



Nortel Contact Center 7.1

CC Express 7.1 – SIP Deployment

Issue 1.0
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CC Express 7.1 – SIP Tech Transfer

Contents

- SIP CC Fundamentals (30 mins)
- Deploying Express - CS1000 SIP Configuration (90 mins)
- Troubleshooting (60 mins)
- Backup Material
 - Ordering & Licensing



Nortel Contact Center 7.1

SIP CC Fundamentals

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SIP Fundamentals for CC

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Intended audience

- Sales Engineering, Installation, Training and Support personnel
- It is recommended that attendees have reviewed the CC7.0 and CC7.1 tech transfers
- Exception would be those personnel only requiring knowledge of CC Express 7.1 as it pertains to the configuration of SIP on CS1000



Introduction

- Express 7.1 has changed – more than you may think
 - Important to understand the fundamental differences
- Express and Voice only SIP CC are the same from a SIP deployment perspective
 - Express and SIP CC are used interchangeably. Assume that they are the same for the purpose of this presentation.
 - **AML** Express/CC refers to non SIP based CC server
 - SIP Express/CC refers to the NEW SIP based CC server.



Important Concepts (1)

- Express has “evolved”
 - SIP based Application Server
 - Telephony interface is now SIP (and SIP only)
- Session Initiation Protocol (SIP) – A VoIP protocol
 - Currently the most popular Industry standard for VoIP
- Express no longer as tightly bound to the CS1000
 - No AML link with the CS1000
 - Does not employ CS1000 CDN's, ACD or ACD set functionality
 - SIP Enabled CS1000 is REQUIRED



Important Concepts (2)

- CS1000 deployment changes for Express 7
 - Needs to be SIP enabled (Sig Server, NRS, DSP's)
 - Used only for TDM interfaces, and agent terminals
 - No AML connection with Express.
 - No CDN's required on the CS1000 for Express.
 - No ACD queues required on the CS1000 for Express.
 - For incoming PSTN calls, CS1000 tandems calls towards the Express CC Server via SIP trunks



Important Concepts (3)

- Agent UI changes
 - Agents require a Windows based workstation to run CCAD
 - Provisioned with a “normal” SCR CS1000 tel set.
 - Can be TDM or IP*.
 - Not provisioned with an ACD key**.
 - Contact Center Application Desktop (CCAD) is used to control all functions of the tel set.
 - Agents must use CCAD for all tel set controls.
 - Agents cannot log into the CC via the tel set.
 - Conference and Transfer facilities on the CS1000 tel set are NOT supported.

*SIP sets are not yet supported (lacking TR87 support)

**Exceptions to this are for proposed failover functionality, discussed later



Session Initiation Protocol (SIP)

- Supported by Internet Engineering Task Force (IETF)
 - Internet-style protocol
 - Developed and reviewed in an open process
- Based off SMTP and HTTP
- Initially drafted in 1996
- Accepted in 2000.
- Supported by practically every manufacturer of IP Phone, Gateway, Call Manager and IP PBX.

Sources:

<http://www.ietf.org>

<http://www.cs.columbia.edu/sip/talks/sip-short-history.pdf>

<http://www.voipplanet.com/backgrounders/article.php/3505511>

http://en.wikipedia.org/wiki/Session_Initiation_Protocol



CS1000 and SIP

- Introduced in 2004 on RIs 4.0
- Requires a Local Area Network capable of supporting VoIP
 - Design / Performance / QoS / Operations
 - Refer to CS1000 NTP's 553-3001-160 & NN43001-260 Converging the Data Network with VoIP Fundamentals
- Existing TDM only Meridian 1 systems require the following additional hardware, and so must be migrated to a CS1000 system:
 - Signalling Server (SS) – to run applications that support SIP interfaces: SIP trunk, and SIP CTI.
 - DSPs – Hardware dedicated to transcode TDM media to IP media (speech path), and vice versa.



CS1000 VoIP hardware

- Signalling Server (SS)
 - Runs many applications
 - VTRK – SIP virtual trunking
 - SIP CTI – TR87/CSTA support
 - NRS – Network Routing Server
 - TPS – Terminal Proxy Server (IP tel sets)
 - Number of physical form factors
 - ISP1100, CP-PM, HP, IBM or DELL COTS
 - Duals NIC's (ELAN and TLAN)
 - Manages signalling and resources for media



CS1000 VoIP hardware

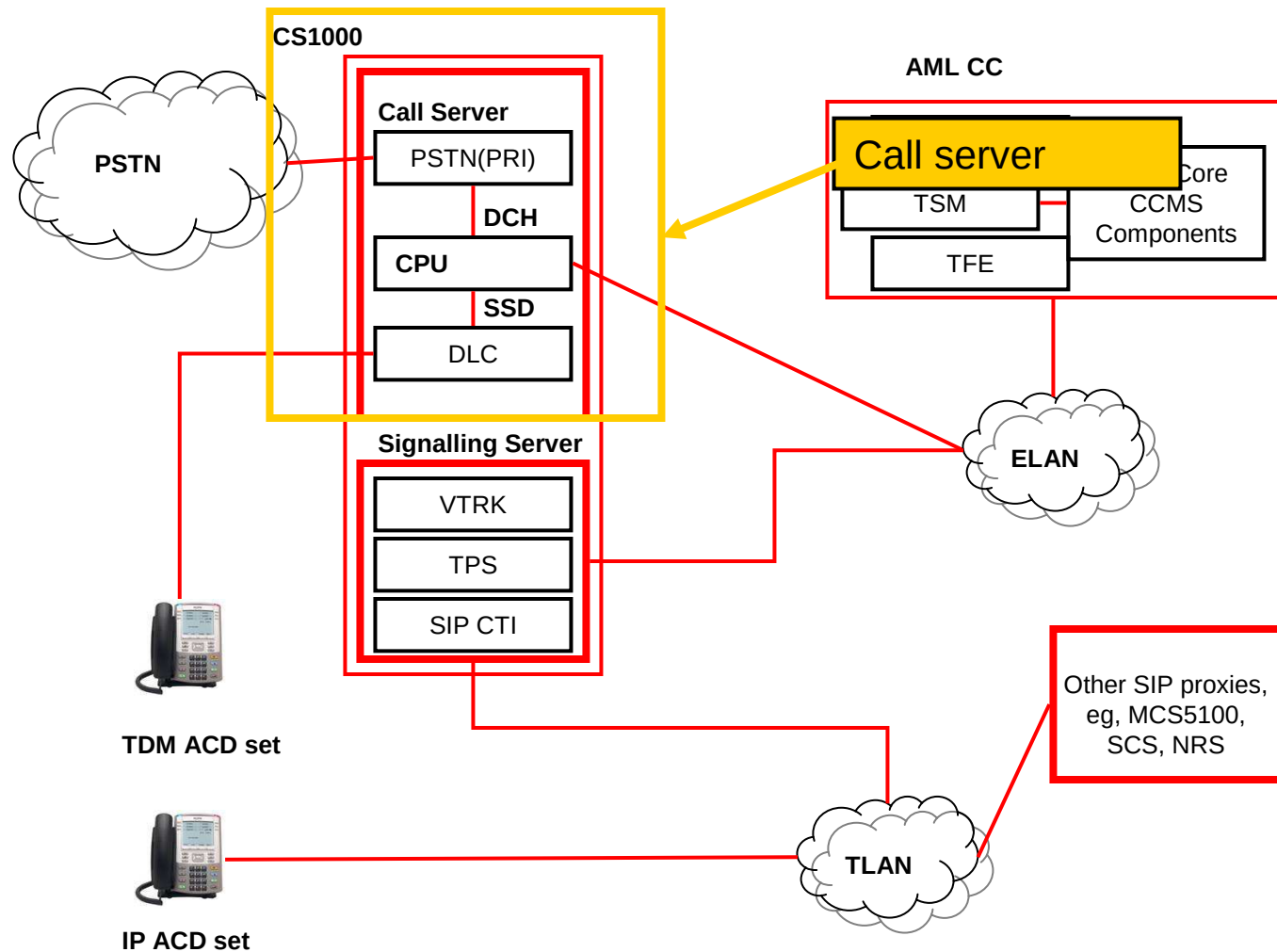
- Digital Signal Processor (DSP)
 - Hardware that transcodes IP media to TDM media, and vice versa
 - Managed by the Signalling Server
 - Number of physical form factors
 - MC32, MC32S (secure) daughterboards (32 and 96 port) on a CP-PM card



SIP Domains

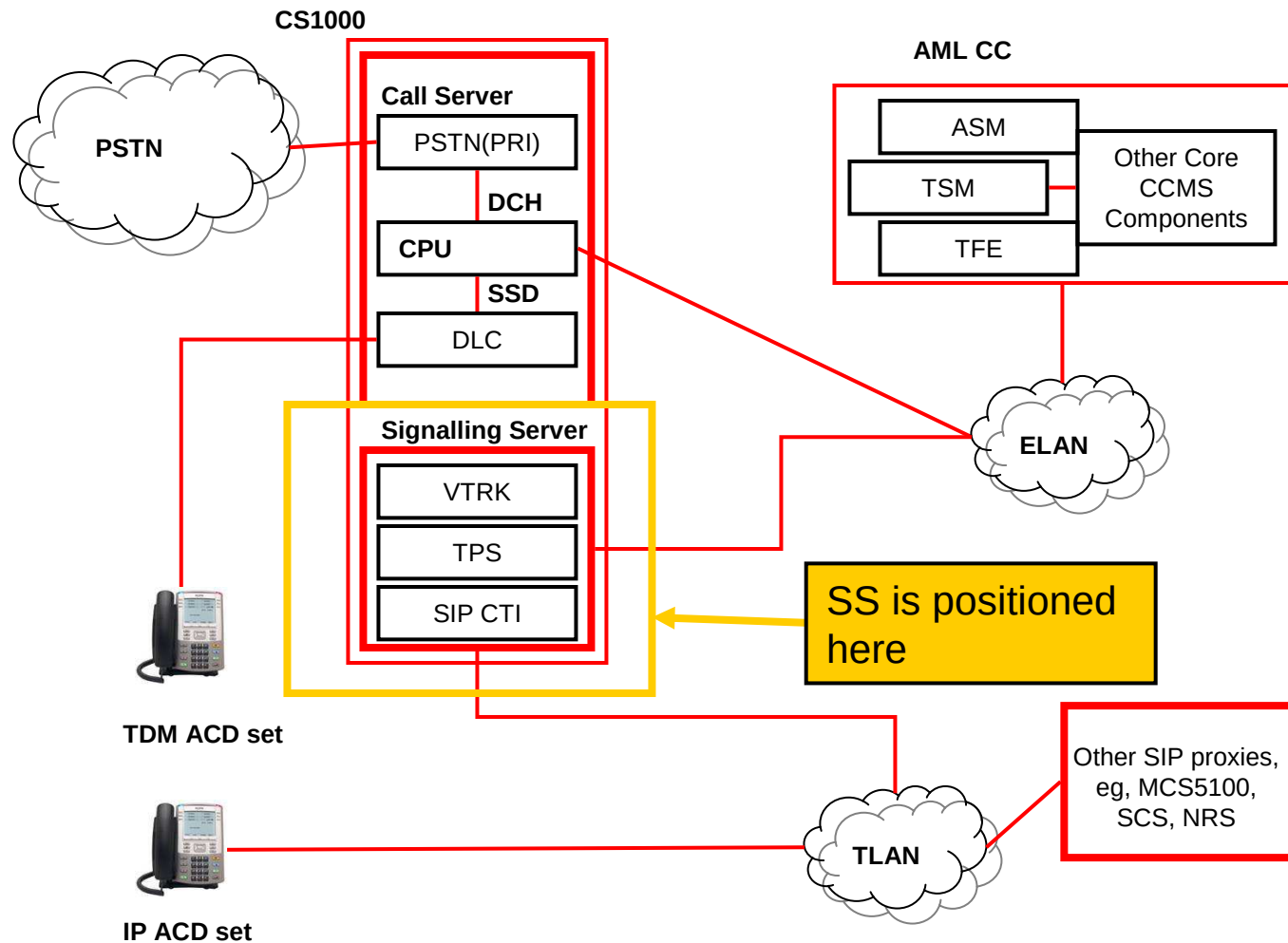
- SIP domains are similar, but not the same as AD domains
 - A site can have multiple AD and SIP domains
- A SIP user endpoint is usually composed of a <UN>@<FQDN>
 - Eg: ctuohy@nortel.com, ctuohy@47.166.107.38
- A DNS Server record for an AD domain may advise the proxy that services its SIP domain.
- Important SIP domain configuration on Express:
 - Server Configuration->SIP Network tab
 - Route point configuration
 - Agent SIP URI configuration.
- Current implementation expects AD like domain names
 - Single word SIP domain names currently cause issues, eg nortel
 - This is documented and will be revisited in future releases

CS1000 and SIP (1)



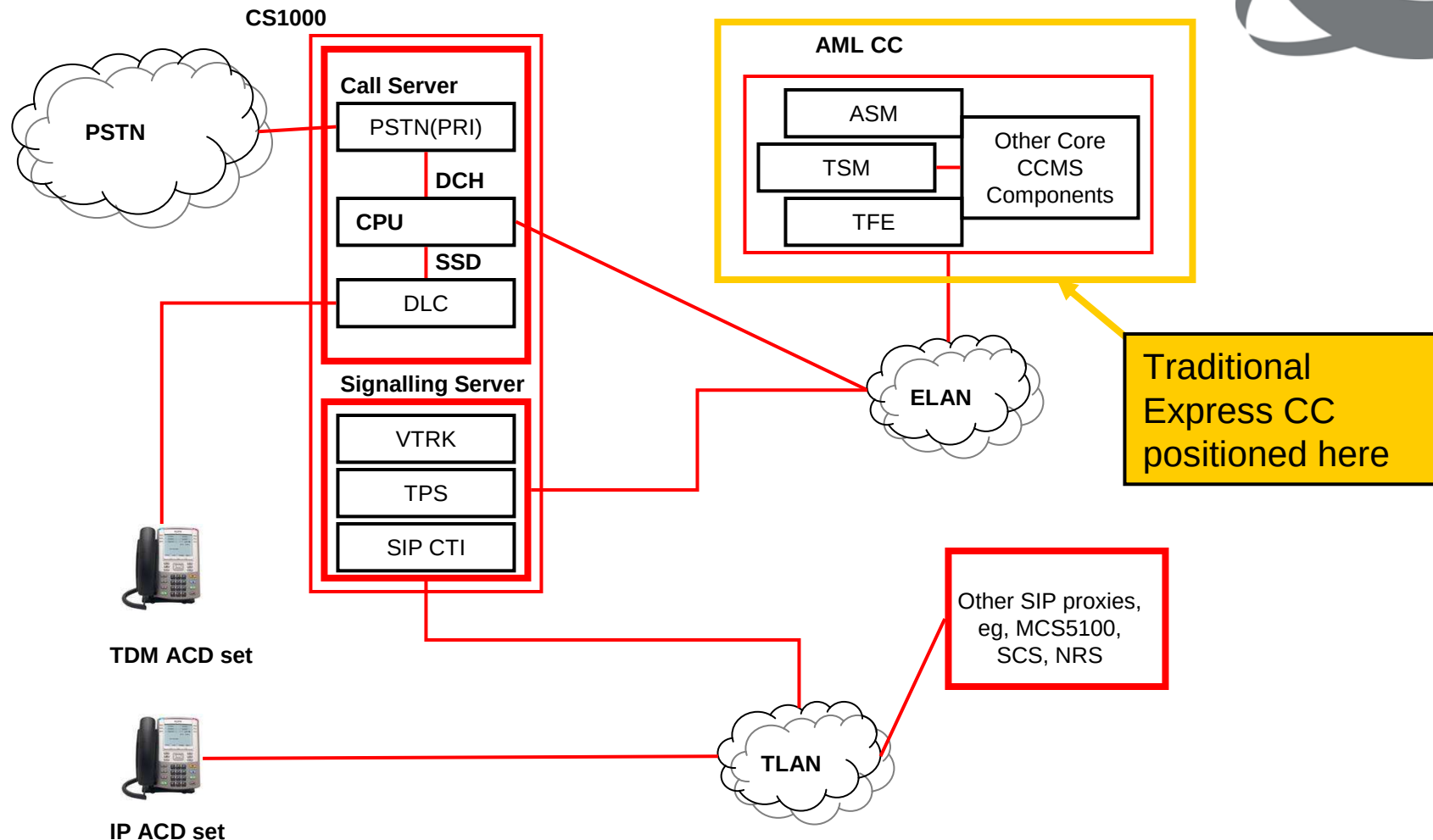
- TPS Emulates TDM sets, and communicates with the CS via SSD
- VTRK emulated MCDN, and communicated with CS via DCH messaging
- All the above are transported via the ELAN link

CS1000 and SIP (2)



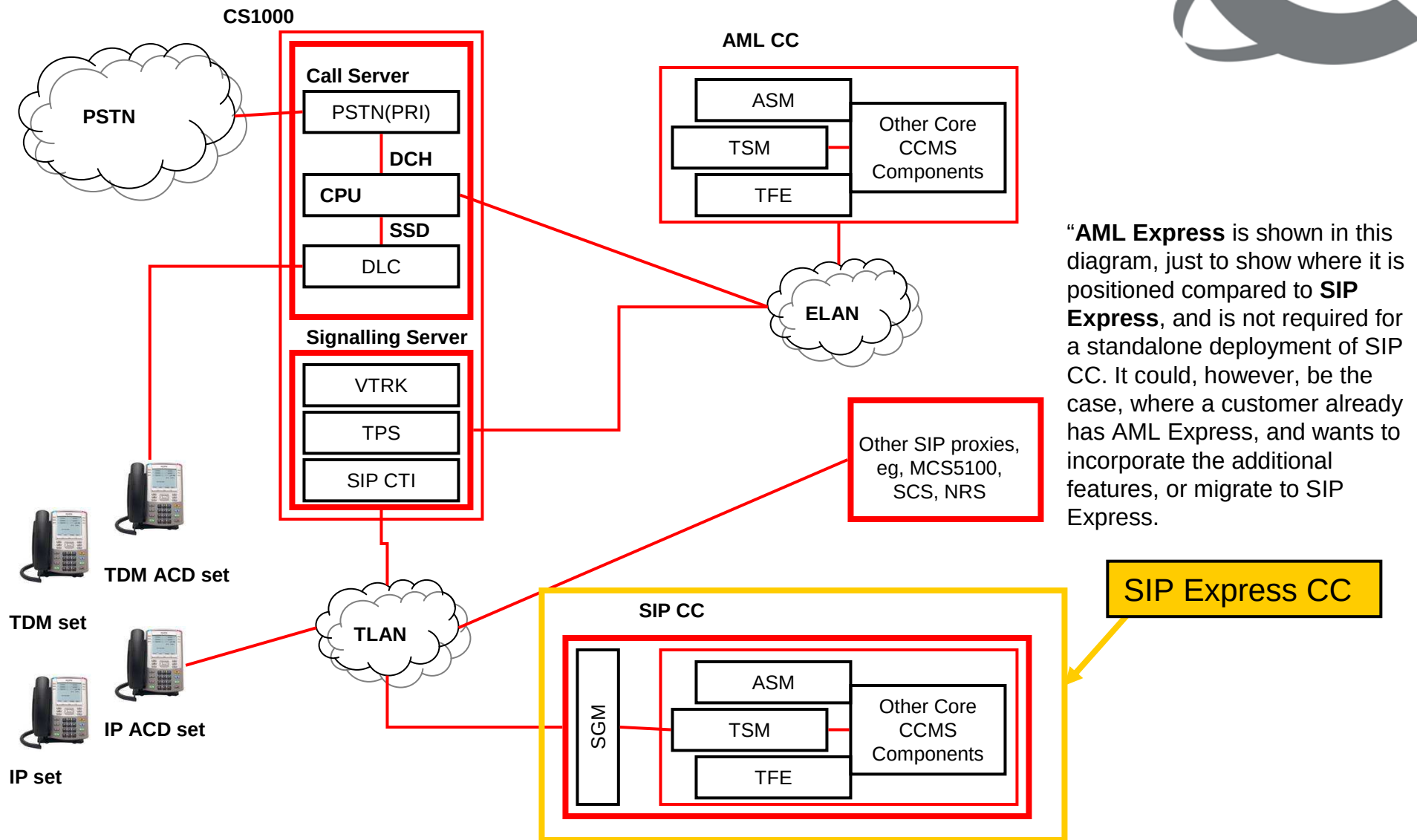
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CS1000 and SIP (3)



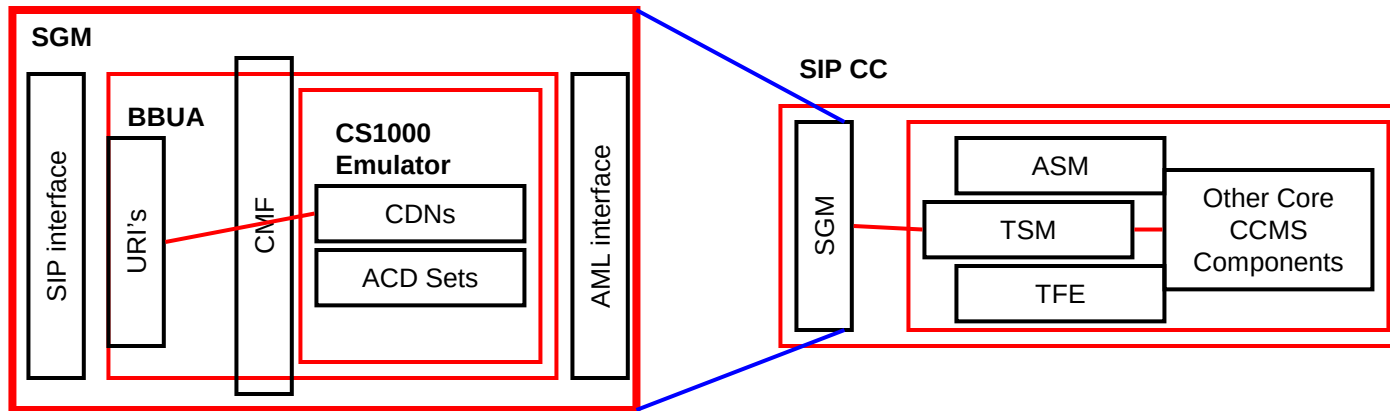
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- VTRK emulated MCDN, and communicated with CS via DCH messaging
- All the above are transported via the ELAN link

CC Express 7.1



“**AML Express** is shown in this diagram, just to show where it is positioned compared to **SIP Express**, and is not required for a standalone deployment of SIP CC. It could, however, be the case, where a customer already has AML Express, and wants to incorporate the additional features, or migrate to SIP Express.

SIP Gateway Manager (SGM)



- SIP enables Express
- SGM interfaces
 - Provides an AML interface to Telephony Service Manager (TSM)
 - Provides a SIP interface to the SIP network
- Internal Components
 - CS1000 Emulator
 - Maps SIP URIs to CDNs that TSM can understand



CDN/Route Point detail

- CDN has “moved” into the SIP network, now called a Controlled Route Point.
- Endpoint in the SIP network
- Calls routed to it directly, or via a Network Routing Service (NRS)
- Accepts and processes calls using the defined Uniform Resource Indicator (URI)*
- Request URI's received not matching the defined URI are rejected (404 Not Found or 403 Forbidden).
- Registration is not yet supported.

* [Uniform Resource Identifier] - The generic term for all types of names and addresses that refer to objects on the World Wide Web <http://www.ietf.org/rfc/rfc3986.txt>

CDN/Route Point detail (2)



CDNs (Route Points) Server:

CDNs		Open Queue		Refresh		
Name	Number	URI	Call Type	Acquired?	Status	
2314_SalesCDN	2314	sip.2314@sipccocs.com	Local	☒	Acquired	
2315_UniversalCDN	2315	sip.2315;phone-context=cdp.udp@sipccocs.com:5060;maddr=47.166.110.31;transport=tcp;user=phone	Local	☒	Acquired	

- CCMA defines the Route Point on the SIP network
- When defined, it does the following:
 - Sets the accepted URI in SGM
 - Sets the CDN to be configured in the CS1000 emulator
 - Advised CCMS of the CDN to acquire (on the emulator)
- When defined, maps the URI to the CDN, to be processed by CCMS
- The Route Points need to be acquired so CCMS will service them

Agent SIP Detail config



Agent Details : **Colm Tuohy**

▼ [User Details](#)

First Name:	* Colm	User Type:	Agent
Last Name:	* Tuohy	Login ID:	* 3794
Title:			
Department:		SIP URI:	sip:ctuohy@sipccocs.com
Language:	English	SIP Terminal:	sip:3794@47.166.107.38

- SIP URI and SIP Terminal ARE REQUIRED
 - Identifies the agent's tel set on the SIP network
 - CCT does not import agent terminals as before
- SIP Terminal
 - Is always defined as the agent's provisioned DN followed by the CS1000 Node IP.
 - "sip:3794@47.166.107.38" in this example.
- SIP URI
 - Can be the same as the agent's windows login name and domain
 - Note the login domain is the same name as the CS1000 SIP domain - "sipccocs.com" in this example.

Solution Diagram

Required information before deployment

CS1000 details:

- Login details for CS1000 and NRS
- Node Number
- Node IP
- NRS IP
- NRS type (eg: co-res SRS, standalone SPS)
- SIP Domain, including L0 and L1 levels.
- Type of dialling plan (CDP/UDP).
- SIP Trunk details: Zone no, loop no, DCH no, Route no, RLB used, DSC/LOC used to access RLB, DMI alterations if any.
- Planned numbers for Express Route Points, and agent terminals.

Express Details:

- Server name and IP
- Server Login details
- CCMA details
- Test agent details (2 off)
- Planned script deployment
- ROUTE CALL plans

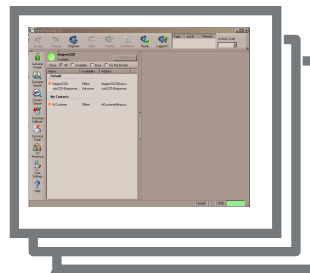
Customer touch points

Voice
Customer



DN 4159

Agents



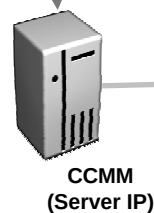
DN 4150

DN 4151

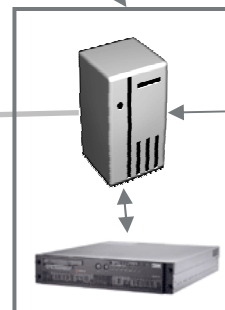
DN 4152

IP or TDM
phones

CCT and CCMM Web services connections

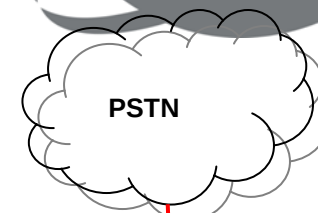


CCMM
(Server IP)



Express 7
(Server IP)

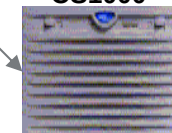
SIP
Network



PSTN

Node 61 (Node IP)
(SIP CTI IP = Node IP)

CS1000



NRS



CS1000 DSP considerations

- CS1000 DSPs
- DSP Consumption
- DSP Engineering



CS1000 DSPs

- Digital Signalling Processor (DSP)
- Transcode TDM media to IP media and vice versa
- Pool resource on the CS1000
- Used when a TDM user and an IP user are connected (speech path)
 - Eg: PSTN user calls an IP tel set user, IP telset user calls a TDM user
- Sufficient number of DSP's to handle TDM/IP trans coding traffic
- 3 major parties of a CC, which can be TDM or IP types
 - Customers, Agents, 3rd Parties / experts
 - TDM endpoints will each consume a DSP
 - Local IP endpoints will not consume a DSP
- Each site profile will be different – Depends if callers, agents and / or xferred to parties are TDM or IP endpoints.
- Will need to be engineered and monitored for blocking scenarios



DSP Consumption

- Each TDM caller will consume 1 DSP
 - Eg: 10 TDM calls waiting, 5 TDM calls answered by IP agents, will consume 15 DSPs.
- Each TDM agent will consume 1 DSP while on a CC call,
 - eg: 10 TDM calls waiting, 5 TDM calls answered by 2 TDM agents, and 3 IP Agents, $10+5+2=17$ DSPs
- Calls xferred to TDM endpoints by agents, currently consumes 2 DSPs for the duration of the call
 - Eg: 10 Calls waiting, 5 TDM calls answered by 2 TDM agents, and 3 IP agents, and the previous 8 TDM calls xferred to TDM endpoints. $10+5+2+(8 \times 2) = 33$ DSPs



DSP Engineering

- Understand how a site is employing their DSP pool
 - Use them for existing H.323 or SIP trunks
 - IP phone conferencing
 - TDM – IP telset interaction
- Establish traffic profile
 - CS1000 traffic reporting
- Monitor DSP usage,
 - CS1000 traffic reporting and/or VGW OM Reports
- Monitor for blocking scenarios



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Deploying CC Express - CS1000 SIP
Configuration

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Deploying Express – CS1000 SIP Configuration



- System Diagram
- CS1000 Assumptions
- Required CS1000 information
- CS1000 Configuration tasks
- Express Server Assumptions
- Required Express Server details
- Enable SIP app on the SS*
- Post SIP Gateway configuration
- CS SIP Trunk configuration
- Post SIP trunk configuration
- SIP CTI
- Checking applications state
- NRS configuration (VxWorks based NRS)
- NRS configuration (Standalone COTS type)
- Using Call Pilot as a Front end IVR / Routing callers ba...

Solution Diagram

Required information before deployment

CS1000 details:

- Login details for CS1000 and NRS
- Node Number
- Node IP
- NRS IP
- NRS type (eg: co-res SRS, standalone SPS)
- SIP Domain, including L0 and L1 levels.
- Type of dialling plan (CDP/UDP).
- SIP Trunk details: Zone no, loop no, DCH no, Route no, RLB used, DSC/LOC used to access RLB, DMI alterations if any.
- Planned numbers for Express Route Points, and agent terminals, ROUTE CALL DN's.

Express Details:

- Server name and IP
- Server Login details
- CCMA details
- Test agent details (2 off)
- Planned script deployment
- ROUTE CALL plans

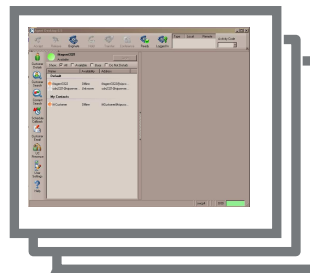
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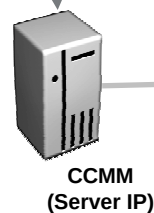
DN 4150

DN 4151

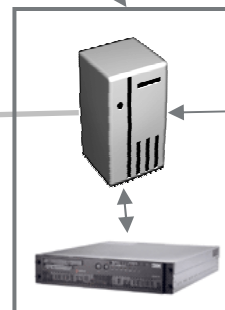
DN 4152

IP or TDM
phones

CCT and CCMM Web services connections

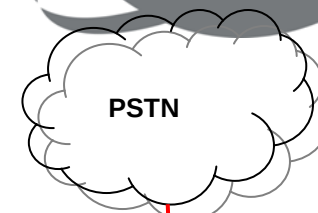


CCMM
(Server IP)



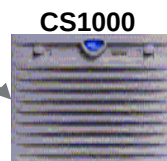
Express 7
(Server IP)

SIP
Network



PSTN

Node 61 (Node IP)
(SIP CTI IP = Node IP)



CS1000

NRS



CS1000 Assumptions

- **Release 5 and greater, and suitably patched*.**
- **Available licences – Details later**
 - SIP ports, SIP CTI AML, TR87, SIP Trunk DCH
- **Already have a VoIP enabled CS1000 in place****
 - Signalling Server, NRS and DSP's installed and ready
- **Already use a CDP or UDP dialling plan (ESN data block is set up)**
- **Network Routing Service – Two types**
 - SIP Redirect Server (SRS)
 - SIP Proxy Server (SPS)
 - Can be co-res with the SS above
 - Or exist somewhere else in the SIP Network

*Please see the up to date Distributor Technical Reference for required patches.

**Deployment of CS1000 VoIP components is well documented via CS1000 NTPs. See CS1000E Upgrade Procedure NN43041-458 for example.



Required CS1000 information

- Know or decide on the following details: (In red are the details used in this example)
 - System login details (SS, NRS and CS)
 - Node IP address **47.166.110.196**
 - CS & SS ELAN IP address **47.166.111.74 & 76**
 - Node number **62**
 - SIP domain name, (including L1 (UDP) and L0 (CDP)) **nortel.com, udp_nortel, cdp_nortel.udp_nortel**
 - SIP Gateway Endpoint Name **cppm02_nortel**
 - NRS IP address **47.166.110.197**
 - SIP trunk (VTRK) Zone **2**
 - SIP trunk DCH number **10**
 - SIP trunk Route number **10**
 - SIP trunk ACOD **4810**
 - SIP trunk loop **64**
 - Chose a Dialling plan to integrate Express – CDP / UDP **CDP**
 - Chose the Express server CDN's (Route Points) **2150**
 - List ROUTE CALL DN's **93450**
 - List Agent DN's **4310, 4315**



CS1000 Configuration tasks

- Enable peer to peer SIP networking
 - Enable and config SIP application on SS
 - Add SIP VTRK SUPL, ZONE, DCH, ROUTE, RLB, DSC/LOC
- Enable SIP CTI
 - Enable application on SS
 - Add VAS and ELAN on CS
- Configure Agent sets with an SCR key, T87A COS and AST



Express Server Assumptions

- Express CC is already installed and ready for config



Required Express Server details

- System login details
- Server hostname and IP
- CCMA login details



Enable SIP app on the SS*

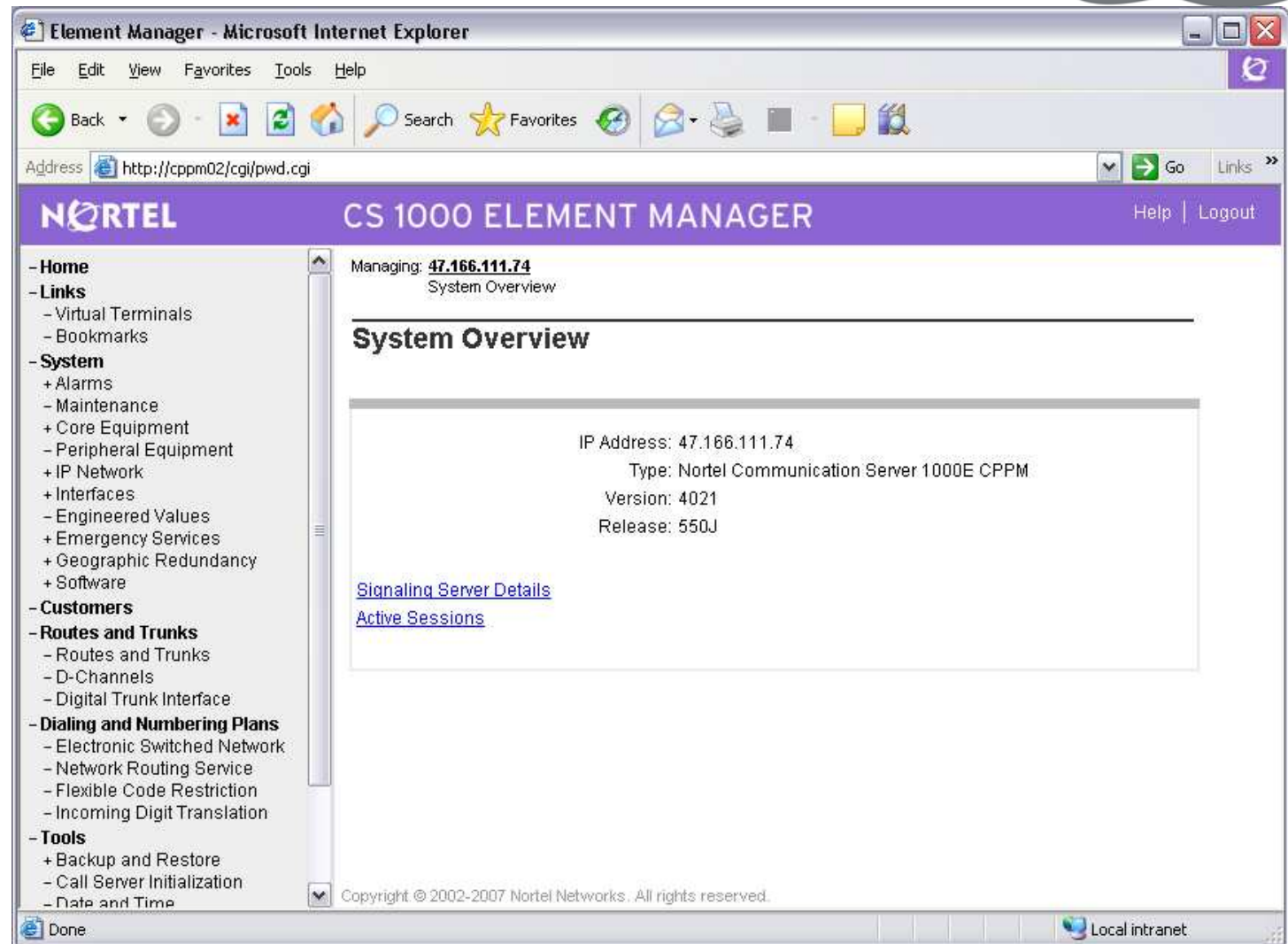
- Login to the CS1000.
- Login to the CS1000 Element Manager, either through UCM (R6.0), ECM (R5.x) or directly on the signalling server (vxWorks based R5.x)

*These screen shots have been collected from CS1000 R5.5 with co-resident NRS.

