



# HOWTO Install and Configure Grouper 2.2.1 on Ubuntu Linux 12.04

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# 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 add the attribute “isMemberOf” and retrieve eduPersonEntitlement from Grouper.

# 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). 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 git`

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/2.2.1/grouper.installer-2.2.1.tar.gz`
   - `tar xzvf grouper.installer-2.2.1.tar.gz`
   - `mv grouper.installer-2.2.1 /opt/grouper`

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

3. Answer to the questions as follows:

```
- Do you want to 'install' a new installation of grouper, or 'upgrade' an existing installation
(enter: 'install' or 'upgrade' or blank for the default) [install]: install

- Enter in the Grouper install directory (note: better if no spaces or special chars) [/opt/grouper]:
/opt/grouper

- Enter the default IP address for checking ports (just hit enter to accept the default unless on a ma-
chine 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

nov 17, 2014 10:06:59 AM edu.internet2.middleware.grouperInstaller.util.GiDbUtils rollbackQuietly

GRAVE: Problem rolling back

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

        at com.mysql.jdbc.SQLError.createSQLException(SQLError.java:888)

        at com.mysql.jdbc.Connection.rollback(Connection.java:5257)

        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(GrouperIn-
staller.java:4546)

        at edu.internet2.middleware.grouperInstaller.GrouperInstaller.mainInstallLogic(GrouperInstaller.-
java:3102)

                                                                                                    at
edu.internet2.middleware.grouperInstaller.GrouperInstaller.mainLogic(GrouperInstaller.java:849)

        at edu.internet2.middleware.grouperInstaller.GrouperInstaller.main(GrouperInstaller.java:207)


It is enough that this message appears on the last line ”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
- The tomcat HTTP port is in use or unavailable: 8080, do you want to pick different ports? (t|f): f
- Do you want to set URIEncoding to UTF-8 in tomcat server.xml <Connector> elements (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 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-user-
s.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
- The Grouper WS has been built in the past, do you want it rebuilt? (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/`

   (As username use "**GrouperSystem**", as password use "**###GROUPER-PASSWORD###**")

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

6. Edit the **/etc/default/tomcat7** file by adding this JAVA_OPTS line under the default ones:

```
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-2.2.1/grouper-ws/build/dist/grouper-
ws" path="/grouper-ws" reloadable="false"/>
      <Context docBase="/opt/grouper/grouper.ui-2.2.1/dist/grouper" path="/grouper"
reloadable="false"/>
                  ...other things...
</Host>
```

9. Replace "**$**" with "**#**" on the value "*${uiException.class.simpleName}*" into **/opt/grouper/grouper.ui-2.2.1/dist/grouper/WEB-INF/jsp/dynamicTile.jsp** file.

10. 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/*`

11. 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`

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

13. Test the correct execution of Grouper into the default environment by opening the web page:
    `http://`**`###YOUR.GROUPER.FQDN###`**`:8080/grouper/`
    (As username use "**GrouperSystem**", as password use "**###GROUPER-PASSWORD###**")

# 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 for grouper application, protect it with SSL/HTTPS certificate 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.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.conf**" 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.conf ; 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-2.2.1/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 informations for the user to be inserted in Grouper, are as
follows:"

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-2.2.1
./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 --user=grouperdb --password=###DB-PASSWORD### --database=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** and to **addMemberToSysAdmin.sh**:
   - `chmod +x /root/addSubject.sh /root/addMemberToSysAdmin.sh`

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

6. Modify the callLogin path from "**login.do**" to "**home.do**" into "**structs-config.xml**" file:
   - `vim /opt/grouper/grouper.ui-2.2.1/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. Modify the **grouper.properties** to be able to edit the system groups by adding the following lines:
   - `vim /opt/grouper/grouper.ui-2.2.1/dist/grouper/WEB-INF/classes/grouper.properties:`

```
#if groups like the wheel group should be auto-created for convenience (note: check
config needs to be on)
configuration.autocreate.system.groups = true


# A wheel group allows you to enable non-GrouperSystem subjects to act
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 /root/addMemberToSysAdmin.sh`

10. Test the correct execution of Grouper on HTTPS by opening the web page:
    `https://`**`###YOUR.GROUPER.FQDN###`**`/grouper/`
    (And log-in into the grouper application with an IdP that releases the eppn of the user inserted with addSubject.sh script)

# 5 Phase 3 – Install the Grouper VOOT Connector

## 5.1 Prepare the environment

1. Download the code of Grouper VOOT Connector into **/usr/local/src**:
   - `cd /usr/local/src`
   - `wget http://software.internet2.edu/grouper/release/2.2.1/grouper.vootBinary-2.2.1.tar.gz`
   - `tar zxf grouper.vootBinary-2.2.1.tar.gz`

2. Extract and copy the **grouperVoot.jar** into the right position:
   - `cp /usr/local/src/grouperVoot.binary-2.2.1/grouperVoot.jar /opt/grouper/grouper.ws-2.2.1/grouper-ws/build/dist/grouper-ws/WEB-INF/lib/grouperVoot.jar`

3. Modify the **sources.xml** by removing every "`^M`" character:
   - `dos2unix /opt/grouper/grouper.ws-2.2.1/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>
```

4. Setup the Grouper **web.xml:**
   - `vim /opt/grouper/grouper.ws-2.2.1/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>
```

5. 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 https://shibboleth.net/downloads/identity-provider/latest/shibboleth-identityprovider-2.4.3-bin.tar.gz`
2. Install the IdP on the Grouper VM into **/opt/shibboleth-idp** directory:
   - `tar zxf shibboleth-identityprovider-2.4.3-bin.tar.gz`
   - `export JAVA_HOME="/usr/lib/jvm/java-7-oracle"`
   - `cd /usr/local/src/shibboleth-identityprovider-2.4.0 ; sh install.sh`
3. 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`
4. 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" />
```

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

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

6. 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>
```

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

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

8. 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`
9. Restart the Tomcat7 and Apache2 service:
   - `service tomcat7 restart`
   - `service apache2 restart`
10. Configure the IdP to retrieve the federation's metadata that contain the Grouper SP Metadata
11. Modify the "**attribute-resolver.xml**" on grouper machine by adding:
    - A new DataConnector:

```
<!-- Grouper Database connector -->
    <resolver:DataConnector xsi:type="RelationalDatabase" xmlns="urn:mace:shibbo-
leth: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 DISTINCT REPLACE(GROUP_NAME, CONCAT(SUBSTRING_INDEX(SUB-
STRING_INDEX('$requestContext.getPeerEntityId()', '//', -1), '/', 1), ':'), '') AS
GROUP_NAME
                FROM grouper_memberships_lw_v
                WHERE subject_id = '$requestContext.principalName'
                  AND GROUP_NAME LIKE CONCAT(SUBSTRING_INDEX(SUBSTRING_INDEX('$re-
questContext.getPeerEntityId()', '//', -1), '/', 1), '%')
                  AND list_name = 'members'
                  AND GROUP_NAME NOT LIKE '%:service:%'
          ]]>
        </QueryTemplate>
```

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

    <resolver:DataConnector xsi:type="RelationalDatabase" xmlns="urn:mace:shibbo-
leth:2.0:resolver:dc" id="grouperServices">
        <ApplicationManagedConnection jdbcDriver="com.mysql.jdbc.Driver"
                                      jdbcURL="jdbc:mysql://localhost:3306/grouper"
                                      jdbcUserName="grouperdb"
                                      jdbcPassword="geantdbpassword" />

        <QueryTemplate>
          <![CDATA[
                SELECT DISTINCT CONCAT('urn:mace:garr.it:',
REPLACE(REPLACE(GROUP_NAME, ':service:authorized', ''), CONCAT(SUBSTRING_INDEX(SUB-
STRING_INDEX('$requestContext.getPeerEntityId()', '//', -1), '/', 1), ':'), '')) AS
GROUP_NAME
                FROM grouper_memberships_lw_v
                WHERE subject_id = '$requestContext.principalName'
                  AND GROUP_NAME LIKE CONCAT(SUBSTRING_INDEX(SUBSTRING_INDEX('$re-
questContext.getPeerEntityId()', '//', -1), '/', 1), '%')
                  AND list_name = 'members'
                  AND GROUP_NAME LIKE '%:service:authorized'
          ]]>
        </QueryTemplate>

        <Column columnName="GROUP_NAME" attributeID="eduPersonEntitlement"
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>


<!-- AttributeDefinition for "eduPersonEntitlement" attribute -->
    <resolver:AttributeDefinition id="eduPersonEntitlement" xsi:type="ad:Simple"
sourceAttributeID="eduPersonEntitlement">
        <resolver:Dependency ref="grouperServices" />
        <resolver:DisplayName xml:lang="en">Grouper authorized
services</resolver:DisplayName>
        <resolver:DisplayName xml:lang="it">Servizi autorizzati da Grouper</re-
solver:DisplayName>
        <resolver:DisplayDescription xml:lang="en">List of authorized services re-
trieved from Grouper</resolver:DisplayDescription>
        <resolver:DisplayDescription xml:lang="it">Elenco dei servizi autorizzati
```

