AXtension® Data Anonymizer

Implementation Guide

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1. INTRODUCTION

Welcome to the implementation guide for AXTENSION® DATA ANONYMIZER! This document describes how to install and configure this product, and provides both a functional and a technical reference.

1.1 PRODUCT SUMMARY

AXTENSION® DATA ANONYMIZER is a solution for anonymization in Microsoft Dynamics CRM. It allows users to anonymize records whenever customers ask for it. It also allows you to scramble real life data in for example a test environment.

1.2 DOCUMENT OUTLINE

This document is an implementation manual for AXTENSION® DATA ANONYMIZER. Chapters 0, 3 and 0 provide a functional and a technical (administration) reference. Chapter 0 discusses some errors that might occur and how to solve them.

1.3 COMPATIBILITY WITH MICROSOFT DYNAMICS CRM

This version of AXTENSION® DATA ANONYMIZER supports Microsoft Dynamics 365 Customer Engagement version 8.1 and higher (both online and on premise).

1.4 TARGET AUDIENCE

The main purpose of this document is to provide consultants (and optionally administrators) with thorough understanding of AXTENSION® DATA ANONYMIZER. Based upon this document they can decide how to implement the solution and how to use particular entities/fields. Additionally they are able to train end users in using the product.
This manual assumes that the reader has basic knowledge of Microsoft Dynamics CRM in general.

2.   FUNCTIONAL REFERENCE

2.1.   OVERVIEW

Ensuring your customer's privacy to the best of your abilities is a big part in building a strong and healthy relationship with them. At the same time, privacy regulations (like the European GDPR) will put pressure on organizations to treat their customer data with the outmost care, which will pose many challenges to all kinds of companies.

That is where AXTENSION® DATA ANONYMIZER comes to the rescue. It provides a set of functions helping you anonymizing privacy sensitive information where it should not exist (anymore). Basically there are three main use cases for which AXTENSION® DATA ANONYMIZER provides the right set of tools:

- **Erase personal information on customer demand from your production database**

This may sound as a simple request. However, with customer data scattered amongst different parts of your customer engagement environment, erasing this data is easier said than done. AXTENSION® DATA ANONYMIZER offers a solution to this by providing a simple user interface through which a user can delete or anonymize customer data in only two mouse clicks.
This feature helps fulfilling one of the key GDPR requirements: the "Right to be forgotten".

- **Remove personal information after data retention period has ended**

When a service / contract / subscription / etc. is ended, you might need to keep the data in your system for a couple of months / years: your data retention period. However, at the end of the data retention period, you have to remove the (personal) data your system. You can implement this process with AXTENSION® DATA ANONYMIZER as well.

- **Scramble production data in a test database**

The case for using production data for testing purposes is an easy one. However, using production data can seriously harm your customer's privacy.
AXTENSION® DATA ANONYMIZER contains a set of features that will allow you to scramble the personally identifiable information contained in your CRM environment, so that it can be used for testing purposes.

2.2.   GETTING STARTED

Perform these steps in order to get started with AXTENSION® DATA ANONYMIZER:
1.   Install the solution from the Microsoft AppSource

2.   Install a License (refer to section 3.1)

3.   Assign the 'Anonymization User' security role (refer to section 3.8)

4.   Review the out-of-the-box configuration (refer to Chapter 3)

5.   Implement batch jobs for anonymizing large numbers of records (refer to Chapter 0)

Now you are good to go, happy anonymizing!

2.3. ANONYMIZE A CONTACT/LEAD

In order to anonymize a contact or a lead, you can simple click on the 'Anonymize' button in the command bar.

+ NEW   DEACTIVATE   CONNECT   ADD TO MARKETING LIST   ASSIGN   EMAIL A LINK   DELETE   ANONYMIZE   FORM   ...

Note: you can anonymize more records at the same time by selecting the records in a list view and run the workflow 'Anonymize Contact' or 'Anonymize Lead'.
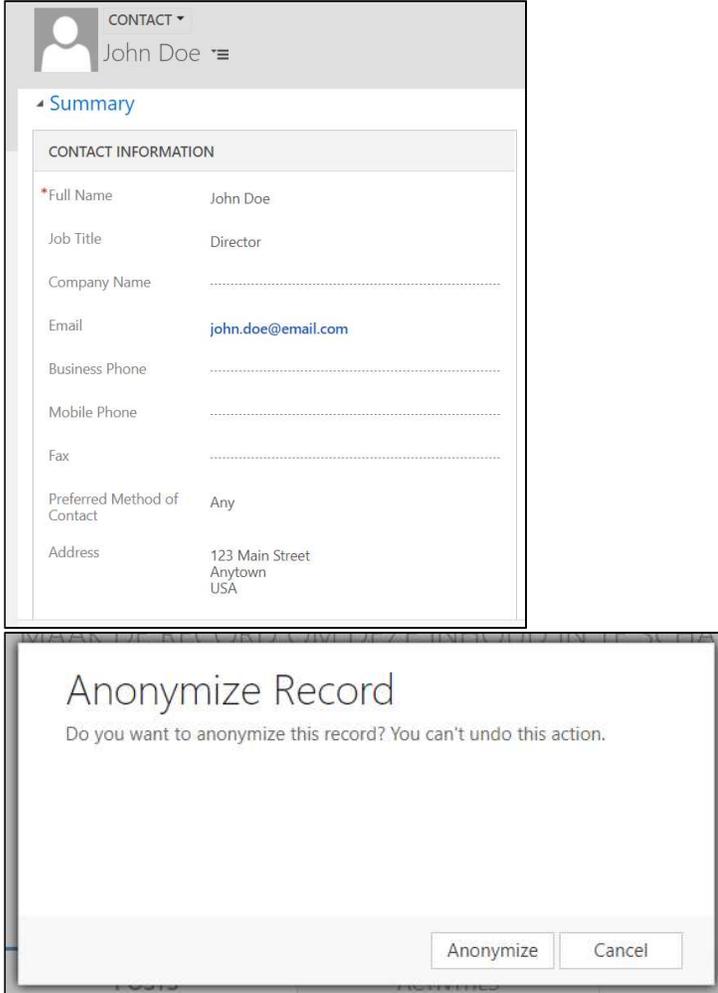
When the anonymization is completed, the record will look like this:

2.4. ANONYMIZE AFTER RETENTION PERIOD

In many cases, it is desirable or even obligated to save and retain data after an agreement, service or membership has ended. When this 'data retention period' has ended, the (personal) data must be deleted. You want to anonymize these records as well, but not individually. In this case you want to run a job periodically to find these records and to anonymize them. For this purpose, you can implement a scheduled job (refer to section 4.2), that automatically anonymizes all selected records.

