Lucent Technologies
Bell Labs Innovations

# Lucent Operations and Maintenance Center - HLR and HSS (Lucent OMC-H)

## Release 7.1 (in support of SDHLR 6.0 Software Update 1)

## Configuration Management

401-380-078R7.1
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# About this information product

## Purpose

This document is to provide the configuration management concepts and tasks for a Lucent Operations and Maintenance Center - HLR and HSS (Lucent OMC-H).

Common user tasks such as scheduling of actions and viewing or managing reports and logs are not of any specific relevance to the configuration management user of the Lucent OMC-H. The Configuration Management Guide only provides configuration related information about these functions. For extensive details on these functions, refer to the *System Administration*, 401-380-075.

## Reason for reissue

This is the first issue of this document for Lucent OMC-H Release 7.1.

## Intended audience

This document is written for configuration management users. This document is written for users who will configure the network data for the SDHLR, HCF and HDF network elements. This document will assist these personnel in performing configuration management activities from the Lucent OMC-H GUI.

This document is not intended to support network planners who may be planning Network Element configuration and will never log in to the Lucent OMC-H.

## How to use this information product

There are no special instructions for using this document.

## Conventions used

The following conventions are used in this document:

| | |
|---|---|
| User | Refers to any person who is performing a task. |
| **Bold** typeface | Identifies menu selections and command names. |

| | |
|---|---|
| `Constant-width` typeface | Identifies keyboard input and system generated responses. |
| *Italic* typeface | Identifies titles of documents, file names, and directories. |
| **Esc+2** | Implies that you press **Esc** and then press **2**. |
| < > (Angle Brackets) | Represents the variables that are not optional in a command. |

## Related documentation

This section lists the documents that support the use of the Lucent OMC-H for installation, operation, administration, and maintenance activities.

### Lucent OMC-H documentation

The following documents comprise the Lucent OMC-H documentation set:

- *Command Line Interface*, 401-380-081
- *Configuration Management*, 401-380-078
- *Fault Management*, 401-380-077
- *Graphical User Interface*, 401-380-082
- *Object Descriptions*, 401-380-080
- *Performance Management*, 401-380-079
- *System Administration*, 401-380-075
- *System Installation*, 401-380-084
- *System Overview*, 401-380-083
- *ASCII North Bound Interface*, 401-380-833
- *Corba North Bound Interface*, 401-380-831
- *SNMP North Bound Interface*, 401-380-832

### Third-party documentation

The Lucent OMC-H document set refers to the following third-party documentation:

- *Sun GigaSwift Ethernet Adapter Installation and User's Guide*, 806-2989-10.
- *Veritas Cluster Server 4.1 User's guide* from (http://support.veritas.com)
- *VERITAS NetBackup User's Guide, UNIX* from (http://support.veritas.com)
- *NetBackup Installation Guide for UNIX* from (http://www.securityfocus.com/infocus/1741)
- *Introduction to Nessus* from (http://www.securityfocus.com/infocus/1741)

- *Internet Scanner* from (http://www.securityfocus.com/infocus/1741)
- *Nessus 3.0 Advanced User Guide* from (http://www.securityfocus.com/infocus/1741
)

## Related training

Lucent Technologies provides a complete set of training courses to support the Lucent Technologies, UMTS and CDMA Systems.

For a complete description of Lucent Technologies, UMTS and CDMA system courses, see https://training.lucent.com

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# 1 Introduction to Configuration Management

## Overview

### Purpose

This chapter provides a basic overview of Lucent OMC-H Configuration Management and explains how to access configuration management functions using the GUI.

### Contents

# Configuration Management overview

## About Configuration Management

Configuration management allows you to remotely manage SDHLR network elements. The tasks you can perform, depend upon the permissions assigned to you. All permissions are assigned by the Lucent OMC-H system administrator. For more details refer to *System Administration*, 401-380-075.

## Benefits of remote configuration management

Lucent OMC-H Configuration Management provides the following benefits:

- You can configure all the network elements from one central location.
- If you want a common configuration for a set of network elements, you can create a group of NEs and configure this group once. Lucent OMC-H replicates. this configuration onto every network element in that group.
  **Example**: To operate optimally, all HCF network elements in an HCF Cluster must have identical SS7 data configuration. Use the Lucent OMC-H, to assign the data only once to the whole HCF Cluster, instead of assigning SS7 data to each HCF individually.

## User tasks

You can perform the following configuration management tasks from the Lucent OMC-H :

- NE configuration
  All the functions listed here are described in detail in various chapters of this document.
  - Creating, modifying and deleting
  - Viewing and Provisioning
  - Synchronizing
  - State Administration
  - Software updates
- Viewing and managing configuration management reports and logs
  These functions are briefly described in this document. For details see the *System Administration*, 401-380-075.
- Viewing user and task information
  These functions are described in the *System Administration*, 401-380-075.
- Managing and administering Default Parameter Profiles (DPPs)
  These functions are described in the *System Administration*, 401-380-075.

### Administrative tasks

You can perform the following tasks, as a user with configuration management administrative permissions :

- Scheduling tasks
  These functions are described in the *System Administration*, 401-380-075.
- Backing up data on objects
  These functions are described in the *System Administration*, 401-380-075.
- Setting a default printer

### Overview of the configuration management process

Configuration management on the Lucent OMC-H involves the following steps in the given order:

1. Configuring HCF cluster(s)
2. Configuring HCF network elements
3. Configuring SS7 data for the HCF Cluster(s)
4. Configuring HDF network elements
5. Configuring HDF mated pairs

### Related information

For more information on permissions, refer to "The Network Manager GUI" (p. 1-4).

# The Network Manager GUI

## Overview

This topic explains how CM functions can be accessed from the GUI.

## Network Manager

The Network Manager provides you with an interface for performing configuration activities through the Lucent OMC-H. To access and use the Network Manager interface, you must have CM permissions assigned by the Lucent OMC-H System Administrator.

Access the Network Manager by selecting **Network** -> **Network Manager** from the Lucent OMC-H Desktop menu bar, or by clicking the **Network Manager** icon on the Desktop tool bar.

## Setting NM System Preferences

Network Management (NM) system preferences allow you to control the number of Network Manager windows, and related reports that can be opened at once.

For permissions to set NM System Preferences, contact your System Administrator.

## Related information

For more information on the Network Manager, refer to the *Lucent OMC-H Graphical User Interface*, 401-380-082.

For more information on permissions, refer to the *Lucent OMC-H System Administration*, 401-380-075.

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# Groups Management overview

### Overview

This section defines Network Element (NE) groups and the tree hierarchy structure.

### Lucent OMC-H group

The Lucent OMC-H manages a large number of NEs. Grouped NEs allow you to configure data identically on members of a group, when needed.

For example, HCF clusters require identical SS7 configuration on all HCFs in the Cluster. You can create a group (the Cluster) to configure the SS7 data identically on all HCFs.

When the system first starts up, the OMC-H group is automatically created. Any other group will be created within this OMC-H group. An OMC-H group cannot be deleted.

### Groups and the Hierarchy Structure

The tree hierarchy view in the Lucent OMC-H GUI displays the various groups, the NEs they contain and the hierarchical relationships between them. This enables you to see the relationships between parent and child objects on the network.

Groups can be created, modified, and deleted.

### Types of Groups

The Lucent OMC-H uses the following types of groups:

- HDF Mated Pairs
- HCF Clusters
- HCF Groups

### Related information

For more information on groups and the tree hierarchy, refer to the *Lucent OMC-H Graphical User Interface*, 401-380-082.

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# 2 Configuring network objects

## Overview

### Purpose

This section introduces the concept of Objects and their states.

### Contents

# Network Elements and Objects

## Network Elements

A Network Element (NE) is a unique entity that provides switching, transport, or network operations functionality. Each NE consists of multiple physical and logical resources that can be configured and monitored separately or as a group.

## Network Objects

All NEs and their physical and logical resources are recognized as objects by an element or network management system. Objects represent manageable parts of a network element. Objects can be managed separately or grouped together for efficient management.

### Examples

An SS7 circuit board is a physical object. An SS7 link is a logical object. Objects can have various states. For details on Network Element States refer to "Network Element States" (p. 2-4).

## Object attributes

An object is defined by one or more attributes. These are properties associated with the object. A property can define a condition, a value, or a set of values. The term attribute is used in reference to Graphical User Interface (GUI), and the term parameter is used instead of attribute when used in reference to the Command Line Interface (CLI).

### Example

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The HCF object can have various attributes such as the following:

- sDHLRId that identifies the SDHLR to which this HCF belongs
  Or
- clusterId that identifies the ID of the Cluster to which HCF belongs

## Network Element Groups

Lucent OMC-H manages a large number of NEs. Grouping NEs allows Lucent OMC-H to configure data identically on different NEs, if needed.

The HM tree view shows the hierarchical relationships between the objects and the groups represented on it. You can create, modify, and delete groups.

When the system first starts up, the Lucent OMC-H group is automatically created. You can create other groups within this Lucent OMC-H group. A Lucent OMC-H group cannot be deleted.

The Lucent OMC-H contains three types of groups:

- HDF Mated Pairs
- HCF Clusters
- HCF Groups

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# Network Element States

## Types of states

Lucent OMC-H tracks different state information of the SDHLR Network Elements (NE). The states that Lucent OMC-H displays are:

- Management
- Alarm
- Application
- SPA Major
- SS7 (Only HCF , does not apply to HDF)
- NE Config State
- Local SSN State

## Management State

The management state indicates if the NEs is currently being managed by Lucent OMC-H.

The Management state is shown for each NE on the **NE Management** window and the **All NEs** table. The Management state is also shown in **All NEs** Critical Indicators table

**Important!** On the All NEs table, an unmanaged state is indicated by a red X symbol.

| Management States | Descriptions |
|---|---|
| Managed | Indicates that the NE is currently managed by Lucent OMC-H. When a network element is in the Managed state, communication between Lucent OMC-H and the network element is established or re-established. |
| Unmanaged | Indicates that the NE is currently managed by Lucent OMC-H. When a network element is in the Unmanaged state, communication between Lucent OMC-H and the network element is stopped, but the network element continues to provide service. Communication can be restored at any time. |

## Alarm State

The alarm state of the NE indicates the alarm of the highest severity being reported to Lucent OMC-H by the NE. This is called the Highest Severity Alarm (HSA) of the

NE. An NE can have many alarms of different severities at one time, but only the highest severity is displayed in the Network Manager.

| Alarm States | Descriptions |
|---|---|
| Indeterminate | Indicates that the Lucent OMC-H is unaware of the alarm state for the NE |
| Critical | Indicates that the alarm impacts the functioning of the NE critically. |
| Major | Indicates that the alarm has a major impact on the functioning of the NE |
| Minor | Indicates that the alarm has some minor impact on the functioning of the NE |
| Warning | Indicates that the alarm is generated as a forewarning measure and does not impact the functioning of the NE yet |
| Cleared | Indicates that the alarm is cleared for this NE |

The alarm state is shown for each NE on the:

- **NE Detail** window (opened from the HM tree)
- HM tree, displayed as an icon
- NE tree, displayed as an icon
- **All NEs** table.
- Hardware view
- Topological View
- Topographical View

For more information on Alarm states, see the *Lucent OMC-H Fault Management*, 401-380-077.

### Application State

The application state of the NE indicates the state of the HCF or HDF application on the NE.

The application state is shown for each NE on the **HDF Detail** or **HCF Detail** window (opened from NE tab).

For more information on application states, see the SDHLR or MiLife Application Server (MAS) documentation.

| **Application States** | **Descriptions** |
|---|---|
| In Service (IS) | Indicates that the HCF or HDF is operating properly |
| Manually Out Of Service (MOOS) | Indicates that the HCF or HDF's process is running but cannot receive call traffic, because a user removed the HCF or HDF from service |
| Not Running (NR) | Indicates that the HCF or HDF process is not running and cannot receive call traffic. |
| Initializing (I) | Indicates that the HCF or HDF processes are initializing |
| Shutting Down (SD) | Indicates that the HCF or HDF is currently being shut down and will soon be out of service. |

## SPA Major State

The SPA Major state of the NE indicates the state of the HCF or HDF application on the NE.

The SPA Major state is shown for each NE on the **HDF Detail** or **HCF Detail** window (opened from NE tab).

| **SPA Major States** | **Descriptions** |
|---|---|
| In Service (IS) | Indicates that the HCF or HDF is operating properly |
| Out Of Service (OOS) | Indicates that the HCF or HDF is out of service |
| Manually Out Of Service (MOOS) | Indicates that the HCF or HDF has been out of service manually |
| Disabled/Equipped | Indicates that the HCF or HDF configuration data has been installed on the network element. |

## SS7 State

The SS7 state of the NE indicates the state of the SS7 processes on the HCF

The SS7 state is shown for each NE on the **HCF Detail** window (opened from NE tab).

| SS7 States | Descriptions |
|---|---|
| Unknown | Indicates that the Lucent OMC-H is unaware of the status of the SS7 processes |
| Inactive | Indicates that the HCF is not currently using it’s SS7 processes |
| Unequipped | Indicates that the HCF SS7 processes are not configured. |
| Active | Indicates that the HCF is currently using it’s SS7 processes. |

### NE Config State

The NE Config State indicates the availability of the NE (HCF or HDF) to the user for configuration, regardless of any other state. The NE Config State determines whether or not a certain Configuration Management operation can be performed on the NE.

| NE Config States | Descriptions |
|---|---|
| Not Available | Indicates the default state when the NE is created and is in the unmanaged state |
| Available | Indicates the state in which the user is permitted to configure the NE |
| HB failure | Indicates a heartbeat failure |
| Invalid SPA | Indicates the SPA version on the NE is not the one corresponding to the NE Software Version |
| Invalid Data | Indicates an error in reading an NE specific table, say an out of range vale received from an NE. |
| ProtocolType Mismatch | Indicates a dynamic change in the protocol type on the NE |
| GroupType Mismatch | Indicates that the protocol type on the NE does not match with the group type on the Lucent OMC-H |
| SS7 data Mismatch. | Indicates a mismatch between the ParamScpTable data on the NE and the data under the SS7 VNE in Lucent OMC-H |

### Local SSN state

The state of a Local SSN is shown on the **Local SSN Detail** window and the **Local SSN** table.

| Local SSN states | Descriptions |
|---|---|
| Active | Indicates that the Local SSN is active and running |
| Disabled | Indicates that the Local SSN has been disabled |
| Out of service (OOS) | Indicates that the Local SSN is Out of Service and disabled |

# SS7 Managed Object States

## Types of states

Lucent OMC-H tracks different state information for some of the SS7 managed objects. The SS7 managed objects that Lucent OMC-H displays state information are:

- Linkset
- S7 Link
- ATM Link
- S7 Board.
- Route
- SCTP Association States

## Linkset state

The state of a linkset is shown on the **Linkset Detail** window and the **Linkset** table.

A linkset can have the following states:

- Normal
- Blocked
- Unequipped

## Object states for S7 Links and ATM Links

Both ATM Links and S7 Links have a Major state. Both these SS7 objects exhibit the same states.

An S7 Link or an ATM Link can have the following states:

- Active
- Blocked
- Inhibited
- Unequipped
- Manually out of service (MOOS)
- Out of service (OOS)

The state of an S7 link is shown on the **S7 Link Detail** window and the **S7 Link** table.

The state of an ATM link is shown on the **ATM Link Detail** window.

## S7 Board state

The state of a S7 Board is shown on the **S7 Board Detail** window and the **S7 Board** table.

A S7 Link can have the following states:

- Unequipped
- Diagnose
- Active
- Manually out of service (MOOS)

### Route state

The state of a SS7 Port is shown on the **Route Detail** window and the **Route** table.

The Route states are:

- Normal
- Blocked

### SCTP Association States

The state of an SCTP Association is shown on the **SCTP Association Detail** window.

The SCTP Association states are:

- Unequippedl
- Active
- Manually out of service (MOOS)
- Out of service (OOS)

### ATM Link States

The ATM Link state is visible from the **ATM Link Detail** View.

| ATM Link States | Descriptions |
|---|---|
| Active | Indicates that the ATM Link is active and running |
| Blocked | Indicates that the ATM Link is blocked |
| Inhibited | Indicates that the ATM Link is inhibited |
| Unequipped | Indicates that the ATM Link is unequipped |
| MOOS | Indicates that the ATM Link has been manually disabled |
| OOS | Indicates that the ATM Link is Out of Service and disabled |

# Hardware View

## Hardware View

The hardware view is a simplified schematic representation of the Rear View of the SDHLR Equipment (HCF/HDF). It depicts the object's cards, ports and their native states.

## Visible components

Hardware views only show hardware objects (such as disks, ethernet ports, S7 boards etc.), from the Lucent OMC-H object mode. Software or logical objects are not depicted.

A ToolTip for each visible component displays

- Object name (user label or Global Distinguished Name, that is, GDN)
- State values (Out of Service etc.)

Highest Severity Alarm (HSA), native and other states defined for display on the hardware view are updated dynamically. However, the physical changes in the objects present in the NE are not updated dynamically.

## Accessing the Hardware view

You can access the Hardware View for a network element, from the **Hardware** option on the **View** Menu, of the NE tree View.

The Hardware view opens in the Network Manager window.

## Tasks that can be performed

The following tasks can be performed from the hardware view.

- Viewing the NE Detail View
  Double-click an NE or object in the hardware view to see the detail view.
- Performing Object-specific tasks on the NE
  Right-click an NE or object to perform specific tasks, including viewing relevant topological and topographical views, alarm tables, opening the detail view, managing or unmanaging the NE, and synchronization.

## Related information

For more information on hardware views and information on how to invoke the NE detail view, refer to *Graphical User Interface*, 401-380-082.

# Highest Severity Alarms

## Alarms in the Network Manager

The Network Manager interface indicates when alarms are present on the different NEs. The GUI will display the level of the highest severity alarm on each NE.

If an NE has no active alarm, the high severity indication is “cleared”.

## High severity alarm indication

The high severity alarm is indicated on the:

- **NE Detail** window (opened from the HM tree)
- HM tree, displayed as an icon
- NE tree, displayed as an icon
- **All NEs** table.
- Topological View
- Topographical View
- Hardware View

## Example

If a network element has a critical alarm on it, the Network Manager interface will indicate that the NE contains a critical alarm.

## Related information

For more information on how high severity alarms are indicated in the HM tree view, refer to *Lucent OMC-H Graphical User Interface Guide*, (401-380-082).

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# Output Message (OP) Status

### Output Message (OP) SNMP Status

Lucent OMC-H supports retrieval of SNMP agent states on all NEs in its management domain, on demand . The state of the master and its sub-agents are reported. This information allows you to exclusively administer and diagnose managed NEs .

### Retrieved SNMP Agent information

On executing the OP command, Lucent OMC-H returns SNMP status for the following Agents, in a tabled format.

- Master
- Host
- Platform
- MIB II
- NE agent (HCF or HDF)

### Supported Agent Status

Lucent OMC-H displays the following status for the retrieved SNMP Agents.

- **ACT:** Active
- **EQP:** Equipped
- **FAIL:** Failed
- **UNK:** Unknown.

### The Unknown Status

There may be a case that Lucent OMC-H shows NE Management state to be managed, but due to failed communication or other unknown causes, is unable to retrieve the NEs SNMP agents' status.

In such a scenario, the SNMP status is reported as "UNK" (unknown) by the Lucent OMC-H. As a workaround, you need to execute the OP command again.

The NE must be in a managed state. If the NE is in an unmanaged state, the corresponding data for this NE is not presented in the table output.

### Software Version

OP status is supported for NEs with software version 310 and above.

# Default Parameter Profile

### What is a Default Parameter Profile (DPP)?

DPPs are profiles that are used to load saved profile values on a window.

Most screens allow creation of customized profiles. You can save the values entered into a profile and reuse that profile to enter values while creating another object of same type. This reuse mechanism saves time while using the GUI screen actions.

You can use Customized DPPs provided by Lucent OMC-H to create profiles and perform specific tasks.

### Saving a DPP

When you are creating or modifying attributes of an MO, you have the option of saving certain or all of the attribute values to be reused at a later stage. Select **More**, then **Save profile** option.

### Loading a DPP

Reuse of the saved DPP is termed as 'loading a DPP'. From a new or existing form, select **More**, then **Load profile** to load a DPP.

Once you click that icon, you will be prompted to select from the existing list of DPPs in the **Profile Browser**. Select the DPP you want, and the attributes that were included in that profile will be instantly loaded onto that screen.

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# Managing or unmanaging a network element

## Purpose

This procedure provides instructions for managing or unmanaging a network element (NE).

## Related information

For more information, refer to.

## Before you begin

Ensure that:

- You have the required permissions to carry out tasks in Network Manager.
- The NE should not already be in the state to which you are trying to change it. For example if you are unmanaging the NE it should not already be unmanaged.

## To manage or unmanage a network element

Complete the steps below to manage or unmanage a network element.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View.

2. Right click the NE you want to manage, and select **Manage** or **Unmanage**.

   **Result:** The NE state changes to Managed.

END OF STEPS

# Retrieving SNMP Status using OP command

## Overview

This procedure allows you to retrieve the SNMP status of an individual network element (NE) or a group of NEs, by executing OP (Output message) command on:

- HCF, HDF, or Diameter HCF to retrieve the SNMP status of an individual NE
- HCFCluster, HDFPool, HDF Mated Pair, SDHLR Complex, HCF Group (currently supporting DIAMETER), to retrieve the SNMP status on a group of NEs.

## Related Information

For more information on SNMP Agents, and the retrieved status, refer to "Output Message (OP) Status" (p. 2-13).

## Before you begin

Ensure that:

- You have the required permissions to perform operations on the target NE
- The target NE is in the managed state

## To retrieve SNMP status using OP command

Complete the following procedure to retrieve SNMP status using the OP command.

1. Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop** window.

2. From the HM tree view, expand the OMC-H group.

3. Select either a group of NEs or an individual NE.

4. From the menu bar, click **View** -> **OP Status SNMP**.

   **Result:** The SNMP State table is displayed in the **Lucent OMC-H Desktop->Network Manager** window.

END OF STEPS

# Working with profiles

## Purpose

This section describes the procedures for viewing, modifying, deleting or setting the default state of Default Parameter Profiles (DPPs), used to load the default values on a particular screen.

## Related information

For information on permissions, refer to *System Administration*, 401-380-075.

## Before you begin

Ensure that:

- You have the required permissions to work with network elements and managed objects (MOs)
- You have saved DPPs for the target managed object (MO).

## To perform operations on profiles

Complete the following procedure to perform operations on profiles.

1. From the menu bar of the **Lucent OMC-H Desktop**, click **Tools** -> **Profiles**.

   **Result:** The **Lucent OMC-H Profile Browser** window is displayed.

2. From the **Profile Type** drop-down list, select the profile type to be viewed.

   **Result:** All the profiles corresponding to the selected profile type are listed.

3. From the Profile Type list, select the profile or profiles on which you want to perform an operation.

4.

| If you want to... | Then... |
|---|---|
| View a profile | After Step 3, click the **Details** button of the selected profile.<br>The detail view for the selected profile is displayed. |

| If you want to... | Then... |
|---|---|
| Modify a profile | 1. After Step 3, Right-click the selected profile, and click **Details**. or Double-click the profile<br>The **Profile details** window is displayed<br>2. From the **Profile details** window, modify the **Name**, **Description** and **Use by default checkbox** values .<br>3. Click **OK** to submit the changes. |
| Set the default state of a profile | After Step 3, right-click the selected profile, and click **Set/Unset as default**.<br>This toggles the default state of the profile.<br>To verify the state of the profile, double-click the profile to display the **Create Modify** window. If the **Use by default** checkbox was previously selected, it will be cleared now and vice versa. |
| | |
| | |
| Delete a profile | After Step 3, right-click the selected profile or profiles, and click **Delete**.<br>*Alternatively*, click **Delete** on the **Lucent OMC-H Profile Browser**.<br>A confirmation dialog box appears with the message, "*Are you sure you want to invoke action Delete?*". Select **Yes** to complete the action or **No** to cancel the request. |

END OF STEPS

# 3 Lucent OMC-H upgrade

## Overview

### Purpose

This chapter explains the process of upgrading Lucent OMC-H from Release 7.0 to Release 7.1.

### Contents

# Lucent OMC-H upgrade

## Introduction

Lucent OMC-H upgrade is performed when Lucent OMC-H has already been installed on the server and it has to be upgraded to a newer version.

Lucent OMC-H upgrade from Release 7.0 to Release 7.1 is performed in two stages:

- Lucent OMC-H OS update : Refer the *System Installation Guide,* 401-380-084 for this procedure
- Lucent OMC-H upgrade from Release 7.0 to Release 7.1.
  Refer to the *System Installation Guide*, 401-380-084 for this procedure.
- Support for NE level upgrade: See "To perform NE level upgrade" (p. 3-2).

## To perform NE level upgrade

Performing NE level Upgrade from Release 7.0 to Release 7.1 involves the following:

**1** MiLife Application Server (MAS) upgrade at the physical NE.

**2** MAS upgrade on Lucent OMC-H to confirm that the MAS upgrade has been performed successfully for that NE, and to put the NE in managed state.

To perform this, click **Action** -> **Upgrade** -> **MAS**, from the Lucent OMC-H Network Manager menu bar.

**3** Service Package Application (SPA) upgrade at the physical NE.

**4** SPA upgrade on Lucent OMC-H to confirm that the SPA upgrade has been performed successfully for that NE, and to put the NE in managed state.

To perform this, click **Action** ->**Upgrade** ->**SPA**, from the Lucent OMC-H Network Manager menu bar.

## Related information

For comprehensive information on the upgrade process, refer to *System Installation*, 401-380-084.

□

# Network element MAS/SPA upgrade and downgrade use case scenarios

## Purpose

This topic details the various network element (NE) level upgrade and downgrade scenarios on Lucent OMC-H.

The different HCF and HDF upgrade/downgrade scenarios are as follows.

1. Upgrading MiLife Application Server (MAS) on the HCF and HDF
2. Upgrading Service Package Application (SPA) on the HCF and HDF
3. Downgrading SPA on the HCF and HDF
4. Downgrading MAS on the HCF and HDF.

Some other upgrade use case scenarios available for Lucent OMC-H Release 7.1 , HCF are :

1. SS7 protocol type HCF upgrade.
2. Diameter Protocol type HCF upgrade
3. SS7 and Diameter protocol types HCF upgrade
4. HDF type NE upgrade

## Upgrading the HCF

To upgrade the HCF:

1. After physically upgrading the MAS on an HCF, perform Upgrade MAS on that HCF, from the Lucent OMC-H GUI.
   In case it is the first HCF of the cluster, the [Y]_Upgrade cluster is created, where Y is the cluster name, and this HCF moves to the [Y]_Upgrade cluster. It is then managed. If the [Y]_Upgrade cluster already exists, then it creates a new cluster, [Y]_Upgrade_[X], where X is the random number. On being upgraded, all subsequent HCFs will be moved one at a time to the existing [Y]_Upgrade_[X] cluster.
   Once that is done, all the HCFs move to [Y]_Upgrade_[X] only.
   If the cluster contains more than one HCF and if you upgrade the first Master HCF (MAS upgrade), then this HCF will be moved to the new cluster ([Y]_Upgrade). Then if you want to perform LinkSet actions, you have to do it on the master HCF, which is present in the [Y]_Upgrade cluster. This state information will not be updated in the old cluster. It will only be updated in the upgraded cluster. The link (ATM/S7link) state corresponding to that Linkset will get updated separately on both clusters depending on HCF nodes present in the cluster. The remote PC status will also be updated only in the master HCF, which is present in upgraded cluster.
2. After physically upgrading the SPA on the first HCF in the upgraded cluster, perform Upgrade SPA on the that HCF from the Lucent OMC-H GUI.

**Important!** When the last HCF in the cluster is upgraded successfully, the target cluster is renamed to [Y], where Y is the cluster name.

### Upgrading the HDF

To upgrade the HDF:

1. After physically upgrading the MAS on the HDF, perform Upgrade MAS on that HDF from the Lucent OMC-H GUI.
2. After physically upgrading the SPA on that HDF, perform Upgrade SPA on that HDF from the Lucent OMC-H GUI.

### Downgrading the HCF

To downgrade the HCF:

1. After physically downgrading the SPA from the HCF, perform Downgrade SPA on that HCF from the Lucent OMC-H GUI.
2. After physically downgrading the MAS from the HCF, perform Downgrade MAS on that HCF, from the Lucent OMC-H GUI.
   In case it is the first HCF of the cluster, the [Y]_Downgrade cluster is created, where Y is the cluster name, and this HCF moves to the [Y]_Downgrade cluster. It is then managed. If the [Y]_Downgrade cluster already exists, then it creates a new cluster, [Y]_Downgrade_[X], where X is the random number. On being downgraded, all subsequent HCFs will be moved one at a time to the existing [Y]_Downgrade_[X] cluster.
   Once that is done, all the HCFs move to [Y]_Downgrade_[X] only.

   **Important!** When the last HCF in the cluster is downgraded successfully, the target cluster is renamed to [Y], where Y is the cluster name.

### Downgrading the HDF

To downgrade the HDF:

1. After physically downgrading the SPA on the HDF, perform Downgrade SPA on that HDF from the Lucent OMC-H GUI.
2. After physically downgrading the MAS on that HDF, perform Downgrade MAS on that HDF from the Lucent OMC-H GUI.

### Related information

For more information on how to upgrade or downgrade MAS/SPA on an HCF and HDF, refer to "Performing MAS/SPA upgrade or downgrade operations on HCF and HDF" (p. 3-5).

☐

# Performing MAS/SPA upgrade or downgrade operations on HCF and HDF

## Purpose

This procedure allows you to perform an upgrade or downgrade of MAS/SPA on HCF and HDF network elements (NE).

## Related information

For more information on the upgrade process, refer to " Network element MAS/SPA upgrade and downgrade use case scenarios" (p. 3-3).

## Before you begin

| If you want to | Then |
|---|---|
| Upgrade MiLife Application Server (MAS) on an HCF and HDF | Ensure that:<br>• You have the required permissions to work on the NE<br>• MAS platform is upgraded on the NE, i.e. the NE is physically upgraded<br>• The NE should have already undergone DowngradeMAS action or is a newly created NE of SPA version 600.<br>For Lucent OMC-H upgrade from Release 7.0 to Release 7.1 the NE's MAS version should be R26SU1. |
| Upgrade Service Package Application (SPA) on an HCF and HDF | Ensure that:<br>• You have the required permissions to work on the NE<br>• SPA platform is upgraded on the NE, i.e. the NE is physically upgraded<br>• The NE should have already undergone an UpgradeMAS or an DowngradeSPA action<br>For Lucent OMC-H upgrade from Release 7.0 to Release 7.1, the NE SPA version should be 600 |
| Downgrade Service Package Application (SPA) on an HCF and HDF | Ensure that:<br>• You have the required permissions to work on the target NE<br>• The SPA platform is downgraded on the NE, that is, the NE is physically downgraded.<br>• The NE should have already undergone an UpgradeSPA<br>To downgrade Lucent OMC-H SPA on an HCF and HDF, the NE version should be 610 |

| If you want to | Then |
|---|---|
| Downgrade MiLife Application Server (MAS) on an HCF and HDF | Ensure that: <br>• You have the required permissions to work on the target NE <br>• MAS platform is downgraded on the NE, that is, the NE is physically downgraded. <br>• The UpgradeMAS or DowngradeSPA operation should have been completed successfully <br>To downgrade Lucent OMC-H MAS on an HCF and HDF, the NE version should be R26SU2 |

### To perform an upgrade or downgrade of MAS/SPA on the HCF or HDF

Complete the following procedure to perform an upgrade or downgrade of MAS/SPA on HCF and HDF network elements.