```
ottenuti da Grouper</resolver:DisplayDescription>
        <resolver:AttributeEncoder xsi:type="enc:SAML1String" name="urn:mace:dir:at-
tribute-def:eduPersonEntitlement" />
        <resolver:AttributeEncoder xsi:type="enc:SAML2String"
name="urn:oid:1.3.6.1.4.1.5923.1.1.1.7" friendlyName="eduPersonEntitlement" />
    </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"/>
```

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

```
    <!--  Release the transient ID to anyone →
    <afp:AttributeFilterPolicy id="releaseTransientIdToAnyone">
        <afp:PolicyRequirementRule xsi:type="basic:ANY"/>

        <afp:AttributeRule attributeID="transientId">
            <afp:PermitValueRule xsi:type="basic:ANY"/>
        </afp:AttributeRule>


        <afp:AttributeRule attributeID="isMemberOf">
           <afp:PermitValueRule xsi:type="basic:ANY"/>
        </afp:AttributeRule>


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

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

# 7 Phase 5 – Configure a Shibboleth SP to use the "isMemberOf" attribute and eduPersonEntitlement from Grouper AA

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.example.it/idp/shibboleth</Entity>
</AttributeResolver>
```

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

```
<Attribute name="urn:mace:dir:attribute-def:eduPersonEntitlement"
id="entitlement" />

<Attribute name="urn:oid:1.3.6.1.4.1.5923.1.1.1.7" id="entitlement" />
...
<Attribute name="urn:oid:1.2.840.113556.1.666.1" id="isMemberOf"/>
```

4. Configure the policy of the SP to retrieve "**isMemberOf**" and "**eduPersonEntitlement**" attributes:

```
...
        <!-- Require isMemberOf and eduPersonEntitlement to be released only by
Grouper AA -->
        <afp:AttributeRule attributeID="isMemberOf">
                <afp:PermitValueRule xsi:type="basic:AttributeIssuerString"
value="https://grouper.example.it/idp/shibboleth" />
        </afp:AttributeRule>
        <afp:AttributeRule attributeID="eduPersonEntitlement">
                <afp:PermitValueRule xsi:type="basic:AttributeIssuerString"
value="https://grouper.example.it/idp/shibboleth" />
        </afp:AttributeRule>

