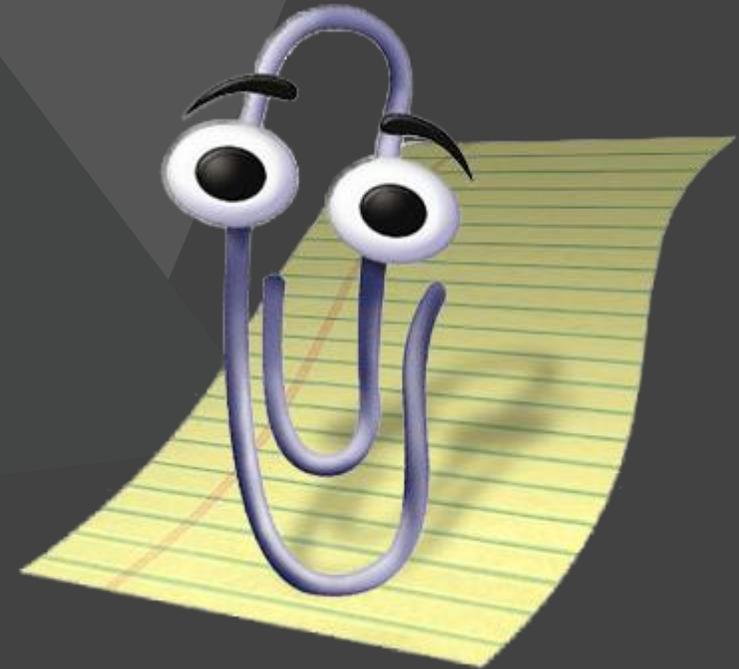


From Clippy to Kernel

Open Source at Microsoft

Suzanne Daniels



**Judge us by the actions we have taken in
the recent past, our actions today and in
the future**

— Satya Nadella, CEO of Microsoft

About me

Suzanne Daniels

- Technology Strategist at Microsoft: Helping partners do cool/useful/profitable stuff on Azure.
- Focus on OSS/Dev/Infra (serverless?)
- Originally developer (in VB, Clipper, Delphi)
- Clippy fangirl
- OSS Consultant for years
- Besides technology: D&I
- Got a call. Now this happened.

