HOWTO Install and Configure Grouper 2.1.5 on Ubuntu Linux 12.04

23 Giugno 2014

Author: Marco Malavolti, Andrea Biancini

Index

1 Introduction

This is a tutorial for users that want to know how to install Grouper on a Ubuntu Linux 12.04 machine and that want to know how to use the new “isMemberOf” produced.

2 Packages required

- ntp
- vim

3 Phase 1 – Installation of Grouper

3.1 Install the Operating System (Ubuntu 12.04 – Precise Pangolin) on target machines

Install Ubuntu Linux 12.04 on the target machines, from the installation parameters, choose ONLY "**Standard system utilities"** and "**SSH server"** to minimize the number of packages to be installed on the target machine.

Configure the network and the name resolution so that the machine reachable with its FQDN (as returned by **hostname -f** command) from the Puppet Agents and the Puppet Master. It can be obtained by editing the **/etc/hosts** file.

Install the following packages and their dependencies:

- `sudo apt-get install vim ntp`

3.2 Prepare the environment

1. Assume the role of root user for all the process steps:
   - `sudo su -`

2. Install the required packages and their dependencies:
   - `apt-get install python-software-properties`
   - `add-apt-repository ppa:webupd8team/java`
   - `apt-get update ; sudo apt-get dist-upgrade`
   - `apt-get install oracle-jdk7-installer ant tomcat7 dos2unix mysql-server`

3. Configure JAVA_HOME for correctly execution of tomcat7:
   a) Select the 'oracle' version of Java after execute the command:
      - `update-alternatives --config java`

   b) Add the following line to "**/etc/default/tomcat7**" to set the JAVA_HOME:
      - `JAVA_HOME="/usr/lib/jvm/java-7-oracle"`

4. Create the Grouper Log directories:
   - `mkdir /var/log/grouperUi ; chown tomcat7:tomcat7 /var/log/grouperUi`
   - `mkdir /var/log/grouperWs ; chown tomcat7:tomcat7 /var/log/grouperWs`

5. Create the Grouper DB:
   - `mysql -u root -p`
   - `mysql> create database grouper;`
   - `mysql> create user 'grouperdb'@'localhost' identified by '###DB-PASSWORD###';`
   - `mysql> grant all on grouper.* to 'grouperdb'@'localhost' identified by '###DB-PASSWORD###';`
   - `mysql> flush privileges;`
   - `mysql> exit;`

3.3 Install Grouper

1. Download the Grouper installer, extract it and move it in the **/opt** directory:
   - `cd /usr/local/src`
   - `wget http://software.internet2.edu/grouper/release/2.1.5/grouper.installer-2.1.5.tar.gz`
   - `tar xzvf grouper.installer-2.1.5.tar.gz`
   - `mv grouper.installer-2.1.5 /opt/grouper`

2. Execute the installer of Grouper:
   - `cd /opt/grouper`
   - `java -jar grouperInstaller.jar`

3. Answer to the questions as follows:

- Enter in the Grouper install directory (note: better if no spaces or special chars) [/usr/local/src/grouper.installer-2.1.5]: **/opt/grouper**

- Enter the default IP address for checking ports (just hit enter to accept the default unless on a machine with no network, might want to change to 127.0.0.1): [0.0.0.0]: **0.0.0.0**

- Do you want to set gsh script to executable (t|f)? [t]: **t**

- Do you want to run dos2unix on gsh.sh (t|f)? [t]: **t**

- Do you want to use the default and included hsqldb database (t|f)? [t]: **f**

- Enter the database URL [jdbc:hsqldb:hsql://localhost:9001/grouper]: **jdbc:mysql://localhost:3306/grouper**

- Database user [sa]: **grouperdb**

- Database password (note, you aren't setting the pass here, you are using an existing pass, this will be echoed back) [<blank>]: **###DB-PASSWORD###**

- Don't care if this message appears:

Checking database with query: select 1

giu 12, 2014 12:20:09 PM edu.internet2.middleware.grouperInstaller.util.GiDbUtils rollbackQuietly

