Oracle® Communications Diameter Signaling Router

Operations, Administration, and Maintenance Guide

Release 9.2.0.0.0
G36344-01
September 2025

Oracle Communications Diameter Signaling Router Operations, Administration, and Maintenance Guide, Release 9.2.0.0.0

G36344-01

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Preface

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

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Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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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 My Oracle Support, select **2**.

You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

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What's New in This Release

This section introduces the documentation updates for Release 9.2.0.0.0.

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- Updated the note about DNS configuration in the DNS Configuration section.
- Added LDAP CLI Authentication Configuration in the LDAP Authentication section and the following sections:
  - Configuring /etc/hosts
  - Configuring LDAP Authentication for CLI
  - Managing User Access and Groups
  - Deleting LDAP Configuration
  - Targeting Specific Servers

1 Introduction

The guide includes sections about the manual scope, audience, and organization, how to find related publications, and how to contact customer support for assistance.

1.1 Overview

This documentation:

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

1.2 Scope and Audience

This manual is intended for anyone responsible for configuring and administering the Operations, Administration, and Maintenance options. Users of this manual must have a working knowledge of telecommunications and network installations.

1.3 Manual Organization

This document is organized in to the following chapters:

- Administration contains information about the administration of users, passwords, groups, sessions, and other OAM functions.
- Configuration contains information about the configuration of network elements, services, resource domains, servers, server groups, places, place associations, and networks on the OAM.
- Alarms and Events contains information about viewing, exporting, and generating reports on active and historical alarms and events in OAM.
- Security Log contains information about the security log files included with OAM.
- Status and Manage contains information about the status and management of network elements, servers, high availability servers, databases, KPIs, processes, tasks, and files on the OAM.
- Measurements contains information about the measurement elements in the OAM.

1.4 Accessibility of GUI

To access the Diameter Signaling Router GUI:

1. Log in to GUI using valid credentials.
2. From the left navigation pane of the **Main Menu**, click **Administration** and navigate to all the following applications:

- Administration
- Configuration
- Alarms & Events
- Security Log
- Status & Manage
- Measurements
- Communication Agent
- Measurements Streaming
- Diameter Common
- Diameter
- Radius
- SBR
- Policy and Charging

3. Click on the plus icon, expand and see the properties to configure, view, or make changes to user accounts or groups.

1.5 Acronyms

The following table provides information about the acronyms and the terminology used in the document:

Table 1-1 Acronyms

Acronyms	Description
MP	Message Processor
SOAM	System Operation Administration and Management
NOAM	Network Operation Administration and Management
DRD	Disaster Recovery Data
TLS	Transport Layer Security
DTLS	Datagram Transport Layer Security
SG	Security Group

2 Administration

This chapter describes the administrative tasks. These tasks are at the system level and are limited to users with administrative privileges. The associated menu items do not appear in the user interface for non-administrative users.

2.1 General Options

Use the **General Options** page to view a list of general options settings.

> **Note**
>
> The **General Options** page content is dynamic and reflects parameters set in other code, and as such, there is no static number of rows in this page.

2.1.1 Viewing the General Options Page

The **General Options** page lists all option variables, the current value of each variable, and a brief description of each setting including the default values.

To view the General Options Page, from the **Administration**, click **General Options**.

2.1.2 General Options Settings

The following table describes the fields of the **General Options Settings**. These fields are configurable and can be set as per the user's requirement. For example, It allows the user to enable and disable the user accounts, the users can set the intervals to delete the older files, set password expiration intervals, and change user passwords and so on.

Table 2-1 General Options Fields

Field (* indicates a required field)	Description	Data Input Notes
Enable HA Safeguards	Enables HA Role change Validation.	Range: 0 to 1 Default: 1
* Enable MMI Access	Enables Machine-to-Machine Interface access on servers. A user must be authorized for MMI access in order to enable the feature.	Format: Numeric Range: 0 (Disabled), 1 (Enabled) Default: 1
* Export File Compression Type	The compression algorithm is used when exporting the data files.	Format: Numeric Range: 0 (None), 1 (gzip), 2 (bzip2) Default: 1

Table 2-1 (Cont.) General Options Fields

Field (* indicates a required field)	Description	Data Input Notes
* Last Log in Expiration	Indicates the number of days of inactivity before a user account is disabled. The account must be re-enabled by the guiadmin user with admin group permissions. Entering a value of 0 indicates that the account is never disabled.	Format: Numeric Range: 0 - 200 Default: 0
* Lock out Window	Indicates the amount of time (in minutes) in which exceeding the **Maximum Consecutive Failed Log in** attempts causes an account to be disabled. The account must be reenabled by the guiadmin user or any user with admin group permissions. Entering a value of 0 indicates the window is unlimited and disables the **Maximum Consecutive Failed Log in** attempts setting.	Format: Numeric Range: 0 - unlimited Default: 30
* Maximum Consecutive Failed Login	Indicates the maximum number of failed log in attempts that can occur within the **Lock out window** before the account is disabled. The account must be reenabled by the guiadmin user or any user with admin group permissions. Entering a value of 0 indicates that the account is never disabled.	Format: Numeric Range: 0 - 10 Default: 5
* Maximum Password History	Maximum number of passwords maintained in a history list before reuse of a password is allowed. Entering a value of 0 in this field indicates that no password history is applied and the same password can be reused.	Format: Numeric Range: 0 - 10 Default: 3
* Maximum Records per Page	The maximum number of records to display per page.	Format: Numeric Range: 10 - 100 Default: 20
* Minimum Password Difference	The Minimum character difference between passwords. Ensure there is minimum difference in the new password in comparison with the older password that you set earlier. Entering a value of 0 in this field indicates that the same password can be repeated.	Format: Numeric Range: 0 - 16 Default: 0
* Minimum Password Length	This field indicates the minimum number of valid characters required for a user password.	Format: Numeric Range: 8 - 16 Default: 8

Table 2-1 (Cont.) General Options Fields

Field (* indicates a required field)	Description	Data Input Notes
* Password Expiration	The number of calendar days passwords stay active. By default, passwords expire in 90 days. Entering a value of 0 in this field means that passwords never expire. The expiration is retroactive: if the expiration is set to 30 days and it has been 45 days since the password was last changed, the password is now expired.	Format: Numeric Range: 0 - 90 Default: 90
* Remote Server Data Export Cleanup	Remote Server Data Export Cleanup specifies interval (in days) to delete the files older than that specified day(s) from export directory. • If the value is 0 , the cleanup is disabled. • If the value is nonzero, for example if the value is 2, this denotes that the files older than 2 days will be deleted from export directory. • A set procedure is in place for removing backup files older than 14 days (even if they haven't been transferred). Hence the backup cleanup is not required. **Note:** This cleanup runs every morning at 4:03 AM. It checks the value specified for Remote Server Data Export Cleanup. If the value is 0 no cleanup action is performed from export directory. If the value is non zero, the files older than that specified day(s) will be deleted from export directory. After the cleanup is done, transfer of deleted files to any of the configured remote server is not possible as the source files will be removed.	Format: Numeric Default: 0
* SAML Enabled	Enables SAML (Security Assertion Markup Language) authentication of users.	Format: Numeric Range: 0 (Disabled), 1 (Enabled) Default: 0
* SAML Inactivity Timeout	The time (in minutes) before SAML authenticated sessions expire.	Format: Numeric Range: 0 (no expiration) - 3600 Default: 120

Table 2-1 (Cont.) General Options Fields

Field (* indicates a required field)	Description	Data Input Notes
* Single Sign on Session Life	Indicates the maximum session life (in minutes) for a single sign-on session. This occurs in a domain context. If the system is accessed through its IP address, then the domain context or Single Sign-On session life is not used.	Format: Numeric Range: 0 - 3600 Default: 120
* Site Upgrade Bulk Availability	Site based upgrade availability for bulk upgrade of MP groups. **Note**: Site Upgrade Bulk Availability cannot be changed when any site is being upgraded.	Format: Numeric Range: 0 (none), 1 (50%), 2 (66%), and 3 (75%) Default: 1
* Site Upgrade SOAM Method	Site based upgrade SOAM method. **Note**: Site Upgrade SOAM Method cannot be changed when any site upgrade is being upgraded. Bulk upgrade will upgrade all non-active SOAM servers together.	Format: Numeric Range: 0 (serial), 1 (bulk) Default: 1
* Durability Administrative State	The durability state of the system.	Format: Numeric Range: 1 = NO disk: data is replicated to the active secondary server NOAM only. 2 = NO: Secondary server NOAM pair data is replicated to both the active and standby NOAMs. 3 = NO DRNO: Disaster Recovery data NOAM is replicated to the active or standby secondary server NOAMs. Default: 1
Disabled Account	Message displayed when attempting to log in to a disabled account.	Format: Alphabetic Default: This account has been disabled.
Certificate Domain Name	Certificate Domain Name, used for Single Sign-On and HTTPS certificates, for example, yourdomain.com. Certificate Domain Name supports single domain for certificate management.	Format: Alphanumeric, hyphen, and decimal characters. Range: 255 characters Default: Blank
Failed Login Message	Message displayed on a failed log in.	Format: Alphabetic Default: Login failed
IP Authorization Denied Message	This is the message displayed when the IP Authorization is denied.	Format: Alphabetic Default: Access denied
Login Message	This is the message displayed on the log in screen, when the user logs in.	Format: Alphabetic Default: Welcome to the Oracle System Login

Table 2-1 (Cont.) General Options Fields

Field (* indicates a required field)	Description	Data Input Notes
Welcome Message	This is the message seen after the successful log in. **Note**: You can customize the message appearance by using HTML code, for example, to insert a line break.	Format: Alphabetic The %loginName%, %lastLoginTime%, %loginAttempts%, and %lastLoginIP% tokens are replaced when the welcome message displays.
Export Data Space Replace	The character to replace a space in the export group name when added to the export directory or `filename`.	Format: Alphanumeric Default: Underscore (_)

2.1.3 Configuring General Options

Perform the following procedure to configure General Options:

1. Locate the options that you want to change in the variable column.
2. Change the value of the options.

   Input parameters are provided in the description along with the default value if applicable.
3. Click **OK** to save the changes or **Cancel** to undo the changes and return the options to the previously saved values.

2.2 Access Control

The Access Control page enables you to perform functions such as adding, modifying, enabling, or deleting user accounts, passwords, groups, sessions, single sign-on certificates, IPs, and SFTP user information.

2.2.1 Users Administration

The Users Administration page allows you to perform functions such as adding, modifying, enabling, or deleting user accounts. The primary purpose of this page is to set up users for logging in to the system. This page can also be used for adding users for the purpose of validating usernames and passwords in SOAP provisioning requests.

Each user is assigned to a group or groups. Permissions to a set of functions are assigned to each group. The permissions determine the functions and restrictions for the users belonging to the group.

A user must have user or group administrative privileges to view or make changes to user accounts or groups. The administrative user can set up or change user accounts and groups, enable or disable user accounts, set password expiration intervals, and change user passwords.

System user

Each user who is allowed to access the user interface is assigned a unique username. This username and the associated password must be provided during log in. After three consecutive, unsuccessful log in attempts, a user account is disabled. The number of failed log

in attempts before an account is disabled is a value that is configured in the **General Options Settings**. For more information, see General Options.

2.2.1.1 Viewing User Account Information

Perform the following procedure to view user account information:

1. To view the user administration page, from the **Access Control**, click **Users** , appears with the user account information displayed. .
2. To view more detailed information, select a user and click **Report**.

   The user report displays the detailed information of the user account.

2.2.1.2 User Administration Fields

The following table displays the User Administration Fields.

Table 2-2 User Administration Fields

Fields	Description
Username	The Username allows access to the GUI and must be unique.
Account Status	If a user account is disabled, the user is unable to log in until an administrative user manually enables the account. If the user account is currently logged in, this action does not disrupt the session.
Remote Auth	Remote authorization is enabled or disabled.
Local Auth	Local authorization is enabled or disabled.
GUI Access	GUI access is enabled or disabled.
MMI Access	Machine-to-Machine Interface access is enabled or disabled.
Consecutive Failed Log in Attempts	The number of consecutive failed log in attempts.
Concurrent Log ins Allowed	The number of concurrent log ins allowed.
Inactivity Limit	The limit set on account inactivity after log in.
Comment	An optional field for user-defined text about this account (64 character maximum).
Groups	The groups to which the selected Username is assigned. Also provides a list of provisioned groups. A user's groups determine the permissions assigned to the user. The permissions determine the functions and restrictions for the users belonging to the group.

2.2.1.3 Insert New User Fields

The following table displays the Insert New User Fields.

To view the Insert New User fields, From the **Users** page, click **Insert** at the bottom of the screen.

Table 2-3 User Administration Fields

Element	Description	Data Input Notes
Username	The Username allows access to the GUI and must be unique.	Format: String Range:5 to 32 alphanumeric characters in lowercase (a to z, 0 to 9) and can contain special characters such as "_" , "." , and "@".
Group	The groups to which the selected Username is assigned. Groups define the permissions assigned to the user. The permissions determine the functions and restrictions for the users belonging to the group.	Range: provisioned groups Default: admin
Authentication Options	Authentication options used with the account. When using local authentication, the account is disabled until a password is established. If using remote authentication, an authentication server must be configured.	Format: Checkbox Range: Allow Remote Auth or Allow Local Auth Default: Local Auth enabled, Remote Auth disabled.
Access Options	users can access their account with two options: • Machine-to-Machine • GUI Both may be selected.	Format: Checkbox Range: Allow GUI Access or Allow MMI Access Default: GUI and MMI access enabled
Access Allowed	Whether the user account is enabled.	Format: Checkbox Default: Account Enabled
Maximum Concurrent Log in	Maximum concurrent log in per user per server.	This feature cannot be enabled for users belonging to the admin group. Range: 0-50 Default: 0 0 = no limit
Session Inactivity Limit	The time, in minutes, after which log in session expires.	Range: 0-3600 Default: 120 0 = session never expires
Comment	A field for user defined text about this account (100 character maximum). This field is optional.	Format: Alphanumeric characters Range: 0-100 characters

2.2.1.4 Adding New User

> **Note**
>
> - Prior to performing this procedure, you should know to which user groups the user should be assigned. The group assignment determines the functions that a user has access to. If you need to create a new group for the user, create the group before adding the user. See Adding a Group.
> - When setting up a user for SOAP provisioning request validation, the only field other than **Username** and **Group** used for this validation process is **Access Options**.

Perform the following procedure to Add a New User:

1. From the **Users** page, click **Insert** at the bottom of the screen.
2. Enter **Username** that consists of 5-32 characters.

   For more information about **Username**, or any field on this page, see Insert New User Fields.
3. Select a **Group** for the user.
4. Select the **Authentication Options** to be used with this account.
5. Select the **Access Options** allowed for this account. When setting up a user for SOAP provisioning request validation, check mark **Allow MMI Access**. It is recommended you also uncheck **Allow GUI Access** (users set up for SOAP request validation should not have UDR GUI access).
6. Select whether the account is enabled using the **Access Allowed** checkbox.
7. Enter the **Maximum Concurrent Log ins**.

   > **Note**
   >
   > Maximum Concurrent Log ins cannot be enabled for users in the admin group.
8. Enter the **Session Inactivity Limit**.
9. Enter text about this user in the **Comment** field.

   This field is required.
10. Perform one of the following actions:
    - Click **Apply**.
      A confirmation message displays at the top of the Insert Users page to inform you the new user has been added to the database. To close the Insert Users page, click **Cancel**.
    - Click **OK**.
      The Users administration page displays again with the new user displayed.

The new user is added to the database.

2.2.1.5 Modifying Attributes of User

Perform the following procedure to Modify Attributes of a User:

1. From the **Users** page select a user from the list.
2. Click **Edit** at the bottom of the screen.
3. Modify one or more of the user account information fields.
4. Click **OK** or **Apply**.

   The Users administration page re-appears. The user account information is updated in the database, and the changes take effect immediately.

2.2.1.6 Deleting a User

When a user is deleted from the database, they will be unable to log in the next time. If the user is currently logged in to the system, this operation does not disrupt the user's current session. To stop a current user session, see Deleting user sessions, or to disable a user's account, see Enabling or Disabling a User Account.

Perform the following procedure to delete a user from the database:

1. From the **Users** page, click **Delete** at the bottom of the screen.
2. Select the appropriate user from the list.
3. Click **OK** to delete the user.

The user has been deleted from the database and no longer appears in the **Users** page.

2.2.1.7 Generating a User Report

A user account usage report can be generated from the users page. This type of report provides information about a user's account usage including last log in date, the number of days since the user last logged in, and the user's account status.

Perform the following procedure to generate a user report:

1. From the **Users** page, select one or more users.

   > **Note**
   >
   > If no users are selected, then all users appear in the users report.

2. Click **Report**.

   The Users Report is generated. This report can be printed or saved to a file.
3. Click **Print** to print the report.
4. Click **Save** to save the report to a file.

2.2.1.8 Passwords

Password configuration, such as setting passwords, password history rules, and password expiration, occurs in Administration. The application provides two options to set the passwords:

- Setting a password from the Users Administration page.

- Setting a password from the System Login page.

The user interface provides two forms of password expiration. The administrative user can configure password expiration on a system-wide basis. By default, password expiration occurs after 90 days. The administrative user can also disable the password expiration function. For procedural information on configuring password expiration, see Configuring the expiration of a password.

Password expiration is also forced the first time that a user logs in to the user interface. During initial user account setup, the administrative user grants the user a temporary password. When the user attempts to log in for the first time, the software forces the user to change the password. The user is redirected to page where the user must enter the old password and then enter a new valid password twice.

A valid password:

- Must contain minimum 8 to 16 characters.
- Must contain minimum three of the four types of following characters: numerics, lower case letters, upper case letters, or special characters (! @ # $ % ^ & * ? ~).
- The password cannot be the same as the username or include the username in any part of it. For example, **Username=jsmith** and **password=$@jsmithJS** would be invalid.
- cannot be the inverse of the Username (for example, **Username=jsmith** and **password=$@htimsj** would be invalid).
- There cannot be three or more consecutively repeated characters, or three or more ascending or descending alpha-numeric characters in a row. For example, **1234, aaaa, dcba**.
- The last three passwords cannot be reused..

2.2.1.8.1 Setting a password from the Users Administration page

Passwords expire every 90 days by default. When the SOAP request authentication feature is turned on and if a user's password expires, the SOAP request is not updated to reflect the new password, the SOAP request will fail authentication validation. To change the expiration date to another value (including setting it to 0 so the password never expires), follow the steps in Configuring the expiration of a password.

> **Note**
>
> Only an administrative user may use this procedure. For information about how a non-administrative user can change a password, see Setting a password from the System Login page.

Perform the following procedure to change an existing user's password:

1. From the **Users** page, select the appropriate user from the list.
2. Click **Change Password**.

   The Set Password page appears. The selected user appears in the **New Password** box.
3. Enter a password in the **New Password** and **Retype New Password** fields. For information on valid passwords, see Passwords.

   The system verifies the values entered in both fields match.
4. Click **Continue**.

5. Click **Administration** and then, **Users** to return to the User Administration page.

The password has been updated in the database and takes effect the next time the user attempts to log in to the user interface.

2.2.1.8.2 Setting a password from the System Login page

> **Note**
>
> This procedure is for non-administrative users. For information about how an administrative user can set a password, see Setting a password from the Users Administration page.

Perform the following procedure to change a existing, non-administrative user's password on the system log in page:

1. Select the **Change password** checkbox on the System Login page.
2. Enter the user name and password.
3. Click **Login**.
4. Enter a password in the **New Password** and **Retype New Password** fields. For information on valid passwords, see Passwords.

   The system verifies the values entered are valid and that both fields match.
5. Click **Continue**.

   The password has been updated in the database, which takes effect the next time the user attempts to log in to the user interface.

You have now completed this procedure.

2.2.1.8.3 Configuring the expiration of a password

Perform the following procedure to change the variable that controls the length of time for the password expiration:

1. From the **General Options** page, locate the **Password Expiration** in the **Variable** column.
2. Enter an integer in the **Value** column. The integer indicates the number of days that elapse before the password expires. To disable password expiration, enter **0**.
3. Click **OK** or **Apply** to submit the information.

The password expiration variable is changed to the new value.

2.2.1.9 Enabling or Disabling a User Account

The user interface automatically disables a user account after five consecutive failed log in attempts. The administrative user can also manually disable a user account to prevent a user from logging on to the system. If a user account is disabled, the user is unable to log in until an administrative user manually enables the account.

Perform the following procedure to enable or disable the user account:

1. From the **Users** page, select a user from the list.
2. Click **Edit**.

3. From the **Edit** page, click the **Account Enabled** checkbox to enable, a check mark indicates that the account is enabled. Do not click the checkbox if you want to disable the account.
4. Click **OK**.

   The account is enabled or disabled.

2.2.1.10 Changing a User's Assigned Group

The group assignment determines the functions that a user has access to, for more information, see Group Administration.

> **Note**
>
> If the user is currently logged in to the system, this operation does not affect the user's current session. The next time the user logs in, the new assignment takes effect.

Perform the following procedure to change a User's Assigned Group:

1. From the **Users** page, select a user from the list.
2. Click **Edit**.
3. Select the appropriate groups from the **Group** listing.
4. Click **OK**.

The user's assigned groups are updated in the database and take effect the next time the user attempts to log in the user interface.

2.2.2 Groups Administration

The Groups Administration page allows you to create, modify, and delete user groups.

To view the Groups Administration page, from **Access Control**, click **Groups**.

A group is a collection of one or more users who need to access the same set of functions. Permissions are assigned to the group for each application function. All users assigned to the same group have the same permissions for the same functions. In other words, you cannot customize permissions for a user within a group.

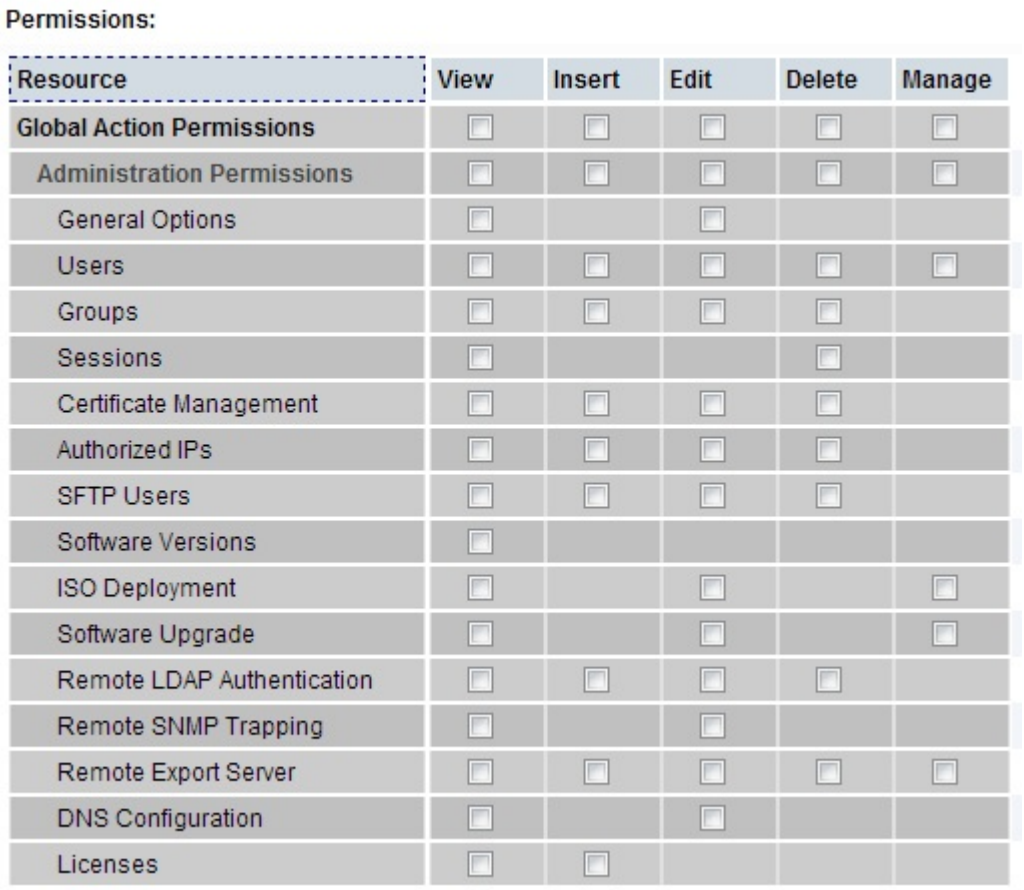
You can assign a user to multiple groups. You can add, delete, and modify groups except for the Pre-defined User and Group that come with the system.

The default group **admin**, provides access to all GUI options and actions on the GUI menu. You can also set up a customized group that allows administrative users in this new group to have access to a subset of GUI options or actions. Additionally, you can set up a group for non-administrative users, with restricted access to even more GUI options and actions.

For non-administrative users, a group with restricted access is essential. To prevent non-administrative users from setting up new users and groups, be sure **User** and **Group** in the Administration Permissions section are unchecked. Removing the check marks from the Global Action Permissions section does not prevent groups and users from being set up. Figure 2-1 displays these sections of the Group Administration page.

> **Note**
>
> When setting up users for SOAP provisioning request validation, it is recommended a separate non-administrative group be set up for these users.

Figure 2-1 Global Action and Administration Permissions



Each permission checkbox on the Groups Administration page corresponds to a menu option on the GUI main menu or a submenu. If a checkbox is checked for a group, then the group has access to this option on the menu. If a checkbox is not checked, then the group does not have access to this option, and the option is not visible on the GUI menu.

These checkboxes are grouped according to the main menu's structure, most folders in the main menu correspond to a block of permissions. The exceptions to this are the permission checkboxes in the Global Action Permissions section.

The Global Action Permissions section allows you to control all insert (**Global Data Insert**), edit (**Global Data Edit**), and delete (**Global Data Delete**) functions on all GUI pages (except User and Group). For example, if the **Network Fields** checkbox is selected in the (Configurations Permissions section), but the **Global Data Insert** checkbox is not selected, the users in this group cannot insert a new Network Element.

By default, all groups have permissions to view application data and log files.

2.2.2.1 Adding a Group

Perform the following procedure to Add a Group:

1. From the **Groups** page, click **Insert**.
2. Enter a unique name in the **New Group Name** field, and optionally, in the **Description** field, enter text to describe the group. When setting up a group for the purpose of SOAP request validation, use a name to easily identify this purpose, such as SOAP Users.
3. To enable View, Insert, Edit, Delete or Manage actions on all pages accessed from the GUI, selectively check mark each action in the **Global Action Permissions** row.

   Checks appear next to each page under that action.
4. Check mark the remaining menu permissions to which you want this group to have access.

> **Note**
>
> - For a group created for SOAP request validation, no permissions must be check marked.
> - To quickly select all permissions in a given section, place a check beside the desired section under the desired action. For example, if the group needs only view access for the **Alarms and Events** section, place a single check next to **Alarms and Events Permissions** and under the **View** action. For more information on the options displayed on the Group page, see Groups Administration.

5. Perform one of the following actions:
   - Click **Apply**.
     A confirmation message appears at the top of the Add Groups page to inform you that the new group has been added to the database. To close the Add Groups page, click **Cancel**.
   - Click **OK**.

> **Note**
>
> The **Group Members** pane at the bottom of the page displays the entry **None** for a new group. If you would like to add users to the new group now, double-click **None** to launch the Add User page. For more information, see Insert New User Fields.

The new group is added to the database.

2.2.2.2 Modifying a Group

A predefined group cannot be modified during installation. For more information see, Pre-defined User and Group.
Perform the following procedure to modify a group:

1. From the **Groups** page. Select the desired group from the Groups administration page.
2. Select the desired group from the Groups administration page.

3. Click **Edit**. For more information on permission options, see OAM Groups Administration Permissions.
4. Modify the group permissions as needed.

   For information on permission options, see OAM Groups Administration Permissions.
5. Click **OK** or **Apply**.

   Clicking **OK** returns you to the Groups administration page and clicking **Apply** leaves you in the Groups edit page, but applies the changes.

The main GUI menu of the affected users is not changed until the user logs out and back in to the system, or the user refreshes the menu (using the web browser's refresh function). The change in accessibility to menu options for affected user(s) takes effect immediately.

2.2.2.3 Deleting a Group

> **Note**
>
> The system does not enable any user to delete a predefined group provided during installation. For more information see, Pre-defined User and Group.

Perform the following procedure to delete a group:

1. From the **Groups** page.
2. Select the desired group from the Groups administration page and take note of any users presented in the **Users** pane.

   > **Note**
   >
   > The **Users** pane lists all users associated with the group. If there are users associated with the group, you must delete the users or assign them to another group before deleting the group. See Changing a User's Assigned Group.
3. After all users have been cleared from the **Users** pane click **Delete**.
4. Click **OK** to delete the group.

   A status box displays the results of the action.

The group is removed from the database.

2.2.2.4 Generating a Group Report

A group report can be generated from the Groups administration page. This type of report provides information about a groups global action and administrative permissions.

Perform the following procedure to Generate a Group Report:

1. From the **Groups** page, select one or more groups.

   > **Note**
   >
   > If no groups are selected, then all groups appear in the group report.

2. Click **Report**.
3. Click **Print** to print the report or **Save** to save the report to a file.

2.2.2.5 Pre-defined User and Group

The user account and group shown in the Pre-defined User and Group table are delivered with the system and cannot be deleted or modified.

Table 2-4 Pre-Defined User and Group

User	Group	Description
guiadmin	admin	Full access (read/write privileges) to all functions including administration functions.

2.2.2.6 OAM Groups Administration Permissions

The following table describes the OAM groups administration permissions:

Table 2-5 OAM Groups Administration Permissions

Permission	Description
	Global Action Permissions
Global Data View	Grants permission to view data in database tables.
Global Data Insert	Grants permission to insert or add data to database tables.
Global Data Edit	Grants permission to edit or modify data in database tables.
Global Data Delete	Grants permission to delete data from database tables.
Global Data Manage	Grants permission to manage data in database tables.
	Administration Permissions
General Options	Grants permission to configure global options such as: • Last log in expiration • Maximum consecutive failed log in attempts • Password history • Maximum records per page • Password expiration • Configuration of the log in message • Configuration of the welcome message
Users	Grants permission to set up new users.
Groups	Grants permission set up user groups.
Sessions	Grants permission to view and delete sessions information.
Certificate Management	Grants permission to view, insert, edit, and delete SSO certificates.
Authorized IPs	Grants permission to insert and delete authorized IP addresses.
SFTP Users	Grants permission to view, insert, edit, and delete SFTP Users.
Software Versions	Grants permission to view software version data.
ISO Deployment	Grants permission to transfer ISO files to be used in server installations and upgrades.
Software Upgrade	Grants permission to prepare, initiate, monitor, and complete server software upgrades.
Remote LDAP Authentication	Grants permission to view, insert, edit, and delete LDAP Authentication.
Remote SNMP Trapping	Grants permission to view and edit SNMP Trapping.

Table 2-5 (Cont.) OAM Groups Administration Permissions

Permission	Description
Remote Export Server	Grants permission to view, insert, edit, delete, and manage remote export servers.
	Configuration Permissions
Network Fields	Grants permission to insert, edit, delete, lock, or unlock Network Fields.
Resource Domains	Grants permission to view, insert, edit, and delete Resource Domains.
Servers	Grants permission to insert new servers or delete servers from the topology.
Services	Grants permission to insert, edit, and delete new services in the topology.
Server Groups	Grants permission to group provisioned servers by role, function, and redundancy model.
Places	Grants permission to view, insert, edit, and delete Places.
Networks	Grants permission to insert, edit, and delete new networks in the topology.
DSCP	Grants permission to view, insert, edit, and delete DSCP data.
Network Devices	Grants permission to insert, edit, and delete new network devices in the topology.
Network Routes	Grants permission to insert, edit, and delete new network routes in the topology.
	Alarms & Events Permissions
View Active Alarms	Grants permission to view active alarms.
View Event History	Grants permission to view alarm and event history.
SNMP Trap Log	Grants permission to view SNMP trap log.
	Security Log Permissions
View Security Log	Grants permission to view security logs from all configured servers.
	Status & Manage Permissions
Network Fields	Grants permission to view the status of Network Fields and manage Customer Router Monitoring.
Servers	Grants permission to stop and restart configured servers.
HA	Grants permission to view detailed HA status.
Database	Grants permission to disable provisioning to servers, inhibit database replication, perform backups, compare a database to an archive, and restore a database.
KPIs	Grants permission to view KPIs for all configured servers.
Processes	Grants permission to view details about server processes.
Active Tasks	Grants permission to view details about long running tasks.
Scheduled Tasks	Grants permissions to view details about scheduled tasks.
Files	Grants permission to display the file list for a network entity.
	Measurements Permissions
Report	Grants permission to create and export measurement reports.

2.2.2.7 IPFE Group Administration Permissions

The following table describes the IP Front End (IPFE) Group Administration permissions:

Table 2-6 IPFE Configuration Permissions

Permission	Description
Options	Enables a user to set up data replication between IPFEs, specify port ranges for TCP traffic, and set application server monitoring parameters.
Target Sets	Enables a user to create, edit, view, and delete Target Sets and IP List TSAs.

2.2.2.8 Communication Agent Group Administration Permissions

The following table describes the Communication Agent (ComAgent) Group permissions:

Table 2-7 Communication Agent Configuration Permissions

Permission	Description
Remote Servers	Enables a user to create, edit, view, and delete Remote Servers.
Connection Groups	Enables a user to create, edit, view, and delete Connection Groups.
Routed Services	Allows a user to create, edit, view, and delete Routed Services.

Table 2-8 Communication Agent Maintenance Permissions

Permission	Description
Show Connection Status	Enables a user to display Connection Status.
Change Connection Status	Enables a user to change Connection Status.
Show Routed Services Status	Enables a user to display Routed Services Status.
Show HA Services Status	Enables a user to display **HA** Services Status.

2.2.2.9 Diameter AVP Dictionary Group Administration Permissions

This following table describes the Diameter AVP Dictionary Group Administration permissions:

Table 2-9 Diameter AVP Dictionary Group Administration Permissions

Permission	Description
AVP Dictionary	Enables a user to view, create, edit, delete, and manage AVP Dictionary.
Vendors	Enables a user to view, create, edit, delete, and manage Vendors.

2.2.2.10 DSR Diameter Group Administration Permissions

The following table describes the DSR Diameter Group Administration permissions:

Table 2-10 Diameter Configuration Permissions

Permission	Description
Local Nodes	Enables a user to create, edit, view, and delete Local Nodes.
Peer Nodes	Enables a user to create, edit, view, and delete Peer Nodes.
Connection Configuration Sets	Enables a user to create, edit, view, and delete Connection Configuration Sets.
Capacity Configuration Sets	Enables a user to create, edit, view, and delete Capacity Configuration Sets.
Connections	Enables a user to create, edit, view, and delete Connections.
Route Groups	Enables a user to create, edit, view, and delete Route Groups.
Route Lists	Enables a user to create, edit, view, and delete Route Lists.
Peer Routing Rules	Enables a user to create, edit, view, and delete Peer Routing Rules.
Egress Throttle Groups	Enables a user to create, edit, view, and delete Egress Throttle Groups.
Reroute on Answer	Enables a user to define sets of Diameter Application Ids and Result Code AVP values that trigger Request message rerouting when an Answer response is received from a peer.
Application Routing Rules	Enables a user to create, edit, view, and delete Application Routing Rules.
System Options	Enables a user to view and edit System Options.
DNS Options	Enables a user to view and delete DNS Options.
Application Ids	Enables a user to create, edit, view, and delete Application Ids.
CEX Configuration Sets	Enables a user to create, edit, view, and delete CEX Configuration Sets.
Message Priority Configuration Sets	Enables a user to create, edit, view, and delete Message Priority Configuration Sets.
Egress Message Throttling Configuration Sets	Enables a user to create, edit, view, and delete Egress Message Throttling Configuration Sets.
Peer Route Tables	Enables a user to create, edit, view, and delete Peer Route Tables and Peer Routing Rules.
Routing Option Sets	Enables a user to create, edit, view, and delete Routing Option Sets.
Pending Answer Timers	Enables a user to create, edit, view, and delete Pending Answer Timers.
CEX Parameters	Enables a user to create, edit, view, and delete CEX Parameters.
Command Codes	Enables a user to create, edit, view, and delete Command Codes.
Capacity Summary	Enables a user to view the Capacity Summary.
MP Profiles	Enables a user to create, edit, view, and delete MP Profiles.
Profile Assignments	Enables a user to create, edit, view, and delete DA-MP Profile Assignments.

Table 2-10 (Cont.) Diameter Configuration Permissions

Permission	Description
Message Copy Configuration Sets	Enables a user to create, edit, view, and delete Message Copy Configuration Sets.
Reserved MCC Ranges	Enables a user to create, edit, view, and delete MCC Ranges.
Application Route Tables	Enables a user to create and delete Application Route Tables; and view and edit Rules in the tables.
Trusted Network Lists	Enables a user to create, edit, view, and delete Trusted Network Lists for Topology Hiding.
Path Topology Hiding Configuration Sets	Enables a user to create, edit, view, and delete Path Topology Hiding Configuration Sets.
S6a/S6d HSS Topology Hiding Configuration Sets	Enables a user to create, edit, view, and delete S6a/S6d HSS Topology Hiding Configuration Sets.
MME/SGSN Topology Hiding Configuration Sets	Enables a user to create, edit, view, and delete MME or SGSN Topology Hiding Configuration Sets.
Protected Networks	Enables a user to create, edit, view, and delete Protected Networks for Topology Hiding.
Connection Capacity Dashboard	Enables a user to view the Connection Capacity Dashboard.
Import	Enables a user to provision the DSR system from an ASCII CSV (Comma Separated Values) text file.
Export	Enables a user to export the DSR configuration data into a CSV (Comma Separated Values) file of the same format.

Table 2-11 Diameter Maintenance Permissions

Permission	Description
Route Lists	Enables a user to view priority, capacity, Route Group assignment, and status information for Route Lists.
Connections	Enables a user to view Initiator, Local Node, Peer Node, MP Server Hostname, Application ID, Admin State, Operational Status, and Operational Reason information for Connections. This permission also provides the ability to enable and disable Connections.
Egress Throttle Groups	Enables a user to view Admin State, Operational Status, Operational Reason, and other information for Egress Throttle Group Rate Limiting and Pending Transaction Limiting.
Route Groups	Enables a user to view Peer Node assignment, capacity, percent, and status information for Route Groups.
Peer Nodes	Enables a user to view connection, status, and operation reason information for Peer Nodes.
Applications	Enables a user to view status for DSR Applications.
DA-MP Status	Enables a user to view status for DA-MPs.

Table 2-12 Diameter Mediation Permissions

Permission	Description
Rule Templates	Enables a user to define Mediation Rule Templates.
Enumerations	Enables a user to view and edit Mediation Enumerations.
Triggers	Enables a user to view and edit Mediation Triggers.
State & Properties	Enables a user to set the state of a Rule Template and configure settings for a Rule Template.
Internal Variables	Enables the user to view, create, edit, and delete Interval Variables.
Measurements	Enables the user to view, create, edit and delete custom measurements and measurements based on a particular Action.
Rule Sets	Enables a user to define Mediation Rule Sets.

Table 2-13 Diameter Diagnostics Permissions

Permission	Description
Test Connections Diagnose	Enables diagnosis of test messages on a test connection.
Test Connections Report	Enables reporting of diagnostic results.
MP Statistics (SCTP)	Enables network operators to retrieve per MP SCTP statistics for MPs hosting Diameter connections.

2.2.2.11 EIR Configuration Group Administration Permissions

The following table describes the EIR Configuration Group Administration permissions:

Table 2-14 EIR Configuration Group Administration Permissions

Permission	Description
EIR Options	Enables a user to view and edit EIR Options.
EIR Imsi Ranges	Enables a user to view, create, edit, and delete EIR Imsi Ranges.

2.2.2.12 Radius Configuration Group Administration Permissions

The following table describes the Radius Configuration Group Administration permissions:

Table 2-15 Radius Configuration Group Administration Permissions

Permission	Description
Ingress Status Server Cfg Set	Enables a user to view, create, edit, and delete Ingress Status Server Cfg Set.
Message Authenticator	Enables a user to view, create, edit, and delete Message Authenticator.
Shared Secret Cfg Set	Enables a user to view, create, edit, and delete Shared Secret Cfg Set.

Table 2-15 (Cont.) Radius Configuration Group Administration Permissions

Permission	Description
NAS Node	Enables a user to view, create, edit, and delete NAS Node.
Network Options	Enables a user to view and edit Network Options.
Message Conversion Cfg Set	Enables a user to view Message Conversion Cfg Set.

2.2.2.13 RBAR Group Administration Permissions

The following table describes the Range-Based Address Resolution (RBAR) Group Administration permissions:

Table 2-16 RBAR Configuration Permissions

Permission	Description
Applications	Enables a user to create, view, and delete Applications.
Exceptions	Enables a user to edit and view Exceptions.
Destinations	Enables a user to create, edit, view and delete Destinations.
Address Tables	Enables a user to create, view, and delete Address Tables.
Addresses	Enables a user to create, edit, view, and delete Addresses.
Address Resolutions	Enables a user to create, edit, view, and delete Address Resolutions.
System Options	Enables a user to view and edit RBAR System Options.

2.2.2.14 SCEF Configuration Group Administration Permissions

The following table describes the DSR Service Capability Exposure Function (SCEF) Configuration Group Administration permissions:

Table 2-17 SCEF Configuration Group Administration Permissions

Permission	Description
Nidd Configuration Sets	Enables a user to view, create, edit, and delete Nidd Configuration Sets.
Apn Configuration Sets	Enables a user to view, create, edit, and delete Apn Configuration Sets.
Monitoring Event Configuration Sets	Enables a user to view, create, edit, and delete Monitoring Event Configuration Sets.
SCS Application Servers	Enables a user to view, create, edit, and delete SCS Application Servers.
System Options	Enables a user to view and edit System Options.
Device Triggering Configuration Sets	Enables a user to view, create, edit, and delete Device Triggering Configuration Sets.

Table 2-17 (Cont.) SCEF Configuration Group Administration Permissions

Permission	Description
Access Control Lists	Enables a user to view, create, and delete Access Control Lists.
Access Control Rules	Enables a user to view, create, edit, and delete Access Control Rules.
Access Control Associations	Enables a user to view, create, and delete Access Control Associations.

2.2.2.15 Service Broker Group Administration Permissions

The following table describes the fields of Service Broker Group Administration Permissions:

Table 2-18 EAGLE XG NP Query Router

Permission	Description
Configuration	Enables access to Service Broker Configuration settings.
Query	Enables users to query NP Query Router configuration tables.
Maintenance	Enables access to maintenance tools including enabling or disabling NP Query Router.

2.2.2.15.1 FABR Group Administration permissions

The following table describes the Full Address-Based Resolution (**FABR**) Group Administration permissions:

Table 2-19 FABR Configuration Permissions

Permission	Description
Applications	Allows a user to create, view, and delete Applications.
Exceptions	Allows a user to edit and view Exceptions.
Default Destinations	Allows a user to create, edit, view and delete Default Destinations.
Address Resolutions	Allows a user to create, edit, view, and delete Address Resolutions.
System Options	Allows a user to view and edit FABR System Options.

2.2.2.16 SSR Group Administration Permissions

The following table describes the SSR group administration permissions:

Table 2-20 SSR Configuration Permissions

Permission	Description
POPs	Grants permission to view, insert, and delete POPs.
Domains	Grants permission to view, insert, and delete Domains.

Table 2-20 (Cont.) SSR Configuration Permissions

Permission	Description
Option Profiles	Grants permission to view, insert, edit, and delete Option Profiles.
Defaults	Grants permission to edit default options.
SUA Signaling Gateways	Grants permission to view, insert, edit, and delete SUA Signaling Gateway.
DNS	Grants permission to view and edit DNS servers, and to view, insert, edit, and delete DNS cache pre-load records.
SIP Server	Grants permission to edit TCP and SCTP options.
CAPM	Grants permission to view, insert, and delete CAPM definitions and enumerations.
Internal Components	Grants permission to view, insert, delete, and view Internal Components.

Table 2-21 SSR Routing Permissions

Permission	Description
Route Service	Grants permission to view, insert, edit, and delete Route Services.
Routing Profile	Grants permission to view, insert, edit, and delete Routing Profiles.
Rules	Grants permission to view, insert, edit, and delete Routing Rules.
RS Prefix Screening	Grants permission to view, insert, edit, and delete RS Prefix Screening.
NP Prefix Screening	Grants permission to view, insert, edit, and delete NP Prefix Screening.
CAPM Tasks	Grants permission to view, insert, edit, and delete CAPM Routing Task rules.

Table 2-22 SSR Routing Permissions

Permission	Description
Clusters	Grants permission to view, insert, edit, and delete Clusters and to assign servers to Clusters and Clusters to MPs.
Servers	Grants permission to view, insert, edit, and delete servers for Load Balancing Clusters.
Routing Policies	Grants permission to view, insert, edit, and delete Load Balancer Routing Policies.
Monitoring	Grants permission to set Load Balancer monitoring options and to monitor Load Balancer servers.

