

SAP BusinessObjects Business Intelligence platform
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SAP BusinessObjects Query as a Web Service Designer



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1 Introduction

1.1 What is Query as a Web Service Designer?

Note

The updated Online Help for this release is fully documented in the Query as a web server users guide PDF version available from the SAP Help portal <http://help.sap.com>. The full version of this Online Help is also available in the English version of the 4.1 release.

Query as a Web Service Designer is an SAP Business Objects application that allows business users to quickly create queries and publish them as web services.

A query as a web service is a SQL statement that has been built on a BusinessObjects universe and published as a web service to a host server housing web services.

The query as a web service is available to any application that uses web services, and allows users to access data returned by the query from within the application. It allows Business Intelligence (BI) information to be securely delivered to any application that can consume web services.

Query as a Web Service Designer has a client component that you use to create queries from universes, and a server-side web service that allows developers to create web services from specific Business Objects queries.

1.2 How is Query as a Web Service Designer used?

Query as a Web Service Designer allows BI content to be delivered to any user interface that can process web services. It allows business users define their own query from a universe, and then publish that query as a standalone web service.

Query as a Web Service Designer can be used in a range of client-side solutions in tools such as:

- Microsoft Office, Excel, and InfoPath
- SAP NetWeaver
- OpenOffice
- Business rules and process management applications
- Enterprise Service Bus platforms

Note

For information on using the web services provided by SAP Business Objects, refer to the SAP Developer Network (SDN) site <http://www.sdn.sap.com/irj/boc/>.

1.3 Query as a Web Service Designer component architecture

Query as a Web Service Designer works on top of Windows applications. It is based on the W3C web service specifications:

- SOAP
- WSDL
- XML

Query as a Web Service Designer has two main components:

Table 1:

Component	Description
Server side	Included in the SAP BusinessObjects Business Intelligence platform and stores the Query as a Web Service Designer catalog, and hosts the published web services.
Client end	Client application used by business users to create and publish queries as web services. You can install the client on several machines that can then access and share the same Query as a Web Service Designer catalog stored on the server.

i Note

In this guide, the name Query as a Web Service Designer is used to mean the client. When information is given that refers to the server component, it is referred to as the server component of Query as a Web Service Designer .

The client communicates with the server components using Web Services.

2 Installing Query as a Web Service Designer

2.1 Installation pre-requisites for Query as a Web Service Designer

Query as a Web Service Designer has the following installation pre-requisites:

Table 2:

For ...	Installation pre-requisites	Description
Server side	SAP BusinessObjects Business Intelligence Suite 4.1	For an updated list of supported Web Applications and versions, see: SAP Service Marketplace: https://support.sap.com/pam
	Web Services	
	Tomcat or another supported web application and JDK .	
Client end	.NET 2.0 framework	Required to build and publish queries.
	The client platform must be supported for use with SAP BusinessObjects Business Intelligence Suite 4.1.	For an updated list of supported versions, see: the SAP Service Marketplace: https://support.sap.com/pam

2.2 Installing Query as a Web Service Designer

The server component of Query as a Web Service Designer installs automatically as part of SAP BusinessObjects Business Intelligence Suite 4.1.

You must install the Query as a Web Service Designer client on every machine that will access the server through web services. Once you have completed the installation of Query as a Web Service Designer , you define a 'host' system on first login.

Note

Users need to be either part of the Administrators or QaaWS Designer User groups to be able start Query as a Web Service Designer client and to use it to design queries.

1. Navigate to the Add-Ons\Query as a Web Service folder on the BusinessObjects Enterprise collaterals installation disk or locate the Query as a Web Service setup.exe file on your network.
2. Double-click setup.exe to launch the Query as a Web Service Designer Wizard.
3. Follow the on-screen instructions in the installation wizard to complete the installation procedure.

i Note

Once the installation is completed, you must define a 'host' system at the first login. See Related Topics for information on starting the application for the first time.

Related Information

[How to start Query as a Web Service Designer \[page 11\]](#)

[How to manage Query as a Web Service Designer hosts in the CMS \[page 14\]](#)

2.3 Troubleshooting Query as a Web Service installation

This section contains information to help you trouble shoot potential installation problems. Refer to the linked topics at the end of the section for information concerning each of the following issues:

- Ensure CMS starts before Tomcat.
- Change the default CMS.
- Activate web service traces.
- Optimize CMS availability.

Related Information

[Ensure the CMS starts up before Tomcat \[page 7\]](#)

[Optimizing CMS availability \[page 9\]](#)

2.3.1 Ensure the CMS starts up before Tomcat

Ensure that the CMS is started before Tomcat. When Tomcat starts, the Query as a Web Service Designer servlet is initialized, and requires the definition of Query as a Web Service Designer Query as a Web Service Designer from the CMS to correctly build the cache. The CMS must be available for this process.

If you launch the CMS automatically using the NT Services, you do not need to do this manually.

2.3.2 Changing the default CMS

The web service connects to the local machine name CMS by default (port 6400). If you want to change to a dedicated CMS, you must specify the different CMS port number from the default by changing the domain property in the `dsws.properties` file. Do this as follows:

1. Stop Tomcat.
2. Locate the `dsws.properties` file located under: `<INSTALLPATH>\warfiles\WebApps\dswsbobje\WEB-INF\classes`.
3. Open the file `dsws.properties` and locate: `<domain=CMSServerName:port>`
4. Enter your CMS name. You can enter a fully qualified domain name to specify the location of the CMS.
5. Close and save the `dsws.properties` file.
6. Restart Tomcat.

Note

If you do not change the domain property in the `dsws.properties` file, you receive an error message "Server not found or server may be down (FWM01003)". If you receive the error message, you need to change the default CMS port number.

For more information about managing servers in the CMC, refer to the Business Intelligence Platform Administrator Guide available from the SAP Help Portal: <http://help.sap.com>.

2.3.3 Activating web service traces

If there is configuration issue, the SAP Business Objects Administrator may be required to set up traces to allow better troubleshooting.

