Cleo Integration Cloud™ | Clarify

Chapter

Web Services Provider SOAP

Overview

This topic demonstrates how to create a Web Service Provider and related Clarify objects to process SOAP requests for information from Consumers, as detailed in the *Web Services Consumer SOAP* demo.

The Web Service Provider generates a WSDL file that identifies the server hosting the Web Service, lists the operations that can be executed, and provides XML Schemas so a consumer knows how to form their request message and understand the response message.

Contents

Scenario

In the Provider's database, the *HEADER* table is populated as here.

PO_NUMBER	DATE	CONTACTNAME	PHONE	EMAIL	LINES	QUANTITY	COST	PROCESSED	DATEPROCESSED
BestValue_22	1/1/2013	BOB SMITH	(555) 555-5555	BSMITH@BVGS.COM	2	1100	3875	U	(null)
GoodStuff_303	1/2/2013	SUSAN JOHNSON	(555) 555-6666	SJOHNSON@BVGS.COM	3	190	2380	U	(null)
FV-2013_0047	1/3/2013	BOB SMITH	(555) 555-5555	BSMITH@BVGS.COM	1	1	375	U	(null)

This demo concludes by showing how a consumer obtains information about a specific purchase order.

Resources

The resources needed to accomplish this transformation are meant to provide a basic understanding of how Clarify objects work together. All resources are created and defined on the *Clarify Workbench* perspective's *Project Explorer* view.

- Project [**com.training.demo06.soapprovider**] – A Project is a directory within the Workspace.

- Package [**com.training.demo06.soapprovider**] – A Package is a directory within a Project.

- File Adapter [**WriteXmlFA**] – This File Adapter sends the target data out of Clarify.

- XML Schema [**PurchaseOrdersRequestXML**] – This Schema describes the XML request message.

- XML Schema [**PurchaseOrdersResponseXML**] – This Schema describes the XML response message.

- Data Source [**PurchaseOrdersDS**] – This Data Source defines the location and login credentials for the purchase order database.

- SQL Access [**PurchaseOrdersSQL**] – This SQL Access object gathers the requested information from the purchase order database.

- Web Service Provider [**PurchaseOrdersWSP**] – This Web Service Provider object processes requests for information from Consumers. When this object is created, Clarify generates the *PurchaseOrdersWSP* Business Process in a separate Package.

- Business Process [**PurchaseOrdersWSP**] – This automatically-created object requires editing to prepare and send the response message.

Project: com.training.demo06.soapprovider

Select *File | New | Clarify Project*.

Type **com.training.demo06.soapprovider** in the *Project name* field.

Click **Finish**.

When Clarify creates a Project, it automatically creates a Package named the same as the Project.

File Adapter: WriteXmlFA

Select the Package.

Select *File | New | File Adapter*.

Choose **Write** and click **Next**.

Type **WriteXmlFA** in the *Name* field.

Click **Finish**. The object is created, and its editor appears.

Click in the *File Path* field. Click the **Browse For Folder** button, locate/select the *C:\Clarify_demos\demo06\out* folder, and click **OK**.

Type **PurchaseOrderResponse.xml** in the *File name* field.

Select *Generate Unique Name* from the *Collision Action* field's dropdown.

Save the object and close the editor.

Schema: purchaseordersrequest

Select the Package.

Select *File | New | XML Schema*. A wizard assists with creating and defining this object.

In the *Clarify XML Schema Version Selection* panel, select *Version 1*.

The *Create* panel allows for importing an existing file or creating a new XML Schema. Choose *Create from an XSD or DTD* and click **Next**.

The *Import XML Schema or DTD* panel allows for selecting a file to use. Click **Browse**, select the *purchaseordersrequest.xsd* file in the *C:\Clarify_demos\demo06* folder, and click **Open**. Click **Next**.

The *Select Root Element* panel allows for indicating the root element for the XML Schema. Select *order_number* and click **Next**.

The *XML Schema* panel allows for specifying the object's location and name. Accept the proposed **purchaseordersrequest** name.

Click **Finish**. The object is created, and its editor appears.

> When fully-expanded, the Schema shows the *po_number* element for the request message.

Close the editor.

Schema: purchaseordersresponse

Select the Package.

Select *File | New | XML Schema*. A wizard assists with creating and defining this object.

In the *Clarify XML Schema Version Selection* panel, select *Version 1*.

