VDCH
Recovery to Primary (RCVP)	<input type="checkbox"/>
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"/> 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
<p>+ Basic options (BSCOPT)</p> <p>+ Advanced options (ADVOPT)</p> <p>+ Feature Packages</p>	

- 6 For the **D Channel Card Type (CTYP)**, select **D-Channel is over IP (DCIP)**.
- 7 For the **Designator (DES)**, type a meaningful name.

The Designator must not contain spaces; use underscores instead. Make a note of the Designator in your records for future reference.

- 8 For **User (USR)**, select **Integrated Services Signaling Link Dedicated (ISLD)**.
- 9 For **Interface type for D-channel (IFC)**, select **Meridian Meridian1 (SL1)**.
- 10 Leave all other parameters as is and click **Submit**. The new channel appears.

—End—

Configuring zones (LD 117)

Before you can configure the virtual routes and trunks, the following zones must be configured, in any order:

- Zone 1 = IP Phones zone (ZBRN = MO)
- Zone 2 = Voice Gateway Channels zone, which should be different from the IP Phones zone (ZBRN = VTRK)

Ensure that enough bandwidth is allocated for the zones with the heaviest traffic.

Never use or configure zone 0.

Configuring zones (LD 117)

Step	Action
------	--------

- | | |
|---|---|
| 1 | Log on to Element Manager. |
| 2 | Select System > IP Network > Zones . See Figure 12 "Zones" (page 39) . |

Figure 12
Zones

CS 1000 ELEMENT MANAGER [Help](#) | [Logout](#)

Managing: [192.167.104.3](#)
IP Telephony » Zones

Zones

Maintenance

- Maintenance Commands for Zones (LD 117)

Configuration

- Configuration Spreadsheet

Please Choose the

- Zone 0
 - Zone Basic Property and Bandwidth Management
 - Adaptive Network Bandwidth Management and CAC
 - Alternate Routing for Calls between IP Stations
 - Branch Office Dialing Plan and Access Codes
 - Branch Office Emergency Service Information
 - Branch Office Time Difference and Daylight Saving Time Property
- + Zone 1
- + Zone 2

- 3 Select the **Zone** you wish to configure.
Configured zones appear in the list at the bottom of the page.
- 4 Click **to Add**.
The Zone Basic Property and Bandwidth Management page appears. See [Figure 13 "Zone Basic Property and Bandwidth Management"](#) (page 40).
- 5 After you click **to Add**, a message may appear prompting you to use the Zone Basic Property and Bandwidth Management Spreadsheet. Click **OK**.

Figure 13
Zone Basic Property and Bandwidth Management

CS 1000 ELEMENT MANAGER
Help

Managing: [192.167.104.3](#)
 IP Telephony » [Zones](#) » Zone 0 » Zone Basic Property and Bandwidth Management

Zone Basic Property and Bandwidth Management

Input Description	Input Value
Zone Number (ZONE):	<input type="text" value="0"/>
Intrazone Bandwidth (INTRA_BW):	<input type="text" value="1000000"/>
Intrazone Strategy (INTRA_STGY):	<input type="text" value="Best Quality (BQ)"/>
Interzone Bandwidth (INTER_BW):	<input type="text" value="1000000"/>
Interzone Strategy (INTER_STGY):	<input type="text" value="Best Quality (BQ)"/>
Resource Type (RES_TYPE):	<input type="text" value="Shared (SHARED)"/>
Zone Intent (ZBRN):	<input type="text" value="MO (MO)"/>
Description (ZDES):	<input style="width: 100%;" type="text"/>

- 6 Leave the default values for bandwidth and resource type as is.
- 7 Set the Zone Intent (ZBRN) as follows:
 - Zone 1 is for the IP Phones at the Main Office. Set Zone Intent (ZBRN) for Zone 1 to **MO (MO)**.
 - Zone 2 is for the Voice Gateway Channels. Set Zone Intent (ZBRN) for Zone 2 to **VTRK (VTRK)**.
- 8 For **Description (ZDES)**, type a meaningful description.
- 9 Click **Submit**.
- 10 Repeat this procedure for the second zone.

—End—

Creating the virtual route (LD 16)

Perform the following procedure to create the virtual route.

Creating the virtual route (LD 16)

Step	Action
------	--------

- 1 Log on to Element Manager.
- 2 Select **Routes and Trunks > Routes and Trunks** for the customer to be configured.
- 3 Click the **Add route** button.
The New Route Configuration page appears. See [Figure 14 "New Route Configuration"](#) (page 42).

Figure 14
New Route Configuration

CS 1000 ELEMENT MANAGER

Managing: 192.167.104.3
Routes and Trunks » Routes and Trunks » Customer 0, Route 1 Property Configuration

Customer 0, Route 1 Property Configuration

- Basic Configuration

Input Description	Input Value
Route Data Block (RDB) (TYPE)	RDB
Customer number (CUST)	00
Route Number (ROUT)	1
Designator field for trunk (DES)	VTRK_SIP
Trunk Type (TKTP)	TIE
Incoming and Outgoing trunk (ICOG)	Incoming and Outgoing (IAO) ▼
Access Code for the trunk route (ACOD)	1000 *
The route is for a virtual trunk route (VTRK)	<input checked="" type="checkbox"/>
- Zone for codec selection and bandwidth management (ZONE)	002 Range: 0 - 255
- Node ID of signaling server of this route (NODE)	5 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)	5 ▼
- Interface type for route (IFC)	Meridian M1 (SL1) ▼
- Private Network Identifier (PNI)	00002 Range: 0 - 32700
- Network Calling Name Allowed (NCNA)	<input checked="" type="checkbox"/>
- Network Call Redirection (NCRD)	<input checked="" type="checkbox"/>
- Trunk Route Optimization (TRO)	<input checked="" type="checkbox"/>
- Recognition of DTI2 ABCD FALT signal for ISL (FALT)	<input type="checkbox"/>
- Channel Type (CHTY)	B-channel (BCH) ▼
- Call Type for outgoing direct dialed TIE route (CTYP)	Coordinated Dialing Plan (CDP) ▼
- Insert ESN Access Code (INAC)	<input checked="" type="checkbox"/>
- Integrated Service Access Route (ISAR)	<input type="checkbox"/>
- Display of Access Prefix on CLID (DAPC)	<input type="checkbox"/>

+ Basic Route Options

+ Network Options

+ General Options

+ Advanced Configurations

* Mandatory fields of current configuration

- 4 Select the **Route Number (ROUT)**.
- 5 For **Designator field for trunk (DES)**, type a meaningful name.
- 6 For **Trunk Type (TKTP)**, select **TIE Trunk data block (TIE)**.

- 7 For **Incoming and Outgoing trunk (ICOG)**, select **Incoming and Outgoing (IAO)**.
- 8 Set the **Access Code for the trunk route (ACOD)**.
- 9 Select the **The route is for a virtual trunk route (VTRK)** check box.
- 10 Type the **Zone** number of the zone configured as ZBRN = VTRK for the new route.
This value must match the values you configure in the Signaling Server.
- 11 Type the **Node ID of signaling server of this route (NODE)**.
This value must match the values you configure in the Signaling Server.
- 12 For **Protocol ID for the route (PCID)**, select **SIP (SIP)** or **H323 (H323)**.
- 13 Select the **Integrated Services Digital Network option (ISDN)** check box.
- 14 For **Mode of operation (MODE)**, select **Route uses ISDN Signaling Link (ISLD)**.
- 15 Select the virtual **D Channel number (DCH)**.
- 16 For **Interface type for route (IFC)**, select **Meridian M1 (SL1)**.
- 17 Type the **Private Network Identifier (PNI)**.
- 18 Leave the **Call Type for outgoing direct dialed TIE route (CTYP)** at the default value.
It is best to let NARS/BARS entries determine the NPI/TON for a number so that the route can be used for multiple call types.
- 19 Select the **Insert ESN Access Code (INAC)** check box.
- 20 Leave the other default values as is and click **Submit**.
The Routes and Trunks screen appears showing the created routes.

—End—

Creating the virtual trunks (LD 14)

The Virtual Trunk TNs that you configure in this procedure cannot overlap with the ones that you configure for IP Phones.

Creating the virtual trunks (LD 14)

Step	Action
1	Log on to Element Manager.
2	Select Routes and Trunks > Routes and Trunks . See Routes and Trunks .
3	Expand the Customer heading.
4	Click Add trunk next to the route to which you wish to add the trunk. The New Trunk Configuration page appears. See Figure 15 "New Trunk Configuration" (page 45).

Figure 15
New Trunk Configuration

CS 1000 ELEMENT MANAGER
Help | Log

Managing: 192.167.102.3
Routes and Trunks » Routes and Trunks » Customer 0, Route 2, New Trunk Configuration

Customer 0, Route 2, New Trunk Configuration

- Basic Configuration

Input Description	Input Value
Multiple trunk input number (MTINPUT)	<input type="text"/>
Trunk data block (TYPE)	IP Trunk (IPTI) <input type="text"/>
Terminal Number (TN)	96 1 4 6 *
Designator field for trunk (DES)	SIP
Extended Trunk (XTRK)	VTRK
Route number, Member number (RTMB)	1 1 *
Level 3 Signaling (SIGL)	<input type="text"/>
Card Density (CDEN)	<input type="text"/>
Start arrangement Incoming (STRI)	Immediate (IMM) <input type="text"/>
Start arrangement Outgoing (STRO)	Immediate (IMM) <input type="text"/>
Trunk Group Access Restriction (TGAR)	1
Channel ID for this trunk. (CHID)	1
Increase or decrease the member numbers (INC)	Increase channel and member number (YES) <input type="text"/>
Class of Service (CLS)	<input type="button" value="Edit"/>

+ Advanced Trunk Configurations

- 5 If you are configuring several trunks the same way, select the **Multiple trunk input number (MTINPUT)** (optional).
- 6 For **Trunk data block (TYPE)**, select **IP Trunk (IPTI)**.
- 7 Type the **Terminal Number (TN)** for the trunk.
- 8 For **Designator field for trunk (DES)**, type a meaningful value.
- 9 For **Extended Trunk (XTRK)**, select **Virtual trunk (VTRK)**.
- 10 Type the **Route number, Member number (RTMB)** for the trunk.

- 11 Set the values of **Start arrangement Incoming (STRI)** and **Start arrangement Outgoing (STRO)**.
Immediate (IMM) is recommended for both fields.
- 12 Type the **Channel ID for this trunk (CHID)**.
- 13 To add a **Class of Service (CLS)** to a feature, click the **Edit** button and configure the feature.
In a basic configuration, you can leave the CLS as is.
- 14 Select **Advanced Trunk Configurations** to display a list of advanced features.
- 15 Edit the necessary fields or accept the default values.
- 16 Click **Submit**.

—End—

Creating the Network Control Block (NCTL) for network access (LD 87)

Complete the following procedure to create the Network Control Block.

