

# data8 duplicare™ installation

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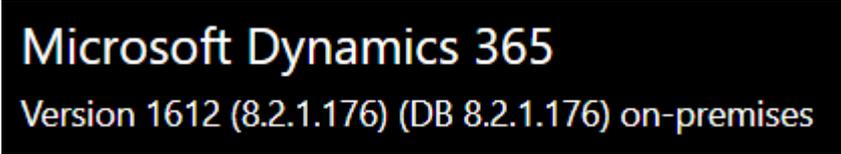
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## Prerequisites

Before installing the data8 duplicare™ solution, please review the following list of prerequisites:

1. **Microsoft Dynamics 365**

To confirm your product version, click on the gearwheel icon in the top right corner of the Dynamics screen and click About



A screenshot of the Microsoft Dynamics 365 'About' page. The text is displayed on a black background with white and yellow text. It reads: 'Microsoft Dynamics 365' in white, and 'Version 1612 (8.2.1.176) (DB 8.2.1.176) on-premises' in yellow.

Confirm that the first number in brackets starts with at least 8.2

2. **Online or IFD**

Your Dynamics 365 instance must either be hosted by Microsoft (with a domain name ending in dynamics.com), or be configured for Internet Facing Deployment (IFD).

3. **Data8 account**

You must have a valid Data8 account. Please register at <https://www.data-8.co.uk/> if you have not already

4. **Registered CRM connection**

We need to be able to connect to your CRM for the duplicare™ solution to work correctly. Please enter your connection details at <https://www.data-8.co.uk/Dashboard/CrmConnections>

Once you have met these prerequisites please contact your Data8 account manager to apply your duplicare™ license to your account.

## Installation

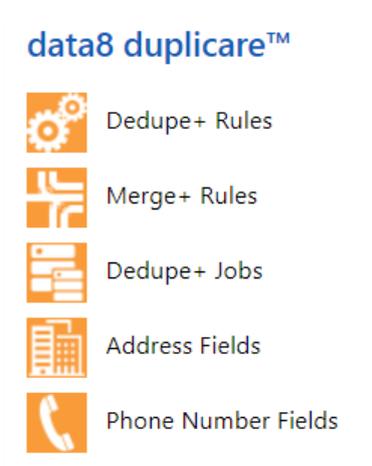
Import the data8 duplicare™ solution into your Dynamics 365 instance by navigating to Settings > Solutions. Click “Import”, select the solution zip file and click “Next”. Follow each step through with the default settings selected - ensuring you enable the SDK message processing steps. The solution import should finish with one warning.

Once installed, double click to open the solution. Enter your Data8 username and password that you use to log into the Data8 website and press Save. This will create the link from your CRM to the Data8 systems. Once it say, “Details saved successfully” you can close the pop-up solutions window.

After this step is complete, your installation is set up and you are ready to customise the product to satisfy your business needs.

## Configuration

All the configuration for the data8 duplicare™ solution is done using the main Dynamics 365 menu system under Settings > data8 duplicare™:



## Duplicate Detection

### Creating a Dedupe+ Rule

data8 duplicare™ enhances the standard duplicate detection rules with its own Dedupe+ Rules. Navigate to Settings > Dedupe+ Rules on the main sitemap and click the “New” button in order to create a new rule.

Give the rule a name to help you identify it and enter your base & matching record types. This works in the same way as the standard duplicate detection rules – the base type defines the type of record that will be matched from, and the matching type defines the type of record that will be found. These should be entered as the internal “logical” names of the entity types, e.g. “account” or “contact”. As you type you will be shown a drop-down list of possible valid names.

The “Auto Edit Forms” option, if set to “Yes”, will automatically apply the required customisations to each active form for the selected base record type. If you leave this set to “No”, you will need to apply some additional customizations to each form on which you want to use duplicate detection. If you want to set this to “Yes”, you must do so now before saving the record.

The “Real Time Enabled” option defines whether this rule should be applied to identify duplicates as a user is entering a record (if set to “Yes”), or only to identify duplicates within your database in bulk (if set to “No”). This option cannot be changed once the rule is created, so choose which way you want to work with this rule now.

