



Informatica® Data Integration - Free & PayGo

Microsoft Dynamics 365 for
Sales Connector

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Preface

Use *Microsoft Dynamics 365 for Sales Connector* to learn how to read from Microsoft Dynamics 365 for Sales by using Data Integration. Learn to create a connection, develop mappings, and run mapping tasks in Data Integration.

Informatica Resources

Informatica provides you with a range of product resources through the Informatica Network and other online portals. Use the resources to get the most from your Informatica products and solutions and to learn from other Informatica users and subject matter experts.

Informatica Network

The Informatica Network is the gateway to many resources, including the Informatica Knowledge Base and Informatica Global Customer Support. To enter the Informatica Network, visit <https://network.informatica.com>.

As an Informatica Network member, you have the following options:

- Search the Knowledge Base for product resources.
- View product availability information.
- Create and review your support cases.
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Product Availability Matrices (PAMs) indicate the versions of the operating systems, databases, and types of data sources and targets that a product release supports. You can browse the Informatica PAMs at <https://network.informatica.com/community/informatica-network/product-availability-matrices>.

Informatica Velocity

Informatica Velocity is a collection of tips and best practices developed by Informatica Professional Services and based on real-world experiences from hundreds of data management projects. Informatica Velocity represents the collective knowledge of Informatica consultants who work with organizations around the world to plan, develop, deploy, and maintain successful data management solutions.

You can find Informatica Velocity resources at <http://velocity.informatica.com>. If you have questions, comments, or ideas about Informatica Velocity, contact Informatica Professional Services at ips@informatica.com.

Informatica Marketplace

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You can contact a Global Support Center by telephone or through the Informatica Network.

To find your local Informatica Global Customer Support telephone number, visit the Informatica website at the following link:

<https://www.informatica.com/services-and-training/customer-success-services/contact-us.html>.

To find online support resources on the Informatica Network, visit <https://network.informatica.com> and select the eSupport option.

CHAPTER 1

Introduction to Microsoft Dynamics 365 for Sales Connector

You can use Microsoft Dynamics 365 for Sales Connector to connect to Microsoft Dynamics 365 for Sales from Data Integration. You can connect to Microsoft Dynamics 365 for Sales deployed online or on-premises.

Use Microsoft Dynamics 365 for Sales Connector to securely read data from Microsoft Dynamics 365 for Sales. You can use Microsoft Dynamics 365 for Sales objects as sources and lookups in mappings and mapping tasks.

When you run a mapping or mapping task, the agent uses the OData API to perform the specified operation and read data from Microsoft Dynamics 365 for Sales.

Use FetchXML as a query to read data from Microsoft Dynamics 365 for Sales.

Microsoft Dynamics 365 for Sales Connector assets

Create assets in Data Integration to integrate data using Microsoft Dynamics 365 for Sales Connector.

When you use Microsoft Dynamics 365 for Sales Connector, you can include the following Data Integration assets:

- Data transfer task
- Mapping
- Mapping task

For more information about configuring assets and transformations, see *Mappings*, *Transformations*, and *Tasks* in the Data Integration documentation.

Administration of Microsoft Dynamics 365 for Sales Connector

You can use Microsoft Dynamics 365 for Sales Connector after the organization administrator registers a native application with Azure Active Directory for password grant authentication or a Web application for client certificate grant authentication.

Authentication

You can select the Microsoft Dynamics 365 for Sales server type as on-premise or online and then select the authentication type in the Microsoft Dynamics 365 connection properties to access Microsoft Dynamics 365 for Sales online or on-premises from Data Integration.

You can use the following authentication types to connect based on the online or on-premises deployment of Microsoft Dynamics 365 for Sales:

OAuth 2.0 Password Grant

Applicable to access Microsoft Dynamics 365 for Sales online and on-premises.

Specify the Microsoft Dynamics 365 for Sales web API URL, user name, password, and application ID in the Microsoft Dynamics 365 for Sales connection properties to access Microsoft Dynamics 365 for Sales. To access Microsoft Dynamics 365 for Sales on-premises, you must additionally specify the security token service URL in the following format: `https://sts1.<company>.com/adfs/oauth2/token`

For additional configurations, see ["Use a native application with Azure Active Directory for password grant authentication" on page 7](#)

OAuth 2.0 Client Certificate Grant

Applicable to access Microsoft Dynamics 365 for Sales online.

Specify the Microsoft Dynamics 365 for Sales web API URL, application ID, tenant ID, keystore file, keystore password, key alias, and key password to access Microsoft Dynamics 365 for Sales. For additional configurations, see ["Use a web application for client certificate grant authentication" on page 8](#)

OAuth 2.0 Client Secret Grant

Applicable to access Microsoft Dynamics 365 for Sales online.

Specify the Microsoft Dynamics 365 for Sales application ID and client secret to access Microsoft Dynamics 365 for Sales. For additional configurations, see ["Use a web application for client secret grant authentication" on page 10](#)

Use a native application with Azure Active Directory for password grant authentication

Azure Active Directory is a cloud-based directory that provides identity management services. You can use Azure Active Directory to securely communicate with Microsoft Dynamics 365 for Sales.

To use the Password Grant authentication for Microsoft Dynamics 365 for Sales Connector, the organization administrator needs to register a native application with Azure Active Directory. After the organization administrator registers the native application with Azure Active Directory, you can communicate with the services of Microsoft Dynamics 365 for Sales.

Note: It is not recommended to use the Password Grant authentication type for new connections.

To register a native application with Azure Active Directory, click the following URL:

<https://docs.microsoft.com/en-us/dynamics365/operations/dev-itpro/data-entities/services-home-page>

Use a web application for client certificate grant authentication

You must have a valid certificate to use the client certificate grant authentication type.

Note: You can run the following commands from any machine and use the certificates in the Azure Active Directory application.

