

Building Ingress From Concept to Connection

Scott McAllister

Principal Developer Advocate

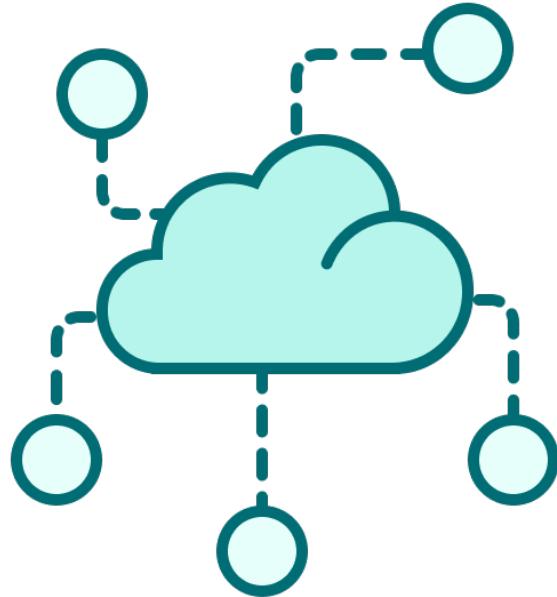
ngrok



kubernetes

Trade-offs





Your service

Before ngrok

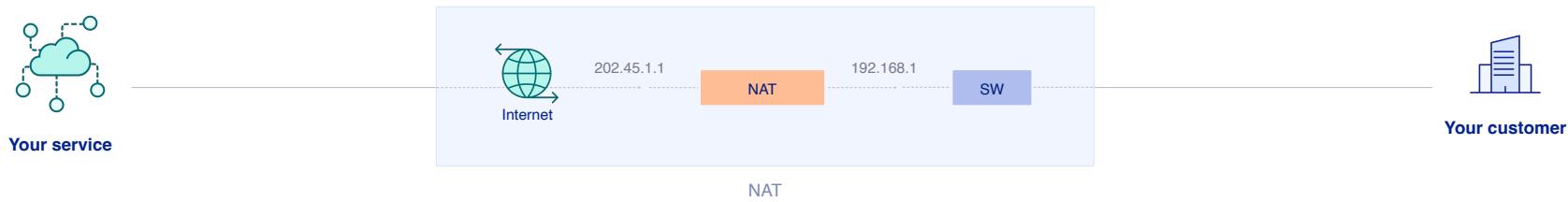


Your service



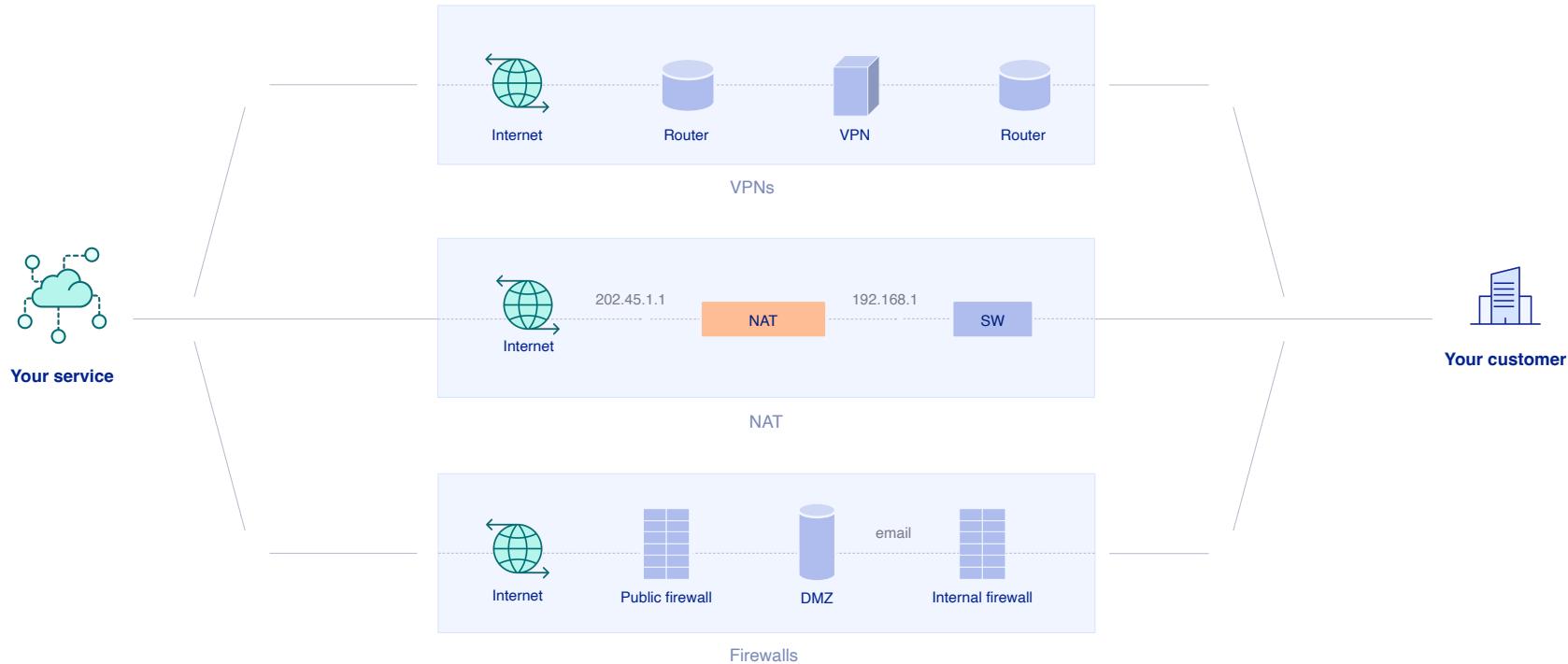
Your
customer

Before ngrok



ngrok

Before ngrok



After ngrok



Your service



Your customer

ngrok

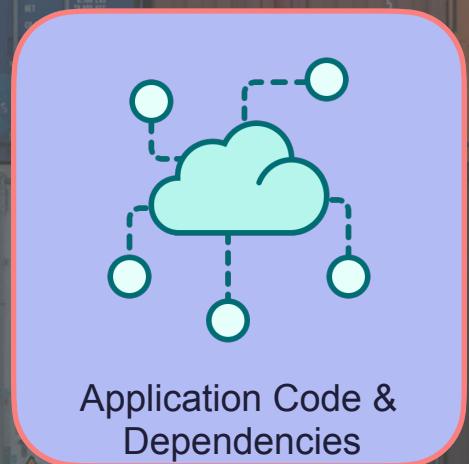
ngrok CLI

```
> ngrok http 80 --domain="stirtrek-2023.ngrok.dev"

Session Status      online
Account            Scott McAllister (Plan: Pro)
Version             3.2.2
Region              Europe (eu)
Latency             235ms
Web Interface       http://127.0.0.1:4040
Forwarding          https://stirtrek-2023.ngrok.dev
```

“Developers are still being forced to work
with the **assembly language** of
networking”

– *Alan Shreve, Founder of ngrok*



ngrok

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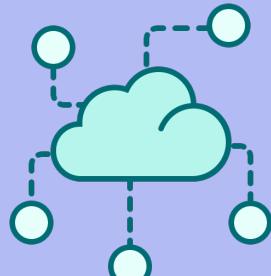
Container



