



Zowe

Project Overview

Agenda



- Introducing Zowe
- Quick Facts about Zowe
- Why Zowe?
- Zowe Vision Statement
- What's in Zowe?
 - *Zowe REST Services*
 - *Zowe Web Desktop*
 - *Zowe CLI*
 - *Zowe API Mediation Layer*
- Getting Started with Zowe
- Demo

Introducing Zowe



- An extensible framework for connecting applications and tools to mainframe data and applications.
- Aims to make the mainframe an integrated and agile platform within the changing IT architectural landscape.
- First open source project on z/OS. All code is licensed under the Eclipse Public License version 2.0

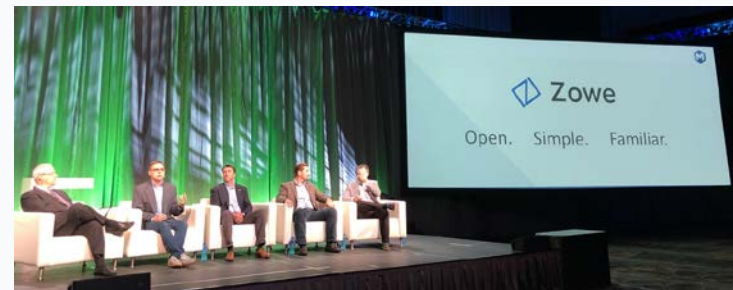


Zowe

Quick Facts about Zowe



- **Zowe 1.0.0 Announce at THINK SF 2019**
 - 100% Open Source (EPL 2.0)
 - Defined extensions points
 - Framework ready for commercial exploitation
- Pronounced as “Zoe” – [zoh-ee] in English
 - Not an acronym – just a simple, fun, and easy name
 - Using the spelling “Zowe” allowed us to trademark
- An open source project under the Open Mainframe Project (OMP), a collaborative project within the Linux Foundation
- IBM, Rocket Software, and CA Technologies are founding members
- **Generally Available on Feb 8th, 2019**



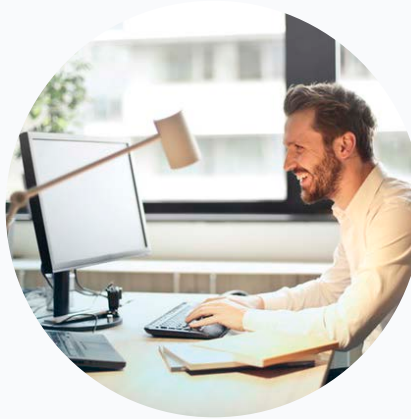
Why Zowe ?



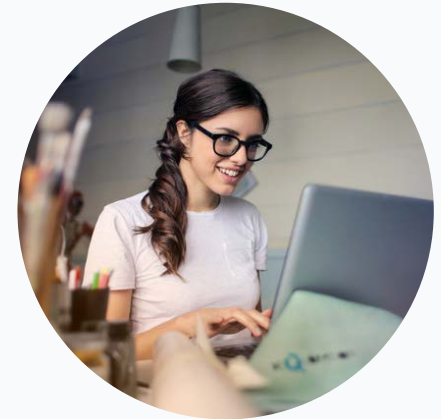
Information Technology is undergoing a revolution of changing architectures



