Oracle® Cloud

Using the Microsoft Dynamics 365 CRM Adapter with Oracle Integration 3

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Contents

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

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at `https://www.oracle.com/corporate/accessibility/`.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `https://support.oracle.com/portal/` or visit `Oracle Accessibility Learning and Support` if you are hearing impaired.

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 at `http://cloud.oracle.com`
- *Using Integrations in Oracle Integration 3*
- *Using the Oracle Mapper with Oracle Integration 3*
- Oracle Integration documentation on the Oracle Help Center.

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.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	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 Microsoft Dynamics 365 CRM Adapter

Review the following topics to learn about the Microsoft Dynamics 365 CRM 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:

Microsoft Dynamics 365 CRM Adapter Capabilities

The Microsoft Dynamics 365 CRM Adapter enables you to integrate a cloud application that exposes data by OData services and OData APIs with Oracle Integration. You can configure the Microsoft Dynamics 365 CRM Adapter as a trigger or invoke connection in an integration in Oracle Integration. The Microsoft Dynamics 365 CRM Adapter facilitates integrating CRM modules such as sales and customer service, providing an optimal navigation experience and user interface.

The Microsoft Dynamics 365 CRM Adapter provides the following capabilities:

- Supports metadata operations for business, system and custom entities.
- Supports Create, Update, Delete, Retrieve by ID, and Retrieve All operations for entities.
- Supports inbound connection trigger functionality to capture events from Microsoft Dynamics 365, enabling real-time data synchronization and event-driven integrations.
- Supports OData APIs protected using OAuth 2.0 client credentials and OAuth 2.0 authorization code (three-legged) credentials authentication for both trigger and invoke connections.
- Supports the top and count for query operations.
- Supports custom fields for business, system, and custom entities.
- Supports implementing secure egress (dedicated NAT gateway) for invoking OData APIs using a private endpoint as well as a public gateway.
- Supports custom queries for the Query operation.
- Supports multilevel navigation ($expand on child entities) for the Get and Query operations, enabling Navigation and Select query parameters for:
  - Invoke connections (Retrieve All and Retrieve by ID operations)
  - Trigger connections (Create, Update, and Merge operations).

This capability allows for $filter and $orderby query parameters for an invoke connection Retrieve All operation and provides outbound single-level navigation for Create and Update operations.

The Microsoft Dynamics 365 CRM Adapter is one of many predefined adapters included with Oracle Integration. See the Adapters page in the Oracle Help Center.

Microsoft Dynamics 365 CRM Adapter Restrictions

Note the following Microsoft Dynamics 365 CRM Adapter restrictions.

- Navigation properties are not supported. Create operations do not work for the entities that require the navigation property (Child Entity) as the mandatory field to pass the payload.
- The Microsoft Dynamics 365 CRM Adapter is currently certified only for sales and customer service applications.

> **Note:**
>
> There are overall service limits for Oracle Integration. A service limit is the quota or allowance set on a resource. See Service Limits.

What Application Version Is Supported?

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

Workflow to Create and Add an Microsoft Dynamics 365 CRM 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	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 Microsoft Dynamics 365 CRM Adapter Connection
2	Create the integration. When you do this, you add trigger (source) and invoke (target) connections to the integration.	Understand Integration Creation and Best Practices in *Using Integrations in Oracle Integration 3* and Add the Microsoft Dynamics 365 CRM Adapter Connection to an Integration
3	Map data between the trigger connection data structure and the invoke connection data structure.	Map Data in *Using Integrations in Oracle Integration 3*

Step	Description	More Information
4	(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 *Using Integrations in Oracle Integration 3*
5	Activate the integration.	Activate an Integration in *Using Integrations in Oracle Integration 3*
6	Monitor the integration on the dashboard.	Monitor Integrations During Runtime in *Using Integrations in Oracle Integration 3*
7	Track payload fields in messages during runtime.	Assign Business Identifiers for Tracking Fields in Messages and Track Integration Instances in *Using Integrations in Oracle Integration 3*
8	Manage errors at the integration level, connection level, or specific integration instance level.	Manage Errors in *Using Integrations in Oracle Integration 3*

2 Create an Microsoft Dynamics 365 CRM Adapter Connection

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

Topics:

- Prerequisites for Creating a Connection
- Create a Connection

Prerequisites for Creating a Connection

You must satisfy the following prerequisites to create a connection with the Microsoft Dynamics 365 CRM Adapter:

- Obtain the Microsoft Dynamics 365 Organization URL and API Version
- Register an Application
- Create a New Client Secret
- Assign API Permissions

Obtain the Microsoft Dynamics 365 Organization URL and API Version

Obtain the Microsoft Dynamics 365 organizational URL and API version. See View developer resources. The Web API Endpoint URL is the Microsoft Dynamics 365 organizational URL followed by the API version.

