Enterprise Service Mesh (ESM)
Istio

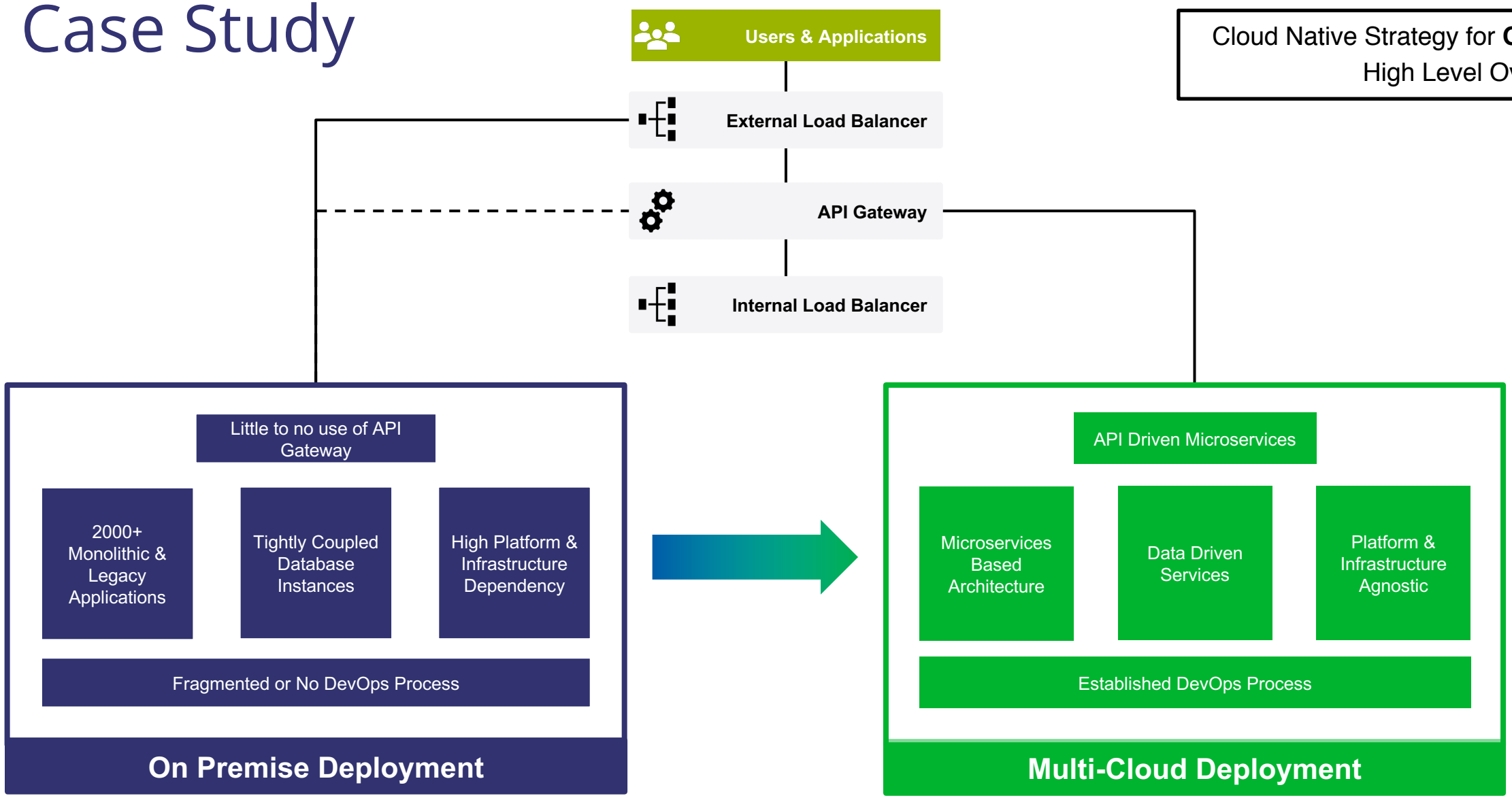
ESB is a thing of the past, ESM is the future!

Agenda

- Case Study
- Problem Statement
- FooBar Service Upgrade Example
- Istio
- FooBar Service Upgrade Example – With Istio
- Demo
- Discussion

Case Study

Cloud Native Strategy for **Org Net**
High Level Overview



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Case Study

This case study investigates the Cloud Native strategy being undertaken by (the fictitious) Org Net.

