

Oracle® Cloud

Using the SAP S/4HANA Cloud Adapter with Oracle Integration Generation 2



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Preface

This guide describes how to configure this adapter as a connection in an integration in Oracle Integration.



Note:

The use of this adapter may differ depending on the features you have, or whether your instance was provisioned using Standard or Enterprise edition. These differences are noted throughout this guide.

Topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Diversity and Inclusion](#)
- [Related Resources](#)
- [Conventions](#)

Audience

This guide is intended for developers who want to use this adapter in integrations in Oracle Integration.

Documentation Accessibility

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Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and

partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Related Resources

See these Oracle resources:

- Oracle Cloud
<http://cloud.oracle.com>
- *Using Integrations in Oracle Integration Generation 2*
- *Using the Oracle Mapper with Oracle Integration Generation 2*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Understand the SAP S/4HANA Cloud Adapter

Review the following conceptual topics to learn about the SAP S/4HANA Cloud Adapter and how to use it as a connection in integrations in Oracle Integration. A typical workflow of adapter and integration tasks is also provided.

Topics:

- [SAP S/4HANA Cloud Adapter Capabilities](#)
- [What Application Version Is Supported?](#)
- [Workflow to Create and Add an SAP S/4HANA Cloud Adapter Connection to an Integration](#)



Note:

There are overall service limits for Oracle Integration. A service limit is the quota or allowance set on a resource. See [Service Limits](#).

SAP S/4HANA Cloud Adapter Capabilities

The SAP S/4HANA Cloud Adapter enables you to create an integration with an SAP S/4HANA Cloud application. You can configure the SAP S/4HANA Cloud Adapter as an invoke connection in an integration in Oracle Integration.

The SAP S/4HANA Cloud Adapter provides the following benefits:

- Provides metadata caching support.
- Enables simplified integration with the SAP S/4HANA Cloud application.
- Discovers business objects and operations and provides easy mapping to SAP S/4HANA business objects.
- Provides invoke (target) connection support for performing the following types of actions against the selected business object and operation:
 - Query (get records from SAP S/4HANA Cloud)
 - Create (create records in SAP S/4HANA Cloud)
 - Update (update records in SAP S/4HANA Cloud)
 - Delete (delete a record in SAP S/4HANA Cloud)
- Supports all custom objects defined by the user and custom fields created at SAP S/4HANA Cloud along with the standard objects and fields.
- Supports SAP S/4HANA OData APIs protected using basic authentication and client certificate-based authentication.

The SAP S/4HANA Cloud Adapter is one of many predefined adapters included with Oracle Integration. You can configure the SAP S/4HANA Cloud Adapter as an invoke connection in an integration in Oracle Integration.

What Application Version Is Supported?

For information about which application version is supported by this adapter, see the Connectivity Certification Matrix.

See [Connectivity Certification Matrix](#).

Workflow to Create and Add an SAP S/4HANA Cloud Adapter Connection to an Integration

You follow a very simple workflow to create a connection with an adapter and include the connection in an integration in Oracle Integration.

This table lists the workflow steps for both adapter tasks and overall integration tasks, and provides links to instructions for each step.

Step	Description	More Information
1	Access Oracle Integration.	Go to https://instance_URL/ic/home
2	Create the adapter connections for the applications you want to integrate. The connections can be reused in multiple integrations and are typically created by the administrator.	Create an SAP S/4HANA Cloud Adapter Connection
3	Create the integration. When you do this, you add trigger (source) and invoke (target) connections to the integration.	Create Integrations in <i>Using Integrations in Oracle Integration Generation 2</i> and Add the SAP S/4HANA Cloud Adapter Connection to an Integration
4	Map data between the trigger connection data structure and the invoke connection data structure.	Map Data in <i>Using Integrations in Oracle Integration Generation 2</i>
5	(Optional) Create lookups that map the different values used by those applications to identify the same type of object (such as gender codes or country codes).	Manage Lookups in <i>Using Integrations in Oracle Integration Generation 2</i>
6	Activate the integration.	Activate Integrations in <i>Using Integrations in Oracle Integration Generation 2</i>
7	Monitor the integration on the dashboard.	Monitor Integrations in <i>Using Integrations in Oracle Integration Generation 2</i>
8	Track payload fields in messages during runtime.	Assign Business Identifiers for Tracking Fields in Messages and Manage Business Identifiers for Tracking Fields in Messages in <i>Using Integrations in Oracle Integration Generation 2</i>

