



# PowerShell for Azure AD Demystified

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Manage users, admins, security  
settings, and more



# Agenda

About me

Intended audience

PowerShell Modules

MSOL Module (old)

AzureAD Module (new)

AzureADPreview Module (newer)

MgGraph (so new it's unfinished)

Contact info, slides, and scripts

# Who am I?

Roger P Seekell  
Systems Engineer, Jefferson Co Public Schools

The district has over 115,000 active users,  
over 36,000 devices

Started learning PowerShell in summer 2011  
(v2)

Written hundreds of scripts, some scheduled  
to run regularly

**I GOT A FEVER**



**AND THE ONLY PRESCRIPTION IS  
MORE POWERSHELL**

# About this presentation

I'll spend a few slides on each module, then demo it!

This will be informal and flexible; please speak up with any questions or comments

I don't have to finish my presentation. I'm willing to try something on the spot!

I'm using Visual Studio Code; you could use PowerShell ISE as well

# Intended Audience



Folks whose job it is to manage users/groups/licenses/MFA in AzureAD / Office 365

Folks that have repetitive tasks or reports to do

Folks with at least a beginner's understanding of PowerShell

# General notes

PoSh is short for PowerShell

cmdlet is short for commandlet, a PowerShell function

AzureAD runs on UserPrincipalName (email), not SamAccountName (short username)

This assumes you're Global Admin; delegation is possible, not covered in this presentation

I'll point out which things work on Windows PowerShell 5 vs. PowerShell 7

# How to get these modules

To see if you have it (two options):

- `Get-Module -ListAvailable "AzureAD"`
- `Get-InstalledModule -Name AzureAD`

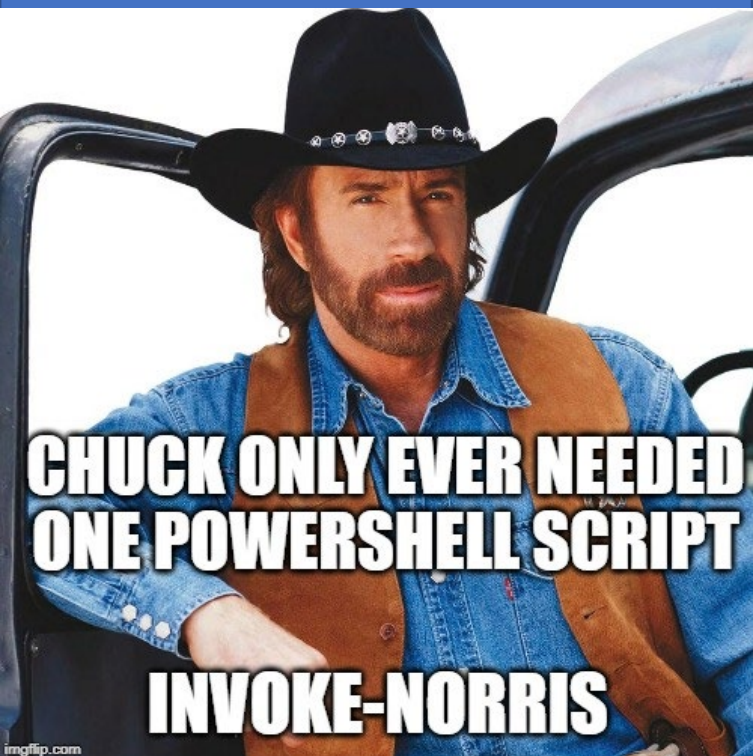
To install:

- `Install-Module AzureAD`

By default, it installs for all users, so you'll need to run PowerShell as administrator

Or, if you install with `-scope CurrentUser`, it will install in your profile and won't need admin rights

# Updating modules



To update:

- Update-Module AzureAD

Note: Update may install a second version

Note: Must update modules in PowerShell 7 and Windows PowerShell separately

To uninstall:

- Uninstall-Module AzureAD



# MSOnline

Microsoft Azure Active Directory Module for Windows PowerShell

Last update: version 1.1.183.66 on 11/15/2021

Deprecation status is unknown

- Licensing to stop working July 1 (more on that later)

Examples:

- Get-MsolUser
- Add-MsolGroupMember

# Getting Starting with MSOnline

To install, run:

- `Install-Module MSOnline`

To load (optional):

- `Import-Module MSOnline`

Note: not native to PoSh 7, so you must use compatibility switch:

- `Import-Module MSOnline -UseWindowsPowerShell`

Must connect before anything else:

- `Connect-MsolService` (then look for pop-up login screen)

# MSOnline Module is Best For

Users and groups

MFA methods

★ Administrator  
Role Report

# AzureAD

This is the General Availability release of Azure Active Directory V2 PowerShell Module.