1. Invoke the **Lucent OMC-H Network Manager** from the Desktop.

2. Expand the OMC-H group and select the NE (HCF or HDF) whose MAS/SPA needs to be upgraded or downgraded.

3. From the menu bar, click **Action** -> **Upgrade/Downgrade** -> **MAS** or **SPA**.

   **Result:** An **Action Confirmation** window is displayed.

4. Click **Yes** to perform the upgrade.

### Results

| If | Then |
|---|---|
| You have just performed a MAS upgrade on an NE | The MAS gets upgraded to the selected NE.<br>This action upgrades the MAS portion of the datamodel for that NE in Lucent OMC-H. The Lucent OMC-H is now capable of managing that NE with MAS R26SU2 and SPA 600<br>Two HCF scenarios:<br>• If the upgraded NE is an SS7 HCF, then it is moved to a new Cluster (called the mate Cluster) with the <ClustereName>_ Upgrade as a user label. If this is the first HCF in the new cluster, a SS7 reverse sync operation is triggered, else a forward sync is triggered.<br>**Note**: The reverse sync will copy the SS7 configuration data from NE to OMC-H and forward sync will do the reverse.<br>• If the upgraded NE is a Diameter HCF, then it is deleted and created in the same HCF group <ClustereName> |
| You have just performed a SPA upgrade on an NE | The SPA gets upgraded to the selected NE.<br>This action upgrades the SDHLR portion of the datamodel for that NE in Lucent OMC-H. The Lucent OMC-H is now capable of managing that HCF or HDF with MAS R26 SU2 and SPA 610 or SPA 6.0SU1.<br>Two HCF scenarios :<br>• If the HCF is in Cluster and if the upgraded HCF contains both SS7 and Diameter data, both SS7 and Diameter sync will be performed .<br>• If the HCF is in HCF group and if the upgrade HCF contains both SS7 and diameter data, the sync will not be performed on both SS7 and Diameter data. The user has to delete the HCF and create the same in another HCF cluster |
| You have just performed a SPA downgrade on an NE | The SPA gets downgraded to the selected NE.<br>This action shall downgrade the SDHLR portion of the HCF or HDF datamodel on Lucent OMC-H, so that the Lucent OMC-H is now capable of managing NEs with MAS R26 SU2 and SPA version 600.<br>If the HCF is in cluster (Dual-HCF) and if the downgraded HCF contains only diameter data, the diameter sync shall not happen. If the downgraded HCF contains only SS7 data, SS7 sync shall be performed. |

| If | Then |
|---|---|
| You have just performed a MAS downgrade on an NE | The MAS gets downgraded to the selected NE.<br>This downgrades the MAS portion of the datamodel for that HCF or HDF in Lucent OMC-H and the Lucent OMC-H is now capable of managing that HCF or HDF with MAS R26 SU1 and SPA 600<br>The HCF is moved to a new Cluster (called as mate Cluster) with the <ClusterName>_Downgrade as a user label. If this is the first HCF in the new cluster, a SS7 reverse sync operation is triggered; else a SS7 forward sync is triggered.<br>**Note**: The reverse sync will copy the SS7 configuration data from NE to Lucent OMC-H and forward sync will do the reverse |

END OF STEPS

# 4 Network element software administration

## Overview

### Purpose

This chapter provides the procedures for network element software administration.

### Contents

# Network Element Software Upgrade

## Two upgrades required

At times it is necessary to update the software on the HDF and HCF network elements. In the case of HCF two remote system are used to do this, Lucent OMC-H for the MiLife Application Server (MAS) platform software and eSM for the HCF software.

As Lucent OMC-H is only involved in the download of the MAS software, only this topic is covered here. For information on updating the HCF software, see the HCF documentation and the eSM documentation.

## MAS software upgrade process

The upgrade of MiLife Application Server (MAS) software is a 2 phase process:

1. Download the new software to the network element from Lucent OMC-H
2. Activate the new software on the network element either locally at the network element's local maintenance terminal, or by SSH cut-through from the Lucent OMC-H.

   Perform the following steps to access the SSH Cut Through window.

   a. In the HM tree, select the HCF or HDF you wish to activate using the SSH Cut Through window.
   b. From the menu bar, click **Tools** -> **Cut Through** -> **SSH Cut Through**. The Logon window appears to enter the data for the SSH session.
   c. Enter the user name and password details. Click **OK** to connect to the SSH session for the selected HCF or HDF.

## Software download only

The information provided here only covers the download of software to the network element. For information on activating the software using SSH cut through, see the HCF documentation or the MAS documentation.

## 3 software versions

The Lucent OMC-H can contain up to three different software versions at the same time for each network element type.

□

# Downloading software on a network element

## Purpose

This procedure allows you to download MiLife Application Server (MAS) platform software to a network element.

## Related information

For information on how to import software, refer to "Importing software on a network element" (p. 4-5).

**Important!** If you do not have the file to be downloaded on the NE, you need to import the file first.

## Before you begin

Ensure that:

- The new software to be downloaded is in the */omc/data/nefiles/ne_sw_download* directory on the Lucent OMC-H server. The software will be delivered by SSH, or via a DAT tape or CD-ROM
- The software download directory specified in Lucent OMC-H system preferences exists on NEs. For more information on this see *Lucent OMC-H System Administration*, 401-380-075
- The software download directory is writable by the FTP user specified in the communication parameters, for the NEs to be upgraded.

## To download software on a network element

Complete the following procedure to download software on a network element.

---

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the HCF or HDF you want to upgrade.

---

**2** Right-click anywhere on the NE detail view, and select **Show on Tree**.

**Result:** The selected NE gets displayed in the NE tree view.

---

**3** From the menu bar, click **Tools** -> **Software Administration** -> **Download**.

**Result:** The **Enter input parameters for Download** window is displayed.

---

**4** From the **Software to download*** list-box, select the software you want to download on the NE.

---

**5** Click **OK** to start the software download now, or click **More** -> **Schedule** to download the software later.

**Result:** The MAS software is downloaded to the selected NE.

---

**6** Activate the downloaded software through a SSH Cut Through to the network element.

For more information on software activation, see the MAS platform documentation and the Super D-HLR documentation.

END OF STEPS

# Importing software on a network element

### Purpose

This procedure allows you to import software to a network element (NE).

### Related Information

There is no related information for this procedure.

### Before you begin

There are no preconditions to perform this procedure.

### To import software on an NE

Complete the following procedure to import software on an NE.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All**. In the HM tree that opens, double-click the HCF or HDF you want to upgrade.

2. Right-click anywhere on the NE detail view, and select **Show on Tree**.

   **Result:** The selected NE gets displayed in the NE tree view.

3. From the menu bar, click **Tools** -> **Software Administration** -> **Import**.

   **Result:** The **Import NE Software Bundle to OMC-H** window is displayed.

4. From the **Import options** drop-down list, select the method of importing the software bundle.

5. From the **Image to import*** list-box, select the file that has to be imported.

6. Click **Import** to start the import operation.

   **Result:** The selected file is imported to the selected NE.

END OF STEPS

# 5 Configuring an SDHLR

## Overview

### Purpose

This chapter describes the SDHLR object and provides a procedure to modify the SDHLR group name. You cannot modify any other variable on the SDHLR.

### Contents

# SDHLR object description

## SDHLR Complex

The SDHLR complex is a collection of servers, distributed over a TCP/IP network. The OMC-H group on the Lucent OMC-H GUI contains all the supported SDHLR complexes. The Lucent OMC-H supports a maximum of 10 SDHLR complexes. Each SDHLR contains one or more HCF Clusters or HCF Groups, and a collection of HDF servers, along with their mate servers.

Each NE contains an SNMP (Simple Network Management Protocol) agent. Configuration management, fault management, and performance management tasks are performed directly on that NE.

## SDHLR Network elements and Groups

The SDHLR complex consists of the following child objects.

- One or more HCF Clusters
- One or more HCF Groups, currently supporting only DIAMETER protocol
- One HCF Pool
- One HDF Pool
- One or more HDF Mated Pair groups
- Child objects belonging to these groups
- SS7 connectivity

## Rules for creating

The first SDHLR is created automatically, and subsequent SDHLRs are created on user instruction. Lucent OMC-H also creates the HCF Cluster table, HCF Group table and the HDF Pool table. The SS7 tree is created after the first HCF is put in a managed state.

## Rules for deleting and modifying

Only the last instance of the SDHLR cannot be deleted.

The HCF Cluster, HCF Pool, HDF Pool, and HCF Group should be empty, and no HDF Mated pair objects should exist. The Delete operation then deletes all child objects of the SDHLR complex namely the HCF Clusters, HCF Pool, HDF Pool, HCF Groups, IP Connection VNE, and Logical Connection VNE.

You can only modify the user label of this object.

### SDHLR network element functions

The SDHLR HDF network elements store subscriber data and platform configurations. The HDFs do not communicate with the UMTS network directly but only through the HCF network elements. The HDF network elements can be viewed as the UMTS subscriber database.

HCF network elements communicate subscriber and network configuration data to the UMTS network. The HCF network elements can be viewed as the access mechanism between the UMTS network and the subscriber database.

Each SDHLR complex is mutually exclusive. For example, it is not possible to create an HDF Mated Pair containing HDFs from different SDHLR complexes. It is not possible to move NEs or any other data between complexes.

### SDHLR internal network

An internal network exists between the HCF and HDF network elements. The SDHLR network provides reliable transport for administrative, provisioning, recovery, and transaction traffic.

The network can be a Local Area Network (LAN) or Wide Area Network (WAN), depending on the geographical location of the network elements.

### SS7 management

An SS7 interface connects the SDHLR to the wireless operator’s networks. SS7 is a child of the HCF Cluster. SS7 is a containment object and has its own tree structure.

### Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

□

# Node Growth

## Overview

Every NE in an SDHLR complex needs to be aware of the connectivity information of all other NEs in the complex. The connectivity information for an NE is stored in the *MSGHOSTS* and */ETC/INET/HOSTS* files.

Node growth enables you to expand the SDHLR network and update the MiLife Application Server (MAS) platform files, *MSGHOSTS* and */ETC/INET/HOSTS*, on all the network elements (NEs) in the SDHLR complex from one central location - the Lucent OMC-H. This procedure also ensures that all NEs are aware of the connectivity information of all other NEs in the complex

This is done without disruption of call processing or configuration data on any of the existing nodes.

## The *MSGHOSTS*and */ETC/INET/HOSTS* files

The *MSGHOSTS* file contains the names and IDs of the hosts that *MSGHOSTS* communicates with. This file must be the same on all NEs in a network.

The */ETC/INET/HOSTS* file contains the IP address corresponding to the interfaces (Interface Name depends on the hardware type of the NE) and the corresponding Host Name

| Field | Description |
|---|---|
| *MSGHOSTS* | |
| Field 1 | Host number |
| Field 2 | Logical name of the processor that is sent to processes |
| Fields 3 and 4 | Names of the two addresses that can be used to reach that host. These entries must exist in the */ETC/INET/HOSTS* file<br>A preferred path can be specified by placing an "*" before the name. If simplex networking is used, the same name can be used twice. |
| Field 5 | Machine Name is the name of the port on the NE for a particular hardware type. |
| Field 6 | The Port type of the NE |
| Field 7: | The group ID of the NE. |
| */ETC/INET/HOSTS* | |
| Field 1 | IP address is the IPV4 addresses of the corresponding interfaces on the NE. |

| | |
|---|---|
| Field 2 | Machine Name is the name of the port on the NE for a particular hardware type. |
| Field 3 | Aliases of the ETC HOSTS entries |

## Tasks that cannot be performed while Node Growth is in progress

You cannot perform the following tasks during Node Growth:

- Creating an HCF or HDF
- Moving one or more HCFs (from the HCFPool to HCFCluster and vice versa)
- Moving HDFs from HDF Pool to a Mated Pair group and vice versa
- Deleting an HCF or HDF
- Adding or deleting a Mated pair
- Read host entries
- Clear host entries.

## Constraints for performing Node Growth

The following factors must be considered before performing a Node Growth:

- Node Growth is available only at SDHLR, HCF and HDF levels.
- Node Growth cannot be performed on HDFs in the HDF Pool. They should be unmanaged when node growth is called on the complex.
- The NEs must be in the managed state, with the NE Config State being available, and must have the software version 600 and above.
  **Note**: Node Growth can be performed at the SDHLR complex level even if some NEs in that SDHLR complex are in the unmanaged state.
- At a time, only one Node Growth procedure per SDHLR complex can be executed
- The NE hardware types supported for Node Growth are NETRA440, NETRA1400, and NETRA1280. These can be with or without FibreGBE interfaces.
- NE de-growth is not possible. That is, once an NE is grown successfully, its entries will not be removed from the *MSGHOSTS* and */ETC/INET/HOSTS* files on the NEs and from the IP Connection VNE in the SDHLR complex.
- During SDHLR upgrade the NE growth procedure shall not be available to you. In this case, you need to manually update the *MSGHOSTS* and */ETC/INET/HOSTS* files on every NE.

□

# Creating an SDHLR

## Purpose

This procedure allows you to create an SDHLR group. The first SDHLR is auto-created when the Lucent OMC-Hsystem is installed. Subsequently, you can create up to a maximum of 10 SDHLRs.

## Related information

For information on the SDHLR, refer to "SDHLR object description" (p. 5-2).

## Before you begin

There are no preconditions to perform this procedure.

## To create an SDHLR

Complete the following procedure to create an SDHLR.

**1** Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window, to invoke the **Lucent OMC-H Network Manager** window.

*Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network** -> **Network Manager**.

**2** From the Network Manager HM tree view, select the OMC-H group.

**3** From the menu bar, click **Action** -> **Create** -> **SDHLR**.

*Alternatively*, right-click the OMC-H group and click **Create** -> **SDHLR**.

**Result:** The **Enter input parameters for SDHLR** window is displayed.

**4** Type the SDHLR name in the **Name** text-box.

**5** Click **OK** to create the SDHLR.

**Result:** The SDHLR is created and the following containment objects are auto-created:

- HCFCluster
- HCFPool
- HDFPool

- IPConn
- LogicalConn.

END OF STEPS

# Read host entries

### Purpose

This procedure allows you to read the host entries from *MSGHOSTS* and */ETC/INET/HOSTS* files.

The Lucent OMC-H reads and validates

- *MSGHOSTS* information from the SDHLR MIBs and MAS MIBs, and
- */ETC/INET/HOSTS* information from the MAS MIBs.

You need to perform the read host entries procedure before performing node growth on an NE.

### Related information

There is no related information for this procedure.

### Before you begin

To perform this action successfully ensure that:

- You have the required permissions to work with network elements and managed objects (MOs)
- You invoke Read Host entries only on managed NEs that have not already been grown. This action is not supported on unmanaged NEs or NEs which have already been grown

### To Read Host Entries for an NE

Complete the following procedure to Read Host Entries :

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. .

2. From the HM TreeView, select the SDHLR Complex. and from the **Action** menu item select **Read Host Entries** option. This action can also be invoked from the NE.

   **Result:** If you perform this action from the SDHLR, the Host Entries will be read and validated for each NE in the complex. If you perform this action on the NE directly, a dialog box is displayed for you to confirm your action. Once you confirm this the Host Entries will be read and validated for each NE in the complex.

   For both cases the *EtcHost* and *MsgHost* instances will get created, for each NE in the complex, under the IPConn VNE.

This procedure will fail under the following circumstances:

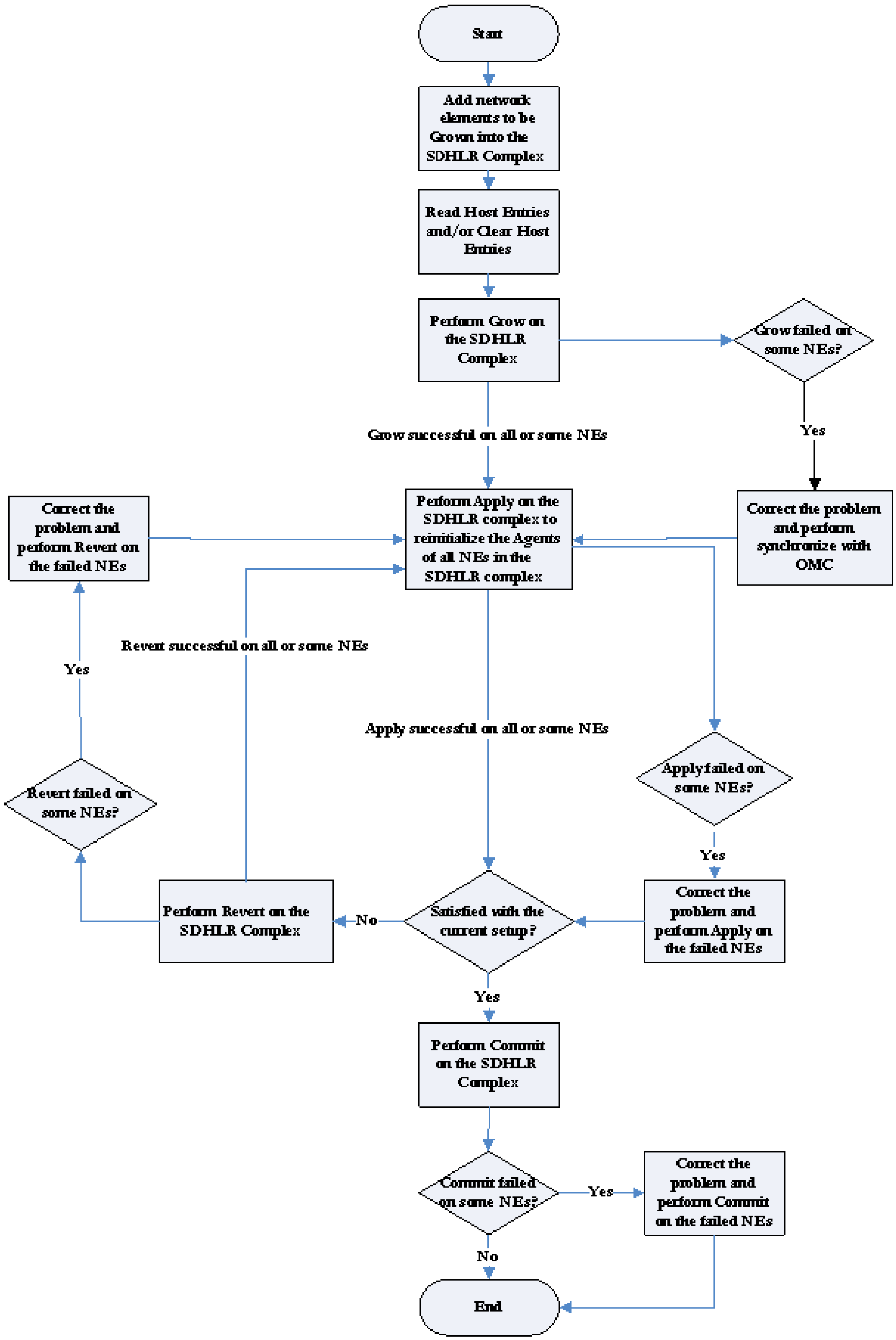
- If a Node Growth operation is in progress for that complex
- If the NE is in the unmanaged state
- If the NE being read has already been grown into the network

END OF STEPS

# Performing Node Growth

## Node Growth process

This flow chart explains the Node Growth process.



### Performing Node Growth from Lucent OMC-H GUI

To perform Node Growth:

1. In the HM tree view, select the SDHLR complex where Node Growth is to be performed.
2. Perform the Read Host Entries or Clear Host Entries on NEs where applicable
3. From the menu bar, click **Action** -> **Node Growth** -> **Grow** to update the *MSGHOSTS* and */ETC/INET/HOSTS* files on all the NEs of that SDHLR complex.
   **Note**: During the Growth action, if any NE is in the unmanaged state, Lucent OMC-H recalls unmanaged NEs' information whenever the NE is managed again by displaying a warning message saying, "`Node Growth is pending on the NE`"
4. On successful completion of Grow, click **Apply** to apply changes to the NEs. However, if Grow fails on one or more NEs, select the NE where the failure occurred, and click **Action** -> **Node Growth** -> **Synchronize with OMC**.
5. On synchronizing, perform **Apply** on the failed NEs.
   All actions are context sensitive on a per NE basis. For example, once you perform **Apply** on an NE in the SDHLR complex, only **Revert** and **Commit** will be available for that NE. However, in the case of **Apply**, the NE does not notify Lucent OMC-H about the result of the **Apply** action.
   Before proceeding with a **Revert** or **Commit**, you need to verify if **Apply** has succeeded on all NEs of that SDHLR complex.
   To do so, check the *OMlogs* file (*/snlog/OMlog0* or */snlog/OMlog1*) of each NE of the SDHLR complex for "**INIT COMPLETE**", for the required timestamp. This indicates that the **Apply** action has been completed successfully on all NEs of the SDHLR complex.
6. If you are dissatisfied with the current setup, click **Action** -> **Node Growth** -> **Revert**, else go to **Step** 8.
   This helps you to recover the backed up *MSGHOSTS* and */ETC/INET/HOSTS* files on the NEs.
7. After suitably modifying the setup, again perform an **Apply** on the SDHLR complex.
8. Click **Action** -> **Node Growth** -> **Commit** to confirm the updated data, and remove the backup files created on the NEs during Grow.
   If the commit fails on one or more NEs, repeat the **Commit** action on the failed NEs.
   The commit action is successful only if it was successful on all the NEs in the SDHLR complex.

### Tracking the status of Node Growth

Node Growth can be performed at the SDHLR complex level even if some NE is in that SDHLR complex are in the unmanaged state. All the actions are asynchronous. To track the status and result of the Node Growth operation, you have to refer to Action History.

### Accessing Action History

To invoke Action History, from the **Desktop** menu bar, click **Tools** -> **Action History**.

If the status is failed, you need to see the NE Error report for more information.

To know more about viewing reports, refer to *System Administration*, 401-380-075. Check the timestamp and user name to identify the right NE Error report.

The NE Error report contains information on the NE for which the Node Growth failed, and the description of the error.

### Example of an NE Error report

Here are the contents of a typical NE Error report:

- **Description**: NE Error Report
- **Date**: Mon May 30 04:58:21 GMT 2006
- **Author**: omcadm
- **NE**: HCF=37
- **Error message**: Error Code OMCH1020: Grow failed on HCF=37
  This implies that the SDHLR Complex Node Growth COMMIT command has failed on this NE {37).

### Accessing the Extended Error Table

If an action fails on an NE, you can open the **Extended Error Table** to know the reason for failure.

To invoke the Extended Error Table, from the **Network Manager** navigate to and select the NE, then go to **View** -> **Extended Table**.

□

# Clear host entries

### Purpose

This procedure allows you to clear the host entries for an NE by deleting the *MSGHOSTS* and */ETC/INET/HOSTS* files. You may want to perform this procedure if you do not want to use an existing NE for node growth but do not want to physically delete it either.

This action is only available to you at the NE level. You cannot invoke a Clear host entries operation from the SDHLR complex.

### Related information

There is no related information for this procedure.

### Before you begin

Ensure that:

- You have the required permissions to work with network elements and managed objects (MOs)
- You only invoke this operation on unmanaged NEs

### To Clear Host Entries for an NE

Complete the following procedure to Clear Host Entries for an NE:

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**.

**2** From the HM TreeView, navigate to the SDHLR Complex and select the NE for which you do not want to perform node growth.

**3** Right-Click on the NE and click on **Clear Host Entries**

**Result:** A dialog box is displayed for you to confirm your action. Once you confirm this, the Host Entries will be deleted for that NE in the complex. The *EtcHost* and *MsgHost* instances will get deleted for that NE from the IPConn VNE

This procedure will fail under the following circumstances:

- If a Node Growth operation is in progress for that complex
- If the NE is in the Managed state
- If the NE has already been grown into the network

END OF STEPS

# Modifying the SDHLR group name

## Purpose

This procedure provides instructions for modifying the SDHLR group name.

This procedure should be performed if the default name of the SDHLR application is not acceptable.

The group name is the name of the object. The default value is SDHLR, for the auto-created SDHLR.

## Related information

For more information on the SDHLR, see "SDHLR object description" (p. 5-2).

## Before you begin

There are no preconditions to perform this procedure.

## To modify the SDHLR group name

Complete the steps below to modify the SDHLR group name.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the SDHLR group name.

2. Go to the **View** menu and select **Details**.

   **Result:** The SDHLR details window is displayed.

3. Click **Modify**.

4. Change the Group Name and click **OK**.

   **Result:** The name of the SDHLR group is changed.

END OF STEPS

# 6 Configuring an HLR Control Function (HCF) network element

## Overview

### Purpose

This chapter defines the HCF and provides procedures to configure it.

### Contents

# Description of the HCF network element

## Overview

### Purpose

This section describes the HCF.

### Contents

# SDHLR and the HCF

### HCF responsibilities

The HCF network element has a number of responsibilities including:

- Terminating the physical connections to the SS7 network
- Accepting Mobile Application Part (MAP) messages from the Mobile Switching Centers (MSC) and Visitor Location Registers (VLRs)
- Carrying out SS7 and HLR protocol processing
- Interacting with the HDF in order to update subscriber data
- Informing the network when subscriber data has been changed

### HDF-HCF Connectivity

An HCF in the HCF Cluster must contain details of the HDFs within that SDHLR. Each HDF must also contain details of its corresponding HCF within that SDHLR.

### HCF Pool

The purpose of the HCF Pool object is to hold the HCF Servers which are currently unassigned to any Cluster.

The HCF Pool is a child object of the SDHLR. It is automatically created by the Lucent OMC-H when the SDHLR is created. There should be one instance of the HCF Pool per SDHLR.

### HCF audit and synchronization

To help ensure that the HCF data is always consistent between all HCFs in a cluster, occasionally an HCF audit should performed. The SS7 Audit action performs a comparison of the SS7 data on the Lucent OMC-H and that on the HCF Server. The mismatches detected are listed in an Audit Report. The operator can view these discrepancies from a report.

An SS7 configuration that is not in synchronization can be adjusted by the user by invoking the **HCF synchronize** and **Synchronize with OMC** operations. This ensures that the SS7 data for each HCF is the same as the data stored in the Lucent OMC-H database.

□

# Fault Recovery on an HCF

## Introduction

HCF network elements (NEs) are arranged into groups called Clusters, where a Cluster acts as a single SS7 Signalling Point. All the HCFs in a Cluster must share the same SS7 data. If the SS7 data in the Lucent OMC-H becomes corrupted HCFs can be moved from the Cluster to the HCF Pool. They are held in the Pool, allowing you delete and recreate the Cluster (if required) and re-add the HCFs. This effectively wipes all SS7 data for that Cluster and its' HCFs on the Lucent OMC-H and the process of creating a Cluster can be started again without the need to entirely remove the HCF NEs from the Lucent OMC-H.

The processes below describes how the system lets you effect a recovery in the situation where the SS7 data within a Cluster becomes corrupted.

## Performing fault recovery on a HCF

To perform fault recovery on an HCF:

**1** Move all the HCFs in the Cluster to the HCF Pool.

**2** Select one of the moved HCFs in the Pool to be used as the SS7 reference (SS7 data held on this HCF must be correct for the Cluster). Move the selected HCF to any existing empty cluster and bring it to the operational state.

**3** Move the remaining HCF Servers from the HCF Pool back to the Cluster and put them into an operational state.

□

# HCF network element description

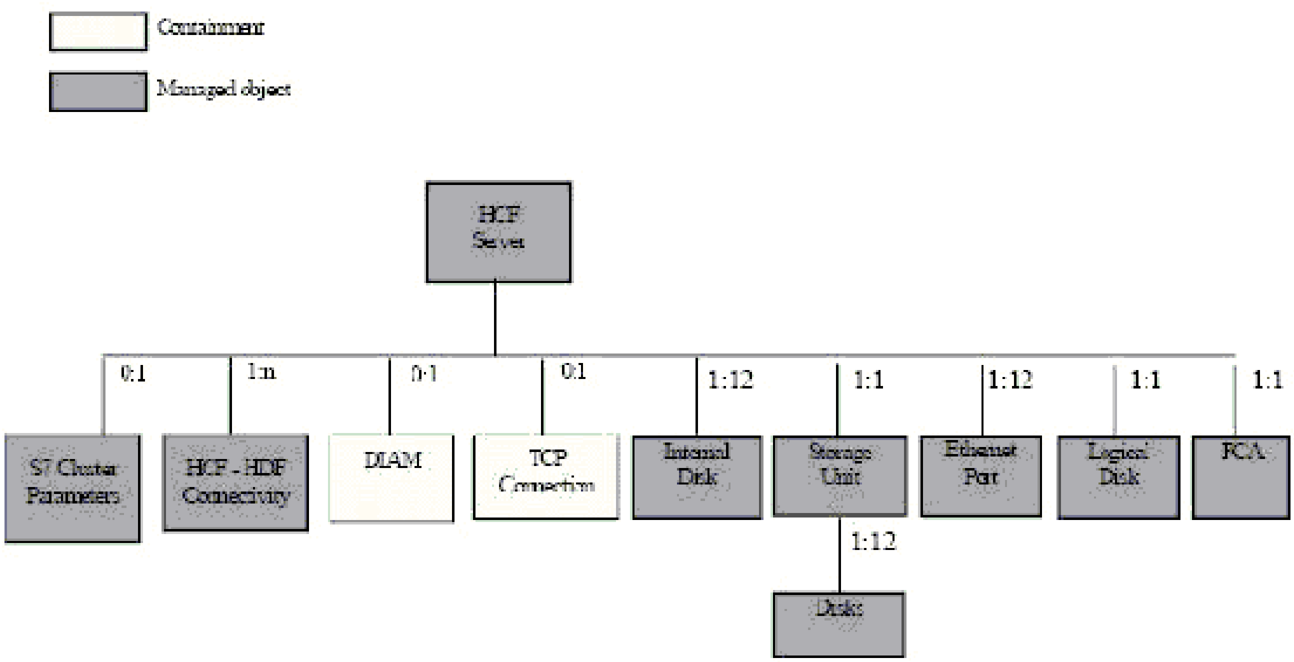
## Description

This section describes the HCF network element as it is represented on the Lucent OMC-H GUI.

An HCF network element (NE) can be created from its parent Cluster object, or from the HCF Pool object.

### Structure of the HCF network element

The following figure shows the HCF network element representation on the Lucent OMC-H GUI.




## Rules for creating, modifying and deleting the HCF and related objects

<table>
<tr><th>Rules for creating</th><th>Rules for modifying</th><th>Rules for Deleting</th></tr>
<tr><td colspan="3">HCF<br>The HCF network element (also known as the HCF or HCF Server) contains the following child objects:<br>• SS7 Cluster Parameters<br>• HCF - HDF Connectivity</td></tr>
</table>

<table>
<tr><th>Rules for creating</th><th>Rules for modifying</th><th>Rules for Deleting</th></tr>
<tr><td colspan="3">HCF Cluster<br>The HCF Cluster is a child of the SDHLR.<br>The HCF Cluster object contains the following child objects:<br>• SS7<br>• HCF Server</td></tr>
<tr><td colspan="3">Structure of the Cluster<br>When Lucent OMC-H automatically creates the SDHLR, it also creates one HCF Cluster. The HCF Cluster lists the HCF servers as they are added to the HCF Cluster. A maximum of 16 HCF servers can be added to an HCF Cluster.</td></tr>
<tr><td>The following rules apply with creating the HCF Cluster:<br>• The Cluster ID is provided by Lucent OMC-H, but can be supplied by the user<br>• The first HCF Cluster is automatically created by Lucent OMC-H and the Group name is ’HCFCluster’<br>• When the first HCF in the Cluster is put in a managed state the SS7 object is automatically created.<br>• You can create additional HCF Cluster objects, and must provide the Group name and ID.</td><td>You can only modify the Group name.</td><td>The following rules apply with deleting this object:<br>• You can only delete an HCF Cluster object when there are no HCF servers present, in the cluster<br>• You cannot delete the last remaining HCF Cluster. There must be at least one HCF Cluster object always present in the SDHLR.</td></tr>
<tr><td colspan="3">HCF Pool<br>The HCF Pool is a group object created automatically when the SDHLR is created.</td></tr>
</table>

<table>
<tr><th>Rules for creating</th><th>Rules for modifying</th><th>Rules for Deleting</th></tr>
<tr><td>The following rules apply with creating the HCF Pool:<br>• The HCF Pool is automatically created when the SDHLR is created<br>• The maximum number of instances of the HCF Pool is one.</td><td>You can only modify the HCF Pool’s Group name attribute.</td><td>You cannot delete the HCF Pool.</td></tr>
<tr><td colspan="3">Local SSN<br>The Local Subsystem Number (SSN) is a logical object and a child of the HCF object.<br>The Local SSN shall represent the SSNs declared against the Originating Point Code (OPC), as defined in the HCF Object, their status and their overload levels. The declaration and availability of a subsystem define the capabilities of the SDHLR.<br>When a subsystem is unavailable, the SDHLR will be unable to process MAP messages associated with the unavailable subsystem type.<br>The overload level is defined by the number of active calls per SSN. When Max Call Level 0 is reached the SSN is considered to be in Overload.<br>You can enter the OPC on the Lucent OMC-H GUI or CLI, or can reference the SS7 User label attribute. If the User label is used, Lucent OMC-H retrieves the OPC from the SS7 object.</td></tr>
<tr><td colspan="3">Mapping to the SDHLR network element<br>The Local SSN object contains a number of attributes that map to attributes on objects on the SDHLR network element.<br>These objects are:<br>• S7_LOCAL_SSN<br>• SSN_OVERLOAD_STATE<br>• SSN_STATUS<br>Note: An HCF with software version 310 does not support the SSN_OVERLOAD_ STATE object.</td></tr>
<tr><td>A Local SSN object is automatically created by the system when an SS7 HCF is managed, provided that the Local SSN object exists at the NE. You cannot create this object.</td><td>You cannot modify this object.</td><td>You cannot delete this object.</td></tr>
</table>

## Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

□

# Creating HCF network elements

## Overview

### Purpose

This section provides procedures for creating HCF network elements.

### Contents

# Creating an HCF Cluster

## Purpose

This procedure allows you to manually create an HCF Cluster, in addition to the one that is automatically created by the system.

## Related information

For more information, see "SDHLR and the HCF" (p. 6-4).

## Before you begin

No additional information is required before you begin this procedure.

## To create an HCF Cluster

Complete the following procedure to create an HCF Cluster.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the SDHLR group where you want to create the HCF Cluster.

