
HP OSS Software



HP Unified OSS Console V1.3.0 Installation and Configuration Guide

for the Red Hat Linux Operating Systems

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Chapter 1 Preface

This guide describes how to install and configure the Unified OSS Console server platform.

Intended Audience

This Installation and Configuration guide is for anyone who is responsible for installing/uninstalling or configuring the UOC platform.

The readers are assumed to have minimal knowledge of Linux shell scripts.

Software Versions

The supported software referred to in this document is as follows:

Server:

Software	Version	OS	Database
UOC Server	1.3	Red Hat Linux 5.x or 6.x X86-64bit	Optional for topology maps or DB adaptor <ul style="list-style-type: none">- Oracle 11.2.x- H2 1.4.180- MySQL 5.1 +- Vertica 7.0.x- MS SQL Server 2012 with JDBC Driver 4.0 for DB adaptor

Web Browser:

Web Browser	Version	Web site
Microsoft Internet Explorer	10 or later	http://windows.microsoft.com/en-us/internet-explorer/download-ie
Mozilla Firefox	17 or later	https://www.mozilla.org/en-US/firefox
Google Chrome	23 or later	https://www.google.com/chrome

Table 1 Software Version

Typographical Conventions

Courier Font:

- Source code and examples of file contents.
- Commands that you enter on the screen.
- Pathnames
- Keyboard key names

Italic Text:

- Filenames, programs and parameters.
- The names of other documents referenced in this manual.

Bold Text:

- To introduce new terms and to emphasize important words.

Table 2 Convention

Convention	Meaning
#	The Linux root default prompt.
Ctrl/x	Indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button. In examples and procedures, a key combination is enclosed in a box.
[Return]	Indicates that you press the Return key to execute a command line.

Associated Documents

The following documents contain useful reference information:

- UOC 1.3 User Guide
- UOC 1.3 Release Notes

Support

Please visit our HP Software Support Online Web site at <https://softwaresupport.hp.com/> for contact information, and details about HP Software products, services, and support.

- Troubleshooting information
- Patches and updates
- Problem reporting
- Training information
- Support program information

Chapter 2 Installation

This chapter describes how to install the Unified OSS Console V1.3. It is recommended to read the Release Notes document before proceeding with the installation.

2.1 Prerequisites

2.1.1 Hardware

The table below lists the minimum hardware requirements for a UOC server installation. Appropriate sizing is of course subject to real volume of data or throughput and is therefore subject to specific adaptations.

Table 3: hardware requirements for a UOC Server

	Minimal	Optimum
CPU	Dual-Core 2 1.6GB Processor	8 cores
Memory Size	8GB	64 GB.
Hard disk Size	10GB	10 GB (only configuration data is stored on disk)
Network	100MB Ethernet	1000MB Ethernet

Table 4: hardware requirements for a UOC Client

	Minimal	Optimum
CPU	2.4GHz Processor	Dual-Core
Memory Size	4GB	8 GB.
VGA Memory	512M	1GB



For large volume of data loading, it is recommended to tune these values to optimize the performance of the system.

2.1.2 OS and Java

The OSS Console V1.3 software is officially supported only on Red Hat Enterprise Linux 5.x or 6.x X86-64 Systems

You can check the installed OS version of your server with the following commands:

```
$ lsb_release -id
```

or

```
$ cat /etc/issue
```

A java JDK 1.7 is necessary for running UOC processes.

You can check which JDK version is present on your system with the following commands:

```
$ rpm -qa | grep jdk
```

or

```
$ javac -version
```

2.1.3 Environment

The environment variable `JAVA_HOME` must be set correctly, with the path to the JDK.

```
$JAVA_HOME/bin/java -version
```

A “uoc” user must be created on the system (this step is optional, but recommended, especially to avoid warnings during an installation without root privileges).

```
# useradd -m uoc
```

Don't forget to change its password.

```
# passwd uoc
```

2.2 Installation locations

The UOC server can be installed anywhere on disk. The installation is split in 2 separate folders: `$UOC_HOME` and `$UOC_DATA`. These two locations can be freely chosen during the installation process.

The `UOC_HOME` directory contains the binary files like java libraries (jars), executable or sample data files. These “product” files are read-only (with very limited exceptions). These files can typically be replaced by newer versions during a software upgrade. Likewise, the uninstallation procedure can potentially remove all these files, and therefore all changes done on them can be lost during a software upgrade.

On the other hand, the UOC_DATA directory contains configurations files or user data files. These files can be preserved during a software upgrade. They can usually be edited by users (either directly or through a graphical designer which generates the file). It is also a good idea to backup them regularly. For the OSS console, the UOC_DATA location contains typically the views definitions, filters, user profiles, etc...

The UOC_HOME and UOC_DATA directories must be different.

The default values are respectively: /opt/UOC and /var/opt/UOC. Using these default values generally requires **root privileges**.

2.3 Installation steps

The OSS Console comes in a standard tar file.

```
uoc-server-package-1.3-linux.tar
```

Unpack the archive in a temporary directory of your choice:

```
$ tar xvf uoc-server-package-1.3-linux.tar

UOCSEVER-V1.3-01A.noarch.rpm
install-uoc-server.sh
licenses/LICENSE-ojdbc.txt
```

Then the installation procedure differs slightly, depending on which user is performing it, and the desired target installation locations.

Generally, Linux packages require root credentials to be installed on the system. The package is registered in the central package database, and the software is made available to anyone. This is also the default approach for installing UOC.

However, regular users can also install the UOC server if they want too (for testing or simply if do not have root access). In this case, the rpm packages won't be visible in the central package database. Users will have to remember where the kit is installed. This can however be automated by adding the UOC environment setup in their profile (see below).

Several UOC installations can cohabit on the same system. However, running different instances at the same time is not possible.

2.3.1 Standard installation (with root credentials)

If you have root access on your server, it's easier to stick to default locations and settings.

In this case, all installed files will be owned by the "uoc" user created previously (see the pre-requisites section).

To install the UOC as root, execute the following command:

```
# ./install-uoc-server.sh
```

Installing the HP OSS Console server package using
UOC_HOME=/opt/UOC and UOC_DATA=/var/opt/UOC:

The UOC product delivers the Oracle JDBC driver.
To be able to use it, you must accept the Oracle license terms.
Please read the license terms from the file ./licenses/LICENSE-
ojdbc.txt
Please read carefully the content of the specific file.
Answer "Y" to the question if you accept the license terms.
Answer "N" to quit the installation wizard.
Do you accept the license terms? [Y]

Y

The installation will continue!

Preparing...

[100%]

1:UOCSEVER

[100%]

creating /var/opt/UOC
creating /var/opt/UOC/conf
creating /var/opt/UOC/data
creating /var/opt/UOC/data/snapshot
creating /var/opt/UOC/data/cmstore/
creating /var/opt/UOC/data/cmstore/custfile
creating /var/opt/UOC/data/cmstore/dimension
creating /var/opt/UOC/data/cmstore/filter
creating /var/opt/UOC/data/cmstore/group
creating /var/opt/UOC/data/cmstore/locks
creating /var/opt/UOC/data/cmstore/pivot
creating /var/opt/UOC/data/cmstore/role
creating /var/opt/UOC/data/cmstore/snap
creating /var/opt/UOC/data/cmstore/user
creating /var/opt/UOC/data/cmstore/viewtype
creating /var/opt/UOC/data/cmstore/transformer
creating /var/opt/UOC/data/cmstore/nocmap
creating /var/opt/UOC/logs
creating /var/opt/UOC/tmp
creating /var/opt/UOC/topology_maps
creating /var/opt/UOC/topology_maps/images
creating /var/opt/UOC/adapters
creating /var/opt/UOC/adapters/nom_temip
creating /var/opt/UOC/adapters/nom_temip/resources
creating /var/opt/UOC/adapters/nom_temip/resources/META-

INF

creating /var/opt/UOC/adapters/nom_temip/resources/META-

INF/spring

copying demo data files
copying temip data files
copying custom data files
copying csv, db adapters configuration files
copying topology maps images

UOC server package installed successfully.

Source the file /opt/UOC/.environment.sh to set environment
variables related to your new installation.

Edit the file /var/opt/UOC/conf/application.conf for TeMIP
configuration details .

```
Bye.
```

You must accept the Oracle ODBC license terms before proceeding with the installation.

Don't try to install the rpm package by yourself, as the installation script does quite a lot of configuration under the hood, in particular for managing the split between the UOC_HOME and UOC_DATA parts.

It is also recommended to use the "uoc" user to start or stop the Console server, or to edit the configuration files. For this, source the \$UOC_HOME/.environment.sh from the uoc user profile setup script. This will set in particular the UOC_HOME and UOC_DATA environment variables to the correct values and update the PATH to locate the uoc command.

```
# echo ``. /opt/UOC/.environment.sh`` >> /home/uoc/.bash_profile
# su - uoc
$ which uoc
/opt/UOC/bin/uoc
```



On RHEL 5.x, you may see a warning message during the installation like: "error: can't create transaction lock on /tmp/uoc_home/rpm/__db.000". You may safely disregard this message.

2.3.2 Regular user installation

It is sometimes convenient to install the UOC software as a regular user. In such a case, use the "-t" option as follows:

```
$ ./install-uoc-server.sh -t -r /tmp/uoc_home -d /tmp/uoc_data

Using local rpm db in /tmp/uoc_home/rpm
Installing the HP OSS Console server package using
UOC_HOME=/tmp/uoc_home and UOC_DATA=/tmp/uoc_data:
-----
The UOC product delivers the Oracle JDBC driver.
To be able to use it, you must accept the Oracle license terms.
Please read the license terms from the file ./licenses/LICENSE-
ojdbc.txt
Please read carefully the content of the specific file.
Answer "Y" to the question if you accept the license terms.
Answer "N" to quit the installation wizard.
    Do you accept the license terms? [Y]

Y
The installation will continue!
```

```

Preparing...
##### [100%]
  1:UOCSEVER
##### [100%]
  creating /tmp/uoc_data
  creating /tmp/uoc_data/conf
  creating /tmp/uoc_data/data
  creating /tmp/uoc_data/data/snapshot
  creating /tmp/uoc_data/data/cmstore/
  creating /tmp/uoc_data/data/cmstore/custfile
  creating /tmp/uoc_data/data/cmstore/dimension
  creating /tmp/uoc_data/data/cmstore/filter
  creating /tmp/uoc_data/data/cmstore/group
  creating /tmp/uoc_data/data/cmstore/locks
  creating /tmp/uoc_data/data/cmstore/pivot
  creating /tmp/uoc_data/data/cmstore/role
  creating /tmp/uoc_data/data/cmstore/snap
  creating /tmp/uoc_data/data/cmstore/user
  creating /tmp/uoc_data/data/cmstore/viewtype
  creating /tmp/uoc_data/data/cmstore/transformer
  creating /tmp/uoc_data/data/cmstore/nocmap
  creating /tmp/uoc_data/logs
  creating /tmp/uoc_data/tmp
  creating /tmp/uoc_data/topology_maps
  creating /tmp/uoc_data/topology_maps/images
  creating /tmp/uoc_data/adapters
  creating /tmp/uoc_data/adapters/nom_temip
  creating /tmp/uoc_data/adapters/nom_temip/resources
  creating /tmp/uoc_data/adapters/nom_temip/resources/META-
INF
  creating /tmp/uoc_data/adapters/nom_temip/resources/META-
INF/spring
  copying demo data files
  copying temip data files
  copying custom data files
  copying csv, db adapters configuration files
  copying topology maps images
UOC server package installed successfully.
Source the file /tmp/uoc_home/.environment.sh to set environment
variables related to your new installation.
Edit the file /tmp/uoc_data/conf/application.conf for TeMIP
configuration details.
Bye.

```

The “-t” option is generally used in conjunction with the “-r” (for “root” or home directory) and “-d” (for “data” directory) options, as regular users probably do not have permissions to create folders in the default /opt or /var/opt locations.

Like in the previous case, it is recommended to source the \$UOC_HOME/.environment.sh script in your user profile.

```
$ echo `"/tmp/uoc_home/.environment.sh" >> ~/.bash_profile`
```

This will update the path with the UOC commands and set the required environment variables for administrating the UOC server.

2.3.3 Alternate installations

Several installation combinations are possible. The installation script has a `-h` option (for help) that describes the other various options available:

```
$ ./install-uoc-server.sh -h
Usage:
    install-uoc-server.sh [-h] [-t] [-u] [-r root directory] [-d
data directory] [--dbpath rpm db path]

-r DIRECTORY : use an alternate UOC UOC_HOME root Directory
(default is /opt/UOC)

-d DIRECTORY : use an alternate UOC UOC_DATA data directory
(default is /var/opt/UOC)

-u : installed files will be owned by the user executing this
script instead of the uoc user. When used with the --dbpath
option, this lets install UOC without root credentials. This -u
option generally requires also the -r and -d ones, as the default
user may not have permissions to create the default /opt/UOC or
/var/opt/UOC directories.

--dbpath DIRECTORY : use an alternate rpm database (default is
/var/lib/rpm). This is useful to install UOC without root
credentials. You have to remember the value provided here to be
able to track the installed packages or remove them later on. A
typical value can be ~/lib/rpm. The rpm database can also be
located in . If so, consider the -t option which sets the rpm
database to /rpm automatically.

-t : means -u and --dbpath /rpm at the same time. This overrides
the -u or --dbpath options if provided.

-h displays this usage message

EXAMPLES:

    install-uoc-server.sh
```

This uses the default values and must be executed by root. All files installed in /opt/UOC and /var/opt/UOC will be owned by uoc.

```
install-uoc-server.sh -t -r /tmp/uoc_home -d /tmp/uoc_data
```

This installs UOC with location UOC_HOME=/tmp/uoc_home and UOC_DATA=/tmp/uoc_data. The rpm db is /tmp/uoc_home/rpm and all installed files are owned by the current user.

2.4 Installation verification

After installation, you can check what release is currently installed with the “uoc inventory” command.

```
$ uoc inventory
```

```
HP UOC packages currently installed:
```

```
package                                summary
```

```
-----
```

```
UOCSEVER-V1.3-01A  
Level 01 Rev A
```

```
HP OSS Console Server Version V1.3
```

You can check the directories layout for \$UOC_HOME:

```
/opt/UOC  
|-- 3pps  
|   |-- activemq -> /opt/UOC/3pps/apache-activemq-5.9.0  
|   |-- apache-activemq-5.9.0  
|   |-- apache-tomcat-7.0.42  
|   |-- apache-tomcat-7.0.42-custom  
|   |   |-- bin  
|   |   |-- conf  
|   |   `-- lib  
|   |-- kits  
|   `-- tomcat -> /opt/UOC/3pps/apache-tomcat-7.0.42  
|-- adapters  
|   |-- csv  
|   |   |-- bin  
|   |   |-- conf  
|   |   `-- lib  
|   |-- db  
|   |   |-- bin  
|   |   |-- conf  
|   |   `-- lib  
|   |       `-- 3rd
```

```

|-- qc
|   |-- bin
|   |-- conf
|   |-- lib
|-- nom_temip
|   |-- bin
|   |-- lib
|   |-- resources
|-- bin
|-- conf
|-- data
|   |-- cmstore
|   |   |-- dimension
|   |   |-- group
|   |   |-- role
|   |   |-- user
|   |   |-- viewtype
|-- examples
|   |-- custom
|   |   |-- data
|   |   |   |-- cmstore
|   |   |   |   |-- custfile
|   |   |   |   |-- dimension
|   |   |   |   |-- group
|   |   |   |   |-- pivot
|   |   |   |   |-- role
|   |   |   |   |-- user
|   |   |   |   |-- viewtype
|   |   |-- data-samples
|   |   |   |-- alarm
|   |   |   |-- h2
|   |-- demo
|   |   |-- data
|   |   |   |-- cmstore
|   |   |   |   |-- custfile
|   |   |   |   |-- dimension
|   |   |   |   |-- filter
|   |   |   |   |-- group
|   |   |   |   |-- nocmap
|   |   |   |   |   |-- CEA
|   |   |   |   |   |   |-- XML
|   |   |   |   |   |   |-- bg_image
|   |   |   |   |   |-- France
|   |   |   |   |   |   |-- XML
|   |   |   |   |   |   |-- bg_image
|   |   |   |   |   |-- India
|   |   |   |   |   |   |-- XML
|   |   |   |   |   |   |-- bg_image
|   |   |   |   |-- pivot
|   |   |   |   |-- role
|   |   |   |   |-- transformer
|   |   |   |   |-- user
|   |   |   |   |-- viewtype
|   |   |-- data-samples
|   |   |   |-- SiteMonitoring
|   |   |   |-- TTMonitoring
|   |   |   |-- cea
|   |   |   |-- gsm_topo_map

```

```

|-- data
|-- sample-transformer
|-- lib
|-- src
|-- com
|-- hp
|-- uoc
|-- sample_views
|-- service_noc
|-- config
|-- CEA
|-- France
|-- India
|-- data
|-- CEA
|-- France
|-- India
|-- sample-transformer
|-- ServiceNocTransformer
|-- lib
|-- src
|-- com
|-- hp
|-- uoc
|-- lib
|-- data

```

You can also check the directories layout for \$UOC_DATA:

```

/var/opt/UOC
|-- adapters
|-- nom_temip
|-- resources
|-- META-INF
|-- spring
|-- conf
|-- data
|-- cmstore
|-- custfile
|-- dimension
|-- filter
|-- group
|-- locks
|-- nocmap
|-- CEA
|-- XML
|-- bg_image
|-- France
|-- XML
|-- bg_image
|-- India
|-- XML
|-- bg_image
|-- pivot
|-- role
|-- snap
|-- transformer

```



```
| | |-- user
| | `-- viewtype
| `-- snapshot
|-- logs
|-- tmp
`-- topology_maps
    |-- images
```

Chapter 3 Configuration

3.1 UOC NOM TeMIP adapter

3.1.1 Pre-requisites

To be able to monitor TeMIP through the OSS console, we assume that:

1. A TeMIP V6 server is installed and configured. If not, please refer to the “TeMIP Installation Guide for Linux” document.
2. TeMIP Web Services is installed and configured on this server (as the OSS console connects to TeMIP through web services). If not, please refer to the “TeMIP Web Services Installation and Administration Guide” document.
3. HP OSS Open mediation (NOM) is installed and configured on a server. If not, please refer to the “Open Mediation Installation and Configuration Guide” document.
4. HP OSS TeMIP Channel Adapter (TeMIP CA) is installed and configured on a server. If not, please refer to the “TeMIP CA Installation and Configuration Guide” document.

Note: The TeMIP CA is deployed in NOM’s container, so NOM and the TeMIP CA are located of the same host. The TeMIP server and the OSS console server can run on different remote systems.

3.1.2 TeMIP Web Services configuration

NOM TeMIP adapter supports both “security” and “no security” mode of TeMIP application.

By default the NOM TeMIP adapter is configured to support the “no security” mode.

3.1.2.1 Switch from a “security” mode to a “no security” mode on TeMIP server

To change the TWS mode to “no security”, perform the following **on the TeMIP server**:

```
# cd /var/opt/temip/TWS/tomcat/webapps/TeMIP_WS/WEB-INF/conf
# cp axis2.xml.nosecu axis2.xml
```

```
# manage `restart mcc 0 app temip_web_services`
```

3.1.2.2 How to configuration NOM to support “security password clear” mode of TeMIP application

1. On TeMIP server the TWS axis2.xml file should be changed

```
cd /var/opt/temip/TWS/tomcat/webapps/TeMIP_WS/WEB-INF/conf
cp axis2.xml.user_password_clear axis2.xml
manage restart mcc 0 appli temip_web_services
```

2. To allow the report of alarms to NOM, the axis2.xml file of NOM should be updated

```
cd /var/opt/openmediation-72/containers/instance-0/ips/temip-ca-22/etc/conf

Edit the axis2.xml file and add the `UsernameToken` string for items tag.

<action>
<items>UsernameToken</items>
    <passwordCallbackClass>com.hp.temip.temip_ws.common.pwcallback.PWCallback</passwordCallbackClass>
<passwordType>PasswordText</passwordType>
```

3. Then, some other files should be updated in NOM to take into account directives.

```
cd /var/opt/openmediation-72/containers/instance-0/ips/temip-ca-22/etc

Edit the following files:
actions.to-temip.ao.request.xslt
actions.to-temip.tt.request.xslt
and add in each of them the following red lines:

<!-- Generic request -->
<!-- ***** -->
<xsl:template name="generic_request">
<xsl:param name="request_type" />
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:tt="http://tt_server.types.ws.temip.ov.hp.com">
<soapenv:Header>

<wsse:Security xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
soapenv:mustUnderstand="1">
<wsse:UsernameToken xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd"
```

```

wsu:Id="UsernameToken-43">
<wsse:Username>temip</wsse:Username>
<wsse:Password Type="http://docs.oasis-
open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">TeMIP</wsse:Password>
</wsse:UsernameToken>
</wsse:Security>
<tt:InCallParams>

<xsl:if test="command/entry[key='SOAP_Handle']">
<tt:Handle><xsl:value-of
select="command/entry[key='SOAP_Handle']/value"/></tt:Handle>
</xsl:if>
<xsl:if test="command/entry[key='SOAP_Cancel']">
<tt:Cancel><xsl:value-of
select="command/entry[key='SOAP_Cancel']/value"/></tt:Cancel>

```

4. To finish, please restart NOM container

```

# nom_admin --shutdown-container
# nom_admin --start-container

```

5. Then restart or start the UOC server.

```

$ uoc stop
$ uoc start

```

3.1.3 NOM configuration

On the server where NOM and the TeMIP channel adapter have been installed check for connectivity details, the following configuration files (or equivalent depending on your NOM containers):

```

$ vi /var/opt/openmediation-72/containers/instance-0/ips/temip-
ca-22/etc/conf/TeMIP_configuration.dynamic.xml
<Authentication>
  <UserName>temip</UserName>
  <Password>TeMIP</Password>
</Authentication>
<Axis>
  <RepositoryPath>conf/repository</RepositoryPath>
  <XmlPath>conf/axis2.xml</XmlPath>
</Axis>
<DirectorConfiguration>
  <MachineName>localhost</MachineName>
  <!--
  Put here TeMIP director name.

```

If you leave this field as is, dynamic flows operations will not work

```
-->
<TeMIPDirectorEntity>.temip.vml_temip</TeMIPDirectorEntity>
  <TWSServerPort>7180</TWSServerPort>
</DirectorConfiguration>
```

MachineName is the system name where the TWS server is running.

