

Working with OAuth 2.0 APIs in Azure Data Factory

by Martin Schoombee



Photo by tabitha turner on [Unsplash](#)

Martin Schoombee

“I help people make sense
of their data”

My blog: martinschoombee.com

My company: 28twelve.consulting

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GitHub Repo:

<https://github.com/mschoombee/Presentations/wiki/Presentations>



Agenda

- What is OAuth
- Authorization Flows
- Testing APIs (with Postman)
- Azure Data Factory – Linked Services, Datasets & Pipelines

Open Authorization (OAuth)

“A way for Internet users to grant websites or applications access to their information without giving them their passwords”

Authorization Flows

Authorization Flows

1. Code Flow
2. Code Flow (with PKCE)
3. Resource Owner Password Flow
4. Implicit Flow with Form Post
5. Client Credentials Flow (Microsoft)



Authorization Code Flow





Hello Mint,
I'd like to see my
bank transactions
in your app.

Hello Nancy.
**Ok, I can help
you with that.**





**Hello Piggy Bank
API,**

**Nancy would like to
see her bank
transactions in my
app.**





Hello Piggy Bank
API,

Nancy would like to
see her bank
transactions in my
app.

I need to get her
permission first.

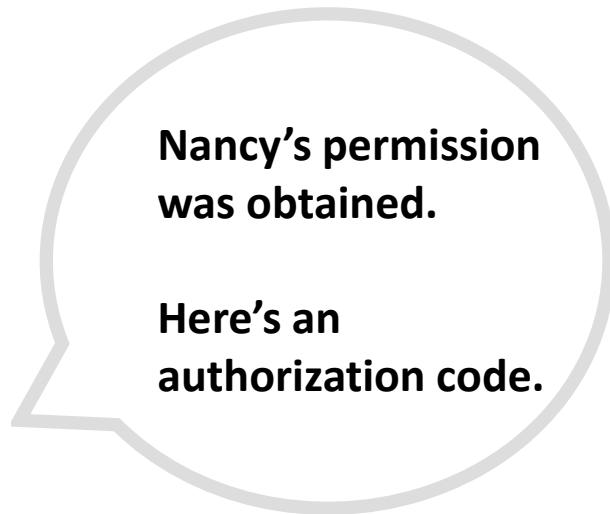
Here's a login
screen...





A central login interface featuring a white rectangular box. At the top center is a green and white cartoon dog's face with black-rimmed glasses. Below the dog are two input fields: "Phone Number" and "Password", each with a thin grey border. Underneath these fields is a large orange button with the text "Log In" in white. Below the button is the word "OR" in a bold, black, sans-serif font. At the bottom is another input field with the text "Send Password".





**Nancy's permission
was obtained.**

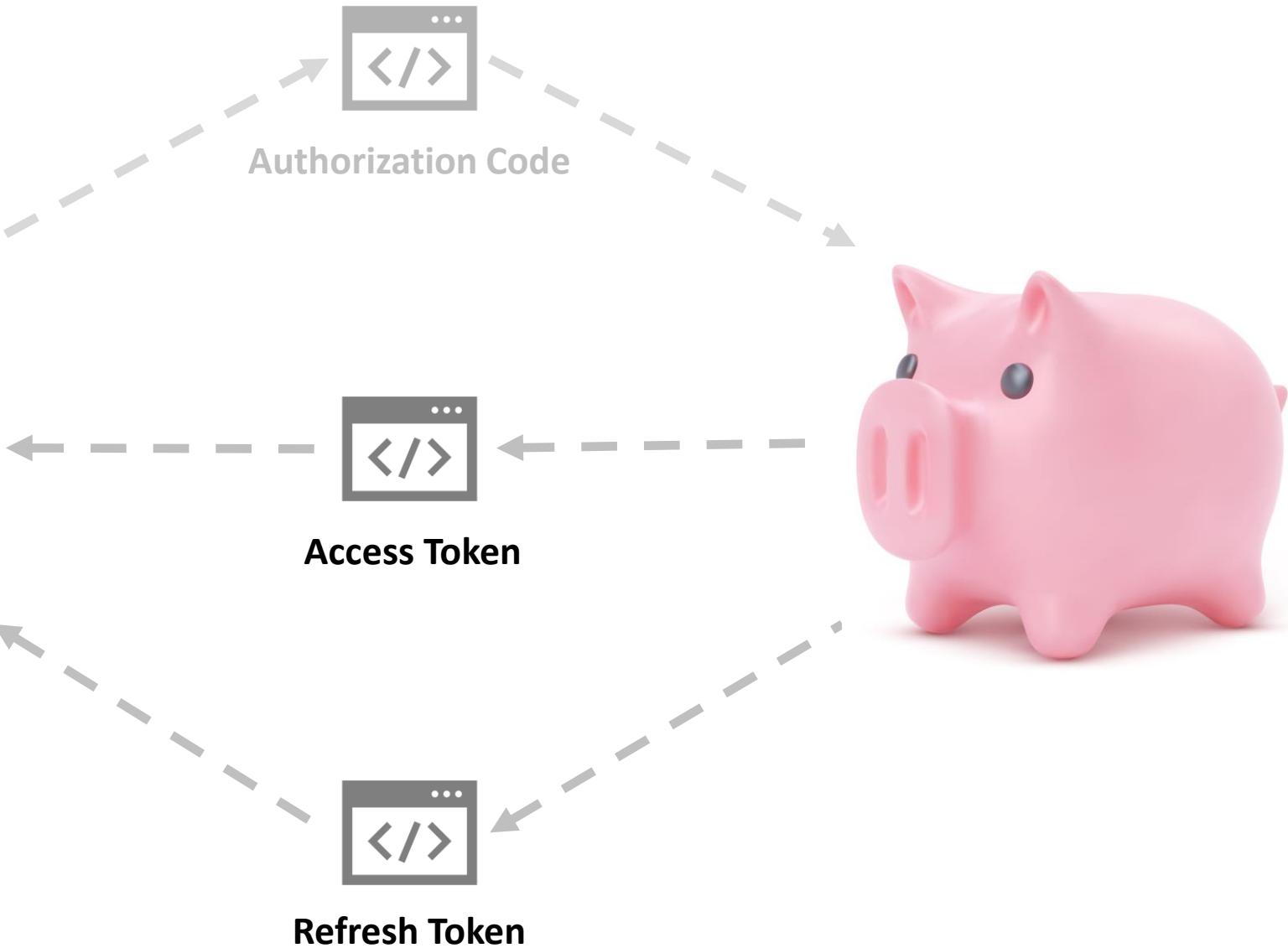
**Here's an
authorization code.**





Authorization Code







I don't see the problem



A central login interface. At the top is a green cat wearing black-rimmed glasses, peeking over a white rectangular form. The form contains two input fields: "Phone Number" and "Password", each with a thin grey border. Below these is a large orange button with the text "Log In" in white. Underneath the button is the word "OR" in a bold, dark font. At the bottom is another input field with the text "Send Password".



OAuth 2.0 Challenges

1. User Interaction Required



OAuth 2.0 Challenges

1. User Interaction Required

2. Variation



OAuth 2.0 Challenges

1. User Interaction Required
2. Variation
3. Error Messages



OAuth 2.0 Challenges

1. User Interaction Required
2. Variation
3. Error Messages
4. ETL Tools





[Go back to last organisation](#)

Demo Company (US) ▾

Dashboard

Business

Accounting

Projects

Contacts

Your last login: [yesterday](#) from United States[Edit dashboard](#)

Demo Company (US)

Demo Company (US) ▾

Checking Account

132435465

[Reconcile 29 items](#)

Balance in Xero (4,946.33)

Statement balance (Oct 15) 1,608.77

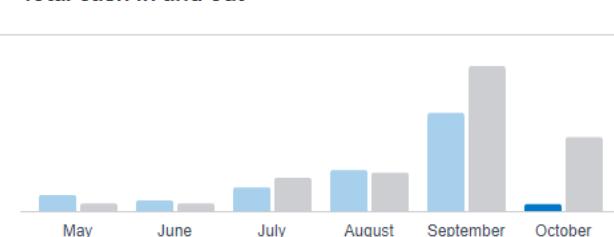
Savings Account

987654321

No transactions imported

[Import a bank statement](#)

Total cash in and out



Account watchlist

Account

This month YTD

Advertising (600)	0.00	10,453.75
Entertainment (620)	0.00	53.60
Inventory (140)	0.00	0.00
Sales (400)	7,654.10	29,250.85

Invoices owed to you

[New sales invoice](#)

2 Draft invoices

1,100.00

9 Awaiting payment

9,172.63

5 Overdue

6,978.08



Bills you need to pay

[New bill](#)

Draft bills

0.00

17 Awaiting payment

10,291.84

4 Overdue

4,692.56

App details – Xero

developer.xero.com/app/manage/app/627099b2-e4fe-4f7c-ac36-8b0f25a99a1c

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Apps > 28t-Demo App details Save :

App details

Configuration Collaborators History Webhooks App Store application

Take the next step to grow with Xero

Building your app is just the start. Become a Xero App Partner and reach millions of Xero customers and 100,000+ accountants and bookkeepers with a tiered program that brings app partners more resources, tools and opportunities to grow. Due to ongoing high demand for the Xero App Store, there may be a delay of up to 3 months for our team to review your application. Thank you for your patience.