**2** From the menu bar, click **Action** -> **Create** -> **Cluster**.

**Result:** The **Enter input parameters for Create Cluster** window is displayed.

**3** Type the Group Name and Group ID and click **OK**.

**Result:** The new HCF Cluster is created.

END OF STEPS

# Creating an HCF in an HCF Cluster

## Purpose

This procedure allows you to create HCF network elements in an HCF Cluster.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

## Before you begin

Ensure that:

- You have the required permissions to carry out tasks in the Network Manager
- The new HCF has been physically installed
- Basic configuration of the HCF has been performed from the enhanced Services Manager (eSM) by running the `install-config` command. This installs the basic configuration necessary to support the HCF application, as well as the HDF connectivity information.
- The HCF Cluster contains less than the maximum allowed HCFs, that is, 16
- The SiteInfo object has been created.

## To create an HCF in an HCF Cluster

Complete the following procedure to create an HCF in an HCF Cluster.

---

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the HCF Cluster, where the HCF needs to be created.

---

**2** From the menu bar, click **Action** -> **Create** -> **HCF**.

**Result:** The **Create HCF - General** window is displayed.

---

**3** Specify the NE name, software version, and overload priority.

---

**4** You can also specify an NE ID. If you choose not to enter it, a system generated ID will be assigned. Once the NE is created you cannot change the value of this ID. The system generates the HCF ID to always assign the next available unique ID on creation of each instance of this object.

5 Click **Next** and populate information under the Communication, SNMP, SNMP Security, and SSH/SFTP tabs.

At this point you may want to configure key based SSH/SFTP authentication for the new HCF. To do this you require administrative permissions. For details about the procedure for configuring key-based SSH/SFTP authentication on the new HCF refer to *System Administration*, 401-380-075.

6 Click **Next**.

**Result:** The **Communication Parameters for HCF NE** window is displayed.

7 Provision all the required fields on the tabs.

8 Click **Next**.

**Result:** The **Location** window is displayed.

9 In the Geographical Location block, select the site from the **SiteName** drop-down list.

10 Select the frame in which NE is physically located from the **Frame ID** drop-down list and the position of the NE in the frame from the **Position ID** drop-down lists.

11 Click **Finish** to create the HCF now or click **More**->**Save Profile** to save your changes. You can load this profile on any NE later by clicking **More**-> **Load Profile** on the HCF NE Tree.

**Result:** The HCF is created in the HCF Cluster.

END OF STEPS

# Creating an HCF in an HCFPool

### Purpose

This procedure provide instructions for creating HCF network elements in an HCFPool.

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

For information on how to schedule a task, refer to the *System Administration*, 401-380-075.

### Before you begin

Ensure that:

- You have the required permissions to carry out tasks in the Network Manager
- The new HCF has been physically installed
- Basic configuration of the HCF has been performed from the enhanced Services Manager (eSM) by running the `install-config` command. This installs the basic configuration necessary to support the HCF application, as well as the HDF connectivity information.
- eSM has run the `install-proc` command to bring up the HCF application. At this point, the Subsystem (SSN) should be inhibited.
- The HCF Pool contains less than the maximum allowed HCFs, that is, 32

### To create an HCF in an HCFPool

Complete the following procedure to create an HCF in an HCFPool.

**1** Click on the **Network Manager** icon on the **Lucent OMC-H - Desktop** window, to invoke the **Lucent OMC-H - Network Manager** window.

*Alternatively*, on the **Lucent OMC-H - Desktop** window, click **Network** -> **Network Manager**.

**2** In the HM tree, navigate to the HCFPool.

**3** From the menu bar, click **Action** -> **Create** -> **HCF**.

*Alternatively*, right-click the HCFPool and select **Create** -> **HCF**.

**Result:** The **Create HCF: General** window is displayed.

4 Specify the NE name, Software version, and Overload priority for the HCF.

5 You can also specify an NE ID. If you choose not to enter it, a system generated ID will be assigned. Once the NE is created you cannot change the value of this ID. The system generates the HCF ID to always assign the next available unique ID on creation of each instance of this object.

6 Click **Next** and populate information under the Communication, SNMP, SNMP Security, and SSH/SFTP tabs.

While populating the HCF SNMP security parameters, if you populate the privacy passwords with less than 8 characters or more than 30 characters, then Lucent OMC-H gives an error. The length of the SNMP Privacy Password on the HCF must be the same as on the Lucent OMC-H.

7 Click **Next** to proceed.

**Result:** The **Communication Parameters for HCF NE** window is displayed.

8 Provision all the required fields on the tabs.

9 Click **Next** to proceed.

**Result:** The **Location** window is displayed.

10 Select the site name from the **SiteName** drop-down list.

11 Click **Finish** to create the HCF now or click **More**->**Save Profile** to save your changes. You can load this profile on any NE later by clicking **More**-> **Load Profile** on the HCF NE Tree.

**Result:** The HCF is created in the HCFPool.

END OF STEPS

# Deleting HCF network elements

## Overview

### Purpose

This section provides procedures for deleting HCF network elements.

### Contents

# Deleting an HCF from an HCF Cluster

## Purpose

This procedure allows you to delete an HCF from an HCF Cluster.

## Related information

For more information, see "SDHLR and the HCF" (p. 6-4).

## Before you begin

Ensure that the HCF exists in the HCF Cluster and is in communication with the Lucent OMC-H.

## To delete an HCF from an HCF Cluster

Complete the following procedure to delete an HCF from an HCF Cluster.

**1** Unmanage the HCF you want to delete.

For information on how to unmanage the HCF, see "Managing or unmanaging a network element" (p. 2-15).

**Result:** The HCF becomes unmanaged.

**2** In the HM tree, select the HCF you want to delete.

**3** From the Action menu, select **Delete**.

**Result:** A Confirmation window is displayed.

**4** Click **OK** to delete the HCF.

**Result:** The HCF is removed from the HCF Cluster and from the database.

END OF STEPS

# Deleting a HCF Cluster

### Purpose

This procedure provides instructions for deleting a HCF Cluster.

### Related information

For more information, see "SDHLR and the HCF" (p. 6-4).

### Before you begin

Ensure that:

- The HCF Cluster is empty (contains no HCF servers)
- There is more than one HCF Cluster in the SDHLR.

### To delete an HCF Cluster

Complete the following procedure to delete an HCF Cluster.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the HCF Cluster you want to delete.

**2** From the menu bar, click **Action** -> **Delete**.

**Result:** A Confirmation window is displayed.

**3** Click **Yes** to delete the HCF Cluster.

**Result:** The HCF Cluster is removed from the database.

END OF STEPS

# Deleting an HCF from an HCF Pool

### Purpose

This procedure allows you to delete an HCF from an HCF Pool.

### Related information

For more information, see "SDHLR and the HCF" (p. 6-4).

### Before you begin

Ensure that the HCF you want to delete exists in the HCF Pool.

### To delete an HCF from an HCF Pool

Complete the following procedure to delete an HCF from the an HCF Pool.

1. Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

   For more information on accessing the Network Manager, refer to Graphical User Interface, 401-380-082.

2. In the HM tree, navigate to the HCF that you want to delete, from an HCFPool.

3. From the menu bar, click **Action** -> **Delete** to delete the selected HCF.

   *Alternatively:*

   - Right-click the HCF, and click **Delete**.
   - Click the **Delete** icon on the tool bar.

     **Result:** An **Action Confirmation** window is displayed.

4. Click **Yes** to delete the HCF or click **No** to cancel the delete operation.

   **Result:** The HCF is removed from the database.

END OF STEPS

# Moving HCF network elements

## Overview

### Purpose

This section provides procedures for moving HCF network elements.

### Contents

# Moving an HCF to an HCFPool

### Purpose

This procedure allows you to move an HCF to an HCFPool.

### Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

### Before you begin

**Important!** You need Lucent OMC-H administrator permissions to move an HCF to an HCFPool.

Also ensure that:

- You have the required permissions to carry out tasks in the Network Manager
- The HCF exists in the HCFCluster.
- You ONLY attempt to move an HCF to Pool when the HCF is in the unmanaged state. If you try to move a managed HCF, Lucent OMC-H shall display an error message asking you to unmanage the HCF first.

### To move an HCF to an HCFPool

Complete the following procedure to move an HCF to an HCFPool.

**1** Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

For more information on accessing the Network Manager, refer to *Graphical User Interface*, 401-380-082.

**2** In the HM tree, navigate to the HCF in the HCFCluster that you want to move to the HCFPool.

**3** From the menu bar, click **Action** -> **Move to Pool**, to move the HCF.

*Alternatively*, right-click the HCF, and click **Move to Pool**.

**Result:** The **Action Confirmation** window is displayed.

**4** Click **Yes** to move the HCF, or click **No** to cancel the move operation.

**Important!** If the HCFPool contains the maximum number of HCFs, it throws an error and the HCF will remain in the HCFCluster.

**Result:** The HCF is moved from the selected HCFCluster to the target HCFPool.

END OF STEPS

# Moving an HCF from an HCFPool to an HCFCluster

### Purpose

This procedure allows you to move an HCF, from an HCFPool to an HCFCluster.

### Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

### Before you begin

Ensure that:

- You have the required permissions to carry out tasks in the Network Manager
- The HCF exists in the HCFPool
- The HCF to be moved has been updated locally with the correct, and required connectivity information
- The existing HDF servers are updated to include the connectivity to the new HCF server.

### To move an HCF to an HCFCluster

1. Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

   For more information on accessing the Network Manager, refer to Graphical User Interface, 401-380-082.

2. In the HM tree, navigate to the HCF in the HCFPool that you want to move to the HCFCluster.

3. From the menu bar, click **Action** -> **Move HCF**, to move the HCF.

   *Alternatively*, right-click the HCF, and click **Move HCF**.

   **Result:** The **Enter input parameters for Move HCF** window is displayed.

4. From the **Available Clusters** drop-down list, select the HCFCluster you want to move the HCF to.

**5** Click **OK** to move the HCF now, or click **More** -> **Schedule** to move the HCF later.

**Result:** The HCF is moved from the HCFPool to the HCFCluster.

END OF STEPS

# Moving all HCFs from a Cluster to an HCFPool

### Purpose

This procedure allows you to move all HCFs from an HCFCluster to an HCFPool.

### Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

For information on assigning permissions and scheduling tasks, refer to *System Administration*, 401-380-075

### Before you begin

Ensure that you have the required permissions to carry out tasks in the Network Manager.

### To move all HCFs from a Cluster to an HCFPool

**1** Click on the **Network Manager** icon on the **Lucent OMC-H - Desktop** window, to invoke the **Lucent OMC-H - Network Manager** window.

*Alternatively*, on the **Lucent OMC-H - Desktop** window, click **Network** -> **Network Manager**.

**2** In the HM tree, navigate to the HCF Cluster containing the HCFs you want to move.

**3** From the menu bar, click **Action** -> **HCFs to Pool**, to move all the HCFs.

*Alternatively*, right-click the HCF, and click **HCFs to Pool**.

**Result:** The **Action Confirmation** window is displayed.

**4** Click **Execute now** to move all the HCFs now, or click **More** -> **Schedule** to move all the HCFs later.

**Result:** All the HCFs are moved from the selected HCFCluster to the target HCFPool.

END OF STEPS

# Synchronizing HCF network elements

## Overview

### Purpose

This section provides procedures for synchronizing HCF network elements.

### Contents

# Synchronizing an HCF network element

### Purpose

The first HCF is automatically synchronized when the HCF is put in a managed state. This procedure allows you to synchronize the values of the HCF, but does not affect the contained managed objects.

### Related information

For information on object attributes and values, refer to *Object Descriptions,* 401-380-080.

### Before you begin

Ensure that the NE Config State on the HCF is “Available”.

### To synchronize an HCF

Complete the following procedure to synchronize an HCF.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the HCF you want to synchronize.

**2** Right-click anywhere on the NE detail view, and select **Show on Tree**.

**Result:** The HCF gets displayed in the NE tree view.

**3** From the menu bar, click **Action** -> **Synchronisation** -> **HCF Synchronise**.

**Result:** Lucent OMC-H synchronizes its data with the data on the HCF.

END OF STEPS

# Synchronizing SS7 configuration for an HCF

## Purpose

This procedure allows you to synchronize SS7 configuration for an HCF. Perform this task to ensure that the SS7 data is identical on the HCF and the Lucent OMC-H database.

The data on the HCF is overwritten by the data from Lucent OMC-H.

## Related information

For more information, see "SDHLR and the HCF" (p. 6-4).

## Before you begin

Ensure that the NE Config State on the HCF is "Available". Also ensure that SPA state should be OOS for software version 310 of the HCF and SPA state should be MOOS for the software versions 400 & 500 of the HCF.

## To synchronize SS7 configuration for an HCF

Complete the following procedure to synchronize SS7 configuration for an HCF.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the HCF you want to synchronize

2. Right-click anywhere on the NE detail view, and select **Show on Tree**.

   **Result:** The HCF gets displayed in the NE tree view.

3. From the menu bar, click **Action** -> **Synchronization**, and then **SS7 Synchronize with OMC**.

   **Result:** The Lucent OMC-H synchronizes its SS7 data with the SS7 data on the HCF network element.

   To verify the status of the synchronization operation, invoke the detail view of that HCF and check the SS7 synchronization Status attribute in the HCF tab.

   **Reference:** For information on invoking the detail view of an HCF, refer to *Graphical User Interface*, 401-380-082.

END OF STEPS

# Auditing an HCF

### Purpose

This procedure allows you to audit an HCF. An Audit is a check between the SS7 configuration data in the Lucent OMC-H and the SS7 configuration data on the HCF network element.

If there is a discrepancy in between the two databases, you should check the Audit log in the Report Manager and then possibly synchronize the SS7 data.

### Related information

For more information, see "SDHLR and the HCF" (p. 6-4).

### Before you begin

Ensure that the HCF is in the Managed state.

### To audit an HCF

Complete the following procedure to audit an HCF.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the HCF you want to audit. The NE details are displayed in the NE detail view.

**2** Right-click anywhere on the NE detail view, and select **Show on Tree**.

**Result:** The HCF gets displayed in the NE tree view.

**3** From the Action menu, click **Audit** and select **SS7**.

**Result:** The Lucent OMC-H audits the SS7 configuration data in the database with the data on the HCF.

**4** If there is a discrepancy between the two databases, then synchronize the SS7 data.

For information on how to synchronize the SS7 data, refer to "Synchronizing SS7 configuration for an HCF" (p. 6-28).

END OF STEPS

# Performing other operations on the HCF

## Overview

### Purpose

This section provides procedures for modifying HCF network elements, managing the SPA for the HCF and removing or restoring the HCF network element.

### Contents

# Modifying HCF parameters

## Purpose

This procedure allows you to modify the parameters of an HCF network element.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Before you begin

| If you want to modify the HCF | Then |
|---|---|
| Name | No precondition is required to perform this task. |
| Communication parameters | Ensure that the HCF you want to modify is unmanaged. |

## To modify the HCF parameters

Complete the following procedure to modify HCF parameters.

1 From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the HCF you want to modify.

2 From the menu bar, click **View** -> **Details**.

**Result:** The NE detail window for this HCF is displayed.

3

| If you want to modify the HCF | Then |
|---|---|
| Name | Perform the given steps:<br>1. Click **Modify** on the NE Detail View.<br>2. Change the HCF name.<br>3. Click **OK** to change the name now, or click **More -> Schedule** to change the name later. |

| If you want to modify the HCF | Then |
|---|---|
| Communication parameters | Perform the given steps:<br>1. Click **NE Management...**.<br>2. Click **Modify**.<br>3. Update the required communication parameters.<br>While modifying HCF SNMP security parameters, if you populate the privacy passwords with less than 8 characters or more than 30 characters, then Lucent OMC-H gives an error. The length of the SNMP Privacy Password on the HCF must be the same as on the Lucent OMC-H.<br>4. Click **OK** to submit the changes now, or click **More -> Schedule** to modify the parameters later.<br>If you click the **NE Location...** tab after Step 2, the **Latitude** and **Longitude** fields cannot be modified (they are greyed out), although there is a **Modify** button available. However, you can modify these parameters from the SiteInfo object.<br>For more information on modifying the latitude and longitude from the SiteInfo object, refer to *Chapter 10, Configuring the Topological and Topographical Views*. |

END OF STEPS

# Managing SPA for an HCF

## Purpose

This procedure allows you to manage Service Package Application (SPA) for an HCF. You can manage SPA for an HCF by enabling, disabling, removing or restoring SPA for the HCF from the Lucent OMC-H.

## Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

## Before you begin

| If you want to | Then |
|---|---|
| Enable SPA | Ensure that the SPA is in the **disabledEquipped** state and the Application is in the **Not_Running** state.<br>**Note**: Lucent OMC-H Release 7.1 supports SPA versions 600 and 610 only. |
| Disable SPA | Ensure that the SPA and the Application are in the **Manually Out Of Service (MOOS)** state |
| Remove SPA | Ensure that SPA is **In Service (IS)** and Application State should be **Not_running**. |
| Restore SPA | Ensure that SPA is **Manually Out Of Service (MOOS)**. |

## To manage SPA for an HCF

Complete the following procedure to enable, disable, remove or restore SPA for an HCF.

**1** Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

For more information on accessing the Network Manager, refer to *Graphical User Interface*, 401-380-082.

**2** In the HM tree, double-click the HCF whose SPA you want to manage.

**3** Right-click anywhere on the NE detail view, and select **Show on Tree**.

**Result:** The HCF gets displayed in the NE tree view.

**4** From the menu bar, click **Action** -> **Object Specific** -> **<manage_action>**.

*Alternatively*, right-click the target HCF and click **Object Specific** -> **<manage_action>** .

The Lucent OMC-H provides the following <manage_action> options to choose from:

- Enable
- Disable
- Remove
- Restore

**Result:** The **Action Confirmation** window is displayed.

**5** Click **Yes** to perform the SPA manage operation on the HCF.

**Result:**

| If you performed the | Then you see the following results |
|---|---|
| Enable SPA operation on the HCF | If you are using SPA version 310 then the SPA gets enabled and the state of the SPA changes to Out of Service (OOS). If you are using SPA version 400 or 500 then the SPA gets enabled and the state of the SPA changes to Manually Out of Service (MOOS). |
| Disable SPA operation on the HCF | The SPA gets disabled and the state of the SPA changes to Equipped. |
| Remove SPA operation on the HCF | If you are using SPA version 310 then the SPA gets enabled and the state of the SPA changes to Out of Service (OOS). If you are using SPA version 400 or 500 then the SPA gets enabled and the state of the SPA changes to Manually Out of Service (MOOS). |
| Restore SPA operation on the HCF | The SPA is restored on the HCF network element. |

END OF STEPS

# Performing object specific actions on a LocalSSN object

### Purpose

This procedure allows you to remove or restore a LocalSSN object.

### Related information

For information on a LocalSSN object, refer to "HCF network element description" (p. 6-6).

### Before you begin

| If you want to | Then ensure that |
|---|---|
| Remove the Local SSN | The LocalSSN object state is In Service (IS). |
| Restore the Local SSN | The LocalSSN object state is Manually Out Of Service (MOOS). |

### To remove or restore a LocalSSN object

Complete the following procedure to remove or restore a LocalSSN object.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View navigate to the HCF Cluster.

2. Right-click on the SS7 HCF object, and select **Show on Tree**.

3. In the NE Tree View right-click the HCF object whose LocalSSN you want and click **Expand All**.

4. Select the LocalSSN object.

5. From the menu bar, click **Action** -> **Object Specific** -> **<Object-Specific>** action.

   The available <Object-Specific> actions for the Local SSN object are

   - Remove
   - Restore

**Result:** The LocalSSN object gets removed and the LocalSSN state changes from "IS" to "MOOS" (Manually Out Of Service). To verify the state of the LocalSSN object, double-click to view the Detail View.

The State label displays the current state of the LocalSSN object.

END OF STEPS

# 7 Configuring a HLR Control Function (HCF) Group

## Overview

### Purpose

This chapter describes the HCF Group and provides procedures to configure it.

**Note:**Though the SDHLR HCF can support multiple transport protocols, currently it only provides DIAMETER and SS7 protocols. So all further references to an HCF in the HCF Group here will mention it as the DIAMETER HCF.

### Contents

# Description of the Diameter HCF

## Overview

### Purpose

This section describes a Diameter HCF.

### Contents

# Diameter Protocol

## Diameter Protocol Description

Diameter protocol is the next generation Accounting, Authentication, and Authorization (AAA) solution for networks where user authentication occurs in fixed and wireless domains.

Up to now, the most widely used AAA protocol has been Remote Authentication Dial-In User Service (RADIUS), which is not suited for Mobile and Virtual Private Network (VPN) application requirements.

The Diameter protocol is defined in terms of a base protocol and a set of applications. This allows the protocol to be extended to new access technologies. The base protocol provides basic mechanisms for reliable transport, message delivery, and error handling. However, the base protocol must be used in tandem with a Diameter Application.

## Diameter Applications

The Diameter applications are:

- Mobile IPv4 [DIAMMIP]
- NASREQ (Network Access Service Requirements)

NASREQ is the working Group of the IETF for the next generation NAS AAA requirements. NASREQ application supports dial-in PPP/IP and is the intended replacement for RADIUS.

## HCF Group

The HCF Group is a container object for the Diameter HCF. The parent group is the SDHLR group.

□

# DIAMETER object descriptions

## Overview

This section describes the SDHLR DIAMETER objects that can be configured and managed from the Lucent OMC-H.

## Rules for creating, modifying and deleting DIAMETER objects

<table>
<tr><th>Rules for creating</th><th>Rules for modifying</th><th>Rules for deleting</th></tr>
<tr><td colspan="3">DIAM TCP Host Info<br>The DIAM TCP Host object is a child object of the DIAM object. The DIAM object is auto-created when the HCF supporting the Diameter protocol is created and managed.<br>The maximum number of instances of a DIAM TCP Host Info object is 512.</td></tr>
<tr><td>There are no special rules for creating the DIAM TCP Host object</td><td>You cannot modify the DIAM TCP Host Info object.</td><td>There are no special rules for deleting the DIAM TCP Host object</td></tr>
<tr><td colspan="3">Adjacent host<br>The Adjacent host object is the child object of the DIAM object. Once the Diameter HCF is created and managed, reverse synchronization is triggered in the background. On successful completion of reverse synchronization, the DIAM object is auto-created.<br>The maximum number of instances of an Adjacent host object is 512.</td></tr>
<tr><td>There are no special rules for creating the Adjacent host object</td><td>You can only modify an Adjacent host object’s name attribute.</td><td>The following rules apply for deleting an Adjacent host object:<br>• You cannot delete an Adjacent host object if a Destination Route object has a reference to its Adjacent Host ID.<br>• You cannot delete an Adjacent host object if a DIAM TCP Host object has a reference to its Adjacent Host ID</td></tr>
<tr><td colspan="3">Local host<br>The Local host object is a child object of the DIAM object. The DIAM object is auto-created when the HCF supporting the DIAMETER protocol is created and managed and Diameter reverse synchronization (triggered as a part of the manage action) is successful.<br>The maximum number of instances of a Local host object is 1.</td></tr>
</table>

| Rules for creating | Rules for modifying | Rules for deleting |
|---|---|---|
| There are no special rules for creating the Local host object | You can modify all Local host object’s attributes, except the ID. | You cannot delete a Local host object. |
| **Destination Route**<br>The Destination Route object is a child object of the DIAM object. The DIAM object is auto-created when the HCF supporting the DIAMETER protocol is created and managed.<br>The maximum number of instances of a Destination Route object is 512. | | |
| There are no special rules for creating the Destination Route object | You can modify all Destination Route object’s attributes, except Host Configuration Index and Host Realm. | There are no special rules for deleting the Destination Route object |
| **Diameter SSN**<br>The Diameter SSN object is a child object of the DIAM object. The DIAM object is auto-created when the HCF supporting the DIAMETER protocol is created and managed.<br>The maximum number of instances of a Diameter SSN object is 50. | | |
| There are no special rules for creating the Diameter SSN object | You cannot modify any Diameter SSN object attributes. | There are no special rules for deleting the Diameter SSN object |
| **Vendor**<br>The Vendor object is a child object of the DIAM object. The DIAM object is auto-created when the HCF supporting the Diameter protocol is created and managed.<br>The maximum number of instances of a Vendor object is 1. | | |
| There are no special rules for creating the Vendor object | You can modify all Vendor object’s attributes, except the Index (DiamVsAppidIndex). | There are no special rules for deleting the Vendor object |
| **TCP IP Host**<br>The TCP IP Host object is a child object of the TCPConnection object. The TCPConnection object is auto-created when the HCF supporting the Diameter protocol is created and managed.<br>The maximum number of instances of a TCP IP Host object is 100. | | |

| Rules for creating | Rules for modifying | Rules for deleting |
|---|---|---|
| There are no special rules for creating the TCP IP Host object | You can modify TCP IP Host object attributes, except for Host Name and Host Configuration Index. | You cannot delete a TCP IP Host object if its host name is referenced in a TCP IP Listening Port object or a TCP IP Connecting Port object. |
| **TCP IP Listening Port**<br>The TCP IP Listening Port object is a child object of the TCPConnection object. The TCPConnection object is auto-created when the HCF supporting the Diameter is created and managed.<br>The maximum number of instances of a TCP IP Listening Port object is 100. | | |
| There are no special rules for creating the TCP IP Listening Port object | You cannot modify this object. | There are no special rules for deleting the TCP IP Listening Port object |
| **TCP IP Connecting Port**<br>The TCP IP Connecting Port object is a child object of the TCPConnection object. The TCPConnection object is auto-created when the HCF supporting the Diameter protocol is created and managed.<br>The maximum number of instances of a TCP IP Connecting Port object is 100. | | |
| There are no special rules for creating the TCP IP Connecting Port object | You cannot modify a TCP IP Connecting Port. | You can delete a TCP IP Connecting Port object. |

## Attributes and values

For information on object attributes and values, refer to *Object Descriptions,* 401-380-080.

□

# Creating Diameter network elements

## Overview

### Purpose

This section provides procedures for creating the HCF with Diameter support.

### Contents

# Creating an HCF group

### Purpose

This procedure allows you to create a HCF Group within an SDHLR group.

### Related information

For information on the HCF Group, refer to "Diameter Protocol" (p. 7-4).

For information on scheduling tasks, refer to the *System Administration*, 401-380-075.

### Before you begin

Ensure that the parent SDHLR group exists on the Lucent OMC-H.

### To create a HCF Group

Complete the following procedure to create a HCF Group.

---

**1** Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window, to invoke the **Lucent OMC-H Network Manager** window.

*Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network** -> **Network Manager**.

---

**2** In the HM tree, expand the OMC-H group and select the SDHLR group where you want to create the HCF Group.

---

**3** From the menu bar, click **Action** -> **Create** -> **HCF Group**.

**Result:** The **Enter input parameters for Cluster** window is displayed.

---

**4** Type the **Name**.

---

**5** You can also specify an HCF Group ID. If you choose not to enter it, a system generated ID will be assigned. Once the HCF Group is created you cannot change the value of this ID. The system generates the HCF Group ID to always assign the next available unique ID on creation of each instance of this object.

**6** Click **OK** to create the HCF Group now, or click **Schedule** to create it later.

END OF STEPS

# Creating a Diameter HCF

## Purpose

This procedure allows you to create a Diameter HCF within a HCF Group.

## Related information

For information on creating a HCF Group, refer to “Creating an HCF group” (p. 7-9).

## Before you begin

Ensure that the parent HCF group exists.

## To create a Diameter HCF

Complete the following procedure to create a Diameter HCF.

---

**1** Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window, to invoke the **Lucent OMC-H Network Manager** window.

*Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network** -> **Network Manager**.

---

**2** In the HM tree view, expand the OMC-H group.

---

**3** Expand the SDHLR group that contains the parent HCF Group and select the parent HCF Group.

---

**4** From the menu bar, click **Action** -> **Create** -> **HCF**.

**Result:** The **Create HCF - General** window is displayed.

---

**5** Type the **Name**.

---

**6** You can also specify an NE ID. If you choose not to enter it, a system generated ID will be assigned. Once the NE is created you cannot change the value of this ID. The system generates the HCF ID to always assign the next available unique ID on creation of each instance of this object.

7 Click **Next** and populate information under the Communication, SNMP, SNMP Security, and SSH/FTP tabs.

At this point you may want to configure key based SSH/SFTP authentication for the new NE. To do this you require administrative permissions. For details about the procedure for configuring key-based SSH/SFTP authentication on the new HCF refer to *System Administration*, 401-380-075.

8 Click **Finish** to commit all the changes specified in the wizard and create the Diameter HCF now, or click **More** -> **Save Profile** to save your changes. You can later load this profile on any Diameter HCF by clicking on **More** -> **Load Profile** in the NE Detail View of that HCF.

At any time during the creation process, click **Back** to go to the previous wizard window, and click **Cancel** to cancel the creation operation.

END OF STEPS

### Result

The Diameter HCF gets created. You need to manage the Diameter HCF, to bring it to the operational state. Right-click the Diameter HCF, and click **Manage**. The Diameter HCF gets managed and reverse synchronization is triggered in the background. Once the reverse synchronization is completed successfully, the following objects get auto-created.

- DIAM object
- TCP Connection object.

□

# Creating Diameter objects

### Purpose

This procedure allows you to create the following Diameter objects.

- Diameter TCP Host
- Adjacent Host
- Local Host
- Destination Route
- Diameter SSN
- Vendor

### Related information

For information on the Diameter objects, refer to "DIAMETER object descriptions" (p. 7-5), .

### Before you begin

There are no preconditions to perform this procedure.

### To create Diameter objects

Complete the following procedure to create Diameter objects.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the parent HCF, supporting Diameter, of the DIAM object whose child objects need to be created.

2. Right-click anywhere on the NE detail view, and select **Show on Tree** to display the selected Diameter HCF in the NE tree view.

3. Select the Diameter object .

4. From the menu bar, click **Action** -> **Create** -> **<DIAM object name>** (Vendor, Local Host, Adjacent Host, Destination Route, or Diam SSN).

   *Alternatively*, you can right-click the Diameter object and click **Create** -> **<DIAM object name** (Vendor, Local Host, Adjacent Host, Destination Route, or Diam SSN).

**Result:** The **Enter input parameters for Create <DIAM object name** window is displayed.

The Adjacent Host, Destination Route, and Diam SSN objects can also be created by right-clicking their parent table objects. For example, right-click **AdjacentHostTable** to create an Adjacent Host object.

**5** Specify values in the fields provided.

**6** Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The Diameter object is created.

END OF STEPS

# Creating TCP IP objects

## Purpose

This procedure allows you to create the following TCP IP objects.

- TCP IP Host
- TCP IP Listening Port
- TCP IP Connection Port

## Related information

For information on the TCP IP objects, refer to "DIAMETER object descriptions" (p. 7-5).

## Before you begin

There are no preconditions to perform this procedure.

## To create TCP IP objects

Complete the following procedure to create the TCP IP objects.

---

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the parent Diameter HCF of the TCP IP object whose child objects need to be created.

---

**2** Right-click anywhere on the NE detail view, and select **Show on Tree** to display the selected Diameter HCF in the NE tree view.

---

**3** Select the TCP IP object.

---

**4** From the menu bar, click **Action** -> **Create** -> **<TCP IP object name>** (TCP IP Host, TCP IP Listening Port, TCP IP Connection Port).

*Alternatively*, you can right-click the TCP IP Connection object or the parent table object (for example, the TCPHostConfigTable) and click **Create** -> **<TCP IP object name>** (TCP IP Host, TCP IP Listening Port, TCP IP Connection Port).

**Result:** The **Enter input parameters for Create <TCP IP object name>** window is displayed.

**5** Specify values in the fields provided.

**6** Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The TCP IP object is created.

END OF STEPS

# Modifying Diameter network elements

## Overview

### Purpose

This section provides procedures for modifying HCF group objects.

**Note:** The HCF Group currently supports only the DIAMETER protocol

### Contents

# Modifying HCF Group objects

## Purpose

This procedure allows you to modify the following HCF Group objects.

- Adjacent Host
- Local Host
- Destination Route
- Diameter SSN
- Vendor

## Related information

For information on the modifiable attributes of the HCF Group objects, refer to “DIAMETER object descriptions” (p. 7-5).

## Before you begin

There are no preconditions to perform this procedure.

## To modify Diameter objects

Complete the following procedure to create the HCF Group objects.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the parent HCF Group of the Diameter object whose child objects need to be modified.

2. Right-click anywhere on the NE detail view, and select **Show on Tree** to display the selected Diameter HCF in the NE tree view.

3. Select the DIAM object and expand it.

4. Select the Diameter object to be modified.

5. From the menu bar, click **View** -> **Details** to open the detail view.

   *Alternatively*, you can right-click the selected object and click **Details** or double-click the selected object.

**6** Click **Modify** on the detail view.

**7** Modify the editable fields, if required.

**8** Click **OK** to submit the changes now or click **More** -> **Schedule** to submit the changes later.

**Result:** The Diameter object gets modified.

END OF STEPS

# Modifying TCP IP objects

## Purpose

This procedure allows you to modify the following TCP IP objects.

- TCP IP Host
- TCP IP Listening Port
- TCP IP Connection Port

## Related information

For information on the modifiable attributes of the TCP IP objects, refer to "DIAMETER object descriptions" (p. 7-5).

## Before you begin

There are no preconditions to perform this procedure.

## To modify TCP IP objects

Complete the following procedure to create the TCP IP objects.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the HCF Group (currently supporting only DIAMETER Objects) of the TCP IP object whose child objects need to be created.

2. Right-click anywhere on the NE detail view, and select **Show on Tree** to display the selected Diameter HCF in the NE tree view.