Last update: version 2.0.2.140 on 8/19/2021

Uses AzureAD Graph behind the scenes

Examples:

- Get-AzureAdUser
- Get-AzureAdDevice

# Azure AD Graph Deprecation

**BRACE YOURSELF**



**WINTER IS COMING**

makeameme.org

**BIG NOTE:** Azure AD uses the “Azure AD Graph” which will be retired on June 30, 2022

Will this PowerShell module stop working?  
*Unclear.*

Sounds like the license cmdlets will stop working (for both AzureAD and MSOL)

It's a shame because this module is easier than the new Graph cmdlets

# Getting Starting with AzureAD

To install, run:

- `Install-Module AzureAD`

To load (optional):

- `Import-Module AzureAD`

Note: not native to PoSh 7, so you must use compatibility switch:

- `Import-Module AzureAD -UseWindowsPowerShell`

Must connect before anything else:

- `Connect-AzureAD` (then look for pop-up login screen)

# AzureAD Module is Best For

The short-run  
only ??

Users and  
groups

Devices  
(Intune, etc.)

★ Resolve a  
compromised  
user

# AzureAD Preview overview

Separate module with additional, less-tested features of Azure AD module, otherwise same pros and cons

Last update: version 2.0.2.149 on 2/1/2022

Same end of life as primary AzureAD Module

This one has a few extra cmdlets that are quite useful, particularly sign-in logs

**WHAT IF I TOLD YOU**

**THERE'S MORE THAN  
ONE AZURE AD MODULE**



# Getting started with AzureAD Preview

You must install it in a special way:

- `Install-Module AzureADPreview -AllowClobber`

If you have both on your system, you must import it specifically:

- `Import-Module AzureADPreview -Force`

You may have to precede your cmdlets with the module:

- `AzureADPreview\Connect-AzureAD`

AzureAD  
Preview  
Module is Best  
For

Sign-in logs!

# Odata Query

Used in several “Graph” cmdlets

A user-friendly PowerShell explanation:

- <https://www.michev.info/Blog/Post/1888/filtering-users-and-groups-with-the-azure-ad-graph-odata-syntax>

Other examples (from MS):

- <https://docs.microsoft.com/en-us/powershell/module/azuread/get-azureadauditsigninlogs?view=azureadps-2.0-preview#examples>

Note: Your values are case-sensitive

# Microsoft Graph (MG) Overview

## Microsoft Graph PowerShell Module

- In short, it is a PowerShell wrapper around the Graph API
- Different from using PowerShell to call a Graph API (URL)

## What is Graph?

- An SDK that talks to all the objects/APIs/libraries in Microsoft 365, the [replacement](#) of Azure AD Graph that also covers Teams, Exchange, Intune, etc.
- Plain English: a collection of all the objects and actions in Microsoft 365 / Azure AD

Module Last update: version 1.9.3 on Mar 10, 2022

In terms of possibility, it is huge; in terms of a learning curve (and frustration), it is also huge

- It seems unfinished, incomplete; e.g., some help still missing, some commands don't work
- Often must look at the Graph itself to figure out PowerShell

# Starting with Microsoft Graph (MG)

**YOU GET A MODULE!**

**AND YOU GET A MODULE!**

makeameme.org

Get with Install-Module Microsoft.Graph

Comes in 39 separate modules, or you can mix and match

- Find-Module Microsoft.Graph.Authentication | Install-Module
- Watch the author; there's a Microsoft.Graph.PlusPlus that isn't Microsoft

Nice [tutorial here](#) to find a user, find a channel it can post to, and post a Teams message

You must grant yourself permission to each different kind of object, such as user.read.all, group.readwrite.all, mail.send, etc.

