KubeCon
CloudNativeCon
North America 2019

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Service Discovery With Hybrid and Multi-Cloud
- Introduction to CoreDNS
Yong Tang
CoreDNS

Speaker

- Yong Tang
  - GitHub: @yongtang
  - Maintainer: CoreDNS
  - SIG IO Lead: TensorFlow
  - Director of Engineering, MobileIron

Agenda

- Introduction
- Status Update
- Google Summer of Code
- Community Bridge by Linux Foundation
- Technical Deep Dive
  - Plugin and CoreDNS
  - Service Discovery with Hybrid & Multi Cloud
  - Demo CoreDNS with Google Cloud DNS
- Q & A

CoreDNS

- Flexible DNS server written in Go
- Focus on service discovery
- Plugin based architecture, easily extended
- Supports DNS, DNS over TLS, DNS over gRPC
- Default DNS server in Kubernetes
- Support integration with Route53/Google Cloud DNS/Azure DNS
- Started and led by Miek Gieben

CoreDNS

CoreDNS Community

- 192 Contributors and Growing (Big Thanks!)
- 14 Maintainers
- 30 Public Adopters
- 5000+ Stars
- **46 million** dockerhub downloads!

CoreDNS Community

- Most active:
  - GitHub: https://github.com/coredns/coredns
  - Slack: #coredns on https://slack.cncf.io
- More resources:
  - Web: https://coredns.io
  - Blog: https://blog.coredns.io
  - Twitter: @corednsio

Google Summer of Code

- Participated 3 years in a row (2017-2019)
- 2017: Varyoo (GitHub: varyoo)
- 2018: Jiacheng Xu (GitHub: jiachengxu)
- 2019: An Xiao (GitHub: ihac)

Google Summer of Code

CoreDNS

Community Bridge Program

- Sponsored by Linux Foundation
- 2019: Palash Nigam (GitHub: palash25)

CoreDNS: Plugins

- External plugin:
  - Link through https://coredns.io
- Plugin as a CoreDNS subproject
  - Separate repo within CoreDNS org for issue and PR tracking
  - Sponsored by one maintainer
- Plugin in CoreDNS project
  - More selective in quality
  - Same issue and PR tracking in CoreDNS repo (OWNERS)
  - Sponsored by one maintainer

