Red Hat Fuse 7.0

Ignite Sample Integration Tutorials

Instructions for Creating Sample Integrations

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Instructions for Creating Sample Integrations

Abstract

Follow step-by-step instructions for using Ignite to create, test, and deploy sample integrations.

Table of Contents

PREFACE

Ignite lets you obtain data from an application or service, operate on that data if you need to, and then send the data to a completely different application or service. You can do all this without writing code.

Explore Ignite by creating these sample integrations:

- Chapter 3, *Implement a Twitter to Salesforce sample integration*
- Chapter 4, *Implement a Salesforce to database sample integration*
- Chapter 5, *Implement an AMQ to REST API sample integration*

A user guide for Ignite is also available.

In this release, consider the names Red Hat Fuse Online and Ignite as interchangeable.

To obtain support, in Ignite, in the upper right, click and then select **Support**.

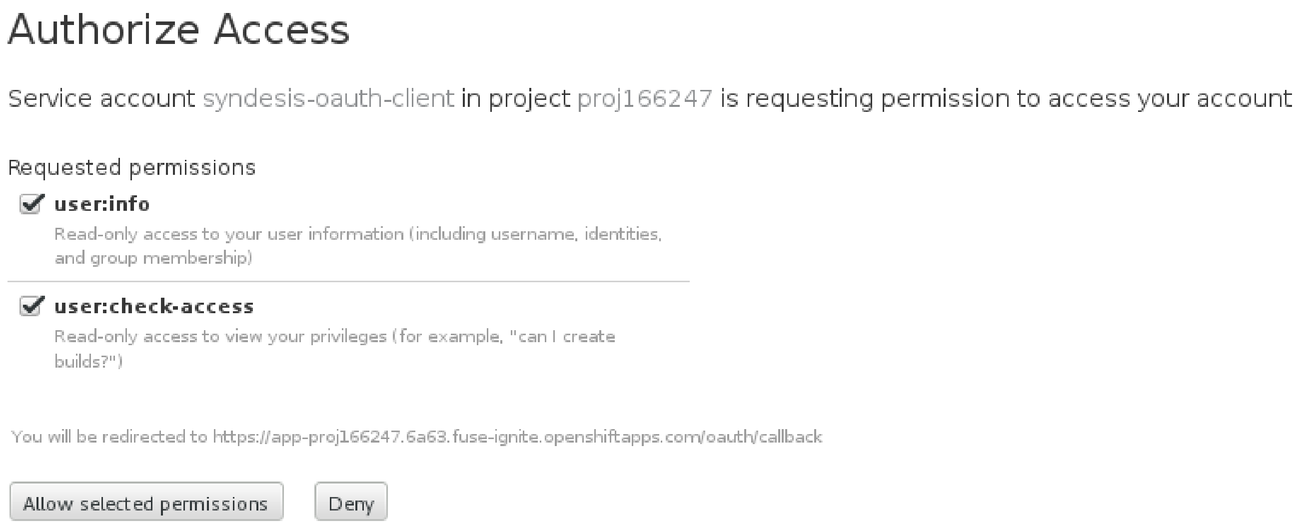
CHAPTER 1. COMPARISON OF SAMPLE INTEGRATIONS

You can create the sample integrations in any order. To help you decide which one to try first, the following table compares them.

Comparison Point	Twitter to Salesforce	Salesforce to Database	AMQ to REST API
Average time to complete	25 minutes. This includes the time needed to obtain Twitter and Salesforce accounts. It does not include 5 - 12 minutes of waiting for Salesforce registration to take effect and for Ignite to start running the integration.	10 minutes if you already created the Twitter to Salesforce sample. Otherwise, 20 minutes, which includes the time needed to obtain a Salesforce account. This does not include waiting time.	25 minutes. This does not include the time it takes Ignite to start running the integration.
Prerequisites	Twitter account, Salesforce account	Salesforce account	None
Demonstrated features include	Connections, OAuth support, data mapping, filtering	Connections, OAuth support, data mapping, SQL database access	Connections, data mapping, custom step extension, custom REST API client connector

CHAPTER 2. LOGGING IN TO IGNITE

In this release, you receive a link for accessing Ignite. Clicking this link displays the **Red Hat OpenShift Online Log In** page, which prompts you to log in by using your Red Hat account. Logging in prompts you to authorize Ignite to access to your account:



Click **Allow selected permissions**. You need to do this only once. The next time you log in, Ignite immediately appears.

Red Hat supports using Ignite in the following browsers:

- Chrome
- Firefox
- Microsoft Edge

CHAPTER 3. IMPLEMENT A TWITTER TO SALESFORCE SAMPLE INTEGRATION

This sample integration watches Twitter for tweets that mention a particular Twitter user. When the integration finds such tweets, it filters them so that only those tweets that contain the text you specify cause the integration to continue.

For tweets that contain the specified text, the integration passes data related to the tweet, including the Twitter user name, to Salesforce and Salesforce creates a new contact.

To implement, deploy, and test this sample integration, the main steps are:

1. Section 3.2, “Register Ignite as a Twitter client”
2. Section 3.3, “Create a Twitter connection”
3. Section 3.4, “Register Ignite as a Salesforce client”
4. Section 3.5, “Create a Salesforce connection”
5. Section 3.6, “Create and deploy Twitter to Salesforce sample integration”
6. Section 3.7, “Confirm that the Twitter to Salesforce integration works”
7. Section 3.8, “Clean up your integration”

Before you implement this sample integration, see Section 3.1, “Prerequisites for implementing Twitter to Salesforce integration”.

3.1. PREREQUISITES FOR IMPLEMENTING TWITTER TO SALESFORCE INTEGRATION

To implement a Twitter to Salesforce sample integration:

- You need a Twitter account. You can obtain one at http://twitter.com.
- You need an account in a Salesforce installation that is used for development. This account must have Salesforce API access, which is available in a Salesforce Enterprise account or a Salesforce Developer account. To obtain a free developer account, visit https://developer.salesforce.com/signup. It takes less than two minutes to obtain a Salesforce account.

