Installation Instructions for IUCLID 6 Server
## Changes to this document

<table>
<thead>
<tr>
<th>Date</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/10/2019</td>
<td>Updated for IUCLID 6.4.</td>
</tr>
<tr>
<td>07/08/2019</td>
<td>Clarified the setting of a limit for bulk import/export in section 5.9.</td>
</tr>
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<td>24/04/2019</td>
<td>Described the changes required to move to Open Java, and the consequences for the update process.</td>
</tr>
<tr>
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<td>Updated the section 3.2 IUCLID 6 Server as a Windows service.</td>
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<td>24/10/2018</td>
<td>Updated for version IUCLID 6 v3.1.1. Added a description of how the introduction of the HTML user-interface affects the installation of IUCLID 6.</td>
</tr>
<tr>
<td>04/12/2017</td>
<td>For installation under Linux, added more detail and made corrections. Added instructions on how to set the memory used by the Updater tool.</td>
</tr>
<tr>
<td>14/11/2017</td>
<td>Updated for version IUCLID 6 v2.0.0. Described the new functionality of the Updater tool.</td>
</tr>
<tr>
<td>28/04/2017</td>
<td>Updated values of versions for IUCLID 6 v1.3.0.</td>
</tr>
<tr>
<td>31/01/2017</td>
<td>For backing up a Derby database, only vendor documentation should be used. Added more information on adjustment of memory requirements. Added advice on use of built-in JDK with the Migrator and Updater tools. Updated values for IUCLID 6 v1.2.0.</td>
</tr>
<tr>
<td>14/10/2016</td>
<td>Added entry to trouble shooting for OutofMemory. For migration, set the example values of the address of the IUCLID 6 database to be consistent with the screenshot.</td>
</tr>
<tr>
<td>30/09/2016</td>
<td>Added location of webstart landing page. Updated values for IUCLID 6 v1.1.0.</td>
</tr>
<tr>
<td>21/06/2016</td>
<td>Added new section for the Updater tool. More detail is given on how to verify the results of a migration from IUCLID 5.6 to IUCLID 6. Java 7 is no longer supported by the ECHA Helpdesk for use with IUCLID 6 or any of its helper java applications.</td>
</tr>
<tr>
<td>27/05/2016</td>
<td>Added section on backup/restore of the database. Recommended that starting the migrator with a graphical interface is done using the script i5db-ui-migrator.cmd. Corrected and edited the section on SSL. Locking of the User SuperUser. Changed default value of Xmx4096m from 1024 to 4096. Corrected the version of the Derby server to 10.11.1.1.</td>
</tr>
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1. Introduction

IUCLID 6 Server is available to download free of charge from the IUCLID 6 website. There are two packages: one for Windows, and one for Linux. The packages contain all the necessary software to run IUCLID 6 Server on an existing installation of either Windows or Linux. In addition to IUCLID 6 Server itself there are: GlassFish 4, a database of type Derby (JavaDB), and Java 8 JDK for either Windows or Linux. If required for a particular installation environment, it is possible to replace those software components with equivalents obtained separately from IUCLID 6 Server. See the section Prerequisites > 2.2 Software for more details.

The database in the installation package is already initialised as a IUCLID 6 database. Post-installation configuration is described in section 5, Configuration of the IUCLID 6 Server.

2. Prerequisites

2.1. Hardware

IUCLID 6 Server and database software can be installed on the same server machine, or on two separate servers. For separate servers we recommend a 1 gigabit per second network. It is also possible to run the IUCLID 6 Server on a cluster of application servers with a load balancer. Clustering the database is implemented via the normal database clustering procedures.

The recommended amount of RAM available on the machines is indicated in the table below. More may be required if there are many simultaneous users, and/or a large database.

There should be at least two cores available for the application server and at least 2 cores for the database server. We recommend the use of fast and reliable server hard drives. Data should be backed-up regularly.

For the Java client user interface we recommend 4 GB RAM and two processor cores. There should be a 1 gigabit per second network between a client and the server.

2.1.1. Server

Table 1: Hardware recommendations for small to medium types of server installation with 2 to 10 simultaneous users and less than 1000 Substances

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application server</td>
<td></td>
</tr>
<tr>
<td>CPU/Cores</td>
<td>Dual Core / 3.0 GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>8 GB*</td>
</tr>
<tr>
<td>Database server</td>
<td></td>
</tr>
<tr>
<td>CPU/Cores</td>
<td>Dual Core / 3.0 GHz</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB</td>
</tr>
<tr>
<td>Network</td>
<td></td>
</tr>
<tr>
<td>Topology/Firewall/Proxy</td>
<td>Connection between database and application server (Gigabit wired)</td>
</tr>
</tbody>
</table>
* Note that if the amount of memory available for the application server is less than 8 GB this requirement can be decreased by decreasing the maximum memory allocated to Java. How to do that is explained in section 5.5 Set JVM memory options. For example, if the value of the parameter \texttt{Xmx<value>} is decreased from 4 GB to 2 GB, the system requirement for the server is reduced from 8 GB to 6 GB.

Table 2: Hardware recommendations for a large type of server installation with 10s of simultaneous users and more than 1000 Substances

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application server</td>
<td>Cluster of 2 servers, each with 6 CPUs (2.40 GHz)</td>
</tr>
<tr>
<td>CPU/Cores</td>
<td>Cluster of 2 servers, each with 6 CPUs (2.40 GHz)</td>
</tr>
<tr>
<td>Memory</td>
<td>8 GB per server</td>
</tr>
<tr>
<td>Database server</td>
<td>4 CPUs (2.40 GHz)</td>
</tr>
<tr>
<td>CPU/Cores</td>
<td>4 CPUs (2.40 GHz)</td>
</tr>
<tr>
<td>Memory</td>
<td>8 GB</td>
</tr>
<tr>
<td>Network</td>
<td>Connection between database and application server (Gigabit wired)</td>
</tr>
<tr>
<td>Topology/Firewall/Proxy</td>
<td>Connection between database and application server (Gigabit wired)</td>
</tr>
</tbody>
</table>

2.1.2. Java client user interface

Table 3: Hardware recommendation for Java client user interface

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java client machine</td>
<td>CPU/Cores</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB</td>
</tr>
</tbody>
</table>

2.2. Software

In the tables below the required software is Java JDK 8, IUCLID 6 Server, GlassFish 4 and a database. IUCLID 6 Server comes with a Java database built-in, but for large installations with tens of simultaneous users and thousands of substance datasets, we recommend to use an Oracle database instead.

The release of IUCLID 6 Server in October 2019 is bundled with Open JDK instead of the Oracle Java SE 8 JDK used before April 2019. This is due to a change in the way Oracle provides support. See the following link for more details https://www.oracle.com/technetwork/java/java-se-support-roadmap.html. IUCLID 6 Server does not depend on any specific Open JDK 8 distribution; though testing was performed with Red Hat and Azul Zulu Open JDK.
### 2.2.1. Server

**Table 4: Software for small to medium types of server installation with 2 to 10 simultaneous users and less than 1000 Substances**

<table>
<thead>
<tr>
<th>Software</th>
<th>Product</th>
<th>Version</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>JDK</td>
<td>8</td>
<td>Azul Zulu Open JDK 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Supplied with IUCLID 6 Server)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oracle Java SE 8 JDK</td>
</tr>
<tr>
<td>Application server</td>
<td>GlassFish Server</td>
<td>4</td>
<td>(Supplied with <strong>IUCLID 6 Server</strong>)</td>
</tr>
</tbody>
</table>

**Table 5: Software for a large type of server installation with 10s of simultaneous users and more than 1000 Substances**

<table>
<thead>
<tr>
<th>Software</th>
<th>Product</th>
<th>Version</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java</td>
<td>JDK</td>
<td>8</td>
<td>Azul Zulu Open JDK 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Supplied with <strong>IUCLID 6 Server</strong>)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oracle Java SE 8 JDK</td>
</tr>
<tr>
<td>Application server</td>
<td>GlassFish Server</td>
<td>4</td>
<td>(Supplied with <strong>IUCLID 6 Server</strong>)</td>
</tr>
<tr>
<td></td>
<td><strong>Download the appropriate JDBC thin driver.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.2.2. Java Web Start for the client user interface

To connect to IUCLID 6 Server using the Java client user interface, the machine on which the client is run must have Java 8 JRE with Java Web Start technology. The recommended options are shown below. Pay attention to licencing and security when choosing which option to use.

<table>
<thead>
<tr>
<th>Platform</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows, macOS,</td>
<td>Oracle Java SE 8 JRE</td>
</tr>
<tr>
<td>Linux</td>
<td></td>
</tr>
<tr>
<td>Windows</td>
<td>Red Hat Open JDK 8 for Windows.</td>
</tr>
<tr>
<td>Linux</td>
<td>Use the package manager of the Linux distribution to install icedtea-web.</td>
</tr>
</tbody>
</table>

3. Installation of IUCLID 6 Server

Download the package for IUCLID 6 Server from the IUCLID website. The path and name of the directory to which the package is downloaded is referred to in this manual as <download_dir>. Move and/or copy the package to the installation directory of IUCLID 6. Unzip the downloaded package. This extracts a directory named iuclid6-server-<version>, which is referred to in this manual as <installation_dir>. It contains the installation folder for GlassFish, named glassfish4, which is referred to in this manual as <glassfish_installation>.

