

**Oracle® Communications  
HLR Router**

Getting Started

**E72250 Revision 01**

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## Oracle Communications HLR Router Getting Started

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# Chapter 1

## About the Help

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### Topics:

- [The Online Help System.....8](#)
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The online help describes the functions of the HLR Router and provides procedures and explanations of the GUI that is used to configure the application components. The online help is updated with each major release of the software.

## The Online Help System

The online help system:

- Gives a conceptual overview of the application's purpose, architecture, and functionality
- Describes the pages and fields on the application GUI (Graphical User Interface)
- Provides procedures for using the application interface
- Explains the organization of, and how to use, the documentation

The Getting Started section of the Help provides an overview of the application and a description of how to use the Help. In this section, you can find information about the application, including a product overview, the system architecture, and functions. Additionally, the Getting Started section familiarizes you with common GUI features, including user interface elements, main menu options, supported browsers, and common user interface widgets.

## Help Organization

The online help is organized into multiple sections, each covering a different aspect of the application.

### Getting Started

The Getting Started section of the documentation provides an overview of the HLR Router application and documentation. In this section you can find information about the HLR Router including a product overview, the system architecture, and functionality. Additionally, this section familiarizes you with common HLR Router GUI features including user interface elements, main menu options, supported browsers, and common user interface widgets.

### OAM

The OAM section of the documentation describes HLR Router's Operation, Administration, and Maintenance, and the GUI pages nested under the Administration, Configuration, Alarms & Events, Log Files, Status & Manage, and Measurements Menu options. The OAM section of the documentation explains how to use these GUI pages to view and manage the basic operation, administration, and maintenance for the HLR Router.

### SS7/Sigtran

The SS7/Sigtran section of the documentation describes HLR Router's Signaling Network Interface, and how to use the GUI pages nested under the SS7/Sigtran Menu option. The Signaling Network Interface provides standard SCCP functionality, traditional MTP3 routing capabilities, and a standard M3UA interface to the external network. The SS7/Sigtran section of the documentation explains how to use the SS7/Sigtran GUI pages to perform configuration and maintenance tasks related to adjacent servers, SS7 signaling points, link sets, associations, routes, and SS7 Sigtran options.

### HLR Router Online Help

The HLR Router Online Help section of the documentation describes GUI pages nested under the EAGLE XG Database and the Tekelec HLR Router Menu options. These GUI Menu options allow you



to manage Network Entity, DN, IMSI, Signaling, and PDBI configurations as well as Audit, Query and PDBI maintenance. The HLR Router Online Help section of the documentation explains how to perform configuration and maintenance tasks using these GUI pages.

### HLR Router Administration

The HLR Router Administration section provides system configuration information; Query Server information; general, provisioning, and file formatting information.

### HLR Router Alarms, KPIs, and Measurements

The HLR Router Alarms, KPIs, and Measurements section provides information relevant to understanding alarms and events that may occur in the HLR Router; recovery procedures for addressing alarms and events, as necessary; tasks for viewing alarms and events, generating alarms reports, and viewing and exporting alarms and events history; and SS7/Sigtran measurement information, including any relevant customer actions for addressing unusual measurement values.




### Transport Manager


The Transport Manager section provides information relevant to the configuration of Transports (STOP associations and UDP connections with remote hosts over an underlying IP network). It provides the interface to the Adapter Layer and manages the connections and data transmission from STOP/UDP sockets.

## 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	Danger: (This icon and text indicate the possibility of <i>personal injury</i> .)
 WARNING	Warning: (This icon and text indicate the possibility of <i>equipment damage</i> .)
 CAUTION	Caution: (This icon and text indicate the possibility of <i>service interruption</i> .)

Icon	Description
	<p>Topple: (This icon and text indicate the possibility of <i>personal injury and equipment damage.</i>)</p>

## Related Publications

The HLR Router documentation set includes these publications, which provide information for the configuration and use of HLR Router and related applications.

Some documents are available only through the Oracle Technical Network (OTN).

The current releases of all documents are available through the Oracle Technical Network

*Getting Started* includes a product overview, system architecture, and functions. It also explains the HLR Router GUI features including user interface elements, main menu options, supported browsers, and common user interface widgets.

*Operation, Administration, and Maintenance (OAM) Guide* provides information on system-level configuration and administration tasks for the advanced functions of the HLR Router, both for initial setup and maintenance.