Creating the Network Control Block (NCTL) for network access (LD 87)

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log onto Element Manager. |
| 2 | Select Dialing and Numbering Plans > Electronic Switched Network . |
| 3 | Select Customer > Network Control & Services > Network Control Parameters (NCTL) .
See Figure 16 "Electronic Switched Network" (page 47) . |

Figure 16
Electronic Switched Network

CS 1000 ELEMENT MANAGER Help | Logout

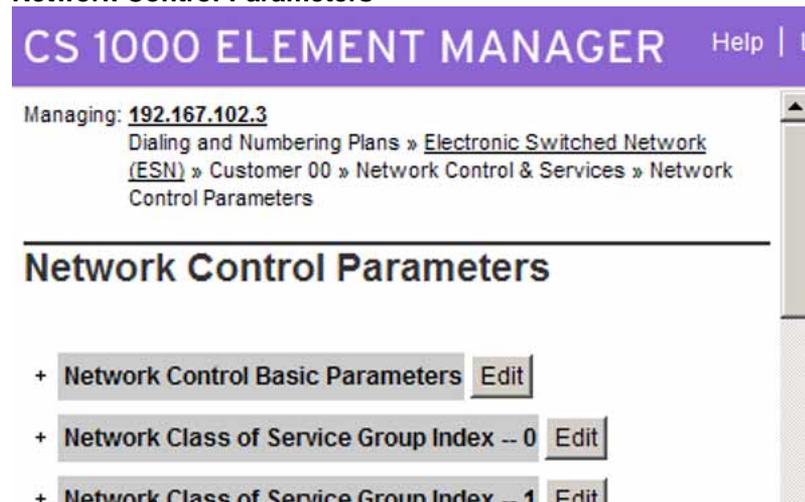
Managing: **192.167.102.3**
 Dialing and Numbering Plans » Electronic Switched Network (ESN)

Electronic Switched Network (ESN)

- Customer 00
 - Network Control & Services
 - Network Control Parameters (NCTL)
 - ESN Access Codes and Parameters (ESN)
 - Digit Manipulation Block (DGT)
 - Route List Block (RLB)
 - Incoming Trunk Group Exclusion (ITGE)
 - Network Attendant Services (NAS)
 - Coordinated Dialing Plan (CDP)
 - Local Steering Code (LSC)
 - Distant Steering Code (DSC)
 - Trunk Steering Code (TSC)
 - Numbering Plan (NET)
 - Access Code 1
 - Home Area Code (HNPA)
 - Home Location Code (HLOC)
 - Location Code (LOC)
 - Numbering Plan Area Code (NPA)
 - Exchange (Central Office) Code (NXX)
 - Special Number (SPN)
 - Network Speed Call Access Code (NSCL)
 - Free Calling Area Screening (FCAS)
 - Free Special Number Screening (FSNS)
 - Access Code 2
 - Home Area Code (HNPA)
 - Home Location Code (HLOC)
 - Location Code (LOC)
 - Numbering Plan Area Code (NPA)
 - Exchange (Central Office) Code (NXX)
 - Special Number (SPN)

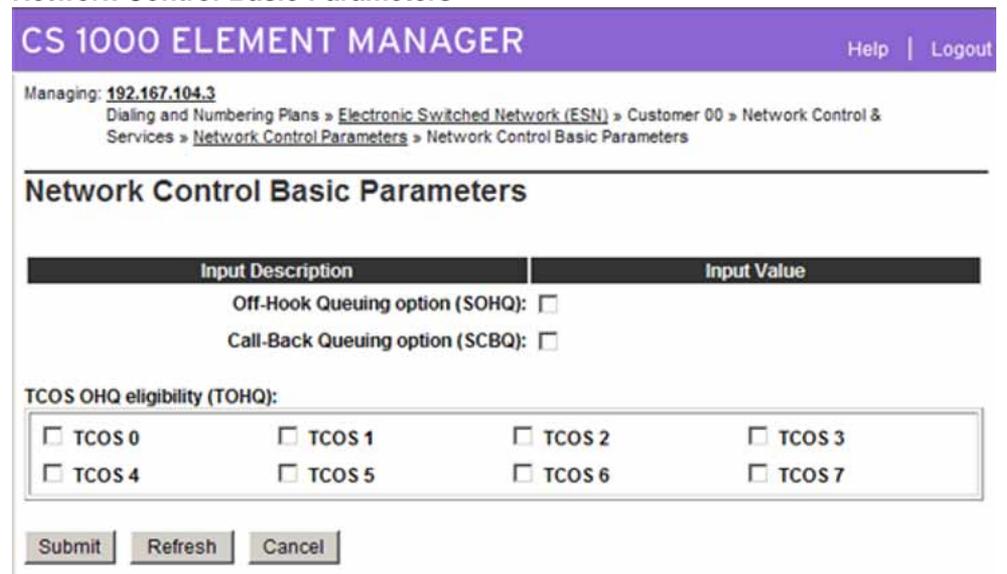
- 4 A message appears if no network control data is configured. Click **OK** to configure new data. The Network Control Parameters page appears. See [Figure 17 "Network Control Parameters"](#) (page 48).

Figure 17
Network Control Parameters



- 5 Click the **Edit** button next to **Network Control Basic Parameters**. The Network Control Basic Parameters page appears. See [Figure 18 "Network Control Basic Parameters"](#) (page 48).

Figure 18
Network Control Basic Parameters



- 6 Choose the basic control parameters for your network.
- 7 Click **Submit**.

—End—

Creating the ESN data block for CDP

Complete the following procedure to create the ESN data block for CDP.

Creating the ESN data block for CDP

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log on to Element Manager. |
| 2 | Select Dialing and Numbering Plans > Electronic Switched Network . |
| 3 | Select Customer > Network Control & Services > ESN Access Codes and Parameters (ESN) .
The Electronic Switched Network page appears. See Figure 16 "Electronic Switched Network" (page 47) . |
| 4 | A message appears if ESN data is not configured. Click OK .
The ESN Access Codes and Basic Parameters page appears. See Figure 19 "ESN Access Codes and Basic Parameters" (page 50) .
If ESN data is configured on your switch, the fields on this page appear populated. |

Figure 19
ESN Access Codes and Basic Parameters

CS 1000 ELEMENT MANAGER

Managing: [192.167.104.3](#)
 Dialing and Numbering Plans » [Electronic Switched Network \(ESN\)](#) » Customer 00 » Network Control & Services » ESN Access Codes and

ESN Access Codes and Basic Parameters

Input Description	Input Value
Maximum number of Digit Manipulation tables (MXDM):	100
Maximum number of Route Lists (MXRL):	100
Time of Day Schedules (TODS): (items seperated by a space)	0 00 00 23 59
Routing Controls (RTCL):	<input type="checkbox"/>
Check for Trunk Group Access Restrictions (TGAR):	<input type="checkbox"/>
NCOS Map (NMAP): (items seperated by a space)	00-0 01-0 02-0 03-0 04-0 05-0 06-0 07-0 08-0 09-0 10-0 11-0 12-0 13-0 14-0 15-0 16-0 17-0 18-0 19-0 20-0 21-0 22-0 23-0 24-0 25-0 26-0 27-0 28-0 29-0 30-0 31-0 32-0 33-0 34-0 35-0 36-0 37-0 38-0 39-0 40-0 41-0
Maximum number of Supplemental Digit restriction blocks (MXSD):	100
Maximum number of Incoming Trunk Group exclusion tables (MXIX):	100
Maximum number of Free Calling area screening tables (MXFC):	100
Maximum number of Free Special number screening tables (MXFS):	100
One or two digit NARS/BARS Access Code 1 (AC1):	9
NARS/BARS Dial Tone after dialing AC1 or AC2 access codes (DLTN):	<input checked="" type="checkbox"/>
Expensive Route Warning Tone (ERWT):	<input checked="" type="checkbox"/>
- Expensive Route Delay Time (ERDT):	6
Extended Time of Day schedule (ETOD):	
Maximum number of LOC codes (NARS only) (MXLC):	100
Maximum number of Special Common Carrier entries (MSCC):	
One or two digit NARS Access Code 2 (AC2):	6
Coordinated Dialing Plan feature for this customer (CDP):	<input checked="" type="checkbox"/>
- Maximum number of Steering Codes (MXSC):	100
- Number of digits in CDP DN (DSC + DN or LSC + DN) (NCDP):	6

Submit Refresh Cancel

- 5 Edit the main parameters (**MXDM**, **MXRL**, **MXSD**, **MXIX**, **MXFC**, **MXFS** and **MXLC**) if required, or leave the default values as is.
- 6 Select the **Coordinated Dialing Plan feature for this customer (CDP)** check box.
- 7 Set the value of the **Maximum number of Steering Codes (MXSC)**.
- 8 Set the value of the **Number of digits in CDP DN (DSC+DN or LSC+DN) (NCDP)**.

- 9 Click **Submit**.

—End—

Creating the RLB for the virtual trunk route (LD 86)

Perform the following procedure to create the RLB for the virtual trunk route.

Creating the RLB for the virtual trunk route (LD 86)

Step	Action
------	--------

- 1 Log on to Element Manager.
- 2 Select **Dialing and Numbering Plans > Electronic Switched Network**.
The Electronic Switched Network page appears. See [Figure 16 "Electronic Switched Network" \(page 47\)](#).
- 3 Select **Customer > Network Control and Services > Route List Block (RLB)**.
If route list blocks are not configured, the error message "Route List does not exist" appears. Click **OK**.
- 4 Enter the **Route List Index number** you wish to add.
- 5 Click **to Add**.
The Route List Block Configuration page appears. See [Figure 20 "Route List Block" \(page 52\)](#).

Figure 20
Route List Block

Input Description	Input Value
Route List Index (RLI):	2
Entry Number for the Route List (ENTR):	0 (0 - 6)
Local Termination entry (LTER):	<input type="checkbox"/>
Route Number (ROUT):	2
Skip Conventional Signaling (SCNV):	<input type="checkbox"/>
Display Originator's Information (DORG):	<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)
- QSIG Alternate Routing Causes (COPT):	QSIG Alternate Routing Cause 1
ISDN Drop Back Busy (IDBB):	Drop Back Disabled (DBD)
ISDN Off-Hook Queuing Option (IOHQ):	<input type="checkbox"/>
Off-Hook Queuing Allowed (OHQ):	<input type="checkbox"/>
Call Back Queuing Allowed (CBQ):	<input type="checkbox"/>
Number of Alternate Routing Attempts (NALT):	5 (1 - 10)
Initial Set (ISET):	0 (0 - 64)
Set Minimum Facility Restriction Level (MFRL):	0
Overlap Length (OVLL):	0 (0 - 24)

Submit Cancel

6 For **Strategy on Congestion (SBOC)**, select **Reroute All (RRA)**.

- 7 Accept the other defaults and click **Submit**.
The new Route List Block is generated. You can check the configuration by selecting Route List Block Index and Data Entry Index.

—End—

Creating the CDP steering codes (LD 87)

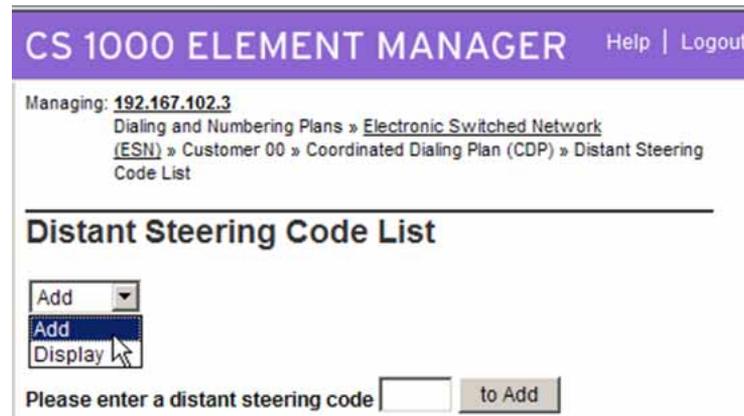
Perform the following procedure to create the CDP steering codes.

Creating the CDP steering codes (LD 87)

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log on to Element Manager. |
| 2 | Select Dialing and Numbering Plans > Electronic Switched Network .
The Electronic Switched Network page appears. See Figure 16 "Electronic Switched Network" (page 47) . |
| 3 | Select Customer > Coordinated Dialing Plan (CDP) > Distant Steering Code (DSC) .
The Distant Steering Code List page appears. See Figure 21 "Distant Steering Code List" (page 53) . |

Figure 21
Distant Steering Code List



- 4 From the menu at top left, select **Add** to add a new Distant Steering Code.
- 5 Enter a **Distant Steering Code (DSC)** to add.
The Distant Steering Code is a unique identifier for remote switches or locations. Add a Distant Steering Code for all remote locations.

- 6 Click to **Add**.
The Distant Steering Code page appears. See Figure 22 "Distant Steering Code" (page 54).

Figure 22
Distant Steering Code

Input Description	Input Value
Distant Steering Code (DSC):	506
Flexible Length number of digits (FLEN):	0 (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):	1
Collect Call Blocking (CCBA):	<input type="checkbox"/>
maximum 7 digit NPA code allowed (NPA):	
maximum 7 digit NXX code allowed (NXX):	

Submit Cancel

- 7 Check that the parameters are configured appropriately for your system.
- 8 Select a **Route List to be accessed for trunk steering code (RLI)**.
- 9 Click **Submit**.
- 10 This steering code is now defined. You can click the plus sign to view all the entered information.
- 11 Repeat this procedure for all Distant Steering Codes required for remote switches and locations:
- LOC (Location Code)
 - HLOC (Home Location Code)
 - NPA
 - HNPA (Home NPA)

- SPN (Special Numbers)
- NXX

—End—

Checking CODEC and QoS settings

At this point, the Call Server configuration is complete. It is recommended that you check the CODEC and QoS settings.