3. Select the TCP IP object and expand it.

4. Select the TCP IP object to be modified.

5. From the menu bar, click **View** -> **Details** to open the detail view.

   *Alternatively*, you can right-click the selected object and click **Details** or double-click the selected object.

6. Click **Modify** on the detail view.

**7** Modify the editable fields, if required.

**8** Click **OK** to submit the changes now or click **More** -> **Schedule** to submit the changes later.

**Result:** The TCP IP object gets modified.

END OF STEPS

# Deleting Diameter network elements

## Overview

### Purpose

This section provides procedures for deleting a Diameter HCF.

### Contents

# Deleting Diameter objects

### Purpose

This procedure allows you to delete the following Diameter objects.

- Diameter TCP Host
- Adjacent Host
- Destination Route
- Diameter SSN
- Vendor

### Related information

For information on the Diameter objects, refer to"DIAMETER object descriptions" (p. 7-5).

### Before you begin

Ensure that:

- You have the required permissions to use Network Manager
- The Adjacent Host object is not being referenced by the Destination Route object, while it is being deleted.

### To delete an object

Complete the following procedure to delete an object:

1. Invoke the **Lucent OMC-H Network Manager** window through the **Lucent OMC-H Desktop**.

2. In the HM tree, double-click the HCF Group of the Diameter object whose child objects need to be deleted.

3. Right-click anywhere on the NE detail view, and select **Show on Tree** to display the selected Diameter HCF in the NE tree view.

4. Select the DIAM object and expand it.

5. Select the Diameter object to be deleted.

6 From the menu bar, click **Action** -> **Delete** to delete the object now or click **More** -> **Schedule** -> **Delete** to delete the object later.

*Alternatively*, click the **Delete** icon on the tool bar, or right-click the object and click **Delete** or **Schedule** -> **Delete**.

**Result:** The object is deleted.

END OF STEPS

# Deleting TCP IP objects

## Purpose

This procedure allows you to delete the following TCP IP objects.

- TCP IP Host
- TCP IP Listening Port
- TCP IP Connection Port

## Related information

For information on the TCP IP objects, refer to "DIAMETER object descriptions" (p. 7-5).

## Before you begin

There are no preconditions to perform this procedure.

## To delete a TCP IP object

Complete the following procedure to delete a TCP IP object.

**1** Invoke the **Lucent OMC-H Network Manager** window through the **Lucent OMC-H Desktop**.

**2** In the HM tree, double-click the parent Diameter HCF of the TCP IP object whose child objects need to be deleted.

**3** Right-click anywhere on the NE detail view, and select **Show on Tree** to display the selected Diameter HCF in the NE tree view.

**4** Select the TCP IP object and expand it.

**5** Select the TCP IP object to be deleted.

**6** From the menu bar, click **Action** -> **Delete** to delete the object now or click **More** -> **Schedule** -> **Delete** to delete the object later.

*Alternatively*, click the **Delete** icon on the tool bar, or right-click the object and click **Delete** or **Schedule** -> **Delete**.

**Result:** The object is deleted.

END OF STEPS

# Synchronizing Diameter network elements

## Overview

### Purpose

This section provides procedures for synchronizing a Diameter HCF.

### Contents

# Performing audit on the Diameter HCF

## Purpose

This procedure allows you to perform an audit of the Diameter and TCP/IP objects of the Diameter HCF. The audit operation compares the attribute values of the Diameter objects and TCP/IP on the Lucent OMC-H with that on the actual NE.

In case of discrepancies found in the values, as a result of the audit operation, an Audit report is generated.

## Related information

For information on creating a Diameter HCF, refer to "Creating a Diameter HCF" (p. 7-11).

## Before you begin

Ensure that the parent NE Config State on the Diameter HCF is set to "Available"

## To perform an audit on a Diameter HCF

Complete the following procedure to perform an audit on a Diameter HCF.

**1** Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window, to invoke the **Lucent OMC-H Network Manager** window.

*Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network -> Network Manager**.

**2** In the HM tree view, expand the OMC-H group.

**3** Expand the SDHLR group that contains the parent HCF group and select the parent HCF group.

**4** Double-click the Diameter HCF. The Diameter HCF details are displayed in the NE detail view.

Right-click anywhere on the NE detail view, and select **Show on tree** to view it in the NE tree view.

**5** From the menu bar, click **Action** -> **Audit** -> **Diameter** to compare the attribute values on the Lucent OMC-H and the actual NE.

*Alternatively*, right-click the Diameter HCF, and click **Audit**.

**Result:** The status window displays the progress of the audit operation. Once the audit operation is complete, a **Warning** window is displayed, suggesting that the audit is complete and an audit report is generated.

**6** To view the audit report:

1. Click the **Reports Manager** icon on the **Lucent OMC-H Desktop** window, to invoke the Report Manager.
2. From the menu bar, click **View** -> **Configuration Reports** -> **Audit Reports**.
3. From the list of audit reports displayed, scroll down to select the last audit report generated and double-click the report. The Report Information block indicates the name of the report, and the date and time it was generated.

   **Result:** The **HCF Audit Report** is displayed in a browser window, displaying the mismatched values of Lucent OMC-H and the NE.

END OF STEPS

# Diameter Synchronization with NE (Reverse Synchronization)

### Purpose

This procedure allows you to synchronize the data on Diameter HCF and TCP/IP objects with that on the actual NE. This is known as reverse synchronization.

As a result of this synchronization, current attribute values on the actual NE are reflected on the Lucent OMC-H GUI.

### Related information

For information on how to create a Diameter HCF, refer to "Creating a Diameter HCF" (p. 7-11).

### Before you begin

Ensure that the parent Diameter HCF is in the managed state.

### To synchronize data on Diameter HCF with actual NE

Complete the following procedure to synchronize data on the Diameter HCF with the actual NE.

1. Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window.

   *Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network -> Network Manager**.

2. In the HM tree view, expand the OMC-H group.

3. Expand the SDHLR group that contains the parent HCF group and select the parent HCF group.

4. Double-click the Diameter HCF, and right-click anywhere on the NE detail view, and select **Show on tree** to view it in the NE tree view.

5. From the menu bar, click **Action** -> **Synchronisation** -> **Diameter Synchronise with NE** to start the reverse synchronization process.

   *Alternatively*, right-click the Diameter HCF, and click **Synchronisation** -> **Diameter Synchronise with NE** .

**Result:** The status window displays the status of the operation, and the attribute values of the selected Diameter HCF on the actual NE get reflected on the GUI.

END OF STEPS

# Synchronizing an HCF

### Purpose

This procedure allows you to synchronize the data on Diameter HCF and TCP/IP objects with Lucent OMC-H.

### Related information

For information on how to create a Diameter HCF, refer to "Creating a Diameter HCF" (p. 7-11).

This synchronization operation is the same as the HCF synchronization operation performed for SS7 data. For more information on that operation, refer to "Synchronizing an HCF network element" (p. 6-27).

### Before you begin

Ensure that NE Config State on the parent Diameter HCF is "Available"

### To synchronize data on Diameter HCF with an HCF

Complete the following procedure to synchronize data on the Diameter HCF with HCF.

1. Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window.

   *Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network -> Network Manager**.

2. In the HM tree view, expand the OMC-H group.

3. Expand the SDHLR group that contains the parent HCF group and select the parent HCF group.

4. Double-click the Diameter HCF, and right-click anywhere on the NE detail view, and select **Show on tree** to view it in the NE tree view.

5. From the menu bar, click **Action** -> **Synchronisation** -> **HCF Synchronise** to start the synchronization process.

   *Alternatively*, right-click the Diameter HCF, and click **Synchronisation** -> **HCF Synchronise**.

**Result:** The status window displays the status of the operation. The existing Diameter data on Lucent OMC-H is cleared, and the data currently existing on the HCF is reflected on Lucent OMC-H as well.

END OF STEPS

# Diameter Synchronization with Lucent OMC-H (Forward Synchronization)

## Purpose

This procedure allows you to synchronize the data on Diameter HCF and TCP/IP objects with that on the Lucent OMC-H. This is known as forward synchronization.

As a result of this synchronization, current attribute values on the Lucent OMC-H are reflected on the NE.

## Related information

For information on how to create a Diameter HCF, refer to "Creating a Diameter HCF" (p. 7-11).

## Before you begin

Ensure that the parent Diameter HCF is in the managed state.

## To synchronize data on Diameter HCF with Lucent OMC-H

Complete the following procedure to synchronize data on the Diameter HCF with Lucent OMC-H.

**1** Click on the **Network Manager** icon on the **Lucent OMC-H Desktop** window, to invoke the **Lucent OMC-H Network Manager** window.

*Alternatively*, on the **Lucent OMC-H Desktop** window menu bar, click **Network** -> **Network Manager**.

**2** In the HM tree view, expand the OMC-H group.

**3** Expand the SDHLR group that contains the parent HCF group and select the parent HCF group.

**4** Double-click the Diameter HCF, and right-click anywhere on the NE detail view, and select **Show on tree** to view it in the NE tree view.

**5** From the menu bar, click **Action** -> **Synchronisation** -> **Diameter Synchronise with OMC** to start the forward synchronization process.

*Alternatively*, right-click the Diameter HCF, and click **Synchronisation** -> **Diameter Synchronise with OMC** .

**Result:** The status window displays the status of the operation, and the attribute values of the selected Diameter HCF on the Lucent OMC-H get reflected on the GUI.

END OF STEPS

# 8 Configuring an HLR Data Function (HDF) network element

## Overview

### Purpose

This chapter defines an HDF and provides procedures that can be used to configure it.

### Contents

# SDHLR and the HDF

## Purpose of the HDF

The purpose of the HDF is to store all the data about wireless devices in the network. Each piece of wireless equipment, be it a phone, PDA or laptop computer with a wireless modem, needs a massive amount of data for the wireless network to function properly. The HDF stores this data for each piece of equipment, which is also a unique entity in the network.

## Lucent OMC-H data responsibilities

The Lucent OMC-H is only responsible for the provisioning and tracking of the system and global data. This includes settings that apply to the operation of the SDHLR in the network. The Lucent OMC-H has no responsibility for, or knowledge of, subscriber data. Subscriber data is stored on the HDF network elements, but the Lucent OMC-H has no connection with this data.

Subscriber data is provisioned and managed separately by a subscriber data provisioning system called the enhanced Service Manager (eSM).

## HDF responsibilities

The HDF network element has the following responsibilities:

- Retrieval and storage of global and system data for call processing and provisioning
- HCF-HDF synchronization when data has been updated. HCF has access to all the data that is stored in the HDF.
- Retrieval and storage of end user equipment data

## HDF and the mated pairs

To ensure that the HDF functionality is always available in the network, HDFs are always deployed in redundant mated pairs. Each mate in the pair contains exactly the same data configuration at all times. Until both HDFs of a mated pair are configured the HDFs remain in the HDF Pool.

The SDHLR network is composed of at least one HCF and at least one pair of mated HDFs. In a typical network, there are several clusters of HCFs and associated mated pairs of HDFs. Each HDF mated pair contains two HDF network elements child objects.

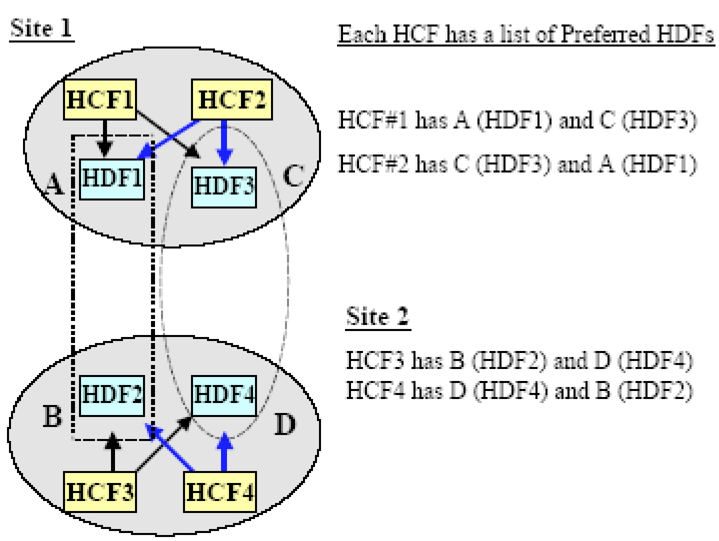
Each HDF network element contains a HDF-HCF Connectivity table. The SDHLR data is stored on the two mates. If a failure occurs on an HDF then the mate takes over as a backup, and all traffic switches to the mate HDF.

### Preferred HDF

For load balancing and optimal performance of subscribers' database transactions, it is useful to identify which HDF out of a mated pair is local (in terms of physical co-location) to a given HCF, that is, which is the *preferred HDF*.

Assuming normal operations, the HCF always accesses this *preferred HDF* for database transactions in preference to a remote HDF mate from the pair of HDFs available.

In the given figure for HCF1, HDF1 and HDF2 form one mated pair. Of these HDFs, HDF1 is proximate (local) to HCF1 and HDF2 is distant (remote) to HCF1 in terms of physical distance. Hence, HDF1 is the preferred HDF.




Mated HDF Pairs – A and B (HDF1, HDF2) and C and D (HDF3, HDF4).

Similarly other HCF-preferred HDF combinations are:

- HCF1
  A(HDF1) and C(HDF3)
- HCF2
  C(HDF3) and A(HDF1)
- HCF3
  B(HDF2) and D(HDF4)
- HCF4
  D(HDF4) and B(HDF2)

☐

# HDF Routing

## Routing types

HDF Routing can be performed in two ways, namely:

- **Round Robin Routing:** The HCF selects the HDF alternately from the mated pair of HDFs.
- **Preferred HDF Routing:** The HCF selects the HDF that is physically local to that HCF.

## Routing scenarios

There are various scenarios in which the routing type is selected. They are:

- When the NE starts up with Round Robin routing, and Lucent OMC-H has a Preferred HDF list defined:
  - The NE shall be updated to use the Lucent OMC-H list.
  - The Info Changed flag shall be reset to 0 (hcfPreferredHdfInfoChanged MIB attribute).
- When the NE starts up with Preferred HDF routing, and Lucent OMC-H does not have any list defined:
  - the Lucent OMC-H shall copy the NE list and store it.
  - The Info Changed flag shall be reset to 0 (hcfPreferredHdfInfoChanged MIB attribute).
- When the NE starts up with a Preferred HDF routing and Lucent OMC-H has an identical list defined:
  - Lucent OMC-H shall read the NE’s list and compare it with its own.
  - If the Lucent OMC-H and NE’s list are identical, then no action shall be taken.
  - the Info Changed flag shall be reset to 0 (hcfPreferredHdfInfoChanged MIB attribute).
- When the NE starts up with Preferred HDF routing, and Lucent OMC-H has a different list defined:
  - The Lucent OMC-H shall read the NE’s list and compare it with its own.
  - The NE shall be updated to use the Lucent OMC-H list, if different.
  - The Info Changed flag shall be reset to 0 (hcfPreferredHdfInfoChanged MIB attribute).
- When the NE has an HDF list:
  - Lucent OMC-H shall allow to change the routing to Round Robin.
  - The Preferred HDF list at the NE is deleted and the routing is changed to Round Robin at the NE.

□

# HDF network element description

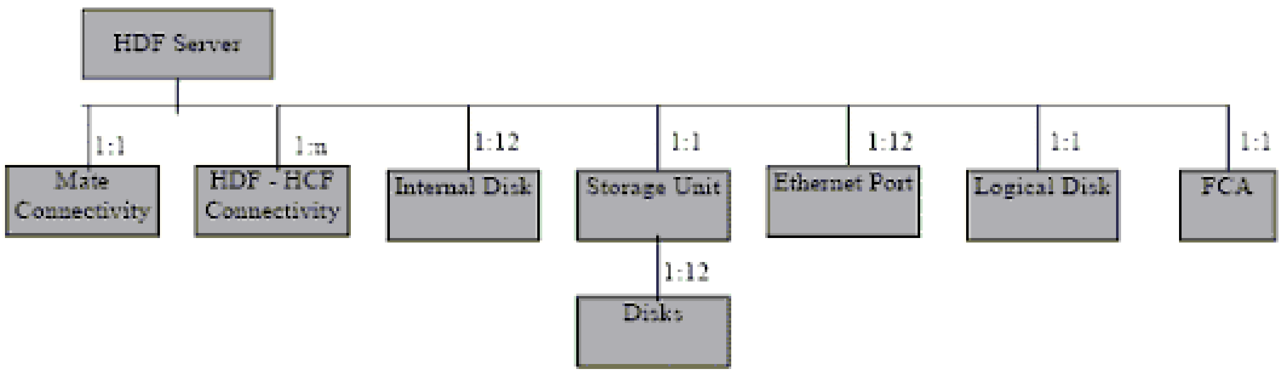
## Description

This section describes the HDF network element as it is represented on the Lucent OMC-H GUI.

An HDF network element (NE) can be created from the HDF Pool object.

### Structure of the HDF network element

The following figure shows the HDF network element representation on the Lucent OMC-H GUI.




## Rules for creating, modifying and deleting HDF network elements

| Rules for creating | Rules for modifying | Rules for deleting |
|---|---|---|
| **HDF** You can create any number of HDF pairs for an HCF. | | |

| Rules for creating | Rules for modifying | Rules for deleting |
|---|---|---|
| You must create the HDF from the HDF Pool object. | The following rules apply with modifying the HDF:<br>• You can only modify the HDF user label and Overload priority attributes<br>• You must unmanage the HDF before modifying the communication parameters. | The following rules apply with deleting the HDF:<br>• You must unmanage the HDF.<br>• You can select the HDF servers from the HDF Pool.<br>• You can delete the HDF mated pair but not individual HDFs from the pair. When you delete an HDF Mated Pair the HDFs are moved to the HDF Pool, from where the HDFs can be deleted. |
| **HDF Pool**<br>The HDF Pool is a group object created automatically when the HCF is created. | | |
| The following rules apply with creating the HDF Pool:<br>• The HDF Pool is automatically created when the SDHLR is created<br>• The maximum number of instances of a HDF Pool is one. | You can only modify the HDF Pool's Group name attribute. | You cannot delete the HDF Pool. |

## Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

□

# Creating an HDF

### Purpose

This procedures allows you to create HDF network elements.

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

### Before you begin

Ensure that:

- You have the required permissions to carry out tasks in Network Manager
- The SiteInfo object has been created.

### To create an HDF and add it to the HDF Pool

Complete the following procedure to create an HDF and add it to the HDF Pool.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the HDF Pool, where the HDF needs to be created.

2. From the menu bar, click **Action** -> **Create** -> **HDF**.

   **Result:** The **Create HDF - General** window is displayed.

3. Specify the NE name, software version, and overload priority for that HDF.

4. You can also specify an NE ID. If you choose not to enter it, a system generated ID will be assigned. Once the NE is created you cannot change the value of this ID. The system generates the HDF ID to always assign the next available unique ID on creation of each instance of this object.

5. Click **Next** and populate information under the Communication, SNMP, SNMP Security, and SSH/SFTP tabs.

At this point you may want to configure key based SSH/SFTP authentication for the new NE. To do this you require administrative permissions. For details about the procedure for configuring key-based SSH/SFTP authentication on the new HCF refer to *System Administration,* 401-380-075.

**6** Click **Next**.

**Result:** The **Communication Parameters for HDF NE** window is displayed.

**7** Provision all the required fields on the tabs.

**8** Click **Next**.

**Result:** The **Location** window is displayed.

**9** In the Geographical Location block, select the site from the **SiteName** drop-down list.

**10** Select the frame in which NE is physically located from the **Frame ID** drop-down list and the position of the NE in the frame from the **Position ID** drop-down lists.

**11** Click **Finish** to create the HDF now or click **More**->**Save Profile** to save your changes. You can load this profile on an HDF later by clicking **More**-> **Load Profile** on the HCF NE Tree.

**Result:** The HDF is added to the HDF Pool, and can be added to an HDF Mated Pair.

END OF STEPS

# Creating a HDF Mated Pair from the HDFs in the HDF Pool

### Purpose

This procedure provides instructions for creating a HDF Mated Pair from existing HDFs in the HDF pool.

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

### Before you begin

Before performing this procedure, create the new HDF objects to be joined in a Mated Pair by performing the procedure in “Creating an HDF ” (p. 8-7).

The following conditions must be met before performing the procedure:

- The SDHLR has been installed and is functional. It consists of a single Cluster with contained HCFs and an unmated HDF network element held in the HDF Pool
- The new HDFs have been physically installed and all physical connections are in place.
- The NE Config State on the HDFs are “Available” before a mated pair can be created.

### To create an HDF Mated Pair

Complete the steps below to create a Mated Pair.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select and expand the **HDF Pool**.

2. Select one of two HDFs to be included in a mated pair.

3. From the Action menu, select **Create HDF Mated Pair**.

   **Important!** After adding or deleting a mated pair once all HCFs are managed, double-click the Preferred HDF tab on the NE detail view of the HCF, to view the updated Preferred HDF data. However, it takes some time to retrieve the Preferred data and display the same on the NE detail view.

**Result:** Lucent OMC-H processes the request and searches for the mate for the HDF. Depending on the outcome of the search, one of the following occurs:

- If the mate is found in the HDF pool, the HDF Mated Pair is created.
- If no mate is found, then an error message is displayed communicating that the mate is not found for that HDF
- If the mate is found in the HDF pool, but the mated pair cannot be created due to data discrepancies, no action is taken. You should update each HDF's connectivity details so that each mate refers to the other mate.

END OF STEPS

# Modifying HDF parameters

### Purpose

This procedure allows you to modify the parameters of an HDF network element.

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

### Before you begin

| If you want to modify the HDF | Then |
|---|---|
| Name | No precondition is required to perform this task. |
| Communication parameters | Ensure that the HDF you want to modify is unmanaged. |

### To modify the HDF parameters

Complete the following procedure to modify HDF parameters.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, select the HDF you want to modify.

**2** From the menu bar, click **View** -> **Details**.

**Result:** The NE detail window for this HDF is displayed.

**3**

| If you want to modify the HDF | Then |
|---|---|
| Name | Perform the given steps:<br>1. Click **Modify** on the NE Detail View.<br>2. Change the HDF name.<br>3. Click **OK** to change the name now, or click **More -> Schedule** to change the name later. |

| **If you want to modify the HDF** | **Then** |
|---|---|
| Communication parameters | Perform the given steps:<br>1. Click **NE Management...**.<br>A window containing the HDF communication parameters is displayed.<br>2. Click **Modify**.<br>3. Update the required communication parameters.<br>While modifying HDF SNMP security parameters, if you populate the privacy passwords with less than 8 characters or more than 30 characters, then Lucent OMC-H gives an error. The length of the SNMP Privacy Password on the HDF must be the same as on the Lucent OMC-H.<br>4. Click **OK** to submit the changes now, or click **More -> Schedule** to modify the parameters later.<br>If you click the **NE Location...** tab after Step 2, the **Latitude** and **Longitude** fields cannot be modified (they are greyed out), although there is a **Modify** button available. However, you can modify these parameters from the SiteInfo object.<br>For more information on modifying the latitude and longitude from the SiteInfo object, refer to *Chapter 10, Configuring the Topological and Topographical Views*. |

END OF STEPS

# Selecting Routing type

## Purpose

This procedure allows you to select the HDF routing type (Round Robin or Preferred HDF).

## Related Information

For more information on Preferred HDF, refer to "SDHLR and the HDF" (p. 8-2) and "HDF Routing" (p. 8-4).

For more information on routing types, refer to "HDF Routing" (p. 8-4).

## Before you begin

Ensure that all the HDF Mated Pairs have already been created on Lucent OMC-H, before the HCF is created.

## To select the routing type:

**1** Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop** window.

**2** Navigate to the target HCF in the NE Tree view.

**3** Double-click the HCF or right-click the HCF and click **Detail**.

**Result:** The **HCF NE Detail view** is displayed in the right pane.

**4** Select the **Preferred HDF** tab on the NE Detail view and click **Modify** to change the routing type.

**5** From the **Preferred HDF Routing** drop-down list, select **On** to select the routing type as Preferred HDF and **Off** to select routing type as Round Robin.

**Important!** If **Preferred HDF Routing** is set to **Off**, the value of all the HDFs in the mated pair should be **Off**. However, if **Preferred HDF Routing** is set to **On**, the value of at least one HDF in each mated pair should be **On**. If not, manually set them to **On**, to avoid an error in the application.

6 If **Preferred HDF Routing** is set to **On** , select the row from one of the mated pairs of HDFs displayed in the **Preferred HDF Routing Table**.

7 Double-click the row in the table for that mated pair.

**Result:** The **Preferred HDF Entry Detail View** window is displayed.

8 Set the Preferred HDF to **On** state.

The other HDF automatically gets set to the **Off** state.

You can click on **Previous** to toggle to the previous row in the table, and **Next** to go to the next row in the table.

9 Click **OK** on the **Preferred HDF Entry Detail View** window to confirm the settings which get reflected in the table.

10 Click **Apply** or **OK** to reflect the changes on the HCF device.

END OF STEPS

# Deleting an HDF Mated Pair

## Purpose

This procedure provides instructions for deleting an HDF Mated Pair object from a HCF, and therefore from service.

## Related information

For more information, see "SDHLR and the HDF" (p. 8-2).

## Before you begin

The following condition must be met before performing the procedure:

- The HDFs to be deleted must exist as a mated pair, and be part of a fully functional HCF.

## To Delete an HDF Mated Pair from the system

Complete the steps below to delete an HDF Mated Pair from the system.

**1** From the Hierarchy Manager, highlight the HDF Mated Pair object to be deleted.

**2** Select **Delete** from the Actions list.

**Result:** The HDF mated pair is deleted and both HDF are returned to the HDF pool.

END OF STEPS

# Synchronizing HDF configuration data

## Purpose

This procedure allows you to synchronize HDF configuration data on the Lucent OMC-H with that on the HDF, to ensure that the configuration data is identical on both the databases.

## Related information

For more information, see "Creating a HDF Mated Pair from the HDFs in the HDF Pool" (p. 8-9).

## Before you begin

There are no preconditions to perform this procedure.

## To synchronize HDF configuration data

Complete the following procedure to synchronize HDF configuration data.

1. Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

   For more information on accessing the Network Manager, refer to Graphical User Interface, 401-380-082.

2. Double-click the HDF you want to synchronize in the HM tree view.

3. Right-click anywhere on the NE detail view, and select **Show on Tree**.

   **Result:** The HDF gets displayed in the NE tree view.

4. From the menu bar, click **Action** -> **Synchronisation** -> **HDF Synchronise**.

   *Alternatively*, right-click the target HDF and click **Synchronisation** -> **HDF Synchronise**.

   **Result:** The Lucent OMC-H synchronizes its HDF configuration data with the configuration data on the HDF.

END OF STEPS

# Managing SPA for an HDF

## Purpose

This procedure allows you to manage Service Package Application (SPA) for an HDF. You can manage SPA for an HDF by enabling, disabling, removing or restoring SPA for the HDF from the Lucent OMC-H.

## Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

## Before you begin

| If you want to | Then |
|---|---|
| Enable SPA | Ensure that the SPA is in the **disabledEquipped** state and the Application is in the **Not_Running** state.<br>**Note**: Lucent OMC-H Release 7.1 supports SPA versions 600 and 610 only. |
| Disable SPA | Ensure that the SPA and the Application are in the **Manually Out Of Service (MOOS)** state |
| Remove SPA | Ensure that the SPA is **In Service (IS)** state and the Application state is **Not_Running** |
| Restore SPA | Ensure that the SPA is **Manually Out Of Service (MOOS)** |

## To manage SPA for an HDF

Complete the following procedure to enable, disable, remove or restore SPA for an HDF.

---

**1** Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

For more information on accessing the Network Manager, refer to *Graphical User Interface*, 401-380-082.

---

**2** In the HM tree, double-click the HDF whose SPA you want to manage.

---

**3** Right-click anywhere on the NE detail view, and select **Show on Tree**.

**Result:** The HDF gets displayed in the NE tree view.

**4** From the menu bar, click **Action** -> **Object Specific** -> **<manage_action>**.

*Alternatively*, right-click the target HDF and click **Object Specific** -> **<manage_action>** .

The Lucent OMC-H provides the following <manage_action> options to choose from:

- Enable
- Disable
- Remove
- Restore

**Result:** The **Action Confirmation** window is displayed.

**5** Click **Yes** to perform the SPA manage operation on the HDF.

**Result:**

| If you performed the | Then |
|---|---|
| Enable SPA operation on the HDF | The state of the SPA gets enabled and the state of the SPA changes to **Manually Out of Service (MOOS)**. |
| Disable SPA operation on the HDF | The state of the SPA gets disabled and the state of the SPA changes to **Equipped**. |
| Remove SPA operation on the HDF | The state of the SPA changes to **Manually Out of Service (MOOS)**. |
| Restore SPA operation on the HDF | The SPA is put back in service. |

END OF STEPS

# 9 Configuring the SS7 Network

## Overview

### Purpose

This chapter defines an SS7 network and its objects, and provides procedures to configure these objects.

### Contents

# Description of the SS7 Network

## Overview

### Purpose

This section describes the SS7 network.

### Contents

# SDHLR and the SS7 Network

### SS7 network

The Signaling System Number 7 (SS7) network is used to support bearer signaling services and Intelligent Network services such as call waiting. The function of the bearer signaling services is to transport information in the most appropriate way for the user application and subsystem.

The SS7 network provides a Common Channel Signaling (CCS) capability where signaling information is carried on physical channels as opposed to channels that carry voice and data. The CCS method contains signaling links which transport signal messages along signaling network elements, known as signaling points. Each signaling network element is identified in the network by is unique Signaling Point Code (SPC).

### SS7 network and SDHLR relationship

The SS7 network is the interface between the SDHLR network element and the Wireless Operators’ networks. The SS7 network interacts with the HCF network elements. It has no communication with the HDF network elements.

The SDHLR interacts with SS7 when sending and receiving messages to and from other elements within the network. The message types could consist of mobile equipment locations, updates, and requests for authentication verification.

### SS7 responsibilities

The SS7 network is responsible for the routing of query messages to and from the SDHLR. SS7 processes routing, timer, and threshold configurations that are required for SS7 to function.

### SS7 Synchronization status indicator

To ensure that SS7 data is identical on the HCF and the Lucent OMC-H database, SS7 synchronization is performed. To verify the status of the synchronization operation, invoke the detail view of that HCF and check the SS7 synchronization Status attribute in the HCF tab. The SS7 synchronization Status attribute assumes the following values:

- **In Progress**, if the synchronization is still going on
- **Completed**, if the synchronization has successfully completed
- **Failed**, if the synchronization has failed.
- **Not applicable**, if the HCF does not support SS7 data
- **Out of synch**, if the HCF is in the unmanaged state, or Lucent OMC-H cannot communicate with the HCF. This happens when some SS7 objects are not created on the HCF. This status helps you to decide whether or not to perform an SS7 synchronization.

### SS7 and SDHLR connectivity

From the SS7 network perspective, one signaling network element is made up of a maximum of 16 HCF network elements. The HCF network elements form the cluster, which become the Single Point Code (SPC), or Signaling Point. All the HCF network elements in the cluster use the same SPC.

An example of this is where an SDHLR contains 10 HCFs. These could be grouped into three clusters, each with four, four, and two HCF nodes respectively. Each cluster containing the HCF nodes supports millions of subscribers and forms a single SPC.

### GTT objects

The Global Title Translation (GTT) object is a logical object and a child of the SCCP object.

The GTT object is responsible for routing messages to its final destination, where processing of messages can take place. The final destination is accessed by providing the Point Code (PC) and Subsystem Number (SSN).

If the final destination is in a different network, unknown to the SDHLR, the message is then sent to another GTT and finally on to its final destination.

GTT configuration is available for ITU and CHN network elements.