Co-Existence With
Other Cloud Models



Protecting Current
and Future
Investments



Simple and
Familiar



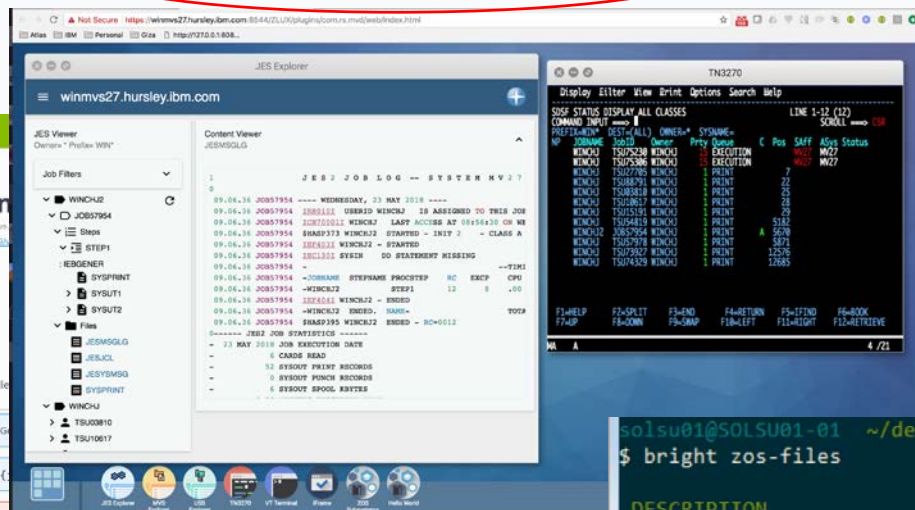
Zowe Vision Statement

- Attract new people
 - ✓ Demystify the Z platform
 - ✓ Enhance integration and consumability
 - ✓ Promote open community of practice
- Reduce learning curve
 - ✓ Improve productivity
 - ✓ Modern, platform-neutral interfaces
 - ✓ Cloud-like experience
- Simplify architecture
 - ✓ Reduce operational overhead
 - ✓ Improve co-existence
 - ✓ Enable rich ecosystem of free and commercial solutions

What's in Zowe?



Browser-based Web Desktop



API Mediation Layer (Gateway, Discovery Service, Catalog)

API Mediation Layer API

The API Mediation Layer for z/OS Internal API services. The API Mediation Layer provides a single point of access to mainframe REST APIs and offers enterprise cloud like features such as high availability, scalability, dynamic API discovery, and documentation.

apicatalog

API Catalog

API Homepage

API Catalog service to display service details and API documentation for discovered API services.

API Catalog

API Version: 1.0.0

[Base URL: caiw.ca.com:8080/api/v1/apicatalog]

REST API for the API Catalog service which is a component of the API Mediation Layer. Use this API to retrieve information regarding catalog dashboard tiles, tile contents and its status, API documentation and status for the registered services.

Api Document

Base URL: winms27.hursley.ibm.com:8044/Zowe/apicatalog.com/mvc/swaggerIndex.html
<https://winms27.hursley.ibm.com:8044/Zowe/apicatalog.com/mvc/swaggerIndex.html>

Api Documentation

[Terms of service](#)

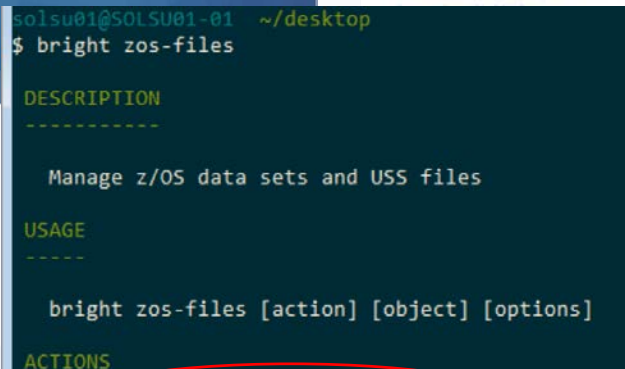
[Apache 2.0](#)

JES job APIs

Jobs Controller

- GET /api/v1/jobs Get a list of jobs
- GET /api/v1/jobs/{jobName} Get a job by name
- DELETE /api/v1/jobs/{jobName}/{jobId} Delete a job and purge its associated files
- GET /api/v1/jobs/{jobName}/{jobId}/files Get a list of output file names for a job
- GET /api/v1/jobs/{jobName}/{jobId}/files/{fileId}/content Get content from a specific job output file
- GET /api/v1/jobs/{jobName}/{jobId}/steps Get job steps for a given job
- POST /api/v1/jobs/dataset Submit a job given a data set