Once you are happy with your selections, save the record. At this point, the solution will make various required customizations to your system to support the duplicate detection system so this can take a little while to complete. Once it has finished saving, the option to define the details of the rules will appear.

### Setting up the details of the Dedupe+ Rule

The screenshot shows the configuration page for a Dedupe+ Rule named "Contact Name Match". The page title is "DEDUPE+ RULE : INFORMATION" and the rule name is "Contact Name Match". Under the "General" tab, the following settings are visible:

Rule Name *	<b>Contact Name Match</b>
Base Record Type *	<b>contact</b>
Matching Record Ty *	<b>contact</b>
Real Time Enabled	<b>Yes</b>

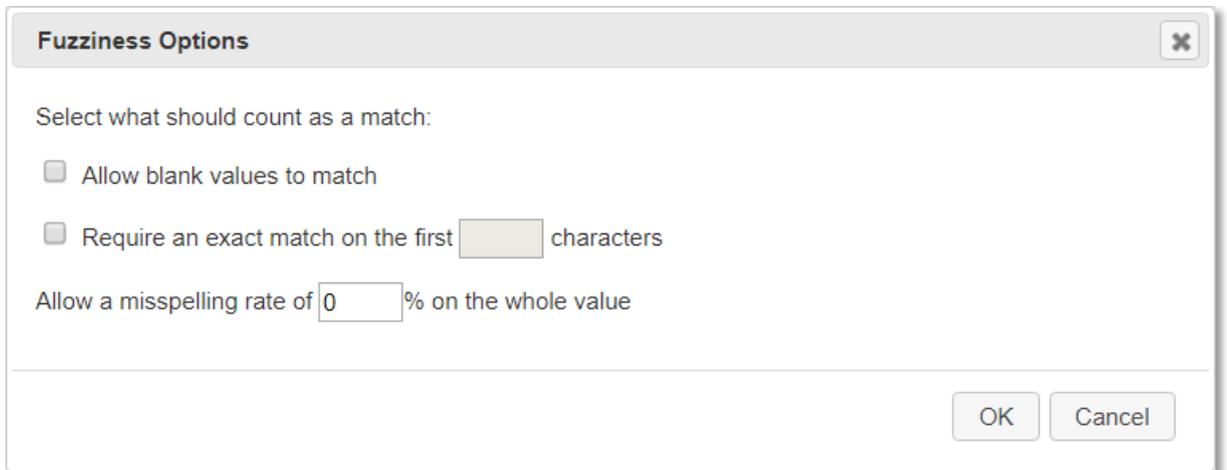
At the bottom, there is a dropdown menu currently set to "And" and an empty input field.

Click the drop-down list to select a rule to add. The following types of rule are available:

- **And/Or**  
Groups other rules together. A default “And” grouping is applied automatically to the rules you add. You can switch an And to an Or by clicking the drop-down arrow to the left.

- **Exact Match**

Provides simple matching of exact values, similar to the standard duplicate detection rules. Select the field to match. Additional options are available by clicking the drop-down arrow to the left and selecting “Fuzziness Options”:



Use “Allow blank values to match” if you want to allow a blank value to match another blank value. This does not allow a populated value to match a blank – that is covered by the “Non-Conflicting” rule type below.

If you have selected to match on a text field you will also see the next two options. Use “Require an exact match on the first x characters” to apply the exact match only to the start of the field. You can also specify a misspelling rate to allow fuzzy matches in case of typos. This is expressed as a percentage value which represents the number of characters the two values are different by. If the value on your master record is 10 characters long and you specify a misspelling rate of 20%, this will match records with values up to 2 characters different.

If the selected field is configured as a Phone Number Field, the exact matching is done on a standardized version of the telephone number so any differences in punctuation are ignored.

- **Exact Match Across Fields**

Provides matching of exact values across a set of fields. Use this to allow matching of any telephone number or email address for example. In the drop-down list, select each field you want to include in the match in turn to build up the list of fields.



A record will count as a match if any of the fields match, e.g. the Business Phone from one record matches the Home Phone of another.

