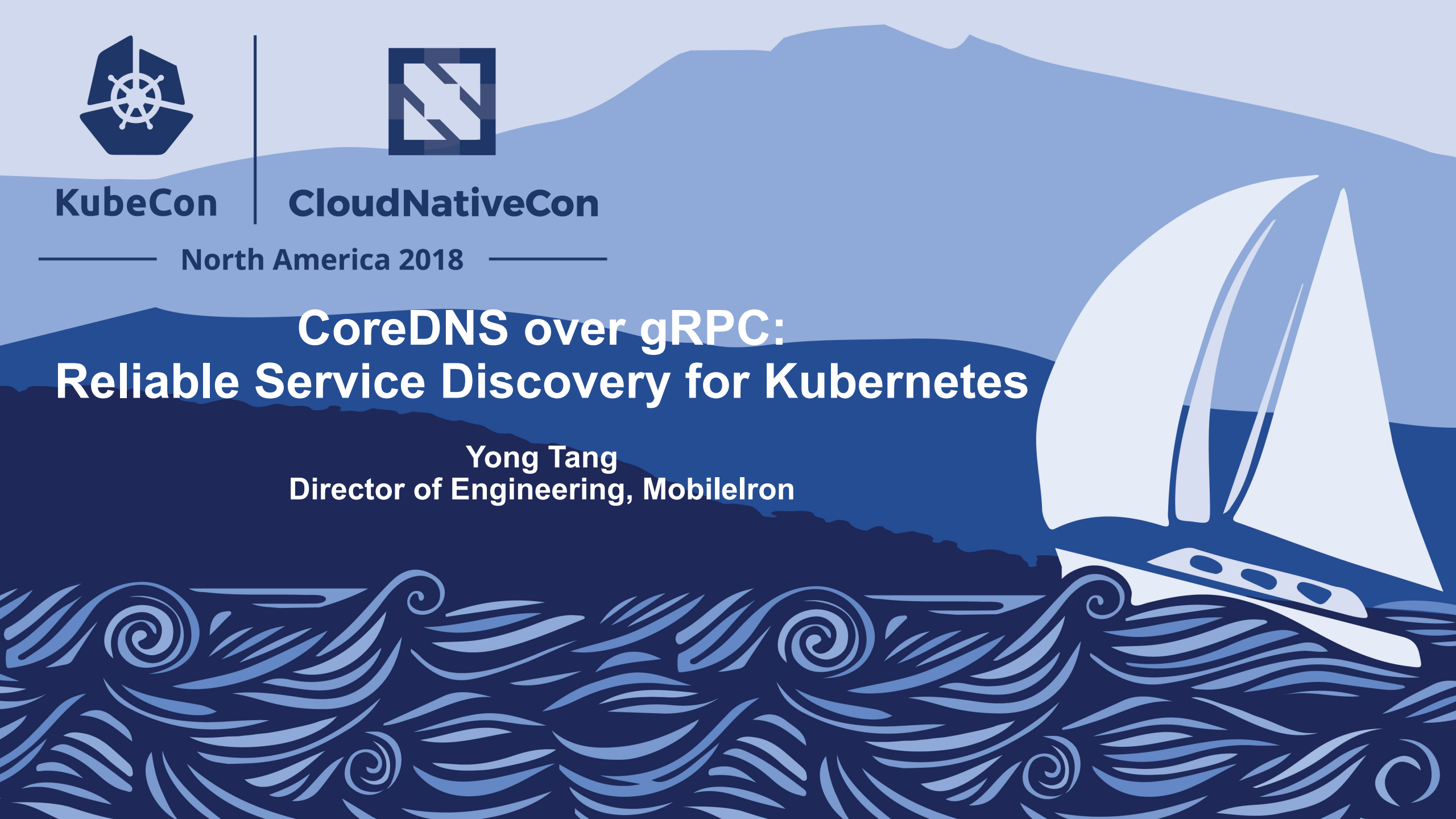


# CoreDNS over gRPC: Reliable Service Discovery for Kubernetes

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# Agenda



- Myself:
  - GitHub: https://github.com/yongtang
  - Maintainer, CoreDNS, Docker/Moby
  - Maintainer and SIG I/O Lead, TensorFlow
  - Director of Engineering, MobileIron

- My talk:
  - CoreDNS and its usage in Kubernetes
  - Limitations of DNS for service discovery
  - CoreDNS over gRPC



# CoreDNS



- Flexible DNS server written in Go
- Plugin based architecture, easily extended
- Supports DNS, DNS over TLS, DNS over gRPC
- CoreDNS has a focus on service discovery
- Native Kubernetes integration
  - GA in Kubernetes 1.11, default in 1.13
- CNCF incubating project



# Service Discovery with DNS



- DNS is a nice and flexible indirection
- DNS is easy and simple, for Dev/DevOps/IT
- DNS has been there for a long time & part of the existing IT infrastructure
- Works with hybrid environments (in & out of k8s cluster)
- DNS is distributed in nature, scales really well

