Oracle® Communications
Network Charging and Control
Installation Guide
Release 5.0.1

June 2013
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About This Document

Scope

The document includes all the information required to install or remove Oracle Communications Network Charging and Control (NCC) platform.

Audience

This guide is for system administrators who install or remove the NCC platform.

Prerequisites

Before installing or removing NCC you should have a solid understanding of Unix, Oracle Solaris, Oracle Solaris Cluster, and a familiarity with IN concepts as well as an understanding of Oracle databases, Oracle RAC, SQL, and PL/SQL. Attempting to install or remove the NCC system without the appropriate background skills, could damage the system; including cause temporary or permanent incorrect operation, loss of service, or render your system beyond recovery.

This document describes system tasks that should be carried out only by suitably trained operators.

Related documents

See the following documents for information about managing and configuring NCC:

- *NCC System Administrator's Guide*
- *NCC User's Configuration Guide*
Document Conventions

Typographical Conventions

The following terms and typographical conventions are used in the Oracle Communications Network Charging and Control (NCC) documentation.

<table>
<thead>
<tr>
<th>Formatting convention</th>
<th>Type of information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Special Bold</strong></td>
<td>Items you must select, such as names of tabs. Names of database tables and fields.</td>
</tr>
<tr>
<td><strong>Italics</strong></td>
<td>Name of a document, chapter, topic or other publication. Emphasis within text.</td>
</tr>
<tr>
<td><strong>Button</strong></td>
<td>The name of a button to click or a key to press. <strong>Example:</strong> To close the window, either click <strong>Close</strong>, or press <strong>Esc</strong>.</td>
</tr>
<tr>
<td><strong>Key+Key</strong></td>
<td>Key combinations for which the user must press and hold down one key and then press another. <strong>Example:</strong> <strong>Ctrl+P</strong>, or <strong>Alt+F4</strong>.</td>
</tr>
<tr>
<td><strong>Monospace</strong></td>
<td>Examples of code or standard output.</td>
</tr>
<tr>
<td><strong>Monospace Bold</strong></td>
<td>Text that you must enter.</td>
</tr>
<tr>
<td><strong>variable</strong></td>
<td>Used to indicate variables or text that should be replaced.</td>
</tr>
<tr>
<td><strong>menu option &gt; menu option &gt;</strong></td>
<td>Used to indicate the cascading menu option to be selected, or the location path of a file. <strong>Example:</strong> <strong>Operator Functions &gt; Report Functions</strong> <strong>Example:</strong> <code>/IN/html/SMS/Helptext/</code></td>
</tr>
<tr>
<td><strong>hypertext link</strong></td>
<td>Used to indicate a hypertext link on an HTML page.</td>
</tr>
</tbody>
</table>

Specialized terms and acronyms are defined in the *Glossary* at the end of this guide.
Overview

Introduction

This chapter describes the Oracle Communications Network Charging and Control (NCC) installed components and provides an overview of the NCC installation procedure.

In this chapter

This chapter contains the following topics.

NCC Installed Components Overview 1
NCC Installation Procedure Overview 3
Service Templates 4
Ensuring a Successful Installation 5

NCC Installed Components Overview

About NCC Installed Components

The NCC installation process installs and configures the following components:

- Oracle database
- Additional third-party software
- NCC software packages

You can install NCC manually or you can use the NCC Installation Manager to install NCC automatically. When you install NCC automatically, you also have the option to apply the following service template configuration:

- Prepaid Charging Service Template (PCST)
- Social Networking Service Template (SNST)

When you apply a service template, the initial configuration and setup for the service is installed automatically. You will need to perform post installation configuration tasks before you will be able to use the service.

For more information on the:

- Available service templates, see Service Templates (on page 4)
- Post installation configuration tasks, see General Post Installation Tasks (on page 65) and NCC Installation Manager Post Installation Tasks (on page 73)
# NCC Software

This table describes the sub-components which comprise the NCC software.

<table>
<thead>
<tr>
<th>Component</th>
<th>To Provide</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS</td>
<td>Service Management System (SMS) support for all other components. For example:</td>
</tr>
<tr>
<td></td>
<td>• Data replication.</td>
</tr>
<tr>
<td></td>
<td>• Statistics and alarm collection.</td>
</tr>
<tr>
<td></td>
<td>• Security (users and permissions).</td>
</tr>
<tr>
<td></td>
<td>• Report generation.</td>
</tr>
<tr>
<td>SLEE</td>
<td>The Service Logic Execution Environment (SLEE) for the Voucher and Wallet Server (VWS) and Service Logic Controller (SLC) nodes.</td>
</tr>
<tr>
<td>ACS</td>
<td>Base call handling and processing capabilities, and the control plan editor.</td>
</tr>
<tr>
<td>CCS</td>
<td>Rating, charging, subscriber and voucher capabilities.</td>
</tr>
<tr>
<td>SMCB</td>
<td>SMS rating and charging capabilities.</td>
</tr>
<tr>
<td>BE</td>
<td>Real-time charging, voucher redemption, and session control capabilities.</td>
</tr>
<tr>
<td>MM</td>
<td>All messaging capabilities.</td>
</tr>
<tr>
<td>MM Navigator</td>
<td>Routing information lookup capabilities for messaging services.</td>
</tr>
<tr>
<td>RAP</td>
<td>Camel roaming capabilities.</td>
</tr>
<tr>
<td>UIP and UPC</td>
<td>USSD capabilities.</td>
</tr>
<tr>
<td>DAP</td>
<td>Outbound XML capabilities.</td>
</tr>
<tr>
<td>OSD</td>
<td>Inbound XML capabilities.</td>
</tr>
<tr>
<td>LCP</td>
<td>Location based capabilities.</td>
</tr>
<tr>
<td>SCA</td>
<td>SIP capabilities.</td>
</tr>
<tr>
<td>VSSP</td>
<td>ISUP capabilities.</td>
</tr>
<tr>
<td>SIGTRAN</td>
<td>M3UA and SUA capabilities.</td>
</tr>
<tr>
<td>PI</td>
<td>Provisioning capabilities.</td>
</tr>
<tr>
<td>CAP3_GW</td>
<td>CAP3 capabilities.</td>
</tr>
<tr>
<td>DCA</td>
<td>Inbound Diameter capabilities.</td>
</tr>
<tr>
<td>DCD</td>
<td>Outbound Diameter capabilities.</td>
</tr>
<tr>
<td>ECA</td>
<td>Inbound EDR/CDR processing capabilities.</td>
</tr>
<tr>
<td>ENUM</td>
<td>ENUM capabilities.</td>
</tr>
<tr>
<td>IS41</td>
<td>Inbound IS41 (CDMA) capabilities.</td>
</tr>
<tr>
<td>LCA</td>
<td>Inbound LDAP capabilities.</td>
</tr>
<tr>
<td>MOB_ROAM</td>
<td>Additional roaming capabilities.</td>
</tr>
<tr>
<td>NP_SERVICE_PACK</td>
<td>Number portability capabilities.</td>
</tr>
<tr>
<td>RCA</td>
<td>RADIUS capabilities.</td>
</tr>
<tr>
<td>SES</td>
<td>Subscriber event capabilities.</td>
</tr>
<tr>
<td>SEI</td>
<td>SMS to email capabilities.</td>
</tr>
<tr>
<td>TFR</td>
<td>TCAP relay capabilities.</td>
</tr>
<tr>
<td>VPN</td>
<td>Virtual private networking capabilities.</td>
</tr>
</tbody>
</table>
Certification

This release has been certified on:
- Solaris 11.1 and Oracle Database 11.2
- Java SE 6 and Java SE 7
- Oracle 11.2 32 bit client

Deprecated Support

This release deprecates support for the following:
- Solaris 10
- Oracle 10.2

Obsoleted Support

This release makes obsolete the support for the following:
- Oracle 9i client

NCC Installation Procedure Overview

Installation Procedure Overview

You install NCC on each Service Management System (SMS), Voucher and Wallet Server (VWS), and Service Logic Controller (SLC) node. This procedure provides an overview on how to install NCC on each node.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Plan your installation. When planning your installation, you will need to:</td>
</tr>
<tr>
<td></td>
<td>- Determine the scale of your implementation, for example, whether it is a small test system or a large production system.</td>
</tr>
<tr>
<td></td>
<td>- Determine how many physical systems you need.</td>
</tr>
<tr>
<td></td>
<td>- Plan the system topology, for example, which nodes (SMS, VWS, or SLC) will run on which machines.</td>
</tr>
<tr>
<td></td>
<td>See the chapter, <em>Planning Your NCC Installation</em> (on page 7), for details.</td>
</tr>
<tr>
<td>2</td>
<td>Review the following system requirements:</td>
</tr>
<tr>
<td></td>
<td>- Hardware requirements, such as disk space and memory size</td>
</tr>
<tr>
<td></td>
<td>- Software requirements, such as operating system version, file system layout, and file sizes</td>
</tr>
<tr>
<td></td>
<td>- Information requirements, such as IP addresses and host names</td>
</tr>
<tr>
<td></td>
<td>See the chapters, <em>NCC System Requirements</em> (on page 11), and <em>Advanced Storage and Memory Sizing</em> (on page 25), for details.</td>
</tr>
<tr>
<td>3</td>
<td>Perform pre-installation tasks:</td>
</tr>
<tr>
<td></td>
<td>- Perform system preparation tasks such as disabling services and configuring the location of log files.</td>
</tr>
<tr>
<td></td>
<td>- For clustered systems, install and configure Oracle cluster software and services.</td>
</tr>
<tr>
<td></td>
<td>- Install and configure the Oracle database.</td>
</tr>
<tr>
<td></td>
<td>- Install and configure additional third-party software.</td>
</tr>
<tr>
<td></td>
<td>See the chapter, NCC Pre-Installation Tasks, for details.</td>
</tr>
<tr>
<td>Step</td>
<td>Action</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>4</td>
<td>Install the NCC product software on all nodes. You must install NCC on the SMS nodes first. See the chapter, <em>Installing NCC Using Installation Manager</em> (on page 51) or <em>Installing NCC Manually</em> (on page 131), for details.</td>
</tr>
<tr>
<td>5</td>
<td>Optionally apply a service template configuration set. See the topic, <em>Installation Environment</em> (on page 55), for details.</td>
</tr>
<tr>
<td>6</td>
<td>Perform mandatory post-installation configuration tasks. See the chapters, <em>General Post Installation Tasks</em> (on page 65) and <em>NCC Installation Manager Post Installation Tasks</em> (on page 73), for details.</td>
</tr>
<tr>
<td>7</td>
<td>Verify the installation. See the chapter, <em>Verifying the NCC Installation</em> (on page 189), for details.</td>
</tr>
</tbody>
</table>

**Installation Options**

You can install NCC in two ways:

- By using the NCC Installation Manager. This enables you to automatically install the individual components and optionally apply selected service template configuration. See *Installing NCC Using Installation Manager* (on page 51).
- By manually installing and configuring all NCC component software packages. See *Installing NCC Manually* (on page 131).

**Service Templates**

**About Service Templates**

You can install the following service templates when you install NCC using the NCC Installation Manager:

- Prepaid Charging Service Template (PCST)
- Social Networking Service Template (SNST)

Installing a service template automatically performs initial configuration and setup for the service. You will need to perform additional post installation configuration tasks to complete the service setup.

**Prepaid Charging Service Template**

The Prepaid Charging Service Template (PCST) is an example configuration that includes control plans and tariffing configuration. It provides a list of prepaid services that can be used to differentiate the operator from competitors in the market.

For more information on prepaid services and their configuration, see *NCC User's Configuration Guide*.

**Social Networking Service Template**

The Social Networking Service Template (SNST) is an example configuration with example control plans. It enables you to set up a service to help operators reduce subscriber churn by providing subscriber benefits. For example, subscribers can benefit from preferential tariffs or discounts when they call each other after establishing a relationship. The relationship is managed through SMS interactions that trigger control plans and web portal (Open Services Development) interactions. Subscribers can register for the service, and use the service to add or remove friends.

For more information on SNST, see *NCC Social Networking Service Template User's & Technical Guide*. 

4 NCC Installation Guide
Ensuring a Successful Installation

Introduction

The NCC installation should be performed only by qualified personnel. You must be familiar with the Oracle Solaris operating system and Oracle Database software. You should be experienced with installing Solaris packages. It is recommended that the installation and configuration of the Oracle database be performed by an experienced database administrator.

Installation Guidelines

Follow these guidelines:

- As you install each component; for example, the Oracle database, verify that the component installed successfully before continuing the installation process.
- Pay close attention to the system requirements. Before you begin installing the software, make sure your system has the required base software. In addition, make sure that you know all of the required configuration values, such as host names and port numbers.
- As you create new configuration values, write them down. In some cases, you might need to re-enter configuration values later in the procedure.
Chapter 2

Planning Your NCC Installation

Overview

Introduction

This chapter explains how to plan an Oracle Communications Network Charging and Control (NCC) installation.

In this chapter

This chapter contains the following topics.

About Planning Your NCC Installation
Detailed Planning

About Planning Your NCC Installation

Planning Your NCC installation Overview

When planning your NCC installation, you will need to decide:

- How many nodes of each type to install
- Which node to install on which server
- Whether the Service Management System (SMS) node is a single node or a two node cluster
- If external storage is used, how to connect each server to the external storage
- The IP network connectivity between the servers
- The IP network connectivity to the rest of the network
- How to integrate the NCC solution into the telco infrastructure

Before installing NCC you should create an implementation plan which includes the following elements:

- A logical and physical overview of the solution, listing all nodes used in the solution and how they interact (for example: protocols used, and so on). If the solution is spread geographically across multiple sites, then this can be reflected here.
- Hardware details for each node, including connected hardware such as external storage
- Rack mounting and cabling details
- Storage and database details
- IP network details
- Telco network integration details

About Co-hosting NCC Nodes

Co-hosting multiple NCC nodes on a single physical server is only supported in combination with virtualization technologies, such as:

- Oracle VM Server for SPARC
- Hardware partitioning such as dynamic domains
Each node should have its own operating system, database instance, and storage layout.

**Detailed Planning**

**Storage Planning**

Document the storage configuration. For each SMS, Voucher and Wallet Server (VWS), and Service Logic Controller (SLC) node, include the following information:

- How the internal disks will be organized
- Whether or not disks will be managed by a volume manager or a RAID controller or both
- What data will be stored on each disk or disk group
- How the external storage will be organized, for example, what are the Logical Unit Numbers (LUN), RAID groups, and so on
- How the servers will be connected to the storage and how this access is redundant
- Details of any specific parameters that will be set in the external storage, volume manager, and file systems
- For a clustered SMS, details of shared external storage that will be accessed concurrently by multiple nodes

**Database Planning**

Document all database parameters for each SMS, VWS, and SLC node, including:

- Where all the different database elements (such as data files, redo logs, archive logs, and so on) will be stored
- The values defined for the oracle environment variables (such as ORACLE_SID, ORACLE_BASE, ORACLE_HOME, and so on)
- The System Global Area (SGA) parameters
- Any other specific instance parameters you will use

**Network Planning**

To plan the network implementation:

- Document the different internal and external IP networks that will be used and create a schematic overview of these networks. Use this overview to describe which nodes have access to which networks.
- Document the physical configuration of the network. For example, document which Network Interface Card (NIC) ports will be used for which networks.
- Document how redundancy will be achieved, for example, through IP network multipathing (IPMP). Refer to *Oracle Solaris Administration: Network Interfaces and Network Virtualization* for details.
- Document Network Time Protocol (NTP) configuration. Either list existing NTP servers or define which nodes will be configured as NTP servers.
- Create a host register containing details of all IP addresses and netmasks for all nodes and networks.

**Integration Planning**

Plan for integration with the telco ecosystem by documenting at least the following items:

- How the SLC nodes will be integrated into the telco ecosystem. Create a schematic overview, and use this overview to describe the interaction between the SLC nodes and the telco infrastructure (for example: MSC Signaling Gateways, IPs, and so on).
- Which transport and application protocols will be used in which scenarios (for example: M3UA, SUA, INAP, Camel, MAP, and so on).
- How traffic will be routed to and from the SLC nodes. For example, record details of SCCP/SUA routing, including SCCP addressing parameters, global title addresses, subsystems, and so on.
- How traffic will be load-balanced across the SLC nodes.
- Record any protocol specific details for each application protocol. For example, for INAP or Camel, record which subsystem numbers and service keys will be used and which type of service will be invoked for each.
- Create a detailed call-flow for each call scenario, showing the signaling units and signaling unit parameters being received and returned by the SLC nodes.

**OSD Configuration Planning**

You configure Open Services Development (OSD) to enable SLC nodes to receive HTTP/SOAP requests to trigger control plans on the SLC. If you need to configure OSD, you should determine:

- How many OSD interfaces will run on each SLC
- The IP address and TCP port that each interface will use to listen for incoming connections

The SMS and VWS nodes also send HTTP/SOAP requests to the SLC nodes in order to submit SMS notifications. This means that as a minimum, you should configure OSD interfaces as targets for the SMS and VWS nodes.

**Tip:** You should use an:

- **Internal LAN** for the HTTP/SOAP traffic from the VWS and SMS to the SLC nodes, if available
- **External LAN** for the HTTP/SOAP traffic coming from external systems

You should document the OSD configuration in a table and keep this information available for reference during the installation and configuration process.

**OSD Configuration Example**

This table lists example OSD configuration for SMS notification requests.

<table>
<thead>
<tr>
<th>SLC nodes</th>
<th>OSD interface</th>
<th>Sample IP:port values</th>
<th>Source nodes</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLC1</td>
<td>osdInterface</td>
<td>10.1.0.10:2222</td>
<td>SMS, VWS1, VWS2</td>
<td>SMS Notification request</td>
</tr>
<tr>
<td>SLC2</td>
<td>osdInterface</td>
<td>10.1.0.20:2222</td>
<td>SMS, VWS1, VWS2</td>
<td>SMS Notification request</td>
</tr>
</tbody>
</table>

** Replication Planning **

You should document all replication elements, node IDs, and IP addresses in a table. This information will be needed when you configure replication following the installation. See **Configuring Replication Nodes** (on page 78).

**Replication Reference Table Example**

This table shows the type of replication information you will need when configuring replication.

<table>
<thead>
<tr>
<th>Node</th>
<th>Replication</th>
<th>UpdateRequester ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Type</td>
<td>Node ID</td>
</tr>
<tr>
<td>Name</td>
<td>Internal IP</td>
<td>Address</td>
</tr>
<tr>
<td>Name</td>
<td>Alarms</td>
<td>AVD</td>
</tr>
<tr>
<td>Name</td>
<td>Stats</td>
<td>Other ID</td>
</tr>
</tbody>
</table>

**Chapter 2, Planning Your NCC Installation**
<table>
<thead>
<tr>
<th>Node</th>
<th>Replication</th>
<th>UpdateRequester ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>test_SLC1</td>
<td>SLC</td>
<td>301 10.0.0.11 601</td>
</tr>
<tr>
<td>test_SLC2</td>
<td>SLC</td>
<td>302 10.0.0.12 602</td>
</tr>
<tr>
<td>test_VWS1</td>
<td>VWS</td>
<td>351 10.0.0.21 651</td>
</tr>
<tr>
<td>test_VWS2</td>
<td>VWS</td>
<td>352 10.0.0.22 652</td>
</tr>
</tbody>
</table>
Chapter 3

NCC System Requirements

Overview

Introduction

This chapter describes the hardware and software requirements for the Oracle Communications Network Charging and Control (NCC) applications.

In this chapter

This chapter contains the following topics.

Network Requirements ................................................. 11
Memory Requirements ............................................... 13
Storage Requirements ............................................... 14
Software and Hardware Requirements .................. 20
Preparing the System ................................................. 21

Network Requirements

Introduction

All NCC nodes require IP network connectivity to communicate with each other, as well as with other network elements such as management clients, provisioning systems or telephony signaling transfer points. A typical NCC implementation comprises the following logical network types:

- Management
- Billing
- Internal
- Signaling
- Cluster Interconnects (clustered systems only)

IP Networks

This table describes the logical IP network types in a typical NCC implementation.

<table>
<thead>
<tr>
<th>Network</th>
<th>Type</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>External</td>
<td>Provides external access to the NCC nodes, for example for operations using the UI, provisioning systems (subscriber creation, ATM recharges), data warehouse (EDR collection), and so on. It also allows the nodes to transit data to peripheral systems, such as network management systems (SNMP traps).</td>
</tr>
<tr>
<td>Billing</td>
<td>Internal</td>
<td>Use an internal network for billing communication between the NCC nodes, such as call reservation requests or wallet information requests. The billing network should not be accessible by external systems.</td>
</tr>
</tbody>
</table>
### Network Types and Purposes

<table>
<thead>
<tr>
<th>Network</th>
<th>Type</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Internal</td>
<td>Use for all internal communications between the NCC nodes, including data replication but excluding billing communication. The Internal network should not be accessible by external systems.</td>
</tr>
</tbody>
</table>
| Signaling          | External| Use two signaling networks for redundant signaling connectivity between the SLC nodes and the telephony network. For integration into:  
- A GSM or CDMA network, set up a multi-homed SCTP association between Signaling Gateways (SG) and the SLC nodes to carry M3UA or SUA (sigtran) traffic.  
- An NGN network, use the signaling networks to set up two separate TCP/IP connections between the Media Gateway Controller (MGC or softswitch) and each SLC node.  
The connection between the SLC nodes and the SG/MGCs can be switched (systems on the same IP subnet) or routed (systems on different IP subnets). |
| Cluster Interconnect | Internal| Use one or more cluster interconnect networks for connections between the two SMS nodes by Oracle Solaris cluster software and Oracle RAC software. |

### Connecting Networks

When setting up the NCC network connections, you should:
- Connect management, billing, and internal networks to all nodes.
- Connect signaling networks to SLC nodes only.
- Use a single physical network for each logical network to ensure optimal performance and stability in production implementations. However, logical networks can share a single or multiple physical networks, if required.
- Ensure full redundancy for each network by using two or more network ports connected to an independent ethernet network for each network.
- Use Solaris iPMP to achieve IP address and network interface failover capabilities on the NCC nodes.

When setting up cluster network connections, you must:
- Physically isolate cluster Interconnect networks and dedicate them for use by the cluster. Physically isolate multiple interconnects, for example, by using virtual local area networks (VLAN).

### Logical Network Settings

This table lists the settings you should use for bandwidth, latency, security, redundancy, and external routing for each type of logical network.

<table>
<thead>
<tr>
<th>Logical Network</th>
<th>Bandwidth</th>
<th>Latency</th>
<th>Security</th>
<th>Redundancy</th>
<th>External Routing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>High</td>
<td>Medium</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Billing</td>
<td>High</td>
<td>Low</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Internal</td>
<td>High</td>
<td>Medium</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Signaling</td>
<td>High</td>
<td>Low</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Interconnect</td>
<td>High</td>
<td>Low</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Note:** If you do not require routing for connectivity to peer signaling nodes, then you will not need external routing for the signaling network.
Logical Network Settings Table

This table explains the bandwidth, latency, security, redundancy, and external routing settings listed in Logical network settings (on page 12).

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth</td>
<td>An indicator of the required bandwidth for this link. Most model IP links have low bandwidth requirements, allowing them to be satisfied with shared infrastructure. Medium requirements may require some quality of service. High bandwidth requirements may require a dedicated link, for example, over an E1/T1 bearer.</td>
</tr>
<tr>
<td>Latency</td>
<td>Latency requirements are relevant to performance and volume testing. The level of latency reflects how time critical the response is.</td>
</tr>
<tr>
<td>Security</td>
<td>The level of security required depends on whether or not the information being passed is:</td>
</tr>
<tr>
<td></td>
<td>• Sensitive</td>
</tr>
<tr>
<td></td>
<td>• Financial information such as vouchers</td>
</tr>
<tr>
<td></td>
<td>You may need a dedicated point to point link for high levels of security.</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Redundancy enables failover protection in the event of a connection being lost.</td>
</tr>
<tr>
<td>External Routing</td>
<td>External routing is needed if the subnet will require routing beyond the NCC solution.</td>
</tr>
</tbody>
</table>

Cluster Specific Network Requirements

If you are installing NCC on a clustered SMS then you will need the following management IP addresses.

<table>
<thead>
<tr>
<th>Name</th>
<th>Example Hostname</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRS hostname 1</td>
<td>SMS1_rac</td>
<td>Required for Oracle Grid Infrastructure</td>
</tr>
<tr>
<td>CRS hostname 2</td>
<td>SMS2_rac</td>
<td>Required for Oracle Grid Infrastructure</td>
</tr>
<tr>
<td>Listener for SMF1</td>
<td>SMS1_lsnr</td>
<td>Address dedicated for the Oracle listener on the SMF1 instance</td>
</tr>
<tr>
<td>Listener for SMF2</td>
<td>SMS2_lsnr2</td>
<td>Address dedicated for the Oracle listener on the SMF2 instance</td>
</tr>
<tr>
<td>SMS Screens</td>
<td>sms_screens</td>
<td>Logical hostname dedicated to the SMS GUI</td>
</tr>
</tbody>
</table>

Important: You must define the sms_screens hostname in the /etc/hosts file on both cluster nodes. You must specify "sms_screens" as the hostname.

Memory Requirements

About Memory Requirements

You will require at least eight gigabytes of RAM per node to completely install NCC on the NCC platform. You may require additional memory depending on the size and complexity of the deployment.

The exact amount of memory you will require on each SMS, VWS, and SLC node depends on:

- The operating system and related functions, including volume management
- The NCC application processes
The Oracle instance processes and SGA.

**Note:** For advanced memory sizing, see *Advanced Storage and Memory Sizing* (on page 25).

### Database Memory

This table details the minimum settings for the Oracle SGA. You should review all settings for your specific deployment.

For more information on minimum memory requirements for the NCC applications, see *Memory Sizing* (see "Memory Sizing for a Small Production System" on page 32) for a small production system.

<table>
<thead>
<tr>
<th>SGA Element</th>
<th>Recommended minimum setting (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SMS</td>
</tr>
<tr>
<td>log_buffer</td>
<td>16</td>
</tr>
<tr>
<td>java_pool_size</td>
<td>160</td>
</tr>
<tr>
<td>shared_pool_size</td>
<td>512</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>256</td>
</tr>
<tr>
<td>large_pool_size</td>
<td>160</td>
</tr>
<tr>
<td>db_cache_size</td>
<td>48</td>
</tr>
<tr>
<td>db_keep_cache_size</td>
<td>32</td>
</tr>
<tr>
<td>db_recycle_cache_size</td>
<td>32</td>
</tr>
<tr>
<td>db_32k_cache_size</td>
<td>128</td>
</tr>
</tbody>
</table>

**Note:** For clustered systems, SMS recommendations are per node.

### Storage Requirements

#### Introduction

Each node in an NCC installation will consist of a number of logical sets of data. On some nodes additional sets of data may be required, such as Oracle Archive logs, or data files may be divided to help optimize performance. For example, redo logs and data files could be separated in the Oracle Database Instance set.

You should follow these recommendations if possible:

- Dedicate the boot disk to the Solaris OS and do not use it to store any other logical data groups
- Maintain a mirror of the boot disk for redundancy.

**Note:** The `/IN` mount point is mandatory and should be created prior to software installation. If no `/IN` mount point exists, then an `/IN` directory will be created automatically at installation and used on the root file-system.

#### General Storage Requirements

Each NCC node will consist of at least the minimum logical sets of data listed in this table.

<table>
<thead>
<tr>
<th>Data set</th>
<th>Mount point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris operating system with <code>/var</code> file system and swap space</td>
<td>Boot disk</td>
</tr>
<tr>
<td>NCC applications (binaries, libraries, log files, temporary files)</td>
<td><code>/IN</code> (mandatory)</td>
</tr>
<tr>
<td>Oracle Database Server (binaries, <code>$ORACLE_BASE</code>, <code>$ORACLE_HOME</code>)</td>
<td><code>/u01</code> (recommended)</td>
</tr>
<tr>
<td>Data set</td>
<td>Mount point</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Oracle Database Instance (for example, data files, log files)</td>
<td>/oracle/datafiles</td>
</tr>
</tbody>
</table>

**SMS Storage Requirements**

This table details the mount points and minimum storage requirements for the SMS node.

<table>
<thead>
<tr>
<th>Data set</th>
<th>Mount point</th>
<th>Minimum size</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC applications</td>
<td>/IN</td>
<td>20 GB</td>
</tr>
<tr>
<td>Oracle database server</td>
<td>/u01</td>
<td>5 GB</td>
</tr>
<tr>
<td>Oracle database instance</td>
<td>/oracle/datafiles</td>
<td>80 GB</td>
</tr>
</tbody>
</table>

**SMS Cluster Storage Requirements**

This table details the mount points and minimum storage requirements for the SMS cluster nodes.

<table>
<thead>
<tr>
<th>Local Data sets (per node)</th>
<th>Mount point</th>
<th>Minimum size (GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC applications</td>
<td>/IN</td>
<td>20</td>
</tr>
<tr>
<td>Oracle database server</td>
<td>/u01</td>
<td>5</td>
</tr>
<tr>
<td>Shared Data sets (per cluster)</td>
<td>Mount point</td>
<td>Minimum size (GB)</td>
</tr>
<tr>
<td>Oracle shared</td>
<td>/global/oracle</td>
<td>5</td>
</tr>
<tr>
<td>Application shared</td>
<td>/global/IN</td>
<td>20</td>
</tr>
<tr>
<td>Oracle database instance</td>
<td>+DATA (ASM DATA diskgroup)</td>
<td>80</td>
</tr>
</tbody>
</table>

**VWS Storage Requirements**

This table details the mount points and minimum storage requirements for the VWS node.

<table>
<thead>
<tr>
<th>Data set</th>
<th>Mount point</th>
<th>Minimum size</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC applications</td>
<td>/IN</td>
<td>20 GB</td>
</tr>
<tr>
<td>Oracle database server</td>
<td>/u01</td>
<td>5 GB</td>
</tr>
<tr>
<td>Oracle database instance</td>
<td>/oracle/datafiles</td>
<td>45 GB</td>
</tr>
</tbody>
</table>

**SLC Storage Requirements**

This table details the mount points and minimum storage requirements for the SLC node.

<table>
<thead>
<tr>
<th>Data set</th>
<th>Mount point</th>
<th>Minimum size</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC applications</td>
<td>/IN</td>
<td>20 GB</td>
</tr>
<tr>
<td>Oracle database server</td>
<td>/u01</td>
<td>5 GB</td>
</tr>
<tr>
<td>Oracle database instance</td>
<td>/oracle/datafiles</td>
<td>25 GB</td>
</tr>
</tbody>
</table>

**SMS Tablespace Requirements**

This table lists the minimum tablespace sizing required for an installation on the SMS.
Note: These requirements do not change on clustered SMS nodes, except that they are stored in ASM Diskgroup.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS</td>
<td>ACS_DATA</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>ACS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>ACS_SUBURB_DATA1</td>
<td>200</td>
<td>4</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>ACS_SUBURB_INDEX1</td>
<td>200</td>
<td>4</td>
<td>800</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_CDR</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_CDR_INDEX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_DATA</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_EVENT</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_EVENT_INDEX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_INDEX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_INDEX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS_INDEX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_XDB</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>ENUM</td>
<td>EN_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>EN_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>EN_SUBS</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>EN_SUBS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>LCP</td>
<td>LCP_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>LCP_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>MM</td>
<td>MMX_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>MMX_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>NP_SERVICE_PACK</td>
<td>NP_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NP_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NP_SUBS</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NP_SUBS_INDEX</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td>OSA</td>
<td>OSA_INDEXES</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>OSA_TABLES</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>OSD</td>
<td>OSD_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>OSD_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>PI</td>
<td>PI_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
</tbody>
</table>
### Component Tablespace Requirements

This table lists the minimum tablespace sizing required on the VWS.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACS</td>
<td>ACS_DATA</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
</tbody>
</table>

---

### Component Tablespace Requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>Tablespace name</td>
<td>Datafile Size (MB)</td>
<td>Number of Files</td>
<td>Total Size</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>------------</td>
</tr>
<tr>
<td>ACS_INDEX</td>
<td></td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>BE</td>
<td>BE_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>BE_EVENT</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_EVENT_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_SUBS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>SYSAUX</td>
<td></td>
<td>500</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>SYSTEM</td>
<td></td>
<td>450</td>
<td>1</td>
<td>450</td>
</tr>
<tr>
<td>TEMP</td>
<td></td>
<td>2001</td>
<td>5</td>
<td>10010</td>
</tr>
<tr>
<td>REDO</td>
<td></td>
<td>101</td>
<td>16</td>
<td>1616</td>
</tr>
<tr>
<td>TOOLS</td>
<td></td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>UNDO</td>
<td></td>
<td>2001</td>
<td>5</td>
<td>10010</td>
</tr>
<tr>
<td>USERS</td>
<td></td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>CCS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>OSA</td>
<td>OSA_INDEXES</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>OSA_TABLES</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>SMS</td>
<td>SMF_DATA</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>SMF_INDEX</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
</tbody>
</table>

**SLC Tablespace Requirements**

This table lists the minimum tablespace sizing required on the SLC.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS</td>
<td>ACS_DATA</td>
<td>200</td>
<td>2</td>
<td>402</td>
</tr>
<tr>
<td></td>
<td>ACS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>ACS_SUBURB_DATA1</td>
<td>200</td>
<td>4</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>ACS_SUBURB_INDEX</td>
<td>200</td>
<td>4</td>
<td>800</td>
</tr>
<tr>
<td>Component</td>
<td>Tablespace name</td>
<td>Datafile Size (MB)</td>
<td>Number of Files</td>
<td>Total Size</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>------------</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_SCP_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>CCS_SCP_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>ENUM</td>
<td>EN_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>EN_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>EN_SUBS</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>EN_SUBS_I</td>
<td>200</td>
<td>1</td>
<td>612</td>
</tr>
<tr>
<td>LCP</td>
<td>LCP_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>LCP_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>MM</td>
<td>MMX_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>MMX_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>NP_SERVICE_PACK</td>
<td>NP_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NP_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NP_SUBS</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>NP_SUBS_I</td>
<td>200</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>OSA</td>
<td>OSA_INDEXES</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>OSA_TABLES</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>OSD</td>
<td>OSD_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>OSD_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>RCA</td>
<td>RCA_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>RCA_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>SES</td>
<td>SES_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>SES_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>SMS</td>
<td>SMF_DATA</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>SMF_INDEX</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>SYSAUX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>SYSTEM</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>TOOLS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>UNDOTBS1</td>
<td>2001</td>
<td>2</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>USERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>UIP</td>
<td>UIS_CDR</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>UIS_CDR_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
</tbody>
</table>
### Software and Hardware Requirements

#### Introduction

This section details the hardware platforms and prerequisite software required to install Oracle Communications Network Charging and Control (NCC).

For details on installing the required system software, see the installation and setup documentation supplied with the software.

#### Hardware Platforms

This table lists the minimum recommended and mandatory hardware platforms for the NCC applications.

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Mandatory / Recommended</th>
<th>Required for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun 64-bit SPARC CPU architecture</td>
<td>Mandatory</td>
<td>All nodes including SMS and SMS Clustered</td>
</tr>
<tr>
<td>Storage Array (RAID)</td>
<td>Recommended</td>
<td>SMS only</td>
</tr>
<tr>
<td>PC (screen: 1024x768 pixels)</td>
<td>Recommended</td>
<td>Client</td>
</tr>
</tbody>
</table>

#### Prerequisite Software

This table describes the third-party or layered software that you should install prior to installing NCC in a clustered or a non-clustered implementation.

<table>
<thead>
<tr>
<th>Software</th>
<th>Version</th>
<th>Description</th>
<th>Where to install</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris</td>
<td>11 64-bit</td>
<td>SUN operating system. This includes the Solaris packages listed below. The minimum version is Solaris 11.</td>
<td>All nodes</td>
</tr>
<tr>
<td>Cluster S/W</td>
<td>3.2 or later</td>
<td>NA</td>
<td>SMS Clustered</td>
</tr>
<tr>
<td>Oracle</td>
<td>11.2.0.3.0</td>
<td>Oracle Grid Infrastructure</td>
<td>SMS Clustered</td>
</tr>
<tr>
<td>Oracle</td>
<td>11.2.0.3.0</td>
<td>Oracle Database Server (11gR2 Enterprise Edition)</td>
<td>SMS nodes</td>
</tr>
<tr>
<td>Oracle</td>
<td>11.2.0.3.0</td>
<td>Oracle Database Server (11gR2 Standard Edition)</td>
<td>SLC and VWS nodes</td>
</tr>
</tbody>
</table>
Prepare the System

Introduction

You should check the kernel parameters on the system to ensure the system is optimally configured.

Note: Actual kernel parameters may be greater than those listed here.

Kernel Parameters

On Solaris 11, the kernel parameters shown in this table must be set to values greater than or equal to the recommended value shown. The table also contains the resource controls that replace the /etc/system file for a specific kernel parameter.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Replaced by Resource Control</th>
<th>Recommended Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>semsys:seminfo_semni</td>
<td>project.max-sem-ids</td>
<td>100</td>
</tr>
<tr>
<td>semsys:seminfo_semmsl</td>
<td>process.max-sem-nsems</td>
<td>256</td>
</tr>
<tr>
<td>shmsys:shminfo_shmmax</td>
<td>project.max-shm-memory</td>
<td>4294967295</td>
</tr>
<tr>
<td>shmsys:shminfo_shmmni</td>
<td>project.max-shm-ids</td>
<td>100</td>
</tr>
</tbody>
</table>
**Viewing Resource Control Values**

Follow these steps to view the current values specified for resource controls for Solaris 11 and later, and to change them if required.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in as the user root.</td>
</tr>
<tr>
<td>2</td>
<td>View the current value of the resource control by entering the following commands:</td>
</tr>
<tr>
<td></td>
<td><code>id -p // to verify the project id</code></td>
</tr>
<tr>
<td></td>
<td><code>uid=0(root) gid=0(root) pojid=1 (user.root)</code></td>
</tr>
<tr>
<td></td>
<td><code>prctl -n project.max-shm-memory -i project user.root</code></td>
</tr>
<tr>
<td></td>
<td><code>prctl -n project.max-sem-ids -i project user.root</code></td>
</tr>
<tr>
<td>3</td>
<td>Check the parameters are set to at least the minimum values.</td>
</tr>
<tr>
<td></td>
<td>For information about recommended minimum values, see <em>Kernel Parameters</em> (on page 21).</td>
</tr>
<tr>
<td>4</td>
<td>Change the parameter values as required, using the <code>prctl</code> command.</td>
</tr>
</tbody>
</table>

**Examples:**
- To modify the value of `mx-shm-memory` to 6 GB, enter the following command:
  ```bash```
  ```
  prctl -n project.max-shm-memory -v 6gb -r -i project user.root
  ```
- To modify the value of `max-sem-ids` to 256, enter the following command:
  ```bash```
  ```
  prctl -n project.max-sem-ids -v 256 -r -i project user.root
  ```

**Setting the Time Zone**

**Introduction**

The same time zone must be used for all machines on which the NCC applications are installed. GMT is the recommended time zone for all machines, however the local time zone may be configured for the NCC UI and some NCC applications.

**Setting Time Zones to GMT**

The NCC applications use the default time zone unless it is overridden in the user's profile.

Locale and Time Zone are configured through SMF service properties. Refer to Oracle Solaris 11 documentation for details.

Ensure all accounts default to the GMT time zone, that is to `TZ=GMT`. To set or change the default time zone, you should set this on each node, and then restart each node. This will ensure that all accounts are in the correct time zone.

You should synchronize the date and time for all nodes through Network Time Protocol (NTP). If no NTP server is available then you should use the SMS nodes as NTP servers.

**Important:** It is critical that the date and time are synchronized across all NCC nodes.

**Checking the Time Zone**

Follow these steps to verify that a UNIX system has time zones configured correctly for the operation of screens and discounts.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log on to the machine you want to check the time zone of.</td>
</tr>
</tbody>
</table>
Enter `env | grep TZ`

Result: This command should return:
```
TZ = GMT
```

This indicates that the time zone directory is set to GMT.
Introduction

Precise storage and memory requirements depend on too many factors to be predicted accurately. This chapter provides estimate requirements for a number of example deployment scenarios of Oracle Communications Network Charging and Control (NCC).

In this chapter

This chapter contains the following topics.

| Types of Implementations                      | 25 |
| Small Production System Example               | 26 |
| Medium Production System Example              | 32 |
| Large Production System Example               | 36 |

Types of Implementations

Introduction to Types of Implementations

This section provides estimated storage and memory requirements for a number of example deployment scenarios.

Example Size Scenarios

This table describes the different scenarios for which sizing information is provided.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test system</td>
<td>This is the basic system installed as a minimum using the Oracle Communications NCC Installation Manager. It comprises:</td>
</tr>
<tr>
<td></td>
<td>• One SMS node</td>
</tr>
<tr>
<td></td>
<td>• One VWS pair (two nodes)</td>
</tr>
<tr>
<td></td>
<td>• One SLC node</td>
</tr>
<tr>
<td></td>
<td>This system corresponds to the minimum storage requirements detailed in Storage Requirements (on page 14).</td>
</tr>
<tr>
<td>Scenario</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Small production system| A production system covering:  
  - < One million subscribers  
  - < 24 million vouchers  
  - < One million EDRs / day with four weeks retention.  
  Comprising:  
  - One SMS node  
  - One VWS pair (two nodes)  
  - Two SLC nodes  
  For details, refer to *Small Production System Example* (on page 26). |
| Medium production system| A production system covering:  
  - < Five million subscribers  
  - < 120 million vouchers  
  - < Ten million EDRs / day with 12 weeks retention.  
  Comprising:  
  - One SMS node  
  - Two VWS pairs (Four nodes)  
  - Four SLC nodes  
  For details, refer to *Medium Production System Example* (on page 32). |
| Large production system | A production system covering:  
  - < Ten million subscribers  
  - < 240 million vouchers  
  - < 20 million EDRs / day with 24 weeks retention.  
  Comprising:  
  - One SMS RAC Cluster (two nodes)  
  - Four VWS pairs (eight nodes)  
  - Eight SLC nodes  
  For details, refer to *Large Production System Example* (on page 36). |

**Small Production System Example**

**Introduction**

The following topics provide an example of the minimum storage and memory sizing requirements which should be used when deploying the NCC applications in a small production environment.