2.5. SCRAMBLE THE DATABASE

If you copied your production database to a test database, this test environment contains personal data of your customers. You have to remove that personal data, but you still want to have representative test data.

With AXTENSION® DATA ANONYMIZER you can scramble these personal data, which actually removes the personal data and replaces it with real life test data.

In order to scramble records, run the workflow 'Scramble Contact' or 'Scramble Lead' on these records.
To scramble the whole database you can execute a batch process that anonymizes all record in a background process. Refer to Chapter 0 for instructions how to setup and execute these batch processes.

Before you scramble the data may look like this:

	Full Name ↑	Email	Mobile Phone	Address 1
	Adelaide Beck	Adel.BEC6370@yopmail.com	(708) 441-4535	2696 Bosak Gainesville 32610 United States
	Adonis Clark	Ado.CLAR2266@reallymymail.com	(256) 365-5053	2767 Pioneer San Antonio 78530 United States
	Aiyana Roman	Aiy.ROM6164@dispostable.com	(630) 351-3898	4515 Irving San Bernardino 92313 United States
	Alberto Espinoza	Albe.ESPIN2152@mailinator.com	(641) 413-4923	5777 Kiona Reno 89548 United States
	Alfonso Pickett	Alfo.PICKET2327@yopmail.com	(980) 814-1763	3067 Academy Salem 97327 United States
	Alfredo Lindsay	Alf.LINDS8908@dispostable.com	(772) 820-6030	8645 Marshfield San Jose 95161 United States
	Ali Owens	Al.OWE8260@yopmail.com	(870) 180-5965	7515 Hopkins Joliet 60484 United States
	Alice Calderon	Al.CALDER8021@monumentmail.com	(309) 756-6728	6010 Constance Amarillo 79174 United States
	Alissa Mclaughlin	Alis.MCLAU6567@monumentmail.com	(602) 341-7872	2264 98th Virginia Beach 23035 United States
	Allison Rios	Alliso.RIO1543@reallymymail.com	(938) 616-4700	4963 Brodman Kansas City 66046 United States
	Alvaro Roberts	Alva.ROBERTS5383@reallymymail.com	(478) 162-4517	1829 Oakdale Murfreesboro 37180 United States
	Amelie Allen	Ameli.ALLE6270@mailinator.com	(949) 514-7551	4698 Ritchie Gilbert 85292 United States
	Amina Ross	Amina.ROSS5663@dispostable.com	(442) 903-7318	4263 Packers Providence 02840 United States
	Ana Porter	Ana.PORTER3434@dispostable.com	(989) 701-3529	9440 Lemont Lakewood 80277 United States
	Angelica Mills	Angelic.MILL4516@dispostable.com	(269) 835-6820	8519 Mary Austin 78945 United States
	Angelique Terrell	Angeli.TERR4386@dispostable.com	(671) 153-4095	6049 Oakwood Fargo 58006 United States
	Aspen Petersen	Aspe.PETERSE9340@reallymymail.com	(347) 868-8528	2380 Melrose Fort Wayne 46890 United States
	Audrianna Bentley	Audrianna.BENTL1632@dispostable.com	(858) 450-5320	8652 Mccrea Chicago 60112 United States
	Ava Bernard	A.BERNARD5450@monumentmail.com	(907) 621-1433	3567 Lsd Montrose Av Albuquerque 87953 United States

When you want to test scrambling data, select the records you want to scramble and execute the scrambling workflow.

After the scrambling is completed, the data may look like this:

☐	Full Name ↑	Email	Mobile Phone	Address 1
	Adelaide Larson (sample)	bhxjnsja@nhsvigykch.com	(837) 556-3995	7723 Firestone Drive Mesa 06519 United States
	Adonis Craft (sample)	gnjpncze@jpqanrkgrw.com	(765) 417-5831	8621 Opal Lexington 89077 United States
	Aiyana Curry (sample)	oombionf@qyufydwgfs.com	(348) 981-8540	6049 Oakwood Las Vegas 01627 United States
	Alfredo Brady (sample)	sulfkplj@tpwhjwbamh.com	(480) 631-9664	8862 Paxton Tampa 05624 United States
	Alfredo Warner (sample)	oyyzgipq@zclavecnjt.com	(275) 297-9769	2264 98th Surprise 01121 United States
	Ali Espinoza (sample)	byppbahh@fjcjqgzykl.com	(686) 788-2237	7790 52nd Aurora 11910 United States
	Alice Vargas (sample)	zjrvfoex@pzivzkxunf.com	(599) 569-8216	8712 Sherman Park Chattanooga 95733 United States
	Allison Jacobson (sample)	vsiwazlh@pqsrdwzlxy.com	(420) 292-3191	2136 Newgard Irvine 93094 United States
	Amelie Bailey (sample)	vlcgwvgo@wximdegyma.com	(622) 221-4340	1162 Wolfram Philadelphia 92533 U.S.
	Amelie West (sample)	lkrnmaft@hcfjfofxsk.com	(443) 991-9594	7102 Honore Worcester 52224 United States
	Amina Best (sample)	uhkllnhb@dpunhnojsm.com	(766) 387-2319	3016 Westgate Lexington 87409 United States
	Angelique Olson (sample)	esihblwg@jufcuakeae.com	(758) 927-9400	9007 Brodman Jackson 48087 United States
	Bo Rademaker (sample)	fjgiccis@ofjjymubgw.com	(865) 736-2146	5777 Kiona Kent 23336 United States
	Branden Powell (sample)	eaffvkex@kazowkrqyw.com	(540) 229-1743	3567 Lsd Montrose Av Aurora 52224 United States
	Brett Padilla (sample)	wzaqrqfd@rwlsvsupbe.com	(888) 606-5037	819 Rutherford Charleston 66046 U.S.
	Brooke Justice (sample)	ktkxkpjf@eoaahbucpk.com	(623) 909-5991	7691 Benedict Ct. Mesa 64088 United States
	Bryson Owens (sample)	jlmpiopj@jjasyxxobq.com	(204) 704-3213	4114 Pope John Paul Ii 80980 United States
	Carson Conrad (sample)	ozkpsora@fpysfomuzr.com	(448) 501-4855	8030 Olcott Salem 83030 United States
	Carson Meyers (sample)	davoexye@pntsrrrwgg.com	(824) 756-3304	3723 Cornelia Cleveland 33739 United States

