



BIS

Web Services

Install & Setup



S4IT - BIS Web Services Installation and Setup Manual
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Introduction

Goal

The BIS Web Services exposes an open and standard interface to the BIS ROLAP engine. This way any application that acts as a Web Service Client can access the authorized BIS data layer.

Advantages

The main advantage is that the developers are now allowed to create their own user interface layer maintaining the access to the already predefined star schemas and reports. The BIS Web Services allows external access to the BIS star schema maintaining the security rules defined at BIS metadata level.

There are two distinct ways of getting data through the BIS Web Services interface:

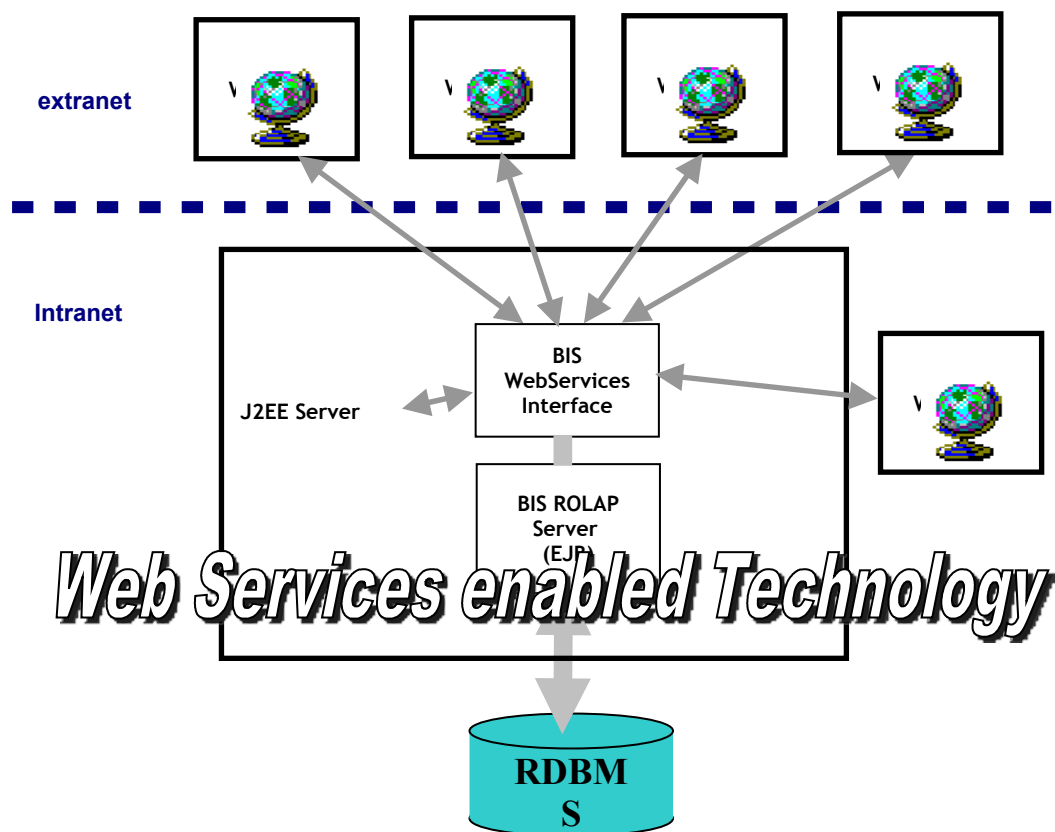
- Using the Pre-defined reports
- Executing Ad-Hoc queries, using the BIS ROLAP QUERY SYNTAX. This functionality is limited to BIS-Navigators only.

The security is enforced using a UserNameToken-based authentication between a web service client and a web service provider. This allows the federation of services. This way both the Web Services provider and the consumer may run in distinct domains.

Architecture

The BIS Web Services are implemented using the Java EE Platform. The Java EE platform uses a distributed multi-tiered application model for enterprise applications. Application logic is divided into components according to function, and the various application components that make up a Java EE application are installed on different machines depending on the tier in the multi-tiered Java EE environment to which the application component belongs. To expose Web Services it was used the JAX-WS API. JAX-WS stands for Java API for XML Web Services. JAX-WS is a technology for building web services and clients that communicate using XML. JAX-WS allows developers to write message-oriented as well as RPC-oriented web services.