CoreDNS: Service Discovery

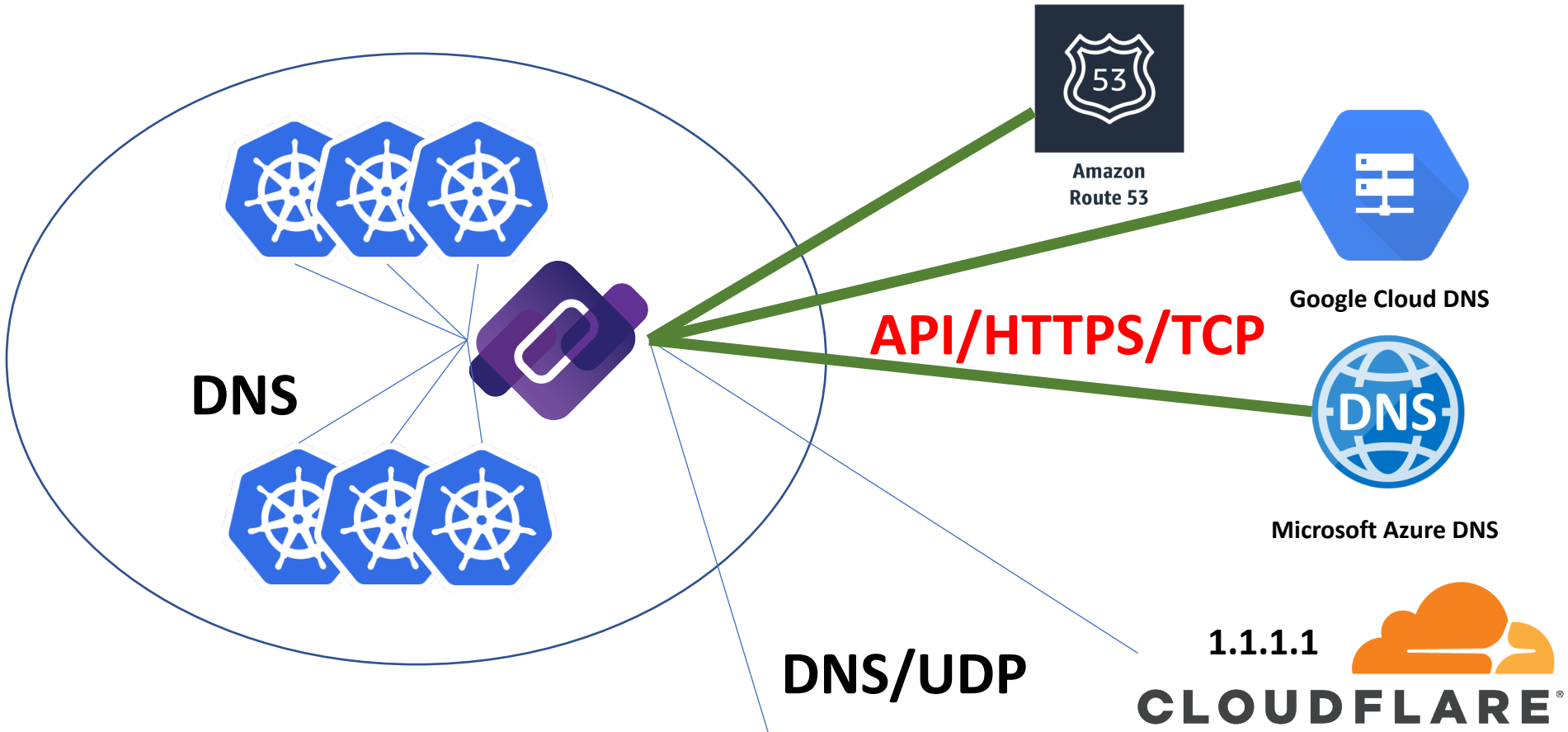
- DNS is a nice indirection
- Maximum flexibility
- Easy and simple to change DNS
- Pervasive in IT infrastructure
- Distributed in nature, scales to Internet

Corefile: CoreDNS Configurations


```
.:53 {
    # By default all plugins are disabled initially, unless enabled explicitly
    kubernetes cluster.local 10.96.0.0/12 { <- k8s integration
       pods insecure
    }
    route53 example.com.:Z1Z2Z3Z4DZ5Z6Z7    <- route53 aws cloud data sync up
    hosts example.hosts example.org {       <- additional records, added (inline)
       192.0.0.100 www.example.org
    }
    health                                  <- healthcheck
    prometheus                              <- metrics
    cache 30                                <- cache & performance
    forward . 1.1.1.1:53                    <- forward to 1.1.1.1 (Cloudflare)
    errors
}
```