3.2. REGISTER IGNITE AS A TWITTER CLIENT

You must register your installation of Ignite as an application that can access Twitter. This lets you create any number of integrations that connect to Twitter. In other words, you need to register a particular installation of Ignite with Twitter only once.

In each Ignite environment, there can be only one registration of Ignite as a Twitter client. However, while each Twitter connection uses the same registration, it can use different user credentials.

Perform these steps:

1. In Ignite:

a. In the left panel, click **Settings**.

b. Near the top of the **OAuth Application Management** page, where you see **`During registration, enter this callback URL:`**, copy the URL at the end of the sentence to the clipboard.

c. To the right of the **Twitter** entry, click **Register** to display the **Client ID** and **Client Secret** fields.

2. In another browser tab, go to the Twitter **Application Management** web site at https://apps.twitter.com and do the following:

a. Confirm that the URL is **`apps.twitter.com`** and not just **`twitter.com`**.

b. If you are not already logged in to the Twitter **Application Management** site, log in.

c. Click **Create New App**.

d. In the **Name** field, enter a name for your new app. This name must be unique among all names of apps registered with Twitter.

e. In the **Description** field, enter helpful information. Twitter requires some input in this field.

f. In the **Website** field, paste the URL that you copied at the beginning of this procedure and remove **`api/v1/credentials/callback`** from the end of the URL.

g. In the **Callback URL** field, paste the URL again. It should be something like this: **`https://app-proj9128.7b63.fuse-ignite.openshiftapps.com/api/v1/credentials/callback`**.

h. Click **Yes** to agree to the Twitter developer agreement.

i. Click **Create your Twitter application**.

j. Click the **Keys and Access Tokens** tab.

k. Copy the **Consumer Key**.

3. On your Ignite installation **Settings** page, paste the Twitter consumer key into the Twitter **Client ID** field.

4. On the Twitter **Keys and Access Tokens** tab, copy the **Consumer Secret** and paste it into the Ignite Twitter **Client Secret** field.

5. Click **Save** and then click **Ok**.

3.3. CREATE A TWITTER CONNECTION

A connection to Twitter requires registration of Ignite as an application that can access Twitter. If you did not already register Ignite, see Section 3.2, “Register Ignite as a Twitter client”.

After you create a Twitter connection, you can use it in multiple integrations.

To create a Twitter connection:

1. In Ignite, in the left panel, click **Connections** to display any available connections.

2. In the upper right, click **Create Connection** to display the available connectors. A connector is a template that you use to create one or more connections.

3. Click the **Twitter** connector.

4. Click **Connect Twitter** to display a Twitter authorization page. You might need to log in to Twitter before you see the authorization page.

5. Click **Authorize app** to return to Ignite.

6. In the **Connection Name** field, enter your choice of a name that helps you distinguish this connection from any other connections. For example, enter **`Twitter Connect 1`**.

7. In the **Description** field, optionally enter any information that is helpful to know about this connection. For example, enter **`Sample Twitter connection that uses my Twitter login credentials.`**

8. In the upper right, click **Create** to see that the connection you created is now available. If you entered the example name, you would see that **Twitter Connect 1** is now available.

3.4. REGISTER IGNITE AS A SALESFORCE CLIENT

You must register your installation of Ignite as an application that can access Salesforce. This lets you create any number of integrations that connect to Salesforce. In other words, you need to register a particular installation of Ignite with Salesforce only once.

If you already registered Ignite as a Salesforce client and created a Salesforce connection, skip to Section 3.6, “Create and deploy Twitter to Salesforce sample integration”.

In each Ignite environment, there can be only one registration of Ignite as a Salesforce client. However, while each Salesforce connection uses the same registration, it can use different user credentials.

Perform these steps to register Ignite as a Salesforce client:

1. In Ignite:

   a. In the left panel, click **Settings**.

   b. Near the top of the **OAuth Application Management** page, where you see **`During registration, enter this callback URL:`**, copy that URL to the clipboard.

   c. To the right of the **Salesforce** entry, click **Register** to display the **Client ID** and **Client Secret** fields.

2. In another browser tab, log in to your Salesforce account and follow the steps below to create a connected app. These instructions assume that you are using the Salesforce Classic user interface. To switch from the Salesforce Lightning Experience interface, click your profile icon and select **Switch to Salesforce Classic**. For additional information, see the Salesforce documentation for Create a Connected App.

   a. In Salesforce, in the upper right, click **Setup**.

   b. In the left panel, select **Build** > **Create** > **Apps**.

   c. Scroll down to **Connected Apps** and click **New**.

   d. Enter the required information and then select **Enable OAuth Settings**.

e. In the **Callback URL** field, paste your Ignite URL, which you copied at the beginning of this procedure. For example: **`https://app-proj9128.7b63.fuse-ignite.openshiftapps.com/api/v1/credentials/callback`**.

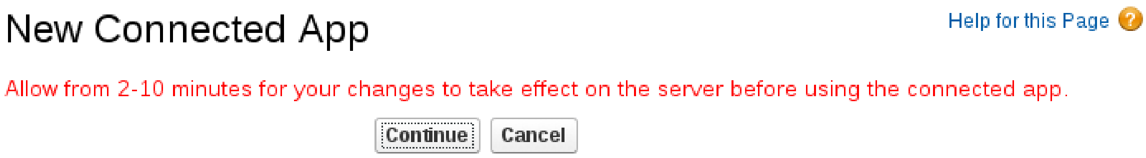
f. For **OAuth Scopes**, add:

- **Access and manage your data**
- **Allow access to your unique identifier**
- **Perform requests on your behalf at any time**

g. Select **Include ID token** and then **Include Standard Claims**.

h. Scroll down and click **Save**.

i. Scroll up to see that Salesforce indicates a short wait:



j. Click **Continue**.

k. Copy the consumer key that Salesforce provides.

