

# CloudNative Aalborg presents

## Observability using Elastic Search

by Simon Bengtsson - Sparnord

## Exploiting the winds of change with Cloud Native

by Anders Keis & Thor Lange - MHI Vestas



Hosted by



An Official  
 CLOUD NATIVE  
COMPUTING FOUNDATION  
Meetup Group

# CloudNative Aalborg

#CloudNativeAalborg  
#CloudNativeNordics

Join Slack



@ <https://www.cloudnativenoridcs.com/>

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Cloud Native **Aalborg** presents

# Observability

and

# Exploiting the winds of change

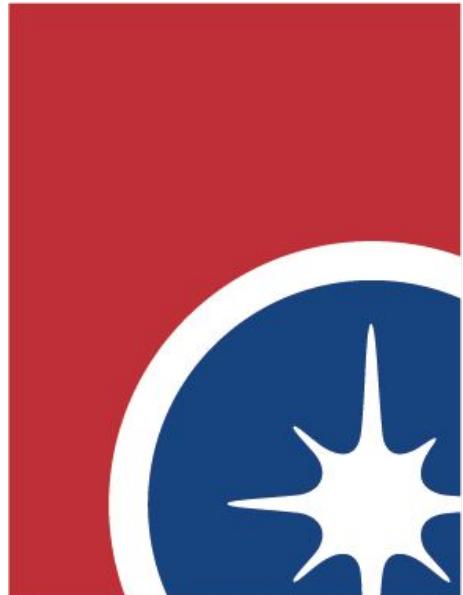


# Agenda

- 17.00 Welcome
- 17.15 Elastic Search
- 17.45 Food
- 18.15 Exploiting the Winds of Change
- 18.45 Networking

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A big thank you to this evening's host



sparNord

# Tweet! Tweet!



#CloudNativeAalborg

#CloudNativeNordics

Make some noise about our awesome community... @CloudNativeFdn, #kubernetes, etc.



# Cloud Native Nordics Community



CLOUD NATIVE  
**NORDICS**



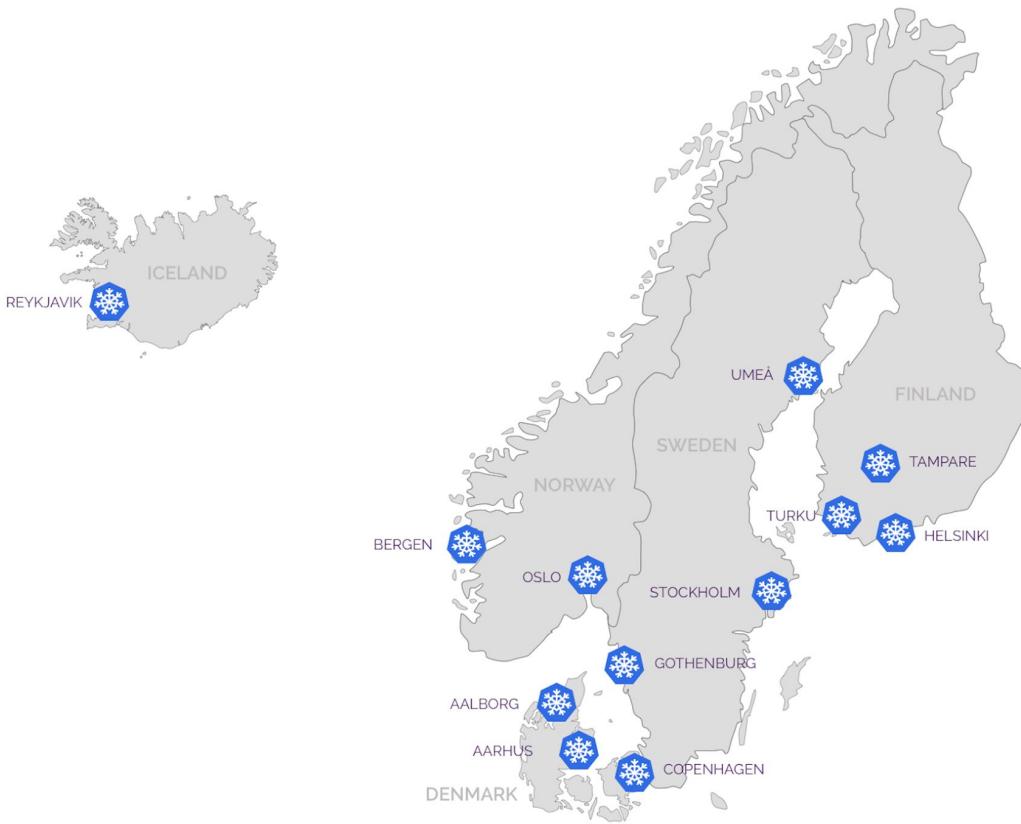
CLOUD NATIVE  
**NORDICS**

Continue the discussions and meet Cloud Natives from Denmark, Sweden, Norway, Iceland and Finland