3. ADMINISTRATION REFERENCE

This chapter provides information for administrators or implementation consultants to set up the anonymization for a specific entity. You can find the administration entities in the Settings area.
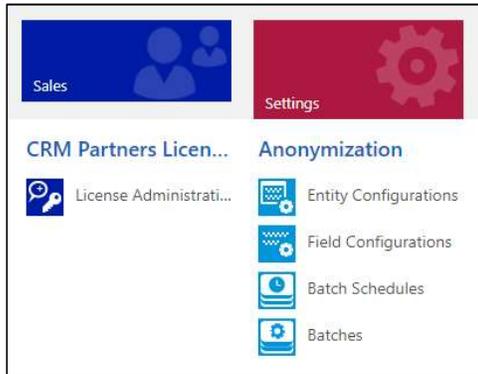
3.1. INSTALL A LICENSE

In order to start using Anonymization you have to install a (trial) license. Open the License Administration via the settings in CRM. The first time it will open with a registration page, as you need to register your CRM organization before you can install a license.

3.1.1. First CRM organization registration

Register your first CRM organization by providing a name and e-mail address. When registration is done, the license dashboard will be displayed from which you can install the license.

3.1.2. Additional CRM organizaton registration

You have to register additional organizations with an activation token. You can obtain a token by opening the license dashboard in a CRM organization that is already registered. Click the 'New Organization' button, which will open a dialog in which you can copy the activation token.
Paste this activation token in the license registration form for your new CRM organization. Next, the license dashboard will be displayed, see next paragraph.

3.1.3. Install license

In the license dashboard, press the button 'Request licenses'. This will automatically install a trial license for 30 days. In order to get a full license, contact AXtension via: info@axtension.com.

Once the license is purchased, it will be displayed in the 'Available licenses' section on the dashboard. You can click the 'Request Licenses' button again to install the final license.

3.2. CONFIGURATION OVERVIEW

You can configure the anonymization in the 'Entity Configurations'. An entity configuration defines how a record should be anonymized. The options shown are on entity-level (1). The specific fields that you want to anonymize should be configured in the Field Configurations (2). Data in related records can be anonymized by adding related entity configurations (3). Every configuration can have its own related entity configurations, even on more levels (currently, there is no limit on the number of levels yet).

3.3. ANONYMIZE OR SCRAMBLE

The anonymization of a record in a production environment is different from the scrambling of data in a test environment. The result will be different, so also the configuration will differ. This is why different configurations for scrambling and anonymization can be maintained next to each other. The field 'Anonymization Type' on the entity configuration form indicates whether the end goal is scrambling or anonymization.
NOTE: Although scrambling will only be applied in a test environment, it makes sense to have the configuration records available in your production environment as well. The reason for this: when you copy your production database to a test environment, this configuration must be available for scrambling the new test environment. *However, ensure that you don't execute a scramble job on you production database! You can deactivate the scrambling configuration records, which makes them unavailable for the batch job.*

3.4. ENTITY CONFIGURATION REFERENCE

This paragraph describes the configurations that can be done on the Entity Configurations.

Field	Description
Configuration Type	The type of the configuration: Primary Configuration (Top-level configuration) or Related Entity (all related entities). This field will be filled automatically and is locked. When an entity configuration is entered through the Related Entity Configuration section, the Configuration Type will always be Related Entity. In all other cases, the Configuration Type will be Primary Configuration.
ENTITY INFORMATION	This section shows general information about the Entity Configuration.
Entity Name	The (schema) name of the entity that should be anonymized.
Action	Indicates how the record should be anonymized: • **Anonymize**. The data on the record will be anonymized according to the settings in Field Configurations. • **Delete**. The record will be deleted. NOTE: when a record cannot be deleted because of related records, you can add a new related entity configuration in order to delete these related records. These related records will be deleted first, after which the current record will be deleted.
Anonymization Type	Indicates whether this configuration applies to anonymization or to scrambling. This field can only be edited for a top-level configuration (so when Configuration Type = Primary Configuration). For related entity configurations this field will be filled automatically and will therefore be locked.
RELATIONSHIP INFORMATION	This section indicates the relationship between the current entity and another entity and is therefore only visible when it is a related entity (Configuration Type = Related Entity).
Parent Entity Configuration	Connects the current record to the parent Entity Configuration. This field is always locked and is filled automatically when the record is added through the parent configuration.
Relationship Type	Defines the type of relationship (from the perspective of the parent configuration's entity) The options are: • **1:N Relationship**. When the parent configuration's entity can have multiple records associated of the current configuration's entity (the lookup field resides on the current configuration's entity) • **N:1 Relationship**. The other way around: when the current configuration's entity can have multiple records associated of the parent configuration's entity (the lookup resides on the parent configuration's entity) • **Activity Party**. Applicable when the current entity is an activity entity. In this case, all records that are connected through a random activity record are selected. (Connected through a field like From, To, CC, BCC etc).