The *Create* panel allows for importing an existing file or creating a new XML Schema. Choose *Create from an XSD or DTD* and click **Next**.

The *Import XML Schema or DTD* panel allows for selecting a file to use. Click **Browse**, select the *purchaseordersresponse.xsd* file in the *C:\Cleo\Clarify_demos\demo06* folder, and click **Open**. Click **Next**.

The *Select Root Element* panel allows for indicating the root element for the XML Schema. Select *order_info* and click **Next**.

The *XML Schema* panel allows for specifying the object's location and name. Accept the proposed **purchaseordersresponse** name.

Click **Finish**. The object is created, and its editor appears.

> When fully-expanded, the Schema shows all elements for the response message.
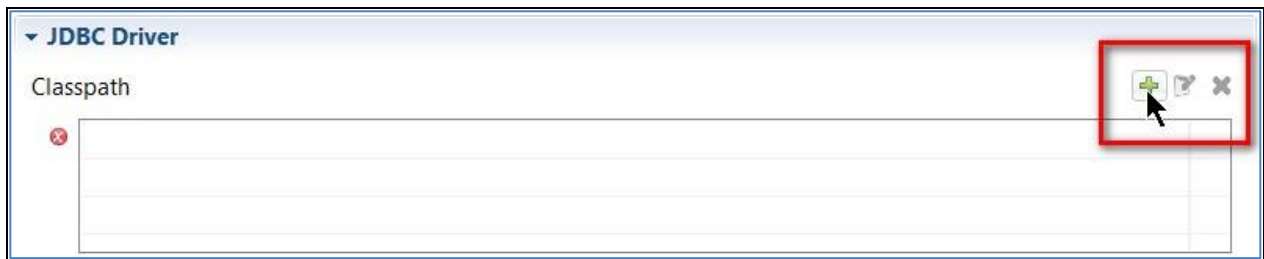
Close the editor.

Data Source: PurchaseOrdersDS

Select the Package.

Select *File | New | Data Source*.

Type **PurchaseOrdersDS** in the *Name* field.

Click **Finish**. The object is created, and its Editor appears.

Click the *JDBC Driver* section's **Add** button.

Click the **Open** button, locate/select the *hsqldb-2.3.3.jar* file in the *C:\Clarify_demos\DEMO_DB_FULL* folder, and click **Open**. Click **OK**.

Click in the *Driver Name* field and double-click the *org.hsqldb.jdbc.JDBCDriver* entry.
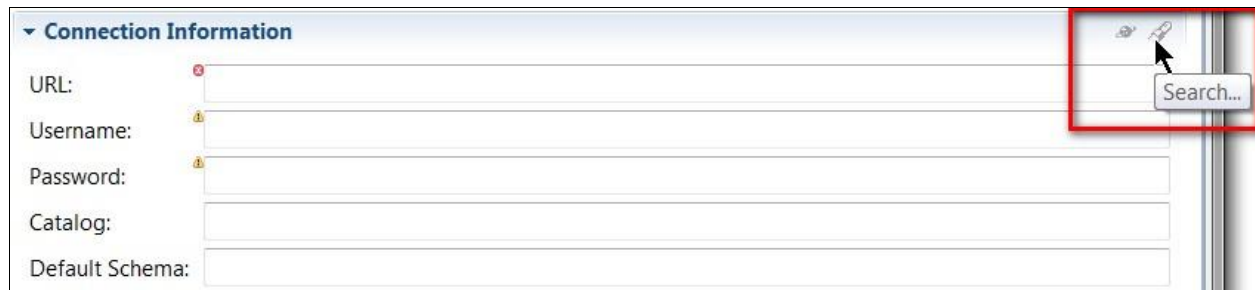
Provide values for the fields in the *Connection Information* section as below.

Field	Value
URL	jdbc:hsqldb:file:C:\Clarify_demos\DEMO_DB_FULL\database\dbschematest; hsqldb.lock_file=false;shutdown=true
Username	atl
Password	atl
Catalog	PUBLIC
Default Schema	PUBLIC

You may wish to copy the line below from this PDF document and paste it into the URL field.
jdbc:hsqldb:file:C:\Clarify_demos\DEMO_DB_FULL\database\dbschematest;hsqldb.lock_file=false;shutdown=true