The server component of IUCLID 6 Server, which is deployed in GlassFish Server, can be started in two different ways, as described in the next two subsections. Before starting IUCLID 6 Server, ensure that no applications are running on conflicting ports. The defaults are 8080 and 4848.

Starting a user interface that connects to the server is described in 4.4 The welcome page of IUCLID 6 Server.

3.1. IUCLID Server started and stopped from a script

IUCLID 6 Server can be started and stopped by running scripts delivered with it, as described in the subsections below. This method is convenient if you do not have administrator rights to the host machine, or you do not want to run IUCLID 6 Server as a service in Windows, which is described in the next section, 3.2 IUCLID 6 Server as a Windows service.

3.1.1. Starting and stopping IUCLID Server using scripts under Windows

By default, the JDK that is delivered with IUCLID 6 Server is used.

The path to the JDK is controlled by the value of the parameter AS_JAVA, which is set within the following file:

<installation_dir>\glassfish4\glassfish\config\asenv.bat

Under Windows the path to the JDK is relative to the settings file asenv.bat. Therefore, to use the JDK that is delivered with IUCLID, the line in the file asenv.bat is:
set AS_JAVA=..\..\..\jdk

If no value is set for the parameter, Windows looks for a path to JDK in the environment variable PATH. Alternatively, it is possible to use the absolute path to the JDK.

To start IUCLID 6 Server, run the following script.
<installation_dir>\start_Iuclid6_server.bat

If the following message appears, close it by clicking on the cross at the top right.

Figure 1: Windows Firewall dialogue

![Windows Security Alert]

If the start script was not run from the command line, a command line window opens. Wait until the following message is displayed.

Figure 2: The IUCLID 6 Server has started successfully

![Admin Port: 4848 Command start-domain executed successfully.]

Do not close the window whilst IUCLID 6 is in use, because this will stop IUCLID 6 Server.

To stop IUCLID 6 Server, run the following script:
For instructions on how to view a graphical user interface of IUCLID 6 Server, proceed to section 4
Check the GlassFish server from its HTML console.

### 3.1.2. Starting and stopping IUCLID 6 Server using scripts under Linux

The path to the JDK is set using the parameter `AS_JAVA`, within the following file:

```bash
<installation_dir>/glassfish4/glassfish/config/asenv.conf
```

Under Linux, it is recommended to set `AS_JAVA` to be the value of the absolute path to the JDK.
To use the JDK that is delivered with IUCLID, the syntax is:

```bash
AS_JAVA="<installation_dir>/jdk"
```

The value of `AS_JAVA` as delivered with the installation package uses a path relative to the working directory of the start and stop scripts. This works if the scripts are run from the installation directory. The syntax is:

```bash
AS_JAVA="jdk"
```

Some scripts need to be set as executable. Do this using the following command:

```bash
$ chmod +x *.sh
```

To start **IUCLID 6 Server**, run the following script.

```bash
<installation_dir>/start_Iuclid6_server.sh
```

To stop **IUCLID 6 Server**, run the following script:

```bash
<installation_dir>/stop_Iuclid6_server.sh
```

For instructions on how to view a graphical user interface of IUCLID 6 Server, proceed to section 4
Check the GlassFish server from its HTML console.

### 3.2. IUCLID 6 Server as a Windows service

The script `start_Iuclid6_server.bat` starts **IUCLID 6 Server**. After a restart of Windows it will need to be restarted manually. However, **IUCLID 6 Server** can be run as a service in Windows that starts automatically when Windows starts. To do that, carry out the following steps:

1. Edit the following file

```bash
<glassfish_installation>\glassfish\config\asenv.bat
```

Add the line:

```bash
set AS_JAVA=<installation_dir>\java
```
Use the full path to the installation. The value of `<java>` is the name of the folder that contains the Java delivered with IUCLID 6 Server, for example `jdk`.

2. Create the Windows service using a command from a console that was started using (right-click) Run as Administrator. The simplest command, which uses default values to create a service with the same name as the Glassfish domain for the instance of IUCLID is:

```
<glassfish_installation>\bin\asadmin create-service domain1
```

3. To check and manage the newly created service, open the management window for services in Windows using:

   right-click on Start > Computer Management > Services and Applications > Services

It is recommended to set the Startup Type of the service to Delayed Start. This is set in the properties of the service which are accessed by right-clicking on the name of the service in the list, as shown in the example below.

**Figure 3:** Set the Startup type of the Windows service to Automatic (Delayed Start)
4. Once the service has been created correctly, select the service, and then click on Start the service.

4. **Check the GlassFish server from its HTML console**

This section describes the steps to check that GlassFish is running correctly.

4.1. **GlassFish Welcome page**

The address of the GlassFish welcome page is:

http://<host>:8080

If the browser is running on the same machine as GlassFish, the value of <host> can be set to localhost. You should see the following.

*Figure 4: GlassFish Server Welcome page*

![GlassFish Welcome Page](image)

4.2. **GlassFish Administration page**

The address of the GlassFish administration console is:

http://<host>:4848

You should see the administration console as shown below.
If the server is not running, check for errors in the log file shown on start-up:

`<glassfish_installation>\glassfish\domains\domain1\logs\server.log`

By default, remote access to the GlassFish admin console from a host other than localhost is not allowed. The following message is given.

*Configuration Error*

*Secure Admin must be enabled to access the DAS remotely*

To allow remote access, see section 7.3. under trouble-shooting.

**4.3. Check the file server.log**

**Path to log file:**

`<glassfish_installation>\glassfish\domains\domain1\logs\server.log`
Expected entry in log file:

```
[YYYY-MM-DDTHH:MM:SS.MMM+ZZZZ] [glassfish 4.1] [INFO] []
[org.glassfish osgi javaeebase] [tid: _ThreadID=* _ThreadName=pool-**-thread-*) [timeMillis: *] [levelValue: 800] []
  deployed bundle eu.echa.iuclid6.war [375] at file:
  <glassfish_installation>\glassfish\domains\domain1\osgi-cache\felix\bundle300\data\applications\bundle375-1433404572681\]
```

4.4. The welcome page of **IUCLID 6 Server**

The address of the welcome page of **IUCLID 6 Server** is:

http://<host>:8080/webstart

If the browser is running on the same machine as GlassFish, the value of <host> can be set to localhost. **Note** that the first time **IUCLID 6 Server** is run, it may take several minutes before this page becomes available. The delay should be less for subsequent start-ups. Whilst **IUCLID 6 Server** is starting, the browser gives error 404. If the response remains as 404 for over 10 minutes, check for errors in the following log file:

<glassfish_installation>\glassfish\domains\domain1\logs\server.log

When **IUCLID 6 Server** has started, the browser displays the following:
Unless settings have been changed, *IUCLID 6 Server* is now running using the default values supplied in the *IUCLID 6 Server* download package. The default database is in the directory shown below:

`<glassfish_installation>\glassfish\domains\domain1\databases`

For the configuration of a different database, for example Oracle, see section 5.3 *Database installation and initialisation*. Even if the default database is not used, it may be useful to try it out first for testing purposes, and to become familiar with other aspects of the installation.

The next step is to open a user interface to *IUCLID 6 Server*. On the welcome page, the user can select between two types of user interface. For information about the differences in functionality between the two, see the [IUCLID web site](https://iuclid.echa.europa.eu). The new interface requires only a web browser. The classic interface is a Java client that uses webstart and requires an installation of Java Runtime 1.8+. Starting each type of user interface is described in sections 4.5 *Use the new IUCLID interface - HTML* and 4.6 *Use the classic IUCLID interface – Java client*. 
4.4.1. Configuring the welcome page of IUCLID 6 Server

In some cases it may be convenient to have the page shown above pointing at more than one instance of IUCLID 6. For example, to allow users to choose between separate test and production instances of IUCLID 6. This can be done by editing the HTML that is contained within the file index.jsp that is located within the installation of IUCLID 6 in the following archive file:

..\glassfish4\glassfish\domains\domain1\iuclid6\iuclid6-war-<version>.war

The file is at the top level of the folder structure in the archive. The archive can be opened by various applications, for example 7-Zip.

4.5. Use the new IUCLID interface - HTML

The address of the HTML user interface of IUCLID 6 Server is:

http://<host>:8080/iuclid6-web/

To open the interface from the welcome page, click on the button:

![Use the new IUCLID user interface](Image)

This opens the log-in page shown below:

![Welcome back!](Image)

Log in with the following credentials:

Username=SuperUser
Password=root
On logging in, the HTML interface for IUCLID 6 opens displaying the *Dashboard* page, as shown below.

**Figure 8:** The main window of the HTML user interface of *IUCLID 6 Server*

On first starting IUCLID 6 Server it is possible to view the web interface before all of its components have loaded. One way to tell when all the components have been loaded, and the interface is ready to use, is when the button *New Substance* appears, as shown below.
4.6. Use the classic IUCLID interface – Java client

On the machine used to view the interface, ensure that a Java Runtime 1.8+ is installed that supports Java Web Start, as described in section 2.2.2 Java Web Start for the client user interface. To open the interface from the welcome page, click on the button shown below:

If the window shown below is displayed with name=IUCLID 6, and publisher=European Chemicals Agency, click on Run.

