



Informatica™

Informatica® PowerExchange for Microsoft  
Dynamics CRM

10.4.0

# User Guide for PowerCenter

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# Preface

Use the *Informatica® PowerExchange® for Microsoft Dynamics CRM User Guide for PowerCenter®* to learn how to extract from and load to Microsoft Dynamics CRM by using PowerCenter Client. Learn to create a Microsoft Dynamics CRM connection, develop mappings, and run sessions in an Informatica domain.

## 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:

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- View product availability information.
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- Find your local Informatica User Group Network and collaborate with your peers.

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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](#)
- [PowerCenter and Microsoft Dynamics CRM Integration, 9](#)

### Understanding PowerExchange for Microsoft Dynamics CRM Overview

PowerExchange for Microsoft Dynamics CRM integrates PowerCenter with Microsoft Dynamics CRM to extract and load data. You can import Microsoft Dynamics CRM business entities as sources and targets to create mappings and run a session 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.

You can use PowerExchange for Microsoft Dynamics CRM to extract data from or load data to Dynamics 365 Sales.

Organizations choose on-premise deployment of Microsoft Dynamics CRM if they are large enough to support the installed software and required hardware. The organization is responsible for maintaining the technology infrastructure and the software licenses are paid through licensing fees.

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 product line consists of enterprise resource planning (ERP) and customer relationship management (CRM) software applications.

PowerExchange for Microsoft Dynamics CRM integrates PowerCenter with 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.

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. One-to-many, many-to-one, many-to-many, and self-referential relationships are available.

**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.

## PowerCenter 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 Designer so you can import Microsoft Dynamics CRM entities into PowerCenter and use them in mappings. It integrates Microsoft Dynamics CRM with the PowerCenter Integration Service so you can run workflows that extract, transform, and load Microsoft Dynamics CRM data.

## PowerCenter Designer and Microsoft Dynamics CRM

Use the Designer to import Microsoft Dynamics CRM entities as Microsoft Dynamics CRM source or target definitions.

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

# PowerCenter Integration Service and Microsoft Dynamics CRM Integration

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

The PowerCenter 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.

## 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](#)
- [Registering the Plug-in, 11](#)
- [Creating a Registry Entry for PowerExchange for Microsoft Dynamic CRM , 13](#)
- [HTTP Proxy Options, 13](#)
- [Installing the Security Policy Files, 14](#)
- [Login Configuration, 14](#)
- [Kerberos Configuration, 15](#)
- [Adding the Certificate to the Keystore File, 15](#)
- [Copying JAR Files, 16](#)

## PowerExchange for Microsoft Dynamics CRM Configuration Overview

PowerExchange for Microsoft Dynamics CRM installs with PowerCenter.

If you upgrade from a previous version, you must register the PowerExchange for Microsoft Dynamics CRM plug-in with the PowerCenter repository.

## Registering the Plug-in

After you complete the installation, register the plug-in with the repository. If you are upgrading from a previous version, update the plug-in registration when you register the plug-in.

To register the plug-in, the repository must be running in exclusive mode. Use the Administrator tool or the pmrep RegisterPlugin command line program to register the plug-in. If you do not have the correct privileges to register the plug-in, contact the user who manages the PowerCenter Repository Service.

The plug-in file is an .xml file that defines the functionality of the adapter. When you install the server component, the installer copies the plug-in file to the following directory:

```
<Informatica installation directory>/server/bin/plugin
```

The name of the plug-in file for PowerExchange for Microsoft Dynamics CRM is `msd-crm.xml`.

## Registering the Plug-in from the Administrator Tool

Register a repository plug-in to add its functionality to the repository.

1. Run the PowerCenter Repository Service in exclusive mode.
2. In the **Navigator**, select the PowerCenter Repository Service to which you want to add the plug-in.
3. In the **Contents** panel, click the **Plug-ins** view.
4. In the **Actions** menu of the **Domain** tab, select **Register Plug-in**.
5. On the **Register Plug-in** page, click the **Browse** button to locate the plug-in file.
6. Enter your user name, password, and security domain.  
The **Security Domain** field appears when the Informatica domain contains an LDAP security domain.
7. Click **OK**.  
The PowerCenter Repository Service registers the plug-in with the repository. The results of the registration operation appear in the activity log.
8. Run the PowerCenter Repository Service in normal mode.

## Registering the Plug-in from the Command Line Program

You can use the `pmrep RegisterPlugin` command to register the plug-in from the command line program.

1. Run the PowerCenter Repository Service in exclusive mode.
2. Run the `pmrep Connect` command to connect to the Repository Service using a user account with Administrator Repository privilege.

