

AWS App Mesh

Shubha Rao

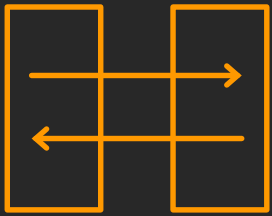
Principal Product Manager
Amazon Web Services

Customers have lots of pieces
to operate



What do developers really need to
build their applications?

App Mesh Features



Consistency across
teams



Failure visibility and
isolation



Fine-grained
deployment controls



Authentication and
Authorization controls

Why did we built AWS App Mesh?



**Security, reliability,
availability, and scale**

Managed by AWS



**Application
focus**

Declarative model for
application
communication

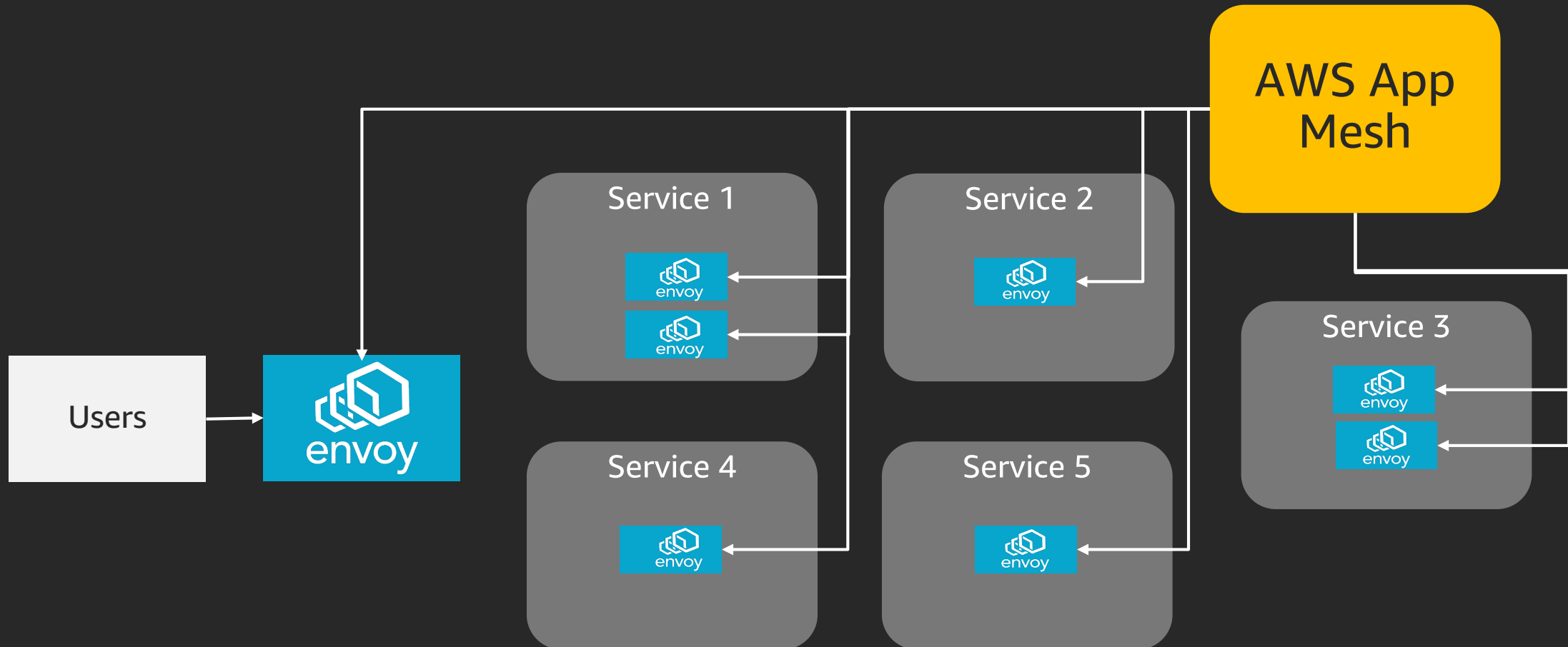


**Choice: picking the
best tool for the job**

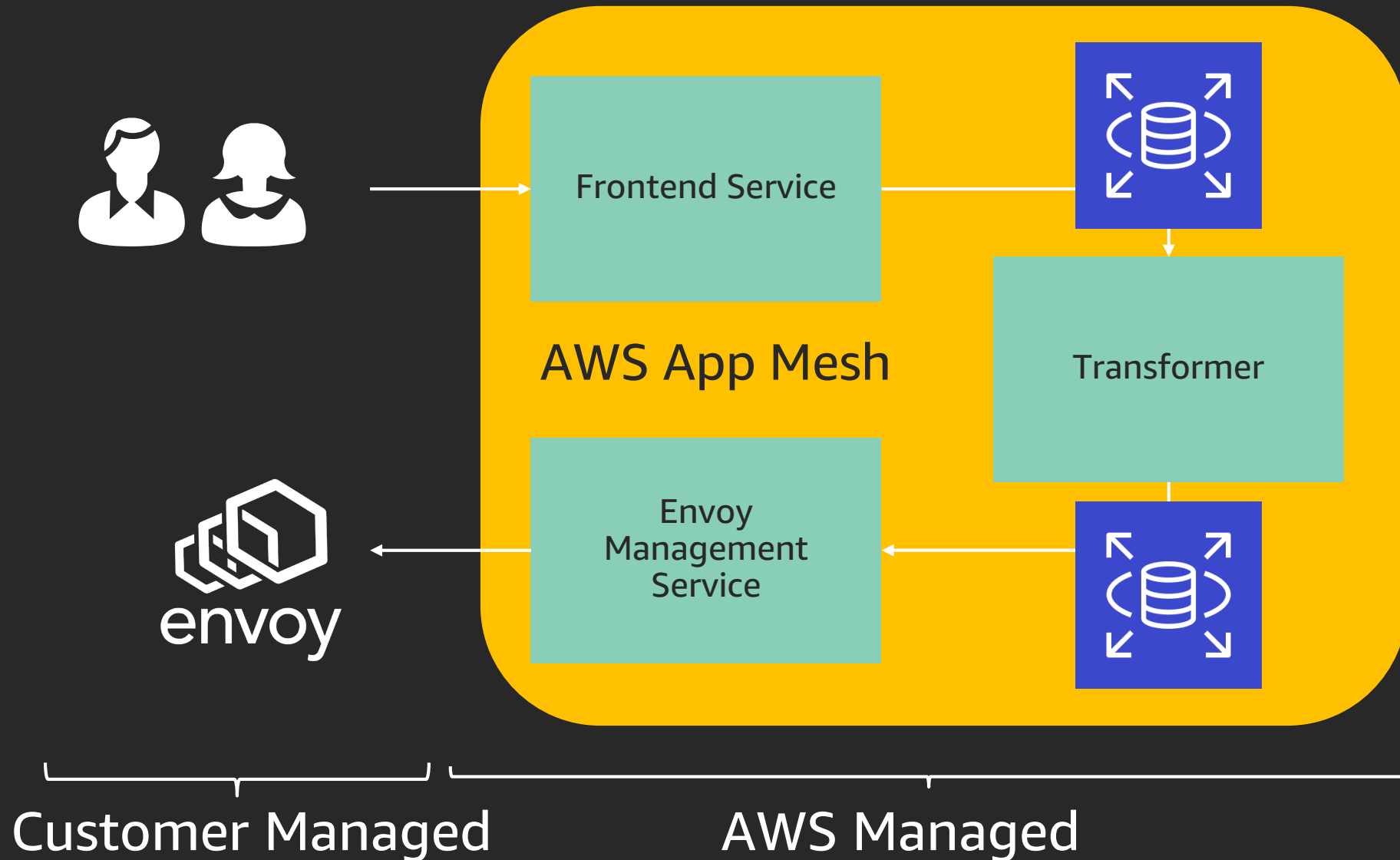
Works with multiple
compute options

AWS App Mesh is our first step in building an application-aware network

AWS App Mesh manages your proxy configuration



High-Level App Mesh Control Plane Architecture