Figure 9: How to tell that the web interface has loaded fully
Once the Java client has started, the login window opens, as shown below, and the Pre-flight check closes automatically. The values of the parameters displayed above in the Pre-flight check
can be viewed from within the Java client under the main menu item Help > Environment settings. See the next section for more details.

The first time the Java client is run per computer, per user, the start-up takes more time than for subsequent start-ups.

**Figure 12: The log-in window of the Java client user interface for IUCLID 6 Server**

Log in with the following credentials:

*Username*=SuperUser

*Password*=root

On logging in, the main window of the Java client for IUCLID 6 opens, displaying the home page, as shown below.
4.6.1. Environment settings

The values of the parameters displayed in the pre-flight check can be viewed from within the IUCLID 6 Server Java client under the main menu item Help > Environment settings., as shown below.

The OSGI jars that were indicated briefly in the pre-flight check can be seen in full under the button OSGI bundles > View, as shown below.
A good way of testing whether the installation has worked, is by importing some test data that is supplied with the download. Extract the directory named `TestData` from the installation package into the parent directory of the installation of IUCLID 6 Server. There are various ways of doing that but some examples are given below:

**Example for Windows with 7-Zip**

```
C:\applications\iuclid6 7z x -y <download_dir>\<iuclid6_server_package> TestData
```

**Example for Linux**

```
$ unzip -o <download_dir>/iuclid6_server_package TestData/*
```
Using the *Import* function in the graphical user interface of *IUCLID 6 Server*, to import the test file named *InstallationTest.i6z* which is in the directory named *TestData*. This should import a *Legal entity* that has the name *Test Legal Entity Please Delete*. Check that the import of the file was successful by viewing the legal entity in the graphical user interface. To do that in the Java client, click on the icon for *Legal entity* at the lower left of the home page, and then look in the navigation pane on the left. After a successful test, delete the imported *Legal entity*.

If the import was not a success, first check section 5.4 *Set temporary directory*.

5. **Configuration of the *IUCLID 6 Server***

The server side of *IUCLID 6 Server* is configured using the following files:

```
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml
<glassfish_installation>\glassfish\domains\domain1\config\server.settings.properties
```

The Java client side of *IUCLID 6 Server* is configured using the following file:

```
<glassfish_installation>\glassfish\domains\domain1\config\client.settings.properties
```

Some typical changes to the default values that may be required are described below. Any changes to the files above, take effect only on starting the server.

5.1. **Set the title of the Java client window**

The title of the window for the Java client application of *IUCLID 6 Server* is set using the parameter named *client.window.title* in the settings file:

```
<glassfish_installation>\glassfish\domains\domain1\config\client.settings.properties
```

The default value is *IUCLID 6*.

5.2. **Set the port number**

In the following configuration file:

```
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml
```

Under:

```
domain\configs.config[@name="server-config"]\network-config\network-listeners
```

set the port:

```
<network-listener port="8080" protocol="http-listener-1" transport="tcp" name="http-listener-1" thread-pool="http-thread-pool"></network-listener>
```
5.3. Database installation and initialisation

IUCLID 6 Server is designed to work with either an Oracle database or a Derby (JavaDB) database.

For instructions on Oracle, go straight to section 5.3.1 Oracle.

There are three ways of setting up the database software Derby (JavaDB), as described in sections below. For a complete description of Derby (JavaDB) and Derby Network Server, see the documentation provided by the vendor at:

https://db.apache.org/derby/manuals/index.html

5.3.1. Oracle

5.3.1.1. Installation

The installation of an Oracle database is not covered by this document. Please refer to the vendor’s documentation.

5.3.1.2. Initialisation

A database user must be created before running IUCLID 6 Server. All the objects belonging to the user will be created when IUCLID 6 Server is first run. Create and configure the user manually by performing the following commands as sysdba. Do not place values in quotes.

$ create user <database_user> identified by <database_password>;
$ alter user <database_user> default tablespace <tablespace name> quota unlimited on <tablespace name>;
$ grant connect to <database_user>;
$ grant resource to <database_user>;

5.3.1.3. Database driver

Place the JDBC thin driver appropriate to your version of Oracle and Java 8 in the directory:

<glassfish_installation>/glassfish/domains/domain1/lib

5.3.1.4. Database type

The database type is set in the following configuration file:

<glassfish_installation>/glassfish/domains/domain1/config/domain.xml

For the element jdbc-resource that has an attribute of jndi-name with a value of jdbc/iuclid6, set the value of the attribute pool-name as shown below:

<jdbc-resource pool-name="IUCLID6_OraclePool" jndi-name="jdbc/iuclid6"/></jdbc-resource>
5.3.1.5. **Database connection credentials**

The credentials of the database connection are set in the following configuration file:
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml

The values for the credentials are placed in the attributes of elements named `property` that are in the element named `jdbc-connection-pool` for the type of database set in section 5.3.1.4 above.

**Example for Oracle**

Note the attribute/value pair below of `name="IUCLID6_OraclePool"`.

```
<jdbc-connection-pool max-pool-size="96" driver-classname="" datasource-classname="oracle.jdbc.xa.client.OracleXADatasource" res-type="javax.sql.XADataSource" description="" name="IUCLID6_OraclePool">
    <property name="URL" value="jdbc:oracle:thin:@10.1.1.1:1521/orcl"></property>
    <property name="networkProtocol" value="tcp"></property>
    <property name="serverName" value="10.1.1.1"></property>
    <property name="user" value="username_case_sensitive"></property>
    <property name="password" value="password_case_Sensitive"></property>
</jdbc-connection-pool>
```

5.3.2. **Derby Embedded with no database server**

*IUCLID 6 Server* contains an initialised IUCLID 6 database of type Derby Embedded that is fully contained within the following directory:
<br>
<installation_dir>\glassfish4\glassfish\domains\domain1\databases\iuclid6

Where the path to the database is required, the value above is used. Bear in mind that with this configuration, only one client can connect to the database at once. For example, this means that if any database client, such as Squirrel, is connected to the database, *IUCLID 6 Server* cannot connect to the database. To connect a database client and *IUCLID 6 Server* to the database at the same time, see the methods described in sections Derby Embedded with a database server 5.3.3 and Derby Network Server 5.3.4.

5.3.2.1. **Database driver**

The driver for Derby Embedded is supplied with Derby Embedded and therefore you do not have to do anything. For information purposes only, the driver is:
<br>
<glassfish_installation>\javadb\lib\derby.jar

5.3.2.2. **Database type**

The database type is set in the following configuration file:
<br>
<glassfish_installation>\glassfish\domains\domain1\domain.xml

For the element `jdbc-resource` that has an attribute of `jndi-name` with a value of `jdbc/iuclid6`, set the value of the attribute `pool-name` as shown below:
<jdbc-resource pool-name="IUCLID6_Embedded_DerbyPool" jndi-name="jdbc/iuclid6"></jdbc-resource>

5.3.2.3. **Configure the embedded database server to not start**

Set the database server to not start by setting the following parameter in file `domain.xml`, inside `<config name="server-config">`:

```xml
<jvm-options>-Dderby.drda.startNetworkServer=false</jvm-options>
```

5.3.2.4. **Database connection credentials**

The credentials of the database connection are set in the following configuration file:

```xml
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml
```

The values for the credentials are placed in the attributes of elements named `property` that are in the element named `jdbc-connection-pool` for the type of database set in section 5.3.2.2 above.

**Example for Derby Embedded with no database server**

Note the attribute/value pair below of name="IUCLID6_Embedded_DerbyPool".

```xml
<jdbc-connection-pool driver-classname="" max-pool-size="96" datasource-classname="org.apache.derby.jdbc.EmbeddedXADataSource40" resource-type="javax.sql.XADataSource" description="" name="IUCLID6_Embedded_DerbyPool">
    <property name="User" value="IUCLID6"></property>
    <property name="DatabaseName" value="iuclid6"></property>
    <property name="Password" value="IUCLID6"></property>
    <property name="AttributesAsPassword" value="false"></property>
    <property name="LoginTimeout" value="0"></property>
    <property name="connectionAttributes" value=";create=true"></property>
</jdbc-connection-pool>
```

5.3.3. **Derby Embedded with a database server**

Use *Derby Embedded with a database server* where more than one simultaneous connection to the database is required. In this configuration *IUCLID 6 Server* uses a database server, both of which run in the same instance of Java.

5.3.3.1. **Database driver**

The driver is supplied in the installation package of *IUCLID 6 Server*.

5.3.3.2. **Database type**

The database type is set in the following configuration file:

```xml
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml
```
For the element `jdbc-resource` that has an attribute of `jndi-name` with a value of `jdbc/iuclid6`, set the value of the attribute `pool-name` as shown below:

```xml
<jdbc-resource pool-name=\"IUCLID6_Embedded_DerbyPool\" jndi-name=\"jdbc/iuclid6\"></jdbc-resource>
```

### 5.3.3.3. Configure the embedded database server

In the settings file `domain.xml`, inside `<config name=\"server-config\">` set the database server to start, by including the following line:

```xml
<jvm-options>-Dderby.drda.startNetworkServer=true</jvm-options>
```

### 5.3.3.4. Database connection credentials

The credentials of the database connection are set in the following configuration file:

```xml
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml
```

The values for the credentials are placed in the attributes of elements named `property` that are in the element named `jdbc-connection-pool` for the type of database set in section 5.3.3.2 above.