Already a partner? [Move to the new Xero App Store](#)

[Become a Xero App Partner](#)

You can connect up to 25 organisations to uncertified apps. [Read more about uncertified app limits.](#)

Web app
0 of 25 connections ⓘ

App name: 28t-Demo

Company or application URL: <https://28twelve.consulting>

Privacy policy URL (optional):

App details - Xero

developer.xero.com/app/manage/app/627099b2-e4fe-4f7c-ac36-8b0f25a99a1c

pi-hole Azure Portal O365 Admin Center Azure DevOps Power BI SharePoint - 28twel... PowerShell Visualizations WiFi pi-hole Other bookmarks

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?

Save

Apps > 28t-Demo

App details

App details Configuration Collaborators History Webhooks App Store application

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Xero App Partner

App name

28t-Demo

Web app

0 of 25 connections

App name

28t-Demo

Company or application URL

<https://28twelve.consulting>

Privacy policy URL (optional)

App details - Xero

developer.xero.com/app/manage/app/627099b2-e4fe-4f7c-ac36-8b0f25a99a1c

pi-hole Azure Portal O365 Admin Center Azure DevOps Power BI SharePoint - 28twe... PowerShell Visualizations WiFi pi-hole Other bookmarks

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Save

Apps > 28t-Demo

App details

App details Configuration Collaborators History Webhooks App Store application

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Company or application URL

[Xero App Partner](#)

Web app
0 of 25 connections

App name

Company or application URL

Privacy policy URL (optional)



App details

Configuration

Collaborators

History

Webhooks

App Store application

Connection

0 of 25 connections i

Redirect URIs

<https://28twelve.consulting>[Learn about redirects](#)[Add another URI](#)

Redirect URIs

<https://28twelve.consulting>[Learn about redirects](#)

Login URL for launcher (optional)

URL will be used by launcher to log in to app. [Find out about launcher](#)



Client id

47.....CD



[Copy](#)

Connection

0 of 25 connections [i](#)

Redirect URIs

<https://28twelve.consulting>



[Learn about redirects](#)

[Add another URI](#)

Client id

47.....CD



[Copy](#)

Client secret 1

Created at 2022-07-12T11:37:46.6553557Z UTC



[Generate another secret](#)

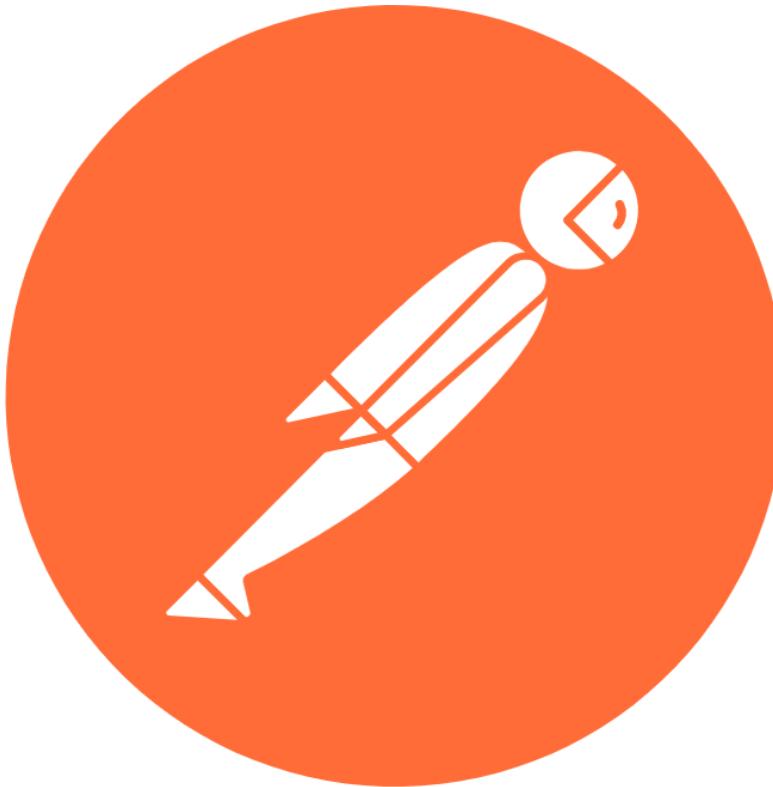
Client secret 1

Created at 2022-07-12T11:37:46.6553557Z UTC



Login URL for launcher (optional)

URL will be used by launcher to log in to app. [Find out about launcher](#)



POSTMAN

New Personal Workspace New Import + ...

No Environment

Collections + xero api X ...

APIs

Environments

Mock Servers

Monitors

Flows

History

Xero API Demo

- GET Connections
- GET Invoices
- POST Refresh Token



[Open Workspace Overview](#)

Create a new request:

SET COPY ↗

No Environment

New Personal Workspace

New Import

+ ...

Collections

xero ap|   

Xero API Demo

GET Connections

GET Invoices

POST Refresh Token

APIs

Environments

Mock Servers

Monitors

Flows

History

+ ...

Collections

xero ap|   

Xero API Demo

GET Connections

GET Invoices

POST Refresh Token

APIs

Environments



Open Workspace Overview

Create a new request:

 Online  Find and Replace  Console

 Cookies  Capture requests  Bootcamp  Runner  Trash 

Home Workspaces API Network Explore

Search Postman

Invite Settings Bell User Upgrade

New Personal Workspace New Import Xero API Demo + ... No Environment

Collections APIs Environments Mock Servers Monitors Flows History

xero api Xero API Demo Authorization • Pre-request Script Tests Variables • Runs

This authorization method will be used for every request in this collection. You can override this by specifying one in the request.

Type OAuth 2.0

The authorization data will be automatically generated when you send the request. Learn more about [authorization](#)

Add auth data to Request Headers

Current Token

This access token is only available to you. Sync the token to let collaborators on this request use it.

Access Token Available Tokens eyJhbGciOiJSUzI1NiIsImtpZCI...

Header Prefix Bearer

Configure New Token

Configuration Options • Advanced Options

Token Name Enter a token name...

Grant Type Authorization Code

Callback URL {{(re_directURI)}}

Authorize using browser

Auth URL https://login.xero.com/identity/conne...

Access Token URL https://identity.xero.com/connect/to ...

Client ID {{(client_id)}}

Client Secret {{(client_secret)}}

Online Find and Replace Console Cookies Capture requests Bootcamp Runner Trash

The screenshot shows the Postman application interface. On the left, there's a sidebar with various sections: Collections, APIs, Environments, Mock Servers, Monitors, Flows, and History. The main area displays a 'New Personal Workspace' with a collection named 'xero api'. This collection contains several requests: 'GET Connections', 'GET Invoices', and 'POST Refresh Token'. The 'Authorization' tab is selected, showing that the OAuth 2.0 type is chosen. It includes fields for 'Add auth data to' (Request Headers), 'Current Token' (with an access token listed), and 'Header Prefix' (Bearer). Below this, there's a 'Configure New Token' section with tabs for 'Configuration Options' (selected) and 'Advanced Options'. Fields for token name, grant type (set to Authorization Code), callback URL ({{(re_directURI)}}, with an 'Info' icon), and auth URL (https://login.xero.com/identity/conne...) are shown. There are also fields for access token URL, client ID ({{(client_id)}}), and client secret ({{(client_secret)}}). At the bottom, there are standard Postman navigation and status icons.

Home Workspaces API Network Explore

Xero API Demo

Search Postman

Invite Settings Notifications Upgrade

New Personal Workspace New Import Xero API Demo + ... No Environment

Collections APIs Environments Mock Servers Monitors Flows History

xero api Xero API Demo

Authorization • Pre-request Script Tests Variables • Runs

This authorization method will be used for every request in this collection. You can override this by specifying one in the request.

Type OAuth 2.0 Add auth data to Request Headers

The authorization data will be automatically generated when you send the request. Learn more about [authorization](#)

Current Token

This access token is only available to you. Sync the token to let others use it.

Access Token Available Tokens eyJhbGci... Bearer

Type OAuth 2.0 Add auth data to Request Headers

The authorization data will be automatically generated when you send the request. Learn more about [authorization](#)

Header Prefix ⓘ

Configure New Token

Configuration Options • Advanced Options

Token Name Enter a token...

Grant Type Authorization Code

Callback URL ⓘ {{(re_directURI)}}

Authorize using browser

Auth URL ⓘ https://login.xero.com/identity/conne...

Access Token URL ⓘ https://identity.xero.com/connect/to ...

Client ID ⓘ {{(client_id)}}

Client Secret ⓘ {{(client_secret)}}

Share Fork 0 Run Save ...

Online Find and Replace Console Cookies Capture requests Bootcamp Runner Trash

The screenshot shows the Postman interface with the 'Xero API Demo' collection selected. The 'Authorization' tab is active. Two specific sections are highlighted with orange boxes:

- The first highlighted section is under the 'Add auth data to' dropdown, which is set to 'Request Headers'. It contains the text: "The authorization data will be automatically generated when you send the request. Learn more about [authorization](#)".
- The second highlighted section is also under the 'Add auth data to' dropdown, which is set to 'Request Headers'. It contains the same text: "The authorization data will be automatically generated when you send the request. Learn more about [authorization](#)".