SAP Business Objects strongly recommends using traces only for troubleshooting purposes in test environments

1. In the Central Configuration Manager (CCM), stop "Apache Tomcat 5.5.20" service.
2. Change the trace level.
By default Query as a Web Service only traces errors. You may be requested to provide additional traces for customer assurance.
3. Edit `log4j.properties` located in `[installationpath]\dswsbobje\WEB-INF\classes\`
4. Type the following in the properties file:`log4j.logger.com.businessobjects=DEBUG, BO1`
5. Change the trace location.
By default, it traces in the output console output. If you want to trace a file, comment the `ConsoleAppender` and uncomment the `RollingFileAppender`. If Tomcat is set as a service, you will trace in `dswsbobje.log` found under the file path `C:\WINDOWS\system32\# console appender #`
`log4j.appender.BO1=org.apache.log4j.ConsoleAppender #`
`log4j.appender.AXIS1=org.apache.log4j.ConsoleAppender #rolling file appender`
`log4j.appender.BO1=org.apache.log4j.RollingFileAppender`
`log4j.appender.BO1.File=dswsbobje.log log4j.appender.BO1.Append=false`
`log4j.appender.BO1.MaxBackupIndex=5 log4j.appender.BO1.Max FileSize=10`
6. In the CCM, start "Apache Tomcat 5.5.20" service.

2.3.4 Optimizing CMS availability

The CMS can have only one single CMS system database. The connection with CMS system database can be lost for the following reasons:

- The database is down.
- A network outage between CMS and CMS System database.
- A software or hardware failure of CMS machine or application.

In any of these cases, deploying two CMS decreases the probability that both CMS will be unable to communicate with the CMS system database that is on the CMS machine.

However, if the CMS system database is down then all CMS will be unable to process incoming requests without errors, regardless of whether there are a single CMS or multiple CMSs in the cluster.

You can limit the risk by employing the fault tolerance solutions provided by the database vendor. Each database vendor provides fault tolerance solutions to minimize the risk of the database being unavailable. One fault tolerance option may be to set up a secondary mirror database that runs on a secondary server. For example, if the first database is out the `tns.ora` file is automatically updated to point to the secondary database server. Since available fault tolerance measures are database-specific, see the documentation for your specific database vendor for more information on fault tolerance measures.

Note

If the feature is available and enabled, even if the system database connection is lost, the CMS automatically re-establishes the database connection without administrator intervention.

2.4 Optimizing queries on relational data sources for SAP BusinessObjects Dashboards

You can take advantage of two Dashboards Query as a Web Service Designer (QaaWS) servers to optimize Query as a Web Service Designer requests on relational data sources from SAP BusinessObjects Dashboards. The servers are the following:

- Dashboards Cache Server
- Dashboards Processing Server

Note

You do not need to enable the endpoint and Dashboards servers if you are not experiencing Query as a Web Service Designer scalability issues.

Both servers are installed with SAP BusinessObjects Business Intelligence platform. You must manually activate the servers and the Dashboards QaaWS Endpoint in the web application server to implement the query optimization.

This section describes how you can activate the Dashboards QaaWS Endpoint after the installation and activation of the servers. The Dashboards QaaWS Endpoint redirects Dashboards QaaWS relational requests to the new Dashboards QaaWS servers.

Refer to the enterprise administration documentation for this release for a full description of the new servers and the advantages available for Dashboards users using Query as a Web Service Designer requests on relational data sources.

2.4.1 Activating the Dashboards QaaWS Endpoint

Before you can activate the Dashboards QaaWS Endpoint to optimize Query as a Web Service Designer requests from SAP BusinessObjects Dashboards , you must complete the following steps:

- Install SAP BusinessObjects Business Intelligence platform.
- Create the new servers in the Central Management Console (CMC). Refer to *Business Intelligence Platform Administrator Guide* at SAP Help Portal: <http://help.sap.com> for information on this and the following task.
- Enable and start the new Dashboards servers.

You activate the Dashboards QaaWS Endpoint to allow data to be filtered through the new servers. This optimizes the number of queries that can be handled by Query as a Web Service Designer for Dashboards users.

1. Stop the application server.
2. Browse to and open the file `/DSWSBOBJE_INSTALLDIR/WEB-INF/web.xml`.
3. Add the following information:

```
<filter>
<filter-name> XcelsiusQaawsAccelerator </filter-name>
<description> Qaaws Runtime Query Accelerator </description>
<filter-class> com.sap.xcelsius.server.QaawsRuntimeRequestFilter </filter-class>
</filter>
<filter-mapping>
<filter-name>XcelsiusQaawsAccelerator</filter-name>
<url-pattern>/qaawsservices/*</url-pattern>
</filter-mapping>
```

4. Restart the application server. The two new Dashboards servers are ready to process any Query as a Web Service Designer requests.

3 Starting Query as a Web Service Designer

3.1 Startup pre-requisites for Query as a Web Server Designer

Ensure that the following pre-requisites are completed before you start Query as a Web Service Designer:

Table 3:

Startup pre-requisites	Description
User logged in as Administrator or defined in QaaWS Group Designer.	You define user group membership in the Central Management Console. If you need to be added to this user group, see your administrator.

3.2 How to start Query as a Web Service Designer

Query as a Web Service Designer is used with a Central Management System (CMS). The CMS contains the server component that stores the Query as a Web Service Designer catalog and hosts the published Web Services.

When you start Query as a Web Service Designer for the first time, you must define the host server before starting.

Each successive time you start Query as a Web Service Designer you select an available host server, then log into the CMS.

Once you are logged in, the Query as a Web Service Designer startup Query Catalog page appears. From this page you can start the query creation and publication wizard to publish a new query and edit existing published queries.

Related Information

[Starting Query as a Web Service Designer for the first time \[page 12\]](#)

[Starting Query as a Web Service Designer \[page 12\]](#)

[Logging in with different login credentials \[page 13\]](#)

3.2.1 Starting Query as a Web Service Designer for the first time

When you start Query as a Web Service Designer for the first time, you must define a host server in the CMS where the web services are installed. Once you have defined a host server, this host is automatically available the next time you start the application. You can define multiple host servers, but you can only connect to one at a time.

