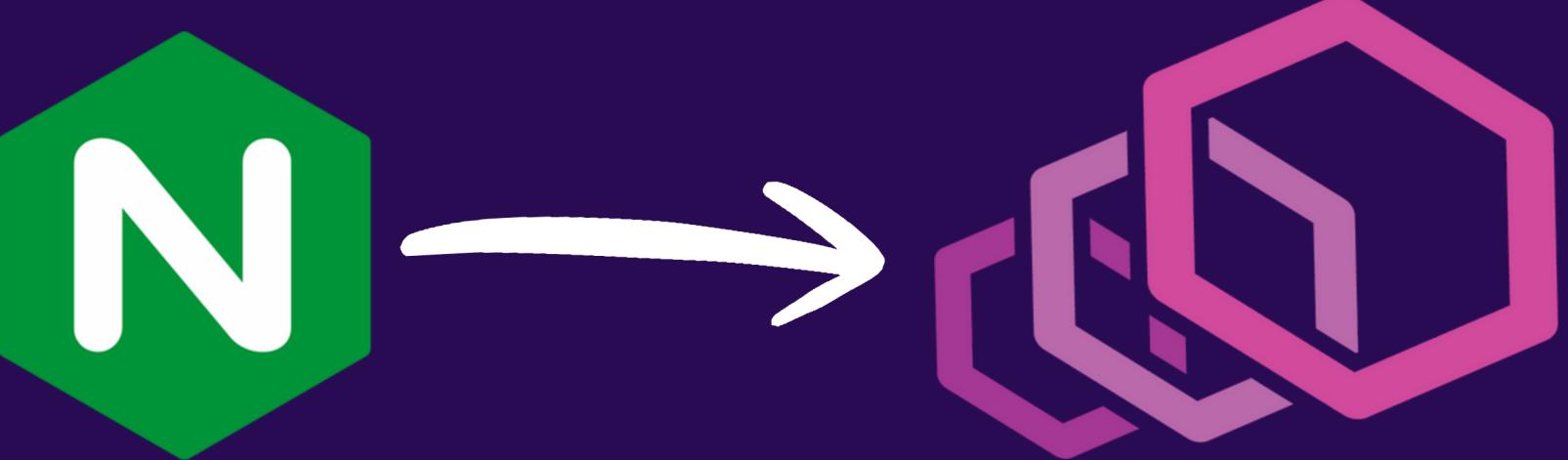


How to migrate from ingress-nginx to Envoy Gateway



Colin J Lacy

Sr. Software Engineer
Cisco



@colinjcodesalot

Agenda

- 1 Gateway API mental model
- 2 Migration plan
- 3 YAML in action!
- 4 Where do we go from here?

Gateway API mental model

Ingress Resource

- Minimal set of path-level behaviors available in the resource definition
- Cannot natively define security rules, e.g. OIDC authentication
- No support for any protocol beyond HTTP
- Dependent on implementation-specific annotations

How ingress-nginx handles...

- HTTPS redirect **annotation**
- Path rewrites **annotation**
- Forcing authentication **annotation**
- Weighted routing **New Ingress + annotation**
- TCP routes **Helm values update**

Gateway API



- Provides resources that target different roles in the team
- Flexibility beyond HTTP
- Scales for multiple use cases with resource-based configuration
- Extensible by design via the Policy Attachment model
- Plus other cool stuff (like weighted routing for A/B testing)!

Our Team



Arvis

Cloud Admin

Has the keys to the
AWS account



Ringo

Platform Operator

kubectl commander



Gunther

Developer

But Claude said it was the
optimal solution!