GTT is a containment object and contains the following child objects:

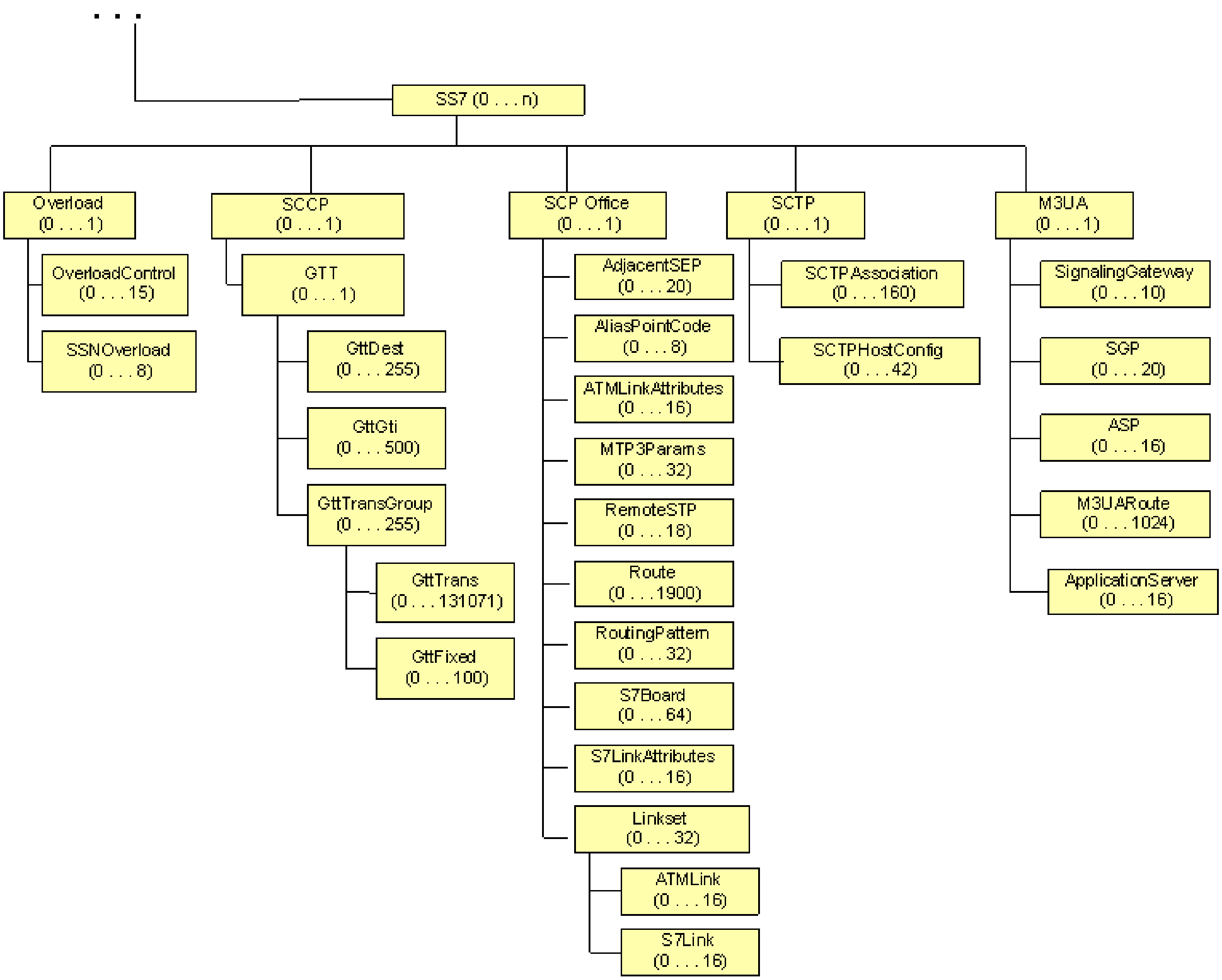
- Global Title Indicator (GTI)
- Global Title Translation Group (TG)
- Global Title Destination (GTD)

□

# SS7 Objects in SDHLR

### SS7 Object Model

The following figure depicts the SS7 structure within the SDHLR.




### SS7 object descriptions

A number of objects are mapped differently on the Lucent OMC-H and these mappings will be indicated in each section that describes the SS7 objects in detail.

The following is an example of how different the mappings on the Lucent OMC-H can be from that on the SDHLR. The SCP Office managed object on the Lucent OMC-H

SS7 object model is made up of attributes from three objects on the SDHLR network element.

The SCP Office object has a combination of attributes from the following objects at the SDHLR.

- S7_Route_timer
- S7_LAN
- S7_M3_MSGPRI
- S7_MPR_Thresholds
- S7_SAAL_MPR

The Lucent OMC-H SS7 object model is made up of a number of logical components. For example the logical object Link which is used to carry messages to and from the SDHLR network element is transported by a physical carrier.

The SS7 object is a containment object and is a child of the HCF Cluster object. SS7 configurations apply to all HCF network elements in the HCF Cluster.

The SS7 managed objects are grouped into two categories. Those objects that are part of the SS7 object model hierarchy, and the following list which make up the SS7 protocol stage:

- Service Control Point (SCP) Office
- Signaling Connection Control Part (SCCP)
- Overload (OVLD)
- MTP 3 User Adaptation (M3UA)
- Signaling Control Transport Protocol (SCTP)

The following table shows the objects in alphabetical order, their relationship to other objects, and the number of object instances.

| Object | Parent object | Child object / associated object | Number of instances per parent object |
|---|---|---|---|
| Global Title Destination (GTD) | GTT | Not available | 0 to 255 instances per GTT |
| Global Title Fixed (GTF) | Translation Group | Not available | 0 to 100 instances per Translation Group |
| Global Title Indicator (GTI) | GTT | Not available | 0 to 500 instances per GTT |
| Global Title Translation (GTT) | Translation Group | Not available | 0 to 131071 instances per Translation Group |
| GTT (containment) | SCCP | Global Title Destination<br>Global Title Indicator<br>Translation Group | 1 per SCCP |

| Object | Parent object | Child object / associated object | Number of instances per parent object |
|---|---|---|---|
| S7 Link | Linkset | S7 Link Attributes<br>MTP3 Params | 1 to 16 per Linkset |
| ATM Link | Linkset | S7 Link Attributes<br>MTP3 Params | 1 to 16 per Linkset |
| Linkset | SCP Office | S7 Link<br>ATM Link | 1 to 32 per SCP Office |
| SCP Office | SS7 | Remote STP<br>Adjacent SEP<br>Alias PC<br>S7 Board<br>Route<br>Routing Pattern<br>Linkset<br>ATM Link attributes<br>MTP3 Params<br>S7 Link attributes | 1 per SS7 |
| Remote STP | SCP Office | No child object<br>Remote SSN is associated with this object | 3 to 18 per SCP Office |
| Adjacent SEP | SCP Office | No child object | 1 to 20 per SCP Office |
| Alias PC | SCP Office | No child object | 1 to 8 per SCP Office |
| S7 Board | SCP Office | No child object | 1 to 64 per SCP Office |
| Route | SCP Office | Routing Pattern is associated with this object | 1 to 1900 per SCP Office |
| Routing Pattern | SCP Office | No child object<br>Route and Linkset are associated with this object | 1 to 32 per SCP Office |
| Linkset | SCP Office | S7 Link<br>ATM Link | 1 to 32 per SCP Office |
| ATM Link Attributes | SCP Office | ATM Link is associated with this object | 0 to15 per SCP Office |
| MTP3 Params | SCP Office | ATM Link and S7 Link are associated with this object | 1 to 32 per SCP Office |
| S7 Link Attributes | SCP Office | S7 Link is associated with this object | 0 to 15 per SCP Office |
| SCCP | SS7 | GTT | 1 per SS7 |

| Object | Parent object | Child object / associated object | Number of instances per parent object |
|---|---|---|---|
| SS7 (containment) | This is the root object | SCP Office<br>SCCP<br>Overload | 1 per SDHLR |
| Overload | SS7 | SSN Overload<br>Overload control | 1 per SS7 |
| M3UA | SS7 | M3UARoute, ASP, SGP, Signaling Gateway and Application Server | 1 per SS7 |
| Translation Group | GTT | Global Title Translation<br>Global Title Fixed | 0 to 255 instances per GTT |
| ASP | M3UA | SCTP HostConfig | 1-16 per M3UA object |
| SGP | M3UA | Routing context and SCTP host id are associated with this object | 1-20 per M3UA object |
| SignalingGateway | M3UA | SGP id is associated with this object | 1-10 per M3UA object |
| Application Server | M3UA | ASP and SGP id objects are associated with this object | 1-16 per M3UA |
| M3UARoute | M3UA | SignalingGateway id is associated with this object | 1-1024 per M3UA object |
| SCTP | SS7 | SCTPHostConfig and SCTPAssociation | 1 pr SS7 |
| SCTPHostconfig | SCTP | No child object | 1-42 per SCTP object |
| SCTPAssociation | SCTP | The SCTP host id, ASP id and SGP id are associated with this object. | 1-160 per SCTP object |
| SSN Overload | Overload | No child object | 8 per Overload object |
| Overload Control | Overload | No child object | 15 per Overload object |

The following objects have association relationships:

- Each Linkset object is associated with the each Routing Pattern object
- Each S7 Link object is associated with both MTP3 Parameter, and S7 Link Attributes objects
- Each ATM Link object is associated with both the MTP3 Parameters and ATM Link Attributes object.

□

# Provision the SS7 network

## Introduction

The framework of the SS7 network is automatically for each HCF cluster. You have to create much of the SS7 network after the base structure has been created automatically. To customize your SS7 configuration, follow the process below.

## Provision SS7 connectivity process

Follow this process to provision SS7 connectivity for each HCF cluster.

1. Create the Remote STP object.

   See the following procedure to create the Remote STP object, "Creating SCP Office objects" (p. 9-68).

2. Create the Adjacent SEP object.

   See the following procedure to create the Adjacent SEP attribute object, "Creating SCP Office objects" (p. 9-68).

3. Create the Alias PC object.

   See the following procedure to create the Alias PC object, "Creating SCP Office objects" (p. 9-68).

4. Create the S7 Board.

   See the following procedure to create the S7 Board, "Creating SCP Office objects" (p. 9-68).

5. Create the Route object.

   See the following procedure to create a Route object, "Creating SCP Office objects" (p. 9-68).

6. Create the Routing Pattern object.

   See the following procedure to create the Routing Pattern object, "Creating SCP Office objects" (p. 9-68).

**7** Create the Linkset.

See the following procedure to create the Linkset, "Creating SCP Office objects" (p. 9-68).

**8** (Optional) Create a Combined Linkset.

See the following procedure to create a combined Linkset, "Creating SCP Office objects" (p. 9-68).

**9** Create the S7 Link.

See the following procedure to create the S7 Link, "Creating SCP Office objects" (p. 9-68).

**10** (Optional) If the SCP Office S7 links will have 2 or more sets of possible S7 link attributes, create the new S7 link Attribute sets.

See the following procedure to create the S7 Link attributes, "Creating SCP Office objects" (p. 9-68).

**11** Create the ATM Links.

See the following procedure to create the ATM Links, "Creating SCP Office objects" (p. 9-68).

**12** (Optional) If the SCP Office ATM links will have 2 or more sets of possible ATM link attributes, create the new ATM link Attribute sets.

See the following procedure to create the ATM Link attributes, "Creating SCP Office objects" (p. 9-68).

**13** Create the MTP3 Parameters object.

See the following procedure to create the MTP3 Parameters object, "Creating SCP Office objects" (p. 9-68).

**14** Create the GTT Dest.

See the following procedure to create the GTT Dest, "Creating a GTT child object" (p. 9-46).

**15** Create the GTT Trans Grp. You must create at least one of the three possible GTT Transgroup configurations

See the following procedure to create the GTT Trans Grp, "Creating a GTT child object" (p. 9-46).

**16** (Required if you set "Use External STP" to false in the GTT Trans Grp.) Create the GTT Fixed and GTT Trans.

See the following procedures to create the GTT Fixed and GTT Trans, "Creating a GTT child object" (p. 9-46). .

**17** Create the GTT GTI.

See the following procedure to create the GTT GTI, "Creating a GTT child object" (p. 9-46). .

**18** Create the SSN Overload.

See the following procedure to create the SSN Overload , "Creating Overload child objects" (p. 9-28).

**19** (Optional) Modify the SSN Overload parameters.

See the following procedure to modify the SSN Overload parameters, "Modify the Overload child objects" (p. 9-30).

**20** Create the Overload Control.

See the following procedure to create the Overload Control, "Creating Overload child objects" (p. 9-28).

**21** (Optional) Modify the Overload Control parameters.

See the following procedure to modify the Overload Control parameters, "Modify the Overload child objects" (p. 9-30).

☐

# Configuring the M3UA object

## Overview

### Purpose

This section provides the following details:

- Rules for creating, modifying and deleting M3UA, its child objects and attributes
- Procedures for creating, modifying and deleting the objects

You cannot create or configure the M3UA object. You can only view its details. You can, however, configure various M3UA child objects and their attributes.

### Contents

# M3UA object descriptions

## Summary of contents

This section describes the various M3UA objects and lists the rules that must be followed to create, modify or delete these objects.

See the sections listed below for information on specific objects:

| For details on ... | See... |
|---|---|
| M3UA | Rules for creating, modifying and deleting"M3UA" (p. 9-14) |
| Application Server | Rules for creating, modifying and deleting "Application Server" (p. 9-15) |
| ASP | Rules for creating, modifying and deleting"ASP" (p. 9-16) |
| M3UA Route | Rules for creating, modifying and deleting "M3UA Route" (p. 9-16) |
| Signaling Gateway | Rules for creating, modifying and deleting"Signaling Gateway" (p. 9-17) |
| SGP | Rules for creating, modifying and deleting"SGP" (p. 9-17) |

## M3UA

M3UA is a container object and a child of the SS7 object. The M3UA protocol provides a mechanism for the transport of SS7 MTP3 signaling over IP using SCTP. There can only be one M3UA object per SS7 cluster.

| Rules | Descriptions |
|---|---|
| **Creation** | The M3UA object is auto created when you create the SS7 cluster object |
| **Modification** | You cannot modify this object. |
| **Deletion** | You cannot delete this object. |

## Application Server

The Application Server is child of the SS7. It is an M3UA entity serving a specific routing key. The Routing Key will describe SS7 parameters and their values that uniquely define the range of signaling traffic to be handled by the Application Server.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply while creating this object:<br>• Only one Application Server object can be created per SS7 Cluster Configuration<br>• ASP ID shall not be equal to any other ASP ID for the object.<br>• SGP ID shall not be equal to any other SGP ID for the object. .<br>• There must be an M3UA ASP object existing with the same ASP IDs as specified in the 'ASP ID1 to ASP ID16' attributes for the M3UA Application Server, if specified.<br>• There must be an M3UA SGP object existing with the same SGP IDs as specified in the 'SGP ID1 to SGP ID20' attributes for the M3UA Application Server, if specified. |
| **Modification** | You can modify all attributes of this object except for ASP ID, Routing key type, Pointcode type, SGP ID1 and SGP ID2.<br>The following rules apply while modifying this object:<br>• ASP ID shall not be equal to any other ASP ID for the object.<br>• SGP ID shall not be equal to any other SGP ID for the object<br>• There must be an M3UA ASP object existing with the same ASP IDs as specified in the 'ASP ID1 to ASP ID20' attributes for the M3UA Application Server, if specified.<br>• There must be an M3UA SGP object existing with the same SGP IDs as specified in the 'SGP ID1 to SGP ID20' attributes for the M3UA Application Server, if specified |
| **Deletion** | There are no special rules for deleting this object. |

### ASP

The M3UA Application Server Process is child of the SS7 M3UA object. An ASP is a process instance of an Application Server. An ASP contains an SCTP endpoint and may be configured to process signaling traffic within more than one Application Server.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• When creating, there must be an SCTPHostConfig object existing with same ‘Local SCTP host ID.<br>• When creating, there shall not be any other M3UA ASP object existing with the same ’Network ASP ID’.<br>• When creating, there cannot be an entry in SG_ASP with this ’Local SCTP host ID’ and ’local port’ |
| **Modification** | You can only modify the Network ASP ID. |
| **Deletion** | The following rules apply when creating this object:<br>• When deleting, there cannot exist a SCTP Association object with same ASP ID.<br>• When deleting, there cannot exist a M3UA ApplServer object with same ASP ID. |

### M3UA Route

The M3UARoute is a child of the SS7 M3UA object.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object.<br>• When creating, there must be Signaling Gateway object existing with its ‘SG ID’ same as Normal SG ID<br>• When creating, there must be Signaling Gateway object existing with its ‘SG ID’ same as Alternate SG ID1<br>• When creating, there must be Signaling Gateway object existing with its ‘SG ID’ same as Alternate SG ID2 |
| **Modification** | You cannot modify this object. |
| **Deletion** | There are no special rules for deleting this object. |

### Signaling Gateway

The Signaling Gateway is a container object and a child of the SS7. An SG acts a bridge between an IP and an SS7 network. An SG appears to the SS7 network as an SS7 Signaling Point.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• There cannot exist another Signaling Gateway object with same SG CLLI<br>• There must be one M3UA SGP object existing with SGP ID = Primary SGP ID<br>• There must be one M3UA SGP object existing with SGP ID = Secondary SGP ID if it is non-zero<br>• There cannot exist another Signaling Gateway object with the same Primary or Secondary SGP ID. |
| **Modification** | The following rules apply while modifying this object<br>• There must be one M3UA SGP object existing with SGP ID = Primary SGP ID<br>• There must be one M3UA SGP object existing with SGP ID = Secondary SGP ID if it is non-zero<br>• There cannot exist another Signaling Gateway object with the same Primary or Secondary SGP ID.<br>• There cannot exist another Signaling Gateway object with same SG CLLI |
| **Deletion** | Ensure that there is no M3UA Route with Normal or Alternate SG IDs equal to the SG ID of this object. |

### SGP

The SGP is a container object and a child of the SS7. An SGP is a process instance of a Signaling Gateway. It serves as an active, backup, load-sharing or broadcast process of a Signaling Gateway.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object.<br>• There must be an SCTPHostConfig object existing with the same ‘Remote SCTP host ID.<br>• When creating, there cannot be an entry in SG_SGP with this Remote sctp host ID and Remote port |

<table>
<tr><th>Rules</th><th>Descriptions</th></tr>
<tr><td>Modification</td><td>You cannot modify this object.</td></tr>
<tr><td>Deletion</td><td>The following rules apply while deleting this object<ul><li>There must not be a Signaling Gateway object existing with same SGP ID.</li><li>There must not be Application Server object existing with same SGP ID</li><li>There must not be SCTP Association object existing with same SGP ID</li></ul></td></tr>
</table>

### Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

□

# Creating an M3UA child Object

### Purpose

This procedure allows you to create an M3UA child object.

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

### Before you begin

Before you begin, no additional information is required.

### To create an M3UA child Object

Complete the steps below to create an M3UA child object.

---

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

---

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

---

**3** Expand the SS7 object and navigate to the M3UA object.

---

**4** From the menu bar, click **Action** -> **Create** -> **<M3UA child object>**.

The <M3UA child object> can assume the following values:

- ASP
- Application Server
- SGP
- M3UA Route
- Signaling Gateway

**Result:** The **Enter input parameters for Create <M3UA child object>** window is displayed.

---

**5** Enter your values here.

**6** Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The new <M3UA child object> is created.

END OF STEPS

# Modifying an M3UA child object

### Purpose

This procedure allows you to modify an M3UA child object.

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

### Before you begin

Before you begin, no additional information is required.

### To modify an M3UA child object

Complete the steps below to modify the M3UA child object attributes.

1 From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the SS7 object from the HCF Cluster.

2 Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

3 Expand the SS7 object and navigate to the M3UA object.

4 Double click on the **<M3UA child object>**

For modification, the <M3UA child object> can have the following values:

- ASP
- Application Server
- Signaling Gateway

**Result:** The **SS7-[id], M3UA-[id], <M3UA child object>=[id]** window is displayed

**Note:** The IDs in square brackets above [] indicate the auto generated object IDs assigned by the system while creating the object.

5 Click on **Modify**

6 Change the values, as required and click **OK** to save the changes.

**Result:** The modified <M3UA child object> is created

END OF STEPS

# Deleting an M3UA child Object

### Purpose

This procedure allows you to delete an M3UA child Object.

### Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

### Before you begin

No further information is required to perform this task.

### To delete an M3UA child object

Complete the following procedure to delete an M3UA child Object.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and invoke the SS7 HCFCluster **Show on tree**. From here select the <M3UA child object> you want to delete.

For deleting , the <M3UA child object> can have the following values:

- ASP
- Application Server
- Signaling Gateway
- M3UA Route
- SGP

**2** From the menu bar, click **Action** -> **Delete**.

**Result:** An **Action Confirmation** window is displayed.

**3** Click **Yes** to delete the <M3UA child object>.

**Result:** The <M3UA child object> is removed from the database.

**Note:**If the <M3UA child object> you are attempting to delete is the last one in the <M3UA child object> Table under the M3UA object then this delete action will delete the <M3UA child object> table itself.

END OF STEPS

# Configuring the Overload object

## Overview

### Purpose

This section describes the Overload object and SSN Overload object and provides procedures for configuring them.

### Contents

# Overload object descriptions

## Summary of contents

This section describes the various Overload objects and lists the rules that must be followed to create, modify or delete these objects.

See the sections listed below for information on specific objects:

| For details on ... | See... |
|---|---|
| Overload | Rules for creating, modifying and deleting"Overload" (p. 9-25) |
| Overload Control | Rules for creating, modifying and deleting "Overload Control" (p. 9-26) |
| SSN Overload | Rules for creating, modifying and deleting"SSN Overload" (p. 9-26) |

## Overload

The Overload is a container object and a child of the SS7. The Overload object allows finer control of the overload thresholds for all SS7 messages, than that provided by the system defaults.

Throttle percentages are relative to the default system processing cycles for inbound and outbound message queues. An increase or decrease from the thresholds causes a corresponding increase or decrease in the processing cycle for the appropriate queues.

There can only be one Overload object per SS7 cluster

Overload has the following child objects:

- Overload Control
- SSN Overload

| Rules | Descriptions |
|---|---|
| **Creation** | Overload is automatically created when the SS7 object is created by Lucent OMC-H<br>There are no special rules for creating this object. |
| **Modification** | You cannot modify this object. |
| **Deletion** | You cannot delete this object. |

## Overload Control

The Overload Control object allows finer control of the overload thresholds for all SS7 messages, than that provided by the system defaults. The Overload Control defines the Transaction Capabilities Application Part (TCAP) automatic call gapping parameters for the HCF Cluster.

There can be a maximum of 15 Overload Control per SS7.

**Mapping to the SDHLR** The Overload Control object contains a number of attributes that map to attributes on an object on the SDHLR network element. The object is S7_OVLD_CTRL

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object.<br>• The first instance of the Overload Control object is created from the Overload detail view<br>• Further instances are created from the Overload Control table detail view |
| **Modification** | For overload thresholds 1 to 15 the Gap Level, Duration Level, Gap Value and Duration Value must not increase for each threshold.<br>For example, for ANSI_GAP_LEVEL and ANSI_DUR_LEVEL: overload index 1 <= overload index 2 <= overload index 3 <=..... <= overload index 15 |
| **Deletion** | You cannot delete this object. |

## SSN Overload

The SSN Overload Control object allows finer control of the overload thresholds for all SS7 messages, than that provided by the system defaults. SSN Overload Control defines the Transaction Capabilities Application Part (TCAP) automatic call gapping parameters for the overload thresholds. A maximum of eight thresholds can be maintained for each SSN.

**Mapping to the SDHLR** The SSN Overload Control object contains a number of attributes that map to attributes on an object on the SDHLR network element. The object is S7_AUTO_SOCC.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The first instance of the SSN Overload Control object can be created from the Overload detail view<br>• Further instances are created from the SSN Overload Control table detail view |
| **Modification** | For overload thresholds 1 to 8 the Gap Level, Duration Level, Gap Value and Duration Value must increase for each threshold. For example, for ANSI_GAP_LEVEL and ANSI_DUR_LEVEL: overload index 1 <= overload index 2 <= overload index 3 <=overload index 4 <= overload index 5 <= overload index 6<=overload index 7<= overload index 8. |
| **Deletion** | You cannot delete this object. |

## Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

□

# Creating Overload child objects

## Purpose

This procedure allows you to create an Overload Control or SSN Overload object.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Before you begin

Before you begin, no additional information is required.

## To create an Overload Child Object

Complete the following procedure to create an Overload Child Object.

---

1 From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

---

2 Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

---

3 Expand the **SS7** object and navigate to the **Overload** object.

---

4 From the menu bar, click **Action** -> **Create** -> **<Overload child object>**.

The <Overload child object> can be Overload Control or SSN Overload.

**Result:** The **Enter input parameters for <Overload child object>** window is displayed.

---

5 Change the default values, if required.

---

6 Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The new <Overload child object> is created.

END OF STEPS

# Modify the Overload child objects

## Purpose

This procedure provides instructions for modifying the Overload child objects.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Before you begin

Before you begin, no additional information is needed.

## To modify the Overload child objects

Complete the steps below to modify the Overload child objects.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the SS7 object from the HCF Cluster.

2. Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

3. Expand the **SS7** object and navigate to the **Overload** object.

4. Double-click the **<Overload Child Object>** that you want to modify.

   The <Overload Child Object> can be Overload Control or SSN Overload

5. Click **Modify** .

   **Result:** The modifiable fields become enabled.

6. Make any required changes to the <Overload Child Object> parameters.

7. Click **OK** or **Apply** to submit the operation now, or select **More** -> **Schedule** to schedule the operation to be submitted later.

**Result:** The <Overload Child Object> parameters are modified.

END OF STEPS

# Configuring the SCCP object

## Overview

### Purpose

This section describes the SCCP object and provides procedures for configuring it.

### Contents

# SCCP object descriptions

## Summary of contents

This section describes the various M3UA objects and lists the rules that must be followed to create, modify or delete these objects.

See the sections listed below for information on specific objects:

| For details on ... | See... |
|---|---|
| SCCP | Rules for creating, modifying and deleting“SCCP” (p. 9-33) |
| GTT | Rules for creating, modifying and deleting “GTT” (p. 9-34) |
| GttGti | Rules for creating, modifying and deleting“GttGti” (p. 9-34) |
| GttDest | Rules for creating, modifying and deleting “GttDest” (p. 9-37) |
| GttTrans | Rules for creating, modifying and deleting“GttTrans” (p. 9-41) |
| GttTransGroup | Rules for creating, modifying and deleting“GttTransGroup” (p. 9-39) |
| GttFixed | Rules for creating, modifying and deleting“GttFixed” (p. 9-43) |

## SCCP

There can only be one SCCP object per SS7 Cluster

The Signal Control Connection Protocol (SCCP) is a logical object and a child of the SS7 object.

Mapping to the SDHLR network element

The SCCP object contains a number of attributes that map to attributes on two objects on the SDHLR network element.

The two objects are:

- S7_SCCP_PARAM
- S7_SC_MSGPRI

| Rules | Descriptions |
|---|---|
| **Creation** | The SCCP object is automatically created when the SS7 object is created |

| Rules | Descriptions |
|---|---|
| **Modification** | There are no special rules for modifying this object |
| **Deletion** | You cannot delete this object |

## GTT

The Global Title Translation (GTT) is a logical object and a child of the Signal Control Connection Protocol (SCCP) object.

The Global Title Translation object is responsible for routing messages to its final destination, where messages are process. The final destination is accessed by providing the Destination Point Code (DPC) and Subsystem Number (SSN).

If the final destination is in a different network, unknown to the SDHLR, the message is then sent to another GTT and finally on to its final destination.

GTT is a containment object, and contains the following child objects:

- GTT Global Title Indicator (GttGti)
- GTT Global Title Destination (GttDest)
- GTT Translation Group (GttTransGroup)
  GttTransGroup has the following child objects:
  - GttTrans
  - GttFixed

As this is a containment object, the only attribute available is the ID, which is automatically created by Lucent OMC-H

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The GTT object is created automatically on creation of the SCCP object<br>• There can only be one instance of the GTT containment object per SS7 object. |
| **Modification** | You cannot modify this object. |
| **Deletion** | You cannot delete this object. |

## GttGti

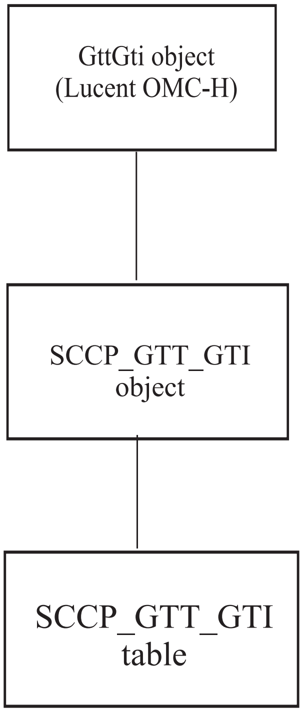
Global Title Translation (GTT) Global Title Indicator (Gti) is a logical object, and a child of the GTT containment object.

The GttGti container object and table created when the first GttGti object is created is the entry point into the global title translation. The table directs the contained global title to a particular translation group, and determines the translation applied and destination of that message.

Mapping to the SDHLR network element

The GttGti object contains a number of attributes that map to attributes on the SCCP_GTT_GTI object on the SDHLR network element.

The mapping structure is represented in the following figure:




| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The GttGti container and table are created when the first GttGti object is created<br>• The maximum number of entries in the GttGti table is 500 (1 through 500)<br>• If GTI equals 1, then only NAI (Nature of Address) is present<br>• If GTI equals 2, then only TT (Translation Type) is present<br>• If GTI equals 3, then only TT and NP (Numbering Plan) are present<br>• If GTI equals 4, then TT, NAI, and NP are all present. |
| **Modification** | Only TG_ID can be modified.<br>There are no special rules for modifying this object |
| **Deletion** | You can delete entries from the GttGti table. There are no special rules for deleting this object |

### GttDest

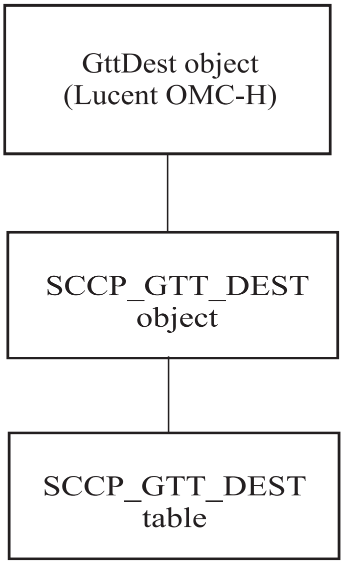
The Global Title Destination (GttDest) is a logical object and a child of the Global Title Translation (GTT) object.

The GttDest contains a table which provides final routing information which is applied to incoming SCCP messages. It assigns a Destination Point Code (DPC) and Subsystem Number (SSN) to each Global Title. The destination could be an external STP, but this may not indicate the final destination of the message.

Mapping to the SDHLR network element

The GttDest object contains a number of attributes that map to attributes on the SCCP_GTT_DEST object on the SDHLR network element.

The following figure shows the mapping of the GttDest object to a corresponding object on the SDHLR:




| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The GttDest container and table are automatically created when the first GttDest object is created<br>• The maximum number of entries in the GttDest table is 255 (0 through 255)<br>• If PTCODE_FORMAT is ITU then NID, CLU and MEM = 0<br>• If PTCODE_FORMAT is CHN then PC = 0<br>• If you use the GttDest’s Backup Index attribute, it must already exist as the Destination Index, in a separate entry in the GttDest container table. |
| **Modification** | There are no special rules for modifying this object |
| **Deletion** | The following rules apply when deleting this object:<br>• You can delete entries from the table but cannot delete the table<br>• Ensure all referencing GttTransGroup or GttTrans objects are deleted<br>• Ensure no GttDest entry refers to another GttDest entry as a backup SSN. |

### GttTransGroup

The GttTransGroup is a logical object of the GTT containment. It contains two child objects, GttTrans and GttFixed.

The Global Title Translation Group table defines the Destination Indexes to be applied to each Translation Group, and by doing so, the routing to be applied to that Translation Group.

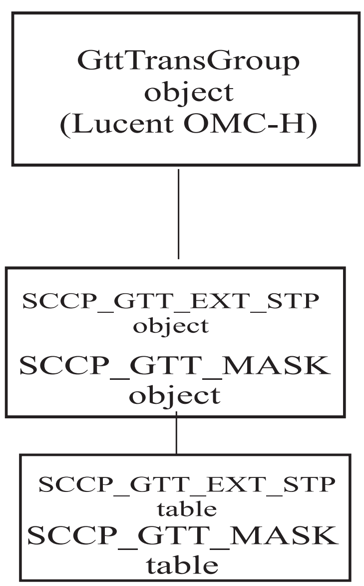
It can do this in two basic ways:

- For a given Translation Group (as defined by the GTT Global Title Indicator table), it provides a Destination Index directly. The GTT DEST table then provides the routing details regardless of the Global Title content.
- It can direct the Global Title content to either the GTT FIXED or GTT TRANS tables. These tables provide rules to analyze the Global Title and provide the Destination Index depending upon the content of the Global Title.

Mapping to the SDHLR network element

The GttTransGroup object contains a number of attributes that map to attributes on the SCCP_GTT_MASK and SCCP_EXT_STP objects on the SDHLR network element.

The following figure shows the mapping of the Translation Group object to the corresponding object on the SDHLR




Each child object contains tables and it is important that the tables are updated when additions and deletions take place. If an entry is removed and the table is not updated, the translation route may not be reached and a message may never get to its destination. Lucent OMC-H is responsible for carrying out checks on these tables.

| Rules | Description |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The TGID used is created in GttGti<br>• Add both cases for fixed = 0<br>• The GttTransGroup container and table are created when the first GttTransGroup object is created<br>• The total number of digits supplied by the Fixed digits, Primary digits, and Secondary digits attributes cannot exceed 10<br>• The maximum number of entries in the GttTransGroup table is 255 (0 to 255).<br>• The Destination Index must exist in the SCCP_GTT_ DEST table<br>• The user must enter a valid Translation Group ID (0 through 255) and link that to any entry in the GttDest, GttTrans, or GttFixed tables. |
| **Modification** | The following rules apply when modifying this object:<br>• You can only modify the Destination index attribute. The Destination index attribute is only available for modification when the User external STP attribute is ’True’.<br>• To update FIXED, check if there is an entry in GTT_FIXED for this TG_ID. If yes, then the fixed digit mask (GTT_FIXED) must be deleted first.<br>• To update FIXED, PRIMARY or SECONDARY ensure that there is no an entry in GTT_TRANS for this TG_ID. If there is, then you must delete the mask is being used by the GTT Trans first. |
| **Deletion** | The following rules apply when deleting this object:<br>• Ensure there are no child objects before you delete entries from the table<br>• If FIXED = 0 there is no reference to this TG_ID in the GTT_Trans table<br>• You can delete entries from the GttTransGroup table. |

### GttTrans

The Global Title Translation Group (GttTrans) is a logical object and a child of the GttTransGroup object.