1. Run the following command to create a public-private key pair:

```
keytool -genkey -alias <keypair_name1> -keyalg <key_algorithm> -validity <number_days> -  
keystore <path and file name of the generated certificate> -storetype <store_type> -  
keypass <key_password> -storepass <store_password>
```

For example, keytool -genkey -alias keyalias -keyalg RSA -validity 1825 -keystore
"C:\Cdrive\Cloud\R27\MSDCRM_WebAPI\MSDCRM_WebAPI\certificate\iicsdummy.com\federated.jks"
-storetype JKS -keypass keypassword -storepass changeit

2. Run the following commands to import the root CA certificate(s) followed by the user's signed certificate to the keystore:

```
a. keytool -import -trustcacerts -alias <keypair_name2> -file <CA_certificate_name> -  
keystore <path and file name of the generated certificate>
```

For example, keytool -import -trustcacerts -alias root -file gd_bundle-g2-g1.crt -
keystore "C:\Cdrive\Cloud\R27\MSDCRM_WebAPI\MSDCRM_WebAPI\certificate\iicsdummy.com
\federated.jks"

```
b. keytool -import -trustcacerts -alias <keypair_name1> -file  
<user's_signed_certificate_name> -keystore <path and file name of the generated  
certificate>
```

For example, keytool -import -trustcacerts -alias keyalias -file b2024001944cdb12.crt -
keystore "C:\Cdrive\Cloud\R27\MSDCRM_WebAPI\MSDCRM_WebAPI\certificate\iicsdummy.com
\federated.jks"

Note: The above steps might vary depending on the types of files you receive from the CA. You might also receive a single file with all the certificates for which you only need to perform step b.

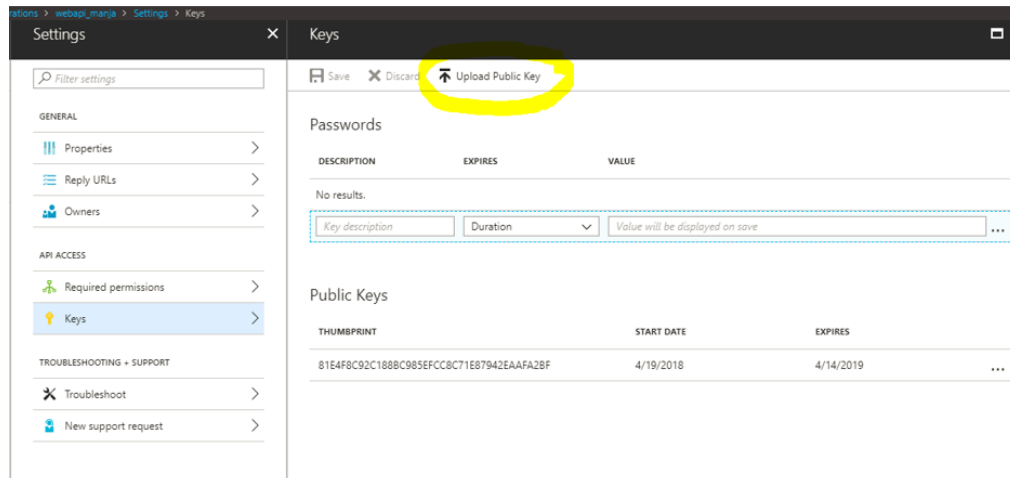
Do not perform these steps for self-signed certificates.

3. Run the following command to export the certificate from the keystore:

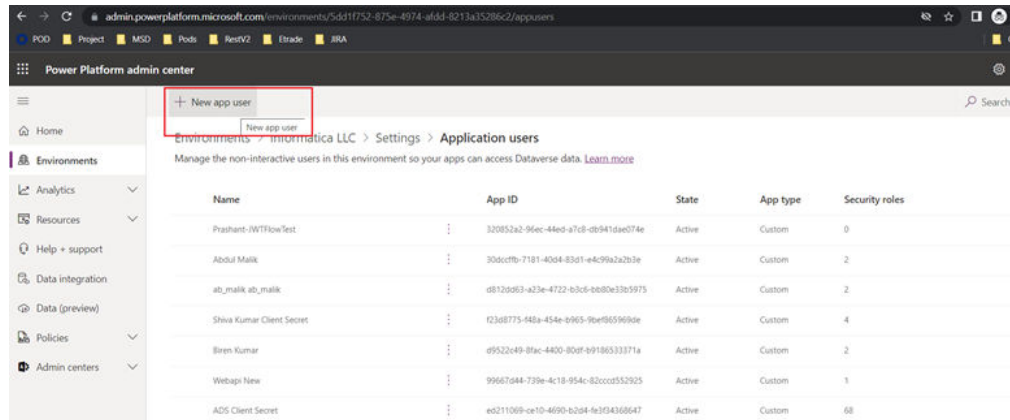
```
keytool -export -alias <keypair_name1> -file <certificate_name> -keystore <path and file  
name of the generated certificate>
```

For example, keytool -export -alias keyalias -file keyalias.crt -keystore "C:\Cdrive\Cloud
\R27\MSDCRM_WebAPI\MSDCRM_WebAPI\certificate\iicsdummy.com\federated.jks"