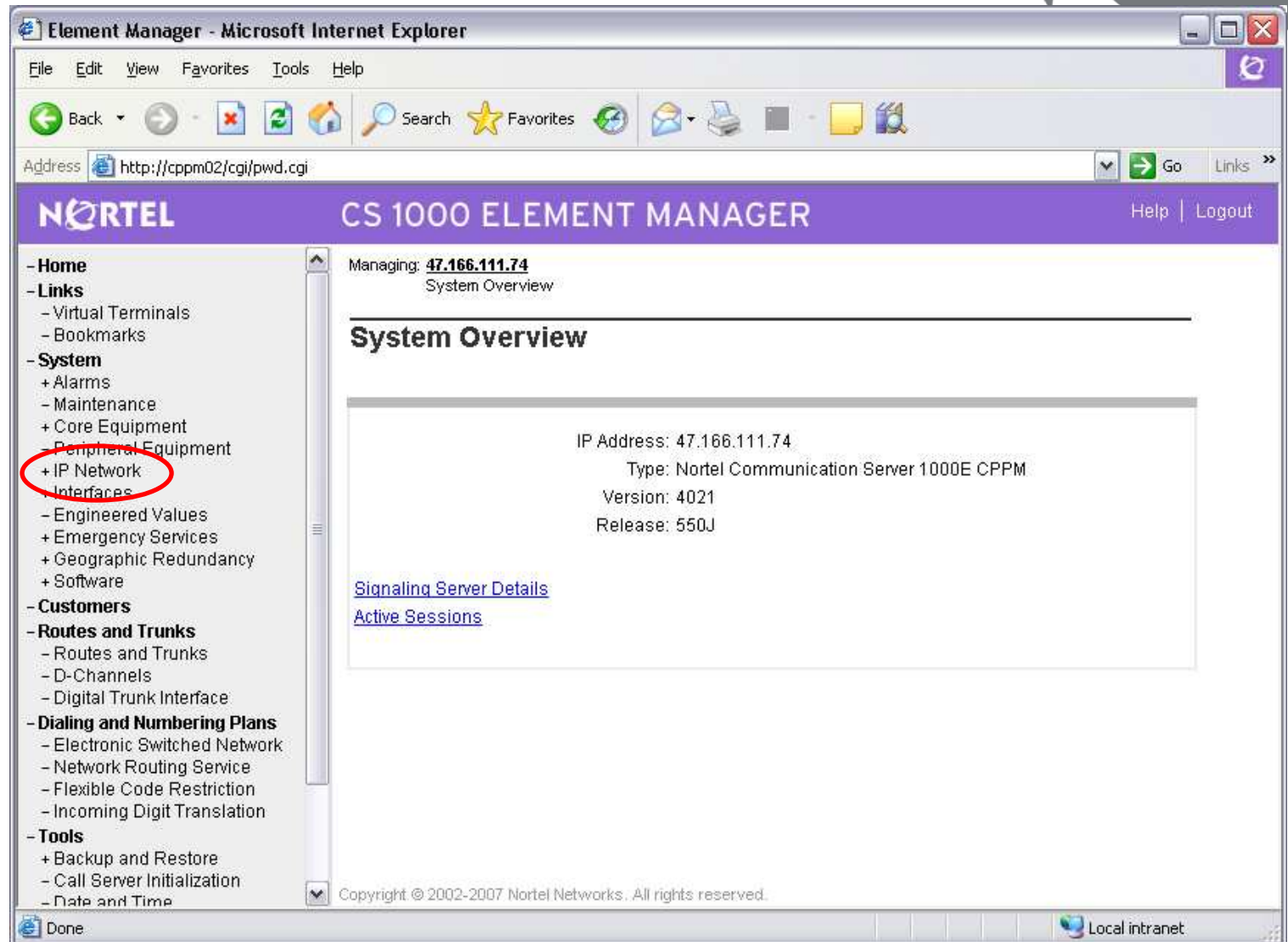
This is considered the most common deployment today (Oct 2009) for small sites and labs

The screenshot shows a web browser window titled "Login to Element Manager - Microsoft Internet Explorer". The address bar shows the URL "http://cppm02/cgi/pwd.cgi?c=Pubkey&h=context/admin/login&l=en". The page has a purple header with the text ">CS 1000 ELEMENT MANAGER" and the Nortel logo. Below the header, there is a "WARNING!" section with a disclaimer about the software and data. To the right of the warning, there are input fields for "User ID:", "Password:", and "Call Server IP Address: 47.166.111.74". At the bottom right, there are "Login" and "Reset" buttons. The footer of the page says "Copyright © 2002-2007 Nortel Networks. All rights reserved." The browser's status bar at the bottom shows "Done" and "Local intranet".

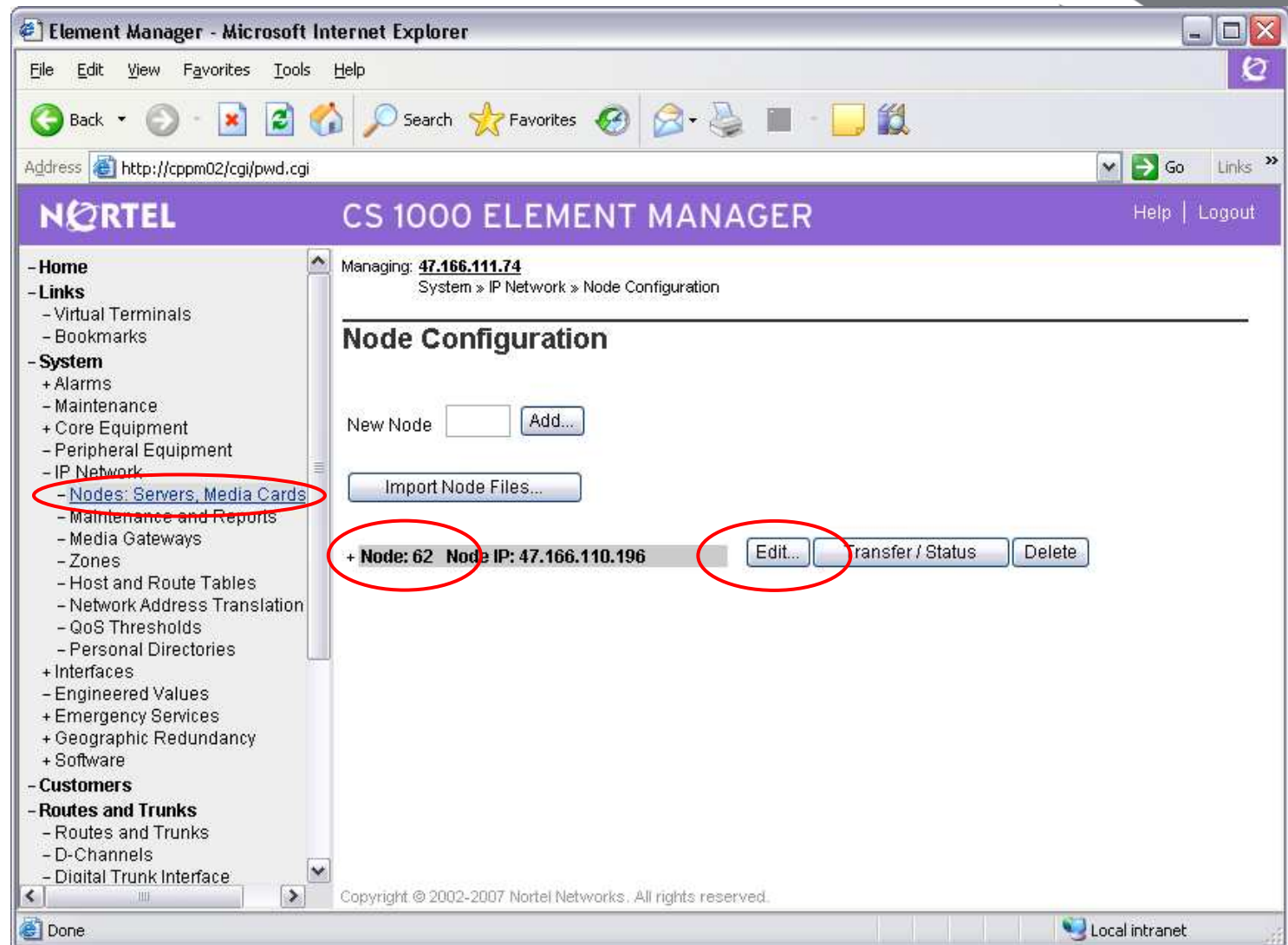
Logged in



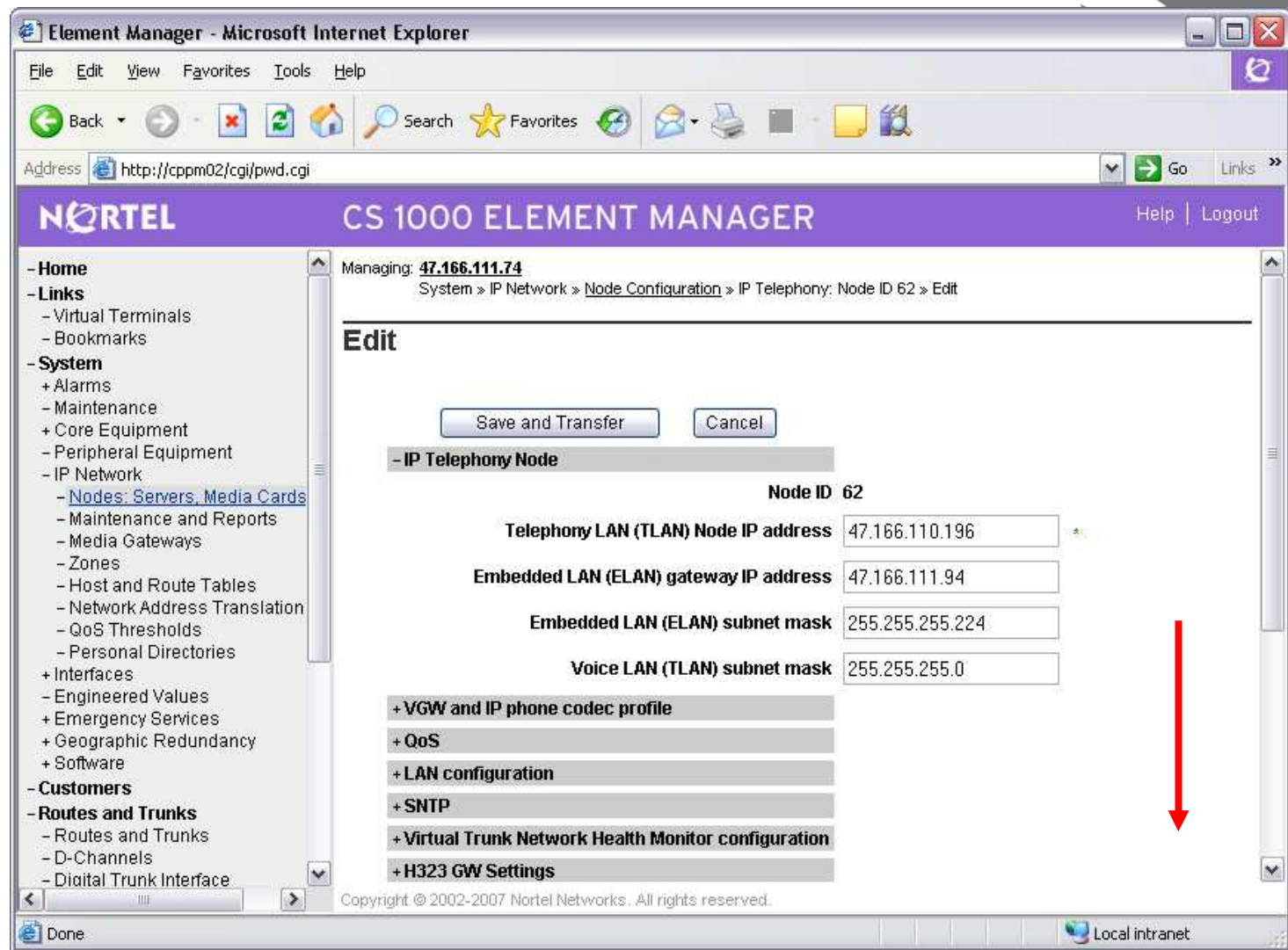
Enable and config SIP app – Expand IP Network



Click Nodes, then Edit the node to be configured



Scroll down



SIP GW Settings



Expand SIP GW Settings

The screenshot shows the 'Element Manager - Microsoft Internet Explorer' window. The address bar displays 'http://cppm02.europe.nortel.com/cgi/pwd.cgi'. The page title is 'NORTEL CS 1000 ELEMENT MANAGER'. The left sidebar contains a navigation tree with categories: Home, Links, System, Customers, Routes and Trunks, Dialing and Numbering Plans, and Tools. The 'System' category is expanded, and 'SIP GW Settings' is selected. The main content area displays configuration fields for 'Telephony LAN (TLAN) Node IP address' (47.166.110.196), 'Embedded LAN (ELAN) gateway IP address' (47.166.111.94), 'Embedded LAN (ELAN) subnet mask' (255.255.255.224), and 'Voice LAN (TLAN) subnet mask' (255.255.255.0). Below these are expandable sections for '+VGW and IP phone codec profile', '+QoS', '+LAN configuration', '+SNTP', '+Virtual Trunk Network Health Monitor configuration', '+H323 GW Settings', '+Firmware', '+SIP GW Settings' (highlighted), '+SIP URI Map', '+SIP CD Services', '+SIP CTI Services', '+Microsoft Unified Messaging', '+Cards' (with an 'Add' button), and '+Signaling Servers' (with an 'Add' button). At the bottom are 'Save and Transfer' and 'Cancel' buttons. A footer note states '* Mandatory fields of current configuration' and 'Copyright © 2002-2007 Nortel Networks. All rights reserved.' The status bar shows the URL 'http://cppm02.europe.nortel.com/ifs/nav/navtree.htm#H_39_3' and 'Local intranet'.

SIP GW Settings

Ensure this is set to disabled, or best effort

Set to NRS IP (SS TLAN IP) (if not already)

An SRS supports UDP or TCP

Element Manager - Microsoft Internet Explorer

Address: <http://cpm02.europe.nortel.com/cgi/pwd.cgi>

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

- Home
- Links
 - Virtual Terminals
 - Bookmarks
- System
 - + Alarms
 - Maintenance
 - + Core Equipment
 - Peripheral Equipment
 - IP Network
 - Nodes: Servers, Media Cards
 - Maintenance and Reports
 - Media Gateways
 - Zones
 - Host and Route Tables
 - Network Address Translation (NAT)
 - QoS Thresholds
 - Personal Directories
 - + Interfaces
 - Engineered Values
 - + Emergency Services
 - + Geographic Redundancy
 - + Software
 - Customers
 - Routes and Trunks
 - Routes and Trunks
 - D-Channels
 - Digital Trunk Interface
 - Dialing and Numbering Plans
 - Electronic Switched Network
 - Network Routing Service
 - Flexible Code Restriction
 - Incoming Digit Translation
 - Tools
 - + Backup and Restore
 - Call Server Initialization
 - Date and Time
 - + Logs and reports
 - Security
 - + Passwords
 - + Policies
 - + Login Options

+ Firmware

- SIP GW Settings

TLS Security

Security Policy: Best Effort

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: 47.166.110.197

Port: 5060

Supports Registration: ☒

Primary CDS Proxy or Re-direct server flag: ☒

Transport Protocol: TCP

Secondary Proxy or Re-direct Server

Secondary Proxy or Redirect (TLAN) IP address: 47.166.107.58

Port: 5061

Supports Registration: ☒

Secondary CDS Proxy or Re-direct server flag: ☒

Transport Protocol: TLS

CLID Parameters

Country Code (CCC):

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

Digits to Strip: Prefix to Insert: Format of CLID

Subscriber Number (SN): 0 +<CCC><AreaCode><SN>

National Number (NN): 0 +<CCC><NN>

International number: +<International number>

+ SIP URI Map

+ SIP CD Services

+ SIP CTI Services

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Local intranet

SIP URI map

Expand SIP URI Map

Element Manager - Microsoft Internet Explorer

Address: <http://cppm02.europe.nortel.com/cgi/pwd.cgi>

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

Node ID 62

Telephony LAN (TLAN) Node IP address: 47.166.110.196

Embedded LAN (ELAN) gateway IP address: 47.166.111.94

Embedded LAN (ELAN) subnet mask: 255.255.255.224

Voice LAN (TLAN) subnet mask: 255.255.255.0

- + VGW and IP phone codec profile
- + QoS
- + LAN configuration
- + SNTP
- + Virtual Trunk Network Health Monitor configuration
- + H323 GW Settings
- + Firmware
- + SIP GW Settings
- + SIP URI Map**
- + SIP CD Services
- + SIP CTI Services
- + Microsoft Unified Messaging
- + Cards [Add]
- + Signaling Servers [Add]

[Save and Transfer] [Cancel]

**Mandatory fields of current configuration*

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Local intranet

SIP URI map



Enter the L1 domain name

Enter the L0.L1 domain name

The screenshot shows the 'SIP URI Map' configuration page in the Nortel CS 1000 Element Manager. The left sidebar contains a navigation tree with categories like Home, Links, System, Customers, Routes and Trunks, and Tools. The main content area is titled 'SIP URI Map' and contains several input fields for domain names. Red arrows point from the text labels on the left to the 'Public E.164/National domain name' and 'Private/UDP domain name' fields.

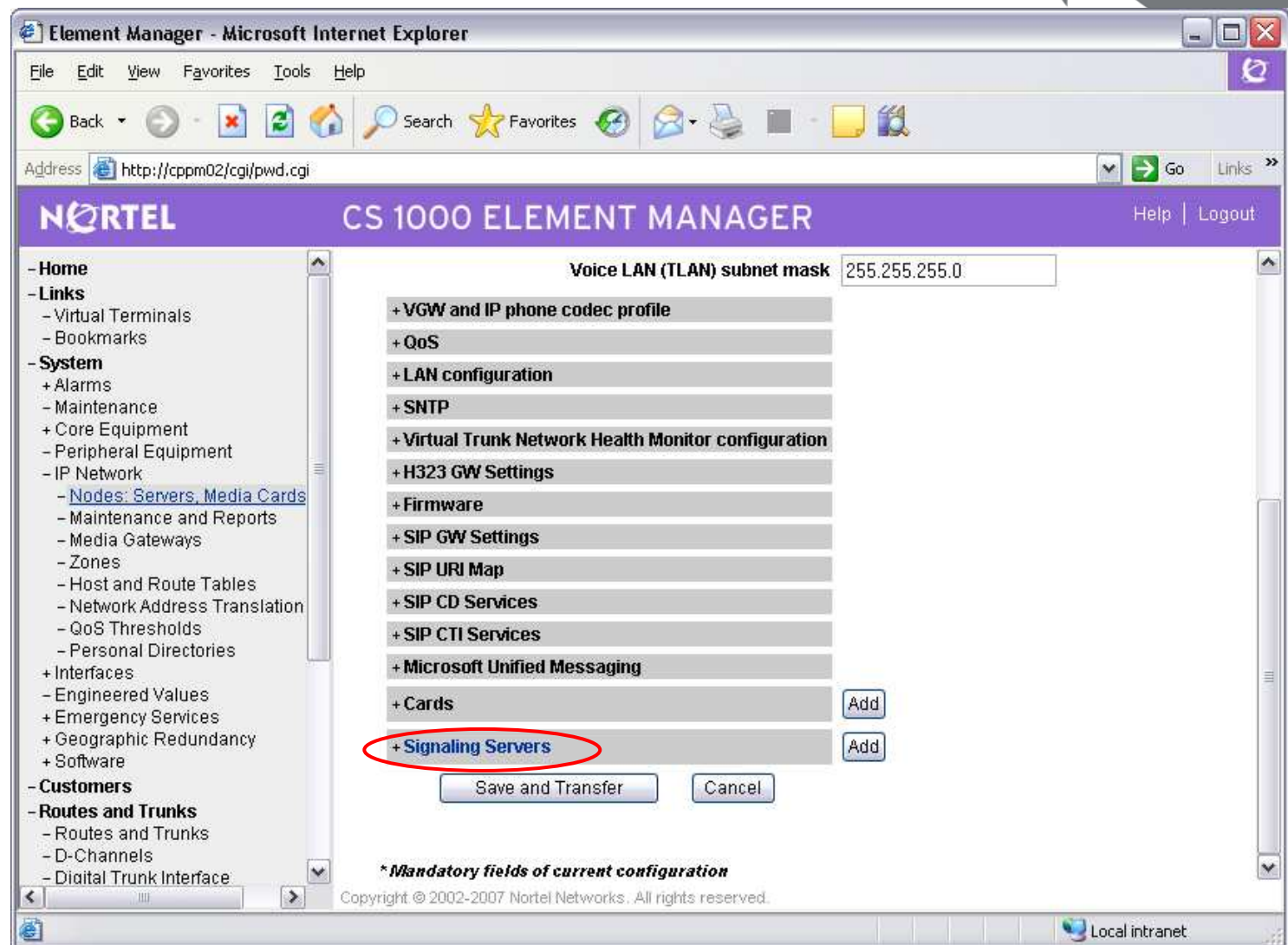
Domain Name	Value
Public E.164/National domain name	nortel.com
Public E.164/Subscriber domain name	lab.nortel.com
Public E.164/Unknown domain name	PublicUnknown
Public E.164/Special Number domain name	PublicSpecial
Private/UDP domain name	udp_nortel
Private/CDP domain name	cdp_nortel.udp_nortel
Private/Special Number domain name	PrivateSpecial
Private/Unknown (vacant number routing) domain name	PrivateUnknown
Unknown/Unknown domain name	UnknownUnknown

Buttons: Save and Transfer, Cancel

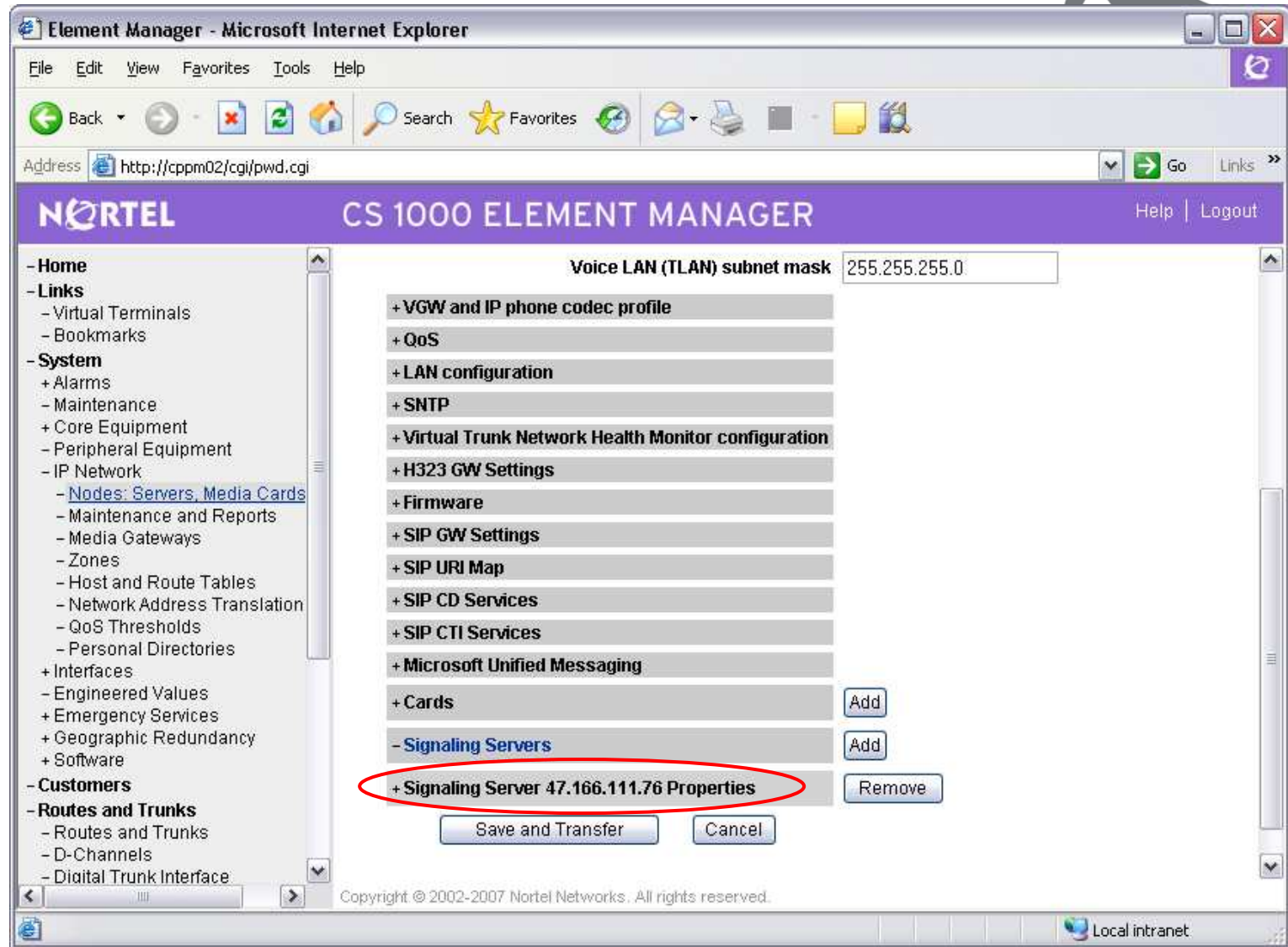
* Mandatory fields of current configuration

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Expand Signalling Servers



Expand the SS in the node to be configured



Configure the SIP gateway

Drop down and select option with SIP in it

If a co-res NRS is required, check this box

5060 is the default port for SIP

Chosen SIP domain

Chosen SIP Gateway Endpoint Name

Chose and remember this password

If using Co-res NRS, select as Primary

When finished, **Save and Transfer**

Element Manager - Microsoft Internet Explorer

Address: http://cppm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

- Signaling Server 47.166.111.76 Properties [Remove]

Role: **Leader**
Type: **CPPM**

Embedded LAN (ELAN) IP address: 47.166.111.76
Embedded LAN (ELAN) MAC address: 00:1b:ba:fc:7a
Telephony LAN (TLAN) IP address: 47.166.110.197
Telephony LAN (TLAN) gateway IP address: 47.166.110.254
Hostname: cppm02_nortel
H323 ID: cppm02_nortel

Enable Line TPS: ☒
Enable IP Peer Gateway (Virtual Trunk TPS): **SIP only** (dropdown menu)
N) IP address and Telephony LAN(TLAN) not in the same subnet as Telephony LAN when Line TPS or IP Peer Gateway is H.323 and SIP and/or VTRK applications will not run.

Enable SIP Proxy / Redirect Server: ☒
Local SIP TCP/UDP Port to Listen to: 5060
SIP Domain name: nortel.com
SIP Gateway Endpoint Name: cppm02_nortel
SIP Gateway Authentication Password: ●●●●

Enable Gatekeeper: ☐
Network Routing Service Role: **Primary** (dropdown menu)

[Save and Transfer] [Cancel]

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Local intranet

Navigation Tree:

- Home
- Links
 - Virtual Terminals
 - Bookmarks
- System
 - + Alarms
 - Maintenance
 - + Core Equipment
 - Peripheral Equipment
 - IP Network
 - Nodes: Servers, Media Cards
 - Maintenance and Reports
 - Media Gateways
 - Zones
 - Host and Route Tables
 - Network Address Translation
 - QoS Thresholds
 - Personal Directories
 - + Interfaces
 - Engineered Values
 - + Emergency Services
 - + Geographic Redundancy
 - + Software
- Customers
- Routes and Trunks
 - Routes and Trunks
 - D-Channels
 - Digital Trunk Interface
- Dialing and Numbering Plans
 - Electronic Switched Network
 - Network Routing Service
 - Flexible Code Restriction
 - Incoming Digit Translation
- Tools
 - + Backup and Restore
 - Call Server Initialization
 - Date and Time
 - + Logs and reports
- Security
 - + Passwords
 - + Policies



Transfer Complete

Element Manager - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back

Search

Favorites

Address

http://cppm02/cgi/pwd.cgi

Go

Links

NORTEL

CS 1000 ELEMENT MANAGER

Help | Logout

- Home

- Links

- System

- Customers

- Routes and Trunks

Dialing and Numbering Plane

- Virtual Terminals

- Bookmarks

+ Alarms

+ Maintenance

+ Core Equipment

- Peripheral Equipment

- IP Network

- Nodes: Servers, Media Cards

- Maintenance and Reports

- Media Gateways

- Zones

- Host and Route Tables

- Network Address Translation

- QoS Thresholds

- Personal Directories

+ Interfaces

- Engineered Values

+ Emergency Services

+ Geographic Redundancy

+ Software

- Routes and Trunks

- Routes and Trunks

- D-Channels

- Digital Trunk Interface

Managing: 47.166.111.74

System » IP Network » Node Configuration » IP Telephony: Node ID 62 » Transfer / Status

Transfer / Status

Select All

Unselect All

Transfer to Selected Elements

Hostname	ELAN IP	TN	Type	Role	Transfer Status (BOOTP)	Transfer Status (CONFIG)
☐ cppm02_nortel	47.166.111.76		Signaling Server - CPPM	Leader	Finished	Finished

Cancel

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Local intranet



Post SIP Gateway configuration

- A SS reboot may be necessary to start the VTRK and NRS applications if selected as per above
- In order to communicate with other SIP devices, this endpoint will be added to an NRS
 - In this case, the NRS is a co-res application on this SS
- Instructions on how to add the CS1000 as a SIP Endpoint is covered later



CS SIP Trunk configuration

- Add a VTRK zone, or use an existing zone if engineered to the requirements of the site
- Zones are used to help manage bandwidth consumption on the customer LAN for VoIP media
- The compromise is on the quality of speech path with VoIP users and capacity (number of concurrent calls) a LAN connection can cope with
- The options are Best Quality (high BW) or Best Bandwidth (lower quality)
- The CS1000 decides on the most suitable media codec, according to the zone rules defined by the craftsperson

Add a zone – Click Zones

Element Manager - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://cppm02/cgi/pwd.cgi> Go Links

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

Managing: **47.166.111.74**
System » IP Network » [Node Configuration](#) » IP Telephony: Node ID 62 » Transfer / Status

Transfer / Status

Select All Unselect All Transfer to Selected Elements

Hostname	ELAN IP	TN	Type	Role	Transfer Status (BOOTP)	Transfer Status (CONFIG)
☐ cppm02_nortel	47.166.111.76		Signaling Server - CPPM	Leader	Finished	Finished

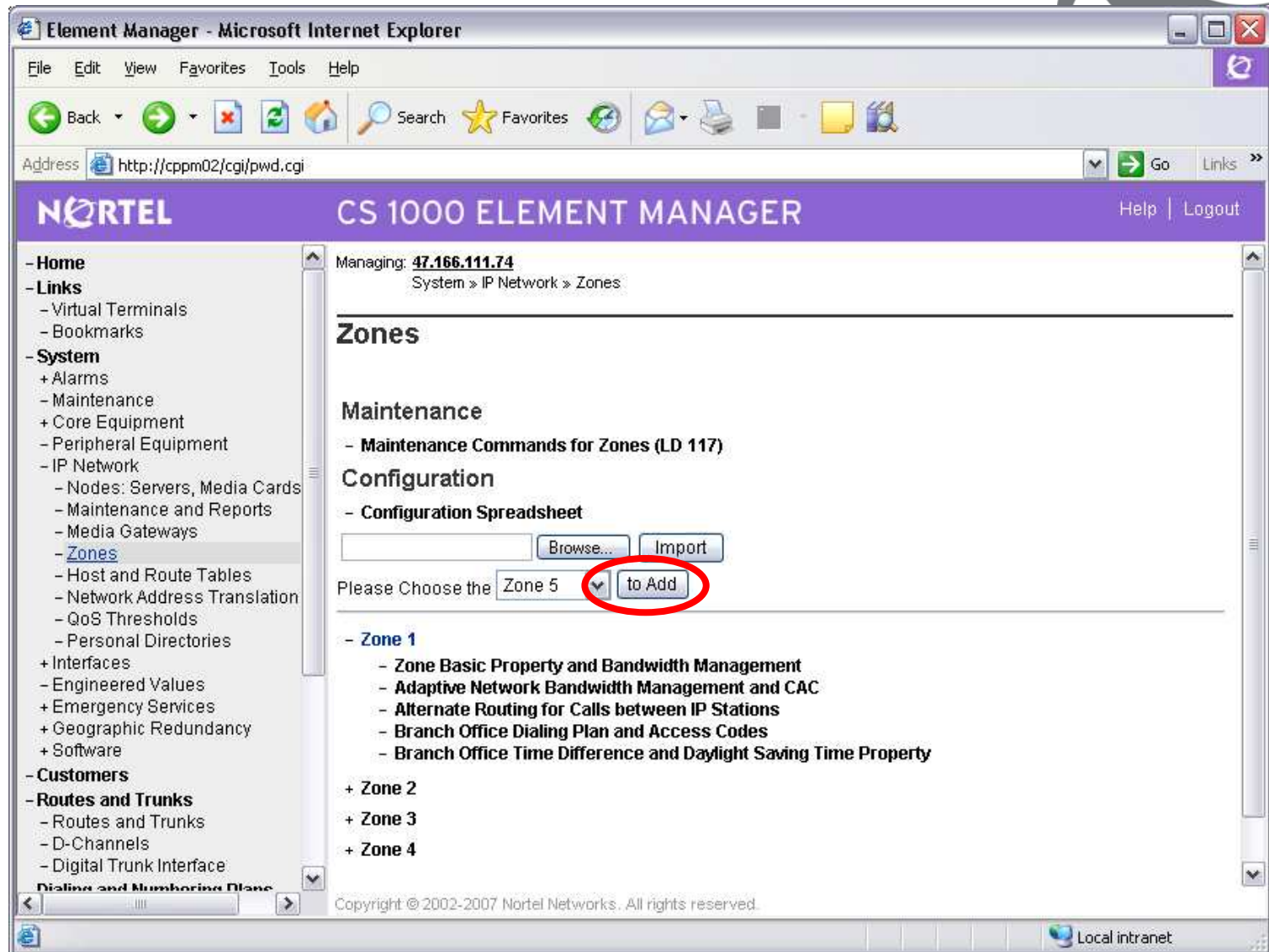
Cancel

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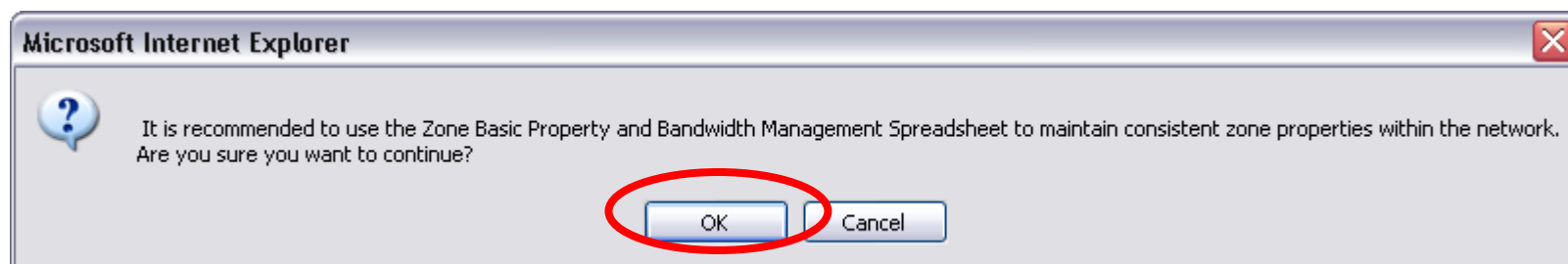
Local intranet

- Home
- Links
 - Virtual Terminals
 - Bookmarks
- System
 - + Alarms
 - Maintenance
 - + Core Equipment
 - Peripheral Equipment
 - IP Network
 - [Nodes: Servers, Media Cards](#)
 - Maintenance and Reports
 - Media Gateways
 - **Zones**
 - Host and Route Tables
 - Network Address Translation
 - QoS Thresholds
 - Personal Directories
 - + Interfaces
 - Engineered Values
 - + Emergency Services
 - + Geographic Redundancy
 - + Software
- Customers
- Routes and Trunks
 - Routes and Trunks
 - D-Channels
 - Digital Trunk Interface
- Dialing and Numbering Plans

Add a zone – Click Add



Click OK, if only performing basic Zone configuration



Zone configuration



Select defaults, unless familiar with zone management

Select VTRK from the drop down box

Enter a description to identify the zone correctly, eg, SIProute10

Click Submit

Element Manager - Microsoft Internet Explorer

Address: http://cppm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER

Managing: 47.166.111.74

System » IP Network » Zones » Zone 5 » Zone Basic Property and Bandwidth Management

Zone Basic Property and Bandwidth Management

Input Description	Input Value
Zone Number (ZONE):	5
Intrazone Bandwidth (INTRA_BW):	1000000
Intrazone Strategy (INTRA_STGY):	Best Quality (BQ)
Interzone Bandwidth (INTER_BW):	1000000
Interzone Strategy (INTER_STGY):	Best Quality (BQ)
Resource Type (RES_TYPE):	Shared (SHARED)
Zone Intent (ZBRN):	MO (MO)
Description (ZDES):	MO (MO) BMG (BMG) VTRK (VTRK)

Submit Cancel

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Local intranet

CS Configuration – Virtual Superloop



- Because SIP trunks do not map onto any physical hardware, as a PRA trunk does, there is no need to waste physical loops on them. So a virtual loop is defined to represent these trunks from a CS point of view.
- SIP trunks are represented as soft identities on the SS by the VTRK application.
- Add a virtual superloop, or use free Terminal Numbers (TN's) of an existing superloop.