# Microsoft Graph (MG) First Steps

Use Connect-MgGraph, which will prompt you to sign in

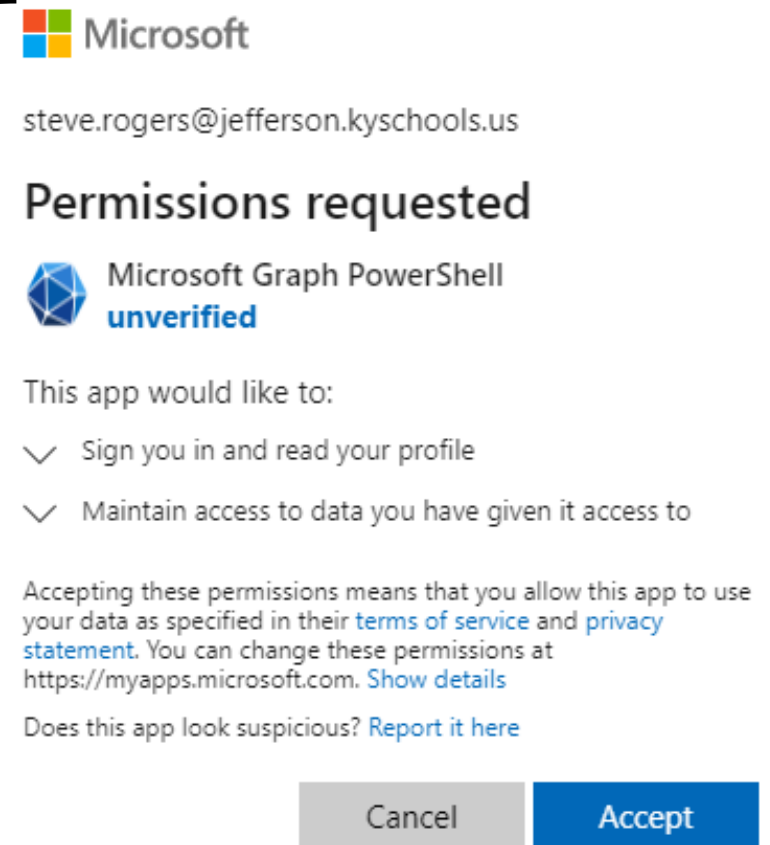
In PowerShell 5, popup window like previous modules

In PowerShell 7, opens a web browser to authentication

- Tip: copy/paste to your web browser already signed into your admin account to save time
- Do not close the tab, or you will have to restart your PowerShell session

First time, get a Permissions requested screen:

Use Get-MgContext to see who you are and what rights you have



# Microsoft Graph First Steps (cont.)

If you don't have permission to grant yourself permission, you'll see this:

Sometimes you must switch to "beta" to find what you're looking for:

- Select-MgProfile beta

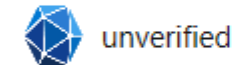
Note: Beta items are unsupported and subject to change

Sign in to your account

JCPS Office 365

steve.rogers@jefferson.kyschools.us

**Need admin approval**



unverified

needs permission to access resources in your organization that only an admin can grant. Please ask an admin to grant permission to this app before you can use it.

[Have an admin account? Sign in with that account](#)

[Return to the application without granting consent](#)

# MG Module is great for

Sign-in and  
audit logs

Licensing after  
June 30<sup>th</sup>,  
2022 😬

★ Conditional  
Access Policies

MFA  
Authentication  
Methods

★ Send an  
email

Post a Teams  
message



# MG Module is not great

Expect headaches and dead-ends if you attempt it

Try to find someone else who made a script

Send Microsoft feedback when you get a chance



# Comparison Table

	MSOL	AzureAD	AzureADPreview	MgGraph
Runs in Windows PowerShell 5	Yes	Yes	Yes	Yes
Runs in PowerShell 7	Yes, with -Use	Yes, with -Use	Yes, with -Use	Yes
Browser-based login	No	No	No	Yes (v7)
Ease of learning	Medium	Medium	Medium	Hard-Insane
Work after 7/1/22	Partially	Partially	Partially	Yes

Note: Could not use MSOL in VS Code using PowerShell 7

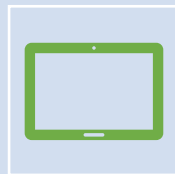
# General PowerShell tips



Subscribe to <https://community.idera.com/database-tools/powershell/powertips/> to have knowledge sent to your inbox



If you're new to PowerShell, get PowerShell 7 and use Visual Studio Code for scripting



Use Windows Terminal to have tabs with different versions of PowerShell

# My Resources

Github: [github.com/rpstester](https://github.com/rpstester)

## PowerShellAzureAd

- Send e-Mail With Graph
- Conditional Access Policy Report
- Email Azure Risky Events

## PowerShell7Stuff

- O365Helper
  - Repair-o365account
- And other modules

Note: please use scripts at your own risk!

Thank you all  
for attending!



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