The rest of the interface includes the collection tree on the left, various tabs like 'Pre-request Script', 'Tests', 'Variables', and 'Runs', and a bottom navigation bar with links like 'Online', 'Find and Replace', 'Console', 'Cookies', 'Capture requests', 'Bootcamp', 'Runner', and 'Trash'.

Home Workspaces API Network Explore

Xero API Demo

Search Postman

Invite Settings Bell User Upgrade

New Personal Workspace New Import Xero API Demo + ... No Environment

Collections APIs Environments Mock Servers Monitors Flows History

xero api Xero API Demo Authorization • Pre-request Script Tests Variables • Runs

This authorization method will be used for every request in this collection. You can override this by specifying one in the request.

Type OAuth 2.0

The authorization data will be automatically generated when you send the request. Learn more about [authorization](#)

Add auth data to Request Headers

Current Token
This access token is only available to you. Sync the token to let collaborators on this request use it.

Access Token
Available Tokens eyJhbGciOiJSUzI1NiImlmpZCI...

Header Prefix Bearer

Current Token
This access token is only available to you. Sync the token to let collaborators on this request use it.

Access Token
Available Tokens eyJhbGciOiJSUzI1NiImlmpZCI...

Header Prefix Bearer

Configure New Token

Configuration Options Advanced Options

Token Name Enter a token name...

Grant Type Authorization Code

Callback URL {{(re_directURI)}}

Authorize using browser

Auth URL https://login.xero.com/identity/conne...

Access Token URL https://identity.xero.com/connect/to ...

Client ID {{(client_id)}}

Client Secret {{(client_secret)}}

Online Find and Replace Console Cookies Capture requests Bootcamp Runner Trash

The screenshot shows the 'Authorization' tab in Postman's 'Xero API Demo' collection. It highlights the 'Current Token' and 'Access Token' sections with orange boxes. The 'Current Token' section contains a note about being only available to the user and a sync button. The 'Access Token' section shows an available token and a sync button. Below these, a 'Configure New Token' section is shown with fields for Token Name, Grant Type (set to Authorization Code), Callback URL ({{(re_directURI)}}), and various URLs and IDs for the OAuth 2.0 flow. The 'Configuration Options' tab is selected in the new token section.

MANAGE ACCESS TOKENS

X

All Tokens

Delete ▾

 This token has expired

Token Name

Token Name

Token Details

Use Token

Token Name

Token Name 

Access Token

eyJhbGciOiJSUzI1NlslmtpZCI6IjFDQUY4RTY2NzcyRDZEQzAyOEQ
2Nzl2RkQwMjYxNTgxNTcwRUZDMTkLCJ0eXAiOJKV1QiLCJ4NXQ
iOjISy1PWm5jdGjQW8xbkp2MENZVmdWY09fQmsifQ.eyJyMjI0
jE2NTc3NjA3NDAsImV4cCI6MTY1Nzc2MjU0MCwiaXNzljoiaHR0cH
M6Ly9pZGVudGl0eS54ZXJvLmNvbSlslmF1ZCI6Imh0dHBzOj8vaW
RlbnRpdkueGVyby5jb20vcvmVzb3VyY2VzliwiY2xpZW50X2lkjoiN
DcyMjEQjU4N0M3NDFBMDIBNjl5Njk0RjVEN0RCQ0QiLCJzdWliOj
JIYzhINDI4NTQ4MjI1N2Y4YjkNjMyNTUwNTViMGZmNyIsImF1dGhf
dGIzSI6MTY1Nzc2MDY4MiwieGVyb191c2VyaWQiOjhYTlzZDQ1Z
C1INWQyLTRiY2UtOGYxNS1mNDc1ODAwOWExNjYiLCJnbG9iYWxf
c2Vzc2lvbl9pZCI6ImFkNmNmODRmYTUwYjQ1NzdhYTFjNDEyZDA

MANAGE ACCESS TOKENS

All Tokens Delete ▾

This token has expired

Token Name

Token Details

Token Name

Token Name

Access Token

Use Token

All Tokens Delete ▾

Token Name

Token Name

Rlb...
Dcy...
JIY...
dGltZ...
C1INW...
c2Vzc...

MANA	expires_in	1800
All To	refresh_token	4ac4771c2f4360a959005048a21f7ec5d33380b333bd7a32e2ddb 56a5c7f65f2
Token	scope	openid profile accounting.transactions.read projects.read offline_a ccess

ENOXkqdk9x4ZU6rlN0OD9rAQ31ldJACKi0b-KWRkXRSp7Fdtmhbx7
Shd8ezAOXgYe8RDfWy74WsW3fOeRboGzP0uNn3A

expires_in	1800
refresh_token	4ac4771c2f4360a959005048a21f7ec5d33380b333bd7a32e2ddb 56a5c7f65f2
scope	openid profile accounting.transactions.read projects.read offline_a ccess

Configure New Token

Configuration Options ● Advanced Options

Token Name

Enter a token name...

Grant Type

Authorization Code

Callback URL ⓘ

`{{re_directURI}}`

Authorize using browser

Auth URL ⓘ

<https://login.xero.com/identity/connect/>

Access Token URL ⓘ

<https://identity.xero.com/connect/token>

Client ID ⓘ

`{{client_id}}`

Client Secret ⓘ

`{{client_secret}}`

Scope ⓘ

`{{scopes}}`

State ⓘ

28t-demo

Client Authentication

Send client credentials in body

 Clear cookies ⓘ

Get New Access Token

Configure New Token

Configuration Options • Advanced Options

Token Name

Enter a token name...

Grant Type

Authorization Code

Callback URL ⓘ

`{{re_directURI}}`

Authorize using browser

Auth

Grant Type

Acc

Authorization Code

Client ID ⓘ

`{{client_id}}`

Client Secret ⓘ

`{{client_secret}}`

Scope ⓘ

`{{scopes}}`

State ⓘ

28t-demo

Client Authentication

Send client credentials in body



Clear cookies ⓘ

Get New Access Token

Configure New Token

Configuration Options ● Advanced Options

Token Name

Enter a token name...

Grant Type

Authorization Code

Callback URL ⓘ

`{{re_directURI}}`

Authorize using browser

Auth URL ⓘ

`https://login.xero.com/identity/conne...`

Access Token URL ⓘ

Callback URL ⓘ

`{{re_directURI}}`

Authorize using browser

Scope ⓘ

`{{scopes}}`

State ⓘ

`28t-demo`

Client Authentication

Send client credentials in body

Clear cookies ⓘ

Get New Access Token

re_directURI

<https://28twelve.consulting>

<https://28twelve.consulting>

Authorization • Pre-request Script Tests Variables • Runs

These variables are specific to this collection and its requests. [Learn more about collection variables.](#)

VARIABLE	INITIAL VALUE ⓘ	CURRENT VALUE ⓘ
<input checked="" type="checkbox"/> xero-tenant-id	960ea43e-b784-42cf-bc6e-e4b6780f1286	960ea43e-b784-42cf-bc6e-e4b6780f1286
<input checked="" type="checkbox"/> client_id	47222DB587C741A0	47222DB587C741A0
<input checked="" type="checkbox"/> client_secret	wH0OjuTU8XjrwxFfk	wH0OjuTU8XjrwxFfk
<input checked="" type="checkbox"/> refresh_token	4ac4771c2f4360a959005048a21f7ec5d33380b333b...	4ac4771c2f4360a959005048a21f7ec5d33380b333bd7a32e2ddb56a5c7f65f2
<input checked="" type="checkbox"/> re_directURI	https://28twelve.consulting	https://28twelve.consulting

Configure New Token

Configuration Options ● Advanced Options

Token Name

Enter a token name...

Grant Type

Authorization Code

Callback URL ⓘ

`{{re_directURI}}`

Authorize using browser

Auth URL ⓘ

`https://login.xero.com/identity/conne...`

Access Token URL ⓘ

`https://identity.xero.com/connect/to...`

Client ID ⓘ

`{{client_id}}`

Client Secret ⓘ

`{{client_secret}}`

Scope ⓘ

`{{scopes}}`

State ⓘ

`28t-demo`

Client Authentication

`Send client credentials in body`

Auth URL ⓘ

`https://login.xero.com/identity/conne...`

Access Token URL ⓘ

`https://identity.xero.com/connect/to...`

Client ID ⓘ

`{{client_id}}`

Client Secret ⓘ

`{{client_secret}}`

Scope ⓘ

`{{scopes}}`

State ⓘ

`28t-demo`

Client Authentication

`Send client credentials in body`

Home Workspaces API Network Explore

Search Postman

Invite Settings Bell Bootcamp Upgrade

New Personal Workspace New Import Xero API Demo + ... No Environment

collections xero api Xero API Demo Share Fork 0 Run Save ...

Xero API Demo

Authorization • Pre-request Script Tests Variables • Runs

This authorization method will be used for every request in this collection. You can override this by specifying one in the request.

Access Token Available Tokens

Login | Xero Accounting Software

File Edit View Help

xero

Log in to Xero

Email address

Password

Log in

Forgot password? Can't log in?