Add a Virtual Superloop



1. Expand Core Equipment
2. Then Click Superloops
3. Select a free number
4. Select Virtual
5. Then "to add"

The screenshot shows the Nortel CS 1000 Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://cppm02/cgi/pwd.cgi`. The page title is "CS 1000 ELEMENT MANAGER". The left sidebar contains a navigation menu with categories like Home, Links, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. The "System" category is expanded, and "Superloops" is selected. The main content area displays the "Superloops" configuration page. At the top, it says "Managing: 47.166.111.74" and "System » Core Equipment » Superloops". Below this, there is a form to "Choose a Superloop Number" (set to 60) and "and type:" (set to CARR). A dropdown menu is open, showing options: CARR, FIBR, IPMG, STD, Phantom, and Virtual. The "Virtual" option is selected. To the right of the dropdown is a "to Add" button. Below the form, there is a table listing existing superloops:

Superloops	Type	Action
Superloops: 4	Type: IPMG	Edit
Superloops: 8	Type: IPMG	Edit
Superloops: 64	Type: Virtual	Edit

At the bottom of the page, there is a copyright notice: "Copyright © 2002-2007 Nortel Networks. All rights reserved." and a "Local intranet" icon.

Add a Virtual Superloop



1. Review and save

The screenshot shows the Nortel CS 1000 Element Manager web interface in a Microsoft Internet Explorer browser window. The address bar shows the URL `http://cppm02/cgi/pwd.cgi`. The page title is "CS 1000 ELEMENT MANAGER". The left sidebar contains a navigation menu with categories: Home, Links, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. The "System" category is expanded, showing sub-items like Alarms, Maintenance, Core Equipment, Loops, Superloops (highlighted), MSDL/MISP Cards, Conference/TDS/Multifrequen, Tone Senders and Detectors, and Peripheral Equipment. The main content area displays the "Superloops 60 Property Configuration" page. It shows the IP address "47.166.111.74" and the path "System > Core Equipment > Superloops > Superloops 60 Property Configuration". Below this is a table with two columns: "Input Description" and "Input Value". The table contains two rows: "Superloop (SUPL)" with a value of "60" and "Superloop Type (SUPT)" with a value of "Virtual". At the bottom right of the form are three buttons: "Save", "Delete", and "Cancel". A red arrow points from the text "1. Review and save" to the "Save" button. The footer of the page includes the copyright notice "Copyright © 2002-2007 Nortel Networks. All rights reserved." and a status bar showing "Done" and "Local intranet".

Input Description	Input Value
Superloop (SUPL)	60
Superloop Type (SUPT)	Virtual

Save Delete Cancel

CS Configuration –D-Channel



- The CS already has a comprehensive communications channel, called a PRA Data Channel.
- A D-Channel is normally only employed for call control of Basic and Primary Rate Interface connections (ISDN).
- This same channel is re-used so the CS can control calls on the VTRK application on the SS.
- From the CS point of view, the SIP trunk looks the same as an ISDN link.

Add a DCH

1. Click on D-Channels

The screenshot shows the 'Element Manager - Microsoft Internet Explorer' window. The address bar displays 'http://cppm02/cgi/pwd.cgi'. The page title is 'NORTEL CS 1000 ELEMENT MANAGER'. The left sidebar contains a navigation tree with categories: Home, Links, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. Under 'Routes and Trunks', 'D-Channels' is selected. The main content area is titled 'D-Channels' and shows 'Managing: 47.166.111.74' and 'Routes and Trunks » D-Channels'. It has two sections: 'Maintenance' with links like 'D-Channel Diagnostics (LD 96)' and 'D-Channel Expansion Diagnostics (LD 48)', and 'Configuration'. The 'Configuration' section has a form with 'Choose a D-Channel Number:' followed by a dropdown menu showing numbers 0 through 12, with '10' selected. To the right of the dropdown is a 'Type' dropdown set to 'DCH' and a 'to Add' button. Below the dropdown, there's a table with columns 'Channel', 'Type', 'Card Type', and 'Description'. The first row shows 'Channel: 3', 'Type', 'Card Type: MSDL', and 'Description: PRI'. An 'Edit' button is next to it. The bottom status bar shows 'Copyright © 2002-2007 Nortel Networks' and 'Local intranet'.

3. Click "to add"

2. Choose and available DCH number



Add a DCH

1. Select DCIP type
(DCH over IP)

Element Manager - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Reload Print Mail Address Bar Links

Address http://cppm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER Help Logout

Managing: 47.166.111.74
Routes and Trunks » D-Channels » D-Channels 10 Property Configuration

D-Channels 10 Property Configuration

- Basic Configuration

Input Description	Input Value
Action Device And Number (ADAN) (TYPE)	DCH
D channel Card Type (CTYP)	D-channel Interface card on TMDI (TMDI) D-channel Interface card (DCHI) Multi-purpose Serial Data Link (MSDL) D-Channel is over IP (DCIP) Single port SDI card (SDI) Single Port DCH card (SPDC) Enhanced Serial Data Interface (ESDI) Misc./SDI/Peripheral Signaling card (MSPS) Dual-port SDI card (SDI2) Four-Port SDI card (SDI4) SDI paddle board (XSDI)
Group number (GRP)	
Device number (DNUM)	
Port number (PORT)	
Designator (DES)	
Recovery to Primary (RCVP)	
PRI loop number for Backup D-channel (BCHL)	
User (USR)	
Interface type for D-channel (IFC)	Meridian DMS-100 (D100)
Country (CNTY)	ETS 300 =102 basic protocol (ETSI)

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Done Local intranet

Add a DCH

2. Enter a description

3. Select Meridian SL1 for Interface type (IFC)

4. Click Submit

Element Manager - Microsoft Internet Explorer

Address: http://cppm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

D-Channels 10 Property Configuration

- Basic Configuration

Input Description	Input Value
Action Device And Number (ADAN) (TYPE)	DCH
D channel Card Type (CTYP)	D-Channel is over IP (DCIP)
Designator (DES)	SIP_TRK
Recovery to Primary (RCVP)	☐
PRI loop number for Backup D-channel (BCHL)	
User (USR)	Integrated Services Signaling Link Dedicated (ISLD)
Interface type for D-channel (IFC)	Meridian DMS-100 (D100)
Country (CNTY)	Meridian DMS-100 (D100)
D-Channel PRI loop number (DCHL)	1 TR 6 for Germany (1TR6)
Primary Rate Interface (PRI)	Asia-Pacific ISDN interface (APAC)
Secondary PRI2 loops (PRI2)	Ericsson AXE-10 for Australia (AXEA)
Release ID of the switch at the far end (RLS)	Ericsson AXE-10 for Sweden (AXES)
Central Office switch type (CO_TYPE)	Interface to Meridian DMS-250 (D250)
Integrated Services Signaling Link Maximum (ISLM)	Interface to Japan D70 (D70)
Signaling Server Resource Capacity (SSRC)	Q Reference Signalling Point interface (EGF4)
	EuroISDN interface for ETS 300 403 (E403)
	ESIG interface with GF platform (ESGF)
	ETSI Q reference signalling point (ESIG)
	Interface to AT&T ESS#4 (ESS4)
	AT&T ESS#5 (ESS5)
	EuroISDN interface (EURO)
	ISIG interface with GF platform (ISGF)
	ISO Q reference signalling point (ISIG)
	Interface ID for JAPAN TTC (JTTC)
	NI-2 TR-1268 interface type (NI2)
	Numeris for France (NUME)
	Meridian SL 100 (SL100)
	Meridian Meridian1 (SL1)
	SYS-12101 Norway (SNT2)
	SwissNet (SWIS)
	Telecom New Zealand (NEAX-61) (TCNZ)

+ Basic options (BSCOPT)

+ Advanced options (ADVOPT)

+ Feature Packages

Submit Refresh Delete Cancel

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Done Local intranet

Add a SIP Route and SIP Trunks

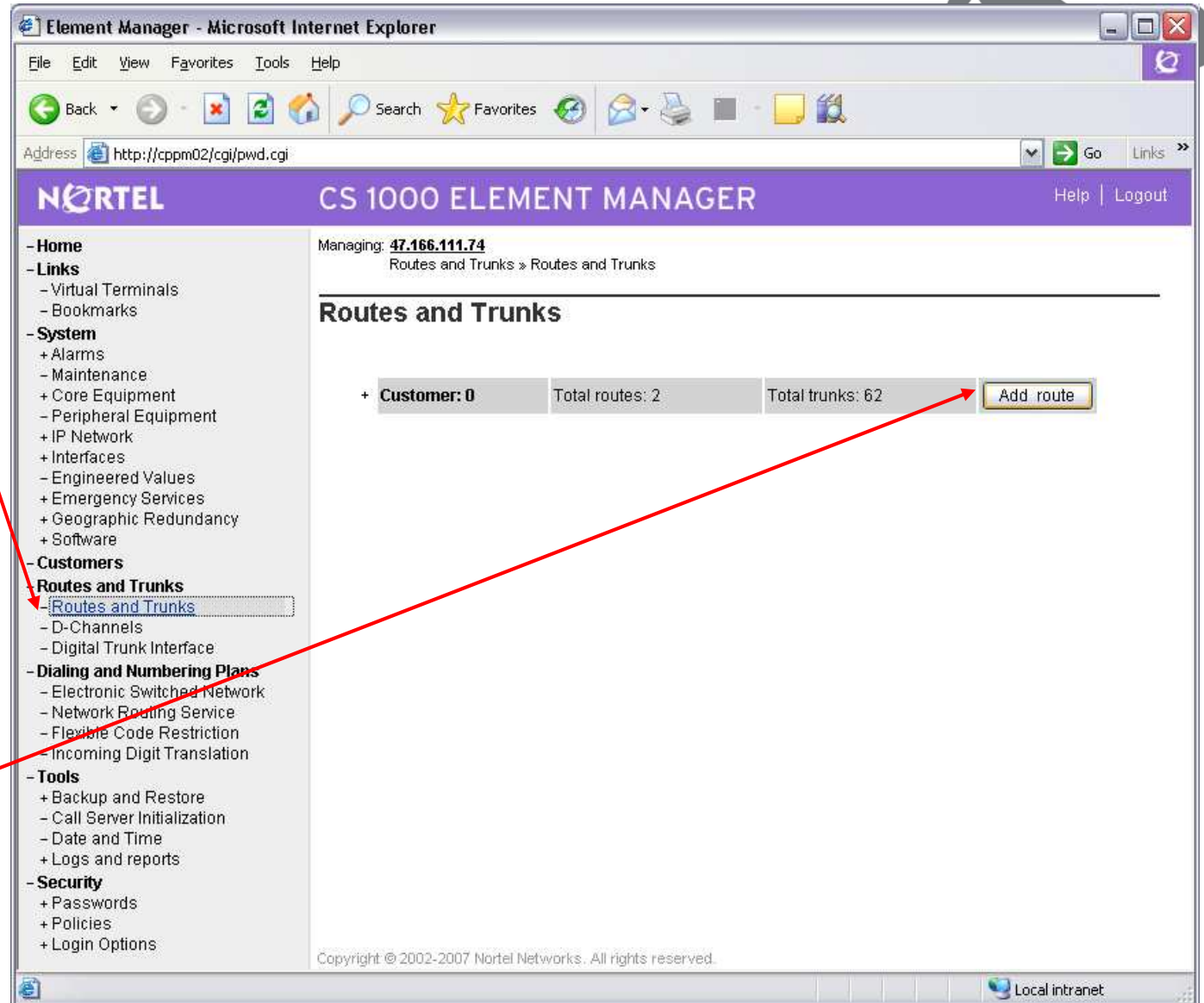


- A SIP route is treated and accessed as any other route on the CS1000
- Any calls directed towards this route, are then directed towards the VTRK application on the SS.
- The VTRK application converts the DCH messages to SIP messages, to be directed over the SIP network.

Add a SIP Route

1. Click Routes and Trunks

2. Click "Add Route"



Add a SIP Route

3. Select a free Route number

4. Enter a description (SIPTRK)

Element Manager - Microsoft Internet Explorer

Address: http://cpm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER

Managing: 47.166.111.74

Routes and Trunks » Routes and Trunks » Customer 0, New Route Configuration

Customer 0, New Route Configuration

- Basic Configuration

Input Description	Input Value
Route Data Block (RDB) (TYPE)	RDB
Customer number (CUST)	0
Route Number (ROUT)	
Designator field for trunk (DES)	0
Trunk Type (TKTP)	1
Incoming and Outgoing trunk (ICOG)	4
Access Code for the trunk route (ACOD)	5

+ Basic Route Options

+ Network Options

+ General Options

+ Advanced Configurations

Submit Cancel

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Done

Local intranet

Add a SIP Route

5. Select TIE
 6. Select IAO
 7. Enter an ACOD that does not conflict with your dialling plan
 8. Check this box
 9. Enter the zone (as previously defined)
 10. Node number
 11. Select SIP
 12. Select SIP
- Scroll down

Element Manager - Microsoft Internet Explorer

Address: http://cpm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

Managing: 47.166.111.74
Routes and Trunks » Routes and Trunks » Customer 0, New Route Configuration

Customer 0, New Route Configuration

- Basic Configuration

Input Description	Input Value
Route Data Block (RDB) (TYPE)	RDB
Customer number (CUST)	0
Route Number (ROUT)	10
Designator field for trunk (DES)	SIP_TRK
Trunk Type (TKTP)	TIE trunk data block (TIE)
Incoming and Outgoing trunk (ICOG)	Incoming and Outgoing (IAO)
Access Code for the trunk route (ACOD)	4810
Trunk type M911P (M911P)	☐
The route is for a virtual trunk route (VTRK)	☒
Zone for codec selection and bandwidth management (ZONE)	2 Range: 0 - 255
Node ID of signaling server of this route (NODE)	62 Range: 0 - 9999
Protocol ID for the route (PCID)	SIP (SIP)
Print Correlation ID in CDR for the route (CRID)	☐
Integrated Services Digital Network option (ISDN)	☒
Mode of operation (MODE)	
Interface type for route (IFC)	Meridian M1 (SL1)
Private Network Identifier (PNI)	0 Range: 0 - 32700
Network Calling Name Allowed (NCNA)	☒

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Local intranet

Add a SIP Route

13. Select ISLD

14. Enter the previously created DCH number

15. Click Submit

Element Manager - Microsoft Internet Explorer

Address: http://cpm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

- Home
- Links
 - Virtual Terminals
 - Bookmarks
- System
 - + Alarms
 - Maintenance
 - Core Equipment
 - Loops
 - Superloops
 - MSDL/MISP Cards
 - Conference/TDS/Multifrequency
 - Tone Senders and Detectors
 - Peripheral Equipment
 - + IP Network
 - + Interfaces
 - Engineered Values
 - + Emergency Services
 - + Geographic Redundancy
 - + Software
- Customers
- Routes and Trunks
 - Routes and Trunks
 - D-Channels
 - Digital Trunk Interface
- Dialing and Numbering Plans
 - Electronic Switched Network
 - Network Routing Service
 - Flexible Code Restriction
 - Incoming Digit Translation
- Tools
 - + Backup and Restore
 - Call Server Initialization
 - Date and Time
 - + Logs and reports
- Security
 - + Passwords
 - + Policies
 - + Login Options

Protocol ID for the route (PCID) SIP (SIP)

Print Correlation ID in CDR for the route (CRID) ☐

Integrated Services Digital Network option (ISDN) ☒

Mode of operation (MODE) Route uses ISDN Signaling Link (ISLD)

D channel number (DCH) 10 Range: 0 - 254

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

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

Network Calling Name Allowed (NCNA) ☒

Network Call Redirection (NCRD) ☐

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

Channel Type (CHTY) B-channel (BCH)

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

Insert ESN Access Code (INAC) ☐

Integrated Service Access Route (ISAR) ☐

Display of Access Prefix on CLID (DAPC) ☐

+ Basic Route Options

+ Network Options

+ General Options

+ Advanced Configurations

Submit Cancel

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Local intranet

Route saved, add trunks



1. Click Add trunk

The screenshot shows the Nortel CS 1000 Element Manager web interface. The browser window is titled 'Element Manager - Microsoft Internet Explorer'. The address bar shows 'http://cppm02/cgi/pwd.cgi'. The page header includes the Nortel logo and 'CS 1000 ELEMENT MANAGER'. The left sidebar contains a navigation menu with categories like Home, Links, System, Customers, and Routes and Trunks. The main content area is titled 'Routes and Trunks' and displays a table with route information. A red arrow points from the text '1. Click Add trunk' to the 'Add trunk' button for the route with ID 10.

Customer	Total routes	Total trunks		
- Customer: 0	Total routes: 2	Total trunks: 30	Add route	
+ Route: 3	Type: TIE	Description: PRI	Edit	Add trunk
- Route: 10	Type: TIE	Description: SIP_TRK	Edit	Add trunk

Add trunks

2. Select 32

3. Select IPTI type

4. Super loop number and shelf/card/unit

5. Enter a description

6. Enter Route and member

7, 8. Select WNK for both fields

9. Select an appropriate TGAR

10. CHID (normally starts with 1)

4. Click SAVE

Element Manager - Microsoft Internet Explorer

Address: http://cpm02/cgi/pwd.cgi

NORTEL CS 1000 ELEMENT MANAGER Help | Logout

Managing: 47.166.111.74
Routes and Trunks » Routes and Trunks » Customer 0, Route 10, New Trunk Configuration

Customer 0, Route 10, New Trunk Configuration

- Basic Configuration

Input Description	Input Value
Multiple trunk input number (MTINPUT)	32
Trunk data block (TYPE)	IP Trunk (IPTI)
Terminal Number (TN)	60 0 0 0
Designator field for trunk (DES)	SIP_TRK
Extended Trunk (XTRK)	VTRK
Route number, Member number (RTMB)	10 1
Level 3 Signaling (SIGL)	
Card Density (CDEN)	
Start arrangement Incoming (STRI)	Wink or Fast Flash (WNK)
Start arrangement Outgoing (STRO)	Wink or Fast Flash (WNK)
Trunk Group Access Restriction (TGAR)	0
Channel ID for this trunk. (CHID)	1
Increase or decrease the member numbers (INC)	Increase channel and member number (YES)
Class of Service (CLS)	Edit

+ Advanced Trunk Configurations

Save Cancel

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Done Local intranet

Post SIP trunk configuration



- SIP Trunks are now configured.



SIP CTI

- 2 parts to the configuration
- An ELAN and VAS part, on the CS
 - Performed via CS1000 overlays
 - Needs to be ELAN 32 or higher (virtual)
- An Application on the SS
 - Performed via CS1000 EM
 - A SS reboot is required to start the new application.



Enable SIP CTI on the CS

- Login to the CS admin terminal (overlays)
- Many ways to do this, one of which follows:
 - Use a CMD window on a Windows PC or server.
 - Telnet into the Node IP address
 - Need login details to gain access.
- Other ways to login to the CS are via a direct TTY port or via EM.
- Use Id 17 to define an ELAN and a VAS to be used by the SIP CTI application on the SS

Log into the CS1000 admin terminal



```
c:\ Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\>telnet cppm02
```

Use a “cmd” window in a Windows environment
Enter telnet <CS IP address, or hostname>

Log into the CS1000 admin terminal

A screenshot of a Telnet session window titled 'c:\ Telnet cppm02'. The window has a black background with white text. The text shows a login prompt 'login: admin2' and a password prompt 'password:'. A red rectangle highlights the 'login: admin2' text. Below the prompts, there is a block of text: 'The software and data stored on this system are the property of, or licensed to, Nortel Networks and are lawfully available only to authorized users for approved purposes. Unauthorized access to any software or data on this system is strictly prohibited and punishable under appropriate laws. If you are not an authorized user then logout immediately. This system may be monitored for operational purposes at any time.' At the bottom, the prompt 'oam> _' is visible.

```
c:\ Telnet cppm02
login: admin2
password:

The software and data stored on this system are the property of,
or licensed to, Nortel Networks and are lawfully available only
to authorized users for approved purposes. Unauthorized access
to any software or data on this system is strictly prohibited and
punishable under appropriate laws. If you are not an authorized
user then logout immediately. This system may be monitored for
operational purposes at any time.

oam> _
```

Enter CS1000 credentials to login

Log into the CS1000 admin terminal

A screenshot of a Telnet session window titled 'Telnet cppm02'. The window has a black background with white text. The text shows a login process where 'admin2' is entered as the username. A password prompt is shown, but the password is not visible. A long legal disclaimer follows. Then, the command 'oam> cslogin' is entered, with 'oam>' highlighted by a red rectangle. After the command, several system messages are displayed, including a security warning, a status message 'OVL111 000 IDLE', and a timestamp 'TTY 10 SCH MTC BUG 11:51'.

```
cx Telnet cppm02

login: admin2
password:

The software and data stored on this system are the property of,
or licensed to, Nortel Networks and are lawfully available only
to authorized users for approved purposes. Unauthorized access
to any software or data on this system is strictly prohibited and
punishable under appropriate laws. If you are not an authorized
user then logout immediately. This system may be monitored for
operational purposes at any time.

oam> cslogin

SEC054 A device has connected to, or disconnected from, a pseudo tty without aut
hentica
ting

OVL111 000 IDLE

TTY 10 SCH MTC BUG 11:51
```

At this point, a telnet session with the SS exists
To login to the CS, enter the command “**cslogin**”



Log into the CS1000 admin terminal

A screenshot of a Telnet session window titled 'Telnet cppm02'. The window shows a command-line interface with the following text: 'ting', 'OUL111 000 IDLE', 'TTY #10 CON NTC BUS 11:51', 'logg admin2', 'PASS?' (highlighted with a red box), 'SECURITY SECURITY WARNING: THIS SYSTEM CONTAINS INSECURE PASSWORDS, NOTIFY YOUR SYSTEM ADMINISTRATOR', 'TTY #10 LOGGED IN ADMIN2 11:51 14/10/2009', '>', 'The software and data stored on this system are the property of, or licensed to, Nortel Networks and are lawfully available only to authorized users for approved purposes. Unauthorized access to any software or data on this system is strictly prohibited and punishable under appropriate laws. If you are not an authorized user then logout immediately. This system may be monitored for operational purposes at any time.', 'OUL000', '>'.

```
cx Telnet cppm02
ting
OUL111 000 IDLE
TTY #10 CON NTC BUS 11:51
logg admin2
PASS?
SECURITY SECURITY WARNING: THIS SYSTEM CONTAINS INSECURE PASSWORDS, NOTIFY YOUR SYSTEM ADMINISTRATOR
TTY #10 LOGGED IN ADMIN2 11:51 14/10/2009
>
The software and data stored on this system are the property of,
or licensed to, Nortel Networks and are lawfully available only
to authorized users for approved purposes. Unauthorized access
to any software or data on this system is strictly prohibited and
punishable under appropriate laws. If you are not an authorized
user then logout immediately. This system may be monitored for
operational purposes at any time.
OUL000
>
```

Re-enter the CS1000 credentials to enter the CS1000 overlay space



Log into the CS1000 admin terminal

```
Telnet cppm02
operational purposes at any time.
>ld 17
MEM AVAIL: <U/P>: 98950750   USED U P: 5265904 53167   TOT: 104269821
DISK SPACE NEEDED: 37 KBYTES
DCH          AVAIL: 253   USED: 2   TOT: 255
AML          AVAIL: 13    USED: 3   TOT: 16
REQ chg
TYPE adan
ADAN new elan 36
CTYP elan
DES SIP_CTI
LCTL
MEM AVAIL: <U/P>: 98950462   USED U P: 5266163 53196   TOT: 104269821
DISK SPACE NEEDED: 37 KBYTES
DCH          AVAIL: 253   USED: 2   TOT: 255
AML          AVAIL: 13    USED: 3   TOT: 16
ADAN DATA SAVED
ADAN
REQ
```

At the ">" prompt, enter "ld 17". (to exit the overlay, type ****). Next type chg, adan, new elan 36, elan, SIP_CTI as per the screen shot above. Need <CR> each line.

Log into the CS1000 admin terminal



```
Telnet cppm02
OVL000
>
OVL000
>ld 17
CFN000
MEM AVAIL: <U/P>: 98950492    USED U P: 5266163 53166    TOT: 104269821
DISK SPACE NEEDED: 37 KBYTES
DCH          AVAIL:    253    USED:    2    TOT:    255
AML          AVAIL:    13    USED:    3    TOT:    16
REQ chg
TYPE vas
VAS new
USID 36
ELAN 36
SECU yes
INTL
MCNT
USID
VAS
MEM AVAIL: <U/P>: 98950482    USED U P: 5266163 53176    TOT: 104269821
DISK SPACE NEEDED: 37 KBYTES
DCH          AVAIL:    253    USED:    2    TOT:    255
AML          AVAIL:    13    USED:    3    TOT:    16
REQ
```

Next add a VAS to the ELAN, from ld 17, by typing chg, vas, new, 36, 36, yes, and <CR> the remaining prompts, as per the screen shot above.

Log into the CS1000 admin terminal



A screenshot of a Telnet window titled 'Telnet cppm02'. The window shows a series of configuration parameters and system status information. A red box highlights the bottom section of the output, and a red circle highlights the window's close button.

```
Telnet cppm02
TYPE vas
VAS new
USID 36
ELAN 36
SECU yes
INTL
MCNT
USID
VAS

MEM AVAIL: <U/P>: 98950482    USED U P: 5266163 53176    TOT: 104269821
DISK SPACE NEEDED: 37 KBYTES
DCH          AVAIL: 253    USED: 2    TOT: 255
AML          AVAIL: 13     USED: 3    TOT: 16
REQ
TIM000 12:00 14/10/2009 CPU 0
***
OUL000
>ld 43
EDD000
.edd
DB SEQ NUM = 83
```

Finally, save the configuration by exiting ld 17, by entering ***, loading ld 43, and typing edd <CR>. After saving logout using "logo" Exit the terminal by closing the window (x on top right)

Enable SIP CTI application on the SS



- Login and navigate to the CS1000 Node
- Enable SIP CTI
- Un-Check the TLS check box
- Save and transfer
- Reboot SS
- Check SIP CTI settings are correct
- Correct if necessary, and reboot again

Enable SIP CTI app on the SS*



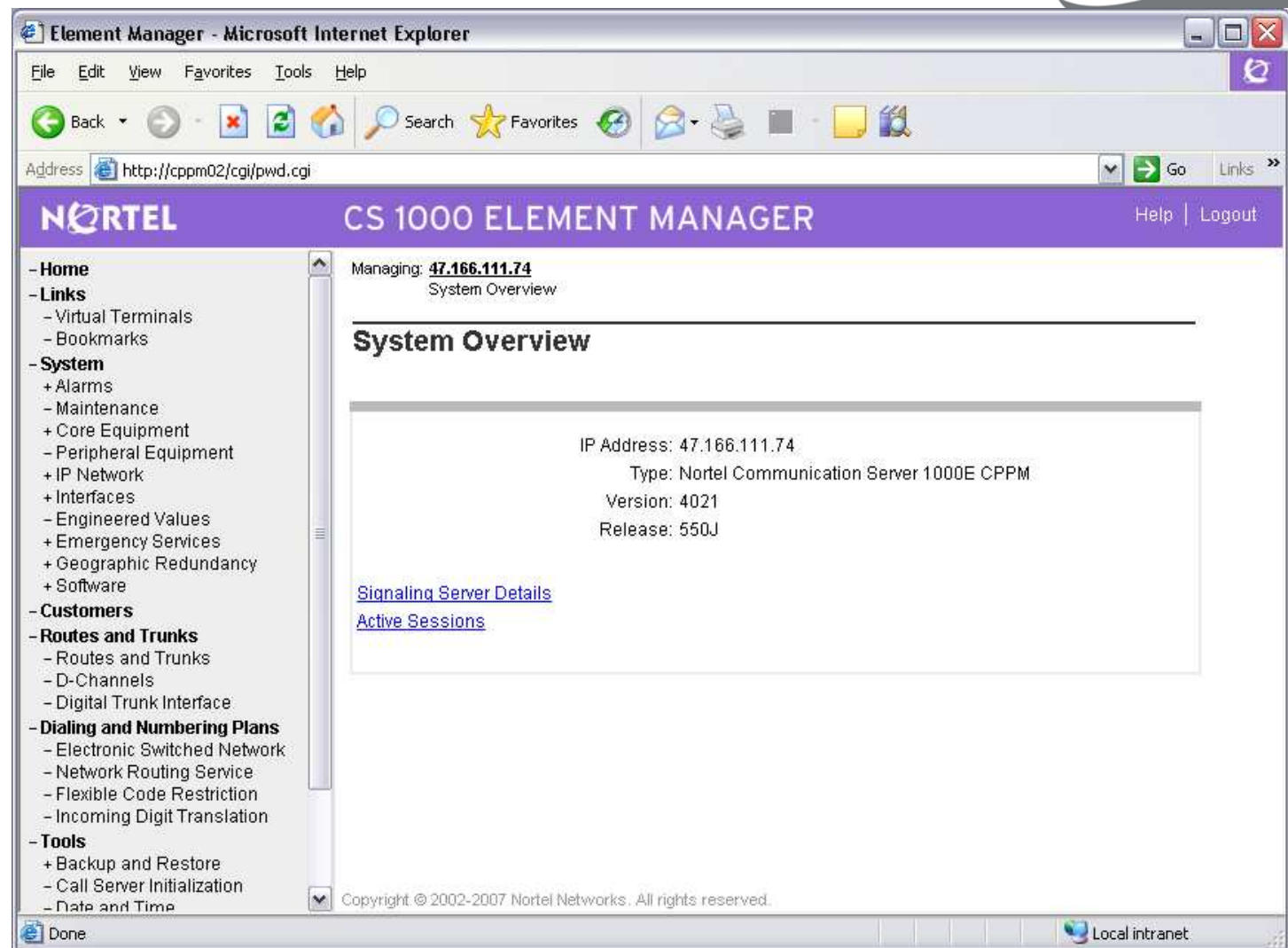
- Login to the CS1000
 - Login to the CS1000 Element manager interface, either through UCM (R6.0), ECM (R5.x) or directly on the signalling server (vxWorks based R5.x)

*These screen shots have been collected from CS1000 on R5.5 with co-resident NRS.

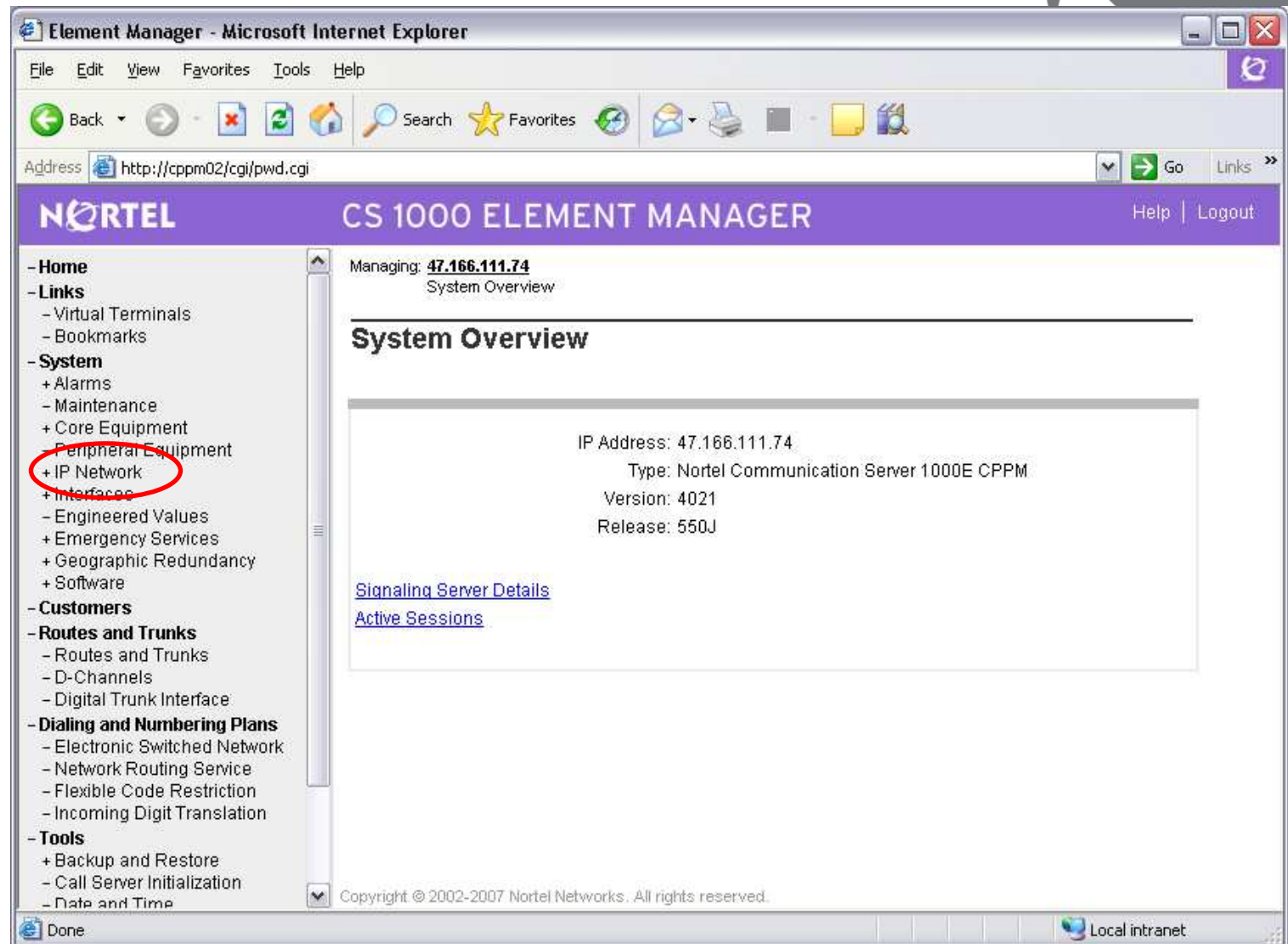
This is considered the most common deployment today (Oct 2009) for small sites and labs.

A screenshot of a Microsoft Internet Explorer browser window displaying the login page for the CS1000 Element Manager. The browser's address bar shows the URL: http://cppm02/cgi/pwd.cgi?c=Pubkey&h=context/admin/login&l=en. The page has a purple header with the text ">CS 1000 ELEMENT MANAGER" and the Nortel logo. Below the header, there is a "WARNING!" section with a disclaimer about software and data ownership. To the right of the warning, there are input fields for "User ID:", "Password:", and "Call Server IP Address:" (with the value 47.166.111.74). Below these fields are "Login" and "Reset" buttons. At the bottom of the page, there is a copyright notice: "Copyright © 2002-2007 Nortel Networks. All rights reserved." The browser's status bar at the bottom shows "Done" and "Local intranet".