*HLR Router Online Help* explains how to use the HLR Router GUI pages to manage the configuration and maintenance of the EAGLE XG Database and the Tekelec HLR Router.

*HLR Router Administration Guide* describes HLR Router architecture, functions, system and PDBI configuration; Signaling and Transport configuration; the Query Server; and PDE CSV file formats.

*HLR Router Alarms, KPIs, and Measurements Reference Guide* provides detailed descriptions of alarms, events, Key Performance Indicators (KPIs), and measurements; indicates actions to take to resolve an alarm, event, or unusual measurement value; and explains how to generate reports containing current alarm, event, KPI, and measurement information.

*SS7/Sigtran User Guide* describes HLR Router's Signaling Network Interface, which provides standard SCCP functionality, traditional MTP3 routing capabilities, and a standardM3UA interface to the external network. The SS7/Sigtran section of the documentation explains how to use the SS7/Sigtran GUI pages to perform configuration and maintenance tasks related to adjacent servers, SS7 signaling points, link sets, associations, routes, and SS7/Sigtran options.

*Transport Manager User Guide* describes the configuration of Transports (SCTP associations and UDP connections with remote hosts over an underlying IP network).

## 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](http://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

## About HLR Router

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### Topics:

- *Introduction to HLR Router.....14*
- *System Architecture.....15*
- *Distributed configuration.....17*

This section describes the HLR Router, its GUI, the system architecture, and decentralized configuration.

## Introduction to HLR Router

The HLR Router aids the optimization of HLR workloads over mobile networks by providing a centralized database of subscriber to HLR mappings. This allows mobile network operators to optimize the workloads of HLRs by pairing subscribers with HLRs based on their signaling activity patterns. It also optimizes capacity for each HLR by allowing subscriber ranges to be split over different HLRs and allows individual subscribers to be assigned to any HLR.

Additionally, the HLR eliminates the need to maintain subscriber routing information at every MSC in the network. When an HLR record is needed, the MSC routes the request to the HLR. The HLR uses global title translation to determine the correct HLR for the subscriber and sends the MSC request to that HLR. The HLR also provides the ability to route to mated HLRs based on SS7 network status, and to route to a default HLR if no translations exist for a given subscriber via exception routing. Not only does this eliminate the need to maintain subscriber routing information at every MSC in the network, this also allows great flexibility in distributing or redistributing subscribers across available HLRs.

This introduction will familiarize you with the basic operation, features, and components of the HLR Router.

## HLR Router functionality

The HLR Router provides these functionalities:

- SCCP message relay functions for HLR Routing
- PDBI provisioning allowing independent information systems to add, delete, change or retrieve information about any IMSI, DN, or Network Entity association
- The ability to add an NPA to a region using NPA Splits
- Automatic provisioning of blacklist entries for new Network Entities
- Efficient and flexible MTP3-style routing of SS7 signaling between MSCs and HLRs
- A Mate Network Entities table that contains preferred and mate relationships that allows rerouting to a Mate Network Entity if the primary is not available
- Ability to throttle the amount of any GSM messages destined to the HLR
- Exception routing of messages that do not find a successful translation in the provisioning database
- The ability for a remote client to run adhoc, read-only queries on a provisioned database using Query Server
- Geographically independent Disaster Recovery NOAM servers that can, upon activation, take over the responsibilities of the main NOAM
- Enhanced application security via the ability to manage the administration of accounts, logins, and passwords
- Real-time alarms and alarm history availability
- The ability to capture and preserve vital collections of configured data using manual and/or automatic backups
- Automatic file-based bulk import of provisioning data on the NOAM
- Map Layer Routing (MLR) to activate or deactivate the map layer routing feature
- On-demand ability to collect performance data on HLR Router
- Access to the Secure Active Network Environment (SANE)

## System Architecture

The HLR Router consists of an active/standby pair of NOAM servers in an HA configuration, a third NOAM server configured as a Query Server (optional), an optional DR NOAM, redundant SOAM servers, and up to 10 MP (Message Processor SCCP Relay Point) servers per SOAM site. An HLR Router can have up to 40 sites with each capable of supporting up to 512 remote signaling points.

Figure 1: HLR Router System Diagram provides an overview of the HLR Router architecture.