The `RegisterPlugin` command uses the following syntax:

```
pmrep connect -r <repository name> -d <domain_name> -n <domain user name> -x  
<domain_password>
```

3. Find `<adaptername>.xml` in the following directory:

```
<Informatica installation directory>\server\bin\Plugin
```

4. Run the `pmrep RegisterPlugin` command to update the repository.

The `RegisterPlugin` command uses the following syntax:

```
pmrep registerplugin -i <Informatica installation directory>\server\bin\Plugin  
\<adaptername>.xml -e
```

# Creating a Registry Entry for PowerExchange for Microsoft Dynamic CRM

Create a registry entry for PowerExchange for Microsoft Dynamics CRM on the client machine.

1. Go to the following location: `<Informatica client installation directory>\clients\PowerCenterClient\client\bin`
2. Run the `PWX_MSynamics_64.reg` file to create the registry entry.

## HTTP Proxy Options

If your organization uses a proxy server to access the internet, you need to configure the HTTP proxy server authentication settings. Configure the HTTP proxy options for the PowerCenter Integration Service and PowerCenter Client.

If you are upgrading, verify that the settings for the HTTP proxy options for each component are correct.

## Configuring HTTP Proxy Options

You can configure the HTTP proxy options in the `properties.conf` file. The `properties.conf` file must be present in the following locations:

- For the PowerCenter Integration Service, `<Informatica installation directory>/server/bin/javaliib/msdcrm/conf`
  - For the PowerCenter Client, `<Informatica installation directory>/clients/PowerCenterClient/client/bin/javaliib/msdcrm/conf`
1. Use a text editor to create a text file, and save it as `properties.conf` in the following locations:
    - For the PowerCenter Integration Service, `<Informatica installation directory>/server/bin/javaliib/msdcrm/conf`
    - For the PowerCenter Client, `<Informatica installation directory>/clients/PowerCenterClient/client/bin/javaliib/msdcrm/conf`
  2. Configure the following parameters in the text file and specify appropriate values for each parameter:

Parameter	Description
ProxyHost	Required. Host name of the HTTP proxy server.
ProxyPort	Required. Port number of the HTTP proxy server.
ProxyUser	Required if configured on the proxy server. User name for the proxy account.
ProxyPassword	Required if configured on the proxy server. Password for the proxy account.

For example, you can specify the following values for HTTP proxy options:

```
ProxyHost=inkw12adq12.informatica.com  
ProxyPort=8888
```

```
ProxyUser=adminqa
ProxyPassword=infil200^
```

## 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 8.
  - To download on AIX, see the IBM documentation.
  - To download on all other 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 `UnlimitedJCEPolicyJDK8.zip` to the following location: `<PowerCenter Installation Directory>\clients\java\32bit\jre\lib\security`.
3. For the server, extract the files to the following location: `<PowerCenter Installation Directory>/java/jre/lib/security`.
  - On AIX, extract the files you downloaded.
  - 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"
```

For AIX, update `login.conf` with details of the SPN in the following format:

```
<ApplicationServer> {com.ibm.security.auth.module.Krb5LoginModule
requiredprincipal="<domainaccount>@<FQDN>";};
```

For example,