Table 2-23 SIP Timer Permissions

Permission	Description
Sets	Grants permission to view, insert, edit, and delete SIP Timer Sets.

Table 2-24 SSR Maintenance Permissions

Permission	Description
SUA Connection Status	Grants permission to view the status of SUA Connections.
Selective Logging	Grants permission to view and provision selective logging rules and rule assignments, to activate or deactivate selective logging, and to view and save logs to a file.
DNS Cache	Grants permission to view and flush the DNS cache and to add and delete DNS cache entries.
IP Blacklist	Grants permission to view and flush the IP Blacklist and to add an IP Blacklist entry.
Heartbeat List	Grants permission to view and flush the Heartbeat List and to add and delete Heartbeat List entries.
TCP Connections	Grants permission to view the status of TCP connections.
SCTP Associations	Grants permission to view the status of SCTP Associations.
SSR Configuration status	Grants permission to view the status of SSR Configuration.

2.2.2.17 SS7/Sigtran Group Administration Permissions

The SS7/Sigtran group administration permissions are only available in products that use the SS7/Sigtran plug-in. The following table describe the SS7/Sigtran group administration permissions:

Table 2-25 SS7/Sigtran Configuration Permissions

Permission	Description
Adjacent Server Groups	Enables the user to view, insert, edit, and delete Adjacent Server Groups.
Local Signaling Points	Enables the user to view, insert, edit, delete, and generate a report on Local Signaling Points.
Remote Signaling Points	Enables the user to view, insert, delete, generate a report, and view status on Remote Signaling Points.
Remote MTP3 Users	Enables the user to view, insert, delete, and view the status of Remote MTP3 Users.
Link Sets	Enables the user to view, insert, delete, generate a report, and view status of Link Sets.
Links	Enables the user to view, insert, delete, generate a report, and view status of a Link.

Table 2-25 (Cont.) SS7/Sigtran Configuration Permissions

Permission	Description
Routes	Enables the user to view, insert, edit, delete, generate a report, and view status of Routes.
SCCP Options	Enables the user to view and edit SCCP Options.
MTP3 Options	Enables the user to view and edit MTP3 Options.
M3UA Options	Enables the user to view and edit MTP3 Options.
Local Congestion Options	Enables the user to view Local Congestion Options.
Local SCCP Users	Enables the user to view, insert, delete, generate a report, and view status of the Local SCCP Users.

Table 2-26 SS7/Sigtran Maintenance Permissions

Permission	Description
Local SCCP Users	Enables the user to view the status of Local SCCP Users and to enable and disable LSUs.
Remote Signaling Points	Enables the user to view the status of Remote Signaling Points and to reset the network status of routes.
Remote MTP3 Users	Enables the user to view the status of Remote MTP3 Users and to reset the subsystem and point code status.
Link Sets	Enables the user to view the status of Link Sets.
Links	Enables the user to view the status of Links and to enable and disable Links.
Associations	Enables the user to view the status of Associations and to enable, disable, and block Associations.

Table 2-27 SS7/Sigtran Command Line Interface

Permission	Description
Command Import	Enables the user to use the Command Import page.

2.2.2.18 Transport Manager Configuration Group Administration Permissions

The following table describes the Transport Manager Group Administration permissions:

Table 2-28 Transport Manager Configuration Group Administration Permissions

Permission	Description
Adjacent Node	Enables a user to view, create, and delete Adjacent Node.
Configuration Sets	Enables a user to view, create, edit, and delete Configuration Sets.
Transport	Enables a user to view, create, edit, and delete Transport.

Table 2-29 Transport Manager Maintenance Group Administration Permissions

Permission	Description
Transport	Enables a user to view and manage Transport.

2.2.2.19 UDR Group Administration Permissions

The following table describes the Group Administration permissions:

Table 2-30 UDR Group Administration Permissions

Permission Group	Description
UDR Configuration	
Provisioning Options	Enables a user to view and edit provisioning option settings.
Ud Client Options	Enables a user to view and edit Ud client option settings.
UDRBE Options	Enables a user to view and edit UDRBE option settings.
Ud Remote Server Configuration	Enables a user to view and edit Ud remote server configuration settings.
Provisioning Connections	Enables a user to view, add, edit, or delete provisioning connections.
Ud Client Key Details	Enables a user to view and edit Ud client key detail settings.
Subscribing Client Permissions	Enables a user to view, add, or delete subscribing client permissions.
Ud Client Attribute MAP SEC	Enables a user to view, add, edit, or delete Ud client attribute MAP SEC settings.
Subscriber Query and Provisioning	Enables a user to view, add, edit, or delete subscriber query and provisioning settings.
Create Profile/Add Entity	Enables a user to view and add profiles and entities.
Auto Enrollment Options	Enables a user to view and edit auto enrollment option settings.
Auto Enrollment Blacklist	Enables a user to view, add, or delete auto enrollment blacklist entries.
Command Log Export Options	Enables a user to view and edit command log export option settings.
Pool Spanning Options	Enables a user to view and edit Pool Spanning Option settings.
Pool Network Configuration	Enables a user to view, add, or delete pool network configurations.
UDR Key Range	Enables a user to view, add, or delete key ranges.
Ud Client Options	Enables a user to view and edit ud client option settings.
Ud Client Remote Server Configuration	Enables a user to view and edit ud remote server configuration settings.
Ud Client Attribute Mapping	Enables a user to view and edit ud attribute mapping.
UDR SEC	

Table 2-30 (Cont.) UDR Group Administration Permissions

Permission Group	Description
Entity	Enables a user to view, add, edit, or delete an entity.
Interface Entity Map	Enables a user to view, add, or delete an interface entity map.
Entity Field Set	Enables a user to view, add, edit, copy, or delete an entity field set.
Entity Base Field Set	Enables a user to view, add, edit, copy, or delete an entity base field set.
Entity Definition	Enables a user to view, add, edit, or delete an entity field set.
UDR Maintenance	
Subscriber Query	Enables a user to perform a subscriber query.
Connections	Enables a user to view current external connections.
Command Log	Enables a user to view command log history.
Import Status	Enables a user to view the status of import operations.
Export Schedule	Enables a user to view, add, edit, or delete an export schedule.
Export Status	Enables a user to view the status of exports.
Subscribing Client Availability	Enables a user to view the status of subscribing clients.
Quota Reset Scheduler Tasks	Enables a user to view, add, edit, delete, or manage quota reset scheduler tasks.
Database Auditor	Enables a user to view and manage the database auditor.
Command Log Export Status	Enables a user to view the status of log exports.
Ud Client Connection Status	Enables a user to view, edit, or manage the status of Ud client connections.

2.2.2.20 vSTP Configuration Group Administration Permissions

The following table describes the vSTP Configuration Group Administration permissions:

Table 2-31 vSTP Configuration Group Administration Permissions

Permission	Description
Remote Hosts	Enables a user to view, create, edit, and delete Remote Hosts.
Local Hosts	Enables a user to view, create, edit, and delete Local Hosts.
vSTP Connections	Enables a user to view, create, edit, and delete vSTP Connections.
vSTP Connection Status	Enables a user to view, edit, and manage vSTP Connection Status.
vSTP Connection Configuration Sets	Enables a user to view, create, edit, and delete vSTP Connection Configuration Sets.
vSTP Remote Signaling Points	Enables a user to view, create, edit, and delete vSTP Remote Signaling Points.
vSTP Local Signaling Points	Enables a user to view, create, edit, and delete vSTP Local Signaling Points.
vSTP Link Sets	Enables a user to view, create, edit, and delete vSTP Link Sets.

Table 2-31 (Cont.) vSTP Configuration Group Administration Permissions

Permission	Description
vSTP Links	Enables a user to view, create, edit, and delete vSTP Links.
vSTP Routes	Enables a user to view, create, edit, and delete vSTP Routes.
vSTP Link Status	Enables a user to view, edit, and manage vSTP Link Status
vSTP Link Set Status	Enables a user to view, edit, and manage vSTP Link Set Status.
vSTP Remote Signaling Point Status	Enables a user to view, edit, and manage vSTP Remote Signaling Point Status.
vSTP Global Title Addresses	Enables a user to view, create, edit, and delete vSTP Global Title Addresses.
vSTP GTT Sets	Enables a user to view, create, edit, and delete vSTP GTT Sets.
vSTP GTT Selectors	Enables a user to view, create, edit, and delete vSTP GTT Selectors.
vSTP Feature Admin States	Enables a user to view, create, edit, and delete vSTP Feature Admin States.
vSTP Sccp Options	Enables a user to view and edit vSTP Sccp Options.
vSTP MRN Sets	Enables a user to view, create, edit, and delete vSTP MRN Sets.
vSTP MAP Sets	Enables a user to view, create, edit, and delete vSTP MAP Sets.
vSTP M2pa Options	Enables a user to view and edit vSTP M2pa Options.
vSTP M3rl Options	Enables a user to view and edit vSTP M3rl Options.
vSTP MP Leader	Enables a user to view vSTP MP Leader.
vSTP GTT Actions	Enables a user to view, create, edit, and delete vSTP GTT Actions.
vSTP GTT Actions Sets	Enables a user to view, create, edit, and delete vSTP GTT Actions Sets.
vSTP Capacity	Enables a user to view vSTP Capacity.
vSTP MP Peers Status	Enables a user to view vSTP MP Peers Status.
vSTP Alarm Aggregation Options	Enables a user to view and edit vSTP Alarm Aggregation Options.

2.2.2.21 Policy DRA Group Administration Permissions

The **Administration** and the **Group** GUI page displays permissions checkboxes for all Policy DRA pages for both NOAM and SOAM.

- All the permissions can be updated only on the NOAM **Administration** and the **Group** page.
- All the permissions can be viewed but not updated on the SOAM **Administration** and the **Group** page.

The following table describes the Group Administration permissions:

Table 2-32 Policy DRA Configuration Permissions

Permission	Description
PCRFs	Allows a user to create, edit, view, and delete PCRFs.
Binding Key Priority	Allows a user to assign Binding Key Priorities to Binding Key Types.
Topology Hiding	Allows a user to create, edit, view, and delete Policy Clients from which PCRF names should be hidden.

Table 2-32 (Cont.) Policy DRA Configuration Permissions

Permission	Description
PCRF Pools	Allows a user to create multiple PCRF Pools, which are selected using the combination of IMSI and Access Point Name (APN).
PCRF Pool To PRT Mapping	Allows a user to view the list of PCRF Pools or Sub-Pools configured at the NOAMP and allows each to be mapped to a Peer Routing Table to be used when a new binding is created for the PCRF Pool.
PCRF Sub-Pool Selection Rules	Allows a user to create, edit, and delete rules for selection of a PCRF Sub-Pool for a given PCRF Pool and Origin-Host value.
Network-Wide/Site Options	Allows a user to set Network-Wide Policy DRA configuration from the NOAM.
Options	Allows a user to view and edit Network-Wide Options and Site Options.
Error Codes	Allows a user to view and edit Result Codes to be returned for Policy DRA error conditions.
Alarm Settings	Allows a user to view and edit Alarm Settings.
Congestion Options	Allows a user to view and edit Congestion Options.

The following table describes the Policy DRA Maintenance Permissions:

Table 2-33 Policy DRA Maintenance Permissions

Permission	Description
Policy SBR Status	Allows a user to view status for Policy SBRs.
Binding Key Query	Allows a user to enter a Binding Key Type and Binding Key search value, and search for the specified Binding Key data.

2.2.3 Sessions Administration

To view the Sessions Administration page, from the **Access Control**, click **Sessions**.

The Sessions Administration page enables the administrative user to view a list of current user sessions and to stop user sessions that are in progress. This function does not disable the user's log in account. To end a user session that is in progress, delete the user session. For other methods of controlling user access to a system, see Enabling or Disabling a User Account and Deleting a User.

2.2.3.1 Sessions Administration Fields

The following table describes the fields of the Sessions Administration page:

Table 2-34 Sessions Administration Fields

Fields	Description
Sess ID	Shows a system assigned ID for the session.

Table 2-34 (Cont.) Sessions Administration Fields

Fields	Description
Expiration Time	Shows the date and UTC time that the session expires.
Login Time	Displays the UTC log in time.
User	Displays the **Username** of the user logged in to the session.
Group	Displays the **Group** to which the user belongs.
TZ	Displays the user time zone: UTC.
Remote IP	Displays the IP address of the machine from which the user connected to the system.

2.2.3.2 Deleting user sessions

Perform the following procedure to Delete a User Session:

> **Note**
>
> You cannot delete your own session.

1. From the **Sessions** page, select the appropriate session from the table.

   To distinguish the appropriate session, locate either the User or the IP address found in the corresponding pane. For more information see, Sessions Administration Fields.

   > **Note**
   >
   > You can select multiple rows to delete at one time. To select multiple rows, press and hold **Ctrl** as you click to select specific rows.

2. Click **Delete**.

   The session is deleted, and the user is no longer logged in to the system. The next time the user attempts to perform an action, the user is redirected to the System Login page.

2.2.4 Certificate Management

To view certificate Management, from the **Access Control**, click **Certificate Management**.

The Certificate Management feature allows users to configure certificates for:

- HTTPS/SSL - Enables secure log in without encountering messages about untrusted sites.
- LDAP (TLS) - Enables the LDAP server's public key to encrypt credentials sent to the LDAP server.
- TLS/DTLS over TCP/SCTP Transport - Enables transport layer security protocols and encryption on a per connection basis at the application layer. For example, DSR local and peer node connections.
- Single Sign-On (SSO) - Enables users to navigate among several applications without having to re-enter log in credentials.
- Certificate Authority (CA) - A digital certificate provided by a trusted source used to make secure connections between a client and server.

When setting up Certificate Management, you must first assign a system domain name for the DNS configuration before importing any certificates. For more information, see DNS Configuration.

After assigning a system domain name, you must configure the LDAP authentication servers used for single sign in. For more information, see LDAP Authentication.

2.2.4.1 Single Sign-on Zone Fields

To view Single Sign-on Zone Fields, From the **Certificate Management** page, click **Establish SSO Zone**.

The following table describes the fields of Single Sign-on Zone

Table 2-35 Single Sign-On Zone Fields

Fields	Description	Data Input Notes
Zone Name	Name of the SSO compatible remote zone.	Range: A to Z, a to z, 0-9 and periods - maximum 15 characters.

2.2.4.1.1 Establishing the Single Sign-On Zone

Prior to configuring a single sign-on zone, the single sign-on domain name must be configured.

Perform the following procedure to configure the Single Sign-On Zone:

1. On the **Establish SSO Zone** page, enter a **Zone Name** that consists of 1-15 characters.
2. Click **Apply** to save the changes you have made and remain on this screen, or click **OK** to save the changes and return to the zone page.

The new single sign-on zone is added to the database.

2.2.4.1.2 Re-establishing the Single Sign-on Local Zone

Re-establishing the local zone renders all of the certificates for this zone obsolete. After re-establishing the local zone, you have to re-distribute the certificate for this zone to all the other remote zones to re-establish the trusted relationship and re-enable single sign-on between the zones.

Following is the procedure to re-establish the single sign-on local zone:

1. On the **Establish SSO Zone** page, select the local zone from the list.
2. Click **Reestablish Local Zone**.

   A confirmation message appears stating that reestablishing a local zone invalidates configured SSO key-exchanges involving this machine.
3. Click **OK**.

The local zone is re-established in the database.

2.2.4.1.3 Create CSR

To view Create CSR, from the **Certificate Management** Page, click **Create CSR**.

The Certificate Management feature allows users to build certificate signing requests (CSRs).

A Certificate Signing request is a block of encrypted text that is generated on the single sign-on server. It contains information that is included in your certificate such as your organization name, common name (domain name), locality, and country.

2.2.4.1.3.1 Create CSR Fields

The following table describes the fields used when creating a CSR:

Table 2-36 Create CSR Fields

Fields	Description	Data Input Notes
Country	The 2-letter country code where the entity being described lives.	Range: A to Z
State or Province	The state or province (full name) where the entity being described lives.	Range: 1-100 character long string. Allowed characters are A-Z, a-z, spaces, and hyphens.
Locality	The locality name (for example, city) of the entity being described.	Range: 1-100 character long string. Allowed characters are A-Z, a-z, spaces, and hyphens.
Common Name	The common name of the entity being described. Replacing a certificate marked visible or active results in browser connection errors, which may require a reload or restart of the browser to restore connectivity. The list includes only those entities that do not already have an associated certificate.	Range: 1-100 character long string. Allowed characters are A-Z, a-z, spaces, and hyphens. **Note:** Common Names are case insensitive and must be unique.
Organization	The name of the organization to which the entity belongs.	Range: 1-100 character long string. Allowed characters are A-Z, a-z, spaces, and hyphens.
Email Address	The email address of the entity being described.	Range: 1-100 character long string. Allowed characters are A-Z, a-z, 0-9, . (period), and @ (at symbol) **Note:** As per new digicert standards, email address is an optional field.

> **Note**
>
> As per new digicert standards, Organizational Unit (OU) field will no longer appear in order forms and in all new, renewed, and reissued public TLS certificates. Removal of OU field will not affect previously issued certificates with a valid OU field.

2.2.4.1.3.2 Creating a CSR

Perform the following procedure to outline the information necessary to create a CSR. A CSR is a certificate signing request, and is sent from an applicant to a certificate authority to apply for a digital identity certificate.

1. From the **Create CSR** page, select a two-character **Country** code for the entity..

   For more information about any field on this page, see Table 2-36.

2. Select the full name of the **State or Province**.
3. Select the **Locality** name, for example, the city.
4. Select the **Common Name** for the entity being included in the CSR.
5. Select the entity **Organization**.
6. Select the entity **Organizational Unit** for the entity being included in the CSR.
7. Select the entity **Email Address**.
8. Click **Generate CSR** to submit the information.
9. Click **Back** to return to the Certificate Management page.

2.2.4.1.4 Import Certificate

To view Import Certificate, from the **Access Control**, click **Certificate Management** and click **Import**.

The Certificate Management feature enables users to import certificates in cases where this is preferred over configuring certificates. All imported certificates are appended to the Certificate Management table.

> **Note**
>
> The maximum number of allowed TLS or DTLS certificates is 1000.

2.2.4.1.4.1 Import Certificate Fields

The following table describes the fields when importing a certificate:

Table 2-37 Import Certificate Fields

Fields	Description	Data Input Notes
X.509 Certificate	PEM encoded X.509 Certificate.	Range: 2048 characters **Note**: For SSL (TLS/DTLS) certificates, valid range is 1024-2048 characters.
Private Key	PEM encoded Private Key.	Range: 2048 characters **Note**: For SSL (TLS/DTLS) keys, valid range is 1024-2048 characters.
Passphrase	The Passphrase used to protect the Private Key.	

2.2.4.1.4.2 Importing a Certificate

Perform the following procedure to import a certificate:

1. On the **Import** page, enter the **X.509 Certificate**.

   For more information about any field on this page, see Table 2-37.
2. Enter the **Private Key**.
3. Enter the **Passphrase**.
4. Click **OK** to import the certificate.

2.2.4.1.4.3 Bulk Importing of Certificates

Perform the following procedure to bulk import certificates by uploading a valid XML certificates file from a local workstation.

> **Note**
>
> The maximum allowed TLS or DTLS certificates is 1000. Attempting to import more than 1000 TLS or DTLS certificates, including existing certificates, results in an error message.

1. From the **Certificate Management** page, click **Browse**.
2. Navigate to the location of the XML certificates file on the local workstation. Select the file and click **Open**.
   - Only XML file will be supported.
   - The browsers upload window clears and the file name is presented next to the **Browse** button.
   - Ensure that the filename length including.extension is restricted to 255 characters.
3. Click **Upload File**.

   During the upload process, checks are performed to verify a valid file extension and whether there is invalid data in the XML file being uploaded.

2.2.4.1.5 Updating a Certificate

Perform the following procedure to update a certificate:

1. From the **Certificate Management** page, select the appropriate certificate from the table list.
2. Click **Update**.
3. Update the **X.509 Certificate**.
4. Click **OK** to update the certificate.

2.2.4.1.6 Deleting a Certificate

Perform the following procedure to delete a certificate:

1. From the **Certificate Management** page, select the appropriate certificate from the table list.
2. Click **Delete**.
3. Click **OK** to delete the certificate.

The certificate is deleted from the database and no longer appears in the table listing.

2.2.4.1.7 Generate a Certificate Report

Perform the following procedure to generate a certificate report:

1. From the **Certificate Management** page, select the certificate for which you want to create a report.

> **Note**
>
> To select multiple server groups, press and hold **Ctrl** as you click to select specific rows. Alternatively, if no servers are selected then all server groups appear in the report.

2. Click **Report**.
3. Click **Print** to print the report, or click **Save** to save a text file of the report.

2.2.4.1.8 Exporting Certificates

Perform the following procedures to export certificates:

1. From the **Certificate Management** page, select one or more certificate you want to export.

   If no certificates are selected, then all of the configured certificates shall be exported.
2. Click **Export**.
3. Select the appropriate action presented in the Open File screen.

   Depending on the action selected, the file opens in the preferred application or is saved to the local workstation.

2.2.5 Authorized IPs

To view Authorized IPs, From the **Access Control**, click **Authorized IPs**.

IP addresses that have permission to access the **GUI** can be added or deleted on the Authorized IPs page. If a connection is attempted from an IP address that does not have permission to access the GUI, a notification appears on the GUI.

> **Note**
>
> This feature cannot be enabled until the IP address of the client is added to the authorized IP address table. You must add the IP address of your own client to the list of authorized IPs first before you enable this feature.

2.2.5.1 Authorized IPs Fields

The following table describes the fields of the Authorized IPs:

Table 2-38 Authorized IPs Fields

Fields	Description
IP Address	IP address with permission to access the GUI.
Comments	Users can insert additional information (up to 64 characters) to describe the server, or the field can be left blank.

2.2.5.2 Insert Authorized IP Addresses

Perform the following procedure to insert the Authorized IP Addresses:

> **Note**
>
> This procedure pertains to GUI access only.

1. From the **Authorized IPs** page, click **Insert**.
2. Enter an IP address in the **IP Address Value** field.
3. Optional: Enter a comment in the **Comment Value** field.
4. Perform one of the following:
   - Click **OK**.
     The Authorized IP page reappears, and the IP address you entered is visible in the table. The IP address is authorized to access the GUI.
   - Click **Apply**.
     The IP address that you entered is authorized to access the GUI. You can now enter additional IP addresses. Click **Apply** after each IP address entered. When you have finished entering IP addresses, click **OK** to return to the Authorized IPs page. All of the IP addresses you entered are visible in the table.

2.2.5.3 Deleting Authorized IP Addresses

Perform the following procedure to delete Authorized IP Addresses:

1. From the **Authorized IPs** page, select the IP address you want to delete from the Authorized IP Address table.

   > **Note**
   >
   > Do not delete your own IP address. If you delete your own IP address, you lose access to the GUI. If this happens, contact the Customer Care Center.

2. Click **Delete**.
3. Click **OK**.

   This deletes the IP address from the table, and the IP address no longer has permission to access the GUI when the feature is enabled.

You have now completed this procedure.

2.2.5.4 Enabling Authorized IPs Functionality

Enabling Authorized IPs functionality prevents unauthorized IP addresses from accessing the GUI.

Perform the following procedure to enable the Authorized IPs functionality:

> **Note**
>
> This pertains only to GUI access.

1. From the **Authorized IPs** page, select the Info box in the upper left corner of the screen.

> **Note**
>
> This feature cannot be enabled until the IP address of the client is added to the authorized IP address table. You must add the IP address of your own client to the list of authorized IPs first before you enable this feature.

2. Click **Enable**.

   The Authorized IPs functionality is enabled. Only authorized IPs can access the GUI.

2.2.5.5 Disabling Authorized IPs Functionality

Perform the following procedure to disable the Authorized IPs Functionality:

> **Note**
>
> This pertains only to GUI access.

1. From the **Authorized IPs** page, select the Info box in the upper left corner of the screen.
2. Click **Disable** to disable the Authorized Ips.

2.2.6 SFTP Users Administration

To View SFTP Users page, from the **Access Control**, click **SFTP Users**.

The SFTP Users feature adds the ability to configure remote access accounts for SFTP access, and provides restricted access through those accounts to the export area of the file management directory to use for exporting MEAL data.

2.2.6.1 SFTP User Fields

The following table describes the fields on the SFTP Users page:

Table 2-39 SFTP User elements

Element	Description
Username	The SFTP user name account. Range = Lowercase alphanumeric (a-z, 0-9) string between 5 and 32 characters long.
Permissions	The permissions associated with the account. The user can only access export files that match the assigned permission. Valid permissions are: • Measurements, Alarms, and Events • Security Logs • Measurements, Alarms, Events, and Security Logs
Comment	Comments about the SFTP user. Range = A string between 1 and 100 characters long.
SSH Key	The **SSH** public key to be used with this account.

2.2.6.2 Insert an SFTP User

Perform the following procedure to Add a new SFTP User:

1. From the **SFTP Users** page, click **Insert**.
2. Enter a **Username** to be used to identify the SFTP User.

   For more information about any field on this page, see Table 2-39.
3. Select the **Permissions** to be associated with the SFTP user.
4. Enter a **Comment**, if necessary, about the SFTP User.
5. Enter the **SSH Key** to be used with the account.
6. Click **OK** to submit the information and return to the SFTP Administration page, or click **Apply** to submit the information and continue entering additional data.

The new SFTP user information and related settings are saved and activated.

2.2.6.3 Configuring SFTP User information

Perform the following procedure to update SFTP user information:

1. From the **SFTP Users** page, select the appropriate user from the list.
2. Click **Edit** and update the user information.
3. Click **OK** or **Apply** to submit the information.

The SFTP user changes are saved and activated.

2.2.6.4 Deleting an SFTP User

Perform the following procedure to Delete an SFTP User:

1. From the **SFTP Users** page, select the appropriate user name from the list.
2. Click **Delete**.
3. Click **OK** to delete the user.

The user is deleted from the database and no longer appears in the listing.

2.2.6.5 Generating an SFTP User report

Perform the following procedure to generate an SFTP User Report:

1. From the **SFTP Users** page, click **Report**.

   > **Note**
   >
   > It is optional to select a specific user, as all users appear in the Users Report.

   The SFTP Users report is generated. This report can be printed or saved to a file.
2. Click **Print** to print the report.
3. Click **Save** to save the report to a file.

2.2.6.6 Showing SFTP User Logs

Perform the following procedure to generate a SFTP User Access log:

1. From the **SFTP Users** page, select a user from the list.
2. Click **Show Logs**.

   The SFTP Users log is generated showing all activity for the user. This report can be printed or saved to a file.
3. Click **Print** to print the report.
4. Click **Save** to save the report to a file.

2.2.6.7 Updating SFTP User Password Settings

Perform the following procedure to update SFTP User Password Settings:

1. From the **SFTP Users** page, select the appropriate user from the list.
2. Click **Change Password**.
3. Enter the new SFTP password for this user. Confirm the entry by retyping the password.

   > **Note**
   >
   > Passwords must contain at least three of the following characters to be valid: numeric, lowercase letters, uppercase letters, or a special character.

4. Click **Continue**.

The SFTP user password changes are saved and activated.

2.3 Software Management

The Software Management options allow you to administer:

- Versions
- Upgrade

2.3.1 Versions

To view the Versions, from the **Software Management**, click **Versions**.

The Versions page is a report that displays the software release levels for the server. The report can be viewed on the screen, printed, or saved to a file.

2.3.1.1 Printing and Saving the Software Versions Report

Following is the procedure to print or save the Software Versions Report:

1. From the **Versions** page, click **Print** to print the report.

   A Print window appears. Click **OK**.
2. Click **Save** to save the report to a file.

2.3.2 Upgrade

To view Upgrade, from the **Software Management**, click **Upgrade**.

The Upgrade menu choice is only available on the NOAM. It includes server, Server Group (SG) and Entire Site (ES) options. in this context, site refers to this grouping (SO SG plus all replication children MP SGs). This additional automation prevents having to initiate a server group upgrade on the SO group followed by additional form submissions for each MP group.

> **Note**
>
> In this context, site refers to the topological grouping of the SO SG and all its replication children MP SGs, regardless of geographic location of the servers. For example, the site upgrade includes a spare SOAM, which is a member of SO SG, but is in another geographic location.

Use the Upgrade page to perform software upgrades and related functions on in-service servers in a network. In addition to initiating and accepting upgrades, this page provides to ability to perform backups, health checks (checkups), and reporting. Upgrade functionality is available on a server, SG, or site basis and supports pause, restart, and cancellation functionality.

There are several situations where the SG or site upgrade task automatically pauses or stops itself to allow you to perform recovery actions. You can then restart or cancel the overall upgrade. It is also possible to restart SG or site upgrade on a partially upgraded SG or site. When an SG or Site upgrade is paused or canceled, any currently running upgrades (from a TPD standpoint) continue until they complete or fail. Servers that are in the Pending state are not started.

SG upgrades automatically pause in the following situations:

- A server upgrade fails.
- A response of false from *canServerUpgrade()* function is received when the server requires an upgrade pre-check.
- A server upgrade is cancelled after being hung.

A SG upgrade can be ended by cancelling the SG upgrade from the **Status & Manage**, and then **Tasks**, and then **Active Tasks** page. The SG upgrade can then be restarted using the **Administration**, and then **Software Management**, and then **Upgrade** page. A site upgrade can be ended by cancelling the site upgrade from the **Status & Manage**, and then **Tasks**, and then **Active Tasks** page. The site upgrade can then be restarted using the **Administration**, and then **Software Management**, and then **Upgrade** page.

The server group upgrade provides the ability to upgrade all servers in a server group by filling out a form with options such as Mode and Availability, selecting an ISO, and clicking **OK** to initiate the upgrades. From that point, long running tasks on the NOAMP manage the upgrade of each server in the group, ensuring that enough servers in the group remain active to handle ongoing system management and subscriber traffic. While the servers are upgrading, you can view the progress of each server's upgrade. You can start an automated server group upgrade on multiple server groups with additional GUI actions.

> **Note**
>
> The instructions in this section provide a generic framework for upgrades. You should always defer to the application specific upgrade instructions based on each release.

> **Caution**
>
> We recommend you contact My Oracle Support and inform them of your upgrade plans before beginning this or any upgrade procedure. Before upgrading, go to the My Oracle Support website to acquire the correct upgrade procedure for your product and review any relevant Technical Service Bulletins (TSBs).

2.3.2.1 Upgrade Fields

The Upgrade Fields describes the fields on the Upgrade page. This page supports Automated Site Upgrade, as well as Automated Server Group (ASG) and server upgrade.

> **Note**
>
> There can be two tabs on this page. The following tab labels are the examples: **NO_SG** and **SO_SGx**. The fields in Table 2-40 list all fields on both tabs. Only tabs with servers after filtering is applied are displayed. The SOAM server groups indicate which sites are eligible for the site upgrade. **Entire Site** is only available on the **SO_SGx** tab.

The grid reflects the following rules:

- One row of tabs or two rows of tabs is displayed, depending on the selected server group.
- The top (or only) row is always the OAM server groups (NOAM and SOAm). Multiple NOAM and SOAM server group tabs can exist in the top row.
- The second row displays when an SOAM group is selected, and it contains an **Entire Site** tab, and a tab for each SOAM and MP server group in the SOAM group's administrative domain. An administrative domain is a server group and its replication children SGs, which all share a topological relationship regardless of geographic location.
- When the entire Site tab is selected, the grid displays rows of server groups.
- The single row of tabs that is initially displayed shows the NOAM server groups followed by the SOAM server groups. The SOAM server groups indicate sites that are eligible for site upgrade.
- When a SG tab is selected, the grid displays rows of servers (as with ASG).
- If filtering has been applied, the **Entire Site** tab only displays when the result set for the site contains more than one server group.

> **Note**
>
> The NOAM server group is not eligible for Automated Site Upgrade. When you select a SOAM server group from **Entire Site** on the **SO_SGx** tab, you can perform site upgrade on all servers in the SOAM's administrative domain.

Table 2-40 Upgrade Fields

Field	Description
Hostname	Lists the Hostname of the server.
Upgrade State	Displays the state that allows for graceful upgrade of server without degradation of service. Based on HA Status and Application State. Available states are: • Backup Needed • Backup in Progress • Ready • Pending • Upgrading • Accept or Reject • Failed • Backout Ready
Server Status	Overall server status. Selecting the link displays the full Server Status report for the server.
OAM HA Role	The OAM HA role for this server. See HA Status Fields for more information.
Appl HA Role	The application HA role for the server.
Server Role	Role of this server in the system. Role is configured on the **Configuration**, and then **Server** page.
Network Field	Lists the Network Field to which the server belongs.
Function	Function of this server in the system. NOAMP and SOAM function are assigned on the **Configuration**, and then **Server** page. For message processors, function is assigned on the related configuration page.
Upgrade Method (Entire Site)	The method to be used for this server group's upgrade. Methods are associated with SG functions by the application.
Server Upgrade States (Entire Site)	A list of the number of servers in each state in the server group, for example, Ready (1/2), Upgrading (1/2).
Server Application Versions (Entire Site)	A list of the number of servers in each state in the server group, for example, 7.2.0_72.41.8 (1/2), 7.2.0_72.41.9 (1/2).
Application Version	Application version currently installed and running on each server.
Upgrade ISO	The ISO used for the upgrade.
Start Time	The time upgrade started.
Status Message	The current upgrade status message.
Finish Time	The time upgrade finished.

Table 2-40 (Cont.) Upgrade Fields

Field	Description
Entire site	• When the **Entire Site** tab is selected, some buttons are disabled because they only apply to selected server row(s), not selected SG row(s). These include **Backup** and **Checkup**. These are available when you are in an SG tab (using AW 6.0 ASG). • On the **Entire Site** tab, **Accept** is replaced with **Site Accept**. This allows you to accept all upgrades in the site by Server Group, much like **Backup All** and **Checkup All**. • When the **Entire Site** tab is selected, **Auto Upgrade** is changed to **Site Upgrade**. Clicking **Site Upgrade** generates a report of the planned upgrade order for all the servers in the site. You can then select an ISO and initiate the upgrade. If the site upgrade is already in progress, the form shows the status of each SG and each server. **Note**: If filtering has been applied, the Entire Site tab only displays when the result set for the site contains more than one server group.
Backup	Initiates backups on a server and server group basis based on the active server group tab.
Backup All	Initiates backups on a network field basis.
Checkup	Initiates upgrade health checks on a server and server group basis based on the active server group tab. This is enabled for all server group tabs. This is disabled on the active **Entire Site** tab.
Checkup All	Initiates upgrade health checks on a network field basis.
Upgrade Server	Enabled when one or more rows within the active server group tab are selected and the server is in the Ready state.
Upgrade Server or **Auto Upgrade** from the NO_SG tab	Initiates a server upgrade on servers with the action of upgrade. The form also allows the user to restart site upgrade on a partially upgraded site. **Note**: Upgrade is initiated according to the auto-upgrade policy on servers with an action of Auto Upgrade.
Site Upgrade or **Upgrade Server Group** from the Entire Site tab	Initiates a site upgrade. The form also allows the user to restart site upgrade on a partially upgraded site.
Site Upgrade	Moves to a form displaying the planned upgrade order for all the servers in the site. You can then select an ISO and initiate the upgrade. If the site upgrade is already in progress, the form shows the status of each SG and each server.
Site Accept	Initiates site accepts on a server group basis. This form is available only from the **Entire Site** tab, and it applies to servers in the current site only.

Table 2-40 (Cont.) Upgrade Fields

Field	Description
Auto Upgrade	Initiates the upgrade. Two upgrade modes are available; when no servers are selected, the button reflects **Auto Upgrade** and initiates a server group automated upgrade based on the active server group tab. When one or more servers are selected, the button toggles to **Upgrade Server** and initiates an upgrade only on the selected servers.
Accept	Accept upgrade on the selected servers in the active server group tab.
Report	Generates a server report. Two report options are available; when no servers are selected, a report is generated for all servers in the server group. When one or more servers are selected, a report is generated only for the selected servers. When the **Entire Site** tab is displayed, the report contains information about the currently selected site. The report begins with the overall site upgrade status. If a site upgrade is in progress, the start time and running time are included. After this, the report includes the server groups in their upgrade sets (which shows the order of the site upgrade, whether in progress or planned). Each server group's upgrade method is also shown. The report also lists each server and its current status (Backup Needed, Ready, Upgrading, Failed, and so on) and its software version.
Report All	Generates a report for all servers in all server groups. When the **Entire Site** tab is displayed, this report shows all ongoing site upgrades in the topology (in case multiple sites are being upgraded simultaneously).

2.3.2.2 Overview of the Upgrade Procedure

The information in this section provides a general overview of the upgrade process. The user should always defer to the application specific upgrade instructions based on each release.

Perform the following general procedure when upgrading a server:

1. Backup your server.
2. Upload and verify the ISO image. (Refer to the sections on Uploading a Local File, Deploying an ISO file and Validating an ISO file.)
3. Initiate an upgrade.
4. Accept the upgrade.

> **Note**
>
> Contact My Oracle Support and inform them of your upgrade plans before beginning this or any upgrade procedure. Before upgrading, go to the My Oracle Support website to acquire the correct upgrade procedure for your product and review any relevant Technical Service Bulletins (TSBs).

2.3.2.3 Overview of the Automated Site Upgrade Procedure

The information in this section provides a general overview of the automated site upgrade process. Always refer to the application specific upgrade instructions based on each release.

Perform the following general procedure when performing an automated site upgrade:

1. Upgrade the NO server group serially (one at a time) to ensure at least one NO is always active to provide OAM&P.
2. Upgrade the DRNO server group. Note that some products upgrade these first.
3. Select an SO network field and upgrade it as follows:
   - The SO servers can either be serial or bulk (non-active at once, then active) as specified in **General Options**.
   - Upgrade the MP servers using desired availability settings. The code uses the following rules (some of which can be specified by the user):
     - Servers are upgraded in parallel as long as the number of active, non-upgrading servers exceeds the user specified minimum availability.
     - Servers can be upgraded serially instead.
     - Servers are upgraded in HA order meaning Spare servers followed by Observer, Stby, and Active. An additional application-level customization allows certain servers to be upgraded last, once the rest of their group has upgraded.
4. Repeat step 3 until all SO network sites are upgraded (thereby completing upgrade of the entire network).
5. Accept the upgrade.

> **Caution**
>
> Contact My Oracle Support and inform them of your upgrade plans before beginning this or any upgrade procedure. Before upgrading, go to the My Oracle Support website to acquire the correct upgrade procedure for your product and review any relevant Technical Service Bulletins (TSBs).

2.3.2.4 Backing Up Full Configuration Before an Upgrade

It is recommended that you back up your server's full configuration before an upgrade. The configuration backup of a server runs in the background, enabling you to continue working while a backup is in process.

Two options are available to the user to perform a backup. The option **Backup** allows backups on a server and server group basis. The option **Backup All** allows backups on a network element basis.

2.3.2.4.1 Backing Up Using the Backup Option

Servers must be in an appropriate upgrade state before initiating a backup. The appropriate upgrade states are **Backup Needed** or **Ready**.

> **Note**
>
> **Backup** is not available on the **Entire Site** tab.

Perform the following procedure to initiate a server backup:

1. From the **Upgrade** page, select the appropriate server group tab that contains the target servers.

   Target servers are displayed in the work area.
2. Optional: If you would like to selectively back up individual servers, highlight the servers from the listing.

   > **Note**
   >
   > If you would like to back up the entire server group, leave all servers unselected.
3. Click **Backup**.
4. On the Upgrade [Backup] form, click **Exclude** (to perform a full backup of the COMCOL run environment, excluding the database parts specified in the files) or **Do Not Exclude** (to perform a full backup of the COMCOL run environment without excluding any database parts, which is a longer procedure and produces larger backup files).
5. Click **OK** to run the back up procedure.

The backup process saves server information in the background for either all the servers that are available for backup, or just for the selected servers.

2.3.2.4.1.1 Upgrade Backup Fields

The following table describes the fields on the Upgrade Backup form.

To view the Upgrade Backup Fields, from the **Upgrade** page, click **Backup**.

Table 2-41 Upgrade Backup Fields

Field	Description
Top Section	
Hostname	Hostname of the server.
Action	The action available during the backup. This field is not editable. Valid values include: • Back up • No back up
Current application version	The current version of the application.
Full Backup Options	

Table 2-41 (Cont.) Upgrade Backup Fields

Field	Description
Database parts exclusion	Valid values are: • **Exclude** - performs a full backup of the COMCOL run environment, excluding the database parts specified in the files in the exclude_parts.d directory. • **Do Not Exclude** - performs a full backup of the COMCOL run environment without excluding any database parts, which is a longer procedure and produces larger backup files in the filemgmt directory.

2.3.2.4.2 Backing Up Using the Backup All Option

Perform the following procedure to create a full backup on a Network Field basis:

1. From the **Upgrade** page, click **Backup All**.
2. On the Upgrade (Backup All) form all Networks Fields are selected for backup by default. Deselect any Network Fields that do not require a backup or alternatively, deselect **Action** and select any Network Fields required to be backed up. Take notice of the server list for all selected Network Fields. Confirm that all target servers are presented. If any target servers are not presented, click **Cancel** and review the server status.
3. In the **Full backup options** pane of the Upgrade (Backup All) form, click **Exclude** (to perform a full backup of the COMCOL run environment, excluding the database parts specified in the files) or **Do Not Exclude** (to perform a full backup of the COMCOL run environment without excluding any database parts, which is a longer procedure and produces larger backup files).
4. Click **OK** to run the back up procedure.

The backup all process saves server information in the background for all servers of a selected Network Field group that are in the proper state for backup.

2.3.2.4.2.1 Upgrade Backup All Fields

The following table describes the fields on the Backup All:

Table 2-42 Upgrade Backup All Fields

Network Fields	Description
Top Section	
Network Field	Name of the Network Field
Action	This action defines which Network Field is included in the backup. By default, all are selected. To limit the backup to a select group, deselect the Action checkbox and select which Network fields are to be included in the backup.
Server(s) in the proper state for backup	Defines which servers in each Network Field are in a proper state for backup.
Full Backup Options	

Table 2-42 (Cont.) Upgrade Backup All Fields

Network Fields	Description
Database parts exclusion	Valid values are: • **Exclude** - performs a full backup of the COMCOL run environment, excluding the database parts specified in the files in the exclude_parts.d directory. • **Do Not Exclude** - performs a full backup of the COMCOL run environment without excluding any database parts, which is a longer procedure and produces larger backup files in the filemgmt directory.

2.3.2.5 Performing Upgrade Health Checks

Two buttons are located on the Upgrade administration page: **Checkup** and **Checkup All**. These let you perform upgrade health checks at various stages of the upgrade process. You can perform health checks on one or more selected server or servers, an entire server group, or more encompassing, on a network field basis. Additionally, the upgrade health check functionality is divided into four types: Advance Upgrade, Early Upgrade, Pre-Upgrade, and Post-Upgrade.

> **Note**
>
> Depending on the application, any combination of the four types might be available presented. If only three types are available on the Upgrade [Checkup] or Upgrade [Checkup All] form, that means that the application supports those three types only.

See Upgrade Fields for more information about **Checkup** and **Checkup All**.

> **Note**
>
> Some applications might not support health checks using **Checkup** and **Checkup All**. If your application does not to support this functionality, the buttons are on the Upgrade page, but they are disabled. You will not be able to navigate to the checkup forms.

> **Caution**
>
> Depending on the application, the upgrade health check buttons might have different functionality than what is described in this content. Upgrade health checks should only be run as directed in the application upgrade guide for your specific release.

2.3.2.5.1 Upgrade health check using the checkup option

Perform the following procedure to initiate an upgrade health check on an individual server or per server group basis.

> **Note**
>
> The target ISO image file must be deployed before initiating a pre-upgrade health check. See Deploy an ISO File for more information. Additionally, a health check cannot be started on a server group or any individual servers in that group if another health check for that group is running. For example, a running network field based health check using the **Checkup All** option.

1. From the **Upgrade** page, select the appropriate server group tab that contains the target servers.
2. Optional: If you would like to selectively run a health check on individual server, highlight the servers from the list.

> **Note**
>
> To perform a health check on all servers in a server group, do not select any servers.

3. Click **Checkup**.
4. Select the appropriate **Checkup Type** using the options presented in the Health Check Settings pane.
5. Depending on the checkup type, you might be required to select the appropriate ISO image file from the Upgrade ISO list. Table 2-43 lists the options.

Table 2-43 Upgrade ISO Options

Option	Description
Advance Upgrade	The user may optionally choose the target ISO image file from the Upgrade ISO list.
Early Upgrade	The user may optionally choose the target ISO image file from the Upgrade ISO list.
Pre-Upgrade	The user is required to choose the target ISO image file from the Upgrade ISO list.
Post-Upgrade	No image selection is required. The ISO list is disabled.