The GttTrans object determines the destination for a defined number pattern.

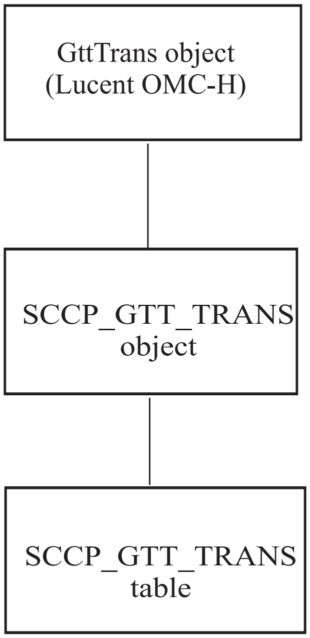
The maximum number of entries in the GttTrans table is 131071 (1 through 131071)

Mapping to the SDHLR network element

The GttTrans object contains a number of attributes that map to attributes on the SCCP_GTT_TRANS object, on the SDHLR network element.

The GttTrans container and table are automatically created when the first GttTrans object is created

The following figure shows the mapping of the GttTrans object to a corresponding object on the SDHLR.




| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• When the Fixed digits attribute in the GttTransGroup object equals zero, the Fixed digits attribute in GttTrans is disabled<br>• The Destination index must exist in the SCCP_GTT_DEST table<br>• For a given Translation group ID, the number of digits in the Fixed digit field must match the value in the Fixed digits field in the SCCP_GTT_MASK table<br>• For a given Fixed digit entry a matching entry must exist in the GttFixed table, and the number of entries must not exceed the value of Max translations specified in that table<br>• For a given Translation group ID, the number of digits in the Primary and secondary digit field must match the sum of the values in the Primary digits, and Secondary digits fields held in the SCCP_GTT_MASK table<br>• If there are no FIXED_DIG defined here then the number of entries, in GTT_TRANS, does not exceed the value of MAX_XLAT specified in the GTT_TRANS_GRP. |

| Rules | Descriptions |
|---|---|
| **Modification** | You can only modify the Destination Index attribute<br>There are no special rules for modifying this attribute |
| **Deletion** | The following rules apply when deleting this object:<br>• You can delete entries from the GttTrans table<br>• You can remove the Global Title Destination entry from the table. Lucent OMC-H ensures that a corresponding entry in the GttTransGroup table does not exist. |

## GttFixed

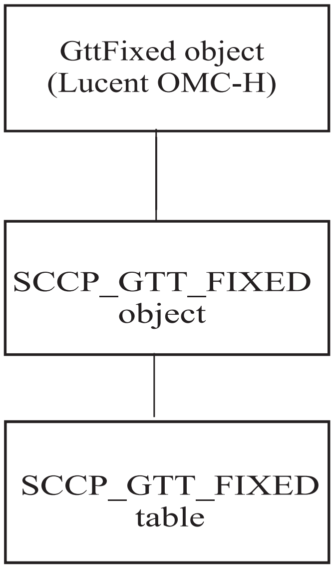
The Global Title Fixed (GttFixed) is a logical object and a child of the GttTransGroup object.

The GttFixed is a container object that defines the maximum number of translations allowed for a particular combination of Translation Group ID and a fixed digit string.

Mapping to the SDHLR network element

The GttFixed object contains a number of attributes that map to attributes on the SCCP_GTT_FIXED object on the SDHLR network element.

The following figure shows the mapping of the GttFixed object to a corresponding object on the SDHLR.




| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The GttFixed container and table are automatically created when the first GttFixed object is created<br>• The maximum number of entries in the GttFixed table is 100 (1 through 100)<br>• There are not more then MAX_XLAT entries in GTT_TRANS with this TG_ID and FIXED_DIG<br>• The number of digits specified in the Fixed digit attribute must match the number specified in the Fixed digits attribute in the SCCP_GTT_MASK table. |
| **Modification** | Only the MAX_XLAT field can be modified and the checks defined on create must be adhered to. |
| **Deletion** | The following rules apply when deleting this object:<br>• You can delete entries from the GttFixed table<br>• Firstly, all GTT Trans objects that reference the GttFixed object are deleted. |

## Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

## Related information

There is no related information for this object.

# Creating a GTT child object

## Purpose

This procedure allows you to create a GTT child object.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Before you begin

Before you begin, no additional information is required.

## To create a GTT child object

Complete the following procedure to create a GTT child object.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

**3** Expand the SS7 object, navigate to the SCCP object and select the GTT object.

**4**

| If you want to create a | Then |
|---|---|
| GTT child object | Perform the following steps<br>1. From the menu bar, click **Action** -> **Create** -> **<Gtt child object>**.<br>The **Enter input parameters for <Gtt child object>** window is displayed.<br>The Gtt Child objects can be :<br>• GttGti<br>• GttDest<br>• GttTransGrp<br>2. Go to Step 5 |

| If you want to create a | Then |
|---|---|
| GttTransGrp Child Object | Perform the following steps<br>1. From the Gtt object navigate to the GttTransGrp object.<br>2. From the menu bar, click **Action** -> **Create** -> **<GttTransGrp child object>**.<br>The **Enter input parameters for <GttTransGrp child object>** window is displayed.<br>The GttTransGrp child objects can be :<br>• GttFixed<br>• GttTrans<br>3. Go to Step 5 |

**5** Change the default values, if required.

**6** Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The new GTT object is created.

END OF STEPS

# Modifying the GTT objects

## Purpose

This procedure allows you to modify the Global Title Translation (GTT) parameters.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Before you begin

See *Rules for creating, modifying and deleting SCCP objects* for checks and guidelines.

## To modify the GTT objects

Complete the following procedure to modify the GTT objects.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the SS7 object from the HCF Cluster.

2. Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

3. Expand the **SS7** object.

4. Expand the **SCCP** object.

5. Expand the **GTT** object.

6

| If you want to modify a | Then |
|---|---|
| Gtt Child object | Perform the following steps:<br>• Double-click the **<GTT Child Object>** that you want to modify<br>**Result**: The <GTT Child Object> detail view appears.<br>The GTT Child Object can be:<br>– GttTransGrp<br>– GttGti<br>– GttDest<br>• Go to Step 7 |
| GttTransGrp Child object | Perform the following steps:<br>• Expand the **GTTTransGroup** object.<br>• Double-click the **<GTTTransGroup Child Object>** that you want to modify<br>**Result**: The <GTTTransGroup Child Object> detail view appears.<br>The GTTTransGroup Child Object can be:<br>– GttTrans<br>– GttFixed<br>• Go to Step 7 |

7 Click **Modify** .

**Result:** The modifiable fields become enabled.

8 Make any required changes to the GTT child object parameters.

9 Click **OK** or **Apply** to submit the operation now, or select **More** -> **Schedule** to schedule the operation to be submitted later.

**Result:** The GTT objects are modified.

END OF STEPS

# Deleting a GTT child object

## Purpose

This procedure provides instructions for deleting entries from the GTT child object tables.

## Related information

For more information, see "SCCP object descriptions" (p. 9-33).

**Important!** A GTTTrans entry with a fixed digit value cannot be deleted

## Before you begin

Before you begin, no additional information is needed.

## To delete a GTT child object

Complete the following procedure to delete a GTT child object from the database.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View double click on the HCF Cluster. From the HCF Cluster **Detail View** window that opens, right click and invoke the **Show-on Tree**. From the NE tree that opens, .

**2**

| If you want to delete a | Then |
|---|---|
| Gtt Child Object | Perform the following steps:<br>• Select the **<GTT child object>** you want to delete<br>The <GTT child object> can be:<br>– GttDest<br>– GttGti<br>– GttTransGrp<br>• Go to Step 3 |

| **If you want to delete a** | **Then** |
|---|---|
| GttTransGrp Child Object | Perform the following steps:<br>• Expand the GTT object.<br>• Navigate to the **<GttTransGrp Child Object>** that you want to delete<br>The <GttTransGrp Child Object> can be:<br>– GttTrans<br>– GttFixed<br>• Go to Step 3 |

**3** From the menu bar, click **Action** -> **Delete**.

**Result:** An **Action Confirmation** window is displayed.

**4** Click **OK** to delete the GTT child object.

**Result:** The GTT child object is removed from the database.

END OF STEPS

# Configuring the SCP Office object

## Overview

### Purpose

This section describes the SCP Office object and provides procedures for configuring it.

### Contents

# SCP Office object description

## Summary of contents

This section describes the various SCP Office objects and lists the rules that must be followed to create, modify or delete these objects.

See the sections listed below for information on specific objects:

| For details on ... | See... |
|---|---|
| **SCP Office** | Rules for creating, modifying and deleting“SCP Office” (p. 9-53) |
| **Remote STP** | Rules for creating, modifying and deleting “Remote STP” (p. 9-58) |
| **Adjacent SEP** | Rules for creating, modifying and deleting“Adjacent SEP” (p. 9-55) |
| **Alias PC** | Rules for creating, modifying and deleting “Alias Pointcode” (p. 9-55) |
| **S7 Board** | Rules for creating, modifying and deleting“S7 Board” (p. 9-62) |
| **Linkset** | Rules for creating, modifying and deleting“Linkset” (p. 9-63) |
| **Route** | Rules for creating, modifying and deleting“Route” (p. 9-58) |
| **Routing Pattern** | Rules for creating, modifying and deleting“Routing Pattern” (p. 9-61) |
| **ATM Link Attributes** | Rules for creating, modifying and deleting“ATM Link Attributes” (p. 9-56) |
| **MTP3Params** | Rules for creating, modifying and deleting“MTP3 Parameters” (p. 9-57) |
| **S7 Link Attributes** | Rules for creating, modifying and deleting“S7 Link Attributes” (p. 9-62) |

## SCP Office

The SCP Office is a logical object and a child of the SS7 object. The SCP Office and child objects define the signaling network and link objects for the HCF cluster. It details parameters that are common for all Links and Linksets.

The maximum number of SCP Office objects that can exist on a single SDHLR is one

Mapping to the SDHLR network element

The SCP Office object contains a number of attributes that map to attributes on five objects on the SDHLR network element.

These objects are:

- Route Timer (S7_Route_TMR)
- GTT Support SCCP Subsystem Management (GTT_SCMG)
- Lan (S7_LAN)
- MTP3 (S7_M3_MSGPRI)
- S7MPRThresholds (S7_MPR_THREASHOLDS)
- ATMMPRThresholds (S7_SAAL_MPR)

The SCP Office object contains the following child objects:

- Remote STP
- Adjacent SEP
- Alias PC
- S7 Board
- Linkset
- Route
- Routing Pattern
- ATM Link Attributes
- MTP3Params
- S7 Link Attributes

The Lucent OMC-H supports creation of one SCP Office object per HCF cluster. The SCP Office is created as part of the NE synchronization operation performed before SS7 data provisioning.

| Rules | Descriptions |
|---|---|
| **Creation** | The Lucent OMC-H supports creation of one SCP Office object per HCF cluster. The SCP Office is created as part of the NE synchronization operation performed before SS7 data provisioning. |
| **Modification** | There are no special rules for modifying this object |
| **Deletion** | The following rules apply when deleting this object:<br>• The SCP Office object cannot be deleted directly<br>• The SCP Office object is deleted when the last HCF in the cluster is deleted. |

### Adjacent SEP

The Adjacent Signalling End Point (SEP) is a managed object and a child of the SCP Office object.

The Adjacent SEP details signalling end points that are adjacent to this office. This objects contains the parameters which map to the S7_ADJACENT_SEP object on the SDHLR.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The Adjacent SEP object is created on selection of the SCP Office object<br>• The Adjacent SEP object can also be created from the Adjacent SEP Table view<br>• There is a maximum of 20 per SS7 network<br>• The pointcode cannot be defined as a Remote STP or as a home STP or local / SCP pointcode in the SS7 object<br>• The pointcode can only be defined as an adjacent SEP once. |
| **Modification** | You cannot modify this object. |
| **Deletion** | You cannot delete a Adjacent SEP object if it is referenced by a linkset object. |

### Alias Pointcode

The Alias Pointcode is a managed object and a child of the SCP Office object.

The Alias Pointcode details signalling end points that are adjacent to this office. This objects contains the parameters which map to the S7_ALIAS_PC object on the Super D-HLR.

| Rules | Description |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The Alias Pointcode object is created on selection of the SCP Office object<br>• The Alias Pointcode object can also be created from the Alias Pointcode table view<br>• There is a maximum of 8 per SS7 network<br>• The pointcode format of the Alias Pointcodes must be of the same type as the pointcode in the SS7 parent object<br>• The Alias pointcode must not be the same as any other Alias Pointcode or the Local Pointcode or Home STPs in the SS7 object.<br>• For ANSI, the Alias Pointcode must not exist as a ROUTE, where the protocol_type is SMEMBER. |
| **Modification** | You cannot modify this object. |
| **Deletion** | There are no special rules for deleting this object |

### ATM Link Attributes

The ATM Link Attributes is a logical object and a child of the SCP Office object. It is an Lucent OMC-H only object, and will reference the ATM Link Attributes object.

Congestion Threshold checks

The following rules apply to the dependencies between congestion thresholds:

- XMTDSCRD_1 -> XMTCONG_1 -> XMTABATE_1
- XMTDSCRD_2 -> XMTCONG_2 -> XMTABATE_2
- XMTDSCRD_3 -> XMTCONG_3 -> XMTABATE_3
- XMTABATE_2 -> XMTCONG_1
- XMTABATE_3 -> XMTCONG_2

- XMTCONG_2 -> XMTDSCRD_1
- XMTCONG_3 -> XMTDSCRD_2

| Rules | Description |
|---|---|
| **Creation** | The following rules apply with creating this object:<br>• The ATM Link Attributes container and table are automatically created, containing an ATM Link Attributes entry with ID=0<br>• The parent SCP Office object must exist<br>• The attribute ID (ATM_LINK_PARAM_ID) is zero for the first automatically created ATM Link Attributes object. All other Link Attributes objects can have the ID 1 through 15. The ID must also be unique in the SCP Office object<br>• The maximum number of ATM Link Attributes objects per SCP Office object is 16. |
| **Modification** | There are no special rules for modifying this object. |
| **Deletion** | The following rules apply with deleting this object:<br>• The Lucent OMC-H will support the modification of the ATM Link Attributes object except ATMlinkAttribute ID=0.<br>• Only the ATM_LINK_PARAM_ID cannot be changed. |

## MTP3 Parameters

The MTP3 Parameters is a logical object and a child of the SCP Office object.

When a Link is created referring to a particular MTP3Params object, the values from that MTP3Params object are used to populate the Link object.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The MTP3 Parameter object is automatically created when the SCP Office parent object is created<br>• The maximum number of MTP3Params objects per SCPOffice object is 32 (0 to 31)<br>• This automatically created MTP3 Parameters object has an MTP3_Parameter_Id of 0 and is populated with default values. It cannot be modified.<br>• Further MTP3 Parameters objects can be created from the SCP Office detail view |

| Rules | Descriptions |
|---|---|
| **Modification** | You can modify this object, except with MTP3ParamID=0.<br>You cannot modify the default instance of the object. |
| **Deletion** | The following rules apply when deleting this object:<br>• You cannot delete the default instance of this object (MTP3_Parameter_Id=0)<br>• You can delete further instances of this object<br>• It is not possible to delete MTP3 Parameters object that are referenced by S7_Link or ATM_LINK objects |

## Remote STP

The Remote Signalling Transfer Point (STP) is a managed object and a child of the SCP Office object.

The Remote STP details signalling transfer points that are connected to this office. This object contains the parameters which map to the S7_REMOTE_STP object on the SDHLR.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The Remote STP object is created on selection of the SCP Office object<br>• The Remote STP object can also be created from the Remote STP table view<br>• There is a maximum of 18 per SS7 network. |
| **Modification** | You cannot modify this object. |
| **Deletion** | You cannot delete a Remote STP object if it is referenced by a linkset.object. |

## Route

The Route is a logical object and a child of the SCP Office object. The maximum number of Route objects per SCP Office is 1900.

The Route object identifies the destination point for a transaction. Each route is associated with a network type (ANSI, or ITU) and contains the Destination Point Code (DPC) which identifies the network element's destination (for example the location of the HCF Server).

If the destination network element is an adjacent node, the Linkset's attribute, Far End Point Code and the Route's attribute, Destination Point Code (DPC) are the same.

Mapping to the SDHLR network element

The Route object contains a number of attributes that map to attributes on an the S7 Pointcode (S7_POINTCODE) object on the SDHLR network element.

| Rules | Description |
|---|---|
| General rules for **Creation** and **Modification** of the Route object | The following general rules apply when creating and modifying this object:<br>• The DPC cannot be the same as the Local Point Code (LPC) entered for the SS7 object<br>• The same linkset cannot be reused within a single Route object<br>• The Routing Pattern Index must exist in the database before the Route instance is created<br>• The Route pointcode must not be the same pointcode for this cluster (SS7 pointcode)<br>• You can modify the Routing Pattern index<br>• For China and ITU there must not be more than 1900 Routes<br>• For ITU if a Route has a POINTCODE_TYPE of SEP or STEP then the Route must not be defined as an Alias Pointcode |

| Rules | Description |
|---|---|
| Specific **Creation** and **Modification** of the Route object in an ANSI network | The following special rules apply when creating and modifying the Route object in the ANSI network:<br>• For each Route NID only one route can exist where the POINTCODE_TYPE = NTWK_O.<br>• If the Route NID exists with a POINTCODE_TYPE = NTWK_O then there cannot be any other routes defined with the same NID.<br>• If a Route exists with a POINTCODE_TYPE = NTWK_O then CLU must = 0 and MEM must = 0.<br>• There cannot be more than 128 Routes with the POINTCODE_TYPE = CLU_O.<br>• If the Route NID and Route CLU exists with a POINTCODE_TYPE = CLU_O then there cannot be any other routes with the same NID and CLU.<br>• If the Route exists with a POINTCODE_TYPE = CLU_O then MEM must = 0.<br>• There cannot be more than 384 Routes with the POINTCODE_TYPE = POP_CLU.<br>• If a Route exists with a POINTCODE_TYPE = POP_CLU then MEM must = 0.<br>• There cannot be more than 1900 Routes with the POINTCODE_TYPE = SMEMBER.<br>• If the POINTCODE_TYPE = SMEMBER then check this Route does not exist as an Alias Pointcode.<br>• If the POINTCODE_TYPE = SMEMBER then there must already exist a route with the same NID and CLU whose POINTCODE_TYPE is set to POP_CLU.<br>• There cannot be more than 128 point codes a POINTCODE_TYPE = UPOP_CLU.<br>• If this route.NID and route.CLU exists with a POINTCODE_TYPE = UPOP_CLU then there cannot be any other routes with the same NID and CLU.<br>• It is not possible to create two Routes with the same NID and CLU where one route’s POINTCODE_TYPE = UPOP_CLU and the other route’s POINTCODE_TYPE = POP_CLU. |

| Rules | Description |
| --- | --- |
| **Deletion** | The following rules apply when deleting this object:<br>• It is not possible to delete a Route with a POINTCODE_ TYPE = POP_CLU if there still exists some routes with the same NID and CLU and POINTCODE_TYPE set to SMEMBER. This is specific to the ANSI network.<br>• For an ITU network, if the route is referring to a GTTDest object, then that route cannot be deleted. |

#### Routing Pattern

The Routing Pattern is a logical object and a child of the SCP Office object.

The Routing Pattern object defines a Linkset. It may contain information on a number of Linkset objects used for routing to a destination. The Routing Pattern object contains references for up to 3 Linkset objects in order of preference. The selected Linkset object provides the first step to the final destination.

Mapping to the SDHLR network element

The Routing Pattern object contains a number of attributes that map to attributes on the S7 RTG Pattern (S7_RPI) object on the SDHLR network element.

| Rules | Description |
| --- | --- |
| **Creation** | The following rules apply when creating this object:<br>• The Chosen Linkset must exist, as a Linkset or as a combined Linkset.<br>• If the Alternate Linksets are not 0 then the Linkset must exist in the Linkset object. |
| **Modification** | You can modify the Chosen Linkset, First Alternate Linkset, and Second Alternate Linkset. The Index cannot be modified. |
| **Deletion** | To delete this object ensure no Route objects reference the Routing Pattern. |

## S7 Board

The S7 Board is a managed object and a child of the SCP Office object. There is a maximum of 64 boards per SS7 network.

| Rules | Descriptions |
|---|---|
| **Creation** | There are no special rules for modifying this object. |
| **Modification** | The S7 Board cannot be modified. |
| **Deletion** | You cannot delete a S7 board cannot be deleted if it is used by the S7_Link, or ATM_Link. |

## S7 Link Attributes

The S7 Link Attributes is a logical object and a child of the SCP Office object. The S7 Link Attributes object requires a set of timers and values that are associated with the Message Transfer Protocol (MTP) layer. It is anticipated that the set of timers and values do not change from link to link. Lucent OMC-H supports a set of objects that contain these timers and values and each link can refer to these objects.

The maximum number of S7 Link Attributes objects per SCP Office object is 16. The user can create a maximum of 15 more S7 Link Attribute objects

Congestion Threshold checks

The following rules apply to the dependencies between congestion thresholds:

- XMTDSCRD_1 > XMTCONG_1 > XMTABATE_1
- XMTDSCRD_2 > XMTCONG_2 > XMTABATE_2
- XMTDSCRD_3 > XMTCONG_3 > XMTABATE_3
- XMTABATE_2 > XMTCONG_1
- XMTABATE_3 > XMTCONG_2

- XMTCONG_2 > XMTDSCRD_1
- XMTCONG_3 > XMTDSCRD_2

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply with creating this object:<br>• One S7 Link Attributes container and table are automatically created, and are empty until the first S7 Link Attributes entry is made.<br>• The attribute ID (LKPARMID) is zero for the first automatically created S7 Link Attributes object. All other Link Attributes objects can have the ID 1 through 15. The ID must also be unique in the Network object |
| **Modification** | The Lucent OMC-H will support the modification of the S7Link Attributes object, except S7LinkAttributeID=0.<br>Only S7_LINK_PARAM_ID cannot be changed. |
| **Deletion** | The following rules apply with deleting this object:<br>• Ensure that no other Link objects reference that ID (LKPARMID)<br>• You cannot delete a Link Attributes object when the ID (LKPARMID) is zero<br>• This object is automatically deleted when the SCP Office object is deleted. |

### Linkset

The Linkset is a logical object and a child of the SCP Office object. The Linkset has two child object called S7 Link and ATM Link. The Linkset object identifies adjacent nodes in the SS7 network. Multiple linksets can be defined for the same adjacent node.

A combined Linkset allows the user to extend the capacity of a Linkset. You can only have two linksets for a combined Linkset. The maximum number of entries in the Linkset table is 32

Mapping to the HCF network element

The Linkset object contains a number of attributes that map to attributes on three objects on the HCF network element.

The two objects are:

- Link Set (S7_LINKSET)
- Link Set Status (LINK_SET_STATUS)

Note: LINK_SET_STATUS table contains Linkset specific state information.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• The Linkset table is created when the first Linkset object is created<br>• FECLLI should be the same for all Linksets with the same far end pointcode<br>• There is a maximum of 2 Linksets with the same combined Linkset ID<br>• The combined Linkset ID is not the same as the ID of any existing Linksets<br>• The ID must be unique<br>• All SS7 links in the Linkset must be in the out of service state before the Linkset table can up updated. |
| **Modification** | Refer to the rules for creating the object |
| **Deletion** | A Link can only be deleted when it is in the Manually Out Of Service (MOOS) near-end state. |

### S7 Link

The S7 Link is a logical object and a child of the Linkset.

The Link object specifies the SS7 data link. The link carries messages, normally transported over a single 64 kbps slot. A set of links, 1 through 16 (1 through 512 for the SS7 tree) is defined for each Linkset object. Links within a linkset will loadshare, but messages in a single transaction shall use the same link to ensure sequential delivery.

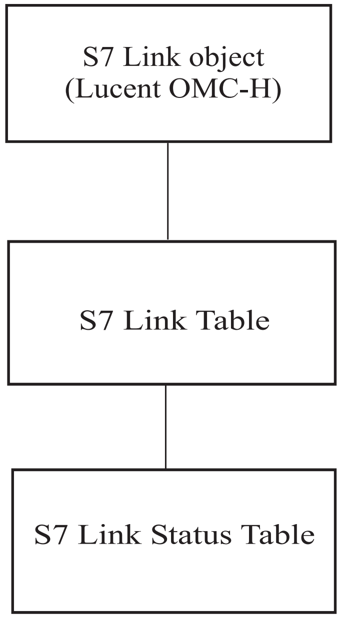
Mapping to the SDHLR network element

The Link object contains a number of attributes that map to attributes on two objects on the SDHLR network element.

The two objects are:

- S7 LinkTable
- S7 LinkStatus Table

The following figure shows the mapping of the S7 Link object to corresponding objects on the HCF.




| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply when creating this object:<br>• A maximum of 16 links can be created per S7 Board, that is each combination of the SS7 Node ID and Slot attributes, belonging to the S7 Board can support up to 16 links.<br>• The maximum number of entries in the table is 512 (16 per Linkset)<br>• The Link attribute ref. attribute must exist<br>• The Link class of the referred board should be MTP2T1 for ANSI, MTP2E1 for ITU, and MTP2AA for CHN<br>• The SS7 node ID, Slot, Port, and Channel attributes must be unique within a HCF cluster.<br>• You must create the Linkset prior to creating the Link<br>• The Signal link code (SLC) must be unique within a Linkset<br>• TS board must exist for the TS_NUMBER, LK_Group or LK_Number.<br>• The link number must be allowed range for the SS7_board.<br>• There must not be more than 512 links in total (S7_links and ATM links). |

| Rules | Descriptions |
|---|---|
| **Modification** | There are no special rules for modifying this object. |
| **Deletion** | You can only delete this object when the Link is in the “Manually Out Of Service (MOOS) near-end” state. |

### ATM Link

The ATM Link is a logical object and a child of the Linkset object. The ATM Link carries the messages. While links within a linkset will loadshare messages, single transactions use the same link to ensure sequential delivery.

The ATM Link object requires a set of timers and values that are associated with the SAAL layer. It is anticipated that the set of timers and values do not change from link to link. Lucent OMC-H supports a set of objects that contain these timers and values and each link can refer to these objects.

Mapping to the SDHLR network element

The ATM Link object contains a number of attributes that map to attributes on the S7 SAAL (S7_SAAL) object on the SDHLR network element.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply with creating this object:<br>• Another Link (ATM or S7 Link) must not exist with the same ts_number, lk_member and lk_group<br>• A board must exist for the TS_NUMBER and LK_GROUP with the link class SAAL<br>• There must not be more than 512 links in total (ATM and S7 Links), and not more than 128 ATMLinks across all linksets.<br>• Link Attributes objects can have the ID 1 through 15. The ID must also be unique in the Linkset object<br>• The maximum number of ATM links and S7 links per Linkset is 32. |
| **Modification** | There are no special rules for modifying this object. |
| **Deletion** | This object can only be deleted when it is in it’s manually out of service (MOOS) near end state |

## Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Related information

There is no related information.

□

# Creating SCP Office objects

## Purpose

This procedure allows you to create an SCP Office child object.

## Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

For information on scheduling tasks, refer to the *System Administration*, 401-380-075.

## Before you begin

Refer to the Rules for creating, modifying and deleting SCP Office objects in SCP Office Object Descriptions.

## To create an SCP Office child Object

Complete the following procedure to create an SCP Office child Object.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

**3** Expand the **SS7** object.

4

| If you want to create | Then |
|---|---|
| An SCP Office child object | Perform the following steps:<br>• Select the **SCP Office** object.<br>• From the menu bar, click **Action** -> **Create** -> **<SCP Office child Object>**.<br>The <SCP Office child Object> can be:<br>– ATM Link Attributes<br>– Adjacent SEP<br>– Alias PC<br>– MTP3Params<br>– Remote STP<br>– Route<br>– Routing Pattern<br>– S7 Board<br>– S7 Link Attributes<br>– Linkset<br>**Note**: To create a **Combined Linkset**, create the first Linkset and set the Combined ID to a previously unused value between 1 and 32. 0 is not allowed.<br>Then create the second Linkset. The Combined ID must be set to the same value used in the first Linkset.<br>• When the **Enter input parameters for <SCP Office child Object>** window is displayed, go to Step 5. |
| A Linkset child object | Perform the following steps:<br>• Expand the **SCP Office** object.<br>• Select the **LinkSet Table** object.<br>• From the menu bar, click **Action** -> **Create** -> **<Linkset child Object>**.<br>The <Linkset child Object> can be:<br>– S7 Link<br>– ATM Link<br>• When the **Enter input parameters for <Linkset child Object>** window is displayed, go to Step 5. |

5 Change the default values, if required.

6 Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The new SCP Office object is created. The system generates the IDs to always assign the next available unique ID on creation of each instance of an object.

END OF STEPS

# Modify the SCP Office Objects

## Purpose

This procedure provides instructions for modifying the SCP Office objects.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

## Before you begin

Before you begin, no additional information is needed.

## To modify the SCP Office objects

Complete the steps below to modify the SCP Office objects.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View double click, double-click the SS7 object from the HCF Cluster.

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

**3** Expand the **SS7** object.

**4**

| If you want to modify | Then |
|---|---|
| The SCP Office object | Perform the following steps:<br>1. Double-click the **SCP Office** object.<br>2. Go to Step 5 |

<table>
<tr><th>If you want to modify</th><th>Then</th></tr>
<tr><td>An SCP Office child object</td><td>Perform the following steps:<br>1. Expand the SCP Office object and select the <SCP Office child object> object from there.<br>The <SCP Office child object> can be:<br>• ATM Link Attributes<br>• S7 Link Attributes<br>• Adjacent SEP<br>• Remote STP<br>• Route<br>• Route Pattern<br>• MTP3Params<br>• Linkset<br>2. Go to Step 5</td></tr>
<tr><td>A Linkset child Object</td><td>Perform the following steps:<br>1. Navigate to the SCP Office object and expand the Linkset Table object from there.<br>2. Select the <Linkset child object >you want to modify. The <Linkset child object > can be ATM Link or S7 Link<br>3. Go to Step 5</td></tr>
</table>

**5** Click **Modify** .

**Result:** The modifiable fields become enabled.

**6** Make necessary changes to the default values.

**7** Click **OK** or **Apply** to submit the operation now, or select **More** -> **Schedule** to schedule the operation to be submitted later.

**Result:** The SCP Office parameters are modified.

END OF STEPS

# Performing Object-Specific actions on SCP Office child objects

## Purpose

The Lucent OMC-H allows you to perform various object-specific actions. Object-specific means that these operations are available to you for particular objects only.

The various object-specific actions available to you are described in the following table.

| Action | Available for the following SCP Office objects | Before performing the procedure | Result |
|---|---|---|---|
| Allow | S7 Link<br>ATM Link | **For S7 Link**<br>Ensure that the selected S7 link is in the ”blocked”, inhibited”, “MOOS”, or “OOS” state.<br>**For ATM Link**<br>Ensure that the selected ATM link is in the “inhibited”, “MOOS”, or “OOS” state. | **For S7 Link**<br>The S7 Link is allowed and its state changes from “inhibited” to “active”.<br>**For ATM Link**<br>The ATM Link is allowed and its state changes from “inhibited” to “active”. |
| Inhibit | S7 Link<br>ATM Link | **For S7 Link**<br>Ensure that the selected S7 link is in the ”blocked”, “active”, “Manually Out Of Service (MOOS)”, or “OOS” state.<br>**For ATM Link**<br>Ensure that the selected ATM Link is in the “active”, “MOOS”, or “OOS” state. | **For S7 Link**<br>The S7 link is inhibited, that is its state changes from “active” to “inhibited”.<br>**For ATM Link**<br>The ATM link is inhibited, that is its state changes from “active” to “inhibited”. |

| Action | Available for the following SCP Office objects | Before performing the procedure | Result |
|---|---|---|---|
| Disable | S7 Link<br>ATM Link<br>S7 Board | **For S7 Link**<br>Ensure that S7 Link's major state is "blocked", "inhibited", or "Out Of Service (OOS)".<br>**For ATM Link**<br>Ensure that ATM link's major state is "inhibited" or "Out Of Service (OOS)".<br>**For S7 Board**<br>Ensure that the S7 Board object state is Active. | **For S7 Link**<br>The S7 Link is disabled and the state changes from "blocked", "inhibited", or "Out Of Service (OOS)" state to the "Manually OOS (MOOS)" state.<br>**For ATM Link**<br>The ATM link is disabled and the state changes from "inhibited" or "Out Of Service (OOS)" to "Manually OOS (MOOS)".<br>**For S7 Board**<br>The S7 Board object gets disabled and the S7 Board state changes from "Active" to "MOOS". To verify the state of the S7 Board object, double-click to view the Detail View.<br>The State label displays the current state of the S7 Board object. |

| Action | Available for the following SCP Office objects | Before performing the procedure | Result |
|---|---|---|---|
| Enable | S7 Link<br>ATM Link<br>S7 Board | **For S7 Link**<br>Ensure that S7 link's major state is "Manually Out Of Service (MOOS)".<br>**For ATM Link**<br>Ensure that the ATM link is in the "Manually Out Of Service (MOOS)" state.<br>**For S7 Board**<br>Ensure that the S7 Board object state is Manually Out Of Service (MOOS). | **For S7 Link**<br>The S7 link is enabled and changes the state from "Manually Out Of Service (MOOS)" to its previous state.<br>**For ATM Link**<br>The ATM link is enabled and the state changes from MOOS to its previous state.<br>**For S7 Board**<br>The S7Board object gets activated and the S7Board state changes from "MOOS" to "Active". To verify the state of the S7Board object, double-click to view the Detail View.<br>The State label displays the current state of the S7Board object. |
| Activate | Linkset | Ensure that the selected LinkSet object is in the blocked state. | The LinkSet object gets activated and the LinkSet state changes to "normal" from "blocked". To verify the state of the LinkSet object, double-click to view the Detail View.<br>The State label displays the current state of the LinkSet object. |

| Action | Available for the following SCP Office objects | Before performing the procedure | Result |
|---|---|---|---|
| Deactivate | Linkset | Ensure that the selected LinkSet object is in the normal state. | The LinkSet object gets deactivated and the LinkSet state changes to "blocked" from "normal". To verify the state of the LinkSet object, double-click to view the Detail View. The State label displays the current state of the LinkSet object. |
| Block | S7 Link | Ensure that the selected S7 link is in the "active", "inhibited", "Manually Out Of Service (MOOS)", or "OOS" state. | The S7 link is blocked, that is its state changes from "active" or "inhibited" to "blocked". |
| Unblock | S7 Link | Ensure that the selected S7 link is in the blocked, Manually Out Of Service (MOOS), or OOS state | The S7 link is unblocked, that is its state changes from "blocked" to its previous state, that is, "active" or "inhibited". |

### Related information

There is no related information for this procedure.