TeMIPDirectorEntity should be the name of the TeMIP instance where to create collection services (“manage show temip *” displays the instance names).

```
$ vi /var/opt/openmediation-72/containers/instance-0/ips/temip-
ca-22/etc/actions-to-temip-jms-connector.xml
<endpoint id="tws"
uri="http:localhost:7180/TeMIP_WS/services/TEMIP?throwExceptionOn
Failure=false& bridgeEndpoint=true"/>
```

Replace localhost with the real TeMIP server name.

After changing these files, you need to restart NOM:
Assuming that the NOM container is default 0:

```
# nom_admin --shutdown-container
# nom_admin --start-container
```



For making these changes permanent, even in case of TeMIP CA un-deployment, please refer to the HP OSS Open Mediation User Guide.

Note that on RHEL 6.x systems, NOM can conflict with webmin (for port 10000).
You can

- 1- Either stop webmin before starting NOM.

```
# /etc/webmin/stop
```

- 2- Or reconfigure OpenMediation network ports.

Please refer to the HP OSS Open Mediation guide to know how to change port.

3.1.4 UOC NOM TeMIP adapter configuration

If UOC and the NOM TEMIP CA are installed on different servers you have to update some particular UOC files. So, please edit and update the following files:

```
$ vi $UOC_DATA/adapters/nom_temip/resources/camel-context.xml
```

```
<bean id="nomjms"
class="org.apache.activemq.camel.component.ActiveMQComponent">
    <property name="brokerURL" value="tcp://localhost:10000"/>
</bean>
```

Replace above “localhost” by your NOM server name.

```
$ vi $UOC_DATA/conf/application.conf
nom_temip_adapter {
    ca_name = "uoc-ca"
    nom_flow_name = "dynamic_flow_uoc"
    monitored_ocs = ["test_oc"]
    tt_server = "TT_SERVER .SM"
    scope = "NOT_CLOSED"
}
```

Replace “test_oc” by the list of Operation Context names you want to monitor with the OSS console. For example: [“demo_oc1”, “demo_oc2”, “demo_oc3”]

Make sure that all monitored OCs have the TeMIP “Emit Aggregate Event” attribute set to true, as this is the default for NOM.

The “tt_server” is the name of the Service Manager, if user wants to integrate the Service Manager with the UOC, after the Service Manager is already integrated NOM, set the name of the Service Manager to this attribute.

The “scope” defines the shown alarms scope. The scope can be "NOT_CLOSED" or "NOT_TERMINATED". The default scope is "NOT_TERMINATED", means to display all the alarms that have not the state equals to "terminated" (which are acknowledged, outstanding). Another scope "NOT_CLOSED" means to display all the alarms that have not the problem status equals to Closed.

In some circumstances/configurations the request timeout timer of NOM may expired too early. This timer duration could be extended by modifying the camel-context.xml file (cf below):

```
$ edit $UOC_DATA/adapters/nom_temip/resources/camel-context.xml
    Replace
    <endpoint id="actionsToNom"
uri="nomjms:topic:com.hp.openmediation.actions"/>
    By
    <endpoint id="actionsToNom"
uri="nomjms:topic:com.hp.openmediation.actions?requestTimeout=30000"/>
```

Where 30000 means 30 seconds. The default value is 20000.

Then restart or start the UOC server.

```
$ uoc stop
$ uoc start
```

3.1.5 TeMIP data samples

TeMIP demo views are provided by default as examples in the UOC server. To be able to use them out of the box, a set of sample data is also provided. TeMIP FCL scripts to generate alarms can be found in the `$UOC_HOME/examples/temip/data-samples` directory

- `create_entities.cmd`: this script can be used to create TeMIP entities.

```
$manage do create_entities.cmd
```

- `send_alarms.cmd`: this script can be used to send a burst of alarms.

```
$ manage do send_alarms.cmd
```

- `Endurance/Loop_send_alarms.sh`: this script can be used to simulate endless endurance.

```
$ Endurance/Loop_send_alarms.sh
```

- `delete_entities.cmd`: this script can be used to clean-up TeMIP Entities.

```
$ manage do delete_entities.cmd
```



The scripts must be executed on the TeMIP director. Alarms are created in OCs called `demo_oc1`, `demo_oc2`, `demo_oc3`, `demo_oc4` and `demo_oc5`.

3.2 Firewall / Ports

It may happen that some TCP port numbers are already in use by other processes on the system. Here is how to change the ports used by tomcat and the rmi registry if necessary.

3.2.1 Tomcat

The infamous default value is: 8080. A conflict may occur if another tomcat server is running on the same host.

To change this default value, edit the file:

`$UOC_HOME/3pps/tomcat/conf/server.xml`, and change the following line:

```
<connector port="" 8080" protocol="HTTP/1.1"
```

Replace 8080 by the desired value, like for example: 9090.

Note: if a new version of the OSS console is installed (e.g. V1.3), you may have to perform this change again manually.

If this port number is modified, the default URL for the OSS console home page is changed accordingly. For example:

```
http://localhost:9090/uoc/auth/login.html
```

3.2.2 RMI registry

The default value is **1099**. A port conflict may occur for example if NNM is installed on the same host as the UOC server.

As the rmi registry is used for inter process communication, several files need to be updated.

In `$UOC_DATA/conf`, change the following files (to choose port number 2000 instead):

arrival.xml:

```
<server />
```

To:

```
<server rmi_port="2000" />
```

arrival_client.xml:

```
<server />
```

To:

```
<server rmi_port="2000" />
```

And

```
<client />
```

To:

```
<client rmi_port="2000" />
```

cm.xml:

```
<rmi_port>1099</rmi_port>
```

To:

```
<rmi_port>2000</rmi_port>
```

lcheck.xml:

```
<rmi_port>1099</rmi_port>
```

To:

```
<rmi_port>2000</rmi_port>
```

Finally, if you have modified the default RMI registry port, use the “-r” option when starting the UOC server:

```
uoc -r 2000 start
```


3.2.3 Firewall settings

Netfilter is a host-based firewall for Linux operating systems. It is included as part of the Linux distribution and it is activated by default on RHEL6. This firewall is controlled by the program called iptables. Netfilter filtering takes place at the kernel level, before a program can even process the data from the network packet.

Therefore, when iptables is up and filtering packets, its settings should be modified in order to let UOC work properly.

Let's suppose we have the default iptables configuration file.

```
# cat /etc/sysconfig/iptables

# Generated by iptables-save v1.4.7 on Wed Jan 29 15:46:33 2014
*filter
:INPUT ACCEPT [0:0]
:FORWARD ACCEPT [0:0]
:OUTPUT ACCEPT [17238040:2593637303]
-A INPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
-A INPUT -p icmp -j ACCEPT
-A INPUT -i lo -j ACCEPT
-A INPUT -p tcp -m state --state NEW -m tcp --dport 22 -j ACCEPT
-A INPUT -j REJECT --reject-with icmp-host-prohibited
-A FORWARD -j REJECT --reject-with icmp-host-prohibited
COMMIT

# Completed on Wed Jan 29 15:46:33 2014
```

On top of this, or on top of your current iptables settings, you will need to add filters to open ports used by UOC server.

By default, 3 chains are used: INPUT, OUTPUT, FORWARD. Please refer to the Red Hat Linux guide for a better understanding of what a chain is and what the packet matching rules are, that apply within a chain.

Here we are going to create a new custom chain, used by INPUT, dedicated to control UOC port, for example for the default instance.

Let's call it UOC. To do so, you will need to:

- Add 2 lines to define the UOC chain
- Add 1 line to open ports used by the UOC default instance

Please make sure to specify the same port numbers as the ones defined in the \$UOC_HOME/3pps/tomcat/conf/server.xml file.

Please see below for an updated version of the configuration file (added lines are in **blue**):

```
# cat /etc/sysconfig/iptables

# Generated by iptables-save v1.4.7 on Wed Jan 29 15:46:33 2014
*filter
:INPUT ACCEPT [0:0]
:FORWARD ACCEPT [0:0]
:OUTPUT ACCEPT [17238040:2593637303]
:UOC - [0:0]
```

```

-A INPUT -j UOC
-A INPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
-A INPUT -p icmp -j ACCEPT
-A INPUT -i lo -j ACCEPT
-A INPUT -p tcp -m state --state NEW -m tcp --dport 22 -j ACCEPT
-A INPUT -j REJECT --reject-with icmp-host-prohibited
-A FORWARD -j REJECT --reject-with icmp-host-prohibited
-A UOC -p tcp -m tcp --dport 8080 -m comment --comment "OSS
Console GUI" -j ACCEPT
COMMIT

# Completed on Wed Jan 29 15:46:33 2014

```

Then, you need to validate your settings using the iptables command or the iptables service.

```

# service iptables restart

iptables: Flushing firewall rules:
[ OK ]
iptables: Setting chains to policy ACCEPT: filter
[ OK ]
iptables: Unloading modules:
[ OK ]
iptables: Applying firewall rules:
[ OK ]

```

And then you need to check that your settings are up and running:

```

# iptables -list UOC

Chain UOC (1 references)
target      prot opt      source                destination
ACCEPT tcp    --      anywhere              anywhere tcp
dpt:webcache /* OSS Console GUI */

```

If everything is OK, please save your configuration so that it is taken into account after a reboot:

```

# service iptables save

Iptables: saving firewall rules to /etc/sysconfig/iptables:
[OK]

```

Of course, you may also disable the Linux kernel firewall, to prevent any additional system administration tasks.

3.3 UOC License

License check module is an independent part can be integrated to UOC. After installing UOC, it will be deployed with the default configuration.

lcheck.xml

```
# vi $UOC_DATA/conf/lcheck.xml

<?xml version="1.0" encoding="UTF-8"?>

<lcheck>

    <rmi_hostname>localhost</rmi_hostname>

    <rmi_port>1099</rmi_port>

</lcheck>
```

rmi_hostname : it is the RMI host name. The default value is “localhost”. It means it will use the same host as UOC. If user changes it to other server means the license service will be deployed in another specific server.

Usually we should use the default configuration.

rmi_port : RMI port . Just like the RMI_REGISTRY . Usually we should use the default value.

License Files

```
# ls -l $UOC_DATA/licenses

... data

... OSST_Unified_Console_LicKey.txt

... OSST_Unified_Console_PD_File_Master.bin
```

data folder: Some log information is recorded in this folder.

OSST_Unified_Console_LicKey.txt: All license keys should be in this file. For example:

```
# HP Unif OSS Console 5Conc Viewers

9CDG B9MA H9PQ GHXY VWA5 HW25 29JL KMPL B89H MZVU DXAU 2CSM GHTG L762 RMW6 E4BE KJVT
D5KM GFVW TSNJ QD3J 5RW8 BNTM 9GW6 Q9S5 HXLZ VW69 95VL LYTK X7EQ FL73 PN3G 4WVD YDUS
NWS2 XD9S 5YNP FST7 NKCX H4SP 4MJ9 AAEE EZWH 2E4X ENUU BGN5 S8CH K7DX E8TJ BGLF 29JK
69MC "MP_UOC_20140919 JK232FAE HP Unif OSS Console 5Conc Viewers E-LTU"

# HP Unified OSS Console 5Conc Oper

ACTG A9MA H9PA 8HXZ U2A4 HW2F 29JL KMPL B89H MZVU DXAU 2CSM GHTG L762 7MG6 W3BE KJVT
D5KM GFVW TSNJ QD3J 5RW8 BNTM 9GW6 Q9S5 HXLZ VW69 95VL LYTK X7EQ FL73 PN3G 4WVD YDUS
NWS2 XD9S 5YNP FST7 NKCX H4SP 4MJ9 AAEE EZWH 2E4X ENUU BGN5 S8CH K7DX E8TJ BGLN 29JK
69MC "MP_UOC_20140919 JK234FAE HP Unified OSS Console 5Conc Oper E-LTU"

# HP Unified OSS Console 1 Conc Edit

QCDA D9MA H9PA 8HU2 U2A4 HW2N Y9JL KMPL B89H MZVU DXAU 2CSM GHTG L762 PM82 V3BE KJVT
D5KM EFVW TSNJ QD3J 5RW8 BNTM 9GW6 Q9S5 HXLZ VW69 95VL LYTK X7EQ FL73 PN3G 4WVD YDUS
NWS2 XD9S 5YNP FST7 NKCX H4SP 4MJ9 AAEE EZWH 2E4X ENUU BGN5 S8CH K7DX E8TJ BGLV 29JK
69MC "MP_UOC_20140919 JK236FAE HP Unified OSS Console 1 Conc Edit E-LTU"

# HP Unif OSS Console Data Coll Serv

9CLE C9MA H9PA GHU2 U2A4 HW2V Y9JL KMPL B89H MZVU DXAU 2CSM GHTG L762 JMG6 G4RE KJVT
D5KM EFVW TSNJ YD3J 5RW8 BNTM 9GW6 Q9S5 HXLZ VW69 95VL LYTK X7EQ FL73 PN3G 4WVD YDUS
NWS2 XD9S 5YNP FST7 NKCX H4SP 4MJ9 AAEE EZWH 2E4X ENUU BGN5 S8CH K7DX E8TJ BGLZ 29JK
69MC "MP_UOC_20140919 JK237FAE HP Unif OSS Console Data Coll Serv E-LTU"
```

```
# HP Unif OSS Cons DataCol DR/Dev
```

```
AC3A B9MA H9PA GHX2 U2A4 HW2V Y9JL KMPL B89H MZVU DXAU 2CSM GHTG L762 RMG6 F4RE KJVT  
D5KM EFWV TSNJ YD3J 5RW8 BNTM 9GW6 Q9S5 HXLZ VW69 95VL LYTK X7EQ FL73 PN3G 4WVD YDUS  
NWS2 XD9S 5YNP FST7 NKCY H4SP 4MJ9 AAEH EZWH 2E4X ENUU BGN5 S8CH K7DX M8TJ BGLZ 29JK  
69MC "MP_UOC_20140919 JK237FBE HP Unif OSS Cons DataCol DR/Dev E-LTU"
```

OSST_Unified_Console_PD_File_Master.bin: This is the core file for license check, it should not be modified.

After UOC is started, user will see the license check process : "LICENSE_MAN" through "uoc show" command.

```
# uoc show
```

PROCESS_NAME	PID	USER	CPU_TIME
RMI Registry	5314	uoc	00:00:02
ActiveMQ 5.7.0	5341	uoc	00:00:14
LICENSE_MAN	5365	uoc	00:00:05
ARRIVAL	5379	uoc	00:00:05
CONF_MAN	5394	uoc	00:00:13
CSV_ADAPTER	5410	uoc	00:00:04
DB_ADAPTER	5423	uoc	00:00:08
NOM_TEMIP_ADAPTER	5439	uoc	00:00:23
QC_PROVIDER	5454	uoc	00:00:05
Tomcat 7.0.42	5483	uoc	00:00:51

“Uoc lcheck” command is used to show the online user limitation value and list.

The command of lcheck can display the online user info.

```
cd $UOC_HOME/bin
```

```
# uoc lcheck
```

Capacity : 5

Online List :

User Id	User Name	IP Address	Host Name
temip	temip	16.31.78.173	llorca1.emea.hpqcorp.net
temip	temip	16.28.34.31	16.28.34.31

temip	temip	16.31.78.173	llorca1.emea.hpqcorp.net
admin	admin	16.17.178.6	16.17.178.6

Capacity value is 5 means the maximum online user number is five.

Online list has four properties, those are User Id, User Name, IP Address and Host Name. Sometimes, the hostname, which can't be obtained, is replaced by the IP Address.

Notice:

License check module can't check user offline if user quit UOC system that have not logout by UOC logout function. So it will only listen the event of tomcat session timeout to handle user offline. And usually the timeout value is about 30 minutes. During this period, the online total value is inconsistent the really online user.

3.4 ActiveMQ5.9 Web Control Password

If the user want to login to the activeMQ web control page, the default user/password is admin/admin, if anyone want to change it, please check the file jetty-realm.properties in the \$UOC_HOME/3pps/apache-activemq-5.9.0/conf

Chapter 4 UOC Server

4.1 UOC commands

The UOC server side platform is managed by a central “uoc” command located in `$UOC_HOME/bin`, and available in your `PATH` if you have followed the installation instructions.

You can display the command usage with the `-h` option:

```
# uoc -h

Usage:
  uoc [options] action

options:
  -s time :    change delay (in sec) between each started process
               (default is 2 sec)
  -r port :    change the port number used by the rmiregistry
               process at startup (default is 1099)
  -v:         set verbose mode
  -d:         set debug mode
  -h:         displays this usage message

actions:
  start:      start the OSS console server processes
  stop :      stop the OSS console server processes
  show :      show the OSS console server processes
  inventory:  list the currently installed UOC packages
  diagnose:   search for potential errors in log files
  archive:    package log files into a folder named by current date
```

4.2 Start server

You can start the UOC server with the `start` command.

```
# uoc start

Starting UOC processes (with UOC_HOME=/opt/UOC and
UOC_DATA=/var/opt/UOC):
  rmiregistry
```

```

activemq
license mgt
arrival
cm
csv adapter
db adapter
nom_temip adapter
qc provider
tomcat

receiver
db transformer

```

4.3 List processes

To see what process are running, use the show command:

```
# uoc show
```

PROCESS_NAME	PID	USER	CPU_TIME
RMI Registry	5576	root	00:00:00
ActiveMQ 5.9.0	5624	root	00:00:05
LICENSE_MAN	5638	root	00:00:02
ARRIVAL	5651	root	00:00:01
CONF_MAN	5670	root	00:00:06
CSV_ADAPTER	5701	root	00:00:05
DB_ADAPTER	5718	root	00:00:03
NOM_TEMIP_ADAPTER	5749	root	00:00:06
QC_PROVIDER	5768	root	00:00:02
RECEIVER	5852	root	00:00:06
Tomcat 7.0.42	5800	root	00:00:09

4.4 Access to the console

UOC is a web-based application. When Tomcat and all other processes have been started successfully, user can use a web browser (IE, Firefox...) to access OSS Console GUI.

The default URL is similar to the following:

http://<UOC Server Ip>:<port>/uoc/gui/ViewDesktop.html

Default port is 8080.



- To log in, and have a look to all the demo sample views the username/password are **demo/demo**.
- If UOC NOM TeMIP Adapter has been configured, to log in, and have a look to the default TeMIP views the username/password are **temip/temip**

4.5 Stop server

To stop the UOC server, use the stop command:

```
# uoc stop
Stopping UOC processes:
    5800 - tomcat
    5701 - CSV_ADAPTER
    5718 - DB_ADAPTER
    5749 - NOM_TEMIP_ADAPTER
    5768 - QC_PROVIDER
    5670 - CONF_MAN
    5651 - ARRIVAL
    5638 - LICENSE_MAN
    5852 - RECEIVER
    5624 - activemq
    5576 - rmiregistry
```


Chapter 5 Advanced Configuration

5.1 TeMIP Custom AO support

5.1.1 Standard TeMIP attributes management

Currently, some standard attributes of TeMIP alarms are not received in the UOC due to some naming mismatch in the chain from TeMIP to UOC. Some names seen in `mcc_dap_browser` are not consistent with what is returned by TWS.

Example of such standard attributes that are not consistent:

“**Creation Timestamp**” encoded by TWS “**Creation_Time**” in the event.
It is encoded “**Creation_Timestamp**” in summarize directive.

“**Problem Occurrences**” is encoded by TWS “**Problem_Occurrence**”.

To cope with this issue, some modifications should be done both on TeMIP side and NOM side as described below.

Please follow the steps below to handle correctly the following attributes, inconsistently encoded:

- **Acknowledgement time stamp**
- **last modification timestamp**
- **Previous state**
- **Alarm Origin**
- **Original Event time**
- **Acknowledgement User ID**
- **Operator Note**
- **Clearance report flag**
- **escalated alarm**
- **sa total**
- **problem occurrence**
- **creation timestamp**
- **specific problem**

Step 1: TeMIP server side

The following attributes are not present in the AggregateEvent partition and also in Object Creation event.

So, they must be added to TeMIP object model.

