



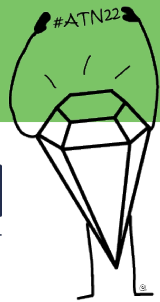
Cloud, OpenSource & Communautés

Julien Landuré
@jlandure





Agile Tour Nantais 2022 #ATN22



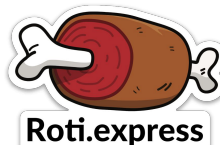
Valeur!ad
Richesses humaines & expertises IT



KANOMA
TRIBU AGILE



Crédit Mutuel
ARKEA



l'institut des médias avancés,
des arts et des technologies





Julien Landuré

CTO Zenika

GDG & DevFest Nantes Organizer

GDE Cloud



jlandure.dev
[@jlandure](https://twitter.com/jlandure)



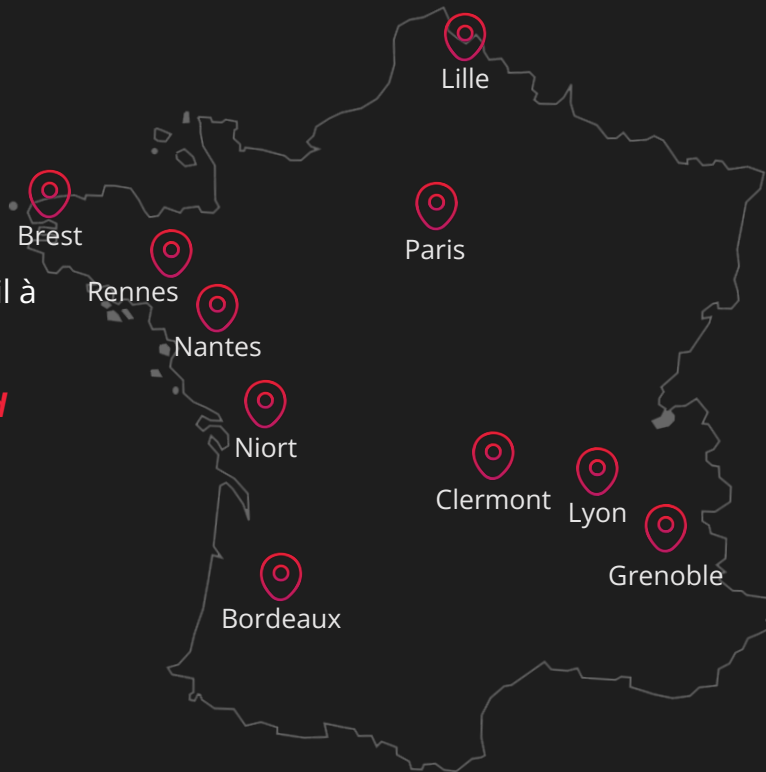
Merci à Agile Nantes de m'accueillir 🎉

Zenika recrute

📌 Coach Cloud, DevOps, Agilité 🧠

Envie de rejoindre le projet Zenika, venez échanger ou email à jobs@zenika.com 😊

Nous recrutons ! #opensource #web #agile #devops #cloud





THE
APACHETM
SOFTWARE FOUNDATION



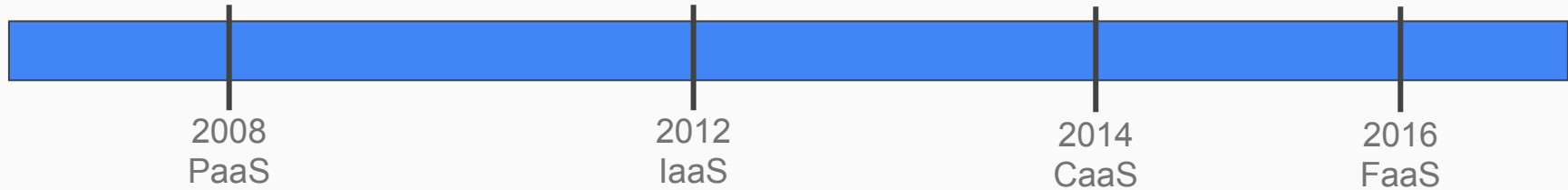


Timeline *aas

AWS



Google Cloud



Azure

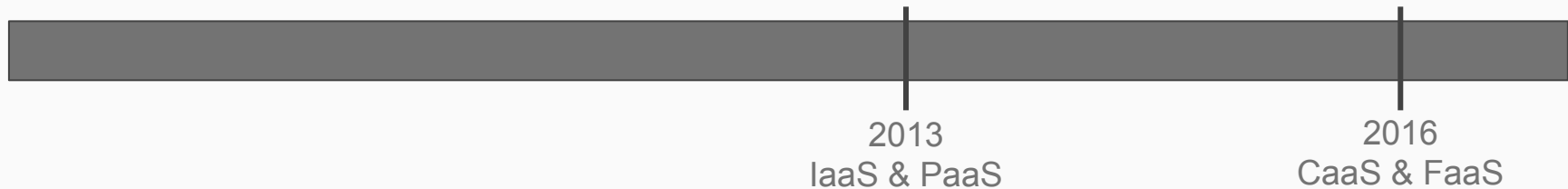
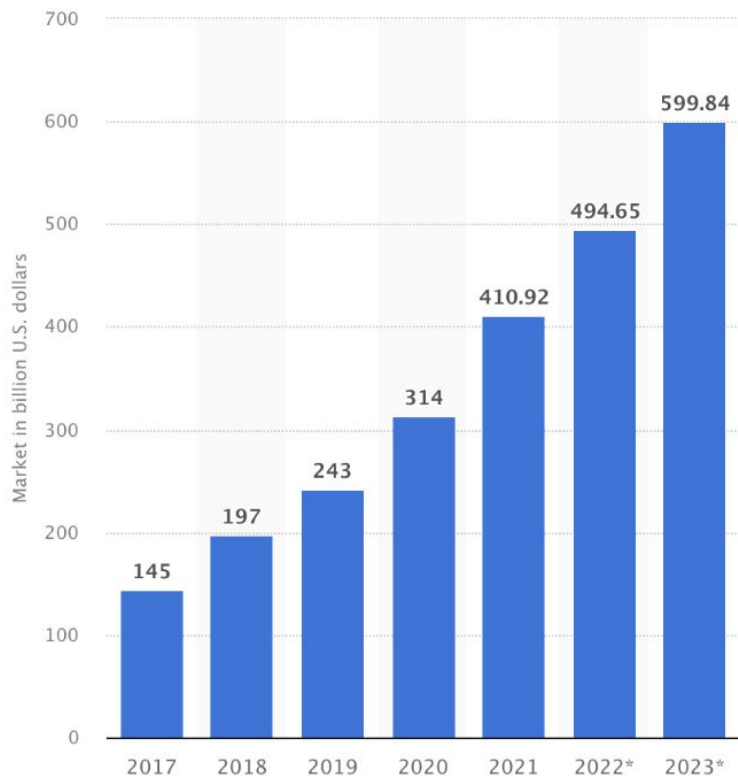


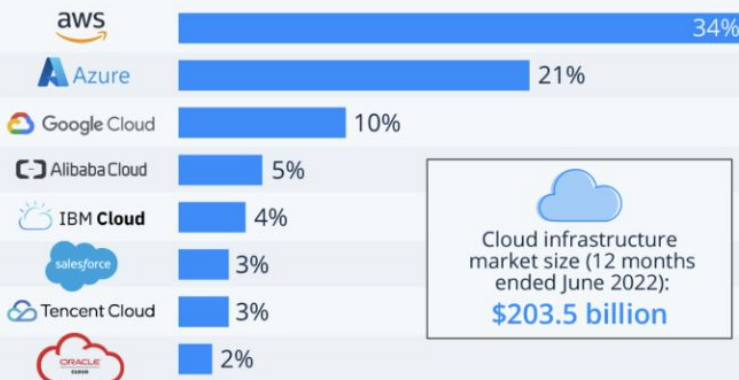
Figure 1. Magic Quadrant for Cloud Infrastructure and Platform Services





Amazon Leads \$200-Billion Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q2 2022*



Cloud infrastructure
market size (12 months
ended June 2022):
\$203.5 billion

#1 CNCF



The Linux Foundation is dedicated to building sustainable ecosystems around open source projects to accelerate technology development and industry adoption.

Today the Linux Foundation is much more than Linux



Security

We are helping global privacy and security through a program to encrypt the entire internet.



Networking

We are creating ecosystems around networking to improve agility in the evolving software-defined datacenter.



Cloud

We are creating a portability layer for the cloud, driving de facto standards and developing the orchestration layer for all clouds.



Automotive

We are creating the platform for infotainment in the auto industry that can be expanded into instrument clusters and telematics systems.



Blockchain

We are creating a permanent, secure distributed ledger that makes it easier to create cost-efficient, decentralized business networks.



Web

We are providing the application development framework for next generation web, mobile, serverless, and IoT applications.