App Mesh Configuration

Mesh

Application

Virtual Gateway

Ingress rules

Virtual Service

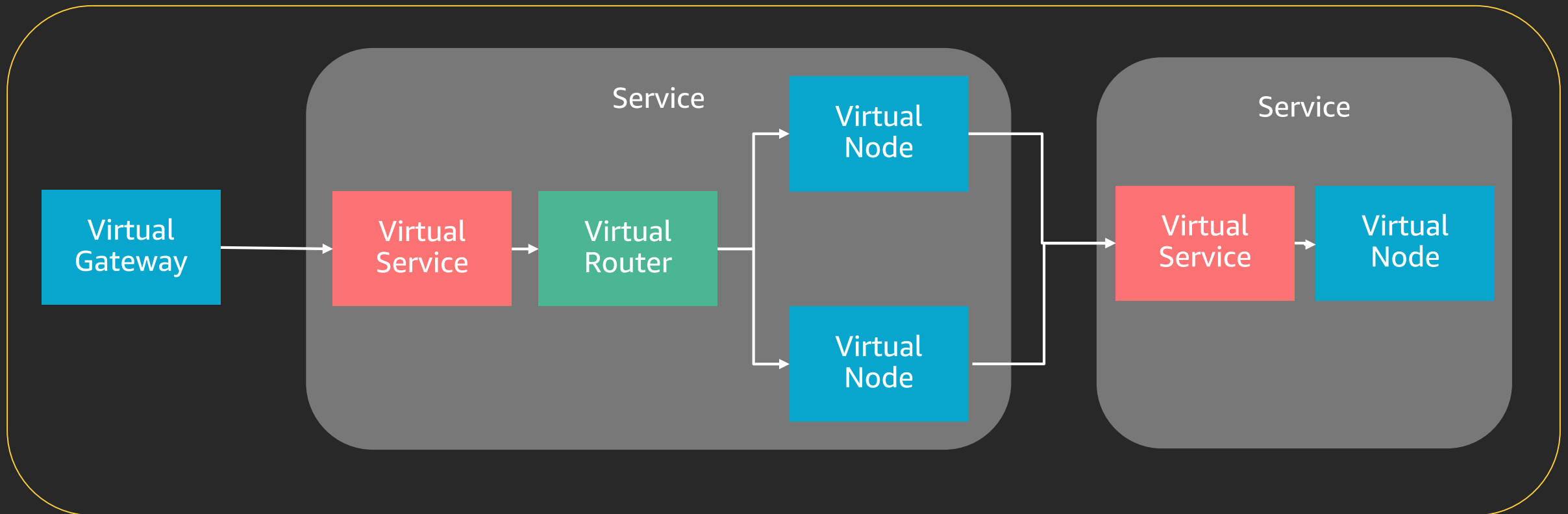
Logical name/
Service discovery

Virtual Router

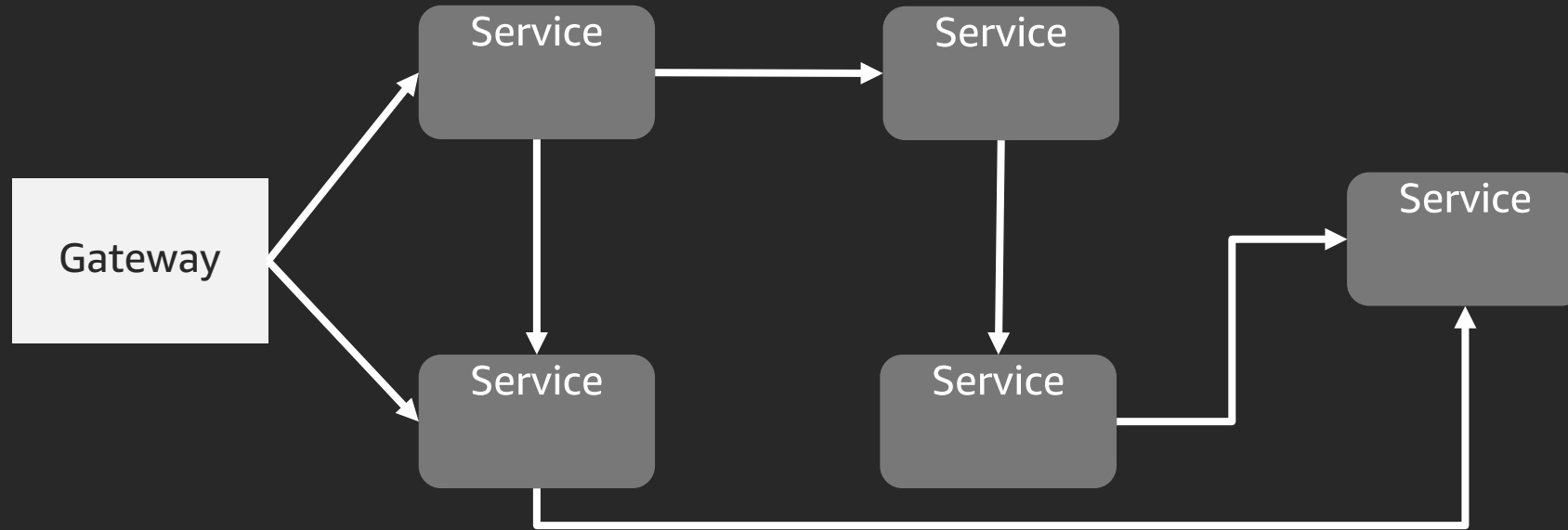
Routing match
conditions

Virtual Node

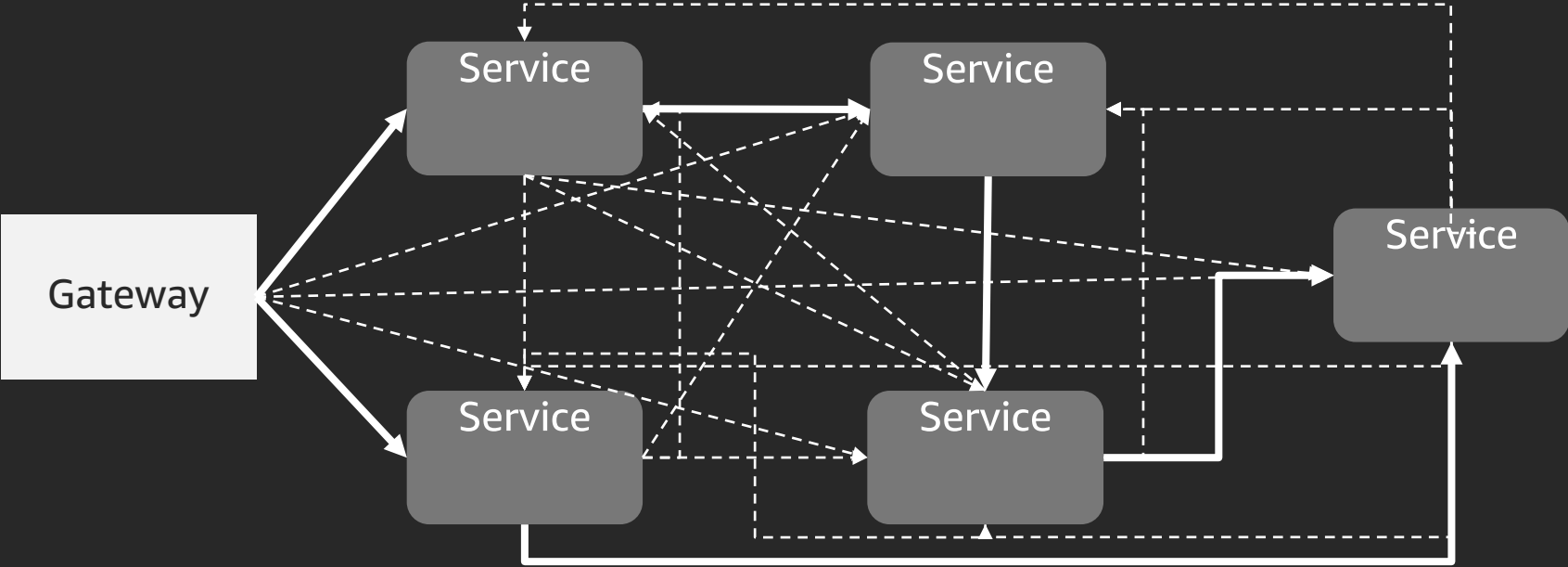
Group of service
endpoints



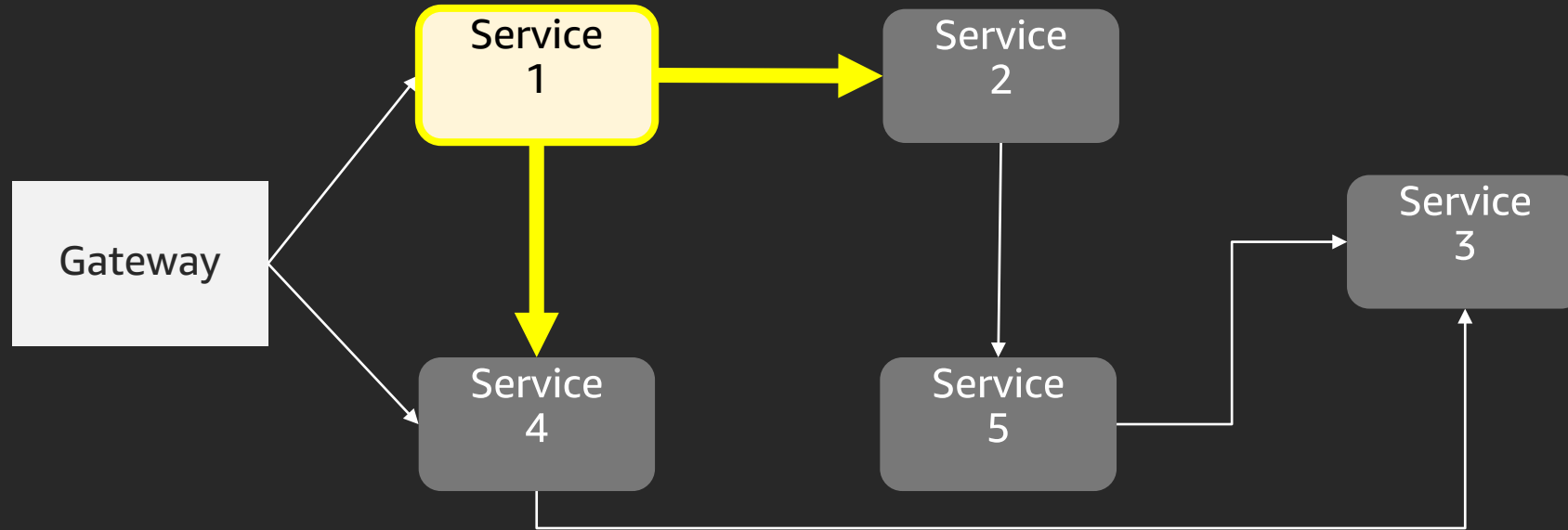
App Mesh requires explicitly modeled dependencies