With JAX-WS, clients and web services have a big advantage: the platform independence of the Java programming language. In addition, JAX-WS is not restrictive: a JAX-WS client can access a web service that is not running on the Java platform, and vice versa. This flexibility is possible because JAX-WS uses technologies defined by the World Wide Web Consortium (W3C): HTTP, SOAP, and the Web Service Description Language (WSDL). WSDL specifies an XML format for describing a service as a set of endpoints operating on messages.



As the picture above shows the BIS Web Services (WS) exposes an interface that can be consumed by Web Services Clients running in the same J2EE Server; in another J2EE Server or .NET server in the same hardware platform or even by WS Client applications running on other servers in an intranet or extranet environment. The BIS engine accesses the RDBMS through a JDBC connection pool, defined at J2EE server level.

The first version of BIS Web Services is available in a pre-deployed SUN Glassfish v2 J2EE Application Server.

Requirements for a standalone server

Disk Space:

Minimum free space for Installation: 200 MB

Recommended: 500 MB

Memory: Min 1 GB - Max depends on the number of concurrent queries and the size of the data sets.

CPU: 2 or above CPU Cores depending on the number of concurrent queries

Installation Steps

Unix/Linux Environment

- Have a BIS installation setup and running. So you can access it from BIS-Navigator or BIS-Executive. Have the Database connection parameters.
- Have installed JDK 1.5 / 1.6 or above

Run from **shell** `<JDK_PATH>/bin/javac -version` to check the installed JDK version. A message of the type **javac 1.5.0_15...** must be displayed in the first lines.

If you can't locate the javac than execute the following:

```
# export JAVA_HOME=<JDK_PATH>
# export PATH=$JAVA_HOME:$PATH
```

- Copy all the **s4AppSrv** and **Tools** folders located in the **Web Services** folder of **BIS Software Distribution CD** to a **new folder** in the server. The full pathname of the new **s4AppSrv** folder in the server will be identified in this document as **<s4AppSrv_path>**.

e.g. if the s4AppSrv folder was copied from the CD to `/bis/s4AppSrv` in your server, than
<s4AppSrv_path> = /bis/s4AppSrv

- Edit the file **<s4AppSrv_path>/bin/asadmin** change the line started by call to **asenv.conf** in order to contain the full path name of the **asenv.conf**.
If **<s4AppSrv_path>** installation folder is **/bis/s4AppSrv** then the line should look like:

```
. "/bis/s4AppSrv/config/asenv.conf"
```

- All the strings of type **<s4AppSrv_path>** in the file **config/asenv.conf** must be replaced by the **full pathname of the glassfish installation folder**.

If the glassfish installation folder is **/bis/s4AppSrv** then, as an example, the **AS_ANT** and **AS_INSTALL** properties should look like:

```
AS_ANT="/bis/s4AppSrv/lib/ant"
```

```
AS_INSTALL="/bis/s4AppSrv"
```

- Locate and change, if necessary, the property **AS_JAVA** within the same **config/asenv.conf** file, in order to point to the full pathname of a valid JDK 1.5 or 1.6 in the file **config/asenv.conf** like:

```
AS_JAVA="<JDK_PATH>"
```

If the previous steps were not correctly defined, the attempt to start the glassfish Application Server, most probably, will result in the following error message: **The system cannot find the path specified.**

- Start the J2EE Server

```
$ cd <s4AppSrv_path>
$ ./bin/asadmin start-domain domain1
```

If required:

Please enter the **master password**> **s4Mpassword** (This is the default master password)

Wait until a message like the following one is displayed:

Domain domain1 is ready to receive client requests. Additional services are being started in background.

Domain [domain1] is running [Sun GlassFish Enterprise Server v2.1.1 ((v2.1 Patch...
Admin Console is available at [http://localhost:4848].

.....

Domain listens on at least following ports for connections:
[8484 8181 4848 3700 3820 3920 8686].

- Validate if it is operational, by accessing the url http://localhost:8484 in a browser

You should see a page containing the following messages:
Sun Java System Application Server 9.1_1 (build b60e-fcs)
Your Application Server is now running

- Update the s4Properties file that contains the database and Web Services authentication data

a. From the **Tools** server folder execute the **s4WSPProperties.sh**

b. Full fill all the fields according with your target database and Web Services Security Properties.

c. Press the button "**Test Connection**" and verify if the status is "Connection OK".

d. Then copy the **s4Properties** file created in the Tools folder to the **<s4AppSrv_path>/domains/domain1/config** folder.

e. Copy also the **biscli.dlb** file to the **<s4AppSrv_path>/domains/domain1/config** folder. The **biscli.dlb** file can be located in one of the workstations running BIS Administrator or Navigator.