3. Return to your Ignite installation **Settings** page and paste the Salesforce-provided consumer key into the Salesforce **Client ID** field.

4. Back in Salesforce, copy the consumer secret that Salesforce provides.

5. Return to your Ignite installation **Settings** page and paste the Salesforce-provided consumer secret into the Salesforce **Client Secret** field.

6. Click **Save** and then click **Ok**.

3.5. CREATE A SALESFORCE CONNECTION

A connection to Salesforce requires registration of Ignite as an application that can access Salesforce.

If you did not already register Ignite see Section 3.4, “Register Ignite as a Salesforce client”.

Be sure to wait 2 - 10 minutes after registering your Ignite installation as a Salesforce client before you try to create a Salesforce connection. After you create a Salesforce connection, you can use it in multiple integrations.

To create a Salesforce connection:

1. In the left panel, click **Connections** to display available connections.

2. In the upper right, click **Create Connection** to display the available connectors. A connector is a template for creating one or more connections.

3. Click the **Salesforce** connector.

4. Click **Connect Salesforce** to display a Salesforce authorization page. You might need to log in to Salesforce before you see the authorization page.

   NOTE

   The following error indicates that Salesforce does not have the correct Ignite callback URL:

   `error=redirect_uri_mismatch&error_description=redirect_uri%20must%20match%20configuration`

   If you get this error message, then in Salesforce, ensure that the Ignite callback URL is specified according to the instructions in Section 3.4, "Register Ignite as a Salesforce client".

5. Click **Allow** to return to Ignite.

6. In the **Connection Name** field, enter your choice of a name that helps you distinguish this connection from any other connections. For example, enter **`SF Connect 1`**.

7. In the **Description** field, optionally enter any information that is helpful to know about this connection. For example, enter **`Sample Salesforce connection that uses my Salesforce login credentials.`**

8. In the upper right, click **Create** to see that the connection you created is now available. If you entered the example name, you would see that **SF Connect 1** is now available.

3.6. CREATE AND DEPLOY TWITTER TO SALESFORCE SAMPLE INTEGRATION

To create and deploy an integration that uses the Twitter and Salesforce connections you created, the main steps are:

- Section 3.6.1, "Choose the start connection"
- Section 3.6.2, "Choose the finish connection"
- Section 3.6.3, "Add a basic filter step"
- Section 3.6.4, "Add a data mapping step"
- Section 3.6.5, "Give the integration a name and deploy it"

3.6.1. Choose the start connection

To choose the start connection:

1. On the left, click **Integrations**.

2. In the upper right, click **Create Integration**.

3. On the **Choose a Start Connection** page, click the Twitter connection you created. If you gave it the example name, you would click **Twitter Connect 1**. When the integration starts, it uses the credentials defined in this connection to connect to Twitter.

4. On the **Choose an Action** page, click **Mention**.

After connecting to Twitter, the integration monitors Twitter for mentions that include your Twitter screen name. A match triggers the next step in the integration. However, before you add steps that operate on data between connections, you choose the connection that the integration uses to finish its work.

3.6.2. Choose the finish connection

To add the finish connection to the integration:

1. On the **Choose a Finish Connection** page, click the Salesforce connection you created. If you gave it the example name, you would click **SF Connect 1**. This integration finishes by using the credentials defined in this connection to connect to Salesforce.

2. On the **Choose an Action** page, click **New record**.

3. On the next page, accept **Contact** as the Salesforce record to create.

4. Click **Done** to add the finish connection to the integration.

3.6.3. Add a basic filter step

Add a basic filter step that checks tweets that mention you for particular content. The integration continues only if that content is present.

To add a basic filter step:

1. In the main panel, click **Add a step**.

2. Click **Basic Filter**.

3. In the first field (**The data you want to evaluate**), start to enter **`text`** and when **`text`** appears below the field, click it. This indicates that the content to filter for is in the Twitter **`text`** field, which contains the text of the tweet.

4. Accept **contains** as the condition to be met for the integration to continue.

5. In the last field, enter **`#RedHatIsGreat`** or some other text you choose. A tweet that mentions you must contain the text you enter here for the integration to continue operating on this data.

6. Click **Done** to complete the basic filter step.

3.6.4. Add a data mapping step

Add a data mapping step that correlates Twitter mention fields to Salesforce contact fields:

1. In the left panel, hover over the plus sign between the filter step and the finish connection to display a pop-up in which you click **Add a Step**.

2. Click **Data Mapper** and wait a few moments. When the data fields appear, the **Sources** panel on the left displays the Twitter fields and the **Target** panel on the right displays the Salesforce fields.

3. Map the Twitter **name** field to the Salesforce **`FirstName`** and **`LastName`** fields:

   a. In the **Sources** panel, click the magnifying glass to display the search field and enter **`name`**.

   b. Under the **`user`** folder, click the **name** field.

   c. In the **Mapping Details** panel, under **Action**, click the down caret and select **Separate**.

   d. Below that, under **Targets**, in the input field, start to type **`FirstName`**. When **/FirstName** appears below the field, click it. The data mapper displays a line from the Twitter **name** field to the Salesforce **FirstName** field.

   e. In the lower right, click **Add Target**.

   f. In the new target, in the input field, start to type **`LastName`**. When **/LastName** appears below the field, click it. The data mapper displays another line from the Twitter **name** field, but this time it goes to the Salesforce **LastName** field. The blue lines indicate the current focus.

4. Map the Twitter **`screenName`** field to the Salesforce **`Title`** field:

   a. In the **Sources** panel, scroll down to click the **screenName** field.

   b. On the right, at the top of the **Target** panel, click the magnifying glass to display the search field and enter **`Title`**.

   c. Click the **Title** field. The data mapper displays a line from the Twitter **screenName** field to the Salesforce **Title** field.