Application Code &
Dependencies

Pod

Container



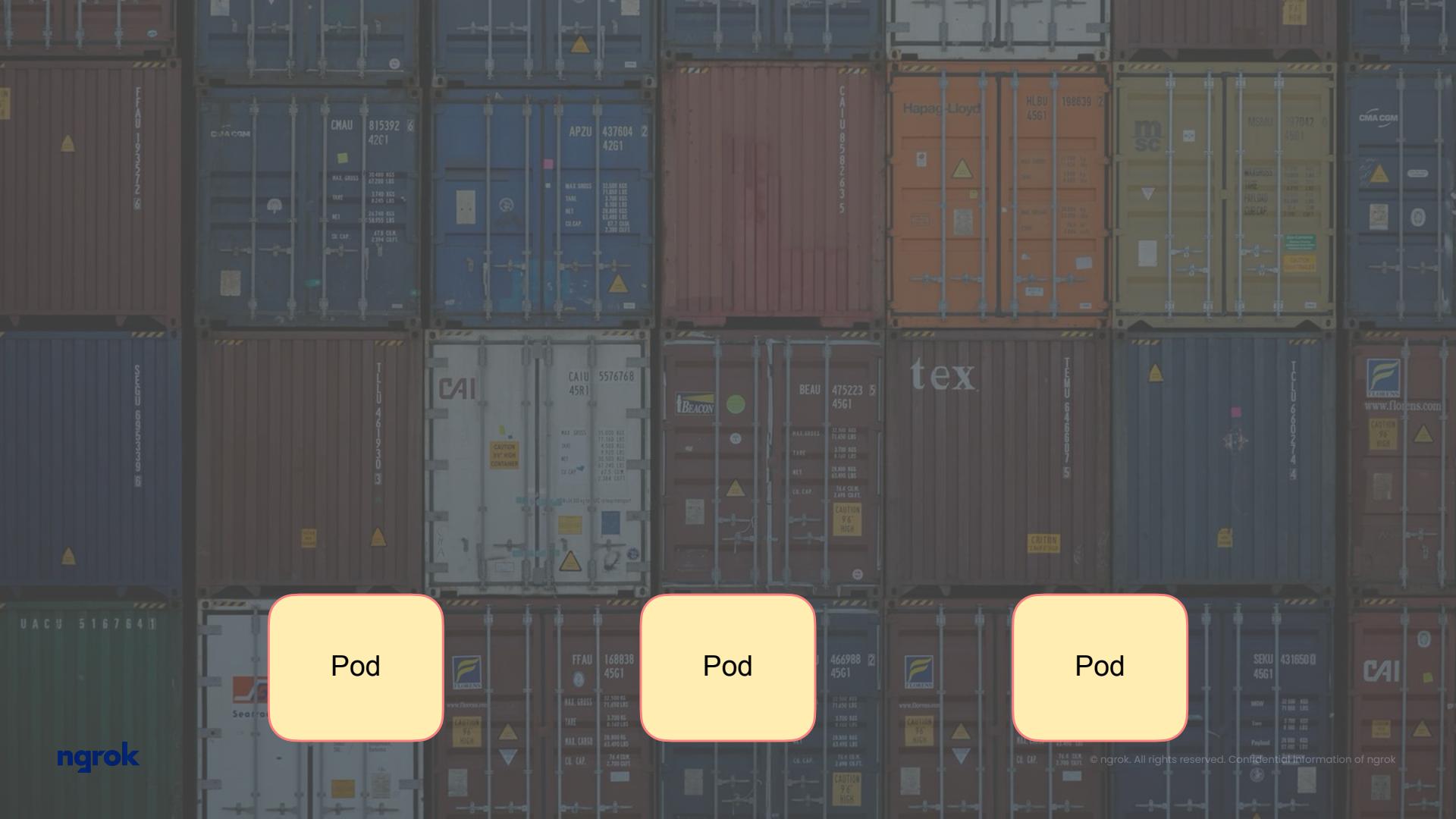
Application Code &
Dependencies

ngrok

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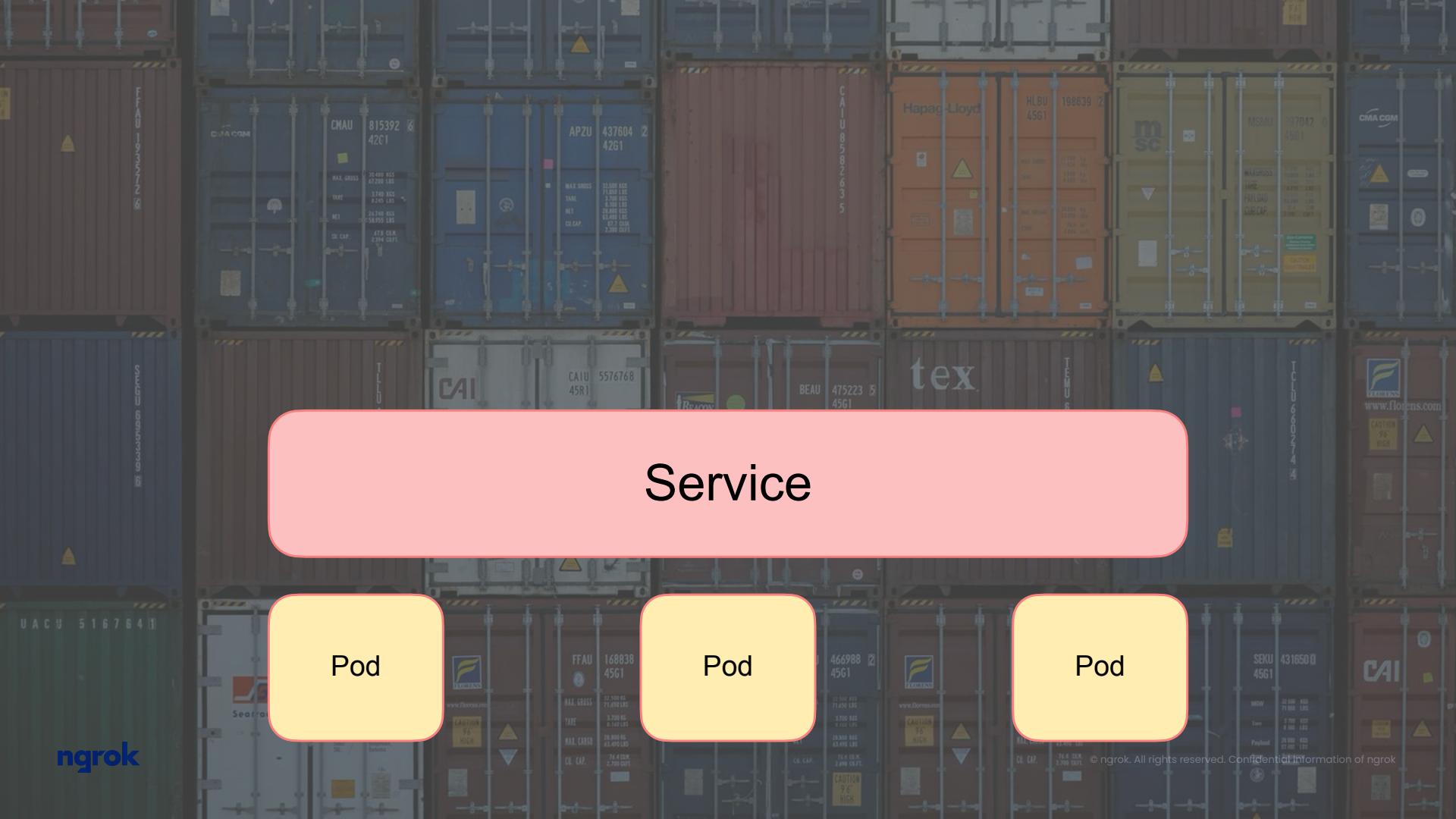
Pod



