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GUIDE

Mitel OpenScape Fault Management

Mitel OpenScape Fault Management V14, FM 2 FM Gateway Plugin

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1 Introduction

1.1 What is the FM 2 FM Gateway?

The FM 2 FM Server Gateway, also called Server2Server Gateway or short Gateway in the following, provides an efficient hierarchical management solution for the OpenScape Fault Management (OpenScape FM) systems from Unify.

By employing the Gateway Plugin, multiple OpenScape FM servers can be integrated into one central OpenScape FM management station, acting as the master server. The result is a unified representation of an OpenScape FM multi-subsystem environment in one OpenScape FM master system.

1.1.1 Benefits for the Customer

Organizations that are currently using or are planning to use the OpenScape FM to manage their TCP/IP and telecommunications world can benefit from employing the S2S Gateway in the following ways.

1.1.1.1 Integration of Isolated Networks

Network infrastructures of organizations and enterprises often consist of multiple isolated local area networks (LAN) and telecommunication networks at different places. Each isolated network is managed separately in a non centralized way. In many cases a central administration is not possible, because the subnetworks are separated by firewalls or not connected at all. Provided that a dedicated network connection exists, the Gateway integrates the management of those isolated networks in one central OpenScape FM management server. Therefor the Gateway enables a general overview and control of the isolated networks managed by OpenScape FM from a single point of access.

1.1.1.2 Load Distribution

To determine the status of large networks with many connected devices can be a cost sensitive work for management platforms. For example, the OpenScape FM system uses active polling to calculate the current devices status.

Load distribution or load balancing (these terms will be used interchangeably in this section) means to distribute the monitoring of the devices for large networks evenly across separate OpenScape FM servers so that no single OpenScape FM server is overwhelmed. The Gateway combines all “load balanced” OpenScape FM instances into one central OpenScape FM master server. The result is a “load balanced” fault monitoring approach increasing the performance and survivability of the Fault Management in connection with large networks, while reducing the network traffic between separated locations.

1.2 Operating Principles

1.2.1 OpenScape Fault Management

OpenScape FM is the Unify corporate umbrella management platform for the OpenScape Enterprise Convergence Architecture. It is a web-based client/server solution, which is completely implemented in Java. It provides fault monitoring and control of heterogeneous Unify OpenScape communication infrastructures. It integrates the management of circuit switched and packet based IP networks thus covering established PBX as well as upcoming Voice over IP (VoIP) communication technology.

OpenScape FM is a scalable platform offering specific add-ons (called Plugins) for the management of OpenScape 4000, OpenScape Business/H3K and OpenScape Voice communication devices.

1.2.2 Interconnecting Separate OpenScape FM Platforms

By using the Gateway Plugin it is possible to integrate the management functions from one or more OpenScape FM servers, so called slave servers, into a central OpenScape FM master server. The Gateway enables the management of all supported OpenScape FM communication technologies.

For this purpose, on all OpenScape FM slave servers the Gateway Plugin has to be initialized and the connection parameters to the selected master server have to be configured. Afterwards the Gateway will transfer all objects and topologies as well as corresponding fault events and information that have been selected for synchronization on the respective slave server.

It is possible to transfer the slave server‘s entire content (default setting) or to transfer individual parts, so called sub-trees. The selection of sub-trees allows for the creation of a customized network representation on the master server and reduces the amount of data overhead by the Gateway.

1.2.3 Gateway Architecture

The Gateway is divided into two modules: the Gateway Plugin and the Gateway Database Daemon. The Gateway Plugin runs on the OpenScape FM slave server and communicates with the Daemon which resides on the OpenScape FM master server (see *Figure 1*).

The Gateway Plugin transfers topology views and fault events to the OpenScape FM master server. The daemon receives the synchronized data and writes it into the database of the master server.

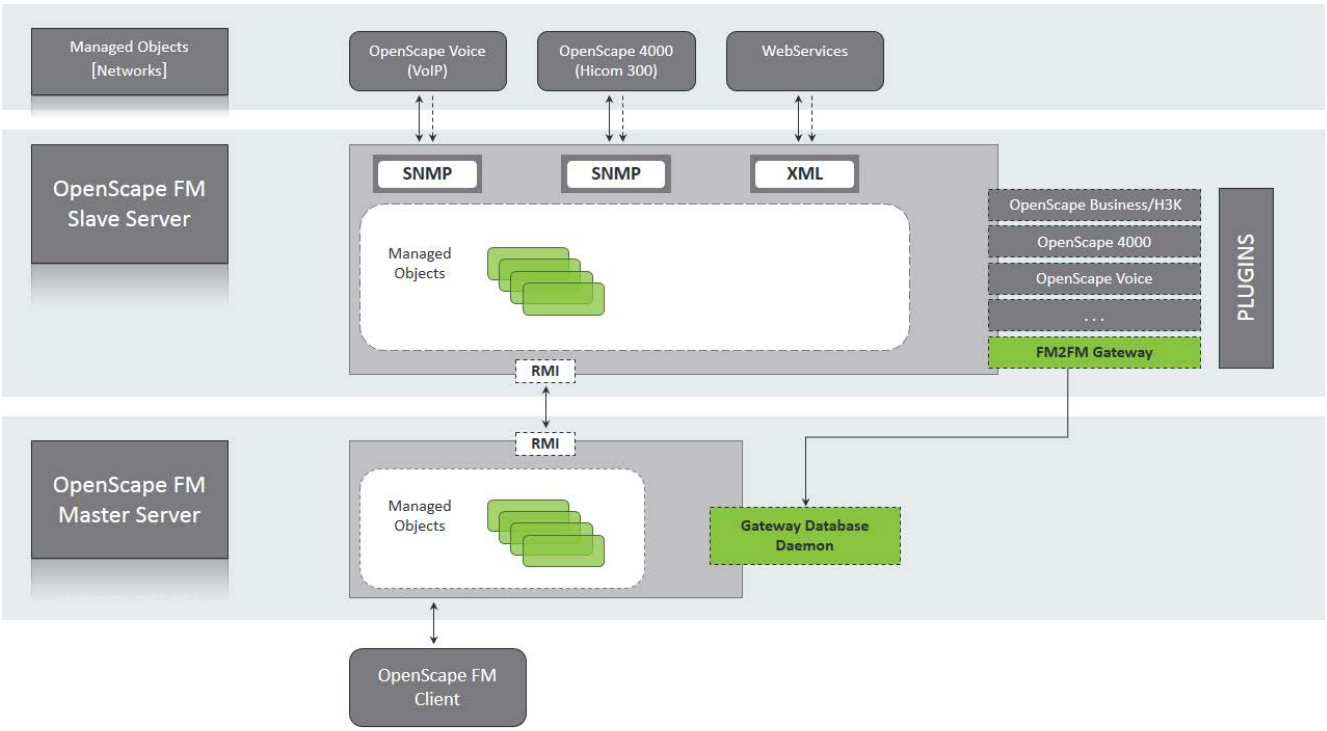

Figure 1 Architecture of the S2S Gateway

Forwarding of events is done for all objects which are transferred to the OpenScape FM master system. These events are displayed in the OpenScape FM master systems Event Browser.

