



Informatica® PowerExchange for Microsoft  
Dynamics CRM

10.2

# User Guide

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# Preface

The *Informatica PowerExchange® for Microsoft Dynamics CRM User Guide* provides information about reading data from and writing data to Microsoft Dynamics CRM. This guide is written for database administrators and developers who are responsible for configuring, developing connections, and mappings that read data from and write data to Microsoft Dynamics CRM. This guide assumes you have knowledge of Microsoft Dynamics CRM and Informatica.

## Informatica Resources

### Informatica Network

Informatica Network hosts Informatica Global Customer Support, the Informatica Knowledge Base, and other product resources. To access Informatica Network, visit <https://network.informatica.com>.

As a member, you can:

- Access all of your Informatica resources in one place.
- Search the Knowledge Base for product resources, including documentation, FAQs, and best practices.
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### Informatica Knowledge Base

Use the Informatica Knowledge Base to search Informatica Network for product resources such as documentation, how-to articles, best practices, and PAMs.

To access the Knowledge Base, visit <https://kb.informatica.com>. If you have questions, comments, or ideas about the Knowledge Base, contact the Informatica Knowledge Base team at [KB\\_Feedback@informatica.com](mailto:KB_Feedback@informatica.com).

### Informatica Documentation

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If you are an Informatica Network member, you can access 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](mailto:ips@informatica.com).

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## Informatica Global Customer Support

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If you are an Informatica Network member, you can use Online Support at <http://network.informatica.com>.

## CHAPTER 1

# Understanding PowerExchange for Microsoft Dynamics CRM

This chapter includes the following topics:

- [Understanding PowerExchange for Microsoft Dynamics CRM Overview, 8](#)
- [Understanding Microsoft Dynamics CRM, 9](#)
- [Informatica and Microsoft Dynamics CRM Integration, 9](#)

## Understanding PowerExchange for Microsoft Dynamics CRM Overview

PowerExchange for Microsoft Dynamics CRM integrates Informatica with Microsoft Dynamics CRM to extract and load data. You can import Microsoft Dynamics CRM business entities as read and write data objects to create and run mappings to extract data from or load data to an entity. You can view, create, update, and delete data in Microsoft Dynamics CRM entities.

You can use PowerExchange for Microsoft Dynamics CRM to extract from and load to the on-premise, Internet-facing, or online deployment of Microsoft Dynamics CRM.

Organizations choose on-premise deployment of Microsoft Dynamics CRM if they are large enough to support the installed software and required hardware. Organizations choose Internet-facing deployment of Microsoft Dynamics CRM if they have distributed networks where users have to sign on from different locations. Some organizations choose online deployment of Microsoft Dynamics CRM because there is usually little or no expense needed in terms of hardware or information technology (IT) infrastructure.

PowerExchange for Microsoft Dynamics CRM uses the Microsoft Dynamics CRM security model to enforce data access controls. Microsoft Dynamics CRM supports multiple organizations. Your ability to access data depends on the Microsoft Dynamics CRM organization that is associated with the user login that you use when you connect to Microsoft Dynamics CRM.

You can use PowerExchange for Microsoft Dynamics CRM to integrate and migrate data from diverse data sources, including other applications, with Microsoft Dynamics CRM data. You can also use PowerExchange for Microsoft Dynamics CRM to synchronize data between a Microsoft Dynamics CRM system and other CRM systems like Siebel or Microsoft Dynamics CRM.



# Understanding Microsoft Dynamics CRM

Microsoft Dynamics CRM is an enterprise software that you can use to manage marketing, sales, and customer service. Microsoft Dynamics CRM provides an account management system that tracks activities and revenue. Microsoft Dynamics product line consists of enterprise resource planning (ERP) and customer relationship management (CRM) software applications.

PowerExchange for Microsoft Dynamics CRM integrates Informatica with Microsoft Dynamics CRM.

In a Microsoft Dynamics CRM system, the top-most entity is called an organization. An organization can have multiple business units. Business units can have child business units. The CRM users are assigned to the different business units.

Microsoft Dynamics CRM supports a rich business entity model. An entity is a container for data, similar to a table in a relational database. Each entity contains a set of attributes. When you install Microsoft Dynamics CRM a set of entities are available by default. Some of these are customizable. In addition, you can create custom entities to contain business data. The owner of an entity can be an organization, a business unit or a user. Entities contain attributes. An attribute is a container for a piece of data in an entity. Microsoft Dynamics CRM supports a wide variety of attribute types. A relationship defines an association between two entities. PowerExchange for Microsoft Dynamics CRM supports one-to-many and many-to-many relationships.

**Note:** Microsoft Dynamics ERP includes Microsoft Dynamics AX, Microsoft Dynamics GP, Microsoft Dynamics NAV, and Microsoft Dynamics SL. You cannot use PowerExchange for Microsoft Dynamics CRM with Microsoft Dynamics ERP.

## Informatica and Microsoft Dynamics CRM Integration

PowerExchange for Microsoft Dynamics CRM accesses Microsoft Dynamics CRM server through web services.

PowerExchange for Microsoft Dynamics CRM integrates Microsoft Dynamics CRM with the Informatica so you can import Microsoft Dynamics CRM entities into Informatica and use them in mappings.

PowerExchange for Microsoft Dynamics CRM integrates Microsoft Dynamics CRM with the Data Integration Service so that you can run mappings that extract, transform, and load Microsoft Dynamics CRM data.

## Informatica Developer and Microsoft Dynamics CRM

Use the Developer tool to import Microsoft Dynamics CRM entities as Microsoft Dynamics CRM read or write data objects.

The Developer tool connects to the Microsoft Dynamics CRM service with a Microsoft Dynamics CRM login. The Developer tool then generates a list of entities that you can import. You can also filter the list of entities.