- Stop the Application Server Domain

```
<cmd> cd <s4AppSrv_path>
<cmd> bin/asadmin stop-domain domain1
```

The screenshot shows the 's4WSPProperties' configuration window. It is divided into several sections:

- Database Connection Properties:** Includes fields for RDBMS Type (Oracle), Host Name (davinci), Service Port Num (1521), Service Name (ORCL), and Schema Owner (S4IT_OWNER).
- Database Authentication Properties:** Includes fields for User Name (bis), Password (masked), and Confirm Password (masked). A 'Test Connection' button is present.
- WebServices Security Properties:** Includes fields for WS Phrase (s4WS), Token (ABCDE), and Pass phrase (2173076161637771512367014113271131031751217</x500Token>).
- Log Level:** A dropdown menu set to 0.
- Log File:** A text field containing 's4WSlog'.
- Buttons:** 'Test Connection' and 'Save Parameters'.
- Status Bar:** Displays 'jdbc:oracle:thin:@davinci:1521/ORCL'.

- Change the file `glassfish/jdbc/s4Database` and related `jdbc-connection-pool`
 - a) Backup the file `<s4AppSrv_path>/domains/domain1/config/domain.xml`
 - b) Modify the file `<s4AppSrv_path>/domains/domain1/config/domain.xml`

Search for the line containing the string `jdbc/s4Database` and replace the string "`S4 jdbc-connection-pool Name`" in the attribute `pool-name`, by the `jdbc-connection-pool Name` corresponding to your Database.

DB2:
`jdbc-connection-pool Name="DB2DB"`

Informix:
`jdbc-connection-pool Name="InfxDB"`

Oracle:
`jdbc-connection-pool Name="OraDB"`

Microsoft SQL*Server via JDBC-ODBC bridge:
`jdbc-connection-pool Name=" SqlSrvDB"`

- c) Locate the line that starts with "`<jdbc-connection-pool`" and that contains the "`jdbc-connection-pool Name`" chosen in the previous point,

Change the specific **Database Properties** between corresponding Tags `<jdbc-connection-pool ... >` and `</jdbc-connection-pool>` in order to fit your database settings.

NOTE: **Do NOT change the value of the Password property.** The value must be equal to "`${ALIAS=DBPwdAlias}`"

E.g. for an Informix Database:

```
<jdbc-connection-pool allow-non-component-callers="false" ..... >
  <property name="User" value="db_username"/>
  <property name="DatabaseName" value="s4_db"/>
  <property name="IfxIFXHost" value="server.dom.com"
  <property name="ServerName" value="ol_server"/>
  <property name="PortNumber" value="1525"/>
</jdbc-connection-pool>
```

- d) If the default **port (8484)** is **not available** than modify to another free one. For that, locate the string `id="http-listener-1"` in the file `<s4AppSrv_path>/domains/domain1/config/domain.xml` and then change the tag `port="8484"` to another port number.

- e) Save the changes

- f) Start the domain: `asadmin start-domain domain1`

- g) Define the db user password: `asadmin create-password-alias DBPwdAlias`

Validation

- Test the access to S4ITWS Web services by default on port 8484.

`http://<server name>:8484/s4WSsrv/S4ServerWSService?wsdl`

A WSDL file should be displayed

- Test the access to the sample Web service Client by default on port 8484

http:// <server name>:8484/S4ITWSCLI

If it returns the following line, than it **is working OK !**

Error: S4SERVER error:-1 Msg:Web Service Report Não Disponível

Windows Environment

- Have a BIS installation setup and running. So you can access it from BIS-Navigator or BIS-Executive. Have the Database connection parameters.
- Have installed JDK 1.5 / 1.6 or above

Run from **cmd** <JDK_PATH>\bin\javac -version to check the installed JDK version.
A message of the type **javac 1.5.0_15...** must be displayed in the first lines.

