



# Building an Envoy Control Plane

Steve Sloka  
@stevesloka



# About Me

Sr. Member of Technical Staff

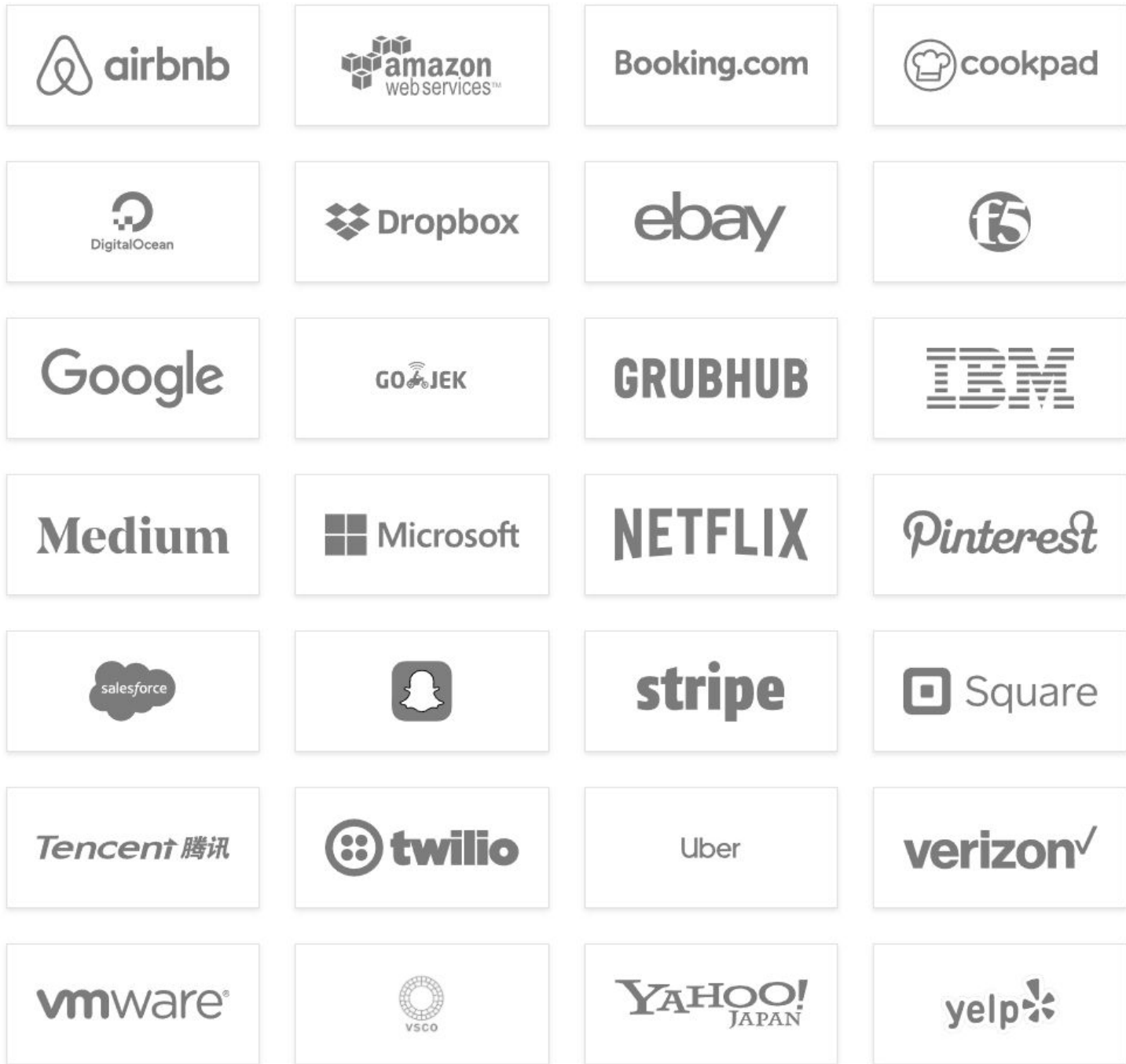
- K8s since 2014
- Kubernetes Contributor
- Contour / Gimbal @ VMware
- CKA / CKAD
- Pittsburgh Kubernetes Meetup Organizer

# What is Envoy?



“Envoy is an open source edge and service proxy, designed for cloud-native applications.”

- [envoyproxy.io](https://envoyproxy.io)





Istio



HashiCorp  
Consul



CLOUD FOUNDRY



cilium



Ambassador



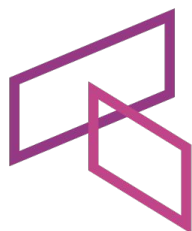
Gloo

EnRoute

Envoy Route Controller



CONTOUR



ROTOR  
BY TURBINE LABS



envoy  
OPERATOR



GetEnvoy



Kuma

<https://www.envoyproxy.io/community>

# Envoy Core Concepts / Terminology

# Upstream/Downstream





## Listeners

- Named network location (e.g., port, unix domain socket, etc.) that can be connected to by downstream clients
- TCP/UDP
  - Filter Chain
    - Filters

# Routes

- Virtual Hosts
- HTTP Header Modifications
- Route Entries per vhost

# Clusters

- A group of logically similar upstream hosts
  - Members are discovered via Service Discovery →