The views and fault events transferred to the OpenScape FM master server are visualized by the standard OpenScape FM Client. To display specific information of the transferred objects, the object-specific context menus of the ‘original’ objects are also available in the OpenScape FM master system. While performing an action from a remote context menu, all information is displayed in the client in the same way as if the action were performed directly on the slave server.

2 Getting Started

OpenScape FM is a web-based client/server management solution which is fully implemented in Java. OpenScape FM provides fault monitoring and control of Unify HiPath PBX and VoIP networks. The basic module is the OpenScape FM Desktop providing the basis to implement and use technology specific Plugin modules. The Gateway Plugin will be installed automatically during the OpenScape FM installation.

2.1 Installing and Initializing

The Gateway Plugin is automatically available after the OpenScape FM installation process. No additional installation is necessary. On the master server no further actions are necessary. On the slave servers the Gateway Plugin has to be initialized.

When connected to the OpenScape FM slave server, with an OpenScape FM client, the Gateway Plugin can be initialized via the menu entry **Server->Plugins->Init Server2Server Gateway**.

Now the OpenScape FM slave component is ready for the data exchange with the OpenScape FM master server. Afterwards the following actions have to be performed:

- the license on the master server has to be set, see *Section 2.2, “Licensing”* for more information.
- the connection to the OpenScape FM master server has to be configured (see *Section 3.1, “Set up Gateway Connection”*).
- the synchronisation process has to be started (see *Section 3.2, “Gateway Synchronization”*).

2.2 Licensing

The Gateway Plugin is equipped with a temporary demo license, valid for up to 2 slave servers, therefor it will be immediately operational. Since the demo license is only valid for 7 days (90 days using CLA), it should be replaced with a proper license within this period.

The licensing of the Plugin is managed by the License Manager of OpenScape FM. The License Manager of OpenScape FM is a component which manages all licenses needed by the OpenScape FM. Therefore the Gateway Plugin license has to be known by the OpenScape FM License Manager. More about the License Manager and how to install new licenses can be found in the *OpenScape FM Desktop User Guide*.

A license for the Gateway is only needed on the master server. Here the amount of connected slaves has to be licensed.

When the number of licensed slaves is reached, no further slave servers may connect to the master server.

The license feature symbol ‘OpenScape FM‘ below the object path "System"->"Server"->"License Manager" will show the current license status. More information about the license status can be displayed by using the menu entries **Server->Administration->License Manager->License Status...** and **Server->Administration->License Manager->Detail Information...** from the main menu. More about the License Manager can be found in the *OpenScape FM Desktop User Guide*.

When the license expires, a license violation warning occurs. A warning will be received once a day and a Gateway event will be registered in the Event Browser of the master. Until a valid license is entered, no data from the slaves will be synchronized after the grace period.

3 Working with the FM 2 FM Gateway

After the Gateway Plugin has been initialized on the OpenScape FM slave server, the Gateway *Manager* symbol, called **Server2Server Gateway** (see *Figure 2*), appears on its root submap. This Gateway Manager symbol serves as a container for all Gateway connections of the slave server.

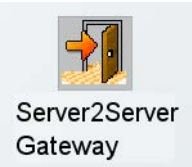

Figure 2 Gateway Manager symbol

With a double click, the submap of the Server2Server Gateway can be opened. This submap contains the Gateway symbols which represent connections to OpenScape FM master servers. These Gateway symbols serve as the base for all OpenScape FM Gateway operations. Initially the OpenScape FM Gateway symbol is grey, because the synchronization process is not running.

The object-specific menu entries will be further explained in the following.

3.1 Set up Gateway Connection

The following sections explain the slave server‘s configuration dialogs for the set-up of a Gateway connection to a master server.

Important Note:
If an *IBM Java1.8* is used on the master server and an *Oracle Java1.8* on the slave server, the connection does not work with TLS version 1.2 (Transport Layer Security). In this special case, version 1.0 or 1.1 has to be used. These versions can be reactivated on the master server by using the main menu entry **Server->Administration->Server Properties** and the page **Server Process Parameters**.

3.1.1 Edit Connection Parameter

The context menu of the Server2Server component contains the menu entry **Edit Gateway Parameters**. This menu entry is only visible for “Administrator” users. Via the menu entry **Edit Gateway Parameters**, a user interface is opened in which the connection parameters for the receiving OpenScape FM master server (*Figure 3*) can be specified. All parameters can only be edited while the gateway synchronization is stopped.

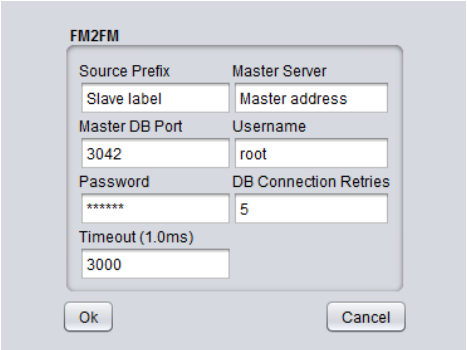

Figure 3 Edit Gateway Parameters

Source Prefix: This prefix will be assigned to all object names on the OpenScape FM master server which have been imported from the OpenScape FM slave server. **Thus it should be set initially and not changed afterwards.** Per default, the name of the server is set. If this is not available, the IP address is used.
If multiple OpenScape FM slave servers, with customized source prefixes, are used with one OpenScape FM master server the entered source prefixes should be distinct.

Master Server: Here the name or IP address of the OpenScape FM master server, where the data is to be transferred to, is defined.

Master DB Port: Here, the port for the OpenScape FM master server connection is specified. The default value is ‘3042‘.

Username: A valid username for the OpenScape FM master server has to be indicated here. This user must have the database administrator right for the root submap in the OpenScape FM master server.

Password: Here, the password for the OpenScape FM master user account has to be specified.

DB Connection Retries: The number of connection retries. If the synchronization is interrupted due to network errors or if an error concerning the synchronization occurs, a reconnect is initiated (default 5 attempts at 3 second intervals).
If these attempts all fail, the online synchronization is terminated in a controlled manner and the gateway enters a permanent reconnection mode. In this mode an attempt to reconnect is made every 60 seconds. If this is successful, the online synchronization is restarted.