## Data Integration Service and Microsoft Dynamics CRM Integration

The Data Integration Service connects to Microsoft Dynamics CRM to extract, transform, and load Microsoft Dynamics CRM data.

The Data Integration Service uses the Simple Object Access Protocol (SOAP) to transmit data to and from the Microsoft Dynamics CRM service.

A connection object stores the Microsoft Dynamics CRM user ID, password, and end point URL information for the run-time connection. Each Microsoft Dynamics CRM source or target in a mapping references a Microsoft Dynamics CRM application connection object.

## Deployment

You can use Power Exchange for Microsoft Dynamics CRM for the following deployments:

### **On-premise**

You can use PowerExchange for Microsoft Dynamics CRM for on-premise deployment with active directory authentication and claims-based authentication.

### **Internet-facing**

You can use Power Exchange for Microsoft Dynamics CRM for Internet-facing deployment with claims-based authentication.

### **Online**

You can use PowerExchange for Microsoft Dynamics CRM for online deployment with passport authentication.

### **Internet-facing and Online**

You can use Power Exchange for Microsoft Dynamics CRM for Internet-facing deployment with claims-based authentication combined with online deployment with passport authentication.

## Authentication

PowerExchange for Microsoft Dynamics CRM authenticates the connection information with Microsoft Dynamics CRM to extract and load data.

Microsoft Dynamics CRM uses active directory, passport, and claims-based authentication based on the deployment type.

Active directory authentication for PowerExchange for Microsoft Dynamics CRM uses Windows authentication. Before you add the users to Microsoft Dynamics, add the users to the Windows Active Directory.

Claims-based authentication for PowerExchange for Microsoft Dynamics CRM authenticates a user based on a set of claims about the identity of the user such as the user name and password contained in a trusted token. Claims-based authentication requires the availability of a security token service (STS) running on a server. PowerExchange for Microsoft Dynamics CRM uses user name mixed endpoint for the authentication that is configured on the STS.

Passport authentication for PowerExchange for Microsoft Dynamics is based on user name and password verification. PowerExchange for Microsoft Dynamics CRM uses Windows Live ID and Office 365 for passport authentication.

## HTTP Compression

PowerExchange for Microsoft Dynamics CRM uses HTTP compression to extract data if HTTP compression is enabled in the Internet Information Services (IIS) where Microsoft Dynamics CRM is installed.

## CHAPTER 2

# PowerExchange for Microsoft Dynamics CRM Configuration

This chapter includes the following topics:

- [Powerexchange for Microsoft Dynamics CRM Configuration Overview, 11](#)
- [Prerequisites, 11](#)
- [Installing the Security Policy Files, 12](#)
- [Login Configuration, 12](#)
- [Kerberos Configuration, 13](#)
- [Adding the Certificate to the Keystore File, 13](#)
- [Properties.conf Configuration, 14](#)

## Powerexchange for Microsoft Dynamics CRM Configuration Overview

You can use PowerExchange for Microsoft Dynamics CRM on Windows or Linux. You enable PowerExchange for Microsoft Dynamics CRM with the PowerExchange for Microsoft Dynamics CRM license key.

You must configure PowerExchange for Microsoft Dynamics CRM before you can read data from or write data to Microsoft Dynamics CRM. Before you use PowerExchange for Microsoft Dynamics CRM, perform the prerequisite tasks.

## Prerequisites

Before you configure PowerExchange for Microsoft Dynamics CRM, perform the following tasks:

1. Install or upgrade Informatica.
2. Verify that you have read and write permissions on the following directories on each machine that runs the Data Integration Service:
  - `<Informatica Installation Directory>\services\shared\security`

- <Informatica Installation Directory>\java\jre\lib
- 

You must be able to add and overwrite files in these directories.

3. Verify that you have read and write permissions on the following directories of each Developer client machine:
  - <Informatica Installation Directory>\clients\java\jre\lib
  - <Informatica Installation Directory>\clients\shared\security
4. You must be able to add and overwrite files in these directories.
5. Verify that you have the proper certificates stored in the keystore on your client and server machines to access Microsoft Dynamics CRM.

## Installing the Security Policy Files

PowerExchange for Microsoft Dynamics CRM requires Java Cryptography Extension (JCE) unlimited strength jurisdiction policy files to support 256 bit strength encryption.

1. Download Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 7. To download on supported platforms, access the download page from the following website: <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.
2. For the client, extract the local\_policy.jar and US\_export\_policy.jar from UnlimitedJCEPolicyJDK7.zip to the following location: <Informatica Installation Directory>\clients\java\jre\lib\security.
3. For the server, extract the files to the following location: <Informatica Installation Directory>\java\jre\lib\security. On all other supported platforms, extract the local\_policy.jar and US\_export\_policy.jar files.

## Login Configuration

If you run a Microsoft Dynamics CRM application pool using a domain account, you must update the login configuration file with the Service Principle Name (SPN) of Microsoft Dynamics CRM.

**Note:** For SPN details, contact the Microsoft Dynamics CRM administrator.

Update login.conf with details of the SPN in the following format:

```
<ApplicationServer>="<domainaccount>@<FQDN>"
```

Domain account is the application pool identity for CRMAppPool. For example,

```
CRMAPP01.contoso.com="CRMService@contoso.com"
```

Update login.conf in the following locations:

- On the Informatica Client machine, the configuration file is in the following location: <Informatica Installation Directory>\clients\DeveloperClient\msdcrm\conf
- On the Informatica Server machine, the configuration file is in the following location: <Informatica Installation Directory>\tomcat\bin\msdcrm\conf

You can add multiple entries for multiple instances of Microsoft Dynamics CRM, in the login.conf file. Delimit multiple entries by using a new line. Terminate the last entry with a semicolon. Entries in login.conf are case sensitive.