Checking CODEC and QoS settings

Step	Action
1	Log on to Element Manager.
2	Select System > IP Network > Nodes: Servers, Media Cards . See Figure 5 "Node Configuration " (page 29).
3	Click Edit .
4	Expand the VGW and IP phone codec profile heading and edit the fields as necessary. See Figure 23 "VGW and IP phone codec profile" (page 56).

Figure 23
VGW and IP phone codec profile

The screenshot shows the 'CS 1000 ELEMENT MANAGER' configuration page. At the top, there are 'Save and Transfer' and 'Cancel' buttons. Below them are expandable sections: '+ IP Telephony Node' and '- VGW and IP phone codec profile'. The configuration parameters are as follows:

- Enable Echo canceller:
- Echo canceller tail delay: 128 (milliseconds)
- Voice activity detection threshold: -17 (DBM) (range: -20 - +10)
- Idle noise level: -65 (DBM) (range: -327 - +327)
- DTMF Tone detection:
- Enable V.21 FAX tone detection:
- FAX maximum rate: 14400 (bps)
- FAX playout nominal delay: 100 (milliseconds) (range: 0 - 300)
- FAX no activity timeout: 20 (milliseconds) (range: 10 - 32000)
- FAX packet size: 30

Below these settings is a list of codecs with 'Select' checkboxes:

- + Codec G711:
- + Codec G729A:
- + Codec G723.1:
- + Codec T38 FAX:

At the bottom, there are sections for '+ QoS' and '+ LAN configuration', both currently collapsed.

- 5 Expand the **QoS** heading and edit the fields as necessary. See [Figure 24 "QoS"](#) (page 57).

Figure 24
QoS

- 6 Click **Save and Transfer**.
- 7 A confirmation message appears. Click **OK**.

—End—

Call Server configuration

The procedures in this section are as follows:

- "Configuring Application Module Link (LD 17)" (page 57)
- "Configuring Value Added Server (LD 17)" (page 58)
- "Configuring the Automatic Call Distribution Directory Number (LD 23)" (page 59)
- "Configuring a Control Directory Number (LD 23)" (page 60)
- "Configuring Service DN for Converged Desktop (LD 90)" (page 61)
- "Configuring Personal Call Assistant (LD 11)" (page 62)
- "Configuring the Signaling Server" (page 64)
- "Configuring Converged Desktop users (LDs 10/11)" (page 69)

Configuring Application Module Link (LD 17)

Perform the following procedure to configure Application Module Link.

Configuring Application Module Link (LD 17)

Step	Action
1	Connect to the Call Server.
2	Enter LD 17 .
3	Enter the appropriate values as described in the following table. For prompts not listed in the following table, press Enter to accept the default.

—End—

Table 3
LD 17 - Application Module Link

Prompt	Response	Description
REQ	CHG	Change existing data
TYPE	ADAN	Action Device and Number
- ADAN	NEW ELAN x	Action Device and Number, where x is the ELAN link number. x = 32 to 47 (inclusive) for Small Systems x = 32 to 127 (inclusive) for Large Systems AML link number within the preceding range implies that the transport is over TCP/RUDP link.
CTYP	ELAN	AML over Ethernet card type

Configuring Value Added Server (LD 17)

Perform the following procedure to configure the Value Added Server.

Configuring Value Added Server (LD 17)

Step	Action
1	Connect to the Call Server.
2	Enter LD 17 .
3	Enter the appropriate values as described in the following table. For prompts not listed in the following table, press Enter to accept the default.

—End—

Table 4
LD 17 - Value Added Server

Prompt	Response	Description
REQ	CHG	Change existing data
TYPE	VAS	Value Added Server (VAS) configuration
VAS	NEW	New VAS data block
VSID	32–500 32–47 32–127	VAS identifier For Small Systems and CS 1000S For Large Systems Nortel recommends that the VAS identifier match the ELAN link number configured in the procedure " Configuring Application Module Link (LD 17) " (page 57).
ELAN	x	Associate VAS ID x with Application Module Link over Ethernet (ELAN) x The AML ELAN link number must match the number provisioned in the procedure " Configuring Application Module Link (LD 17) " (page 57).

Configuring the Automatic Call Distribution Directory Number (LD 23)

Perform the following procedure to configure the Automatic Call Distribution Directory Number (ACD DN).

Configuring the Automatic Call Distribution Directory Number (LD 23)

Step	Action
------	--------

- | | |
|---|--|
| 1 | Connect to the Call Server. |
| 2 | Enter LD 23 . |
| 3 | Enter the appropriate values as described in the following table.
For prompts not listed in the following table, press Enter to accept the default. |

—End—

Table 5
LD 23 - ACD DN

Prompt	Response	Description
REQ	NEW	Add new data
TYPE	ACD	Automatic Call Distribution DN data block This is a special DN created to specify a destination ACD DN to which incoming calls are directed. Multiple CDNs can direct calls to the same ACD DN, providing different treatments based on the CDN parameters.
CUST	xx	Customer number as defined in LD 15 (customer number associated with this data block)
ACDN	xxxx	ACD Directory Number, where xxxx = the DN for your system
MAXP		Maximum number of agent positions

Configuring a Control Directory Number (LD 23)

Perform the following procedure to configure a Control Directory Number (CDN).

Configuring a Control Directory Number (LD 23)

Step	Action
------	--------

- | | |
|---|---|
| 1 | Connect to the Call Server. |
| 2 | Enter LD 23 . |
| 3 | Enter the appropriate values as described in the following table. For prompts not listed in the following table, press Enter to accept the default. |

—End—

Table 6
LD 23 - CDN

Prompt	Response	Description
REQ	NEW	Add new data
TYPE	CDN	Control DN data block

Prompt	Response	Description
CUST	xx	Customer number associated with this data block
CDN	xxxx	Control DN The CDN cannot be configured as a mailbox DN.
CDSQ	YES	Converged Desktop Service Queue YES = allow CDSQ NO = deny CDSQ For Converged Desktop, set CDSQ to YES.
DFDN	x...x	Local Default ACD DN Up to 4 digits, or up to 7 digits with Directory Number Expansion (DNXP) package 150. IMPORTANT: The local default ACD DN must match ACDN configured in the procedure " Configuring the Automatic Call Distribution Directory Number (LD 23) " (page 59).
CNTL	YES	Control DN is in control When CNTL = NO, CDN calls are sent to the Default ACD DN (DFDN)

Configuring Service DN for Converged Desktop (LD 90)

Perform the following procedure to configure the Service DN for Converged Desktop.

Configuring Service DN for Converged Desktop (LD 90)

Step	Action
------	--------

- | | |
|---|--|
| 1 | Connect to the Call Server. |
| 2 | Enter LD 90 . |
| 3 | Enter the appropriate values as described in the following table.
For prompts not listed in the following table, press Enter to accept the default. |

—End—

Table 7
LD 90 - Service DN for Converged Desktop

Prompt	Response	Description
REQ	NEW	Add new data
CUST	xx	Customer number as defined in LD 15
FEAT	NET	Network translation tables
TRAN	AC1 or AC2	Access Code, where: AC1 = NARS / BARS AC2 = NARS
TYPE	SPN	Special number translation (special code translation block) Configure the CDS Service DN as an SPN, and point it to the SIP trunk. This number is internal only between the Call Server and the Signaling Server for reserving the Virtual Trunk when routing the terminating CD call out to the MCS 5100.
SPN	xxxx	Special Number The same DN must be used on the Signaling Server in the Service DN field of the config.ini file.
-FLEN	xx	Flexible length number of digits Flexible length is the exact number number of digits the system expects to receive before accessing a trunk and outpulsing those digits.
-RLI	xxx	Route List Index for Converged Desktop Service Class of Service (CLS) The RLI number must point to the SIP Virtual Trunk on the desired Signaling Sever. For example, if the CDN and SPN are configured on Signaling Server 1, then this RLI must use the route configured on Signaling Server 1.

Configuring Personal Call Assistant (LD 11)

Perform the following procedure to configure Personal Call Assistant (PCA).

Configure a minimum of two PCAs. Configure the number of PCA agents appropriate for your system's call volume.

Configuring Personal Call Assistant (LD 11)

Step	Action
1	Connect to the Call Server.
2	Enter LD 11 .
3	Enter the appropriate values as described in the following table. For prompts not listed in the following table, press Enter to accept the default.

—End—

Table 8
LD 11 - PCA

Prompt	Response	Description
REQ	NEW	Add a new data block to the system
TYPE	PCA	Personal Call Assistant
TN	l s c u c u	PCA Terminal Number For Large Systems and CS 1000E systems, where l = loop, s = shelf, c = card, u = unit For Small Systems, CS 1000S systems, Media Gateway 1000B systems, and Media Gateway 1000T systems, where c = card, u = unit
DES	aaaaaa	Description of PCA Terminal Number
CUST	xx	Customer number as defined in LD 15
ZONE	xx	Zone number for IP Phones
CLS	UNR	Unrestricted Class of Service
KEY	0 ACD xxxx cccc zzzz 2 MCN yyyy	Telephone function key assignments Automatic Call distribution (ACD) key, where: xxxx = ACD DN configured in LD 23 for Converged Desktop use ccc = CLID table entry of (0)–N, where N = the value entered at the SIZE prompt of LD 15 minus 1 zzzz = agent's position ID (zzzz can be up to 4 digits; up to 7 digits with Directory Number Expansion [DNXP] package 150)

Prompt	Response	Description
		<p>Multiple Call Non-Ringing key, where yyyy = Converged telephone Call Forward DN</p> <p>The DN can be up to 4 digits, or up to 7 digits with DNxP. When the MCN key is defined, the MARP prompt appears. Because MCN and DN are used by the feature to originate calls, the same DN can be applied to all PCAs.</p>

Configuring the Signaling Server

Perform the following procedure to configure the Signaling Server.

Configuring the Signaling Server

Step	Action
1	Log on to Element Manager.
2	Select System > IP Network > Nodes: Servers, Media Cards .
3	Beside the node for which SIP CDS is to be configured, click Edit .
4	Expand the SIP CD Services heading. See Figure 25 "SIP CD Services" (page 65) .

Figure 25
SIP CD Services

- 5 Fill in the appropriate values for your network. Refer to [Table 9 "SIP CD Services - fields description"](#) (page 65) for configuration parameters.

Table 9
SIP CD Services - fields description

Parameter	Value	Description
Service Enabled	<check box>	To enable the Converged Desktop Service (CDS) application for this node, select this check box. If CDS is not enabled, no calls are sent to the MCS 5100, including both originating and terminating calls to or from the Converged Desktop telephone.