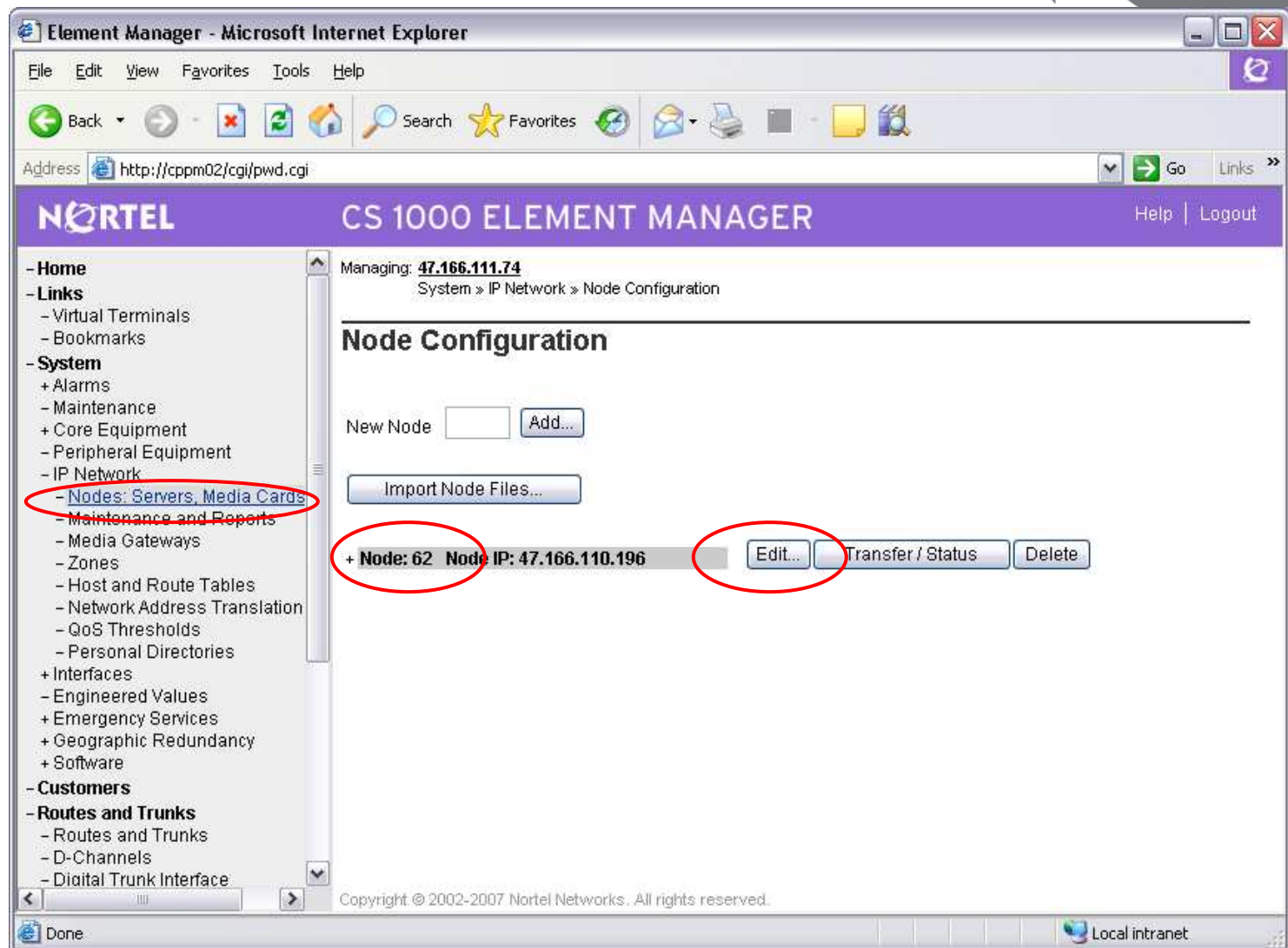
Logged in



Enable and config SIP app – Expand IP Network



Click Nodes, then Edit the node to be configured



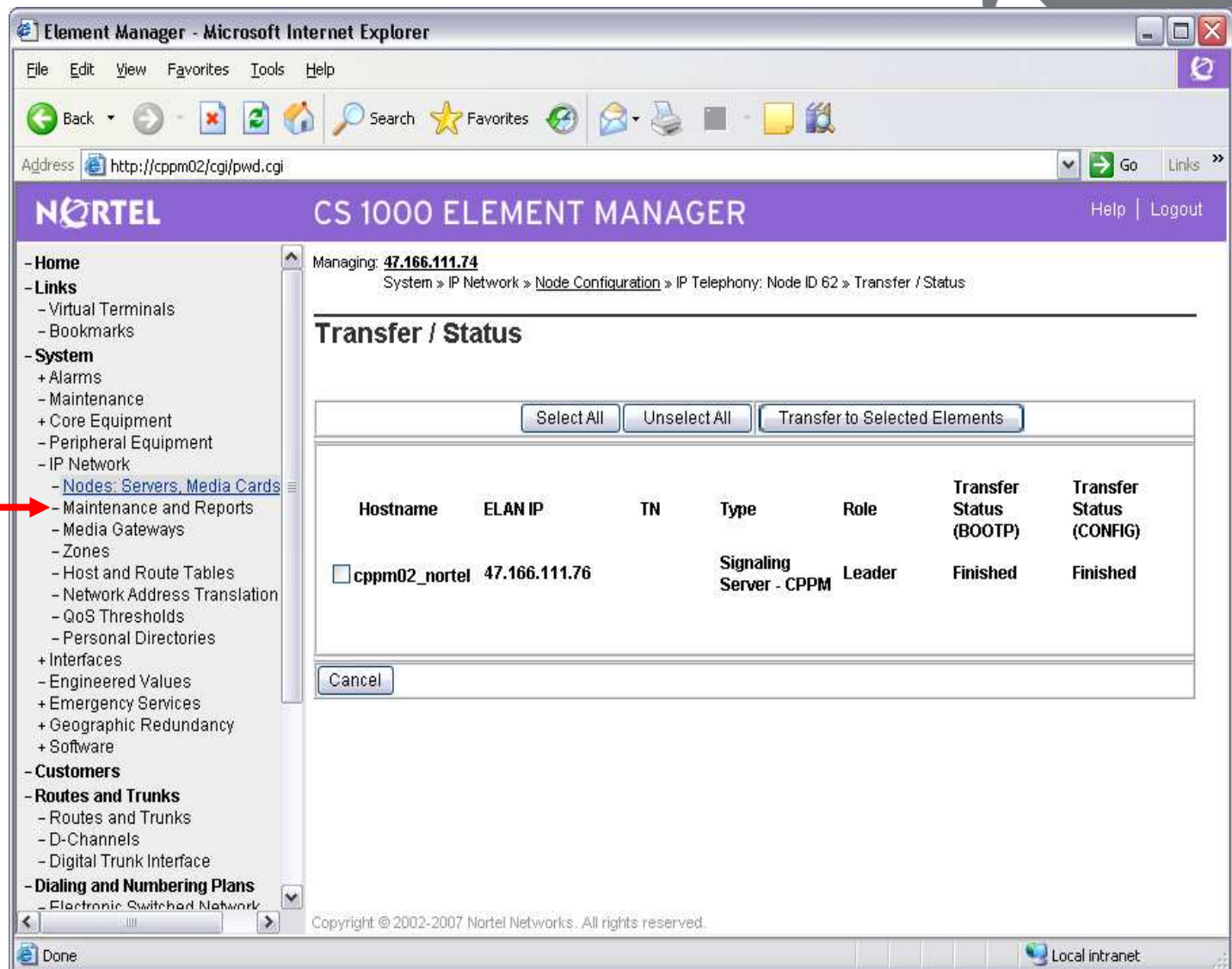
SIP CTI config

1. Expand SIP CTI section
2. Check the box, to enable the SIP CTI service
3. Ensure TLS is unchecked
4. Accept the remaining config items as default
5. Scroll to the bottom of the page, and **Save and Transfer**.
6. The system may prompt a restart.

The screenshot shows the 'CS 1000 ELEMENT MANAGER' interface. The left sidebar contains a tree view with categories like Home, Links, System, Customers, Routes and Trunks, Dialing and Numbering Plans, Tools, and Security. The 'SIP CTI Services' link is selected. The main content area displays the 'CTI Settings' configuration page. The 'Service Enabled' checkbox is checked, and the 'Support TLS Endpoints Only' checkbox is unchecked. The 'CTI Settings' section includes fields for Customer Number, Maximum Associations per DN, Place International Calls Within This Country As National Calls (checked), and various prefixes (National, International, Location Code Call, Special Number, Subscriber). The 'CLID Parameters' section includes a Dialing Plan dropdown (set to CDP), Calling Device URI Format, and fields for Home Location Code, Country Code (CCC), Area Code (AreaCode), and Digits to Strip. The 'Format of CLID' section shows the format for the CLID string, with options for +<CCC><AreaCode><SN>, +<CCC><NN>, and +<International number>. The 'Save and Transfer' button is at the bottom of the page.

Reboot SS

1. Click Maint & Reports



The screenshot shows the Nortel CS 1000 Element Manager web interface. The left sidebar contains a tree view with categories like Home, Links, System, Interfaces, Customers, Routes and Trunks, and Dialing and Numbering Plans. A red arrow points to 'Maintenance and Reports' under the 'System' category. The main content area displays the 'Transfer / Status' page for the node 'cppm02_nortel'. The page includes a table with columns for Hostname, ELAN IP, TN, Type, Role, Transfer Status (BOOTP), and Transfer Status (CONFIG). The table shows one entry for 'cppm02_nortel' with a 'Finished' status for both BOOTP and CONFIG. The interface also includes a 'Cancel' button and a 'Copyright © 2002-2007 Nortel Networks. All rights reserved.' footer.

Hostname	ELAN IP	TN	Type	Role	Transfer Status (BOOTP)	Transfer Status (CONFIG)
☐ cppm02_nortel	47.166.111.76		Signaling Server - CPPM	Leader	Finished	Finished

Reboot SS



2. Click Reset

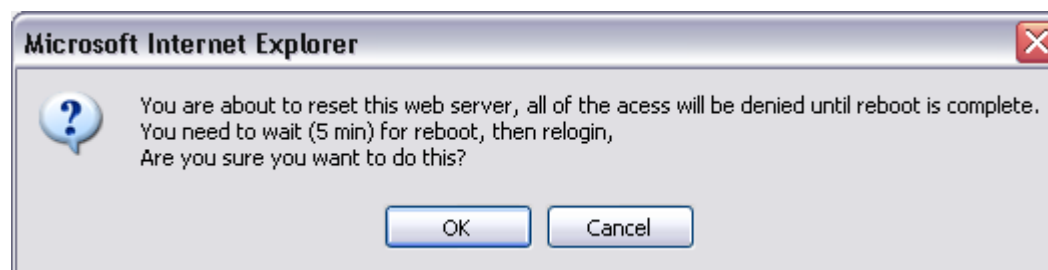
The screenshot shows the 'Element Manager - Microsoft Internet Explorer' window. The address bar displays 'http://cppm02/cgi/pwd.cgi'. The page title is 'CS 1000 ELEMENT MANAGER'. The left sidebar contains a navigation menu with categories like Home, Links, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. The main content area is titled 'Node Maintenance and Reports' and shows details for 'Node ID: 62' with IP '47.166.110.196'. A table lists the node's configuration, including 'Index', 'ELAN IP', 'Type', and 'TN'. Below the table, there are several buttons: 'GEN CMD', 'RPT LOG', 'OM RPT', 'Reset', 'Virtual Terminal', and 'Status'. A red arrow points from the text '2. Click Reset' to the 'Reset' button.

Index	ELAN IP	Type	TN
cppm02_nortel	47.166.111.76	Signaling Server-CPPM	NO TN



Reboot SS

3. Click OK, if now is a good time to restart the SS



Check the SIP CTI settings



- Sometimes SIP CTI “wants” to default to TLS Only endpoints.
- Ensure that the Checkbox is unchecked after the SS reboot.
- If it is checked, clear it and reboot the SS a second time.



Checking the SIP trunks, and SIP CTI



- After the reboot, there is a number of items that can be checked to establish the state of the SIP trunks, and the SIP CTI application.
- SIPGwShow
- vtrkShow
- SIPCTIShow

Checking applications state



1. Click Maint & Reports

2. Click Gen Cmd

The screenshot shows the Nortel CS 1000 Element Manager web interface in Microsoft Internet Explorer. The browser address bar shows `http://cppm02/cgi/pwd.cgi`. The page title is "CS 1000 ELEMENT MANAGER". The left sidebar contains a navigation menu with categories: Home, Links, System, Interfaces, Customers, Routes and Trunks, and Dialing and Numbering Plans. The "System" category is expanded, showing sub-items like Alarms, Maintenance, Core Equipment, Peripheral Equipment, and IP Network. The "Maintenance and Reports" link is highlighted. The main content area displays "Node Maintenance and Reports" for Node ID: 62, Node IP: 47.166.110.196, and Total elements: 1. A table lists the node details, and a row of buttons (GEN CMD, RPT LOG, OM RPT, Reset, Virtual Terminal, Status) is visible. A red arrow points from the "Maintenance and Reports" link in the sidebar to the "GEN CMD" button.

Index	ELAN IP	Type	TN	ELAN
cppm02_nortel	47.166.111.76	Signaling Server-RTM	NO	

SIPGwShow



1. Select sip for Group

2. Select SIPGwShow

3. Click Run

4. Results displayed here

The screenshot shows the 'Element Manager - Microsoft Internet Explorer' window. The address bar displays 'http://cppm02/cgi/pwd.cgi'. The page title is 'NORTEL CS 1000 ELEMENT MANAGER'. The left sidebar contains a navigation tree with categories like Home, Links, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. The main content area is titled 'General Commands' and shows the 'Managing: 47.166.111.74' system. The 'Element IP' is 47.166.111.76 and the 'Element Type' is Signaling Server-CPPM. The 'Group' is set to 'Sip' and the 'Command' is 'SIPGwShow'. The 'IP address' is 47.166.111.74 and the 'Number of Pings' is 3. The 'RUN' button is clicked, and the results are displayed in a table format.

SIPGwShow Status	
Primary Proxy IP address	: 47.166.110.197
Secondary Proxy IP address	: 47.166.107.58
Primary Proxy port	: 5060
Secondary Proxy port	: 5061
Primary Proxy Transport	: UDP
Secondary Proxy Transport	: TLS
Active Proxy	: Primary :Registered
Time To Next Registration	: 14 Seconds
Channels Busy / Idle / Total	: 0 / 32 / 32
Stack version	: 4.0.0.30
TLS Security Policy	: Best Effort
SIP Gw Registration Trace	: OFF
Output Type Used	: RPT
Channel tracing	: -1

vtrkShow



1. Select vtrk for Group

2. Select vtrkShow

3. Click Run

4. Results displayed here

The screenshot shows the 'Element Manager - Microsoft Internet Explorer' window. The address bar displays 'http://cppm02/cgi/pwd.cgi'. The page title is 'NORTEL CS 1000 ELEMENT MANAGER'. The left sidebar contains a navigation tree with categories like Home, Links, System, Customers, and Routes and Trunks. The main content area is titled 'General Commands' and shows the command execution interface. The 'Group' dropdown is set to 'Vtrk', and the 'Command' dropdown is set to 'vtrkShow'. The 'RUN' button is highlighted with a red arrow. Below the command input, the 'IP address' is set to '47.166.111.74' and the 'Number of Pings' is set to '3'. The 'PING' button is also visible. The results section, titled 'VTRK Summary', displays the following information:

```
VTRK Summary
-----
VTRK status : Active
Master status : On
Protocol : SIP
D-Channel : 10
Customer : 0
Channels Idle : 31
Channels Busy : 1
Channels Busy : 0
Channels Pend : 0
Channels Dsbl : 0
Channels Ukwn : 0
Channels Total : 32
```

SIPCTIShow



1. Select sipCti for Group

2. Select SIPCTIShow

3. Click Run

4. Results displayed here

The screenshot shows the Nortel CS 1000 Element Manager web interface in a Microsoft Internet Explorer browser. The browser address bar shows `http://cppm02/cgi/pwd.cgi`. The page title is "CS 1000 ELEMENT MANAGER". The left sidebar contains a navigation menu with categories like Home, Links, System, Customers, Routes and Trunks, and Dialing and Numbering Plans. The main content area is titled "General Commands" and shows the command execution interface. The "Group" dropdown is set to "SipCti", the "Command" dropdown is set to "SIPCTIShow", and the "RUN" button is highlighted. Below the command input, the "IP address" is set to "47.166.111.74" and the "Number of Pings" is set to "3". The "PING" button is also visible. The results section, titled "SIP CTI Status and Settings:", displays the following information:

```
SIP CTI Status and Settings:
-----
Application status: Active
Customer number: 0
Dialing plan: CDP
SIP URI format: FQDN
Maximum number of associations per CN: 3
Support TLS Endpoints Only: FALSE
-----
CTI Dial Plan Information
-----
Home Location Code: Not Configured
Country Code: Not Configured
NPA Prefix: Not Configured
```

The "Support TLS Endpoints Only: FALSE" line is circled in red. The bottom of the page shows the copyright notice "Copyright © 2002-2007 Nortel Networks. All rights reserved." and the status bar indicates "Local intranet".

NRS configuration (VxWorks based NRS)



- If a SIP network is already in place
 - Need on site expertise to configure the NRS
 - The SIP network is their responsibility
 - Configuration can be complex
 - They understand the network best
 - Each site is different
 - Can aid debugging routing issues, eg, ROUTE CALL
 - Need to explain how SIP CC uses it



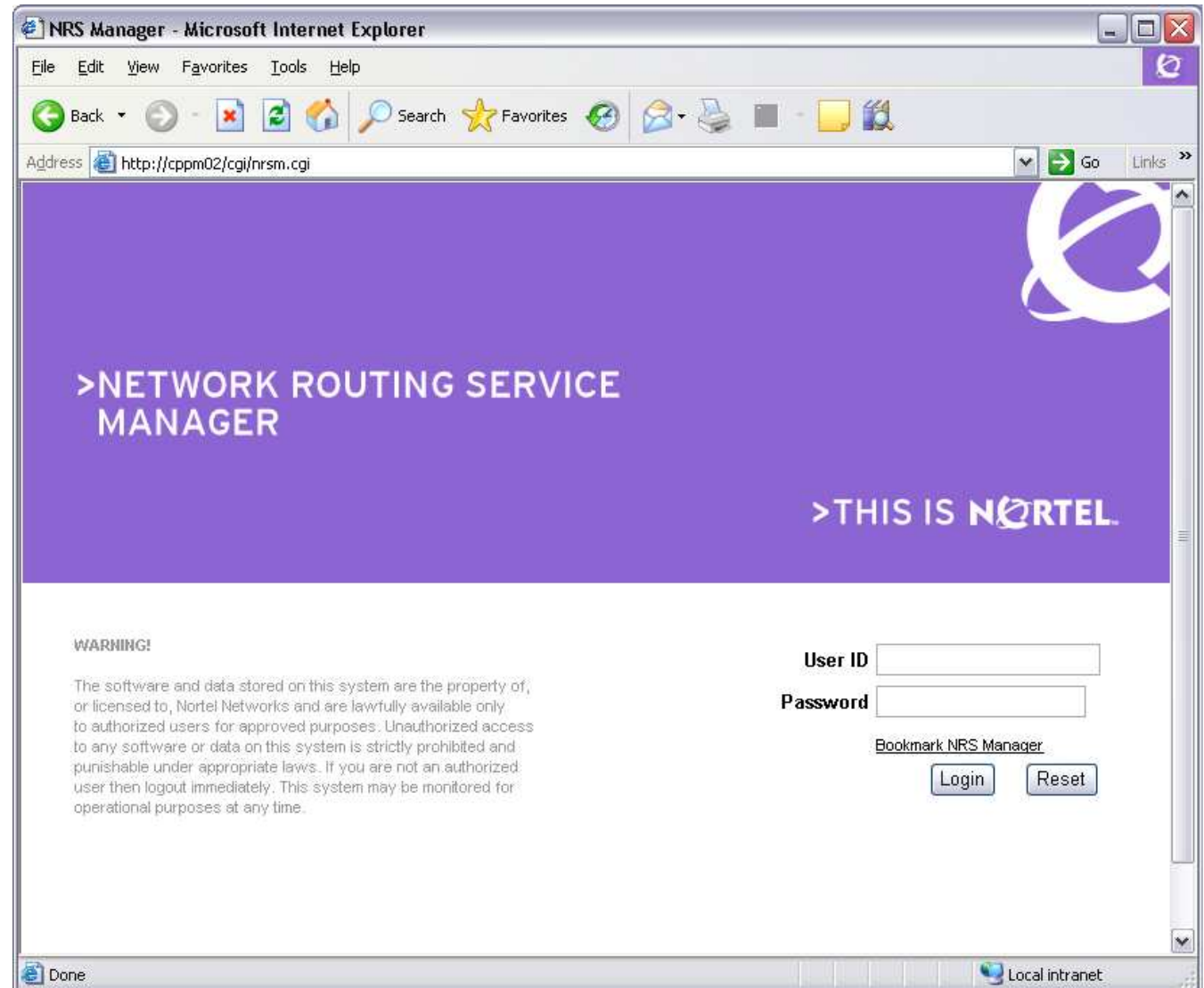
NRS configuration

- This example uses the co-res NRS application on the SS.
- An NRS uses a dual DB, where one is active and the other is in standby. Changes can only be made to the standby DB.
- To implement the changes, the DBs are Cutover (swapped). From that point, the DBs can be reverted (re-swapped), or committed (synced), which is normal progression.
- Tasks:
 - Login to the NRS
 - Create a service domain
 - Create L0 and L1 domain
 - Add SIP endpoints (CS1000 and Express Server)
 - Add routing entries to route calls to these endpoints.
 - SIP Routing tests
 - Cutover and commit
 - Logout

Login to the NRSM



1. Use IE to navigate to the co-res NRS. One way is via the CS1000 node IP or FQDN, follows by "/nrs". Eg, <http://cppm02.europe.nortel.com/nrs>
2. Login with the correct credentials



NRSM

1. Once logged in, click Configuration

Network Routing Service

Software version	sse-5.50.12
Connected NRS role	PrimaryNRS
Primary NRS IP (TLAN)	47.166.107.58
Primary NRS state	ACTIVE
Alternate NRS IP (TLAN)	Unknown
Alternate NRS state	Unknown
Alternate permanent in service	OFF

Configured Components

# of Service Domains	2
# of L1 Domains (UDP)	2
# of L0 Domains (CDP)	2
# of Gateway Endpoints	5
# of User Endpoints	0
# of Routing Entries	7
# of Default Routes	0
# of Collaborative Servers	1

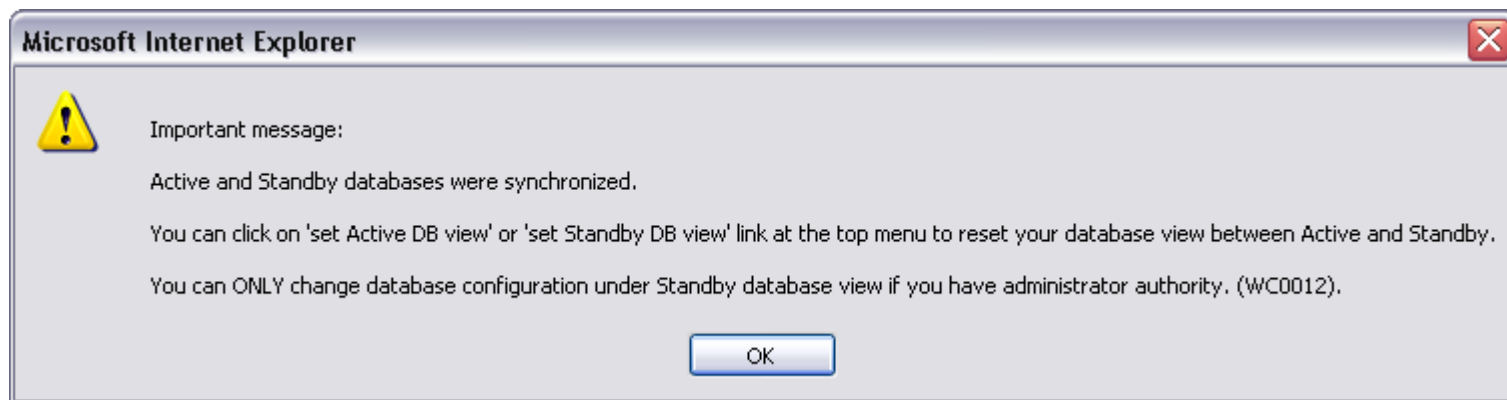
Users Logged Into This NRS Manager

admin	47.166.133.44
-------	---------------

Database status

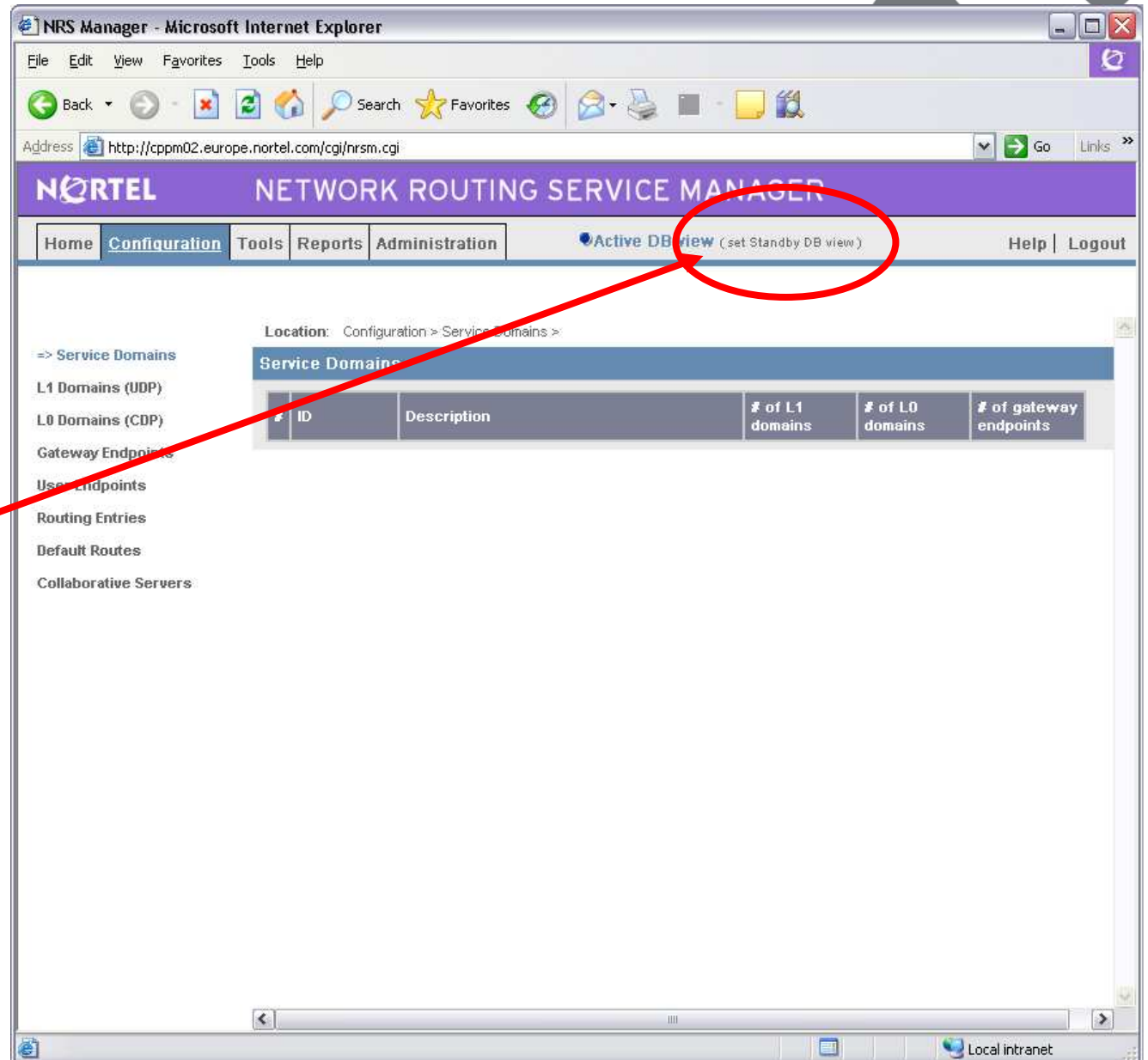


1. Clicking “Configuration” will inform the current database status
2. If its safe to do so, continue by clicking OK



Standby DB

1. To modify the NRS DB, have to switch to the standby DB. Click set Standby DB view



Service Domain

Add a service domain. In this case, nortel.com

NRS Manager - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://cpm02.europe.nortel.com/cgi/nrsm.cgi> Go Links >>

NORTEL NETWORK ROUTING SERVICE MANAGER

Home **Configuration** Tools Reports Administration [Standby DB view \(set Active DB view\)](#) Help Logout

Location: Configuration > Service Domains >

Service Domains

Add...

ID	Description	# of L1 domains	# of L0 domains	# of gateway endpoints
Add...				

101

Service domain addition



1. Add a service domain. In this case, nortel.com
2. Click Save

A screenshot of the NRS Manager web interface in a Microsoft Internet Explorer browser window. The browser's address bar shows the URL 'http://cppm02.europe.nortel.com/cgi/nrsm.cgi'. The page title is 'NRS Manager - Microsoft Internet Explorer'. The main header of the application is 'NORTEL NETWORK ROUTING SERVICE MANAGER'. Below the header is a navigation bar with tabs: 'Home', 'Configuration', 'Tools', 'Reports', and 'Administration'. The 'Configuration' tab is selected. On the right side of the navigation bar, it says 'Standby DB view (set Active DB view)' and 'Help | Logout'. The main content area shows a breadcrumb trail: 'Location: Configuration > Service Domains > Add Service Domain >'. Below this is a form titled 'Add Service Domain'. The form has two fields: 'Domain name' and 'Domain description'. The 'Domain name' field contains the text 'nortel.com' and is circled in red. The 'Domain description' field is empty. At the bottom of the form is a 'Save' button. A red arrow points from the first step of the list to the 'Domain name' field, and another red arrow points from the second step to the 'Save' button. A legend at the bottom of the form indicates '* Mandatory field indicator'.

L1 domain name addition



1. Add L1 Domain, click here

Location: Configuration > Service Domains >

Service Domains

Add...

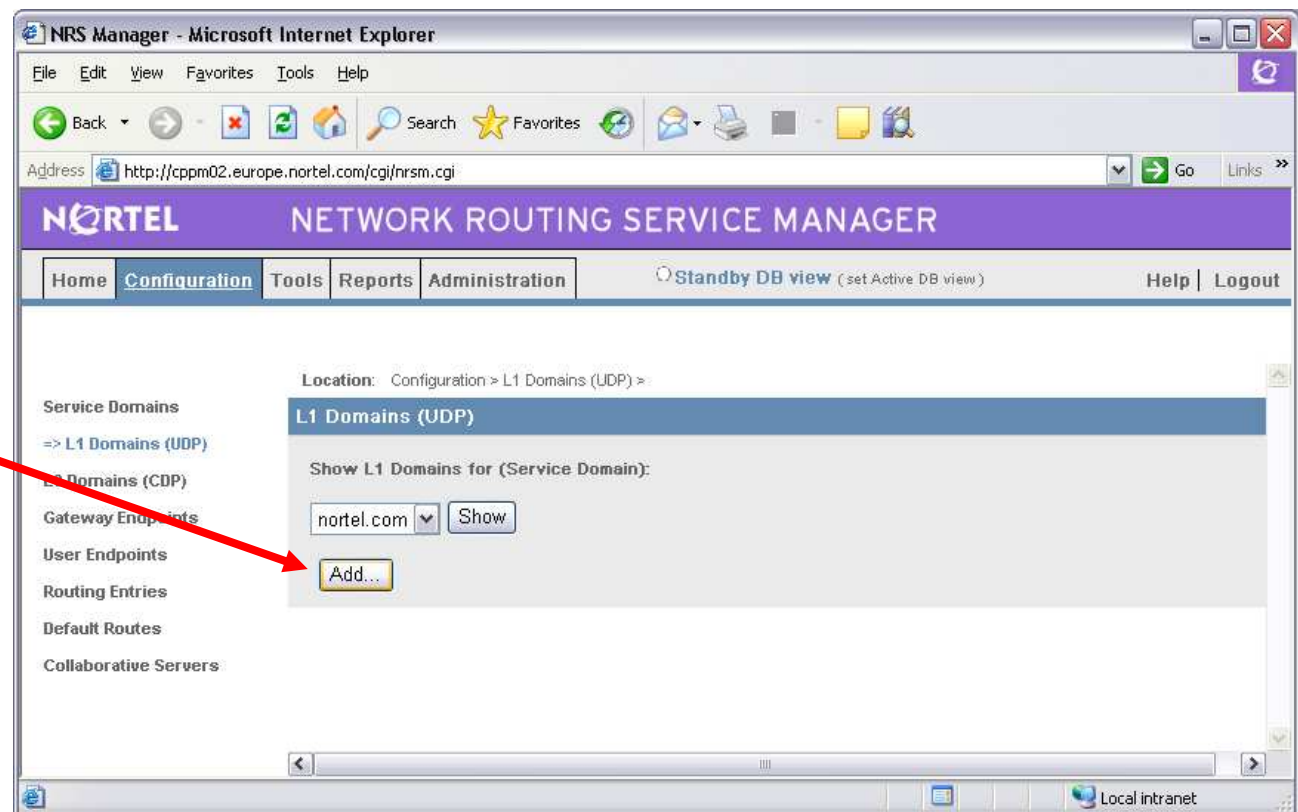
#	ID	Description	# of L1 domains	# of L0 domains	# of gateway endpoints
1	nortel.com	Not available	0	0	0

Add...

L1 domain name addition



1. Click Add...



L1 domain name addition

1. This field will be pre-populated with udp, and needs to match SIP URI maps on the CS1000 Gateway. In this case, it is post fixed with _nortel
2. Add international E.164 country code (353 for Ireland)
3. Enter regional E.164 area code (91 for Galway)
4. Click Save

The screenshot shows the 'Add L1 Domain (nortel.com)' form in the NRS Manager. The form includes the following fields:

- Domain name: udp_nortel *
- Domain description: [Empty]
- Endpoint authentication enabled: Authentication off
- Authentication password: [Empty]
- E.164 country code: 353 *
- E.164 area code: 91 *
- E.164 international dialing access code: [Empty]
- E.164 national dialing access code: [Empty]
- E.164 local (subscriber) dialing access code: [Empty]
- Private L1 domain (UDP location) dialing access code: [Empty]
- Special number: [Empty]
- Emergency service access prefix: [Empty]
- Special number label: PrivateSpecial

A 'Save' button is located at the bottom of the form. A note at the bottom indicates '*Mandatory field indicator'.

L0 domain name addition

1. Perform the same actions to add an L0 domain
2. This field will be pre-populated with cdp, and needs to match SIP URI maps on the CS1000 Gateway. In this case, it is post fixed with _nortel
3. Add international E.164 country code (353 for Ireland)
4. Enter regional E.164 area code (91 for Galway)
5. Click Save

NRS Manager - Microsoft Internet Explorer

Address: http://cppm02.europe.nortel.com/cgi/nrsm.cgi

NORTel NETWORK ROUTING SERVICE MANAGER

Home Configuration Tools Reports Administration Standby DB view (set Active DB view) Help Logout

Location: Configuration > L0 Domains (CDP) > Add L0 Domain >

Add L0 Domain nortel.com / udp_nortel

Service Domains

L1 Domains (UDP)

=> L0 Domains (CDP)

Gateway Endpoints

User Endpoints

Routing Entries

Default Routes

Collaborative Servers

Domain name: cdp_nortel *

Domain description: [empty]

Endpoint authentication enabled: Not configured

Authentication password: [empty]

E.164 country code: 353 *

E.164 area code: 91 *

Private unqualified number label: PrivateUnknown

E.164 international dialing access code: [empty]

E.164 national dialing access code: [empty]

E.164 local (subscriber) dialing access code: [empty]

Private L1 domain (UDP location) dialing access code: [empty]

Special number: [empty]

Emergency service access prefix: [empty]

Save

*Mandatory field indicator

NRS Domain configuration

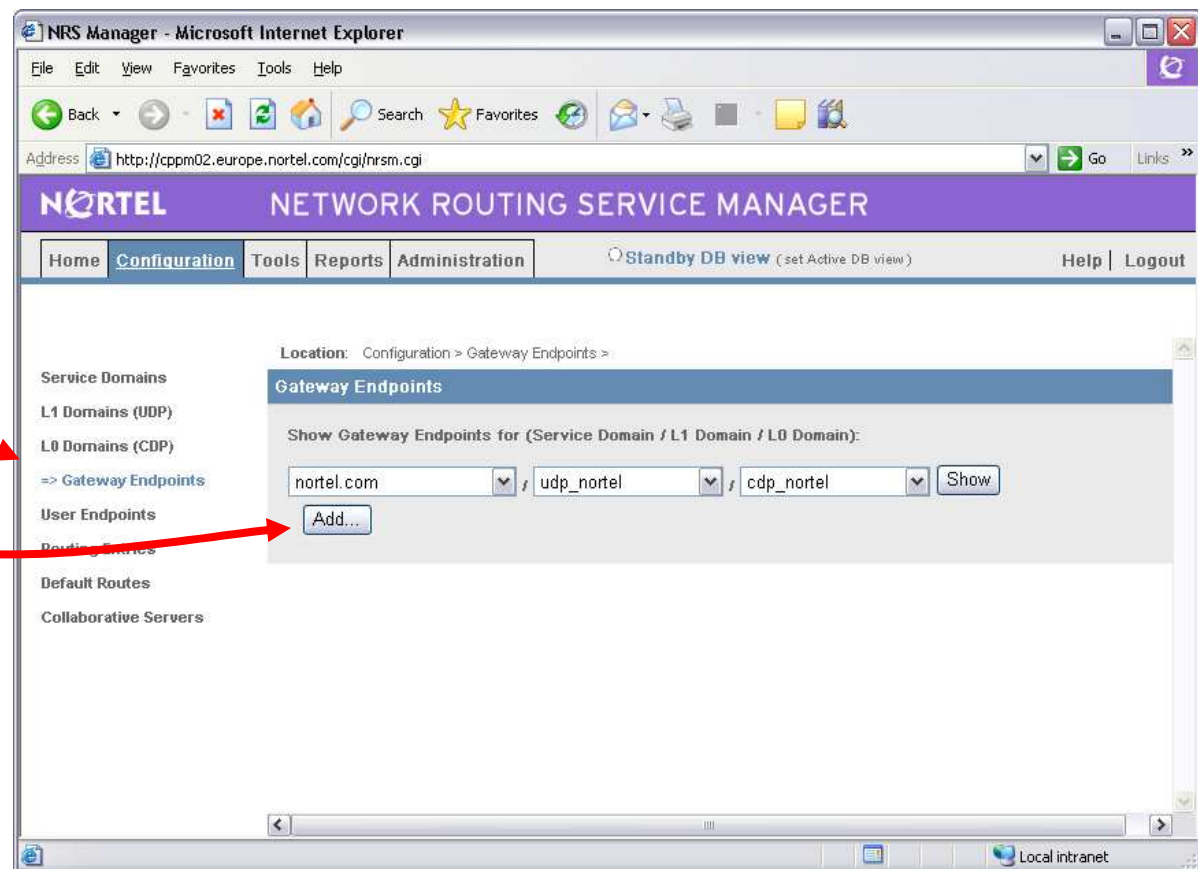


- The service domain is now in place.
- The L1 and L0 allow the NRS make UDP/CDP routing decisions.
- L1 and L0 are also known as a phone context
- Need to add the CS1000 and Express systems to it as Gateway Endpoints

Adding Endpoints



1. Click Gateway Endpoints
2. Click Add...



Add CS1000 Endpoint

1. Enter the endpoint name, as specified on the CS1000 endpoint
2. Enter a description
3. This is a Dynamic endpoint (supports registration)
4. Transport is selected as TCP
5. Click Save

NRS Manager - Microsoft Internet Explorer

Address: <http://cprm02.europe.nortel.com/cgi/nrsm.cgi>

NORTEL NETWORK ROUTING SERVICE MANAGER

Home Configuration Tools Reports Administration Standby DB view (set Active DB view) Help Logout

Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)

Service Domains

L1 Domains (UDP)

L0 Domains (CDP)

=> Gateway Endpoints

User Endpoints

Routing Entries

Default Routes

Collaborative Services

Endpoint name:

Endpoint description:

Tandem gateway endpoint name:

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: ☒

Add Express Endpoint

1. Enter the endpoint name, as specified on the CS1000 endpoint
2. Enter a description
3. This is a **Static** endpoint (does not supports registration yet)
4. Because this is a static endpoint, the IP address of the server must be specified here
5. Transport is selected as TCP
6. Click Save

NRS Manager - Microsoft Internet Explorer

Address: http://cppm02.europe.nortel.com/cgi/nrsm.cgi

NORTEL NETWORK ROUTING SERVICE MANAGER

Home Configuration Tools Reports Administration Standby DB view (set Active DB view) Help Logout

Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)

Service Domains

L1 Domains (UDP)

L0 Domains (CDP)

=> Gateway Endpoints

User Endpoints

Routing Entries

Default Routes

Collaborative Servers

Endpoint name: Express15 *

Endpoint description: Wenyi Express Server

Tandem gateway endpoint name: [Look up](#)

Endpoint authentication enabled: Not configured

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: IP version 4

Static endpoint address: 47.166.110.15

H.323 Support: H.323 not supported

SIP support: Static SIP endpoint

SIP transport: TCP

SIP port: 5060

Network Connection Server enabled: ☐

Save

Endpoints are added



1. Now need to add routing entries for each of the endpoints
2. Click Routing Entries

Location: Configuration > Gateway Endpoints >

Gateway Endpoints

Show Gateway Endpoints for (Service Domain / L1 Domain / L0 Domain):

nortel.com / udp_nortel / cdp_nortel Show

Add...

