

Documentation: Advanced Sync

Document version: 23.0.11 Date: 13/05/2024 Author: Dynavision Product Team

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1 Introduction

Welcome to the official manual of the Dynavision Advanced Sync module.

This extension provides functionalities for syncing information between Business Central and another endpoint.

This manual is currently a work in progress and will be made available soon.

2 Installation

2.1 Extension

The Dynavision Advanced Sync module is a separate Business Central extension.

- **1.** Choose the search icon, enter **Extension Management**, and then choose the related link.
- 2. Choose Manage in the Action bar on the page and choose action Extension Marketplace.
- 3. In the search bar, enter **Dynavision Advanced Sync** and install this app.

2.1.1 Dependencies (dependencies)

The Dynavision Advanced Sync module has dependencies to other modules. Those modules are automatically installed when the Dynavision Advanced Sync extension is installed.

3 Configuration

3.1 Setup Service-to-Service Authentication

Service-to-Service authentication is used in scenarios where there is no user interaction required. This authentication enables access to API's using the identity of an application instead of a user.

In order to set up this authentication, the following steps need to be performed:

- **1.** Create an App Registration in Azure.
- **2.** Create an AAD Application in Business Central and grant consent.

When it comes to licensing, this authentication method also requires an additional license:

If an application connects to Business Central with a single account, then that's considered multiplexing. In itself, this is not prohibited. However, it does not reduce the number of required licenses. All users accessing Business Central need to be properly licensed. No matter if they access Business Central with their own credentials or by sharing a single user.

See the following <u>blog</u> for more info about licensing.

3.1.1 Create App Registration

- **1.** Navigate to the Azure portal.
- 2. Search and open the App Registrations page.
- 3. Choose the action New Registration.
- 4. Choose one of the following supported account types:
 - **a.** Accounts in this organizational directory only ([organization] Single tenant) : Select if the external application will only be used inside your organization.
 - **b.** Accounts in any organizational directory (Any Azure AD directory Multitenant) : Select if other organizations should access the external application.
- Enter the following Redirect URL: <u>https://businesscentral.dynamics.com/OAuthLanding.htm</u> and select type web.
- 6. Choose the action **Register** to create the application.
- 7. Assign the correct permissions to the application.
 - **a.** Open the created application and navigate to **API Permissions**, in the navigation pane.
 - **b.** Choose the action **Add a permission** and select the **Dynamics 365 Business Central** API.
 - **c.** Select **Application Permissions** (not delegated permissions) when asked for the type of permissions to configure.
 - d. Check the API.ReadWrite.All permission.
 - e. Choose the action Add permissions.
 - f. Select the API.Readwrite.All permission and choose Grant admin consent for [organization].

- **8.** Create a client secret.
 - a. Navigate to **Certification & secrets** in the app registration.
 - **b.** Choose the action **New client secret**.
 - c. Enter a **Description** and select an **Expiration period**.
 - d. Choose Add.
 - **e.** Copy the Value and store somewhere safely. This will be needed later to perform the API calls.

3.1.2 Create an AAD application in Business Central and grant consent

- 1. Navigate to the page **Microsoft Entra Applications** in Business Central.
- **2.** Choose the action **New**.
- **3.** Fill in the **Client ID**. This can be found on the Overview page of the Azure App Registration, in the field Application (Client) ID.
- 4. Choose the action **Grant Consent**.
- **5.** Enter the **Login Credentials** in the login page that is shown. Only users with the following permissions will be able to login to grant consent.
 - a. Global Administrator,
 - **b.** Application Administrator, and
 - **c.** Cloud Application Administrator.
- 6. Accept the request permissions.
- **7.** Add the system permission **D365 Automation**. This permission set included the necessary rights for the table and table data.
- 8. Add a permission set that exposes the required API pages. Example given: in case of the Dynavision Message API, add the ESCA CORE, EDIT permission set.
 Remark: it is important to add the minimum permissions required for the scenario to work. See the following resources for more info:
 - **a.** https://learn.microsoft.com/en-us/dynamics365/business-central/devitpro/administration/automation-apis-using-s2s-authentication#task-2-set-upthe-azure-ad-application-in-
 - **b.** https://www.kauffmann.nl/2021/07/02/service-to-service-authentication-inbusiness-central-18-3-usage-and-license-terms/

3.2 Authentication – User used for access to API

3.2.1 Access Token

For the OAuth authentication, an Access Token needs to be generated. This can be done by running through the following steps.