6. Click **OK**.

The system initiates the health check. The user can monitor the progress of the task by selecting the **Tasks** list in the page control area. Once the task is complete, the user can access the results file either by selecting the active link under the details column in the **Tasks** list or by navigating to **Status & Manage**, and then **Tasks**, and then **Active Tasks**, selecting the appropriate server tab, and selecting the active link in the result details column. Either of these methods displays the Files page. See Files for information about managing files.

2.3.2.5.1.1 Upgrade Health Check Checkup Option Fields

The following table describes the fields of the Upgrade Checkup page:

Table 2-44 Upgrade Checkup Fields

Field	Description
Top Section	
Hostname	Hostname of the server
Action	The action available during the upgrade health check. This field is not editable. Valid value is: • Health Check
Status	The current status of the server includes: • OAM Max HA Role • Application Max HA Role (MP server groups only) • Network Field • Application Version
Health Check Settings	
Checkup Type	The upgrade health check type choices include: • Advance Upgrade • Early Upgrade • Pre-Upgrade • Post-Upgrade
Upgrade ISO	A list of available upgrade ISO media files. **Note**: This field is disabled for upgrade health checks of the type Post-Upgrade.
Submit Buttons	
OK	Submits the information to the server, and if successful, returns to the View page for that table.
Cancel	Returns to the View page for the table without submitting any information to the server.

2.3.2.5.2 Upgrade health check using the checkup all option

Perform the following procedure to initiate an upgrade health check on a network field basis:

> **Note**
>
> The target ISO image file must be deployed before initiating a pre-upgrade health check. For more information, see Deploy an ISO File for more information. Additionally, a health check cannot be started if another health check is running. For example, a running health check on a server group or any individual servers using the **Checkup** option.

1. From the **Upgrade** page, click **Checkup All**.
2. Select the target Network Fields using the check boxes presented in the action pane. On the Upgrade [Checkup All] form, all Networks Fields are selected for check up by default. Deselect any Network Fields that do not require a check up or, alternatively, deselect Action and select any Network Fields requiring a health check. Note the server list for all selected Network Fields and confirm that all target servers are presented. If any target servers are not presented, then select **Cancel** and review the server status.
3. Select the appropriate **Checkup Type** using the options presented in the Health Check Settings pane.

4. Depending on the checkup type, you might be required to select the appropriate ISO image file from the Upgrade ISO list. Table 2-45 lists the choices.

Table 2-45 ISO image file options

Option	Description
Advance Upgrade	(Optional) Select the target ISO image file from the Upgrade ISO list.
Early Upgrade	(Optional) Select the target ISO image file from the Upgrade ISO list.
Pre-Upgrade	Select the target ISO image file from the Upgrade ISO list.
Post-Upgrade	No image selection is required. The ISO list is disabled.

5. Click **OK**.

The system initiates the health check. The user can monitor the progress of the task by selecting the **Tasks** list in the page control area. Once the task is complete, the user can access the results file either by selecting the active link under the details column in the **Tasks** list or clicking **Status & Manage**, and then **Tasks**, and then **Active Tasks**, selecting the appropriate server tab, and selecting the active link in the result details column. Either of these methods displays the Files page. See Files for information about managing files.

2.3.2.5.2.1 Upgrade health check checkup all option Fields

The following table describes the Upgrade health check checkup all option Fields:

Table 2-46 Upgrade Checkup All Fields

Fields	Description
Top Section	
Network Field	Name of the Network Field.
Action	Defines which Network Fields are included in the checkup. By default, all are selected. To limit the checkup to a select group, deselect the Action checkbox and select which Network Fields are to be included in the checkup.
Server(s)	Defines the servers in each Network Field. This does not imply that each server is in the proper upgrade state to initiate a health check.
Health check options	
Checkup Type	The upgrade health check type. Option choices include: • Advance Upgrade • Early Upgrade • Pre-Upgrade • Post-Upgrade
Upgrade ISO	A list of available upgrade ISO media files. **Note**: This field is disabled for upgrade health checks of the type Post-Upgrade.
Submit Buttons	
OK	Submits the information to the server and, if successful, returns to the View page for that table.

Table 2-46 (Cont.) Upgrade Checkup All Fields

Fields	Description
Cancel	Returns to the View page for the table without submitting any information to the server.

2.3.2.6 Initiating Upgrades

You can choose to upgrade individual servers, server groups, or perform an automated upgrade for the entire site.

> **Note**
>
> Upgrade health checks, including health checks of the type **Early Upgrade** and **Pre-Upgrade**, should only be run as directed in the application upgrade guide for your specific release.

2.3.2.6.1 Individual Upgrade Server

Perform the following procedure to initiate an individual upgrade server:

> **Note**
>
> The **Upgrade** menu choice is only available on the NOAM.

1. From the **Upgrade** page, select one or more **Hostname(s)** on the **NO_SG** tab view.
2. Click **Upgrade Server**.

   The displayed GUI page shows configuration information about the selected Hostname.
3. Select the appropriate ISO media file from the **Upgrade ISO** list.
4. Click **OK**.

The system initiates the upgrade.

2.3.2.6.1.1 Initiate Upgrade Server Fields

The following describes the fields on the Initiate Upgrade form for individual server upgrades:

Table 2-47 Initiate Upgrade Fields (Individual Servers)

Field	Description
Top Section	
Hostname	Hostname of the server
Action	The action available during the upgrade. This field is not editable. Valid value is: • Upgrade

Table 2-47 (Cont.) Initiate Upgrade Fields (Individual Servers)

Field	Description
Status	The current status of the server. Includes: • OAM Max HA Role • Appl Max HA Role (MP server groups only) • Network Field • Application Version
Upgrade Settings Section	
Upgrade ISO	A list that contains the file names of available ISO images.

2.3.2.6.2 Server Group Automated Upgrade

Perform the following procedure for an automated upgrade for the entire server group:

1. From the **Upgrade** page, leave all servers unselected.
2. Click **Auto Upgrade**.

   The **Initiate Upgrade** form appears.
3. Select the appropriate **Mode** from the available listing.

   For information on the available upgrade settings, see Table 2-48.
4. For MPs only, select the desired **Availability** from the list.

   In serial upgrade mode **Availability** is not an option.
5. Select the appropriate ISO image from the **Upgrade ISO** list.
6. Click **OK**.

The system initiates the upgrade.

2.3.2.6.2.1 Initiate Server Group Upgrade Fields

The following table describes the fields on the automated Server Group upgrade.

> **Note**
>
> For OAM server groups, HA groups are created according to the OAM HA Role of the server. The non-active HA role order is spare, observer, and standby. For MP server groups, HA groups are created according to the Application HA Role of the server. The HA role order is spare, observer, standby and active.

The options in the Upgrade Settings section vary by server group type and are listed in Table 2-48.

Table 2-48 Initiate Upgrade Fields (Server Group)

Field	Description
Top Section	
Hostname	Hostname of the server.

Table 2-48 (Cont.) Initiate Upgrade Fields (Server Group)

Field	Description
Action	The action available during the upgrade. This field is not editable. Valid values include: • No upgrade • Upgrade • Auto Upgrade
Status	The current status of the server. Includes: • OAM Max HA Role • Appl Max HA Role (MP server groups only) • Network Field • Application Version
Upgrade Settings Section	
Upgrade ISO	A list that contains the file names of available ISO images.
Mode	The server group upgrade mode. Valid values are: • Bulk - Upgrades all non-active OAM servers. For MPs only, upgrades servers according to availability setting in HA order. • Serial - Upgrades individual servers sequentially in HA order. • Grouped Bulk - Upgrades all non-active OAM servers by HA groups. For MPs only, upgrades servers in HA groups according to the availability setting.
Availability	For MPs only. A list that specifies the desired percent availability of the servers in a server group during a bulk upgrade. Selecting **None** leads to all servers with an Action status of Auto Upgrade being unavailable.

2.3.2.6.3 Automated Site Upgrade

Perform the following procedure to initiate an automated upgrade for an entire site:

1. From the **Upgrade** page, select the SO SG tab corresponding to the site to be upgraded.
2. Select an **Entire Site**.
3. Click **Site Upgrade**.
4. Select an ISO.
5. Click **Site Accept** when ready to accept the upgrade. This action might need to take place based on site configuration or testing requirements, including time-sensitive requirements.

The system initiates the site upgrade.

2.3.2.6.3.1 Initiate Site Upgrade Fields

The following table describes the fields on the Site Initiate Upgrade form for an automated Site upgrade:

Table 2-49 Site Initiate Upgrade Fields

Field	Description
Cycle	Displays the upgrade cycle in which the indicated servers will be upgraded.
Action	The configured upgrade type (depends on the selected ISO).
Server Group	Displays the server groups affected by the upgrade cycle.
Server	Displays the servers included in the upgrade (including Release).
Function	Displays the function of the server group. The function is provisioned by the application.

2.3.2.7 Accepting an Upgrade

After the server has successfully upgraded, run all health checks specified in the application upgrade guide. Accepting the upgrade confirms that the upgrade is correct and signals the end of the upgrade process.

> **Note**
>
> - Upgrade health checks, including health checks of the type Post-Upgrade, should only be run as directed in the application upgrade guide for your specific release.
> - Once an upgrade is accepted, the backup configuration files are deleted and you cannot backout. It is not necessary to accept an upgrade immediately after completion. The decision may be made to test or soak the upgraded system before acceptance.

Perform the following procedure to complete an upgrade:

1. From the **Upgrade** page, select the target servers from the list.
2. Click **Accept** to complete the upgrade.

2.3.2.8 Generating an Upgrade Report

Perform the following procedure to generate a server report:

1. From the **Upgrade** page, generate a report using one of the following options:
   - To generate a report for specific servers in a server group, click to select the server for which you want to create a report, and then click **Report**.

     > **Note**
     >
     > You can also use **Report** for a site upgrade report on the **Entire Site** tab.

   - To generate a report for all servers in a server group, do not select any server in the group and click **Report**.
   - To generate a report for all servers in all server groups, click **Report All**.

2. Click **Print** to print the report, or click **Save** to save a text file of the report.

2.4 Remote Servers

To view Remote Servers, from the **Access Control**, click **Remote Servers**.

The remote servers options allow you to administer:

- LDAP Authentication
- SNMP Trapping
- Data Export
- DNS Configuration

For more information, see each individual section.

2.4.1 LDAP Authentication

To view the LDAP Authentication, from the **Remote Servers**, click **LDAP Authentication**.

The following information is necessary to configure the authentication of LDAP servers. This includes server fields and procedures on configuring, updating, viewing, and deleting server information.

Single sign-on (SSO) can be configured to with or without a shared LDAP authentication server. If the LDAP server is configured, SSO can be configured for remote authentication on an account basis. The default user account (guiadmin) cannot be configured to use remote (LDAP) authentication.

If multiple LDAP servers are configured, the first available server in the list is used to perform the authentication. Secondary servers are only used if the first server is unreachable.

If the user account name has "@" symbol, LDAP Authentication checks for the suffixed domain name in the list of configured LDAP Servers. It then connects to the first available server with a matching domain name to perform the authentication. If this server is not reachable, it proceeds to the next server with a matching domain name.

If the system is not using a DNS server or IP address for the LDAP server, the LDAP server must be added to the etc or hosts file.

2.4.1.1 LDAP Authentication Fields

The table describes the fields of the LDAP Authentication page:

Table 2-50 LDAP Authentication Fields

Field	Description	Data Input Notes
Hostname	Unique case-sensitive name for the server.	Format: Valid IPv4 or IPv6 address or a valid hostname. Format: Case-sensitive alphanumeric [a-z, A-Z, 0-9], period (.) and minus sign (-). The first character must be alpha. Range: 1 to 255-character string

Table 2-50 (Cont.) LDAP Authentication Fields

Field	Description	Data Input Notes
Account Domain Name	Domain name of the LDAP server.	Format: <name>.<tld> (ex. website.com). Range = 1-20 character alphanumeric [a-z, A-Z, 0-9], period (.)
Account Domain Name Short	The short version of the account domain name (for example, WEBSITE).	Must be a capitalized version of the domain name, without the extension. Range = 1-10 character alphanumeric [a-z, A-Z, 0-9]
Port	Port that the LDAP servers can be accessed by on the host machine	Default = 389 Range = Integer with value between 0 and 65535
Base DN	Directory path of the user being authenticated.	Range = 1-100 character alphanumeric [a-z, A-Z, 0-9]
Username	Username used for account DN lookups	Range = 1-256 character alphanumeric
Password	The password of the user DN used for account lookups.	Range: restrictions depend on the LDAP server's settings.
Account Filter Format	User account search filter.	Range = 1-100 character alphanumeric [a-z, A-Z, 0-9] Default = (&(objectClass=user) (sAMAccountName=%s))
Account Canonical Form	Canonical Form for the provided username.	Format: Options Valid choices: • Traditional (e.g., guest) • Backslash (e.g., WEBSITE\guest) • E-Mail (e.g., guest@website.com) Default = Backslash style
Bind Requires DN	Whether the LDAP authentication bind requires a username in DN form.	Default = unchecked (disabled)

2.4.1.2 Insert LDAP Authentication Servers

Perform the following procedure to configure LDAP authentication servers:

1. From the **LDAP Authentication** page, click **Insert** at the bottom of the table.
2. Enter a **Hostname**. This is a user-defined name for the server. The hostname must be unique.
3. Enter an **Account Domain Name**. This is the name of the LDAP server.
4. Enter an **Account Domain Short Name**. This is a shorter version of the domain name, for example, WEBSITE.
5. Enter the **Port** for the LDAP server on the remote machine.

6. Enter the **Base DN**. This is the directory path of the user being authenticated.
7. Enter the **User Name** for the user domain name.
8. Enter the **Password** for the user domain.
9. Enter the **Account Filter Format**. This is the user account search filter.
10. Enter the **Account Canonical Form**. This is the format for the user name listing.
11. Select whether or not to enable **Bind Requires DN**, which determines whether the LDAP required the user name in DN format.
12. Click **OK** to submit the information and return to the LDAP Authentication page, or click **Apply** to submit the information and continue entering additional data.

> **Note**
>
> Once you have entered LDAP servers to the listing, you can order them using the **Move Up** and **Move Down** buttons on the LDAP Authentication screen. The server order in the listing determines the order that servers are tried against.

13. When finished adding LDAP servers, click **Test Server** to validate the server connection. This button enables you to confirm the server settings (by entering the correct user id or password combination) without logging out.

2.4.1.3 Edit LDAP Authentication Servers

Perform the following procedure to update LDAP authentication server information:

1. From the **LDAP Authentication** page, click **Edit** to edit the LDAP server.
2. Click **OK** or **Apply** to submit the information.

The LDAP server changes are saved and activated.

2.4.1.4 Generating an LDAP Authentication Report

Perform the following procedure to generate an LDAP Authentication report:

1. From the **LDAP Authentication** page, click **Report**.

> **Note**
>
> It is optional to select a specific user, as all users appear in the Users Report.

The LDAP Authentication report can be printed or saved to a file.

2. Click **Print** to print the report.
3. Click **Save** to save the report to a file.

2.4.1.5 Deleting an LDAP Authentication Server

Perform the following procedure to delete an LDAP Authentication server:

1. From the **LDAP Authentication** page, select the appropriate host name from the list for the LDAP Authentication server.

2. Click **Delete**.
3. Click **OK** to delete the authentication server.

The server is deleted from the database and no longer appears in the listing.

2.4.1.6 LDAP CLI Authentication Configuration

This section provides information about how to configure LDAP authentication for CLI users on the DSR system using the `ldapCliAuthentication.sh` script. The script allows users to connect to an LDAP server by providing the necessary configurations. Additionally, LDAP authentication can be extended to GUI users by configuring LDAP server in the DSR GUI.

Assumptions

- LDAP Authentication will be applicable only to newly created users. Default users such as `admusr` and `root` remain unaffected by LDAP Authentication.
- Access to `sudo` and other administrative commands for a LDAP user will be dependent on their group permissions. DSR provides a mechanism to add LDAP users to system groups.
- To support both CLI and GUI Authentication for LDAP users, DSR assumes that the same LDAP server is configured on both CLI and GUI.
- In case of only CLI Authentication, configure LDAP for CLI by running the `./ldapCliAuthentication` script as mentioned in the below steps.
- If the system is not using a DNS server or IP address for the LDAP server, the LDAP server must be added to the `/etc/hosts` file. See Configuring /etc/hosts section to update `/etc/hosts` using a script.
- In case of multiple LDAP servers, the base DN must be identical across all the LDAP servers.
- In case of multiple LDAP servers, the first available server in the configuration is used to perform the authentication. Secondary servers are only used if the first server is unreachable.
- LDAP user IDs must not conflict with existing user ids present in the DSR system.
- Users created in LDAP server must have UID between 5 and 32 characters. There is no restriction for username length at DSR CLI level, however this limit should be followed to remain consistent with the username length in DSR GUI.
- The default login attribute for LDAP users is UID and default filter is `objectClass=posixAccount`. These settings are not currently changeable.

Table 2-51 LDAP Authentication

LDAP Authentication	Configuration
LDAP authentication for DSR GUI	LDAP authentication for DSR GUI
LDAP Authentication on DSR GUI as well as CLI	LDAP Authentication on DSR GUI as well as CLI
LDAP Authentication on DSR CLI	LDAP Authentication on DSR CLI

LDAP Authentication for DSR GUI

Perform the following steps to enable LDAP authentication for DSR GUI

1. For configuring LDAP server on GUI, see LDAP Authentication Fields.
2. For configuring LDAP user on the GUI, see Viewing User Account Information.

> **Note**
>
> - These steps are identical to those used in previous DSR releases.
> - GUI Authentication is only supported for A and B-level servers.

LDAP Authentication on DSR CLI

Perform the following steps to enable LDAP Authentication on DSR CLI:

1. Configure `/etc/hosts` following the Configuring /etc/hosts section if required (Optional).
2. Configure LDAP for CLI by running the `ldapCliAuthentication` script as given in the Configuring LDAP Authentication for CLI section.

> **Note**
>
> CLI Authentication is supported for all the servers of the topology.

LDAP Authentication on DSR GUI as well as CLI

Perform the following steps to enable LDAP Authentication on DSR GUI as well as CLI:

1. Configure `/etc/hosts` following the section Configuring /etc/hosts (Optional).
2. Configure LDAP for CLI by running the `ldapCliAuthentication` script as mentioned in the following section Configuring LDAP Authentication for CLI.
3. For configuring LDAP server on GUI, see LDAP Authentication Fields.
4. For configuring LDAP user on the GUI, see Viewing User Account Information.

> **Note**
>
> This shall enable GUI authentication using LDAP on the A and B-level servers and LDAP CLI Authentication on all the servers (A-level/B-level/C-level) of the topology.

2.4.1.6.1 Configuring /etc/hosts

If the system is not using a DNS Server or IP address for the LDAP server, the below utility can be used to update the /etc/hosts file with the LDAP server IP and its hostname. This configuration applies to all servers in the topology.

Perform the following procedure to configure /etc/hosts:

1. Run the below command as `admusr` on the Active NOAM server of the topology. Replace <IP> with the LDAP Server IP and <HOSTNAME> with the LDAP server's hostname. The <IP> and <HOSTNAME> are separated by a space character. In case of multiple entries, provide them in a comma separated format.

Example:

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add-hosts --entries
"<IP> <HOSTNAME>"
```

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add-hosts --entries
"10.10.10.10 ldap-server-1.in,10.10.10.11 ldap-server-2.in"
```

2. The above command will append the below 2 entries in the `/etc/hosts` file on all the servers of the topology.

```
10.10.10.10 ldap-server-1.in
10.10.10.11 ldap-server-2.in
```

> **Note**
>
> The `--add-hosts` utility does not validate the given inputs. It will append the given inputs to the `/etc/hosts` file as provided. Verify the input values before running the command.

2.4.1.6.2 Configuring LDAP Authentication for CLI

Perform the following procedure as `admusr` on the Active NOAM (Network Operations, Administration, and Maintainance) server of the topology. This will enable LDAP Authentication for CLI (Command Line Interface) users on the DSR setup:

1. Run the below command and replace <LDAP_SERVER_URI> with the LDAP Server IP or hostname. In case of multiple URIs, rerun the command with different LDAP URIs. Replace <BASE_DN> with the base DN of LDAP Server.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add --ldap-uri
"<LDAP_SERVER_URI>" --port "389" --base-dn "<BASE_DN>"
```

Example:

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add --ldap-uri "ldap-
server-1.in" --port "389" --base-dn "dc=oracle,dc=com"
```

> **Note**
>
> - To add multiple LDAP Servers, rerun the above command with details of each LDAP server.
> - The `--add` utility supports `--hostnames` flag. This means LDAP configuration can be performed selectively on the specified servers of a topology. For more information about hostnames flag, see Targeting Specific Servers.

2. Verifying LDAP user sync:

- To verify LDAP users are now available on the DSR system, run the below command on the DSR system, replacing <LDAP_USERNAME> with the UID of an existing user on the LDAP server.

  ```
  id <LDAP_USERNAME>
  ```

2.4.1.6.3 Managing User Access and Groups

LDAP authentication applies only to newly created users. Access to `sudo` and other system privileges is determined by group memberships.

Adding LDAP users to system groups

To grant LDAP users access to certain administrative commands, the provided utility allows adding users to system groups:

- The specified groups must exist on the DSR system before adding users.
- The utility supports adding multiple users to multiple groups simultaneously.

To add an LDAP user to a system group, perform the below command. Replace <LDAPUSER> with the username of LDAP user and <GROUP> with the system group name. The below command will add the user <LDAPUSER> to <GROUP> on all the servers of the topology.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add-user-to-group --user
"<LDAPUSER>" --group "<GROUP>"
```

Example:

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add-user-to-group --user
"user1,user2" --group "group1,group2"
```

In this case, user1 and user2 (LDAP Users) will both be added to group1 and group2 for all the servers present in the topology.

> **Note**
>
> LDAP users will only be available on the DSR system after LDAP has been configured by following the previous steps. Until that configuration is complete, user synchronization between the LDAP server and the DSR system will not take place.

Granting sudo privilege to LDAP user

To grant `sudo` permissions to LDAP users, add users to the `admgrp` group present in the DSR system. This can be performed by running the following command on the Active NOAM (Network Operations, Administration and Maintenance of the DSR system as the `admusr`.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add-user-to-group --user
"<LDAPUSER>" --group "admgrp"
```

Avoiding CLI Errors during login

In case the LDAP user is receiving "Permission denied" error logs when logging to the DSR CLI (Command Line Interface), add the user to below `awadm` system group. This can be performed by running the below command on Active NOAM of DSR system as `admusr`.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add-user-to-group --user
"<LDAPUSER>" --group "awadm"
```

The --add-user-to-group utility supports --hostnames flag. For more information, see Targeting Specific Servers.

Removing LDAP users from system groups

The script also provides a utility to remove LDAP users from system groups. This ensures that LDAP users can be removed from existing DSR group membership if required. To remove LDAP users from one or more DSR system groups, run the below command as `admusr` on Active NOAM server.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --remove-user-from-group --
user "<LDAPUSER>" --group "<GROUP>"
```

Example:

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --remove-user-from-group --
user "user1,user2" --group "group1,group2"
```

In this case, user1 and user2 (LDAP users) will be removed from both the system groups, group1 and group2 from all the servers of topology.

> **Note**
>
> This utility can only remove LDAP users from secondary groups, not from their primary group (GID). Primary group is the group which is set when the user is created in LDAP. To modify the primary group, changes must be made directly on the LDAP server.

The --remove-user-from-group utility supports --hostnames flag. For more information on hostnames flag, see Targeting Specific Servers.

2.4.1.6.4 Deleting LDAP Configuration

The script provides a `--delete` flag to remove the LDAP configuration from DSR system. This is useful in case of any misconfigurations or if LDAP Authentication needs to be disabled on the DSR CLI.

To remove LDAP configuration, run the below command as `admusr` user on Active NOAM (Network operations, Administration and Maintenance) server of the DSR topology. The command will remove LDAP configuration from all the servers of the topology.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --delete
```

> **Note**
>
> - The above command **removes only the DSR system's LDAP configuration** and does not delete user accounts from the LDAP server. Any LDAP users previously synced to the DSR will no longer be recognized.
> - If LDAP Authentication is required again, it must be reconfigured entirely using the setup script.

The `--delete` flag does not support the `--hostnames` flag. For more information about `--hostnames` flag, see Targeting Specific Servers.

2.4.1.6.5 Targeting Specific Servers

The `ldapCliAuthentication.sh` script includes a `--hostnames` flag that allows running specific actions such as `--add-user-to-group`, `--remove-user-from-group`, or `--add` only on the specified servers, rather than applying changes to all the servers.

To apply an action only to certain servers, run the below command as `admusr` on Active NOAM (Network Operations, Administration, and Maintenance) server of the DSR topology.

```
/usr/TKLC/appworks/bin/ldapCliAuthentication.sh --add --ldap-uri
"<LDAP_SERVER_URI>" --port "389" --base-dn "<BASE_DN>" --hostnames
'<HOSTNAME1>,<HOSTNAME2>'
```

The above command performs LDAP configuration only on the specified hostnames, without this flag, the action applies to all the servers.

The `--hostnames` flag is supported for all the actions supported by the `ldapCliAuthentication.sh` script except the `--delete` flag.

> **Note**
>
> - Recommended practice: Run commands without the `--hostnames` flag to ensure all servers remain consistent in their LDAP configuration, user permissions, and `/etc/hosts` entries.
> - This flag is primarily provided to accommodate newly added servers to the topology.

2.4.2 SNMP Trapping

To view the SNMP Trapping, from the **Remote Servers**, click **SNMP Trapping**.

The SNMP Trapping page enables the user to configure up to five remote managers to receive traps using the industry standard Simple Network Management Protocol (SNMP). The user can select between versions v2c, v3, or both along with the typical security parameters associated with each of the versions.

> **Note**
>
> The SNMP Manager is provided by the customer.

The SNMP agent is responsible for SNMP managed objects. Each managed object represents a data variable. A collection of managed objects is called a Management Information Base (MIB). In other words, a MIB is a database of network management information that is used and maintained by the SNMP protocol. The MIB objects contain the SNMP traps that are used for alarms; a readable SNMP table of current alarms in the system; and a readable SNMP table of KPI data.

A configuration mode option is provided that allows the user apply a configuration to all servers in the system or only to a specific site.

By default, system-wide traps are sent from the active Network OAM&P server while site-specific traps are sent from active Site OAM servers. Alternately, functionality may be enabled that enables individual servers to send traps, in which case individual servers interface directly with SNMP managers.

> **Note**
>
> 1. Only the Active Network server enables SNMP administration. Global SNMP configuration cannot be modified if the disaster recover site is made Primary. It can be updated once original site becomes Primary again.
> 2. If the customer wants to perform SNMP configuration from DR Active NOAM, then delete the SNMP configuration from primary NOAM before failover to DR.
> 3. If original primary NOAM is not responding (for example, Disaster Recovery), then cleanup SNMP configuration of original primary Active NOAM from database using the command `itrunc SnmpCfg` before performing SNMP configuration on DR Active NOAM. This command must be run on DR Active NOAM console.

The application sends SNMP traps to SNMP Managers that are registered to receive traps. IP addresses and authorization information can be viewed and changed using the SNMP administration page. For SNMP to be enabled, at least one Manager must be set up.

2.4.2.1 SNMP Administration Fields

On the active network OAM&P server, the SNMP Administration page provides for the configuration of SNMP services.

The following table describes the fields of the SNMP Administration page:

Table 2-52 SNMP Administration Fields

Fields	Description	Data Input Notes
Configuration Mode	A configuration mode that determines whether the trap configuration is applied to all servers in the system or only to a specific site.	Format: Option Range: Global or Per-Site

Table 2-52 (Cont.) SNMP Administration Fields

Fields	Description	Data Input Notes
Manager 1	Manager to receive SNMP traps and send requests. It could be a valid IP address or a valid hostname.	Valid IPv4, IPv6 address or a valid hostname. The port is optional, and can be specified by following the network address with a colon (:) and the port number. **Note**: IPv6 address must be encased in square brackets if the port is to be specified, for example, [address]:port. IPv4 addresses are 32 bits, represented in a dot-decimal notation like this: x.x.x.x where each x (called an octet) is a decimal value from 0 to 255. They are separated by periods. For example: 1.2.3.4 and 192.168.1.100 are valid IPv4 addresses. IPv6 addresses are 128 bits, represented in a colon-hexadecimal notation like this: z:z:z:z:z:z:z:z where each z is a group of hexadecimal digits ranging from 0 to ffff. They are separated by colons. Leading zeros may be omitted in each group. "::" can be used (at most once) in an IPv6 address to represent a range of as many zero fields as needed to populate the address to eight fields. So the IPv6 address 2001:db8:c18:1:260:3eff:fe47:1530 can also be represented as 2001:0db8:0c18:0001:0260:3eff:fe47:1530 and the IPv6 address:1 is the same as 0000:0000:0000:0000:0000:0000:0000:0001 Hostname Format: Alphanumeric [a-z, A-Z, 0-9] and minus sign (-) Hostname Range: 1 to 255-character string Port Format: Numeric Port Range: 1 to 65535 **Note**: If the port is not specified, the standard SNMP trap port of 162 is used. Default: No manager is configured.
Manager 2	Manager to receive SNMP traps and send requests. It could be a valid IP address or a valid hostname.	See description for Manager 1.
Manager 3	Manager to receive SNMP traps and send requests. It could be a valid IP address or a valid hostname.	See description for Manager 1.
Manager 4	Manager to receive SNMP traps and send requests. It could be a valid IP address or a valid hostname.	See description for Manager 1.
Manager 5	Manager to receive SNMP traps and send requests. It could be a valid IP address or a valid hostname.	See description for Manager 1.

Table 2-52 (Cont.) SNMP Administration Fields

Fields	Description	Data Input Notes
Enabled Versions	Enables the specified versions of SNMP. Options are: • SNMPv2c: Allows SNMP service only to managers with SNMPv2c authentication. • SNMPv3: Allows SNMP service only to managers with SNMPv3 authentication. • SNMPv2c and SNMPv3: Allows SNMP service to managers with either SNMPv2c or SNMPv3 authentication. This is the default.	Format: List Range: SNMPv2c, SNMPv3, or SNMPv2c and SNMPv3 Default: SNMPv2c and SNMPv3
Traps Enabled	Enables or disables SNMP trap output. The GUI user may selectively disable sending autonomous traps to SNMP managers when alarms are raised. Default is enabled. Access to alarm and KPI tables is not affected by this setting.	Format: Checkbox Range: Enabled or Disabled Default: Enabled
Traps from Individual Servers	Enables or disables SNMP traps from individual servers. If enabled, the traps are sent from individual servers, otherwise traps are sent from the Network OAM&P server.	Format: Checkbox Range: Enabled or Disabled Default: Disabled
SNMPV2c Read-Only Community Name	Configured Read-Only Community Name (SNMPv2c only). Public is the default. This field is required when SNMPv2c is enabled in Enabled Versions. The length of community name should be less than 32 characters.	Format: Alphanumeric [a-z, A-Z, 0-9] Range: 1 - 31 characters Default: snmppublic **Note**: The Community Name cannot equal Public or Private.
SNMPV2c Read-Write Community Name	Configured Read-Write Community Name (SNMPv2c only). Public is the default. This field is required when SNMPv2c is enabled in Enabled Versions. The length of community name should be less than 32 characters.	Format: Alphanumeric [a-z, A-Z, 0-9] Range: 1 - 31 characters Default: snmppublic **Note**: The Community Name cannot equal Public or Private.
SNMPv3 Engine ID	Configured Engine ID (SNMPv3 only). This field is required when SNMPv3 is enabled in **Enabled Versions**. A unique Engine ID value is generated by default.	Format: Hex digits 0-9 and a-f Range: 10 - 64 characters Default: A unique Engine ID value
SNMPv3 Username	Specifies an authentication username (SNMPv3 only). The default is TekSNMPUser. This field is required when SNMPv3 is enabled in Enabled Versions.	Format: Alphanumeric [a-z, A-Z, 0-9] Range: 1 - 32 characters Default: TekSNMPUser

Table 2-52 (Cont.) SNMP Administration Fields

Fields	Description	Data Input Notes
SNMPv3 Security Level	Sets authentication and privacy options (used for SNMPv3 only).	Format: List Range: • No Auth No Priv: Authenticate using the user name. No Privacy. • Auth No Priv: Authenticate using the MD5 or SHA1 protocol. No Privacy. • Auth Priv: Authenticate using the MD5 or SHA1 protocol. Encrypt using the AES or DES protocol. This is the default value. Default: Auth Priv
SNMPv3 Authentication Type	Sets authentication protocol (used for SNMPv3 only).	Format: List Range: SHA-1 or MD5 Default: SHA-1
SNMPv3 Privacy Type	Sets privacy protocol (used for SNMPv3 only). This field is required when SNMPv3 Security Level is set to Auth Priv.	Format: List Range: • AES: Use Advanced Encryption Standard privacy. • DES: Use Data Encryption Standard privacy. Default: AES
SNMPv3 Password	Authentication password set up for the user specified in SNMPv3 Username (used for SNMPv3 only). This field is required when SNMPv3 is enabled and privacy is enabled in SNMPv3 Security Level.	Format: Any characters] Range: 8 - 64 characters

2.4.2.2 Adding an SNMP Manager

Perform the following procedure to Add an SNMP Manager:

1. From the **SNMP Trapping** page, select the desired **Server Group** tab.
2. Click **Insert**.
3. Update the options as appropriate.

   For more information regarding any field on this page, see SNMP Administration Fields.
4. Click **OK** to submit the information.

The new manager and related settings are saved and activated.

2.4.2.3 Configuring SNMP Trap Settings

Perform the following procedure to configure SNMP trap settings:

1. From the **SNMP Trapping** page, select the desired **Server Group** tab.
2. Select the desired SNMP manager configuration by clicking on the line.
3. Click **Edit** to view the settings.
4. Update the options as appropriate.

For more information regarding any field on this page, see SNMP Administration Fields.

5. Click **OK** to submit the information.

The SNMP trap changes are saved and activated.

2.4.2.4 Deleting SNMP Trap Managers or Configurations

Perform the following procedure to remove one or more SNMP trap managers or to delete the configuration:

1. From the **SNMP Trapping** page, select the desired **Server Group** tab.
2. Select the desired SNMP manager configuration by clicking on the line.
3. To delete the entire configuration, click **Delete** and respond to the confirmation dialogue box.

   The entire **SNMP Trapping** configuration is deleted.
4. To delete a one or more managers, click **Edit**.
5. Identify the target manager and remove the IP address or hostname from the **Manager** field.

   For more information regarding this or any field on this page, see SNMP Administration Fields.
6. Click **OK** to apply the settings.

The SNMP configuration changes are saved. If the SNMP manager hostnames and IP addresses are cleared from all Manager fields, the SNMP feature is effectively disabled.

2.4.2.5 Suspending and Resuming SNMP Trap Managers

Perform the following procedure to suspend or resume SNMP trap managers:

1. From the **SNMP Trapping** page, select the desired server group tab.

   The trap managers configured for that server group appear.
2. Select the desired trap manager. Click **Suspend** or **Resume** based on the current state. A dialog box appears requesting confirmation. Confirm the choice.

The SNMP manager state changes.

2.4.3 Data Export

To view the Data Export, from the **Remote Servers**, click **Data Export**.

From the Data Export page you can set an export target to receive exported selected data. Several types of data can be filtered and exported using this feature. For more information about how to create data export tasks, see:

- Exporting Active Alarms
- Exporting Alarm and Event History
- Exporting KPIs
- Exporting measurement reports

For more information, see each individual section.

2.4.3.1 Data Export Overview

To view the Data Export page, from the **Remote Servers**, click **Data Export**.

This feature allows you to create jobs to regularly transfer files or entire directories out of the file management area to a remote server using rsync.

- You can schedule up to 5 jobs to run per site (NO or SO)
- Each job can select one or more file management area subdirectories to include in the job.
- Each job can have its own schedule.
- Jobs can be tracked using the active tasks screen under status and manage. User defined tasks name can be applied for easy tracking. For more information, see Tasks.

> **Note**
>
> You are not limited to one remote server. Up to 5 different remote servers may be utilized.

Data Export pulls from files located in the file management area. Various automated and manual processes use the file management area to store files. These include the following types:

- Active Alarms (export task). See Exporting Active Alarms.
- Alarm and Event History (export task). See Exporting Alarm and Event History.
- Security Log (export task). See Exporting Security Log Files.
- KPIs (export task). See Exporting KPIs.
- Measurement Reports (export task). See Exporting Measurements Reports.
- Backups (depending on the application, this may include provisioning and configuration data).

Types designated as export tasks are scheduled by the user using forms accessed from the applicable page. It is important to understand that when you are scheduling an export task from one of these forms, you are not scheduling an export job to the remote server. You are scheduling an export task to the file management area. For more information, see Files.

Files to be selected for export jobs are sourced from the file management area. Within the file management area, only files in the **export** and **backup** directories are eligible for export. Selecting the scope of files to be exported is accomplished by defining a directory path, starting with the **export** or **backup** directories, and using wildcards to include a desired range of files. A simple search using your favorite search engine explains wildcards and how to use them.

As the names infer, the **backup** directory hosts the backup files and the **export** directory hosts various performance indicators and log files generated by export tasks. For more information, see File Name Formats APDE for a description of directory structure and file name formats. For a practical view of files on your system, navigate from the GUI main menu to the **Status & Manage**, **Files** page and browse the various entries presented under each of the host tabs (this assumes that some export tasks have already been executed).

Table 2-53 presents some examples when defining files to be transferred. Some of these examples may not be practical but convey a point.

Table 2-53 Data Export Examples

Files to Transfer	Description
export/*	Default value. Includes all subdirectories and files from the export directory.
backup/*	Includes all subdirectories and files from the backup directory.
export/*,/backup/*	Includes all subdirectories and files from both the backup and export directories.
export/<hostname>/*	Includes all export subdirectories and files from the specified host.
export/<hostname>/Events/*	Includes all events files from the specified host.
export/*/Events/*	Includes all events files from all hosts.
export/<hostname>/Events/*/*2016??01*	Includes all events files from the specified host and all network fields that occurred on the first day of each month in the year 2016 (The date segment is part of the file naming convention).
export/<hostname>/Alarms/*	Includes all alarm files from the specified host.
export/<hostname>/KPI/*	Includes all KPI files from the specified host.
export/<hostname>/Measurements/*	Includes all Measurements files from the specified host.
export/<hostname>/Seculog/*	Includes all Security Log files from the specified host.

When configuring an export job, the typical scheduling mechanisms are available. These include **Upload Frequency**, **Minute**, **Time of Day**, and **Day of Week**. The minimum export frequency is 15 minutes with the other options being hourly, daily, and weekly. Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out. For example, if you were to select a frequency of daily, only the Time of Day list would be active. The minute list and the Day of Week buttons would be inactive and grayed out. See Data Export Fields for information on the scheduling options.

File synchronization is managed using rsync. Depending on the OS and implementation of the remote server, it may be required to define the path to the rsync binary on the remote server. This is not common but an option is available to do that. Otherwise, this can be left blank. See Data Export Fields for more information.

Several file compression choices are available, these include gzip, bzip2, and none. By default gzip is used. Based on scheduling, the compressed files are temporarily created on the local host once they are transferred to the remote server. The file compression choices can be made from the General Options form. For more information, see General Options Settings.

2.4.3.2 Data Export Fields

The following table describes the fields on the Data Export Fields page.

Table 2-54 Data Export Fields

Field	Description	Data Input Notes
Task Name	Periodic export task name.	Format: Text box Range: Maximum length is 40 characters. Valid characters are alphanumeric, minus sign, and spaces between words. The first character must be an alpha character. The last character must be an alpha character or a number. Default: APDE Remote Server Copy
Task Description	Optional periodic export task description.	Format: Text box Range: Maximum length is 255 characters. Valid characters are alphanumeric, minus sign, underscore, and spaces between words. The first character must be an alpha character. The last character must be an alpha character or a number. Default: None
Remote Server	Name of export server.	Format: Text box Range: Maximum length is 255 characters. Valid hostname characters are alphanumeric, minus sign, and period. The Hostname must start with an alphanumeric and end with an alphanumeric. The top level domain (TLD) must be alphabetic. **Note**: Must be a valid hostname, IPv4 address, or IPv6 address. Default: None
Username	Username used to access the export server.	Format: Text box Range: Maximum length is 32 characters; alphanumeric characters (a-z, A-Z, and 0-9). Default: None
Directory on Export Server	Directory path on the export server where the exported data files are to be transferred.	Format: Text box Range: Maximum length is a 4096-character string. Valid characters are alphanumeric (a-z, A-Z, and 0-9), dash, underscore, period, and forward slash. If no directory is specified, the username's home directory on the remote server is used. Default: None

Table 2-54 (Cont.) Data Export Fields

Field	Description	Data Input Notes
Path to rsync on Remote Server	Optional path to the rsync binary on the export server.	Format: Text box Range: Maximum length is a 4096-character string. Valid characters are alphanumeric (a-z, A-Z, and 0-9), dash, underscore, period, asterisk, and forward slash. **Note**: If no path is specified, the rsync-path option is not used.
Files to Transfer	Path to the files in the file management area on the local server to be transferred to the remote export server.	Format: Text combobox Range: Maximum length is a 4096-character string. Valid characters are alphanumeric (a-z, A-Z, and 0-9), dash, underscore, period, asterisk, and forward slash. Default: None **Note**: Combo box allows for several predefined options a user can select, or the user can type in a specific path. Path must be a subdirectory of backup/ or export/. If no directory is provided, the default directory is set to export/*.
Upload Frequency	Frequency at which the export occurs.	Format: Options Range: fifteen minutes, hourly, daily, or weekly Default: weekly **Note**: Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out.
Minute	Select the minute of each hour when transfer begins. Enabled only if Upload Frequency is hourly or fifteen minutes. For a frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer in the hour, a value between 0 and 14.	Format: Scrolling list Range: 0 to 59 Default: 0 **Note**: The Minute selection is only active if the selected Upload Frequency is either Fifteen Minutes or Hourly.
Time of Day	Select the time of day when the data will be written to the export directory. Enabled only if Export Frequency is daily or weekly. Select from 15-minute increments, or fill in a specific value.	Format: Time text box Range: HH:MM with AM/PM Default: 12:00 AM **Note**: The Time of Day selection is only active if the selected Upload Frequency is either Daily or Weekly. Select from 15-minute increments or fill in a specific value.

Table 2-54 (Cont.) Data Export Fields

Field	Description	Data Input Notes
Day of Week	Select the day of week when the data will be written to the export directory. Enabled only if Export Frequency is weekly.	Format: Options Range: Sunday through Saturday Default: Sunday **Note**: This field is active only if Weekly is selected.

2.4.3.3 Configuring Data Export Jobs

The Data Export [Insert] form enables you to configure a single data export job to send files to a remote server. You are allowed to configure up to five jobs per site.

Following is the procedure to configure Data Export Jobs:

1. From the **Data Export** page, click **Insert**..

   The Data Export page is presented with a grid displaying any currently configured export servers.
2. Enter a **Task Name**.
3. Enter a **Task Description**.
4. Enter a **Remote Server** Name, IPv4, or IPv6 address.

   See Data Export Fields for details about the **Remote Server** field and other fields that display on this page.
5. Enter a **Username**.
6. Optional: Enter the **Directory on Export Server**.

   This is the target directory path on the export server.
7. Optional: Enter the **Path to Rsync** on the remote server.

   > **Note**
   >
   > Depending on the OS and implementation of the remote server, it may be required to define the path to the rsync binary on the export server but this is not common. If no path is specified, the username's home directory on the export server is used.
8. Select or enter the **Files to Transfer** path(s).

   This entry defines the paths to the files within the File Management Area from which files are exported. A combobox allows for one of several predefined options to be selected, or the user can type in a specific path. Multiple paths may be entered.
9. Select the **Upload Frequency**.
10. If you selected fifteen minutes or hourly for the upload frequency, select the **Minute** for which the transfer is set to begin.

> **Note**
>
> This is the minute of each period when the transfer is set to begin. For an Upload Frequency of Fifteen Minutes, transfers occur four times per hour, and this field sets the minute of the first transfer in the hour.

11. If you selected daily or weekly for the upload frequency, select the **Time of Day**.
12. If you selected weekly for the upload frequency, select the **Day of the Week**.
13. Click **OK** to apply the changes or **Cancel** to discard the changes.

    The export job configuration is saved and you are returned to the Data Export page. A grid is presented reflecting the newly added job.
14. If public keys were manually placed on the remote server, skip to step 17; otherwise, select the newly added export job by clicking on it and click **Key Exchange**. This button initiates a key exchange between the local OAM server and the data export remote server currently defined in the job. See Generating Data Export Keys Report.
15. Enter the password.

    A password must be entered before the exchange can complete. The server attempts to exchange keys with the remote server. After the keys are successfully exchanged, continue with the next step.
16. Optional: Select the newly updated export job by clicking on it. Click **Test Transfer** to confirm the ability to export to the remote server.

    The user can monitor the progress of the task by selecting the **Tasks** list in the page control area.

The export job is now configured and active.

2.4.3.4 Updating Data Export Jobs

Perform the following procedure to **Edit** a specific export job:

1. From the **Data Export** page, select the desired export job .

   The Data Export page displays with a grid displaying currently configured export jobs.
2. Click **Edit**.
3. Make the desired changes. Note that some options are not available to change and the buttons, text boxes, or lists are grayed out. Some options may become active based on other selections, for example, **Upload Frequency**.
4. Click **OK** to apply the changes or **Cancel** to discard the changes.

   If **OK** was selected, the export job configuration is saved and you are returned to the Data Export page.
5. Optional: Select the newly updated export job by clicking on it. Click **Test Transfer** to confirm the ability to export to the remote server.

   The user can monitor the progress of the task by selecting the **Tasks** list in the page control area.

The export job is now updated and active.

2.4.3.5 Deleting Data Export Jobs

The Data Export page has a button that enables you to delete one or more data export jobs. Following is the procedure to delete the export job:

1. From the **Data Export** page, from the grid, click to select the export job you want to delete. Alternately, you can delete multiple export jobs. To delete multiple jobs, press and hold **Ctrl** and click to select multiple jobs.

   The Data Export page is presented with a grid displaying currently configured export jobs.
2. Click **Delete** and respond to the confirmation dialogue box that is presented.
3. Click **OK** to delete the export jobs.

2.4.3.6 Data Export Transfer Now

The Data Export page has a button that enables you to initiate an immediate attempt to transfer any data files in the user defined directory to the remote server without having to wait for a scheduled period to arrive. Only a single export job may be selected for each attempt.

Perform the following procedure to Data Export Transfer Now:

1. From the **Data Export** page, from the grid, select the desired export job.

   The Data Export page displays with a grid displaying the currently configured export jobs.
2. Click **Transfer Now** to initiate an immediate attempt to transfer the data files and respond to the confirmation screen that displays.
3. Click **OK** to initiate the transfer.

The file transfer is initiated. The user can monitor the task or simply check the export directory on the remote server for success.

2.4.3.7 Generating Data Export Keys Report

The **Keys Report** button located on the Data Export page generates a report that contains the root public key of the local OAM server in the associated network field. The key can then be added to the remote server to allow RSYNC transfer of exported data files from the selected OAM server.

> **Note**
>
> The **Keys Report** function is available regardless of whether a data export job is currently defined or not.

The report can be printed, or saved to a file.

Perform the following procedure to generate the data export keys report:

1. From the **Data Export** page, click **Keys Report**.

   The Data Export [Report] page displays the public key of the local OAM server.
2. Click **Print** to print the report, or click **Save** to save the file locally to your client workstation. Click **Back** to return you to the Data Export page.

The keys report contains detailed instructions on how to add these public keys to the remote server.

2.4.4 DNS Configuration

To view the DNS Configuration page, navigate to **Remote Servers** and select **DNS Configuration**.

The page displays a single row of tabs. Each tab represents a network field and all servers participating in that network field. In addition to the tabs, the page includes **Add**, **Edit**, and **Delete** buttons. These buttons are enabled or disabled based on the presence or absence of an active DNS configuration.

> **Note**
>
> Only one DNS server is allowed to be configured per network field.

Once a DNS configuration has been applied, the page displays the name server and address as well as each of the defined search domains for that name server.

A DNS configuration can be applied globally to the system or to a specific network field. The DNS configuration is considered in **GLOBAL** mode if only a NO configuration exists. Otherwise, it's per-site. Put another way, if a single DNS configuration is only applied to the NO network field and no other tab receives a configuration then the DNS configuration is in **GLOBAL** mode and serves all the network fields. If two or more DNS configurations are applied to the system the configuration is in **SITE** mode. If no DNS configuration is applied then the system is in **UNCONFIGURED** mode. To determine the current mode of the system access the **Info** list.

> **Note**
>
> Once the system is in **SITE** mode, only "per-site" option will be visible for all the network tabs except for NO or DR-NO network elements. Any network field tab not containing a DNS configuration is excluded from accessing a DNS server.

The following sections describe the fields and procedures used to set up the DNS (Domain Name System) configuration.

- DNS Configuration Fields
- Adding a DNS Configuration
- Configuring DNS Configuration
- Deleting a DNS Configuration

2.4.4.1 DNS Configuration Fields

The DNS Configuration Insert page enables user to configure domain name system. The following table describes the fields of the DNS Configuration Insert page:

Table 2-55 DNS Configuration Fields

Field	Description	Data Input Notes
External DNS Name Server		
Name Server	Address of external DNS name server. [Must be a valid ipv4 or ipv6 address].	Format: Valid IPv4 or IPv6 address Range: (IPv4) or colon hex (IPv6)
Domain Search Order		
Search Domain 1	A valid domain name.	Format: alphanumeric, hyphen, and decimal characters. Range: Up to 255 characters
Search Domain 2	A valid domain name.	Format: alphanumeric, hyphen, and decimal characters. Range: Up to 255 characters
Search Domain 3	A valid domain name.	Format: alphanumeric, hyphen, and decimal characters. Range: Up to 255 characters
Search Domain 4	A valid domain name.	Format: alphanumeric, hyphen, and decimal characters. Range: Up to 255 characters
Search Domain 5	A valid domain name.	Format: alphanumeric, hyphen, and decimal characters. Range: Up to 255 characters
Search Domain 6	A valid domain name.	Format: alphanumeric, hyphen, and decimal characters. Range: Up to 255 characters
Submit Buttons		
OK	Submits the information to the server, and, if successful, returns to the DNS Configuration page.	NA
Cancel	Returns to the DNS Configuration page without submitting any information to the server.	NA

2.4.4.2 Adding a DNS Configuration

Perform the following procedure to add DNS Configuration:

1. From the **DNS Configuration** page, select the tab representing the desired network field.
2. Click **Insert**.
3. Enter a **Name Server** using a valid IPv4 or IPv6 address.
4. Enter the **Search Domain** in the domain search order. You may add up to six search domain names.
5. Click **OK** to submit the information.

The new DNS configuration is saved and activated.

2.4.4.3 Configuring DNS Configuration

Perform the following procedure to configure DNS Configuration:

1. From the **DNS Configuration** page, select the tab representing the desired network field.
2. Click **Edit**.
3. Update the information on the DNS **Configuration [Insert]** form and click **OK** to submit the new information.

The updated DNS configuration is saved and activated.

2.4.4.4 Deleting a DNS Configuration

Perform the following procedure to delete a DNS Configuration:

> **Note**
>
> Before deleting a configuration, note the DNS configuration mode. Deleting a DNS configuration from the NO network field while the system is in **GLOBAL** mode affects all network fields relying on DNS service.

1. From the **DNS Configuration** page, select the tab representing the desired network field.
2. Click **Delete**.
3. Click **OK** to confirm the deletion.
4. Confirm that the DNS configuration has been deleted by navigating to the desired network field tab and confirming that the **No DNS configured** message is displayed.

The DNS configuration has been deleted.

2.4.5 SAML 2.0 Support

To view the SAML Authentication Fields, from the **Remote Servers**, click **SAML Authentication**.

Security Assertion Markup Language (SAML) works by exchanging user information such as logins, authentication state, identifiers, and other relevant attributes between the identity and service provider. As a result, it simplifies and secures the authentication process as the user only needs to log in once with a single set of authentication credentials.

2.4.5.1 SAML Authentication and Fields

SAML is an authentication mechanism used for authenticating a user in DSR and SDS. It is an additional authentication mechanism to the existing local and LDAP authentication mechanisms.

SAML is an open standard used for authentication. Web applications use SAML to transfer authentication data between the Identity Provider (IDP) and the Service Provider (SP). Web applications leverage SAML through the IDP to authenticate the user. There is no need for the SP to store passwords and address forgotten password issues.

IDP and SP exchange their metadata, which contains the required information for interaction.

The SAML authentication flow is as follows:

1. Enable Saml authentication functionality from General Options screen.
2. Customer must upload IDP Metadata file in DSR/SDS.
3. Customer must upload DSR/SDS Metadata file on their IDP.

4. Once configuration is complete, the user can log in through SAML using url: `<ipaddress>?auth=SAML`

> **Note**
>
> 1. DSR/SDS will act as a Service Provider, and the sample Metadata of SP is provided in DSR/SDS Metadata File.
> 2. The customer provides the IDP Metadata file, and it can be uploaded only from the Active NOAM screen.
> 3. Configuration of Metadata on customer's IDP is not within the scope of DSR/SDS.
> 4. SAML Authentication Screen allows the configuration of IDP metadata file.

SAML Authentication Fields

Table 2-56 SAML Authentication Fields

Fields	Description	Data Input Notes
Entity Id	Entity Id of IDP Server	Format: String

2.4.5.2 Enabling SAML Authentication

Enabling SAML Authentication functionality allows SAML authentication of users.

By default, SAML Enabled parameter is 0 (disabled). Set the parameter to 1 to enable SAML functionality. You have successfully enabled SAML authentication functionality.

2.4.5.3 Disabling SAML Authentication

To disable the SAML Authentication, set the SAML enabled parameter to 0. You have successfully disabled SAML authentication functionality.

2.4.5.4 Uploading IDP Metadata

This procedure defines the automated process of uploading an IDP Metadata configuration file for SAML authentication.
Following is the procedure to upload an XML file to configure SAML authentication:

> **Note**
>
> This procedure pertains to GUI access only. User can insert IDP Metadata using upload functionality only.

1. From the **SAML Authentication** page, click **Browse** to locate and select the file to configure the IDP Metadata.

   The SAML Authentication window is displayed.
2. Select the target file and click **Open**.

> **Note**
>
> - Only XML file format is supported.
> - Ensure that the length of the filename, including.extension, is restricted to 255 characters.

The **Browse** screen disappears, and the target file is displayed in the text box to the right of the **Browse** button.

3. Click **Upload File**.

   The file is uploaded and data validation is performed.
   Metadata validation is performed immediately. If the file is valid, then IDP Metadata will be inserted and Entity Id will be displayed on the page. If the file contains invalid parameters and returns an error message, the IDP Metadata is not inserted.

> **Note**
>
> The maximum number of IDP Metadata that can be inserted is 1. If the user wants to insert new IDP Metadata, the existing metadata must be deleted and then uploaded with a new Metadata..

2.4.5.5 Deleting IDP Metadata

Following ia the procedure to delete IDP Metadata.

1. From the **SAML Authentication** page, select the appropriate Entity Id from the table listing.
2. Click **Delete**.
3. Click **OK** to delete IDP metadata.

   The IDP Metadata is deleted from the database, and the Entity Id entry will not appear in the table listing.

2.4.5.6 DSR/SDS Metadata File

DSR/SDS must provide the metadata file for configuration on the IDP. A sample data file is as follows:

> **Note**
>
> Under **AssertionComsumerService** tag, set **Location** to XMI or VIP of the OAM server to be logged in.