Security noticeboard Terms of use Privacy Help Center Sign up

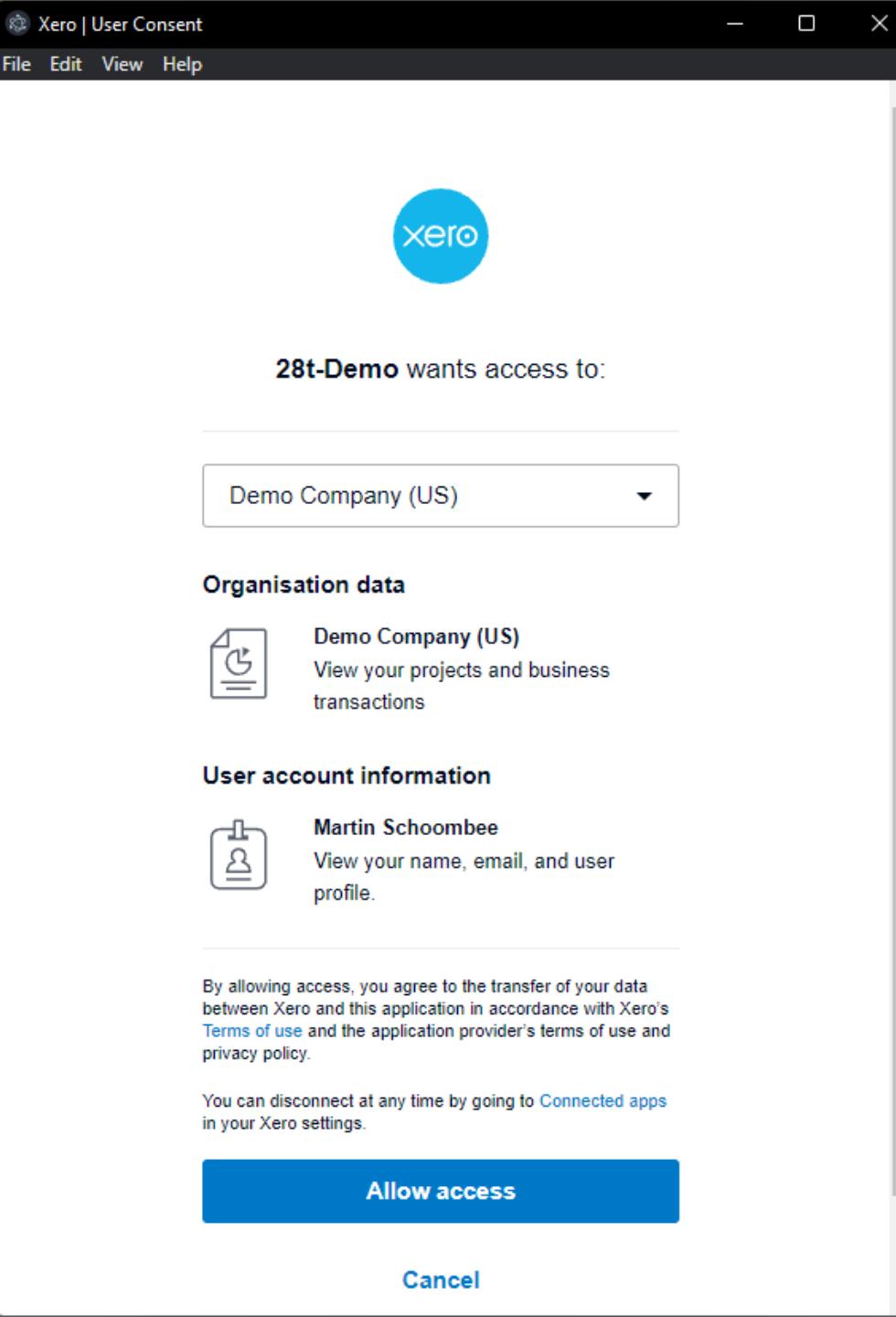
Client Authentication Send client credentials in body

Clear cookies Get New Access Token

Online Find and Replace Console Cookies Capture requests Bootcamp Runner Trash

Collections APIs Environments Mock Servers Monitors Flows History

A modal window titled "Login | Xero Accounting Software" is displayed over the Postman interface. The window shows a "Log in to Xero" form with fields for "Email address" and "Password", and a "Log in" button. Below the form are links for "Forgot password?" and "Can't log in?". At the bottom of the modal, there are links for "Security noticeboard", "Terms of use", "Privacy", "Help Center", and "Sign up". The background of the Postman interface shows a collection named "Xero API Demo" with various API endpoints listed under "Authorization".



MANAGE ACCESS TOKENS

X

All Tokens Delete ▾

Token Details

Use Token

Token Name

Token Name

Token Name 

Token Name

Access Token

eyJhbGciOiJSUzI1NlslmtpZCI6IjFDQUY4RTY2NzcyRDZEQzAyOEQ
2Nzl2RkQwMjYxNTgxNTcwRUZDMTkilCJ0eXAlOjJKV1QiLCJ4NXQ
iOjISy1PWm5jdGjQW8xbkp2MENZVmdWY09fQmsifQ.eyJmYiO
jE2Njc1ODgzMDksImV4cCl6MTY2NzU5MDEwOSviaXNzljoiaHR0c
HM6Ly9pZGVudGl0eS54ZXJvLmNvbSlslmF1ZCI6lmh0dHBzOi8va
WRlbnPdHkueGvyby5jb20vcmvzb3VyY2VzliwiY2xpZW50X2lkjoi
NDcyMjJEQjU4N0M3NDFBMDIBNjI5Njk0RjVEN0RCQ0QiLCJzdWli
OjIYzhINDI4NTQ4MjI1N2Y4YjlkNjMyNTUwNTViMGZmNyIsImF1dG
hfdGltZSI6MTY2NzU4ODIzNywieGvyb191c2VyaWQiOjJhYTlzZDQ1
ZC1INWQyLTRiY2UtOGYxNS1mNDc1ODAwOWExNjYiLCJnbG9iYWx
fc2Vzc2lvbl9pZCI6ImY1NGE1NGQzOGZmMDRkODJhMzJmYWNkMj
g3YTViOGNllwianRpljoiQjc4ODUxNUE0RjY0RTIyNDkwQzFFNkMw
RTE4QzgyMUIiLCJhdXRoZW50aNhdGlvbl9ldmVudF9pZCI6IjM3Z
GVIM2RILTNIYzEtNDI5My04NmIzLWY0Yjc2ODFIYzQxNilslnNjb3BIIj

GET https://api.xero.com/api.xro/2.0/invoices

Xero API Demo / Invoices

Save Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input type="checkbox"/> summaryOnly	True			
<input type="checkbox"/> ModifiedAfter	2021-04-01T00:00:00			
<input type="checkbox"/> where	Type=="ACCREC" AND Date>=DateTime(2021, 4, 1)			
Key	Value	Description		

KEY	VALUE
<input type="checkbox"/> summaryOnly	True
<input type="checkbox"/> ModifiedAfter	2021-04-01T00:00:00
<input type="checkbox"/> where	Type=="ACCREC" AND Date>=DateTime(2021, 4, 1)

xero api

Xero API Demo / Invoices

Save Send

GET https://api.xero.com/api.xro/2.0/invoices

Params • Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input type="checkbox"/> summaryOnly	True			
<input type="checkbox"/> ModifiedAfter	2021-04-01T00:00:00			
<input type="checkbox"/> where	Type=="ACCREC" AND Date>=DateTime(2021, 4, 1)			
Key	Value	Description		

GET https://api.xero.com/api.xro/2.0/invoices?ModifiedAfter=2021-04-01T00:00:00

GET https://api.xero.com/api.xro/2.0/invoices?ModifiedAfter=2021-04-01T00:00:00 Send

Params • Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

Query Params

	KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input type="checkbox"/>	summaryOnly	True			
<input checked="" type="checkbox"/>	ModifiedAfter	2021-04-01T00:00:00			
<input type="checkbox"/>	where	Type=="ACCREC" AND Date>=DateTime(2021, 4, 1)			
	Key	Value	Description		

GET https://api.xero.com/api.xro/2.0/invoices?ModifiedAfter=2021-04-01T00:00:00

Send

Params • Authorization Headers (9) Body Pre-request Script Cookies

Query Params

KEY	Value	Description
summaryOnly	True	
ModifiedAfter	2021-04-01T00:00:00	
where	Type=="ACCREC" AND Date>=DateTime(2021, 4, 1)	
Key		

Body Cookies (4) Headers (12) Test Results

Pretty Raw Preview Visualize JSON  

Status: 403 Forbidden Time: 151 ms Size: 923 B Save Response

```
1 "Type": null,
2 "Title": "Forbidden",
3 "Status": 403,
4 "Detail": "AuthenticationUnsuccessful",
5 "Instance": "bc85e96b-12c1-4321-88b2-69583d71a7a1",
6 "Extensions": {}
```

```
1 "Type": null,
2 "Title": "Forbidden",
3 "Status": 403,
4 "Detail": "AuthenticationUnsuccessful",
5 "Instance": "bc85e96b-12c1-4321-88b2-69583d71a7a1",
6 "Extensions": {}
```

6. Call the API

Make calls against the Xero APIs by simply adding the following headers to your request:

- **Authorization:** "Bearer " + access_token
- **xero-tenant-id:** tenantId

```
GET .../api.xro/2.0/Invoices
Authorization: "Bearer " + access_token
Accept: application/json
Xero-tenant-id: 45e4708e-d862-4111-ab3a-dd8cd03913e1
```

copy code

GET https://api.xero.com/connections

GET https://api.xero.com/connections Send

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Body Cookies (4) Headers (12) Test Results Status: 200 OK Time: 398 ms Size: 1.05 KB Save Response

Pretty Raw Preview Visualize JSON

```
1 {  
2   "id": "be805d62-1522-4427-837e-47850f9efcdb",  
3   "authEventId": "37dee3de-3ec1-4293-86b3-f4b7681ec416",  
4   "tenantId": "a1e09f46-9f74-4508-8c42-47a766ced138",  
5   "tenantType": "ORGANISATION",  
6   "tenantName": "Demo Company (US)",  
7   "createdDateUtc": "2022-11-04T18:58:28.6343400",  
8   "updatedDateUtc": "2022-11-04T18:58:28.6358280"  
9 }  
10  
11 }
```

GET https://api.xero.com/connections

Params Authorization Headers (8) Body Pre-request Script Cookies

Send

Query Params

KEY	VALUE	DESCRIPTION
Key	Value	Description

Body Cookies (4) Headers (12) Test Results

Pretty Raw Preview Visualize JSON

Status: 200 OK Time: 398 ms Size: 1.05 KB Save Response

```
1 [ {  
2   "id": "be805d62-1522-4427-837e-47850f9efcdb",  
3   "authEventId": "37dee3de-3ec1-4293-86b3-f4b7681ec416",  
4   "tenantId": "a1e09f46-9f74-4508-8c42-47a766ced138",  
5   "tenantType": "ORGANISATION",  
6   "tenantName": "Demo Company (US)",  
7   "createdDateUtc": "2022-11-04T18:58:28.6343400",  
8   "updatedDateUtc": "2022-11-04T18:58:28.6358280"  
9 } ]  
10 }  
11 ]
```



xero-tenant-id

{{xero-tenant-id}}

Params	Authorization	Headers (9)	Body	Pre-request Script	Tests	Settings	Cookies
<input checked="" type="checkbox"/> User-Agent							
<input checked="" type="checkbox"/> Accept							
<input checked="" type="checkbox"/> Accept-Encoding							
<input checked="" type="checkbox"/> Connection							
<input checked="" type="checkbox"/> xero-tenant-id							

Body Cookies (4) Headers (13) Test Results

Status: 200 OK Time: 1159 ms Size: 101.52 KB Save Response ▾

Pretty Raw Preview Visualize XML ▾

```
1 <Response xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
2   <Id>00f3a60d-0265-44bc-8560-29a24d2c29a1</Id>
3   <Status>OK</Status>
4   <ProviderName>28t-Demo</ProviderName>
5   <DateTimeUTC>2022-11-04T19:44:52.4524529Z</DateTimeUTC>
6   <Invoices>
7     <Invoice>
8       <Contact>
9         <ContactID>ac565f9c-9829-4f51-8a5b-0400de972b3c</ContactID>
10        <Name>PowerDirect</Name>
11      </Contact>
12      <Date>2021-09-22T00:00:00</Date>
13      <DueDate>2021-10-02T00:00:00</DueDate>
14      <Status>PAID</Status>
15      <LineAmountTypes>NoTax</LineAmountTypes>
16      <SubTotal>90.00</SubTotal>
17      <TotalTax>0.00</TotalTax>
18      <Total>90.00</Total>
19      <UpdatedDateUTC>2011-09-20T19:53:28.613</UpdatedDateUTC>
20      <CurrencyCode>USD</CurrencyCode>
21      <FullyPaidOnDate>2021-09-29T00:00:00</FullyPaidOnDate>
22      <Type>ACCPAY</Type>
23      <InvoiceID>20ff01b8-c2d8-49bb-8abf-a9486c9ea665</InvoiceID>
24      <InvoiceNumber>RPT644-1</InvoiceNumber>
25      <Payments>
```

GET https://api.xero.com/api.xro/2.0/invoices?M

Send

Params • Authorization Headers (9) Body Pre-req Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input type="checkbox"/> summaryOnly	True			
<input checked="" type="checkbox"/> ModifiedAfter	2021-04-01T00:00:00			
<input type="checkbox"/> where	Type=="ACCREC" AND Date>=DateTime(2021, 4, 1)			
Key	Value	Description		

Body Cookies (4) Headers (12) Test Results

Pretty Raw Preview Visualize JSON  

Status: 401 Unauthorized Time: 106 ms Size: 968 B Save Response

```
1 {"Type": null,
2 "Title": "Unauthorized",
3 "Status": 401,
4 "Detail": "TokenExpired: token expired at 07/14/2022 01:35:40",
5 "Instance": "4404a8e7-61ac-4bde-a955-364a334ecddc",
6 "Extensions": {}}
```

1 {"Type": null,
2 "Title": "Unauthorized",
3 "Status": 401,
4 "Detail": "TokenExpired: token expired at 07/14/2022 01:35:40",
5 "Instance": "4404a8e7-61ac-4bde-a955-364a334ecddc",
6 "Extensions": {}}

Refreshing access & refresh tokens



Access tokens expire after 30 minutes. Your app can refresh an access token without user interaction by using a refresh token. You get a refresh token by requesting the [offline access](#) scope during the initial user authorization. Refresh tokens expire after 60 days.

To refresh your access token you need to POST to the token endpoint:

```
https://identity.xero.com/connect/token
```

[copy code](#)

The request will require an authorization header containing your app's client_id and client_secret

- **Authorization:** "Basic " + base64encode(client_id + ":" + client_secret)

The request body will need to contain the grant type and refresh token

- **grant_type**=refresh_token
- **refresh_token**=Your refresh token

```
POST https://identity.xero.com/connect/token
authorization: "Basic " + base64encode(client_id + ":" + client_secret)
Content-Type: application/x-www-form-urlencoded
```

[copy code](#)

```
grant_type=refresh_token
&refresh_token=xxxxxx
```

To refresh your access token you need to POST to the token endpoint:

<https://identity.xero.com/connect/token>

Refreshing access & refresh tokens

Access tokens expire after 30 minutes. Your app can refresh an access token without user interaction by using a refresh token. You get a refresh token by requesting the [offline access](#) scope during the initial user authorization. Refresh tokens expire after 30 days.

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[copy code](#)

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The request body will need to contain the grant type and refresh token

- **grant_type**=refresh_token
- **refresh_token**=Your refresh token

```
POST https://identity.xero.com/connect/token
authorization: "Basic " + base64encode(client_id + ":" + client_secret)
Content-Type: application/x-www-form-urlencoded
```

[copy code](#)

```
grant_type=refresh_token
&refresh_token=xxxxxx
```

The request will require an authorization header containing your app's client_id and client_secret

- **Authorization:** "Basic " + base64encode(client_id + ":" + client_secret)

Refreshing access & refresh tokens

Access tokens expire after 30 minutes. Your app can refresh an access token without user interaction by using a refresh token. You get a refresh token by requesting the offline access scope during the initial user authorization. Refresh tokens expire after 60 days.

To refresh your access token you need to POST to the token endpoint:

<https://identity.xero.com/connect/token>

copy code

The request will require an authorization header containing your app's client_id and client_secret

- **Authorization:** "Basic " + base64encode(client_id + ":" + client_secret)

The request body will need to contain the grant type and refresh token

- **grant_type**=refresh_token
- **refresh_token**=Your refresh token

```
POST https://identity.xero.com/connect/token
authorization: "Basic " + base64encode(client_id + ":" + client_secret)
Content-Type: application/x-www-form-urlencoded
```

copy code

```
grant_type=refresh_token
&refresh_token=xxxxxx
```

Refreshing

Access tokens expire

refresh token. You get a refresh token by requesting the [offline access scope](#) during the initial user authorization. Refresh tokens expire after 60 days.