**Disk Storage on the SMS**

This table describes the minimum disk storage required on the SMS to deploy the NCC applications in a small production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Datafiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/oracle/datafiles</td>
<td>Core Oracle database</td>
<td>17411</td>
<td>2%</td>
<td>17759</td>
<td>109</td>
</tr>
<tr>
<td></td>
<td>NCC application datafiles</td>
<td>67732</td>
<td>2%</td>
<td>69087</td>
<td></td>
</tr>
</tbody>
</table>
### Mount Point | Contents | Required Space (MB) | Block Overhead | Allocated Space | GB
--- | --- | --- | --- | --- | ---
### Datafiles
/oracle/datafiles | Core Oracle database | 17411 | 2% | 17759 | 109
/oracle/datafiles | NCC application datafiles | 67732 | 2% | 69087 |
/oracle/datafiles | CCS BE EDTs stored in database | 24012 | 2% | 24492 |
/oracle/redologs | Oracle redo logs | 1616 | 2% | 1648 | 2
/oracle/tempfiles | Oracle TEMP tablespace | 10005 | 2% | 10205 | 10
### Other
/oracle/archivelogs | Oracle archive logs | 102400 | 2% | 104448 | 102
/u01 | Oracle software | 5120 | 2% | 5222 | 6
/IN | | 20480 | 2% | 20890 | 24
| | | 3418 | 2% | 3486 |
### Total
Grand Total | | | | | 257238 | 253

### Disk Storage on the VWS
This table describes the minimum disk storage required on the VWS to deploy the NCC applications in a small production environment.
## Disk Storage on the SLC

This table describes the minimum disk storage required on the SLC to deploy the NCC applications in a small production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Datafiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/oracle/datafiles</td>
<td>Core Oracle database</td>
<td>17408</td>
<td>2%</td>
<td>17756</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>NCC application datafiles</td>
<td>7702</td>
<td>2%</td>
<td>7856</td>
<td></td>
</tr>
<tr>
<td>/oracle/redologs</td>
<td>Oracle redo logs</td>
<td>1600</td>
<td>2%</td>
<td>1632</td>
<td>2</td>
</tr>
<tr>
<td>/oracle/tempfiles</td>
<td>Oracle TEMP tablespace</td>
<td>10005</td>
<td>2%</td>
<td>10205</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/u01</td>
<td>Oracle software</td>
<td>5120</td>
<td>2%</td>
<td>5222</td>
<td>6</td>
</tr>
<tr>
<td>/IN</td>
<td></td>
<td>20480</td>
<td>2%</td>
<td>20890</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grand Total</td>
<td></td>
<td></td>
<td>63561</td>
<td>65</td>
</tr>
</tbody>
</table>

## Oracle Datafiles on the SMS

This table provides details of the Oracle datafiles on the SMS for which sizing should be reviewed for a small production system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSAUX</td>
<td>SYSAUX</td>
<td>500</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>SYSTEM</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>TEMP</td>
<td>TEMP</td>
<td>2001</td>
<td>5</td>
<td>10005</td>
</tr>
<tr>
<td>TOOLS</td>
<td>TOOLS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>UNDOTBS1</td>
<td>UNDOTBS1</td>
<td>2001</td>
<td>5</td>
<td>10005</td>
</tr>
<tr>
<td>SMS</td>
<td>USERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>ACS</td>
<td>CONTROL FILES</td>
<td>300</td>
<td>3</td>
<td>900</td>
</tr>
<tr>
<td>SMS</td>
<td>REDO LOGS</td>
<td>100</td>
<td>16</td>
<td>1600</td>
</tr>
<tr>
<td>ACS</td>
<td>ACS_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>ACS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_DATA</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_EVENT</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_EVENT_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_INDEX</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>Component</td>
<td>Tablespace Name</td>
<td>Datafile Size (MB)</td>
<td>Number of Files</td>
<td>Total Size (MB)</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
<td></td>
</tr>
<tr>
<td>CCS_VOUCHERS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
<td></td>
</tr>
<tr>
<td>CCS_XDB</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
<td></td>
</tr>
<tr>
<td>LCP</td>
<td>LCP_DATA</td>
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<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>LCP_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>MM</td>
<td>MMX_DATA</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>MMX_INDEX</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>OSD</td>
<td>OSD_DATA</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>OSD_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>PI</td>
<td>PI_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>PI_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>SMS</td>
<td>REP_DATA</td>
<td>2001</td>
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<td>2001</td>
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<tr>
<td></td>
<td>SMF_ALARMS</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
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<td></td>
<td>SMF_ALARMS_I</td>
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<td>4002</td>
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<td></td>
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<td>2001</td>
<td>7</td>
<td>14007</td>
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<tr>
<td></td>
<td>SMF_AUD_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>SMF_DATA</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>SMF_INDEX</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>SMF_STATS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>SMF_STATS_I</td>
<td>2001</td>
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<td>4002</td>
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<td>UIS_CDR</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>UIS_CDR_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>UIS_DATA</td>
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<td>200</td>
</tr>
<tr>
<td></td>
<td>UIS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>UPC</td>
<td>UPC_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>UPC_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
</tbody>
</table>

**Partitioned Files on the SMS**

This table provides the estimated storage (in MB) for the partitioned tablespaces on the SMS in a small production environment.

<table>
<thead>
<tr>
<th>Partitioned Tablespace Name</th>
<th>File Size</th>
<th>Weekly Storage</th>
<th>Datafiles / Week</th>
<th>Weekly Partitions Allocated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS_CDR_Yyyyy_Www</td>
<td>2001</td>
<td>3800</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total Files Required</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
### Oracle Datafiles on the VWS

This table provides details of the Oracle datafiles on the VWS for which sizing should be reviewed.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSAUX</td>
<td>SYSAUX</td>
<td>500</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>SYSTEM</td>
<td>2001</td>
<td>1</td>
<td>2.001</td>
</tr>
<tr>
<td>TEMP</td>
<td>TEMP</td>
<td>2001</td>
<td>5</td>
<td>10.005</td>
</tr>
<tr>
<td>TOOLS</td>
<td>TOOLS</td>
<td>2001</td>
<td>1</td>
<td>2.001</td>
</tr>
<tr>
<td>UNDO</td>
<td>UNDO</td>
<td>2001</td>
<td>5</td>
<td>10.005</td>
</tr>
<tr>
<td>SMS</td>
<td>USERS</td>
<td>2001</td>
<td>1</td>
<td>2.001</td>
</tr>
<tr>
<td>ACS</td>
<td>CONTROL FILES</td>
<td>300</td>
<td>3</td>
<td>900</td>
</tr>
<tr>
<td>SMS</td>
<td>REDO LOGS</td>
<td>100</td>
<td>16</td>
<td>1.600</td>
</tr>
<tr>
<td>ACS</td>
<td>ACS_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>ACS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>BE</td>
<td>BE_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>BE_SUBS</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>BE_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_DATA</td>
<td>200</td>
<td>7</td>
<td>1400</td>
</tr>
<tr>
<td></td>
<td>CCS_INDEX</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
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<td>4002</td>
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<td></td>
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<td>2001</td>
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<tr>
<td>SMS</td>
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<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>SMF_INDEX</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>UIP</td>
<td>UIS_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
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<tr>
<td></td>
<td>UIS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
</tbody>
</table>
Oracle Datafiles on the SLC

This table provides details of the Oracle datafiles on the SLC for which sizing values should be reviewed.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSAUX</td>
<td>SYSAUX</td>
<td>500</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>SYSTEM</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>TEMP</td>
<td>TEMP</td>
<td>2001</td>
<td>5</td>
<td>10005</td>
</tr>
<tr>
<td>TOOLS</td>
<td>TOOLS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>UNDOTBS1</td>
<td>UNDOTBS1</td>
<td>2001</td>
<td>5</td>
<td>10005</td>
</tr>
<tr>
<td>SMS</td>
<td>USERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>ACS</td>
<td>CONTROL FILES</td>
<td>300</td>
<td>3</td>
<td>900</td>
</tr>
<tr>
<td>SMS</td>
<td>REDO LOGS</td>
<td>100</td>
<td>16</td>
<td>1600</td>
</tr>
<tr>
<td>ACS</td>
<td>ACS_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>ACS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_SCP_DATA</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>CCS_SCP_INDEX</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>CCS_SCP_SUBS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
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<td>CCS_SCP_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>LCP</td>
<td>LCP_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>LCP_INDEX</td>
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<td>200</td>
</tr>
<tr>
<td>MM</td>
<td>MMX_DATA</td>
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<td>1</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>MMX_INDEX</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>OSD</td>
<td>OSD_DATA</td>
<td>300</td>
<td>1</td>
<td>300</td>
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<td></td>
<td>OSD_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>SMS</td>
<td>SMF_DATA</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>SMF_DATA</td>
<td>100</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>UIP</td>
<td>UIS_CDR</td>
<td>2001</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>UIS_CDR_INDEX</td>
<td>2001</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>UIS_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>UIS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td>UPC</td>
<td>UPC_DATA</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>UPC_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
</tbody>
</table>
Memory Sizing for a Small Production System

This table provides the estimated minimum memory requirements (in MB) for the NCC applications deployed on a small production system.

<table>
<thead>
<tr>
<th>SGA Element</th>
<th>SMS</th>
<th>VWS</th>
<th>SLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>log_buffer</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>java_pool_size</td>
<td>150</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>shared_pool_size</td>
<td>512</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>512</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>large_pool_size</td>
<td>256</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>db_cache_size</td>
<td>256</td>
<td>128</td>
<td>32</td>
</tr>
<tr>
<td>db_keep_cache_size</td>
<td>4096</td>
<td>5012</td>
<td>2048</td>
</tr>
<tr>
<td>db_recycle_cache_size</td>
<td>2048</td>
<td>2048</td>
<td>0</td>
</tr>
<tr>
<td>db_32k_cache_size</td>
<td>2048</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NCC applications</td>
<td>4096</td>
<td>4096</td>
<td>4096</td>
</tr>
</tbody>
</table>

Medium Production System Example

Introduction

The following topics provide an example of the minimum storage and memory sizing requirements which should be used when deploying the NCC applications in a medium sized production environment.

Disk Storage on the SMS

This table describes the minimum disk storage required on the SMS to deploy the NCC applications in a medium sized production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Datafiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/oracle/datafiles</td>
<td>Core Oracle database</td>
<td>37418</td>
<td>2%</td>
<td>38166</td>
<td>677</td>
</tr>
<tr>
<td></td>
<td>NCC application datafiles</td>
<td>109753</td>
<td>2%</td>
<td>111948</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CCS BE EDRs stored in database</td>
<td>532266</td>
<td>2%</td>
<td>542911</td>
<td></td>
</tr>
<tr>
<td>/oracle/redologs</td>
<td>Oracle redo logs</td>
<td>1600</td>
<td>2%</td>
<td>1632</td>
<td>2</td>
</tr>
<tr>
<td>/oracle/tempfiles</td>
<td>Oracle TEMP tablespace</td>
<td>30015</td>
<td>2%</td>
<td>30615</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/u01</td>
<td>Oracle software</td>
<td>120</td>
<td>2%</td>
<td>5222</td>
<td>6</td>
</tr>
<tr>
<td>/oracle/archivelogs</td>
<td>Oracle archive logs</td>
<td>102400</td>
<td>2%</td>
<td>104448</td>
<td>102</td>
</tr>
<tr>
<td>/IN</td>
<td>NCC application</td>
<td>20480</td>
<td>2%</td>
<td>20890</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Incoming &amp; processed EDR flat files</td>
<td>34180</td>
<td>2%</td>
<td>34863</td>
<td></td>
</tr>
</tbody>
</table>
### Disk Storage on the VWS

This table describes the minimum disk storage required on the VWS to deploy the NCC applications in a medium sized production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>/oracle/datafiles</td>
<td>Core Oracle database</td>
<td>37418</td>
<td>2%</td>
<td>38166</td>
<td>677</td>
</tr>
<tr>
<td></td>
<td>NCC application datafiles</td>
<td>109753</td>
<td>2%</td>
<td>111948</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Grand Total</strong></td>
<td></td>
<td></td>
<td>890696</td>
<td>872</td>
</tr>
</tbody>
</table>

### Disk Storage on the SLC

This table describes the minimum disk storage required on the SLC to deploy the NCC applications in a medium sized production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>/oracle/datafiles</td>
<td>Core Oracle database</td>
<td>17408</td>
<td>2%</td>
<td>17756</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>NCC application datafiles</td>
<td>38218</td>
<td>2%</td>
<td>38982</td>
<td></td>
</tr>
<tr>
<td>/oracle/redologs</td>
<td>Oracle redo logs</td>
<td>1600</td>
<td>2%</td>
<td>1632</td>
<td>2</td>
</tr>
<tr>
<td>/oracle/tempfiles</td>
<td>Oracle TEMP tablespace</td>
<td>10005</td>
<td>2%</td>
<td>10205</td>
<td>10</td>
</tr>
<tr>
<td>/oracle/archivelogs</td>
<td>Oracle archive logs</td>
<td>20480</td>
<td>2%</td>
<td>20890</td>
<td>21</td>
</tr>
<tr>
<td>/u01</td>
<td>Oracle software</td>
<td>5120</td>
<td>2%</td>
<td>5222</td>
<td>6</td>
</tr>
<tr>
<td>/IN</td>
<td></td>
<td>20480</td>
<td>2%</td>
<td>20890</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td>115577</td>
</tr>
</tbody>
</table>

---

Chapter 4, Advanced Storage and Memory Sizing 33
## Additional Oracle Datafiles on the SMS

This table provides details of the additional Oracle datafiles that will be used on the SMS. These datafiles are in addition to those created automatically by the installation process as a minimum or for a test system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMP</td>
<td>TEMP</td>
<td>2001</td>
<td>15</td>
<td>30015</td>
</tr>
<tr>
<td>UNDOTBS</td>
<td>UNDOTBS1</td>
<td>2001</td>
<td>15</td>
<td>30015</td>
</tr>
<tr>
<td></td>
<td>UNDOTBS2</td>
<td>2001</td>
<td>15</td>
<td>30015</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_EVENT</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
<tr>
<td></td>
<td>CCS_EVENT_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>6</td>
<td>12006</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>10</td>
<td>20010</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS_I</td>
<td>2001</td>
<td>8</td>
<td>16008</td>
</tr>
<tr>
<td>SMS</td>
<td>SMF_ALARMS</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
<tr>
<td></td>
<td>SMF_ALARMS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>SMF_AUD</td>
<td>2001</td>
<td>7</td>
<td>14007</td>
</tr>
<tr>
<td></td>
<td>SMF_AUD_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>SMF_STATS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>SMF_STATS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
</tbody>
</table>
Partitioned Files on the SMS

This table provides the estimated storage (in MB) for the partitioned tablespaces on the SMS in a medium sized production environment.

<table>
<thead>
<tr>
<th>Partitioned Tablespace Name</th>
<th>File Size</th>
<th>Weekly Storage</th>
<th>Datafiles / Week</th>
<th>Weekly Partitions Allocated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS_CDR_Yyyyy_Www</td>
<td>2001</td>
<td>37700</td>
<td>19</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

Total Files Required: 247

Tablespace Size (MB): 532266

Additional Oracle Datafiles on the VWS

This table provides details of the additional Oracle datafiles that will be used on the VWS. These datafiles are in addition to those created automatically by the installation process as a minimum or for a test system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>BE_SUBS</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
<tr>
<td></td>
<td>BE_SUBS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_DATA</td>
<td>200</td>
<td>5</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>CCS_INDEX</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>4</td>
<td>8004</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>4</td>
<td>8004</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
</tbody>
</table>

Additional Oracle Datafiles on the SLC

This table provides details of the additional Oracle datafiles that will be used on the SLC in a medium production environment. These datafiles are in addition to those created automatically by the installation process as a minimum or for test system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS</td>
<td>CCS_SCP_DATA</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>CCS_SCP_INDEX</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>4</td>
<td>8004</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
</tbody>
</table>
Memory Sizing for a Medium Production System

This table provides the estimated minimum memory requirements (in MB) for the NCC applications deployed in a medium sized production environment.

<table>
<thead>
<tr>
<th>SGA Element</th>
<th>SMS</th>
<th>VWS</th>
<th>SLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>log_buffer</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>java_pool_size</td>
<td>150</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>shared_pool_size</td>
<td>512</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>512</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>large_pool_size</td>
<td>512</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>db_cache_size</td>
<td>512</td>
<td>128</td>
<td>32</td>
</tr>
<tr>
<td>db_keep_cache_size</td>
<td>8192</td>
<td>12960</td>
<td>6464</td>
</tr>
<tr>
<td>db_recycle_cache_size</td>
<td>8192</td>
<td>2048</td>
<td>0</td>
</tr>
<tr>
<td>db_32k_cache_size</td>
<td>8192</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NCC applications</td>
<td>8192</td>
<td>8192</td>
<td>8192</td>
</tr>
</tbody>
</table>

Large Production System Example

Introduction

The following topics provide an example of the minimum storage and memory sizing requirements which should be used when deploying the NCC applications in a large production environment.

Disk Storage on the SMS

This table describes the minimum disk storage required on the SMS to deploy the NCC applications in a large production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASM +DATA Diskgroup</td>
<td>Core Oracle database</td>
<td>107453</td>
<td>2%</td>
<td>109602</td>
<td>2240</td>
</tr>
<tr>
<td></td>
<td>NCC application files</td>
<td>163780</td>
<td>2%</td>
<td>167056</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CCS BE EDRs stored in database</td>
<td>1976988</td>
<td>2%</td>
<td>2016528</td>
<td></td>
</tr>
<tr>
<td>ASM +REDO Diskgroup</td>
<td>Oracle redo logs</td>
<td>1600</td>
<td>2%</td>
<td>1632</td>
<td>2</td>
</tr>
<tr>
<td>ASM +TEMP Diskgroup</td>
<td>Oracle TEMP tablespace</td>
<td>50025</td>
<td>2%</td>
<td>51026</td>
<td>50</td>
</tr>
<tr>
<td>ASM +CRS Diskgroup</td>
<td>Oracle OCR</td>
<td>512</td>
<td>2%</td>
<td>522</td>
<td>1</td>
</tr>
</tbody>
</table>

Datatypes (shared / global)

Other (shared / global)
Chapter 4

Advanced Storage and Memory Sizing

### Mount Point | Contents                  | Required Space (MB) | Block Overhead | Allocated Space | GB
--- | --- | --- | --- | --- | ---
ASM +CRS Diskgroup | Oracle voting          | 512 | 2% | 522 | 1
/global/oracle | Oracle shared          | 10240 | 2% | 10445 | 11
/global/IN | IN application logs    | 51200 | 2% | 52224 | 51
/global/CCS | Processed EDR flat files | 68359 | 2% | 69727 | 69
/global/CDR | Incoming EDR flat files for CDRLoader1 | 17090 | 2% | 17432 | 18

**Other (private / local)**

| Directory | Contents               | Required Space (MB) | Block Overhead | Allocated Space | GB
--- | --- | --- | --- | --- | ---
/IN | NCC applications       | 20480 | 2% | 20890 | 21
/u01 | Oracle software        | 5120 | 2% | 5222 | 6
ASM +ARCH1 Diskgroup | Oracle archive logs   | 102400 | 2% | 104448 | 102
ASM +ARCH2 Diskgroup | Oracle archive logs   | 102400 | 2% | 104448 | 102

**Total**

| Type              | Required Space (MB) | Allocated Space | GB
--- | --- | --- | ---
Shared/Global       | 2549009 | 2495 |
Private/Local       | 261120 | 258 |
Grand Total         | 2810129 | 2753 |

### Disk Storage on the VWS

This table describes the minimum disk storage required on the VWS to deploy the NCC applications in a large production environment.

| Mount Point         | Contents                      | Required Space (MB) | Block Overhead | Allocated Space | GB
--- | --- | --- | --- | --- | ---
/oracle/datafiles | Core Oracle database       | 17408 | 2% | 17756 | 59
/oracle/datafiles | NCC application datafiles   | 41820 | 2% | 42656 |
/oracle/redologs | Oracle redo logs            | 1600 | 2% | 1632 | 2
/oracle/tempfiles | Oracle TEMP tablespace      | 10005 | 2% | 10205 | 10

**Other**

| Mount Point         | Contents      | Required Space (MB) | Block Overhead | Allocated Space | GB
--- | --- | --- | --- | --- | ---
/oracle/archivelogs | Oracle archive logs | 20480 | 2% | 20890 | 21
/u01 | Oracle software | 5120 | 2% | 5222 | 6
/IN |                | 20480 | 2% | 20890 | 21

**Total**

| Type | Required Space (MB) | Allocated Space | GB
--- | --- | --- | ---
Grand Total       | 119251 | 119 |
Disk Storage on the SLC

This table describes the minimum disk storage required on the SLC to deploy the NCC applications in a large production environment.

<table>
<thead>
<tr>
<th>Mount Point</th>
<th>Contents</th>
<th>Required Space (MB)</th>
<th>Block Overhead</th>
<th>Allocated Space</th>
<th>GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>/oracle/datafiles</td>
<td>Core Oracle database</td>
<td>17408</td>
<td>2%</td>
<td>17756</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>NCC application datafiles</td>
<td>19708</td>
<td>2%</td>
<td>20102</td>
<td></td>
</tr>
<tr>
<td>/oracle/redologs</td>
<td>Oracle redo logs</td>
<td>1600</td>
<td>2%</td>
<td>1632</td>
<td>2</td>
</tr>
<tr>
<td>/oracle/tempfiles</td>
<td>Oracle TEMP tablespace</td>
<td>10005</td>
<td>2%</td>
<td>10205</td>
<td>10</td>
</tr>
</tbody>
</table>

Other

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>/u01</td>
<td>Oracle software</td>
<td>5120</td>
<td>2%</td>
<td>5222</td>
<td>6</td>
</tr>
<tr>
<td>/IN</td>
<td></td>
<td>20480</td>
<td>2%</td>
<td>20890</td>
<td>21</td>
</tr>
</tbody>
</table>

Total

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75807</td>
</tr>
</tbody>
</table>

Additional Oracle Datafiles on the SMS

This table provides details of the additional Oracle datafiles that will be used on the SMS in a large production environment. These datafiles are in addition to those created automatically by the installation process as a minimum or for a test system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMP</td>
<td>TEMP</td>
<td>2001</td>
<td>25</td>
<td>50025</td>
</tr>
<tr>
<td>UNDOTBS</td>
<td>UNDOTBS1</td>
<td>2001</td>
<td>25</td>
<td>50025</td>
</tr>
<tr>
<td></td>
<td>UNDOTBS2</td>
<td>2001</td>
<td>25</td>
<td>50025</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_EVENT</td>
<td>2001</td>
<td>6</td>
<td>12006</td>
</tr>
<tr>
<td></td>
<td>CCS_EVENT_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>12</td>
<td>24012</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>19</td>
<td>38019</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS_I</td>
<td>2001</td>
<td>16</td>
<td>32016</td>
</tr>
<tr>
<td>SMS</td>
<td>SMF_ALARMS</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
<tr>
<td></td>
<td>SMF_ALARMS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>SMF_AUD</td>
<td>2001</td>
<td>7</td>
<td>14007</td>
</tr>
<tr>
<td></td>
<td>SMF_AUD_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
</tbody>
</table>
### Partitioned Files on the SMS

This table provides the estimated storage (in MB) for the partitioned tablespaces on the SMS in a large production environment.

<table>
<thead>
<tr>
<th>Partitioned Tablespace Name</th>
<th>File Size</th>
<th>Weekly Storage</th>
<th>Datefiles / Week</th>
<th>Weekly Partitions Allocated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS_CDR_Yyyyy_Www</td>
<td>2001</td>
<td>75350</td>
<td>38</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>950</td>
</tr>
</tbody>
</table>

Total Files Required: 950

Tablespace Size (MB): 1976988

### Additional Oracle Datafiles on the VWS

This table provides details of the additional Oracle datafiles that will be used on the VWS in a large production environment. These datafiles are in addition to those created automatically by the installation process as a minimum or for a test system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>BE_SUBS</td>
<td>2001</td>
<td>3</td>
<td>6003</td>
</tr>
<tr>
<td></td>
<td>BE_SUBS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>BE_VOUCHERS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td>CCS</td>
<td>CCS_DATA</td>
<td>200</td>
<td>4</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>CCS_INDEX</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS</td>
<td>2001</td>
<td>6</td>
<td>12006</td>
</tr>
<tr>
<td></td>
<td>CCS_SUBS_I</td>
<td>2001</td>
<td>1</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS</td>
<td>2001</td>
<td>4</td>
<td>8004</td>
</tr>
<tr>
<td></td>
<td>CCS_VOUCHERS_I</td>
<td>2001</td>
<td>2</td>
<td>4002</td>
</tr>
</tbody>
</table>

### Additional Oracle Datafiles on the SLC

This table provides details of the additional Oracle datafiles that will be used on the SLC in a large production environment. These datafiles are in addition to those created automatically by the installation process as a minimum or for a test system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Tablespace Name</th>
<th>Datafile Size (MB)</th>
<th>Number of Files</th>
<th>Total Size (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS</td>
<td>CCS_SCP_DATA</td>
<td>200</td>
<td>2</td>
<td>400</td>
</tr>
</tbody>
</table>
## Memory Sizing for a Large Production System

This table provides the estimated minimum memory requirements (in MB) for the NCC applications deployed in a large production environment.

<table>
<thead>
<tr>
<th>SGA Element</th>
<th>SMS</th>
<th>VWS</th>
<th>SLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>log_buffer</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>java_pool_size</td>
<td>150</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>shared_pool_size</td>
<td>512</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>pga_aggregate_target</td>
<td>512</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>large_pool_size</td>
<td>512</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>db_cache_size</td>
<td>512</td>
<td>128</td>
<td>32</td>
</tr>
<tr>
<td>db_keep_cache_size</td>
<td>16384</td>
<td>17696</td>
<td>12368</td>
</tr>
<tr>
<td>db_recycle_cache_size</td>
<td>8192</td>
<td>2048</td>
<td>0</td>
</tr>
<tr>
<td>db_32k_cache_size</td>
<td>16384</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NCC applications</td>
<td>8192</td>
<td>8192</td>
<td>8192</td>
</tr>
</tbody>
</table>
Overview

Introduction

This chapter explains the tasks you should perform before installing Oracle Communications Network Charging and Control (NCC).

In this chapter

This chapter contains the following topics.

Preparing the System for Installation 41
Browsers 44
Installing and Configuring Oracle Cluster Software and Services 44
Installing and Configuring Oracle Database 45
Installing and Configuring Additional Third-Party Software 49

Preparing the System for Installation

About Preparing the System

To prepare the system before you install NCC, log in to each node in turn as the user root, and perform the following tasks:

- Disable automount for the /home directory. See Disabling automount for /home (on page 41).
- Enable remote login for the root user. See Enabling Remote Login (on page 42).
- If you are installing NCC automatically using Installation Manager, you should configure where to log Notice alarms. See Notice Alarm Logging (on page 42).
- Configure the directory to use for reporting core dumps and storing core files. See Setting Up coreadm (on page 42).
- Disable any unnecessary system services. See Disabling System Services (on page 43).
- Ensure machines automatically boot following a temporary power loss. See Configuring for Auto-boot (on page 43).
- Generate and exchange ssh keys to allow automatic login to different machines. See Generating and Exchanging ssh Keys (on page 43).
- Modify the sshd_config file to enable ssh root login. See Modifying SSH Config (on page 43).
- Configure the SSH SMF service. See Configuring the SSH SMF Service (on page 44).

Disabling automount for /home

You should disable automount for the /home directory so that you can create an oracle user for the database administrator in the /home directory.
Follow these steps to disable `automount` for the `/home` directory.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Comment out the line in the `/etc/auto_master` file containing `auto_home` by inserting `#` at the beginning of the line. For example:  
    `# /home auto_home -nobrowse` |
| 2    | Restart autofs to remount the file system by entering the command:  
    `/usr/sbin/svcadm restart autofs` |
| 3    | Soft link `/export/home` to `/home` by entering the command:  
    `/ln -s /home /export/home`  
    **Result:** This allows you to write to both the `/export/home` and the `/home` directories. |

**Enabling Remote Login**

Comment out the following line in the `/etc/default/login` file by inserting `#` at the beginning of the line:

```
# CONSOLE=/dev/console
```

This will enable you to log in remotely as the user root from every remote client.

**Notice Alarm Logging**

If you are using Installation Manager to install NCC, you should configure where to log notice alarms for all facilities. To log notice level alarms (`*.notice`) to `/var/adm/messages`, include the following line in the `/etc/syslog.conf` file:

```
*.notice;kern.debug;daemon.notice;mail.crit /var/adm/messages
```

**Supporting Multi-byte UTF-8 Character Sets**

To support multi-byte UTF-8 character sets, such as simple and traditional Chinese character sets, as well as others, the NCC installation process selects one of the following two options:

- AL32UTF8 for supporting multi-byte UTF-8 character sets
- US7ASCII for supporting US 7-bit ASCII character sets

The NCC Installation Manager automatically selects AL32UTF8 as the default option.

If you install NCC manually, the installation script displays the following prompt:

```
Please select the charset to use. AL32UTF8 US7ASCII
```

Regardless of which way you install NCC, the NCC installation process writes the selected option to the installation process output.

The character set is selected prior to creation of the database.

**Setting Up coreadm**

Set up `coreadm` to report core dumps and to store core files in a defined directory. For example, use the following commands to report core dumps and store core files in the `/var/crash` directory:

```
/usr/bin/coreadm -g /var/crash/core-%n-%p-%f -e global  
/usr/bin/coreadm -e global-setid  
/usr/bin/coreadm -d proc-setid  
/usr/bin/coreadm -d process  
/usr/bin/coreadm -e log  
/usr/bin/coreadm -u
```

**Important:** You should use a dedicated volume for storing core files to ensure that other system, or application directories, are not affected if this directory becomes full.
Disabling System Services

You can disable the following system services, if required:

- FTP
- Telnet
- Rlogin
- Sendmail

Use the `svcadm` command to disable unnecessary services.

Example commands

```
svcadm disable ftp
svcadm disable telnet
svcadm disable rlogin
svcadm disable sendmail
```

Configuring for Auto-boot

Set the eeprom auto-boot parameter value to true using the following command. This will ensure that the machine will automatically boot following a temporary power loss, such as a power outage.

Example

```
eeprom "auto-boot?"=true
```

Generating and Exchanging ssh Keys

Follow these steps to generate and exchange Sun ssh key files. You can exchange the generated key files with other servers to allow automatic login to different machines without using a password.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in to the root directory as the user <code>root</code>.</td>
</tr>
<tr>
<td>2</td>
<td>Enter the command: <code>ssh-keygen -t rsa</code></td>
</tr>
<tr>
<td></td>
<td>Result: Generating public/private rsa key pair.</td>
</tr>
<tr>
<td>3</td>
<td>At the prompt, enter the file in which to save the key or accept the default.</td>
</tr>
<tr>
<td></td>
<td>Enter file in which to save the key (<code>//.ssh/id_rsa</code>):</td>
</tr>
<tr>
<td>4</td>
<td>Enter a passphrase, or leave empty if you require no passphrase.</td>
</tr>
<tr>
<td></td>
<td>Enter passphrase (empty for no passphrase):</td>
</tr>
<tr>
<td></td>
<td>Enter same passphrase again:</td>
</tr>
<tr>
<td></td>
<td>Your identification has been saved in <code>//.ssh/id_rsa</code>.</td>
</tr>
<tr>
<td></td>
<td>Your public key has been saved in <code>//.ssh/id_rsa.pub</code>.</td>
</tr>
<tr>
<td></td>
<td>The key fingerprint is: 0f:f2:28:8e:fb:5f:fa:0f:11:bd:cc:80:21:f7:7b:9b root@wlg1310</td>
</tr>
<tr>
<td>5</td>
<td>Use <code>scp</code> (secure copy protocol) to exchange the generated ssh keys between servers.</td>
</tr>
</tbody>
</table>

Modifying SSH Config

Follow these steps to enable ssh root login in the `/etc/ssh/sshd_config` file.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Modify the <code>sshd_config</code> file.</td>
</tr>
<tr>
<td>2</td>
<td>Set the <code>PermitRootLogin</code> parameter value to <code>yes</code>.</td>
</tr>
</tbody>
</table>
Step | Action
--- | ---
3 | Enter the following command: 
\$ svcadm -v restart svc:/network/ssh:default

**Configuring the SSH SMF Service**

Enter the following commands to configure the ssh SMF service to ensure the ssh daemon is running in milestone/ multi-user mode (run-level 2):

```
svccfg -s network/ssh delprop dependents/ssh_multi-user-server
svccfg -s network/ssh setprop dependents/ssh_multi-user = fmri: /milestone/multi-user
svccfg: Type required for new properties
svcadm refresh network/ssh
svcadm restart network/ssh
```

**Browsers**

**Installation Manager Browser**

To install NCC using the NCC Installation Manager, you must use a browser listed in this table. Install the required browser on the client system, if it is not installed already.

**Note:** Javascript must be enabled.

<table>
<thead>
<tr>
<th>Browser</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Chrome</td>
<td>24 or higher</td>
</tr>
<tr>
<td>Mozilla Firefox</td>
<td>17.0 or higher</td>
</tr>
<tr>
<td>Internet Explorer</td>
<td>not supported</td>
</tr>
</tbody>
</table>

**Browser and Java for NCC UI**

To enable you to access the NCC UI ensure that the required Java version, and the browser listed in this table, is installed on your client system.

**Note:** NCC supports client systems that use Windows XP or higher.

<table>
<thead>
<tr>
<th>Browser/Java</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>Java SE 7, 1.7.0_25 / 7u25 or later.</td>
</tr>
<tr>
<td>Browser</td>
<td>Any browser supporting the required Java version, such as IE 8 or higher.</td>
</tr>
</tbody>
</table>

**Installing and Configuring Oracle Cluster Software and Services**

**Installing and Configuring Oracle Solaris Cluster Software**

Install the Oracle Solaris Cluster software on clustered SMS nodes only. See *Oracle Solaris Cluster Software Installation Guide* from the Oracle Solaris Cluster Documentation Center for detailed instructions on installing Oracle Solaris Cluster software.

You should use the Oracle Solaris Cluster Data Service for Oracle Real Application Clusters. For further information, see *Oracle Solaris Cluster Data Service for Oracle Real Application Clusters Guide.*
Installing and Configuring Oracle Cluster-ready Services

Install Oracle Cluster ready services on Clustered SMS nodes only. See Oracle Clusterware and Oracle Real Application Clusters Installation Guide 11g Release 2 (11.2) for Solaris Operating System for detailed installation instructions.

Installing and Configuring Oracle Database

About Installing and Configuring Oracle Database

You need to install Oracle Database Server on all nodes:

- Enterprise Edition for SMS
- Standard Edition for all other nodes (SLC, VWS1, VWS2)

Installing the Oracle Database Software

The following process overview describes the main steps to use to install the Oracle Database Server software on each type of node.

For detailed installation instructions, see Oracle 11g Database Installation Guide for Solaris Operating System (SPARC 64-Bit) documentation sets.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Install Oracle Server 11gR2.</td>
</tr>
<tr>
<td>2</td>
<td>Apply Oracle 11g server patch sets.</td>
</tr>
<tr>
<td>3</td>
<td>Install Oracle 11g 32 bit client libraries.</td>
</tr>
<tr>
<td>4</td>
<td>Apply Oracle 11g 32 bit client patch set(s).</td>
</tr>
</tbody>
</table>

Oracle Database Software Installation Guidelines

Follow these guidelines during the installation process.

<table>
<thead>
<tr>
<th>Installation entity</th>
<th>Guideline value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Software Owner User</td>
<td>Username: oracle</td>
</tr>
<tr>
<td>OSDBA Group</td>
<td>dba</td>
</tr>
<tr>
<td>Oracle Base Directory (ORACLE_BASE)</td>
<td>/u01/app/oracle</td>
</tr>
<tr>
<td>Oracle 11g Home Directory (ORACLE_HOME)</td>
<td>/u01/app/oracle/product/11.2</td>
</tr>
<tr>
<td>Oracle database datafile directory</td>
<td>/oracle/datafiles</td>
</tr>
</tbody>
</table>
### Installation entity | Guideline value
--- | ---
Oracle user `.profile` (/home/oracle/.profile) | ```
# Set up terminal, non-interactive, default vt100
TERM=vt100
export TERM

tty > /dev/null
if [ $? -eq 0 ]; then
    # Set some options
    set -o vi
    stty erase "^H" kill "^U" intr "^C" eof "^D"
    stty hupcl ixon ixoff
tabs
    set -o vi
fi

umask 022

MAIL=/usr/mail/${LOGNAME:?}
export MAIL

ORACLE_BASE=/u01/app/oracle
export ORACLE_BASE

ORACLE_HOME=$ORACLE_BASE/product/11.2
export ORACLE_HOME

LD_LIBRARY_PATH_64=$ORACLE_HOME/lib
export LD_LIBRARY_PATH_64

LD_LIBRARY_PATH=$ORACLE_HOME/lib32
export LD_LIBRARY_PATH

PATH=$PATH:$ORACLE_HOME/bin:/usr/bin:/etc:/usr/ccs/bin:
    /usr/openwin/bin:/usr/local/bin:/usr/sbin
EDITOR=vi
export EDITOR

ORACLE_SID=[SMF|SCP|E2BE]

Note: `ORACLE_SID` must be set to one of:
- SMF for SMS node
- SCP for SLC nodes
- E2BE for VWS nodes

export ORACLE_SID

ulimit -s unlimited
ulimit -n 4096
```
Chapter 5

Oracle 11g OUI Installation Guidelines

Follow these guidelines when using the Oracle Universal Installer to install Oracle 11g on all nodes.

<table>
<thead>
<tr>
<th>Installation option</th>
<th>Guideline values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Method</td>
<td>Basic</td>
</tr>
<tr>
<td>Installation Type</td>
<td>Enterprise edition for SMS nodes</td>
</tr>
<tr>
<td></td>
<td>Standard editions for VWS and SLC nodes</td>
</tr>
<tr>
<td>Create Starter Database</td>
<td>No</td>
</tr>
<tr>
<td>Configuration Option</td>
<td>Install database software only</td>
</tr>
</tbody>
</table>

**Installation entity**

**Guideline value**

| Global profile (/etc/profile) | PS1='"$LOGNAME@$(/usr/bin/hostname):$({ "$LOGNAME" == "root" } && printf "%s" "$PWD"# " || printf "%s" "$PWD\$ ")' |
|-----------------------------|-------------------------------------------------------------------------------------------------------------|
|                            | ORACLE_BASE=/u01/app/oracle                                                                                |
|                            | export ORACLE_BASE                                                                                         |
|                            | ORACLE_HOME=S/ORACLE_BASE/product/11.2                                                                   |
|                            | export ORACLE_HOME                                                                                         |
|                            | LD_LIBRARY_PATH_64=S/ORACLE_HOME/lib                                                                     |
|                            | export LD_LIBRARY_PATH_64                                                                                    |
|                            | LD_LIBRARY_PATH=S/ORACLE_HOME/lib32                                                                      |
|                            | export LD_LIBRARY_PATH                                                                                     |
|                            | PATH=$PATH:$ORACLE_HOME/bin                                                                                 |
|                            | export PATH                                                                                               |
|                            | ORACLE_SID=[SMF|SCP|E2BE]                                                                                |

**Note:** ORACLE_SID must be set to one of:
- SMF for SMS node
- SMF1 for Cluster node 1
- SMF2 for Cluster node 2
- SCP for SLC nodes
- E2BE for VWS nodes

<table>
<thead>
<tr>
<th>System resources for Oracle</th>
<th>max-shm-memory = 16G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>max-sem-ids = 100</td>
</tr>
<tr>
<td></td>
<td>max-sem-nsems = 256</td>
</tr>
<tr>
<td></td>
<td>max-shm-ids = 100</td>
</tr>
</tbody>
</table>

Create a project for this as follows:

```
# projadd -U oracle -K "project.max-shm-memory=(priv,16G,deny)" group.dba
# projmod -sK "project.max-sem-ids=(priv,100,deny)" group.dba
# projmod -sK "process.max-sem-nsems=(priv,256,deny)" group.dba
# projmod -sK "project.max-shm-ids=(priv,100,deny)" group.dba
```
Oracle 11g 32bit Client OUI Installation Guidelines

Follow these guidelines when using the Oracle Universal Installer to install Oracle 11g2 32 bit client.

<table>
<thead>
<tr>
<th>Installation option</th>
<th>Guideline values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Type</td>
<td>Custom</td>
</tr>
<tr>
<td>Download Software</td>
<td>Skip software updates</td>
</tr>
<tr>
<td>Available Product Components</td>
<td>Oracle Database Utilities, Oracle Net Listener</td>
</tr>
<tr>
<td>Oracle Net assistant</td>
<td>Select <strong>Cancel</strong>, then <strong>OK</strong>, then <strong>OK</strong> again. Then <strong>Skip</strong> to move to the root files.</td>
</tr>
</tbody>
</table>

Oracle Automatic Startup

You should implement startup scripts to automatically start up the local database instance on system startup.

You can use the `/etc/init.d/oracle` example oracle startup script to configure the system to start Oracle automatically on startup (and shut down Oracle automatically on system shutdown).

You should configure automatic startup for Oracle at init level 2 instead of the default init level 3 by defining a symbolic link for `$99oracle` to `/etc/init.d/oracle` in `/etc/rc2.d`.

To configure automatic startup for Oracle at init level 2, log in as the user root, and enter the following commands:

```bash
chmod 700 /etc/init.d/oracle
ln -s /etc/init.d/oracle /etc/rc0.d/K10oracle
ln -s /etc/init.d/oracle /etc/rc1.d/K10oracle
rm -f /etc/rc2.d/K10oracle
ln -s /etc/init.d/oracle /etc/rc2.d/S99oracle
rm -f /etc/rc3.d/S99oracle
```

**Note:** After entering these commands, the symbolic link between `/etc/init.d/oracle` and `$99oracle` in the `/etc/rc0.d` and the `/etc/rc1.d` directories mean that the Oracle instance will be stopped when the system is set to an init level below 2.

Example Oracle Startup Script

Here is an example startup script for starting and stopping the local database instance. The script is located in the `/etc/init.d/oracle` file.

**Example script**

```bash
# oracle Start/Stop the Databases...
#
RETVAL=0
ORA_OWNER="oracle"
ORA_HOME="/u01/app/oracle/product/11.2"

start() {
    echo "Starting Oracle: "
su - $ORA_OWNER -c "$ORA_HOME/bin/lsnrctl start"
su - $ORA_OWNER -c "$ORA_HOME/bin/dbstart"
    RETVAL=$?
    return $RETVAL
}

stop() {
    echo "Stopping Oracle: "
```
su - $ORA_OWNER -c "$ORA_HOME/bin/lsnrctl stop"
su - $ORA.Owner -c "$ORA_HOME/bin/dbshut"
RETVAL=$?
return $RETVAL

restart() {
  stop
  start
}
case "$1" in
  start) start;;
  stop) stop;;
  restart) restart;;
  *)
  *) echo "$Usage: $0 {start|stop|restart}"; exit 1;
  esac

Creating the Oracle Database

The Oracle database instances are automatically created during the installation of the NCC software packages. A single database instance is created on each NCC node.

This table shows the mapping between each node type and the named database instance on the node.

<table>
<thead>
<tr>
<th>Node type</th>
<th>Database instance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS</td>
<td>SMF</td>
</tr>
<tr>
<td>Oracle RAC Clustered SMS</td>
<td>SMF1 and SMF2</td>
</tr>
<tr>
<td>VWS</td>
<td>E2BE</td>
</tr>
<tr>
<td>SLC</td>
<td>SCP</td>
</tr>
</tbody>
</table>

Linking the Oracle 11g2 32bit Client

To link the Oracle 11g2 32bit client, enter the following commands:

```
cd $ORACLE_HOME
ln -s /u01/app/oracle/product/11.2.0_client32/lib ./lib32
cd bin
ln -s /u01/app/oracle/product/11.2.0_client32/bin/extproc ./extproc32
cd $ORACLE_HOME/oracore/zoneinfo
ln -s /u01/app/oracle/product/11.2.0_client32/oracore/zoneinfo/timezone_11.dat
ln -s /u01/app/oracle/product/11.2.0_client32/oracore/zoneinfo/timezr1g_11.dat
```

The extproc32 binary is expected to be found in `$(ORACLE_HOME)/bin`.

On the SLC only:
```
su root
cp /u01/app/oracle/product/11.2.0_client32/lib/libclntsh.so.11.1 /usr/lib/secure
```

Installing and Configuring Additional Third-Party Software

BRM Portal Toolkit

The bcdScp package requires that BRM Portal Toolkit is installed on the SLC nodes. This is not delivered with NCC, and must be installed separately. See NCC `BRM Charging Driver Technical Guide` for details.
However, an installation may not require interaction with Oracle Communications Billing and Revenue Management (BRM), which means that BRM Portal Toolkit and bcdScp may not need to be installed.

When you run the installation prerequisite check (see Checking NCC Prerequisites (on page 60)), if BRM Portal Toolkit is:

- Installed, this prerequisite will pass and bcdScp will be included in the package list.
- Not installed, this prerequisite will fail. If you then install NCC (see Installing NCC Automatically (on page 63)), the screen will display a warning stating that bcdScp will not be installed, and this will be excluded from the package list.

If, after failing the prerequisite check, the package is required, you must install BRM Portal on the platform, then run the prerequisite check again.
Chapter 6

Installing NCC Using Installation Manager

Overview

Introduction

This chapter explains how to install Oracle Communications Network Charging and Control (NCC) using the NCC Installation Manager.

In this chapter

This chapter contains the following topics.

About Installing NCC 51
Installation Environment 55
Installing the NCC Applications 62

About Installing NCC

Introduction to NCC Installation Manager

The NCC Installation Manager enables you to install the NCC component software packages automatically. You can also configure Installation Manager to install selected service templates after installing NCC. This will automatically configure elements of the selected services.

The following service templates are available:

- Prepaid Charging Service Template (PCST)
- Social Networking Service Template (SNST)

For more information on service templates, see Service Templates (on page 4).

Installation Process

You install NCC by performing the following tasks:

1. Download the installation media pack that contains the Oracle Communications Network Charging and Control NCC applications. For more information, see Downloading the Installation Media Pack (on page 53).
2. Extract the installation archives to each NCC node in turn. For more information, see Extracting the Installation Archives (on page 53).
3. Start the Installation Manager back end. For more information, see Starting the Installation Manager Back End (on page 54).
4. Start the Installation Manager front end. For more information, see Starting the Installation Manager Front End (on page 55).
5. Install NCC on each NCC node in turn. For information about the installation order, see Installation Order (on page 52). You install NCC on a node by performing the following steps:
1. Configure the installation environment for the node. See Configuring the Installation Environment (on page 60).
2. Check the environment settings. See Checking NCC Prerequisites (on page 60).
3. Install the NCC software for the node. See Installing the NCC Applications (on page 62).

After you complete the installation, exit the Installation Manager front end and back end.

Installation Order

Installing NCC requires all the NCC packages for each node of the Oracle Communications Network Charging and Control (NCC) platform to be installed independently and sequentially in the following order:

1. Install all the NCC SMS packages on the SMS nodes first. If you are installing a clustered system, install NCC on the primary SMS and then install it on the secondary SMS.
2. Install all NCC SLC packages on each SLC node.
3. Install all the NCC VWS packages on each VWS pair in this order: primary node, then secondary node.

Installing NCC on an individual node typically consists of the following high level steps:

1. Set the environment values for the node on which you are installing NCC by selecting the node in the Environment tab in the NCC Installation Manager screen and then specifying a value for all the other fields in the tab. For more information, see Configuring the Installation Environment (on page 60).
2. Check the environment settings by running the check prerequisites report. If there are any errors, correct them and then rerun the report. For more information, see Checking NCC Prerequisites (on page 60).
3. Install the NCC packages on the node. For more information, see Installing the NCC Applications (on page 62).

Users Created Automatically by the Installation

This table lists the IDs of all the users that may be created automatically on each node when you install NCC. You must specify a password for each user when you configure the installation environment for each node. At installation, only those users that are needed for the NCC software you are installing will be created.

Note: User passwords will be checked for validity. For more information, see:

- About Unix User Password Validity Checks (on page 61)
- About Oracle User Password Validity Checks (on page 62)

! is an invalid character in any password.

<table>
<thead>
<tr>
<th>User</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>smf_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>acs_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>ccs_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>ebe_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>xms_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>ses_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>sei_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>lcp_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>osa_oper</td>
<td>UNIX</td>
</tr>
<tr>
<td>rim_oper</td>
<td>UNIX</td>
</tr>
</tbody>
</table>
User | Type
--- | ---
uis_oper | UNIX
upc_oper | UNIX
is41_oper | UNIX
SYSTEM | Oracle
SYS | Oracle
SU | Oracle
(This is the SU user for the SMS user interface)
SMF | Oracle
SCP | Oracle
E2BE_ADMIN | Oracle
ACS_ADMIN | Oracle
CCS_ADMIN | Oracle
MMX_ADMIN | Oracle
SES_ADMIN | Oracle
OSA_ADMIN | Oracle
UBE_REPORTS | Oracle
UBE_WALETMIG | Oracle
PI admin | PL administrator

### Downloading the Installation Media Pack

To install NCC using the NCC Installation Manager, you will require the following media pack:

- Oracle Communications Network Charging and Control 5.0.1 Media Pack

This media pack includes both the software and NCC Installation Manager.

You download the NCC software from the Oracle software delivery Web site:

http://edelivery.oracle.com/

Follow these steps to download the NCC installation media pack.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Download the NCC media packs from the Oracle software delivery Web site: <a href="http://edelivery.oracle.com/">http://edelivery.oracle.com/</a></td>
</tr>
</tbody>
</table>
| 2 | Copy the archive to a temporary directory on the target node on which you are installing NCC.  
**Note:** The amount of space available in this directory must be at least three times the size of the archive. For example, if the archive is 500 MB, then the temporary directory should be at least 1500 MB. |
| 3 | The media pack is downloaded to a zip file that is named after the part number. Rename the media pack to **NCC_v5_0_1.zip** after downloading it. |

### Extracting the Installation Archives

Follow these steps to extract the NCC Installation Manager archive.
Note: You must extract the NCC archive to each Service Management System (SMS), Voucher and Wallet Server (VWS), and Service Logic Controller (SLC) node. If you are installing NCC on a cluster, you need to install from a local directory on each SMS. If you download the NCC zip file to a global directory (that is, on disk space shared between the two SMSs) and install from there, you will get misleading default settings in the Environment tab of the installer.

**Step** | **Action**
--- | ---
1 | Log in as the user root on the node on which you are installing NCC.
2 | Copy the NCC_v5_0_1_0_0.zip file to the /var/spool/pkg directory:
   ```
cp NCC_v5_0_1_0_0.zip /var/spool/pkg
   ```
3 | Unzip the NCC_v5_0_1_0_0.zip file:
   ```
   unzip NCC_v5_0_1_0_0.zip
   ```
   **Result:** The NCC_INSTALLER.zip file is included in the list of extracted files.
4 | Unzip the NCC_INSTALLER.zip file:
   ```
   unzip NCC_INSTALLER.zip
   ```

**Starting the Installation Manager Back End**

Follow these steps to start the Installation Manager back end.

Note: The session in which the back end was started must remain running throughout the duration of the installation. You can achieve this using a tool such as 'Screen' to launch the back end. Alternatively, you can start the back end with nohup to ensure that it remains up and running.

**Step** | **Action**
--- | ---
1 | Log in as the user root and go to the install directory created by the Oracle Communications NCC Installation Manager archive.
2 | Run the `./install.sh` script by entering the following commands. Specify which TCP port the installation back end will listen on (default 8080) using the `-p` parameter:
   ```
cd /var/spool/pkg/NCCInstaller
./install.sh -p port
   ```
   Where `port` is an available port number.
   **Result:** You will see the following output:
   ```
   Disabling sendmail (will be re-enabled when script is terminated)
   ...
   Remove temporary session files ... Done
   Creating NCC install path ... Done
   Unzipping installation files ....................Done
   To start the NCC installer, browse to http://ipaddress:port
   Init sys.path ... done
   Init config.cfg ... done
   Loading compatibility modules
   ...loading compatibility.esgap
   ```
   Where:
   - `ipaddress` is the IP address of the NCC node you are installing.
   - `port` is the port you are using for the installation back end.

**Tip:**
To start the back end with nohup, enter the command:
```
nohup ./install.sh &
```
To start the Installation Manager front end, use the link supplied in the script output.
Chapter 6

Installing NCC Using Installation Manager

Step | Action
--- | ---
3 | When the installation is complete, exit the back end. See *Installing NCC Automatically* (on page 63) for details.

Starting the Installation Manager Front End

Follow these steps to start the NCC Installation Manager front end.

**Important:** You should only connect to the front end once.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log on to a client system that has IP connectivity to the system being installed.</td>
</tr>
<tr>
<td>2</td>
<td>Open a web browser on the client system.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>For a list of supported browsers, see <em>Installation Manager Browser</em> (on page 44).</td>
</tr>
<tr>
<td>3</td>
<td>Browse to the NCC install IP address and port number on which the Installation Manager was started.</td>
</tr>
<tr>
<td><strong>Example</strong></td>
<td>http://IP_address:port_number</td>
</tr>
<tr>
<td><strong>Where:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• <em>IP_address</em> is the IP address you are using to install NCC.</td>
</tr>
<tr>
<td></td>
<td>• <em>port_number</em> is the number of the port you used when starting the Installation Manager back end.</td>
</tr>
<tr>
<td><strong>Result:</strong></td>
<td>You see the Oracle Communications NCC Installation Manager - Welcome screen.</td>
</tr>
</tbody>
</table>

Welcome Screen

Here is an example Oracle Communications NCC Installation Manager Welcome screen.

[Welcome Screen Image]

**Welcome to the OCNCC Installation Manager.**

**Please follow the instructions below:**

1. Go to the Environment tab, and change the settings
2. Go to the Install tab to start the installation

Installation Environment

**Introduction**

The *Environment* tab in the Oracle Communications NCC Installation Manager screen lets you:
Configure the installation environment settings such as node platforms and Oracle database directories

Check installation prerequisites

Environment Tab

The following is an example of the fields displayed in the following areas of the Environment tab in the Oracle Communications NCC Installation Manager screen for an SMS node:

- Type of platform
- Address of platform
- Oracle DB Settings
- Installation Type

Notes:

- These fields will vary depending on whether you are installing NCC on an SMS, a clustered SMS, an SLC, or a VWS.
- This example may change slightly between releases.

For information about the fields in the Environment tab, see Environment Tab Field Descriptions (on page 57).

The Environment tab also includes an Install Passwords area and a Cluster Settings area. The Install Passwords area lists all the users for whom you must enter passwords. For a list of these users, see Users Created Automatically by the Installation (on page 52). The Cluster Settings area is only available for clustered installations. For an example Cluster Settings section, see Cluster Fields (on page 57).
Cluster Fields

Here is an example of the additional Cluster Settings fields that become visible in the Environment tab when type of platform is set to Cluster_node.

Note: These fields will not be visible when type of platform is set to Server.

![Cluster Settings Table]

Environment Tab Field Descriptions

This table describes the function of each field on the Environment tab.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of platform</td>
<td>Defines the type of NCC node to install this machine as. For example, select:</td>
</tr>
<tr>
<td></td>
<td>- SMS_sparc for SMS</td>
</tr>
<tr>
<td></td>
<td>- UBE_sparc for VWS</td>
</tr>
<tr>
<td></td>
<td>- UAS_sparc for SLC</td>
</tr>
<tr>
<td>Type</td>
<td>Indicates if the installation will be clustered. Select:</td>
</tr>
<tr>
<td></td>
<td>- Cluster_node when installing an SMS cluster node.</td>
</tr>
<tr>
<td></td>
<td>- Server when installing a single non clustered SMS node. This field is</td>
</tr>
<tr>
<td></td>
<td>available only when installing the SMS node.</td>
</tr>
<tr>
<td>Address of platform</td>
<td></td>
</tr>
<tr>
<td>IP</td>
<td>Pre-populated field containing the IP address used to connect to this machine.</td>
</tr>
<tr>
<td>USMS FQ host name</td>
<td>Fully qualified address of the SMS node used for the NCC installation. This field is available only when installing VWS or SLC nodes.</td>
</tr>
<tr>
<td>Oracle DB Settings</td>
<td></td>
</tr>
<tr>
<td>Root directory</td>
<td>Set this to the base directory where Oracle is installed. Defaults to /u01.</td>
</tr>
<tr>
<td>Data directory</td>
<td>Set this to the directory where the NCC database instance datafiles for this machine will be created. Defaults to /oracle/datafiles.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: This directory should already exist. For clustered SMS nodes, this directory should be a shared file system accessible from both cluster nodes.</td>
</tr>
<tr>
<td>Redo log directory</td>
<td>Set this to the directory where the Oracle redo log files will be stored. Defaults to /oracle/redologs.</td>
</tr>
<tr>
<td>Temp directory</td>
<td>The directory location for the OCNCC database instance temporary tablespaces. Defaults to /oracle/tempfiles. This field is available only when installing NCC on a clustered SMS node.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Base directory</td>
<td>Defines the ORACLE_BASE directory for your Oracle installation. Defaults to /u01/app/oracle. This field will be automatically updated with the value from the Root directory field.</td>
</tr>
<tr>
<td>Oracle home</td>
<td>Defines the ORACLE_HOME directory for the Oracle Database for your installation. For Oracle 11g, defaults to /u01/app/oracle/product/11.2.0. This field will be automatically updated based on the value from the Root directory field.</td>
</tr>
<tr>
<td>Oracle client home</td>
<td>Defines the ORACLE_HOME directory for the Oracle client for your installation. For Oracle 11g installations, defaults to /u01/app/oracle/product/11.2.0. This field will be automatically updated with the value from the Root directory field.</td>
</tr>
<tr>
<td>Oracle password on SMS</td>
<td>Must match the Oracle password that was defined when Oracle was installed on the SMS node. The password in the repeat password field must match the password field.</td>
</tr>
<tr>
<td>Installation Type</td>
<td></td>
</tr>
</tbody>
</table>
| Type                         | Defines the type of installation to perform. Choose one of the following options:  
  - **Software And Templates** if you want to install only the NCC software, or if you want to install the NCC software and selected service templates.  
  - **Social Networking Service Template Only** to install only the SNST. When you choose this option the Installation Manager will not install the NCC software. You must have installed NCC on your system already to use this option.  
  
  **Important:** You must use the same setting for the Installation Type, Type field when you install each node in the system.  |
| ACS Customer                 | Sets the name of the service provider that will be used during the automatic installation of the selected service templates. This will be pre-populated with the following default value: OCNCCtemplate.                           |
| Prepaid Charging Service Template | This check box is visible when you select the "Software and Templates" Installation Type.  
Select this check box to automatically install the Prepaid Charging Service Template (PCST) configuration after installing the NCC software. The PCST is an example configuration that includes control plans and tariffing configuration.  
It provides a list of prepaid services that can be used to differentiate the operator from competitors in the market.  
For more information on prepaid services and their configuration, see *NCC User's Configuration Guide*. |
### Field Description

**Social Networking Service Template**

This check box is visible when you select the "Software and Templates" Installation Type.

Select this check box to automatically install the Social Networking Service Template (SNST) configuration after installing the NCC software.

The SNST configuration enables you to set up a service to help operators reduce churn by providing subscriber benefits. For example, subscribers can benefit from preferential tariffs or discounts when they call each other after establishing a relationship. The relationship is managed through SMS interactions that trigger control plans and web portal (Open Service Development) interactions.

For more information on SNST, see *NCC Social Networking Service Template User's & Technical Guide*.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Networking Service Template</td>
<td>This check box is visible when you select the &quot;Software and Templates&quot; Installation Type. Select this check box to automatically install the Social Networking Service Template (SNST) configuration after installing the NCC software. The SNST configuration enables you to set up a service to help operators reduce churn by providing subscriber benefits. For example, subscribers can benefit from preferential tariffs or discounts when they call each other after establishing a relationship. The relationship is managed through SMS interactions that trigger control plans and web portal (Open Service Development) interactions. For more information on SNST, see <em>NCC Social Networking Service Template User's &amp; Technical Guide</em>.</td>
</tr>
</tbody>
</table>

### Installation Settings

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timezone</td>
<td>Defines the default local time zone configured in NCC. Defaults to GMT.</td>
</tr>
<tr>
<td>Country Code</td>
<td>Defines the default country code for the system.</td>
</tr>
<tr>
<td>CCS CDR Loader Input directory</td>
<td>Location of single file system for CCS CDR Input files</td>
</tr>
<tr>
<td>CCS CDR Output directory</td>
<td>Location of single file system for CCS CDR Output files</td>
</tr>
<tr>
<td>CCS CDR VWARS Per Process</td>
<td>The CDR Loader process automatically scales to the number of VWARS processes. This value specifies the maximum number of VWARS processes (producing CDR Files) that each CDR Loader process will handle.</td>
</tr>
<tr>
<td>Currency</td>
<td>Select the system country name and currency code from the drop down list.</td>
</tr>
</tbody>
</table>

### Install Passwords

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| List of user names | Lists the users for whom you must specify a password. For a list of users, see *Users Created Automatically by the Installation* (on page 52). For information about:  
  - Unix password validity checks, see *About Unix User Password Validity Checks* (on page 61)  
  - Oracle user password validity checks, see *About Oracle User Password Validity Checks* (on page 62)  
  The password in the repeat password field for each user must match the first password field for the user. |

### Cluster Settings

**Note:** These fields only apply when the Type field is set to Cluster_node

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
</table>
| nodeId | Sets whether this is the primary or secondary SMS node in the cluster. Select:  
  - 1 for the first node in the cluster  
  - 2 for the second node in the cluster |
| IP address other node | Set to the management IP address of the other node. For example, when installing the first node, enter the IP address of the second node in this field. |
| Hostname other node | Set to the management hostname of the other node in the cluster. |
| Oracle Shared directory | Set to the path of a shared directory to use during the install and to use for shared Oracle ‘dbs’ and ‘admin’ directories. |
| Grid Path | Set to the directory where Oracle Grid is installed. NCC uses Oracle Grid to manage distributed resources. |
### Configuring the Installation Environment

Follow these steps to configure the installation environment for an NCC node.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Environment</strong> tab in the Oracle Communications NCC Installation Manager screen.</td>
</tr>
</tbody>
</table>
| 2    | Click **Change settings**.  
**Result:** You see the current environment settings. For an example screen, see *Environment Tab* (on page 56). |
| 3    | In the **Type of platform** area, select the type of node on which to install NCC. You must select **USMS_sparc** if this is the first NCC node to be installed. |
| 4    | Enter a value for all the remaining fields in the **Environment** tab. For more information about these fields, see *Environment Tab Field Descriptions* (on page 57).  
**Note:** You must enter a password for all the users listed in the **Install Passwords** area. The passwords will be checked for validity when you check prerequisites. |
| 5    | Click **Save**. |

### Checking NCC Prerequisites

Before you install the NCC applications on an NCC node, check prerequisites to check that all the values you set in the **Environment** tab are valid. The prerequisite checks include validity checks:

- For Unix users’ passwords. For more information, see *About Unix User Password Validity Checks* (on page 61).
- For Oracle users’ passwords. For more information, see *About Oracle User Password Validity Checks* (on page 62).
- To verify the USMS Oracle user password and IP address of the SMS node (when installing the SLC nodes).

Follow these steps to check NCC installation prerequisites prior to starting the installation.

**Note:** All items must pass the prerequisite checks before you start the installation.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Click the **Environment** tab in the Oracle Communications NCC Installation Manager screen.  
**Result:** You see the check prerequisites option in the Host banner. |
| 2    | Click **check prerequisites**.  
**Result:** A report will be generated showing which prerequisites have been met.  
For an example report, see *Check Prerequisites Report* (on page 61). |
| 3    | If any prerequisites have not been met, then make corrections and run the check again. |
Check Prerequisites Report

The following figure is an example check prerequisites report that shows the error reported when the USMS Oracle password is set incorrectly on the Environment tab.

About Unix User Password Validity Checks

The passwords you set for Unix users in the Environment tab will be checked for validity when you run the check prerequisites report. The tests used to validate each password will depend on the Unix configuration set by the Unix system administrator in the /etc/default/passwd configuration file.

Example

The following example configuration shows some of the parameters that may be set.

MINALPHA=80
MINNONALPHA=0 # Should be ignored.
# MINUPPER=0
# MINLOWER=1
# MAXREPEATS=0
# MINSPECIAL=2
# MINDIGIT=0
# WHITESPACE=YES
NAMECHECK=NO

Where:

- **MINALPHA** defines the minimum number of alphabetic characters. If not set, it defaults to 2.
- **MINNONALPHA** defines the minimum number of non-alphabetic characters, such as digits and special characters. The default is one.
MINUPPER and MINLOWER define the minimum number of uppercase and lowercase characters required. Not checked when both parameters are set to zero (default).

MAXREPEATS determines the number of times you can consecutively use the same character (for example: 111 or xxx). This is not checked by default.

MINDIGIT determines how many digits are required. If not set, no digits are required. However, typically MINNONALPHA will be set, so one digit or one special character is likely to be required.

MINSPECIAL determines how many special characters are needed and defaults to none.

NAMECHECK allows or disallows passwords which are the same as or a circular shift of the username.

For more information about password requirements for your system, see your Unix system administrator.

About Oracle User Password Validity Checks

The passwords you set for Oracle users in the Environment tab will be checked for validity when you run the check prerequisites report.

The password should not be the same as the username. They are also case sensitive.

Installing the NCC Applications

Introduction

You use the NCC Installation Manager to install the NCC application packages automatically. The installation procedures will be executed sequentially and checked off as they complete.

Note: Some installation procedures (for example, for the smsSms, smsScp and beBe packages) may take more than an hour to complete, depending on system and I/O performance.

Install Tab

Here is an example Install tab in the Oracle Communications NCC Installation Manager screen.
Installing NCC Automatically

Follow these steps to run the NCC automatic installation processes.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Install</strong> tab in the Oracle Communications NCC Installation Manager screen.</td>
</tr>
<tr>
<td>2</td>
<td>To track the level of detail to view in the log, click the <strong>Log</strong> icon in the banner and select the default log level. Selecting <strong>4 Debug</strong> will give you the most verbose output, which is useful for seeing progress.</td>
</tr>
</tbody>
</table>
| 3    | Click **Run All**.  
*Result:* You see the tab and the list of application packages that will be installed.  
To see an example screen, see *Install tab* on page 62. |
| 4    | In the Install banner, click **Start**.  
*Result:* Each package will be installed in sequence. After successful completion, it will be marked with a tick. |
| 5    | When all the packages have been installed successfully, stop the Installation Manager back end by pressing **Ctrl+C** in the terminal window.  
If the back end was started using nohup, you can exit the process by sending a SIGINT signal.  
**Example**  
From the shell where the back end was started, enter:  
```
kill -INT %1
```
From a new shell, enter:  
```
kill -INT PID
```
Where **PID** is the process ID of the `install.sh` process. To determine this value, enter:  
```
ps -ef | grep install.sh
```
| 6    | Reboot the system to ensure all processes and subsystems are started up and running correctly. |
Note: When installing the nodes on a clustered SMS, please install one node at a time. You must install the primary node in the cluster first.
Overview

Introduction

This chapter describes the general tasks you must perform after installing Oracle Communications Network Charging and Control (NCC). You should perform these tasks after installing NCC on a new platform. If you installed the Social Networking Service Template on an existing NCC platform, then you do not need to perform these tasks.

In this chapter

This chapter contains the following topics.

About General Post Installation Tasks 65
Post Installation Initial Configuration 66
SMS Cluster Post Installation Tasks 68
Setting Up CDR Storage 70

About General Post Installation Tasks

Post Installation Initial Configuration Tasks

The post installation initial configuration tasks set the initial configuration for each NCC node. You should perform these tasks after completing the NCC installation on all nodes, if you installed:

- Only the NCC software
- The NCC software and selected service template configuration

If you installed the Social Networking Service Template on an existing NCC platform then you do not need to perform these tasks because the initial configuration will exist already.

Cluster Post Installation Tasks

If you installed NCC on a clustered SMS then you should perform the cluster post installation tasks. For details, see SMS Cluster Post Installation Tasks (on page 68).

CDR Storage Configuration Tasks

The call data records (CDRs) generated by the system will be stored in the database. On production deployments, you should configure table partitioning for the CCS_BE_CDR table to define the following:

- The number of files needed each week to store CDR data
- The number of weeks to hold CDR data before it is purged from the database
- The location for the CDR datafiles

For details on CDR table partitioning configuration, see Setting Up CDR Storage (on page 70).
Note: For more information on CDR and EDR records, and how they are generated, see NCC Event Detail Record Reference Guide.

smsTrigDaemon Tasks

These post install tasks for smsTrigDaemon are required if the xmlTcapInterface (SLEE_TC) is also used. If the xmlTcapInterface (SLEE_TC) is not used then this procedure can be ignored.

This procedure is for both clustered and unclustered installations.

Follow these steps to add the smsTrigDaemon configuration.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Update the sqlplus command in the <code>create_trig_config.sh</code> with the correct user and password.</td>
</tr>
</tbody>
</table>
| 2    | On both cluster nodes (and in a non-clustered model), run the following scripts, as `smf_oper`, to create an example `eserv.config` file for the smsTrigDaemon:  
`/IN/service_packages/SMS/bin/create_trig_config.sh`  
`>/IN/service_packages/SMS/etc/eserv.config.example.trigDaemon` |
| 3    | On both cluster nodes (and on a non-clustered model), check and optionally add the triggering section of `/IN/service_packages/SMS/etc/eserv.config.example.trigDaemon` to the `/IN/service_packages/eserv.config` file on the SMS. |
| 4    | On a non-clustered model, modify the `inittab` to enable the smsTrigDaemon process, as root, enter the following at the prompts:  
`sed /sm11.*smsTrigDaemon/s/off/respawn/ /etc/inittab`  
`/etc/inittab.tmp.$$`  
`mv /etc/inittab.tmp.$$ /etc/inittab`  
`init q` |
| 5    | On a clustered environment you may start smsTriggerDaemon by executing the following command on a single node:  
`/opt/ESERVSmsTrigDaemon/util/startSmsTrigDaemon` |

Post Installation Initial Configuration

About Initial Configuration Tasks

Perform the following initial configuration tasks after completing the NCC installation on all nodes:

- Set SSH `StrictHostKeyChecking` for user `smf_oper` on each node. See Setting SSH `StrictHostKeyChecking` (on page 67).
- Set up IP addresses and hostnames to servers. See Setting IP Addresses and Hostnames (on page 67).
- Update the tablespace storage allocation on each node in accordance with system implementation type. For example, a large production system will require greater storage allocation than a small production system. See Update Oracle Tablespace Storage (on page 67).
- Update Oracle SGA parameters on each node. See Update Oracle SGA Parameters (on page 68).
- Set shared memory limits for the NCC system. See Setting Shared Memory Limits (on page 68).

Note: If you installed only the SNST on an existing NCC platform, then you do not need to perform these tasks.
Setting SSH StrictHostKeyChecking

Follow these steps on each node to set SSH StrictHostKeyChecking for the user smf_oper.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in to the SMS as the user smf_oper.</td>
</tr>
<tr>
<td>2</td>
<td>Create or edit the /IN/service_packages/SMS/.ssh/config file.</td>
</tr>
</tbody>
</table>
| 3    | Include these lines:  
|      | Host *  
|      |     StrictHostKeyChecking no |
| 4    | Repeat these steps for the SLC and VWS nodes, logging on as the user smf_oper each time. |

Setting IP Addresses and Hostnames

You should ensure that the /etc/hosts file on all nodes includes entries for all hosts and their aliases. Some host aliases are automatically defined when you install NCC, therefore you should include at least the following entries:

- sms_host  sms  usms  usms.CdrPush
- be_host_1  be1
- scp_host  scp  uas1  acsStatsMaster  uas.ccsSSMMaster
- be_host_2  be2

Where:

- sms_host is the IP address for the SMS node
- be_host_1 is the IP address for the primary VWS node
- scp_host is the IP address for the SLC node
- be_host_2 is the IP address for the secondary VWS node

Follow these steps to set up IP addresses and hostnames to servers.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in to each node in turn.</td>
</tr>
<tr>
<td>2</td>
<td>Refer to your network plan to configure all network interfaces in the /etc/hosts file on each node. See Network Planning (on page 8) for more information.</td>
</tr>
</tbody>
</table>

Example /etc/hosts file

```
localhost 127.0.0.1 localhost
192.68.44.136 be1
192.68.44.130 sms usms usms.CdrPush
192.68.44.133 scp uas1 acsStatsMaster
                  uas.ccsSSMMaster
192.68.44.139 be2
```

Update Oracle Tablespace Storage

On each node in turn, update the tablespace storage allocation on the database instance on the node, to suit your deployment. Add or resize data files as required.
Update Oracle SGA Parameters

On each node in turn, update the Oracle SGA parameters for the database instance on the node to suit your deployment.

Setting Shared Memory Limits

Follow these steps on each node in turn to set shared memory limits for the NCC system.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in as the user root.</td>
</tr>
</tbody>
</table>
| 2    | Add the esg project group and set the shared memory limits for it by entering these commands:  
  projadd -G esg -c "esg group project" -K "project.max-shm-memory=(priv,4G,deny)" group.esg  
  projmod -sK "project.max-sem-ids=(priv,2048,deny)" group.esg  
  projmod -sK "process.max-sem-nsems=(priv,2048,deny)" group.esg  
  projmod -sK "project.max-shm-ids=(priv,2048,deny)" group.esg |

Checking Number of Connections to Database

Oracle database static parameters are defined in the initSMF.ora file located in the $ORACLE_HOME/dbs directory.

The processes parameter in the Static Parameters section of initSMF.ora defines the maximum number of connections allowed to the Oracle database. For an NCC installation, you should check that this parameter is set to 400 or a higher value.

Example configuration in initSMF.ora

```
# Static Parameters
####################
....
processes = 400
...
```

SMS Cluster Post Installation Tasks

About SMS Cluster Post Installation Tasks

This section describes the post installation tasks you should perform if you installed NCC on a clustered SMS. It also provides example configuration for the Oracle Solaris Cluster Data Service for Oracle Real Application Clusters.

Warning: You should *not* perform these tasks if you installed NCC on an unclustered SMS node or if you installed the Social Networking Service Template on an existing NCC platform.

Oracle Solaris Cluster Data Service for Oracle RAC

You should use the Oracle Solaris Cluster Data Service for Oracle Real Application Clusters to manage the Oracle database instance and listeners.

Note: For more information, see *Oracle Solaris Cluster Data Service for Oracle Real Application Clusters Guide*. 
Example Configuration

Here is an example configuration for the Oracle Solaris Cluster Data Service for Oracle Real Application Clusters.

Configure the resource groups for Oracle instances

```bash
# clresourcetype register SUNW.oracle_rac_server
# clresourcegroup create -p nodelist=sms1 \
- p rg_affinities=++rac-framework-rg rac-inst1-rg
# clresourcegroup create -p nodelist=sms2 \
- p rg_affinities=++rac-framework-rg rac-inst2-rg
```

Replace sms1 and sms2 with the cluster node names.

```bash
#clresource create -g rac-inst1-rg -t SUNW.oracle_rac_server \
- p resource_dependencies=rac-framework -p oracle_sid=SMF1 \
- p oracle_home=/u01/app/oracle/product/10.2 rac-inst1
#clresource create -g rac-inst2-rg -t SUNW.oracle_rac_server \
- p resource_dependencies=rac-framework -p oracle_sid=SMF2 \
- p oracle_home=/u01/app/oracle/product/10.2 rac-inst2
```

Set the oracle_home parameter to match your installation.

```bash
# clresourcegroup online -emM rac-inst1-rg
# clresourcegroup online -emM rac-inst2-rg
```

Configure the Logical Hostnames for the Listeners

```bash
# clresourcegroup create -n sms1,sms2 -p failback=true \
- p rg_affinities=rac-inst1-rg 1h-oral1-rg
# clresourcegroup create -n sms2,sms1 -p failback=true \
- p rg_affinities=rac-inst2-rg 1h-oral2-rg
# clreslogicalhostname create -h sms-1sln1 -g 1h-oral1-rg \n- N mgmt@1,mgmt@2 usms-1slnr1-rs
# clreslogicalhostname create -h sms-1slnr2 -g 1h-oral2-rg \n- N mgmt@1,mgmt@2 usms-1slnr2-rs
```

Replace sms1 and sms2 with the cluster node names, sms-1slnr1 and sms-1slnr2 with the listener hostnames, and mgmt with the management iPMP group.

```bash
# clresourcegroup online -emM 1h-oral1-rg
# clresourcegroup online -emM 1h-oral2-rg
```

Configure the resource groups for the Listeners

```bash
# clresourcetype register SUNW.oracle_listener
# clresourcegroup create -n sms1,sms2 \n- p rg_affinities=++1h-oral1-rg ora-1slnr1-rg
# clresourcegroup create -n sms2,sms1 \n- p rg_affinities=++1h-oral2-rg ora-1slnr2-rg
```

Replace sms1 and sms2 with the cluster node names