- 1. Navigate to the <u>Azure Portal</u> with an AD-user.
- **2.** Register a new application in the **App Registrations** page, which can be found in the navigation pane.

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Monitor Advisor Security Center Help + support	Identity Governance Application proxy Licenses Azure AD Connect						
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3. Fill in the Name and choose the supported account types and choose Register.

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4. Copy the **Application (Client) ID**, and save this information for later use.



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 SQL databases Azure Cosmos DB Virtual machines 	Authentication Certificates & secrets Token configuration	Supported account types Who can use this application or access this API?	Objective-C, Swift, Xamarin	Java, Kotlin, Xamarin				
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 Monitor Advisor Security Center Hele 4 support 	Roles and administrators (Preview) Manifest Support + Troubleshooting Troubleshooting	account of an existing registration. If you need to enable personal account of enable personal account of the enable persona						
Subscriptions	New support request	Treat application as a public client. Required for the use of the following flows where a redirect URI is not used						

- 6. Copy the Redirect URL and save this information for later use.
- 7. Navigate to the Tab Certificates & secrets.
- **8.** Create a **New Client Secret**. This is not needed when a *mobile and desktop application* is created as platform, but for other platforms, it can be possible that this

Client Secret is needed. Save the secret immediately, because this will only be displayed once.

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 Virtual machines Load balancers Storage accounts 	Certificates & secrets Token configuration API permissions Expose an API	No certificates have been added for this application.							
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3.2.2 Authentication Setup

- **1.** Choose the search icon, enter **Authentication Setup**, and then choose the related link.
- 2. Choose the action **New**, to create a new Authentication Setup.
- 3. Fill in the information needed according to the Authorization Type.

a. Authorization Type: Basic

i. Web Service Username

Specifies the Web Service Username.

ii. Web Service Access Key

Specifies the Web Service Access Key.

b. Authorization Type: OAuth2 & Business Central OAuth2

i. OAuth2 Grant Type

Specifies the OAuth2 Grant Type.

The options are:

01. Client Credentials, and

02. Authorization Code.

ii. Tenant

Specifies the tenant for which the Authentication is set up.

iii. Client Id

Specifies the Client ID. This is the ID that is copied from the Access Token Setup.

iv. Client Secret

Specifies the Client Secret. This is the Secret that is copied from the Access Token Setup.

v. Authentication Provider URL

Specifies the Authentication Provider URL. This is the URL that will be used to authenticate the communication.

vi. Redirect URL

Specifies the Redirect URL. This is the Redirect URL that was copied from the Azure App when creating the Access Token.

vii. Scope

Specifies the Scope. This is the scope that contains the API's that will be used to communicate, using the authenticated connection.

viii. Access Token

Specifies the Access Token. This token can be obtained by choosing the action **Get Authentication String**.

ix. Access Token expires at

Shows when the Access Token expires. If this is blank, a new token is requested each time. This can be updated using the action **Get authentication String**.

x. Initialized

Indicates if additional steps (grant consent,...) are required before the authentication setup can be used.

c. For the **Authentication Type OAuth2 and Business Central OAuth2**, the supplied information can be checked by using the action **Test Connection**.

3.3 API URL

Set up the API URL's that will be needed to fetch the correct information in the communication between Business Central and the other endpoint.

- 1. Choose the search icon, enter **API URL**, and then choose the related link.
- **2.** Either add the line for the API URL manually, or choose the action **Create API URL**... to start up the wizard to create the API URL.
- **3.** Fill in the information requested on the list page or the wizard. Below is described what is asked for in the wizard.

a. API Code

Specifies the code that will be used to identify the API URL.

b. Authentication Code

Specifies the Authentication code, used to authenticate the communication that is executed with the API URL. This has been set up in the previous section, <u>Authentication Setup</u>.

c. Tenantld

Specifies the Tenant ID of the Business Central Tenant that will communicate with the set up API URL. The current tenant ID will be filled in by default, but can be edited if the API points to another tenant.

d. Environment

Specifies the environment in the tenant. (Sandbox, Production, ...)

e. Company Name

Specifies the name of the company in the tenant environment. Using the lookup function, all companies in the environment are displayed to choose from.

f. Page Id

Specifies the API Page ID. Attention: the presumption here is that the API pages

on both environments are the same. It is also possible to view all API pages that can be selected using the lookup functionality in the field.

g. Page Name

Displays the name of the selected API Page ID.

h. API URL

Displays the API URL that will be created based on the entered parameters in the setup wizard.

