

# **Import Tool**

**For Dynamics CRM 365** 



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Page 2 of 59 Import Tool 365 (9.0)

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Page **3** of **59** Import Tool 365 (9.0)

## Table Of Contents

| Table Of Contents                                     | 4           |
|---|-------------|
| What's in this manual                                 | 5           |
| Functionality   | . <b></b> 6 |
| Chapter 1: Import Tool Overview                       | 6           |
| Chapter 2: Running the Import Tool for the first time | . 10        |
| Chapter 3: Using the Import Tool                      | . 15        |
| Chapter 4: Import Tool Setup                          | . 18        |
| Chapter 5: Creating New Project                       | .20         |
| Chapter 6: Fields Mapping                             | . 31        |
| Chapter 7: Validating and running import              | .35         |
| Chapter 8: Running the import from the command line   | .36         |
| Chapter 9: Expressions                                | . 37        |
| Chapter 10: Functions                                 | .39         |
| Chapter 11: Advanced scripting                        | .53         |
| Support   | .59         |

## What's in this manual

DPS Import Tool is a powerful application designed specifically to import data into Dynamics 365. It can easily handle complex import scenarios and it allows you to import or update all elements of Product Catalog, any core Microsoft CRM entity (Accounts, Contacts, Leads, etc.) and also custom entities.

This manual contains the following main chapters:

- > Import Tool Overview
- Running the Import Tool for the first time
- Using the Import Tool
- > Import Tool Setup
- Creating a New Project
- > Fields Mapping
- Validating and running the import
- > Expressions
- > Functions
- Scripts

Page **5** of **59** Import Tool 365 (9.0)

## **Functionality**

#### Chapter 1: Import Tool Overview

Import Tool is a powerful application specifically designed to simplify the data import to Dynamics 365. It allows you to import or update all core entity types (Account, Contact, Lead, etc.), all elements of Product Catalog or any custom entities.

With the Import Tool you can:

- Import data from different sources:
  - o SQL Server
  - Microsoft Excel
  - o Text files (csv, tsv, etc)
  - o Any ODBC data provider
  - o Email mailbox using POP3 or IMAP protocol
  - o Or you can develop your own data source plugin.
- Save import project containing mapping schema, use functions to transform the input data, create custom scripts and much more.
- Use different import modes: import new records, update existing records, perform both at the same time, delete unwanted records or change record status (for example activate, deactivate, etc.).
- Import data into custom entities and fields.
- Run import process from a command line which can be used to automate or schedule the import process.

#### **Versions**

Import Tool comes in two versions: **Data Migration** version and **Full** version.

Data Migration version is designed for the initial data imports and will work only for 60 days. This version should help customers to import essential data into Dynamics 365, test and make all necessary data updates at the beginning of the implementation process.

Full version is ideal for initial and on-going data imports as it has no expiration date. This is the best choice for customers that require regular updates to the data stored in Dynamics 365, for example when price lists need to be updated regularly, new products are frequently imported and so on.

In addition to that, Import Tool is divided into 7 modules which allow importing or updating different groups of entities. Customers that do not need to import all types of records can choose only a single module or multiple modules that are critical for their business. Furthermore import of custom entities is always included when at least one module is registered.

Below table lists the modules available and Dynamics 365 entities they will allow to import.

Page **6** of **59** Import Tool 365 (9.0)

| Module              | Dynamics CRM Record              | Dynamics CRM Entities          |
|---------------------|----------------------------------|--------------------------------|
| Activities          | Appointment                      | appointment                    |
|                     | Attachment                       | acctivity attachment           |
|                     | Campaign Activity                | campaignactivity               |
|                     | E-mail                           | email                          |
|                     | E-mail Template                  | template                       |
|                     | Fax                              | fax                            |
|                     | Letter                           | letter                         |
|                     | Phone Call                       | phonecall                      |
|                     | Recurring Appointment            | recurringappointmentmaster     |
|                     | Service Activity                 | serviceappointment             |
|                     | Task                             | task                           |
| Customer Records    | Account                          | account                        |
| Customer Necorus    | Address                          | customeraddress                |
|                     |                                  |                                |
|                     | Competitor<br>Contact            | competitor                     |
|                     |                                  | contact                        |
|                     | Currency                         | transactioncurrency            |
|                     | Customer Relationship            | customerrelationship           |
|                     | Lead                             | lead                           |
| =: 11c .            | Opportunity Relationship         | customeropportunityrole        |
| Field Service       | Bookable Resource                | bookableresource               |
|                     | Bookable Resource Booking        | bookableresourcebooking        |
|                     | Bookable Resource Booking Header | bookableresourcebookingheader  |
|                     | Bookable Resource Category       | bookableresourcecategory       |
|                     | Bookable Resource Category Assn  | bookableresourcecategoryassn   |
|                     | Bookable Resource Characteristic | bookableresourcecharacteristic |
|                     | Bookable Resource Group          | bookableresourcegroup          |
|                     | Booking Status                   | bookingstatus                  |
| Marketing Campaigns | Account                          | account                        |
|                     | Campaign                         | campaign                       |
|                     | Campaign Activity                | campaignactivity               |
|                     | Campaign Item                    | campaignitem                   |
|                     | Campaign Response                | campaignresponse               |
|                     | Contact                          | contact                        |
|                     | Currency                         | transactioncurrency            |
|                     | Feedback                         | feedback                       |
|                     | Lead                             | lead                           |
|                     | Marketing List                   | list                           |
|                     | Marketing List Member            | listmember                     |
|                     | Rating Model                     | ratingmodel                    |
|                     | Rating Value                     | ratingvalue                    |
| Product Catalog     | Currency                         | transactioncurrency            |
|                     | Discount                         | discount                       |
|                     | Discount List                    | discounttype                   |
|                     | Price List                       | pricelevel                     |
|                     | Price List Item                  | productpricelevel              |
|                     | Product                          | product                        |
|                     | Product Association              | productassociation             |
|                     | Product Relationship             | productsubstitute              |
|                     | Property                         | dynamicsproperty               |
|                     | Property Association             | dynamicspropertyasociation     |
|                     |                                  | ay.lallicspropercyasociation   |

Page **7** of **59** Import Tool 365 (9.0)

|         | Duan auto Instance           | dunanci can yan aytu in atan ca |
|---------|------------------------------|---------------------------------|
|         | Property Instance            | dynamicspropertyinstance        |
|         | Property Option Set Item     | dynamicspropertyoptionsetitem   |
|         | Unit                         | uom                             |
|         | Unit Group                   | uomschedule                     |
| Sales   | Account                      | account                         |
|         | Competitor                   | competitor                      |
|         | Competitor Address           | competitoraccess                |
|         | Contact                      | contact                         |
|         | Currency                     | transactioncurrency             |
|         | Feedback                     | feedback                        |
|         | Goal                         | goal                            |
|         | Goal Metric                  | metric                          |
|         | Invoice                      | invoice                         |
|         | Invoice Line                 | invoicedetail                   |
|         | Lead                         | lead                            |
|         | Marketing List               | list                            |
|         | Marketing List Member        | listmember                      |
|         | Opportunity                  | opportunity                     |
|         | Opportunity Product          | opportunityproduct              |
|         | Opportunity Relationship     | customeropportunityrole         |
|         | Order                        | salesorder                      |
|         | Order Line                   | salesorderdetail                |
|         | Queue                        | queue                           |
|         | Queue Item                   | quueuqitem                      |
|         | Quote                        | quote                           |
|         | Quote Line                   | quotedetail                     |
|         | Rating Model                 | rating Model                    |
|         | Rating Value                 | rating Value                    |
|         | Rollup Field                 | rollupfield                     |
|         | Rollup Query                 | goalrollupquery                 |
|         | Rollup Query                 | goalrollupquery                 |
|         | Sales Attachment             | salesliteratureitem             |
|         | Sales Literature             | salesliterature                 |
|         | Territory                    | territory                       |
| Service | Account                      | account                         |
| Service | Article                      | kbarticle                       |
|         | Article Comment              | kbarticlecomment                |
|         |                              |                                 |
|         | Article Template             | kbarticletemplate<br>incident   |
|         | Case Resolution              |                                 |
|         | Case Resolution              | incidentresolution              |
|         | Channel Property             | channelproperty                 |
|         | Channel Property Group       | channelpropertygroup            |
|         | Characteristic               | characteristic                  |
|         | Contact                      | contact                         |
|         | Contract                     | contract                        |
|         | Contract Line                | contractdetail                  |
|         | Contract Template            | contracttemplate                |
|         | Currency                     | transactioncurrency             |
|         | Entitlement                  | entitlement                     |
|         | Entitlement Channel          | entitlementchannel              |
|         | Entitlement Template         | entitlementtemplate             |
|         | Entitlement Template Channel | entitlementtemplatechannel      |

Page 8 of 59 Import Tool 365 (9.0)

|              | Facility/Equipment         | equipment                |
|--------------|----------------------------|--------------------------|
|              | Feedback                   | feedback                 |
|              | Knowledge Article          | knowledgearticle         |
|              | Knowledge Article Incident | knowledgearticleincident |
|              | Knowledge Article Views    | knowledgearticleviews    |
|              | Knowledge Base Record      | knowledgebaserecord      |
|              | Queue                      | queue                    |
|              | Queue Item                 | queueitem                |
|              | Rating Model               | rating Model             |
|              | Rating Value               | rating Value             |
|              | Rating Model               | rating Model             |
|              | Rating Value               | rating Value             |
|              | Resource Group             | constrainbasedgroup      |
|              | Rollup Field               | rollupfield              |
|              | Routing Rule Set           | routingrule              |
|              | Rule Item                  | routingruleitem          |
|              | Service                    | service                  |
|              | Service Activity           | serviceappointment       |
|              | Site                       | site                     |
|              | SLA                        | sla                      |
|              | SLA Item                   | slaitem                  |
|              | Subject                    | subject                  |
|              | Team Template              | teamtemplate             |
| System       | Business Unit              | businessunit             |
|              | Connection                 | connection               |
|              | Connection Role            | connectionrole           |
|              | Currency                   | transactioncurrency      |
|              | Email Server Profile       | emailserverprofile       |
|              | Note                       | annotation               |
|              | Position                   | position                 |
|              | Queue                      | queue                    |
|              | Resource Group             | constraintbasedgroup     |
|              | Site                       | site                     |
|              | Subject                    | subject                  |
|              | Team                       | team                     |
|              | Territory                  | territory                |
|              | User                       | systemuser               |
| Full version | All Above                  | All Above                |

## **Product Licensing**

## **Demo Licenses**

Import Tool is licensed per Organization. Downloaded version is fully functional limited to importing or updating 5 records only. This is the only restriction when no registration key has been entered. Evaluation license is not needed.

## Compatibility

Import Tool 365 (9.0) is compatible with all deployment types of Dynamics 365 version 9.

