

IUCLID 5

Guidance and Support

Web Service Installation Guide



IUCLID 5
INTERNATIONAL UNIFORM CHEMICAL INFORMATION DATABASE

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1. Introduction

1.1. Important notes

The IUCLID 5 web service uses the IUCLID 5 client interface to communicate with an IUCLID 5 server, which is part of a distributed installation of IUCLID 5. That means the IUCLID 5 web service needs the IUCLID 5 distributed version to operate; it will not work with a IUCLID 5 standalone version. The IUCLID 5 web service uses the client libraries of IUCLID 5 to communicate with the IUCLID 5 server. These libraries must have the correct version, i.e. the client libraries used by the IUCLID 5 web service must be exactly the same as the client libraries that are installed in the server installation of IUCLID 5.

The bundled version of the web service package contains all necessary libraries but you have to ensure that you install an appropriate version of the IUCLID 5 server.

Whenever the IUCLID 5 server is updated, the IUCLID 5 Web Service has to be updated too. Never operate the IUCLID 5 web service with older client libraries against an updated IUCLID 5 server.

1.2. Prerequisites

The IUCLID 5 web service needs an installation of the IUCLID 5 distributed version to operate. It can be installed on Apache Tomcat 6.0.x or Weblogic Server Version 10.3.

As needed by the IUCLID 5 distributed version the IUCLID 5 web service needs the Java Development Kit (JDK) Version 1.6 or above for the installation.

The IUCLID 5 server installation instructions could be downloaded from the official IUCLID 5 website.

<http://iuclid.echa.europa.eu/> (Section 'Get IUCLID 5')

Important Notes:

- *The IUCLID 5 web service can only connect to an IUCLID 5 server version **5.1.0**. or IUCLID 5 server version **5.2.0**. Connection to version **below 5.1.0** will not work properly!*
- *Executing the Query Tool Web Service requires the installation of the server-side part of the IUCLID 5 Query Tool plugin in the IUCLID 5 server. The client side of the query tool is not needed, as it is already included in the web service*

1.3. Installation files

The following files are necessary for an installation of the IUCLID 5 web service:

- **i5wsruntime.war**
The IUCLID 5 web service binaries and configuration files.
- **axis2.xml**
The configuration file for the IUCLID 5 web service and the AXIS2 web service framework. This file is part of the file i5wsruntime.war (see i5wsruntime.war/WEB-INF/conf)

The following file is necessary for an installation of the IUCLID 5 web service on WebLogic 10.3:

- **weblogicpatch.zip**
Contains the files that must be placed in the patch classpath of the Weblogic domain that will contain the IUCLID 5 Webservice (contains some of the IUCLID 5 specific XML libraries: xalan.jar, serializer.jar and xercesImpl.jar).

2. Standard Deployment

Within the standard deployment the IUCLID 5 web service runs in the same servlet container (Apache Tomcat, Weblogic) as the IUCLID 5 server. Please note that you might need to make additional memory available to your servlet container, as installing the web service in the same container as the IUCLID 5 server will increase the memory consumption. Please refer to the documentation of your servlet container to find out how additional memory can be made available to the servlet container.

Take the file `i5wsruntime.war` which is placed at the folder `runtime packages` of the delivery and deploy it to Apache Tomcat or Weblogic.

For details of how to deploy a WAR file to the servlet container please refer to the corresponding documentation or see the IUCLID 5 standard documentation.

<http://ecbwbiu5.jrc.it/index.php?fuseaction=home.documentation&type=public>

Note:

As default the IUCLID 5 web service try to connect the IUCLID 5 Server using <http://localhost:8080/i5server>.

*If your IUCLID 5 Server runs at a **different host or port**, please see chapter 0 Advanced Deployment for details on how to change the IUCLID 5 Server connection URL.*

2.1. Validate deployment

You can validate the deployment of the IUCLID 5 web service by open the IUCLID 5 web service web application, which is actually the AXIS2 web application console.