1. Update the two following msl files

```
a- /usr/opt/temip/mmtoolkit/msl/temip_ah_fm_ao_events.ms
```

Add the following line in aggregate event part:

```
ARGUMENT Acknowledgement Time Stamp = 39 : BinAbsTim
DISPLAY = TRUE,
SYMBOL = AO_ARG_ACK_TIME
END ARGUMENT;
```

```
ARGUMENT Last Modification Timestamp = 9901 : BinAbsTim
DISPLAY = TRUE,
SYMBOL = AO_LASTMOD_TIME
END ARGUMENT ;
```

```
ARGUMENT Previous State = 68 : AlarmObjectStateType
DISPLAY = TRUE,
SYMBOL = AO_PREVIOUS_STATE
END ARGUMENT ;
```

```
ARGUMENT Clearance Report Flag =32: Boolean
DISPLAY = TRUE,
SYMBOL = AO_COND_CLEAR
END ARGUMENT ;
```

```
b- /usr/opt/temip/mmtoolkit/msl/temip_ah_fm_ao_events_common_args.ms
```

Add the following lines:

```
ARGUMENT Acknowledgement Time Stamp = 39 : BinAbsTim
DISPLAY = TRUE,
SYMBOL = AO_ARG_ACK_TIME
END ARGUMENT ;
```

```
ARGUMENT Last Modification Timestamp = 9901 : BinAbsTim
DISPLAY = TRUE,
SYMBOL = AO_LASTMOD__TIME
END ARGUMENT ;
```

```
ARGUMENT Previous State = 68 : AlarmObjectStateType
DISPLAY = TRUE,
SYMBOL = AO_PREVIOUS_STATE
END ARGUMENT ;
```

```
ARGUMENT Clearance Report Flag =32: Boolean
DISPLAY = TRUE,
SYMBOL = AO_COND_CLEAR
END ARGUMENT ;
```

2. Rebuild the TeMIP dictionary

Please execute the following commands:

```
# mcc_msl -I/usr/opt/temip/mmtoolkit/msl -
m/usr/opt/temip/mmtoolkit/msl/temip_ah_fm_srvc_if.ms

mcc_msl - Info: File write locked
"/var/opt/temip/tmp/mcc_msl_mcc_fdictionary.dat.lock"

mcc_msl - Info: Loading existing binary MIR database file
"/var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat"

mcc_msl - Info: stat
"/var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat" mode:
0644 user: temip group: users size: 227736132 mtime: Fri Dec 6
04:25:44 2013 atime: Fri Apr 25 14:54:36 2014 sum: 22142

mcc_msl - Info: Checking the Built-In Data Types file version
"/usr/opt/temip/mmtoolkit/msl/builtin_types.dat"

mcc_msl - Info: Merging MSL file
"/usr/opt/temip/mmtoolkit/msl/temip_ah_fm_srvc_if.ms"

mcc_msl - Info: Merging Object Acknowledgement Time Stamp = 39

mcc_msl - Info: Ending Compilation of MSL file (31 lines)

mcc_msl - Info: File write locked
"/var/opt/temip/tmp/mcc_fdictionary.dat.lock" before output file
dump

mcc_msl - Info:
/var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat file saved
into /var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat.bak

mcc_msl - Info: stat
"/var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat.bak"
mode: 0644 user: temip group: users size: 227736132 mtime: Fri
Dec 6 04:25:44 2013 atime: Fri Apr 25 14:54:36 2014 sum: 22142

mcc_msl - Info: Generating Binary Output to
"/var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat"

mcc_msl - Info: stat
"/var/opt/temip/conf/en_US.iso88591/mcc_fdictionary.dat" mode:
0644 user: temip group: users size: 227736396 mtime: Fri Apr 25
20:10:51 2014 atime: Fri Apr 25 20:10:51 2014 sum: 59909

# mcc_ptb

# temip_stop
```

```
# temp_start
```

Step 2: NOM server side

1. Update the TeMIP_configuration.dynamic.xml file

Those attributes must be added to the
/var/opt/openmediation-72/containers/instance-0/ips/temip-
ca-22/etc/conf/**TeMIP_configuration.dynamic.xml** file as follow
(red lines):

```
<CustomAttributes>
  <CustomAttribute>
    <!-- Works only for TeMIP 6.1 and above -->
    <Attribute>Creation_Stamp</Attribute>
    <Datatype>BinAbsTime</Datatype>
  </CustomAttribute>
  <CustomAttribute>
    <!-- Works only for TeMIP 6.1 and above -->
    <Attribute>Creation_Time</Attribute>
    <Datatype>BinAbsTime</Datatype>
  </CustomAttribute>
  <CustomAttribute>
    <Attribute>Children</Attribute>
    <Datatype>XmlString</Datatype>
  </CustomAttribute>
  <CustomAttribute>
    <Attribute>Parents</Attribute>
    <Datatype>XmlString</Datatype>
  </CustomAttribute>
  <CustomAttribute>
    <Attribute>Pb</Attribute>
    <Datatype>XmlString</Datatype>
  </CustomAttribute>
  <CustomAttribute>
    <Attribute>User_Text</Attribute>
    <Datatype>XmlString</Datatype>
  </CustomAttribute>
  <CustomAttribute>
    <Attribute>User_Identifier</Attribute>
    <Datatype>XmlString</Datatype>
  </CustomAttribute>
</CustomAttributes>
```

```

<CustomAttribute>
    <Attribute>Problem_Status</Attribute>
    <Datatype>XmlString</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Original_Severity</Attribute>
    <Datatype>XmlString</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Acknowledgement_User_Identifier</Attribute>
bute>
    <Datatype>XmlString</Datatype>
</CustomAttribute>
<CustomAttribute>
<Attribute>Acknowledgement_Time_Stamp</Attribute>
    <Datatype>BinAbsTime</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Handled_User_Identifier</Attribute>
    <Datatype>XmlString</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Handle_Time_Stamp</Attribute>
    <Datatype>BinAbsTime</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Termination_User_Identifier</Attribute
>
    <Datatype>XmlString</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Termination_Time_Stamp</Attribute>
    <Datatype>BinAbsTime</Datatype>
</CustomAttribute>
<CustomAttribute>
    <Attribute>Clearance_Time_Stamp</Attribute>
    <Datatype>BinAbsTime</Datatype>
</CustomAttribute>
<CustomAttribute>

```

```

        <Attribute>Handled_By</Attribute>
    <Datatype>EntitySet</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Correl_Notif_Info</Attribute>
        <Datatype>XmlString</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Alarm_Comment</Attribute>
        <Datatype>CommentTypeSet</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Last_Modification_Timestamp</Attribute>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Original_Event_Time</Attribute>
        <Datatype>BinAbsTime</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Problem_Occurrences</Attribute>
        <Datatype>XmlString</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Problem_Occurrence</Attribute>
        <Datatype>XmlString</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Alarm_Origin</Attribute>
        <Datatype>XmlString</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Previous_State</Attribute>
        <Datatype>XmlString</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Alarm_Object_Operator_Note</Attribute>
    </CustomAttribute>

```

```

        <Datatype>XmlString</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Clearance_Report_Flag</Attribute
>
        <Datatype>XmlBoolean</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Escalated_Alarm</Attribute>
        <Datatype>XmlBoolean</Datatype>
    </CustomAttribute>
    <CustomAttribute>
        <Attribute>Sa_Total</Attribute>
        <Datatype>XmlString</Datatype>
    </CustomAttribute>
</CustomAttributes>

```

Restart container (as root user)

```

# /opt/openmediation-72/bin/nom_admin -shutdown-container
# /opt/openmediation-72/bin/nom_admin -start-container

```

Step 3: UOC server side

Some fields corresponding to these attributes must be added to the \$UOC_DATA/data/cmstore/dimension/temp_alarm.xml temp_alarm.xml dimension (red lines)

```

<Field name="acknowledgement_timestamp" type="date"/>
  <Field name="acknowledgement_user_identifier" type="string"/>
  <Field name="additional_text" type="string"/>
  <Field name="alarm_origin" type="enum:alarm_origin"/>
  <Field name="alarm_type" type="string"/>
  <Field name="children" type="string" multiple="true"/>
  <Field name="clearance_report_flag" type="boolean"/>
  <Field name="creation_timestamp" type="date"/>
  <Field name="domain" type="string"/>
  <Field name="escalated_alarm" type="boolean"/>
  <Field name="event_time" type="date"/>
  <Field name="identifier" type="number" isKey="true"/>
  <Field name="last_modification_timestamp" type="date"/>
  <Field name="managed_object" type="string"/>
  <Field name="operation_context" type="string" isKey="true"/>

```



```

<Field name="operator_note" type="string"/>
<Field name="original_event_time" type="date"/>
<Field name="original_severity"
type="enum:perceived_severity"/>
<Field name="parents" type="string" multiple="true"/>
<Field name="perceived_severity"
type="enum:perceived_severity"/>
<Field name="previous_state" type="enum:state"/>
<Field name="probable_cause" type="string"/>
<Field name="problem_occurrences" type="number"/>
<Field name="problem_information" type="string"
multiple="true"/>
<Field name="problem_status" type="enum:problem_status"/>
<Field name="sa_total" type="number"/>
<Field name="specific_problems" type="string"
multiple="true"/>
<Field name="state" type="enum:state"/>
<Field name="target_entities" type="string" multiple="true"/>
<Field name="user_text" type="string"/>
<Field name="uniqueid" type="string" isKey="true"/>
<Field name="map_association_id" type="string"/>

```

Restart UOC

```

# $UOC_HOME/bin/uoc stop
# $UOC_HOME/bin/uoc start

```

5.1.2 Customer specific attributes management

To be able to receive specific Customer Attributes of alarms on the OSS Console the following steps should be executed.

1. Update Custom AO field in the Channel Adapter part
 - Look in the TeMIP dictionary the TeMIP presentation name of the Custom attribute you want to forward to UOC console.
Example: "SITE_CODE" and "UCA Custom Field1".
 - Update the channel adapter configuration file accordingly (TeMIP_configuration.dynamic.xml)

```

# cd /var/opt/openmediation-72/containers/instance-0/ips/temip-
ca-22/etc/conf

```

---- edit TeMIP_configuration.dynamic.xml file and add the following:

```

<CustomAttribute>
  <Attribute>SITE_CODE</Attribute>
  <Datatype>XmlString</Datatype>
</CustomAttribute>

<CustomAttribute>
  <Attribute>UCA Custom Field1</Attribute>
  <Datatype>XmlString</Datatype>
</CustomAttribute>

```

2. Update the temp_alarm raw dimension file in UOC server part with the CustomAO

```

# cd $UOC_DATA/data/cmstore/dimension/

--- edit temp_alarm.xml file and add the following

<Field>
  <name>sitecode</name>
  <type>string</type>
</Field>
<Field>
  <name>ucacustomfield1</name>
  <type>string</type>
</Field>

```



Attribute Naming convention

Be careful: the naming convention in NOM and UOC are different for Custom AO attribute names.

Example1:

SITE_CODE in TeMIP Side becomes

sitecode in UOC server part (no uppercase, no underscore)

Example2:

UCA Custom Field1 in TeMIP Side becomes

Ucacustomfield1 in UOC server part (no uppercase, no blank)



Attribute Type convention

Custom attribute value that will be received by OSS Console will be a string in any case but the type specified in TeMIP CA configuration controls encoding and decoding of data.

For TeMIP attributes of types FullEntityName, EntitySet and BinAbsTim it's best to use corresponding types in TeMIP CA configuration:

- EntitySpec
- EntitySet,
- BinAbsTime

If `XmlString` is specified instead then attribute will be returned in quite unreadable format.
supported type list:

- `XmlDecimal`
- `XmlString`
- `XmlBoolean`
- `EntitySpec`
- `EntitySet`
- `BinAbsTime`

3. Restart the Container

```
--- at NOM adapter server side
--- assuming that the NOM container is by default 0:
#nom_admin --shutdown-container
#nom_admin --start-container
```

4. Restart UOC server

```
--- at UOC server side
# $UOC_HOME/bin/uoc stop
# $UOC_HOME/bin/uoc start
```

5. Open the TeMIP Real time Alarm view through OSS Console URL.

Select **settings** icon, and then choose the custom attribute that should be displayed in the `temp_alarm` popup window.

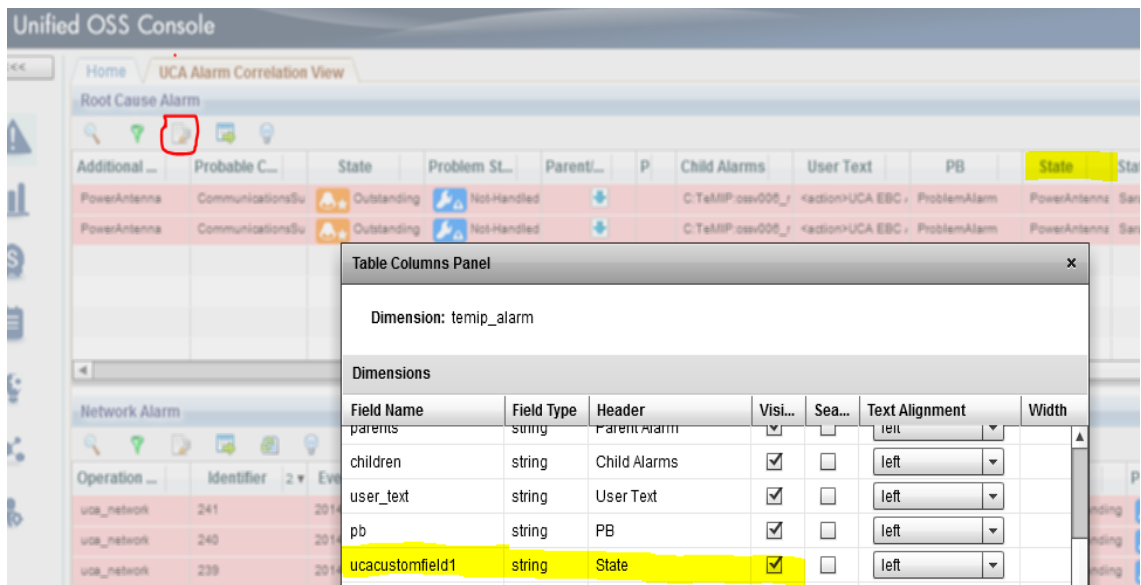


Figure 1: OSS console real-time alarm table view columns configuration

5.2 Trouble Ticket directives support

OSS Console TeMIP Real Time alarm table view provides **Service Manager** or **Remedy** Trouble Tickets directives accessible through the contextual menu.

By default these directives are grayed to avoid any error in case no Service Manager/TeMIP OSS-J or Remedy/TT Liaison adapters have been installed and configured on the platform.

To be able to use the TT directives you must execute the following steps.

1- Pre-requisites

Tickets managed by **HP Service Manager** Server:

- HP Service Manager must be installed and configured. If not please refer to the right documentation to install it.
- TeMIP OSS-J adapter must be installed and configured. If not please refer to the right documentation to install it.

Tickets managed by **Remedy** Server:

- Remedy Server must be installed and configured. If not please refer to the right documentation to install it.
- TeMIP TT Liaison FM must be installed and configured. If not please refer to the right documentation to install it.

2- Update \$UOC_DATA/conf/application.conf

```
nom_temip_adapter {
    ca_name = "uoc-ca"
    nom_flow_name = "dynamic_flow_uoc"
    monitored_ocs = ["demo_oc1", "demo_oc2"]
    tt_product = "SM"
    tt_server = "TT_SERVER .SM"
    scope = "NOT_CLOSED"
```

Where

tt_product is the product used to managed the Trouble Tickets. Two products Service Manager or Remedy are supported in OSS-Console.

The authorized values of tt_product field are:
tt_product="SM" to support HP service Manager.

tt_product= "ARS" to support Remedy.

tt_server is the TeMIP instance name of the Trouble Ticket server that is configured in the TeMIP TT liaison adapter.

Examples:

tt_server="TT_SERVER .SM"

(Where TT_SERVER .SM is the server instance name used by TEMIP ossj91 adapter).

tt_server="TTS .ars_windows"

(Where TTS .ars_windows is the TT server Instance used by TeMIP Remedy TT liaison adapter).

Scope is the category of the TeMIP Alarms we want to display according to their Problem Status/State.

Scope can be "NOT_CLOSED" or "NOT_TERMINATED".

The default scope is "NOT_TERMINATED". This scope is based on the State of the Alarms meaning that we only want to display the alarms that are **Outstanding or Acknowledge**.

For Trouble Ticket functionality, we will use "NOT_CLOSED". This scope is based on the Problem Status of the Alarm meaning that we want to display any the alarms that are not closed (including for instance the Terminated/Handled ones).



Only one Trouble Ticket Server is supported at a time.

3- Check the temp_alarm.xml dimension.

The dimension must contain problem_information field. This field corresponds to the handled_by attributes of the TeMIP Alarm Object. Add it if it is not present in the following file:

\$UOC_DATA/data/cmstore/dimension/temp_alarm.xml

```
...  
<Field name="problem_occurrences" type="number"/>  
<Field name="problem_information" type="string" multiple="true"/>  
<Field name="problem_status" type="enum:problem_status"/>  
...
```

4- Update the TeMIP Real Time alarm view to make TT directives accessible. Through the view Designer with admin/admin user open the RTAH view



Figure 2: OSS console real-time alarm table view

In properties part of alarm table select “commands” field

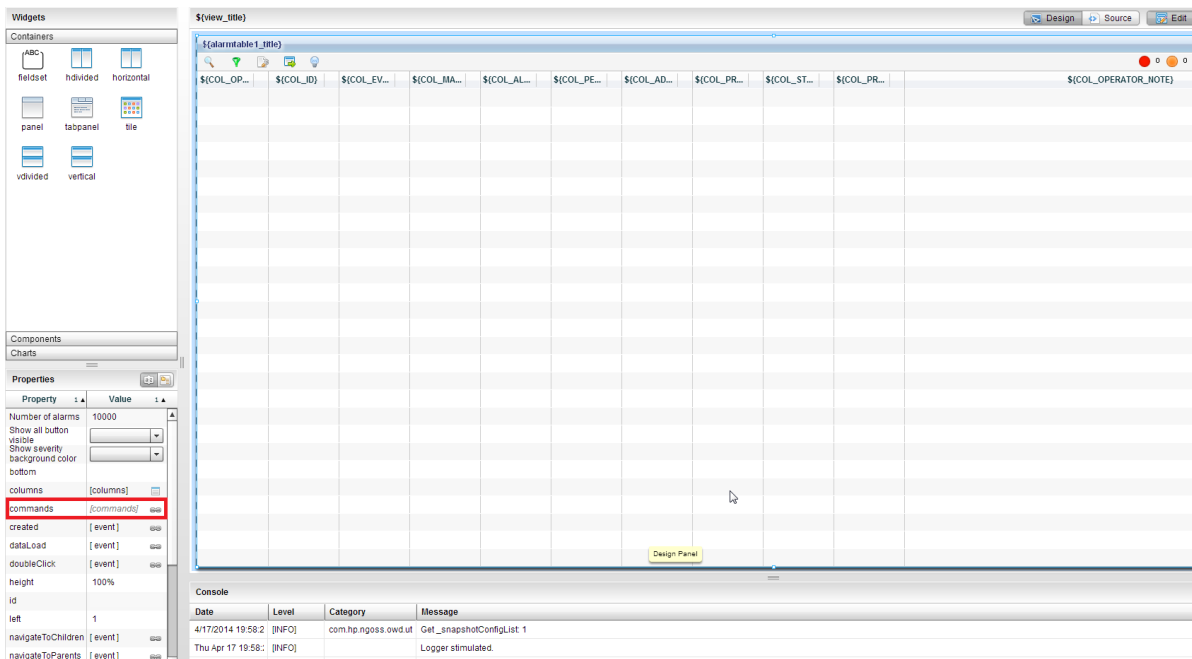


Figure 3: real-time alarm table command properties

For each Trouble Ticket commands update the Premise content

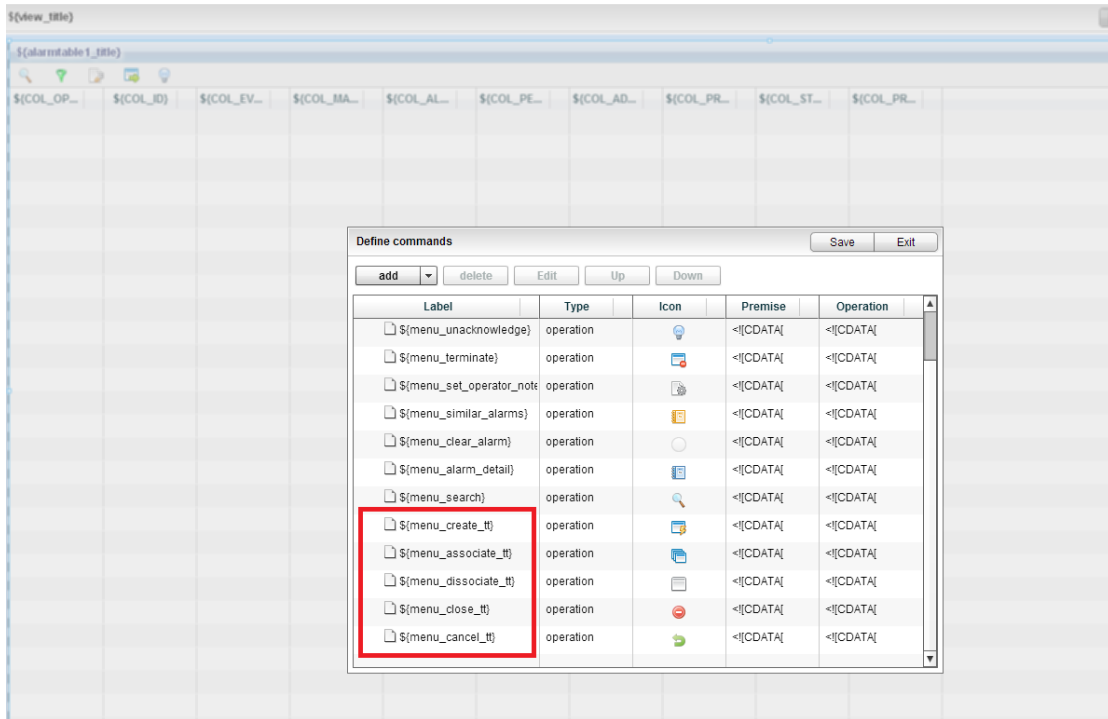


Figure 4: real-time alarm table define command

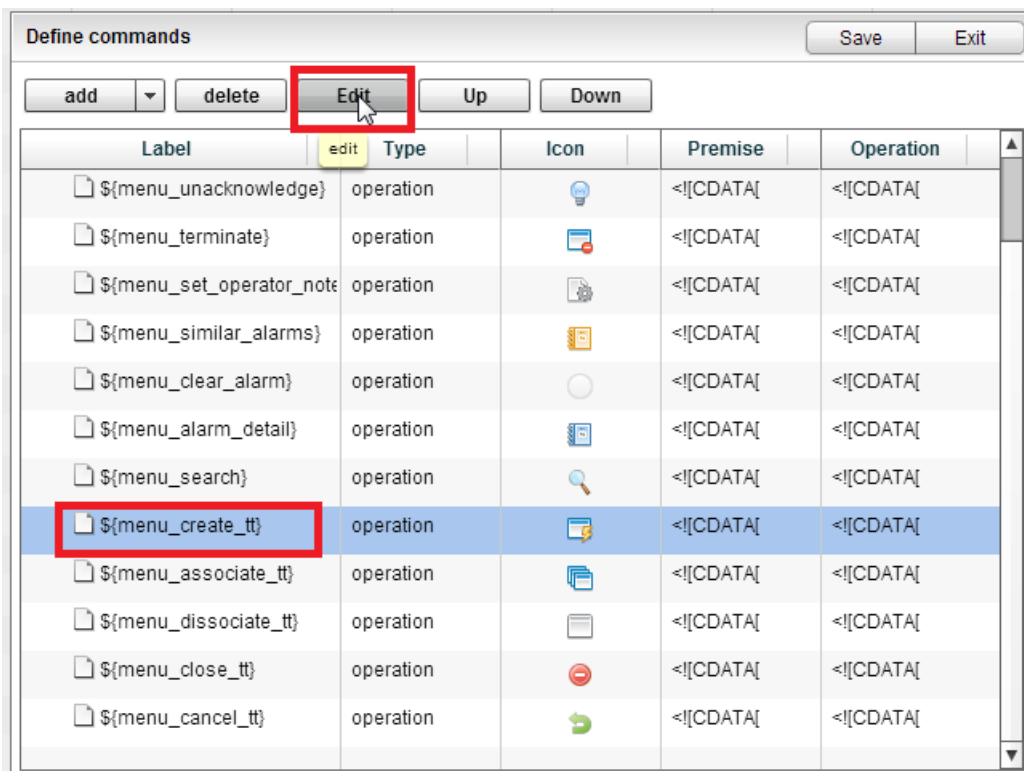


Figure 5: real-time alarm table Edit command

Comment the “return false;” instruction and uncomment the next one as followed:

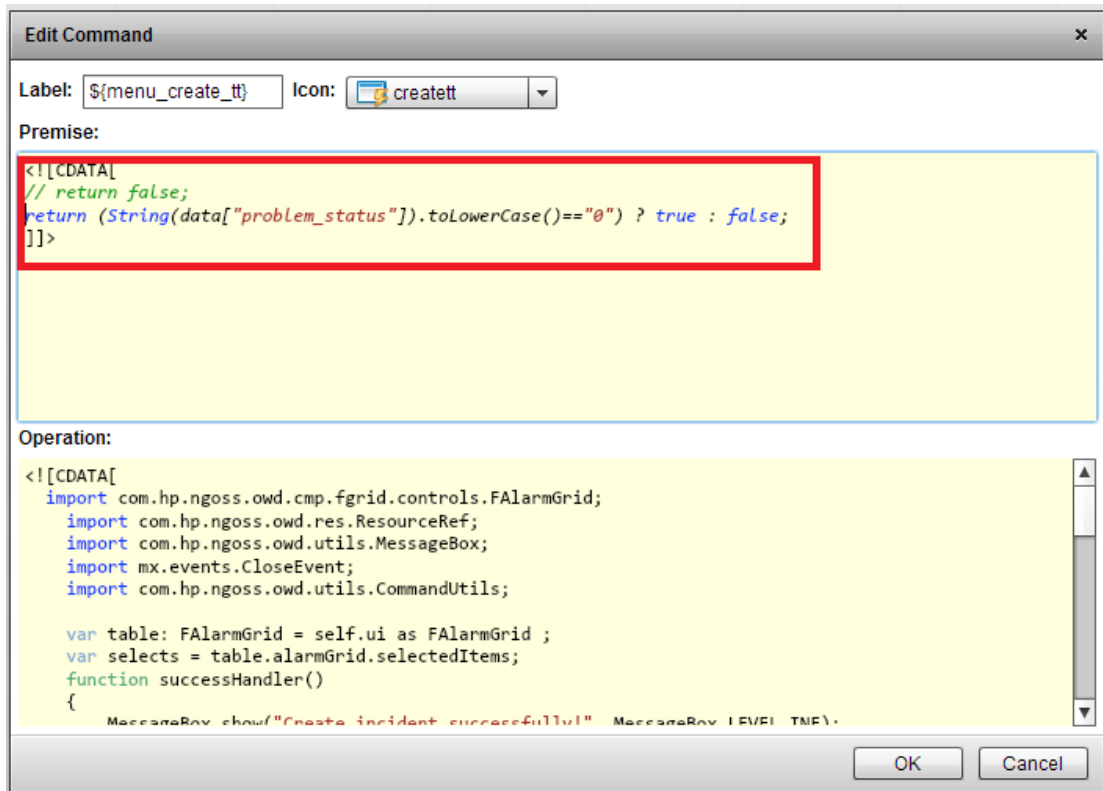


Figure 6: real-time alarm table command actionscript

Click ok then save the commands

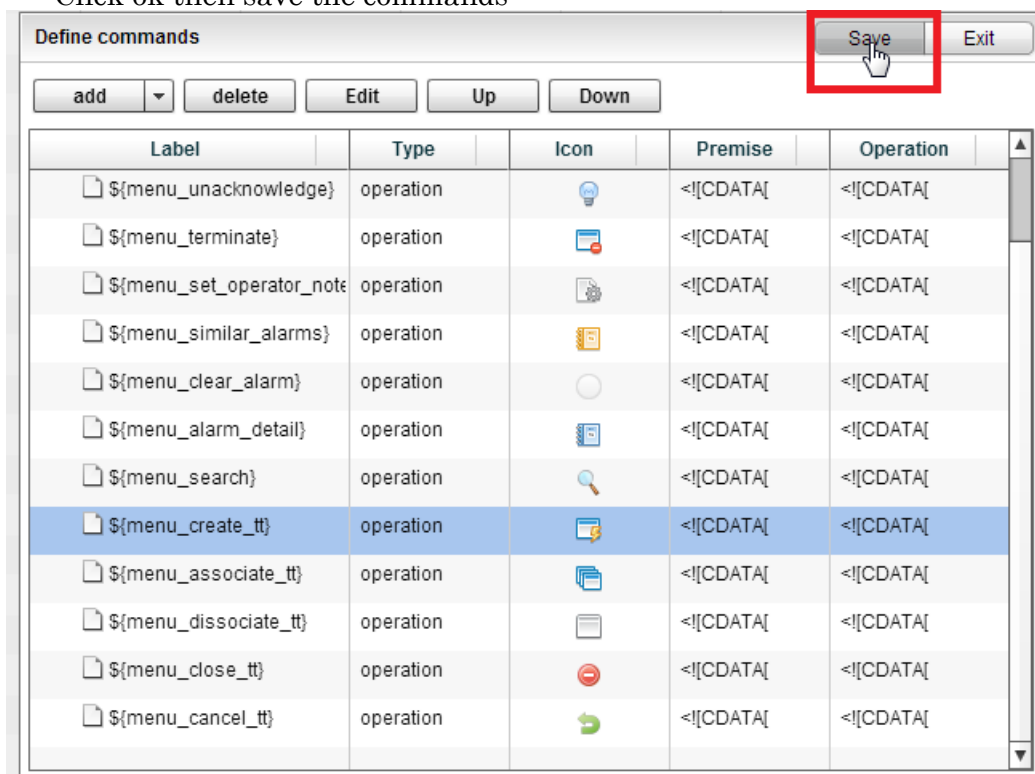


Figure 7: real-time alarm table save command

Exit from the “Define commands” popup window and don’t forget to save the view.

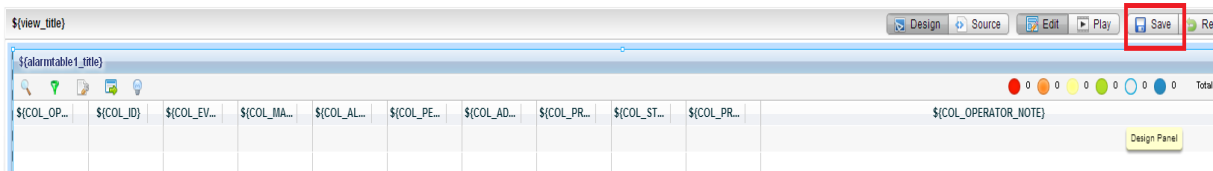




Figure 8: real-time alarm table save view

	<p>Service Manager supported directives:</p> <ul style="list-style-type: none"> - Create_tt (creatett directive) - Associate_tt (associatett directive) - Dissociate_tt (dissociatett directive) - Close_tt (closett directive) - Cancel_tt (canceltt directive) <p>Remedy supported directives:</p> <ul style="list-style-type: none"> - Create_tt (create directive) - Associate_tt (associate_alarm directive) - Dissociate_tt (dissociate_alarm directive) - Close_tt (closeFromTeMIP directive)
---	--

5- Service Manager configuration update

	<p><i>The configuration below is applicable for Tickets managed by Service Manager only.</i></p>
---	--

TeMIP server side: check SM adapter configuration.

By default, when a user wants to associate a TT to an alarm, no check is done on the existence of the incident in the SM manager.

To activate the validation please update the line in the following file

`/etc/hp/ism/adapters/jsr91ovscadapter/conf/OVSCJSR91AdapterConfig.xml`

```
<!-->check incident Status Before UpdateTT<!-->
<checkStatusBeforeUpdateTT>True</checkStatusBeforeUpdateTT>
```

Stop and restart the adapter

```
# cd /usr/hp/ism/adapters/jsr91ovscadapter/bin
# ./stopadapter
# ./startadapter
```

6- UOC server side: restart UOC

```
$UOC_HOME/bin/uoc stop
$UOC_HOME/bin/uoc start
```

5.3 CSV adapter

Each time you will create, update a new view that will be fed by the content of at least one csv file, you will need to update the csv adapter configuration file.

This file is used to associate a csv data source file to a given dimension.

All the sample views delivered by UOC kit and accessible through demo/demo account are configured with the csv adapter.

1. Update csv_adapter.xml configuration file

Once your dimension has been defined, you can update the csv adapter configuration file as below:

```
# cd $UOC_DATA/conf

--- edit and update csv_adapter.xml file

<?xml version="1.0" encoding="UTF-8"?>
<csv_adapters>
  <instance dimension="my_dimension" datafiles="/tmp/my_data-
file.csv" mode="full" delimiter=";" >
  <field name="( [\s\S]*)" datepattern="yyyy/MM/dd HH:mm" />
  </instance>
</csv_adapters>
```

Where:

dimension: is the name of the raw dimension defined with the dimension manager and located into \$UOC_DATA/data/cmstore/dimension directory.

datafiles: is the name and location of the csv data source file from which data will be collected,

mode: represents the way data will be collected. “full” mode meaning that each time the csv data file will be updated, all the data will be reloaded. “delta” mode meaning that only updated lines will be reread. Today csv adapter only supports the full mode.

delimiter: is the separator used in the csv file. Default value is the comma “,”.

name (field)/datepattern: is used to specify, in case csv file provide date fields, the format of these fields. “name” attribute is a regular expression allowing to specify the name or a set of name field(s) that match(es) the given datepattern.

Example1:

```
<field name="( [\s\S]*)" datepattern="yyyy/MM/dd HH:mm"
/>
```

All the fields which contain date in the csv file, have the same date format which is “yyyy/MM/dd HH:mm”

Example2:

```
<field name="([\s\S]*)" datapattern="yyyy/MM/dd HH:mm" />
<field name="([\s\S]*)" datapattern="yyyy/MM/dd HH:mm:ss"
/>
```

Some fields containing date in the csv file, have “yyyy/MM/dd HH:mm” some other have "yyyy/MM/dd HH:mm:ss" date formats.

Example3:

```
<field name="(aaa)" datapattern="yyyy/MM/dd HH:mm" />
<field name="(bbb)" datapattern="yyyy/MM/dd HH:mm:ss"
/>
```

Field names in the csv file that start with “aaa” string have the “yyyy/MM/dd HH:mm” date format.

Field names in the csv file that start with “bbb” string have “yyyy/MM/dd HH:mm:ss” date format.

2. Restart the csv adapter

After each update of the csv configuration file, you need to restart the adapter.

```
# $UOC_HOME/adapters/csv/bin/stop.sh
# $UOC_HOME/adapters/csv/bin/start.sh
```

Add the encoding info to support 2 bytes characters(if needed):

If there is any 2 bytes characters in the csv file (like Chinese, Korean, Japanese language characters), we need to add encoding in the instance.

For example:

```
# vi $UOC_DATA/conf/csv_adapter.xml
# <!--sample views-->
    <instance dimension="demo_alarm"
datafiles="${UOC_HOME}/examples/demo/data-
samples/alarm/Export.csv" mode="full" encoding="GB18030" >
        <field name="([\s\S]*)" datapattern="yyyy/MM/dd
HH:mm" />
    </instance>
```

Then we need to restart the adapter as step 2.

5.4 DB adapter

Each time you create or update a new view that will be fed by the content of at JDBC database, you need to update the db adapter configuration file.

This file is used to associate a DB instance to a given dimension.

The sample view “Service Site monitoring H2” delivered by UOC kit and accessible by user through custom/custom account in the “Service Management” category is configured with the db adapter.

1. Update db_adapter.xml configuration file

Once your dimension has been defined, you can update the db adapter configuration file as below:

```
# cd $UOC_DATA/conf

--- edit and update db_adapter.xml file

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<db_adapter>

  <!-- Example connection with Oracle -->
  <connection id="connection1" driver="oracle.jdbc.OracleDriver"
url="jdbc:oracle:thin:@16.17.98.197:1521:TOPOv1" username="UOC" password="UOC"
reconn="true" maxconn="10" maxidle="6" maxwait="30" />
  <instance dimension="test" table="UOC_TEST" mode="full" connection="connection1"
period="1 second" lazy="true" />

  <!-- Example connection with h2 -->
  <connection id="connection2" driver="org.h2.Driver"
url="jdbc:h2:tcp://localhost/${UOC_HOME}/examples/custom/data-
samples/h2/SiteMonMemDB" username="" password="" />
  <instance table="SITEMON_DATA" dimension="sitemonH2" mode="full"
connection="connection2" />

  <!-- Example connection with mysql -->

  <connection id="connection3" driver="com.mysql.jdbc.Driver"
url="jdbc:mysql://16.156.194.168:3306/nfvdemo" username="root" password="root" />
  <instance table="T_UOCTEST" dimension="mysql_test" mode="full"
connection="connection4" period="15 second" />

  <!-- Example connection with vertica -->

  <connection id="fault_rpt_conn" driver="com.vertica.jdbc.Driver"
url="jdbc:vertica://16.173.234.159:5433/ossdb" reconn="false" username="fault_rpt"
password="!qazxsw2" />
  <instance dimension="fault_rpt" table="alarmobject" mode="full"
connection="fault_rpt_conn" />

</db_adapter>
```

Where:

connection Id: is a name for the connection.

driver: is the jdbc driver used.

url: represent the parameters of the connection to access the DB instance.

username/password: used to connect to the DB instance.

reconn: used to define if database connection broken, will the db adapter try to reconnect to database next time.

maxconn: the max database connection could be used, it's optional, default value is 50.

maxidle: the maximum number of connections that can remain idle, it's optional, default value is 30.

maxwait: the max waiting second when a request try to get a database connection, it's optional, default value is 30.

And

instance dimension: is the name of the raw dimension defined with the dimension manager and located into \$UOC_DATA/data/cmstore/dimension directory.


table: is the name of the table where data will be collected.

connection: is the name of the connection defined previously that will be used to access the table.

mode: represents the way data will be collected. “full” mode meaning that each time the DB data table will be updated, all the data will be reloaded. “delta” mode meaning that only updated records will be reread.

period: represents the timer interval between next time JDBC adapter refresh the database.

lazy: represents whether the instance provides subscribe service or not. “true” means that the instance does not provide subscribe services, “false” means it does. The default value is “false” if the “lazy” attribute is not set.

	<p><u>Provided drivers</u></p> <p><i>Some drivers are delivered by the UOC packages. These drivers are:</i></p> <ul style="list-style-type: none">- Oracle driver- H2 driver- MySQL driver- VERTICA driver
---	---

After having modified the db_adapter.xml file, restart the db_adapter as follow:

```
# $UOC_HOME/adapters/db/bin/stop.sh  
# $UOC_HOME/adapters/db/bin/start.sh
```

To check the db adapter restart, edit the DB_ADAPTER.log file

```
# cd $UOC_DATA/logs  
# tail -f DB_ADAPTER.log
```

receiverglobal.conf	receiver.dimensions	Define the dimensions to be subscribe data from adaptors	["temp_alarm","demo_alarm"]
	receiver.startServer	If to start H2 DB service within Receiver.' true' to start 'false' not	true
	receiver.ServerParam	The parameters to startup H2 server. Don't change the default value.	-tcpAllowOthers
	receiver.maxDBWorkerPerConsumer	This parameter is not active, keep the default value	1
	receiver.remoteDataHandler.active	Must keep the default value	false
	receiver.remoteDataHandler.path	This paramter is not actived, keep the default value	"akka.tcp://RemoteDataHandler@localhost:2553/user/dataHandler"
	receiver.localDataHandler	The actor address of the local data handler. If the service is not started on the localhost, i.e.. 192.168.0.1, then ONLY update the 'localhost' to the IP address or the host name. MUST keep the left part unchanged! The host value must be same as akka.remote.netty.tcp.hostname in recciverservice.conf	"akka.tcp://ReceiverService@localhost:2553/user/dataHandler"
receiverservice.conf	akka.loggers	Log configuration. Don't change it.	["akka.event.slf4j.Slf4jLogger"]
	akka.logger-startup-timeout	Log configuration. Don't change it.	"25s"
	akka.actor.provider	System configuration. Don't change it.	"akka.remote.RemoteActorRefProvider"
	akka.remote.netty.tcp.hostname	The host value must be same as receiver.localDataHandler in receiverglobal.conf	"localhost"
	akka.remote.netty.tcp.port	The port used by receiver service. If modify the default value, MUST keep the same port value in the receiver.localDataHandler in receiverglobal.conf	2553
receiverconsole.conf	akka.loggers	Log configuration. Don't change it.	["akka.event.slf4j.Slf4jLogger"]
	akka.logger-startup-timeout	Log configuration. Don't change it.	"25s"

	akka.actor.provider	System configuration. Don't change it.	"akka.remote.RemoteActorRefProvider"
	akka.remote.netty.tcp.hostname	The host to run the receiver console. Suggest not updating.	"localhost"
	akka.remote.netty.tcp.port	The port used by receiver console service. If modify the default value, MUST keep different with the port value in the receiver.localDataHandler in receiverglobal.conf	2552
h2_conf.xml	<type>	<p>the db pool type will be used, by now, it could be :h2,dbcp or just remain nothing.</p> <p>h2 : the db pool implement by H2, it could support multi h2 instance.</p> <p>Dbcp: the db pool implement by DBCP, it could support multi h2 instance.</p> <p>nothing: it mean no value was input , just like <type></type>, in this mode, the db pool implement by H2, but it could not support mulit h2 instancel.</p>	<type></type>
	<url>	JDBC url to the h2 database. Don't change it.(this item effect just when <type> is blank)	jdbc:h2:tcp://localhost/mem:uocCenterPool;DB_CLOSE_DELAY=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0
	<usr>	User name to access the DB. Don't change it.(this item effect just when <type> is blank)	sa
	<pwd>	Password to access the DB. Don't change it.	
	<maxConnNumber>	The max db connection pool size. Need tune this value to get the best performance. (this item effect just when <type> is blank)	300
	<h2>	when type is h2, the QC module will use setting in this tag	
	<dbcp>	when type is dbcp, the QC module will use setting in this tag	
	<pool>	it mean a new db pool tag,use in	

	<h2>,<dbcp> tag	
<name>	a db pool name, it is mandatory,use in <h2>,<dbcp> tag	
<driver>	db driver name, don't change it,use in <h2>,<dbcp> tag	org.h2.Driver
<maxtotal>	it is same as <maxConnNumber>, it just use in <h2>,<dbcp> tag.	150
<maxwaitmillis>	it mean the max waiting milli second when a request try to get a database connection,use in <h2>,<dbcp> tag	60000
<initialsize>	The initial number of connections that are created when the pool is started,use in <dbcp> tag	0
<maxidle>	the maximum number of connections that can remain idle in the pool, without extra ones being released, or negative for no limit.	120
<minidle>	The minimum number of connections that can remain idle in the pool, without extra ones being created, or zero to create none.	30
<removeabandoned>	Flag to remove abandoned connections if they exceed the removeAbandonedTimeout. If set to true a connection is considered abandoned and eligible for removal if it has not been used for longer than the removeAbandonedTimeout. Creating a Statement, PreparedStatement or CallableStatement or using one of these to execute a query (using one of the execute methods) resets the lastUsed property of the parent connection. Setting this to true can recover db connections from poorly written applications which fail to close a connection.	false
<removeabandonedtimeout>	Timeout in seconds before an abandoned connection can be removed	300

<timebetwee nevictionrun smillis>	The number of milliseconds to sleep between runs of the idle object evictor thread. When non-positive, no idle object evictor thread will be run	600000
---	--	--------

5.5 Receiver

Receiver module collects data from adaptors and builds the UOC center data pool in H2 data base. The H2 data base is started with Receiver.

How to start Receiver

Start with UOC by 'uoc start' command
Start individually by 'receiver_start' command

How to stop Receiver

Stop with UOC by 'uoc stop' command
Stop individually by 'receiver_console -shutdown' command

Note: H2 database will stopped with Receiver and all the cached data will be rebuild when receiver started.

How to configure Receiver

There are 4 files used by Receiver module under \$UOC_DATA/conf

H2_conf.xml
receiverglobal.conf
receiverservice.conf
receiverconsole.conf

Most parameters shall keep the default values.

To collect data automatically into the H2 database, it required to update the list defined in the receiverglobal.conf or to use receiver_console command to collect data manually.

Note: Don't add too many dimension in the collection list, if some of them are unavailable it will block the whole data collection.

Flow table show the details of the configuration items.