Twitter: @suushier

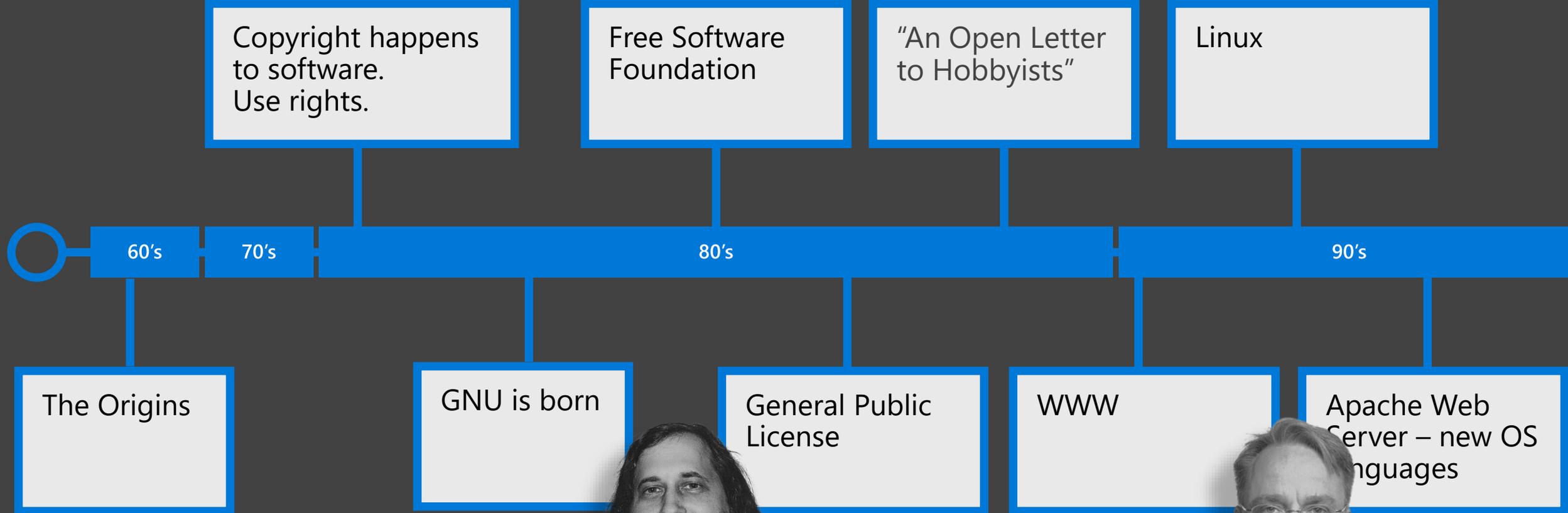


Today

Microsoft: From Clippy to
Kernel

Tour of some Azure services
you might like

Before Clippy



Red Hat goes Public

Git+GitHub Launch

Grave period of lawsuits and statements

Sun -> Oracle

90's

2000's

Open Source Initiative

Clippy introduced

"Interop memo"
First OSS released

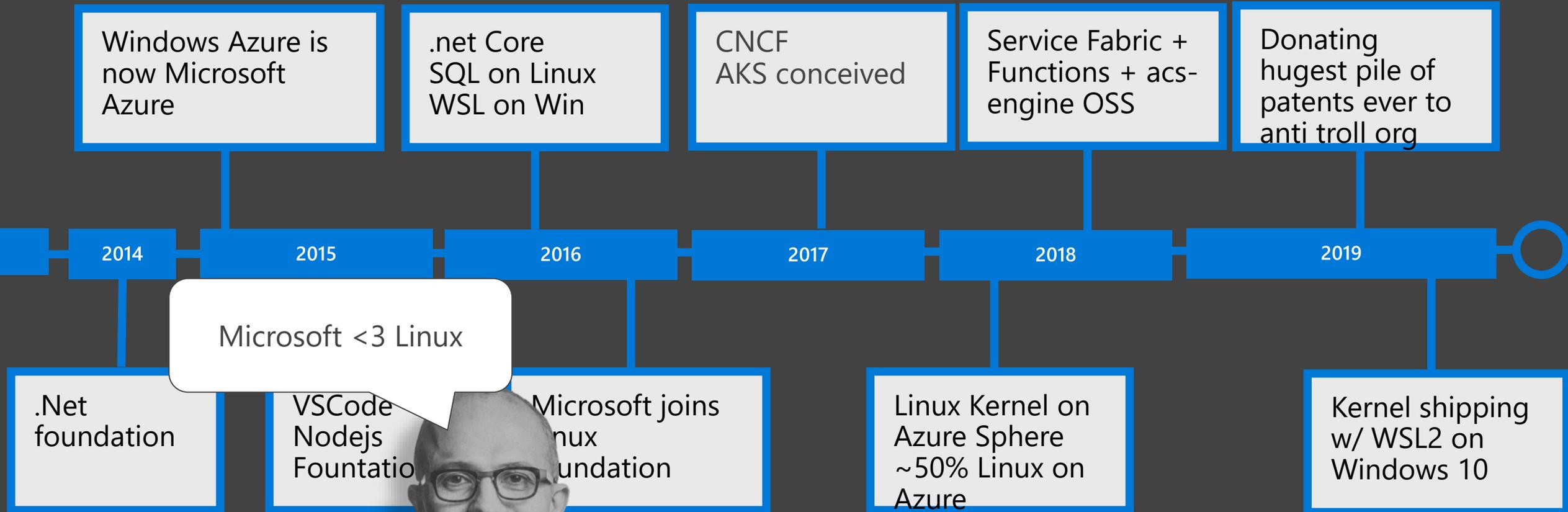
Samba Agreement

AWS + Google Born

First contributions + Node.js on windows



After Clippy



Microsoft <3 Linux



Traditional VM

Isolated

Slower to boot

Large memory footprint

You need to manage it

vs

WSL 2

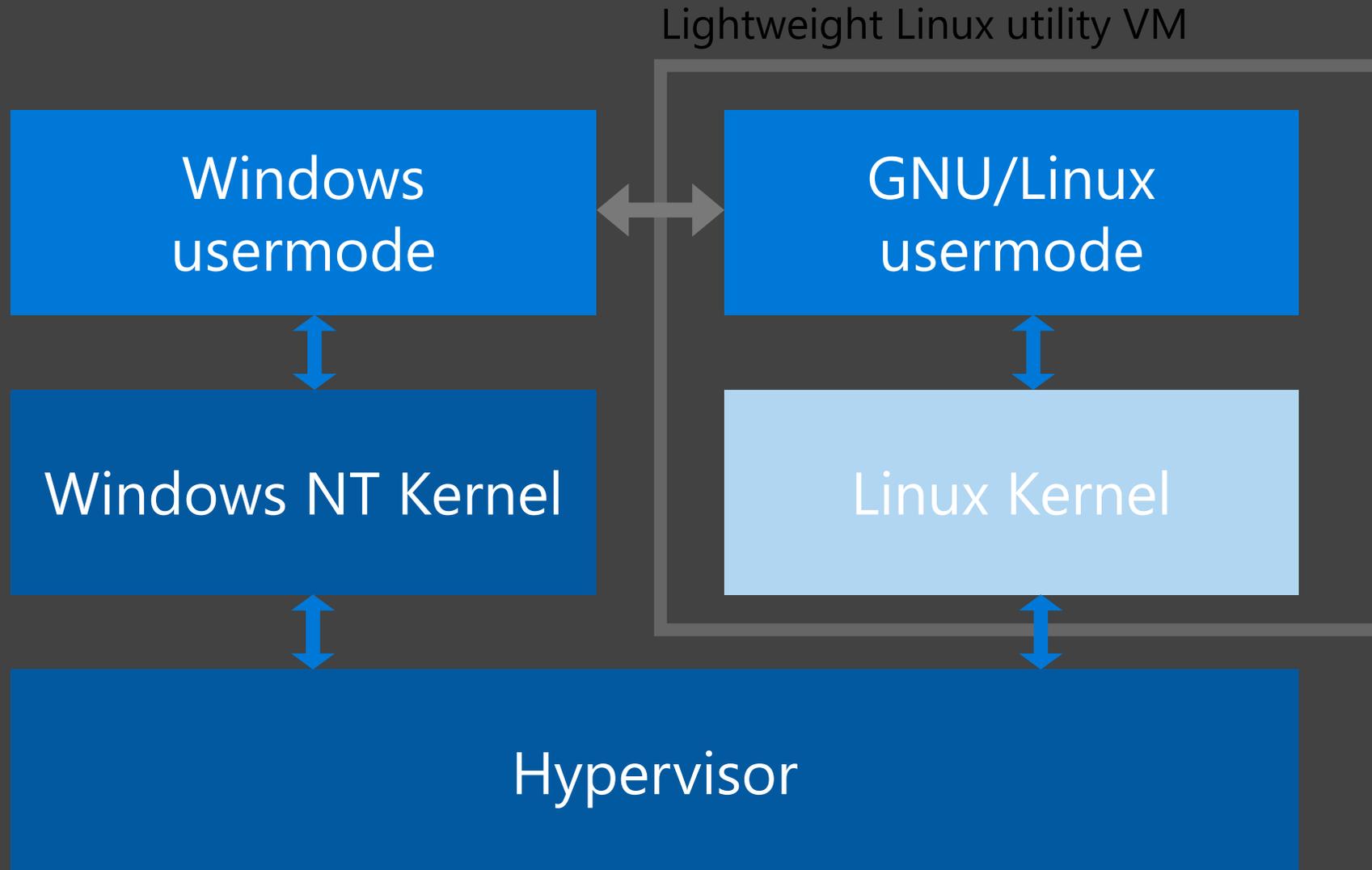
Integrated

Fast to boot (~1 second)

Small memory footprint

Only runs when you need it

WSL 2 architecture overview



WSL features

✓ Windows File Access

DryFs mount options will continue to work in WSL 2

✓ Interop

Launching Windows binaries

✓ /etc/wsl.conf

Configuration options

✓ wslpath

Translate paths from one environment to the other

✓ \$WSLENV

Share environment variables between Linux and Windows

Inner Sourcing

In 2014, Microsoft CEO Satya Nadella directed all Microsoft engineers to "open source internally" - anyone at the company can see anyone else's code and use it as needed.

This vision is now a day-to-day reality for Microsoft engineers.

Innovate

Microsoft releases key innovations as open source for others to use and build upon



Contribute

Microsoft contributes code and thought leadership to open source communities, engaging developers as developers



Enable

Azure enables every developer and organization to more easily adopt open source in the cloud, without having to be an expert

Question

Can you name projects
originated at Microsoft?