1. In the Windows Start menu, point to ► *Programs* ► *SAP BusinessObjects BI platform* ► *SAP BusinessObjects BI platform Client Tools* ► *Query As A Web Service Designer* ►.
The *Manage Hosts* dialog box appears. It lists available host servers, and allows you to add new servers and edit existing ones. The first time you start Query as a Web Service Designer the list is empty. You must firstly define a host server.
2. Click *Add*.
The *Edit a Host* dialog box appears. It contains the parameters that you define to create a new host server. See the section in Related Topics for a description of each parameter.
3. Enter the required information in the *Edit a Host* dialog box.
The *Manage Hosts* dialog box appears. It lists available host servers, and allows you to add new servers and edit existing ones. The first time you start Query as a Web Service Designer the list is empty. You must firstly define a host server.
4. Click OK.
The *Manage Hosts* dialog box appears. The new host is now listed.
5. Select the new host and click *Close*.
The *Select your credentials* login box appears. The new host information is available.
6. Enter your password, then click *OK*.
The Query as a Web Service Designer client start up page appears.

3.2.2 Starting Query as a Web Service Designer

Note

This information refers to an earlier version of Query as a Web Service Designer and BusinessObjects Enterprise. For up to date information, refer to the latest version of the Query as a Web Service user guide on the SAP Help Portal: <http://help.sap.com>.

Before you start Query as a Web Service Designer, ensure that you have met the following pre-requisites, refer to Related Topics for more information.

- Your user name must be in the user group *QaaWS Group Designer*, or you must be logged in as Administrator.
- You have defined a server host to store the query web service. You do this when you start Query as a Web Service Designer for the first time, or at any other time by adding a host in the *Edit a Host* dialog box.

You start Query as a Web Service Designer by selecting a host server and entering login information in the login box. You have the following login fields:

Table 4:

Login information	Description
Host	Server in CMS that stores the query webservice. You must define a host server before you can create a query.
System	Central Management Server (CMS) that houses the host server.
User	User name. It must be a member of the <i>QaaWS Group Designer</i> user group, or an Administrator.
Password	User password. This is assigned to you by your administrator.
Authentication	Type of authentication service required to access the CMS. This information is provided by your administrator. The following protocols are available: <ul style="list-style-type: none"> Enterprise LDAP Windows AD
Enable Windows Active Directory Single Sign In	Select if Single Sign In is supported by the Authentication protocol. This option is only available for Windows AD.
Interface Locale	Language used for the user interface. You can select a language available from the drop down list. This list contains installed languages supported by the SAP Business Objects BI platform.

1. In the Windows Start menu, point to ► *Programs* ► *SAP BusinessObjects BI platform* ► *SAP BusinessObjects BI platform Client Tools* ► *Query As A Web Service Designer* ►
The login box appears.
2. Select a host server name from the Host drop down list.
3. Enter your System, User Name, and password information.
4. Click *Options*.
The login box displays Authentication, Single Sign On, and Interface Local options.
5. Select login information.
6. Click OK.
The Query Catalog page appears. You can create, publish, and manage queries as web services from this page.

3.2.3 Logging in with different login credentials

You can log in to Query as a Web Service as a new user without quitting the application.

Select ► *Tools* ► *Log in as* ►

The login box appears. Enter the new user information and click OK.

3.3 How to manage Query as a Web Service Designer hosts in the CMS

A Query as a Web Service Designer Host is the server component in the CMS that stores the Query as a Web Service Designer catalog and stores the published web services. You create a host when you start Query as a Web Service Designer for the first time.

You add a host to the CMS and configure the connection parameters for existing hosts from the [Manage Hosts](#) dialog box.

You access the [Manage Hosts](#) dialog box from the [Tools](#) menu, or from the login box when you log into Query as a Web Service .

The [Manage Hosts](#) dialog box lists host servers. You have the following host administration options:

Table 5:

Manage Host option	Description
Add	Click to define a new host.
Edit	Select a Host name in the list, and click to edit host definition.
Delete	Select a Host name and click to remove the host from the list.
Clear	Click to clear all hosts in the list.

Related Information

[Adding a new host \[page 14\]](#)

[Editing a host \[page 15\]](#)

3.3.1 Adding a new host

You add a new host from the [Manage Hosts](#) dialog box.

1. Select  [Tools](#) .
The [Manage Hosts](#) dialog box appears.

Note

You can also access the [Manage Hosts](#) dialog box from the login box when you log in to Query as a Web Service.

2. Click the [Add](#) button.
The [Edit a Host](#) dialog box appears.
3. Enter information for the host parameters and click [OK](#).
The host is added to the list in the [Manage Hosts](#) dialog box.


4. Click [Close](#).

3.3.2 Editing a host

You edit a host definition from the [Edit a Host](#) dialog box. You can edit the following host parameters:

Table 6:

Edit host parameters	Description
Name	Name of the host server. This is the name that appears in the Host field in the login box.
URL	The URL address of the host server. A default URL for the host is automatically entered. You can edit the URL if required. You should verify that the port address in the URL is correct.
CMS	Name of the CMS that houses the host. This is the name that appears in the System field in the login box.
<ul style="list-style-type: none">• User• Authentication• Enable Windows Active Directory Single Sign In	These parameters are described in the section in Related Topics.

1. Select  [Tools](#)  [Manage Hosts](#) .
- The [Manage Hosts](#) dialog box appears.

Note

You can also access the [Manage Hosts](#) dialog box from the login box when you log in to Query as a Web Service.

2. Click a Host in the list.
3. Click the [Edit](#) button.

The [Edit a Host](#) dialog box appears. It contains the parameters that can be edited for the Host.
4. Enter or modify one of more values.
5. Click [OK](#) then click [Close](#).

The login box appears. The modifications to the host apply immediately.

4 Creating a new query to publish as a web service

4.1 Create and publish a new query as a web service

You can create a new query to publish as a web service in two ways:

- Use the *Publish as a Web Service Wizard* to define a query from scratch.
- Duplicate an existing query to use as a definition template, and modify its definition to create a new query.