Lookup Field Name	The (schema)name from the lookup-field through which the records are connected, for 1:N and N:1 relationships. NOTE: for N:1 relationships, this lookup field resides on the entity of the parent configuration.
OPTIONS	This section contains the optional settings.
Deactivate Record	Indicates whether the record must be deactivated after anonymization. NOTE: this option is not available for scrambling. Refer to section 3.9 for more details about deactivating record.
Delete Audit History	Indicates if Audit History needs to be deleted. Note that the executing user must have permission to delete Audit History. This permission is not part of the provided security roles. Deletion of Audit History is currently supported in CRM Online version 8.2 and higher.
Delete Notes and Attachments	Indicated whether the notes (including attachments) must be deleted. NOTE: this option is not possible for activity entities (entities that are connected through an Activity Party relationship).
Delete Posts	Indicates whether the posts fort he current records must be deleted.
Anonymization Status Field	The (schema)name of the field in which the anonymization status can be edited. This setting is optional: when this field remains empty, there will be no anonymization status for this record. Refer to section 3.7.
Execute In Batch (Background)	If enabled, the anonymization will not be performed right from the dialog, but the record will be marked for anonymization. The actual processing will be done in a batch run afterwards. This allows users or administrators to undo the anonymization request in case of mistakes. It is also possible to implement an approval process. Refer to section 3.8 for more information.
Post Queue Message	If enabled, a message will be posted to an Azure Storage Queue, which can trigger external functions (e.g. anonymize same person in another system). Refer to section 3.11 for more details.
Queue Connection String	An Azure Storage connection string, providing all the details needed to connect to the queue (like destination, authentication, etc.).

Next to these fields there are also two subgrids on the Entity Configuration Form:
- Field Configurations: Here you can add the specific fields that have to be anonymized on the current entity.
- Related Entity Configurations: Here you can add the related entities that also must be anonymized.

3.5. FIELD CONFIGURATION

This paragraph describes the configurations that can be done on the Field Configuration.

FIELD CONFIGURATION : INFORMATION
address1_city ▾

▴ General

*Entity Configuration	contact		
*Field Name	address1_city	*Action	Replace
Attribute Type	🔒 String	Replacement Format	xxxxxxxxxx

Field	Description
Field Name	The (schema)name of the field that must be anonymized.
Action	Indicated how the field should be anonymized: • **Clear**. The content of the field will be deleted. • **Replace**. The field will be filled with another value, based on the Replacement Format.
Replacement Format	Indicates which value should replace the current value. Refer to section 3.6.
Entity Configuration	The Entity Configuration this record belongs to.

3.6. REPLACEMENT FORMAT

Replacement Formats indicates the possibilities to fill a field with another value. There are 3 possibilities:

A fixed value
The value that is filled in will be copied directly to the field that must be anonymized.

A random value
Indicate a placeholder that generates a random value. This placeholder is dependent on the data type and contains a range in which the random value should be generated.
The format of the placeholder is: {datatype(range start, range end)}. Possible placeholders are:
- {number(*min*, *max*)} – example: {number(0,100)}
- {decimal(*min*, *max*)} – example: {decimal(0.0,100.0)}
- {datetime(*min, max*)} – example: {datetime(1900-01-01,2100-01-01)}
- {text(*length*)} – example: {text(50)}

Notes:
- It is not possible to put negative numbers in the range definition (it is however possible to put a minus sign in front of the whole placeholder, so the whole placeholder will always be negative).

- The text placeholder does not include a range but contains only the number of characteristics that the new text can contain.

- Numbers cannot contains thousands separators and the decimal separator has to be a dot (.).

- Date/ time indications have to be entered in the format: yyyy-MM-dd (when you want to include the time, the format will be yyyy-MM-dd hh:mm:ss).

Sample Data

The placeholder for sample data is *{sampledata}*. When this placeholder is specified, the system chooses a random value from the sample data (from the same field the placeholder is defined for). The sample data are retrieved from the database itself by making a random selection from (not yet anonymized) records. Because fields are combined from different records, representative data is created that is not identifyable to an existing person.
The system will ensure that:

- The sample data value differs from the current value

- A sample data records is used only once to provide a sample data value for the current record (ensures that all fields are populated from different records)

Combinations

For text fields it is possible to combine values. For example:

- Email-address, a combination of random values and fixed values: {text(15)}@{text(15)}.com

- Last name, combination of sample data and fixed values: {sampledata} (sample)

3.7. ANONYMIZATION STATUS

On the Contact and Lead entities the field 'Anonymization Status' will be installed automatically. It can however still be edited in the settings. This field indicates whether the record is already anonymized or not. This field has to following options:

- Anonymization requested (refer to section 3.8.2)

- Anonymization approved (idem)

- Anonymized

- Scrambled

It is possible to configure a status field on other entities as well. In order to do so, make a new option set field that is based on the shared option set 'Anonymization Status' (cnm_anonymizationstatus).

Configure the field name of this status field on the correct entity configuration (in the field 'Anonymization Status Field').

3.8. AUTHORIZATION AND APPROVAL

The purpose of anonymization is to remove personal data, in an unrecoverable way. As you can't undo this action, you should be careful with anonymizing records. There are two ways to prevent mistakes:

1. Authorize only a few users to anonymize data
2. Postpone the actual anonymization, and optionally implement an approval process

3.8.1. Authorize users

Three Security Roles are provided in Anonymization.

Name	Description
Anonymization User	Anonymization users can execute or request anonymization on a single record (and its related records)
Anonymization Administrator	Anonymization administrators can manage Entity Configurations and execute and schedule batches.
CRM Partners Batch Processing	The CRM Partners Batch Processing role is needed to communicate with the Batch Processing and Batch Scheduling services. Refer to section 4.3.

In order to authorize users, assign the security role 'Anonymization User'. Without this role, the Anonymize button is not available on the contact and lead form and anonymization through workflow will fail with an error.
So, only those users who have the 'Anonymization User' role assigned, will be able to anonymize data. This also applies to administrators with the 'System Administrator' role.

Another security rol ('Anonymization Administrator') is available for users that should manage the configurations and execute batches. Note that this role is not required for users that have the necessary permissions through other roles (like system administrators).

