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<th>Contents</th>
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</tr>
<tr>
<td>2 Getting Started With Salesforce</td>
<td>Provides installation prerequisites and describes how to setup the iWay Application Adapter for Salesforce.</td>
</tr>
<tr>
<td>3 Creating Metadata for Salesforce</td>
<td>Describes how to create metadata for Salesforce services and events.</td>
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<td>4 Joining Salesforce Business Objects</td>
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<td>7 Using DataMigrator to Load Data to Salesforce</td>
<td>Describes two ways to pass parameters, using a WHERE filter and using a JOIN condition.</td>
</tr>
<tr>
<td>8 Using the Salesforce Bulk API</td>
<td>Describes how to use the Salesforce Bulk API.</td>
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</tr>
<tr>
<td>10 Creating Workflow Rules and Outbound Messages in Salesforce</td>
<td>Describes how to create a workflow rule and outbound message in Salesforce.</td>
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</table>

Conventions

The following table lists and describes the conventions that apply in this manual.
<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>THIS TYPEFACE or this typeface</td>
<td>Denotes syntax that you must enter exactly as shown.</td>
</tr>
<tr>
<td>this typeface</td>
<td>Represents a placeholder (or variable) in syntax for a value that you or the system must supply.</td>
</tr>
<tr>
<td>underscore</td>
<td>Indicates a default setting.</td>
</tr>
<tr>
<td>this typeface</td>
<td>Represents a placeholder (or variable), a cross-reference, or an important term. It may also indicate a button, menu item, or dialog box option you can click or select.</td>
</tr>
<tr>
<td>this typeface</td>
<td>Highlights a file name or command.</td>
</tr>
<tr>
<td>Key + Key</td>
<td>Indicates keys that you must press simultaneously.</td>
</tr>
<tr>
<td>{  }</td>
<td>Indicates two or three choices; type one of them, not the braces.</td>
</tr>
<tr>
<td>[  ]</td>
<td>Indicates a group of optional parameters. None are required, but you may select one of them. Type only the parameter in the brackets, not the brackets.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>Indicates that you can enter a parameter multiple times. Type only the parameter, not the ellipsis points (...).</td>
</tr>
<tr>
<td>. . . . .</td>
<td>Indicates that there are (or could be) intervening or additional commands.</td>
</tr>
</tbody>
</table>
Related Publications

To view a current listing of our publications and to place an order, visit our Technical Documentation Library, http://documentation.informationbuilders.com. You can also contact the Publications Order Department at (800) 969-4636.

Customer Support

Do you have questions about this product?

Join the Focal Point community. Focal Point is our online developer center and more than a message board. It is an interactive network of more than 3,000 developers from almost every profession and industry, collaborating on solutions and sharing tips and techniques, http://forums.informationbuilders.com/eve/forums.

You can also access support services electronically, 24 hours a day, with InfoResponse Online. InfoResponse Online is accessible through our World Wide Web site, http://www.informationbuilders.com. It connects you to the tracking system and known-problem database at the Information Builders support center. Registered users can open, update, and view the status of cases in the tracking system and read descriptions of reported software issues. New users can register immediately for this service. The technical support section of www.informationbuilders.com also provides usage techniques, diagnostic tips, and answers to frequently asked questions.

Call Information Builders Customer Support Service (CSS) at (800) 736-6130 or (212) 736-6130. Customer Support Consultants are available Monday through Friday between 8:00 a.m. and 8:00 p.m. EST to address all your questions. Information Builders consultants can also give you general guidance regarding product capabilities and documentation. Please be ready to provide your six-digit site code number (xxxx.xx) when you call.

To learn about the full range of available support services, ask your Information Builders representative about InfoResponse Online, or call (800) 969-INFO.

Information You Should Have

To help our consultants answer your questions effectively, be prepared to provide the following information when you call:

- Your six-digit site code (xxxx.xx).
- Your WebFOCUS configuration:
  - The front-end you are using, including vendor and release.
  - The communications protocol (for example, TCP/IP or HLLAPI), including vendor and release.
The software release.

Your server version and release. You can find this information using the Version option in the Web Console.

The stored procedure (preferably with line numbers) or SQL statements being used in server access.

The Master File and Access File.

The exact nature of the problem:

Are the results or the format incorrect? Are the text or calculations missing or misplaced?

The error message and return code, if applicable.

Is this related to any other problem?

Has the procedure or query ever worked in its present form? Has it been changed recently? How often does the problem occur?

What release of the operating system are you using? Has it, your security system, communications protocol, or front-end software changed?

Is this problem reproducible? If so, how?

Have you tried to reproduce your problem in the simplest form possible? For example, if you are having problems joining two data sources, have you tried executing a query containing just the code to access the data source?

Do you have a trace file?

How is the problem affecting your business? Is it halting development or production? Do you just have questions about functionality or documentation?

User Feedback

In an effort to produce effective documentation, the Technical Content Management staff welcomes your opinions regarding this document. You can contact us through our website http://documentation.informationbuilders.com/connections.asp.

Thank you, in advance, for your comments.
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Chapter 1

Introducing the IWAF Adapter for Salesforce

The WebFOCUS platform brings full Salesforce integration capabilities and allows customers to use Salesforce in new and powerful ways.

Our integration lets you:

- Report directly from Salesforce.
- Download Salesforce tables to a local database.
- Update records in Salesforce for write-back capability.
- Capture Salesforce events in real time.

In this chapter:

- Features of the IWAF Adapter for Salesforce
- Component Information for the IWAF Adapter for Salesforce

Features of the IWAF Adapter for Salesforce

The IWAF Adapter for Salesforce is an adapter that provides a means to exchange real-time business data between Salesforce systems and third-party application, database, or external business partner systems. The adapter enables external applications for inbound and outbound processing with Salesforce.

The adapter enables DataMigrator and WebFOCUS to communicate and exchange transactions with Salesforce using one of the following two methods:

- **Service Adapter.** Applications use this capability to initiate a Salesforce business event.
- **Event Adapter.** Applications use this capability if they require access to Salesforce data only when a Salesforce business event occurs.

The iWay Application Adapter for Salesforce provides:

- Support for bidirectional message interactions.
- Salesforce object repository metadata browser support to build metadata (synonyms) to handle adapter requests or event data.
- Secure communications over the Internet using HTTPS.
Component Information for the IWAF Adapter for Salesforce

The IWAF Adapter for Salesforce works in conjunction with one of the following components:

- DataMigrator
- WebFOCUS
Getting Started With Salesforce

The following section provides installation prerequisites and describes how to setup the iWay Application Adapter for Salesforce.

In this chapter:

- Prerequisites

Prerequisites

The following components are needed in order to fully support Salesforce integration:

- A Salesforce.com user ID.
- DataMigrator or WebFOCUS Version 7 Release 7.04.
- Java Virtual Machine.

Getting a Salesforce Developer ID

You can use your Salesforce user ID to get a Salesforce developer ID. If you do not have a user ID, you can obtain a Salesforce developer ID by logging in to the Salesforce Web console ([http://developer.force.com](http://developer.force.com)) and clicking Join Now to sign up. Once you complete the sign up process and change your password, you will receive a security token in an e-mail. You will need that token to connect to the server for DataMigrator.

DataMigrator or WebFOCUS

Make sure you have the Version 7 Release 7.04 Server installed on your machine.

Java Virtual Machine

Verify that the system that you are using has Java installed. If it is not installed, download it from [www.java.com](http://www.java.com) and install it.

Then, add the directories where Java is installed to your system path. The default directories on Windows for the Java Virtual Machine and run time environments are: `C:\Program Files \Java\jre6\bin\client` and `C:\Program Files\Java\jre\bin`.

Note:

- After changing the values for the Path environment variable, you should restart your system.
If you are running a 64-bit server, use the 64-bit Java version.
Creating Metadata for Salesforce

The iWay Application Adapter for Salesforce enables the processing of Salesforce business objects. DataMigrator and WebFOCUS access Salesforce through the adapter.

This section provides instructions on how to create metadata for Salesforce services and events.

**In this chapter:**

- Configuring the Salesforce Service Adapter
- Adding an Adapter and Connection to a Salesforce Service
- Adding an Adapter and Connection to a Salesforce Event
- Creating a Synonym for a Salesforce Service
- Sample Data From a Salesforce Service
- Creating a Synonym for a Salesforce Event

### Configuring the Salesforce Service Adapter

1. From the DMC, expand *Adapters* and then *Available*. 
2. Right-click the IWAF adapter and select Configure, as shown in the following image.

3. Click OK to confirm the changes.
The Configure Adapters or Create Synonyms window opens, as shown in the following image.

