Highly scalable, secured and re-usable solution for Archive, Retain and Delete the Microsoft D365 data

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## Introduction

### Problem

- Excessive storage of data in China and UK
- Customer engagement
- No data archival and retention in process at part of the product offering
- Compliance with GDPR and other data retention and compliance policies

### Solution

- Provides a highly scalable, secured and reusable solution for:
  1. Archive data
  2. Retain data
  3. Delete post retention period
- Uses Azure services for scaling as well as reliability
  1. Blob Data (Cosmos DB) and Blob storage are used for archival and retention
  2. Web job for data extraction and deletion
- Highly available: Processes are long-lasting, dynamic, 24x7, and Azure services are available

### Outcome(s)

- Configurable, scalable archival and retention process by system administrator
- Lower resource (S3) utilization providing scale and faster performance
- GDPR compliant with configurable data retention policies
- Easier Setup
Archiving

1. Connect Dynamics 365 (CRM) to Azure
2. Read welcomed configured for Archival and Archival Rules
3. Readeworthy relationships and cascaded delete options
4. Readnized entity/child entities
5. Archive claim Cosmos DB and attachments into Blob storage
6. Flag records for unsuccessful archive

Deleting

1. Read flagged records from Azure storage
2. Connect to CRM
3. Delete from CRM

Backlinks:
1. 2
2. 3
3. 1
Getting Started

To begin, there are two separate installations that we need to complete in series.

a. App Source (including entity configuration), and
b. Azure Services Deployment

Install CRM Solution from App Source

Select **Get it Now** button to start the download and follow the process.

Once completed go to **Solutions**, the structure of which should look like below.
Archival Entity Configurations in CRM:
Path: CRM→Archival→CRM Archival Configuration

There are three detailed sections on this page:

- Archive Entities
- Archival Entities Information
- Non-Archiving Entity

**Archiving Entity Properties**

- **Entity**: Type the first letter of the target entity; this will spawn a dropdown list of choices. Select the matching entity from that list.
- **Fetch XML**: Enter the Fetch xml of the select entity.
  - Click on Advanced Find in CRM
  - Using the Look for dropdown Listbox, select the entity
  - Add a condition matching desired criteria, for example “Created On, Older than X days, 15”
  - Click on Download Fetch XML button
  - Copy and paste the XML source into the Fetch XML Textbox.
  - Optionally confirm the XML by clicking on the Validate XML button.
- **Retain in Archival For**: This value sets the amount of Time to retain in archive. Enter the integer unit of Time (minutes, hours, days, years) for Archival retention.
- **Clear old Logs from Last**: This values set the amount of Time to clear the old logs from Azure tables. (Days)
- **Reset Button**: Resets the form.
- **Save button**: Saves the configuration details.
- **Deactivate button**: Used to deactivate the entity. Only active entities are used by jobs.
- **Activate button**: Used to activate the entity. Only de activated entities can be activated.
Click **Save** to retain the information; the Page response will display the Archival Entities Information.

Archiving Entity Properties

- **Status**: Always either Active or InActive. Only Active entities are selected by the job.
Below are the default Non-Archiving entities included with the solution.

<table>
<thead>
<tr>
<th>Non Archivable Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save</td>
</tr>
</tbody>
</table>

Never Archive Entity

<table>
<thead>
<tr>
<th>ENTITY NAME</th>
<th>CREATED ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>emailhash</td>
<td>12/15/2017 5:25 PM</td>
</tr>
<tr>
<td>bulkdeletefailure</td>
<td>1/9/2018 2:44 PM</td>
</tr>
</tbody>
</table>

NonArchivable Entity Properties

- **NeverArchive Entity**: Name of non-archive entity excluded from the arching process. For reference, a list of existing non-archiving entities is provided as indicated.
- **Save button**: Save the configuration.
- **Delete button**: Deletes the selected entity from the list.
**Archival Setup**

*Note*: This instruction applies to First-Time Only setup.

**Azure Active Directory (AAD) Setup**

If you have already registered the applications in Azure Directory and have its Application ID & Secret, you can skip this step.

1. Login to windows azure portal ([https://ms.portal.azure.com/](https://ms.portal.azure.com/))
2. Click on **Azure Active Directory**, as shown in below image.
3. Click on **App registrations**, as shown in below image.
4. Click on **New registration**, as shown in below image.

5. Provide the details as shown below and click on **Create** button
   - **Name**: Any valid web application name. For ex: AADWebAppForDataArchival
   - **Application Type**: Select ‘Web’ in Redirect UI option to create Web app / API
   - **Sign-on URL**: Any valid URL. For ex: [https://localhost](https://localhost)
Note: Tap anywhere on the screen if Register button is not enabled.

6. Save Application ID.
7. Click on Managed application in local directory as shown in below picture.

By Clicking on Managed Application in Local Directory, It navigates to the below page. Copy the Object id as shown below.
And Save Object ID, as shown in above image.