Register an Application

Register an application in Microsoft Entra ID, and obtain the tenant ID, client ID, and client secret.

1. Sign in to the Microsoft Azure management portal using an account with the administrator permission.
2. Navigate to **Microsoft Entra ID**, and then to **App registrations**.
3. Click **New Registrations**.
4. Enter a name for the application and select a supported account type.
5. Optionally, under **Redirect URI**, enter the redirect URI in the following format:

   ```
   https://OIC_instance_URL/icsapis/agent/oauth/callback
   ```

> **Note:**
>
> A redirect URI is only required if you want to configure the Authorization Code Credentials security policy for your Microsoft Dynamics 365 connection.

6. Click **Register**.
   The tenant ID and client ID are displayed.
7. Copy the values for the tenant ID and client ID.
   You'll need to enter those values on the Connections page when you configure security for the Microsoft Dynamics 365 CRM Adapter.

> **Note:**
>
> For the Client Credentials security policy, make sure to create an application user for Microsoft Dynamics 365 to use this tenant ID. For all read, write, and delete permissions, assign the security roles as Service Reader, Service Writer, and Service Deleter.

Create a New Client Secret

1. Select the application that you registered. See Register an Application.
2. Click **Certificates & secrets**.
3. Click **Client secrets**, and then click **New client secret**.
4. Enter a description of the secret and select a duration.
5. Click **Add**.
   The client secret is displayed in the **Value** column.
6. Copy the client secret from the **Value** column.
   You'll need to enter the client secret on the Connections page when you configure security for the Microsoft Dynamics 365 CRM Adapter. See Configure Connection Security.

Assign API Permissions

You must grant API permissions to the application that you created in Microsoft Entra ID.

1. Sign in to the Microsoft Azure management portal using an account with the administrator permission.
2. Navigate to **Microsoft Entra ID**, and then to **App registrations**.
3. Select the application that you registered. See Register an Application.
4. Click **View API permissions**.
5. Click **Add a permission**.
6. Click the **Microsoft APIs** tab and select **Dynamics CRM**.
7. Select **Delegated permissions** and the **user_impersonation** check box, then click **Add permissions**.

Create a Connection

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

> **Note:**
>
> You can also create a connection in the integration canvas. See why working with projects is preferred.

To create a connection in Oracle Integration:

1. Decide where to start:
   - Work in a project (see why working with projects is preferred).
     a. In the navigation pane, click **Projects**.
     b. Select the project name.
     c. Click **Integrations** .
     d. In the **Connections** section, click **Add** if no connections currently exist or **+** if connections already exist. The Create connection panel opens.
   - Work outside a project.
     a. In the navigation pane, click **Design**, then **Connections**.
     b. Click **Create**. The Create connection panel opens.
2. 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.
3. Enter the information that describes this connection.

Element	Description
Name	Enter a meaningful name to help others find your connection when they begin to create their own integrations.
Identifier	Automatically displays the name in capital letters that you entered in the **Name** field. If you modify the identifier name, don't include blank spaces (for example, `SALES OPPORTUNITY`).

Element	Description
Role	Select the role (direction) in which to use this connection. **Note**: *Only* the roles supported by the adapter you selected are displayed for selection. Some adapters support all role combinations (trigger, invoke, or trigger and invoke). Other adapters support fewer role combinations. 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, assume 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.
Keywords	Enter optional keywords (tags). You can search on the connection keywords on the Connections page.
Description	Enter an optional description of the connection.
Share with other projects	**Note**: This field only appears if you are creating a connection in a project. Select to make this connection publicly available in other projects. Connection sharing eliminates the need to create and maintain separate connections in different projects. When you configure an adapter connection in a different project, the **Use a shared connection** field is displayed at the top of the Connections page. If the connection you are configuring matches the same type and role as the publicly available connection, you can select that connection to reference (inherit) its resources. See Add and Share a Connection Across a Project.