Page **9** of **59** Import Tool 365 (9.0)

## Go to All Programs and find "DPS Limited" folder

If you are using 32-bit version of Windows the following shortcuts will be available:

- Import Tool 365 (9.0)
- Import Tool 365 (9.0) Command Line

If you are using 64-bit version of Windows there will be two more shortcuts available:

- Import Tool 365 (32-bit)
- Import Tool 365 Command Line (32-bit)

Both 32- and 64-bit versions are fully compatible with Dynamics CRM 2016 and provide the same functionality. The only difference is that if you want to use for example Excel file as your data source and you are running 64-bit Windows, there is no 64-bit ODBC provider for Excel and you will have to use 32-bit version of the Import Tool. And this is the only reason why we are providing 32-bit version of the Import Tool.

## 2. Select "Import Tool 365"

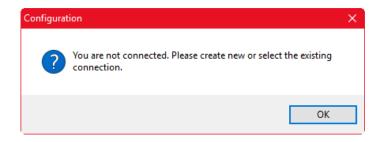
This will start the Import Tool application.



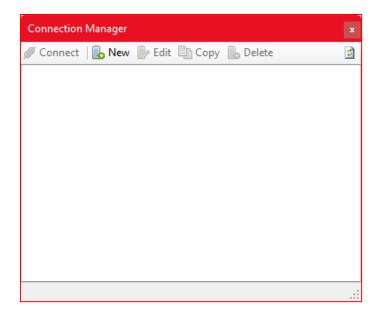
Page **10** of **59** Import Tool 365 (9.0)

## **Connection Configuration**

When running the Import Tool for the first time you will be asked to create a new connection.

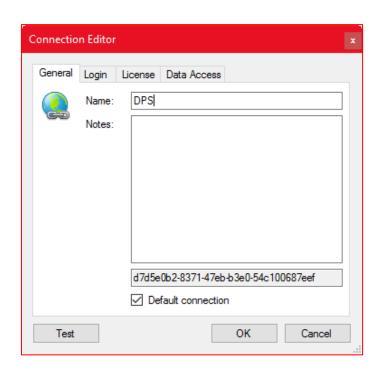


Click "OK" to continue.



Click "New" button. "Connection Editor" window will open. It has four tabs:

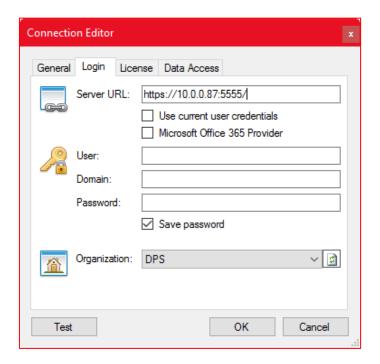
#### General



Page 11 of 59 Import Tool 365 (9.0)

Specify the name for your connection. You can also add some notes (optional). If you tick "Default connection" then the connection you are creating will be selected when launching the Import Tool next time (assuming you have more than one connection available, otherwise if there is only one connection it is always treated as a default).

## • Login

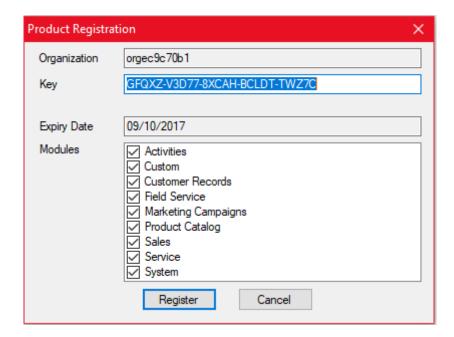


Enter the URL of your CRM server. If you are connecting to the local CRM installation using Active Directory authentication you can tick "Use current user credentials" if you want to use credentials of the currently logged on user. If you are connecting to other type of CRM deployment (Live, IFD, etc.) you have to provide user name and password and optionally domain name. If you don't want to be prompted for the password every time application starts, make sure that "Save password" is ticked. "Microsoft Office 365 Provider" should be ticked if you have your Live CRM 2011 provisioned through Microsoft Office 365.

Click to populate the organizations and select the organization you want to connect to. At this stage you can test your connection by clicking "Test" button.

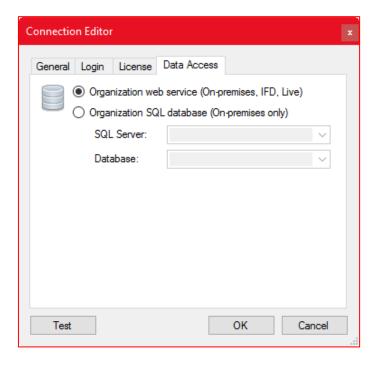
Page **12** of **59** Import Tool 365 (9.0)

#### License



Enter your registration key if you already have it. You can always enter the registration key later using this window or from the Main Menu by going to Tools -> Registration. Without registration the application is fully functional, but is limited to process (import) first five records only.

#### Data Access



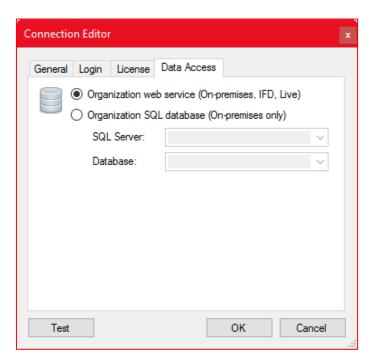
Data Access settings specify how the organization data is accessed. There are two modes:

- Organization web service this is recommended setting. When selected, CRM data will be accessed using the CRM web services only.
- Organization database this option can be enabled to improve performance when accessing the CRM data (database is used for read operations only). However this can only be used in onpremises installation types as you will have to specify SQL Server and Database that should be used (make sure that it matches the selected organization).

Connection Manager can be access from the main menu: Connections  $\rightarrow$  Manage.

Page **13** of **59** Import Tool 365 (9.0)

Once your connection has been defined, click "Connect".



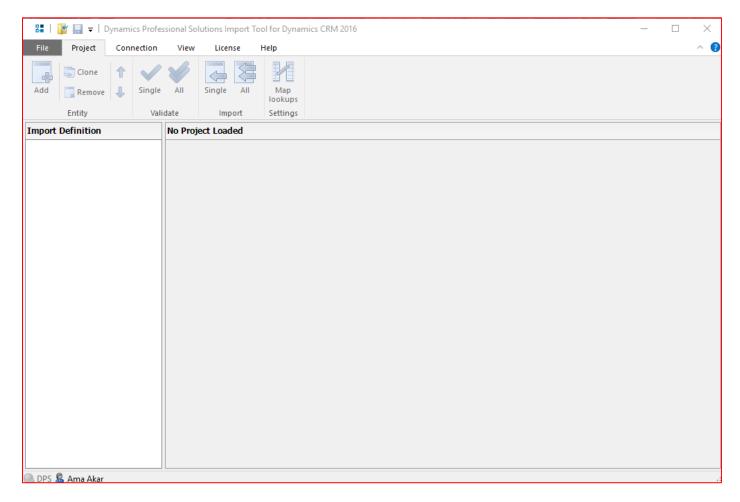
3. Progress window will be displayed:



4. It can take couple minutes for the first time to complete.

Page 14 of 59 Import Tool 365 (9.0)

To access the Import Tool, go to Start  $\rightarrow$  All Programs  $\rightarrow$  DPS Limited  $\rightarrow$  Import Tool 2011. This is the main application window.

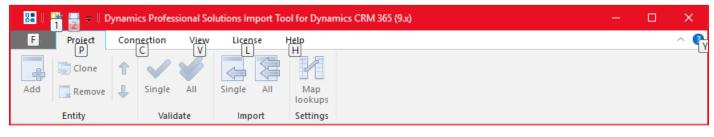


#### Ribbon

In this version of the Import Tool, menu and toolbar has been replaced by Ribbon. This is similar interface to Microsoft Office and CRM 2011.

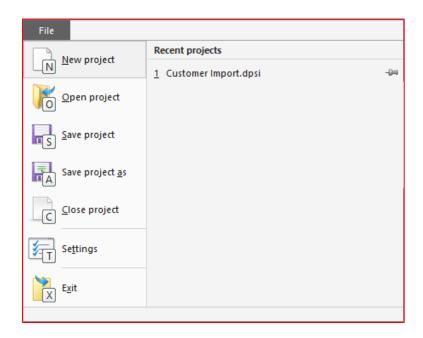
Note that if you are still using older version of Windows, you will be presented with standard menu and toolbar instead. Minimum operating system version for Ribbon support is Windows Vista SP2 with Platform Update. See **Appendix A** for the interface reference.

There are 6 tabs available:



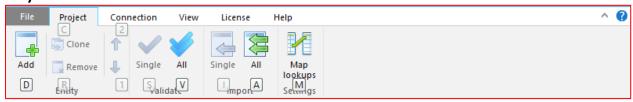
Page **15** of **59** Import Tool 365 (9.0)

## 1. File tab



| Command         | Description                                      |
|-----------------|--|
| New project     | Creates a new empty import project.              |
| Open project    | Opens the existing import project.               |
| Save project    | Saves the import project.                        |
| Save project as | Saves the import project under a different name. |
| Close project   | Closes the import project.                       |
| Settings        | Opens the Settings window.                       |
| Exit            | Closes the Import Tool application.              |
| Recent projects | Contains recently opened import projects.        |

## 2. Project tab

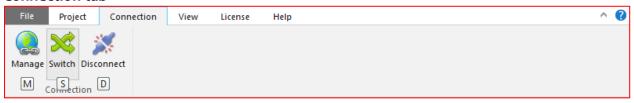


| Group    | Command   | Description                                     |
|----------|-----------|---|
| Entity   | Add       | Adds a new entity import definition to the      |
|          |           | project.  |
| Entity   | Clone     | Creates a copy of the currently selected entity |
|          |           | import definition.                              |
| Entity   | Remove    | Removes the currently selected entity from the  |
|          |           | import project.                                 |
| Entity   | Move up   | Moves the currently selected entity one level   |
|          |           | up in the hierarchy.                            |
| Entity   | Move down | Moves the currently selected entity one level   |
|          |           | up in the hierarchy.                            |
| Validate | Single    | Validates the import for currently selected     |
|          |           | entity.   |
| Validate | All       | Validates the import for all enabled entities   |
|          |           | within the whole project.                       |
| Import   | Single    | Runs the import for currently selected single   |
|          |           | entity only.                                    |

Page **16** of **59** Import Tool 365 (9.0)

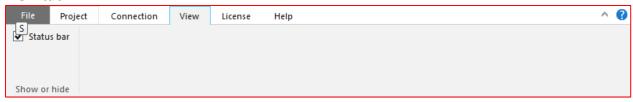
| Import   | All         | Runs the import for all enabled entities within |
|----------|-------------|---|
|          |             | the whole project.                              |
| Settings | Map lookups | Allows changing default fields used for finding |
|          |             | related records.                                |

## 3. Connection tab



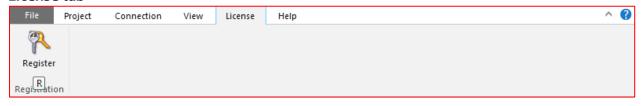
| Group      | Command    | Description                           |
|------------|------------|---------------------------------------|
| Connection | Manage     | Opens the Connection Manager window.  |
| Connection | Switch     | Opens the Switch Connection dialog.   |
|            |            | Command is available if more than one |
|            |            | connection has been defined.          |
| Connection | Disconnect | Closes current connection.            |

## 4. View tab



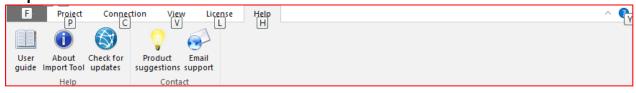
| Group        | Command    | Description                    |
|--------------|------------|--------------------------------|
| Show or hide | Status bar | Shows or hides the status bar. |

## 5. License tab



| Group        | Command  | Description                    |
|--------------|----------|--------------------------------|
| Registration | Register | Opens the registration window. |

## 6. Help tab

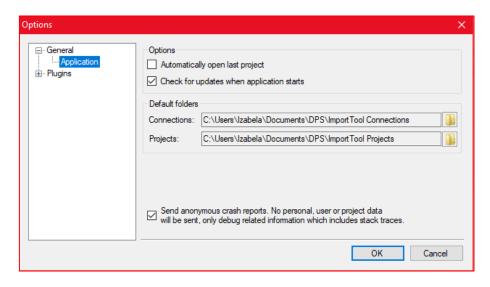


If you are using older version of Windows, instead of Ribbon you will be presented with standard menu and toolbar. Minimum operating system version for Ribbon support is Windows Vista SP2 with Platform Update.