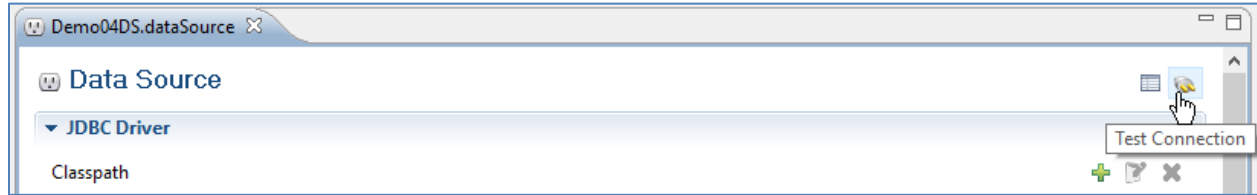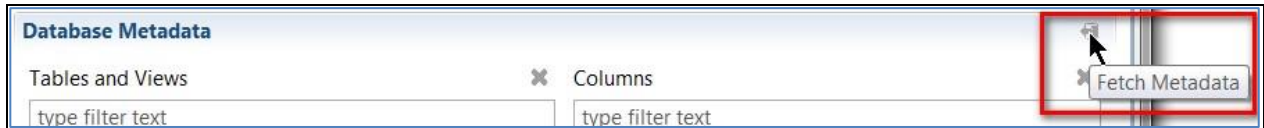Note that the **Search** button may be used to produce a list to populate the *Catalog* field and the *Default Schema* field.

Click the **Test Connection** button to ensure Clarify can connect to the database. Click **OK**.

Click the *Database Metadata* section's **Fetch Metadata** button to display the tables of the database's default Schema.

Save the object and close the editor.

SQL Access: PurchaseOrdersSQL

Select the Package.

Select *File | New | SQL Access*.

Type **PurchaseOrdersSQL** in the *Name* field.

Click **Finish**. The object is created, and its editor appears.

To accommodate the SQL statement's 1 input and 10 output parameters, 11 parameters must be created and defined. For each, click the *Parameters* section's **Add** button, and provide the information as indicated here.

Name	Type	Jdbc Type	Direction
INPUT	String	VARCHAR	In
PONumber	String	VARCHAR	Out
OrderDate	String	VARCHAR	Out
ContactName	String	VARCHAR	Out
Phone	String	VARCHAR	Out
Email	String	VARCHAR	Out
Lines	String	VARCHAR	Out
Quantity	String	VARCHAR	Out
Cost	String	VARCHAR	Out
Processed	String	VARCHAR	Out
ProcessedDate	String	VARCHAR	Out

In the *Sql Access Properties* section, click in the *Data Source* field and then double-click *PurchaseOrdersDS* to select that object.

Type (as one line) or copy and paste the text below in the *SQL Statement* field.

```
select
"PO_NUMBER","DATE","CONTACTNAME","PHONE","EMAIL","LINES","QUANTITY","COST","PROCESSED","DATE
PROCESSED" from "PUBLIC"."HEADER" where "PO_NUMBER" = ${INPUT}
```

Save the object and close the editor.

Web Service Provider: PurchaseOrdersWSP

Select the Package.

Select *File | New | Web Service Provider*.

Choose *SOAP/WSDL*, choose *Synchronous*, and click **Next**.

Type **PurchaseOrdersWSP** in the *Name* field.

Click **Finish**. The object is created, and its Editor appears.

The *PurchaseOrdersWSP* Business Process associated with this Web Service Provider object is created in a new *com.training.demo06.soapprovider.purchaseorderswsp* Package.

Type **localhost** in the *External Address* field.

Choose **SSL**.

Click in the *Input Schema* field and select the *purchaseordersrequest* object.

Click in the *Output Schema* field and select the *Purchaseordersresponse* object.

The *Business Process* field is already populated with the Clarify-generated *PurchaseOrdersWSP* object. This cannot be changed.

Save the object and close the editor.

Business Process: PurchaseOrdersWSP

This Business Process, when generated by Clarify upon creating the Web Service Provider object, has two tasks: *SendSoapReply*, which sends the response message to the Consumer, and *SetExitStatus*, which sets the Business Process's Exit Status to *true*. Clarify has populated all but one of their parameters.

Three tasks must be inserted before that pair to (1) determine the requested purchase order number, (2) gather the data, and (3) assemble the response message. An optional fourth task will be added to (4) write the response message. Also, (5) the provided *SendSoapReply* task's definition will be modified.

Double-click the *PurchaseOrdersWSP* Business Process. The object is opened, and its editor appears.

Task 1: Determine the requested purchase order number

Clarify needs to disassemble the request XML message to discover the purchase order number.