To refresh your access token you need to POST to the token endpoint:

<https://identity.xero.com/connect/token>

copy code

The request will require an authorization header containing your app's client_id and client_secret

- **Authorization:** "Basic " + base64encode(client_id + ":" + client_secret)

The request body will need to contain the grant type and refresh token

- **grant_type=refresh_token**
- **refresh_token=Your refresh token**

The request body will need to contain the grant type and refresh token

- **grant_type=refresh_token**
- **refresh_token=Your refresh token**

Type Basic Auth

The authorization header will be automatically generated when you send the request. Learn more about [authorization ↗](#)

Username {{client_id}}

Password *****

POST https://identity.xero.com/connect/token Send

Params Authorization ● Headers (11) Body ● Pre-request Script Tests Settings Cookies

Type Basic Auth

The authorization header will be automatically generated when you send the request. Learn more about [authorization ↗](#)

Username {{client_id}}

Password *****

Show Password



Authorization



Basic e3tjbGllbnRfaWR9fTp7e2NsaWVudF9zZWNyZXR9fQ==

POST

https://identity.xero.com/connect/token

Send

Params Authorization • Headers (11) Body • Pre-request Script Tests Settings

Cookies

Headers Hide auto-generated headers

KEY	VALUE	DESCRIPTION	...	Bulk Edit	Presets
<input checked="" type="checkbox"/> Authorization	(i) Basic e3tjbGllbnRfaWR9fTp7e2NsaWVudF9zZWNyZXR9fQ==				
<input checked="" type="checkbox"/> Cookie	(i) _abck=A0A01B96731A791DEAE2A92B224F95E7~-1~YAAQLE5DFyWavj+EAQAA...				
<input checked="" type="checkbox"/> Postman-Token	(i) <calculated when request is sent>				
<input checked="" type="checkbox"/> Content-Type	(i) multipart/form-data; boundary=<calculated when request is sent>				
<input checked="" type="checkbox"/> Content-Length	(i) <calculated when request is sent>				
<input checked="" type="checkbox"/> Host	(i) <calculated when request is sent>				
<input type="checkbox"/> User-Agent	(i) PostmanRuntime/7.29.2				
<input type="checkbox"/> Accept	(i) */*				
<input type="checkbox"/> Accept-Encoding	(i) gzip, deflate, br				
<input type="checkbox"/> Connection	(i) keep-alive				
<input type="checkbox"/> Content-Type	application/json				

<input checked="" type="checkbox"/>	grant_type	refresh_token
<input checked="" type="checkbox"/>	refresh_token	{{refresh_token}}

POST https://identity.xero.com/connect/token Send

Params Authorization Headers (11) ● Body ● Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/> grant_type	refresh_token			
<input checked="" type="checkbox"/> refresh_token	{{refresh_token}}			
Key	Value	Description		

Body Cookies (5) Headers (13) Test Results Status: 200 OK Time: 571 ms Size: 3.05 KB Save Response

Pretty Raw Preview Visualize JSON

```

1
2 "id_token": "eyJhbGciOiJSUzI1NiIsImtpZCI6IjFDQUY4RTY2NzcyRDZEQzAy0EQ2NzI2RkQwMjYxNTgxNTcwRUZDMTkilCJ0eXAi0iJKV1QiLCJ4NXQi0iJISy1Pwm5jdGjQW8xbkp2MENZVmDwY09fQmsifQ.
eyJuYmYiOjE2Njc10TQ3NzksImV4cCI6MTY2NzU5NTA30SwiaXNzIjoiaHR0chM6Ly9pZGVudGl0eS54ZXJvLmNvbSIisImF1ZCI6IjQ3MjIyREI10DdDNzQxQTA5QTy0TY5NEY1RdDEQkNEIiwiaWF0IjoxNjY3NTk0Nzc5LCJhdF9oYXNoIjoi3
d3REFoND1EfWF9vSEZ6YWRGUkxjdyIsInN1Yi6ImVj0GU0Mjg1NDgyMjU3Zjh1i0WQ2MzI1NTA1NW1iWzmY3IiwiYXV0aF90aW1lIjoxNjY3NTk0NjIxLCJ4ZXJvX3VzZxJpZCI6ImFhmjnKNDVklWU1ZDitNGjzS04ZjE1LWY0NzU4MDA5YTe2NiIs
Imdsb2JhbF9zZXNzaW9uX2lkIjoiYjkxNDNhZjh1i0WQ2MzI1NTA1NW1iWzmY3IiwiYXV0aF90aW1lIjoxNjY3NTk0NjIxLCJ4ZXJvX3VzZxJpZCI6ImFhmjnKNDVklWU1ZDitNGjzS04ZjE1LWY0NzU4MDA5YTe2NiIs
FtaWx5X25hbWU0iJTY2hvB21iZWUiLCJuYW1lIjoiTWFydGluIFNjaG9vbWjlzsIsImFtciI6WyJwd2QiLCJtZmEiLCJvdHAiXX0.
WlNhNG29BTNFMd0CWgUkUR5Mr_Cslmu0dyd27LSC_0IRsgrYxth5hsy8VtF05Z6VVsRcms7qtbMguln0BK9opdHAs4bvUcmppottaG0X2maneVkuV2_bmxzPFDWssry9ToNnJElNQ8D50Y5Milp8-_TF3VhBJY71qodYBI88df0d9gEB2g50xhjk
OHWG31x2jXuucaV_npQ9qp0-QvH5_ZmVi6uiLBri4ELd2VldpHzSs_Kt-DcoNHgMBupsj2Pv3nSwutBgdtsT3pwgi7U44Rlk1HxNMUaVz3pLpD0gWc8YJKBa48__FVbiJ6DvGhQTXJukmzvm7fsG-_ojfHbQ",
3 "access_token": "eyJhbGciOiJSUzI1NiIsImtpZCI6IjFDQUY4RTY2NzcyRDZEQzAy0EQ2NzI2RkQwMjYxNTgxNTcwRUZDMTkilCJ0eXAi0iJKV1QiLCJ4NXQi0iJISy1Pwm5jdGjQW8xbkp2MENZVmDwY09fQmsifQ.
eyJuYmYiOjE2Njc10TQ3NzksImV4cCI6MTY2NzU5NjU30SwiaXNzIjoiaHR0chM6Ly9pZGVudGl0eS54ZXJvLmNvbSIisImF1ZCI6Imh0dHBz0i8vaWrlbnRpdkueGVby5jb20vcmVzb3VyY2VzIiwiY2xpZw50X2lkIjoiNDcyMjJEQjU4N0M3ND
FBMDlbNjI5Njk0RjVEN0RCQQQiLCJzdWIoiJlYzh1NDI4NTQ4MjI1N2Y4Yj1kNjMyNTUwNTViMGZmNyIsImF1dGhfGltZSI6MTY2NzU5NDYyMSwieGVyb191c2VyaWQioiJhYTizDQ1ZC1lNWQyLTrIY2U0GYxNS1mDc10DAw0WEExNjYiLCJn
bg9iYWxfc2Vzc2lvb19pZCI6ImI5MTQzYWY4YmU3ZDQxYzdiNjNiNmYxNGI1NTU3ZDBlIiwanRpIjoiRjEwOTY0RThBNzI0Q0TQ2MEYxMjk3Qj1GMjkyQjIzNjkiLCJhdXRoZw50aWNhdGlvb19ldmVudF9pZCI6IjdlzjIxZmI0LTm2NDQtNDgwMC
04YjcwLWI5ZjAyMjMzNjg40CIsInNjb3BlIjpBInByb2ZpbGuILCJvcGvuaWQilCJwc9qZWN0cy5yZWFkIiwiYWNjb3VudGluZy50cmFuc2FjdgLvbnnMucmVhZCIsIm9mZmxbpbmVfYWNjZXNzIl0sImFtciI6WyJwd2QiLCJtZmEiLCJvdHAiXX0.
q2ej9PqQOsXgRzF2aOBp_w7zgQpiM1N4zZEB3rlcE6G6Bf6ypbZDxCgofu6lm0-MetJQY8FnHz7USupAH4xY38wtv-EmjFRSN9a0TMUuUJ6TgLpJJLJHhY0EQlopSIZ8kv6xU-XBjaYoI_w5owpK6eHqYU0cHmY-k_b2Bc-UcBNoG6hEb57QjKK
QHVSVw2odDjsTi8uziJM6z4Fhbe82tAzuhKzh0Hob73Ff5ksSqmrl_bLggbqMKcw2YANTPalzT7nf-Vgg06qbxaiVC23hTbh4WN93jAH2Ke61uGjKw3stKJkq5kv1p7ZanL91jBtlkgReDi8LK3CPDcWgw5A",
4 "expires_in": 1800,
5 "token_type": "Bearer",
6 "refresh_token": "o_Qn6L1GSs8rMVZFa2rJnUg8zkAt7CstTcu3JiaDeAw",
7 "scope": "profile openid projects.read accounting.transactions.read offline_access"
8

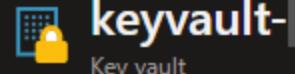
```

Recap





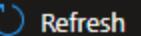
Azure



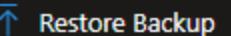
Search



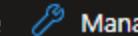
Generate/Import



Refresh



Restore Backup



View sample code



Manage deleted secrets

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Access policies

Events

Objects

Keys

Secrets

Name	Type	Status
xero-access-token		✓ Enabled
xero-client-id	Client ID	✓ Enabled
xero-client-secret		✓ Enabled
xero-refresh-token		✓ Enabled
xero-tenant-id	Tenant ID	✓ Enabled

keyvault- | Secrets ...

Search Generate/Import Refresh Restore Backup View sample code Manage deleted secrets

Name	Type	Status
xero-access-token	Client ID	✓ Enabled
xero-client-id		✓ Enabled
xero-client-secret		✓ Enabled
xero-refresh-token		✓ Enabled
xero-tenant-id	Tenant ID	✓ Enabled

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Access policies Events

Objects

Keys Secrets

The screenshot shows the Azure Key Vault interface. On the left, there's a sidebar with navigation links like Overview, Activity log, and Objects. The main area is titled 'Secrets'. At the top, there are several buttons: Search, Generate/Import, Refresh, Restore Backup, View sample code, and Manage deleted secrets. Below these is a table listing five secrets. The first four secrets ('xero-access-token', 'xero-client-id', 'xero-client-secret', 'xero-refresh-token') are grouped under a 'Client ID' type and are highlighted with a yellow rounded rectangle. The fifth secret, 'xero-tenant-id', is listed under a 'Tenant ID' type. A large yellow callout box surrounds the entire row for 'xero-tenant-id', which itself has a smaller yellow rounded rectangle around its text. The status column for all secrets shows a checkmark and the word 'Enabled'.

keyvault- | Access control (IAM) ...