Minimizes config size, mutation and blast radius



Performs fragment parsing to customize config



App Mesh implements Envoy xDS



Aggregated
Discovery
Service

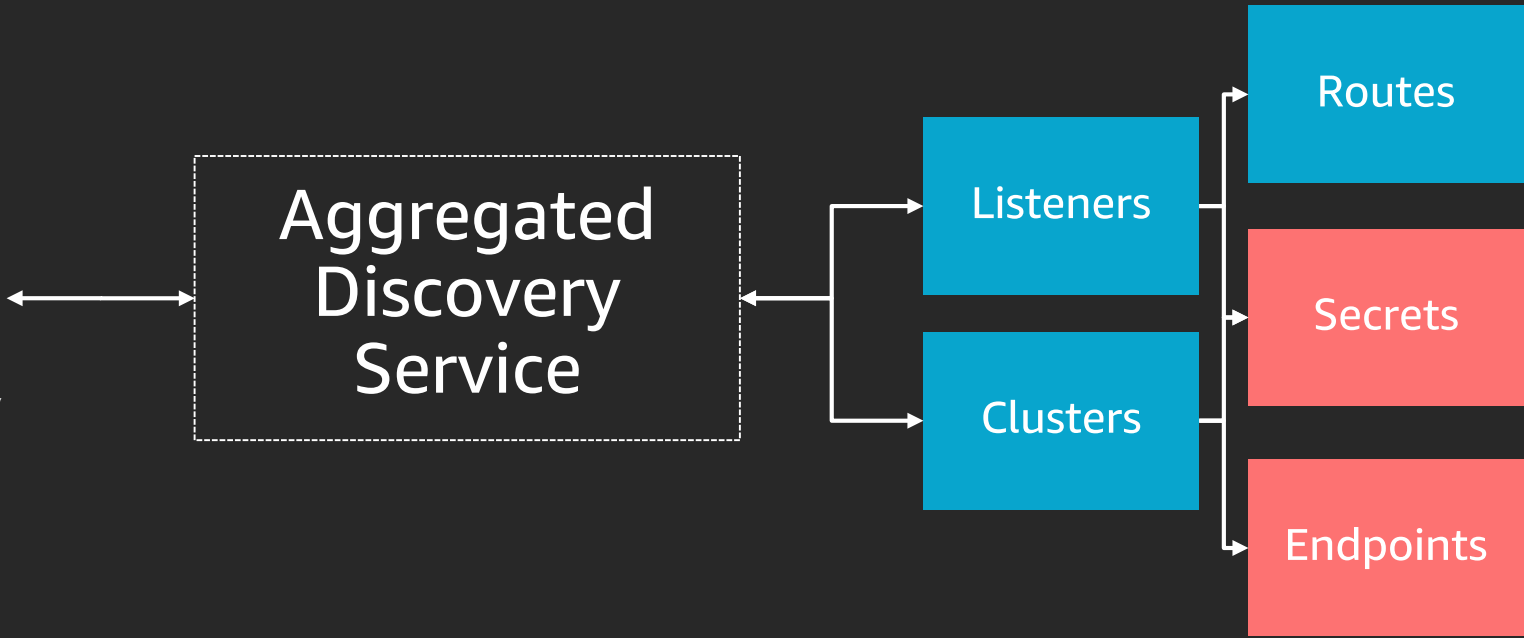
Listeners

Clusters

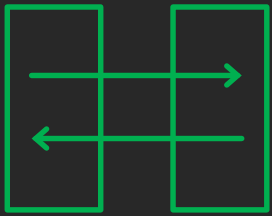
Routes

Secrets

Endpoints



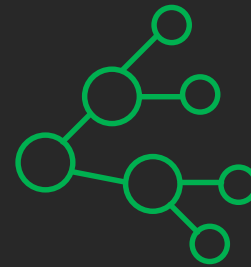
App Mesh Features and Roadmap



Consistency across
teams



Failure visibility and
isolation



Fine-grained
deployment controls



Authentication and
Authorization controls

Where we are and near term roadmap

Observability

Container Insights Mesh
Dashboard

--

Access logs
Metrics

Tracing

AWS solutions and Partner
integrations

Traffic Management

HTTP/2, gRPC

Ingress Gateway

--

Routing based on explicit
dependency mapping

TCP, HTTP1.1

Path, Header based routing

Weighted Routing

Route Priorities

Retries

Health Check & Load
Balancing at Envoy

Security

Encryption – ACM

Encryption – Bring your cert

mTLS - Bring your cert

mTLS - ACM

Bring your AuthZ

Where we are and near term roadmap

Must-Haves

Regions
CloudFormation
Scaling
PrivateLink
Backwards compatible API
Public Previews
New Envoy versions support

Usability

ECS Console
K8S Controllers
Helm Charts for K8S controllers
Flagger Integration
HIPAA Compliance

Integrations

Cross Account Support using AWS RAM
On-Prem / Hybrid with AWS Outposts
Metadata based routing with AWS Cloud Map
Cross Cluster Support using AWS Cloud Map

Community Participation

Upstream Envoy support – SigV4 AuthN for Envoys

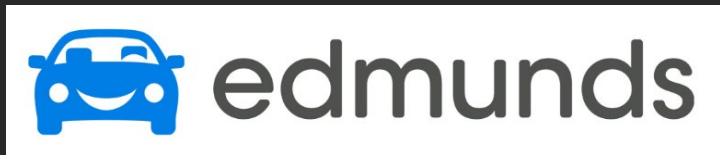
Envoy configuration sequencing changes

ACM integration with SPIFFE/SPIRE

X-Ray integration

Open Sourcing App Mesh control plane – Envoy Management Service

Edmunds: Improving modern software development and microservices with App Mesh



Edmunds is a leading car information and shopping platform, helping millions of visitors each month find their perfect car.