```bash
# clresource create -g ora-1slnr1-rg -t SUNW.oracle_listener \n- p oracle_home=/u01/app/oracle/product/11.2.0 \n- p listener_name=LISTENER1 oracle-listener1-rs
# clresource create -g ora-1slnr2-rg -t SUNW.oracle_listener \n- p oracle_home=/u01/app/oracle/product/11.2.0 \n- p listener_name=LISTENER2 oracle-listener2-rs
```

Set the oracle_home parameter to match your installation.
# clresourcegroup online -emM ora-1snr1-rg
# clresourcegroup online -emM ora-1snr2-rg

### Updating Listener Hostnames

By default the Oracle listeners have been configured to use the management IP addresses of each cluster node. If dedicated hostnames and IP addresses have been defined and configured, then the parameters in this table should be updated by replacing the IP addresses with the hostname or IP addresses dedicated to the listeners.

<table>
<thead>
<tr>
<th>File</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ORACLE_HOME/network/admin/listener.ora</td>
<td>&quot;HOST&quot; parameter in &quot;ADDRESS&quot; strings</td>
</tr>
<tr>
<td>$ORACLE_HOME/network/admin/tnsnames.ora</td>
<td>&quot;HOST&quot; parameter in &quot;ADDRESS&quot; strings</td>
</tr>
<tr>
<td>Oracle SMF1 and SMF2 instances</td>
<td>SMF1.dispatchers, SMF2.dispatchers</td>
</tr>
</tbody>
</table>

### Setting Up CDR Storage

#### About CDR Storage Configuration

If you installed NCC in a production environment, then you should configure `ccspart.cfg` to define how CDRs will be stored.

**Note:** If you installed only the SNST on an existing NCC platform, then you do not need to perform these tasks.

#### Setting Up CDR Table Partitioning

Follow these steps to set up CDR table partitioning for CDR storage.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>As the user <code>root</code> on the SMS node, edit the <code>/IN/service_packages/CCSPART/etc/ccspart.cfg</code> file.</td>
</tr>
</tbody>
</table>
| 2    | Specify appropriate values for these parameters. For a description of each parameter, see Parameters (see "ccspart.cfg File Parameters" on page 71):  
  * WEEKLY_DATAFILE_COUNT  
  * WEEKS_TO_KEEP_PARTITION  
  * DATAFILE_PATH |
| 3    | As the same user, enter the command:  
  `/IN/service_packages/CCSPART/ccsCdrPart.conf.sh` |

#### ccspart.cfg Configuration File

The `ccspart.cfg` file configures how CDR data is stored. It is located in the `/IN/service_packages/CCSPART/etc/ccspart.cfg` directory.
**ccspart.cfg File Parameters**

This table describes the parameters you should configure in the `ccspart.cfg` file to set up CDR table partitioning.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEEKLY_DATAFILE_COUNT</td>
<td>Sets the number of 200MB data files required per week to hold CDR data.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> CDR data files may contain multiple CDR records, potentially</td>
</tr>
<tr>
<td></td>
<td>of different types.</td>
</tr>
<tr>
<td>WEEKS_TO_KEEP_PARTITION</td>
<td>Sets the number of weeks CDR data should remain available on the SMS node</td>
</tr>
<tr>
<td>DATAFILE_PATH</td>
<td>Sets the location on the disk where CDR datafiles will be created.</td>
</tr>
</tbody>
</table>
Overview

Introduction

This chapter assumes you applied the template service configuration when you installed Oracle Communications Network Charging and Control (NCC). It describes the additional tasks you must perform before the template configuration will be fully operational.

Note: If you did not select a template service configuration in the Installation Manager then you should perform the General Post Installation Tasks (on page 65) only. You can skip the configuration tasks described in this chapter.

For information about configuring the system, see NCC User's Configuration Guide.

In this chapter

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<th>Topic</th>
<th>Page</th>
</tr>
</thead>
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<tr>
<td>SMS Node Configuration</td>
<td>75</td>
</tr>
<tr>
<td>OSD Configuration</td>
<td>87</td>
</tr>
<tr>
<td>SMCB Configuration</td>
<td>92</td>
</tr>
<tr>
<td>SMS Named Events Configuration for SNST</td>
<td>94</td>
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<tr>
<td>PI Configuration for SNST</td>
<td>97</td>
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<tr>
<td>CCS Capability Configuration</td>
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<td>Configuration Files on the SMS</td>
<td>104</td>
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<tr>
<td>VWS Node Configuration</td>
<td>105</td>
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<td>MFile Generation</td>
<td>110</td>
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<td>Starting the SLEE</td>
<td>112</td>
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<tr>
<td>SLC Node Configuration</td>
<td>113</td>
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<tr>
<td>Messaging Manager Configuration</td>
<td>114</td>
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<tr>
<td>Messaging Manager Scheme Configuration</td>
<td>115</td>
</tr>
<tr>
<td>MM SMSC Configuration and Node Mapping</td>
<td>120</td>
</tr>
<tr>
<td>SCTP Configuration</td>
<td>124</td>
</tr>
<tr>
<td>SIGTRAN Configuration</td>
<td>125</td>
</tr>
<tr>
<td>eserv.config Configuration on the SLC</td>
<td>127</td>
</tr>
<tr>
<td>Configuring and Starting the SLEE</td>
<td>130</td>
</tr>
</tbody>
</table>

About Post Installation Tasks

Service Template Post Installation Tasks

This table lists the post installation tasks that should be carried out after using the Installation Manager to automatically install:
- NCC and the Prepaid Charging Service Template (PCST) configuration and the Social Networking Service Template (SNST) configuration
- NCC and the PCST configuration
- NCC and the SNST configuration
- Only the SNST configuration

**Note:** "Yes" in a column indicates that you should perform this task for this service template configuration. "No" in a column indicates that you should not perform this task for this service template configuration.

<table>
<thead>
<tr>
<th>Post Install Task to Perform</th>
<th>NCC and Both Templates</th>
<th>NCC and PCST</th>
<th>NCC and SNST</th>
<th>SNST Only</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SMS Node Configuration</strong> <em>(on page 75)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>OSD Configuration</strong> <em>(on page 87)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>SMCB Configuration</strong> <em>(on page 92)</em></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>SMS Named Events Configuration</strong> <em>(for SNST on page 94)</em></td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>PI Configuration for SNST</strong> <em>(on page 97)</em></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>CCS Capability Configuration</strong> <em>(on page 99)</em></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>SNST DAP ASP Configuration</strong> <em>(on page 103)</em></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Configuration Files on the SMS</strong> <em>(on page 104)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>VWS Node Configuration</strong> <em>(on page 105)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>MFile Generation</strong> <em>(on page 110)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Starting the SLEE on the VWS</strong> <em>(on page 112)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>SLC Node Configuration</strong> <em>(on page 113)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Messaging Manager Configuration</strong> <em>(on page 114)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Messaging Manager Scheme Configuration</strong> <em>(on page 115)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>MM SMSCs Configuration and Node Mapping</strong> <em>(on page 120)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>SCTP Configuration</strong> <em>(on page 124)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Sigtran Configuration</strong> <em>(on page 125)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>eserv.config Configuration on the SLC</strong> <em>(on page 127)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Configuring and Starting the SLEE</strong> <em>(on page 130)</em></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Chapter 8

SMS Node Configuration

About SMS Node Configuration

This section describes the configuration tasks you should perform as a minimum on the SMS node. You perform these tasks in the Service Management System UI:

- Configure the node details for all NCC nodes.
- Configure the nodes that will be used by the replication processes.
- Configure the resource limits and global business prefix for the service provider.
- Configure the VWS domains. In a standard configuration a pair of VWS (primary and secondary) servers are used.
- Add VWS pair details to the VWS domains.
- Configure the replication tables used in replicating data to nodes.

Note: If you installed only the SNST on an existing NCC platform, then you do not need to perform these tasks.

Launching SMS Using Webstart

Follow these steps to launch Service Management System using Java Webstart. You can use this process to install a shortcut to the SMS on your desktop.

Note: To launch GUI applications using Java Webstart, you must ensure that the Web server supports the jnlp file type. For more information, see Setting up the Screens in SMS Technical Guide.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Using an Internet browser, open the SMS Webstart. There are two methods to do this:</td>
</tr>
<tr>
<td></td>
<td>1 Open the Service Management System default page on the SMS_hostname, then click the WebStart link.</td>
</tr>
<tr>
<td></td>
<td>2 Open SMS Webstart directly. The address is in the format: http://SMS_hostname/sms.jnlp</td>
</tr>
<tr>
<td></td>
<td>Where SMS_hostname is the hostname of the SMS or cluster which is running the SMS application.</td>
</tr>
<tr>
<td></td>
<td>Result: You see the Opening sms.jnlp download screen.</td>
</tr>
</tbody>
</table>
**Chapter 8**

### Opening SMS using Webstart

There are two methods to open SMS using Webstart. If by:

- Opening the `sms.jnlp` download screen, select **Open with** and click **OK**.
- Shortcut icon saved to the desktop, double-click the SMS `sms.jnlp` icon.

For more information, refer to *Launching SMS using Webstart* (on page 75).

**Result:** The following screens open:

1. **SMS - SMS_hostname screen**, for example:

   ![SMS_Hostname_Screen](image)

2. The SMS Login screen will appear.

   See *Logging on to SMS* (on page 76).

**Note:** When launching SMS for the first time using Webstart, a shortcut icon is downloaded and displayed on the Desktop.

This enables you to open the SMS GUI directly by double-clicking the shortcut icon. The icon is removed every time you clear the system cache and downloads again when launching SMS through Webstart after clean up.

### Logging On To SMS

Follow these steps to log on to SMS on the SMS Login screen.

**Step** | **Action** |
--- | --- |
1 | In the **User Name** field, enter **SU**. |
2 | In the **Password** field, enter the password for the SU user. Passwords are case sensitive. |
   | **Note:** This will be the password that you specified for the SU users on the **Environment** tab in the Installation Manager window. |
3 | Click **OK**. |
   | **Result:** A security warning will pop up. |
4 | Click **Run**. |
# Configuring Node Details

Follow these steps to configure the details for all nodes.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | In the Service Management System UI, select **Operator Functions > Node Management**.  
**Result:** You see the **All Nodes** tab in the Node Management screen. |
| 2    | Click **Find**.  
**Result:** You see the Find All Nodes screen. |
| 3    | Click **Search**.  
**Result:** You should see an entry for the SMS node in the node table.  
4    | Select the node on the table and click **Close**.  
**Result:** You see the node details on the **All Nodes** tab. |
5 Verify the node details and make any necessary changes.

**Note:** You should use the Internal IP Address for the node or hostname. If you use the hostname, then this must resolve to the correct internal IP address for the node.

6 Click **Save**.

**Note:** If you are unable to save the node details after making changes to the **IP Address** field, then you will need to delete the existing record and create a new one.

7 Repeat steps 2 through 6 for all other nodes. To clear field values before adding another node, click **Clear**.

### Configuring Replication Nodes

Follow these steps to configure the nodes used in replication.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Replication Nodes</strong> tab in the Node Management screen.</td>
</tr>
</tbody>
</table>
Chapter 8

NCC Installation Manager Post Installation Tasks

### Configuring Resource Limits

Follow these steps to configure resource limits. You must set resource limits for your service provider before you create VWS domains.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | From the Services menu in the Service Management System UI, select Prepaid Charging > Service Management.  
**Result:** You see the Service Management screen. |
2. Select the **Resource Limits** tab.

**Result:** You see the **Resource Limits** tab on the Service Management screen.
### Step 3
Select the service provider for whom you want to set resource limits.

**Note:** The default service provider for the PCST or SNST is OCNCCTemplate.

### Step 4
Click **Edit**.

### Step 5
Select the **Limits** option and specify the service provider's limits for the following:
- Maximum Product Types
- Maximum Voucher Types
- Maximum Rate Tables
- Grace Period
- Maximum Bad Pin Count

### Step 6
Select the **Business Prefix** option, and specify the **Global Business Prefix** for the service provider.

### Step 7
Click **Save**.

**Note:** This defines the minimum configuration for service provider limits.
# Configuring VWS Domains

Follow these steps to configure the VWS domains. For each domain you will need to define a pair of servers (a primary VWS and a secondary VWS).

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the Services menu in the Service Management System UI, select Prepaid Charging &gt; Service Management.</td>
</tr>
<tr>
<td>2</td>
<td>Select the service provider for whom you want to configure the VWS domain. Note: The default service provider for the PCST or SNST is OCNCCtemplate.</td>
</tr>
<tr>
<td>3</td>
<td>Select the Domain tab, and click New. Result: The New Domain screen (See example on page 83) appears.</td>
</tr>
<tr>
<td>4</td>
<td>Enter the domain name in the Name field. For example, enter VWS Domain 1.</td>
</tr>
<tr>
<td>5</td>
<td>From the Type drop down list, select UBE.</td>
</tr>
<tr>
<td>6</td>
<td>Specify the maximum number of accounts this domain will be able to handle in the Maximum Accounts field. For example, enter 1000000.</td>
</tr>
<tr>
<td>7</td>
<td>In the Manages section, select Charging, Tracking and Voucher Management.</td>
</tr>
<tr>
<td>8</td>
<td>In the Nodes section, add the primary and secondary nodes. See Adding node details (on page 83) for details.</td>
</tr>
<tr>
<td>9</td>
<td>Click Save.</td>
</tr>
<tr>
<td>10</td>
<td>Repeat steps 3 through 9 for each VWS domain. For more information on domains, refer to Service Management in CCS User's Guide.</td>
</tr>
</tbody>
</table>
Example New Domain Screen

Here is an example New Domain screen.

![New Domain Screen](image)

Adding Node Details

Follow these steps to add primary and secondary nodes to a VWS domain.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the Nodes section of the New Domain screen, click <strong>New</strong>. <strong>Result:</strong> The <em>New Domain Node screen</em> (See example on page 84) appears.</td>
</tr>
<tr>
<td>2</td>
<td>Enter the node name in the <strong>Name</strong> field, for example, <strong>VWS Domain Primary</strong>. You must enter a unique name.</td>
</tr>
<tr>
<td>3</td>
<td>Select the <strong>Node Number</strong> from the drop down list. This will be the corresponding replication node ID for this VWS node. <strong>Note:</strong> Where there is more than one node for a domain, the lower numbered node is the primary node.</td>
</tr>
<tr>
<td>4</td>
<td>The node's IP address is automatically populated in the <strong>Address</strong> field. If you have a dedicated billing network, change this to the dedicated billing IP address for this node.</td>
</tr>
<tr>
<td>5</td>
<td>The <strong>Client Port</strong> field is automatically set to 1500. You may change this if required.</td>
</tr>
<tr>
<td>6</td>
<td>The <strong>Internal Port</strong> field is automatically set to 1600. You may change this if required.</td>
</tr>
<tr>
<td>7</td>
<td>Click <strong>Save</strong>.</td>
</tr>
</tbody>
</table>
Repeat steps 1 through 7 to add the secondary node for this domain.

**Result:** The new nodes are listed in the Nodes section of the screen.

### Example New Domain Node Screen

Here is an example New Domain Node screen.

### Configuring Replication Tables

Follow these steps to configure table replication for each node.

**Note:** You must add all tables to be replicated to each node. For VWS nodes, some replication tables will be configured automatically during the VWS domain creation.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In the Service Management System UI, select <strong>Operator Functions &gt; Node Management</strong>, then select the <strong>Table Replication</strong> tab.</td>
</tr>
</tbody>
</table>
### Chapter 8

#### NCC Installation Manager Post Installation Tasks

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Add all the required tables to be replicated to each node (the node can be identified by replication ID). To add a table, drag and drop the table from the <strong>Available Groups</strong> section on the left to the relevant node number in the <strong>Allocated Replication Groups</strong> section on the right.</td>
</tr>
<tr>
<td>3</td>
<td>The required tables for the SLC and VWS have been pre-configured. To immediately add all the required tables select <strong>Apps</strong> in the <strong>Available Replication Groups</strong> list.</td>
</tr>
<tr>
<td>4</td>
<td>Keeping the mouse button depressed, drag the icon across to the <strong>Allocated Replication Groups</strong> list. Drop on the required node name by releasing the mouse button. <strong>Result:</strong> You see the <strong>Node Type Filter Selection</strong> screen.</td>
</tr>
</tbody>
</table>
| 5    | Select the **Node Type** from the drop-down list. Select:  
  - **scp** for SLC  
  - **be** for VWS  
  **Note:** Some replication groups are added automatically when you create a domain. |
| 6    | Click **OK**.  
  **Result:** The replication group will be allocated to the selected node. |
### Chapter 8

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 7    | When replication tables have been configured for all the nodes, click **Save**.  
*Result:* You see the **Save Complete** message and the details are saved.  
**Note:** Do not click **Create Config File** as you do not need to create the replication configuration file at this stage. This will be created as part of VWS node configuration. |
| 8    | Click **Close**.  
*Result:* The Node Management screen will be closed. |
| 9    | From the **File** menu on the Service Management System screen, select **Logout & Exit**.  
*Result:* All your updates will be saved to the database, including any updates that have been cached. |
| 10   | Re-open the SMS main screen. See Accessing SMS for more information. |
| 11   | Select **Services > Messaging Manager > Replication**.  
*Result:* You see the **Replication** tab in the Messaging Manager Replication screen. |
| 12   | Select only the check box for all SLC nodes.  
**Important:** You should ensure that check boxes for all VWS nodes are not selected. |
| 13   | Click **Apply**, and then click **Close**. |

#### Configuring VSSP

To complete VSSP configuration, add the lines in the following files:

- **acs.conf**:
  ```
  ssf (vssp,NOA=4,Address=32495123452,interface=vssp)
  ssf (sca,NOA=4,Address=32495123452,interface=sca)
  ```
  See [acs.conf configuration file](on page 104) for details.

- **sms.html**:
  ```
  <PARAM NAME=ssfs VALUE="vssp">
  This file is located at /IN/html/sms.html
  ```

- **sms.jnlp**:
  ```
  <param name="ssfs" value="sca" />
  This file is located at /IN/html/sms.jnlp
  ```
Chapter 8

Setting Default Currency

You must set a default currency for your country. To do this, on the CCS, Service Management UI, you need to create a currency associated with the country, then make that currency the default.

If you have installed a service template, a currency will be already set up. However, the currency is set with the first country in the list having that selected currency. In this case you need to replace this country linked to this currency:

1. Create a new currency with the correct country
2. Delete the old one

Refer to the Currency and Global Configuration topics in CCS User's Guide for details.

OSD Configuration

About OSD Configuration

Open Services Development (OSD) enables third parties to submit html (WSDL) files that invoke control plans. You should perform the following configuration in the Open Services Development screen for OSD:

- On the Service Providers tab configure the OSD ports for all OSD interfaces on all SLC nodes.
- On the Client ASPs tab configure the clients that will be using OSD. For SMS notifications, this will be all the SMS and VWS nodes.

Note: Use the information you prepared in OSD configuration planning (on page 9) to configure details of the OSD interfaces, IP addresses and TCP port numbers.

OSD Port for SNST

If you installed the Social Networking Service Template (SNST) configuration, then an SNST port will be automatically configured for you. This port will be used for internal requests between DAP and OSD on the SLC. You will see the following configuration listed for this port in the table on the Service Providers tab when you select the OCNCCtemplate from the Service Provider drop down list:

- **Port**: 2221
- **Address**: 127.0.0.1
- **Interface Name**: osdInterface

Important: You should not modify or delete the details for this port.

Accessing OSD

Follow these steps to open the Open Services Development (OSD) screen.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Launch the Service Management System UI. See Opening SMS (see &quot;Opening SMS using Webstart&quot; on page 76) for details.</td>
</tr>
<tr>
<td>2</td>
<td>From the Services menu, select Open Services Development. Result: You see the Service Providers tab in the Open Service Development window.</td>
</tr>
</tbody>
</table>
Service Providers Tab

Here is an example Service Providers tab in the Open Services Development screen.

Configuring OSD Ports

Configure OSD ports by defining the IP address, port, and interface name for all OSD interfaces on all SLC nodes. Follow these guidelines:

- If the OSD port will be used for internal communication between the SLC nodes, and the SMS or VWS nodes, then configure the SLC port and IP address to match the eserv.config file triggering section address and port information for the SMS or VWS nodes.
- Configure the interface name for the OSD port to match the configured OSD interface running on the SLC SLEE.

Note: If you installed the SNST, then an SNST port will be configured automatically. For details, see OSD port for SNST (on page 87).

Follow these steps to configure OSD ports for the OCNCCtemplate service provider.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Click the Service Providers tab in the Open Service Development screen. Result: You see the Service Providers tab in the Open Services Development screen. For an example screen, see Service Providers tab.</td>
</tr>
<tr>
<td>2</td>
<td>Select OCNCCtemplate from the Service Provider drop down list.</td>
</tr>
</tbody>
</table>
Step | Action
---|---
3 | Click Add.
**Result:** You see the New Port List Entry screen.

4 | Add the IP Address, Port and Interface Name for all OSD interfaces on all SLC nodes using the information prepared in *OSD configuration planning* (on page 9).

5 | After adding each entry, click Save.

**Client ASPs Tab**

Here is an example Client ASPs tab.
Configuring Client ASPs

Use the information you prepared in OSD configuration planning (on page 9) to configure the client ASPs that will be using OSD. You should add clients for:

- SMS notifications, for all the SMS and VWS nodes.
- If SNST is installed, for the social networking ASP that interacts with, for example, Facebook.

Follow these steps to configure the client ASPs.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Select the Client ASPs tab in the Open Services Development screen.  
**Result:** You see the Client ASPs tab. For an example screen, see Client ASPs tab. |
| 2    | Enter the name of the node in the **Client ASP Name** field. This will be one of the following:  
- The name of the SMS or VWS node for which you are configuring the ASP.  
- A name of your choice (if you are configuring the SNST ASP). |
| 3    | In the **IP Address** field, enter the IP address from which the client ASP node will connect to the SLC node. |
| 4    | In the **User Name** field, enter the username that the client ASP will use to authenticate itself on the SLC.  
**Important:** You must specify the **notif** username for VWS and SMS client ASPs. |
| 5    | Set **Max Tx/Sec** to 10. |
| 6    | Set **Max Tx Outstanding** to 10. |
| 7    | Set the password for the SOAP HTML header in the **Change Password** and **Confirm Password** fields.  
**Important:** You must set the password to **notif** for VWS and SMS client ASPs. |
| 8    | Click **Save**.  
**Result:** The **Add** button becomes available. |
| 9    | Click **Add** to add allowed operations for this ASP.  
To add allowed operations for VWS or SMS clients, see Adding allowed operations for VWS and SMS clients.  
To add allowed operations for SNST clients, see Adding allowed operations for SNST clients (on page 91). |
| 10   | Repeat these steps until all the clients have been configured. |

Adding Allowed Operations for VWS and SMS Clients - ncc 4.4.1, galaxy

Follow these steps to add the InvokeOSD operation to the list of allowed operations for a VWS or SMS client ASP.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | On the Client ASPs tab, click **Add**.  
**Result:** The **Allow Operation for ASP** screen appears, with the following default field values:  
- **Service Provider** is the currently selected provider in other tabs.  
- **Operation Set** is the first in the list for the provider.  
- **Operation** is the first in the list for the operation set. |
### Step 2
Select the **OCNCCtemplate Service Provider** from the drop down list.

**Note:** The selected provider will be updated in the other OSD tabs and you will be prompted to save any unsaved changes.

### Step 3
Select the **OSD Operation Set** from the drop down list.

### Step 4
Select the **InvokeOSD Operation** from the drop down list.

### Step 5
Click **Save**.

---

#### Adding Allowed Operations for SNST Clients

Follow these steps to add an allowed operation for SNST.

**Note:** You should perform this task only if you installed the SNST.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Click <strong>Add</strong>.</td>
</tr>
</tbody>
</table>

**Result:** The **Allow Operation for ASP** screen appears.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Select the <strong>OCNCCtemplate Service Provider</strong> from the drop down list.</td>
</tr>
</tbody>
</table>

**Note:** The selected provider will be changed in the other OSD tabs and you will be prompted to save any unsaved changes.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Select the <strong>SNST Operation Set</strong> from the drop down list.</td>
</tr>
</tbody>
</table>
SMCB Configuration

Introduction

The Short Message Charging Bundle (SMCB) is the billing configuration service for inbound and outbound short messages.

When you install the Prepaid Charging Service Template (PCST), the service template configuration will configure SMCB automatically. This configuration can be used by both the PCST and the Social Networking Service Template (SNST). When you install the SNST on an existing NCC system, the SMCB should be configured already. Therefore you do not need to configure SMCB if you installed:

- The NCC software and PCST.
- The NCC software, PCST, and SNST.
- SNST on an existing NCC platform.

Because the SNST does not configure SMCB automatically, you will need to configure SMCB if you installed the NCC software and SNST. You configure SMCB to define the SMCB rating type that will be used for SMS charging.

Configuring the SMCB Rating Type

Follow these steps to configure the SMCB rating type for SNST.

Note: Only perform this task if you installed the NCC software and the SNST configuration.
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 4    | Click **New**.  
**Result:** The Create SMCB Rating Type screen appears. This example screen shows the values to use for the **SNST SMS** Rating Type. |
| 5    | Configure the rating type for SNST by entering the following values in the fields on the Create SMCB Rating Type screen:  
- **Enter** **SNST SMS** in the **Name** field  
- **Select** **Named Event** from the **Rating Type** drop down list  
- **Select** **SNST Events** from the **Named Event Class** drop down list  
- **Select** **SNST SMS** from the **Named Event Name** drop down list  
| 6    | Click **Save**. |

### Configuring the SMCB Rating Rule

Follow these steps to configure the SMCB rating rule for SNST.

**Note:** Only perform this task if you installed the NCC software and the SNST configuration.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Rating Rules</strong> tab in the SMCB Service screen.</td>
</tr>
</tbody>
</table>
Step | Action
--- | ---
2 | **Click New.**

**Result:** The Create SMCB Rating Rule screen appears. This example screen shows the values you should use for the SNST SMS rating rule.

3 | Configure the rating rule for the SNST by entering the following values in the fields on the Create SMCB Rating Rule screen:
   - Enter **SNST SMS** in the **Name** field
   - Enter ^ in the **Source Regex** field
   - Enter ^ in the **Destination Regex** field

4 | Click **Save**.

### SMS Named Events Configuration for SNST

**Introduction**

A named event catalogue defines a list of named events for a service. When you install a service template, the named events for SMS messages must be allocated to the named event catalogue for the service. When you install:

- NCC software and the PCST, the SMCB rating types and SMS named events are automatically configured for the PCST and allocated to the PCST named event catalogue.
- NCC software, PCST, and SNST, you will update the configuration for SMS named events to add them to the SNST named event catalogue. This will enable the same named events to be used by both services.
- NCC software and the SNST, the SNST SMS named event is allocated to the SNST named event catalogue automatically.
SNST on top of an existing NCC configuration, the rating types in the SMCB configuration are using named events which are not allocated to the SNST named event catalogue. You will add the SMS named events to the SNST named event catalogue.

This section explains how to allocate named events for SMS messages to the SNST named event catalogue if you installed:

- The SNST on an existing NCC system
- The NCC software, the PCST, and the SNST

You do not need to assign named events to the SNST named event catalogue if you installed the NCC software and the:

- SNST
- PCST

### Allocating Named Events to SNST Named Event Catalogue

Follow these steps to allocate SNST named events to the SNST named event catalogue.

**Note:** Perform this task if you installed the NCC software and the SNST configuration only.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | On the NCC Service Management System UI, select **Services > Prepaid Charging > Rating Management**.  
  **Result:** The Rating Management screen appears. |
| 2    | Select the OCNCCtemplate from the **Service Provider** drop down list at the top of the Rating Management screen. |
| 3    | Select the **Named Event** tab.  
  **Note:** For information on named events, see *Named Event* topic in *CCS User's Guide*. |
| 4    | Select the Event Set that will be used by the SMCB configuration from the **Event Set** drop down list. If you installed:  
  - PCST, select the event set named **SMS**.  
  - SNST on an existing NCC system, select the event set already configured for SMCB SMS messages. |
### Step 8 Action

**Result:** You should see a list of named events. For example, the PCST named events are:

- HPLMN Fixed
- HPLMN Free
- HPLMN IZ1
- HPLMN IZ2
- HPLMN IZ3
- HPLMN IZ4
- HPLMN IZ5
- HPLMN Off-net
- HPLMN On-net
- HPLMN Premium 1
- HPLMN Premium 2
- HPLMN Premium 3
- VPLMN Fixed
- VPLMN Free
- VPLMN IZ1
- VPLMN IZ2
- VPLMN IZ3
- VPLMN IZ4
- VPLMN IZ5
- VPLMN Off-net
- VPLMN On-net
- VPLMN Premium 1
- VPLMN Premium 2
- VPLMN Premium 3

5. Select the first event in the list, and click **Edit**.
   **Result:** The Edit Named Event screen appears.

6. Allocate the selected event to the SNST named event catalogue. Select **SNST** in the Available Named Event Catalogues list and click **Add >**.
   **Result:** The SNST named event catalogue will be allocated the named event and it will be moved to the Allocated Named Event Catalogues list.

7. Click **Save**.

8. Repeat steps 5 through 7 for each SNST named event. If you installed PCST and SNST then you will need to edit all the SMS events listed in step 4.

### SNST Named Event Overrides

Named events for SMS messages are free events by default. To set up charges for these events for the SNST, configure event overrides in the SNST named event catalogue. The override values will be used for the events instead of the default values when the SNST named event catalogue tariffs apply.

For details on how to configure overrides for named events, see **Rating Management - Named Event Catalogues** topics in **CCS User’s Guide**.
PI Configuration for SNST

Introduction

The SNST uses a Provisioning Interface (PI) port for the internal communication between the Data Access Pack (DAP) on the SLC and the PI on the SMS. To configure the PI for SNST you:

- Configure the SNST PI port. See Configuring the SNST PI port (on page 97).
- Configure the dap user. See Configuring the dap user (on page 98).
- Configure the PI hosts. See Configuring PI hosts (on page 98).

You should perform the PI configuration if you installed:

- NCC software, PCST, and SNST.
- NCC software and SNST.
- SNST on an existing NCC system.

For more information on the PI, see the PI documentation.

Configuring the SNST PI Port

Follow these steps to configure the PI port for SNST.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Service Management System UI, select Services &gt; Provisioning &gt; Administration. Result: The Administration screen for the PI appears.</td>
</tr>
<tr>
<td>2</td>
<td>Select the Ports tab, then click New. Result: The PI Ports screen appears. Here is an example PI Ports screen showing the SNST PI port configuration.</td>
</tr>
</tbody>
</table>
| 3    | Configure the PI port for SNST by entering the following values in the fields on the screen:  
  - Enter the port number 3001 in the Port field  
  - Enter 10 in the Max Connections field  
  - Select SOAP from the Type drop down list |
| 4    | Click Save. |
Configuring the dap User

Follow these steps to configure the dap user.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | In the PI Administration screen, select the **Users** tab and click **New**.  
**Result:** The PI Users screen appears. Here is an example screen showing the dap user configuration. |
| 2    | Configure the dap user by entering the following values in the fields on the screen:  
- Enter **dap** in the **User** field  
- Enter **dap** in the **Enter Password** and **Confirm Password** fields  
- Enter **99** in the **Security Level** field |
| 3    | Click **Save**. |

Configuring PI Hosts

Follow these steps to configure the host IP address for each SLC node.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Select the **Hosts** tab in the PI Administration screen and click **New**.  
**Result:** The PI Hosts screen appears. |
| 2    | Enter the IP address of the SLC node in the **IP Address** field. |
| 3    | Enter a description in the **Description** field. |
| 4    | Click **Save**. |

Rereading Configuration for inittab Processes

Follow these steps to force the system to reread the configuration for inittab processes on the SMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log on to the SMS as the user root.</td>
</tr>
</tbody>
</table>
| 2    | Cycle between inittab run level 2 and run level 3. Set the inittab run level to 2 by entering the following command:  
```
init 2
```
Chapter 8

NCC Installation Manager Post Installation Tasks

Step | Action
--- | ---
3 | Check the run level by entering the following command:
   ```
   who -r
   ```
   **Example output**
   ```
   run-level 2 Jan 13 10:46 2 0 3
   ```
4 | Set the inittab run level to 3 by entering:
   ```
   init 3
   ```
5 | Check the run level by entering:
   ```
   who -r
   ```
   **Example output**
   ```
   run-level 2 Jan 13 10:46 3 1 2
   ```

## CCS Capability Configuration

### Introduction

You define global CCS capabilities in the SMS UI. A capability definition includes the default control plan for the capability, the service trigger, called party number, and the EDR type to output.

You configure the control plans for the SNST product type to assign a CCS capability to each control plan. This will determine the types of services provided.

CCS capabilities are configured automatically for the Prepaid Charging Service Template (PCST). CCS capabilities are not configured automatically for the Social Networking Service Template (SNST), and the PCST configuration does not include CCS capabilities for the SNST.

If you installed the SNST in addition to the PCST, or on an existing NCC system, then you need to update the CCS capabilities configuration for the SNST. You should ensure that there are no conflicts between the installed services.

**Note:** There are many ways in which you can configure CCS capabilities to combine with an existing NCC service.

This section explains which capabilities you must configure for the SNST. After configuring the CCS capabilities for SNST, you must configure the control plans for the SNST product type.

For more information on CCS capabilities and product types, see *CCS User’s Guide*.

### Configuring CCS Capabilities for SNST

Follow these steps to configure CCS capabilities for SNST.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1 | On the NCC Service Management System screen and select **Services > Prepaid Charging > Service Management**.  
   **Result:** The Service Management screen appears. |
| 2 | Select the **OCNCCTemplate** from the **Service Provider** drop down list at the top of the Service Management screen. |
| 3 | Select the **Capability** tab. |
Chapter 8

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 4    | To:  
  - Add a new capability, click **New**  
  - Edit an existing capability, select the capability on the tab and click **Edit**  
  **Result:** The New Capability screen or Edit Capability screen appears. Here is an example configuration for the SNST Short-Code capability. |

![New Capability Screen](image)

<table>
<thead>
<tr>
<th>Name</th>
<th>Service</th>
<th>Called Party Number</th>
<th>Default Control Plan</th>
<th>Statistics Category</th>
<th>Statistics Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS Notification</td>
<td>ACS_Notification</td>
<td>NA</td>
<td>NA</td>
<td>SMS</td>
<td>MAP</td>
</tr>
<tr>
<td>BPL</td>
<td>CCS_BPL</td>
<td>NA</td>
<td>NA</td>
<td>Voice</td>
<td>CAP2</td>
</tr>
<tr>
<td>SNST Short-Code</td>
<td>CCS_SM_MO</td>
<td>To be determined. For example: 122</td>
<td>SNST_SMS_KEYWORD_NONCMX</td>
<td>SMS Self Care</td>
<td>MAP</td>
</tr>
<tr>
<td>SMSMO</td>
<td>CCS_SM_MO</td>
<td>NA</td>
<td>SNST_SMS_NONCMX</td>
<td>SMS</td>
<td>MAP</td>
</tr>
</tbody>
</table>

**SNST Capabilities Table A**

This table lists the configuration values for the capabilities you should add if the SNST is the only installed service template.
<table>
<thead>
<tr>
<th>Name</th>
<th>Service</th>
<th>Called Party Number</th>
<th>Default Control Plan</th>
<th>Statistics Category</th>
<th>Statistics Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNST IVR</td>
<td>CCS</td>
<td>To be determined.</td>
<td>SNST_IVR</td>
<td>Voice</td>
<td>CAP2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For example: 5123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNST VOICE CB</td>
<td>SNST_VOICE_C B</td>
<td>NA</td>
<td>SNST_VOICE_C_ALL_BACK</td>
<td>Voice</td>
<td>CAP2</td>
</tr>
<tr>
<td>VOICE MO</td>
<td>CCS</td>
<td>NA</td>
<td>SNST_VOICE_NONCMX</td>
<td>Voice</td>
<td>CAP2</td>
</tr>
</tbody>
</table>

**SNST Capabilities Table B**

This table lists the configuration values for the capabilities you should add or update if the SNST is installed in addition to the PCST.

<table>
<thead>
<tr>
<th>Name</th>
<th>Service</th>
<th>Called Party Number</th>
<th>Default Control Plan</th>
<th>Statistics Category</th>
<th>Statistics Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNST Short-Code</td>
<td>CCS_SM_MO</td>
<td>To be determined.</td>
<td>SNST_SMS_KEY</td>
<td>SMS Self Care</td>
<td>MAP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For example: 122</td>
<td>WORD_NONCMX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMSMO</td>
<td>CCS_SM_MO</td>
<td>NA</td>
<td>SNST_SMS_NONCMX</td>
<td>SMS</td>
<td>MAP</td>
</tr>
<tr>
<td>SNST IVR</td>
<td>CCS</td>
<td>To be determined.</td>
<td>SNST_IVR</td>
<td>Voice</td>
<td>CAP2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For example: 5124</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNST VOICE CB</td>
<td>SNST_VOICE_C B</td>
<td>NA</td>
<td>SNST_VOICE_C_ALL_BACK</td>
<td>Voice</td>
<td>ISUP</td>
</tr>
<tr>
<td>HPLMN MO</td>
<td>CCS</td>
<td>NA</td>
<td>SNST_VOICE_NONCMX</td>
<td>Voice</td>
<td>CAP2</td>
</tr>
</tbody>
</table>

**Configuring Control Plans for the SNST Product Type**

Configure the control plans for the SNST product type to assign a CCS capability to each control plan. This will ensure the correct control plan is invoked for each service defined in the SNST product type.

Follow these steps to configure the control plans for the SNST product type.

**Note:** For more information on configuring product types, see *CCS User's Guide*.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the NCC Service Management System screen, select <strong>Services&gt; Prepaid Charging &gt; Subscriber Management</strong>.</td>
</tr>
<tr>
<td></td>
<td><strong>Result:</strong> The Subscriber Management screen appears.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> For information on accessing the NCC Service Management System screen, see <em>Opening SMS</em> (see &quot;Opening SMS using Webstart&quot; on page 76).</td>
</tr>
<tr>
<td>2</td>
<td>Select the <strong>OCNCCtemplate</strong> from the <strong>Service Provider</strong> drop down list at the top of the Service Management screen.</td>
</tr>
<tr>
<td>Step</td>
<td>Action</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| 3    | Select the **Product Type** tab.  
      **Result:** The list of available product types that appears on the tab will include the SNST product type. This product type is configured automatically when you install SNST. |
| 4    | Select the **SNST** product type record and click **Edit**.  
      **Result:** The Edit Product Type screen for the SNST product type appears. |
| 5    | Select **Control Plans** from the list of options on the left hand side of the Edit Product Type screen. |
| 6    | Set the default tariff plan to **SNST_VOICE_MO** by selecting **SNST_VOICE_MO** from the **Default Tariff Plan** drop down list. |
| 7    | For each control plan listed in the **SNST control plans table** (on page 102), add the control plan configuration to the SNST product type.  
      To add the configuration for a control plan:  
      - Click **New**.  
      - Fill in the fields in the New Control Plan screen using the values from the **SNST control plans table** (on page 102).  
      - Click **Apply**.  
      Here is an example control plan configuration in the New Control Plan screen. |
| 8    | When you have completed the SNST control plan configuration, save the product type.  
      On the Edit Product Type screen, click **Save**. |

**SNST Control Plans Table**

This table lists the CCS capabilities and associated control plans for the SNST product type.

<table>
<thead>
<tr>
<th>CCS Capability</th>
<th>Control Plan</th>
<th>Tariff Plan Override</th>
<th>Override Tariff Plan With</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS_Notification</td>
<td>ACS_Notification</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SNST.Short-Code</td>
<td>SNST_SMS_KEYWORd</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SMSMO</td>
<td>SNST_SMS</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SNST_IVR</td>
<td>SNST_IVR</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
SNST DAP ASP Configuration

Introduction

The Data Access Pack (DAP) provides the capability to send requests to external ASPs and optionally receive responses for further processing by the IN platform.

If you installed the Social Networking Service Template (SNST), then you should configure the DAP ASP for SNST. You configure the DAP ASP to set the destination URL to the PI port on the SMS that uses the SOAP protocol. This is an internal DAP-PI connection used by the SNST.

For more information on DAP, see DAP User's & Technical Guide and DAP User's Guide.

Note: Because the Prepaid Charging Service Template (PCST) does not use DAP, you do not need to configure the DAP ASP for PCST.

Configuring DAP ASP for SNST

Follow these steps to configure the Destination URL for the DAP ASP for SNST.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1 | From the Service Management System UI, select Services > DAP > Resources.  
Result: The DAP Resources screen appears. |
| 2 | Select the ASP tab.  
Result: The list of available ASPs appears on the tab, including an ASP named SMS_PI_SOAP. |
| 3 | Select the SMS_PI_SOAP ASP and click Edit.  
Result: The ASP Configuration screen for the SMS_PI_SOAP ASP appears. |
| 4 | In the Destination URL field, configure the URL for SMS. Before you configure the URL, the contents of this field will look similar to this:  
http://sms:3001/  
Where sms is the hostname of the SMS. The SLCs should resolve this address from their /etc/hosts file.  
Configure the destination URL by replacing sms with the host name or the IP address of the SMS node. For example:  
http://192.168.1.1:3001/  
Note: You must terminate the value of the Destination URL with the "/" character. |
| 5 | Click Save. |
Chapter 8

Configuration Files on the SMS

About SMS Configuration Files

Some configuration for the NCC software components is set in the following configuration files on the SMS node:

- `eserv.config`
- `acs.conf`

You should review the configuration in these files. For details, see Checking `eserv.config` file parameters (on page 127).

`eserv.config` Configuration File

The `eserv.config` file is a shared configuration file, from which most NCC applications read their configuration. Each NCC node (SMS, VWS, and SLC) has its own version of the configuration file, containing configuration relevant to that machine. The configuration file contains many different parts or sections, each application reads the parts of the `eserv.config` file that contains data relevant to it. It is located in the `/IN/service_packages/` directory.

The `eserv.config` file format allows hierarchical groupings, and most applications make use of this to divide up the options into logical groupings.

Example `eserv.config` Parameter Section

This example shows CCS wallet handler configuration in `eserv.config`.

```
CCS = {
    reservationHandler = {
        reservationLengthTolerance = 60  # in milliseconds
        summariseWalletTolerance = 60000
    }
}
```

To identify a particular configuration item in the file, use notation such as this:

`CCS.reservationHandler.summariseWalletTolerance`

`acs.conf` Configuration File

The `acs.conf` configuration file contains configuration specific to the ACS application. It is located in the `/IN/service_packages/ACS/etc/` directory.

SNST Configuration Files on the SMS

When you install the Social Networking Service Template (SNST), the Installation Manager copies the existing configuration files on the SMS:

- `eserv.config` is copied to `eserv.config.SNST` located in the `/IN/service_packages` directory.
- `acs.conf` is copied to `acs.conf.SNST` located in the `/IN/service_packages/ACS/etc` directory.

Installation Manager then applies the new configuration for the SNST to the copies of the configuration files. You should review the modifications to these files. For example, you can view the differences between `eserv.config` and `eserv.config.SNST` by entering the following command:

```
diff eserv.config eserv.config.SNST
```

If you are happy with the changes then you should rename `eserv.config.SNST` to `eserv.config`, and `acs.conf.SNST` to `acs.conf`. Otherwise:

- Note the differences introduced by the SNST configuration.
Chapter 8

- Back up the existing configuration files.
- Manually apply the SNST configuration to the existing configuration files.

For details of additional configuration that must be set, see Checking eserv.config file parameters (on page 127).

Checking Configuration File Parameters

This table lists the configuration parameters that you should review in eserv.config and acs.conf.

To make changes, log in as the user root and edit the relevant configuration file.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>File name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS.ccsProfileDaemon.triggering.osd_scps</td>
<td>Set to a comma separated list of the IP:port combinations for all OSD interfaces on the SLC nodes that will be used for sending notification SMS messages. (Use the source IP address). Example: osd_scps=[&quot;10.1.0.10:2222&quot;,&quot;10.1.0.20.2222&quot;]</td>
<td>eserv.config</td>
</tr>
<tr>
<td>CCS.ccsCDRLoader.AcctHistPlugin.acsCustomerIdData.acsCustomerId</td>
<td>Change the parameter value to the ID of the 'OCNCCtemplate' ACS Customer. To determine the ACS Customer ID enter the following SQL command: select id from acs_customer where name = 'OCNCCtemplate'.</td>
<td>eserv.config</td>
</tr>
<tr>
<td>triggering.scps</td>
<td>Defined in the triggering section for the smsTrigDaemon process. This sets the SLC that will receive BPL execution requests from the SMS. Set to a comma separated list of the IP:port combinations for the SLCs. Set port to 3072, and use the internal IP address, if configured. Example: scps=[&quot;10.1.0.10:3072&quot;,&quot;10.1.0.20.3072&quot;]</td>
<td>eserv.config</td>
</tr>
<tr>
<td>acsStatisticsDBInserter.MasterServerLocation</td>
<td>Set to an IP address or hostname for the SLC running the acsStatsMaster. Normally set to the first SLC node. You should use the default setting: &quot;acsStatsMaster&quot;. The hostname must resolve to the correct SLC IP address using the /etc/hosts file. See Setting IP addresses and hostnames (on page 67). Example: MasterServerLocation acsStatsMaster</td>
<td>acs.conf</td>
</tr>
</tbody>
</table>

VWS Node Configuration

Introduction

The configuration tasks in this section define the minimum configuration for the VWS node. They are:

- Configure replication IDs. See Configure Replication IDs (on page 106).
- Replicate data to the VWS domains. See Replicating Data to the VWS (on page 106).
• Check configuration in eserv.config. See Checking eserv.config (on page 108).
• Reread configuration for the initab processes. See Rereading Configuration for initab Processes (on page 109).

You should perform the tasks in this section if you installed:

• NCC software and Prepaid Charging Service Template (PCST)
• NCC software and Social Networking Service Template (SNST)
• NCC software, PCST, and SNST

Note: If you installed only the SNST on an existing NCC platform, then you do not need to perform these tasks.

After completing these configuration tasks you must:

• Generate MFiles. See MFile Generation (on page 110)
• Start the SLEE. See Starting the SLEE (on page 112)

**Configure Replication IDs**

This table lists the files containing replication ID configuration. The nodeid parameter must be set to the correct value for each node.

To fill in replication node information correctly, refer to the table you created during Replication Planning (on page 9).

Log in to the VWS nodes (both primary and secondary) as root to edit these files and set the nodeid parameter.

<table>
<thead>
<tr>
<th>Replication ID</th>
<th>Configured in file</th>
<th>Parameter name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replication Node ID</td>
<td>/IN/service_packages/CCS/bin/updateLoaderWrapperStartup.sh</td>
<td>-nodeid</td>
</tr>
<tr>
<td>UpdateRequester ID (Alarms)</td>
<td>/IN/service_packages/SMS/bin/smsAlarmDaemonStartup.sh</td>
<td>-r</td>
</tr>
<tr>
<td>UpdateRequester ID (AVD)</td>
<td>/IN/service_packages/CCS/bin/ccsBeAvdStartup.sh</td>
<td>-r</td>
</tr>
<tr>
<td>UpdateRequester ID (Stats)</td>
<td>/IN/service_packages/SMS/bin/smsStatsDaemonStartup.sh</td>
<td>-r</td>
</tr>
<tr>
<td>UpdateRequester ID</td>
<td>/IN/service_packages/SLEE/bin/replicationIF.sh</td>
<td>-r</td>
</tr>
</tbody>
</table>

**Replicating Data to the VWS**

Follow these steps to enable replication between the SMS and VWS, and to perform initial synchronization of the data.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In the Service Management SystemUI, select Operator Functions &gt; Node Management.</td>
</tr>
<tr>
<td></td>
<td>Result: You see the All Nodes tab on the Node Management screen.</td>
</tr>
</tbody>
</table>
3. Select the Table Replication tab.

4. Click Create Config File.

5. Click OK.
Chapter 8

Step Action

6 On the VWS nodes, open a shell session and review the output in the `updateLoader` log file. This file is located at `/IN/service_packages/CCS/tmp/`.

Example command

```
tail -20f /IN/service_packages/CCS/tmp/updateLoaderWrapper.log
```

Example output

```
Node 351 sms comparison / resync client ready.
Sep 29 15:09:36.750197 updateLoader (4369) NOTICE: Update Loader replication process started (node 351)
Canceling any current client action.
Sep 29 15:09:36.753543 updateLoader (4369) NOTICE: Reached master node 1 at '192.168.44.40'
RES: Wed Sep 29 15:09:39 2010: Node 351, resynchronization pass 1, started processing of 781 SMS and 0 SCP records.
Sep 29 15:09:39.282806 smsCompareResyncClient (4383) NOTICE: Beginning resynchronisation for node 351.
RES: Wed Sep 29 15:09:39 2010: Node 351, resynchronization pass 1, finished processing 781 of 781 SMS and 0 of 0 SCP records.
```

Checking eserv.config

This table lists the configuration parameters that you should review in `eserv.config` on the VWS node. It is located at `/IN/service_packages/`. For more information, see `eserv.config` configuration file (on page 104).

Refer to VWS Technical Guide for details about `eserv.config` on the VWS.

To make changes, log in as the user root and edit the `eserv.config` file.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| `cmnPushFiles = ["-h", "host"]` | Set this parameter to an IP address or hostname of the SMS that will be used by the VWS to transfer files, such as CDRs, to the SMS. You should set this parameter in the following sections of `eserv.config`:  
  - `CCS.ccsVWARSExpiry`  
  - `CCS.ExpiryMessages`  
  - `CCS.notificationPlugin`  
  - `BE.cmnPushFiles`  
  
  **Note:** You should use the default host "usms.CdrPush", and ensure that this hostname resolves to the correct SMS IP address through the `/etc/hosts` file. See Setting IP addresses and hostnames (on page 67). |

| BE.serverId         | Set this parameter to the ID of the domain to which this VWS belongs. To determine the domain IDs, log on to the SMS as the user smf_oper, and enter the following SQL query:  
  `sqlplus /`  
  `SQL> select domain_id, name from ccs_domain;`  
  
  **DOMAIN_ID** **NAME**  
  ---------  
  1  **TESTVWS** |
### SLEEE.cfg Configuration

The SLEEE.cfg file is located on both primary and secondary VWS nodes in the `/IN/service_packages/SLEE/etc/` directory.

It includes the following configuration for the ccsSLEEChangeDaemon interface:

```bash
INTERFACE=ccsSLEEChangeDaemon ccsSLEEChangeD.sh /IN/service_packages/CCS/bin 1 EVENT
```

The ccsSLEEChangeDaemon should run on the primary VWS node only. Edit SLEEE.cfg on the secondary VWS to ensure that the SLEE does not try to run this interface from the secondary VWS. You should comment out the following line:

```bash
# INTERFACE=ccsSLEEChangeDaemon ccsSLEEChangeD.sh /IN/service_packages/CCS/bin 1 EVENT
```

**Note:** Attempts by the SLEE to run ccsSLEEChangeDaemon from the secondary VWS node will result in recurring alarms being generated.

### Rereading Configuration for inittab Processes

Follow these steps to force the system to reread the configuration for inittab processes on the VWS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in to the VWS as the user <code>root</code>.</td>
</tr>
<tr>
<td>2</td>
<td>Cycle between inittab run level 2 and run level 3. Set the inittab run level to 2 by entering the following command: <code>init 2</code></td>
</tr>
<tr>
<td>3</td>
<td>Check the run level by entering: <code>who -r</code></td>
</tr>
<tr>
<td></td>
<td><strong>Example output</strong></td>
</tr>
<tr>
<td></td>
<td><code>run-level 2 Jan 13 10:46 2 0 3</code></td>
</tr>
<tr>
<td>4</td>
<td>Set the inittab run level to 3 by entering: <code>init 3</code></td>
</tr>
</tbody>
</table>
Step 5

Check the run level by entering:

```
who -r
```

Example output

```
run-level 3 Jan 13 10:46 3 1 2
```

**MFile Generation**

**Introduction**

MFiles are files which are generated on the Voucher and Wallet Server (VWS) nodes, and provide a fast lookup for a subset of the data in the E2BE database. MFiles can be generated to provide either CLI-DN rating data or event data.

Following the NCC installation and after any rating change, you must compile new MFiles for each VWS node. You compile MFiles on the MFile Generation tab in the Service Management screen.

*Note:* For more information, see *CCS User's Guide*.

**Accessing the MFile Generation Tab**

Follow these steps to access the MFile Generation tab in the Service Management window.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open the Service Management System main screen if it is not already open. See <em>Opening SMS</em> (see &quot;Opening SMS using Webstart&quot; on page 76) for more information.</td>
</tr>
<tr>
<td>2</td>
<td>Select Services &gt; Prepaid Charging &gt; Service Management and select the MFile Generation tab.</td>
</tr>
</tbody>
</table>
MFile Generation Tab

Here is an example MFile Generation tab.

<table>
<thead>
<tr>
<th>Billing Engine</th>
<th>Requested Date</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2011-01-25 22:31:20</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 01:48:46</td>
<td>Rating</td>
</tr>
<tr>
<td>3</td>
<td>2011-01-25 02:08:26</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 02:15:09</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 03:43:29</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 07:17:45</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 07:17:57</td>
<td>Named Event Catalogue</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 07:19:04</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-25 20:26:27</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-27 02:17:48</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-27 02:55:08</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-27 03:50:45</td>
<td>Named Event Catalogue</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-27 03:52:46</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-27 03:52:46</td>
<td>Named Event Catalogue</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 00:03:46</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 00:12:28</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 00:12:24</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 00:31:26</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 00:33:39</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 01:14:51</td>
<td>Rating</td>
</tr>
<tr>
<td>0</td>
<td>2011-01-28 01:24:39</td>
<td>Rating</td>
</tr>
</tbody>
</table>

MFile Fields

This table describes the function of each field.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain</td>
<td>The Voucher and Wallet Server pair you will send the MFile to. This field is populated by the Domain tab. This field cannot be edited once it is initially saved.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the MFile.</td>
</tr>
<tr>
<td>Request Date</td>
<td>The date the MFile was last requested to run.</td>
</tr>
</tbody>
</table>

Note: This field is only available on the Edit MFile screen.
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Whether the MFile is for:</td>
</tr>
<tr>
<td></td>
<td>• Rating</td>
</tr>
<tr>
<td></td>
<td>• Named event catalogue</td>
</tr>
</tbody>
</table>

## Compiling MFiles

Follow these steps to compile MFiles.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the MFile Generation tab, click <strong>New</strong>. Result: You see the New MFile Configuration screen.</td>
</tr>
<tr>
<td>2</td>
<td>Select the name of the primary Domain from the Domain drop down list.</td>
</tr>
<tr>
<td>3</td>
<td>Select <strong>Rating</strong> from the Type drop down list.</td>
</tr>
<tr>
<td>4</td>
<td>Enter a description such as <strong>Initial install</strong> in the Description field.</td>
</tr>
<tr>
<td>5</td>
<td>Click <strong>Save</strong>. Result: The ccsMFileCompiler on the VWSs within the chosen domain will build up a new MFile and notify the VWS processes.</td>
</tr>
<tr>
<td>6</td>
<td>Repeat these steps to create MFiles for <strong>Type</strong> Named Event Catalogue.</td>
</tr>
<tr>
<td>7</td>
<td>Repeat these steps to create the MFiles for any other configured VWS domain.</td>
</tr>
</tbody>
</table>

## Starting the SLEE

### Starting the SLEE on the VWS

All critical application processes on the VWS node run in the SLEE.

To manually start the SLEE on the VWS node, log on as the user `ebe_oper` and enter the following command:

```
/usr/local/bin/slee-ctrl start
```

To restart the SLEE, enter the following command as the user `root`:

```
/usr/local/bin/slee-ctrl restart
```
SLC Node Configuration

Configure Replication IDs

This table lists the files containing replication ID configuration. The nodeid parameter must be set to the correct value for each node.

Log in as the user root and set the nodeid parameter in these files.

<table>
<thead>
<tr>
<th>Replication ID</th>
<th>Configured in file</th>
<th>Parameter name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replication Node ID</td>
<td>/IN/service_packages/SMS/bin/ updateLoaderStartup.sh</td>
<td>-nodeid</td>
</tr>
<tr>
<td>UpdateRequester ID (Alarms)</td>
<td>/IN/service_packages/SMS/bin/ smsAlarmDaemonScpStartup.sh</td>
<td>-r</td>
</tr>
<tr>
<td>UpdateRequester ID (Stats)</td>
<td>/IN/service_packages/SMS/bin/ smsStatsDaemonStartup.sh</td>
<td>-r</td>
</tr>
<tr>
<td>UpdateRequest ID</td>
<td>/IN/service_packages/SLEE/bin/ replicationIF.sh</td>
<td>-r</td>
</tr>
</tbody>
</table>

Checking acs.conf on the SLC

This table lists the configuration parameters that you should review in acs.conf on the SLC node. The acs.conf file is located in the /IN/service_packages/ACS/etc/ directory.

To edit the acs.conf file you must be logged in as the user root.

For more information on acs.conf, see acs.conf configuration file (on page 104).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>acsStatsMaster masterStatsServer acsStatsLocal masterStatsServer</td>
<td>Set both parameters to an IP address or hostname of the SLC running the acsStatsMaster, normally the primary SLC node. See Setting IP addresses and hostnames (on page 67). Note: You should use the default setting of acsStatsMaster and ensure that this hostname resolves to the correct SLC IP address in the /etc/hosts file.</td>
</tr>
</tbody>
</table>

SNST acs.conf Configuration on the SLC

When you install the Social Networking Service Template (SNST), the Installation Manager copies the existing acs.conf file on the SLC to the /IN/service_packages/ACS/etc/acs.conf.SNST location.

Installation Manager then applies the new configuration for the SNST to the copied configuration file, acs.conf.SNST. You should review the modifications to this file. For example, you can view the differences between acs.conf and acs.conf.SNST by entering the following command:

diff acs.conf acs.conf.SNST

If you are happy with the changes then you should rename acs.conf.SNST to acs.conf. Otherwise:

- Note the differences introduced by the SNST configuration.
- Back up the existing configuration file.
- Manually apply the SNST configuration to the configuration in acs.conf.

For details of additional configuration that must be set, see Checking acs.conf on the SLC (on page 113).
Messaging Manager Configuration

Introduction

The Messaging Manager (MM) application handles receiving, routing, and sending SMS messages through a variety of protocols. This section explains how to implement a basic initial configuration of MM to enable:

- Inbound SMS messages to be received through EMI, SMPP or MAP (MO_FwdSM).
- All inbound SMS messages to trigger the prepaid charging services to charge the sender.
- SMS messages to be routed using FDA (First Delivery Attempt). The FDA will be attempted using MAP. If this fails, then the SMS will be submitted to the SMSC using the MAP, SMPP or EMI protocol.

For more information on configuring MM, see MM User's Guide and MM Technical Guide.

You should configure MM if you installed:

- NCC software and Prepaid Charging Service Template (PCST).
- NCC software and Social Networking Service Template (SNST).
- NCC software, PCST, and SNST.

Note: If you installed only the SNST on an existing NCC platform, then you do not need to perform these tasks.

Accessing the Messaging Manager Configuration Screen

Follow these steps to open the Messaging Manager Configuration screen.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Service Management System main menu, select the Services menu.</td>
</tr>
<tr>
<td>2</td>
<td>Select Messaging Manager, then Configuration.</td>
</tr>
</tbody>
</table>

Result: You see the Messaging Manager Configuration screen.
Viewing the Nodes

Follow these steps to view the MM nodes.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Select the **Nodes** tab on the Messaging Manager Configuration screen.  
**Result:** You see the MM nodes listed on the tab. |

### Messaging Manager Scheme Configuration

#### Introduction

The **Schemes** tab in the Messaging Manager Configuration screen allows you to manage all the routing definitions for the Messaging Manager configuration.

A scheme is a set of rules that define how to treat and route messages.

You specify rules for multiple protocols to define:

- Paths to use
- Connections to use
- Billing domain to use
- Filtering to use
- Actions to take

#### PrepaidPack and SNST Schemes

The MM PrepaidPack scheme is automatically created when you install the Prepaid Charging Service Template (PCST). The MM SNST scheme is automatically created when you install the Social Networking Service Template (SNST). If you installed both templates, then both schemes will be created. You should use the SNST scheme for both templates if both schemes have been created.
You will need to perform some additional configuration for these schemes. The additional configuration tasks are described in this section.

**Opening the Scheme**

Follow these steps to open the template scheme that you want to configure.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Schemes</strong> tab in the Messaging Manager Configuration screen.</td>
</tr>
</tbody>
</table>
| 2    | In the table on the **Schemes** tab, select the scheme record to open. Select one of these schemes:  
  * PrepaidPack  
  * SNST  |
| 3    | Open the record, by performing one of the following actions:  
  * Double-click on the record in the table  
  * Click **Open**.  |

**Result:** You see the Messaging Manager Scheme screen for the selected scheme record.

---

**Scheme Tabs**

The Scheme screen enables you to configure the scheme details.

This table describes the tabs on the screen and tells you whether any configuration is required.

<table>
<thead>
<tr>
<th>Tab</th>
<th>Description</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapters</td>
<td>Defines the adapters which route traffic to and from this scheme. Entries in the <code>eserv.config</code> file identify which adapters will be loaded by Messaging Manager at startup. The link between <code>eserv.config</code> and the adapter</td>
<td>No changes required.</td>
</tr>
</tbody>
</table>
Chapter 8

NCC Installation Manager Post Installation Tasks

### Table

<table>
<thead>
<tr>
<th>Tab</th>
<th>Description</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interfaces</td>
<td>Defines the interfaces which are available to this scheme.</td>
<td>No changes required.</td>
</tr>
<tr>
<td>Paths</td>
<td>Defines the paths available to this scheme.</td>
<td>See Paths Configuration (on page 117).</td>
</tr>
<tr>
<td>Screening</td>
<td>Defines the anti-spam rules for the Scheme.</td>
<td>Screening is not used in this configuration.</td>
</tr>
<tr>
<td>Addressing</td>
<td>Defines the addressing rules for the scheme.</td>
<td>Addressing has been pre-configured so that all inbound SMS messages are assigned a domain named &quot;SMSMO&quot;, while all internally generated SMS messages are assigned a domain named &quot;Notification SMS&quot;.</td>
</tr>
<tr>
<td>Throttling</td>
<td>Reports summary of all the domain throttling values.</td>
<td>Throttling is not used in this configuration.</td>
</tr>
<tr>
<td>Triggering</td>
<td>Defines the triggering rules for the scheme.</td>
<td>See Configuring Triggering Rules (on page 118).</td>
</tr>
<tr>
<td>Routing</td>
<td>Defines the routing rules for the scheme.</td>
<td>See Configuring Routing Rules (on page 119).</td>
</tr>
</tbody>
</table>

### Paths Configuration

A number of paths have been pre-configured for the service template schemes. This table lists the possible configuration for each path.

<table>
<thead>
<tr>
<th>Path</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>To SMSC using EMI</td>
<td>For sending SMS messages to an SMSC using the EMI protocol.</td>
</tr>
<tr>
<td></td>
<td>If you do not require this scenario:</td>
</tr>
<tr>
<td></td>
<td>• Select the path and click <strong>Edit</strong></td>
</tr>
<tr>
<td></td>
<td>• Deselect the <strong>Enabled</strong> check box</td>
</tr>
<tr>
<td></td>
<td>• Click <strong>Save</strong></td>
</tr>
<tr>
<td></td>
<td>If you do require this scenario:</td>
</tr>
<tr>
<td></td>
<td>• Select the path</td>
</tr>
<tr>
<td></td>
<td>• In the Connection panel, select the connection labeled &quot;To SMSC using EMI&quot;</td>
</tr>
<tr>
<td></td>
<td>• In the Connection panel, click <strong>Edit</strong></td>
</tr>
<tr>
<td></td>
<td>• In the <strong>Remote Listen</strong> field, configure the SMSC TCP/IP address and port</td>
</tr>
<tr>
<td></td>
<td>Messaging Manager will use to connect to the SMSC</td>
</tr>
<tr>
<td></td>
<td>• In the <strong>Remote username</strong> and <strong>Remote password</strong> fields configure the username and password MM will use to log into the SMSC.</td>
</tr>
<tr>
<td></td>
<td>• Click <strong>Save</strong></td>
</tr>
<tr>
<td>Path</td>
<td>Configuration</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>To SMSC using SMPP</td>
<td>For sending SMSs to an SMSC using the SMPP protocol.</td>
</tr>
<tr>
<td></td>
<td>If you do not require this scenario:</td>
</tr>
<tr>
<td></td>
<td>• Select the path and click <strong>Edit</strong></td>
</tr>
<tr>
<td></td>
<td>• Deselect the <strong>Enabled</strong> check box</td>
</tr>
<tr>
<td></td>
<td>• Click <strong>Save</strong></td>
</tr>
<tr>
<td></td>
<td>If you do require this scenario:</td>
</tr>
<tr>
<td></td>
<td>• Select the path</td>
</tr>
<tr>
<td></td>
<td>• In the Connection panel, select the connection labeled “To SMSC using SMPP”</td>
</tr>
<tr>
<td></td>
<td>• In the <strong>Remote Listen</strong> field, configure the SMSC TCP/IP address and port</td>
</tr>
<tr>
<td></td>
<td>• In the <strong>Remote username</strong> and <strong>Remote password</strong> fields configure the</td>
</tr>
<tr>
<td></td>
<td>• username and password MM will use to log into the SMSC.</td>
</tr>
<tr>
<td></td>
<td>• Click <strong>Save</strong></td>
</tr>
<tr>
<td>Internal_DR INTERNAL_SME</td>
<td>These paths are used internally between MM and other NCC components. No</td>
</tr>
<tr>
<td></td>
<td>configuration is required.</td>
</tr>
<tr>
<td>To SMSC using MAP</td>
<td>For sending SMS messages to an SMSC using the MAP protocol.</td>
</tr>
<tr>
<td></td>
<td>If you do not require this scenario:</td>
</tr>
<tr>
<td></td>
<td>• Select the path and click <strong>Edit</strong></td>
</tr>
<tr>
<td></td>
<td>• Deselect the <strong>Enabled</strong> check box</td>
</tr>
<tr>
<td></td>
<td>• Click <strong>Save</strong></td>
</tr>
<tr>
<td></td>
<td>If you do require this scenario:</td>
</tr>
<tr>
<td></td>
<td>• Select the path</td>
</tr>
<tr>
<td></td>
<td>• In the Connection panel, select the connection labeled “SMSC”</td>
</tr>
<tr>
<td></td>
<td>• You can configure the SSN and PC or GT values of the SMSC in the</td>
</tr>
<tr>
<td></td>
<td>• corresponding fields. MM will set these values in outgoing MAP</td>
</tr>
<tr>
<td></td>
<td>• messages to reach this SMSC.</td>
</tr>
<tr>
<td></td>
<td>• Click <strong>Save</strong></td>
</tr>
</tbody>
</table>

**Configuring Triggering Rules**

Triggering for all inbound SMS messages has been pre-configured to trigger the template service. In general, all other internally generated SMS messages will be routed to their destination. However, if you have installed the SNST, then the click2SMS service uses the following triggering rules:

- Internally generated SMS messages that originate from the Click2SMS will trigger the template service.
- SMS messages generated internally by the service will be routed to their destination.

Follow these steps to configure whether or not direct delivery (FDA) is attempted for inbound SMS messages.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Triggering</strong> tab in the Messaging Manager Scheme screen.</td>
</tr>
<tr>
<td>2</td>
<td>From the table on the tab, select the <strong>Submit detection point</strong>.</td>
</tr>
<tr>
<td>3</td>
<td>Select the rule for <strong>Orig.Domain = SMSMO</strong> in the PrepaidPack scheme or any other <strong>Orig.Domain</strong> in the SNST scheme.</td>
</tr>
</tbody>
</table>
Chapter 8

Chapter 8, NCC Installation Manager Post Installation Tasks

### NCC Installation Manager Post Installation Tasks

#### Step 4

**Action**: Click **Edit**.

**Result**: The Edit Trigger Rule screen appears.

![Edit Trigger Rule](image.png)

- **Trigger Selection Criteria**
  - Detection point: **Submit**
  - Originating Domain:
  - Originating Address prefix:

- **Trigger Processing**
  - Perform action: **Route**
  - Release cause:
  - **Set routing class**: **Submit**
  - Trigger a call plan in ACS
  - Use scheduled call plan if present
  - Use this named call plan
  - ACS customer:
  - Call plan:

*Please press ENTER after keying customer or call plan names. This will cause the value entered to be retrieved and validated. You can search in either field by entering partial names.*

*Note that a limit of 100 rows is returned in each list. If you cannot find the item you are looking for, please narrow your search criteria.*

---

5. Select the **Set routing class** check box.

6. Select one of the following options from the **Set routing class** drop down list:
   - **Submit**: if no FDA is required. SMS messages will be sent to the SMSC
   - **FDA**: if FDA is required. MM will first attempt to deliver SMS messages directly before sending them to the SMSC

7. Click **Save**.

---

### Configuring Routing Rules

Routing has been pre-configured so that the SMS messages sent to the SMSC are sent using the MAP path (using the MAP protocol). If required you can change this to route SMS messages using the EMI or SMPP path.
Follow these steps to configure routing for the selected service template using EMI or SMPP.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Routing</strong> tab in the Messaging Manager Scheme screen. Select the <strong>Submit</strong> routing class. <strong>Result:</strong> All rules for the selected routing class are displayed in the table on the tab.</td>
</tr>
<tr>
<td>2</td>
<td>Select a rule in the table.</td>
</tr>
<tr>
<td>3</td>
<td>Click <strong>Edit</strong>. <strong>Result:</strong> The Edit Routing Rule screen applicable to the routing class for the selected record appears.</td>
</tr>
<tr>
<td>4</td>
<td>Remove the path named <strong>To SMSC using MAP</strong> from the rule. In the Path table in the <strong>Paths Sequencing</strong> section of the Edit Routing Rule screen, select the path <strong>To SMSC using MAP</strong> and click <strong>Remove</strong>.</td>
</tr>
</tbody>
</table>
| 5    | From the **Paths sequencing** drop down list, select either the EMI or SMPP path by selecting one of the following paths:  
  - **To SMSC using EMI**  
  - **To SMSC using MAP** |
| 6    | Click **Add**. |
| 7    | Click **Save** to save the routing rule to the configuration database. |
| 8    | Repeat these steps for each rule. |
| 9    | Click **Close** to close the scheme. |

**MM SMSC Configuration and Node Mapping**

**Introduction**

To complete Messaging Manager (MM) configuration for the Prepaid Charging Service Template (PCST) and Social Networking Service Template (SNST), you should:

- Configure the default SMSC
- Map the Messaging Manager nodes to the PrepaidPack or SNST scheme

If the SNST is installed, then you should also update the `outgoingOriginatingNumberRules` parameter for every adapter defined in the `eserv.config` file.

**Configuring Default SMSC**

Follow these steps to configure the default SMSC.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>SMSCs</strong> tab in the Messaging Manager Configuration screen. <strong>Result:</strong> You see the available SMSCs listed on the tab.</td>
</tr>
</tbody>
</table>
### Mapping Nodes to Service Template Schemes

Follow these steps to map MM nodes to the required service template scheme.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Select the <strong>Nodes</strong> tab in the Messaging Manager Configuration screen. <strong>Result:</strong> You see the available MM nodes listed on the tab. For an example screen, see <em>Viewing the Nodes</em> (on page 115).</td>
</tr>
<tr>
<td>2</td>
<td>Select the first node in the table and click <strong>Edit</strong>.</td>
</tr>
<tr>
<td>3</td>
<td>In the Edit Node <code>&lt;node name&gt;</code> screen, select the service template <strong>Routing Scheme</strong>.</td>
</tr>
<tr>
<td>4</td>
<td>In the table, select the IP address for the NIC_A interface. This will be the IP address this SLC will use for EMI and SMPP connections. Click <strong>Save</strong>.</td>
</tr>
<tr>
<td>5</td>
<td>Repeat these steps for each MM node.</td>
</tr>
</tbody>
</table>
Replicating Data to the SLC

Follow these steps to enable replication between the SMS and SLC and perform initial synchronization of the data.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Open the Service Management System screen.  
**Note:** If the SMS UI is already running from previous tasks, close the running instance first and then start a new instance.  
To start a new instance, select **Logout & Exit** from the **File** menu in the Service Management System screen. |
| 2    | Select **Operator Functions > Node Management** in the Service Management System screen.  
**Result:** You see the **All Nodes** tab on the Node Management screen. |
Step | Action
--- | ---
3 | Select the Table Replication tab.

4 | Click Create Config File.  
   **Note:** If you have already created a replication configuration file as part of another task and you have not changed the replication configuration, then you do not need to recreate the replication configuration file.

5 | Click OK.

6 | On the SLC node, open a shell session and review the output in the *updateLoader.log* file. This file is located at `/IN/service_packages/SMS/tmp/updateLoader.log`.

**Example output**
```bash
# tail -20f /IN/service_packages/SMS/tmp/updateLoader.log

RES: Wed Sep 29 15:09:39 2010: Node 301, resynchronization pass 1, finished processing 0 SMS and 0 SCP records.
RES: Wed Sep 29 15:09:39.803041smsCompareResyncClient (1052) NOTICE: Ending resynchronization for node 301. Resynchronization was successful.
RES: Wed Sep 29 15:09:40 2010: Node 301, finished processing 0 SMS and 0 SCP records, resync completed successfully.
RES: Wed Sep 29 15:09:40.827498 updateLoader (858) NOTICE: Resynchronization Finished. Processing Queued Updates
RES: Wed Sep 29 15:09:40.872190 updateLoader (858) NOTICE: Finished Processing Queued Updates
```
Configuring xmsTrigger.sh on the SLC

You must update the xmsTrigger.sh file to add the Messaging Manager node name configuration for the SLC node.

Follow these steps to update xmsTrigger.sh.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in to the SLC node as the user root.</td>
</tr>
<tr>
<td>2</td>
<td>Edit the xmsTrigger.sh script to add the Messaging Manager node name in the exec line.</td>
</tr>
</tbody>
</table>

SNST eserv.config for MM Adapters

If you installed the SNST, you should configure each Messaging Manager adapter in the eserv.config file on the SLC node for the Click2SMS service.

The following table lists the configuration parameters that you should review in .eserv.config on the SLC node. It is located at /IN/service_packages/eserv.config.

To update the configuration, log in to the SLC node as the user root and edit the eserv.config file. If you have not renamed the eserv.config.SNST file to eserv.config yet, then update the eserv.config.SNST file instead.

For more information on eserv.config, see eserv.config configuration file (on page 104).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| XMS.xmsTrigger.adapters.outgoingOriginatingNumberRules | For every adapter, except the Wrapper adapter, add in the outgoingOriginatingNumberRules parameter. 
Example configuration 
outgoingOriginatingNumberRules = [ 
  { fromNoa=5, prefix="A", min=4, max=32, remove=1, prepend="", resultNoa=1 } ] |

SCTP Configuration

Introduction

The NCC SIGTRAN software uses the native Solaris SCTP stack for transport. You should review the default and suggested values for the SCTP parameters and adapt these to suit your network environment.

SCTP Parameters

This table describes the most important SCTP parameters and provides a suggested value for use with SIGTRAN networking environments.

Note: These are suggested values only. Optimal values will depend on local network conditions and desired behavior. For more information, including default values and value ranges, see Oracle Solaris Tunable Parameters Reference Manual.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Suggested Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>sctp_xmit_hiwat</td>
<td>Sets the default send window size in bytes</td>
<td>1048576</td>
</tr>
<tr>
<td>sctp_recv_hiwat</td>
<td>Controls the default receive window size in bytes</td>
<td>256000</td>
</tr>
</tbody>
</table>
### Parameter Description Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Suggested Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>sctp_rto_min</td>
<td>Sets the lower boundary in milliseconds for the retransmission timeout (RTO) for all the destination addresses of the peer.</td>
<td>500</td>
</tr>
<tr>
<td>sctp_rto_max</td>
<td>Controls the upper bound in milliseconds for the retransmission timeout (RTO) for all the destination addresses of the peer.</td>
<td>5000</td>
</tr>
<tr>
<td>sctp_rto_initial</td>
<td>Controls the initial retransmission timeout (RTO) in milliseconds for all the destination addresses of the peer.</td>
<td>1000</td>
</tr>
<tr>
<td>sctp_pp_max</td>
<td>Controls the maximum number of retransmissions over a specific path. When this number is exceeded for a path, the path (destination) is considered unreachable.</td>
<td>4</td>
</tr>
<tr>
<td>sctp_pa_max</td>
<td>Controls the maximum number of retransmissions (over all paths) for an SCTP association. The SCTP association is aborted when this number is exceeded.</td>
<td>8</td>
</tr>
<tr>
<td>sctp_max_in_streams</td>
<td>Controls the maximum number of inbound streams permitted for an SCTP association.</td>
<td>10</td>
</tr>
<tr>
<td>sctp_initial_out_streams</td>
<td>Controls the maximum number of outbound streams permitted for an SCTP association.</td>
<td>10</td>
</tr>
</tbody>
</table>

### Editing SCTP Parameters

Follow these steps to edit the SCTP parameters and apply the new values automatically on startup.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log in to the SLC as the user root.</td>
</tr>
</tbody>
</table>
| 2    | Set the value for the parameter you want to change using the `ndd -set` command.  
**Example commands**

```plaintext
ndd -set /dev/sctp sctp_xmit_hiwat 1048576  
ndd -set /dev/sctp sctp_recv_hiwat 256000  
ndd -set /dev/sctp sctp_rto_min 500
```
| 3    | To apply these values automatically on startup, the commands should be placed in a script and run from `rc2.d`.  
**Example**

Place the commands in the `/etc/init.d/nettune` file and then enter the following commands:  
  - `chown root:root /etc/init.d/nettune`
  - `chmod 744 /etc/init.d/nettune`
  - `ln -s /etc/init.d/nettune /etc/rc2.d/S99nettune`

### SIGTRAN Configuration

#### Introduction

The NCC SIGTRAN component provides SIGTRAN M3UA and SUA capabilities for sending and receiving traffic. The NCC template configuration defines four default M3UA Sigtran stack instances. These are for:
- Inbound CAMEL traffic
- Inbound INAP traffic
- Inbound USSD traffic
- Inbound and outbound MAP traffic

Each stack is a separate instance of the m3ua_if process, controlled by individual startup scripts and configuration files and started from the SLEE. You will need to edit each startup script to change the settings to match the target sigtran network.

For more information on SIGTRAN, please refer to the SIGTRAN specific user documentation.

**SIGTRAN Startup Scripts and Configuration Files**

This table lists the startup scripts and configuration files for the sigtran SLEE interfaces.

*Note:* All startup scripts are located in the `/IN/service_packages/SLEE/bin` directory on the SLC. All configuration files are located in the `/IN/service_packages/SLEE/etc` directory on the SLC.

<table>
<thead>
<tr>
<th>SLEE Interface</th>
<th>Protocol</th>
<th>Startup Script</th>
<th>Configuration File</th>
</tr>
</thead>
<tbody>
<tr>
<td>m3uaCapIf</td>
<td>CAMEL</td>
<td>m3ua_CAP_if.sh</td>
<td>m3ua_CAP.config</td>
</tr>
<tr>
<td>m3uaInapIf</td>
<td>INAP</td>
<td>m3ua_INAP_if.sh</td>
<td>m3ua_INAP.config</td>
</tr>
<tr>
<td>m3uaUssdIf</td>
<td>USSD</td>
<td>m3ua_USSD_if.sh</td>
<td>m3ua_USSD.config</td>
</tr>
<tr>
<td>m3uaMmxIf</td>
<td>MAP</td>
<td>m3ua_MMX_if.sh</td>
<td>m3ua_MMX.config</td>
</tr>
</tbody>
</table>

**Startup Script Parameters**

The startup scripts are used to configure SCCP (for example, Global Titles, SSNs) and maximum traffic rates.

This table describes the mandatory parameters which must be configured.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>retgt</td>
<td>Sets the default SCCP Origination Global Title Address. The format depends on the GT type:</td>
<td>&quot;4,0,1,4,123456789&quot;</td>
</tr>
<tr>
<td></td>
<td>1 = &quot;1,Noa,Address_Digits&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = &quot;2,Trans_Type,Address_Digits&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 = &quot;3,Trans_Type,Num_Plan,Address_Digits&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 = &quot;4,Trans_Type,Num_Plan,Noa,Address_Digits&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Example</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;4,0,1,4,123456789&quot; - replace 123456789 with the GTA to be used for each SLC/stack</td>
<td></td>
</tr>
<tr>
<td>retni</td>
<td>Sets the National Indicator in a return address.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0 - to set the NI to 0 (ITU).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - to set the NI to 1 (ANSI).</td>
<td></td>
</tr>
<tr>
<td>retpc</td>
<td>Sets the default SCCP Origination Point Code. If 0, then no Point Code is set</td>
<td>0</td>
</tr>
<tr>
<td>retr</td>
<td>Sets the default SCCP Origination Address’s routing indicator.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0 - route on GT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - route on PC</td>
<td></td>
</tr>
</tbody>
</table>
### Configuration File Parameters

The configuration files are used to configure SCTP and M3UA.

This table describes the mandatory configuration file parameters that you should configure.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>opc</td>
<td>Local point-code for this SLC/stack.</td>
<td></td>
</tr>
<tr>
<td>stpPCs</td>
<td>List of the SG-STPs (signaling gateways) to which outbound traffic will be routed.</td>
<td>[1,2]</td>
</tr>
<tr>
<td>remote_host</td>
<td>For each signaling gateway, the primary and secondary SCTP IP address (or hostname) to be used to connect to this SG.</td>
<td>[ &quot;sg1_sig1&quot;, &quot;sg1_sig2&quot; ]</td>
</tr>
<tr>
<td>remote_port</td>
<td>SCTP port on the SG to connect to.</td>
<td>2900</td>
</tr>
<tr>
<td>local_host</td>
<td>For each signaling gateway, the primary and secondary SCTP IP address (or hostname) to be used on the SLC to connect to this SG.</td>
<td>[ &quot;hostname_sig1&quot;, &quot;hostname_sig2&quot; ]</td>
</tr>
<tr>
<td>local_port</td>
<td>SCTP port on the SLC to connect from.</td>
<td></td>
</tr>
</tbody>
</table>

### Configure APE Parameters

On the SLC the following parameters must be replaced with correct values in the /IN/service_packages:

- ./SLEE/bin/m3ua_MAP_if.sh:-retgt "4,0,1,4,$APE_map_gt"
- ./SLEE/bin/m3ua_IS41_if.sh:-retgt "4,0,1,4,$APE_is41_gt"
- ./NP_SERVICE_PACK/etc/mta.cfg: local_gt_digits =$APE_local_gt_digits
- ./NP_SERVICE_PACK/etc/np_components.cfg: InternalDestination:APE_TEST1

### eserv.config Configuration on the SLC

#### Checking eserv.config File Parameters

The eserv.config file on the SLC defines configuration for NCC. It is located at /IN/service_packages/eserv.config.
For more information on `eserv.config`, see `eserv.config` configuration file (on page 104).

If you installed the SNST then the configuration is defined in the `/IN/service_packages/eserv.config.SNST` file on the SLC.

For more information, see SNST `eserv.config` file on the SLC (on page 129).

You should review the configuration parameters listed in the following table in the eserv.config file or the eserv.config.SNST file, if you installed the SNST. You must log in to the SLC as the user root to edit the configuration.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BeClient.clientName</strong></td>
<td>Set to a unique name on each SLC node.</td>
</tr>
<tr>
<td><strong>Example configuration</strong></td>
<td><strong>BeClient</strong> = { <strong>clientName</strong> = &quot;slcX-ccsBeClient&quot; }</td>
</tr>
<tr>
<td><strong>Where</strong>: <strong>x</strong> is a unique number per SLC node.</td>
<td></td>
</tr>
<tr>
<td><strong>CCS.smcbMacroNodes.HomeCountryCode</strong></td>
<td>Set this to the country code of the HPLMN.</td>
</tr>
<tr>
<td><strong>Example configuration</strong></td>
<td><strong>CCS</strong> = { <strong>smcbMacroNodes</strong> = { <strong>HomeCountryCode</strong> = &quot;44&quot; } }</td>
</tr>
<tr>
<td><strong>CCS.ccsMacroNodes.BSAnnBalanceTypes.acsCustomerId</strong></td>
<td>Change the parameter value to the ID of the ‘OCNCCtemplate’ ACS Customer. To determine the ACS Customer ID enter the following SQL command: select id from acs_customer where name = 'OCNCCtemplate'</td>
</tr>
</tbody>
</table>
| **CCS.ccsMacroNodes.BSAnnBalanceTypes.balTypeIds** | Change the parameter value to the ID of the General Cash Balance. To determine the General Cash Balance ID enter the following SQL command: select id from ccs_balance_type where acs_cust_id = **ID** and name = 'General Cash'
| **Where**: **ID** is the ACS Customer ID |                                                                                                                                 |
| **XMS.xmsTrigger.adapters.GT**    | Set these values to the GT and SCA which will be used in inbound MAP messages addressed to this SLC node.                               |
| **XMS.xmsTrigger.adapters.SCA**   | **Example configuration**                                                                                                                  |
|                                   | adapters = [ **GT** = "5114406267" ]                                                                                                    |
|                                   | **SCA** = "5114406267"                                                                                                                      |
| **Note**: Set these parameters in all the adapters sections of xmsTrigger.                                                              |
| **RIMS.MAP.GT**                   | Set these values to the GTA and SCA that will be used in outbound MAP SRI_SM messages sent out by Messaging Manager for the FDA functionality. |
| **RIMS.MAP.SCA**                  |                                                                                                                                 |

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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCP.sriPlugin.gmscAddress</td>
<td>Set these values to the GT that will be set as the originating address in</td>
</tr>
<tr>
<td></td>
<td>outbound SRI and ATI messages used for location based capabilities.</td>
</tr>
<tr>
<td>LCP.atiPlugin.gsmScfAddress</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Example configuration</td>
</tr>
<tr>
<td></td>
<td>LCP = {</td>
</tr>
<tr>
<td></td>
<td>sriPlugin = {</td>
</tr>
<tr>
<td></td>
<td>gmscAddress = &quot;441234567890&quot;</td>
</tr>
<tr>
<td></td>
<td>}</td>
</tr>
<tr>
<td></td>
<td>atiPlugin = {</td>
</tr>
<tr>
<td></td>
<td>gsmScfAddress=441234567890</td>
</tr>
<tr>
<td></td>
<td>}</td>
</tr>
<tr>
<td></td>
<td>}</td>
</tr>
</tbody>
</table>

### SNST eserv.config File on the SLC

When you install the SNST, the Installation Manager copies the existing `eserv.config` file on the SLC to the `/IN/service_packages/eserv.config.SNST` file location.

Installation Manager then applies the new configuration for the SNST to the copy of the configuration file. You should review the modifications to this file. For example, you can view the differences between `eserv.config.SNST` and `eserv.config` by entering the following command:

```bash
diff eserv.config eserv.config.SNST
```

If you are happy with the changes then you should rename `eserv.config.SNST` to `eserv.config`. Otherwise:

- Note the differences introduced by the SNST configuration.
- Back up the existing configuration file.
- Manually apply the SNST configuration to the existing configuration file.

For details of additional configuration that must be set, see [Checking eserv.config file parameters](#) (on page 127).

### Rereading Configuration for inittab Processes

Follow these steps to force the system to reread the configuration for inittab processes on the SLC.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log on to the SLC as the user root.</td>
</tr>
<tr>
<td>2</td>
<td>Cycle between inittab run level 2 and run level 3. Set the inittab run</td>
</tr>
<tr>
<td></td>
<td>level to 2 by entering the following command:</td>
</tr>
<tr>
<td></td>
<td>init 2</td>
</tr>
<tr>
<td>3</td>
<td>Check the run level by entering:</td>
</tr>
<tr>
<td></td>
<td>who -r</td>
</tr>
<tr>
<td></td>
<td>Example output</td>
</tr>
<tr>
<td></td>
<td>run-level 2 Jan 13 10:46 2 0 3</td>
</tr>
<tr>
<td>4</td>
<td>Set the inittab run level to 3 by entering:</td>
</tr>
<tr>
<td></td>
<td>init 3</td>
</tr>
<tr>
<td>5</td>
<td>Check the run level by entering:</td>
</tr>
<tr>
<td></td>
<td>who -r</td>
</tr>
<tr>
<td></td>
<td>Example output</td>
</tr>
<tr>
<td></td>
<td>run-level 3 Jan 13 10:46 3 1 2</td>
</tr>
</tbody>
</table>
Configuring and Starting the SLEE

SLEE Configuration File

The Service Logic Execution Environment (SLEE) is configured in the SLEE.cfg file located in the /IN/service_packages/SLEE/cfg directory.

For information on the SLEE, see SLEE Technical Guide.

SNST SLEE.cfg Configuration on the SLC

When you install the SNST, the Installation Manager copies the existing SLEE.cfg file on the SLC to the /IN/service_packages/SLEE/cfg/SLEE.config.SNST file location.

Installation Manager then applies the new configuration for the SNST to the copied configuration file, SLEE.config.SNST. You should review the modifications to this file. For example, you can view the differences between SLEE.config.SNST and SLEE.cfg by entering the following command:

```
 diff SLEE.cfg SLEE.config.SNST
```

If you are happy with the changes then you should rename SLEE.config.SNST to SLEE.cfg. Otherwise:

- Note the differences introduced by the SNST configuration.
- Back up the existing configuration file.
- Manually apply the SNST configuration to the configuration in SLEE.cfg.

SLEE Commands

All critical application processes on the SLC run in the SLEE.

To manually start the SLEE, log in as the user acs_oper, and enter the command:

```
/usr/local/bin/slee-ctrl start
```

To restart the SLEE, log in as the user root, and enter:

```
/usr/local/bin/slee-ctrl restart
```

To check the status of the SLEE, and see a list of the processes that are running, enter:

```
/usr/local/bin/slee_ctrl status
```
Chapter 9

Installing NCC Manually

Overview

Introduction
This chapter explains how to manually install Oracle Communications Network Charging and Control (NCC).

In this chapter

This chapter contains the following topics.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
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<td>131</td>
</tr>
<tr>
<td>Loading the Distribution File</td>
<td>135</td>
</tr>
<tr>
<td>Installing the SLEE package</td>
<td>136</td>
</tr>
<tr>
<td>Installing Sms Packages on an Unclustered SMS</td>
<td>137</td>
</tr>
<tr>
<td>Installing Sms Packages on a Clustered SMS</td>
<td>139</td>
</tr>
<tr>
<td>Installing Cluster Packages on a SMS</td>
<td>140</td>
</tr>
<tr>
<td>Installing Scp Packages on a SLC</td>
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<tr>
<td>Installing Be Packages on a VWS</td>
<td>146</td>
</tr>
<tr>
<td>Installation Prompts</td>
<td>148</td>
</tr>
</tbody>
</table>

Installation Procedure Overview

Introduction
This topic explains which packages to install on the SMS, SLC and VWS machines to run the NCC system.

Installation Procedure

Follow these steps to install each package.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Add the package using the pkgadd command.</td>
</tr>
<tr>
<td></td>
<td>Example: pkgadd -d 'pwd' smsSms</td>
</tr>
<tr>
<td>2</td>
<td>Complete the post-installation configuration script (this starts automatically when the pkgadd utility finishes adding the package).</td>
</tr>
</tbody>
</table>

During installation and configuration, there are a number of prompts that you must reply to. See Installation Prompts (on page 148) for assistance.

Application Build Sequence

This table lists the order in which to install the Oracle Communications Network Charging and Control applications. The applications should be installed on the SMS first, and then on the SLC and lastly on the VWS.
Note: You must install the first ten packages in the order listed. You can install subsequent packages in any order, except RIMS must be installed before XMS, and UIS before UPC.

Tip: You may find it helpful to install the packages for a particular application on each node before moving on to the next application.

<table>
<thead>
<tr>
<th>Application build sequence No.</th>
<th>SMS package name</th>
<th>SMS cluster package name</th>
<th>SLC package name</th>
<th>VWS package name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>SLEE</td>
<td>SLEE</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>beBe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>smsSms</td>
<td>smsCluster</td>
<td>smsScp</td>
<td>smsExtras</td>
</tr>
<tr>
<td>4</td>
<td>efmSms</td>
<td>efmCluster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>acsSms</td>
<td>acsCluster</td>
<td>acsScp</td>
<td>acsBe</td>
</tr>
<tr>
<td>6</td>
<td>osdSms</td>
<td>osdCluster</td>
<td>osdScp</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>dapSms</td>
<td></td>
<td>dapScp</td>
<td>dapExtras</td>
</tr>
<tr>
<td>8</td>
<td>beSms</td>
<td></td>
<td>beScp</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>ccsSms</td>
<td>ccsCluster</td>
<td>ccsScp</td>
<td>ccsBe</td>
</tr>
<tr>
<td>10</td>
<td>ccsCdrPart</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>ccsDapSms</td>
<td></td>
<td></td>
<td>osaChamBe</td>
</tr>
<tr>
<td>12</td>
<td>smcbSms</td>
<td></td>
<td>smcbScp</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>dcdSms</td>
<td></td>
<td>dcdScp</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>dcaSms</td>
<td></td>
<td>dcaScp</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ecaSms</td>
<td></td>
<td>ecaScp</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>enumSms</td>
<td></td>
<td>enumScp</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>enumPISms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>rcaSms</td>
<td></td>
<td>rcaScp</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>rimsSms</td>
<td></td>
<td>rimsScp</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>xmsSms</td>
<td></td>
<td>xmsScp</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>lcaSms</td>
<td></td>
<td>lcaScp</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>lcpSms</td>
<td></td>
<td>lcpScp</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>npSms</td>
<td></td>
<td>npScp</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>npciSms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>capgwSms</td>
<td></td>
<td>capgwScp</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
<td>xmlTclf</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>cdmaSms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
<td>vpnScp</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>osaChamSms</td>
<td></td>
<td>osaChamScs</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td>xmlTclf</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>roamingSms</td>
<td></td>
<td>roamingScp</td>
<td></td>
</tr>
</tbody>
</table>
Unclustered Install Procedure Overview

This procedure provides an overview of the steps you need to take to install the NCC applications on an unclustered platform. For details, see:

- *Installing Sms Packages on an Unclustered SMS* (on page 137)
- *Installing Scp Packages on a SLC* (on page 144)
- *Installing Be Packages* (see "Installing Be Packages on a VWS" on page 146)

**Note:** You must install the packages in the correct order. See Application Build Sequence for details.

<table>
<thead>
<tr>
<th>Application build sequence No.</th>
<th>SMS package name</th>
<th>SMS cluster package name</th>
<th>SLC package name</th>
<th>VWS package name</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>scaSms</td>
<td></td>
<td>scaScp</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>sesSms</td>
<td>sesCluster</td>
<td>sesScp</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
<td>seiScp</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>sigtranSms</td>
<td></td>
<td>sigtranScp</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>vsspSms</td>
<td></td>
<td>VSSP</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
<td></td>
<td>cdmagw</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
<td></td>
<td>SMSC</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td></td>
<td></td>
<td>tfr</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>uisSms</td>
<td></td>
<td>uisScp</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>upcSms</td>
<td></td>
<td>upcScp</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
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<td></td>
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<td></td>
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<td>44</td>
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<td>45</td>
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<tr>
<td>46</td>
<td></td>
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<td>47</td>
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<td>48</td>
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<td>51</td>
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</tr>
<tr>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step**  **Description**

1. Load the NCC distribution file on to the SMS, SLC and VWS. For more information, see *Loading the Distribution File* (on page 135).
2. Using pkgadd, install all of the following:
   - Sms packages on the SMS
   - Scp packages on the SLC
Chapter 9

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Be packages on the VWS</td>
</tr>
</tbody>
</table>

*Note:* This is an unclustered installation, therefore do not install any of the cluster packages.

During installation and configuration, there are a number of prompts that you must reply to. See *Installation Prompts* (on page 148) for assistance.

**Clustered Install Procedure Overview**

This procedure provides an overview of the steps you need to take to install the NCC applications on a clustered platform. For details, see:

• *[Installing Sms Packages on a Clustered SMS](on page 139)*
• *[Installing Cluster Packages on a SMS](on page 140)*
• *[Installing Scp Packages on a SLC](on page 144)*
• *[Installing Be Packages](on page 146)*

*Note:* You must install the packages in the correct order. See Application Build Sequence for details.

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Load the NCC distribution file on to each SMS, SLC and VWS. Refer to <em>Loading the Distribution File</em> (on page 135) for more information.</td>
</tr>
</tbody>
</table>
| 2    | Use pkgadd to install all the Sms packages on the primary and secondary SMS nodes.  
  *Note:* In most clustered systems you will be able to install packages in a single shared location accessible by both the primary and secondary nodes. |
| 3    | Some packages will require device information and you will be prompted for this information during the installation. |
| 4    | Use pkgadd to install all the cluster packages on each SMS node. |
| 5    | Use pkgadd to install all of the following:  
  • Scp packages on the SLC node  
  • Be packages on the VWS |

During installation and configuration, there are a number of prompts that you must reply to. See *Installation Prompts* (on page 148) for assistance.

**Third-party Charging Domain Install Process overview**

Refer to the relevant technical documentation for information on installing third-party charging domains.

**Information to Note Before Installation**

Collect this information, as you will need it during the installation process:

• Name of all SMS computers and their IP address  
• Names of any SMS computers  
• Names of the important Oracle directories, such as database mount points

**Post Installation**

After installing the packages and completing the configuration scripts, further configuration must be completed before NCC applications can be used. For more information about these steps, see *NCC User's Configuration Guide*. 

134  NCC Installation Guide
Loading the Distribution File

Introduction

Before you can install the application packages, you must load them in an installation directory on the correct platforms. This procedure copies and registers packages from the distribution file on to the system.

You must repeat this procedure on every machine. If your application packages have already been loaded, you do not have to complete this procedure.

Installation Directory

This procedure copies the distribution file into the /tmp directory. The installation procedure assumes that the /tmp directory has been used.

Packages

You must repeat the procedure for each package on the individual platform, as described in the installation procedures in the Installation Procedure Overview (on page 131).

Procedure

Follow these steps to load the distribution file.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged onto the machine as root.</td>
</tr>
</tbody>
</table>
| 2    | Copy the distribution file into the /tmp directory.  
The application's distribution file will be distributed on either CD or from an FTP location. If you do not either have a CD or know the correct FTP location, please contact your Oracle contact.  
The packages are often distributed in one large compressed file (for example, sms.tar.gz). |
| 3    | Check whether the distribution file is compressed (zipped).  
You can usually determine this by the file extension: .gz or .tgz will mean the file is compressed. Occasionally, the file extension will be incorrect, or the file will fail to uncompress or untar. If it is available, you can use the file command to attempt to determine the type of file by checking its contents.  
If the distribution file is:  
- Not compressed, go to Step 4.  
- Compressed, uncompress the file.  
Example commands:  
  - gunzip filename  
  - gzip -d filename  
Where  
  filename is the distribution file  
Result: This uncompresses the distribution file. |
### Installing the SLEE package

#### Introduction

Use the `pkgadd` command to install the SLEE package on any non-SMS platform in a clustered or unclustered installation.

You must install SLEE on the platform before any other NCC package. See Application build sequence for a full list of the NCC application packages.

#### Installing a SLEE Package

Follow these steps to install a SLEE package on a SLC or VWS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the machine as root.</td>
</tr>
<tr>
<td>2</td>
<td>Enter <code>pkgadd SLEE</code></td>
</tr>
</tbody>
</table>

**Result:** This will install the package.

During the installation procedure, there are a number of prompts that you must reply to. See *Installation Prompts* (on page 148) for assistance.

#### Example SLEE Installation

The text below provides an example of the text displayed, prompts and responses, during a SLEE package installation on a SLC.