[www.cloudnativenorthernlights.com](http://www.cloudnativenorthernlights.com)



# Cloud Native Nordics Community



# Cloud Native Nordics Website

The screenshot shows the homepage of the Cloud Native Nordics website. The header features a dark purple gradient background with white text. On the left, there's a blue hexagonal logo with a white snowflake and the text "CLOUD NATIVE NORDICS". On the right, there are navigation links for "MEETUP GROUPS", "SPEAKERS", "SPONSORS", and "EVENTS". Below the header, a large white snowflake icon is centered against a red gradient background. The main content area has a purple-to-red gradient background. It includes a greeting in multiple languages ("Hej! Hallå!", "Hallo! Hei! Halló!"), a welcome message ("Welcome to Cloud Native Nordics"), and a "Join our Slack community" call-to-action with an input field for an email address.

Hej! Hallå!  
Hallo! Hei! Halló!

Welcome to  
Cloud Native  
Nordics

Join our Slack community

Enter email... ➔

# Cloud Native Nordics Website

The screenshot shows the homepage of the Cloud Native Nordics website. The header features a dark purple gradient background with the Cloud Native Nordics logo (a blue hexagon with a white snowflake) and the text "CLOUD NATIVE NORDICS". The top navigation bar includes links for "MEETUP GROUPS", "SPEAKERS", "SPONSORS", and "EVENTS". Below the header, a large purple section contains the text "Hej! Hallå!  
Hallo! Hei! Halló!" and "Welcome to Cloud Native Nordics". To the right, there is a large blue hexagon with a white snowflake icon, and a yellow speech bubble containing the text "Loving Feedback". At the bottom, there is a call-to-action for Slack and a newsletter sign-up form.

Hej! Hallå!  
Hallo! Hei! Halló!

Welcome to  
Cloud Native  
Nordics

CLOUD NATIVE  
NORDICS

MEETUP GROUPS SPEAKERS SPONSORS EVENTS

Join our Slack community

Enter email... ➔

Loving Feedback

# Cloud Native Aalborg

[Events Near Me](#)   [Groups Near Me](#)