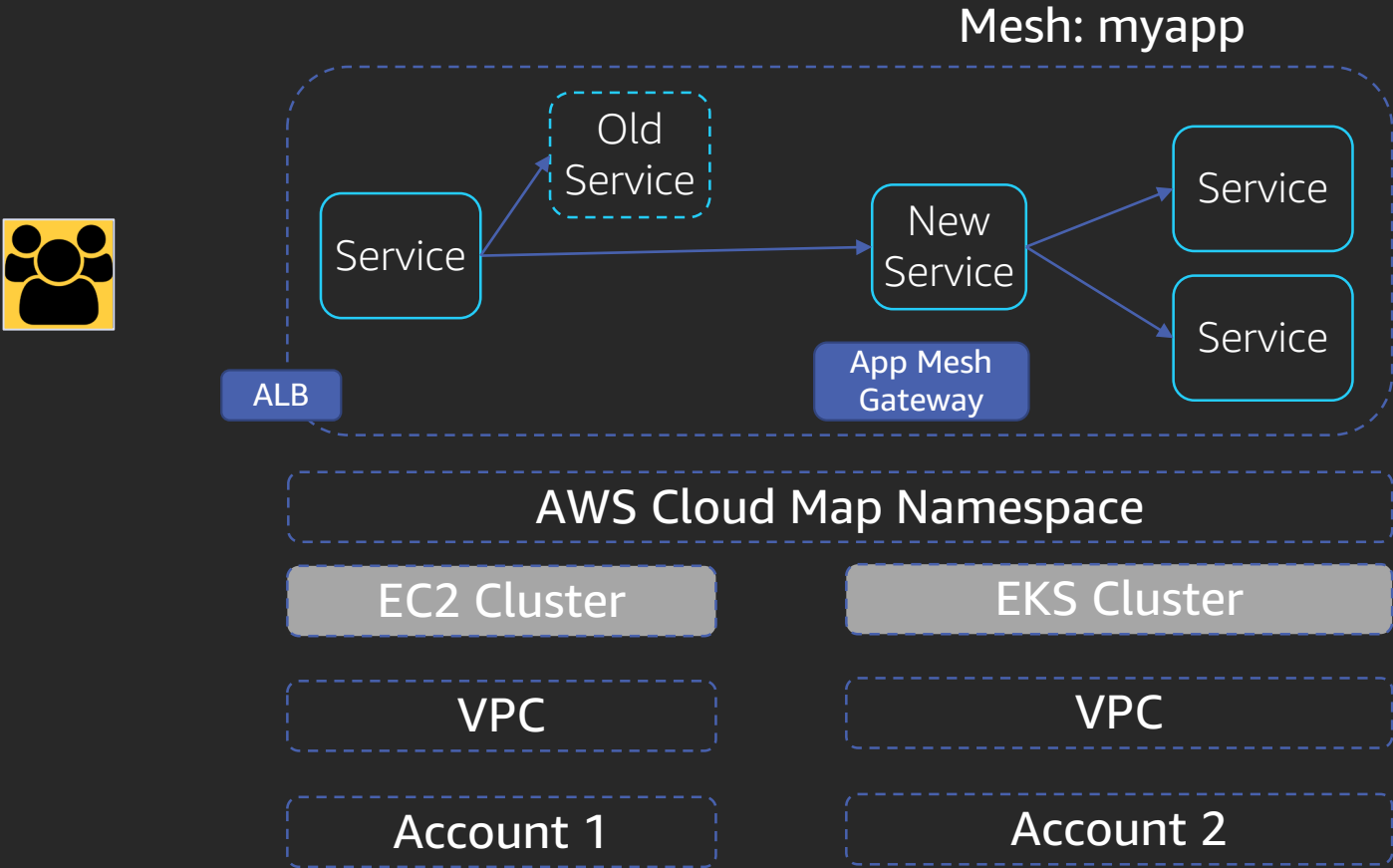
Challenge: There are a number of challenges with Microservices, including control over service-to-service communication, visibility into service-to-service communication and ensure trust by automating security and compliance on small Dev-Ops teams.

Solution: *"App Mesh provide us a consistent communications management, complete visibility, failure isolation, protection, and fine-grained deployment controls."* - Nitin Mahajan, Executive Director, service engineering, Edmunds