Page 17 of 59 Import Tool 365 (9.0)

## 1. Settings (Ribbon 🗲 File tab)

Use this screen to specify general application settings like whether to automatically open your last project; default locations for the connection definitions and project files. Note if you change the default locations, your existing connections and /or projects files will not be automatically copied to the new location. You can also specify your own custom data source plugins.



## Product registration (Ribbon → License → Register)

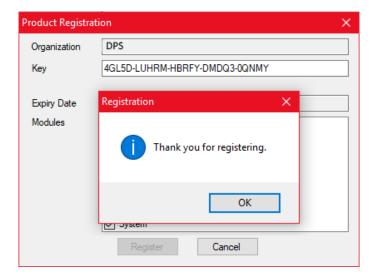
The downloaded version of the Import Tool contains a fully functional product with a limit of five records that can be processed (created, updated, etc.). This restriction is waived upon product registration.

After purchasing the full product version you will receive an e-mail with the registration key for your organization. Enter the registration key you have received. System will show eventual expiry date and modules that you have purchased. Please verify if this information is correct. You can also enter the registration key in the connection setup window.

| Product Registrati     | on X  |
|------------------------|---|
| Organization<br>Key    | DPS   |
| Expiry Date<br>Modules | Activities Custom Customer Records Field Service Marketing Campaigns Product Catalog Sales Service System  Register  Cancel |

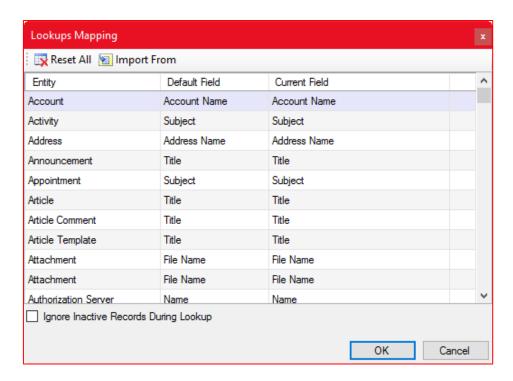
Enter the key and click "Register".

Page **18** of **59** Import Tool 365 (9.0)



## 3. Lookups Mapping

Lookup fields are used to relate one record type to another. For example when creating a new task for a customer contract we are using a related field to associate task with the necessary contract record. Import Tool uses predefined default field (provided by Dynamics 365) to recognize what record you are referring to. In our example this will be the Contact Name that Import Tool will use by default; if in your import data you have a Contact ID instead, you can change the default lookup setup in the Lookup Mapping window.



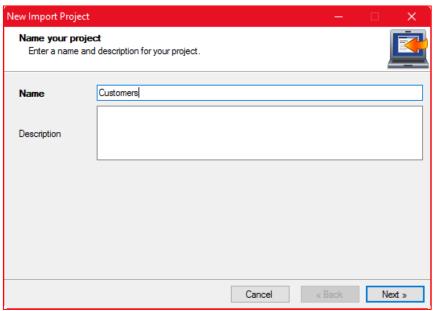
"Reset All" button resets all lookups to use default field. As this information is stored in the project file, you can import mapping from another project file by selecting "Import From".

Page **19** of **59** Import Tool 365 (9.0)

## Follow below steps to create new import project:

## Select New Project from the File tab (Ctrl+N).

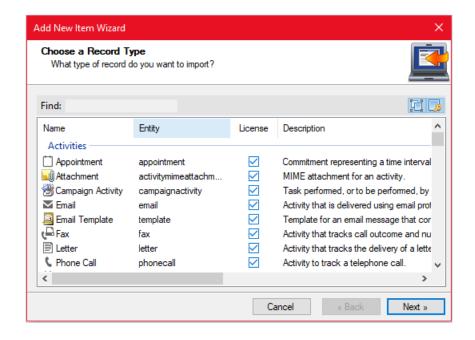
In the "Name your project" screen enter the name and optional description of your project. Click "Next".



#### Choose a Record Type

In the "Choose a Record Type" screen select the entity you are planning to import data to. All Dynamics CRM entities that are available for import are displayed regardless of the registration status. By default, available entities are shown in groups by module; if you want to change that, right click on the list and unmark "Show Groups" option.

Use Find to quickly locate specific record type.

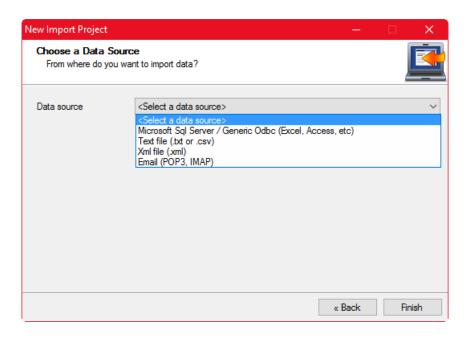


Click "Next".

Page **20** of **59** Import Tool 365 (9.0)

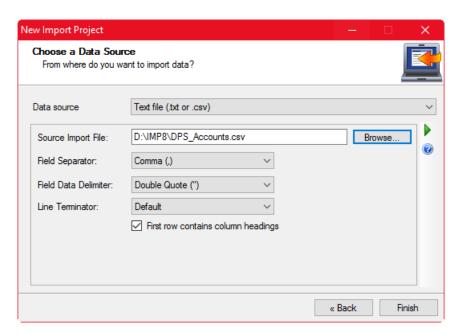
#### 3. Data Source

In the "Choose a Data Source" screen select a source of the data you would like to import from. Then specify information needed by the selected data source type. Click "Finish"



**To import from a text file** select the "Text file (.txt or .csv)" option form the Data source dropdown. Use Browse button to locate your source file. This technically can be any text file:

- Fields should be separated by a comma, tab, semicolon or colon.
- If any field value contains field separator, it must be delimited by single or double quote. Otherwise delimiter is not needed. For example if you have selected comma as a separator, any field value containing comma must be enclosed by "" or " ("Smith, John" or 'Smith, John").
- Line terminator is either CRLF, CR, LF or default. In most cases there is no need of changing it unless you want to import multi line fields.
- First row may contain a header. This is highly recommended as it later greatly helps to map fields.



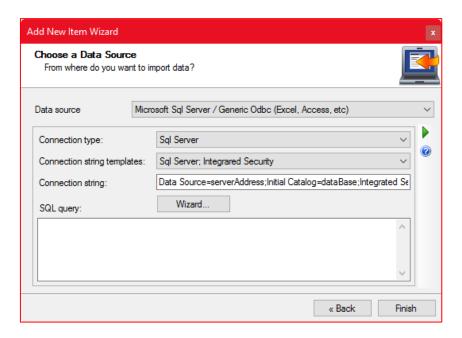
Clicking on will test the connection.

**To import from SQL Server or any ODBC data sources** select Microsoft SQL Server/Generic ODBC option form the Data Source dropdown.

Page **21** of **59** Import Tool 365 (9.0)

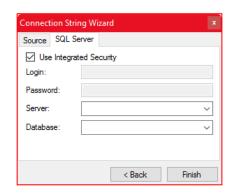
Select your connection type and enter a connection string. You can use one of the templates if you are not sure about connection string syntax.

**SQL Server** connection type is optimized for Microsoft SQL Server. **Generic ODBC** can be used for any other data source, like Microsoft Access, Microsoft Excel, My SQL, etc.



Wizard button can help you to define a connection string. First select your data source (SQL, Excel, Access), click "Next" button and provide all required information. This Wizard is optional and is designed to help you with SQL Server, Microsoft Excel and Microsoft Access connection string creation. You can always enter a connection string manually.

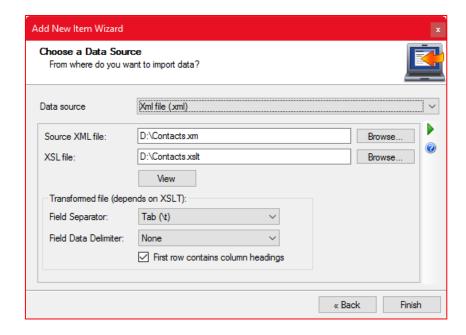




Then enter your query in the SQL query field. This can be a simple or complex statement depending on your needs. Clicking on will test the connection.

**To import data from xml file** select XML file (.xml) option from the Data source dropdown. Because xml file structure cannot be automatically determined it is required to provide an additional transformation file that tells how to extract the information from the source XML file. Clicking on will test the connection.

Page 22 of 59 Import Tool 365 (9.0)



Below is an example of XML file containing contact data and transformation that is used to convert the source XML into a tab separated file. You can test your transformation by clicking "View" button.