<https://www.meetup.com/pro/cncf>

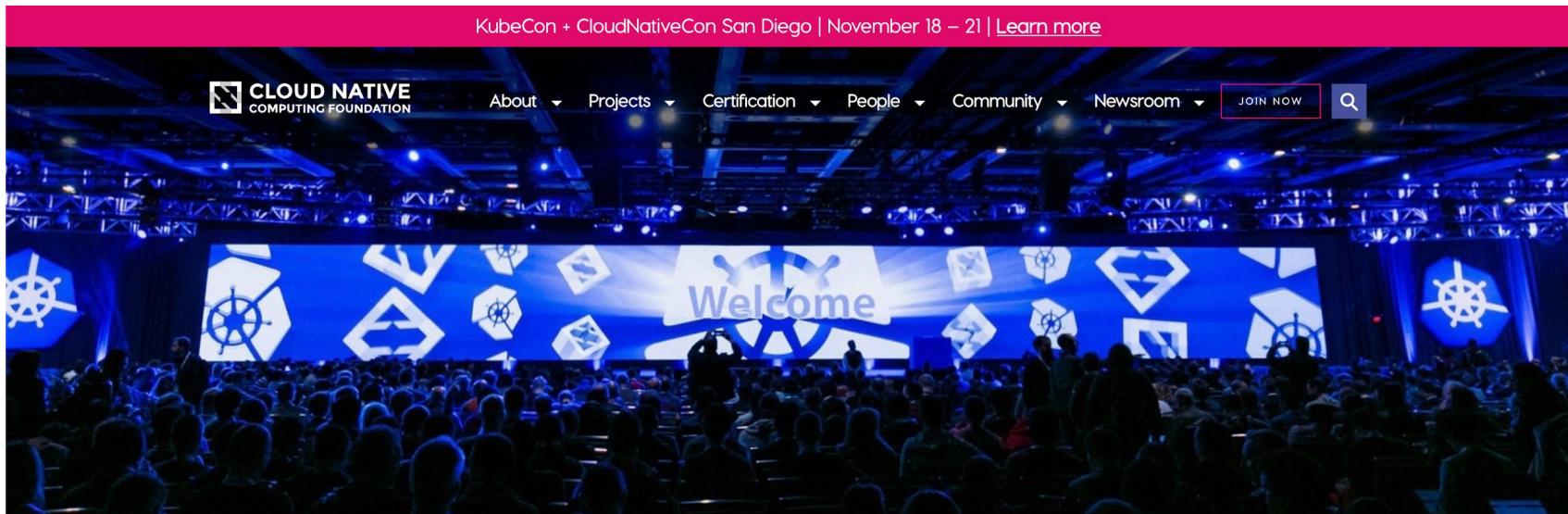
# Cloud Native Computing Foundation

KubeCon + CloudNativeCon San Diego | November 18 – 21 | [Learn more](#)



About ▾ Projects ▾ Certification ▾ People ▾ Community ▾ Newsroom ▾

[JOIN NOW](#)



## Building Sustainable Ecosystems for Cloud Native Software

The Cloud Native Computing Foundation (CNCF) hosts critical components of the global technology infrastructure. CNCF brings together the world's top developers, end users, and vendors and runs the largest open source developer conferences. CNCF is part of the nonprofit Linux Foundation.

# Cloud Native Computing Foundation

KubeCon + CloudNativeCon San Diego | November 18 – 21 | [Learn more](#)

The screenshot shows the Hard Rock Hotel San Diego website. At the top, there's a navigation bar with the Cloud Native Computing Foundation logo, followed by links for About, Projects, Certification, People, and Community. Below the navigation is a banner for KubeCon + CloudNativeCon San Diego. The main content area features a large image of the hotel's rooftop bar at night, with tables, chairs, and a fire pit. To the left is a sidebar with a ship's wheel icon and a "ROOMS & SUITES" link. To the right are links for SERVICES & AMENITIES, PACKAGES & SPECIALS, DINING & NIGHTLIFE, and more. A large yellow speech bubble on the right contains the text "Monday Night ... follow slack". At the bottom left, there's a hashtag "#kubecon19-san-diego".

# kubecon19-san-diego

HARD ROCK HOTEL SAN DIEGO

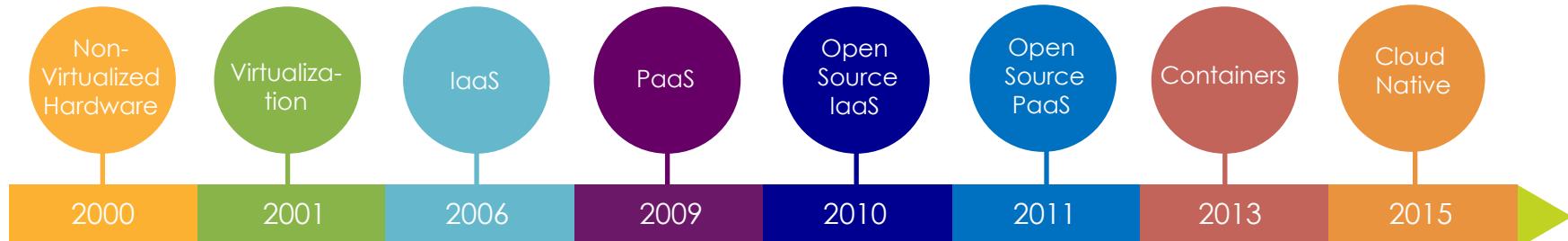
FLOAT ROOFTOP BAR

infrastructure. CNCF brings together the world's top developers, end users, and vendors and runs the largest open source developer conferences. CNCF is part of the nonprofit Linux Foundation.

