



# Level up workflow with Webhooks (Change Events)

Julie Turner



# Julie Turner

*Partner/CTO*

Working with SharePoint since 2007

Microsoft MVP, Office Apps and Services since 2017

Microsoft 365 & Power Platform Community Team since 2019

Open-source project co-maintainer: PnPjs & hTWOo

Co-host: Code. Deploy. Go Live show



<https://julieturner.net/me>

**SYMPRAXIS**  
CONSULTING



# Agenda



What are webhooks and why use them



Architectural pattern for managing subscriptions and events



Cloud Services Overview



Boilerplate code walkthrough



Event handlers

# What are Webhooks (Change Events)?

...altering the behavior of a web page or web application with custom callbacks.

In Microsoft 365 – SharePoint webhooks are supported for list items.

Lists/Libraries

- ◆ Expires in 180 days
- ◆ Only handles async events (-ed)
- ◆ ItemAdded, ItemUpdated, ItemDeleted, ItemCheckedOut, ItemCheckedIn, ItemUncheckedOut, ItemAttachmentAdded, ItemAttachmentDeleted, ItemFileMoved, ItemVersionDeleted, ItemFileConverted

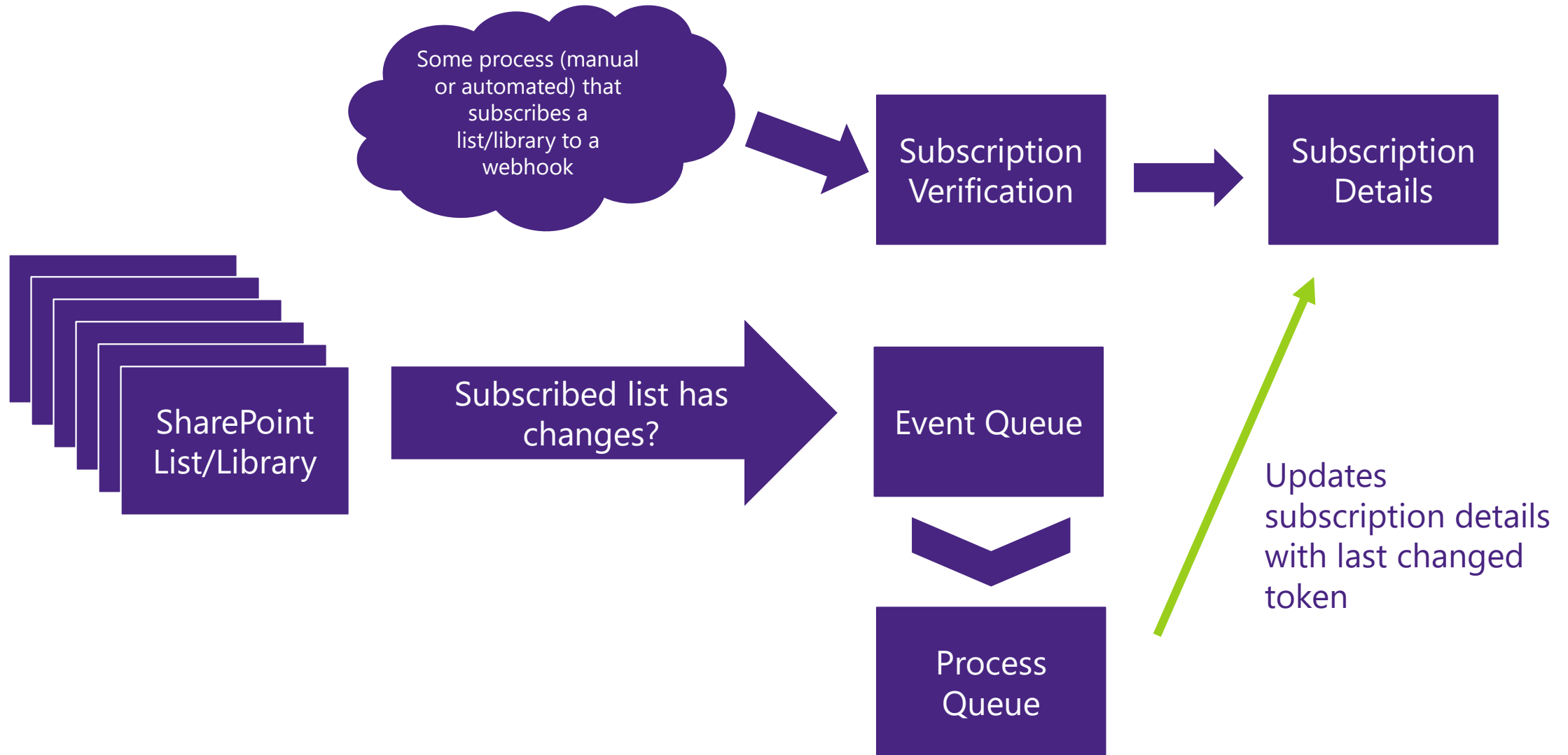


# Why use Webhooks (Change Events)?

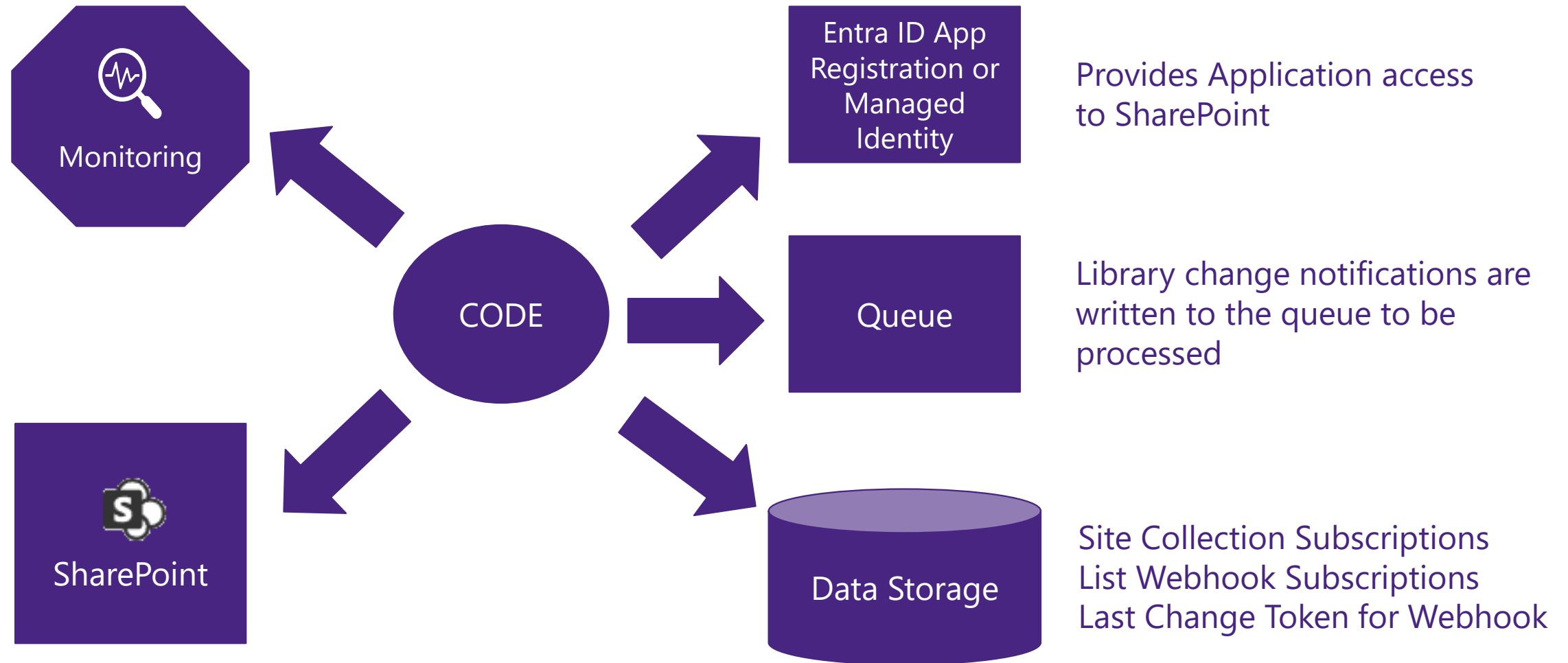
- ◆ Other Options: PowerAutomate flows, Azure LogicApps
  - ◆ PowerAutomate and LogicApps SharePoint connector is in user context
  - ◆ You must manage multiple instances for each list/library that you want to monitor
  - ◆ Actual monitoring of success/failure built into the product
- ◆ Webhooks (Change Events) are a good option:
  - ◆ Complex business process
  - ◆ Requires application vs user context
  - ◆ Need to act on multiple lists/libraries