4. Upload the certificate or public key under a new Web application.

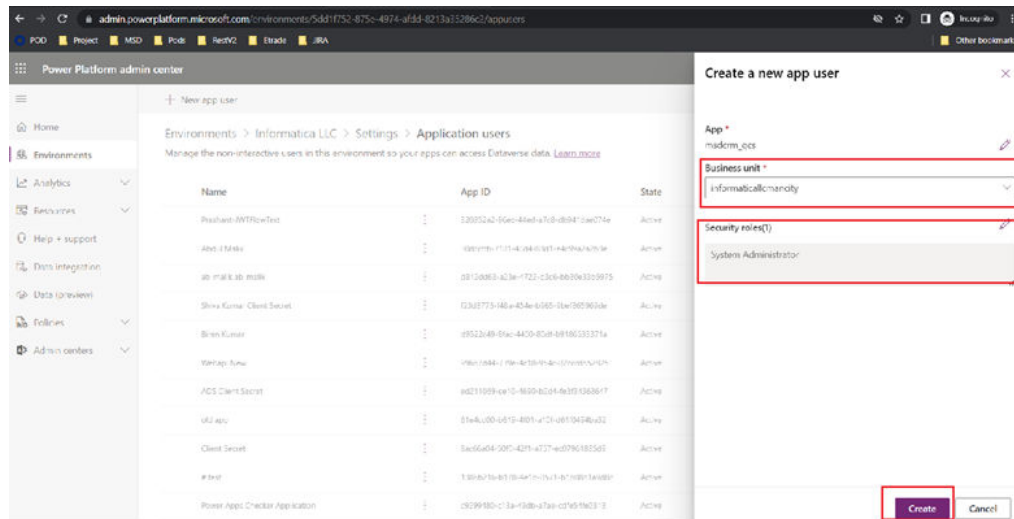


5. Log in to <https://admin.powerplatform.microsoft.com/> to create a new application user for the registered application.
6. Navigate to **Environments** and select the required environment.
7. In the **Settings** option for the environment, click **Users+permissions**.
8. Select the **Applications users** option.
9. Click **+New app user**.



A tab opens on the right requesting for App and User details.

10. Create a new application user and enter the details shown in the following image:



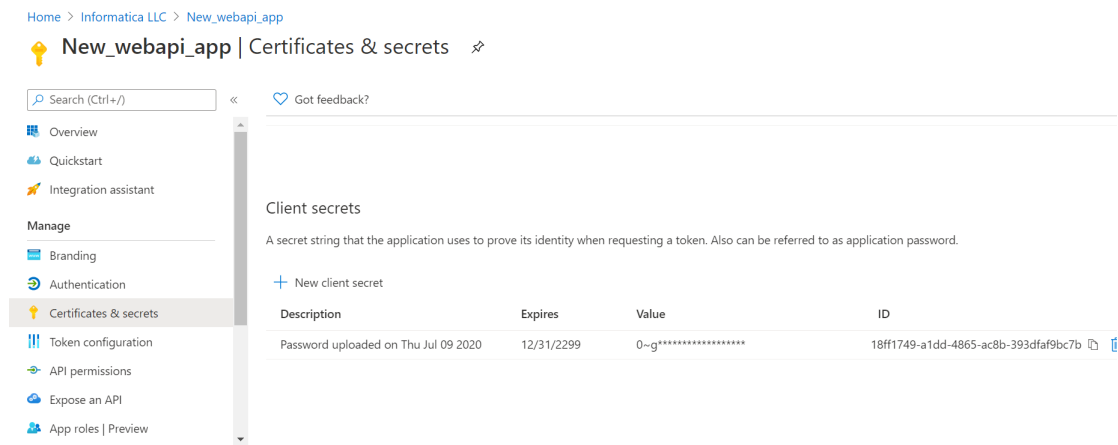
You can choose an App, a Business Unit, and Security role for the new application user.

11. Click **Create**.
12. You will need to enter the application ID, keystore file, keystore password, key alias, and key password when you create a connection in Informatica Cloud.

Use a web application for client secret grant authentication

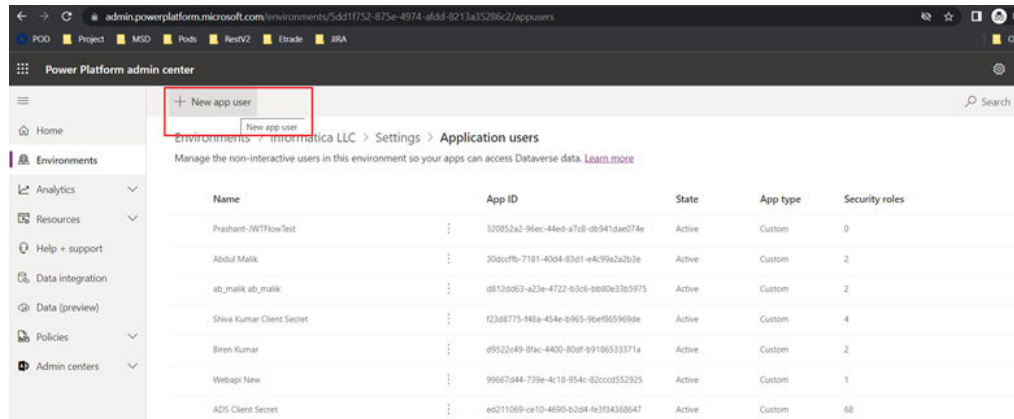
You can configure OAuth 2.0 Client Secret Grant authentication to connect to Microsoft Dynamics 365 for Sales.

1. Go to the Azure registered applications page in Azure Active Directory.
2. Select your application.
3. Navigate to Certificates and Secrets page.



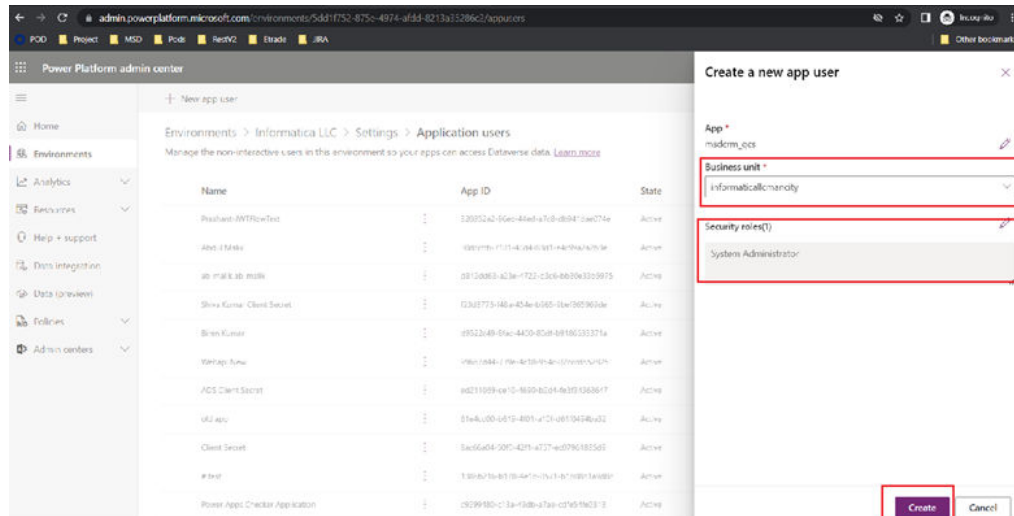
4. Click **New client secret** to generate a client secret.
5. Log in to <https://admin.powerplatform.microsoft.com/> to create a new application user for the registered application.

