Oracle® Communications User Data Repository

Enhanced Subscriber Profile Repository User's Guide

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Chapter 1

Introduction

Topics:

- *Overview.....11*
- *Scope and Audience.....11*
- *Manual Organization.....11*
- *Documentation Admonishments.....11*
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The Introduction section explains the purpose and organization of the documentation, defines the document's audience and admonishments, and provides information about technical support, training, and how to location related publications.

Overview

This documentation describes the Oracle Communications User Data Repository (UDR) platform and the Oracle Communications Enhanced Subscriber Profile Repository (ESPR) application that runs on it. Included is an overview of the product and information about the graphical user interface (GUI) -- the purpose of each GUI page, the elements on each page, and how to enter data.

Scope and Audience

This documentation is intended for trained and qualified system operators and administrators who are responsible for managing the Enhanced Subscriber Profile Repository (ESPR) application on the User Data Repository (UDR) platform.

Note: Some of the UDR components are shared by other applications in the product line. For this reason, the documentation for the shared components may include references to these other applications, and/or describe GUI options not visible or applicable to UDR. For example, DSR applications (such as RBAR, FABR, CPA, and Policy DRA) and IPFE are currently not used by UDR, so you may ignore references to these applications.

Manual Organization

This document is organized into the following chapters:

1. *Introduction* explains the purpose and organization of the documentation, its audience, defines admonishments and writing conventions, and provides information about technical support.
2. *User Interface Introduction* describes the organization and usage of the application's user interface.
3. *About UDR and ESPR* describes the Oracle Communications User Data Repository platform, its functionality, system architecture, and configuration.
4. *Configuration* describes the UDR **Configuration** menu options and their associated functions.
5. *Subscriber Entity Configuration* describes the UDR **Subscriber Entity Configuration** menu options and their associated functions.
6. *Maintenance* describes the UDR **Maintenance** menu options and their associated functions.

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

Table 1: Admonishments

Icon	Description
	Danger: (This icon and text indicate the possibility of *personal injury*.)
	Warning: (This icon and text indicate the possibility of *equipment damage*.)
	Caution: (This icon and text indicate the possibility of *service interruption*.)
	Topple: (This icon and text indicate the possibility of *personal injury* and *equipment damage*.)

Related Publications

For information about additional publications that are related to this document, refer to the *Related Publications Reference* document, which is published as a separate document on the Oracle Help Center (OHC) site. See *Locate Product Documentation on the Oracle Help Center Site* for more information.

Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center (OHC) site, *http://docs.oracle.com*. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at *http://www.adobe.com*.

1. Access the Oracle Help Center site at *http://docs.oracle.com*.
2. Click **`Industries`**.
3. Under the Oracle Communications subheading, click the **`Oracle Communications documentation`** link.
   The Communications Documentation page appears. Most products covered by these documentation sets will appear under the headings “Network Session Delivery and Control Infrastructure” or “Platforms.”
4. Click on your Product and then the Release Number.
   A list of the entire documentation set for the selected product and release appears.

5. To download a file to your location, right-click the **PDF** link, select **Save target as** (or similar command based on your browser), and save to a local folder.

Customer Training

Oracle University offers training for service providers and enterprises. Visit our web site to view, and register for, Oracle Communications training:

http://education.oracle.com/communication

To obtain contact phone numbers for countries or regions, visit the Oracle University Education web site:

www.oracle.com/education/contacts

My Oracle Support (MOS)

MOS (*https://support.oracle.com*) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. When calling, make the selections in the sequence shown below on the Support telephone menu:

1. Select **2** for New Service Request
2. Select **3** for Hardware, Networking and Solaris Operating System Support
3. Select one of the following options:
   - For Technical issues such as creating a new Service Request (SR), Select **1**
   - For Non-technical issues such as registration or assistance with MOS, Select **2**

You will be connected to a live agent who can assist you with MOS registration and opening a support ticket.

MOS is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the Customer Access Support (CAS) main number at 1-800-223-1711 (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at *http://www.oracle.com/us/support/contact/index.html*. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Chapter 2

User Interface Introduction

Topics:

- *User interface organization.....16*
- *Common Graphical User Interface Widgets.....18*

This section describes the organization and usage of the application's user interface. In it you can find information about how the interface options are organized, how to use widgets and buttons, and how filtering and other page display options work.

User interface organization

The user interface is the central point of user interaction with the application. It is a Web-based graphical user interface (GUI) that enables remote user access over the network to the application and its functions.

User Interface Elements

Table 2: User Interface elements describes elements of the user interface.

Table 2: User Interface elements

Element	Location	Function
Identification Banner	Top bar across the web page	Displays the company name, product name and version, and the alarm panel.
Session Banner	Next bar across the top of the web page	The left side of the banner just above the Main Menu provides the following session information: • The name of the machine to which the user is connected, and whether the user is connected via the VIP or directly to the machine. • The HA state of the machine to which the user is connected. • The role of the machine to which the user is connected. The right side of the banner: • Shows the user name of the currently logged-in user. • Provides a link to log out of the GUI.
Main Menu	Left side of screen, under banners	A tree-structured menu of all operations that can be performed through the user interface. The plus character (+) indicates a menu item contains subfolders. • To display submenu items, click the plus character, the folder, or anywhere on the same line. • To select a menu item that does not have submenu items, click on the menu item text or its associated symbol.
Work Area	Right side of panel under status	Consists of three sections: Page Title Area, Page Control Area (optional), and Page Area. • Page Title Area: Occupies the top of the work area. It displays the title of the current page being displayed, date and time, and includes a link to context-sensitive help. • Page Control Area: Located below the Page Title Area, this area shows controls for the Page Area (this area is optional). When available as an option, filter controls

Element	Location	Function
		display in this area. The Page Control Area contains the optional layout element toolbar, which displays different elements depending on which GUI page is selected. For more information, see *Optional Layout Element Toolbar*. • Page Area: Occupies the bottom of the work area. This area is used for all types of operations. It displays all options, status, data, file, and query screens. Information or error messages are displayed in a message box at the top of this section. A horizontal and/or vertical scroll bar is provided when the displayed information exceeds the page area of the screen. When a user first logs in, this area displays the application user interface page. The page displays a user-defined welcome message. To customize the message, see *Customizing the Login Message*.

Main menu options

This table describes all main menu user interface options. Note that user documentation for the **Administration**, **Configuration**, **Alarms & Events**, **Security Log**, **Status & Manage**, and **Measurements** menu options is available in the *Operations, Administration, and Maintenance (OAM)* section of the documentation.

Note: The menu options that appear can differ according to the permissions assigned to a user's log-in account, as well as to the type of server the user is logged into. For example, the **Administration** menu options would not appear on the screen of a user who does not have administrative privileges. Similarly, when the user is accessing the GUI from a Network Operations, Administration, and Provisioning (NOAMP) server, the **Diameter** menu option does not appear.

Table 3: Main Menu Options

Menu Item	Function
Administration	The Administration menu allows you to: • Set up and manage user accounts Prepare, initiate, monitor, and complete upgrades View the software versions report • Configure group permissions • View session information • Authorize IP addresses to access the user interface • Configure options including, but not limited to, password history and expiration, login message, welcome message, and the number of failed login attempts before an account is disabled

Menu Item	Function
	• Configure SNMP services • Configure Export Servers • Configure Domain Name Services
Configuration	Provides access to configuring network elements, servers, server groups, and systems.
Alarms & Events	Lists active alarms and alarm history.
Security Log	Allows you to view and export security log data.
Status & Manage	Allows you to monitor the statuses of server processes, both collectively and individually, as well as perform actions required for server maintenance. Also allows you to view the status of file management systems, and to manage data files on servers throughout the system.
Measurements	Allows you to view, modify, import, and export measurement data.
Communication Agent	Provides infrastructure features and services for enabling inter-server communication.
Diameter Common	Allows you to configure network identifiers and MP profiles, and export and import configuration data.
Diameter	Allows you to configure topology hiding and import and export diameter interface settings.
UDR	Allows you to configure options for the UDR, UDRBE, and subscriber entities. Allows you to perform maintenance on subscriber queries, connections, the command log and to view the import, export, and subscribing client status.

Common Graphical User Interface Widgets

Common controls allow you to easily navigate through the system. The location of the controls remains static for all pages that use the controls. For example, after you become familiar with the location of the display filter, you no longer need to search for the control on subsequent pages because the location is static.

System Login Page

Access to the user interface begins at the System Login page. The System Login page allows users to log in with a username and password and provides the option of changing the password upon login.

The System Login page also features a date and time stamp reflecting the time the page was last refreshed. Additionally, a customizable login message appears just below the **Log In** button.

The user interface is accessed via HTTPS, a secure form of the HTTP protocol. When accessing a server for the first time, HTTPS examines a web certificate to verify the identity of the server. The configuration of the user interface uses a self-signed web certificate to verify the identity of the server. When the server is first accessed, the supported browser warns the user that the server is using a self-signed certificate. The browser requests confirmation that the server can be trusted. The user is required to confirm the browser request to gain access.

Customizing the Login Message

Before logging in, the **System Login** page appears. You can create a login message that appears just below the **Log In** button on the **System Login** page.

Figure 1: Oracle System Login

1. From the **Main Menu**, select **Administration** > **General Options**.
   The **General Options Administration** page appears.
2. Locate **LoginMessage** in the **Variable** column.
3. Enter the login message text in the **Value** column.
4. Click **OK** or **Apply** to submit the information.

A status message appears at the top of the Configuration Administration page to inform you if the operation was successful.

The next time you log in to the user interface, the login message text displays.

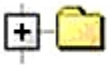
Supported Browsers

This application supports the use of Microsoft® Internet Explorer 8.0, 9.0, or 10.0.

Main Menu Icons

This table describes the icons used in the **Main Menu**.

Table 4: Main Menu icons

Icon	Name	Description
	Folder	Contains a group of operations. If the folder is expanded by clicking the plus (+) sign, all available operations and sub-folders are displayed. Clicking the minus (-) collapses the folder.
	Config File	Contains operations in an Options page.
	File with Magnifying Glass	Contains operations in a Status View page.
	File	Contains operations in a Data View page.
	Multiple Files	Contains operations in a File View page.
	File with Question Mark	Contains operations in a Query page.
	User	Contains operations related to users.
	Group	Contains operations related to groups.
	Help	Launches the Online Help.

Icon	Name	Description
	Logout	Logs the user out of the user interface.

Work Area Displays

In the user interface, tables, forms, tabbed pages, and reports are the most common formats.

Note: Screen shots are provided for reference only and may not exactly match a specific application's GUI.

Tables

Paginated tables describe the total number of records being displayed at the beginning and end of the table. They provide optional pagination with **First | Prev | Next | Last** links at both the beginning and end of this table type. Paginated tables also contain action links on the beginning and end of each row. For more information on action links and other page controls, see *Page Controls*.

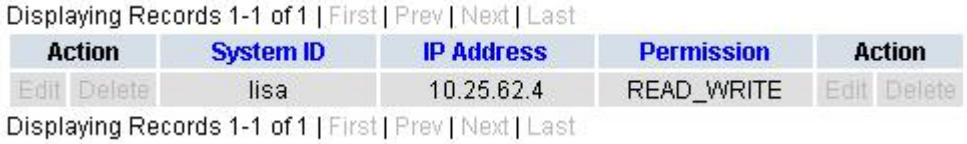


Figure 2: Paginated table

Scrollable tables display all of the records on a single page. The scroll bar, located on the right side of the table, allows you to view all records in the table. Scrollable tables also provide action buttons that operate on selected rows. For more information on buttons and other page controls, see *Page Controls*.

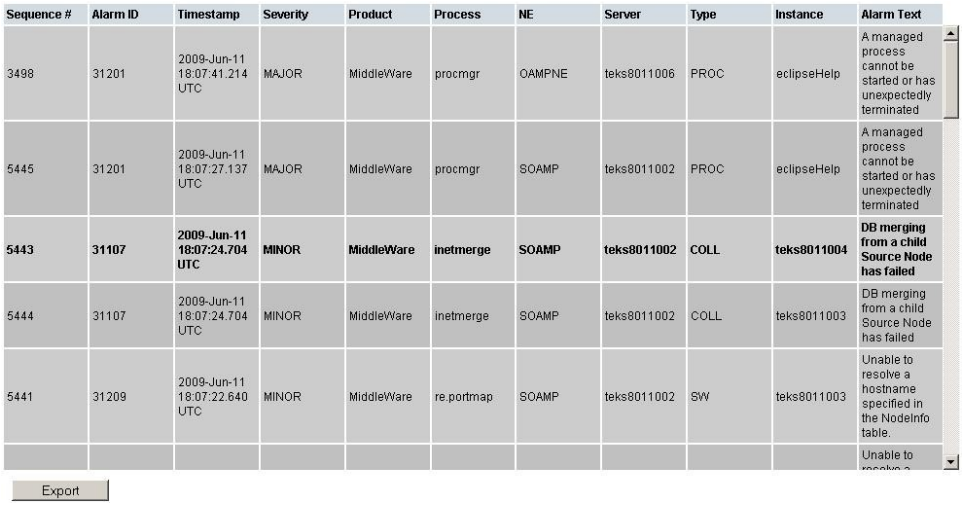


Figure 3: Scrollable table

Note: Multiple rows can be selected in a scrollable table. Add rows one at a time using CTRL-click. Add a span of rows using SHIFT-click.

Forms

Forms are pages on which data can be entered. Forms are typically used for configuration. Forms contain fields and may also contain a combination of pulldown lists, buttons, and links.

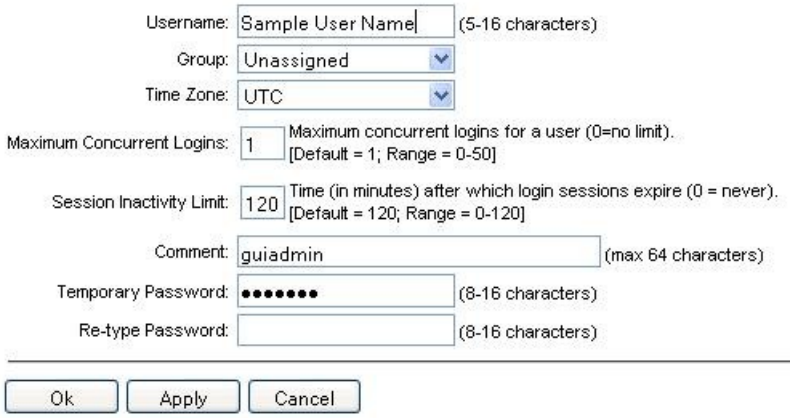
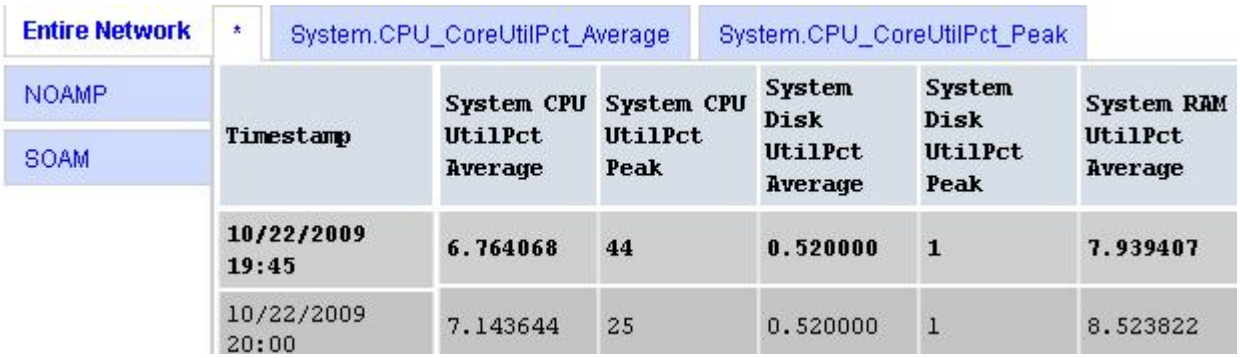


Figure 4: Form page

Tabbed pages

Tabbed pages provide collections of data in selectable tabs. Click on a tab to see the relevant data on that tab. Tabbed pages also group Retrieve, Add, Update, and Delete options on one page. Click on the relevant tab for the task you want to perform and the appropriate fields populate on the page. Retrieve is always the default for tabbed pages.



Timestamp	System CPU UtilPct Average	System CPU UtilPct Peak	System Disk UtilPct Average	System Disk UtilPct Peak	System RAM UtilPct Average
10/22/2009 19:45	6.764068	44	0.520000	1	7.939407
10/22/2009 20:00	7.143644	25	0.520000	1	8.523822

Figure 5: Tabbed pages

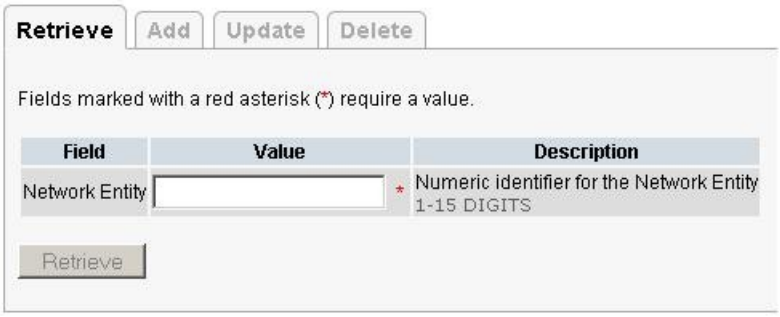


Figure 6: Tabbed pages

Reports

Reports provide a formatted display of information. Reports are generated from data tables by clicking the **Report** button. Reports can be viewed directly on the user interface, or they can be printed. Reports can also be saved to a text file.

```
================================================================================

User Account Usage Report

================================================================================

Report Generated: Fri Jun 19 19:30:55 2009 UTC
From: Unknown Network OAM&P on host teks5001701
Report Version: 1.0
User: guiadmin

--------------------------------------------------------------------------------

Username          Date of Last Login    Days Since Last Login   Account Status
----------------  --------------------  ----------------------  ---------------
guiadmin          2009-06-19 19:00:17   0                       enabled

--------------------------------------------------------------------------------

End of User Account Usage Report

================================================================================
```

Figure 7: Report output

Customizing the Splash Page Welcome Message

When you first log in to the user interface, the splash page appears. Located in the center of the main work area is a customizable welcome message. Use this procedure to create a message suitable for your needs.

1. From the **Main Menu**, select **Administration** > **General Options**.

   The **General Options** page appears.

2. Locate **WelcomeMessage** in the **Variable** column.

3. Enter the desired welcome message text in the **Value** column.
4. Click **OK** to save the change or **Cancel** to undo the change and return the field to the previously saved value.
   A status message appears at the top of the page to inform you if the operation was successful.

The next time you log in to the user interface, the new welcome message text is displayed.

Column headers (sorting)

Some column headers are links that, when clicked, sort the table by that column. Sorting does not affect filtering. Column headers that are black and group column headers are not sortable.

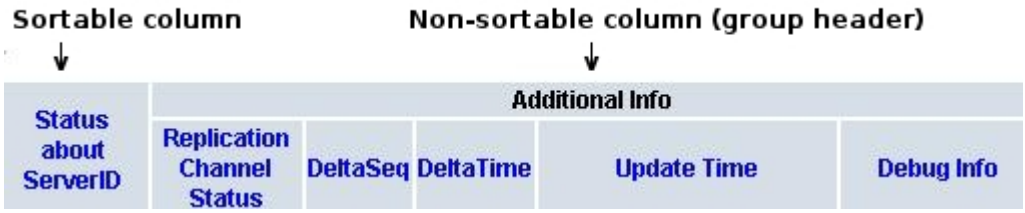


Figure 8: Sortable and Non-sortable Column Headers

Page Controls

User interface pages contain controls, such as buttons and links, that perform specified functions. The functions are described by the text of the links and buttons.

Note: Disabled buttons are grayed out. Buttons that are irrelevant to the selection or current system state, or which represent unauthorized actions as defined in **Group Administration**, are disabled. For example, **Delete** is disabled for users without Global Data Delete permission. Buttons are also disabled if, for example, multiple servers are selected for an action that can only be performed on a single server at a time.