### Before you begin

Refer to the table given in "Purpose" (p. 9-73) above.

### To perform an object-specific action on an SCP Office object

Complete the following procedure to perform an object-specific action on an SCP Office object.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

**3** Expand the **SS7** object.

**4** Expand the **SCP Office** object.

**5**

| If you want to perform | Then |
|---|---|
| The Enable or Disable action on the S7 Board object | Perform the following steps<br>• Select the **S7 Board** object.<br>• Go to Step 6. |
| The Activate or Deactivate action on the Linkset object | Perform the following steps<br>• Select the **LinkSetTable** object.<br>• Go to Step 6. |
| Any other object-specific action on a Linkset child object | Perform the following steps<br>• Expand the **LinkSetTable** object.<br>• Select the **<LinkSet child object>** that you want. The <LinkSet child object> can be S7 link or ATM Link.<br>• Go to Step 6. |

**6** From the menu bar, click **Action** -> **Object Specific** -> **<Object-Specific action>**.

The available <Object-Specific action> for each object is described in the table given in the "Purpose" (p. 9-73) section. This table also describes the results of the various object-specific actions that can be performed.

END OF STEPS

# Deleting SCP Office objects

### Purpose

This procedure provides instructions for deleting SCP Office objects.

### Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

### Before you begin

Refer to Rules for creating, modifying and deleting the SCP Office objects in SCP Office Object Descriptions.

### To delete SCP Office objects

Complete the steps below to delete SCP Office objects from the database.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View double click on the HCF Cluster. From the HCF Cluster **Detailed View** window that opens, right click and invoke the **Show-on Tree**.

**2**

| If you want to delete | Then |
|---|---|
| An SCP Office child object | Perform the following steps:<br>1. From the NE tree view that opens, expand the **SS7** object, navigate to the **SCP Office** object and select the **<SCP Office child object>** you want to delete.<br>The **<SCP Office child object>** can be:<br>• ATM Link Attributes<br>• Adjacent SEP<br>• Alias PC<br>• MTP3Params<br>• Remote STP<br>• Route<br>• Routing Pattern<br>• S7 Board<br>• S7 Link Attributes<br>• Linkset<br>2. Go to Step 3 |

| If you want to delete | Then |
|---|---|
| A Linkset child object | Perform the following steps:<br>1. From the NE tree view that opens, navigate to the **SS7** object and expand the **SCP Office** object.<br>2. Expand the **Linkset Table** and select the **<Linkset child object>** you want to delete.<br>The **<Linkset child object>** can be:<br>• S7 Link<br>• ATM Link<br>3. Go to Step 3 |

**3** From the menu bar, click **Action** -> **Delete**.

**Result:** An **Action Confirmation** window is displayed.

**4** Click **Yes** to delete the SCP Office child object.

**Result:** The SCP Office child is removed from the database.

END OF STEPS

# Configuring the SCTP object

## Overview

### Purpose

This section describes the SCTP object and its child objects. You cannot create or configure this object. You can only view its details. You can, however, configure the SCTP child objects and their attributes

### Contents

# SCTP object description

## Summary of contents

This section describes the various M3UA objects and lists the rules that must be followed to create, modify or delete these objects.

See the sections listed below for information on specific objects:

| For details on ... | See... |
|---|---|
| SCTP | Rules for creating, modifying and deleting“SCTP” (p. 9-81) |
| SCTPhostConfig | Rules for creating, modifying and deleting “SCTPhostConfig” (p. 9-81) |
| SCTPAssociation | Rules for creating, modifying and deleting“SCTPAssociation” (p. 9-82) |

## SCTP

The SCTP is a child of the SS7 object. SCTP (Stream Control Transmission Protocol) allows transmission of multiple streams of data messages at the same time between two connected end points in a network. It is a connectionless protocol and is designed to support transmission of PSTN signaling over IP networks.

It has the following child objects:

- SCTPHostConfig
- SCTPAssociation

There can only be one SCTP object per SS7 cluster

| Rules | Descriptions |
|---|---|
| **Creation** | This object is auto created when you create the SS7 Cluster object |
| **Modification** | You cannot modify this object. |
| **Deletion** | You cannot delete this object. |

## SCTPhostConfig

The SCTP HostConfig is a child of the SS7 SCTP object. You can view details of the SCTP IP host for this configuration from the SCTPHostConfig Details View.

There can only be one SCTP object per SS7 cluster

| Rules | Description |
|---|---|
| **Creation** | Lucent OMC-H does not allow more than 36 instances with “Localhost” having a value “Y”. |
| **Modification** | You cannot modify this object. To change parameters you need to delete the configuration and create a new one again. |
| **Deletion** | You can only delete this object if the SCTPHostConfig ID does not exist as<br>• Local/Remote SCTP host ID in SCTP Association<br>• Local SCTP host ID in ASP<br>• Remote SCTP host ID in SGP |

### SCTPAssociation

The SCTPAssociation is a child of the SS7 object. This object represents a protocol relationship between two SCTP endpoints. An association can be uniquely identified by the transport addresses used by the endpoints in the association.

Two SCTP endpoints cannot have more than one SCTP association between them at any given time.

| Rules | Descriptions |
|---|---|
| **Creation** | The following rules apply:<br>• No more than 10 instances of the SCTPAssociation with Treatment = M3UA are allowed<br>• Treatment shall be M3UA, when Association mode is CLIENT<br>• This object cannot be created before creating the SCTPHostConfig, ASP and the SGP objects, in that sequence.<br>• There cannot be another SCTP Association object with the same ASP ID and SGP ID.<br>• There must be an SCTPHostConfig object existing with Local SCTP host ID<br>• There must be an SCTPHostConfig object existing with Remote SCTP host ID<br>• There must be an M3UA ASP object existing with ASP ID, Localport, and Local SCTP host ID<br>• There must be an M3UA SGP object existing with SGP ID, Remote port and Remote SCTP host ID |
| **Modification** | The following rules apply:<br>• Treatment shall be M3UA, when Association mode is CLIENT<br>• You cannot modify the ID, Association ID, Node ID, Association mode, Local port, Local SCTP host ID, Remote port, Remote SCTP host ID, ASP ID and SGP ID attributes of this object.<br>• You can modify the Valid Cookie Life, Heartbeat Interval, Retransmission and Timer attributes. |
| **Deletion** | This object cannot be deleted if its Association status is active |

## Attributes and values

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

□

# Creating an SCTP child object

### Purpose

This procedure allows you to create an SCTP child objects. The SCTP object is auto created when you create the SS7 Cluster object

### Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

### Before you begin

No additional information is required to perform this procedure.

### To create an SCTP child object

Complete the steps below to create an SCTP child object.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

**3** Expand the SS7 object and navigate to the SCTP object.

**4** From the menu bar, click **Action** -> **Create** -> **<SCTP object name>**, where <SCTP object name> can be SCTPHostConfig or SCTPAssociation.

**Result:** The **Enter input parameters for Create <SCTP object name>** window is displayed.

**5** Enter your values here

**6** Click **OK** to create the object now or click **More** -> **Schedule** to create the object later.

**Result:** The new SCTP child object is created.

END OF STEPS

# Deleting an SCTP child object

### Purpose

This procedure helps you to delete an SCTP child object.

### Related information

For information on object attributes and values, refer to *Object Descriptions*, 401-380-080.

### Before you begin

If you are deleting an SCTPHostConfig object, make sure that this SCTPHostConfig Index is not referred in any of the association objects in the SS7 HCF Cluster

### To delete an SCTP child object

Complete the following procedure to delete an SCTP child object.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View double click on the HCF Cluster. From the HCF Cluster **Detailed View** window that opens, right click and invoke the **Show-on Tree**.

2. From the SS7 HCFCluster **Show on tree**, expand the **SCTP** object and select the **<SCTP child object>** that you want to delete. These can be the SCTPHostConfig or the SCTPAssociation object.

3. From the menu bar, click **Action** -> **Delete**.

   **Result:** An **Action Confirmation** window is displayed.

4. Click **Yes** to delete the SCTP child object .

   **Result:** The SCTP child object is removed from the database.

   **Note:**If the SCTP child object you are attempting to delete is the last one in the SCTP child object Table under the SCTP then this delete action will delete the SCTP child object table itself.

END OF STEPS

# Modifying an SCTP Object

## Purpose

This procedure allows you to modify an SCTPAssociation object.

**Important!** The SCTPHostConfig object cannot be modified.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions*, 401-380-080.

## Before you begin

Before you begin, no additional information is required.

## To modify an SCTPAssociation

Complete the steps below to modify the SCTPAssociation attributes.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View, double-click the SS7 object from the HCF Cluster.

2. Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

3. Expand the SS7 object and navigate to the SCTP object.

4. Double click on the **SCTPAssociation** object

   **Result:** The **SS7-[id], SCTP-[id], SCTPAssociation=[id]** window is displayed

   **Note:** The SCTPAssociation ID in square brackets above [] indicates the object ID assigned by the system while creating the object.

5. Click on **Modify**

6. Change the values, as required and click **OK** to save the changes.

**Result:** The modified SCTPAssociation object is created

END OF STEPS

# Performing Object-Specific actions

## Purpose

This procedure allows you to perform object-specific actions on the SCTP child objects. You can remove or restore the SCTPAssociation or SCTPHostConfig objects using this procedure.

## Related information

For information on object attributes and values, refer to *Lucent OMC-H Object Descriptions,* 401-380-080.

## Before you begin

Before you begin, no additional information is required.

## To perform object-specific actions on an SCTP Association or SCTPHostConfig

Complete the steps below to perform object-specific actions on an SCTP Association or SCTPHostConfig object.

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM tree, double-click the SS7 object from the HCF Cluster.

**2** Right-click anywhere on the SS7 detail view, and select **Show on Tree** to display the selected SS7 object in the NE tree view.

**3** Expand the SS7 object and navigate to the **<SCTP child object>** that you want to remove or restore , under the SCTP object.

**<SCTP child object>** can be the SCTPAssociation or SCTPHostConfig objects.

**4**

| If you want to... | Then... |
|---|---|
| Remove the object | From the menu bar, click **Action** -> **Object Specific** -> **Remove**.<br>Alternatively you can right-click on the selected **<SCTP child object>** and go to **Object Specific** -> **Remove**. |
| Restore the object | From the menu bar, click **Action** -> **Object Specific** -> **Restore**.<br>Alternatively you can right-click on the selected **<SCTP child object>** and go to **Object Specific** -> **Restore**. |

**Result:** The **<SCTP child object>** will be removed or restored from the SCTPAssociation Table.

END OF STEPS

# 10 Configuring the Topological and Topographical Views

## Overview

### Purpose

This chapter provides information on the Topological and Topographical Views and explains how to configure them.

### Contents

# Topological Views

## Overview

### Purpose

This section describes the topological view available from Lucent OMC-H.

### Contents

# Topological view description

## Topological view

The topological view is a logical representation of the network elements (NEs), virtual NEs (VNEs), and the connection objects. They are:

- **NEs:** HCF and HDF servers within a Cluster group
- **VNEs:** IP connection and Logical connection
- **Connection objects:**
  - HcfHdfConnection
  - HdfHcfConnection
  - HdfHdfConnection

## Topological view layout description

The layout of the topological view will be displayed as per the following conditions:

- The Logical connection VNE will be displayed in the centre of the view.
- The HCF will be positioned below and the HDF will be above the Logical connection.
- The HDFs will be grouped into HDF mated pairs. This is to avoid clutter on the view, such that the HDF Pair link does not overlap with any NEs.
- The HCFs will be grouped into HCFClusters, with a space between each cluster.
- HDFs in the HDFPool, and the HCFs in the HCFPool, if shown, will be displayed on the right side of the view.
  There will not be any links shown to these HCFs or HDFs because the connection objects do not exist for these NEs.
- The HdfHcfConnection is shown as a link from an HDF to the Logical connection.
- The HcfHdfConnection is shown as a link from an HCF to the Logical connection.
- The HdfHdfConnection is shown as a link between the two HDFs.

## IP connection

The IP connection represents the logical connection between two NEs (HCF and HDF servers) within the SDHLR and is a container for all connection objects.

The IP connection is the child of SDHLR and is auto created when you create a SDHLR object.

## Logical connection

The Logical connection represents the IP network between the HCFs and HDFs for display on the topological view. It is auto created when you create an SDHLR.

### HcfHdf connection

The HcfHdfConnection object represents the bidirectional logical connections between an HCF and all HDFs.

### HdfHcf connection

The HdfHcfConnection object represents the bidirectional logical connections between an HDF and all HCFs.

### HdfHdf connection

The HdfHdfConnection (HdfPairConnection) object represents the bIdirectional logical connection between the two HDFs in a pair.

**Important!** An HdfPairConnection will exist only when an HDF Pair exists.

□

# Filters for the Topological View

### Filter for the Topological Views

The Topological View supports filters such as Connection type, Node type, Group type, etc., which turn on and off, the display of the objects selected in the view.

### Example

If the Managed NEs only filter is turned ON, only the Managed NEs will be displayed in the view and vice versa.

### Related Information

For more information on filtering objects in the topological view, refer to "Filtering the topological view" (p. 10-9).

☐

# Layers for the Topological View

## Layers for the Topological Views

The Topological View supports filters such as Reflected HSA, Node Names, Connections, etc., which turn on and off, the display of the attributes of the objects selected in the view.

## Example

If the Reflected HSA layer is turned OFF, the Reflected HSA alarm status attribute will not displayed in the view and vice versa.

## Related Information

For more information on selecting layers in the topological view, refer to "To select layers in the Topological View" (p. 10-11).

☐

# Viewing the Topological View

## Purpose

This procedure allows you to view the logical representation of the NEs, VNEs, and the connection objects in a single layout. This view can be invoked by selecting any of the following in the HM Tree:

- SDHLR
- HCF Cluster
- HCF Pool
- HDF Pool
- Mated Pair

The topological view can also be invoked at NE level (HCF and HDF), from both, the HM tree and NE tree view.

## Related Information

For more information on the Topological view, refer to "Topological view description" (p. 10-3).

## Before you begin

Ensure that at least one NE exists within the group that you select for the topological view.

## To view the Topological View

Complete the following procedure to view the Topological View:

**1** Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

For more information on accessing the Network Manager, refer to Graphical User Interface, 401-380-082.

**2** In the HM Tree view, expand the OMC-H group, and navigate to the group whose topological view you want to see.

**3** From the menu bar, click **View** -> **Topological** -> **Details**.

**Result:** The **Topological View - <Group name>** window is displayed in the right pane of the Network Manager window.

END OF STEPS

### Expand All and Collapse All options

When the Topological view is invoked, only the groups (HCF Cluster, HDF Mated pair, HCF Pool and HDF Pool) are displayed. Right-click the groups and click **Expand All** to see the NEs along with their connections (if any), within that group. Click **Collapse All** to collapse the NEs into their corresponding groups and only the groups will be displayed.

☐

# Filtering the topological view

### Purpose

This procedure allows you to filter the objects of the topological view to display only the required objects.

### Related Information

For more information on the filter types, refer to "Filters for the Topological View" (p. 10-5).

### Before you begin

There are no preconditions to perform this procedure.

### To filter the topological view

Complete the following procedure to filter the topological view.

1. Invoke the topological view on the **Lucent OMC-H - Network Manager** window.

2. Right-click anywhere within the topological view window.

3. Click **Filters** in the pop-up menu that is displayed.

   **Result:** The **Configure Filters...** window is displayed.

4. Select or clear the filter options to turn their display ON or OFF respectively, as required.

   **Note**

You need to be aware of the following information while making the filter selections:

- If you select a particular node type to be filtered, you must also select the group type for it.
  For example if you select the HCF node type, you must select a group type, say HCF Cluster, HCF Pool or HCF group, for it. The topological view for a node type is only displayed for the corresponding group type that you select.
- If you select a particular group type without selecting a node type, the topological view displays only group information.
  For example if you select the HCF cluster group type, the topological view displays the HCF Cluster view. You cannot obtain the topological information for the nodes, say the HCFs, within the HCF Clusters, from this view.

**5** Click **OK** to confirm the changes.

**Result:** The topological view will now display only those objects whose filter option is set to ON.

END OF STEPS

# To select layers in the Topological View

## Purpose

This procedure allows you to display the required attributes for the objects of the Topological View.

## Related Information

For more information on layers, refer to "Layers for the Topological View" (p. 10-6).

## Before you begin

There are no preconditions for this procedure.

## Procedure

Perform the following steps to select layers in the Topological View.

1. Open the Topological View on the **Lucent OMC-H - Network Manager** window.

2. Right-click anywhere within the topological view window.

3. Click **Layers** in the pop-up menu that is displayed.

   **Result:** The **Layers** window is displayed.

4. Select or clear the layer options to turn their display ON or OFF respectively, as required.

5. Click **OK** to confirm the changes.

   **Result:** The Topological View will now display only those object attributes whose layer option is set to ON.

END OF STEPS

# Topographical Views

## Overview

### Purpose

This section describes the topographical view available from Lucent OMC-H.

### Contents

# Topographical View

## Topographical view

A Topographical view displays objects that have longitude and latitude attributes, displayed in a geographical background, in their correct locations. It depicts the network elements (NEs) on a map based on the physical location of the NE in the real network . It also allows you to monitor the state of each managed object (MO) in the network.

The view is capable of covering an area of at least 600 network elements.

## Components of the Topographical View

The Topographical view displays only those NEs whose site name has been configured, either during creation, or during modification.

### Co-located Nodes

In case two or more nodes (NEs/VNEs), for which you have permissions, have been configured with the same location parameters, that is, the same longitude and latitude, they are grouped under a single co-located node icon on the Topographical view.

This icon will be displayed at the longitude and latitude location for those nodes.

The co-located node displays the reflected HSA and the site name associated to the individual NEs/VNEs represented by this icon.

**Important!** The co-located table is not updated dynamically. Also, you cannot update it with the “Refresh” command. To view the changes, you have to close it and reopen.

## Layers

The Topographical view supports layers, which turn on and off, the display of the attributes of the objects selected in the view. For example, political data, physical landmarks, infrastructure data etc. The available layers are:

- **Background layers:** They are layers retrieved from the Geographical Information System (GIS) data files.

  The supported background layers are:

  – Environmental Systems Research Institute (ESRI) layers
- **Foreground layers:** They are node and connection layers and they superimpose the background layers.

  The supported foreground layers are:

  – Node and connection layers (Node names, NE Type, NE Managed, Reflected HSA)

### Filters

The Topographical view supports filters, which turn on and off the display of the objects selected in the view. The available filters are:

- **Node type:** HCF, HDF

### Zooming the view

You can enlarge or minimize or focus on a certain section of the view. The available zoom options are:

- **Zoom In** to enlarge
- **Zoom Out** to minimize
- **Zoom To** to zoom to a specific size
- **Zoom to full extent** to view the entire map
- **Zoom by area** to view only a certain section of the map
- **Zoom back to last extent** to revert to the last view

### Related information

For more information on the Topographical View, refer to *Lucent OMC-H Graphical User Interface,* 401-380-082.

□

# SiteInfo Object

## SiteInfo object

The SiteInfo object details the information pertaining to a given site, including the location information. With appropriate permissions (read/write), you can configure the site information from the Lucent OMC-H GUI.

The information stored under this object is used while creating the NE (HCF and HDF), to configure the location details and contact information.

The SiteInfo object is an OMC only Managed Object Class (MOC) and can be indexed on the site name attribute. The SiteInfo is stored in one location containing the SiteInfo for all the SDHLR complexes managed by the one Lucent OMC-H.

## SiteInfo object attributes

The attributes that the SiteInfo object supports are:

- Site name
- Address
- Contact person
- Phone number
- Pager number
- Mobile number
- E-mail address
- Latitude and Longitude in degrees, minutes, seconds, and hemisphere formats.

## Creating a SiteInfo object

The SiteInfo object can be created using batch scripts from the Command Line Interface (CLI) console as well as from the GUI.

For more information on creating a SiteInfo object using the GUI, refer to "Creating the SiteInfo object" (p. 10-17).

For more information on creating a SiteInfo object using the CLI, refer to the Configuration Management chapter, CREATESITEINFO section, in *Command Line Interface*, 401-380-081.

## Maximum allowed SiteInfo objects

A single Lucent OMC-H can support up to a maximum of 200 SiteInfo objects.

## Deleting a SiteInfo object

The SiteInfo object can be deleted from the SiteInfo object Table View, in the NE tree.

This can be done either from the **Action** menu bar by clicking **Delete**, or by right-clicking the selected SiteInfo object and clicking **Delete**.

**Important!** You cannot delete a SiteInfo object whose site name is in use.

### Related information

For more information on viewing the SiteInfo object Table View, refer to "Viewing the Site Administration Data" (p. 10-19).

For more information on creating a SiteInfo object, refer to "Creating the SiteInfo object" (p. 10-17).

□

# Creating the SiteInfo object

## Purpose

This procedure allows you to create the SiteInfo object.

The parent object is the SiteAdmin object, which is auto-created under the EMS group, and can be viewed only in the NE tree view.

## Related information

For information on Site Data object, refer to "SiteInfo Object" (p. 10-15).

## Before you begin

There are no preconditions to this procedure.

## To create the SiteInfo object

Complete the following procedure to create the SiteInfo object.

**1** Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

For more information on accessing the Network Manager, refer to Graphical User Interface, 401-380-082.

**2** In the HM tree, double-click the SiteAdmin object under the EMS group.

**3** Right-click anywhere on the SiteAdmin detail view, and select **Show on Tree**.

**Result:** The SiteAdmin object gets displayed in the NE tree view.

**4** From the menu bar, click **Action** -> **Create** -> **SiteInfo**.

*Alternatively*, right-click the SiteAdmin object and click **Create** -> **SiteInfo**.

**Result:** The **Enter input parameters for Create SiteInfo** window is displayed.

**5** Specify the Name, and contact information in the fields provided.

**6** The system generates an ID to always assign the next available unique ID on creation of each instance of this object. Overwrite this ID if you want.

**7** Specify the Latitude and Longitude details in the fields provided.

**Important!** Ensure that the index, site name, longitude, and latitude are unique for every SiteInfo object.

**8** Click **OK** to create the SiteInfo object now or click **More** -> **Schedule** to create the SiteInfo object later.

END OF STEPS

# Viewing the Site Administration Data

## Purpose

This procedure allows you to view the Site Administration Data in the SiteInfo Table.

## Related information

For information on Site Data object, refer to "SiteInfo Object" (p. 10-15).

## Before you begin

There are no preconditions to perform this procedure.

## To view the Site Administration Data in the SiteInfo Table

Complete the following procedure to view the Site Administration Data in the SiteInfo Table.

1. Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

   For more information on accessing the Network Manager, refer to Graphical User Interface, 401-380-082.

2. In the HM tree, double-click the SiteAdmin object under the EMS group.

3. Right-click anywhere on the SiteAdmin detail view, and select **Show on Tree**.

   **Result:** The SiteAdmin object gets displayed in the NE tree view.

4. Select either the SiteAdmin object or the SiteInfoTable object in the NE tree view.

5. From the menu bar, click **Tools** -> **Location details**.

**Result:** The Site administration data is displayed in the SiteInfo Table in the Network Manager window.

Right-clicking any listed site row in the SiteInfo Table allows you to open the detail view for that site. Click **Modify** to change the attributes.

You can also single-select or multi-select the site rows and right-click to **Delete** any site.

END OF STEPS

# Modifying the location details

### Purpose

This procedure allows you to modify the location details for network elements (NEs), both HCF and HDF.

You can modify the site name only from the NE detail view or the NE Communication Parameters window of the NE detail view, for a specific NE.

### Related information

For information on SiteInfo object, refer to "SiteInfo Object" (p. 10-15).

**Important!** Contact information displayed in the NE detail view is not based on a given NE, but is also coupled with the site name where NE is located. Hence, modifying the site name would also modify the contact information.

### Before you begin

Ensure that the site name has been configured for the selected HCF or HDF.

Modify details for an NE only when it is in the managed state.

### To modify the site name for network elements from the NE detail view

Complete the following procedure to modify the site name for network elements from the NE detail view.

---

**1** From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree View , double-click the NE whose site name has to be configured.

---

**2** Right-click anywhere on the NE detail view, and select **Show on Tree**.

**Result:** The selected NE gets displayed in the NE tree view.

---

**3** From the menu bar, click **View** -> **Details** to open the detail view for that NE.

*Alternatively*, double-click the NE to open the detail view.

**Result:** The NE detail view gets displayed.

---

**4** Select the **Location** tab and click **Modify** on the NE detail view.

**5** Change the site name from the **Site name** drop-down list.

**6** Click **OK** to confirm the change.

**Result:** The site name changes to reflect the new name and the attributes related to the modified site name also get populated accordingly.

END OF STEPS

### To modify the site name for network elements from the HM detail view

Complete the following procedure to modify the site name for network elements from the NE detail view.

**1** In the HM tree, double-click the NE whose site name has to be configured.

**2** From the menu bar, click **Action** -> **Details** to open the detail view for that NE.

*Alternatively*, double-click the NE to open the detail view.

**Result:** The NE detail view gets displayed.

**3** Click **NE Management...**.

**4** Select the **Location** tab and click **Modify** on the NE detail view.

**5** Change the site name from the **Site name** drop-down list.

**6** Click **OK** to confirm the change.

**Result:** The site name changes to reflect the new name and the attributes related to the modified site name also get populated accordingly.

END OF STEPS

# Selecting maps for the Topographical view

## Purpose

This procedure allows you to select the map of the location whose Topographical view you want to see.

## Related Information

For information on installing maps for the view, refer to *System Installation*, 401-380-084.

## Before you begin

Ensure that the map you want to view is installed in the Lucent OMC-H server.

## To select a map for the view

Complete the following procedure to select a map for the view:

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM or NE Tree view, select the object whose Topographical view you want to see.

2. From the menu bar, click **View** -> **Topographical**

   **Result:** The **Select Map** window is displayed.

3. From the **Name** drop-down list, select the location whose map you want to view.

   Select the **Should re-transfer files from server** option if you want to specifically re-download the map from the server and not get them from the cache memory on the client.

4. Click **Ok** to confirm the selection.

   **Result:** The Topographical view for that location is displayed.

END OF STEPS

# Viewing the Topographical View

## Purpose

This procedure allows you to view the logical representation of the network elements (NEs).

This view can be invoked by selecting at Group (OMC-H group, SDHLR, HCF Cluster, HCF Pool, HDF Pool, HCF group, Mated pair etc.) level, or at NE (HCF, HDF) level.

## Related Information

For more information on the Topographical view, refer to "Topographical View" (p. 10-13).

For information on selecting maps for the view, refer to "Selecting maps for the Topographical view" (p. 10-23).

## Before you begin

Ensure that:

- At least one NE exists within the group that you select for the Topographical view
- The managed object's (MO's) NE Location parameters (latitude and longitude), and site name are defined for them to be visible on the map.

## To view the Topographical View

Complete the following procedure to view the Topographical View.

1. From the Lucent OMC-H Desktop, go to the **Network Manager**. **Expand All** and in the HM Tree view, expand the OMC-H Group, and navigate to the group or NE whose Topographical view you want to see.

2. Select any Group or NE in the HM or NE tree view, and from the menu bar, click **View** -> **Topographical** to open the **Select Map** pop up window for a particular region.

   **Result:** The **Select Map** window is displayed.

3. From the **Name** drop-down list, select the location whose map you want to view.

Select the **Should re-transfer files from server** option if you want to specifically re-download the map from the server and not get them from the cache memory on the client.

**4** Click **Ok** to confirm the selection.

**Result:** The Topographical view for that location is displayed.

END OF STEPS

# To filter the Topographical View

### Purpose

This procedure allows you to filter the components of the Topographical View to display only the required objects.

### Related Information

There is no related information.

### Before you begin

There are no preconditions to perform this procedure.

### Procedure

Perform the following steps to filter the Topographical View.

1 Open the Topographical View on the **Lucent OMC-H** → **Network Manager** window.

2 From the icons displayed on the topographical map, select **Show Filters**.

**Note:** The icon context will be displayed as a tool tip on mouse-over

*Alternatively*, right-click anywhere within the Topographical View window and click **Filters**.

**Result:** The **Configure filters** pop-up menu is displayed.

3 Select or clear the filter options to turn their display ON or OFF respectively, as required.

4 Click **OK** to confirm the changes.

**Result:** The Topographical View will now display only those objects whose filter option is set to ON.

END OF STEPS

# Selecting Layers in the Topographical View

### Purpose

This procedure allows you to display the required attributes for the objects of the Topographical view.

### Related Information

There is no related information.

### Before you begin

There are no preconditions for this procedure.

### To select layers in the Topographical View

Complete the following procedure to select layers in the Topographical View.

1. Open the Topographical View on the **Lucent OMC-H Network Manager** window.

2. From the icons displayed on the topographical map, select **Show Layers**.

   **Note:** The icon context will be displayed as a tool tip on mouse-over.

   *Alternatively*, right-click anywhere within the Topographical View window and click **Layers**.

   **Result:** The **Layers** pop-up menu is displayed.

3. Select or clear the layer options to turn their display ON or OFF respectively, as required.

4. Click **OK** to confirm the changes.

   **Result:** The Topographical View will now display only those object attributes whose layer option is set to ON.

END OF STEPS

# Appendix A: Configuration Management Logs and Reports

## Overview

### Purpose

This appendix provides information related to configuration management logs and reports. For detailed descriptions and procedures on the Lucent OMC-H logs and reports functionality, refer to the *System Administration*, 401-380-075.

### Contents

# Logs

## Overview

### Purpose

This appendix provides information on the logs and reports that are generated for Configuration Management (CM) and procedures required to manage them. For detailed descriptions and procedures on the Lucent OMC-H logs functionality, refer to the *System Administration*, 401-380-075.

### Contents

# Logs

## Introduction to logs

Logs are files containing records of actions performed on the server

## Types of logs

The different types of logs are:

- Action Logs
- Security logs
- Event logs.

## Log file description

Logs are files containing records of actions performed for a specific date and they are registered as actions.

Logs record the following information:

- Date: the date and time of the action
- login: the user who performed the action
- System: the system on which the action was performed
- Object: the managed object on which the action was performed
- Action: the operation performed on the managed object
- Status: the result of the operations (Start, Success, or Error)
- Cause: reason for failure of the action (status=Error), if any
- Severity: severity of the error (Fatal, or Non-fatal).

Follow these steps to print the logs to file in a Windows environment:

1. In the log manager window, select the log entries you want to print.
2. Select either **Print** to print all the logs or **Print selection** to print selected logs from the log viewer to invoke the Print dialog box.
3. Select the **Print to file** to generate a postscript file.
4. For information on printing from a windows environment, refer http://support.microsoft.com/default.aspx?scid=kb;EN-US;Q158081. You can also select **Windows Help**, **Printing**, then **Connect to a printer on a network** for information on how to connect to a network printer.

Follow these steps to print the logs to file in a Solaris environment:

1. In the log manager window, select the log entries you want to print.
2. Select either **Print** to print all the logs or **Print selection** to print selected logs from the log viewer to invoke the Print dialog box.

3. Select the **Print to file** to generate a postscript file in a UNIX environment.
4. Execute the command `lpr` to print the .ps file. For more information on print commands in a Solaris environment, refer (http://developers.sun.com/solaris/articles/basicprinting.html ).