GRAVE: Problem rolling back

com.mysql.jdbc.exceptions.jdbc4.MySQLNonTransientConnectionException: Can't call rollback when autocommit=true

at sun.reflect.NativeConstructorAccessorImpl.newInstance0(Native Method)

at sun.reflect.NativeConstructorAccessorImpl.newInstance(NativeConstructorAccessorImpl.java:57)

at sun.reflect.DelegatingConstructorAccessorImpl.newInstance(DelegatingConstructorAccessorImpl.java:45)

at java.lang.reflect.Constructor.newInstance(Constructor.java:526)

at com.mysql.jdbc.Util.handleNewInstance(Util.java:411)

at com.mysql.jdbc.Util.getInstance(Util.java:386)

at com.mysql.jdbc.SQLError.createSQLException(SQLError.java:1013)

at com.mysql.jdbc.SQLError.createSQLException(SQLError.java:987)

at com.mysql.jdbc.SQLError.createSQLException(SQLError.java:982)

at com.mysql.jdbc.SQLError.createSQLException(SQLError.java:927)

at com.mysql.jdbc.ConnectionImpl.rollback(ConnectionImpl.java:4711)

at edu.internet2.middleware.grouperInstaller.util.GiDbUtils.rollbackQuietly(GiDbUtils.java:419)

at edu.internet2.middleware.grouperInstaller.util.GiDbUtils.listSelect(GiDbUtils.java:403)

at edu.internet2.middleware.grouperInstaller.util.GiDbUtils.listSelect(GiDbUtils.java:323)
at edu.internet2.middleware.grouperInstaller.util.GiDbUtils.select(GiDbUtils.java:334)
at edu.internet2.middleware.grouperInstaller.util.GiDbUtils.checkConnection(GiDbUtils.java:474)
at edu.internet2.middleware.grouperInstaller.GrouperInstaller.checkDatabaseConnection(GrouperInstaller.java:1663)
at edu.internet2.middleware.grouperInstaller.GrouperInstaller.mainLogic(GrouperInstaller.java:1027)
at edu.internet2.middleware.grouperInstaller.GrouperInstaller.main(GrouperInstaller.java:191)

It is enough that this message appears "Successfully tested database connection"

- Do you want to init the database (delete all existing grouper tables, add new ones) (t|f)? **t**
- Do you want to add quickstart subjects to DB (t|f)? [t]: **t**
- Do you want to add quickstart data to registry (t|f)? [t]: **t**
- Do you want to start the Grouper loader (daemons)?
  (note, if it is already running, you need to stop it now, check ps -ef | grep gsh | grep loader) (t|f)? [f]: **t**
- Do you want to set the tomcat memory limit (t|f)? [t]: **t**
- Do you want to set tomcat scripts to executable (t|f)? [t]: **t**
- Do you want to run dos2unix on tomcat sh files (t|f)? [t]: **t**
- What ports do you want tomcat to run on (HTTP, JK, shutdown): [8080, 8009, 8005]: **8080, 8009, 8005**
- Should we check ports to see if tomcat was able to stop (t|f)? [t]: **t**
- Couldn't find the command 'sh'. Enter the path of 'sh' (e.g. /bin/sh): **/bin/bash**
- Do you want to set the log dir of UI (t|f)? [t]: **t**
- Enter the UI log dir: [/opt/grouper/apache-tomcat-6.0.35/logs/grouperUi]: **/var/log/grouperUi**
- Enter the URL path for the UI [grouper]: **grouper**
- Enter the GrouperSystem password: **###GROUPER-PASSWORD###**
- Do you want to set the GrouperSystem password in /opt/grouper/apache-tomcat-6.0.35/conf/tomcat-users.xml? [t]: **t**
- Should we stop tomcat anyway? (t|f)? [f]: **f**
- Should we check ports to see if tomcat was able to start (t|f)? [t]: **t**
- Do you want to build the Grouper WS? (t|f) [t]: **t**
- Should we check ports to see if tomcat was able to stop (t|f)? [t]: **t**
- Do you want to set the log dir of WS (t|f)? [t]: **t**
- Enter the WS log dir: [/opt/grouper/apache-tomcat-6.0.35/logs/grouperWs]: **/var/log/grouperWs**
- Enter the URL path for the WS [grouper-ws]: **grouper-ws**
- Should we stop tomcat anyway? (t|f)? [f]: **f**
- Should we check ports to see if tomcat was able to start (t|f)? [t]: **t**
- Do you want to install the provisioning service provider (t|f)? [t]: **t**

4. Test the correct execution of Grouper into the default environment by opening the web page:
   - `http://###YOUR.GROUPER.FQDN###:8080/grouper/`