4. Click Restart Java Services to finish the configuration.

The IWAF adapter now appears in the list of configured adapters.

**Adding an Adapter and Connection to a Salesforce Service**

1. From the DMC, expand Adapters and then Configured. Right-click IWAF and select Add Adapter.

   The select IWAF adapter panel opens.

2. Select iwsforce and click Next.

   The Add Connection for IWAF Step 1 panel opens.
3. Select Salesforce and click Next, as shown in the following image.

![Add Connection for IWAF Step 1](image)

The Add Connection for IWAF Step 2 panel opens.

4. Fill in the form with the following:

   - **Connection Name.** The connection name. You can use the default, CON01.
   - **User.** Your e-mail address.
   - **Password.** Your password and security token as a single entry. For example, if your password is mypassword and security token is mrmxiplx, you would enter mypasswordmrmxiplx.
   - **Endpoint.** Use the default value, unless connecting to an alternate salesforce instance, such as your sandbox.
   - **Username.** Your e-mail address.
   - **Security.** Leave blank.
The following image shows an example of the form filled out.

![Image of form filled out](image)

**Note:** The password and security token are entered as a single entry, for example, `passwordtoken`.

5. Click **Configure**.

**Adding an Adapter and Connection to a Salesforce Event**

1. From the DMC, expand **Adapters** and then **Configured**. Right-click **IWAF** and select **Add Adapter**.

   The select IWAF adapter panel opens.

2. Select **iwfsforce** and click **Next**.

   The Add Connection for IWAF Step 1 panel opens.
3. Select *SForce Listener* and click *Next*, as shown in the following image.

The Add Connection for IWAF Step 2 panel opens.
4. Enter a name for the connection appropriate for the event, for example, account. Then, enter your Salesforce user ID and password, security token, and the open port number as described in *Creating An Open Port* on page 39, as shown in the following image.

**Note:** The password and security token are entered as a single entry, for example, passwordtoken.

5. Click *Configure*.

**Note:** When you change your Salesforce password, you will get a new security token by e-mail from Salesforce. You will need to change the properties for the connection, and enter the new password and security, as shown in the above image.

6. Click the Save icon.
Creating a Synonym for a Salesforce Service

1. Right-click a Salesforce connection you created and select Create Synonym.

   The Select Synonym Candidates for IWAF window opens. Salesforce business objects are listed under the Synonym Candidates folder.

2. Expand the Account folder. The associated methods are located under each business object node. Select Retrieve_Account and click Create Synonym, as shown in the following image.

   ![Create Synonym for IWAF image]

   The Create Synonym for IWAF window opens.

3. Click Create Synonym.

   The Status panel opens.

4. Click Open First Synonym.

Sample Data From a Salesforce Service

1. Right-click the baseapp/retrieve_account line of the Retrieve_Account synonym, and select Sample Data.

   The Sample Data window opens, showing a list of input fields.
2. You must supply a value for one of these fields to retrieve data. Since this sample only has a few rows, the simplest way to do this is by selecting the check box for `INPUT.ISDELETED` and entering `false`, as shown in the following image.

3. Select `INSTANCE` in the Select output segment drop-down menu.

4. Click Sample Data. A report opens, as shown in the following image.

Note: This report was adjusted to display more data.
Creating a Synonym for a Salesforce Event

The synonym can now be used as a source in a data flow.

Creating a Synonym for a Salesforce Event

To create a synonym for a Salesforce event, you must first add an adapter for both Salesforce services and for the event you want to capture.

1. Right-click the Salesforce service and select Create Synonym.

   The Create Synonym for IWAF panel Step 1 panel opens.

2. Expand Account, select Notify_Account, and click Create Synonym.

   The Create Synonym for IWAF Step 2 window opens.

3. In the Select Connection (event type) drop-down menu, select the connection name you created for an event, in this example, account, as shown in the following image.

4. Click Create Synonym.

   You should get a message that says the synonym was created successfully.
5. Open the first synonym.

**Note:** The value for TIMEOUT is set to a variable. If you click the variable, you can see that it has a default value of 60, which is how long a flow using the synonym will wait for a message from salesforce.com. This should be increased if it is an ongoing operation.
This chapter describes the special considerations when joining two Salesforce business objects. The examples in this chapter use the unmodified Salesforce business objects CASE and PRODUCT2, the associated RETREIVE_ methods, and the sample data provided with developer user ID.

In this chapter:

- Joining Salesforce Business Objects

Joining Salesforce Business Objects

This chapter describes the special considerations when joining two Salesforce business objects.

The following image shows a sample of the columns retrieved from CASE, a list of customer problem reports.

Note that the sample includes a product code, PRODUCT__C, but not the actual product name. The product name can be obtained from the PRODUCT2 object.
The synonyms created for the methods of Salesforce business objects are similar to synonyms for database stored procedures and web services. They are represented as a hierarchy with INPUT and OUTPUT parameters. The following image shows the synonym created for the salesforce object PRODUCT2 for the method RETRIEVE_PRODUCT2.
The INPUT parameters are those that are passed to the method. The OUTPUT.INSTANCE parameters are those that are returned as an answer set. For example, the following image shows the answer set returned when the first four columns are retrieved using the method RETRIEVE_PRODUCT2, and shows a list of product names and product codes.

<table>
<thead>
<tr>
<th>INSTANCE.NAME</th>
<th>INSTANCE.PRODUCTCODE</th>
<th>INSTANCE.DESCRIPTION</th>
<th>INSTANCE.ISACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GenWatt Diesel 200kW</td>
<td>GC1040</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Diesel 10kW</td>
<td>GC1020</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>Install: Indust</td>
<td>IN7080</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>SLA: Silver</td>
<td>SL9040</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Propane 500k</td>
<td>GC3040</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>SLA: Platinum</td>
<td>SL9080</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Propane 100k</td>
<td>GC3020</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Propane 1500</td>
<td>GC3060</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Diesel 1000k</td>
<td>GC1060</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>SLA: Bronza</td>
<td>SL9020</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Gasoline 750</td>
<td>GC5040</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>Install: Portab</td>
<td>IN7020</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>SLA: Gold</td>
<td>SL9060</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Gasoline 300</td>
<td>GC5020</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>Install: Indust</td>
<td>IN7040</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>GenWatt Gasoline 200</td>
<td>GC5060</td>
<td>.</td>
<td>true</td>
</tr>
<tr>
<td>Install: Indust</td>
<td>IN7060</td>
<td>.</td>
<td>true</td>
</tr>
</tbody>
</table>
In order to create a table in DataMigrator or a report in WebFOCUS that includes the case information and the product name, you must join the field from CASE called PRODUCT__C to the product code field in PRODUCT2.

There are two product codes in the synonym for the RETRIEVE_PRODUCT2 method. There is INPUT.PRODUCTCODE and INSTANCE.PRODUCTCODE. You could select either field and get the same result, but the way the data is retrieved is different. The following sections describe the different methods that can be taken to obtain the result.
JOIN to an INPUT Field

When you join to an INPUT field, for example, INPUT.PRODUCT_CODE, the value becomes an input parameter to the method. The second method is called for each row retrieved by the first method. This method is acceptable if only one or a small number of cases are retrieved. However, in this example, where RETRIEVE_CASE returns 26 rows that means that RETRIEVE_PRODUCTS2 would be called 26 times. The product code becomes the input parameter to RETRIEVE_PRODUCT, but note that you must pass an input parameter, using a WHERE condition, to RETRIEVE_CASE.

JOIN to an OUTPUT Field

When you join to OUTPUT field, for example, INSTANCE.PRODUCT_CODE, the entire answer set for both tables are retrieved first, and the JOIN is done on the full answer sets. This method is acceptable, as long as the answer sets retrieved are not too large. In this example, where RETRIEVE_CASE returns 26 rows and RETRIEVE_PRODUCTS2 only returns 17 rows, it is the faster approach. Note that in this case you must still pass at least one input parameter to each method.