Did you know

VS Code is the most popular editor for developers in any language (and Open Source)

R, TypeScript, and PowerShell are top ranked open source languages with origins linked to Microsoft

Service Fabric, Functions and acs-engine/infrastructure components are released as open source

Microsoft is a top contributor to the Linux Kernel

Question

Can you guess how many non-Microsoft OSS projects are we working on?

About Contributing

~5K
employees

Are good for > 2 Milion commits

>8K

Non-Microsoft OSS Projects are worked on by employees

We **collaborate** with the CNCF, CF, Linux Foundation, .Net Foundation, and more

Don't **develop** stuff and throw it back over the **wall**, but work **together**.

Community.

.NET

>19K devs

from over

3,700

companies

contributed

Enable

Making Open Source Projects **Easier to use** by **improving** their security and manageability, while **preserving** open APIs.

Providing **enterprise support** and a large partner ecosystem. 1st party like Red Hat, to implementation partners.

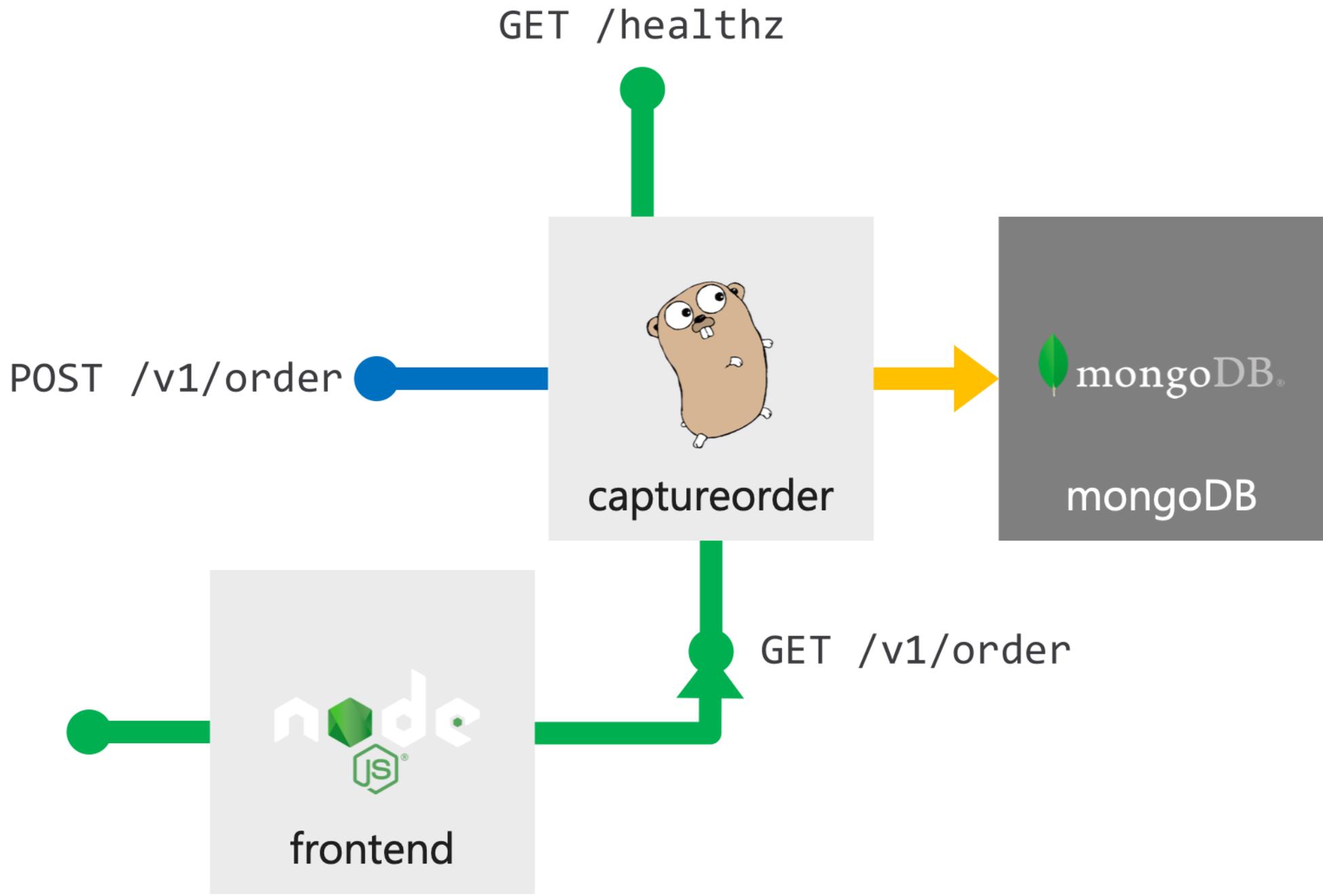


Cool story.

So you can really run Linux on Azure?