Step	Description	More Information
9	Manage errors at the integration level, connection level, or specific integration instance level.	Manage Errors in <i>Using Integrations in Oracle Integration Generation 2</i>

2

Create an SAP S/4HANA Cloud Adapter Connection

A connection is based on an adapter. You define connections to the specific cloud applications that you want to integrate. The following topics describe how to define connections.

Topics:

- [Prerequisites for Creating a Connection](#)
- [Create a Connection](#)
- [Upload an SSL Certificate](#)

Prerequisites for Creating a Connection

You must satisfy the following prerequisites to create a connection with the SAP S/4HANA Cloud Adapter.

- [Prerequisites to Use the Basic Authentication Security Policy](#)
- [Prerequisites to Use the Client Certificate-Based Security Policy](#)

Prerequisites to Use the Basic Authentication Security Policy

You must satisfy the following prerequisites if you want to use the Basic Authentication security policy with the SAP S/4HANA Cloud Adapter.

- [Create a Communication User](#)
- [Create a Communication System](#)
- [Create a Communication Arrangement](#)

Create a Communication User

1. Log in to the SAP S/4HANA Cloud application with administrator credentials.
2. Search for `Communication Management` in the search box in the upper right pane, then click **Maintain Communication Users** in the search results.
3. Click **New** to create a new communication user.
4. On the Create Communication User page, enter a user name, description, and password. You can click **Propose Password** to get a system-generated password.

TESTUSER

General

User Data

User Name:* TESTUSER Description:* testuser

Password

Password: *****

Propose Password Deactivate Password

Create Cancel

5. Copy the user name and password for your communication user. You'll need to enter those values on the Connections page when you configure security for your SAP S/4HANA Cloud Adapter connection in Oracle Integration. See [Configure Connection Security](#).
6. Click **Create**.

Create a Communication System

Perform the following steps to create a communication system and assign a communication user to the communication system.

1. Log in to the SAP S/4HANA Cloud application with administrator credentials.
2. Search for **Communication Management** in the search box in the upper right pane, then click **Communication Systems** in the search results.
3. Click **New** to create a new communication system.
4. Enter a system ID and system name, then click **Create**.

New Communication System

System ID:* TEST_SYSTEMS

System Name:* TEST_SYSTEMS

Create Cancel

5. Click a communication system in the list.
6. Under **Technical Data**, enter the host name of your SAP S/4HANA Cloud tenant in the following format.

myxxxxxx.s4hana.ondemand.com

7. Click the **User for Inbound Communication** tab, then click the add (+) icon.

8. Assign the communication user you created and select the authentication method as **User Name and Password**.
9. Click **Save**.

Create a Communication Arrangement

1. Log in to the SAP S/4HANA Cloud application with administrator credentials.
2. Search for `Communication Management` in the search box in the upper right pane, then click **Communication Arrangements** in the search results.
3. Click **New** to create a new communication arrangement.
4. Select your communication scenario, enter an arrangement name, and click **Create**.
5. Click a communication arrangement in the list. The inbound communication user is automatically assigned.
6. Under **Inbound Services**, the service URL to call the OData service can be found in the following format:

`https://your-system-api.s4hana.ondemand.com/sap/opu/odata/sap/API-name`

7. Click **Save**.

Prerequisites to Use the Client Certificate-Based Security Policy

You must satisfy the following prerequisites if you want to use the Client Certificate-Based security policy with the SAP S/4HANA Cloud Adapter.

- [Create a Communication User](#)
- [Create a Communication System](#)
- [Create a Communication Arrangement](#)
- [Upload Client Certificate X.509 into Oracle Integration](#)

Create a Communication User

1. Log in to the SAP S/4HANA Cloud application with administrator credentials.
2. Search for `Communication Management` in the search box in the upper right pane, then click **Maintain Communication Users** in the search results.
3. Click **New** to create a new communication user.
4. On the Create Communication User page, enter a user name, description, and password. You can click **Propose Password** to get a system-generated password.
5. Upload the certificate (.pem file) on the Certificates page.
6. Click **Create**.