You can access the Web Application by using your favourite Web Browser and the following link (you have to adapt the `<servername>` and `<serverport>` to your environment).

<http://<servername>:<serverport>/i5wsruntime>

After you have opened the URL you will see the following start page of the AXIS 2 web service framework (see Figure 2-1).

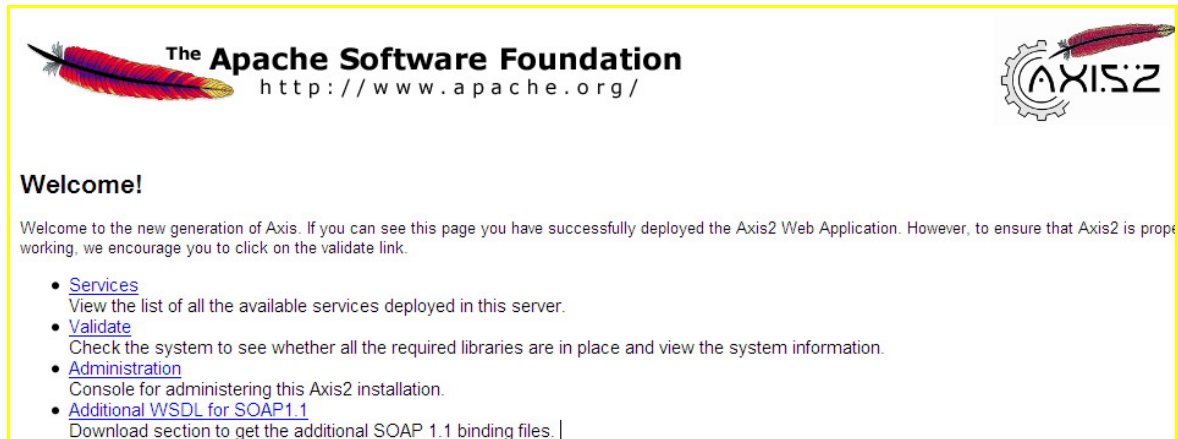


Figure 2-1 AXIS2 – Start page

Select [Services](#) to validate a correct and successful deployment of the IUCLID 5 Web Service. The following page displays all available services and their activation status which have to be "Active" to be successfully started (see Figure 2-2).