3.8.2. Postponed processing

You may want to create a delay between the anonymization request and the actual processing. In the meantime, you can undo the anonymization request if needed. The actual processing can be done later on in a batch process (running in the background).
In order to postpone the anonymization processing, you need to perform these steps:

1. Enable the option 'Execute In Batch (Background)' on the (primary) entity configuration(s). This will cause the anonymization dialog (and workflow) to only set the anonymization status to 'Anonymization Requested'.

2. Implement a batch job that processes all records with anonymization status 'Anonymization Requested'. You can use the out of the box batch processing (refer to Chapter 0 for more details) or use other mechanisms to call the anonymize action on all those records.

Note: Postponed processing is only available for anonymization and not for scrambling of records.

Note: This requires an anonymization status field to be available on the entity (refer to section 3.7).

3.8.3. Approval process

Since anonymization is an irreversible process, it may be desirable to have an approval process in place. Anonymization provides the option for a custom approval process.
In order to implement this approval process, you need to perform these steps:

1. Configure postponed processing (previous section)

2. Implement the approval process, which updates the status from 'Anonymization Requested' to 'Anonymization Approved'. For example:

    a. Create a system/user view that contains all records with anonymization status 'Anonymization Requested'.

    b. Create a workflow, and share it with the users that may approve anonymization.

    c. These users can now approve the records by executing this workflow.

3. Configure the batch job (from step 1) to process records with anonymization status 'Anonymization Approved' (rather than '… Requested').

3.9. DEACTIVATING RECORDS

After anonymization it is likely that records are no longer needed in active state. You can automatically deactivate records by enabling 'Deactivate Record' on the entity configuration.
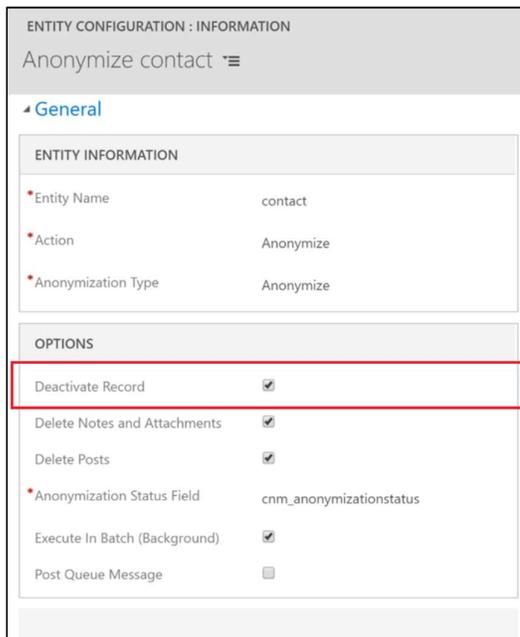
ENTITY CONFIGURATION : INFORMATION
Anonymize contact ⁝≡

▲ General

ENTITY INFORMATION

*Entity Name	contact
*Action	Anonymize
*Anonymization Type	Anonymize

OPTIONS

Deactivate Record	☑
Delete Notes and Attachments	☑
Delete Posts	☑
*Anonymization Status Field	cnm_anonymizationstatus
Execute In Batch (Background)	☑
Post Queue Message	☐

Note that CRM has some restrictions on status updates. The tables below indicate which rules apply to specific entities.

Entities that can only be deactivated depending on its current status:

Entity	Deactivates to status:	Only if current status is:
Opportunity	4 (Canceled)	0 (Open)
Lead	7 (Canceled)	0 (Open)
Invoice	3 (Canceled)	0 (Active)
Entitlement	3 (Expired)	1,4 (Active, Waiting)
CampaignResponse	3 (Canceled)	0 (Open)
Incident	6 (Canceled)	0 (Active)
Contract	5 (Canceled)	1,2 (Invoiced, Active)
Invoice	100003 (Canceled)	0 (Active)
Quote	6 (Closed)	0,1 (Draft, Active)
SalesOrder	4 (Canceled)	0,1 (Active, Submitted)
ServiceAppointment	9 (Canceled)	0,3 (Open, Scheduled)

Entities that cannot be deactivated by Anonymization:

Entity		
ActivityPointer	Fax	PhoneCall
Appointment	IncidentResolution	QuoteClose
CampaignActivity	Letter	SocialActivity
ContractDetail	OpportunityClose	Task
Email	OrderClose	

3.10. EXTENSIBILITY OPTIONS

It is possible to extend the anonymization logic with your own logic. This depends on the way you run the anonymization. Anonymization can be done in three ways:

- Via the Anonymize button on the Contact or Lead (the dialog screen runs the custom action 'Anonymize Contact' or 'Anonymize Lead' on the background)

- By running a workflow that runs this custom action (like the standard workflows 'Anonymize Contact' and 'Anonymize Lead')

- By running the custom actions straight away from custom code.

When the anonymization is run through a workflow, you can apply your own logic by defining your own workflow that runs the custom action and next to that runs other steps. Note: this workflow will not run when the 'Anonymize' button on the Contact or Lead is used.

The most flexible way to apply your own logic is by developing a plugin and register this on the custom action. This logic is applicable in all scenarios and gives the best possibilities to run your own actions.

When you perform the custom action 'Anonymize Contact' or 'Anonymize Lead' from a workflow or from custom code, you should include the following parameters:

- Contact / Lead: the record that should be anonymized

- Anonymization Type: the type of anonymization. The two options here are:

  - 250000000 (Anonymize)

  - 250000001 (Scramble)

The plugin step registration will look like:

3.11. POST A MESSAGE TO A REMOTE SERVICE BUS

Often data that needs to be anonymized in CRM also needs to be anonymized in other databases.

Anonymization can post a message to your service bus that contains some identifiers for the record that is anonymized. This is only possible for primary entity configurations (it will not send messages for related records).

In order to send the message you need to enable the 'Post Queue Message' option on the entity configuration and fill out the 'Queue Connection String'.

3.11.1. Configure Queue Connection String

The connection string will look like:

DefaultEndpointsProtocol=https;AccountName=yourusername;AccountKey=xIH8hhmzp6x3/
lYsBToC7IObKABFcGLQnOcwcRVey6Pfl6mJliXJa99AZjQvzz4nGPJs5BmggJ0rNoZP6Bn5m3Vt
OvurPpFSVrLNcYKsFFXPJP9==;QueueEndpoint=https://resourcename.queue.core.windows.
net

The table below describes the fields to be specified in the connection string.