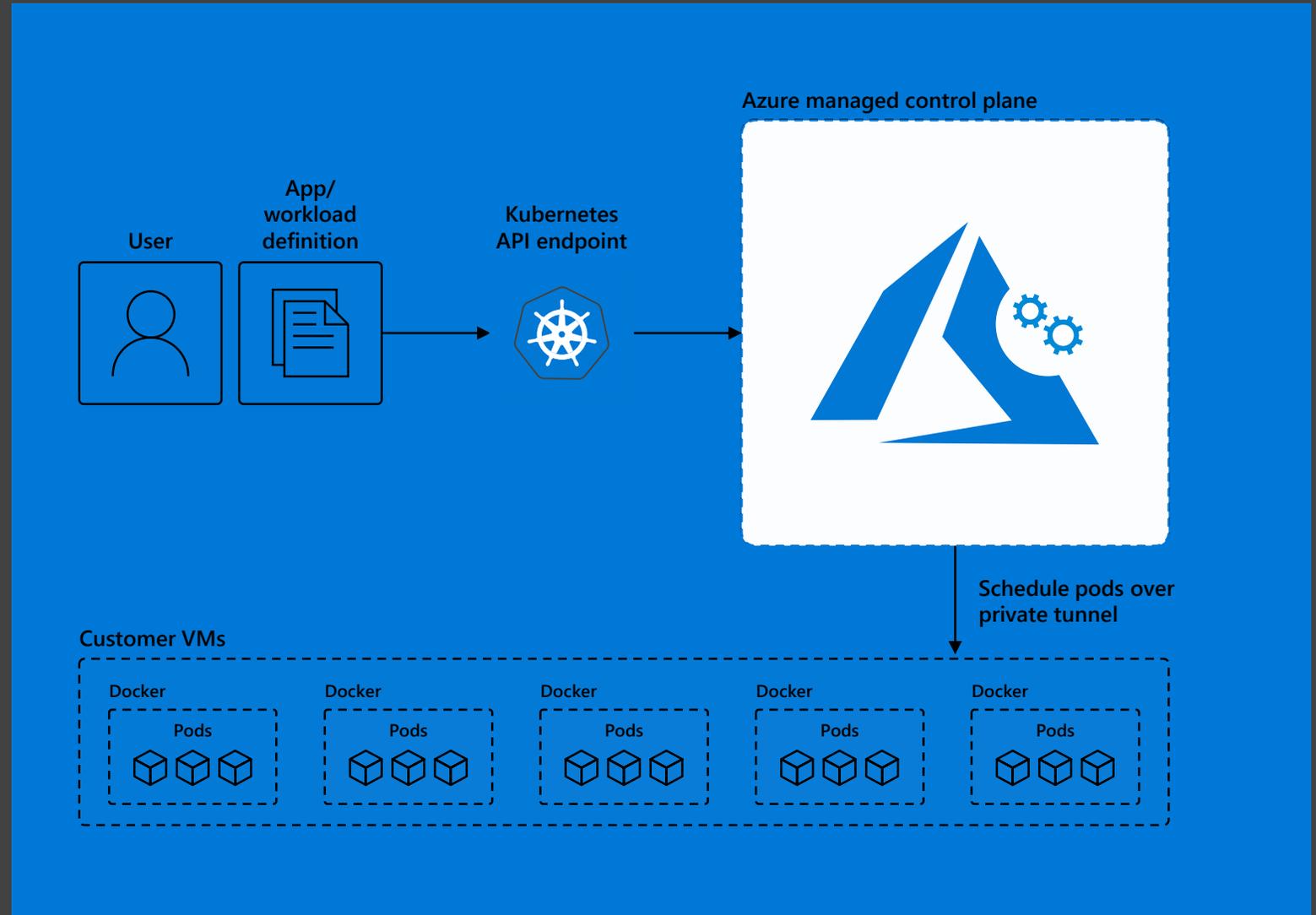
Demo

AKS, ACR, ACI, MongoDB



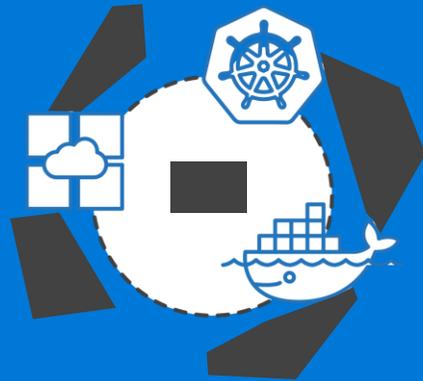
AKS

- Automated upgrades, patches
- High reliability, availability
- Easy, secure cluster scaling
- Self-healing
- API server monitoring
- At no charge

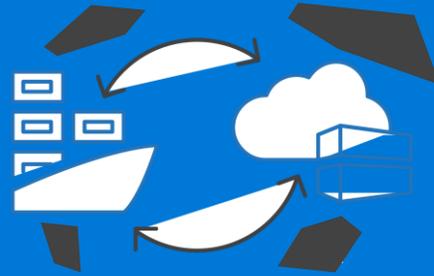


ACR

Manage a Docker private registry as a first-class Azure resource



Manage images for all types of containers



Use familiar, open-source Docker CLI tools

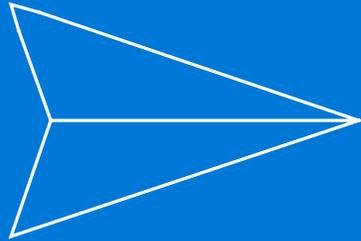


Azure Container Registry geo-replication

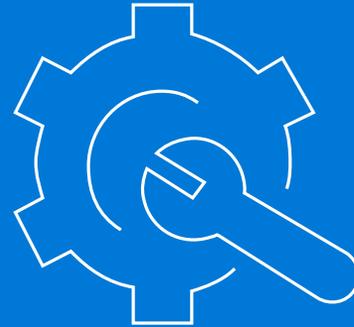


ACR Tasks

Build & Patch your stuff on Azure



Quick task:
Build and push in Azure



Build on code commit
Build on base image update



Multi-step tasks (preview)



Enablement



68% of Kubernetes users* prefer Helm as their package manager



Visual Studio Code Kubernetes Extensions has **11K** monthly active users

Microsoft also maintains...

Helm



Draft



Brigade



Cloud Native
Application Bundles
(CNAB)



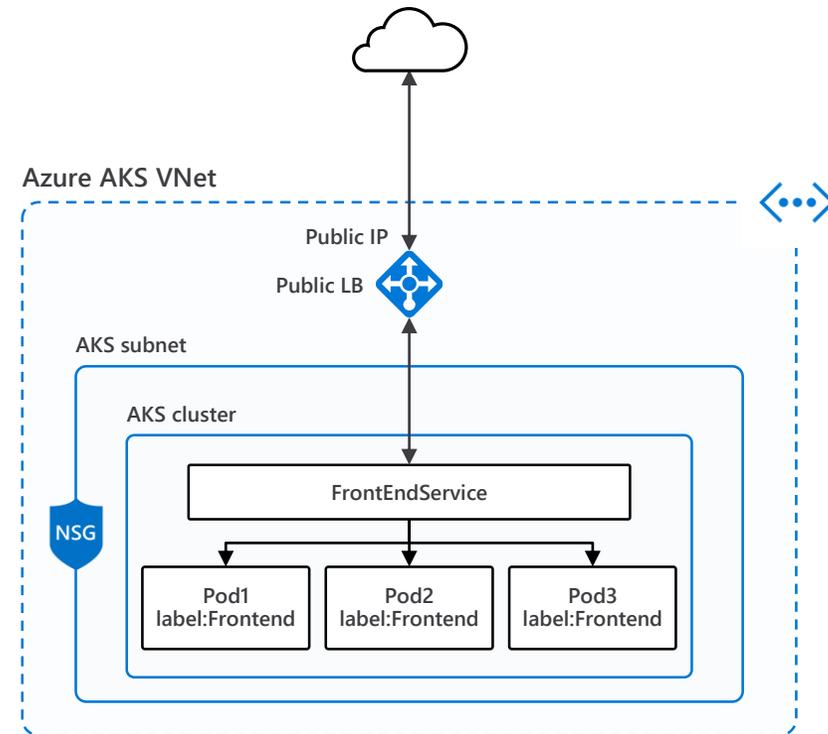
Virtual
Kubelet



Public Service

- Service Type LoadBalancer
- Basic Layer4 Load Balancing (TCP/UDP)
- Each service as assigned an IP on the ALB