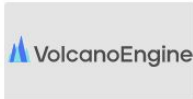


CLOUD NATIVE

COMPUTING FOUNDATION

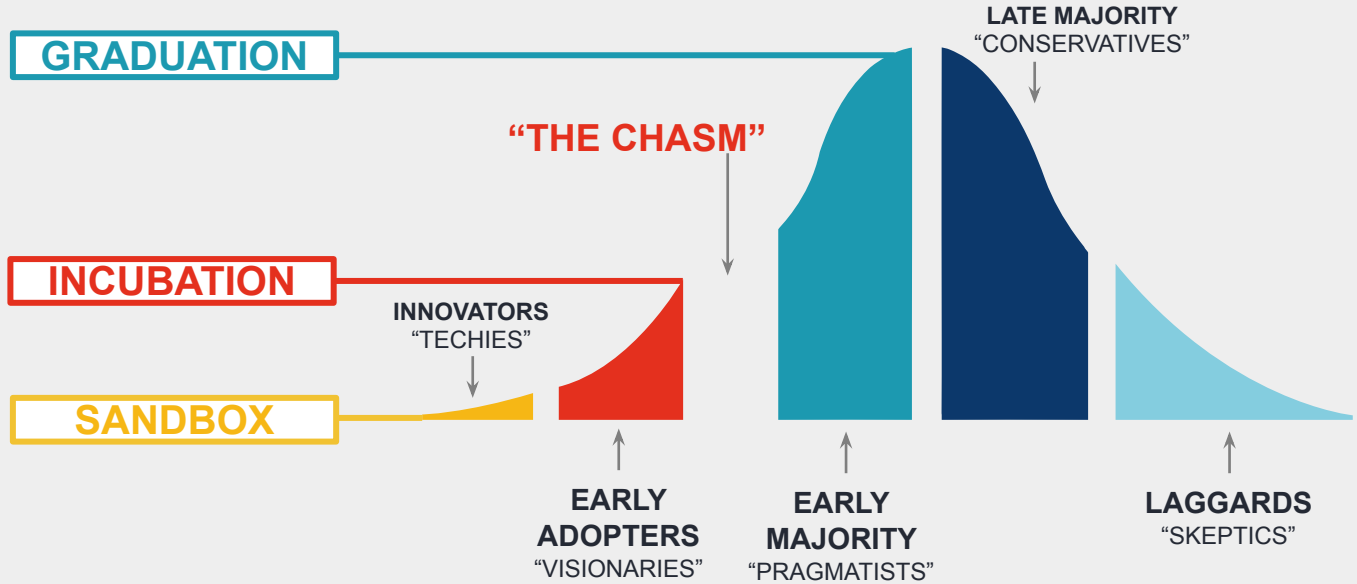
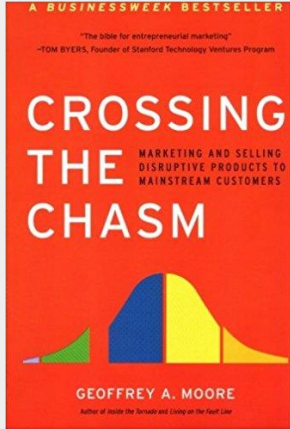
<https://www.cncf.io/>

22 platinum sponsors

 Alibaba Cloud (member) Alibaba Cloud MCap: \$545.65B	 Amazon Web Services (member) Amazon Web Services MCap: \$1.61T	 Apple (member) Apple MCap: \$2.1T	 Arm (member) Arm Holdings MCap: \$207.63B	 AT&T (member) AT&T MCap: \$207.63B
 Cisco (member) Cisco MCap: \$227.23B	 Fujitsu (member) Fujitsu MCap: \$33.83B	 Google Cloud (member) Google MCap: \$1.63T	 Huawei (member) Huawei Technologies MCap: \$131.72B	 IBM (member) IBM MCap: \$131.72B
 Intel (member) Intel MCap: \$230.53B	 JD.com (member) JD.com MCap: \$115.58B	 Kasten (member) Kasten Funding: \$17M	 Microsoft (member) Microsoft MCap: \$1.91T	 NetApp (member) NetApp MCap: \$19.04B
 New Relic (member) New Relic MCap: \$4.08B	 Oracle (member) Oracle MCap: \$242.04B	 Palo Alto Networks (member) Palo Alto Networks MCap: \$34.71B	 Red Hat (member) Red Hat MCap: \$131.72B	 SAP (member) SAP MCap: \$165.46B
 VMware (member) VMware MCap: \$67.54B	 Volcano Engine (member) Volcano Engine			



CNCF Project Maturities



<> Code

! Issues 12

🔗 Pull requests 8

📁 Projects 1

📊 Insights

Branch: master ▾

toc / proposals / kubernetes.adoc

Find file

Copy path



rothgar Update kubernetes proposal doc

3cbb054 on 21 Mar 2017

2 contributors



45 lines (30 sloc) | 3.15 KB

Raw

Blame

History



Kubernetes Proposal

Name of project: Kubernetes

Description

Kubernetes is an open source system for managing [containerized applications](#) across multiple hosts, providing basic mechanisms for deployment, maintenance, and scaling of applications. Kubernetes will serve as a cluster manager for the CNCF ecosystem.