<https://youtu.be/1UDRGlmbiZA>

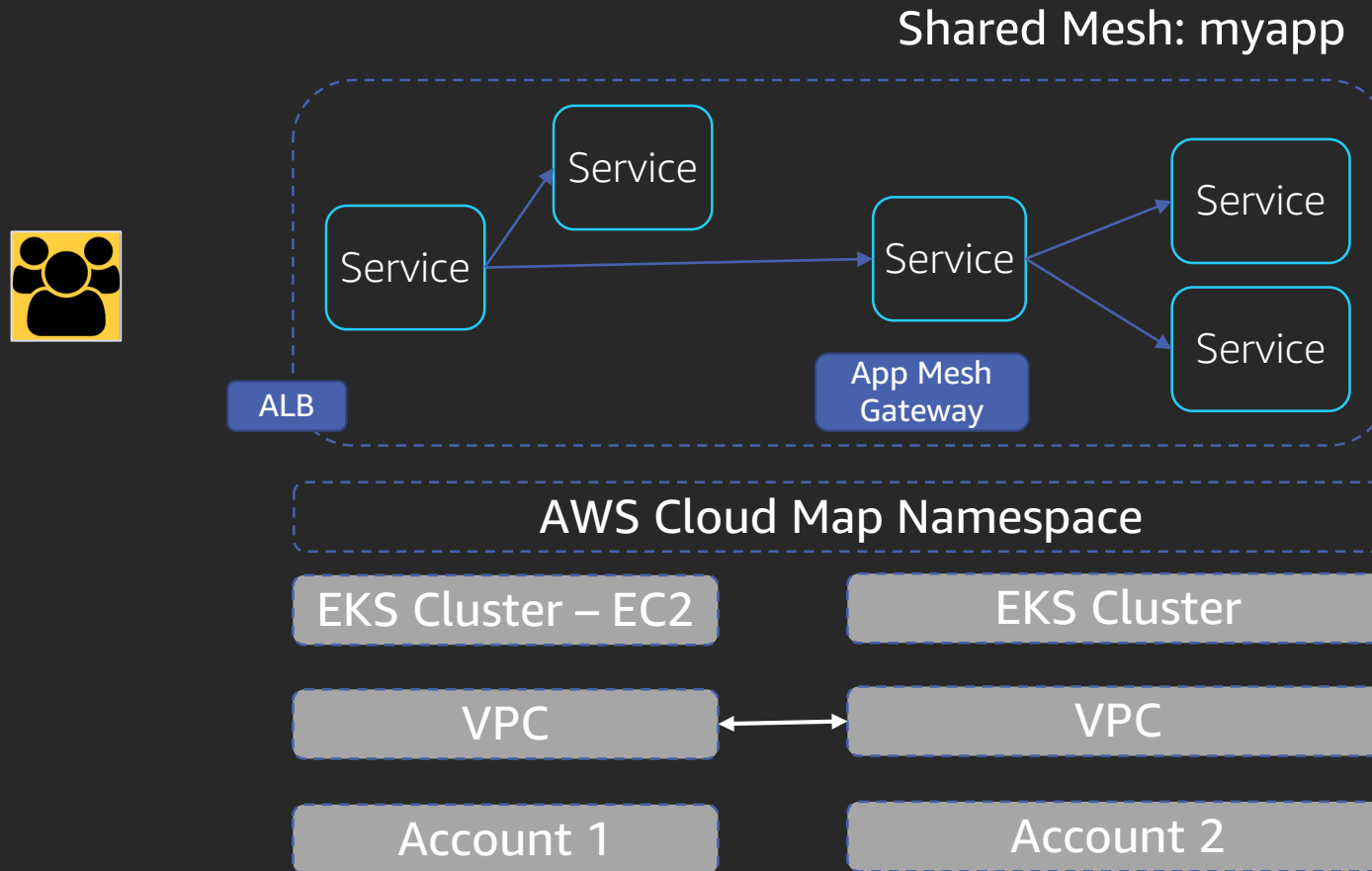
Use Cases

1. Migrate from EC2 or self-managed Kubernetes to EKS



Use Cases

2. Span a mesh across compute mode, accounts, clusters and VPCs

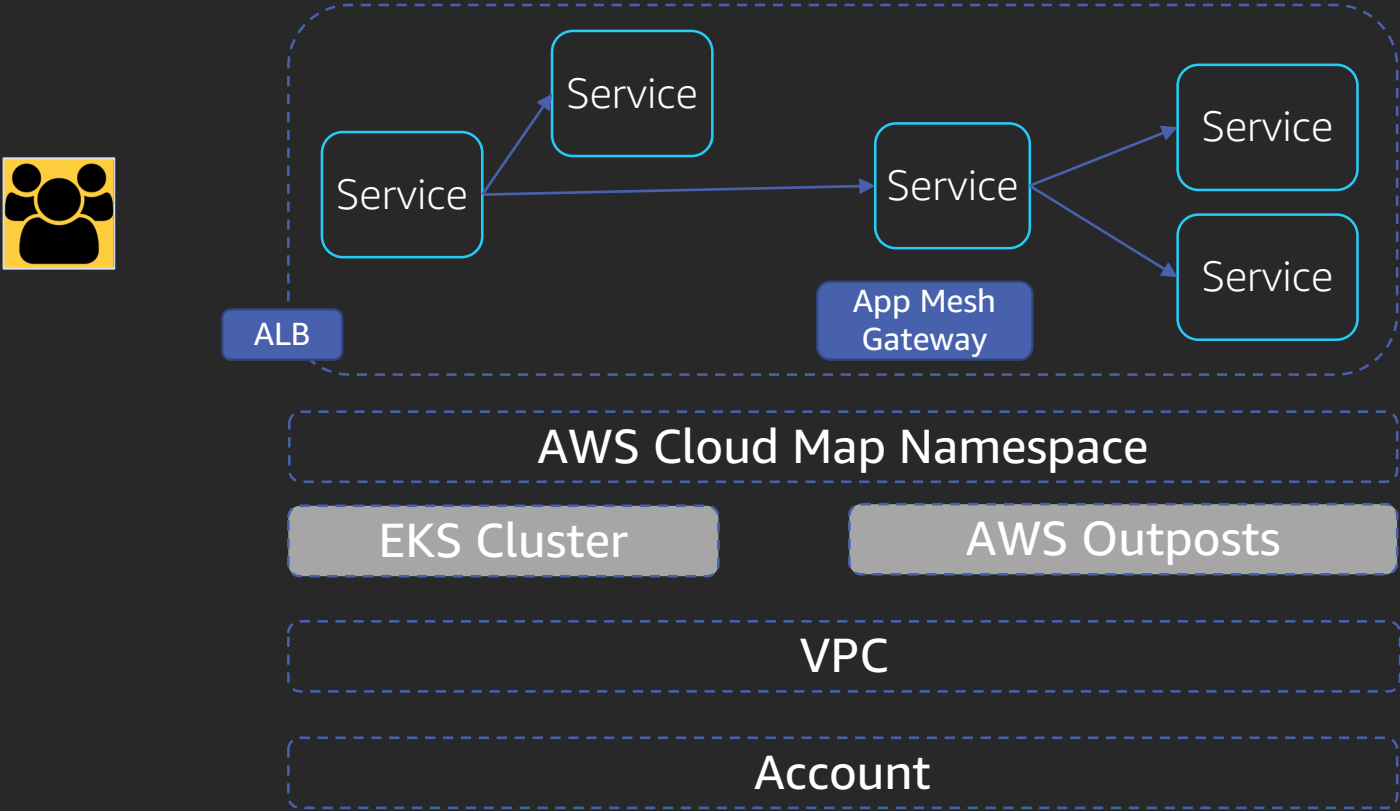


Assumes flat network – one of shared VPC via RAM, VPC Peering, PrivateLink, Transit GW