5. Map the Twitter **`text`** field to the Salesforce **`Description`** field:

   a. In the **Sources** search field, enter **`text`** and under **Status**, click the **text** field.

   b. In the **Target** search field, enter **`description`** and then click the Salesforce **Description** field to create the mapping.

   c. In the upper right, click the grid icon to display the list of mappings, which should look like this:

   Mappings

Sources	Targets	Type
/user/name	/FirstName /LastName	Separate (Space)
/user/screenName	/Title	Map
/text	/Description	Map

6. In the upper right, click **Done**.

3.6.5. Give the integration a name and deploy it

The sample integration is complete. To deploy it:

1. At the top of the left panel, in the **Integration Name** field, enter a name of your choice that distinguishes this integration from any other integrations. For example: **`Twitter to Salesforce Sample Integration`**.

2. In the upper right corner, click **Publish**.

Ignite displays the integration summary page with a **Publishing** spinning circle. Ignite is generating the runtime for the integration and will start it when the runtime is ready. This takes a few minutes.

NOTE

A Fuse Online account is limited to a specific number of integrations that can be running at one time. For details, see the pricing plan. If you are already running the maximum number of integrations, then you must unpublish an integration before you can publish (start running) another one.

If you are using a Fuse Online evaluation account, then only one integration at a time can be running (published). If you already created one of the other sample integrations and that integration is running then this integration is automatically in the **Unpublished** state. You must stop the running integration by unpublishing it. You can then publish this integration.

If you are already running the maximum number of integrations, follow these steps to unpublish (stop) an integration:

1. In the left panel, click **Integrations**.

2. In the entry for the integration that you want to stop, click  on the far right.

3. In the popup, click **Unpublish**.

After unpublishing an integration, start another integration as follows:

1. In the left panel, click **Integrations**.

2. In the entry for the integration that you want to start, click  on the far right.

3. In the popup, click **Publish**.

3.7. CONFIRM THAT THE TWITTER TO SALESFORCE INTEGRATION WORKS

To confirm that the Twitter to Salesforce sample integration is working:

1. In the panel on the left, click **Integrations** to see that the integration you created is a **Published** integration, which means that it is running. If you entered the example name, you would see that **Twitter to Salesforce Sample Integration** is running.

2. Confirm that the integration does not create a contact record when a tweet does not contain the text you specified in the basic filter step:

   a. In Twitter, send a tweet that:

        - Mentions your Twitter handle
        - Does not contain the text you specified in the basic filter step
          For example: **`@Aslan #likesRedHat.`**

    b. Wait for the polling interval to elapse, which can be 30 - 60 seconds.

    c. In Salesforce, confirm that a contact record with your name does not exist.

3. Confirm that the integration creates a new contact record when it should:

    a. In Twitter, send a tweet that:

        - Mentions your Twitter handle
        - Contains the text you specified in the basic filter step
          For example: **`@Aslan knows #RedHatIsGreat.`**

    b. Wait for the polling interval to elapse.

    c. In Salesforce, locate a contact record that has your name, the text of your tweet in the **`Description`** field, and your Twitter screen name in the **`Title`** field.

3.8. CLEAN UP YOUR INTEGRATION

When you are done working with a sample integration, unpublish it and delete it:

1. In the left panel, click **Integrations**.
2. In the main panel, identify the entry for the sample integration that you want to unpublish.
3. In that entry, to the right, click ⋮ and then click **Unpublish**.
4. Click **OK** to confirm that you want to stop running the integration.
5. In the entry for the integration that you just unpublished, to the right, click ⋮ and then click **Delete**.
6. Click **OK** to confirm that you want to delete the integration.

CHAPTER 4. IMPLEMENT A SALESFORCE TO DATABASE SAMPLE INTEGRATION

This sample integration captures updates in Salesforce and then calls a database stored procedure, which synchronizes that database with the Salesforce updates.

To implement, deploy, and test this sample integration, the main steps are:

1. Section 4.2, “Register Ignite as a Salesforce client”
2. Section 4.3, “Create a Salesforce connection”
3. Section 4.4, “Create and deploy Salesforce to database sample integration”
4. Section 4.5, “Confirm that the Salesforce to database integration works”
5. Section 4.6, “Clean up your integration”

If you already created the Twitter to Salesforce sample integration:

- Ignite is already registered as a Salesforce client. You do not need to do this again.
- You already have a Salesforce connection, which you can reuse in this sample integration.

If you did not already create the Twitter to Salesforce sample integration, then you must register Ignite as a Salesforce client and create a Salesforce connection in order to complete the Salesforce to database sample integration.

Before you implement this sample integration, see Section 4.1, “Prerequisites for implementing Salesforce to database integration”.

4.1. PREREQUISITES FOR IMPLEMENTING SALESFORCE TO DATABASE INTEGRATION

To implement a Salesforce to database sample integration, you need an account in a Salesforce installation that is used for development. This account must have Salesforce API access, which is available in a Salesforce Enterprise account or a Salesforce Developer account. To obtain a free developer account, visit https://developer.salesforce.com/signup. It takes less than two minutes to obtain a Salesforce account.

4.2. REGISTER IGNITE AS A SALESFORCE CLIENT

You must register your installation of Ignite as an application that can access Salesforce. This lets you create any number of integrations that connect to Salesforce. In other words, you need to register a particular installation of Ignite with Salesforce only once.

If you already registered Ignite as a Salesforce client and created a Salesforce connection, skip to Section 4.4, “Create and deploy Salesforce to database sample integration”.

In each Ignite environment, there can be only one registration of Ignite as a Salesforce client. However, while each Salesforce connection uses the same registration, it can use different user credentials.

Perform these steps to register Ignite as a Salesforce client:

1. In Ignite:

   a. In the left panel, click **Settings**.

   b. Near the top of the **OAuth Application Management** page, where you see **`During registration, enter this callback URL:`**, copy that URL to the clipboard.

   c. To the right of the **Salesforce** entry, click **Register** to display the **Client ID** and **Client Secret** fields.