CoreDNS

# DNS Limitations



- DNS (UDP) is not reliable and secure
- UDP performance could misleading for DNS
- Jumbo frames (e.g., MTU 9001 vs. 1500 on AWS) not utilized
- Hard to diagnose, no error code
- Service error vs. DNS infrastructure error

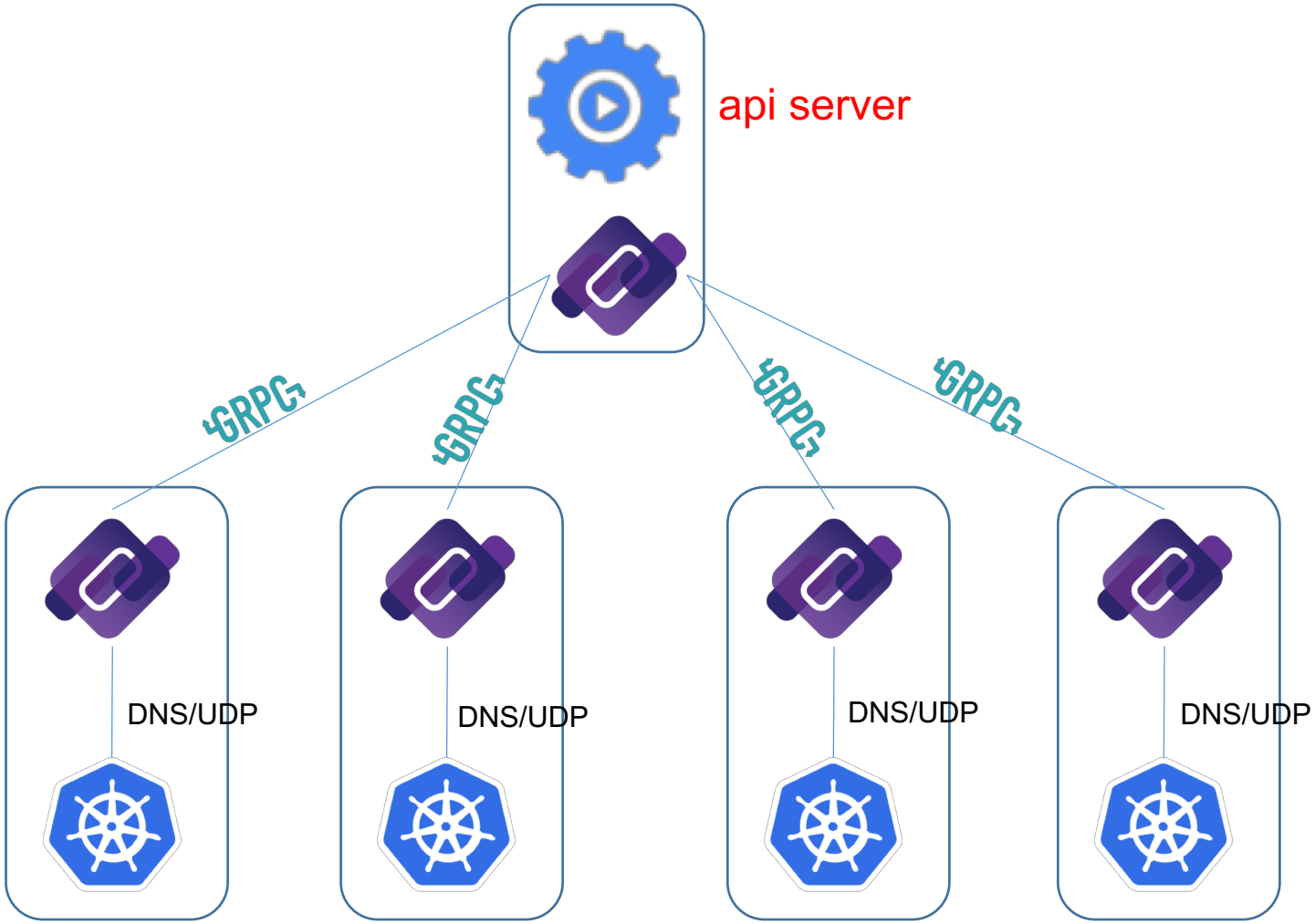
# CoreDNS over gRPC



- DNS/UDP over local host communications
- gRPC/TLS over cross host communications
- Intermediate CoreDNS (cache) to Kubernetes api server


# CoreDNS over gRPC






CoreDNS

# CoreDNS over gRPC



- Front-end compatibility
  - Same DNS for service discovery
  - No implementation or configuration changes for applications
- Reliable and secure back-end communications
- Scales well with layered caching

# THANK YOU

CoreDNS

CoreDNS


KubeCon
CloudNativeCon
North America 2018