

# Mainframe as a Service API Mediation Layer

Denis Tronin, David King – June 1<sup>st</sup>, 2018 – 5.07

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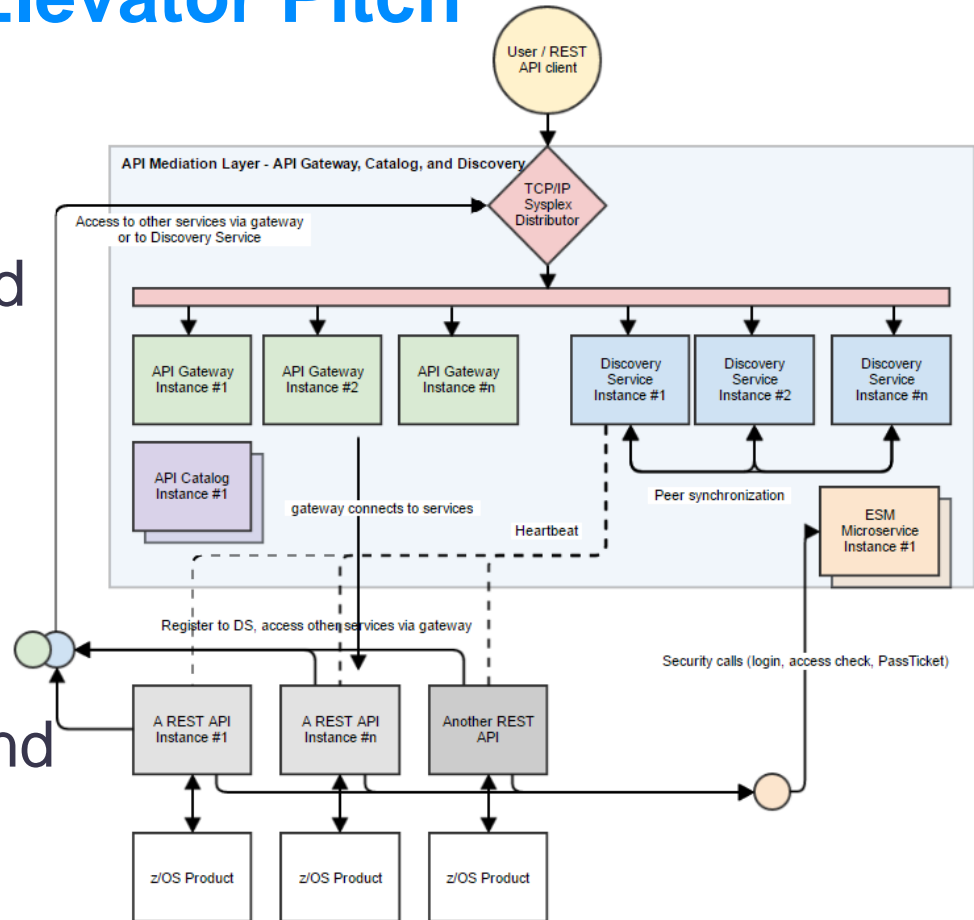
# API Economy

- APIs — application programming interfaces — are a somewhat old technology that has become today's hottest method for building mash-up applications and getting critical legacy data out.
- The fact that some people call this an “API economy” speaks to how effectively APIs expose the hidden value in core information assets, from data warehouses to mainframes.
- APIs empower an ecosystem of internal and external developers to create new apps and revenue streams.
- As of today, the Programmable Web lists 16,590 APIs in its database.



# API Mediation Layer Elevator Pitch

Enables a **single point of access** to multiple CA mainframe service APIs and offers **enterprise cloud-like features** such as high-availability, scalability, dynamic API discovery, consistent security, “one-time” sign-on experience and documentation