Remark: if this API URL is filled in, the process has been completed successfully. filling in the information in the wizard and choosing **Finish** the line is created

- **4.** After filling in the information in the wizard and choosing **Finish**, the line is created for the API URL.
 - a. Source Table No.

Specifies the source table of the API page.

b. CultureInfo

Specifies the culture that is used to format the date values. This will be filled in with the set **Region** on the tenant.

5. Once this information is set up, this can be used in the synchronization setup.

3.4 Synchronization Setup

The setup of the tables that need to be synced and the API URL that needs to be used in order to sync the information needs to be specified in the **Synchronization setup**.

- **1.** Choose the search icon, enter **Synchronization Setup**, and then choose the related link.
- **2.** Fill in the information for the Synchronization.
 - a. Code

Specifies the code of the Synchronization Setup.

b. Table Caption

Specifies the table that is being Synchronized.

c. Enabled

Specifies if the Synchronization Setup is enabled.

d. Requires Context

Specifies if the Synchronization setup is executed via code and cannot be executed individually.

e. API URL Code

Specifies the Code of the API URL used for synchronization.

f. API URL

Specifies the API URL used for synchronization.

g. Operation

Specifies the type of operation for the synchronization. The options are:

i. Post & update

Information will be posted from the current environment to the other endpoint. This will create or update records.

ii. Post

Information will be posted from the current environment to the other endpoint. This will create records.

iii. Update

Information will be posted from the current environment to the other endpoint. This will update records.

iv. Get: Filter

Will fetch information from the other endpoint, using the specified **Filter** in the field **Filer**. Using the fetched information, records will be created, updated or deleted in the current environment, based on the values set in the next three columns.

h. Insert

Specifies if new external records are inserted locally.

i. Modify

Specifies if external modified records are modified locally.

j. Delete

Specifies if external deleted records are deleted locally.

k. Last Synchronization On

Specifies when the last synchronization occurred.

I. Only Process Modified Data

Specifies that only modified records will be processed. This requires the Modified At field to be included in the mappings when data is imported. When exporting data, the value of the Source Date Field No. is used.

m. Skip Token

Specifies the Skip Token, that is used for server side paging.

n. Filter

Specifies the filter applied to local records before sending, or applied to records when fetching information.

o. Pre-processor

Specifies how the records are pre-processed before they are synchronized.

p. No. Of Templates

Specifies the number of linked templates. These templates are applied before the post-processor is executed.

q. Post-Processor

Specifies how the records are pre-processed after they are synchronized.

r. Error Message

Specifies the error message when an error has occurred during processing.

3.5 Synchronization Mappings

The synchronization mappings need to be set up for the **Synchronization Setup**, in order to map the fields that are synchronized between the two endpoints.

- 1. Choose the action Synchronization Mappings on the page Synchronization Setup. This will open the Synchronization Mappings page for the selected Synchronization Setup.
- 2. Add all API Fields that need to be mapped.

a. API Field Name

Specifies the name of the field in the external API.

b. Enabled

Specifies if the mapping is enabled.

c. Is Master System Id

If enabled, this field will be used as OData key field instead of the primary key fields. This also needs to be activated when delete actions are used.

d. Skip field Validation

Specifies if the validation of the field should be skipped.

e. Field Caption

Specifies the field that needs to be mapped with the API Field.

f. Update Field From Response

Specifies if the field should be updated with the corresponding value in the API response.

g. Calculated Value

Specifies a calculated value that will be used to fill the field. The options are:

- i. Street,
- ii. House No.,
- iii. VAT No.,
- iv. ISO Language Code,
- v. Contact Account ID,
- vi. Feature Property Type,
- vii. Opportunity Account ID,
- viii. Opportunity Contact ID,
 - ix. Opportunity Property ID,
 - x. Customer default Contact ID,
- xi. Next Quotation Number,
- xii. Contact Last Name,
- **xiii.** Production BOM Description,
- xiv. Production BOM Unit of Measure,
- xv. Production BOM Sales Price,
- xvi. Quotation Property Value,
- xvii. Property Value,
- xviii. Ship-To Address Customer No.,
- **xix.** Ship-To Address Code.

h. Fix Value

Specifies a fix value that will be used to fill the field.

i. Example Data

Specifies example data for the mapping.

j. Validation Failed

Specifies if the example data was correctly validated. The example data validation can be triggered by choosing the action **Validate Example Data**.