# Process



# Architectural Overview



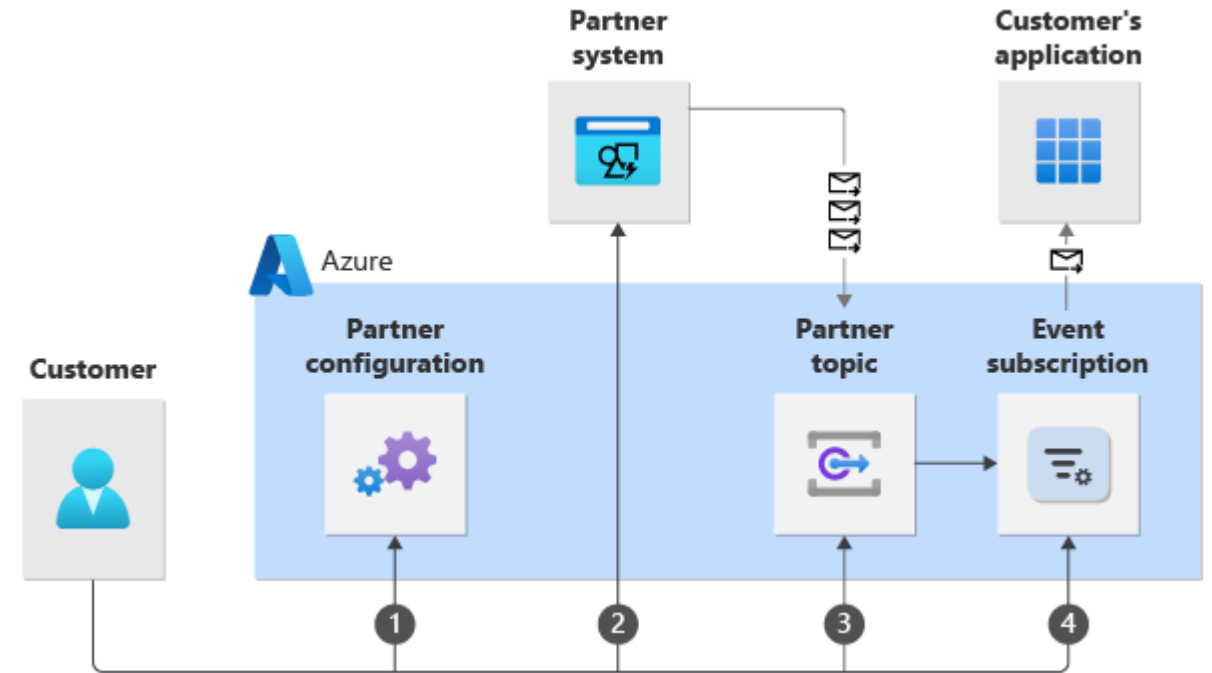
# Cloud Services - Azure

Service	Used for
Resource Group	A container for all your Azure resources related to this solution
Azure Storage	Queue store to manage event notifications and subscription info
Key Vault	Stores secrets and certificates
Function App	Code to manage subscription and execute custom event handlers
AAD App Registrations	Provides app credentials for the function apps.
Application Insights (Opt)	Provides diagnostic logging support
Azure Event Grid	Provides relay for change events



# Event Grid

1. Authorize partner to create a partner topic in a resource group you designate.
2. Request partner to forward your events from its service to your partner topic. Partner provisions a partner topic in the specified resource group of your Azure subscription.
3. After the partner creates a partner topic in your Azure subscription and resource group, activate your partner topic.
4. Subscribe to events by creating one or more event subscriptions for the partner topic.