```
<EntityDescriptor ID="SM38148aa4977a48e7cc446a01f6ba0c02f97179aea5a"
        entityID="https://oracle.com"
xmlns="urn:oasis:names:tc:SAML:2.0:metadata">
        <SPSSODescriptor AuthnRequestsSigned="false"
WantAssertionsSigned="true"
        ID="SM6d552c1f7fb6ed52383838e24696ebe501724ae5936"
```

```
        protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol">
        <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:persistent</
NameIDFormat>
        <AssertionConsumerService isDefault="true" index="0"
Location="https://10.75.236.49"
        Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"/>
        </SPSSODescriptor>
        </EntityDescriptor>
```

3 Configuration

This section describes configuration functions. Configuration data defines the network topology for the network. The topology determines the network configuration, the layout or shape of the network fields, and their components. It defines the interlinking and the intercommunicating of the components. The network topology represents all server relationships within the application. The server relationships are used by middleware to control data replication and data collection, and define HA relationships.

3.1 Networking

Networking is a collection of pages, which allow the user to configure networks, devices, and routes. Additionally, application services are mapped to networks via the Services page.

Navigate to the networking, from the **Main Menu** , click **Configuration** to open the configuration menu. From the **Configuration** menu, select **Networking**.

3.1.1 Networks

The Networks page is used to create the networks used for internal, external, and signaling communications. The networks are grouped into logical buckets called network elements. The networks themselves can be defined after these buckets are created. The advantage of this architecture is simplified network device configuration and service mapping.

The workflow is to first create the network elements and then define the individual networks inside each element.

3.1.1.1 Viewing Network

To view network, from the **Networking**, click **Networks**.

Network field are presented in tabular form. If the target network element is not visible in the available screen space use the scroll right or left buttons located in the toolbar area to the right or left of the visible tabs.

3.1.1.2 Network Field

A network field is simply a collection of networks. In other words, a container of networks. Any servers belonging to a specific network element uses those networks exclusively to communicate internally and externally. A network element can contain multiple servers but a single server can only belong to one network element.

Using a three-tier DSR system as an example, a typical, regionally diverse, signaling network would have multiple network field. Consider a system deployed across an east region and west region. The network element configuration might look like:

- NO_East
- NO_West
- SO_East

- SO_West
- NO_DR (Disaster Recovery Spare)

> **Note**
>
> Depending on the application, the workflow and provisioning instruction may differ from the direction provided here. Always follow the provisioning guidelines for your specific application and release.

There are two methods for creating network field. The first method involves manual entry using the Networks [Insert network element] form. For more information, see Inserting a Network Element.

The second method is more encompassing and allows the user to simultaneously create the network element and associated networks. For more information, see Configuring Network Element file.

3.1.1.3 Insert Network Fields

The following table describes the Network Insert Fields.

Table 3-1 Networks Insert Field

Field	Description	Data Input Notes
Network Name	The name of the network.	Must be unique. Format: String Range: 1-31 alphanumeric characters. Must start with a letter. No special characters are allowed. Defaut: n/a A value is required.
Network Type	The type of network in the context of the application.	Format: List Range: OAM or Signaling Default: OAM
VLAN ID	The VLAN ID of the Network.	Format: Numeric Range: 1-4094 A value is required.
Network Address	The network address of the Network.	Format: Valid network address Range: Dotted decimal (IPv4) or colon hex (IPv6) Default: n/a A value is required.
Netmask	Subnetting to apply to servers within the Network.	Format: Valid network netmask Range: Prefix length (IPv4 or IPv6) or dotted quad decimal (IPv4) Default: n/a A value is required.

Table 3-1 (Cont.) Networks Insert Field

Field	Description	Data Input Notes
Router IP	The IP address of a router on this network. Note: If this is a default network, this is used as the gateway address of the default route on servers with interfaces on this network. If customer router monitoring is enabled, this address is the one monitored.	Format: Valid IP address Range: Dotted decimal (IPv4) or colon hex (IPv6) Default: n/a **Note**: A value is not required. Networks without a router IP cannot be used as the default network. The default network selection defaults to No.
Default Network	Whether the network is the default gateway.	Format: Option Range: Yes or No
Routed	Whether the network is routed outside its network element. Note: The network is automatically assigned to a network element when a server in a network element has an IP from the network assigned. If it is not assigned to a network element, it is assumed to be possibly present in all network Field.	Format: Option Range: Yes or No **Note**: Select No to allow the same IMI network/IPs to be used at multiple Signaling sites.

3.1.1.4 Inserting a Network

Perform the following procedure for manually inserting a network. Alternatively, you can use the automated process of uploading a network field configuration file to create both the network field and associated networks. See Configuring Network Element file.

1. From the **Networks** page, locate and select the target network field tab where you want to create the network.

   Network fields are presented in tabular form. If the target network field is not visible in the available screen space use the scroll right/left buttons located below the toolbar area and to the right or left of the visible tabs.
2. Click **Insert**.
3. Enter a **Network Name**.

   For more information about **Network Name**, or any field on this page, see Insert Network Fields.
4. Select a **Network Type** from the list.
5. Enter a **VLAN ID**.
6. Enter a **Network Address**.

   This is a network address and not a host IP address.
7. Enter a **Netmask**.
8. Optional: Enter the **Router IP.**

   This is used as the gateway address of the default route if yes is chosen in step 10.
9. Choose whether this will be the network with a default gateway.

If yes is chosen, the gateway address entered in step 9 acts as the default route for servers with interfaces on this network.

10. Choose whether this network is routed outside its network field.
11. Click **OK** to submit the information and return to the Networks page, or click **Apply** to submit the information and continue entering additional data. Clicking cancel discards your changes and returns you to the Networks page.

The new network is added to the target network field.

3.1.1.5 Editing a Network

Not all networks can be edited. Pre-configured networks created during the install process, for example, cannot be edited. A network that cannot be edited is distinguished using italic font.

> **Note**
>
> Before editing a network, generate a network report. The network report serves as a record of the network's original settings. Print or save the network report for your records. For more information about generating a network report, see Generating a Network Report.

Perform the following procedure to Edit a network:

1. From the **Networks** page, locate and select the network field tab where the network you want to edit exists.

   Network fields are presented in tabular form. If the target network field is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.
2. Select the target network and determine the lock status. If the network is currently unlocked proceed to the next step. If the network is locked the **Lock/Unlock** button should be active and reflect **Unlock**. Click **Unlock** and respond to the confirmation dialog box that is presented.

   The network is now unlocked.
3. Navigate back to the target network fields tab and select the target network again. Click **Edit**.

   If the network cannot be edited it means it is still locked or it is a pre-configured network.
4. Edit the available fields as necessary.

   See Insert Network Fields for details about the fields that display on this page.

   > **Note**
   >
   > Fields that cannot be edited are disabled.
5. Click **OK** to submit the changes and return to the Networks page, or click **Apply** to submit the information and continue editing additional data. Clicking cancel discards your changes and returns you to the Networks page.
6. Return the target network to the desired lock status.

The network is changed.

3.1.1.6 Locking and Unlocking a Network

Any network on the system can be locked or unlocked. When a network is locked, no modifications may be made to any device or route that uses that network. To add a route or a device to a network, the network would have to be in an unlocked state.

Perform the following procedure to lock or unlock a Network:

1. From the **Networks** page, locate and select the network field tab where the network you want to unlock exists.

   Network fields are presented in tabular form. If the target network field is not visible in the available screen space use the scroll right or eft buttons located below the toolbar area and to the right or left of the visible tabs.
2. Identify the target network and determine the lock status. This can be accomplished by identifying the value of the **Locked** field for your target network. A value of yes indicates that the network is currently locked, no indicates that the network is not currently locked. Alternatively, you can select the target network and take note of the **Lock/Unlock** button. If the button transitions to **Unlock** then the network is currently locked, if the button transitions to **Lock** then the network is currently unlocked.
3. To unlock a locked network, click **Unlock** and respond to the confirmation screen displayed. When unlocking, you also have to confirm by using a check box.

   The network is now unlocked.
4. To lock an unlocked network, click **Lock** and respond to the confirmation dialog box that is presented.

   The network is now locked.

The network is locked or unlocked.

3.1.1.7 Deleting a Network

Not all networks can be deleted. In-use networks and pre-configured networks created during the install process, for example, cannot be deleted. A network that cannot be deleted is distinguished using italic font.

> **Note**
>
> Before deleting a network, generate a network report. The network report serves as a record of the network's original settings. Print or save the network report for your records. For more information about generating a network report, see Generating a Network Report.

Perform the following procedure to Delete a Network:

1. From the **Networks** page, locate and select the network field tab where the network you want to delete exists.

   Network fields are presented in tabular form. If the target network field is not visible in the available screen space use the scroll right/left buttons located below the toolbar area and to the right or left of the visible tabs.
2. Click to select the network you want to delete. To delete multiple networks, press and hold **Ctrl** and click to select multiple networks.

If the network cannot be deleted, **Delete** is disabled. To delete multiple networks at one time, all selected networks must be deletable.

3. Click **Delete** and respond to the confirmation dialog box that is presented.
4. Click **OK** to delete the network.

The network has been removed from the database and it no longer displays in the network field tab.

3.1.1.8 Deleting a Network Fields

The user must confirm that no servers are connected to the target network element before deleting a network element. Attempting to delete a network element with at least one associated server results in an error message and the target network element is not deleted. If a network element contains networks, but is not associated with any servers, then deleting the network element is successful. The networks contained in the target network element are deleted along with the network element.

Perform the following procedure to delete a network field after confirming that no servers are associated with it:

1. From the **Networks** page, locate the target network element tab.

   Network field are presented in tabular form. If the target network element is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.
2. Click the **x** located on the tab of the target network element.

   A delete confirmation message appears.
3. Click **OK** to delete the network element from the database tables.

   A status message is displayed stating the network element has successfully been deleted. Closing the status message returns you to the Networks page.

The network element and related networks are deleted from the databases.

3.1.1.9 Generating a Network Report

A network report provides a summary of the configuration of one or more networks. Reports can be printed or saved to a file.

Perform the following procedure to generate a Network Report:

1. From the **Networks** page, locate and select the network field tab where the target networks exist.

   Network fields are presented in tabular form. If the target network field is not visible in the available screen space use the scroll right or left buttons located below the tool bar area and to the right or left of the visible tabs.
2. Click **Report** to generate a report for all networks. To generate a report for a single network, click to select the network and click **Report**. To generate a report for multiple networks, press and hold **Ctrl** as you click to select specific networks.
3. Click **Print** to print the report, or click **Save** to save the report to a file.

3.1.1.10 Inserting a Network Element

This procedure defines the manual process of inserting a network element. To view the procedure that involves the uploading of a network element configuration file see, Configuring Network Element file.

Perform the following procedure to Insert Network Element:

1. From the **Networks** page, click **Insert Network Element**.
2. Enter a unique name in the value field for **Network Element Name**.
3. Enter a unique name across the network element table in **Network Element Name**.

   See Insert Network Fields for value limitations of the **Network Element Name** field.
4. Click **OK** to submit the information and return to the Networks page or **Cancel** to discard the changes and return to the Networks page.

The network element is added to the topology database tables, and the GUI displays the newly added network element in tab format on the Networks page.

3.1.1.11 Insert Network Fields

The following table describes the fields of the Insert Network:

Table 3-2 Insert Network Field Elements

Field	Description	Data Input Notes
Network Element Name	The user-defined name for the network element.	Must be unique. Format: String Range: 1-32 alphanumeric characters and underscore. Must contain at least one alphabetic character and must not start with a digit. Default: n/a A Value is required.

3.1.1.12 Exporting Network File

The network element **Export** button generates an installation script file used for configuration purposes. Following is the procedure to export the configuration parameters of a network element:

1. From the **Networks** page, select the target network element tab.

   Network field are presented in tabular form. If the target network element is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.
2. Click **Export**.

   A file dialog box appears prompting you to open or save the configuration file. By default the name format of the output file is NE_<yyyymmdd>_<hhmmss>_<zone>.xml. You may change this as needed.

3.1.1.13 Configuring Network Element file

This procedure defines the automated process of uploading a network element configuration file to create the network element. To view the procedure that involves the manual process of inserting a network element see Inserting a Network Element.

> **Note**
>
> Depending on the application, the workflow and provisioning instruction may differ from the direction provided here. Because applications differ, the format of the configuration file is not addressed here. Always follow the provisioning guidelines for your specific application and release.

Perform the following procedure to upload an XML file to configure a new network element:

1. From the **Networks** page, click **Browse** to locate the file you want to use to configure a new network element.

   A file upload screen displays allowing you to navigate to and select the target configuration file.
2. Select the target file and click **Open**.
   - Only XML file will be supported.
   - Ensure that the filename length including.extension is restricted to 255 characters.

   The screen disappears and the target file displays in the text box to the right of the **Browse** button.
3. Click **Upload File**.

   The file is uploaded and data validation is performed.

Data validation is performed immediately. If the file is valid, a new network element is created and reflected in a new tab on the Networks page. Alternately, a file that contains invalid parameters returns an error message, and no network element is created.

3.1.2 Devices

The Devices page is used to configure and manage additional interfaces other than what was configured during the initial installation.

3.1.2.1 Viewing a Device

Devices are viewed on per server basis. The use of italics indicates a device that cannot be edited or deleted.

Following are the steps to view devices:

1. From the **Networking**, click **Devices**.
2. Locate and select the desired server tab.

   Servers are presented in tabbed form. If the target server is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.

The devices for that selected server are displayed.

3.1.2.2 Devices Fields

The following table describes the fields of the Devices page:

Table 3-3 Devices Fields

Tab/Field	Description
Server	The server host name displayed in tabbed format at the top of the table.
Device Name	The name of the device (not user defined).
Device Type	The device type. Supported types include: • Bonding • Vlan • Alias • Ethernet
Device Options	A collection of keyword value pairs for the device options.
IP Interface (Network)	IP address and network name in the format: IP Address (network name).
Configuration Status	The configuration status of the device. The possible states are: • Discovered (provisioned directly on the server). • Configured (provisioned through the GUI; server update is pending). • Deployed (provisioned through the GUI; server update is complete). • Pending (edit or delete update in progress). • Deferred (server cannot be reached for updates). • Error (specific error text is displayed in the Configuration Status field).
Is Locked?	Status of the lock state. The possible states are: • Locked (Not available for edit or delete). • Unlocked (Available for edit or delete).

3.1.2.3 Device Insert Fields

To view the Insert Device Fields, from the **Networking**, click **Device**, and then click **Insert**.

> **Note**
>
> Some fields are dynamic and only display when specific values are selected. Dynamic fields are noted in the description.

The table describes the Device Insert Fields.

Table 3-4 Device Insert Fields

Field	Description	Data Input Notes
Device Type	The type of device. **Note**: A device type of **Ethernet** is system generated and not selectable from this form.	Format: Options Range: Bonding, VLAN, Alias Default: N/A A value is required.
Start on Boot	When selected, this check box enables the device to start on boot.	Format: Check box Default: Enabled
Boot Protocol	The boot protocol.	Format: List Range: None, DHCP Default: None A value is required.
MTU Setting	The Maximum Transmission Unit (MTU) setting for the device (bytes per packet). **Caution**: Changing the MTU setting for an existing interface restarts the interface, which is service affecting.	Format: Numeric Range: 1280-65570 Default: 1500
Monitoring Type	The monitoring type to use with a bonding device. **Note**: This field is dynamic and only displays when bonding is selected as the device type.	Format: Options Range: MII, ARP Default: MI A Value is required.
Primary	The preferred primary interface. **Note**: This field is dynamic and only appears when bonding is selected as the device type and a monitoring type choice is selected.	Format: List Range: None - all available devices Default: None A value is required.
Monitoring Interval	MII monitoring interval in milliseconds. **Note**: A monitoring type is selected by default (MII).	Format: Numeric Range: A positive integer Default: 100ms A value is required.
Upstream Delay	MII monitoring upstream delay in milliseconds. **Note**: This field is dynamic and only appears when bonding is selected as the device type and MII is selected as the monitoring type.	Format: Numeric Range: A positive integer Default: 200ms A value is required.
Downstream Delay	MII monitoring downstream delay in milliseconds. **Note**: This field is dynamic and only appears when bonding is selected as the device type and MII is selected as the monitoring type.	Format: Numeric Range: A positive integer Default: 200ms A value is required.

Table 3-4 (Cont.) Device Insert Fields

Field	Description	Data Input Notes
ARP Validation	The method to validate the ARP probes and replies. **Note**: This field is dynamic and only appears when bonding is selected as the device type and ARP is selected as the monitoring type.	Format: List Range: None, Active, Backup, All Default: None A value is required.
ARP Target IPs	Comma-separated ARP target IP address list. **Note**: This field is dynamic and only appears when bonding is selected as the device type and ARP is selected as the monitoring type.	Format: Valid IP addresses Range: Dotted quad decimal (IPv4) or colon hex (IPv6) Default: None Range: Dotted quad decimal (IPv4) or colon hex (IPv6)
Base Device(s)	The base devices for bond, alias, and VLAN device types. **Note**: Alias and VLAN devices require one selection; bond devices require two selections. This cannot be changed after the device is created.	Format: Options Range: Available base devices Default: N/A A Value is required.
IP Interfaces		
Add IP Interface	Presents a row with a single address box and network list. **Note**: For each row, only one IP Address and network can be specified. To specify additional rows, click**Add IP Interface**.	Format: Button At least one entry is required.
Remove	Removes the device interface IP Address on the selected row. **Note**: This is not a delete button. If**Apply** has already been selected, clicking**Remove** does not delete the interface. Deleting an interface that has already been defined takes place from the Devices page.	Format: Button
Submit Buttons		
OK	Submits the information to the database, and, if successful, returns you to the Devices page.	
Apply	Submits the information to the database, and, if successful, remains on the Devices [Insert] form so that you can enter additional data.	
Cancel	Discards the information and returns you to the Devices page.	

3.1.2.4 Inserting a Device

The Insert Device uses dynamic options, depending on the selected value of a field, options may be added or removed from the page. See Device Insert Fields.

> **Note**
>
> Devices cannot be created that use management networks (those configured after installation and designated in the Network listing in blue italic text). This ensures continued access to the GUI via the management networks. Additionally, device creation requires that the prerequisite networks are already configured. For more information, see Inserting a Network.

Perform the following procedure to Insert a Device:

1. From the **Devices** page, locate and select the desired server tab.

   Servers are presented in tabbed form. If the target server is not visible in the available screen space, use the scroll right or left buttons located below the tool bar area and to the right or left of the visible tabs.
2. Click **Insert**.
3. Select the **Device Type**. If the selected device type is **Bonding**, then continue with this step, otherwise, skip to step 5.
   a. By default, **Start on Boot** is enabled. Uncheck the check box if you want to disable **Start on Boot**.
   b. Select the **Boot Protocol**.
   c. Enter the **MTU Setting** if a default of 1500 is not desired.
   d. Select the **Monitoring Type**.
   e. Select the **Primary** interface.
   f. Enter the **Monitoring Interval**.
   g. If MII was selected as the monitoring type, then enter the **Upstream Delay** in milliseconds, otherwise, skip to substep 4.j.
   h. Enter the **Downstream Delay** in milliseconds.
   i. Select **Base Devices**. Two must be selected.
   j. If ARP was selected as the monitoring type, then enter the **ARP Validation** method.
   k. Enter the **ARP Target IP(s)** using valid comma separated IP addresses.
   l. Skip to step 6 to continue.
4. If the selected device type is **VLAN**, then continue with this step; otherwise, skip to step 6.
   a. By default, **Start on Boot** is enabled. Uncheck the check box if you want to disable **Start on Boot**.
   b. Select the **start Protocol**.
   c. Enter the **MTU Setting** if a default of 1500 is not desired.
   d. Select **Base Device**. Only one can be selected.
   e. Skip to step 6 to continue.

5. If the selected device type is **Alias**, then continue with this step; otherwise, skip to step 7.
   a. By default, **Start on Boot** is enabled. Uncheck the check box if you want to disable **Start on Boot**.
   b. Select the **Boot Protocol**.
   c. Enter the **MTU Setting** if a default of 1500 is not desired. This is not an option for Alias device.
   d. Select **Base Device**. Only one can be selected.
6. Click **Add IP Interface**.

   A new row is created with a textbox and list.
7. Enter an **IP Address** for the device.
8. Select a **Network Name** from the list.
9. For each row, only one IP Address and Network Name can be specified. To specify additional interfaces, select **Add IP Interface** and complete steps 8 and 9.
10. When you are finished adding IP addresses, click **OK** to submit the information and return to the Devices page, or click **Apply** to submit the information and continue entering additional data. Clicking **Cancel** discards your changes and returns you to the Devices page.

3.1.2.5 Editing a Device

Devices with a locked status cannot be edited without unlocking the network to which they belong. For more information, see Locking and Unlocking a Network. Additionally, devices that have a configuration status of discovered cannot be unlocked until you take ownership of the device. For more information, see Taking Ownership of a Device. Some discovered devices not belonging to a network are unlocked immediately after taking ownership. Other discovered devices require the extra step of unlocking the network after taking ownership.

> **Note**
>
> Before editing a device, generate a device report. The device report serves as a record of the device's original settings. Print or save the device report for your records. For more information about generating a device report, see Generating a Device Report.

Perform the following procedure to Edit a Device:

1. From the **Devices** page, locate and select the desired server tab.

   Servers are presented in tabbed form. If the target server is not visible in the available screen space use the scroll right or left buttons located below the tool bar area and to the right or left of the visible tabs.

   The device data for the selected server appears.
2. Click to select a device and click **Edit**.

   If the device cannot be edited, **Edit** is disabled. Confirm that the device is in a deployed and unlocked state. If the device can be edited, the Devices [Edit] form appears.
3. Edit the available fields as necessary.

   See Device Insert Fields for details about the fields that appear on this page.

> **Note**
>
> - Fields cannot be edited are disabled.
> - Changing the MTU setting for an existing interface restarts the interface, which affects service.

4. Click **OK** to submit the information and return to the Devices page, or click **Apply** to submit the information and continue entering additional data. Clicking cancel discards your changes and returns you to the Devices page.

The device is changed.

3.1.2.6 Deleting a Device

Devices with a locked status cannot be deleted without unlocking the network to which they belong. For more information, see Locking and Unlocking a Network. Additionally, devices that have a configuration status of discovered cannot be unlocked until you take ownership of the device. For more information, see Taking Ownership of a Device. Some discovered devices not belonging to a network are unlocked immediately after taking ownership. Other discovered devices require the extra step of unlocking the network after taking ownership.

> **Note**
>
> Before deleting a device, generate a device report. The device report serves as a record of the device's original settings. Print or save the device report for your records. For more information about generating a device report, see Generating a Device Report.

Perform the following procedure to delete a device:

1. From the **Devices** page, locate and select the desired server tab.

   Servers are presented in tabbed form. If the target server is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.

   The device data for the selected server appears.

2. Click to select the device you want to delete. Alternately, you can delete multiple devices. To delete multiple devices, press and hold **Ctrl** and click to select specific devices.

   If the device cannot be deleted, **Delete** is disabled. Confirm that the device is in a deployed and unlocked state. To delete multiple devices at one time, all selected devices must be deletable.

3. Click **Delete**.
4. Click **OK**.

3.1.2.7 Generating a Device Report

A device report can be generated on a single device, multiple devices within the same server, or all devices regardless of server.

Perform the following procedure to generate a Device Report:

1. From the **Devices**, locate and select the desired server tab.

Servers are presented in tabbed form. If the target server is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.

The device data for the selected server displays.

2. To generate a device report, select one of the following procedures:
   - To generate a report for all devices under the current server tab, click **Report**.
   - To generate a report for a single device, click to select the device and click **Report**. Alternatively, you can select multiple devices. To generate a report for multiple devices, press and hold **Ctrl** as you click to select specific devices.
   - To generate a report for all devices regardless of server, click **Report All**.

   The Device Report is generated.
3. Click **Print** to print the report.
4. Click **Save** to save the report to a file.

3.1.2.8 Taking Ownership of a Device

Devices that have a configuration status of **Discovered** are devices that were configured during the initial install or extension process and not added manually. The user has limited abilities to modify these devices. When you need to edit the attributes of these devices, you must first take ownership of the device.

Before taking ownership of a device, the user should be familiar with the concept of locked or unlocked networks. Before editing or deleting any device that belongs to a locked network, the network must be unlocked. For more information, see Locking and Unlocking a Network.

> **Note**
>
> Not all devices must belong to a network. For example, primary interfaces with a state of **Discovered** may not belong to a network.

The process of taking ownership of a device and then editing or deleting that device slightly differs depending on whether or not that device currently belongs to a locked network. For more information, see Editing a Device.

Before taking ownership of a discovered device, the device has a configuration status of **Discovered, Locked**, **Edit** and **Delete** are disabled. Immediately after taking ownership of the device, the configuration status temporarily changes to **Configured** and then **Pending**. Within a few minutes, the device should transition to its final configuration status of **Deployed**. If the device belonged to a locked network before taking ownership, the status displays as **Deployed, Locked**, otherwise it displays as **Deployed, Unlocked**.

> **Note**
>
> Before taking ownership of a device, generate a device report. The device report serves as a record of the device's original settings. Print or save the device report for your records. For more information about generating a device report, see Generating a Device Report.

Perform the following procedure to take ownership of a device:

1. From the **Devices**, click to select the device you want to take ownership of. Alternately, you can take ownership of multiple devices. Press and hold **Ctrl** and click to select more than one device.

   Servers are presented in tabbed form. If the target server is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs.

   If one or more selected devices have a configuration status of something other than **Discovered**, the **Take Ownership** button is disabled. To take ownership of multiple devices at one time, all selected devices must have a configuration status of **Discovered**.

2. Click **Take Ownership**.

   The configuration status temporarily displays **Configured**, then **Pending**, and finally **Deployed**.

The devices are now available for editing or deleting. Take note of the lock status. A device cannot be edited or deleted while in the **Locked** state. See Locking and Unlocking a Network for details on changing the lock status.

3.1.3 Routes

Use the route configuration page to define specific routes for traffic. You can specify routes for the entire network, specific servers, or specific server groups.

3.1.3.1 Viewing a Route

Perform the Following procedure to view routes:

1. From the **Networking**, click **Routes**.
2. Click to select a server group and or server using the tabs at the top of the main work area.

   If the target server group or server is not visible in the available screen space use the scroll right or left buttons located below the toolbar area and to the right or left of the visible tabs. Server groups are presented in tabs at the top of the main work area. Selecting a specific server group reveals the individual servers of that group. Alternatively, selecting the **Entire Network** tab reveals all the servers defined in the system. After selecting a specific server group, the user has the option of selecting a specific server or selecting **Entire Server Group** to reveal the server group scoped routes.

   The route data for the selected server or server group appears.

3.1.3.2 Routes Fields

The following table describes the fields on the Routes page:

Table 3-5 Routes Fields

Tab/Field	Description
Server Group/Server	Server groups are presented in tabs at the top of the main work area. Selecting a specific server group reveals the individual servers of that group. Alternatively, selecting the **Entire Network** tab reveals all the servers defined in the system. After selecting a specific server group, the user has the option of selecting a specific server or selecting **Entire Server Group** to reveal the existing routes.

Table 3-5 (Cont.) Routes Fields

Tab/Field	Description
Route Type	The type of route. Possible types are: • Net (A route that serves a specific network). • default (The default route for that server). • Host (A route to a specific target host).
Destination	The destination network IP address and prefix length in the format: IP Address or Prefix Length.
Netmask	A valid netmask for the destination network.
Gateway	The IP Address of the gateway for the route.
Device Name	The network device through which traffic is being routed. **Note**: This is not available on the **Entire Server Group** tab.
Scope Status	The current number of servers where the route was successfully configured out of the total servers in the server group. **Note**: This column is only present for server group scoped routes.
Route Scope	The scope of the route. Possible types are server and server group. **Note**: This column is only present for server sub-tabs.
Configuration Status	The configuration status of the route. The possible states are: • Discovered (provisioned directly on the server). • Configured (provisioned through the GUI; server update is pending). • Deployed (provisioned through the GUI; server update is complete). • Pending (edit or delete update in progress). • Deferred (server cannot be reached for updates). • Error (specific error text is displayed in the Configuration Status field).
Is Locked?	Status of the lock state. The possible states are: • Locked (Not available for edit or delete). • Unlocked (Available for edit or delete).

3.1.3.3 Routes Insert Fields

To view the Routes Insert Fields, from the **Networking**, click **Routes** and then click **Insert**.

The following table describes the fields of the Routes Insert page:

Table 3-6 Routes Insert Fields

Field	Description	Data Input Notes
Route Type	The type of route.	Format: Option Range: Net, Default, Host Default: N/A A value is required. **Note**: The Default route option is available only if there is no default route configured on the target server. There can be no more than one IPv4 and one IPv6 default route defined.
Device	The network device name through which traffic is routed.	Format: List Range: Provisioned devices on the selected server Default: N/A A value is required.
Destination	The destination network address. **Note**: This field is disabled if the **Route Type** is default.	Format: Valid network address Range: Dotted quad decimal (IPv4) or colon hex (IPv6) Default: N/A
Netmask	A valid netmask for the destination network. **Note**: This field is disabled if the **Route Type** is default. This field is disabled and set to 32 (IPv4) or 128 (IPv6) if the **Route Type** is host.	Format: Valid netmask Range: Valid netmask for the network in prefix length (IPv4 or IPv6) or dotted decimal (IPv4) format Default: N/A
Gateway IP	The IP Address of the gateway for the route.	Format: Valid IP address Range: Dotted quad decimal (IPv4) or colon hex (IPv6) Default: N/A A value is required.

3.1.3.4 Inserting a Route

Routes cannot be created which use management networks (those configured after installation and designated in the Network listing in blue italic text). This ensures continued access to the GUI via the management networks.

Perform the following procedure to Insert a Route:

1. From the **Routes** page, select the target server group or server.
2. Click **Insert**.
3. Select a **Route Type**.

   For more information about **Route Type**, or any field on this page, see Routes Insert Fields .
4. Select a **Device**.
5. Enter a **Destination**.

> **Note**
>
> This step is required only if the **Route Type** is Net or Host. The field is disabled if the **Route Type** is Default.

6. Enter the **Netmask**.

> **Note**
>
> This step is required only if the **Route Type** is Net. The field is disabled if the **Route Type** is Default or Host.

7. Enter the **Gateway IP**.
8. Click **OK** to submit the information and return to the Route page, or click **Apply** to submit the information and continue entering additional data.

3.1.3.5 Editing a Route

Not all routes can be edited. Pre-configured routes created during the install process, for example, cannot be edited. A route that cannot be edited is distinguished using italic font.

> **Note**
>
> Before editing a route, generate a route report. The route report serves as a record of the route's original settings. Print or save the route report for your records. For more information about generating a route report, see Generating a Route Report.

Perform the following procedure to Edit a Route:

1. From the **Routes** page, Using the tabs, navigate to the target server group or server.

   The route data for the selected server or server group appears.
2. Click to select a route and click **Edit**.

   If the route cannot be edited, **Edit** is disabled. If the route can be edited, the Routes [Edit] form appears.
3. Edit the available fields as necessary.

   For more information, see Routes Insert Fields for details about the fields that appear on this page.

> **Note**
>
> Fields that cannot be edited are disabled.

4. Click **OK** to submit the changes and return to the Routes page, or click **Apply** to submit the information and continue editing additional data.

3.1.3.6 Deleting a Route

Not all routes can be deleted. In-use routes and pre-configured routes created during the install process, for example, cannot be deleted. A route that cannot be deleted is distinguished using italic font.

> **Note**
>
> Before deleting a route, generate a route report. The route report serves as a record of the route's original settings. Print or save the route report for your records. For more information about generating a route report, see Generating a Route Report.

Perform the following procedure to Delete a Route:

1. From the **Routes** page, using the tabs, navigate to the target server group or server.

   The route data for the selected server or server group displays.
2. Click to select the route you want to delete. Alternately, you can delete multiple routes. To delete multiple routes, press and hold **Ctrl** and click to select specific routes.

   If the route cannot be deleted, **Delete** is disabled. To delete multiple routes at one time, all selected routes must be deletable.
3. Click **Delete**.

   A confirmation box displays.
4. Click **OK** to delete the route.

The route is deleted.

3.1.3.7 Generating a Route Report

Following is the procedure to generate a Route Report:

1. From the **Routes** page, using the tabs, navigate to the target server group or server.
2. Click **Report** to generate a report for all routes. To generate a report for a single route, click to select the route and click **Report**. Alternately, you can select multiple routes. To generate a report for multiple routes, press and hold **Ctrl** as you click to select specific routes.

   The Route Report is generated.
3. Click **Print** to print the report.
4. Click **Save** to save the report to a file.

3.1.4 Services

This feature allows for flexible network deployment by allowing you to map an application service to a specific network. Additionally, this feature allows for the differentiation of intra and inter-networks on a per service basis. This means that traffic from different services can be segmented, which allows for service specific-networks and routes. This is predicated on the creation of network fields, networks, and routes to support the segmentation of service traffic.

Geo-redundant (spare) nodes and dual-path monitoring are special code on the node at the spare site that continually monitors the availability of the database instances at the primary site

to determine if an automatic failover should occur due to loss of the active site servers. In the event of a network outage, it is possible that if the system is monitoring a single network path only and intra and inter-networks are differentiated, an erroneous condition might occur where both sites try to assume activity. Inherent dual-path monitoring protects against this scenario.

The core services are:

- OAM
- Replication
- Signaling
- HA_Secondary
- HA_MP_Secondary
- Replication_MP

For example, segregation of replication traffic might occur for inter-network (WAN) traffic only. Prerequisite configuration work would have included the creation of at least one LAN network and two WAN networks along with the related routes. For the purposed of this example, these could be named LAN1, WAN1, and WAN2. The services mapping might look similar to the settings in Table 3-7.

Table 3-7 Core Services

Name	Intra-NE Network	Inter-NE Network
OAM	Unspecified	Unspecified
Replication	LAN1	WAN1
Signaling	Unspecified	Unspecified
HA_Secondary	Unspecified	Unspecified
HA_MP_Secondary	Unspecified	Unspecified
Replication_MP	LAN1	WAN2

> **Note**
>
> Services might vary depending on the application. For example, DSR adds a service known as ComAgent to the existing core services. Additionally, workflow and provisioning instruction might differ from the direction provided here. Always follow the provisioning guidelines for your specific application and release.

3.1.4.1 Editing Service information

Services are set during installation of the system. However, you can edit network characteristics of the services.

Perform the following procedure to Edit existing Service Information:

1. From the **Services** page, click **Edit**.
2. Select from the available choices to determine the Intra-NE Network.
3. Select from the available choices to determine the Inter-NE Network.
4. Click **OK** to submit the information and return to the Services page, or click **Apply** to submit the information and remain in the Services [Edit] form. Clicking cancel discards your changes and returns you to the Services page.

> **Note**
>
> The user must restart the applications running on all the servers to apply any service changes. To restart, from the main menu, navigate to **Status & Manage**, click **Server**, from the menu bar below click **Restart**.

3.1.4.2 Generating a Services Report

A services report provides a summary of the services configuration. This report can also be printed or saved to a file.

Perform the following procedure to generate a service report:

1. From the **Services** page, click **Report**.
2. Click **Print** to print the report, or click **Save** to save a text file of the report. Clicking **Back** takes you back to the Services page.

3.2 Servers

To view the servers, from the **Configuration**, click **Servers**.

Servers are the processing units of the application. Servers perform various roles within the application. The roles are:

- Network OAM&P (NOAMP) - The NOAMP is one active and one standby server running the NOAMP application and operating in a high availability global configuration. It also provides a GUI, which is used for configuration, user administration and the viewing of alarms and measurements.
- System OAM (SOAM) - The SOAM is the combination of an active and a standby application server running the SOAM application and operating in a high availability configuration. SOAM also provides a GUI used for local configuration and viewing alarms and measurements details specific to components located within the frame (SOAM, MP). The SOAM supports up to 32 MPs.
- MP - MPs are servers with the application installed and are configured for MP functionality.
- Query Server (QS) - The Query Server is an independent application server containing replicated application data. A Query Server is located in the same physical frame as each NOAMP component.

The role you define for a server affects the methods it uses to communicate with other servers in the network. For more information about how each interface is used, refer to the Network Installation Guide that came with the product.

3.2.1 Server Fields

The Server Fields page lists all servers that are provisioned. The following table describes the fields of the Servers Configuration page:

Table 3-8 Servers Configuration Fields

Fields	Description
Hostname	The defined name for the server. The name must be unique across the server table. Alphanumeric (A-Z, a-z, 0-9) and hyphen (-) characters are allowed. The Hostname must begin and end with an alphanumeric character.
Role	The defined role for the network field. Types are: • Network OAMP - A pair of servers implementing OAMP functions for the entire network. There is only one pair of NOAMP Servers per network, and they comprise the NOAMP Network Field. There can be only two servers of this type in the Servers table. • System OAM - Pairs of servers implementing a centralized database and local OAM functions for each SO Network Field deployed. There can be only two servers of this type per signaling Network Field. • MP - Each pair or cluster of servers implementing message processing functions. • Query Server - An independent application server that contains a replicated version of the PDBI database. It accepts replicated subscriber data from the NOAMP and stores it in a customer accessible database. The Role selected here affects which of the following IP Addresses and VLAN IDs are available to be set up.
System ID	The system ID
Server Group	The server groups to which the server belongs.
Network Field	The name of the network field that is associated with each server. The network field must first be configured using the **Configuration**, and then **Network Elements** page before it can be associated with a server.
Location	The location of the server. This field is optional.
Place	The Place that the server is assigned to.
Details	Lists provisioned IP addresses.

3.2.2 Add New Server Configuration Fields

To view Insert Server Configuration Fields, from the **Configuration**, click **Servers**, and then click **Insert**.

The following table describes the fields on the Adding a New Server page:

Table 3-9 Add New Server Configuration Fields

Fields	Description	Data Input Notes
Hostname	The defined name for the server. The name must be unique across the server table. Alphanumeric (A-Z, a-z, 0-9) and hyphen (-) characters are allowed. The Hostname must begin and end with an alphanumeric character.	Format: Alphanumeric (A-Z, a-z, 0-9) and hyphen (-) characters. Hostname must begin and end with an alphanumeric character. Range: Maximum length is 30 characters
Role	The defined type for the network Field. The Role selected here affects which of the following IP Addresses are available to be configured.	Format: List Range: Network OAM&P, System OAM, MP, Query Server
System ID	System ID for the NOAMP or SOAM server.	Default = none Range = A 64-character string. Valid value is any text string.
Hardware Profile	The hardware profile of the server.	Format: List of customized options.
Network Field Name	The network field must first be set up using the **Configuration**, and then **Network Fields** page.	Format: List Range: A valid Network Field
Location	Optional, user supplied field to identify the location of the server.	Format: Text string Range: Maximum length is 15 characters
Interfaces: Network	The list of available interfaces from the hardware profile.	Format: n/a
Interfaces: IP Address	The IP address of the network.	Format: numeric
Interfaces: Interface	The interface with which the IP address is associated. The list is populated with the available interfaces from the hardware profile. Typically, this list includes bond interfaces (for example, bond0 and/or bond1). One interface is displayed for each network in the network field.	Format: List