CoreDNS

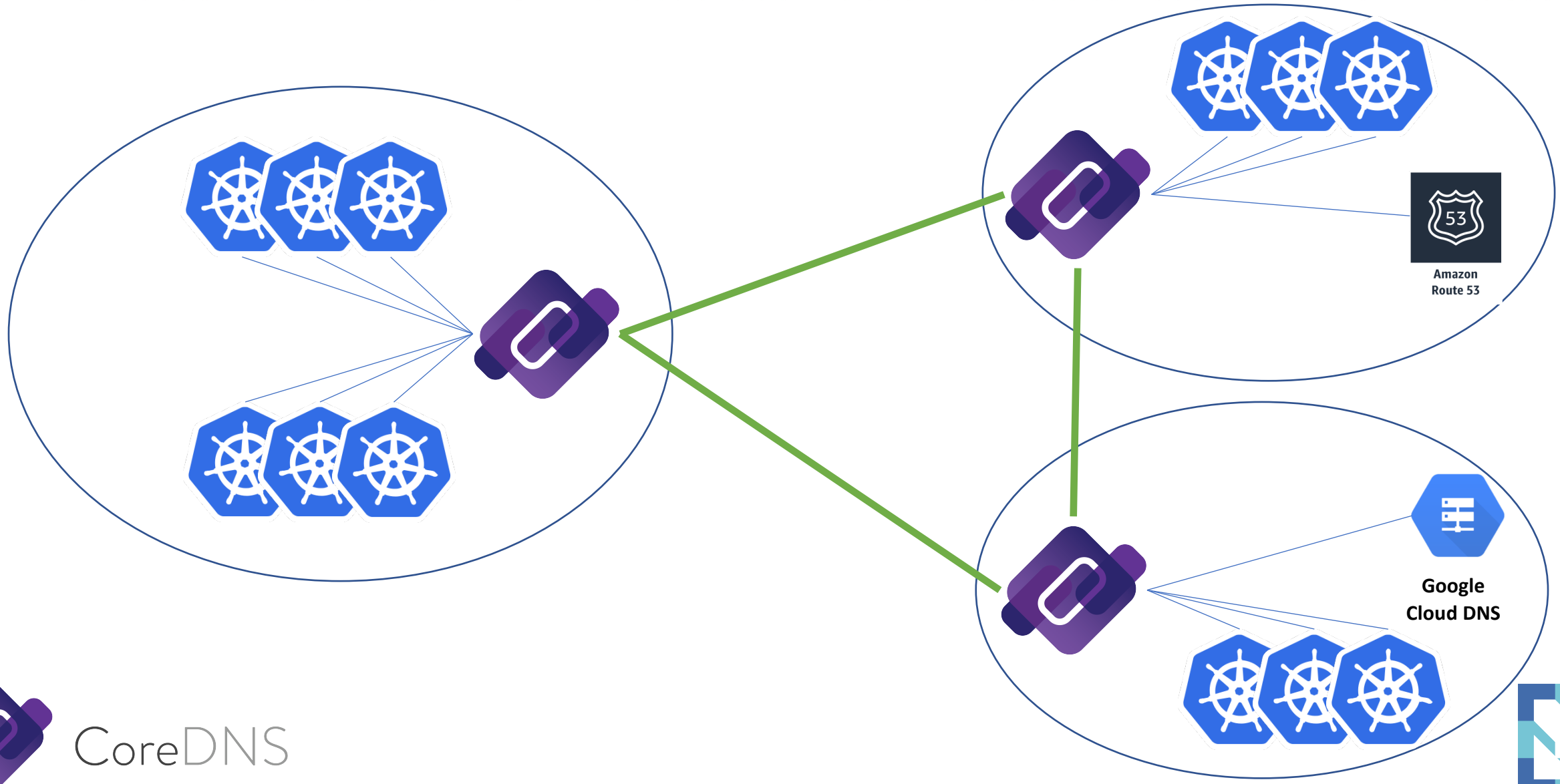
CoreDNS: Service Discovery




```
# /ets/hosts like inline records
hosts example.hosts example.org {
   192.0.0.100 www.example.org
}
```