JOIN Output

The following image shows the result of the join with the case information and the product name.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>STATUS</th>
<th>REASON</th>
<th>ORIGIN</th>
<th>SUBJECT</th>
<th>PRIORITY</th>
<th>PRODUCT_CODE</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Equipment complexity</td>
<td>Phone</td>
<td>Starting generator a</td>
<td>High</td>
<td>GC5040</td>
<td>GenWatt Gasoline 750</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Performance</td>
<td>Phone</td>
<td>Performance inadequacy</td>
<td>High</td>
<td>GC1060</td>
<td>GenWatt Diesel 100k</td>
</tr>
<tr>
<td>Electrical</td>
<td>New</td>
<td>Installation</td>
<td>Web</td>
<td>Seeking guidance on</td>
<td>Low</td>
<td>GC3060</td>
<td>GenWatt Propane 1500</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Installation</td>
<td>Web</td>
<td>Easy installation pr</td>
<td>Low</td>
<td>GC1020</td>
<td>GenWatt Diesel 10kW</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Other</td>
<td>Phone</td>
<td>Maintenance guidal</td>
<td>Medium</td>
<td>GC5020</td>
<td>GenWatt Gasoline 300</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Other</td>
<td>Phone</td>
<td>Electrical circuit m</td>
<td>Medium</td>
<td>GC1060</td>
<td>GenWatt Diesel 10kW</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Feedback</td>
<td>Phone</td>
<td>Generator assembly</td>
<td>Low</td>
<td>GC1020</td>
<td>GenWatt Diesel 10kW</td>
</tr>
<tr>
<td>Structural</td>
<td>Closed</td>
<td>Breakdown</td>
<td>Phone</td>
<td>Structural breakdown</td>
<td>Medium</td>
<td>GC1040</td>
<td>GenWatt Diesel 20kW</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Feedback</td>
<td>Web</td>
<td>Customer service for</td>
<td>Low</td>
<td>GC1020</td>
<td>GenWatt Diesel 10kW</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Closed</td>
<td>Other</td>
<td>Web</td>
<td>Mechanical maintenan</td>
<td>Medium</td>
<td>GC3040</td>
<td>GenWatt Propane 50k</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Feedback</td>
<td>Web</td>
<td>Maintenance guidal</td>
<td>Low</td>
<td>GC1060</td>
<td>GenWatt Diesel 10kW</td>
</tr>
<tr>
<td>Electronic</td>
<td>Closed</td>
<td>Equipment design</td>
<td>Web</td>
<td>Electronic panel f</td>
<td>Medium</td>
<td>GC3020</td>
<td>GenWatt Propane 100k</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Breakdown</td>
<td>Web</td>
<td>Repeated motor break</td>
<td>Medium</td>
<td>GC1020</td>
<td>GenWatt Diesel 10kW</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Equipment design</td>
<td>Web</td>
<td>Starting up generate</td>
<td>Medium</td>
<td>GC5020</td>
<td>GenWatt Gasoline 300</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Installation</td>
<td>Web</td>
<td>Delay in installatio</td>
<td>High</td>
<td>GC3020</td>
<td>GenWatt Propane 10k</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Closed</td>
<td>Breakdown</td>
<td>Web</td>
<td>Frequent mechanical</td>
<td>Medium</td>
<td>GC3060</td>
<td>GenWatt Propane 1500</td>
</tr>
<tr>
<td>Other</td>
<td>Closed</td>
<td>Feedback</td>
<td>Web</td>
<td>Maintenance guidal</td>
<td>Low</td>
<td>GC5020</td>
<td>GenWatt Gasoline 300</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Closed</td>
<td>Equipment complexity</td>
<td>Web</td>
<td>Shutting down of gen</td>
<td>Medium</td>
<td>GC1040</td>
<td>GenWatt Diesel 20kW</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Equipment complexity</td>
<td>Phone</td>
<td>Cannot start generate</td>
<td>Medium</td>
<td>GC1040</td>
<td>GenWatt Diesel 20kW</td>
</tr>
<tr>
<td>Structural</td>
<td>Closed</td>
<td>Equipment design</td>
<td>Phone</td>
<td>Structural failure o</td>
<td>High</td>
<td>GC5060</td>
<td>GenWatt Gasoline 200</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Performance</td>
<td>Phone</td>
<td>Power generation hel</td>
<td>Medium</td>
<td>GC3060</td>
<td>GenWatt Propane 1500</td>
</tr>
<tr>
<td>Structural</td>
<td>Closed</td>
<td>Installation</td>
<td>Phone</td>
<td>Generator GC3060 pla</td>
<td>High</td>
<td>GC3060</td>
<td>GenWatt Propane 1500</td>
</tr>
<tr>
<td>Electronic</td>
<td>Closed</td>
<td>Performance</td>
<td>Web</td>
<td>Signal panel on GC50</td>
<td>Medium</td>
<td>GC5060</td>
<td>GenWatt Gasoline 200</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Other</td>
<td>Phone</td>
<td>Electric surge damage</td>
<td>High</td>
<td>GC5060</td>
<td>GenWatt Gasoline 200</td>
</tr>
<tr>
<td>Mechanical</td>
<td>Closed</td>
<td>Equipment design</td>
<td>Web</td>
<td>Design issue with me</td>
<td>Low</td>
<td>GC3040</td>
<td>GenWatt Propane 50k</td>
</tr>
<tr>
<td>Electrical</td>
<td>Closed</td>
<td>Equipment design</td>
<td>Phone</td>
<td>Motor design hinder</td>
<td>Medium</td>
<td>GC5040</td>
<td>GenWatt Gasoline 750</td>
</tr>
</tbody>
</table>
This section describes how to use DataMigrator to copy data from Salesforce and retrieve a Salesforce event.

**In this chapter:**

- Retrieving Data From Salesforce
- Capturing a Salesforce Event

### Retrieving Data From Salesforce

Retrieving data from a synonym from Salesforce is a lot like using any other data source, but there are a few things you should be aware of. The synonyms created for Salesforce services are all hierarchies with INPUT and OUTPUT segments, where the INPUT segments are parameters you pass to the procedure and the OUTPUT segments are the answer set you get back. To retrieve data, you must ensure that the synonym selected is for an SFDC service that returns an answer set.
To retrieve data from Salesforce:

1. Pass at least one input parameter to the procedure. To do this, use a WHERE condition on one of the FIELD columns in the INPUT segment. For example, you could restrict rows retrieved to active rows with a filter on INPUT.ISDELETED, as shown in the following image.

![WHERE Filter Calculator](image)

**Note:** Only equality relationships can be used and you can only specify one value for each input parameter.

2. Select columns from the OUTPUT segment for your output, as shown in the following image.

![Column Selection](image)
3. In the Column Selection window, click the button to test the SQL statement, as shown in the following image.

![Test SQL Statement](image)

4. In the workspace, right-click the SQL object and select Add Target and then New.

5. Add a new target in the Salesforce directory called accounts.
6. Click the *Run* button and select *Submit* to run the flow, as shown in the following image.
Setting the Batch Size: By default, Salesforce limits the number of rows returned at one time to 1000. This limit can be changed with a WHERE condition on the input field BATCHSIZE, as shown in the following image.

Capturing a Salesforce Event

Before capturing a Salesforce event, you must create the following:

1. An open port.
2. An adapter for a Salesforce service and connection for the event.
3. A synonym for an event.
4. A Direct Load flow that uses the synonym as a source.
5. On Salesforce, an Outbound Message and Workflow Ruler.

Creating An Open Port

You need an open http port that Salesforce can use to send SOAP requests. The Salesforce system sends a SOAP message to this port. You may need to contact your system administrator to open a port and forward the port to your system.
For security reasons, Salesforce restricts the outbound ports you may specify to one of the following:

- **80**: This port only accepts HTTP connections.
- **443**: This port only accepts HTTPS connections.
- **7000-10000**: These ports accept HTTP or HTTPS connections.

**Adding an Adapter and Connection to a Salesforce Event**

You will need to add an adapter and connection to a Salesforce event, as described in *Adding an Adapter and Connection to a Salesforce Event* on page 21.

**Creating a Synonym for an Event**

You will need to create a synonym for an event, as described in *Creating a Synonym for a Salesforce Event* on page 26.

**Creating a Direct Load Flow**

1. In the DMC, right-click an application directory, select *New*, and then *Direct Load Flow*.
2. Drag the synonym notify_account, which was created in Chapter 3, to the left side of the flow as the source.
3. Drag the synonym accounts, which was created in *Retrieving Data From Salesforce* on page 35, to the right side of the flow as the target, as shown in the following image.
4. Right-click the target and select Target Transformations. Map the source to the target, as shown in the following image.

![Target Transformations image]

Click OK.

5. Submit the flow and wait for it to process.

6. Click Save, select an application directory, and enter a flow name.

Creating a Salesforce Workflow and Rule

Workflows and rules are created so that when a change is made to an Account, a message is sent to the listener on the DataMigrator server. For more details on how to create a workflow and rule, see Creating Workflow Rules and Outbound Messages in Salesforce on page 89.

Testing Your Event

1. On the Salesforce web page, click the Account tab. Under Quick Create, enter a Name, phone number and Web site. Click Save.