5. Remove all unnecessary files:
   - `cd /opt/grouper ; rm -rf *.tar ; rm -f *.tar.gz`

6. Edit the **/usr/share/tomcat7/bin/catalina.sh** file by adding this under the "# JAVA_OPTS ...":

```
      JAVA_OPTS="-server -Xmx512M -XX:MaxPermSize=256M"
```

7. Replace the default **tomcat-users.xml** of Tomcat7 with the grouper's ones:
   - `cp /opt/grouper/apache-tomcat-6.0.35/conf/tomcat-users.xml /etc/tomcat7/tomcat-users.xml`

8. Edit the **/etc/tomcat7/server.xml** as follows:

```
<Host name="localhost"  appBase="webapps"
      unpackWARs="true" autoDeploy="true"
      xmlValidation="false" xmlNamespaceAware="false">

      <Context docBase="/opt/grouper/grouper.ws-2.1.5/grouper-ws/build/dist/grouper-
ws" path="/grouper-ws" reloadable="false"/>

      <Context docBase="/opt/grouper/grouper.ui-2.1.5/dist/grouper" path="/grouper"
reloadable="false"/>

                  ...other things...

</Host>
```

9. Replace "**$**" with "**#**" on the value "*${uiException.class.simpleName}*" into **/opt/grouper/grouper.ui-2.1.5/dist/grouper/WEB-INF/jsp/dynamicTile.jsp** file.

10. Remove the "Log out" from Grouper with:
    a) Edit the GrouperUI's "**build.properties**":
       - `vim /opt/grouper/grouper.ui-2.1.5/build.properties`

```
logout.link.show=false
```

    b) Edit the GrouperUI's "**media.properties**":
       - `vim /opt/grouper/grouper.ui-2.1.5/dist/grouper/WEB-INF/classes/resources/grouper/media.properties`

```
logout.link.show=false
```

    c) Recompile the code with:
       - `cd /opt/grouper/grouper.ui-2.1.5 ; ant default`

11. Remove the log's files from their directories to permit to Tomcat7 to write its logs:
    - `rm -f /var/log/grouperUi/*`
    - `rm -f /var/log/grouperWs/*`

12. Shutdown the Grouper's Tomcat Server to leave place to the Apache Tomcat7 installed:
    - `sh /opt/grouper/apache-tomcat-6.0.35/bin/shutdown.sh`

13. Start the Apache Tomcat7 server:
    - `service tomcat7 start`

4 Phase 2 – Shibbolize Grouper and add Subjects to DB

4.1 Install a Shibboleth Service Provider on Grouper machine

1. Install a Shibboleth SP and exchange its metadata with your federation.
   This SP will authenticate the users via EPPN attribute, then modify the "**shibboleth2.xml**" in this way:

```
…
<ApplicationDefaults entityID="https://grouper.fqdn.example.com/shibboleth"
REMOTE_USER="eppn">

…
```

2. Add AJP support to Tomcat7:
   a) Modify the **/etc/tomcat7/server.xml** file by adding this:

```
<Connector port="8009" protocol="AJP/1.3" tomcatAuthentication="false"
redirectPort="8443" />
```

   b) Ensure that the mod "**proxy_ajp**" is enabled:
      - `a2enmod proxy_ajp ; service apache2 restart`

3. Create the apache2 site "**/etc/apache2/sites-available/grouper**" with this content:

```
ProxyPass /grouper ajp://localhost:8009/grouper
ProxyPassReverse /grouper ajp://localhost:8009/grouper

ProxyPass /grouper-ws ajp://localhost:8009/grouper-ws
ProxyPassReverse /grouper-ws ajp://localhost:8009/grouper-ws

<Location /grouper>
     Authtype shibboleth
     ShibRequireSession On
     require valid-user
</Location>
```

   And enable it:
      - `a2ensite grouper ; service apache2 restart`

4.2 Add Subjects to Grouper DB

1. Comment out all the "**<security-constraint>**", "**<login-config>**" and "**<security-role>**" from **/opt/grouper/grouper.ui-2.1.5/dist/grouper/WEB-INF/web.xml.**

