Cloud Services

Contents

Introduction

The Sparx Systems Cloud Services application provides a convenient mechanism for hosting models. It provides easy access to your model by people within your team, and optionally by external customers and consultants anywhere around the world.

This document aims to:

1. Familiarize you with the concepts of the Cloud Services
2. Discuss considerations of when and where you should use a Cloud server
3. Walk you through the process of setting up a server with one or more models
4. Walk you through the process of connecting for the first time
5. Highlight some of the additional functionality available through the Cloud server

Overview

Enterprise Architect models are stored in databases. Prior to the introduction of Cloud Services, Enterprise Architect required users to install the appropriate drivers for the database and create a connection. The system would then use that connection to directly connect to the database and run the model.

With the introduction of Cloud Services that procedure has changed in ways that provide a number of benefits:

1. Improved performance for models used for distributed development. The Cloud server provides benefits to connections that involve high latency and reduced data transfer speeds.

2. The process of setting up drivers and connections can now be performed once by an administrator during the server configuration. The only set-up required on a user machine is to install Enterprise Architect and connect to any model on the Cloud server.

3. Database servers no longer have to be exposed through a firewall; the Cloud server can be run from inside a corporate firewall. All model connections are now created using HTTP, allowing firewalls to completely isolate your database server.

4. A Cloud server can be configured to encrypt all communication. Using standard TLS/SSL protocols, you can be confident that your data is not intercepted during transmission on insecure networks.

5. A Cloud server can be configured to provide HTTP-level authorization to any model taken directly from the model user list. Even when the model is exposed on a public network, you can be assured that only authorized users are able to access your model.

6. A Cloud server can be configured to provide read-only access to any model; for example, for clients required to review a model.

Security considerations

As with any web connected service, there are a number of security concerns that must be considered when setting up a new service.

To help you minimize risks, consider these points:

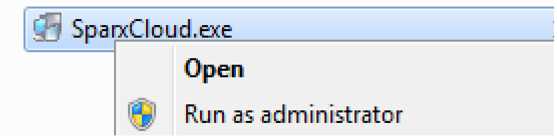
If any data is considered private, always use an HTTPS connection and require user authentication. There is an option on each of the service's database configurations to prompt for this.

There is an implicit trust in sharing a model with anyone. Security is available in models, which prevents a wide range of possible interactions. However, due to Enterprise Architect's flexibility determined users can circumvent this. In particular Model Search SQL queries can be run in a number of places that allow data to be read that would not otherwise be accessible. Of note, this includes user IDs and hashes of their passwords. To prevent this type of access to a list of users, you could use G**lobal Authentication** instead of **Model Authentication**. This is discussed further in the Enterprise Architect Client Connection Properties section below.

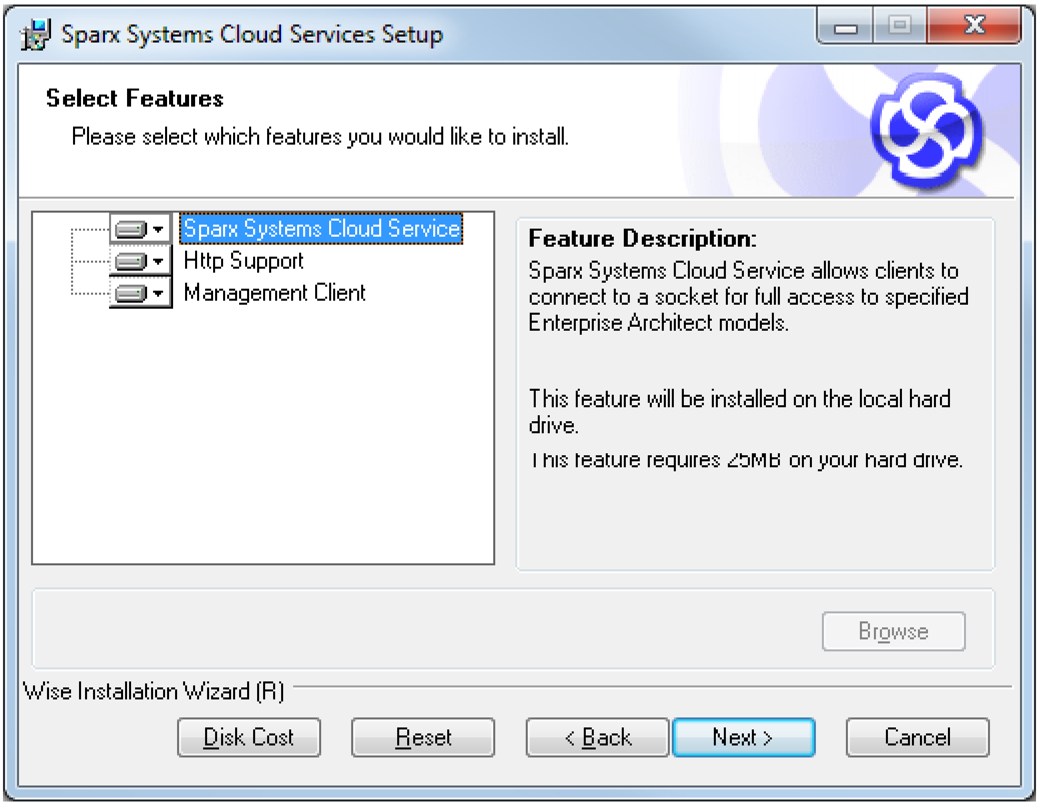
Installation

The Sparx Systems Cloud Server runs as a Windows Service, accepting network connections from Enterprise Architect clients and sending the data required by the system back over the network. The service installer can be downloaded from the registered user section of the Sparx website:
http://www.sparxsystems.com.au/registered/index.html

Installing the service and editing configuration files will both require you to have Administration rights. To ensure that you are running as Administrator, right click on the downloaded installer and select 'Run as Administrator'.



The installation provides options for the components to install.


Sparx Systems Cloud Services Setup
Sparx Systems Cloud Service
Http Support
Management Client
Browse
Wise Installation Wizard (R)
Disk Cost
Reset
< Back
Next >
Cancel

Select Features

Please select which features you would like to install.

Feature Description:

Sparx Systems Cloud Service allows clients to connect to a socket for full access to specified Enterprise Architect models.

This feature will be installed on the local hard drive.

This feature requires 25MB on your hard drive.

Figure 1: Initial dialog for the Cloud Service Setup

These options are:

1. **Sparx Systems Cloud Service –** The Windows service that will accept connections from Enterprise Architect and the management client.

2. **Http Support** - Optional component for integration with IIS.
   This is discussed further in the Added Functionality section below.

3. **Management Client** - This is used for management tasks including configuration of databases to connect to, and some server options.

Server Configuration

In the service install directory is the configuration file **SSCloudServices.config**.

An example of the contents of this file is included in the Sample Server Config File page in the appendix of this document.

To edit the configuration file, open it in a text editor (running as an administrator).

If you are launching the editor from the Windows Server 2012 start screen, you can right-click the selected editor and run it as administrator using this button.

Once opened, you can edit this file to set configuration options, including the ports the server will listen on.

Management Client Connection

The first settings you will see in the configuration file are to control how the Management Client will connect to the server. The default values are:

```
SERVER_PORT=803
SERVER_PASSWORD=
```

SERVER_PORT is sued when you connect to the administration client or opt to use the IIS integration instead of the integrated web-server. For more detail see the IIS integration topic.
We recommend that this port is not exposed to any external networks, as encryption cannot be applied to it.

SERVER_PASSWORD is the password to protect the administration functions of the server. This can also be changed directly within the Management client.

Use of the management client is discussed in the Management Client section.

General Settings

The next list of settings is the default global settings across the entire service:

```
DBMAN_DEFAULTMAXSIMQUERIES=10
AUDIT_TIME_PERIOD=3600
TEMP_DIRECTORY=%SERVICE_PATH%\Temp
LOGGING_LEVEL=SYSTEM
LOGGING_DIRECTORY=%SERVICE_PATH%\Logs
```

```
LOGGING_FILECOUNT=3
LOGGING_FILESIZE=1048576
```

DBMAN_DEFAULTMAXSIMQUERIES is the default maximum number of queries that can be run at a time for any configured database. It can be changed directly within the Management Client (see **Default Max Simultaneous Queries** under Server Options).

AUDIT_TIME_PERIOD is the number of seconds between the system logs recording activity on each database.

TEMP_DIRECTORY is the location to write temporary files before they are sent to clients. You should not generally need to change this.

LOGGING_LEVEL determines how verbose the server should be when writing log files. The valid values are: OFF, FATAL, WARNING, INFO and SYSTEM. This value can be changed directly within the Management client. (See **Logging Level** under Server Options).

LOGGING_DIRECTORY defines where the log files are to be stored. The default is set to = `%SERVICE_PATH%\Logs.`

LOGGING_FILECOUNT, **LOGGING_FILESIZE** collectively determines the maximum number of rolling log files kept and the maximum file size of each log file. When the logging file size is reached a new log file is created. When the file count is exceeded, the oldest file is automatically deleted.