Configurati on File Name	Configurat ion Item	Description	Default Value
receivergloba l.conf	receiver.dim ensions	Define the dimensions to be subscribe data from adaptors	["temp_alarm" ,"demo_alarm"]
	receiver.star	If to start H2 DB service within	true

	tServer	Receiver.' true' to start 'false' not	
	receiver.ServerParam	The parameters to startup H2 server. Don't change the default value.	- tcpAllowOthers
	receiver.maxDBWorkerPerConsumer	This parameter is not active, keep the default value	1
	receiver.remoteDataHandler.active	Must keep the default value	false
	receiver.remoteDataHandler.path	This paramter is not activated, keep the default value	"akka.tcp://RemoteDataHandler@localhost:2553/user/dataHandler"
	receiver.localDataHandler	The actor address of the local data handler. If the service is not started on the localhost, i.e.. 192.168.0.1, then ONLY update the 'localhost' to the IP address or the host name. MUST keep the left part unchanged! The host value must be same as akka .remote.netty.tcp.hostname in receiverservice.conf	"akka.tcp://ReceiverService@localhost:2553/user/dataHandler"
receiverservice.conf	akka.loggers	Log configuration. Don't change it.	["akka.event.slf4j.Slf4jLogger"]
	akka.logger-startup-timeout	Log configuration. Don't change it.	"25s"
	akka.actor.provider	System configuration. Don't change it.	"akka.remote.RemoteActorRefProvider"
	akka.remote.netty.tcp.hostname	The host value must be same as receiver.localDataHandler in receiverglobal.conf	"localhost"
	akka.remote.netty.tcp.port	The port used by receiver service. If modify the default value, MUST keep the same port value in the receiver.localDataHandler in receiverglobal.conf	2553
receiverconsole.conf	akka.loggers	Log configuration. Don't change it.	["akka.event.slf4j.Slf4jLogger"]
	akka.logger-startup-timeout	Log configuration. Don't change it.	"25s"
	akka.actor.provider	System configuration. Don't change it.	"akka.remote.RemoteActorRef"

		Provider"
akka.remote.netty.tcp.hostname	The host to run the receiver console. Suggest not updating.	"localhost"
akka.remote.netty.tcp.port	The port used by receiver console service. If modify the default value, MUST keep different with the port value in the receiver.localDataHandler in receiverglobal.conf	2552
h2_conf.xml	<p>the db pool type will be used, by now, it could be :h2,dbcp or just remain nothing.</p> <p>h2 : the db pool implement by H2, it could support multi h2 instance.</p> <p>Dbcp: the db pool implement by DBCP, it could support multi h2 instance.</p> <p>nothing: it mean no value was input , just like <type></type>, in this mode, the db pool implement by H2, but it could not support mulit h2 instancel.</p>	<type></type>
<url>	JDBC url to the h2 database. Don't change it.(this item effect just when <type> is blank)	jdbc:h2:tcp://localhost/mem:uocCenterPool;DB_CLOSE_DELAY=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0
<usr>	User name to access the DB. Don't change it.(this item effect just when <type> is blank)	sa
<pwd>	Password to access the DB. Don't change it.	
<maxConnNumber>	The max db connection pool size. Need tune this value to get the best performance. (this item effect just when <type> is blank)	300
<h2>	when type is h2, the QC module will use setting in this tag	
<dbcp>	when type is dbcp, the QC module will use setting in this tag	
<pool>	it mean a new db pool tag,use in <h2>,<dbcp> tag	
<name>	a db pool name, it is	

	mandatory,use in <h2>,<dbcp> tag	
<driver>	db driver name, don't change it,use in <h2>,<dbcp> tag	org.h2.Driver
<maxtotal>	it is same as <maxConnNumber>, it just use in <h2>,<dbcp> tag.	150
<maxwaitmillis>	it mean the max waiting milli second when a request try to get a database connection,use in <h2>,<dbcp> tag	60000
<initialsize>	The initial number of connections that are created when the pool is started,use in <dbcp> tag	0
<maxidle>	the maximum number of connections that can remain idle in the pool, without extra ones being released, or negative for no limit.	120
<minidle>	The minimum number of connections that can remain idle in the pool, without extra ones being created, or zero to create none.	30
<removeabandoned>	Flag to remove abandoned connections if they exceed the removeAbandonedTimeout. If set to true a connection is considered abandoned and eligible for removal if it has not been used for longer than the removeAbandonedTimeout. Creating a Statement, PreparedStatement or CallableStatement or using one of these to execute a query (using one of the execute methods) resets the lastUsed property of the parent connection. Setting this to true can recover db connections from poorly written applications which fail to close a connection.	false
<removeabandonedtimeout>	Timeout in seconds before an abandoned connection can be removed	300
<timebetweenevictionrunsmillis>	The number of milliseconds to sleep between runs of the idle object evictor thread. When non-positive, no idle object evictor	600000

thread will be run

How to collect data from adaptor

In UOC data are organized by 'Dimension'. If the dimensions are defined in the receiverglobal.conf, receiver module will subscribe data from adaptors automatically. To subscribe new dimension online use:

```
receiver_console -r <DimensionName>
```

Note: Only RAW dimension is collect from adaptors.

Note: When adaptor restart, the existing subscribe collection is broken, need restart the Receiver or use receiver_console to reestablish the connection.

Note: If a subscribed RAW dimension is updated, i.e. add new customized fields, must restart the Receiver.

5.6 Receiver H2 port

5.6.1 Default port

The default port is "9092".

By default Receiver module start H2 server on the default port which is 9092. It can be configured in \$UOC_DATA/conf/receiverglobal.conf

Below is the default configuration context:

```
$UOC_DATA/conf/receiverglobal.conf
receiver {
    dimensions=["temip_alarm","topo_map_sample_alarm"]
    dimensionsWithPivot=["temip_alarm","topo_map_sample_alarm"]
    startServer=true
    ServerParam=-tcpAllowOthers
    maxDBWorkerPerConsumer=1
    ...
}
```

The property "ServerPort" is not present. That means the default port is 9092.

By default QC_Provider module is connected to H2 server on the default port which is 9092.

It can be configured in \$UOC_DATA/conf/h2_conf.xml

Below is the default configuration:

```
$UOC_DATA/conf/h2_conf.xml
<?xml version="1.0" encoding="UTF-8"?>
  <db>
```

```
<type></type>

<url>jdbc:h2:tcp://localhost/mem:uocCenterPool;DB_CLOSE_DELAY=-
1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0</url>

<usr>sa</usr>

<pwd></pwd>
```

tcp://localhost/mem:uocCenterPool means the default port is 9092.

Topology map also need to connect to H2 database, the default port is 9092. It can be configured in \$UOC_DATA/conf/context.xml

```
$UOC_DATA/conf/context.xml

<Context>
  <!-- Default set of monitored resources -->
  <WatchedResource>WEB-INF/web.xml</WatchedResource>

  <!-- Uncomment this to disable session persistence across
  Tomcat restarts -->
  <!--<Manager pathname="" />-->

  <!-- Uncomment this to enable Comet connection tacking
  (provides events on session expiration as well as webapp
  lifecycle) -->
  <!--<Valve
  className="org.apache.catalina.valves.CometConnectionManagerValve
  " />-->

  <!-- Don't edit this part -->
  <Resource name="jdbc/dimension_datasource" auth="Container"
    type="javax.sql.DataSource" driverClassName="org.h2.Driver"
    url="jdbc:h2:tcp://localhost:9092/mem:uocCenterPool;DB_CLOSE_DELA
    Y=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0" username="sa"
    password="" maxActive="20" maxWait="-1"/>

  <!-- End don't edit -->
  <!--
  <Resource name="jdbc/uoc_datasource" auth="Container"
    type="javax.sql.DataSource"
    driverClassName="oracle.jdbc.OracleDriver"
    url="jdbc:oracle:thin:@127.0.0.1:1521:TOPOv1"
    username="UOC" password="UOC" maxActive="20"
    maxWait="-1"/>
  -->

  <Resource name="jdbc/uoc_datasource" auth="Container"
    type="javax.sql.DataSource" driverClassName="org.h2.Driver"
    url="jdbc:h2:tcp://localhost:9092/mem:uocCenterPool;DB_CLOSE_DELA
    Y=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0" username="sa"
    password="" maxActive="20" maxWait="-1"/>
```

```
</Context>
```

5.6.2 Change the default port

If user want to change the default port, user need to update the hereunder two configuration files:

\$UOC_DATA/ receiverglobal.conf

\$UOC_DATA/conf/h2_conf.xml

\$UOC_DATA/conf/context.xml

And ensure new port is exact same in two files. For example, we want to change the port to 9093.

\$UOC_DATA/ receiverglobal.conf:

```
receiver {
    dimensions=["temip_alarm","topo_map_sample_alarm"]
    dimensionsWithPivot=["temip_alarm","topo_map_sample_alarm"]
    startServer=true
    ServerParam=-tcpAllowOthers
    ServerPort=9093
    maxDBWorkerPerConsumer=1
    ...
}
```

\$UOC_DATA/conf/h2_conf.xml:

```
<?xml version="1.0" encoding="UTF-8"?>
  <db>
    <type></type>

  <url>jdbc:h2:tcp://localhost:9093/mem:uocCenterPool;DB_CLOSE_DELA
  Y=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0</url>

  <usr>sa</usr>
  <pwd></pwd>
```

\$UOC_DATA/conf/context.xml

```
<Context>
  <!-- Default set of monitored resources -->
  <WatchedResource>WEB-INF/web.xml</WatchedResource>
  <!-- Uncomment this to disable session persistence across
  Tomcat restarts -->
```

```

<!--<Manager pathname="" />-->

<!-- Uncomment this to enable Comet connection tacking
(provides events on session expiration as well as webapp
lifecycle) -->

<!--<Valve
className="org.apache.catalina.valves.CometConnectionManagerValve
" />-->

<!-- Don't edit this part -->

<Resource name="jdbc/dimension_datasource" auth="Container"
    type="javax.sql.DataSource" driverClassName="org.h2.Driver"
    url="jdbc:h2:tcp://localhost:9093/mem:uocCenterPool;DB_CLOSE_DELA
    Y=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0" username="sa"
    password="" maxActive="20" maxWait="-1"/>

<!-- End don't edit -->

<!--
    <Resource name="jdbc/uoc_datasource" auth="Container"
        type="javax.sql.DataSource"
    driverClassName="oracle.jdbc.OracleDriver"
        url="jdbc:oracle:thin:@127.0.0.1:1521:TOPOv1"
        username="UOC" password="UOC" maxActive="20"
    maxWait="-1"/>
-->

<Resource name="jdbc/uoc_datasource" auth="Container"
    type="javax.sql.DataSource" driverClassName="org.h2.Driver"
    url="jdbc:h2:tcp://localhost:9093/mem:uocCenterPool;DB_CLOSE_DELA
    Y=-1;MULTI_THREADED=1;LOCK_MODE=3;LOG=0;UNDO_LOG=0" username="sa"
    password="" maxActive="20" maxWait="-1"/>

</Context>

```

5.7 DB Transformer

DB Transformer is an advance module for UOC administrators. The module will execute customized scripts on the H2 database to implement extra features, like:

1. Build index on RAW dimension data tables to optimize the performance.
2. Register UDF function
3. Create transformer views

All the script files are stored under `$UOC_HOME/scripts/dbtransformer/init`. The files will be executing in sequence.

Note: If an error occurred during a script file, the remain script in this file will be skipped and the transformer will execute the left files.

How to create index

In H2 database each dimension maps to a table with the same name. To create index on the table will help to improve the performance. For example to build an index on dimension 'temp_alarm', create a file containing the following:

```
create index i1 on temp_alarm(event_time, IDENTIFIER,operation_context);
```

How to build UDF

UDF (User Defined Function) is supported by H2 data. Users can develop their own UDF in JAVA. Here is an example to split a data column into two columns by specific delimiters.

```
public static ResultSet spliter(Connection conn, String sql,
String sp) throws SQLException {
    SimpleResultSet rs = new SimpleResultSet();
    rs.addColumn("KEY", Types.VARCHAR, 128, 0);
    rs.addColumn("X", Types.VARCHAR, 128, 0);
    rs.addColumn("Y", Types.VARCHAR, 128, 0);
    ResultSet r=conn.createStatement().executeQuery(sql);
    while(r!=null && r.next()){
        String s=r.getString(1);
        String [] ss=s.split(sp);
        if(ss.length>=2){
            rs.addRow(s,ss[0],ss[1]);
        }else{
            rs.addRow(s,s,null);
        }
    }
    r.close();
    return rs;
}
```

Then build a jar file put it under \$UOC_HOME/lib. To make it take effect must restart the H2 Database. (Receiver Module). To register the new function build a new file under \$UOC_HOME/scripts/dbtransformer/init, the content like

```
create alias SPLITER for
"com.hp.uoc.h2.udf.UserDefineFunctions.spliter";
```

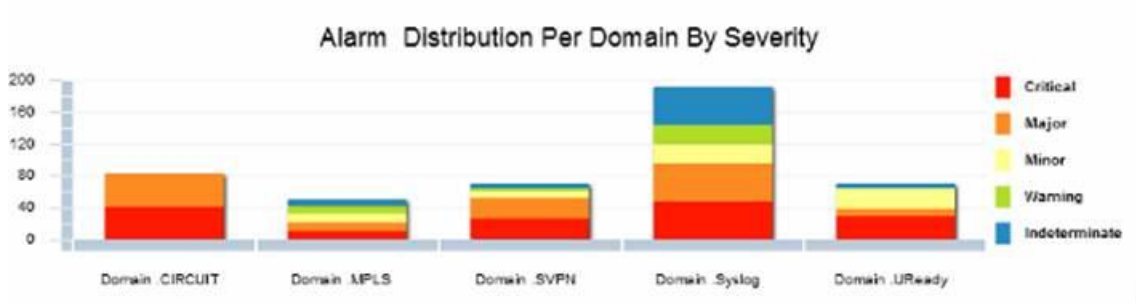
Note: For more details of H2 UDF please refer to H2 official website <http://www.h2database.com/>

How to start DB Transformer

DB Transformer will started with 'uoc start' or 'receiver_start'. When it executes all script files it will exit automatically.

Use case: Use DB Transformer to implement N to N real relationship aggregation

To build a dashboard as follow:



Source Data:

Fact Table: temip_alarm (columns: OPERATION_CONTEXT, ORIGINAL_SEVERITY...)

IDENTIFIER	LAST_MODIFICATION_TIMESTAMP	MANAGED_OBJECT	OPERATION_CONTEXT
26500	1412603427075	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26499	1412603427074	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26498	1412603427074	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26497	1412603427074	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26496	1412603427074	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26495	1412603427073	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26494	1412603427073	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26493	1412603427073	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26492	1412603427073	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26491	1412603427073	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26490	1412603427072	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26489	1412603427072	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26488	1412603427072	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26487	1412603427072	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26486	1412603427072	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26485	1412603427071	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1
26484	1412603427071	OSI_SYSTEM perf_osi1 TESTOBJ t5	perf_op1

Note: Receiver create a table for RAW UOC dimensions the table name is same as the UOC dimension and the columns' name are same as the attributes' name. If receiver subscribes the raw data from adaptor successfully, the data will be store in the table.

Dimension Table: oc_domain (columns: OC, Domains) OC and Domain are in N to N relationship.

OC	DOMAINS
perf_op5	domain2
perf_op5	domain3
perf_op16	domain2
perf_op16	domain3
perf_op16	domain4
perf_op9	domain3
perf_op9	domain4
perf_op9	domain5
perf_op1	domain4
perf_op1	domain5
perf_op1	domain6
perf_op6	domain5
perf_op6	domain6
perf_op6	domain7
perf_op38	domain6
perf_op38	domain7
perf_op38	domain8
perf_op17	domain7
perf_op17	domain8
perf_op17	domain9
perf_op13	domain8

Note: To build this table could define a UOC dimension and build a csv files, Then use csv adaptor and receiver to collect it. The other way if the data is immutable it can be created and loaded by DB Transformer.

Step1: define a new RAW dimension in UOC named domain_alarm as

Domain as String
SEVERITY as String
AlarmNumber as number

Step 2: develop a new UDF function as:

```
public static ResultSet CounterEx(Connection conn, String dim,
String fact, String dimcol, String dimgroup,String factcol, String
factgroup ) throws SQLException {
SimpleResultSet rs = new SimpleResultSet();
rs.addColumn(dimgroup, Types.VARCHAR, 128, 0);
rs.addColumn(factgroup, Types.VARCHAR, 128, 0);
rs.addColumn("Count", Types.INTEGER,10 , 0);
String sql="select distinct " +dimgroup+ " from "+ dim;

ResultSet r= conn.createStatement().executeQuery(sql);
while(r!=null && r.next()){
String g=r.getString(1);
```

```

String sql2="select a."+factgroup+", count(1) from " + fact
+ " a , " + dim + " b  where a."+factcol+"=b."+dimcol+" and
b."+dimgroup+"='"+g+"' group by a."+factgroup;

ResultSet rt= conn.createStatement().executeQuery(sql2);
if(rt!=null){
    while( rt.next()){
        String gf=rt.getString(1);
        int i=rt.getInt(2);
        rs.addRow(g,gf,i);
    }
    rt.close();
}
r.close();
return rs;
}

```

Build a jar file and put it into \$UOC_HOME/lib

Step 3. Create a script file domain_alarm.sql under \$UOC_HOME/scripts/dbtransformer/init as:

```

Drop table if exists domain_alarm; -- receiver will create a table for each RAW UOC
dimension.

create alias countEx for "com.hp.uoc.h2.udf.UserDefineFunctions.CounterEx"; --
register the UDF

create or replace view domain_alarm as (select * from
countEx('OC_DOMAIN','TEMIP_ALARM','OC','DOMAINS','OPERATION_CONTEXT
','ORIGINAL_SEVERITY')); --create the view replace the dropped table

```

DOMAINS	ORIGINAL_SEVERITY	Count
domain30	Major	3600
domain30	Indeterminate	3600
domain30	Warning	3600
domain30	Minor	3600
domain30	Critical	3600
domain31	Major	3598
domain31	Indeterminate	3594
domain31	Warning	3600
domain31	Minor	3596
domain31	Critical	3610
domain10	Major	3600

Step 4. Restart UOC or restart Receiver module using follow commands:

```
$ receiver_console -shutdown
```

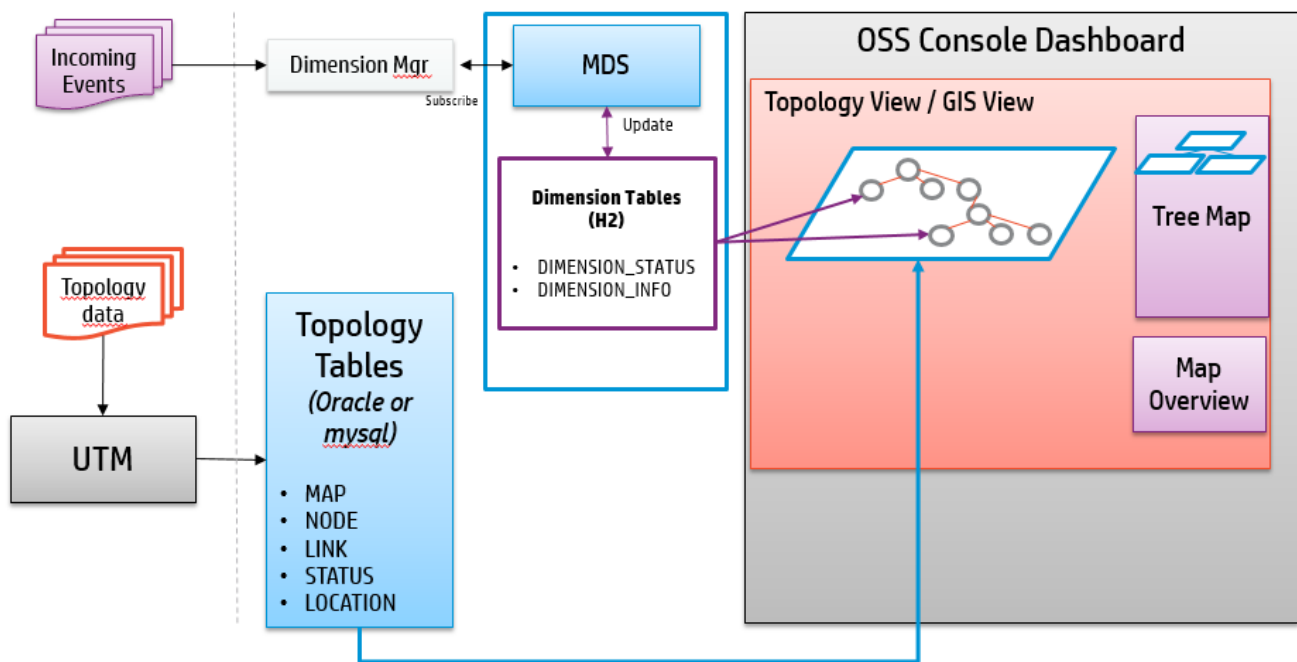
```
$ receiver_start
```

Step 5. Build a dashboard on the dimension domain_alarm.

5.8 Topology map

5.8.1 Overview

Figure 9: Topology Map Overview

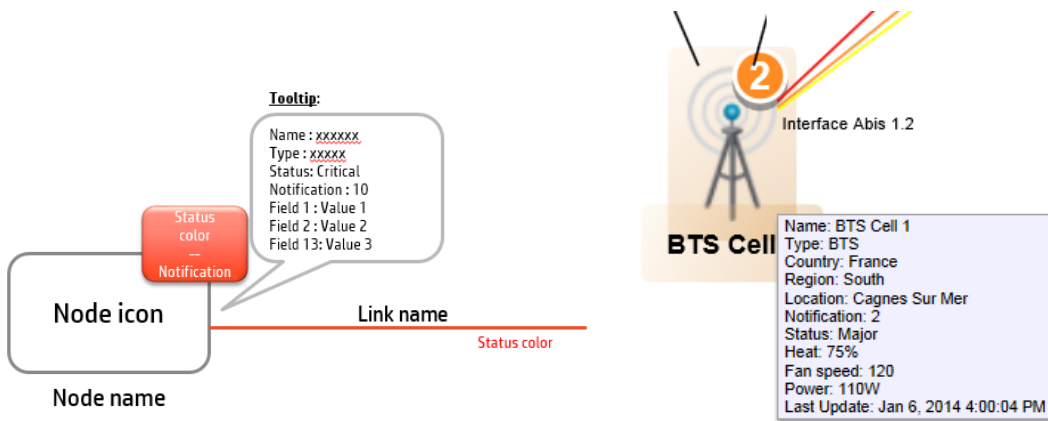


Topology Maps uses topology maps tables to load the map and its hierarchy and uses dimension tables to decorate the topology maps based on dimension values computed by the dimension server.

The topology map table needs to be populated by an external tool like UTM for example.

The topology maps are decorated using computed dimensions.

Figure 10: Topology Map node / link visual decoration



5.8.2 Topology map database

5.8.2.1 Create a database user

Before the installation, you must create a new user (UOC) for the Topology map feature in the Unified OSS Console depending on your database. UOC supports following databases: MySQL, Oracle., H2

Oracle Database:

Please create the user performing the following steps:

1. Log in to the oracle database server as **sysdba**
2. To create a user use the following command:

```
SQL> create user UOC identified by UOC default tablespace users temporary
tablespace temp;
```

3. To grant proper privileges:

```
SQL> grant create session,create procedure,create sequence,create table,create
trigger,create view to UOC;
```

```
SQL> grant unlimited tablespace to UOC;
```

MySQL database:

Please create the user performing the following steps:

1. Log in to the MySQL database as root

```
shell> mysql --user=root mysql
```

2. To create a user use the following command:

```
mysql> CREATE USER 'UOC'@'%' IDENTIFIED BY 'UOC';
```

3. To grant proper privileges:

```
mysql> GRANT ALL PRIVILEGES ON *.* TO 'UOC'@'%' IDENTIFIED BY
'UOC' WITH GRANT OPTION;
```

H2 database:

No need to do anything, it use the H2 DB that created by Receiver and the tables created by DB Transformer.

5.8.2.2 Create Topology map tables

You need to create database schema for UOC manually before performing any other configuration. You will be required to execute the scripts mentioned in the following steps.