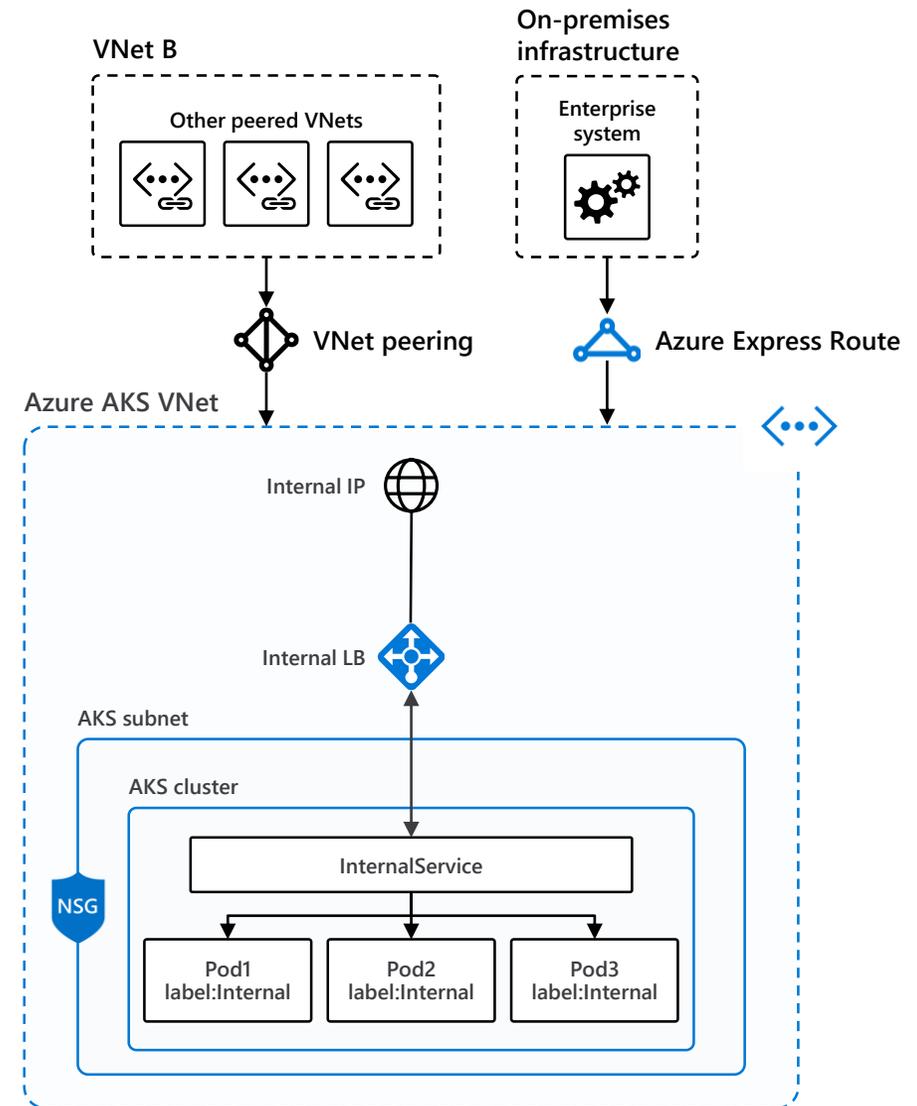
```
apiVersion: v1
kind: Service
metadata:
  name: frontendservice
spec:
  loadBalancerIP: X.X.X.X
  type: LoadBalancer
  ports:
    - port: 80
  selector:
    app: frontend
```



Internal Service

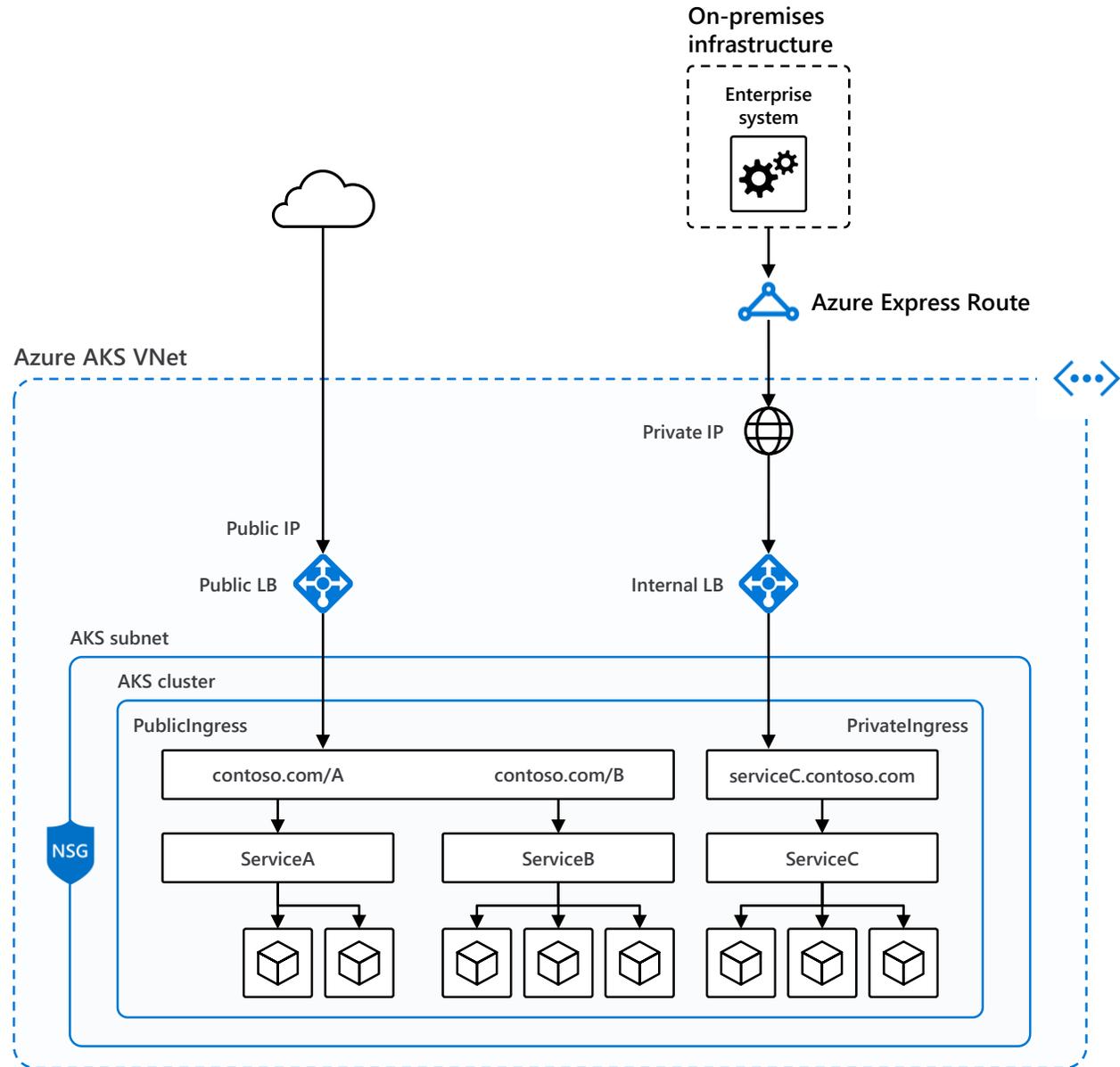
- Used for internal services that should be accessed by other VNets or On-Premise only

```
apiVersion: v1
kind: Service
metadata:
  name: internalservice
  annotations:
    service.beta.kubernetes.io/azure-load-balancer-internal:
"true"
spec:
  type: LoadBalancer
  loadBalancerIP: 10.240.0.25
  ports:
    - port: 80
  selector:
    app: internal
```