Parameter	Value	Description
Service DN used for making VTRK call from Agent:		<p>Enter the Service DN. The Service DN is a number for the CS 1000 to call the Signaling Server CDS application over a SIP Virtual Trunk. This number can be composed of:</p> <p>LOC + extension</p> <p>Extension</p> <p>SPN</p>
Converged Telephone Call Forward DN		<p>This field is required if the SIP gateway application is enabled and the Converged Desktop Service is used. The Converged telephone call forward DN is the CDN defined in LD 23 for the CDS application. This entry designates the CDN that CDS acquires to obtain messaging for call activity. The CS 1000 telephone with CDMO or CDMV Class of Service redirects all calls to the CDN.</p> <p>The acquisition of the CDN identified in this field allows messaging for call activity to be processed to the CDS application on the Signaling Server.</p>
User Info. field for Invite message on the Converged Desktop MO Set		<p>This field is used in the INVITE message of Converged Desktop terminating call handling if the telephone is a multimedia-only telephone.</p> <p>Verify that this field appears as follows:</p> <p>sip:convergeddesktop@SIPdomainname; nortelconverged=continueforce</p> <p>If this string does not appear as shown, then the SIP domain name was not configured during the SIP trunk Gateway configuration. You can find the SIP domain name on the Edit page under Signaling Server > Signaling Server xxx.xxx.xxx.xxx Properties.</p>

Parameter	Value	Description
User Info. field for Invite message on the Converged Desktop MV Set:		<p>This field is used in the INVITE message for Converged Desktop terminating call handling if the telephone is both a multimedia and a voice telephone.</p> <p>Verify that this field appears as follows: sip:convergeddesktop@SIPdomainname; nortelconverged=conditionalfork</p> <p>If this string does not appear as shown, then the SIP domain name was not configured during the SIP trunk Gateway configuration. You can find the SIP domain name on the Edit page under Signaling Server > Signaling Server xxx.xxx.xxx.xxx Properties.</p>
User Info. field in the notify message for Converged Desktop:		<p>This field is used in the NOTIFY message for Converged Desktop.</p> <p>Verify that this field appears as follows: sip:convergeddesktop@SIPdomainname</p> <p>If this string does not appear as shown, then the SIP domain name was not configured during the SIP trunk Gateway configuration. You can find the SIP domain name on the Edit page under Signaling Server > Signaling Server xxx.xxx.xxx.xxx Properties.</p>
RAN route for Announce:	0 to 511	<p>Enter the Recorded Announcement (RAN) route number for call announce as configured in LD 16:</p> <p>0–127 for Small Systems and CS 1000S systems</p> <p>0–511 for Large Systems</p> <p>The RAN definition in this field can be used in two distinct ways:</p> <p>Call progress — A customer may want to announce to a caller that their call is proceeding and to please wait. RAN can be used when delays may be longer than expected as PCA makes calls to other devices. If RAN is not used, callers hear a ringback tone.</p> <p>PCA busy — If PCA agents are busy processing a call and the caller must wait for a PCA so CDS can process the call, the user can be directed to RAN.</p>

Parameter	Value	Description
Wait time before a caller is sent to RAN Queue:	-1 0 <-1 to 32767>	Enter the time (in seconds) that the caller waits before the call is directed to the RAN queue: never send to RAN queue (default) immediately send to RAN queue wait n seconds before sending to RAN queue
Timeout for Ringing indication of the CD set:	<5 to 60>	Enter the time to wait for ringing indication on the Converged Desktop telephone. If a timeout occurs, the system considers the telephone as busy or call-forwarded to other devices. As a result, the Converged Desktop call is canceled. The timeout range is 5 to 60 seconds (default is 10 seconds).
Timeout for CD Server:	<1 to 30>	Enter a timeout value. This value is used when the MCS 5100 is not available or there are network problems. An incoming Converged Desktop call is terminated directly to Converged Desktop telephone without waiting for the MCS 5100. The timeout range is 1 to 30 seconds (default is 5 seconds). Note: Nortel recommends that the timeout value not be configured as a small value. If the time is too short, then a delayed packet can eventually reach the MCS 5100. This can cause a "race condition" between the MCS 5100 routing the call and the CS 1000 routing the call. If the administrator knows of a persistent network problem, or if the MCS 5100 is out of service for a period of time, then Nortel recommends that you disable Converged Desktop Service rather than setting a small timeout value.
Timeout for call answered by other than CD phone set:	<5 to 60>	Enter a timeout value. If a call is answered on any telephone (within the CS 1000 network) other than Converged Desktop telephone itself, then the SIP session is torn down automatically after this timeout. The purpose is to remove "lone" screen pop-ups on the Converged Desktop PC Client (PCC). The timeout range is 2 to 60 seconds (default is 2 seconds).

—End—

Configuring Converged Desktop users (LDs 10/11)

Perform the following procedure to configure Converged Desktop users.

Configuring Converged Desktop users (LDs 10/11)

Step	Action
1	Connect to the Call Server.
2	To program analog (500/2500-type) telephones, enter LD 10 .
3	To program digital telephones or IP Phones, enter LD 11 .
4	Enter the appropriate values as described in the following table. For prompts not listed in the following table, press Enter to accept the default.

—End—

Table 10
LDs 10/11 - Converged Desktop users

Prompt	Response	Description
REQ	NEW CHG	Add new data Change existing data
TYPE	a..a	Type of data block
TN	l s c u c u	PCA Terminal Number for sets Format for Large Systems and CS 1000E systems, where l = loop, s = shelf, c = card, u = unit Format for Small Systems, CS1000S systems, Media Gateway 1000B systems, and Media Gateway 1000T systems, where c = card, u = unit
CUST	xx	Customer number as defined in LD 15
ZONE	yy	Zone for IP Phones

Prompt	Response	Description
CLS	(CDMR) CDMV CDMO	Converged Desktop Service Class of Service (CLS): Converged Desktop Multimedia Restricted (default) Converged Desktop Multimedia and Voice Converged Desktop Multimedia Only Nortel recommends CDMV to give users all features.
CSDN		Converged Desktop Service Control Directory Number (CDN) as configured in LD 23. CSDN is only prompted if CLS is defined as CDMV or CDMO.
KEY	0 SCR yyyy	Telephone function key assignments Single Call Ringing key, where yyyy = DN The DN can be up to 4 digits, or up to 7 digits with Directory Number Expansion (DNXP) package 150. Use a single appearance DN to terminate Voice call (VCC) or Signaling (SIG) calls. When the SCR key is defined, the MARP prompt appears.

MCS 5100 configuration

The procedures in this section are as follows:

- ["Adding IP addresses of IP telephony nodes to the application server as authenticated servers" \(page 71\)](#)
- ["Logging on to the MCS Provisioning Client" \(page 74\)](#)
- ["Configuring the Signaling Server service nodes and routes" \(page 75\)](#)
- ["Configuring the NRS service nodes and routes" \(page 76\)](#)
- ["Configuring a new service node route" \(page 77\)](#)
- ["Assigning a domain to a logical entity" \(page 79\)](#)
- ["Configuring Number Qualifiers" \(page 80\)](#)
- ["Configuring Telephony Route Class of Service \(COS\)" \(page 81\)](#)
- ["Configuring telephony routes for each dialing plan" \(page 83\)](#)

- "Configuring a new route list" (page 85)
- "Configuring the pretranslation table" (page 86)

Adding IP addresses of IP telephony nodes to the application server as authenticated servers

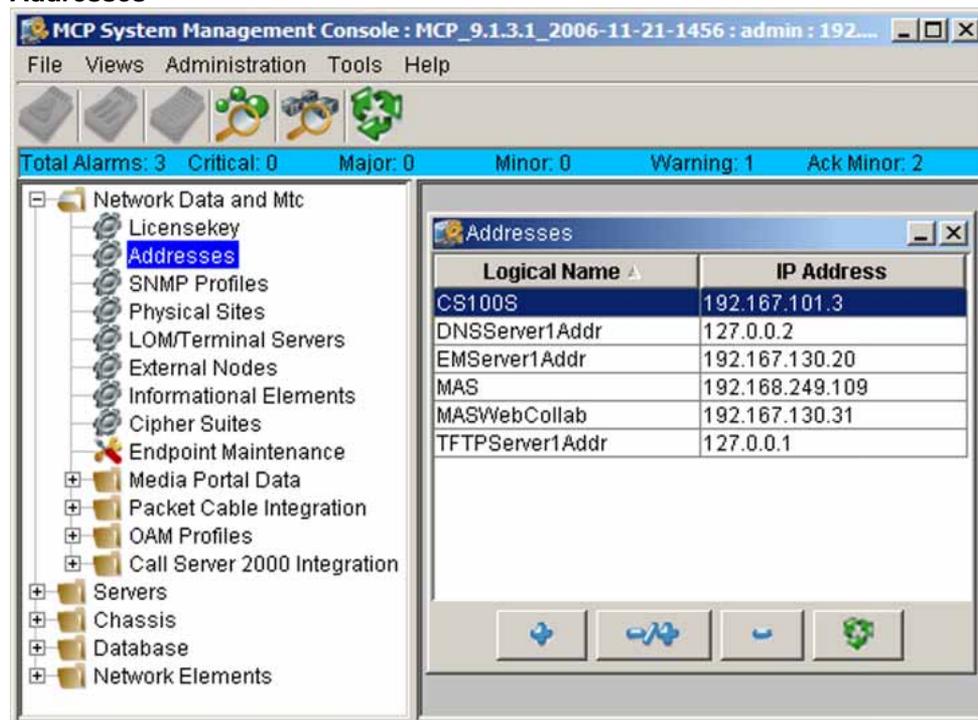
Perform the following procedure to add IP telephony nodes to the application server as authenticated servers.

To configure the Converged Desktop, add both the NRS and the Signaling Server as trusted nodes.

Adding IP addresses of IP telephony nodes to the application server as authenticated servers

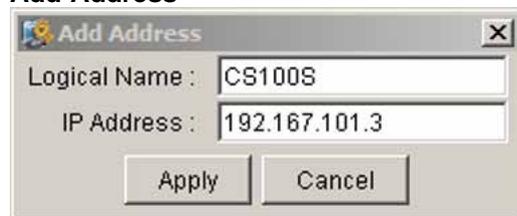
Step	Action
1	In a Web browser, enter the address of the MCP System Management Console, in the format <code>http://<MCP Management IP address>:12120/index.html</code> .
2	Click the Launch MCP System Management Console link.
3	If this is the first time launching the MCP System Management Console, click Run when prompted to install the application. A Desktop Integration window may appear. Select the appropriate choice for your computer.
4	Enter the UserID , Current Password , and Server Information to log on to the MCP System Management Console.
5	Select Network Data and Mtc > Addresses . The Addresses page appears. See Figure 26 "Addresses" (page 72) .

Figure 26
Addresses



- 6 Click the **+** button to add an IP address as an authenticated server. The Add Address dialog box appears. See [Figure 27 "Add Address" \(page 72\)](#).

Figure 27
Add Address



- 7 Type the **Logical Name** of the server.
- 8 Type the **TLAN IP Address** of the Signaling Server.
- 9 Click **Apply**.
- 10 Select **Network Data and Mtc > External Node**.
- 11 Click the **+** button to add an external node. The Add External Node dialog box appears. See [Figure 28 "Add External Node" \(page 73\)](#).

Figure 28
Add External Node

- 12 Type a **Name** for the external node.
- 13 For **Address**, select the logical name of the external node.
- 14 Click **Apply**.
- 15 Select **Network Data and Mtc > Informational Elements**.
- 16 Click the + button to add informational elements.
The Add Informational Element dialog box appears. See [Figure 29 "Add Informational Element"](#) (page 73).

Figure 29
Add Informational Element

- 17 Fill in the parameters listed in the table below.

Parameter	Description
Short Name	The name of the device (for example, MAS110).
Long Name	The description for the device.
Node	The configured external node.
Port	An integer (0 to 65 534)

Parameter	Description
Trusted	Specifies whether the informational element is trusted for SIP communications.
ExemptDoSProtection	Specifies whether the informational element is exempt from Denial of Service Protection.
Type	Type of informational element.
SIP Transport	Type of SIP transport.

- 18 Click **Apply**.
- 19 Repeat this procedure to add another trusted node.
Add both the NRS and the Signaling Server as trusted nodes.

—End—

Logging on to the MCS Provisioning Client

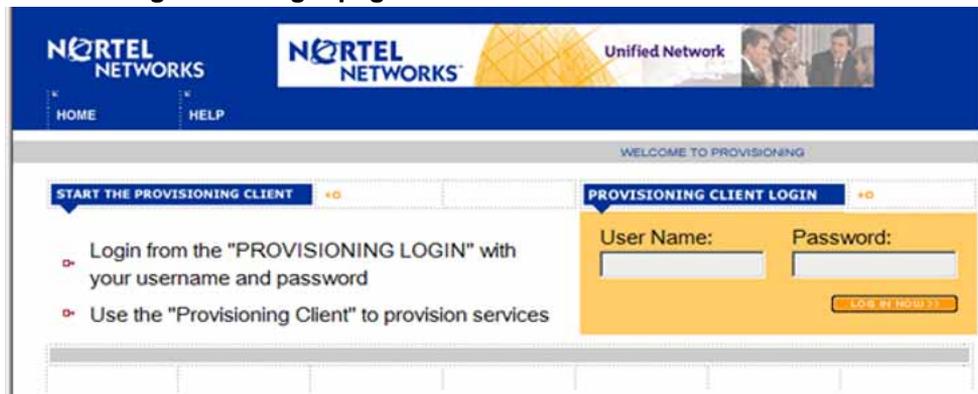
Perform the following procedure to log on to the MCS Provisioning Client.