        <!-- Catch-all that passes everything else through unmolested. -->
        <afp:AttributeRule attributeID="*">
...
```

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

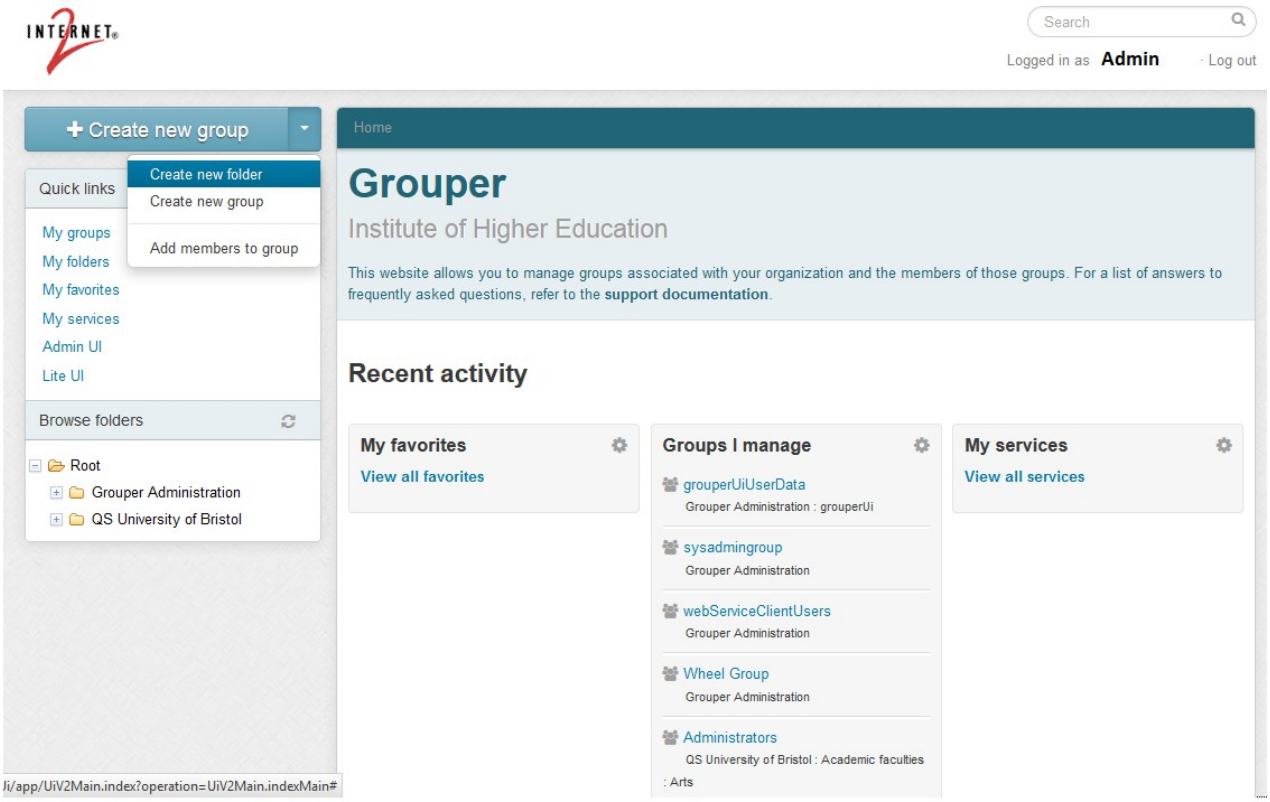
**NOTES:**

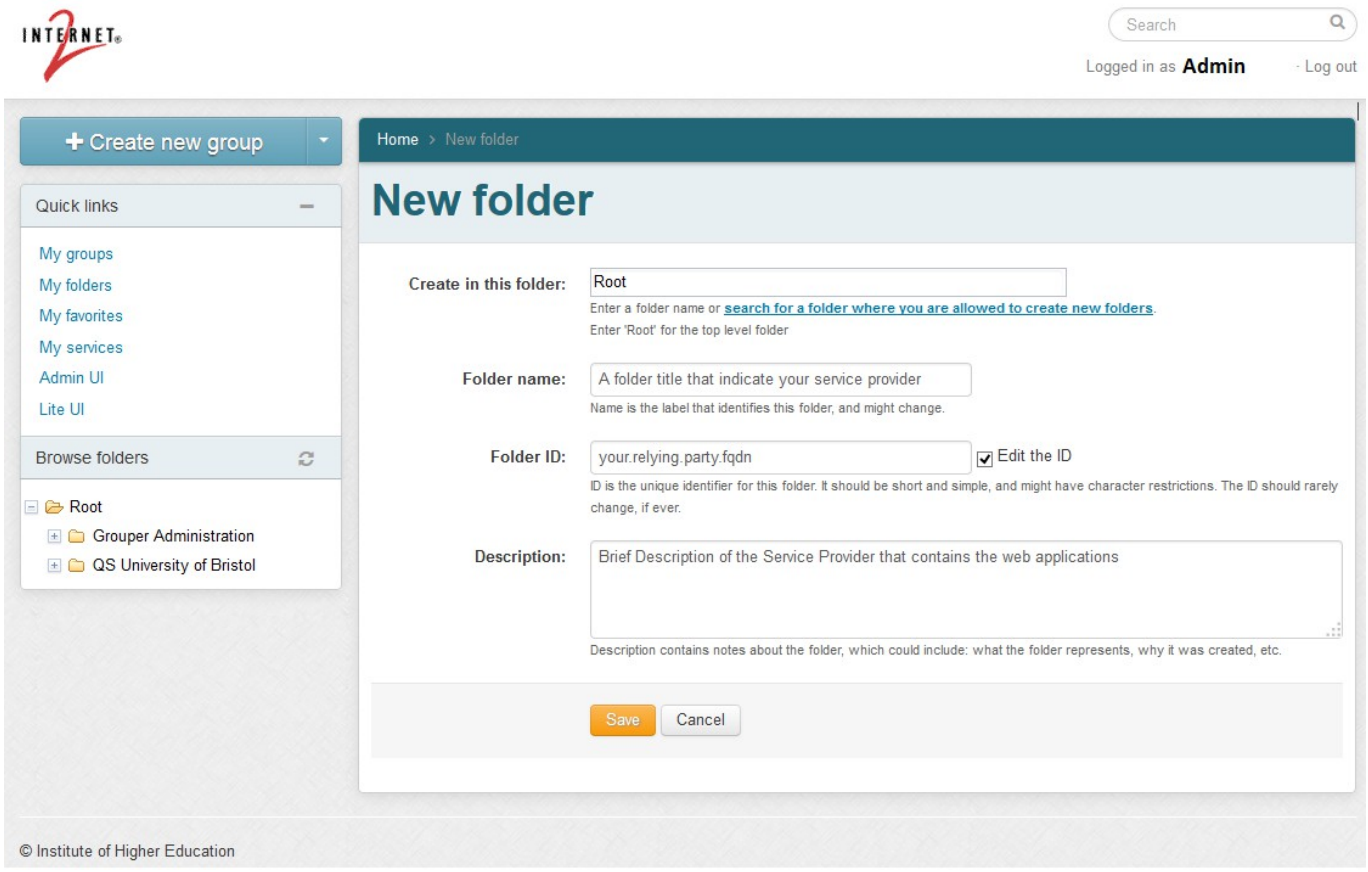
The Federation's IDPs must know, by metadata exchange, the Grouper SP and the other SPs.

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" and "eduPersonEntitlement" attributes to a Service Provider

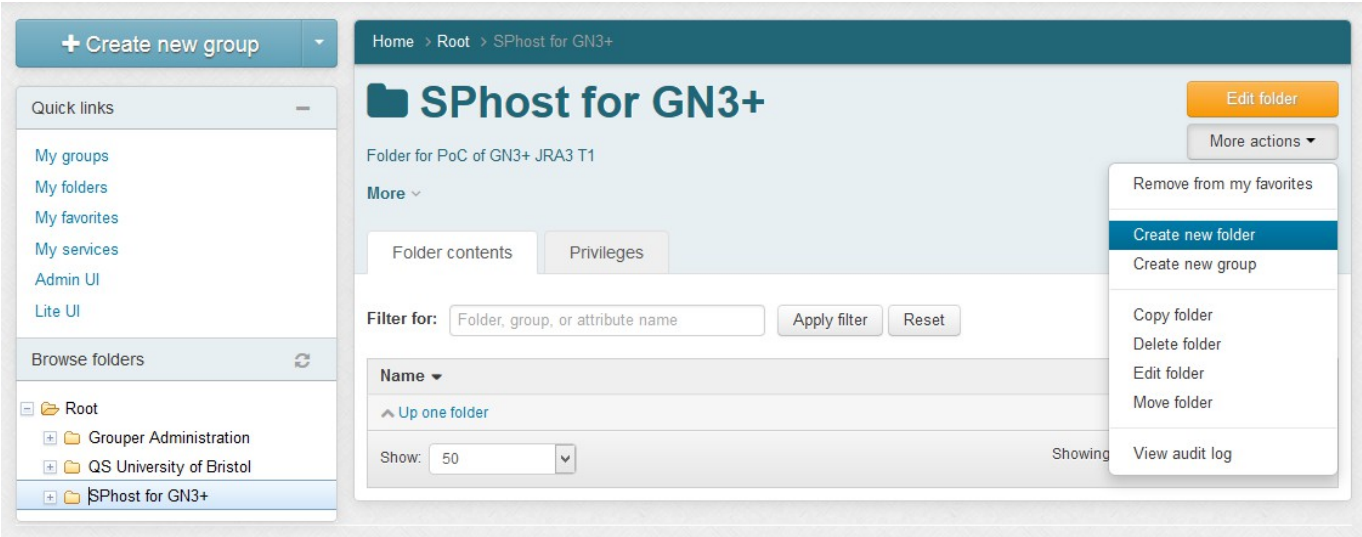
1. Open **https://#YOUR.GROUPER.FQDN#/grouper** and, working as Admin:
   - Create a new folder that has as FolderID the FQDN of the SP to which Grouper will provide the *isMemberOf* attribute and the *eduPersonEntitlement* attribute:

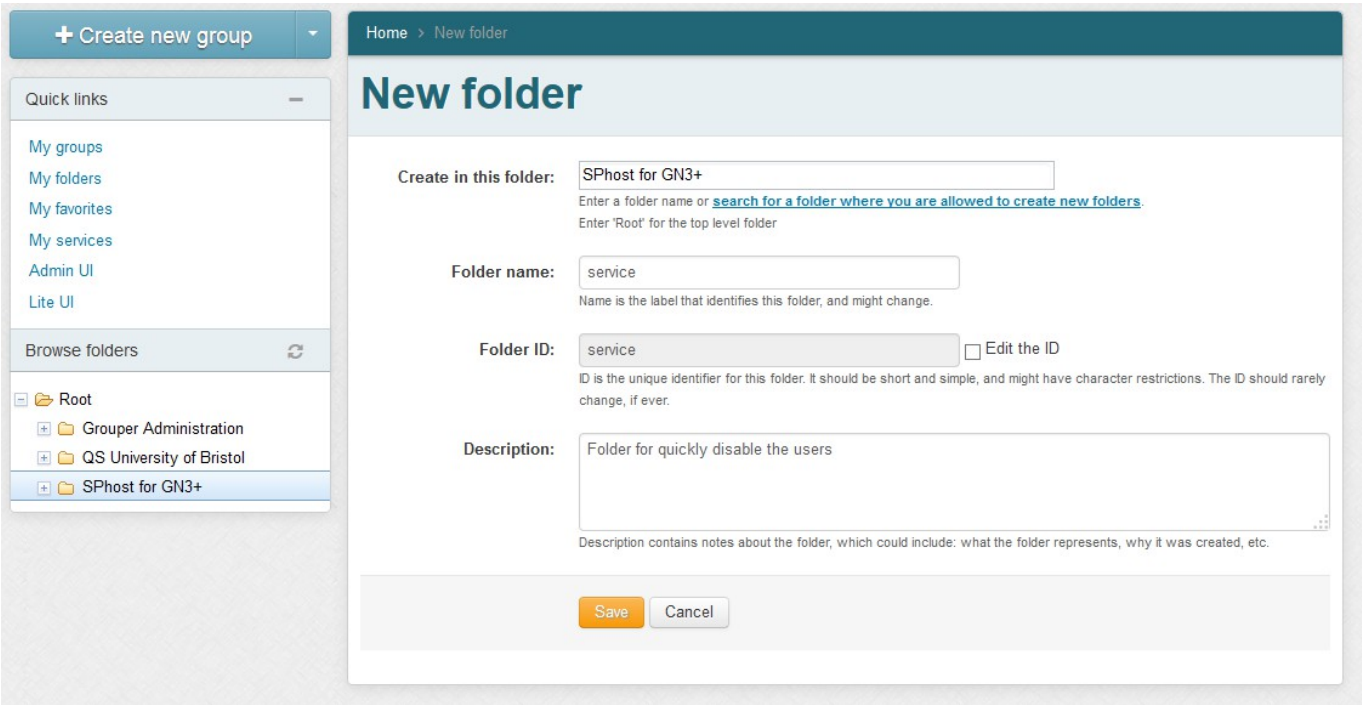




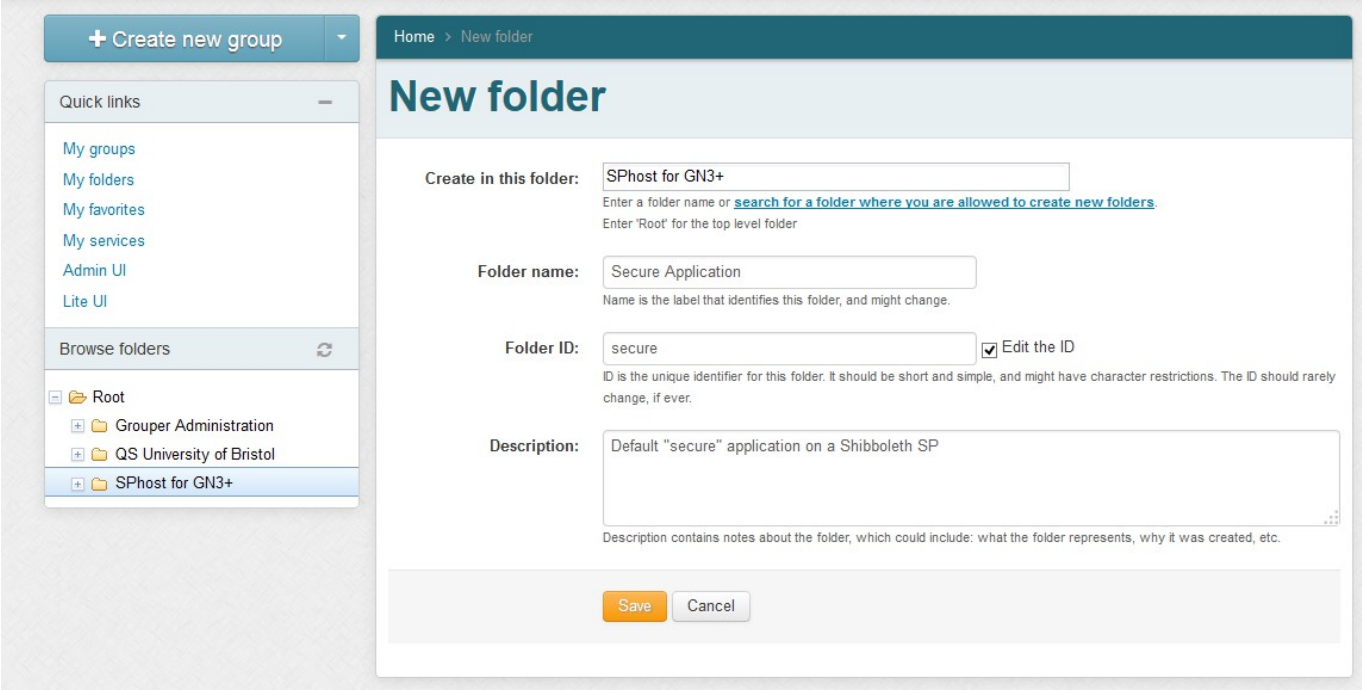

- Refresh the web page to update the visible folders.

- Move on the new folder and create another two folder
  - One, called "**service**", that will be useful to quickly disable the users:

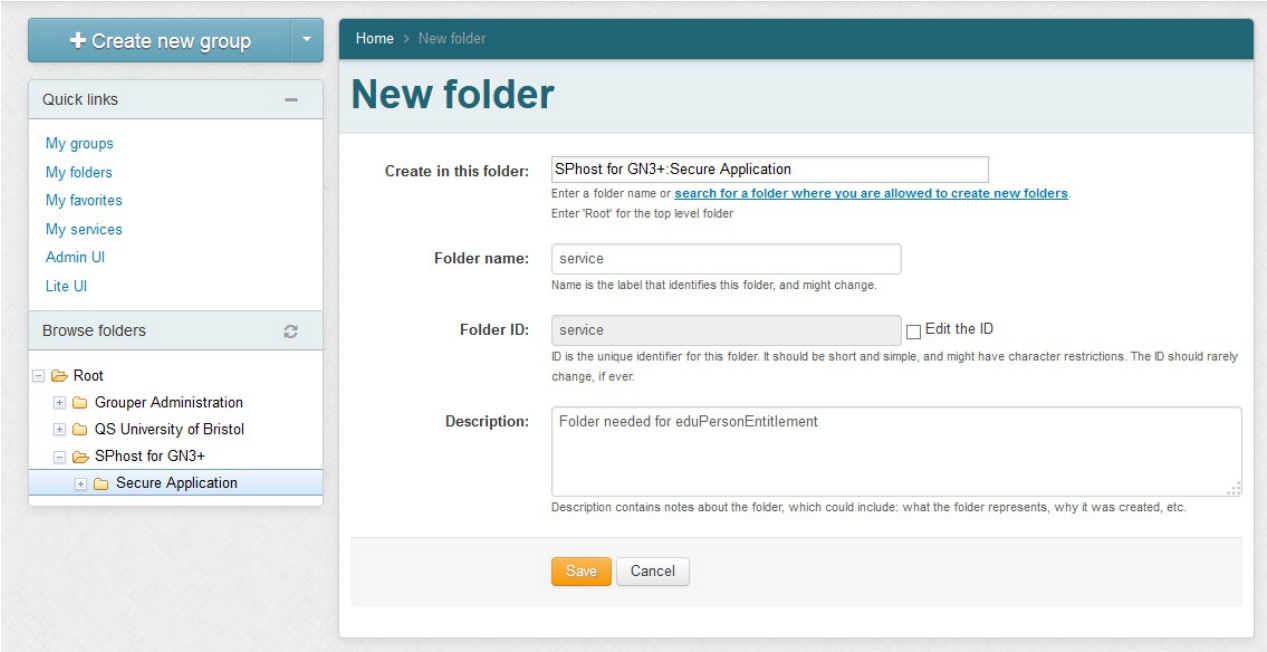


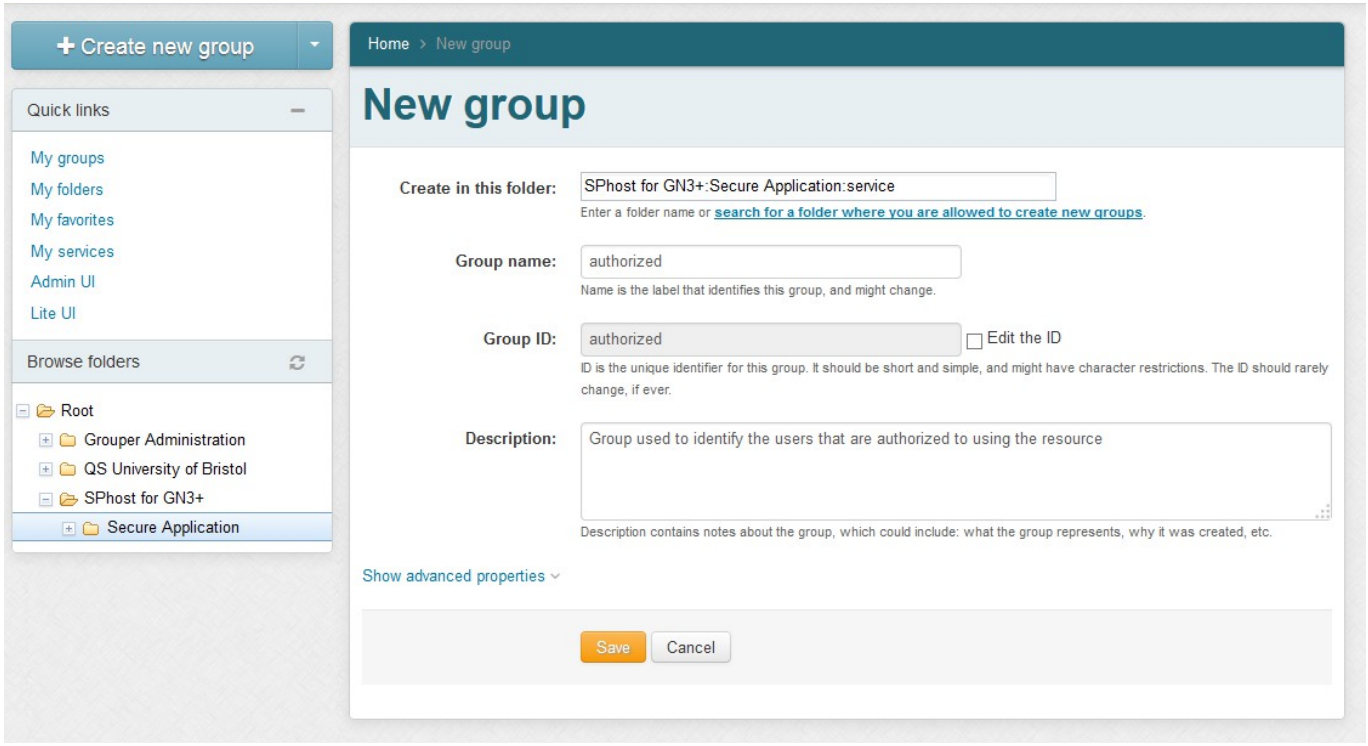
- One, called "**secure**", for Secure Application:

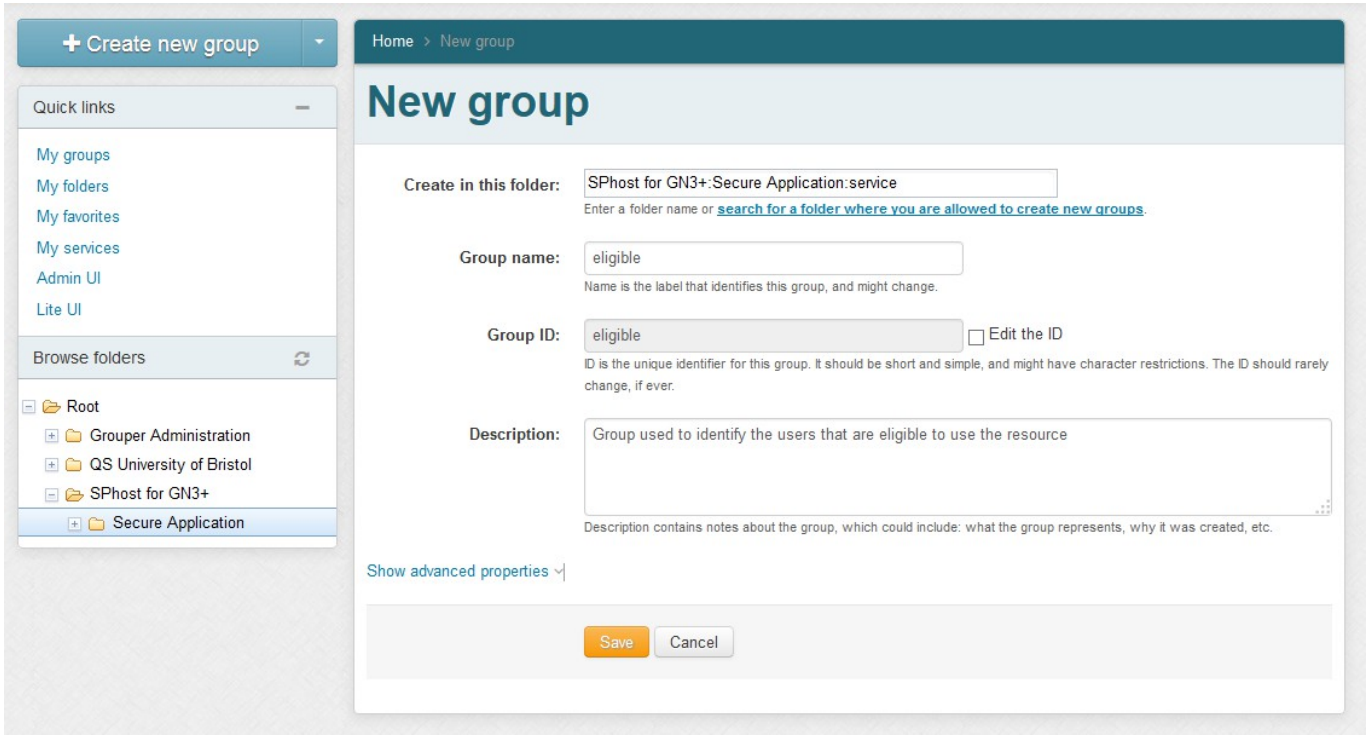


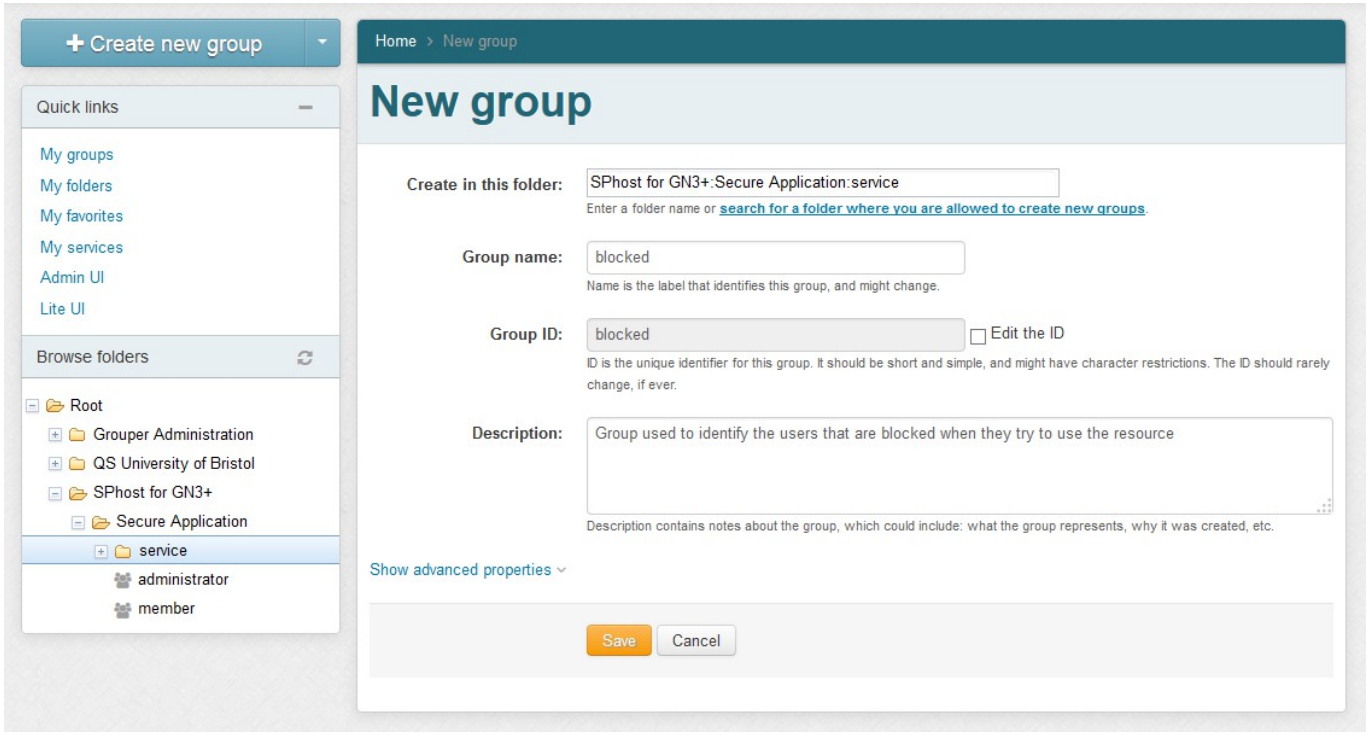

- Create another new folder called "**service**" into the "*secure*" folder:



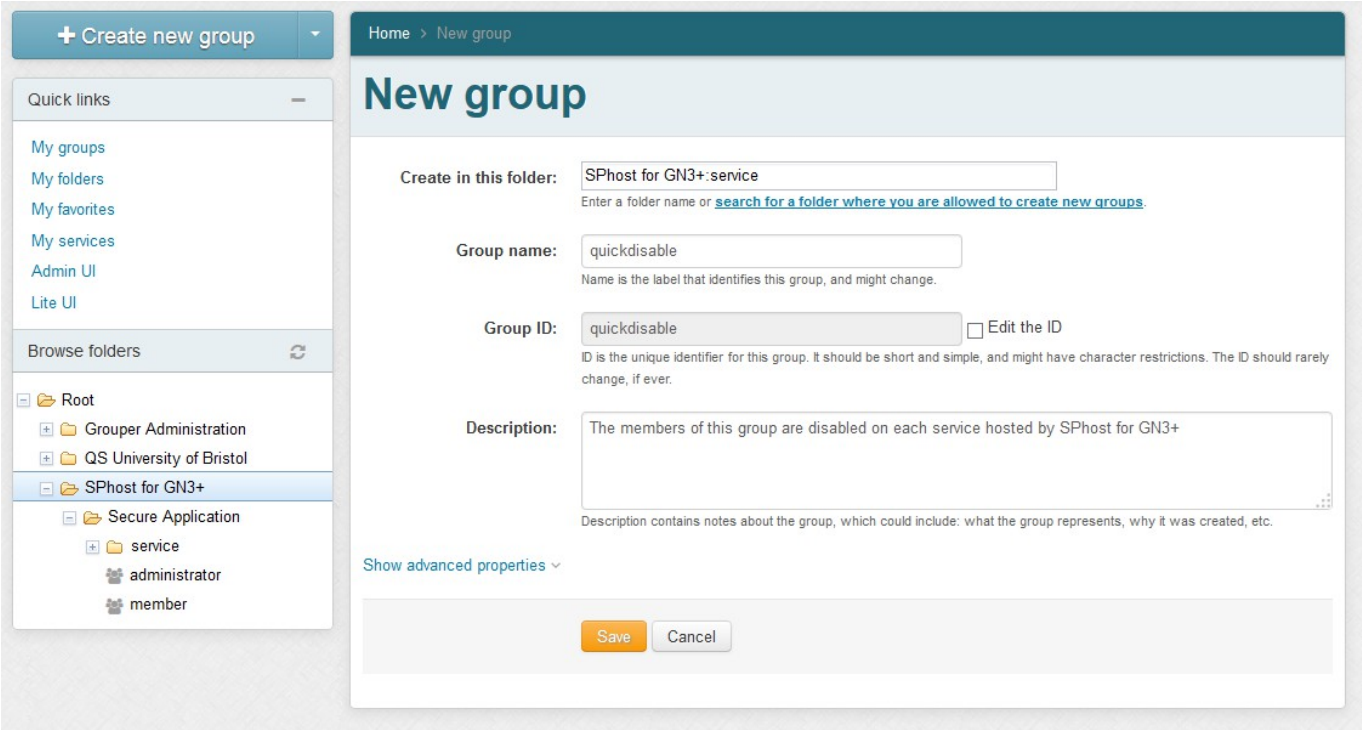
- Create 3 new groups into the "**service**" folder:
  - *authorized*
  - *blocked*
  - *eligible*



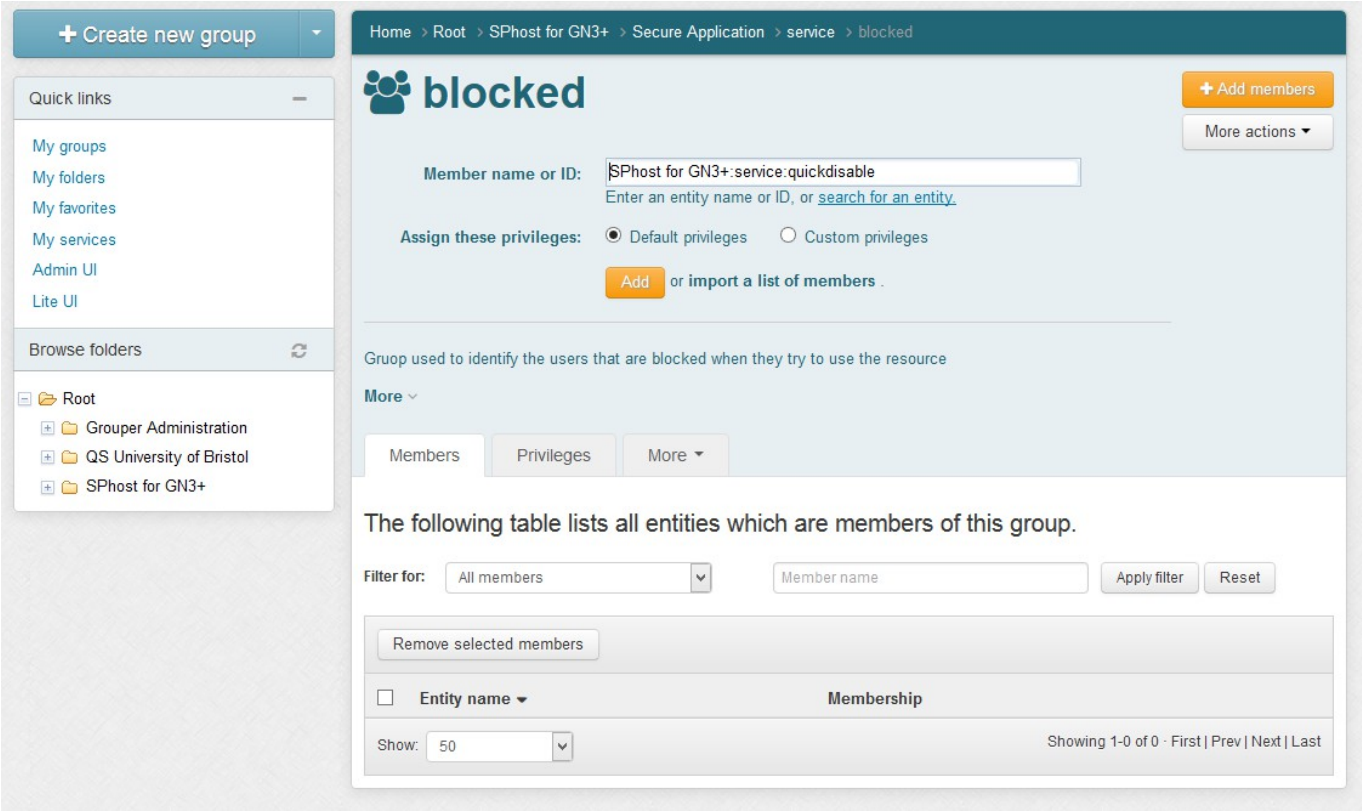




+ Create new group
Quick links
My groups
My folders
My favorites
My services
Admin UI
Lite UI
Browse folders
Root
Grouper Administration
QS University of Bristol
SPhost for GN3+
Secure Application
service
administrator
member
Home > New group
New group
Create in this folder:
SPhost for GN3+:Secure Application:service
Enter a folder name or search for a folder where you are allowed to create new groups.
Group name:
blocked
Name is the label that identifies this group, and might change.