8. Click on Certificates & secrets -> Click on 'New Client Secret' and Provide any value in Description (for ex: key1) and Select a value for Expires (for ex: Never expires) -> Click on Save button as shown in below image.

Note *****: Secret value will get generated. Save it, it is visible only once.
Create Application User in CRM Org:

1. Login to CRM Org with a user who has system admin role
2. Click on Settings -> Security as shown in below image.

3. Click on Users as shown in below image

4. Select Application Users from the dropdown as shown in below image
5. Click on **New** as shown in below image

6. Select **Application User View** from the View Selector (if it is not already selected) as shown in below image.

7. Provide details as mentioned below and Save the details
   - **Application ID**: Azure Active Directory Web Application ID (Application ID generated for AAD Web App, refer below screen shot).
- **Full Name**: Any valid full name. For ex: First Name: Archival & Last Name: Admin
- **Primary Email**: Any valid email. For ex: dummy@dummy.com

*Above email address will not be using in Archival process to send any emails.

**Note**: User Name, Application ID URI & Azure AD Object ID will get created when user is saved.

8. Select newly created Application User. Click on Manage Roles and grant System Admin role.
Create Azure Resources

Once you have successfully registered the applications in Azure Active Directory (AAD), it will open the Azure Portal using the Azure Resource Manager Template referenced in the images below.

If the browser window did not open then you can click [here](#) to launch it and fill all the details that are asked.

Complete the form and deploy to Azure, then navigate to Azure Portal Resource Group.

Note: Make a note of all azure resource’s names provided in the template.

Azure Resource Manager Template Properties

- **Subscription**: Select the correct subscription from the dropdown list.
- **Resource Group**: Please note the following option choices...
  - **First Time setup**: Be sure to select *Create new* option and add a unique resource group name. **Important**: Save the resource group name for future references.
  - **For any upgrades**: Select the *Use existing* option to use the existing resource group name.
- **Location**: Select the correct location from the dropdown list.
- **CRM Username**: Use the AAD Web App Client Id *(Future versions this field will be deleted from the template as it is identified as duplicate)*.
- **CRM Password**: Paste the Secret Key *(Future versions this field will be deleted from the template as it is identified as duplicate)*.
- **CRM Resource URL**: CRM instance URL.
• **Web Site Name**: Any unique website name with contiguous characters.
• **Key Vault Name**: Any unique KV name. **Important**: Please use contiguous lowercase letters only.
• **Database Account Name**: Alphanumeric Cosmos account name.
• **Storage Account Name**: Alphanumeric storage account name.
• **Thread Count**: Suggest using the Default value of 50.
• **AAD Web App Client Id**: Paste the Application Id.
• **Secret Key**: Paste the Secret Key.
• **Object Id**: Paste the existing Object Id.
• **Native Application Id**: Paste the existing Native Application Id.
• **Hosting Plan Name**: Use only unique contiguous lowercase characters.
• **Tenant Id**: Directory Id from AAD → Properties
• **CRM Web APIVersion**: Select the correct value from the dropdown list.
• **Sku Name**: Select the correct value from the dropdown list.
• **Sku Capacity**: Suggest using the Default value of 1.
• **Storage account Type**: Select the correct value from the dropdown list.

Agree the **Terms and Conditions** and click on the **Purchase** button.

After deployment, the components under the resource group will appear as shown below.

<table>
<thead>
<tr>
<th>NAME</th>
<th>TYPE</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>emarchialappplan</td>
<td>App Service plan</td>
<td>Central US</td>
</tr>
<tr>
<td>emarchialcosmosdbacc</td>
<td>Azure Cosmos DB account</td>
<td>Central US</td>
</tr>
<tr>
<td>emarchialkeyvault</td>
<td>Key vault</td>
<td>Central US</td>
</tr>
<tr>
<td>emarchialstorageacc</td>
<td>Storage account</td>
<td>Central US</td>
</tr>
<tr>
<td>CRMArchitialWebapp</td>
<td>App Service</td>
<td>Central US</td>
</tr>
</tbody>
</table>
Configuring Schedule for Archival, Removal & Retention

Path: Resource Group → Search by app name → CRM Archival Web App → Application settings

