Building a Successful Partnership between API Management and Microservices Management

think 2019

API Connect & DataPower

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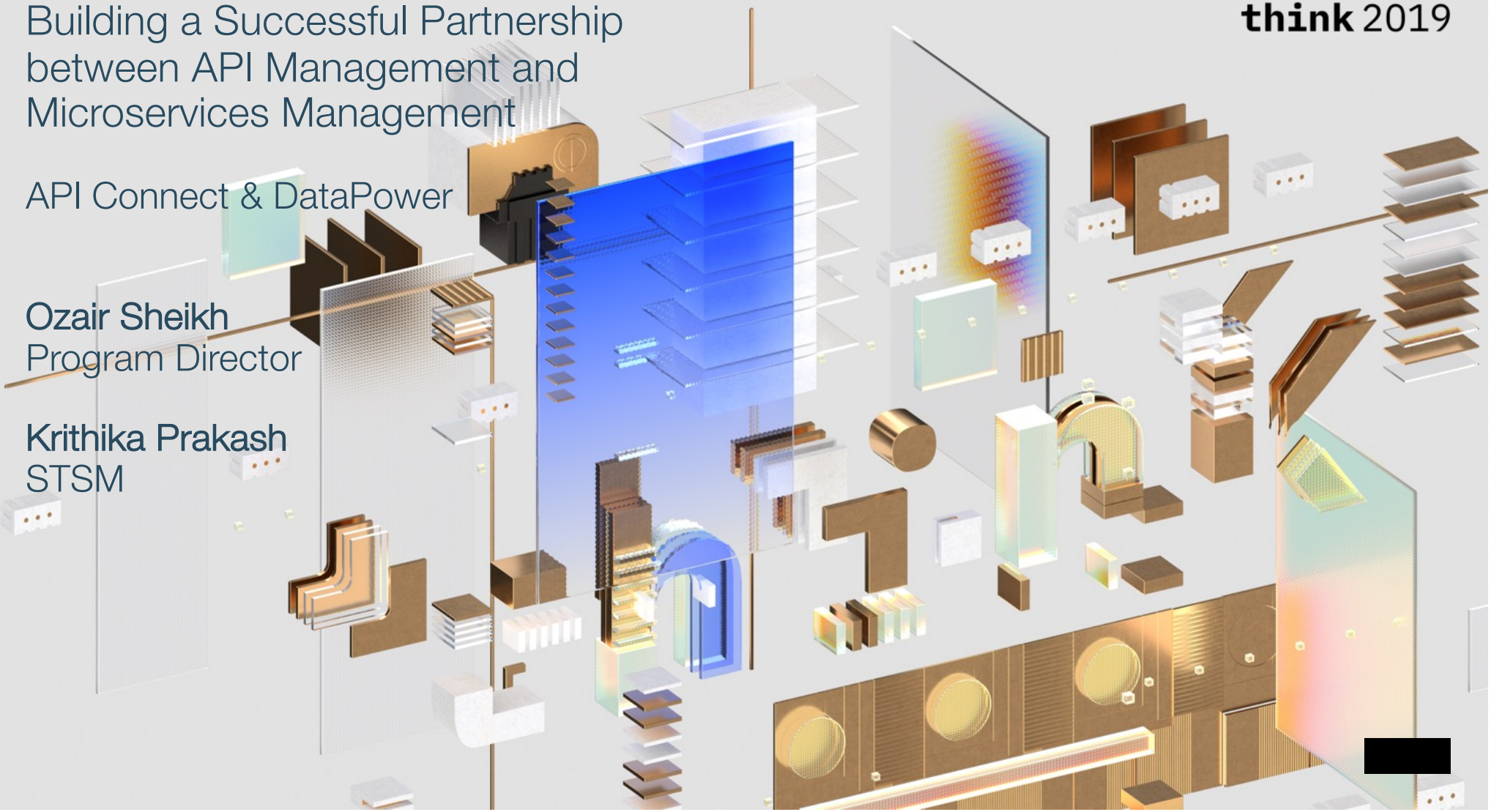