The database scripts are deployed during UOC server kit installation into the following location:

\$UOC_HOME/scripts

Following is a list of the concerned scripts:

- **uoc_tpm_tables-oracle.sql** for oracle schema creation
- **uoc_tpm_tables-mysql.sql** for mysql schema creation
- **uoc_tpm_tables-h2.sql** for H2 schema creation (Demo only)

To create the schema, you will be required to log into the database with the user created (UOC) and run the SQL script to create the required topology map tables according to the database vendor.

The script will create the following empty tables:

UOC_TPM_LINK
UOC_TPM_LOCATION
UOC_TPM_MAP
UOC_TPM_NODE
UOC_TPM_STATUS

At start of the UOC server, the following tables will be automatically created into H2 memory database.

UOC_TPM_DIMENSION_INFO
UOC_TPM_DIMENSION_STATUS

5.8.2.3 Topology map tables description

5.8.2.3.1. UOC_TPM_MAP

This table describes all map item available in the map hierarchy and their parent relationships. This table will be used to populate the Topology map tree.

Column	Type	Optional (Y/N)	Description	Example
(*) MAP_ID	String(100)	N	Identifier of the map	M15
MAP_NAME	String(100)	N	Name of the map	Paris
PARENT_MAP_ID (**)	String(100)	N	Map identifier of the parent map (if the map is not a top map else null)	Null
DOMAIN_NAME	String(100)	Y	Name of the domain of the map (MPLS...)	Network
SOURCE_ID	String(100)	Y	Decoration key. Not use for MAP today.	Null

(*) Primary key, must be unique

(**) It must exist in UOC_TPM_MAP

5.8.2.3.2. UOC_TPM_NODE

This table describes all node item available in a map to build the topology map and the decoration keys to retrieve values computed by dimensions.

Column	Type	Optional (Y/N)	Description	Example
(*) NODE_ID	String(100)	N	Identifier of the node	N8
NODE_NAME	String(100)	N	Name of the node	BTS 345
NODE_TYPE	String(100)	Y	type of the node (router, switch...). 'Default' if not set. This will select the icons from the graphic library. \$UOC_DATA/topology_maps/images/<type>.png	BTS
MAP_ID (**)	String(100)	N	Map identifier where the node is child of	M15
CHILD_MAP_ID (**)	String(100)	Y	Map id of the map to navigate to (child map)	M16
LOCATION_ID(***)	String(100)	Y	Location Identifier of the node	LOC5
SOURCE_ID	String(100)	Y	Decoration key associated to this node to dynamically retrieve the information (status, notification, info...) computed by dimensions.	TeMIP:Node_B_123

(*) Primary key, must be unique

(**) It must exist in UOC_TPM_MAP

(***) It must exist in UOC_TPM_LOCATION

5.8.2.3.3. UOC_TPM_LINK

This table describes all links between nodes available in a map to build the topology map graph and the decoration keys to retrieve values computed by dimensions.

Column	Type	Optional (Y/N)	Description	Example
(*) LINK_ID	String(100)	N	Identifier of the link	L8
LINK_NAME	String(100)	N	Name of the node	Interface A 123
LINK_TYPE	String(100)	Y	Type of the link (ex: optical, interface, fiber...)	Interface A
FROM_NODE_ID (***)	String(100)	N	Identifier of the node FROM	N5

TO_NODE_ID (***)	String(100)	N	Identifier of the node TO	N6
MAP_ID (**)	String(100)	N	Map identifier where the link is child of	M15
CHILD_MAP_ID (**)	String(100)	Y	Map id of the map to navigate to (child map)	M16
SOURCE_ID	String(100)	Y	Decoration key associated to this link to dynamically retrieve the information (status, notification, info...) computed by dimensions.	Null

(*) Primary key, must be unique

(**) It must exist in UOC_TPM_MAP

(***) It must exist in UOC_TPM_NODE

5.8.2.3.4. UOC_TPM_LOCATION

This table describes all the location available for nodes.

Column	Type	Optional (Y/N)	Description	Example
(*) LOCATION_ID	String(100)	N	Identifier of the location	LOC5
LOCATION	String(100)	Y	Name of the node	Paris
COUNTRY	String(100)	Y	Country of the location (France, China,...)	France
REGION	String(100)	Y	Region of the location (ex: North, South...)	North
LATITUDE	Double	Y	Identifier of the node TO	48,856614
LONGITUDE	Double	Y	Map identifier where the link is child of	2,352222

(*) Primary key, must be unique

5.8.2.3.5. UOC_TPM_STATUS

This table describes the list of available node and link status. It provides the name and their associated color for the topology map display.

Column	Type	Optional (Y/N)	Description	Example
(*) ID	Number	N	Identifier of the status	6
NAME	String(100)	N	Name of the status (ex: Critical, Major...)	Critical
COLOR	String(20)	N	RGB color associated to the status	255 0 0

(*) Primary key, must be unique

After running the creation script, status table definition contains by default:

ID	NAME	COLOR
0	OK	128 128 128
2	Indeterminate	38 140 196
3	Warning	109 217 69
4	Minor	255 255 0
5	Major	255 140 35
6	Critical	255 0 0
1	Clear	102 255 255

5.8.2.3.1. UOC_TPM_DIMENSION_STATUS

This table is created in H2 database and provides all the dynamic dimensions computation used to decorate the topology maps.

Column	Type	Optional (Y/N)	Description	Example
(*) SOURCE_ID	String(100)	N	Decoration key. An identifier of the source of data with the following format : SOURCE:IDENTIFIER	TeMIP:domain A
(*) STATUS (**)	Number	N	Status identifier of the source to display on the map. Color of the status will be used to color the bubble indicator.	6
SOURCE	String(100)	Y	Source of the data (TeMIP, NNM, SQM...)	TeMIP
NOTIFICATION	String(100)	Y	Notification (alarm count, etc...) of the source to display on the map with a bubble indicator	N5
DIM_NAME	String(100)	Y	Private and internal information to track the dimension that computed this source	
UPDATE_TIMESTAMP	Date	N	Map id of the map to navigate to (child map)	06/01/14 16:00:04,4530000 00

(*) SOURCE_ID and STATUS are the primary key and must be unique.

(**) It must exist in UOC_TPM_STATUS

5.8.2.3.2. UOC_TPM_DIMENSION_INFORMATION


This table is created in H2 database and provides all the dynamic dimension computation used to decorate the topology maps.

Column	Type	Optional (Y/N)	Description	Example
(*) SOURCE_ID	String(100)	N	Decoration key. An identifier of the source of data with the following format : SOURCE:IDENTIFIER	TeMIP:domain A
FIELD_1	String(100)	Y	Custom Field Name 1 associated to the source to display on the map	Fan
VALUE_1	String(100)	Y	Value associated to the field 1	85%
FIELD_2	String(100)	Y	Custom Field Name 2 associated to the source to display on the map	Heat
VALUE_2	String(100)	Y	Value associated to the field 2	38
FIELD_3	String(100)	Y	Custom Field Name 3 associated to the source to display on the map	Null
VALUE_3	String(100)	Y	Value associated to the field 3	null
UPDATE_TIMES TAMP	Date	N	Map id of the map to navigate to (child map)	06/01/14 16:00:04,45300 0000

(*) Primary key, must be unique

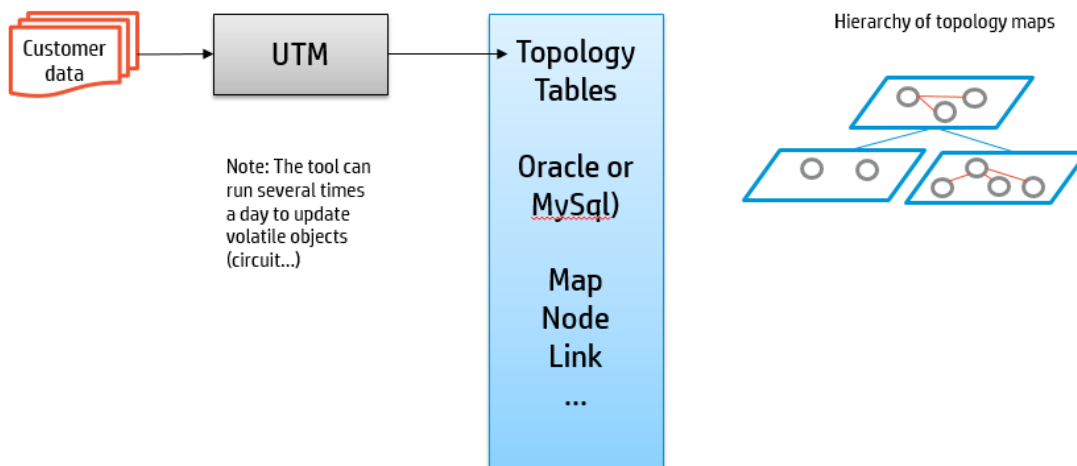
5.8.3 Topology map dataload

The topology map component used a database as an interface to store and load map data (oracle or mysql).

	<i>H2 is dedicated to demonstration purpose and should not be used in production environment</i>
---	--

It is recommended to use UTM to populate the topology maps tables and leverage all the advanced features of the product to minimize updates.

Figure 11: Topology Map dataload process



5.8.4 Tomcat configuration

After database tables creation step, you have to correctly define your database setting to the Tomcat context descriptor file to define required parameter to access to the database tables.

Please edit the file located in
\$UOC_HOME\3pps\Tomcat\conf\context.xml

And define the correct parameters to setup the login and password of the database user. Here is an example with user UOC / password UOC:

```
<Context>
  <!-- Don't edit this part : Topology map dimension tables are
always on H2 -->
    <Resource name="jdbc/dimension_datasource" auth="Container"
type="javax.sql.DataSource" driverClassName="org.h2.Driver"
url="jdbc:h2:tcp://localhost:9092/mem:uocCenterPool"username="sa"
password="" maxActive="20" maxWait="-1"/>
  <!-- End don't edit -->

  <!-- Topology Map tables on Oracle -->
  <Resource name="jdbc/uoc_datasource" auth="Container"
type="javax.sql.DataSource"
driverClassName="oracle.jdbc.OracleDriver"
url="jdbc:oracle:thin:@127.0.0.1:1521:TOPOv1"
username="UOC" password="UOC" maxActive="20" maxWait="-
1"/>
```

```

<!-- Topology Map tables on mysql
<Resource name="jdbc/uoc_datasource" auth="Container"
type="javax.sql.DataSource"
    maxActive="50" maxIdle="30" maxWait="10000"
    username="UOC" password="UOC"
    driverClassName="com.mysql.jdbc.Driver"
    url="jdbc:mysql://localhost:3306/TOPOv1"/>
-->

<!-- Topology Map tables on H2 / Demo only
<Resource name="jdbc/uoc_datasource" auth="Container"
    type="javax.sql.DataSource"
driverClassName="org.h2.Driver"
    url="jdbc:h2:tcp://localhost:9092/mem:uocCenterPool"
    username="sa" password="" maxActive="20" maxWait="-1"/>
-->
</Context>

```

5.8.5 Topology map Graphic library

All icons and background image are stored in an external directory
\$UOC_DATA/topology_maps

Graphic type	Location
Topology Map Icons	\$UOC_DATA/topology_maps/images
Topology Maps Background	\$UOC_DATA/topology_maps/backgrounds

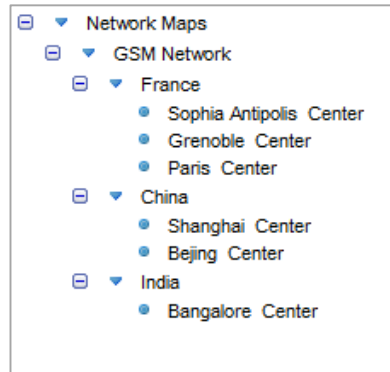


*All images are in format .PNG with images size : 64x64 pixels.
Node Icon follows a naming convention to get external icon
<NodeType>.png.
If the image is not found, a default image named **_default_.png** is used.*

5.8.6 Topology map GSM sample

The embedded sample describes a global GSM network 3G. Its hierarchy looks like:

Figure 12: Topology Map View – Network Maps Hierarchy



The topology maps will display as a sample the following maps. The end user can use the map tree to navigate or double-click to nodes to explore the area.

Figure 13: GSM Network

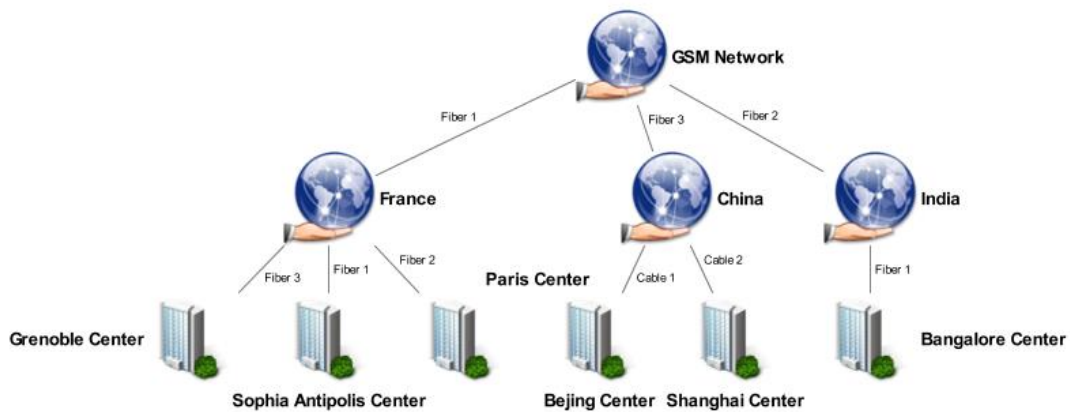


Figure 14: GSM Network (Geographical view)

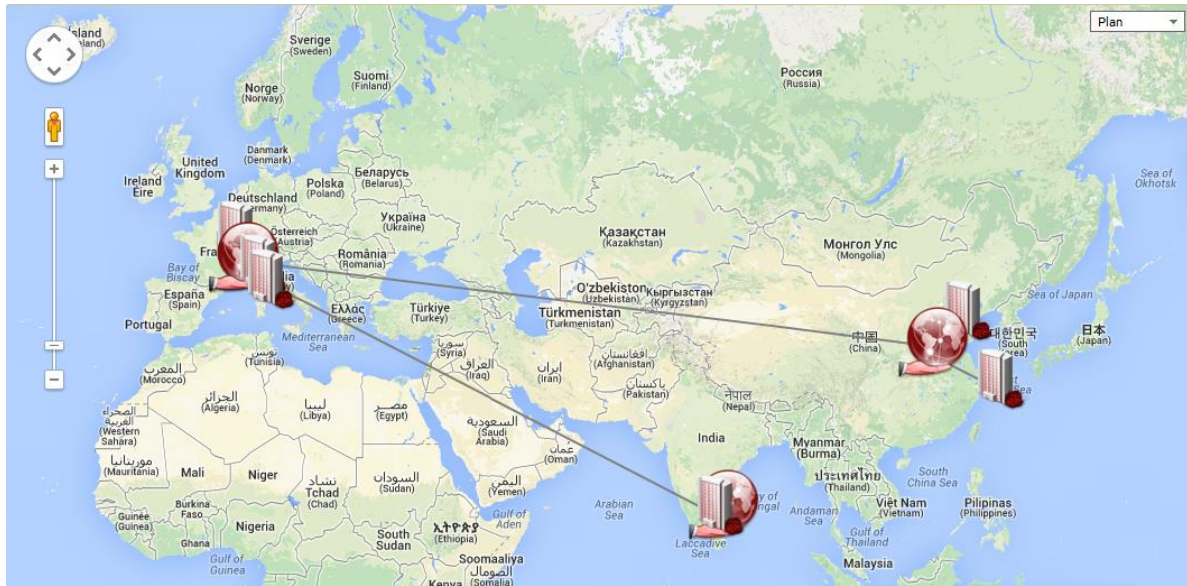


Figure 15: GSM Network / France

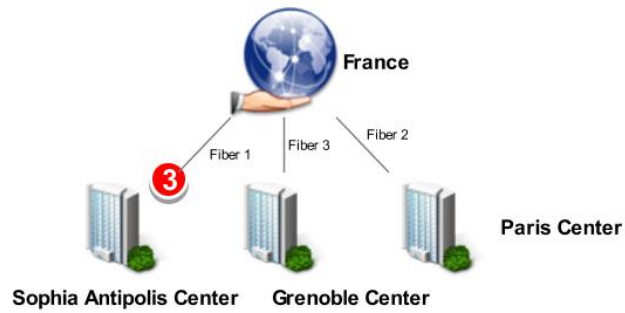


Figure 16: GSM Network / France / Sophia-Antipolis

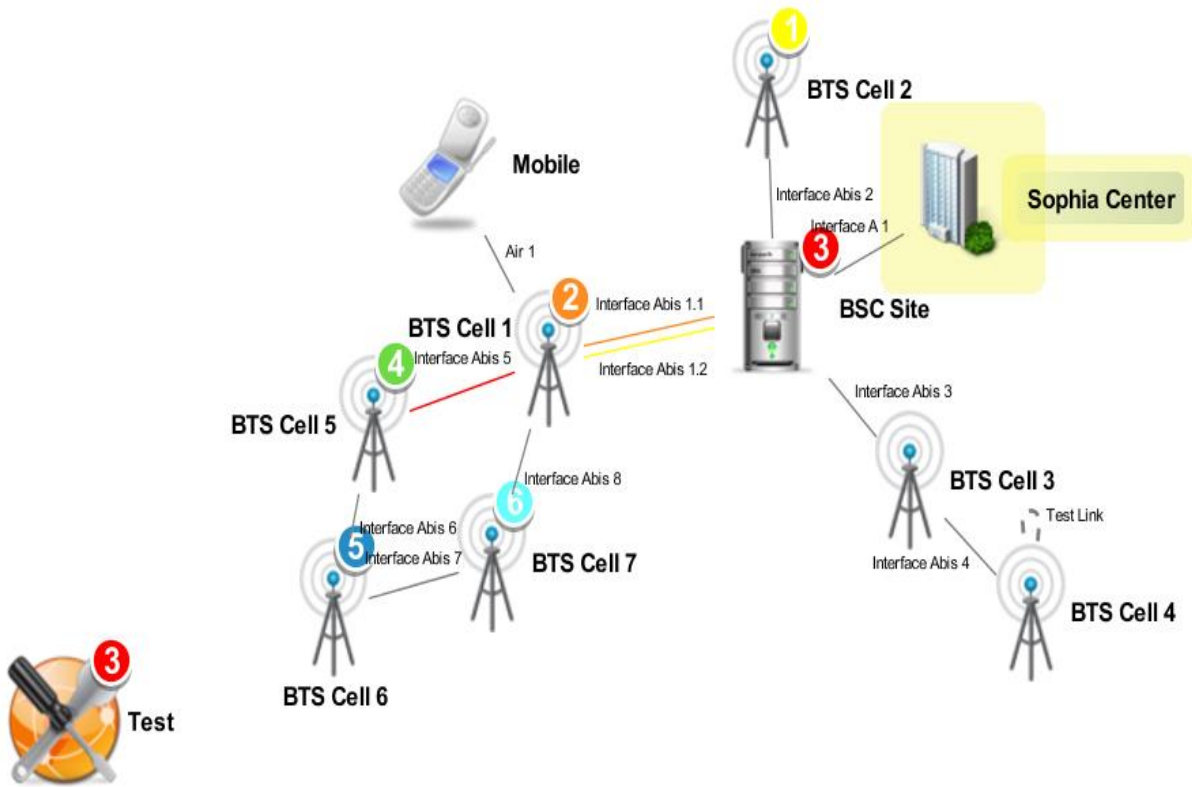


Figure 17: GSM Network / France / Sophia-Antipolis (Geographical view)

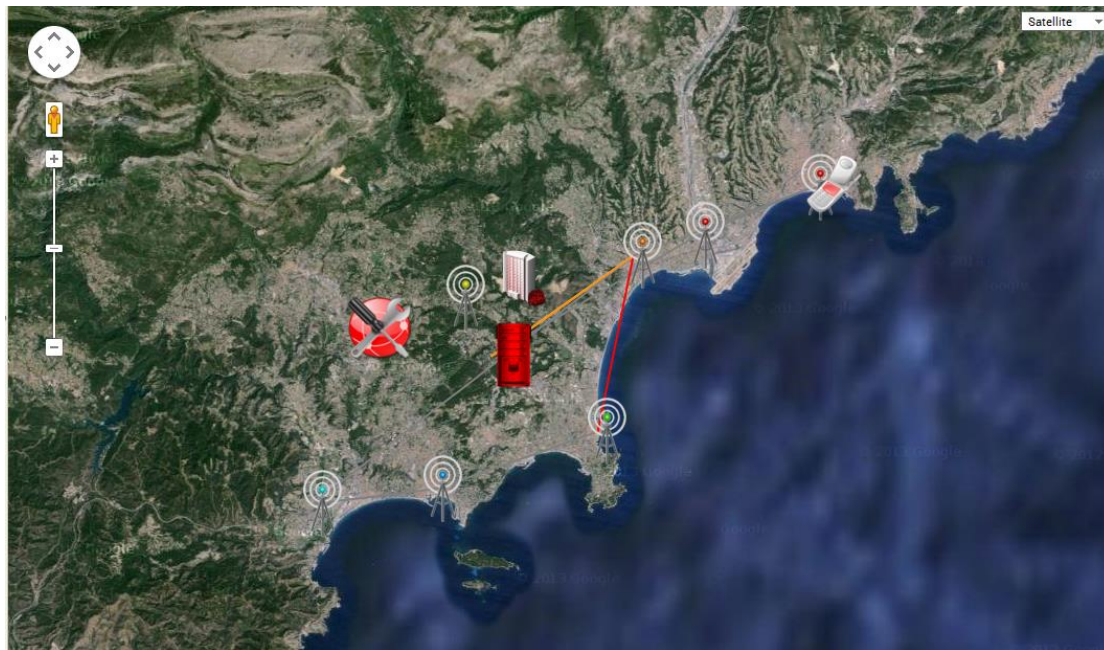
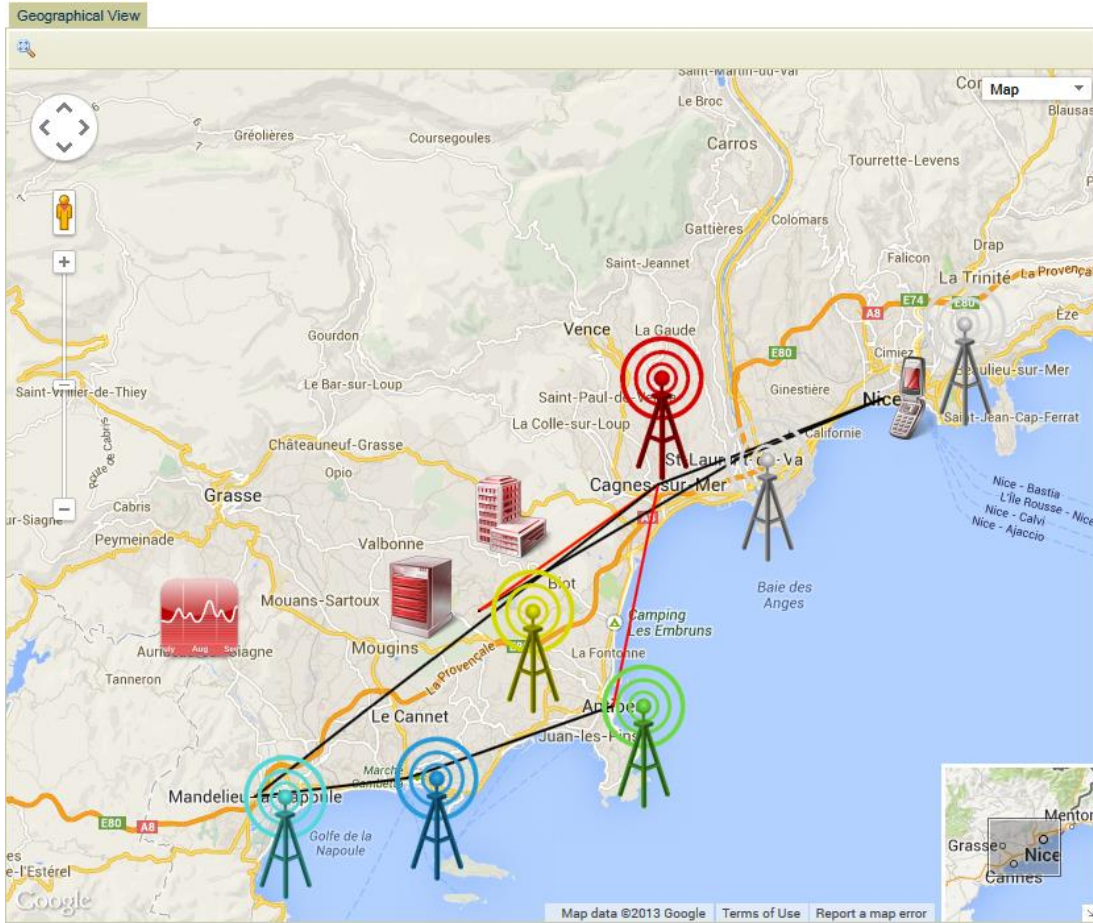