Pod

Pod

Pod

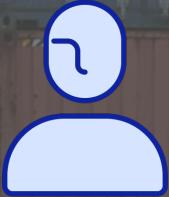


Service

Pod

Pod

Pod



Ingress

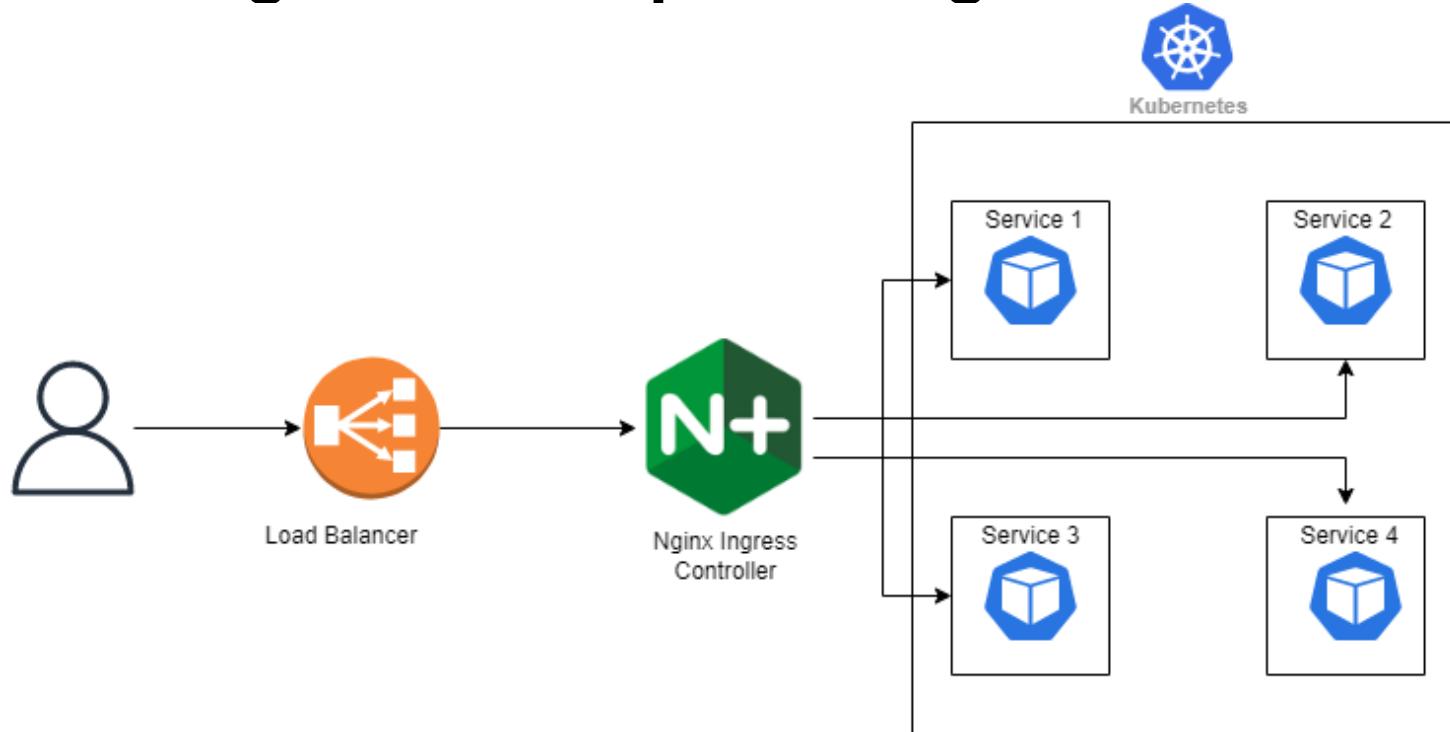
Service

Pod

Pod

Pod

Typical Ingress Set Up with Nginx



Source: <https://www.checkmateq.com/blog/ingress-controller/>

A photograph of a person walking away from the camera on a paved path that leads towards a bright sunset over a lake and mountains. The scene is framed by foliage in the foreground.

ngrok's Journey

ngrok

Trade-off

Monolith or Microservices



Lego Monolith

Media

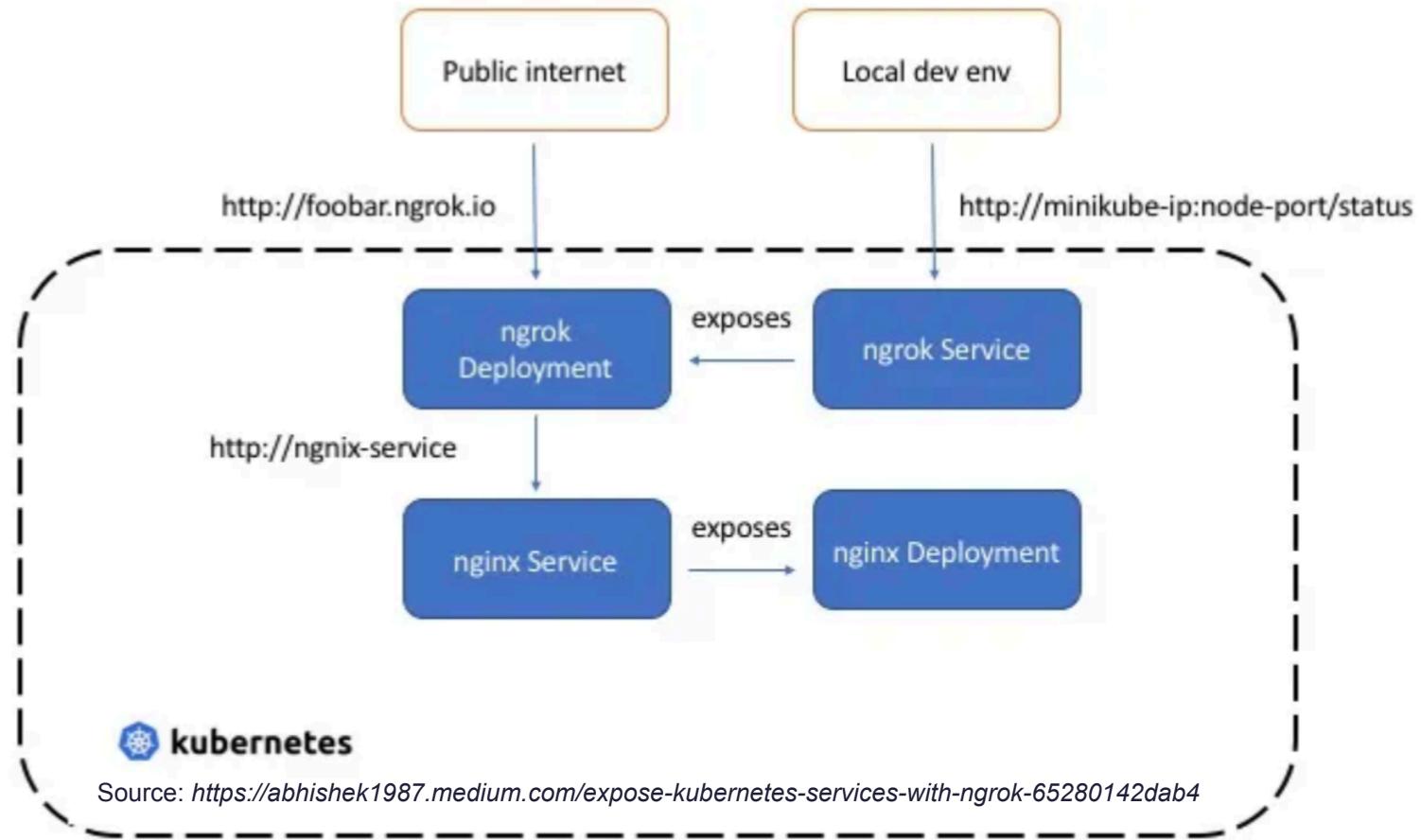
Metrics

Web

Auth

API

ngrok as a Service in Kubernetes



GOOD
SPARK
GARAGE
.COM



ngrok

Safety

1 volt → threshold of feeling tingling

5 volts → Maximum current level human can withstand

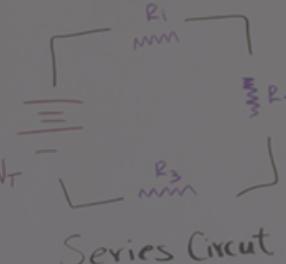
② Basic Circuits

Current - equals flow and is measured in amps.

