SPECCHIO V3 Installation

Prerequisites

- MySQL, including JDBC driver
- SPECCHIO V3 code base
  - the development version is available via Subversion from `svn+ssh://svn@scm.geo.uzh.ch/projects/specchio/SPECCHIO`
  - ready-to-install test releases are available via Git from `https://github.com/IntersectAustralia/dc10/tree/master/specchio-web`
  - the development team can also export ready-to-run client "jar" files and server "war" files using Eclipse
- jOAI, available from `http://www.dlese.org/dds/services/joai_software.jsp`

Initialising the SPECCHIO Database

The following instructions require MySQL Workbench. It should be possible to perform the installation using other MySQL clients (e.g. the text-based one distributed with MySQL itself), but we have not tested these.
The following instructions assume that entries for the target database server exist in both the **SQL Development** and **Server Administration** lists of MySQL Workbench's home page. If they do not exist, use the **New Connection** and **New Server Instance** links, respectively, to create them. The SQL Development connection must log in as the root user.

1. If re-installing over an existing database, delete any existing database and users.
   a. Open a connection to the target server by double-clicking its entry under **SQL Development**.
   b. Right-click on `specchio` on the "Schemas" panel, then **Drop Schema...**
   c. Right-click on `specchio_temp` on the "Schemas" panel, then **Drop Schema...**
   d. Go to **Server Administration** for the target server.
   e. Select **Users and Privileges** from the left-hand navigation panel.
   f. Remove any existing `sdb_admin` user, as well as any other users created by the previous instance of SPECCHIO. Do not delete the root user!
2. Install the SPECCHIO V3.0 database schema definition
   a. Go to **Server Administration** for the target server.
   b. Select **Data Import/Restore** from the left-hand navigation panel.
   c. Check **Import from Self-Contained File.**
   d. Set **File Path** to the `SPECCHIO_V3.0.sql` file.
   e. **Start Import**
3. Set the password for the SPECCHIO administrator.
   a. Open `sdb_admin_creation.sql` in a text editor.

   b. Set the password in the line beginning `CREATE USER...`
   c. Change the input to the MD5 function in the line beginning `` INSERT INTO `specchio`.`specchio_user`... `` so that it matches the password chosen above
      - Both passwords must match the password set in GlassFish's connection pool.
   d. If the MySQL server is running a different host to the GlassFish server, replace all occurrences of 'localhost' with the hostname of the GlassFish server.
   e. Log-in to your MySQL instance as the root user, using either **SQL Development** or the text-based MySQL client.
   f. Execute `sdb_admin_creation.sql`.
4. If you are intending to use SPECCHIO with Research Data Australia, add the ANDS attribute definitions to the database.
   a. Log-in to your MySQL instance as the root user.
   b. Execute `ands_attributes_definition.sql`.

GlassFish Installation

SPECCHIO V3 has been tested with GlassFish 3.1.2.2. Versions prior to 3.1.2 do not appear to work.

Installing GlassFish within Eclipse

1. Install the Eclipse "Web, XML, Java EE and OSGi Enterprise Development" tools using "Install New Software..." on the "Help" menu
2. Install the Eclipse Glassfish plug-in as described at http://glassfishplugins.java.net/eclipse36 (replace "helios" with "juno" if using the latter version of Eclipse).

The GlassFish plug-in creates a domain called `domain1`, whose configuration is located in the `plugins/oracle.eclipse.runtime.glassfish.build3122_1.0.0/glassfish3/glassfish/domains/domain1` sub-folder of the Eclipse installation. This folder will be referred to as `$GLASSFISH_DOMAIN_HOME` below.

Installing GlassFish on a Unix-like server

The following instructions are based on those at http://www.openlogic.com/wazi/bid/199710/Troubleshooting-Glassfish-Installation-on-CentOS and were tested on a CentOS server.
GlassFish has a graphical installation process that requires XWindows to be installed on the target server. The URL above has some suggestions on how to circumvent the graphical installer but I have only tested installation via XWindows.

1. Ensure that the server has a domain name configured: `sudo domainname`

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2. Install a minimal X environment: `sudo yum install xhost xorg-x11-server-Xorg xorg-x11-xauth dejavu-sans-fonts dejavu-serif-fonts`
3. Re-connect to the server using `ssh -X` (this requires XWindows to be running on the local machine and some set up of `xauth`).
4. Install the Java Development Kit: `sudo yum install java-1.6.0-openjdk-devel`
5. Download `glassfish-3.1.2.2-unix.sh` from under "GlassFish Server Open Source Edition" on http://glassfish.java.net.
6. Execute the installer: `sudo ./glassfish-3.1.2.2-unix.sh`
    a. Choose "Typical Installation"
    b. Set installation directory to `/opt/glassfish3`
    c. Uncheck "Install Update Tool"
    d. Install
    e. Set domain name to `specchio`, HTTP port to 8080, admin port to 4848, admin user name to `admin`, and admin password as desired
    f. Select "Create OS Service", name it `specchioService`, and check "Start Domain After Creation"

SPECCHIO's domain configuration files are stored in `/opt/glassfish3/glassfish/domains/specchio`. This folder will be referred to as `$GLASSFISH_DOMAIN_HOME` below.

