What is Cloud Native and Why You Should Care

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CLOUD NATIVE
COMPUTING FOUNDATION

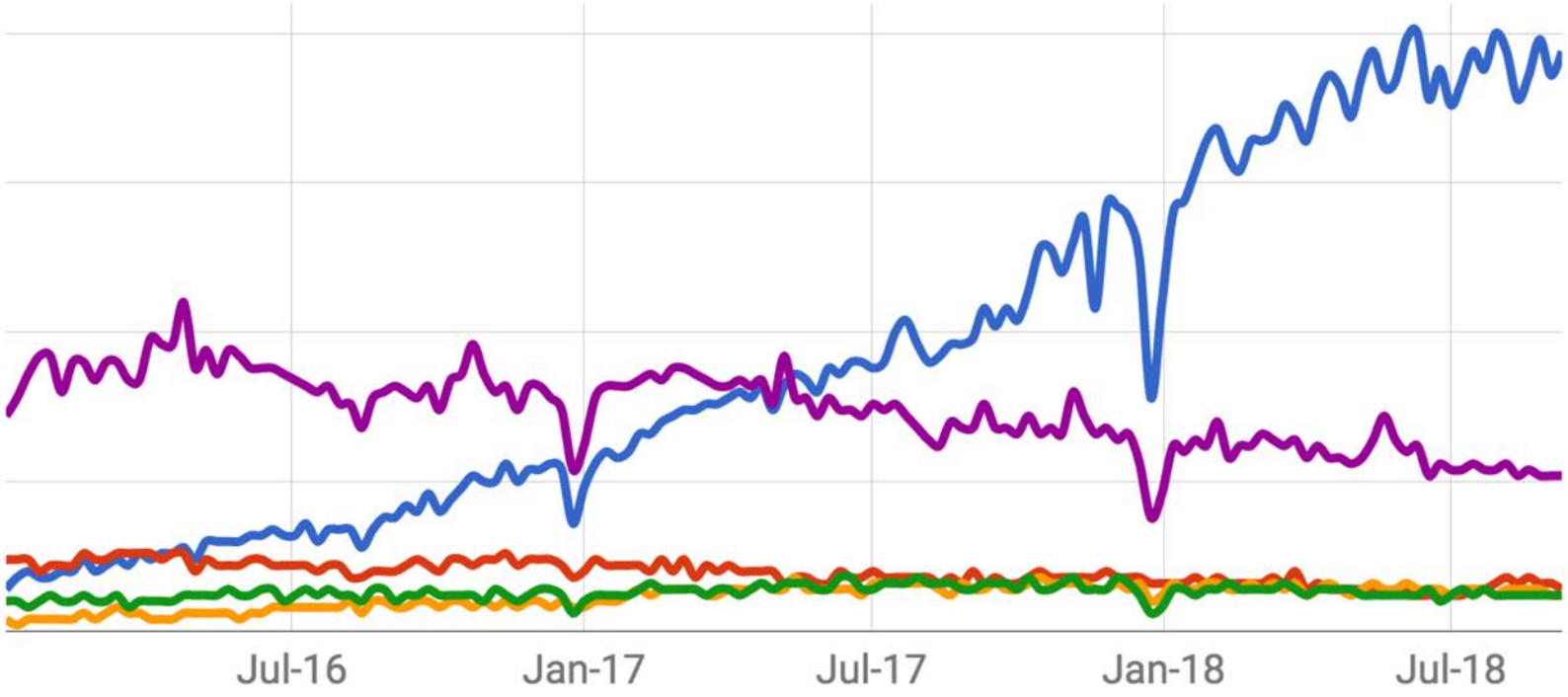
kubernetes

- 4,550 unique authors
- 23,347 unique issue commenters
- 2nd fastest development velocity (behind Linux)