```
CRMAPP01.contoso.com {com.ibm.security.auth.module.Krb5LoginModule
requiredprincipal="CRMService@contoso.com";};
```

Update `login.conf` in the following locations:

- On the PowerCenter Client machine, the configuration file is in the following location: `<PowerCenter Installation Directory>\clients\PowerCenterClient\client\bin\javalib\msdcrm\conf`
- On the PowerCenter Service machine, the configuration file is in the following location: `<PowerCenter Installation Directory>/server/bin/javalib/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:

- <PowerCenter Installation Directory>\clients\PowerCenterClient\client\bin\javalib\msdcrm\conf in the client.
- <PowerCenter Installation Directory>/server/bin/javalib/msdcrm/conf in 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 PowerCenter client and server machines.

1. Copy the certificate files to a local folder.
2. From the command line, browse to <PowerCenter Installation Directory>\clients\java\32bit\jre\bin on the client machine and <PowerCenter Installation Directory>/server/java/jre/bin 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`

\cacerts in Windows and `keytool -import -alias rootcer1 -file "<certificate path>/<certificate filename>" -keystore ../lib/security/cacerts` in Unix.

4. Enter the password for the keystore.

The certificate is added to the keystore file.

## Copying JAR Files

After you upgrade from a previous version of PowerExchange for Microsoft Dynamics CRM, you must copy the jar files in the installation location.

1. Copy the `local_policy.jar`, `US_export_policy.jar`, and `cacerts` files manually in the installation location.

For the client,

- If you upgrade from 9.x to 10.2.0, copy the jar files from the following 9.x installation folder `<Informatica installation directory>\clients\java\jre\lib\security` to the following 10.2.0 installation folder `<Informatica installation directory>\clients\java\32bit\jre\lib\security`
- If you upgrade from 10.x to 10.2.0, copy the jar files from the following 10.x installation folder `<Informatica installation directory>\clients\java\32bit\jre\lib\security` to the corresponding 10.2.0 folder.

For the server, copy the jar files from the `<Informatica installation directory>java/jre/lib/security` folder of the previous release to the corresponding 10.2.0 folder.

2. Copy the `msdcrm` folder manually in the installation location.

For the client, copy the `msdcrm` folder from the `<Informatica installation directory>\clients\PowerCenterClient\client\bin\javalib` folder of the previous release to the corresponding 10.2.0 folder.

For the server, copy the `msdcrm` folder from the `<Informatica installation directory>/server/bin/javalib` folder of the previous release to the corresponding 10.2.0 folder.



## CHAPTER 3

# Microsoft Dynamics CRM Sources and Targets

This chapter includes the following topics:

- [Microsoft Dynamics CRM Sources and Targets Overview, 17](#)
- [Import Filter, 18](#)
- [Importing a Microsoft Dynamics CRM Source or Target Definition, 18](#)

## Microsoft Dynamics CRM Sources and Targets Overview

Use the Designer to import Microsoft Dynamics CRM entities into the PowerCenter repository.

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 Designer displays the entities available in the organization in a hierarchical order. The relationship between the entities can be one-to-one, one-to-many, many-to-many, many-to-one, or self-referential. Design the mappings according to the entity relationships in the sources and targets to maintain the integrity of data.

The Designer imports the following properties of the attributes in an entity:

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

The Designer 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 logical attributes and picklist attribute directly. You can create lookups to read and write these attributes. For example, you cannot read or write data to ParentCustomerIdName in the Contact entity. You can do a lookup on the Account Entity and Contact Entity to read or write data to ParentCustomerIdName.

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.

## Import Filter

You can provide filter conditions when you import Microsoft Dynamics CRM source or target definition to filter the required entities.

When you import Microsoft Dynamics CRM source definitions or target definitions, you can view entities that match the condition.

You can filter entities by name. Use the following guidelines when you enter a filter condition:

- Use a comma (,) to enter more than one filter criterion.
- Use an underscore (\_) or period (.) as wildcard character for a single character. Use an asterisk (\*) or percent sign (%) as wildcard character for multiple characters.

## Importing a Microsoft Dynamics CRM Source or Target Definition

1. Choose to import a Microsoft Dynamics CRM source or target definition.
  - In the Source Analyzer, click **Sources > Import from Microsoft Dynamics CRM**.
  - In the Target Designer, click **Targets > Import from Microsoft Dynamics CRM**.

The **Import from Microsoft Dynamics CRM** dialog box appears.

- In the **Import from Microsoft Dynamics CRM** dialog box, enter the following information:

Import Attribute	Description
Authentication Type	<p>Authentication type for the connection. Select one of the following authentication types:</p> <ul style="list-style-type: none"> <li>- Passport. Often used for online 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>
Application Server	<p>Name of the server that hosts Microsoft Dynamics CRM.</p> <p>Provide the fully-qualified domain name for active directory and claims-based authentication. The fully-qualified domain name should be the same in the SSL certificate file.</p> <p>Use the URL of the CrmDiscoveryService Web service for passport authentication. Log in to Microsoft Dynamics online account and click Settings   Customizations. For example, if the URL for the CrmDiscoveryService Web service is <a href="https://disco.crm5.dynamics.com/XRMServices/2011/Discovery.svc">https://disco.crm5.dynamics.com/XRMServices/2011/Discovery.svc</a>, enter <a href="https://disco.crm5.dynamics.com">disco.crm5.dynamics.com</a>.</p> <p>Configure for active directory, claims-based, and passport authentication.</p>
Port	<p>Port in which Microsoft Dynamics CRM is configured to listen.</p> <p>Default is 5555. If you use secure communication, the default is 443.</p> <p>Configure for active directory and claims-based authentication.</p>
Security Token Service	<p>Microsoft Dynamics CRM security token service URL. For example, <a href="https://sts1.&lt;company&gt;.com">https://sts1.&lt;company&gt;.com</a>.</p> <p>Configure for claims-based authentication.</p>