2. In the DMC, right-click the Data Flow you created and select Submit.

3. Wait 60 seconds (the default timeout interval) for the flow to complete.
4. Right-click the flow name and select Logs, Last Log. You should see that one row was loaded.

5. Right-click the target synonym name and select Sample Data. The output shows the fields you added.
Using WebFOCUS to Report on Data From Salesforce

Salesforce data can also be used as a source for WebFOCUS reporting. Chapter 3 provides instructions on how to create synonyms for salesforce business objects. Once you have created synonyms for methods that retrieve data from salesforce, you can also use WebFOCUS to report from those objects. This section uses InfoAssist as an example.

**In this chapter:**

- Using InfoAssist to Report From Salesforce
- Reporting from Salesforce

---

**Using InfoAssist to Report From Salesforce**

1. From a web browser, connect to an InfoAssist server that is connected to the server where you have created synonyms for metadata. The default URL is: `http://servername:8080/ibi_apps/MyIA`

   The Getting Started window opens.

2. Click *Build A Report*.

   The Open window opens.

3. Scroll down to RETRIEVE_ACCOUNT with a Type of IWAF. Select it and select *OK.*
The InfoAssist main window opens a logical view by default which does not expose the hierarchy of a salesforce method. To switch views, click View and then select **Structured**, as shown in the following image.
A hierarchal view of Data opens, with three different areas in view, as shown in the image below. The first area shows the name of the synonym selected and the fields that correspond with that synonym. The next area, labeled Filter, is initially empty and will contain selection criteria. The last area, labeled Query, shows icons for Sum, which will contain any fields to be displayed, while By and Across will show sort fields if any.

The list of fields is structured the same as the synonym to reflect the salesforce method. Those under INPUT are input parameters to the method, while those under INSTANCE are the output parameters.
4. Every query that uses a salesforce retrieval method must have at least one parameter. This can be done by adding an INPUT parameter as a Filter. To do this, drag the field ISDELETED to the Filter area.

The filter dialog box for ISDELETED opens.

5. Leave Equal To selected. The filter for all input parameters must be equality. In the entry area, labeled Add, type the value false. Then click the button with the funnel and the plus (+) sign. Click OK.

This filter will tell the method to retrieve all the rows for the selected object that have not been deleted. That is all the active rows.

6. Under RETRIEVE_ACCOUNT, scroll down to OUTPUT. Under INSTANCE, select NAME, BILLINGCITY, and INDUSTRY and drag them in to the interactive design view area.

As the column names are added, the report is displayed, as shown in the following image.

![Interactive Design View](image)

**Reporting from Salesforce**

This section describes rules for building reports from Salesforce.

**Input Filters**

- Every query must have at least one input parameter. That means at least one INPUT field must be selected.
Input filters can only use equality relations.

Only one value can be supplied.

Output Filters

Filters can optionally be added on output parameters.

These filters are applied after the data is retrieved.

Any relation can be used.

Print (sum) fields and sort (By and Across) fields

Only output parameters can be used.

Joins

See Chapter 4 for information about joining salesforce methods.

For reporting, you need to join to an INPUT parameter.
DataMigrator can be used to load data to Salesforce by passing parameters to a method that adds or updates data.

This section describes two ways to pass parameters, using a WHERE filter and using a JOIN condition.

**In this chapter:**
- Creating Procedures to Set All On
- Load Data Using a Filter
- Load Data Using a JOIN
- Viewing What was Loaded
- Using Upsert

---

**Creating Procedures to Set All On**

Because of the hierarchal structure of the output parameters of the salesforce methods, the default retrieval methods has to be changed to retrieve results for both records that were loaded successfully and those that were not.

1. Right-click an application directory and select **New**, then **Procedure**.
2. Enter the following lines in the editor:
   ```sql
   SQL SET SQLTCARTES=OFF; END
   SQL SET EMITALL=NO; END
   SQL SET SQLTOPTTF=OFF; END
   SET ALL=ON
   ```
3. Click **Save**.
   
   The Save Procedure dialog box opens.
4. Enter **setallon** as the name and click **Save**.

**Note:** This procedure should be added to the Process Flow tab before the data flow of any data flows created to load data into Salesforce.
Load Data Using a Filter

To load data to Salesforce using a filter:

1. Create a synonym for a service that writes data, for example, create_account following the steps for creating a synonym, as described in Chapter 3.

2. Create a new data flow. Right-click an application directory and select New, then Flow.

3. Drag the synonym retrieve_account from the browser to the left side of the flow.

4. Right-click the SQL object and select WHERE filter.

5. Under Columns/Variables, double click NAME to add it to the list on the left. From the relation drop-down menu, select the equal sign. Leave Type as Value. Under Value, enter the company name ‘Information Builders’, as shown in the following image.

6. Repeat step 5 for each of the columns.

7. Click OK.

8. Right-click the SQL object and select Column Selection.

9. Right-click Name under Available Columns. If Segment and Field View is not selected, select it now.
10. Scroll down to the OUTPUT segment, as shown in the following image.

11. Select the ID and SUCCESS fields. Then under ERROR, select the STATUSCODE, MESSAGE, and FIELDS fields. Click OK to close the column selection.

12. Right-click the right side of the data flow. Select Add Target and New.

13. Right-click the target and select Properties. Select an adapter for delimited flat file or a database that you have configured.

14. Click the Process Flow tab. Right-click the line connecting Start to Data Flow and select Delete.

15. In the browser, click the procedure setallon and drag it into the process flow between Start and Data Flow. Then, right-click Start, drag to setallon and release. Right-click setallon, drag to Data Flow and release.

16. Click the Run button and select Submit to run the flow.

**Load Data Using a JOIN**

To load data to Salesforce using a JOIN:

1. Create a table of input values. You will need a data source that you can create a synonym for. An example is shown in the following image for an input table named newcusts.

2. Right-click an application directory and select New, then Flow.
3. Drag the `newcusts` source synonym to the left of the flow.

4. Drag the `create_account` source synonym to the left of the flow. The flow should look like the following image.

5. Right-click the Join object and select `Join Editor`. In the Right Source panel, right-click `Name`. If Segment and Field View is not selected, select it now.
In the Right Source panel, select the columns to join in the INPUT segment, as shown in the following image.

6. Right-click the SQL object and select *Column Selection*. In the Under Available Columns panel, right-click *Name*. If Segment and Field View is not selected, select it now.
7. Select NAME for the newcusts table, as shown in the following image.

8. Under Create_Account, scroll down to OUTPUT. Select ID and SUCCESS to confirm that the rows were added successfully. Select STATUSCODE, MESSAGE and FIELDS in case they are not.

9. Right-click the right side of the flow and select New and then Target.

10. Right-click Properties and select Delimited Flat File from the Adapter drop-down menu.

11. Type acntresp for the Synonym name.

12. Click the Process Flow tab. Right-click the line from Start to Data Flow and select Delete.

13. In the browser, click the procedure setallon and drag it into the process flow between Start and Data Flow. Then, right-click Start, drag to setallon and release. Right-click setallon, drag to Data Flow and release.

14. Save and run the flow.

15. Click the View Last Log button when the flow completes. You should see that three rows were processed.
16. Right-click on target object and select Toggle. Click the Sample Data tab. You will see the NAME field for each record loaded and the value for SUCCESS of true as shown in the following image. If any rows were not loaded, you will see an explanation in the MESSAGE field.

![Sample Data Table](image)

**Viewing What was Loaded**

1. From the browser, right-click the retrieve_account synonym and select Sample Data.
2. Scroll down to the INPUT.ISDELETED field. Select its check box.
3. Enter false for the Value type.
4. Select INSTANCE for the Output Segment.
5. Click Sample Data.

You will see that three records were loaded.

**Using Upsert**

Salesforce provides an upsert method for its business objects. Upsert is a combination of the words Update and Insert. With this method, existing records are updated and new records are inserted. Use of this method avoids creating unwanted duplicate records.

**Creating a Custom Field as an External ID**

To use the upsert method, the object must have a custom field identified as an External ID.

To add a custom field:

2. Click your name and select Setup.
3. Under Customize, select an object, such as Accounts. Click Fields.
4. Click New and select a field type, such as text.
5. Fill in the field label, for example, Account ID. Fill in the rest of the required information and select the External ID - Set this field as the unique record identifier from an external system check box.
6. Click Next, Next, and then Save.

The Account (or other object name) Fields page opens and shows the new field with its API Name, Account_ID__c, as shown in the following image.

