



# ONAP & CNCF

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# Agenda

- CNCF?
- Status of CNF in ONAP
- ONAP journey to cloud native
- First ideas / propositions for moving on

# CNCF? (1)

- CNCF stands for “Cloud Native Computing Foundation”
  - *“The Cloud Native Computing Foundation builds sustainable ecosystems and fosters a community around a constellation of high-quality projects that orchestrate containers as part of a microservices architecture.”* (<https://www.cncf.io/>)
- As LFN (Linux Foundation Network), it’s a subset of Linux Foundation dealing with cloud native projects such as:
  - Kubernetes
  - Helm
  - Prometheus
  - Fluentd (logging parsing)
  - Jaeger (telemetry)
  - Network Service Mesh
  - ...

# CNCF? (2)

- CNCF has huge number of contributors
  - (> 50k)

- CNCF developed also an interactive landscape of Cloud native:

- <https://landscape.cncf.io/>

- CNCF has also proposed a “trailmap” to go to cloud native:

- [https://raw.githubusercontent.com/cncf/trailmap/master/CNCF\\_TrailMap\\_latest.png](https://raw.githubusercontent.com/cncf/trailmap/master/CNCF_TrailMap_latest.png)



## CLOUD NATIVE TRAIL MAP

The Cloud Native Landscape [Landscape.cncf.io](https://landscape.cncf.io) has a large number of options. This Cloud Native Trail Map is a recommended process for leveraging open source, cloud native technologies. At each step, you can choose a vendor-supported offering or do it yourself, and everything after step #3 is optional based on your circumstances.

### HELP ALONG THE WAY

#### A. Training and Certification

Consider training offerings from CNCF and then take the exam to become a Certified Kubernetes Administrator or a Certified Kubernetes Application Developer [cncf.io/training](https://cncf.io/training)

#### B. Consulting Help

If you want assistance with Kubernetes and the surrounding ecosystem, consider leveraging a Kubernetes Certified Service Provider [cncf.io/csp](https://cncf.io/csp)

#### C. Join CNCF's End User Community

For companies that don't offer cloud native services externally [cncf.io/enduser](https://cncf.io/enduser)

### WHAT IS CLOUD NATIVE?

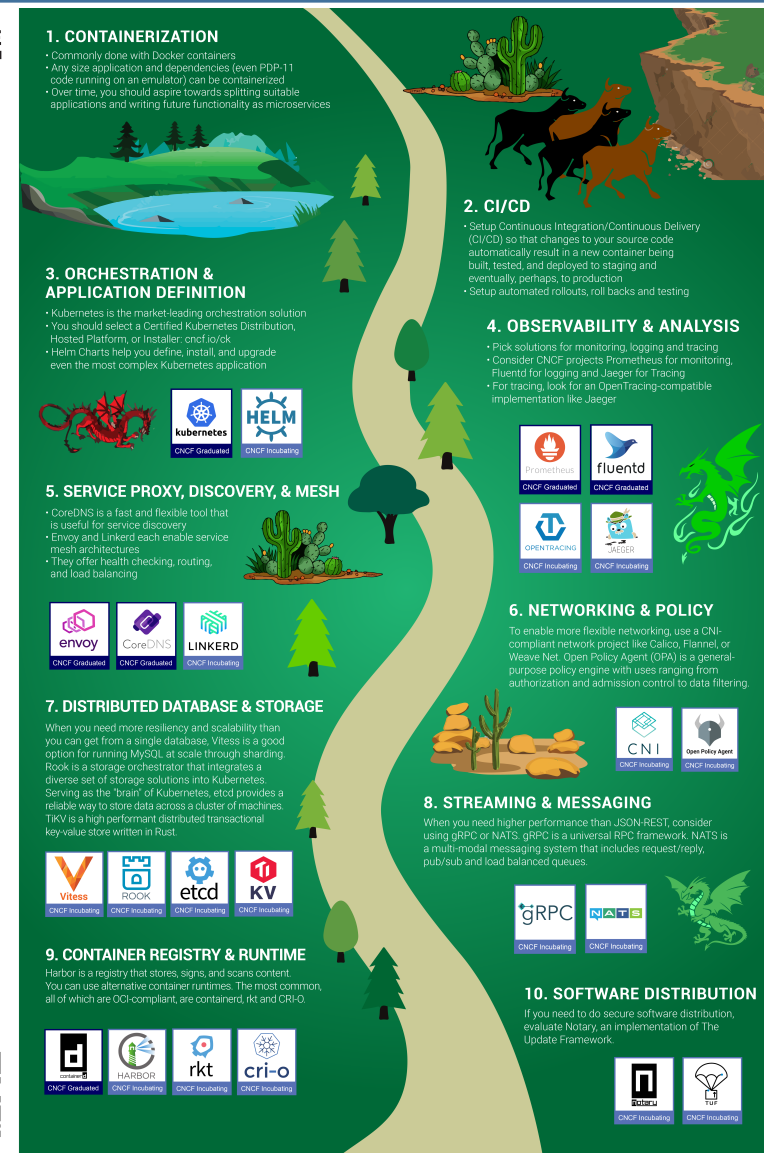
Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds. Containers, service meshes, microservices, immutable infrastructure, and declarative APIs exemplify this approach.