They have over 2000 monolithic and legacy applications, which will be refactored to follow microservices based architecture with an API first mindset.

Along with it, a strict DevOps process will be put in place, which all teams must adhere to.

The core idea here is building modular components using any language and deploying anywhere using the automation tools available.

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Problem Statement

Going Cloud Native is a good Strategy for Org Net, as it offers many benefits over their existing stack.

However, with the distributed nature of the application landscape, service discovery & the general application composition becomes extremely complex.

A lot of the service orchestration falls on the Load Balancers and the API Gateway making them a bottleneck and single point of failure.

This problem amplifies as the service distribution spans across multi-cloud. Quickly turning into an Enterprise Service **Mess...**

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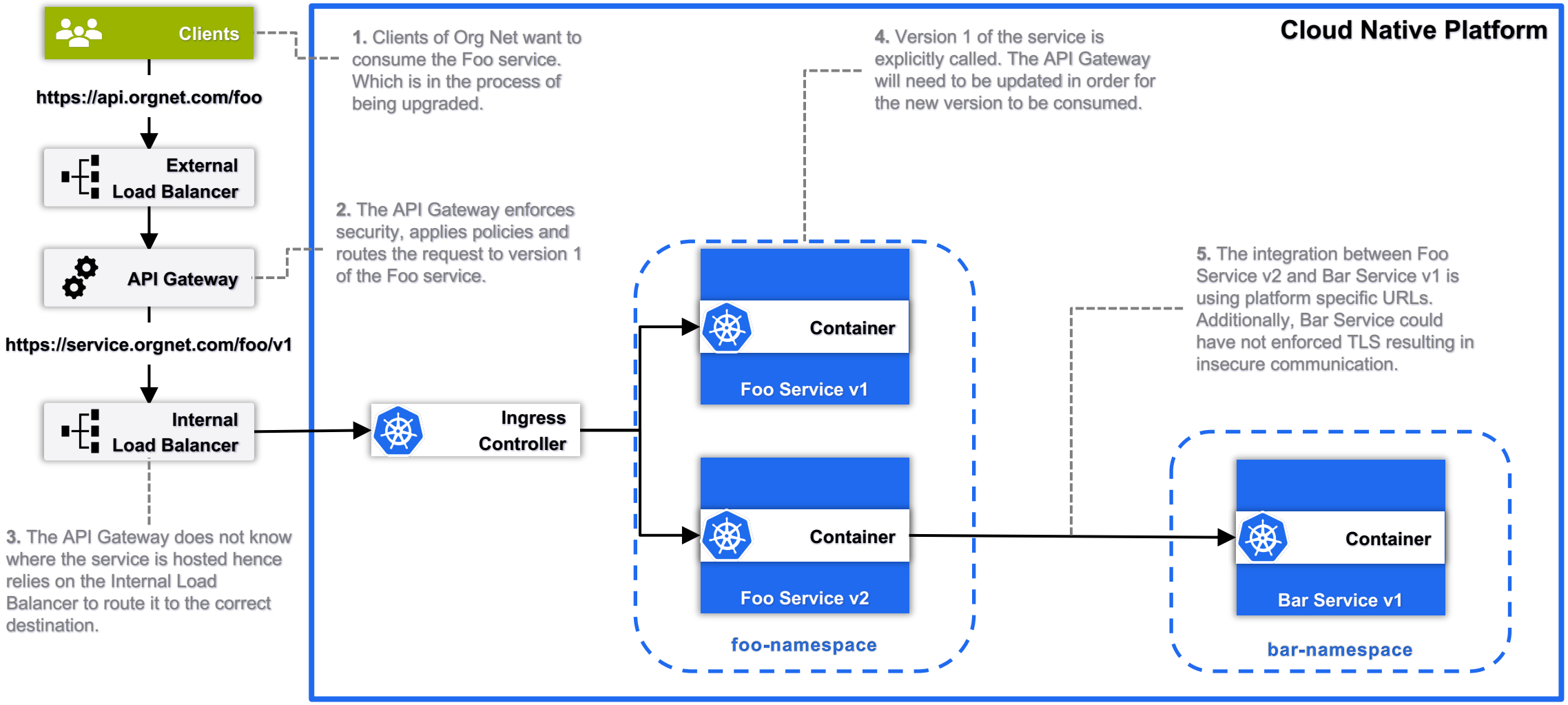
MICROSERVICES
LIGHTYEAR
MICROSERVICES EVERYWHERE