Sponsor / Advisor from TOC: Alexis Richardson

Unique Identifier: kubernetes

License: Apache License v2.0

Source control repositories: <https://github.com/kubernetes> (everything in the org)

Initial Committers: <https://github.com/orgs/kubernetes/teams/kubernetes-maintainers>

Sandbox

Sandbox Stage

To be accepted in the sandbox a project must

- Apply to join the sandbox using the [form](#)
- Adopt the CNCF [Code of Conduct](#)
- Adhere to CNCF [IP Policy](#) (including trademark transferred)
- List their sandbox status prominently on website/readme

See the [CNCF Sandbox Guidelines v1.0](#) for the detailed process.

Incubating

To be accepted to incubating stage, a project must meet the sandbox stage requirements plus:

- Document that it is being used successfully in production by at least three independent end users which, in the TOC's judgement, are of adequate quality and scope. For the definition of an end user, see <https://github.com/cncf/toc/blob/main/FAQ.md#what-is-the-definition-of-an-end-user>
- Have a healthy number of committers. A committer is defined as someone with the commit bit; i.e., someone who can accept contributions to some or all of the project.
- Demonstrate a substantial ongoing flow of commits and merged contributions.
- Since these metrics can vary significantly depending on the type, scope and size of a project, the TOC has final judgement over the level of activity that is adequate to meet these criteria
- A clear versioning scheme.
- Clearly documented security processes explaining how to report security issues to the project, and describing how the project provides updated releases or patches to resolve security vulnerabilities
- Specifications must have at least one public reference implementation.

Graduated

To graduate from sandbox or incubating status, or for a new project to join as a graduated project, a project must meet the incubating stage criteria plus:

- Have committers from at least two organizations.
- Have achieved and maintained a Core Infrastructure Initiative [Best Practices Badge](#).
- Have completed an independent and third party security audit with results published of similar scope and quality as the following example (including critical vulnerabilities addressed): <https://github.com/envoyproxy/envoy#security-audit> and all critical vulnerabilities need to be addressed before graduation.
- Explicitly define a project governance and committer process. This preferably is laid out in a GOVERNANCE.md file and references an OWNERS.md file showing the current and emeritus committers.
- Have a public list of project adopters for at least the primary repo (e.g., ADOPTERS.md or logos on the project website). For a specification, have a list of adopters for the implementation(s) of the spec.
- Receive a supermajority vote from the TOC to move to graduation stage. Projects can attempt to move directly from sandbox to graduation, if they can demonstrate sufficient maturity. Projects can remain in an incubating state indefinitely, but they are normally expected to graduate within two years.