# From Virtualization to Cloud Native



- Cloud native computing uses an open source software stack to:
  - segment applications into *microservices*,
  - package each part into its own container
  - and dynamically orchestrate those containers to optimize resource utilization



# CNCF Cloud Native Definition v1.0

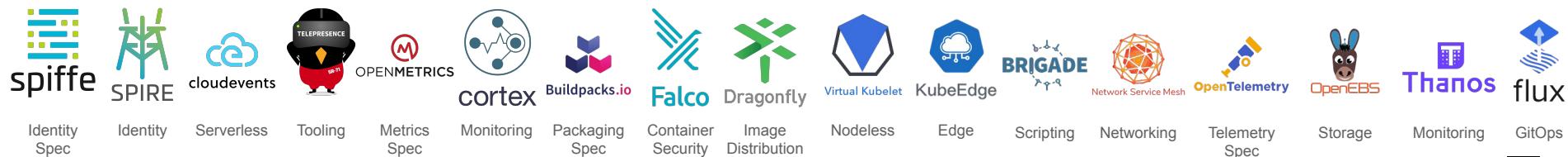
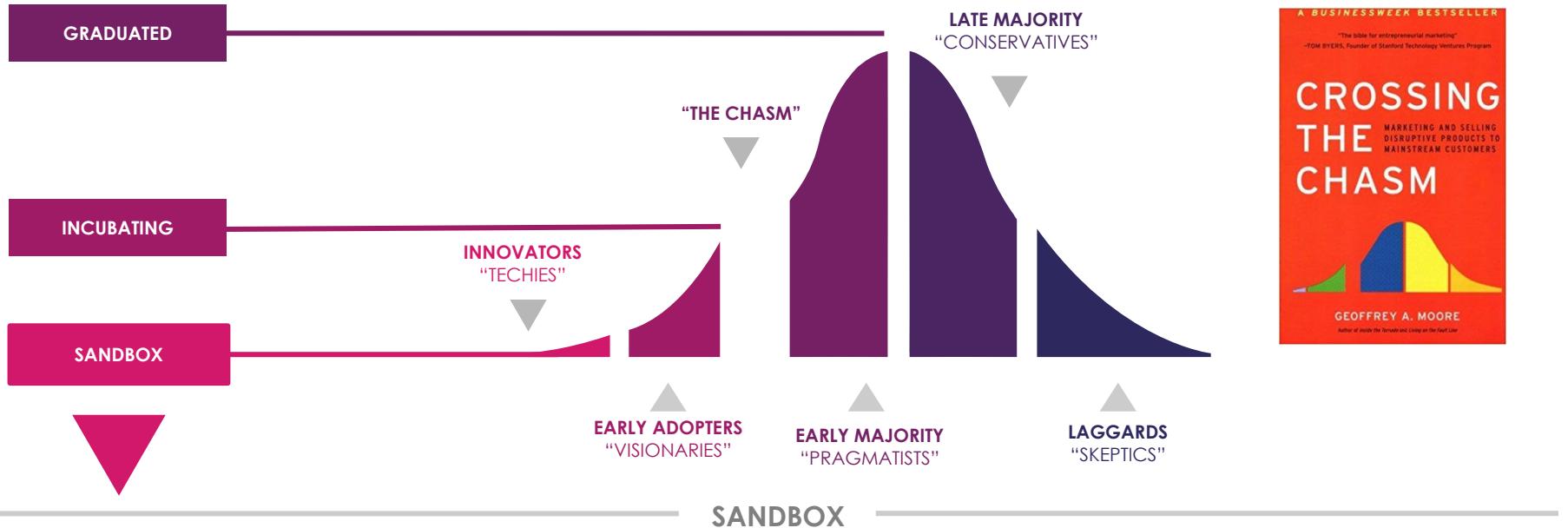
Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds. Containers, service meshes, microservices, immutable infrastructure, and declarative APIs exemplify this approach.

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.