Interfaces: VLAN	This checkbox allows the user to decide whether to create a VLAN interface. If the box is checked, a VLAN interface is automatically created. If the box is not checked, the IP address is assigned directly to the interface selected from the list. Only one IP address can be associated with a non-VLAN interface (for example, bond1). One checkbox is displayed for each interface.	Format: option

Table 3-9 (Cont.) Add New Server Configuration Fields

Fields	Description	Data Input Notes
Interfaces: Prefer	Selection of preferred NTP sources, multiple sources can be designated as preferred. Every NTP Server IP Address field has a corresponding Prefer option.	Format: option
Interfaces: NTP Server IP Address	The IP address of the NTP Server.	Format: numeric

3.2.3 Inserting a Server

Servers can be inserted only after a network field has been provisioned.

Perform the following procedure to insert a server:

1. From the **Servers** page, click **Insert** at the bottom of the table.
2. Enter a **Hostname**. This is a user-defined name for the server. The server name must be unique across the server table.

   For more information about **Hostname**, or any field on this page, see Add New Server Configuration Fields.
3. Select a **Role**.
4. Enter the **System ID**.
5. Select a **Hardware Profile.**
6. Select a **Network Field Name**.

   Select from the network field names defined previously on the Network Field Configuration page.
7. Enter the **IP address** for the appropriate network in the Interfaces grid.
8. Select the **Interface** in the Interfaces grid.
9. Select the **VLAN ID** for the network in the Interfaces grid, if applicable.
10. Select the **Prefer** check box for preferred sources.
11. Click **Add** to add the NTP Server IP Address. Enter the NTP Server IP Address in the text box.
12. Enter the **NTP Server IP Address** in the text box.
13. Select the **Prefer** checkbox for the NTP Server IP Addresses.
14. Enter a **Location**.
15. Click **OK** to submit the information and return to the Servers Configuration page, or click **Apply** to submit the information and continue entering additional data.

The server is added to the network databases.

3.2.4 Editing a Server

Servers that are currently in-service can be edited but the fields available for edit are limited and vary depending on the role. All servers, regardless of service state, can be edited to add, remove, or change NTP settings. Additionally, on OAM servers, System ID can be changed.

> **Note**
>
> Operations, such as NTP sync, should be planned. Critical processes are temporarily shutdown to complete the action. This, or any other in-service operation, should only be run as directed by Oracle support personnel using documentation specific to your application and release.

Perform the following procedure to Edit a server:

1. From the **Servers** page, click to select the server you want to edit.
2. Click **Edit**.
3. Make the desired changes.
4. Click **OK** to save the changes and return to the Servers page. Click **Apply** to submit the changes and remain on the Servers [Edit] form to make additional changes or click **Cancel** to undo the changes and return the values to the previously saved values.

The server edits are submitted to the database.

3.2.5 Deleting a Server

Before a server can be deleted the following conditions must be true:

- The server is not part of a server group.
- The server is not configured as a server pair.

Perform the following procedure to delete a server:

1. From the **Servers** page, click to select the server you want to delete.
2. Click **Delete**.

   Click **Yes** to confirm.

3.2.6 Exporting a Server

The server **Export** button generates an installation script file used for hardware configuration. Use this procedure to export a single server. For information about how to export multiple servers at once, For more information, see Exporting Multiple Servers.

Perform the following procedure to Export a Server:

1. From the **Servers** page, click to select a server to export.
2. Click **Export**.

   The server data is exported to an SH file.
3. Click Info.
4. Click the **download** link to download the file.

3.2.7 Exporting Multiple Servers

The server **Export** button generates an installation script file used for hardware configuration.

Perform the following procedure to export more than one server:

1. From the **Servers** page, press and hold **Ctrl** as you click to select multiple servers.
2. Click **Export**.

   Data for the selected servers is exported to individual SH files located on the **Status and Manage** and the **Files** page.
3. Click **Info.**
4. Click the **Status and Manage** and the **Files** link.

   The SH files for the server data exported in this procedure are located on the **Status and Manage** and the **Files** page.

3.2.8 Generating a Server Report

Perform the following procedure to generate a Server Report:

1. From the **Servers** page, click to select the server for which you want to create a report.

   > **Note**
   >
   > To select multiple server groups, press and hold **Ctrl** as you click to select specific rows. Alternatively, if no servers are selected then all server groups appear in the report.

2. Click **Report**.
3. Click **Print** to print the report, or click **Save** to save a text file of the report.

3.3 Server Groups

To view the Server Groups, from the **Configuration**, click **Server Groups**.

The Server Groups feature allows the user to assign a function, parent relationships, and levels to a group of servers that share the same role, such as NOAM, SOAM, and MP servers. The purpose of this feature is to define database relationships to support the high availability architecture. This relates to replication, availability, status, and reporting at the server level.

From the Server Groups page users can create new groups, edit groups, delete groups, and generate reports that contain server group data. Servers can be added or removed from existing groups using the edit function.

The Server Groups page can be accessed from the main menu by navigating to **Configuration**, and then **Server Groups**. The page displays a grid reflecting all currently configured server groups. A description of the fields displayed in the grid can be found in Server Groups Edit Fields.

> **Note**
>
> Depending on the application configuration, the preferred HA role preference, or NE HA Pref, may not be displayed.

3.3.1 Server Groups Insert Fields

To view the Server Group Insert Fields, from the **Configuration**, click **Server Group**, and then click **Insert**.

The following table describes the fields of the Server Groups Insert form:

Table 3-10 Server Groups Insert Fields

Field	Description	Data Input Notes
Server Group Name	A unique name used to label the server group.	Format: String Range: 1-32 characters. Alphanumeric and underscore are allowed. A minimum of one alphabetic character is required and must not start with a digit. Default: N/A A Value is required.
Level	The level of the servers belonging to this group.	Format: List Range: Levels A, B, or C **Note**: Level **A** groups contain NOAMP and Query servers. Level **B** groups are optional and contain SOAM servers. Level **C** groups contain MP servers. A Value is required.
Parent	The parent server group that functions as the replication parent of the selected server group.	Format: Pulldown menu **Note**: If the level of the group being inserted is A, then the parent field is not editable and NONE is displayed in the list.
Function	The defined function for the server group.	Format: List Range: Functions supported by the system
WAN Replication Connection Count	Specifies the number of TCP connections that are used by replication over any WAN connection associated with this Server Group.	Format: Numeric Range = An integer between 1 and 8 Default = 1

3.3.2 Insert a Server Group

Perform the following procedure to Insert a Server Group:

> **Note**
>
> Servers are not added at this time. Only after the SG is created can servers be added using the edit function.

1. From the **Server Groups**. Click **Insert**.
2. Enter the **Server Group Name.**

   For more information about **Server Group Name**, or any of the fields on this page, see Server Groups Insert Fields.
3. Select a **Level** from the list.
4. Select a **Parent** from the list.
5. Select a **Function** from the list.
6. Enter a **WAN Replication Connection Count.**
7. Click **OK** to submit the information and return to the server groups page or click **Apply** to submit the information and continue adding additional data. Clicking **Cancel** discards all changes and return you to the server groups page.

3.3.3 Add a Server to a Server Group

Servers can be added only after a server group is created. Following are the steps to add a server to a server group:

1. From the **Server Groups**, click to select the server group you want to edit.
2. Click **Edit**.

   The Servers Groups [Edit] form displays the servers in the network field that are possible candidates for inclusion in the server group.
3. To add a server to the server group, select the checkbox for **SG Inclusion**. When checked, the server is included in the server group.
4. Click **OK** to submit the information and return to the Server Groups page, or click **Apply** to submit the information and continue adding additional data. Clicking **Cancel** discards all changes and return you to the Server Groups page.

3.3.4 Server Groups Edit Fields

To view the Server Groups Edit Fields, from the **Configuration**, click **Server Groups**, and then click **Edit**.

Table 3-11 Server Groups Edit Fields

Field	Description	Data Input Notes
Server Group Name	A unique name used to label the server group.	Format: String Range: 1-32 characters. Alphanumeric and underscore are allowed. A minimum of one alphabetic character is required and must not start with a digit. Default: N/A A Value is required.
Level	The level of the servers belonging to this group.	This field cannot be edited. Format: List Range: Levels A, B, or C Note: Level A groups contain NOAMP and Query servers. Level B groups are optional and contain SOAM servers. Level C groups contain MP servers. A Value is required.
Parent	The parent server group that functions as the replication parent of the selected server group.	Format: List **Note**: If the level of the group being inserted is A, then the parent field is not editable and NONE is displayed in the list.
Function	The defined function for the server group.	This field cannot be edited. Format: List Range: Functions supported by the system
WAN Replication Connection Count	Specifies the number of TCP connections that are used by replication over any WAN connection associated with this Server Group.	Format: Numeric Range = An integer between 1 and 8 Default = 1
Prefer Network Field as spare	The Preferred HA Role Setting for the NE. When marked as a preferred spare, the network field only assumes an active or standby role if all the other network fields are unavailable. This allows the user to isolate a dedicated disaster recovery field from normal operations. **Note**: Depending on the application configuration, this selection may not be available.	Format: Check box
Server	The name of a server available for inclusion in the server group.	Automatically populated based on servers available for inclusion.
SG Inclusion	When checked, the server is included in the server group.	Checkbox

Table 3-11 (Cont.) Server Groups Edit Fields

Field	Description	Data Input Notes
Preferred HA Role	The Preferred HA Role Setting for the server. When marked as a preferred spare, the server only assumes an active or standby role if all the other servers in the server group are unavailable. This allows the user to isolate a dedicated disaster recovery node from normal operations.	Checkbox
VIP Assignment: VIP Address	A virtual IP address shared by the servers in this group that have networking interfaces on the same layer-2 network.	Format: Valid IP address Range: Four, 8-bit octets separated by periods [The first octet = 1-255; the last three octets = 0-255] Dotted quad decimal (IPv4) or colon hex (IPv6)

3.3.5 Edit a Server Group

When a server group is created, certain values can be edited, and available servers can be added to or deleted from the server group. Additionally, the edit page presents new fields and choices not present when initially creating the server group.

The Server Groups Edit page allows you to edit existing server groups. The following table describes the fields of the Edit Server Groups page:

Perform the following procedure to edit a server group:

1. From the **Server Groups**, click **Edit**.
2. From the grid, click to select the server group you want to edit.
3. Edit the values that you want to change.

   Fields that cannot be edited are grayed out. For more information about these fields, or any of the fields in this procedure, see Server Groups Edit Fields.
4. Click **OK** to submit the information and return to the Server Groups page, or click **Apply** to submit the information and continue adding additional data. Clicking **Cancel** discards all changes and return you to the Server Groups page.

3.3.6 Delete a Server Group

> **Note**
>
> Only a server group with no existing servers in the group can be deleted. For information about how to delete a server from a server group, see Delete a Server from a Server Group.

Perform the following procedure to delete a server group:

1. From the **Server Groups**, click to select the server group you want to delete from the table.
2. Click **Delete**.
3. Click **OK** to delete the server group.

   If you click **Cancel**, the server group is not deleted, and you are returned to the Server Groups page.

3.3.7 Delete a Server from a Server Group

Perform the following procedure to delete a server from a server group:

1. From the **Server Groups**, click to select the server group you want to edit.
2. Click **Edit**.
3. To delete a server from the server group, de-select the check box for **SG Inclusion**. When unchecked, the server is not included in the server group.
4. Click **OK** to submit the information and return to the Server Groups page, or click **Apply** to submit the information and continue adding additional data. Clicking **Cancel** discards all changes and return you to the Server Groups page.

3.3.8 Assign a VIP to a Server Group

Perform the following procedure to assign a VIP to a server group:

> **Note**
>
> This procedure is optional and is only supported if the system supports VIP.

1. From the **Configuration**, click **Server Groups**.
2. From the table, click to select the server group you want to edit.
3. Click **Edit**.
4. Click **Add** to add a new VIP address to the server group.

   > **Note**
   >
   > Multiple VIP addresses can be added.

5. Insert the **VIP address**.
6. Click **OK** to submit the information and return to the Server Groups page, or click **Apply** to submit the information and continue adding additional data. Clicking **Cancel** discards all changes and returns return you to the Server Groups page.

3.3.9 Remove a VIP from a Server Group

Perform the following procedure to remove a VIP address from a server group:

1. From the **Server Groups**, click to select the server group you want to edit.
2. Click **Edit**.

3. Click **Remove** next to the VIP address you want to remove from the server group.

   The VIP address is removed from the server group.

4. Click **OK** to submit the information and return to the Server Groups page, or click **Apply** to submit the information and continue adding additional data. Clicking **Cancel** discards all changes and returns return you to the Server Groups page.

3.3.10 Generate a Server Group Report

Perform the following procedure to generate a server group report:

> **Note**
>
> Depending on the application configuration, the NE HA Pref, or network field high availability preference, may not be displayed.

1. From the **Server Groups**, click to select the server group for which you want to create a report.

   > **Note**
   >
   > To select multiple server groups, press and hold **Ctrl** as you click to select specific rows. Alternatively, if no servers are selected then all server groups appear in the report.

2. Click **Report**.
3. Click **Print** to print the report, or click **Save** to save a text file of the report.

3.4 Resource Domains

To view the New Resource Domain Fields, from the **Configuration**, click **Resource Domains**.

The Resource Domains function allows you to assign servers to domains.

3.4.1 Add New Resource Domain Fields

To view the New Resource Domain Fields, From the **Configuration**, click **Resource Domains** and click **Insert**.

The following table describes the fields for adding a resource domain field:

Table 3-12 Add New Resource Domain Fields

Fields	Description	Data Input Notes
Resource Domain Name	The name for the resource domain.	Format: Alphanumeric (A-Z, a-z, 0-9) and underscore (_) characters. Range: Maximum length is 32 characters Default: N/A

Table 3-12 (Cont.) Add New Resource Domain Fields

Fields	Description	Data Input Notes
Resource Domain Profile	The profile associated with the resource domain.	Format: List Range: Policy Binding, Policy Session, and Policy and Charging DRA
Server Groups	The server groups associated with the resource domain.	Format: Check box Range: MPSG, NOSG< SBRSG, SBSG2, SOSG

3.4.2 Insert a Resource Domain

Perform the following procedure to Insert a Resource Domain:

1. From the **Configuration**, click **Resource Domains**.
2. Click **Insert** at the bottom of the table.
3. Enter a **Resource Domain Name**. This is a user-defined name for the domain. The domain name must be unique.
4. Select a **Resource Domain Profile**.
5. Select a **Server Group**.
6. Click **OK** to submit the information and return to the Resource Domains Configuration page, or click **Apply** to submit the information and continue entering additional data.

The resource domain is added to the network database.

3.4.3 Edit a Resource Domain

Perform the following procedure to edit Resource Domain:

1. From the **Resource Domains**, Select the resource domain from the listing.
2. Click **Edit** at the bottom of the table.
3. Modify one or more of the resource domain information fields.
4. Click **OK** to submit the information and return to the Resource Domains Configuration page, or click **Apply** to submit the information and continue editing additional data.

The resource domain information is updated in the network database and the changes take effect immediately.

3.4.4 Delete a Resource Domain

Perform the following procedure to Delete a Resource Domain:

1. From the **Resource Domains**, click to select the resource domain you want to delete.

> **Note**
>
> To prevent large service disruptions, you cannot delete a Resource Domain with a profile type or Policy Binding or Policy Session, unless the Policy DRA feature is deactivated. However, resource domains with a profile type of Policy DRA can be deleted without deactivation of the Policy DRA feature.

2. Click **Delete**.

   Click **Yes** to confirm.

The resource domain is deleted from the network database table.

3.4.5 Generate a Resource Domains Report

Perform the following procedure to generate a resource domains report:

1. From the **Resource Domains** click to select the resource domain for which you want to create a report.

> **Note**
>
> To select multiple server groups, press and hold **Ctrl** as you click to select specific rows. Alternatively, if no servers are selected then all server groups appear in the report.

2. Click **Report**.
3. Click **Print** to print the report, or click **Save** to save a text file of the report.

3.5 Places

To view Places , from the **Configuration**, click **Places**.

Places are used to build associations for groups of servers at a single geographic location. These places can then be grouped into place associations, which create relationships between one or more place.

3.5.1 Places Insert Fields

To view the Places Insert Fields, from the **Configuration**, click **Places** and then click **Insert**.

The following table describes the fields of the Places Insert page:

Table 3-13 Places Insert Fields

Field	Description	Data Input Notes
Place Name	A unique name used to label the place.	Format: Alphanumeric characters and underscore (_) are allowed. A minimum of one alphabetic character is required. Range: Maximum length is 32 characters.

Table 3-13 (Cont.) Places Insert Fields

Field	Description	Data Input Notes
Parent	The parent of a place group	Format: List **Note**: This field is not used for PCA configuration. The only option is None.
Place Type	The place type.	Format: List Range: Site (default option).
Servers	List of the available servers in the NO or SO	Format: Checkbox **Note**: Select all of the DA-MP and SBR servers that are physically located at this Site Place.

3.5.2 Inserting Places

Following is the procedure to Insert a Place:

1. From the **Places** page, click **Insert**.
2. Enter the **Place Name.**
3. Select a **Parent** from the list.

> **Note**
>
> A Parent Place is not required for PCA Places and can be set as **None**.

4. Select a **Place Type** from the list.
5. Select all of the available DA-MP and SBR **Servers** that are physically located at this Site Place.
6. Click **OK** to submit the information and return to the Places page, or click **Apply** to submit the information and continue adding additional data.

3.5.3 Editing Places

Following are the steps to edit place information:

1. From the **Places** page, select the place from the listing.
2. Click **Edit** at the bottom of the table.
3. Modify one or more of the place information fields.
4. Click **OK** to submit the information and return to the Places page, or click **Apply** to submit the information and continue editing additional data.

The place information is updated in the network database and the changes take effect immediately.

3.5.4 Delete a Place

Following is the procedure to Delete a Place:

1. From the **Places** page, click to select the place you want to delete from the table.

> **Note**
>
> A Place cannot be deleted if it includes servers. Before deleting, disassociate any servers.

2. Click **Delete**.

   A delete confirmation message appears in a pop up window.

3. Click **OK** to delete the place.

   If you click **Cancel**, the place is not deleted, and you are returned to the Places page.

3.5.5 Generate a Places Report

Perform the following procedure to Generate a Places Report:

1. From the **Places** page, click to select the place for which you want to create a report.

> **Note**
>
> To select multiple server groups, press and hold **Ctrl** as you click to select specific rows. Alternatively, if no servers are selected then all server groups appear in the report.

2. Click **Report**.
3. Click **Print** to print the report, or click **Save** to save a text file of the report.

3.6 Place Associations

The Place Association function allows you to create relationships between places. Places are groups of servers at a single geographic location. For PCA, Place Associations are used to identify all sites that require access to the Policy DRA binding database, and to identify sites that share a PCA session database.

3.6.1 Place Association Insert Fields

To view the Place Association Insert Fields, From the **Main Menu**, click **Configuration**, and then **Place Association**, and then click **Insert**.

The following table describes the fields of the Place Association Insert page.

Table 3-14 Place Association Insert Fields

Field	Description	Data Input Notes
Place Association Name	A unique name used to label the place association.	Format: Alphanumeric characters and underscore (_) are allowed. A minimum of one alphabetic character is required. Range: Maximum length is 32 characters.

Table 3-14 (Cont.) Place Association Insert Fields

Field	Description	Data Input Notes
Place Association Type	The type of place association.	Format: List Range: defined by the application
Places	The places available to be grouped in this association.	Format: Option Range: list of places defined using Places function

3.6.2 Insert a Place Association

Following is the procedure to configure a Place Association:

1. From the **Place Association** page, click **Insert**.
2. Enter the **Place Association Name.**

   For more information about **Place Association Name**, or any of the fields on this page, see Place Association Insert Fields.
3. Optional: Select a **Place Association Type** from the list.
4. Click **OK** to submit the information and return to the Place Associations page, or click **Apply** to submit the information and continue adding additional data.

3.6.3 Edit a Place Associations

Following is the procedure to edit Place Associations:

1. From the **Place Associations** page. Select the place association from the list you want to Edit.
2. Click **Edit** at the bottom of the table.
3. Modify one or more of the place associations information fields.
4. Click **OK** to submit the information and return to the Place Associations Configuration page, or click **Apply** to submit the information and continue editing additional data.

The place association information is updated in the network database and the changes take effect immediately.

3.6.4 Delete a Place Association

Following is the procedure to delete a Place Association:

1. From the **Place Associations** page. Select the place association you want to delete from the table.

   > **Note**
   >
   > You cannot delete a Place Association that includes Places. Before deleting the Place Association, disassociate the Places from the Place Association

2. Click **Delete**.

3. Click **OK** to delete the place association.

   If you click **Cancel**, the place association are not deleted, and you are returned to the Place Association page.

3.6.5 Generate a Place Associations Report

Following is the procedure to generate place associations report:

1. From the **Place Associations** page. Select the place associations for which you want to create a report.
2. Click **Report**.
3. Click **Print** to print the report, or click **Save** to save a text file of the report.

3.7 DSCP

To view the **DSCP**, from the Configuration, click **DSCP**.

Use the he Differentiated Services Code Point (DSCP) pages to configure service point codes. Through the DSCP Configuration page, Interface and Port DSCP information can be inserted and saved to the configuration.

> **Note**
>
> Use the Differentiated Services Code Point (DSC) pages to configure the priority value of outbound traffic. The router receiving the traffic will use the configured value to prioritize the traffic before sending to the intended destination. The priority value can be applied to a network interface or to a network port of the target. For either case, both TCP and SCTP protocols are supported.

3.7.1 Interface DSCP

To view the Interface DSCP, from the **Configuration**, click **DSCP**, and then **Interface DSCP**.

The Interface Differentiated Services Code Point (DSCP) pages allow the user to configure server interfaces for service point codes. Through the Interface DSCP Configuration page, DSCP information can be inserted and saved to the configuration.

3.7.1.1 Interface DSCP Fields

The appearance of the Interface DSCP can vary, and it includes an **Entire Network** tab (when a server group is selected), as well as other server tabs for the selected server group.

> **Note**
>
> The page tabs and fields reflect your site configuration.

The following table describes the fields of the Interface DSCP insert page:

Table 3-15 Interface DSCP Fields

Tab/Field	Description	Data Input Notes
Interface/Server	Server groups are presented in tabs at the top of the main work area. Selecting a specific server group reveals the individual servers of that group. Alternatively, selecting the **Entire Network** tab reveals all the servers defined in the system. After selecting a specific server group, the user has the option of selecting a specific server or selecting **Entire Server Group** to reveal the existing routes.	Visible only for the view page.
Interface	The server interface name	Format: List Range: Valid server interfaces
DSCP	DSCP value for the associated network interfaces.	Format: Numeric Range: 0 to 63, inclusive Default: NA
Protocol	TCP or SCTP protocol	Format: List Range: TCP or SCTP Default: TCP
Scope (View page only)	The DSCP interface details.	This informational field lists the scope and can reflect the entire network or the scope of one of the configurable container tabs.

3.7.1.2 Insert an Interface DSCP

Perform the following procedure for inserting an interface DSCP:

1. From the **Interface DSCP** page, select **Entire Network** or select a server group tab.
2. Select a server sub-tab for the interface, or alternatively if a server group tab is selected and the interface is for all servers in the server group select the Entire Server Group sub tab
3. Click **Insert**.
4. Select the **Interface** from the list of available server interfaces.
5. Enter a valid **DSCP** value. A valid value is an integer between 0 and 63, inclusive.
6. Select **TCP or SCTP protocol** from the list.
7. Click **OK** to submit the information and return to the DSCP page, or click **Apply** to submit the information and continue entering additional data.

The new DSCP is added.

3.7.1.3 Delete an Interface DSCP

Perform the following procedure to delete an interface DSCP:

1. From the **Interface DSCP** page, remain on the tab for Entire Network or select a server group tab.
2. Select a server sub-tab for the interface, or alternatively if a server group tab is selected and the interface is for all servers in the server group select the Entire Server Group sub-tab
3. Click **Delete**.

   A confirmation box appears.
4. Click **OK** to delete the DSCP

3.7.1.4 Generate an Interface DSCP Report

An interface DSCP report provides a summary of the configuration of one or more DSCPs. Reports can be printed or saved to a file.

Perform the following procedure to generate an Interface DSCP Report:

1. From the **Interface DSCP**, select a server tab or **Entire Network**.
2. Click **Report** to generate a DSCP report. This button generates a report for all the interfaces on the selected server or **Entire Server Group** sub-tab if no rows are selected. If one or more rows are selected, the report only contains the information about the selected rows.
3. Click **Print** to print the report.
4. Click **Save** to save the report to a file.
5. Click **Back** to return to the **Configuration**,**DSCP**, and **Interface DSCP** grid.

3.7.2 Port DSCP

To view the Port DSCP, from the **Configuration**, click **DSCP**, and then click **Port DSCP**.

The Port Differentiated Services Code Point (DSCP) pages allow the user to configure server ports for service point codes. Through the Port DSCP Configuration page, DSCP information can be inserted and saved to the configuration.

3.7.2.1 Port DSCP Fields

The appearance of the Interface DSCP can vary, and it includes an **Entire Network** tab (when a server group is selected), as well as other server tabs for the selected server group.

The following table describes the fields of the Port DSCP Insert page.

> **Note**
>
> The page tabs and fields reflect your site configuration.

Table 3-16 Port DSCP Insert Fields

Tab/Field	Description	Data Input Notes
Port/Server	Server groups are presented in tabs at the top of the main work area. Selecting a specific server group reveals the individual servers of that group. Alternatively, selecting the **Entire Network** tab reveals all the servers defined in the system. After selecting a specific server group, the user has the option of selecting a specific server or selecting **Entire Server Group** to reveal the existing ports.	Visible only for the view page.
Port (Insert page only)	A valid TCP or SCTP port.	Format: Numeric Range: 1 to 65535, inclusive
DSCP	DSCP value for the associated port.	Format: Numeric Range: 0 to 63, inclusive
Protocol	TCP or SCTP protocol.	Format: List
Scope (View page only)	The DSCP port details.	This informational field lists the scope and can reflect the entire network or the scope of one of the configurable container tabs.

3.7.2.2 Insert a Port DSCP

Perform the following is the procedure for inserting a Port DSCP:

1. From the **Port DSCP** remain on the tab for **Entire Network** or select a server group (but not a specific server for the interface).
2. Select the server for the interface, or alternatively if a server group is selected, create the interface on all servers in the server group by selecting the Entire Server Group tab.
3. Click **Insert**.
4. Enter a valid **Port** value. A valid value is an integer between 1 and 65535, inclusive.
5. Enter a valid **DSCP** value. A valid value is an integer between 0 and 63, inclusive.
6. Select **TCP or SCTP protocol** from the list.
7. Click **OK** to submit the information and return to the DSCP page, or click **Apply** to submit the information and continue entering additional data.

3.7.2.3 Delete a Port DSCP

Perform the following procedure for deleting a Port DSCP:

1. From the **Port DSCP**, select the server or server group containing the interface, alternatively select the **Entire Network** tab.
2. Click **Delete**.
3. Click **OK** to delete the DSCP.

3.7.2.4 Generate a Port DSCP Report

A Port DSCP report provides a summary of the configuration of one or more DSCPs. Reports can be printed or saved to a file.

Perform the following procedure to generate a Port DSCP Report:

1. From the **Port DSCP**, click **Report** to generate a report for all DSCPs.
2. Click **Print** to print the report.
3. Click **Save** to save the report to a file.
4. Click **Back** to return to the **Configuration**, and then **DSCP**, and then **Port DSCP** grid.

4
Alarms and Events

This section provides an overview of alarms and events. Application alarms and events are unsolicited messages used in the system for trouble notification and to communicate the status of the system to Operations Services (OS). The application merges unsolicited alarm messages and unsolicited informational messages from all servers in a network and notifies you of their occurrence. Alarms enable a network manager to detect faults early and take corrective action to prevent a degradation in the quality of service.

Since alarms from each server are merged into one table of alarms at the SOAM and NOAMP servers, alarms should be viewed at the SOAM or NOAMP servers. When you log in to the GUI at the SOAM server, only alarms within that Network Element are visible. However, if you log in to the GUI at the NOAMP server, all alarms in the entire system are visible.

The Alarms and Events menu also features a page for viewing and generating reports of SNMP traps.

4.1 Alarms and Events Overview

Alarms provide information pertaining to a system's operational condition that a network manager may need to act upon. An alarm might represent a change in an external condition, for example, a communications link has changed from connected to disconnected state. Alarms can have these severities:

- Critical application error
- Major application error
- Minor application error
- Cleared

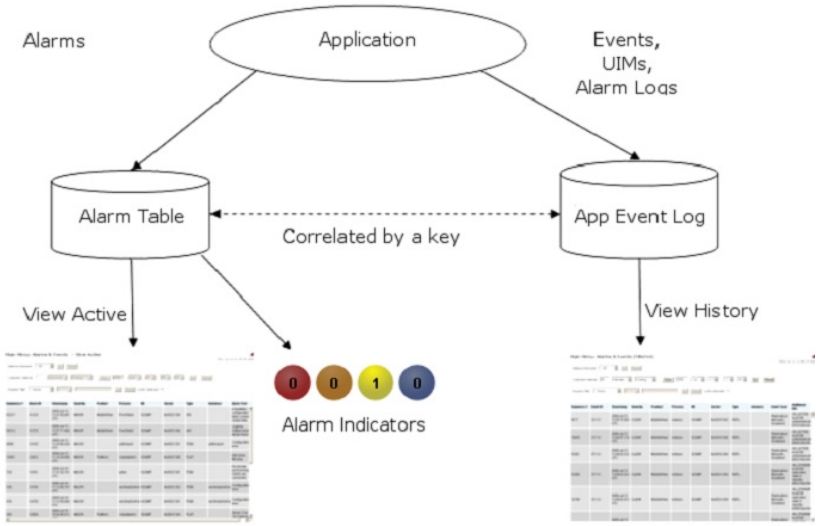
An alarm is considered inactive once it has been cleared and cleared alarms are logged on the **Alarms & Events** and the**View History** page.

Events note the occurrence of an expected condition, such as an unsuccessful log in attempt by a user. Events have a severity of Info and are logged on the View History page.

> **Note**
>
> Some events may be throttled because the frequently generated events can overload the MP or OAM server's system or event history log (for example, generating an event for every ingress message failure). By specifying a throttle interval (in seconds), the events display no more than once during the interval duration period (for example, if the throttle interval is 5 seconds, the event is logged no more than once every 5 seconds).

Figure 4-1 shows how Alarms and Events are organized in the application.

Figure 4-1 Flow of Alarms



Alarms and events are recorded in a database log table. Application event logging provides an efficient way to record event instance information in a manageable form, and is used to:

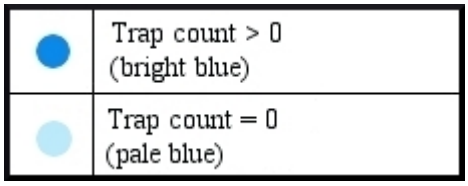
- Record events representing alarmed conditions
- Record events for later browsing
- Implement an event interface for generating SNMP traps

Alarm indicators, located in the User Interface banner, indicate all critical, major, and minor active alarms. A number and an alarm indicator combined represent the number of active alarms at a specific level of severity. For example, if you see the number six in the orange-colored alarm indicator, it means that there are six major active alarms. This is shown in Figure 4-2 and Figure 4-3.

Figure 4-2 Alarm Indicators Legend

	Active Critical Alarm (bright red)
	Active Major Alarm (bright orange)
	Active Minor Alarm (bright yellow)
	No active Critical Alarm (pale red)
	No active Major Alarm (pale orange)
	No active Minor Alarm (pale yellow)
	Not Connected (white)

Figure 4-3 Trap Count Indicator Legend



4.2 Viewing Active Alarms

Active alarms are displayed in a scrollable, optionally filterable table. By default, the active alarms are sorted by time stamp with the most recent alarm at the top.

Perform the following procedure to view active alarms.

> **Note**
>
> The alarms and events that appear in View Active vary depending on whether you are logged into an NOAM or SOAM. Alarm collection is handled solely by NOAM servers in systems that do not support SOAMs.

1. From the **Alarms & Events**, click **View Active**.
2. If necessary, specify filter criteria and click **Go**.

   The active alarms are displayed according to the specified criteria.
   The active alarms table updates automatically. When new alarms are generated, the table is automatically updated, and the view returns to the top row of the table.
3. To suspend automatic updates, click any row in the table.

   The following message appears: `(Alarm updates are suspended.)`
   If a new alarm is generated while automatic updates are suspended, a new message appears: `(Alarm updates are suspended. Available updates pending.)`

   To resume automatic updates, press and hold **Ctrl** as you click to deselect the selected row.

4.3 Active Alarms Fields

To view Active Alarms, from **Alarms & Events**, click **View Active**.

The following table describes the fields on the View Active alarms page:

Table 4-1 Active Alarms Fields

Active Alarms Field	Description
Sequence #	A system-wide unique number assigned to each alarm
Alarm ID	A unique number assigned to each alarm in the system. See Alarm and Event ID Ranges for more information.

Table 4-1 (Cont.) Active Alarms Fields

Active Alarms Field	Description
Alarm Text	Description of the alarm. The description is truncated to 140 characters. **Note**: The **Alarm Text** field is not truncated in exports or reports.
Timestamp	Date and time the alarm occurred (fractional seconds resolution)
Severity	Alarm severity - Critical, Major, Minor.
Product	Name of the product or application that generated the alarm.
Process	Name of the process that generated the alarm
NE	Name of the Network Field where the alarm occurred.
Server	Name of the server where the alarm occurred.
Type	Alarm or Event Type, for example, Process, Disk, Platform. See Alarm and Event Types for more information.
Instance	Instance of the alarm, for example, Link01 or Disk02. The Instance provides additional information to help differentiate two or more alarms with the same number. This field may be blank if differentiation is not necessary.

4.4 Exporting Active Alarms

You can initiate a one-time export task of active alarm data or schedule periodic exports from the **Alarms and Events** and **View Active** page. Active alarm data can be exported immediately, or you can schedule exports to occur daily or weekly. If filtering has been applied in the View Active page, only filtered data is exported.

For each export task, the system automatically creates a CSV file of the filtered data. The file is available in the file management area until you manually delete it, or until the file is transferred to an alternate location using the remote server data export feature. For more information about using remote server data export, see Data Export.

Alarm details can be exported to a file by clicking **Export** on the View Active page. The system automatically creates and writes the exported active alarm details to a CSV file in the file management area.

Perform the following procedure to export active alarms to a file, or schedule a periodic data export task of this data:

1. From the **View Active**, locate and select the server group tab that contains the alarms of interest.

   Server groups are presented in tabular form. If the target server group is not visible in the available screen space, use the scroll right/left buttons located below the tool bar area and to the right or left of the visible tabs.

2. Click **Export**.

3. Select the **Export Frequency**. Based on this selection, other fields may become active or inactive.

4. Type a **Task Name**.

   This field is not active if the selected export frequency is once. For more information about **Task Name**, or any field on this page, see View Active Export Fields.

5. Optional: Type a **Description**.

   This field is not active if the selected export frequency is once.

6. Optional: Type a **Filename Prefix**.

   The filename prefix is prepended to the generated export file name for quick identification.

7. Select the **Minute** if **Export Frequency** is fifteen minutes or hourly.

   If the selected export frequency is fifteen minutes or hourly, this is the minute of each period when the transfer is set to begin. For an export frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer of the hour.

8. Select the **Time of Day** if **Export Frequency** is daily or weekly.

   This field is not active if the selected export frequency is once, fifteen minutes, or hourly.

9. Select the **Day of Week** if **Export Frequency** is weekly.

   This field is not active if the selected export frequency is once, fifteen minutes, hourly, or daily.

10. Click **OK** to initiate the active alarms export task or **Cancel** to discard the changes and return to the View Active page.

The data export task is initiated or scheduled.
From the **Status & Manage** click, **Files** you can view a list of files available for download, including the file you exported during this procedure. For more information, see View the File List.

Scheduled tasks can be viewed, edited, and deleted, and reports of scheduled tasks can be generated from **Status & Manage** and then, **Tasks** and then,**Scheduled Tasks**. For more information see:

- Editing a Scheduled Task
- Deleting a Scheduled Task
- Generating a Scheduled Task Report

> **Note**
>
> Only one export operation at a time is supported on a single server. If an export is in progress from another GUI session when you click **Export**, a message is displayed and the export does not start. Wait until the other export is complete before you can begin your export.

4.5 View Active Export Fields

To view Active Export Fields, from **Alarms & Events**, click **View Active**, and then click **Export**.

The following table describes the fields on the Export:

Table 4-2 Schedule Active Alarm Data Export Fields

Field	Description	Data Input Notes
Export Frequency	Frequency at which the export occurs	Format: Option Range: Once, Fifteen Minutes, Hourly, Daily, or Weekly Default: Once **Note**: Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out. Note that the Fifteen Minute, Hourly, Daily, and Weekly scheduling options are only available when provisioning is enabled.
Task Name	Name of the scheduled task.	Format: Text box Range: Maximum length is 40 characters. Valid characters are alphanumeric, minus sign, and spaces between words. The first character must be an alpha character. The last character must not be a minus sign. Default: APDE Alarm Export. The default value can only be used once. For scheduled exports, the frequency is not Once, because the name must be unique. **Note**: This field is not active if the selected export frequency is once.
Description	Optional description of the scheduled task	Format: Text box Range: Maximum length is 255 characters; alphanumeric (a-z, A-Z, and 0-9) and minus sign (-). Description must begin with an alphanumeric character. **Note**: This field is not active if the selected export frequency is once.
Filename Prefix	Optional export filename prefix. The extension to pre-pend the generated export file name.	Format: Text box Range: Maximum length is 8 characters; alphanumeric (a-z, A-Z, and 0-9).
Minute	Select the minute of each hour when the data will be written to the export directory. Enabled only if Export Frequency is hourly or fifteen minutes. For a frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer in the hour, a value between 0 and 14.	Format: Scrolling list Range: 0 to 59 Default: 0 **Note**: This field is not active if the selected export frequency is Once, Daily, or Weekly. This field is only active if the selected export frequency is Fifteen Minutes or Hourly.
Time of Day	Select the time of day when the data will be written to the export directory. Enabled only if Export Frequency is daily or weekly. Select from 15-minute increments, or fill in a specific value.	Format: Time text box Range: HH:MM with AM/PM Default: 12:00 AM **Note**: This field is not active if the selected export frequency is Once, Fifteen Minutes, or Hourly. This field is only active if the selected export frequency is Daily or Weekly.

Table 4-2 (Cont.) Schedule Active Alarm Data Export Fields

Field	Description	Data Input Notes
Day of Week	Select the day of week when the data will be written to the export directory. Enabled only if Export Frequency is weekly.	Format: Option Range: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday Default: Sunday **Note**: This field is active only if Weekly is selected.

4.6 Viewing Alarm and Event History

All historical alarms and events are displayed in a scrollable, optionally filterable table. The historical alarms and events are sorted, by default, by time stamp with the most recent one at the top. Use this procedure to view alarm and event history.

> **Note**
>
> The alarms and events that appear in View History vary depending on whether you are logged in to an NOAM or SOAM. Alarm collection is handled solely by NOAM servers in systems that do not support SOAMs.

Perform the following procedure to view Alarm and Event History:

1. From the **View History**, specify filter criteria and click **Go**.

   > **Note**
   >
   > Some fields, such as **Additional Info**, truncate data to a limited number of characters. When this happens, a **More** link appears. Click **More** to view a report that displays all relevant data.

   Historical alarms and events are displayed according to the specified criteria.
   The historical alarms table updates automatically. When new historical data is available, the table is automatically updated, and the view returns to the top row of the table.

2. To suspend automatic updates, click any row in the table.

   The following message appears: `(Alarm updates are suspended).`
   If a new alarm is generated while automatic updates are suspended, a new message appears: `(Alarm updates are suspended. Available updates pending).`

   To resume automatic updates, press and hold **Ctrl** as you click to deselect the selected row.

4.7 Historical Alarms and Event Fields

The following table describes the fields on the View History Alarms and Events page:

Table 4-3 Historical Alarms Fields

Historical Alarms Field	Description
Sequence #	A system-wide unique number assigned to each alarm/event.
Event ID	A unique number assigned to each alarm/event in the system.
Event Text	Description of the alarm/event. The description is truncated to 140 characters. If the description is truncated, a link to the alarm report is appended.
Timestamp	Date and time the alarm/event occurred (fractional seconds resolution).
Severity	Alarm/event severity - Critical, Major, Minor, and Info.
Additional Info	Any additional information about the alarm or event that might help fix the root cause of the alarm or event. **Additional Information** is truncated to 140 characters. **Note**: **Additional Info** field is not truncated in exports or reports.
Product	Name of the product or application that generated the alarm/event.
Process	Name of the process that generated the alarm/event.
NE	Name of the Network Field where the alarm/event occurred.
Server	Name of the server where the alarm/event occurred.
Type	Alarm or Event Type, for example, Process, Disk, Platform. See Alarm and Event Types for more information.
Instance	Instance of the alarm/event, for example, Link01 or Disk02. The Instance provides additional information to help differentiate two or more alarms/events with the same number. This field may be blank if differentiation is not necessary.

4.8 Historical Events Data Export Fields

The following table describes the fields on the Export page:

Table 4-4 Schedule Event Data Export Fields

Field	Description	Data Input Notes
Export Frequency	Frequency at which the export occurs	Format: Option Range: Once, Fifteen Minutes, Hourly, Daily, or Weekly Default: Once **Note**: Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out. Note that the Fifteen Minute, Hourly, Daily and Weekly scheduling options are only available when provisioning is enabled.
Task Name	Name of the scheduled task.	Format: Text box Range: Maximum length is 40 characters. Valid characters are alphanumeric, minus sign, and spaces between words. The first character must be an alpha character. The last character must not be a minus sign. A value is required. **Note**: This field is not active if the selected export frequency is once.
Description	Optional description of the scheduled task	Format: Text box Range: Maximum length is 255 characters; alphanumeric (a-z, A-Z, and 0-9) and minus sign (-). The first character must be alphanumeric. The last character must be a minus sign (-). **Note**: This field is not active if the selected export frequency is once.
Filename Prefix	Optional export filename prefix. The extension to pre-pend the generated export file name.	Format: Text box Range: Maximum length is 8 characters; alphanumeric (a-z, A-Z, and 0-9).
Minute	Select the minute of each hour when the data will be written to the export directory. Enabled only if Export Frequency is hourly or fifteen minutes. For a frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer in the hour, a value between 0 and 14.	Format: Scrolling list Range: 0 to 59 Default: 0 **Note**: This field is not active if the selected export frequency is Once, Daily, or Weekly. This field is only active if the selected export frequency is Fifteen Minutes and Hourly.

Table 4-4 (Cont.) Schedule Event Data Export Fields

Field	Description	Data Input Notes
Time of Day	Select the time of day when the data will be written to the export directory. Enabled only if Export Frequency is daily or weekly. Select from 15-minute increments, or fill in a specific value.	Format: Time text box Range: HH:MM with AM/PM Default: 12:00 AM **Note**: This field is not active if the selected export frequency is Once, Fifteen Minutes, or Hourly. This field is only active if the selected export frequency is Daily or Weekly.