FooBar Service Upgrade Example



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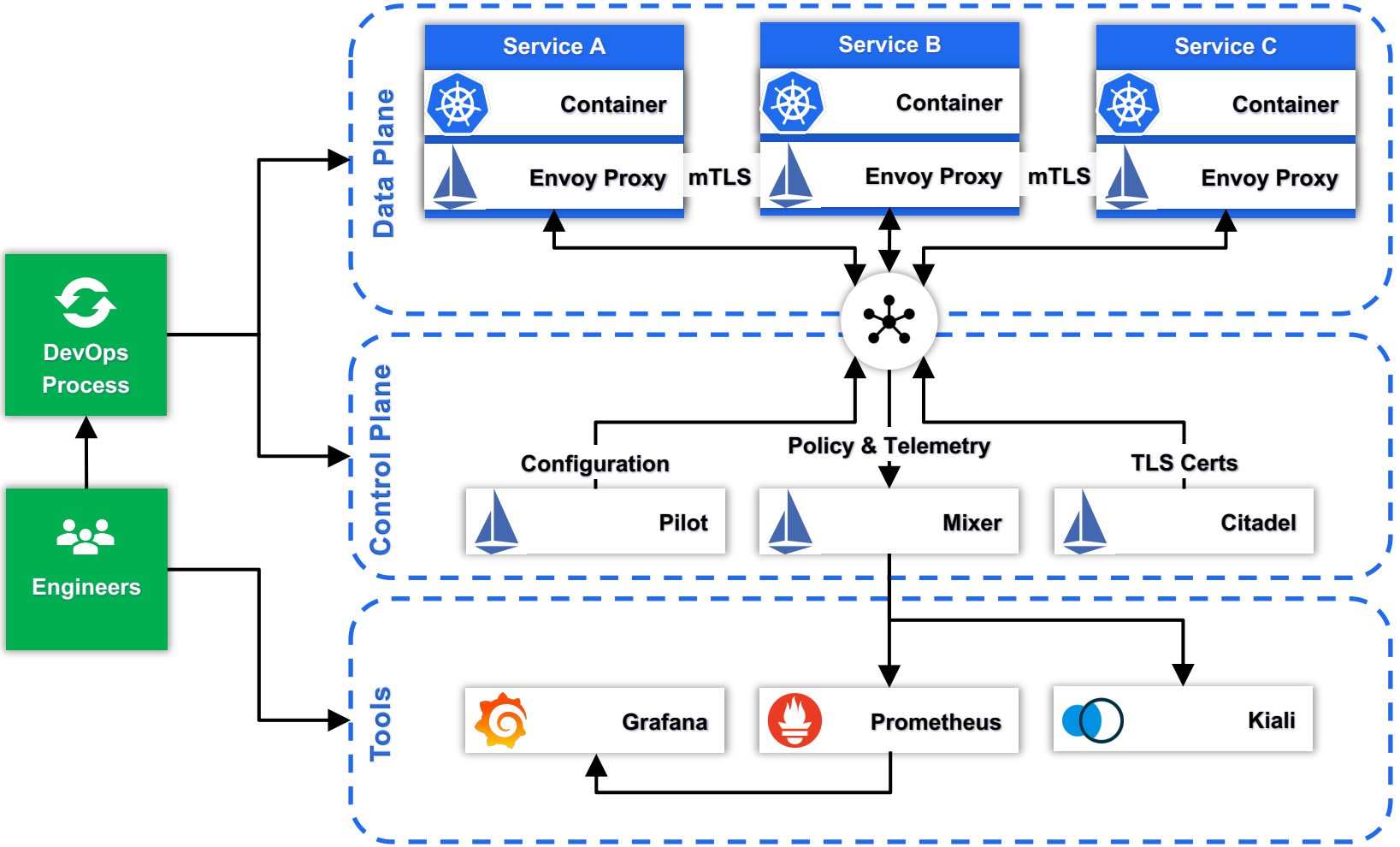
Istio Architecture



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Istio Key Features

The Istio components work together to provide the following key features: -

Feature	Details
Traffic Management	Request Routing Discovery & Load Balancing Handling Failures Fault Injection
Security	Encryption Identity Authentication & Authorization
Observability	Logging Metrics Tracing

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Istio Resources

Istio Resources provide a DevOps friendly way to manage the Enterprise Service Mesh.