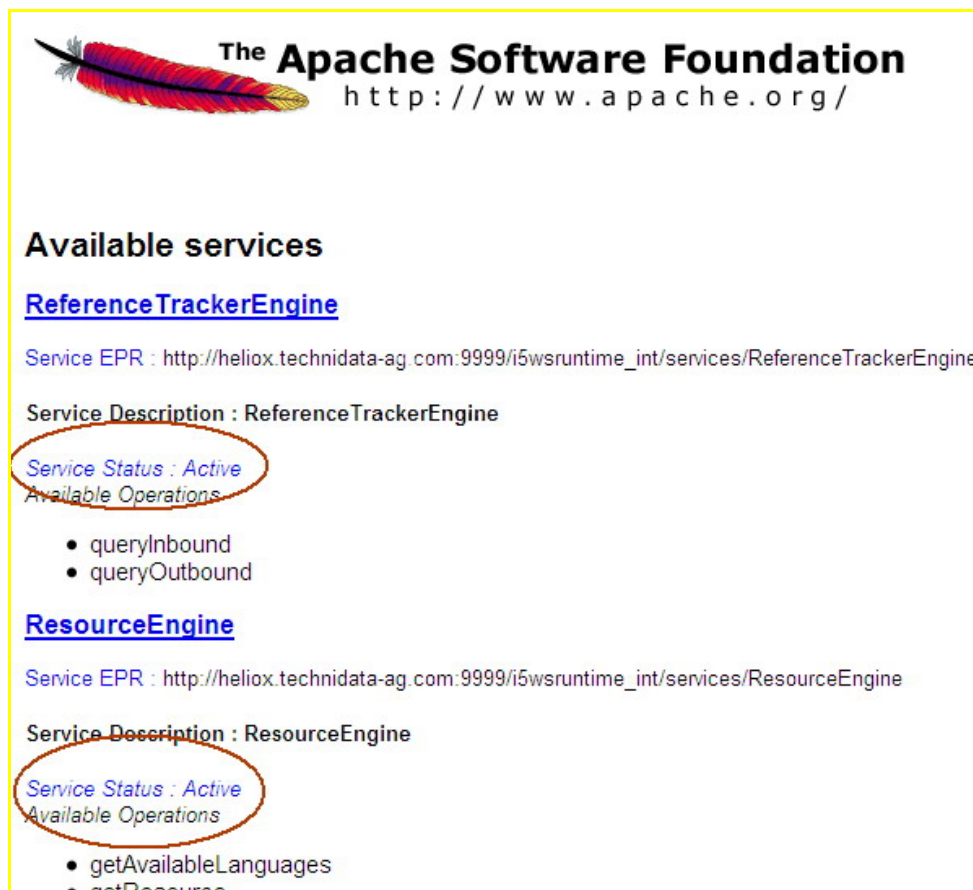


Figure 2-2 AXIS2 – Available services

The following list of IUCLID 5 web services should be available and “active” (you will find also the default AXIS 2 service “Version”):

- Reference Tracker Engine
- Resource Engine
- Referential Integrity Engine
- *Session Engine*
- *Query Engine*
- *Messaging Engine*
- *Endpoint Access Engine*
- *Document Access Engine*
- *Query Tool Engine*
- *Inventory Engine*

3. Advanced Deployment

As the IUCLID 5 web service using the IUCLID 5 client interface for the back-end communication, you have the alternative to deploy it on different machines or run the IUCLID 5 server on different ports. In that case, you have to adopt the [server.connection.url](#) either by unpacking the war-file to the servlet container and change the configuration directly at the extracted web application structure or creating a new war-file which contains the changed configuration.

In general it makes no difference for the following steps expect that you have to pack the files afterward as **i5wsruntime.war** or just start the servlet engine.

Ensure that the servlet container is stopped and than select the displayed directory.

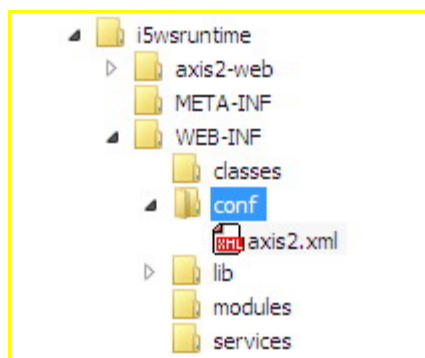


Figure 3-1 WAR file structure – configuration

The file **axis2.xml** contains the runtime configuration for the web service framework and also the configuration for the IUCLID 5 web service.

The XML snippet shows this default configuration.

```

...
<!--
=====
IUCLID5 connection configuration
Java properties XML file
=====
-->
<parameter name="IUCLID5.configuration">
  <properties>
    <comment>IUCLID 5 Connection Settings</comment>

    <!-- the connection URL to access the IUCLID 5 server -->
    <entry key="server.connection.url">http://localhost:8080/i5server</entry>

    <!--
    The standard queries are limited to 2000 result counts.
    If you want to remove this limitation you could either use the execution
    Definition limitation state settings (see execute query) or set this
    global property.
    Nevertheless the settings at the execution definition would override this parameter.

    Note: setting this flag to true may increase memory usage at the server.
    -->
    <entry key="query.engine.enable.infinite.result">true</entry>

    <!-- This flag enables/disables the session validation -->
    <entry key="session.engine.enable.session.validation">true</entry>

    <!-- web service session time-out after 2 hours (is default value)-->
    <entry key="session.scavenger.timeout.sec">7200</entry>

    <!-- check every 5 minutes if some web service sessions died
    is default value) -->
    <entry key="session.scavenger.frequency.sec">300</entry>

  </properties>
</parameter>
...