Timeout (1.0 ms): The timeout interval for every connection attempt to the OpenScape FM master server, in milliseconds. Before initiating the next connection attempt the gateway is waiting until the time interval elapsed.

Important Note:
The parameters **Source Prefix**, **Master Server**, **Master DB Port**, **Username** and **Password** are only editable when the Gateway synchronization is stopped.

All operations of the Edit Gateway Parameters GUI will be reported in the OpenScape FM log file, see *Section 3.2.4, “Logging of Gateway Operations”*.

3.1.2 View Connection Parameters...

This menu entry is visible for “Operator” users only. With **Show Gateway Parameters...** a GUI similar to the one explained in *Section 3.1.1, “Edit Connection Parameter”* can be opened, but all fields are read-only.

3.1.3 Select Synchronization Nodes...

The menu entry **Select Synchronization Nodes...** of the OpenScape FM Gateway symbol opens a GUI (see *Figure 4*) where the Synchronization Nodes can be selected. These are the access points for the synchronization, i.e. when a synchronization point is selected, the corresponding object/node and its entire subtree will be exported to the OpenScape FM master platform. The default setting for the synchronization is the root node. If the preselected node is not changed, the entire OpenScape FM object hierarchy will be exported to the OpenScape FM master server.

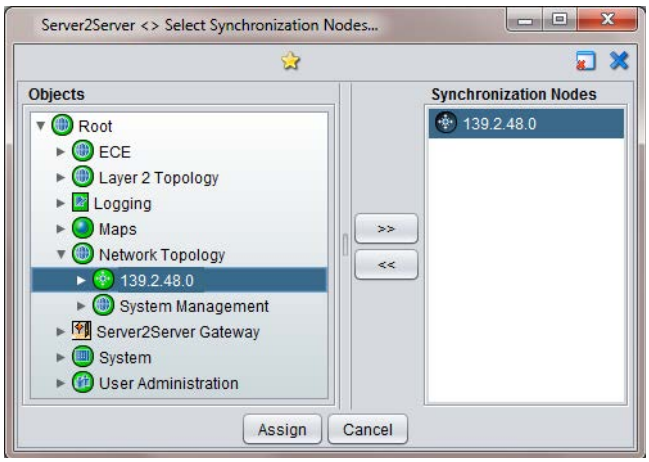

Figure 4 Assign Synchronization Nodes

In the object tree on the left-hand side, an object can be selected and by pressing **>>** (select) it will be added to the list of synchronization nodes on the right-hand side. Each object will be displayed only once even if it is selected several times.

In order to remove it from that list, it has to be selected on the right-hand side and can then be removed by pressing **<<** (deselect).

The button **Assign** confirms all operations and closes the GUI. If the operations should be reversed, the button **Cancel** closes the GUI without saving.

If the Gateway Synchronization is not running during the selection of the synchronization nodes, the selected synchronization nodes will be integrated with the next synchronization process.

If the Gateway Synchronization is running during the selection of the synchronization nodes, the selected synchronization nodes will be integrated in the currently running synchronization process. The synchronization does not need to be restarted.

All operations of the Synchronization Nodes GUI will be reported in the OpenScape FM log files, see *Section 3.2.4, “Logging of Gateway Operations”*.

Important Note:
When an object is synchronized *for the first time*, all currently present status relevant events and their existing event comments are transmitted to the Master.
These are usually all non acknowledged events with status *Warning*, *Minor*, *Major* or *Critical*).

3.1.4 Select Synchronization Map...

The Map, which will be taken as a basis for the Gateway synchronization, can be selected, using the menu entry **Select Synchronization Map...** of the OpenScape FM Gateway symbol‘s context menu (see *Figure 5*). All map specific information related to the symbols of the synchronized objects (*Section 3.1.3, “Select Synchronization Nodes...”*) on this map will be automatically transferred and updated in the OpenScape FM master system, while the synchronization process is active. The following map specific information will be synchronized:

- Positions of symbol and connection symbols
- Labels of symbol and conection symbols
- Symbol types (bitmaps and shapes)
- Background images of submaps

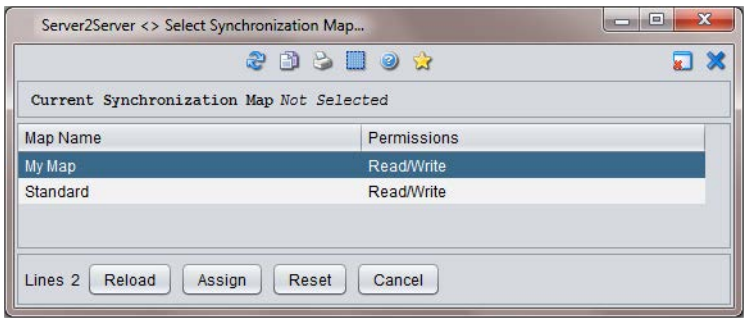

Figure 5 Select Synchronization Map

A selected map from the list can be confirmed with the button **Assign**.

The button **Cancel** reverses the operations and closes the GUI without saving. **Reset** will disable the transfer of the map specific information.

If the Gateway Synchronization is not running during the selection of the synchronization map, all the map specific information for the selected synchronization nodes will be integrated during the next synchronization process.

If the Gateway Synchronization is running during the selection of the synchronization map, the map specific information for the selected synchronization nodes will be integrated in the currently running synchronization process. The synchronization does not need to be restarted.

3.2 Gateway Synchronization

The following sections explain the Gateway specific dialogs for the handling and supervision of the synchronisation process.

3.2.1 Start Synchronization

The menu entry **Start Synchronization** starts the transfer of the previously selected objects to the OpenScape FM master server. Initially, all selected objects with their subtrees will be transferred, this process is called **Synchronization**. When this process has been completed, the so called **Online Synchronization** starts - i.e. all actions which are performed on the OpenScape FM slave server and which concern the synchronization nodes will be transferred to the OpenScape FM master server. When the synchronization process has been started, the OpenScape FM Gateway symbol will turn green - unless any problems arise which will be indicated by a light blue (status “Warning”) or red (i.e. status “Critical”) OpenScape FM Gateway symbol, depending on the type of the problem.

The menu entry **Start Synchronization** changes to **Stop Synchronization**.