Use AWS Resource Access Manager to share the mesh resource

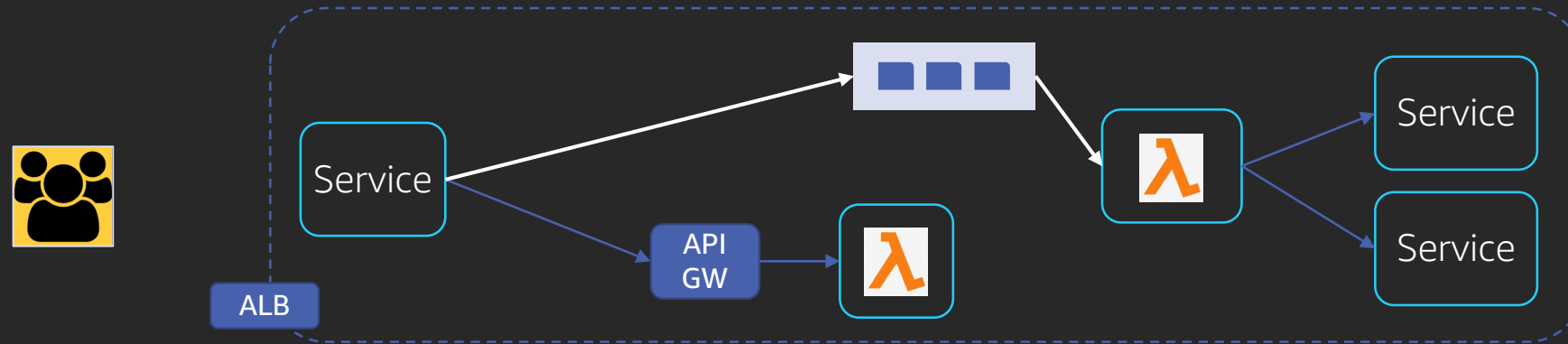
Use Cases

3. Span a mesh across hybrid deployments



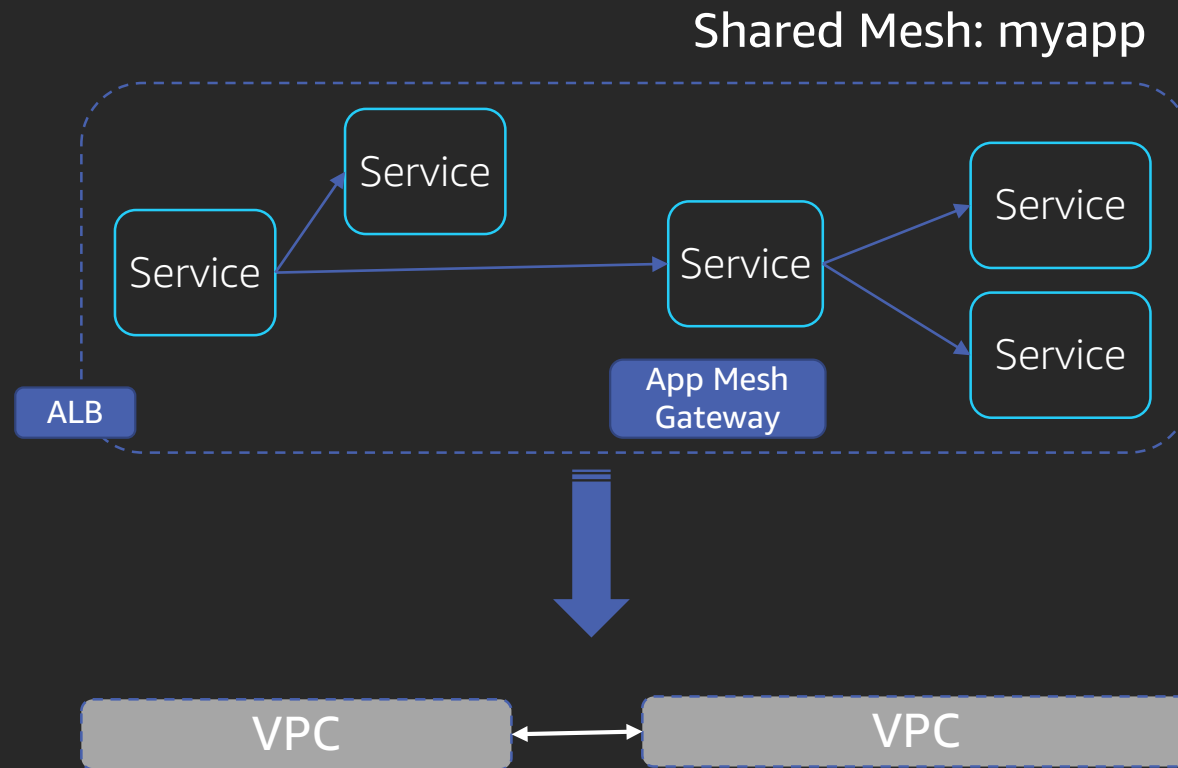
Future Directions- Brainstorming (not on roadmap)