Note: The =%SERVICE_PATH% refers to the directory where the Cloud service is installed.

For more details on using the logs see the Activity Logs page in the Appendix.

Enterprise Architect Client Connection Properties

Using the Cloud server you can define an arbitrary number of different ports on which to listen for connections from Enterprise Architect, each with a different configuration. Each port is denoted in the configuration file with open and close parentheses on their own lines.

```
 (
SERVER_PORT=80
REQUIRE_SSL=0
DEFAULT_MODEL=
MODEL_AUTHENTICATION=
GLOBAL_AUTHENTICATION=user model
OSLC_SUPPORT=1
)
```

SERVER_PORT is the port on which the server will listen for HTTP connections; each connection must be unique and not used by any other services on the machine. You must check that no firewalls are blocking this port on the client or server. Using the standard HTTP port (80) or HTTPS port (443) is best.

REQUIRE_SSL should be set to **1** to enable HTTPS on this port; HTTPS should be enabled for all connections that are being exposed on public networks. HTTPS requires a private key file (**server.pem**), to be included in the same directory as the configuration file, before it will run.
Note: This unique file must be user-created. See Creating a Self-Signed Certificate using OpenSSL.

DEFAULT_MODEL allows a single model to be exposed on a port, making it possible to use a different port for each model. Model Names are discussed further in the Connecting Enterprise Architect as a Client section below.

MODEL_AUTHENTICATION can be set to **1** to request HTTP authorization using the user security in the model being connected to. Note that if you are not using SSL to connect, the usernames and passwords will be sent in plain text. This option is mutually exclusive with GLOBAL_AUTHENTICATION.

GLOBAL_AUTHENTICATION can be set to the name of a model with security enabled that will provide the list of users for all models accessed by the connection. This is helpful if you want to provide multiple models but only manage one list of users. This option is mutually exclusive with MODEL_AUTHENTICATION.

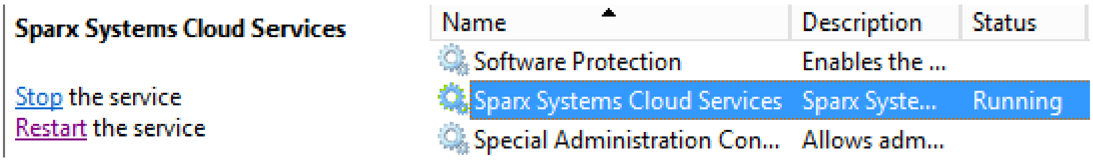
OSLC_SUPPORT is enabled by default. It allows models to be queried using the Open Services for Lifecycle Collaboration standard. This is discussed further in the section Open Services for Lifecycle Collaboration. Set to **0** to disable.

Restarting the Sparx Cloud Server

If you make any changes to the configuration file you must restart the server for the changes to take effect. A server restart is carried out in the Windows **Services** application.

Depending on the server operating system, there are two methods for restarting the Cloud Server, as shown:

1) Figure 2 shows how to restart the service using Window **Services.** This is available in all versions of Windows (see Control Panel | Administrative Tools | Services).



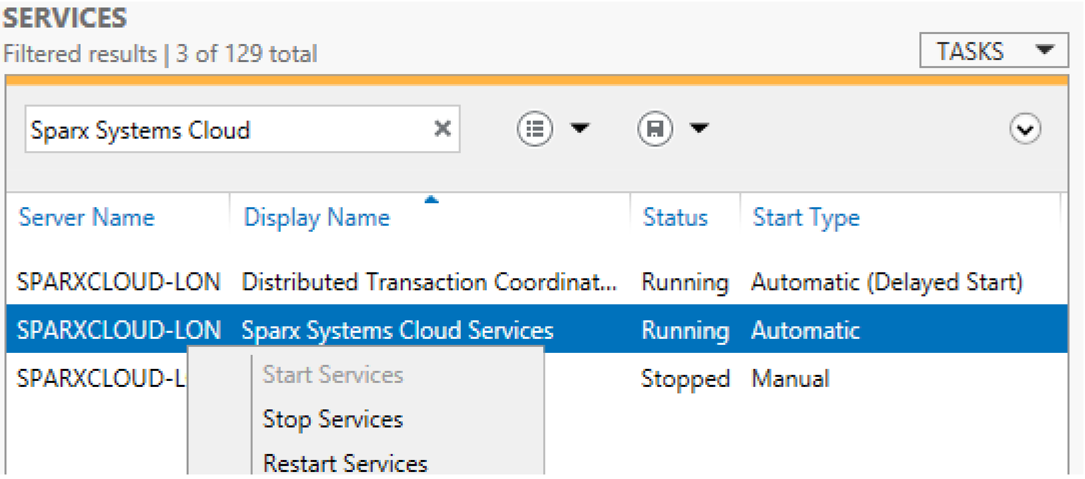
Sparx Systems Cloud Services

Stop the service
Restart the service

Name	Description	Status
Software Protection	Enables the ...	
Sparx Systems Cloud Services	Sparx Syste...	Running
Special Administration Con...	Allows adm...	

Figure 2: Start and Stop options for Cloud Services in the Windows Services view

2) Figure 3 shows how to restart the service using the Server Manager on Windows Server 2012.



SERVICES

Filtered results | 3 of 129 total

Server Name	Display Name	Status	Start Type
SPARXCLOUD-LON	Distributed Transaction Coordinat...	Running	Automatic (Delayed Start)
SPARXCLOUD-LON	Sparx Systems Cloud Services	Running	Automatic
SPARXCLOUD-L		Stopped	Manual

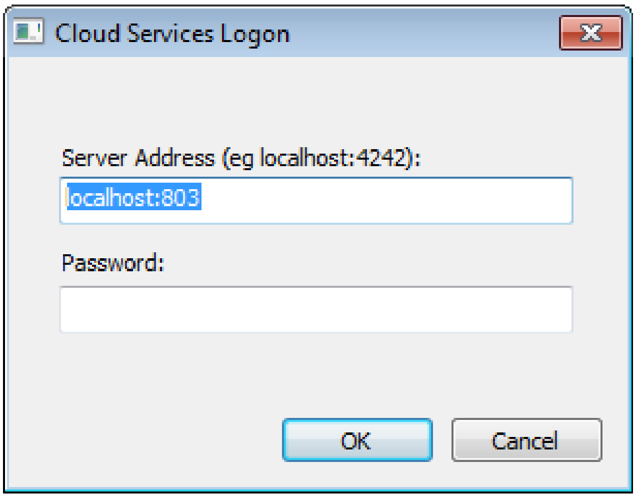
Figure 3: Start and Stop options in Windows 2012 Server

Using the Management Client

At any point after installation you can connect to the service using the **Management Client** (SSCloudServicesClient.exe).

> Note: By default this is accessible from: ..\Program Files (x86)\Sparx Systems\Client.

When you run SSCloudServicesClient.exe the **Cloud Service Logon** dialog displays.



Cloud Services Logon

Server Address (eg localhost:4242): localhost:803

Password:

Figure 4: Cloud Services Logon dialog

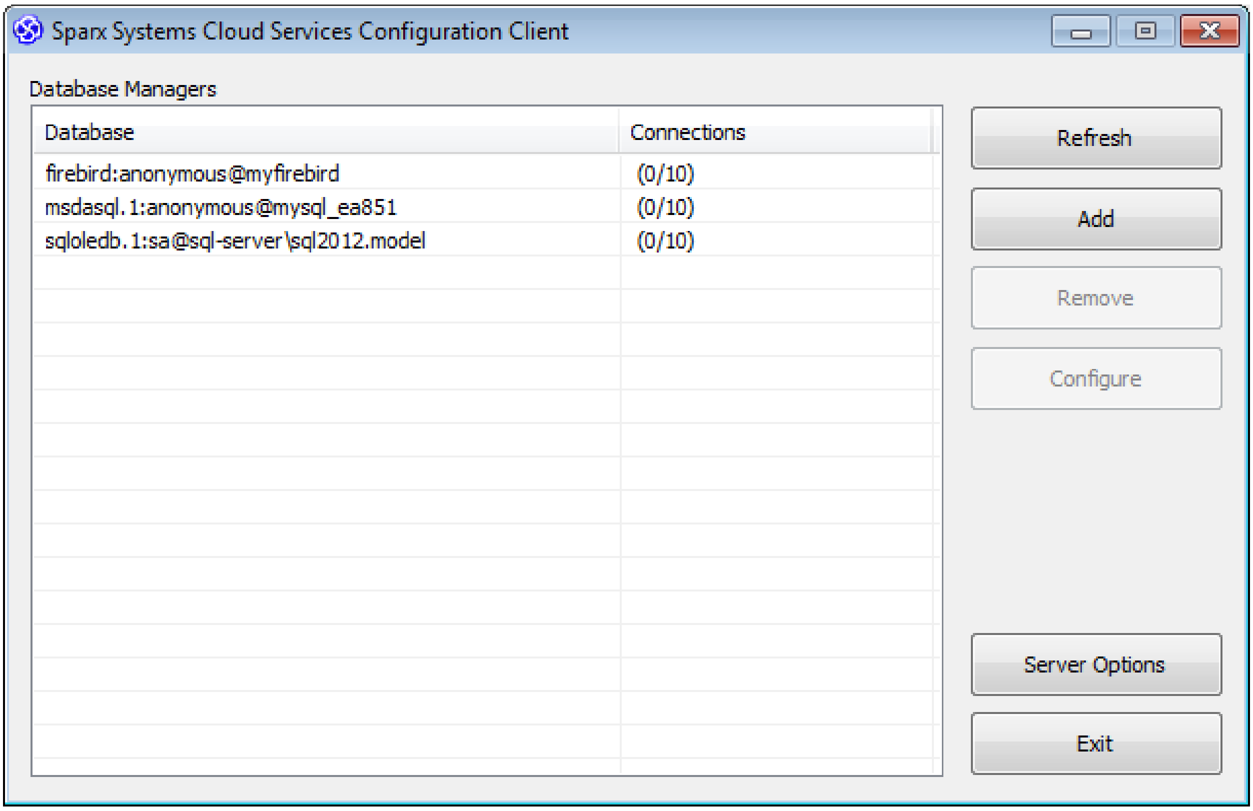
In the **Cloud Services Logon** dialog enter these details:

1. **Server Address**
   The **Management Client** can be used from any machine, but note that it should not be used outside a secure network because the communication is not secured.
   The **Server Address** format is:
   <ServerURI>:< Port>

   The server URI can be 'localhost', an IP address, a DNS name or a machine name; e.g. MyWebServer.
   If you are working on the web server, "localhost" will be sufficient.
   Details on where the port is defined are provided in Manage Client Connection.

2. **Password**
   Enter the password as defined in Manage Client Connection. By default this password is blank.

After you connect to the server the Sparx Systems Cloud Services Configuration Client dialog displays:



Sparx Systems Cloud Services Configuration Client

Database Managers

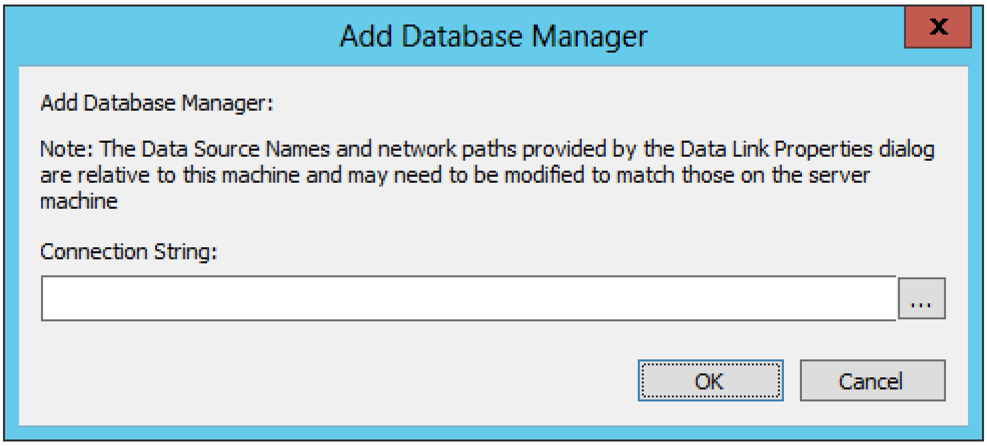
Database	Connections
firebird:anonymous@myfirebird	(0/10)
msdasql.1:anonymous@mysql_ea851	(0/10)
sqloledb.1:sa@sql-server\sql2012.model	(0/10)

Figure 5: Sparx Systems Cloud Services Configuration Client dialog showing three databases

In this example, three databases have already been set up, and there are no active connections to any of them.

Adding a new Database

Click on 'Add' to configure a new database connection. The Add Database Manager dialog displays.



Add Database Manager

Add Database Manager:

Note: The Data Source Names and network paths provided by the Data Link Properties dialog are relative to this machine and may need to be modified to match those on the server machine

Connection String:

Figure 6: Add Database Manager dialog

For the **Connection String** field you have two options:

1. **Connect to an existing DBMS**
To connect to an existing database, specify the connection string to the database. If you are running the admin client on the same machine as the server you can click on the ellipsis (...) button to open the **Data Link Properties** dialog to build the connection string.

   For details on creating a project database and the ODBC drivers required for connection to your specific DBMS, see the Enterprise Architect Server based Repositories Help pages.

   Note: Configure the ODBC connection for a **System DSN** not a **User DSN**.

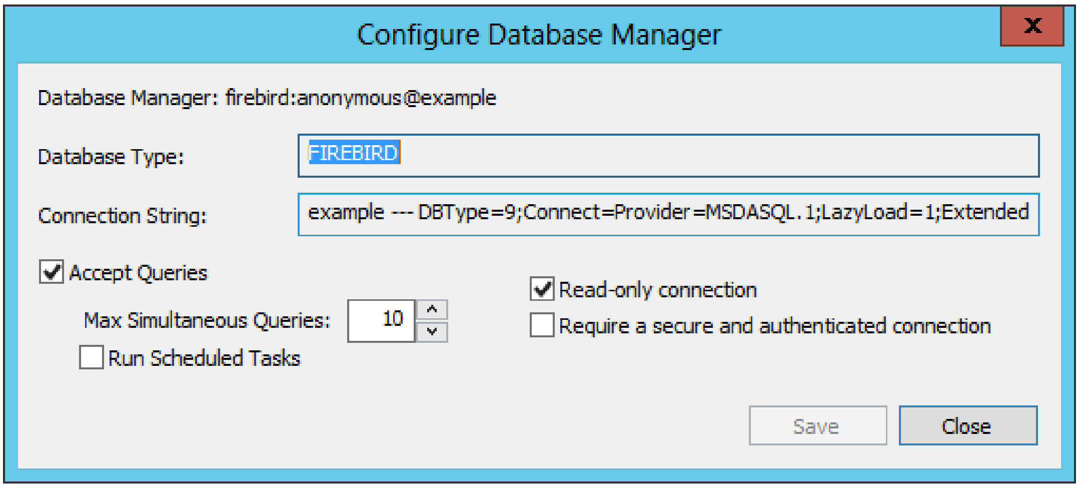
2. **Create a Firebird Database**
You can create a new Firebird database by entering a model name followed by the extension '.feap'.
A new Firebird database with this name is automatically created under the *%SERVICE_PATH%\Models\* directory. A connection string is defined to connect to this new file.

Database Configuration

Once you have entered a connection to a database you can configure the setting for it:

1. Select any database entry in the main dialog (see Figure 5).

2. Click on the **Configure** button to adjust settings for this database.
Figure 7 shows the details of the connections and provides a number of options that apply to the database.



Configure Database Manager

Database Manager: firebird:anonymous@example

Database Type: FIREBIRD

Connection String: example --- DBType=9;Connect=Provider=MSDASQL.1;LazyLoad=1;Extended

☑ Accept Queries

Max Simultaneous Queries: 10

☐ Run Scheduled Tasks

☑ Read-only connection

☐ Require a secure and authenticated connection

Figure 7: Configuration details of a DBMS connection

The options on the **Configure Database Manager** dialog are:

Accept Queries must be selected to allow users to connect to this database.

Max Simultaneous Queries is a control on the maximum number of simultaneous connections that will be created to this model. The default value for this field when creating a new connection is configurable in the **Default Max Simultaneous Queries** option in the **Configure Server** dialog.

To maintain constraints of system performance against resource usage you can look at the **audit history** for each database (in the Activity Logs), to see how many connections have been used in the specified time period.

Run Scheduled Tasks triggers the server to run periodic updates to this model. This is discussed further in Run Scheduled Tasks, below.

Read-only connection allows a model to be shared without allowing any changes to be made. Note: The same database can be set up with two different connection settings: one Read/Write, one Read-Only, with the Read-Only typically being accessible for clients to review.

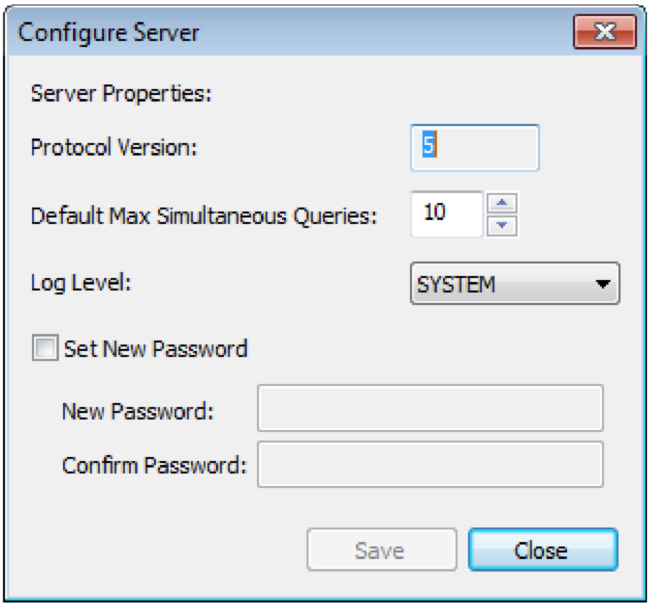
Require a secure and authenticated connection flags that security is required for this model. No connections will be accepted unless via HTTPS, with either model authentication or global authentication set.