Logging on to the MCS Provisioning Client

Step	Action
------	--------

- | | |
|---|--|
| 1 | In a Web browser, enter the Web address of the MCS Provisioning Client in the address bar (for example, http://192.167.130.20/prov). The Provisioning Client login Web page appears. See Figure 30 "Provisioning Client Login page" (page 74). |
|---|--|

Figure 30
Provisioning Client Login page



- 2 Log on using your user ID and password.
The default user ID and password are **admin**.
- 3 You can now begin provisioning the MCS 5100 system.

—End—

Configuring the Signaling Server service nodes and routes

Perform the following procedure to configure Signaling Server service nodes and routes.

Configuring the service nodes and routes

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Service Nodes folder.
3	Select Add Node . The Modify Node page appears. See Figure 31 "Modify Node" (page 75) .

Figure 31
Modify Node

Modify Node

Node Name ?

Node Address	<input checked="" type="radio"/> External Domain	<input type="text" value="ccsip.com:5060;maddr=192.168.1.1"/>
	<input type="radio"/> Address Name	<input type="text" value="---None Selected---"/>

Node Type

Location

Is Trusted True False

Behind 1-to-1 NAT True False

Enhanced IM True False

Dual CLI True False

- 4 Configure the Signaling Server node.

Fill in the parameters as listed in the table below.

Table 11
Signaling Server node

Parameter	Description
Node Name	Type the node name for the Signaling Server.
Node Address	Select the External Domain option button. Type the External Domain of the Signaling Server (Call Server) in the format <domain name>:5060;maddr=<Call Server IP address>
Node Type	For integration with the CS 1000, set Node Type to CS 1000 .
Location	Select Other .
Trusted Node	Select True .
Behind 1-to-1 NAT	Select False .
Enhanced IM	Select False .
Dual CLI	Select False .

- 5 Click **Add** to complete the configuration of the Signaling Server node.

—End—

Configuring the NRS service nodes and routes

Perform the following procedure to configure NRS service nodes and routes.

Configuring the NRS service nodes and routes

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Service Nodes folder.
3	Select Add Node . The Modify Node page appears. See Figure 31 "Modify Node" (page 75) .
4	Configure the NRS node.

Fill in the parameters as listed in the table below.

Table 12
NRS node

Parameter	Description
Node Name	Type the node name for the NRS.
Node Address	Select the Address Name option button. Select the NRS Address Name from the list.
Node Type	For integration with the CS 1000, set Node Type to CS 1000 .
Location	Select Other .
Trusted Node	Select True .
Behind 1-to-1 NAT	Select False .
Enhanced IM	Select False .
Dual CLI	Select False .

- 5 Click **Add** to complete the configuration of the NRS node.

—End—

Configuring a new service node route

Perform the following procedure to configure a new service node route.

Add a service node route for both the Call Server and the NRS.

Configuring a new service node route

Step	Action
------	--------

- | | |
|---|---|
| 1 | Log on to the MCS provisioning Client. |
| 2 | Under the Provisioning folder, expand the Service Node folder. |
| 3 | Select Add Logical Entity to create a new entity, or select List Logical Entity to modify an existing entity. |
| 4 | If you are modifying an existing entity, click the Details link next to the entity you wish to modify.
See Figure 32 "Logical Entities" (page 78) . |

Figure 32
Logical Entities

Logical Entities			
Name	Domains	Details	Delete
all_services	Domains	Details	Delete
gateway_entity	Domains	Details	Delete

- 5 If you are creating a new logical entity:
- Type a new **Entity Name**.
 - Select all the **Routable Services** associated with the new entity. Ctrl-click to select multiple services.
 - Select the **Selection Algorithm**.

See Figure 33 "Add Logical Entity" (page 78).

Figure 33
Add Logical Entity

Add Logical Entity

Entity Name:

Routable Services:

Ad Hoc Conferencing
 Branding Announcements
 Unified Communications
 Chat
 Meet Me Conferencing

Selection Algorithm:

Add route(s) to logical entity:

Name:	Node:	Parms:	Weight (0-10):
<input type="text"/>	<input type="text" value="ccsip"/>	Trunk Group <input type="text"/> <input type="button" value="ADD"/> <input type="button" value="REMOVE ALL"/>	<input type="text"/>
		<input type="button" value="ADD"/> <input type="button" value="UPDATE"/>	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="button" value="REMOVE"/>		<input type="button" value="REMOVE ALL"/>	

- 6 In the **Add route(s) to logical entity** section, type the **Name** of the route.

- 7 Select the **Node**.
- 8 For **Parms**, select the parameter type (for example, Trunk Group).
- 9 In the Parm's section, click the **Add** button.
- 10 Type a **Trunk Group** name.
- 11 Type the **Weight** of the route.
- 12 Click the **Add** button next to the Update button to add the route to the listed routes.
- 13 Click **Modify Entity** to complete the configuration of the new or modified route(s).
- 14 Repeat this procedure to add another service node route.
Add a service node route for both the Call Server and the NRS.

—End—

Assigning a domain to a logical entity

Perform the following procedure to assign a domain to a logical entity.

Assigning a domain to a logical entity

Step	Action
------	--------

- | | |
|---|---|
| 1 | Log on to the MCS provisioning Client. |
| 2 | Under the Provisioning folder, expand the Service Node folder. |
| 3 | Select List Logical Entity . |
| 4 | Click the domain link next to the logical entity containing the node routes.
The Assign Domain page appears. |
| 5 | From the Available domains menu, select a domain to add to the logical entity. |
| 6 | Click Add .
The domain appears in the Assigned Domains list. |
| 7 | Repeat this procedure for all logical entities. |

—End—

Configuring Number Qualifiers

Perform the following procedure to configure Number Qualifiers.

When you configure the Number Qualifiers, the information must match the configured information for the CS 1000 SIP URI Map and the CS 1000 NRS SIP URI. Refer to the procedure "[Configuring the Signaling Server](#)" (page 64) for more about the CS 1000 SIP URI Map configuration.

Configuring Number Qualifiers

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Domains folder.
3	Expand the folder for the domain that you are configuring.
4	Expand the Telephony Routes folder.
5	Select Number Qualifiers . The Number Qualifiers page appears. See Figure 34 "Number Qualifiers" (page 81).

Figure 34
Number Qualifiers

Number Qualifiers

Add a new Number Qualifier for domain ccsip.com

Name * ?

Description * ?

Current Number Qualifiers

Name	Description	Delete
local	NPI=public, TON=Subscriber	Delete
national	NPI=public, TON=National	Delete
international	NPI=public, TON=International	Delete
publicUnknown	NPI=public, TON=Unknown	Delete
cdpDomain	NPI=private, TON=Level 0	Delete
udp	NPI=private, TON=Level 1	Delete
subscriber	NPI=private, TON=Subscriber	Delete
privateUnknown	NPI=private, TON=Unknown	Delete
unknown	NPI=Unknown, TON=Unknown	Delete

- 6 Add new number qualifiers for each entry in the SIP URI Map.
- 7 For **Name**, enter the name of the Number Qualifier.
- 8 For **Description**, enter a description of the Number Qualifier.
- 9 Click **Add**.

—End—

Configuring Telephony Route Class of Service (COS)

Perform the following procedure to configure COS.

Configuring Telephony Route Class of Service (COS)

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Domains folder.
3	Expand the folder for the domain that you are configuring.
4	Expand the Telephony Routes folder.
5	Click Routing COS . The Class of Service Information page appears. See Figure 35 "Class of Service Information " (page 82).

Figure 35
Class of Service Information

Class of Service Information for ccsip.com

Add or Modify Class of Service Information

Name: ?

Description: ?

Reorder or Delete Class of Service

Current Choices Available

Gold|CD2

- 6 For **Name** , enter a name for the Class of Service.
- 7 For **Description**, enter a description for the Class of Service.

- 8 Click **Save**.

—End—

Configuring telephony routes for each dialing plan

Perform the following procedure to configure the routes for each dialing plan.

For Each dialing plan entry, configure the following routes:

- private CDP route
- private UDP route
- Gateway CDP route
- Gateway UDP route
- private PSTN route
- route for local dial-9 National (NPA) dialing using the Gateway CS 1000 PSTN

Configuring telephony routes for each dialing plan

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Domains folder.
3	Expand the folder for the domain that you are configuring.
4	Expand the Telephony Routes folder.
5	Click Add TelephonyRoute . The Create New Telephony Route page appears. See Figure 36 "Create New Telephony Route" (page 84) .

Figure 36
Create New Telephony Route

Create New Telephony Route

Name: Private CDP ?

Description: Private CDP Route ?

From Digits: 8300 ?

To Digits: 8500 ?

Min Number of Digits: 4 ?

Max Number of Digits: 4 ?

Route Type: Private ?

Remove: 0 ?

Prefix: 0002552 ?

Recursive: No ?

Route List:

Save Clear

- 6 In the **Name** field, enter the Route Type name.
- 7 In the **Description** field, enter a description of the Route Type.
- 8 In the **From Digits** field, enter the numbers on which translation is carried out.
- 9 In the **To Digits** field, enter the numbers on which translation is carried out.
- 10 Fill in the **Min Number of Digits** field.
- 11 Fill in the **Max Number of Digits** field.
- 12 Select the **Route Type**.
- 13 In the **Remove** field, type the number of digits to be removed during digit manipulation/translation.
- 14 In the **Prefix** field, type the number to be prefixed to the number coming in for translation.
- 15 For **Recursive**, select **No**.

- 16 Click **Save**.
- 17 Repeat this procedure for each Route Type.

—End—

Configuring a new route list

Perform the following procedure to configure a new route list.

Configuring a new route list

Step	Action
------	--------

- | | |
|---|---|
| 1 | Log on to the MCS Provisioning Client. |
| 2 | Under the Provisioning folder, expand the Domains folder. |
| 3 | Expand the folder for the domain that you are configuring. |
| 4 | Expand the Telephony Routes folder. |
| 5 | Click Add RouteList .
The Create New Route List page appears. See Figure 37 "Create New Route List " (page 85). |

Figure 37
Create New Route List

Create a New Route List in ccsip.com domain

Name: ?

Description: ?

Incoming Other Domain Tree Call Routing: ?

Incoming Same Domain Tree Call Routing: ?

Class of Service: ?

Telephony Route(s): ?

- 6 For **Name** , enter a name for the route list.

- 7 For **Description**, enter a description for the route list.
- 8 For **Incoming Other Domain Tree Call Routing**, select **Allow**.
- 9 For **Incoming Same Domain Tree Call Routing**, select **Allow**.
- 10 For **Class of Service**, select the COS.
- 11 Click **Save**.

—End—

Configuring the pretranslation table

Perform the following procedure to configure the pretranslation table.

Configuring the pretranslation table

Step	Action
------	--------

- | | |
|---|--|
| 1 | Log on to the MCS Provisioning Client. |
| 2 | Under the Provisioning folder, expand the Domains folder. |
| 3 | Expand the folder for the domain that you are configuring. |
| 4 | Expand the Telephony Routes folder. |
| 5 | Click Pretranslation Table .
The Pre translations page appears. See Figure 38 "Pre translations" (page 86) . |

Figure 38
Pre translations

Pre translations

Add New Pretranslations in domain ccsip.com

Number Qualifier	Length	Prefix	Add
+1	*		Add

Current Pretranslations

"

Number Qualifier	Length	Prefix	Save	Delete
cdpDomain	4	*6552	Save	Delete

- 6 Configure pretranslations for each of the number qualifiers in the Add New Pretranslations section.

- 7 Select a **Number Qualifier**.
- 8 In the **Length** field, type the length of number to be pretranslated.
- 9 In the **Prefix** field, type the associated prefix.
- 10 Click **Add**.
- 11 Repeat for all required Number Qualifiers.