2. Create the bash script "**/root/addSubject.sh**" that permits you to add a Subject to Grouper:

```
#!/bin/bash

function ask_param {
   local VALUE=$1
   local NAME=$2

   if [ -z "$VALUE" ]; then
      read -p "Insert the $NAME: " VALUE
   fi

   echo $VALUE
}


EPPN=$(ask_param "$1" "eppn")
NAME=$(ask_param "$2" "name")
SURNAME=$(ask_param "$3" "surname")
EMAIL=$(ask_param "$4" "email")


echo "The provided information for the user to be inserted in Grouper, are as fol-
lows:"

echo ""
echo "eppn:    $EPPN"
echo "name:    $NAME"
echo "surname: $SURNAME"
echo "email:   $EMAIL"
echo ""
echo "Press ENTER to continue or CTRL+C to exit..."
read -p "" DEL


cd /opt/grouper/grouper.apiBinary-2.1.5
./bin/gsh <<EOF
addSubject("$EPPN", "person", "$NAME $SURNAME");
EOF

cd -


#GrouperSession.startRootSession();
#subj = findSubject("horberg@umu.se");
#attr = subj.getAttributes();
#attr.put("loginid", new HashSet(java.util.Arrays.asList(new String[] { "horberg@u-
mu.se" })));


mysql -u grouperdb –password=###DB-PASSWORD### grouper <<EOF
insert into subjectattribute values('$EPPN','loginid','$EPPN','$EPPN');
insert into subjectattribute values('$EPPN','description','$NAME
$SURNAME',lower('$NAME $SURNAME'));
insert into subjectattribute values('$EPPN','name','$NAME $SURNAME',lower('$NAME
$SURNAME'));
insert into subjectattribute values('$EPPN','email','$EMAIL','$EMAIL');

EOF
cd -
```

3. Create the bash script "**/root/addMemberToSysAdmin.sh**" that permits you to add a Member to the Sysadmin group:

```
#!/bin/bash

function ask_param {
   local VALUE=$1
   local NAME=$2

   if [ -z "$VALUE" ]; then
      read -p "Insert the $NAME: " VALUE
   fi
   echo $VALUE
}

EPPN=$(ask_param "$1" "eppn")

echo "The provided information for the user to be inserted in Grouper, are as fol-
lows:"
echo ""
echo "eppn:    $EPPN"
echo ""
echo "Press ENTER to continue or CTRL+C to exit..."
read -p "" DEL

cd /opt/grouper/grouper.apiBinary-2.1.5
./bin/gsh <<EOF
addMember("etc:sysadmingroup","$EPPN");
EOF
cd -
```

4. Add the right privileges to **addSubject.sh**:
   - `chmod +x /root/addSubject.sh /root/addMemberToSysAdmin.sh`

5. Execute the **addSubject.sh** script to add the user stored on you IdP (as many as you want):
   - `/bin/bash /root/addSubject.sh`

6. Modify the callLogin path from "**login.to**" to "**home.to**" into "**structs-config.xml**" file:
   - `vim /opt/grouper/grouper.ui-2.1.5/dist/grouper/WEB-INF/struts-config.xml`

```
<action path="/callLogin" scope="request"
   type="edu.internet2.middleware.grouper.ui.actions.CallLoginAction"
   unknown="false" validate="false">
      <forward name="callLogin" path="/home.do" redirect="true"/>
</action>
```

7. Edit the **grouper.properties** to be able to edit the system groups:
   - `vim /opt/grouper/grouper.ui-2.1.5/dist/grouper/WEB-INF/classes/grouper.properties:`

```
configuration.autocreate.system.groups = true
…
groups.wheel.use                        = true
```

8. Restart Tomcat7 service to apply the changes:
   - `service tomcat7 restart`

9. Add a created Subject to SysAdmin group:
   - `/bin/bash addMemberToSysAdmin.sh`

5 Phase 3 – Install the Grouper VOOT Connector

5.1 Prepare the environment

1. Install subversion on Grouper VM:
   - `apt-get install subversion`

2. Download the code of Grouper VOOT Connector into **/usr/local/src**:
   - `cd /usr/local/src`
   - `svn checkout http://anonsvn.internet2.edu/svn/i2mi/branches/GROUPER_2_0_BRANCH/grouper-misc/grouper-voot/`

3. Modify the "**build.properties**" file created by:
   - `cd /usr/local/src/grouper-voot`
   - `cp build.example.properties build.properties`
   - `vim build.properties:`

```
grouper.dir = /opt/grouper/grouper.apiBinary-2.1.5
grouperWs.dir = /opt/grouper/grouper.ws-2.1.5/grouper-ws
```

