Lessons for LF Energy from the Growth of Cloud Native

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Cloud Native Computing Foundation

- Nonprofit, part of the Linux Foundation; founded Dec 2015

Graduated
- kubernetes
- Prometheus
- envoy
- CoreDNS
- fluentd
- jaeger

Incubating
- gRPC
- opentracing
- CNI
- Helm
- etcd
- Linkerd
- Vitess
- NATS

- Platinum members:
CNCF Membership Reaches 500
124 Companies in the End User Community

Plus 15 non-public members
Kubernetes in Search Trends

Google Trends

WeChat

Kubernetes  OpenStack  Mesos  Docker Swarm  Cloud Foundry

Kubernetes  OpenStack
Certified Kubernetes Conformance

- CNCF runs a software conformance program for Kubernetes
  - Implementations run conformance tests and upload results
  - Mark and more flexible use of Kubernetes trademark for conformant implementations
  - cncf.io/ck
99 Certified Kubernetes Partners
## Training and Certification

### Training
- Over 88,000 people have registered for the free Introduction to Kubernetes course on edX
- Over 9,800 people have registered for the $299 Kubernetes Fundamentals course

### Certification
- Over 10,600 people have registered for the Certified Kubernetes Administrator (CKA) online test
- Over 4,000 people have registered for the Certified Kubernetes Application Developer (CKAD) online test
Kubernetes Certified Service Provider

A pre-qualified tier of vetted service providers who have deep experience helping enterprises successfully adopt Kubernetes through support, consulting, professional services and/or training.

Benefits

- Placement at the top of https://kubernetes.io/partners/
- Monthly private meetings with cloud native project leaders, TOC members, and representatives from the Governing Board
- Access to leads from the kubernetes.io for end users looking for support

Requirements

- Three or more certified engineers
- Business model to support enterprise end users
- Be a CNCF member

https://www.cncf.io/certification/kcsp/
118 Kubernetes Certified Service Providers
KubeCon + CloudNativeCon

- North America 2019
  - San Diego: November 18-21, 2019

- Europe 2020
  - Amsterdam: March 30 - April 2, 2020

- China 2020
  - Shanghai: July 28-30, 2020

- North America 2020
  - Boston: November 17-20, 2020
Google’s K8s Contributions and % of the Whole

See DevStats
Overwhelmed? Please see the CNCF Trail Map. That and the interactive landscape are at l.cncf.io
Cloud Native Trail Map

Trail Map: l.cncf.io

1. CONTAINERIZATION
- containerization data with Docker containers
- Apply stateless workload and implementation (e.g., Redis)
- containerize only the stateful components to maintain state
- use management tools and platforms to maintain and apply future functionality as microservices

2. CI/CD
- Pulling Continuous Integration/Continuous Delivery (CI/CD) so that changes to your source code automatically result in a new container being built, tested, and deployed to staging and eventually, production environments
- Setup automated rollback, roll backs and testing

3. ORCHESTRATION & APPLICATION DEFINITION
- Kubernetes is the leader in orchestration solutions
- You should select a Certified Kubernetes Administrator or Certified Kubernetes Application Developer level of training
- Helm Charts help you define, install, and upgrade even the most complex Kubernetes application

4. OBSERVABILITY & ANALYSIS
- Put in place solutions for monitoring, logging, and tracing
- Consider CNCF projects Prometheus for monitoring, Fluentd for logging, and Jaeger for tracing

5. SERVICE PROXY, DISCOVERY, & MESH
- Consul is a fast and flexible tool that is useful for entire cloud
- Envoy and Linkerd each enable service mesh architectures
- They offer health checking, routing, and load balancing

6. NETWORKING & POLICY
- To enable more flexible networking, use a CNCF-compliant network project like Calico, Flannel, or Venet
- Open Policy Agent (OPA) is a general-purpose policy engine with header languages, authorization, and admission control to data filtering

7. DISTRIBUTED DATABASE & STORAGE
- When you need more resiliency and scalability than you can get from a single database, this is a good option for running MySQL, or more through the sharding model that improves a database’s throughput and high availability
- Spanning the Forum of Kubernetes, this ecosystem is characterized by high architecture standards for distributed systems like MySQL's

8. STREAMING & MESSAGING
- When you need a higher-performed data in 2020/2021, consider using Kafka, Rook, or Apache Kafka as a service

9. CONTAINER REGISTRY & RUNTIME
- Container registries that store, share, and access container
- Docker images can be containerized, which makes them easier to store and transport

10. SOFTWARE DISTRIBUTION
- Pulls need to do secure software distribution, which facilitates an implementation of The Common Best Practices

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

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

The Cloud Native Computing Foundation seeks to lead adoption of this paradigm by fostering and outstanding an ecosystem of open source vendor-neutral projects. The demonstrative state of the art platforms to make these innovations accessible for everyone.
LF Energy Landscape

See the interactive landscape at l lfenergy.org

Projects

- LF Energy Growth
- LF Energy Growth
- LF Energy OEDI
- LF Energy Sandbox
- LF Energy Sandbox
- LF Energy Sandbox

Premier

- alliander
- RHE

General

- IBM
- ORNL
- elering
- energinet
- PNNL
- EPFL
- Fluorre

Associate

- THE FARADAY GRID
- USDOE NatLab
- Stanford
- NREL
- IEA RES
- EPRI
- RICE
- NASG
- NC State University
- MIT

This LF Energy Landscape is a living document that developers, investors, vendors, researchers and others can use as a resource to better understand the open energy ecosystem.

l lfenergy.org
You are viewing 33 cards with a total of 188 stars, market cap of $120.03B and funding of $235.56M.
Please follow up with Dan Kohn
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This presentation is available at:
https://github.com/cncf/presentations