Key vault

Search

Add Download role assignments Edit columns Refresh Remove Got feedback?

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Access policies

Events

Objects

Keys

Secrets

Certificates

Settings

Check access

Role assignments

Roles

Deny assignments

Classic administrators

Number of role assignments for this subscription ⓘ

11 4000

Showing a filtered set of results. Total number of role assignments: 8

1 items

Name	Type	Role	Scope
Key Vault Secrets Officer	Data Factory	Key Vault Secrets Officer	This resource

28t-datafactory-etc /subscriptions/f0e... Data Factory

Key Vault Secrets Officer

28t-datafactory-etc /subscriptions/f0e... Data Factory

fc... Data Factory

Azure Data Factory

New linked service

Data store Compute

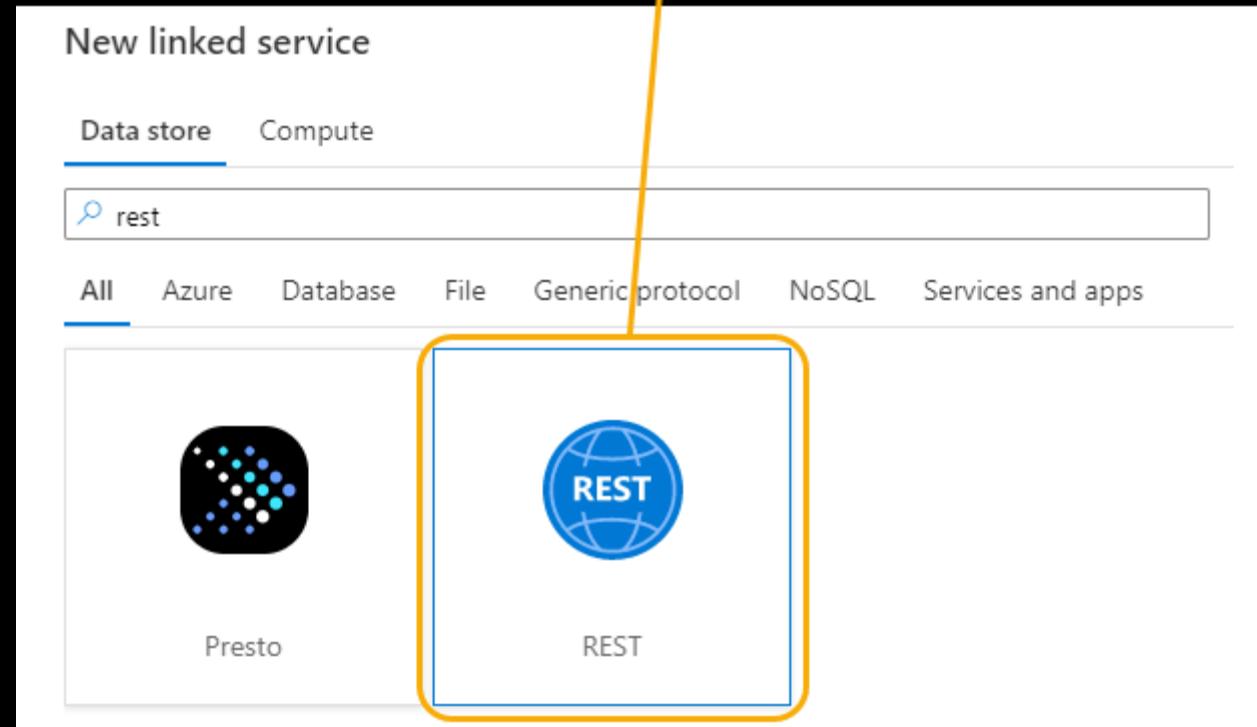


xero

All Azure Database File Generic protocol NoSQL Services and apps



Xero



Base URL *

REST

Name *
RestServ

Description
[Redacted]

Authentication type *

Anonymous

Connect via integration runtime * ⓘ

28t-integrationruntime-west

Base URL *

Authentication type *

Anonymous

Server Certificate Validation ⓘ

Enable Disable

Auth headers ⓘ

+ New

Annotations

+ New

> Parameters

> Advanced ⓘ

Microsoft Azure | Data Factory | 28t-datafactory-etl

» Data Factory Validate all Publish all

Factory Resources xero +

- Pipelines 10
 - Controller Pipelines 3
 - Worker Pipelines 7
- Datasets 1
 - RestApi_Xero ...
- Data flows 0
- Power Query 0

REST RestApi_Xero

Connection Parameters

Linked service * RestService_Xero Test connection Edit New Learn more

Integration runtime * 28t-integrationruntime-west Edit

Base URL https://api.xero.com/ Relative URL @dataset().RelativeUrl

Preview data

The screenshot displays the Microsoft Azure Data Factory interface. On the left, the 'Factory Resources' sidebar is visible, showing categories like Pipelines, Datasets, Data flows, and Power Query. The 'Datasets' section has 'RestApi_Xero' selected. The main workspace shows a 'Rest' dataset named 'RestApi_Xero'. In the 'Connection' tab, the 'Linked service' is set to 'RestService_Xero' and the 'Integration runtime' is set to '28t-integrationruntime-west'. The 'Parameters' tab is also present. Two specific fields are highlighted with yellow boxes: 'Base URL' (containing 'https://api.xero.com/') and 'Relative URL' (containing '@dataset().RelativeUrl'). A large yellow arrow points from the 'Relative URL' field in the main configuration area down to the 'Relative URL' field in the detailed view below. The top navigation bar includes links for Data Factory, Validate all, Publish all, and various status indicators.

[Data Factory](#) ▾ [Validate all](#) [Publish all](#)

Factory Resources

 xero

Pipelines

10

Controller Pipelines

3

Worker Pipelines

7

Worker-CopyExcelFile-XeroInvoices

Worker-CopyExcelFile-XeroTimesheets

Worker-CopyJson-XeroInvoices

Worker-CopyJson-XeroProjects

Worker-CopyJson-XeroTasks

Worker-CopyJson-XeroTime

Worker-RefreshTokens-Xero

Datasets

1

RestApi_Xero

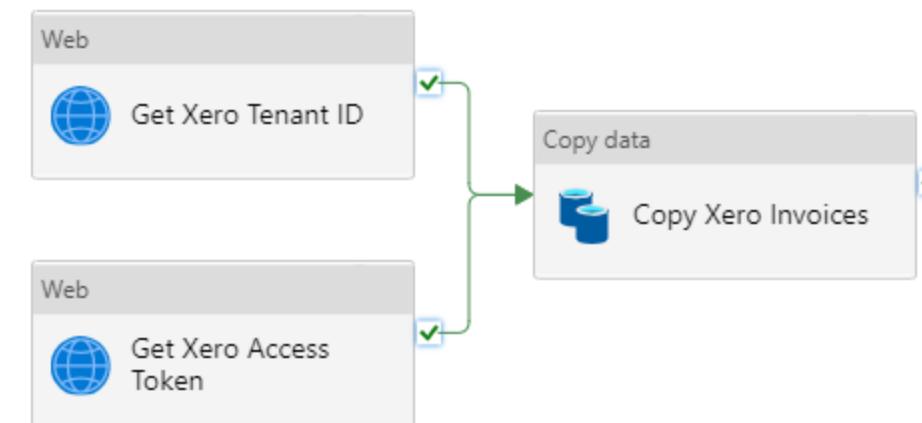
Data flows

0

Power Query

0

Worker-CopyJson... X

[Validate](#) [Debug](#) [Add trigger](#)[Parameters](#) [Variables](#) [Settings](#) [Output](#)[New](#) [Delete](#)

Name	Type	Default value
KeyVaultSecretsUrl	String	https:// vault
XeroApiRelativeUrl	String	api.xro/2.0/invoices?where=
StagingSchema	String	Staging_Xero
StagingTable	String	invoices

» Data Factory Validate all Publish all

Factory Resources

xero

- Pipelines 10
 - Controller Pipelines 3
 - Worker Pipelines 7
 - Worker-CopyExcelFile-XeroInvoices
 - Worker-CopyExcelFile-XeroTimesheets
 - Worker-CopyJson-XeroInvoices
 - Worker-CopyJson-XeroProjects
 - Worker-CopyJson-XeroTasks
 - Worker-CopyJson-XeroTime
 - Worker-RefreshTokens-Xero
- Datasets 1
 - RestApi_Xero
- Data flows 0
- Power Query 0

Worker-CopyJson-... X

Validate Debug Add trigger

General Settings User properties

Name * Get Xero Tenant ID Learn more ↗

Description

Timeout ① 0.00:05:00

Retry ① 0

Retry interval (sec) ① 30

Secure output ①

Secure input ①

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Factory Resources

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Get Xero Tenant ID

[{}](#) [D](#) [B](#)**Web**

Get Xero Access Token

Method * ⓘ

GET

Authentication ⓘ

System Assigned Managed Identity

Resource *

https://vault.azure.net

[General](#) [Settings](#) [User properties](#)**URL**@{(pipeline).parameters.KeyVaultSecrets} [X](#)

⚠ Information will be sent to the URL specified. Please ensure you trust the URL entered.