Swagger-defined z/OS REST APIs

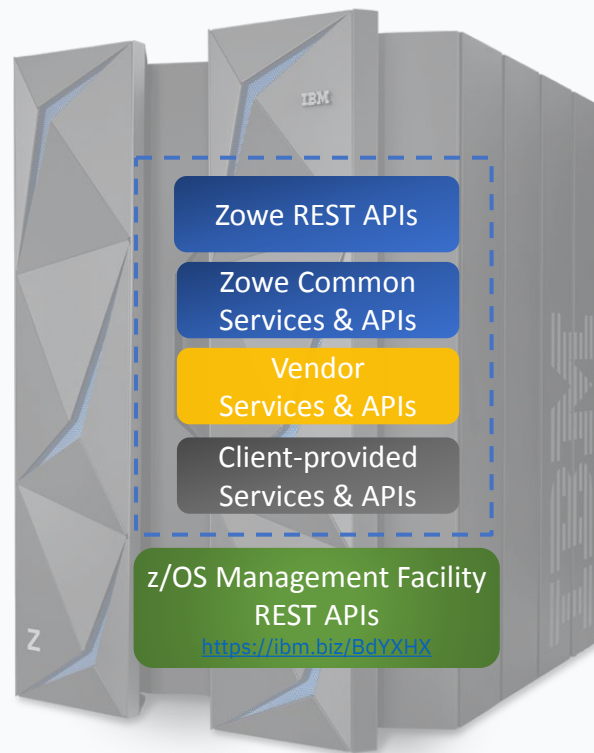


Node.js- based CLI



Zowe REST Services – API economy for deep integration

- Industry standard REST interfaces to z/OS resources that are language and platform neutral, stateless and scalable
- Foundational building blocks for system services
- **Dataset APIs**
 - Create, read, update, delete, and list data sets
- **JES APIs**
 - View the information and files of jobs, and submit and cancel job
- **USS APIs**
 - Create, read, update, and delete USS files
- **System APIs**
 - View information about PARMLIB, SYSPLEX, and USER

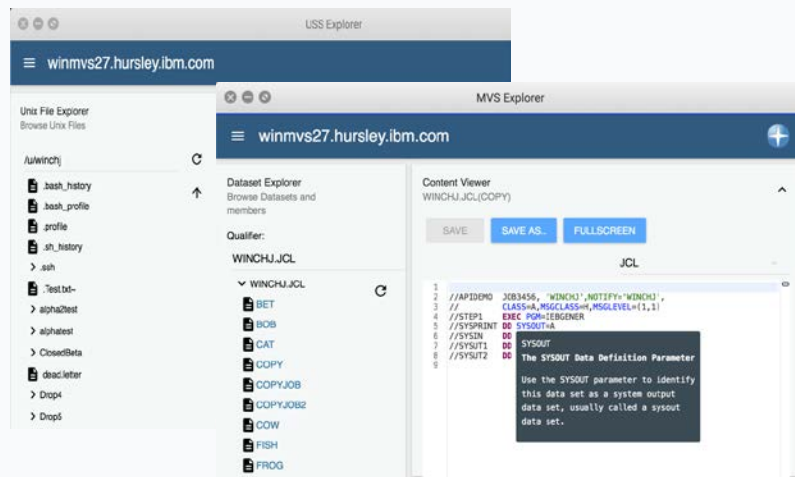
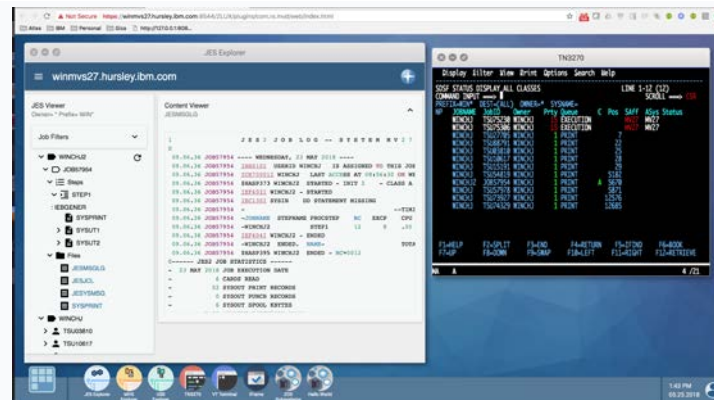