Table 5: Example Action buttons contains examples of Action buttons.

Table 5: Example Action buttons

Action button	Function
Insert	Inserts data into a table.
Edit	Edits data within a table.
Delete	Deletes data from table.
Change	Changes the status of a managed object.

Some Action buttons take you to another page.

Submit buttons, described in *Table 6: Submit buttons*, are used to submit information to the server. The buttons are located in the page area and accompanied by a table in which you can enter information. The Submit buttons, except for **Cancel**, are disabled until you enter some data or select a value for all mandatory fields.

Table 6: Submit buttons

Submit button	Function
OK	Submits the information to the server, and if successful, returns to the View page for that table.
Apply	Submits the information to the server, and if successful, remains on the current page so that you can enter additional data.
Cancel	Returns to the View page for the table without submitting any information to the server.

Optional Layout Element Toolbar

The optional layout element toolbar appears in the Page Control Area of the GUI.

Figure 9: Optional Layout Element Toolbar

The toolbar displays different elements depending on which GUI page is selected. The elements of the toolbar that can appear include:

- Filter – Allows you to filter data in a table.
- Errors – Displays errors associated with the work area.
- Info – Displays information messages associated with the work area.
- Status – Displays short status updates associated with the main work area.
- Warning – Displays warnings associated with the work area.

Notifications

Some messages require immediate attention, such as errors and status items. When new errors occur, the Errors element opens automatically with information about the error. Similarly, when new status items are added, the Status element opens. If you close an automatically opened element, the element stays closed until a new, unacknowledged item is added.

Figure 10: Automatic Error Notification

Note: Viewing and closing an error does not clear the Errors element. If you reopen the Errors element, previously viewed errors are still in the list.

When new messages are added to Warning or Info, the styling of the element changes to indicate new messages are available. The styling of the Task element changes when a task changes state (such as, a task begins or ends).

Opening an Element in the Toolbar

Use this procedure to open an element in the optional layout element toolbar.

1. Click the text of the element or the triangle icon to open an element.
   The selected element opens and overlays the work area.
2. Click **X** to close the element display.

Filters

Filters are part of the optional layout element toolbar and appear throughout the GUI in the Page Control Area. For more information about optional layout element toolbar functionality, see *Optional Layout Element Toolbar*.

Filters allow you to limit the data presented in a table and can specify multiple filter criteria. By default, table rows appear unfiltered. Three types of filters are supported, however, not all filtering options are available on every page. The types of filters supported include:

- Network Element – When enabled, the Network Element filter limits the data viewed to a single Network Element.

  Note: Once enabled, the Network Element filter will affect all pages that list or display data relating to the Network Element.

- Collection Interval – When enabled, the collection interval filter limits the data to entries collected in a specified time range.
- Display Filter – The display filter limits the data viewed to data matching the specified criteria.

Once a field is selected, it cannot be selected again. All specified criteria must be met in order for a row to be displayed.

The style or format of filters may vary depending on which GUI pages the filters are displayed. Regardless of appearance, filters of the same type function the same.

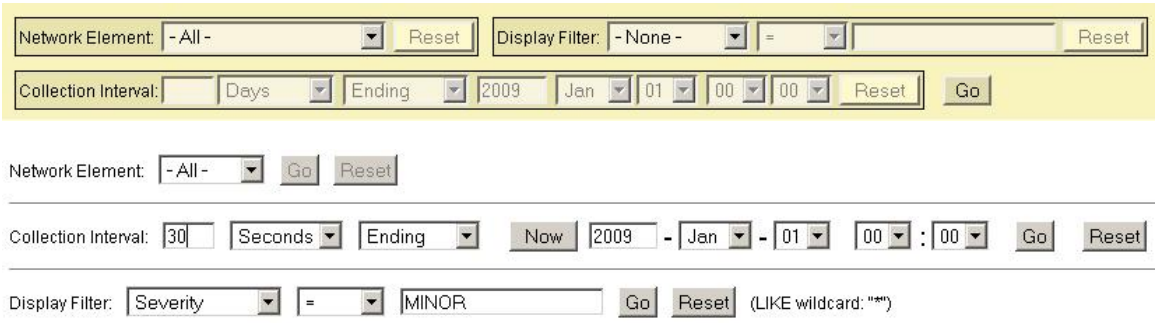


Figure 11: Examples of Filter Styles

Filter Control Elements

This table describes filter control elements of the user interface.

Table 7: Filter Control Elements

Operator	Description
=	Displays an exact match.
!=	Displays all records that do not match the specified filter parameter value.
>	Displays all records with a parameter value that is greater than the specified value.
>=	Displays all records with a parameter value that is greater than or equal to the specified value.
<	Displays all records with a parameter value that is less than the specified value.
<=	Displays all records with a parameter value that is less than or equal to the specified value.
Like	Enables you to use an asterisk (*) as a wildcard as part of the filter parameter value.
Is Null	Displays all records that have a value of **Is Null** in the specified field.

Note: Not all filterable fields support all operators. Only the supported operators will be available for you to select.

Filtering on the Network Element

The global Network Element filter is a special filter that is enabled on a per-user basis. The global Network Element filter allows a user to limit the data viewed to a single Network Element. Once enabled, the global Network Element filter affects all sub-screens that display data related to Network Elements. This filtering option may not be available on all pages.

1. Click **Filter** in the optional layout element toolbar.
   The filter tool appears.
2. Select a Network Element from the **Network Element** pulldown menu.
3. Click **Go** to filter on the selection, or click **Reset** to clear the selection.

Records are displayed according to the specified criteria.

Filtering on Collection Interval

The Collection Interval filter allows a user to limit the data viewed to a specified time interval. This filtering option may not be available on all pages.

1. Click **Filter** in the optional layout element toolbar.
   The filter tool appears.
2. Enter a duration for the **Collection Interval** filter.
   The duration must be a numeric value.

3. Select a unit of time from the pulldown menu.
   The unit of time can be seconds, minutes, hours, or days.
4. Select **Beginning** or **Ending** from the pulldown menu.
5. Click **Go** to filter on the selection, or click **Reset** to clear the selection.

Records are displayed according to the specified criteria.

Filtering Using the Display Filter

Use this procedure to perform a filtering operation. This procedure assumes you have a data table displayed on your screen. This process is the same for all data tables. However, all filtering operations are not available for all tables.

1. Click **Filter** in the optional layout element toolbar.
   The filter tool appears.
2. Select a field name from the **Display Filter** pulldown menu.
   This selection specifies the field in the table that you want to filter on. The default is **None**, which indicates that you want all available data displayed.
   The selected field name displays in the **Display Filter** field.
3. Select an operator from the operation selector pulldown menu.
   The selected operator appears in the field.
4. Enter a value in the value field.
   This value specifies the data that you want to filter on. For example, if you specify Filter=Severity with the equals (=) operator and a value of MINOR, the table would show only records where Severity=MINOR.
5. For data tables that support compound filtering, click **Add** to add another filter condition. Then repeat steps 2 through 4.
   Multiple filter conditions are joined by an AND operator.
6. Click **Go** to filter on the selection, or click **Reset** to clear the selection.

Records are displayed according to the specified criteria.

Auto refresh controls

Auto refresh controls are widgets that control the rate at which the Page Area refreshes on some pages. They are located in the Page Control Area on the right side. Auto refresh can be set to **15** seconds or **30** seconds, and it can be turned off. The changes take effect immediately.

Click one of the Auto Refresh options to set the auto refresh rate. Click the **Off** option to terminate automatic refreshing of the page.

Pause Updates

Some pages refresh automatically. Updates to these pages can be paused by selecting the **Pause updates** checkbox. Uncheck the **Pause updates** checkbox to resume automatic updates. The **Pause updates** checkbox is available only on some pages.

Max Records Per Page Controls

Max Records Per Page is used to control the maximum number of records displayed in the page area. If a page uses pagination, the value of Max Records Per Page is used. Use this procedure to change the Max Records Per Page.

1. From the **Main Menu**, select **Administration** > **General Options**.

   The **General Options Administration** page appears.

2. Change the value of the **MaxRecordsPerPage** variable.

   Note: Maximum Records Per Page has a range of values from 10 to 100 records. The default value is 20.

3. Click **OK** or **Apply**.

   OK saves the change and returns to the previous page.

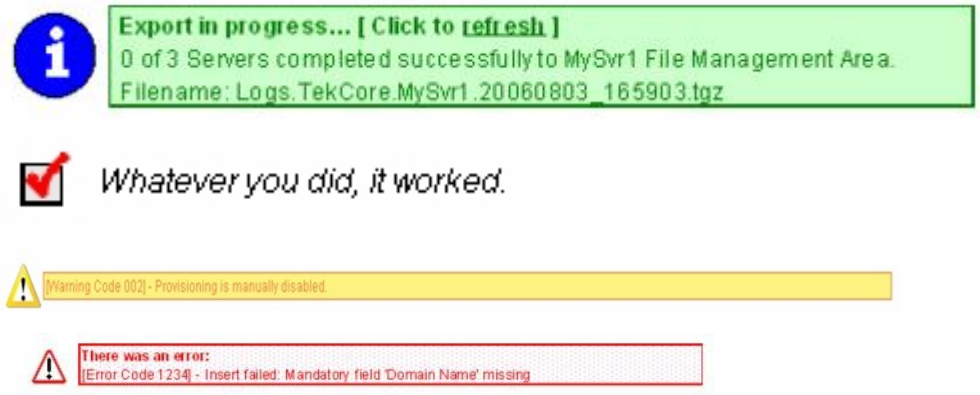
   Apply saves the change and remains on the same page.

The maximum number of records displayed is changed.

Message display

A message appears at the top of the Work Area on a page when a process needs to communicate errors or information. When an event is in progress, a refresh link may be provided here so that you can refresh without having to use the browser's refresh function

These are examples of some of the messages that can appear in a Work Area:



Chapter 3

About UDR and ESPR

Topics:

- *Product Functionality.....31*
- *System Architecture.....31*
- *Distributed Configuration.....35*
- *User Data Repository Data Model.....36*
- *Configuration Sequence.....38*

This introduction will familiarize you with the functionality, system architecture, and configuration of the Oracle Communications User Data Repository (UDR) platform.

This platform provides a highly-scalable, consolidated database back end for subscriber and profile data that can be leveraged across the product portfolio. UDR can utilize multiple application front ends with the database.

Currently, UDR supports the Oracle Communications Enhanced Subscriber Profile Repository (ESPR) application, a function used for the storage and management of subscriber policy control and pool data. XML-REST and XML-SOAP interfaces are used by ESPR for creating, retrieving, modifying, and deleting subscriber and pool data.

Product Functionality

This product provides the following functionality:

- GUI-based provisioning
- UDR database - Stores subscriber data needed by the ESPR application. Stores Subscription Data Objects (SDOs) which contain the entities (XML blobs, such as profile, state, and quota) associated with subscribers and pools. Also stores Subscription Notification Objects (SNOs) which contain a list of application servers that have requested to be notified when entity data for a subscriber or pool changes.
- Provisioning front end application (one per interface type, such as RAS, XSAS)
- Provisioning back end (UDRBE) application - Provides back end database for subscriber and profile data
- Key database (Indexing System)
- Configuration Application (GUI and the Subscriber Entity Configuration (SEC))
- Supports XML-REST and XML-SOAP as subscriber provisioning interfaces
- XML format export and import of database contents
- Backup of disk synchronized tables
- Each SOAM masters DIAMETER connection configuration data that is scoped to its site. This configuration data is small relative to the NOAMP provisioning data.
- Measurements and KPIs
- Alarms, Events, and Logs for all interfaces
- DB, SDO, and SNO Audits:
  - DB Audit - Replication audit within replicas and Active server
  - SDO Audit - Removes auto-enrolled subscribers that are inactive or expired and removes entities that no longer exist
  - SNO Audit - Removes expired notification subscriptions and notification subscriptions whose subscribing client no longer exists
- Backup and Restore of UDR database components
- Disaster Recovery UDR -Geodiverse site
- Monitors exceptions
- Subscriber Notification - Allows network clients to subscribe to and receive notifications when entity data for a subscriber is changed.
- Auto Enrollment - Allows subscribers to be automatically created and automatically deleted when they are no longer active.
- Supports Diameter Sh Interface to query and update entity data for a subscriber
- Subscriber Query GUI - Allows you to query entity data for a subscriber on a GUI

System Architecture

The UDR platform provides a highly-scalable, consolidated database back end for subscriber and profile data. UDR interfaces multiple application front ends with the database.

This figure provides a high-level view of the architecture.

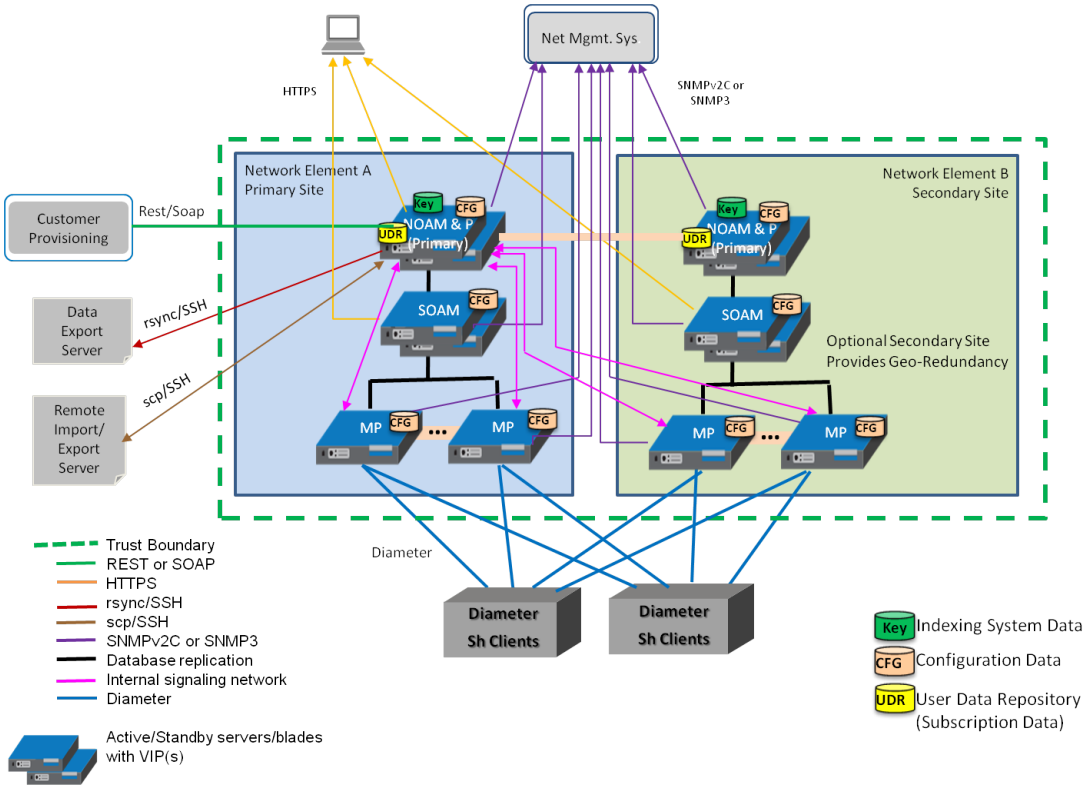


Figure 12: UDR System Architecture

System Components

The system is comprised of several components:

NOAMP Server

The NOAMP (Network Operation, Administration, Maintenance, & Provisioning) servers provide OAM interface for UDR and hosts following applications:

- Subscriber Entity Configuration (SEC) Application and database
- Provisioning Front End Interface Application (one per interface type, e.g., REST or SOAP-XML)
- Provisioning Back End (BE) Application (maintains the Indexing System DB and modifies Entities based on Provisioning commands)
- UDR Application which manages Subscription Data Objects (SDOs) and Subscription Notification Objects (SNOs).
- Indexing System
- Subscriber Database

Subscriber Entity Configuration

Subscriber Entity Configuration (SEC) allows the operator to define, via the GUI, the names and characteristics of the data blobs that will be stored in the User Data Repository (UDR) as contents of a Subscription Data Object (SDO) register.

- Assign Names: e.g. Profile, PoolProfile, Quota, PoolQuota, State, etc.
- Assign basic attributes: e.g. opaque/transparent
- Assign transparent attributes: e.g. base-field-sets, field-sets, fields
- Add new fields and field-sets as a new version of an existing subscription entity.
- SEC determines which SDO register stores which subscription entity. (Register Map)
- SEC data is replicated from the active NOAMP to all OAMs and MPs.
- SEC also associates interface-specific message parameters with subscription entity managed objects. (Interface Entity Map)

Provisioning Front End (FE) Application(s)

The provisioning front ends are the processes interfacing to the provisioning clients (External provisioning systems are supplied and maintained by the network operator) and they run on the active NOAMP server.

Provisioning Clients will connect to Provisioning Front Ends to add, change, delete or retrieve subscriber/pool information in the ESPR database.

UDR Back End (UDRBE) Interface

The UDR Back End provides the back end application for the consolidated database for subscriber and profile data.

- Hosted on the active NOAMP
- Constitutes of ProvBe, Subscription, Notification Manager and UdrbeApp Tasks
- Processes Internal Requests from the Provisioning Front Ends.
- Subscription handling/Notification generation
- Receives Auto-enrollment requests from the UDR Application
- Modifies Subscriber data based on Provisioning commands (ProvBE)
- Modifies Subscriber data based on Sh Indications (SPRBE)

Indexing System

The Indexing system provides a means for the Provisioning Back End application on the NOAMP to manage Subscription Relationships and locate Subscription data that applies to a given request. The Indexing System stores User Identities, Identity Relationships, and Subscription Relationships. The Indexing System is updated (creates, deletes, changes) after a command is received on the Provisioning Front End Interface and forwarded to the Provisioning Back End. An Indexing System update applies to either one Individual Subscription or one Pool Subscription.

The Indexing System DB:

- is A-source data
- is replicated only to NOAMP Servers
- is synchronized to disk
- stores user identities, identity relationships and subscription relationships
- Normally maintained by provisioning or by network traffic (For example, auto enrollment in UDR)

The Indexing System provides provisioning and network clients the ability to:

- Lookup an individual subscription giving a user identity
- Lookup a pool subscription given a pool identity
- Lookup a pool subscription given an individual subscription

- Lookup members of a pool given a pool subscription

User Data Repository

The NOAMP Hosts the UDR, which stores Subscription Data Objects (SDOs) that contain the entities (XML Blobs) such as profile, state and quota associated with subscribers and pools. UDR stores Subscription Notification Objects (SNOs), which record application servers that need to be notified when an entity changes.

An Individual Subscription is all data associated with a particular network user that cannot be shared by multiple network users.

A Pool Subscription is all data associated with a particular group of network users and that is shared by all members of the group. Individual and Pool Subscription Data Objects (SDOs) contain entities (XML blobs such as profile, state and quota).

A Subscription Notification Object (SNO) contains a list of network clients that have requested to be notified when entity data for a subscriber is changed.

For UDR data:

- The data is A-source data.
- The active NOAMP masters the UDR DB and makes it durable by synchronizing the database to disk, and by replicating the database to the standby NOAMP and the active DR NOAMP.
- The active DR NOAMP replicates the UDR data to the standby DR NOAMP.
- The data is not replicated to the MPs or SOAMs.

The active NOAMP masters the database and makes it durable by synchronizing the database to disk and replicating the database to the standby NOAMP and to the spare-active DR NOAMP. The spare-active DR NOAM&P replicates this data to the spare-standby DR NOAMP. The data is not replicated to the MPs.

Disaster Recovery (DR) NOAMP

The Disaster Recovery (DR) Provisioning Site is another UDR Provisioning Site. It is recommended to use a geo-redundant DR Provisioning site; however, having a DR Provisioning Site is not required. The DR Provisioning Site is similar to the Primary Provisioning Site. The DR Provisioning Site has the same hardware configuration and network accessibility as the Primary Provisioning Site. The Primary and DR Provisioning Sites have a different VIP for their Active UDR Servers.