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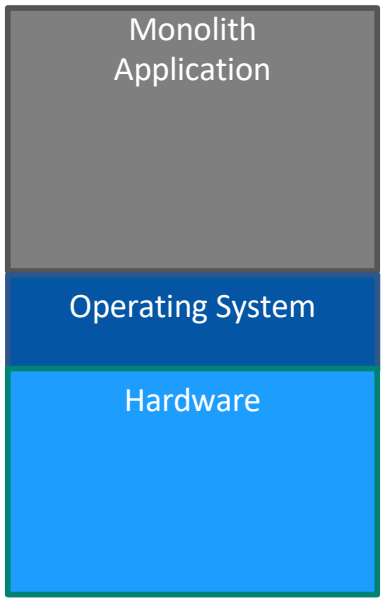
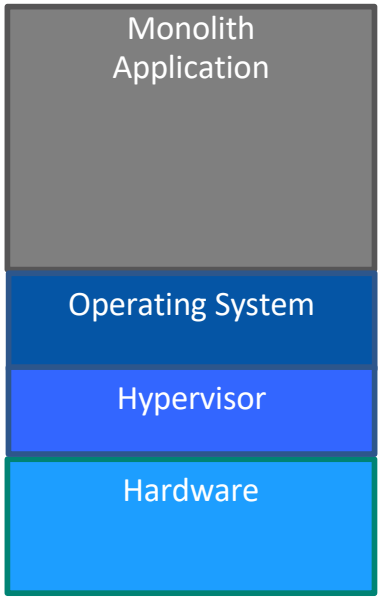
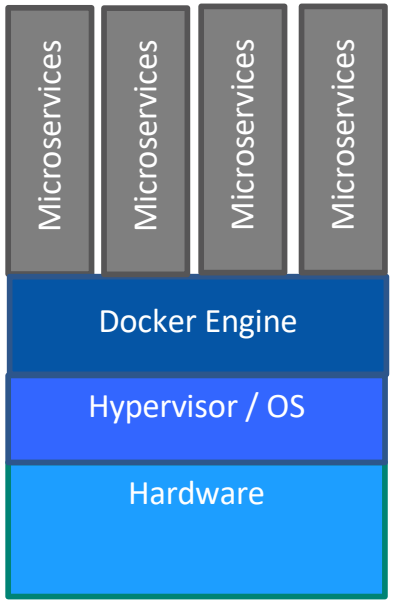
Evolution of Virtualization



