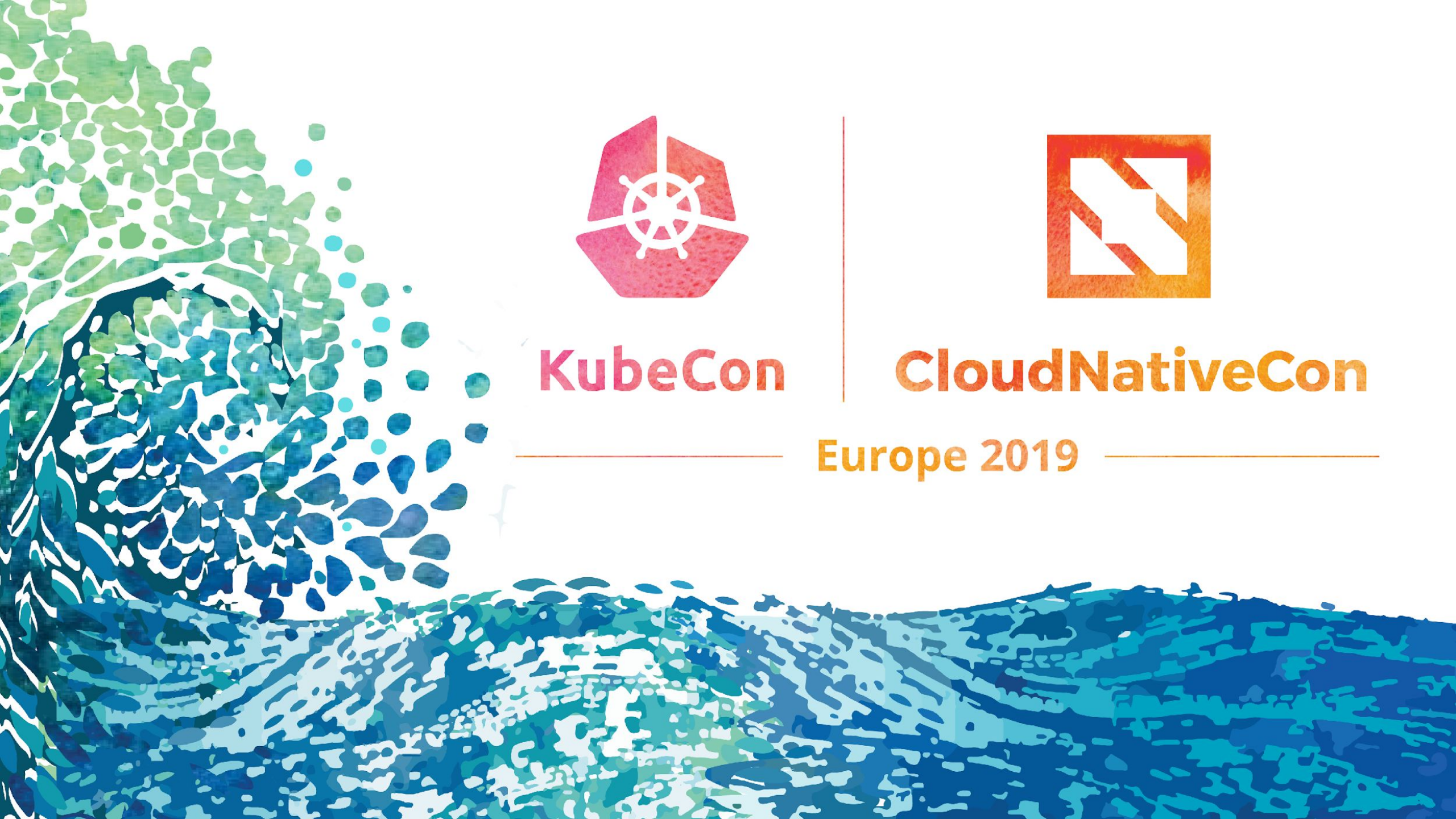

KubeCon
CloudNativeCon
Europe 2019

Intro: CoreDNS

Daniel Garcia, Michael Grosser

Speakers

Daniel Garcia

Contributor: CoreDNS
SaaS Architect: Infoblox
@daniel-garcia @_danielgarcia_

Michael Grosser

Maintainer: CoreDNS | Contributor: K8s
Founder: Okkur Labs & Rekkur Solutions
@stp_ip @stp-ip