Method * ⓘ

GET

Authentication ⓘ

System Assigned Managed Identity

Resource *

https://vault.azure.net

Headers ⓘ[+ New](#)> Advanced

```
@{pipeline().parameters.KeyVaultSecretsUrl}xero-tenant-id?api-version=7.0
```

Microsoft Azure | Data Factory > 28t-datafactory-1

Search

Factory Resources

xero

Pipelines

- Controller Pipelines
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 - Worker-CopyExcelFile-XeroInvoices
 - Worker-CopyExcelFile-XeroTimesheets
 - Worker-CopyJson-XeroInvoices
 - Worker-CopyJson-XeroProjects
 - Worker-CopyJson-XeroTasks
 - Worker-CopyJson-XeroTime
 - Worker-RefreshTokens-Xero

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Data flows

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Worker-CopyJson... X

Validate Add trigger

Web

Get Xero Tenant ID

Copy data

Copy Xero Invoices

Web

Get Xero Access Token

General Settings User properties

URL

@{pipeline().parameters.KeyVaultSecretsUrl}xero-tenant-id?api-version=7.0

Information will be sent to the URL specified. Please ensure you trust the URL entered.

Method

GET

Authentication

System Assigned Managed Identity

Resource

https://vault.azure.net

Headers

New

Advanced

Pipeline expression builder

Add dynamic content below using any combination of expressions, functions and system variables.

@{pipeline().parameters.KeyVaultSecretsUrl}xero-tenant-id?api-version=7.0

Clear contents

Parameters System variables Functions Variables

Search

KeyVaultSecretsUrl
Pipeline parameter

StagingSchema
Pipeline parameter

StagingTable
Pipeline parameter

XeroApiRelativeUrl
Pipeline parameter

OK Cancel

```
graph LR; URLField[URL] --> PEB[Pipeline expression builder]
```

Validate all Publish all

Factory Resources

xero X +

Pipelines 10

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Worker Pipelines 7

Worker-CopyExcelFile-XeroInvoices

Worker-CopyExcelFile-XeroTimesheets

Worker-CopyJson-XeroInvoices

Worker-CopyJson-XeroProjects

Worker-CopyJson-XeroTasks

Worker-CopyJson-XeroTime

Worker-RefreshTokens-Xero

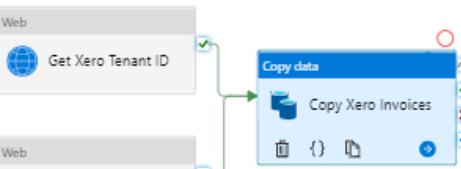
Datasets 1

RestApi_Xero

Data flows 0

Power Query 0

Worker-CopyJson-...

Validate Validate copy runtime Debug Add triggerAdditional headers ①+ New Delete

Name	Value
Authorization	Bearer @{activity('Get Xero Access Tok...')}
xero-tenant-id	@activity('Get Xero Tenant ID').output....

Request method ①

GET

Request timeout ①

00:05:00

Request interval (ms) ①

10

Additional headers ①+ New Delete

Name	Value
Authorization	Bearer @{activity('Get Xero Access Tok...')}
xero-tenant-id	@activity('Get Xero Tenant ID').output....

Pagination rules ①+ NewAdditional columns ①+ New

» Data Factory ▾ Validate all Publish all

Factory Resources

xero



Pipelines

Controller Pipelines

10

Worker Pipelines

3

Worker-CopyExcelFile-XeroInvoices

Worker-CopyExcelFile-XeroTimesheets

Worker-CopyJson-XeroInvoices

Worker-CopyJson-XeroProjects

Worker-CopyJson-XeroTasks

Worker-CopyJson-XeroTime

Worker-RefreshTokens-Xero

7

Datasets

RestApi_Xero

1

Data flows

0

Power Query

0

Worker-RefreshTok... X

» Validate Debug Add trigger

Web



Get Xero Client ID



Web



Get Xero Client Secret



Web



Get Xero Refresh Token



Web



Refresh Xero Access Token



Web



Save New Xero Refresh Token



Web



Save New Xero Access Token



Parameters Variables Settings Output

+ New

Delete

Name

Type

Default value

KeyVaultSecretsUrl

String

https://.vault



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Factory Resources < xero +

Pipelines 10

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 - Worker-CopyExcelFile-XeroTimesheets
 - Worker-CopyJson-XeroInvoices
 - Worker-CopyJson-XeroProjects
 - Worker-CopyJson-XeroTasks
 - Worker-CopyJson-XeroTime
- Worker-RefreshTokens-Xero 1

Datasets 1

- RestApi_Xero

Data flows 0

Power Query 0

Worker-RefreshTok... Validate all Add trigger

Get Xero Client ID
Get Xero Client Secret
Get Xero Refresh Token

Refresh Xero Access Token

Save New Xero Refresh Token
Save New Xero Access Token

General Settings User properties

URL https://identity.xero.com/connect/token

Method * POST

Information will be sent to the URL specified. Please ensure you trust the URL entered.

Body grant_type=refresh_token&refresh_tok...

Authentication None

Headers *
+ New Delete

Name	Value
Authorization	Basic @{base64(concat(activity('Get Xe...))}
Content-Type	application/x-www-form-urlencoded

> Advanced

Search

https://identity.xero.com/connect/token

⚠ Information will be sent to the URL specified. Please ensure you trust the URL entered.

POST

[Data Factory](#) [Validate all](#) [Publish all 1](#)

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Worker-RefreshTok... ▶ Validate ▶ Debug ⚡ Add trigger

General Settings User properties

URL <https://identity.xero.com/connect/token>
⚠ Information will be sent to the URL specified. Please ensure you trust the URL entered.

Method * POST

Body grant_type=refresh_token&refresh_tok...

Authentication None

Headers *
+ New Delete

Name	Value
Authorization	Basic @{base64(concat(activity('Get X...'))}
Content-Type	application/x-www-form-urlencoded

> Advanced

Body

grant_type=refresh_token&refresh_tok...

Authentication

None

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Validate all Publish all

Factory Resources

xero

Pipelines

- Controller Pipelines
- Worker Pipelines
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 - Worker-CopyExcelFile-XeroTimesheets
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Worker-RefreshTok... [Validate]

Get Xero Client ID → Refresh Xero Access Token → Save New Xero Refresh Token, Save New Xero Access Token

Get Xero Client Secret → Refresh Xero Access Token → Save New Xero Refresh Token, Save New Xero Access Token

Get Xero Refresh Token → Refresh Xero Access Token → Save New Xero Refresh Token, Save New Xero Access Token

General Settings User properties

URL: https://identity.xero.com/connect/token

Method: POST

Body: grant_type=refresh_token&refresh_t...

Authentication: None

Headers

New Delete

Name	Value
Authorization	Basic @{base64(concat(activity('Get Xe...))}
Content-Type	application/x-www-form-urlencoded

Advanced

Headers

New Delete

Name	Value
Authorization	Basic @{base64(concat(activity('Get Xe...))}
Content-Type	application/x-www-form-urlencoded

Validate all Publish all 1

Factory Resources

xero +

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 - Worker-CopyJson-XeroTime
 - Worker-RefreshTokens-Xero 1
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 - RestApi_Xero
- Data flows 0
- Power Query 0

Worker-RefreshTok...

Validate Debug Add trigger

```
graph LR; A[Get Xero Client ID] --> B[Get Xero Client Secret]; A --> C[Get Xero Refresh Token]; B --> D[Refresh Xero Access Token]; C --> D; D --> E[Save New Xero Refresh Token]; D --> F[Save New Xero Access Token]
```

Basic @{base64(concat(activity('Get Xero Client ID').output.value, ':', activity('Get Xero Client Secret').output.value))}

URL `https://identity.xero.com/connect/token`

Method * POST

Body `grant_type=refresh_token&refresh_tok...`

Authentication None

Headers *

Name	Value
Authorization	Basic @{base64(concat(activity('Get Xe...))}
Content-Type	application/x-www-form-urlencoded

> Advanced

Lessons Learned



Lessons Learned

1. API Docs!!



Lessons Learned

1. API Docs!!
2. Start with Postman*



Lessons Learned

1. API Docs!!
2. Start with Postman*
3. *Generic* Linked Service



Lessons Learned

1. API Docs!!
2. Start with Postman*
3. *Generic* Linked Service
4. Use Azure KeyVault



Lessons Learned

1. API Docs!!
2. Start with Postman*
3. *Generic* Linked Service
4. Use Azure KeyVault
5. Separate Token Refresh



Lessons Learned

1. API Docs!!
2. Start with Postman*
3. *Generic* Linked Service
4. Use Azure KeyVault
5. Separate Token Refresh
6. Pagination :-/



Resources

- OAuth
 - <https://www.oauth.com/>
- Xero
 - <https://developer.xero.com/>
- KeyVault Secrets API
 - <https://docs.microsoft.com/en-us/rest/api/keyvault/secrets/get-secret/get-secret>
- My Blog Series
 - <https://martinschoombee.com/2022/02/15/working-with-oauth-2-0-apis-in-azure-data-factory-a-series/>