Variable	Description	Example
DefaultEndpointsProtocol	Used protocol to connect to the service	https
AccountName	Account name	yourusername
AccountKey	Private key	xIH8hhmzp6x3/IYsBToC7IObKABFcGLQnOcwcRVey6Pfl6mJliXJa99AZjQvzz4nGPJs5BmggJ0rNoZP6Bn5m3VtOvurPpFSVrLNcYKsFFXPJP9
QueueEndpoint	Url of the queue endpoint	https://resourcename.queue.core.windows.net

4. BATCH PROCESSING

AXTENSION® DATA ANONYMIZER provides an out-of-the-box solution for batch processing. Batch processing is needed when the system must process (potentially) large numbers of records, which is the case when scrambling the whole database. Since there are limitations on processing time within CRM, batch handling is processed outside CRM on a cloud service (managed by AXtension).

Anonymization use-cases in which you need batch processing:
- Scrambling the whole database

- Scheduled anonymization of records in case of postponed processing

- Scheduled anonymization of records after data retention period

This Chapter first describes how to execute a batch process manually and how to configure batch

scheduling. Section 4.3 describes how to setup the batch processing in your CRM environment.

4.1. START AN ANONYMIZATION BATCH

To manually execute an anonymization batch, click on 'Start Anonymization' in the Batch entity view.
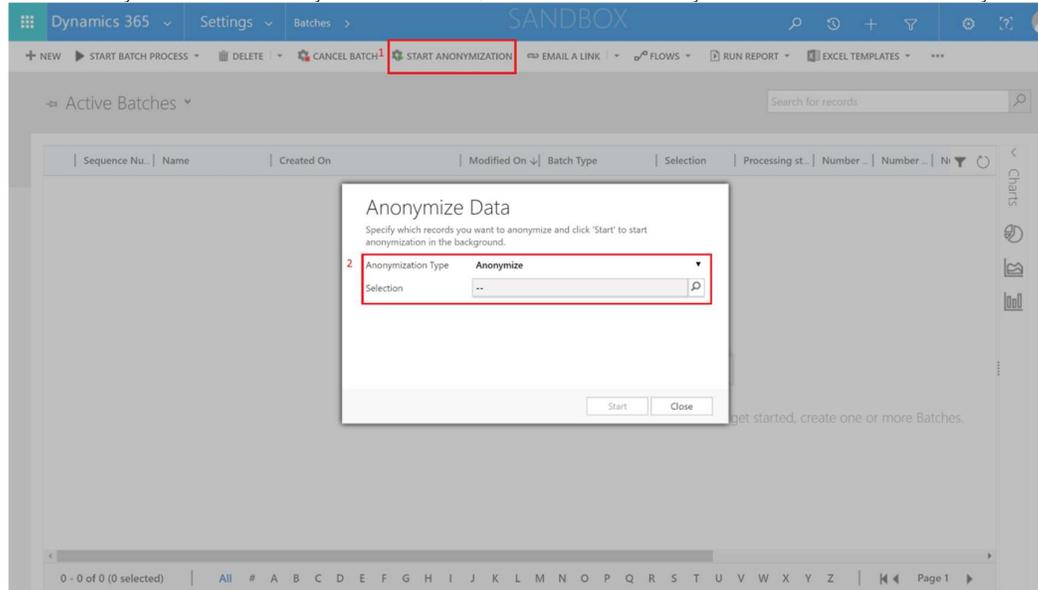
You need to specify these parameters:
- Anonymization Type: specify whether you want to anonymize or to scramble data

- Selection: specify which records you want to process. This is a 'Rollup Query', in which you can

  create an Advanced Find query that returns all records to be anonymized/scrambled.

Once you click the 'Start' button, the dialog will create a batch record with status 'Starting'. This in turn will send a message to the online cloud service that will execute the processing in the background. You can monitor the progress on the batch record.
When the processing is completed, the batch status will be set to 'Finished', which is an inactive state (causing the batch record to disappear from the 'Active Batches' view).

Note: similar to anonymizing records individually, you need full permissions to execute anonymization on multiple records in a batch (read, write and optionally delete permissions on all entities that are affected).

4.1.1. Cancelling a batch

To cancel a running batch, select the batch record and click on 'Cancel Batch'. A dialog appears in which you can confirm cancellation. Upon confirmation, the dialog will set the status of the batch record to 'Cancelling'.
The background process will recognize the cancellation request and will abort the batch processing. It updates the status to 'Cancelled' to notify confirm that the processing is aborted. This may take a few seconds. Note that 'Cancelled' is an inactive status, so the batch record will disappear from the 'Active Batches' view.
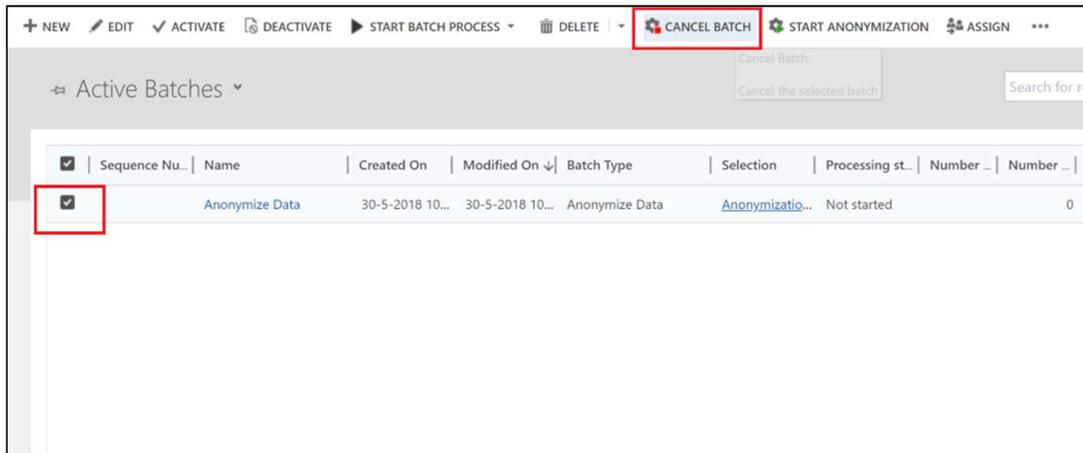
4.2. BATCH SCHEDULING

Anonymization provides a method to schedule batches following a time schedule.
A schedule is useful if for example an approval process for anonymization is in place. Or records need to be automatically anonymized when they meet certain conditions (after data retention period).