```

Code 3-1 IUCLID 5 Web Service configuration

The following table shows the IUCLID 5 web service configuration options:

<i>Configuration Key</i>	<i>Description</i>
<i>server.connection.url</i>	<i>URL of the IUCLID 5 server</i>
<i>query.engine.enable.infinite.result</i>	<i>If true, execute the queries without considering the result count limitation.</i>
<i>session.engine.enable.session.validation</i>	<i>If true, execute the session validation for each incoming request.</i>
<i>session.scavenger.timeout.sec</i>	<i>Defines the session time out for the web service sessions.</i>
<i>session.scavenger.frequency.sec</i>	<i>Defines the time frame the session scavenger looks for idle sessions.</i>

Table 3-1 Configuration description

To change the server connection, open the file **axis2.xml** with a text editor and locate the line that starts with `<entry key="server.connection.url">`. Change <http://localhost:8080/i5server> so that it contains the URL of your IUCLID 5 server and save the file.

- If you have changed the file within the servlet container you can now restart it and the IUCLID 5 web service using the changed configuration.
- If you have extracted the file **i5wsruntime.war** you have to pack its changed content again and deploy it the servlet container. Now restart it and the IUCLID 5 web service will also using the changed configurations.

3.1. **AXIS2 administration console**

This AXIS2 web application also enables access to the administration console by using the Administration link at the start page (Figure 2-1). Now you will be prompt to enter username and password (SuperUser/root by default).

Important Note:

*We **strongly recommend** that you change this **default** values, because it would easily be hacked!*

Open the file `axis2.xml` (see 0

Advanced Deployment) with a text editor and locate

- `<parameter name="userName">SuperUser</parameter>`
- `<parameter name="password">root</parameter>`

Change these two values and restart the servlet container.

3.2. Security Issues

This chapter contains some security relevant issues. It gives you an overview but not a detailed description on how to protect your Web Service environment, please also refer to your servlet container and the AXIS2 documentation for more information.

3.2.1 Set up https

Hypertext Transfer Protocol Secure (HTTPS) is a combination of the standard Hypertext Transfer Protocol (HTTP) with the Secure Sockets Layer (SSL) and respectively Transport Layer Security (TLS) to provide encryption and secure identification of the server.

This **quick setup guide** shows how to enable https communication using Tomcat and IUCLID 5 Web Service. For detailed information please refer to the tomcat documentation.

- <http://tomcat.apache.org/tomcat-6.0-doc/index.html>
- <http://tomcat.apache.org/tomcat-6.0-doc/ssl-howto.html>

Enable HTTPS (SSL) on Tomcat

For a **quick** configure of SSL on Tomcat, you have to follow these steps.

Important Note:

This is just the simplest way of configure SSL on Tomcat and should be only used for testing purpose. We **strongly recommend** that you following the detailed SSL documentation of Apache Tomcat (see <http://tomcat.apache.org/tomcat-6.0-doc/ssl-howto.html>)!

1. Create a self signed certificate key-store by executing the following command.

Windows:

```
%JAVA_HOME%\bin\keytool -genkey -alias tomcat -keyalg RSA
```

Unix:

```
$JAVA_HOME/bin/keytool -genkey -alias tomcat -keyalg RSA
```

Now you are prompt to enter the password, set tomcats defaults "changeit". In the next steps you are asked to enter the certification content information.

2. Configure the SSL connector.

Open the server.xml file under \$CATALINA_BASE/conf/ and uncomment the SSL HTTP/1.1 Connector entry and tweak as necessary. As we have used the default key-store and password we could use the default connector entry without any further customising.

```
<Connector port="8443" protocol="HTTP/1.1" SSLEnabled="true"  
maxThreads="150" scheme="https" secure="true"  
clientAuth="false" sslProtocol="TLS" />
```

3. Validate new configuration.
Restart tomcat and validate the successfully setup of the HTTPS connector by open the AXIS2 web application start page (Figure 2-1) using new currently configured SSL port (8443).