Server Options

Along with the database connection options, there are options you can set for the web server.

1. Open the **Sparx Systems Cloud Services Configuration Client** dialog (See Figure 5).

2. Click on the **Server Options** button
   The **Configure Server** dialog displays, on which you to change the basic options on the server.



Configure Server

Server Properties:

Protocol Version: 5

Default Max Simultaneous Queries: 10

Log Level: SYSTEM

☐ Set New Password

New Password:

Confirm Password:

Figure 8: Configure Server dialog

The options on the **Configure Server** dialog are:

Protocol Version allows you to see the protocol being provided to communicate with Enterprise Architect. This is preset to **5**.

Default Max Simultaneous Queries is the default setting for the number of queries that a new database manager will accept on creation.
See **Max Simultaneous Queries** in Database Configuration and **Audit History** in Activity Logs

Log Level allows you to change the level of detail that is included in the logs generated by the service. For details on the settings see Activity Logs.

Set New Password allows you to modify the password required to use the Management Client for this server.

Each of these options can also be set in the configuration file; however, the service does not require a restart if set using this dialog (see General Settings).

Connecting Enterprise Architect as a Client

Once your server has been set up with at least one port listening for communication and at least one model you can connect to, you can connect to the model using Enterprise Architect's **Connect to Cloud** option.

When you open Enterprise Architect the **Open Project** dialog displays. The **Connect to Server** button on the top right provides access to Cloud connections. This dialog can also be opened using the menu option File | Open Project.

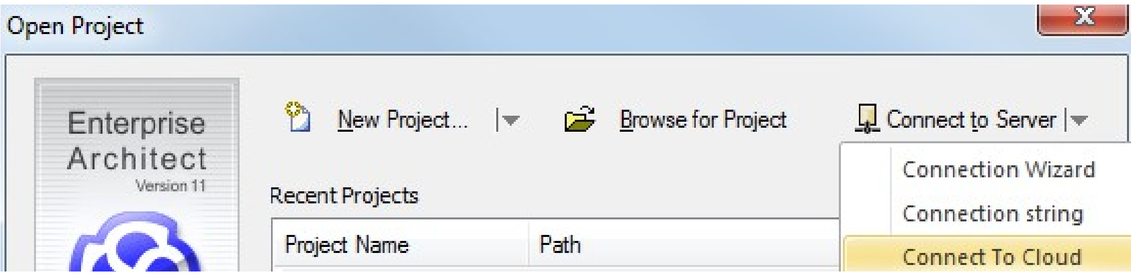


Figure 9: Open Project dialog showing the Connect To Cloud option.

Alternatively, you can click on the **Connect to Cloud** option on the **Start Page**.

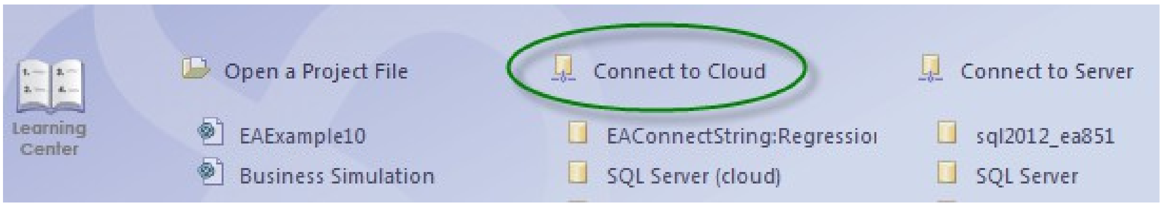
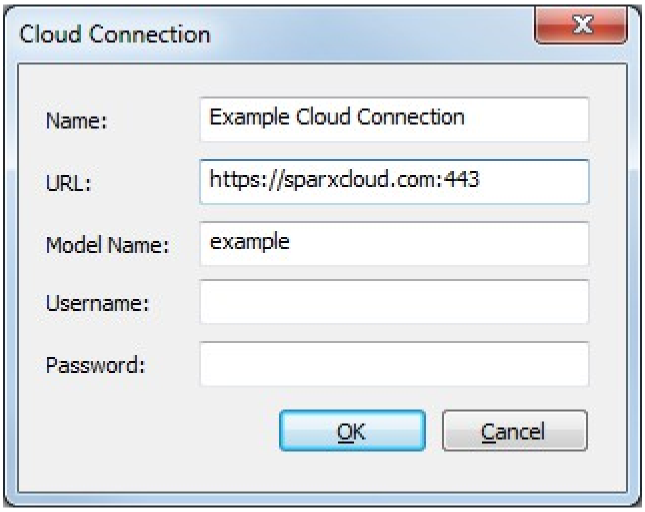


Figure 10: Start page option for connecting to a Cloud model

The **Cloud Connection** dialog prompts you for the details of the model.



Cloud Connection

Name: Example Cloud Connection

URL: https://sparxcloud.com:443

Model Name: example

Username:

Password:

Figure 10: The Cloud Connection dialog.

The option details for the Cloud Connection dialog are:

Name is the text that the model will be identified as on your machine. It can be any value and does not need to match any values on the server. In the example, 'Example Cloud Connection' will appear in the recent model list.

URL provides the protocol, path and port for the server, in the format:

<Protocol>://<MachineName>:<Port>

In the example, we are connecting to the machine **sparxcloud.com**, using the **HTTPS** protocol on port **443**.

Where a protocol of **https://** is used, **http://** would also be valid.

The machine name **sparxcloud.com** can be specified as a machine name or as the IP address of your server.

The port number (**:443)** is optional if using port **80** for HTTP or port **443** for HTTPS.

Model Name is a pointer to the model as configured on the server:

- For a DBMS it is the **DataSource** or **DB Instance** name as defined in the ODBC connection set on the Cloud server
- For a Firebird model it is the name of the file with no extension (no .feap suffix)

The **Model Name** can be derived from the **Connection String** field in Figure 7. Below are some examples of these strings. The bold text is what is entered in the **Model Name** field**:**

Firebird model:	firebird:anonymous@**FBmodel**
ODBC data source – Data Source:	msdasql.1:anonymous@**postgres**
SQL server OLE DB - Database name:	sqloledb.1:sa@sql-server\sql2012.**MsSQL**
Oracle OLE DB:	oraoledb.oracle.1:ea851@**ora11g**

If the Cloud Server specified a default model for the port you are connecting to, this field is not required.

Fields are also available for **Username** and **Password**. These are not generally required as Enterprise Architect will prompt if the server requires authentication.

Additional Functionality

In addition to the core functionality of providing a model over an HTTP connection, Cloud Services offer three more facilities that add value to setting up a server.

Open Services for Lifecycle Collaboration (OSLC)

Open Services for Lifecycle Collaboration (OSLC) is an initiative to allow easier integration between requirement tools. It uses HTTP to list, add, modify and delete requirements.

The service provider definition to which to direct any OSLC client is:

<protocol>://<server>:<port>/<model_name>/oslc/sp/

For example, if you are connecting to a server running on your own machine using the default settings, the connection will be:

http://localhost:804/model/oslc/sp/

For more information see http://open-services.net/.

Re-usable Asset Service

The Re-usable Asset Service (RAS) portion of the Cloud Server allows packages to be defined that can be used in any model. Enterprise Architect and the Cloud Server will track cross-package dependencies and ensure that everything required by a package is available when the package is requested.

Scheduled Tasks

The Cloud Server includes optional support for running time based updates to data.

This is currently limited to updating a Time Series chart automatically to provide a dynamic view of how a model is changing over time. For more information see the Enterprise Architect Help topic **Define a Time Series chart**.

IIS Integration (optional)

Although the built in web-server provides a number of benefits and is the preferred means for providing Cloud Services for Enterprise Architect, the Cloud Server can optionally be integrated with an IIS server.

If this is required, you must include HTTP support when installing this service.

To configure IIS to host the Cloud Service, you must open in Windows the **Internet Information Services (IIS) Manager** and configure it to send requests to the appropriate module. This is discussed in the following sections on the IIS modules:

1. HTTP Module
2. ISAPI Module
3. Configuration Settings

These will require an Application pool that is 32-bit and not managed code.

Note: For more details see: http://www.iis.net/learn/get-started/introduction-to-iis/iis-modules-overview

HTTP Module

To set up the HTTP module in **Internet Information Services (IIS) Manager**:

1. In the **Connections** panel, select the machine properties (top of the tree).
2. Double-click on the **Modules** icon in the middle panel.
   This returns the **Modules** list and the **Actions** view.