Voltage - is the force and it is labeled as Volts

Resistance - is the opposition and is measured in Ohms (Ω)

③ Circuit theory



Architecture

④ Digital logic

Or logic



$$X = A + B$$

And logic



$$Y = A \cdot B$$

NAND



$$X = \overline{A \cdot B}$$

NOR



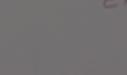
$$X = \overline{A + B}$$

XOR



$$X = A \oplus B$$

XNOR



$$X = \overline{A \oplus B}$$

XOR



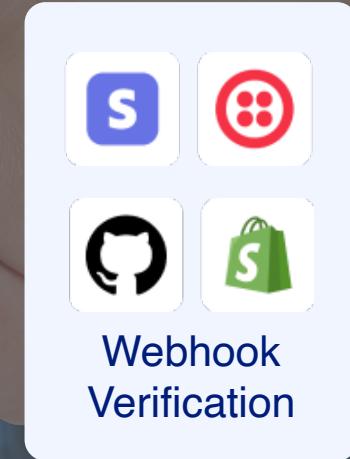
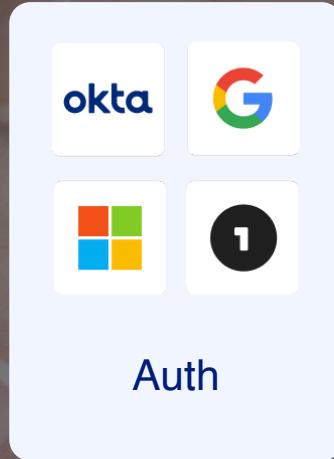
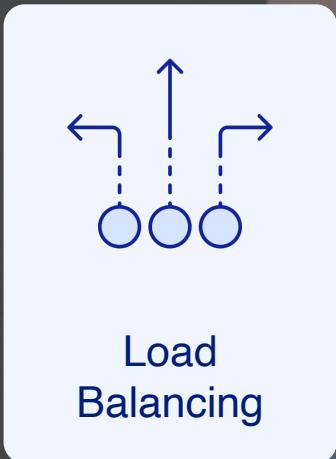
Idiomatic API