**Note:** You do not have to update the login configuration file if an instance of Microsoft Dynamics CRM application pool runs on the local system, local service, or Network Service account. The SPN is generated by default in the following format:

```
host/<hostname>
```

The host name is the name of the server that hosts Microsoft Dynamics CRM.

## Kerberos Configuration

After you install PowerExchange for Microsoft Dynamics CRM, update the Kerberos configuration file with details of the Active Directory domain controller. You must allow the user to delegate Kerberos service in Active Directory for the Microsoft Dynamics CRM application pool account.

Update krb5.conf in the following locations with the details of the domain controller:

- <Informatica Installation Directory>\clients\DeveloperClient\msdcrm\conf for the client.
- <Informatica Installation Directory>\tomcat\bin\msdcrm\conf for the server.

## Active Directory Configuration for Kerberos Authentication

To connect to Microsoft Dynamics CRM using PowerExchange for Microsoft Dynamics CRM, configure Active Directory for Kerberos authentication.

Update the login configuration file with the SPN for the domain account under which Microsoft Dynamics CRM application pool is running.

1. From Microsoft Active Directory, select **Users > domain account name > Properties**.  
The **Properties** dialog box appears.
2. On the **Delegation** tab, select the option **Trust this user for the delegation to any Service (Kerberos Only)**.

## Adding the Certificate to the Keystore File

Before you can work with PowerExchange for Microsoft Dynamics CRM over a secure connection, add certificates to the keystore file to the Developer client and server machines.

1. Copy the certificate files to a local folder.
2. From the command line, browse to <Informatica Installation Directory>\clients\shared\security on the client machine and <Informatica Installation Directory>\services\shared\security on the server machine.
3. From the command line, run the following command: `keytool -importcert -alias <certificate alias name> -file " <certificate path>\<certificate filename>" -keystore ..\lib\security\infa_truststore.jks` in Windows and `keytool -import -alias rootcer1 -file "<certificate path>\<certificate filename>" -keystore ..\lib\security\infatruststore.jks` in Unix.

4. Enter the password for the keystore.  
The certificate is added to the keystore file.

## Properties.conf Configuration

You can use the properties.conf file to change the number of retry counts and intervals while creating a connection. You can change the number of partitions for Microsoft Dynamics online deployment that can be set during bulk load. You can also change the default location of the login.conf and kerberos.conf file.

The properties.conf file must be present in the following location:

### Server

```
<Informatica Installation Directory>\tomcat\bin\msdcrm\conf
```

### Client

```
<Informatica Installation Directory>\clients\DeveloperClient\msdcrm\conf
```

The following are the default property keys and values. You can edit the following values:

- RETRY\_COUNT=5
- RETRY\_INTERVAL=1000
- RETRY\_COUNT\_FOR\_BAD\_CONTEXT\_TOKEN\_RESPONSE=5

The following are the descriptions of the property keys:

- RETRY\_COUNT: Defines the number of times to retry if the connection request fails. You can set this property to work at design-time and run-time.
- RETRY\_INTERVAL: Defines the interval in milli seconds between two retry attempts. Default is 1000.
- RETRY\_COUNT\_FOR\_BAD\_CONTEXT\_TOKEN\_RESPONSE: Defines the number of times to retry if the IIS fails.
- MAX\_CLOUD\_PARTITIONS: The number of partitions that can be defined for online deployment of Microsoft Dynamics CRM. During bulk load, you can set this property to work at run-time.
- KERBEROS\_CONFIG\_FILES\_LOCATION: The default location of the login.conf and krb5.conf files. You can set this property to work at design-time and run-time. The location of the configuration file and the Kerberos configuration file specified at run-time will take precedence.

## CHAPTER 3

# Microsoft Dynamics CRM Connections

This chapter includes the following topics:

- [Microsoft Dynamics CRM Connections Overview, 15](#)
- [Microsoft Dynamics CRM Connection Properties, 16](#)
- [Creating a Microsoft Dynamics CRM Connection, 17](#)

## Microsoft Dynamics CRM Connections Overview

A Microsoft Dynamics CRM connection creates a connection between the Developer tool and Microsoft Dynamics CRM. PowerExchange for Microsoft Dynamics CRM uses SOAP to connect to Microsoft Dynamics CRM.

Create a Microsoft Dynamics CRM connection to create data objects, preview data, and run mappings. Use the Microsoft Dynamics CRM connection to read data from and write data to Microsoft Dynamics CRM.

# Microsoft Dynamics CRM Connection Properties

Use a Microsoft Dynamics CRM connection to connect to a Microsoft Dynamics CRM object.

The following table describes the Microsoft Dynamics CRM connection properties:

Property	Description
Authentication Type	Authentication type for the connection. Select one of the following authentication types: <ul style="list-style-type: none"><li>- Passport. Often used for online deployment and online deployment combined with Internet-facing deployment of Microsoft Dynamics CRM.</li><li>- Claims-based. Often used for on-premise and Internet-facing deployment of Microsoft Dynamics CRM.</li><li>- Active directory. Often used for on-premise deployment of Microsoft Dynamics CRM.</li></ul>
Discovery Service URL	URL of the Microsoft Dynamics CRM service. Use the following format: <http/https>://<Application server name>:<port>/XRMService/2011/Discovery.svc To find the Discovery Service URL, log in to the Microsoft Live instance and click <b>Settings &gt; Customization &gt; Developer Resources</b> .
Security Token Service	Microsoft Dynamics CRM security token service URL. For example, https://sts1.<company>.com. Configure for claims-based authentication.
Domain	Domain to which the user belongs. You must provide the complete domain name. For example, msd.sampledomain.com. Configure for active directory and claims-based authentication.
User Name	User ID registered with Microsoft Dynamics CRM. Configure for active directory, claims-based, and passport authentication.
Password	Password to authenticate the user. Configure for active directory, claims-based, and passport authentication.
Organization Name	Microsoft Dynamics CRM organization name. Organization names are case sensitive. For Microsoft Live authentication, use the Microsoft Live Organization Unique Name. To find the Organization Unique Name, log in to the Microsoft Live instance and click <b>Settings &gt; Customization &gt; Developer Resources</b> .
Metadata Access	Configuration directory for the client. Default directory is: <INFA_HOME>/clients/DeveloperClient/msdcrm/conf
Use Above Directory for Data Access	Select this option if the configuration file and server file are in the same directory. If the server file is in a different directory, uncheck this option and specify the directory path in the Data Access field.
Data Access	Configuration directory for the server. If the server file is located in a different directory, specify the directory path.