- Copy all the **s4AppSrv** and **Tools** folders located in the **Web Services** folder of **BIS Software Distribution CD** to a **new folder** in the server. The full pathname of the new **s4AppSrv** folder in the server will be identified in this document as **<s4AppSrv_path>**.

e.g. if the s4AppSrv folder was copied from the CD to E:\bis\s4AppSrv in your server, than
<s4AppSrv_path> = E:\bis\s4AppSrv

- Edit the file **<s4AppSrv_path>\bin\lasadmin.bat** change the line started by call to asenv.bat in order to contain the full path name of the asenv.bat.
If **<s4AppSrv_path>** installation folder is **E:\bis\s4AppSrv** then the line should look like:

call "E:\bis\s4AppSrv\config\asenv.bat"

- All the strings of type **<s4AppSrv_path>** in the file **config\asenv.bat** must be replaced by the **full pathname of the glassfish installation folder**.

If the glassfish installation folder is **E:\bis\s4AppSrv** then, as an example, the **AS_ANT** and **AS_INSTALL** properties should look like:

Set AS_ANT= E:\bis\s4AppSrv\lib\ant

Set AS_INSTALL= E:\bis\s4AppSrv

- Locate and change, if necessary, the property **AS_JAVA** within the same **config/asenv.sh** file, in order to point to the full pathname of a valid JDK 1.5 or 1.6 in the file **config/asenv.bat** like:

set AS_JAVA=<JDK_PATH>

If the previous steps were not correctly defined, the attempt to start the glassfish Application Server, most probably, will result in the following error message: **The system cannot find the path specified.**

- Start the J2EE Server

<cmd> cd <s4AppSrv_path>

<cmd> bin\lasadmin start-domain domain1

Please enter the master password> s4Mpassword (This is the default master password)

Wait until a message like the following one is displayed:

Domain domain1 is ready to receive client requests. Additional services are being started in background.

Domain [domain1] is running [Sun GlassFish Enterprise Server v2.1.1 ((v2.1 Patch...
Admin Console is available at [http://localhost:4848].

.....

Domain listens on at least following ports for connections:
[8484 8181 4848 3700 3820 3920 8686].

- Validate if it is operational, by accessing the url **http://localhost:8484** in a browser

You should see a page containing the following messages:

Sun Java System Application Server 9.1_02 (build b04-fcs)
Your Application Server is now running

- Update the s4Properties file that contains the database and Web Services authentication data

- a. From the **Tools** server folder execute the **s4WSProperties.bat**.
- b. Fill all the fields according with your target database and Web Services Security Properties.
- c. Press the button "Test Connection" and verify if the status is "Connection OK".
- d. Then copy the s4Properties file created in the Tools folder to the **<s4AppSrv_path>\domains\domain1\config** folder.
- e. Copy also the **biscli.dlb** file to the **<s4AppSrv_path>\domains\domain1\config** folder. The **biscli.dlb** file can be located in one of the workstations running BIS Administrator or Navigator.

s4WSProperties

Database Connection Properties

RDBMS Type:

Host Name:

Service Port Num:

Service Name:

Schema Owner:

Database Authentication Properties

User Name:

Password:

Confirm Password:

Test Connection

WebServices Security Properties

WS Phrase:

Token:

Pass phrase:

Log Level:

Log File:

Save Parameters

jdbc:oracle:thin:@//davinci:1521/ORCL

- Stop the Application Server Domain

```
<cmd> cd <s4AppSrv_path>
<cmd> bin\asadmin stop-domain domain1
```

- Change the file glassfish jdbc/s4Database and related jdbc-connection-pool

a) Backup the file **<s4AppSrv_path>\domains\domain1\config\domain.xml**

b) Modify the file **<s4AppSrv_path>\domains\domain1\config\domain.xml**

Search for the line containing the string **jdbc/s4Database** and replace the string "**S4 jdbc-connection-pool Name**" in the attribute **pool-name**, by the **jdbc-connection-pool Name** corresponding to your Database.

DB2:

```
jdbc-connection-pool Name="DB2DB"
```

Informix:

```
jdbc-connection-pool Name="InfxDB"
```

Oracle:

```
jdbc-connection-pool Name="OraDB"
```

Microsoft SQL*Server via JDBC-ODBC bridge:

```
jdbc-connection-pool Name="SqlSrvDB"
```

c) Locate the line that starts with “<jdbc-connection-pool” and that contains the “**jdbc-connection-pool Name**” chosen in the previous point,

Change the specific **Database Properties** between corresponding Tags <jdbc-connection-pool ...> and </jdbc-connection-pool> in order to fit your database settings.