Seamless Kubernetes integration

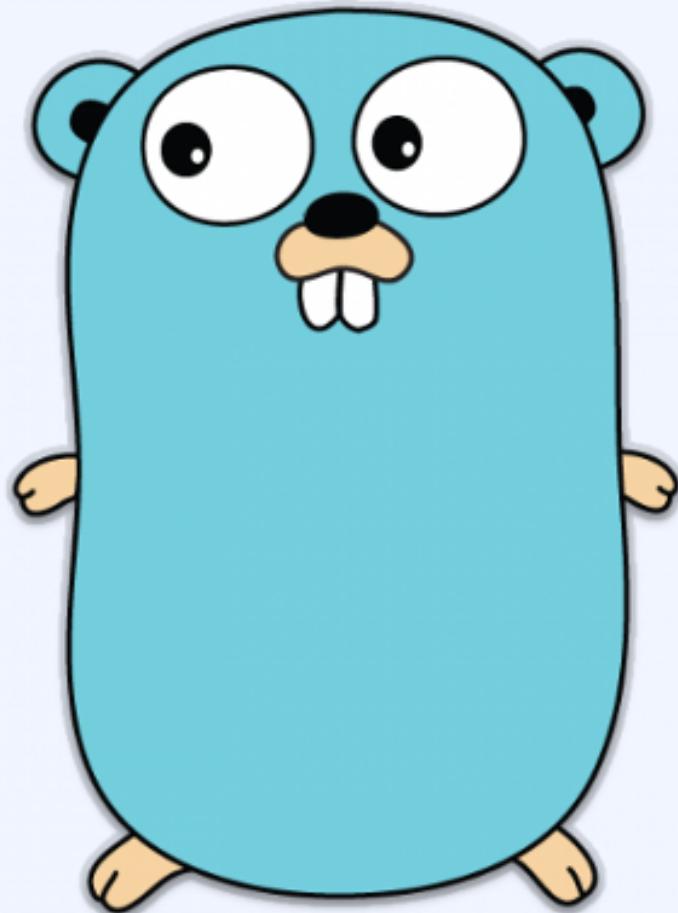
Hexadecimal

16^4	16^3	16^2	16^1	16^0
65536	4096	256	16	1

Trusted Infrastructure



ngrok

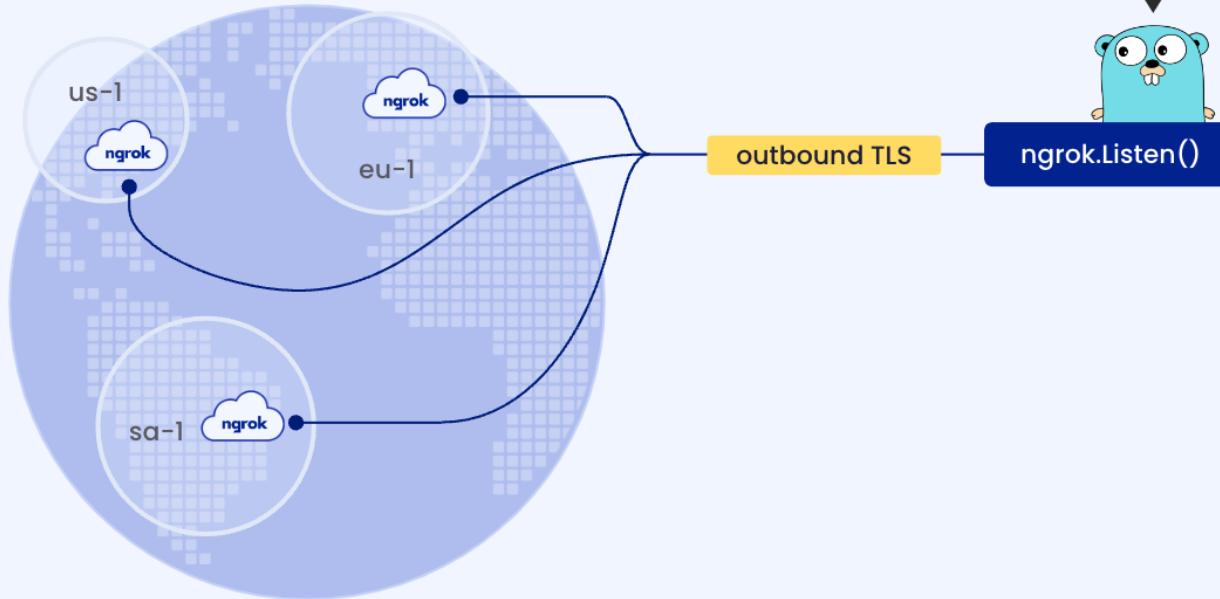


ngrok



ngrok

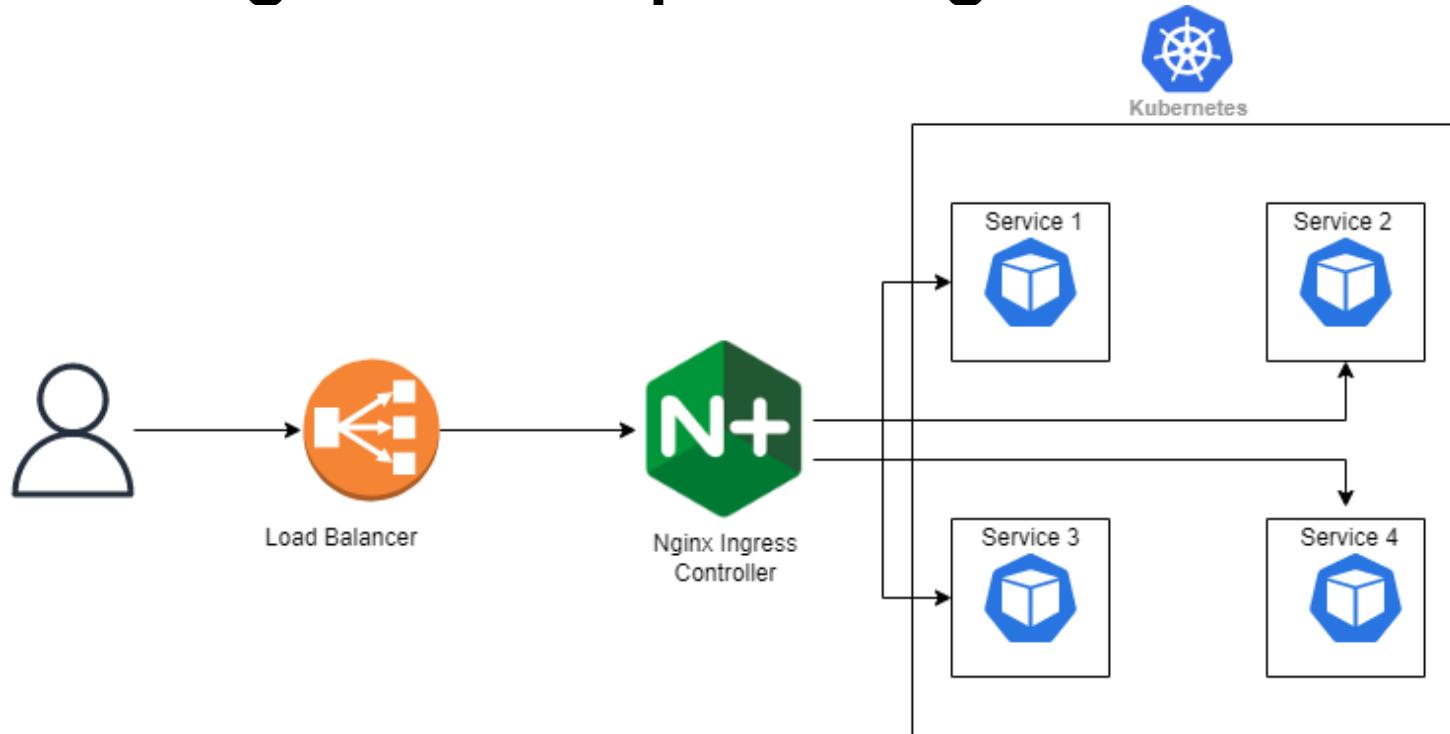
```
ngrok.Listen(ctx, config.HTTPEndpoint(  
    config.WithDomain("my-app.ngrok.io"),  
    config.WithAllowCIDRString("192.30.252.0/22"),  
    config.WithCircuitBreaker(0.8),  
    config.WithOAuth("github"),  
))
```



<https://myapp.ngrok.io>

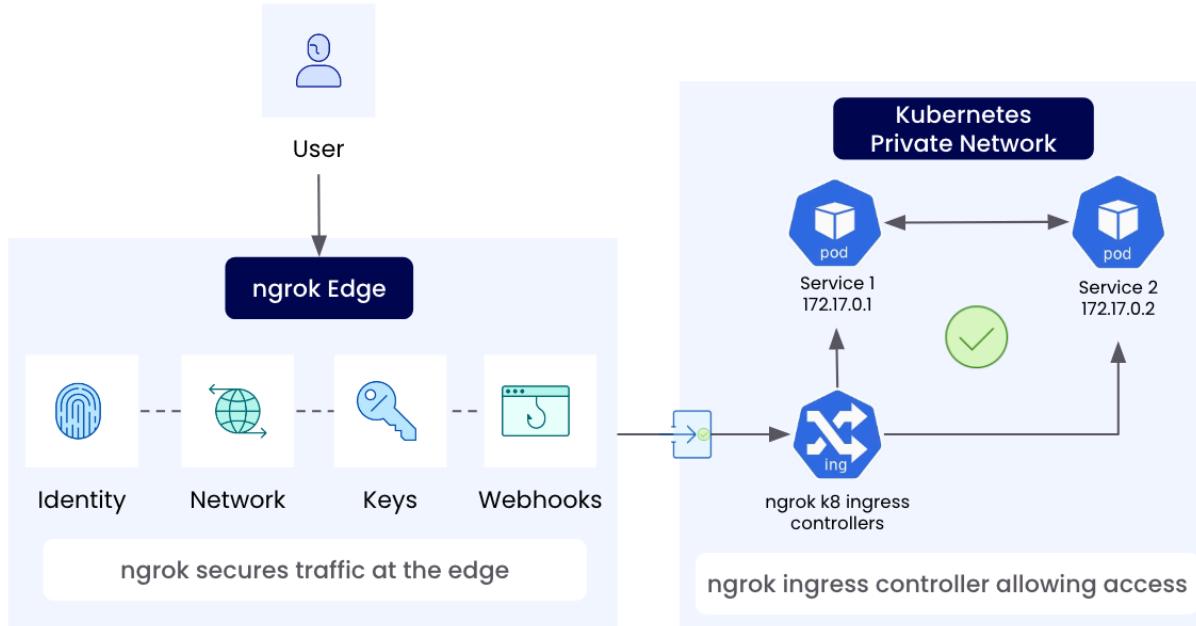
ngrok

Typical Ingress Set Up with Nginx



Source: <https://www.checkmateq.com/blog/ingress-controller/>

ngrok Ingress Controller: our journey



Development

Controller Runtime

Set of standard Go libraries for building Kubernetes Controllers

Kubebuilder

Framework for building Kubernetes APIs using custom resource definitions (CRDs)

Trade-offs

Ingress Controller vs Gateway API Spec

Widely used specification

Community already knows how to use

It's what we use internally

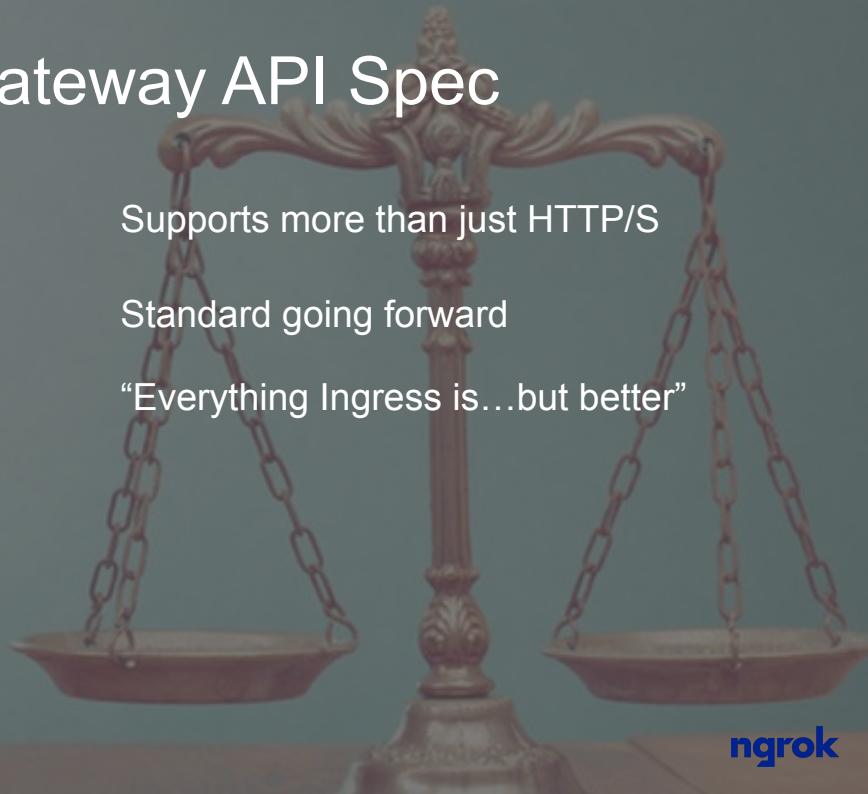
Most Gateway implementations still in Alpha

Gateway specs still in flux

Supports more than just HTTP/S

Standard going forward

“Everything Ingress is...but better”



Current Status

Project Status: Beta

Using Internally on Infrastructure Cluster
For CI Processes

Current Status

Seeking Feedback!