2. In another browser tab, log in to your Salesforce account and follow the steps below to create a connected app. These instructions assume that you are using the Salesforce Classic user interface. To switch from the Salesforce Lightning Experience interface, click your profile icon and select **Switch to Salesforce Classic**. For additional information, see the Salesforce documentation for Create a Connected App.

   a. In Salesforce, in the upper right, click **Setup**.

   b. In the left panel, select **Build** > **Create** > **Apps**.

   c. Scroll down to **Connected Apps** and click **New**.

   d. Enter the required information and then select **Enable OAuth Settings**.

   e. In the **Callback URL** field, paste your Ignite URL, which you copied at the beginning of this procedure. For example: **`https://app-proj9128.7b63.fuse-ignite.openshiftapps.com/api/v1/credentials/callback`**.

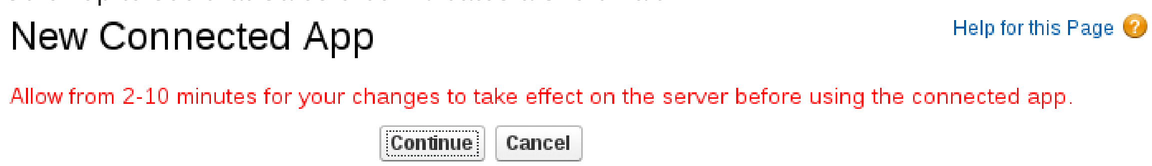
   f. For **OAuth Scopes**, add:

      - **Access and manage your data**
      - **Allow access to your unique identifier**
      - **Perform requests on your behalf at any time**

   g. Select **Include ID token** and then **Include Standard Claims**.

   h. Scroll down and click **Save**.

   i. Scroll up to see that Salesforce indicates a short wait:



   j. Click **Continue**.

   k. Copy the consumer key that Salesforce provides.

3. Return to your Ignite installation **Settings** page and paste the Salesforce-provided consumer key into the Salesforce **Client ID** field.

4. Back in Salesforce, copy the consumer secret that Salesforce provides.

5. Return to your Ignite installation **Settings** page and paste the Salesforce-provided consumer secret into the Salesforce **Client Secret** field.

6. Click **Save** and then click **Ok**.

4.3. CREATE A SALESFORCE CONNECTION

A connection to Salesforce requires registration of Ignite as an application that can access Salesforce.

If you did not already register Ignite, see Section 4.2, “Register Ignite as a Salesforce client”.

Be sure to wait 2 - 10 minutes after registering your Ignite installation as a Salesforce client before you try to create a Salesforce connection. After you create a Salesforce connection, you can use it in multiple integrations.

To create a Salesforce connection:

1. In the left panel, click **Connections** to display available connections.
2. In the upper right, click **Create Connection** to display the available connectors. A connector is a template for creating one or more connections.
3. Click the **Salesforce** connector.
4. Click **Connect Salesforce** to display a Salesforce authorization page. You might need to log in to Salesforce before you see the authorization page.

> **NOTE**
>
> The following error indicates that Salesforce does not have the correct Ignite callback URL:
>
> `error=redirect_uri_mismatch&error_description=redirect_uri%20must%20match%20configuration`
>
> If you get this error message, then in Salesforce, ensure that the Ignite callback URL is specified according to the instructions in Section 4.2, “Register Ignite as a Salesforce client”.

5. Click **Allow** to return to Ignite.
6. In the **Connection Name** field, enter your choice of a name that helps you distinguish this connection from any other connections. For example, enter **`SF Connect 1`**.
7. In the **Description** field, optionally enter any information that is helpful to know about this connection. For example, enter **`Sample Salesforce connection that uses my Salesforce login credentials.`**
8. In the upper right, click **Create** to see that the connection you created is now available. If you entered the example name, you would see that **SF Connect 1** is now available.

4.4. CREATE AND DEPLOY SALESFORCE TO DATABASE SAMPLE INTEGRATION

To create and deploy an integration that uses the Salesforce connection and the database connection, the main steps are:

- Section 4.4.1, “Choose the start connection”
- Section 4.4.2, “Choose the finish connection”

- Section 4.4.3, “Add a data mapping step”
- Section 4.4.4, “Give the integration a name and deploy it”

4.4.1. Choose the start connection

To choose the start connection:

1. On the left, click **Integrations**.
2. Click **Create Integration**.
3. On the **Choose a Start Connection** page, click your Salesforce connection. If you specified the example name, you would click **SF Connect 1**.
4. On the **Choose an Action** page, click **On create**.
5. In the **Object name** field, select **Lead**.
6. Click **Done** to add the start connection to the integration.

After connecting to Salesforce, the integration watches for notifications that a Salesforce **Lead** record was created. When the integration finds such a notification, it passes the new lead’s data to the next step in the integration.

However, before you can add the next step, you must choose the integration’s finish connection.

4.4.2. Choose the finish connection

To add the finish connection to the integration:

1. On the **Choose a Finish Connection** page, click the **PostgresDB** connection. This integration finishes by using the credentials defined in this database connection to connect to the provided sample database.
2. On the **Choose an Action** page, click **Invoke SQL stored procedure**, which passes data to a stored procedure.
3. In the **Procedure Name** field, click and select **add_lead**, which is the provided stored procedure to run in the sample database. The selected procedure determines the requirements for additional steps in the integration, for example, which Salesforce data fields need to be mapped to which database fields.
4. Click **Done** to add the finish connection to the integration.

4.4.3. Add a data mapping step

To add a step that maps Salesforce fields to database fields:

1. In the left panel, hover over the plus sign immediately after the start connection to display a pop-up in which you click **Add a Step**.
2. Click **Data Mapper** and wait a few moments. When the data fields appear, the **Sources** panel on the left displays the Salesforce fields and the **Target** panel on the right displays the database fields.