Figure 18: GSM Network / France / Grenoble



Figure 19: GSM Network / France / Paris

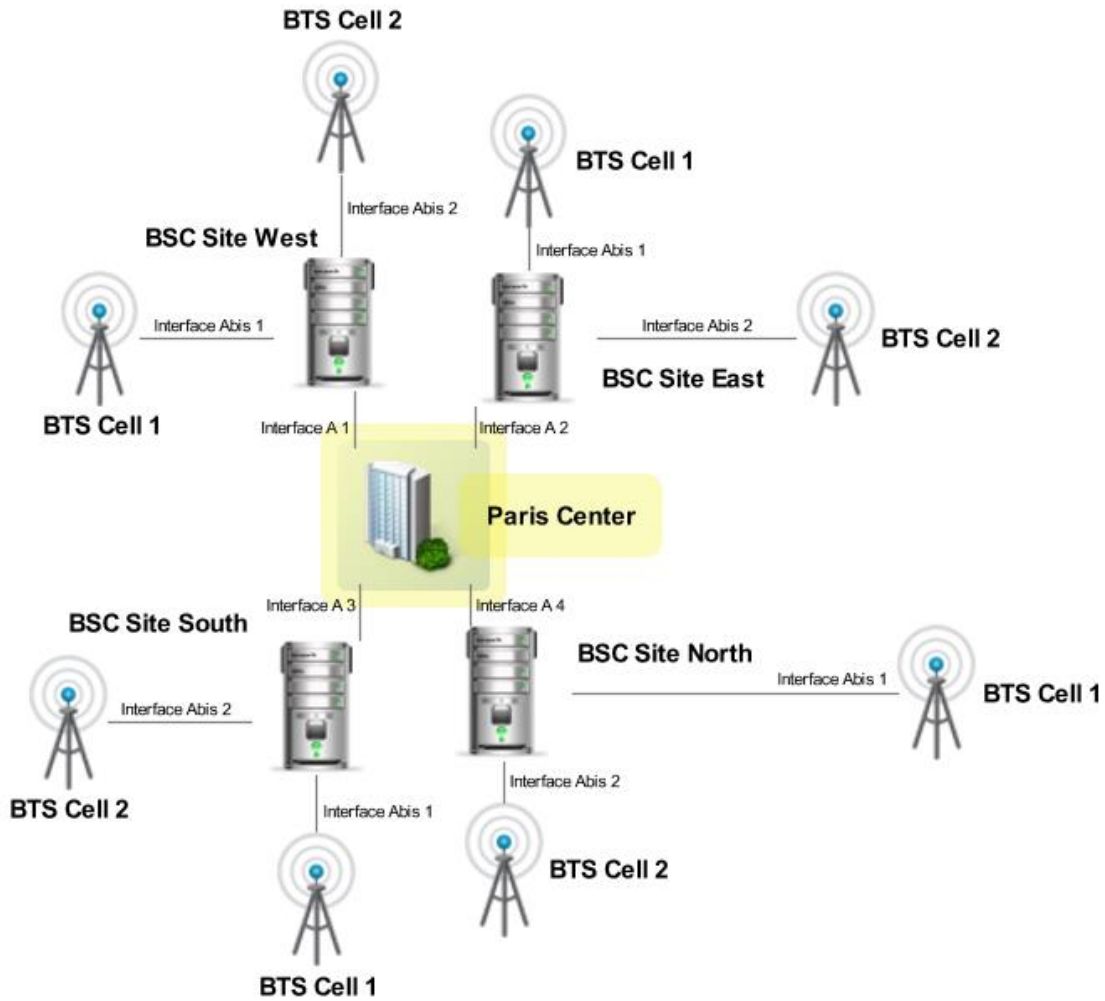


Figure 20: GSM Network / China

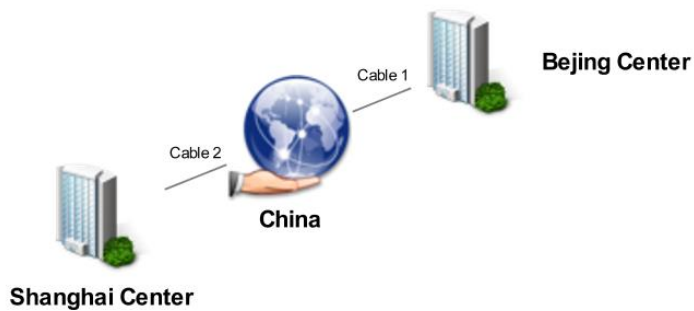


Figure 21: GSM Network / China / Shanghai

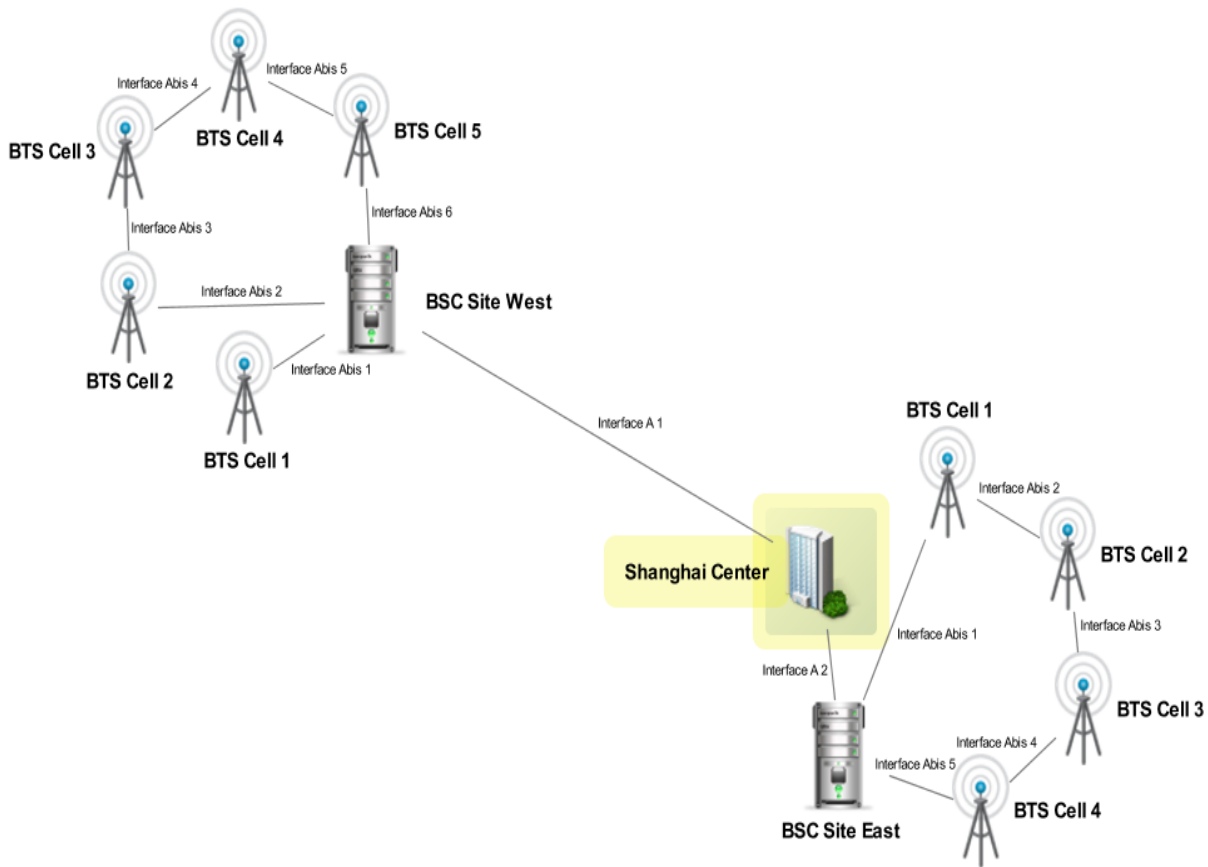
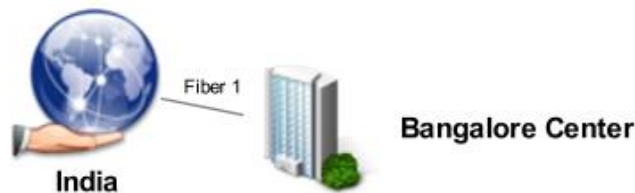


Figure 22: GSM Network / India



5.8.7 Customized icon

User can use their customized icon images for node. The type of the image should be PNG, and the name of the image should be lower case letters. Then put the icon images into `$UOC_HOME/topology_maps/images`.

5.9 HTTPS

5.9.1 Importing Self-signed Certificate

Below is step of HTTPS configuration in UOC.

1. Generate key store

The domain name with red italic characters should be replaced by the domain name of the server where the UOC is running.

The blue italic character should be decided by the operator and maintained for the certificate lifecycle.

```
keytool -genkey -alias uocssl -keyalg RSA -keysize 1024 -keypass uocssl -validity 365 -dname "CN=HITBSS5, OU=hp, O=ldap, L=shanghai, ST=shanghai, C=CN" -keystore /tmp/uocssl.keystore -storepass uocssl
```

For more about keytool command , you could refer following URL:

<http://docs.oracle.com/javase/6/docs/technotes/tools/solaris/keytool.html>

2. Export certificate

The orange italic part is decided by last step

The blue italic part should be decided by the operator.

```
keytool -export -alias uocssl -keystore /tmp/uocssl.keystore -file /tmp/uocssl.crt -storepass uocssl
```

3. Edit \$UOC_HOME/3pps/tomcat/conf/server.xml of CAS server tomcat enable HTTPS

<!-- clientAuth=false means only need server certificate, it is one way SSL

```
clientAuth=want means client certificate exists, validate it, but not mandatory clientAuth=true means client certificate is required, it is 2 way SSL --> <Connector port="8443" protocol="HTTP/1.1" SSLEnabled="true" maxThreads="150" scheme="https" secure="true" keystoreFile="/tmp/uocssl.keystore" keystorePass="uocssl" clientAuth="false" sslProtocol="TLS" URIEncoding="UTF-8"/>
```

4. Import certificate to the keystore of JRE of the web server

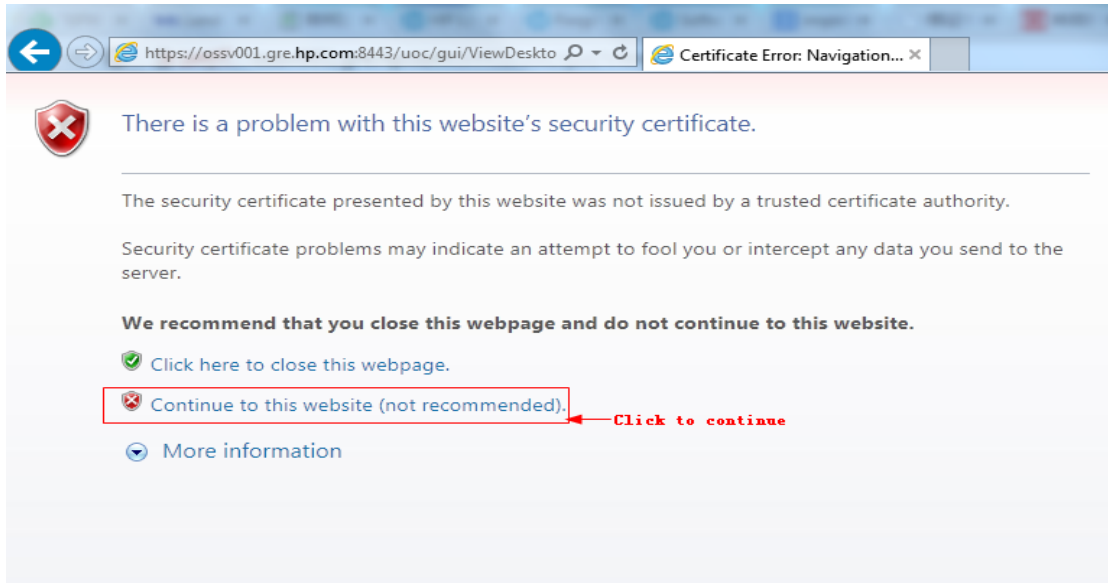
This step is for the JAVA applications that need to visit UOC by URL, for other kinds of applications, need to find their own ways.

```
keytool -import -keystore $JAVA_HOME/jre/lib/security/cacerts -file /tmp/uocssl.crt -alias uocssl
```

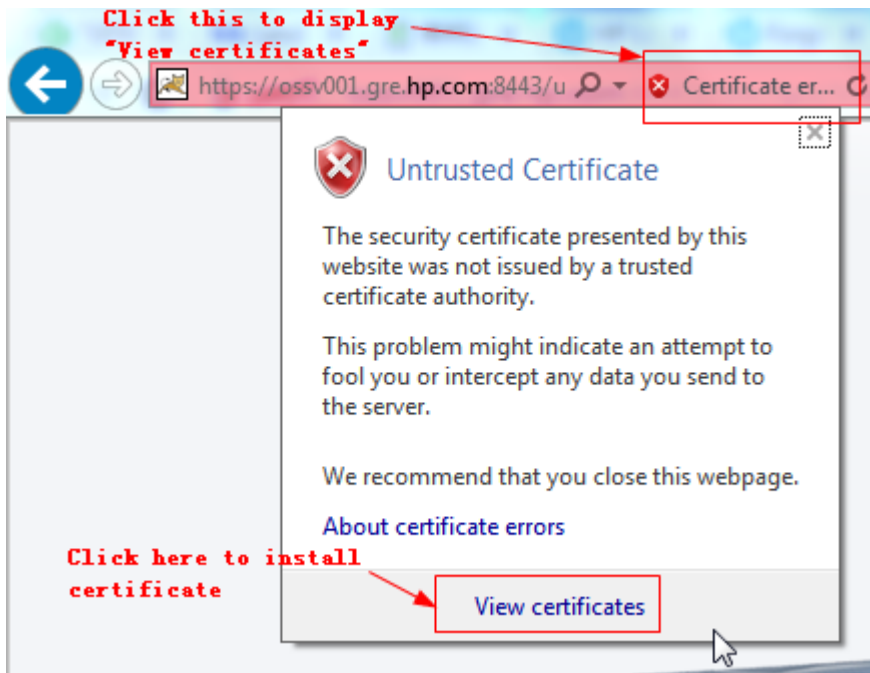
Enter keystore password: changeit (changeit is the default password of JRE)

5. End user trust the certificate. (If customer is using a certificate published by a trusted 3-rd party CA, we may do not need this)

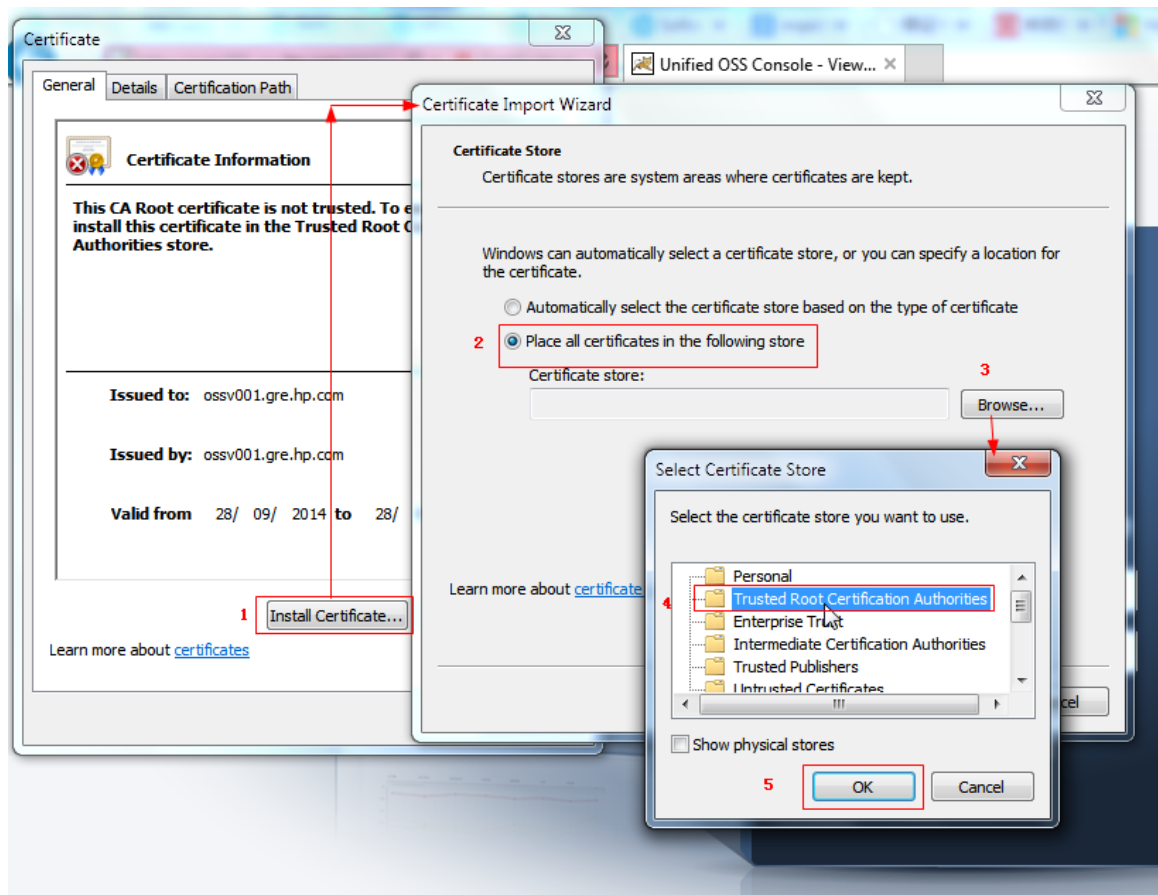
- a) End user should use domain name to visit the UOC URL
- b) When first time to visit the UOC URL, you could see a certificate error notification in the browser, and click the "Continue to this web site" to display next page



c) Click the Certificate Error link to view certificate.



d) Import certificate to trusted root certificate database



For other browsers import certificate, please refer to the following URL:

<http://docs.oracle.com/cd/E19146-01/821-1828/gfyvq/index.html>

5.9.2 Importing Third Certificate

Please follow Tomcat official guide to install a third certificate

[http://tomcat.apache.org/tomcat-5.5-doc/ssl-howto.html#Installing a Certificate from a Certificate Authority](http://tomcat.apache.org/tomcat-5.5-doc/ssl-howto.html#Installing_a_Certificate_from_a_Certificate_Authority)

5.10 SSO Configuration

To be able to support SSO with SAML2.0, we assume that:

1. Before Install ADFS, please make sure Active Directory installed, and SSL configured enabled for IIS, make sure <https://localhost> can be available by browser. The Active Directory installation please refer to office site.
2. ADFS2.0 (Active Directory Federation Server) has been installed. If not, please refer to the installation guide from the official site:

<http://www.microsoft.com/en-us/download/details.aspx?id=10909>

3. ADFS2.0 has been well configured. If not, please refer to the official site and run ADFS 2.0 Federation Server Configuration Wizard in the ADFS 2.0 Management Console.
4. DNS name of your Windows Server is available at the UOC.
5. UOC has been configured to use HTTPS (required by ADFS). If not, please refer to chapter 5.9.
6. UOC has been correctly installed and configure. If not, please refer to installation Guide, and make sure that “authentication_*.jar” has been correctly deployed under:
 \$UOC_HOME/3pps/tomcat/webapps/uoc/WEB-INF/lib/

To initialize IDP metadata:

1. Download ADFS2.0 metadata from:
 <https://servername/FederationMetadata/2007-06/FederationMetadata.xml>
 where *servername* is the ADFS2.0 installed host name.
2. Store the downloaded file under:
 \$UOC_HOME/3pps/apache-tomcat-7.0.42/webapps/uoc/WEB-INF/classes/metadata/
3. Add the configuration file named “metadatas.xml” under
 \$UOC_DATA/conf/

The content is like in the following example:

```
<?xml version="1.0" encoding="UTF-8"?>
<Metadatas>
<IDP>
<name>adfs2.0</name>
<metadataFile>/metadata/FederationMetadata.xml</metadataFile>
<url>https://servername/FederationMetadata/2007-06/FederationMetadata.xml</url>
</IDP>
</Metadatas>
```

Attribute	Description
Name	Idp product name
metadataFile	The idp metadata file stored in UOC under \$UOC_HOME/3pps/apache-tomcat-7.0.42/webapps/uoc/WEB-INF/classes/metadata/, it's strongly recommend to put the files here. If you want to change the file name, please don't forget to modify the idp.xml under \$UOC_DATA/conf/
url	The url is the download link from IDP product, it's optional setting.