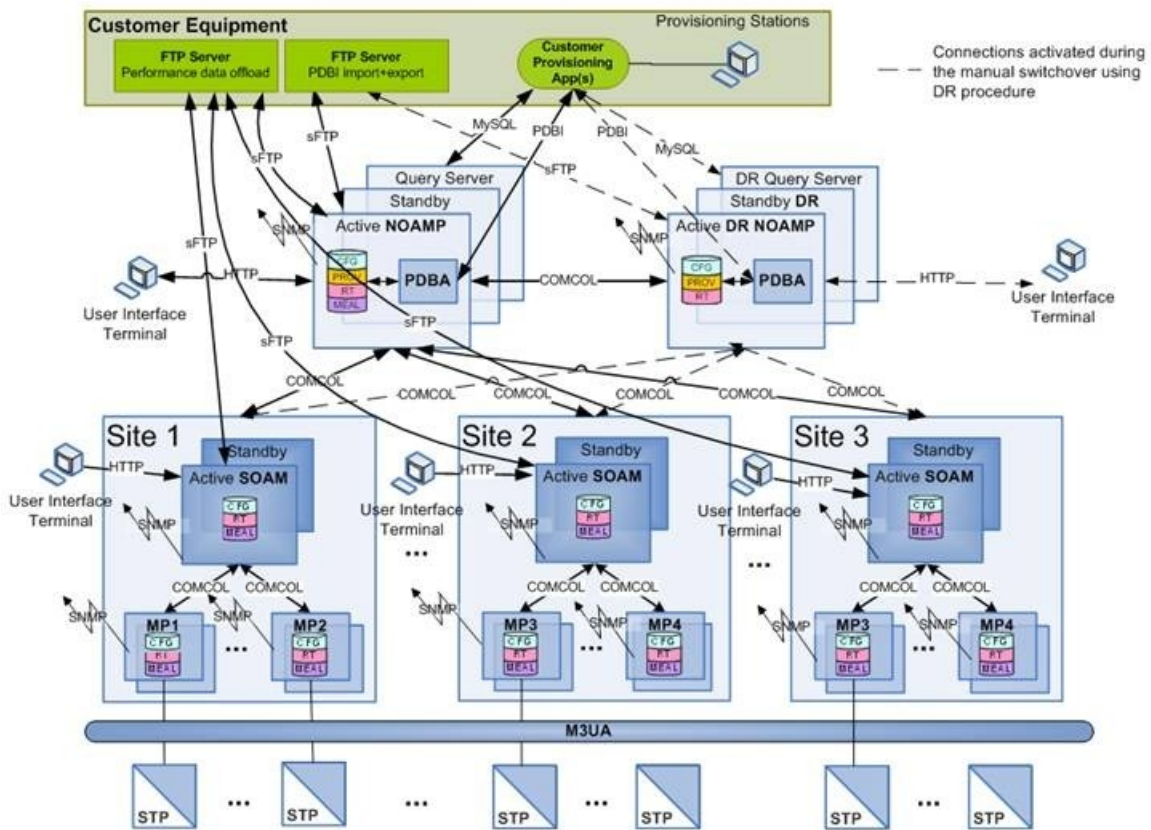


Figure 1: HLR Router System Diagram

## HLR Router Components

### NOAM

The NOAM component consists of one active NOAM and one standby NOAM server running in a high availability configuration. It accepts subscriber data provisioned by the customer over PDBI and replicates it to the DR NOAM, the Query Server and all subtending SOAMs. It also provides a GUI which is used for configuration, user administration and the viewing of alarms and measurements.

NOAM distributes all successful incoming subscriber provisioning data, independent of source, to all downstream Network Elements and the DR NOAM at a rate of up to 200 provisioning database

updates per second. In order to ensure the database levels of the Network Elements are less than the database levels of the NOAM and DR NOAM, the active provisioning site NOAM provisions the DR NOAM prior to updating the Network Elements.

### **DR NOAM (Optional)**

The DR NOAM is a geographically independent NOAM component. The DR NOAM has the same hardware configuration and network accessibility as the NOAM.

The DR NOAM's databases are kept up to date through real-time replication of subscriber and application data from the Active NOAM. Under normal operating conditions, the DR NOAM does not provision any downstream systems but if made Active, it will take over all the functions of the Active NOAM including the PDBI and database replication to subtending SOAMs.

### **SOAM**

The SOAM component consists of one active SOAM and a standby SOAM server running in a high availability configuration. It accepts subscriber data replicated from the Active NOAM and in turn replicates it to all subtending MPs located in the same physical frame. SOAM also provides a GUI used for local Signaling configuration and viewing alarms and measurements details specific to components located within the frame (SOAM, MP).