1. Lambda Support



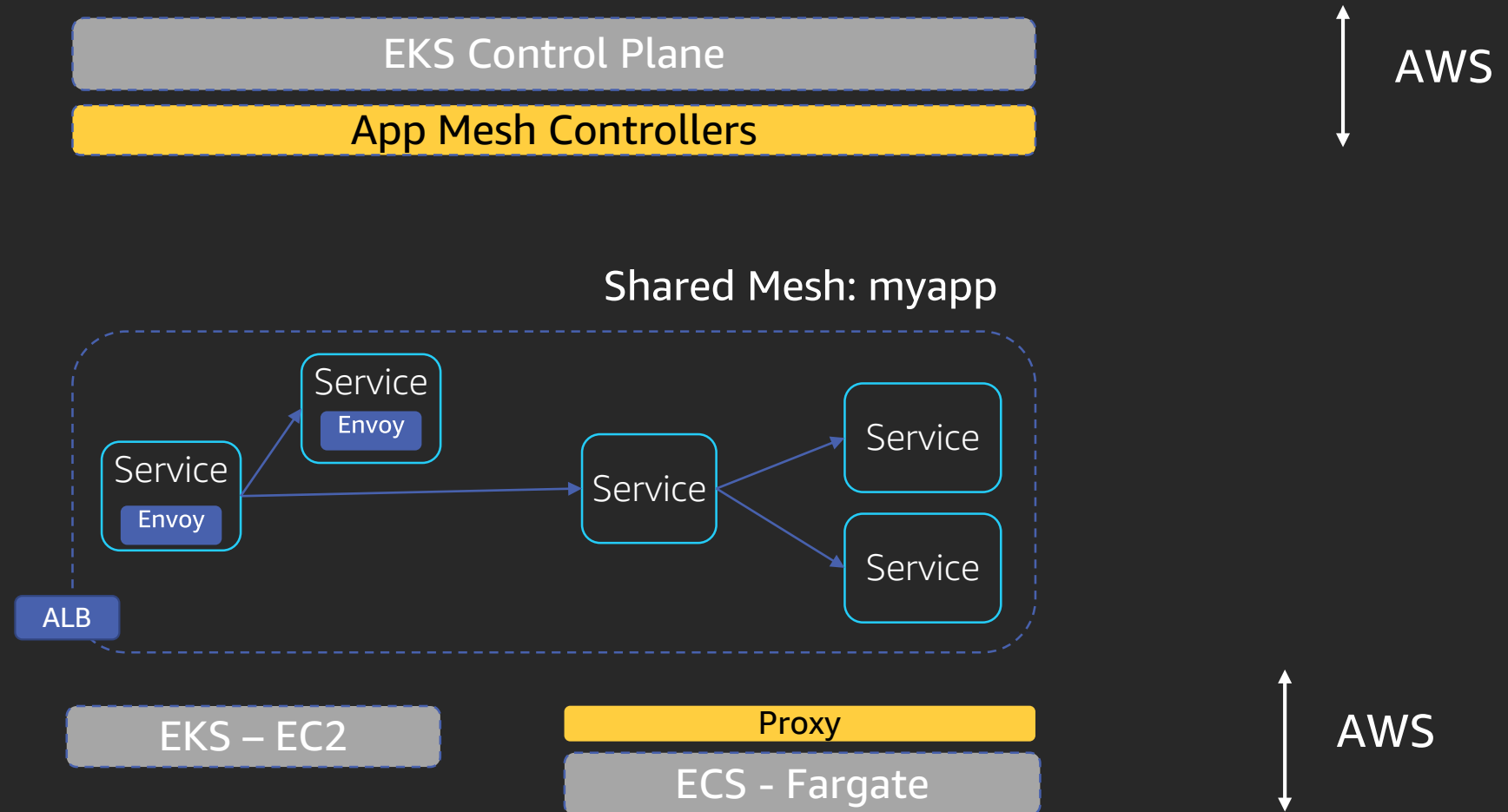
Future Directions- Brainstorming (not on roadmap)

2. Connection management



Future Directions- Brainstorming (not on roadmap)

3. More Managed (Think Fargate)



Give us your input

surveymonkey.com/r/appmesh

Roadmap: <https://github.com/aws/aws-app-mesh-roadmap>

github.com/aws/aws-app-mesh-roadmap/projects/1

Search or jump to... Pull requests Issues Marketplace Explore

aws / aws-app-mesh-roadmap Unwatch 91 Star 120 Fork 7

Code Issues 64 Pull requests 0 Projects 1 Security Insights Settings

aws-app-mesh-roadmap Updated 23 hours ago Filter cards Add cards Fullscreen Menu

- 6 Researching**
 - Open Source the App Mesh Envoy Image build, release, and validation tools** #5 opened by dastbe. Phase: More Inp... Roadmap: Accepted
 - HIPAA eligibility** #66 opened by shubharao. Phase: Researching Roadmap: Accepted
 - Circuit Breaker Policy** #6 opened by jamsajones. Phase: Researching Roadmap: Accepted
 - Use App Mesh for ingress routing** #37 opened by jamsajones. Phase: Researching Roadmap: Accepted
- 7 We're Working On It**
 - Support SPIFFE/SPIRE for mTLS** #68 opened by paavan98pm. Phase: Working on it Roadmap: Accepted
 - Support App Mesh Across Multiple Accounts** #64 opened by dastbe. Phase: Working on it Roadmap: Accepted
 - Region expansion** #1 opened by jamsajones. Phase: Working on it Roadmap: Accepted
- 2 Coming Soon**
 - End to end encryption of traffic with customer provided certs** #38 opened by jamsajones. Phase: Coming Soon Roadmap: Accepted
 - Increase service limits** #110 opened by shubharao. Roadmap: Accepted
- 1 Available in Preview Channel**
 - End to end encryption of traffic with ACM managed certs** #39 opened by jamsajones. Phase: In Preview Roadmap: Accepted

Engage with us!

- Take the App Mesh Workshop
- Meet our team at the booth
- Check example apps and config on Github:
<https://github.com/aws/aws-app-mesh-examples/tree/master/walkthroughs>
- Read our latest post on Containers blog:
<https://aws.amazon.com/blogs/containers/cross-amazon-eks-cluster-app-mesh-using-aws-cloud-map/>
- Tweet with #appmesh

Engage with us



Meet us at our booth



[aws-app-mesh-roadmap](#)



[#appmesh](#) or [_shubha](#)

Vision

“Our goal is that if you are running applications on AWS, you should not have to worry about managing networking infrastructure. It should be handled by our application-aware network ... App Mesh, as it exists today, is the first step in this journey.”

~Werner Vogels

<https://www.allthingsdistributed.com/2019/03/redefining-application-communications-with-aws-app-mesh.html>

Give us your input: surveymonkey.com/r/appmesh