Roles & Resources



GatewayClass

Defines the implementation tooling, and how a Gateway instance will interact with underlying infrastructure



Gateway

Instance of a **GatewayClass**, deploys the router pod, plus the underlying infra (e.g. load balancers) defined by the **GatewayClass**



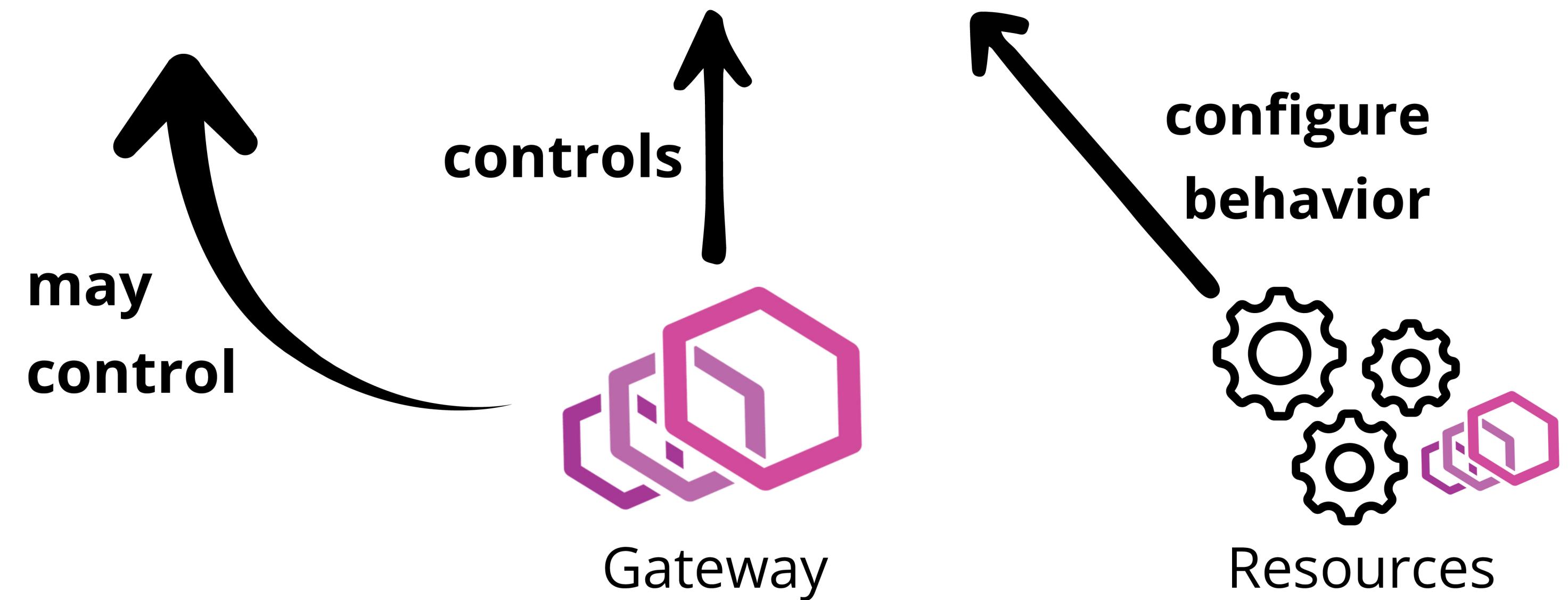
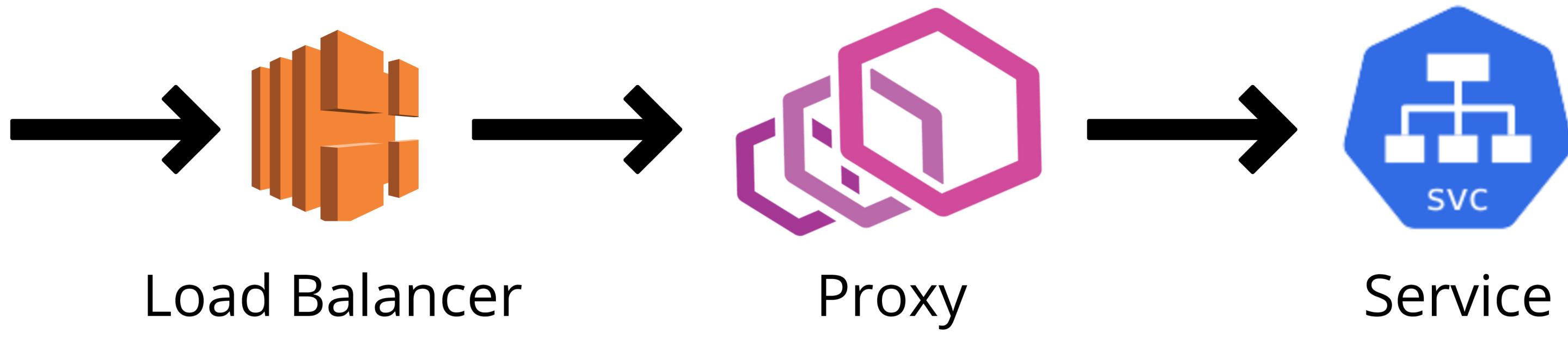
<Proto>Route