The SOAM supports up to 10 MPs.

### **Query Server (Optional)**

The Query Server is an independent application server containing a replicated version of the PDBI database. It accepts replicated subscriber data from the NOAM and stores it in a customer accessible MySQL database. A Query Server is located in the same physical frame as each NOAM component (NOAM / DR NOAM).

### **Network Element**

Network Elements are containers that group and create relationships between servers in the network. There are two types of Network Elements:

- NOAM: such as the NOAM and the DR NOAM
- Signaling: contains a pair of SOAM servers and one or more MP servers

The system can support two NOAM Network Elements and up to 40 Signaling Network Elements.

### **MPs**

The MPs are servers with the HLR Router application installed that are configured for MP functionality. They accept replicated subscriber data from the local SOAM and store it in a subscriber database.

The MP is accessed as a Service Relay Point and is connected to the Eagle STPs via Sigtran M3UA interfaces. Each MP is capable of relaying real-time SCCP messages at a maximum sustained rate of 25,000 transactions per second for HLR routing lookups. Multiple MP servers may be deployed in a single frame in order to scale query capacity. Each site can support up to 10 MPs, but the HLR Router System can support up to a total of 96 MPs in the system.



## Distributed configuration

The HLR Router supports centralized and decentralized configurations:

- Centralized configuration:
  - All subscriber data configuration and maintenance occurs at the NOAM level
  - Application management, such as configuring servers, occurs at the NOAM level
- Decentralized:
  - All signaling network configuration and maintenance occurs on the SOAM level

Due to distributed configuration:

- Most OAM Administration, Configuration, and Status & Manage tasks can only be performed when you are logged into an active NOAM
- EAGLE XG Database and Tekelec HLR Router tasks related to the subscriber database are only available when logged into an active NOAM, with the exception of querying the database
- EAGLE XG Database and Tekelec HLR Router tasks related to signaling are only available when logged into an active SOAM
- All SS7/Sigtran Main Menu options are only available when you are logged into an SOAM
- The available Alarms, KPIs, Measurements, and Events vary depending on whether you are logged into an NOAM or SOAM

## Centralized configuration

Subscriber provisioning data is provisioned at the active server of the Primary NOAM cluster and replicated to all servers on the network. System configuration and subscriber data is provisioned at the active server of the Primary NOAM cluster, replicated to all other NOAMs, and then replicated to the active SOAM of each Network Element (NE).

### PDBI

The main method of subscriber data provisioning is PDBI (Provisioning Database Interface). PDBI allows one or several independent information systems supplied and maintained by the network operator to be used for provisioning databases and for configuring systems. Through the PDBI, independent information systems may add, delete, change or retrieve information about any IMSI, DN, or Network Entity association.

### GUI Provisioning

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

*Table 2: NOAM Main Menu Options* shows the GUI options available when logged into an NOAM.

Table 2: NOAM Main Menu Options

Menu Item	Function
Administration	<p>All options available:</p> <ul style="list-style-type: none"> <li>• General Options</li> <li>• Access Control <ul style="list-style-type: none"> <li>• Users</li> <li>• Groups</li> <li>• Sessions</li> <li>• Certificate Management</li> <li>• Authorized IPs</li> <li>• SFTP Users</li> </ul> </li> <li>• Software Management <ul style="list-style-type: none"> <li>• Versions</li> <li>• Upgrade</li> </ul> </li> <li>• Remote Servers <ul style="list-style-type: none"> <li>• LDAP Authentication</li> <li>• SNMP Trapping</li> <li>• Data Export</li> <li>• DNS Configuration</li> </ul> </li> </ul>
Configuration	<p>All options available:</p> <ul style="list-style-type: none"> <li>• Network Elements</li> <li>• Network <ul style="list-style-type: none"> <li>• Devices</li> <li>• Routes</li> </ul> </li> <li>• Services</li> <li>• Servers</li> <li>• Server Groups</li> <li>• Resource Domains</li> <li>• Places</li> <li>• Place Associations</li> <li>• DSCP <ul style="list-style-type: none"> <li>• Interface DSCP</li> <li>• Port DSCP</li> </ul> </li> </ul>
Alarms & Events	<p>All options available:</p> <ul style="list-style-type: none"> <li>• View Active</li> <li>• View History</li> <li>• View Trap Log</li> </ul>

