AKS
Gateway API
vs
Ingress

Agenda

1. Ingress
2. Gateway API
3. Gateway Routing
4. Gateway API vs. Ingress
5. Video Series

Expose Pods

Service with type Load Balancer

Ingress

Gateway

Ingress

Expose our pods to the outside using an Ingress

Allows for more features than Kubernetes Services:

- Only one entry point

- Better routing

- Automate TLS certificates with Cert-Manager

- TLS termination

Ingress

Ingress Controller:
- Traefik
- Nginx
- Application Gateway Ingress Controller (AGIC)

Routing:
- Domain with TLS → Azure Load Balancer → Ingress → Service → Pods

Ingress Downsides

Ingress controllers have a lot of control how traffic is routed

Annotations are unique to the used Ingress controller (e.g. Nginx) → vendor lock-in

TLS secrets need to be in the same namespace as the ingress and the pods (no cross-namespace support with Ingress)

Ingress Downsides

Ingress does not support traffic policies

No modularity

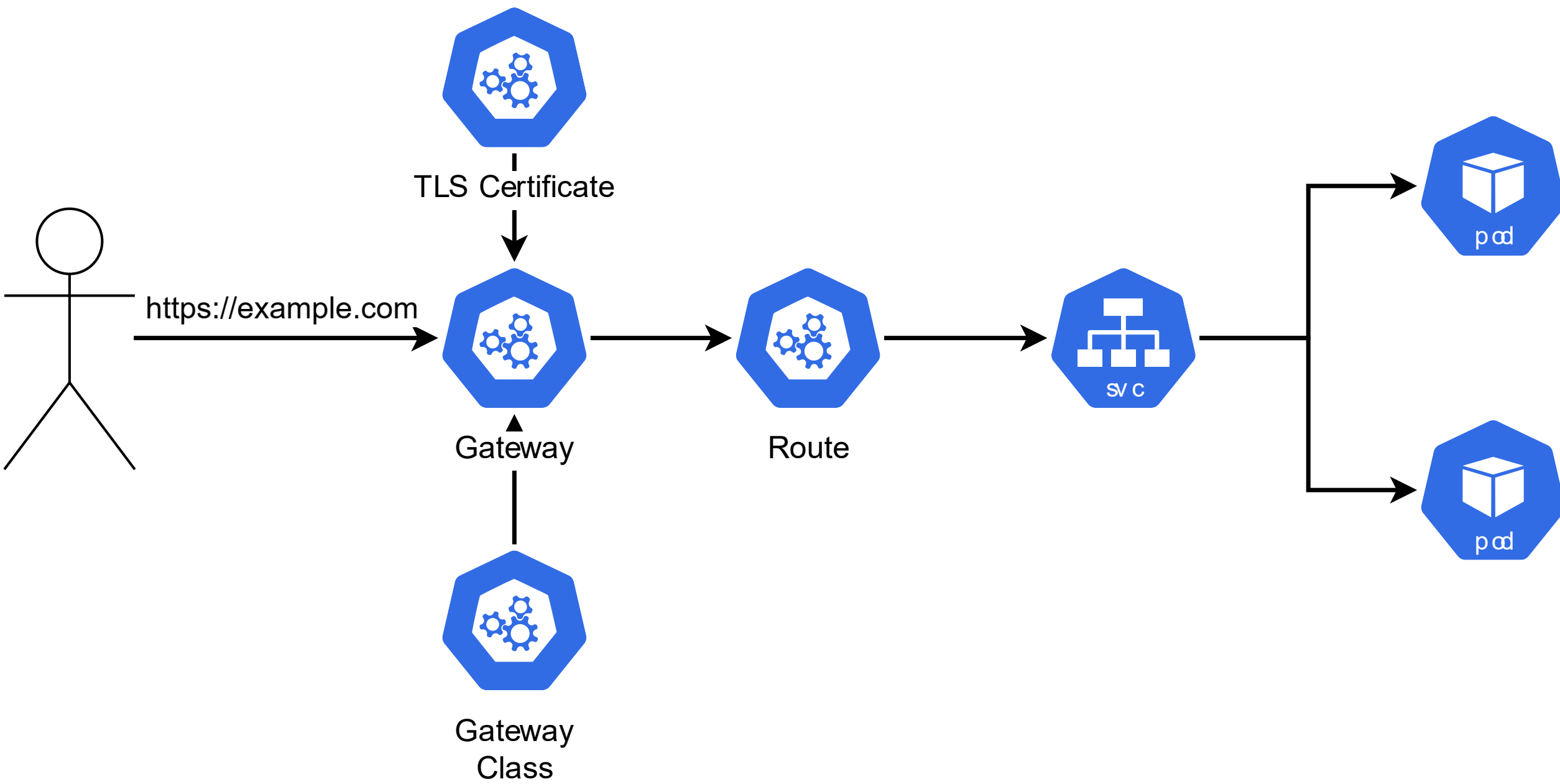Gateway API announced in 2023 to solve these downside

Ingress and Ingress Controller

Gateway API

Components are modular and split into multiple parts

Gateway Class configures proxy (similar to (IngressClass)

Azure provides a Gateway Class

TLS Certificate

https://example.com

Gateway

Route

svc

pod

pod

Gateway
Class

Gateway

Gateway contains listeners

Governs TLS certificates

Namespaced

Gateway consumes Gateway Class which is global and can be in any namespace

Gateway

Gateway Routing

Listeners can listen on different ports

Different protocols:

- HTTP
- HTTPS
- TLS
- TCP
- UDP

Gateway Routing

Gateway references TLS certificate (in any namespace)

Configures allowed routes

MTLS configuration possible

Routes

Weighted load balancing (traffic splitting)

Uses standards instead of annotations

Routes:
- HTTPS and HTTP
- TCP and UDP
- GRPC
- TLS

Routing

Routing options:

- Path
- Header, e.g. User-Agent
- Query
- HTTP method
- Redirect request

Routes

Gateway API vs Ingress

Gateway API might not replace Ingress

Ingress is very easy to manage

- Especially in smaller teams

Gateway might be better for multi-team setups due to modularity

Gateway API vs Ingress

I will use Gateway API for now

It's something new and exciting to learn more about

Ingress stays as it is

Gateway API in Azure

Application Gateway for Containers

Brings additional features:

- Advanced health checks
- WAF support
- Autoscaling and high-availability

AGC Video Series

1. Kubernetes Gateway API – Is Ingress dead?
2. Azure Application Gateway for Containers Setup in AKS
3. Host multiple Apps with one Application Gateway for Containers on AKS
4. Automate DNS Records for AKS TLS Setup

AGC Video Series

5. Cert-Manager: Automated HTTPS for everyone on AKS

6. Cert-Manager & Azure DNS for Wildcard Certificates on AKS

7. CI/CD for AKS dynamic PR Environments with TLS

8. AKS Gateway Routing: Path, Query and Headers

AGC Video Series

AGC Video Series - Bonus

13. K8s Gateway implementation without Azure
14. TBD