Routing behavior for traffic coming in through a **Gateway** to a backend resource, with multiple protocols supported (e.g. **gRPCRoute**, **HTTPRoute**)

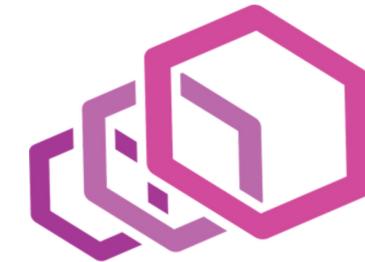


envoy
gateway

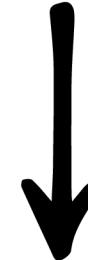
- Built on top Envoy Proxy, a CNCF Graduated project
- Extends the Gateway API with additional resources
- Allows broad and fine-grained security policy assertion
- Supports multiple security policies within the same Gateway
- Can also handle authorization, or configure external authorization



Essential extensions



GatewayClass



EnvoyProxyConfig

Gateway



SecurityPolicy

<Proto>Route

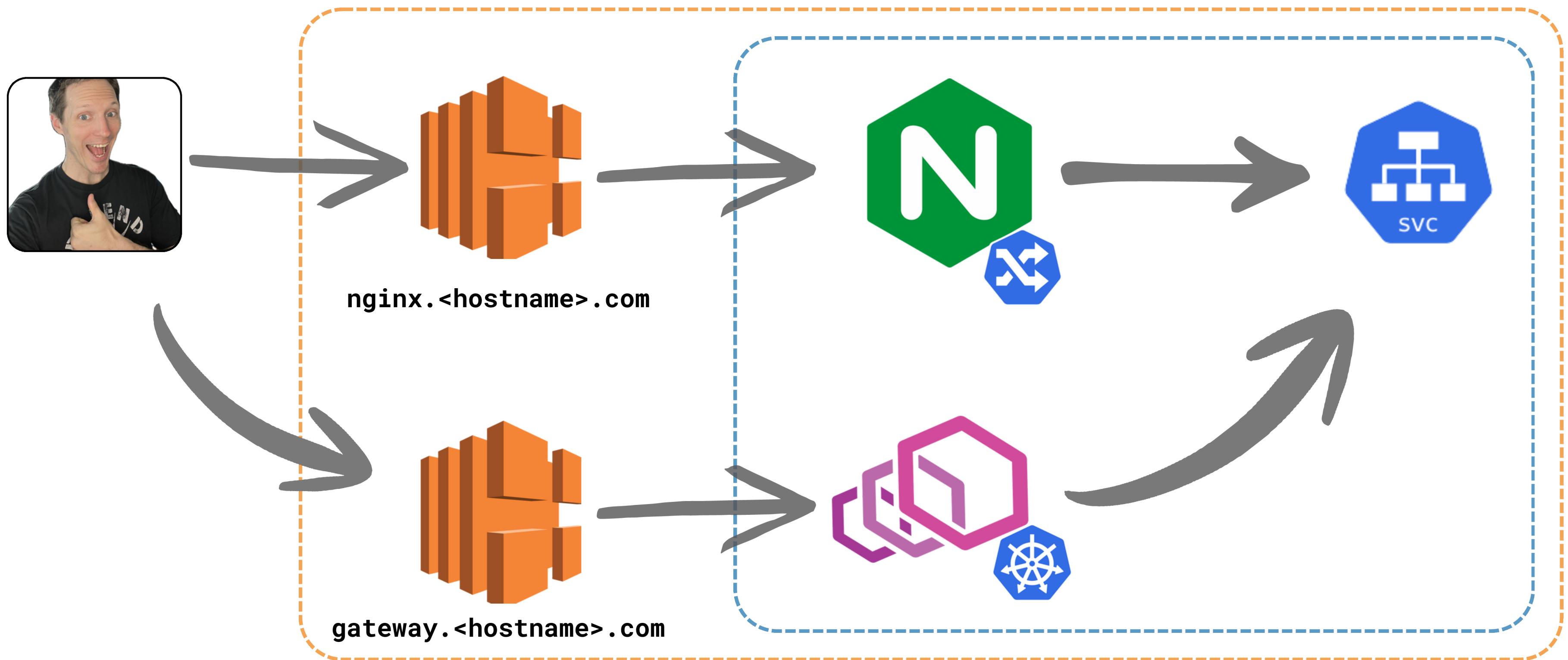


Backend

Admittedly, the lines can get a little blurred...

Migration plan

Parallel Entrypoints



Intended Routes

- A public catch-all route at the root path: `/*`
- A route protected by OIDC authentication: `/protected/*`
- A canary deployment splitting traffic: `/version/*`
- A TCP route pointing to a MySQL cluster: `:3306`