Bare Metal



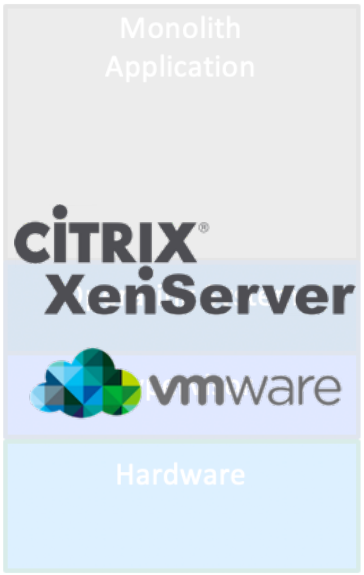
Virtual Machines



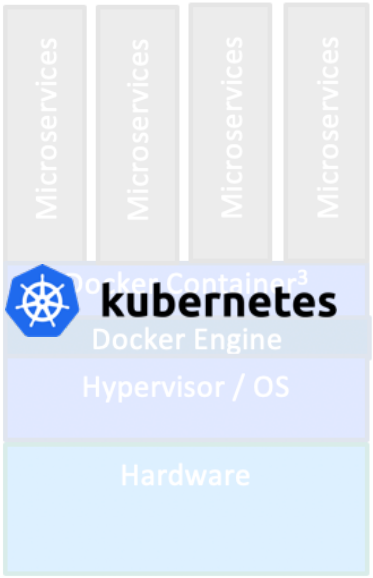
Containers

How do we manage at scale

Bare Metal



Virtual Machines



Containers

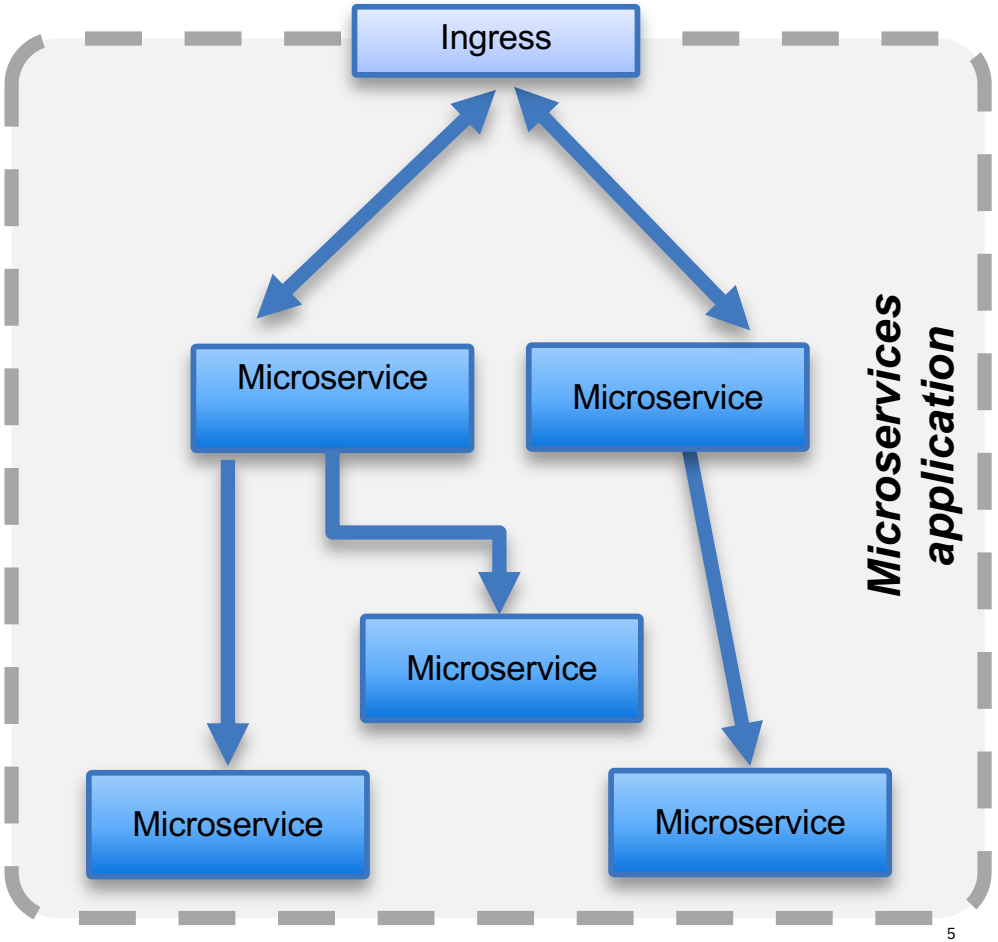