**Example for Derby Embedded with a database server**

Note the attribute/value pair below of `name=\"IUCLID6_Embedded_DerbyPool\"`:

```xml
<jdbc-connection-pool driver-classname=\"\" max-pool-size=\"96\" datasource-classname=\"org.apache.derby.jdbc.EmbeddedXADataSource40\" resource-type=\"javax.sql.XADataSource\" description=\"\" name=\"IUCLID6_Embedded_DerbyPool\">
  <property name=\"User\" value=\"IUCLID6\"></property>
  <property name=\"DatabaseName\" value=\"iuclid6\"></property>
  <property name=\"Password\" value=\"IUCLID6\"></property>
  <property name=\"AttributesAsPassword\" value=\"false\"></property>
  <property name=\"LoginTimeout\" value=\"0\"></property>
  <property name=\"connectionAttributes\" value=\";create=true\"></property>
</jdbc-connection-pool>
```

### 5.3.4. Derby Network Server

Use **Derby Network Server** where the database server needs to be run either in a separate instance of Java on the same host as **IUCLID 6 Server** or, on a different host to **IUCLID 6 Server**.

### 5.3.4.1. Installation of Derby (JavaDB)

Install the Derby (JavaDB) software on the host of the database server. Derby (JavaDB) version 10.11.1.1 has been tested and found to work with **IUCLID 6 Server**. Later versions should work, but have not been tested. Decide on the location of the directory that contains databases within the filesystem of the host, hereafter referred to as `<database_dir>`.
In `<database_dir>` run the appropriate version for the operating system of the script named:

`...javadb\bin\startNetworkServer`

The Derby Network Server should now be running. A log file named, `derby.log` is created in the directory `<database_dir>`.

When the server side of IUCLID 6 is run, it attempts to connect to a database inside a directory named `iuclid6` that is within the directory `<database_dir>`. If no such directory exists, one is created.

### 5.3.4.2. Database driver

The driver is supplied in the installation package of **IUCLID 6 Server**.

### 5.3.4.3. Database type

The database type is set in the following configuration file:

`<glassfish_installation>\glassfish\domains\domain1\config\domain.xml`

For the element `jdbc-resource` that has an attribute of `jndi-name` with a value of `jdbc/iuclid6`, set the value of the attribute `pool-name` as shown below:

```xml
<jdbc-resource pool-name="IUCLID6_External_DerbyPool" jndi-name="jdbc/iuclid6"></jdbc-resource>
```

### 5.3.4.4. Configure the embedded database server to not start

Set the database server to not start by setting the following parameter in file `domain.xml`, inside `<config name="server-config">`:

```xml
<jvm-options>-Dderby.drda.startNetworkServer=false</jvm-options>
```

### 5.3.4.5. Database connection credentials

The credentials of the database connection are set in the following configuration file:

`<glassfish_installation>\glassfish\domains\domain1\config\domain.xml`

The values for the credentials are placed in the attributes of elements named `property` that are in the element named `jdbc-connection-pool` for the type of database set in section 5.3.4.3 above.

**Example for Derby Network Server**

Note the attribute/value pair below of name="IUCLID6_External_DerbyPool".

```xml
<jdbc-connection-pool max-pool-size="96" driver-classname="" datasource-classname="org.apache.derby.jdbc.ClientXADatasource40" resource-type="javax.sql.XADatasource" description="" name="IUCLID6_External_DerbyPool">
  <property name="User" value="IUCLID6"></property>
</jdbc-connection-pool>
```
<property name="DatabaseName" value="iuclid6"></property>
<property name="RetrieveMessageText" value="true"></property>
<property name="Password" value="IUCLID6"></property>
<property name="Ssl" value="off"></property>
<property name="ServerName" value="localhost"></property>
<property name="SecurityMechanism" value="4"></property>
<property name="ConnectionAttributes" value=";create=true"></property>
<property name="TraceFileAppend" value="false"></property>
<property name="TraceLevel" value="-1"></property>
<property name="PortNumber" value="1527"></property>
<property name="LoginTimeout" value="0"></property>
</jdbc-connection-pool>

5.4. Set temporary directory

This feature allows a directory to be set to which attachments and imports are stored temporarily before they are added to the database. If the addition to the database is successful, the file is deleted from the directory. If the addition to the database fails for some reason, the file remains in this directory. Such files are not automatically deleted by IUCILID 6 Server. Therefore, it is recommended that this folder is emptied on a regular basis.

The directory is indicated by the value of the parameter:

environments.attachments.temp.dir:

in the following settings file:

<glassfish_installation>\glassfish\domains\domain1\config\server.settings.properties

The directory must be writeable by the server. Ensure that the value of the path conforms to the formatting requirements of the operating system. Under Microsoft Windows, use escaped backslash (\) delimiters between the nodes in the path, for example:

<machine>\temp\iuclid6

5.5. Set JVM memory options

The memory settings for the server can be set in the file:

<glassfish_installation>\glassfish\domains\domain1\domain.xml

Within the section:

<configs><!--<config name="server-config">/<java-config>;

in the line:

<jvm-options>-Xmx4096m</jvm-options>

An example showing the context is given below:

<jvm-options>-XX:PermSize=64m</jvm-options>
<jvm-options>-XX:MaxPermSize=192m</jvm-options>
<jvm-options>-Xmx4096m</jvm-options>

Be aware that a value of less than 4096m can cause problems during the importation of data. In the file domain.xml there is an alternative instance of the parameter Xmx to the one shown above, but it is in a different context, and has no effect. Its context is:

<jvm-options>-XX:NewRatio=2</jvm-options>
<jvm-options>-Xmx512m</jvm-options>

5.6. Configuring SSL on the application server

IUCLID 6 Server is delivered such that SSL can be used for the connection between the server and the Java client user interface without the need for additional configuration. However, it is supplied with a self-signed certificate that causes browsers to give security warnings. To avoid such warnings, an appropriate certificate must be installed, as described below. It is recommended that SSL be used because, for example, without it user authentication details are not encrypted during transit when a User logs in to the Java client.

By default, GlassFish handles both secure (HTTPS) and unsecure connections (HTTP). The ports are 8181 and 8080 respectively. If unsecure HTTP is not allowed, the relevant listener on port 8080 may be disabled.

The self-signed certificate that is delivered with IUCLID 6 Server is generated by GlassFish, and installed in the following file:
<glassfish_installation>\glassfish\domains\domain1\config\keystore.jks

To install a trusted certificate that does not cause browsers to issue security warnings, follow the procedure described below.

Handling the keystore can be done either via the command line using the command keytool, which is part of the JDK, or via a graphical tool such as Portecle.

Detailed instructions for the command keytool can be found on the Oracle documentation page at the link below:
http://docs.oracle.com/javase/8/docs/technotes/tools/windows/keytool.html

The graphical tool, Portecle, is described at the following link:
http://portecle.sourceforge.net

It is important to note the following:

1. The password of the certificate, and the password of the keystore, must be the same as each other. The default values for both are "changeit".

2. The password of the keystore, and the master password of the domain, must be the same as each other. If you need to change the master password of the domain (by default "changeit") use the command, asadmin, that is supplied with GlassFish. An example is shown below:
   asadmin change-master-password --savemasterpassword=true domain1
   The option savemasterpassword=true saves the master password in a file in the
filesystem, so that the server may be rebooted using an automated process. The OS user associated with the server must have access to this file.

Some example commands are shown below in which a certificate named `MyCertificate.pfx` is installed in a keystore named `keystore.jks`, and then given an alias `iuclid-cert`.

1. List the certificates that are installed in the keystore.
   ```bash
   keytool -keystore keystore.jks -list
   ```

2. Uninstall from the keystore the certificate that was created by Glassfish.
   ```bash
   keytool -delete -alias s1as -keystore keystore.jks
   ```

3. Install your own certificate into the keystore.
   ```bash
   keytool -importkeystore -destkeystore keystore.jks -srckeystore MyCertificate.pfx -srcstoretype PKCS12
   ```

4. List the certificates that are in the keystore to verify that your certificate is present.
   ```bash
   keytool -keystore keystore.jks -list
   ```
   Make a note of the alias of the certificate you want to use. This is referred to below as `<my certificate>`.

5. Give your certificate an alias that identifies it as being use for IUCLID.
   ```bash
   keytool -changealias -alias <my certificate> -destalias iuclid-cert -keystore keystore.jks
   ```

6. If necessary, change the password of your certificate.
   ```bash
   keytool -keystore keystore.jks -keypasswd -alias iuclid-cert
   ```

Finally, configure GlassFish to use your certificate. This can be done by editing the file `domain.xml`, replacing the default value `s1as` with `iuclid-cert` or alternatively, use the web console to configure the SSL tab of the relevant listener.

### 5.7. Configure Background Jobs (Optional)

To ensure that enough resources are available in the server, it is possible to limit the number of background jobs that can operate concurrently. This affects how many import/export/print operations that can occur in the background at once, so a balance must be found between the needs of users, and the availability of server resources.

The configuration of the background jobs is done by configuring the number of MDBs that listen to the background jobs queues.

This configuration is controlled by a deployment descriptor found in the file:

```
iuclid6-ejb.jar\META-INF\glassfish-ejb-jar.xml
```

in the directory:

```
<glassfish_installation>\glassfish\domains\domain1\iuclid6
```

The file itself contains an explanation of what each of the parameters does and which block affects which business procedure.