# Cluster Service Discovery

- Static
- Strict / Logical DNS
- Original Destination
- **Endpoint discovery service (EDS)**
- Custom

# Configuring Envoy

## Ways to configure Envoy

- Static File
- Filesystem
- REST
- Management Servers
  - gRPC-SotW
  - gRPC-Delta

# xDS

**LDS**

Listener Discovery Service

**RDS**

Route Discovery Service

**CDS**

Cluster Discovery Service

**EDS**

Endpoint Discovery Service



**LDS**

Listener Discovery Service

**RDS**

Route Discovery Service

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Cluster Discovery Service

**EDS**

Endpoint Discovery Service

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Route Discovery Service

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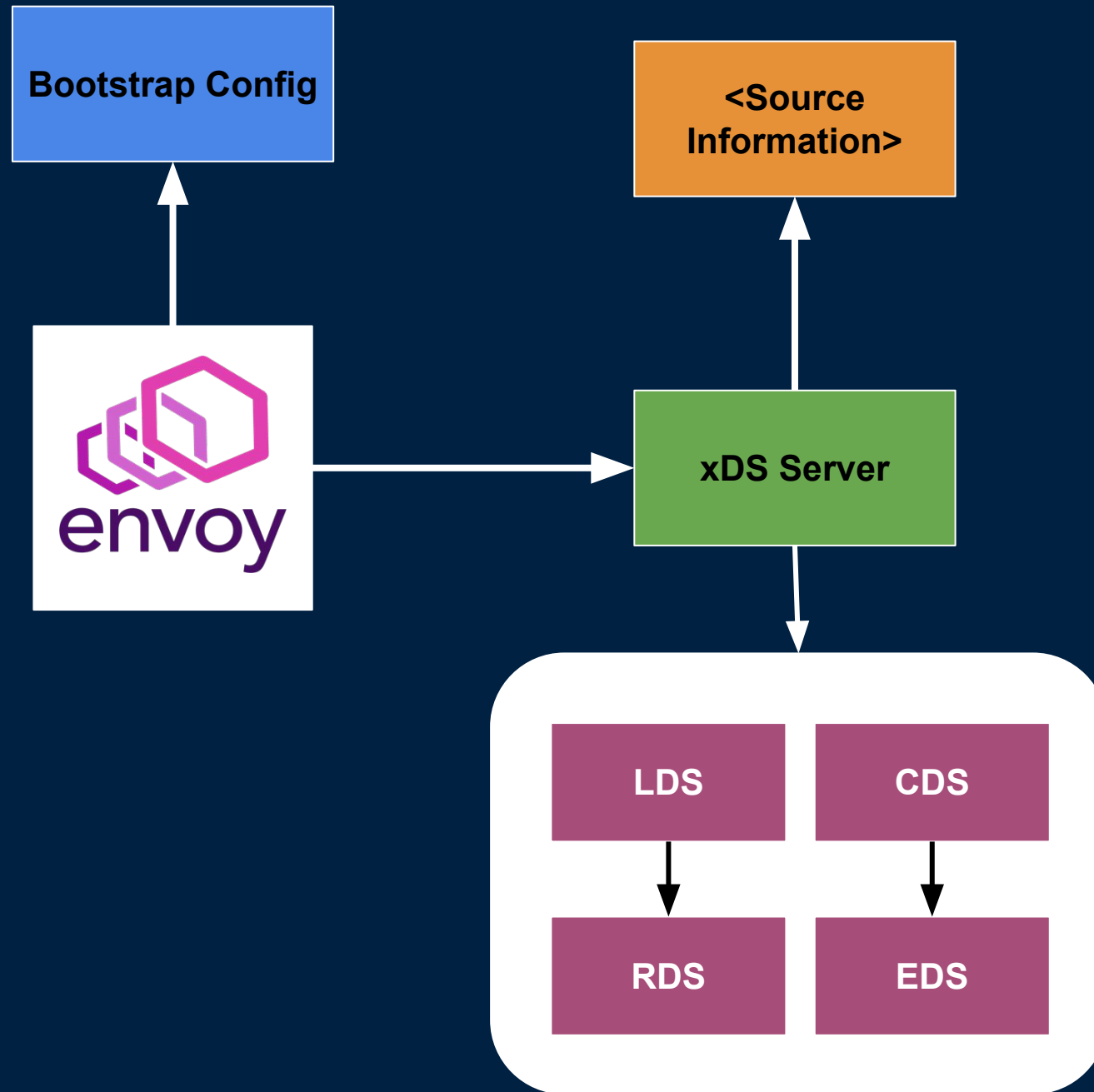
**xDS**

Endpoint Discovery Service

## Four Variants

- Separate gRPC streams per resource type
  - State of the World
  - Incremental
- ADS: Aggregated gRPC stream
  - State of the World
  - Incremental

Put it alllllll together!





**THIS DEMO USES**

**'WORKING CODE'**

makeameme.org

## Resources:

- [github.com/stevesloka/envoy-xds-server](https://github.com/stevesloka/envoy-xds-server)
- [github.com/envoyproxy/go-control-plane](https://github.com/envoyproxy/go-control-plane)

# Thank You

@stevesloka  
steve@stevesloka.com