Menu Item	Function
Security Log	All options available: <ul style="list-style-type: none"> <li>• View History</li> </ul>
Status & Manage	All options available: <ul style="list-style-type: none"> <li>• Network Elements</li> <li>• Server</li> <li>• HA</li> <li>• Database</li> <li>• KPIs</li> <li>• Processes</li> <li>• Tasks                             <ul style="list-style-type: none"> <li>• Active Tasks</li> <li>• Scheduled Tasks</li> </ul> </li> <li>• Files</li> </ul>
Measurements	All options available: <ul style="list-style-type: none"> <li>• Report</li> </ul>
EAGLE XG Database	<ul style="list-style-type: none"> <li>• Configuration:                             <ul style="list-style-type: none"> <li>• Network Entity</li> <li>• DN</li> <li>• IMSI</li> <li>• PDBI                                     <ul style="list-style-type: none"> <li>• Options</li> <li>• Connections</li> <li>• Blacklist</li> <li>• Export</li> </ul> </li> </ul> </li> <li>• Maintenance:                             <ul style="list-style-type: none"> <li>• Query                                     <ul style="list-style-type: none"> <li>• Network Entity</li> <li>• DN</li> <li>• IMSI</li> </ul> </li> <li>• PDBI                                     <ul style="list-style-type: none"> <li>• Connections</li> <li>• Command Log</li> <li>• Import Status</li> <li>• Export Status</li> <li>• Run Command</li> <li>• DB Status</li> </ul> </li> </ul> </li> <li>• NPA Splits</li> </ul>

Menu Item	Function
Tekelec HLR Router	Configuration: <ul style="list-style-type: none"> <li>• Options</li> <li>• Service Config</li> <li>• Substitutions</li> <li>• Mated Entities</li> <li>• Throttling               <ul style="list-style-type: none"> <li>• DN Whitelist</li> <li>• IMSI Whitelist</li> <li>• MP Groups</li> <li>• Opcodes</li> <li>• Rules</li> <li>• Rule Test</li> </ul> </li> <li>• PDE               <ul style="list-style-type: none"> <li>• Options</li> </ul> </li> </ul>

## Decentralized configuration

Since each Network Element may have different signaling network connectivity and different routes, signaling and application site-specific configuration data is configured at the SOAM. The SOAM servers provide provisioning control over multiple Message Processors (SCCP Relay Points), for the SS7 Signaling Network Interface, and for HLR routing configuration.

The SOAM replicates system configuration, signaling and application site-specific configuration, and real-time data to the MPs. Measurements, Events, Alarms, and Logs from active/standby SOAM, and all MPs in the local Network Element, are merged to the active server of the Primary NOAM cluster.

[Table 3: SOAM Main Menu Options](#) shows the GUI options available when logged into an SOAM.

**Table 3: SOAM Main Menu Options**

Menu Item	Function
Administration	Most <b>Administration</b> submenu functions are only permissible from an active, primary NOAM server. However, these options may be fully utilized from an SOAM: <ul style="list-style-type: none"> <li>• Sessions</li> <li>• Authorized IPs</li> <li>• Versions</li> <li>• Data Export</li> </ul>
Configuration	Provisioning functions are only permissible from an active, primary NOAM server.

Menu Item	Function
Alarms & Events	Most options are available: <ul style="list-style-type: none"> <li>• View Active</li> <li>• View History</li> </ul> However, provisioning functions for <b>View Trap Log</b> are only permissible from an active, primary NOAM server.
Security Log	All options are available: <ul style="list-style-type: none"> <li>• View History</li> </ul>
Status & Manage	Most <b>Status &amp; Manage</b> submenu functions are available on an SOAM. However, these options are only permissible from an active, primary NOAM server: <ul style="list-style-type: none"> <li>• Network Elements</li> <li>• HA</li> <li>• Files</li> </ul>
Measurements	<ul style="list-style-type: none"> <li>• Report</li> </ul>
Transport Manager	<ul style="list-style-type: none"> <li>• Configuration               <ul style="list-style-type: none"> <li>• Adjacent Node</li> <li>• Configuration Sets</li> <li>• Transport</li> </ul> </li> <li>• Maintenance               <ul style="list-style-type: none"> <li>• Transport</li> </ul> </li> </ul>
SS7/Sigtran	<ul style="list-style-type: none"> <li>• Configuration               <ul style="list-style-type: none"> <li>• Adjacent Server Groups</li> <li>• Local Signaling Points</li> <li>• Local SCCP Users</li> <li>• Remote Signaling Points</li> <li>• Remote MTP3 Users</li> <li>• Link Sets</li> <li>• Links</li> <li>• Routes</li> <li>• SCCP Options</li> <li>• MTP3 Options</li> <li>• M3UA Options</li> <li>• Local Congestion Options</li> <li>• Capacity Constraint Options</li> </ul> </li> <li>• Maintenance</li> </ul>