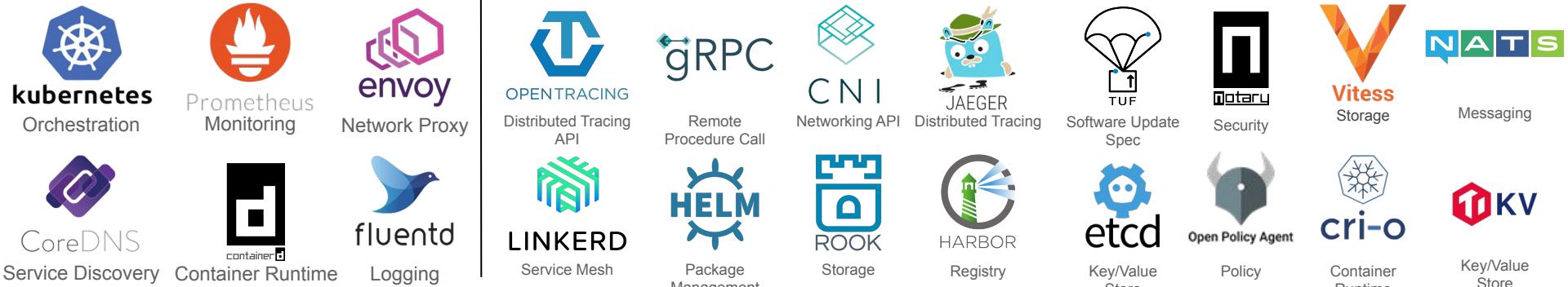
# CNCF Project Maturities



# Cloud Native Computing Foundation

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

## Graduated



## Incubating



# Cloud Native Trail Map

18

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



## CLOUD NATIVE TRAIL MAP

The Cloud Native Landscape ([l.cncf.io](https://l.cncf.io)) has a large number of options. This Cloud Native Trail Map is a recommended process for learning about 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 taking 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 need assistance with Kubernetes and the surrounding ecosystem, consider leveraging a Kubernetes Certified Service Provider [cncf.io/kscp](https://cncf.io/kscp)

#### 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.

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

v20190821



### 1. CONTAINERIZATION

- Commonly done with Docker containers
- Any size application and dependencies (even PDP-11 code running on an emulator) can be containerized
- Over time, you should aspire towards splitting suitable applications and writing future functionality as microservices



### 3. ORCHESTRATION & APPLICATION DEFINITION

- Kubernetes is the market-leading orchestration solution
- You should select a Certified Kubernetes Distribution, Hosted Platform, or Installer: [cncf.io/cck](https://cncf.io/cck)
- Helm Charts help you define, install, and upgrade even the most complex Kubernetes application



### 5. SERVICE PROXY, DISCOVERY, & MESH

- CoreDNS is a fast and flexible tool that is useful for service discovery
- Envoy and Linkerd each enable service mesh architectures
- They offer health checking, routing, and load balancing



### 7. DISTRIBUTED DATABASE & STORAGE

When you need more resilience and scalability than you can get from a single database, Vitess is a good option for running MySQL at scale through sharding. Rock is a storage orchestrator that integrates a diverse set of storage solutions into Kubernetes. Serving as the "brain" of Kubernetes, etcd provides a shared, consistent data store across a cluster of machines. TiKV is a high performance distributed transactional key-value store written in Rust.



### 9. CONTAINER REGISTRY & RUNTIME

Harbor is a registry that stores, signs, and scans content. You can use alternative container runtimes. The most common, both of which are OCI-compliant, are containerd and CRI-O.



### 2. CI/CD

- Setup 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, perhaps, to production
- Set up automated rollouts, roll backs and testing

### 4. OBSERVABILITY & ANALYSIS

- Pick solutions for monitoring, logging and tracing
- Consider CNCF projects Prometheus for monitoring, Fluentd for logging and Jaeger for Tracing
- For tracing, look for an OpenTracing-compatible implementation like Jaeger



### 6. NETWORKING & POLICY

To enable more flexible networking, use a CNCF-compliant network project like Calico, Flannel, or Weave Net. Open Policy Agent (OPA) is a general-purpose policy engine with ranges from authorization and admission control to data filtering.



### 8. STREAMING & MESSAGING

When you need higher performance than JSON+REST, consider using gRPC or NATS. gRPC is a universal RPC framework. NATS is a multi-modal messaging system that includes request/reply, pub/sub and load balanced queues.



### 10. SOFTWARE DISTRIBUTION

If you need to do secure software distribution, evaluate Notary, an implementation of The Update Framework.





# CNCF Cloud Native Interactive Landscape

[Reset Filters](#)

Grouping

No Grouping

Sort By

Stars (high to low)

Category

Any

CNCF Relation

Any

License

Any

Organization

Any

Headquarters Location

Any

**Example filters:**[Cards by age](#)[Open source landscape](#)[Member cards](#)**Cards by stars**[Cards from China](#)[Certified K8s/KCSP/KTP](#)[Cards by MCap/Funding](#)[Download as CSV](#)

The Cloud Native Trail Map ([png](#), [pdf](#)) is CNCF's recommended path through the cloud native landscape. The cloud native landscape ([png](#), [pdf](#)), serverless landscape ([png](#), [pdf](#)), and member landscape ([png](#), [pdf](#)) are dynamically generated below. Please open a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2019-07-12 2:17:13Z

You are viewing 1,158 cards with a total of 1,725,127 stars, market cap of \$10.38T and funding of \$57.6B.