The DR Provisioning Site's databases are kept up to date through real-time replication of subscriber and application data from the Primary Provisioning Site's Active UDR Server. Under normal operating conditions, the DR Active UDR Server does not have an active provisioning front end, active provisioning backend and active UDR application backend. When the Primary Provisioning Site's Active and Standby UDR Server fails, the system automatically fails over from the Primary Provisioning Site's Active UDR Server to the Disaster Recovery Provisioning Site's Active UDR Server. After the Disaster Recovery Provisioning Site becomes active, it shall take over all the functions of the Primary Provisioning Site's Active UDR server including the provisioning/signaling connections and database replication to subtending SOAMs.

SOAM

The primary purpose of the SOAM (System Operation, Administration, and Maintenance server) is to become the single point of entry for the replication stream of subscriber entity configuration data into a UDR Signaling Site. The SOAM is the combination of an active and a standby server running

the SOAM application and operating in a high availability configuration. The active SOAM Server receives subscriber entity configuration data replicated from the Primary Provisioning Site's Active UDR Server. In turn replicates the data to the Standby SOAM Server and to all subtending MPs located in the same site level. The user can configure/view Provisioning Options, Provisioning Connections, Subscribing Client permissions, Subscriber Entities, Transparent Entities, Interface Entity Map, Diameter information, alarms and measurements using a GUI connected to the SOAM's VIP address.

MP

MPs provide a scalable signaling interface. All MPs are active. The functions of MP are listed below:

- Hosts the Client-side of the Network Application (PNRs host the server side as well)
- Hosts the Network Stack. For example: Diameter, SOAP, LDAP, SIP, SS7
- Connects to the signaling network

MPs that provide the Diameter Sh application use the Diameter Plug-In (DPI), which is the same Diameter stack used by Diameter Signaling Router (DSR). The Sh Application integrates as part of the Diameter Application Layer (DAL).

Distributed Configuration

The UDR supports centralized configurations:

- Centralized configuration:
  - All subscriber data configuration and maintenance occurs at the NOAMP level
  - Application management, such as configuring servers, occurs at the NOAMP level

Due to distributed configuration:

- All OAM Administration, Configuration, and Status & Manage tasks can only be performed when you are logged into an active NOAMP.
- All Alarms, KPIs, Measurements, and Events are accessible from the NOAMP.

Centralized Configuration

Subscriber provisioning data is provisioned at the active server of the Primary UDR cluster and replicated to all NOAMP servers on the network. System configuration and subscriber data is provisioned at the active server of the Primary UDR cluster, and then it's replicated to all other NOAMP servers.

REST/SOAP

The main method of subscriber data provisioning is XML-REST or XML-SOAP interfaces. REST Application Server (RAS) and XML SOAP Application Server (XSAS) are the Provisioning Front End (FE) processes that interface to Provisioning Clients and run on active NOAMP servers.

GUI Provisioning

Local provisioning can be done using the GUI menu. The GUI can be used to manage Provisioning setup, to make direct changes to the subscriber database entries, and to perform application operations, management, and provisioning.

User Data Repository Data Model

The Subscriber Data Management: User Data Repository is a system used for the storage and management of subscriber policy control data. The Subscriber Data Management: User Data Repository functions as a centralized repository of subscriber data for the PCRF.

Note: This section describes the default data model; the data model can be customized using the Subscriber Data Management: User Data Repository GUI.

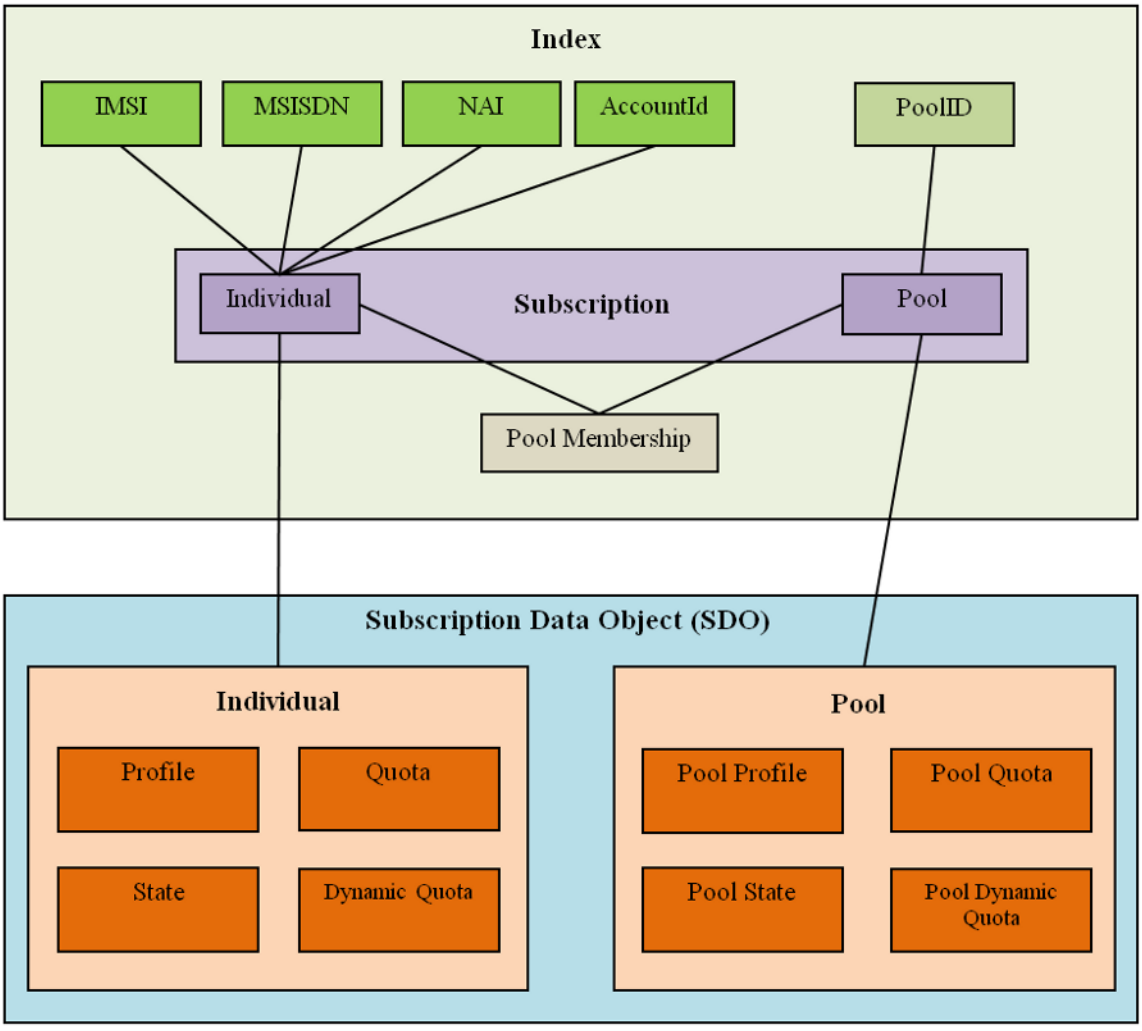


Figure 13: Subscriber Data Management: User Data Repository Data Model

Subscriber-related data includes:

- Profile/Subscriber Data: pre-provisioned information that describes the capabilities of each subscriber. This data is typically written by the customer's OSS system (via a provisioning interface) and referenced by the PCRF (via the Sh interface).
- Quota: information that represents the subscriber's use of managed resources quota, pass, top-up, roll-over). Although the Subscriber Data Management: User Data Repository provisioning interfaces allow quota data to be manipulated, this data is typically written by the PCRF and only referenced using the provisioning interfaces.
- State: subscriber-specific properties. Like quota, this data is typically written by the PCRF, and referenced using the provisioning interfaces.
- Dynamic Quota: dynamically configured information related to managed resources (pass, top-up, roll-over). This data may be created or updated by either the provisioning interface or the Sh interface.
- Pool Membership: The pool to which the subscriber is associated. The current implementation allows a subscriber to be associated with a single pool, although the intention is to extend this to multiple pools in the future.

The Subscriber Data Management: User Data Repository can also be used to group subscribers using Pools. This feature allows wireless carriers to offer pooled or family plans that allow multiple subscriber devices with different subscriber account IDs, such as MSISDN, IMSI, or NAI to share one quota.

Pool-related data includes:

- Pool Profile: pre-provisioned information that describes a pool
- Pool Quota: information that represents the pool's use of managed resources (quota, pass, top-up, roll-over)
- Pool State: pool-specific properties
- Pool Dynamic Quota: dynamically configured information related to managed resources (pass, top-up, roll-over)
- Pool Membership: list of subscribers that are associated with a pool

The data architecture supports multiple Network Applications. This flexibility is achieved though implementation of a number of registers in a Subscriber Data Object (SDO) and storing the content as Binary Large Objects (BLOB). An SDO exists for each individual subscriber, and an SDO exists for each pool.

The Index contains information on the following:

- Subscription:
  - A subscription exists for every individual subscriber, and for every pool
  - Maps a subscription to the user identities through which it can be accessed
  - Maps an individual subscription to the pool of which they are a member
- Pool Subscription:
  - A pool subscription exists for every pool
  - Maps a pool subscription to the pool identity through which it can be accessed
  - Maps a pool subscription to the individual subscriptions of the subscribers that are members of the pool
- User Identities:
  - Use to map a specific user identity to a subscription

    - IMSI, MSISDN, NAI and AccountId map to an individual subscription
    - PoolID maps to a pool subscription

- Pool membership
    - Maps a pool to the list of the individual subscriber members
- The Subscription Data Object (SDO):

  An SDO record contains a list of registers, holding a different type of entity data in each register. An SDO record exists for:

    - Each individual subscriber
        - Defined entities stored in the registers are:
            - Profile
            - Quota
            - State
            - Dynamic Quota
    - Each pool
        - Defined entities stored in the registers are:
            - Pool Profile
            - Pool Quota
            - Pool State
            - Pool Dynamic Quota

Provisioning applications can create, retrieve, modify, and delete subscriber/pool data. The indexing system allows to access Subscriber SDO via IMSI,MSISDN,NAI or AccountId. The pool SDO can be accessed via PoolD.

A field within an entity can be defined as mandatory, or optional. A mandatory field must exist, and cannot be deleted.

A field within an entity can have a default value. If an entity is created, and the field is not specified, it will be created with the default value.

A field within an entity can be defined so that once created, it cannot be modified. Any attempt to update the field once created will fail.

A field within an entity can have a reset value. If a reset command is used on the entity, those fields with a defined reset value will be set to the defined value. This is currently applicable only to field values within a row for the Quota entity.

Configuration Sequence

The following configuration steps are required before using the UDR system for the first time.

Configure your system in the following order; perform the steps from the primary active NOAMP unless otherwise noted:

1. **Configure the first NOAMP** using
   Configuration > Network Elements;
   Configuration > Services; and
   Configuration > Servers.
2. **Configure remaining servers** using
   Configuration > Network Elements; and
   Configuration > Servers.
3. **Configure XSI networks (All SOAM sites)** using
   Configuration > Network.
4. **Pair primary NOAMP servers (for first NOAMP site only)** using
   Configuration > Server Groups;
   Status & Manage > HA; Status & Manage > Server;
   Alarms & Events > View Active; and
   Administration > SNMP.
5. **Pair SOAM and DR sites** using
   Configuration > Server Groups;
   Status & Manage > HA; and
   Status & Manage > Server.
6. **Configure MP server groups** using
   Configuration > Server Groups; and
   Status & Manage > Server.
7. **Configure MP signaling interfaces** using
   Configuration > Network > Devices; and
   Configuration > Network > Routes.
8. **Configure ESPR application on MP (all SOAM sites)** (from SOAM) using
   Diameter > Configuration > DA-MPs > Profile Assignments;
   Diameter > Maintenance> Applications; and
   (from active NOAMP VIP)
   Communication Agent > Maintenance > HA Services Status.
9. **Configure local nodes** (all SOAM sites) using
   Diameter > Configuration > CEX Parameters;
   Diameter > Configuration > Configuration Sets > CEX Configuration Sets; and
   Diameter > Configuration > Local Nodes.
   - Add IP addresses for all of the MPs in the same server group as the SOAM.

10. **Configure peer nodes (all SOAM sites)** using

    Diameter > Configuration > Peer Nodes.

    - Create a Peer Node for each of the PCRF's MPEs.

11. **Configure MPE to MP connections (all SOAM sites)** using

    Diameter > Configuration > Connections.

    - For each MP, create connections to all desired MPEs

12. **Add permissions for the FQDN of the peer node (primary NOAMP site)** using

    UDR> Configuration > Subscribing Client Permissions.

    - For each peer node's FQDN value, create an entry on Subscribing Client Permissions page

13. **Configure allowable remote connections (primary NOAMP site)** using

    UDR > Configuration > Provisioning Connections.

The UDR installation provides a default configuration, so no additional configuration steps are required. Additional configuration actions may be taken to customize the system.

Chapter 4

Configuration

Topics:

- *Provisioning Options.....42*
- *UDRBE Options.....46*
- *Provisioning Connections.....49*
- *Subscribing Client Permissions.....51*
- *Auto Enrollment.....53*
- *Command Log Export Options.....57*

The **UDR Configuration** menu options allow you to configure provisioning options and view, insert, edit, and delete provisioning connections, NAI hosts, destinations, and routing entities.

The available database menu options vary based on the type of server you are logged into and the permissions assigned to your group. If you do not see a menu option you need, make sure you are logged into the appropriate type of server and ask your administrator to make sure the group your user ID belongs to has the appropriate permissions.

Provisioning Options

The **Provisioning Options** page controls how provisioning interfaces (REST/XSAS, etc.) work. The GUI is used to specify values for various global parameters that guide the behavior of imports and exports. Unless noted, any changes to options take effect immediately.

Connections between the application and the provisioning client are set up using the **Provisioning Connections** page.

Provisioning Options elements

This table describes the fields on the Provisioning Options page.

Table 8: Provisioning Options Elements

Element	Description	Data Input Notes
Compatibility Mode	The release version to which the current release is backward compatible.	Format: Dropdown menu Range: R9.x, R10+ Default: R10+
Allow SOAP Connections	Whether or not to allow incoming provisioning connections. On a new software installation, SOAP connections are disabled by default. If both SOAP and REST connections are turned off on this page, alarm 13075 is raised.	Format: Check box Range: Checked, Unchecked Default: Unchecked
SOAP Interface Idle Timeout	Maximum time (in seconds) that an open connection will remain active without a request being sent, before the connection is dropped.	Format: Numeric; seconds Range: 1-86400 Default: 1200
SOAP Interface Port	SOAP Interface TCP Listening Port. NOTE: Changes to the TCP listening port do not take effect until the 'xsas' process is restarted. Also, you must specify a different port than the REST Interface.	Format: Numeric Range: 0-65535 Default: 62001
Maximum SOAP Connections	Maximum number of simultaneous SOAP Interface client connections. NOTE: Changes to the Maximum SOAP Connections do not take effect	Format: Numeric Range: 1-100 Default: 100

Element	Description	Data Input Notes
	until the 'xsas' process is restarted.	
Maximum Requests in SOAP <tx> XML	The maximum number of requests in a single SOAP tx transaction.	Format: Numeric Range: 1-50 Default: 12
Allow REST Connections	Whether or not to allow incoming provisioning connections on the REST Interface. On a new software installation, REST connections are disabled by default. If both SOAP and Rest connections are turned off on this page, alarm 13075 is raised.	Format: Check box Range: Checked, Unchecked Default: Unchecked
REST Interface Idle Timeout	Maximum time (in seconds) than an open REST connection will remain active without a request being sent, before the connection is dropped.	Format: Numeric; seconds Range: 1-86400 Default: 1200
REST Interface Port	REST Interface TCP Listening Port. NOTE: Changes to the TCP listening port do not take effect until the 'ras' process is restarted. Also, you must specify a different port than the SOAP interface.	Format: Numeric Range: 0-65535 Default: 8787
Maximum REST Connections	Maximum number of simultaneous REST interface client connections.	Format: Numeric Range: 1-100 Default: 100
REST Secure Mode	Whether or not the REST interface operates in secure mode (using SSL), or unsecure mode (plain text). NOTE: Changes to the Secure Mode do not take effect until the 'ras' process is restarted.	Format: Dropdown menu Range: Secure, Unsecure Default: Unsecure
Remote Host IP Address	IP address and username of the Remote Import/Export Host. Use the **SSH Key Exchange** button to enter and save the password for the remote host.	Format: IP Address - dotted decimal; Username - alphanumeric Range: IP Address - standard address format xxx.xxx.xxx.xxx; Username - all existing usernames on the remote host

Element	Description	Data Input Notes
		Default: IP Address - blank; Username - blank
Remote Export Transfers Enabled	Whether or not to allow export files to be copied to the Remote Export Host.	Format: Check box Range: Checked, Unchecked Default: Unchecked
Local Export Directory	Local directory where export files are created. This value is for reference only and cannot be changed.	Format: String Range: 0-255 characters Default: /var/TKLC/db/filemgmt/provexport
Remote Export Directory	Directory in the Remote export Host to which export files are transferred if configured.	Default: blank Format: String Range: 0-255 characters
Maximum Number of Exported Subscribers	The maximum number of subscribers that can be exported per export file. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-30000000 Default: 30000000
Export Status Lifetime	Number of days the Export operation's status information and associated files are available before they are automatically removed from the local system. This value is for reference only and cannot be changed.	Format: String Range: 1-365 days Default: 7
Remote Import Enabled	Whether or not import files are imported from a Remote Host.	Format: Check box Range: Checked, Unchecked Default: Unchecked
Local Import Directory	Local directory to which import files are copied from the Remote Host. This value is for reference only and cannot be changed.	Format: String Range: 0-255 characters Default: /var/TKLC/db/filemgmt/provimport
Remote Import Directory	The directory in which import files exist on the Remote Import Host.	Format: String Range: 0-255 characters Default: blank
Import Status Lifetime	Number of days the Import operation's status information and associated files are available	Format: String Range: 1-365 days

Element	Description	Data Input Notes
	before they are automatically removed from the local system. This value is for reference only and cannot be changed.	Default: 7
PNR Generation with Import	Configure whether or not Sh PNR messages should be generated whenever a subscriber's or pool's data is updated or deleted with import. If checked, PNR(s) will be generated for subscribers with an active subscription if a relevant subscriber or pool is updated or deleted. If unchecked, no PNR(s) will be generated when the subscriber or pool is updated or deleted.	Format: Check box Range: Checked, Unchecked Default: Unchecked
Maximum Provisioning Backend Response Timeout	The maximum time (in seconds) that a transaction can remain open before provisioning front end expires the request sent.	Format: Numeric; seconds Range: 2-3600 Default: 7
Log Insert, Update, and Delete Provisioning Messages	Whether or not to log Insert/Update/Delete incoming and outgoing provisioning messages in the command log.	Format: Check box Range: Checked, Unchecked Default: Checked
Log Retrieve Provisioning Messages	Whether or not to log retrieve incoming and outgoing provisioning messages in the command log.	Format: Check box Range: Checked, Unchecked Default: Checked
Provisioning Response with Durability Confirmation	If checked, respond to provisioning commands after confirmation of Durability. Enabling this feature decreases the provisioning throughput. This feature applies to all provisioning requests received over any supported provisioning interface (REST or SOAP). When enabled, this feature forces the system to wait for completion of the data durability checks (before sending a provisioning request	Format: Check box Range: Checked, Unchecked Default: Unchecked

Element	Description	Data Input Notes
	acknowledgement back, or responding to, the OSS). When disabled (unchecked), the acknowledgement is sent back without waiting for completion of the request's data durability checks.	

Editing provisioning options

You can only perform this task when logged into the active NOAMP server. Note that you must have permission to edit this page. Access permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Configuration** > **Provisioning Options**.
   The **Provisioning Options** page appears.
2. Modify the options you want to change by entering information in the appropriate fields.
   For a detailed explanation about the options and valid input for these fields, see *Provisioning Options elements*.
3. Click **Apply**.
   If field validations succeed, the changes are saved and you remain on the same page. A successful update message appears.
   If the page contains any values that are not valid or are out of range, an error message appears.