Related Information

[How to create a new query using the Publish as a Web Service wizard \[page 16\]](#)

[How to create a new query by duplicating a published query \[page 22\]](#)

4.2 How to create a new query using the Publish as a Web Service wizard

You use the *Publish as a Web Service Wizard* to create a new query to publish as a web service.

If you want to use an existing query as a template, see the section about duplicating a published query in Related Topics.

You create and publish a query by following the workflow described here. Refer to the topics and the end of the page to link directly to the Help page that corresponds to the wizard step. Each Help page fully describes the properties that you set on the current wizard page.

Table 7: Query creation and publish workflow using the wizard

Query creation and publish workflow	Description
Start the <i>Publish as a Web Service Wizard</i>	You start the wizard from the Query Catalog page. This is the page that appears when you login to a Host.
Set name and description for the new query.	You enter name and comments for the query.
Set advanced properties	You can set parameters for reverse proxy use, session time-out constraints, and authentication type.
Choose a universe as the data source for the query.	You select the universe that contains the objects to be used in the query. The universe is the data source for the query.

Query creation and publish workflow	Description
Build the query using a Query Panel.	You build the query using a Query Panel to combine dimensions and measures, and set conditions for the query.
Preview and publish the new query as a web service.	You preview the SQL for the query, and publish the query as a web service to the Host server.

Related Information

To start the Publish as a Web Service wizard [page 17]

To set query name and description properties [page 17]

To select a universe for a query [page 19]

To define a query [page 19]

To preview and publish a query [page 21]

4.2.1 To start the Publish as a Web Service wizard

You use the *Publish as a Web Service Wizard* to create and publish a new query. You start the wizard from the Query Catalog page. There is a Help page for each successive page in the wizard.

1. Start Query as a Web Service.
The Query Catalog page appears. It lists the current query webservices stored in the Host server.
2. Select **► Query ► New ► Query ►**.
The *Publish as a Web Service Wizard* opens to the *Description* page. You can enter name, description, and advanced parameter information on this page.

4.2.2 To set query name and description properties

On the *Description* page of the *Publish as a Web Service Wizard* you specify a name and description for the new query to publish as a web service.

1. Enter a name and description for the query.
2. Do one of the following:
 - If you want to set parameters for reverse proxy use, session timeout constraints, or authentication type, then click the *Advanced parameters* button.
 - If you do not want to set advanced parameters, then click *Next*.

Depending on your choice, either the dialog box for advanced parameters or the next page in the wizard *Select a Universe* page appears.

4.2.2.1 To set web service advanced parameters

You can set parameters from the [Advanced Parameters](#) dialog box for the following:

- Reverse proxy use using a web service base URL
- Session timeout constraints
- Authentication mode used for web service consumers. This setting only applies to the web service when it is consumed.

Each of these options is described in the topics listed at the end of the section.

1. Click the [Advanced](#) button on the [Description](#) page of the [Publish as a Web Service Wizard](#). The [Advanced Parameters](#) dialog box appears.
2. Do one of the following:
 - Edit or type a new web service base URL .
 - Type or use the up and down arrows to enter a new value for session timeout constraint.
 - Select an authentication mode from the drop down list box.
3. Click [OK](#).
The Description page appears. You continue the definition of the query from this page.

4.2.2.1.1 Web service base URL

Reverse proxy is a network address translation of a machine from a URL in a given network to a URL in another network, usually an external network like the public internet.

A server called `myserver.company.com` within a company network could be called: `www.mycompany.com` in the external network.

To support such a deployment, you must set up a Web Services base URL. The base URL contains the external URL from which you want your Web Service to be accessible, for example `www.mycompany.com/dswsbobje/`.

4.2.2.1.2 Session timeout

To improve the performance of Query as a Web Service, particularly the cascading call scenario, the user's connection to the server is cached by the web service provider. You can configure session time-out (in seconds) for each Query as a Web Service connection. The default is 60 seconds.

For example, if a given user login calls **service 1** and then under 60 seconds calls **service 2** with the same login (identical username and password), the server reuses the same connection and reinitializes the session time-out.

4.2.2.1.3 Authentication mode

Authentication mode is the type of directory against which the BusinessObjects XI platform validates the login.

Examples include Enterprise, LDAP, Windows AD, and SAP.

You can set the authentication mode so that it will be defined according to the service, or by the consumer:

- **Service**
You, as administrator, select the authentication directory; all users subsequently accessing the service authenticate on this directory (except for the sessionID option).
All authentication directories supported by the server are available for selection in the Authentication Mode drop-down list.
- **Consumer defined**
The consumer of the query selects the authentication mode as an input parameter called authenticationType.

4.2.3 To select a universe for a query

The [Select a universe](#) page of the [Publish as a Web Service Wizard](#) lists the universes available to the CMS. You select the universe to be used as the data source for the query.

1. Click a universe in the list.
A description of the selected universe appears in the description box.
2. Click [Next](#).
The [Query](#) page of the wizard appears.

4.2.4 To define a query

The [Query](#) page of the [Publish as a Web Service Wizard](#) allows you to use a query panel to define a query based on a universe. The query panel is based on the [Web Intelligence HTML Query Panel](#). The query panel is described briefly in this section with instructions to build a query, however, the query panel is fully documented in the guide Building queries with Web Intelligence Query - HTML. You should refer to this guide in the documentation for this release for more information.

The query panel contains the following zones:

Table 8:

Query panel zone	Description
Universe pane	Pane to the left of the query panel that contains the classes, dimensions, and measures in the universe organized in a tree structure. These objects map to SQL structures in the database. You build your query using these objects.
Result objects pane	You drag the objects for your query into this pane. You can apply a sort to data for each object by right clicking an object and selecting the type of sort.
Filter objects pane	You drag objects to define a filter to restrict the data returned for the query. You can select operators from a list, apply a filter using a constant, list of values, or define a prompt for user input.

1. In the [Universe](#) pane, do one of the following:
 - Double click objects for the query.
 - Select and drag objects over to the [Result objects](#) pane.

The query objects are aligned in the [Result objects](#) pane. You can change the order of an object in the query by selecting and dragging it to the desired position. You can remove any object by selecting it and dragging it back into the [Universe](#) pane.