Zowe Web Desktop – An app container in a browser



- Known as **zLUX**, the Zowe Web UI is a virtual desktop system that offers a rich and open platform for a web-based mainframe user experience.
- Mainframe Virtual Desktop**
 - A web-based window manager that provides full screen interactive experience
- Zowe Node Server**
 - Runs zLUX; uses Express.js as web service framework for communication between applications and z/OS services and components, pre-reqs Node.js for z/OS
- ZSS Server**
 - Provides secured REST API services
- Application plug-in**
 - Dataservices, Configuration dataservice, URI broker, app-to-app communication, Error reporting UI, Logging utility
- Explorers**
 - JES, MVS, USS explorers
 - Basic editing support for REXX and JCL



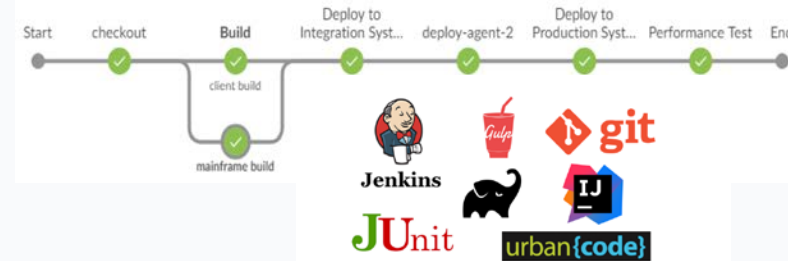


Zowe CLI – Enables cloud-like access to mainframe



- Enables app developers and DevOps engineers to interact with the mainframe easily through a CLI from any terminal on Windows, MacOS, Linux
- Easily integrates with IDEs, shell commands, bash scripts, and build tools; installs using NPM
 - **Interact with mainframe files**
Create, edit, download, and upload mainframe files (data sets) directly
 - **Submit jobs**
Submit JCL from data sets or local storage, monitor status, view and download output automatically
 - **Issue TSO and z/OS console commands**
Issue TSO and console commands to the mainframe directly
 - **Integrate z/OS actions into scripts**
Build local scripts that accomplish both mainframe and local tasks
 - **Produce responses as JSON documents**
Return data in JSON format on request for consumption in other programming languages
 - **CLI Plug-Ins**
Access to CICS and Db2