## Tasks you can perform

You can perform the following tasks related to logs from the Lucent OMC-H:

- Select and display logs
- Store and archive logs

For details about these procedures on logs see *System Administration*, 401-380-075

# Configuration Management Logs

## About Configuration Management logs

Lucent OMC-H administrators can view logs to see actions that have taken place on the Lucent OMC-H.

The following Configuration Management logs exist:

- Audit logs
- User action logs
- Attribute value change logs
- Object creation and deletion logs.

## Accessing log files

You can view a log file on the Log Viewer window. To access this window, select **Tools**, then **Log Manager** on the Lucent OMC-H GUI desktop menu bar.

For more information on the Log Viewer window, see the *System Administration*, 401-380-075.

## Permissions

This window is only available if you have administrative permissions.

□

# Aggregating SDHLR Logs

### Purpose

This procedure allows you to aggregate SDHLR Logs from the Network Manager.

### Related information

There is no related information for this procedure.

### Before you begin

Make sure that the individual Network Element (NE) log files are available at Lucent OMC-H for aggregation. You cannot aggregate SDHLR log files across different log types.

You can aggregate logs for the following network element groups or managed objects:

- SS7 HCF, Diameter HCF, HDF
- HDF mated pairs, HCF SS7 Cluster, HCF Group or within a single SDHLR Complex (composed of HDF mated pairs, HCF SS7 Clusters, HCF Groups).

The following table lists the naming convention for the aggregated log directories:

| When invoked from ... | the logs are placed at ... |
|---|---|
| NE (HCF or HDF) | */data/aggregatedlogs/<LOGTYPE./<SDHLRNAME>_ <CLUSTER/MATEDPAIR/DIAMETERNAME>_<NEUSERLABEL>_ <NETYPE>_<NEID>* |
| Cluster or Mated pair or HCF group | */data/aggregatedlogs/<LOGTYPE>/<SDHLRNAME>_ <CLUSTER/MATEDPAIR/DIAMETERNAME>_<GROUPTYPE>_ <GROUPID>* |
| SDHLR group | */data/aggregatedlogs/<LOGTYPE>/SDHLRNAME>_<GROUPTYPE>_ <GROUPID>* |

### To aggregate SDHLR Logs

Complete the following procedure to aggregate SDHLR Logs.

1 Invoke the **Lucent OMC-H - Network Manager** window from the **Lucent OMC-H - Desktop**.

For more information on accessing the Network Manager, refer *Graphical User Interface*, 401-380-082.

**2** In the HM tree, select one of the SDHLR Complex, Mated HDF or HCF Cluster, HDF or HCF, or HCF Group.

**3** From the menu bar, select **Tools** -> **SDHLR Logs** -> **Aggregate SDHLR Logs**.

**Result: Enter input parameters for Aggregate SDHLR Logs** window is displayed.

**4** In the **Log Types** field, select any of the log types **Om Log**, **Debug Log** or **Subscriber trace Log** from the drop-down list. In the **Start Date** and **End Date** field, use the drop-down calender to specify the date range for aggregating the logs. In the **Time** field, select the start date time and the end date time from the drop-down list. If the Lucent OMC-H application time and server time are different, you should synchronize the application and the server time.

**Important!** The timestamp in the Lucent OMC-H log files is based on the Lucent OMC-H local time zone settings that may differ from the time zone settings of SDHLR NEs. If SDHLRs HCF or HDF nodes reside in different time zones, Lucent OMC-H will not synchronize time format of SDHLR NEs to the Universal Standard Time (used by Lucent OMC-H) before compiling the log files.

**Result:** Lucent OMC-H generates a single text file for the SDHLR aggregated log data containing individual SDHLR NE log file information.

**5** To view the aggregated logs, select **Tools** -> **SDHLR** -> **View aggregated logs**.

**Result:** Lucent OMC-H displays an index of all the aggregated SDHLR logs in a internet browser. These logs are stored for seven days. You can configure the storage period from one to seven days. The default storage limit is three days. For more information on configuring the log storage period, refer *System Administration*, 401-380-075.

END OF STEPS

# Reports

## Overview

### Purpose

This chapter provides information on the various types of Configuration Management (CM) reports and procedures required to manage them.

For detailed descriptions and procedures on the Lucent OMC-H reports functionality, refer to the *System Administration*, 401-380-075.

### Contents

# Configuration reports

### Report Manager

The Report Manager feature on Lucent OMC-H allows you to view or generate configuration reports in different formats, namely Comma Separated Values (CSV) and HTML.

### Permissions

You need Lucent OMC-H administrator permissions to generate reports. Other users can view reports on Report Manager.

### Supported report formats

The report formats that are supported are:

- Comma Separated Values (CSV)
- HTML.

### Report formats not supported

The report formats that are not supported are:

- DMFlexConfigto3GPP
- DMFlexToSessionlog3GPP
- INVENTORY.

  **Important!** If you transform any report to these formats that are not supported, the system throws an exception.

### Tasks you can perform

You can perform the following tasks related to reports from the Lucent OMC-H:

- Generate a report
- View a report
- Transform a report to a specific format
- Delete a report

For details about these procedures see *System Administration,* 401-380-075

□

# Summary by NE Type Report

## Report description

The Summary by NE Type report shows by network element (NE) Type and NE software version:

- All instances of that type and version with a counter of all visible Managed Objects (logical MOs) and MOs below that NE instance
- Below each NE instance, all the end-user visible Managed Object Classes (logical MOCs) belonging to that NE instance with a counter of number of MOs.

☐

# Network Element Configuration Report

## Report description

The Network Element (NE) Configuration report shows:

- DN: All attribute names and values for the object identified by the Distinguished Name (DN) (including those that are not kept in the database, but directly in the NE) .
- All objects below the identified DN until the given depth is reached.

□

# Network State Report

## Report description

The Network State report shows:

- DN: All state attribute names and values for the object identified by the Distinguished Name (DN).
- All objects below the identified DN, until the given depth is reached.

## Important

If any object does not have state attributes, it shall not be shown.

□

# CM Operation Report

## Report description

The CM Operation report shows all configuration management operations that were performed in a given day, in descending order (last operation first). The following information is displayed:

- logDate: Date and time at which the operation was performed.
- Login: Operator who performed the operation.
- Object: Object on which the operation was performed.
- Action: Operation performed.
- Status: Status of the operation (START, SUCCESS, or ERROR).
- Cause: Cause of the error that occurred during the operation.
- Severity: Severity of the error that occurred during the operation.
- Parameters: Parameters passed for performing the operation.

# State Change Report

### Report description

The State Change report shows all Event logs specifying a change in state on a given day. The following information is displayed:

- logDate: Date and time when the state change event was received.
- Object: NE/Managed object on which the state change event was received.
- Event: State change event.
- Description: Old values of the changed attributes.

☐

# Attribute Value Change Report (AVCR)

## Report description

The AVCR shows all Event logs specifying attribute value changes (other than state attribute changes) for a specific day. The following information is displayed.

- logDate: Date and time at which the attribute change was received.
- Object: NE/Managed object for which the attribute change was received.
- Event: Attribute change event.
- Description: Old values of the changed attributes.

☐

# Audit Report

## Report description

The Audit report shows for the selected network element:

- All the active Boards, LinkSets, Links, and LocalSSNs
- All the undeleted and uncreated Objects.
- All the mismatched values for (undeleted) LocalSSNs of Lucent OMC-H and the NE

## Important

This report can be only viewed through the report manager window of the Lucent OMC-H. For details about generating this report see "Performing audit on the Diameter HCF" (p. 7-28) and "Auditing an HCF" (p. 6-29)

# Glossary

## Numerics

**3G**

*Third Generation* is a mobile telecommunications technology that supports high-speed, high-bandwidth wireless services for advanced applications.

**3GPP**

*Third Generation Partnership Project* is a project set up to expedite the development of technical specifications for 3G.

**3GPP2**

*Third Generation Partnership Project 2* is a collaborative 3G telecommunications standards-setting project comprising North American and Asian interests on the development of the next generation CDMA 2000 wireless communication.

**100 Base-T**

*100 Base-T* is a networking standard that supports data transfer rates that are 10 times faster than Ethernet, also known as Fast Ethernet.

## A

**A-Interface**

GSM interface between BSS and MSC

**AAL**

*ATM Adaptation Layer* is a layer in the *B-ISDN* protocol hierarchy that adapts user traffic to a cell format.

**ACCH**

Associated Control Channel

**ACK**

*Acknowledgement* is a message that acknowledges the reception of a transmitted packet.

**ALCAP**

Access Link Control Application Protocol

**AMR**

*Adaptive Multi Rate* is a high-data rate service and transmission principle for 3G cell phones and networks.

**AN**

The *UE* is directly connected to the *Access Network* to give access to the core network.

**ANSI SS7**

The *American National Standards Institute SS7* protocol is the standard SS7 signaling protocol used in the North American *GSM* 1900 market.

**ASC**

Access Service Class

**ASCII**

*American Standard Code for Information Interchange* is the world-wide standard for the code numbers used by computers to represent all characters.

**ATM**

Asynchronous Transfer Mode (ATM) is a dedicated-connection switching technology that transmits data in 53-byte units over a physical medium using digital signal technology.

**AuC**

*Authentication Center* is a component of the *GSM* network's infrastructure equipment, which stores information for authenticating mobiles and encrypting their voice and data transmissions.

**AVCR**

*Attribute Value Change Record* - a configuration report.

**B**

**B-ISDN**

*Broadband Integrated Services Digital Network* is a packet switching technique which uses packets of fixed length, resulting in lower processing and higher speeds.

**BCCH**

*Broadcast Control Channel* is a logical channel within a *GSM* frequency range.

**BCH**

Broadcast Channel

**BEC**

Bit Error Correction

**BER**

*Bit Error Rate* represents the percentage of bits that have errors relative to the total number of bits received in a transmission, usually expressed as ten to a negative power. For example, a transmission might have a BER of 10 to the minus 6, which means out of 1,000,000 bits transmitted, one bit was in error.

**BLER**

Block Error Rate

**BSC**

*Base Station Controller* is the network node that connects the *BTS* and the *MSC*.

**BSS**

*Base Station System*, consists of *BSC* and *BTSs*.

**BTS**

*Base Transceiver Station* handles the radio interface with the mobile phone and is composed of an antenna and transceiver.

## C

**CA**

Correlation Asset

**CAMEL**

*Customized Applications for Mobile networks Enhanced Logic* is a *GSM* standard for Wireless Intelligent Network capabilities that support roaming between countries and different networks.

**CAP**

CAMEL Application Part

**CB**

Cell Broadcast

**CC**

Call Control

**CCC**

Consistency and Comparison Checker

**CCCH**

Common Control Channel

**CCH**

Control Channel

**CCPCH**

Common Control Physical Channel

**CCS**

*Common Channel Signaling* is a form signaling in which a group of circuits share a signaling channel. Refer to *SS7*.

**CCSS7**

*Common Channel Signaling System No. 7* is a signaling standard - the ANSI SS7 protocol is used in the North American market and the *ITU-T* SS7 protocol is used in other markets.

**CDMA**

*Code Division Multiple Access* is a technique for spread-spectrum, multiple-access digital communications that creates channels through the use of unique code sequences.

**CF**

Control Function

**CFN**

Connection Frame Number

**CGI**

Common Gateway Interface

**CLI**

*Command line interface* is a text-based interface that enables you to type executable instructions at a user prompt.

**CM**

Configuration Management

**CMIP**

*Common Management Information Protocol* is the *OSI* protocol for network management.

**CMISE**

Common Management Information Service Element

**CN**

Core Network

**CORBA**

*Common Object Request Broker Architecture* is an architecture and specification for creating, distributing, and managing distributed program objects in a network.

**CPCH**

Common Packet Channel

**CPICH**

Common Pilot Channel

**CPIO**

*Copy file archives In and Out* is a command that copies files into and out of a *cpio* archive. The *cpio* archive may span multiple volumes.

**CPU**

Central Processing Unit

**CS**

Circuit Switched

**CSU**

*Channel Service Unit* is a piece of hardware that converts digital data frames used on a *LAN* into a frame appropriate to a *WAN* and vice versa.

**CSV**

*Comma Separated Value* is the simplest form of file for holding scientific, or other data. Data is listed in columns in a text file, each value being separated by a comma.

**CTCH**

Common Traffic Channel

## D

**DCA**

Dynamic Channel Allocation

**DCCH**

Dedicated Control Channel

**DCH**

Dedicated Channel

**DCN**

*Data Communications Network* is used to convey Network Management commands and reports around a communications network infrastructure.

**DHCP**

The *Dynamic Host Configuration Protocol* is a communications protocol that lets network administrators manage centrally and automate the assignment of IP addresses in an organization’s network.

**DL**

Downlink

**DNS**

*Domain Name System* translates alphabetic domain names into numeric IP addresses.

**DPCCH**

Dedicated Physical Control Channel

**DPCH**

Dedicated Physical Channel

**DPDCH**

Dedicated Physical Data Channel

**DRNC**

Drift Radio Network Controller

**DRNS**

Drift Radio Network Subsystem

**DSX**

*Digital Signal Cross-Connect* switch permits cross-connections by patch cords and plugs and is used with E1/T1 lines.

**DTCH**

Dedicated Traffic Channel

**DTX**

*Discontinuous Transmission* is a battery-saving feature in which, while the phone is switched on, the power is conserved by turning off transmission during pauses in speech. However, it impairs sound quality.

**E**

**E1**

Wide-area digital transmission scheme used predominantly in Europe that carries data at a rate of 2.048 Mbps.

**EDGE**

*Enhanced Data Rates for GSM Evolution* is an enhanced modulation technique designed to increase network capacity and data rates in *GSM* networks. *EDGE* provides data rates up to 384 Kbps.

**EIR**

*Equipment Identity Register* is a database used to verify the validity of equipment being used in mobile networks.

**EIRP**

*Equivalent Isotropic Radiated Power* evaluates the strength of receive signals.

**EML**

*Element Management Layer* is an abstraction of the functions provided by systems that manage each network element on an individual basis.

**EMS**

*Element Management System* is a management system that provides functions at the *EML*.

**ETSI**

*European Telecommunications Standards Institute* is the primary telecommunications standards organization that produces European standards and technical reports.

## F

**FACH**

Forward Access Channel

**FAUSCH**

Fast Uplink Signaling Channel

**FCS**

*Frame Check Sequence* is a 16-bit field, usually appended to the end of a frame, which contains error checking information.

**FDD**

In a *Frequency Division Duplex* system, it is possible for simultaneous transmission and reception of radio signal. The mode of communication is facilitated by having a frequency channel with two separate operating frequencies, one for transmission and the other for reception.

**FDMA**

*Frequency Division Multiple Access* is a digital transmission technology that combines elements of *TDMA* and spread spectrum.

**FEC**

*Forward Error Correction* is a technique for detection and correction of errors in a digital data stream.

**FER**

Frame Error Rate

**FM**

Fault management

**FMS**

Flexent™ Mobility Server

**FN**

Frame Number

**FP**

Frame Protocol

**FRU**

*Field Replaceable Unit* is a component, which upon failure, can be removed from a network device and replaced in the field.

**FS**
Fault Synchronization

**FTAM**
*File Transfer, Access and Management* is an *OSI* remote file service and protocol.

**FTP**
*File Transfer Protocol* is a protocol used on the Internet for exchanging files.

**FWR**
Flexent™ Wireless Router

## G

**GDF**
Generic Descript File

**GDN**
Global Distinguished Name

**GGSN**
Gateway GPRS Support Node

**GIS**
*Geographical Information System* is a specialized database for storing and manipulating geographic information.

**GMSC**
*Gateway Mobile Switching Center* acts as a gateway for incoming calls in a *GSM* network.

**GMSK**
*Gaussian Minimum Shift Keying* is a method of modulation used by *GSM*, which shapes pulses to minimize spectral leakage.

**GPRS**
*General Packet Radio System* is a *GSM* data transmission technique that does not set up a continuous channel for the transmission and reception of data, but transmits and receives data in packets. It makes very efficient use of available radio spectrum.

**GSM**
*Global System for Mobile Communications* is a standard for digital cellular communications used by second generation mobile phones to connect to the mobile networks.

**GSN**
GPRS Support Node

**GTP**

*GPRS Tunneling Protocol* is a protocol that transports IP packets between an *SGSN* and a *GGSN*.

**GTT**

Global Title Transaction

**GUI**

*Graphical User Interface* is a visual interface to an application with graphical elements, such as icons, menu bars, buttons, toolbars, and dialogs to interact with the application.

**H**

**HCF**

Home Location Register Control Function

**HCS**

Hierarchical Cell Structure

**HDF**

Home Location Register Data Function

**HLR**

*Home Location Register* is the location register databases to which subscriber identity is assigned for record and billing purposes.

**HM**

Hierarchy Manager of Lucent OMC-H Network Manager.

**HO**

Handover

**HSCSD**

*High Speed Circuit Switched Data* is a dedicated circuit-switched data communications technology for *GSM* that increases data throughput up to 14.4 Kbps in a single channel, and up to 57.6 Kbps in aggregated channels.

**HVAC**

Heating, ventilation, and air conditioning.

**I**

**ID**

Inventory Data

**IFM**

Integrated Fault Management

**IMEI**

*International Mobile Equipment Identity* is a unique identifier assigned to all GSM devices.

**IMSI**

*International Mobile Subscriber Identity* uniquely identifies mobile subscribers to a mobile network.

**IMT-2000**

*International Mobile Telecommunications 2000* is a general term for technologies planned to be included in the *ITU's* world standards for third generation mobile communication.

**IN**

*Intelligent Network* is a sophisticated network capable of recognizing the profile of its users or subscribers.

**INAP**

*Intelligent Network Application Part* was developed by *ITU*. *INAP* is a parallel definition of *IN* standards based on the American AIN 0.1.

**IP**

The *Internet Protocol* is the protocol by which data is sent from one computer to another on the Internet.

**IPv6**

*Internet Protocol Version 6* provides 128-bit IP addresses.

**ISDN**

*Integrated Services Digital Network* is a digital telephony scheme that allows users to connect to the Internet over standard phone lines at speeds higher than a 56K modem allows.

**ISO**

*International Standards Organization* is an international organization responsible for setting international standards, such as the ISO Latin-1 character set.

**ISUP**

*ISDN User Part* is a portion of the signaling system that manages the telephone call, including calling party number information, call status checking, trunk management, system messaging.

**ITU**

*International Telecommunication Union* is an international organization that sets standards for data communication.

**ITU-T**

*International Telecommunication Union — Telecommunication Standardization Sector*, an advisory organization that is part of *ITU*, is responsible for communications, telecommunications, and networking standards throughout the world.

**Iu**

Interface between the core network and the UTRAN

**Iu-CS**

Interface — Circuit Switched

**Iu-PS**

Interface — Packet Switched

**Iub**

Interface between an RNC and a Node B

**Iur**

Logical interface between two RNCs

**IWU**

Inter Working Unit

## J

**JVM**

Java Virtual Machine

## K

**Kbps**

*Kilobits per second* is a unit of measurement of the transmission speed of data measured in 1,024 bits per second.

## L

**L1**

Layer 1 (L1) refers to the physical layer of cache memory in a computer. For example, the Intel MMX microprocessor comes with 32 thousand bytes of L1.

**L2**

Layer 2 (L2) refers to the Data Link layer of the commonly-referenced multi-layered communication model, Open Systems Interconnection (OSI). The Data Link layer is concerned with moving data across the physical links in the network.

**L3**

Layer 3 (L3) refers to the Network layer of the commonly-referenced multi-layered communication model, Open Systems Interconnection (OSI). The Internet Protocol (IP) address is a layer 3 address.

**LA**

Location Area

**LAI**

Location Area Identity

**LAN**

*Local Area Network* is a short-haul communications system that connects data processing devices in a building or group of buildings within a few square kilometers, including workstations, front-end processors, controllers, switches, and gateways.

**LAPD**

*Link Access Procedure type D* is an X.25 point-to-point link Layer 2 link protocol defined by ITU-T to transfer blocks of information across a single Layer 1 link and supports multiplexing of different connections at Layer 2.

**LAPDm**

Link Access Procedure type D (mobile)

**LLC**

Logical Link Control

**LMT**

Local Maintenance Terminal

**LOM**

The *Lights Out Management* prompt provides the Command Line Interface for the System Controller. It provides configuration control, environmental status, the ability to power on and off the system, the ability to change the System Controller password and access to other System Controller functions.

**LSA**

Localized Service Area

**LTE**

Line Transmission Equipment

**Lucent OMC-H**

Lucent OMC-H is a software that maintains the logical structure and administrative data of Super Distributed Home Location Register.

**LUN**

*Logical Unit Number* is used to identify SCSI devices so the host can address and access the data on each disk drive in an array

**LVM**

*Logical Volume Manager* allows several physical partitions to be represented as a single block device, amongst other things.

## M

**MAC address**

*Media Access Control address* is the unique physical address of each device’s network interface card.

**MAP**

Mobile Application Part

**MAS**

MiLife Application Server

**MB**

Megabyte

**Mbps**

*Megabits per second* is a unit of measurement of the transmission speed of data measured in 1,048,576 bits per second.

**MCC**

Mobile Country Code

**MCCM**

Mobile Communication Configuration Management

**ME**

Mobile Equipment

**MIB**

*Management Information Base* is a data store for management information.

**MIM**

Management Information Model

**MIS**

*Management Information Server* is the Solstice EM software process that serves network management clients. The process running on a network workstation or server that maintains network management information in a database according to the definitions in its *MIT*, provides polling, filtering, logging, and other services to Solstice EM services and various other applications.

**MIT**

*Management Information Tree* is a naming tree for an *MIS* or a set of *MISs*. The structure that organizes access to all information stored in the Solstice EM *MIS*.

**MML**

Man-Machine Language

**MNC**

Mobile Network Code

**MO**

*Managed Object* is a conceptual view of a logical or physical resource that needs to be monitored and controlled to avoid network failure and performance degradation.

**MS**

Mobile Station

**MSC**

*Mobile Switching Center* is an interface between the base station system and the switching subsystem of the mobile phone network.

**MSID**

Mobile Station Identifier

**MSIN**

Mobile Station Identification Number

**MSISDN**

*Mobile Subscriber International Standards Digital Network* is the number used to call a mobile subscriber. It consists of a country code, a national destination code, and a subscriber number.

**MTBF**

*Mean Time Between Failures* is a measure of reliability. The longer the time span between failures, the more reliable the device.

**MTP**

*Message Transfer Part* refers to Level 1 through 3 protocols of the *SS7* protocol stack.

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**N**

**NBAP**

Node B Application Part

**NBI**

*North Bound Interface* is a collection of interfaces used for communication between the Telecommunications Management Network defined *EMS* and *NMS* layers .

**NDC**

National Destination Code

**NE**

*Network Element* is an equipment deployed in a telecommunications network that carries voice, data, or video traffic.

**NEM**

Network Element Manager

**NMC**

*Network Maintenance Center* provides 24-hour monitoring of public networks.

**NML**

*Network Management Layer* is an abstraction of the functions provided by systems which manage *NEs* on a collective basis, so as to monitor and control the network end-to-end.

**NMS**

*Network Management System* is an entity that implements functions at the *NML* and *EML*.

**NRM**

Network Resource Model

**NSAP**

*Network Service Access Point* is a form of addressing used within *ISO's* network layer protocols.

**NTP**

*Network Time Protocol*, defined in IETF RFC 1305, is used for synchronizing the internal clock of the computers to a common time source.

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## O

**OAM&P**

Operations, Administration, Maintenance, and Provisioning

**OSI**

*Open Systems Interconnection* is a set of internationally accepted and openly developed standards that meet the needs of network resource administration and integrated network utility.

**OSS**

*Operations Support System* is a network management system supporting a specific management function, such as alarm surveillance and provisioning.

---

## P

**PAD**

*Packet Assembler/Disassembler* assembles packets of asynchronous data and emits these buffers in a burst to a packet switch network. It also disassembles packets from the network and emits the data to the non-packet device.

**PCCH**

Paging Control Channel

**PCCPCH**
Primary Common Control Physical Channel

**PCG**
Packet Charging Gateway

**PCH**
*Paging Channel*, a logical channel within one *GSM* frequency range, is used for paging or alerting mobile terminals to an incoming call.

**PCN**
Packet Core Network

**PCPCH**
Physical Common Packet Channel

**PDCP**
Packet Data Convergence Protocol

**PDN**
Packet Data Network

**PID**
Packet Identification

**PLMN**
*Public Land Mobile Network* is another name for a *GSM* network.

**PM**
Performance Management

**PM GUI**
Process Manager Graphic User Interface

**PMO**
Process Management Object

**PPP**
*Point-to-Point Protocol* is the most common Internet protocol for connection to *TCP/IP* networks through conventional and *ISDN* modems.

**PPS**
Post Processing System

**PRACH**
Physical Random Access Channel

**PS**
Packet switched

**PSPDN**

*Packet Switched Public Data Network* is a packet-oriented public network usually based on X.25.

**PSTN**

*Public Switched Telephone Network*, generic term for public dial-up telephone networks, is a collection of interconnected voice-oriented public telephone networks.

**PTM**

*Point to Multipoint* is a network configuration that connects one point to multiple points on the network.

**PTP**

*Point to Point* is a radio system in which two sites on a radio channel communicate only between themselves and with no other site. This is typically employed when the two sites exchange large amounts of information.

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**Q**

**QoS**

*Quality of Service* is a measure of the service quality for a telecommunications service.

**QPSK**

*Quaternary Phase Shift Keying* is a code that allows two bits per signal element.

---

**R**

**RA**

Routing Area

**RAB**

Radio Access Bearer

**RAC**

Routing Area Code

**RACH**

Random Access Channel

**RAID**

*Redundant Array of Independent Disks* provides a method of distributing data across a set of physical disks to prevent the loss of all data if a disk fails.

**RAN**

Radio Access Network

**RANAP**

Radio Access Network Application Part

**RF**

*Radio Frequency* is a range of electromagnetic frequencies above sound and below visible light, used for broadcast transmission.

**RIP**

*Routing Information Protocol* is a simple routing protocol that is part of the TCP/IP protocol suite. It determines a route based on the smallest hop count between source and destination.

**RJ-45**

*Registered Jack-45* is an 8-pin connector used to attach data transmission devices to standard telephone wiring and is commonly used in *100 Base-T* connections.

**RLC**

Radio Link Control

**RLCP**

Radio Link Control Protocol

**RMI**

Remote Method Invocation

**RNC**

*Radio Network Controller* is a logical collective network entity consisting of TCS, PCF applications, and TPUs. The RNC provides high-speed cell and packet processing capabilities, and supports multiple packet transport protocols, such as ATM, IP, and MPLS.

**RNS**

Radio Network Subsystem

**RNSAP**

Radio Network Subsystem Application Part

**RNTI**

Radio Network Temporary Identifier

**RRA**

Radio Resource Allocation

**RRC**

Radio Resource Control

**RRM**

Radio Resource Management

**RS-232C**

*RS-232C* is a standard that describes the physical interface and protocol for serial data communication between computers and serial devices, such as modems.

**RSCP**

Received Signal Code Power

**RSSI**

Received Signal Strength Indicator

**RX**

Receive

## S

**SACCH**

Slow Associated Control Channel

**SAP**

*Service Access Point* is the point at which the services of an *OSI* layer are made available to the next higher layer.

**SBI**

South Bound Interface

**SCCH**

Synchronization Control Channel

**SCCP**

*Signaling Connection Control Part* is a *SS7* protocol that provides additional functions to the *MTP*. It typically supports *TCAP*.

**SCH**

*Synchronization Channel* is a special channel broadcast by the base station to enable the mobile terminals within its cell synchronize themselves with the network.

**SCP**

SS7 consists of a set of reserved or dedicated channels known as signaling links and the network points that they interconnect. The three types of network points (also called signaling points) are Service Control Points (SCPs), Service Switching Points (SSPs), and Signal Transfer Points (STPs).

**SCSI**

Small Computer System Interface

**SDCCH**

*Standalone Dedicated Control Channel* is logical channel with one *GSM* frequency range.

**SEM**
Solstice Enterprise Manager

**SFTP**
*Secure File Transfer Protocol* performs operations over an encrypted *SSH* transport, thus gaining the features of public key encryption and compression.

**SGSN**
Serving GPRS Support Node

**SIM**
*Subscriber Identity Module*, a card commonly used in *GSM* phones, stores data that identifies the caller to the network service provider and encrypts voice and data transmissions.

**SMS**
*Short Message Service* is a feature available with phones to allow users to send and/or receive short alphanumeric messages.

**SMS-CB**
SMS Cell Broadcast

**SNM**
Sub-Network Management function

**SNMP**
Simple Network Management Protocol

**SPC**
Signaling Point Code

**SRNC**
Serving Radio Network Controller

**SRNS**
Serving Radio Network Subsystem

**SS7**
*Signaling System No. 7* is an internationally standardized general purpose signaling system that provides a means of signaling and transferring information between network processors. *SS7* uses two protocol types; *ITU-T* and *ANSI*. SS7 consists of a set of reserved or dedicated channels known as signaling links and the network points that they interconnect. The three types of network points (also called signaling points) are *SCPs*, *SSPs*, and *STPs*.

**SSH**
*Secure Shell* is a command line interface used to securely access a remote computer.

**SSN**

SubSystem Number

**SSP**

*Service Switching Points* originate or terminate a call and communicate with *SCPs* on the SS7 network to determine how to route a call or set up and manage some special feature.

**STC**

Signaling Transport Converter

**STP**

*Signal Transfer Points* are nodes in an SS7 network that route messages between exchanges and databases that hold subscriber and routing information.

**System Controller**

The *System controller* is responsible for providing the *LOM* functions, which include power on sequencing, environmental monitoring, fault indication, and alarms.

## T

**T1**

Basic rate for digital trunks in North America (rate 1.544 Mbps)

**TCAP**

*Transaction Capabilities Application Part* provides the signaling function of network databases. *TCAP* is an application protocol that provides the platform to support non-circuit related, transaction-based information exchange between network entities, as used by ISDN.

**TCH**

*Traffic Channel* is a channel used by the network to transmit coded voice packets.

**TCP/IP**

*Transmission Control Protocol/Internet Protocol* is a combined set of protocols that performs the transfer of data between two computers. *TCP* monitors and ensures correct transfer of data and *IP* receives the data from *TCP*, breaks it up into packets, and ships it off to the network.

**TDD**

Time Division Duplex

**TDMA**

*Time Division Multiple Access* uses a time-slice technique on a radio channel to deliver digitized packets of speech or data.

**TFC**

Transport Format Combination

**TFCI**

Transport Format Combination Indicator

**TFCS**

Transport Format Combination Set

**TMN**

*Telecommunications Management Network* architecture is a reference model for a hierarchical telecommunications management approach. Its purpose is to divide the functional areas of management into layers.

**TMSI**

Temporary Mobile Subscriber Identity

**TPU**

Traffic Processing Unit is an adjunct unit that provides a network interface function, transport protocol processing, application traffic processing, and transport plane resource management.

**Tx**

*Tx* is a common abbreviation used for *Transmit*.

## U

**U-RNTI**

UTRAN Radio Network Temporary Identity

**UARFCN**

UTRA Absolute Radio Frequency Channel Number

**UARFN**

UTRA Absolute Radio Frequency Number

**UDP**

*User Datagram Protocol* is the Transport layer protocol in the *TCP/IP* suite. *UDP* is used at the two ends of a data transfer. However, it does not establish a connection or provide reliable data transfer like TCP.

**UDT**

*Unit Data* is an error message type of class type 0. See also *XUDT*.

**UE**

User Equipment

**UMTS**

*Universal Mobile Telecommunications System* provides broadband, packet-based transmission of text, digitized voice, video, and multimedia at data transmission rates up to 2 Mbps.

**UNI**

*User Network Interface* is a protocol that defines how *ATM* end users connect to private and public networks. The *UNI* defines the available capabilities for ATM transport.

**UPS**

Uninterruptible Power Supply

**URA**

User Registration Area

**USIM**

Universal Subscriber Identity Module

**UTC**

*Universal Time Coordinated* is the mean solar time along the Earth's prime meridian (0° longitude). *UTC* was formerly known as Greenwich Mean Time (GMT).

**UTRAN**

Universal Terrestrial Radio Access Network

**Uu**

Radio interface between the UTRAN and the User Equipment

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**V**

**VBR**

Variable Bit Rate

**VC**

Virtual Circuit

**VHE**

Virtual Home Environment

**VLAN**

A virtual (or logical) LAN is a local area network with a definition that maps workstations on some other basis than geographic location (for example, by department, type of user, or primary application).

**VLR**

Visitor Location Register

**VNE**

Virtual Network Element

**VoIP**

Voice Over IP

**W** **WAG**

Wireless Access Gateway

**WAN**

Wide Area Network

**WAP**

Wireless Application Protocol

**WDP**

Wireless Datagram Protocol

**Workstation**

A desktop computer with a graphics monitor running the UNIX operating system

**X** **X.25**

A CCITT (ITU-T) protocol specification covering OSI layers 1, 2, and 3.

**X.733**

An ITU-T stamdard specification covering alarm reporting function.

**XUDT**

An Extended Unit Data (XUDT) message is an error message type of class type 1. See also UDT.

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