- See devstats.cncf.io

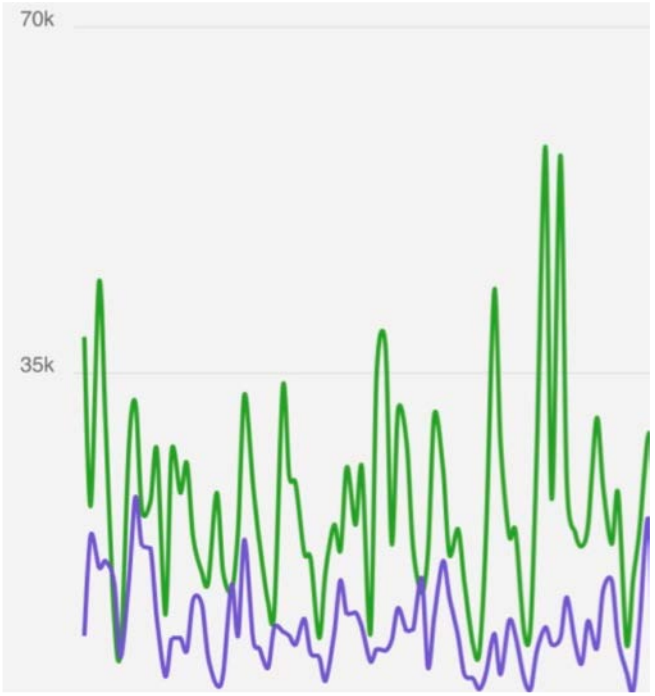
Kubernetes in Search Trends

Google Trends



Kubernetes OpenStack Mesos Docker Swarm Cloud Foundry

WeChat



Kubernetes OpenStack

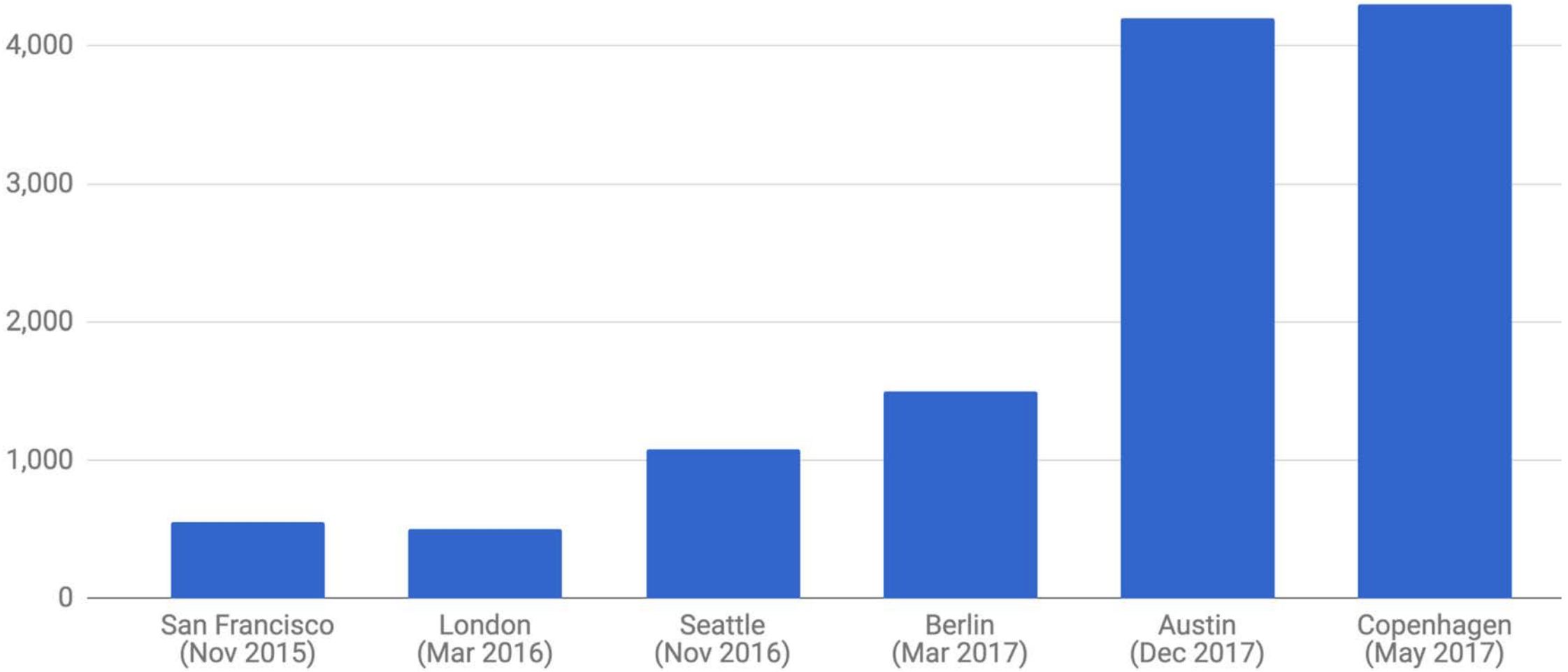
61 Companies in CNCF's End User Community

Plus 7 non-public members

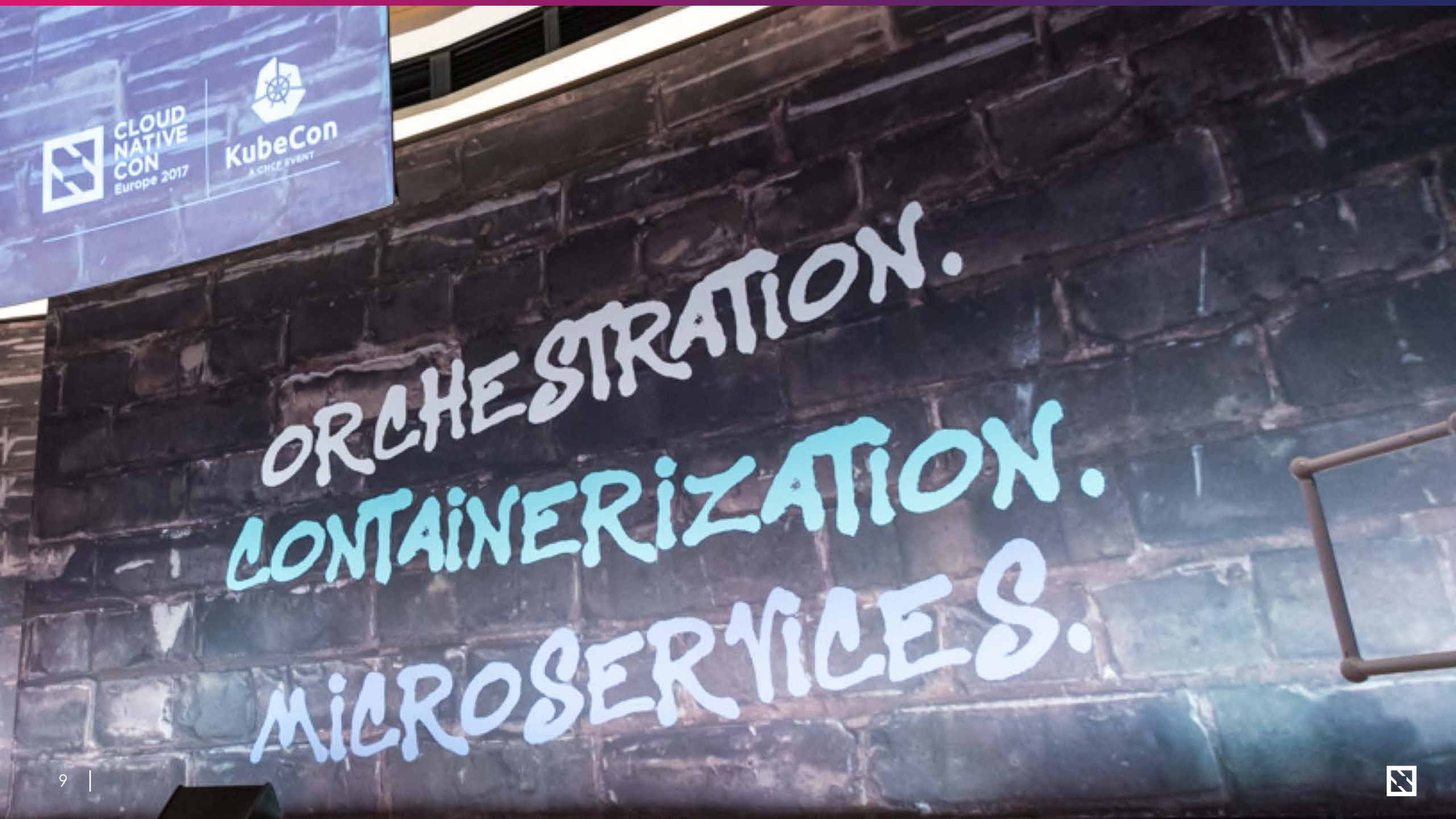
61 Kubernetes Certified Service Providers