—End—

Converged desktop user configuration

The procedures in this section are as follows:

- ["Configuring a service package" \(page 87\)](#)
- ["Configuring a converged desktop user" \(page 88\)](#)

Configuring a service package

Perform the following procedure to configure a service package.

Configuring a service package

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Domains folder.
3	Expand the folder for the domain that you are configuring.
4	Expand the Service Package folder.
5	Select Create Package . The Create New Package page appears. See Figure 39 "Create new package" (page 88) .

Figure 39
Create new package

Create new package for domain ccsip.com

Name of the Packages * ?

Set package as default for domain

Select Service(s)

Choose All Services

Calling Line ID Restriction

 Calling Name/Number Privacy

 Media Privacy (Media Portal Required)

Converged Desktop

 Setup

 Converged Desktop Enabled

Presence

 Maximum size of client friend list

 Report when inactive

 Inactivity Timer (in minutes) ?

 Report when on the phone

- 6 For **Name of the Packages**, type a package name.
- 7 Select the services and the appropriate parameters to include in the service package.
- 8 Select the **Converged Desktop** check box.
- 9 Under Converged Desktop, for **Setup**, select **ConvergedDesktop**.
- 10 For **Converged Desktop Enabled**, select **Yes**.
- 11 Click **Save**.

—End—

Configuring a converged desktop user

Perform the following procedure to configure a converged desktop user.

Configuring a converged desktop user

Step	Action
1	Log on to the MCS Provisioning Client.
2	Under the Provisioning folder, expand the Domains folder.
3	Expand the folder for the domain that you are configuring.
4	Expand the Users folder.
5	Select Add User . The Add New User page appears. See Figure 40 "Add new user" (page 90) .

Figure 40
Add new user

Add new user to ccsip.com

User Name: * ?

First Name: ?

Last Name: ?

Password: * ?

Confirm Password: * ?

Service package: ▾

Aliases:

Status Reason: ▾

email:

Business Phone: ?

Home Phone: ?

Cell Phone: ?

Pager: ?

Fax: ?

Directory Number: ?

Private Charge ID:

Public Charge ID:

Location: ▾

Class of Service: ▾

Redirection Class of Service: ▾

Time Zone: ▾

Locale: ▾

- 6 Fill in the appropriate values for the user, including:
 - a. **Private Charge ID** (comprised of the HLOC and DN of the converged telephone)
 - b. **Public Charge ID** (the NPA + NXX + DN of the converged telephone)
 - c. **Class of Service**
- 7 Click **Save**.
When the new user is successfully added, a confirmation page appears.
- 8 Select **Converged Desktop Properties**.
The Converged Desktop Data page appears. See [Figure 41 "Converged Desktop Data"](#) (page 91).

Figure 41
Converged Desktop Data

Main	Change Password	Groups	Customize service package
Voicemail	Meet Me properties	Converged Desktop properties	SIP Line Data
Routes	Unified Communications Properties	Prefix Data	

Converged Desktop Data for user jsmith@ccsip.com

Converged Desktop Alias: * ?

Private Preferred Audio Device: * ?

Public Preferred Audio Device: * ?

Converged Desktop User Type:

Click to Dial Enabled:

- 9 Type the **Converged Desktop Alias**.
This is the PNI + HLOC + DN of the converged telephone.
- 10 If you are configuring UDP, type the **Private Preferred Audio Device**.
- 11 If you are configuring CDP, type the **Public Preferred Audio Device**.

- 12 For **Converged Desktop User Type**, select **Enterprise Converged User**.
- 13 To enable Click to dial, select the **Click to Dial Enabled** check box (optional).
- 14 Click **Save**.

—End—

NRS configuration

The Network Routing Service (NRS) uses a basic SIP structure for its configuration, which is applicable for SIP, H.323, and Network Connection Server (NCS) call completion. This structure is the basis of the single network dialing/numbering plan.

Before you begin configuration of the NRS, gather the names of all domains and subdomains.

NRS configuration procedures

The sequence of NRS configuration procedures is as follows:

- "Launching NRS Manager" (page 93)
- "Verifying and adjusting system-wide settings" (page 95)
- "Configuring the NRS server settings (H.323 Gatekeeper or SIP)" (page 97)
- "Configuring the service domain" (page 100)
- "Configuring the L1 domain (UDP)" (page 102)
- "Configuring the L0 domain (CDP)" (page 104)
- "Configuring Gateway endpoints" (page 107)
- "Configuring routing entries" (page 111)
- "Configuring collaborative servers" (page 113)
- "Updating the database" (page 115)
- "Checking the status of registered endpoints" (page 116)
- "Checking the status of virtual D-channels" (page 117)
- "Checking the status of virtual trunks" (page 118)

Launching NRS Manager

Perform the following procedure to launch NRS Manager.

Launching NRS Manager

Step	Action
1	Log on to Element Manager.
2	Select Dialing and Numbering Plans .
3	Select Network Routing Service .
4	Click Next . The NRS logon page appears.
5	Enter the user ID and password. The NRS Overview page appears. See Figure 42 "NRS Overview" (page 95) .

Figure 42
NRS Overview

Location: Home > NRS Overview >

Network Routing Service		
Software version	sse-4.50.88	
Connected NRS role	PrimaryNRS	
Primary NRS IP (TLAN)	192.167.105.2	
Primary NRS state	ACTIVE	
Alternate NRS IP (TLAN)	Unknown	
Alternate NRS state	Unknown	
Alternate permanent in service	OFF	

Configured Components		
# of Service Domains	1	
# of L1 Domains (UDP)	1	
# of L0 Domains (CDP)	1	
# of Gateway Endpoints	2	
# of User Endpoints	0	
# of Routing Entries	4	
# of Default Routes	0	
# of Collaborative Servers	0	

Users Logged Into This NRS Manager		
admin	207.179.167.96	

—End—

Verifying and adjusting system-wide settings

You can check system-wide settings and make changes from NRS Manager.

Verifying and adjusting system-wide settings

- | Step | Action |
|------|---|
| 1 | Log on to NRS Manager. |
| 2 | Select System Wide Settings .
The System Wide Settings page appears. See Figure 43 "System Wide Settings" (page 96) . |

Figure 43
System Wide Settings

Location: Home > System Wide Settings >

System Wide Settings

DB sync interval for alternate [Hours]

SIP registration time to live timer [Seconds]

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

H.323 alias name *

Alternate NRS server is permanent

Auto backup time [HH:MM]

Auto backup to FTP site enabled

Auto backup FTP site IP address

Auto backup FTP site path

Auto backup FTP username

Auto backup FTP password

* Mandatory field indicator

- 3 Configure the information in the System Wide Settings page.

Refer to Table 13 "System Wide Settings - fields description" (page 97).

Table 13
System Wide Settings - fields description

Field	Description
DB Synch interval for alternate [Hours]	24 is the default.
SIP registration time to live timer [Seconds]	30 seconds is recommended.
H.323 Gatekeeper registration time to live timer [Seconds]	30 seconds is recommended.
H.323 alias name	This is a mandatory field. The H.323 Alias Name must be alphanumeric and contain no spaces. The default value is the same as the H.323 ID and HostName value configured in the PRIMARY Signaling Server's config.ini file.
Alternate NRS server is permanent	Select this check box if the Alternate NRS Server is to remain in service after a switch-over, even if the Primary NRS recovers. Clear the check box if the Alternate NRS switches over functions to the Primary NRS Server after the Primary NRS Server recovers.
Auto backup time [HH:MM]	Enter the time when the database backup automatically occurs.
Auto backup to FTP site enabled	Select this check box to enable automatic backup of the NRS database to an FTP site.
Auto backup FTP site IP address Auto backup FTP site path Auto backup FTP username Auto backup FTP password	Enter values for Autobackup FTP if you enabled automatic backup of the NRS database to an FTP site.

4 Click **Save**.

—End—

Configuring the NRS server settings (H.323 Gatekeeper or SIP)

Perform the following procedure to configure NRS server settings.

Configuring the NRS server settings (H.323 Gatekeeper or SIP)

Step	Action
1	Log on to NRS Manager.
2	Select NRS Server Settings . The NRS Overview page appears. See Figure 44 "NRS Overview" (page 99) .

Figure 44
NRS Overview

Location: Home > NRS Server Settings >

NRS Settings	
Host name	<input type="text" value="CS1000S_CP"/> *
Primary IP (TLAN)	<input type="text" value="192.167.101.2"/> *
Alternate IP (TLAN)	<input type="text" value="0.0.0.0"/> *
Control priority	<input type="text" value="40"/>
H.323 Gatekeeper Settings	
Location request (LRQ) response timeout [Seconds]	<input type="text" value="3"/> ▾
SIP Server Settings	
Mode	<input type="text" value="Redirect"/> ▾
UDP transport enabled	<input checked="" type="checkbox"/>
UDP port	<input type="text" value="5060"/>
UDP maximum transmission unit (MTU)	<input type="text" value="1500"/>
TCP transport enabled	<input checked="" type="checkbox"/>
TCP port	<input type="text" value="5060"/>
TCP maximum transmission unit (MTU)	<input type="text" value="1500"/>
Network Connection Server (NCS) Settings	
Primary NCS port	<input type="text" value="16500"/>
Alternate NCS port	<input type="text" value="16500"/>
Primary NCS timeout [Seconds]	<input type="text" value="10"/> ▾
<input type="button" value="Save"/>	

* Mandatory field indicator

- 3 Under **NRS Settings**, set the following values:
 - **Host name**
 - **Primary IP (TLAN)**
 - **Alternate IP (TLAN)**
 - **Control priority**
- 4 Under **H.323 Gatekeeper Settings**, select the **Location request (LRQ) response timeout [Seconds]**.
- 5 Under **SIP Server Settings**, set the following values:
 - **Mode**
 - **UDP transport enabled/disabled**
 - **UDP port**
 - **UDP maximum transmission unit (MTU)**
 - **TCP transport enabled/disabled**
 - **TCP port**
 - **TCP maximum transmission unit (MTU)**

Make the values under SIP Server Settings the same as those you configure for the SIP Proxy in Element Manager.

- 6 Under **Network Connection Server (NCS) Settings**, set the following values:
 - **Primary NCS port**
 - **Alternate NCS port**
 - **Primary NCS timeout [Seconds]**
- 7 Click **Save**.
- 8 A message appears, indicating that a manual reboot is required for the changes to take effect.
Click **OK**.

—End—

Configuring the service domain

The NRS database information configured in this procedure is required by both the SIP Redirect Server and the H.323 Gatekeeper.

Configuring the service domain

- | Step | Action |
|------|---|
| 1 | Log on to NRS Manager. |
| 2 | Select the Configuration tab.
An informational dialog box appears. |
| 3 | Click OK . |
| 4 | Click Standby DB view to switch from active to standby database view. The active database view is the default view. Use the active database for runtime queries, and the standby database for administrator modifications. You must use standby view to make changes to the database.
See Figure 45 "Service Domains" (page 101). |

Figure 45
Service Domains

Location: Configuration > Service Domains >

Service Domains					
Add...					
#	ID	Description	# of L1 domains	# of L0 domains	# of gateway endpoints
1	ccsip.com	Not available	1	1	2
Add...					

- Select **Service Domains**.
- Click **Add**.
- Enter your **Domain name** and a **Domain description**.
These values must match that set for the Signaling Server.
- Click **Save**.
The Service Domains page appears again with the new domain added.
When no description is entered, the service domain is shown with the message "Not available". This means that the description is not entered, but the service domain is still active. This applies to all description fields in NRS Manager.

—End—

Configuring the L1 domain (UDP)

You can configure the L1 domain after you configure the service domain. The L1 domain is a service domain associated with UDP.

Configuring the L1 domain (UDP)

Step	Action
1	Log on to NRS Manager.
2	Select the Configuration tab.
3	Click Standby DB view to switch from active to standby database view.
4	Select L1 Domains (UDP) .
5	Click Add . The View L1 Domain Property page appears. See Figure 46 "View L1 Domain Property" (page 102).