4. Click **Create**.

   Your connection is created. You're now ready to configure the connection properties, security policies, and (for some connections) access type.

5. Follow the steps to configure a connection.
   The connection property and connection security values are specific to each adapter. Your connection may also require configuration with an access type such as a private endpoint or an agent group.

6. Test the connection.

Configure Connection Properties

Enter connection information so your application can process requests.

1. Go to the **Properties** section.

2. In the **Microsoft Dynamics 365 Organization URL** field, enter the organization ID URL. See Obtain the Microsoft Dynamics 365 Organization URL and API Version. For example:

```
https://organization_idapi.crm8.dynamics.com
```

3. In the **Tenant ID** field, enter the tenant ID for your Microsoft Dynamics 365 instance. See Prerequisites for Creating a Connection.
4. In the **API version** field, enter the Microsoft Dynamics 365 API version.

Configure Connection Security

Configure security for your Microsoft Dynamics 365 CRM Adapter connection.

1. Go to the **Security** section.
2. Select the security policy to use.

Security Policy	Fields
Client Credentials	a. **Client ID** — Enter the client identifier issued to the client during the registration process. b. **Client secret** — Enter the client secret.
Authorization Code Credentials	a. **Client ID** — Enter the client identifier issued to the client during the registration process. b. **Client secret** — Enter the client secret.

Note:

When you configure the security policy for the Microsoft Dynamics 365 CRM Adapter connection, the **Provide Consent** option is displayed. You must verify the connection properties by clicking **Provide Consent**. Configuring all the details alone is not sufficient.

Configure the Endpoint Access Type

Configure access to your endpoint. Depending on the capabilities of the adapter you are configuring, options may appear to configure access to the public internet, to a private endpoint, or to an on-premises service hosted behind a fire wall.

- Select the Endpoint Access Type
- Ensure Private Endpoint Configuration is Successful

Select the Endpoint Access Type

1. Go to the **Access type** section.
2. Select the option for accessing your endpoint.

Option	This Option Appears If Your Adapter Supports ...
Public gateway	Connections to endpoints using the public internet.
Private endpoint	Connections to endpoints using a private virtual cloud network (VCN). **Note**: To connect to private endpoints, you must complete prerequisite tasks in the Oracle Cloud Infrastructure Console. Failure to do so results in errors when testing the connection. See Connect to Private Resources in *Provisioning and Administering Oracle Integration 3* and Troubleshoot Private Endpoints in *Using Integrations in Oracle Integration 3*.

Ensure Private Endpoint Configuration is Successful

- To connect to private endpoints, you must complete prerequisite tasks in the Oracle Cloud Infrastructure Console. Failure to do so results in errors when testing the connection. See Connect to Private Resources in *Provisioning and Administering Oracle Integration 3*.
- When configuring an adapter on the Connections page to connect to endpoints using a private network, specify the fully-qualified domain name (FQDN) and *not* the IP address. If you enter an IP address, validation fails when you click **Test**.
- IPSec tunneling and FastConnect are not supported for use with private endpoints.

Test the Connection

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

1. In the page title bar, click **Test**. What happens next depends on whether your adapter connection uses a Web Services Description Language (WSDL) file. Only some adapter connections use WSDLs.

If Your Connection...	Then...
Doesn't use a WSDL	The test starts automatically and validates the inputs you provided for the connection.
Uses a WSDL	A dialog prompts you to select the type of connection testing to perform: • **Validate and Test**: Performs a full validation of the WSDL, including processing of the imported schemas and WSDLs. Complete validation can take several minutes depending on the number of imported schemas and WSDLs. No requests are sent to the operations exposed in the WSDL. • **Test**: Connects to the WSDL URL and performs a syntax check on the WSDL. No requests are sent to the operations exposed in the WSDL.

2. 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 and verify URLs and credentials. Continue to test until the connection is successful.
3. When complete, click **Save**.

3

Add the Microsoft Dynamics 365 CRM Adapter Connection to an Integration

When you drag the Microsoft Dynamics 365 CRM Adapter into the trigger or invoke area of an integration, the Adapter Endpoint Configuration Wizard is invoked. This wizard guides you through configuration of the Microsoft Dynamics 365 CRM Adapter endpoint properties.