Use SSL/TLS	<p>Use secure connection when Microsoft Dynamics CRM website is configured for secured communication.</p> <p>Configure for active directory and claims-based authentication.</p>
Domain	<p>Domain to which the user belongs. You must provide the complete domain name. For example, <a href="https://msd.sampledomain.com">msd.sampledomain.com</a>.</p> <p>Configure for active directory and claims-based authentication.</p>
User Name	<p>User ID registered with Microsoft Dynamics CRM.</p> <p>Configure for active directory, claims-based, and passport authentication.</p>
Password	<p>Password to authenticate the user.</p> <p>Configure for active directory, claims-based, and passport authentication.</p>

- Click **Connect**.
  - Click **Next**.
  - Optionally, enter a condition to filter entities.
  - Select the organization from which you want to load the entities.
  - Click **Load Entities**.
  - Select an entity and drill down to select the child entities that you want to import.
- After you select an entity, the **Entity Information** pane displays information about the entity.
- Click **Finish**.

## CHAPTER 4

# Microsoft Dynamics CRM Application Source Qualifiers

This chapter includes the following topics:

- [Microsoft Dynamics CRM Application Source Qualifiers Overview, 20](#)
- [Entity Join, 21](#)
- [Row Limit, 22](#)
- [Source Filter, 22](#)
- [Sorted Ports, 23](#)

## Microsoft Dynamics CRM Application Source Qualifiers Overview

Microsoft Dynamics CRM Application Source Qualifiers represents the rows that the PowerCenter Integration Service reads during a session.

You can use the Application Source Qualifier properties to improve the performance when the session reads from a Microsoft Dynamics CRM source.

In the Application Source Qualifier for the sources, you can perform the following tasks:

### **Filter data**

Use the source filter to retrieve the required rows.

### **Sort data**

Use sorted ports to sort data and to ensure that the PowerCenter Integration Service reads source data in a specific order from an entity.

### **Entity join**

Use entity join to ensure that the PowerCenter Integration Service joins two related entities.

### **Row limit**

Use the row limit to retrieve a specific number of rows. The PowerCenter Integration Service retrieves the number of rows specified.

# Entity Join

Use entity join in the Application Source Qualifier to join two related entities.

You can join two related entities that have either one to many or many to one 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 PowerCenter Integration Service retrieves only those records that satisfy this condition.

The following table describes the entity join information:

Property	Description
Primary Entity	Primary entity to join in the Application Source Qualifier.
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.

## Configuring Entity Join

You can configure related join entities from the Application Source Qualifier.

1. Drag the primary entity and the entity you want to link to the Mapping Designer.  
The PowerCenter Integration Service creates two Application Source Qualifiers for the two entities.
2. Delete the Application Source Qualifier of the linked entity and connect all the ports from the linked entity to the Application Source Qualifier of the primary entity.
3. In the Mapping Designer, double-click the Application Source Qualifier.
4. Click the **Microsoft Dynamics CRM Properties** tab.
5. Click the Browse button by the **Entity Join** field.  
The **Edit Metadata Extension Value - Entity Join** dialog box appears.
6. The primary entity is selected by default.  
You can select another primary entity.  
The PowerCenter Integration Service populates the corresponding relationships between the primary entity and the linked entity.
7. In the **Relationship Attributes** section, the primary entity attribute and the linked entity attribute are populated.
8. Click **OK**.

**Note:** You can join two entities that are the same.

# Row Limit

Use the row limit in the Application Source Qualifier to retrieve a specific number of rows.

The PowerCenter Integration Service retrieves the number of rows based on the value entered. If you do not enter a value, the PowerCenter 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 Application Source Qualifier, the PowerCenter Integration Service retrieves the number of rows based on the sorted data output. If you do not configure sorted ports in the Application Source Qualifier, the PowerCenter Integration Service retrieves the number of rows based on the behavior of the third party server.

## Configuring the Row Limit

You can configure the number of rows that you want to retrieve from the Application Source Qualifier.

1. In the Mapping Designer, double-click the Application Source Qualifier.
2. Click the **Microsoft Dynamics CRM Properties** tab.
3. Enter the number of rows you want to retrieve in the row limit field.
4. Click **OK**.

# Source Filter

Use the source filter in the Application Source Qualifier to retrieve rows from an entity that meet a condition.

You can provide a source filter to improve the performance when you read from Microsoft Dynamics CRM.

Use the guidelines in the Fetch XML Schema provided by Microsoft when you enter the filter conditions. The Fetch XML Schema is available in the following location:

<http://msdn.microsoft.com/en-us/library/ms936575.aspx>

## Configuring a Source Filter

Configure a source filter from the Application Source Qualifier.

1. In the Mapping Designer, double-click the Application Source Qualifier.
2. Click the **Microsoft Dynamics CRM Properties** tab.
3. Click the Browse button by the Source Filter field.  
The **Edit Metadata Extension Value - Source Filter** dialog box appears.
4. Select the filter type.  
You can select AND or OR as the filter type.
5. Click **Add Type**.  
The filter expression appears in the **Filter Expression** pane.
6. Select the attribute on which you want to apply the filter.  
All the fields in the source definition are available for selection.

**Note:** When you join entities, select the attributes of the primary entity.

7. Select the operator that you want to specify in the condition.

**Warning:** The session fails if you provide an operator that is not valid for the attribute that you select.

8. Enter a value for the condition.
9. Click **Add Condition**.

The condition appears in the **Filter Expression** pane.

Ensure that the Filter Expression is of the following format:

```
<filter type='<type>'>
  <condition attribute='<attribute name>' operator='<operator name>' value='<value>' />
</filter>
```

10. Click **OK**.

## Sorted Ports

Use sorted ports in the Application Source Qualifier to retrieve data from an entity in a specific order.

You can configure sorted ports in the Application Source Qualifier to retrieve the entities in ascending or descending order. You can provide several sort filters. The PowerCenter Integration Service processes the sort filters from in the order you configure in the Application Source Qualifier.

## Configuring Sorted Ports

Configure sorted ports from the Application Source Qualifier.

1. In the Mapping Designer, double-click the Application Source Qualifier.
2. Click the **Microsoft Dynamics CRM Properties** tab.
3. Click the Browse button by the Sorted Ports field.

The **Edit Metadata Extension Value - Sorted Ports** dialog box appears.

4. Select the attribute on which you want to apply the sort expression.

All the fields in the source definition are available for selection.

**Note:** When you join entities, select the attributes of the primary entity.

5. Select the sort type.

You can sort by ascending or descending.

6. Click **Add to Sort Order**.

The condition appears in the **Filter Expression** pane. The sort expression appears in the following format in the **Sort Order** pane:

```
<order attribute='<attribute name>' descending='<false/true>' />
```

7. Click **OK**.

## CHAPTER 5

# Microsoft Dynamics CRM Sessions

This chapter includes the following topics:

- [Microsoft Dynamics CRM Sessions Overview, 24](#)
- [Microsoft Dynamics CRM Connection, 25](#)
- [Microsoft Dynamics CRM Source Session Properties, 27](#)
- [Microsoft Dynamics CRM Target Session Properties, 28](#)
- [Update Strategy in PowerExchange for Microsoft Dynamics CRM, 29](#)
- [Bulk Load, 30](#)
- [Parameterization, 31](#)

## Microsoft Dynamics CRM Sessions Overview

After you create mappings, you can create a session to extract, transform, and load data.

Create connections to read data from and write data to Microsoft Dynamics CRM. You can define properties in a session to determine how the PowerCenter Integration Service reads data from an Microsoft Dynamics CRM source or writes data to an Microsoft Dynamics CRM target. If the SOAP connection to Microsoft Dynamics CRM times out, the PowerCenter Integration Service attempts to reconnect five times before the session fails.



# Microsoft Dynamics CRM Connection

A Microsoft Dynamics CRM connection extracts data from and loads data to the Microsoft Dynamics CRM. PowerExchange for Microsoft Dynamics CRM uses SOAP to connect to Microsoft Dynamics CRM.

The following table describes the Microsoft Dynamics CRM connection properties:

Property	Description
Service Type	Type of Web service for passport authentication. Select one of the following values: <ul style="list-style-type: none"> <li>- Discovery Service</li> <li>- Organization Service</li> </ul>
Application Server	Name of the server that hosts Microsoft Dynamics CRM. Provide the fully qualified domain name for active directory and claims-based authentication. The fully qualified domain name must be the same in the SSL certificate file. Configure for active directory, claims-based, and passport authentication. If you use discovery service, use the URL of the CrmDiscoveryService Web service for passport authentication. Log in to Microsoft Dynamics online account and click Settings   Customizations. For example, if the URL for the CrmDiscoveryService Web service is <code>https://disco.crm5.dynamics.com/XRMServices/2011/Discovery.svc</code> , enter <code>disco.crm5.dynamics.com</code> If you use organization service, use the URL of the CrmOrganizationService Web service for passport authentication. Log in to Microsoft Dynamics online account and click Settings   Customizations. For example, if the URL for the CrmOrganizationService Web service is <code>https://informaticallc.api.crm8.dynamics.com/XRMServices/2011/Organization.svc</code> , enter <code>https://informaticallc.api.crm8.dynamics.com/XRMServices/2011/Organization.svc</code>
Port	Port in which Microsoft Dynamics CRM is configured. Configure for active directory, claims-based, and passport authentication.
Use SSL/TLS	Secure method to connect to the application server by using SSL or TLS security protocols. Configure for active directory and claims-based authentication.
Organization Name	Name of the organization that you want to connect to. Use one of the following options: <ul style="list-style-type: none"> <li>- Name of the organization that appears when you log in to Microsoft Dynamics CRM.</li> <li>- Name that appears in the Deployment Manager.</li> <li>- The unique organization name. To find the unique organization name, log in to Microsoft Dynamics account and click <b>Settings &gt; Customizations &gt; Developer Resources</b>.</li> </ul> Configure for active directory, claims-based, and passport authentication.
Domain	Domain to which the user belongs. You must provide the complete domain name. Configure for active directory and claims-based authentication.

Property	Description
Authentication Type	Method to authenticate the user. Select one of the following options: 1. Passport. Often used for online deployment of Microsoft Dynamics CRM. 2. Claims-based. Often used for on-premise and Internet-facing deployment of Microsoft Dynamics CRM. 3. Active Directory. Often used for on-premise deployment of Microsoft Dynamics CRM.
Security Token Service	Microsoft Dynamics CRM security token service URL. For example, https://sts1.company.com. Configure for claims-based authentication.

## Configuring a Microsoft Dynamics CRM Connection

1. In the Workflow Manager, connect to a PowerCenter repository.
2. Click **Connections > Application**.  
The **Application Connection Browser** dialog box appears.
3. Click **New**.  
The **Select Subtype** dialog box appears.
4. Select Microsoft Dynamics CRM Connection and click **OK**.  