6. Navigate to **Environments** and select the required environment.
7. In the **Settings** option for the environment, click **Users+permissions**.
8. Select the **Applications users** option.
9. Click **+New app user**.



A tab opens on the right requesting for App and User details.

10. Create a new application user and enter the details shown in the following image:



You can choose an App, a Business Unit, and Security role for the new application user.

11. Click **Create**.
12. You will need to enter the application ID and client secret when you create a connection in Informatica Cloud.

Rules and guidelines for Microsoft Dynamics 365 for Sales

Consider the following rules and guidelines when you use Microsoft Dynamics 365 for Sales source operations:

- Microsoft Dynamics 365 for Sales Connector supports only the following DateTime format: `yyyy-mm-ddThh:mm:ssZ`. For example, 2016-12-31T00:00:00Z, where Z represents the UTC timezone.
- When you fetch a large number of records from Microsoft Dynamics 365 for Sales, set the JVM options for type DTM to increase the -Xms and -Xmx values in the system configuration details of the Secure Agent, and then restart the Secure Agent.
- You can set the JVM property `-DMSD_SALES_ADAPTER_LOG_LEVEL=ALL` to configure unique request IDs for all the requests so that they can be uniquely identified at the Microsoft Dynamics 365 for Sales server. The request ID is sent as a header with the request when you configure the JVM property.
- The input for Customer, Owner, and Lookup data types should be in the following format:
`/LogicalCollectionName(guid)` or `LogicalCollectionName(guid)`
- You can use the `$LastRunTime` variable in a simple data filter for a source object.
- Before you use Microsoft Dynamics 365 Connector for Sales, allow access to the domains listed in the following Knowledge base article:[000186283](#)

Rules and guidelines for FetchXML query and record name aliases

Consider the following rules and guidelines when you use FetchXML query and record name aliases in Microsoft Dynamics 365 for Sales sources and lookups:


- To configure a FetchXML query, you must select the source type as **Multiple Objects**. Then, select the **Add Sibling** option to add multiple objects. Depending upon the relationship name selected, the related object is shown up for the primary object in the **Add Sibling Object** window.
- The primary entity in the FetchXML query and the primary object in the source should be the same.
- Attributes should not have aliases in the FetchXML query.
- You must specify an alias map in the **Record Name Aliases** field. The map holds the alias names for each linked entity that is part of the FetchXML query. The map is required because the result dataset contains modified field names for the linked objects.
- If you use a single source object, the **Record Name Aliases** field is optional.
- The linked-entity name and alias specified in the **Record Name Aliases** field should be the same as in the FetchXML query.
- The mapped attributes in the field mapping must match the attributes mentioned in the FetchXML query. Otherwise, the non-matching attributes are ignored.
- There is a URL length limit on the FetchXML query. To fetch more elements, use `<all-attributes />` in the FetchXML query.
- You can configure the `$LastRuntime` and `$LastRunDate` parameters as part of the FetchXML query. Do not use quotes when you configure the parameters in the query.
- You can fully parameterize a maximum of 600 characters in the FetchXML query.
- To fetch all the records from Microsoft Dynamics 365 for Sales, enter the term `#INFA_PAGING#` in the FetchXML query.










For example,

```
<fetch mapping="logical" #INFA_PAGING#>
  <entity name="new_alldatatypes">
    <attribute name="new_name"/>
    <link-entity name="account" from="accountid" to="new_customer" alias="acc" >
      <attribute name="name" />
    </link-entity>
  </entity>
</fetch>
```

When you use Microsoft Dynamics 365 for Sales sources and caching-disabled lookups, you can configure a condition in the FetchXML query. In the FetchXML query, set the condition attribute to the value of the lookup field that you used in the lookup condition.

For example, if the lookup fields are name, websiteurl, and emailaddress1, as shown in the following image, the condition values are #INFA_name#, #INFA_websiteurl#, and #INFA_emailaddress1#.

 NewLookup Properties

General	Lookup Condition: Simple																
Incoming Fields																	
Lookup Object																	
Lookup Condition	<div> <div>Lookup Conditions</div> <table border="1"> <thead> <tr> <th>Lookup Field</th> <th>Operator</th> <th>Incoming Field</th> <th></th> </tr> </thead> <tbody> <tr> <td>name</td> <td>=</td> <td>INFA_name</td> <td></td> </tr> <tr> <td>websiteurl</td> <td>=</td> <td>INFA_websiteurl</td> <td></td> </tr> <tr> <td>emailaddress1</td> <td>=</td> <td>INFA_emailaddress1</td> <td></td> </tr> </tbody> </table> </div>	Lookup Field	Operator	Incoming Field		name	=	INFA_name		websiteurl	=	INFA_websiteurl		emailaddress1	=	INFA_emailaddress1	
Lookup Field	Operator	Incoming Field															
name	=	INFA_name															
websiteurl	=	INFA_websiteurl															
emailaddress1	=	INFA_emailaddress1															
Return Fields																	
Advanced																	

The following FetchXML query shows the condition values #INFA_name#, #INFA_websiteurl#, and #INFA_emailaddress1# for the lookup fields name, websiteurl, and emailaddress1:

```
<fetch mapping="logical" #INFA_PAGING#>
  <entity name="account">
    <attribute name="name"></attribute><attribute name="websiteurl"></
attribute><attribute name="emailaddress1"></attribute>
    <filter type="and">
      <condition attribute="websiteurl" entityname="account" operator="eq"
value="#INFA_websiteurl#"></condition>
      <condition attribute="name" entityname="account" operator="eq" value="#INFA_name#"></
condition>
      <filter type="or">
        <condition attribute="emailaddress1" entityname="account" operator="eq"
value="#INFA_emailaddress1#">
      </condition><condition attribute="name" entityname="account" operator="eq"
value="#INFA_name#"></condition>
      </filter>
    </filter>
  </entity>
</fetch>
```

CHAPTER 2

Microsoft Dynamics 365 for Sales connections

Create a Microsoft Dynamics 365 for Sales connection to securely read data from Microsoft Dynamics 365 for Sales. You can use Microsoft Dynamics 365 for Sales connections to specify sources and lookups in mapping and mapping tasks.