4. Execute "**ant**" command to build the jar:
   - `ant`

5. Copy the **grouperVoot.jar** into the right position:
   - `cp /usr/local/src/grouper-voot/dist/grouperVoot.jar /opt/grouper/grouper.ws-2.1.5/grouper-ws/build/dist/grouper-ws/WEB-INF/lib/grouperVoot.jar`

6. Modify the **source.xml** by removing every "`^M`" character:
   - `vim /opt/grouper/grouper.ws-2.1.5/grouper-ws/build/dist/grouper-ws/WEB-INF/classes/sources.xml`

   and ensure to see this:

```
<!-- If using emails and need email addresses in sources, set which attribute has
the email address in this source -->
<init-param>
      <param-name>emailAttributeName</param-name>
      <param-value>email</param-value>
</init-param>
```

7. Setup the Grouper **web.xml:**

   - `vim /opt/grouper/grouper.ws-2.1.5/grouper-ws/build/dist/grouper-ws/WEB-INF/web.xml`

```
<!-- Add this to filter-mapping -->
<filter-mapping>
   <filter-name>Grouper service filter</filter-name>
   <url-pattern>/voot/*</url-pattern>
</filter-mapping>


<!-- Add this to servlet -->
<servlet>
   <servlet-name>VootServlet</servlet-name>
   <display-name>Voot Servlet</display-name>
   <servlet-class>edu.internet2.middleware.grouperVoot.VootServlet</servlet-class>
   <load-on-startup>1</load-on-startup>
</servlet>


<!-- Add this to servlet-mapping -->
<servlet-mapping>
   <servlet-name>VootServlet</servlet-name>
   <url-pattern>/voot/*</url-pattern>
</servlet-mapping>


<!-- Add this to security-constraint -->
<security-constraint>
   <web-resource-collection>
      <web-resource-name>Voot services</web-resource-name>
      <url-pattern>/voot/*</url-pattern>
   </web-resource-collection>

   <auth-constraint>
      <role-name>grouper_user</role-name>
   </auth-constraint>
</security-constraint>
```

8. Restart Tomcat server:
   - `service tomcat7 restart`

6 Phase 4 – Configure an Attribute Authority on Grouper machine

1. Download the Shibboleth IdP package from Internet2 and store it into **/usr/local/src** directory:
   - `cd /usr/local/src`
   - `wget http://www.shibboleth.net/downloads/identity-provider/2.4.0/shibboleth-identityprovider-2.4.0-bin.zip`
2. Install the IdP on the Grouper VM into **/opt/shibboleth-idp** directory:
   - `sudo apt-get install unzip ; unzip shibboleth-identityprovider-2.4.0-bin.zip`
   - `export JAVA_HOME="/usr/lib/jvm/java-7-oracle"`
   - `cd /usr/local/src/shibboleth-identityprovider-2.4.0 ; sh install.sh`
3. Copy the Xerces and Xalan libraries into the right position:
   - `cp -r /usr/local/src/shibboleth-identityprovider-2.4.0/endorsed /usr/share/tomcat7`
4. Assign the right privileges by executing this:
   - `chown tomcat7 /opt/shibboleth-idp/logs/`
   - `chown tomcat7 /opt/shibboleth-idp/metadata/`
   - `chown tomcat7 /opt/shibboleth-idp/credentials/`
   - `chmod 400 /opt/shibboleth-idp/credentials/idp.key`
   - `chmod 644 /opt/shibboleth-idp/credentials/idp.crt`
   - `chown tomcat7 /opt/shibboleth-idp/credentials/idp.key`
   - `chown tomcat7 /opt/shibboleth-idp/credentials/idp.crt`
5. Deploy the **idp.war** application:
   - `vim /etc/tomcat7/Catalina/localhost/idp.xml`:

```
<Context docBase="/opt/shibboleth-idp/war/idp.war"
   privileged="true"
   antiResourceLocking="false"
   antiJARLocking="false"
   unpackWAR="false"
   swallowOutput="true" />
```

6. Modify the "**/etc/apache2/sites-enabled/default-ssl**" by adding the bold text under the Virtual-Host:

```
<VirtualHost _default_:443>
   ServerName grouper.fqdn.example.com:443
      ...
   ProxyPass /idp ajp://localhost:8009/idp
   ProxyPassReverse /idp ajp://localhost:8009/idp
</VirtualHost>
```