Configuring a MySQL Connection Pool in GlassFish

GlassFish provides a graphical administration interface at http://localhost:4848. You can also configure it by directly editing the file `$GLASSFISH_DOMAIN_HOME/config/domain.xml.`

1. Copy the MySQL JDBC connector (`mysql-connector-java-5.x.x-bin.jar`) into `$GLASSFISH_DOMAIN_HOME/lib/ext` and re-start GlassFish.
2. Create a JDBC connection pool using the Glassfish administration interface:
    a. Visit Resources > JDBC > JDBC Connection Pools.
    b. Click "New".
    c. Set "Pool Name" to `specchio_web_pool.`
    d. Set "Resource Type" to `javax.sql.DataSource`.
    e. Set "Database Driver Vendor" to "MySQL".
    f. Test using the "Ping" button on the connection pool's main page
3. Check database connection information for `specchio_web_pool`:
    a. Visit Resource > JDBC > JDBC Connection Pools > `specchio_web_pool` > Additional Properties.

    b. If using a URL to configure the database information, set BOTH `Url` and `URL` to `jdbc:mysql://localhost:3306/specchio`.
    c. Otherwise, set `serverName`, `databaseName` and `port` appropriately.
    d. Check that the settings for `user` and `password` match those used in the database configuration scripts used when initialising the SPECCHIO database (above).
4. Enable “Match Connections” for `specchio_web_pool` (Resource > JDBC > JDBC Connection Pools > specchio_web_pool > Advanced)
5. Create a JDBC Resource using the Glassfish administration interface:
    a. Visit Resources > JDBC > JDBC Resources.
    b. Click “New”
    c. Set “JNDI Name” to `jdbc/specchio`.
    d. Set “Pool Name” to `specchio_web_pool`.
    e. “Description” can be anything.

Configuring User Authentication

The following instructions assume that your SPECCHIO applicaton “jar” is installed in a folder called `$SPECCHIO_CLIENT_HOME`. If using Eclipse, `$SPECCHIO_CLIENT_HOME` is the root folder of the “SPECCHIO Web Client” work space.

1. Add your GlassFish instance’s public key to the SPECCHIO Web Client’s Java key store[1] :
    a. $ keytool -export -alias s1as -keystore $GLASSFISH_DOMAIN_HOME/config/keystore.jks -file glassfish.crt [no password required]
    b. $ keytool -import -alias <any string> -file glassfish.crt -keystore $SPECCHIO_CLIENT_HOME/specchio.keystore [use password "specchio"]
2. Set up JDBC Realm authentication in Glassfish (note that the labels on GlassFish’s realm configuration page are somewhat misleading):
    a. Visit Configurations > server_config > Security > Realms.
    b. Click “New”.
    c. Set “Name” to `specchioRealm`.
    d. Set “Class Name” to `com.sun.enterprise.security.auth.realm.jdbc.JDBCRealm`.
    e. Set “JAAS Context” to `jdbcRealm`.
    f. Set “JNDI” to `jdbc/specchio`.
    g. Set “User Table” to `specchio.specchio_user`.
    h. Set “User Name Column” to `user`.
    i. Set “Password Column” to `password`.
    j. Set “Group Table” to `specchio.specchio_user_group`. (This is actually

[1] The production version of the SPECCHIO client should be shipped with the appropriate public keys already installed. If the SPECCHIO server’s certificate is signed by a well-known certificate authority, it should not be necessary to install extra public keys at all.

called the “user group table” in other documentation.)

k. Set “Group Table User Name Column” to `user`.

l. Set “Group Name Column” to `group_name`.

m. Set “Database User” and “Database Password” to the SPECCHIO administrator’s username (usually `sdb_admin`) and password.

n. Set both “Digest Algorithm” and “Password Encryption Algorithm” to `MD5`.

Installing the SPECCHIO Web Services and OAI Service

1. Deploy the SPECCHIO Web Service
   a. *Using Eclipse:* Eclipse deploys the application automatically if using the project checked out from Subversion; use the “Server” tab on the “Java EE” view to start and stop the GlassFish server.
   b. *From the command line:* `sudo /opt/glassfish3/glassfish/bin/asadmin deploy --force specchio-services.war`
   c. *Using GlassFish’s administrative interface*: Choose “Deploy an application” from the home page, then specify the “war” file as the “packaged file to be uploaded to the server”. Leave all other settings at their default values.
2. Deploy the jOAI service:
   a. Unzip the `joai-3.x.x.x.zip` package, replacing the `x`’s with the appropriate version number.
   b. *From the command line*: `sudo /opt/glassfish3/glassfish/bin/asadmn deploy --force joai-3.x.x.x/oai.war`
   c. *Using GlassFish’s administrative interface*: Choose “Deploy an application” from the home page, then specify the `joai-3.x.x.x/oai.war` file as the “packaged file to be uploaded to the server”. Leave all other settings at their default values.