What's Next

Publicly Release v.1

Support Gateway API Spec

Resources

Controller Runtime

<https://github.com/kubernetes-sigs/controller-runtime>

Kubebuilder

<https://book.kubebuilder.io/>

ngrok Ingress Controller for Kubernetes

<https://github.com/ngrok/kubernetes-ingress-controller>

Kubernetes Ingress Controller

<https://kubernetes.io/docs/concepts/services-networking/ingress-controllers/>

Kubernetes API Gateway

<https://gateway-api.sigs.k8s.io/>

ngrok

Scott McAllister

Speaker, Writer, Coder

ngrok



stmcallister.github.io



@stmcallister



techhub.social/@stmcallister



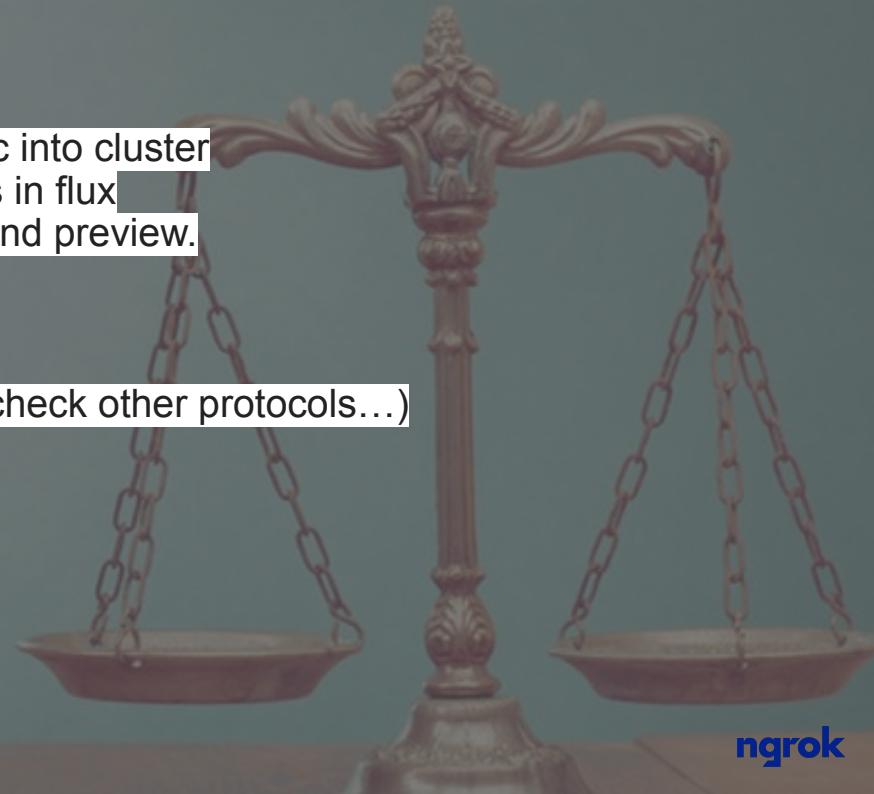
@stmcallister.bsky.social

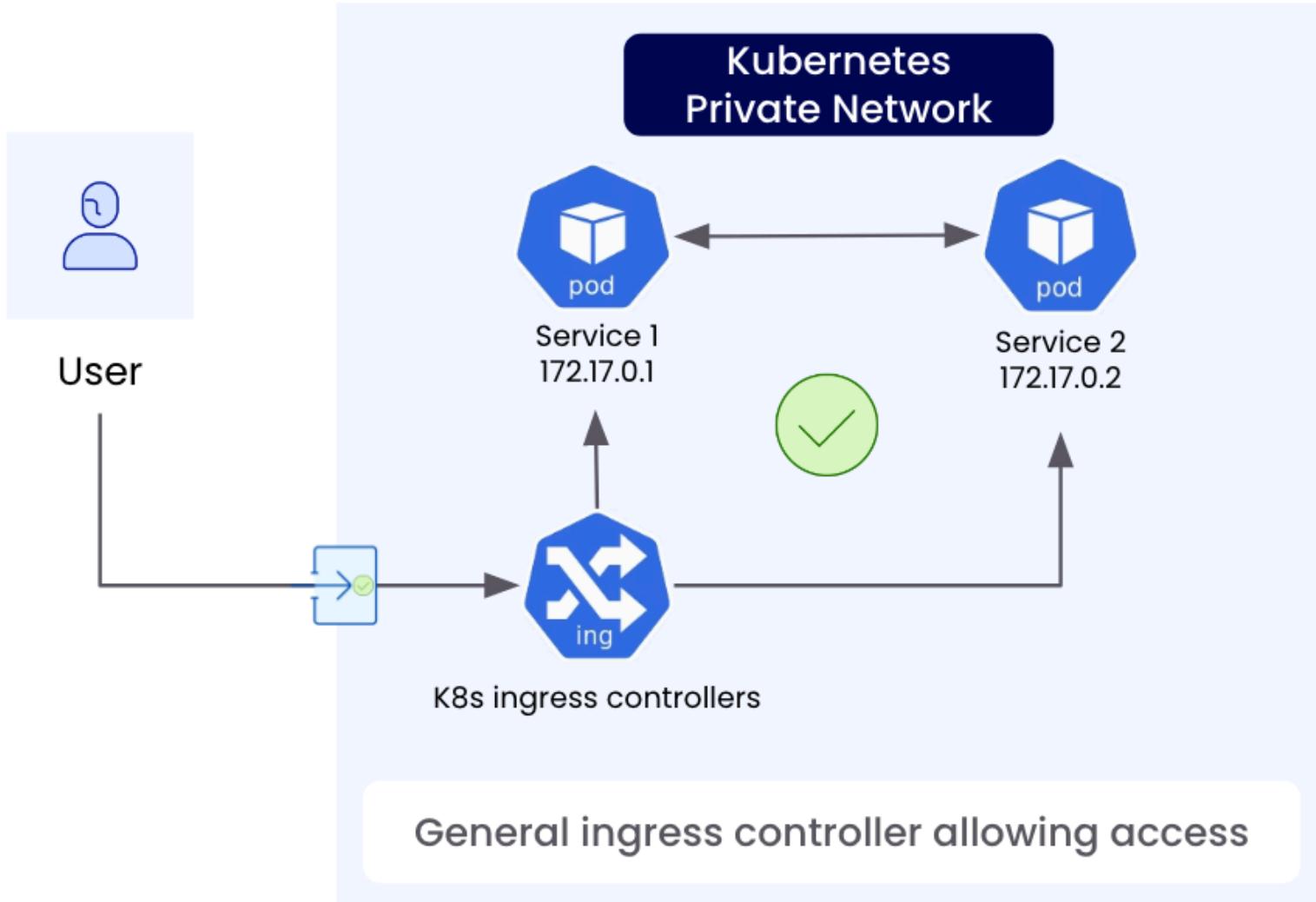


Thank you

Trade-offs

- Tons of people know how to use it to get traffic into cluster
- Gateway spec is still pretty new. Lots of specs in flux
 - Most of the implementations are alpha and preview.
 - HashiCorp Consul status?
 - cert-manager integration is in alpha
- Downside: only HTTP traffic. Gateway TCP, (check other protocols...)
- One tunnel manager per pod
 - Simplicity
 - May not scale well





Title only

Title and content

Maecenas pulvinar pellentesque luctus.