Any fields that are configured as Phone Number Fields are matched using a standardized version of the telephone number so any differences in punctuation are ignored.

- **Fuzzy Company Name Match**

Provides specialized fuzzy matching for company names, taking into account the various ways of writing what appear to a human to be the same. For example, this would allow “Data8 Ltd”, “Data 8 Limited”, “Data Eight Group” etc. to all match.

Options to control the details of what matches will be allowed can be found by clicking the drop-down arrow to the left and selecting “Fuzziness Options”:

**Fuzziness Options**

Select what should count as a match:

- Allow misspellings in the company name so "Data8" and "Deta8" will match

**Legal Terminators**

- Separate legal terminators such as "Inc", "Ltd"
- Allow a company name with no legal terminator to match one with a legal terminator  
Two company names with different legal terminators, e.g. "Data8 Ltd" and "Data8 Plc" will not match

**Business Descriptors**

- Separate business descriptors such as "Services", "Group" so "Data8" will match "Data8 Services"
- Use an extended list of thousands of extra business descriptors such as "Consulting", "School", "Roofing"
- Allow a company name with one business descriptor to match one with a different descriptor, so "Data8 Services" and "Data8 Consulting" will match

**Numbers & symbols**

- Standardise numbers and symbols so "Data Eight" will match "Data 8"
- Ignore punctuation so "Data.8" will match "Data8"
- Ignore spaces so "Data 8" will match "Data8"
- Ignores bracketed text so "Data8 (CRM) Ltd" will match "Data8 Ltd"

**Prefix & Suffix**

- Ignore a trailing "S" at the end of the business name so "Tesco" will match "Tescos"
- Only ignore a trailing "S" for longer words, so "IDS" will not match "ID"
- Ignore common leading words such as "The" and "www"
- Only use the first 60 characters of the company name, ignore everything else

OK Cancel

- **Fuzzy Address Match**

Provides specialized fuzzy matching for addresses, taking into account the various different ways of writing an address that can all relate to the same location.

Before being able to select an address to match, you must first configure the set of fields to be used for the address under the Settings > Address Fields section.

- **Fuzzy Person Name Match**

Provides specialized fuzzy matching for person names, taking into account nicknames as well as misspellings. Select the fields that hold the first and last names. Options to control the details of what matches will be allowed can be found by clicking the drop-down arrow to the left and selecting “Fuzziness Options”:

**Fuzziness Options** ✕

Select what should count as a match:

Record 1	Record 2	<input checked="" type="radio"/> Full Name	<input type="radio"/> Initial	<input type="radio"/> Last Name
Richard Hartland	Rich Heartland	✓	✓	✓
Richard Hartland	Dick Hartland	✓	✓	✓
Richard Hartland	R Hartland	✗	✓	✓
Richard Hartland	Rob Hartland	✗	✗	✓
Richard Hartland	Jane Hartland	✗	✗	✓
Richard Hartland	Jane Smith	✗	✗	✗

**Full Name**

The first and last name must both match, and the first name must contain a full word. Misspellings and name variants are allowed.

**Initial**

The first and last name must both match, and the first name can contain a single letter only. Anything that matches at Full Name level is a match, plus any where only a matching initial is present.

**Last Name**

The last name must match, but the first names can be different. Misspellings are allowed.

Select whether you want to match at Full Name, Initial or Last Name level.

- **Single Value Match**

Restricts the matching to a specific subset of records, independent of the record being created/updated. Commonly used to match only active records by selecting the Status field:

Only match records where 
 
 equals

but can also be used to apply different rules to different types of records, e.g. tighter matches on customers vs. prospects.

- **Non-Conflicting**

Similar to the Exact Match rule, but allows any value to match a blank. Commonly used for fields that provide a link to an external system and where merging two records with different values would cause an error while still allowing manually entered records to be matched.