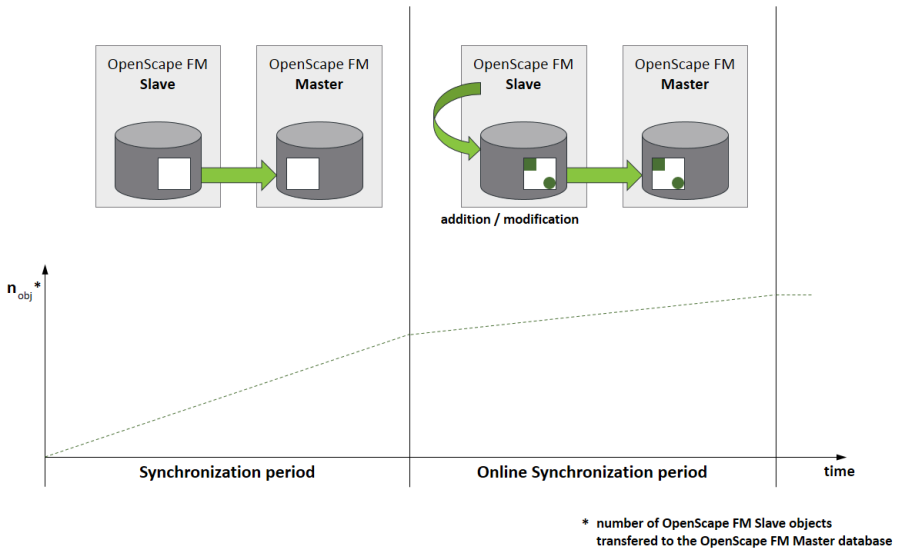

Figure 6 Server 2 Server synchronization process

After a synchronization has started two more submenus become available in the OpenScape FM Gateway symbol’s context menu: **Statistic** and **Performance**. They provide menu entries which give access to data transfer parameters.

Important Note:
If the OpenScape FM slave server is stopped while the Gateway Plugin is running, the current synchronization state of the Gateway Plugin (i.e. “running”) is saved. When the OpenScape FM server is restarted, the Gateway Plugin will automatically be started in the before saved synchronization status.

3.2.2 Statistics

The submenu **Statistics** provides three menu entries, which offer different synchronizations status information:

- **Synchronization**, see *Section 3.2.2.1, “Synchronization...”*
- **Online Synchronization**, see *Section 3.2.2.2, “Online Synchronization...”*
- **Object Counter**, see *Section 3.2.2.3, “Object Counter...”*

As mentioned in the chapter *Section 3.2.1, “Start Synchronization”*, the synchronization process is divided in the Initial Synchronization and the Online Synchronization. Therefor there are two different menu entries to view the synchronization status. The menu entry **Synchronization** to view the information of the Initial Synchronization and the menu entry **Online Synchronization** to view the information of the Online Synchronization.

3.2.2.1 Synchronization...

The menu entry **Statistics->Synchronization...** opens an Info Browser which displays the current status of the Initial Synchronization process. This menu entry will only be available when the Gateway Synchronization has been activated.

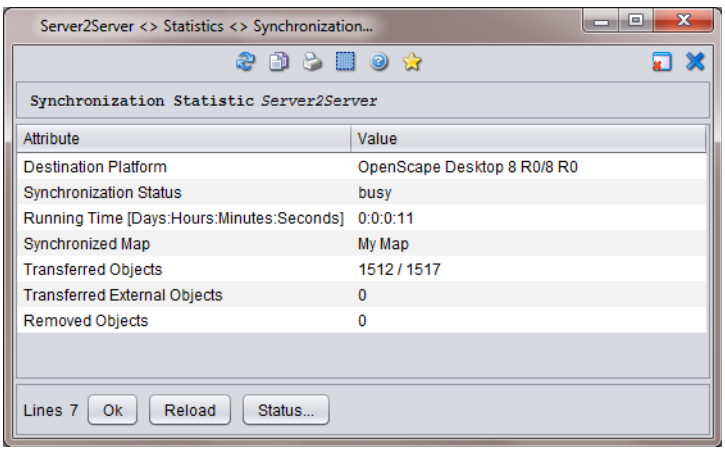

Figure 7 Synchronization Statistic

Destination Platform: The name and version of the master server (OpenScape FM)

Synchronization Status: If the initial synchronization process is started and running, “busy” is displayed. If the “Online Synchronization” has begun, i.e. when the initial synchronization has been accomplished, “finished” is displayed.

Running Time: Indicates how long the initial synchronization process has already been running.

Synchronized Map: Indicates the name of the synchronized map. All map specific information like symbol positions, labels, types and background images of synchronized objects on this map will be synchronized during the synchronization process.

Transferred Objects: Indicates the current number of synchronized objects and after the slash (/) the total number of objects to be synchronized.

Transferred External Objects: Indicates the number of synchronized external objects, i.e. OpenScape FM reference objects. See the *OpenScape FM Desktop User Guide* for a detailed explanation of reference objects.

Removed Objects: During an initial synchronization, objects which are in the OpenScape FM master database but which are no longer part of the synchronization nodes, will be removed from the OpenScape FM master database. Their number is indicated here.

The Button **Reload** refreshes all values of the Info Browser.

Status...: This button opens a GUI with four progress bars which indicate the percentages of the synchronization values (*Figure 8*):

Transferred Objects: This progress bar shows the percentage of OpenScape FM objects which have been transferred to the OpenScape FM master database.

Parent Child Relations: This progress bar shows the percentage of OpenScape FM object relations which have been transferred to the OpenScape FM master database. See the *OpenScape FM Desktop User Guide* for a detailed explanation of the object hierarchy in the OpenScape FM database.

Removed Objects: This progress bar shows the percentage of OpenScape FM objects which have already been removed from the OpenScape FM master database. Only objects which are no longer part of the synchronization nodes and have the OpenScape FM server-specific prefix (see *Section 3.1.1, "Edit Connection Parameter"*) will be removed.

Transferred Bitmaps: This progress bar shows the percentage of OpenScape FM bitmap images which have already been transferred to the OpenScape FM.

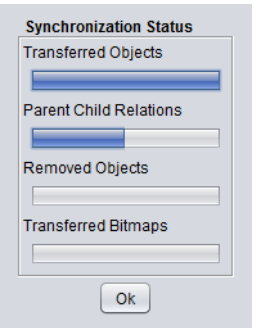

Figure 8 Synchronization Status

3.2.2.2 Online Synchronization...

The menu entry **Statistics->Online Synchronization...** opens an Info Browser which displays the current status of the Online Synchronization process (see *Figure 9*). The Online Synchronization process is started once the Initial Synchronization process has been completed. Until the Initial Synchronization process is finished all Online Synchronization parameters except for the status (which will be **waiting**) will be hidden. **Reload** updates the values of the Info Browser.