Managing the interaction between microservices

Kubernetes manages the lifecycle of individual containers

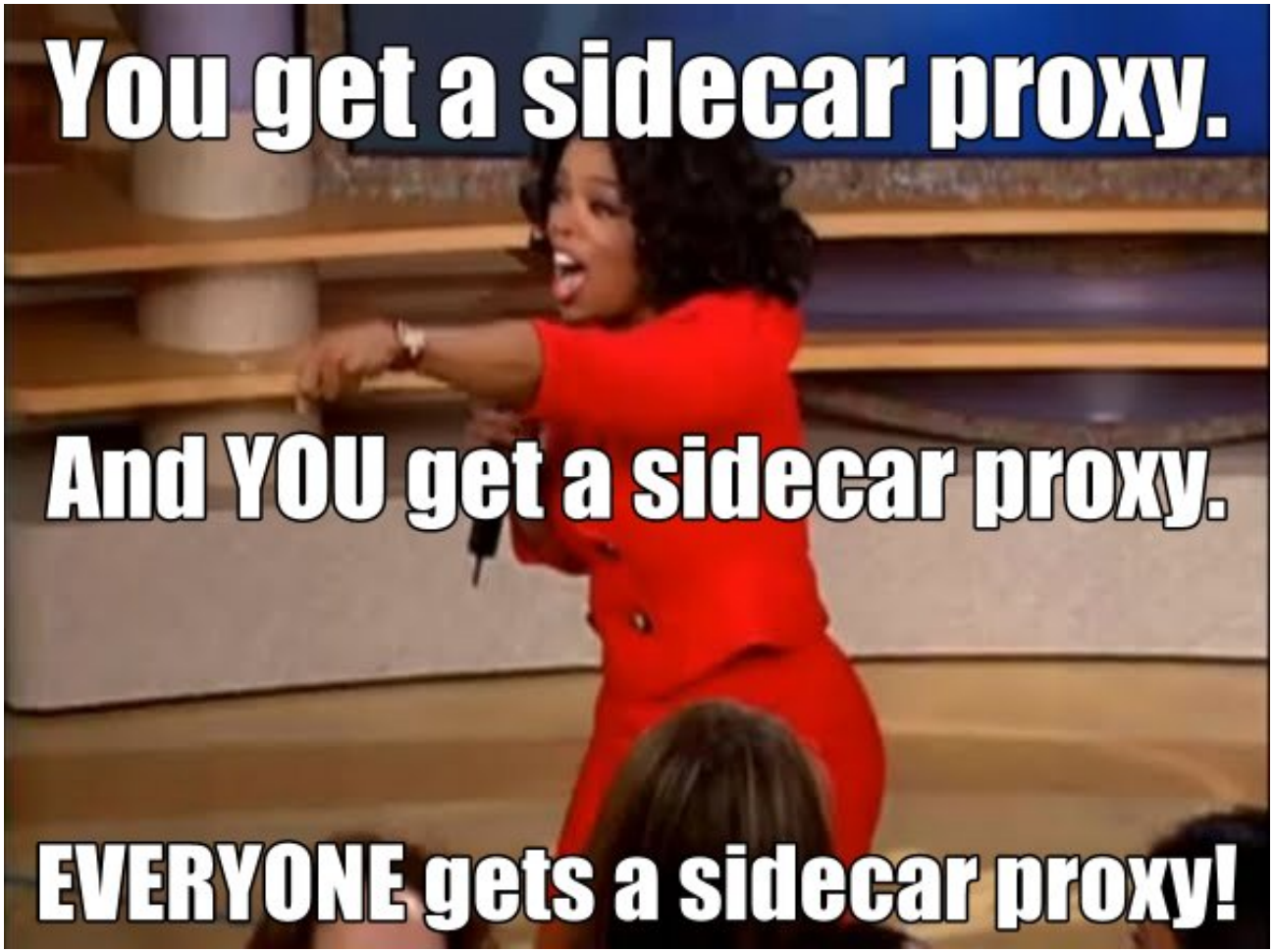
Istio runs on Kubernetes allowing you to manage the interaction between microservices (deployed in containers)