Group ID:
blocked
Edit the ID
ID is the unique identifier for this group. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.
Description:
Group used to identify the users that are blocked when they try to use the resource
Description contains notes about the group, which could include: what the group represents, why it was created, etc.
Show advanced properties
Save
Cancel

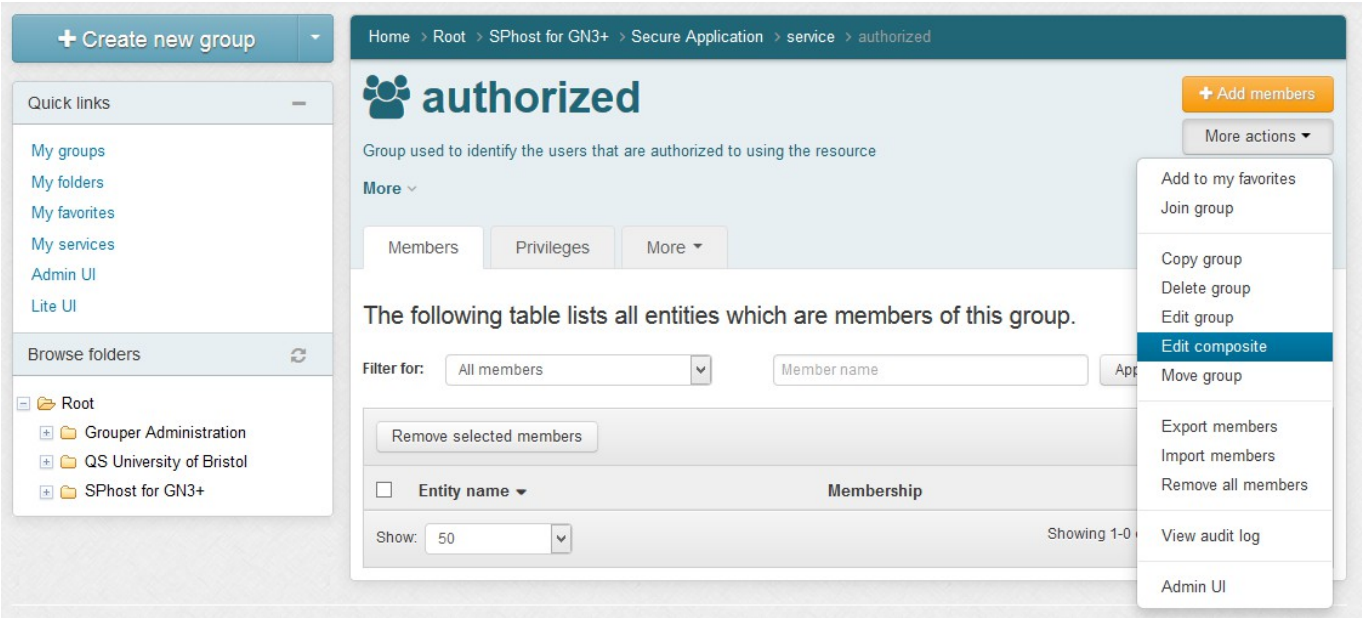
- Create a new group called "**quickdisable**", in the folder "*secure*" of Sphost, that will contain all the users blocked on all services hosted by the SPhost relying party:

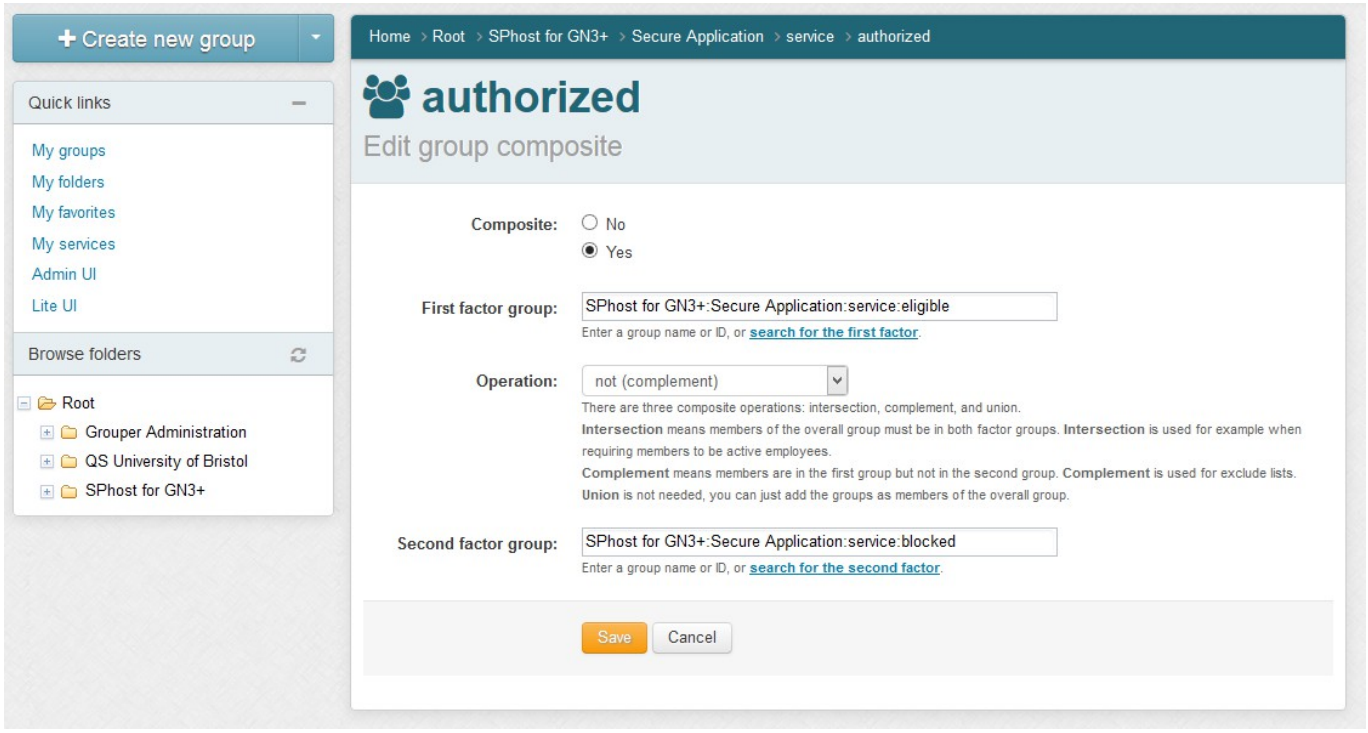