Property	Description
Truststore Filename	Set the INFA_TRUSTSTORE in the environment variables. The directory must contain the truststore file <code>infa_truststore.jks</code> . If the file is not available at the path specified, the Data Integration Service checks for the certificate in the Java cacerts file. If you want to use the Java cacerts file, clear this field.
Truststore Password	Password for the <code>infa_keystore.jks</code> file. If you want to use the Java cacerts file, clear this field.
Keystore Filename	Contains the keys and certificates required for secure communication. If you want to use the Java cacerts file, clear this field.
Keystore Password	Password for the <code>infa_keystore.jks</code> file. If you want to use the Java cacerts file, clear this field.

## Creating a Microsoft Dynamics CRM Connection

Create a Microsoft Dynamics CRM connection before you import physical data objects.

1. On the Developer client, click **Window > Preferences**.
2. Select **Informatica > Connections**.
3. Expand the domain in the Available Connections.
4. Select Microsoft Dynamics CRM Connection and click **Add**.
5. Provide the CRM Server and User Login information and click **Next**.
6. Provide the Configuration Directory and Security Details.
7. Click **Test Connection** to verify the connection to Microsoft Dynamics CRM.
8. Click **Finish**.

## CHAPTER 4

# Microsoft Dynamics CRM Data Objects

This chapter includes the following topics:

- [Microsoft Dynamics CRM Data Objects Overview, 18](#)
- [Microsoft Dynamics CRM Data Object Overview Properties, 19](#)
- [Microsoft Dynamics CRM Data Object Read Operation Properties, 20](#)
- [Microsoft Dynamics CRM Data Object Write Operation Properties, 24](#)
- [Importing a Microsoft Dynamics CRM Data Object, 27](#)
- [Creating a Microsoft Dynamics CRM Data Object Read or Write Operation, 28](#)

## Microsoft Dynamics CRM Data Objects Overview

Create a Microsoft Dynamics CRM data object to read data from Microsoft Dynamics CRM. A Microsoft Dynamics CRM data object is a physical data object that represents data based on a Microsoft Dynamics CRM metadata.

Microsoft Dynamics CRM entities represent Microsoft Dynamics CRM metadata. You can import the metadata from any entity available in your Microsoft Dynamics CRM organization. When you import from Microsoft Dynamics CRM, the Developer client displays the entities available in the organization in a hierarchical order. The relationship between the entities can be one-to-many and many-to-many. Design the mappings according to the entity relationships in the read and write data objects to maintain the integrity of data.

The Developer client imports the following properties of the attributes in an entity:

- Name
- Display Name
- Datatype
- Precision
- Scale
- Required Level
- Description of the attribute

The Developer client displays all the entities in Microsoft Dynamics CRM. Some entities may not be readable or writable.

**Note:** You cannot import OptionSet metadata with PowerExchange for Microsoft Dynamics CRM.

You can edit the source or target definitions after you import the entities. You can read data from attributes of datatype entity\_name but cannot write data.

You cannot import the picklist attribute directly. You can create a lookup to read and write the picklist attribute.

When you write an attachment for an annotation or note entity, encode the file as a base64 string. When you read an attachment from a Microsoft Dynamics CRM source, the attachment is read as a base64 encoded string. You may need to decode the string to binary if you use binary fields in other targets or transformations. The default size of an attachment is 5 MB.

## Microsoft Dynamics CRM Data Object Overview Properties

The **Overview** properties include general properties that apply to the Microsoft Dynamics CRM data object. They also include object properties that apply to the resources in the Microsoft Dynamics CRM data object.

### General Properties

The following table describes the general properties that you configure for Microsoft Dynamics CRM data objects:

Property	Description
Name	Name of the Microsoft Dynamics CRM data object.
Description	Description of the Microsoft Dynamics CRM data object.
Connection	Name of the Microsoft Dynamics CRM connection.

### Object Properties

The following table describes the object properties that you can view for Microsoft Dynamics CRM resources:

Property	Description
Name	Name of the resource.
Description	Description of the resource.
Physical Name	Name of the resource entity specified in the Microsoft Dynamics CRM data object.

# Microsoft Dynamics CRM Data Object Read Operation Properties

The Data Integration Service reads data from a Microsoft Dynamics CRM object based on the data object read operation. The Developer tool displays the data object read operation properties of the Microsoft Dynamics CRM data object in the Data Object Operation view.

You can view or configure the data object read operation from the source and output properties.

## Source properties

Represents data that the Data Integration Service reads from the Microsoft Dynamics CRM object. Select the source properties to view data such as the name and description of the Microsoft Dynamics CRM object and the column properties.

## Output properties

Represents data that the Data Integration Service passes into the mapping pipeline. Select the output properties to edit the port properties of the data object read operation. You can also set advanced properties, such as row limit and bulk API.

## Source Properties of the Data Object Read Operation

The source properties are populated based on the Microsoft Dynamics CRM object that you added when you created a data object. The source properties of the data object read operation include general and column properties that apply to the Microsoft Dynamics CRM object.