As an example, we can combine these rules to find matches between active contacts in the same account where there is either a match on the name or telephone numbers as shown below:

The screenshot displays a configuration window for a deduplication rule. It features a logical structure with 'And' and 'Or' operators. Under the 'And' operator, there are two conditions: 'Exact match from Company Name' and 'Only match records where Status equals Active'. Under the 'Or' operator, there are two conditions: 'Fuzzy person name match from First Name Last Name' and 'Exact match from any of'. The 'Exact match from any of' condition has a dropdown menu with the following options: Business Phone, Business Phone 2, Home Phone, Mobile Phone, Telephone 3, and -- Select Field --.

## Technical Details

When you created the Dedupe+ Rule, a new field “Duplicate Detected Id” (logical name `data8_duplicateddetectedid`) is automatically created on the selected entity type (both base and matching, if different), and a standard duplicate detection rule is created on it.

If you selected both the “Auto Edit Forms” and “Real Time Enabled” options when you created the rule, a number of modifications will be made automatically to all active forms for the selected base entity type to allow the user to be notified of potential duplicates as they are entering data. If you selected the “Real Time Enabled” option but not the “Auto Edit Forms” option, you will need to complete these changes manually on the forms you want it to work on. Both Main and Quick Create forms can be customized in this way:

1. Add the “Duplicate Detected Id” field to the form and set it to be hidden by default
2. Add the `data8_duplicateddetectionsript` script library to the form
3. Add an event handler to the form OnLoad event. Select the `duplicateddetectionsript` library and enter `getTriggerFields` as the function name

A “Publish All” system job will be started in the background to publish the changes. Once this is complete, the duplicate detection functionality will be ready to work.

The new field and the changes to the form are automatically removed when the Dedupe+ Rule is deleted.

## Merging

### Creating a Merge+ Rule

data8 duplicare™ enhances the standard record merging functionality with its own Merge+ Rules. Navigate to Settings > Merge+ Rules on the main sitemap and click the “New” button in order to create a new rule.

- Enter the entity type (“Name” field). Start to enter the name and an auto-complete pop-up with the available options that match the entered characters will show. Select the correct entity from the list.
- The next option is the “Merged Status Reason”. **Optional.**  
This specifies the reason for making the records “Inactive” that are NOT picked as the Merge Master Record. In this box, enter the number for the Status Reason field (*statuscode*) for the specified Entity. You can find/edit this by going to Settings > Customizations, expand Entities and the entity in question, select “Fields”, find the “statuscode” field, and double click it. Under “Type”, select the status you are looking for and click “Edit”. In the new pop-up window, find the “Value” it will be a number and is the value you need to enter for the “Merged Status Reason”.  
*If not specified the “default” value for the “Inactive” status reason is used.*
- Below that is the Master Selection Rule. **Optional.**  
An “order by” clause that uses our “Expression & Sorts” (see [below](#)) and is used to specify the order that the records are sorted to pick out the Master Record (top record after the sort has been applied).

Once the General and the Advanced sections have been filled out, save the record. This may take some time as a number of customizations will be made automatically to the selected entity type to enable merging. Once this is complete the fields within the entity will be shown to allow you to customize how each one is merged.

### Field Merge Rules

The layout that is used is the same as the layout that was applied the last time the chosen entity was viewed. Any fields that are not on the layout will be grouped together in the “Additional Fields” section at the bottom.

Each field can have any number of merge rules applied to it. If none is applied, the value of the field is left unchanged from the master record. To apply a Merge Rule to a field click the field and modify the “MERGE RULES” in the right side of the window.

The following merge rule types are available (some are only applicable to specific types of fields):

- **Use value from master record**  
A value (by default, the value from the selected field) is taken from the first record in the list. A different source field can be selected if required.
- **Use most common value**  
The set of records being merged is analysed to identify the most common value from the specified source field. By default, the source field will be the same as the selected target field but can be changed if necessary.  
An optional filter can be applied to the set of records being merged, e.g. to exclude blank values. In this case, only those records matching this filter are analysed.  
If there are two or more different values with the same number of occurrences, you can choose to continue to the next rule or to pick an arbitrary winner. If continuing to the next

rule, only those records that are part of the potential winning values are passed as candidate records to the next rule.