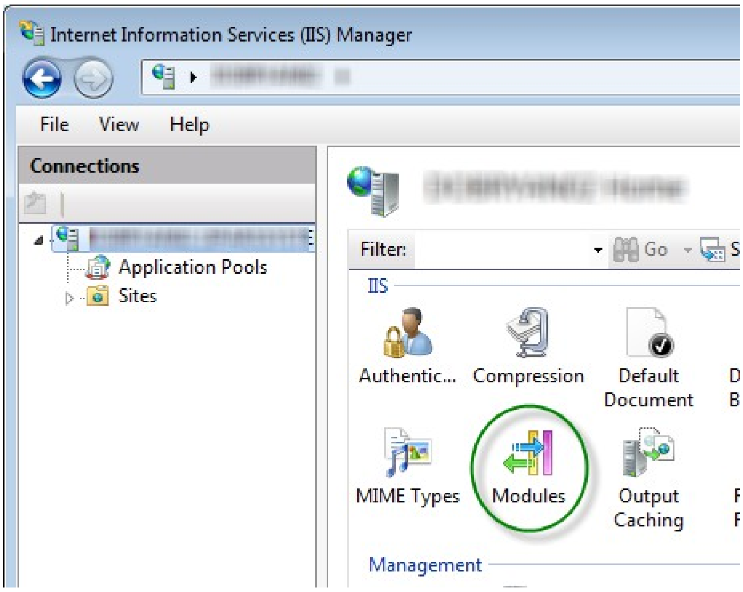
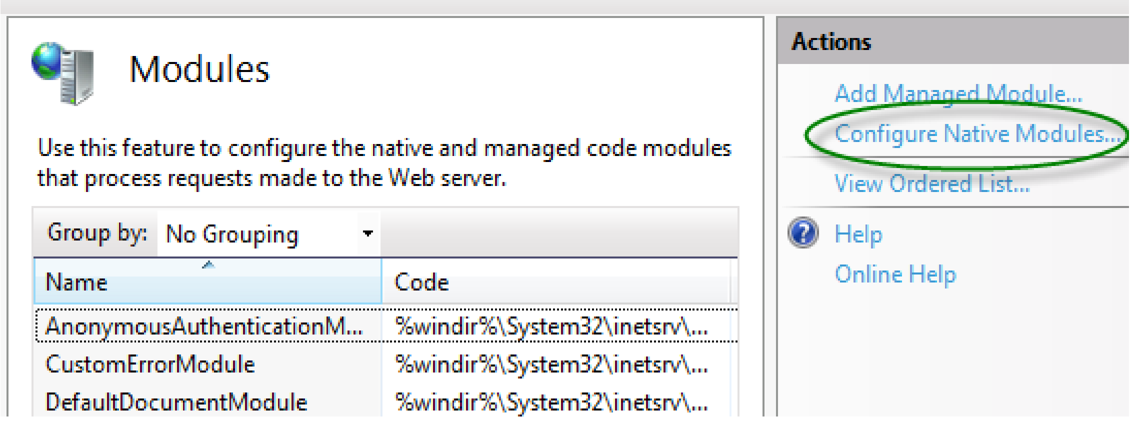


Figure 11: Internet Information Services (IIS) Manager showing the Modules option.

3. In the **Actions** list, click on the **Configure Native Modules...** option.



Modules

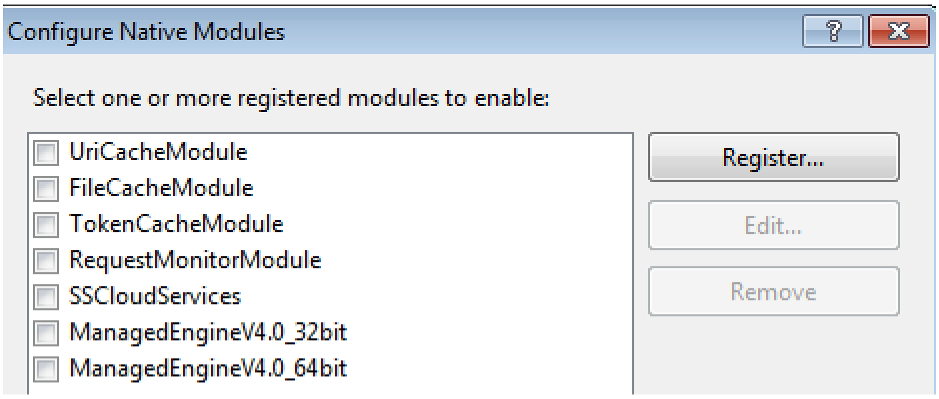
Use this feature to configure the native and managed code modules that process requests made to the Web server.

Group by: No Grouping

Name	Code
AnonymousAuthenticationM...	%windir%\System32\inetsrv\...
CustomErrorModule	%windir%\System32\inetsrv\...
DefaultDocumentModule	%windir%\System32\inetsrv\...

Figure 12: IIS Modules listing and related Actions

4. This opens the **Configure Native Modules** view.

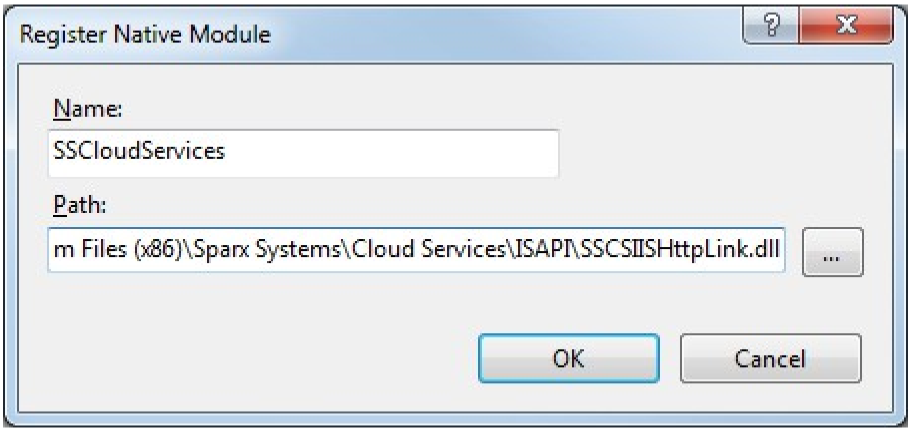


Configure Native Modules

Select one or more registered modules to enable:

- □ UriCacheModule
- □ FileCacheModule
- □ TokenCacheModule
- □ RequestMonitorModule
- □ SSCloudServices
- □ ManagedEngineV4.0_32bit
- □ ManagedEngineV4.0_64bit

5. Click on the **Register** button to open the **Register Native Module** dialog.



Register Native Module

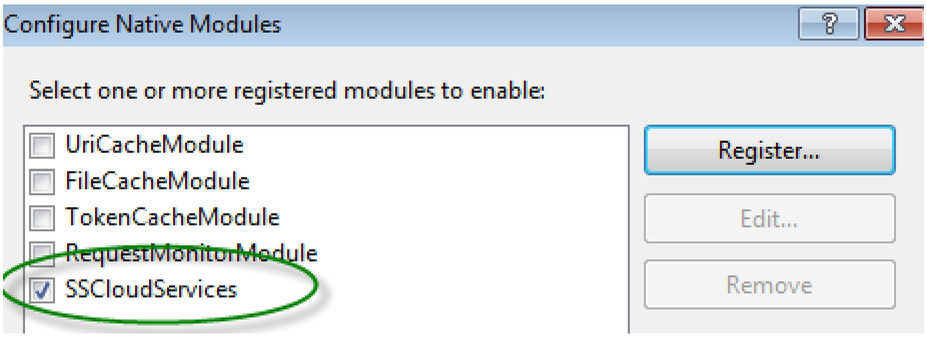
Name: SSCloudServices

Path: m Files (x86)\Sparx Systems\Cloud Services\ISAPI\SSCSIISHttpLink.dll

Figure 13: Dialog for registering a native module.