Build | Test | Deploy



```
GROUPS
-----

plugins          Install and manage plug-ins
profiles         Create and manage configuration profiles
provisioning | pv Perform z/OSMF provisioning tasks on Published Templates
                  in the Service Catalog and Provisioned Instances in the
                  Service Registry.

zos-console | console Issue z/OS console commands and collect responses
zos-files | files      Manage z/OS data sets
zos-jobs | jobs        Manage z/OS jobs
zos-tso | tso          Issue TSO commands and interact with TSO address spaces
zosmf            Interact with z/OSMF

OPTIONS
-----

--version | -v (boolean)

    Display the current version of CA Brightside

GLOBAL OPTIONS
-----

--response-format-json | --rfj (boolean)

    Produce the command response as a JSON document

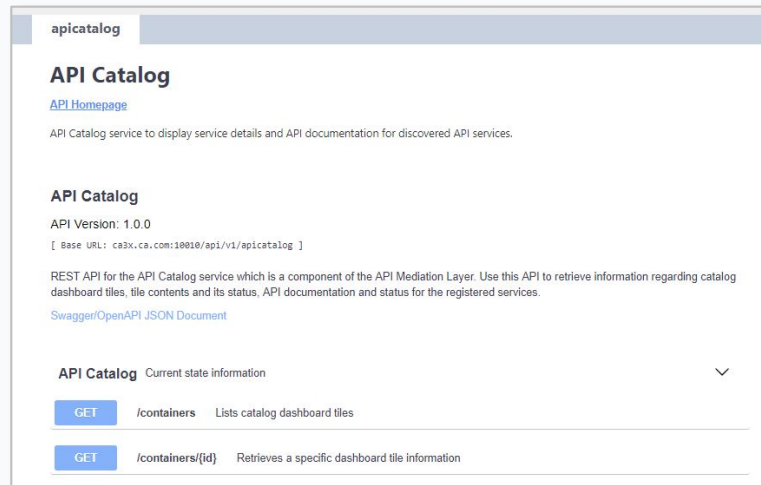
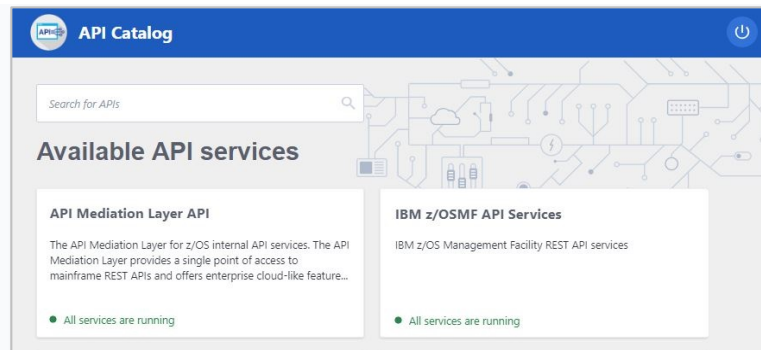
--help | -h (boolean)
```