- Add the "**quickdisable**" group to the "**blocked**" group of the Secure Application:

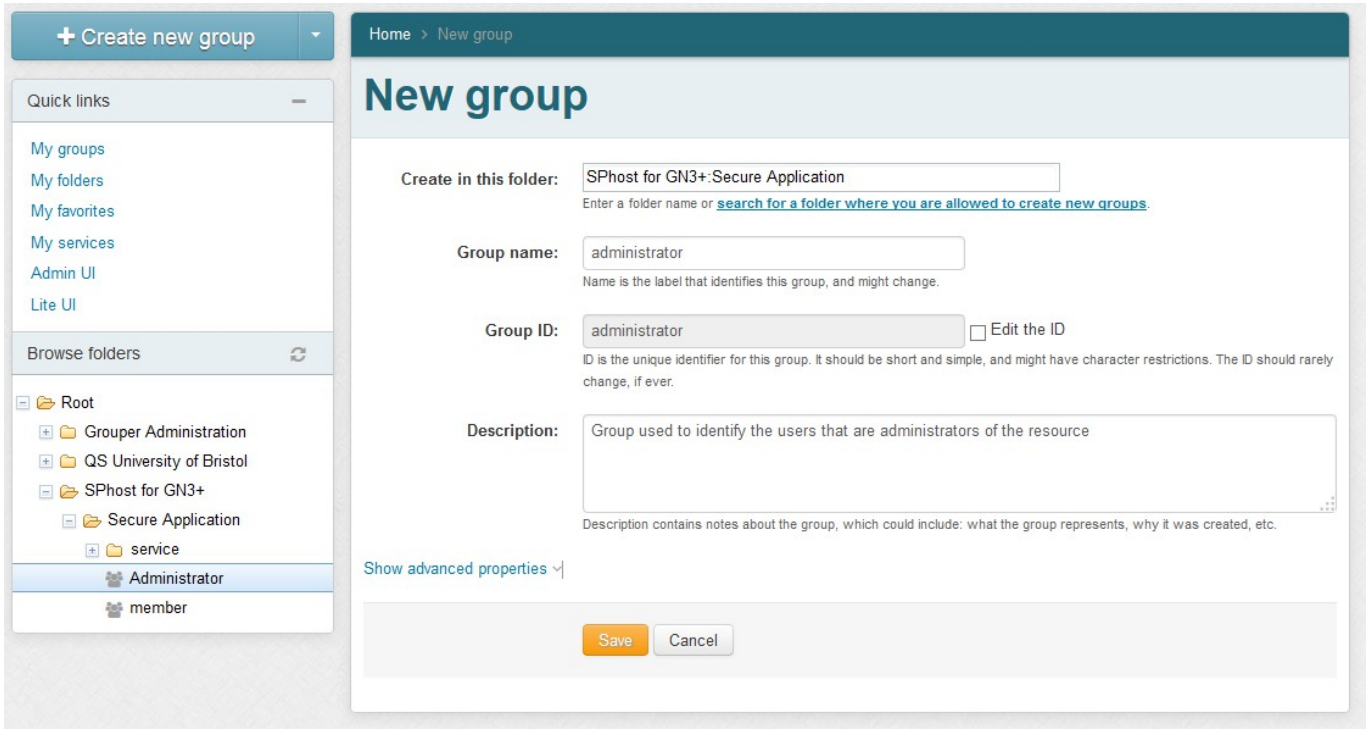


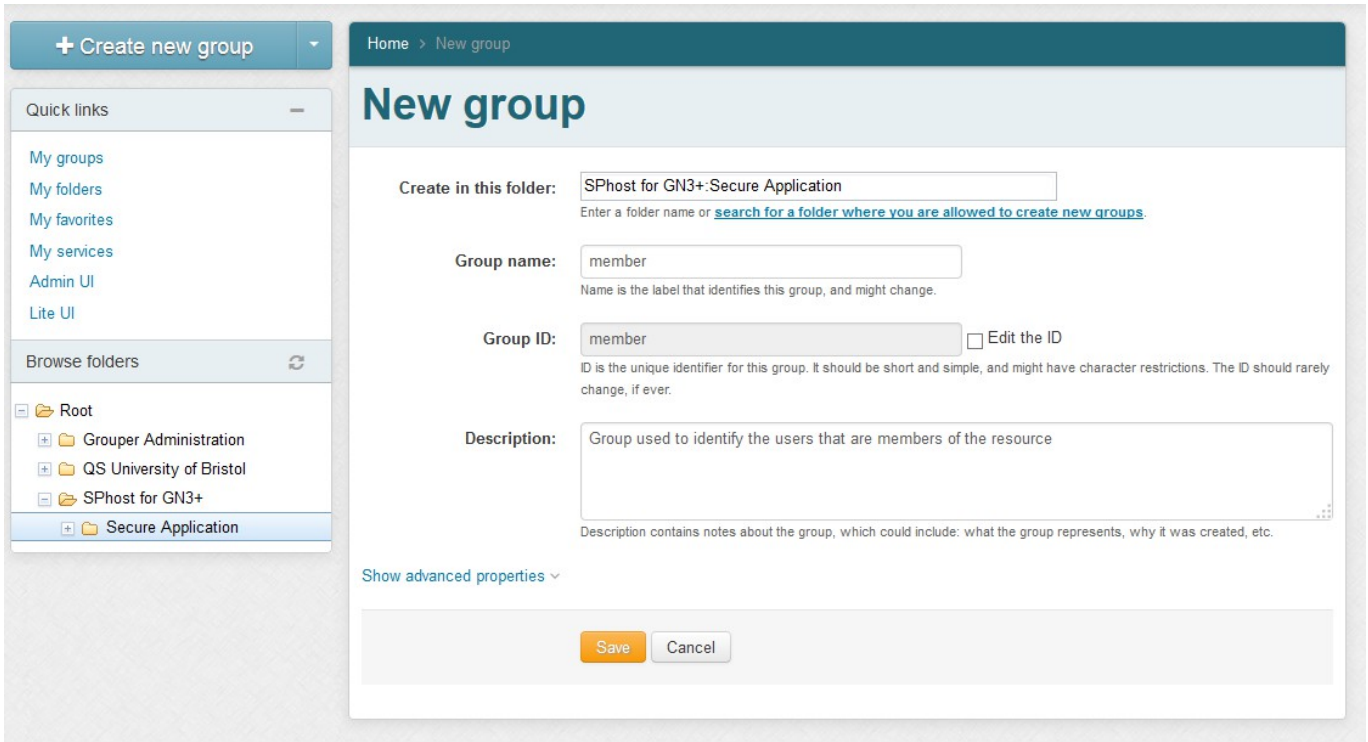
- Make the "**authorized**" group a composite group that involves "**eligible**" and "**blocked**" groups:

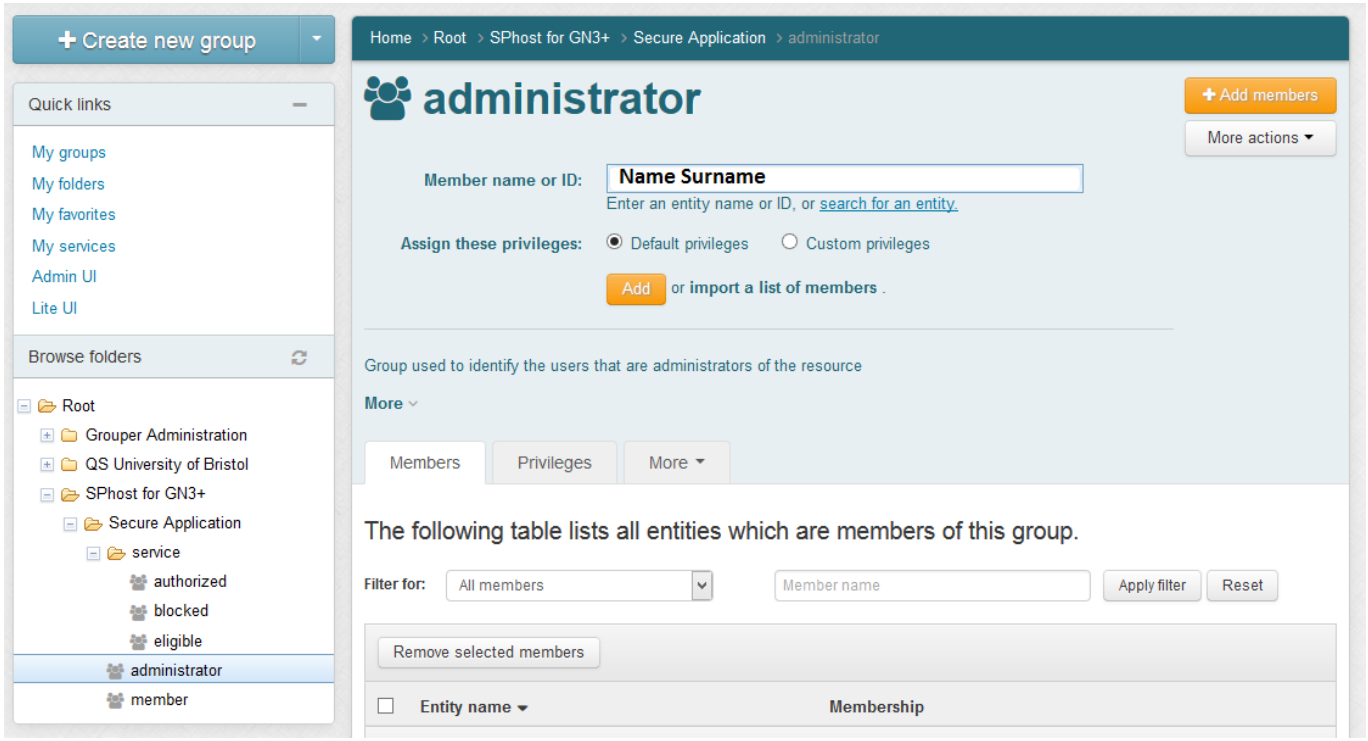


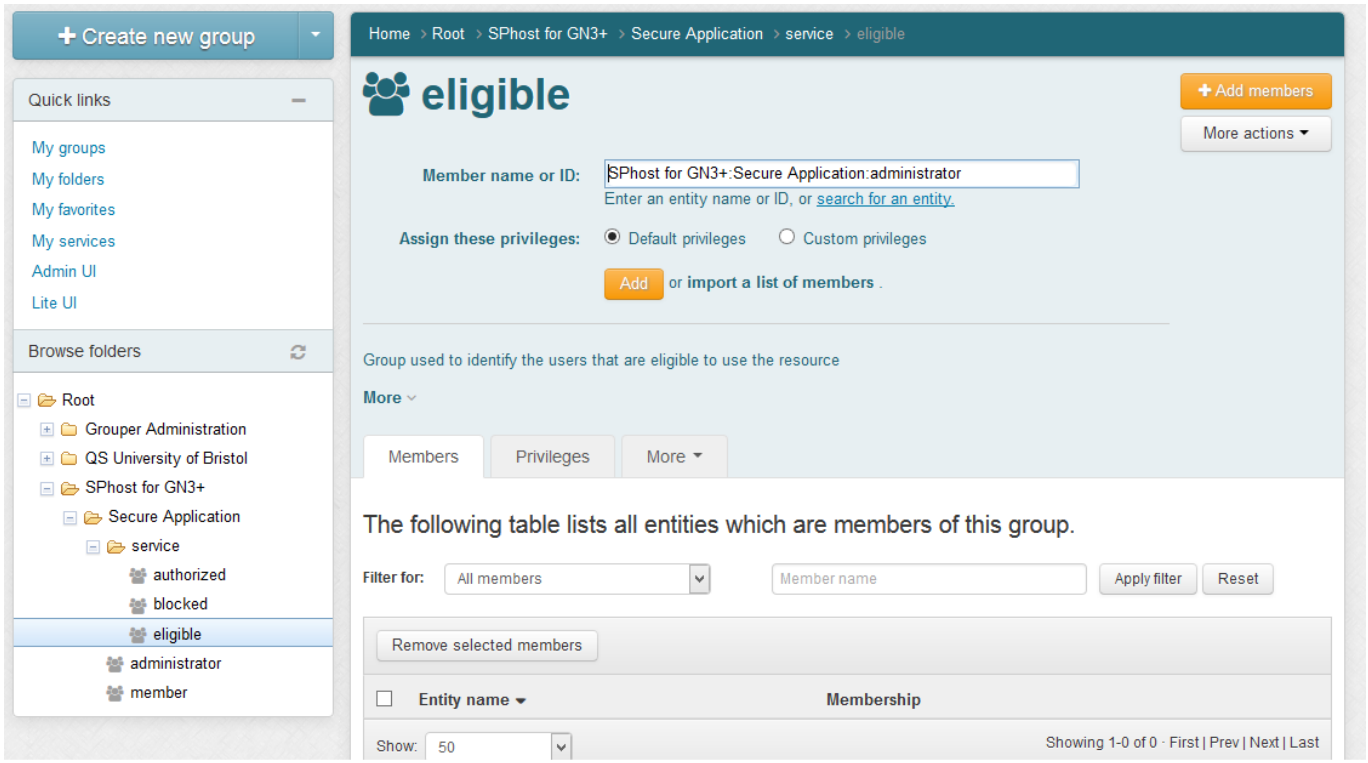
- Create the following new groups into the "**secure**" folder and **add** members by searching their surname:
  - *administrator*
  - *member*

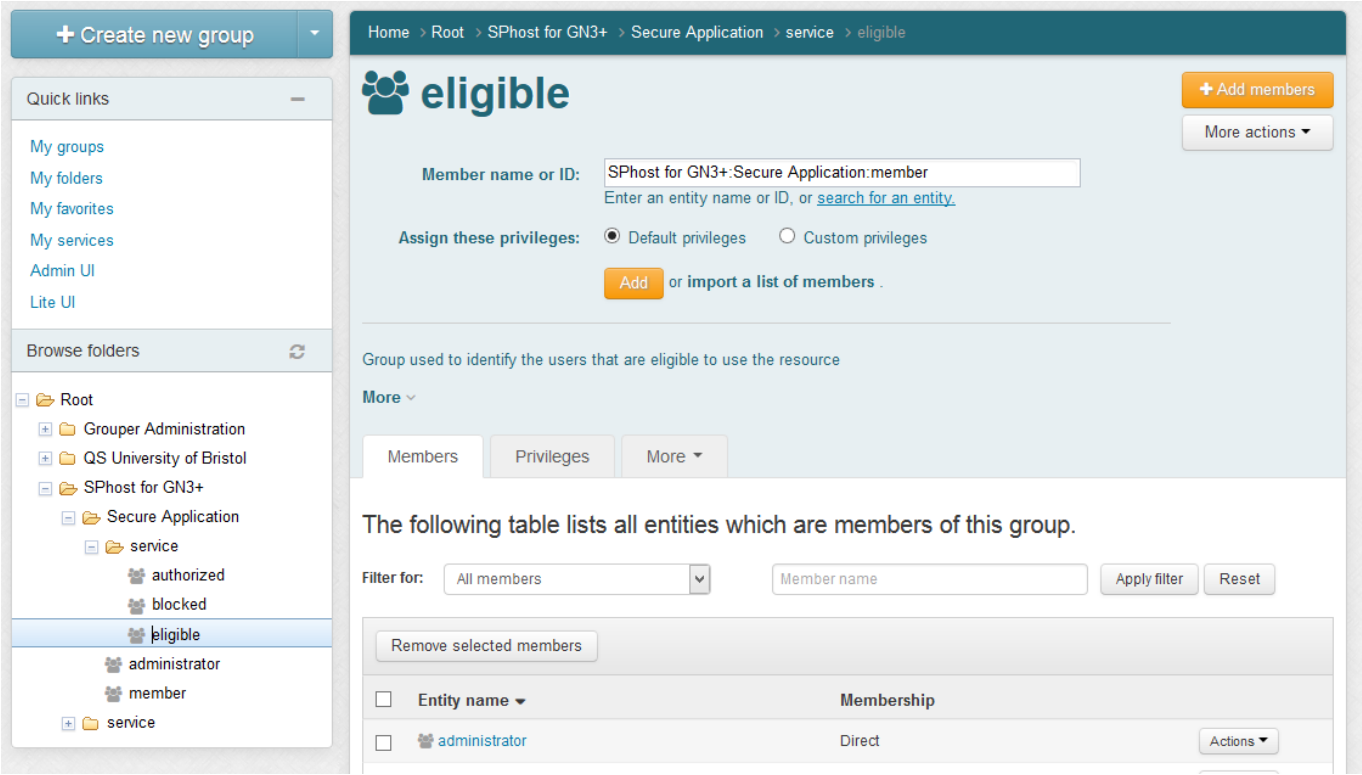





- Add the "**administrator**" and "**member**" group as member of the "**eligible**" group created into "**service**" folder of *Secure Application*:






- Finally add members to the "*administrator*" or "*member*" group created.
  This permits to Grouper to release the **isMemberOf** attribute and the **eduPersonEntitlement** attribute of the subjects added for your **"secure"** service on Grouper application.

2. Try to log-in on a simple application protected by the SP for which you have created a folder into Grouper and see if the attributes "**isMemberOf**" and **"eduPersonEntitlement"** are released by checking the **/Shibboleth.sso/Session** page of your SP.

entitlement = urn:mace:garr.it:secure
...
...
isMemberOf = secure:administrator

*Attribute = Value*