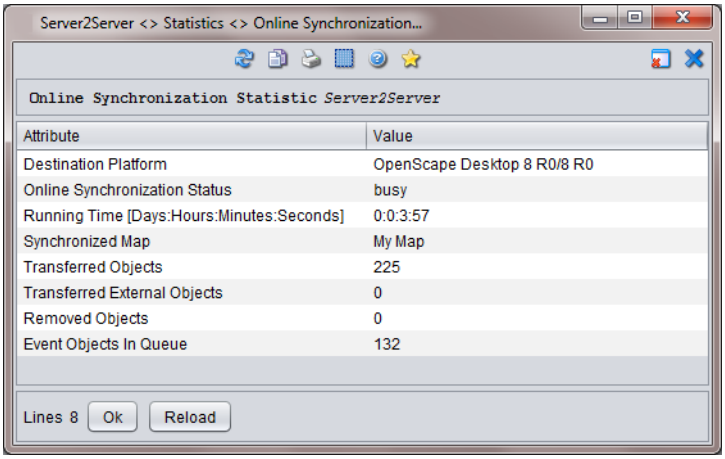

Figure 9 Online Synchronization Statistic

Destination Platform: The name and version of the master server (OpenScape FM).

Online Synchronization Status: If the Initial Synchronization process is still running, **waiting** is displayed. If the Online Synchronization has begun, **busy** is displayed.

Running Time: Indicates how long the Online Synchronization process has already been running.

Synchronized Map: Indicates the name of the synchronized map. All map specific information like symbol positions, labels, types and background images of synchronized objects of this map will be synchronized during the synchronization process.

Transferred Objects: Indicates the number of synchronized objects.

Transferred External Objects: Indicates the number of synchronized external objects. i.e. OpenScape FM reference objects. See the *OpenScape FM Desktop User Guide* for a detailed explanation of reference objects.

Removed Objects: During a synchronization, objects which have been in the OpenScape FM master database but which are no longer part of the synchronization nodes, will be removed from the OpenScape FM master database. Their number is indicated here.

Event Objects in Queue: Indicates the number of pending object operations which are still to be performed, e.g. the discovery of new nodes. This number also mirrors the current Gateway load.

3.2.2.3 Object Counter...

The Gateway Plugin keeps track of the number of transferred objects for each object type.

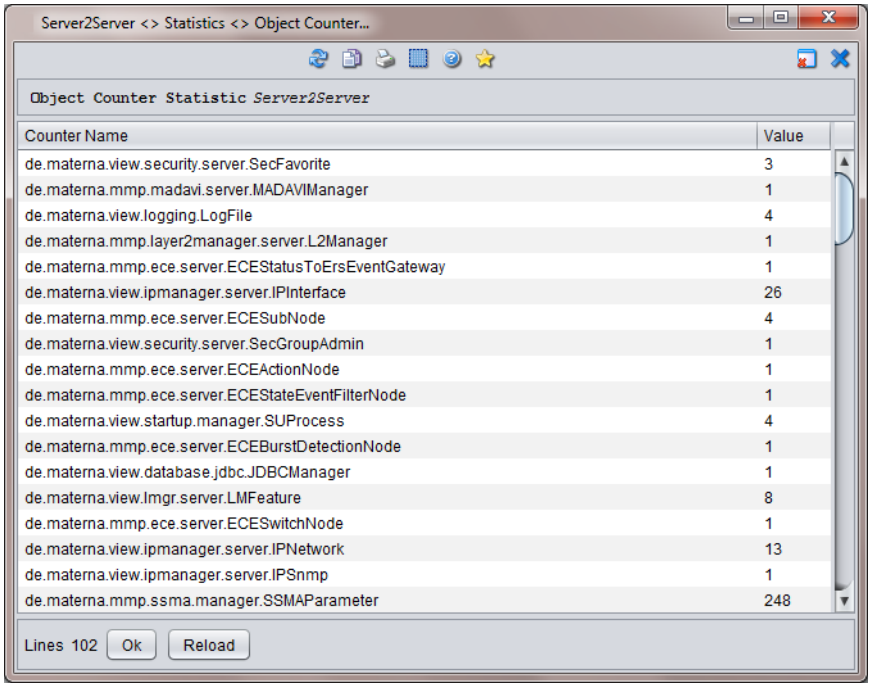

Figure 10 Object Counter Statistics

3.2.3 Performance

The submenu **Performance** offers three menu entries: **Object Events...** (*Section 3.2.3.1, "Object Events..."*), **Fault Events...** (*Section 3.2.3.2, "Fault Events..."*) and **Delta Transferred Objects...** (*Section 3.2.3.3, "Delta Transferred Objects..."*). All three represent values as charts (see *Figure 11*) which cover a time period since the opening of this GUI until the current time.

By the help of several check-boxes it can be configured if

- the legend is displayed ("**Show Legend**")
- the values are displayed as a chart or as a table ("**Show Chart**")
- the grid lines are displayed ("**Show Grid**")

With the slider (**X-Gap**) the grid scale factor, which ranges between 0 and 15, can be selected.

3.2.3.1 Object Events...

This GUI gives a graphical representation of the number of object events which are still pending. Thus it illustrates the values which have been explained in *Section 3.2.2.2, "Online Synchronization..."*. Times of high synchronization activity and the time intervals of the synchronization process can be tracked using this GUI.