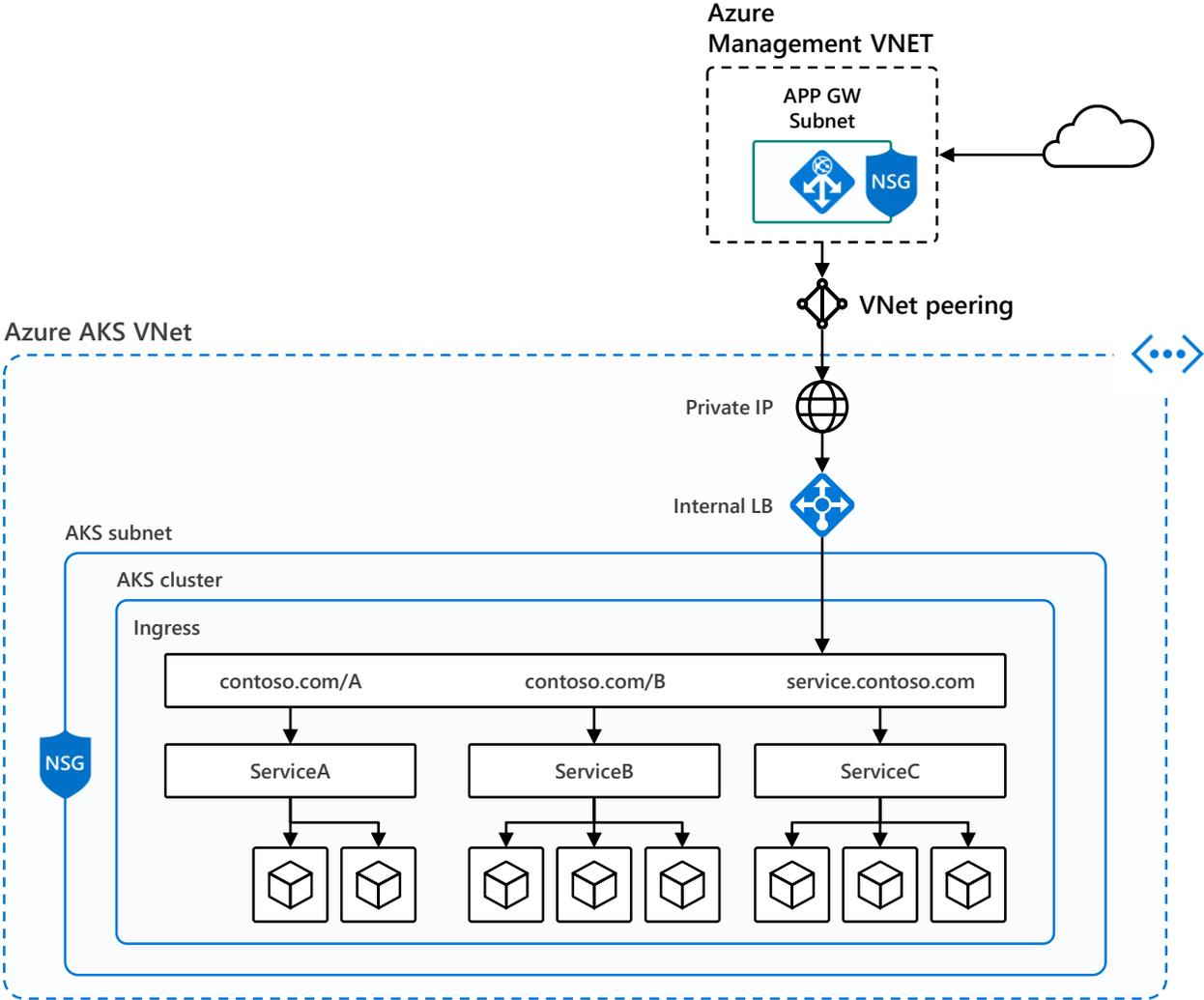


Ingress

```
kind: Ingress
metadata:
  name: contoso-ingress
  annotations: kubernetes.io/ingress.class: "PublicIngress"
spec:
  tls:
  - hosts:
    - contoso.com
    secretName: contoso-secret
  rules:
  - host: contoso.com
    http:
      paths:
      - path: /a
        backend:
          serviceName: servicea
          servicePort: 80
      - path: /b
        backend:
          serviceName: serviceb
          servicePort: 80
```



