

Microsoft Graph

One API to Rule them All

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Agenda

What is the Microsoft Graph?

Development

Calling the Microsoft Graph

Development

Authentication & Authorization

Resources

Understanding Microsoft Graph

In the beginning...

Initially we had multiple services for different silos of data

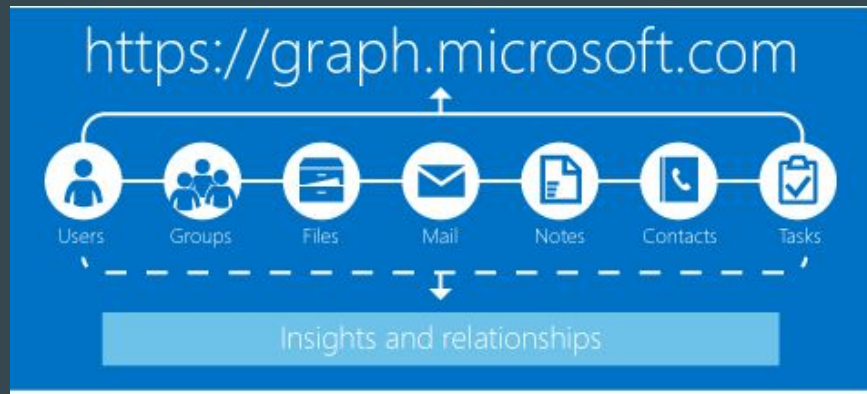
- Users: Azure AD Graph
- Mail / Calendar / Contacts: Exchange / Outlook
- OneDrive & OneDrive for Business
- OneNote

Each API endpoint required a new OAuth2 bearer token

All relationships had to be handed in code

Discoverability of the APIs was challenging

Microsoft Graph



<http://graph.microsoft.io>

Single endpoint for all
Office 365 related data

- Users
- Exchange
- Yammer
- Files
- OneNote
- ...

Acts as a proxy to other services

- Graph endpoints map to
_____ existing services

Advantages to Using Microsoft Graph

Well known service resource ID's & endpoints

- Eliminates need for endpoint discovery

Unified REST API

- Only need a single token for multiple services

Consistent property naming schemes

Contextual relationships

Integrated direct navigation between silo'd services

Versioned endpoints - v1.0 & beta (more in the future)

Developing with the Microsoft Graph

Developing with Microsoft Graph - Overview

HTTP verbs dictate the request intent: GET | POST | PATCH | PUT | DELETE

Requests must be authenticated

Get full entity details supported using \$metadata

[https://graph.microsoft.com/{version}/\\$metadata](https://graph.microsoft.com/{version}/$metadata)

Microsoft Graph - Request Pattern

<https://graph.microsoft.com/{version}/{resource}?{odata-query-parameters}>

- {version}
 - v1.0 | beta
- {resource}
 - groups | users | devices | organization
 - Aliases: me | myOrganization
- {odata-query-parameters}
 - Format results: \$select | \$orderby
 - Control results: \$filter | \$expand
 - Paging: \$top | \$skip | \$skiptoken
 - \$count

Authorization & Authentication for the Microsoft Graph

Step 1: What's the scenario?

*answers to these questions dictate
the options available*

Questions to ask:

- Accessing enterprise data and/or personal (consumer) data?
 - Resources & permissions required?
 - Type of application?
 - Web | SPA | Service
 - Will users be involved or will it be a service / daemon?
-

Step 2: Auth v1 / v2

AAD v1 - Traditional Authentication

- Access enterprise services only
- Register & manage app via Azure Mgmt Portal
- <http://aconn.me/1YnPWzz>

AAD v2 - Converged Authentication

- Access enterprise & consumer services
 - App registration portal
 - Incremental / dynamic consent
 - <http://aconn.me/1VVt221>
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Step 3: App+User / App- Only

App + User (aka: delegated)

- Most common
- Used in web app scenarios

App-Only

- Applicable when no users involved
 - Ideal for a scheduled service
 - Only certain permissions allowed
 - Requires tenant admin consent
-

DEMO

Registering an app with Azure AD using the Azure Management Portal

Exploring the Microsoft Graph

Graph Explorer

<https://graph.microsoft.io/en-us/graph-explorer>

- Browser based interface
- Issue HTTP requests and see response
- Easy authentication
- No need to manually edit headers
- Advantages
 - Ideal for quick exploring
 - No app creation needed
 - No install needed
- Disadvantages
 - Only supports testing the endpoint

Postman

<https://www.getpostman.com>

- Chrome extension | Mac app
- Full control over HTTP request
- Manual authentication
- Advantages
 - Create same request as you would in custom code, without the overhead of a project
 - Save previous queries in collections
- Disadvantages
 - Have to create the full request

DEMO

Exploring Microsoft Graph

- (1) Microsoft Graph Explorer
- (2) Postman

Resources

<http://graph.microsoft.io/en-us/>

Walkthroughs

- ASP.NET MVC - <http://graph.microsoft.io/en-us/docs/platform/aspnetmvc>
- Node.js - <http://graph.microsoft.io/en-us/docs/platform/nodejs>
- Angular - <http://graph.microsoft.io/en-us/docs/platform/angular>

Sample Code & Applications

- <https://github.com/microsoftgraph>

Questions?

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slides & code:

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