A template sample is given below for reference:

```xml
<?xml version="1.0" encoding="UTF-8"?>
```
<!DOCTYPE glassfish-ejb-jar PUBLIC "-//GlassFish.org//DTD GlassFish Application Server 3.1 EJB 3.1//EN" ">
<glassfish-ejb-jar>
    <!-- The configuration below allows up to 6, 9 and 72 background jobs to be run in parallel in small, medium and large env respectively-->
    <enterprise-beans>
        <ejb>
            <!-- Handles bulk import of archives containing raw data only -->
            <ejb-name>MDBBulkDataJobHandler</ejb-name>
            <bean-pool>
                <steady-pool-size>${mdbmultiraw.min}</steady-pool-size><!-- initial and minimum pool size -->
                <resize-quantity>${mdbmultiraw.resize}</resize-quantity><!-- when more MDBs are needed, how many to create each time up to the maximum below -->
                <max-pool-size>${mdbmultiraw.max}</max-pool-size><!-- maximum number of MDBs allowed -->
            </bean-pool>
        </ejb>
        <ejb>
            <!-- Handles single import/export and bulk export for both raw data/dossiers as well as bulk import of dossiers -->
            <!-- Considering this queue is used for almost all background jobs in the system we should probably configure it at a higher number than the other queue -->
            <ejb-name>MDBSingleDataJobHandler</ejb-name>
            <bean-pool>
                <steady-pool-size>${mdbsingledata.min}</steady-pool-size>
                <resize-quantity>${mdbsingledata.resize}</resize-quantity>
                <max-pool-size>${mdbsingledata.max}</max-pool-size>
            </bean-pool>
        </ejb>
        <ejb>
            <!-- Handles print jobs -->
            <ejb-name>MDBPrintDataJobHandler</ejb-name>
            <bean-pool>
                <steady-pool-size>${mdbprintdata.min}</steady-pool-size><!-- initial and minimum pool size -->
                <resize-quantity>${mdbprintdata.resize}</resize-quantity><!-- when more MDBs are needed, how many to create each time up to the maximum below -->
                <max-pool-size>${mdbprintdata.max}</max-pool-size><!-- maximum number of MDBs allowed -->
            </bean-pool>
        </ejb>
    </enterprise-beans>
</glassfish-ejb-jar>
5.8. Configuring logging

LOGBack has been selected as the next version of the well-known Log4j. It is a logging system built with performance in mind, directly implementing SLF4j APIs and deployable as an OSGi bundle.

Logback has extensive configuration options all of which are described in the manual available at: http://logback.qos.ch/manual/index.html

In IUCLID 6 the current configuration is as follows:

| The configuration is checked every minute. |
| The JMXConfigurator (configuration at runtime via JMX, e.g., jConsole) is activated. |
| A servlet that displays the status of the logging system can be found at http://<server>/iuclid6/loggingSystemStatus |
| The root logger has been configured to level WARN (so all external libraries display warnings/errors) |
| The "eu.echa.iuclid6" logger (i.e., all the application's code) should be set to INFO (developers may lower this to TRACE) |
| A separate "performanceLogger" is used to write performance and timing measurements on a separate log file (this logger's output is not present in the other log files) |

The following appenders have been setup:

- **Console appender** that displays everything (except the requests from the polling component) - currently disabled
- **Main log file** (accepts everything - except polling component, rolls daily to archive)
- **Error log file** (accepts everything from level WARN and ERROR, rolls daily to archive)
- **Poller log file** (accepts only the logs from the polling component (not from executing background jobs or from direct user requests), rolls daily to archive) - this is separate because of high frequency of logs just in case
- **User actions log file** (accepts the logs from direct user requests (not from executing background jobs or from the polling component), rolls daily to archive)
- **Jobs log file** (accepts the logs for all executing background jobs (not from direct user requests or from the polling component), rolls daily to archive)
- **Client Communication Layer Cache log file** (accepts only the logs from this component, rolls daily to archive) and outputs statistical information on cache usage
- **One log file per user per day for poller requests** (rolls daily to archive)
- **One log file per user per day for errors** (rolls daily to archive)
- **One log file per user per day for jobs** (rolls daily to archive)
- **One log file per user per day for user actions** (rolls daily to archive)
- **One log file per request (does NOT roll daily - logback limitation - must be archived externally)**
- **One log file per job (does NOT roll daily - logback limitation - must be archived externally)**

All logging statements include Mapped Diagnostic Context (MDC) information as needed and as available:

- username
- HTTP request identifier (an up to 10 digits number)
- source component (currently one of "user", "poller", "job", "clientCommCache")
- job identifier (UUID) when running in a background job context
As an example, one can go through the master error log file. For each exception/warning, there will be relevant information from MDC on which request/job/user was involved in the issue. These values can then be used to find relevant entries in the log files specific to a particular request, job and/or user involved. The default archival policy is to maintain records for 180 days.

The following figure gives an example of how the structure of the log output could look in the folder:

<glassfish_installation>\glassfish\domains\domain1\logs

The directories `commClientCache_iuclid6.log` and `perf_iuclid6.log` are missing from the top level of this screenshot.

**Figure 16: Logs for domain in GlassFish**
On the top-level there is the file `server.log` that contains only the server’s output to which deployment or configuration errors from OSGi are written.

The directory `iuclid6` contains the following logs:

<table>
<thead>
<tr>
<th>Log file</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>all_iuclid6.log</td>
<td>contains every log output coming from IUCLID 6</td>
</tr>
<tr>
<td>error_iuclid6.log</td>
<td>contains only errors/warnings</td>
</tr>
<tr>
<td>jobs_iuclid6.log</td>
<td>contains logging output from background jobs running on the server</td>
</tr>
<tr>
<td>poller_iuclid6.log</td>
<td>contains logging output from the polling component</td>
</tr>
<tr>
<td>user_actions_iuclid6.log</td>
<td>contains logging output corresponding to actual user originated requests</td>
</tr>
<tr>
<td>perf_iuclid6.log</td>
<td>missing from the screenshot above - contains logging output with performance and timing measurements</td>
</tr>
<tr>
<td>commClientCache_iuclid6.log</td>
<td>missing from the screenshot above - contains logging output with statistics on the client communication layer cache usage</td>
</tr>
</tbody>
</table>

Subdirectories

- **requests** contains one log per request sent to the server using a request ID as part of the filename
- **users** under which there is a set of log files (again separately for jobs, error, poller and actual user actions) for each specific user. (The unknown user is everything coming from a thread in the application not directly bound to a specific user, e.g. a system timer thread)
- **archive** directory with subdirectories based on dates and contents that date’s logs inside a zip archive (again split accordingly into jobs, error, etc. as well as per user).

### 5.8.1. Installations using an external log indexing solution such as Splunk

Not all files and loggers need to be active at all times. Therefore, for all externally indexed environments it is suggested to:

1. Disable all appenders except `server.log`
2. Turn off `performanceLogger` by simply commenting it out
3. Make sure logger `eu.echa.iuclid6` is set to INFO
4. Monitor and index two files:
   - `logs\iuclid6\all_iuclid6.log` (application logs)
b. logs\server.log (glassfish server and OSGi engine related logs, deployment errors, anything that happens outside the application)

In case of a problem, use the external indexing system to search through and identify what happened.

A configuration file to set up LOGBack XML for this configuration is provided in:

<glassfish_installation>\glassfish\domains\domain1\config\logback-large.xml

To use this configuration, copy the file to:

<glassfish_installation>\glassfish\domains\domain1\config\logback.xml

5.8.2. Installations not using an external indexing solution

In such an environment, more extensive logging is required. Using all the appenders incurs a performance penalty, but it is a necessary tool for debugging problems. It is therefore suggested to:

1. Turn off the performanceLogger, by simply commenting it out;
2. Make sure eu.echa.iuclid6 logger is set to INFO;
3. Enable the following appenders:
   - MAIN_FILE
   - ERROR_FILE
   - USER_ACTIONS_FILE
   - JOBS_FILE
   - SIFT_BY_USER_USER_ACTIONS
   - SIFT_BY_USER_ERROR
   - SIFT_BY_USER_JOBS
   - SIFT_BY_JOB
   - SIFT_BY_REQUEST

A configuration file to set up LOGBack XML for this configuration is provided in:

<glassfish_installation>\glassfish\domains\domain1\config\logback-medium.xml

This is the default file supplied with IUCLID 6. To use this configuration, copy the file to:

<glassfish_installation>\glassfish\domains\domain1\config\logback.xml

It is important to notice that the above configuration is about the IUCLID 6 Server application log files. GlassFish server's own logging system is configured from:

<glassfish_installation>\glassfish\domains\domain1\config\logging.properties
Normally no changes are needed from the default settings.