7. Copy the "**/etc/apache2/sites-enable/default-ssl**" to "**/etc/apache2/sites-enable/default-ssl-8443**" and change all "443" port to "8443", and add this:

```
<VirtualHost _default_:8443>
   ServerName grouper.fqdn.example.com:8443
   ...
   SSLCertificateFile    /opt/shibboleth-idp/credentials/idp.crt
   SSLCertificateKeyFile /opt/shibboleth-idp/credentials/idp.key
   ...
   SSLVerifyClient optional_no_ca
</VirtualHost>
```

8. Add the port 8443 to those that Apache2 listen by editing the "**/etc/apache2/ports.conf**" file:

```
Listen 8443
NameVirtualHost *:8443
```

9. Install mysql-java-connector:
   - `sudo apt-get install libmysql-java`
   - `cp /usr/share/java/mysql-connector-java-5.1.16.jar /opt/shibboleth-idp/lib`
   - `cp /usr/share/java/mysql-connector-java-5.1.16.jar /var/lib/tomcat7/common`
10. Restart the Tomcat7 and Apache2 service:
    - `service tomcat7 restart`
    - `service apache2 restart`
11. Configure the IdP to retrieve the federation's metadata that contain the Grouper SP Metadata
12. Modify the "**attribute-resolver.xml**" by adding:
    - A new DataConnector:

```
<!-- Grouper Database connector -->
<resolver:DataConnector xsi:type="RelationalDatabase"
xmlns="urn:mace:shibboleth:2.0:resolver:dc" id="grouper">
   <ApplicationManagedConnection jdbcDriver="com.mysql.jdbc.Driver"
      jdbcURL="jdbc:mysql://localhost:3306/grouper"
      jdbcUserName="grouperdb"
      jdbcPassword="geantdbpassword" />

        <QueryTemplate>
           <![CDATA[
             SELECT REPLACE(GROUP_NAME, CONCAT(SUBSTRING_INDEX(SUBSTRING_INDEX('$re-
questContext.getPeerEntityId()', '//', -1), '/', 1), ':'), '') AS GROUP_NAME FROM
grouper_memberships_lw_v WHERE subject_id = '$requestContext.principalName' AND
GROUP_NAME LIKE CONCAT(SUBSTRING_INDEX(SUBSTRING_INDEX('$requestContext.getPeerEnti-
tyId()', '//', -1), '/', 1), '%') AND list_name = 'members'

          ]]>
        </QueryTemplate>

        <Column columnName="GROUP_NAME" attributeID="isMemberOf" type="String" />
</resolver:DataConnector>
```

    - A new AttributeDefinition:

```
<!-- AttributeDefinition for "isMemberOf" attribute -->
<resolver:AttributeDefinition id="isMemberOf" xsi:type="ad:Simple" sourceAt-
tributeID="isMemberOf">
   <resolver:Dependency ref="grouper" />
   <resolver:DisplayName xml:lang="en">Grouper groups</resolver:DisplayName>
   <resolver:DisplayName xml:lang="it">Gruppi Grouper</resolver:DisplayName>
   <resolver:DisplayDescription xml:lang="en">List of groups retrieved from
Grouper</resolver:DisplayDescription>
   <resolver:DisplayDescription xml:lang="it">Elenco dei gruppi ottenuti da
Grouper</resolver:DisplayDescription>
   <resolver:AttributeEncoder xsi:type="enc:SAML1String" name="urn:mace:dir:at-
tribute-def:isMemberOf" />
   <resolver:AttributeEncoder xsi:type="enc:SAML2String"
name="urn:oid:1.2.840.113556.1.666.1" friendlyName="isMemberOf" />
</resolver:AttributeDefinition>
```