Agenda

- Introduction
- State of Affairs
- Roadmap
- Plugins
- Configuration (Corefile)
- Community/Contributing

CoreDNS

Introduction

- Flexible DNS server written in Go
- Started and led by Miek Gieben
- Based on Caddy HTTP server
- Plugin-based architecture, easily extended
- Supports DNS, DNS over TLS and others

Introduction

- Native support of Kubernetes
- Integration with etcd and other data sources
  - incl. AWS's Route 53, Redis, SQL, plain files
- Support for Prometheus metrics
- Forward to recursive DNS server

State of Affairs

- Version 1.5.0 (released 2019-04-07)
- Graduated CNCF project
  - Inception (2017)
  - Incubation (2018)
  - Graduation (2019)
- Growing community
  - 150+ contributors (Big Thanks!)
  - 15 maintainers
  - 30 public adopters
  - ~4000 stars

State of Affairs

- Each plugin is backed by an additional set of OWNERs
- New plugins:
  - Response Rate Limiting (rrl)
  - Block ANY queries (any)
- Kubernetes plugin:
  - Generally available (GA) since Kubernetes 1.11
  - Now the recommended default since Kubernetes 1.13

State: GSoC 2019

Google Summer of Code 2019

- Project ideas: github.com/cncf/soc#coredns

  > *great contribution ideas*

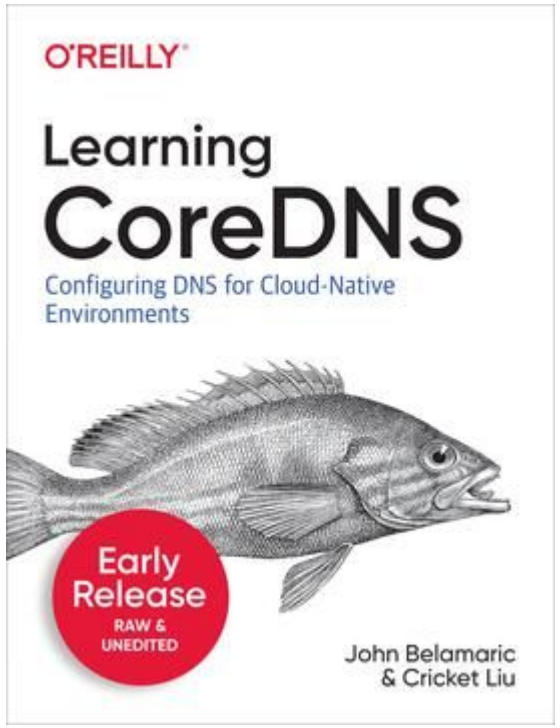
- Mentor: **Yong Tang** (GitHub: @yongtang)

- Accepted project:

  > *Support Source IP Based Query Block/Allow in CoreDNS*

State: CoreDNS Book

https://book.coredns.opensourcesoftware.rocks*



Written by

John Belamaric

> Google Engineer and CoreDNS maintainer

Cricket Liu

> DNS Architect at Infoblox and author of many DNS books on O'REILLY

*DNS redirect fun with the help of TXTDirect and GitNS (using CoreDNS)

Roadmap

- Core
  - Performance and stability improvements
- Plugin
  - GRPC transport iteration client and server
  - DNS over HTTPS
  - resolver plugin as external plugin (#2216)
  - more plugins

Data Plugins

- *file*: read data from a single RFC 1035-style master file
- *auto*: read data from RFC 1035-style master files
- *forward*: read data from upstream resolvers
- *hosts*: read zone data from a /etc/hosts style file
- *proxy:* deprecated and replaced by forward

Helper Plugins

- *reload*: automatic Corefile reloads
- *errors*: logging of error messages
- *log*: log queries and response data to stdout
- *prometheus*: expose metrics with Prometheus style endpoint
- *cache*: DNS response caching

Plugins Kubernetes related

- *kubernetes*: read zone data from Kubernetes cluster API
- *etcd*: read zone data from etcd v3 endpoint
- *health*: enables a health check endpoint.
- ready: enables a readiness check HTTP endpoint