- **Use most common value across a set of fields**

This rule only applies to text fields. The set of records being merged is analysed to identify the most common values across multiple fields (e.g. Email Address 1, Email Address 2 and Email Address 3). Any blank values are automatically excluded. The Priority setting then identifies which of the values to take, e.g. “1” indicates to take the most common value, “2” to take the second most common etc. When different values occur the same number of times, an arbitrary ordering is applied between them.

- **Concatenate**

This rule only applies to text fields. The value is taken from the specified source field from each record being merged and then concatenated together into a single value. Optionally ensures each value is included only once, where multiple records have the same value, excludes blank values and can use different separators.

- **Filter & Sort**

Takes the set of records being merged, optionally applies a filter to it to exclude specific records and then sorts the result. The value is then taken from the specified source field from the record that is first in that sorted list. If two or more records have the same sort order you can choose whether to pick one arbitrarily or continue to the next rule. If continuing to the next rule, only those records that are at the top of the sorted list are passed on to the next rule.

- **Sum**

This rule only applies to numeric or money fields. The value is calculated by adding up the value from each record being merged. This is currency aware, so £100 + \$150 with an exchange rate of £1 = \$1.50 will result in £200 or \$300 depending on the currency of the merged record, not £250 or \$250.

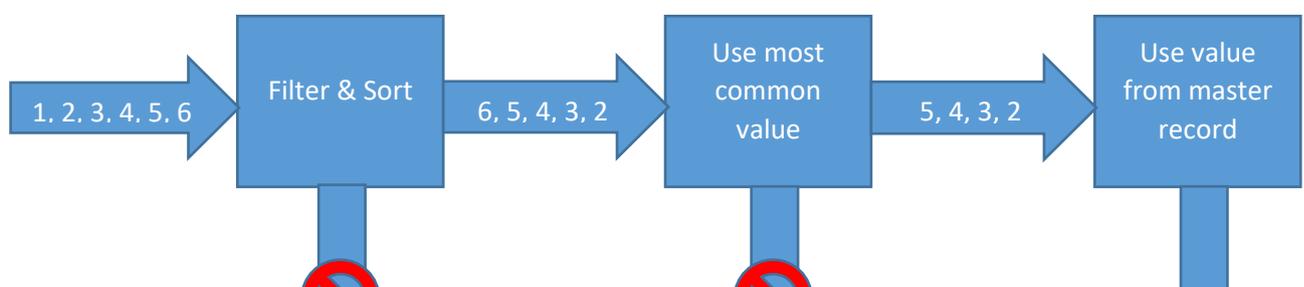
The merge process can be thought of as a pipeline, with the set of records to be merged being passed from one rule to the next until a rule produces a value. The set of records may be filtered or reordered in each step, which can affect how the next step operates. The following example attempts to demonstrate how this works:

### Example Pipeline

The following records are selected for merging:

#	Created On	Full Name	Email Address 1	Do Not Email
1	2017-01-01	Joe Bloggs	<a href="mailto:email_1@example.com">email_1@example.com</a>	True
2	2017-02-02	Jo Bloggs	<a href="mailto:email_1@example.com">email_1@example.com</a>	False
3	2017-03-03	Joe Blogs	<a href="mailto:email_2@example.com">email_2@example.com</a>	False
4	2017-04-04	Jo Blogs	<a href="mailto:email_1@example.com">email_1@example.com</a>	False
5	2017-05-05	Joe Bloggs	<a href="mailto:email_2@example.com">email_2@example.com</a>	False
6	2014-06-06	Jo Blogs	<a href="mailto:email_3@example.com">email_3@example.com</a>	False

We want to take the best email address from this set of records. The master selection rule is set to “createdon” to prefer the oldest record, so the records will start in the pipeline in the above order.



email\_2@example.com

**Filter & Sort** is configured with Filter: donotemail = false and Sort: createdon desc. This will filter out record #1. As there are still 5 records left that it cannot distinguish between it does not return a value, but passes those 5 records on to the next stage in the pipeline. However, the records are now sorted in the opposite order, with the most recently created record first.