```bash
pkgadd -d `pwd` SLEE
```

```bash
Processing package instance <SLEE> from </tmp>
```

**SLEE Installation**

**(sun4u) 3.2.0.7**

**Oracle**

```bash
## Processing package information.
## Processing system information.
## Verifying disk space requirements.

## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.

The following files are being installed with setuid and/or setgid permissions:

/IN/service_packages/SLEE/bin/su_remove.sh <setuid root setgid other>

Do you want to install these as setuid/setgid files [y,n,?,q] y
```
Installing NCC Manually

This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of <SLEE> [y,n,?] y

Installing SLEE Installation as <SLEE>

```plaintext
## Executing preinstall script.
## Installing part 1 of 1.
/IN/service_packages/SLEE/bin/alarmIF
/IN/service_packages/SLEE/bin/cdrIF
/IN/service_packages/SLEE/bin/check

list of files truncated...

/IN/service_packages/SLEE/lib/libStatusEvent.so
/usr/lib/secure/libSLEE.so <symbolic link>
[ verifying class <none> ]
## Executing postinstall script.
Installation of <SLEE> was successful.
```

Installing Sms Packages on an Unclustered SMS

Introduction

Use the `pkgadd` command to install an Sms package on an SMS in an unclustered platform. Repeat this procedure for each Sms package. See Application Build Sequence for a full list of the NCC application packages.

Installing an Sms Package

Follow these steps to install an Sms package on a SMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SMS as root.</td>
</tr>
<tr>
<td>2</td>
<td>Enter <code>pkgadd appSms</code> &lt;br&gt;where <code>app</code> is the application &lt;br&gt;Result: This will install the package.</td>
</tr>
</tbody>
</table>

When installation is complete, the utility automatically runs the post-install script on the SMS. During the installation procedure, there are a number of prompts that you must reply to. See Installation Prompts (on page 148) for assistance.

Example ccsSms Package Installation on Unclustered SMS

The text below provides an example of the text displayed, prompts and responses, during a ccsSms package installation on an unclustered SMS.

```
$ pkgadd -d `pwd` ccsSms

This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of <ccsSms> [y,n,?] y

Please enter a password for ccs_oper in order to unlock the account for remote access.
* New password:
* Re-enter new password:
* passwd (SYSTEM): passwd successfully changed for ccs_oper
```
Define GPG_HOME now?  
[y,n,?]  
y
Please specify the time zone
(default: GMT)

Please select an CCS SMS installation type:
# 1 CCS with a full ACS installation
# 2 CCS Standalone
1

ccsSms installation script ./ccsSms.conf.sh

Installing into /IN/service_packages/CCS

This script uses the configuration file created during smsSms installation. Please retain that file, so that the databases can be cleanly removed at package removal time.

Importing SMF environment variables.

Please specify the ORACLE_SID to use when configuring the database.

Searching for Oracle Client Installations - Please Wait

NOTE:  3 options found, please choose one
(1) /u01/app/oracle/product/9.2.0
(2) /u01/app/oracle/product/10.2.0
(3) Manual

Select the options to use (default: 1) ?
Install CCS SMF schema on database SMF (on this node) ?  
y

Is the database instance on a remote node ?

n

Using sizing ccs_smf_min_Sizing.tar
/IN/service_packages/DB/CCS/SMS/sizing/ccs_smf_min_Sizing.tar
/IN/service_packages/CCS/db/install/create/SMF/scripts

Please enter the password for the SMF user on the SMF instance

Please enter the password for the SYSTEM user on the SMF instance

Please enter the password for the SYS user on the SMF instance

Please enter the password for the ACS_ADMIN user on the SMF instance

Please specify the three OFS mount points that will contain the SMF data files. These must contain sufficient disk space as indicated in the Product Administration Guide.

Add tables to database SMF now?

y

Configuring SMF database instance.

This may take a while.

.
.
.

ccsSms database tables were installed.

Please specify the time zone
(default: GMT) [?]

Enter the host name of the Primary Billing Engine

Sending SIGHUP to inetd to start cmnReceiveFiles...

ccsSms install is complete
Installing Sms Packages on a Clustered SMS

Introduction

Use the `pkgadd` command to install an Sms package on an SMS in a clustered platform. Repeat this procedure for each sms package on each node of the cluster. See Application Build Sequence for a full list of the NCC application packages.

Installing an Sms Package

Follow these steps to install an Sms package on a SMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SMS as <code>root</code>.</td>
</tr>
<tr>
<td>2</td>
<td>Enter <code>pkgadd appSms</code> where <code>app</code> is the application</td>
</tr>
<tr>
<td></td>
<td>Result: This will install the package.</td>
</tr>
</tbody>
</table>

When installation is complete, the utility automatically runs the post-install script on the SMS. During the installation procedure, there are a number of prompts that you must reply to. See `Installation Prompts` (on page 148) for assistance.

Example ccsSms Installation on a Node of a Clustered SMS

The text below provides an example of the text displayed, prompts and responses, during a ccsSms package installation, on the primary node of a clustered SMS.

```
# pkgadd -d `pwd` ccsSms
This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of <ccsSms> ?
 y
Please enter a password for ccs_oper in order to unlock the account for remote access.
New Password:
Re-enter new Password:
pwd: password successfully changed for ccs_oper

* Define GPG_HOME now? y
* Please specify the time zone

(default: GMT)
# Please select an CCS SMS installation type:
# 1 CCS with a full ACS installation
# 2 CCS Standalone

* ccsSms installation script ./ccsSms.conf.sh
* Installing into /IN/service_packages/CCS

* This script uses the configuration file created during smsSms installation. Please retain that file, so that the databases can be cleanly removed at package removal time.

* Importing SMF environment variables.
Please specify the ORACLE_SID to use when configuring the database.

* NOTE: The smsSms package has been installed in CLUSTERED mode.
* The CCS schema should only be added to the SMF database if this node is the primary node of the cluster.

Is this node the primary node of the cluster?
 y```
Installing Cluster Packages on a SMS

Introduction

Use the pkgadd command to install cluster packages on an SMS in a clustered platform. Repeat this procedure for each cluster package on each node of the cluster. See Application Build Sequence for a full list of the NCC application packages.

When the SMS installation is complete, you must run the application post-install script on the primary SMS to start the resources.

Installing a Cluster Package

Follow these steps to install a cluster package on a SMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SMS as root.</td>
</tr>
<tr>
<td>2</td>
<td>Enter <code>pkgadd appCluster</code> where <code>app</code> is the application</td>
</tr>
<tr>
<td></td>
<td>Result: This will install the package.</td>
</tr>
</tbody>
</table>

When installation is complete, the utility automatically runs the post-install script on the SMS. During the installation procedure, there are a number of prompts that you must reply to. See Installation Prompts (on page 148) for assistance.
Example ccsCluster Installation on the Primary Node

The text below provides a sample of the text displayed, and responses, during a ccsCluster package install on the primary node of a clustered SMS, with an Oracle HA database.

```
pkgadd -d. ccsCluster
Processing package instance <ccsCluster> from </var/spool/pkg>
Sun Cluster resource types for CCS binaries(sparc) 3.1.8.3
Sun Microsystems, Inc.
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying package dependencies.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of <ccsCluster> [y,n,?] y
Installing Sun Cluster resource types for CCS binaries as <ccsCluster>

## Installing part 1 of 1.
/IN/service_packages/CCS/ccsCluster_v3_1_0_0_v2_ReleaseNotes.txt
/opt/ESERVCCcsBeOrb/README.CcsBeOrb
/opt/ESERVCCssBeOrb/bin/CcsBeOrb_monitor_check
/opt/ESERVCCssBeOrb/bin/CcsBeOrb_monitor_start

... ...

/opt/ESERVCCssSMDispatcher/util/startCcsSSMDispatcher
/opt/ESERVCCssSMDispatcher/util/stopCcsSSMDispatcher
/opt/ccsCluster.conf.sh
/opt/ccsCluster.unconf.sh
[ verifying class <none> ]
## Executing postinstall script.
ccsCluster configuration - install date: Thu Nov 4 11:32:32 PM GMT 2010
NOTE:This script starts the CCS cluster resources distributed with the ccsCluster package.
NOTE:The CCS cluster resources should only be started once the ccsCluster package has been installed on all nodes, for example if this node is the final node.

* Start resource groups? [only do this on the *final* node in a new installation]

[y,n,?] n
NOTE: Exiting without starting cluster resources.
Installation of <ccsCluster> was successful.
```

Example ccsCluster Installation on a Secondary Node

The text below provides an example of the text displayed, and responses, during a ccsCluster package install on the secondary node of a clustered SMS, with an Oracle HA database.

```
pkgadd -d. ccsCluster
Processing package instance <ccsCluster> from </var/spool/pkg>
Sun Cluster resource types for CCS binaries(sparc) 3.1.8.3
Sun Microsystems, Inc.
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
## Verifying package dependencies.
## Verifying disk space requirements.
```
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.

This package contains scripts which will be executed with super-user permission during the process of installing this package.

Do you want to continue with the installation of `<ccsCluster>` [y,n,?] **y**

Installing Sun Cluster resource types for CCS binaries as `<ccsCluster>`

## Installing part 1 of 1.

```
/IN/service_packages/CCS/ccsCluster_v3_1_0_0_v2_ReleaseNotes.txt
/opt/ESERVcciCsBeOrb/README.CcsBeOrb
/opt/ESERVcciCsBeOrb/bin/CcsBeOrb_monitor_check
/opt/ESERVcciCsBeOrb/bin/CcsBeOrb_monitor_start

./.
./.
./.
```

```
/opt/ESERVcciCsSSMDispatcher/util/startCcsSSMDispatcher
/opt/ESERVcciCsSSMDispatcher/util/stopCcsSSMDispatcher
/opt/ccsCluster.conf.sh
/opt/ccsCluster.unconf.sh
verifying class <none>
```

## Executing postinstall script.

**ccsCluster** configuration - install date: Friday,  4 December 2009  1:12:38 AM GMT

This is an Oracle HA cluster

Changing the mode of CcsBeOrb from scalable to failover...
Done
Changing the mode of CcsCDRLoader from scalable to failover...
Done
Changing the mode of CcsSSMDispatcher from scalable to failover...
Done
...

Removing ccsBeOrb from inittab...
ccsBeOrb has been removed from inittab

Removing ccsCDRLoader from inittab...
ccsCDRLoader has been removed from inittab
...

Removing ccsPCChange from inittab...
ccsPCChange has been removed from inittab

Crontab was setup in a non-cluster mode, fixing it...

Remove ccsWalletExpiry from crontab
  * NOTE: Removing ccsWalletExpiry from cron file /var/spool/cron/crontabs/ccs_oper

Remove ccsPeriodicCCRecharge from crontab
  * NOTE: Removing ccsPeriodicCCRecharge from cron file /var/spool/cron/crontabs/ccs_oper

  ./.

  * ccsPeriodicCharge-cron.sh inserted into ccs_oper crontab.

Done.
Reloading the inittab...
Done

**NOTE:** This script starts the CCS cluster resources distributed with the ccscluster package.

**NOTE:** The CCS cluster resources should only be started once the ccsCluster package has been installed on all nodes, for example. if this node is the final node.
* Start resource groups? [only do this on the *final* node in a new installation]

[y,n,?] 

y

Creating a failover instance ... 
Registering resource type <ESERV.CcsBeOrb:4>...done.
Creating failover resource group <CcsBeOrb-harg>...done.
Creating resource <CcsBeOrb-hars> for the resource type <ESERV.CcsBeOrb:4>...done.
Bringing resource group <CcsBeOrb-harg> online...done.

Creating the resource group affinity for CcsBeOrb-harg...
/usr/cluster/bin/clrg set -p RG_affinities=++oracleha-rs CcsBeOrb-harg 2>&1

Creating the resource dependency for CcsPCChange-hars...
/usr/cluster/bin/clresource set -p resource_dependencies_offline_restart=oracleha-server-rs CcsPCChange-hars

ccsCluster configuration complete.
See /opt/ccsCluster.install.log for errors
Installation of <ccsCluster> was successful.

Example ccsCluster.conf.sh

The text below provides an example of the text displayed once you have installed the ccsCluster package, and the ccsCluster.conf.sh script is running.

Run this script on the primary SMS after you have finished installing ccsSms and ccsCluster on all the SMSs in the installation.

```
# ccsCluster.conf.sh

NOTE: This script starts the CCS cluster resources distributed with the ccsCluster package.

NOTE: The CCS cluster resources should only be started once the ccsSms and ccsCluster package have been installed on all nodes, for example if this node is the final node.
Start the CCS cluster resources now?
Installation of <ccsCluster> was successful.
```

CCS Cluster Resource Groups

This table lists the CCS cluster resource groups and their types.

**Note:** Please refer to the *Sun Cluster System Administration Guide* for details on starting and stopping individual resource groups.

<table>
<thead>
<tr>
<th>Resource Group Name</th>
<th>Type of Resource</th>
<th>Network Aware</th>
</tr>
</thead>
<tbody>
<tr>
<td>CcsBeOrb</td>
<td>Scalable</td>
<td>No</td>
</tr>
<tr>
<td>CcsCDRFileGenerator</td>
<td>Failover</td>
<td>No</td>
</tr>
<tr>
<td>CcsCDRLoader</td>
<td>Scalable</td>
<td>No</td>
</tr>
<tr>
<td>CDRLoaderA to CDRLoaderL</td>
<td>Scalable</td>
<td>No</td>
</tr>
<tr>
<td>CcsChangeDaemon</td>
<td>Failover</td>
<td>No</td>
</tr>
<tr>
<td>CcsProfileDaemon</td>
<td>Failover</td>
<td>No</td>
</tr>
<tr>
<td>CcsSSMDispatcher</td>
<td>Scalable</td>
<td>No</td>
</tr>
</tbody>
</table>
## Starting the Resources

Follow these steps to finish the ccsCluster installation. You must complete the steps on each SMS in the cluster.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log into the SMS as <strong>root</strong>.</td>
</tr>
<tr>
<td>2</td>
<td>Enter <code>unset HOSTNAME;</code></td>
</tr>
</tbody>
</table>
| 3    | Start the ccsBeOrb using the start-up shell script.  
**Example commands:**  
```bash  
cd /opt/ESERVCCsBeOrb/util  
./startCcsBeOrb  
```
| 4    | Start the ccsCDRFileGenerator using the start-up shell script.  
**Example commands:**  
```bash  
cd /opt/ESERVCCsCDRFileGenerator/util  
./startCcsCDRFileGenerator  
```
| 5    | Start the ccsCDRLoader using the start-up shell script.  
**Example commands:**  
```bash  
cd /opt/ESERVCCsCDRLoader/util  
./startCcsCDRLoader  
```
| 6    | Start the CDRLoader for each CDRLoader\text{\textit{X}} using the start-up shell script, where \textit{X} is one of the following letters: A, B, C, D, E, F, G, H, I, J, K, L.  
**Example commands:**  
```bash  
cd /opt/ESER\text{\textit{V}}CDRLoader\text{\textit{X}}/util  
./startCDRLoader\text{\textit{X}}  
```
| 7    | Start the ccsProfileDaemon using the start-up shell script.  
**Example commands:**  
```bash  
cd /opt/ESERVCCsProfileDaemon/util  
./startCcsProfileDaemon  
```
| 8    | Start the ccsSSMDispatcher using the start-up shell script.  
**Example commands:**  
```bash  
cd /opt/ESERVCCsSSMDispatcher/util  
./startCcsSSMDispatcher  
```
| 9    | Start the ccsChangeDaemon using the start-up shell script.  
**Example commands:**  
```bash  
cd /opt/ESERVCCsChangeDaemon/util  
./startCcsChangeDaemon  
```

**Note:** You must be in the Bourne shell when you follow this procedure.

## Installing Scp Packages on a SLC

### Introduction

Use the `pkgadd` command to install the Scp package on an SLC. Repeat this procedure for each scp package. See Application Build Sequence for a full list of the NCC application packages.

### Installing an Scp package

Follow these steps to install an Scp package on a SLC.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SLC as <strong>root</strong>.</td>
</tr>
</tbody>
</table>
Step | Action
--- | ---
2 | Enter `pkgadd appScp`
   where `app` is the application
   Result: This will install the package.

When installation is complete, the utility automatically runs the post-install script on the SLC. During the installation procedure, there are a number of prompts that you must reply to. See *Installation Prompts* (on page 148) for assistance.

**Example ccsScp Installation on a SLC**

The text below provides an example of the text displayed, prompts and responses, during a ccsScp package install on a SLC.

```
$ pkgadd -d `pwd` ccsScp
* Please select an CCS SCP installation type:
  * 1: CCS on a dedicated SCP
  * 2: CCS on a combined SMF/SCP node
  * 3: CCS on a dedicated SCP without ACS
1
Selected Product: CCS on a dedicated SCP

Please specify the ORACLE_SID to use when configuring the database.
SCP

Please enter the password for the SCP user on the SCP instance
SCP

Please enter the required database sizing
ccs scp min sizing.tar

Using sizing ccs scp min sizing.tar
/IN/service_packages/DB/CCS/SCP/sizing/ccs scp min sizing.tar
/IN/service_packages/CCS/db/install/create/SCP/scripts

Please enter the password for the ACS_ADMIN user on the SCP instance
ACS_ADMIN

Please enter the password for the SYSTEM user on the SCP instance
MANAGER

Please enter the password for the SYS user on the SCP instance
Change on install

Please specify the three OFS mount points that will contain the SCP data files. These must contain sufficient disk space as indicated in the Product Administration Guide.

* Add tables to database SCP now? y
* Configuring SCP database instance.
  * This may take a while.

* ccsScp database tables were installed.

Installation of <ccsScp> was successful
```
Installing Be Packages on a VWS

Introduction

Use the **pkgadd** command to install the Be package on an VWS. Repeat this procedure for each Be package. See Application Build Sequence for a full list of the NCC application packages.

Installing a Be Package

Follow these steps to install a Be package on a VWS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the VWS as <strong>root</strong>.</td>
</tr>
</tbody>
</table>
| 2    | Enter **pkgadd appBe** where app is the application  
Result: This will install the package. |

During the installation procedure, there are a number of prompts that you must reply to. See *Installation Prompts* (on page 148) for assistance.

Example ccsBe Installation on the Primary VWS

The text below provides an example of the text displayed, prompts and responses, during a ccsBe package install on a primary node or single VWS.

```
# pkgadd -d `pwd` ccsBe
* ccsBe installation script ./ccsBe.conf.sh  
* installing into /IN/service_packages/CCS  
* NOTE: Using HOST smphost.telcoexample.com  
* Destination Database : BE on its own database  
* Please enter the password for the SYSTEM user on the E2BE instance  
* Please enter the password for the SYS user on the E2BE instance  
Use raw devices for CCS tablespaces? y  
Please ensure that the following configuration file is correct before proceeding:  
/IN/service_packages/CCS/db/install/create/CCS/scripts/autogen_ccs_devices.sql  
Press enter to continue.  
Please specify the three OFS mount points which will contain the BE data files. These must contain sufficient disk space as indicated in the Product Administration Guide. Please enter the required database sizing (default sizing is test)  
Using sizing ccs_be_min_Sizing.tar  
/IN/service_packages/DB/CCS/BE/sizing/ccs_be_min_Sizing.tar  
/IN/service_packages/CCS/db/install/create/BE/scripts  
Create ccsBE tablespace now? y  
* NOTE: Creating and configuring ccsBe tablespaces.  
  * This may take a while.  
Are we running as a single BE, or a pair of BE servers? (Yes for a pair, No for single) y  
Is this the setup script for the PRIMARY Billing engine? y  
Enter the replication node ID for this Billing Engine (default: 351) [?] 600  
Enter the node ID for the SLEE replication interface [600 - 1023] [?] 600
```
* Creating /IN/service_packages/CCS/.profile-be

* Creating /IN/service_packages/CCS/.profile

* Selecting /IN/service_packages/CCS/.profile-be for inclusion in /IN/service_packages/CCS/.profile.

Enter the password for ccs_oper on the SMS host

NOTE: Adding machine smp1 to .netrc

NOTE: .netrc file entry created

Adding inittab entry ccs9 for ccsMFileCompiler
Adding inittab entry ccl0 for cmnConfigWrapper
Adding inittab entry ccl1 for cmnConfigWrapper
Adding inittab entry ccl2 for cmnConfigWrapper
Adding inittab entry ccs8 for updateLoaderWrapper.sh

Reloading inittab.

Enter the hostname of the SMP to send the Rewards, Wallet Expiry, and Voucher expiry records

[?] Enter the logical BE Server ID that this Billing Engine will be (see Domain Configuration screen or CCS_DOMAIN database table for valid values) [?]

* *****************************************
* NOTE: ccsBe installation complete
* *****************************************

* Please check that the binary
* /usr/sbin/fuser
* has READ and EXECUTE (r-x) permissions for USER, GROUP and OTHER.
* *****************************************

**Raw Device Configuration**

To configure CCS to use raw devices as data files, once installation is complete, edit the /IN/service_packages/E2BE/db/install/create/BE/scripts/autogen_ccs_devices.sql file.