71 Certified Kubernetes Partners

KubeCon + CloudNativeCon Attendees




aaS Architecture: Move Fast and Bake Things
Bootstrapped with single-donut mixer, fryer, and topper
Built with OpenTracing-aware Mutex wrapper
Web Client
Web Server
Mixer
Fryer
Topper
CLOUD NATIVE CON
KubeCon
SUPPORTING THE CLOUD NATIVE ECOSYSTEM
www.cncf.io | @CloudNativeFdn
ORCHESTRATION.
CONTAINERIZATION.
MICROSERVICES.
gRPC


CLOUD NATIVE CON Europe 2017
KubeCon
A CNCF EVENT
ORCHESTRATION.
CONTAINERIZATION.
MICROSERVICES.

Cloud Native Definition (1 of 3)

Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as ***public, private, and hybrid clouds***. Containers, ***service meshes***, microservices, immutable infrastructure, and declarative APIs exemplify this approach.

cncf.io/d

Cloud Native Definition (2 of 3)

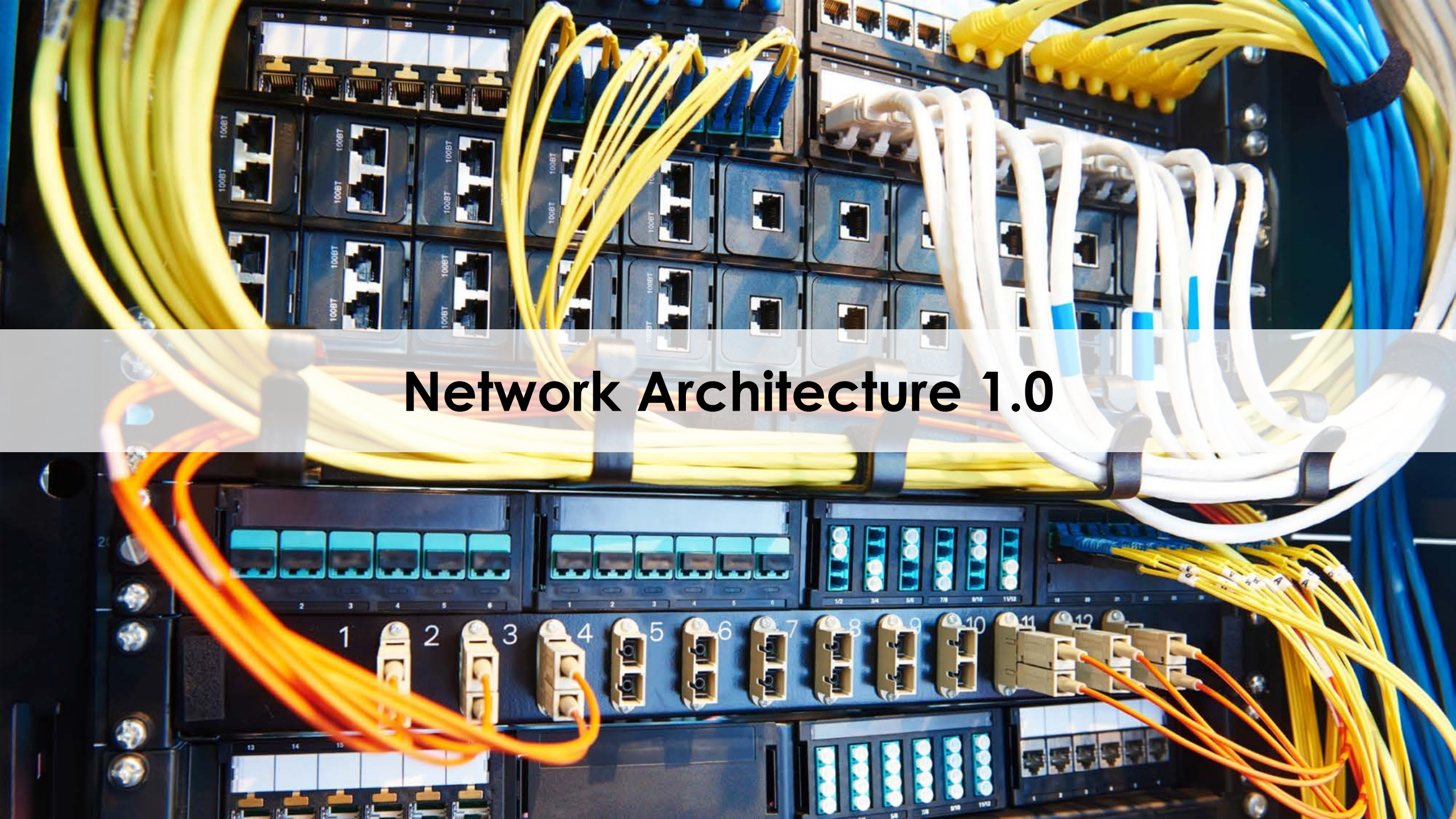
These techniques enable ***loosely coupled systems*** that are resilient, manageable, and observable. Combined with ***robust automation***, they allow engineers to make ***high-impact changes*** frequently and predictably with minimal toil.