UDRBE Options

UDRBE (UDR Back End) options control how specific features on the back-end work, such as notification and auto-enrollment. The GUI is used to specify values for various global parameters that guide the behavior of the UDR Back End features. Unless noted, any changes to options take effect immediately.

UDRBE Options elements

This table describes the fields on the UDRBE Options page.

Table 9: UDRBE Options Elements

Element	Description	Data Input Notes
Cleanup Deleted Entity Enabled	Whether or not to automatically delete an entity for a subscriber if the entity is no longer defined in the Subscriber Entity Configuration	Format: Check box Range: Checked, Unchecked Default: unchecked

Element	Description	Data Input Notes
Notification Delivery Timeout	The time, in seconds, after which a delivery attempt for a notification is deemed to have timed out if no response is received. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-600 (seconds) Default: 10
Notification Maximum Delivery Attempts	The maximum number of times the MP (message processor) attempts to notify the associated MPE (multimedia policy engine) of a change in subscriber or pool information before the notification is deleted. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-100 Default: 3
Notification Maximum Time To Live	The maximum time, in seconds, before an undelivered notification (once created) expires and is deleted. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-604800 Default: 86400
Notification Delivery Retry Period	The minimum number of seconds between delivery attempts made for a notification that failed to be delivered but for which the Application Server is still available. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-3600 (seconds) Default: 30
Notification Maximum Records	The maximum number of outstanding notifications stored by the system. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-10000000 Default: 10000
Notification Minimum Scan Interval	The minimum number, in seconds, between checking the list of outstanding notifications, for notifications that can potentially be retried. If a scan takes longer than this time, the next scan will start without additional delay. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-3600 (seconds) Default: 2

Element	Description	Data Input Notes
New Notification Send Rate	The maximum rate at which delivery attempts for newly generated notifications will be sent. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-100000 (requests per second) Default: 2500
Existing Notification Send Rate	The maximum rate at which delivery attempts for buffered notifications will be sent. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-100000 (requests per second) Default: 2500
Maximum Successive Failures Before Unavailable	The number of successive failed notification delivery attempts for an Application Server that results in the Application Server being set to unavailable. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-100 Default: 5
Delivery Retry Period When Unavailable	The number of seconds after which a periodic notification retry attempt for an Application Server that is unavailable will be triggered. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-3600 (seconds) Default: 300
Maximum Subscriptions per Subscriber	The maximum number of subscriptions per subscriber. The oldest subscription is deleted to make room when a new subscription is added. This value is for reference only and cannot be changed.	Format: Numeric Range: 1-1000 Default: 10
Transaction Durability Timeout	The amount of time (in seconds) allowed between a transaction being committed and it becoming durable. (A transaction becomes durable when it's written to disk.) If the Transaction Durability Timeout lapses, a DURABILITY_TIMEOUT response is sent to the originating client. The associated request should be resent to ensure that the request was committed. NOTE: Changes to Transaction Durability Timeout	Format: Numeric Range: 2-3600 (seconds) Default: 5

Element	Description	Data Input Notes
	do not take effect until UDRBE is restarted.	

Editing UDRBE options

You can only perform this task when logged into the active NOAMP server.

1. Select **UDR** > **Configuration** > **UDRBE Options**.
   The **UDRBE Options** page appears.
2. Modify the options you want to change by entering information in the appropriate fields.
   For a detailed explanation about the options, which fields can be edited, and valid input for these fields, see *UDRBE Options elements*.
3. Click **Apply**.
   If field validations succeed, the changes are saved and you remain on the same page. A successful update message appears.

   If the page contains any values that are not valid or are out of range, an error message appears.

Provisioning Connections

The **Provisioning Connections** page allows you to configure a whitelist of all allowable remote connections. Only servers listed in the provisioning connections list are allowed to remotely connect to the primary provisioning site's NOAMP server and execute commands. UDR won't know the connection type (REST/SOAP) until a connection is established. The connection type is displayed on the **Connection Status** page (accessible from the **UDR** > **Maintenance** menu).

Note: Connection options must be set prior to configuring connections. For more information about this option, see *Provisioning Options*.

By default, UDR allows up to 100 unsecure SOAP and 100 secure/unsecure REST provisioning connections; the maximum number of connections allowed can be changed using the **UDR** > **Configuration** > **Provisioning Options** page. For more information, see *Provisioning Options*.

From the **Provisioning Connections** page, you can:

- View the list of servers allowed to establish a remote connection and each server's permissions
- Configure the UDR to allow connection requests from remote servers
- Delete servers from the connections list

Provisioning Connections elements

This table describes the fields on the Provisioning Connections page.

Table 10: Provisioning Connections Elements

Element	Description	Data Input Notes
System ID	Identification text for the system.	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1–15 characters Default: Blank
IP Address	A single IP address or a single range of IP addresses (in CIDR - Classless Inter-Domain Routing - format) allowed to connect to the provisioning server. If entering a CIDR address range, the address format is a.b.c.d/n, where n is the network prefix. For more information on CIDR notation, reference IETF RFC 4632.	Format: IPv4 dot-decimal notation (for a single address) or CIDR notation (for a range of addresses) Range: IPv4 dot-decimal notation -the first octet must be between 1-255, the other three must be between 0-255; CIDR notation - same as IPv4 but also includes / and a number between 20 and 32, for example, 204.22.31.42/25 Default: Blank

Viewing provisioning connections

You can perform this task when logged into an active NOAMP.

Select **UDR** > **Configuration** > **Provisioning Connections**.
The **Provisioning Connections** page appears.

The currently allowed provisioning connections are listed in the table.

Adding a provisioning connection

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Configuration** > **Provisioning Connections**.
   The **Provisioning Connections** page appears.
2. Click **Insert**.
   The **Provisioning Connections [Insert]** page appears.
3. Enter a system ID in the **System ID** field. This field is required.
4. Enter a unique IP address for the provisioning connection in the **IP Address** field. This field is required.
5. Perform one of the following:

- Click **OK** to save the provisioning connection and return to the **Provisioning Connections** page.
- Click **Cancel** to return to the **Provisioning Connections** page without saving the changes.

If **OK** is clicked and any of the following conditions exist, an error message appears:

- Any required field is empty; no value was entered or selected
- The entry in any field is not valid (wrong data type or out of the valid range)
- The IP Address is not unique; it already exists in the system

Deleting a provisioning connection

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Configuration** > **Provisioning Connections**.
   The **Provisioning Connections** page appears.
2. Locate the connection you want to delete and click to highlight it.
3. Click **Delete**.
   A popup confirmation window appears.
4. Perform one of the following actions:
   - Click **OK** to delete the connection.
   - Click **Cancel** to cancel the delete function and return to the **Provisioning Connections** page.

Subscribing Client Permissions

Use this page to view the list of client hosts and their associations with data reference and permissions. The **Subscribing Client Permissions** page determines a white list of all possible client's permissions. In the Permission grid, the **permissions** column can list any combination of the three permissions: U (UDR), P (PUR) or S (SNR) (e.g. U, P, S, UP, US, PS, UPS).

Note: The client host being associated with permissions must exist in the system before adding a subscribing client permission record.

From the **Subscribing Client Permissions** page, you can:

- Filter the list of subscriber client permissions to display for only the desired client hosts
- View the list of existing subscriber client permissions
- Add a new subscriber client permission
- Delete a client host from the client permissions list

Subscribing Client Permissions elements

This table describes the fields on the Subscribing Client Permissions page.

Table 11: Subscribing Client Permissions Elements

Element	Description	Data Input Notes
Client Host	Define a client host to associate with a data reference and configure related permissions. This field is required.	Format: Text string - Fully Qualified Domain Name (FQDN) of this subscribing client. FQDN is case-insensitive and consists of a list of labels separated by periods. Each label can contain letters, numbers, dashes, periods, and an underscore. A label must start with a letter, number, or underscore (underscore can only be used as the first character), and must end with a letter or number. Range:1-255 characters (label - 1-63 characters) Default: blank
Data Reference	Data reference associated with client host. The value for this field is automatically generated and cannot be accessed from here.	Format: Numeric Range: 0 Default: 0
Permissions	The permissions associated with the client host, to send PUR, SNR, and/or UDR messages. One, two, or three checkboxes may be checked.	Format: Check boxes Range: Checked, unchecked Default: Unchecked

Viewing subscribing client permissions

You can perform this task when logged into an active NOAMP.

1. Select **UDR** > **Configuration** > **Subscribing Client Permissions**.
   The **Subscribing Client Permissions** page appears.
2. To view a subset of existing subscribing client permissions, use the **Filter** option in the upper left corner to define the permissions you want displayed.

The list of client hosts and their associations with data references and permissions is displayed.

Adding a subscribing client permission

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Configuration** > **Subscribing Client Permissions**.

The **Subscribing Client Permissions** page appears.

2. Click **Insert**.
   The **Subscribing Client Permissions [Insert]** page appears.
3. Enter an existing client host name in the **Client Host** field.
4. Click to check mark the permissions to associate with this client host - **UDR**, **PUR**, and/or **SNR**.
5. Perform one of the following:

   - Click **OK** to save the permissions and return to the Subscribing Client Permissions page.
   - Click **Apply** to save the permissions and remain on the Insert page.
   - Click **Cancel** to return to the Subscribing Client Permissions page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:

   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The client host is not unique; it already exists in the subscribing client permissions list

Deleting a subscribing client permission

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Configuration** > **Subscribing Client Permissions**.
   The **Subscribing Client Permissions** page appears.
2. Click to highlight the permission record to delete, and click **Delete**.
   A popup confirmation window appears.
3. Perform one of the following actions:

   - Click **OK** to delete the permission record.
   - Click **Cancel** to cancel the delete function and return to the **Subscribing Client Permissions** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Auto Enrollment

This menu provides access to the Auto Enrollment Options and Auto Enrollment Blacklist GUI pages:

- Auto Enrollment Options controls how the auto enrollment feature works on the back-end when provisioning or signaling traffic is received
- Auto Enrollment Blacklist provides the ability to deactivate auto enrollment on ranges of subscribers.

As part of the auto enrollment feature, the **Maintenance** > **Subscriber Query** page displays statistics for the auto enrolled subscribers. The value provides the count of the **Auto Enrolled Subscribers** configured in the software's database and is obtained from the SDO (Subscriber Data Object)/SNO (Subscription Notification Object) audit run. Note that the number of subscribers displayed is updated when the screen is refreshed or the Submit button is pressed.

Auto Enrollment Options

The **Auto Enrollment Options** page controls how the auto enrollment feature works on the back-end. The GUI is used to specify values for various parameters that guide the behavior of the auto enrollment feature. Unless noted for the field on the GUI page, any changes to auto enrollment options take effect immediately.

Auto Enrollment Options elements

This table describes the fields on the Auto Enrollment Options page.

Table 12: Auto Enrollment Options Elements

Element	Description	Data Input Notes
Auto Enrollment on Provisioning Enabled	Whether or not provisioning requests can trigger auto-enrollment when the user identity is not found.	Format: Check box Range: Checked, Unchecked Default: Unchecked
Auto Enrollment on PUR Enabled	Whether or not PUR requests can trigger auto-enrollment when the user identity is not found.	Format: Check box Range: Checked, Unchecked Default: Unchecked
Auto Enrollment on SNR Enabled	Whether or not SNR requests can trigger auto-enrollment when the user identity is not found.	Format: Check box Range: Checked, Unchecked Default: Unchecked
Auto Enrollment Cleanup on SNR Enabled	Whether or not to automatically delete an auto-enrolled subscriber after receiving an SNR (unsubscribe) for the last active subscription for the subscriber.	Format: Check box Range: Checked, Unchecked Default: Checked
Auto Enrollment Cleanup Inactive Subscriber Enabled	Whether or not to automatically delete an auto-enrolled subscriber after a subscription is inactive for a period that exceeds the inactivity timeout.	Format: Check box Range: Checked, Unchecked Default: Checked
Auto Enrollment Inactivity Timeout	The duration, in days, of a lack of entity updates that causes an auto-enrolled subscriber to become eligible for cleanup.	Format: Numeric Range: 0-90 days Default: 90

Editing Auto Enrollment Options

You can only perform this task when logged into the active primary NOAMP server. Note that you must have permission to edit this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Configuration** > **Auto Enrollment Options**.
   The **Auto Enrollment Options** page appears.
2. Modify the options you want to change by entering information in the appropriate fields.
   For a detailed explanation about the options and valid input for these fields, see *Auto Enrollment Options elements*.
3. Click **Apply**.
   If field validations succeed, the changes are saved and you remain on the same page. A successful update message appears.

   If the page contains any values that are not valid or are out of range, an error message appears.

Auto Enrollment Blacklist

Auto Enrollment Blacklist allows you to deactivate auto enrollment on ranges of subscribers. This allows you to configure IMSI and MSISDN blacklist ranges for auto-enrolled subscribers. These ranges are checked before auto enrollment can be triggered from either the Provisioning interface or the Sh interface.

Auto Enrollment Blacklist elements

This table describes the fields on the Auto Enrollment Blacklist page.

Table 13: Auto Enrollment Blacklist Elements

Element	Description	Data Input Notes
Blacklist ID	Enter unique string that identifies the auto enrollment blacklist range.	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1-32 characters Default: Blank
Key Type	Select the type of key used for blacklisting the subscribers.	Format: Pulldown menu Range: MSISDN, IMSI Default: MSISDN
Start Range	Select start range of the key for the subscribers to be blacklisted.	Format: Numeric Range: 8-15 digits

Element	Description	Data Input Notes
	This value should be less than or equal to the value in End Range.	Default: Blank
End Range	Select end range of the key for the subscribers to be blacklisted. This value should be greater than or equal to the value in Start Range.	Format: Numeric Range: 8-15 digits Default: Blank

Viewing auto enrollment blacklists

Use this procedure to view a list of existing auto enrollment blacklists.

You can perform this task when logged into an NOAMP. Note that this menu option only appears if you must have permission to view auto enrollment blacklists. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Configuration** > **Auto Enrollment** > **Auto Enrollment Blacklist**.
   The **Auto Enrollment Blacklist** page appears.
2. To view a subset of existing auto enrollment blacklists, use the **Filter** option in the upper left corner to define the blacklists you want displayed.

The list of existing auto enrollment blacklists is displayed.

Adding an auto enrollment blacklist

Use this procedure to configure an auto enrollment blacklist, which is used to deactivate auto-enrollment on a range of subscribers. A blacklist is checked before auto enrollment can be triggered from either the Provisioning interface or the Sh interface.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to edit this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Configuration** > **Auto Enrollment** > **Auto Enrollment Blacklist**.
   The **Auto Enrollment Blacklist** page appears.
2. Click **Insert**. (Note that you must have permission to add a blacklist record on this page for the Insert link to be active.)
   The **Auto Enrollment Blacklist [Insert]** page appears. For a detailed explanation about the options and valid input for the fields on this page, see *Auto Enrollment Blacklist elements*.
3. Select the type of key in the **Key Type** field to be associated with this blacklist.
4. Enter the **Start Range** and **End Range** values for the subscriber ID range to be blacklisted.
5. Perform one of the following:
   - Click **OK** to save the blacklist and return to the **Auto Enrollment Blacklist** page.
   - Click **Cancel** to return to the **Auto Enrollment Blacklist** page without saving the changes.

   If **OK** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected (All fields on this page are required.)

- The entry in any field is not valid (wrong data type or out of the valid range)
- The Blacklist ID is not unique; it already exists in the auto enrollment blacklist list

Deleting an Auto Enrollment Blacklist

You can only perform this task when logged into the Active Primary NOAMP.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to delete on this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Configuration** > **Auto Enrollment** > **Auto Enrollment Blacklist**.
   The **Auto Enrollment Blacklist** page appears.
2. Click to highlight the blacklist record to delete, and click **Delete**. (Note that you must have permission to delete a blacklist record on this page for the Delete link to be active.)
   A popup confirmation window appears.
3. Perform one of the following actions:
   - Click **OK** to delete the blacklist record.
   - Click **Cancel** to cancel the delete function and return to the **Auto Enrollment Blacklist** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Command Log Export Options

The **Command Log Export Options** page allows you to automatically export provisioning commands received by UDR from the provisioning system for the purpose of archiving and/or auditing. When enabled, the export is automatically triggered at the top of each hour and also occurs when the provisioning command log table reaches 80% of its maximum size. The command log export mechanism checks every five minutes to determine if either of these criteria is met. Information included in the file for each logged command includes the remote IP address from which the transaction was initiated (the provisioning client IP that sent the provisioning request), the date and time of the transaction, the connection ID (used to correlate requests and responses), and requests/responses (captured in XML format, along with XML command parameters). The exported file is stored in a compressed format and contains only commands logged since the previous export was triggered.

The exported file may grow in size depending on the size or number of the provisioning command messages captured in the command log table. There are free tools available that can be used to open large csv files or split a large file into multiple smaller files. It is recommended that one of these free tools be used to work with large exported files.

Command Log Export Options elements

This table describes the fields on the **Command Log Export Options** page.

Table 14: Command Log Export Options Elements

Element	Description	Data Input Notes
Remote Host IP Address for Command Log Export	The **IP Address** of the remote server to which the log file is written. The login **Username** is also required. Once the IP address and username are provided, click **SSH Key Exchange** for a pop-up window where you can enter the password for the remote server.	**IP Address** Format: IPv4 dot-decimal notation Range: The first octet must be between 1-255, the other three must be between 0-255 Default: Blank **Username** Format: Alphanumeric Range: all existing usernames on the remote host Default: Blank
Local Command Log Export Directory	The local directory where command log export files are stored. This value is for reference only and cannot be changed.	Format: Alphanumeric and file path characters Range: 0-255 Default: /var/TKLC/db/filemgmt /cmdlogexport
Remote Command Log Export Directory	The directory where command log export files are saved to on the remote server	Format: Alphanumeric and file path characters Range: 0-255 Default: Blank
Command Log Export Status Lifetime	The number of days the command log export operation's status information and associated fields are available before they are automatically removed from the local system. This value is for reference only and cannot be changed.	Format: Numeric Range: 0-255 Default: 1
Remote Command Log Export Enabled	If checked marked, command log export is enabled.	Format: Check box Range: Checked, unchecked Default: Unchecked

Editing Command Log Export Options

You can only perform this task when logged into the active primary NOAMP server. Note that you must have permission to edit this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Configuration** > **Command Log Export Options**.
   The **Command Log Export Options** page appears.
2. Enter the **IP address** of the server where the log file is to be exported.
3. Enter the **Username** to be used for logging into the server.
4. Click **SSH Key Exchange** to enter the remote server password.
   A pop-up window appears.
5. Enter the remote server password and click **OK**.
   The password is accepted and the window closes. This step needs to be completed only on initial setup or if the password changes.
6. Enter the directory where the log is to be stored on the remote server in **Remote Command Log Export Directory**.
7. Click to check mark **Remote Command Log Export Enabled** to enable the export process. If not checked, the export process is turned off.
8. Click **Apply**.
   If field validations succeed, the changes are saved and you remain on the same page. A successful update message appears. Changes take affect immediately.

   If the page contains any values that are not valid or are out of range, an error message appears.

Chapter 5

Subscriber Entity Configuration

Topics:

- *Entity.....61*
- *Transparent Entity.....64*
- *Interface Entity Map.....80*

A subscriber entity configuration (SEC) is a database that contains an XML data model used for processing subscriber data. A data model defines which XML elements are allowed in an entity and defines how these elements relate to one another.

The SEC defines the type and format of the data that can be stored and processed in the subscriber profile repository. The SEC comprises the pre-configured entities that come with the system as well as any user-defined entities.

The **Subscriber Entity Configuration** menu options allow you to add, edit, and delete entities; change entity attributes; define and change transparent entity structure; and perform mappings between entities and interface entities. Changes implemented from these menu options are written to the SEC and take effect immediately.

The options that appear on this menu vary based on the type of server you are logged into and the permissions assigned to your group. If you do not see the menu option you need, make sure you are logged into the appropriate type of server and ask your administrator to make sure the group your user ID belongs to has the appropriate permissions.