Figure 46
View L1 Domain Property

View L1 Domain Property (ccsip.com)

Domain name	<input type="text" value="innovatia"/>
Domain description	<input type="text"/>
Endpoint authentication enabled	<input type="text" value="Authentication off"/>
Authentication password	<input type="text"/>
E.164 country code	<input type="text" value="1"/>
E.164 area code	<input type="text" value="506"/>
E.164 international dialing access code	<input type="text" value="011"/>
E.164 national dialing access code	<input type="text" value="9"/>
E.164 local (subscriber) dialing access code	<input type="text" value="6"/>
Private L1 domain (UDP location) dialing access code	<input type="text" value="6"/>
Special number	<input type="text" value="9"/>
Emergency service access prefix	<input type="text" value="9"/>
Special number label	<input type="text" value="PrivateSpecial"/>

- 6 Configure the L1 domain.
Refer to [Table 14 "L1 domain fields" \(page 103\)](#) for configuration information.

Table 14
L1 domain fields

Field	Value	Description
Domain name	<alphanumeric string>	Mandatory. The name must be alphanumeric and can be up to 30 characters in length.
Domain description	<character string>	Optional. The description can include any character except single quotes and be up to 120 characters in length.
Endpoint authentication enabled	Authentication off Authentication on	If Authentication on is selected, all endpoints require authentication.
Authentication password	<alphanumeric string>	If Authentication on is selected, enter an authentication password. The password must be alphanumeric and up to 30 characters in length.
E.164 country code	<numeric string>	Mandatory. The code must be numeric and up to 7 characters in length.
E.164 area code	<numeric string>	Mandatory. The code must be numeric and up to 7 characters in length.
E.164 international dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 national dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 local (subscriber) dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
Private L1 domain (UDP location) dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
Special number	<numeric string>	Optional. The number must be numeric and up to 30 characters in length.
Emergency service access prefix	<numeric string>	Optional. The number must be numeric and up to 30 characters in length.
Special number label	<alphanumeric string>	Optional. The label must be alphanumeric and up to 30 characters in length. The first character in the label must be alphabetic.

- 7 Click **Save**.

The L1 Domains page appears again with the new L1 domain added.

- 8 To view the configured data for the L1 domain, click the **Show** button, and then the **ID** in the **L1 Domains (UDP)** menu. The View L1 Domain Property page appears, displaying your configured data.

—End—

Configuring the L0 domain (CDP)

The L0 domain is a service domain associated with CDP, representing the private addresses field in the SIP URI. This address is composed of the service, L1, and L0 domains.

Configuring the L0 domain (CDP)

Step	Action
1	Log on to NRS Manager.
2	Select the Configuration tab.
3	Click Standby DB view to switch from active to standby database view.
4	Select L0 Domains (CDP) .
5	Click Add . The View L0 Domain Property page appears. See Figure 47 "View L0 Domain Property" (page 105).

Figure 47
View L0 Domain Property

- 6 Enter the appropriate values for your network. Refer to [Table 15 "Add L0 Domain fields" \(page 105\)](#) for configuration information. The country codes, area codes, public prefixes, and private prefixes must match those of your L1 domain.

Table 15
Add L0 Domain fields

Field	Value	Description
Domain name	<alphanumeric string>	Mandatory. The name must be alphanumeric and can be up to 30 characters in length.

Field	Value	Description
Domain description	<character string>	Optional. The description can include any character except single quotes and can be up to 120 characters in length.
Endpoint authentication enabled	Authentication off Authentication on	If Authentication on is selected, then all endpoints require authentication.
Authentication password	<alphanumeric string>	if Authentication on is selected, enter a password. The password must be alphanumeric and up to 30 characters in length.
E.164 country code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 area code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
Private unqualified number label	<alphanumeric string>	The label must be alphanumeric and up to 30 characters in length. The first character in the label must be alphabetic.
E.164 international dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 national dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 local (subscriber) dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
Private L1 domain (UDP location) dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
Special number	<numeric string>	Optional. The number must be numeric and up to 30 characters in length.
Emergency service access prefix	<numeric string>	Optional. The number must be numeric and up to 30 characters in length.

- 7 Click **Save**.
The L0 Domains page appears again, showing the added domain.
- 8 To view the configured data, in the L0 Domains page, select the Service Domain and L1 Domain and click **Show**.
A list of configured L0 domains appears.
- 9 Select the L0 domain to view its configuration information.

The View L0 Domain Property page appears. See [View L0 Domain Property](#).

—End—

Configuring Gateway endpoints

Add an endpoint for both the Communication Server 1000 and Multimedia Communication Server 5100 (MCS 5100).

These are Gateway endpoints, which can be served by several users. You can add multiple endpoints, some SIP-only, some H.323-only, and Unistim. You can also configure a user endpoint, which can be only one of these three protocols.

Configuring Gateway endpoints

Step	Action
1	Log on to NRS Manager.
2	Select the Configuration tab
3	Click Standby DB view to switch from active to standby database view.
4	Click Gateway Endpoints .
5	Click Add . The View Gateway Endpoint Property page appears. See Figure 48 "View Gateway Endpoint Property" (page 108) .

Figure 48
View Gateway Endpoint Property

View Gateway Endpoint Property (ccsip.com / innovatia / saintjohn)

Endpoint name *

Endpoint description

Tandem gateway endpoint name [Look up](#)

Endpoint authentication enabled

Authentication password

E.164 country code

E.164 area code

E.164 international dialing access code

E.164 national dialing access code

E.164 local (subscriber) dialing access code

Private L1 domain (UDP location) dialing access code

Private special number 1

Private special number 2

Static endpoint address type

Static endpoint address

H.323 Support

SIP support

SIP transport

SIP port

Network Connection Server enabled

6 Enter the appropriate values for your network.

Refer to Table 16 "Add Gateway Endpoint fields" (page 109) for configuration information.

Table 16
Add Gateway Endpoint fields

Field	Value	Description
Endpoint name	<alphanumeric string>	The name must be alphanumeric and up to 30 characters in length. Note: Configure the MCS 5100 Gateway endpoint name as convergeddesktop .
Endpoint description	<alphanumeric string>	The description must be alphanumeric and up to 120 characters in length.
Tandem gateway endpoint name	<alphanumeric string>	The tandem Gateway is optional. This indicates whether the endpoint is used to tandem calls from outside the network. The name must be alphanumeric and up to 30 characters in length. Note: Use the Look-up link to find configured Gateway endpoints.
Endpoint authentication enabled	Not configured Authentication off Authentication on	If this option is selected, the Gateway endpoint uses the L1 or L0 authentication (if enabled). If this option is selected, authentication is off for this Gateway endpoint even if L1 or L0 authentication is enabled. If this option is selected, authentication is on for this Gateway endpoint, and the authentication overrides the L1 or L0 authentication (if enabled).
Authentication password	<alphanumeric string>	If Authentication on is selected, choose a password. The password must be alphanumeric and up to 30 characters in length.
E.164 country code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 area code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 international dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 national dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
E.164 local (subscriber) dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.

Field	Value	Description
Private L1 domain (UDP location) dialing access code	<numeric string>	Optional. The code must be numeric and up to 7 characters in length.
Private special number 1	<numeric string>	Optional. The number must be numeric and up to 30 characters in length.
Private special number 2	<numeric string>	Optional. The number must be numeric and up to 30 characters in length.
Static endpoint address type	IP version 4	Select IP version 4 from the drop-down list.
Static endpoint address	<Node IP address>	This is the address of the MCS 5100 application server, responsible for the MCS voice path. If a third-party Gateway is used, it is the IP address of the Gateway.
H.323 Support	H.323 not supported RAS H.323 endpoint Not RAS H.323 endpoint	RAS H.323 Endpoint is recommended. If an H.323 Gateway Endpoint is configured with an H.323 Support type of RAS H.323 endpoint, NRS Manager displays Endpoint Dynamic Registration information after the H.323 Gateway registers with the NRS. Endpoint Dynamic Registration information includes Call Signaling IP, RAS IP, Alias name, t35Country code, t35Extension, Manufacturer code, Product ID, and Version ID.
SIP support	SIP not supported Static SIP endpoint Dynamic SIP endpoint	Dynamic SIP Endpoint is recommended. If a SIP Trunk Gateway Endpoint is configured with a SIP Support type of Dynamic SIP endpoint, NRS Manager displays Endpoint Dynamic Registration Information for SIP after the SIP Trunk Gateway registers with the NRS. Endpoint Dynamic Registration Information includes SIP IP, Registration expiry time, User agent, and Preference.
SIP transport	TCP UDP	TCP is selected by default. This information should match the SIP Transport Protocol in the Signaling Server Properties.

Field	Value	Description
SIP port	<port value>	Default SIP port value is 5060. If the SIP Port is changed, the value must be numeric and up to 5 numbers in length. The range is 0 to 65535.
Network Connection Server enabled	<check box>	Select the Network Connection Server is enabled check box if this Gateway Endpoint supports the NCS for branch office or SRG user redirection to the main office, Virtual Office, or Geographic Redundancy.

- 7 Click **Save**.
The Gateway Endpoints window appears again with the new endpoints added.
- 8 From the Gateway Endpoint page, select the **Service Domain, L1 Domain, and L0 Domain** to view the configured data of an endpoint.
- 9 Click **Show**.
A list of configured Gateways appears.
- 10 Click the **Gateway ID** you wish to view.
The View Gateway Endpoint Property page appears. See [View Gateway Endpoint Property](#).

—End—

Configuring routing entries

Perform the following procedure to configure routing entries.

Configuring routing entries

Step	Action
1	Log on to NRS Manager.
2	Select the Configuration tab
3	Click Standby DB view to switch from active to standby database view.
4	Click Routing Entries .
5	Type the relevant Gateway Endpoint OR Click the Look up link and perform a search. All configured endpoints appear.

- 6 Click the endpoint to configure as a Routing Entry.
- 7 Select a DN type. For **UDP**, select **Private level 1 regional (UDP location code)**.
- 8 For **CDP**, select **Private level 0 regional (CDP steering code)**.
- 9 Click **Show**.
The Routing Entries page appears. See Figure 49 "Routing Entries" (page 112).

Figure 49
Routing Entries

Location: Configuration > Routing Entries >

Routing Entries

Show Routing Entries for (Service Domain / L1 Domain / L0 Domain / Endpoint)
Select domains and enter a gateway endpoint name to show specified routing entries.
Use the wildcard * by itself for all gateway endpoints :

/
 /
 /

Gateway Endpoint: [Look up](#)

With DN Type:

#	DN Prefix	DN Type	Route Cost	SIP URI Phone Context
1	<u>22</u>	Private level 0 regional (CDP steering code)	1	cdp.udp
2	<u>224350</u>	Private level 0 regional (CDP steering code)	1	cdp.udp
3	<u>23</u>	Private level 0 regional (CDP steering code)	1	cdp.udp

- 10 Click **Add** to add a new Routing Entry.
The View Routing Entry Property page appears. See Figure 50 "View Routing Entry Property " (page 113).

Figure 50
View Routing Entry Property

Location: Configuration > Routing Entries > View Routing Entry Property >

* Mandatory field indicator

- 11 Enter the **DN prefix**.
This is the CDP DSC steering code.
- 12 Enter the **Route cost (1-255)**.
The higher the number, the higher the cost. This is equivalent to Least Cost Routing.
- 13 Click **Save**.

—End—

Configuring collaborative servers

A Collaborative Server is a server in another network zone that can resolve requests when your NRS cannot find a match in its numbering plan database.

You can specify a list of Networking Routing Servers in different network zones in your NRS. The NRS Manager provides a utility for adding and viewing a list of NRSs (Collaborative Servers) in different network zones.

Configuring collaborative servers

Step	Action
1	Log on to NRS Manager.
2	Select the Configuration tab
3	Click Standby DB view to switch from active to standby database view.

- 4 Click **Collaborative Servers**.
- 5 Click **Add**.
The Add Collaborative Server page appears. See [Figure 51 "Add Collaborative Server" \(page 114\)](#). This page may differ from the view shown here depending on the value you choose for the Domain type for collaborative server.