Try it now at  
<https://l.cncf.io>

[Tweet](#) 694

Landscape

Card Mode

Serverless

Members

No Grouping (1158)



Kubernetes

Cloud Native Computing Foundation (CNCF)  
★ 55,292

Elastic

Elastic ★ 42,628  
MCap: \$7.09B

Netdata

Netdata ★ 39,579



Ansible

Red Hat ★ 38,340  
MCap: \$33.43B

Redis

Redis Labs ★ 37,543  
Funding: \$146.6M

serverless

Serverless ★ 30,993  
Serverless Funding: \$13M

Grafana

Grafana Labs ★ 29,826  
Funding: \$1.23M

No Code

No Code ★ 29,736



Dubbo

Apache Software Foundation ★ 27,880



etcd

Cloud Native Computing Foundation (CNCF) ★ 26,033



Prometheus

Cloud Native Computing Foundation (CNCF) ★ 25,134



Traefik

Containous ★ 23,355  
Containous Funding: \$1.06MApache Spark ★ 22,617  
Apache Software FoundationKong ★ 22,580  
Funding: \$69.1MRethinkDB ★ 22,388  
Linux FoundationgRPC ★ 22,130  
Cloud Native Computing Foundation (CNCF)GitLab ★ 21,901  
GitLab Funding: \$168.2MSentry ★ 21,457  
Sentry Funding: \$26.5M

# Do you want to host a Meetup?



Arne Mejlholm  
IT Developer  
Sparnord



Simon Bengtsson  
Systems Engineer  
Sparnord



Camilla Beck Larsen  
Systems Engineer  
Sparnord



Allan Højgaard Jensen  
Cloud Platform Architect  
Oracle

come talk to us...

# Do you want to speak at a Meetup?



Arne Mejlholm  
IT Developer  
Sparnord



Simon Bengtsson  
Systems Engineer  
Sparnord



Camilla Beck Larsen  
Systems Engineer  
Sparnord



Allan Højgaard Jensen  
Cloud Platform Architect  
Oracle

come talk to us...

# Cloud Native Aalborg

We need your feedback...

- what can we do better?
- any ideas for future meetups?
- provide feedback on:  **slack**

# Observability with ELK - Elastic Search

/by

Simon Bengtsson

IT Developer Sparnord



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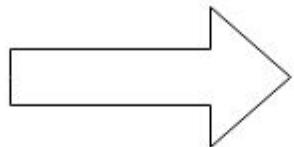
# Logs

- Structured Logging (JSON)
  - Add metadata, making it easier searching afterwards
    - Trace info
    - User info
    - Etc.
  - Log collectors adding docker and kubernetes metadata (Filebeat)
- Common format and naming
  - Same field name for same data
  - Same data in same format (etc. Log levels E, ERR, ERROR)