Entity

The **Entity** page is used to add, edit, and delete entities from the subscriber entity configuration (SEC). An entity is a type of subscriber data stored in XML format, such as quota, state, or profile of a subscriber.

Two types of entities can be defined: opaque and transparent. Opaque entity elements cannot be individually read or edited. Transparent entity elements and values inside those elements can be read and edited. (These values can be edited with SOAP/REST provisioning software.)

When defining a new transparent entity, the following must be defined (in the order listed) using options on the **Transparent Entity** menu before you can save the new entity:

1. Field set (if using): *Adding a field set*
2. Base field set: *Adding a base field set*
3. Definition: *Adding a definition*

Note that the system comes pre-configured with eight entities; each is pre-defined as either opaque or transparent:

- DynamicQuota (opaque)
- PoolDynamicQuota (opaque)
- PoolProfile (transparent)
- PoolQuota (transparent)
- PoolState (opaque)
- Profile (transparent)
- Quota (transparent)
- State (opaque)

These pre-defined entities come preloaded with default configuration and these can be customized if needed.

Additionally, an entity can be pooled with other entities for the purpose of pool processing. An entity that is not pooled applies to one subscriber; an entity that is pooled can be shared by multiple subscribers.

Note: Once an entity is defined, at least one interface entity map entry must exist in order for the entity data to be accessed using provisioning or network interfaces. One interface entity map entry is required per interface.

Entity elements

Use the **Entity** page to manage entities. This table describes fields on this page.

Table 15: Subscribers Elements

Element	Description	Data Input Notes
Entity Name	Name of the entity. Note that this value cannot be changed once a new entity is saved.	Format: String - valid characters are alphanumeric and underscore; must contain at least

Element	Description	Data Input Notes
		one alphabetic or numeric character, and cannot start with a number Range: 1-32 characters Default: Blank
Entity Type	Entity type can be opaque or transparent. When opaque is selected, the **Transparent Entity Definition** field is not accessible.	Format: pulldown list Range: Opaque, Transparent Default: Opaque
Transparent Entity Definition	Name of the transparent entity definition (this field associates a base field set and field set(s) (when used) with an entity). This field can be accessed only when the **Entity Type** is specified as Transparent.	Format: pulldown list Range: Select value from list Default: Blank
Pooled	Check box that indicates whether or not an entity is a pooled entity.	Format: Check box Range: Checked, unchecked Default: Unchecked
Register ID	Upon creation, every entity is automatically assigned a Unique register identity. This value is used internally, and cannot be edited.	Format: Numeric

Viewing entities

All possible entities configured in the database can be viewed from this page. There is no limitation to the number of entities that can be configured.

You can perform this task when logged into an NOAMP.

Select **UDR** > **Subscriber Entity Configuration** > **Entity**.
The **Entity** page appears.

The list of entities and their entity type, along with their association with transparent entity definition, pooled, and registered ID, is displayed.

Note: To change the order of the records in a column (from descending to ascending or vice versa), click the header of that column.

Adding an entity

Follow these steps to add a new entity. Note that if you are adding a transparent entity, the field sets (when used), base field set, and definition being used in the entity must first be defined.

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Entity**.
   The **Entity** page appears.
2. Click **Insert**.
   The **Entity [Insert]** page appears.
3. Enter a unique **Entity Name** to associate with the entity.
4. Select the **Entity Type** from the pulldown menu. See *Entity elements* for more information on each field.
5. If an entity type of Transparent is selected, specify the type of **Transparent Entity Definition**.
6. Check mark **Pooled** if this is a pooled entity.
7. Perform one of the following:
   - Click **OK** to save the permissions and return to the **Entity** page.
   - Click **Apply** to save the permissions and remain on the **Insert** page.
   - Click **Cancel** to return to the **Entity** page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The Entity Name is not unique; it already exists in the entity list

Editing an entity

Follow these steps to modify an existing entity, including any of the eight pre-defined entities. The four pre-defined opaque entities can be changed to transparent if provisioning changes need to be made to the values within these entities.

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Entity**.
   The **Entity** page appears.
2. Click on the entity to be edited.
   The selected entity displays in green.
3. Click **Edit**.
   The **Entity [Edit]** page appears.
4. Change existing entity values, as needed. The only field that cannot be changed for an existing entity is the Entity Name; to change this field, the existing entity must be deleted and a new one created. See *Entity elements* for more information on each field.
5. Perform one of the following:
   - Click **OK** to save the permissions and return to the **Entity** page.
   - Click **Apply** to save the permissions and remain on the **Edit** page.
   - Click **Cancel** to return to the **Entity** page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The Entity Name is not unique; it already exists in the entity list

Deleting an entity

Follow these steps to delete an entity. You can only perform this task when logged into the Active Primary NOAMP. Note that an entity cannot be deleted if it is referenced by an Interface Entity Map.

Note: Global Data Delete permission is required for this function.

1. Select **UDR** > **Subscribing Entity Configuration** > **Entity**.
   The **Entity** page appears.
2. Click on the entity to be deleted.
   The selected entity displays in green.
3. Click **Delete**.
   A popup confirmation window appears.
4. Perform one of the following actions:
   - Click **OK** to delete the permission record.
   - Click **Cancel** to cancel the delete function and return to the **Entity** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Transparent Entity

The Transparent Entity menu contains options that allow you to add, edit, and delete the internal structure elements that compose transparent entities: field sets, base field sets, and definitions.

A transparent entity is a type of subscriber data stored in XML format in the subscriber entity configuration (SEC) (e.g., quota, profile, or dynamic quota element) and whose internal structure can be read and changed by UDR (in other words, transparent means you can manipulate fields and rows). The data can be changed using SOAP/REST provisioning software.

There are four pre-defined transparent entities that come with the system:

- PoolProfile
- PoolQuota
- Profile
- Quota

These pre-defined entities come preloaded with default configuration and these can be customized if needed.

Note that before a new transparent entity can be added (using the *Adding an entity* procedure), the field sets (if used), base field set, and definition to be used within that entity must first be defined.

Field Set

The **Field Set** page is used to add, edit, and delete field sets from the subscriber entity configuration (SEC). A field set is an XML element that contains a group of related XML elements (or fields). Each field set is associated with a specific attribute that makes that field set unique. For example, the pre-defined pool quota field set has an Instance Identifier Attribute called name and contains fields

specific to this pool quota. This field set can appear multiple times in the same entity as long as each field set has a unique name value (i.e., the first field set has a name of John, the second field set has a name of Sarah, and the third field set has a name of Harold). A field set also defines each field's properties/validation rules and the order in which the fields are stored.

Note that the system comes pre-configured with six field sets:

- Quota (QuotaV3)
- State Property (StatePropertyV1)
- Dynamic Quota (DynamicQuotaV1)
- Pool Quota (PoolQuotaV3)
- Pool State Property (PoolStatePropertyV1)
- Pool Dynamic Quota (PoolDynamicQuotaV1)

These field sets can be modified and/or new field sets can be added as needed.

Note: A transparent entity field set can be defined but cannot be accessed until it is referenced by a Transparent Entity Base Field Set, or referenced by another Transparent Entity Field Set.

Field Set elements

Use the **Field Set** page to manage ESPR transparent entity field sets. *Table 16: Field Set Elements* describes the elements that can be configured for a field set.

Table 16: Field Set Elements

Element	Description	Data Input Notes
Field Set Name	Name of the transparent entity field set.	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1-64 characters Default: Blank
Element String	XML element name under which defined fields reside.	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1-64 characters Default: Blank
Repeatable	Indicates that the field set is a repeatable element. When multiple instances of data exist in an entity, a repeatable element	Format: Checkbox Range: Checked, unchecked Default: Unchecked

Element	Description	Data Input Notes
	contains the data fields for a specific instance of an entity. When this element is checked, the **Instance Identifier Attribute** element is enabled.	
Instance Identifier Attribute	XML attribute instance associated with a repeatable element. This value indicates which repeatable element is being selected. This element is enabled only if the **Repeatable** element is checked.	Format: String - valid characters are alphanumeric and underscore; if enabled, must contain at least one alphabetic or numeric character, and cannot start with a number Range: 0-64 characters Default: Blank

In the lower part of the **Field Set** page, use the **Add Field** button to add a data field record to this field set. *Table 17: Field Elements* describes the elements that can be configured for each data field record.

Table 17: Field Elements

Element	Description	Data Input Notes
Element String	The name of the XML element defined in the field set. If *Field Set* is selected from the **Type** dropdown list, then the **Element String** value for the field is automatically populated with the **Element String** value of the field set selected from the **Field Set Name** dropdown list.	Format: String; if the parent *Base Field Set* is Element Based, the format of **Element String** is alphanumeric and underscore, must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1-64 characters Default: Blank
Type	Field type. If *Field Set* is selected, then the **Min/Max Value**, **Updatable**, **Resettable**, **Reset Value**, **Defaultable**, **Default Value**, and **Special Format** elements are disabled. If *RegEx* is selected and **Resettable** or **Defaultable** is check marked, the value in the associated element (**Reset Value** or **Default Value**) is validated using the regex expression in the **Special Format** element.	Format: Dropdown list Range: Integer, Regex, Field Set Default: Regex

Element	Description	Data Input Notes
Field Set Name	Previously defined transparent entity field set where the field will be assigned. Note that a specific **Field Set Name** can only be referenced once by another field set or base field set. This element is enabled only if *Field Set* was selected from the **Type** dropdown list.	Format: Dropdown list Range: Previously defined tranparent entity field set Default: Blank
Min Value	The minimum field value allowed.	Format: Numeric Range: 0-4294967295 Default: Blank
Max Value	The maximum field value allowed.	Format: Numeric Range: 0-4294967295 Default: Blank
Updatable	Indicates that the value can be sent in an update request.	Format: Check box Range: Checked, unchecked Default: Unchecked
Resettable	Sets the value to the value in the **Reset Value** element if a reset operation is performed.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Reset Value	Value to set the field to if a reset operation is performed. This element is enabled only if the **Resettable** element is checked. Note that if a **Type** of **RegEx** is specified, this value is validated using the regex expression specified in the **Special Format** element.	Format: Numeric Range: 0-4294967295 Default: Blank
Defaultable	Sets the value to the value in the **Default Value** element if a value if not specified in the insert request.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Default Value	Value to set the field to if a value is not specified in the insert request. This element is enabled only if the **Defaultable** element is checked. Note that if a **Type**	Format: Numeric Range: 0-4294967295 Default: Blank

Element	Description	Data Input Notes
	of **RegEx** is specified, this value is validated using the regex expression specified in the **Special Format** element.	
Min Occur	Indicates if the field is mandatory or optional. If the value is 0, then the field does not have to exist. If the value is 1 or more, then the field is mandatory, and the specified number of instances must exist for the Entity to be valid. Note that when **Defaultable** is check marked, this value must be either 0 or 1.	Format: Numeric Range: 0-4294967295 Default: Blank
Max Occur	Indicates the maximum number of occurrences of the field. A value of *NO_LIMIT* indicates an unlimited number of occurrances.	Format: Numeric Range: 0-4294967295 Default: Blank
Special Format	This element is a regular expression, conforming to the Perl regular expression syntax. This value must match the entire regular expression to be considered valid. This value can be used to apply advanced/special field validation if required (i.e., validation of the value in the **Default Value** or **Reset Value** element).	Format: String Range: 1-64 characters Default: Blank

Viewing field sets

All possible field sets configured in the database can be viewed from this page. There is no limitation to the number of field sets that can be configured.

You can perform this task when logged into an NOAMP.

Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Field Set**.
The **Field Set** page appears.

The list of transparent entity field sets is displayed.

Note: To change the order of the records in a column (from descending to ascending or vice versa), click the header of that column.

Adding a field set

Use this procedure to add a new field set. You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Field Set**.
   The **Field Set** page appears.
2. Click **Insert**.
3. Enter a unique **Field Set Name** to associate with the entity.
4. Enter a unique **Element String** for the XML element name.
5. If this field set is repeatable, check mark **Repeatable** and enter an XML attribute instance identifier.
6. Click **Add Field** to add a data field record to associate with this transparent entity field set, and then enter data for the record. At least one data field record must be associated with a transparent entity field set or an error will occur when you try to save the field set. See *Field Set elements* for more information about each variable element.
7. Once all needed fields have been added, perform one of the following:
   - Click **OK** to save the permissions and return to the **Field Set** page.
   - Click **Apply** to save the permissions and remain on the **Insert** page.
   - Click **Cancel** to return to the **Field Set** page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The field set name is not unique; it already exists in the field set list

Editing a field set

Use this procedure to update the settings for an existing field set.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Field Set**.
   The **Field Set** page appears.
2. Click to highlight the field set record to edit, and click **Edit**.
   The **Field Set [Edit]** page appears.
3. Modify the settings for this field set, as needed. Note that at least one data field record must be associated with this transparent entity field set. For more information about the variable elements on this page, see *Field Set elements*.
4. Perform one of the following:
   - Click **OK** to save the changes and return to the **Field Set** page.
   - Click **Apply** to save the changes and remain on this page.

   If field validations succeed, the connection is saved.

   If **OK** or **Apply** is clicked and any of the following conditions exist, an error message appears:
   - If the entry in any field is not valid or are out of range
   - If a required field is empty (not entered)

Copying a field set

Use this process to create a new field set from an existing field set. This capability can save time setting up a new field set when it has identical or similar fields specified to an existing field set.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Field Set**.
   The **Field Set** page appears.
2. Click to highlight the field set to copy, and click **Copy**.
   The **Field Set [Copy]** page appears.
3. Enter a unique **Field Set Name** and **Element String** to associate with this field set.
4. Modify the remaining settings for this field set, as needed. Note that at least one data field record must be associated with this transparent entity field set. For more information about the variable elements on this page, see *Field Set elements*.
5. Perform one of the following:
   - Click **OK** to save the changes and return to the **Field Set** page.
   - Click **Apply** to save the changes and remain on this page.

   If field validations succeed, the field set is saved.

   If **OK** or **Apply** is clicked and any of the following conditions exist, an error message appears:
   - If the entry in any field is not valid or are out of range
   - If a required field is empty (not entered)

Deleting a field set

If a field set is referenced from any other field sets, you must first modify the referencing field set to eliminate this reference before you are allowed to perform the delete.

You can only perform this task when logged into the Active Primary NOAMP.

Note: Global Data Delete permission is required for this function.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Field Set**.
   The **Field Set** page appears.
2. Click to highlight the field set to delete, and click **Delete**.
   A popup confirmation window appears.
3. Perform one of the following actions:
   - Click **OK** to delete the permission record.
   - Click **Cancel** to cancel the delete function and return to the **Field Set** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Base Field Set

The **Base Field Set** page is used to add, edit, and delete base field sets from the subscriber entity configuration (SEC). A base field set is the first XML element (also called the root element) in an entity; it contains the entity's version information (if present in entity) and one or more fields/field sets. There is only one base field set per entity.

Note that the system comes pre-configured with eight base field sets:

- Profile (SprProfileBFS)
- Quota (SprQuotaV3BFS)
- State (SprStateV1BFS)
- DynamicQuota (SprDynamicQuotaV1BFS)
- PoolProfile (SprPoolProfileBFS)
- PoolQuota (SprPoolQuotaV3BFS)
- PoolState (SprPoolStateV1BFS)
- PoolDynamicQuota (SprPoolDynamicQuotaV1BFS)

The existing base field sets can be modified, and new base field sets can be added as needed.

Note: Once a base field set is defined it cannot be accessed until it is assigned to a *Transparent Entity Definition.*

Base Field Set elements

Use the **Base Field Set** page to manage base field sets. *Table 18: Base Field Set Elements* describes fields on this page.

Table 18: Base Field Set Elements

Element	Description	Data Input Notes
Base Field Set Name	Name of this Base Field Set Definition	Format: String - alphanumeric and underscore; must contain at least one letter or number, and cannot start with a number Range: 1-64 characters Default: Blank
Element String	XML element name under which defined fields reside.	Format: String - alphanumeric and underscore; must contain at least one letter or number, and cannot start with a number Range: 1-64 characters Default: Blank
Allow Versions	Indicates whether multiple versions of this entity are allowed.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Version Identifier Element	The XML element name of the version identifier. This element is enabled only if the **Allow Versions** element is checked.	Format: String - alphanumeric and underscore; must contain at least one letter or number, and cannot start with a number Range: 1-64 characters Default: Blank

Element	Description	Data Input Notes
Version Value	The version value of the XML blob associated with the base field set. This element is enabled only if the **Allow Versions** element is checked.	Format: Numeric Range: 0-4294967295 Default: Blank
XML Storage Format	Indicates whether the entity version is element based or field name based.	Format: Dropdown list Range: Element Based, Field Name Based Default: Element Based

In the lower part of the **Base Field Set** page, use the **Add Field** button to add a data field record to the base field set. *Table 19: Base Field Elements* describes the elements that can be configured for each data field record.

Table 19: Base Field Elements

Element	Description	Data Input Notes
Element String	XML element name under which defined fields reside. If *Field Set* is selected from the **Type** dropdown list, then this **Element String** value is automatically populated with the **Element String** value of the field set selected from the **Field Set Name** dropdown list.	Format: String - alphanumeric only; must contain at least one letter or number. String value can start with a number if **XML Storage Format** is *Field Name Based*, value cannot start with a number if **XML Storage Format** is *Element Based*. Range: 1-64 characters Default: Blank
Type	Field type. If *Field Set* is selected, then the **Min/Max Value**, **Updatable**, **Resettable**, **Reset Value**, **Defaultable**, **Default Value**, and **Special Format** elements are disabled. If *RegEx* is selected and **Resettable** or **Defaultable** is check marked, the value in the associated element (**Reset Value** or **Default Value**) is validated using the regex expression in the **Special Format** element.	Format: Dropdown list Range: Integer, Regex, Field Set Default: Regex
Field Set Name	Previously defined transparent entity field set where the field	Format: Dropdown list

Element	Description	Data Input Notes
	will be assigned. Note that a specific **Field Set Name** can be referenced only once by another field set or base field set. This element is enabled only if *Field Set* was selected from the **Type** dropdown list.	Range: Previously defined transparent entity field set Default: Blank
Min Value	The minimum field value allowed.	Format: Numeric Range: 0-4294967295 Default: Blank
Max Value	The maximum field value allowed.	Format: Numeric Range: 0-4294967295 Default: Blank
Updatable	Indicates that the field value can be sent in an update request.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Resettable	Sets the field value to the value in the **Reset Value** element if a reset operation is performed.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Reset Value	Value to set the field if a reset operation is performed. This element is enabled only if the **Resettable** element is checked. Note that this value is validated using the regex expression specified in the **Special Format** element.	Format: Numeric Range: 0-4294967295 Default: Blank
Defaultable	Sets the field value to the value in the **Default Value** element if a value if not specified in the insert request.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Default Value	Value to set the field if a value is not specified in the insert request. This element is enabled only if the **Defaultable** element is checked. Note that this value is validated using the regex expression specified in the **Special Format** element.	Format: Numeric Range: 0-4294967295 Default: Blank

Element	Description	Data Input Notes
Min Occur	Indicates if the field is mandatory or optional. If set to 0, then the field does not have to exist. If set to 1 or more, then the field is mandatory, and the specified number of instances must exist for the Entity to be valid.	Format: Numeric Range: 0-4294967295 Default: Blank
Max Occur	Indicates the maximum number of occurrences of the field. A value of *NO_LIMIT* indicates an unlimited number of occurrences.	Format: Numeric Range: 0-4294967295 Default: Blank
Special Format	This element is a regular expression conforming to the Perl regular expression syntax. This value must match the entire regular expression to be considered valid. This value can be used to apply advanced/special field validation if required (i.e., validation of the value in the **Default Value** or **Reset Value** element.) .	Format: String Range: 1-64 characters Default: Blank

Viewing base field sets

All possible base field sets configured in the database can be viewed from this page. There is no limitation to the number of base field sets that can be configured.

You can perform this task when logged into an Active Primary NOAMP.

Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Base Field Set**.
The **Base Field Set** page appears.

The list of transparent entity base field sets is displayed.

