How to use REST APIs with PowerShell

Graziella Iezzi

@lunagra80

Who am I?

- Business Applications Engineer

- Fascinated by PowerShell

- Italian expat living in Amsterdam

- 🐦 @lunagra80

Agenda

- What are REST APIs

- What to consider before getting hands on

- Invoke-RestMethod

- Authentication

- Pagination and getting data

- Sending data out

- Takeaways

What are APIs?

Application Programming Interface

"a set of programming tools that enables a program to communicate with another program or an operating system, and that helps software developers create their own applications" - Oxford University Press

What are APIs?

"a set of endpoints that allows you to interact with a specific web application"

Endpoints are web-based (HTTP and HTTPS) functions. The interaction with them is mostly done through JSON
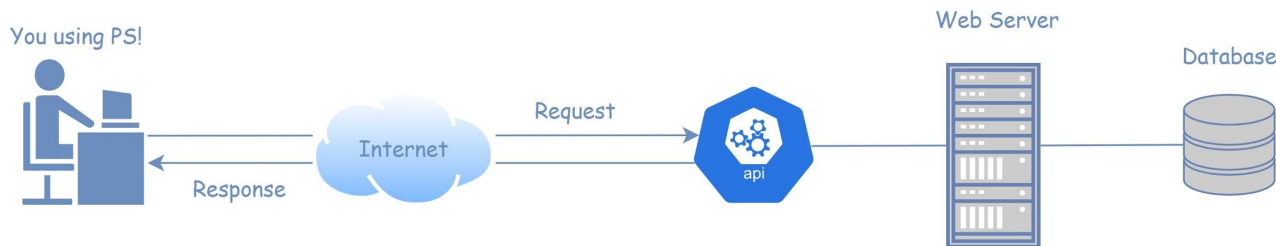
What are RESTful APIs?

Representational State Transfer

The architectural style that defines the properties and constraints about how an API is developed. i.e. uniform interface, cache, client-server

RESTful API is a Web Service API that follows the REST architectural constraints

What to consider before getting hands on?

- *Authentication*: which kind is used

- *URI*: what endpoint/s do you have to use to run the feature you need

- *Method* (GET, POST, PUT, PATCH, DELETE, etc): what action do you need to do

- *Header*: what additional information (Content-Type, Authentication, etc) do you need to pass to the endpoint

- *Body*: (if needed) what data do you need to send to the endpoint, and what's the expected format

Invoke-RestMethod

Sends an HTTP or HTTPS request to a RESTful Web Service that returns richly structured data (i.e. JSON, XML)

Outputs are System.Int64, System.String, System.Xml.XmlDocument and PSObject

Parameters:
- *-Method*
- *-Uri*
- *-Headers*
- *-Body*
- *-ResponseHeadersVariable* (PS7 only)
- -FollowRelLink (PS7 only)
- -MaximumFollowRelLink (PS7 only)

Authentication

Basic authentication (ref to my code)
- username and password
- Single string concatenated with ":"

Bearer Token:
- a string representing an access authorization issued to the client
- TLS is mandatory
- if generated programmatically they are returned in a JSON format
- can be send in the header, the body or in query string

Pagination

"it is the concept of dividing the results into different pages"

- Cursor / Relay Cursor in the response body

- Relation link in the response header

Takeaways

- Always read the documentation first to avoid headaches later!

- PowerShell makes using APIs easy

- Have a "safe place" for your secrets

References

PSConfEU 2020 code: https://github.com/graiezzi/2020/tree/master/sessions/Graziella%20Iezzi

Secret Management Module https://devblogs.microsoft.com/powershell/secretmanagement-and-secretstore-release-candidate-2/

Roy Fielding REST https://www.ics.uci.edu/~fielding/pubs/dissertation/rest_arch_style.htm

How to build Apps in Slack https://slack.com/intl/en-nl/blog/productivity/how-to-get-started-building-apps-on-slack

How to build Apps in GitHub https://docs.github.com/en/developers/apps/creating-a-github-app

Authentication in GitHub https://docs.github.com/en/rest/guides/getting-started-with-the-rest-api

Slack conversations endpoints
    https://api.slack.com/methods/conversations.create
    https://api.slack.com/methods/conversations.list
    https://api.slack.com/methods/chat.postMessage

GitHub endpoints
    https://docs.github.com/en/rest/reference/repos
    https://docs.github.com/en/rest/reference/issues

HHPSUG - @lunagra80

Questions?