Menu Item	Function
	<ul style="list-style-type: none"> <li>• Local SCCP Users</li> <li>• Remote Signaling Points</li> <li>• Remote MTP3 Users</li> <li>• Linksets</li> <li>• Links</li> <li>• Command Line Interface</li> <li>• Command Import</li> </ul>
EAGLE XG Database	Maintenance: <ul style="list-style-type: none"> <li>• Query               <ul style="list-style-type: none"> <li>• Network Entity</li> <li>• DN</li> <li>• IMSI</li> </ul> </li> </ul>
Tekelec HLR Router	Configuration: <ul style="list-style-type: none"> <li>• Exception Routing</li> <li>• MP E.164</li> </ul> Maintenance: <ul style="list-style-type: none"> <li>• Test</li> </ul>

# Chapter 3

## User Interface Introduction

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### Topics:

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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 4: User Interface Elements* describes elements of the user interface.

**Table 4: 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	<p>The left side of the banner just above the Main Menu provides the following session information:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• The HA state of the machine to which the user is connected.</li> <li>• The role of the machine to which the user is connected.</li> </ul> <p>The right side of the banner:</p> <ul style="list-style-type: none"> <li>• Shows the user name of the currently logged-in user.</li> <li>• Provides a link to log out of the GUI.</li> </ul>
Main Menu	Left side of screen, under banners	<p>A tree-structured menu of all operations that can be performed through the user interface. The plus character (+) indicates a menu item contains subfolders.</p> <ul style="list-style-type: none"> <li>• To display submenu items, click the plus character, the folder, or anywhere on the same line.</li> <li>• To select a menu item that does not have submenu items, click on the menu item text or its associated symbol.</li> </ul>
Work Area	Right side of panel under status	<p>Consists of three sections: Page Title Area, Page Control Area (optional), and Page Area.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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</li> </ul>



Element	Location	Function
		<p>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 <a href="#">Optional Layout Element Toolbar</a>.</p> <ul style="list-style-type: none"> <li>• 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 <a href="#">Customizing the Login Message</a>.</li> </ul>

### Main menu options

The menu options that appear on the screen differ according to whether you are logged into an NOAM or SOAM. This table describes all main menu user interface options. For a list of NOAM menu options, please see [Centralized configuration](#). For a list of SOAM menu options, please see [Decentralized configuration](#).

**Note:** The menu options can differ according to the permissions assigned to a user's log-in account. For example, the Administration menu options would not appear on the screen of a user who does not have administrative privileges.

Menu Item	Function
Administration	<p>The Administration menu allows you to:</p> <ul style="list-style-type: none"> <li>• Set up and manage user accounts</li> <li>• Configure group permissions</li> <li>• View session information</li> <li>• Authorize IP addresses to access the user interface</li> <li>• 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</li> <li>• Configure SNMP services</li> <li>• Validate and transfer ISO files</li> <li>• Prepare, initiate, monitor, and complete upgrades</li> <li>• View the software versions report</li> </ul>
Configuration	Provides access to configuring network elements, servers, server groups, and systems.

Menu Item	Function
Alarms and 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.
SS7/Sigtran	Provides maintenance and configuration options for the Signaling Network Interface. This provides standard SCCP functionality, traditional MTP3 routing capabilities, and a standard M3UA interface to the external network.  <b>Note:</b> The SS7/Sigtran menu option is only available when logged into an SOAM.
Transport Manager	Enables the configuration of Transports (SCTP associations and UDP connections with remote hosts over an underlying IP network).
EAGLE XG Database	Provides maintenance and configuration options related to HLR Routing.  <b>Note:</b> The EAGLE XG Database options differ depending on the type of server a user is logged into.
Tekelec HLR Router	Provides maintenance and configuration options related to HLR  <b>Note:</b> The Tekelec HLR Router options differ depending on whether a user is logged in to a NOAM or SOAM.
Help	Launches the online help system for the user interface.
Logout	Allows you to log out of the user interface.