Resource	Details
Gateway	Configures a Load Balancer for HTTP/TCP traffic, operating on the edge of the mesh, enabling ingress traffic for one or more endpoints.
Virtual Service	Defines rules, which control how requests are routed within the mesh, including: request distribution, timeouts & retries, conditions and fault injection.
Destination Rule	Connection policies to apply once a Virtual Service routing has occurred, including: circuit breakers, load balancing type and TLS settings.
Service Entry	Configure endpoints, which exist outside of the mesh.
Policy	Applies authentication policies to the requests received by a Service. A policy can be mesh wide (Mesh Policy) or specific to Namespace and/or one or more Services.

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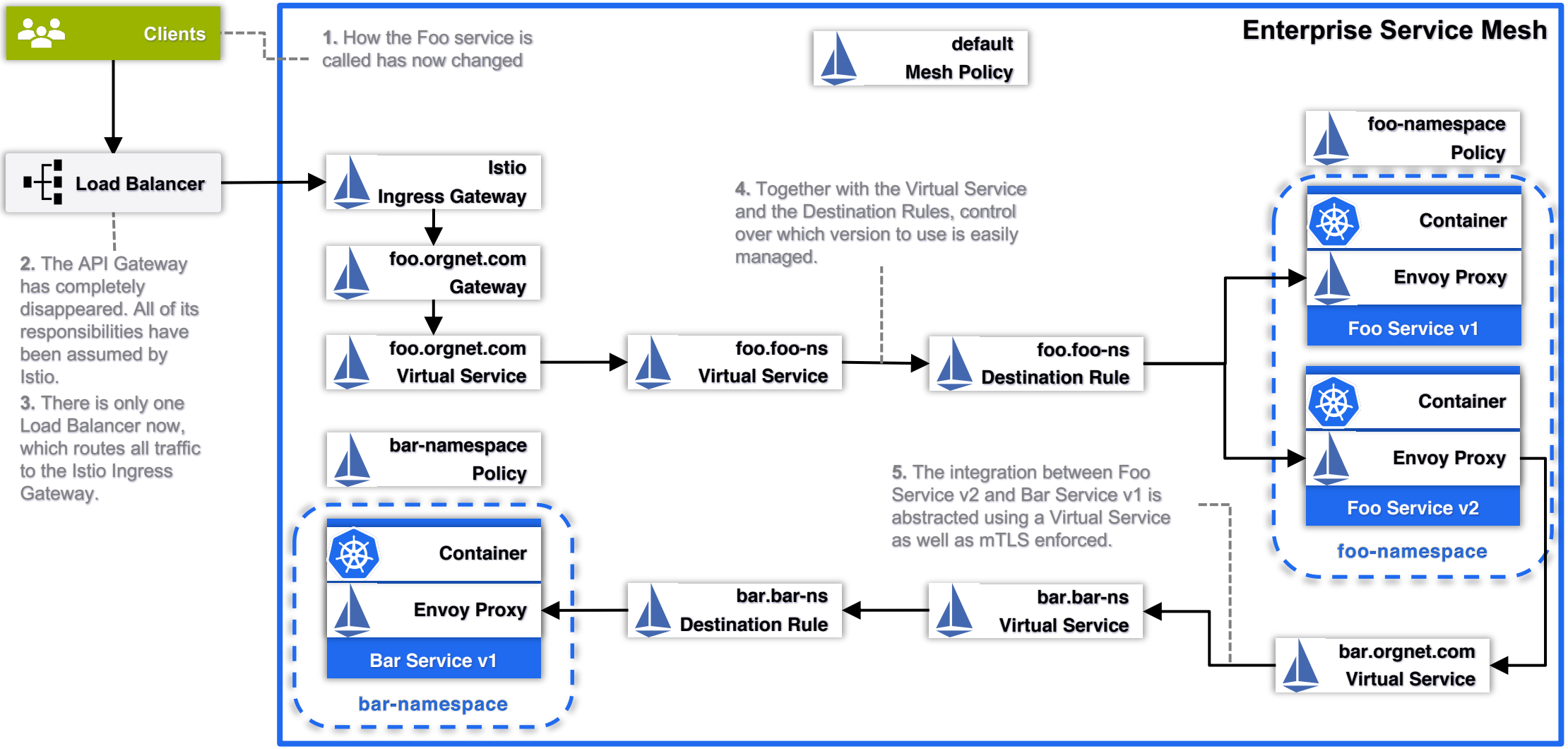
FooBar Service – With Istio