6. Type in the **Name** and the **Path** to the SSCSIISHttpLink.dll file.

7. Click on the **OK** button. The SSCloudServices checkbox will now be selected.



Configure Native Modules

Select one or more registered modules to enable:

□ UriCacheModule
□ FileCacheModule
□ TokenCacheModule
□ RequestMonitorModule
☑ SSCloudServices

8. Click on **OK** to close the Configure Native Modules dialog.

9. In the **Connections** panel (see Step 10), select your web site.

10. Double-click the **Handler Mappings** in the middle pane.

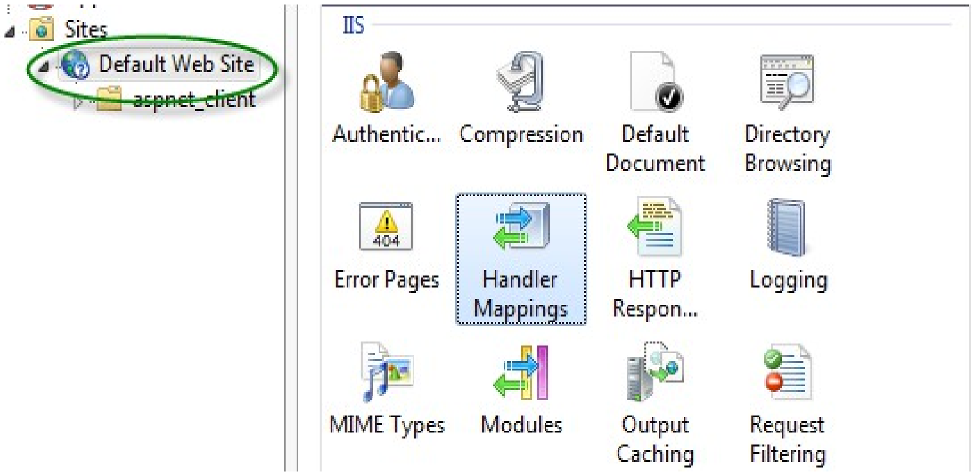
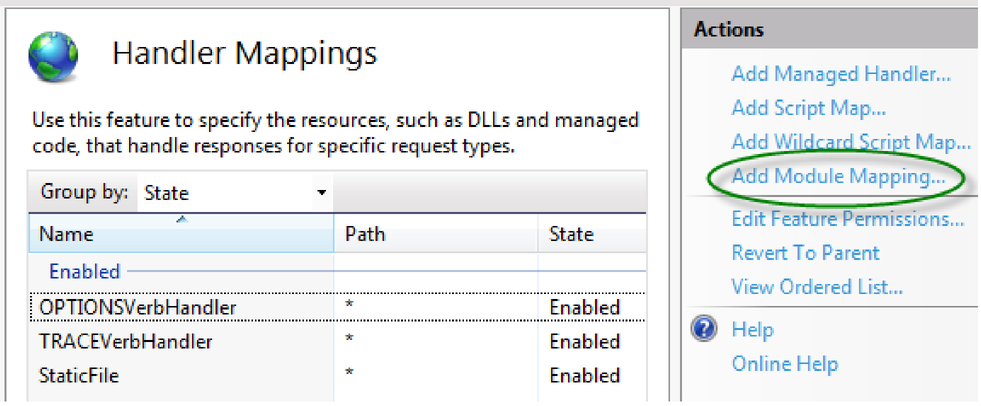


Figure 14: IIS Manager showing the Handler Mappings option.

This opens the Handler Mappings view:



Handler Mappings

Use this feature to specify the resources, such as DLLs and managed code, that handle responses for specific request types.

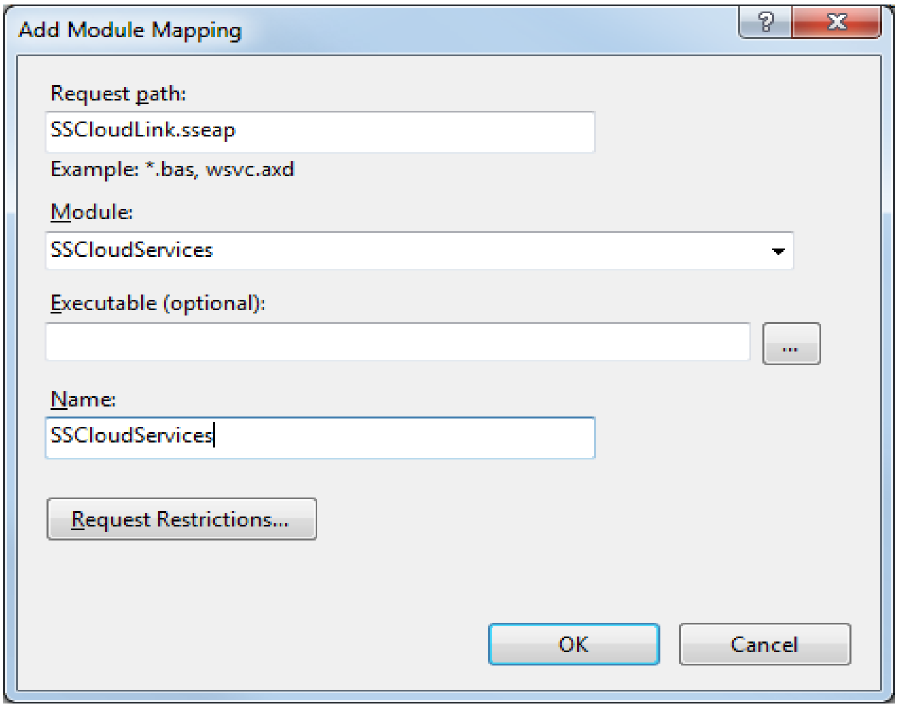
Group by: State

Name	Path	State
Enabled		
OPTIONSVerbHandler	*	Enabled
TRACEVerbHandler	*	Enabled
StaticFile	*	Enabled

Figure 15: IIS Handler Mappings listing and related Actions

11. In the **Actions** list, click on the **Add Module Mapping** option to open the **Add Module Mapping** dialog.

12. In the **Add Module Mapping** dialog (Figure16), set the **Request path**, **Module** and **Name**. From the **Module** drop-down select the module added in step 6.



Add Module Mapping

Request path: SSCloudLink.sseap

Example: *.bas, wsvc.axd

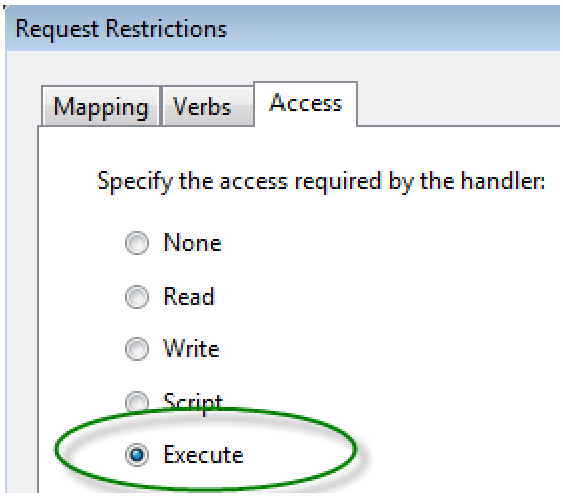
Module: SSCloudServices

Executable (optional):

Name: SSCloudServices

Figure 16: IIS Add Module Mapping dialog with the Cloud Service settings.

13. Click on the **Request Restrictions** button and, on the **Request Restrictions** dialog, select the **Access** tab. Select the **Execute** radio button to enable Execute permission.



Request Restrictions

Mapping | Verbs | Access

Specify the access required by the handler:

○ None

○ Read

○ Write

○ Script

● Execute

14. Click on the **OK** button.
15. Close the **Add Module Mapping** dialog by clicking on the **OK** button.

ISAPI Module

To configure an ISAPI module instead of the HTTP module:

1. In the **Connections** panel, select the machine properties:

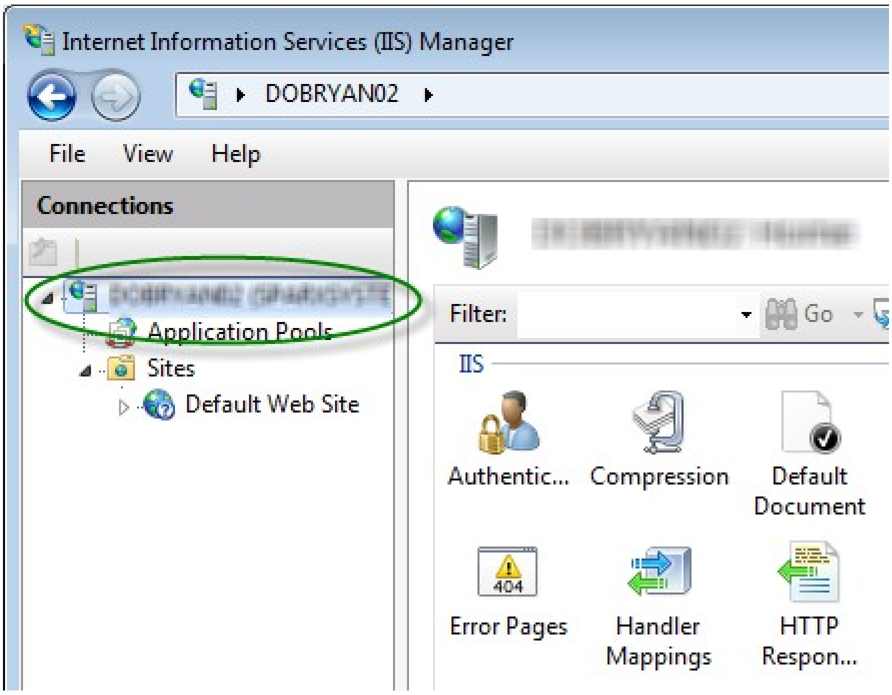
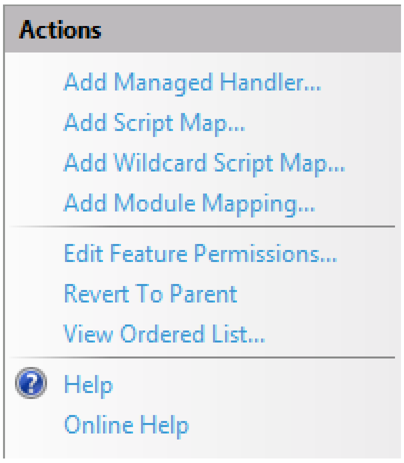