2. If you want to create a filter, double click or drag a filter object over to the [Filter objects](#) pane.
The object is automatically associated with a drop down list for operators, a text box for a constant, and a drop down list for a list of values or prompt.
3. Select an operator and select the required filter from the drop down lists. Each of the available filters are described in Related Topics.
4. Click [OK](#).
The [Preview](#) page of the wizard appears.

4.2.4.1 To set query constraints

You can set constraints to optimize query performance. You can set the following constraints:

Table 9:

Constraint	Description
Duplicate rows	When selected, allows duplicate rows to be returned. By default, the query does not return duplicate rows.
Max. fetched time	Maximum time allowed for data fetch. The default value "-1" indicates that this option is deactivated, and the value set in the universe connection parameters applies.
Max. rows fetched	Maximum number of rows to be fetched by a query. The default value "-1" indicates that this option is deactivated, and the value set in the universe connection parameters applies.
Sample result set	The number of rows you want to return for a sample result set before running the query.

1. From the query panel, click the options icon at the top left of the page.
A dialog box with query constraint options appears.
2. Set constraint values where required.
3. Click [OK](#).

4.2.4.2 To define query sort order

You can define sorts for each object in the universe. You can also define a sort priority for an object.

1. From the query panel, click the [Manage Sorts](#) icon above the [Universe](#) pane.
A dialog box with sorting options appears.
2. Expand folders in the [Available objects](#) pane and select an object.
3. Double click the object, or click the arrow to place the object in the [Query Sorts](#) pane.
4. Select the object in the [Query Sorts](#) pane and click either [Ascending](#) or [Descending](#).
5. If required, select an object and click the [Move up](#) or [Move Down](#) buttons.

6. Click [OK](#).

4.2.4.3 To define lists of values

You define a list of values by selecting the object in the Query page, then defining the list of values on a list of values page.

1. From the Query page, drag an object into the Filter objects pane.
A text box flanked by two drop down list filters appears.
2. Select In List from the drop down list to the left of the text box, then select List of Values from the drop down list to the right of the text box.
The List of Values dialog box appears.
3. Double click on each value in the list pane that you want to appear in the list of values. The value appears in the Selected Values pane.
4. Click OK.
The values appear in the text box.

4.2.4.4 To define prompts

You define a prompt by selecting the object in the Query page, then opening a prompt page to define the prompt.

1. From the Query page, drag a prompt object to the Filter objects pane.
A text box flanked by two drop down list filters appears
2. Select Prompt from the drop down list to the right of the text box.
A prompt icon appears.
3. Click the prompt icon.
A define a prompt box appears. Type the text that you want to display for the prompt, and select the options that apply to the prompt.
4. Click OK.

4.2.5 To preview and publish a query

The [Preview](#) page of the [Publish as a Web Service Wizard](#) allows you to preview the objects in the query and the result table. once you are satisfied with the preview, you can publish the query as a web service to the host server.

1. Verify that universe, the objects, and the result of the query are correct.
2. Click [Publish](#).
The query is published to the host server as a web service. It is listed in the Query Catalog page.

4.3 How to create a new query by duplicating a published query

You can create a new query to publish by duplicating a published query, and using it as a template to build a new query. Once the query is duplicated, the *Publish as a Web Service Wizard* starts automatically and you modify the definition in the same way as creating a new query with the wizard.

You need to have the appropriate user permissions to copy a query in a folder and add a new query to another folder.

Related Information

[To duplicate a existing published query \[page 22\]](#)

4.3.1 To duplicate a existing published query

You duplicate a query to create a new query definition as follows:

1. Do one of the following:
 - Select a query listed in the Query Catalog page and select **► Query ► Duplicate ►**.
 - Right click a query in the Query Catalog page list and select *Duplicate* from the list.

The *Publish as a Web Service Wizard* starts.

2. Follow the wizard to rename and modify the query definition.

5 Managing queries as web services

5.1 Managing queries from the Query Catalog page

The Query Catalog page appears when you start up Query as a Web Server Designer. It lists the queries published to the host server and the universe used by each query. For each selected query in the list, the name, universe name, description, and URL address for WSDL description of the selected query are listed in the information pane to the right.

From the Query Catalog page, you can create and publish new queries, and manage published queries already published to the host server.

You can perform the following actions from the Query Catalog page:

Table 10:

Menu	Available actions
Query	<ul style="list-style-type: none">• Create a new query and create folders in the catalog list to store and organize queries.• Edit the definition of a query.• Duplicate a query to use as the template for a new query.• Delete, rename, and refresh queries in the list.• Deploy a query to another host server.
Edit	The standard Windows editing actions Cut, Copy, and Paste are available.
Tools	<ul style="list-style-type: none">• Access the Manage Hosts dialog box to add, edit, and delete host servers.• Log out and log in as a different user, or to a different host without quitting the application.• Access the advanced parameters dialog box to set web based URL, session time out limits, and authentication mode for the query.

5.2 To create folders in the Query Catalog

You can create folders in the Query Catalog page to organize queries in the list.

From the Query Catalog page, do one of the following:

- Click the root folder and select [Query](#) > [New Folder](#).
- Right click the root folder and select [New Folder](#) from the list.

A new folder is created in the list. You can create folders within any folder in the list.

5.3 To edit a query as a web service

You can modify the definition of a query that has been published as a web service at any time. Editing a query web service can change the associated WSDL, and can break the link that is used by other users to communicate with the web service.

Business Objects™ recommends that you notify users of any changes you make.

1. From the Query Catalog page, select the query that you want to edit.
2. Do one of the following:
 - Select **Query > Edit**.
 - Double click a query.
 - Right click a query and select **Edit** from the catalog list.

The **Publish as a Web Service Wizard** starts.

3. Follow the wizard to edit the query and then republish the query.

5.4 To rename a query

You can rename a query in the Query Catalog. The new name applies immediately. You do not have to republish the query to apply the new name, as the web service is identified in the CMS by a unique identifier (CUID) instead of the query name as in previous releases.

1. From the Query Catalog page, do one of the following:
 - Double click a query in the list.
 - Select a query in the list, and Select **Query > Rename**.

The query is highlighted.