The following sections describe the wizard pages that guide you through configuration of the Microsoft Dynamics 365 CRM Adapter as a trigger or an invoke in an integration.

Topics:

- Basic Info Page
- Trigger Operations Page
- Trigger Query Parameters Page
- Invoke Action Page
- Invoke Operations Page
- Invoke Query Parameters 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?	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: • 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?	Enter an optional description of the connection’s responsibilities. For example: `This connection receives an inbound request to synchronize account information with the cloud application.`

Trigger Operations Page

Select the operation type to perform.

Element	Description
Select Entity type	Select the entity type to perform from the list. • **Business** • **Custom** • **System** • **All**
Select Entity	Select the entity from the list based on the selected entity type.
Select Operation	Select the operation to execute. • **Create** • **Update** • **Delete** • **Merge** **Note**: The **Merge** operation is available only for a few selected entities.

Trigger Query Parameters Page

Configure query parameters for the **Create**, **Update**, and **Merge** operations.

Element	Description
Select navigation properties	Select to get the child entities associated with a selected entity type in the response. That is, you can expand the navigation property of an entity. • **Filters by navigation name:** Enter the initial letters to filter the display of navigation property names. • **Configure expand parameters:** Lists the expand query parameters that meet the selection criteria. • **Your selected expand parameters:** Lists your expand query parameters selection. **Note**: The navigation property supports multiple levels of hierarchy. However, within the shuttle box, only the first-level navigation property is available by default. To enable multilevel navigation, modifications must be made through the **Edit Query** option.
Select required fields in response	Allows you to request a specific set of properties (required fields) for an entity. • **Filters by field name**: Enter the initial letters to filter the display of field names. • **Configure fields**: Lists the fields that meet the selection criteria. • **Your selected fields**: Lists your field selection.

Element	Description

Edit Query	The child page shows a query generated based on your selected query parameters. You can edit and save the query as needed.
	Note:
	• You can use this option to add up to fifth-level navigation properties.
	• For Customized Query:
	  – If the query is edited, the Summary Page shows the edited query under the **Customized Query** section.
	  – The Configure Query Parameter page does not provide the option to select from the shuttle box.
	  – Only the **Edit Query**, **Try Query**, and **Reset Configuration** options are available.
	  – Revisiting the trigger after adding a customized query shows a warning message above that shows the previously-selected query.

Try Query	When the query is successful, the child page shows the response according to the specific ID provided. If it fails, an error message is shown. **Note**: The **Try Query** option is mandatory for **Create**, **Update**, and **Merge** operations. The child page shows where you must provide the ID details for the newly added trigger. Click **Test** to view the response. Click **Continue** to proceed.
Reset Configuration	If the **Query** is customized (that is, edited) and the trigger connection is then re-edited, a warning message is displayed. Clicking **Reset Configuration** clears the customized query entirely and returns the default configuration.

Invoke Action Page

Select the action type to perform.

Element	Description
Which action do you want to perform?	Select the action type to perform from the list. • **Create, Update or Delete** • **Query or Search Information**

Invoke Operations Page

Select the operation type to perform based on the action you chose on the invoke Action page.

- Create, Update or Delete
- Query or Search Information

Create, Update or Delete

If you select **Create, Update or Delete** on the Action page, the following options are displayed. The **Create** and **Update** operations for single-level navigation are directly available in the mapper.

Element	Description
Select Entity type	Select the entity type to perform from the list. • **Business** • **Custom** • **System** • **All**
Select Entity	Choose the entity from the list based on the selected entity type.
Select Operation	Select the operation to execute. • **Create** • **Update** • **Delete**

Query or Search Information

If you select **Query or Search Information** on the Action page, the following options are displayed.

Element	Description
Select Entity type	Select the entity type to perform from the list. • **Business** • **Custom** • **System** • **All**
Select Entity	Choose the entity from the list based on the selected entity type.
Select Operation	Select the operation to execute. • **Retrieve by ID** • **Retrieve All**

Invoke Query Parameters Page

Configure the invoke query parameters for the **Retrieve All** and **Retrieve by ID** operations.

- Retrieve All
- Retrieve by ID

Retrieve All

This page appears when you select the **Retrieve All** option on the Operations page.