Kubernetes provides routing of microservices but is not concerned with the security or routing requirements between individual microservices

Istio provides a policy-based approach to provide security, app resiliency and dynamic routing between microservices



How does Istio do all this?



Managing the interaction between microservices

Standard Kubernetes Deployment

```
NAME                                READY     STATUS    RESTARTS   AGE
fancave-client-66764c4796-4cr7l     1/1       Running   0          3m
fancave-db-c9d67ccb7-bdxjv          1/1       Running   0          3m
fancave-news-7b577ff4b7-nj2z7       1/1       Running   0          3m
fancave-teams-ab577ytfs-n3rz7       1/1       Running   0          3m
fancave-players-bcfd9bd68-v6lgk     1/1       Running   2          3m
```

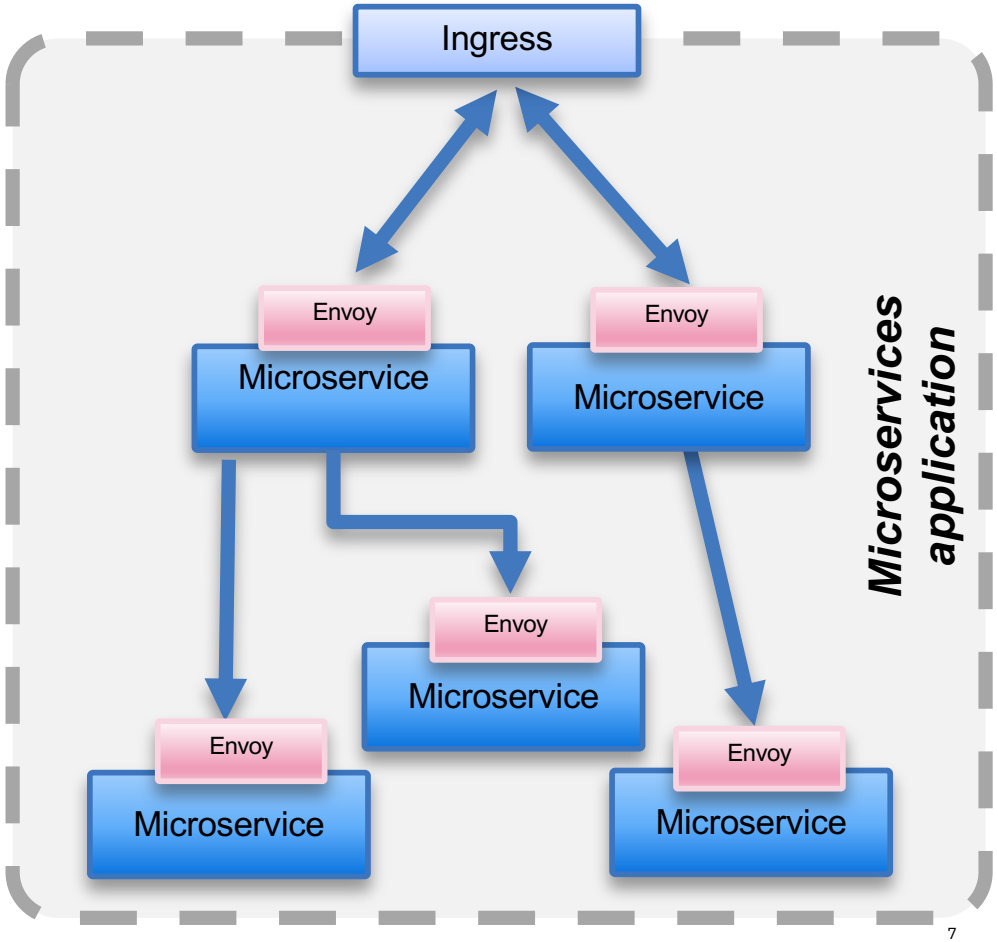
Deployment with Istio

```
NAME                                READY     STATUS    RESTARTS   AGE
fancave-client-66764c4796-4cr7l     2/2       Running   0          3m
fancave-db-c9d67ccb7-bdxjv          2/2       Running   0          3m
fancave-news-7b577ff4b7-nj2z7       2/2       Running   0          3m
fancave-teams-ab577ytfs-n3rz7       2/2       Running   0          3m
fancave-players-bcfd9bd68-v6lgk     2/2       Running   2          3m
```