More Plugins

Built-in plugins (35+):

https://coredns.io/plugins/

External plugins (15+):

https://coredns.io/explugins/

Configuration structure


```
[ZONE:PORT] {
   [PLUGIN]
}
```

```
.:53 {
  log {
     # comment
   }
  kubernetes
}
```

https://caddyserver.com/tutorial/caddyfile

https://coredns.io/2017/07/23/corefile-explained/

Authoritative DNS server config


```
coredns.io {
  file coredns.io {
    transfer to * 185.49.140.62
  }
  errors
  log
}
```

Recursive DNS server config


```
. {
   forward . 8.8.8.8
   cache
   errors
   log
}
```

Configuration: Cache Sidecar

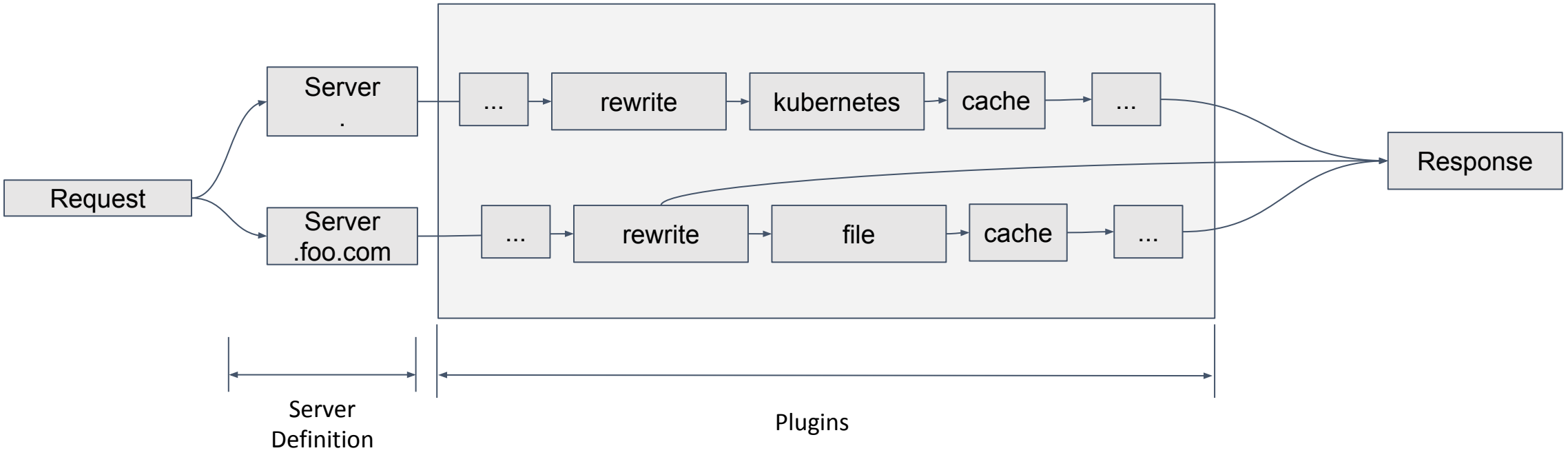

```
.:53 {
        cache 30
        forward . 8.8.8.8 {
                force_tcp
        }
        errors
        log
}
```

Config similar to NodeLocal Cluster Addon

DNS Rewrite to for local routing


```
. {
    rewrite continue name www.example.com web-app.default.cluster.local
    kubernetes
    cache
    errors
    log
}
```

Architecture



Community

- Most active:
  - GitHub: github.com/coredns/coredns
  - Slack: #coredns on slack.cncf.io
- More resources:
  - Web: coredns.io
  - Blog: blog.coredns.io
  - Twitter: @corednsio
  - Mailing list/group (not very active)
    - coredns-discuss@googlegroups.com

Contributions Welcome

- Star CoreDNS at github.com/coredns/coredns
- Add your company to ADOPTERS.md
- File bugs and contribute to issue discussions
- Create your first PR for docs or code
- Create a custom plugin for your use-case