# Log flow



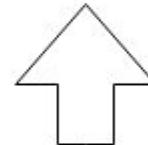
beats



Forwarding Logs



elasticsearch



Analyze

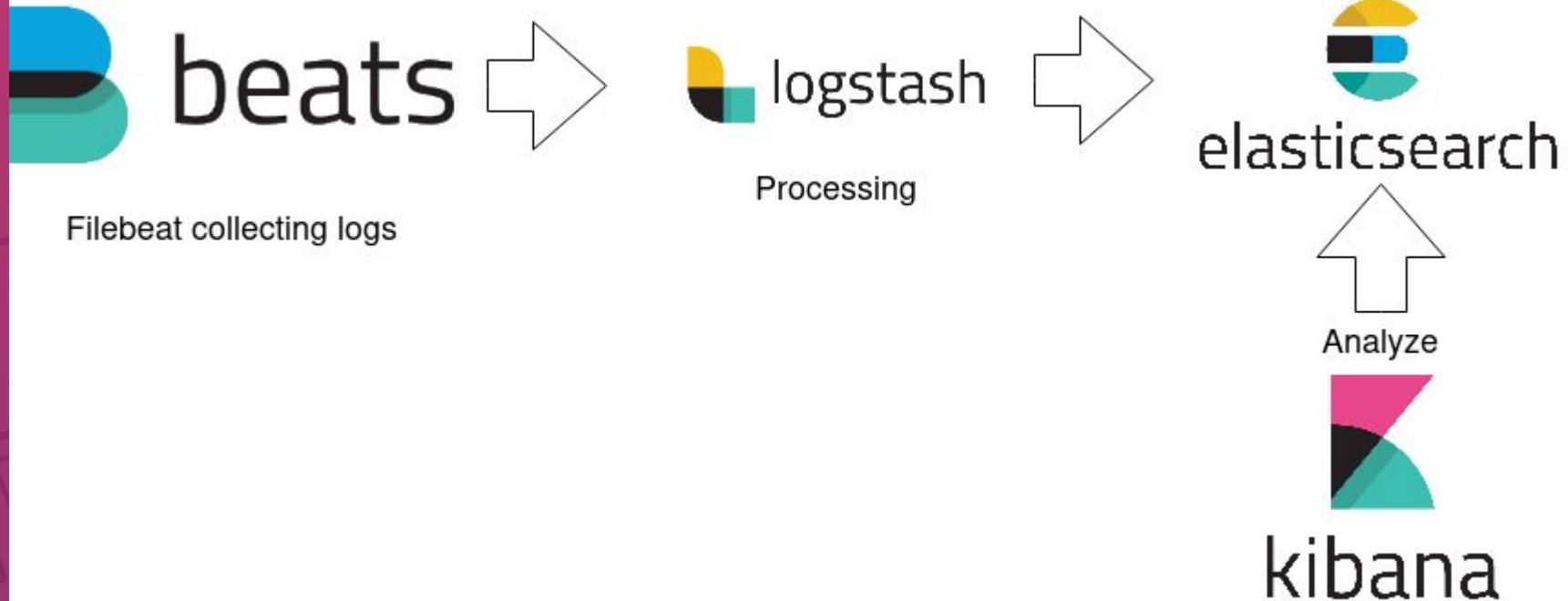


kibana



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# Log flow with logstash



# Elastic Cloud on Kubernetes (ECK)

- Kubernetes Operator (Currently in Beta)
- Cloud like management on premise
- Supported resources
  - Elasticsearch
  - Kibana
  - APM
- Configured using Kubernetes CRD

# Operator

Easy install

```
kubectl apply -f https://download.elastic.co/downloads/eck/1.0.0-beta1/all-in-one.yaml
```

This will install the operator into the `elastic-system` namespace

# Deploy ElasticSearch Cluster

```
apiVersion: elasticsearch.k8s.elastic.co/v1beta1
kind: Elasticsearch
metadata:
  name: demo
  namespace: demo
spec:
  version: 7.4.0
  nodeSets:
    - name: default
      count: 1
      config:
        node.master: true
        node.data: true
        node.ingest: true
        node.store.allow_mmap: false
```

# Deploy Kibana

```
apiVersion: kibana.k8s.elastic.co/v1beta1
kind: Kibana
metadata:
  name: demo
  namespace: demo
spec:
  version: 7.4.0
  count: 1
 .elasticsearchRef:
    name: demo
```

# Elasticsearch install demo

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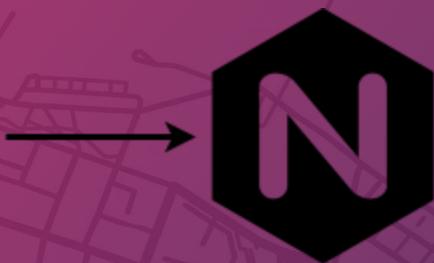
# What if we combine Logs with Jaeger

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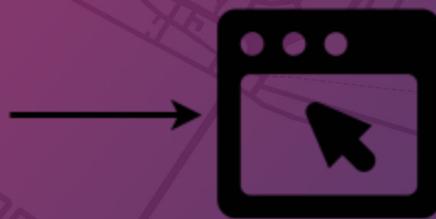
# Demo of logs + tracing



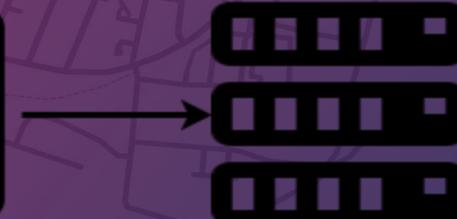
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Nginx Ingress