#### XML file:

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Sample xml file to be used with Contacts.xslt -->
<Contacts>
              City="Sacramento"
                                   State="CA"
                                                  Country="US"
                                                                    PostalCode="94987"
  <Contact
EmailAddress="MaryBergstrom@ads.com">
    <Address>
     1178
     Sandy Blvd.
    </Address>
    <FirstName>Mary</FirstName>
    <LastName>Bergstrom</LastName>
  </Contact>
                                                    Country="US"
              City="Springfield"
                                                                    PostalCode="62333"
  <Contact
                                     State="IL"
EmailAddress="RobertBorges@adc.com">
    <Address>1074 Lori Drive &gt;X&lt; </Address>
    <FirstName>Robert</FirstName>
    <LastName>Borges
  </Contact>
              City="Hartford"
                                   State="CT"
                                                                    PostalCode="06198"
  <Contact
                                                   Country="US"
EmailAddress="StephenAcevedo@acm.com">
    <Address>
      1172
     Flamingo
     Dr.
    </Address>
    <FirstName>Stephen</FirstName>
    <LastName>Acevedo</LastName>
  </Contact>
               City="Dallas"
                                                  Country="US"
                                                                    PostalCode="20313"
  <Contact
                                  State="TX"
EmailAddress="AdrianDumitrascu@ac.com">
   <Address>100 Red Oak Lane</Address>
    <FirstName>Adrian</FirstName>
    <LastName>Dumitrascu</LastName>
  </Contact>
</Contacts>
```

Page **23** of **59** Import Tool 365 (9.0)

Transformation (XSL) file:

```
<?xml version="1.0" encoding="utf-8"?>
<!--
   This is an example of simple xsl transformation file. It matches Contacts.xml
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
 <!-- Set output format: Unicode, no xml header, text only. -->
 <xsl:output encoding="utf-8" omit-xml-declaration="yes" method="text" />
 <xsl:template match="/">
   <!--
       Output document header. Number of items should match fields.
       Name can be the same as xml element or attribute, but doesn't have to.
       Fields are separated by tab (	); new rows by CRLF (

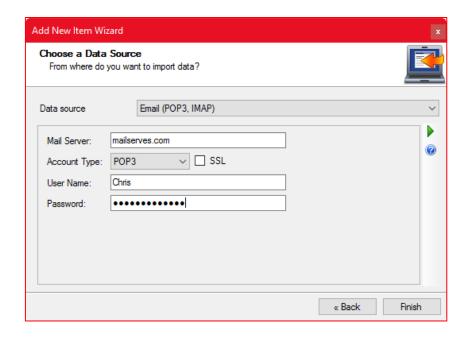
).
   <xsl:text>Address1 Line1&#9;</xsl:text>
   <xsl:text>Address1 City&#9;</xsl:text>
   <xsl:text>Address1 StateOrProvince&#9;</xsl:text>
   <xsl:text>Address1 Country&#9;</xsl:text>
   <xsl:text>Address1 PostalCode&#9;</xsl:text>
   <xsl:text>EmailAddress&#9;</xsl:text>
   <xsl:text>FirstName&#9;</xsl:text>
   <xsl:text>LastName&#xD;&#xA;</xsl:text>
   <!--
        Output fields. Number of items should match header.
        Fields are separated by tab (	); new rows by CRLF (