...

```
NAME                                READY
istio-system    istio-citadel-6b6fdfdd6f-qnk2p
istio-system    istio-policy-67f4d49564-5tx5
istio-system    istio-pilot-6f8d49d4c4-qdbzs
```

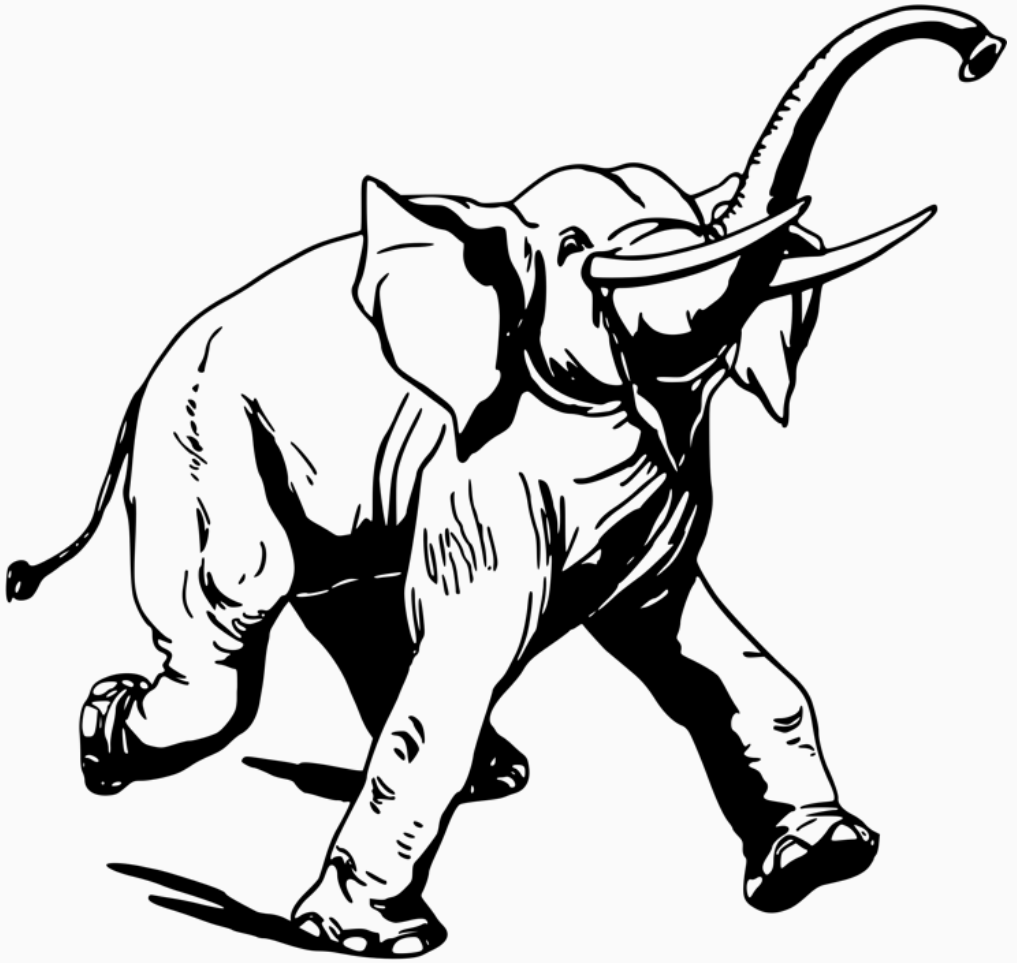
Policy Management



What Is Istio?

An open services platform to manage service interactions across microservices

Lets answer the obvious questions …



Can Istio replace API Management solutions?

Istio is NOT a complete API Management solution

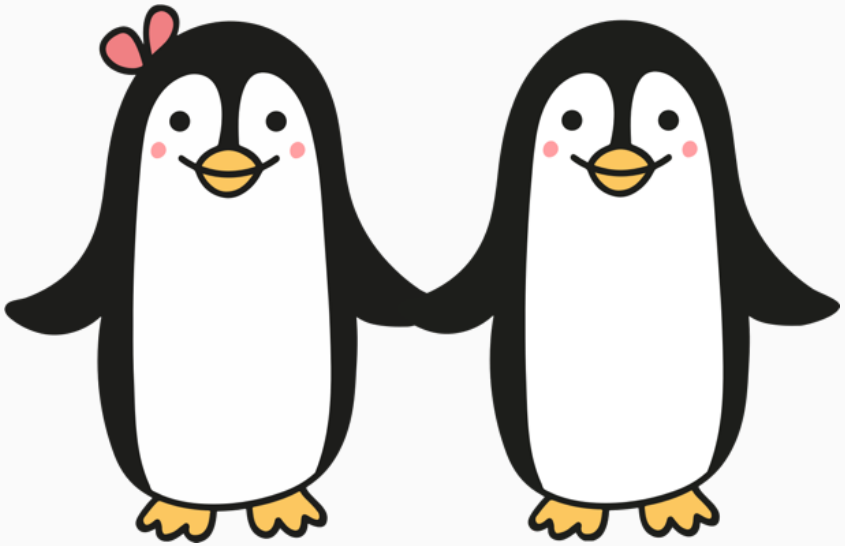
Istio does not provide API lifecycle, socialization or comprehensive edge API security

Can I replace DataPower with Istio/Envoy?

No, they have very different value propositions

Can I use DataPower & Envoy together?