YAML in Action!

Where do we go from here?

Things to try:

- Try using JWT clients to authenticate
- Route-specific SecurityPolicies with different security settings
- Traffic policies around rate limiting, failover, circuit breaking
- External authorization checks using OPA
- Extension management that I don't even know about

AWS Network Load Balancers

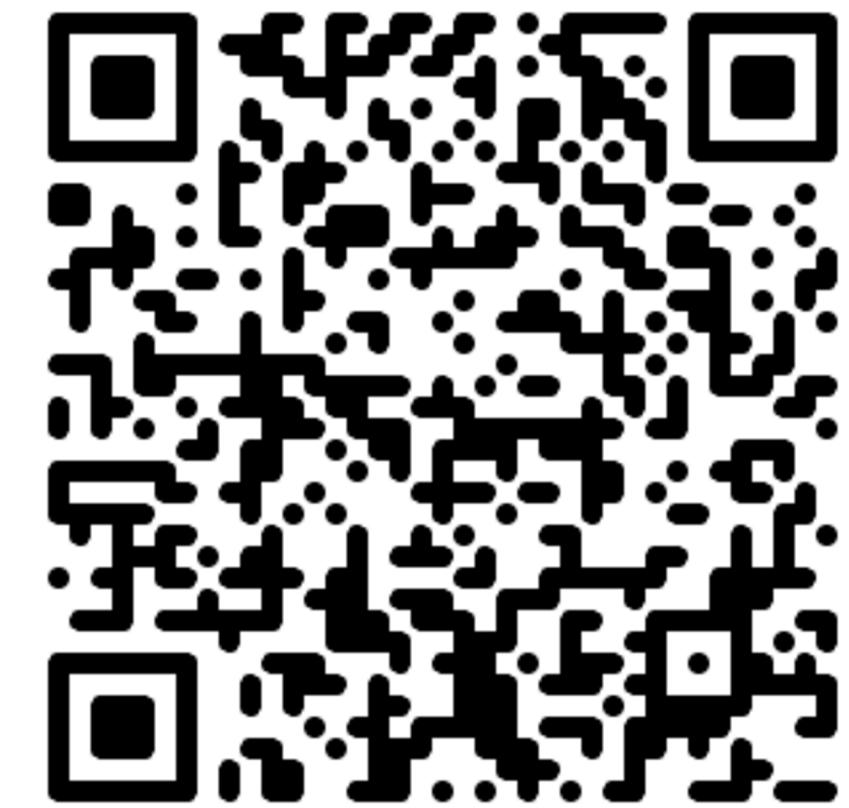
The thumbnail features a purple-to-orange gradient background with a grid pattern. The Tetrate logo (an orange stylized 't') and the word 'tetrate' are in the top left corner. In the top right corner is a circular profile picture of a smiling man. The text 'KUBERNETES INGRESS' is in small orange capital letters at the top left of the white content area. The main title 'Maximum Throughput, Minimum Resources:' is in large bold black font. Below it, the subtitle 'Envoy Gateway + AWS Load Balancing' is in a smaller italicized black font. At the bottom left is an orange button with the text 'Read Article >'.