Note: To change the order of the records in a column (from descending to ascending or vice versa), click the header of that column.

Adding a base field set

Follow these steps to add a new base field set. You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Base Field Set**.
   The **Base Field Set** page appears.
2. Click **Insert**.

3. Enter a unique **Base Field Set Name** to associate with the entity.
4. Enter a unique **Element String** for the XML element name.
5. If multiple versions of this entity are allowed, check mark **Allow Versions** and enter a **Version Identifier Element** and **Version Value**.
6. In **XML Storage Format**, specify if the entity version is element based or field name based.
7. Click **Add Field** to add a data field record to associate with this transparent entity base field set, and enter data for the record. At least one data field record must be associated with a transparent entity base field set or an error will occur when you try to save the base field set. See *Base Field Set elements* for more information on each variable element.
8. Once all needed fields have been added, perform one of the following:
   - Click **OK** to save the permissions and return to the **Base Field Set** page.
   - Click **Apply** to save the permissions and remain on the **Insert** page.
   - Click **Cancel** to return to the **Base Field Set** page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The base field set name is not unique; it already exists in the base field set list

Editing a base field set

Use this procedure to update the settings for an existing base field set.

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Field Base Set**.
   The **Base Field Set** page appears.
2. Click to highlight the base field set record to edit, and click **Edit**.
   The **Base Field Set [Edit]** page appears.
3. Modify the settings for this base field set, as needed. Note that at least one data field record must be associated with this transparent entity base field set. For more information about the variable elements on this page, see *Base Field Set elements*.
4. Perform one of the following:
   - Click **OK** to save the changes and return to the **Base Field Set** page.
   - Click **Apply** to save the changes and remain on this page.

   If field validations succeed, the connection is saved.

   If **OK** or **Apply** is clicked and any of the following conditions exist, an error message appears:
   - If the entry in any field is not valid or is out of range
   - If a required field is empty (not entered)

Copying a base field set

Use this process to create a base field set from an existing base field set. This capability can save time setting up a new base field set when the new one has identical or similar fields specified to an existing base field set.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Base Field Set**.
   The **Base Field Set** page appears.
2. Click to highlight the field set to copy, and click **Copy**.
   The **Base Field Set [Copy]** page appears.
3. Enter a unique **Field Set Name** and **Element String** to associate with this base field set.
4. Modify the remaining settings for this base field set, as needed. Note that at least one data field record must be associated with this transparent entity base field set. For more information about the variable elements on this page, see *Base Field Set elements*
5. Perform one of the following:
   - Click **OK** to save the changes and return to the **Base Field Set** page.
   - Click **Apply** to save the changes and remain on this page.

   If field validations succeed, the field set is saved.

   If **OK** or **Apply** is clicked and any of the following conditions exist, an error message appears:
   - If the entry in any field is not valid or are out of range
   - If a required field is empty (not entered)

Deleting a base field set

If a base field set is referenced from any other base field sets or from an entity definition, you must first modify the referencing record (base field set or entity definition) to eliminate the reference before you are allowed to perform the delete.

You can only perform this task when logged into the Active Primary NOAMP.

Note: Global Data Delete permission is required for this function.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Base Field Set**.
   The **Base Field Set** page appears.
2. Click to highlight the base field set to delete, and click **Delete**.
   A popup confirmation window appears.
3. Perform one of the following actions:
   - Click **OK** to delete the permission record.
   - Click **Cancel** to cancel the delete function and return to the **Base Field Set** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Definition

The **Definition** page is used to add, edit, and delete transparent entity definitions from the subscriber entity configuration (SEC). A transparent entity definition is a container for different versions of transparent entities and provides details on if/how to extract the version number from within a transparent entity.

Note: A transparent entity definition can be defined but cannot be accessed until it is associated with an entity. This can be done by either creating a new entity to use the definition or updating the definition

associated with an existing entity. An opaque entity must be changed to transparent before it can be associated with a definition.

Definition elements

Use the UDR **Definition** page to manage transparent entity definitions. This table describes fields on this page.

Table 20: Definition Elements

Element	Description	Data Input Notes
Transparent Entity Definition Name	Name of the transparent entity definition	Format: String - alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1-32 character Default: Blank
Allow Reset	Check mark when a reset operation is allowed on this entity.	Format: Check box Range: Checked, unchecked Default: Unchecked
Number of Versions Defined	A derived value that is determined by the number of times a base field set is mapped to a definition on a Definition page. Appears only on the Definitions View page.	Format: Numeric Range: 1-64 Default: 1

In the lower part of the page, use the **Add Version** button to associate one or more existing base field sets with the entity definition. At least one base field set must be associated with a definition before the definition record can be saved.

Table 21: Definition Version Elements

Element	Description	Data Input Notes
Base Field Set Name	Name of the base field set associated with this entity definition. Only existing base field set names can be selected.	Format: Dropdown list Range: List of existing base field set names Default: Blank
Element String	XML element name under which the defined fields reside. This element cannot be edited from here.	Format: String Range: 1-64 characters

Element	Description	Data Input Notes
Version Capable	Check box indicating whether or not multiple versions of this Entity are allowed (check marked if yes). This element cannot be edited from here.	Format: Check box Range: Checked, unchecked
Version Identifier Element	XML element name of the version identifier. This element cannot be edited from here.	Format: String Range: 1-64 characters
Version Values	The version value associated with this base field set. This element cannot be edited from here.	Format: Numeric Range: 0-4294967295

Viewing definitions

All possible entity definitions configured in the database can be viewed from this page. There is no limitation to the number of definitions that can be configured.

You can perform this task when logged into the Active Primary NOAMP.

Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Definition**.
The **Definition** page appears.

The list of transparent entity definitions is displayed.

Note: To change the order of the records in a column (from descending to ascending or vice versa), click the header of that column.

Adding a definition

Use this procedure to add an entity definition and to associate one or more base field sets with it.

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Definition**.
   The **Definition** page appears.
2. Click **Insert**.
3. Enter a unique **Transparent Entity Definition Name** to associate with the definition.
4. Checkmark **Allow Reset** if a reset can be performed for this entity definition.
5. Click **Add Version** for each base field set to associate with this entity definition.
6. From the **Base Field Set Name** dropdown list, select an existing base field set to associate with this entity definition. Note that at least one base field set must be associated with a definition before you can save the new definition record.

   Note: The base field set info that appears here is for display purposes only. See *Base Field Set elements* for more information on each field.

7. Once all needed fields have been added, perform one of the following:
   - Click **OK** to save the permissions and return to the **Definition** page.

- Click **Apply** to save the permissions and remain on the **Insert** page.
- Click **Cancel** to return to the **Definition** page without saving the changes.

If **OK** or **Apply** is clicked and any of the following exist, an error message appears:

- Any required field is empty; no value was entered or selected
- The entry in any field is not valid (wrong data type or out of the valid range)
- The transparent entity definition name is not unique; it already exists in the base field set list

Editing a definition

Use this procedure to update the settings for an existing entity definition.

You can only perform this task when logged into the Active Primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Definition**.
   The **Definition** page appears.
2. Click to highlight the definition record to edit, and click **Edit**.
   The **Definition [Edit]** page appears.
3. Modify the settings for this definition, as needed. A new version, or base field set, can be added by clicking **Add Version**, and an existing version can be deleted by clicking the gray **x** on the row to delete. Note that at least one base field set must be associated with a definition before you can save the modified definition record. For more information about these fields, see *Definition elements*
4. Perform one of the following:

   - Click **OK** to save the changes and return to the **Definition** page.
   - Click **Apply** to save the changes and remain on this page.

   If field validations succeed, the connection is saved.

   If **OK** or **Apply** is clicked and any of the following conditions exist, an error message appears:

   - If the entry in any field is not valid or is out of range
   - If a required field is empty (not entered)

Deleting a definition

Follow these steps to delete an entity definition.

You can only perform this task when logged into the active primary NOAMP.

1. Select **UDR** > **Subscriber Entity Configuration** > **Transparent Entity** > **Definition**.
   The **Definition** page appears.
2. Click to highlight the base field set to delete, and click **Delete**.
   A popup confirmation window appears.
3. Perform one of the following actions:

   - Click **OK** to delete the definition.
   - Click **Cancel** to cancel the delete function and return to the **Definition** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Interface Entity Map

This menu option maps the name of an entity in the SEC database to a specific type of interface - SH, REST, SOAP, etc. An interface entity mapping makes an entity available on the related interface. For example, in the case of a REST interface, the data type seen within the URL of a REST request is mapped to the entity.

Example uses of interface entity maps:

Sh Interface Entity Map - mapping a data entity to the Sh interface makes the entity available to the Policy Management server.

REST Interface Entity Map - mapping a data entity to the REST interface makes the entity available to the provisioning systems.

Interface Entity Map elements

Use the **Interface Entity Map** page to manage interface entity maps. This table describes fields on this page.

Table 22: Interface Entity Map Elements

Element	Description	Data Input Notes
Interface Entity Name	Entity name specific to an interface. For example, Service Indication name (for Sh) and URL token (for REST).	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 1-128 characters Default: Blank
Interface Name	Type of interface	Format: Dropdown list Range: SH, REST, SOAP, XML Default: REST
Entity Name	SEC entity name to be mapped.	Format: Dropdown list Range: All defined entity names Default: Blank

Viewing interface entity maps

All possible interface entity maps configured in the database can be viewed from this page. There is no limitation to the number of maps that can be configured.

You can perform this task when logged into an Active Primary NOAMP.

Select **UDR** > **Subscriber Entity Configuration** > **Interface Entity Map**.
The **Interface Entity Map** page appears.

The list of existing interface entity maps is displayed.

Note: To change the order of the records in a column (from descending to ascending or vice versa), click the header of that column.

Adding an interface entity map

Follow these steps to add a new interface entity map. You can only perform this task when logged into the Active Primary NOAMP.

Note: At least one entity must exist before an interface entity map can be created.

1. Select **UDR** > **Subscriber Entity Configuration** > **Interface Entity Map**.
   The **Interface Entity Map** page appears.
2. Click **Insert**.
3. Enter an **Interface Entity Name** to map to a specific type of interface and entity. If needed, the same **Interface Entity Name** can be used for more than one Interface Name. See *Interface Entity Map elements* for more information on each field.
4. Select a type of interface from the **Interface Name** pulldown list.
5. Select an existing entity name to associate with this interface from the **Entity Name** pulldown list.
6. Perform one of the following:
   - Click **OK** to save the permissions and return to the **Interface Entity Map** page.
   - Click **Apply** to save the permissions and remain on the **Insert** page.
   - Click **Cancel** to return to the **Interface Entity Map** page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The interface entity name is not unique; it already exists in the interface entity map list

Deleting an interface entity map

Follow these steps to delete an entity definition. You can only perform this task when logged into the Active Primary NOAMP.

Note: Global Data Delete permission is required for this function.

1. Select **UDR** > **Subscriber Entity Configuration** > **Interface Entity Map**.
   The **Interface Entity Map** page appears.
2. Click to highlight the interface entity map to delete, and click **Delete**.
   A popup confirmation window appears.
3. Perform one of the following actions:
   - Click **OK** to delete the interface entity map.
   - Click **Cancel** to cancel the delete function and return to the **Interface Entity Map** page.

Once the delete process is complete, an **Info** option appears in the upper left corner. When clicked, the record's delete status is displayed.

Chapter 6

Maintenance

Topics:

- *Subscriber Query 84*
- *Connections.....86*
- *Command Log.....87*
- *Import Status.....89*
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- *Export Status.....95*
- *Subscribing Client Status.....97*
- *Quota Reset Scheduler Tasks.....98*
- *Database Auditor.....105*
- *Command Log Export Status.....110*

From the **Maintenance** menu you can:

- Query database information for a specific subscriber key
  - MSISDN
  - IMSI
  - NAI
  - account ID
  - pool ID
- View provisioning connections, command logs, and the status of imports and exports
- Schedule exports
- View the subscribing client status
- Configure quota reset tasks
- Audit/clean inconsistent subscriber/pool records

The available menu options vary based on the type of server you are logged into (i.e., for provisioning maintenance tasks, you must be logged into the active primary NOAMP) and the permissions assigned to your group. If you do not see a menu option you need, please make sure you are logged into the appropriate type of server and ask your administrator to make sure the group your user ID belongs to has the appropriate permissions.

Subscriber Query

The **Subscriber Query** page displays provisioned subscriber and pool statistics, and allows you to query database information for a specific subscriber key and entity type. Query options include MSISDN, IMSI, NAI, account ID, and pool ID.

Querying the system for specific subscriber data allows you to see if adjustments to data management or to the subscriber database need to be made.

Subscriber Query elements

The **Subscriber Query** page consists of three different sections: database statistics, data entry fields and a result display window. Database Statistic displays statistics related to the number of provisioned subscribers and pools in the UDR database. All elements available through the Subscriber Query entry fields are presented in the Subscriber Query Entry Elements table. All elements available in the Subscriber Query **Result** display window, in alphabetical order, are presented in the Subscriber Query Result Elements table.

Table 23: Database Statistics

Element	Description
Subscribers	Number of subscribers in UDR database
Pools	Number of pools in UDR database
MSISDN Keys	Number of MSISDN key values in UDR database
IMSI Keys	Number of IMSI key values in UDR database
NAI Keys	Number of NAI key values in UDR database
Account ID Keys	Number of Account ID key values in UDR database
NAI Hosts	Number of NAI Host values in UDR database
Auto Enrolled Subscribers	Number of auto enrolled subscribers configured in the software's database and obtained from the SDO (subscription data object)/SNO (Subscription notification object) audit run. The number displayed here is calculated during a periodic database audit; the timestamp next to the value displays the time when the audit occurred.
Enterprise Pools	Number of enterprise pools configured in the UDR database; the date and time the value was last calculated is displayed here. (An enterprise pool has a **PoolProfile** with the field Type set to Enterprise and is used for pools expecting to have more than 25 subscribers. Push Notification Request (PNR) messages are not generated for an

Element	Description
	enterprise pool when provisioning or usage updates occur. Note that updates on subscribers will still generate PNRs.) The number displayed here is calculated during a periodic database pool audit; the timestamp next to the value displays the time when the audit occurred.
Subscribers in Enterprise Pools	Total number of subscribers who are members of enterprise pools. The number displayed here is calculated during a periodic database pool audit; the timestamp next to the value displays the time when the audit occurred. This value is not updated when the screen is refreshed.

Table 24: Subscriber Query Entry Elements

Element	Description	Data Input Notes
Key Type	Type of subscriber identifier to include in the query; this field is required.	Format: Pulldown list Range: IMSI, MSISDN, NAI, account ID, pool ID Default: Blank
Key Value	The MSISDN, IMSI, etc. number you are looking up.	Format: String Range: 1-255 characters Default: Blank
Entity Type	Type of entity to display; this field is automatically populated with Dynamic Quota (or Pool Dynamic Quota) when the **Key Type** is specified.	Format: Pulldown list Range: Dynamic Quota, Profile, Quota, State, Pool Information; if **Key Type** is pool ID -- Pool Dynamic Quota, Pool Profile, Pool Quota, Pool State Default: blank

Result Display Window

Once data is entered into the fields and **Submit** is clicked, the query is performed. Content that can appear in this section of the page includes fields from the **Entity**, **Field Set**, **Base Field Set**, or **Definition** pages, and/or can come from opaque content.

For more details on this content, first look up the associated Entity Name on the **UDR** > **Subscriber Entity Configuration** > **Entity** page to determine if the content is from a transparent or opaque entity (**Entity Type**). If the content is from the entity itself, view the *Entity elements* table for details about that content.

- If from a transparent entity, view *Definition elements*, *Base Field Set elements*, and *Field Set elements* for details about that content.
- If from an opaque entity, this content is user-defined and additional details are not available.

Running a subscriber query

Use this procedure to query and display the subscriber table content requested, based on the query values entered.

1. Select **UDR** > **Maintenance** > **Subscriber Query**.
   The **Subscriber Query** page appears.
2. Select the type of subscriber identifier to display from the **Key Type** pulldown list.
3. Enter the subscriber MSISDN, IMSI, etc. value on which you are searching in the **Key Value** field.
4. Select the type of entity to display from the **Entity Type** pulldown list.
5. Click **Submit**.

The query is run and any specified subscriber data is displayed in the **Result** display window at the bottom of the page.

Connections

The **UDR -> Maintenance -> Connections** page allows you to view a list of all current external connections. All remote IP addresses/ports and details of when each connection was established can be viewed. A display filter can be applied for a specified search. The information is displayed in tabular format.

Any local connections (including the one from the GUI itself) are not included.

Connections elements

The **UDR -> Maintenance -> Connections** page displays information in a tabular format.

Table 25: Connections Elements

Field	Definition	Data Notes
Timestamp	Time the connection was established	Format: Year-Month-Day Hour-Minute-Second
CID	Connection ID number	Format: Integer
Remote IP	IP address for the remote client	Format: Valid IP address
Remote Port	Port used for the remote client connection	Format: Valid port number
Connection Type	Indicates if the connection interface type is REST (RAS), SOAP (XSAS), XmlImport, or XmlExport	Range: XSAS, RAS, XmlImport, XmlExport

Viewing connections status

Use this procedure to view a list of information of all provisioning connections established to the system. The listing of connections may be filtered.

1. Select **UDR** > **Maintenance** > **Connections**.

   The **Connections** page appears. All provisioning connections are displayed in tabular form.

2. To perform filtering, select the category on which to filter from the **Display Filter** dropdown menu.

   Table 26: Connection Status Display Filter categories

Category	Description
Remote IP Address	IP address for the remote client.
CID	The Connection ID on which to filter.
Remote Port	Port used for the remote client connection.
Connection Type	Type of interface connection.

3. Enter the target character string to filter on in the text box.
4. Use **Time Range** fields to select the time interval to display:
   - Enter the amount of time for which connections are to be displayed -- enter a numeric value in the first field and specify the type of time interval in the second field (Days, Hours, Minutes, or Seconds).
   - Specify either Beginning or Ending to indicate whether the date and time listed specifies the beginning or the end of the time range.
   - Enter the date and time for the time range to begin/end (Year, Month, Date, Hour, Minute).
5. Click **Go** to show results.

Any connections that occurred during the specified time range display are listed on the page. Any time results are filtered, the highlighted text **RESULTS FILTERED** is displayed at the bottom of the results.

Command Log

The **UDR -> Maintenance -> Command Log** page shows a table that contains the details and status of different commands and their responses that were executed over a period of time, from both remote and local connections, including the GUI. This table shows the **Timestamp**, **System ID**, **Remote IP**, **CID**, and the **Text** of the commands received from both remote and local connections, including the GUI. This page also provides the ability to filter the results based on SystemID, Remote IP, CID, Log Text, or Timestamp.

Every provisioning message exchanged between provisioning systems is written to the command log and is stored for up to seven days.

Command Log elements

The **UDR -> Maintenance -> Command Log** page displays information in a tabular format. This table describes elements on the **UDR -> Maintenance -> Command Log** page.

Table 27: Command Log Elements

Element	Description
Timestamp	Date and time the command was logged
System ID	System identifier of the originating client
Remote IP	IP address of the originating client
CID	Client connection identifier
Text	Exact command and response message
Pause updates	Check mark to pause the updating of commands to this page.

Viewing command logs history

Use this task to view details and status of different commands that were executed over a period of time. The history is displayed as a table that shows the **Timestamp**, **System ID**, **CID**, and the **Text** of the commands received from both remote and local connections, including the GUI. The history may be filtered by category. A maximum of 10,000 records can be displayed.

Note: You can check mark the **Pause updates** check box to temporarily stop this command log from being updated.

1. Select **UDR** > **Maintenance** > **Command Log**.
   The **Command Log** page appears.
2. To filter the commands displayed, select the category by which to perform the filtering:

   Table 28: Command Log filtering categories

Category	Description
None	Show all commands
System ID equal to...	A hidden text box becomes visible for you to enter the System ID to filter on.
CID equal to...	A hidden text box becomes visible for you to enter the Connection ID to filter on.
Log text like...	A hidden text box becomes visible for you to enter one or more keywords to filter on.
Time range...	When selected, hidden select boxes for "**From**" and "**To**" times become visible for you to enter the time range to filter on.

