DEV04: How to create custom Connector for Microsoft Flow

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Agenda

- Business Application Platform
- Introducing Custom Connectors
- Building Custom Connectors to SaaS APIs
- Using Custom Connectors from Flow
- End-to-end sample: Build a connector to ASP.NET API
Business Application Platform

MEASURE

ACT

AUTOMATE

Power users

Power BI

PowerApps

Microsoft Flow
Microsoft PowerApps is a service for creating and using custom business apps across platforms

**Connect** to data & systems you’re already using; create the data you need

**Create** apps, forms, and workflows without writing code

**Use** apps on web and mobile
Build useful apps without writing code

Craft forms and screens in a visual designer that helps you see exactly what you’ll get.

Take advantage of device capabilities like cameras, GPS, and pen controls.

Build business logic into your apps with an Excel-inspired expression language.

Extend the capabilities of connected data sources, or focus just on the bits you need.
Publish apps instantly for web and mobile

Get apps to your team when and where they’re needed, whether that’s on the web, Windows, iOS or Android—no app store required.
Microsoft Flow helps non-developers work smarter by automating workflows across apps and services.

- Get notifications
- Copy files
- Collect data
- Automate approvals
What makes up a Flow?

**Example: Notification Flow**

**Trigger**—the event that kicks off the flow:
- Manually
- On a schedule
- On an event in the cloud

**Actions**—what the flow does

Uses data from the trigger
Templates help users to get started
Logic Apps

Visually design workflows in the cloud

Express logic through powerful control flow

Connect disparate functions and APIs

Utilize declarative definition to work with CI/CD
Connectors
A **connector** is a wrapper around an API that allows the underlying service to talk to **Logic Apps, Microsoft Flow** and **PowerApps**.
Connect to cloud AND on-premises data

Quickly generate and customize apps based on Excel files, SharePoint Online lists, Dynamics 365, Salesforce records and more. You can even connect custom APIs.

Even connecting to data in your local systems through the common on premises data gateway.

Your apps will be able to fully interact with underlying sources and will respect the permissions you’ve already established in them.

200+ connectors today
Public connectors available to all users

Custom connectors you can build for your organization
Why build a connector?

**Enterprise developers**
Looking for connectivity to a service we don’t currently support
Need connectivity to a custom or internal service

**Partners and ISVs**
Expand the number of services you integrate with
Provide the extensibility your customers need
Increase exposure and adoption
Building a Custom Connector

Develop
Build, secure and describe your API
Import from existing artifacts (Open API, Postman) or build from scratch

Test
Validate your API calls
Use in Flow and PowerApps for E2E testing

Share
Allow other users within your organization to use your connector
Building a Custom Connector

Develop
- Build, secure and describe your API
- Import from existing artifacts (Open API, Postman) or build from scratch

Test
- Validate your API calls
- Use in Flow and PowerApps for E2E testing

Share
- Allow other users within your organization to use your connector

Certify
- Share your connector with all users of Flow and PowerApps

Only for Public Connectors
Develop a connector

• Start from scratch
• Start from Postman collection
• Start from Swagger(Open API) definition
Configure authentication type

- No Authentication
- Basic authentication
- API Key
- OAuth 2.0
Configure actions, triggers and references

- Model request and response
- Import from sample
- Triggers: Webhooks or polling
- Validation
Building Connectors
demo
Create custom connector

Custom connector title

My New Connector

Continue  Cancel
General information

Add an icon and short description to your custom connector. Your host and base URL will be automatically generated from the swagger file.

Icon background color:
A color to show behind the icon (e.g., '#007ee5')

Description
Give your custom connector a short description

Connect via on-premises data gateway Learn more

Scheme
- [ ] HTTPS
- [ ] HTTP

* Host
api.contoso.com

Base URL
/
Security

Choose the authentication type and fill in the required fields to set the security for your custom connector.

Learn more

Authentication type

Choose what authentication is implemented by your API *

- No authentication
- Basic authentication
- API Key
- OAuth 2.0
Authentication type

Choose what authentication is implemented by your API:

- Basic authentication

Basic authentication

Users will have to provide a valid username and password before using this API.

<table>
<thead>
<tr>
<th>Parameter label</th>
<th>Parameter name</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>username</td>
</tr>
<tr>
<td>password</td>
<td>password</td>
</tr>
</tbody>
</table>

Do NOT enter secrets here. These fields are used to configure display names for connections.
Authentication type

Choose what authentication is implemented by your API:

- API Key

Edit

API Key

Users will be required to provide the API Key when creating a connection.

<table>
<thead>
<tr>
<th>Parameter label</th>
<th>Parameter name</th>
<th>Parameter location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Header</td>
</tr>
</tbody>
</table>

Edit
Security

Choose the authentication type and fill in the required fields to set the security for your custom connector.

OAuth 2.0

Identity Provider
Generic OAuth 2

Client id *
Client id

Client secret *
Password

Authorization URL *
Authorization URL

Token URL *
Token URL

Refresh URL *
Refresh URL

Scope
Scope

Redirect URL
Save the custom connector to generate the redirect URL.
Actions (1)

Actions determine the operations that users can perform. Actions can be used to read, create, update or delete resources in the underlying connector.

New action

Triggers (0)

Triggers read data in from your connector. A trigger focuses on a particular event that happens, say a new Contact or Order being created and provides the relevant data so that users can take action on that event.

New trigger

References (0)

References are reusable parameters used by both actions and triggers.
Using custom connectors in Flow
demo
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<th>Date</th>
<th>Temperature</th>
<th>Condition</th>
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<td>21.99</td>
<td>few clouds</td>
</tr>
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<td>21.99</td>
<td>few clouds</td>
</tr>
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<td>04/19/2018</td>
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<tr>
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<td>05/09/2018 22:01:59</td>
<td>17.74, mist</td>
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</tbody>
</table>
Practical example – K2

demo
Custom connector architecture

- Microsoft Flow
- PowerApps
- Hosting environment
  - Connector ID + Operation + Connection ID
  - Host + Path + Credentials
- RESTful API
- Custom connector
Using your own Web API

Hosting environment

Custom Connector

Microsoft Flow
PowerApps

Your Web API
Securing your Web API

Hosting environment

Custom Connector

Microsoft Flow
PowerApps

AAD Application #1

Your Web API
Resources
flow.microsoft.com
https://docs.microsoft.com/connectors
https://aka.ms/apiconnectors
https://help.k2.com/onlinehelp/k2five/userguide/5.0/default.htm#How_Tos/WorkflowRESTAPI/Workflow-REST-with-MS-Flow.htm
QUESTIONS & ANSWERS
Thank You!