KUBERNETES INGRESS

**Maximum Throughput,
Minimum Resources:**

Envoy Gateway + AWS Load Balancing

Read Article >



All About Security Policies

Securing the Gateway

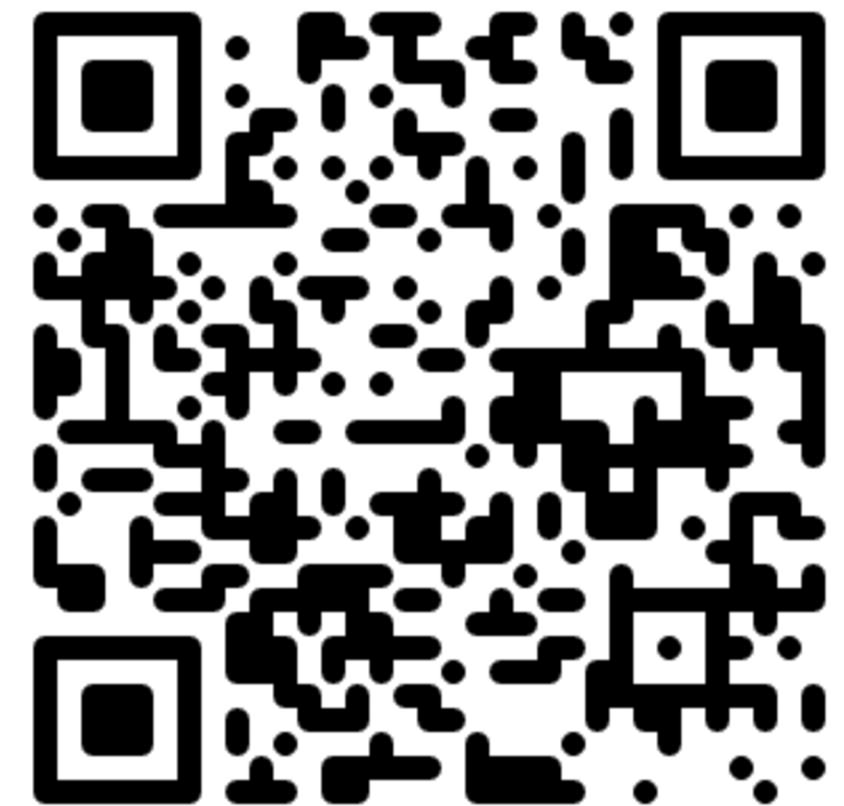
A Deep Dive into Envoy Gateway's Advanced Security Policy

Robin Zhao, Tetrate

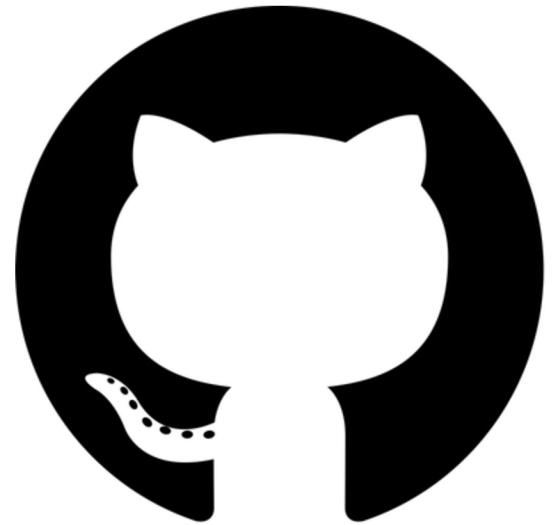
Envoy Gateway Maintainer
Envoy Contributor