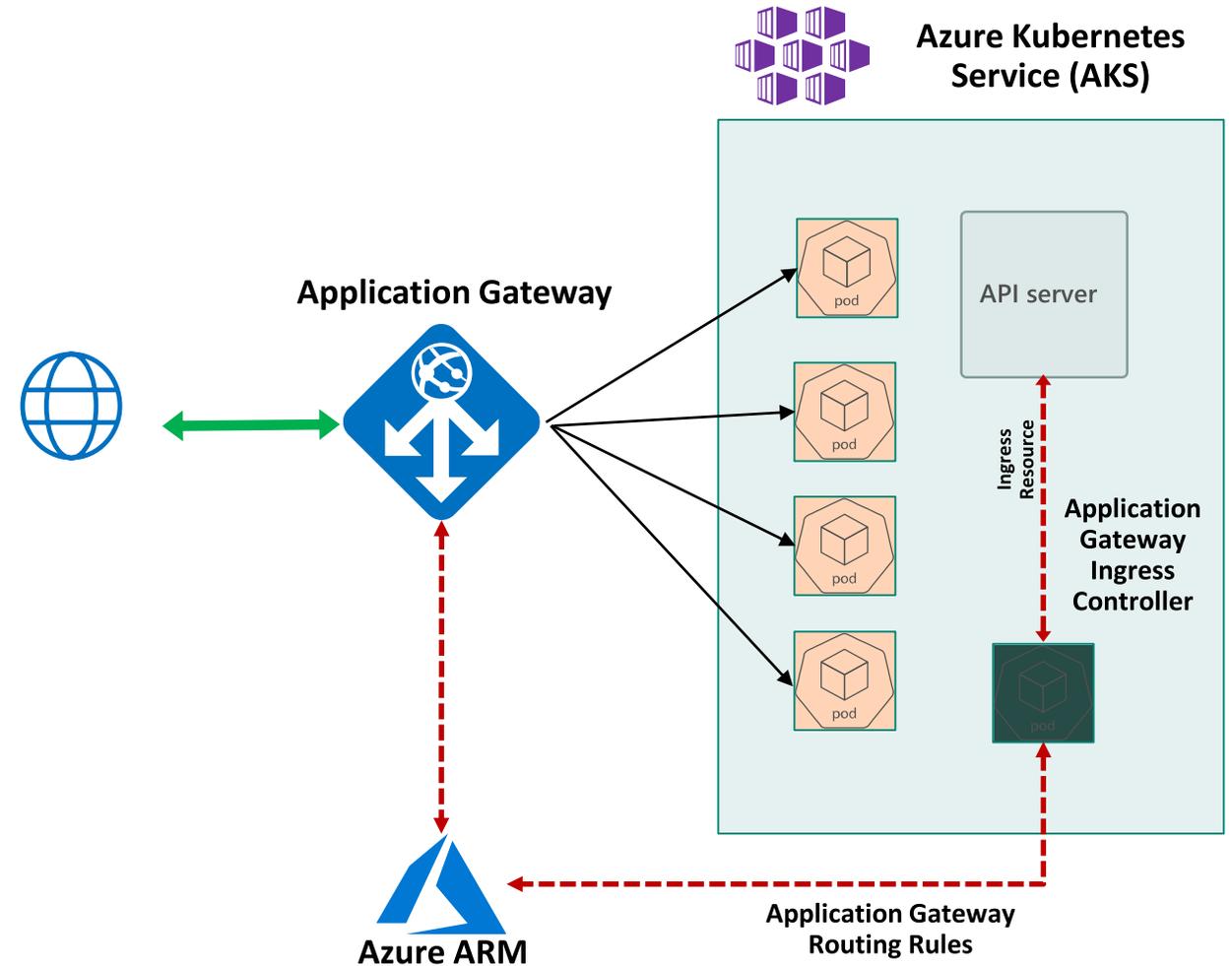
Securing Kubernetes Services with WAF



Application Gateway Ingress Controller

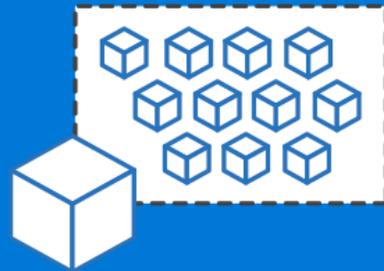
- Attach Application Gateways to AKS Clusters
- Load Balance from the Internet to pods
- Supports features of k8s ingress resource – TLS, multi-site and path-based routing
- Pod-AAD for ARM authentication