Element	Description
Select navigation properties	Select to get the child entities associated with a selected entity type in the response. That is, you can expand the navigation property of an entity. • **Filters by navigation name:** Enter the initial letters to filter the display of navigation properties names. • **Configure expand parameters:** Lists the expand query parameters that meet the selection criteria. • **Your selected expand parameters:** Lists your expand query parameters selection. **Note**: The navigation property supports multiple levels of hierarchy. However, within the shuttle box, only the first-level navigation property is available by default. To enable multilevel navigation, modifications must be made through the **Edit Query** option.
Select required fields in response	Allows you to request a specific set of properties (required fields) for an entity. • **Filters by field name**: Enter the initial letters to filter the display of field names. • **Configure fields**: Lists the fields that meet the selection criteria. • **Your selected fields**: Lists your field selection.
Add $orderby Query Parameters	Allows you to sort the result set in an ascending or descending order. Example: `https: //host/service.svc/Order?$orderby=ShipCountry`
Add $filter Query Parameters	Allows you to filter the set of resources that are returned in the response by applying conditions. Example: `https://host/service.svc/Oreder?$filetr = ShipCountry`
Edit Query	The child page shows a query generated based on your selected query parameters. You can edit and save the query as needed. **Note**: • You can use this option to add up to fifth-level navigation properties. • For Customized Query: – If the query is edited, the Summary Page shows the edited query under the **Customized Query** section. – The Configure Query Parameter page does not provide the option to select from the shuttle box. – Only the **Edit Query**, **Try Query**, and **Reset Configuration** options are available. – Revisiting the invoke after adding a customized query shows a warning message above that shows the previously-selected query.
Try Query	When the query is successful, the child page shows the top five rows. If it fails, an error message is shown. **Note**: The **Try Query** option is mandatory for **Create**, **Update**, and **Merge**. The child page displays where you must provide the ID details for the newly added invoke. Click **Test** to view the response. Click **Continue** to proceed.

Element	Description
Reset Configuration	If the **Query** is customized (that is, edited) and the invoke connection is then re-edited, a warning message is displayed. Clicking **Reset Configuration** clears the customized query entirely and returns the default configuration.

Retrieve by ID

This page appears when you select the **Retrieve by ID** option on the Operations page.

Element	Description
Select navigation properties	Select to get the child entities associated with a selected entity type in the response. That is, you can expand the navigation property of an entity. • **Filters by navigation name:** Enter the initial letters to filter the display of navigation properties names. • **Configure expand parameters:** Lists the expand query parameters that meet the selection criteria. • **Your selected expand parameters:** Lists your expand query parameters selection. **Note**: The navigation property supports multiple levels of hierarchy. However, within the shuttle box, only the first-level navigation property is available by default. To enable multilevel navigation, modifications must be made through the **Edit Query** option.
Select required fields in response	Allows you to request a specific set of properties (required fields) for an entity. • **Filters by field name**: Enter the initial letters to filter the display of field names. • **Configure fields**: Lists the fields that meet the selection criteria. • **Your selected fields**: Lists your field selection.
Edit Query	The child page shows a query generated based on your selected query parameters. You can edit and save the query as needed. **Note**: • You can use this option to add up to fifth-level navigation properties. • For Customized Query: – If the query is edited, the Summary Page shows the edited query under the **Customized Query** section. – The Configure Query Parameter page does not provide the option to select from the shuttle box. – Only the **Edit Query**, **Try Query**, and **Reset Configuration** options are available. – Revisiting the invoke after adding a customized query shows a warning message above that shows the previously-selected query.
Try Query	When the query is successful, the child page shows the top five rows. If it fails, an error message is shown. **Note**: The **Try Query** option is mandatory for **Create**, **Update**, and **Merge**. The child page shows where you must provide the ID details for the newly added invoke. Click **Test** to view the response. Click **Continue** to proceed.

Element	Description
Reset Configuration	If the **Query** is customized (that is, edited) and the invoke connection is then re-edited, a warning message is displayed. Clicking **Reset Configuration** clears the customized query entirely and returns the default configuration.

Summary Page

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

Element	Description
Summary	Displays a summary of the configuration values you defined on previous pages of the wizard. 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. To return to a previous page to update any values, click the appropriate tab in the left panel or click **Go back**. To cancel your configuration details, click **Cancel**.