The **Connection Object Definition** dialog box appears.
5. Enter a name for the Microsoft Dynamics CRM connection.
6. Enter the following properties for the connection:

Property	Description
Name	Connection name used by the Workflow Manager. Connection name cannot contain spaces or other special characters, except underscore (_).
User Name	Microsoft Dynamics CRM user name with permissions to access the CRM. To define the user name in the parameter file, enter the session parameter <i>\$ParamName</i> as the user name, and define the value in the session or workflow parameter file. The PowerCenter Integration Service interprets user names that start with <i>\$Param</i> as session parameters.
Use Parameter in Password	Indicates the password for the Microsoft Dynamics CRM user name is a session parameter, <i>\$ParamName</i> . If you enable this option, define the password in the workflow or session parameter file, and encrypt it by using the <i>pmpasswd</i> CRYPT_DATA option. Default is disabled.
Password	Password for the Microsoft Dynamics CRM user name.

7. Enter the Microsoft Dynamics CRM connection attributes.

You can change the location of the krb5.conf and login.conf files at run-time. Enter another location in the **Kerberos Config File Location**.

- On the PowerCenter Client machine, the configuration file and the Kerberos configuration file are in the following default location:  
`<PowerCenter Installation Directory>\clients\PowerCenterClient\client\bin\javalib\msdcrm\conf`
- On the PowerCenter Service machine, the configuration file and the Kerberos configuration file are in the following default location:  
`<PowerCenter Installation Directory>/server/bin/javalib/msdcrm/conf`

**Note:** The location of the configuration file and the Kerberos configuration file specified at run-time will take precedence.

8. Click **OK**.

The application connection appears in the Application Object Browser.

## Microsoft Dynamics CRM Source Session Properties

You can configure the session properties for a Microsoft Dynamics CRM source on the Mapping tab. Define the properties for each source instance in the session.

You can override the source filter and sorted ports in the Application Source Qualifier at the session level. You can use the session property Stop on Errors to indicate how many non-fatal errors the PowerCenter Integration Service can encounter before it stops the session.

The following table describes the session property you can configure for a Microsoft Dynamics CRM source session:

Session Property	Description
Source Filter	Retrieves rows from an entity that meets a condition.
Sorted Ports	Retrieves data from an entity in a specific order.
Maximum Page Size	The maximum number of records in a page buffer that PowerCenter Integration Service reads from Microsoft Dynamics CRM. Default is 50.
Row Limit	The number of rows that PowerCenter Integration Service retrieves from Microsoft Dynamics CRM.
Entity Join	Joins two related entities.

# Microsoft Dynamics CRM Target Session Properties

You can configure the session properties for a Microsoft Dynamics CRM target on the Mapping tab. Define the properties for each target instance in the session.

You can use the session property Stop on Errors to indicate how many non fatal errors the PowerCenter Integration Service can encounter before it stops the session.

**Note:** Stop on Errors are calculated as per batch size. A session fails only if the error count is greater than the Stop on Errors specified after the batch succeeds. For example, if you are using normal mode and if the thread count is greater than 1, then Stop on Errors will check for errors in the batch after the entire batch is processed.

The following table describes the session property you can configure for a Microsoft Dynamics CRM target session:

Session Property	Description
Use Bulk	The PowerCenter Integration Service writes records in bulk mode during data load. Default is not selected.
Alternate Key Name	Indicates whether the column is an alternate key for an entity. Specify the name of the alternate key. You can use alternate key in update, upsert, and delete operations. <b>Note:</b> If you map both primary key and alternate key attributes in a mapping, the primary key takes precedence over the alternate key.
Add row reject reason	Select to add the reason for rejecting the rows in the reject file. Default is disabled.
Maximum Batch Size	Number of records that PowerCenter 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 PowerCenter Integration service runs. Default is 8.
Reject File Directory	Directory name of the reject files. By default, the PowerCenter Integration Service writes all reject files to <code>\$PMBadFileDir</code> .
Reject File Name	File name for the reject file.

## Reject Files

The PowerCenter Integration Service creates a reject file for each target instance in the mapping.

When loading data to the Microsoft Dynamics CRM target tables, the rows can be rejected either by the writer or by the Microsoft Dynamics CRM target tables. The writer rejects the rows if there is a data conversion error or if you try to insert, update, or delete rows without configuring the session properties. The PowerCenter Integration Service writes the rejected rows into the reject file.

When the Microsoft Dynamics CRM target table rejects a row during session run, Microsoft Dynamics CRM sends the data to PowerCenter Integration Service. The PowerCenter Integration Service writes the rejected data to the reject file. The PowerCenter Integration Service updates the session log with the number of rows in the packet rejected by Microsoft Dynamics CRM.

Each row indicates if the row is set for insert, update, delete, or reject by marking 0, 1, 2, or 3 respectively at the beginning of each row. The PowerCenter Integration Service creates the reject file based on the target instance. For example, the following reject file shows operation indicators at the beginning of each row:

```
1,D,55B5B303-06C3-4362-BECA-4B6470F7E950,D,Update 1,D
2,D,55B5B303-06C3-4362-BECA-4B6470F7E950,D,Insert 1,D
0,D,55B5B303-06C3-4362-BECA-4B6470F7E950,D,Insert 1,D
```

## Update Strategy in PowerExchange for Microsoft Dynamics CRM

You can configure the update strategy for a Microsoft Dynamics CRM with the target session properties and treat source rows as source session property.

By default, the PowerCenter Integration Service updates target tables based on key values. You can override the default UPDATE statement for each target in a target definition.

You can set the following update strategy options:

### Inserts

If you treat source rows as inserts, select Insert for the target option. When you enable the Insert target row option, the PowerCenter Integration Service ignores the other target row options and treats all rows as inserts. If you disable the Insert target row option, the PowerCenter Integration Service rejects all rows.

### Deletes

If you treat source rows as deletes, select Delete for the target option. When you enable the Delete target option, the PowerCenter Integration Service ignores the other target-level row options and treats all rows as deletes. If you disable the Delete target option, the PowerCenter Integration Service rejects all rows.

### Updates

If you treat source rows as updates, the behavior of the PowerCenter Integration Service depends on the target options you select.

The following table describes how the PowerCenter Integration Service loads the target when you configure the session to treat source rows as updates:

Data Driven	PowerCenter Integration Service Behavior
Insert	If enabled, the PowerCenter Integration Service uses the target update option (Update as Update, Update as Insert, or Update else Insert) to update rows. If disabled, the PowerCenter Integration Service rejects all rows when you select Update as Insert or Update else Insert as the target-level update option.
Update as Update	PowerCenter Integration Service updates all rows as updates.
Update as Insert	PowerCenter Integration Service updates all rows as inserts. You must also select the Insert target option.

Data Driven	PowerCenter Integration Service Behavior
Update else Insert	PowerCenter Integration Service updates existing rows and inserts other rows as if marked for insert. You must also select the Insert target option.
Delete	PowerCenter Integration Service ignores this setting and uses the selected target update option.

### Data Driven

If you treat source rows as data driven, you use an Update Strategy transformation to specify how the PowerCenter Integration Service handles rows. However, the behavior of the PowerCenter Integration Service also depends on the target options you select.

The following table describes how the PowerCenter Integration Service loads the target when you configure the session to treat source rows as data driven:

Data Driven	PowerCenter Integration Service Behavior
Insert	If enabled, the PowerCenter Integration Service inserts all rows flagged for insert. Enabled by default. If disabled, the PowerCenter Integration Service rejects the following rows: - Rows flagged for insert - Rows flagged for update if you enable Update as Insert or Update else Insert
Update as Update	PowerCenter Integration Service updates all rows flagged for update. Enabled by default.
Update as Insert	PowerCenter Integration Service inserts all rows flagged for update. Disabled by default.
Update else Insert	PowerCenter Integration Service updates rows flagged for update and inserts remaining rows as if marked for insert.
Delete	If enabled, the PowerCenter Integration Service deletes all rows flagged for delete. If disabled, the PowerCenter Integration Service rejects all rows flagged for delete.

## Bulk Load

You can configure the session to write records in bulk mode. The PowerCenter 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 target session properties to perform bulk loading:

### Use Bulk

The PowerCenter Integration Service writes records in bulk mode during data load. PowerCenter Integration Service can process one bulk request for one session 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 PowerCenter 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 session 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 PowerCenter Integration Service in the Administrator tool.

## Parameterization

You can create a configuration file with connection and session properties that overrides the properties in run-time.

You can parameterize session and connection properties.

### Parameterizable Connection Properties

You can provide the connection properties in a configuration file for parameterization.

You can parameterize the following connection properties:

- Username
- Password
- Application Server
- Port
- Organization Name
- Domain

### Parameterizable Session Properties

You can create a configuration file with source and target session properties that overrides the properties in run-time.

You can parameterize the following source session properties:

- Maximum Page Size
- Source Filter
- Sorted Ports

You can parameterize the following target session properties:

- Maximum Batch Size
- Thread Count

# APPENDIX A

## Microsoft Dynamics CRM and Transformation Data Types

This appendix includes the following topics:

- [Microsoft Dynamics CRM and Transformation Data Types, 32](#)
- [XML Format for PartyList Data Type, 35](#)
- [Alternate Key as Reference, 35](#)

## Microsoft Dynamics CRM and Transformation Data Types

PowerExchange for Microsoft Dynamics CRM maps the Microsoft Dynamics CRM data types to the PowerCenter transformation data types.

PowerCenter 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. They appear in all transformations in a mapping.

When the Integration Service reads the source data, it converts the native data types to the comparable transformation data types before transforming the data. When the Integration Service writes to a target, it converts the transformation data types to the comparable native data types. For more information about data types, see the *PowerCenter Designer Guide*.



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

Microsoft Dynamics CRM Data Type	Range and Description	Transformation Data Type
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
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 data type.	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

Microsoft Dynamics CRM Data Type	Range and Description	Transformation Data Type
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
PartyList	Activity party details that has information about PartyId, ActivityPartyId, and ParticipationTypeMask. A PartyId is a unique identifier of the party associated with the activity. For example, <logicalname:guid>. 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. <b>Note:</b> If you populate the ActivityPartyId more than once, the task fails with a duplicate key error. A ParticipationTypeMask is the role of the person in the activity, such as sender, organizer, or owner. While reading and writing, the PartyList data type is in string format, but it contains XML data.	String
Picklist	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. 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.	Integer
State	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 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.	Integer

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

## XML Format for PartyList Data Type

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.

## Alternate Key as Reference

You can specify an alternate key as reference for Lookup, Customer, Owner, and PartyList data types.

Use the following format to specify an alternate key as reference for Lookup, Customer, and Owner data types:

```
<entity_name>:alternate_key(<Lower Case Field Name 1: Value>,...,
  <Lower Case Field Name N: Value>)
```

For example,

```
contact:alternate_key(firstname:Account_Contact_alterkey 1,
  new_customkey:lookup_customer_partylist1@alt.com)
```

Use the following XML format to specify an alternate key as reference for a PartyList entity:

```
<EntityCollection>
  <Entity Name="activityparty">
    <Attribute Name="partyid" Value="<entity_name>:alternate_key
      (<Lower Case Field Name 1: Value>,...,<Lower Case Field Name N: Value>)" />
    <Attribute Name="participationtypemask" Value="2" />
    <Attribute Name="activitypartyid" Value="<entity_name>:alternate_key
      (<Lower Case Field Name 1: Value>,...,<Lower Case Field Name N: Value>)" />
  </Entity>
  <Entity Name="activityparty">
    <Attribute Name="partyid" Value="<entity_name>:alternate_key
      (<Lower Case Field Name 1: Value>,...,<Lower Case Field Name N: Value>)" />
    <Attribute Name="participationtypemask" Value="2" />
    <Attribute Name="activitypartyid" Value="<entity_name>:alternate_key
      (<Lower Case Field Name 1: Value>,...,<Lower Case Field Name N: Value>)" />
  </Entity>
</EntityCollection>
```

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