Zowe API Mediation Layer – Gateway to mainframe APIs

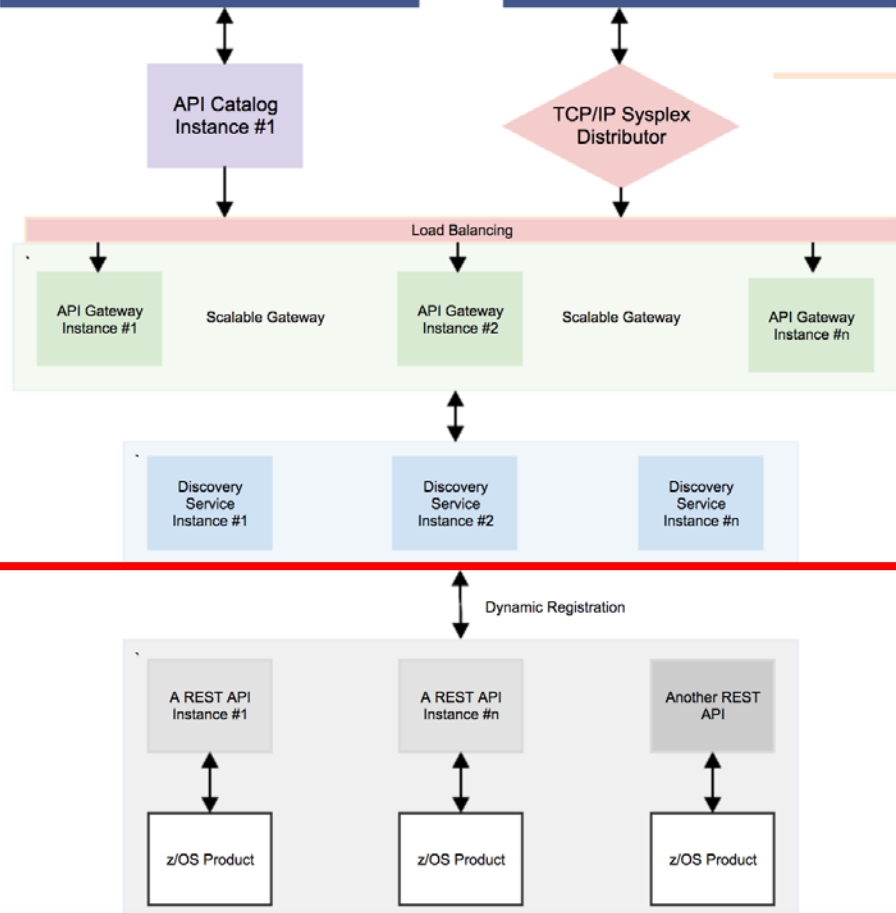


- Enables a single point of access to mainframe APIs with high-availability, scalability, dynamic API discovery, consistent security, “one-time” sign-on experience and unified standard API documentation (OpenAPI / Swagger)
- **API Catalog**
UI Catalog of available APIs with their Swagger doc and service status
- **Gateway**
Single secure point of entry to an ecosystem of API services. Hides complexity. Highly available. Based on Netflix Zuul.
- **Discovery Service**
Discover APIs across many applications. Repository of active API services. Based on Netflix Eureka.



People Find APIs

Apps Call APIs



z/OS Conne

z/OSMF

Jax-RS App

API Layer Components*

- **API Catalog**

UI Catalog of available APIs with their Swagger doc and service status

- **API Gateway**

Single point of entry to an ecosystem of microservices. Hides complexity. Highly available. Based on Netflix Zuul.

- **Discovery Service**

Discover APIs across many applications. Repository of active services. Based on Netflix Eureka.

- **z/OSMF API**

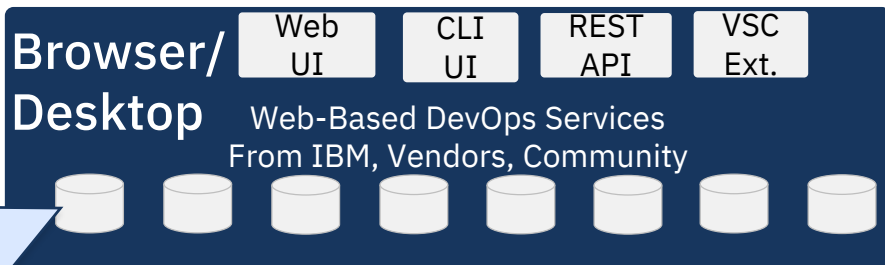
Authenticate Zowe users with mainframe credentials

** Separate microservices, might be running as separate address spaces*

Zowe High Level Architecture

Base Components

- Editor support (REXX/JCL to start)
- CLI
- APIs
- Virtual Desktop – App Container
- VS Code Extension