<table>
<thead>
<tr>
<th>Account Custom Fields &amp; Relationships</th>
<th></th>
<th>Help</th>
<th>Action</th>
<th>Field Label</th>
<th>API Name</th>
<th>Data Type</th>
<th>Controlling Field</th>
<th>Modified By</th>
</tr>
</thead>
</table>

7. Create the synonym for the upsert method, as described in Creating Metadata for Salesforce on page 17. The new field you create appears as the last field in the INPUT segment.

**Using an External ID Field**

When creating a data flow using an upsert method, you must identify the external ID field. This can be done in the JOIN object that joins the upsert method to an input table, as shown in the image below. There are two fields that are required in the join:

- A source field with the external ID field, for example, ACCOUNT_ID = ACCOUNT_ID__C
7. Using DataMigrator to Load Data to Salesforce

- The input field name EXTERNALID with the API Name of the external ID field, for example, EXTERNALID = ‘ACCOUNT_ID__C’
Using the Salesforce Bulk API

This section describes how to use the Salesforce Bulk API to work with large data volumes.

In this chapter:

- Using the Salesforce Bulk API
- Creating a Source Data File
- Creating a Job and Adding a Batch
- Creating a Flow to Close a Job
- Creating a Flow to Check Job Status
- Running a Flow to Load Data
- Running a Flow to Check Results
- Getting Results for a Batch
- Creating a Process Flow
- Using Upsert
- Adding Additional Batches to a Job
- Parameters for Creating a Job

Using the Salesforce Bulk API

The standard Salesforce methods for creating, inserting, and updating Salesforce objects can be problematic for large data volumes. In addition, depending on the type of account, Salesforce limits the number of API calls and logins permitted.

The Salesforce Bulk API allows you to quickly load your organization’s data into Salesforce from CSV or XML files.

To use the Bulk API, you first create a job which results in a job ID. Then you add one or more batch to the job, identified by the Job ID. The result for each batch is a Batch ID. When all the batches are added, close the job and the batches will run in the background. You can check the status of the job and get results from the batches.
With DataMigrator use of the Bulk API is simplified because you do not have to write XML and Batch files. Instead you create flows, and the Job ID is passed from one flow to the next as a target, which is then used as a source in a JOIN to the next phase.

For more information, see the Salesforce Bulk API Developer’s Guide.

**Creating Synonyms for the Salesforce Bulk API**

To use the Batch API, you need to create synonyms for each of the Batch API methods.

1. Right-click an IWAF connection for Salesforce and select *Create Synonym*.
   
   The Select Synonym Candidates for IWAF window opens. Salesforce business objects are listed under the Synonym Candidates folder.

2. Expand the *Batch API* folder. The methods for the Batch API are listed under the node.

3. Select *CreateJob* and then click the *Create Synonym* button, as shown in the following image.

   ![Create Synonym for IWAF](image)

   The Create Synonym for IWAF window opens.

4. Select an Application Directory where you want to store the synonym. Click *Create Synonym*.

   The Status window opens.

5. Click *Close*.

6. Repeat this procedure for all the Batch API methods.

**Adjusting the Field Widths in Synonyms**

The synonyms created for Salesforce objects are based on an xsd (XML Schema Definitions) from the IWAF adapter. Unfortunately they do not include the length of the elements. The default length is 20 characters, but that is not enough in many instances.
For example, the full location and name of an input and output files will likely be more than 20 characters. There are file name parameters in the synonyms for AddBatch and GetBatchResults that should be changed.

1. In the browser, double-click on addbatch to open it. If you are not in the Field View tab, click on it.

   If the properties panel is not displayed click the button

2. Click the FILE field. In the properties panel, change the ACTUAL value from A20 to a larger value, such as A40. Note that the USAGE value is automatically changed to match, as shown in the following image.

   ![Image of properties panel](image)

   3. Click the Save button to save the synonym.

   4. Repeat this procedure for getbatchresults.
Creating a Source Data File

The input data for a Bulk API procedure can be in the form of a CSV file. This can easily be created by DataMigrator data flow.

The column names must match the Salesforce field names of the object to be loaded. This can be done in the SQL Column Select by specifying an Alias.

The target properties should specify a target adapter of Delimited Flat File, delimiter of comma and header set to Yes. If data values could include commas, use an Enclosure of double quote (").

Date values must be in the format 2012-05-25

Below is an example of an input file for the Opportunity object with a few fields:

Name,StageName,CloseDate
iWay Software,test,2012-05-25
Level 5,test,2012-05-25
Information Builders,test,2012-05-25
InfoBuild,test,2012-05-25

Creating a Job and Adding a Batch

This procedure shows you how to create a data flow that uses the Bulk API to load data from a CSV file to a Salesforce object. The name and location of the file are variables that are specified at run time so that the same flow can be used for different data and objects. It performs insert operations, although that too could be a variable.

This example creates a job and then adds a batch to it. The maximum number of records that can be processed in a batch is controlled by Salesforce to balance resources among their customers. To process more records additional batches could be added to the job.

Creating a Job

1. Right-click an application directory and select New, then Flow.
   A new data flow window opens.
2. Right-click the SQL object and select Add, then Join.
3. Right-click the Inner Join object and select Add, then Select.
4. Right-click the new SQL object Select Columns (T1) and select Add, then Source.
   A Select Synonym object opens.
5. Select the synonym createjob and click Select.
6. Double-click the SQL object T1 to open it. Double-click JOBID to select it. Click OK.
7. Right-click the SQL object T1 and select Where Filter. Click the Relational Expression tab.

8. Under Columns/Variables, double-click OPERATION and enter the value `insert`. For the CONTENTYPE value, enter `CSV`. For OBJECT, use the variable name `&OBJECT` so that the same flow can be used for more than one object.

When you are done, the calculator display should look like the following image.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Relational Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1. T2.OPERATION</td>
<td>=</td>
</tr>
<tr>
<td>2. T2.CONTENTTYPE</td>
<td>=</td>
</tr>
<tr>
<td>3. T2.OBJECT</td>
<td>=</td>
</tr>
</tbody>
</table>

9. Click OK.

**Adding a Batch for a Delimited File**

1. Right-click Inner Join and select Add Source.

   A Select Synonym window opens. If the filter button is checked, click it.

2. Select the synonym `addbatch` and click Select.

3. Double-click the Inner Join object.

   The Join Editor opens. Under Left Source and Right Source, click on the field JOBID and then click the **button. Click Ok.

4. Double-click the main SQL object.

   The Column Selection window opens. Under T1, click JOBID, and under T3 Ctrl-click BATCHID, as shown in the following image.
Click the button and OK.

5. Right-click the main SQL object and select WHERE Filter.

The WHERE Filter Calculator opens.

6. Click the Relational Expression tab. Double-click CONTENTTYPE and enter ‘CSV’. Click FILE and enter ‘&INPUTFILE’. When you are done, it should look like the following image.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T3.CONTENTTYPE</td>
<td>=</td>
<td>Value</td>
</tr>
<tr>
<td>2</td>
<td>T3.FILE</td>
<td>=</td>
<td>Variable</td>
</tr>
</tbody>
</table>

7. Click OK.

**Setting the Target Properties**

The target created by the flow in this procedure is going to have a single line that contains the Job ID and Batch ID assigned by Salesforce for the job. This information is important for the next steps.

1. Right-click the workspace to the right of the SQL object and select Add target, then New.
2. Right-click the target object and select Properties.

The Target Properties window opens.

3. Select an available adapter, such as Delimited Flat file. Enter an application directory and synonym name, such as salesforce/jobbatch.
4. Enter a location for the table or file, such as salesforce/jobbatch.ftm. Enter a comma (,) for the field delimiter and select Yes for the Header, as shown in the following image.
5. Close the Properties panel.

The completed data flow should look like the following image.

6. Click the Save button to save the flow.

The Save Procedure as window opens. Enter a name for the flow, such as create_job_batch. Click Save.

Creating a Flow to Close a Job

After you have submitted all the batches for a job, the job should be closed. Once the job is closed no more batches can be added. A job will eventually time out if you do not close it.

1. Right-click an application directory and select New, then Flow.
2. Right-click the SQL object and select Add, then Join.
3. Right-click the Join object and select Add, then Source.

The Select synonym panel opens.

Select closejob and click Select.

4. Right-click the Join object and select Add, then Source.

The Select synonym panel opens.

Select the target synonym for the flow you created to load data, such as jobbatch and click Select.

5. Double-click the Join object to open it. Under Left source and Right source, select JOBID.

Click the button and click OK.