KubeCon | CloudNativeCon
Europe 2025

The slide has a decorative footer featuring a collage of British icons like Big Ben, the Union Jack, and a double-decker bus.



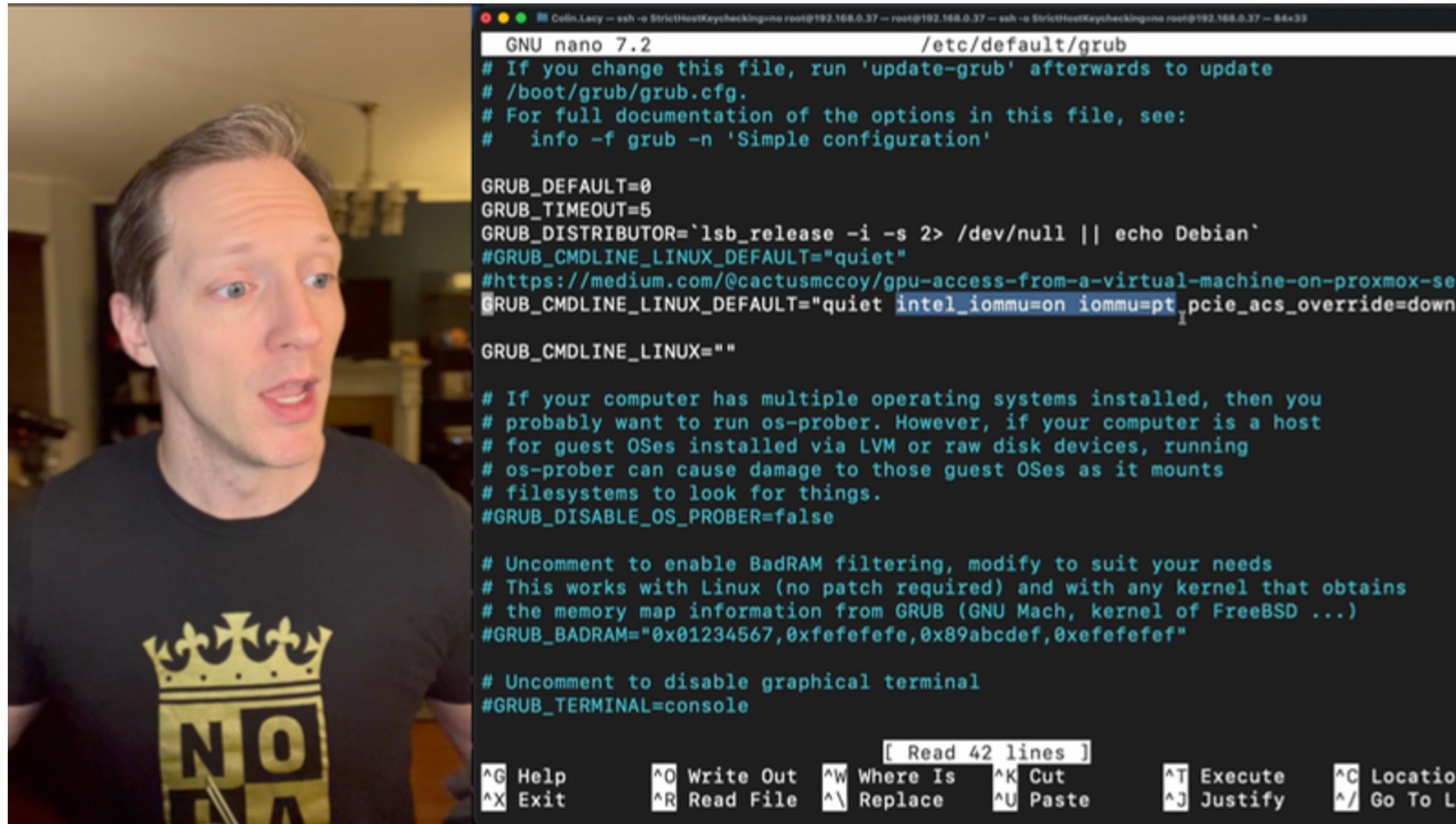
Demo repo is on GitHub