It is also important to notice that occasionally for troubleshooting deployment and startup issues you may need to increase the logging level of the Declarative Services OSGi GlassFish subcomponent. This is used internally in IUCLID 6 Server to bind together the different submodules. This particular setting is controlled from the file:

<glassfish_installation>\glassfish\config\osgi.properties

5.9. Configuring the upper limit to the size of bulk import and export jobs - IMQ

Bulk export, and bulk import use an implementation of the Java Message Service (JMS). A bulk job is initiated in one JMS transaction, and then the actual import or export operation is executed in separate JMS transactions. The data transfer in a JMS transaction involves the sending of data in JMS messages via a queue. There is a rough equivalence of one JMS message per archive file that is imported or exported. To manage resources effectively, an upper limit is placed on the number of JMS messages that can be sent in one transaction to the same queue. The default limit is 1000, which means that you can bulk import up to 1000 archives per job, or bulk export up to 1000 entities per job. It is suggested that the value of this limit is configured to be less than 5000, although the practical limit is related to the overall resources available to the JMS server. These resources are controlled from a separate properties file outside domain.xml, which is indicated below.

<glassfish_installation>\glassfish\domains\domain1\imq\instances\imqbroker\props\config.properties

The upper limit is set using the following parameter in the file:

imq.transaction.producer.maxNumMsgs

Example: Set the upper limit to 5000.

imq.transaction.producer.maxNumMsgs=5000

To modify the upper limit, first ensure that the IUCLID server has been started and stopped at least once, so that the relevant imq configuration directories have been created. The application does need to be deployed during the start and stop.

What about the config in the interface?

5.10. Instance Based Security (IBS)

Instance Based Security (IBS) is described in the IUCLID 6 Help System. By default, IBS is turned off. Before turning IBS on, be sure that the system and its users are ready for it. Turning IBS off after having configured access rights, and also turning it back on again, may have unpredictable results. Such actions are not supported by the ECHA Helpdesk.

To turn IBS on, set the parameter as below, and then restart the instance of IUCLID 6 Server.

Loggin in and out of a user is not enough to effect the change. IBS cannot be switched on and off via the graphical user interface of IUCLID 6.

Settings file:
Parameter:
environments.instance.based.security=true

5.11. Locking of the User SuperUser

By default, the User SuperUser can be locked. To prevent this, set the parameter as below, and then restart the instance of **IUCLID 6 Server**. Logging in and out of a User is not enough to effect the change.

**Settings file:**
<glassfish_installation>/glassfish/domains/domain1/config/server.settings.properties

Parameter:
environments.lock.superUser.enabled=false

If the User SuperUser is locked, it can be unlocked using the following SQL command:

$ update IUCLID_USER set FAILED_LOGIN_ATTEMPTS=0 where username = 'SuperUser';

5.12. Backup/Restore of the database

It is essential that the database is backed up. This should be done regularly, and before performing updates and any large migrations or imports of data.

5.12.1. Oracle

The backup and restore of an Oracle database are not covered by this document. Please refer to the vendor’s documentation.

5.12.2. Derby

The default database with which **IUCLID 6 Server** is supplied is contained completely within the folder named *iuclid6* with the following path:
<glassfish_installation>/glassfish/domains/domain1/databases/iuclid6

For instructions on making backups, see the vendor’s documentation at the following address:
6. Monitoring

6.1. Application log files
The log files are:
derby.log (for derby embedded database)
<glassfish_installation>\glassfish\domains\domain1\logs\server.log (as defined in domain.xml)
<glassfish_installation>\glassfish\domains\domain1\logs\**\*.log

6.2. Database location (Derby/Javadb)
For the IUCLID 6 Server, the default location of the database is:
<glassfish_installation>\glassfish\domains\domain1\databases\iuclid6
The database connection details are held in:
<glassfish_installation>\glassfish\domains\domain1\databases\domain.xml
Please see section Database installation and initialisation
The default location of the derby log file is:
<glassfish_installation>\glassfish\domains\domain1\databases\derby.log

6.3. Working directories
When GlassFish starts, the IUCLID 6 Server application is deployed to:
<glassfish_installation>\glassfish\domains\domain1\osgi-cache\felix\bundle300\data\applications\bundle375-????????????????????
7. **IUCLID 6 trouble-shooting**

In this section, some potential errors and their resolution are given.

7.1. **No free port within range / Port already in use**

SEVERE|glassfish3.1.2|grizzly|_ThreadID=??;_ThreadName=Thread-??;|doSelect IOException

deSelect

java.net.BindException: No free port within range:

SEVERE|glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|_ThreadID=16;_ThreadName=Thread-2;|java.rmi.server.ExportException: Port already in use: 8686; nested exception is:

Solution

There may be another instance of glassfish running. Stop the process and try again.

If the OS is Linux, the process using the port can be found using the following command:

```
$ sudo netstat -lptu|grep <port>
```

7.2. **Unsupported major.minor version 51.0**

SEVERE|glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|_ThreadID=19;_ThreadName=Thread-2;|java.lang.UnsupportedClassVersionError:

eu\echa\iuclid6\presentationdefinition\registry\impl\PresentationDefinitionRegistryImpl : Unsupported major.minor version 51.0

Solution

Java 6 is being used. Change the PATH to include java 8.

7.3. **Log in to the admin console of GlassFish gives an error:**

Secure Admin must be enabled to access the DAS remotely

By default, remote access to the admin console of GlassFish is not allowed. This is done for reasons of security. So long as appropriate security measures are in place, remote access can be allowed as described below.

Solution

1) Ensure IUCLID is running.

2) Perform the following command:

```
<Installation_directory>/glassfish4/bin/asadmin change-admin-password
```

This asks for a username and password. The defaults are user=admin and an empty password. Therefore, by default, simply press ENTER twice. Then enter the new username and password.
3) Perform the following command:
<Installation_directory>/glassfish4/bin/asadmin enable-secure-admin

4) Restart IUCLID.

### 7.4. http:<host>/webstart gives 404 Not found

**Solution**

Check the server log file in:
<glassfish_installation>/glassfish/domains/domain1/logs/server.log

### 7.5. http:<host>/webstart downloads an old version of the jnlp file

This may be caused by a proxy having cached the previous version.

**Solution**

Flush the proxy.

### 7.6. JMS resource not created

The server does not start and the file server.log shows:

```
SEVERE|glassfish3.1.2|javax.enterprise.system.container.ejb.mdb.com.sun.ejb.containers|ThreadID=*;_ThreadName=Thread- *
|com.sun.appserv.connectors.internal.api.ConnectorRuntimeException
com.sun.appserv.connectors.internal.api.ConnectorRuntimeException: JMS resource not created : jms/BulkBackgroundJobs
```

**Solution:**

Please re-install the server.

### 7.7. The client displays HTTP Status 500

org.apache.jasper.JasperException: PWC6345: There is an error in invoking javac. A full JDK is required, not only JRE.

**Solution:**

Re-start the server using a java 8 full JDK.

### 7.8. Out of Memory

Whilst carrying out an action in IUCLID 6, an error is given that includes the text:

OutOfMemory
Solution:
Increase the amount of JVM memory allocated to IUCLID 6, as described in section 5.5 Set JVM memory options.

7.9. Invalid maximum heap size
On starting the GlassFish server for IUCLID 6 Server, the following error is given:
Invalid maximum heap size: -Xmx4096m
The specified size exceeds the maximum representable size.
Error: Could not create the Java Virtual Machine.
Error: A fatal exception has occurred. Program will exit.

Solution:
Run IUCLID 6 Server on a machine with more memory.

7.10. Error messages in server.log that can safely be ignored
SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|_ThreadID=60;_ThreadName=Thread-2;|java.lang.IllegalArgumentException: Illegal character in opaque part at index 65: embeddedjar:bundle://302.0.0/fop-1.0.jar!/org/apache/fop/pdf/sRGB Color Space Profile.icm
at java.net.URI.create(URI.java:859)
The issue is also reported on GlassFish and Felix JIRAs
https://java.net/jira/browse/GLASSFISH-20986
https://issues.apache.org/jira/browse/FELIX-4429

SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|_ThreadID=60;_ThreadName=Thread-2;|INFO 28/05/15 12:58:liquibase: Successfully acquired change log lock[#]

SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|_ThreadID=60;_ThreadName=Thread-2;|INFO 28/05/15 12:58:liquibase: Reading from DATABASECHANGELOG[#]

SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.tools.deployment.org.glassfish.deployment.common|_ThreadID=63;_ThreadName=Thread-2;|Exception while visiting com/sun/gjc/common/DataSourceSpec.class of size 3267
java.lang.NullPointerException
SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|ThreadID=60;_ThreadName=Thread-2;INFO 28/05/15 12:58:liquibase: dropSequence is not supported on derby but will continue|

7.11. Other errors in server.log file

7.11.1. Exception in thread …

SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|ThreadID=61;_ThreadName=Thread-2;Exception in thread "Thread-29" [#]
SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|ThreadID=61;_ThreadName=Thread-2;java.lang.NullPointerException
    at eu.echa.iuclid6.osgi.launcher.OsgiOrderLauncher.stageFiles(OsgiOrderLauncher.java:158)
    at eu.echa.iuclid6.osgi.launcher.OsgiOrderLauncher.init(OsgiOrderLauncher.java:121)
    at eu.echa.iuclid6.osgi.launcher.OsgiOrderLauncher.run(OsgiOrderLauncher.java:106)
    at java.lang.Thread.run(Thread.java:745)

Solution:

Check that the iuclid6 bundles are deployed in the directory:
<glassfish_installation>\glassfish\domains\domain1\iuclid6
See section 3 Installation of IUCLID 6 Server.