**Use most common value** will now look for the most common email address. Although [email\\_1@example.com](#) occurs 3 times and [email\\_2@example.com](#) only twice in the original set of records, record #1 has been filtered out, so there is a draw. Record #6 is eliminated as [email\\_3@example.com](#) only occurs once. Records #5, #4, #3 and #2 are passed on to the next step (preserving the sort order from the previous step)

**Use value from master record** will now simply take the value from the first record, i.e. record #5

### Expressions and Sorts

Expressions & Sort use a language called **Expressions**. This should be familiar to administrators who are used to SQL or CRM's own calculated fields.

Each expression can reference any of the fields in the records being merged by their logical names – these logical names are shown in the “Take value from” drop down lists for quick reference, but can also be found in the customization areas of CRM.

Common operators can be applied to the values, such as + - < > = !=. Literal numeric and string values can be used, with strings enclosed in single quotes.

Filters are a single expression that result in a Boolean (true or false) value. This is typically done with a comparison operator such as < > = != is is not, e.g. emailaddress1 is not null. These can also be combined with and and or.

Each sort is composed of an expression and a direction, **ASC** or **DESC**. Multiple sorts can be combined with commas, e.g. emailaddress1 ASC, createdon DESC. The direction can be omitted, in which case it is assumed to be **ASC**.

When you enter a sort or expression and leave the field it is validated, and any validation errors are highlighted in red and must be corrected before saving the changes.

### Technical Details

If you create a Merge+ Rule for an entity that does not natively support merging (anything other than Accounts, Contacts, Leads and Cases), a new attribute “Merged Into” (logical name `data8_masterid`) will be created along with a relationship `data8_masterid_entityname` to relate a merged record to its master.

The ribbon for the selected entity will be customized to add our own merge-related buttons. This will also hide the default Merge button if the entity is one of Accounts, Contacts, Leads or Cases. These ribbon changes will be made in a new unmanaged solution called “DeDupePlus Customizations”.

The new attribute and the ribbon changes are automatically undone when the Merge+ Rule is deactivated or deleted.

## Address Standardization

data duplicare™ can standardize the formatting of the addresses on your records to improve your data quality, make searching for records and analysing your data more effective, and provide for fuzzy address matching in a Dedupe+ Rule.

### Creating an Address Field

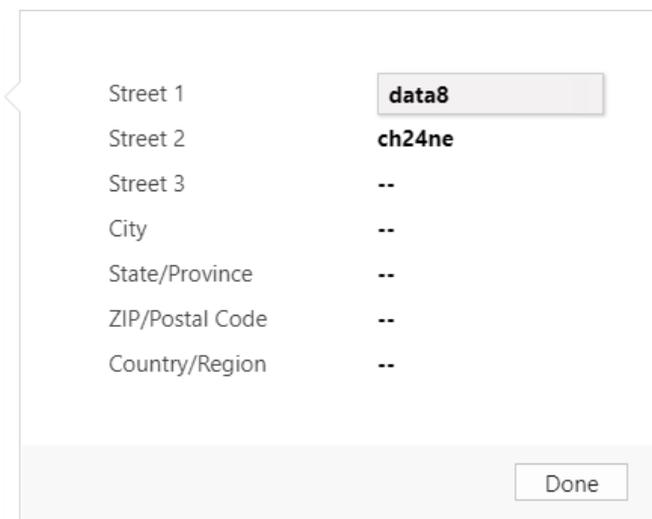
An Address Field record groups a set of attributes together that represent an address, e.g. Street 1 – 3, City, State/Province and Postal Code. The addresses in those fields are then automatically standardized as records are created or updated.

Go to Settings > Address Fields and click New to get started. Enter the name of the entity that holds the address information. This should be the logical name (e.g. “account”, “contact”) of the entity – a drop down list will appear as you type to help you out.

Enter the name of the attributes in the entity that hold the relevant parts of the address. Again, these should be the logical names of the attributes and a drop-down list will appear as you type to help. Once you enter the name of the attribute for Street 1, the others will be populated automatically although you can change them if necessary.

Many addresses will be entered without a country being specified, so use the Default Country Code field to specify the default country that should be assumed where one is not specified on the record. This should be entered as an ISO 2-character code, e.g. “US”, “GB” etc.