Yes, they are complementary and great things happen when they work together



API Management emphasizes the API Consumer

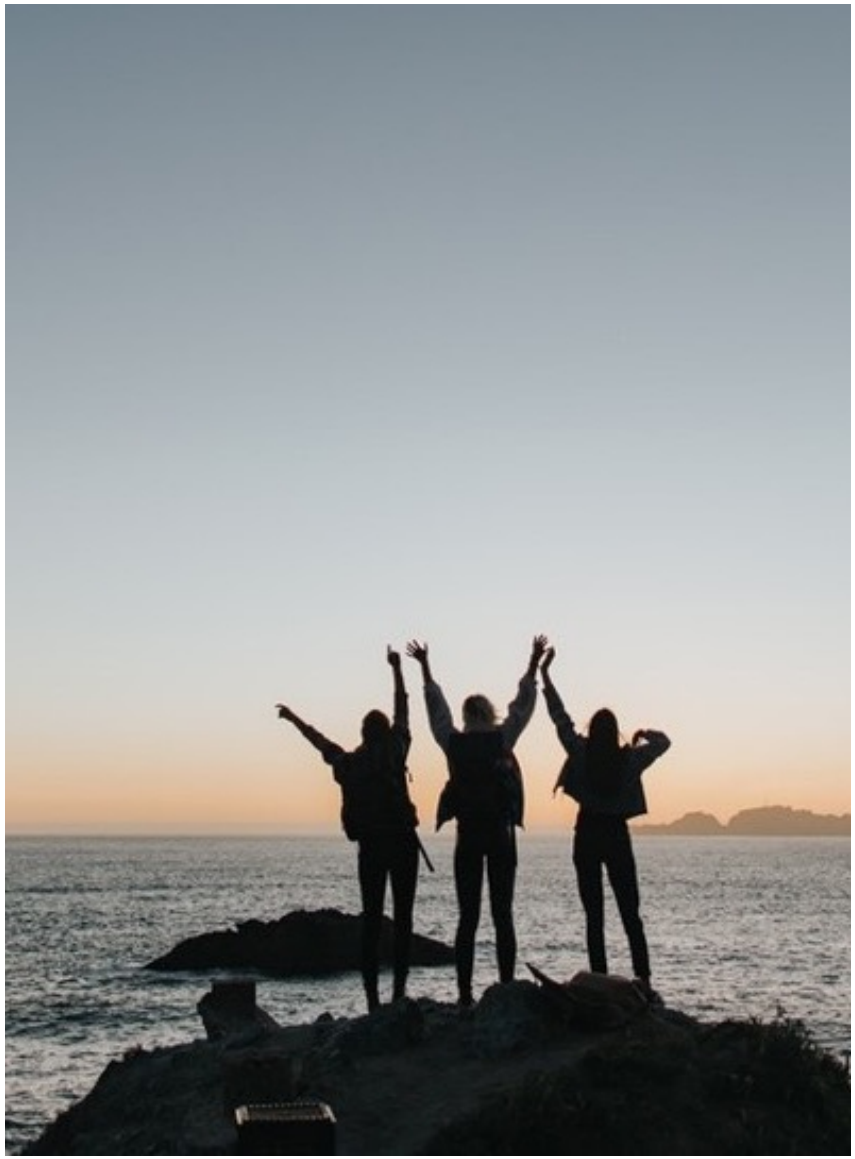
Goals of API management

- How APIs can be changed and consumed over time
- How API subscriptions are controlled

Goals of Microservices Management

- How Microservices interact and change with with each other over time

API management becomes critical when the organizational distance increases between the API provider and API Consumer



API Economy requires External API Strategy

API changes & versioning requires a controlled communication process especially with you have large number of public API consumers

APIs must be managed as products since third-party applications are built that put trust in their availability

API Providers manage changes as part of the API lifecycle

- Staging, Published, Replacement (non-breaking), Deprecation (if breaking), and finally Retirement.

Microservices and API Rate Limiting serve different purposes

Rate Limiting of Microservices is to prevent the application from hanging and failing fast to recover quickly

Rate Limiting of APIs is a business requirement to manage the number of API calls, potentially for monetization

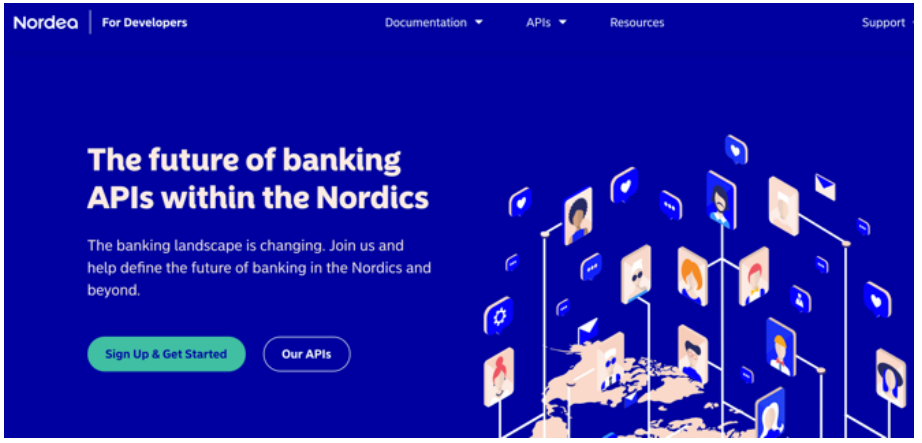
Circuit Breakers in Microservices management provide an additional level of protection to timeout long running microservices and act more resiliently

API Management provide developer portals for Service discovery

API Management platforms provide a Developer portal so developers can self-discover APIs and invoke them without contacting the API provider

Microservice Management does not have a socialization strategy.