7.11.2. Waiting for changelog lock…

SEVERE|oracle-glassfish3.1.2|javax.enterprise.system.std.com.sun.enterprise.server.logging|ThreadID=60;_ThreadName=Thread-2;INFO 28/05/15 12:47:liquibase: Waiting for changelog lock....[#]

Solution:

If the application has not yet been used, delete and re-create the database.
Please see section 5.3 for database location:
Otherwise, run the following SQL commands on the database:
    Derby:
    $ update databasechangeloglock set locked=false
Oracle:

$ update databasechangeloglock set locked=0
8. Migration of data to **IUCLID 6 Server** from IUCLID 5 Server or earlier

To migrate data to **IUCLID 6 Server** from a server installation prior to IUCLID 6, follow the instructions provided on the IUCLID website at:


9. Updating **IUCLID 6 Server**

Before updating **IUCLID 6 Server**, shut down or close the user interfaces, shut down the server, and then create a back-up of the database. Refer to the vendor’s documentation for how best to create the backup. If the database configuration used is the default *Derby Embedded with no database server*, a backup will be created automatically during the update process, but it is still safest to ensure that the database is backed-up independently, and that the restore process has been checked.

**IUCLID 6 Server** can be updated to the latest version by running a java software application, the *Updater tool*. The tool is available on the IUCLID 6 website in archives named:

*iuclid6-updater-*<version>*.zip*

*iuclid6-updater-linux-*<version>*.tar.gz*

Unpack the archive to a convenient directory that is accessible by the computer that contains the installation to be updated. If the *Updater tool* is unpacked to the installation folder, the tool automatically finds the installation, otherwise it has to be selected on the first page of the tool wizard. The *Updater tool* comes with its own Java JDK, so it needs access to neither a system wide Java JDK, nor the one in the installation folder. The contents of the unpacked directory, named *iuclid6-updater-*<version>* are shown in an example below.

**Figure 17: The contents of the Updater tool’s directory for Windows**
The Updater tool can be run either with or without a graphical user interface. Running Updater tool without a graphical wizard is designed for environments where it is preferable, or essential, to use only the command line.

The Updater tool can also be used to update IUCLID 6 Desktop. The graphical interface is designed to be self-documenting so there is no dedicated manual for updating IUCLID 6 Desktop.

Do not try to use Updater tool with an unofficial release of IUCLID 6, such as a beta version.

### 9.1. Running Updater tool with a graphical wizard

To use a graphical wizard under Windows, run the following:

- **Windows:** `iuclid6-update-gui.cmd`
- **Linux:** `iuclid6-update-gui.sh`

### 9.1.1. Select the installation of IUCLID 6 Server

The first page of the graphical wizard of the Updater tool is shown in an example below.
Legend for Figure 18

1. The path to the installation to be updated. If the directory of the *Updater tool* is in the installation directory, the path is found automatically, otherwise, browse to it manually. The *Updater tool* sets the installation directory automatically to be the first directory it finds up the filesystem tree from itself that contains a directory named `glassfish4`;

2. Check the type of installation, and the version of the installation to be updated;

3. Select *Update*;

4. When *Update* is selected in (3), there is an option *Would you like the IUCLID6 tool to upgrade the JDK?* If this box is ticked, the Java JDK delivered with *IUCLID Server* will be changed from Oracle Java SE 8 JDK to Azul Zulu Open JDK 8, except when it has already been done in the past, for example, whilst upgrading to *IUCLID Server 3.16.1*. Note that the *Restore* function does not restore a Java JDK that was updated by the *Updater tool*. To have the option of restoring the Java JDK, make a backup copy of the folder named `jdk`.

When the installation directory is correct, *Update* has been selected, and the correct option for JDK is set, click on *Next*. 
9.1.2. Set the location of the back-up archive

Whenever the Update tool is run, before making any changes, it creates a back-up archive of the installation to be changed. The location of this archive is set on the second page of the wizard, as shown in the example below.

**Figure 19: Set the path to the automatic backup**

Consider where the archive file will be stored. The default directory may not be the best location, although it can always be moved later. In the example shown above, a dedicated folder has been created.

On clicking Next, the Updater tool creates a backup archive.

The Updater tool archives the installation directory of the software GlassFish, which by default has the name glassfish4. If the Updater tool cannot find a directory named glassfish4 it cannot proceed. The archive is given a name of the form IUCLID6-v<version>-<datetime>.i6fb. If the default option for the database is used, Derby Embedded with no database server, the database is fully contained within the archive because it is in a directory below the directory glassfish4, as shown below:

<installation_dir>\glassfish4\glassfish\domains\domain1\databases\iuclid6

In that case, the backup archive contains a copy of the application files and the database, which includes data such as Substances and Dossiers. For other database configurations, the database may not be in the archive, and must therefore be backed up separately. A backup archive created by the Updater tool may be used by its Restore feature, as described in the next section.

Once the path to the automatic backup is set correctly, click on Next.
9.1.3. Set the database connection parameters

On the third page of the wizard parameters for connections to database(s) are set. An example is given below.

Figure 20: Database connection parameters

![Database connection parameters](image)

9.1.3.1. Database connection parameters for IUCLID 6 Server

In the example shown above, the Updater tool has found a previous installation of IUCLID 6 Server and has copied its database connection details into the wizard.

To test whether the connection details are correct, click on Verify (Ver…). If the Updater tool is able to connect to the database, a confirmation message is shown at the bottom left of the interface.

If an error message is shown stating that the Updater tool cannot connect to the IUCLID 6 database, check the details carefully, and then try again.

**Tip:** When using the embedded derby database with IUCLID 6 Server, if you see the error message, “Cannot connect to the IUCLID 6 database”, but you know the connection details are correct, check whether there is something else already connected to the database, for example, because either IUCLID 6 or another instance of the Updater tool are running. The command line window that opened on starting the IUCLID 6 Server must be closed before the Updater tool can connect.

The Updater tool reads the parameters of the database connection from the following configuration file:

```
<glassfish_installation>\glassfish\domains\domain1\config\domain.xml
```

The way in which the connection details are entered into the file domain.xml are described in section 5.3 Database installation and initialisation.
If the *Updater tool* gives an error message that it cannot read the connection details from the file `domain.xml`, check that the installation of *IUCLID 6 Server* is valid and configured correctly.

If the connection parameters for the IUCLID 6 database are correct, before proceeding, consider whether the option described in the next section is relevant. If it is not, click on *Next*.

### 9.1.4. Was the IUCLID 6 installation migrated from IUCLID 5, and is the IUCLID 5 database still accessible?

This option is relevant only if the data in the IUCLID 6 database originally came from IUCLID 5, and the *IUCLID 6 database patch tool* has not already been run on it. It can be ignored if the original IUCLID 5 database and its associated software, PostgreSQL, are no longer accessible. For more information, see below.

In the past, in some cases, the migration process from IUCLID 5 to IUCLID 6 did not migrate all data perfectly. This was addressed by running a separate software tool known as the *IUCLID 6 database patch tool*. This tool required access to both the original source IUCLID 5 database, and the IUCLID 6 database to which data had been migrated. An option to run the *IUCLID 6 database patch tool* is integrated in to the *Updater tool*. Ticking the box for this field turns that option on. The IUCLID 5 database must be accessible, so PostgreSQL must be running. The *Updater tool* looks for an installation of IUCLID 5 on the machine on which it is run. An example of the connection parameters is shown in the figure below.

#### Figure 21: Database connection parameters for IUCLID 5

The location of the parameters is described in the subsection below. If the IUCLID 5 database is running on a different host than the *Updater tool*, it is necessary to configure PostgreSQL to accept the connection. See the vendor’s documentation for [more information](#).

If the connection parameters for the IUCLID 5 database are correct, click on *Next*.

### 9.1.4.1. Database connection parameters for IUCLID 5

For IUCLID 5, the required values are in the following properties files:
Desktop: `<iuclid5 installation directory>\conf\workstation.properties`
Server: `\webapps\i5server\WEB-INF\classes\server.properties`

The parameters in the properties files correspond to the fields in the migration application as follows.

**Table 9: The location of the database for IUCLID 5**

<table>
<thead>
<tr>
<th>Field in migration application</th>
<th>Field in properties file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database url</td>
<td>hibernate.connection.url</td>
</tr>
<tr>
<td>Database username</td>
<td>hibernate.connection.username</td>
</tr>
<tr>
<td>Database password</td>
<td>hibernate.connection.password</td>
</tr>
</tbody>
</table>

In the example shown in the screen shot above, the values are the defaults for IUCLID 5 with a PostgreSQL database, as shown below:

Database url = `jdbc:postgresql://localhost:5432/iuclid5`
Database username = `iuclid5`
Database password = `iuclid5`

**9.1.5. Summary page**

The fourth page of the wizard presents a summary of the overall update process, and states what is about to be changed. Read it through carefully.
Clicking *Close* at this point stops the update process before the automatic backup has been created, and before the current installation of *IUCLID 6 Server* has been changed.

When the update process begins, it first checks whether the *IUCLID 6 Server* is running, and if it is, shuts it down. Java clients for the user interface should already have been closed manually before running the *Updater tool*.

If all the details are correct, and the IUCLID 6 database has been or will be backed up, click *Next*.