Finally, the “Standardize” option specifies what should happen with addresses entered into these fields. A machine-readable version of the address will be stored in additional fields in the background, but if you set this option to “Yes” a standardized version of the address will also be written back into the same fields it came from. With this turned on your users can enter addresses such as:



Street 1	data8
Street 2	ch24ne
Street 3	--
City	--
State/Province	--
ZIP/Postal Code	--
Country/Region	--

Done

and as soon as they save the record it is transformed into:

Street 1	<b>Data 8, Unit 4</b>
Street 2	<b>Venture Point, Stan</b>
Street 3	<b>Little Stanney</b>
City	<b>CHESTER</b>
State/Province	<b>--</b>
ZIP/Postal Code	<b>CH2 4NE</b>
Country/Region	<b>United Kingdom</b>

Once you have created the Address Field record and clicked Save, the status will change to “Initializing”. This may take a while as additional fields are set up automatically on the entity to hold the standardized version of the address. As soon as the record is saved, any new or changed addresses will be standardized. At the same time, the existing records will be extracted, standardized and re-imported into Dynamics 365 to get your historic records up to the same standard. Once this process is complete, the status will change to “Active”. At this point, it can be used for fuzzy address matching in a Dedupe+ Rule.

#### Technical Details

When the Address Field record is saved, 15 additional fields will be added to the entity. The display name of each one will be “Address 1 (Standardized)” (replacing Address 1 with the display name of the source fields). These are used to hold the various elements of the machine-readable version of the address and should not be referenced directly. They are automatically removed when the Address Field record is deleted.

## Telephone Number Standardization

data duplicare™ can standardize the formatting of the telephone numbers on your records to improve matching of telephone numbers in a Dedupe+ Rule regardless of the punctuation that may be entered around a telephone number, and can also assist with CTI systems that require the telephone number to be entered in a specific format.

### Creating a Phone Number Field

A Phone Number Field record identifies the field that holds a telephone number and specifies the type of formatting that should be applied. To get started, go to Settings > Phone Number fields and click New.

Enter the entity name that holds the telephone number. This should be logical name of the entity, e.g. account, contact, lead. As you type a drop-down list will appear to help you out. Once you've entered the entity name, enter the attribute name as the logical name of the attribute within that entity that holds the telephone number. Again, a drop-down list will be shown as you type.

As most people tend to enter telephone numbers without a country code, enter the Default Country Code as the dialling prefix that should be assumed if one isn't specified, e.g. 1 for North America, 44 for UK.

A new field will be created on the entity to store a standardised version of the telephone number. If you want the original telephone number field to be updated with a standardised version, use the following options to control how it should be formatted:

- **Current Country Format Type**  
For telephone numbers that are in the same country code as that entered in the "Default Country Code" field, use this formatting.
  - None  
Leave the telephone number as originally entered by the user
  - National  
Change the telephone number into national format, removing any leading international dialling code
  - International  
Change the telephone number into international format, adding a + and the default country code if required
- **Default Format Type**  
For telephone numbers that are in any other country code, apply this formatting
- **Format Punctuation**  
If set to "Yes", applies the country-specific punctuation rules that apply to the telephone number. Depending on the country this could involve adding spaces, parentheses, dashes or other characters to make the telephone number appear in a more natural format to the user

When you save the Phone Number Field, the record will show in "Initializing" status. At this point, any telephone numbers added or modified will have the relevant formatting applied to them. At the same time, a background job will start extracting all the existing telephone numbers, standardizing them and re-importing them into Dynamics 365. Once this is complete, the status will change to "Active". At this point, the standardized versions will be used for matching in Dedupe+ Rules.

## Technical Details

When the Phone Number Field is saved, an additional field will be added to the entity. This will have the same display name as the original field but with “(Standardized)” appended to it. Regardless of the formatting options specified, this will always store the telephone number in full international format without any punctuation. This is used by the Dedupe+ Rules and can also be used for CTI systems. This field will be removed when the Phone Number Field is deleted.