6. Double-click the SQL object.

The Column Selection window opens. Double-click the CLOSE_JOB_RESPONSE field to select it. Click OK to close it.
7. Right-click the workspace to the right of the SQL object and select Add Target, then New.
8. Right-click the target object and select Properties.
   The target properties window opens.
9. Select an available adapter, such as Delimited Flat file. Enter an application directory and synonym name, such as salesforce/checkresp.
10. Enter a location for the table or file, such as salesforce/checkresp.ftm. Enter a comma (,) for the field delimiter and select Yes for the Header.
11. Click the Save button to save the flow.
   The Save Procedure as window opens.
   Enter a name for the flow, such as close_job. Click Save.

Creating a Flow to Check Job Status

1. Right-click an application directory and select New, then Flow.
2. Right-click the SQL object and select Add, then Join.
3. Right-click the Join object and select Add, then Source.
   The Select synonym panel opens.
4. Select checkjob and click Select.
5. Right-click on Join object and select Add, then Source.
   The Select synonym panel opens.
   Select the target synonym for the flow you created to load data, such as jobbatch, and click Select.
6. Double-click the Join object to open it. Under Left Source, right-click Name and select Field View. Scroll down and select the JOBID field. Under Right Source, select the JOBID field.

Click the button. The Join Editor should look like the following image.

![Join Editor Image]

Click OK.

7. Double-click the SQL object to open it.

The Column Selection window opens.

Select all seven fields in the segment BATCHINFO.

8. Click OK to close the window.
9. Right-click the workspace to the right of the SQL object and select Add Target, then New. The data flow should look like the following image.

10. Right-click the target object and select Properties. The target properties window opens.

11. Select an available adapter, such as Delimited Flat file. Enter an application directory and synonym name, such as salesforce/jobresp.

12. Enter a location for the table or file, such as salesforce/jobresp.ftm. Enter a comma (,) for the field delimiter and select Yes for the Header.

13. Click the Save button to save the flow. The Save Procedure as window opens.

Enter a name for the flow, such as check_job_request. Click Save.

**Running a Flow to Load Data**

1. In the browser, right-click the flow name create_job_batch and select Submit.
A dialog box opens where you can enter the object name and the full location of the input file, as shown in the following image.

2. Click Run and wait for the flow to complete.
3. Right-click the flow name and select View, then Last Log. There should be one row processed regardless of the number of records in the source file.
4. Right-click the flow name close_job and select Submit.

Running a Flow to Check Results

1. In the browser, right-click the flow name check_job_request and select Submit.
   Wait for the flow to complete.
2. In the browser, right-click jobresp and select Sample Data. You will see that the job and batch completed and that it processed four records, as shown in the following image.

Getting Results for a Batch

Once a batch is complete the results can be downloaded to a delimited file that contains one record for each one processed.
Creating a Flow

1. Right-click an application directory and select New, then Flow.
2. Right-click the SQL object and select Add, then Join.
3. Right-click the Join object and select Add, then Source. Select getbatchresults and click Select.

   The Select synonym panel opens.
4. Right-click the Join object and select Add, then Source.

   The Select synonym panel opens.
5. Select the target synonym for the flow you created to load data, such as jobbatch, and click Select.
6. Double-click the Join object to open it. Under Left Source and Right Source, click JOBID and click the button. Repeat this for BATCHID. When you are done the Join Editor should look like the following image.
Click OK.
7. Right-click the SQL object and select *Column Selection*.

The Column Selection window opens.
8. Double-click the *GET_BATCH_RESPSONSE* field to select it. Then click *OK*.
9. Right-click the SQL object and select *WHERE Filter*. Click the *Relational Expressions* tab.

Double-click *FILE*. Select *Variable* for Type and enter ‘&OUTFILE’ as the value. Click *OK*.
10. Right-click the workspace to the right of the SQL object and select *Add Target*, then *New*.
11. Right-click the target object and select *Properties*.

The target properties window opens.
12. Select an available adapter, such as Delimited Flat file. Enter an application directory and synonym name, such as salesforce/batchresp.
13. Enter a location for the table or file, such as salesforce/jobresp.ftm. Enter a comma (,) for the field delimiter and select *Yes* for the Header.
14. Click the Save button to save the flow.

The Save Procedure as window opens.

Enter a name for the flow, such as get_batch_results. Click Save.

**Running the Flow**

1. In the browser, right-click *get_batch_results* and select *Submit*.

A dialog box opens. Enter a full path and name for the output file to be created, as shown in the following image
2. Click Run and wait for the flow to complete.

Creating a Synonym for the Batch Results File

1. Right-click an application directory and select New, then Synonym.
   The Select adapter… dialog box opens.

2. Under Delimited Flat File, select <local>.
   The Select Data File… dialog box opens.

3. For Data File Location, enter the directory you specified above. For Extension, enter .txt, as shown in the following image.

4. Click Next.
   The Select Synonym Candidates… window opens.
5. Select the checkbox in front of your file. Enter a comma (,) for the field delimiter, select Yes for the Header, and select double quote (") for Enclosure, as shown in the following image.

Click Create Synonym. The Create Synonym... Status window opens. Ensure that it says Created successfully.

6. Click Open First Synonym.
7. Right-click the segment name `BATCHRESULTS` and select `Sample Data`. The Sample Data dialog box opens and shows the status for each records that was processed, as shown in the following image.

![Sample Data](image)

**Creating a Process Flow**

Once you have the flows working you may want to automate the process. You can do this by adding each data flow into a process flow, and entering the run time parameters.

1. Right-click an application directory and select `New`, then `Flow`.

   A data flow opens.

2. Click the `Process Flow` tab.

3. Drag your data flow that creates a delimited flat file in the workspace.

4. Repeat for each of the following flows:

   - create_job_batch
   - close_job_request
   - check_request
   - get_batch_results
   - check_job_request
   - [ ]
5. Right-click start and drag a line to the next flow and release. Repeat this until all the flows are joined together, as shown in the following image.

![Diagram showing flows joined together](image)

6. Right-click create_job_batch and select Properties. Click the Parameters ellipses and click OK.

The Parameter Editor opens. Select the Show all Parameters checkbox. Enter the values for INPUTFILE as the location of your input file and OBJECT as Opportunity, as shown in the following image.

![Parameter Editor](image)

<table>
<thead>
<tr>
<th>Name</th>
<th>Format</th>
<th>Default</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 INPUTFILE</td>
<td></td>
<td></td>
<td>'c:\\apps\salesforce\pty.txt'</td>
</tr>
<tr>
<td>2 OBJECT</td>
<td></td>
<td></td>
<td>'Opportunity'</td>
</tr>
<tr>
<td>3 STOPAT</td>
<td></td>
<td></td>
<td>'1000000000'</td>
</tr>
<tr>
<td>4 STARTAT</td>
<td></td>
<td></td>
<td>'0'</td>
</tr>
<tr>
<td>5 DBMSERROR</td>
<td></td>
<td></td>
<td>'100000000'</td>
</tr>
</tbody>
</table>

7. Click get_batch_results. Click the Parameters ellipses.

The Parameter Editor opens. Select the Show all Parameters checkbox. Enter a value for OUTFILE, then click OK.