Create a connection and associate it with a mapping or mapping task. Define the source properties to read data from Microsoft Dynamics 365 for Sales.

You can create a Microsoft Dynamics 365 for Sales connection on the **Connections** page. The connection becomes available to the entire organization.

Microsoft Dynamics 365 for Sales connection properties

When you set up a Microsoft Dynamics 365 for Sales connection, configure the connection properties.

The following table describes the Microsoft Dynamics 365 for Sales connection properties:

Property	Description
Connection Name	Name of the connection. Each connection name must be unique within the organization. Connection names can contain alphanumeric characters, spaces, and the following special characters: _ . + -, Maximum length is 255 characters.
Description	Description of the connection. Maximum length is 4000 characters.
Type	The Microsoft Dynamics 365 for Sales connection type.
Runtime Environment	The name of the runtime environment where you want to run the tasks. Specify a Secure Agent or Hosted Agent. If you want to use the Hosted Agent to access Microsoft Dynamics 365 for Sales, the connection must use OAuth 2.0 Password Grant authentication.

Property	Description
Authentication Type	<p>The authentication method that the connector must use to log in to the Microsoft Dynamics 365 for Sales online or on-premises.</p> <p>Select one of the following authentication types:</p> <ul style="list-style-type: none"> - OAuth 2.0 Password Grant. Requires the web API URL, username, password, and application ID. You additionally need the security token service URL to access Microsoft Dynamics 365 for Sales on-premises. Applies to Microsoft Dynamics 365 for Sales online and on-premises. - OAuth 2.0 Client Certificate Grant. Requires the web API URL, application ID, tenant ID, keystore file, keystore password, key alias, and key password. Applies to Microsoft Dynamics 365 for Sales online. - OAuth 2.0 Client Secret Grant. Requires the application ID and client secret. Applies to Microsoft Dynamics 365 for Sales online.
Web API url	The URL of the Microsoft Dynamics 365 for Sales endpoint.
Username	The user name to connect to the Microsoft Dynamics 365 for Sales account.
Password	The password to connect to the Microsoft Dynamics 365 for Sales account.
Application ID	The Azure application ID for Microsoft Dynamics 365 for Sales.
Tenant ID	The directory ID for Azure Active Directory.
Keystore File	<p>The location and the file name of the key store.</p> <p>Not applicable when you use the Hosted Agent.</p>
Keystore Password	The password for the keystore file required for secure communication.
Key Alias	The alias name for the individual key.
Key Password	<p>The password for the individual keys in the keystore file required for secure communication.</p> <p>Not applicable when you use the Hosted Agent.</p>
Retry Error Codes	The comma-separated http error codes for which the retries are made.
Retry Count	<p>The number of retries to get the response from an endpoint based on the retry interval.</p> <p>Default is 5.</p>
Retry Interval	<p>The time in seconds to wait before Microsoft Dynamics 365 for Sales Connector retries for a response.</p> <p>Default is 60 seconds.</p>
Client Secret	The client secret key to connect to Microsoft Dynamics 365 for Sales account.
Server Type	<p>The Microsoft Dynamics 365 for Sales server that you want to access.</p> <p>You can select the server type from the following list:</p> <ul style="list-style-type: none"> - Microsoft Dynamics Online. Connects to Microsoft Dynamics 365 for Sales deployed online. - Microsoft Dynamics On-premise. Connects to Microsoft Dynamics 365 for Sales deployed on-premises.
Security Token Service URL	<p>The Microsoft Dynamics 365 for Sales security token service URL.</p> <p>Applies to the OAuth 2.0 Password Grant to access Microsoft Dynamics 365 for Sales on-premises.</p> <p>For example, <a href="https://sts1.<company>.com/adfs/oauth2/token">https://sts1.<company>.com/adfs/oauth2/token</p>

Configure the proxy settings

If your organization uses an outgoing proxy server to connect to the internet, the agent connects to Informatica Intelligent Cloud Services through the proxy server.

You can configure the Secure Agent to use the proxy server on Windows and Linux. You can use the unauthenticated or authenticated proxy server.

Configuring the proxy settings on Windows

To configure the proxy server settings for the Secure Agent on a Windows machine, you must configure the proxy server settings through the Secure Agent Manager and the JVM options of the Secure Agent.

Configure proxy settings through the Secure Agent

To configure the proxy server settings through the Secure Agent Manager, perform the following steps:

1. Click **Start > All Programs > Informatica Cloud Secure Agent > Informatica Cloud Secure Agent** to launch the Secure Agent Manager.

The Secure Agent Manager displays the Secure Agent status.

2. Click **Proxy** in the Secure Agent Manager page.
3. Click **Use a Proxy Server** to enter proxy server settings.
4. Configure the following proxy server details:

Field	Description
Proxy Host	Host name of the outgoing proxy server that the Secure Agent uses.
Proxy Port	Port number of the outgoing proxy server.

5. Click **OK**.

Configure the proxy settings through JVM options

To configure the proxy server settings through JVM options, perform the following steps:

1. Log in to Informatica Intelligent Cloud Services.
2. Open Administrator and select **Runtime Environments**.
3. Select the Secure Agent for which you want to configure a proxy server.
4. On the upper-right corner of the page, click **Edit**.
5. In the **System Configuration Details** section, select the **Type** as **DTM** for the Data Integration Service.