cncf.io/d

Cloud Native Definition (3 of 3)

The Cloud Native Computing Foundation seeks to ***drive adoption*** of this paradigm by fostering and sustaining an ***ecosystem of open source, vendor-neutral projects***. We democratize ***state-of-the-art patterns*** to make these innovations accessible for everyone.

cncf.io/d



Network Architecture 1.0

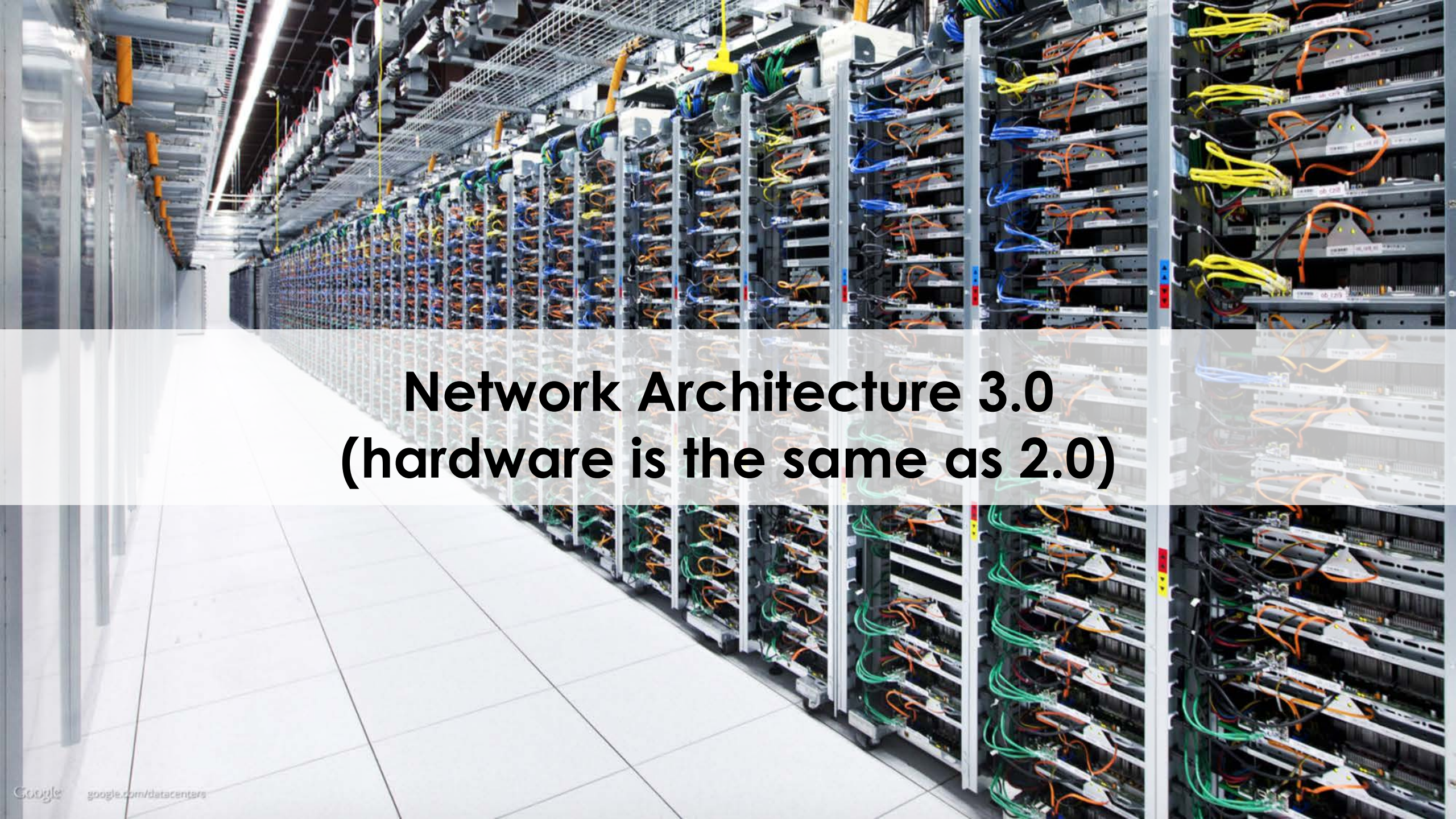
Network Architecture Evolution 1.0

1.0: Separate physical boxes for each component (e.g., routers, switches, firewalls)

Network Architecture 2.0

Network Architecture Evolution 2.0

2.0: Physical boxes converted to virtual machines called Virtual Network Functions (VNFs) running on VMware or OpenStack