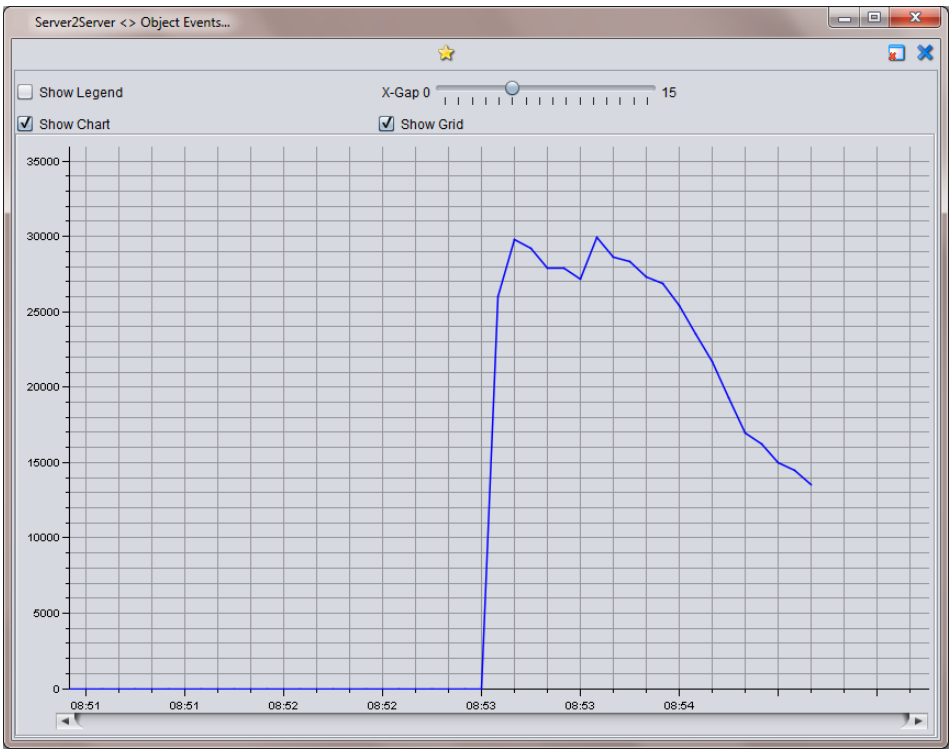

Figure 11 Object Event Performance

3.2.3.2 Fault Events...

The menu entry **Performance->Fault Events...** opens a GUI giving a graphical representation of the number of relevant fault events registered by OpenScape FM. I.e. the number of events of the Event Browser which still have to be transferred to OpenScape FM master server. Each fault event registered at the OpenScape FM slave server is transferred to the OpenScape FM master server. All exported fault events are displayed in the Event Browser of the OpenScape FM master server, see *Section 3.3.3, "Event/Alarm Handling"*.

3.2.3.3 Delta Transferred Objects...

The menu entry **Performance->Delta Transferred Objects...** opens a GUI giving a graphical representation of the number of objects that are newly synchronized per time period. Each period covers a time interval of ten seconds. Especially when a large number of objects is to be newly synchronized at the same time, this feature can be used to visualize the progress of the synchronization process.

3.2.4 Logging of Gateway Operations

All Gateway Plugin operations will be logged in the OpenScape FM **Activity Log**. Errors will be reported in the **Error Log**. The Logging component is explained in detail in the *OpenScape FM Desktop User Guide*. The operations are performed under the **gatewayAdmin** account - thus the corresponding log file entries can be retrieved by looking for the gatewayAdmin in the column **Group** of the log files.

3.3 Utilizing the Gateway

The following sections describe the object hierarchy of the transferred objects on the OpenScape FM master server and explain the remote control of the OpenScape FM slave servers via the OpenScape FM master server.

3.3.1 Map Layout

Once the synchronization process has been started, an object named **Gateway Container** will be created on the root submap of the OpenScape FM master server.

On the submap of the Gateway Container, every Gateway Plugin which synchronizes objects to this OpenScape FM master server will be displayed as an OpenScape FM server Container symbol. The label of such a Container symbol contains the **Source Prefix** configured in the **Gateway Parameters** (*Section 3.1.1, "Edit Connection Parameter"*) of the respective OpenScape FM slave server.

The submaps of these server Containers contain the synchronized objects of the appropriate exporting OpenScape FM slave server.

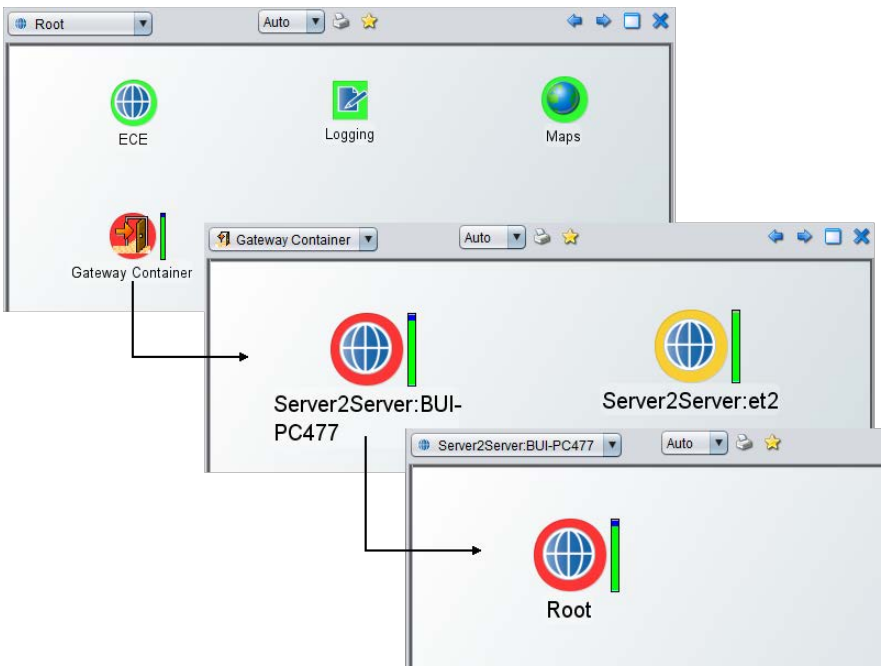

Figure 12 Map Layout in OpenScape FM master system

3.3.2 OpenScape FM Remote Objects Specific Menu

After the synchronization, each transferred object (referred to as **remote objects** in the following text) is represented in the OpenScape FM master system. The menu entries of each *original* object will also be accessible from the master platform, once a valid OpenScape FM slave system user account has been set for the remote connection.

By selecting the menu entry **Remote Login...** a user/password pair to authorize the connection to the exporting OpenScape FM server (see *Figure 13*) can be set. With this user account an internal session from the OpenScape FM master to the OpenScape FM slave server is established to retrieve all context menu entries of the *original* objects. Since this remote connection will be encrypted it is necessary to accept the SSL certificate of the slave server. This can be done by using the respective check box within the login window.

The SSL certificate of the slave server will be added to the list of SSL certificates (**Server->SSL Certificates**) after the initial remote connection. To change the login credentials, the menu action **Change Remote Login** can be used. The Change Remote Login menu action is available from any remote object's context-menu, if a valid login has previously been entered.

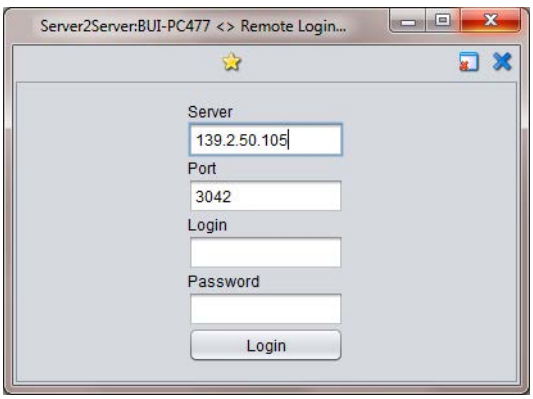

Figure 13 Remote Login Dialog

After pressing the **Login** button, the context menu of each remote object contains a seperate submenu starting with **Remote Actions:** and the IP address of the orginal exporting OpenScape FM server. This seperate submenu contains the OpenScape FM specific menu entries (*Figure 14*). The menu entries are the same as offered in the OpenScape FM slave system for the selected object, which means they are object and session specific.