## Missing Main Menu options

Permissions determine which Main Menu options are visible to users. Permissions are defined through the **Group Administration** page. The default group, **admin**, is permitted access to all GUI options and functionality. Additionally, members of the **admin** group set permissions for other users.

Main Menu options vary according to the group permissions assigned to a user's account. Depending on your user permissions, some menu options may be missing from the Main Menu. For example, Administration menu options do not appear on your screen if you do not have administrative permissions. For more information about user permissions, see *Group Administration* in the OAM section of the online help, or contact your system administrator.

## 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.



## Oracle System Login

Wed Jul 8 14:20:00 2015 EDT

**Log In**

Enter your username and password to log in

Username:

Password:

Change password

Welcome to the Oracle System Login.

Unauthorized access is prohibited. This Oracle system requires the use of Microsoft Internet Explorer 8.0, 9.0, or 10.0 with support for JavaScript and cookies.

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**Figure 2: Oracle System Login**

1. From the **Main Menu**, click **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.











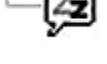
## Supported Browsers

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 5: 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.
	Task	Contains operations related to Tasks
	Help	Launches the Online Help.
	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](#).

Displaying Records 1-1 of 1 | [First](#) | [Prev](#) | [Next](#) | [Last](#)

Action		System ID	IP Address	Permission	Action	
<a href="#">Edit</a>	<a href="#">Delete</a>	lisa	10.25.62.4	READ_WRITE	<a href="#">Edit</a>	<a href="#">Delete</a>

Displaying Records 1-1 of 1 | [First](#) | [Prev](#) | [Next](#) | [Last](#)

**Figure 3: 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](#).

Sequence #	Alarm ID	Timestamp	Severity	Product	Process	NE	Server	Type	Instance	Alarm Text
3498	31201	2009-Jun-11 18:07:41.214 UTC	MAJOR	MiddleWare	procmgr	OAMPNE	teks8011006	PROC	eclipseHelp	A managed process cannot be started or has unexpectedly terminated
5445	31201	2009-Jun-11 18:07:27.137 UTC	MAJOR	MiddleWare	procmgr	SOAMP	teks8011002	PROC	eclipseHelp	A managed process cannot be started or has unexpectedly terminated
5443	31107	2009-Jun-11 18:07:24.704 UTC	MINOR	MiddleWare	inetmerge	SOAMP	teks8011002	COLL	teks8011004	DB merging from a child Source Node has failed
5444	31107	2009-Jun-11 18:07:24.704 UTC	MINOR	MiddleWare	inetmerge	SOAMP	teks8011002	COLL	teks8011003	DB merging from a child Source Node has failed
5441	31209	2009-Jun-11 18:07:22.640 UTC	MINOR	MiddleWare	re.portmap	SOAMP	teks8011002	SW	teks8011003	Unable to resolve a hostname specified in the NodeInfo table.
										Unable to resolve a hostname specified in the NodeInfo table.

[Export](#)

**Figure 4: 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.

Username:  (5-16 characters)

Group:

Time Zone:

Maximum Concurrent Logins:  Maximum concurrent logins for a user (0=no limit).  
[Default = 1; Range = 0-50]

Session Inactivity Limit:  Time (in minutes) after which login sessions expire (0 = never).  
[Default = 120; Range = 0-120]

Comment:  (max 64 characters)

Temporary Password:  (8-16 characters)

Re-type Password:  (8-16 characters)

Figure 5: 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.

<b>Entire Network</b>	*	System.CPU_CoreUtilPct_Average		System.CPU_CoreUtilPct_Peak		
NOAMP						
SOAM						
		<b>Timestamp</b>	<b>System CPU UtilPct Average</b>	<b>System CPU UtilPct Peak</b>	<b>System Disk UtilPct Average</b>	<b>System Disk UtilPct Peak</b>
		10/22/2009 19:45	6.764068	44	0.520000	1
		10/22/2009 20:00	7.143644	25	0.520000	1
						<b>System RAM UtilPct Average</b>
						7.939407
						8.523822

Figure 6: Tabbed Pages

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

Field	Value	Description
Network Entity	<input type="text"/>	* Numeric identifier for the Network Entity 1-15 DIGITS

Figure 7: Tabbed Pages

## Reports

Reports provide a formatted display of information. Reports are generated from data tables by clicking **Report**. 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 8: 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**, click **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 9: 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 6: Example Action Buttons](#) contains examples of Action buttons.