The autogen_be_devices.sql file contains a number of repeated entries of the form:

```sql
/* Datafiles for tablespace: CCS_DATA */

/* Datafile 1 partition size should be 100M + 1M */
define DEVICE_CCS_DATA1 =
/* Datafile 2 partition size should be 100M + 1M */
define DEVICE_CCS_DATA2 =

*/

##########################################################################

Note: The comment for each data file listed per table space, contains a size in MB of the form XM + 1M, that is:

/* Datafile 2 partition size should be 100M + 1M */
Chapter 9

Configuring the File

Follow these steps to configure the entries in autogen_ccs_devices.sql.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>For each individual data file listed create a raw device of the size specified in the comment (consult the partitioning guide below), for example. For the above example create two raw devices, each of 101 MB.</td>
</tr>
<tr>
<td>2</td>
<td>For each created data file, append the line of the form DEVICE_CCS_DATA with the full path of the new device node, that is: DEVICE_CCS_DATA1=/dev/rdsk/c1t4d3s0 DEVICE_CCS_DATA2=/dev/rdsk/c1t4d3s1</td>
</tr>
<tr>
<td>3</td>
<td>Save and back up the newly populated device file (as it may be removed by the uninstallation process later)</td>
</tr>
</tbody>
</table>

Installation Prompts

List of Installation Prompts

Here is a list of prompts that you may encounter during manual installation of the Oracle Communications Network Charging and Control package.

$username$ password
Prompt: Enter username password (default: username) [?] |
Response: Accept default. Password is the same as username. |
Usage: osdScp, osdSms, dapSms, xmsSms, xmsScp

acs_devices.sh File
Prompt: The configuration file /IN/service_packages/ACS/db/install/acs_devices.sh must contain the list of raw devices that will be used when creating the ACS_DATA and ACS_INDEX table spaces. Please ensure that this file is correct before proceeding. Press [Return] to continue. |
Response: Verify that the file does contain the list of RAW devices, then Enter. |
Notes: See ACS Technical Guide for details about the acs_devices.sh file and raw devices. |
Usage: acsSms (clustered)

Add <acsprocess> To inittab
Prompt: Add acsprocess to inittab ? (answer n if you will use a Resource Group) [y,n,?] |
Response: Enter n if you will use a Resource Group, otherwise y. |
Note: Where acsprocess can be: acsCompilerDaemon acsProfileCompiler acsStatisticsDBInserter |
Usage: acsSms
Add smsAlarmManager to inittab
Prompt:  Add smsAlarmManager to inittab ?(answer n if you will use a Resource Group) [y,n,?]
Response:  Enter y to add the smsAlarmManager to the inittab. If the smsAlarmManager is to be started using a resource group, enter n.
Usage:  efmSms

Add Tables to Database
Prompt:  Add tables to database database now?
Response:  Entering y will begin the process of creating the Oracle database for CCS on the SMS platform.
where the database for:
- ccsSms, ccsVoucherSms is SMF
- ccsScp is SCP
Usage:  ccsSms, ccsVoucherSms, ccsScp

Add Tables to Database Now
Prompt:  Add tables to database db now?
Response:  Entering y will begin the process of creating the Oracle database on the SMS machine.
Usage:  ccsScp, lcpSms, piSms

alarmDaemon Replication Node Number
Prompt:  Please specify the alarmDaemon replication node number. (default: 601) [?]
Response:  Enter the unique node number for the smsAlarmDaemon to use on this machine. Check the smsAlarmDaemonStartup.sh scripts on all other platforms, and the SMS Node Management screens to choose a number that has not been used. To follow the numbering convention, choose a value between 601 and 699. This will avoid replication conflicts with other replication processes, such as the smsStatsDaemon.
Usage:  smsExtras

asp id Directory
Prompt:  Please select the asp id directory (default: /IN/service_packages/SMCB/stats/asp_ids ) [?]
Response:  Type or select the asp id directory, or accept the default.
Usage:  smcbSms

Automatic Call Plan Deletion and Service Number Updating
Prompt:  Do you want automatic call plan deletion and Service Number updating installed?
NOTE:  2 options found, please chose one
(1) Yes
(2) No
Select the option to use (default: 1) [?]
Response:  Enter a number or accept default.
Notes: This is required if CCS is deployed.
Usage: acsSms

Base SLEE Service Key
Prompt: Please enter the base SLEE service key (this will be 1 unless otherwise defined in sua if.sh for example)
Response: Enter 1
Usage: npScp

Bearer Value for MNP_SUBSCRIBERS
Prompt: What is the default bearer value for MNP_SUBSCRIBERS?:
(default: ROAMING)
Response: Accept the default value.
Usage: roamingScp

Cache Expiry Timer
Prompt: Please enter the cache expiry timer (default: 600) [?]
Response: Do one of the the following:
- Enter the time for cache entry expiry
- Accept the default (10 minutes)
Usage: lcpScp

Cache Size (Number of Responses) locApp Caches
Prompt: Please enter the cache size (number of responses) locApp caches
(default: 100000) [?]
Response: Do one of the the following:
- Enter the size of the locApp cache
- Accept the default.
Usage: lcpScp

CCS SCP Installation Type
Prompt: * Please select an CCS SCP installation type:
* 1: CCS on a dedicated SCP
* 2: CCS on a combined SMF/SCP node
* 3: CCS on a dedicated SCP without ACS
Response: Enter:
- 1 if you are installing ccsScp onto a machine which functions solely as an SLC
- 2 if you are installing ccsScp onto a machine that performs the functions of both the SMS and the SLC
- 3 if you are installing CCS without ACS
Usage: ccsScp
Chapter 9

CCS SMS Installation Type

Prompt: # Please select an CCS SMS installation type:
# 1 CCS with a full ACS installation
# 2 CCS Standalone

Response: If you are installing CCS in conjunction with ACS (and have already installed the acsSms package) you should enter 1. Otherwise enter 2.

Usage: ccsSms

CDR Upload Directory

Prompt: Please specify the CDR upload directory. Ensure this is consistent with the CDR upload directory specified during the SMS installation on the SCPs.

(default: /IN/service_packages/SMS/cdr/received) [?]

* CDR upload directory: /IN/service_packages/SMS/cdr/received - accept? [y,n,?] 

Response: Enter one of the following:
- **y** to accept the default directory
- **n** to enter a different directory

If you have entered **n**, enter the full path of the directory EDRs transferred by cmnPushFiles will go to.

Note: The directory specified here must match the directory specified by cmnPushFiles on the SLCs. It is recommended that you accept the default.

Usage: smsSms, smsScp

CDR Interface

Prompt: Please enter the name of the CDR interface (default is cdrIF):

Confirm cdrIF? (y/n):

Response: Enter **y**, then confirm

Usage: uisScp

Cluster Node ID

Prompt: Please enter a CLUSTER NODE ID for the Database instance

This must be different on all cluster nodes. Use 1 on the primary node, 2 on the secondary node, etc.

(This value will added to /IN/html/sms.html for Java screens DB access)

(default: 1) [?]

Cluster node ID: 1 - accept? [y,n,?]

Response: Enter a node number for the SMF that will be used by this SMS.

SMS node numbers must be in the range 1-16, and should start consecutively from 1.

The first primary SMS should have the node number 1.

Usage: smsSms (clustered)
Clustered Mode
Prompt: Do want to install smsSms in CLUSTERED mode?
[y,n,?]  
Response: Enter y to install the package on one of a set of clustered SMSs.
Usage: smsSms (clustered)

Concatenation Group
Prompt: Enter concatenation group (default: Default) [?]
Response: Enter a value or accept the default.
Usage: xmsScp

Configure Replication through the SMP Screens
Prompt: Please configure replication through the SMP screens now (this is a manual procedure). Ensure the data is replicated to the SCP before proceeding.
Press the enter key when ready...
Response: You must replicate the RCA tables to the SLC node to complete the installation. If you do this now, the ConfigName parameter is automatically updated in eserv.config file.
If required, you can replicate the tables once the installation completes. You must then manually update ConfigName in eserv.config.
Press any key to continue the installation.
Note: For details, see NCC Radius Control Agent Technical Guide.
Usage: rcaScp

Configure sharedAddress Resource Group
Prompt: Configure sharedAddress resource group (*do this on ALL nodes*)? [needed by network aware resource groups] (y/n): y
Enter sharedAddress resource group name: cluster3
confirm (y/n): y
Response: Enter y, then enter the sharedAddress resource group name and confirm.
Usage: smsCluster (RAC)

Configure Package Now
Prompt: Would you like to configure this package now? (y/n):
Response: Enter y to configure the package. Any other response will skip the configuration of the package, and will need to be done manually later before the PI can be used.
Usage: piSms (clustered), piappSms (for example, piAcsSms, piCcsSms)

Configure USSD Interactive Services Gateway Components
Prompt: Would you like to configure the USSD Interactive Services Gateway app Components now [Y|N]?
Response: Enter y to configure USSD Gateway components.
Usage: uisSms, uisScp, upcSms, upcScp
Conflicting Files
Prompt: The following files are already installed on the system and are being used by another package:
* /IN/html <attribute change only>
* - conflict with a file which does not belong to any package.

Do you want to install these conflicting files [y,n,?,q] y

Response: The utility checks if there are any conflicts between existing files and the files which the utility will install. If there are any conflicts, they will be listed.
You can ignore the "attribute change only" messages.

Enter:
- y to continue the installation and overwrite the existing files
- n to cancel the installation.

Usage: All NCC packages

Constant for Location Uncertainty
Prompt: Please enter the constant "const" for location uncertainty as specified in GSM 03.32 [?]

Response: Enter the "const" constant to use during conversion from ATI Cell IDs to Geographical Locations (refer to GSM standard 03.32 for guidance on the value to enter).

Notes: Where const can be one of the following:
- C
- X

Usage: lcpScp

Continue With Installation
Prompt: This package contains scripts which will be executed with super-user permission during the process of installing this package.
Do you want to continue with the installation of package [y,n,?] y

Response: Enter y to continue with the installation.
If you enter anything else the script will abort.

Usage: All NCC packages

Country Codes File
Prompt: Please select the country codes file (default: /IN/service_packages/SMCB/stats/country_codes.txt) [?]

Response: Enter or select the country code or accept the default.

Usage: smcbSms

Create SMF tablespaces
Prompt: Create ccsBe tablespace now? [y,n,?] y

Response: Enter y to begin creating the Oracle database for this billing engine.

Usage: ccsBe
Create App Tablespace Now
Prompt: Create app tablespace now?
       [y,n,?]  
Response: If you want tablespaces created and configured, enter y
        If the existing space is large enough to contain the statistics, enter n
Notes: Where app can be one of the following:
        • osaChamScs
        • osaChamSms
Usage: osaChamScs, osaChamSms

Create Database Now
Prompt: Create database db now?
       [y,n,?]  
Response: Enter one of:
        • y to create the database
        • n to cancel the install
Notes: Where db may be one of the following:
        • E2BE
        • SCP
        • SMF
The installation may take up to 30 minutes.
The following errors may appear:
        • CREATE ROLE exp_full_database *
        • ERROR at line 1:
          ORA-01921: role name 'EXP_FULL_DATABASE' conflicts with another user or role name
        • CREATE ROLE imp_full_database *
        • ERROR at line 1:
          ORA-01921: role name 'IMP_FULL_DATABASE' conflicts with another user or role name
        • ERROR at line 1:
          ORA-01951: ROLE 'RESOURCE' not granted to 'SYSTEM'
        • ERROR at line 1:
          ORA-01953: command no longer valid, see ALTER USER
These errors are the result of normal operation of an Oracle script and does not indicate a problem which requires fixing.
Usage: smsSms, smsScp

Create DIAMETER CCS Domain Type
Prompt: Create a DIAMETER CCS domain type ?
       [y,n,?]  
Response: Enter y to create a CCS domain type.
Usage: dcdSms
Create Large Size Database
Prompt: Create large size database ?
Response: If you are installing a:
  • Production VWS instance, enter y to install a full-size database.
  • Test VWS instance, enter n to install a small database.
Usage: beBe

Create SMF_STATISTICS_DEFN
Prompt: Does the package need to create the SMF_STATISTICS_DEFN on this machine? [y,n,?] 
Response: If you want to use the:
  • SMF table SMF_STATISTICS_DEFN to define which statistics should be collected, enter y
  • Flat file smsStatsDaemon.cfg to define which statistics should be collected, enter n
If you answer n, the script will jump to ssh key setup.
Usage: smsExtras

Create smsExtras Database Entries
Prompt: Create smsExtras database entries on E2BE now? [y,n,?] 
Response: Enter y to install the database objects for smsExtras, enter n to skip the database installation.

Note: If n is chosen here the rest of the post database install will still proceed, so running the smsExtras.unconf.sh will be required before re-running smsExtras.conf.sh.
Usage: smsExtras

Create Instance Tablespaces
Prompt: Create instance tablespaces on this machine? [y,n,?] 
Response: If you want to give the statistics collection its own Oracle table space, enter y
If the existing space is large enough to contain the statistics, enter n
If there is enough disk space to create a separate table space for the statistics, it is recommended to create the separate space.
Usage: smsExtras, osaChamSms

Data Index Path
Prompt: Data index path (default: /volB/dbf1):
Response: Enter the data index path or accept the default, then confirm.
Usage: npSms, npScp
Data File Path
Prompt: Data file path (default: /volB/dbf1):
Response: Enter the data file path or accept the default, then confirm.
Usage: npSms, npScp

Database Block Size
Prompt: Please specify the database block size:
NOTE: 3 options found, please choose one
(1) 8192
(2) 4096
(3) 2048
Select the option to use (default: 1) [?]
Response: Select the database block size which is appropriate for your environment.
Usage: beBe

Database Installed on This Machine
Prompt: Is there a database installed on this machine? [y,n,?]
Response: If you have a database installed on the machine as part of the replication network, enter y
Otherwise, enter n. If you answer n, the script will jump to ssh key setup.
Usage: smsExtras

Database Instance on a Remote Node
Prompt: Is the database instance on a remote node? [y,n,?]
Response: If the database has:
- Been set up on a remote node, enter y
- Not been set up on a remote node, enter n
Usage: acsSms, beSms, ccsSms, uisSms, upcSms, piSms (Oracle HA), piappSms (for example, piAcsSms, pi CcsSms)
**Database Profile Menu**

**Example**

**Prompt:**

NOTE: 8 options found, please choose one
(1) ./cluster_Oracle_10g.ora
(2) ./cluster_Oracle_9i.ora
(3) ./default_Oracle_10g.ora
(4) ./default_Oracle_8i.ora
(5) ./default_Oracle_9i.ora
(6) ./sun-netra-500Kblocks.ora
(7) ./sun-t1000.ora
(8) Done

Select the option to use (default: 1) [?] 

**Response:**

Select a Database Profile Menu from the displayed options. Do not chose a clustered option.

**Note:** Description for the options are:
- Cluster oracle 10g
- Cluster oracle 9i
- Default oracle 10g
- Default oracle 8i
- Default oracle 9i
- Non cluster oracle 8i
- Non cluster oracle 10g
- not used

**Usage:** smsSms (unclustered), smsScp

---

**Database Size Menu**

**Example**

**Prompt:**

NOTE: 3 options found, please choose one
(1) ./smp_defaultsize.sql
(2) ./smp_small_10g_raw_size.sql
(3) Done

Select the option to use (default: 1) [?] 

**Response:**

Select an appropriate size for the SMF from the displayed options.

**Note:** The recommended size option is:
- ./platform_defaultsize.sql (1) for an unclustered install
- ./platform_small_10g_raw_size.sql (2) is only used in clustered installs

**Usage:** smsSms, efmSms, smsScp, smsExtras, acsSms, acsScp, beBe, ccsVoucherSms, ccsBe (secondary), vpnSms, vpnScp, sesSms

---

**Datafile Path**

**Prompt:**

Please enter the datafile path (default: /volA/oradata/dbf1) [?] 

**Response:**

Enter the datafile path or accept the default.

**Usage:** rcaScp
Define GPG_HOME
Prompt: Define GPG_HOME now? [y,n,?]
Response: Enter y to define this now, otherwise enter n.
Notes: GPG is used by voucher batch creation - usually 'SMS/.gpg_home'
Usage: ccsSms

Delete Old Alarm Definitions
Prompt: Delete old app alarm definitions (default: y) [y,n,?]
Response: Accept default.
Usage: osdSms, xmsSms

Destination Port Number
Prompt: Enter the destination port number (default: 9999) [?]
Response: Enter a value or accept the default.
Usage: upcScp

Device Configuration File
Prompt: Please enter the full path and file name of a completed device configuration file
(use the provided default as a template).
Response: Enter the full path to the raw devices configuration file. You must edit and save the ccs_devices.sh configuration file before proceeding.
Usage: ccsSms, ccsBe (secondary)

Directory Created Now
Prompt: The selected base directory </IN/service_packages/app> must exist before installation is attempted. Do you want this directory created now [y,n,?,q]
Response: Enter y to continue with the installation. If you enter anything else, the script will abort.
Usage: ecaScp, tcpScp, tcpSms, npScp

Domain Type Name
Prompt: Please enter the domain type name: [?]
Response: Type in the name for the domain type and confirm.
Usage: dcdSms
Ensure Configuration File is Correct
Prompt: You are about to install MMX on a cluster.
The configuration file /tmp/xms_devices.sql must contain the list of raw
devices that will be used when creating the MMX_DATA and MMX_INDEX
tables.
Please ensure that this configuration file is correct before proceeding.
Press [Enter] to continue.
Response: Check that the configuration file is correct, then Enter.
Usage: xmsSms

Ensure File is Correct
Prompt: The configuration file
/IN/service_packages/SES/db/install/create/SMP/scripts/autogen_ses_devices.sql must contain the list of raw devices that will be used when creating the various HCPT tablespaces.
Please ensure that this file is correct before proceeding.
Press [Enter] to continue.
Response: Check that the configuration file is correct, then Enter.
Usage: sesSms

eserv.config File Name
Prompt: Please enter the eserv.config file name (default:
/IN/service_packages/eserv.config) [?]
Response: Enter the name of the eserv.config configuration file or accept the default.
Usage: lcpScp

Files in Directory
Prompt: There are files in directory /volB/app/oracle/data/dbf1/SMF. Press Y to remove them or anything else to abort installation. (default: N) [?]
Response: The installation script checks to see whether there are any files resident in the mount points. If there are, you will receive a warning message.
Enter one of the following:
• y to overwrite the files and continue the installation
• n to cancel the installation.
Usage: smsSms
Force smsStatsDaemon to Re-read Configuration

Prompt: To enable the collection of service statistics, the smsStatsDaemon must re-read its configuration. Before this happens, the new statistic definitions must be replicated to this SCF. Ensure this replication is configured using the screens, then answer Y to the following question to force the smsStatsDaemon to re-read its configuration.

Force smsStatsDaemon to re-read configuration? (y/n):

Response: You must replicate the NP tables to the SLC node to complete the installation. When you have replicated the tables, enter y to force the smsStatsDaemon to re-read its configuration.

Note: For details, see Replicating the NP tables in NP Service Pack Technical Guide.

Note: If required, you can replicate the tables once the installation completes. You must then send the smsStatsDaemon a SIGHUP to force it to re-read its configuration.

Usage: npScp

Fragmentation Install

Prompt: Please select Continue to begin the fragmentation_install part of smsSms install

NOTE: 2 options found, please choose one
(1) Continue
(2) Quit

Select the option to use (default: 1) [?] 1

Response: Enter 1 to continue installing the fragmentation script for smsSms install.

Usage: smsSms (clustered)

Fully Qualified Host Name

Prompt: Enter the SMS fully qualified host name [?]

Response: Enter the host name or accept the default.

Usage: npScp

General Device Configuration File

Prompt: Please enter the full path and file name of a completed general device configuration file
(use the provided default as a template).

Response: This question will be asked only if "N" was answered to the question "Install E2BE with raw devices for datafiles ?"

Usage: beBe

GSM SCF Address for the ATI Plugin

Prompt: Please enter the GSM SCF address for the ATI plugin [?]

Response: Enter the GSM SCF (global title) address for the SLC, for example 441234555666.
(Refer to your network support department for more information).

Usage: lcpScp
GMSC Address for the SRI Plugin
Prompt: Please enter the GMSC address for the SRI plugin [?]
Response: Enter the GMSC (global title) address for the SLC, for example 441234567890 (Refer to your network support department for more information).
Usage: lcpScp

Host Name of the Primary Billing Engine
Prompt: Enter the host name of the Primary Billing Engine. (default: <hostname>) [?]
Response: Enter the hostname of the primary VWS. You do not need to include the fully justified hostname.
Usage: ccsSms

Host Name of the SMP
Prompt: Enter the host name of the SMP. This will be used for the WSDL URLs. (default: <hostname>) [?]
Response: Enter the SMS host name or accept the default.
Usage: osdSms

Hostname of the SMP To Send
Prompt: Enter the hostname of the SMP to send the Rewards, Wallet Expiry, and Voucher expiry records [?]
Response: Enter the SMS hostname for CCS.
Usage: ccsBE

Icons To Use in the Task Bar
Prompt: Please select the icons to use in the task bar:
NOTE: 3 options found, please choose one
(1) NCC Blue icons
(2) NCC Orange icons
(3) Java icon
Select the option to use (default: 1) [?]
Response: Enter a number or accept default.
Notes: Refer to ACS Technical Guide for a description of the icons.
Usage: acsSms

indexfile Path
Prompt: Please enter the indexfile path (default: /volA/oradata/dbf1) [?]
Response: Enter the indexfile path or accept the default.
Usage: rcaScp

Insert Alarm Definition Data
Prompt: Do want to insert alarm definition data into the database? [y,n,?]
Response: Enter n to not install the alarm definition information into the database.
Usage: efmSms

Install ACS Components
Prompt: Install the ACS components? [y,n,?]
Response: Enter y to install the nodes into ACS.
Usage: rimsSms, xmsSms

Install ACS SMF Schema on Database SMF
Prompt: Install ACS SMF schema on database SMF? [y,n,?]
Response: Enter y to proceed.
Usage: acsSms

Install Alarm Reporting
Prompt: Do you want to install alarm reporting? [y,n,?]
Response: If you want to collect alarms from this machine, enter y
Result: The script will install the smsAlarmDaemon, and will detail the changes it is making to install the smsStatsDaemon.
If you do not want to collect alarms from this machine, enter n. If n is entered, the script will jump forward to smsStatsDaemon.
Usage: smsExtras

Install Automatic Index Defragmentation
Prompt: INSTALL Automatic Index Defragmentation
Auto - Install as IOT and enable Automatic Index Defragmentation
Automatic Index Defragmentation will help improve the general performance of your replication system as it allows the period check and rebuild of indexes if fragmentation is detected.
Normal - Install as Normal Indexes (non-IOT, heap-organised tables)
Automatic Index Defragmentation will NOT be installed. If this feature is selected, .... over time.
NOTE: 3 options found, please choose one
(1) Auto
(2) Normal
(3) Quit
Select the option to use (default: 1) [?]
Response: Selecting Auto install option will disable any user prompts for backup files and use default values.
Usage: smsSms (clustered)

Install CCS SMF Schema on Database SMF
Prompt: Install CCS SMF schema on database SMF (on this node)?
Response: Enter y.
Usage: ccsSms
Chapter 9

Install cdmaSms to Database
Prompt: Do you want to install the cdmaSms database to SMF?
[y,n,?]  
Response: Enter y to continue with the installation.
Usage: cdmaSms

Install Database
Prompt: The database install only needs to be done if this is the primary node
of a cluster, or a non-clustered machine.
Install database ?
[y,n,?]  
Response:  
• Unclustered SMS, enter y
• Clustered, enter:
  • y for a primary SMS
  • n for a secondary SMS
Result: If y was entered, the utility will install the SMF on this SMS.
Usage: osdSms, dapSms, dcdSms, dcaSms, ecaSms, xmsSms

Install Database Component
Prompt: If this package has been installed before and it was removed without
uninstalling the database, you want to answer 'n' to the following
question.
Do you want to install the database component?
[y,n,?]  
Response: If this package has been installed before and it was removed without uninstalling the
database, enter n. Otherwise, enter y.
Usage: sesSms

Install Database Now
Prompt: Install database now?
[y,n,?]  
Response: Enter y to start creating the SCP database.
If you enter anything other than y, the script will abort.
Usage: dapScp, dapExtras, scaSms

Install Database SMF
Prompt: Install database SMF ?
[y,n,?]  
Response:  
• Unclustered SMS, enter y
• Clustered, enter:
  • y for a primary SMS (unless the SMF has already been installed)
  • n for a secondary SMS
Result: If y was entered, the utility will install the SMF on this SMS.
Usage: smsSms
**Chapter 9**

**Install E2BE With Raw Devices For Datafiles**
**Prompt:** Install E2BE with raw devices for datafiles? [y,n,?]  
**Response:** If you are:  
- Using raw devices, enter y  
- Not using raw devices, enter n  
**Usage:** beBe

**Install Example Control Plans**
**Prompt:** Would you like to install the example control plans? [y,n,?]  
**Response:** Enter y to install example control plans.  
**Usage:** dcaSms

**Install MMX Service Library**
**Prompt:** Install the MMX service library (default: y) [y,n,?]  
**Response:** Enter:  
- y to install the xmsSvcLibrary entries to `acs.conf`  
- n to bypass the installation, that is, the following password request will not be made.  
**Note:** A y response and if the package was built with PStore support, the PStore install steps automatically happen.  
**Usage:** xmsScp

**Install OSA SMF Database on this Node**
**Prompt:** Install OSA SMF database on this node? [y,n,?]  
**Response:** Enter:  
- y for a primary SMS (unless the SMF has already been installed)  
- n for a secondary SMS  
**Usage:** osaChamSms (clustered)

**Install OSA SMF Schema on Database SMF**
**Prompt:** Install OSA SMF database schema in clustered mode?  
**Response:** Enter y.  
**Usage:** osaChamSms (clustered)

**Install RAP on SCP**
**Prompt:** Install RAP on SCP [y/n]? (default: n) [?]  
**Response:** To:  
- Install RAP on SLC, enter y  
- Not install RAP, accept the default value  
**Usage:** roamingScp
Install RIMS Macro Nodes
Prompt: Install the RIMS macro nodes? [y,n,?]  
Response: Enter y to continue.
Usage: rimsScp

Install database
Prompt: This is a clustered installation. You should only install the smcbSms database if this node is the primary node of the cluster.
* Do you want to install the smcbSms database to SMF1? [y,n,?]  
Response:  
- Unclustered SMS, enter y  
- Clustered, enter:  
  - y for a primary SMS  
  - n for a secondary SMS
Usage: smcbSms

Install database now
Prompt: Install the database? [y,n,?]  
Response: Enter y to install the database on the SMS now.
If n, the database will not be installed and you will need to install it manually at a later date by running the configuration script.
Usage: npSms, npScp

Install TRANS on SCP
Prompt: Install TRANS on SCP [y/n]? (default: n) [?]  
Response: To:  
- Install TRANS on SLC, enter y  
- Not install RAP, accept the default value.
Usage: roamingScp

Install USSD on SCP
Prompt: Install USSD on SCP [y/n]? (default: n) [?]  
Response: To:  
- Install USSD on this SLC, enter y  
- Not install USSD on this SLC, accept the default
Usage: roamingScp

Installing <co_ac> RADIUS Control Agent SMS Installation as
Prompt: Installing <co_ac> RADIUS Control Agent SMS installation as <rcaSms> [y,n,?]  
Response: Enter y to continue.
Usage: rcaSms

IP Address of Client for the PI
Prompt: Please enter the IP address of a client for the PI in the format nnn.nnn.nnn.nnn, where nnn are numbers between 0 and 255, or press enter to use the default. This client can be edited, and additional clients can be added, using the PI administration screens.
Response: Enter an IP address from which PI clients can make connections with PI.
Default is 127.0.0.1.

Usage: piSms

IP Address of Node
Prompt: Please enter IP ADDRESS OF NODE1. [?] 123.456.78.901
* IP ADDRESS OF NODE1: 123.456.78.901 - accept? [y,n,?] 123.456.78.901
Response: The IP Address of Node1 and 2 entered here will be updated in the /IN/html/startsms.jnlp file. This file is used to gain web access on cluster installations.
Usage: smsSms (clustered)

IS41 HLR SSN Address
Prompt: Please enter the IS41 HLR SSN address for the POSREQ plugin [?]
Response: Enter the IS-41 SSN (subsystem number) address for the SLC, for example 6 (Refer to your network support department for more information).

Usage: lcpScp

IS41 MSC Market ID
Prompt: Please enter the IS41 MSC Market ID for the POSREQ plugin [?]
Response: Enter the IS-41 Originating MSC ID (Market ID part), for example 14656 (Refer to your network support department for more information).

Usage: lcpScp

IS41 MSC Switch ID
Prompt: Please enter the IS41 MSC Switch ID for the POSREQ plugin [?]
Response: Enter the IS-41 Originating MSC ID (Switch ID part), for example 1 (Refer to your network support department for more information).

Usage: lcpScp

IS41 SCF PC Address
Prompt: Please enter the IS41 SCF PC address for the POSREQ plugin [?]
Response: Enter the IS-41 PC (point code) address for the SLC, for example 12 (Refer to your network support department for more information).

Usage: lcpScp
IS41 SCF SSN Address
Prompt: Please enter the IS41 SCF SSN address for the POSREQ plugin [?]
Response: Enter the IS-41 SSN (subsystem number) address for the SLC, for example 5 (Refer to your network support department for more information).
Usage: lcpScp

JRE 1.6 Available on the Console
Prompt: Certain screens need Java v1.6 on the console in order to operate. If an older version is used, that functionality won't be made available to the user.
Is JRE 1.6 available on the console (default: y) [y,n,?] 
Response: Enter y to continue with the installation.
If you enter anything other than y, the script will continue, but the screens reliant on JRE 1.6 will not be available.
Usage: dapSms

Language id for the Language
Prompt: Enter the language id for the 'lang' language 
(default: 0) [?]
Language 'lang' with id 'num' selected, is this correct? [y,n,?]
Response: Enter the language ID or accept default, then confirm.
Usage: uisSms

LCP_ts Tablespace
Prompt: Please enter the raw partition that should be used to create the LCP_ts tablespace [?]
Response: Enter the name of the raw device on which to store the LCP_ts tablesapce (refer to the Oracle sizing spreadsheet for more information).
Notes: The required tablespaces are:
- LCP_DATA
- LCP_INDEX
Usage: lcpSms

License Purchased
Prompt: Please select which License you have purchased:
* 1: Mobile Originating Only
* 2: Mobile Terminating Only
* 3: Both 
(default: 1) [?]
Response: Enter 3
Usage: smcbSms, smcbScp

Local Subsystem Number
Prompt: Please enter the local subsystem number (SSN) e.g. 8
Response: Enter 8
Usage: \texttt{npScp}

**Logical BE Server ID**

**Prompt:** Enter the logical BE Server ID that this Billing Engine will be (see Domain Configuration screen or CCS\_DOMAIN database table for valid values) [?]

**Response:** Enter the logical server ID for the VWS.

**Usage:** \texttt{ccsBE}

**logicalAddress Name**

**Prompt:** Enter logicalAddress name [This must exist in /etc/hosts on all nodes]: confirm (y/n):

**Response:** Enter the required name and confirm.

**Usage:** \texttt{osdCluster}

**Modify Tables to Database SMF**

**Prompt:** Modify tables to database SMF now? [y,n,?] 

**Response:** Enter \texttt{y} to modify tables.

**Usage:** \texttt{ccsDapSms}

**MNP Installed**

**Prompt:** Do you have MNP Installed \{y,n\}? 

**Response:** If MNP is:
- Installed, enter \texttt{y}
- Not installed, enter \texttt{n}

**Usage:** \texttt{roamingScp}

**Name of Administrator User for PI**

**Prompt:** Please enter the name of an administrator user for PI, or press enter to use the default. This user will have a security level of 99.

**Response:** Enter a username for the PI admin account. This is not a UNIX account, and will only be used in PI. The default is \texttt{admin}.

**Usage:** \texttt{piSms}

**Name of Above Client**

**Prompt:** Please enter the name of the above client (maximum 30 characters), or press enter to use the default. Allowed characters: a-z A-Z 0-9. Maximum 30 characters.

**Response:** Enter a name for the machine identified by the \textit{IP address of client for the PI} (on page 166). This adds a description to the IP address record. Default is \texttt{default}.

**Usage:** \texttt{piSms}
Node Cluster is Not the Primary Node
Prompt: The node cluster3b is NOT the primary node. The replication.config file needs to be re-initialised.
Enter the Replication Node ID. This needs to be unique for each node in the Oracle HA cluster, e.g. 1 for the primary node, 2 for the secondary node, etc):
 confirm (y/n):
Response: Enter the replication node ID, and confirm.
Usage: smsCluster (Oracle HA)

Node ID for SLEE Replication Interface
Prompt: Enter the node ID for the SLEE replication interface [600 - 1023] [?]
Response: Enter a node ID in the range 600 to 1023.
Usage: ccsBe

Node Name
Prompt: Enter node name (default: eng-host06-z3) [?]
Response: Enter the value or accept the default.
Usage: xmsScp

Node Type for SLEE Replication Interface
Prompt: Enter the node ID for the SLEE replication interface [600 - 1023]
(default: 801) [?]
Response: Enter a node ID or accept the default.
Usage: acsScp

Number of locApp Instances to Run
Prompt: Please enter the number of locApp instances to run (default: 1) [?]
Response: Enter the number of locApp instances or accept the default.
Usage: lcpScp

OSF Mount Points as ACS install
Prompt: Re-use the same OSF mount points as ACS install for VPN (db) database ? [y,n,?] 
Response: Accept the defaults unless they have been previously changed.
Usage: vpnSms, vpnScp
OFS Mount Points Which Contain SMF Core Data Files

Example Prompt:
Please specify the three OFS mount points which will contain the SMF core data files. These must contain sufficient disk space as indicated in the Product Administration Guide.

Enter FIRST redo log path (default: /volB/dbf1) [?]

Enter SECOND redo log path (default: /volB/dbf2) [?]

Enter THIRD redo log path (default: /volB/dbf3) [?]

Enter FIRST control file path (default: /volB/dbf1) [?]

Enter SECOND control file path (default: /volB/dbf2) [?]

Enter THIRD control file path (default: /volB/dbf3) [?]

Response: Prompts for the OFS mount points into which to install the Oracle data files. Accept the system prompt for the mount point.

Note: There are a few prompts, accept the default on each mount point.

Usage: smsSms, smsScp, acsSms, osaChamSms

OFS Mount Points Which Contain the Data Files

Example Prompt:
Please specify the three OFS mount points which will contain the package/platform data files. These must contain sufficient disk space as indicated in the Product Administration Guide.

Enter FIRST datafile path (default: /volA/dbf1) [?]

Enter SECOND datafile path (default: /volA/dbf2) [?]

Enter THIRD datafile path (default: /volA/dbf3) [?]

Response: Enter the three directories where the tablespace datafiles should reside or accept the defaults.

Note: For ccsScp, use the same mount points as the acsScp installations.

Usage: smsExtras, acsScp, beBe, ccsSms, ccsScp, ccsBe, osaChamScs, piSms

Oracle 9 64bit

Prompt:
Is this Oracle 9 64bit?
[y, n, ?]

Response: If this installation is on:
- Oracle 9 64bit, enter y
- Oracle 9 32bit, enter n

Usage: smsSms

Oracle Client Installations

Example Prompt:
Searching for Oracle Client Installations - Please Wait
NOTE: 3 options found, please choose one
(1) /u01/app/oracle/product/9.2.0
(2) /u01/app/oracle/product/10.2.0
(3) Manual

Select the options to use (default: 1) ?

Response: Enter the number of the option you require or accept the default.

Usage: ccsSms, lcaSms, npSms, vpnSms
Chapter 9

ORACLE Datafile Path on Remote Node
Prompt: Enter the ORACLE datafile path on the remote node (e.g. /volB/oracle/data/dbf1)
Response: Enter the datafile path or accept the default.
Usage: piSms

Oracle init Files
Prompt: Please specify a shared directory where to copy oracle init files. Ensure this is consistent with the directories specified during the SMS installation on the SCPs and other SMP nodes. This directory must exist and reside on a global file system that is accessible to all SMP nodes in your cluster.
(default: /u01/share/SMS/oracle/admin) [?]
* Shared directory for oracle files: /u01/share/SMS/oracle/admin-accept? [y,n,?]
Response: Enter y to accept the default directory or n to enter a different directory.
Usage: smsSms (clustered)

Oracle Initialisation File Template
Prompt: Please enter the Oracle initialisation file template to use for this installation:
NOTE: 3 options found, please choose one
(1) initBE_8i.ora
(2) initBE_9i.ora
(3) initBE_9i_optimised.ora
Select the option to use (default: 1) [?]
Response: Select the Oracle initialization file template designed to configure this instance of the E2BE database.
Usage: beBe

Oracle version
Prompt: Enter the Oracle server version (Enter as x.y.z e.g. 9.2.0) ?
Response: Enter the Oracle version.
Example: 9.2.0 (The full version must be entered including the trailing .0.)
Usage: smsSscp, aclsSms (clustered)

Oracle SID on the SMP
Prompt: Enter Oracle SID on the SMP {default: SMF1} [?]
Response: Enter a value or accept the default.
Usage: xmsSscp
Oracle Version
Prompt: Enter the Oracle Version (Enter as x.y.z) [9.2.0] ?
Response: Enter the Oracle version.
Example: 9.2.0 (The full version must be entered including the trailing .0.)
Usage: smsSms, smsExtras, beBe, osaChamSms

ORACLE_BASE
Example: Please enter the value of ORACLE_BASE to use.
Prompt:
NOTE: 2 options found, please choose one
(1) /u01/app/oracle
(2) Manual
Select the option to use (default: 1) [?]
Response: Accept the default or enter 2 for manual.
If you chose manual, enter the ORACLE_BASE directory.
Example: /volA/oracle/app/oracle
Usage: smsSms, smsScp, smsExtras, acsSms, beBe, uisSms, uisScp, upcScp, upcSms

ORACLE_HOME
Example: Please choose a value for ORACLE_HOME from the following list, taken from /var/opt/oracle/oratab.
Prompt:
NOTE: 2 options found, please choose one
(1) /u01/app/oracle/product/9.2.0
(2) Manual Entry or Exhaustive Search
Select the option to use (default: 1) [?]
Response: Select the ORACLE_HOME directory from the supplied list.
If you chose manual, enter the ORACLE_HOME directory.
Note: These are distinct directories, writable by Oracle, into which datafiles underlying SMS may be stored.
See your system administrator for these file locations.
Usage: smsSms, smsScp, smsExtras, acsScp, beBe, uisScp, upcScp, upcSms
**ORACLE_SID**

**Prompt:** Please specify the ORACLE_SID to use when configuring the database.
   (default: platform) [?]  
**Response:** Enter the Oracle_SID.
   The Oracle SID specifies the database associated with:
   - For an unclustered SMS
   - For clustered SMF1 for the primary SMS or SMF2 for the secondary SMS.
   Accept the default.

**Note:** For:
   - Unclustered, on the SMS machine, the default Oracle_SID is SMF. Unless the database was installed with a different Oracle_SID, enter **SMF**.
   - Clustered - On the primary SMS, the default Oracle_SID is **SMF1**. On the secondary SMS, the default Oracle_SID is **SMF2**.
   - The default Oracle_SID on an SLC is SCP. Unless the database was installed with a different Oracle_SID, enter **SCP**.
   - The default Oracle_SID on an Voucher and Wallet Server is **E2BE**.

**Usage:** smsSms, efmSms, smsScp, smsExtras, acsSms, acsScp, beSms, cssSms, cssScp, cssDapSms, dapsms, osaChamSms, lcaSms, lcpSms, npSms, vpnSms, uisSms, uisScp, upcScp, upcSms, piSms

**ORACLE_SID (SCP)**

**Prompt:** ORACLE_SID (SCP):  
**Response:** Enter a value or accept the default, then confirm.  
**Usage:** npScp

**Oracle Password for User scp**

**Prompt:** Oracle password for user scp (scp):  
**Response:** Enter a value or accept the default, then confirm.  
**Usage:** npScp

**Oracle User (SCP)**

**Prompt:** Oracle user (SCP):  
**Response:** Enter a value or accept the default, then confirm.  
**Usage:** npScp

**Oracle User Name**

**Prompt:** Enter package Oracle User Name. (default: default) [?]  
**Response:** Accept the default value.

**Notes:** For:
   - SMS, default is **smf**
   - SLC, default is **SCP**

**Usage:** roamingSms, roamingScp
Chapter 9

Password for oper
Prompt: NOTE: Please enter a password for oper in order to unlock the account for remote access.
New Password:
Re-enter new Password:
Response: Type and confirm password for smf_oper user.
Notes: Where op may be:
- ebe_oper
- is41_oper
- smf_oper
Usage: smsSms, smsScp, smsExtras, beBe, cdmagw

Password for oper In Order to Unlock Account for Remote Access
Prompt: NOTE: Please enter a password for package_oper in order to unlock the account for remote access.
(default: package_oper) [?]
New Password:
Re-enter new Password:
Response: Enter and confirm password for package_oper (for example, acs_oper) user.
Usage: acsSms, ccsSms, osaChamSms, osaChamScs, rimsSms, rimsScp, lcpScp, lcpSms, sesSms, sesScp, uisSms, uisScp, upcScp (stand-alone), upcSms

Password for ccs_oper on the SMS Host
Prompt: Enter the password for ccs_oper on the SMS host
Response: Enter the password for the UNIX system user ccs_oper on the SMS host.
Usage: ccsBE

Password for User on the Instance
Prompt: Please enter the password for the user user on the platform instance (default: default) [?]
Response: Accept the default.
Notes: Where machine may be:
- SMF, or SMF1 for Sms packages
- SCP for Scp packages
- E2BE for Be packages
Usage: Most NCC packages.

Password of Administrator User for PI
Response: Enter a password for the PI admin account.
Usage: piSms
Perform Changes on the Database

Prompt: WARNING!
On a clustered SMS, the database changes should only be performed on the primary node in the cluster. If this is a secondary node in a SMS cluster, then enter 'n' at the following prompt.

* Perform changes on the database now? [y,n,?]  

Response: For:
- Unclustered SMS, enter y
- Clustered, enter:
  - y for a primary SMS
  - n for a secondary SMS

Usage: lcaSms

Plugins to Configure

Prompt: App Plugin configuration...
0...All Plugins
1...GSM ATI Plugin
2...IS41 POSREQ Plugin
3...GSM SRI Plugin
Please choose which plugins to configure. [?]  

Response: Enter the number for the plug-in, depending on the required plug-in configuration, and confirm.

Result: The installation continues using the selected plug-in configuration.

If you enter 0, you will be prompted to install details for each plug-in.

Usage: lcpScp, lcpSms

Port to be Marked as Secure

Prompt: Is this port to be marked as secure. (Y / N)  

Response: To mark the port number for PI process (on page 175) as:
- Secure, enter Y.
- Not secured, enter N.

Default is N

Usage: piSms

Port Number for PI Process

Prompt: Please enter the port number for a PI process, or press enter to use the default. This port will have max connections of 10. This port can be edited, or additional ports can be added, using the PI administration screens. Allowed range 1024-65535. This port should not be in use by another process.

Response: Enter a port number for a PI process.
Default is 2999.

Note: You can add other port numbers using the PI Administration screens.

Usage: piSms
Prerequisite Package Not Completely Installed
Prompt: WARNING: The <osdSms> package "eServ OSD package " is a prerequisite package and is not completely installed. Do you want to continue with the installation of <osdCluster> [y,n,?] 
Response: Enter y to continue. Any other reply will abort the installation. 
Usage: osdCluster

Primary Billing Engine
Prompt: Is this the setup script for the PRIMARY billing engine? 
Response: If yes, enter y. 
Usage: ccsBe

Primary Node of the Cluster
Prompt: NOTE: The smsSms package has been installed in CLUSTERED mode. The app should only be added to the SMF database if this node is the primary node of the cluster. Is this node the primary node of the cluster? [y,n,?] 
Response: For: 
• The primary node of the cluster, enter y. 
• Secondary node of the cluster, enter n. 
Usage: acsSms, beSms, ccsSms, dapSms, lcpSms, roamingSms, sesSms

Product Installation Type
Prompt: Please select an app product installation type: 
* 1: app on an stand-alone SCP machine 
* 2: app on an dual-install SMS/SCP machine 
(default: 1) [?] 
Response: Select an installation type for this SLC. If you are installing the app on: 
• A stand-alone SLC, enter 1. 
• The same SLC as the SMS, enter 2. 
Your selection will be displayed. 
Notes: Where app may be: 
• ACS 
• npScp 
Usage: AcsScp, npScp
Prompt User for All Responses

Prompt: All: Prompt user for all responses
NOTE: 3 options found, please choose one
(1) Default
(2) All
(3) Quit

Select the option to use (default: 1) [?] 1

Response: The user will be prompted with appropriate messages depending on the type of defragmentation.

Usage: smsSms (clustered)

RADIUS Control Agent SCP Installation Configuration Menu

Prompt: RADIUS Control Agent: SCP Installation Configuration Menu ***
15 options found, please choose one

(1) Destination SLEE Service Key: 14
(2) SLEE Timer interface handle: Timer
(3) Oracle login: /
(4) RADIUS Port: Core messages: 1812
(5) RADIUS Port: Accounting messages: 1813
(6) RADIUS Port: Dynamic Authorization messages: 3799
(7) Acceptable message delay window: 300 second(s)
(8) Retry count: 10
(9) Maximum UDR file open time: 600 second(s)
(10) Maximum UDR file size: 1024 kb
(11) IDP parameters (select to display/set IDP parameters)
(12) Threshold Quota Gap: 10
(13) SLEE Poll Count: 100
(14) Select Timeout: 10000

OR

(15) ACCEPT THE CURRENT CONFIGURATION

Select the option to use [?]

Response: To:

- Change a parameter value, enter the option number for the parameter. You are then requested to enter the new value.
- View/modify the IDP parameters, enter 16.
- Accept the current configuration.

Note: Each time you change a parameter value, the SCP Configuration Menu is redisplayed.

Usage: rcaScp
RADIUS Control Agent SMP Installation Configuration Menu

Prompt: RADIUS Control Agent: SMP Installation Configuration Menu ***
9 options found, please choose one

(1) Configuration name: default
(2) Session Timeout: 0 second(s)
(3) Idle Timeout: 0 second(s)
(4) Internal Error Message: Network error. Please contact the service provider.
(5) Default Billing Type: Volume.
(6) Maximum Volume Quota: 0 (no maximum).
(7) Maximum Duration Quota: 0 (no maximum).
(8) Write UDR: UDRs written.

OR

(9) ACCEPT THE CURRENT CONFIGURATION

Response: Enter one of the following:
- Enter 9 to accept the values currently assigned to the configuration options
- Enter the number of the configuration option you want to change. You are then asked to enter the new value.

Note: The Configuration Menu is redisplayed each time you specify a new value for a configuration option. Once you are happy with the configuration, enter 9 to accept it.

Usage: rcaSms

Raw Device Check

Prompt: All of the above checks/steps must be completed before you continue or the fragmentation_install may fail.
Are you sure you wish to continue (Y/N)? y

Please enter the raw device for the REP_DATA tablespace (default: /dev/md/ora0/rdsk/d107) []?

Response: Enter y, then enter the location of the raw device for the REP_DATA tablespace or select the default.

Usage: smsSms (clustered)

Raw Partition Used to Create PI Tablespace

Prompt: Please enter the raw partition that should be used to create the PI_ts tablespace []?

Response: Enter the partition that is to be used to create the tablespace.
Examples - for:
- PI_DATA, the partition is /dev/did/rdsk/d15s0
- PI_INDEX, the partition is /dev/did/rdsk/d15s1

Usage: piSms (clustered)

Redirection Port

Prompt: Enter redirection port (default: 9832) []?

Response: Enter value or accept the default.

Usage: xmsScp
Replication Node Id
Prompt: Enter the Replication Node Id (accept default for dual-installations) (default: 1) [?]
Response: Accept the default for the replication node ID.
Usage: smsSms

Replication Node Id
Prompt: Enter the replication node ID for this Billing Engine (default: 351) [?]
Response: Enter the replication node ID or accept the default.
Usage: ccsBe

Required Database Sizing
Prompt: Please enter the required database sizing
Response: Prompt for the sizing of the database.
Usage: ccsScp, ccsBe

Response Deadline
Prompt: Please enter the response deadline in seconds (default: 2) [?]
Response: Enter the deadline for a response from the HLR/MSC for a location request or accept the default (2 seconds).
Usage: lcpScp

roamingSms Installed with USSD_IMSI_X_MSISDN Table
Prompt: Has roamingSms been installed with the USSD_IMSI_X_MSISDN table? [y/n]?
Response: Accept the default.
Usage: roamingScp

Run Configuration Script
Prompt: Run configuration script? (y/n):
Response: Enter y to run the configuration script now. This installs the database on the SLC.
If n, the configuration script will not run and you will need to run it manually at a later date.
Usage: npScp

Running as a Single BE
Prompt: Are we running as a single BE, or a pair of BE servers? (Yes for a pair, No for single)
Response: Enter y to create a pair of VWSs.
Usage: ccsBe
Chapter 9

Oracle User Name
Prompt: Enter SDP Oracle User Name. (SDP this is the owner of MNP tables!): (default: SDP)
Response: Accept the default value.
Usage: roamingScp

setuid/setgid Files
Prompt: The following files are being installed with setuid and/or setgid permissions:
/IN/service_packages/SMS/bin/smsSendSighup.sh <setuid root>
Do you want to install these as setuid/setgid files [y,n,?,q]
Response: Enter y to continue with the installation.
Usage: roamingScp

Shared Directory for Storing WSDL Files
Prompt: Please enter a shared directory (visible to all nodes in the cluster) for storing WSDL files. (default: /u01/share) [?]
Response: Enter the shared directory name or accept the default.
Usage: osdSms

Shared Directory for Storing XML Configuration
Prompt: Please enter a shared directory (visible to all nodes in the cluster) for storing xml configuration information.: /u01/share/SMS
Confirm /u01/share/SMS? (y/n): y
Response: Enter the path to the shared directory which will be used for storing xml configuration or accept the default.
Usage: smsSms (clustered)

Shared Directory Visible to All Nodes in Cluster
Example: In order to synchronise user and group IDs between all nodes in the cluster, please specify the absolute path to a shared directory that is visible to all nodes in the cluster.
Prompt: Shared directory (/global/dg-smf1/shared): /global/oracle/shared
Confirm /global/oracle/shared? (y/n):
Response: Enter the path to the shared directory which will be used for user and group IDs, then confirm.
Usage: smsSms (clustered), sesSms

Shared Secret
Prompt: Please enter the shared secret required to calculate MD5 check sum for RADIUS messages. [?]
Response: Enter and confirm the shared secret to use and confirm
Usage: rcaSms
slee_acs Configuration File
Prompt: Please enter the slee_acs configuration file (default: 
/IN/service_packages/SLEE/etc/acs.conf) [?]
Response: Enter the name of the slee_acs configuration file or accept the default.
Usage: lcpScp

SLEE configuration file name
Prompt: Please enter path to your SLEE configuration file
(default is /IN/service_packages/SLEE/etc/SLEE.cfg) [?]
Response: Enter the name of the SLEE configuration file or accept the default.
Usage: cdmagw, uisScp

SLEE Configuration File Name
Prompt: Please enter the SLEE configuration file name (default:
/IN/service_packages/SLEE/etc/SLEE.cfg) [?]
Response: Enter the name of the SLEE configuration file or accept the default.
Result: Questions will be asked to determine defaults for the LCP application.
Usage: lcpScp

SLEE Service Key of Location Application
Prompt: Please enter the SLEE service key of the Location Application (locApp)
(default: 15) [?]
Response: Enter the SLEE service key for LCP (locApp) or accept the default.
Usage: lcpScp

SLEE Startup File Name
Prompt: Please enter the SLEE startup file name (default:
/IN/service_packages/SLEE/bin/SLEE.sh) [?]
Response: Enter the name of the SLEE startup file or accept the default.
Result: The SLEE startup file will be updated for LCP.
Usage: lcpScp

SMF Password
Prompt: Enter SMF password (default: SMF) [?]
Response: Accept default.
Usage: osdSms, dapSms, xmsSms, sigtranSms

SMS Fully Qualified Host Name
Prompt: Enter the SMS fully qualified host name [?]
Response: Enter the fully-qualified host name. The name must include the domain name and would be similar to:
hcpt-tst-pbe01.oracle.co.nz
For clustered installations, this will be the shared hostname for the cluster.
Usage: smsScp, acsScp
Chapter 9

SMS Product Installation Type
Prompt: Please select an SMS product installation type:
* 1: smsScp on an SCP
* 2: smsScp on an SMF (using the SMF instance)
(default: 1) [?]
Response: Select an installation type for this SLC.
If you are installing the SLC on:
  ● A separate machine from the SMS, enter 1.
  ● The same machine as the SMS, enter 2.
Your selection will be displayed.
Usage: smsScp

SMS Reports Output Directory
Prompt: Please specify the SMS reports output directory.
This directory must exist and reside on a global file system that is accessible to all SMP nodes in your cluster.
(default: /u01/share/SMS/output) [?]
* SMS reports output directory: /u01/share/SMS/output - accept? [y,n,?] [?]
Response: Specify the output directory where the SMS reports will be generated.
Usage: smsSms (clustered)

smsMergeDaemon Replication Node Number
Prompt: Please specify the smsMergeDaemon replication node number.
(default: 1000) [?]
Response: Enter the smsMergeDaemon node number. This node number must be unique. It is recommended that you accept the default.
Usage: smsSms

Stats Daemon installed
Prompt: Do you want the smsStatsDaemon installed on this machine?
Response: To collect statistics from this machine, enter y.
If n, the script will jump forward to the completion notice.
Usage: smsExtras

smsStatsDaemon Replication Node Number
Prompt: Please specify the smsStatsDaemon replication node number
Response: Enter the replication node number of the smsStatsDaemon. You can configure the replication node details through the SMS UI.
The smsStatsDaemonStartup.sh script will use the -r switch to define the unique replication node number, instead of the --c and --a switches.
Usage: smsExtras
smsStatsDaemon to use Replication
Prompt: Do you want the smsStatsDaemon to use replication?
Response: To use the:
- Statistics replication process to transfer statistics from this machine to the SMS, enter y
- Flat file copying process to transfer the statistics from this machine to the SMS, enter n
If n, the script will jump forward to the SMF_STATISTICS_DEFN.
If y, the smsStatsDaemonStartup.sh script will use the –c and –a switches to define the locations of where to put the flat files of collected statistics
Usage: smsExtras

Specify Absolute Path to a Shared Directory
Prompt: In order to synchronise user and group IDs between all nodes in the cluster, please specify the absolute path to a shared directory that is visible to all nodes in the cluster. Shared directory (/global/dg-smf1/shared):
Response: Enter and confirm the name of a suitable directory, for example: /u01/share
Usage: acsSms (clustered)

Specify Name of Oracle HA Resource Group
Prompt: Please specify the name of the Oracle HA resource group: oracleha-rg
Name of Oracle HA resource group: oracleha-rg - accept (y/n)?
Response: Enter and confirm the name of the Oracle HA resource group.
Usage: smsCluster (Oracle HA)

Specify Time Zone
Prompt: Please specify the time zone (default: GMT)
Response: Accept the default time zone.
Usage: ccsSms

Start ACS Cluster Resources
Prompt: NOTE: This script starts the ACS cluster resources distributed with the acsCluster package.
NOTE: The ACS cluster resources should only be started once the acsCluster package has been installed on all nodes, i.e. if this node is the final node.
Start the ACS cluster resources now? [y,n,?]?
Response: Enter y if this is the final node to be installed.
Usage: acsCluster (Oracle RAC)
Chapter 9

Start Resource Groups
Prompt: Start resource groups? [only do this on the *final* node in a new installation] (y/n):
Response: Enter y if this is the final node in a new installation, otherwise enter n.
Usage: smsCluster, efmCluster, acsCluster (Oracle HA), osdCluster, ccsCluster (Oracle HA), piCluster (Oracle HA)

Statistics Node Type
Prompt: Please select the statistics node type:
1: Master
2: Client
(default: 1) [?]
Response: Accept default.
Notes: One SLC is nominated as master, subsequent SLCs are clients
Usage: acsScp

Stats Daemon Installed
Prompt: Do you want the Stats Daemon installed on this machine? [y,n,?]  
Response: Enter y or n.
Usage: smsSms

Stats Master SCP Fully Qualified Host Name
Prompt: Enter the Stats Master SCP fully qualified host name [?]
Response: Enter the fully-qualified name. The name must include the domain name and would be similar to:
    nz-dev-build01.oracle.co.nz
Usage: acsSms

Storage Option
Prompt: Please choose a storage option  
NOTE:  2 options found, please choose one  
(1) production
(2) design
Select the option to use (default: 1) [?]
Response: For a production machine, accept the default.
Usage: npSms

Store WSDL Files on a Shared Directory
Prompt: Storing WSDL files on a shared directory only needs to be done if this is an Oracle RCA cluster, or an Oracle HA cluster. Store WSDL files on a shared directory (default: n) [y,n,?]  
Response: Enter y to continue.
Usage: osdSms (clustered)
System Device Configuration File
Prompt: Please enter the full path and file name of a completed system device configuration file
(use the provided default as a template).
Response: This question will be asked only if N was answered to the question "Install E2BE with raw devices for datafiles?"
Usage: beBe

System Password
Prompt: Enter system password (default: manager) [?]
Response: Accept default.
Usage: osdSms, osdScp, xmsSms, xmsScp

Tcap Interface Handle
Prompt: Please enter the Tcap interface handle [?]
Response: Enter the name of the HLR/MSC TCAP interface.
Refer to TCAP Interfaces Technical Guide for more information.
Usage: lcpScp

Timer Interface
Prompt: Please enter the name of the Timer interface (default is Timer):
Confirm Timer? (y/n):
Response: Enter y, then confirm.
Usage: uisScp

Timer Interface Handle
Prompt: Please enter the timer interface handle (default: Timer) [?]
Response: Enter the name of the SLEE timer interface or accept the default.
Usage: lcpScp

Type of Machine
Prompt: Please enter the type of machine e.g. sms or scp or ext (for be) - (this is for inittab entries and program names)
Response: Enter the type of machine you are installing the smsExtras onto.
Options include:
- sms
- scp
- ext
Usage: smsExtras
Chapter 9

Update Database Now
Prompt: Update the database now?
[y, n, ?]
Response: Enter y to update the database.
Usage: uisSms, uisScp, upcScp, upcSms

Use CCS Service Library
Prompt: Use CCS service library instead of MMX service library (default: y)
[y, n, ?]
Response: Enter:
- y to install all features (tdp.conf is amended to use the CCS service library
ccsSvcLibrary).
- n if neither CCS nor Profile Management (PME) are installed on the machine
(tdp.conf will use the MMX service library).
Usage: xmsScp

Use Database to Configure the Stats Daemon
Prompt: Do you want use the database to configure the Stats Daemon? (No will
use a file, yes will use database) [y, n, ?]
Response: If you want to use the:
- Contents of the database table SMF_STATISTICS_DEFN to define the statistics
to collect, enter y
- smsStatsDaemon.cfg file, enter n
It is recommended that the database is used.
Usage: smsExtras

Use Raw Devices for CCS Tablespaces
Prompt: Use raw devices for CCS tablespaces?
Response: If you are:
- Using raw devices, enter y
- Not using raw devices, enter n
Usage: ccsBe

Use Replication for Alarm Reporting
Prompt: Do you want to use replication for alarm reporting?
[y, n, ?]
Response: If you want to:
- Use the database replication mechanism to pass alarms through to the SMS
using replication, enter y. The alarms are stored in the
SMF_ALARM_MESSAGE table in the database.
- Collect the alarms on the Oracle alert log, enter n
  If n is entered, the script will jump forward to smsStatsDaemon.
Usage: smsExtras
User Who Will Install the Database Scripts
Prompt: Please enter the user who will install the Database scripts 
(default: E2BE_ADMIN) [?]
Response: For a Voucher and Wallet Server accept the default. For other machines enter the 
Oracle username that can log in to that Oracle instance.
Usage: smsExtras

USSD Gateway Default Language
Prompt: Enter the USSD Gateway default language name 
(default: English) [?]
Response: Enter the default language name or accept the default.
Usage: uisSms

USSD_IMSI_X_MSISDN Table
Prompt: Install the USSD_IMSI_X_MSISDN table for number translations?
Response: Enter y to create the table, otherwise enter n.
Usage: roamingSms

Which Unique SCP Number is this Node
Prompt: Which unique SCP number is this node (1 .. 99)? 
(default: 1) [?]
Response: Enter the SLC node number for this SLC installation.
Notes: For more information about choosing node numbers, see Replication Overview in SMS Technical Guide. 
It is important to take note of the node numbers given in the configuration process. You 
must enter these node numbers, for replication, in the Node Management screen. For 
more information about the Node Management screen, see SMS User's Guide.
Usage: smsScp

XML Content Provider IP Address
Prompt: Enter the XML content provider IP address [?]
Response: Enter the IP address.
Usage: upcScp

XML Interaction Response Timer Duration
Prompt: Enter the XML interaction response timer duration (default: 3000) [?]
Response: Enter a value or accept the default.
Usage: upcScp
Overview

Introduction

This chapter explains how to verify that the Oracle Communications Network Charging and Control (NCC) applications work correctly following installation using the Oracle Communications Installation Manager tool.

In this chapter

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About Verifying the Installation

Introduction

Verify the NCC installation to ensure the system works correctly after being installed using the Oracle Communications NCC Installation Manager. This chapter describes how to set up NCC and the tests that you should run to verify the installation. These tests cover the basic features of the installation.

**Note:** The validation tests described in this chapter require the template service configuration to have been applied as part of the Installation Manager installation.

Prerequisites

Before you can start verifying the installation you must ensure that all:

- Nodes are up and running
- Post-installation tasks are completed
- SLEE processes are running correctly and without errors on the SLC and VWS machines

About The Validation Suite

The validation suite consists of the following:

- A set of slit, mipt and Plbatch template scripts
- A python script which uses the template script to produce runnable scripts based on the parameters set by the user during installation
The tests run during validation use the test binaries installed by the testTools package.

## Setting Up for Testing

### Introduction

To run the tests described in this chapter, you need to set up the following:

- Messaging Manager scheme
- Configuration files
- Prepare test tools

### Setting Up The Messaging Manager Scheme

Follow these steps to set up the scheme in Messaging Manager.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Open the Service Management System UI and select from the menu: **Services -> Messaging Manager -> Configuration**.  
Result: You see the Messaging Manager Configuration screen. |
| 2    | Select the **Schemes** tab. |
| 3    | From the table, select **PrepaidPack** and click **Open**.  
Result: You see the Messaging Manager Scheme 'PrepaidPack' screen. |
| 4    | Select the **Paths** tab and, from the table on the left side of the screen, select the **To SMSC using SMPP** path. |
| 5    | From the table on the right of the screen, select the **Generator** connection and click **Edit**.  
Result: You see the Edit SMPP Connection 'Generator' screen. |
| 6    | Change **Remote listen** to the IP address of the SLC and **Port** to **9000**. |
| 7    | Click **Save**.  
Result: You are returned to the Messaging Manager Scheme 'PrepaidPack' screen. |
| 8    | Select the **Triggering** tab, then select the **Detection point**: **Deliver** from the drop down list. |
| 9    | From the table, select the **Notification SMS** entry and click **Edit**.  
Result: You see the Edit Trigger Rule screen. |
| 10   | Ensure that the routing class for trigger processing is set to **Submit**. If it is not set to **Submit**, change the routing class by selecting the **Select routing class** check box, then selecting **Submit** from the drop down box.  
Click **Save**.  
Result: You are returned to the Messaging Manager Scheme 'PrepaidPack' screen. |
| 11   | Select the **Routing** tab, then select the **Routing class**: **Submit** from the drop down list. |
| 12   | From the table, select the **Notification SMS** entry and click **Edit**.  
Result: You see the Edit Routing Rule screen. |
| 13   | In the **Paths sequencing** area, from the table displaying the path, retries, and interval, select any existing entry in the list and click **Remove**. |
| 14   | From the drop down list, select **To SMSC using SMPP** and click **Add**, then **Save**.  
Result: You are returned to the **Routing** tab. |
| 15   | From the table, select the **SMSMO** entry and click **Edit**.  
Result: You see the Edit Routing Rule screen. |
Chapter 10

### Setting Up Configuration Files

To run the tests described in this chapter, you need to make changes to the following configuration files on the SLC.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Edit the `/IN/service_packages/SLEE/etc/SLEE.cfg` file by adding the following line at the end of the file:  
`INTERFACE=mapGenIF mapGenIF.sh /IN/service_packages/TEST_TOOLS/bin` |
| 2    | Edit the `/IN/service_packages/RAP/etc/rap.cfg` file by changing the following line:  
`TSAN_RANGE=001 100` to:  
`TSAN_RANGE=001 001` |

### Preparing Test Tools

You then need to prepare the test tools on the platforms.

On the SLC as user root, enter the following:

```bash
cd NCC_INSTALLER/validation
python prepare_scripts.py
cp *.slp *.mipt /IN/service_packages/TEST_TOOLS/etc
chown acs_oper:esg /IN/service_packages/TEST_TOOLS/etc/*
/IN/service_packages/SLEE/bin/slee-ctrl restart
su - acs_oper
cd /IN/service_packages/TEST_TOOLS/tmp/
nohup /IN/service_packages/TEST_TOOLS/bin/mipt -v
/IN/service_packages/TEST_TOOLS/etc/smsc.mipt > smsc.out 2>&1 &
```

On the SMS as user root, enter the following:

```bash
cd /var/spool/pkgNCC_INSTALLER/validation
python prepare_scripts.py
cp *.batch /tmp
```

### Provisioning

**About the Test**

This test uses the Provisioning Interface (PI) to execute the following commands:

- Create a new subscriber
- Query the subscriber
- Activate the subscriber
- Freeform recharge the General Cash balance
Simulating Provisioning Using PI

Follow these steps to simulate provisioning using PI and verify the results.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | On the SMS as user `smf_oper`, enter the following:  
`/IN/service_packages/PI/bin/PIbatch /tmp/pi_test.batch 127.0.0.1` |
| 2    | View the `/tmp/pi_test.batch.result` result file and verify that all commands were executed successfully.  
Enter the following:  
`$ cat /tmp/pi_test.batch.result` |

Example PI Test Output

```
->admin,admin;  
<ACK,SYNSTAMP=2013032207315244;  
  # Create subscriber  
  >CCSCD1=ADD:MSISDN=711000001,PROVIDER=OCNCCtemplate,PRODUCT=Bronze,SYNSTAMP=2013032207315245;  
  <-CCSCD1=ADD:ACK:ACCOUNT_NUMBER=10711000001,SYNSTAMP=2013032207315245;  
  Running command sleep 5  
  End of output from sleep 5  
  # Query subscriber:  
  >CCSCD1=QRY:MSISDN=711000001,SYNSTAMP=2013032207315246;  
  <-CCSCD1=QRY:ACK:MSISDN=711000001,ACCOUNT_NUMBER=10711000001,PRODUCT=Bronze,SERVICE_PROVIDER=OCNCCtemplate,STATUS=P,CREATION_DATE=2013032207315245,WALLET_EXPIRY_DATE=,BALANCE_EXPIRY_DATE=,BALANCE=500,INITIAL_BALANCE=500,LANGUAGE=english,FR_CURRENCY=RUB,FR_FREE_SWAPS_REMAINING=0,LAST_SWAP_RESET_DATE=,SYNSTAMP=2013032207315246;  
  # Activate subscriber  
  >CCSCD1=CHG:MSISDN=711000001,STATUS=A,SYNSTAMP=2013032207315247;  
  <-CCSCD1=CHG:ACK,SYNSTAMP=2013032207315247;  
  # Recharge subscriber  
  >CCSCD3=RCH:MSISDN=711000001,BALANCE_TYPE=General,CASH,AMOUNT=5000,RECHARGE_TYPE=Custom,REFERENCE=Validation,SYNSTAMP=2013032207315248;  
  <-CCSCD3=RCH:ACK,SYNSTAMP=2013032207315248;  
  # Query 1 balance type  
  >CCSCD1=QRY:MSISDN=711000001,BALANCE_TYPE=General,CASH,LIST_TYPE=BALANCE,SYNSTAMP=2013032207315249;  
  <-CCSCD1=QRY:ACK:MSISDN=711000001,ACCOUNT_NUMBER=10711000001,BALANCE=6500,SYNSTAMP=2013032207315249;  
  # Execute BPL - Subscribe to Community Service  
  >CCSBPL=EXE:MSISDN=711000001,BPL=CSACT,EXT1=2,SYNSTAMP=2013032207315250;  
  <-CCSBPL=EXE:ACK:302=Service activated,SYNSTAMP=2013032207315250;  
Disconnected
```
National MO Call

About the Test

This test simulates a 90 second national voice call for the subscriber previously created in the PI test, to an on-net called number.

Simulating a National Voice Call to an On-Net Called Number

Follow these steps to simulate a national voice call to an on-net called number.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Service Management System UI, select from the menu Services -&gt; Prepaid Charging -&gt; Subscriber Management.</td>
</tr>
<tr>
<td>2</td>
<td>Select the Subscriber tab.</td>
</tr>
<tr>
<td>3</td>
<td>In the Service Provider field, select the OCNC template from the drop down list.</td>
</tr>
<tr>
<td>4</td>
<td>In the Subscriber ID field, enter country_code11000001 where country_code is the country code configured in the NCC Installer during the installation.</td>
</tr>
<tr>
<td>5</td>
<td>Click Search.</td>
</tr>
<tr>
<td>6</td>
<td>In the table, select the entry found and click Edit. Result: You see the Edit Subscriber screen.</td>
</tr>
<tr>
<td>7</td>
<td>Select the Wallets option and take note of the total value of the General Cash balance type.</td>
</tr>
<tr>
<td>8</td>
<td>Click Cancel to close the subscriber again.</td>
</tr>
<tr>
<td>9</td>
<td>On the SLC, enter the following to simulate a voice call: su -acs_oper /IN/service_packages/TEST_TOOLS/bin/slpit -k 1 /IN/service_packages/TEST_TOOLS/etc/voice_national.slp</td>
</tr>
</tbody>
</table>

Output should report 1 call Ran and 1 Okay:

<table>
<thead>
<tr>
<th>Call Type</th>
<th>Ran</th>
<th>Okay</th>
<th>Failed</th>
<th>Aborted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

10 Reopen the subscriber as described in steps 6-7. Take note of the new total value of the General Cash balance type. This should have decreased by 1.25 (this can vary by an order of 10 or 100 depending on the currency base configured in the NCC Installer during the installation).

11 Click View EDRs and locate the first entry with EDR Type = Regular Call.

12 Select the entry and click Display. Result: The EDR displays all the information for the test call. Call Status should be Successful and Duration 90.0
Roaming MO Call

About the Test

This test simulates a 30 second roaming mobile originated voice call for the previously created subscriber to an on-net called number.

Simulating a Roaming Mobile Originated Voice Call to an On-Net Called Number

Follow these steps to simulate a roaming mobile originated voice call to an on-net called number.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Service Management System UI, select from the menu Services -&gt; Prepaid Charging -&gt; Subscriber Management.</td>
</tr>
<tr>
<td>2</td>
<td>Select the Subscriber tab.</td>
</tr>
<tr>
<td>3</td>
<td>In the Service Provider field, select the OCNCCTemplate from the drop down list.</td>
</tr>
<tr>
<td>4</td>
<td>In the Subscriber ID field, enter country_code11000001 where country_code is the country code configured in the NCC Installer during the installation. Click Search.</td>
</tr>
<tr>
<td>5</td>
<td>In the table, select the entry found and click Edit. Result: You see the Edit Subscriber screen. Select the Wallets option and take note of the total value of the General Cash balance type. Click Cancel to close the subscriber again.</td>
</tr>
<tr>
<td>6</td>
<td>On the SLC, enter the following to simulate a voice call:  su -s acs_oper  /IN/service_packages/TEST_TOOLS/bin/slpit -k 2  /IN/service_packages/TEST_TOOLS/etc/voice_roaming.slp  Output should report 1 call Ran and 1 Okay:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Call Type</th>
<th>Ran</th>
<th>Okay</th>
<th>Failed</th>
<th>Aborted</th>
</tr>
</thead>
<tbody>
<tr>
<td>---------</td>
<td>-----</td>
<td>------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Reopen the subscriber as described in steps 6-7. Take note of the new total value of the General Cash balance type. This should have decreased by 1.50 (this can vary by an order of 10 or 100 depending on the currency base configured in the NCC Installer during the installation). Click View EDRs and locate the first entry with EDR Type = Roaming Call. Select the entry and click Display. Result: The EDR displays all the information for the test call. Call Status should be Successful and Duration 30.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

USSD Balance Query

About the Test

This test simulates a USSD Balance Query.
# Simulating a USSD Balance Query

Follow these steps to simulate a USSD Balance Query.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | On the SLC, enter the following:  
      telnet localhost 3615  
      msisdn country_code=11000001  
      open 123456789012345 *125*# |

Where `country_code` is the country code configured in the NCC Installer during the installation.

**Result:** A response should be returned with the current General Cash balance value.

**Example output:**

```
# telnet localhost 3615
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
Ready. Type 'help' for usage.
msisdn 711000001
MSISDN set to '711000001'
open 123456789012345 *125*#
PA: Your current Cash balance is 55 EUR and 75 cents.
REL: Thank you for using this service
```

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>On the Service Management System UI, select from the menu Services -&gt; Prepaid Charging -&gt; Subscriber Management.</td>
</tr>
<tr>
<td>3</td>
<td>Select the Subscriber tab.</td>
</tr>
<tr>
<td>4</td>
<td>In the Service Provider field, select the OCNCCTemplate from the drop down list.</td>
</tr>
<tr>
<td>5</td>
<td>In the Subscriber ID field, enter <code>country_code=11000001</code> where <code>country_code</code> is the country code configured in the NCC Installer during the installation.</td>
</tr>
<tr>
<td>6</td>
<td>Click Search.</td>
</tr>
<tr>
<td>7</td>
<td>In the table, select the entry found and click Edit.</td>
</tr>
<tr>
<td>8</td>
<td>Select the Wallets option and verify that the General Cash balance value matches the text in Step 1 (That is: &quot;Your current cash balance is...&quot;)</td>
</tr>
</tbody>
</table>

---

## National SMS

### About the Test

This test simulates a national short message for the previously created subscriber to an on-net destination number.

### Simulating a National Short Message to an On-Net Destination Number

Follow these steps to simulate a national short message to an on-net destination number.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Service Management System UI, select from the menu Services -&gt; Prepaid Charging -&gt; Subscriber Management.</td>
</tr>
</tbody>
</table>
Chapter 10

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Select the Subscriber tab.</td>
</tr>
<tr>
<td>3</td>
<td>In the Service Provider field, select the OCNCCtemplate from the drop down list.</td>
</tr>
<tr>
<td>4</td>
<td>In the Subscriber ID field, enter country_code11000001 where country_code is the country code configured in the NCC Installer during the installation.</td>
</tr>
<tr>
<td>5</td>
<td>Click Search.</td>
</tr>
<tr>
<td>6</td>
<td>In the table, select the entry found and click Edit. Result: You see the Edit Subscriber screen.</td>
</tr>
<tr>
<td>7</td>
<td>Select the Wallets option and take note of the total value of the General Cash balance type.</td>
</tr>
<tr>
<td>8</td>
<td>Click Cancel to close the subscriber again.</td>
</tr>
<tr>
<td>9</td>
<td>On the SLC enter the following to simulate an SMS: su - acs_oper /IN/service_packages/TEST_TOOLS/bin/slpit -k 4 /IN/service_packages/TEST_TOOLS/etc/sms_national.slp</td>
</tr>
<tr>
<td>10</td>
<td>View the /IN/service_packages/TEST_TOOLS/tmp/smsc.out file. A new SMPP message should have been appended to the file with the following values: smpp_command_id = smpp_submit_sm smpp_destination_addr = 'country_code11000001' smpp_short_message = octets 'Test SMS'</td>
</tr>
<tr>
<td>11</td>
<td>Reopen the subscriber as described in steps 6-7. Take note of the new total value of the General Cash balance type. This should have decreased by 0.10 (this can vary by an order of 10 or 100 depending on the currency base configured in the NCC Installer during the installation).</td>
</tr>
<tr>
<td>12</td>
<td>Click View EDRs and locate the first entry with EDR Type = Short Message Named Event.</td>
</tr>
<tr>
<td>13</td>
<td>Select the entry and click Display. Result: The EDR displays all the information for the test SMS. Call status should be Successful and Event Name 'HPLMN On-net'.</td>
</tr>
</tbody>
</table>

**IVR Interaction + Service Subscription**

**About the Test**

This test simulates a voice call to the IVR, navigating through the IVR menus and attempting to subscribe to the Friends and Family service which incurs an immediate fee and subscription to a periodic monthly fee.

**Simulating a Voice Call to an IVR and Subscription to F&F Service**

Follow these steps to simulate a voice call to an IVR and subscription to F&F service.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Service Management System UI, select from the menu Services -&gt; Prepaid Charging -&gt; Subscriber Management.</td>
</tr>
<tr>
<td>2</td>
<td>Select the Product Type tab.</td>
</tr>
<tr>
<td>3</td>
<td>In the Service Provider field, select the OCNCCtemplate from the drop down list.</td>
</tr>
</tbody>
</table>
Chapter 10

Verifying the NCC Installation

Step | Action
--- | ---
4  | In the table, select the name **Bronze** and click **Edit**.  
**Result:** You see the Edit Product screen.
5  | Select the **Profile, Friends & Family Config** option and ensure that the **Friends & Family Enabled** check box is selected.
6  | Click **Save**.
7  | On the SLC enter the following to simulate an IVR call: 
```
  su - acs_oper
  /IN/service_packages/TEST_TOOLS/bin/slpit -k 1
  /IN/service_packages/TEST_TOOLS/etc/ivr.slp
```

**Output** should report 1 call Ran and 1 Okay:

<table>
<thead>
<tr>
<th>Call Type</th>
<th>Ran</th>
<th>Okay</th>
<th>Failed</th>
<th>Aborted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

8  | Reopen the subscriber as described in steps 6-7.
9  | Click **View EDRs**.  
**Result:** The last three EDRs should be as follows:
- Event Charge EDR of 1.00 for the immediate activation fee
- Periodic Charge State EDR for the subscription to the periodic fee
- Voucher Type Recharge EDR for the initial 8 'FF Free Changes' units

10 | Close the View EDRs window and select the **Subscriber/Friends and Family** tab. The Friends & Family Subscription Details should indicate an Active Current State.

Cleaning Up After Testing

Setting up Configuration Files

Once you have finished running the tests described in this chapter, you need to make changes to restore the original settings in the following configuration files on the SLC.

Step | Action
--- | ---
1  | Edit the `/IN/service_packages/SLEE/etc/SLEE.cfg` file by removing the following line at the end of the file: 
`INTERFACE=mapGenIF mapGenIF.sh /IN/service_packages/TEST_TOOLS/bin l EVENT`  
2  | Edit the `/IN/service_packages/RAP/etc/rap.cfg` file by changing the following line: 
`TSAN_RANGE=001 001`  
   to:  
`TSAN_RANGE=001 100`
Overview

Introduction

This chapter explains how to remove the Oracle Communications Network Charging and Control (NCC) packages.

You must remove packages in the reverse order of the installation described in Installation.

In this chapter

This chapter contains the following topics.

Removing NCC Packages 199
Removal Prompts 204

Removing NCC Packages

Introduction

This topic explains which packages to remove on the SMS, SLC and VWS machines to un-install the NCC system.

Note: Package removal will leave behind database tablespace files. These will need manual removal once all packages have been removed.

Before You Begin

The pkgrm command will delete the entire package directory. Please check the /IN/service_packages directories for the NCC applications for any files you wish to keep.

If you are storing any critical files there, please move them before starting these procedures.

Application Removal Sequence

Remove the NCC packages in reverse order to that specified in the Application build sequence.

Removing a Be Package

Follow these steps to remove a Be package from a VWS.

Note: You must ensure that the ccsVoucherBe package was removed prior to removing ccsBe.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the VWS as root.</td>
</tr>
<tr>
<td>2</td>
<td>Enter <code>pkgrm appBe</code> where <code>app</code> is the application.</td>
</tr>
<tr>
<td></td>
<td>Result: This will remove the package.</td>
</tr>
</tbody>
</table>
During the removal procedure, there are a number of prompts that you must reply to. See Removal Prompts (on page 204) for assistance.

**Removing an Scp Package**

Follow these steps to remove an Scp package from a SLC.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SLC as root.</td>
</tr>
</tbody>
</table>
| 2    | Enter `pkgrm appScp`  
where *app* is the application.  
Result: This will remove this package. |

During the removal procedure, there are a number of prompts that you must reply to. See Removal Prompts (on page 204) for assistance.

**Removing the ccsCluster Package**

Follow these steps to remove the ccsCluster package from a clustered SMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SMS as root.</td>
</tr>
</tbody>
</table>
| 2    | Enter `pkgrm ccsCluster`  
Result: The package is removed. |

Note: When removing packages on a clustered SMS, it is sometimes possible that cluster resource groups do not get removed. A resource group cannot be removed while it is in error, and the resource group can go into an error state while it is being removed. The scripts for removing cluster resources are auto-generated by Sun Cluster, so cannot be edited to clear the error state, and there is no way of guaranteeing that it will not go back into the error state immediately after clearing. To fix this issue, see Clearing cluster resource groups (on page 200).

Tip: It is a good idea to remove packages in reverse order. Therefore, you should remove ccsCluster on the secondary node before removing it from the primary node.

During the removal procedure, there are a number of prompts that you must reply to. See Removal Prompts (on page 204) for assistance.

**Clearing Cluster Resource Groups**

Follow these steps to clear cluster resource groups.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure you are logged into the SMS as root.</td>
</tr>
</tbody>
</table>
| 2    | At the root prompt, run the cluster setup tool:  
`clsetup`  
Result: The options menu is displayed. |
| 3    | Select option 2) Resource groups  
Result: The Resource Group menu is displayed. |
| 4    | Select option 12) Clear the stop_failed error flag from a resource |
| 5    | Enter `yes` to continue. |
| 6    | Select any resource groups listed to clear the STOP_FAILED flag. |
### Chapter 11, Uninstalling NCC

#### Step 7
From the resource group menu select 11) Remove a resource group.

#### Step 8
Select for removal any resource groups that are associated with the SMS Daemon processes.

**Warning:** Do not remove any resource groups associated with **RAC**, **QFS**, **ZFS**, or rhw groups **node1-hard** and **node2-hard**.

#### Step 9
Once completed, enter **q** to quit from each menu and return to the command prompt.

### Removing an Sms Package

Follow these steps to remove an sms package from the SMS.

**Note:** You must ensure that the **ccsVoucherSms** package has been removed already.

#### Step 1
Ensure you are logged into the SMS as root.

#### Step 2
Enter `pkgrm appSms` where **app** is the application.

**Result:** This removes the package.

During the removal procedure, there are a number of prompts that you must reply to. See *Removal Prompts* (on page 204) for assistance.

### Example ccsCluster Removal Primary SMS Node

The text below provides an example of the text displayed, prompts and responses, during a removal of the ccsCluster package from the primary SMS node, with an Oracle HA database.

```bash
# pkgrm ccsCluster

The following package is currently installed:
ccsCluster  Sun Cluster resource types for CCS binaries
  (sparc) 3.1.8.3

Do you want to remove this package? [y,n,?,q] y

## Removing installed package instance <ccsCluster>

This package contains scripts which will be executed with super-user permission during the process of removing this package.

Do you want to continue with the removal of this package [y,n,?,q] y

## Verifying package <ccsCluster> dependencies in global zone
## Processing package information.
## Executing preremove script.

Before removing this package, you must execute the following script:
  /opt/ccsCluster.unconf.sh as the super-user.

Would you like me to execute this script for you now? (y/n): y

Remove resource groups? [Warning - this will affect *all* cluster nodes] (y/n): y
/usr/bin/ksh /opt/ESERVccsBeOrb/util/removeCcsBeOrb -v
Disabling the resource <CcsBeOrb-hars> ...
scswtch -n -j CcsBeOrb-hars done.
Removing the resource <CcsBeOrb-hars> ...
scrgadm -r -j CcsBeOrb-hars
```
Example xmsScp Removal

The text below provides an example of the text displayed, prompts and responses, during a removal of the xmsScp package from the SLC.

```
pkgrm xmsScp
The following package is currently installed:
 xmsScp  XMS Installation
        (sun4u) 4.1.1.0
Do you want to remove this package? [y,n,?,q] y
## Removing installed package instance <xmsScp>
This package contains scripts which will be executed with super-user permission during the process of removing this package.

Do you want to continue with the removal of this package [y,n,?,q] y
## Verifying package <xmsScp> dependencies in global zone
## Processing package information.
## Executing preremove script.
* Importing SMF environment variables.
Back up tdp.conf as 'IN/service_packages/tdp.conf.xms'
* Removing entry xms1 from /etc/inittab
* Reloading inittab.
```

NOTE: Deleting XMS Tables for database SCP ....
NOTE: Deleting XMS Users for database SCP ....
NOTE: Deleting XMS Tablespaces for database SCP ...
* XMS database updates were successfully removed.
* xmsScp database updates were removed.

... SQL> Disconnected from Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, Real Application Clusters and Data Mining options

* xmsScp uninstall is complete

## Removing pathnames in class <none>
/IN/service_packages/XMS/xmsScp.unconf.sh
/IN/service_packages/XMS/xmsScp.conf.sh
.
.
.
Removal of <xmsScp> was successful.

## Executing postremove script.
NOTE:     Removing user xms_oper
NOTE:     Removing files from the /IN/service_packages/XMS directory structure
## Updating system information.
Removal of <xmsScp> was successful.

### Example xmsSms Removal

The text below provides an example of the text displayed, prompts and responses, during a removal of
the xmsSms package from the primary node of a clustered SMS.

`pkgrm xmsSms`

The following package is currently installed:
  xmsSms  XMS (for SMS) Installation
          (sun4u) 4.0.0.1.b3

Do you want to remove this package? [y,n,?,q] y

## Removing installed package instance <xmsSms>

This package contains scripts which will be executed with super-user permission during the
process of removing this package.

Do you want to continue with the removal of this package [y,n,?,q] y

## Verifying package <xmsSms> dependencies in global zone
## Processing package information.
## Executing preremove script.
* Importing SMF environment variables.
  * xmsSms statistics database updates were removed.

NOTE: Deleting SMF Packages for database SMF1 ....
NOTE: Deleting SMF Sequences for database SMF1 ....
NOTE: Deleting SMF Triggers for database SMF1 ....
.
.
.
* xmsSms database updates were removed.
* xmsSms node database updates were removed.
* Profile management database updates were removed.
* Control plans were removed.
* xmsSms uninstall is complete
## Removing pathnames in class <none>
/IN/service_packages/XMS/xmsSms.unconf.sh
/IN/service_packages/XMS/xmsSms.conf.sh
.
.
.

## Executing postremove script.
NOTE: Removing user xms_oper
NOTE: Removing /IN/html/Xms_Service
NOTE: Removing files from the /IN/service_packages/XMS directory structure
rm: directory "/IN/service_packages/XMS/bin" Directory not empty
/IN/service_packages/XMS/bin is not empty, not removing.
/IN/service_packages/XMS is not empty, not removing.
## Updating system information.
Removal of <xmsSms> was successful.

### Removal Prompts

#### List of Removal Prompts

Here is a list of prompts that you may encounter during the removal of an NCC package.

**Continue with Removal**

**Prompt:** This package contains scripts which will be executed with super-user permission during the process of removing this package.
Do you want to continue with the removal of this package [y,n,?,?,q]

**Response:** Enter y to continue with the removal.
Any other response will cancel the removal process.

**Usage:** All NCC packages.

**Confirm that You Intend to Remove Database**

**Prompt:** Please confirm that you intend to remove the database SMF (y/[n])

**Response:** To continue with the removal process of the SMF, enter y.
Any other answer will continue with the removal but leave the SMF intact.

**Usage:** smsSms

**Could Not Resolve Service Name**

**Prompt:** ORA-12154: TNS:could not resolve service name. Quit? [y,n,?] 

**Response:** Enter n to continue.

**Usage:** uisSms

**Database Instance on a Remote Node**

**Prompt:** Is the database instance on a remote node ? [y,n,?] 

**Response:** If the database has:
- Been set up on a remote node, enter y
- Not been set up on a remote node, enter n

**Usage:** lcpSms, npPIISms, uisSms, piSms, piappSms
Disable PI Tester
Prompt:  NOTE: The PI Tester should be disabled if this is the last customer piSms package to be removed.
* Do you want to disable the PI Tester?
Response:  Enter y to continue.
Usage:  piappSms

Execute Script for You Now
Prompt:  Before removing this package, you must execute the following script:
   /opt/app.unconf.sh
   as the super-user.
Would you like me to execute this script for you now? (y/n):
Response:  Enter y to continue.
Usage:  acsCluster, ccsCluster, dapsms, piSms, npPISms, piCluster, piappSms

Password for User on the Instance
Prompt:  Please enter the password for the user user on the platform instance
   (default: default) [?]
Response:  Accept the default.
Notes:  Where platform may be:
   • SMF, or SMF1 for Sms packages
   • SCP for Scp packages
   • E2BE for Be packages
Usage:  Most NCC packages.

Primary Node of the Cluster
Prompt:  Is this node the primary node of the cluster? [y,n,?]
Response:  Enter y only if this is the primary node in the cluster, otherwise enter n.
Usage:  dapSms, lcpSms

ORACLE_BASE
Example:  Please enter the value of ORACLE_BASE to use.
Prompt:  NOTE:  2 options found, please choose one
   (1) /u01/app/oracle
   (2) Manual
   Select the option to use (default: 1) [?]
Response:  Accept default or chose 2 Manual.
   If you chose manual, enter the ORACLE_BASE directory.
   Example:  /volA/oracle/app/oracle
Usage:  uisScp, uisSms, upcScp, upcSms
Chapter 11

**ORACLE_HOME**

**Example**

Please choose a value for ORACLE_HOME from the following list, taken from /var/opt/oracle/oratab.

**Prompt:**

NOTE: 2 options found, please choose one
(1) /u01/app/oracle/product/9.2.0.4
(2) Manual Entry or Exhaustive Search

Select the option to use (default: 1) [?]

**Response:** Select the ORACLE_HOME directory from the supplied list.
If you chose manual, enter the ORACLE_HOME directory.

*Note:* These are distinct directories, writable by Oracle, into which datafiles underlying SMS may be stored.

See your system administrator for these file locations.

**Usage:** uisSms, upcSms, upcScp

**ORACLE_HOME Is Currently Set To**

**Prompt:** ORACLE_HOME is currently set to /u01/app/oracle/product/9.2.0.4. Use this setting? [y,n,?] [?

**Response:** Enter a value or accept the default.

**Usage:** uisScp, upcScp

**ORACLE_SID**

**Prompt:** Please specify the ORACLE_SID to use when configuring the database. (default: platform) [ ?]

**Response:** Enter the Oracle_SID.

The Oracle SID specifies the database associated with:
- For an unclustered SMS
- For clustered SMF1 for the primary SMS, or SMF2 for the secondary SMS.

Accept the default.

*Note:* For:
- Unclustered, on the SMS machine, the default Oracle_SID is SMF. Unless the database was installed with a different Oracle_SID, enter SMF.
- Clustered - On the primary SMS, the default Oracle_SID is SMF1. On the secondary SMS, the default Oracle_SID is SMF2.
- The default Oracle_SID on an SLC is SCP. Unless the database was installed with a different Oracle_SID, enter SCP.
- The default Oracle_SID on an Voucher and Wallet Server is E2BE.

**Usage:** efmSms, dapSms, lcpSms, uisSms, uisScp, upcScp, upcSms

**Remove Database**

**Prompt:** Do you want to remove the database (y/n):

**Response:** Enter y to remove the database.

**Usage:** npScp, npSms
Remove Database Full Cluster Database
Prompt: Remove Database Full Cluster Database (no will remove local instance only)? [y,n,?] 
Response: To remove the full SMF and all contents in the database, enter y. To continue the removal process, remove only the local SMF, enter n. 
Usage: smsSms

Remove EFM Alarm Definitions
Prompt: Remove EFM alarm definitions from the SMS Database? [y,n,?] 
Response: To remove the alarm definitions from the SMF, enter y. To leave the definitions in the database, enter n. 
Usage: efmSms

Remove Package
Prompt: Do you want to remove this package? [y,n,?,q] 
Response: Enter y to continue with the removal. Any other response will cancel the removal process. 
Usage: All NCC packages.

Remove Resource Groups
Prompt: Remove resource groups? [Warning - this will affect *all* cluster nodes] (y/n): 
Response: Enter y to continue. 
Usage: acsCluster, ccsCluster

Remove SMS Database
Prompt: Remove SMS Database? [y,n,?] 
Response: To remove the SMF and all contents in the database, enter y. To continue the removal process, but leave that database and data intact, enter n. 
Usage: smsSms

Run Unconfiguration Script
Prompt: Run the unconfiguration script? (y/n): 
Response: Enter y to run the unconfiguration script. If you answer n, you must run the /IN/service_packages/NP_SERVICE_PACK/npScp.unconf.sh script manually at a later date. 
Usage: npScp, npSms
SLEE Configuration File
Prompt: Please enter path to your SLEE configuration file (default is /IN/service_packages/SLEE/etc/SLEE.cfg) [?]
Response: Enter the name of the SLEE configuration file or accept the default.
Usage: uisScp

Oracle User Name
Prompt: Enter app Oracle User Name.
(default: app)
Response: Accept the default value.
Usage: roamingSms, roamingScp

Undo Database Changes Now
Prompt: * Undo database changes now?
[y,n,?]
Response:
Usage: uisScp (Standalone), upcScp (Standalone), upcSms

Uninstall Database Now
Prompt: Uninstall database now?
[y,n,?]
Response: Enter y to continue removal of the database or n to quit the uninstallation process.
Usage: dapScp
NCC Glossary of Terms

AAA

ACS
Advanced Control Services configuration platform.

ANI
Automatic Number Identification - Term used in the USA by long-distance carriers for CLI.

ASP
- Application Service Provider, or

ATI
Any Time Interrogation - this process is used on a GSM network to interrogate the HLR for location and or subscriber information.

Base Directory
This manual assumes that the application was installed into the default directory, and with the default directory structure.

If you have installed the application into a non-standard directory or directory structure, you will have to amend some of the instructions where a full directory path has been supplied.

Note: It is not recommended to install the application in anywhere other than the default directory, and with the default directory structure.

BE
Billing Engine

CAMEL
Customized Applications for Mobile network Enhanced Logic
This is a 3GPP (Third Generation Partnership Project) initiative to extend traditional IN services found in fixed networks into mobile networks. The architecture is similar to that of traditional IN, in that the control functions and switching functions are remote. Unlike the fixed IN environment, in mobile networks the subscriber may roam into another PLMN (Public Land Mobile Network), consequently the controlling function must interact with a switching function in a foreign network. CAMEL specifies the agreed information flows that may be passed between these networks.

CCS
1) Charging Control Services (or Prepaid Charging) component.
2) Common Channel Signalling. A signalling system used in telephone networks that separates signalling information from user data.
CDMA

Code Division Multiple Access is a method for describing physical radio channels. Data intended for a specific channel is modulated with that channel's code. These are typically pseudo-random in nature, and possess favourable correlation properties to ensure physical channels are not confused with one another.

CDR

Call Data Record

Note: The industry standard for CDR is EDR (Event Detail Record). Over time EDR will replace CDR in the Oracle documentation.

CLI

Calling Line Identification - the telephone number of the caller. Also referred to as ANI.

Connection

Transport level link between two peers, providing for multiple sessions.

CPU

Central Processing Unit

DAP

Data Access Pack. An extension module for ACS which allows control plans to make asynchronous requests to external systems over various protocols including XML and LDAP.

DB

Database

Diameter

A feature rich AAA protocol. Utilises SCTP and TCP transports.

DP

Detection Point

DTMF

Dual Tone Multi-Frequency - system used by touch tone telephones where one high and one low frequency, or tone, is assigned to each touch tone button on the phone.

E2BE

Code used to designate some components and path locations used by the UBE.

EDR

Event Detail Record

Note: Previously CDR. The industry standard for CDR is EDR (Event Detail Record). Over time EDR will replace CDR in the NCC documentation.
EMI
Exchange Message Interface protocol

ENUM
E.164 Number Mapping.

FDA
First Delivery Attempt - the delivery of a short message directly to the SME rather than relaying it through the MC.

FTP
File Transfer Protocol - protocol for electronic transfer of files

GMSC
Gateway MSC. The first MSC which handles a call. For a MOC, this is the caller’s attached MSC. For an MTC, this is the first non-transit MSC in the subscriber’s network that receives the inbound call.

GPRS
General Packet Radio Service - employed to connect mobile cellular users to PDN (Public Data Network- for example the Internet).

GSM
Global System for Mobile communication.

It is a second generation cellular telecommunication system. Unlike first generation systems, GSM is digital and thus introduced greater enhancements such as security, capacity, quality and the ability to support integrated services.

GT
Global Title.

The GT may be defined in any of the following formats:

- Type 1: String in the form "1,<noa>,<BCD address digits>"
- Type 2: String in the form "2,<trans type><BCD address digits>"
- Type 3: String in the form "3,<trans type>,<num plan>,<BCD address digits>"
- Type 4: String in the form "4,<trans type>,<num plan>,<noa>,<BCD address digits>"

The contents of the Global Title are defined in the Q713 specification, please refer to section 3.4.2.3 for further details on defining Global Title.

GUI
Graphical User Interface
HLR
The Home Location Register is a database within the HPLMN (Home Public Land Mobile Network). It provides routing information for MT calls and SMS. It is also responsible for the maintenance of user subscription information. This is distributed to the relevant VLR, or SGSN (Serving GPRS Support Node) through the attach process and mobility management procedures such as Location Area and Routing Area updates.

HPLMN
Home PLMN

HTML
HyperText Markup Language, a small application of SGML used on the World Wide Web.
It defines a very simple class of report-style documents, with section headings, paragraphs, lists, tables, and illustrations, with a few informational and presentational items, and some hypertext and multimedia.

HTTP
Hypertext Transport Protocol is the standard protocol for the carriage of data around the Internet.

IDP
INAP message: Initial DP (Initial Detection Point)

IN
Intelligent Network

INAP
Intelligent Network Application Part - a protocol offering real time communication between IN elements.

Initial DP
Initial Detection Point - INAP Operation. This is the operation that is sent when the switch reaches a trigger detection point.

IP
1) Internet Protocol
2) Intelligent Peripheral - This is a node in an Intelligent Network containing a Specialized Resource Function (SRF).

IP address
Internet Protocol Address - network address of a card on a computer

IS-41
Interim Standard 41 is a signaling protocol used in cellular telecommunications systems. It deals with the signalling between the MSC and other network elements for the purpose of handovers and roaming etc.
ISDN
Integrated Services Digital Network - set of protocols for connecting ISDN stations.

ISUP
ISDN User Part - part of the SS7 protocol layer and used in the setting up, management, and release of trunks that carry voice and data between calling and called parties.

ITU
International Telecommunication Union

IVR
Interactive Voice Response - systems that provide information in the form of recorded messages over telephone lines in response to user input in the form of spoken words or, more commonly, DTMF signalling.

LCP
Location Capabilities Pack - set of software components used by other applications to look up the location of mobile devices.

M3UA
MTP3 User Adaptation. The equivalent of MTP in the SIGTRAN suite.

MAP
Mobile Application Part - a protocol which enables real time communication between nodes in a mobile cellular network. A typical usage of the protocol would be for the transfer of location information from the VLR to the HLR.

MC
Message Centre. Also known as SMSC.

Messaging Manager
The Messaging Manager service and the Short Message Service components of Oracle Communications Network Charging and Control product. Component acronym is MM (formerly MMX).

MGC
Media Gateway Controller

MM
Messaging Manager. Formerly MMX, see also XMS (on page 219) and Messaging Manager (on page 213).

MNP
Mobile Number Portability
MO
Mobile Originated

MOC
Managed Object Class

MS
Mobile Station

MSC
Mobile Switching Centre. Also known as a switch.

MT
Mobile Terminated

MTC
Mobile Terminated Call. The part of the call associated with a subscriber receiving an inbound call.

MTP
Message Transfer Part (part of the SS7 protocol stack).

MTP3
Message Transfer Part - Level 3.

NP
Number Portability

Oracle
Oracle Corporation

OSA
Open Service Access provides a standard interface through which developers can design services that may interact with functions within the network.

PC
Point Code. The Point Code is the address of a switching point.

Peer
Remote machine, which for our purposes is capable of acting as a Diameter agent.

PI
Provisioning Interface - used for bulk database updates/configuration instead of GUI based configuration.
**PL/SQL**
Oracle's Procedural Language for stored procedures and packages.

**PLMN**
Public Land Mobile Network

**RADIUS**
Remote Authentication Dial-In User Service - a system of distributed security that secures remote access to networks and network services against unauthorised access.

**RIMS**
Routing Information for Mobile Services. Used to cache HLR lookup information.

*Note:* Now known as "Messaging Manager Navigator".

**SCA**
1) Service Centre Address
2) Session Control Agent for Session Initiation Protocol (SIP)

**SCCP**
Signalling Connection Control Part (part of the SS7 protocol stack).

**SCF**
Service Control Function - this is the application of service logic to control functional entities in providing Intelligent Network services.

**SCP**
Service Control Point. Also known as SLC.

**SCTP**
Stream Control Transmission Protocol. A transport-layer protocol analogous to the TCP or User Datagram Protocol (UDP). SCTP provides some similar services as TCP (reliable, in-sequence transport of messages with congestion control) but adds high availability.

**Service Provider**
See Telco.

**SES**
Subscriber Event Service is an application that enables a service provider to send text messages to roaming subscribers (both their own and foreign subscribers) when they roam in and out of their network.

**Session**
Diameter exchange relating to a particular user or subscriber access to a provided service (for example, a telephone call).
SGML

SGSN
Serving GPRS Support Node

SIP
Session Initiation Protocol - a signaling protocol for Internet conferencing, telephony, event notification and instant messaging. (IETF)

SLC
Service Logic Controller (formerly UAS).

SLEE
Service Logic Execution Environment

SME
Short Message Entity - an entity which may send or receive Short Messages. It may be located in a fixed network, a mobile, or an SMSC.

SMPP
Short Message Peer-to-Peer protocol

SMS
Depending on context, can be:
- Short Message Service
- Service Management System platform
- NCC Service Management System application

SMSC
Short Message Service Centre - stores and forwards a short message to the indicated destination subscriber number.

SNMP

SOAP

SQL
Structured Query Language - a database query language.
SRF
Specialized Resource Function - This is a node on an IN which can connect to both the SSP and the SLC and delivers additional special resources into the call, mostly related to voice data, for example play voice announcements or collect DTMF tones from the user. Can be present on an SSP or an Intelligent Peripheral (IP).

SRI
Send Routing Information - This process is used on a GSM network to interrogate the HLR for subscriber routing information.

SS7
A Common Channel Signalling system used in many modern telecoms networks that provides a suite of protocols which enables circuit and non circuit related information to be routed about and between networks. The main protocols include MTP, SCCP and ISUP.

SSN
Subsystem Number. An integer identifying applications on the SCCP layer. For values, refer to 3GPP TS 23.003.

SSP
Service Switching Point

SUA
Signalling Connection Control Part User Adaptation Layer

System Administrator
The person(s) responsible for the overall set-up and maintenance of the IN.

TCAP
Transaction Capabilities Application Part – layer in protocol stack, message protocol.

TCP
Transmission Control Protocol. This is a reliable octet streaming protocol used by the majority of applications on the Internet. It provides a connection-oriented, full-duplex, point to point service between hosts.

Telco
Telecommunications Provider. This is the company that provides the telephone service to customers.

Telecommunications Provider
See Telco.

TFR
TCAP Filter Relay
UCAI
Universal Call Agent ISUP (formerly VSSP)

UIS
USSD Interactive Services

UPC
USSD Portal Components

URL
Uniform Resource Locator. A standard way of specifying the location of an object, typically a web page, on the Internet.

USMS
Universal Service Management System hardware platform.

USSD
Unstructured Supplementary Service Data - a feature in the GSM MAP protocol that can be used to provide subscriber functions such as Balance Query and Friends and Family Access.

VLR
Visitor Location Register - contains all subscriber data required for call handling and mobility management for mobile subscribers currently located in the area controlled by the VLR.

VPN
The Virtual Private Network product is an enhanced services capability enabling private network facilities across a public telephony network.

VSSP
Virtual SSP - old name for UCAI

VWS
Oracle Voucher and Wallet Server (formerly UBE).

WSDL
Web Services Description Language.

XML
eXtensible Markup Language. It is designed to improve the functionality of the Web by providing more flexible and adaptable information identification.

It is called extensible because it is not a fixed format like HTML. XML is a ‘metallanguage’ — a language for describing other languages—which lets you design your own customized markup languages for limitless different types of documents. XML can do this because it’s written in SGML.
XMS

Three letter code used to designate some components and path locations used by the Oracle Communications Network Charging and Control *Messaging Manager* (on page 213) service and the Short Message Service. The published code is *MM* (on page 213) (formerly MMX).
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