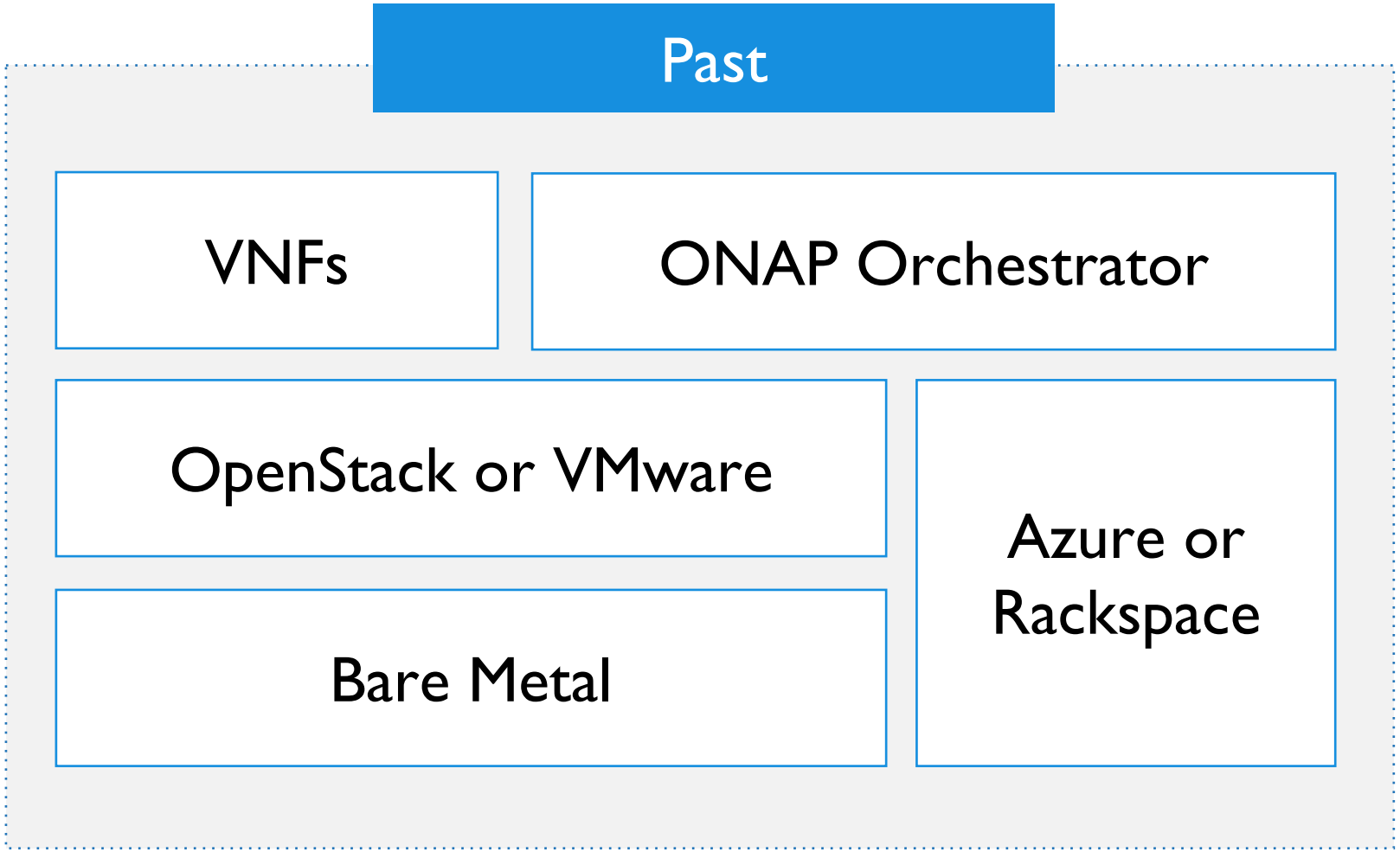


Network Architecture 3.0
(hardware is the same as 2.0)