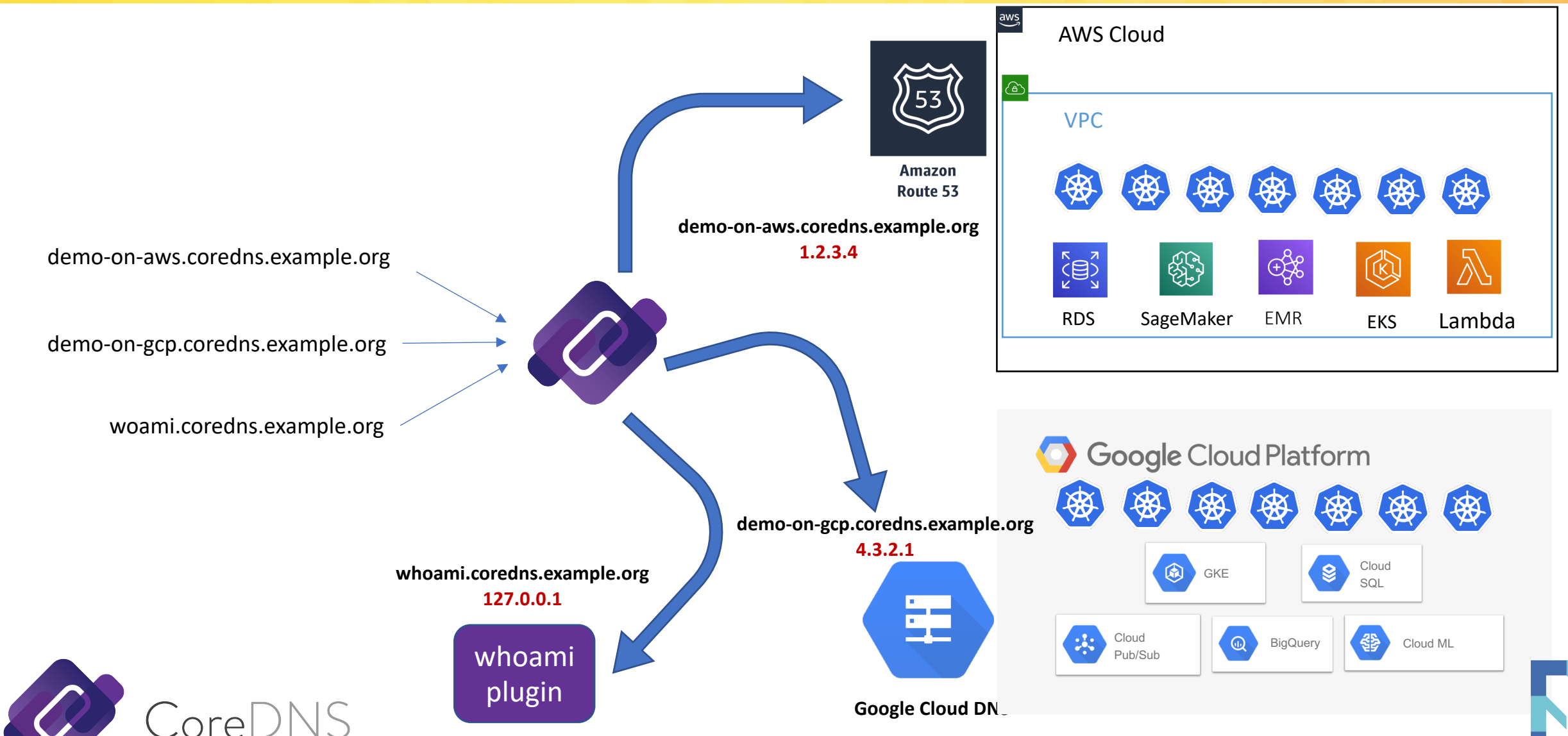
CoreDNS

CoreDNS: Hybrid- and Multi-Cloud



CoreDNS

CoreDNS: Demo



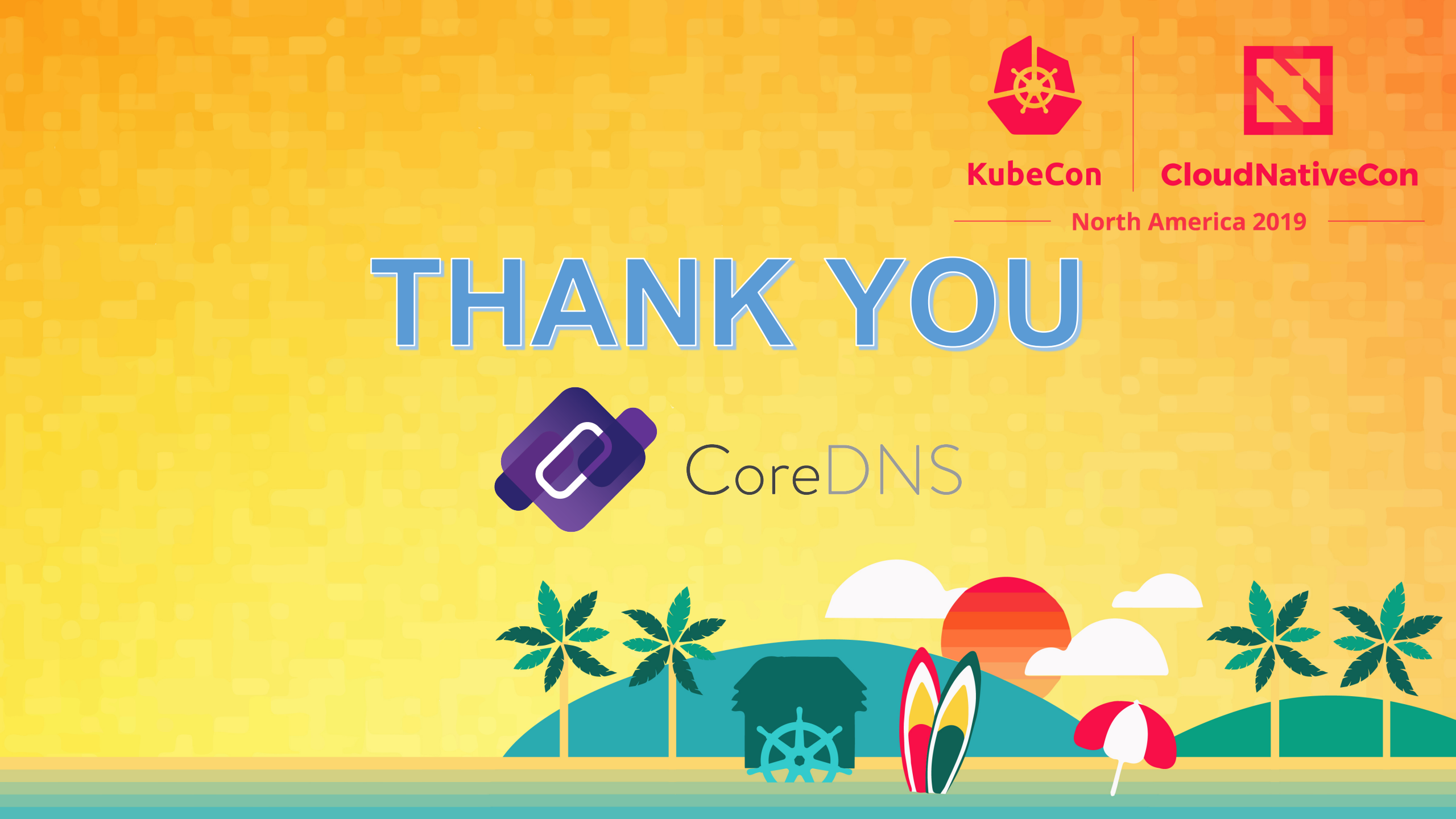
CoreDNS: Demo


```
.:53 {
    # Route53 (Amazon AWS)
    route53 coredns.example.org.:Z01234567890123456789 {
        fallthrough
    }
    # Cloud DNS (Google Cloud)
    clouddns coredns.example.org.:peerless-dahlia-123456:coredns-example-zone {
        credentials "My First Project-9feed012345.json”
        fallthrough
    }
    # Fallback whoami plugin
    whoami
}
```

CoreDNS

CoreDNS: Contribution Welcome

- Star CoreDNS in GitHub:
  - https://github.com/coredns/coredns
- Add the name to ADOPTERS.md
- Participate in GitHub or Slack discussions
  - Slack: #coredns on https://slack.cncf.io
- Create a PR to become a contributor
- Become a maintainer
  - One significant pull request
  - Sponsored by one current maintainer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THANK YOU
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