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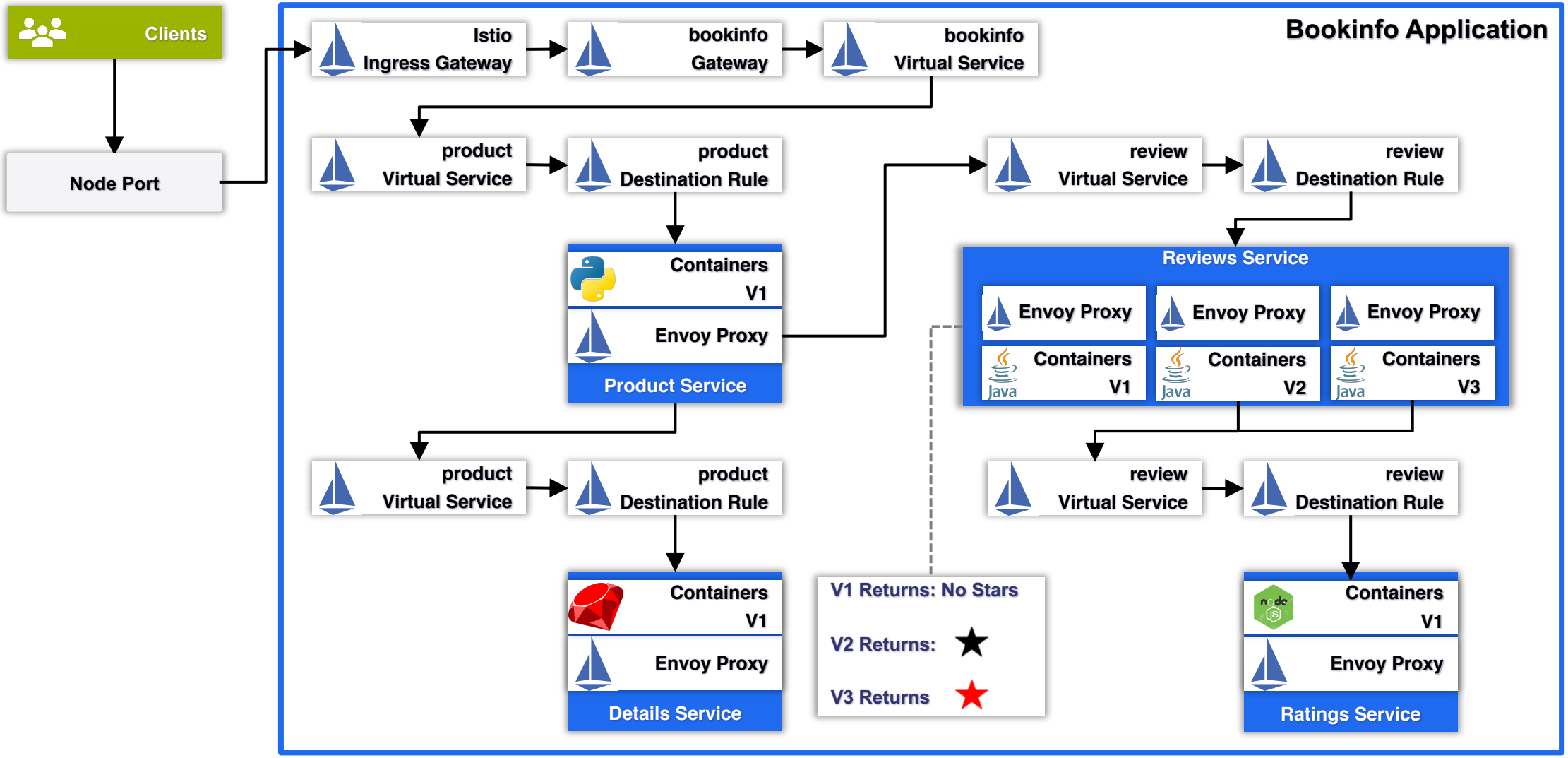
Demo


Clients
Node Port
Bookinfo Application
Istio
Ingress Gateway
bookinfo
Gateway
bookinfo
Virtual Service
product
Virtual Service
product
Destination Rule
Containers
V1
Envoy Proxy
Product Service
review
Virtual Service
review
Destination Rule
Reviews Service
Envoy Proxy
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V1
Containers
V2
Containers
V3
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Virtual Service
product
Destination Rule
review
Virtual Service
review
Destination Rule
Containers
V1
Envoy Proxy
Details Service
V1 Returns: No Stars
V2 Returns:
V3 Returns
Containers
V1
Envoy Proxy
Ratings Service

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