2. Type a new name.
The new name applies immediately.

5.5 To delete a query as a web service

You can delete a query from the Query Catalog list.

Do one of the following:

- Select a query listed in the Query Catalog page and select **Edit > Delete**.
- Right click a query in the Query Catalog list and select **Delete** from the list.

The query is removed from the Host.

5.6 To copy and paste a query as a web service

You can copy a query and past queries between folders in the Query Catalog. Ensure that you have the appropriate user permissions to perform the copy operation.

1. Do one of the following:
 - Select a query in the Query Catalog list and select **Edit > Copy**.
 - Right click a query in the Query Catalog list and select **Copy** from the right click list.
2. Click where you want to paste the query copy, and either select **Edit > Paste** or right click and select **Paste** from the list.
The copied query appears in the Query Catalog list.

5.7 To view query properties

You can view query properties from the Query Catalog page.

1. In the Query Catalog page, select a query in the list. If necessary, open folders to browse to the query.
The properties display on the right side of the query list.
2. Click the URL.
The link to the query description is displayed in a web browser.WSDL definition opens in your web browser.
3. Click the WSDL link in the web page to see the WSDL.

5.8 To view available query web service instances

You can view in a web browser, available instances of Query as a Web Server Designer.

Open a web browser, and go to the following URL:

`http://<name of server>:<Tomcat port number>/dswsbobje/qaawsservices`

Available QaaWS services

- TestJP ([wsdl](#))
 - Administrator
 - Fri Sep 29 11:43:27 PDT 2006
 - eFashion
- Dashboard1 ([wsdl](#))
 - Administrator
 - Mon Sep 18 10:58:48 PDT 2006
 - Island Resorts Marketing
- BenchmarkChartData ([wsdl](#))
 - administrator
 - Tue Sep 26 12:12:11 PDT 2006
 - Benchmark Universe
- BenchmarkType ([wsdl](#))
 - administrator
 - Tue Sep 26 12:12:43 PDT 2006
 - Benchmark Universe
- BenchmarkComparison ([wsdl](#))
 - administrator
 - Wed Sep 27 10:14:40 PDT 2006
 - Benchmark Universe

5.9 How to deploy queries to another web server

This section explains how to deploy to another server. You do this by copying a Query as a Web Service definition from one server to another. For example, you can move a query definition from a development server to a test or production server.

To deploy to another server, you have a choice of the following methods:

- Query as a Web Service Designer
You use the [Deploy to another server](#) option. The advantage of this method is that the query will automatically update the WSDL cache for the query on the new application server. If you do not use this method, you must manually update the WSDL cache.
- Import Wizard. You must manually update the WSDL cache for the deployed query.
- BIAR file. You must manually update the WSDL cache for the deployed query.

i Note

Before starting, make sure the universe and users are the same on both machines. Use the Import Wizard or BIAR files to import universes and users. It is important to have the same CUID during Import Wizard operations.

Related Information

[Updating the WSDL cache when deploying queries to another server \[page 29\]](#)

5.9.1 WSDL file update changes in query deployment

WSDL file updates have changed in this release. In this version upwards, the servlet stores all WSDL files in a .ZIP file on the application server. Previously, the servlet connected to the CMS each time a query was published. The WSDL for the query was dynamically updated. Now, connections to the CMS are no longer required. WSDL files are added to this .ZIP file whenever a new QaaWS query is published or updated. Additional runtime parameters are also stored in the WSDL cache, for example authentication mode, and locale and timeout values used at web service consumption.

When you use the [Deploy to another server](#) option to deploy a query to a different application server, the WSDL cache is updated automatically. If you use either the Import Wizard or a BIAR file to deploy a query to another application server, you must manually update the WSDL .ZIP file. This is described in the Related Topics section.

Related Information

[Updating the WSDL cache when deploying queries to another server \[page 29\]](#)

5.9.2 To deploy to another server using the Query as a Web Service client tool

Using Query as a Web Service Designer, you can deploy queries to another server once, using the same service name.

You can use the Deploy to another server option between two servers that have the same version of Query as a Web Service Designer installed. It is not possible to migrate queries from one version to another using this option.

1. In the Query Catalog, select a query as a web service.
2. Click [Deploy to another server](#).

The Select Your Credentials dialog box appears.

3. Complete the information for the system on which you want to deploy the Web Services, and then click [OK](#).

The Query as a Web Service appears in the Publish Query as a Web Service Wizard.

4. Publish the Query as a Web Service to the new system.

Deploying a Query as a Web Service definition to another server automatically changes the WSDL location and the services execution location.

Note

You can customize this service-based URL using the wizard. You can also make it dynamic in an Xcelsius project by using the Input Values text box of the Web Services Connectivity. Using this functionality, you can switch a dashboard from development to production by simply changing the URL.

You cannot deploy the same query Service Name more than once to the same server.

5.9.3 To deploy Query as a Web Service from Import Wizard

To deploy using the Import Wizard, import the Query as a Web Service definition from the source server to the destination server.

1. Launch the Import Wizard on the source server.
2. After logging in to the source CMS, select the target file to which you will export the definitions.
3. In the *Select objects to import* pane of the Import Wizard dialog box, select *Import folders and objects* then select *Import application folders and objects*.
4. In the *Select application folders and objects* pane of the Import Wizard dialog box, expand the *QaaWS Folder* then the Query as a Web Service definitions or Service Names you want.
5. Continue through the remaining steps of the Import Wizard by clicking *Next*.
6. Open the Import Wizard on the destination server.
7. In the Source Environment dialog box, select the source file to which you exported the definitions.
8. Log into the destination CMS.
9. In the *Select objects to import pane* of the *Import Wizard* dialog box, select *Import folders and objects* then select *Import application folders and objects*.
10. In the *Select application folders and objects* pane of the *Import Wizard* dialog box, select the Query as a Web Service definitions you want.
11. Continue through the remaining steps of the Import Wizard by clicking *Next*.
12. After importing, point the newly-deployed query definition to the web server on the destination system.

5.9.4 To deploy Query as a Web Service from a BIAR file

Make sure the Import Wizard is installed on both the source and destination server.