- Vestibulum sodales porta ligula, non fringilla enim convallis vel.
- Donec id purus tincidunt, rutrum purus vel, posuere lacus.

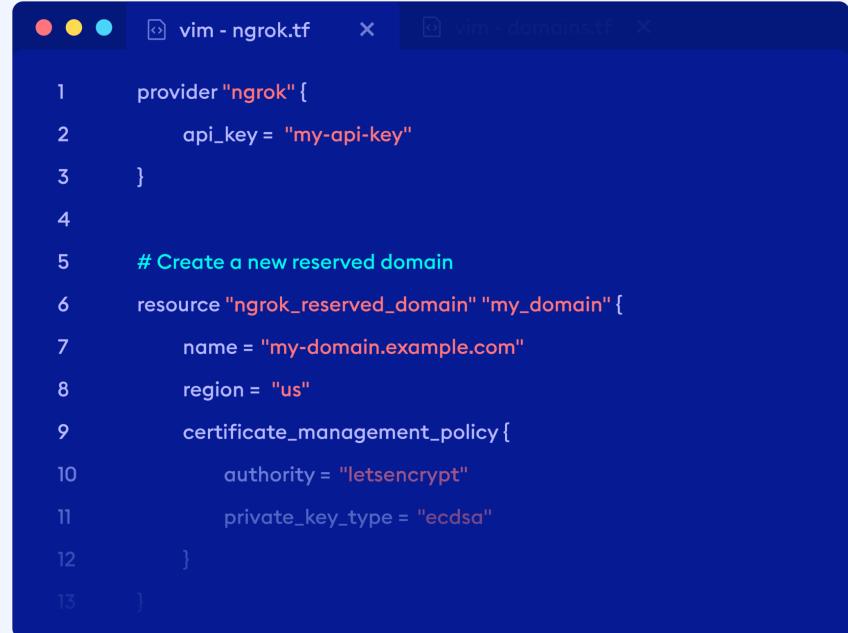
Vivamus laoreet est sem, in aliquam tellus suscipit at. Pellentesque a ligula ornare nibh laoreet euismod nec vel neque. Donec convallis sed neque vel egestas.

Phasellus est nulla, fermentum vitae sollicitudin id, imperdiet eu elit.

Nulla neque magna, tempor sed pharetra eget, finibus quis sem. Fusce semper nibh eu sollicitudin imperdiet. Mauris et erat feugiat, volutpat mauris aliquam, pharetra nulla.

Title and content

Nulla neque magna, tempor sed
pharetra eget, finibus quis sem. Fusce
semper nibh eu sollicitudin imperdiet.



A screenshot of the Vim text editor showing two tabs open. The active tab is titled 'vim - ngrok.tf' and contains the following Terraform code:

```
1 provider "ngrok" {
2     api_key = "my-api-key"
3 }
4
5 # Create a new reserved domain
6 resource "ngrok_reserved_domain" "my_domain" {
7     name = "my-domain.example.com"
8     region = "us"
9     certificate_management_policy {
10         authority = "letsencrypt"
11         private_key_type = "ecdsa"
12     }
13 }
```

The second tab, titled 'vim - domains.tf', is visible in the background.

Four columns

Lorem ipsum

Consectetur adipiscing

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem ligula sed

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem.

Dolor sit amet

Consectetur adipiscing

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem ligula sed

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem.

Donec et miut

Consectetur adipiscing

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem ligula sed

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem.

Fusce tincidunt

Consectetur adipiscing

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem ligula sed

Nullam pharetra, nunc
sit amet vulputate
vestibulum.

Urna enim tincidunt leo,
a efficitur sem.

Two columns



Lorem ipsum

Consectetur adipiscing elit. Nullam pharetra, nunc sit amet vulputate vestibulum, urna enim tincidunt leo, a efficitur sem ligula sed odio. Etiam finibus enim enim, vitae scelerisque nunc finibus vitae.



Donec et mi ut orci

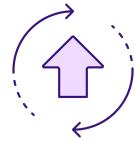
Consectetur adipiscing elit. Nullam pharetra, nunc sit amet vulputate vestibulum, urna enim tincidunt leo, a efficitur sem ligula sed odio. Etiam finibus enim enim, vitae scelerisque nunc finibus vitae.

Three columns



Lorem ipsum

Nullam pharetra, nunc sit
amet vulputate vestibulum



Dolor sit amet

Nullam pharetra, nunc sit
amet vulputate vestibulum



Donec et mi ut orci

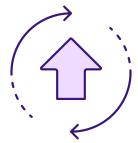
Nullam pharetra, nunc sit
amet vulputate vestibulum

Four columns



Lorem ipsum

Nullam pharetra, nunc
sit amet vulputate
vestibulum



Dolor sit amet

Nullam pharetra, nunc
sit amet vulputate
vestibulum



Donec et miut

Nullam pharetra, nunc
sit amet vulputate
vestibulum



Fusce tincidunt

Nullam pharetra, nunc
sit amet vulputate
vestibulum

Two columns

Lorem ipsum

Consectetur adipiscing elit. Nullam pharetra,
nunc sit amet vulputate vestibulum.

Urna enim tincidunt leo, a efficitur sem ligula
sed odio.

Etiam finibus enim enim, vitae scelerisque nunc
finibus vitae.

Dolor sit amet

Consectetur adipiscing elit. Nullam pharetra,
nunc sit amet vulputate vestibulum.

Urna enim tincidunt leo, a efficitur sem ligula
sed odio.

Etiam finibus enim enim, vitae scelerisque nunc
finibus vitae.

**Lorem ipsum dolor sit amet, consectetur
adipiscing elit. Nullam pharetra, nunc sit
amet vulputate vestibulum**

“

**With users from Melbourne to Montreal,
Dublin to Singapore, we really value
ngrok's Global Infrastructure.**

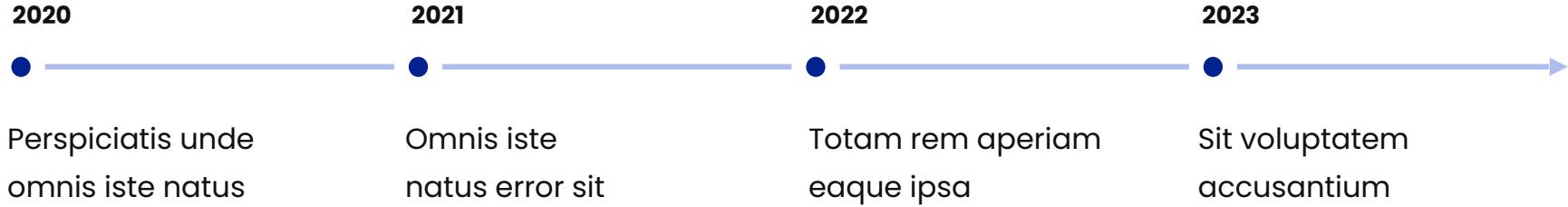
—Wesley Gorman, Senior Director, Engineering



Table

	Category one	Category two	Category three
Consectetur	Consectetur adipiscing elit	Consectetur adipiscing elit	Consectetur adipiscing elit
Nullam pharetra	Nullam pharetra, nunc sit amet	Nullam pharetra, nunc sit amet	Nullam pharetra, nunc sit amet
Vulputate	Vulputate vestibulum	Vulputate vestibulum	Vulputate vestibulum
Urna enim	Urna enim tincidunt leo, a efficitur	Urna enim tincidunt leo, a efficitur	Urna enim tincidunt leo, a efficitur
Etiam finibus	Etiam finibus enim enim, vitae scelerisque	Etiam finibus enim enim, vitae scelerisque	Etiam finibus enim enim, vitae scelerisque
Donec	Donec et mi ut orci ultrics pharetra	Donec et mi ut orci ultrics pharetra	Donec et mi ut orci ultrics pharetra
Fusce tincidunt	Fusce tincidunt, dolor nec tincidunt auctor	Fusce tincidunt, dolor nec tincidunt auctor	Fusce tincidunt, dolor nec tincidunt auctor

Timeline



Code snippet

Lorem ipsum

Consectetur adipiscing elit. Nullam pharetra, nunc sit amet vulputate vestibulum,
urna enim tincidunt leo, a efficitur sem ligula sed odio. Etiam finibus enim enim,
vitae scelerisque nunc finibus vitae.