8. Click the Run button and select Submit.

The Save Procedure As dialog box opens. Enter a name, such as create_opportunities and click Save. Wait for the flow to complete.
9. Click the **View Last Log** button to confirm that all of the data flows completed successfully. The blue lines are hot links, and you should be able to drill down to see the individual logs, as shown in the following image.

```
<table>
<thead>
<tr>
<th>Message Code</th>
<th>Log Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ICM18974)</td>
<td>------ Start of Log Record for salesforce/create_opportunities ------</td>
</tr>
<tr>
<td>(ICM18122)</td>
<td>Request - salesforce/create_opportunities (Owner: ibi) submitted.</td>
</tr>
<tr>
<td>(ICM18027)</td>
<td>DEP_1: flow get_data started.</td>
</tr>
<tr>
<td>(ICM18016)</td>
<td>Request salesforce/get_data submitted. Please, wait for request to complete.</td>
</tr>
<tr>
<td>(ICM18762)</td>
<td>Job ID: 20120521151643_a8666e2c</td>
</tr>
<tr>
<td>(ICM18763)</td>
<td>Request salesforce/get_data complete</td>
</tr>
<tr>
<td>(ICM18039)</td>
<td>DEP_1 get_data Return Code = 0</td>
</tr>
<tr>
<td>(ICM18027)</td>
<td>DEP_0: flow create_job_batch started.</td>
</tr>
<tr>
<td>(ICM18016)</td>
<td>Request salesforce/create_job_batch submitted. Please, wait for request to complete.</td>
</tr>
<tr>
<td>(ICM18762)</td>
<td>Job ID: 20120521151644_7b049131</td>
</tr>
<tr>
<td>(ICM18763)</td>
<td>Request salesforce/create_job_batch complete</td>
</tr>
<tr>
<td>(ICM18039)</td>
<td>DEP_0 create_job_batch Return Code = 0</td>
</tr>
<tr>
<td>(ICM18027)</td>
<td>DEP_2: flow close_job_request started.</td>
</tr>
<tr>
<td>(ICM18016)</td>
<td>Request salesforce/close_job_request submitted. Please, wait for request to complete.</td>
</tr>
<tr>
<td>(ICM18762)</td>
<td>Job ID: 20120521151645_9fde48e4</td>
</tr>
<tr>
<td>(ICM18763)</td>
<td>Request salesforce/close_job_request complete</td>
</tr>
<tr>
<td>(ICM18039)</td>
<td>DEP_2 close_job_request Return Code = 0</td>
</tr>
<tr>
<td>(ICM18027)</td>
<td>DEP_3: flow get_batch_results started.</td>
</tr>
<tr>
<td>(ICM18016)</td>
<td>Request salesforce/get_batch_results submitted. Please, wait for request to complete.</td>
</tr>
<tr>
<td>(ICM18762)</td>
<td>Job ID: 20120521151646_db1406da</td>
</tr>
<tr>
<td>(ICM18763)</td>
<td>Request salesforce/get_batch_results complete</td>
</tr>
<tr>
<td>(ICM18039)</td>
<td>DEP_3 get_batch_results Return Code = 0</td>
</tr>
<tr>
<td>(ICM18027)</td>
<td>DEP_4: flow check_job_request started.</td>
</tr>
<tr>
<td>(ICM18016)</td>
<td>Request salesforce/check_job_request submitted. Please, wait for request to complete.</td>
</tr>
<tr>
<td>(ICM18762)</td>
<td>Job ID: 20120521151651_97b8485b</td>
</tr>
<tr>
<td>(ICM18763)</td>
<td>Request salesforce/check_job_request complete</td>
</tr>
<tr>
<td>(ICM18039)</td>
<td>DEP_4 check_job_request Return Code = 0</td>
</tr>
<tr>
<td>(ICM18031)</td>
<td>Finished</td>
</tr>
<tr>
<td>(ICM18072)</td>
<td>Elapsed run time 0:00:09</td>
</tr>
<tr>
<td>(ICM18975)</td>
<td>------ End of Log Record for salesforce/create_opportunities ------</td>
</tr>
</tbody>
</table>
```

10. In the browser, right-click **jobresp** and select **Sample Data**. View the results to ensure that the job completed successfully.
11. In the browser, right-click batchresults and select Sample Data. View the results to ensure that all records were loaded.

Using Upsert

**Note:** This procedure is only needed when using Upsert.

The Salesforce Bulk API supports the upsert operation which is used to create new records and update existing records based on an External ID column in a Salesforce table. See *Using Upsert* on page 57 for instructions on how to create a custom field in the Account object names Account_ID__c.

1. Follow the instructions outlined in *Creating a Job and Adding a Batch* on page 64.

2. In step 8, use `upsert` as the value for the operation field. Add an additional condition for `EXTERNALIDFIELDNAME` with a type of Variable and value of `&EXTERNALID`, as shown in the following image

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Relational Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column</td>
<td>Relation</td>
</tr>
<tr>
<td>T2.OPERATION</td>
<td>&lt;&gt;</td>
</tr>
<tr>
<td>T2.CONTENTTYPE</td>
<td>&lt;&gt;</td>
</tr>
<tr>
<td>T2.OBJECT</td>
<td>&lt;&gt;</td>
</tr>
<tr>
<td>T2.EXTERNALIDFIELDNAME</td>
<td>&lt;&gt;</td>
</tr>
</tbody>
</table>

3. Save the flow with a different name, such as create_upsert_batch.

4. Run the flow following the instructions in the *Running a Flow to Load Data* on page 70 and *Running a Flow to Check Results* on page 71 sections.

5. Create an input data file ensuring that there is a column with the external id.

6. In step 1, there is an additional prompt for value EXTERNALID. Enter the name `Account_ID__c` and run the flow.

Adding Additional Batches to a Job

**Note:** This procedure is only needed for multiple batches.

Salesforce sets a limit on the amount of processing that it will do in one batch. You can break a data set up into multiple files and submit each file as a batch.

To add additional batches to a job:

1. Run the `create_job_batch` job once to create the target file jobbatch.

2. Right-click an application directory and select New, then Flow.

3. Right-click the SQL object and select Add, then Join.
4. Right-click the *Join* object and select *Add*, then *Source*.
   The Select synonym panel opens.
   Select `addbatch` and click *Select*.

5. Right-click the *Join* object and select *Add*, then *Source*.
   The Select synonym panel opens. Select the target synonym for the `create_job_batch` flow, such as `jobbatch`, and click *Select*.

6. Double-click the Inner Join object to open it. Under Left Source and Right Source, select `JOBID` and click the equal button, as shown in the following image.

![Join Editor Diagram](image)

Click *OK*. 
7. Right-click the SQL object and select WHERE filter. Click the Relational Expression tab. Double-click FILE and select Variable for Type. Enter ‘&INFILE’ for the value. Double-click CONTENTTYPE and enter ‘CVS’ for value. The expression should look like the following image.

<table>
<thead>
<tr>
<th></th>
<th>Column</th>
<th>Relation</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T1.FILE</td>
<td>=</td>
<td>Variable</td>
<td>‘&amp;INFILE’</td>
</tr>
<tr>
<td>2</td>
<td>T1.CONTENTTYPE</td>
<td>=</td>
<td>Value</td>
<td>‘CVS’</td>
</tr>
</tbody>
</table>

Click OK.

8. Double-click the SQL object to open Column Selection. Double-click BATCHID under the OUTPUT and JOBBATCH columns. The Column Selection window should look like the following image. Click OK.

9. Right-click the workspace to the right of the SQL object and select Add target, then New.

10. Right-click the target object and select Properties.

The target properties window opens.

11. Select an available adapter, such as Delimited Flat file. Enter an application directory and synonym name, such as salesforce/jobbatch1.

12. Enter a location for the table or file, such as salesforce/jobbatch1.ftm. Enter a comma (,) for the field delimiter and select Yes for the Header.

13. Click the Save button. The Save Procedure dialog box opens. Enter a name, such as add_batch_request.

You can now run the flow specifying the file name for the new batch.
Parameters for Creating a Job

The first step in using the Bulk API is to create a job. The job specifies the object you are loading and the operation that you are performing. The synonym addjob shows the options as INPUT fields, as shown in the following image. Parameters can be passed in a WHERE condition and/or a JOIN.

The parameters that can be specified are:

**OPERATIONS**

The operation that are performed are query, insert, update, upsert, or delete. The name must be entered in all lower case.

**OBJECT**

The name of the object in Salesforce, such as Account, Contact, or Opportunity.

**EXTERNALIDFIELDNAME**

The name of the external field used as a key. This is used only for the update and upsert operations.

**CONTENTTYPE**

The type of file to be used. Options are CVS or XML.
Certificate Management

The iWay Application Adapter for Salesforce supports services and events. For security reasons, Salesforce provides HTTPS support for services. Events support HTTPS and client authentication. The key store that is provided is used for HTTPS support and a trust store is used for client authentication.

In this chapter:

- Prerequisites
- Key Store Management
- Generating the Certificate Signing Request
- Purchasing the Commercial Certificate From Symantec or a Similar Certificate Authority
- Importing the Root Certificate and Intermediate Certificate
- Importing the Signed Certificate
- Trust Store Management

Prerequisites

Before you configure certificate management for the iWay Application Adapter for Salesforce, you must first perform the following steps:

1. Create a new directory for stored files.
2. Configure this new directory as the current directory.
   
   For example:
   
   ```
   D:\certificate
   ```

3. Ensure that the Keytool is included in the PATH environment variable.
   
   The Keytool is located in the following directory:
   
   ```
   <JDK_HOME>\bin
   ```

Key Store Management

This section describes how to generate the keypair and generate the certificate signing request.
**Note:** In this section, *iWay Software* is used as an example for demonstration purposes. You must use the appropriate information that corresponds to your company or organization.