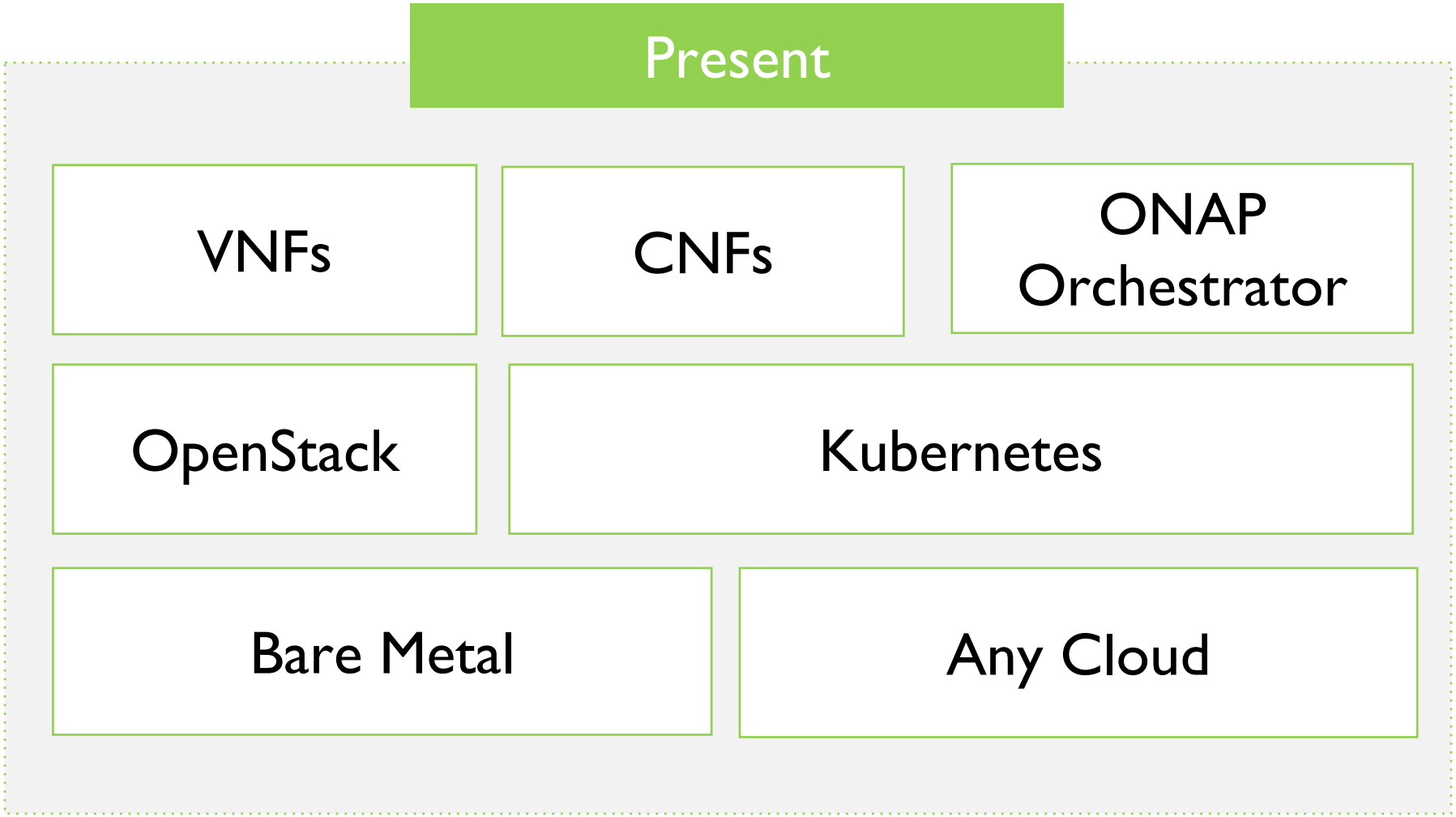
Network Architecture Evolution 3.0

3.0: Cloud-native Network Functions (CNFs) run on Kubernetes on public, private, or hybrid clouds

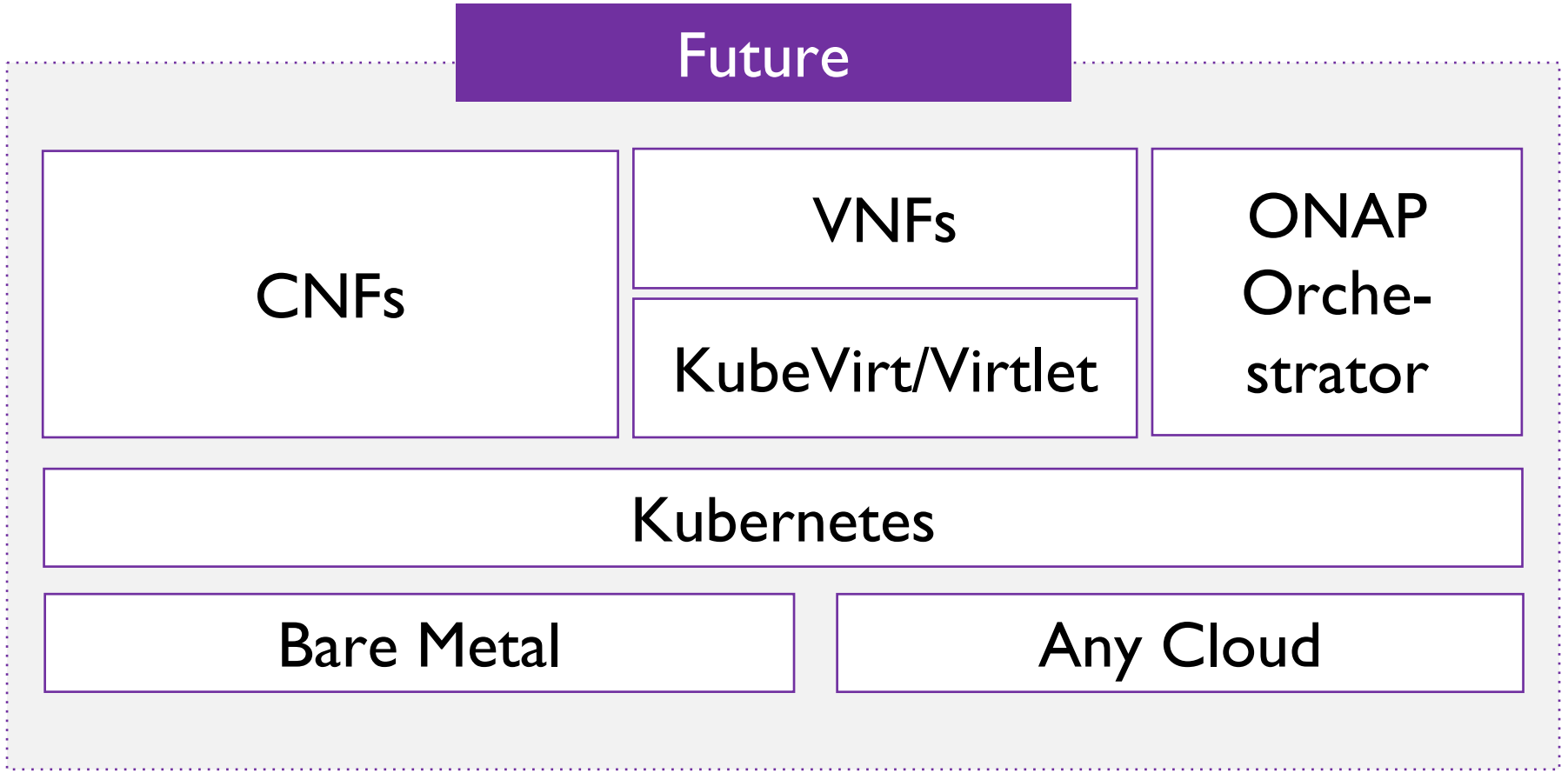
Evolving from VNFs to CNFs (Past)