- To use a proxy server, add the following parameters in any **JVMOption** field and specify appropriate values for each parameter:

Parameter	Description
-Dhttps.proxySet=	Determines whether to use proxy settings for the HTTPS proxy server. Values are True or False.
-Dhttp.proxySet=	Determines whether to use proxy settings for the HTTP proxy server. Values are True or False.
-Dhttps.proxyHost=	Host name of the outgoing HTTPS proxy server.
-Dhttp.proxyHost=	Host name of the outgoing HTTP proxy server.
-Dhttps.proxyPort=	Port number of the outgoing HTTPS proxy server.
-Dhttp.proxyPort=	Port number of the outgoing HTTP proxy server.

Note: You must specify the parameter and the value for the parameter enclosed in single quotation marks.

Example for HTTPS:

```
JVMOption1='-Dhttps.proxySet=<True>'  
JVMOption2='-Dhttps.proxyHost=<proxy_server_hostname>'  
JVMOption3='-Dhttps.proxyPort=<proxy_server_portnumber>'
```

Example for HTTP:

```
JVMOption1='-Dhttp.proxySet=<True>'  
JVMOption2='-Dhttp.proxyHost=<proxy_server_hostname>'  
JVMOption3='-Dhttp.proxyPort=<proxy_server_portnumber>'
```

- Click **Save**.

The Secure Agent restarts to apply the settings.

Note: The session log does not log the proxy server details even if you have configured a proxy server.

Configuring the proxy settings on Linux

You can update the proxy server settings defined for the Secure Agent from the command line. To configure the proxy server settings for the Secure Agent on a Linux machine, you must update the `proxy.ini` file and configure the JVM options of the Secure Agent.

Configure the proxy settings through the Secure Agent

The Secure Agent installer configures the proxy server settings for the Secure Agent based on settings configured in the browser. You can update the proxy server settings defined for the Secure Agent from the command line.

To configure the proxy server settings for the Secure Agent on a Linux machine, use a shell command that updates the `proxy.ini` file.

1. Navigate to the following directory:

```
<Secure Agent installation directory>/apps/agentcore/conf
```

2. To update the `proxy.ini` file, add the following parameters and specify appropriate values for each parameter:

```
InfAgent.ProxyHost=<proxy_server_hostname>
InfAgent.ProxyPort=<proxy_server_port>
```

3. Restart the Secure Agent.

Configure the proxy settings through JVM options

1. Log in to Informatica Intelligent Cloud Services.
2. Open Administrator and select **Runtime Environments**.
3. Select the Secure Agent for which you want to configure a proxy server.
4. On the upper-right corner of the page, click **Edit**.
5. In the **System Configuration Details** section, select the **Type** as **DTM** for the Data Integration Service.
6. To use a proxy server, add the following parameters in any **JVMOption** field and specify appropriate values for each parameter:

Parameter	Description
-Dhttps.proxySet=	Determines whether to use proxy settings for the HTTPS proxy server. Values are True or False.
-Dhttp.proxySet=	Determines whether to use proxy settings for the HTTP proxy server. Values are True or False.
-Dhttps.proxyHost=	Host name of the outgoing HTTPS proxy server.
-Dhttp.proxyHost=	Host name of the outgoing HTTP proxy server.
-Dhttps.proxyPort=	Port number of the outgoing HTTPS proxy server.
-Dhttp.proxyPort=	Port number of the outgoing HTTP proxy server.

Note: You must specify the parameter and the value for the parameter enclosed in single quotation marks.

Example for HTTPS:

```
JVMOption1='-Dhttps.proxySet=<True>'
JVMOption2='-Dhttps.proxyHost=<proxy_server_hostname>'
JVMOption3='-Dhttps.proxyPort=<proxy_server_portnumber>'
```

Example for HTTP:

```
JVMOption1='-Dhttp.proxySet=<True>'
JVMOption2='-Dhttp.proxyHost=<proxy_server_hostname>'
JVMOption3='-Dhttp.proxyPort=<proxy_server_portnumber>'
```

7. Click **Save**.

The Secure Agent restarts to apply the settings.

Note: The session log does not log the proxy server details even if you have configured a proxy server.

CHAPTER 3

Mappings and mapping tasks with Microsoft Dynamics 365 for Sales Connector

Use the Data Integration Mapping Designer to create a mapping.

Microsoft Dynamics 365 for Sales sources in mappings

In a mapping, you can configure a Source transformation to represent a Microsoft Dynamics 365 for Sales source.

The following table describes the Microsoft Dynamics 365 for Sales source properties that you can configure in a Source transformation:

Property	Description
Connection	Name of the source connection.
Source Type	Type of the source object. Select Single Object, Multiple Object or Parameter.
Object	Name of the source object for the mapping.
Filter	Filter value in a read operation. You can add conditions to filter records and reduce the number of rows that the Secure Agent reads from the source.
Sort	Sorts records based on the conditions you specify. Click Configure to add conditions to sort records and reduce the number of rows that the Secure Agent reads from the source.

The following table describes the Microsoft Dynamics 365 for Sales advanced properties that you can configure in a Source transformation:

Microsoft Dynamics 365 for Sales lookups in mappings

You can create lookups for objects in a Microsoft Dynamics 365 for Sales connection. You can retrieve data from a Microsoft Dynamics 365 for Sales lookup object based on the specified lookup condition.

When you configure a lookup in Microsoft Dynamics 365 for Sales, you select the lookup connection and lookup object. You also define the behavior when a lookup condition returns more than one match.

The following table describes the Microsoft Dynamics 365 for Sales lookup object properties that you can configure in a Lookup transformation:

Property	Description
Connection	Name of the lookup connection.
Source Type	Type of the source object. Select Single Object .
Lookup Object	Name of the lookup object for the mapping.
Multiple Matches	Behavior when the lookup condition returns multiple matches. Select Return any row , Return all rows , or Report error .
Filter	Not applicable.
Sort	Not applicable.