4.2.1. Create a Batch Schedule

To implement a batch schedule, create a new record on the Batch Schedule view. The table below describes the fields to be filled on the Batch Schedule form.

Field	Description
Name	A descriptive name of the schedule. Note: this name is used to generate the name of the batches for this schedule.
Batch Type	Specify whether to 'scramble' or 'anonymize' the data. Usually scrambling your database is not performed on a scheduled base.
Selection	The 'advanced find' or 'rollup query' that selects the records for the batch. This selection is a required parameter for the batch process (section 4.1).
Executing user	The user that will execute the anonymization actions. This user will be displayed in the modified by fields and will be visible in the audit log.

	Note: this user needs to have all the required permissions to perform the anonymization (read, write and optionally delete permissions on all entities that are affected).
Interval	The interval for the schedule.
Frequency	The frequency with which the batch must be executed (e.g. day, or month).
Next Run Time	Specify the date and time on which the first batch should run. This field is updated by the system each time a batch is started.

4.2.2. Activate a Batch Schedule

You will create a Batch Schedule in status 'Draft'. To start the schedule you need to activate the record by clicking the 'Activate' button.

Once activated the scheduling mechanism start monitoring the Next Run Time field. When this time is reached, it creates a batch record and it updates the Next Run Time based on the interval and frequency settings.

4.2.3. Deactivate a Batch Schedule

To cancel a Batch Schedule, deactivate the record by clicking the 'Deactivate' button.
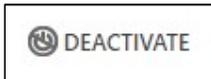
The system stops monitoring the schedule and no batches will be created as long as the schedule is in 'Draft' status. Note: batches that are already created will not be automatically deactivated, nor deleted.

4.3. SETUP BATCH PROCESSING

This section describes how to setup batch processing. The setup for batch scheduling is a different process, which is described in a separate section. In both cases you need to send an email to AXtension to request connection to the online services. If both apply, you can combine both requests.

Perform these steps to setup batch processing:
1. Create a service account that is used by the AXtension cloud services to connect with CRM
   a. Create a non-interactive user as described in https://docs.microsoft.com/en-us/dynamics365/customer-engagement/admin/create-users-assign-online-security-roles#create-a-non-interactive-user-account.
   b. Assign the security roles 'CRM Partners Batch Processing' and 'Anonymization User'.
   c. Assign other security role(s) providing the permission needed to read all the records to be anonymized. *The service account needs read permissions on all entities*

included in the Rollup Query, which is specified in the anonymization batch (section 4.1).

2. Send an email to info@axtension.com to request connection to the AXtension cloud service. Provide these details:

    a. Username and password of the service account.

    b. URL to the CRM environment.

    In the reply you will get the SAS key needed in the next step

3. Specify a SAS key on the batch processing queue endpoint in CRM

    a. Open the Plugin Registration tool (you can find instructions for downloading this tool on https://docs.microsoft.com/en-us/dynamics365/customer-engagement/developer/download-tools-nuget#download-tools-using-powershell).

    b. Connect to your CRM instance.

    c. On the bottom of the list of registered plugins, select the service endpoint 'CrmAndMore.CloudProcessing.BatchQueue' and click 'Update'.

    d. In the SAS Key field, specify the key which you received in the reply email from step 2. Click Save.

Service account permissions

The service account will enable the cloud service to connect to your CRM environment, to:

- Execute the selection of the batch process (it retrieves the IDs of all records in the selection, as specified in the Rollup Query of the anonymization batch, section 4.1).

- Execute the 'Anonymize' action on all records in the selection. This request is executed on behalf of the user that started the batch.

- Report the progress in the Batch record.

- Verify the installed license.

These permissions are provided by the security roles ('CRM Partners Batch Processing' and

'Anonymization User'), and any custom security role that is assigned as well.

4.3.1. On Premise Setup

For on premise environments, some additional steps are needed:
1. Specify the CRM organization name and organization ID in the email to AXtension support

    (step 2 in previous section).

2. Ensure that CRM can be accessed from internet (for example through IFD configuration).

4.4. SETUP BATCH SCHEDULING

Batch Scheduling connects to you CRM system through Server-to-Server (S2S) authentication. This
section describes how to setup S2S authentication for the batch scheduling service.
Note: this instruction only applies to CRM Online instances. For on premise environments a different
setup is needed. Contact AXtension support (info@axtension.com)

Perform these steps to setup batch scheduling:
1. Create an App Registration in Azure Active Directory

    a. Log in to your Active Directory on Azure.

    b. Create an App Registration.

    c. For Name choose a descriptive name for your own administration.

    d. For Type choose: Web app/ API.

    e. For Sign-on URL: field is required, but not relevant.
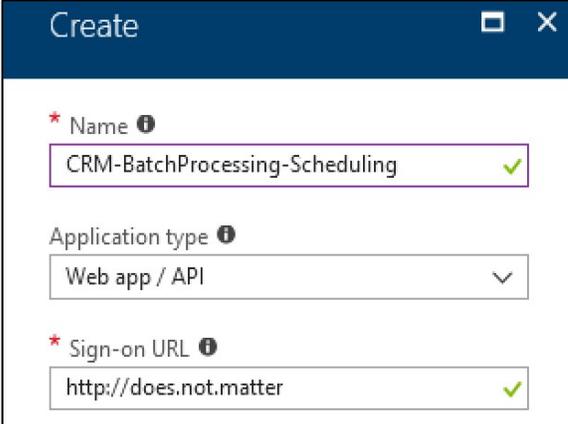
    f. After registration, copy the Application ID, which you need later on.