3. Map the Salesforce `Company` field to the database `company` field:

   a. On the left, in the **Sources** panel, click **Company**.

   b. On the right, in the **Target** panel, click **company**. The data mapper displays a line from the source field to the target field.

4. Map the **Sources** (Salesforce) `Email` field to the **Target** (database) `email` field.

5. Map two Salesforce fields (`FirstName` and `LastName`) to the database `first_and_last_name` field:

   a. In the **Sources** panel, click **FirstName**.

   b. In the **Target** panel, click **first_and_last_name**.

   c. In the **Mapping Details** panel, under **Action**, select **Combine**.

   d. Just above that, click **Add Source**.

   e. Under **Source**, in the input field, start to type `LastName`. When **/LastName** appears below the field, click it. The data mapper displays a line from the **Sources LastName** field to the **Target first_and_last_name** field.

6. Add the following mappings:

Map This Salesforce Field	To This Database Field
`LeadSource`	`lead_source`
`Status`	`lead_status`
`Phone`	`phone`
`Rating`	`rating`

7. In the upper right, click **Done**.

4.4.4. Give the integration a name and deploy it

The sample integration is complete. To deploy it:

1. In the upper right, click **Publish** to give it a name.

2. In the **Integration Name** field, enter a name for the integration. For example, `Salesforce to Database Sample Integration`.

3. In the upper right corner, click **Publish**.

Ignite displays the integration summary page with a **Publishing** spinning circle. Ignite is generating the runtime for the integration and will start it when the runtime is ready. This takes a few minutes.

> **NOTE**
>
> A Fuse Online account is limited to a specific number of integrations that can be running at one time. For details, see the pricing plan. If you are already running the maximum number of integrations, then you must unpublish an integration before you can publish (start running) another one.
>
> If you are using a Fuse Online evaluation account, then only one integration at a time can be running (published). If you already created one of the other sample integrations and that integration is running then this integration is automatically in the **Unpublished** state. You must stop the running integration by unpublishing it. You can then publish this integration.

If you are already running the maximum number of integrations, follow these steps to unpublish (stop) an integration:

1. In the left panel, click **Integrations**.
2. In the entry for the integration that you want to stop, click on the far right.
3. In the popup, click **Unpublish**.

After unpublishing an integration, start another integration as follows:

1. In the left panel, click **Integrations**.
2. In the entry for the integration that you want to start, click on the far right.
3. In the popup, click **Publish**.

4.5. CONFIRM THAT THE SALESFORCE TO DATABASE INTEGRATION WORKS

To confirm that the Salesforce to database integration is working:

1. In the left panel, click **Integrations**.
2. If necessary, wait until your sample integration is a **Published** integration, which means that it is running. If you used the example name, you would see that **Salesforce to Database Sample Integration** is **Published**.
3. In your Salesforce installation, create a new lead. Be sure to enter data in the fields that you mapped: **Company**, **Email**, **FirstName**, **LastName**, **LeadSource**, **Status**, **Phone**, and **Rating**.
4. In a new browser window, insert `todo-` in front of the URL for your Ignite installation. For example: `https://todo-app-proj7614.6a63.fuse-ignite.openshiftapps.com/`.
5. In the **To Do App** display, you should see a notification that a new lead was created in the database.

4.6. CLEAN UP YOUR INTEGRATION

When you are done working with a sample integration, unpublish it and delete it:

1. In the left panel, click **Integrations**.

2. In the main panel, identify the entry for the sample integration that you want to unpublish.

3. In that entry, to the right, click  and then click **Unpublish**.

4. Click **OK** to confirm that you want to stop running the integration.

5. In the entry for the integration that you just unpublished, to the right, click  and then click **Delete**.

6. Click **OK** to confirm that you want to delete the integration.

CHAPTER 5. IMPLEMENT AN AMQ TO REST API SAMPLE INTEGRATION

This sample integration connects to an AMQ broker to obtain item delivery records for a hypothetical enterprise. The integration then executes a custom step that operates on the records to identify any items that were damaged when they were received. After a simple data mapping, the integration connects to a REST API to obtain and provide contact information for vendors of damaged items.

The other sample integrations use connectors and data operations that are built into Ignite. This integration also does that, but in addition, it provides instructions for customizing and extending Ignite by leading you through the procedures for:

- Adding a custom data operation by uploading an extension.
- Adding a custom REST API client connector by uploading a Swagger file.

Ignite provides the extension file and the Swagger file.

To implement the AMQ to REST API sample integration, the main steps are:

1. Section 5.1, “Create an AMQ connection”
2. Section 5.2, “Make a custom step available”
3. Section 5.3, “Create a REST API connector”
4. Section 5.4, “Upload the To Do app icon”
5. Section 5.5, “Create a REST API connection”
6. Section 5.6, “Create and deploy AMQ to REST API sample integration”
7. Section 5.7, “Confirm that the AMQ to REST API integration works”
8. Section 5.8, “Clean up your integration”

5.1. CREATE AN AMQ CONNECTION

The AMQ to REST API sample integration starts by connecting to an AMQ broker that is provided in your OpenShift project. Before you start to create the integration itself, you must:

1. Section 5.1.1, “Start the provided AMQ broker”
2. Section 5.1.2, “Create a connection to that AMQ broker”

5.1.1. Start the provided AMQ broker

To start the AMQ broker:

1. In a browser, go to the OpenShift Web Console at https://console.fuse-ignite.openshift.com/console/. Your installation of Ignite runs on OpenShift Online.
2. In the console, click the name of your Ignite project, which is something like **`proj123456`**.
3. In the **Overview** page, scroll down to **Other Resources** to see the provided AMQ broker.

4. To the left of **broker-amq, #1**, click the caret to display more information.

5. In the additional information, all the way to the right, click the up caret to scale up to running 1 pod. This starts the AMQ broker.