#	ID	Support Protocol(s)	Call Signaling IP	Description	# of routing entries
1	Express15	Static SIP	47.166.110.15	Wenyi Express	0
2	cppm02_nortel	Dynamic SIP / NCS	Not available	CS1000 Endpoint	0

Add...

Add a routing entry for the Endpoints



1. Type, or lookup the Gateway endpoint
2. Select the dialling plan type (CDP in this case)
3. Click Show

A screenshot of the NRS Manager web interface in a Microsoft Internet Explorer browser. The browser's address bar shows the URL 'http://cppm02.europe.nortel.com/cgi/nrsm.cgi'. The page title is 'NRS Manager - Microsoft Internet Explorer'. The main header is 'NORTEL NETWORK ROUTING SERVICE MANAGER'. Below the header is a navigation bar with tabs: 'Home', 'Configuration', 'Tools', 'Reports', and 'Administration'. The 'Configuration' tab is selected. On the left side, there is a sidebar with a tree view containing 'Service Domains', 'L1 Domains (UDP)', 'L0 Domains (CDP)', 'Gateway Endpoints', 'User Endpoints', '=> Routing Entries' (which is highlighted), 'Default Routes', and 'Collaborative Servers'. The main content area shows the 'Routing Entries' configuration page. It includes a 'Location' breadcrumb: 'Configuration > Routing Entries >'. Below this is a section titled 'Routing Entries' with instructions: '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:'. There are three dropdown menus for selecting domains: 'nortel.com', 'udp_nortel', and 'cdp_nortel'. Below these is a text input field for 'Gateway Endpoint:' containing 'cppm02_nortel'. To the right of this field is a 'Look up' link. Below the input field is a 'With DN Type:' dropdown menu set to 'Private level 0 regional (CDP steering code)' and a 'Show' button. At the bottom left of the form is an 'Add...' button. A red arrow points from the third step of the list ('Click Show') to the 'Show' button.



Add a routing entry for the Endpoints

1. No routing entries yet exist, lets **Add** one

The screenshot shows the 'NRS Manager - Microsoft Internet Explorer' window. The address bar displays 'http://cppm02.europe.nortel.com/cgi/nrsm.cgi'. The page title is 'NORTEL NETWORK ROUTING SERVICE MANAGER'. The navigation bar includes 'Home', 'Configuration', 'Tools', 'Reports', and 'Administration'. The 'Standby DB view' is selected. The left sidebar lists 'Service Domains', 'L1 Domains (UDP)', 'L0 Domains (CDP)', 'Gateway Endpoints', 'User Endpoints', and 'Routing Entries' (highlighted with a red arrow). The main content area shows the 'Routing Entries' configuration page. It includes a 'Location' breadcrumb 'Configuration > Routing Entries >'. The 'Routing Entries' section has a header 'Show Routing Entries for (Service Domain / L1 Domain / L0 Domain / Endpoint)' and instructions to 'Select domains and enter a gateway endpoint name to show specified routing entries. Use the wildcard * by itself for all gateway endpoints:'. Below this are three dropdown menus for 'nortel.com', 'udp_nortel', and 'cdp_nortel'. The 'Gateway Endpoint' field contains 'cppm02_nortel' with a 'Look up' link. The 'With DN Type' dropdown is set to 'Private level 0 regional (CDP steering code)' with a 'Show' button. Below these fields is an 'Add...' button. At the bottom, there is a table with columns: '#', 'DN Prefix', 'DN Type', 'Route Cost', and 'SIP URI Phone Context'. Below the table is another 'Add...' button.

Add a routing entry for the Endpoints



1. DN type is CDP
2. DN prefix is 4
3. Least cost route is 1

The screenshot shows the NRS Manager web interface in a Microsoft Internet Explorer browser. The address bar shows the URL: `http://cppm02.europe.nortel.com/cgi/nrsm.cgi`. The page title is "NRS Manager - Microsoft Internet Explorer". The main header is "NORTEL NETWORK ROUTING SERVICE MANAGER". Below the header is a navigation bar with tabs: "Home", "Configuration", "Tools", "Reports", and "Administration". The "Configuration" tab is selected. On the left side, there is a sidebar with a tree view showing "Service Domains", "L1 Domains (UDP)", "L0 Domains (CDP)", "Gateway Endpoints", "User Endpoints", "=> Routing Entries", "Default Routes", and "Collaborative Servers". The "Routing Entries" link is highlighted. The main content area shows the "Add Routing Entry" form. The form title is "Add Routing Entry (nortel.com / udp_nortel / cdp_nortel / cppm02_nortel)". The form has three fields: "DN type" with a dropdown menu showing "Private level 0 regional (CDP steering code)", "DN prefix" with a text box containing "4", and "Route cost (1 - 255)" with a text box containing "1". A "Save" button is at the bottom of the form. A red arrow points from the list item "2. DN prefix is 4" to the "DN prefix" text box. Another red arrow points from the list item "3. Least cost route is 1" to the "Route cost" text box. A small note at the bottom of the form says "*Mandatory field indicator".

Add a routing entry for the Endpoints



1. Repeat the exercise for the Express system
2. Click Add
3. Enter routing entry as previous slide for the CS1000 end
4. Click Save

The screenshot shows the Nortel Network Routing Service Manager (NRS Manager) web interface. The browser window is titled "NRS Manager - Microsoft Internet Explorer". The address bar shows "http://cpnm2.europe.nortel.com/cgi/nrsm.cgi". The page has a purple header with the Nortel logo and the text "NETWORK ROUTING SERVICE MANAGER". Below the header is a navigation bar with tabs: Home, Configuration, Tools, Reports, Administration. The "Configuration" tab is selected. On the left side, there is a sidebar with links: Service Domains, L1 Domains (UDP), L0 Domains (CDP), Gateway Endpoints, User Endpoints, => Routing Entries (highlighted), Default Routes, and Collaborative Servers. The main content area is titled "Routing Entries" and contains the following text: "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:". Below this text are three dropdown menus for selecting domains, followed by a "Gateway Endpoint:" input field containing "Express15". To the right of the input field is a "Look up" link. Below the input field is a "With DN Type:" dropdown menu set to "Private level 0 regional (CDP steering code)" and a "Show" button. At the bottom of the form is an "Add..." button. Below the form is a table with the following headers: #, DN Prefix, DN Type, Route Cost, and SIP URI Phone Context. Below the table is another "Add..." button.

Routing entries added

1. When complete, view all the configured routing entries by entering * in the Gateway Endpoint field, and clicking Show.

In this case, any Request URI beginning 215 will be directed towards the Express system. Anything beginning with 4 will be directed towards the CS1000.

NORTEL NETWORK ROUTING SERVICE MANAGER

Home Configuration Tools Reports Administration Standby DB view (set Active DB view) Help Logout

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:

nortel.com / udp_nortel / cdp_nortel

Gateway Endpoint: * [Look up](#)

With DN Type: Private level 0 regional (CDP steering code) [Show](#)

[Add...](#)

Showing 1 - 2 of 2 < Previous Next >

#	DN Prefix	DN Type	Route Cost	SIP URI Phone Context	Gateway Endpoint
1	215	Private level 0 regional (CDP steering code)	1	cdp_nortel.udp_nortel	Express15
2	4	Private level 0 regional (CDP steering code)	1	cdp_nortel.udp_nortel	cppm02_nortel

[Add...](#)

Test the routing



1. The routing can be tested via the SIP Routing Test Utility
2. Click Tools
3. Then SIP Routing test
4. Select (using Lookup) or type an IP address
5. Enter the string of digits
6. Type of dial plan
7. Click submit



Test the routing

1. The results tell that if the NRS is queried with a request URI with digits beginning with 2153, it will route it to 47.166.110.15, which is the Express server, Express15.

NRS Manager - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print

Address http://cpm02.europe.nortel.com/cgi/nrsm.cgi Go Links

NORTEL NETWORK ROUTING SERVICE MANAGER

Home Configuration **Tools** Reports Administration Help Logout

Location: Tools > SIP Routing Test >

SIP Routing Test - Query Parameter

Test numbering plan for	Standby DB
Terminating service domain name	nortel.com
Terminating L1 domain name	udp_nortel
Terminating L0 domain name	cdp_nortel
Originating endpoint address type	IP version 4
Originating endpoint IP address	47.166.110.15
DN to query	2153
DN type to query	Private level 0 regional (CDP steering code)
Phone context to query (suggested)	cdp_nortel.udp_nortel

Route found

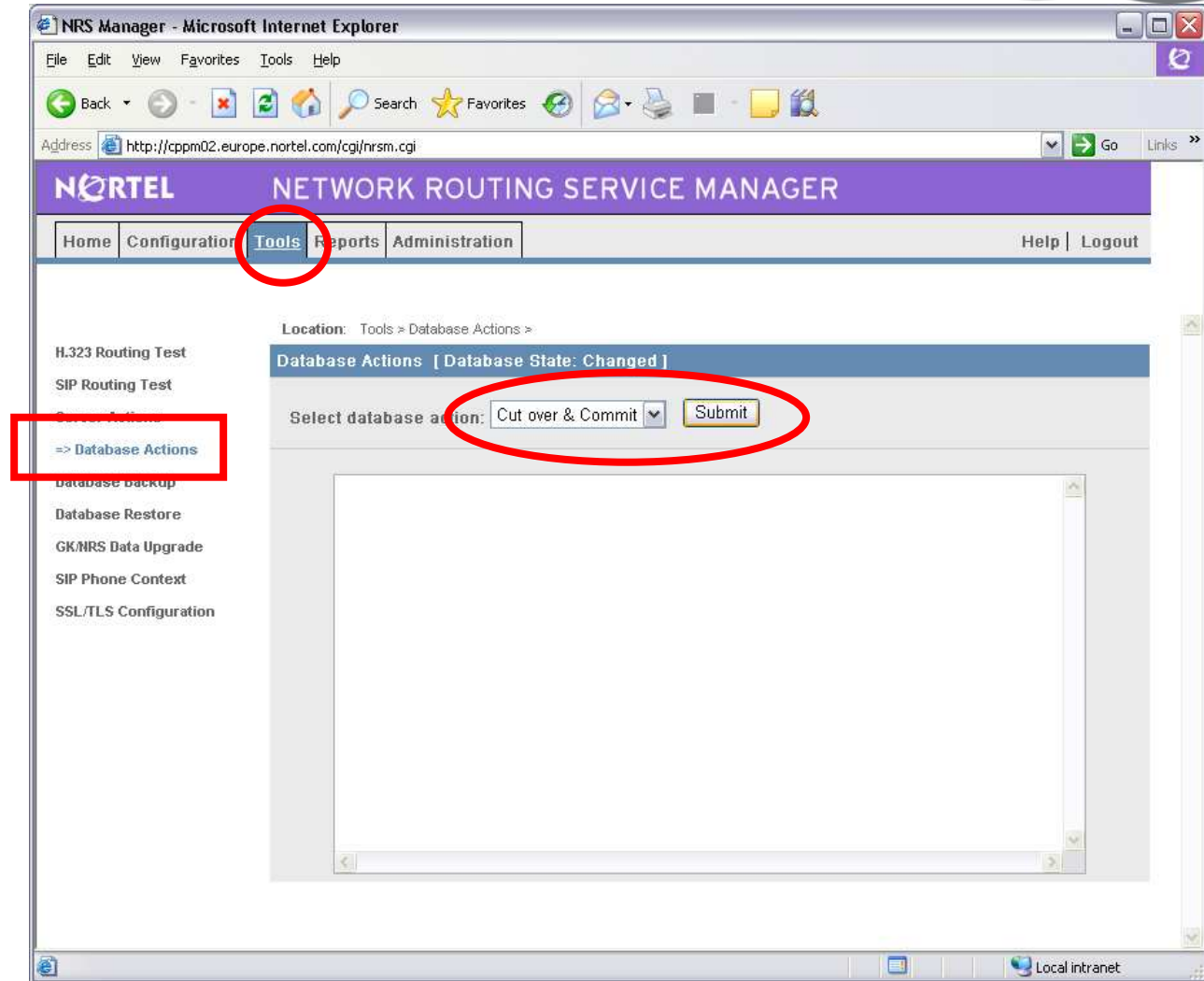
#	Terminating endpoint address	Terminating server address type	Terminating SIP transport	Terminating SIP port	Routing type	Route Cost
1	47.166.110.15	IP version 4	TCP	5060	REGULAR_ROUTE	1

Local intranet

Cut over, and commit the DB



1. Select tools
2. Click Database Actions
3. Select Cutover and Commit
4. Click Submit
5. Make test calls
6. Logout from the NRSM



NRS configuration (Standalone COTS type)

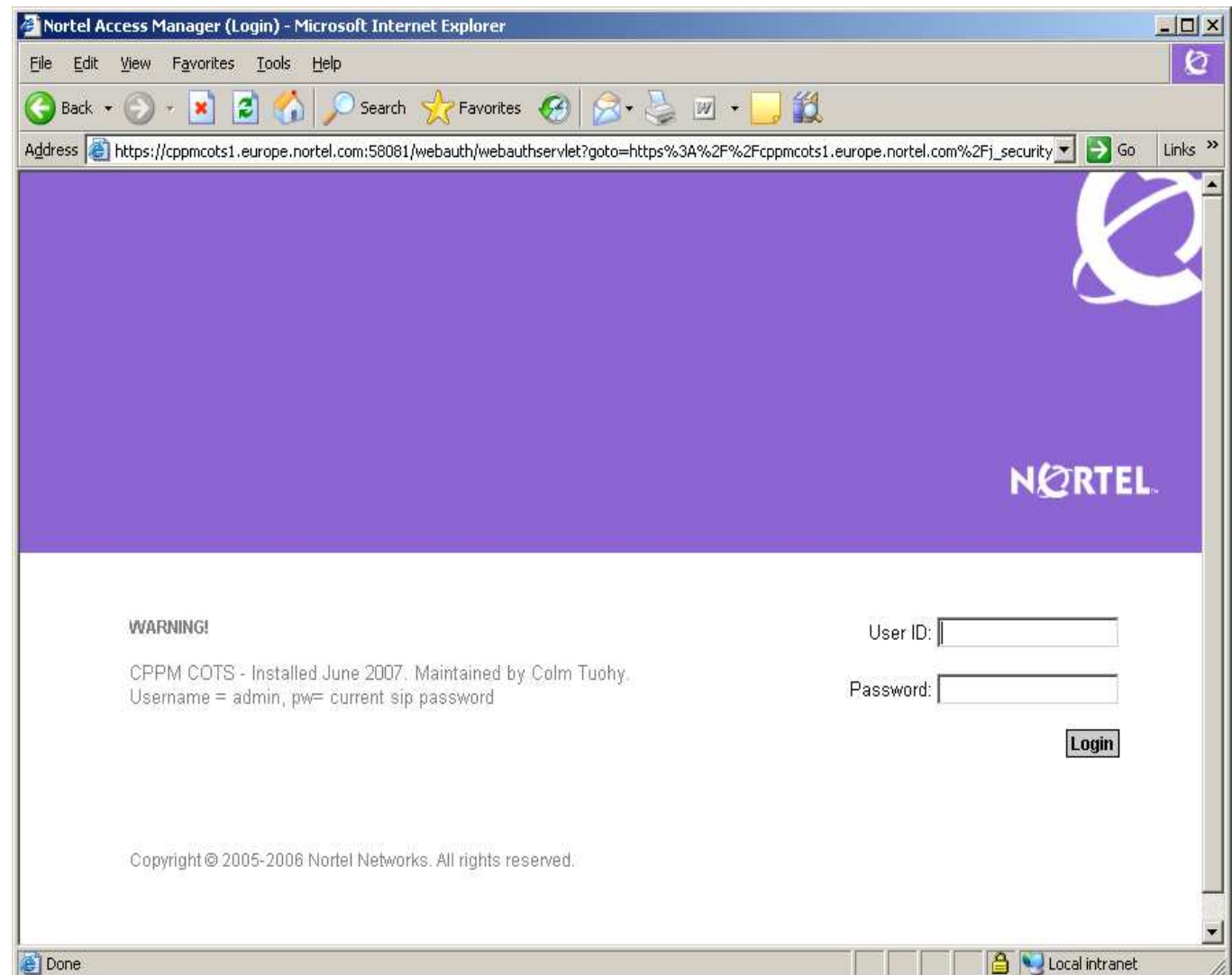


- This example uses the Linux Based NRS application running on a HP COTS server, Release 5.0.
- An NRS uses a dual DB, where one is active and the other is in standby. Changes can only be made to the standby DB.
- To implement the changes, the DBs are Cutover (swapped). From that point, the DBs can be reverted (re-swapped), or committed (synced), which is normal progression.
- Tasks:
 - Login to the NRS
 - Create a service domain
 - Create L0 and L1 domain
 - Add SIP endpoints (CS1000 and Express Server)
 - Add routing entries to route calls to these endpoints.
 - SIP Routing tests
 - Cutover and commit
 - Logout

Login to the ECM (Standalone COTS type)



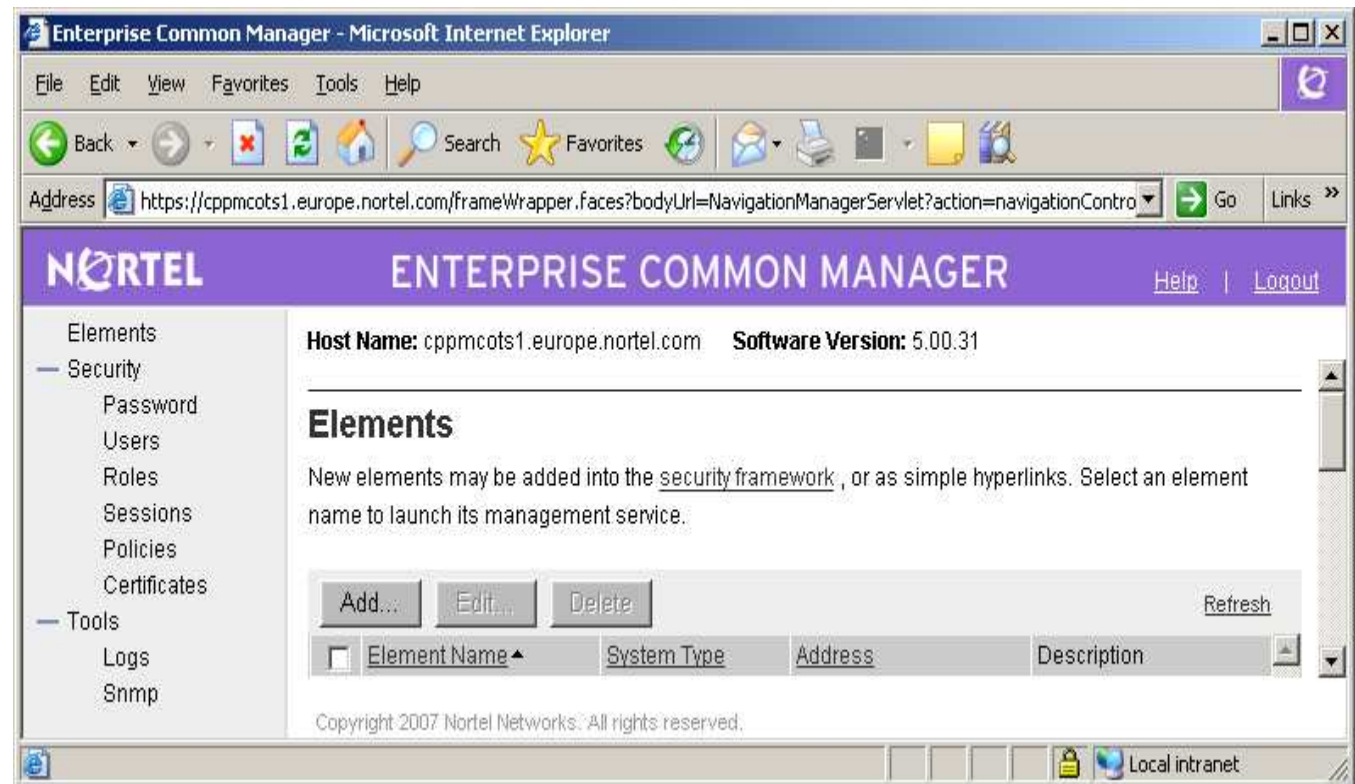
1. Login with the correct credentials to the Enterprise Communication Manager.



ECM -Elements



1. Add the element of system type NRS (Network Routing Service).



Adding NRS Element



1. Enter the name and optional description.
2. Select the element type as Network Routing Service.
3. Click Next.

The screenshot shows the 'Enterprise Common Manager' web interface in a Microsoft Internet Explorer browser. The address bar shows the URL: https://cppmcots1.europe.nortel.com/frameWrapper.faces?bodyUrl=NavigationManagerServlet?action=navigationControlSecureObject. The page has a purple header with the Nortel logo and the text 'ENTERPRISE COMMON MANAGER'. Below the header, there's a navigation menu on the left with 'Elements' and 'Tools' sections. The main content area is titled 'Add New Element' and shows 'Step1: Identify the new element.' with instructions to 'Enter a name and optional description. Depending on the selected element Type, additional steps may be required.' The form contains three fields: 'Name' with the value 'COTSNRS' (1-32 characters), 'Description' with the value 'Express NRS', and 'Type' with a dropdown menu set to 'Network Routing Service'. At the bottom right of the form are 'Next' and 'Cancel' buttons. The footer of the page says 'Copyright 2007 Nortel Networks. All rights reserved.' and the browser status bar shows 'Done' and 'Local intranet'.

Adding NRS Element



1. Enter the TLAN IP of Linux Server along with the base URL.
2. Save and Continue.

The screenshot shows the 'Enterprise Common Manager' web interface in a Microsoft Internet Explorer browser. The address bar shows the URL: `https://cppmcots1.europe.nortel.com/frameWrapper.faces?bodyUrl=NavigationManagerServlet?action=navigationControlSecureObject`. The page title is 'ENTERPRISE COMMON MANAGER'. On the left, there is a navigation menu with 'Elements' expanded, showing 'Security' (Password, Users, Roles, Sessions, Policies, Certificates) and 'Tools' (Logs, Snmp). The main content area is titled 'Add New Element' and includes the text 'Step2: Identify the element's management server in your network.' Below this, there are three input fields: 'TLAN IP of Linux Server' with the value '47.166.107.58', 'Base URL (where NRS Manager is installed):' with the value 'https://cppmcots1.europe.nortel.com', and 'Relative URL (combine with Base URL to define the link):' with the value 'nrsmWeb'. A 'Note' at the bottom states: 'The new element must be saved before you may define user roles.' At the bottom right, there are three buttons: 'Back', 'Save and Continue', and 'Cancel'. The footer of the page says 'Copyright 2007 Nortel Networks. All rights reserved.'

Adding NRS Element



1. Map the permissions supported for this element to existing user roles.
2. Click Finish.

The screenshot shows the 'Enterprise Common Manager' web interface in a Microsoft Internet Explorer browser. The address bar shows the URL: `https://cpmccots1.europe.nortel.com/frameWrapper.faces?bodyUrl=NavigationManagerServlet?action=navigationControlSecureObject`. The page title is 'ENTERPRISE COMMON MANAGER'. The left sidebar contains a tree view with 'Elements' expanded, showing 'Security' (Password, Users, Roles, Sessions, Policies, Certificates) and 'Tools' (Logs, Snmp). The main content area is titled 'Add New Element' and shows 'Step3: Map the permissions supported for this element to existing user roles.' Below this is a 'Role Mapping' section with a table. The table has two columns: 'Role Name' and 'Element Permissions'. The roles listed are: COTS_ROLES, CS1000_Level1, Debugger, LinuxDebug, NrsmMonitor (with 'NRSM Monitor' in the permissions column), Patcher, PowerUser (with 'NRSM Administrator, NRSM Web Service User' in the permissions column), SecurityAdministrator, ShellAdvanceDebug, and ShellDebug. There are 'Edit Mapping...' and 'Copy All From...' buttons above the table. A 'Finish' button is at the bottom right of the table area. The footer of the page says 'Copyright 2007 Nortel Networks. All rights reserved.'

Role Name	Element Permissions
☐ 1 COTS_ROLES	
☐ 2 CS1000_Level1	
☐ 3 Debugger	
☐ 4 LinuxDebug	
☐ 5 NrsmMonitor	NRSM Monitor
☐ 6 Patcher	
☐ 7 PowerUser	NRSM Administrator, NRSM Web Service User
☐ 8 SecurityAdministrator	
☐ 9 ShellAdvanceDebug	
☐ 10 ShellDebug	



Launching NRS Manager

1. Click on the Element name which is of type NRS .
2. Launch NRS Manager.

The screenshot shows the Enterprise Common Manager web interface. The browser window title is "Enterprise Common Manager - Microsoft Internet Explorer". The address bar shows the URL: <https://cppmcots1.europe.nortel.com/frameWrapper.faces?bodyUrl=NavigationManagerServlet?action=navigationControlSecure>. The page header includes the Nortel logo and the text "ENTERPRISE COMMON MANAGER". The left sidebar contains a tree view with "Elements" expanded, showing "Security" (Password, Users, Roles, Sessions, Policies, Certificates) and "Tools" (Logs, Snmp). The main content area displays "Host Name: cppmcots1.europe.nortel.com" and "Software Version: 5.00.31". Below this, the "Elements" section contains a table with the following data:

	Element Name	System Type	Address	Description
1	COTSNRS	Network Routing Service	47.166.107.58	Express NRS
2	cppm01	Sip Gateway	47.166.107.38	CS1K original
3	cppm02	Sip Gateway	47.166.110.196	CS1K TLS enabled

Buttons for "Add...", "Edit...", "Delete", and "Refresh" are located above the table. The footer of the page states "Copyright 2007 Nortel Networks. All rights reserved." and the browser status bar shows "Done" and "Local intranet".

Launching NRS Manager



The screenshot shows the Nortel Network Routing Service Manager (NRS) web interface running in a Microsoft Internet Explorer browser. The address bar shows the URL: https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--5a246228-12399a5e174--7ffe/frames.faces.

The interface has a purple header with the Nortel logo and the title "NETWORK ROUTING SERVICE MANAGER". Below the header, there is a left sidebar with a "Common Manager" section containing links for "System", "Numbering Plans", and "Tools".

The main content area displays the "NRS Server" configuration. At the top, it shows "Managing: 47.166.107.58" and "System » NRS Server". Below this, there is a "Service Status" section with buttons for "Enable", "Graceful disable", and "Restart".

☐	Service Name	Service Status
1 ☐	SIP Proxy Server (SPS)	In service
2 ☐	Gatekeeper (GK)	In service
3 ☐	Network Connection Server (NCS)	In service

Below the table is a "Server Configuration" section with an "Edit..." button. Under "NRS Setting", the following parameters are listed:

- Host name: cppmcots1
- Primary TLAN IP address: 47.166.107.58
- Secondary TLAN IP address: 0.0.0.0
- Secondary server host name: SecondaryHostName
- Control priority: 40
- Server mate communication port: 5005
- Realm name: realmName
- Server role: Primary

At the bottom, there is a "U32 Gatekeeper Settings" section and a copyright notice: "Copyright © 2007 Nortel Networks. All rights reserved."



Standby DB

1. Ensure that Standby database is selected for managing.

The screenshot shows the Nortel Network Routing Service Manager web interface. The 'Managing:' section has two radio buttons: 'Active database' and 'Standby database'. The 'Standby database' option is selected, indicated by a red arrow from the instruction above. The interface also shows a list of domains under the 'Domains' section.

Managing:

- ☐ Active database 47.166.107.58
- ☒ Standby database [Numbering Plan » Domains](#)

Domains

Domains establish the basic structure of your converged network, defined by Service domains, L1 (UDP) and L0 (CDP) domains.

Service Domains (2)		L1 Domains (UDP) (0)		L0 Domains (CDP) (0)	
☐	ID	Description	# of L1 Domains	# of L0 Domains	# of Gateway Endpoints
☐	1 kcom.com		1	1	0
☐	2 sipccocs.com		1	1	56

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Service Domain



1. Select the Domains under Numbering Plans.
2. Click on Add button to add the service domain..

NORTEL NETWORK ROUTING SERVICE MANAGER

Managing: ☐ Active database 47.166.107.58
☒ Standby database [Numbering Plan » Domains](#)

Domains
 Domains establish the basic structure of your converged network, defined by Service domains, L1 (UDP) and L0 (CDP) domains.

Service Domains (2)		L1 Domains (UDP) (0)		L0 Domains (CDP) (0)	
☐	ID	Description	# of L1 Domains	# of L0 Domains	# of Gateway Endpoints
☐	1 kcom.com		1	1	0
☐	2 sipccocs.com		1	1	56

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Service domain addition



1. Add a service domain.
In this case, nortel.com
2. Click Save.

A screenshot of the Nortel Network Routing Service Manager web interface. The browser window shows the URL: https://cpmccots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--5a246228-12399a5e174--7ffe/frames.faces. The interface has a purple header with the Nortel logo and the title 'NETWORK ROUTING SERVICE MANAGER'. On the left is a navigation menu with 'Common Manager' expanded, showing 'System' (NRS Server, Database, System Wide Settings) and 'Numbering Plans' (Domains, Endpoints, Routes, Network Post-Translation, Collaborative Servers). The main content area is titled 'Add Service Domain'. It contains a 'Domain name' field with 'nortel.com' and an asterisk, and a 'Domain description' field with 'From CPC'. Below these fields is a note '* Required value.' and two buttons: 'Save' and 'Cancel'. Red arrows from the list on the left point to the 'Domain name' field and the 'Save' button. The footer of the interface shows 'Copyright © 2007 Nortel Networks. All rights reserved.' and a 'Local intranet' status bar.



L1 domain name addition

1. Add L1 Domain, click the tab here.
2. Click Add.

L1 domain name addition

1. This field will be pre-populated with udp, and needs to match SIP URI maps on the CS1000 Gateway. In this case, it is post fixed with _nortel
2. Add international E.164 country code (353 for Ireland)
3. Enter regional E.164 area code (91 for Galway)
4. Click Save

The screenshot shows the Nortel Network Routing Service Manager web interface. The browser address bar displays a URL starting with 'https://cppmcots1.europe.nortel.com'. The page title is 'NORTEL NETWORK ROUTING SERVICE MANAGER'. The left sidebar contains a 'Common Manager' menu with options like 'System', 'Numbering Plans', and 'Tools'. The main content area is titled 'Managing: 47.166.107.58' and shows a breadcrumb trail 'Numbering Plan » Domains » L1 Domain'. The 'Add L1 Domain (nortel.com)' form is displayed with the following fields: 'Domain name' (pre-filled with 'udp_nortel'), 'Domain description', 'Endpoint authentication enabled' (set to 'Authentication off'), 'Authentication password', 'E.164 country code' (353), 'E.164 area code' (91), and several other E.164 related fields. Red arrows from the numbered list point to the 'Domain name' field, the 'E.164 country code' and 'E.164 area code' fields, and the 'Save' button. The bottom of the page includes a copyright notice for 2007 Nortel Networks and a 'Local intranet' status indicator.

Domain name: udp_nortel *

Domain description:

Endpoint authentication enabled: Authentication off

Authentication password:

E.164 country code: 353

E.164 area code: 91

E.164 international dialing access code:

E.164 international dialing code length:

E.164 national dialing access code:

E.164 national dialing code length:

E.164 local (subscriber) dialing access code:

E.164 local (subscriber) dialing code length:

* Required value

Save Cancel

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Local intranet

L0 domain name addition



1. To Add L0 Domain, click the tab here.
2. Click Add.

The screenshot shows the Nortel Network Routing Service Manager web interface. The browser address bar shows the URL: https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.fa. The interface has a purple header with the Nortel logo and the title "NETWORK ROUTING SERVICE MANAGER". On the left is a "Common Manager" sidebar with a tree view containing "System" (NRS Server, Database, System Wide Settings), "Numbering Plans" (Domains, Endpoints, Routes, Network Post-Translation, Collaborative Servers), and "Tools" (SIP Phone Context, Routing Tests, Backup, Restore, GK/NRS Data upgrade). The main content area shows "Managing:" with radio buttons for "Active database" and "Standby database", and the IP address "47.166.107.58". Below this is the "Domains" section with a description: "Domains establish the basic structure of your converged network, defined by Service domains, L1 (UDP) and L0 (CDP) domains." There are three tabs: "Service Domains (3)", "L1 Domains (UDP) (1)", and "L0 Domains (CDP) (0)". The "L0 Domains (CDP) (0)" tab is selected. Below the tabs is a "Filter by Domain:" section with two dropdown menus showing "nortel.com" and "udp_nortel". There are "Add..." and "Delete" buttons, and a "Refresh" link. A table with columns "ID", "Description", "# of Gateway Endpoints", "# of Routing Entries", and "Context" is shown below. The footer of the interface includes "Copyright © 2007 Nortel Networks. All rights reserved." and a "Local intranet" icon.



L0 domain name addition

1. Perform the same actions to add an L0 domain
2. This field will be pre-populated with cdp, and needs to match SIP URI maps on the CS1000 Gateway. In this case, it is post fixed with _nortel
3. Add international E.164 country code (353 for Ireland)
4. Enter regional E.164 area code (91 for Galway)
5. Click Save

https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.fa

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Go Links

NORTEL NETWORK ROUTING SERVICE MANAGER Help Logout

«Common Manager

- System
 - NRS Server
 - Database
 - System Wide Settings
- Numbering Plans
 - Domains
 - Endpoints
 - Routes
 - Network Post-Translation
 - Collaborative Servers
- Tools
 - SIP Phone Context
- + Routing Tests
 - Backup
 - Restore
 - GRNRS Data upgrade

Managing: ☐ Active database 47.166.107.58
☒ Standby database

Numbering Plan » Domains » L0 Domain

Add L0 Domain (nortel.com / udp_nortel)

Domain name: cdp_nortel *

Domain description:

Endpoint authentication enabled: Not configured

Authentication password:

E.164 country code: 353

E.164 area code: 91

Private unqualified number label: PrivateUnknown

E.164 international dialing access code:

E.164 international dialing code length:

E.164 national dialing access code:

E.164 national dialing code length:

E.164 local (subscriber) dialing access code:

* Required value.