Day of Week	Select the day of week when the data will be written to the export directory. Enabled only if Export Frequency is weekly.	Format: Option Range: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday Default: Sunday **Note**: This field is active only if Weekly is selected.

4.9 Exporting Alarm and Event History

You can initiate a one-time export task of alarm history data or schedule periodic exports from the **Alarms and Events** and then, **View History** page. If filtering has been applied in the View History page, only filtered data is exported.

For each export task, the system automatically creates a CSV file of the filtered data. The file is available in the file management area until you manually delete it, or until the file is transferred to an alternate location using the remote server data export feature. For more information about using remote server data export, see Remote Servers.

Perform the following procedure to export alarm and event history to a file, or schedule a periodic data export task of this data:

1. From the **View History** page, specify the desired filter criteria and click **Go**. The **Collection Interval** is required.

   The alarm and event history files are displayed according to the specified criteria.
2. Click **Export**.
3. Select the **Export Frequency**. Based on this selection, other fields may become active or inactive.
4. Enter a **Task Name**.

   This field is not active if the selected export frequency is once. For more information about **Task Name**, or any field on this page, see Historical Events Data Export Fields.
5. Optional: Enter a **Description**.

   This field is not active if the selected export frequency is once.
6. Optional: Enter a **Filename Prefix**.

   The filename prefix is pre-pended to the generated export file name for quick identification.
7. Select the **Minute** if **Export Frequency** is fifteen minutes or hourly.

If the selected export frequency is fifteen minutes or hourly, this is the minute of each period when the transfer is set to begin. For an export frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer.

8. Select the **Time of Day** if **Export Frequency** is daily or weekly.

   This field is not active if the selected export frequency is once, fifteen minutes, or hourly.

9. Select the **Day of Week** if **Export Frequency** is weekly.

   This field is not active if the selected export frequency is once, fifteen minutes, hourly, or daily.

10. Click **OK** to initiate the export task or **Cancel** to discard the changes and return to the View History page.

The data export task is initiated or scheduled.
From the **Status & Manage** and the **Files** page, you can view a list of files available for download, including the file you exported during this procedure. For more information, see View the File List.

Scheduled tasks can be viewed, edited, and deleted, and reports of scheduled tasks can be generated from **Status & Manage**,**Tasks**, and, **Scheduled Tasks**. For more information see:

- Editing a Scheduled Task
- Deleting a Scheduled Task
- Generating a Scheduled Task Report

> **Note**
>
> Only one export operation at a time is supported on a single server. If an export is in progress from another GUI session when you click **Export**, a message is displayed and the export does not start. Wait until the other export is complete before you can begin your export. Alarm export times vary based on the number alarms present in the system.

4.10 Generating a Report of Active Alarms

Perform the following procedure to Generate a Report of Active Alarms:

1. From the **View Active** page, Specify filter criteria, if necessary, and click **Go**.

   The active alarms are displayed according to the specified criteria. Alternately, you can select multiple rows and generate a report using those. To select multiple rows, press and hold **Ctrl** as you click to select specific rows.

2. Click **Report**.

   The View Active Report can be printed or saved to a file.

3. Click **Print** to print the report.

4. Click **Save** to save the report to a file.

4.11 Graph Active Alarms

The View Active alarm screen includes the ability to produce a set of summary graphs, which provide statistical summaries of the active alarms. The active alarms can be graphed based on

different topology characteristics or alarm data fields by selecting one or more components from the Graph list. The graphing selections are persistent.

The active alarm graphs display as a series of stacked bar graphs, one bar stack for each server. Each bar stack shows the count of critical, major, and minor alarms for the selected items in the Graph list. Multiple graphs display side-by-side for each item selected. The graphs are displayed above the active alarms grid listing.

Perform the following procedure to graph the active alarms:

1. From the **View Active** page, specify filter criteria In the Filter list and click **Go**.

   The selected Filter criteria are applied to all Server Group tabs. The active alarms that meet the specified criteria display.

2. Specify one or more graphical information components from the Graph list. Valid components are listed in Table 4-5.

Table 4-5 Graphical information components

Topology Components	Alarm Data Field Components
Network Field	Event ID
Server	Severity
Server Group	Product
Resource Domain	Process
Place	Server
Place Association	Type

> **Note**
>
> Server is both a topology component and a data field in the active alarm data grid display.

   The graphs for the selected components display above the tabbed area.

3. To adjust the graph viewing area, click and hold the slider above the graph while adjusting the proportions with the mouse.
4. To remove one or more graphs, de-select the choices from the **Graph** list.

   If only some choices are deselected, the deselected graphs disappear. If all choices are deselected, the graph display disappears.

4.12 Alarms Formatting Information

This section of the document provides information to help you understand why an alarm occurred and to provide a recovery procedure to help correct the condition that caused the alarm.

The information provided about each alarm includes:

- Alarm Type: the type of alarm that has occurred. For a list of alarm types, see Alarm and Event Types.
- Description: describes the reason for the alarm.
- Severity: the severity of the alarm.

- Instance: the instance of a managed object for which an alarm or event is generated.

> **Note**
>
> The value in the Instance field can vary, depending on the process generating the alarm.

- HA Score: high availability score; determines if switchover is necessary.
- Auto Clear Seconds: the number of seconds that have to pass before the alarm clears itself.

> **Note**
>
> Some alarms and events have an Auto Clear Seconds of 0 (zero), indicating these alarms and events do not auto-clear.

- OID: alarm identifier that appears in SNMP traps.
- Recovery: provides any necessary steps for correcting or preventing the alarm.

4.13 Alarm and Event ID Ranges

The Alarm ID listed for each alarm falls into one of the process classifications listed in the Alarm and Event ID Ranges:

Table 4-6 Alarm/Event ID Ranges

Application/Process Name	Alarm ID Range
IPFE	5000-5999
OAM	10000-10999
IDIH	73001 - 73004
SDS	14000-14999
SS7/Sigtran	19200-19299
Transport Manager	19400-19419
Communication Agent (ComAgent)	19420-19909
DSR Diagnostics	19910-19999
Diameter	8000-8299, 22000-22350, 22900-2999, 25600-25899
Range Based Address Resolution (RBAR)	22400-22424
Generic Application	22500-22599
Full Address Based Resolution (FABR)	22600-22640
PDRA (aka PCA)	22700-22799
CAPM	25000-25499
OAM Alarm Management	25500-25899
Platform	31000-32800
Diameter Custom Applications (DCA)	33300-33630
Independent Subscriber Binding Repository (I-SBR)	33730-33830
vSTP	70000-70999
Equipment Identity Register (EIR)	71000-71999

4.14 Alarm and Event Types

The following table describes the possible alarm or event types that can be displayed.

> **Note**
>
> Not all applications use all of the alarm types listed.

Table 4-7 Alarm and Event Types

Type Name	Type
APPL	Application
CAF	Communication Agent (ComAgent)
CAPM	Computer-Aided Policy Making (Diameter Mediation)
CFG	Configuration
CHG	Charging
CNG	Congestion Control
COLL	Collection
DAS	Diameter Application Server (Message Copy)
DB	Database
DIAM	Diameter
DISK	Disk
DNS	Domain Name Service
DPS	Data Processor Server
ERA	Event Responder Application
FABR	Full Address Based Resolution
HA	High Availability
HTTP	Hypertext Transfer Protocol
IDIH	Integrated DIH
IF	Interface
IP	Internet Protocol
IPFE	IP Front End
LOADGEN	Load Generator
LOG	Logging
MEAS	Measurements
MEM	Memory
NAT	Network Address Translation
NP	Number Portability
OAM	Operations, Administration & Maintenance
PCRF	Policy Charging Rules Function
PDRA	Policy Diameter Routing Agent
PLAT	Platform
PROC	Process
PROV	Provisioning
pSBR	Policy SBR
QP	QBus

Table 4-7 (Cont.) Alarm and Event Types

Type Name	Type
RBAR	Range-Based Address Resolution
REPL	Replication
SCTP	Stream Control Transmission Protocol
SDS	Subscriber Database Server
SIGC	Signaling Compression
SIP	Session Initiation Protocol Interface
SL	Selective Logging
SS7	Signaling System 7
SSR	SIP Signaling Router
STK	EXG Stack
SW	Software (generic event type)
TCP	Transmission Control Protocol

4.15 Active Alarms Quick Filter

The individual information in the bar stacks of the active alarm graphs can be used to further filter the alarm information in the current Server Group tab. This allows a more focused, quick look at the alarms. The quick filter selections are not persistent. The quick filter settings are cleared once the user browses away from the View Active Alarms page.

Quick filter selections from the graph are applied to the grid and all graphs displayed within the current Server Group tab of the View Active Alarms page. For example, if the portion of the stacked bar graph that displays the critical alarms is selected, the grid filters to show critical platform alarms and the summary statistics are recalculated to adjust the graphs. If additional portions of the graphs are selected, both the grid and the graphs continue to be filtered according to the selections.

> **Note**
>
> Although the quick filter is applied to the grid display, the quick filter criteria are not applied to generated Reports and Exports of active alarm data. Use the **Filter** list in the toolbar to filter the data.

After active alarms have been graphed, perform the following procedure to apply a quick filter to active alarms in a server group:

1. To add a quick filter, select a portion of the stacked bar graph to filter. The stacked bar displays lists of active alarms by the alarm severity.

> **Note**
>
> Alarm severity types are displayed using the following color distinctions:
>
> - Critical - Red
> - Major - Orange
> - Minor - Yellow

Upon selection, the filtered graph portion displays green to indicate it is being used as a filter.

2. Repeat the previous step as needed to filter additional portions of the remaining bar graphs.
3. To remove all quick filtering selections from the active Server Group tab, click **Clear Selections**.

   The display grid and all graphs display with no quick filtering.
4. To remove individual quick filtering selections from the active Server Group tab, select the portion of the stacked bar graph displayed in green.

   The display grid and all graphs recalculate based on the remaining selections.

4.16 Generating a Report of Historical Alarms and Events

Perform the following procedure to Generate a Report of Historical Alarms and Events:

1. From the **View History**, specify filter criteria, if necessary, and click **Go**.

   The historical alarms and events are displayed according to the specified criteria.
2. Click **Report**.

   The View History Report can be printed or saved to a file.
3. Click **Print** to print the report.
4. Click **Save** to save the report to a file.

4.17 Viewing Trap Log

The View Trap Log page allows you to monitor traps from external application equipment, such as switches and enclosures. The purpose of monitoring traps is to gain early warning of possible service impacting conditions. View Trap Log provides a visual indicator of active, existing conditions. It also provides a detailed log recording the historical conditions present in the external monitored hardware and important background information for investigating the root cause of the condition.

4.17.1 Viewing Trap Logs

Trap logs are displayed in a scrollable, optionally filterable table.

1. From the **Alarms & Events**, click **View Trap Log**.
2. If necessary, specify filter criteria and click **Go**.
3. If necessary, click to select any traps you want to acknowledge.

> **Note**
>
> Acknowledging a trap causes the trap to be removed from the table and from the trap count indicator. For more information, see Viewing Trap Log Fields.

Alternately, click **Acknowledge All** to acknowledge all traps, or click **UnAcknowledge All** to show all traps in the table once again.

The trap log table updates automatically. When new traps are available, the table is automatically updated, and the view returns to the top row of the table.

4. To suspend automatic updates, click any row in the table.

   The following message appears: `(SNMP Trap updates are suspended.)`
   If a new trap is generated while automatic updates are suspended, a new message appears: `(SNMP Trap updates are suspended. Available updates pending.)`

   To resume automatic updates, press and hold **Ctrl** as you click to deselect the selected row.

4.17.2 Viewing Trap Log Fields

The following table describes the fields on the View Trap Log page:

Table 4-8 View Trap Log Fields

Field	Description
Timestamp	The timestamp (in UTC) when the trap record was collected on the current system.
OID	The Object Identifier (OID) for the trap.
upTime	The uptime as reported by the monitored external equipment.
Trap Collector	The name of the server that first logged the trap.
Trap Source	The external hostname (or IP, if name cannot be resolved) for the trap source.
VarBinds	The OID/value pairs found in the varbind list. **Note**: Only the first few OID/value pairs display. A link to the report for the record is added if the varbind list is truncated.
Acknowledge All Acknowledge	When **Acknowledge All** is clicked, up to 2000 traps selected by the filter are cleared. Acknowledged traps are removed from both the trap count indicator and the View Trap Log page. **Note**: **Acknowledge All** is the default setting for this button. When one or more traps are selected, the button toggles to **Acknowledge**, and only the selected traps are affected.
Unacknowledge All	When **Unacknowledge All** is clicked, all previously acknowledged traps selected by the filter reappear on the page. Unacknowledged traps are added to the trap count indicator. **Note**: **Unacknowledge All** is the default setting for this button. When one or more traps are selected,

Table 4-8 (Cont.) View Trap Log Fields

Field	Description
Unacknowledge	the button toggles to **Unacknowledge**, and only the selected traps are affected.
Report All Report	When **Report All** is clicked, a report is generated that contains information about the first 25 traps selected by the filter. **Note**: **Report All** is the default setting for this button. When one or more traps are selected, the button toggles to **Report**, and only the selected traps are included in the report.
Show: Ack'ed	Selection of this checkbox shows (if checked) or hides (if unchecked) the acknowledged trap records. **Note**: This check box is a filter option that is only available on the **View Trap Log** page.

4.17.3 Viewing Trap Log Report Fields

To view the Trap Log Report Fields, from the **Alarms & Events**, click **View Trap Log Report**.

The following table describes the fields on the View Trap Log Report page:

Table 4-9 View Trap Log Report Fields

Field	Description
acked	Indicates whether the trap has been acknowledged. Value = True or False
duplicate	Indicates whether the trap has been marked as a duplicate. Value = True or False
trapId	The trap ID is an internal sequence number to identify specific traps from the same source.
OID	The Object Identifier (OID) for the trap.
upTime	The upTime as reported by the monitored external equipment.
srcNode	The name of the server that first logged the trap.
networkField	The Network Field of the server that first logged the trap.
timeStamp	The timestamp (in UTC) when the trap record was collected on the current system. **Note**: This is the timestamp used when specifying the collection interval.
srcTimeStamp	The time (in UTC) when the specific trap record was received at the system that first logged the trap.
Trap Source	The external hostname (or IP, if name cannot be resolved) for the trap source.
trapSourceIP	The IP address of the external hardware being monitored.

Table 4-9 (Cont.) View Trap Log Report Fields

Field	Description
varbind	The specific OID/value pairs found in the varbind list. There is a varbind entry for each varbind in the logged trap record.

4.17.4 Generating a Trap Log Report

Perform the following procedure to generate a Trap Log Report:

1. From the **Alarms & Events**, click **View Trap Log**.
2. Click to select the trap log for which you want to create a report.

> **Note**
>
> If no trap is selected, the report contains data about the first 25 traps selected by the filter. Alternately, you can select multiple rows and generate a report using those. To select multiple rows, press and hold **Ctrl** as you click to select specific rows.

3. Click **Report**.

> **Note**
>
> When no trap is selected, the button toggles to **Report All**.

4. Click **Print** to print the report, or click **Save** to save a text file of the report.

5
Security Log

This section provides an overview of security log options. The Security Log page allows you to view the historical security logs from all configured servers. Security logs are displayed in a scrollable, optionally filterable table. Security log data can be exported and then retrieved from the **Status & Manage**, and then **Files** page.

The **Export** function allows you to export security log files from one or more servers to the file management storage area of the server to which your GUI session is connected. Files in the file management storage area can be viewed from the **Status & Manage**, and then **Files** page. The logging feature is an OAM function, so you can be connected to either a NOAMP server or an SOAM server (but not an MP server).

The system automatically creates and writes the exported security log details to a CSV file in the file management area, as the following figure shows. If filtering has been applied in the View Active page, only filtered active alarms are exported.

CSV files can be downloaded from the file management storage area to your computer, such as your client PC, using the **Status & Manage**, and then **Files** page. See Files for steps on how to download files to your computer.

5.1 Security Log View History Fields

Table 5-1 describes the fields of the **Security Log**, and then **View History** page.

Table 5-1 Security Log View History Fields

Security Log History Field	Field Description
Timestamp	The date and time the security record was generated (fractional seconds resolution).
User	The user initiating the action.
Sess ID	The session identifier.
Remote IP	The remote IP address for the user.
Message	Summary details about the action, which generated the security record.
Status	The status of the action, either SUCCESS or ERROR.
Screen	The page on which the action occurred, the Login page, for example.
Action	The user action, login, for example.
Details	Additional details about the action, which generated the security record.
Server	The server which processed the action.

5.2 View Security Log Files

Use this procedure to view security log files.

1. Click **Security Log**, and then **View History**.
2. Specify the **Collection Interval**.
3. If necessary, specify filter criteria and click **Go**.

> **Note**
>
> Some fields, such as **Details**, truncate data to a limited number of characters. When this happens, a **More** link appears. Click **More** to view a report that displays all relevant data.

The security log history displays sorted by collection time stamp.

> **Note**
>
> There are two relevant time stamps for the security log: the time stamp of the event and the time stamp for when the record was merged. The time stamps display initially using the source time, which makes the report appear unordered. However, the report is indeed sorted by collection time.

5.3 Security Log Data Export Fields

Security Log Data Export Fields describes the fields on the Security Log form.

Table 5-2 Schedule Security Log Data Export Fields

Field	Description	Data Input Notes
Export Frequency	Frequency at which the export occurs	Format: Option Range: Once, Fifteen Minutes, Hourly, Daily, or Weekly Default: Once **Note**: Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out. Note that the Fifteen Minute, Hourly, Daily, and Weekly scheduling options are only available when provisioning is enabled.
Task Name	Name of the scheduled task.	Format: Text box Range: Maximum length is 40 characters. Valid characters are alphanumeric, minus sign, and spaces between words. The first character must be an alpha character. The last character must not be a minus sign. A value is required. **Note**: This field is not active if the selected export frequency is once.

Table 5-2 (Cont.) Schedule Security Log Data Export Fields

Field	Description	Data Input Notes
Description	Optional description of the scheduled task	Format: Text box Range: Maximum length is 255 characters; alphanumeric (a-z, A-Z, and 0-9) and minus sign (-). Description must begin with an alphanumeric character. **Note**: This field is not active if the selected export frequency is once.
Filename Prefix	Optional export filename prefix. The extension to prepend the generated export file name.	Format: Text box Range: Maximum length is 8 characters; alphanumeric (a-z, A-Z, and 0-9).
Minute	Select the minute of each hour when the data will be written to the export directory. Enabled only if Export Frequency is hourly or fifteen minutes. For a frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer in the hour, a value between 0 and 14.	Format: Scrolling list Range: 0 to 59 Default: 0 **Note**: This field is not active if the selected export frequency is Once, Daily, or Weekly. This field is only active if the selected export frequency is Fifteen Minutes and Hourly.
Time of Day	Select the time of day when the data will be written to the export directory. Enabled only if Export Frequency is daily or weekly. Select from 15-minute increments, or fill in a specific value.	Format: Time text box Range: HH:MM with AM/PM Default: 12:00 AM **Note**: This field is not active if the selected export frequency is Once, Fifteen Minutes, or Hourly. This field is only active if the selected export frequency is Daily or Weekly.
Day of Week	Select the day of week when the data will be written to the export directory. Enabled only if Export Frequency is weekly.	Format: Option Range: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday Default: Sunday **Note**: This field is active only if Weekly is selected.

5.4 Exporting Security Log Files

You can initiate a one-time export task of security log data or schedule periodic exports from the **Security Log**, and then **View History** page. If filtering has been applied in the View History page, only filtered data is exported.

For each export task, the system automatically creates a CSV file of the filtered data. The file is available in the file management area until you manually delete it, or until the file is transferred to an alternate location using the remote server data export feature. For more information about using remote server data export, see Remote Servers.

Use this procedure to export seculogs to a file, or schedule a periodic data export task of this data.

1. From the main menu, select **Security Log**, and then **View History**.
2. Specify the desired filter criteria and click **Go**. The **Collection Interval** is required.

   The security log files are displayed according to the specified criteria.
3. Click **Export**.
4. Select the **Export Frequency**. Based on this selection, other fields may become active or inactive.
5. Enter a **Task Name**.

   This field is not active if the selected export frequency is once. For more information about **Task Name**, or any field on this page, see Security Log Data Export Fields.
6. Optional: Enter a **Description**.

   This field is not active if the selected export frequency is once.
7. Optional: Enter a **Filename Prefix**.

   The filename prefix is pre-pended to the generated export file name for quick identification.
8. Select the **Minute** if **Export Frequency** is fifteen minutes or hourly.

   If the selected export frequency is fifteen minutes or hourly, this is the minute of each period when the transfer is set to begin. For an export frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer.
9. Select the **Time of Day** if **Export Frequency** is daily or weekly.

   This field is not active if the selected export frequency is once, fifteen minutes, or hourly.
10. Select the **Day of Week** if **Export Frequency** is weekly.

    This field is not active if the selected export frequency is once, fifteen minutes, hourly, or daily.
11. Click **OK** to initiate the export task or **Cancel** to discard the changes and return to theView History page.

The data export task is initiated or scheduled.
From the **Status & Manage**, and then **Files** page, you can view a list of files available for download, including the file you exported during this procedure. For more information, see View the File List.

Scheduled tasks can be viewed, edited, and deleted, and reports of scheduled tasks can be generated from **Status & Manage**, and then **Tasks**. For more information see:

- Editing a Scheduled Task
- Deleting a Scheduled Task
- Generating a Scheduled Task Report

> **Note**
>
> Only one export operation at a time is supported on a single server. If an export is in progress from another GUI session when you click **Export**, a message is displayed and the export does not start. You must wait until the other export is complete before you can begin your export.

5.5 Generating a Security Log Report

Use this procedure to generate a report.

1. Click **Security Log**, and then **View History**.
2. Specify the **Collection Interval**.
3. Specify the filter criteria, if necessary, and click **Go**.

   The security log files are displayed according to the specified criteria. Alternately, you can select multiple rows and generate a report using those. To select multiple rows, press and hold **Ctrl** as you click to select specific rows.
4. Click **Report**.

   The Security Log Report can be printed or saved to a file.
5. Click **Print** to print the report.
6. Click **Save** to save the report to a file.

5.5.1 Enhanced Security logs with correct log in error

Security logs capture log in failure reasons. Some of the failure reasons are:

- Invalid user
- Invalid password
- Expired password

The log in failure messages are not shown on GUI security logs as session is not yet established. Users can see the generic failure message “Failed Log in attempt” on GUI log in page. There were no reasoning provided to user on GUI log in page about exact cause of log in failure. By implementing this enhancement, the user can ascertain the exact cause of the log in failure.

6
Status and Manage

This section describes how to view and manage the various types of data generated by the system.

6.1 Network Elements

The Network Elements page provides the status of network elements as well as a location in which you can manage Customer Router Monitoring. Customer Router Monitoring, if enabled, monitors connectivity from the system to customer network gateways.

6.1.1 Network Elements

The table describes the fields of the Network Elements page:

Table 6-1 Network Elements

Element	Description
Network Element Name	The network element name associated with each server hostname. Each configured network element in the system is listed here. A network is a collection of servers that share networking configuration, regardless of physical location or replication relationships.
Customer Router Monitoring	Indicates whether router monitoring is enabled or disabled.
Enable Ping	A button that enables Customer Router Monitoring for the selected network element.
Disable Ping	A button that disables Customer Router Monitoring for the selected network element.

6.1.2 Enabling and Disabling Ping on Network Fields

This procedure describes how to enable or disable Customer Router Monitoring on selected Network Fields.

1. Click **Status & Manage**, and then **Network Fields**.
2. Click to select a Network Element.
3. Click **Enable Ping** to enable Customer Router Monitoring, or click **Disable Ping** to disable Customer Router Monitoring.

   A confirmation window appears.
4. Click **OK** to continue. Progress bar displays a status message.

A message appears in the Information area of the screen to confirm the success of the procedure. The Customer Router Monitoring status has been changed.

If the procedure fails, an error message appears. Repeat steps from 2 to 4. If the problem persists, contact My Oracle Support.

6.2 Server

The Server page provides a single point for monitoring collected data, isolating problems, and performing actions required for server maintenance. This page provides roll-up status for six subsystems on each server defined in the network. You can navigate to individual subsystem status pages for more detailed information with a single click the Server page.

6.2.1 Server Status Fields

Table 6-2 describes the fields on the **Status & Manage**, and then **Server** page.

Table 6-2 Server Status Fields

Server Status Element	Description
Network Element	The network element name associated with each Server Hostname.
Server Hostname	The server hostname. All servers in the system are listed here.
Appl State	An administrative state that reflects the state of the application running on each server. Possible states are Enabled, Disabled, and Unk (Unknown indicates the application state cannot be determined due to an error).
Alm	Aggregated alarm status for each server. Possible values are Norm, Err, Warn, and Unk.
DB	Aggregated database status for each server. Possible values are Norm, Err, Warn, Unk, and Man.
Reporting Status	Reporting status for each server. Possible values are Norm, Err, Warn, Unk, and Man.
Proc	Aggregated process status for each server. Possible values are Norm, Err, Unk, and Man.

6.2.2 Server Status

Each server collects performance data and status information for several subsystems. Since the system may consist of hundreds of geographically diverse servers, you need the ability to monitor this data and quickly isolate problems.

There are several aspects to monitoring server status. You can monitor the administrative state of each server in the system, as well as the status of the alarms, replication, collection, high availability, database, and process systems on each server.

The **Application State** field for each server displays the current administrative state of the application running on that server. Stopping application software places it in the Disabled **Application State**. Restarting application software places it in the Enabled **Application State**. Servers that are restarted by clicking **Restart**, restarts all application processes, regardless of their current state.

> **Note**
>
> Enabled and Disabled are administrative states. They do not reflect the current status or running state of the application software.

The collection subsystem gathers status and alarm information from all other subsystems. Each of these subsystems reports varying degrees and severities of status. The status reported is not the same between subsystems. For this reason, the Server Status page provides a common status reporting framework to help identify problems at a server level.

6.2.3 Reporting Status Framework

Table 6-3 describes the reporting framework.

Table 6-3 Reporting Status Framework

Reporting Status	Description
Norm (Normal)	The subsystem is operating as expected.
Warn (Warning)	The subsystem is experiencing one or more minor problems.
Err (Error)	The subsystem is experiencing one or more Major or Critical problems.
Man (Manual Maintenance)	The subsystem has been placed in a manually assigned state.
Unk (Unknown)	No information is available for the subsystem. When there is a problem gathering data in the Alarm, HA, or Database subsystems, the Collection subsystem sends a status of **unknown**.

Not all of the subsystems report status per server. The HA Status subsystem shares some status information between two servers. The Server page combines status information into a single status per subsystem per server.

How status is reported for each subsystem is explained in more detail in these sections:

- Alarm Status Fields
- HA Status Fields
- Database Status Fields
- Process Status Fields

6.2.4 Alarm Status Fields

Alarm status is derived from all of the alarms present on a server. Table 6-4 describes the possible alarm severities and their equivalent reporting statuses on the Server page.

Table 6-4 Alarm Status vs Reporting Status

Alarm Status	Reporting Status Equivalent	Priority	Color
Unknown	Unk	1 (Highest)	Red
Critical	Err	2	Red

Table 6-4 (Cont.) Alarm Status vs Reporting Status

Alarm Status	Reporting Status Equivalent	Priority	Color
Major	Err	3	Orange
Minor	Warn	4	Yellow
None	Norm	5 (Lowest)	-

6.2.5 Database Status Fields

The Server page combines the individual status, maintenance, and the collection delivery mechanism into a single database status. The highest priority status is the one reported to the Server page. Table 6-5 lists the database statuses.

> **Note**
>
> **Unknown** is the status reported when a failure prevents the reporting or the collection of database status.

Table 6-5 Database Status vs Reporting Status

	Reporting Status Equivalent			
Database Status	Maintenance in Progress	Maintenance NOT in Progress	Priority	Color
Unknown	Unk	Unk	1 (Highest)	Red
Critical	Man	Err	2	Red
Major	Man	Err	3	Red
Minor	Man	Warn	4	Yellow
Normal	Man	Norm	5 (Lowest)	-

6.2.6 HA Status Fields

HA Status is derived from the **HA Status** and **HA Availability** fields on the HA Status page. The collection mechanism is combined with status and availability but not with the forced standby state.

The Server page reports high availability manual maintenance status (forced standby) differently from other status subsystems. Most manual maintenance statuses are stored on the affected server, collected to the reporting server, and displayed. The forced standby state is replicated rather than collected, and is therefore available directly on the reporting server. Table 6-6 lists the status differences.

> **Note**
>
> **Unknown** is the status reported when a failure prevents the reporting or the collection of HA availability.

Table 6-6 HA Status versus Reporting Status

	Reporting Status Equivalent			
HA Status	Forced Standby	NOT Forced Standby	Priority	Color
Unknown	Man	Unk	1 (Highest)	Red
Offline	Man	Err	Err	2
Failed	Man	Err	3	Red
Degraded	Man	Warn	4	Yellow
Normal	Man	Norm	5 (Lowest)	-

6.2.7 Process Status Fields

The Server page combines the individual process status and the collection delivery mechanism into a single process status. The highest priority status is the one reported to the Status page. Processes, which are intentionally not running on the server do not show up in process status. Table 6-7 lists the process statuses.

> **Note**
>
> **Unknown** is the status reported when a failure prevents the reporting or the collection of process status.

Table 6-7 Process Status versus Reporting Status

	Reporting Status Equivalent			
Process Status	Application Disabled	Application Enabled	Priority	Color
Unknown	Man	Unk	1 (Highest)	Red
Pend	Man	Err	2	Red
Kill	Man	Norm	3	-
Up	Man	Norm	4 (Lowest)	-

6.2.8 Server Errors

There are three ways to view servers with alarm status other than Normal:

- Viewing the Server Status page: All servers appear on this page along with the highest alarm for each subsystem.
- Mousing over an aggregated server status: The underlying status reported by the subsystem appears when the cursor moves over that status.
- Viewing the aggregated server status: The aggregated status for each subsystem is a link to the selected subsystem's page. The page provides details for the selected server only. Click the link to view the status for the selected server.

6.2.9 Aggregated Server Status Fields

Clicking a status link opens the status page that corresponds to the selected column and filters that page by the server corresponding to the selected row. This is shown in Table 6-8.

Table 6-8 Click-Through Status Screen

Server Status Column	Corresponding Status Page
Alm	Alarm History Page - see Viewing Alarm and Event History
DB	Database Status Page - see Database
HA	High Availability Status Page - see HA (High Availability)
Proc	Processes Page - see Processes

6.2.10 Display Aggregated Server Status

Use this procedure to display a corresponding status page:

1. Click **Status & Manage**, and then **Server**.
2. Click the status field for which you want to view more details.

The related status page appears with only the selected server in the status table.

6.2.11 Stop the Application

Use this procedure when the application on a server must be stopped. Stopping the application software places it in the Disabled Application state. Examples of when to stop the application include times when you need to delete a server, change a server role, or perform a system restore.

GUI sessions are not affected by the stop and restart application software actions. You may continue to use the GUI as these actions progress. You may use GUI sessions connected to servers with stopped application software. GUI provisioning may be affected if the server is the active NOAMP server. Stopping and starting application software may cause a switchover as well; you can observe changes in the status of those servers from the Server Status page.

> ⚠ **Caution**
>
> Do not click **Stop** for an application until you have assessed the impact on the system. Stopping the application on a server can adversely affect processes on this server and/or other servers in the network element.

1. Click **Status & Manage**, and then **Server**.
2. Click to select the server you want to stop.

   To select multiple rows, press and hold **Ctrl** as you click to select specific rows.
3. Click **Stop**.

   A warning message appears:

Are you sure you wish to stop application software on the following server(s)?
<server name>

4. Click **OK** to continue.

Application processes are disabled on this server. Stopping the application or restarting running software influences the high availability subsystem by raising an alarm. Stopping application software affects server processing in the following ways:

- Servers continue to emit alarms and collect measurements.
- NOAMP and SOAM servers continue to publish replicated data and accept GUI connections.
- SOAM and Message processing servers continue to subscribe to replicated data.
- NOAMP servers do not accept provisioning/configuration changes.
- MP servers do not maintain signaling connections or process messages.

6.2.12 Restart the Application

If the **Application State** displays Disabled, **Restart** starts the software. If the **Application State** displays Enabled, **Restart** stops and then starts the software. Restarting the software places it in the enabled state.

A Restart can be used:

- To restart a newly created server, which has software in the disabled state.
- When a server is removed and re-added to topology and has software in the disabled state.

GUI sessions are not affected by the restart application software action. You may continue to use the GUI as these actions progress. You may use GUI sessions connected to servers with application software being restarted. GUI provisioning may be affected if the server is the active NOAMP server. Stopping and starting application software may cause a switchover as well; you can observe changes in the status of these servers from the Server Status page.

> ⚠ **Caution**
>
> Do not click **Restart** for an application until you have assessed the impact on the system. Restarting the application on a server can adversely affect processes on this server and/or other servers in the network element.

Use this procedure to restart the application on a server:

1. Click **Status & Manage**, and then **Server**.

   The Server Status page appears.

2. Click to select the server you want to restart.

   Alternately, you can select multiple servers to restart. To select multiple rows, press and hold **Ctrl** as you click to select specific rows.

3. Click **Restart**

   A warning message appears:
   Are you sure you wish to restart application software on the following server(s)?
   <server name>

4. Click **OK** to continue.

Application processes are restarted on this server. Restarting running software influences the High Availability subsystem by raising an alarm. If the software is running when the Restart is selected, the stopping of the software affects server processing in the following ways:

- Servers continue to emit alarms and collect measurements.
- NOAMP and SOAM servers continue to publish replicated data and accept GUI connections.
- SOAM and Message processing servers continue to subscribe to replicated data.
- NOAMP servers do not accept provisioning/configuration changes.
- Message Processing servers do not maintain signaling connections or process messages.

6.2.13 Restart a Server

A server should not be rebooted until you have assessed the full impact on the system. This list describes what happens when servers of different roles are rebooted:

- **OAM Server controlling GUI session:** Restart of OAM Servers ends all GUI sessions controlled by that server. Note that the restart may restart the server controlling your GUI session. After the restart sequence completes, you can re-establish a GUI session with the rebooted server. You are presented with a log in screen and must re-authenticate to create a new session.
- **Active OAM Server:** Stopping and starting application software may cause a switchover. You have different capabilities on Active versus Standby OAM servers, depending on the feature. For example, provisioning is only allowed from the active NOAMP server.
- **Other Servers:** Rebooting Message Processing servers and Standby OAM servers without GUI sessions has no direct GUI impact. You can observe changes in the status of these servers.

> ⚠ **Caution**
>
> Do not click **restart** for a server until you have assessed the impact on the system. **Restart** temporarily halts all services on the designated server; do not perform a restart unless other servers within the network element can take over the traffic load.

Use this procedure to restart a server:

1. Click **Status & Manage**, and then **Server**.
2. Click to select the server you want to restart.

   Alternately, you can select multiple servers to restart. To select multiple rows, press and hold **Ctrl** as you click to select specific rows.
3. Click **restart**.

   A warning message appears:
   Are you sure you wish to restart the following server(s)? <server name>
4. Click **OK** to continue.

The specified server is rebooted. Rebooting the server influences the high availability subsystem. The rebooted server's mate no longer detects HA heartbeats and raises an alarm.

6.2.14 NTP Sync

Periodically a user has the must sync or resync one or more servers to the preferred NTP source. This might be required for various reasons including a network change, a new NTP server has been added, or a disaster recovery of an existing NTP server has taken place. Capabilities differ depending on the application. For example, The DSR Network OAM presents a broader scope of eligible servers than the DSR System OAM but the functionality remains the same.

> ⚠ **Caution**
>
> This operation should be planned. Critical processes are temporarily shut down to complete the action. The user should understand the concepts of the high availability (HA) subsystem related to **Max Allowed HA Role**. Reference HA (High Availability).

> ⓘ **Note**
>
> **NTP Sync** can only be performed on a server that currently reflects a **Max Allowed HA Role** of Standby, Spare, or Observer.

Following is the procedure to perform an **NTP Sync** on one or more servers.

1. Click **Status and Manage**, and then **HA**.
2. Identify the target servers on which you want to perform the **NTP Sync** action. Confirm that all target servers reflect a **Max Allowed HA Role** of either Standby, Spare or Observer.
3. Click **Status and Manage**, and then **Server**.
4. Select one or more targets servers and click **NTP Sync**.

   A warning message appears:

   Are you sure you wish to force an NTP Sync on the following server(s)?
5. Click **OK** to continue.

The NTP sync action is invoked on the target servers. A message is displayed at the top of the work area informing the user of the status of the operation.

6.2.15 Generate a Server Status Report

Use this procedure to generate a server status report on one or more servers. This report differs from the server configuration report in that it presents server status information as defined in the server status elements table. Reference Server Status Fields.

1. Click **Status & Manage**, and then **Server**.
2. Select one or more servers.

   > ⓘ **Note**
   >
   > If no servers are selected, then all servers appear in the status report.
3. Click **Report**.

4. Click **Print** to print the report, or click **Save** to save a text file of the report to your local workstation.

6.3 HA (High Availability)

HA Status provides the status of the HA relationships for OAM and MP servers, which are configured to run as either active-standby server pairs or individual servers. The internal status fields are used to map to a Derived HA Status. The Derived HA Status is displayed as the HA Status.

The Availability state of a server is used by HA to determine when a switchover is necessary. Availability is ranked with a score. A lower score is better and means that the server is in better health. The decision to switchover is based on this score. The switchover only occurs if a Standby server is deemed to be in better health (has a lower score) than an Active server. If the Standby's score is equal to or higher than the Active's score, then a switchover does not occur. In the HA Status screen, the server taking over shows its HA Status going to Active and HA Role going to Providing Service. The mate shows its unhealthier status.

Availability states are driven from conditions or events, which have occurred on a server. As events and conditions change on a server, its Availability status can change. Depending on the set of conditions on an Active-Standby server pair, a switchover may occur.

6.3.1 HA Status Fields

The HA page displays detailed status of how HA is working in the entire network in tabular form. Table 6-9 describes the details displayed for all servers.

Table 6-9 HA Status Fields

HA Status Element	Description
Hostname	The server's hostname.
OAM HA Role	The operational OAM HA role of the server: • Active: Server is running as the Active server. It is providing service and owns the VIP. • Standby: Server is running as the Standby server. It is ready to provide service in the event of a switch over. • Spare: Server is running as the Spare server. • Observer: Server is running as the Observer server. • OOS: Server is out of service for that role.
Application HA Role	The operational application HA role of the server: • Active: Server is running as the Active server. It is providing service and owns the VIP. • Standby: Server is running as the Standby server. It is ready to provide service in the event of a switch over. • Spare: Server is running as the Spare server. • Observer: Server is running as the Observer server. • OOS: Server is out of service for that role.

Table 6-9 (Cont.) HA Status Fields

HA Status Element	Description
Max Allowed HA Role	The administrative maximum allowed HA role that the server is allowed to achieve. Defaults are: • NOAMP: Active • SOAM: Active • MP: Active • Query Server: Observer
Mate Hostname List	List of possible hostnames that can act as the server's mate.
Network Element	The network element that the server belongs to.
Server Role	The server's role (Query Server, or MP for Message Processor).
Active VIPs	An indication of all VIPs that are active on the server.

6.3.2 Modifying the HA Status

Use this procedure to modify the HA status:

1. Click **Status & Manage**, and then **HA**.
2. Click **Edit**.
3. Change the **Max Allowed HA Role** for any hostname on the list.

> **Note**
>
> At least one NOAMP must remain active on the network.

4. Click **OK** to save the changes.

The modifications are written to the database. The change takes effect immediately.

6.3.3 Sorting HA status data

HA status data is not displayed in a particular default order. To sort the HA status data, click any of the column headers in the HA status table to sort the table by that column. Clicking again on the same column header reverses the direction of the sort (ascending or descending). To return to the table's original ordering, click **Status & Manage**, and then **HA**.

6.4 Database

The Database page provides:

- The ability to disable and enable provisioning system-wide on the active NOAM and site-wide on the active SOAM.
- Database status information for each server in the network. The system tracks alarms associated with a database and displays this information about the Database page.
- Access to several database functions. These functions include: disabling and enabling provisioning; displaying a database status report; inhibiting and allowing replication;

backing up and restoring database and/or provisioning information; comparing the current database version to a backup to ensure schema compatibility; initiate a manual audit and suspend an automated audit. With the exceptions of restore and replication, these functions affect a single OAM or MP server only.

- The status of database backups.
- The durability status.

6.4.1 Database Status Fields

The Database page displays status information and functions on a per server basis. Database Status Fields describes the fields on the Status & Manage Database page.

> **Note**
>
> At the top of the Database Status and Manage screen is an information display. Database maintenance operations, for example, automatic and manual backups, or restore messages, are listed in this information display. While not technically a status table element, this display provides important information and should be viewed periodically.

Table 6-10 Database Status Fields

Fields	Description
Network Element	The name of the Network Element to which the server belongs.
Server	Name of the Server.
Role	The role the server plays in the system.