Evolving from VNFs to CNFs (Present)



Evolving from VNFs to CNFs (Future)



Three Major Benefits

1. Cost savings

Three Major Benefits

2. Improved resiliency (to failures of individual CNFs, machines, and even data centers)

Three Major Benefits

3. Higher development velocity

The challenge of transitioning VNFs to CNFs

- Moving network functionality from ***physical*** hardware to encapsulating the software in a ***virtual*** machine (P2V) is generally easier than ***containerizing*** the software (P2C or V2C)
- Many VNFs rely on kernel hacks or otherwise do not restrict themselves to just the ***Linux userspace ABI***

Cloud Native Computing Foundation

- Non-profit, part of the Linux Foundation; founded Dec 2015

Graduated

Orchestration

Monitoring

Incubating

Distributed Tracing API

Logging

Remote Procedure Call

Container Runtime

Container Runtime

Networking API

Service Mesh

Distributed Tracing

Software Update Spec

Security

Storage

Service Discovery

Messaging

Service Mesh

Package Management

Storage

Sandbox

Identity Spec

Identity

Policy

Serverless

Tooling

Registry

Metrics Spec

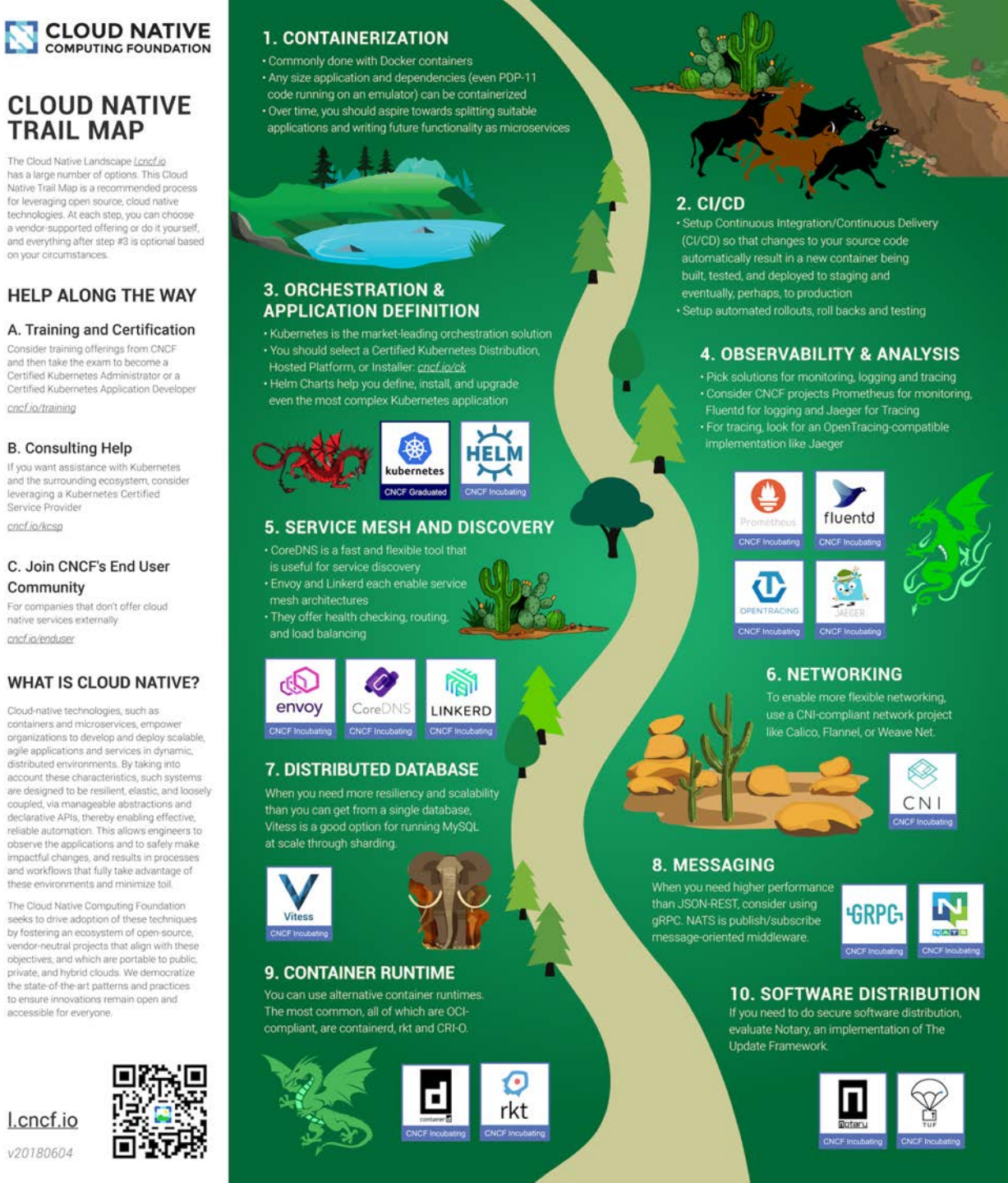
Distributed K/V

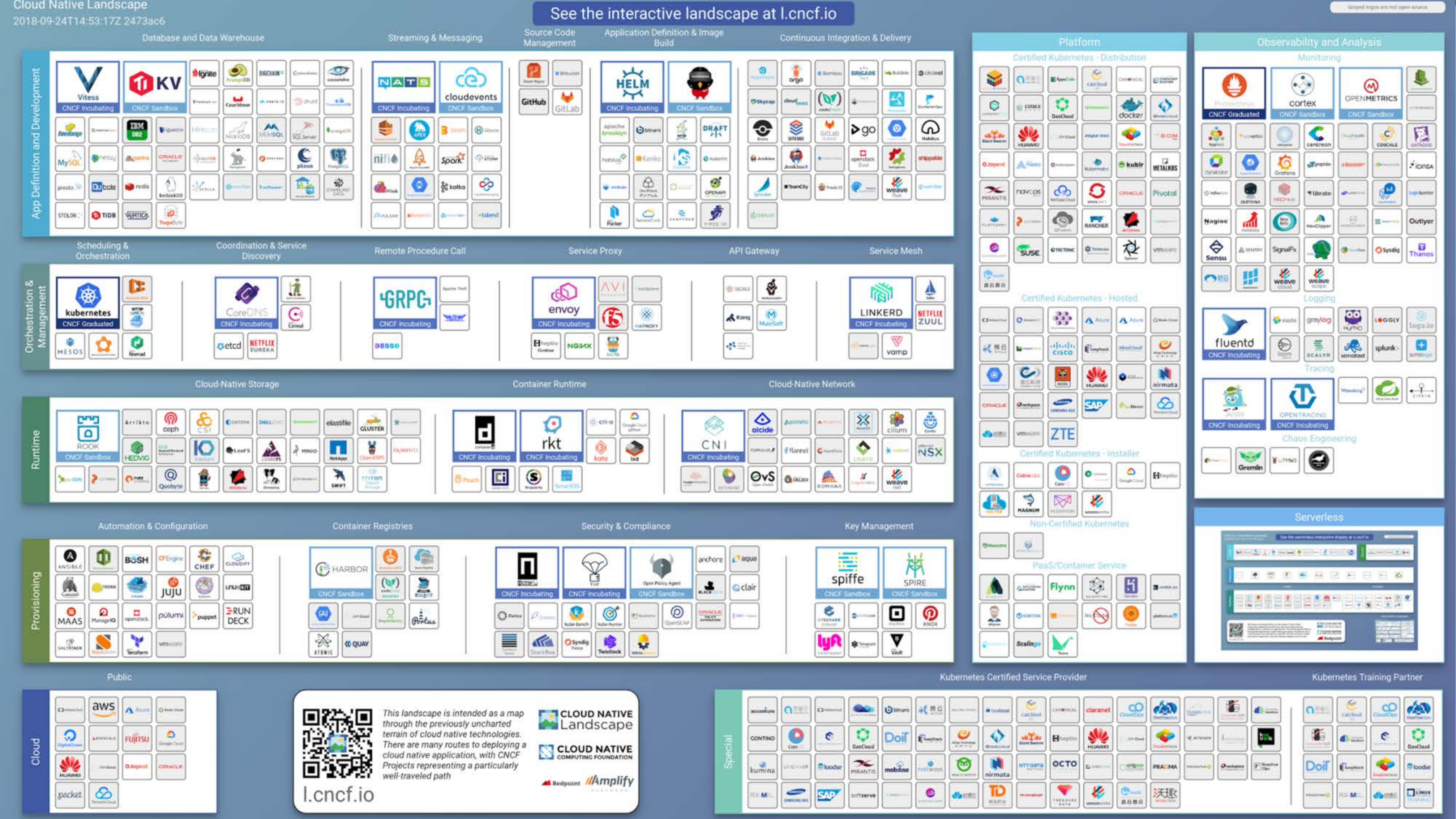
Monitoring

- Platinum members:

Cloud Native Trail Map

Trail Map: l.cncf.io




Cloud Native Landscape
2018-09-24T14:53:17Z 2473ac6
See the interactive landscape at l.cncf.io
App Definition and Development
Database and Data Warehouse
Streaming & Messaging