### 9.1.6. Follow the update process

The update process can be followed from the log files and from the interface, as indicated below. Once the creation of the backup archive is finished, the *Updater tool* writes the new application files in to the installation by replacing the following directories:

- `<installation_dir>\glassfish4\glassfish\domains\domain1\iuclid6`
- `<installation_dir>\glassfish4\glassfish\domains\domain1\logs`
- `<installation_dir>\glassfish4\glassfish\domains\domain1\osgi-cache`
Installation Instructions for *IUCLID 6 Server*

No other directories are touched, so a database in the default location is not touched.

Under Windows if a dialog box like that below is shown, and the default value suits the needs of the installation, it can be dismissed by clicking on the cross at the top right. Note that the version of JDK being used to run the *Updater tool* is shown.

**Figure 23: Windows security alert for the Updater tool**

![Windows security alert](image)

An example of the report at the end of a successful update is shown below.
9.1.6.1. Logging of the Updater tool

The Updater tool writes the following log files.

Table 10: Logging of the Updater tool

<table>
<thead>
<tr>
<th>Name of log file</th>
<th>Content of log file</th>
</tr>
</thead>
<tbody>
<tr>
<td>migration-report.log</td>
<td>Information on the migration of data from the old to the new version of the database of IUCLID 6 Server.</td>
</tr>
<tr>
<td>patch-report.log</td>
<td>Actions carried out by the IUCLID 6 database patch tool.</td>
</tr>
<tr>
<td>updater.log</td>
<td>Details of what happened during the update process.</td>
</tr>
</tbody>
</table>

9.1.7. Increasing the memory for the graphical Updater tool

If the Updater tool, gives the following error message, it needs to be run again with more memory allocated to it, as described below.

```
java.lang.OutOfMemoryError: Java heap space
```
If the error message is shown whilst the Updater tool is creating a backup, the existing installation of IUCLID 6 Server has not yet been touched, so the Updater tool can just be run again, this time with more memory. If the error message is shown after the Updater tool has created a backup and whilst it is updating IUCLID 6 Server, the installation must first be restored, before running the Updater tool with more memory. Restoration is described in section 9.1.9.

To run the Updater tool with more memory, first edit a script in the directory bin, and then run the tool again. Set the maximum amount of memory that the Updater tool may use by editing the value of the parameter Xmx in the file:

Windows:    bin/updater.cmd
Linux:      bin/updater.sh

For example, to double the maximum amount of memory from the default value of 2048 MB to 4096 MB, change –Xmx2048m to –Xmx4096m.

A detailed guide to memory management for IUCLID 6 and its tools, aimed at non-IT specialists, is provided in the document Java and Memory in IUCLID 6.

9.1.8. Starting IUCLID 6 Server after an update

After the Updater tool has finished an update, it does not attempt to restart IUCLID 6 Server. This must be done using the method appropriate for the system. The first time IUCLID 6 Server is started after Updater tool has been run, it will take longer to start.

9.1.9. Restore

Restore is intended to be used only when there is a need to recover an installation of IUCLID 6 because something went wrong during the Update process.

When the restore process begins, before writing over any data, the Update tool creates a backup of the installation to be overwritten, which it then saves in the same directory as the archive from which an installation will be restored. The new archive is given a name of the form IUCLID6- v<version>-autobackup-<datetime>.i6fb.

If the installation being restored uses the default database configuration, Derby Embedded with no database server, the data in the archive is restored to the installation. The data that was present in the installation before the restoration, is deleted. However, that data is in the backup archive that was created automatically at the start of the restoration. If the installation being restored does not use the default database configuration, the database must be restored independently of the Updater tool or the Restore script.

A backup archive created by the Restore feature, may be used in a subsequent restore process.

In the restore process the Updater tool reads the complete directory glassfish4 from the backup archive, and then writes it to the installation directory. This includes all the configuration files, but not the JDK, and not the scripts used to start and stop IUCLID 6 Server.

The wizard for the restoration process has features in common with the update process, as described onwards from section 9.1.1 Select the installation of IUCLID 6 Server. Here, only the differences are described in detail. Before starting the restore process, ensure that IUCLID 6 Server is not running.
On the first page of the wizard, in the field *IUCLID 6 Installation Directory*, select the installation to be written over. Then, select *Restore* as shown below.

**Figure 25: Choose to restore an installation of IUCLID 6 Server**

Click on *Next*.

On the second page of the wizard, select the archive file from which an installation of *IUCLID 6 Server* will be restored. The selected file must have the extension *i6fb*. An example is shown below.

**Figure 26: Select a backup archive from which to restore an installation of IUCLID 6 Server**

Click on *Next*.

The third page of the wizard presents a summary of the overall restoration process, and states what is about to be changed. Read it through, with care.
Clicking *Close* at this point stops the restoration process before the automatic backup has been created, and before the selected installation of *IUCLID 6 Server* has been changed.

When the restoration process begins, it first automatically shuts down the *IUCLID 6 Server* that it is about to act upon. User interfaces should be shut down or closed manually before running the *Updater tool*.

If all the details are correct, and any required database backups have been made, click *Next*.

The restoration process can be followed from the interface, and the log file: 
\`\logs\updater.log\`.

If no more actions are required, the *Updater tool* may be closed.

Note that the *Restore* function does not restore a Java JDK was updated by the *Updater tool*.

### 9.2. Running *Updater tool* without a graphical wizard

*Updater tool* can be run without a graphical wizard from the command line, in which case the values of the parameters must be entered into a settings file. The functionality is the same as that
for the graphical version described in previous sections. For more information about the scripts and their installation, see the start of this chapter in the manual, 9 Updating IUCLID 6 Server.

The settings file, is located in a directory named config and has the name:

`updaterConfig.properties`

The settings file contains the same parameters that are set in the graphical wizard, plus one extra to determine what happens if an error occurs.

An example of the settings file is given below for the screenshots above, in which the OS was Windows, and the type of database was Embedded Derby. Note the different path separators for Windows and Linux.

```properties
# For the two first directory-related properties, please note that
# in windows, the path separator should be (\) while in unix (/)

# The directory where the glassfish installation resides
# This property is required for both update and restore actions
installation.directory=F:\iuclid6

# The directory where the backup file will be stored in case of update or loaded in case of restore operation
backup.directory=F:\backup

# The name of the backed up archive to be restored, including the i6fb suffix
# This property is needed only for restore action
backup.archive=IUCLID6-v1.1.0-20170127-185658.i6fb

# Oracle connection url
# connection.url=jdbc:oracle:thin:@172.17.52.75:1521:iucliddev

# External derby connection url
# connection.url=jdbc:derby://localhost:1527/iuclid6

# Embedded derby connection url
connection.url=jdbc:derby:C:/iuclid6/glassfish4/glassfish/domains/domain1/databases/iuclid6

# Connections details for IUCLID5 DB to be used by db patch/migration tools (OPTIONAL)
# iuclid5.connection.url=jdbc:postgresql://localhost:5432/iuclid5
# iuclid5.connection.user=iuclid5
# iuclid5.connection.password=iuclid5

# Connections details for IUCLID6 DB to be used by db patch/migration tools (REQUIRED)
iuclid6.connection.user=IUCLID6
iuclid6.connection.password=IUCLID6

# For cli-based execution, in case db migration failures are identified specify the action to perform.
# Eligible values are: [update, restore, prompt]. Default value is prompt
on.dbmigration.errors=prompt
```

Start the update or restore by running one of the appropriate scripts below:
Installation Instructions for *IUCLID 6 Server*

**Windows**

`iuclid6-update.cmd`

`iuclid6-restore.cmd`

**Linux**

`iuclid6-update.sh`

`iuclid6-restore.sh`

On Linux, if required, the scripts above can be set to be executable using the following command:

```
$ chmod +x *.sh
```

Whilst the creation of a backup archive and the update or restore is running, do not interrupt the associated process(es) in any way. The progress can be followed from the command window, and from the log file(s).

### 9.2.1. Increasing the memory for the Updater tool when run with no graphical interface

If the *Updater tool*, gives the following error message, it needs to be run again with more memory allocated to it, as described below.

```
java.lang.OutOfMemoryError: Java heap space
```

If the error message is shown whilst the *Updater tool* is creating a backup, the existing installation of *IUCLID 6 Server* has not yet been touched, so the *Updater tool* can just be run again, this time with more memory. If the error message is shown after the *Updater tool* has created a backup and whilst it is updating *IUCLID 6 Server*, the installation must first be restored, before running the *Updater tool* with more memory. Restoration is described in section 9.1.9.

To run the *Updater tool* with more memory, first edit a script in the directory `bin`, and then run the tool again. Set the maximum amount of memory that the *Updater tool* may use by editing the value of the parameter `Xmx` in the file:

**Windows:**

`bin/updater.cmd`

**Linux:**

`bin/updater.sh`

For example, to double the maximum amount of memory from the default value of 2048 MB to 4096 MB, change `-Xmx2048m` to `-Xmx4096m`.

A detailed guide to memory management for IUCLID 6 and its tools, aimed at non-IT specialists, is provided in the document [*Java and Memory in IUCLID 6*](#).

### 9.3. Automatic notification of the availability of an update

A *IUCLID 6 Server* Java client can be set to check automatically from the IUCLID 6 website to see whether a new version of IUCLID 6 or its plugins has been published. The frequency of checking is set, per User, via the *User management*, as described in the help system of IUCLID 6. When a newer version is detected on the website, a message is displayed in the message area of the user interface.