5.1.2. Create a connection to that AMQ broker

To create a connection to the AMQ broker that is running in your Fuse Online project in OpenShift:

1. In Ignite, in the left panel, click **Connections** to display any available connections.

2. In the upper right, click **Create Connection** to display Ignite connectors.

3. Click the **AMQ** connector.

4. Configure the connection by entering:

    a. In the **Broker URL** field, enter **`tcp://broker-amq-tcp:61616`** as the location to obtain data from.

    b. In the **Username** field, enter **`amq`** as the user name for the account that accesses this AMQ broker.

    c. In the **Password** field, enter **`topSecret`** as the password for the account that accesses this AMQ broker.

    d. Leave the other fields blank.

5. Click **Validate**. Ignite immediately tries to validate the connection and displays a message that indicates whether validation is successful. If validation fails, check the values you entered and try again.

6. When validation is successful, click **Next**.

7. In the **Connection Name** field, enter your choice of a name that helps you distinguish this connection from any other connections. For example, enter **`AMQ Broker 1`**.

8. In the **Description** field, optionally enter any information that is helpful to know about this connection. For example, enter **`Sample AMQ connection that uses the provided broker.`**

9. In the upper right, click **Create** to see that the connection you created is now available. If you entered the example name, you would see that **AMQ Broker 1** is now available.

5.2. MAKE A CUSTOM STEP AVAILABLE

Ignite provides a number of steps that operate on integration data between connections. If Ignite does not provide a between-connections step that meets your need, a developer can code an extension that defines one or more custom steps that operate on data between connections. The developer gives you a **`.jar`** file that contains the extension. You then upload the extension in Ignite to make the custom step(s) available for use in integrations.

The AMQ to REST API sample integration uses a custom step that operates on data between connections to identify items that were damaged when they were received.

To make the **Damage Reporter** custom step available:

1. In a new browser tab, go to https://github.com/syndesisio/fuse-online-sample-extension/releases.
2. Download the extension's `.jar` file.
3. In Ignite, in the left panel, click **Customizations**.
4. At the top, click **Extensions**.
5. Click **Import Extension**.
6. Click **Browse** and select the downloaded `.jar` file that contains the extension. Ignite validates the file, extracts and displays the extension's name, ID, and description, and lists **Damage Reporter** as the custom step that the extension defines.
7. Click **Import**. Ignite makes the custom step available and displays the extension details page.

> **NOTE**
>
> For more information about coding an extension and creating its `.jar` file, see the Tooling User Guide.

5.3. CREATE A REST API CONNECTOR

Ignite can create connectors for REST APIs that support Hypertext Transfer Protocol (HTTP)/1.0 or HTTP/1.1. To do this, Ignite requires a valid Swagger 2.0 specification that describes a REST API you want to connect to.

Your Ignite installation provides the To Do app, which has a REST API for which a Swagger specification is available.

To create a REST API connector for the To Do app:

1. Identify the URL for your Ignite installation's copy of the Swagger specification:
   a. In the Ignite navigation panel, click **Home**.
   b. Copy the URL into a text editor.
   c. At the beginning of the URL, insert **`todo-`**.
   d. At the end of the URL, replace **`dashboard`** with **`swagger.json`**.

   The result is something like this: **`https://todo-app-proj217402.6a63.fuse-ignite.openshiftapps.com/swagger.json`**
2. In the Ignite navigation panel, click **Customizations**.
3. Click **Create API Connector**.
4. Select **Use a URL**.
5. In the input box, paste the URL for your Swagger specification and click **Next**.
6. On the **Review Swagger Actions** page, click **Next**. If you see a warning, you can ignore it.
7. Click **Next** again to accept **HTTP Basic Authorization**.

8. On the **Review/Edit Connector Details** page, Ignite populates the fields with values from the Swagger specification.
    a. If you want to, you can change the values in the **Connector Name** and **Description** fields.
    b. Confirm that the value in the **Host** field is correct. For example, it should be something like this: **`https://todo-app-proj217402.6a63.fuse-ignite.openshiftapps.com`**.
    c. Confirm that the value in the **Base URL** field is **`/api`**.
9. Click **Create Connector**.

Ignite displays the **API Client Connectors** tab with an entry for the **Todo App API** that you just created.

5.4. UPLOAD THE TO DO APP ICON

To show the flow of an integration, Ignite displays icons that identify the applications that the integration is connecting to. Your Ignite installation provides an icon for the REST API connector that you just created for the To Do app.

To upload the To Do app icon:

1. Display the To Do app icon:
    a. In a new browser tab, paste the URL for your Swagger specification.
    b. At the end of the URL, replace **`swagger.json`** with **`images/todo_icon.png`** and click **Enter**. For example: **`https://todo-app-proj217402.6a63.fuse-ignite.openshiftapps.com/images/todo_icon.png`**.
2. Save the **`todo_icon.png`** image.
3. In Ignite, in the **API Client Connectors** tab, click the entry for the **Todo App API** to display its details.
4. On the **Connector Details** page, click **Browse**.
5. Navigate to **`todo_icon.png`**, select it, and click **Open**.
6. Refresh the display of the **Connector Details** page. The image now appears on the left.

5.5. CREATE A REST API CONNECTION

To create a connection to the To Do app REST API:

1. In Ignite, in the left panel, click **Connections** to display any available connections.
2. In the upper right, click **Create Connection** to display available connectors.
3. Click the **Todo App API** connector that you just created.
4. In the **Todo App API Configuration**, notice that Ignite populates the **Authentication Type**, **Base Path**, and **Host** fields from the connector information.
5. In the **Password** field, enter any value. For this sample integration, password and user name values are required but they are not used.

6. In the **Username** field, enter any value.
7. Click **Next**.
8. In the **Connection Name** field, enter your choice of a name that helps you distinguish this connection from any other connections. For example, enter `Todo App API Client`.
9. In the **Description** field, optionally enter any information that is helpful to know about this connection. For example, enter `Connection to the provided Todo app REST API.`
10. In the upper right, click **Create** to see that the connection you created is now available.