Source Code Management
Application Definition & Image Build
Continuous Integration & Delivery
Orchestration & Management
Scheduling & Orchestration
Coordination & Service Discovery
Remote Procedure Call
Service Proxy
API Gateway
Service Mesh
Runtime
Cloud-Native Storage
Container Runtime
Cloud-Native Network
Provisioning
Automation & Configuration
Container Registries
Security & Compliance
Key Management
Platform
Certified Kubernetes - Distribution
Certified Kubernetes - Hosted
Certified Kubernetes - Installer
Non-Certified Kubernetes
PaaS/Container Service
Observability and Analysis
Monitoring
Logging
Tracing
Chaos Engineering
Serverless
Cloud
Public
Special
Kubernetes Certified Service Provider
Kubernetes Training Partner
Vitess
CNCF Incubating
KV
CNCF Sandbox
NATS
cloudevents
HELM
kubernetes
CNCF Graduated
CoreDNS
GRPC
envoy
LINKERD
ROOK
containerd
rkt
CNI
HARBOR
Notary
TUF
Open Policy Agent
spiffe
SPIRE
Prometheus
cortex
OPENMETRICS
fluentd
JAEGER
OPENTRACING
This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path
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CLOUD NATIVE Landscape
CLOUD NATIVE COMPUTING FOUNDATION
Redpoint
Amplify

PLEASE TRY THE INTERACTIVE LANDSCAPE NOW:

l.cncf.io

KubeCon + CloudNativeCon

- China
  - Shanghai: November 13-15, 2018
  - Sponsorships open
- North America
  - Seattle: December 10-13, 2018
  - Sponsorships open
- 2019
  - Barcelona: May 20-23, 2019
  - Shanghai: June 26-28, 2019
  - San Diego: November 18-21, 2019