Create a Communication System

Perform the following steps to create a communication system and assign a communication user to the communication system.

1. Log in to the SAP S/4HANA Cloud application with administrator credentials.

2. Search for `Communication Management` in the search box in the upper right pane, then click **Communication Systems** in the search results.
3. Click **New** to create a new communication system.
4. Enter a system ID and system name, then click **Create**.
5. Click a communication system in the list.
6. Under **Technical Data**, enter `localhost` in the **Host Name** field.
7. In the **Logical System** field, enter a system name.
8. Click the **User for Inbound Communication** tab, then click the add (+) icon.
9. Assign the communication user you created and select the authentication method as **SSL Client Certificate**.
10. Click the **User for Outbound Communication** tab, then click the add (+) icon.
11. Select the authentication method as **User Name and Password**, and enter the username and password.
12. Click **Create**.
13. Click **Save**.
14. Check that the status is **Active**.

Create a Communication Arrangement

Follow the steps to create a communication agreement. See [Create Communication Agreement](#).

Upload Client Certificate X.509 into Oracle Integration

Upload the X.509 client certificate. See [Upload an SSL Certificate](#).

Create a Connection

Before you can build an integration, you have to create the connections to the applications with which you want to share data.

To create a connection in Oracle Integration:

1. In the left navigation pane, click **Home > Integrations > Connections**.
2. Click **Create**.

Note:

You can also create a connection in the integration canvas of:

- An orchestrated integration (See [Define Inbound Triggers and Outbound Invokes](#).)
- A basic routing integration (See [Add a Trigger \(Source\) Connection](#).)

3. In the **Create Connection — Select Adapter** dialog, select the adapter to use for this connection. To find the adapter, scroll through the list, or enter a partial or full name in the **Search** field and click



Search.

4. In the Create Connection dialog, enter the information that describes this connection.
 - a. Enter a meaningful name to help others find your connection when they begin to create their own integrations. The name you enter is automatically added in capital letters to the **Identifier** field. If you modify the identifier name, don't include blank spaces (for example, SALES OPPORTUNITY).
 - b. Enter optional keywords (tags). You can search on the connection keywords on the Connections page.
 - c. Select the role (direction) in which to use this connection (trigger, invoke, or both). Only the roles supported by the adapter are displayed for selection. When you select a role, only the connection properties and security policies appropriate to that role are displayed on the Connections page. If you select an adapter that supports both invoke and trigger, but select only one of those roles, you'll get an error when you try to drag the adapter into the section you didn't select. For example, let's say you configure a connection for the Oracle Service Cloud (RightNow) Adapter as only an **invoke**. Dragging the adapter to a **trigger** section in the integration produces an error.
 - d. Enter an optional description of the connection.
5. Click **Create**.

Your connection is created. You're now ready to configure the connection details, such as connection properties, security policies, connection login credentials, and (for certain connections) agent group.

Configure Connection Properties

Enter connection information so your application can process requests.

1. Go to the **Connection Properties** section.
2. In the **SAP S4HANA Host** field, enter the SAP S/4 HANA host name. For example:

```
https://host_name-api.s4hana.ondemand.com
```

Configure Connection Security

Configure security for your SAP S/4HANA Cloud Adapter connection.

1. Go to the **Security** section.
2. From the **Security Policy** list, select the security policy.
 - **Basic Authentication**
 - **Client Certificate based Security Policy**
3. If you select **Basic Authentication**:
 - a. In the **Username** field, enter the communication user name that you obtained after performing the steps in the prerequisites section. See [Create a Communication User](#).
 - b. In the **Password** field, enter the password for the communication user that you obtained after performing the steps in the prerequisites section. See [Create a Communication User](#).

- If you select **Client Certificate based Security Policy**:
 - In the **Identity keystore Alias Name** field, provide the identity keystore alias name of the X.509 certificate that you uploaded into Oracle Integration. See [Prerequisites to Use the Client Certificate-Based Security Policy](#).