Access to the service mesh can be given to services but the discovery and relationship is manually managed



Key Takeways

API Management is GREAT at

- **Managing API Consumers** and communicating lifecycle changes about the API
- **Securely expose data assets** as APIs to third-party applications
- **Self-service discovery and management** of APIs using Developer Portal

Microservice Management (ISTIO) is GREAT at:

- **Mesh routing and discovery** between Microservices
- **Mesh security** between microservices without impacting performance
- **Preventing microservices from catastrophic** application failures - failing fast to recover quickly

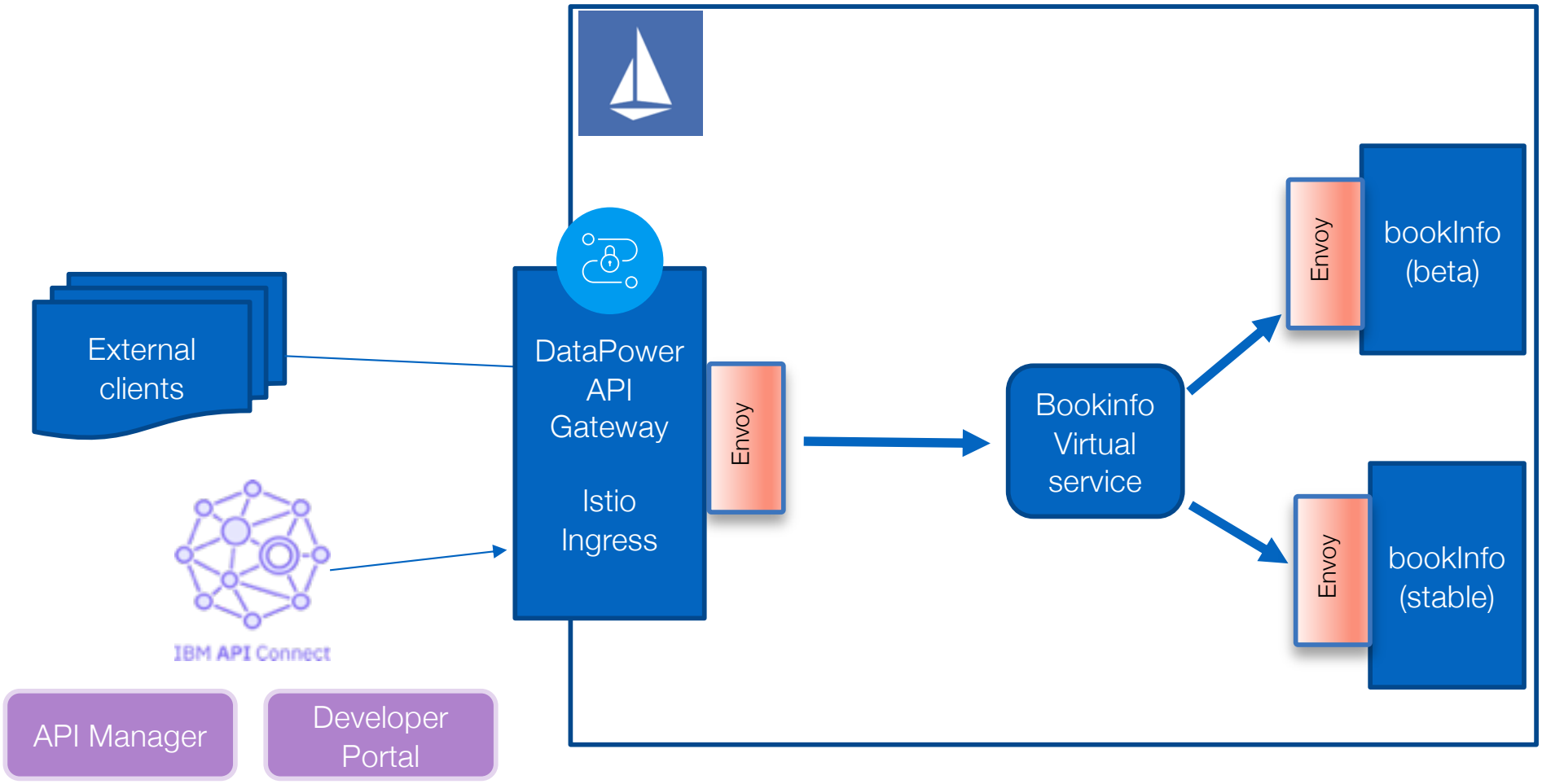
Resources

API and Microservice Management Technical Whitepaper
https://developer.ibm.com/apiconnect/2018/07/25/api-connect-istio-side-side-perspective-get-white-paper/

Istio Service Mesh and APIConnect/DataPower Gateway integration
https://developer.ibm.com/apiconnect/2018/11/13/part-1-istio-and-apic-datapower-integration/

Myth or Fact: Demystifying the Role of an API Gateway within microservices architectures
https://medium.com/@ozairs/myth-or-fact-demystifying-the-role-of-an-api-gateway-within-microservices-architectures-cfa3e8945a12

DataPower deployed at the edge of an Istio mesh



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