The following table describes the Microsoft Dynamics 365 for Sales lookup object advanced properties that you can configure in a Lookup transformation in mappings:

Advanced Property	Description
Row Limit	The maximum number of rows that the Secure Agent processes. Specify a number to process a specific number of rows.
Page Size	Size of the page set to retrieve the maximum number of entries for each page. Default value is 100.
FetchXML Query	The native Microsoft query format to read data from Microsoft Dynamics 365 for Sales. Enter the FetchXML query defined in Microsoft Dynamics 365 for Sales. You can use one or any combination of paging, filter, sort, and join operations in the FetchXML query.
Record Name Aliases	Not applicable.

The following table describes the advanced properties for Lookup transformations in mappings:

Property	Description
Tracing Level	Determines the detail level of error and status messages written to the Activity Log. You can choose terse, normal, verbose initialization, or verbose data. Default is normal.
Lookup Caching Enabled	Determines whether to cache lookup data during the runtime session. When you enable caching, the Data Integration Server queries the lookup source once and caches the values for use during the session. Caching the lookup values can improve session performance. When you disable caching, each time a row passes into the transformation. Default is enabled.
Lookup cache directory name	Specifies the directory to store cached lookup data when you select Lookup Caching Enabled. The directory name can be an environment variable.
Lookup Data Cache Size	Sets the maximum size that the Secure Agent allocates to the data cache in memory. Select Auto to determine the cache size at runtime. Select Value to specify a maximum amount of memory to allocate to the cache. If the server cannot allocate the specified maximum amount when the session is initialized, the session fails. When the cached data is more than the available memory, it is paged to disk. Default is Auto.
Lookup Index Cache Size	Sets the maximum size the agent allocates to the index cache in memory. Select Auto to determine the cache size at runtime. Select Value to specify a maximum amount of memory to allocate to the cache. If the server cannot allocate the specified maximum amount when the session is initialized, the session fails. When the cached data is more than the available memory, it is paged to disk. Default is Auto.
Null ordering	Determines how the null values are ordered. You can choose to sort null values high or low. By default, null values are sorted high. This overrides configuration to treat nulls in comparison operators as high, low, or null.
Sorted Input	Indicates whether or not the lookup file data is in sorted order. This increases lookup performance for file lookups. If you enable sorted input and the condition columns are not grouped, the session fails. If the condition columns are grouped but not sorted, the lookup is processed as if you did not configure sorted input.
Pre-build Lookup Cache	Specifies to build the lookup cache before the Lookup transformation receives data. Multiple lookup cache files can be built at the same time to improve performance.
Optional	Determines whether the transformation is optional. If a transformation is optional and there are no incoming fields, the task can run and the data can go through another branch in the data flow. If a transformation is required and there are no incoming fields, the task fails. For example, you might configure a parameter for the source connection. In one branch of the data flow, you add a Lookup transformation with a field rule so that only Date/Time data enters the transformation. You specify that the Lookup transformation is optional. When you configure the mapping task, you select a source that does not have Date/Time data. The mapping task ignores the branch with the Lookup transformation, and the data flow continues through another branch of the mapping.

CHAPTER 4

Data type reference

Data Integration uses the following data types in Microsoft Dynamics 365 for Sales mappings and mapping tasks:

- Microsoft Dynamics 365 for Sales native data types appear in the source transformations when you choose to edit metadata for the fields.
- Transformation data types. Set of data types that appear in the transformations. These are internal data types based on ANSI SQL-92 generic data types, which the Secure Agent uses to move data across platforms. They appear in all transformations in a mapping.

When the Secure Agent reads source data, it converts the native data types to the comparable transformation data types before transforming the data.

Microsoft Dynamics 365 for Sales and transformation data types

The following table lists the Microsoft Dynamics 365 for Sales data types that Data Integration supports and the corresponding transformation data types:

Microsoft Dynamics 365 for Sales Data Type	Microsoft Dynamics 365 Web API Specific DataType	Range and Description	Transformation Data Type
Bigint	Int64	You can specify the maximum and minimum values between 922, 337, 203, 685, 477 and 922, 337, 203, 685, 477.	Bigint
Boolean	Boolean	You can specify the text for both options. When added to a form, the field properties control whether the attribute is displayed as two radio buttons, a check box, or a list. Input must be True or False.	String

Microsoft Dynamics 365 for Sales Data Type	Microsoft Dynamics 365 Web API Specific DataType	Range and Description	Transformation Data Type
Customer	String	<p>Customer attribute represents a type of lookup where either an account or contact is a valid type of record. Input must be in the following format:</p> <p>/LogicalCollectionName(guid) or LogicalCollectionName(guid)</p> <p>For example, /accounts(4fca93d7-b73d-e011-b010-005056a8019b) or accounts(4fca93d7-b73d-e011-b010-005056a8019b)</p> <p>The source field uses the following naming convention: <code><name>_value</code>, where <code><name></code> matches the name of the Customer data type.</p> <p>For example, <code>_customerid_value</code></p> <p>The target field uses the following naming convention: <code><name>_<reference></code>, where <code><reference></code> is an entity that has a relationship with the object.</p> <p>For example, <code>customerid_account</code></p> <p>Note: A field name starting with an underscore character (<code>_</code>), for example <code>_customerid_value</code>, also appears under the target object. However, you cannot write the field to the target object.</p> <p>For more information about the naming convention, refer to the following URL:</p> <p>https://msdn.microsoft.com/en-in/library/mt607990.aspx#bkmk_properties</p> <p>To use an alternate key, input must be in the following format:</p> <p><code>\LogicalCollectionName(<fieldname>=value,<fieldname2>=value,...)</code>, where field name is the alternate key defined in the LogicalCollectionName.</p>	String
DateTime	DateTimeOffset	<p>Date and time values. All DateTime values in the Microsoft Dynamics 365 for Sales connector gets converted to UTC standard time.</p> <p>The minimum value is 1900-01-01T00:00:00.000Z. The maximum value is 9999-12-30T23:59:59Z.</p>	Date/Time
Decimal	Decimal	<p>You can specify the level of precision up to ten decimal places and the minimum and maximum values from -1,000,000,000 to 1,000,000,000.</p>	Decimal
Double	Double	<p>A decimal attribute. You can specify the level of precision up to five decimal places and the minimum and maximum values from -1,000,000,000 to 1,000,000,000.</p>	Double
EntityName	String	<p>The entity attribute represents the logical name of an entity. You cannot write the EntityName data type.</p>	String
Integer	Int32	<p>Integer values. You can specify the maximum and minimum values from -2,147,483,648 to 2,147,483,647.</p>	Integer