Test the Connection

Test your connection to ensure that it's configured successfully.

- In the page title bar, click **Test**.
- Wait for a message about the results of the connection test.
 - If the test was successful, then the connection is configured properly.
 - If the test failed, then edit the configuration details you entered. Check for typos, verify URLs and credentials, and download the diagnostic logs for additional details. Continue to test until the connection is successful.
- When complete, click **Save**.

Upload an SSL Certificate

Certificates are used to validate outbound SSL connections. If you make an SSL connection in which the root certificate does not exist in Oracle Integration, an exception is thrown. In that case, you must upload the appropriate certificate. A certificate enables Oracle Integration to connect with external services. If the external endpoint requires a specific certificate, request the certificate and then upload it into Oracle Integration.

To upload an SSL certificate:

- In the left navigation pane, click **Home > Settings > Certificates**. All certificates currently uploaded to the trust store are displayed in the Certificates dialog. The



link enables you to filter by name, certificate expiration date, status, type, category, and installation method (user-installed or system-installed). Certificates installed by the system cannot be deleted.

Name	Type	Category	Status
mykey3 (EXPIRES IN 1 MONTH)	X.509	Identity	Configured
mykey2 (EXPIRES)	X.509	Identity	Configured
recert1586867745048 (EXPIRES IN 4 YEARS)	X.509	Trust	Configured
recert1586863610817 (EXPIRES IN 4 YEARS)	X.509	Trust	Configured
recert1586857607511 (EXPIRES IN 4 YEARS)	X.509	Trust	Configured
recert1586857416600 (EXPIRES IN 4 YEARS)	X.509	Trust	Configured

- Click **Upload** at the top of the page. The Upload Certificate dialog box is displayed.

3. Enter an alias name and optional description.
4. In the **Type** field, select the certificate type. Each certificate type enables Oracle Integration to connect with external services.
 - **X.509 (SSL transport)**
 - **SAML (Authentication & Authorization)**
 - **PGP (Encryption & Decryption)**

X.509 (SSL transport)

1. Select a certificate category.
 - a. **Trust:** Use this option to upload a trust certificate.
 - i. Click **Browse**, then select the trust file (for example, `.cer` or `.crt`) to upload.
 - b. **Identity:** Use this option to upload a certificate for two-way SSL communication.
 - i. Click **Browse**, then select the keystore file (`.jks`) to upload.
 - ii. Enter the comma-separated list of passwords corresponding to key aliases.

 **Note:**

When an identity certificate file (JKS) contains more than one private key, all the private keys must have the same password. If the private keys are protected with different passwords, the private keys cannot be extracted from the keystore.

- iii. Enter the password of the keystore being imported.
 - c. Click **Upload**.

SAML (Authentication & Authorization)

1. Note that **Message Protection** is automatically selected as the only available certificate category and cannot be deselected. Use this option to upload a keystore certificate with SAML token support. Create, read, update, and delete (CRUD) operations are supported with this type of certificate.
2. Click **Browse**, then select the certificate file (`.cer` or `.crt`) to upload.
3. Click **Upload**.

PGP (Encryption & Decryption)

1. Select a certificate category. Pretty Good Privacy (PGP) provides cryptographic privacy and authentication for communication. PGP is used for signing, encrypting, and decrypting files. You can select the private key to use for encryption or decryption when configuring the stage file action.
 - a. **Private:** Uses a private key of the target location to decrypt the file.
 - i. Click **Browse**, then select the PGP file to upload.
 - ii. Enter the PGP private key password.
 - b. **Public:** Uses a public key of the target location to encrypt the file.
 - i. Click **Browse**, then select the PGP file to upload.

- ii. In the **ASCII-Armor Encryption Format** field, select **Yes** or **No**. **Yes** shows the format of the encrypted message in ASCII armor. ASCII armor is a binary-to-textual encoding converter. ASCII armor formats encrypted messaging in ASCII. This enables messages to be sent in a standard messaging format. This selection impacts the visibility of message content. **No** causes the message to be sent in binary format.
 - iii. From the **Cipher Algorithm** list, select the algorithm to use. Symmetric-key algorithms for cryptography use the same cryptographic keys for both encryption of plain text and decryption of cipher text.
- c. Click **Upload**.