).
    <xsl:for-each select="/Contacts/Contact">
     <xsl:value-of select="normalize-space(Address)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(@City)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(@State)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(@Country)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(@PostalCode)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(@EmailAddress)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(FirstName)" />
     <xsl:text>&#9;</xsl:text>
     <xsl:value-of select="normalize-space(LastName)" />
     <xsl:text>&#xD;&#xA;</xsl:text>
   </xsl:for-each>
 </xsl:template>
</xsl:stylesheet>
```

**To import data from an email account** select Email (POP3, IMAP) option from the Data source dropdown.

Specify your email server address and type (POP3 or IMAP). You can also specify a port in the mail server address if non-standard port should be used (for example: pop3:myserver.com:3200). Mark SSL if your server requires secure connections. You also have to provide user name and password. Clicking on will test the connection.

Page **24** of **59** Import Tool 365 (9.0)

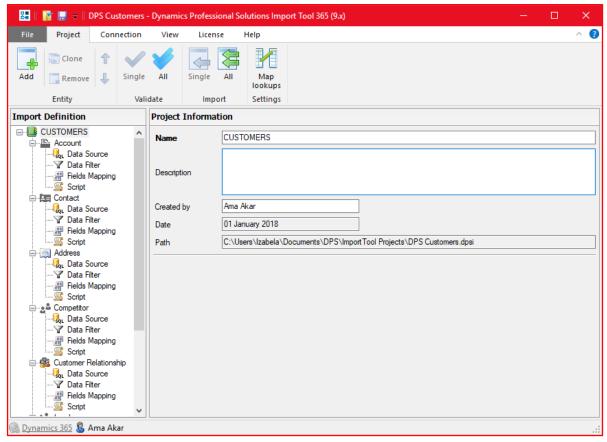


When you have finished defining the data source, click "Finish" button and you will see the main screen window.

The main screen is dived into two sections. Left section contains a tree structure and is called Import Definition. It shows the entities included in the project.

Right section is content sensitive and shows detailed information for what is selected in the left section. Section title will change depending on what level is selected in the left pane. You can select a top-level Project item, Entity, Data Source, Data Filter, Field Mapping or Script.

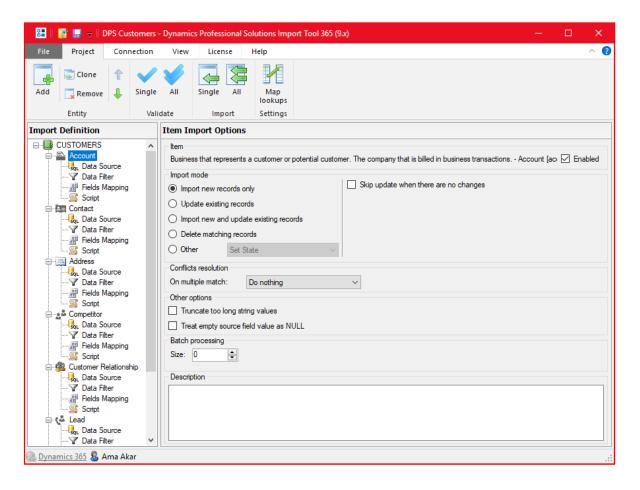
By selecting a project in the left pane **Project Information** will be displayed in the right section of the main screen.



Page **25** of **59** Import Tool 365 (9.0)

| Name        | Name of your project.   |
|-------------|---|
| Description | Optional description.   |
| Created by  | System will populate this field with a user name that created the project. You can change this information if you wish. |
| Date        | System will display date when you project was created.  |

By selecting the entity in the left pane **Item Import Options** will be displayed in the right section of the main screen.

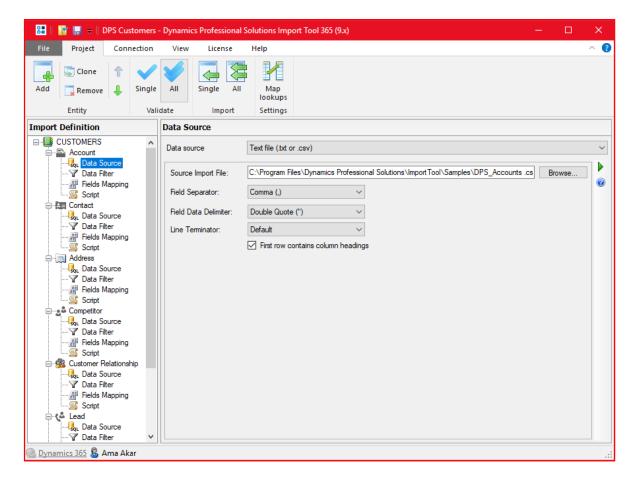


Page **26** of **59** Import Tool 365 (9.0)

| Item                                   | Contains entity description and technical name.  |  |  |
|--|--|--|--|
| Enabled                                | Specifies whether this entity should be included in the import.  Disabled items will be skipped during the import.   |  |  |
| Import mode                            | Specifies one of the import modes.  If you want to update records make sure you have selected at least one key in a Fields Mapping Section.  You may also delete records from the system or change record status.  Available options:  • Import new records only – only new records will be imported, if record already exists it won't be updated.  • Update existing records – only updates existing records, if record doesn't exist it won't be created.  • Import new and update existing records – combination of the two above options. New record will be created if it doesn't exist, otherwise existing record will be updated.  • Delete matching records – matching records will be deleted.  • Other  • Activate – use this option to activate inactive records.  • Deactivate – use this option to deactivate records.  • SetState – use this option to change record state. |  |  |
| Conflict resolution                    | <ul> <li>Decide what to do when multiple records match the selected key.</li> <li>Do nothing – no action will be executed if multiple existing records are found.</li> <li>Update all matching records – action will be executed against all matching records.</li> </ul>  |  |  |
| Truncate too long string value         | If this option is marked system will truncate too long strings to the maximum allowed length of the specific field. Otherwise error will occur.  |  |  |
| Treat empty source value as null       | If this option is marked system treats empty source value as a NULL; otherwise as an empty string.   |  |  |
| Skip update when there are no changes. | If this option is marked update command won't be executed if there are no changes. This means last modified column won't be updated. This option might be useful if you for example don't want to execute some workflow on save and there are no changes.  |  |  |
| Description                            | Enter an optional description for the entity import.   |  |  |

By selecting Data Source for the specific entity in the left pane you can access **Data Source** settings in the right section of the main screen.

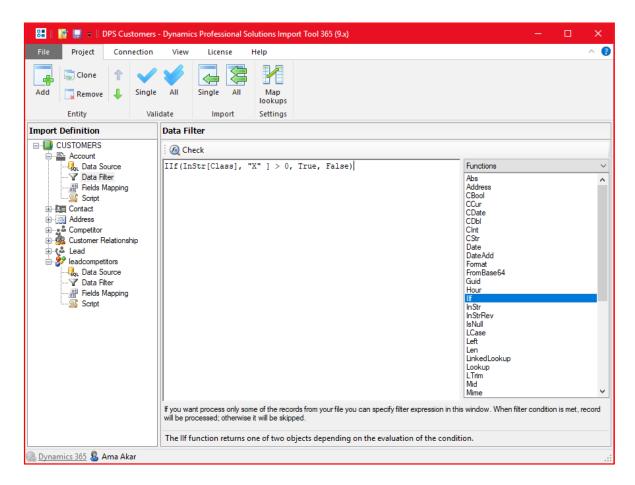
Page 27 of 59 Import Tool 365 (9.0)



In this screen you can modify or change data source configuration.

Page 28 of 59 Import Tool 365 (9.0)

By selecting Data Filter for the specific entity in the left pane you can access **Data Filter** in the right section of the main screen.

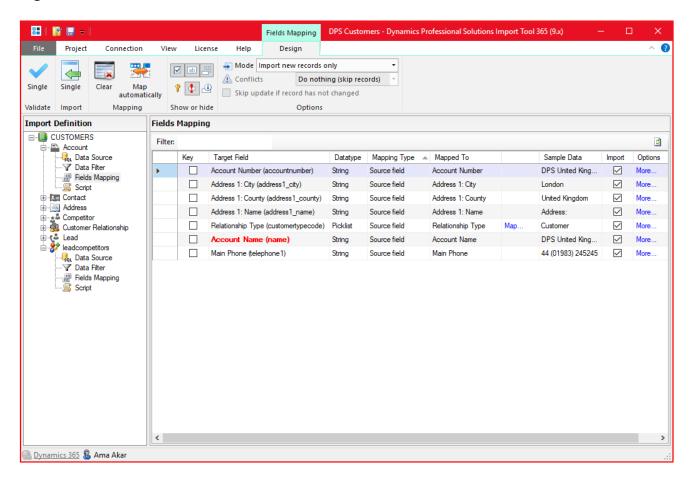


Data filter may be useful if you want to process only some of the records that are in the source file and you are unable to filter the data using other means (for example using a data source query). When filter condition is met, record will be processed otherwise it will be skipped.

In the example above, if source field "Class" contains character "X" record will be imported and other records will be skipped. You can use Functions and Operators when defining a filter. More about functions and operators you can find in later chapter.

Page **29** of **59** Import Tool 365 (9.0)

By selecting the Fields Mapping for the specific entity in the left pane you can access **Fields Mapping** in the right section of the main screen.

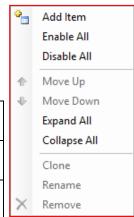


In this section you can map source fields to the CRM fields. This part will be described in details in the Chapter 6 of this manual.

## Left pane context menu

In the left pane you can right click in order to open a context menu.

| Add Item     | Adds a new item to the current project (new entity to      |  |
|--------------|--|--|
|              | import).   |  |
| Enable All   | Enables all items in the current project. Only enabled     |  |
|              | items will be imported.                                    |  |
| Disable All  | Disables all items in the project. Disabled items will not |  |
|              | be imported.   |  |
| Move Up      | Moves the selected item up in the hierarchy. Items are     |  |
|              | imported in the order as displayed in the tree.            |  |
| Move Down    | Moves the selected item down in the hierarchy. Items       |  |
|              | are imported in the specified order.                       |  |
| Expand All   | Expands all items in the project.                          |  |
| Collapse All | Collapses all items in the project.                        |  |
| Clone        | Creates a copy of the currently selected item.             |  |
| Rename       | Renames the selected item.                                 |  |
| Remove       | Removes the selected item form the project.                |  |



Page **30** of **59** Import Tool 365 (9.0)

From the left pane in the main screen select Fields Mapping for the item you want to import.

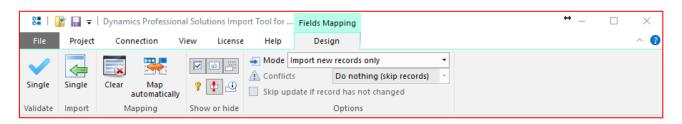
| Fields Mapping |                                      |          |              |                   |     |                   |              |         |
|----------------|--------------------------------------|----------|--------------|-------------------|-----|-------------------|--------------|---------|
| Filter:        |                                      |          |              |                   |     |                   |              |         |
|                | Target Field                         | Datatype | Mapping Type | Mapped To         |     | Sample Data       | Import       | Options |
| <b>&gt;</b>    | Account Number (accountnumber)       | String   | Source field | Account Number    |     | DPSUK01           | $\checkmark$ | More    |
|                | Address 1: City (address1_city)      | String   | Source field | Address 1: City   |     | London            | $\checkmark$ | More    |
|                | Address 1: County (address1_county)  | String   | Source field | Address 1: County |     | United Kingdom    | ~            | More    |
|                | Address 1: Name (address1_name)      | String   | Source field | Address 1: Name   |     | Main Address:     | $\checkmark$ | More    |
|                | Relationship Type (customertypecode) | Picklist | Source field | Relationship Type | Мар | Customer          | ~            | More    |
|                | Email (emailaddress1)                | String   | Source field | Email             |     | UK-Office@dps.c   | $\checkmark$ | More    |
|                | Industry (industrycode)              | Picklist | Source field | Industry          | Мар | Information Tech  | ~            | More    |
|                | Account Name (name)                  | String   | Source field | Account Name      |     | DPS United King   | $\checkmark$ | More    |
|                | Ownership (ownershipcode)            | Picklist | Source field | Ownership         | Мар | Private           | ~            | More    |
|                | Main Phone (telephone 1)             | String   | Source field | Main Phone        |     | 44 (01983) 245245 | $\checkmark$ | More    |
|                | Currency (transactioncurrencyid)     | Lookup   | Source field | Currency          |     | Pound Sterling    | $\checkmark$ | More    |

| Key          | Indicates that this is the field that should be used to find existing record in the CRM. More than one field can be marked as key field. This basically determines which field or fields determine that record is unique.  For example if you are importing contacts it can be email address (single key) assuming there can be only one contact with a given email address. Or it can be first and last name (two key fields). You don't have to select any key fields, but in this case duplicate records can be created. This can be resolved later by using duplicate |
|--------------|---|
|              | detection in the CRM.   |
| Target Field | This column lists all available fields for the selected entity type (e.g. fields in the CRM). Custom fields will be listed, too.  |
| Data Type    | This column provides information about data type of the target (e.g. CRM) field. Most of the types are self-explanatory. There is one special type that is worth mentioning: <b>Lookup</b> . This is a reference to another record in the CRM. For example Unit has Unit Group lookup field which specifies the parent unit group. Similarly parent customer for a contact, etc.  |
| Mapping Type | <ul> <li>This column tells the system where to get the imported value from. Available options are: <ul> <li>Unmapped – target field is not mapped to anything and won't be imported.</li> <li>Source field – target field is mapped to the data source field.</li> <li>Expression – target field is mapped to an expression (for example calculated value, constant). More about functions you can find in Chapter 9.</li> <li>For some type of fields like Status, Picklist, Owner there will be another option specific to this type.</li> </ul> </li> </ul>            |
| Mapped To    | If the selected mapping type is "Source field" this column will list all fields available in the data source.  If the selected mapping type is "Expression" this column will show   |

Page **31** of **59** Import Tool 365 (9.0)

|             | inline expression editor.  |  |  |  |
|-------------|--|--|--|--|
|             | This unnamed column is used only when selected mapping type is "Expression" or if a target field is of specific type (for example Status, Picklist, Owner, etc.). In this case you will be provided with a list of available values.   |  |  |  |
| Sample Data | This column displays sample data from the data source.   |  |  |  |
| Import      | This column indicates whether the field should be imported or not.   |  |  |  |
| Options     | <ul> <li>Update options</li> <li>Default – import always updates CRM field with value from a source (or expression).</li> <li>Do not update if target field has already value</li> <li>Do not update with an empty value – import updates CRM field only when source is not empty.</li> <li>Append text– import appends source value instead of overwriting existing value. Available for string and memo fields only. It is useful for appending new lines to memo fields.</li> <li>Field Import Options</li> <li>Do not update if target field has already value</li> <li>Do not update with an empty value</li> <li>Append text</li> <li>Import</li> <li>Aways</li> <li>When updating existing record only</li> <li>When updating existing record only</li> <li>OK</li> </ul> |  |  |  |
|             | Import   |  |  |  |
|             | Always     When creating new record only   |  |  |  |
|             | When creating new record only  |  |  |  |
|             | When updating existing record only   |  |  |  |

Ribbon commands and options – this is ribbon is visible when Fields Mapping is selected in the tree view:



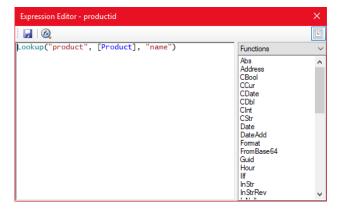
| Group        | Command           | Description   |
|--------------|-------------------|---|
| Validate     | Single            | Validates the import for currently selected entity. |
| Import       | Single            | Runs the import for currently selected entity.      |
| Mapping      | Clear             | Clears all mappings.                                |
| Mapping      | Map automatically | Tries to map source and target fields automatically |
|              |                   | based on matching target and source field names.    |
| Show or hide | < >               | Show mapped fields only – hides or shows rows with  |
|              |                   | unmapped fields.                                    |
| Show or hide | ab                | Show sample data column – hides or shows the        |
|              |                   | sample data column.                                 |

Page **32** of **59** Import Tool 365 (9.0)

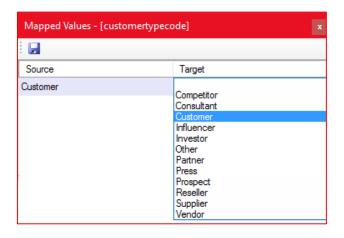
| Show or hide | 1010            | Show data type column – hides or shows the data      |
|--------------|-----------------|--|
|              |                 | type column.   |
| Show or hide | ?               | Show primary key field – hides or shows a row with   |
|              |                 | field that represent the ID of a record (GUID). This |
|              |                 | field cannot be imported to or updated, but can be   |
|              |                 | used to uniquely identify the existing record.       |
| Show or hide | <b>‡</b>        | Highlight required fields – when selected, business  |
|              |                 | required fields will be highlighted. These are the   |
|              |                 | fields required when <b>creating</b> new record.     |
| Show or hide | _0              | Show target field information – hides or shows the   |
|              |                 | panel with additional information about CRM field.   |
| Options      | Mode            | See page 27 for more details about import modes.     |
| Options      | Conflicts       | See page 27 for more details about conflict          |
|              |                 | resolution.  |
| Options      | Skip update if  | See page 27 for more details about this option.      |
|              | records has not |  |
|              | changed         |  |

When selected mapping type is "Expression", you can use Expression Editor to build expression. Click "Edit to access the **Expression Editor**. Build your expression using fields from the data source and/or available functions. You can drag and drop items from the list displayed on the right hand side. There are two buttons:

- Save button saves the expression to the row currently being edited.
- Verify button checks the expression syntax.



For some field types, like Picklist, Status, Owner, etc. and when selected mapping type is "Source field" you will have to map source values to the CRM values. In this case click on "Map..." link:



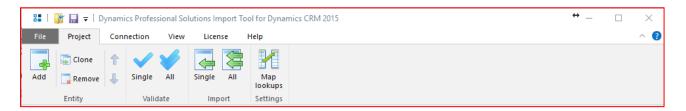
Page **33** of **59** Import Tool 365 (9.0)

For Customer or some Lookup type fields and when selected mapping type is "Source field" you will have to specify the target lookup type. In this case click on "Target..." link:

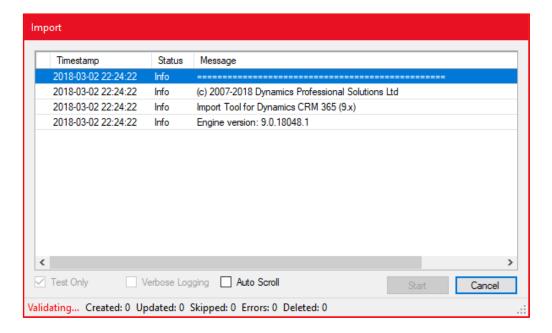


Page **34** of **59** Import Tool 365 (9.0)

When all project settings have been specified, you can validate whether your import will work the way it was intended to using "Validate Single" or "Validate All" commands.



At this point no import is actually executed. The program only simulates the import process to locate any potential problems. You can study the results in the Import screen by scrolling through the validation results. To save results to a text file or copy displayed information to the Clipboard, right click on the window (or click the appropriate icon near "Save" button) and select the action. Verbose Logging option specifies that much more information will be logged and displayed in the progress window. It is usually useful when troubleshooting import issues.



