Evolving your APIs

A step-by-step approach
Me, myself and I

- Developer
- Developer advocate

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Your first API

- Probably focused on REST(ful) semantics
We need to deploy v2!
Step 1 – The initial situation

No Gateway

http://apisix.org/hello

http://apisix.org/hello/

http://apisix.org/hello/John

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You (probably) lied

Reverse Proxy

http://apisix.org/hello
http://acme.org/hello
http://acme.org/bye

Upstream 1
Upstream 2
Upstream 3
An API Gateway can help!
Let’s go back a bit

I started to use the Internet a bit before 2000

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My first website

- HTML:
  - With images
  - With MIDI audio
  - No CSS
  - No JavaScript

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Web server

- Serve static content
Personal Home Page

- Apache Web Server
- People wanted more dynamic content
  1. CGI scripts
  2. PHP

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The rise of WWW

- Companies started to use it as an official communication channel
  - Redundancy
  - Load balancing

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WWW becomes ubiquitous

- More unrelated nodes
  - Routing

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The evolution of the Web Server

1. Serve static content
2. Serve dynamic content
3. Load balancer
4. Routing

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Reverse Proxy: Single Point of Entry

- Any cross-concern feature
  - Authentication
  - Authorization
  - Caching
  - IP Blocking
Interconnecting heterogeneous Information Systems

- File sharing with FTP
- Synchronous communication inside a tech stack
- Synchronous communication via HTTP

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API Gateway

- Specialized Reverse Proxy
- Features dedicated to APIs
  - Billing
  - Complex rate-limiting
  - Etc.
API Gateways

- Apache APISIX
- Kong Gateway
- Tyk
- Gloo
- Ambassador
- Gravitee

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Apache APISIX

- Donated to the Apache Foundation in 2019
- Became a Top-Level Project in 2020
Apache APIIX, an API Gateway the Apache way
Step 2 – Introduce an API Gateway
Step 3 – Introduce a versioned resource

API Gateway

http://apisix.org/hello/*

http://apisix.org/hello/v1/*

Upstream

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Step 4 – Move the unversioned resource permanently

API Gateway

http://apisix.org/hello/* → 301
http://apisix.org/hello/v1/*

Upstream

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Step 5 – Make users register

- Hard to change because we don’t know our users
- But developers don’t like to register
- Provide them an incentive
  - 429

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Step 6 – Test in production but be smart about it

http://apisix.org/hello/v1/*

API Gateway

Upstream v1

Upstream v2

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Step 7 – Use proven deployment methods

- Canary release for the win
Step 8 – Deprecate your endpoints

- IETF Draft
- Deprecation header
  - Date or Boolean
- Link header to point to the new resource
- Sunset header
Step 9 and afterwards – Time for v3!

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Thanks for your attention!

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