3

Add the SAP S/4HANA Cloud Adapter Connection to an Integration

When you drag the SAP S/4HANA Cloud Adapter into the invoke area of an integration, the Adapter Endpoint Configuration Wizard is invoked. This wizard guides you through configuration of the SAP S/4HANA Cloud Adapter endpoint properties.

The following sections describe the wizard pages that guide you through configuration of the SAP S/4HANA Cloud Adapter as an invoke in an integration. You cannot use the SAP S/4HANA Cloud Adapter as a trigger in an integration.

Topics:

- [Basic Info Page](#)
- [Invoke Operations Page](#)
- [Invoke Action Page](#)
- [Summary Page](#)

Basic Info Page

You can enter a name and description on the Basic Info page of each adapter in your integration.

Element	Description
What do you want to call your endpoint?	<p>Provide a meaningful name so that others can understand the responsibilities of this connection. You can include English alphabetic characters, numbers, underscores, and hyphens in the name. You can't include the following characters:</p> <ul style="list-style-type: none">• No blank spaces (for example, My Inbound Connection)• No special characters (for example, #;83& or righ(t)now4) except underscores and hyphens• No multibyte characters
What does this endpoint do?	<p>Enter an optional description of the connection's responsibilities. For example:</p> <p>This connection receives an inbound request to synchronize account information with the cloud application.</p>

Invoke Operations Page

Select the action type to perform on the SAP S/4HANA Cloud application.

Element	Description
Which action do you want to perform on SAP S4HANA?	<ul style="list-style-type: none"> • Query: Retrieves information from the SAP S/4HANA Cloud application corresponding to the selected module and operation. • Create: Creates new records in the SAP S/4HANA Cloud application. • Update: Updates the existing records in the SAP S/4HANA Cloud application. • Delete: Deletes a record from the SAP S/4HANA Cloud application.
Select Module	Select a module name, such as API_SALES_ORDER_SRV , API_PRODUCT_SRV , and so on.
Select Entity	Select an entity name, such as A_CustomerGroupType , A_PlannedOrderCapacityType , and so on.
Select Operation	Select an operation name, such as Get specific item from the collection A_SalesOrderType .

Invoke Action Page

If you selected **Query** on the Operations page, the following options are displayed.

Element	Description
Configure \$expand query option. This enables to expand navigation properties in response.	<p>Select this checkbox if you want to make use of the \$expand option in the query. As a result, the selected response property/properties appears/appear as expanded in the response.</p> <p>If you select this checkbox, the following options are displayed.</p> <ul style="list-style-type: none"> • Filter by navigation property name: Type the initial letters of the navigation property name to filter the display of names in the list. • Configure expand parameters: Select the navigation property such as to_BillingDocument, to_CustomerGroup, and so on. • Your selected expand parameters: Displays the selected navigation property.
Configure \$select option. This enables to select only the required properties in response.	<p>Select this checkbox to limit the properties to receive in the response. If you do not select this checkbox, all the fields appear in the response by default.</p> <p>If you select this checkbox, the following options are displayed.</p> <ul style="list-style-type: none"> • Filter by field name: Type the initial letters of the field name to filter the display of names in the list. • Configure fields: Select a field such as CustomerGroup, SalesOrder, and so on. • Your selected fields: Displays the selected fields.

Summary Page

You can review the specified adapter configuration values on the Summary page.

Element	Description
Summary	<p>Displays a summary of the configuration values you defined on previous pages of the wizard.</p> <p>The information that is displayed can vary by adapter. For some adapters, the selected business objects and operation name are displayed. For adapters for which a generated XSD file is provided, click the XSD link to view a read-only version of the file.</p> <p>To return to a previous page to update any values, click the appropriate tab in the left panel or click Back.</p> <p>To cancel your configuration details, click Cancel.</p>

4

Implement Common Patterns Using the SAP S/4HANA Cloud Adapter

You can use the SAP S/4HANA Cloud Adapter to implement the following common pattern.