RESTful Services

Catalog of RESTful API



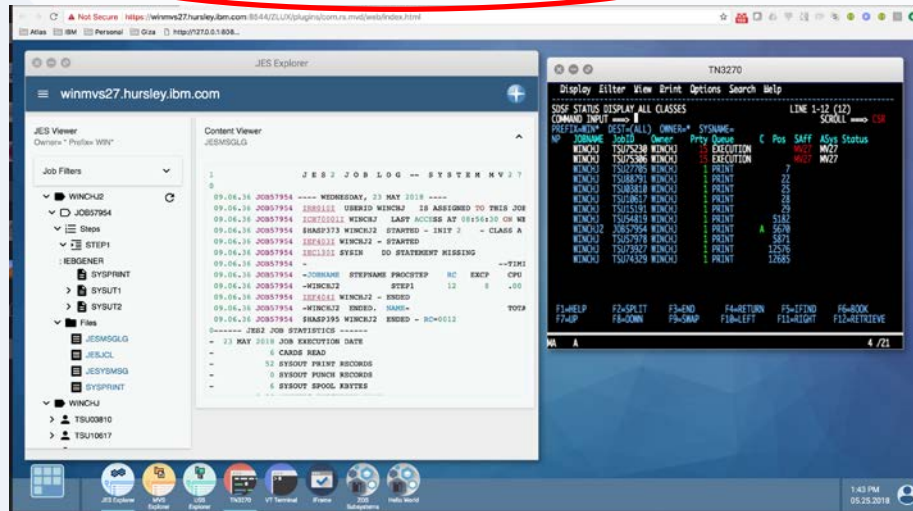
Sample Vendor / Open Source Integration

- ServiceNow
- JIRA
- Jenkins
- Git
- SonarLint

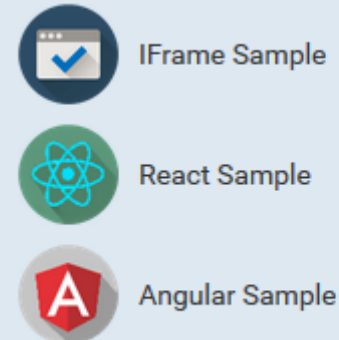
Where is Zowe Extensible?



Browser-based Web Desktop



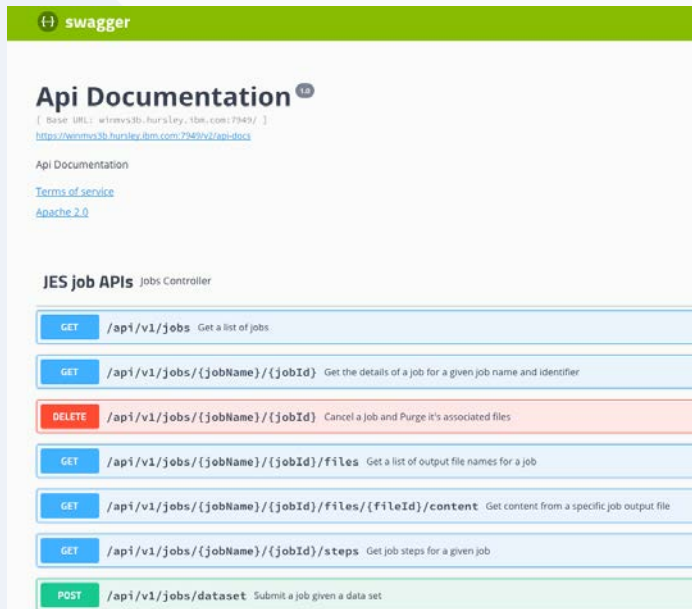
- z/OS Native Web UI for applications
- Launch in context (i.e., right-click 3270 to web app)
- App to app communication
- Exploit graphic widgets planned for inclusion



Where is Zowe Extensible?



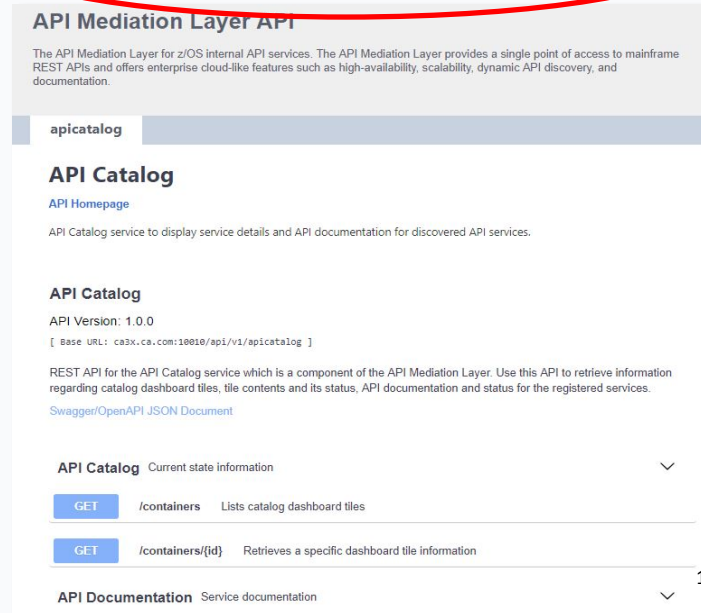
- REST API enable your products
 - REST API for product controls/admin
 - Sharing of information



Swagger-defined z/OS REST APIs

- Opt in to API Mediation
- Participate in Single Sign On, High Availability and Status tracking capabilities

API Mediation Layer (API Catalog, Discovery Service, Gateway)



Where is Zowe Extensible?