- A change to the Principal Connector:

```
<!-- ========================================== -->
<!--      Principal Connectors                  -->
<!-- ========================================== -->

<!--
    <resolver:PrincipalConnector xsi:type="pc:Transient" id="shibTransient" nameID-
Format="urn:mace:shibboleth:1.0:nameIdentifier"/>

    <resolver:PrincipalConnector xsi:type="pc:Transient" id="saml1Unspec" nameIDFor-
mat="urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified"/>

    <resolver:PrincipalConnector xsi:type="pc:Transient" id="saml2Transient" nameID-
Format="urn:oasis:names:tc:SAML:2.0:nameid-format:transient"/>

-->

    <resolver:PrincipalConnector xsi:type="pc:Direct" id="saml1Direct"
nameIDFormat="urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified"/>

    <resolver:PrincipalConnector xsi:type="pc:Direct" id="saml2Direct"
nameIDFormat="urn:oasis:names:tc:SAML:2.0:nameid-format:unspecified"/>
```

13. Modify the "**attribute-filter.xml**" of Grouper IdP by adding this:

```
<afp:AttributeFilterPolicy id="sp-test-4-grouper">
   <afp:PolicyRequirementRule xsi:type="basic:AttributeRequesterString"
value="https://sp-test-grouper.example.com/shibboleth" />
      <afp:AttributeRule attributeID="isMemberOf">
         <afp:PermitValueRule xsi:type="basic:ANY"/>
      </afp:AttributeRule>

      <afp:AttributeRule attributeID="eduPersonPrincipalName">
         <afp:PermitValueRule xsi:type="basic:ANY"/>
      </afp:AttributeRule>
</afp:AttributeFilterPolicy>
```

14. Don't restart Tomcat7 before the end of Phase 5 !!!!

7 Phase 5 – Configure a Shibboleth SP to use the "isMemberOf" attribute

1. Install and Configure a Shibboleth SP (`sp-test-grouper.example.com`) and exchange its metadata with Grouper AA and Federation.
2. Modify the "**shibboleth2.xml**" by adding this AttributeResolver:

```
<!-- Use a SAML query if no attributes are supplied during SSO. -->
<AttributeResolver type="Query" subjectMatch="true"/>
   <AttributeResolver type="SimpleAggregation" attributeId="eppn"
                 format="urn:oasis:names:tc:SAML:2.0:nameid-format:unspecified">
   <Entity>https://grouper.fqdn.example.com/idp/shibboleth</Entity>
</AttributeResolver>
```

3. Edit the "**attribute-map.xml**" to resolve the new attribute "**isMemberOf**":

```
<Attribute name="urn:oid:1.2.840.113556.1.666.1" id="isMemberOf"/>
```

4. Restart the "**shibd**" service:
   - `service shibd restart`
5. Restart Tomcat7 on Grouper machine
6. Configure the Federation's IdPs to release the "**eduPersonPrincipalName**" of their users to the Grouper Application/SP.

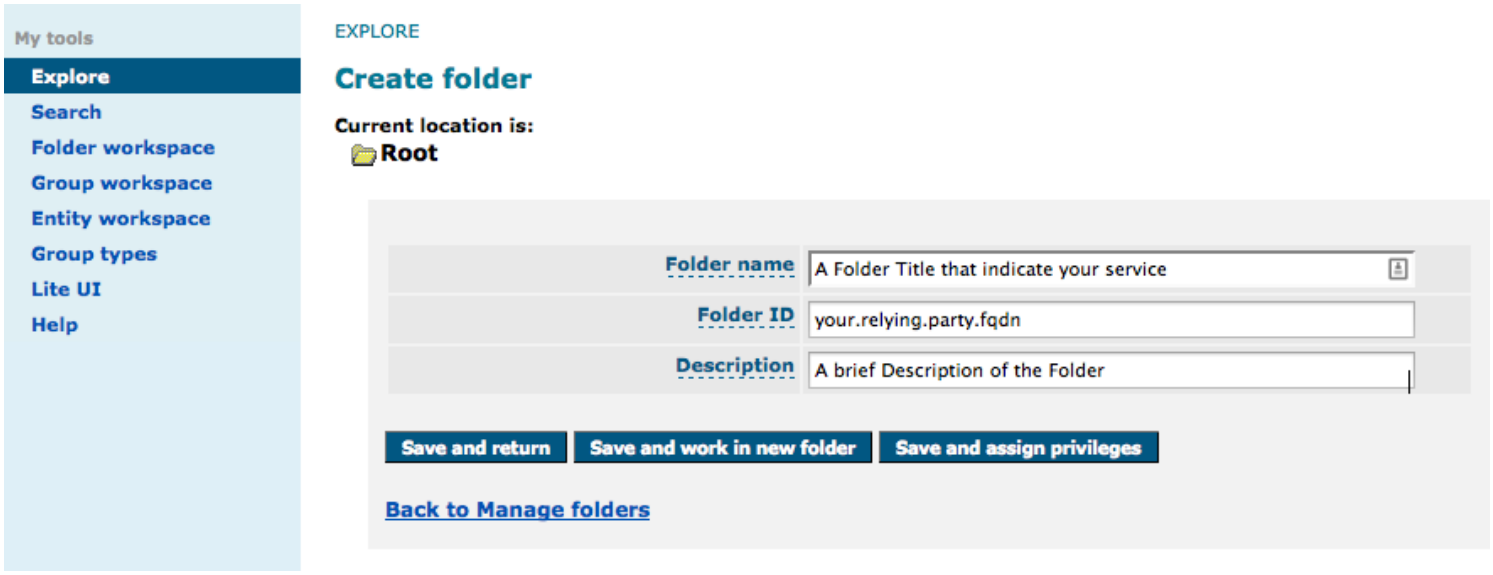
NOTES:

The Federation's IDPs must know, by metadata exchange, the Grouper SP and the other SPs.

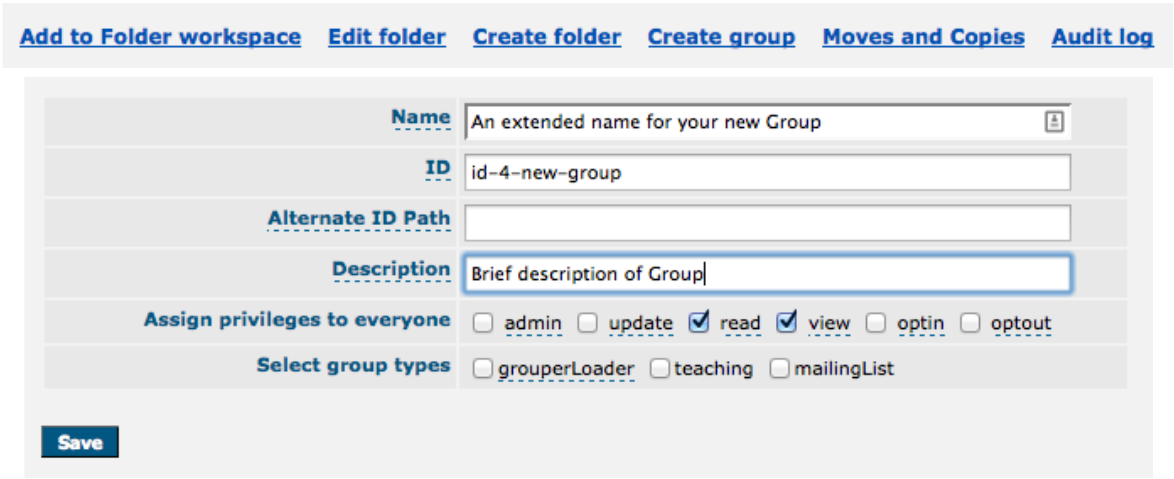
The Federation's Sps must know, by metadata exchange, the Grouper AA and the other IdPs.

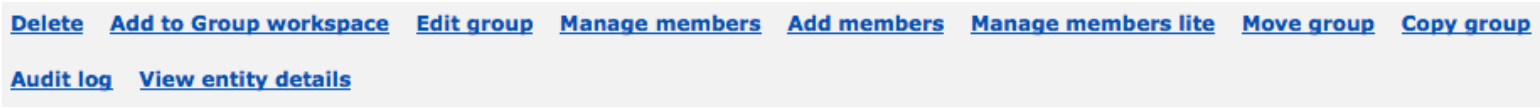
8 Phase 6 – Configure Grouper to release the "isMemberOf" attribute to a Service Provider

1. Open **https://#YOUR.GROUPER.FQDN#/grouper** and, working as Admin:
   - Create a new Folder that have as FolderID the FQDN of the SP to which Grouper will give the *isMemberOf* attribute:



   - Create a new group into that folder and add a member (you) by searching your surname:





This permits to Grouper to release the **isMemberOf** attribute to the **your.relying.party.fqdn**.

2. Try to login on a simple application protected by the SP for which you have created a directory into Grouper and see if the attribute "**isMemberOf**" is release by checking the **/Shibboleth.sso/Session** page of your SP.