To create this task, click the **Add** button in the *Script* section. Click that step's *Click to select task* entry. In the list of available tasks, type **dis** in the *Filter* field to restrict the display to tasks containing that text. Double-click *purchaseordersrequest - Disassemble* to select that object-specific task. Click the **Up** button until this task appears on the first line.

To define this task, click the *Properties* view tab.

This task has two parameters.

Click in the *sourceXml* parameter's field. This parameter represents the StorageNode (the data in the request message). The bold-italic text indicates that this is a mandatory parameter. In the list of available parameters and variables, double-click the Clarify-supplied *wsPayload* parameter.

Click in the *po_number* parameter's field. In the list of available parameters and variables, click **New Variable**. *newVariable* appears in the *Properties* view and in the *Variables* section, with its name pre-selected, ready for a name change. Type **requestPONumber** and press **Enter** to rename this variable. This new name is reflected in the *Properties* view.

Task 2: Gather the data

The SQL Access object is used to obtain the proper information.

To create this task, click the **Add** button in the *Script* section. Click that step's *Click to select task* entry. In the list of available tasks, type **SQL** in the *Filter* field to restrict the display to tasks containing that text. Double-click *PurchaseOrdersSQL* to select that user-defined object. If necessary, click the **Up** or **Down** buttons until this task appears on the second line.

To define this task, click the *Properties* view tab.

This task has 11 parameters – one input (for the requested purchase order number) and 10 output (for the content of the response message). All are mandatory.

Click in the *INPUT* parameter's field. This input parameter represents the purchase order number specified by the Consumer in their request message. In the list of available parameters and variables, double-click the previously-defined *requestPONumber* variable.

To populate the 10 output parameters, click in each field, click **New Variable**, and type the new variable name, as indicated here.

Parameter	Variable Name
PONumber	PONumber
OrderDate	OrderDate
ContactName	ContactName
Phone	Phone
Email	Email
Lines	Lines
Quantity	Quantity
Cost	Cost
Processed	Processed
ProcessedDate	ProcessedDate

Task 3: Assemble the response message

Clarify needs to assemble the response XML message.

To create this task, click the **Add** button in the *Script* section. Click that step's *Click to select task* entry. In the list of available tasks, type **assem** in the *Filter* field to restrict the display to tasks containing that text. Double-click *purchaseordersresponse - Assemble* to select that object-specific task. If necessary, click the **Up** or **Down** buttons until this task appears on the third line.

To define this task, click the *Properties* view tab.

This task has 12 parameters. All are mandatory.

Click in the *targetXml* parameter's field. This parameter represents the content of the response message. In the list of available parameters and variables, click **New Variable**. *newVariable* appears in the *Properties* view and in the *Variables* section, with its name pre-selected, ready for a name change. Type **responseMessage** and press **Enter** to rename this variable. This new name is reflected in the *Properties* view.

Click in the *useXSITypes* parameter's field. This parameter indicates if the response message should include XSI type information. In the list of available parameters and variables, click the *Boolean Literal* tab and double-click *false*.

To populate the remaining parameters, click in each field and select the existing variable, as indicated here.

Parameter	Variable Name
po_number	PONumber
date	OrderDate
contact_name	ContactName
phone	Phone
email	Email
lines	Lines
quantity	Quantity
cost	Cost
processed	Processed
date_processed	ProcessedDate

Task 4: Write the response message

Clarify outputs the response message to the local file system; this optional task is useful for internal auditing purposes.

To create this task, click the **Add** button in the *Script* section. Click that step's *Click to select task* entry. In the list of available tasks, type **wri** in the *Filter* field to restrict the display to tasks containing that text. Double-click the *WriteXmlFA* object to select it. If necessary, click the **Up** or **Down** buttons until this task appears on the fourth line.

To define this task, click the *Properties* view tab.

This task has only one parameter.

Click in the *storageNodes* parameter's field. This parameter represents the AdapterPayload (the data in the response message). In the list of available parameters and variables, double-click the previously-defined *responseMessage* variable.

Task 5: SendSoapReply

The Clarify-supplied *SendSoapReply* task, which now appears on the fifth line, must be defined.

To define this task, click the *Properties* view tab.

This task has three parameters, two of which are already defined.

Click in the *Reply Document* parameter's field. This parameter represents the *StorageNode* (the data in the response message). In the list of available parameters and variables, double-click the previously-defined *responseMessage* variable.