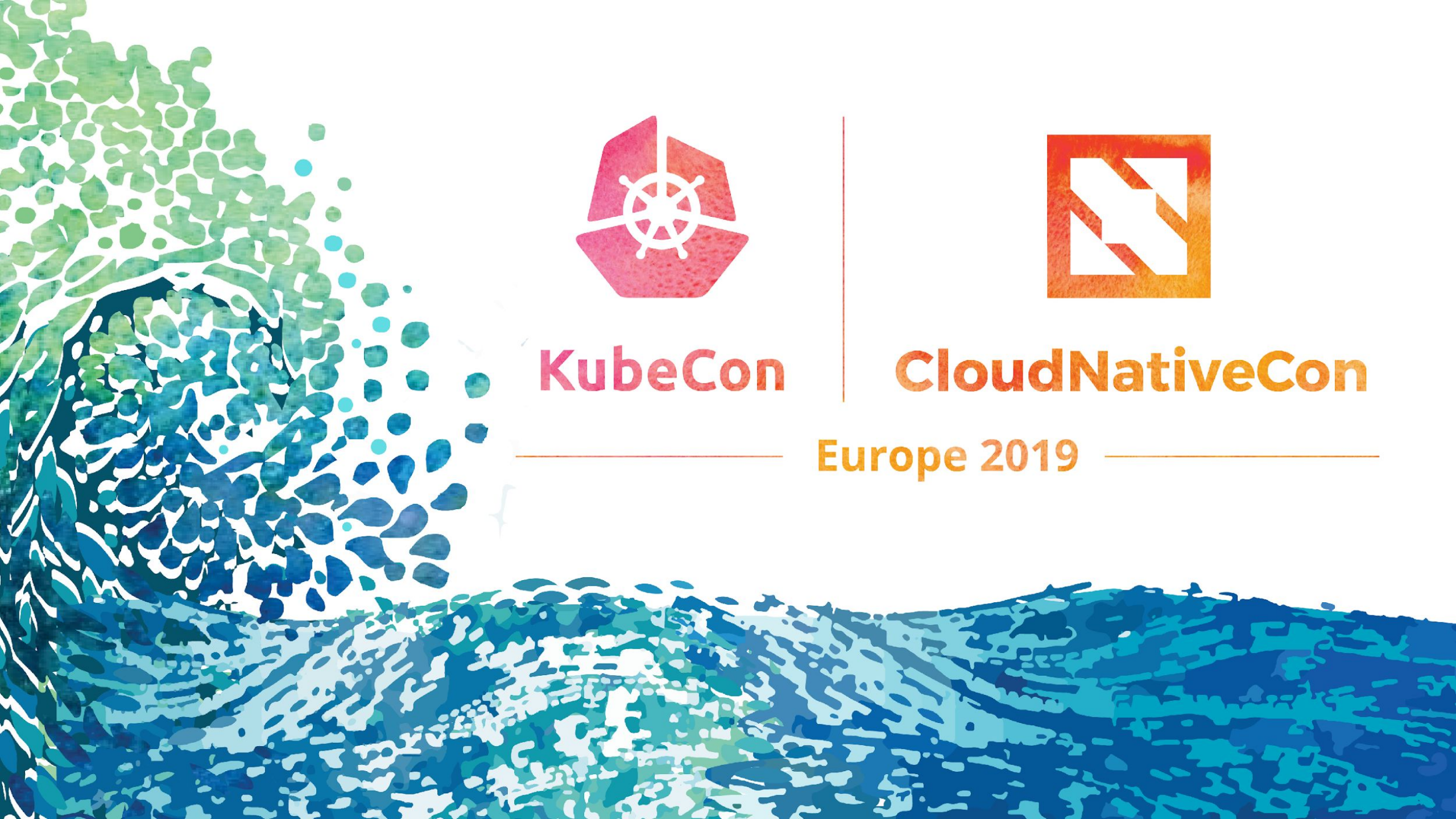
CoreDNS Sessions

Meet the Maintainer: CoreDNS- John Belamaric, Google
Tuesday May 21, 2019 16:00 - 16:30
CNCF Answer Bar, Sponsor Showcase

Deep Dive: CoreDNS - Yong Tang, MobileIron & John Belamaric, Google
Wednesday, May 22 • 14:50 - 15:25
Hall 8.0 E4

THANK YOU

CoreDNS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