Save Cancel

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Done Local intranet



NRS Domain Configuration

- The service domain is now in place.
- The L1 and L0 allow the NRS make UDP/CDP routing decisions.
- L1 and L0 are also known as a phone context
- Need to add the CS1000 and Express systems to it as Gateway Endpoints

Adding Endpoints



1. Click Endpoints
2. Select the service domain, L1 and L0.
3. Click Add...

The screenshot shows the Nortel Network Routing Service Manager web interface. The browser address bar shows the URL: https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.fa. The interface has a purple header with the Nortel logo and the title "NETWORK ROUTING SERVICE MANAGER". On the left is a "Common Manager" sidebar with a tree view containing "System" (NRS Server, Database, System Wide Settings), "Numbering Plans" (Domains, Endpoints, Routes, Network Post-Translation, Collaborative Servers), and "Tools" (SIP Phone Context, Routing Tests, Backup, Restore, GK/NRS Data upgrade). The main content area shows "Managing:" with radio buttons for "Active database" (selected) and "Standby database", and the IP address "47.166.107.58". Below this is a "Search for Endpoints" section with a text input for "Endpoint ID:" (containing an asterisk), dropdowns for "Limit results to Domain:" (nortel.com), "udp_nortel", and "cdp_nortel", a "Results per page:" dropdown (100), and a "Search" button. At the bottom, there are tabs for "Gateway Endpoints (0)" and "User Endpoints (0)". Under "Gateway Endpoints (0)", there are buttons for "Add...", "Delete", "SIP phone context...", and "Refresh". Below these buttons is a table with columns: "ID", "Supported Protocols", "Call Signaling IP", "Description", "# of Routing Entries", and "Context". The table is currently empty. The footer of the interface says "Copyright © 2007 Nortel Networks. All rights reserved." and the browser status bar shows "Done" and "Local intranet".



Add CS1000 Endpoint

1. Enter the endpoint name, as specified on the CS1000 endpoint.
2. Enter a description.

The screenshot shows the 'Add Gateway Endpoint' form in the Nortel Network Routing Service Manager. The form is titled 'Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)'. It includes a sidebar with a 'Common Manager' menu containing 'System', 'Numbering Plans', and 'Tools'. The main form area has a 'Managing' section with 'Active database' and 'Standby database' options. The 'Endpoint name' field is set to 'cppm02_nortel' and the 'Description' field is set to 'CS1000 Endpoint'. Other fields include 'Trust Node' (checked), 'Tandem gateway endpoint name' (Not configured), 'Endpoint authentication enabled' (Authentication off), and several E.164 fields for country code, area code, international dialing access code, international dialing code length, national dialing access code, national dialing code length, and local (subscriber) dialing. The form has 'Save' and 'Cancel' buttons at the bottom right. A copyright notice 'Copyright © 2007 Nortel Networks. All rights reserved.' is at the bottom left of the form area.

https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011-- Microsoft Intern...

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Go Links

Address https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces Go Links

NORTEL NETWORK ROUTING SERVICE MANAGER Help Logout

«Common Manager

- System
 - NRS Server
 - Database
 - System Wide Settings
- Numbering Plans
 - Domains
 - Endpoints
 - Routes
 - Network Post-Translation
 - Collaborative Servers
- Tools
 - SIP Phone Context
- + Routing Tests
 - Backup
 - Restore
 - GK/NRS Data upgrade

Managing: ☐ Active database 47.166.107.58
☒ Standby database

Numbering Plan » Endpoints » Gateway Endpoint

Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)

Endpoint name: cppm02_nortel *

Description: CS1000 Endpoint

Trust Node: ☒

Tandem gateway endpoint name: Not configured

Endpoint authentication enabled: Authentication off

Authentication password:

E.164 country code:

E.164 area code:

E.164 international dialing access code:

E.164 international dialing code length:

E.164 national dialing access code:

E.164 national dialing code length:

E.164 local (subscriber) dialing:

* Required value

Save Cancel

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Local intranet



Add CS1000 Endpoint

1. This is a Dynamic endpoint (supports registration).
2. SIP TCP Transport is enabled.
3. Click Save.

https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Reload Print Mail Address Bar Links

Address https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces Go Links

NORTEL NETWORK ROUTING SERVICE MANAGER Help Logout

«Common Manager

- System
 - NRS Server
 - Database
 - System Wide Settings
- Numbering Plans
 - Domains
 - Endpoints
 - Routes
 - Network Post-Translation
 - Collaborative Servers
- Tools
 - SIP Phone Context
- + Routing Tests
 - Backup
 - Restore
 - GK/NRS Data upgrade

Managing: ☐ Active database 47.166.107.58
☒ Standby database
Numbering Plan » Endpoints » Gateway Endpoint

Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)

Static endpoint address type: IP version 4

Static endpoint address:

H.323 support: H.323 not supported

SIP support: Dynamic SIP endpoint

SIP TCP transport enabled: ☒

SIP TCP port: 5060

SIP UDP transport enabled: ☐

SIP UDP port: 5060

SIP TLS transport enabled: ☐

SIP TLS port: 5061

Persistent TCP support enabled ☐

End to end security support: ☐

Network Connection Server enabled: ☒

Redundancy enabled: Not Configured

Main endpoint name: Not configured

* Required value

Save Cancel

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Local intranet



Add Express Endpoint

1. Enter the endpoint name, as specified on the CS1000 endpoint
2. Enter a description

https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011-- Microsoft Intern...

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Mail Print Address Bar Go Links

Address https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces Go Links

NORTEL NETWORK ROUTING SERVICE MANAGER Help Logout

«Common Manager

- System
 - NRS Server
 - Database
 - System Wide Settings
- Numbering Plans
 - Domains
 - Endpoints
 - Routes
 - Network Post-Translation
 - Collaborative Servers
- Tools
 - SIP Phone Context
 - + Routing Tests
 - Backup
 - Restore
 - GK/NRS Data upgrade

Managing: ☐ Active database 47.166.107.58
☒ Standby database

Numbering Plan » Endpoints » Gateway Endpoint

Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)

End point name: Express15 *

Description: Wenyi Express Server

Trust Node: ☒

Tandem gateway endpoint name: Not configured

Endpoint authentication enabled: Authentication off

Authentication password:

E.164 country code:

E.164 area code:

E.164 international dialing access code:

E.164 international dialing code length:

E.164 national dialing access code:

E.164 national dialing code length:

E.164 local (subscriber) dialing

* Required value

Save Cancel

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Local intranet

Add Express Endpoint

1. This is a **Static** SIP endpoint (does not supports registration yet)
2. Because this is a static endpoint, the IP address of the server must be specified here
3. Enable SIP TCP Transport
4. Click Save

The screenshot shows the Nortel Network Routing Service Manager web interface. The left sidebar contains a navigation menu with sections: «Common Manager», - System (NRS Server, Database, System Wide Settings), Numbering Plans (Domains, Endpoints, Routes, Network Post-Translation, Collaborative Servers), - Tools (SIP Phone Context), + Routing Tests (Backup, Restore, CK/NRS Data upgrade). The main content area is titled 'Add Gateway Endpoint (nortel.com / udp_nortel / cdp_nortel)'. It features a 'Managing:' section with 'Active database' selected and IP '47.166.107.58'. Below this, the form includes: 'Static endpoint address type' set to 'IP version 4'; 'Static endpoint address' set to '47.166.110.15'; 'H.323 support' set to 'H.323 not supported'; 'SIP support' set to 'Static SIP endpoint'; 'SIP TCP transport enabled' checked; 'SIP TCP port' set to '5060'; 'SIP UDP transport enabled' unchecked; 'SIP UDP port' set to '5060'; 'SIP TLS transport enabled' unchecked; 'SIP TLS port' set to '5061'; 'Persistent TCP support enabled' checked; 'End to end security support' unchecked; 'Network Connection Server enabled' checked; 'Redundancy enabled' set to 'Not Configured'; and 'Main endpoint name' set to 'Not configured'. At the bottom right are 'Save' and 'Cancel' buttons. A footer note states 'Copyright © 2007 Nortel Networks. All rights reserved.' and the system status shows 'Local intranet'.



Endpoints are added

1. Now need to add routing entries for each of the endpoints
2. Limit results to relevant domains.
3. Click Routes

Managing: ☐ Active database 47.166.107.58
☒ Standby database [Numbering Plan](#) » Endpoints

Search for Endpoints

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

Endpoint ID:

Limit results to Domain: / /

Results per page:

Gateway Endpoints (2) User Endpoints (0)

☐	ID ^	Supported Protocols	Call Signaling IP	Description	# of Routing Entries	Context
☒	Express15	Static SIP endpoint	47.166.110.15	Wenyi Express Server	0	nortel.com / udp_nortel / cdp_nortel
☒	cppm02_nortel	Dynamic SIP endpoint / NCS	Not available	CS1000 Endpoint	0	nortel.com / udp_nortel / cdp_nortel

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Add a routing entry for the Endpoints

1. Select Service, L1 and L0 Domains respectively by selecting the drop down menu in Limit results to Domain.
2. Select the CS1K Endpoint Name.
3. Click Add.

https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011-- Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces Go Links »

NORTEL NETWORK ROUTING SERVICE MANAGER Help | Logout

Managing: ☐ Active database 47.166.107.58
☒ Standby database Numbering Plan » Routes

Search for Routing Entries

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

Dn Prefix: * Dn Type: All DN Types

Limit results to Domain: nortel.com / udp_nortel / cdp_nortel

Endpoint Name: cppm02_nortel

Results per page: 100 Search

Routing Entries (0) Default Routes (0)

Add... Copy... Move... Routing test... Delete Refresh

☐ DN Prefix	DN Type	Route Cost	SIP URI Phone Context	Context
------------------------------------	---------	------------	-----------------------	---------

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Local intranet

Add a routing entry for the Endpoints



1. Select Service,L1 and L0 Domains respectively by selecting the drop down menu in Limit results to Domain.
2. Select the Express Server from the Endpoint Name drop down menu.
3. Click Add.

The screenshot shows the Nortel Network Routing Service Manager web interface in a Microsoft Internet Explorer browser. The address bar shows the URL: https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces. The interface has a purple header with the Nortel logo and the title "NETWORK ROUTING SERVICE MANAGER". On the left is a "Common Manager" sidebar with a tree view containing "System", "Numbering Plans", "Tools", and "Routing Tests". The main content area is titled "Managing:" and shows "Active database" and "Standby database" options. Below this is a "Search for Routing Entries" section with a search form. The form includes a "DN Prefix" field with an asterisk, a "DN Type" dropdown set to "All DN Types", and a "Limit results to Domain:" section with three dropdowns: "nortel.com", "udp_nortel", and "cdp_nortel". Below these is an "Endpoint Name:" dropdown set to "Express15". A "Search" button is at the bottom right of the search form. Below the search form are two tabs: "Routing Entries (0)" and "Default Routes (0)". Under the "Routing Entries (0)" tab, there are buttons for "Add...", "Copy...", "Move...", "Routing test...", and "Delete", along with a "Refresh" button. Below these buttons is a table header with columns: "DN Prefix", "DN Type", "Route Cost", "SIP URI Phone Context", and "Context". The table body is currently empty. The footer of the page shows "Copyright © 2007 Nortel Networks. All rights reserved." and a taskbar with a "Done" button and a "Local intranet" icon.

Add a routing entry for the Express Endpoint

1. From the DN type drop down menu, select CDP Steering Code
2. Enter DN prefix as 215
3. Least cost route is 1
4. Click Save

The screenshot shows the Nortel Network Routing Service Manager web interface in a Microsoft Internet Explorer browser. The address bar shows the URL: https://cpmccots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--5a246228-12399a5e174--7ffc/frames.faces. The page title is "NORTEL NETWORK ROUTING SERVICE MANAGER". The left sidebar shows a navigation menu with "Common Manager" expanded, containing "System", "Numbering Plans", and "Tools". Under "Numbering Plans", "Routes" is selected. The main content area shows the "Add Routing Entry" form for the instance "nortel.com / udp_nortel / cdp_nortel / Express15". The form includes a "Managing:" section with "Active database" and "Standby database" radio buttons, and a "47.166.107.58" IP address. The form fields are: "DN type" (dropdown menu showing "Private level 0 regional (CDP steering code)"), "DN prefix" (text box with "215" and an asterisk), and "Route cost" (text box with "1" and an asterisk). A note at the bottom of the form states "* Required value." and there are "Save" and "Cancel" buttons.

https://cpmccots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--5a246228-12399a5e174--7ffc/frames.faces

NORTEL NETWORK ROUTING SERVICE MANAGER

Help | Logout

«Common Manager

- + System
- Numbering Plans
 - Domains
 - Endpoints
 - Routes
 - Network Post-translation
 - Collaborative Servers
- + Tools

Managing: ☐ Active database 47.166.107.58
☒ Standby database [Numbering Plan](#) » [Routes](#) » [Routing Entry](#)

Add Routing Entry (nortel.com / udp_nortel / cdp_nortel / Express15)

DN type: Private level 0 regional (CDP steering code) *

DN prefix: 215 *

Route cost: 1 * (1-255)

* Required value.

Save Cancel

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Local intranet



Routing entries added

1. When complete, view all the configured routing entries by selecting relevant domains and All Gateway Endpoints in Endpoint Name.

In this case, any Request URI beginning 215 will be directed towards the Express system. Anything beginning with 4 will be directed towards the CS1000.

The screenshot shows the Nortel Network Routing Service Manager web interface. The left sidebar contains a navigation menu with sections: «Common Manager, System (NRS Server, Database, System Wide Setting), Numbering Plans (Domains, Endpoints, Routes, Network Post-Transl, Collaborative Servers), and Tools (SIP Phone Context, Routing Tests, Backup, Restore, GK/NRS Data upgrac). The main content area is titled 'NETWORK ROUTING SERVICE MANAGER' and includes a 'Managing' section with radio buttons for 'Active database' and 'Standby database', and a 'Search for Routing Entries' section with input fields for 'DN Prefix' (set to '*'), 'DN Type' (set to 'All DN Types'), 'Limit results to Domain' (set to 'nortel.com'), and 'Endpoint Name' (set to 'All gateway endpoints'). A 'Search' button is present. Below the search section, there are tabs for 'Routing Entries (2)' and 'Default Routes (0)'. The 'Routing Entries' tab is active, showing a table with columns: 'DN Prefix', 'DN Type', 'Route Cost', 'SIP URI Phone Context', and 'Context'. The table contains two entries: one with DN Prefix '215' and another with DN Prefix '4'. Both entries have a Route Cost of 1 and are associated with the SIP URI Phone Context 'cdp_nortel.udp_nortel'. The context for '215' is 'nortel.com / udp_nortel / cdp_nortel / Express15' and for '4' is 'nortel.com / udp_nortel / cdp_nortel / cppm02_nortel'. The interface also includes a 'Refresh' button and a 'Results per page' dropdown set to 100.

DN Prefix	DN Type	Route Cost	SIP URI Phone Context	Context
1 ☐ 215	Private level 0 regional (CDP steering code)	1	cdp_nortel.udp_nortel	nortel.com / udp_nortel / cdp_nortel / Express15
2 ☐ 4	Private level 0 regional (CDP steering code)	1	cdp_nortel.udp_nortel	nortel.com / udp_nortel / cdp_nortel / cppm02_nortel



Test the routing

1. The routing can be tested via Routing Tests through Tools.
2. Then SIP Routing test.
3. Select the respective domains.
4. Select the Originating endpoint IP address
5. Enter the string of digits in DN to query.
6. Select DN Type to CDP Steering Code.
7. Click Test

The screenshot shows the Nortel Network Routing Service Manager web interface. The browser address bar displays the URL: https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces. The page title is "NORTEL NETWORK ROUTING SERVICE MANAGER".

On the left sidebar, under "Common Manager", the "Tools" menu item is highlighted with a red box. Below it, the "Routing Tests" menu is expanded, and the "SIP" option is circled in red.

The main content area is titled "SIP Routing Test". It contains the following fields and options:

- Managing: ☐ Active database, ☒ Standby database. IP: 47.166.107.58. Link: Tools > Routing Test > SIP
- Service domain name: nortel.com (dropdown)
- L1 domain name: udp_nortel (dropdown)
- L0 domain name: cdp_nortel (dropdown)
- Originating endpoint address type: IP Version 4 (dropdown)
- Originating endpoint IP address: 47.166.110.15 (text input, marked with a red asterisk)
- DN to query: 2153 (text input, marked with a red asterisk)
- DN type: Private Level0 Regional(CDP Steering Code) (dropdown)
- Phone context to query (suggest): cdp_nortel.udp_nortel (text input)

A "Test" button is located at the bottom right of the form. Below the form, a note states: "Note: Phone context is required for all DN types except E.164 International".

The footer of the page reads: "Copyright © 2007 Nortel Networks. All rights reserved." and "Local intranet".

Test the routing

1. The results tell that if the NRS is queried with a request URI with digits beginning with 2153, it will route it to 47.166.110.15, which is the Express server, Express15.

The screenshot shows the Nortel Network Routing Service Manager (NRS) web interface. The browser address bar shows the URL: `https://cppmcots1.europe.nortel.com/nrsmWeb/_INSTANCE_/b09ff476a347dfce--43e1b935-1133ef4b011--7fff/frames.faces`. The page title is "NORTEL NETWORK ROUTING SERVICE MANAGER".

On the left is a navigation menu with sections: «Common Manager», System, Numbering Plans, Tools, and Routing Tests. The "Routing Tests" section is expanded, showing options like H.323, SIP, Backup, Restore, and GKNRS Data upgrade.

The main content area is titled "SIP Routing Test". It contains several input fields and a "Test" button:

- Service domain name: `nortel.com`
- L1 domain name: `udp_nortel`
- L0 domain name: `cdp_nortel`
- Originating endpoint address type: `IP Version 4`
- Originating endpoint IP address: `47.166.110.15` *
- DN to query: `2153` *
- DN type: `Private Level0 Regional(CDP Steering Code)`
- Phone context to query (suggest): `cdp_nortel.udp_nortel`

Below the "Test" button, a section titled "Possible Routes Found" displays a table with the following data:

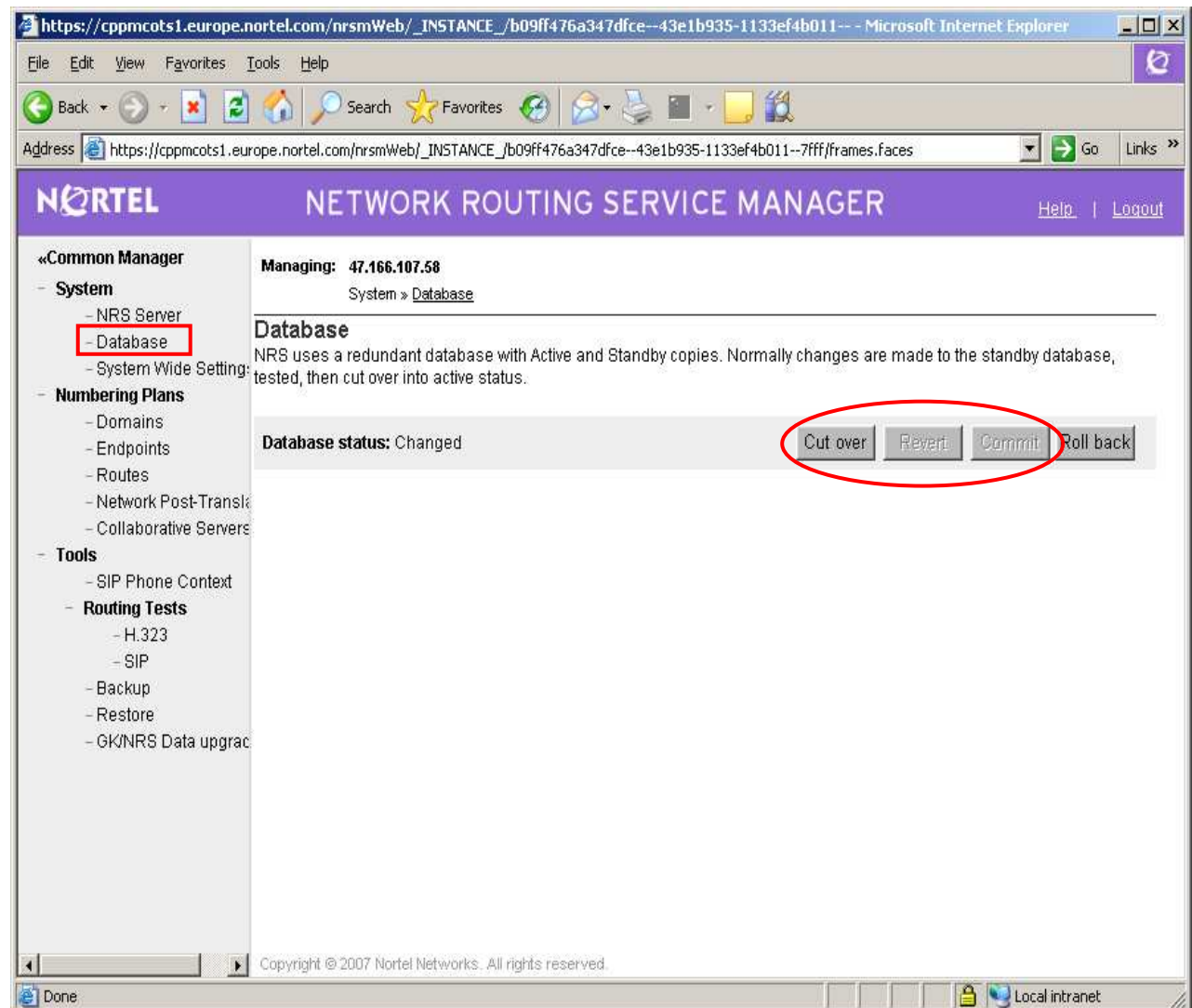
#	Terminating endpoint address	Terminating SIP transport	Terminating SIP port	Routing type	Route cost
0	47.166.110.15	0	5060	REGULAR_ROUTE 1	

At the bottom of the page, there is a copyright notice: "Copyright © 2007 Nortel Networks. All rights reserved." and a status bar showing "Done" and "Local intranet".



Cut over and commit the DB

1. Select System in the left pane.
2. Click Database
3. Click Cut over
4. Click commit
5. Make test calls
6. Logout from the NRSM





Making a test call

- From a CS1000 telset, make a call by dialling the Route Point DN on the Express server
 - Eg, dial 2310 in this example configuration.
- The caller should receive treatment, as per TFE scripts.
 - Ring back, MOH, an announcement
- If not, need to start debugging
 - CCMS_SGM_SIPMessages0.log on Express
 - SIP DCIP message monitoring on the CS
 - SIPCallTrace on the SS



Agent TN configuration

- Login to the CS overlay terminal as detailed earlier
- List available TN's
- Create Agent TN's using TDM or IP sets
- Assign SCR DN to Key 0
- Set COS T87A (others are optional depending on requirements)
- Set AST = 0



Agent terminal – Find a free TN

Id 20

luvu – list unused voice unit

Next available TN

```

c:\ Telnet cppm02
> ld 20
PT0000
REQ: luvu
TYPE: 2050pc
TN
TYPE 2050PC TN 064 0 00 22 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 23 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 24 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 25 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 26 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 27 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 28 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 29 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 30 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 00 31 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 03 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 04 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 05 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 06 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 07 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 08 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 09 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 10 VIRTUAL 8D UCE
TYPE 2050PC TN 064 0 01 11 VIRTUAL 8D UCE

```

Agent terminal

COS set to T87A

AST set to the same key as SCR is on
This can be key 1 or 2

This agents SCR key, that
Express will route calls to

VOUA VOLA – Virtual Office

LNA – Last number redial

CFXA – Call forward external allowed

AHA – Auto on hold

```
Telnet cppm02
>ld 20
PT0000
REQ: new
TYPE: 2050pc
TN 63*
TN 64 0 0 22
DES ECC
CUST 0
NUID
NHIN
KEM
ZONE 1
ERL
ECL
FDN
IGAR 0
LDN
NCOS
RNPG
SSU
SCPW 0000
SGRP
SFLT
CAC_MEC
CLS t87a voua vola lna cfxa unr aha
LNRS
SCI
PLEU
DANI
AST 0
ITNA
MLWU_LANG
MLNG
DNRK
KEY 0 scr 4313
CPND new
CPND_LANG
NAME Express Agt 4313
XPLN
DISPLAY_FMT
UMB
KEY
MGMT001 TNB NEW TYPE:2050PC TN:64 0 0 22
MEM AVAIL: <U/P>: 98949768 USED U P: 5266451 53602 TOT: 104269821
DISK SPACE NEEDED: 54 KBYTES
DIGITAL TELEPHONES AVAIL: 1000 USED: 0 TOT: 1000
TNS AVAIL: 32639 USED: 128 TOT: 32767
REQ: _
```



Routing entries for ROUTE CALL

- Need to plan ROUTE CALL <DN> instructions
- Additional, or special NRS Routing entries may be required to support ROUTE CALL script commands
- In depth knowledge of NRS configuration may be required, so the NRS resolves ROUTE CALL DN's correctly (possible digit manipulation)
- Easiest workaround for ROUTE CALL to external numbers, is CFW a set to the external number, and ROUTE CALL to this CFW set.

Using Call Pilot as a Front end IVR / Routing callers based on CLID



- Some sites employ Call Pilot on the CS1000 to provide basic call routing decisions, using IVR prompts.
- As a result of the decisions callers make, Call Pilot transfers them to their choice of destination.
- An issue with this, is when the caller is transferred to a 3rd party, the Calling Line ID (CLID) of the Call Pilot port is what is presented and displayed on the 3rd party, instead of the original callers CLID.
- When the 3rd party is Express, Express cannot make correct routing decisions based on Callers CLID, because it does not get it.

Using Call Pilot as a Front End IVR / Routing callers based on CLID



- To resolve this, the CS1000 RLB configuration is changed to display the original Caller CLID, instead of the xfering party CLID (as what happens when CP does the xfer).
- Tasks:
- Find the RLB being used to route calls to Express via SIP trunk.
- Change the DORG* setting to YES
- Not yet configurable from EM (RIs 5.5). Have to configure via overlays.

*Display Call Originator's Information (DORG). See CS1000 NTP NN43001-115, New in this Release (Release 5.0)

Using Call Pilot as a Front end IVR / Routing callers based on CLID



1. Log into CS1000 via terminal as described before
2. Id 86
3. Chg
4. Customer 0
5. RLB
6. RLI serving the SIP trunk to Express
7. Entry 0
8. <CR> until DORG prompt
9. Enter YES
10. <CR> to finish
11. Save config via Id 43, edd.

```
Telnet cppm02
>ld 86
MEM AVAIL: <U/P>: 98949804   USED U P: 5266447 53570   TOT: 104269821
DISK SPACE NEEDED: 55 KBYTES
REQ chg
CUST 0
FEAT r1b
RLI 10
ENTR 0
ROUT
TOD
SCNU
CNU
EXP
FRL
DMI
ISDM
FCI
DORG yes
IDBB
IOHQ
OHQ
CBQ
ENTR
ISET
NALT
MFRL
OULL
MEM AVAIL: <U/P>: 98949804   USED U P: 5266447 53570   TOT: 104269821
DISK SPACE NEEDED: 55 KBYTES
REQ
ESN004
REQ -
```

Automatic Default (SIP CC Failure)



- AML Express employs CS1000 ACD queues as a failover mechanism
- SIP Express does not have this option
- Number of manual solutions can be deployed
 - Not automatic, Manual detection and deployment
 - Employ existing CS1000 features
 - Options include ACD Queue, PLDN, DNIS, Group hunt

R&R scenarios: CS1000 ACD queue example



- CS1000 ACD Queue used as a backup
- Normally in Night Service (NSVC)
- NCFW to CDP DN for SIP Express
- Agents can co-reside with SIP Agents

R&R scenarios: CS1000 ACD queue example



- Agents equipped with CS1000 set:
 - Can be TDM/IP and or ACD/Normal type set.
 - KEY 0 ACD 1310 4 7310 – Used with CS1000 ACD queue
 - KEY 1 SCR 4310 – Used for SIP CC calls
 - KEY 3 Not ready – Used with CS1000 ACD queue
 - KEY 4 MSB key*, activation of MSB also makes SCR key busy*.
- Supervisors equipped with Night Service (NSVC) key, normally on Key 2
- Customer call the published ACD DN, or a DN forwarded to the ACD DN.

* See limitations

R&R scenarios: CS1000 ACD queue example



- Normal Operation:
 - Supervisor normally has CS1000 ACD queue in NSVC.
 - Day: NSVC + key D (3)
 - Night: NSVC + Key N (6)
 - Customer calls ACD DN
 - ACD queue NCFW set to CDP/UDP number that resolves to the SIP CC. Call is forwarded to SIP CC (via a SIP trunk).
 - SIP CC processes the call, and presents it to the SCR key on the agent set.

R&R scenarios: CS1000 ACD queue example



- SIP CC fails (power, LAN or other physical loss)
 - Supervisor/Agents detect SIP CC failure (CCAD notification)
 - Removes the CS1000 ACD queue from night service
 - Calls processed using CS1000 ACD to agents.
- Recovery
 - Supervisor is informed when SIP CC recovers, and/or retries CCAD.
 - If successful, Supervisor inserts the CS1000 ACD queue in NSVC, resulting in calls being forwarded and processed by SIP CC.

R&R scenarios: CS1000 ACD queue example – Limitations



- The MSB key is required to take a set out of MSB
- Use of the MSB key makes both the ACD key, and SCR key BSY
 - The MSB key defaults to active after a CS init.
 - MSB must be deactivated for agents to receive any calls.
- It is the responsibility of the Supervisor with the NSVC key to detect the state of the SIP CC
- Can only be one Night Service key per ACD queue
- Note – CCAD has be used while using SIP CC, set has to be used while in Default ACD

R&R scenarios: CS1000 ACD queue example

–Config example



ACD QUEUE example

TYPE ACD
CUST 0
ACDN **1310 (Published number that customers call)**
...
ICDD NO
NCFW **2311 (2311 is a DSC towards SIP CC)**
..
OVDN
IFDN 2311
..
CWNT NONE

Supervisor TN example

DES SIPCCSPR
TN 064 0 00 04 VIRTUAL
TYPE **2050PC (Can be TDM/IP and/or ACD/Normal type set)**
...
TGAR 0
...
SCPW 0000
SFLT NO
CAC_MFC 0
CLS UNR FBD WTA LPR MTD FND HTD TDD HFA CRPD
MWD LMPN RMMD SMWD AAD IMD DOS XHD IRD NID OLD VCE DRG1
...
FDSD NOVD VOLA VOUA OUSD OBPD CDMR ICRD MCDD **T87A** KEM3
MSNV FRA PKCH
CPND_LANG ENG
...
DANI NO
AST **01 (SCR key used for SIP CC, Key 1)**
...
KEY 00 ACD 1310 4 7310 **(ACD Queue on CS1000)**
SPV **(SPV COS)**
01 SCR 4310 0 MARP **(Key used for SIP CC)**
CPND
...
02 NSVC 1310 **(SPV with the Night Service Key, only 1 per ACD queue)**
03 DWC 1310 (Display calls waiting)
04 NRD
05 MSB
....



Nortel Contact Center 7.1

Troubleshooting

BUSINESS MADE SIMPLE

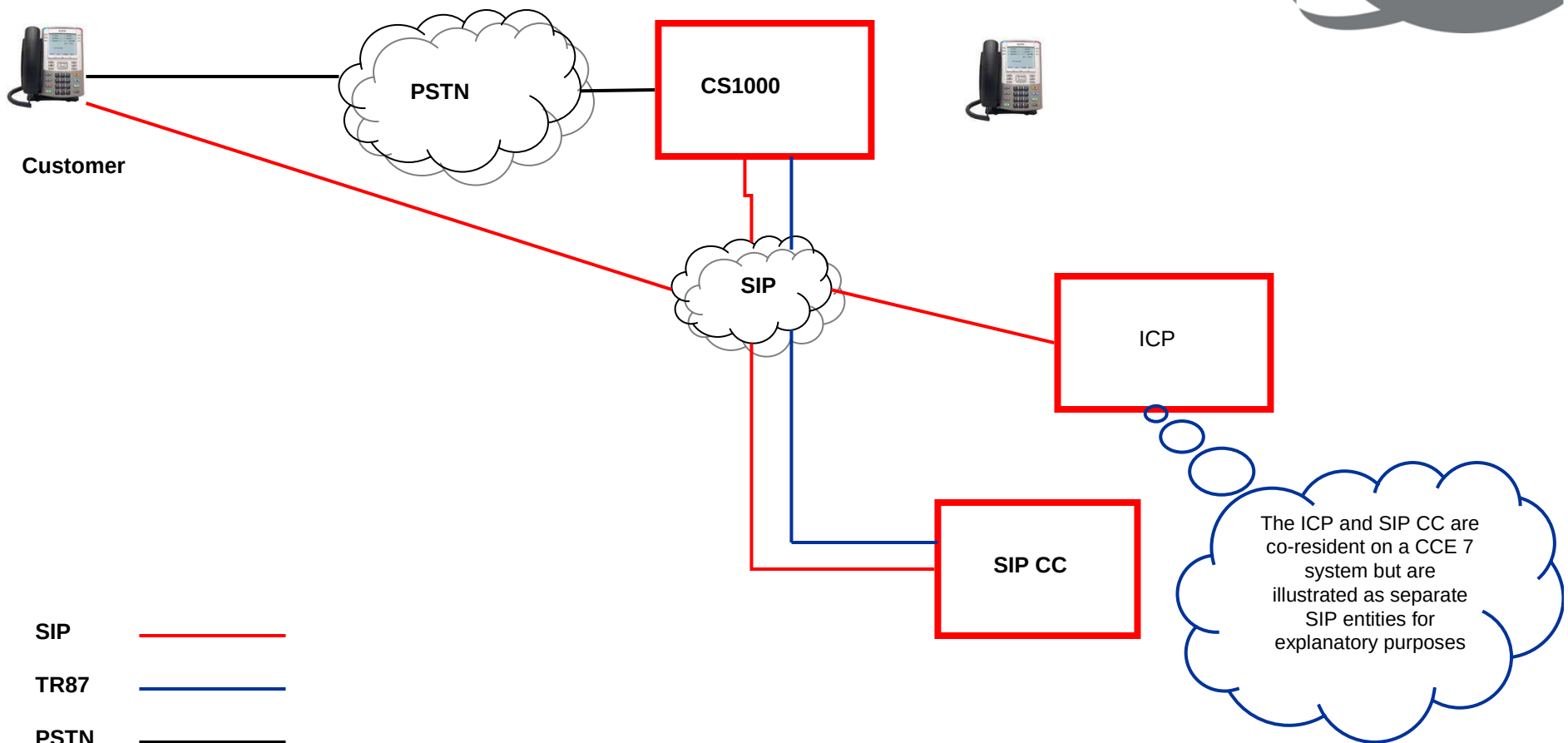




Troubleshooting Agenda

- Architecture Overview
 - SIP CC Architecture
 - SIP CC Call Flows
 - Agent Connects/Disconnects to/from CCT
 - CCMS Login / Logout
 - Incoming Voice Call
 - ICP Interaction
 - Distinguishing between CS1k / ICP / CC Express issues
 - Log files required to debug issue.
 - Sample problems
- Specific Deltas between AML and SIP CC
 - Blind Transfer
 - Agent Display
- Route Call Issues

CCE 7.1 Architecture – A SIP View

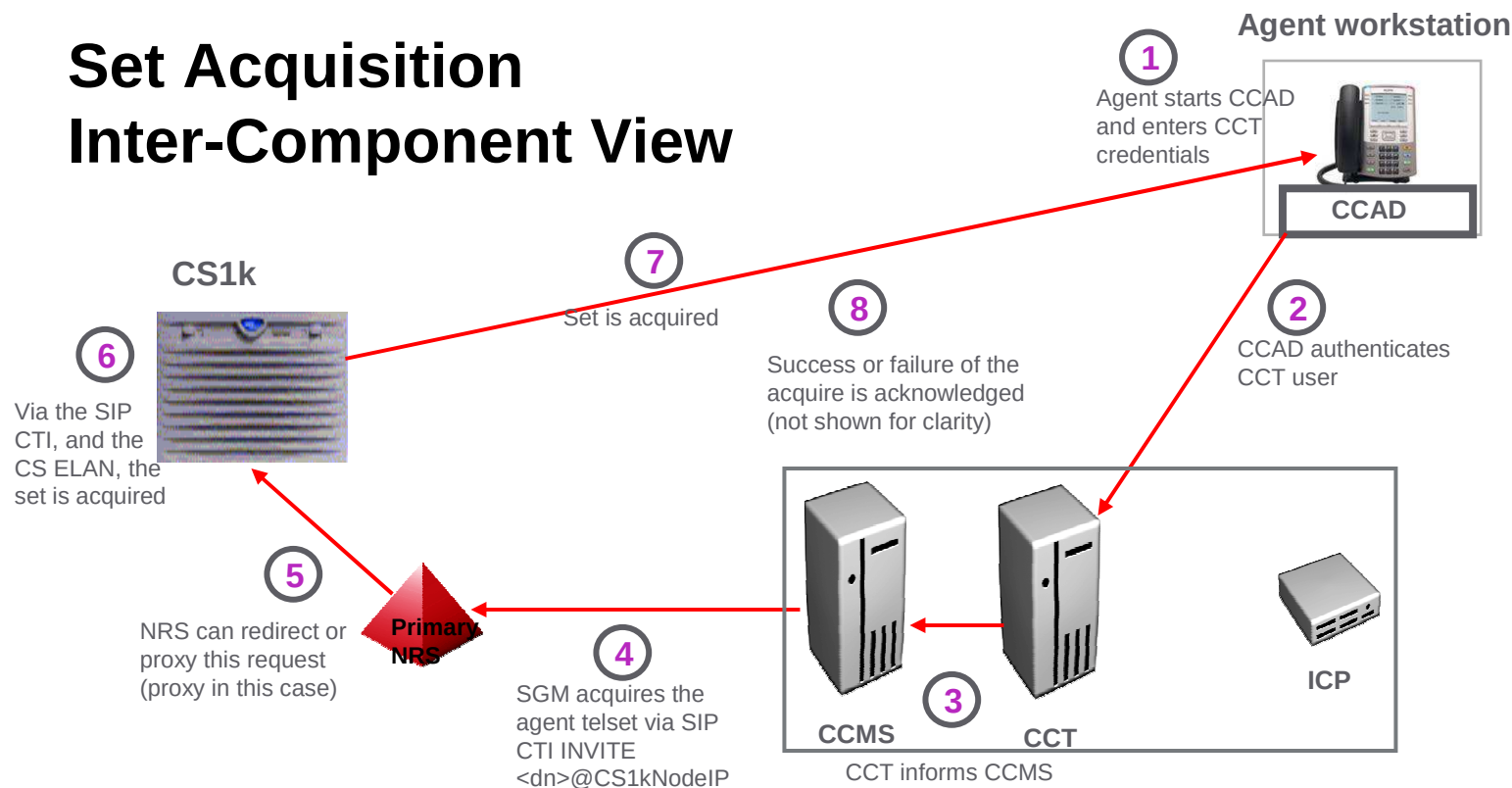




Call flows

- Set acquisition
- Set de-acquisition
- Agent Login
- Agent Logout
- Incoming Voice call
- SGM-ICP interaction detail – Inject RINGBACK