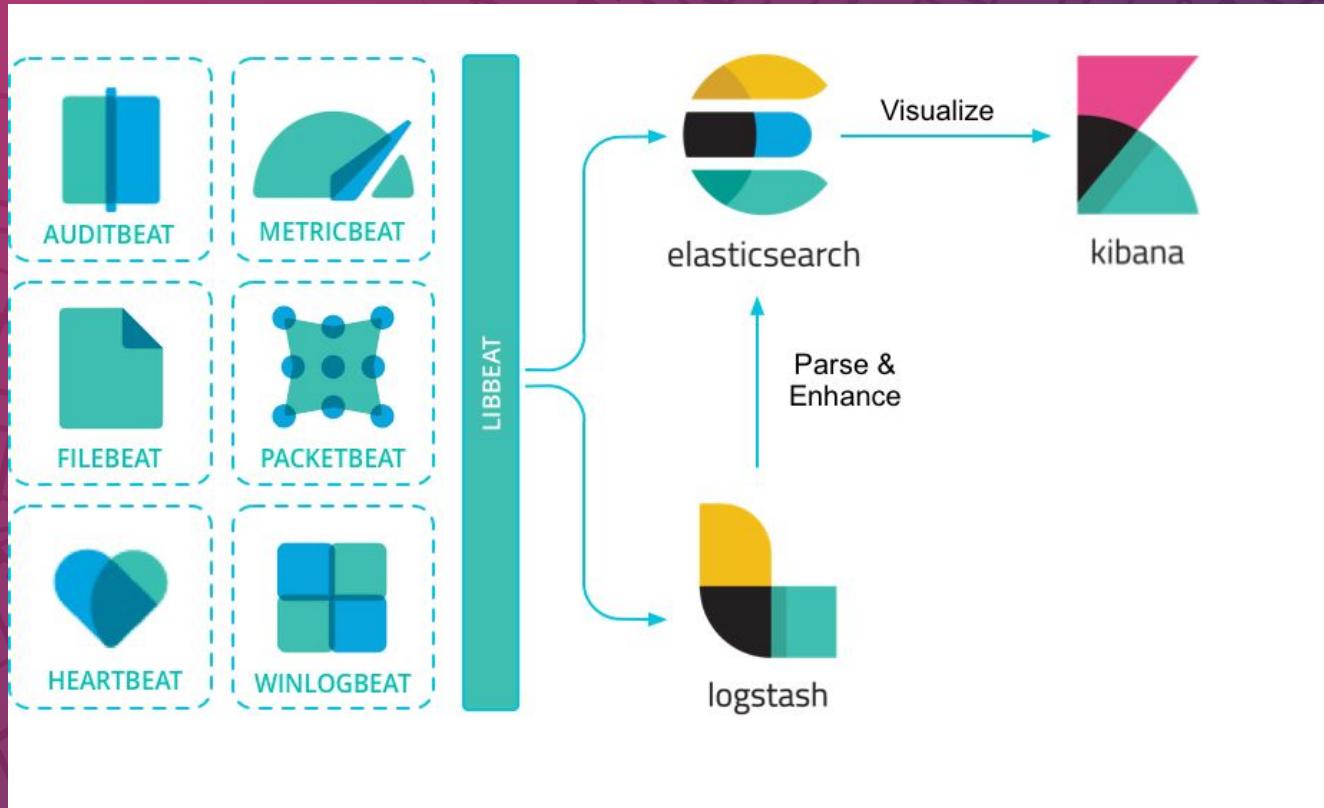
Quote Frontend



Quote Service

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# Elastic Beats



# Code/setup examples

Github:

<https://github.com/Cloud-Native-Aalborg/Meetup-3>

Elastic Cloud on Kubernetes (ECK) docs:

<https://www.elastic.co/guide/en/cloud-on-k8s/current/index.html>



# Food

/sponsored by



# spar nord



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COMPUTING FOUNDATION

# Exploiting wind of change with Cloud Native

/by Anders Keis Thor Lange

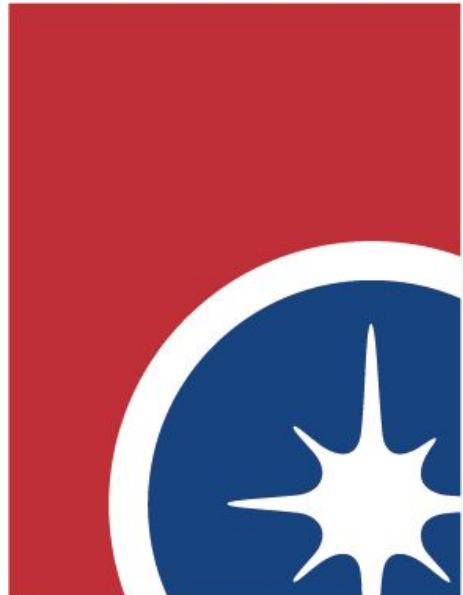
Cloud Infrastructure and Cloud Solution Architects MHI Vestas



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A big thank you to this evening's host



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# Networking

/by You

Cloudnatives in Aalborg

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