You can view the source properties of the data object read operation from the **General**, **Column**, and **Advanced** tabs.

### General Properties

The general properties display the name and description of the data object read operation.

### Column Properties

The column properties display the data types, precision, and scale of the source property in the data object read operation.

The following table describes the source column properties of the data object read operation:

Property	Description
Name	Name of the column
Type	Native data type of the column
Precision	Maximum number of significant digits for numeric data types, or maximum number of characters for string data types. For numeric data types, precision includes scale.
Scale	Maximum number of digits after the decimal point for numeric values
Primary Key	Determines if the column property is a part of the primary key.
Display Name	Display name of the column.

Property	Description
Required Level	Sets the property for the data entry requirement level that is enforced for the attribute.
Access Type	Indicates whether the field has read and write permissions.
Description	Description of the column

## Advanced Properties

The advanced properties display the business name of the Microsoft Dynamics CRM entity.

The following table describes the source column properties of the data object read operation:

Property	Description
Intersect Entity	Indicates that the entity is an intersect entity.

## Output Properties of the Data Object Read Operation

The output properties represent data that the Data Integration Service passes into the mapping pipeline. Select the output properties to edit the port properties of the data object read operation.

The output properties of the data object read operation include general properties that apply to the data object operation. The output properties also include port, source, query, and advanced properties that apply to the Microsoft Dynamics CRM object.

You can view and change the output properties of the data object read operation from the **General**, **Ports**, **Sources**, **Query**, and **Advanced** tabs.

### General Properties

The general properties display the name and description of the data object read operation.

### Ports Properties

The output ports properties display the data types, precision, and scale of the data object read operation.

The following table describes the output ports properties that you configure in the data object read operation.

Property	Description
Name	Name of the port.
Type	Data type of the port.
Precision	Maximum number of significant digits for numeric data types, or maximum number of characters for string data types. For numeric data types, precision includes scale.
Scale	Maximum number of digits after the decimal point for numeric values.
Description	Description of the port.

## Sources Properties

The sources properties list the Microsoft Dynamics CRM objects in the data object read operation.

## Query Properties

The Data Integration Service generates a default SQL query that it uses to read data from Microsoft Dynamics CRM. The default query is a SELECT statement for each column that it reads from the sources. You can override the default query through the simple or advanced query.

The following table describes the query properties that you configure for Microsoft Dynamics CRM entities:

Property	Description
Join	User-defined join in a data object. A user-defined join specifies the condition used to join data from multiple sources in the same data object.
Filter	Filter value in a read operation. The filter specifies the where clause of select statement. Use a filter to reduce the number of rows that the Data Integration Service reads from the source. When you enter a source filter, the Developer tool adds a WHERE clause to the default query.
Sort	Sorts the rows queried from the source. The Data Integration Service adds the ports to the ORDER BY clause in the default query.

## Run-time Properties

The run-time properties displays the connection type and partition information used for the data object operation.

The following table describes the run-time properties that you configure for relational sources:

Property	Description
Connection	Name of the Microsoft Dynamics CRM connection.
Partition Types	Type of the partition used. The partition type determines how the Data Integration Service redistributes data across partition points.

## Advanced Properties

Use the advanced properties to specify the data object read operation properties to read data from Microsoft Dynamics CRM objects.

The following table describes the advanced properties that you configure in the data object read operation:

Property	Description
Page Size	Maximum number of records the Data Integration Service can read from a Microsoft Dynamics CRM source in one batch. Default is 50 records.
Row Limit	Specifies the maximum number of rows the Data Integration Service processes. Default is 0, which indicates that the Data Integration Services reads all records.

## Join

Use entity join in the read operation properties to join two related entities.

You can join two related entities that have either one to many or many to many relationships. For example, join the account and contact entities to retrieve all accounts and the corresponding contacts.

You cannot join unrelated entities, more than two entities, or join entities that have many to many relationships. If you join entities that have many to many relationships, the Data Integration Service retrieves only those records that satisfy this condition.

The following table describes the join information:

Property	Description
Primary Entity	Primary entity to join in the read operation properties.
1:N Relationships	The corresponding relationships between the primary entity and the linked entity.
Join Type	Type of join that can be inner or outer join. Default is outer join.
Primary Entity Join Attribute	The primary entity join attribute.
Linked Entity Join Attribute	The linked entity join attribute.
Join Expression	Displays the adapter-specific relationship you specify to join two related entities. You can copy this expression and use it when you specify the related entity join information at run-time.

## Row Limit

Use the row limit in the read operation properties to retrieve a specific number of rows.

The Data Integration Service retrieves the number of rows based on the value entered. If you do not enter a value, the Data Integration Service retrieves all the rows. For example, you can test a mapping by retrieving a sample of rows.

If you configure sorted ports in the read operation properties, the Data Integration Service retrieves the number of rows based on the sorted data output. If you do not configure sorted ports in the read operation properties, the Data Integration Service retrieves the number of rows based on the behavior of the third party server.

## Filter

Use the Filter transformation to filter out rows in a mapping. As an active transformation, the Filter transformation may change the number of rows passed through it.

The Filter transformation allows rows that meet the specified filter condition to pass through. It drops rows that do not meet the condition. You can filter data based on one or more conditions. You can provide a filter to improve the performance when you read from Microsoft Dynamics CRM.

A filter condition returns TRUE or FALSE for each row that the Data Integration Service evaluates, based on whether a row meets the specified condition. For each row that returns TRUE, the Data Integration Services pass through the transformation. For each row that returns FALSE, the Data Integration Service drops and writes a message to the log.

You cannot concatenate ports from more than one transformation into the Filter transformation. The input ports for the filter must come from a single transformation.

## Sort

Use the sort operation in the read operation properties to retrieve data from an entity in a specific order.