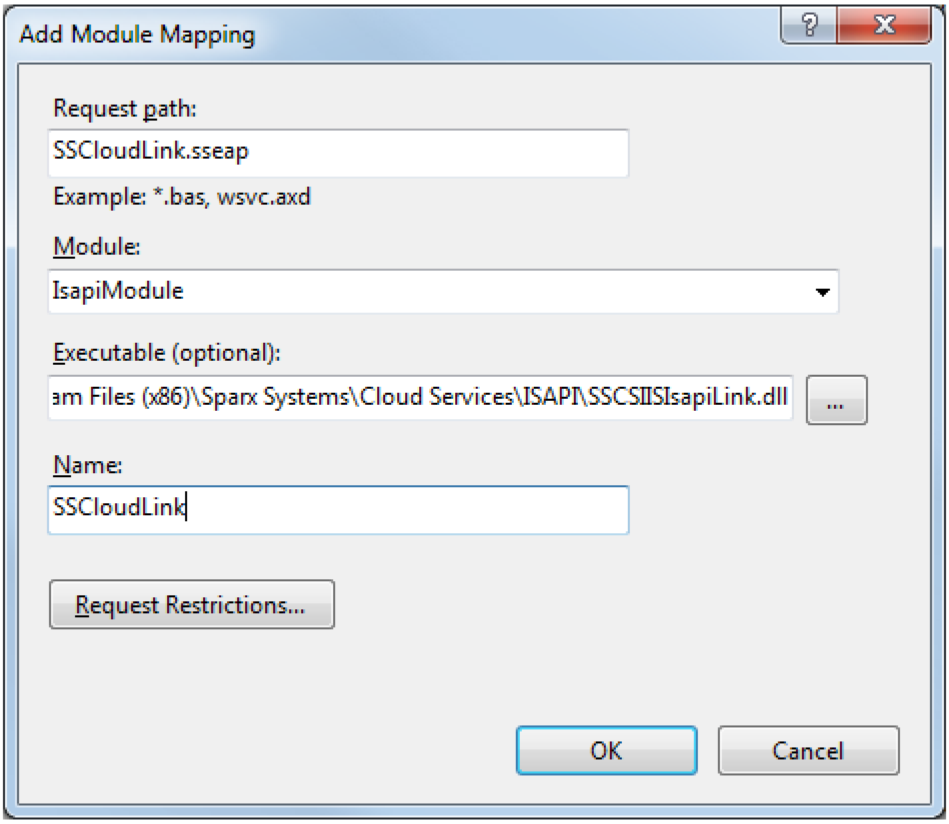
Figure 17: Selecting IIS Machine Properties

2. Double-click on the **Handler Mappings** icon:

3. In the **Actions** list, click on the **Add Module Mapping** option.



4. In the **Add Module Mapping** dialog, set **Request path** to **SSCloudLink.sseap**, **Module** to **IsapiModule**, and **Executable** to **SSCSIISIsapiLink.dll,** as shown.


Add Module Mapping

Request path:
SSCloudLink.sseap
Example: *.bas, wsvc.axd

Module:
IsapiModule

Executable (optional):
am Files (x86)\Sparx Systems\Cloud Services\ISAPI\SSCSIISIsapiLink.dll

Name:
SSCloudLink

Figure 17: IIS Add Module Mapping dialog with the Cloud Service settings.

5. Click on the **OK** button to close the dialog.

Configuration settings

The path containing SSCSIISHttpLink.dll and SSCSIISIsapiLink.dll contains a configuration file SSCloudLink.sseap. Referring to the example in Figure 17 the path is “C:\Program Files (x86)\Sparx Systems\Cloud Services\ISAPI”.

Edit this in a text editor running as an Administrator. The default contents are:

```
[cloud]
server=localhost
port=4444
```

Change these values to reference the connection details for the administration port of the server.

You should now be able to connect to a model using Enterprise Architect via your IIS server.

Appendix

Sample Server config file

```
# Default port for all TCP connections to this service
# including management requests and connections routed
# through the ISAPI module.
# It is not recommended to expose this port outside of
# your private network.
SERVER_PORT=803
SERVER_PASSWORD=

# General server properties.
DBMAN_DEFAULTMAXSIMQUERIES=10
# Audit once every 4 hours
AUDIT_TIME_PERIOD=14400
TEMP_DIRECTORY=%SERVICE_PATH%\Temp

# LOGGING OPTIONS
# LOG_LEVEL – Valid log levels, from lowest to highest, are:
# 1. FATAL
# 2. WARNING
# 3. INFO
# 4. SYSTEM
LOGGING_LEVEL=SYSTEM
LOGGING_DIRECTORY=%SERVICE_PATH%\Logs
LOGGING_FILECOUNT=3
LOGGING_FILESIZE=1048576

(
# Run simple http port to allow public access to our public api model
SERVER_PORT=80

# Warning: There is no security applied to this connection.
REQUIRE_SSL=0

# Provide the public api directly when accessing via http
DEFAULT_MODEL=public api
)

(
# https port running on the default https port, provided for our
# internal models
SERVER_PORT=443
REQUIRE_SSL=1
# Ensure all users have to log on to the server with credentials
# matching the requested model
MODEL_AUTHENTICATION=1
)
```

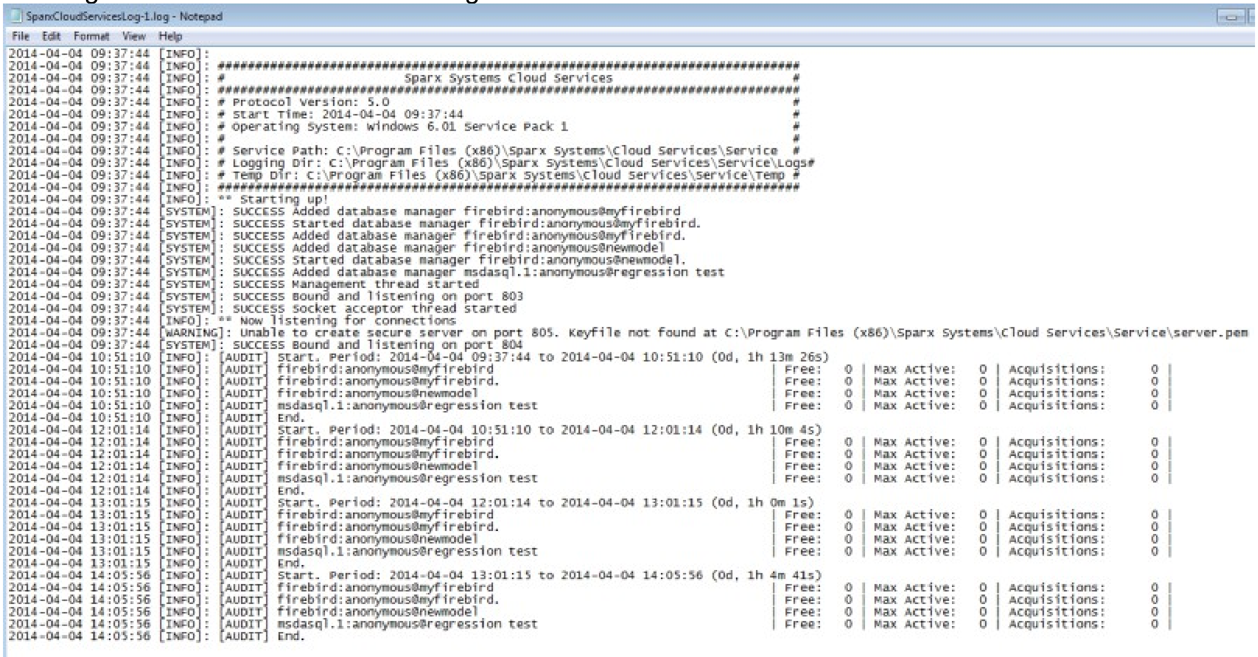
Activity Logs

The activity of the Sparx Systems Cloud Service is logged to file according to the options specified in the configuration file SSCloudServices.config. For more details see General Settings.