Figure 51
Add Collaborative Server

Location: Configuration > Collaborative Servers > Add Collaborative Server >

Add Collaborative Server

Domain type for collaborative Server L1 domain ▾

L1 domain name (with service domain path) cdsig.com / udp ▾

Alias name

Server address type IP version 4 ▾

Server address *

H.323 support

RAS port

SIP support

SIP transport TCP ▾

SIP port

Network Connection Server support

Network Connection Server transport UDP ▾

Network Connection Server port

* Mandatory field indicator

- 6 For **Domain type for collaborative Server**, select either **L0 domain** or **L1 domain**.
- 7 For the **L1 or L0 domain name**, select the L1 or L0 domain name.
- 8 Enter the **Alias name** of the collaborative server.

The alias name must be alphanumeric and contain no spaces.

- 9 For **Server address type**, select **IP version 4**.
- 10 For **Server address**, type the server IP address.
- 11 If the H.323 protocol is supported by the server, populate the following fields:
 - **H.323 support** check box
 - **RAS port**
- 12 If the SIP protocol is supported by the server, populate the following fields:
 - **SIP support** check box
 - **SIP transport** protocol
 - **SIP port**
- 13 If Network Connection Service is supported by the server, populate the following fields:
 - **Network Connection Server support** check box
 - **Network Connection Server transport**
 - **Network Connection Server port**
- 14 Click **Save**.
The Collaborative Servers page appears with the new server.
- 15 For redundancy purposes, perform this procedure again for the alternate NRS in the other network zone.

—End—

Updating the database

To save your entries, you must update the database.

Updating the database

Step	Action
1	Log on to NRS Manager.
2	Click the Tools tab.
3	Click the Database Actions tab.

The Database Actions page appears, showing the Database State as Changed. See Figure 52 "Database Actions" (page 116).

Figure 52
Database Actions

Location: Tools > Database Actions >

The screenshot shows a web interface for 'Database Actions'. The title bar indicates the 'Database State: Changed'. There is a dropdown menu for selecting a database action, currently set to 'Cut over & Commit', and a 'Submit' button. The main area of the page is a large, empty rectangular frame with scrollbars, suggesting a list of actions or a detailed view that is currently blank.

- 4 From the **Select database action** menu, select **Cut over & Commit**.
- 5 Click **Submit**.

—End—

Checking the status of registered endpoints

Perform the following procedure to check the status of registered endpoints.

Checking the status of registered endpoints

Step	Action
------	--------

- | | |
|---|------------------------|
| 1 | Log on to NRS Manager. |
|---|------------------------|

- 2 Click the **Configuration** tab.
- 3 Select **Service Domains**.
See [Service Domains](#).
- 4 Ensure that **Active DB view** is selected.
- 5 Click the number in the **# of Gateway endpoints** column.
- 6 Click **Show**.
The Gateway Endpoints page appears. See [Figure 53 "Gateway Endpoints"](#) (page 117).

Figure 53
Gateway Endpoints

Gateway Endpoints					
Show Gateway Endpoints for (Service Domain / L1 Domain / L0 Domain):					
<input type="text" value="ccsip.com"/> / <input type="text" value="innovatia"/> / <input type="text" value="saintjohn"/> <input type="button" value="Show"/>					
Showing 1 - 2 of 2 < Previous Next >					
#	ID	Support Protocol(s)	Call Signaling IP	Description	# of routing entries
1	CS1000S_CP	RAS H.323 / Dynamic SIP / NCS	192.167.101.3 / 192.167.101.3	CS1000S, node 5	1
2	converqeddesktop	Static SIP	192.167.130.20	Converged Desk...	6

—End—

Checking the status of virtual D-channels

Perform the following procedure to check the status of virtual D-channels.

Checking the status of virtual D-channels

- | Step | Action |
|------|--|
| 1 | Log on to Element Manager. |
| 2 | Select Routes and Trunks > D-Channels . |
| 3 | Select D-Channel Diagnostics (LD 96) .
The D-Channel Diagnostics page appears. See Figure 54 "D-Channel Diagnostics" (page 118). |

Figure 54
D-Channel Diagnostics

CS 1000 ELEMENT MANAGER

Managing: 192.167.104.3
Routes and Trunks » D-Channels » D-Channel Diagnostics

D-Channel Diagnostics

Diagnostic Commands	Command Parameters	Action
Status for D-Channel (STAT DCH)		Submit
Disable Automatic Recovery (DIS AUTO)	<input type="checkbox"/> ALL	Submit
Enable Automatic Recovery (ENL AUTO)	<input type="checkbox"/> FDL	Submit
Test Interrupt Generation (TEST 100)		Submit
Establish D-Channel (EST DCH)		Submit

DCH DES APPL_STATUS LINK_STATUS AUTO_RECV PDCH BDCH
 005 VDCH OPER EST ACTV AUTO

Instruction: Select command, add value and click on [Submit]

Cancel

- 4 Under **Diagnostic Commands**, select **Status for D-Channel (STAT DCH)**.
- 5 Click **Submit**.
- 6 Check that the D-Channel is operational, established, and active.

—End—

Checking the status of virtual trunks

Perform the following procedure to check the status of virtual trunks.

Checking the status of virtual trunks

Step	Action
1	Log on to Element Manager.
2	Select System > IP Network > Maintenance and Reports .

- 3 Expand the **Node ID** heading.
- 4 Click **GEN CMD** for the switch.
The General Commands page appears. See Figure 55 "General Commands" (page 119).

Figure 55
General Commands

Managing: 192.167.104.3
IP Telephony » Nodes: Servers, Media Cards » Node Maintenance and Reports » General Commands

General Commands

Element IP: 192.167.104.4 Element Type: SS

Group Command Protocol Start Range

IP address Number of Pings

```

-----
VTRK Summary
-----
VTRK status   : Active
Protocol      : SIP
D-Channel     : 5
Customer      : 0
Channels Idle : 12
Channels Busy : 0
Channels Mbsy : 0
Channels Pend : 0
Channels Dsbl : 0
Channels Ukwn : 0
Channels Total: 12
Chid ranges   : 1 to 112
-----

```

IND	TN	DCH	PROTOCOL	CHID	CUST	ROUTE	MEMB	ICOG	VoIP
0	065-00	005	MCDN->EST	001	00	001	001	IO	SIP
1	065-01	005	MCDN->EST	002	00	001	002	IO	SIP
2	065-02	005	MCDN->EST	003	00	001	003	IO	SIP
3	065-03	005	MCDN->EST	004	00	001	004	IO	SIP
4	065-04	005	MCDN->EST	005	00	001	005	IO	SIP
5	065-05	005	MCDN->EST	006	00	001	006	IO	SIP
6	065-06	005	MCDN->EST	007	00	001	007	IO	SIP
7	065-07	005	MCDN->EST	008	00	001	008	IO	SIP
8	065-08	005	MCDN->EST	009	00	001	009	IO	SIP
9	065-09	005	MCDN->EST	010	00	001	010	IO	SIP
20	067-00	005	MCDN->EST	111	00	003	001	IO	SIP
21	067-01	005	MCDN->EST	112	00	003	002	IO	SIP

```

-----
VTRK State = Active
-----
VTRK Status = Enabled
-----

```

- 5 For **Group**, select **Vtrk**.
- 6 For **Command**, select **vtrkShow**.
- 7 For **Protocol**, type **H323**.

- 8 Click **Run**.
The Virtual Trunk status appears.
- 9 Check each IP Phone manually. At the **DEF GW** option, verify that the IP address is the same as the TLAN Gateway of that system. If the phones ring and have dial tone but there is no speech path, the Default Gateway is 0.0.0.0 and is not operational.

—End—

Appendix

Integration example

Table 17 "Example integration parameters" (page 121) provides an example of the parameters used for an integration of the Communication Server 1000 (CS 1000) and Multimedia Communication Server 5100 (MCS 5100) systems.

These parameters are used in the procedures throughout this document.

Table 17
Example integration parameters

Parameter	Value
User IDs and passwords	
Call Server user ID	admin1
Call Server password	0000
Element Manager user ID	admin1
Element Manager password	0000
Network Routing Service user ID	admin
Network Routing Service password	admin
Signaling Server SIP Gateway authentication password	0000
MCS provisioning client user ID	admin
MCS provisioning client password	admin
System Management Console user ID	admin
System Management Console password	admin
IP addresses and URLs	
Management LAN (ELAN) Gateway	192.167.100.1
Call Server	192.167.100.3
Element Manager	192.167.100.4
Signaling Server management LAN (ELAN)	192.167.100.4

Parameter	Value
Signaling Server voice LAN (TLAN) Gateway	192.167.101.1
Session Initiation Protocol (SIP) Gateway primary proxy/redirect IP address	192.167.101.2
Network Routing Service (NRS) primary IP address	192.167.101.2
Signaling Server voice LAN (TLAN)	192.167.101.2
TLAN of the Signaling Server	192.167.101.3
Voice LAN (TLAN) node	192.167.101.3
MCS 5100 application server	192.167.130.20
MCS 5100 provisioning client	192.167.130.20/prov
Management LAN subnet mask	255.255.255.0
Voice LAN subnet mask	255.255.255.0
Gateway endpoint static IP addresses	192.167.100.3 192.167.130.20
Names	
NRS host name	1000S_CP
L0 domain name	saintjohn
L1 domain name	innovatia
MCS 5100 domain name	ccsip.com
Service domain	ccsip.com
Signaling Server SIP domain name	ccsip.com
Signaling Server H.323 ID	CS1000S_CP
Signaling Server host name	CS1000S_CP
Signaling Server SIP Gateway endpoint name(s)	CS1000S_CP convergeddesktop
H.323 alias name	CS1000NODE5
Terminal Numbers (TN)	
Trunk TN(s)	65 0 00 00 65 0 00 01
PCA TN(s)	85 0 00 01 85 0 00 02
Converged Desktop set TN(s)	85 0 00 03 85 0 00 04
Directory Numbers (DN)	
Special DN (SPN)	8330
Service DN used for making VTRK calls	8330

Parameter	Value
Default ACD DN (DFDN)	8330
ACD DN	8330
CLID	0
Agent position IDs	8401 8402
MCN Converged telephone call forward DN	8440
Converged telephone call forward DN	8310
Control Directory Number (CDN)	8310
Desktop User or SCR DN(s)	8350 8360
Miscellaneous	
Customer number	0
CUST	0
Private Network Identifier (PNI)	2
CS 1000 IP Peer Gateway protocol(s)	
Access Code for trunk route (ACOD)	1000 (SIP) 1001 (H323)
Trunk route number(s)	1
Trunk member number(s)	1 2
Trunk channel ID	1
NARS/BARS Access Code 1 (AC1)	9
NARS/BARS Access Code 2 (AC2)	6
Type of data block (phone sets)	i2002
HLOC	552
NXX (the NXX on the MCS 5100 system is the same as the HLOC on the CS 1000)	552
Distant Steering Code (DSC)	22
D-channel number(s) (DCH)	5
Zone(s) for IP Phones	1
Zone(s) for voice Gateway channels	2
Zone used for codec selection and BW management	2
Node ID of the Signaling Server	5
Channel ID (CHID) for the trunk	1 2

Parameter	Value
AML ELAN link number	32
VAS Identifier (VSID)	32
Maximum number of agent positions (MAXP)	25
Route List Index (RLI)	1
Flexible Number of Digits (FLEN)	
CLID	0
Agent's position ID(s)	8401 8402
Comprehensive dial plan between the MCS 5100 and CS 1000 systems	

Enterprise: Common

Solution Integration Guide for Communication Server 1000/Multimedia Communication Server 5100

Copyright © 2007, Nortel Networks
All Rights Reserved.

Publication: NN49000-301
Document status: Standard
Document version: 02.01
Document date: 29 March 2007

To provide feedback or report a problem in this document, go to
www.nortel.com/documentfeedback.

The information in this document is subject to change without notice. The statements, configurations, technical data, and recommendations in this document are believed to be accurate and reliable, but are presented without express or implied warranty. Users must take full responsibility for their applications of any products specified in this document. The information in this document is proprietary to Nortel Networks.

Nortel, the Nortel logo and the Globemark are trademarks of Nortel Networks.
Microsoft, MS, MS-DOS, Windows, and Windows NT are registered trademarks of Microsoft Corporation.
All other trademarks and registered trademarks are the property of their respective owners.

Sourced in Canada.