You can configure the sort operation in the read operation properties to retrieve the entities in ascending or descending order. You can provide several sort filters. The Data Integration Service processes the sort filters from in the order you configure in the read operation properties.

For picklist fields, the Data Integration Service sorts the returned rows based on the Option Set label stored for the field on Microsoft Dynamics CRM. For lookup fields, the Data Integration Service sorts the returned rows based on the name of the lookup record.

# Microsoft Dynamics CRM Data Object Write Operation Properties

The Data Integration Service writes data to a Microsoft Dynamics CRM object based on the data object write operation. The Developer tool displays the data object write operation properties for the Microsoft Dynamics CRM data object in the Data Object Operation section.

You can view the data object write operation from the Input and Target properties.

### Input properties

Represent data that the Data Integration Service reads from an enterprise resource planning (ERP) system or a relational data object. Select the input properties to edit the port properties and specify the advanced properties of the data object write operation.

### Target properties

Represent data that the Data Integration Service writes data to Microsoft Dynamics CRM. Select the target properties to view data, such as the name, description, and the relationship of the Microsoft Dynamics CRM object.

## Input Properties of the Data Object Write Operation

Input properties represent data that the Data Integration Service reads from an enterprise resource planning (ERP) system or a relational data object. Select the input properties to edit the port properties of the data object write operation. You can also specify advanced data object write operation properties to write data to Microsoft Dynamics CRM entities.

The input properties of the data object write operation include general properties that apply to the data object write operation. They also include port, source, and advanced properties that apply to the data object write operation.

You can view and change the input properties of the data object write operation from the **General**, **Ports**, **Sources**, and **Advanced** tabs.

### General Properties

The general properties list the name and description of the data object write operation.



## Ports Properties

The input ports properties list the data types, precision, and scale of the data object write operation.

The following table describes the input ports properties that you must configure in the data object write operation:

Property	Description
Name	Name of the port.
Type	Data type of the port.
Precision	Maximum number of significant digits for numeric data types, or maximum number of characters for string data types. For numeric data types, precision includes scale.
Scale	Maximum number of digits after the decimal point for numeric values.
Description	Description of the port.

## Sources Properties

The sources properties list the Microsoft Dynamics CRM objects in the data object write operation.

## Run-time Properties

The run-time properties displays the connection type and partition information used for the data object operation.

The following table describes the run-time properties that you configure for relational sources:

Property	Description
Connection	Name of the Microsoft Dynamics CRM connection.
Partition Types	Type of the partition used. The partition type determines how the Data Integration Service redistributes data across partition points.

## Advanced Properties

The advanced properties allow you to specify data object write operation properties to write data to Microsoft Dynamics CRM objects.

You can configure the following advanced properties in the data object write operation:

Property	Description
Update	Update strategy for existing rows. Select one of the following strategies: <ul style="list-style-type: none"><li>- Update as Update. Updates all rows flagged for update. This is the default value.</li><li>- Update as Insert. Inserts all rows flagged for update.</li><li>- Update else Insert. Updates all rows flagged for update if they exist in the target and then inserts any remaining rows marked for insert.</li></ul>
Use Bulk	The Data Integration Service writes records in bulk mode during data load. Default is not selected.
Maximum Batch Size	Number of records that Data Integration Service writes at a time during bulk load of data. Default is 50.
Thread Count	Number of parallel threads for data load. Set the appropriate value based on the hardware capabilities of the machine on which the Data Integration service runs. Default is 8. Thread count is not applicable for bulk.

## Target Properties of the Data Object Write Operation

The target properties represent the data that is used to populate the Microsoft Dynamics CRM data object that you added when you created the data object. The target properties of the data object write operation include general and column properties that apply to the Microsoft Dynamics CRM objects. You can view the target properties of the data object write operation from the **General**, **Column**, and **Advanced** tabs.

### General Properties

The general properties display the name and description of the Microsoft Dynamics CRM entities.

### Column Properties

The column properties display the data types, precision, and scale of the target property in the data object write operation.

You can view the following target column properties of the data object write operation:

Property	Description
Name	Name of the column
Type	Native data type of the column
Precision	Maximum number of significant digits for numeric data types, or maximum number of characters for string data types. For numeric data types, precision includes scale.
Scale	Maximum number of digits after the decimal point for numeric values

Property	Description
Primary Key	Determines if the column property is a part of the primary key.
Display Name	Display name of the column.
Required Level	Sets the property for the data entry requirement level that is enforced for the attribute.
Access Type	Indicates whether the field has read and write permissions.
Description	Description of the column

## Advanced Properties

The advanced properties display the business name of the Microsoft Dynamics CRM entity.

The following table describes the source column properties of the data object write operation:

Property	Description
Intersect Entity	Indicates that the entity is an intersect entity.

# Importing a Microsoft Dynamics CRM Data Object

Import a Microsoft Dynamics CRM data object to read data from a Microsoft Dynamics CRM entity.

1. Select a project or folder in the Object Explorer view.
2. Click **File > New > Data Object**.
3. Select **Microsoft Dynamics CRM Data Object** and click **Next**.  
The **New Microsoft Dynamics CRM Data Object** dialog box appears.
4. Enter a name for the data object.
5. Click **Browse** next to the **Location** option and select the target project or folder.
6. Click **Browse** next to the **Connection** option and select the Microsoft Dynamics CRM connection from which you want to import the Microsoft Dynamics CRM entity.
7. To add an object, click **Add** next to the **Selected Resource(s)** option.  
The **Add Resource** dialog box appears.
8. Select a Microsoft Dynamics CRM entity. You can search for it or navigate to it.
  - Navigate to the Microsoft Dynamics CRM entity that you want to import and click **OK**.
  - To search for the Microsoft Dynamics CRM entity, enter the name of the Microsoft Dynamics CRM entity that you want to add and click **OK**.
9. If required, add additional objects to the Microsoft Dynamics CRM data object.  
You can also add objects to a Microsoft Dynamics CRM data object after you create it.
10. Click **Finish**.