    g. Open the App registration and click 'Settings'.

h. In the 'Required permission' tab, add a permission for Dynamics CRM Online (API = Dynamics CRM Online, delegate permission = Access CRM Online as organization users).
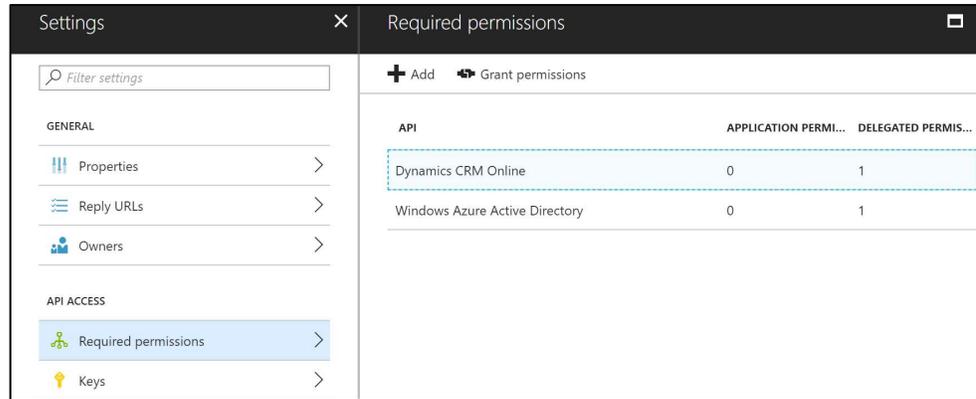

i. In the 'Keys' tab, add a key for Batch Schedule. Specify a descriptive name and set duration to 'Never expires'.

Important: upon saving you need to copy the value of the created key (this key is only visible during saving, if you don't save the key you need to create a new one). You will need this key later on.
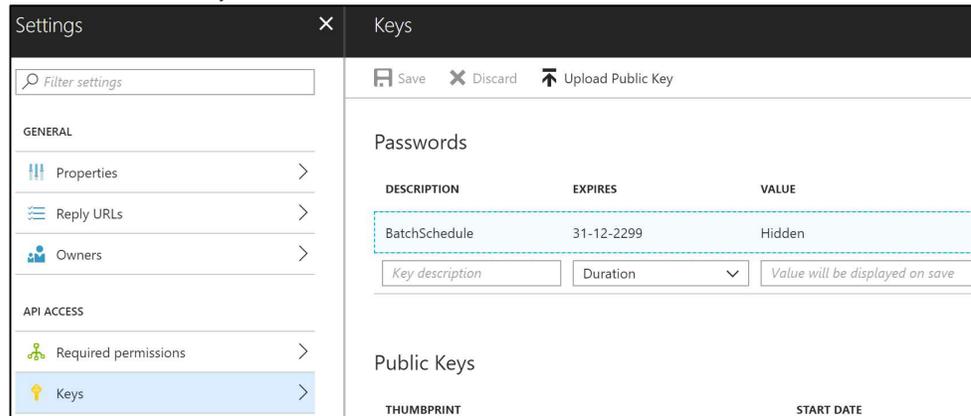
2. Create an Application User, which is used by the batch scheduling service to connect to your CRM environment.

a. In CRM, navigate to the system users (Settings > Security > Users). Select the view 'Application Users'.
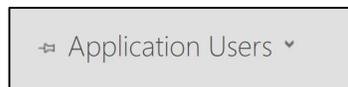
b. Create a new user (select the form 'Application user').

c. Specify these values:

Field	Description
Application ID	The Application ID value of the App registration in the previous step.
Full Name	The name of the application, choose a descriptive name.
Primary email	The email address that may be used to contact you in case of issues. *This is currently not being used, but may be the case in future versions.*

Save the user record (note that the fields Application ID URI and Azure AD Object ID will be filled automatically).

d. Assign the security role 'CRM Partners Batch Processing' to this user.

3. Send an email to info@axtension.com to request connection to the AXtension batch scheduling service. Provide these details:

a. The application ID (from step 1.f)

b. The application key (from step 1.i)

Service account permissions

The service account (application user) will enable the cloud service to connect to your CRM environment, to:

- Read and update the batch schedule information.

- Create a batch record (this request is executed on behalf of the Executing User, as specified on the batch schedule).

These permissions are provided by the security role ('CRM Partners Batch Processing').

5.   TROUBLESHOOTING

This chapter describes some errors that can occur and specifies how you can solve them.

Error messages
Cannot parse {data type}, output: {generated value} *This happens when the generated value cannot be parsed to the data type of the target field. Make sure you check the Replacement Format.*
Replace not supported for attribute type '{attribute type}' *This error occurs when a field configuration is configured with the 'Replace' action for a field on which only 'Clear' is possible. Choose the action 'Clear' for this field type.*
Field {field name} of entity {entity name} contains insufficient unique values to be used as sample data *This happens when the sample data set (1000 most used recent records for the current entity) contains values that are not differentiated enough, which is why the current value cannot be replaced by another value. This means that the size of the dataset is not big enough or that the current field cannot be used for scrambling.*
Entity {entity name } contains insufficient data to be used as sample data *This error can occur when the sample dataset contains not enough records. A sample record can only be used once to replace the current record. This error occurs for example when there are more field configurations than sample records. Solutions are:*   *Remove or disable Field Configurations with a {sampledata} placeholder in the Replacement Format. For example, the address2… fields. (The less {sampledata} placeholders, the less sample records needed.)*   *Avoid scrambling fields that always have the same value (including blank fields)*   *Create or import more test data*
Attribute type {type} not supported *This means that the anonymization is not possible on this field (type).*
Specified AnonymizationType with value '{anonymization type}' is not supported *This error occurs when an invalid value is specified in the AnonymizationType parameter from a workflow or from custom code. Check the parameter settings. See also paragraph 3.7 for the options.*
Request not supported: 'DeleteRecordChangeHistory'. *This error occurs when you enabled the 'Delete Audit History' on the entity configuration while audit history deletion is not supported for your CRM version.*

In case you do not succeed in solving the problem, please contact info@axtension.com.