Node.js- based CLI

```
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profiles     Create and manage confi
provisioning | pv Perform z/OSMF provisio
              in the Service Catalog
              Service Registry.
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zos-files | files      Manage z/OS data sets
zos-jobs | jobs        Manage z/OS jobs
zos-tso | tso          Issue TSO commands and
zosmf          Interact with z/OSMF

OPTIONS
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--version | -v (boolean)
              Display the current version of CA Brightsi

GLOBAL OPTIONS
-----
--response-format-json | --rfj (boolean)
              Produce the command response as a JSON document
--help | -h (boolean)
```

zos-files DS
zos-files US
zos-jobs
TSO
Console

“plug-ins”

Out of box
commands

z/OSMF

REST APIs

TSO, Console
JES, MVS. USS

Custom
Extensions

Your
application,
product,
tool, ...

Commitment to Core Infrastructure Initiative (CII) & Badge Program



- “CII is a collaborative, pre-emptive program and approach for strengthening cyber security that is widely supported by industry leaders”
- “CII Badge Program is a self-certify, declaration of industry best practices and conformances in driving secure software development and governance”

Notable CII “backers”

Source: <https://www.coreinfrastructure.org>



Notable Badge “earners”

Source: <https://bestpractices.coreinfrastructure.org>



The Zowe open community

Zowe Leadership
Committee (ZLC)

Zowe Continuous
Integration/Continuous Development
(CI/CD)

Zowe On-
boarding

Zowe Core
Technology

Zowe API
Mediation
and Security

Mission: Develop the material and supporting activities for onboarding developers and customers

Mission: expand upon the base technologies being contributed to the project

Mission: expand upon integration and interface extension points and overall security

Open
Mainframe
Project Board

Open
Mainframe
Technical
Steering
Committee

Open
Mainframe
Marketing
Committee

Check out

<https://zowe.org/about-us/>

A foundational principle of this new project is meritocracy. The more that somebody contributes, the more responsibility they will earn. A pattern of quality contribution to a project may lead to an invitation to join the project as a committer.

Leadership roles in the Project are also merit-based and earned by peer acclaim. Merit must be demonstrated in publicly-accessible forums. Committers and project leads are added to a project via an election.

Getting Started with ...



Open. Simple. Familiar.

- Project Community site
 - <https://zowe.org>
- Access to Download
 - <https://zowe.org/download>
- Review Zowe squads, missions, and activities
 - <https://zowe.org/contribute/>
- Code Guidelines
 - <https://zowe.org/code-guidelines/>
- Project Governance
 - <https://zowe.org/about-us/>
- GitHub
 - <https://github.com/zowe>
- Project Documentation (includes user and install guides)
 - <https://zowe.github.io/docs-site/>
- Developer Tutorials
 - <https://developer.ibm.com/tutorials/zowe-step-by-step-tutorial/>



Community Slack Channels



Community Mailing Lists



Community Calendar



Community Meeting Minutes

Get involved in the Zowe community



Join Open Source Community @

<https://www.openmainframeproject.org/projects/zowe>

Participate in and contribute to the Zowe developer community at zowe.org

Learn how your organization can become a steward and supporter of this project with Open Mainframe Project membership at openmainframeproject.org/about/join





Zowe “Demo”

Intro Demo:

<https://www.youtube.com/watch?v=NX20ZMRoTtk&feature=share>

Visual Studio Code (using command line):

https://www.youtube.com/watch?v=la1_Ss27fn8