OAM Max HA Role	The observed maximum high availability role among all resources in policy 0 on the server: • Active: Server is running as the Active server. • Standby: Server is running as the Standby server. It is ready to provide service in the event of a switch over. • Spare: Server is running as the Spare server. • Observer: Server is running as the Observer server. • OOS: Server is out of service.
Application Max HA Role	The observed maximum HA role among all resources in all other policies on the server: • Active: Server is running as the Active server for application policies. • Standby: Server is running as the Standby server. It is ready to provide service in the event of a switch over. • Spare: Server is running as the Spare server. • Observer: Server is running as the Observer server. • OOS: Server is out of service.

Table 6-10 (Cont.) Database Status Fields

Fields	Description
Status	Alarm status for a server; status is reported for a server as the highest severity of all database alarms associated with that server. The status of the server affects the color of that server row: • Normal - No alarms related to DB status (no change in background color). • Minor - The server has raised a minor alarm that relates to DB status (yellow background). • Major - The server has raised a major alarm that relates to DB status (orange background). • Critical - The server has raised a critical alarm that relates to DB status (red background). • Unknown - Alarm collection is not possible or reports an error (red background).
DB Level	The database update level on a server. This value is incremented by certain types of database updates and allows the user to compare DB levels across different servers.
OAM Repl Status	OAM Replication status for a server as reported by COMCOL: • Unknown - no current status information. • Normal - all links are normal. • Degraded - some replication links are up, some are down. • Failed - all replication links to this server are down or failed. • Not Applicable - replication does not apply. • Not Configured - replication is not configured. • Auditing - all links are auditing or normal, zero links are down.
SIG Repl Status	Signaling Replication status for a server as reported by COMCOL: • Unknown - no current status information. • Normal - all links are normal. • Degraded - some replication links are up, some are down. • Failed - all replication links to this server are down or failed. • Not Applicable - replication does not apply. • Not Configured - replication is not configured. • Auditing - all links are auditing or normal, zero links are down.
Repl Status	Displays whether replication is inhibited for the server. The inhibiting of replication on servers occurs automatically during the Restore procedure.
Repl Audit Status	Displays whether replication auditing is in progress for the server.

6.4.2 View Database Status

The Database Status page displays a table of all servers and their associated database status. To identify servers that require attention, information for each database is condensed into a single status, which is shown in the **Status** column. The database alarm status indicates the severity of the most severe database-related alarm on each server. This status affects the color of the background for the server status cell. For more details on the **Status** element and a description of the background colors, see the **Status** description in the table in the previous section, Database Status Fields.

Use the following procedure to view the database status for servers:

- Click **Status & Manage**, and then **Database**.

6.4.3 Sort Database Data

Database data is not displayed in a particular default order. To sort the database data, click any of the column headers in the Database status table to sort the table by that column. Clicking again on the same column header reverses the direction of the sort (ascending or descending).

6.4.4 Generate the Server Database Report

The Server Database Report provides detailed information about a selected server, such as:

- Name of the server on which the report is generated
- Any associated database alarms
- Any associated database maintenance in progress
- Current database disk and memory usage
- Other service information of use to My Oracle Support personnel when diagnosing a problem

Use this procedure to generate a server database report:

1. Click **Status & Manage**, and then **Database**.
2. Click to select the server for which you want to generate a report.
3. Click **Report**.
4. Click **Print** to print the report.
5. Click **Save** to save the report to a file.

6.4.5 Inhibit/Allow Replication of Data

The Database Status page provides manual control for inhibiting and re-allowing database replication on servers.

> **Note**
>
> The inhibiting of replication on servers occurs automatically during the Restore procedure. For information about this process, see Restore Data to the Active NOAMP Server.

Use this procedure to inhibit replication on a server:

1. Click **Status & Manage**, and then **Database**.
2. Click to select the server for which you want to inhibit replication.
3. Click **Inhibit Replication**.

   A confirmation box displays the message, **Inhibit replication to server <servername>. Are you sure?**
4. Click **OK**.

Replication for the selected server is inhibited. The text on the button changes from **Inhibit Replication** to **Allow Replication** for the selected server, and **Inhibited** appears in the last column in the selected server's row. When you are ready to allow replication on this serverserver again, click **Allow Replication**.

6.4.6 Back Up Data

Backup allows you to capture and archive data configured and/or provisioned on a specific NOAMP or SOAM server. All files that are part of the backup are archived into a single file in the file management storage area. For information on file storage and file name format conventions, see Files.

A backup of configuration and/or provisioning data on the NOAMP or on an SOAM server can be initiated or terminated from the Database Status page. The status of a backup can viewed from the **Status & Manage**, and then **Tasks**, and then **Active Tasks** page.

> **Note**
>
> You must be logged into the active server to backup data for that server. For example, to perform a backup of NOAMP configuration or provisioning data, you must be logged into the active NOAMP. To perform a backup of SOAM configuration data, you must be logged into the active SOAM. Data backup is handled solely by NOAMP servers in systems that do not support SOAMs.

> **Note**
>
> Depending on the application, the Provisioning button may not be functional. For example, on the active DSR NOAMP, the Provisioning button displays, but it is disabled. The active UDR NOAMP presents the button as functional and the user may toggle the selection as desired.

> **Note**
>
> Only Configuration data can be backed up on SOAM. The Provisioning button is not functional on SOAM and cannot be checked. Only the Configuration button is active.

Use this procedure to backup data for a server.

1. Click **Status & Manage**, and then **Database**.
2. Click **Disable Provisioning** and click **OK**.

Provisioning and configuration updates are disabled for all servers, and the **Disable Provisioning** button changes to **Enable Provisioning**.

> **Note**
>
> On an NOAMP, this means provisioning and configuration are disabled system-wide. On an SOAM, configuration is disabled only on the SO level.

3. Click to select the Active server in the Network Element that contains the data you want to backup.
4. Click **Backup**.
5. Select the data to be backed up, either **Provisioning**, **Configuration**, or both.

> **Note**
>
> Only Configuration data can be backed up on SOAM. The Provisioning button is not functional on SOAM and cannot be checked. Only the Configuration button is active.

6. Select the backup archive compression algorithm, either gzip, bzip2, or none.

> **Note**
>
> When backing up a database above 300M for SDS provisioning, it is recommended that you do not use bzip2.

7. Enter a comment in the **Comment** field to identify the backup file.

   This information is stored as part of the backup file and is displayed before a restore of the file occurs.
8. Change the **Archive Filename**, if desired.
9. Click **OK**.

   The backup begins. When the backup begins, the Tasks box is displayed with the long running task which is managing the backup. You can follow the progress of the backup from the Tasks box. After refreshing the page, the status of the backup appears in the Information message box with a message similar to this.

   ```
   Backup on <server_name> status MAINT_IN_PROGRESS.
   ```

   The only action that can be taken for this server while a backup is in progress is **Report**. The backup is complete when the status message changes to this one.

   ```
   Backup on <server_name> status MAINT_CMD_SUCCESS. Success
   ```

10. Click **Enable Provisioning** and click **OK**.

> **Note**
>
> You do not have to wait until the backup is complete to re-enable provisioning and configuration updates.

Provisioning and configuration updates are enabled for all servers, and the **Enable Provisioning** button changes to **Disable Provisioning**.

The backed up data is stored in a compressed file and copied to the file management storage area of the server that was backed up. Use the **Status & Manage**, and then **Files** option to access this file. To transfer the file off-site, use the procedure, Transferring a File to Off-site Storage.

6.4.7 Database Archive Compare Fields

The Database Archive Compare page displays a database report for the selected server. The databases and topologies are compared and the results are displayed. Table 6-11 describes the fields of the Database Archive Compare page.

Table 6-11 Database Status Fields

Element	Description
SBR Database Compatibility	The compatibility status of the SBR databases being compared.
Archive Contents	The type of data that has been archived.
Database Compatibility	The compatibility status of the databases being compared.
Node Type Compatibility	The compatibility status of the relevant nodes.
Topology Compatibility	The compatibility status of the topology.
User Compatibility	The compatibility of the user and authentication data.
Contents	The contents of the archived database.
Table Instance Counts	Compares the number of database tables in the current database versus the database archive.

6.4.8 Compare a Backup File to an Active Database

The Compare page allows you to select a backup file in the file management storage area to compare and authenticate to the current database on the selected server. You must have at least one backup file to do a comparison.

Use this procedure to compare a backed up file with an active database:

1. Click **Status & Manage**, and then **Database**.
2. Click to select the server whose data you want to compare to a backup.
3. Click **Compare**.
4. Click an option to select the backup to compare.
5. Click **OK**.

   The Database Archive Compare page appears displaying a database report for the selected server. The databases and topologies are compared and the results displayed.

6. Click **Print** to print the report.
7. Click **Save** to save the report to a file.

6.4.9 Restore Data to the Active NOAMP Server

> **Caution**
>
> This information is provided for informational purposes only and does not grant permission to the customer to enact these procedures. The database restore operation is a service affecting procedure and careful consideration must be taken before running database restore. All restore procedures shall be performed by Oracle Communications or its authorized representatives using the product specific Disaster Recovery guide.

Restore allows you to select and re-apply previously stored data across all components. Restorations can only be performed from the active NOAMP server.

> **Note**
>
> Restoration to any server other than the active NOAMP prevents proper provisioning and replication control within the network.

Restoration causes HA activity to switch from the targeted NOAMP server at the start to the mate of the target server, and back again on completion.

During restoration, the target server's database is stopped so that the database tables may be replaced with those contained in the Backup and Archive file. No alarms, events, measurements, or other stateful or collected data is archived by the target server for that time period. The target server begins recollecting that data once restoration is complete.

Restoration automatically enacts replication control on all application servers. This isolates the changes to the server being restored and allows the remainder of the network to operate without impact. Restoration automatically disables provisioning using the provisioning control subsystem. This stabilizes the database contents for the duration of the restoration procedure.

Several procedures are used during the restore process. The order in which they are performed varies depending on the number of servers and the setup of your system. Before data restoration can occur, the archived file being restored must be transferred to the file storage area. For more information, see Transferring a Local File to the File Management Storage Area.

The documentation that came with your application provides a detailed list of all steps to perform during a restore, as well as the order in which to perform them. However, this information is provided for informational purposes only and does not grant permission to the customer to enact these procedures. Contact My Oracle Support for more information about restoring data.

6.4.10 Confirm a Restore Procedure on the Active NOAMP Server

> **⚠ Caution**
>
> This information is provided for informational purposes only and does not grant permission to the customer to enact these procedures. The database restore operation is a service affecting procedure and careful consideration must be taken before running database restore. All restore procedures shall be performed by Oracle Communications or its authorized representatives using the product specific Disaster Recovery guide.

After the restore procedure is initiated, the Database Restore Confirm page appears. This page contains information about the compatibility status of the server and the selected archive.

The documentation that came with your application provides a detailed list of all steps to perform during a restore, as well as the order in which to perform them. However, this information is provided for informational purposes only and does not grant permission to the customer to enact these procedures. Contact My Oracle Support for more information.

6.4.11 Replicate Restored Data to an SOAM Server

When data is restored to the NOAMP, the data must be replicated to one SOAM server in each signaling network element, if the system supports SOAMs.

> **⚠ Caution**
>
> This information is provided for informational purposes only and does not grant permission to the customer to enact these procedures. All restore procedures shall be performed by Oracle Communications or its authorized representatives.

This procedure describes the process used to replicate restored data to an SOAM server:

1. Click **Status & Manage**, and then **Database**.
2. Locate all standby SOAM servers in the server table.
3. Click **Allow Replication** for each of these servers.

   Allow Replication displays for servers that are currently inhibited from receiving replicated database updates. This action enables replication for the selected servers. (For servers currently allowed to receive replicated database updates, the word **Inhibit Replication** displays here instead).
4. Click **Status and Manage**, and then **Replication**.
5. Verify that Auto Refresh is turned on.

   When the replication audit starts for a specific server, the Replication Status for that server displays **Not Replicating**, and Replication Channel Status displays **Audit**.
6. When the replication audit is complete, Replication Status returns to **Replicating** and Replication Channel Status returns to **Active**.
7. Click **Status & Manage**, and then **HA**.
8. Switch over the high availability state of the standby SOAM servers.

For more information about setting the high availability state, see HA (High Availability).

Replication is restored, and standby SOAM servers are updated with data from the restored backup. See Replicating Restored Data to an MP Server, for information about how to manually turn replication back on for MP servers.

6.4.12 Replicating Restored Data to an MP Server

When data is restored to SOAM servers, the data must be replicated to each MP server.

> ⚠ **Caution**
>
> This information is provided for informational purposes only and does not grant permission to the customer to enact these procedures. All restore procedures shall be performed by Oracle Communications or its authorized representatives.

Use this procedure to replicate restored data to an MP server:

1. Click **Status & Manage**, and then **Database**.
2. Locate all MP servers.
3. Click **Allow Replication** for each of these servers.

   Replication resumes for each of these servers.
4. Click **Status & Manage**, and then **Replication**.
5. Verify that Auto Refresh is turned on.
6. When the replication audit starts for a specific server, the Replication Status for that server displays **Not Replicating**, and Replication Channel Status displays **Audit**.
7. When the replication audit is complete, Replication Status returns to **Replicating** and Replication Channel Status returns to **Active**.
8. Click **Status & Manage**, and then **HA**.
9. Switch over the high availability state of the standby MP servers.

   For more information about setting the high availability state, see HA (High Availability).

Replication is restored on the selected servers, and the servers are updated with data from the restored backup.

6.4.13 Enable and Disable Provisioning on the Active NOAMP Server

Use this procedure to enable or disable provisioning updates on the active NOAMP server:

1. Click **Status & Manage**, and then **Database**.
2. Click **Enable Provisioning**.

   Provisioning and configuration updates are enabled on all active NOAMP servers in the system. The **Enable Provisioning** button switches to **Disable Provisioning**.
3. To disable provisioning on a NOAMP GUI, click **Disable Provisioning**.

> **Note**
>
> After enabling or disabling provisioning, it will take a few minutes to reflect the changes from MMI. Any operation performed within this time frame from MMI will be successful.

6.4.14 Enable and Disable Provisioning on the Active SOAM Server

Use this procedure to enable or disable provisioning updates on the active SOAM server:

1. Click **Status & Manage**, and then **Database**.
2. Click **Enable Site Provisioning**.

   Provisioning and configuration updates are enabled on all active SOAMs at the SO level. The **Enable Site Provisioning** button switches to **Disable Site Provisioning**.
3. To disable provisioning on a SOAM GUI, click **Disable Site Provisioning**.

> **Note**
>
> After enabling or disabling provisioning, it will take a few minutes to reflect the changes from MMI. Any operation performed within this time frame from MMI will be successful.

6.5 KPIs

This section provides general information about KPIs, the **Status & Manage**, and then **KPIs** page, and how to view, export, and graph KPIs. Be aware that core KPI functionality is described here. Applications expand on this functionality based on topology and features. Always refer to the documentation for your specific application and release.

6.5.1 KPI Overview

Key Performance Indicators (KPIs) can be accessed from the **Status & Manage**, and then **KPIs** page. KPIs represent point-in-time values monitoring various aspects of system performance. There are two types of KPIs, scalar and arrayed, that are used when the monitored element is either distinct or when the monitored element is repeated. For example, the overall CPU utilization for a system can be monitored as a scalar KPI, and the per core CPU utilization can be monitored as an arrayed KPI (where each array element represents the usage for a CPU core.)

Two important filter concepts in this section are **Scope** and **Group**. These options can be selected from the **KPI Filter** drawer.

A scope is a collection of servers in a given topology. The scope presented in the first tab is referred to as the Entire Network scope. A sub-scope can be selected from the filter using one of the configurable containers:

- Network Element
- Server Group
- Resource Domain
- Place

- Place Associations

> **Note**
>
> Scope is limited to only one selection. Multiple scope selections from the filter are prohibited.

Statistics are calculated across the selected scope. For example, when viewing CPU utilization with a selected scope of **Entire-Network** and a group of **Non Arrayed**, the CPU average statistic displayed is for all CPUs in the topology.

A group is a collection of KPIs. For example, Server, displays various system data related to a server. A group is named, and may consist of any mix of single (scalar) or arrayed KPIs. For presentation, groups are automatically partitioned into sub-groups where all of the scalar KPIs are grouped in the Non Arrayed sub-group, and each arrayed KPI is grouped into its own sub-group. Applications, topology, and features dictate what named groups are available to the user.

Smooth data presentation is a technique used to provide less erratic updates to the data. This process uses a form a data averaging as opposed to real time data and provides the user with a better overview of what resources are being used.

Exporting of KPIs uses the Automated Performance Data Export (APDE) framework. The export options can be accessed by opening the **KPI APDE Export** drawer. Export tasks can be monitored by opening the **KPI APDE Tasks** drawer. See Exporting KPIs for more information about the exporting of KPIs. See Files for more information about the APDE format.

Graphing options can be accessed by opening the **KPI Graph** drawer. See Graphing KPIs for more on the KPI graphing feature.

6.5.2 KPI work area layout

The KPIs page can be accessed by navigating from the main menu to **Status & Manage**, and then **KPIs**. Notice the title at the top of the work area. Like other pages, the title presents the ordered list of navigation steps taken to reach the current page. The title also reflects the selected group whose information is being displayed in the main work area. An example of this would be:

Main Menu: Status & Manage, and then **KPIs [Group: 'Server']**

In this case, the default group of 'Server' is presented in the title bar. This changes as different groups are selected from the filter function.

Unlike some of the other pages viewed in the OAM GUI, the KPIs page uses the concept of drawers. These are similar in function to the **Filter**, **Info**, and **Tasks** lists found on other pages but are located (docked) on the right side of the work area. When selected, they open horizontally presenting the options available.

Under the title bar are two levels of tabs. The top level of tabs present a scope roll-up and subsequent tabs in that row present sub-scoped servers. By default, or when no scope is selected, the view presents a global scope. In this case, the first tab is labeled **Entire-Network** and subsequent tabs reflect individual servers. This varies depending on the tier being served by the GUI. Using DSR as an example, the System OAM presents different servers than the Network OAM in the same topology.

The second level of tabs present named groups of arrays with the exception of the first tab. The first tab presents the non-arrayed or scalar KPIs. The subsequent tabs present compatible arrays based on the selected scope.

> **Note**
>
> The named groups of arrays vary depending on application and features. Refer to documentation specific to your application and release.

6.5.3 KPIs Fields

KPI fields vary based on the context of the information being displayed and selected scope. Statistical data is always presented using the smooth data presentation technique. See KPI Overview. Depending on the application, arrayed KPI names may be pulled from a mapping table providing a proper name. Alternatively, the KPI name may be a simple index and the meaning can be inferred from the context of the group. For example, a multi-core CPU KPI presenting the utilization of each core named 0,1,2,3. Table 6-12 lists the KPI status fields and Table 6-13 lists the KPI statistical fields..

Table 6-12 KPIs Statistical Fields

KPIs Status Field	Description
Name	The KPI name (or index if this is an arrayed KPI without a mapping table).
Average	Average value of the KPI name within the selected scope.
Max	Maximum value of the KPI name within the selected scope.
Min	Minimum value of the KPI name within the selected scope.
Median	Median value of the KPI name within the selected scope.
Sum	Summary of all values of the KPI name within the selected scope.
Description	Description of the KPI name.

Table 6-13 KPIs Value Fields

KPIs Status Element	Description
Name	The KPI name (or index if this is an arrayed KPI without a mapping table)
Value	Average value of the KPI name within the selected scope.
Description	Description of the KPI name.

6.5.4 Viewing KPIs

Use this procedure to filter and view KPI data.

By default, the initial page display presents KPI data with a scope of **Entire-Network** and a group of **Non Arrayed**. From this filter set, the work area displays server statistics based on all the servers in this topology. Use this procedure to apply a different filter set and view the corresponding KPI data.

1. From the main menu, select **Status & Manage**, and then **KPIs**.

To isolate the statistics of specific server on the **Status and Manage**, and then **KPIs [Group: 'Server']** page, navigate the tabs in the row containing **Scope** selection tabs. If the target server is not visible in the available screen space use the scroll right/left buttons located to the right or left of the visible tabs in the row containing scope selection tabs.

2. To apply a different filter, select the **KPI Filter** drawer located to the right of the main work area. The filter icon is represented by a funnel. The drawer slides open and presents lists for both **Group** and **Scope**. In addition to the lists, two action buttons are presented: **Go** and **Reset**. Select the desired **Group** and **Scope** and click **Go**.

   The drawer closes and the KPI data displays in the work area. Navigate the **Group** and **Scope** tabs to further isolate the KPI data.

6.5.5 KPIs data export Fields

Table 6-14 describes the fields in the Schedule KPI Periodic Export Task drawer.

Table 6-14 Schedule KPI Periodic Export Task Fields

Element	Description	Data Input Notes
Export Frequency	Frequency at which the export occurs	Format: Option Range: Once, Fifteen Minutes, Hourly, Daily, or Weekly Default: Once **Note**: Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out. Note that the Fifteen Minute, Hourly, Daily, and Weekly scheduling options are only available when provisioning is enabled.
Task Name	Name of the scheduled task.	Format: Textbox Range: Maximum length is 40 characters. Valid characters are alphanumeric, minus sign, and spaces between words. The first character must be an alpha character. The last character must not be a minus sign. A value is required. **Note**: This field is not active if the selected export frequency is once.
Description	Optional description of the scheduled task	Format: Textbox Range: Maximum length is 255 characters; alphanumeric (a-z, A-Z, and 0-9) and minus sign (-). Description must begin with an alphanumeric character. **Note**: This field is not active if the selected export frequency is once.
Filename Prefix	Optional export filename prefix. The extension to pre-pend the generated export file name.	Format: Textbox Range: Maximum length is 8 characters; alphanumeric (a-z, A-Z, and 0-9).

Table 6-14 (Cont.) Schedule KPI Periodic Export Task Fields

Element	Description	Data Input Notes
Minute	Select the minute of each hour when the data will be written to the export directory. Enabled only if Export Frequency is hourly or fifteen minutes. For a frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer in the hour, a value between 0 and 14.	Format: Scrolling list Range: 0 to 59 Default: 0 **Note**: This field is not active if the selected export frequency is Once, Daily, or Weekly. This field is only active if the selected export frequency is Fifteen Minutes and Hourly.
Time of Day	Select the time of day when the data will be written to the export directory. Enabled only if Export Frequency is daily or weekly. Select from 15-minute increments, or fill in a specific value.	Format: Time textbox Range: HH:MM with AM/PM Default: 12:00 AM **Note**: This field is not active if the selected export frequency is Once, Fifteen Minutes, or Hourly. This field is only active if the selected export frequency is Daily or Weekly.
Day of Week	Select the day of week when the data will be written to the export directory. Enabled only if Export Frequency is weekly.	Format: Option Range: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday Default: Sunday **Note**: This field is active only if Weekly is selected.

6.5.6 Exporting KPIs

You can schedule a one-time or periodic export of KPI data from the KPIs page. KPI data can be exported immediately, or you can schedule periodic exports to occur every fifteen minutes, hourly, daily, or weekly.

The **KPI Export** feature uses the Automated Performance Data Export (APDE) framework. See Files for more information about APDE generated files. Once the export task is complete the files can be located in the files management storage area, which can be accessed by navigating from the main menu to **Status & Manage**, and then **Files**. The files are available in the file management area until you manually delete it, or until the file is transferred to an alternate location using the Export Server feature. For more information about using Export Server, see Remote Servers.

One or more export files are created for every export task. Exports based on a filtered data set honor scope but not group. All groups are included in the export task. Each exported file contains a unique name with a suffix type of csv. By default the system uses gzip compression. The default compression type can be changed. See Remote Servers for more information.

The csv subgroup portion of the filename is one of the following type:

- SCALAR - the report contains Non-Arrayed items; there is no index column.
- INDEXED - the report contains Arrayed items using a numerical index.
- <map_name> - the report contains Arrayed items using a common name mapped index.

> **Note**
>
> Index values can be either numeric or string. For CPU cores, naming the array indexes does not offer any significant value, but for other kinds of arrayed KPIs, the indexes may have a meaningful name (which are used in place of a numeric index.)

Use this procedure to initiate or schedule a KPI data export task.

1. Click **Status & Manage**, and then **KPIs**.
2. Apply the desired filter criteria. Select the **KPI Filter** drawer located to the right of the main work area. The filter icon is represented by a funnel. The drawer slides open and presents lists for both **Group** and **Scope**. Specify filter criteria and click **Go**.

   The KPIs are displayed according to the specified filter criteria.
3. Select the **KPI APDE Export** drawer located to the right of the main work area. The filter icon is represented by a stylistic clock. The drawer slides open and presents the export options.
4. Select the **Export Frequency**. Based on this selection, other fields may become active or inactive.
5. Enter a **Task Name**.

   This field is not active if the selected export frequency is once. For more information about **Task Name**, or any field on this page, see KPIs data export Fields.
6. Optional: Enter a **Description**.

   This field is not active if the selected export frequency is once.
7. Optional: Enter a **Filename Prefix**.

   The filename prefix is pre-pended to the generated export file name for quick identification.
8. Select the **Minute** if **Export Frequency** is fifteen minutes or hourly.

   If the selected export frequency is fifteen minutes or hourly, this is the minute of each period when the transfer is set to begin. For an export frequency of fifteen minutes, transfers occur four times per hour, and this field displays the minute of the first transfer.
9. Select the **Time of Day** if **Export Frequency** is daily or weekly.

   This field is not active if the selected export frequency is once, fifteen minutes, or hourly.
10. Select the **Day of Week** if **Export Frequency** is weekly.

    This field is not active if the selected export frequency is once, fifteen minutes, hourly, or daily.
11. Click **OK** to initiate the KPI export task.

    KPI export task progress can be monitored from the **KPI APDE Tasks** drawer. See KPI Export Tasks.

The data export task is initiated or scheduled.
From the **Status & Manage**, and then **Files** page, you can view a list of files available for download, including the file you exported during this procedure. For more information, see View the File List.

Scheduled KPI tasks can be viewed, deleted and reports can be generated from **Status & Manage**, and then **Tasks**, and then **Scheduled Tasks**. For more information, see:

- Editing a Scheduled Task

- Deleting a Scheduled Task
- Generating a Scheduled Task Report

You cannot modify KPIs using this task unless you delete the KPI and create a new one.

> **Note**
>
> Only one export operation at a time is supported on a single server. If an export is in progress from another GUI session when you click **Export**, a message is displayed and the export does not start. You must wait until the other export is complete before you can begin your export.

6.5.6.1 KPI Export Tasks

You can monitor the progress of a **KPI APDE Export** task from the **KPI APDE Tasks** drawer. No task management actions are available from this drawer but active links to the exported files are presented upon selecting a specific task.

Use this procedure to monitor the status of a **KPI APDE Export** task. This procedure assumes that an export has been performed or scheduled.

1. Click **Status & Manage**, and then **KPIs**.
2. Select the **KPI APDE Tasks** drawer located to the right of the main work area. The filter icon is represented by a stylistic list. The drawer slides open and presents the task list.
3. To access the active links to exported files select a completed task. The active links appear below the task list and are available for selecting.

   Scheduled and completed tasks can be viewed, edited, and deleted, and reports of scheduled tasks can be generated from the **Status & Manage**, and then **Tasks** page. For more information see:

   - Editing a Scheduled Task
   - Deleting a Scheduled Task
   - Generating a Scheduled Task Report

6.5.7 Graphing KPIs

The graphing function allows for an easy visual display of KPI information over time.

Graph plots the information in selected rows on the grid over time with each line representing a row selected from the grid. A key is displayed to the right of the graph that shows which lines represent which rows.

When only rows of type percentage are selected, the graph displays a range from zero to one hundred on the y-axis. Otherwise, a range from the minimum value to the maximum value (with some buffer) is displayed. The y-axis automatically adjusts if a KPI goes outside the range displayed. When incompatible rows are selected a warning is presented at the top of the drawer stating "Mixed data detected. Results may not be as expected.

Use this procedure to graph KPIs:

1. Click **Status & Manage**, and then **KPIs**.

2. Apply the desired filter criteria. Select the **KPI Filter** drawer located to the right of the main work area. The filter icon is represented by a funnel. The drawer slides open and presents lists for both **Group** and **Scope**. Specify filter criteria and click **Go**.

   The KPIs are displayed according to the specified filter criteria.

3. To isolate the statistics of specific server navigate the tabs in the row containing **Scope** selection tabs. If the target server is not visible in the available screen space use the scroll right/left buttons located to the right or left of the visible tabs in the row containing scope selection tabs.

4. To isolate the statistics of specific group navigate the tabs in the row containing **Group** selection tabs. If the target group is not visible in the available screen space use the scroll right/left buttons located to the right or left of the visible tabs in the row containing group selection tabs.

5. Select one or more lines from the grid representing the desired data set.

   > **Note**
   >
   > Press **Ctrl** to individually select KPIs. Press **Shift** to select a range of KPIs.

6. Select the **KPI Graph** drawer located to the right of the main work area. The filter icon displays by a stylistic graph. The drawer slides open and displays two action buttons: **Go** and **Reset**. Click **Go** to generate graph.

   The drawer closes and the KPI graph displays in the work area below the KPI grid.

7. To remove the graphing, navigate back to the **KPI Graph** drawer and select **Reset**.

   The drawer is closed and the KPI graph is no longer presented in the work area.

6.6 Processes

The Processes page displays process status and other process information about a per-process basis for all servers in the system. Processes are controlled at the server level using the Stop, Restart, and restart options on the Servers page. See Server for more on Stop, Restart, and restart.

6.6.1 Process Status Fields

Table 6-15 describes fields on the **Status & Manage**, and then **Processes** page.

Table 6-15 Process Status Fields

Process Status Element	Description
Hostname	The hostname of the server.
Process Name	Name of the process, based on a unique identifying process tag within the application. Multiple processes on a server with the same name are appended with an instance number (#), for example, idbsvc(0) and idbsvc(1).
Start Time	Date and time the process was last (re)started.

Table 6-15 (Cont.) Process Status Fields

Process Status Element	Description
Status	Status of the process. Possible values are: • **Up**: Process is up and running. Processes, which are started successfully and reach a steady-state have a status of Up. • **Done**: The process is complete. • **Kill**: Process is being stopped. This is the normal state for a process to enter while being stopped. If a process is failing to shutdown, it remains in the Kill state for an extended amount of time. • **Pend**: Process execution is pending, waiting to be (re)started. Processes that have exited abnormally from the Up state shall fall into the Pend state. Processes that cannot start successfully shall remain in the Pend state. • **Unknown**: A failure is preventing the reporting or collection of the process status.
# Starts	Number of times the process started. All counts are 1 when a server starts up. The count increments to 2 if the process restarts and increments with each process restart. The count resets to 1 if the server is restarted.
CPU usage	An estimate of recent CPU percentage used per process on the server.
Heap Memory Used (K)	Size of the heap used per process in Kilobytes.

6.7 Tasks

The Tasks pages display the active, long running tasks and scheduled tasks on a selected server. The Active Tasks page provides information such as status, start time, progress, and results for long running tasks, while the Scheduled Tasks page provides a location to view, edit, and delete tasks that are scheduled to occur.

6.7.1 Active Tasks

The Active Tasks page displays the long running tasks on a selected server. The Active Tasks page provides information such as status, start time, progress, and results, all of which can be generated into a report. Additionally, you can pause, restart, or delete tasks from this page.

6.7.1.1 Active Tasks Fields

The Active Tasks page displays information in a tabular format where each tab represents a unique server. By default, the current server's tab is selected when the page is loaded. Table 6-16 describes fields on the Active Tasks page.

Table 6-16 Active Tasks Fields

Active Tasks Element	Description
ID	Task ID

Table 6-16 (Cont.) Active Tasks Fields

Active Tasks Element	Description
Name	Task name
Status	Current status of the task. Status values include: running, paused, completed, exception, and trapped.
Start Time	Time and date when the task was started.
Update Time	Time and date the task's status was last updated .
Result	Integer return code of the task. Values other than 0 (zero) indicate abnormal termination of the task. Each value has a task-specific meaning.
Result Details	Details about the result of the task.
Progress	Current progress of the task.

6.7.1.2 Delete a Task

Use this procedure to delete one or more tasks.

1. Click **Status & Manage**, and then **Tasks**, and then **Active Tasks**.
2. Select a server.

> **Note**
>
> Hovering the cursor over any tab displays the name of the server.

All active tasks on the selected server are displayed.

3. Select one or more tasks.

> **Note**
>
> To delete a single task or multiple tasks, the status of each task selected must be one of the following: completed, exception, or trapped.

> **Note**
>
> You can select multiple rows to delete at one time. To select multiple rows, press and hold Ctrl as you click to select specific rows.

4. Click **Delete**.
5. Click **OK** to delete the selected tasks.

6.7.1.3 Delete All Completed Tasks

Use this procedure to delete all completed tasks.

1. Click **Status & Manage**, and then **Tasks**, and then **Active Tasks**.

2. Select a server.

> **Note**
>
> Hovering the cursor over any tab displays the name of the server.

All active tasks on the selected server are displayed.

3. Click **Delete all Completed**.
4. Click **OK** to delete all completed tasks.

6.7.1.4 Cancel a Running or Paused Task

Use this procedure to cancel a task that is running or paused.

1. Click **Status & Manage**, and then **Tasks**, and then **Active Tasks**.
2. Select a server.

> **Note**
>
> Hovering the cursor over any tab displays the name of the server.

All active tasks on the selected server are displayed.

3. Select a task.
4. Click **Cancel**.
5. Click **OK** to cancel the selected task.

6.7.1.5 Pause a Task

Use this procedure to pause a task.

1. Click **Status & Manage**, and then **Tasks**, and then **Active Tasks**.
2. Select a server.

> **Note**
>
> Hovering the mouse over any tab displays the name of the server.

All active tasks on the selected server are displayed.

3. Select a task.

> **Note**
>
> A task may be paused only if the status of the task is running.

4. Click **Pause**.
5. Click **OK** to pause the selected task.

For information about restarting a paused task, see Restart a Task.

6.7.1.6 Restart a Task

Use this procedure to restart a task.

1. Click **Status & Manage**, and then **Tasks**, and then **Active Tasks**.
2. Select a server.

> **Note**
>
> Hovering the mouse over any tab displays the name of the server.

All active tasks on the selected server are displayed.

3. Select a paused task.

> **Note**
>
> A task may be restarted only if the status of the task is paused.

4. Click **Restart**.
5. Click **OK** to restart the selected task.

The selected task is restarted.

6.7.1.7 Active Tasks Report Fields

The Active Tasks [Report] page displays report data for selected tasks. Table 6-17 describes fields on the Active Tasks [Report] page.

Table 6-17 Active Tasks Report Fields

Active Tasks Report Field	Description
Task ID	Task ID
Display Name	Task name
Task State	Current status of the task. Status values include: running, paused, completed, exception, and trapped.
Admin State	Confirms task status
Start Time	Time and date when the task was started
Last Update Time	Time and date the task's status was last updated
Elapsed Time	Time to complete the task
Result	Integer return code of the task. Values other than 0 (zero) indicate abnormal termination of the task. Each value has a task-specific meaning.
Result Details	Details about the result of the task

6.7.1.8 Generate an Active Task Report

Use this procedure to generate an active task report.

1. Click **Status & Manage**, and then **Tasks**, and then **Active Tasks**.
2. Select a server.

> **Note**
>
> Hovering the mouse over any tab displays the name of the server.

All active tasks on the selected server are displayed.

3. Select one or more tasks.

> **Note**
>
> If no tasks are selected, all tasks matching the current filter criteria is included in the report.

4. Click **Report**.
5. Click **Print** to print the report.
6. Click **Save** to save the report.

6.7.2 Scheduled Tasks

The periodic export of certain data can be scheduled through the GUI. The Scheduled Tasks page provides you with a location to view, edit, delete, and generate reports of these scheduled tasks. For more information about the types of data that can be exported, see:

- Exporting Active Alarms
- Exporting Alarm and Event History
- Exporting Security Log Files
- Exporting KPIs
- Exporting measurements reports

> **Note**
>
> APDE remote server copy tasks cannot be deleted or edited from the Scheduled Tasks page. The user must perform these actions from the Data Export page.

6.7.2.1 Scheduled Tasks Fields

The Scheduled Tasks page displays information in a tabular format where each tab represents a unique server. By default, the current server's tab is selected when the page is loaded. Scheduled Task Fields describes fields on the Scheduled Tasks page.

Table 6-18 Scheduled Tasks Fields

Scheduled Tasks Element	Description
Task Name	Name given at the time of task creation.

Table 6-18 (Cont.) Scheduled Tasks Fields

Scheduled Tasks Element	Description
Description	Description of the task.
Time of Day	The hour and minute the task is scheduled to run.
Day-of-Week	Day of the week the task is scheduled to run.
Network Elem	The Network Element associated with the task.

6.7.2.2 Editing a Scheduled Task

Use this procedure to edit a scheduled task.

1. Click **Status & Manage**, and then **Tasks**, and then **Scheduled Tasks**.
2. Select a task.
3. Click **Edit**.
4. Edit the available fields as necessary.

   See Scheduled Tasks Fields for details about the fields that display on this page.
5. Click **OK** or **Apply** to submit the changes and return to the Scheduled Tasks page.

6.7.2.3 Deleting a Scheduled Task

Use this procedure to delete one or more scheduled tasks.

1. Click **Status & Manage**, and then **Tasks**, and then **Scheduled Tasks**.
2. Select one or more tasks.
3. Click **Delete**.
4. Click **OK** to delete the selected tasks.

6.7.2.4 Generating a Scheduled Task Report

Use this procedure to generate a scheduled task report.

1. Click **Status & Manage**, and then **Tasks**, and then **Scheduled Tasks**.
2. Select one or more tasks.

   > **Note**
   >
   > If no tasks are selected, all tasks matching the current filter criteria is included in the report.
3. Click **Report**.
4. Click **Print** to print the report.
5. Click **Save** to save the report.

6.8 Files

The Files page provides access to the file management storage area of all servers configured on the system. This area is used to store and manage files generated by OAM server operations such as backup data and measurement processes. In addition to viewing and deleting files, you can also use the Files page to download existing files to an alternate location and upload new files.

6.8.1 File Status Fields

The Files page displays information in a tabular format where each tab represents a unique server. By default, the current server's tab is selected when the page is loaded. Table 6-19 describes the fields on the Files page.

Table 6-19 File Field

Element	Description
File Name	Name of the file.
Size	File size. Sizes are shown in one of the following units: PB (petabyte), TB (terabyte), GB (gigabyte), MB (megabyte), KB (kilobyte), or B (byte).
Type	File extension type.
Timestamp	Time and date of file creation on the server.

6.8.2 File Name Formats APDE

This table describes the file content types and file name formats for files written to the file management storage area using the Automated Performance Data Export (APDE) framework. APDE defines a common process by which various performance indicators and logs are exported to the file management storage area. These are Alarms, Events, KPIs, Measurements, and Security Logs.

> **Note**
>
> This section describes the system generated file names only.

In general, APDE generates files with a file name format of:

`<directory path>/<name><suffix><ext>`

Using an example of the type **Events** a file name might look like:

`export/myserver/Events/Events_20159030-112016-EDT_13.csv.gz`.

In this example, the **<directory path>** includes `export/<hostname>/<export type>/`. The **<name>** includes `<export type>_<date-time-tz>_<task id>`. The **<suffix>** is `csv` and the **<ext>** is `gz`.

> **Note**
>
> Depending on the filtering used when the data was exported to the file management area, a scope may be added to the path. This may include a network element or server group.

There are five **export type** categories differentiating the directory paths. We used **Events** in the example but the full list includes:

- `Alarms`
- `Events`
- `KPI`
- `Seculog`
- `Measurements`

> **Note**
>
> The measurements export type is only under the **Measurements** export type directory. The supported types vary according to the measurements offered by the application.

Following the export type in the **<directory path>** comes the **<name>**. With the exception of measurement export file names, the first part of the **<name>** typically begins with the **export type**. Names vary per export type but are similar to:

- `Alarms_<date-time-tz>_<task id>`
- `Events_<date-time-tz>_<task id>`
- `KPI_<date-time-tz>_<task id>`
- `Seculog_<date-time-tz>_<task id>`
- `<Measurements>` have varying name formats, which include (but not limited to):
  - `MeasSimple_<date-time-tz>_<task id>`
  - `MeasSimple_<date-time-tz>_<measurement group>_<task id>`
  - `MeasArrayed_<date-time-tz>_<task id>`
  - `MeasArrayed_<date-time-tz>_<measurement group>_<task id>`
  - `<type name>_<date-time-tz>_<task id>`
  - `<type name>_<date-time-tz>_<measurement group>_<task id>`

> **Note**
>
> Task ID uniquely identifies an individual export task and can be correlated to an active task under **Status & Manage**, and then **Tasks**, and then **Active Tasks**.

By default the `<suffix>` is **csv** (comma-separated value).

The file `<ext>` dictates the compression used and is user defined. The default is gzip. See Remote Servers for details on choosing file compression. Table 6-20 lists the file content types.

Table 6-20 File Name Formats Exports

File Content Type	File Name Common Examples
Exports (APDE)	
Alarms & Events	A common example of an events file is: export/<hostname>/Events/Events_<date-time-tz>_<task id>.csv.gz A common example of an alarms file is: export/<hostname>/Alarms/Alarms_<date-time-tz>_<task id>.csv.gz Each of these types are comma-separated value files (csv) compressed using gzip (gz).