1. Open the Import Wizard™ on the source server.
2. After logging in to the source CMS, select the target BIAR file to which you will export the definitions.
3. In the *Select objects to import* pane of the Import Wizard dialog box, select *Import folders and objects* then select *Import application folders and objects*.
4. In the *Select application folders and objects* pane of the Import Wizard dialog box, expand the *QaaWS Folder* then the Query as a Web Service definitions or Service Names you want.
5. Continue through the remaining steps of the Import Wizard.
6. Open the Import Wizard on the destination server.

-
7. In the Source Environment dialog box, select the BIAR file to which you exported the definitions.
 8. Log into the destination CMS™.
 9. In the Select Objects to Import dialog box, select *Import folders and objects* > *Import application folders and objects*.
 10. In the Select Application Folders and Objects dialog box, select the Query as a Web Service definitions you want.
 11. Continue through the remaining steps of the Import Wizard.
 12. After importing, point the newly-deployed query definition to the web server on the destination system.

5.9.5 Updating the WSDL cache when deploying queries to another server

If you do not use the *Deploy to another server* option in Query as a Web Service to deploy a query to another server, you need to manually update the WSDL cache to ensure that the query is synchronized with the CMS. You do this when you use the import wizard, or a BIAR file to deploy a query to another server.

To manually update the WSDL when a query is deployed to another application server, do the following:

- Go to the following URL: `http://<AppServerName>:<port>/dswsbobje/qaawsservices/wsdlGenerator`
- If required, enter login information for the CMS.

The WSDL files are automatically updated.

5.10 Deploying Query as a Web Server over multiple web servers

5.10.1 To configure Query as a Web Service Client to connect to a reverse proxy web server

Reverse proxy is a network address translation of a machine from a URL in a given network to a URL in another external network. Since Query as a Web Service client binds to the Report Engine, Query and BICatalog Web Service you must specify the external URL of the Web Services

```
wsresource4=QueryService|query web service alone|http://[myserver.mycompany.com]/dswsbobje/services/query
```

1. Locate the `dsws.properties` file.
This file is located in `dswsbobje` web application.
2. Update the following properties:

Table 11:

Property name	Property value
wsresource1	ReportEngine reportengine web service alone http:// <[myserver.mycompany.com]> /dswsbobje/services/ reportengine
wsresource2	BICatalog bicatalog web service alone <[myserver.mycompany.com]> dswsbobje/services/bicatalog
wsresource4	QueryService query web service alone http:// <[myserver.mycompany.com]> /dswsbobje/services/query

6 Consuming queries as web services with different applications

6.1 Consuming a query as a web service using WSDL

WSDL is an XML-based description of how to communicate using the web service. It describes the protocol bindings and message formats required to interact with the Web Services listed in its directory.

The supported operations and messages are described on a high level and then bound to a concrete network protocol and message format. WSDL is often used in combination with SOAP and XML schema to provide Web Services for the Internet.

A client program connecting to a web service can read the WSDL to determine what functions are available on the server.

To find the WSDL for a query as a web service, select it in the Query Catalog.

6.2 Consuming a query as a web service in SAP BusinessObjects Dashboard

To consume a query as a web service inside SAP BusinessObjects Dashboards, use the Web Service Connector.

The Web Service Connector component allows a Flash document created in SAP BusinessObjects Dashboards to communicate with Query as a Web Service Designer through SOAP, using point and click. The SAP BusinessObjects Dashboards Flash document is self-contained and communicates with the web service to display data visually. The only prerequisite is that there be a SOAP-based web service available to the Flash document.

The Web Service Connector component, when activated, creates a SOAP-based message (an XML document) and sends it to the web service. The web service responds with a SOAP-based message of its own. The Web Service Connector component then sends this data to all the other components, resulting in a live visual representation of your data.

There are many public web services available, and many different toolkits and packages for SOAP-based web services. To use public web services and packages that already have a web service on top, you only need a WSDL document for the web service. For Query as a Web Service Designer, you can find the WSDL in the properties of each web service by selecting it in the Query Catalog page.

See the SAP BusinessObjects Dashboards documentation for more information.

6.2.1 Cross-domain issue

After downloading the SAP BusinessObjects Dashboards widget from the web, you may encounter difficulty retrieving data with Query as a Web Service Designer if the Flash and the client tool come from different web domains.

This occurs for security reasons related to Macromedia Flash. The Flash displayed in a browser is not permitted to access data residing outside the web domain from which the Flash file format (SWF) originated.

The solution depends on whether your Dashboard server and the Query as a Web Service Designer client are on the same or different machines.

Same machine

Open the Optional Parameters dialog box from the *Advanced parameters* button and modify the Web Service Base URL so that it matches the web domain used to download Dashboard.

Different machines

For instructions, go to:

http://www.adobe.com/cfusion/knowledgebase/index.cfm?id=tn_14213 ➡

6.2.2 To select the web service

Selecting the web service involves pointing the Web Service Connector component to the WSDL document.

1. When working on an Excel spreadsheet, double-click the Web Service Connector component to open the Properties panel.
2. In the left pane, click and drag the Connection Refresh button to the dashboard on the right side of the application screen.
3. Do one of the following:
 - Select **Data > Connections.** ➤
 - Click the *Data refresh* button.

The Select Web Service dialog box appears.

4. Click *Add*.
A list of available connection types appears.
5. Select *Query as a Web Server Designer* from the list.
Selecting Query as a Web Server Designer ensures that SAP BusinessObjects Dashboards manages the correct authentication for login parameters.
6. Type a name for the connection.

7. In the WSDL URL box, type or paste the location of the WSDL document.

8. Click *Import*.

If there was an error, the WSDL document may not be fully validated or it may not meet requirements of the Web Service Connector component.

9. In the Methods list, select the method you want to bind with.

For a given web service, you can bind to only one method per component.

10. Click *OK*.

The input and output messages are now available for you to tie to your data.

6.2.3 Input messages

For input messages, only elements can be tied to data.

Use the "-" button to remove folders and elements. This prevents the folder or field from being sent in the message.

The "+" button can be used to add a folder or a repeating element.