To initialize SP metadata:

1. Make sure that UOC starts successfully, download the SP metadata file from:
<https://servername/uoc/saml/metadata>
where *servername* is the UOC installed hostname.
2. Store the download file to ADFS2.0 , In ADFS 2.0 Management Console select "Add Relying Party Trust"
3. Select "Import data about the relying party from a file" and select the metadata.xml file download earlier. Select Next
4. The wizard may complain that some content of metadata is not supported. You can safely ignore this warning
5. Continue with the wizard. On the "Ready to Add Trust" make sure that tab endpoints contains multiple endpoint values. If not, verify that your metadata was generated with HTTPS protocol URLs
6. Leave "Open the Edit Claim Rules dialog" checkbox checked and finish the wizard
7. Select "Add Rule", choose "Send LDAP Attributes as Claims" and press Next
8. Add NameID as "Claim rule name", choose "Active Directory" as Attribute store, choose "SAM-Account-Name" as LDAP Attribute and "Name ID" as "Outgoing claim type", finish the wizard and confirm the claim rules window
9. Open the provider by double-clicking it, select tab Advanced and change "Secure hash algorithm" to SHA-1
10. Modify the configuration file named "metadatas.xml" under:
\$UOC_DATA/conf/ to add SP config.

The content is like the part highlighted in red of the example below:

```
<?xml version="1.0" encoding="UTF-8"?>  
<Metadatas>  
<IDP>  
<name>adfs2.0</name>  
<metadataFile>/metadata/FederationMetadata.xml</metadataFile>  
<url>https://servername/FederationMetadata/2007-06/FederationMetadata.xml</url>  
</IDP>
```

```

<SP>
<name>uoc1.3</name>
<metadataFile>/metadata/uoc_saml_metadata.xml</metadataFile>
<url>https://192.168.152.131:8443/uoc/saml/metadata</url>
</SP>
</Metadatas>

```

Attribute	Description
Name	SP app name
metadataFile	The sp metadata file stored in UOC under \$UOC_HOME/3pps/apache-tomcat-7.0.42/webapps/uoc/WEB-INF/classes/metadata/, it's strongly recommend that put the files here. If you want to change the file name, please don't forget to modify the idp.xml under \$UOC_DATA/conf/
url	The url is the download link from SP app, it's optional setting.

11. If you want to change the EntityID of metadata you downloaded before, please edit file \$UOC_HOME/3pps/apache-tomcat-7.0.42/webapps/uoc/WEB-INF/classes/webapp-context.xml, change the red line below and restart UOC.

```

<bean id="metadataGeneratorFilter"
      class="org.springframework.security.saml.metadata.MetadataGeneratorFilter">
  <constructor-arg>
    <bean
      class="org.springframework.security.saml.metadata.MetadataGenerator">
      <property name="entityId" value="uoc_sp_local" />
      <property name="requestSigned" value="false" />
    </bean>
  </constructor-arg>
</bean>

```

To test with ssocircle in public network:

1. Open <http://www.ssocircle.com/en/> and follow the introduction to register a new account.

Self Registration

* User Name [a-zA-Z.-]:

* Password - at least 8 characters:

* Confirm Password:

* First Name:

* Last Name:

* Full Name:

* Email Address:

* Indicates required field

For example, register username uoc, password test@123

2. Download metadata from the UOC link, for example the server is 16.17.100.35:

<http://16.17.100.35:8080/uoc/saml/metadata>

3. Login sso circle with example account uoc/test@123.

msisdn login

SSO CIRCLE

Home
Login
Logout

New SSO Circle Offering
> SAML Service Provider Test Tool
> SAML Test API
> Monitoring and Certification Seal

Download the free SSOCheck Tool

user name / password

User Name:

Password:

4. Upload metadata on web site.

Manage your Service Provider Metadata

Service Provider Metadata

uoc_sp

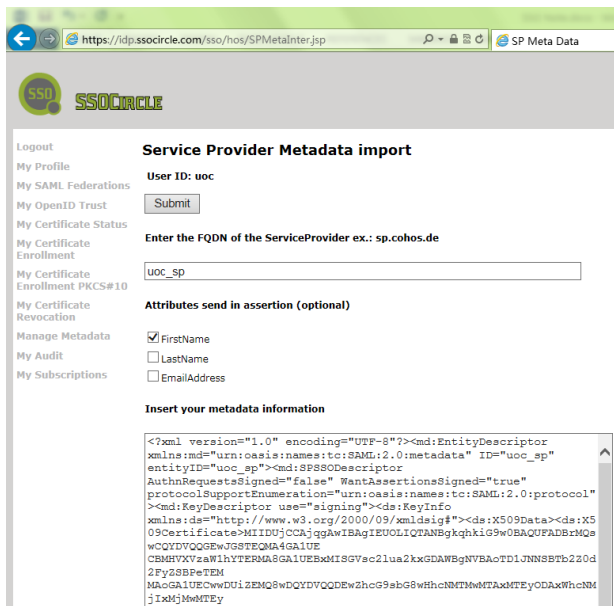
[Add new Service Provider](#)

[SSOCircle Public IDP Metadata](#)

[Manage Metadata](#)

Logout
My Profile
My SAML Federations
My OpenID Trust
My Certificate Status
My Certificate Enrollment
My Certificate Enrollment PKCS#10
My Certificate Renewal
My Audit
My Subscriptions

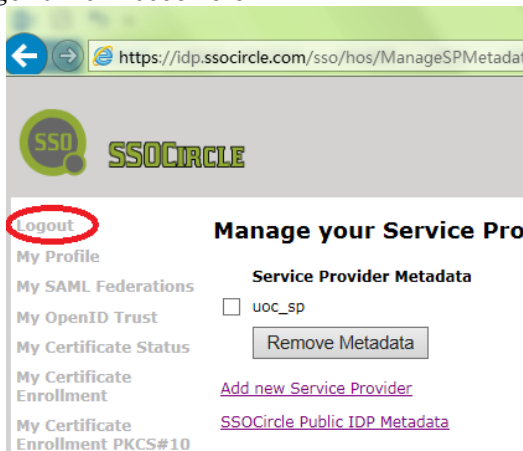
Click “Manage Metadata” in the left menu, then click “Add new Service Provider”.



Input the value of entity ID and the metadata information in the “uoc_saml_metadata.xml” downloaded from UOC, check “FirstName”, then click “Submit” button.

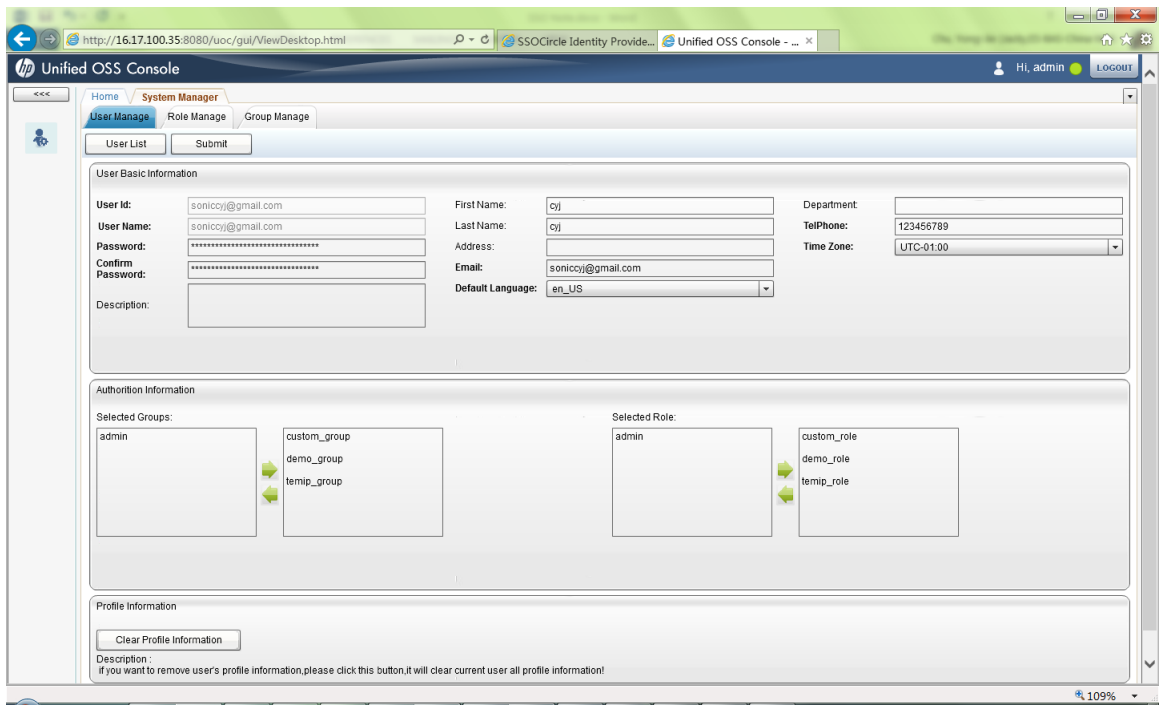
After that, check the successful page, and access the metadata by clicking the “Manage Metadata” menu.

5. Logout from ssoircle



6. Create a new user by using the email address that registered in ssoircle.

For example user id and name is soniccyj@gmail.com.



7. Validate the SSO.

- Open the login page in UOC: <http://16.17.100.35:8080/uoc/saml/login>, then it will automatically jump to the SSO login page.
- Login as the account: uoc/test@123.
- Web page will automatically jump to UOC and login successful.

5.11 LDAP Configuration

To be able to integrate with Active Directory, we assume that:

1. Active Directory has been installed and configured. If not, please refer to Active Directory installation Guide from the official site. We recommend to install version 2000 or 2003.
2. If the installed Active Directory needs security communication, please refer to configuration guide to install CA from official site.
3. UOC has been correctly installed. If no, please refer to installation Guide, and make sure that "authentication_*.jar" is deployed under \$UOC_HOME/3pps/tomcat/webapps/uoc/WEB-INF/lib/

Add the configuration file named "authentication.xml" under \$UOC_DATA/conf/

The content is like blow example:

```
<?xml version="1.0" encoding="UTF-8"?>
<Auth>
<AD>
<domain>uoc.com</domain>
<url>ldap://192.168.152.130:389</url>
```

```

<enable>no</enable>
<ignoreUOCPasswordValidation>yes</ignoreUOCPasswordValidation>
</AD>
</Auth>

```

Attribute	Description
Domain	Active Directory Domain Name
url	Active Directory ldap protocol connection URL name, AD default port is "389"
enableAuthentication	Enable or disable ad authentication in UOC, "yes" or "no"
ignoreUOCPasswordValidation	If enableAuthentication=yes, this settings will work and this setting is to enable or disable password validation in UOC,set "yes" or "no"
enableSSL	It's optional , if need SSL communication , set value as "Yes"
keystore	It's optional, if enableSSL = "Yes", need set value as keystore file path like:/tmp/ad.keystore
keyPassword	It's optional, if enableSSL = "Yes", Set value as keystore password

5.12 Password Encryption

The UOC server supports both MD5 (default) and PBKDF2 encryption method. Before UOC startup, please make sure the preferred method is correctly defined in `#{UOC_DATA}/conf/cm_context.xml`.

```

<bean id="dataSource" class="com.hp.uoc.cm.um.util.CmDataSource"
destroy-method="close">
<property name="driverClassName" value="org.h2.Driver" />
<property name="url"
value="jdbc:h2:tcp://localhost:9192/#{UOC_DATA}/db/uoc_umm_md5;ifexists=true" />
<property name="username" value="sa" />
<property name="password" value="" />
</bean>

```

driverClassName: commonly don't need change

url: if you use “md5” encryption method, it don’t need change, but if you use “pbkdf2” encryption method, you only need change the database name as:
'jdbc:h2:tcp://localhost:9192/\${UOC_DATA}/db/uoc_umm_pbkdf2;ifexists=true'

Username:H2 database user name, commonly is “sa”

Password: H2 Database user’s password, default is empty, but if you have change the user’s password, here need change corresponding.

Chapter 6

Uninstallation

This chapter describes how to uninstall the server subset of UOC product.

6.1 Uninstallation

When uninstalling UOC, the UOC Server must be firstly stopped.

```
$ $UOC_HOME/bin/uoc stop
```



If the installation has been done with root user, to stop UOC server, user has to login to UOC server as uoc user because only uoc user is allowed to operate on UOC program.
If the installation has been done with a non-root user, the UOC server will have to be stopped by this non-root user

Check that no processes remains:

```
$UOC_HOME/bin/uoc show
```

If some processes are still running, you can stop them with the standard Unix “kill” command.

You can check the currently installed version of UOC with the following command:

```
$UOC_HOME/bin/uoc inventory
```

Then use the following script to uninstall the UOC server:

```
$UOC_HOME/scripts/uninstall-uoc-server.sh
```

```
Currently installed UOC server packages:
```

```
[0]      UOCSEVER-V1.3-01E.noarch
```

```
Select the one to un-install ('Enter' to Cancel): 0
```

```
removing package UOCSEVER-V1.3-01E.noarch ...
```

```
UOC server package UOCSEVER-V1.3-01E.noarch removed successfully
```


6.2 Uninstalling verification

If the installation had been done with root user, the default RPM db path is usually used. The un-installation verification can be done without specifying the RPM db Path option.

```
$ rpm -qa | grep UOC
```

If the installation had been done instead with non-root user, a specific RPM db path was used.

```
$ rpm -qa --dbpath $UOC_RPMDBPATH | grep UOC
```

If the removal was successful, the \$UOC_HOME folders should be empty.

Chapter 7

Troubleshooting

7.1 Frequent issues / error messages

No	Trouble description	Action
1	can't access UOC through web by IP:8080/UOC/auth/login.html	<p>Make sure all processes are running, especially the tomcat server one (server the web pages we want to display in the browser). Use the “uoc show” command to check the status of the processes on the server side. Check also for exceptions in the log files.</p> <p>Check for firewall configuration, and that the server system is effectively accessible for HTTP requests.</p>
2	After updating the period for snapshot in Dashboard, there isn't any change in the Dashboard view.	Restart the UOC server in order to load the latest updates.
3	<p>Error in temp_adapter.log</p> <p>Exception in thread "main"</p> <p>javax.jms.JMSEException: Could not connect to broker URL: tcp://16.173.245.94:61616 . Reason: java.net.ConnectException: Connection refused</p>	Please check the firewall settings for this server, to make sure the TWS port isn't blocked.
4	Failed to start Apache ActiveMQ	<p>If after starting UOC ActivMQ is not started. Check the log: \$UOC_HOME/3pps/apache-activemq-5.9.0/data/activemq.log</p> <p>If you get the following error:</p> <p>2015-08-03 18:51:09,257 ERROR Failed to start Apache ActiveMQ ([localhost, ID:ossv035.gre.hp.com-48834-</p>

1438620669088-0:1], java.io.IOException: **Transport Connector could not be registered in JMX: Failed to bind to server socket: amqp://0.0.0.0:5672?maximumConnections=1000&wireFormat.maxFrameSize=104857600 due to: java.net.BindException: Address already in use) | org.apache.activemq.broker.BrokerService | main**

This means that maybe the following service **qpidd** is already using the same port.

To check which process uses the port please execute the following command:

netstat -plnt | grep 5672

```
tcp    0    0 0.0.0.0:5672          0.0.0.0:*          LISTEN
2404/qpidd
tcp    0    0 :::5672              :::*                LISTEN
2404/qpidd
```

It is qpidd service

[root@ossv035 data]# ps -ef | grep 2404

```
root    587  554  0 18:57 pts/5    00:00:00 grep 2404
qpidd   2404  1  0 Jul23 ?        00:01:16 /usr/sbin/qpidd --data-dir /var/lib/qpidd --daemon
```

you should stop the service

/sbin/service qpidd stop

Stopping Qpid AMQP daemon: [OK]

Then restart UOC

Chapter 8 Logging configuration

8.1 Configuring UOC Logs

UOC uses Logback to output log statements to a variety of output targets. The logging behavior is controlled by editing an external configuration file (\$UOC_DATA/conf/logback.xml), without modifying the application.

Logback has three main components (loggers, appenders and layout) which work together to log messages according to levels, and to control at runtime how these messages are formatted and where they should be logged.

To enable, disable or change the level of tracing in the log, the administrator needs to modify the **logback** configuration file located under:

\$UOC_HOME/conf/logback.xml

It is recommended to follow recommendations in logback documentation to manage correctly the log level and the log layout. Refer to

<http://logback.qos.ch/manual/index.html>

The sample configuration looks as below:

```
<?xml version="1.0" encoding="UTF-8"?>
<configuration scan="true" scanPeriod="10 seconds" debug="true">
  <appender name="STDOUT"
class="ch.qos.logback.core.ConsoleAppender">
    <encoder>
      <pattern>%d{HH:mm:ss.SSS} [%thread] %-
5level %logger{36} - %msg%n</pattern>
    </encoder>
  </appender>
```

```

<appender name="UOC"
class="ch.qos.logback.core.rolling.RollingFileAppender">
    <File>${UOC_DATA}/logs/UOC.log</File>
    <rollingPolicy
class="ch.qos.logback.core.rolling.TimeBasedRollingPolicy">
        <fileNamePattern>${UOC_DATA}/logs/UOC-%d{yyyy-MM-
dd}-%i.log.gz</fileNamePattern>
        <timeBasedFileNamingAndTriggeringPolicy
class="ch.qos.logback.core.rolling.SizeAndTimeBasedFNATP">
            <!-- or whenever the file size reaches10MB -->
            <maxFileSize>10MB</maxFileSize>
        </timeBasedFileNamingAndTriggeringPolicy>
        <!-- keep 30 days' worth of history -->
        <maxHistory>30</maxHistory>
        <append>true</append>
    </rollingPolicy>
    <layout class="ch.qos.logback.classic.PatternLayout">
        <Pattern>%d %p %t %c - %m%n</Pattern>
    </layout>
</appender>

<logger name="com.hp" level="INFO">
    <appender-ref ref="UOC"/>
</logger>

<root level="DEBUG">
    <appender-ref ref="STDOUT"/>
</root>

</configuration>

```

In the sample configuration above, we only declared one logger named “com.hp”, and whose level is “INFO”. For later use, it can be defined as several different loggers, with each one a different name, so that we can distribute for each module with different log level.

8.2 Log Files

Every UOC component logs information in a dedicated log file. All log files are under `${UOC_DATA}/logs`

Log Name	Description
NOM_TEMIP_ADAPTER.log	NOM TeMIP Adapter logs
CSV_ADAPTER.log	CSV Adpater logs
DB_ADAPTER.log	Database Adapter logs

CONF_MAN.log	Configuration Management logs
DB_TRANSFORMER.log	DB Transformer logs
ARRIVAL.log	Arrival logs
PRESENTER.log	Presenter logs
QC_PROVIDER.log	QC Provider logs
RECEIVER.log	Receiver logs
LICENSE_MAN.log	License logs

Default level for all these loggers is: **INFO**

8.3 Log Levels

The administrator can change the name of the log file if needed and the level of traces. It can be one of the following levels:

- TRACE
- DEBUG
- **INFO (Default)**
- WARN
- ERROR

Warning: a level of TRACE or DEBUG will produce megabytes of logging and slow startup of Tomcat. These levels must be reserved for time-bounded troubleshooting sessions, for example on request by the Support team.

Example of log level INFO for component Receiver

...

```
<logger name="com.hp.uoc.centerpool" level="INFO">
  <appender-ref ref="RECEIVER" />
</logger>
```

...

8.4 Log Appender

An output destination for logging is called an *appender* and can be changed in the XML configuration file. Default appenders are console (output) or files (stored on disk)

Refer to the pattern appender

<http://logback.qos.ch/manual/appenders.html> to get the detailed string definition to use.

Example of appender customization:

Logs will be stored in a rolling files whose maximum size is 10MB, and up to 5 previous files are stored. Current tracing will be in file RECEIVER.log

```
...
    <appender name="RECEIVER"
class="ch.qos.logback.core.rolling.RollingFileAppender">
    <File>${UOC_DATA}/logs/RECEIVER.log</File>
    <rollingPolicy
class="ch.qos.logback.core.rolling.TimeBasedRollingPolicy">
        <fileNamePattern>${UOC_DATA}/logs/RECEIVER-%d{yyyy-MM-dd}-%i.log.gz</fileNamePattern>
        <timeBasedFileNamingAndTriggeringPolicy
class="ch.qos.logback.core.rolling.SizeAndTimeBasedFNATP">
            <!-- or whenever the file size reaches10MB -->
            <maxFileSize>10MB</maxFileSize>
        </timeBasedFileNamingAndTriggeringPolicy>
        <!-- keep 30 days' worth of history -->
        <maxHistory>30</maxHistory>
    </rollingPolicy>
    <append>true</append>
    <layout class="ch.qos.logback.classic.PatternLayout">
        <Pattern>%d %p %t %c - %m%n</Pattern>
    </layout>
</appender>
...
```

8.5 Log Layout

Administrator can customize the output destination but also the output format. This is achieved by associating a *layout* with an appender. The layout is responsible for formatting the logging request according to the user's wishes, whereas an appender takes care of sending the formatted output to its destination.

Refer to the pattern layout

<http://logback.qos.ch/manual/layouts.html> to get the detailed string definition to use.

Example of customized layout

```
<appender name="RECEIVER"  
class="ch.qos.logback.core.rolling.RollingFileAppender">  
  ...  
  <layout class="ch.qos.logback.classic.PatternLayout">  
    <Pattern>%d %p %t %c - %m%n</Pattern>  
  </layout>  
</appender>
```