See the entry/setting: LOGGING_DIRECTORY.
By default this output is set to:

```
        =%SERVICE_PATH%\Logs
```

The log content resembles the following:


SparxCloudServicesLog-1.log - Notepad
File Edit Format View Help

```
2014-04-04 09:37:44 [INFO]:
2014-04-04 09:37:44 [INFO]: ##############################################################################
2014-04-04 09:37:44 [INFO]: #                        Sparx Systems Cloud Services                        #
2014-04-04 09:37:44 [INFO]: ##############################################################################
2014-04-04 09:37:44 [INFO]: # Protocol Version: 5.0                                                      #
2014-04-04 09:37:44 [INFO]: # Start Time: 2014-04-04 09:37:44                                            #
2014-04-04 09:37:44 [INFO]: # Operating System: Windows 6.01 Service Pack 1                              #
2014-04-04 09:37:44 [INFO]: #                                                                            #
2014-04-04 09:37:44 [INFO]: # Service Path: C:\Program Files (x86)\Sparx Systems\Cloud Services\Service  #
2014-04-04 09:37:44 [INFO]: # Logging Dir: C:\Program Files (x86)\Sparx Systems\Cloud Services\Service\Logs#
2014-04-04 09:37:44 [INFO]: # Temp Dir: C:\Program Files (x86)\Sparx Systems\Cloud Services\Service\Temp #
2014-04-04 09:37:44 [INFO]: ##############################################################################
2014-04-04 09:37:44 [INFO]: ** Starting up!
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Added database manager firebird:anonymous@myfirebird
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Started database manager firebird:anonymous@myfirebird.
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Added database manager firebird:anonymous@myfirebird.
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Added database manager firebird:anonymous@newmodel
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Started database manager firebird:anonymous@newmodel.
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Added database manager msdasql.1:anonymous@regression test
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Management thread started
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Bound and listening on port 803
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Socket acceptor thread started
2014-04-04 09:37:44 [INFO]: ** Now listening for connections
2014-04-04 09:37:44 [WARNING]: Unable to create secure server on port 805. Keyfile not found at C:\Program Files (x86)\Sparx Systems\Cloud Services\Service\server.pem
2014-04-04 09:37:44 [SYSTEM]: SUCCESS Bound and listening on port 804
2014-04-04 10:51:10 [INFO]: [AUDIT] Start. Period: 2014-04-04 09:37:44 to 2014-04-04 10:51:10 (0d, 1h 13m 26s)
2014-04-04 10:51:10 [INFO]: [AUDIT] firebird:anonymous@myfirebird                                      | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 10:51:10 [INFO]: [AUDIT] firebird:anonymous@myfirebird.                                     | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 10:51:10 [INFO]: [AUDIT] firebird:anonymous@newmodel                                        | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 10:51:10 [INFO]: [AUDIT] msdasql.1:anonymous@regression test                                | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 10:51:10 [INFO]: [AUDIT] End.
2014-04-04 12:01:14 [INFO]: [AUDIT] Start. Period: 2014-04-04 10:51:10 to 2014-04-04 12:01:14 (0d, 1h 10m 4s)
2014-04-04 12:01:14 [INFO]: [AUDIT] firebird:anonymous@myfirebird                                      | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 12:01:14 [INFO]: [AUDIT] firebird:anonymous@myfirebird.                                     | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 12:01:14 [INFO]: [AUDIT] firebird:anonymous@newmodel                                        | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 12:01:14 [INFO]: [AUDIT] msdasql.1:anonymous@regression test                                | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 12:01:14 [INFO]: [AUDIT] End.
2014-04-04 13:01:15 [INFO]: [AUDIT] Start. Period: 2014-04-04 12:01:14 to 2014-04-04 13:01:15 (0d, 1h 0m 1s)
2014-04-04 13:01:15 [INFO]: [AUDIT] firebird:anonymous@myfirebird                                      | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 13:01:15 [INFO]: [AUDIT] firebird:anonymous@myfirebird.                                     | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 13:01:15 [INFO]: [AUDIT] firebird:anonymous@newmodel                                        | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 13:01:15 [INFO]: [AUDIT] msdasql.1:anonymous@regression test                                | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 13:01:15 [INFO]: [AUDIT] End.
2014-04-04 14:05:56 [INFO]: [AUDIT] Start. Period: 2014-04-04 13:01:15 to 2014-04-04 14:05:56 (0d, 1h 4m 41s)
2014-04-04 14:05:56 [INFO]: [AUDIT] firebird:anonymous@myfirebird                                      | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 14:05:56 [INFO]: [AUDIT] firebird:anonymous@myfirebird.                                     | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 14:05:56 [INFO]: [AUDIT] firebird:anonymous@newmodel                                        | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 14:05:56 [INFO]: [AUDIT] msdasql.1:anonymous@regression test                                | Free:   0 | Max Active:   0 | Acquisitions:      0 |
2014-04-04 14:05:56 [INFO]: [AUDIT] End.
```

The level of messages that will be written to the log file is defined by the **LOG_LEVEL** option in the Configuration file. Higher log levels include messages from the lower levels that precede them. Valid log levels, from lowest to highest, are:

FATAL	Events that result in termination of the service's execution
WARNING	Events outside the normal scope of the service's operation, but not fatal (such as a wrong password supplied by a client)
INFO	Events generated within the normal scope of the service's operation
SYSTEM	Detailed system level events (such as client connection/disconnection)

Audit History

To maintain constraints of system performance against resource usage you can look at the audit history (in the activity log) for each database, to see how many connections have been used in a specified period.

This is an example of an entry in the audit log for a database. (Note: The configuration has **Max Simultaneous Queries** set to **15**.)

```
2014-06-23 16:40:32 [INFO]: [AUDIT] Start. Period: 2014-06-23 15:25:39 to 2014-06-23 16:40:32 (0d, 1h 14m 53s)
2014-06-23 16:40:32 [INFO]: [AUDIT] msdasql:anonymous@xxxx | Free: 15 | Max Active: 14 | Acquisitions: 24820 |
2014-06-23 16:40:32 [INFO]: [AUDIT] msdasql:anonymous@xxxx | Free:   0  | Max Active: 0  | Acquisitions:        0 |
2014-06-23 16:40:32 [INFO]: [AUDIT] End.
```

The log shows that the service for this database did not hit the limit of 15 queries in the 1 hour 14 minute auditing period.

There is a server configuration setting for how frequently logs of the use of each database are generated (see AUDIT_TIME_PERIOD in General Settings).

Troubleshooting

For a simple check that the service is operating on the non-secure ports defined in the configuration file, you can enter the following address into a web browser:

HTTP*://<MachineName>:<Port>*

For example, on the Cloud Server:

http://localhost:804/

If the port is enabled this prompt displays:

> **Sparx Systems Cloud Server**
> Congratulations, your server is now ready to host your models. Connect through the configuration client to add or remove models.

If this is not returned, check the settings in your Cloud Service configuration file and also check that the port is not in use by another service.

Note: This will not operate for secure SSL ports.

Checking errors returned

There are two key sources of troubleshooting information: the Cloud Service log files and the Enterprise Architect **System Output** window. For trouble shooting it is recommended that the Cloud Services **LOG_LEVEL** property be set to the highest level, **SYSTEM.**

Errors reported in the Log files:

Reported Error	Cause
Unable to create secure server on port x ...	Two possible causes: • Keyfile not found at C:\Program Files (x86)\Sparx Systems\Cloud Services\Service\server.pem • The .pem file is an invalid certificate (i.e. a private key is missing) See the section Creating a Self-Signed Certificate using OpenSSL
REQUEST_CONNECT FAIL. Error (5): Unable to connect to database	Check that the ODBC connection is set up correctly: - The driver is correct - **System DSN** is used not a **User DSN**

Errors reported via Enterprise Architect's System Output window.

Reported Error	Cause
Cloud Service: Unable to connect to cloud Database	Check that the ODBC connection has been configured for **System DSN** not **User DSN**.
Cloud Service: The database manager for this database was shut down.	**Configure Database Manager** dialog for the DBMS has [x] **Accept Queries** set.
Cloud Services: HTTP Status Code: 401 Access denied"	The Cloud Database Configuration requires secure and authenticated connection (REQUIRE_SSL = 1). The problem could be: • Connection to a model with an un-secure connection (i.e. Database Connection requires SSL, but tried to connect on port 80) • Both MODEL_AUTHENTICATION= and GLOBAL_AUTHENTICATION= are set (these are exclusive) • Username and password is incorrect
Cloud Services: Unable to connect to service: HTTP status: 500	Either a firewall is blocking the port or you have tried connecting to a port the server isn't listening on.

Creating a Self-Signed Certificate using OpenSSL

To use HTTPS the service requires a unique user-defined security file (security.pem).
Supplied with the Cloud Service is the Openssl.exe which can be used for creating self-signed Certificates.

The creation of certificates and the interaction with a service provider on implementing them is outside the scope of this document; however, you can reference web links covering this operation.

We provide a simple batch file method of creating a server.pem file. If you paste this code into a batch file and run it with the target hostname as a parameter, it will generate an appropriate key file.

```
echo off

if not "%1" == "" goto generate

echo ERROR: No target specified
echo USAGE: %0 url
echo EXAMPLE %0 localhost
goto end

:generate
echo on
openssl genrsa -out %1.key 2048
openssl req -new -x509 -key %1.key -out %1.cert -days 3650 -subj /CN=%1
copy /b %1.cert+%1.key server.pem

:end
```

The **server.pem** file must be installed in the same directory as the **SSCloudServices.config** file (..\Sparx Systems\Cloud Services\Service).

Note: you may need to download an openssl config file (openssl.cnf) from the net.