The data object appears under Physical Data Objects in the project or folder in the Object Explorer view.

# Creating a Microsoft Dynamics CRM Data Object Read or Write Operation

You can add a Microsoft Dynamics CRM data object read or write operation to a mapping or mapplet as a source. You can create the data object read or write operation for one or more Microsoft Dynamics CRM data objects.

Before you create a Microsoft Dynamics CRM data object read or write operation, you must create at least one Microsoft Dynamics CRM data object.

1. Select the data object in the Object Explorer view.
2. Right-click and select **New > Data Object Operation**.
3. Enter a name for the data object read or write operation.
4. Select **Read** or **Write** as the type of data object operation.
5. Click **Add**.

The **Select Resources** dialog box appears.

6. Select the Microsoft Dynamics CRM entity for which you want to create the data object read or write operation and click **OK**.
7. Click **Finish**

The Developer tool creates the data object read or write operation for the selected data object.

## CHAPTER 5

# Microsoft Dynamics CRM Mappings

This chapter includes the following topic:

- [Microsoft Dynamics CRM Mappings Overview, 29](#)

## Microsoft Dynamics CRM Mappings Overview

After you create a Microsoft Dynamics CRM data object read or write operation, you can develop a mapping.

You can define the following objects in the mapping:

- Microsoft Dynamics CRM data object read operation as the input to read data from Microsoft Dynamics CRM entities.
- Relational, flat file, or any supported data object as the output.
- Relational, flat file, or any supported data object as the input.
- Microsoft Dynamics CRM data object write operation as the output to write data to Microsoft Dynamics CRM entities.

Validate and run the mapping to read data from Microsoft Dynamics CRM sources, and write to a Microsoft Dynamics CRM entity.

## CHAPTER 6

# Microsoft Dynamics CRM Run-time Processing

This chapter includes the following topics:

- [Microsoft Dynamics CRM Run-time Processing Overview, 30](#)
- [Bulk Load, 30](#)
- [Parameterization, 31](#)
- [Partitioning, 31](#)

## Microsoft Dynamics CRM Run-time Processing Overview

When you develop a Microsoft Dynamics CRM mapping, you define the data object operation read or write properties. The data object read operation determines how Microsoft Dynamics CRM sources read data, and the data object write operation determines how to write data to Microsoft Dynamics CRM entities.

## Bulk Load

You can configure the data object write operation to write records in bulk mode. The Data Integration Service can write records to Microsoft Dynamics CRM by using the ExecuteMultipleRequest API. The Microsoft Dynamics CRM version must be a minimum of Microsoft Dynamics CRM 2011 Rollup 13.

Set the following data object write operation properties to perform bulk loading:

### **Use Bulk**

The Data Integration Service writes records in bulk mode during data load. The Data Integration Service can process one bulk request for one data object operation partition for on-premise deployment. For online deployment, the maximum partitions allowed for bulk load is two.

### **Maximum Batch Size**

The number of records that Data Integration Service writes at a time during bulk load of data. The maximum bulk batch size you can configure for bulk load is 1000 records. The default is 50 records.

**Note:** If the batch size is greater than 500, the data object operation requires 512 MB minimum and 1024 MB maximum memory. If you do not increase the memory limits, the mapping might fail. Configure the **Java SDK Minimum Memory** limit to 512 MB and the **Java SDK Maximum Memory** limit to 1024 MB in the Data Integration Service in the Administrator tool.

## Parameterization

You can create a configuration file with data object write operation properties that overrides the properties in run-time.

You can parameterize the data object write operation properties.

### Parameterizable Data Object Operation Properties

You can create a configuration file with data object read and write operation properties that overrides the properties at run-time.

You can parameterize the following data object read operation properties:

- Maximum Page Size
- Source Filter
- Sorted Ports

You can parameterize the following data object write operation properties:

- Maximum Batch Size
- Thread Count

## Partitioning

The Data Integration Services creates a default partition type at each partition point. If you have the Partitioning option, you can change the partition type. The partition type controls how the Data Integration Service distributes data among partitions at partition points.

When you configure the partitioning information for a pipeline, you must define a partition type at each partition point in the pipeline. The partition type determines how the Data Integration Service redistributes data across partition points.

You can define the following partition types:

#### **Dynamic Partitioning**

When you use dynamic partitioning, you can configure the partition information so that the Data Integration Service determines the number of partitions to create at run time.

#### **Key Range Partitioning**

You specify one or more ports to form a compound partition key. The Data Integration Service passes data to each partition depending on the ranges you specify for each port. Use key range partitioning where the sources or targets in the pipeline are partitioned by key range.

## Dynamic Partitioning

If the volume of data grows or you add more processors, you might need to adjust partitioning so that the run time does not increase. When you use dynamic partitioning, you can configure the partition information so that the Data Integration Service determines the number of partitions to create at run time.

The Data Integration Service scales the number of partitions at run time based on factors such as source database partitions or the number of nodes in a grid.

If any transformation in a stage does not support partitioning, or if the partition configuration does not support dynamic partitioning, the Data Integration Service does not scale partitions in the pipeline. The data passes through one partition.

You can optimize read performance by using key range partitioning and optimize write performance by using dynamic partitioning.

## Key Range Partitioning

With key range partitioning, the Data Integration Service distributes rows of data based on a port or set of ports that you define as the partition key. For each port, you define a range of values. The Integration Service uses the key and ranges to send rows to the appropriate partition.