**Generating the Key Pair**

Use the following command to generate the key pair:

```
D:\certificate>keytool -genkey -v -alias iwaysoftware -validity 365
-keyalg RSA -keypass iwaysoft -keystore iway.jks -storepass iwaysoft
```

What is your first and last name?
[Unknown]: **www.iwaysoft.com**

What is the name of your organizational unit?
[Unknown]: **iwaysoft**

What is the name of your organization?
[Unknown]: **iwaysoft**

What is the name of your City or Locality?
[Unknown]: **New York**

What is the name of your State or Province?
[Unknown]: **New York**

What is the two-letter country code for this unit?
[Unknown]: **US**

Is CN=www.iwaysoft.com, OU=iwaysoft, O=iwaysoft, L=New York, ST=New York, C=US correct?
[no]: **yes**

**Generating the Certificate Signing Request**

Use the following command to generate the certificate signing request:

```
D:\certificate>keytool -certreq -alias iwaysoftware -file iwaysoft
-keystore iway.jks -storepass iwaysoft
```

**Purchasing the Commercial Certificate From Symantec or a Similar Certificate Authority**

You must purchase the commercial certificate from Symantec or a similar Certificate Authority (CA).

The following is a link to the Symantec Web site that you can use:

Note: For a list of approved Certificate Authorities, it is recommended that you check with Salesforce.

Importing the Root Certificate and Intermediate Certificate

Once you receive the commercial certificate in the mail with the signed certificate, use the following command to import the root certificate:

D:\certificate>keytool -import -trustcacerts -alias symantec_root_ca -file symantec_trial_root.cer -keystore iway.jks -storepass iwaysoft

When prompted regarding trust, enter Yes. Then import the intermediate certificate using the following command:

D:\certificate>keytool -import -trustcacerts -alias symantec_intermediate_ca -file symantec_trial_intermediate_ca.cer -keystore iway.jks -storepass iwaysoft

Importing the Signed Certificate

Copy the signed certificate from the mail and paste it into a new empty file that has a .CER extension. Use the following command to ensure that the alias is the same as the one that is used during the key generation:

D:\certificate>keytool -import -alias iwaysoftware -file iwaysoft.cer -keystore iway.jks -storepass iwaysoft

Generating the Certificate Signing Request

Use the following command to generate the certificate signing request:

D:\certificate>keytool -certreq -alias iwaysoftware -file iwaysoft -keystore iway.jks -storepass iwaysoft

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```
D:\certificate>keytool -import -trustcacerts -alias symantec_root_ca
-file symantec_trial_root.cer -keystore iway.jks -storepass iwaysoft
```

When prompted regarding trust, enter Yes. Then import the intermediate certificate using the following command:

```
D:\certificate>keytool -import -trustcacerts -alias symantec_intermediate_ca
-file symantec_trial_intermediate_ca.cer -keystore iway.jks -storepass iwaysoft
```

Importing the Signed Certificate

Copy the signed certificate from the mail and paste it into a new empty file that has a .CER extension. Use the following command to ensure that the alias is the same as the one that is used during the key generation:

```
D:\certificate>keytool -import -alias iwaysoftware -file iwaysoft.cer
-keystore iway.jks -storepass iwaysoft
```

Trust Store Management

This section describes how to configure trust store management.

Downloading the Root Certificate and Intermediate Certificate

Download the client certificate (sfdc-client.cert) from the Salesforce Web site.

Download the intermediate certificate (for example, symantecclass3ca.cer) and the root certificate (for example, symantecintermediateca.cer) according to the client certificate.

Importing the Root Certificate and Intermediate Certificate

Use the following command to import the root certificate:

```
D:\ certificate>keytool -import -alias symantec_root_ca -file symantecclass3ca.cer -keystore truststore.jks -storepass iwaysoft
```

Use the following command to import the intermediate certificate:

```
D:\ certificate>keytool -import -alias symantec_intermediate_ca -file symantecintermediateca.cer -keystore truststore.jks -storepass iwaysoft
```
Importing the Client Certificate

Before you import the client certificate, verify that the alias is compliant to the certificate.alias key, which is defined in the Salesforce adapter configuration file (LocalStrings.properties). The default is salesforce.

Use the following command to import the client certificate:

```
D:\certificate>keytool -import -alias salesforce -file sfdc-client.cert -keystore truststore.jks -storepass iwaysoft
```

Depending on your environment, the following error may be generated during the import process:

```
keytool error: java.lang.Exception: Input not an X.509 certificate.
```

As a workaround, you must transform the client certificate format to a Base64 encoded binary format.

**Note:** Before you continue, make sure that the root certificate is installed.

Perform the following steps:

1. On a Windows platform, change the file extension to .CER and double-click the file.
   
   The Open dialog box is displayed.

2. Select *Install Certificate*.

3. Open Internet Explorer®.

4. From the menu bar, click *Tools* and select *Internet Options* from the context menu.
   
   The Internet Options dialog box opens.

5. Click the *Content* tab.

6. In the Certificates area, click the *Certificates* button.
   
   The Certificates dialog box opens.

7. Select the certificate you imported previously.

8. Click *Export* and select *Base 64 encoded binary X.509*.

9. Import this format using the following command:

```
D:\certificate>keytool -import -alias salesforce -file sfdc-client.cert -keystore truststore.jks -storepass iwaysoft
```
Outbound messages and workflow rules must be configured to enable event handling for the iWay Application Adapter for Salesforce.

This section describes how to create a workflow rule and outbound message in Salesforce.

**Real Time Event Capture**

Outbound messages and workflow rules must be configured to enable event handling for the iWay Application Adapter for Salesforce. The concept of outbound messaging is part of the workflow rule functionality in Salesforce. Workflow rules can be configured to look for specified field changes or other record activities, such as creating a new object.

**Salesforce Considerations for Outbound Messaging**

- You can configure more than one workflow for each outbound message.
- Workflows and outbound messages are associated with the same Salesforce object.
- If the destination event listener is unavailable, messages remain in a queue until sent successfully, or until they are 24 hours old. After 24 hours, the messages are dropped from the queue.
- If a message cannot be delivered, the interval between retries increases exponentially up to a maximum of two hours between retries.
- Messages are retried independent of their order in the queue, so this can result in messages being delivered out of order.
You cannot build an audit trail using outbound messaging. Each message should be delivered at least once, but it can be delivered more than once. It may not be delivered at all if delivery cannot be achieved within 24 hours. The source object may change after a notification is sent, but before it is delivered, so the destination listener will only receive the latest data, not any intermediate changes.

For security reasons, Salesforce restricts the outbound ports you may specify to one of the following:

- 80: This port only accepts HTTP connections.
- 443: This port only accepts HTTPS connections.
- 1024-66535 (inclusive): These ports accept HTTP or HTTPS connections.

Creating a Workflow Rule

1. Log in to your Salesforce.com account.
2. Click the drop-down menu on the top of the screen that shows your name and then Setup, as shown in the following image.

The Getting Started page opens.
3. In the App Setup tree, expand Create and then Workflow & Approvals. Click Workflow Rules, as shown in the following image.

![App Setup Tree](image)

The All Workflow Rules page opens.

4. Click the New Rule button.

The Step 1 of the New Workflow Rule window opens.
5. Choose the object you want your workflow rule to apply to, as shown in the following image.

![Image of workflow rule configuration](image)

**Note:** This object should be the same as the one you configured in your event synonym.

6. Click *Next*.

7. In step 2 of the New Workflow Rule window, enter the Rule Name, an Evaluation Criteria, and a Rule Criteria, as shown in the following image.
8. Click Save & Next.

**Creating Outbound Messages**

1. Log in to your Salesforce.com account.
2. Click the drop-down menu on the top of the screen that shows your name and then Setup, as shown in the following image.

![Setup Menu](image)

The Getting Started page opens.
3. In the App Setup tree, expand Create and then Workflow & Approvals. Click Outbound Messages, as shown in the following image.

![App Setup Tree]

**Note:** If you already defined an outbound message for your workflow, you can choose the Existing Option action.

The All Outbound Messages window opens.

4. Click Create New.

The Step 1 of the New Outbound Message window opens.
5. Select Account from the Select Object drop-down menu, as shown in the following image.

![Select Object Drop-down Menu](image1)

Click Next.

6. In step 2 of the New Outbound Message window, enter the Name, Unique Name, Endpoint URL, and User to send as information, as shown in the following image.

![New Outbound Message Window](image2)
7. Save these changes.

Review the outbound message details, as shown in the following image.

![Outbound Message Details](image)

**Activate the Rule for the Outbound Message**

1. In the App Setup tree, expand *Create* and then *Workflow & Approvals*. Click *Account*.
2. Click *Edit*.
3. Click the *Add Workflow Action* button.
4. Select *Select Existing Action* from the drop-down menu, as shown in the following image.

The Select Existing Action page opens.

5. Select *Outbound Message* from the Choose Action Type drop-down menu, as shown in the following image.
6. Select Account under Available Actions and click the Add arrow.

7. Click Save.

The Account Rule Page opens, as shown in the following image.

8. Click the Activate button.
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