To perform the import, select "Import Single" or "Import All" command. If you have just performed validation and Import screen is still open, simply unmark the "Test Only" checkbox in the left bottom corner of the screen and click the Start button.

Page **35** of **59** Import Tool 365 (9.0)

Another way of running the import is to use the command line version of the ImportTool ImportToolCmd.exe which can be found in the Import Tool folder (typically "C:\Program Files\Dynamics Professional Solutions\ImportTool").

This can be useful when you want to run import on a regular basis (scheduled). For example you can create a schedule task using Windows Task Scheduler or any other scheduler software that will execute ImportToolCmd.exe. Please note that ImportToolCmd.exe must run under account that is a valid CRM user with all required privileges.

## **Options**

ImportToolCmd /p projectfile [/c connection] [/pwd password] [/f pluginfile] [/l logfile] [/s]

| Option     | Description   |
|------------|---|
| / <b>p</b> | Required. Specifies the import project file to run.   |
| /c         | Specifies the connection to use. If you have only one connection defined then this parameter is optional. Otherwise it is required. |
| /pwd       | If password is not saved in the connection then it is required to provide a password.   |
| /f         | Optional. Specifies the custom plugin file. May be specified more than once.  |
| /1         | Optional. Specifies the log file name. When parameter is not specified all messages are written to the screen only.                 |
| /s         | Optional. When specified import runs in the simulation mode. Otherwise import runs in normal mode.                                  |

#### **Examples**

Run import (default connection):

ImportToolCmd.exe /p "C:\My Projects\ImportAccounts.dpsi"

Run import with specified connection:

ImportToolCmd.exe /p "C:\My Projects\ImportAccounts.dpsi" /c "My CRM 2011"

Run import and log messages to Import.log:

ImportToolCmd.exe /p "C:\My Projects\ImportAccounts.dpsi" /l C:\Import.log

Run import in test (validation) mode:

ImportToolCmd.exe /p "C:\My Projects\ImportAccounts.dpsi" /s

Display help:

ImportToolCmd.exe

#### **Chapter 9: Expressions**

One of the powerful features you can find in the Import Tool are expressions. Expressions are useful in complex import scenarios where default field mapping is not sufficient.

Syntax used by the expressions in the Import Tool is very simple and if you are familiar with basic concepts of programming they should be easy to use. There are four main elements used in the expressions:

- Literals
- Variables
- Operators
- Functions

#### 1. Literals

Literals represent values that are basically constant.

#### For example:

- "John Smith" is a string
- 127.54 is a decimal
- 13 is an integer
- #2007-12-27# is a date

#### 2. Variables

Variables represent fields that are available in the input file. For example, if your input file has a column named "Last Name" it can be referred as [Last Name]. Value of [Last Name] depends on the actual data in your input file. You can use any column name that is available in your input file regardless whether this column is imported or not. Generic rule is that you should use square brackets ([]) to indicate input file field.

#### 3. Operators

Operators are special functions that operate on literals, variables or other functions. The list of available operators:

- Addition '+'
- Subtraction '-'
- Multiplication '\*'
- Division '\'
- Equal '='
- Not equal '<>'
- Less than '<'</li>
- Less than or equal to '<='</li>
- Greater than '>'
- Greater than or equal to '>='
- Logical AND 'AND' or '&'
- Logical OR 'OR' or '|'
- Logical NOT 'NOT' or '!'

### For example:

- "John" + " Smith" equals "John Smith"
- 127.12 + 3 equals 130.12

Page **37** of **59** Import Tool 365 (9.0)

It is important that operators require compatible arguments. For example "#2007-01-12# + 10" is invalid since first argument is a date, second is a number. In this case we can use a function if intention was to add 10 days to the specified date: DateAdd("d", 10, #2007-01-12#).

### 4. Functions

Functions are described in detail in the next chapter.

Some examples of expressions that can be used in the Import Tool:

- IIf([Last Name] = "Smit", [Last Name] + "h", [Last Name])
  This example appends missing "h" letter in the "Smit" name.
- *DateAdd*("m", 1, Date())
  This example returns a date that is 1 month from today.
- [Current Price] + 10 This example increments current price by 10.

Page **38** of **59** Import Tool 365 (9.0)

This chapter describes useful function that can be used within DPS Import Tool.

### 1. Conversion functions

### **CBool Function**

The CBool function converts an expression to type Boolean.

#### Syntax

CBool(expression)

| Parameter  | Description  |
|------------|--|
| expression | Required. Any valid expression. A nonzero value returns True, zero returns False. An error occurs if the |
| -          | expression cannot be interpreted as a Boolean value.   |

### Example 1

CBool(0) Returns False

### Example 2

CBool(32) Returns True

#### Example 3

CBool("True") Returns True

### **CCur Function**

The CCur function converts an expression to type Currency.

Note: This function is locale and culture aware.

#### Syntax

CCur(expression)

| Parameter  | Description                     |
|------------|---------------------------------|
| expression | Required. Any valid expression. |

### Example 1

CCur("100.25") Returns 100.25

Page **39** of **59** Import Tool 365 (9.0)

### **CDate Function**

The CDate function converts a valid date and time expression to type Date.

Note: This function is locale and culture aware.

#### Syntax

CDate(expression)

| Parameter  | Description  |
|------------|--|
| expression | Required. Any valid expression (like Date() or Now()). |

### Example 1

Date only

CDate("2007-09-01")

#### Example 2

Date and Time

CDate("2007-09-01 11:12:23")

#### **CDbl Function**

The CDbl function converts an expression to type Double.

Note: This function is locale and culture aware.

#### Syntax

CDbl(expression)

| Parameter  | Description                     |
|------------|---------------------------------|
| expression | Required. Any valid expression. |

#### Example 1

CDbl("28.11") Returns 28.11

#### **CInt Function**

The CInt function converts an expression to type Integer.

#### Syntax

CInt(expression)

| Parameter  | Description                     |
|------------|---------------------------------|
| expression | Required. Any valid expression. |

### Example 1

CInt(127.98)

Returns 128

### **CStr Function**

The CStr function converts an expression to type String.

#### Syntax

CStr(expression)

| Parameter | Description |
|-----------|-------------|
|-----------|-------------|

Page **40** of **59** Import Tool 365 (9.0)

| expression | Required. Any valid expression.   |
|------------|---|
|            | If expression is:   |
|            |   |
|            | Boolean - then the CStr function will return a string containing True or False.                   |
|            | Date - then the CStr function will return a string that contains a date in the short-date format. |
|            | Numeric - then the CStr function will return a string that contains the number.                   |

### Example 1

CStr(127.98) Returns "127.98"

# 2. Date and time functions

### **Date Function**

The Date function returns the current system date.

#### Syntax

Date()

### Example 1

Return current system date Date()

### **DateAdd Function**

The DateAdd function returns a date to which a specified time interval has been added.

### Syntax

DateAdd(interval, number, date)

| Parameter | Description   |
|-----------|---|
| interval  | Required. The interval you want to add.   |
|           | Can take the following values:  |
|           | yyyy - Year   |
|           | q - Quarter   |
|           | m - Month   |
|           | y - Day of year   |
|           | d - Day   |
|           | w - Weekday   |
|           | ww - Week of year   |
|           | h - Hour  |
|           | n - Minute  |
|           | s - Second  |
| number    | Required. The number of interval you want to add. Can either be positive, for dates in the future, or negative for dates in the past. |
| date      | Required. Variable or literal representing the date to which interval is added.   |

### Example 1

Add one month to current date DateAdd("m", 1, Date())

#### Example 2

Subtract 14 days from current date DateAdd("d", -14, Date())

Page **41** of **59** Import Tool 365 (9.0)

### **Hour Function**

The Hour function returns a number between 0 and 23 that represents the hour of the day.

#### Syntax

Hour(time)

| Parameter | Description   |
|-----------|---|
| time      | Required. Any expression that can represent a time. |

### Example 1

Return current hour Hour(Now())

### **Minute Function**

The Minute function returns a number between 0 and 59 that represents the minute of the hour.

#### Syntax

Minute(time)

| Parameter | Description   |
|-----------|---|
| time      | Required. Any expression that can represent a time. |

#### Example 1

Return current minute Minute(Now())

### **Month Function**

The Month function returns a number between 1 and 12 that represents the month of the year.

### Syntax

Month(date)

| Parameter | Description   |
|-----------|---|
| date      | Required. Any expression that can represent a date. |

### Example 1

Return current moth Month(Date())

#### **Now Function**

The Now function returns the current date and time according to the setting of your computer's system date and time.

#### Syntax

Now()

### Example 1

Return current date and time

Now()

Page **42** of **59** Import Tool 365 (9.0)

### **Second Function**

The Second function returns a number between 0 and 59 that represents the second of the minute.

#### Syntax

Second(time)

| Parameter | Description   |
|-----------|---|
| time      | Required. Any expression that can represent a time. |

### Example 1

Return current seconds Second(Now())

#### **Time Function**

The Time function returns the current system time.

#### Syntax

Time()

#### Example 1

Return current time Time()

#### **Year Function**

The Year function returns a number that represents the year.

#### Syntax

Year(date)

| Parameter | Description   |
|-----------|---|
| date      | Required. Any expression that can represent a date. |

#### Example 1

Return current year Year(Date())

# 3. String functions

#### **InStr Function**

The InStr function returns the position of the first occurrence of one string within another.

#### Syntax

InStr(string1, string2[, ignoreCase])

| Parameter  | Description  |
|------------|--|
| string1    | Required. The string to be searched.                               |
| string2    | Required. The string expression to search for.                     |
| ignoreCase | Optional. Specifies the string comparison method. Default is True. |

#### Example 1

InStr("Hello", "o")
Returns 5

### Example 2

Page **43** of **59** Import Tool 365 (9.0)

InStr("Hello", "L", True) Returns 0

#### Example 3

InStr("Hello", "l") Returns 3

### **InStrRev Function**

The InStrRev function returns the position of the first occurrence of one string within another. The search begins from the end of string, but the position returned counts from the beginning of the string.

### Syntax

InStrRev(string1, string2[, ignoreCase])

| Parameter  | Description  |
|------------|--|
| string1    | Required. The string to be searched.                               |
| string2    | Required. The string expression to search for.                     |
| ignoreCase | Optional. Specifies the string comparison method. Default is True. |

### Example 1

InStrRev("Hello", "o")
Returns 5

### Example 2

InStrRev("Hello", "L", True) Returns 0

#### Example 3

InStrRev("Hello", "l") Returns 4

### **LCase Function**

The LCase function converts a specified string to lowercase.

#### Syntax

LCase(string)

| Parameter | Description  |
|-----------|--|
| string    | Required. The string to be converted to lowercase. |

### Example 1

LCase("Hello") Returns "hello"

Page **44** of **59** Import Tool 365 (9.0)

### **Left Function**

The Left function returns a specified number of characters from the left side of a string.

#### Syntax

Left(string, length)

| Parameter | Description   |
|-----------|---|
| string    | Required. The string to return characters from.   |
| length    | Required. Specifies how many characters to return. If set to 0, an empty string ("") is returned. If set to greater than or equal to the length of the string, the entire string is returned. |

### Example 1

Left("Hello", 2) Returns "He"

### Example 2

Left("Hello", 20) Returns "Hello"

#### Example 3

Left("Hello", 0) Returns ""

### **Len Function**

The Len function returns the number of characters in a string.

#### **Syntax**

Len(string)

| Parameter | Description                    |
|-----------|--------------------------------|
| string    | Required. A string expression. |

#### Example 1

Len("Hello") Returns 5

### LTrim Function

The LTrim function removes spaces on the left side of a string.

#### Syntax

LTrim(string)

| Parameter | Description                    |
|-----------|--------------------------------|
| string    | Required. A string expression. |

### Example 1

LTrim(" Hello ") Returns "Hello "

Page **45** of **59** Import Tool 365 (9.0)

### **Mid Function**

The Mid function returns a specified number of characters from a string.

#### Syntax

Mid(string, start ,length)

| Parameter | Description  |
|-----------|--|
| string    | Required. The string to return characters from.  |
| start     | Required. Specifies the starting position. If set to greater than the number of characters in string, it returns an empty string (""). |
| length    | Required. The number of characters to return.  |

### Example 1

Mid("Hello", 2, 2) Returns "el"

#### Example 2

Mid("Hello", 1, 1) Returns "H"

### Example 3

Mid("Hello", 3, 20) Returns "llo"

## **Right Function**

The Right function returns a specified number of characters from the right side of a string.

#### Syntax

Right(string, length)

| Parameter | Description   |
|-----------|---|
| string    | Required. The string to return characters from.   |
| length    | Required. Specifies how many characters to return. If set to 0, an empty string ("") is returned. If set to greater than or equal to the length of the string, the entire string is returned. |

### Example 1

Right("Hello", 2) Returns "lo"

### Example 2

Right("Hello", 20) Returns "Hello"

### Example 3

Right("Hello", 0)
Returns ""

Page **46** of **59** Import Tool 365 (9.0)

### **RTrim Function**

The RTrim function removes spaces on the right side of a string.

#### Syntax

RTrim(string)

| Parameter | Description                    |
|-----------|--------------------------------|
| string    | Required. A string expression. |

### Example 1

RTrim(" Hello ") Returns " Hello"

### **Space Function**

The Space function returns a string that consists of a specified number of spaces.

### Syntax

Space(number)

| Parameter | Description  |
|-----------|--|
| number    | Required. The number of spaces you want in the string. |

### Example 1

Space(2) Returns ""

#### **Trim Function**

The Trim function removes spaces on both sides of a string.

#### Syntax

Trim(string)

| Parameter | Description                    |
|-----------|--------------------------------|
| string    | Required. A string expression. |

### Example 1

Trim(" Hello ") Returns "Hello"

### **UCase Function**

The UCase function converts a specified string to uppercase.

### Syntax

UCase(string)

| Parameter | Description  |  |
|-----------|--|--|
| string    | Required. The string to be converted to uppercase. |  |

### Example 1

UCase("Hello") Returns "HELLO"

Page **47** of **59** Import Tool 365 (9.0)

### 4. Math Functions

### **Abs Function**

The Abs function returns the absolute value of a specified number.

#### Syntax

Abs(number)

| Parameter | Description                     |  |
|-----------|---------------------------------|--|
| number    | Required. A numeric expression. |  |

### Example 1

Abs(-2) Returns 2

### **Round Function**

The Round function rounds a number.

### Syntax

Round(expression, numdecimalplaces)

| Description   |  |
|---|--|
| Required. The numeric expression to be rounded.   |  |
| Required. Specifies how many places to the right of the decimal are included in the rounding. |  |
|   |  |

### Example 1

Round(10.244, 2) Returns 10.24

### 5. Miscellaneous functions

### **Format Function**

The Format function returns an expression formatted using specified format.

Note: This function is locale and culture aware.

#### **Syntax**

Format(expression, format)

| Parameter  | Description  |  |
|------------|--|--|
| expression | Required. The expression to be formatted.                        |  |
| format     | Required. The format to apply. Can be any .NET Framework format. |  |

### Example 1

Format(20, "C") Returns "\$20"

### Example 2

Format(64, "X")

Returns "40" (hexadecimal)

Page **48** of **59** Import Tool 365 (9.0)

### **Guid Function**

The Guid function generates new unique identifier.

#### Syntax

Gud()

### **IIf Function**

The IIf function returns one of two objects depending on the evaluation of the condition.

#### Syntax

IIf(condition, truePart, falsePart)

| Parameter | Description  |  |
|-----------|--|--|
| condition | Required. The condition to be evaluated.                 |  |
| truePart  | Required. Part will be returned when condition is True.  |  |
| falsePart | Required. Part will be returned when condition is False. |  |

#### Example 1