Microsoft Dynamics 365 for Sales Data Type	Microsoft Dynamics 365 Web API Specific DataType	Range and Description	Transformation Data Type
Lookup	String	<p>The lookup attribute represents the relationship attribute on the related entity. The valid type for the lookup is established in the relationship. Input must be in the following format:</p> <p><code>/LogicalCollectionName(guid)</code> or <code>LogicalCollectionName(guid)</code></p> <p>For example, <code>/accounts(4fca93d7-b73d-e011-b010-005056a8019b)</code> or <code>accounts(4fca93d7-b73d-e011-b010-005056a8019b)</code></p> <p>The source field uses the following naming convention: <code>_<name>_value</code>, where <code><name></code> matches the name of the Lookup data type.</p> <p>For example, <code>_lookupid_value</code></p> <p>The target field uses the following naming convention: <code><name></code></p> <p>For example, <code>lookupid</code></p> <p>Note: A field name starting with an underscore character (<code>_</code>), for example <code>_lookupid_value</code>, also appears under the target object. However, you cannot write the field to the target object.</p> <p>For more information about the naming convention, refer to the following URL: https://msdn.microsoft.com/en-in/library/mt607990.aspx#bkmk_properties</p> <p>To use an alternate key, input must be in the following format:</p> <p><code>\LogicalCollectionName(<fieldname>=value,<field2name>=value,...)</code>, where field name is the alternate key defined in the LogicalCollectionName.</p>	String
Memo	String	The memo attribute represents a multiline text box.	String
Money	Decimal	You can specify the maximum and minimum values between -922,337,203,685,477 and 922,337,203,685,477. You can set the precision as one, two, or three.	Decimal

Microsoft Dynamics 365 for Sales Data Type	Microsoft Dynamics 365 Web API Specific DataType	Range and Description	Transformation Data Type
Owner	String	<p>The owner attribute represents the relationship attribute on the related entity. The valid type for the owner is established in the relationship. Input must be in the following format:</p> <p><code>/LogicalCollectionName(guid)</code> or <code>LogicalCollectionName(guid)</code></p> <p>For example, <code>/accounts(4fca93d7-b73d-e011-b010-005056a8019b)</code> or <code>accounts(4fca93d7-b73d-e011-b010-005056a8019b)</code></p> <p>The source field uses the following naming convention: <code>_<name>_value</code>, where <code><name></code> matches the name of the Owner data type.</p> <p>For example, <code>_ownerid_value</code></p> <p>The target field uses the following naming convention: <code><name></code></p> <p>For example, <code>ownerid</code></p> <p>Note: A field name starting with an underscore character (<code>_</code>), for example <code>_ownerid_value</code>, also appears under the target object. However, you cannot write the field to the target object.</p> <p>For more information about the naming convention, refer to the following URL:</p> <p>https://msdn.microsoft.com/en-in/library/mt607990.aspx#bkmk_properties</p> <p>To use an alternate key, input must be in the following format:</p> <p><code>\LogicalCollectionName(<fieldname>=value,<fieldname2>=value,...)</code>, where field name is the alternate key defined in the LogicalCollectionName.</p>	String
Picklist	Int32	<p>The picklist attribute provides a set of options that are displayed in a list. You can create the picklist attribute so that it can contain its own options or use a global options set. An option value of a picklist is an integer that corresponds to the option description. You can find the option values and description for the default entities in the Microsoft Dynamics CRM documentation.</p> <p>For example, for an AccountRole picklist, to set the picklist value to Decision Maker, the option value is 1.</p>	Integer
State	Int32	<p>The state attribute is automatically created when you create an entity. The state attribute internally represents the status of the entity. A value of a state is an integer that corresponds to the state description. You can find the state values and description for the default entities in the Microsoft Dynamics CRM documentation.</p> <p>For example, to set the state as Open, the value is 0 for the Activity entity.</p>	Integer

Microsoft Dynamics 365 for Sales Data Type	Microsoft Dynamics 365 Web API Specific DataType	Range and Description	Transformation Data Type
Status	Int32	<p>The status attribute is automatically created when you create an entity. Each of the options must be associated with the state attribute for the entity. The status attribute displays the value of state to the end user. A value of a status is an integer that corresponds to the status description. You can find the status values and description for the default entities in the Microsoft Dynamics CRM documentation.</p> <p>For example, to set the status as Active, the value is 1 for the Account entity.</p>	Integer
String	String	The string attribute represents a single line of text.	String
UniquelIdentifier	Guid	<p>UniquelIdentifier represents an attribute that is the guid of another entity instance. UniquelIdentifier must be in the guid format.</p> <p>For example, 4fca93d7-b73d-e011-b010-005056a8019b</p>	String

Finding the LogicalCollectionName

To find the LogicalCollectionName for Lookup, Customer, and Owner data types, perform the following steps:

1. Log in to the Microsoft Dynamics 365 Sales instance.
2. Install the Entity Metadata Browser solution. To install the Entity Metadata Browser solution, perform the steps given in the following URL:
<https://msdn.microsoft.com/en-us/library/hh547411.aspx>
3. Click **Settings > Solutions**. Select **MetadataBrowser**.
The **Metadata Browser Tool** window opens.
4. Click **Open Metadata Browser**.
5. In the **Metadata Browser** window, under **Schema Name**, select the required entity.
6. Under **Property**, select the corresponding value of LogicalCollectionName.

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