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.

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.

[l.cncf.io](https://l.cncf.io)

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- CNCF has also “Special Interest Group” (SIG)
  - First is SIG User
  - Second is SIG “telco” (aka “us”) which was launched in may
  - Third is SIG “banking” which should be launched soon

- Telecom User Group (TUG) has a page (<https://github.com/cnfc/telecom-user-group>) with all information if you want to attend.
- A Containerized Network Function (CNF) testbed has been launched
  - <https://github.com/cnfc/cnf-testbed>
  - <https://www.cnfc.io/announcement/2019/02/25/cnfc-launches-cloud-native-network-functions-cnf-testbed/>
  - One of the first test is to “perf test” ONAP vCPE use case in Container mode vs VM mode
- One of CNF testbed goal is to have one (less than 3) platforms to test CNF against
  - So need to validate Kubernetes installation (functest-k8s in OPNFV has started)
  - Need to validate that Kubernetes is behaving well (an equivalent of functest-vnf from OPNFV would be nice to have)
  - Make it reproducible in “any” labs

# Status of CNF in ONAP

- "Multicloud-k8s" project has started in Casablanca with the aim to
  - Be able to start "CNF" into a Kubernetes cluster
  - Work has continued in Dublin
  
- CNF test bed is reusing (part of) work done in ONAP

# ONAP journey to cloud native

- Amsterdam release → Containerization
- Beijing release → Orchestration/Application
- Casablanca → start of observability
- Dublin → start of CI/CD





# First ideas / propositions for moving on (1)

- IMHO, ONAP should focus on its business logic (orchestrate NF Lifecycle in general) and try to reuse at maximum CNF projects for its infrastructure
  - i.e. try to be part of a bigger crowd
- If we look at ONAP code today, specific projects (seems to) deals on infrastructure needs:
  - MSB is an API Gateway
  - DCAE Cloudify is a package manager
  - AAF works on Authentication and Authorization
  - DMaaP works on message delivery and pub/sub
  - ...

# First ideas / propositions for moving on (2)

- So we could look if existing CNCF projects could be used as drop in replacement
- For example (of course studies must be performed to validate, and not all will make sense):
  - Linkerd/Istio/Consul Connect/Kong/... for MSB
  - Helm for DCAE deployment (which would also simplify LCM as we have today 2 package managers)
  - Linkerd/Istio + Vault for AAF
  - NATS for DMaaP (NATS is a standalone pub/sub server)
- It's obviously not neutral and may impact a lot ONAP. So benefits (or simplicity to do) must be there

# First ideas / propositions for moving on (3)

- ONAP journey to Cloud Native should continue too
  - Continue centralized logging work
  - Start to use OpenTracing/OpenTelemetry/Jaeger for tracing ONAP full life of a request (use of Service Mesh such as Linkerd/Istio/Consul Connect would give it for “free” in inter pod communication)
  - Propose Prometheus KPIs per Service
  - Propose Ready to use Prometheus alerts / Grafana Dashboards for ONAP
  - Create Network Policies for inter pod and out of cluster communication (again Service Mesh would help)
  - Evaluate interest of more secure docker registries such as Harbor
  - ...

# First ideas / propositions for moving on (4)

- Multicloud-k8s has a reference Kubernetes implementation (based on Kubespray)
- Align this reference implementation with cnf-testbed one would be good.

# Quick wins

- All propositions are not equal in term of complexity.
- Some are quick wins that could be started / continued / finished during El Alto:
  - Logging
  - Prometheus integration (volunteer to make a prototype on one component, external API for examples)
  - Harbor is more of an infrastructure change but may be interesting to investigate (image SHA, vulnerabilities check, ...)

# Conclusion

- CNCF is on top the hype curve today
  - Lots of traction
  - Lots of developer
  - Lots of new stuff
  
- Reusing it in ONAP could help us focus on our core work
  - Onboarding
  - Deployment
  - Configuration
  - Monitoring
  - Self healing
  - ...