```
IIf(5 > 1, "It's true", "It's false")
Returns "It's true"
```

#### Example 2

Format([Field]="", Null(),[Field])
Converts empty string to NULL value.

#### **IsNull Function**

The IsNull function replaces NULL with the specified value.

#### Syntax

IsNull(expression, replacement)

| Parameter   | Description   |  |
|-------------|---|--|
| expression  | Required. The expression to check.                              |  |
| replacement | Required. The replacement value to use when expression is NULL. |  |

### Example

IsNull([Field], "Null replacement")

When [Field] is NULL it will return "Null replacement". Otherwise [Field] will be returned.

#### **Null Function**

The Null function returns the NULL value.

### Syntax

Null()

#### Example

Return NULL value Null()

Page **49** of **59** Import Tool 365 (9.0)

### **ReadFile Function**

The ReadFile function reads content of the specified file to a string.

Syntax

ReadFile(fileName)

Example

ReadFile("C:\Folder\MyFile.txt")

### ReadFileBase64 Function

The ReadFileBase64 function reads content of the specified file to a Base64 encoded string.

Syntax

ReadFileBase64(fileName)

Example

ReadFileBase64("C:\Folder\MyFile.txt")

#### **ToBase64 Function**

The ToBase64 function encodes a string using Base64 encoding.

Syntax

ToBase64(string)

Example

ToBase64("Hello!") Returns "SGVsbG8h"

Page **50** of **59** Import Tool 365 (9.0)

### 6. CRM Functions

### **Lookup Function**

The Lookup function returns a primary key (ID) for the specified entity. This function can to be used for any CRM field of type Lookup.

#### **Syntax**

Lookup(entity, value[, field])

| Parameter | Description   |  |
|-----------|---|--|
| entity    | Required. Any valid CRM entity.   |  |
| value     | Required. A value being looked up.  |  |
| field     | Optional. Specifies a primary field used for queries. When parameter is missing the default primary field will be used. |  |

### Example 1

Lookup("account", "John Smith")

Returns the account object with the specified name.

#### Example 2

Lookup("product", "Bicycle-100") Returns the product object.

#### Example 3

Lookup("account", "AB0201", "accountnumber")

Returns the account object with the specified account number.

### LinkedLookup Function

The Lookup function returns a primary key (ID) value of the specified entity. It also allows linking to another entity. One of the examples is if you want to retrieve a unit record with the specified name for the specified unit group name. Maximum of 4 entities can be linked.

#### Syntax

LinkedLookup(entity1, field1, value1, [entity2, field2, value2...])

| Parameter | Description   |  |  |
|-----------|---|--|--|
| entity1   | Required. Primary entity which is any valid CRM entity name.                              |  |  |
| field1    | Required. Entity field that is used as a condition criteria.                              |  |  |
| value1    | Required. Value for the primary condition.  |  |  |
| entity2   | Secondary CRM entity name that primary entity links to.                                   |  |  |
| field2    | Secondary entity field that is used as condition criteria for this entity.                |  |  |
| value2    | Value for the secondary condition.  |  |  |
|           | Additional optional linked entities (entity3, field3, value3), (entity4, field4, value4). |  |  |
|           |   |  |  |

#### Example

LinkedLookup("uom", "name", [UoM], "uomschedule", "name", [UoMGroup])

Returns the unit with name matching data source column UoM and unit group name matching data source column UoMGroup.

Page **51** of **59** Import Tool 365 (9.0)

### **Sql Function**

The Sql function executes a custom query against specified entity.

Note: If this function returns more than one row an error will be raised.

#### Syntax

Sql(entity, field, condition)

| Parameter | Description  |  |
|-----------|--|--|
| entity    | Required. Any valid CRM entity name.   |  |
| field     | Required. A field to return.   |  |
| condition | Required. A condition. It corresponds to SQL WHERE clause and therefore any valid SQL statement can be used. |  |

#### Example 1

Sql("account", "websiteurl", "name='Mountain Toy Store' AND statuscode=1")
Returns the website url for the account with the specified name.

#### Example 2

Sql("product", "productnumber", "description='Aluminum alloy cups; large diameter spindle."") Returns the product number for the product with the specified description.

### **PartyList Function**

The PartyList function returns a set of entities.

This function is similar to Lookup functions. The difference is that it can return more than one value. It can only be used for fields of PartyList type.

#### **Syntax**

PartyList(entity1, value1[, entity2, value2, [entity3, value2]...])

| Parameter | Description                          |  |
|-----------|--------------------------------------|--|
| entity1   | Required. Any valid CRM entity name. |  |
| value1    | Required. A value being looked up.   |  |
| entity2   | Optional. See entity1.               |  |
| value2    | Optional. See value1.                |  |
|           | Additional items to look up.         |  |

#### Example 1

PartyList("systemuser", "John Smith", "account", "A Bike Store")
Returns two items.

Page **52** of **59** Import Tool 365 (9.0)

#### Chapter 11: Advanced scripting

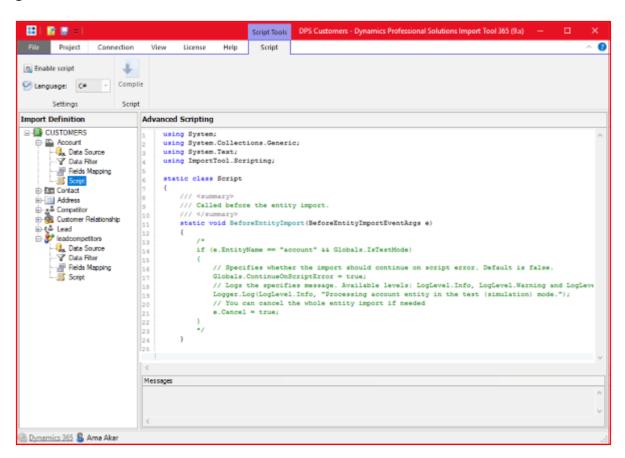
In this version of the Import Tool we are introducing extremely powerful scripting feature that can be used in the scenarios where standard mapping and/or expressions are not sufficient. This is more advanced feature and requires some programming knowledge.

There are two scripting languages currently supported: VB.NET and C#. We recommend using C#, however exactly the same can be achieved using VB.NET.

In the Import Definition for every entity there are now four items available:

- Data Source,
- Data Filter,
- Fields Mapping and
- Script.

When you select Script, Advanced Scripting pane will be displayed. Scripting is disabled by default. To enable it, simply click on the button which shows the current script status (e.g. "Disabled"). Now it should show the "Enabled" status. Clicking on the button when script is enabled will disable the scripting.



Once you enabled the scripting, you will have to decide which language you prefer:

- C# or
- VB.NET.

We recommend using C#, however if you are more familiar with Visual Basic then go ahead and select VB.NET. And remember, once you selected your preferred language, should you decide to change it later you will have to write your script again. There is no automatic conversion between script languages.

When you have selected your preferred language, the template script will be created. Now you will be able to add your own import business logic. But first let's explain the structure of the script.

Use "Compile" button to test the syntax of the script.

### a. Default namespaces