Set Acquisition Inter-Component View

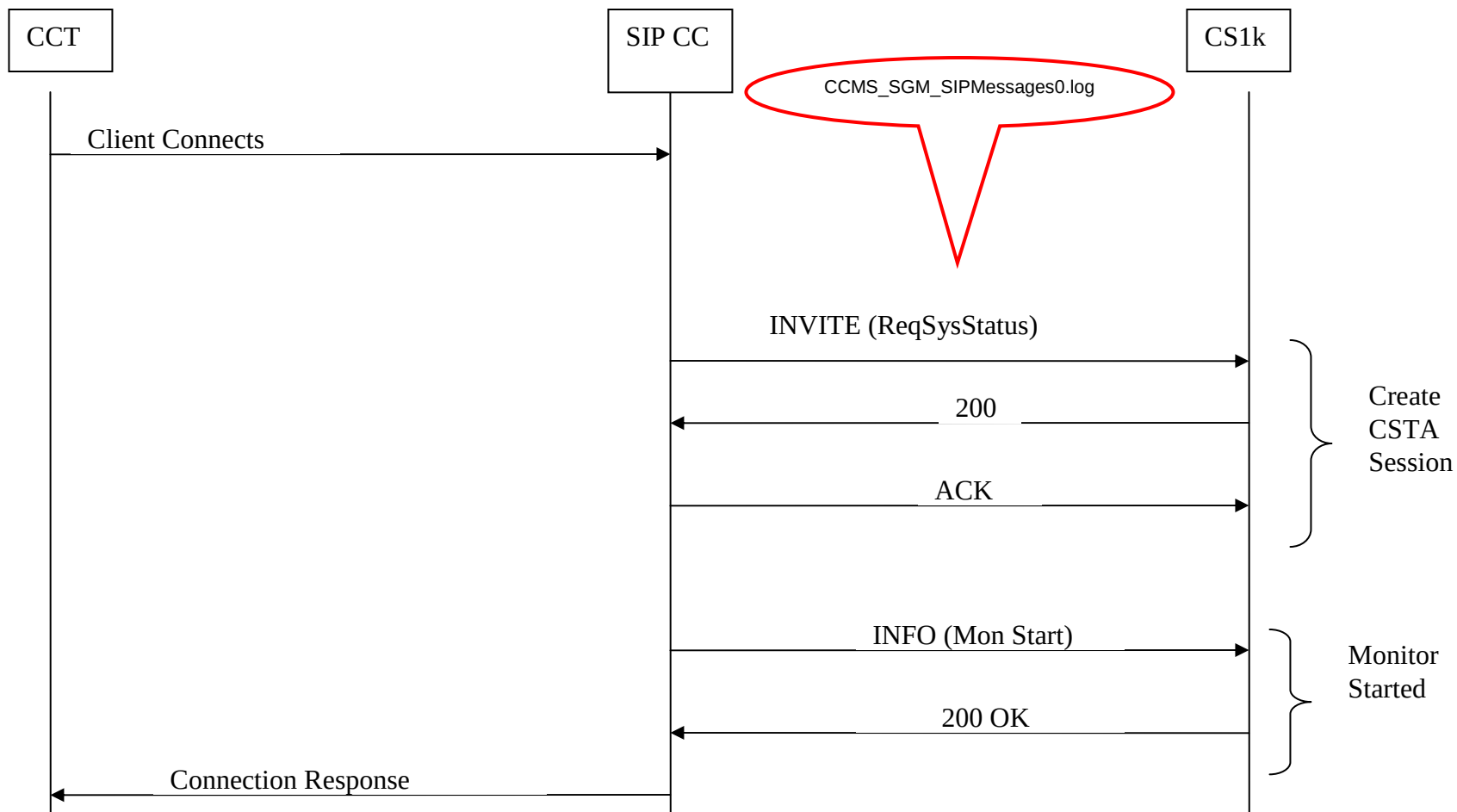


When logging in CCAD, CCMS will acquire the Agent set, via SIP CTI.
To check the result of the attempt, check the result code in the OK returned from the CS1000.
The status of the Originate button on CCAD also signals the result (greyed out means it failed). A good acquire will reply with "normal".
Example failures are "InvalidDeviceState" (the DN key is active), or "ResourceNotAvailable" (SIP CTI is not configured correctly).

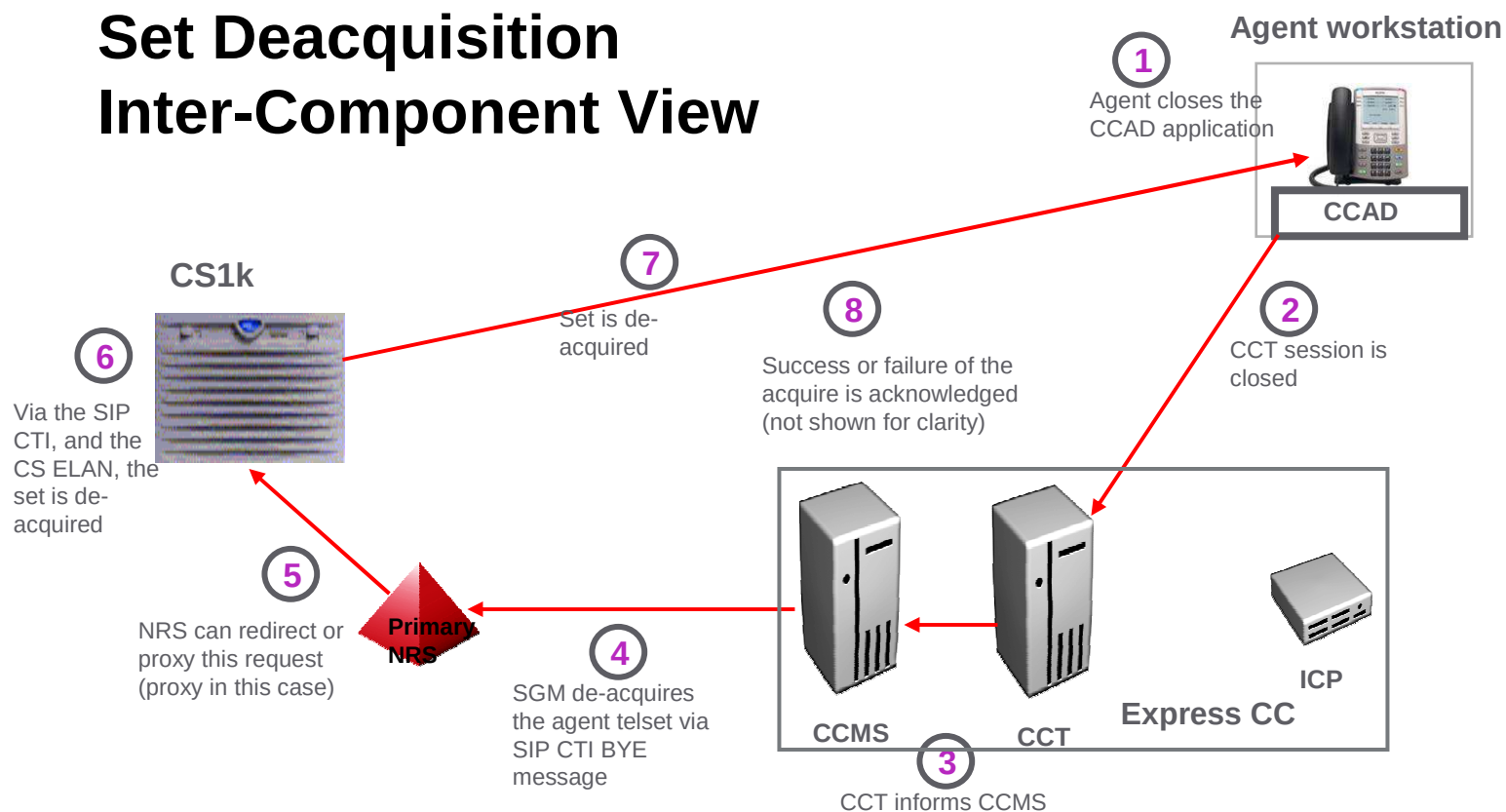
Message Preview			
	Ti	I/O	StartLine
	1	Out	INVITE sip:4315@47.166.110.196 SIP/2.0
	1	In	SIP/2.0 100 Trying
	1	In	SIP/2.0 200 OK
	1	Out	ACK sip:4315@47.166.110.196 SIP/2.0
	1	Out	INFO sip:4315@47.166.110.196 SIP/2.0
	1	In	SIP/2.0 200 OK
	1	In	INVITE sip:2311;phone-context=cdp_nortel SIP/2.0
	1	Out	SIP/2.0 100 Trying
	1	Out	INVITE sip:__sip-conf@nortel.com;x-nt-gw SIP/2.0
	1	In	SIP/2.0 100 Trying
	1	In	SIP/2.0 200 OK

13/10/2009-14:30:01,335 [0x1300] - <- Mess
Direction: incoming
Start-Line: SIP/2.0 200 OK
From: <sip:sips31CCN@nortel.com>;tag=49bf
To: <sip:4315@47.166.110.196>;tag=1e8c47
Call-ID: 4a420608-1f6ea62f-13c4-50022-908
CSeq: 1 INVITE
Content-Disposition: signal;handling=requir
Via: SIP/2.0/UDP 47.166.110.31:5060;branc
Supported: 100rel,x-nortel-sipvc,replaces,tim
User-Agent: Nortel CS1000 SIP G'w/ release
Contact: <sip:4315@47.166.110.196>
Content-Type: application/csta+xml
Content-Length: 205
 <?xml version="1.0" encoding="UTF-8"?>
 <RequestSystemStatusResponse xmlns="http:
 <systemStatus>normal</systemStatus></Req
 \$\$\$end_record

Set Acquisition CCE Messaging View



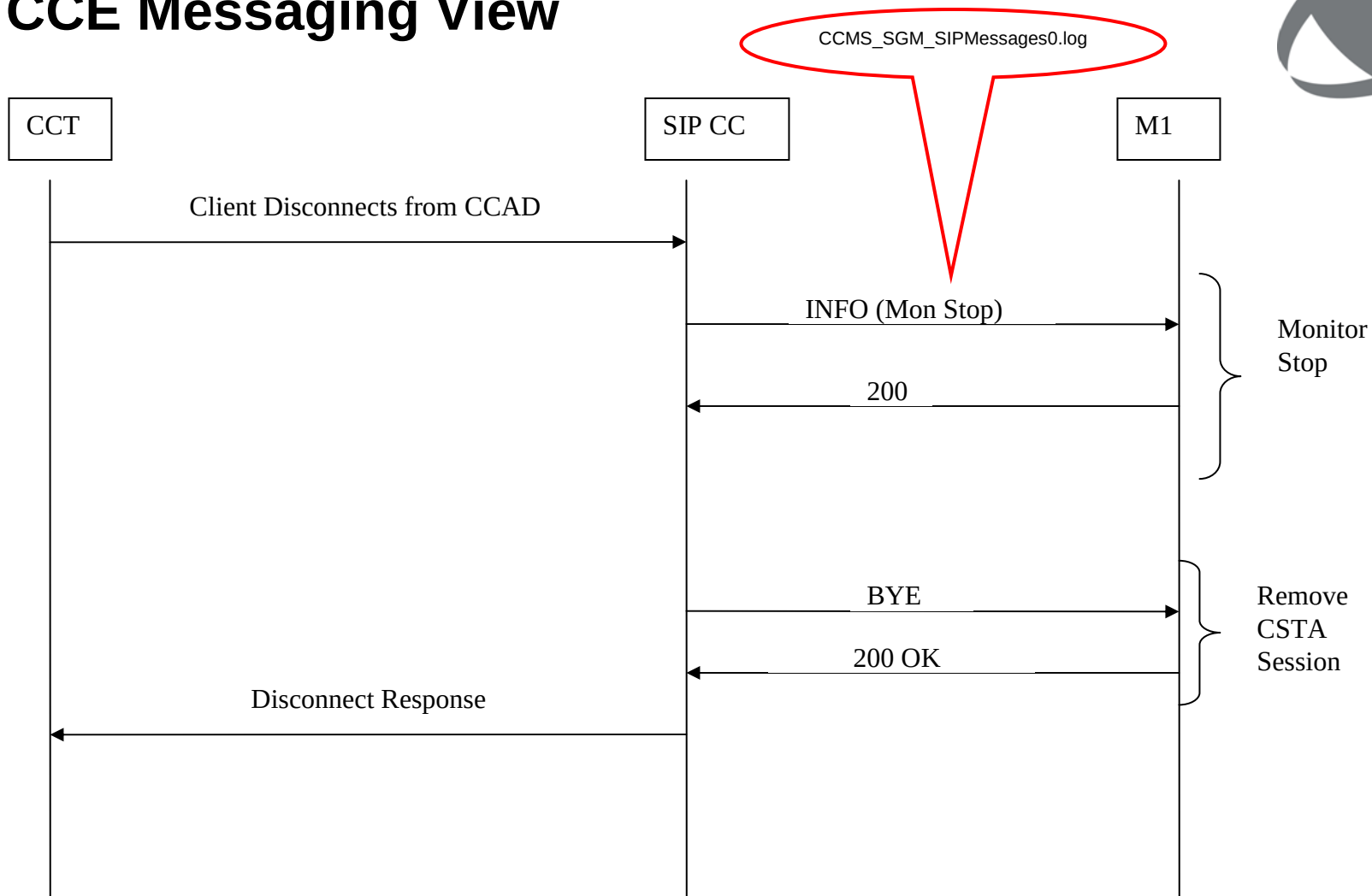
Set Deacquisition Inter-Component View



Message Preview					
	T	I/O	StartLine	From	To
	1	Out	INFO sip:4315@47.1	sips31	4315@47.166.110.196
	1	In	SIP/2.0 200 OK	sips31	4315@47.166.110.196
	1	Out	BYE sip:4315@47.16	sips31	4315@47.166.110.196
	1	In	SIP/2.0 200 OK	sips31	4315@47.166.110.196
	1	In	INVITE sip:2311;ph	4319;	2311;phone-context=cd
	1	Out	SIP/2.0 100 Trying	4319;	2311;phone-context=cd
	1	Out	INVITE sip: __sip-co	2311	__sip-conf@nortel.com
	1	In	SIP/2.0 100 Trying	2311	__sip-conf@nortel.com

13/10/2009-14:40:09,751 [0x46a60] - --> Mes
Direction: outgoing
Start-Line: BYE sip:4315@47.166.110.196
From: <sip:sips31CCN@nortel.com>;tag=49b6
To: <sip:4315@47.166.110.196>;tag=1e8c47
Call-ID: 4a420608-1f6ea62f-13c4-50022-908
CSeq: 4 BYE
Via: SIP/2.0/UDP 47.166.110.31:5060;branc
Max-Forwards: 70
User-Agent: Nortel Contact Center Manager
Content-Length: 0
 \$\$end_record

Set Deacquisition CCE Messaging View



Agent Login Inter-component View

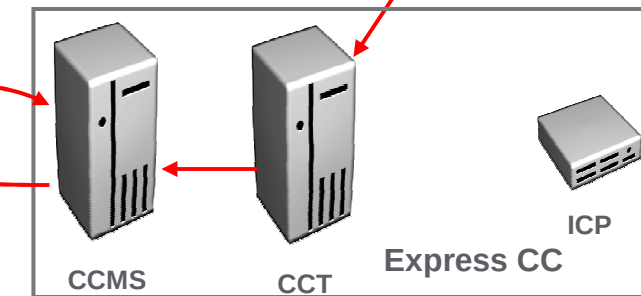


CS1k



Primary
NRS

3
SGM informs ASM
via AML of Login
Request



2
CCT informs CCMS

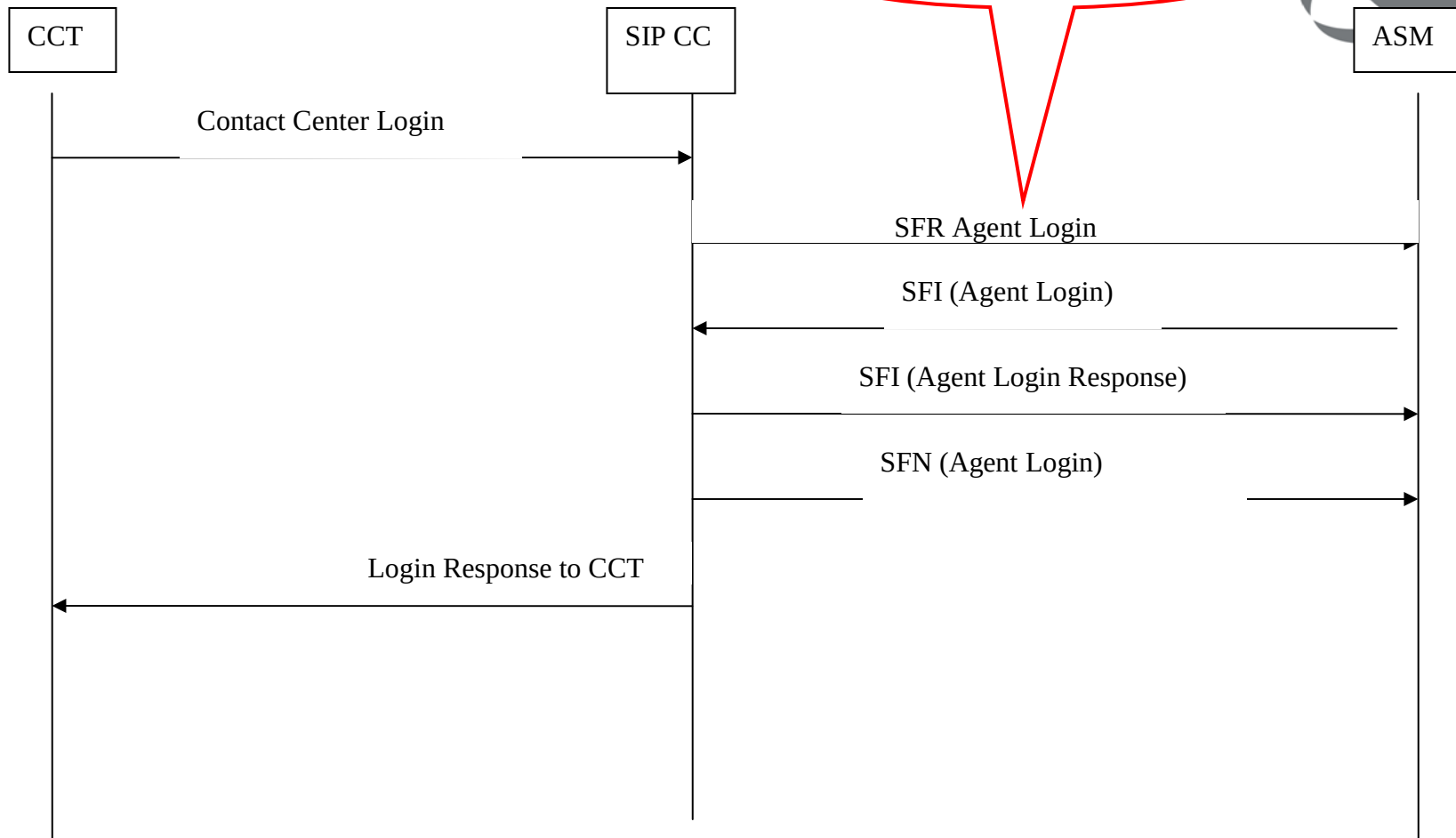
4
Success or failure of the
login is acknowledged (not
shown for clarity)

Agent workstation



1
CCT Agent Login

Agent Login CCE Messaging View



Agent Logout Inter-component View

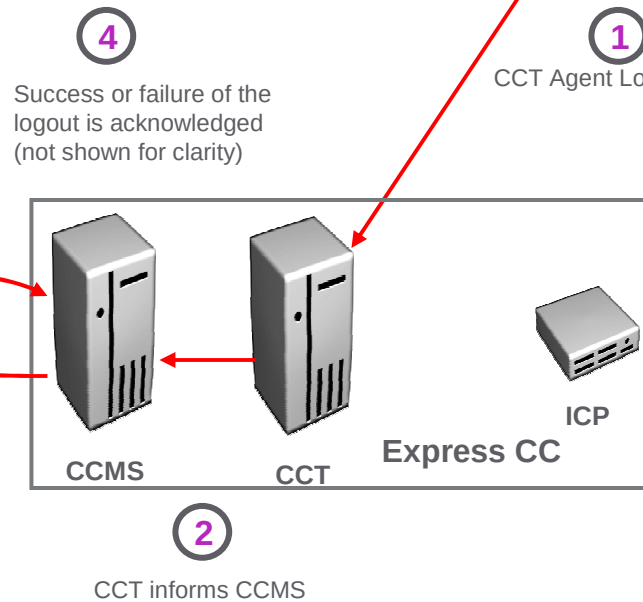


CS1k



Primary
NRS

3
SGM informs ASM
via AML of Logout
Request



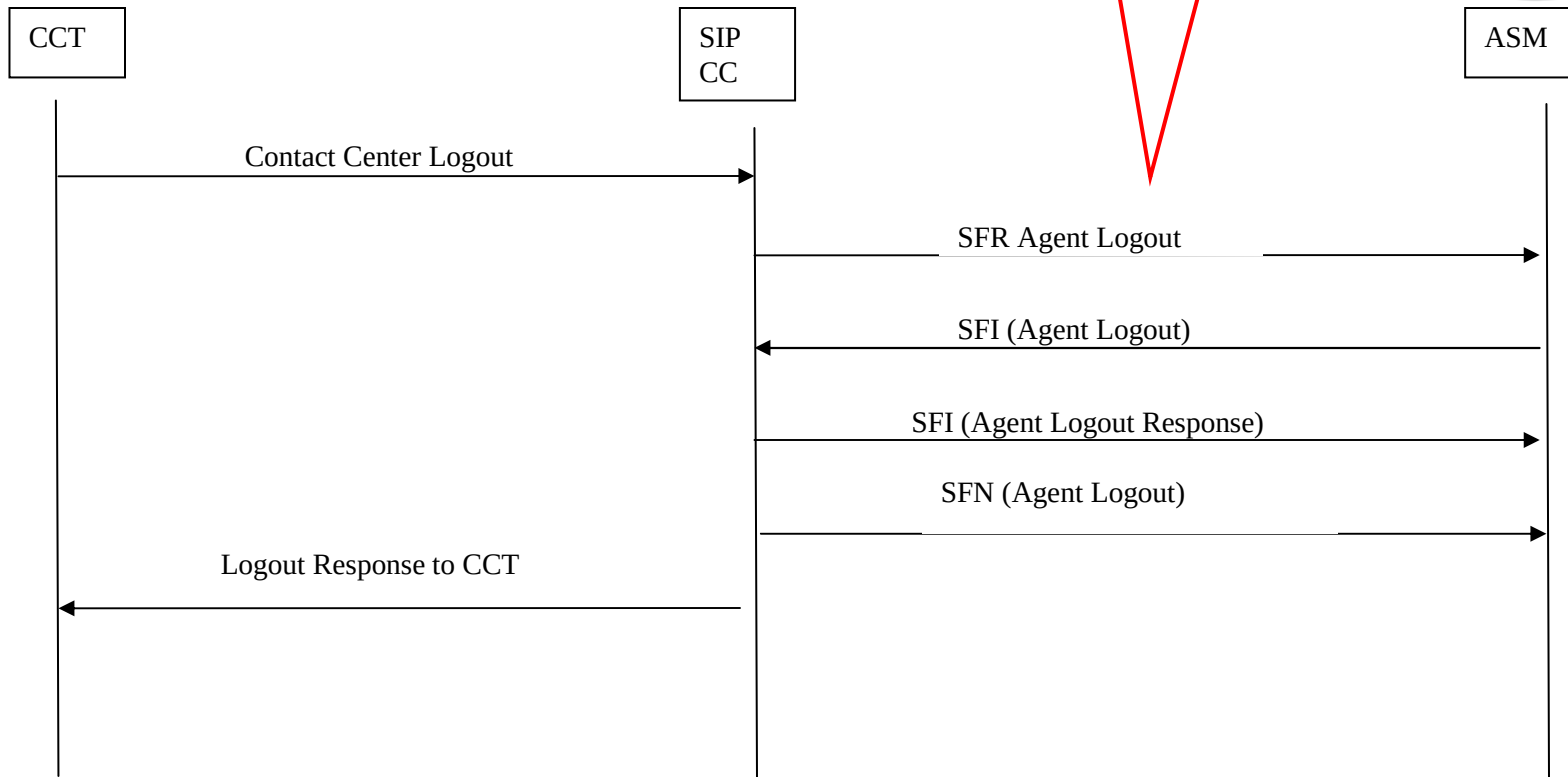
Agent workstation



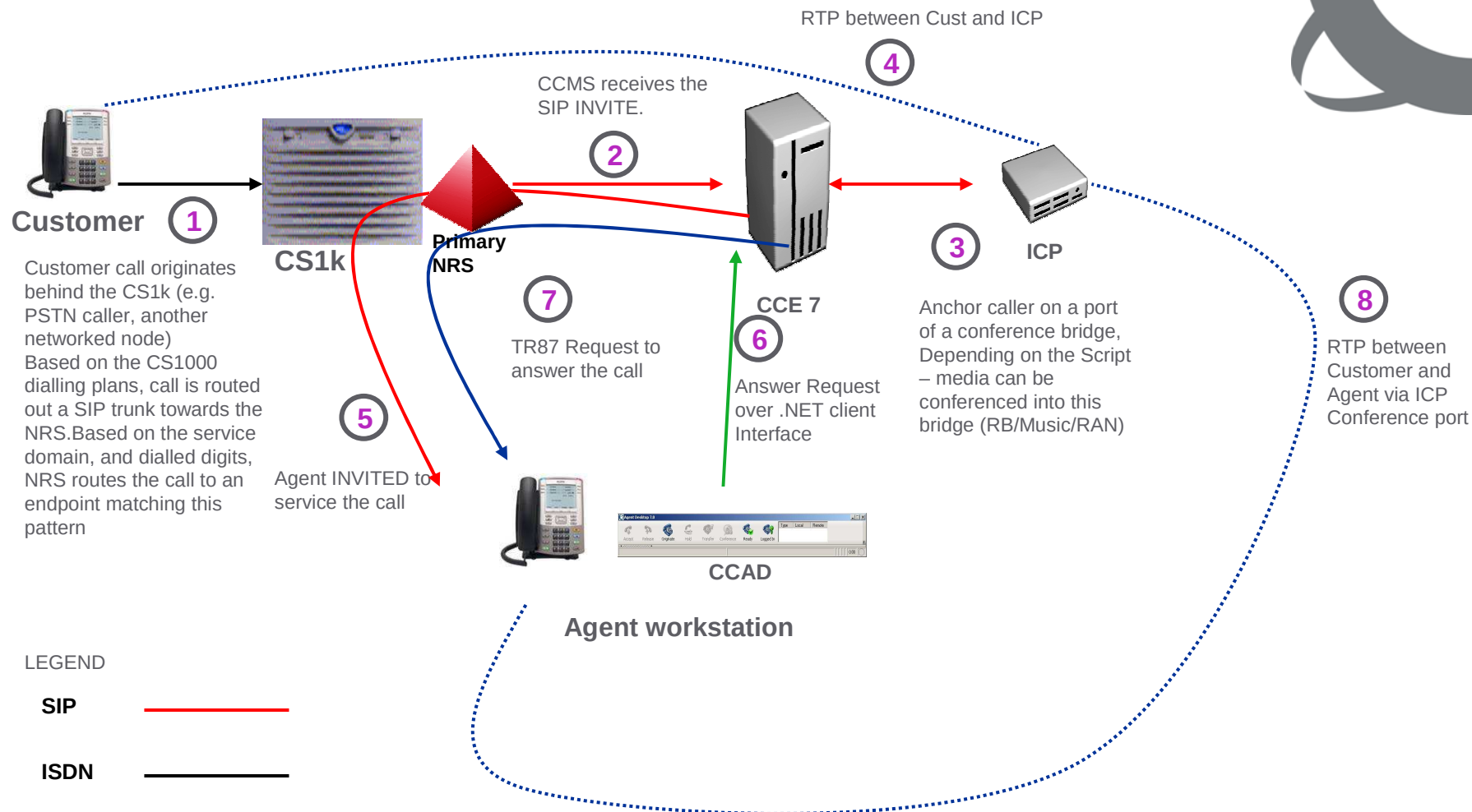
1

CCT Agent Logout

Agent Logout CCE Messaging View



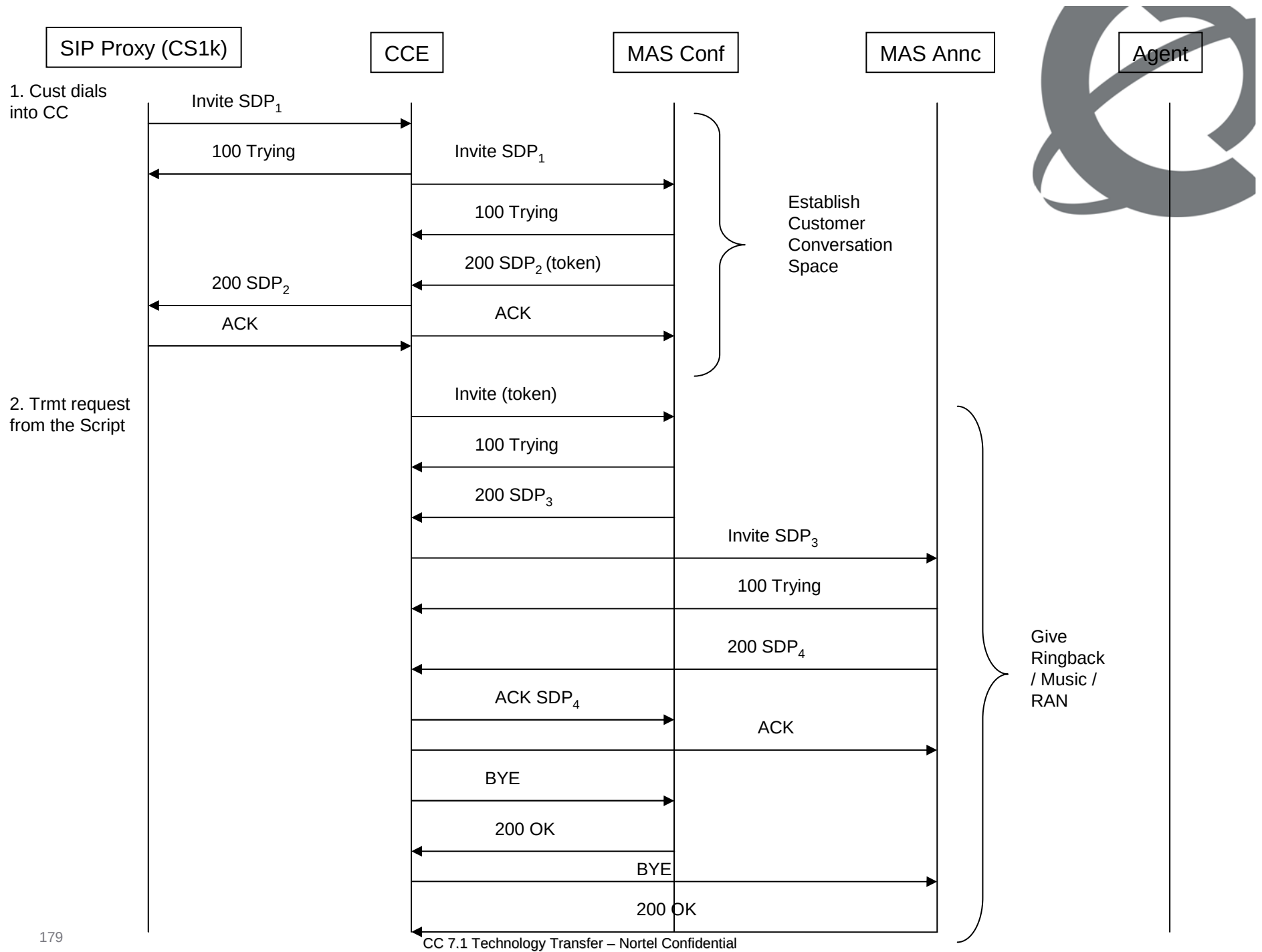
Incoming CC call (SIP and RTP Messaging)

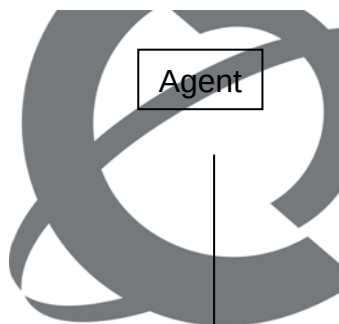


Incoming Voice Call CCE Messaging View



- The next two slides detail the SIP messages that are passed between the main SIP components in the SIP CC solution – namely CS1k, SIP CC, ICP.
- The call flow illustrates the following steps:
 1. An incoming call from a customer to the RoutePoint on CC
 2. Providing the customer with a Treatment from the Script (Ringback, Music, RAN)
 3. Routing the customer to an agent
 4. Agent releases the call





CCMS_SGM_SIPMessages0.log (Snooper)



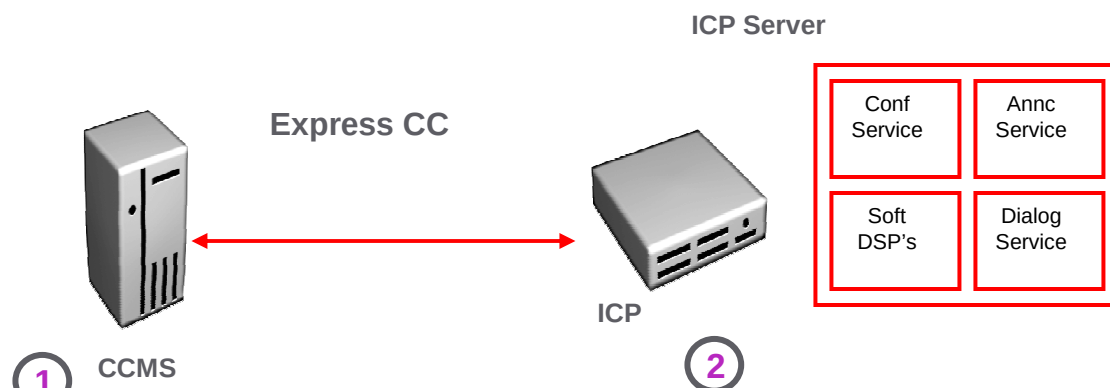
	Time	I/O	StartLine	From	To
▶	15:55:03,001	In	INVITE sip:2350;phone-context=cdp.udp@sipcco	3350;phone-co	2350;phc
	15:55:03,032	Out	SIP/2.0 100 Trying	3350;phone-co	2350;phc
	15:55:03,032	Out	INVITE sip:__sip-conf@sipccocs.com;x-nt-gslid=f	2350@sipccocs.	__sip-cor
	15:55:03,032	In	SIP/2.0 100 Trying	2350@sipccocs.	__sip-cor
	15:55:03,063	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-cor
	15:55:03,063	Out	SIP/2.0 200 OK	3350;phone-co	2350;phc
	15:55:03,079	In	ACK sip:2350;phone-context=cdp.udp@47.166.1	3350;phone-co	2350;phc
	15:55:03,079	Out	ACK sip:__sip-conf@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-cor
	15:55:03,095	In	INFO sip:sipserver35@47.166.110.35:5060 SIP/2	3350@47.166.1	sipserver
	15:55:03,095	Out	SIP/2.0 200 OK	3350@47.166.1	sipserver
	15:55:03,095	Out	INVITE sip:__sip-conf@sipccocs.com;x-nt-gslid=f	2350@sipccocs.	__sip-cor
	15:55:03,095	In	SIP/2.0 100 Trying	2350@sipccocs.	__sip-cor
	15:55:03,110	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-cor
	15:55:03,110	Out	INVITE sip:__sip-annc@sipccocs.com;play=ringb	2350@sipccocs.	__sip-anr
	15:55:03,126	In	SIP/2.0 100 Trying	2350@sipccocs.	__sip-anr
	15:55:03,126	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-anr
	15:55:03,126	Out	ACK sip:__sip-conf@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-cor
	15:55:03,126	Out	ACK sip:__sip-annc@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-anr
	15:55:09,329	Out	BYE sip:__sip-annc@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-anr
	15:55:09,329	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-anr
	15:55:09,329	Out	INVITE sip:__sip-conf@sipccocs.com;x-nt-gslid=f	2350@sipccocs.	__sip-cor
	15:55:09,329	Out	BYE sip:__sip-conf@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-cor
	15:55:09,329	In	SIP/2.0 100 Trying	2350@sipccocs.	__sip-cor
	15:55:09,329	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-cor
	15:55:09,345	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-cor
	15:55:09,345	Out	INVITE sip:__sip-dialog@sipccocs.com;voicexml=	2350@sipccocs.	__sip-dial
	15:55:09,345	In	SIP/2.0 100 Trying	2350@sipccocs.	__sip-dial
	15:55:09,376	In	SIP/2.0 200 OK	2350@sipccocs.	__sip-dial
	15:55:09,376	Out	ACK sip:__sip-conf@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-cor
	15:55:09,376	Out	ACK sip:__sip-dialog@47.166.110.81:5060;transp	2350@sipccocs.	__sip-dial
	15:55:11,751	In	BYE sip:2350@47.166.110.35:5060;transport=TC	__sip-dialog@si	2350@si
	15:55:11,751	Out	SIP/2.0 200 OK	__sip-dialog@si	2350@si
	15:55:11,751	Out	BYE sip:__sip-conf@47.166.110.81:5060;transpo	2350@sipccocs.	__sip-cor