3. Click **Display** to show results.

When results are filtered, the highlighted text **RESULTS FILTERED** is displayed at the bottom of the results.

Import Status

This page allows an operator to view and monitor the status of all import operations. Import records with a status of Completed or Failed can be deleted from this table.

Data can be imported from a provisioning import file to add new or updated data to the database. The values within the file are used to populate the database. The import file is an ASCII text file that contains a series of database manipulation requests. Each request must be formatted on a single line.

Import files are placed in the **Remote Import Directory** on the remote server specified in **Remote Host IP Address** field on the **Provisioning Options** page (**UDR** > **Configuration** > **Provisioning Options**). The files are detected within five minutes and are automatically resynched over SSH File Transfer Protocol (SFTP) to the file management storage area on the active server. This **Local Import Directory** is hardcoded on the **Provisioning Options** page.

For a file to be imported, it must:

- be properly named following the naming convention. (XML import files must have *.ixml file extensions.)
- have been placed in the remote directory after the time when provisioning import last ran
- must not have been previously imported. A file that has already been imported into the local directory will not be imported again, even if its status is Failed

  Note: To import a previously Failed file, correct the file as necessary, rename the file, and then place the renamed file in the remote directory.

Import Status elements

The **UDR -> Maintenance -> Import Status** page displays information in a tabular format.

Table 29: Import Status Elements

Field	Description
Import File	Name of import file. Click on filename to open or save the file.
Time Queued	Time the import was queued
Time Started	Time the import started
Time Completed	Time the import completed
Progress	Percentage of import progress
Result Log	Name/heading of result log. Click on filename to open or save the file.
Pass Count	The number of successful import commands

Field	Description
Fail Count	The number of unsuccessful import commands
Status	Status of the import
Pause updates	Check mark to pause the updating of import files to this page.

Viewing import files

This procedure allows you to view the status of all imports. Imports are not scheduled through the GUI; they are initiated by the presence of a file placed in the **Remote Import Directory** (which is defined on the **Provisioning Options** page).

- If the filename in the **Import File** or **Result Log** column exceeds 24 characters, it is truncated at 22 characters and the characters "**...**" are appended to the end of the truncated string to signify that the filename was truncated.
- The filenames in both the **Import File** or **Result Log** columns are hyperlinks. You can click on the links to view the files as text or to save them locally.
- You cannot edit an imported file using this form.
- You may delete an Import Status record if the **Status** is **Completed** or **Failed**.

1. Select **UDR** > **Maintenance** > **Import Status**.

   The **Import Status** page appears. All provisioning connections are displayed in tabular form. The display fields are described in *Import Status elements*.

2. To filter the commands displayed, select the category by which to perform the filtering:

   Table 30: Import Status filtering categories

Category	Description
Import File	Name of import file
Result Log	Name of results file
Status	Status of the import

3. Choose the filtering operator, either **=** or **Like** (depending on the filtering category).
4. Enter the target character string to filter on in the text box.
5. Use **Time Range** fields to select the time interval to display:
   - Enter the amount of time for which connections are to be displayed -- enter a numeric value in the first field and specify the type of time interval in the second field (Days, Hours, Minutes, or Seconds).
   - Specify either Beginning or Ending to indicate whether the date and time listed specifies the beginning or the end of the time range.
   - Enter the date and time for the time range to begin/end (Year, Month, Date, Hour, Minute).
6. Click **Go** to show results.
7. To delete an import record, click to highlight the import record to delete, and then click **Delete**.

Note: The import record can only be deleted if the **Status** is **Completed** or **Failed**. A popup confirmation dialog appears. For all other imports, the **Delete** action is inactive (grayed-out).

Export Schedule

Use this option to generate and export a text file (in xml format) that contains subscriber records from the subscriber database. This export can be scheduled to occur once, or can be scheduled to recur at a specific interval. The export file includes only the records specified in the subscriber ID field (MSISDN or IMSI) and the record range fields on this page. A maximum of one million subscribers can be exported at one time.

The export file can be:

- offloaded to a remote server
- downloaded to the file transfer area
- used for data manipulation of subscriber data (outside of system)
- used as an import file

The **Provisioning Options** page (**UDR** > **Configuration** > **Provisioning Options**)defines the local and remote directories used for the export and import of files, as well as how long the export/import operations' status information and associated files are available before being removed from the local system.

The export process can run at the same time as provisioning updates and network (Sh) updates.

Export Schedule elements

The Export Schedule page describes elements on the **UDR -> Maintenance -> Export Schedule** page.

Table 31: Export Schedule elements

Field	Description	Data Notes
Identifier	Name of export file	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range: 4-12 characters Default: Blank
Subscriber ID	Type of Subscriber ID based on which subscriber records are exported; appears only on Insert and Edit pages.	Format: Pulldown menu Range: MSISDN, IMSI Default: MSISDN

Field	Description	Data Notes
Date	The initial date on which this export should run; appears only on Insert and Edit pages.	Format: Pulldown menu Range: All months, all days of the month, and the current year and current year + 1 Default: The current date
Time	The initial time at which this export should run; appears only on Insert and Edit pages. Time is specified using the time zone configured for your login.	Format: Pulldown menu Range: All hours and minutes in the day Default: The current time (plus 5 minutes)
First Export	The first time this export is scheduled to run; appears only on View page.	Format: String Range: 4-12 characters Default: Blank
Next Export	The next time this export is scheduled to run; appears only on View page.	Format: Integer Range: 4-12 characters Default: Blank
Start Range	Start of range of data to be included in this export	Format: Integer Range: 8-15 digits Default: Blank
End Range	End of range of data to be included in this export; this field is optional. Note: A maximum of 1 million subscribers will be exported, irrespective of the End Range value.	Format: Integer Range: 8-15 digits Default: Blank
Repeat	How often to repeat the export.	Format: Radio button Range: None, Daily, Weekly, Monthly Default: None
Comment	Purpose of export; this field is optional.	Format: String Range: 0-255 characters Default: Blank

Viewing export schedule

The **UDR -> Maintenance -> Export Schedule** page shows the scheduled exports for this system.

1. Select **UDR -> Maintenance -> Export Schedule**.

   The **Export Schedule** page appears. All exports are displayed in tabular form. The display fields are described in *Export Schedule elements*.

2. To perform filtering, select the category on which to filter from the **Display Filter** dropdown menu.
3. Select the category by which to perform the filtering.

   Table 32: Export Schedule filtering categories

Field	Description
Identifier	Name of export file
Subscriber ID	Type of subscriber ID to export
Start Range	Start of range of data to be included
End Range	End of range of data to be included
Repeat	How often to repeat the export
Comment	Purpose of the export

4. The filtering operator is either = or Like, depending on the filter category.
5. Use **Time Range** fields to select the time interval to display:
   - Enter the amount of time for which export schedules are to be displayed -- enter a numeric value in the first field and specify the type of time interval in the second field (Days, Hours, Minutes, or Seconds).
   - Specify either Beginning or Ending to indicate whether the date and time listed specifies the beginning or the end of the time range.
   - Enter the date and time for the time range to begin/end (Year, Month, Date, Hour, Minute).
6. Click **Go** to show results.

Any export schedules that occurred during the specified time range display are listed on the page, and the highlighted text **RESULTS FILTERED** is displayed at the bottom of the results.

Adding an export schedule

The **UDR -> Maintenance -> Export Schedule [Insert]** page allows you to create an export schedule for this system.

Fields marked with a red asterisk (*) require a value.

1. Select **UDR -> Maintenance -> Export Schedule**.

   The **Export Schedule** page appears.

2. Click **Insert**, located on the bottom of the page.

The **Export Schedule [Insert]** page appears.

3. Enter an identifying string for the scheduled export in the **Identifier** text box.

   The identifier must be 4 to 12 characters.

4. Select the type of **Subscriber ID** to be exported from the pulldown list.
5. Specify the **Date** and **Time** for the first export to occur.
6. Specify the **Start Range** of the data to be exported.
7. Specify the **End Range** of the data to be exported.
8. Optionally, specify the frequency of this export by changing the **Repeat** value.
9. Text may be entered in **Comment** to help identify this export.
10. Perform one of these actions:

    1. Click **OK**. If field validations succeed, the new export is saved and the previous page appears. If the page contains any values that are not valid, or if a required field is empty, an error message appears.
    2. Click **Apply**. If field validations succeed, the new export is saved and you remain on the same page.
    3. Click **Cancel** to abort changes on this page and return to the previous page.

Editing an export schedule

The **UDR -> Maintenance -> Export Schedule [Edit]** page allows you to manually change an existing export job by editing an entry in the Export Schedule.

The field or fields highlighted in yellow are keys and must be unique within this table in order to be successful. Fields marked with a red asterisk (*) require a value.

1. Select **UDR -> Maintenance -> Export Schedule**.

   The **Export Schedule** page appears.

2. Click to highlight the export schedule to edit, and click **Edit**.
   The **Export Schedule [Edit]** page appears.
3. Modify the export schedule values as needed; all fields can be edited. For more information about these fields, see *Export Schedule elements*.
4. Perform one of these actions:

   - Click **OK**. If field validations succeed, the updated schedule is saved and the previous page appears. If the page contains any values that are not valid, or if a required field is empty, an error message appears.
   - Click **Apply**. If field validations succeed, the updated field values are saved and you remain on the same page.
   - Click **Cancel** to abort changes on this page and return to the previous page.

Deleting an export schedule

The **UDR -> Maintenance -> Export Schedule [Delete]** page allows you to manually delete an export schedule by deleting an entry from the Export Schedule Table.

1. Select **UDR -> Maintenance -> Export Schedule**.

   The **UDR Maintenance Export Schedule** page appears.

2. Click to highlight the export schedule to be deleted, and click **Delete**.

   A popup confirmation window appears.

3. Perform one of the following actions:
   - Click **OK** to confirm the action to delete the export schedule and return to the **UDR -> Maintenance -> Export Schedule** page.
   - Click **Cancel** to abort the delete action and return to the **UDR -> Maintenance -> Export Schedule** page.

Once the delete process is complete, an Info option appears in the upper left corner. When clicked, the record's delete status is displayed.

Export Status

The **UDR -> Maintenance -> Export Status** page displays information in a tabular format and shows all in-progress and completed scheduled exports in this system.

Export Status elements

This table describes elements on the **UDR -> Maintenance -> Export Status** page.

Table 33: Export Status Maintenance Elements

Field	Description
Export File	Name of export file
Time Queued	Time the export was queued
Time Started	Time the export started
Time Completed	Time the export completed
Subscriber Count	Number of exported Subscribers
Pool Count	Number of exported Pools
Status	Status of export
Comment	Descriptive text about export. This field is optional, so it may be blank.
Pause updates	Check mark to pause the updating of export files to this page.

Viewing export status

The **UDR -> Maintenance -> Export Status** page shows the status of all in-progress and completed scheduled exports for this system.

- If the filename in the **Export File** column exceeds 24 characters, it is truncated at 22 characters and the characters "**...**" are appended to the end of the truncated string to signify that the filename was truncated.
- The filenames in the **Export File** column are hyperlinks. You can click on the links to view the files as text or to save them locally.
- You can not modify or delete an export record using this form.
- Records are automatically removed after 7 days.

1. Select **UDR -> Maintenance -> Export Status**.

   The **Export Status** page appears. All exports are displayed in tabular form. The display fields are described in *Export Status elements*.

2. Select the category on which to perform the filtering.

   Table 34: Export Status filtering categories

Category	Description
Export File	Name of export file
Status	Status of export
Comment	Descriptive text about export

   Note: The filtering operator of **=** or **Like** appears, depending on the filter category selected; the operator that appears is the only option available and cannot be changed.

3. Enter the target character string to filter on in the text box.
4. Use **Time Range** fields to select the time interval to display:
   - Enter the amount of time for which export schedules are to be displayed -- enter a numeric value in the first field and specify the type of time interval in the second field (Days, Hours, Minutes, or Seconds).
   - Specify either Beginning or Ending to indicate whether the date and time listed specifies the beginning or the end of the time range.
   - Enter the date and time for the time range to begin/end (Year, Month, Date, Hour, Minute).
5. Click **Go** to show results.

Any exports that occurred during the specified time range display are listed on the page, and the highlighted text **RESULTS FILTERED** is displayed at the bottom of the results.

Note: To change the order of the records in the table, click the header on which you want to sort. Records will be reordered in descending order (or vice versa when clicked again).

Subscribing Client Status

The **UDR** > **Maintenance** > **Subscribing Client Status** page displays information in a tabular format and shows the status of all clients in this system. This page displays the client host name, status of the client host, number of failed count, last status change time for when the status of client host was changed, and last retry time for when client host was retried. The **Client Host** contains Sh client names; these match the **Client Host** columns found on the **Subscribing Client Permissions** page (**UDR** > **Configuration** > **Subscribing Client Permissions**).

Subscribing Client Status elements

This table describes elements on the **UDR -> Maintenance -> Subscribing Client Status** page.

Table 35: Subscribing Client Status Elements

Field	Description
Client Host	Name of client host
Status	Status of client - Up, Down
Fail Count	Number of fail count
Last Status Change Time	Time the client host status was changed
Last Retry Time	Last time the client host was retried

Viewing subscribing client status

Use the **UDR -> Maintenance -> Subscribing Client Status** page to view the status of all clients for this system.

1. Select **UDR -> Maintenance -> Subscribing Client Status**.

   The **Subscribing Client Status** page appears. All client hosts are displayed in tabular form. The display fields are described in *Subscribing Client Status elements*.

2. Select the category by which to perform the filtering.

   Table 36: Subscribing Client Status filtering categories

Category	Description
Client Host	Name of client host
Status	Status of client - Up, Down
Fail Count	Number of fail count

3. Choose the filtering operator.

Table 37: Export Status filtering operators

Subscribing Client Operator	Description
=	Is equal to
>=	Is equal to or greater than
<=	Is equal to or less than
Like	Is Like (wildcard is * character)

4. Enter the target character string to filter on in the text box.
5. Click **Go** to show results.

Subscribing clients that match the filtering criteria are listed on the page, and the highlighted text **RESULTS FILTERED** is displayed at the bottom of the results.

Note: To change the order of the records in a column (from descending to ascending or vice versa), click the header of the column.

Quota Reset Scheduler Tasks

The **Quota Reset Scheduler Tasks** page allows you to configure a task that resets one or more quota row element values for inactive subscriber/pool records. The reset occurs at the date and time defined in the task. Up to ten elements can be defined for each Quota Reset task.

There can be multiple tasks scheduled to run at the same time, but one task only runs at a time. Each task is replicated and available on the Standby, DR-Active, and DR-Standby nodes, so a task running on a node can be restarted on other nodes even after a single/double node/site outage.

Additionally, this feature monitors when a task is scheduled to run and displays the status of each task in the **Measurement Statistics** section of the **View** and **Edit** pages. The task execution is complete when all the subscribers/pools in the range are examined and modified. The statistics of the last run are also displayed on this page.

Any time a quota reset task changes status, an Event is generated to notify you of the change. This includes when the quota reset activity is started, completed, aborted, paused, or resumed.

Quota Reset Scheduler Tasks elements

This table describes elements on the **UDR -> Maintenance -> Quota Reset Scheduler Tasks View** and **Edit** pages.

Table 38: Subscribing Client Status Elements

Field	Description	Data Input Notes
Task ID	Specify a unique description to identify the task and its functionality. This field is required.	Format: String Range: 1-64 characters, alphanumeric and underscore

Field	Description	Data Input Notes
		Default: Blank
Start Time	Specify date and time when the quota is to be reset. This field is required.	Format: Pulldown menus Range: Valid calendar date and time (must be in the future); select month, day, year, hour, and minute (in 24 hour time) Default: Blank
Key Type	Select the key type to use when specifying the subscriber range.	Format:Pulldown menu Range: IMSI, MSISDN, or POOLID Default: IMSI
Range - All	Check mark the **All** box for all records with the specified **Key Type** to have their quotas reset. When this box is checked, **Start Range** and **End Range** fields are not available.	Format: Checkbox Range: Checked, unchecked Default: Unchecked
Range - Start Range	Specify the subscribers/pools start range value for the quota reset. For IMSI and MSISDN, the value must be between 8 and 15 digits in length. For POOLID, the value must be between 1 and 22 digits in length. NOTE: This field is required when the **All** check box is not checked.	Format: String Range: 1-22 characters Default: Blank
Range - End Range	Specify the subscribers/pools end range value for the quota reset. For IMSI and MSISDN, the value must be between 8 and 15 digits in length. For POOLID, the value must be between 1 and 22 digits in length. NOTE: This field is required when the **All** check box is not checked.	Format: Numeric Range: 1-22 characters Default: Blank
Force NRT	Select **Yes** if you want the **Quota Row Element Name**'s reset time (in the subscriber/pool records) to be updated to the **New Next**	Format: Pulldown menu Range: Yes, No Default: No

Field	Description	Data Input Notes
	Reset Time value. All **Quota Row Element Name** records that match the Old NRT time will be updated. NOTE: If the value of this field is **Yes**, the **Old NRT** field is required.	
Old NRT	Specify the reset time value being replaced using UTC format. UTC date/time is in ISO/DIS 8601 format -- CCYY-MM-DDThh:mm:ss[Z|(+|-)hh:mm], where: • CC-century (00-99) • YY-year (00-99) • MM-month (01-12) • DD-day of month (01-31) • T-date/time separator • hh-hour (00-23) • mm-minute (00-59) • ss-second (00-59) • Z- indicates the civil time zone at Greenwich Examples of UTC format: 2015-08-07T22:10:20-05:00 2015-07-24T01:15:05Z 2015-08-10T13:20:30+6:00 2015-06-09T10:21:10	Format: UTC string Range: Coordinated Universal Time (UTC) Default: Blank
Row Element List	Quota Row Element Name: Specify the subscriber/pool's element name that is having its quota reset. This field is required.	Format: String Range: 1-64 characters - alphanumeric and underscore Default: Blank
	New Next Reset Time: Specify the date and time used for replacing the Next Reset Time field of the Quota Row Element. Example of UTC format: 2015-11-15T14:30:15Z. This field is required.	Format: UTC string Range: Valid UTC date and time Default: Blank

Field	Description	Data Input Notes
	Click **Add** to add another row element. There can be up to 10 row elements in the list.	
Suppress PNR	Specify if a PNR message should be suppressed during quota reset.	Format: Pulldown menu Range: Yes, No Default: Yes
Reset Values	Specify whether or not the element values should be reset during the quota reset process.	Format: Pulldown menu Range: Yes, No Default: Yes
Current State	Displays the current operational state of the quota reset task. This field is not editable. State options are: • SCHEDULED: The task is scheduled to execute. When the task is created, it goes into SCHEDULED state. The task is requested to be executed at the Start Time. • RUNNING: The task is currently running, scanning through subscriber/pool records, and modifying the quota row elements. • PAUSED: The task execution is temporarily paused due to UDRBE process congestion. • COMPLETED: Quota reset scheduler has completed the modification of the specified records. • ABORTED: The user aborted a task that is in SCHEDULED, RUNNING, or PAUSED state.	Not editable. SCHEDULED is displayed when the task is created.

The **Measurement Statistics** table at the bottom of the **View** page provides the status of the task while running. The **Edit** page gives the status of the last run. The table values are empty before a task runs for the first time. If the task has completed or been aborted, the table shows the status of the last run. These elements are for display only and cannot be edited.

Table 39: Measurement Statistics elements

Field	Description
Last Execution State	Date and time of the last execution completion time in UTC format
Last Execution Completed	The operational state of the task during the last execution. Possible states are RUNNING, PAUSED, ABORTED, and COMPLETED.
Total Records Examined	Total number of subscriber/pool records examined by the task
Total Records Reset	Total number of subscriber/pool records for which one or more quota entities have been modified
Total Row Elements Reset	Total number of quota row elements that have been modified
Last Record Processed	The key value of the subscriber/pool processed last for the specified key type (of the task) NOTE: This value can be IMSI or MSISDN for Subscriber Records, and POOLID for Pool Records.