NOTE: **Do NOT change the value of the Password property**. The value must be equal to “**#{ALIAS=DBPwdAlias}**”

E.g. for an Informix Database:

```
<jdbc-connection-pool allow-non-component-callers="false" ..... >
  <property name="User" value="db_username"/>
  <property name="DatabaseName" value="s4_db"/>
  <property name="IfxIFXHost" value="server.dom.com"/>
  <property name="ServerName" value="ol_server"/>
  <property name="PortNumber" value="1525"/>
</jdbc-connection-pool>
```

d) If the default **port (8484)** is **not available** than modify to another free one. For that, locate the string **id="http-listener-1"** in the file <s4AppSrv_path>\domains\domain1\config\domain.xml and then change the tag **port="8484"** to another port number.

e) Save the changes

f) Start the domain: **bin\asadmin start-domain domain1**

g) Define the db user password: **asadmin create-password-alias DBPwdAlias**

Validation

- Test the access to S4ITWS Web services by default on port 8484.

http://<server name>:8484/s4WSsrv/S4ServerWSService?wsdl

A WSDL file should be displayed

- Test the access to the sample Web service Client by default on port 8484

http:// <server name>:8484/S4ITWSCLI

If it returns the following line, than it **is working OK !**

Error: S4SERVER error:-1 Msg:Web Service Report Não Disponível

Mandatory setup settings for all environments

It is **mandatory** that the **Regional and Language settings** of the Application Server where **BIS Application Server** is running **are the same** as of the **Database Server**. This mainly affects the **formats defined in the BIS Filters**.

If the BIS WS Application Server is not started with the correct Regional and Language settings, could raise database execution errors due to incorrect format of dates and numbers with decimal notation.

Errors like the following can be returned from the Database Server:

Error: S4SERVER error:1861 Msg:ORA-01861: literal does not match format string

Each database vendor has its own locale settings.

Warning: You must properly configure the database client locale in order to send/receive data to the database server, according to the locale used by your application. Both database client locale and application locale settings must match (you cannot have a database client locale in Japanese and a runtime locale in Chinese).

Here is the list of environment variables defining the locale used by the application, for each supported database client:

Database Client	Settings
Oracle	The DB client locale settings can be set with environment variables like NLS_LANG, or after connection, with the ALTER SESSION instruction. By default, the client locale is set from the database server locale.
Informix	The DB client locale is defined by the CLIENT_LOCALE environment variable. For backward compatibility, if CLIENT_LOCALE is not defined, other settings are used if defined (DBDATE / DBTIME / GL_DATE / GL_DATETIME, as well as standard LC_* variables).
IBM DB2	The DB client locale is defined by the DB2CODEPAGE profile variable. You must set this variable with the db2set command. If DB2CODEPAGE is not set, DB2 uses the operating system code page on Windows and the LANG environment variable on Unix.
Microsoft SQL Server	The DB client locale is defined by the Window operating system locale where the database client is installed.

In order to check your Database locale settings do the following:

Oracle:

```
SELECT * FROM NLS_SESSION_PARAMETERS;
```

Informix:

```
database sysmaster;  
select * from sysdbslocale;
```

DB2:

Issue the command "get db config for <dbname>" and you'll see the lines near the top of the output:

```
Database territory = US  
Database code page = 819  
Database code set = ISO8859-1  
Database country/region code = 1
```

SQLServer:

Use the @@LANGUAGE function to show the current language setting

Optional Setup

- Change default Web Server Port Number

In the case that the default port is already in use, it is possible to change the default port to another free one. For that, locate the string **id="http-listener-1"** in the **domain.xml** file located in the folder **<s4AppSrv_path>\domains\domain1\config** and then change the tag **port="8484"** to another free port number. Save the changes and **restart** the domain1.

Note: The change of the port number will require changes in the hardcoded port number references of client web services.

- Sun Java System Application Server Administration Console

If necessary to fine tuning the Application Server you will need to access the Sun Java System Application Server Admin Console. To access it, from a browser access to the url **http://<s4AppServer Hostname>:4848/**

The default credentials to access the Admin Console are:

Username: admin

Password: **s4adminp**