5.6. CREATE AND DEPLOY AMQ TO REST API SAMPLE INTEGRATION

To create and deploy the AMQ to REST API sample integration, the main steps are:

1. Section 5.6.1, “Choose the start connection”
2. Section 5.6.2, “Choose the finish connection”
3. Section 5.6.3, “Add a damage reporter step”
4. Section 5.6.4, “Add a data mapping step”
5. Section 5.6.5, “Give the integration a name and deploy it”

5.6.1. Choose the start connection

To choose the start connection:

1. On the left, click **Integrations**.
2. Click **Create Integration**.
3. On the **Choose a Start Connection** page, click your AMQ connection. If you specified the example name, you would click **AMQ Broker 1**.
4. On the **Choose an Action** page, click the **Subscribe for Messages** action to receive messages from the queue you specify.
5. In the **Destination Name** field, enter `inventoryReceived` for the name of the queue to obtain data from.
6. Click in the **Destination Type** field and select **Queue**.
7. Leave the other fields blank.
8. Click **Done** to add the start connection to the integration.

After connecting to AMQ, the integration watches for messages on the `inventoryReceived` queue. When a message is available, the integration passes it to the **Damage Reporter** step. However, before you can add that step to the integration, you must choose the integration’s finish connection.

5.6.2. Choose the finish connection

To add the finish connection to the integration:

1. On the **Choose a Finish Connection** page, click the To Do app connection that you created. If you assigned the example name, you would click **Todo App API Client**.

2. On the **Choose an Action** page, click **Create new task**, which provides information about who to contact to address a particular damaged item.

5.6.3. Add a damage reporter step

With the start and finish connections in place, you are ready to add the custom step that receives the messages from the AMQ broker and identifies any items that were damaged when they were received.

To add the custom damage reporter step:

1. In the center, click **Add a Step**.

2. On the **Choose a Step** page, click **Damage Reporter**.

5.6.4. Add a data mapping step

Add a data mapping step that correlates the **`task`** field in the output from the damage reporter step to the **`task`** field in the database that the REST API accesses:

1. In the left panel, hover over the plus sign between the damage reporter step and the finish connection to display a pop-up in which you click **Add a Step**.

2. On the **Choose a Step** page, click **Data Mapper**. In the data mapper, the **Sources** panel on the left displays the fields in the output from the damage reporter step. The **Target** panel on the right displays the fields in the database that the API accesses.

3. In the **Sources** panel, click the **`task`** field.

4. In the **Target** panel, expand the **body** field and click **`task`**.

5. Click **Done**.

5.6.5. Give the integration a name and deploy it

The sample integration is complete. To deploy it:

1. In the upper right, click **Publish** to give it a name.

2. In the **Integration Name** field, enter a name for the integration. For example, **`AMQ to REST API Sample Integration`**.

3. Optionally, in the **Description** field, enter information that might be helpful to know about this integration.

4. In the upper right corner, click **Publish**.

Ignite displays the integration summary page with a **Publishing** spinning circle. Ignite is generating the runtime for the integration and will start it when the runtime is ready. This takes a few minutes.

NOTE

A Fuse Online account is limited to a specific number of integrations that can be running at one time. For details, see the pricing plan. If you are already running the maximum number of integrations, then you must unpublish an integration before you can publish (start running) another one.

If you are using a Fuse Online evaluation account, then only one integration at a time can be running (published). If you already created one of the other sample integrations and that integration is running then this integration is automatically in the **Unpublished** state. You must stop the running integration by unpublishing it. You can then publish this integration.

If you are already running the maximum number of integrations, follow these steps to unpublish (stop) an integration:

1. In the left panel, click **Integrations**.
2. In the entry for the integration that you want to stop, click  on the far right.
3. In the popup, click **Unpublish**.

After unpublishing an integration, start another integration as follows:

1. In the left panel, click **Integrations**.
2. In the entry for the integration that you want to start, click  on the far right.
3. In the popup, click **Publish**.

5.7. CONFIRM THAT THE AMQ TO REST API INTEGRATION WORKS

To confirm that the AMQ to REST API integration is working:

1. In the left panel, click **Integrations**.
2. Confirm that your AMQ to REST API integration is **Published**, which means that it is running. The integration must be **Published** before you continue with these instructions.
3. In a new browser window, go to the To Do app display by inserting `todo-` in front of the URL for your Ignite installation. For example: `https://todo-app-proj7614.6a63.fuse-ignite.openshiftapps.com/`.
4. In the To Do app display, click **Show JMS Form** to display an input box that contains an XML message.
5. Click **Send JMS Message** to send that message to the AMQ broker in your OpenShift project. Successful execution returns a task from the To Do app client API. The task identifies the ID of the damaged item and the contact information for its vendor.
6. Edit the XML message to specify two damaged items:
    a. Click **Show JMS Form** to display the message input box again.

b. In the XML message, change the entry for the undamaged item to specify **`damaged="true"`**.

c. Click **Send JMS Message**. The To Do app client API returns a new task that contains IDs for two damaged items and contact information for the two vendors.

7. Edit the XML message to specify an unknown vendor:

   a. Click **Show JMS Form**.

   b. In the XML message, for an item that has **`damaged="true"`**, change the name of the vendor.

   c. Click **Send JMS Message**. The To Do app client API returns a new task that indicates that there is no contact information for the vendor of a damaged item. The To Do app accesses a database that has only two vendors.

5.8. CLEAN UP YOUR INTEGRATION

When you are done working with a sample integration, unpublish it and delete it:

1. In the left panel, click **Integrations**.
2. In the main panel, identify the entry for the sample integration that you want to unpublish.
3. In that entry, to the right, click  and then click **Unpublish**.
4. Click **OK** to confirm that you want to stop running the integration.
5. In the entry for the integration that you just unpublished, to the right, click  and then click **Delete**.
6. Click **OK** to confirm that you want to delete the integration.