For example, if you specify key range partitioning at run-time transformation, the Data Integration Service uses the key and ranges to create the WHERE clause when it selects data from the source. Therefore, you can have the Data Integration Service pass all rows that contain customer IDs less than 135000 to one partition and all rows that contain customer IDs greater than or equal to 135000 to another partition.

If you specify hash user keys partitioning at a transformation, the Data Integration Service uses the key to group data based on the ports you select as the key. For example, if you specify ITEM\_DESC as the hash key, the Data Integration Service distributes data so that all rows that contain items with the same description go to the same partition.



## APPENDIX A

# Microsoft Dynamics CRM and Transformation Data Types

This appendix includes the following topic:

- [Microsoft Dynamics CRM and Transformation Data Types, 33](#)

## Microsoft Dynamics CRM and Transformation Data Types

Informatica Developer uses the following data types in Microsoft Dynamics CRM mappings:

- Microsoft Dynamics CRM native data types. Microsoft Dynamics CRM data types appear in Microsoft Dynamics CRM definitions in a mapping.
- 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 Integration Service uses to move data across platforms. Transformation data types appear in all transformations in a mapping.

When the Data Integration Service reads source data, it converts the native data types to the comparable transformation data types before transforming the data. When the Data Integration Service writes to a target, it converts the transformation data types to the comparable native data types.

The following table lists the Microsoft Dynamics CRM data types that Informatica supports and the corresponding transformation data types:

Microsoft Dynamics CRM Datatype	Range and Description	Transformation Datatype
Bigint	Big integer attribute. You can specify the maximum and minimum values between -922,337,203,685,477 and 922,337,203,685,477.	Bigint
Boolean	A Boolean attribute. 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 should be 0 or 1 , where 0 is for false and 1 for true.	Integer

Microsoft Dynamics CRM Datatype	Range and Description	Transformation Datatype
Customer	Customer attribute represents a type of lookup where either an account or contact is a valid type of record. Input must be in the <logicalname:guid> format . For example, account:4fca93d7-b73d-e011-b010-005056a8019b.	String
DateTime	Date and time values. Minimum value: 1900/1/1 00:00:00 Maximum value: 9999/12/30 23:59:59	Date/Time <b>Note:</b> Null dates are filtered and passed to the target as Null.
Decimal	A decimal attribute. 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.	Decimal
Double	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.	Double
EntityName	Entity attribute represents the logical name of an entity. You cannot write EntityName datatype.	String
Integer	Integer values. You can specify the maximum and minimum values from -2,147,483,648 to 2,147,483,647.	Integer
Lookup	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 <logicalname:guid> or <guid> format . For example, account:4fca93d7-b73d-e011-b010-005056a8019b or 4fca93d7-b73d-e011-b010-005056a8019b.	String
ManagedProperty	ManagedProperty attribute specifies the managed properties for an entity. The value can be either 0 or 1.	String
Memo	Memo attribute represents a multiline text box .	String
Money	Money attribute. 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.	Money
Owner	Owner attribute refers to the owner of an entity. Owner name contains a logical name which can be either systemuser or team. For example, <systemuser:guid> or <team:guid>.	String

Microsoft Dynamics CRM Datatype	Range and Description	Transformation Datatype
PartyList	<p>Activity party details that has information about PartyId, ActivityPartyId, and ParticipationTypeMask.</p> <p>A PartyId is a unique identifier of the party associated with the activity. For example, &lt;logicalname:guid&gt;.</p> <p>An ActivityPartyId is a unique identifier of the activity associated with the activity party. A party is any person who is associated with an activity. ActivityPartyId does not have to be populated while writing as it will be populated if a value is not provided.</p> <p>A ParticipationTypeMask is the role of the person in the activity, such as sender, organizer, or owner.</p> <p>While reading and writing, the PartyList datatype is in string format, but it contains XML data.</p>	String
Picklist	<p>Picklist attribute provides a set of options that are displayed in a drop-down list. You can create the picklist attribute so that it can contain its own options or use a global options set.</p> <p>An option value of a picklist is an integer that corresponds to the option description . You can find the option values and description in the Microsoft Dynamics CRM documentation for the default entities. For example, for an AccountRole picklist , to set the picklist value to " Decision Maker", the option value is 1.</p>	Integer
State	<p>State attribute is automatically created when you create an entity. The state attribute internally represents the status of the entity.</p> <p>A value of a state is an integer that corresponds to the state description . You can find the state values and description in the Microsoft Dynamics CRM documentation for the default entities. For example, to set the state as "Open", the value is 0 for the Activity entity.</p>	Integer
Status	<p>Status attribute is automatically created when you create an entity. Each of the options must be associated with the state attribute for the entity. Status attribute displays the value of state to the end user.</p> <p>A value of a status is an integer that corresponds to the status description . You can find the status values and description in the Microsoft Dynamics CRM documentation for the default entities For example, to set the status as " Active", the value is 1 for the Account entity.</p>	Integer

Microsoft Dynamics CRM Datatype	Range and Description	Transformation Datatype
String	String attribute represents a single line of text.	String
Uniquelidentifier	Unique identifier represents an attribute that is the guid of another entity instance. Uniquelidentifier should be in the guid format. For example, 4fca93d7-b73d-e011-b010-005056a8019b.	String

## PartyList

Each entity uses the following XML format:

```

<EntityCollection>
  <Entity Name="activityparty">
    <Attribute Name="partyid" Value="contact:<guid>"/>
    <Attribute Name="participationtypemask" Value="2"/>
    <Attribute Name="activitypartyid" Value="<guid>"/>
  </Entity>
  <Entity Name="activityparty">
    <Attribute Name="partyid" Value="account:<guid>"/>
    <Attribute Name="participationtypemask" Value="2"/>
    <Attribute Name="activitypartyid" Value="<guid>"/>
  </Entity>
</EntityCollection>

```

**Note:** Each PartyList data type port has a separate XML entry.

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