# Security

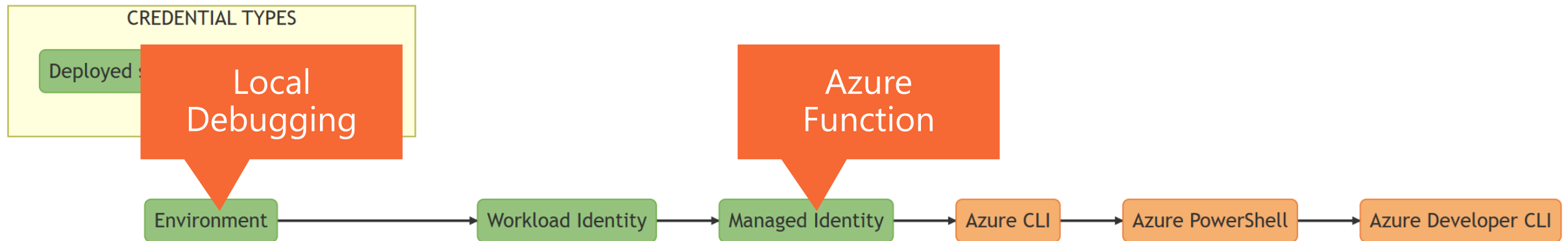
- ◆ EntraId App Registrations/ MSAL
- ◆ Managed Identity/ Azure Identity



# @Azure/Identity

## DefaultAzureCredential

- ◆ Environment - account information specified via environment variables and use it to authenticate.
- ◆ Workload Identity - deployed to Azure Kubernetes Service with Managed Identity enabled
- ◆ Managed Identity - deployed to an Azure host with Managed Identity enabled
- ◆ Azure CLI - developer has authenticated an account via the Azure CLI az login command
- ◆ Azure PowerShell - developer has authenticated using the Azure PowerShell module Connect-AzAccount command
- ◆ Azure Developer CLI - developer has authenticated an account via the Azure Developer CLI azd auth login command



# Managed Identity

*Managed identities in Azure are a service that allows Azure resources to authenticate cloud services without the need for storing credentials in code or configuration files.*

- ◆ You don't need to manage credentials.
  - ◆ Credentials aren't even accessible to you.
- ◆ You can use managed identities to authenticate to any resource that supports Microsoft Entra authentication, including your own applications.
- ◆ Managed identities can be used at no extra cost.
- ◆ System-assigned
  - ◆ 1:1 relationship with the azure resource and its lifecycle is tied to the resource
- ◆ User-assigned
  - ◆ 1:many relationship to azure resources
- ◆ You authorize a managed identity to have access to one or more services



# Authorizing a managed identity

The screenshot illustrates the steps to authorize a managed identity in the Azure Access control (IAM) interface. Red arrows highlight the following actions:

- Clicking the **Access control (IAM)** link in the left-hand navigation pane.
- Clicking the **+** **Add** button in the top toolbar.
- Clicking the **Managed identity** radio button under the **Assign access to** section.
- Clicking the **Subscription \*** dropdown in the **Select managed identities** dialog.
- Clicking the **Managed identity** dropdown in the **Select managed identities** dialog.
- Clicking one of the managed identity entries in the list.

The **Add role assignment** dialog shows the **Members** tab selected, with the **Role** set to **Reader**. The **Members** list is currently empty, with a **+ Select members** link.

```
m365 login --authType browser
```

```
m365 aad approleassignment add --appObjectId "1022615c-4433-4731-a933-53a9d2770e76" --resource "Microsoft Graph" --scopes "Files.ReadWrite.All,Group.Read.All,Mail.Send,User.Read.All"
```

```
m365 aad approleassignment add --appObjectId "1022615c-4433-4731-a933-53a9d2770e76" --resource "SharePoint" --scopes "Sites.FullControl.All"
```

```
m365 aad approleassignment add --appObjectId "1022615c-4433-4731-a933-53a9d2770e76" --resource "SharePoint" --scopes "TermStore.ReadWrite.All"
```

# Boilerplate Webhook Implementation

Code Review

# Summary

- ◆ Set up the Azure Infrastructure
- ◆ Created a NodeJS project and configured it
- ◆ Added helper functions for logging and authentication
- ◆ Created TypeScript Interfaces for SharePoint list changes and EventGrid subscriptions
- ◆ Created triggers to handle subscription renewal and events, putting the events on a queue to be processed
- ◆ Processed the change events and stored the last change token so that we only pick up changes that we haven't successfully processed when a new event fires.

# Resources

- ◆ Overview of SharePoint webhooks
- ◆ Microsoft Graph Subscription Resource
- ◆ Microsoft Graph API change notifications
- ◆ Subscribe to events published by a partner with Azure Event Grid
- ◆ Receive Microsoft Graph API change events through Azure Event Grid
- ◆ How to find SharePoint site collections and OneDrive for Business drives