# Use Case: App Developer Uses Mainframe APIs

## Without API Layer

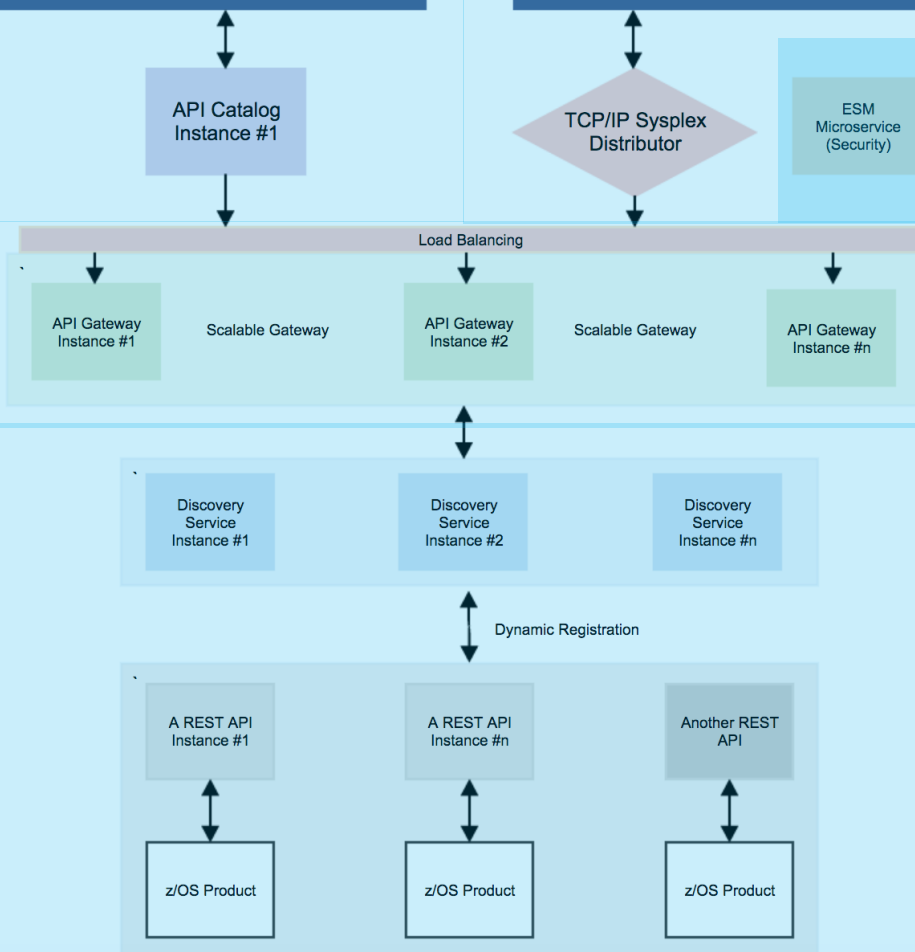
1. Searches for the first mainframe API documentation to learn the details
2. Searches for the second mainframe API documentation to learn details
3. Builds a UI/CLI application that uses APIs he came across
4. Struggles with keeping track of API configuration for multiple services as they are deployed on different locations that change sometimes
5. Struggles with setting up security as it is not consistent across APIs

## With API Layer

1. Logs into API Catalog to learn details of all available REST APIs with Swagger doc and is able to try them out right away
2. Builds application that uses APIs using the unified approach
3. Configures his application to use the API Gateway standard routing to access all APIs he needs

## People Find APIs

## Apps Call APIs



## 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.

### ■ ESM Microservice

Authenticate and authorize API users with mainframe credentials



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

# API Routing

- **Gateway Service**

- Provides access to all API services through a single IP address:

<http://api-service1:port1/endpointX> → <http://gateway:port/api/v1/serviceId1/endpointX>

<http://api-service2:port2/endpointY> → <http://gateway:port/api/v1/serviceId2/endpointY>

- Hides API physical location → no change of URL if service is moved to the different location
- Mediates the service URL → consistency across APIs
- Enables scalability → multiple API services with the same service ID will have the same gateway URL

# API **Dynamic Discovery**

- **Discovery Service**
  - Dynamically locates running micro-services
  - Monitors micro-service availability
  - Allows querying of micro-service details
  - Highly available
- **Discovery Enablement**
  - Code enabler for Spring Boot, Java, and NodeJS micro-services
  - Simple and consistent configuration



# API Documentation – API Catalog Demo

The screenshot displays the API Catalog Demo interface. At the top, a header bar shows 'API Catalog' with a green checkmark icon and a right-pointing arrow. Below this, the main content area is divided into two columns. The left column, titled 'API Catalog', contains a description: 'Display services which are discoverable in the MFaaS ecosystem and have API documentation'. Below the description is a green checkmark icon followed by the text 'All Services Running (1)'. The right column, titled 'Sample MFaaS applications', contains a description: 'Applications which demonstrate how to make a service discoverable in the MFaaS ecosystem'. Below the description is a green checkmark icon followed by the text 'All Services Running (2)'. To the right of these columns, a sidebar contains a 'HOME PAGE' link with a house icon. Below the sidebar, a section titled 'Api Catalog Controller (api-catalog-controller)' lists two API endpoints: 'GET /api/v1/caapicatalog/status/updates' with the description 'getUpdatedContainersStateAsEvents', and 'GET /api/v1/caapicatalog/containers' with the description 'getAllAPIContainers'. At the bottom, a section titled 'Catalog Api Doc Controller (ApiDoc)' is partially visible.

API Catalog

API Catalog

Display services which are discoverable in the MFaaS ecosystem and have API documentation

All Services Running (1)

Sample MFaaS applications

Applications which demonstrate how to make a service discoverable in the MFaaS ecosystem

All Services Running (2)

HOME PAGE

Api Catalog Controller (api-catalog-controller)

GET /api/v1/caapicatalog/status/updates  
getUpdatedContainersStateAsEvents

GET /api/v1/caapicatalog/containers  
getAllAPIContainers

Catalog Api Doc Controller (ApiDoc)



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