• • •

```
[user@localhost]$ | ngrok http 80 --loadBalance=27
```

Type hierarchy

Lorem ipsum

CONTENT SLIDE TITLE: POPPINS, 24PX, MEDIUM, #02238F

Lorem ipsum

LARGE HEADING: POPPINS, 14PX, SEMI-BOLD, #1F1E37

Lorem ipsum

LARGE HEADING: POPPINS, 12PX, SEMI-BOLD, #1F1E37

LOREM IPSUM DOLOR

CODE: IBM PLEX MONO, 9PX, NORMAL

Lorem ipsum dolor sit amet, consectetur adipiscing.
Maecenas **dapibus felis nec** eros scelerisque ullam
corper. Nunc sodales placerat risus.

BODY COPY: POPPINS, 14PX, REGULAR, #1F1E37

- Lorem ipsum dolor sit amet
- Consectetur adipiscing
- Maecenas dapibus felis

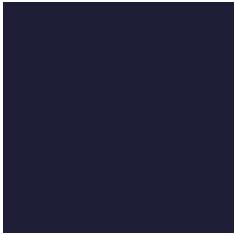
BODY COPY: POPPINS, 14PX, REGULAR, #1F1E37

Lorem ipsum dolor sit amet, consectetur adipiscing. Maecenas
dapibus felis nec eros scelerisque ullam corper. Nunc sodales
placerat risus.

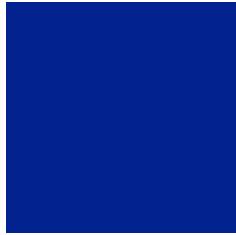
SMALL BODY COPY: POPPINS, 9PX, REGULAR, #1F1E37

Colors

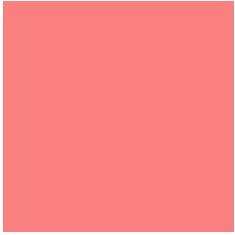
Primary colors



#1F1E37



#02238F



#FA8080

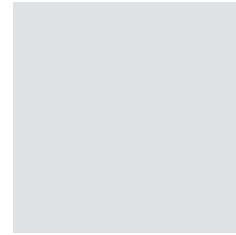


#FFDB62

Secondary colors



#151429



#DEE2E4



#5A5962



#F0F5FF

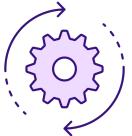
Icons



Ngrok network



Service



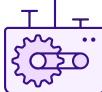
Automation



Capacity



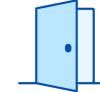
Labeling



Machine



Identity



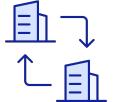
Access Control



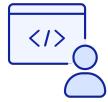
Key



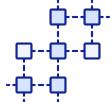
Enterprise



B2B



Developer



Connectivity



Teams



User



Lock



Resiliency



IT Security



Network



Encryption



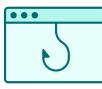
IoT



IoT (variant 2)



Middleware

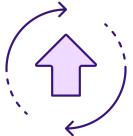


Webhooks

Icons



Speed



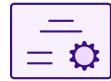
Upgrade



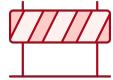
Open Standards



Doc



Certificate



Coming Soon



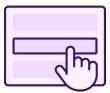
Edge



Geo Location



Get started Alt



Context



World



Everything



Right now



Hourglass



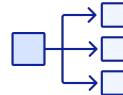
Turnkey



Get started



Inspect



Load Balancer



Social Login



Cheat Sheet



Support



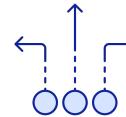
HTTP Edge



TCP Edge



TLS Edge

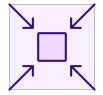


Fault Tolerance

Icons



Circuit Breaker



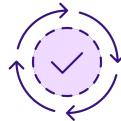
Compression



Demo



No Requirements



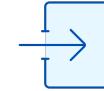
Consistency



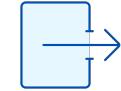
Lightweight



No



Ingress



Egress



Stop



Native OS Service



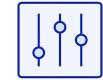
Remote



Instant



Best in Class



Regulation



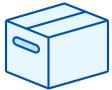
Yes



Domain



Personalized



Out of the shelf

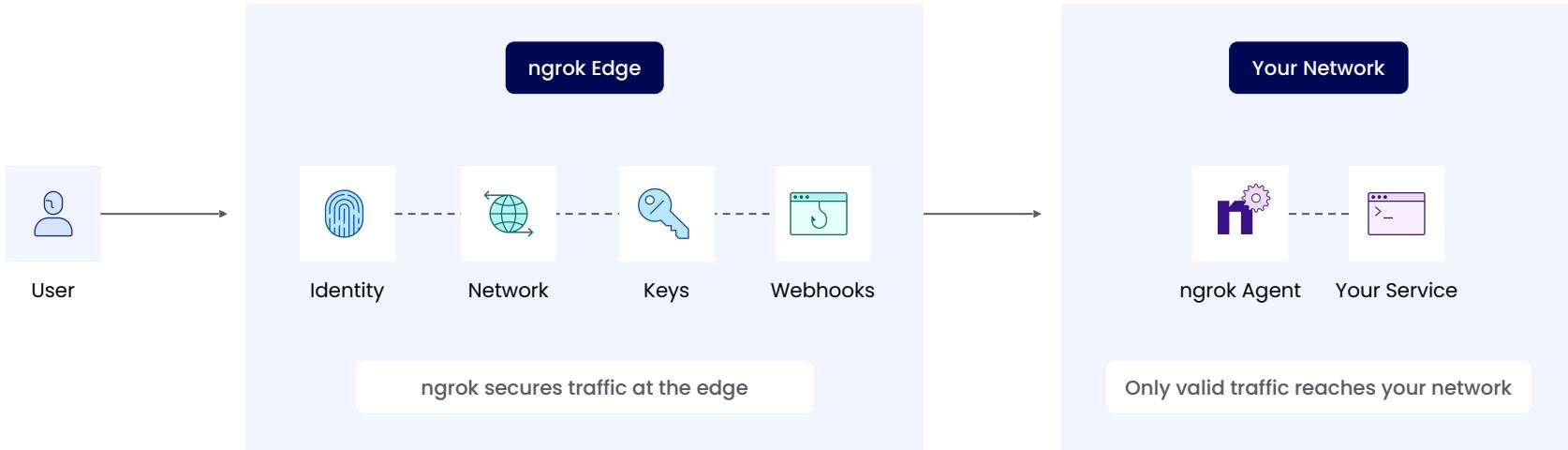


Zero Knowledge



Mutual TLS

Diagrams



Content grid

Thank you

ngrok