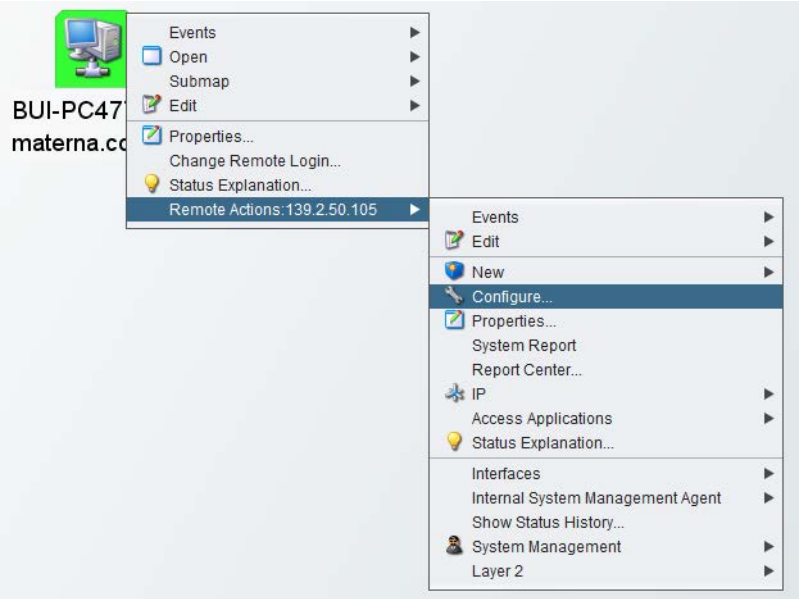

Figure 14 OpenScape FM remote object specific menu entries

If an action from such a remote context menu is performed, all information will be displayed in the client as if it was *directly* connected to the original exporting server (see *Figure 15* as an example). The remote objects from *all* OpenScape FM slave servers, which transfer their data to the current OpenScape FM master server, can be accessed in that way.

For more details about the functionality of OpenScape FM specific menu entries, please refer to the *OpenScape FM Desktop User Guide* and the User Guides of its Plugins.

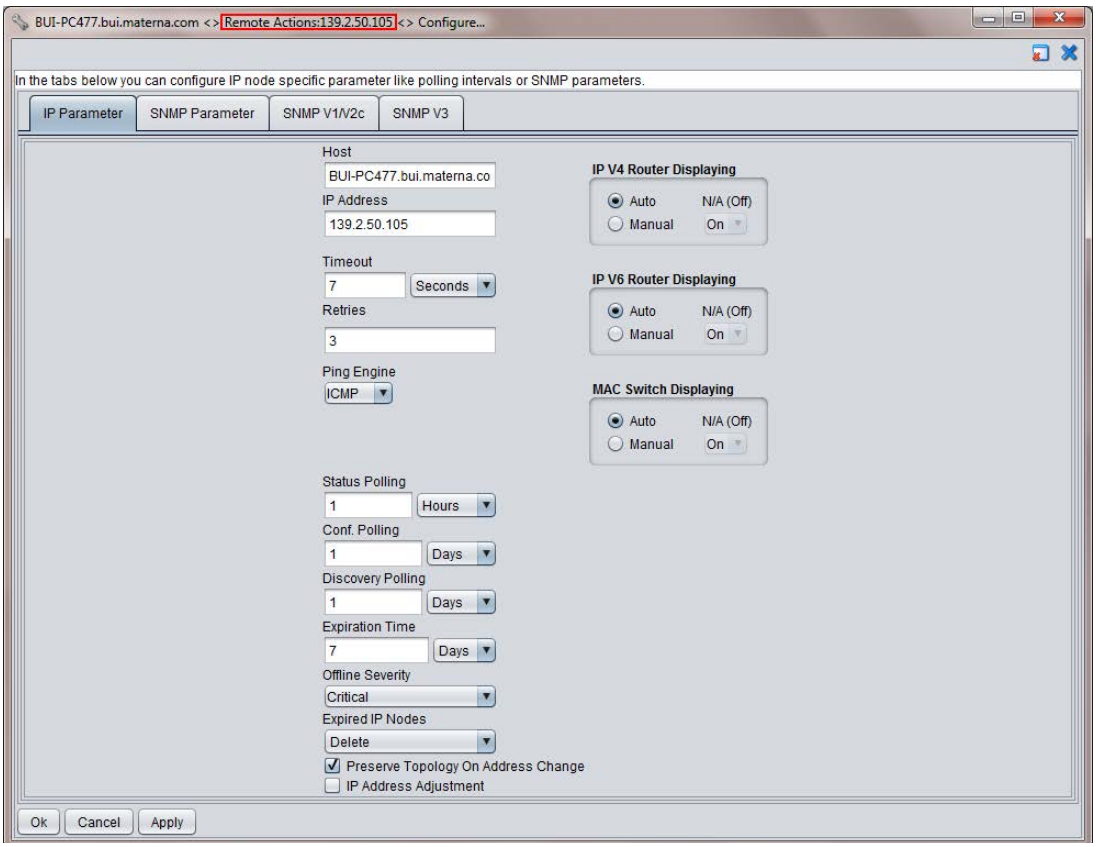

Figure 15 Remote Action Example

3.3.3 Event/Alarm Handling

All events regarding transferred objects will also be transferred to the OpenScape FM master server. These remote events are displayed in the Event Browser of the master OpenScape FM, with the same event categories as in the OpenScape FM slave server. The only difference being, that all remote events have an object source name and label starting with the unique source prefix (see *Section 3.1.1, "Edit Connection Parameter"* for more details) defined in their respective OpenScape FM slave server‘s gateway parameters. All remote events of a specific OpenScape FMslave server can be displayed by inserting the server‘s source prefix in the **Source** text field of the Event Browser (see *Figure 16*).