<https://github.com/Azure/application-gateway-kubernetes-ingress>

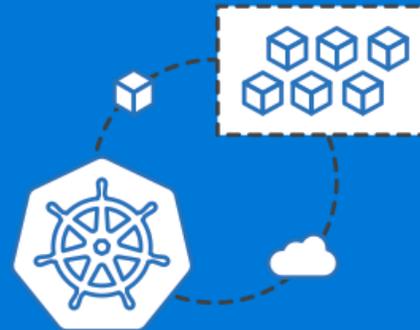


ACI

Easily run containers on Azure without managing servers



Run containers
without managing
servers



Increase agility
with containers on
demand



Secure applications
with hypervisor
isolation



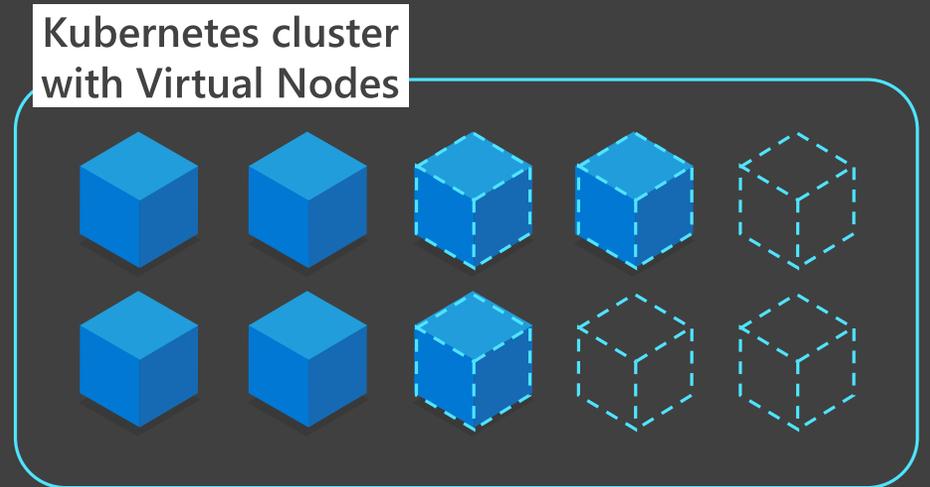
GENERALLY AVAILABLE

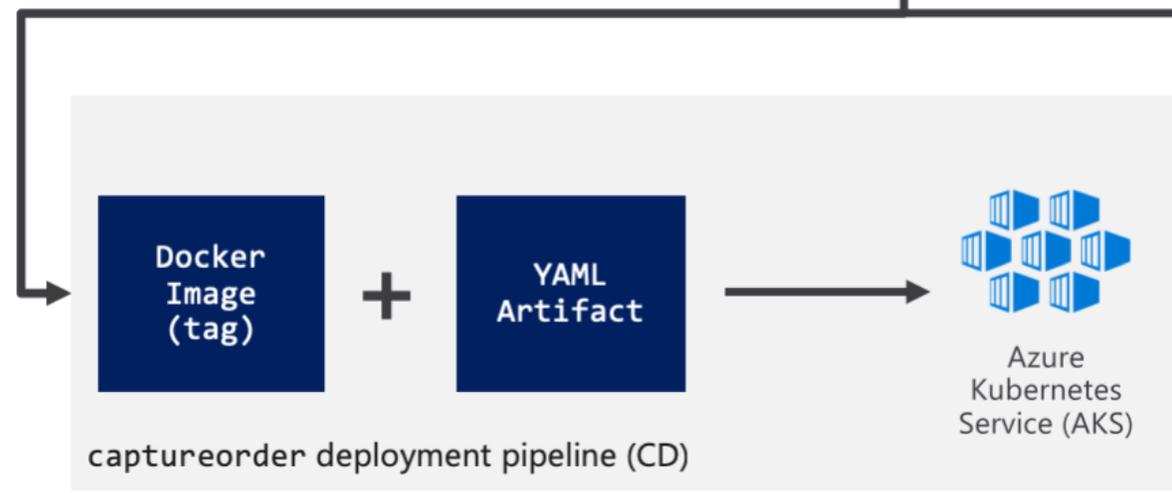
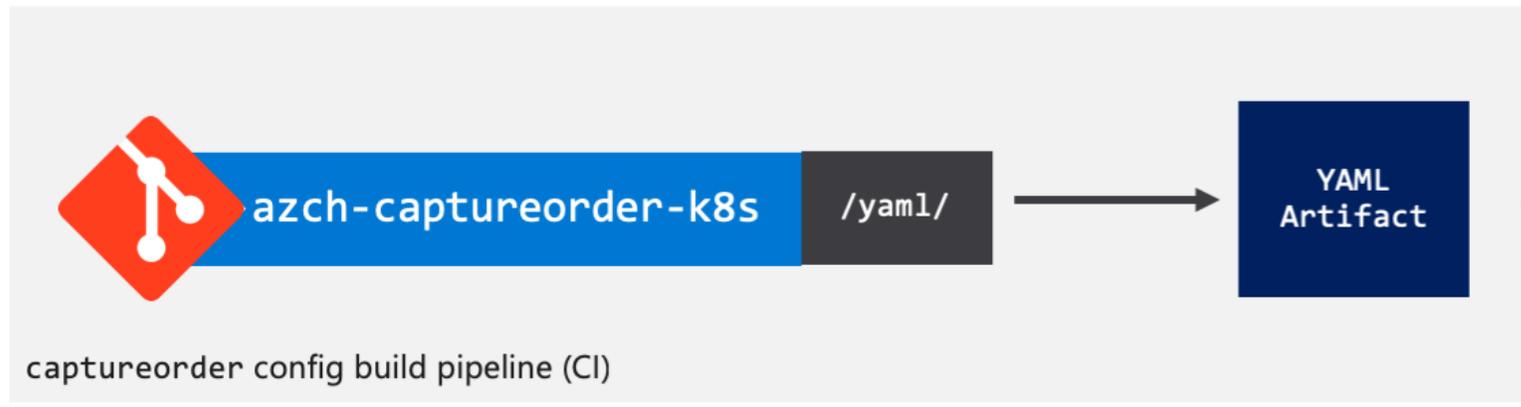
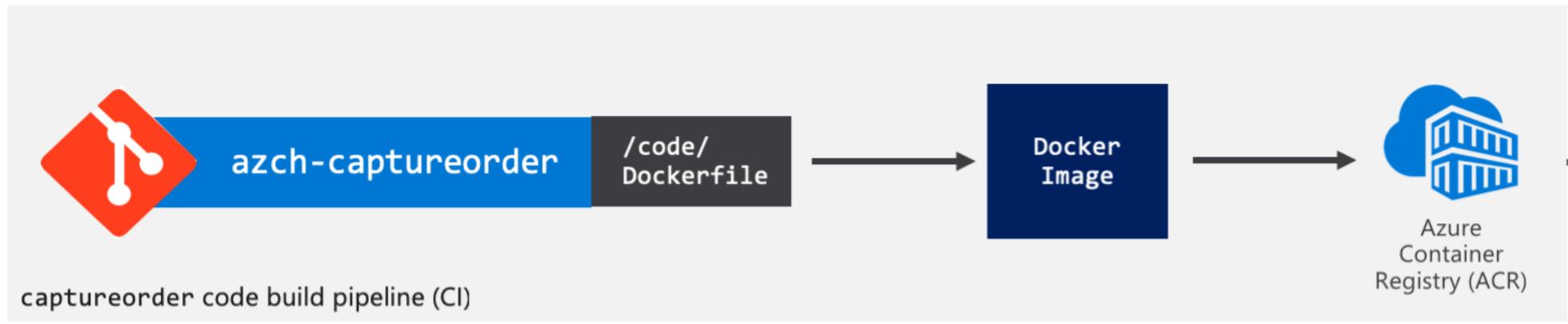
Serverless for Azure Kubernetes Service

Elastically provision compute capacity
with Virtual Nodes

No infrastructure to manage

Built on open sourced Virtual Kubelet
technology, donated to Cloud Native
Computing Foundation (CNCF)





Thank you! Bedankt!

Suzanne Daniels

@suushier

Useful Links:

[Kubernetes AKS Learning Book](#)

[FREE Azure Services](#)

[Azure Citadel](#)

[Open Source Blog](#)

[Channel 9 \(who needs Netflix\)](#)

[Helm](#)