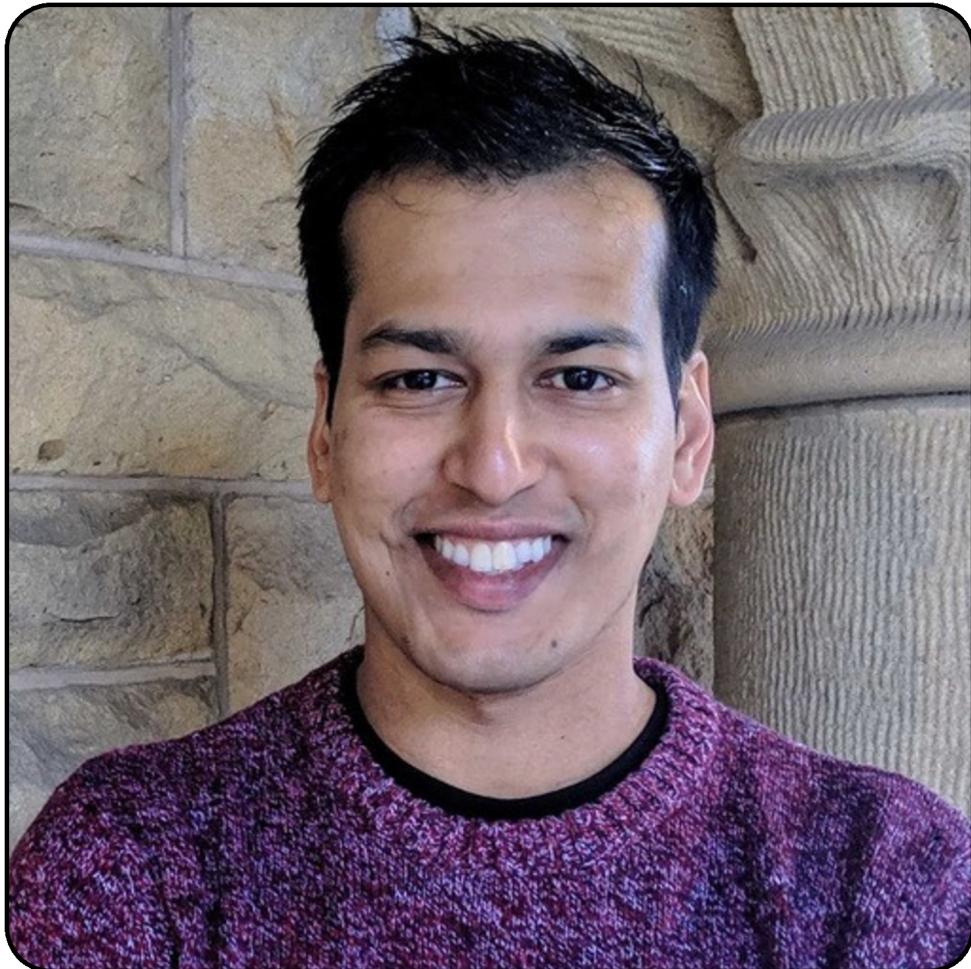
[github.com/colinjlacy
ingress-to-gateway-migration](https://github.com/colinjlacy/ingress-to-gateway-migration)



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“Yes.”

Arko Dasgupta

Envoy Gateway Maintainer