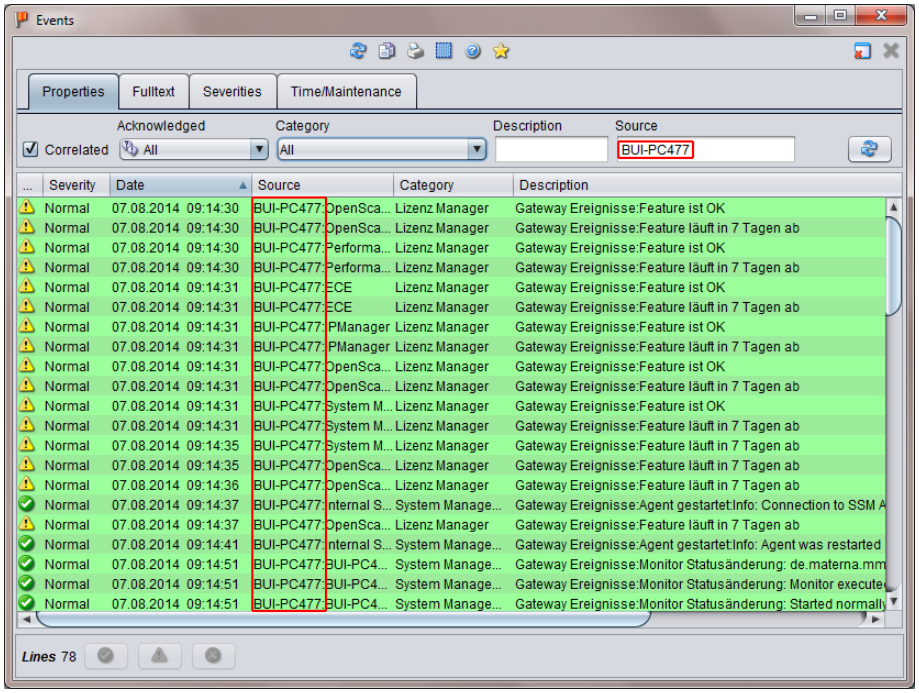

Figure 16 Event Browser with Remote Events

4 Troubleshooting

When problems occur during the work with the Gateway, there are several possibilities to identify the type and source of the error:

4.1 Log files

Logging messages of the Gateway Plugin will be registered in the OpenScape FM server log file, see *OpenScape FM Desktop User Guide.*

4.2 Troubleshooting for Gateway

OpenScape FM servers provide various feedback in the case of an error. This includes, in addition to the above-mentioned log entries, e.g. error messages, fault events and colored object symbols.

4.2.1 Gateway Plugin

The state of the OpenScape FM Gateway symbol located at the slave server is represented by colors. The following table shows the meaning of the different states.

Status	Description	Solution
Critical (red)	No connection between the OpenScape FM slave and master server possible.	Check the network connection.
		Check the gateway parameters, *Section 3.1.1, “Edit Connection Parameter”*.
		Check if the OpenScape FM master server is running, and start it if necessary,
		Check the configuration of the database user for the master server. A user account with database administrator rights for the OpenScape FM master server is needed. More details can be found in *Section 3.1.1, “Edit Connection Parameter”*. The name resolution of the system to which should be connected has to be checked.

Status	Description	Solution
Critical (red)	The number of licensed slaves is to low.	The license on the master is insufficient for the number of connected slaves. The license has to be expanded or the number of slaves has to be reduced.
Warning (light blue)	The last synchronisation node was removed automatically. That means the corresponding OpenScape FM object was deleted. In this case the Gateway Plugin removes these objects automatically.	If this situation is deliberate, this state can be ignored. Otherwise new synchronisation nodes have to be added.
Unset (grey)	No synchronisation active, the Gateway Plugin is not running and was stopped manually by the user before.	If necessary select synchronization nodes and start a synchronisation, for more information please refer to the chapters *Section 3.1.3, “Select Synchronization Nodes...”* and *Section 3.2.1, “Start Synchronization”*.

4.2.2 OpenScape FM Master Server

Problem	Description	Solution
Gateway Down	An event occurs in the Event Browser of the OpenScape FM master server indicating that the gateway on host x.x.x.x is down and not running any more.	The gateway has to be restarted.
Certificate Error	The following warning message occurs in the Message Log Window of the OpenScape FM master server: ‘Connection to target <IP Address> refused. Target not responding on port 3050. Caused by...‘	The SSL Certificate of the slave server has to be accepted. All certificates can be displayed via **Server->SSL Certificates** The certificate can also be loaded directly from within the login window.

Problem	Description	Solution
Autentification Error	The following warning message occurs in the Message Log Window of the OpenScape FM master system: ‘Can not connect to remote server x.x.x.x. Invalid Authentification.’	An invalid user account for the remote server has been entered in the Login-Dialogue window for retrieving information of remote objects. A valid user account and the correct IP address of the slave server have to be entered (see *Section 3.3.2, “OpenScape FM Remote Objects Specific Menu”*).

5 Deinstallation

The Gateway resides on the OpenScape FM slave and master servers, but the plugin is only initialized on the slave system. Therefor actions only need to be performed on the slave server.

5.1 OpenScape FM Slave Server

In order to deinstall the Gateway Plugin from the OpenScape FM slave system, the plugin has to be removed.

Selecting the menu entry **Edit->Delete Object** in the context menu of the Gateway Manager symbol (see *Figure 2* in *Chapter 3, "Working with the FM 2 FM Gateway"*) will delete all Gateway Plugin specific objects from the OpenScape FM database and the Gateway helpsets.

Additional steps are not necessary.

5.2 OpenScape FM Master Server

On the server no deinstallation steps have to be performed. But it is reasonable to remove the remote objects which will no longer be supported by the respective slave.

By selecting the container symbol of the respective server (identifiable by the prefix selected for the slave), and selecting the menu entry **Edit->Delete Object** all remote objects that were transferred by the respective slave will be removed from the master database.

A FM 2 FM Gateway Rights

The plugin's access rights are integrated into the general access management (see *OpenScape FM Desktop User Guide*).

The description of the individual rights can be found within the tooltips for the corresponding right symbols (tree or submap).

B System Requirements

The system requirements are defined by the OpenScape FM. The requirements can be found in the *OpenScape FM Desktop User Guide*.

C Glossary

OpenScape FM: OpenScape Fault Management; the Unify corporate umbrella management platform for the OpenScape Enterprise Convergence Architecture. It is a web-based client/server solution for the management of integrated networks with Unify PBX, IP and VoIP devices.

JVM: Java Virtual Machine; the operating system-specific software which is required on a computer in order to run Java programs. The JVM translates (universal) Java code into machine specific code. *Appendix B, “System Requirements”* shows the Java version that hat to be used with the current Gateway release.

FM 2 FM Plugin: Plugin for the OpenScape FM server which enables the OpenScape FM server to synchronize selected nodes of the object hierarchy with another OpenScape FM server.

SNMP: Simple Network Management Protocol; the standard protocol for the transfer of network management information. It is a UDP-based protocol. SNMP management stations in the network collect information from SNMP agents which are implemented in the managed devices.

VoIP: Voice over IP; a technology which allows the transfer of voice data over an IP, i.e. packet-based, network. The most common standard is H.323.

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