Table 6: 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.

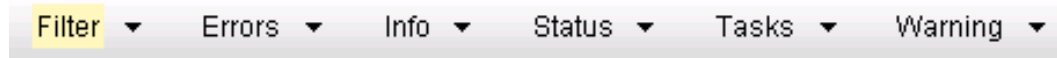
Submit buttons, described in [Table 7: Submit Buttons](#), are used to submit information to the server. The buttons are located in the page area and accompanied by a table in which you can enter information. The Submit buttons, except for **Cancel**, are disabled until you enter some data or select a value for all mandatory fields.

Table 7: 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.



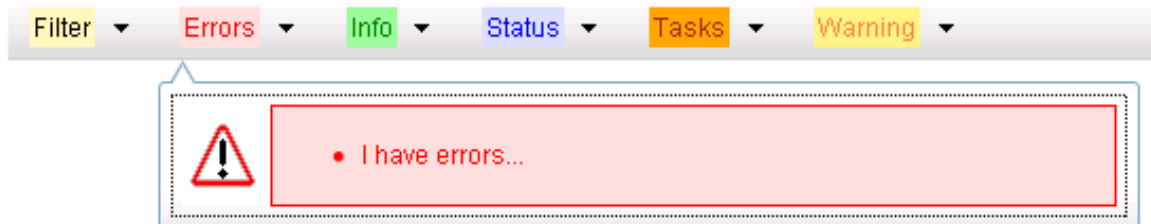
**Figure 10: Optional Layout Element Toolbar**

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 11: 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 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 12: Examples of Filter Styles

## Filter Control Elements

This table describes filter control elements of the user interface.

Table 8: 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.

Operator	Description
<	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 <b>Is Null</b> in the specified field.

**Note:** Not all filterable fields support all operators. Only the supported operators are 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.
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.
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.
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.
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.

**Auto Refresh** : 15 | 30 | Off

### 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**, click **Administration > General Options**.
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.

## C

CSV

Comma-Separated Values

The comma-separated value file format is a delimited data format that has fields separated by the comma character and records separated by newlines (a newline is a special character or sequence of characters signifying the end of a line of text).

## D

DN

Directory number

A DN can refer to any mobile or wireline subscriber number, and can include MSISDN, MDN, MIN, or the wireline Dialed Number.

## 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.

## H

HLR

Home Location Register

A component within the Switching Subsystem of a GSM network. The HLR database is the central database within the GSM architecture. This is where information about the mobile communications subscribers who are assigned to a specific location area is stored. The subscriber data

**H**

is used to establish connections and control services. Depending on the network size, the number of subscribers and the network organization, a number of HLRs can exist within a GSM network.

**I**

IMSI

International Mobile Station Identity

A unique internal network ID identifying a mobile subscriber.

**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 components. All Message Processors replicate from their Signaling OAM's database and generate faults to a Fault Management System.

MSC

Mobile Switching Center

An intelligent switching system in GSM networks. This system establishes connections between mobile communications subscribers.

The primary service delivery node for GSM/CDMA, responsible for routing voice calls and SMS as well as other services (such as conference calls, FAX and circuit switched data).

**N**

NE

Network Element

An independent and identifiable piece of equipment closely associated with at least one



## N

processor, and within a single location.

In a 2-Tiered DSR OAM system, this includes the NOAM and all MPs underneath it. In a 3-Tiered DSR OAM system, this includes the NOAM, the SOAM, and all MPs associated with the SOAM.

The devices, servers, or functions within a wireless network with which Policy Management systems interact.

Network Element

See NE

NOAM

Network Operations,  
Administration, and Maintenance

## P

PDBI

Provisioning Database Interface

The interface consists of the definition of provisioning messages only. The customer must write a client application that uses the PDBI request/response messages to communicate with the PDBA.

## S

SCCP

Signaling Connection Control Part

The signaling connection control part with additional functions for the Message Transfer Part (MTP) in SS7 signaling. Messages can be transmitted between arbitrary nodes in the signaling network using a connection-oriented or connectionless approach.

Sigtran

Signaling Transport

S

SOAM

System Operations,  
Administration, and Maintenance  
Site Operations, Administration,  
and Maintenance

SS7

Signaling System #7

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.