Incoming Invite
from Customer

Ringback played

IVR Session Established

SGM-ICP interaction detail – Inject RINGBACK



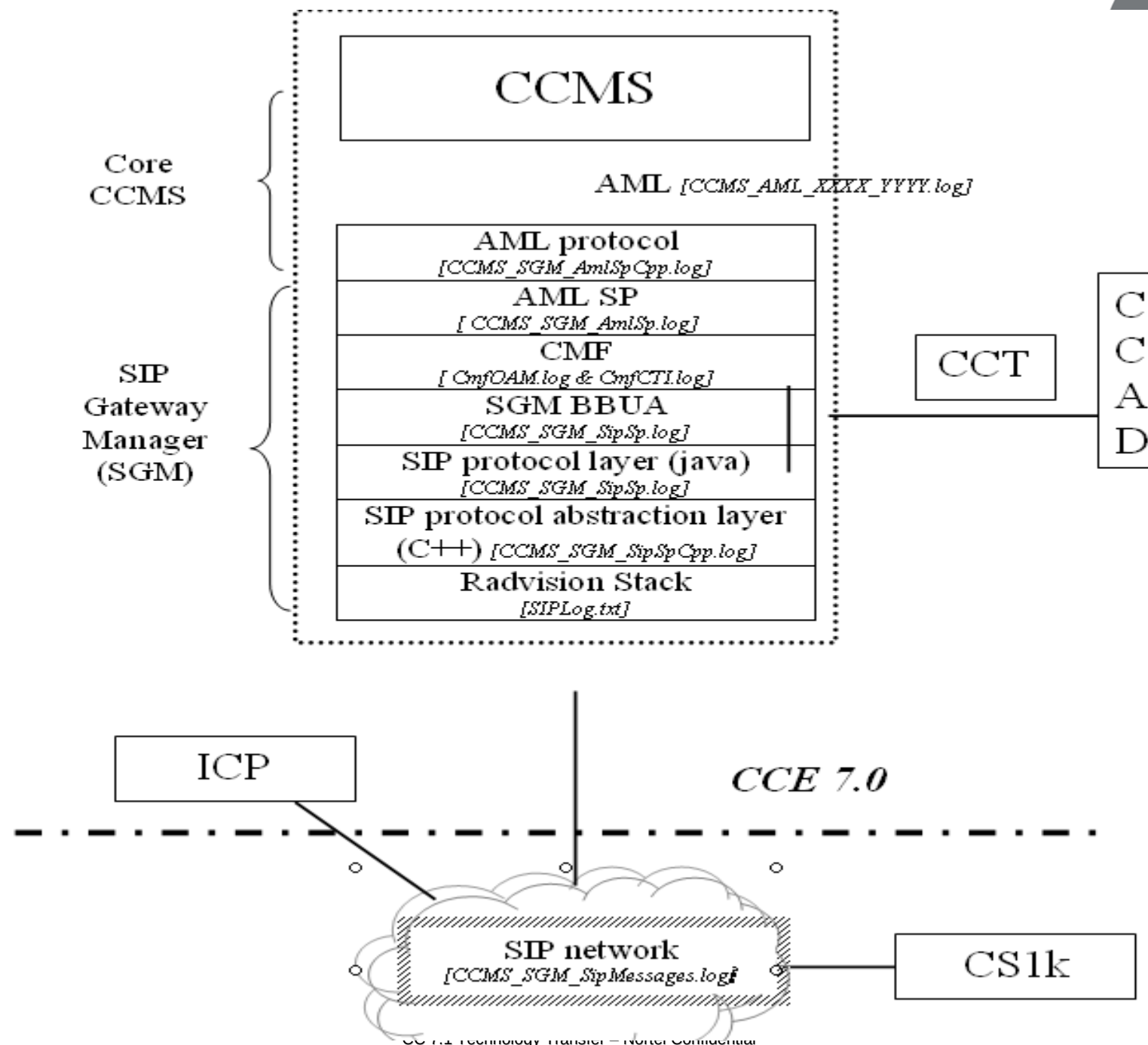
Once the call is anchored, TFE takes control of the call. The SCE flow indicates that Ringback is to be provided
To carry this out, SGM requests for another port into the same conference that the caller is on.
Once it has that, it requests a RINGBACK tone to be injected into this port, from the Annc Service.

ICP provides a second port on the conference, and tells SGM of the details.
As a result for the RINGBACK request, the Annc Service picks the audio file as specified by SGM (RINGBACK, en_ie), and plays this into the conference for the caller to hear.

Out	INVITE sip: __sip-conf@kcom.com;x-nt-gslid=1698ac95-ff
In	SIP/2.0 100 Trying
In	SIP/2.0 200 OK
Out	INVITE sip: __sip-annc@kcom.com;play=ringback;mediaty
In	SIP/2.0 100 Trying
In	SIP/2.0 200 OK
Out	ACK sip: __sip-conf@47.166.110.181:5060;nt_service=__s
Out	ACK sip: __sip-annc@47.166.110.181:5060;nt_service=__

Go get another conf port

And play RINGBACK into it





Debugging (CCMS - 1)

- The following CCMS log files should be captured to enable a SIP related issue to be investigated:
 - **D:\Nortel\Logs\CCMS\CCMS_SGM_SipMessages0.log**
 - **D:\Nortel\Logs\CCMS\CCMS_AML.XXXX.YYYY.log**
 - D:\Nortel\Logs\CCMS\CCMS_SGM_AmlSp.log
 - D:\Nortel\Logs\CCMS\CCMS_SGM_AmlSpCpp0.log
 - D:\Nortel\Logs\CCMS\CCMS_SGM_SipSp.log
 - D:\Nortel\Logs\CCMS\CCMS_SGM_SipSpCpp0.log
 - D:\Nortel\Logs\CCMS\CmfOam.log
 - D:\Nortel\iccm\logs\nicmfjvm.log
 - D:\Nortel\iccm\logs\SipLog.txt

Debugging (CCMS - 2)

TraceControl Utility to configure log files.



The TraceControl utility window is shown with the following settings:

- Select Trace:** A list box containing SIP, SIP_AMLSLogCPP, SIPMSGLog, SIPSPCPLog, and TFE. SIP is selected.
- Trace File Location:** Directory: D:\NORTEL\LOGS\CCMS\ (Browse button)
- Trace File Threshold:**
 - File Size: 50 (MB)
 - Num Of Files: 5
 - Selected Trace Space Required: 250 (MB)
 - Total Trace Space Required: 2970 (MB)
 - Free Space: 58417 (MB)
- Log Level:**
 - ☐ 0 [FATAL]
 - ☒ 3 [DEBUG]
 - ☐ 6 [LOG_TRC_2]
 - ☐ 1 [WARNING]
 - ☐ 4 [LOG_TRACE]
 - ☐ 7 [LOG_TRC_3]
 - ☐ 2 [INFORMATIONAL]
 - ☐ 5 [LOG_TRC_1]
 - ☐ 8 [ERROR]
- Buttons:** Apply, Exit, Reset



Debugging (CS1k)

- If it is suspected that the issue lies on the CS1k then the following commands can be useful to debug TR87 related issues:
 - **SIPCTISessionShow** Shows the total number of TR87 SIP sessions.
 - **SIPCTIClientShow** Shows information about all the associated soft clients.
 - **SIPCTIShow** Shows SIP CTI application status and configuration.
 - **SIPCTIStop** Deacquire one or all AST DN(s) and remove associated SIP CTI sessions.
 - **SIPCTITraceLevel** Sets the MessageTrace Level output to TR87 body only or Detailed format.
 - **SIPCTITraceShow** Prints SIPCTI trace settings.
 - **SIPCTIOutput** Redirect the SIP CTI trace to a specific output destination.
 - **SIPCTITrace** Trace incoming and outgoing TR87 SIP messages.
 - See Nortel Communication Server 1000 Signaling Server Installation and Commissioning, NN43001-312 01.07 Standard Release 5.0 20 June 2007
- The following log file also needs to be captured:
 - SIPCallTrace



Debugging (ICP)

- If it is suspected that the issue lies on the CS1k then the following log files need to be captured (Refer to Aug CC7.1 TT slides for more ICP troubleshooting detail):

confmpDebug.txt	Conference Media Processor debug logging
cstoreDebug.txt	Content Store debug logging
diamcDebug.txt	Diameter charging debug logs
Element ManagerDebug.txt	EM debug logs.
ivrmpDebug.txt	IVR Media Processor debug logging
scDebug.txt	Multimedia Controller debug logging
sipmcDebug.txt	Multimedia Conductor debug logging
srp.log & srp_state.log	Startup and Recovery debug logging
streamsourceDebug.txt	Stream Source debug logging.



Determining where issue lies (1)

- The following two CCMS log files are the most important log files in terms of determining where an issue lies.
 - **D:\Nortel\Logs\CCMS\CCMS_SGM_SipMessages0.log**
 - **D:\Nortel\Logs\CCMS\CCMS_AML.XXXX.YYYY.log**
- The content of these two log files provide enough detail to identify the component in the system where the issue lies.
- SipMessages0.log – SIP Messages between CS1k / ICP / SIP CC
- AML log – AML events indicating the requests / responses to the core ASM/TFE components.



Determining where issue lies (2)

- CCMS_SGM_SipMessages0.log can be opened with any text editor but is formatted so that it can be read using Snooper.exe – a Microsoft protocol analysis tool.
 - Note that Snooper.exe requires .Net 2.0 to be installed.
 - For more information on Snooper please refer to:
 - [http://technet.microsoft.com/en-us/library/dd572600\(office.13\).aspx](http://technet.microsoft.com/en-us/library/dd572600(office.13).aspx)
- When opened with Snooper tool the messaging sequence is displayed as per the images in the previous slides.
- Note that there are some valid errors in this log – for example a SIP 487 response can indicate that a Request Terminated, but this is valid when in response to a Cancel request – as per below:

Message Preview						30/09/2009-10:14:06,234 [0x18ac] - <-- Message Received (Sender Address IP: 10.8.4.10:5060): \$\$begin_record Direction: incoming Start-Line: SIP/2.0 487 Request Terminated From: <sip:5401@ICC>,tag=4a5f18c8-3204080a-13c4-50022-52718-2a54ae62-52718 To: <sip:5455@ICC.com>,tag=194d0bb0-a04080a-13c4-40030-528da-19be9c89-528da Call-ID: 4af112f0-3204080a-13c4-50022-52718-5f4ec57c-52718 CSeq: 1 INVITE Via: SIP/2.0/TCP 10.8.4.50:5060;branch=z9hG4bK-52718-1420b602-56c28243 Supported: 100rel,x-nortel-sipvc,replaces,timer User-Agent: Nortel CS1000 SIP GW release_5.0 version_sse-5.50.12 Allow: INVITE,ACK,BYE,REGISTER,REFER,NOTIFY,CANCEL,PRACK,OPTIONS,INFO,SUBSCRIBE,UPDATE Content-Length: 0 \$\$end_record
	Time	I/O	StartLine	From	To	
	10:14:06,234	Out	CANCEL sip:5455@ICC.com SIP/2.0	5401@ICC	5455@ICC	
	10:14:06,234	In	SIP/2.0 200 OK	5401@ICC	5455@ICC	
▶ !	10:14:06,234	In	SIP/2.0 487 Request Terminated	5401@ICC	5455@ICC	
	10:14:06,234	Out	ACK sip:5455@ICC.com SIP/2.0	5401@ICC	5455@ICC	
	10:14:06,234	In	INFO sip:CCEServer@10.8.4.50:5060 SIP/2.0	5455@10.8.4.	CCEServ	
	10:14:06,234	Out	SIP/2.0 200 OK	5455@10.8.4.	CCEServ	
	10:14:11,827	In	INVITE sip:5401;phone-context=Level2_cdp.L	8548;phone-c	5401;ph	
	10:14:11,859	Out	SIP/2.0 100 Trying	8548;phone-c	5401;ph	
	10:14:11,874	Out	INVITE sip:__sip-conf@ICC.com;x-nt-gslid=35	5401@ICC	__sip-co	
	10:14:11,874	In	SIP/2.0 100 Trying	5401@ICC	__sip-co	

Sample Problem 1 – Identifying an ICP issue

Message Preview					
	Time	I/O	StartLine	From	To
	11:08:21,234	Out	INVITE sip: __sip-annc@ICC.com;play=Default	5401@ICC.co	__sip-an
	11:08:21,234	In	SIP/2.0 100 Trying	5401@ICC.co	__sip-an
!	11:08:21,250	In	SIP/2.0 404 Not Found	5401@ICC.co	__sip-an
	11:08:21,250	Out	ACK sip: __sip-annc@ICC.com;play=Default_R	5401@ICC.co	__sip-an
	11:08:21,250	Out	ACK sip: __sip-conf@10.8.4.50:5070;transport	5401@ICC.co	__sip-co
	11:08:21,250	Out	BYE sip: __sip-conf@10.8.4.50:5070;transport	5401@ICC.co	__sip-co
	11:08:21,250	In	BYE sip:5401@10.8.4.50:5060 SIP/2.0	__sip-conf@IC	5401@IC
	11:08:21,250	Out	SIP/2.0 200 OK	__sip-conf@IC	5401@IC
	11:08:21,250	In	SIP/2.0 200 OK	5401@ICC.co	__sip-co
	11:08:21,265	Out	INVITE sip: __sip-conf@10.8.4.50:5070;transp	5401@ICC.co	__sip-co
	11:08:21,281	In	SIP/2.0 200 OK	5401@ICC.co	__sip-co

07/10/2009-11:08:21,234 [0x18c6] -> Message to Send (Dest Address IP: 10.8.4.50:5070):
 \$\$\$begin_record
 Direction: outgoing
 Start-Line: INVITE sip: __sip-annc@ICC.com;play=Default_Route;early=no;locale=en-us;x-nt-gslid=2cf5cebb-a854-4559-b3bd-7e7b33bf3349 SIP/2.0
 From: <sip:5401@ICC.com>;tag=49696e28-3204080a-13c4-50022-169b7-26194e10-169b7
 To: <sip: __sip-annc@ICC.com>
 Call-ID: 49f883b0-3204080a-13c4-50022-169b7-3bf3264a-169b7
 CSeq: 1 INVITE
 Via: SIP/2.0/TCP 10.8.4.50:5060;branch=z9hG4bK-169b7-584f5e920b58359
 Max-Forwards: 70
 User-Agent: Nortel Contact Center Manager 7.0
 Contact: <sip:5401@10.8.4.50:5060>
 Content-Type: application/sdp
 Content-Length: 381
 v=0

Sending a Request to the ICP

Invite out to the ICP contained a request to play "Default_Route" However the 404 Not Found response tells us that "Default Route" is not configured on the ICP. The resolution here could be to load up "Default_Route" onto the ICP so that it can be played into the conference.

Sample Problem 2 – Identifying a CS1k issue



d:\nortel\logs\ccms\ccms_sgm_sipmessages0.log - Snooper

File Options Reports Help

Message Preview

Time	I/O	StartLine	From	To
18:29:24,713	In	SIP/2.0 100 Trying	2150;phone-co	_sip-anr
18:29:24,729	In	SIP/2.0 200 OK	2150;phone-co	_sip-anr
18:29:24,729	Out	ACK sip:_sip-conf@47.166.110.183:5060;trans	2150;phone-co	_sip-cor
18:29:24,729	Out	ACK sip:_sip-annc@47.166.110.183:5060;trans	2150;phone-co	_sip-anr
18:29:24,745	In	INFO sip:2150;phone-context=cdp_nortel.udp_n	_sip-conf@sip	2150;phc
18:29:24,745	Out	SIP/2.0 200 OK	_sip-conf@sip	2150;phc
18:29:29,604	Out	INVITE sip:_sip-conf@sipccocs.com;x-nt-gslid=	2150;phone-co	_sip-cor
18:29:29,604	In	SIP/2.0 100 Trying	2150;phone-co	_sip-cor
18:29:29,620	In	SIP/2.0 200 OK	2150;phone-co	_sip-cor
18:29:29,620	Out	INVITE sip:4151@sipccocs.com SIP/2.0	2150;phone-co	4151@sj
18:29:29,620	In	SIP/2.0 100 Trying	2150;phone-co	4151@sj
18:29:29,635	In	INFO sip:SIPSERVER15@47.166.110.15:5060 SI	4151@47.166.	SIPSERVE
18:29:29,635	Out	SIP/2.0 200 OK	4151@47.166.	SIPSERVE
18:29:29,635	In	SIP/2.0 180 Ringing	2150;phone-co	4151@sj
18:29:30,135	In	SIP/2.0 200 OK	2150;phone-co	_sip-cor
18:29:31,151	In	SIP/2.0 200 OK	2150;phone-co	_sip-cor
18:29:31,323	Out	INFO sip:4151@47.166.110.196 SIP/2.0	SIPSERVER15	4151@47
18:29:31,338	In	SIP/2.0 200 OK	SIPSERVER15	4151@47
18:29:33,166	In	SIP/2.0 200 OK	2150;phone-co	_sip-cor

15/10/2009-18:29:31,338 [0x19d4] - < Message Received (Sender Address IP: 47.166.110.196:5060):
 \$\$begin_record
 Direction: incoming
 Start-Line: SIP/2.0 200 OK
 From: <sip:SIPSERVER15@sipccocs.com>;tag=4ab70f68-f6ea62f-13c4-50022-1f7a-22eb9279-1f7a
 To: <sip:4151@47.166.110.196>;tag=1ea84448-c46ea62f-13c4-40030-4b86-44cec397-14b86
 Call-ID: 4b491118-f6ea62f-13c4-50022-1f7a-4008c623-1f7a
 CSeq: 5 INFO
 Content-Disposition: signal;handling=required
 Via: SIP/2.0/UDP 47.166.110.15:5060;branch=z9hG4bK-5ae8-1631ca0-79c263a4
 Supported: 100rel,x-nortel-sipvc,replaces,timer
 User-Agent: Nortel CS1000 SIP GW release_5.0 version_sse-5.50.12
 Contact: <sip:4151@47.166.110.196>
 Content-Type: application/csta+xml
 Content-Length: 204
 <?xml version="1.0" encoding="UTF-8"?>
 <CSTAError xmlns="http://www.ecma-international.org/standard/ecma-323/csta/ed3">
 <stateIncompatibility>invalidDeviceState</stateIncompatibility></CSTAError>
 \$\$end_record

Invalid Device State on the CS1k –
Agent's IP phone was
disconnected

Important to look here to
determine where the SIP message
is going to / coming from

Sample Problem 3 – Identifying a CCE Issue



- If there is nothing obvious from the SipMessages0.log then it is possible that the problem lies within CCE.
- The second port of call to determine where the root cause may lie is to look at the D:\Nortel\logs\CCMS\CCMS_AML.XXXX.YYYY.log file. This provides the same level of AML messaging as you would be familiar with on an AML CC. This is due to the fact that there exists an AML Emulator on CCE that provides AML events to the ASM/TFE components.
- A recent example from Site was identified as CCE issue as follows:



Sample Problem 3 – Identifying a CCE Issue

SipMessages0.log contained the following:

Message Preview					
	Time	I/O	StartLine	From	To
	13:25:17,343	Out	INVITE sip:+9058641188@ICC.com:5060;maddr=	5401;phone-co	+905864
	13:25:17,358	In	SIP/2.0 100 Trying	5401;phone-co	+905864
	13:25:17,358	In	SIP/2.0 200 OK	5401;phone-co	+905864
	13:25:17,358	Out	ACK sip: __sip-conf@10.8.4.50:5070;transport=T	5401@ICC.com	__sip-cor
	13:25:17,358	Out	ACK sip:+9058641188@ICC.com:5060;maddr=1	5401;phone-co	+905864
	13:25:17,358	Out	REFER sip:+9058641188@ICC.com:5060;maddr	5401;phone-co	+905864
!	13:25:17,358	In	SIP/2.0 603 Decline	5401;phone-co	+905864
	13:25:27,015	In	BYE sip:5401;phone-context=Level2CDP.Level1U	+9058641188	5401;phc
	13:25:27,015	Out	SIP/2.0 200 OK	+9058641188	5401;phc
	13:25:27,015	Out	BYE sip: __sip-conf@10.8.4.50:5070;transport=T	5401@ICC.com	__sip-cor
	13:25:27,030	In	SIP/2.0 200 OK	5401@ICC.com	__sip-cor
	13:25:40,874	In	INVITE sip:8540;phone-context=Level2CDP.Level	+9058641188	8540;phc

19/10/2009-13:25:17,358 [0x1918] --> Message to Send (Dest Address IP: 10.8.4.10:5060):\$\$begin_re

Direction: outgoing

Start-Line: REFER sip:+9058641188@ICC.com:5060;maddr=10.8.4.10;transport=tcp;user=phone SIP/2.0

From: <sip:5401;phone-context=Level2CDP.Level1UDP@ICC.com;user=phone>;tag=4a613568-32040813c4-50022-407c4-752a4d28-407c4

To: <sip:+9058641188@ICC.com;user=phone>;tag=19395830-a04080a-13c4-40030-1e686e-20b74880-1e686e

Call-ID: 18d8f800-a04080a-13c4-40030-1e686e-6da230c2-1e686e

CSeq: 2 REFER

Via: SIP/2.0/TCP 10.8.4.50:5060;branch=z9hG4bK-407c7-fbe6272-13d7bfca

Refer-To: <sip:ICC.com>

Refered-By: <sip:5401;phone-context=Level2CDP.Level1UDP@ICC.com:5060>;maddr=10.8.4.50;transport=tcp;user=phone;x-nt-redirect=redirect-server

Max-Forwards: 70

Contact: <sip:5401;phone-context=Level2CDP.Level1UDP@10.8.4.50:5060;transport=tcp>

Content-Length: 0

\$\$end_record

The Refer-To header contains the destination for the Route Call Request. If this does not contain a valid destination then there is no where for the CS1k to route the Call, hence the fail response.



Sample Problem 3 – Identifying a CCE Issue

- In this case the Refer-To header is populated via the Request to route the call in the first place – which comes from TFE.
- By investigating the AML log we can see that the Destination DN contained a null value – thus leading to the problem.

```
----- Output from nitfe.exe      Mon Oct 19 13:02:31.311 2009  (02:31.311)
ITR Route
03 1d 00 00 00 00 1e 34 b8 5b 00 00  header (12 bytes)
                        95 01 05  Subtype (Route)
                        96 04 78 f9 27 4f  Call Id
                        4b 02 54 a1  CDN (5401)
                        31 00  Terminating DN    <== Does not contain any value
                        67 01 00  Conditional (unconditional)
```

=====



Blind Transfer Support on CCE 7.0 (1)

- There is some confusion over the terminology used to describe the different flavours of transfer that are supported on CC Express 7.0
- CCE 7.0 **supports** two-step transfers
- CCE 7.0 **does not support** single-step transfers
- A two-step transfer is referred to as a supervised transfer in CCAD and a single-step transfer is referred to in CCAD as a Blind transfer – as per the image below





Blind Transfer Support on CCE 7.0 (2)

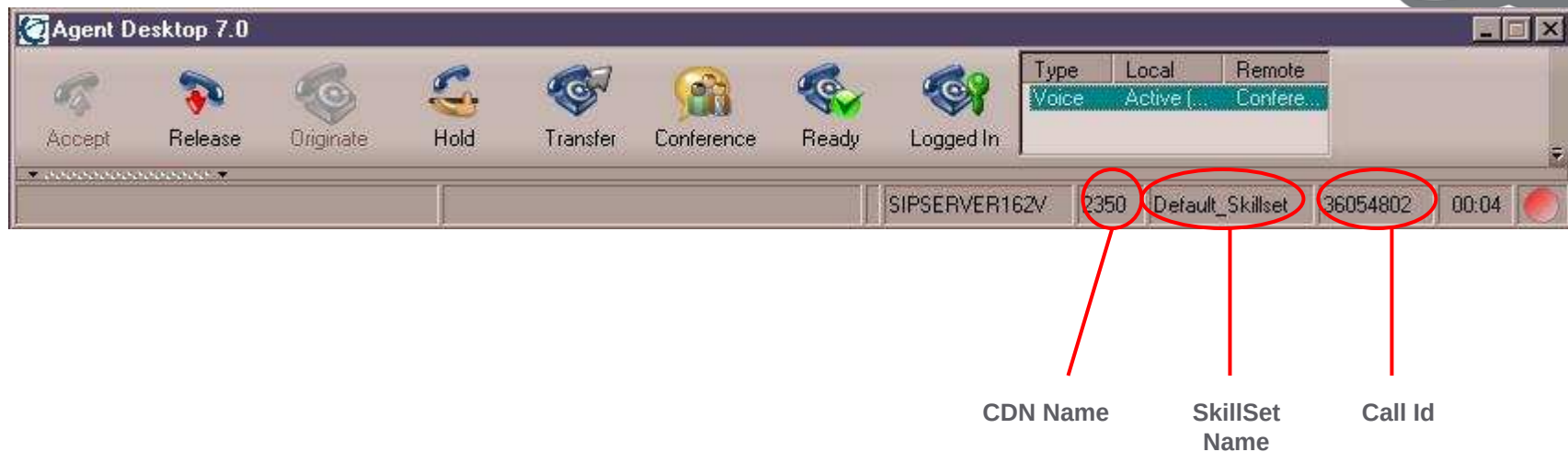
- If an agent wishes to complete a transfer before the destination party has answered the call then it is possible to achieve this via the Supervised Transfer feature as follows:
 1. Agent Receives Incoming call
 2. Agent hits Transfer Key on CCAD
 3. Agent populates the destination party address
 4. Agent hits OK (This initiates the transfer to the dest party)
 5. The Transfer key is now flashing on the CCAD toolbar. When the agent hits the flashing transfer key the transfer will be completed.
 6. Agent can complete the transfer immediately (i.e. blind transfer) or they can wait for the destination party to answer before completing the transfer (i.e. consultative transfer).



Agent Display for CCE 7

- In CCE the CCAD application must be used for all telephony operations (Ans, Disc, Xfer, Conf, Hold etc)
- This is referenced in two NTPs:
 - NN44400-114 - Nortel Contact Center Agent Desktop User Guide
 - NN44400-110 - Nortel Contact Center Fundamentals
- The display option for Agent sets is purely an AML feature and so this means that there is no means by which CCE can update the physical phoneset display for the agent.
- This is why we use CCAD for CCE as this allows us to present all information to the agent. The CDN, DNIS, Skillset name can all be provided by CCAD.

CCAD Display



- These fields are configurable and so can be changed to display whatever the agent requires. This can be configured via the xml file:
 - D:\Nortel\Contact Center\Multimedia Server\Agent Desktop\CCADIntrinsicSettings.xml



CCMA Agent Display

- This feature is disabled for CCE 7.1 due to the fact that this is a CS1k / AML feature. It is by design intent that you will not see this screen in CCMA for CCE 7.1

The screenshot shows a web-based configuration form for a skillset. At the top, there are four phone icons with their respective configurations: '1*24 and 1*18 Configured' (green), '1*16 Not Configured' (red), '1*40 Not Configured' (red), and 'Not Configured' (red). The main form area is divided into several sections: 'skillset name' (text input), 'DNIS' (with sub-fields 'DNIS name' and 'DNIS #'), 'CLID' (with sub-fields 'CLID name' and 'CLID #'), 'Route' (with sub-field 'Route Name'), 'Queue' (with sub-field 'Queue Time'), 'CDN' (with sub-field 'Source CDN name'), and 'Trunk' (with sub-field 'Trunk member'). There is also a 'Label' field with a dropdown arrow. At the bottom, there are two buttons: 'Submit' and 'Reset'. The entire form is overlaid with a large red X, indicating it is disabled or not applicable for the current version.



Route Call

- The following slides attempt to provide some detail around how the Route to DN feature works.
- When an SCE block containing a Route Call is created:
 - The call is blindly re-directed.
 - The result of the REFER is not considered.
 - Any REFER's that fail, are dropped.
- The following CS1k Patches must be in place for Route Call to operate correctly:
 - [MPLR28884 / Q02052731]
 - [MPLR28405]



Route Call

- **NB NB NB NB** : The DN being re-directed to must be **CORRECTLY** resolved by the NRS. This DN is contained in the refer-to header of the SIP REFER message. It is the same DN that the Script writer has entered.
- CS1000 SIPCallTrace will confirm if the NRS is resolving to the correct endpoint for the REFERed to number.
- A dedicated entry may be required on the NRS to resolve REFERS correctly.
- Failure will result in the caller receiving overflow tone.

Route Call – NRS Sample Config



NORTEL NETWORK ROUTING SERVICE MANAGER

Home Configuration Tools Reports Administration Standby DB view (set Active DB view) Help Logout

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:

nortel.com / udp_nortel / cdp_nortel /

Gateway Endpoint: * Look up

With DN Type: Private level 1 regional (UDP location code) Show

Add...

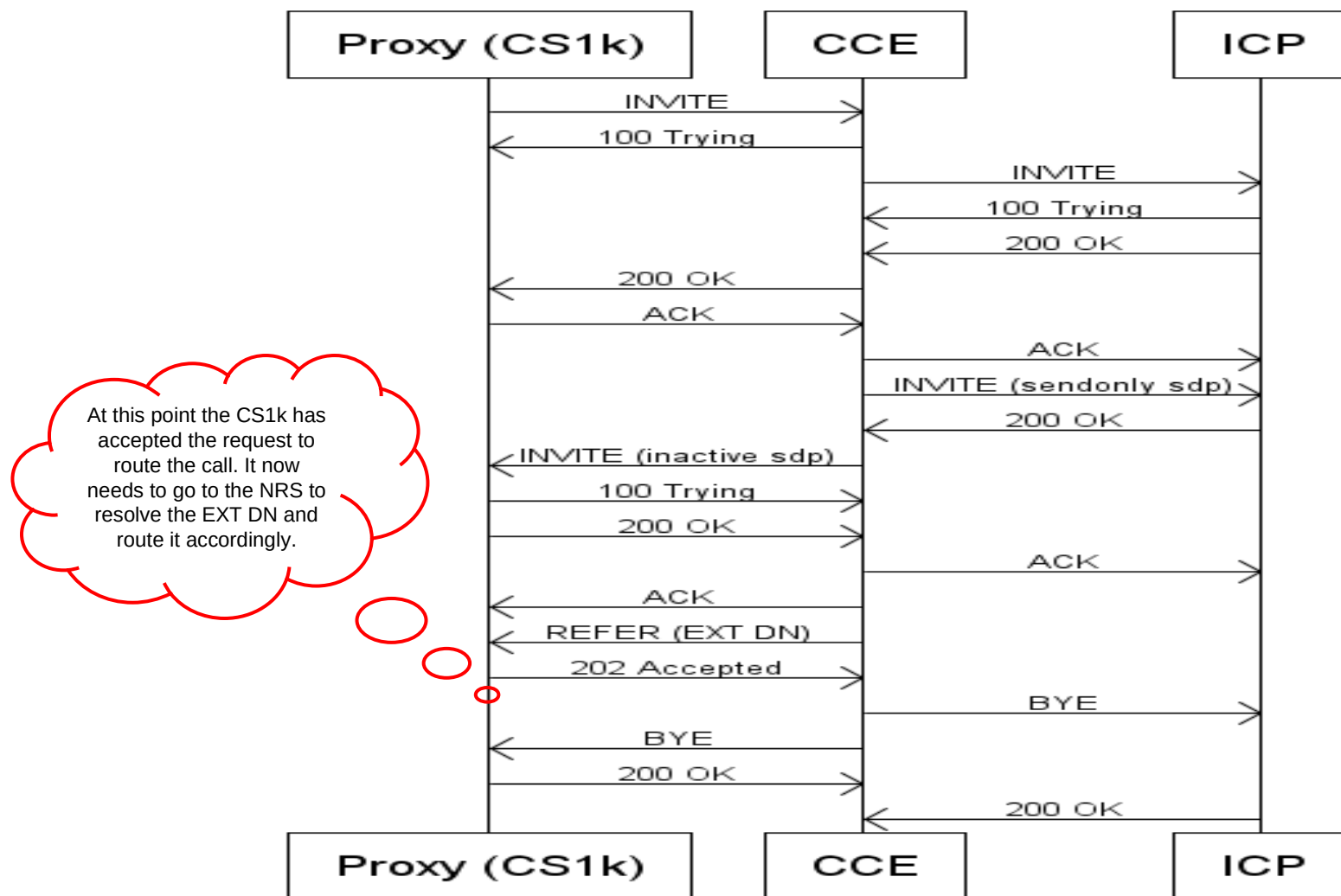
Showing 1 - 1 of 1 < Previous Next >

#	DN Prefix	DN Type	Route Cost	SIP URI Phone Context	Gateway Endpoint
1	9	Private level 1 regional (UDP location code)	1	udp_nortel	cppm02_nortel

Add...

Where you enter the required DN Prefix for routing by the NRS.

SIP Messaging for Route Call





Route Call

I/O	StartLine	Fr
Out	INVITE sip:4319;phone-context=cdp_nortel.udp_nortel@nortel.com:5	23
In	SIP/2.0 100 Trying	23
In	SIP/2.0 200 OK	23
Out	ACK sip: __sip-conf@47.166.108.140:5060;nt_service=__sip-conf;tok	23
Out	ACK sip:4319;phone-context=cdp_nortel.udp_nortel@nortel.com:506	23
Out	REFER sip:4319;phone-context=cdp_nortel.udp_nortel@nortel.com:5	23
In	SIP/2.0 202 Accepted	23
In	BYE sip:2311;phone-context=cdp_nortel.udp_nortel@47.166.110.31:	43
Out	SIP/2.0 200 OK	43
Out	BYE sip: __sip-conf@47.166.108.140:5060;nt_service=__sip-conf;toke	23
In	NOTIFY sip:2311;phone-context=cdp_nortel.udp_nortel@47.166.110.	43
In	SIP/2.0 200 OK	23
Out	SIP/2.0 200 OK	43

Direction: outgoing
Start-Line: REFER sip:4319;phone-context=cdp_nortel.udp_nortel@nortel.com:5060;maddr=47.166.110.196;transport=tcp;user=phone SIP/2.0
From: <sip:2311;phone-context=cdp_nortel.udp_nortel@nortel.com;user=phone>;ta;13c4-50022-77ecf-2c3a8d9f-77ecf
To: "Jam Customer"<sip:4319;phone-context=cdp_nortel.udp_nortel@nortel.com;us1ea7b078-c46ea62f-13c4-40030-6a599-37b66334-6a599
Call-ID: 1e2a3678-c46ea62f-13c4-40030-6a599-3f7c712e-6a599
CSeq: 2 REFER
Via: SIP/2.0/UDP 47.166.110.31:5060;branch=z9hG4bK-77ed3-1d476acc-31fdf5d
Refer-To: <sip:3450@nortel.com>
Referred-By: <sip:2311;phone-context=cdp_nortel.udp_nortel@nortel.com>;user=p
Max-Forwards: 70
Contact: <sip:2311;phone-context=cdp_nortel.udp_nortel@47.166.110.31:5060;tra
Content-Length: 0
\$\$end_record

- Caller is put on hold (Send Only)
- Call is REFER'ed
- CS1000 accepts (202 Accepted)
- Call legs are BYE'ed
- Result of REFER is not reported or considered



NØRTEL