Topics:

- [Use the SAP S/4HANA Cloud Business Partner Records to Create Salesforce Customer Accounts](#)

Use the SAP S/4HANA Cloud Business Partner Records to Create Salesforce Customer Accounts

You can use the business partner (customer) records of SAP S/4HANA Cloud to create customer accounts in the Salesforce application. The business partner (customer) records updated in SAP S/4HANA Cloud are fetched and the business partner address details are used to create accounts in the Salesforce application. This implementation pattern provides an overview of the steps.

1. Create a scheduled orchestrated integration.
2. Create a schedule variable to store the last run time.

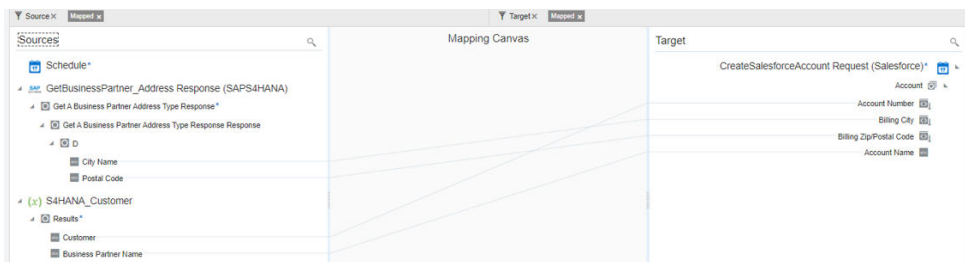
```
$lastrun=""
```

3. Drag an SAP S/4HANA Cloud Adapter into the canvas and configure it as follows to get all the business partner records available in the host URL configured in the SAP S/4HANA Cloud connection.
 - a. On the Basic info page, provide an endpoint name.
 - b. On the Operations page, select the **Query** action, **API_BUSINESS_PARTNER** module, **A_BusinessPartnerType** entity, and **GetAll entities in the collections of A_BusinessPartnerType** operation.
 - c. On the Action page, select the **Configure \$expand query option. This allows to expand navigation properties in response** checkbox.
 - d. Select the required navigation property from the **Configure expand parameters** list (for this example, **to_BusinessPartnerAddress**, **to_BusinessPartnerBank**, **to_BusinessPartnerContact**, **to_Customer**, and so on are selected).
 - e. On the Summary page, review your selections.
4. Drag a for-each action into the canvas and assign results as the repeating element.
5. Drag a switch action into the canvas to check whether or not the business partner (customer) record is null.

```
customer=""
```

When the business partner (customer) record is not null, an SAP S/4HANA Cloud Adapter is configured to get the business partner address. These business partner address details are used to create the customer accounts in Salesforce.

6. Drag a second SAP S/4HANA Cloud Adapter into the canvas and configure it as follows.
 - a. On the Basic info page, provide an endpoint name.
 - b. On the Operations page, select the **Query** action, **API_BUSINESS_PARTNER** module, **A_BusinessPartnerAddressType** entity, and **Get specific item from the collection A_BusinessPartnerAddressType** operation.
 - c. On the Action page, select the **Configure \$expand query option. This allows to expand navigation properties in response** checkbox.
 - d. Select the required navigation property from the **Configure expand parameters** list (for this example, **to_AddressUsage**, **to_EmailAddress**, **to_FaxNumber**, **to_MobilePhoneNumer**, **to_PhoneNumer**, and **to_URLAddress** are selected).
 - e. On the Summary page, review your selections.
7. Perform the required mapping.
8. Drag a Salesforce Adapter into the canvas and configure it as follows:
 - a. On the Basic Info page, provide a name.
 - b. On the Action page, select **Create, Update Or Delete Information**.
 - c. On the Operations page, select the **Create** operation, **Account** business object, and **Use Default Header** checkbox.
 - d. On the Summary page, review your selections.
9. In the mapper, map **Account Number** to **Customer**, **Billing City** to **City Name**, **Billing Zip/Postal Code** to **Postal Code**, and **Account Name** to **Business Partner Name**.



10. When complete, save and activate the integration. The completed integration looks as follows.