6.2.4 Output messages

For output messages, both elements and folders can be tied to data.

Selecting a folder displays the number of columns in that folder. When you tie this to data, each element in the folder is assigned to a column in the order the elements appear.

Selecting fewer columns limits the data that is bound to the number of columns that you select. Selecting additional columns inserts blank columns. If an element is repeating underneath the folder, only the first element will be mapped to the column. The folders underneath the selected folder cannot be mapped.

Use the "-" button to remove unnecessary elements. This contracts the view of the tree and may reduce processing time in the Flash document.

6.2.5 Authentication in SAP BusinessObjects Dashboards

SAP BusinessObjects Dashboards provides an authentication mechanism that enables you to avoid logging into SAP BusinessObjects BI Launchpad twice with the same session ID.

Note the following rules if you customize authentication:

- An existing session ID is used only if the user name and password are blank, so not hard coded or not passed as input values captured by a dialog box. This occurs when Query as a Web Server Designer is running in BI Launchpad or SAP BusinessObjects BI workspaces.
- If the user name and password are not blank, then use these values to authenticate the user. No session is created. This is the most scalable scenario and is the preferred option for large-scale usage.

- If there is no pre-existing session (and username and password are blank), Dashboards displays the standard security dialog, in which a session is created. This occurs when Dashboards designers do not build their own security dialog boxes.

6.3 Consuming a query as a web service in Crystal Reports

This section explains how SAP Crystal Reports can consume a query as a web service as a data source.

1. In the SAP Crystal Reports *Standard Report Creation Wizard*, on the Data page, create a new XML connection.
2. In the XML Type and Location page of the XML dialog box, select *Use Web Server Data Source*, and then click *Next*.

The Web Services Location page appears.

3. In the HTTP WSDL URL field, type the WSDL of the selected query as a web service.

The Authentication page appears.

4. Set Basic authentication (if you haven't already), and then click *Next*.

The Web Service, Port, and Method page appears.

5. Complete the information, and then click *Finish*.

The *Enter Values* dialog box appears.

6. Set the web service parameters with login, password, and prompts, and then click *OK*.

The Data page of the Standard Report Creation Wizard re-appears.

7. Select one of the following options and click *Next*.

- *runQueryAsServiceResponse*
- *runQueryAsServicetable*
- *runQueryAsServicerow*

The Fields page appears.

8. Select the field to build your query on, and then click *Next*.

A report is created.

9. Refresh the report.

The correct parameters are shown in the report.

6.4 Consuming a query as a web service in Microsoft Office InfoPath

This section explains how Microsoft Office InfoPath can consume a query as a web service as a data source.

1. In InfoPath, access the Design a Form task list.

-
2. Click [New From Data Connection](#).

The Data Connection Wizard appears.

3. Select [Web Service](#), and then click [Next](#).
4. Select [Receive and Submit Data](#), and then click [Next](#).
5. Type or browse for the WSDL file, and then click [Next](#).
6. Select the web service operation, and then click [Next](#).
7. Enter a name for the data connection, and then click [Next](#).
8. Type or browse for the web service you want users to submit their forms to, and then click [Next](#).

The Parameters page appears.

9. For each parameter, select [Entire Form](#), and then click [Next](#).
10. Type a name for the data connection submitting data, and then click [Next](#).

The data form appears on the left, and the data source on the right.

11. Build the form, and then click [Run Query](#).

7 Web Service call API description

This section describes the methods generated by a query.

Query as a Web Service Designer always generates the two following methods :

- runQueryAsAService
- runQueryAsAServiceEx

Both methods correspond to the query call, however, runQueryAsAServiceEx is generated for index aware prompts, so there is a difference in input parameter type for Enter_value_s_for_Year_. This is described below.

These two methods always require the same input parameter set and yield the same output parameter set, except the list of prompt input values, as there will be as many input parameters as prompts in the query.

A third method generated is valuesOf_Year. This name (as well as the prompt parameter names) depend on the object names used in the query, and are dynamically generated. This is also described in the following table:

- In parameters

Table 12:

Parameter	Type	Description
login	string	Login information
password	string	Password information
searchLOV	string	Sets the search pattern in the list of values. You can use the following wild card characters in the pattern string: ? : 0 or 1 character, * : 0 or n characters; for example, "M?Greggor" finds the value McGreggor, and "M*Greggor" finds the values McGreggor and MacGreggor.
Enter_value_s_for_Year_	<ul style="list-style-type: none">• For runQueryAsAService: string[]• For runQueryAsAServiceEx: Lov-ValueIndex[]	<p>Prompt for Year values.</p> <p>The method runQueryAsAService requires Enter_Year_ As string as prompt value for Year.</p> <p>The method runQueryAsAServiceEx is generated for index aware prompts so requires an instance of Lov-ValueIndex.</p>
sessionID	string	Identifier for a BusinessObjects Enterprise session that allows the web service to connect to the CMS without a login and password. The web service gets the session identifier from the getSessionInfo call.
serializedSession	string	Allows the web service to connect to the CMS without login and password using a currently open session (serialized session). A serialized session can be obtained from the web service platform session from the getSessionInfo call.

- Out parameters

Table 13:

Parameter	Type	Description
table	Table	Data output is a table consisting of a set of rows, each row being a tuple of values for each column. This is the equivalent of a vertical table in Web Intelligence.
message	string	Text that contains error messages or warnings that may be produced by the server when the query is run.
creatorname	string	Name of query creator.
creationdate	dateTime	Date that the query was created.
creationdateformatted	string	Date that the query was created formatted in the locale of the machine used to create the query.
description	string	Comments
universe	string	Universe name
queryruntime	int	Universe metadata that specifies the database query runtime duration.
fetchedrows	int	Number of rows returned from database and universe metadata.
delegated	boolean	Returns true if the universe defines this LOV as delegated search, so that the list of values is resolved by data base with the given user input pattern, otherwise returns false

8 Limitations using Query as a Web Service Designer

Limitations when creating a query

- Multi-cubes cannot be used
- Combined queries and subqueries cannot be used
- IndexAware prompts are not implemented

Limitations at query run-time

- Object restrictions cannot be used

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