<https://<servername>:8443/i5wsruntime>

If you are using a self signed certificate you might getting notified by your browser about the usage of a not trusted certificate. As we have signed it, we can trust it and accept to forward to the web page.

Now we have successfully installed HTTPS at the Tomcat servlet container and we are nearly ready to use it.

Before we are able to use SSL on the client side we need to get the certificate that we generated earlier and hand it over to the client so it can be imported to the trust store of the clients SSL environment. To be able to send the certificate to the client we have to export it to a file by using the following command.

Windows:

```
%JAVA_HOME%\bin\keytool -export -alias tomcat -file server.cer
```

Unix:

```
$JAVA_HOME/bin/ keytool -export -alias tomcat -file server.cer
```

We only have to specify the name (-alias) as set before and the target file (-file). The location (-keystore) of the trusted store is not necessary, because we have used the default value. Now you can hand over the exported server certificate server.cer to your client application and import it to its trusted store.

Enable HTTPS for IUCLID 5 Web Service

The IUCLID 5 Web Service does not require any further configuration to enable HTTPS communication because it defines the HTTPS transport handler by default.

3.2.2 Advisable OS-Level file protection

The following list of files shall be protected under OS-Level.

- AXIS2 configuration file - axis2.xml
The AXIS2 configuration file contains some very important configuration values like the username and password for the administration console (3.1 AXIS2 administration console).

4. Deployment on WebLogic

The **i5wsruntime.war** that contains the IUCLID 5 web service has to be unpacked before the installation on the WebLogic server. Without unpacking the file, the IUCLID 5 web service will not function properly and will not be able to describe the offered web services in WSDL (web service description language). The IUCLID 5 web services can be deployed in the same WebLogic server domain as the IUCLID 5 distributed installation.

4.1. Installation on WebLogic 10.3

- Create a Weblogic Server Domain for the IUCLID 5 Web Services
- Unzip the file `weblogicpatch.zip` to a directory that can be accessed by the Weblogic server. The unzipped files are `serializer.jar`, `xalan.jar` and `xercesImpl.jar`. Next find the file `setDomainEnv.sh` in your Weblogic Server Domain (it is located in the `bin` directory of the domain). Locate the `PATCH_CLASSPATH` section in the file. For a UNIX/Linux Installation add the following line after the `PATCH_CLASSPATH` section:
`PATCH_CLASSPATH=<patch_directory>/serializer.jar${CLASSPATHSEP}<patch_directory>/xalan.jar${CLASSPATHSEP}<patch_directory>/xercesImpl.jar`
where `<patch_directory>` is the directory to which the file `weblogicpatch.zip` was unpacked. For a Windows based installation add the following line after the `PATCH_CLASSPATH` section:
`set`
`PATCH_CLASSPATH=<patch_directory>/serializer.jar${CLASSPATHSEP}<patch_directory>/xalan.jar${CLASSPATHSEP}<patch_directory>/xercesImpl.jar`
where `<patch_directory>` is the directory to which the file `weblogicpatch.zip` was unpacked.
- Save the file `setDomainEnv.sh`
- Copy the WAR file (`i5wsruntime.war`) to a safe place, e.g. `/opt/bea/i5wsruntime.war`
- Create a directory: `mkdir i5wsruntime`
- Change into this directory: `cd i5wsruntime`
- unzip the WAR file to this directory
`unzip ../i5wsruntime.war`
- If necessary modify the file `axis2.xml` as outlined in the section
- Advanced Deployment
- Possibly you will have to modify the `server.connection.url` as an IUCLID 5 distributed installation in the WebLogic server will typically use port 7001 (instead of 8080).
- Next, use your web browser to access the WebLogic administration console and install the IUCLID 5 web services application from the `i5wsruntime` directory created earlier.

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