Save the object and close the editor.

Deploy/Activate

The Web Service Provider can provide its service only if it is deployed and activated.

Deploy

Access *Admin Console | Projects*.

In the *Workspace* section, expand the *com.training.demo06.soapprovider* Project, and then expand its Package node. Drag the *PurchaseOrdersWSP* Web Service Provider object to the *Selected Scenarios* section.

Start the *Local Test* server by ensuring that it is displayed in the *Server Environment* dropdown and then click the **Start** button.
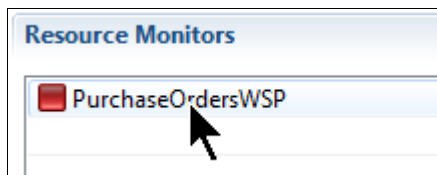
When fully-expanded, the *Server Projects* section shows all installed objects.

Activate

Access *Admin Console | Resource Monitors*.

In the *Resource Monitor Types* section, select the *Web Service Provider* item.

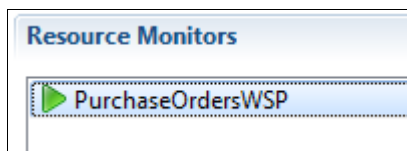In the *Resource Monitors* section, select the *PurchaseOrdersWSP* object.

Notice that the *Properties* view lists the *Internal Providers List Location*, *Internal Provider WSDL Location*, *External Providers List Location*, and *External Provider WSDL Location*.
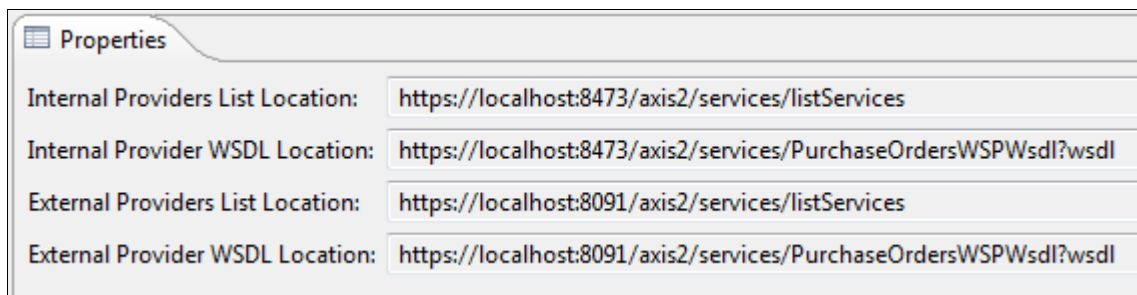
Click the **Start** button.

The Web Service Provider is active.

To ensure that the service is active, enter the *Internal Providers List Location* in your Web browser. The resulting page indicates that the *Service Status* is *Active*.

PurchaseOrdersWSPWsdl

Service EPR : https://localhost:8473/services/PurchaseOrdersWSPWsdl

Service Description : No description available for this service

Service Status : Active
Available Operations

- execute

To inspect that service's WSDL, enter the *Internal Provider WSDL Location* in your Web browser. The contents of the resulting page may be saved to an XML file, re-named (for example, **PurchaseOrdersWSDL.wsdl**) and distributed to consumers.

Consume

For a consumer to initiate a successful SOAP request, first they must know the Web address of the WSDL file or be provided with a copy of the saved WSDL file. Then, they must format their request message properly.

> Third-party software is available to test this Web Service Provider. Or, the *Web Services Consumer SOAP* demo illustrates how to create a Clarify Web Service Consumer solution to request information from this Web Service Provider.

The response message for the *BestValue_22* purchase order is written to a file in the *C:\Clarify_demos\demo06\out* folder. That file's contents appear as below.

```xml
<?xml version="1.0" encoding="UTF-8"?>
- <po:order_info xmlns:po="http://www.extol.com">
    <po_number>BestValue_22</po_number>
    <date>1/1/2013</date>
    <contact_name>BOB SMITH</contact_name>
    <phone>(555) 555-5555</phone>
    <email>BSMITH@BVGS.COM</email>
    <lines>2</lines>
    <quantity>1100</quantity>
    <cost>3875</cost>
    <processed>U</processed>
</po:order_info>
```

Audit

Access *Admin Console | Auditor*.

By default, the *Application* Log Filter Group and its *Process* Log Filter are selected.

The *Log Entries* section shows the results.