```
C#

using System;
using System.Collections.Generic;
using System.Text;
using ImportTool.Scripting;
```

#### **VB.NET**

```
Imports System
Imports System.Collections.Generic
Imports System.Text
Imports ImportTool.Scripting
```

This tells which namespaces should be used. You can add additional namespaces if you need, refer to.NET Framework reference on MSDN for more details. You can also specify additional assemblies you would like to use in the application configuration file:

```
<add key="CustomScriptAssemblies" value="System.Data.dll;System.Web.dll"/>
```

### b. Script class

This is the main class that must exist. You can safely remove the methods you are not going to use, but you have to keep main class definition. Otherwise your script will not compile.

C#

```
static class Script
{
    static void BeforeEntityImport(BeforeEntityImportEventArgs e)
    {
        }
        static void BeforeRecordImport(BeforeRecordImportEventArgs e)
        {
        }
        static void AfterRecordImport(AfterRecordImportEventArgs e)
        {
        }
        static void AfterEntityImport(AfterEntityImportEventArgs e)
        {
        }
        static void AfterEntityImport(AfterEntityImportEventArgs e)
        {
        }
    }
}
```

Page **54** of **59** Import Tool 365 (9.0)

#### VB.NET

```
Friend Class Script
Private Shared Sub BeforeEntityImport(ByVal e As BeforeEntityImportEventArgs)
End Sub

Private Shared Sub BeforeRecordImport(ByVal e As BeforeRecordImportEventArgs)
End Sub

Private Shared Sub AfterRecordImport(ByVal e As AfterRecordImportEventArgs)
End Sub

Private Shared Sub AfterEntityImport(ByVal e As AfterEntityImportEventArgs)
End Sub
End Class
```

There are four methods (events) you can add your code to:

### - BeforeEntityImport

Method is called when the import of the entity is about to start. You can programmatically decide whether to continue the import of this entity or to skip it.

**BeforeEntityImportEventArgs** has the following properties:

| Property   | Type   | Description  |
|------------|--------|--|
| Cancel     | bool   | <pre>Specifies whether to skip the import of this entity. If set to true then import of the entity will be skipped. For example:  C#  if (e.EntityName == "product") {      e.Cancel = true; }  VB.NET  If e.EntityName = "product"      e.Cancel = True End If</pre>  |
| EntityName | string | <pre>Specifies the name of the entity being imported, for example "account", "contact",     "product", etc. Read-only. For example:     C#     if (e.EntityName == "account")     {         Logger.Log(LogLevel.Info, "Hello from script: " + e.EntityName);     }     VB.NET     If e.EntityName = "account"         Logger.Log(LogLevel.Info, "Hello from script: " + e.EntityName)     End If</pre> |

### - BeforeRecordImport

Method is called when the import of a record is about to start. You can programmatically decide whether to continue the import of this record or to skip it.

**BeforeRecordImportEventArgs** has the following properties:

| Property | Type | Description   |
|----------|------|---|
| Cancel   | bool | Specifies whether to cancel the import of the current record. If set to true then import of the current entity will not start. For example: |
|          |      | C#  |
|          |      | <pre>if (e.OldEntity != null)</pre>   |
|          |      | {   |
|          |      | <pre>if ((string)e.OldEntity["name"] == "A Store (sample)")</pre>   |
|          |      | {   |
|          |      | // Cancel current record  |
|          |      | e.Cancel = true;  |
|          |      | }   |
|          |      | else  |
|          |      | {   |
|          |      | <pre>e.NewEntity["description"] = e.OldEntity["name"];</pre>  |
|          |      | }   |
|          |      | }   |

Page **55** of **59** Import Tool 365 (9.0)

|            |            | VB.NET  |  |  |
|------------|------------|---|--|--|
|            |            | If (Not e.OldEntity Is Nothing) Then  |  |  |
|            |            | <pre>If (CStr(e.OldEntity.Item("name")) = "A Store (sample)") Then</pre>  |  |  |
|            |            | ' Cancel current record   |  |  |
|            |            | e.Cancel = True   |  |  |
|            |            | Else  |  |  |
|            |            | e.NewEntity.Item("description") = e.OldEntity.Item("name")  |  |  |
|            |            | End If  |  |  |
|            |            | End If  |  |  |
| DataSource | DataSource | Provides access to the data used as a data source. You can access data source fields  |  |  |
|            |            | either by index or name. For example:   |  |  |
|            |            | C#  |  |  |
|            |            | <pre>object fieldValueByName = e.DataSource["SourceFieldName"];</pre>   |  |  |
|            |            | <pre>object fieldValueByIndex = e.DataSource[2];</pre>  |  |  |
|            |            | VB.NET  |  |  |
|            |            | Dim fieldValueByName = e.DataSource("SourceFieldName")  |  |  |
|            |            | Dim fieldValueByIndex = e.DataSource(2)   |  |  |
|            |            |   |  |  |
| NI Fudi    | To all     |   |  |  |
| NewEntity  | Entity     | This is the new entity that will be imported (created, updated, etc). You can modify it   |  |  |
|            |            | before the import, for example you can set additional entity property values (even if not   |  |  |
|            |            | configured for import). Generally you have full access to the entity before the actual import starts, so you can apply your own business logic. |  |  |
|            |            |   |  |  |
| OldEntity  | Entity     | This is the original (existing) entity that will be updated. This property will not be  |  |  |
|            |            | specified for new records.  |  |  |

Entity data type is fully described in Dynamics 365 SDK which can be downloaded from MSDN.

# - AfterRecordImport

Method is called after the import of a record.

**AfterRecordImportEventArgs** has the following properties:

| Property   | Type       | Description  |  |  |  |
|------------|------------|--|--|--|--|
| Id         | Guid?      | Specifies the Id of the newly created record.  Specifies whether to cancel the import of the current record. If set to true then import of the current entity will not start. For example: |  |  |  |
|            |            |  |  |  |  |
|            |            | C#   |  |  |  |
|            |            | <pre>if (e.OldEntity != null)</pre>  |  |  |  |
|            |            | {  |  |  |  |
|            |            | <pre>if ((string)e.OldEntity["name"] == "A Store (sample)")</pre>  |  |  |  |
|            |            | // Cancel current record   |  |  |  |
|            |            | e.Cancel = true;   |  |  |  |
|            |            | }  |  |  |  |
|            |            | else   |  |  |  |
|            |            | <pre>e.NewEntity["description"] = e.OldEntity["name"];</pre>   |  |  |  |
|            |            | e.NewEntity[ description ] - e.OrdEntity[ name ];  |  |  |  |
|            |            | }  |  |  |  |
|            |            | VB.NET   |  |  |  |
|            |            | If (Not e.OldEntity Is Nothing) Then   |  |  |  |
|            |            | <pre>If (CStr(e.OldEntity.Item("name")) = "A Store (sample)") Then</pre>   |  |  |  |
|            |            | ' Cancel current record  |  |  |  |
|            |            | e.Cancel = True Else   |  |  |  |
|            |            | e.NewEntity.Item("description") = e.OldEntity.Item("name")   |  |  |  |
|            |            | End If   |  |  |  |
|            |            | End If   |  |  |  |
| DataSource | DataSource | Provides access to the data used as a data source. You can access data source fields   |  |  |  |
|            |            | either by index or name. For example:  |  |  |  |
|            |            | C#   |  |  |  |
|            |            | <pre>object fieldValueByName = e.DataSource["SourceFieldName"];</pre>  |  |  |  |
|            |            | <pre>object fieldValueByIndex = e.DataSource[2];</pre>   |  |  |  |
|            |            | VB.NET   |  |  |  |

Page **56** of **59** Import Tool 365 (9.0)

|           |        | <pre>Dim fieldValueByName = e.DataSource("SourceFieldName") Dim fieldValueByIndex = e.DataSource(2)</pre>   |
|-----------|--------|---|
| NewEntity | Entity | This is the new entity that will be imported (created, updated, etc). You can modify it before the import, for example you can set additional entity property values (even if not configured for import). Generally you have full access to the entity before the actual import starts, so you can apply your own business logic. |
| OldEntity | Entity | This is the original (existing) entity that will be updated. This property will not be specified for new records.   |

AfterEntityImport
Method is called after the import of an entity.
AfterEntityImportEventArgs provides the arguments for the method:

| Property   | Type   | Description   |  |  |
|------------|--------|---|--|--|
| EntityName | string | Specifies the name of the entity that was imported, for example "account", "contact", "product", etc. Read-only. For example: |  |  |
|            |        | C#  |  |  |
|            |        | <pre>if (e.EntityName == "account")</pre>   |  |  |
|            |        | {   |  |  |
|            |        | Logger.Log(LogLevel.Info, "Hello from script: " + e.EntityName);  |  |  |
|            |        | }   |  |  |
|            |        | VB.NET  |  |  |
|            |        | <pre>If e.EntityName = "account"</pre>  |  |  |
|            |        | Logger.Log(LogLevel.Info, "Hello from script: " + e.EntityName)   |  |  |
|            |        | End If  |  |  |
| ErrorCount | Int    | The number of errors which occurred during the import. Zero means no errors.  |  |  |

Page **57** of **59** Import Tool 365 (9.0)

### c. Global objects and helper methods

#### Logger

It represents the Logger class you can use in your script to log errors, warnings and messages. There are 3 levels available: Info, Warning and Error. Messages will appear in standard import log.

### Examples:

```
C#
```

```
Logger.Log(LogLevel.Info, "Information");
Logger.Log(LogLevel.Warning, "Warning");
Logger.Log(LogLevel.Error, "Error");
Logger.Log("Information too");
```

#### **VB.NET**

```
Logger.Log(LogLevel.Info, "Information")
Logger.Log(LogLevel.Warning, "Warning")
Logger.Log(LogLevel.Error, "Error")
Logger.Log("Information too")
```

### **Globals**

It represents the class that provides some global variables.

| Property                 | Type   | Description  |
|--------------------------|--------|--|
| ContinueOnScriptError    | bool   | Specifies whether the import should continue if there is an error in the custom script. Default value is true.  Examples: C# Globals.ContinueOnScriptError = true; VB.NET Globals.ContinueOnScriptError = True |
| CustomData               | object | This property can be used to store any data during the import. It can be useful if you need to preserve some information about previously imported records, etc.   |
| IsTestMode               | bool   | Indicates whether the import is running in the test mode or not.   |
| OrganizationServiceProxy |        | Provides the direct access to the organization web service. More information about this class you can find in the Dynamics CRM SDK.  |

#### **Query**

It provides methods for querying the CRM.

- List<Guid> Lookup(string entityName, string attributeName, object value)
- EntityCollection Execute(QueryExpression query)

Above methods are provided for the convenience only as you can use Globals.OrganizationServiceProxy to the same.

Page **58** of **59** Import Tool 365 (9.0)

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