Security Logs	A common example of a security log file is: export/<hostname>/Seculog/Seculog_<date_time_tz>_<task id>.csv.gz Each of these types are comma-separated value files (csv) compressed using gzip (gz).
KPIs	A common example of a KPI file is: export/<hostname>/KPI/KPI_<date-time-tz>_<task id>.csv.gz Each of these types are comma-separated value files (csv) compressed using gzip (gz).
Measurements	Many variations of Measurements files exist. Additionally, the user has the ability to optionally add the measurement group name to the file. Some common examples without the measurement group added: export/<hostname>/Measurements/OAM.ALARM/MeasSimple_<date-time-tz>_<task id>.csv.gz export/<hostname>/Measurements/OAM.SYSTEM/MeasSimple_<date-time-tz>_<task id>.csv.gz export/<hostname>/Measurements/OAM.SYSTEM/MeasArrayed_<date-time-tz>_<task id>.csv.gz Some common examples with the measurement group added: export/<hostname>/Measurements/OAM.ALARM/MeasSimple_<date-time-tz>_<measurement group>_<task id>.csv.gz export/<hostname>/Measurements/OAM.SYSTEM/MeasSimple_<date-time-tz>_<measurement group>_<task id>.csv.gz export/<hostname>/Measurements/OAM.SYSTEM/MeasArrayed_<date-time-tz>_<measurement group>_<task id>.csv.gz Each of these types are comma-separated value files (csv) compressed using gzip (gz).

> **Note**
>
> It is recommended that policies be developed to prevent overuse of the storage area. These might include a procedure to delete files after transferring them to an alternate location using the data export feature. See Remote Servers for details of the feature.

6.8.3 File Name Formats

This table describes the file content types and file name formats for files written to the file management storage area by processes not using the Automated Performance Data Export (APDE) framework for exporting files. For exports using APDE, see File Name Formats APDE for details of those file names.

> **Note**
>
> Files appearing in the storage area are put there by various automated and manual processes. In some cases, the user has the ability to modify the system generated file name. This section describes the system generated file names only.

The file types addressed in this section include:

- **Backup** (Upgrade). This differs from the database backup and is a manual process.
- **Backup** (Database). This differs from the upgrade backup and can be manually or automatically generated.
- **Checkup** (Health Check). These are manually generated files.
- **ISO**. Manually uploaded and system managed.
- **Logs**. These are manually generated files.
- **Servers** (Configuration). These are manually generated files.

The following variables are commonly used in file naming:

- **<server name>** or **<hostname>** is the server hostname from which the file is generated.
- **<checkup type>** is the upgrade health check type. These are EarlyUpgrade, PreUpgrade, or PostUpgrade.
- **<checkup scope>** specifies whether the health check was run on a server group or network element basis.
- **<application name>** is the name of the application.
- **<group name>** is the type of data stored in the backup file.
- **<node type>** specifies whether the backup was generated on an NOAMP or SOAM.
- **<date_time_tz>** is the date, time, and time zone that a file was created. This format can vary from file to file. Some may use hyphens while others use underscores. Some files may not include the time zone. The data and time format is generally YYYYMMDD_HHMMSS.
- **<task id>** Task ID uniquely identifies an individual export task and can be correlated to an active task under **Status & Manage**, and then **Tasks**.
- **(AUTO | MAN)** indicates whether the backup was automatically or manually generated.

The various file extensions used are:

- **bz2** is a compressed archive file created by bzip2. This type of file must be uncompressed to access the content inside.
- **gz** is a compressed archive file created by gzip. This type of file must be uncompressed to access the content inside.
- **log** is a flat file type that can be read by a text reader.
- **sh** is a self-extracting archive commonly used in Linux systems for scripting.
- **tar** is an archive container and must be unpacked to access the content inside.
- **txt** is a flat file type that can be read by a text reader.

> **Note**
>
> The file types listed in Table 6-21 are among the most commonly seen in the file management storage area. The list, however, is not exhaustive and other file types may appear in the storage area.

Table 6-21 File Name Formats

File Content Type	File Name and Description
Backup (Upgrade)	Backup.<application>.<hostname>.FullRunEnv.<group name>.<date_time>.UPG.tar.bz2 Backup.<application>.<hostname>.FullDBParts.<group name>.<date_time>.UPG.tar.bz2 **Note**: In this case, the upgrade backup created two files differentiated by run environment and database. Both are tar files separately compressed using bzip2.
Backup (Database)	backup/Backup.<application>.<hostname>.ProvisioningAndConfiguration.<group name>.<date_time>.(AUTO | MAN).tar.bz2 **Note**: A database backup can generate files using a default or custom file name. Additionally, the user can select compression or no compression. Available compression choices are bz2 or gz. Files generated using no compression are simple tar files. In this type of backup the user has the choice of Provisioning data, Configuration data, or both
Checkup (Upgrade Health Check)	<checkup type>_HealthCheck_<checkup scope>_<date_time>.txt A checkup generates a simple text file that can be viewed or downloaded.
ISO File Image	<name>.iso **Note**: ISO images that have been uploaded but not deployed present a different file name than ISO images that have been uploaded and deployed. For example, an uploaded DSR ISO image has a filename that starts with iso whereas a deployed DSR ISO image has a filename that starts with DSR.
Logs	ugwrap.log upgrade.log **Note**: Upgrade or system logs are different than security logs. Seculogs use the APDE framework to export security logs to the file management storage area.
Servers (Configuration)	TKLCConfigData.<hostname>.sh **Note**: Servers configuration data generally starts with the term TKLCConfigData. These are shell files.

> **Note**
>
> It is recommended that policies be developed to prevent overuse of the storage area. These might include a procedure to delete files after transferring them to an alternate location using the data export feature. See Remote Servers for details of the feature.

6.8.4 View the File List

Use this procedure to view the list of files located in the file management storage area of a server. The amount of storage space currently in use can also be viewed on the Files page.

1. From the Main menu, select **Status & Manage**, and then **Files**.
2. Select a server.

   All files stored on the selected server are displayed.

6.8.5 View a File

Use this procedure to view, print, or save the contents of a file in the file management storage area.

1. Click **Status & Manage**, and then **Files**.
2. Select a server.

   All files stored on the selected server are displayed.
3. Select the file you want to view.

   > **Note**
   >
   > The **View** button is disabled when the contents of the file cannot be viewed from the GUI. For example, if a tar file is selected, the **View** button is disabled, because the contents of tar files cannot be viewed from the GUI.
4. Click **View**.
5. Click **Print** to print the file contents, or click **Save** to save the file.

6.8.6 Upload a File to an Alternate Location

Use this procedure to move a file from the file management storage area to an alternate location.

1. Click **Status & Manage**, and then **Files**.
2. Select a server.

   All files stored on the selected server are displayed.
3. Click **Download**.
4. Click **Save**.
5. Navigate to the drive and folder where you want to save the file.
6. Click **Save**.

6.8.7 Upload a Local File

This procedure allows you to transfer a file from your local computer to the file management storage area of any server in the topology. A file up to 2 GB in size can be uploaded to the file management storage area.

> **Note**
>
> This product currently only supports file uploads and transfers for files less than 2 GB in size. To upload or transfer files greater than 2 GB in size, contact My Oracle Support for assistance.

Use this procedure when you want to transfer a local file to the file management storage area:

1. Click **Status & Manage**, and then **Files**.
2. Select a server.

   All files stored on the selected server are displayed.
3. Click **Upload**.
4. Click **Browse** to select the file to upload.
   - The Choose File window appears allowing you to select a file to upload.
   - Supported files are - csv and iso.
   - Ensure that the filename length including.extension is restricted to 255 characters.
5. Select the file and click **Open**.

   The selected file and its path display in the file upload field.

   > **Note**
   >
   > Before proceeding, verify that the selected file is uniquely named to avoid unintentionally overwriting another file.
6. Click **Upload**.

   A progress bar shows the status of the upload. When the upload is complete, an **Upload Complete** message appears.

   > **Note**
   >
   > Do not close the Status & Manage Files page during the upload. If you attempt to navigate away from the Status & Manage Files page during the upload, a dialog appears to confirm the action. If the page is closed before upload completes, the transfer of data is stopped.

   The file is now stored in the selected server's file management storage area.

6.8.8 Delete Files from the File Management Storage Area

If a Minor or Major Alarm is raised indicating either a minimum of 80% or 90% of file management space is used, old backup files can be deleted to clear space on that server.

Use this procedure remove one or more files from the file management storage area.

1. Click **Status & Manage**, and then **Files**.
2. Select a server.

   All files stored on the selected server are displayed.
3. Select the file that you want to delete.
4. Click **Delete**.
5. Click **OK**.

   The file is deleted and space is cleared on the server.
6. Repeat this procedure for each file to be removed.

The deleted files are cleared from the server and space becomes available in the file management storage area.

6.8.9 Deploy an ISO File

Use this procedure deploy an ISO file:

1. Click **Status & Manage**, and then **Files**.
2. Select the ISO file.
3. Click **Deploy ISO**.

   The ISO deploys to the server and is made available for upgrade on the server and all subtending servers. You can view the current deployment status using the **Tasks** list at the top left of the screen.

6.8.10 Undeploy an ISO File

Use this procedure to undeploy an ISO file:

1. Click **Status & Manage**, and then **Files**.
2. Highlight the ISO to be undeployed.
3. Click **Undeploy ISO**.

   A confirmation message displays.
4. Click the confirmation message.

   The ISO is recalled and is unavailable for upgrade.

6.8.11 Validate an ISO File

Use this procedure to validate an ISO file:

1. Click **Status & Manage**, and then **Files**.
2. Highlight the ISO to be validated.

3. Click **Validate ISO**.

   The ISO is validated. If an ISO image fails validation, it is renamed. An invalid ISO image cannot be deployed.

7

Measurements

This section provides an overview of the options on the Measurements page. All components of the system measure the amount and type of messages sent and received. Measurement data collected from all components of the system can be used for multiple purposes, including discerning traffic patterns and user behavior, traffic modeling, size traffic sensitive resources, and troubleshooting. This section provides an overview of measurements, describes how to generate and export a measurements report, and provides a list of register types.

7.1 Measurements

The measurements framework allows applications to define, update, and produce reports for various measurements.

- Measurements are ordinary counters that count occurrences of different events within the system, for example, the number of messages received. Measurement counters are also called pegs. Additional measurement types provided by the platform framework are not used in this release.
- Applications simply peg (increment) measurements upon the occurrence of the event that must be measured.
- Measurements are collected and merged at the SOAM and NOAM servers as appropriate.
- The GUI allows reports to be generated from measurements.

Measurements that are being pegged locally are collected from shared memory and stored in a disk-backed database table every 5 minutes on all servers in the network. Measurements are collected every 5 minutes on a 5 minute boundary, for example, at HH:00, HH:05, HH:10, HH:15, and so on. The collection frequency is set to 5 minutes to minimize the loss of measurement data in case of a server failure, and also to minimize the impact of measurements collection on system performance.

All servers in the network (NOAM, SOAM, and MP servers) store a minimum of 8 hours of local measurements data. More than 5 minutes of local measurements data is retained on each server to minimize loss of measurements data in case of a network connection failure to the server merging measurements.

Measurements data older than the required retention period are deleted by the measurements framework.

Measurements are reported in groups. A measurements report group is a collection of measurement IDs. Each measurement report contains one measurement group. A measurement can be assigned to one or more existing or new measurement groups so that it is included in a measurement report. Assigning a measurement ID to a report group ensures that when you select a report group the same set of measurements is always included in the measurements report.

Some measurements display as blank (or non-value) and some display as 0. A blank measurement indicates a counter has not been created in the selected reporting interval. A zero measurement indicates that the counter was created, but never pegged. The report may also leave a measurement or sub-measurement out entirely if this item was not created or pegged at all in the reporting interval.

> **Note**
>
> Measurements from a server may be missing in a report if the server is down, the server is in overload, something in the platform merging framework is not working, or the report is generated before data is available from the last collection period (there is a 25 to 30 second lag time in availability).

> **Note**
>
> The maximum number of columns displayed in the Measurement report GUI is limited to 150 columns. Export the report to view all columns.

7.2 Measurement Fields

Table 7-1 describes the fields on the **Measurements**, and then **Report** page.

Table 7-1 Measurements Fields

Field	Description	Data Input Notes
Report	A selection of reports and the interval of how often the data should cover.	Format: List Range: Varies depending on application Interval: Day, Fifteen Minutes, Five Minutes, Half Hour, Hour Default: None
Scope	Network Fields, Server Groups, Resource Domains, Places, and Place Associations for which the measurement report can be run.	Format: List Range: Network Fields in the topology; Server Groups in the topology; Resource Domains in the topology; Places in the topology; Place Associations in the topology **Note**: If no selection is made, the default scope is Entire Network. Default: Entire Network
Column Filter	The characteristics for filtering the column display.	Format: List Range: Sub-measurement Sub-measurement Ranges: • Like: A pattern-matching distinction for sub-measurement name, for example, 123* matches any sub-measurement that begins with 123. • In: A list-matching distinction for sub-measurement ID, for example, 3,4,6-10 matches only sub-measurements 3, 4, and 6 through 10. Default: None

Table 7-1 (Cont.) Measurements Fields

Field	Description	Data Input Notes
Time Range	The interval of time for which the data is being reported, beginning or ending on a specified date.	Format: List Range: Days, Hours, Minutes, Seconds Interval Reference Point: Ending, Beginning Default: Days

7.3 Generating a Measurements Report

Use this procedure to generate and view a measurements report.

> **Note**
>
> There are number of factors that derive the time taken for exporting the measurements like:
>
> - Measurement groups per export task
> - Measurements per Measurement group, whether measurement is arrayed or non-arrayed
> - Measurement Pegs
> - Number of servers in a topology
> - Availability of system resources like CPU and Memory
>
> Refer to Table 7-2 to assess the number of measurement reports generated for each measurement group or scheduled in an export task. For example, an Address Resolution Exception measurement group has single and arrayed measurement types so two measurement reports are generated: one for sing and another for arrayed measurements.

Table 7-2 Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
Address Resolution Exception		Single	5
		Arrayed	15
Address Resolution Performance		Single	4
		Arrayed	21
Application Routing Rules	MeasARTId	Arrayed	1
	MeasApplRoutingRuleId	Arrayed	4
Association Exception		Arrayed	4
Association Usage		Arrayed	1
CAPM	MeasCapmDefId	Arrayed	5
	MeasCapmMeasId	Arrayed	1
	MeasConnectionId	Arrayed	4

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
CPA Exception		Single	11
		Arrayed	2
CPA Performance		Single	14
CPA Session DB		Single	11
		Arrayed	1
ComAgent Exception	ComAgentHAServiceExceptionArrayed	Arrayed	6
	ComAgentHAServiceExceptionSingle	Single	1
	ComAgentMeasExceptionArrayed	Arrayed	1
	ComAgentMeasExceptionSingle	Single	23
	ComAgentPeerGroupExceptionArrayed	Arrayed	2
	ComAgentPeerGroupExceptionSingle	Single	1
	ComAgentPolicerFetchExceptionArrayed	Arrayed	1
	ComAgentRoutedServiceExceptionArrayed	Arrayed	17
ComAgent Performance	ComAgentHAServicePerformanceArrayed	Arrayed	3
	ComAgentMeasPerformanceArrayed	Arrayed	2
	ComAgentMeasPerformanceSingle	Single	15
	ComAgentPeerGroupPerformanceArrayed	Arrayed	2
	ComAgentRoutedServicePerformanceArrayed	Arrayed	12
Connection Congestion		Arrayed	2
Connection Exception		Arrayed	2
Connection Performance	Egress	Arrayed	24
	Egress Congestion Control	Arrayed	10
	Ingress	Arrayed	7
	Ingress Congestion Control	Arrayed	21
	Message Priority	Arrayed	18
Connection Service		Arrayed	7
Connection Transport		Arrayed	13
DA-MP Exception		Single	2
DA-MP Performance		Single	211
		Arrayed	4
DA-MP Service		Single	2

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
DAS		Single	14
		Arrayed	1
DCA Framework Exception	DcaDalId	Arrayed	5
DCA Framework Performance	DcaDalId	Arrayed	21
DSR Application Exception		Single	4
		Arrayed	3
DSR Application Performance		Single	14
		Arrayed	5
Diameter EIR Exception		Single	23
Diameter EIR Performance		Single	5
		Arrayed	4
Diameter EIR Usage		Single	31
Diameter Egress Transaction		Single	2
		Arrayed	8
Diameter Exception		Single	3
		Arrayed	6
Diameter Ingress Transaction Exception		Single	3
		Arrayed	10
Diameter Ingress Transaction Performance		Arrayed	8
Diameter Performance		Single	6
	MeasConnectionId	Arrayed	6
Diameter Rerouting		Single	2
		Arrayed	6
Egress Throttle Group Performance		Arrayed	168
Egress Throttle List Performance		Arrayed	167
Full Address Resolution Exception		Single	5
		Arrayed	15
Full Address Resolution Performance		Single	10
		Arrayed	14
HTTP Layer Performance		Single	14
		Arrayed	2
IDIH		Single	7
IPFE Exception	IpfeTotal	Single	2
	IpfeTsa	Arrayed	6
IPFE Performance	IpfeMpServer	Arrayed	6
	IpfeTotal	Single	5
	IpfeTsa	Arrayed	6
License Measurements		Single	15

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
		Arrayed	14
Link Exception		Arrayed	4
Link Performance		Arrayed	4
Link Set Performance		Arrayed	4
Link Set Usage		Arrayed	1
Link Usage		Arrayed	4
LoadGen Performance		Single	6
MP Performance		Single	11
Message Priority		Single	16
OAM.ALARM		Single	4
OAM.PERF		Single	17
	Audits	Arrayed	3
	AwSoap	Arrayed	3
	CmSoap	Arrayed	3
	GuiHttp	Arrayed	3
	MmiHttp	Arrayed	3
	TpdSoap	Arrayed	3
OAM.SYSTEM		Single	14
		Arrayed	2
OC-DRA Congestion Exception		Arrayed	1
OC-DRA Diameter Exception		Single	12
		Arrayed	13
OC-DRA Diameter Usage		Single	2
		Arrayed	4
	HistogramMeasBuckets	Arrayed	2
P-DRA Congestion Exception		Single	6
P-DRA Diameter Exception		Single	23
		Arrayed	1
P-DRA Diameter Usage		Single	22
	HistogramMeasBuckets	Arrayed	11
	MeasApn	Arrayed	1
	MeasBuckets	Arrayed	1
	MeasPcrfPool	Arrayed	1
	MeasSubPoolRule	Arrayed	1
P-DRA Site Diameter Usage	MeasSBRuleIncCnt	Arrayed	1
	MeasSBRuleRmvLmt	Arrayed	1
PCA NGN-PS Exception		Single	3
PCA NGN-PS Performance		Single	1
Peer Node Performance		Arrayed	5
Peer Routing Rules	MeasPRTId	Arrayed	1

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
	MeasPeerRoutingRuleId	Arrayed	4
RD-IWF Performance		Single	7
Route Group Exception		Arrayed	2
Route Group Performance		Arrayed	21
Route List		Arrayed	4
Routing Usage		Arrayed	5
SBR Audit		Single	31
SBR Binding Exception		Single	11
		Arrayed	1
SBR Binding Performance		Single	18
		Arrayed	1
	MeasAltKeys	Arrayed	1
	MeasBuckets	Arrayed	2
	MeasSBRemoval	Arrayed	1
SBR Exception		Single	4
		Arrayed	6
SBR Performance		Single	15
		Arrayed	4
SBR Session Exception		Single	11
	MeasPendingRarDel	Arrayed	1
SBR Session Performance		Single	18
		Arrayed	2
	MeasApn	Arrayed	2
	MeasBuckets	Arrayed	3
	MeasInvokeSisRarType	Arrayed	1
	MeasInvokeSisResult	Arrayed	1
	MeasSessionsRemovedSis	Arrayed	1
Server Exception		Single	2
Server M3UA Exception		Single	6
Server M3UA Performance		Single	8
Server M3UA Usage		Single	7
Server MTP3 Exception		Single	9
		Arrayed	1
Server MTP3 Performance		Single	4
		Arrayed	2
Server Resource Usage		Single	8
Server SCCP Exception		Single	28
		Arrayed	1
Server SCCP Performance		Single	18
		Arrayed	4

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
Server TCAP Exception		Single	19
		Arrayed	1
Server TCAP Performance		Single	8
		Arrayed	2
Task Performance		Arrayed	33
SS7 Exception measurements			
SS7 Performance measurements			
Topology Hiding Performance		Single	10
		Arrayed	10
Traffic Throttle Group Performance		Arrayed	23
Traffic Throttle Point Performance		Arrayed	139
Transport Exception		Arrayed	10
Transport Performance		Arrayed	12
Transport Usage		Arrayed	2
Traffic Throttle Group Performance measurements			
Traffic Throttle Point Performance Measurements			
USBR Performance		Single	1
		Arrayed	10
vSTP Association Exception		Arrayed	13
vSTP Association Usages		Arrayed	3
vSTP IDPR Performance measurements		Single	36
vSTP CDPA TT		Arrayed	10
vSTP CGPA TT		Arrayed	10
vSTP Connection		Arrayed	9
vSTP Connection Exception		Single	1
vSTP Connection Performance		Arrayed	10
vSTP EIR Exception		Single	7
vSTP EIR Performance		Single	27
		Arrayed	1
vSTP GFLEX Exception		Single	2

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
vSTP GFLEX Performance		Single	1
vSTP ISUP Exception		Single	9
vSTP ISUP Performance		Sigle	5
vSTP MP Performance		Single	6
vSTP LICENSING		Single	4
		Arrayed	2
vSTP LSS Exception		Single	6
vSTP LSS Performance		Single	4
		Arrayed	1
vSTP Link Exception		Arrayed	12
vSTP Link Performance		Arrayed	11
vSTP Link Usage		Arrayed	12
vSTP Linkset Exception		Arrayed	1
vSTP Linkset Performance		Arrayed	7
vSTP Linkset Usage		Arrayed	1
vSTP M2PA Exception	VSTPM2PAExceptionArrayed	Arrayed	1
	VSTPM2PAExceptionSingle	Single	2
	VSTPM2PAExceptionVstpLinkArrayed	Arrayed	14
vSTP M2PA Performance		Single	9
		Arrayed	4
vSTP M3UA Exception		Single	9
vSTP M3UA Performance		Single	4
vSTP M3UA Usage		Single	27
vSTP MNP Exception		Single	11
vSTP MNP Performance		Single	19
		Arrayed	1
vSTP MTP2 Performance		Single	5
		Arrayed	1
vSTP MTP2 Exception		Arrayed by Link ID	12
vSTP MTP3 Exception		Single	13
		Arrayed	5
vSTP MTP3 Performance		Single	12
		Arrayed	7
vSTP SCCP Exception		Single	12
		Arrayed	4
vSTP SCCP Performance		Single	36
		Arrayed	16
vSTP SCCP Usages		Single	1

Table 7-2 (Cont.) Number of Measurement Reports for Each Measurement Group

Report Group	Sub-Group	Type	Number of Measurements
vSTP Server Exception		Single	5
vSTP Server Usage		Single	4
vSTP MNP Exception		Single	2
vSTP MNP Performance		Single	3
vSTP SFAPP Performance		Single	22
		Arrayed	5
vSTP SFAPP Exception		Single	9
vSTP SMS Proxy Performance		Arrayed	7
		Single	27
vSTP SMS Proxy Exception		Arrayed	11
		Single	22
vSTP GFLEX Performance		Arrayed	1
		Single	

1. Click **Measurements**, and then **Report**.
2. Select the **Measurement Report**.
3. Click **Interval**.
4. Select the **Scope**.

   For details about this field, or any field on the **Measurements**, and then **Report** page, see Measurement Fields.
5. Select any filters you may want on the report (Optional).
6. Click **Time Range**.
7. Select **Beginning** or **Ending** as the **Time Range** interval reference point.
8. Select the **Beginning** or **Ending** date.
9. Click **Go**.

> **Note**
>
> Data for the selected scope is displayed in the primary report page. Data for any available sub-scopes are displayed in tabs. For example, if the selected scope is Entire Network, report data for the entire network appears in the primary report page. The individual network entities within the entire network are considered sub-scopes.

10. To view report data for a specific sub-scope, click on the tab for that sub-scope.

7.4 Measurements Data Export Fields

This table describes the fields on the **Measurements**, and then **Report** , and then **Go to Export** page.

Table 7-3 Schedule Measurement Data Export Fields

Field	Description	Data Input Notes
Report Scope	A collection of configurable fields to control report scope.	Format: Options
Report Groups	A graphical list of available groups for report generation.	Format: Options
Time Interval	A configurable field to schedule report generation export frequency.	Format: Options Range: Day, Fifteen Minute, Five Minute, Half Hour, and Hour
Time Range	A configurable field to manage report generation.	Format: Options Range: Days, Hours, Minutes, or Seconds Default: Days
Export Frequency	Frequency at which the export occurs	Format: Options Range: Once, Fifteen Minutes, Hourly, Daily, or Weekly Default: Once **Note**: Depending on what upload frequency is selected, some scheduling choices may become inactive and the buttons or lists are grayed out. Note that the Fifteen Minute, Hourly, Daily, and Weekly scheduling options are only available when provisioning is enabled.
Task Name	Name of the scheduled task.	Format: Text box Range: Maximum length is 40 characters; alphanumeric (a-z, A-Z, and 0-9) and minus sign (-). Task Name must begin and end with an alphanumeric character.
Description	Optional. Description of the scheduled task.	Format: Text box Range: Maximum length is 255 characters; alphanumeric (a-z, A-Z, and 0-9) and minus sign (-). Description must begin with an alphanumeric character.
Export Frequency	Optional. Frequency at which the export occurs.	Format: Radio button Range: Fifteen Minutes, Hourly, Once, Weekly, or Daily Default: Once
Minute	If hourly or fifteen minutes is selected for Upload Frequency, this is the minute of each hour when the data will be written to the export directory.	Format: Scrolling list Range: 0 to 59 Default: 0
Time of Day	Time of day the export occurs.	Format: Time text box Range: 15-minute increments Default: 12:00 AM

Table 7-3 (Cont.) Schedule Measurement Data Export Fields

Field	Description	Data Input Notes
Day of Week	Day of week on which the export occurs.	Format: Radio button Range: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday Default: Sunday

7.5 Exporting Measurements Reports

You can schedule periodic exports of data from the **Measurements Report** page. Measurements data can be exported immediately, or you can schedule exports to occur daily or weekly. If filtering has been applied on the **Measurements Report** page, only filtered data is exported.

During data export, the system automatically creates a CSV file of the filtered data. The file is available in the file management area until you manually delete it, or until the file is transferred to an alternate location using the Export server feature. For more information about using **Export Server**, see Data Export.

> **Note**
>
> The maximum number of columns displayed in the Measurement report GUI is limited to 150 columns. Export the report to view all columns.

Use this procedure to save a measurements report to the file management storage area. Use this procedure to schedule a data export task.

1. Select **Measurements**, and then **Report**.

   The **Measurements Report** page appears. For a description of each field, see Measurement Fields.

2. Generate a measurements report.

   For information about how to generate a measurements report, see Generating a Measurements Report.

3. Click to select the scope or sub-scope measurement report that you want to export.

4. Click **Export**.

   The measurement report is exported to a CSV file. Click the link at the top of the page to go directly to the **Status & Manage**, and then **Files** page. From the **Status & Manage** page, you can view a list of files available for download, including the measurements report you exported during this procedure. The **Schedule Measurement Log Data Export** page appears.

5. Check the **Report Groups** boxes corresponding to any additional measurement reports to be exported.

> **Note**
>
> This step is optional, but is available to allow the export of multiple measurement group reports simultaneously.

6. Select the **Export Frequency**.

> **Note**
>
> If the selected **Export Frequency** is **Fifteen Minutes** or **Hourly**, specify the **Minutes**.

7. Enter the **Task Name**.

   For more information about Task Name, or any field on this page, see Measurements Data Export Fields.

> **Note**
>
> **Task Name** is not an option if **Export Frequency** equals **Once**.

8. Select the **Time of Day**.

> **Note**
>
> **Time of Day** is only an option if **Export Frequency** equals **Daily** or **Weekly**.

9. Select the **Day of Week**.

> **Note**
>
> **Day of Week** is only an option if **Export Frequency** equals **Weekly**.

10. Click **OK** or **Apply** to initiate the data export task.

    The data export task is scheduled. From the **Status & Manage**, and then **Tasks** page, you can view a list of files available for download, including the file you exported during this procedure.

    Scheduled tasks can be viewed, edited, and deleted, and reports of scheduled tasks can be generated from **Status & Manage**, and then **Tasks**. For more information see:

    - Editing a scheduling task
    - Deleting a scheduled task
    - Generating a scheduled task report

Note

The time it takes to generate a single report is based on these factors:

- Number of MPs
- Number of records, for example, data size
- Number of measurement groups/subgroups in a report
- Overall CPU use on the NOAM/SOAM while generating a report
- Number of reports selected
- Frequency of report generation

8
Measurements Streaming

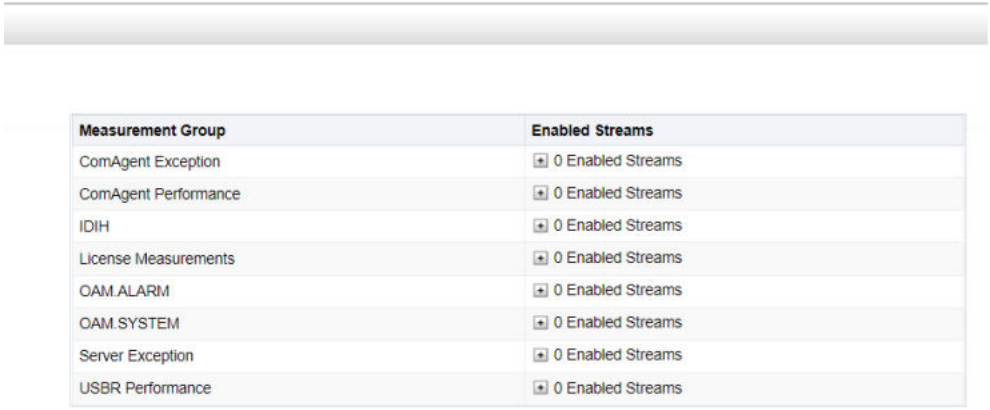
Diameter Signaling Router (DSR) Measurements Data Streaming (MDS) provides DSR statistics to remote servers that are communicating through Apache Kafka in the 3G core network. It provides real-time data, such as CPU, memory and disk usage, incoming and outgoing messages, connection information, and so on. This data is collected for NOAMs, SOAMs, DAMPs, IPFEs, and other components of DSR. The data is filtered, parsed, and sent to remote Kafka clusters. This enables the users to access the metrics on their servers.

8.1 Streams

The Streams page provides the summary of enabled Streams for each measurement group available on the server.

From the **Main Menu**, select **Measurements Streaming**, and click **Streams.**

Figure 8-1 Measurements Streaming



8.1.1 Stream Fields

Stream fields allow the user to enable or disable streaming of measurements (to remote Kafka server) within a measurement group. It also supports the functionality of disabling streaming of all the enabled measurements using the **Disable all Streams** button on the GUI.

Table 8-1 Stream Fields

Fields	Description
Measurement Group	Lists all the Measurement groups
Enabled Streams	Displays the number of enabled streams for each measurement group.
Enable/disable streaming	This option is available when a measurement group is selected to enable or disable streaming.

Table 8-1 (Cont.) Stream Fields

Fields	Description
Disable all Streams	This option disables all the enabled streams from all measurement groups.

8.1.2 Enabling Measurement Streaming

Following is the procedure to enable measurement streaming.

1. From the Main Menu, select Measurements Streaming, and click Streams.
2. Select the Measurement Group to enable the measurements and click **Enable/Disable streaming**.

> **Note**
>
> The **Enable or disable streaming** option will be enabled only when the measurement group is selected.

3. Click the corresponding check box under **Streaming** to enable the measurements from this group.
4. Click **Apply** to save the changes.
5. Click **Back** to return to the Streams page. You can see the number of enabled measurement streams against the measurement group.
6. Repeat these steps to enable measurements from another Measurement Group.

8.1.3 Disabling Measurement Streaming

Following is the procedure to disable measurement streaming:

1. From the **Main Menu**, select **Measurements Streaming**, and click **Streams.**
2. If you wish to disable all measurement streams, click **Disable all Streams**. If you wish to disable the individual measurement streams from each Measurement group, continue with step 3.
3. Select the Measurement group to disable the measurements and click **Enable/disable streaming**
4. Click the corresponding check box to deselect the measurements.
5. Click **Apply** to save the changes.
6. Click **Back** to return to the Streams page. You can see the number of enabled measurement streams against the measurement group.
7. Repeat the steps from step 3 to manually disable measurement streams from another Measurement Group.

8.2 Stream Options

Stream Options is used to configure Kafka and DSR related parameters for Measurements Data Streaming.

Log in to the Stream Options through DSR Active NOAM XMI IP with valid credentials.

When MDS feature is activated, you can see the Stream Options appear on the left Menu under the "Measurements Streaming" folder.

The Measurement Streaming folder lists the following properties:

- Kafka Properties
- DSR Properties

8.2.1 Kafka Properties

This page displays the following fields.

Table 8-2 Kafka Properties

Field(* indicates a required field)	Value	Description
Primary IP and port *	10.167.217.7:8390	IP and Port of primary Kafka cluster. Example of IPv4 input: 10.167.217.7:8392. Example of IPv6 input: [2605:2700:0:3::4713:93e3]:80 **Note:** IP and Port are segregated using: (colon) Default: NA Range: Any valid IPv4/IPv6 address with port
Backup IP and port *	10.167.217.7:8390	IP and port of backup Kafka cluster, which will be used when primary is not available. Example of IPv4 input: 10.167.217.7:8392. Example of IPv6 input: [2605:2700:0:3::4713:93e3]:80 **Note:** IP and Port are segregated using: (colon) Default: NA Range: Any valid IPv4/IPv6 address with port
Topic name *		Defines Kafka's topic name, which is a fundamental unit for event or message organization. Messages with the same topic name will be appended one after another creating a Log file, producers can push messages into the tail of these logs while consumers pull messages off from the head. It is possible to perform logical segregation between messages and events, which works the same concept of different tables having different types of data in a database. Topic Names are limited to 249 characters. Default: NA Range: Topic name can include the following characters: a-z, A-Z, 0-9, . (dot), _ (underscore), and - (hyphen).

Table 8-2 (Cont.) Kafka Properties

Field(* indicates a required field)	Value	Description
Client ID *	Mds2201-DNO00	Client ID is a string to pass to the server when requests are made. The purpose of Client ID is to track the source of requests beyond just IP/port by allowing a logical application name to be included in server-side request logging. Default: NA Range: The client name can be up to 255 characters in length, and can include the following characters: a-z, A-Z, 0-9, . (dot), _ (underscore), and - (hyphen).
Compression codec *	Gzip	Compression codec to use for compressing message sets. Default: Gzip Range: None, Gzip, Snappy, Lz4
Compression level *	0	Compression level parameter for algorithm selected by configuration property compression.codec. Higher values results in better compression at the cost of more CPU usage. Default: 0 Range: (0-9) for gzip, (0-12) for lz4, only 0 for snappy.
Batch size *	16384	Measures batch size in total bytes instead of the number of messages. It controls how many bytes of data to collect before sending messages to the Kafka broker. Batch size should be greater than max record size Default: 16384 Range: 2048 - 2147483647
Linger *	10	Delay in milliseconds to wait for messages in the producer queue to accumulate before constructing message batches (MessageSets) to transmit to brokers. Default: 10 Range: 0-900000
Number of acknowledgments *	1	This field indicates the number of acknowledgements the leader broker must receive from ISR brokers before responding to the request. 0=Broker does not send any response/ack to client, *-1* or all=Broker will block until message is committed by all in sync replicas (ISRs). Default: 1 Range: 1 or all, 0, 1

Table 8-2 (Cont.) Kafka Properties

Field(* indicates a required field)	Value	Description
Security protocol *	SSL	Protocol used to communicate with brokers. Default: SSL Range: PLAINTEXT, SASL_PLAINTEXT, SSL, SASL_SSL **Note:** Using PLAINTEXT as Security Protocol is not recommended.
Connection timeout *	1000	Indicates the time (in milliseconds) to wait after a connection to a Kafka cluster has been requested. If the timeout is over, then the connection will be deemed unsuccessful. Default: 1000 Range: 1000 - 3000
SSL Protocol *	TLSv1.3	The SSL protocol used to generate the SSLContext. Default: TLSv1.3 Range: TLSv1.2, TLSv1.3
Max Record Size *	2048	Maximum size of single record that can be sent over Kafka. Default: 2048 Range: 1000 - 1000000000
Delivery Timeout *	120000	An upper bound on the time (in milliseconds) to report success or failure after a call to send returns. Default: 120000 Range: 0-300000
Request Timeout *	30000	This controls the maximum amount of time (in milliseconds) the client will wait for the response of a request. If the response is not received before the timeout elapses, the client will resend the request if necessary or fail the request if retries are exhausted. Default: 30000 Range: 0-120000
SSL Properties **Note:** The SSL properties are displayed when SSL is selected in Security Protocol.		
SSL CA	NA	Filename of CA file to use in certificate verification.
SSL Certificate	NA	Filename of file in pem format containing the client certificate as well as any CA certificates needed to establish the certificate's authenticity.
SSL Key	NA	Filename containing the client private key.
SSL Key password	NA	Password to be used when loading the certificate chain.

Table 8-2 (Cont.) Kafka Properties

Field(* indicates a required field)	Value	Description
SASL_Plaintext Properties **Note:** The SASL_Plaintext Properties properties are displayed when SASL_Plaintext Properties is selected in Security Protocol.		
SASL Mechanisms	GSSAPI	SASL mechanism to use for authentication. Default: GSSAPI Range: GSSAPI, PLAIN, SCRAM-SHA-256, SCRAM-SHA-512, OAUTHBEARER
SASL Kerberos Service Name	kafka	Kerberos principal name that Kafka runs as, not including /hostname@REALM. Default: kafka
SASL Kerberos Principal	kafkaclient	This client's Kerberos principal name. **Note:** This is not supported on Windows, the logon user's principal is used. Default: kafkaclient
SASL Kerberos Kinit Cmd	NA	Shell command to refresh or acquire the client's Kerberos ticket. This command is executed on client creation and every `sasl.kerberos.min.time.before.relogin (0=disable).` Default: kinit -R -t '%{sasl.kerberos.keytab}' -k %{sasl.kerberos.principal} || kinit -t '%{sasl.kerberos.keytab}' -k %{sasl.kerberos.pricipal}
SASL Kerberos Keytab	NA	Path to Kerberos keytab file. This configuration property is only used as a variable in sasl.kerberos.kinit.cmd as ... -t '%{sasl.kerberos.keytab}'.
SASL Kerberos Min Time Before Relogin	60000	Minimum time in milliseconds between key refresh attempts. Disable automatic key refresh by setting this property to 0. Default: 60000 Range: 0-86400000
SASL Username	NA	SASL username for use with the PLAIN and SASL-SCRAM-.. mechanisms
SASL Password		SASL password for use with the PLAIN and SASL-SCRAM-.. mechanism

Select **Apply** to save the changes, or select **Cancel** to discard the changes.

8.2.2 DSR Properties

The following table describes the fields of DSR properties.

Table 8-3 DSR Properties

Fields	Value	Description
Interval size	Default: 5 minutes	Indicates the time it should wait to read and send the metrics. Interval Size should be lesser than the retention time. Range: 5 minutes, 15 minutes, 30 minutes
Maximum retention time	Default: 30 minutes	It is the maximum amount of time to store metrics that could not be sent to the Kafka cluster. Range: No Retention, 15 minutes, 30 minutes, 1 hour
Output format	Default: JSON	Output format of Kafka's messages. **Note:** This is a read-only attribute.

9 Common Security

The **Common Security**> **Configuration** folder contains the tables to configure the CCNDC Mapping and Neighboring Countries. The pages allow you to view the following information and perform the following actions:

9.1 Country Long Lat

A Country latitude and longitude is an entry which shows the record of an origin country with its latitude and longitude.

Select the **Common Security**, and then **Configuration**, and then **Country Long Lat** page. The page displays the fields on the **Country Long Lat** View, Insert, and Edit pages.

> **Note**
>
> Data Input Notes apply to the Insert and Edit pages only; the View page is read-only.

Table 9-1 Country Long Lat Fields

Field	Description	Data Input Notes
Country Name	Name for the country.	Valid names are strings between one and 32 characters, inclusive. Valid characters are alphanumeric and underscore. The name must contain at least one alpha and must not start with a digit.
Latitude	Defines the latitude of country.	The value will be accurate only upto one digit after decimal.
Longitude	Defines the longitude of the country.	The value will be accurate only upto one digit after decimal.
Mobile Country Code	Mobile Country Code	Minimum: 1, Maximum: 999

You can perform add, edit, or delete tasks on **Common SecurityConfigurationCountry Long Lats** page.

Adding a Country Long Lat

Perform the following steps to configure a new Country Long Lat:

1. Click **Insert**.

> **Note**
>
> The new Country Long Lat must have a name that is unique across all Country Long Lats at the SOAM. In addition, the Country Long Lat's IP Port combination must also be unique across all Country Long Lats configured at the SOAM.

2. Enter the applicable values.
3. Click **OK**, **Apply**, or **Cancel**

Editing a Country Long Lat

Use this procedure to change the field values for a selected Country Long Lat. (The **Country Long Lat Name** field cannot be changed.):

1. Select the **Country Long Lat** row to be edited.
2. Click **Edit**
3. Enter the updated values.
4. Click **OK**, **Apply**, or **Cancel**

Deleting a Country Long Lat

Use the following procedure to delete a Country Long Lat.

> **Note**
>
> You cannot delete a Country Long Lat if it is part of the configuration of one or more Linksets.

1. Select the **Country Long Lat** to be deleted.
2. Click **Delete**.
3. Click **OK** or **Cancel**.

9.2 CCMCC Map

The Mapping provides the mapping between a Mobile country code and a Mobile network code for network identification.

Select the **Common Security**, and then **Configuration**, and then **CCMCC Map** page. The page displays the fields on the **CCMCC Map** View, Insert, and Edit pages.

> **Note**
>
> Data Input Notes apply to the Insert and Edit pages only; the View page is read-only.

Table 9-2 CCMCC Map Fields

Field	Description	Data Input Notes
Country Code	Country codes are short alphabetic or numeric geographical codes (geocodes) developed to represent countries and dependent areas, for use in data processing and communications.	[Min,Max] = [1,999]
Mobile Country Code	Mobile Country Code	[Min,Max] = [1,999]
National Destination Code	National Destination Code identifies the Number Plan Area that is to be used. Default value 0 .	[Min,Max] = [1,999]

You can perform add, edit, or delete tasks on **Common SecurityConfigurationCCMCC Maps** page.

Adding a CCMCC Map

Perform the following steps to configure a new CCMCC Map:

1. Click **Insert**.

> **Note**
>
> The new CCMCC Map must have a name that is unique across all CCMCC Maps at the SOAM. In addition, the CCMCC Map's IP Port combination must also be unique across all CCMCC Maps configured at the SOAM.

2. Enter the applicable values.
3. Click **OK**, **Apply**, or **Cancel**

Editing a CCMCC Map

Use this procedure to change the field values for a selected CCMCC Map. (The **CCMCC Map Name** field cannot be changed.):

1. Select the **CCMCC Map** row to be edited.
2. Click **Edit**
3. Enter the updated values.
4. Click **OK**, **Apply**, or **Cancel**

Deleting a CCMCC Map

Use the following procedure to delete a CCMCC Map.

> **Note**
>
> You cannot delete a CCMCC Map if it is part of the configuration of one or more Linksets.

1. Select the **CCMCC Map** to be deleted.
2. Click **Delete**.
3. Click **OK** or **Cancel**.

9.3 Neighboring Country

The Neighboring Country is an entry, which shows the record of an origin country with its mcc to neighboring country with its neighbor mcc.

Select the **Common Security**, and then **Configuration**, and then **Neighboring Country** page. The page displays the fields on the **Neighboring Country** View, Insert, and Edit pages.

> **Note**
>
> Data Input Notes apply to the Insert and Edit pages only; the View page is read-only.

Table 9-3 Neighboring Country Fields

Field	Description	Data Input Notes
MCC	The Mobile Country Code (MCC) is a three digit code that is used in combination with a Mobile Country Code (MCC) to identify a mobile network operator uniquely.	[Min,Max] = [1,999]
Origin Country Name	The name of the origin country.	
Neighboring Country MCC	The Mobile Country Code (MCC) is a three digit code that is used in combination with a Mobile Country Code (MCC) to identify a mobile network operator uniquely.	[Min,Max] = [1,999]
Neighboring Country Name	The name of the neighboring country. Allowed characters are 1 alphabetic character followed by up to 49 alphabetic characters, including spaces.	

You can perform add, edit, or delete tasks on **Common SecurityConfigurationNeighboring Countrys** page.

Adding a Neighboring Country

Perform the following steps to configure a new Neighboring Country:

1. Click **Insert**.

> **Note**
>
> The new Neighboring Country must have a name that is unique across all Neighboring Countrys at the SOAM. In addition, the Neighboring Country's IP Port combination must also be unique across all Neighboring Countrys configured at the SOAM.

2. Enter the applicable values.

3. Click **OK**, **Apply**, or **Cancel**

Editing a Neighboring Country

Use this procedure to change the field values for a selected Neighboring Country. (The **Neighboring Country Name** field cannot be changed.):

1. Select the **Neighboring Country** row to be edited.
2. Click **Edit**
3. Enter the updated values.
4. Click **OK**, **Apply**, or **Cancel**

Deleting a Neighboring Country

Use the following procedure to delete a Neighboring Country.

> **Note**
>
> You cannot delete a Neighboring Country if it is part of the configuration of one or more Linksets.

1. Select the **Neighboring Country** to be deleted.
2. Click **Delete**.
3. Click **OK** or **Cancel**.

9.4 Signaling Firewall

The Signaling Firewall feature provides network security for Diameter networks in LTE domains. This feature configured with firewall rules by the System OAM only operates on DA-MP servers. When you enable or disable a diameter or RADIUS connection, a notification is sent to the servers to update the firewall rules to allow or disallow incoming network traffic.

> **Note**
>
> In new DSR installations, the Signaling Firewall is enabled by default; however, during a DSR upgrade without the feature, the Signaling Firewall is disabled by default. Otherwise, it uses the setting from the previous release.

Use **Common Security**, and then **Maintenance**, and then **Signaling Firewall** to:

- View the administrative state of an active signaling node and operational status of all servers.
- Click plus (+) to view the operational status of each server.
- Enable or disable the administrative state of a selected signaling node.
- Check pause updates to stop the real-time status updates.

Signaling Firewall Maintenance Fields

The following table describes fields on the Signaling Firewall maintenance page.

Table 9-4 Signaling Firewall Maintenance Fields

Field	Description
Signaling Node	Name of the SOAM Server group.
Admin State	Signaling node can be: • Enabled • Disabled
Servers	Total number of active DA-MP servers reporting on the firewall status in the signaling node.
Operational Status	Operational status from all active servers is collectively used to determine the status of the signaling firewall at a signaling node level. Status can be: • Operational: all servers are operational. • Degraded: one or more servers report failed. • Failed: all servers failed. • Disabled: one or more servers is administratively disabled. • Unknown: one or more servers fails to report. Cell background color is useful in troubleshooting when the operational status of the signaling firewall is degraded, unknown, or failed: • Disabled - Normal/no special coloring • Normal - Normal/no special coloring • Degraded - Yellow • Failed - Red • Unknown - Red
Operational Reason	Operation reason describes the status: • Operational: Firewall is operational on all servers. • Degraded: Firewall has failed on some but not all servers. • Failed: Error message. • Disabled: Firewall is administratively disabled. • Unknown: At least one server fails to report its firewall operational status.

Enabling Signaling Firewall Nodes

Use this task to enable the Signaling Firewall on a signaling node.

The firewall status of each server contributes to the overall firewall operational status of the signaling node.

Enable is only active when you select the Signaling Node (top-level row) and the administrative state is disabled.

1. Click **Common Security**, **Maintenance**, and **Signaling Firewall**.
2. Select the **Signaling Node**.
3. Click **Enable**.
4. Click **OK** or **Cancel**.

Disabling Signaling Firewall Nodes

Use this task to disable Signaling Firewall on a signaling node.

Disable is only active when you select the Signaling Node (top-level row) and the administrative state is enabled. Signaling firewalls are only enabled on the DA-MP Servers shown in the signaling node you select.

1. Click **Common Security**, **Maintenance**, and **Signaling Firewall**.
2. Select the **Signaling Node**.
3. Click **Disable**.
4. Click **OK** or **Cancel**.