Viewing quota reset tasks

Use this procedure to view existing quota reset tasks and to manage them using the action buttons at the bottom of the page. By default, tasks display in state order: RUNNING/PAUSED on top, then SCHEDULED, COMPLETED, and ABORTED.

You can perform this procedure when logged into an NOAMP. Note that you must have permission to view this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Maintenance** > **Quota Reset Scheduler Tasks**.
   The **Quota Reset Scheduler Task** page appears, displaying the tasks table in the center of the page. If no tasks have been set up, only the column headers in the table appear.
2. To view a subset of existing tasks, use the **Filter** option in the upper left corner to define the tasks you want displayed. Tasks can be filtered on the **Task ID**, **State**, or **Key Type**.

To change the order of the tasks in the table, click on a column header to sort by that header.

Adding a quota reset task

Use this procedure to configure a new task to be run in the future. There can be multiple tasks scheduled to run at the same time, but one task only runs at a time. Tasks scheduled at the same time run in the order of their creation time (what time a task is created affects the order of the queue).

You can perform this procedure when logged into an Active Primary NOAMP. Note that you must have permission to view this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Maintenance** > **Quota Reset Scheduler Tasks**.
   The **Quota Reset Scheduler Task** page appears.
2. Click **Insert**.
   The **Quota Reset Scheduler Tasks [Insert]** page appears.
3. Enter a unique name for this task in the **Task ID** field. This field is required.
4. Specify the date and time the quota reset is to occur in **Start Time.**
5. Specify the type of subscribers or pools to be reset by the quota reset in **Key Type**.
6. Either check mark **All** to process all records, or leave **All** unchecked and specify the range of subscribers/pools to be processed.
7. At least one element must be specified in **Row Element List**. To add additional elements to be affected by this quota reset, click **Add** to pop-up another element row. A maximum of ten elements can be defined for a task.
8. The remaining fields on the page are optional. See *Quota Reset Scheduler Tasks elements* for more information on each field.
9. Perform one of the following:
   - Click **OK** to save the task and return to the **Quota Reset Scheduler Tasks** page.
   - Click **Cancel** to return to the **Quota Reset Scheduler Tasks** page without saving the changes.

   If **OK** is clicked and any of the following conditions exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)
   - The Task ID is not unique; it already exists in the system

The new task is created. It now appears on the **Quota Reset Scheduler Tasks** page and has a State of SCHEDULED.

Editing a quota reset task

Use this procedure to edit a task that is in the state of Scheduled, Aborted, or Completed (**Edit** is grayed out if the task is Running or Paused). Modifying a task allows you to rerun an existing task, or change the entire configuration and effectively create a new task.

You can only perform this procedure when logged into the Active Primary NOAMP. Note that you must have permission to edit a task. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Maintenance** > **Quota Reset Scheduler Tasks**.
   The **Quota Reset Scheduler Tasks** page appears.
2. Click on the task to be edited.
   The selected task displays in green.
3. Click **Edit**.
   The **Quota Reset Scheduler Tasks [Edit]** page appears.

4. Change existing task values, as needed. The only field that cannot be changed for an existing Quota Reset Scheduler Tasks is the **Task ID**; to change this field, the existing task must be deleted and a new one created. See *Quota Reset Scheduler Tasks elements* for more information on each field.
5. Perform one of the following:
   - Click **OK** to save the task and return to the **Quota Reset Scheduler Tasks** page.
   - Click **Cancel** to return to the **Quota Reset Scheduler Tasks** page without saving the changes.

   If **OK** or **Apply** is clicked and any of the following exist, an error message appears:
   - Any required field is empty; no value was entered or selected
   - The entry in any field is not valid (wrong data type or out of the valid range)

When the task is successfully changed, the updated task values appear on the **Quota Reset Scheduler Tasks** page. If the **Start Time** was changed, the task now displays in a **State** of SCHEDULED.

Viewing quota reset task statistics

Use this procedure to view a quota reset task's statistics. Note that no statistics display for a task until its processing begins.

You can perform this procedure when logged into an NOAMP. Note that you must have permission to view this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Maintenance** > **Quota Reset Scheduler Tasks**.
   The **Quota Reset Scheduler Task** page appears, displaying the tasks table in the center of the page.
2. Click on the task to be viewed.
   The selected task displays in green.
3. Click **View**.
   The **Quota Reset Scheduler Tasks [View]** page for this task appears.

If the task is currently running, aborted, or completed, statistics appear in the **Measurement Statistics** table.

Deleting a scheduler task

Use this procedure to delete an existing scheduler task that is in a state of SCHEDULED, COMPLETED, or ABORTED.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to delete a task. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Maintenance** > **Quota Reset Scheduler Tasks**.
   The page appears.
2. Click on the scheduler task to be edited.
   The selected scheduler task displays in green.
3. Click **Delete**.
   A popup confirmation window appears.
4. Perform one of the following:

- Click **OK** to delete the task and return to the **Quota Reset Scheduler Tasks** page.
- Click **Cancel** to cancel the delete and return to the **Quota Reset Scheduler Tasks** page.

When successfully deleted, the task is removed from the **Quota Reset Scheduler Tasks** page.

Aborting a scheduler task

Use this procedure to abort an existing scheduler task from the task table that is in a state of SCHEDULED, RUNNING, or PAUSED.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to abort a task. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

1. Select **UDR** > **Maintenance** > **Quota Reset Scheduler Tasks**.
   The **Quota Reset Scheduler Tasks** page appears.
2. Click on the scheduler task to be aborted.
   The selected scheduler task displays in green.
3. Click **Abort**.
   A popup confirmation window appears.
4. Click **OK**.

The selected task is aborted, and an Event is generated to notify users of the abort.

Database Auditor

The **Database Auditor** page is used for auditing subscriber/pool databases for inconsistent records, and for cleaning (i.e., removing) these inconsistent records from the database.

From the **Database Auditor** page, you can perform the following functions:

- view log files from previously run audit and clean processes
- identify (or audit) and report database index inconsistencies
- delete (or clean) inconsistent subscribers/pools and all associated records from the database
- generate a database inconsistency log file
- abort an audit or clean process

An audit determines whether any corruption has occurred in the embedded index values associated with each subscriber. This can occur when references pointing to different parts of a subscriber or pool are left in an incorrect state, pointing to the wrong subscriber or pool records. This issue can cause a variety of system errors, including failure to access a subscriber/pool, failure to provision a subscriber/pool, failure to delete a subscriber/pool, and accessing data for the wrong subscriber. The audit process can be run regularly during a maintenance window (low traffic) or on-demand, when a complaint is received from a subscriber. An audit log file is created during the audit process and produces a list of all database inconsistencies.

The clean process removes inconsistent subscribers and pools from the database (including all associated records), bringing the database back to a consistent state. Once removed, you can then re-provision the deleted subscribers and pools. A clean log file is generated during this process. If no records are deleted, no subscriber or pool information will be listed in the log file.

An audit or clean process can be aborted, changing the process state from **In Progress** to **Aborted** in the **State Table**. The audit or clean process can be restarted by entering the related log filename in the appropriate section of the page and clicking the **Audit** or **Clean** button, respectively.

When UDRBE is in congestion, the abort/clean log file **State** in the **State Table** changes from **In Progress** to **Paused**. When the congestion clears, the paused process will automatically change back to the state of **In Progress**. When the audit/clean process fails, the process state changes to **Failed**. Alarm 13368 is raised when the process fails, and the error is mentioned in the log files.

Database Auditor files

When an audit is run, two files are created: an .ixml and a .dbauditor file. The names of these files are determined by the text entered in the **Result File Name** field. The format of the file name is Audit_<Result File Name>_<timestamp>.

The .ixml file is the result log. Use this file to manually determine which records have inconsistencies and their type. This file lists:

- all of the data records that contain inconsistencies
- number of subscribers or pools audited
- number of inconsistent subscribers or pools
- number of subscribers or pools cleaned
- if an audit failed (or was aborted) and the reason why

The .dbauditor file is used as input in the clean process. It stores statistics and the state for the most recent run, audit, or clean.

When a clean is run, this process also creates a log file. This filename is Clean_<Result File Name>_<timestamp>.

Database Auditor elements

These tables describe elements on the **Database Auditor** page.

Table 40: Single Subscriber or Pool Audit Elements

Field	Description	Data Input Notes
Key Type	Select the type of key used to identify the subscriber or pool for checking the foreign key inconsistency. The value selected here defines what can be entered in the next field, **Key Value**.	Format: Pulldown menu Range: IMSI, MSISDN, Account Id, PoolID Default: Blank
Key Value	Enter the key value used to identify the subscriber or pool for checking the foreign key inconsistency.	Format: Numeric Range: 1 - 255 digits Note: For MSISDN the value must be 8 - 15 digits; for IMSI the value must be 10 - 15 digits; for PoolId the value can be 1 - 22 digits.

Field	Description	Data Input Notes
		Default: Blank
Result File Name	Enter a filename to be used for the log file.	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range:1-32 characters Default: Blank

Table 41: Complete Database Audit Element

Field	Description	Data Input Notes
Result File Name	Enter a filename to be used for the output files. Filenames are prepended with Audit_ and appended with _<timestamp> plus the file format extension (either .ixml or .dbauditor)	Format: String - valid characters are alphanumeric and underscore; must contain at least one alphabetic or numeric character, and cannot start with a number Range:1-32 characters Default: Blank

Table 42: Clean Element

Field	Description	Data Input Notes
Input File Name	Select the name of the file containing the subscriber/pool records with inconsistencies to be cleaned from the pulldown menu.	Format: Pulldown menu Range: List of existing audit files Default: Blank

Table 43: State Table Elements

Field	Description
Process Type	Displays the type of process running. Processes are: Single Subscriber Audit or Pool Audit, Complete Database Audit, and Clean.
Result Logs	Displays the name of the log files generated by the audit/clean process. Filename format: For the audit process: • Audit_<x>_201503142216.dbauditor • Audit_<x>_201503142216.ixml For the clean process: • Audit_<x>_201503142216.dbauditor • Clean_<x>_201503150216.ixml

Field	Description
	The filenames in this column are hyperlinks. Clicking on a link pops up a window and displays the contents of the file as text. Right-clicking a link allows you to save the file.
Time Started	Displays the time when the audit/clean process was started.
Time Completed	Displays the time when the audit/clean process was completed.
Audited subscriber and pool count	Displays the number of subscriber or pool records audited/scanned.
Inconsistent subscriber and pool count	Displays the number of subscriber or pool records that have inconsistency.
Cleaned subscriber and pool count	Displays the number of subscriber or pool records that were deleted.
State	Displays the state of the audit/clean process. States are: In Progress, Completed, Failed, Aborted, and Paused.

Viewing database audit status

The status of all in-progress and completed audits is displayed in the **State Table** at the bottom of the **Database Auditor** page. The table displays the audit and clean processes that have occurred, and includes the process type, the name of the log file generated for the process, the number of audited, inconsistent, and/or cleaned subscribers and pools, and the state of the audit/clean process.

To view the status of audits:

Select **UDR -> Maintenance -> Database Auditor**.

The **Database Auditor** page appears. All audits are displayed in tabular form. The display fields are described in *Database Auditor elements*.

Note: To change the order of the records in the table, click the header on which you want to sort. Records will be reordered in descending order (or vice versa when clicked again).

When UDRBE is in congestion, the abort/clean log file **State** in the **State Table** changes from **In Progress** to **Paused**. When the congestion clears, the paused process will automatically change back to the state of **In Progress**. When the audit/clean process fails, a process in the state of **In Progress** automatically changes to **Failed**. Alarm 13368 is raised when the process fails, and the failure is mentioned in the log file.

Auditing a single subscriber or pool

The **Database Auditor** page allows you to audit a single subscriber or pool for index inconsistencies.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to audit a subscriber/pool. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

To audit a subscriber or pool:

1. Select **UDR -> Maintenance -> Database Auditor**.

The **Database Auditor** page appears. The fields on this page are described in *Database Auditor elements*.

2. In the **Single Subscriber or Pool Audit** section of the page:
   a) Select the **Key Type** you will be entering in **Key Value**.
   b) Enter the **Key Value** that identifies the subscriber or pool to be checked for inconsistencies. This value must exist in the database.
   c) In **Result File Name**, define a name to be used for the log file.
   d) Click **Audit**.

The single subscriber/pool audit runs. The status of the audit displays at the bottom of the page in the **State Table**. Once the audit completes, the status displays as **Completed**, and the number of inconsistencies found is listed.

Auditing the complete database

The **Database Auditor** page allows you to audit an entire database for subscriber or pool index inconsistencies.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to audit a database. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

To audit a complete database:

1. Select **UDR -> Maintenance -> Database Auditor**.

   The **Database Auditor** page appears. The fields on this page are described in *Database Auditor elements*.

2. In the **Complete Database Audit** section of the page:
   a) Define a name to be used for the log file in **Result File Name**.
   b) Click **Audit**.

The complete subscriber/pool audit runs. The status of the audit displays at the bottom of the page in the **State Table**. Once the audit completes, the status displays as **Completed**, and the number of inconsistencies found are listed.

Deleting subscribers and pools with inconsistencies

The **Database Auditor** page allows you to delete subscriber or pool records with inconsistencies that were found while running an audit.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to clean a database. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

To clean a database that has been audited:

1. Select **UDR -> Maintenance -> Database Auditor**.

   The **Database Auditor** page appears. The display fields are described in *Database Auditor elements*.

2. In the **Clean** section of the page:

a) Select the audit file to clean from the **Input File Name** pulldown menu.
b) Once the desired file is displayed in the pop up window, click **OK**.
The selected file displays in the **Input File Name** field.
c) Click **Clean**.

The clean process runs. The status of this process displays at the bottom of the page in the **State Table**. Once the clean process completes, the status changes from **In Progress** to **Completed**, and the number of cleaned (or removed) subscriber and pool records is listed. If desired, the deleted subscribers and pools can now be re-provisioned.

Aborting an audit

An audit or clean process can be aborted from the **Database Auditor** page.

You can only perform this task when logged into the Active Primary NOAMP. Note that you must have permission to abort an audit. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

To abort an audit or clean process:

1. Select **UDR -> Maintenance -> Database Auditor**.

   The **Database Auditor** page appears.

2. In the **State Table** section of the page, click to select the audit or clean process to be aborted. The selected process must be in a state of **In Progress** to be aborted.
   At the bottom of the page, the **Abort** button is now enabled.
3. Click **Abort** to stop the audit/clean in progress.

A warning message pops up. To continue the abort, click **OK**. The abort ends the audit/clean process, and the process in the **State Table** displays with a **State** of **Aborted**. Once aborted, this process can be restarted by specifying the related filename in the audit/clean section of the page and clicking the **Audit** or **Clean** button.

Command Log Export Status

Command log export operations can be viewed and their statuses can be monitored from this page. An export is initiated from the **Command Log Export Options** page located on the **UDR Configuration** menu.

Command Log Export Status elements

This table describes elements on the **Command Log Export Status Elements** page. Note that you must have permission to view this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

Table 44: Command Log Export Status Elements

Field	Description
Export File	Name of the command log export file; filename is in the format of commandLog_export_<yyyymmddhhmm>.csv.zip, where the date/time is in local time.
Time Started	Time the command log export was started in local time; includes date and time.
Time Completed	Time the command log export was completed in local time; includes date and time.
Records Count	Number of command logs exported
Status	Status of the command log export; options are Initializing, Queue, In Progress, Transferring, Completed, and Failed.

Viewing command log export status

Command log export operations that have occurred in the past 24 hours can be viewed and their statuses can be monitored from the **Command Log Export Status** page. The table displays the command log export file name, the time the export started and completed, the number of log files exported, and the status of the export.

Note that you must have permission to view this page. Permission groups are defined on the **Main Menu** > **Administration** > **Access Control** > **Groups** page.

To view the status of exports:

Select **UDR -> Maintenance -> Command Log Export Status**.

The **Command Log Export Status** page appears. All exports are displayed in tabular form. The display fields are described in *Command Log Export Status elements*.

Note: To change the order of the records in the table, click the header on which you want to sort. Records will be reordered in descending order (or vice versa when clicked again).

Glossary

C

CID	Connection ID

D

DAL	Diameter Application Layer
DB	Database
Diameter	Protocol that provides an Authentication, Authorization, and Accounting (AAA) framework for applications such as network access or IP mobility. Diameter works in both local and roaming AAA situations. Diameter can also be used as a signaling protocol for mobility management which is typically associated with an IMS or wireless type of environment.
DPI	Diameter Plug-In is a reusable Diameter stack consisting of DCL, DRL, and an application interface.
DR	Disaster Recovery
DSR	Diameter Signaling Router A set of co-located Message Processors which share common Diameter routing tables and are supported by a pair of OAM servers. A DSR Network Element may consist of one or more Diameter nodes.

E

E

ESPR	Enhanced Subscriber Profile Repository - Oracle Communications' database system that provides the storage and management of subscriber policy control data for PCRF nodes.

F

FE	Front End Used in Provisioning Front End Applications

G

GUI	Graphical User Interface The term given to that set of items and facilities which provides you with a graphic means for manipulating screen data rather than being limited to character based commands.

I

IETF	Internet Engineering Task Force The Internet Engineering Task Force is an open international community of network designers, professional users, and manufacturers who promote the development and operations of the Internet.

L

LDAP	Lightweight Directory Access Protocol A protocol for providing and receiving directory information in a TCP/IP network.

M

M

MP	Message Processor - The role of the Message Processor is to provide the application messaging protocol interfaces and processing. However, these servers also have OAM&P components. All Message Processors replicate from their Signaling OAM's database and generate faults to a Fault Management System.
MPE	Multimedia Policy Engine A high-performance, high-availability platform for operators to deliver and manage differentiated services over high-speed data networks. The MPE includes a protocol-independent policy rules engine that provides authorization for services based on policy conditions such as subscriber information, application information, time of day, and edge resource utilization.

N

NOAMP	Network Operations, Administration, Maintenance, and Provisioning
NRT	The Network Routing (NRT) feature allows provisioning of a single routeset to be used for all MSUs destined to members of that network.

O

OAM	Operations, Administration, and Maintenance The application that operates the Maintenance and Administration

O

Subsystem that controls the operation of many products.

P

PNR

Push Notification Request on Sh Interface

Sent by a Diameter server to a Diameter client in order to notify changes in the user data in the server.

ProvBe

Provisioning Back End

PUR

Sh Profile Update Request (from PCRF to ESPR). This request can refer to the profile entity and other entities.

Q

quota

Specifies restrictions on the amount of data volume, active session time, or service-specific events that a subscriber can consume.

R

RAS

REST Application Server

RFC

Request for Comment

RFCs are standards-track documents, which are official specifications of the Internet protocol suite defined by the Internet Engineering Task Force (IETF) and its steering group the IESG.

S

SDO

Subscription Data Object

S

	An SDO consists of subscription state information and a collection of registers for storing entities. An individual SDO applies to one subscriber. A pool SDO applies to a group of subscribers.
SEC	Subscriber Entity Configuration
SFTP	SSH File Transfer Protocol (sometimes also called Secure File Transfer Protocol) A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network over any reliable data stream. It is typically used over typically used with version two of the SSH protocol.
SIP	Session Initiation Protocol A peer-to-peer protocol used for voice and video communications.
SNO	Subscription Notification Object. An SNO stores a collection of client subscribe-to-notifications for a subscription.
SNR	Subscriber Notification Request on Sh Interface
SOAM	System Operations, Administration, and Maintenance
SOAP	Simple Object Access Protocol
SS7	Signaling System #7

S

	A communications protocol that allows signaling points in a network to send messages to each other so that voice and data connections can be set up between these signaling points. These messages are sent over its own network and not over the revenue producing voice and data paths. The EAGLE is an STP, which is a device that routes these messages through the network.

U

UDR	User Data Repository A logical entity containing user data.
UDRBE	UDR Back End
UTC	Coordinated Universal Time

X

XML	eXtensible Markup Language A version of the Standard Generalized Markup Language (SGML) that allows Web developers to create customized tags for additional functionality.
XSAS	XML SOAP Application Server