Optionally, users are able to set up Archival, Retention, and Removal schedules in Web App.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>keyvaultid</td>
<td>h44a660-156e-46ff-b4ec-327e9304cb6</td>
<td>Slot setting</td>
</tr>
<tr>
<td>keyvaultsecretid</td>
<td>52jwC/Ohq7e3g89F/b9M4487c98e-1W/V4A9PV</td>
<td>Slot setting</td>
</tr>
<tr>
<td>keyVaultUrl</td>
<td><a href="https://archivalprocesskeyvault.azure.net">https://archivalprocesskeyvault.azure.net</a></td>
<td>Slot setting</td>
</tr>
<tr>
<td>ArchivalSchedule</td>
<td>0 20 * * *</td>
<td>Slot setting</td>
</tr>
<tr>
<td>RetentionSchedule</td>
<td>0 20 * * *</td>
<td>Slot setting</td>
</tr>
<tr>
<td>RemoveSchedule</td>
<td>0 20 * * *</td>
<td>Slot setting</td>
</tr>
<tr>
<td>DisableRetention</td>
<td>true</td>
<td>Slot setting</td>
</tr>
<tr>
<td>DisableArchival</td>
<td>true</td>
<td>Slot setting</td>
</tr>
<tr>
<td>DisableRemoval</td>
<td>true</td>
<td>Slot setting</td>
</tr>
<tr>
<td>WEBSOS_IDLE_TIMEOUT</td>
<td>601</td>
<td>Slot setting</td>
</tr>
<tr>
<td>WEBSOS_RESTART_TIME</td>
<td>15</td>
<td>Slot setting</td>
</tr>
<tr>
<td>DisableConsole</td>
<td>true</td>
<td>Slot setting</td>
</tr>
<tr>
<td>CollectionOfferThroughput</td>
<td>1000</td>
<td>Slot setting</td>
</tr>
<tr>
<td>MobileAppManagement_EXTENSION_VERSION</td>
<td>latest</td>
<td></td>
</tr>
</tbody>
</table>

3 Schedules: Users can set schedules in the form of Seconds, Minutes, Hours, Days, Months, and Years (as a Cron expression). Archival, Retention, and Removal jobs are scheduled at 8 PM every day, and then they are disabled by default. If users want to change the schedules, modify before enabling the jobs.

Note: Click **Save** to retain changes.

Click [here](#) to build a Cron expression.
Web Job Status
Path: Resource Group→Search by app name→CRMArchivalWebApp→WebJobs

After jobs are enabled, make sure that the WebJob Status is Running.
Configuring storage & throughput for Entity collection

Path: Azure Cosmos DB account from Resource group → Entity Collection → Scale & Settings

The solution Throughput is set to 1000 RU’s with Unlimited Storage capacity by default.

Calculate the storage and RU as per their usage through the links provided below:

https://docs.microsoft.com/en-us/azure/cosmos-db/request-units

https://azure.microsoft.com/en-us/pricing/calculator/?service=cosmos-db
Verifying Archival Setup

The archival setup needs to be reviewed in multiple places to ensure that it’s working. This occurs in three places:

- Tables
- Cosmos Database
- Logs
- Email Attachments & Notes
Tables
Path: Resource Group → Search by app name → Storage User Account → Tables

Check for the existence of Table name "removals". If it is not present, then the then Archival process has not started: Check with the Support Team.

Cosmos Database
Path: Resource Group → Search by app name → Azure Cosmos DB Account

Verify that the database name is the same as the CRM Orgname, and that the Throughput is the same as previously configured. Collections should be present as shown above.
Logs

Path: Resource Group → Search by app name → Storage User Account → Blobs → archivelogs

**Note:** As a rule, logs are generated every 15 minutes as long as the job is running, therefore wait for 15 minutes to generate the first log.

<table>
<thead>
<tr>
<th>NAME</th>
<th>NICHORID</th>
<th>Blob Type</th>
<th>Size</th>
<th>LEASE STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>archivelog-201909021001-2019090225...</td>
<td>1/5/2019, 6:52:00 PM</td>
<td>Block blob</td>
<td>3.51 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909022109-2019090240...</td>
<td>1/6/2019, 8:40:00 PM</td>
<td>Block blob</td>
<td>3.97 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909024001-2019090255...</td>
<td>1/5/2019, 6:55:00 PM</td>
<td>Block blob</td>
<td>3.67 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909025501-2019090316...</td>
<td>1/5/2019, 7:16:00 PM</td>
<td>Block blob</td>
<td>3.99 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909030001-2019090325...</td>
<td>1/5/2019, 7:25:00 PM</td>
<td>Block blob</td>
<td>3.99 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909032501-2019090344...</td>
<td>1/5/2019, 7:40:00 PM</td>
<td>Block blob</td>
<td>3.23 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909034001-2019090355...</td>
<td>1/5/2019, 7:55:00 PM</td>
<td>Block blob</td>
<td>3.48 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909035501-2019090381...</td>
<td>1/5/2019, 8:10:00 PM</td>
<td>Block blob</td>
<td>3.63 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909040201-2019090425...</td>
<td>1/5/2019, 8:25:00 PM</td>
<td>Block blob</td>
<td>3.43 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909042501-2019090440...</td>
<td>1/5/2019, 8:40:00 PM</td>
<td>Block blob</td>
<td>3.60 MB</td>
<td>Available</td>
</tr>
<tr>
<td>archivelog-201909044001-2019090455...</td>
<td>1/5/2019, 8:55:00 PM</td>
<td>Block blob</td>
<td>3.44 MB</td>
<td>Available</td>
</tr>
</tbody>
</table>
Email Attachments & Notes
Path: Resource Group→Search by app name→Storage User Account→Blobs→annotations

Users can validate that notes and email attachments are actively being stored here (see example below).

This completes this process.