Graduated



Container Runtime



CoreDNS

Coordination & Service
Discovery



envoy

Service Proxy



etcd

Coordination & Service
Discovery



fluentd

Logging



HARBOR

Container Registry



Application Definition &
Image Build



JAEGER

Tracing



kubernetes

Scheduling &
Orchestration



Open Policy Agent

Security & Compliance



Prometheus

Monitoring



ROOK

Cloud Native Storage



TUF

Security & Compliance



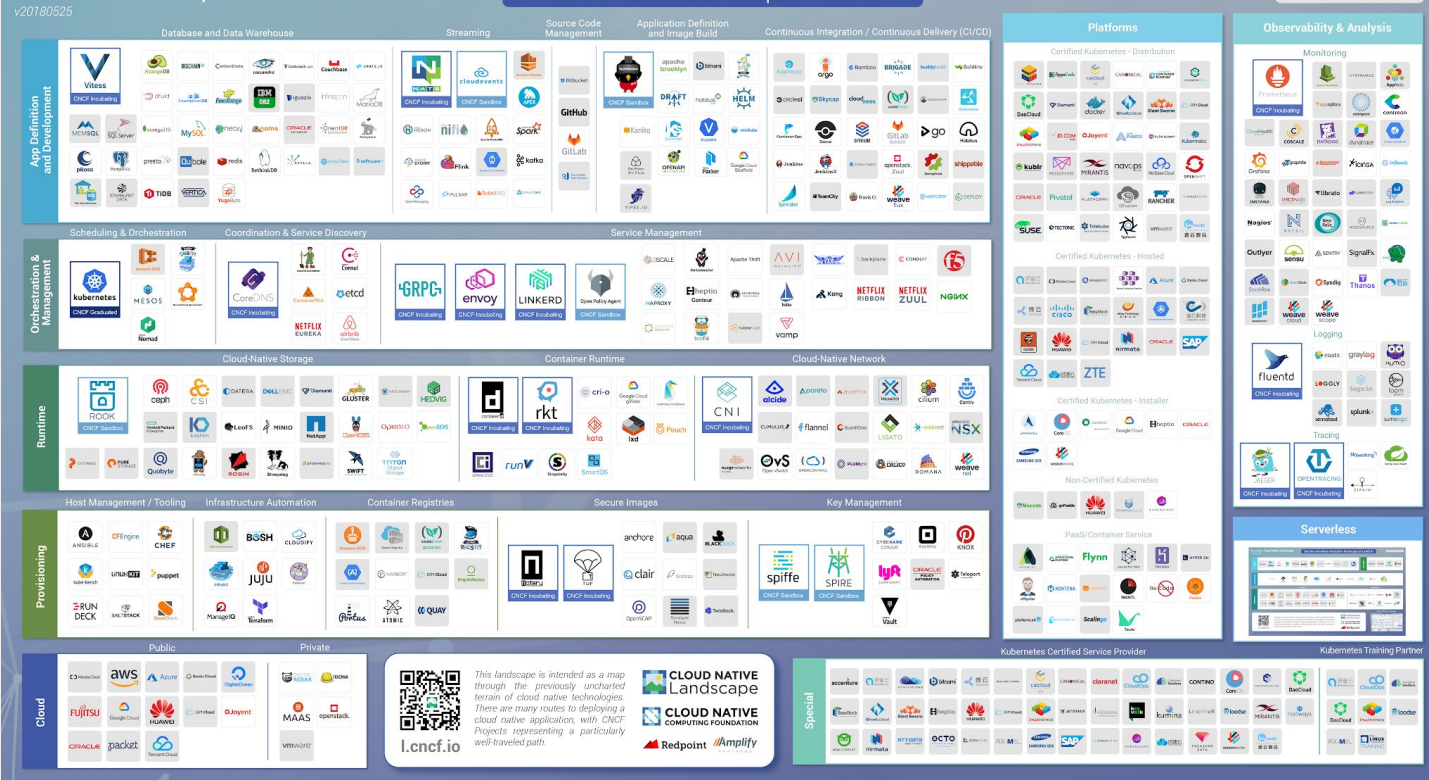
Database



Vitess

Database





l.cncf.io

CLOUD NATIVE TRAIL MAP

The Cloud Native Landscape (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

B. Consulting Help

If you want assistance with Kubernetes and the surrounding ecosystem, consider leveraging a Kubernetes Certified Service Provider
cncf.io/csp

C. Join CNCF's End User Community

For companies that don't offer cloud native services externally
cncf.io/enduser

WHAT IS CLOUD NATIVE?

Cloud-native technologies, such as containers and microservices, empower organizations to develop and deploy scalable, agile applications and services in dynamic, distributed environments. By taking into account these characteristics, such systems are designed to be resilient, elastic, and loosely coupled, via manageable abstractions and declarative APIs, thereby enabling effective, reliable automation. This allows engineers to observe the applications and to safely make impactful changes, and results in processes and workflows that fully take advantage of these environments and minimize toil.

The Cloud Native Computing Foundation seeks to drive adoption of these techniques by fostering an ecosystem of open-source, vendor-neutral projects that align with these objectives, and which are portable to public, private, and hybrid clouds. We democratize the state-of-the-art patterns and practices to ensure innovations remain open and accessible for everyone.

l.cncf.io

v20180604



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/k8s
- Helm Charts help you define, install, and upgrade even the most complex Kubernetes application



5. SERVICE MESH AND DISCOVERY

- 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

When you need more resiliency and scalability than you can get from a single database, Vitess is a good option for running MySQL at scale through sharding.



9. CONTAINER RUNTIME

You can use alternative container runtimes. The most common, all of which are OCI-compliant, are containerd, rkt 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
- Setup 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

To enable more flexible networking, use a CNI-compliant network project like Calico, Flannel, or Weave Net.



8. MESSAGING

When you need higher performance than JSON-RPC, consider using gRPC. NATS is publish/subscribe message oriented middleware.



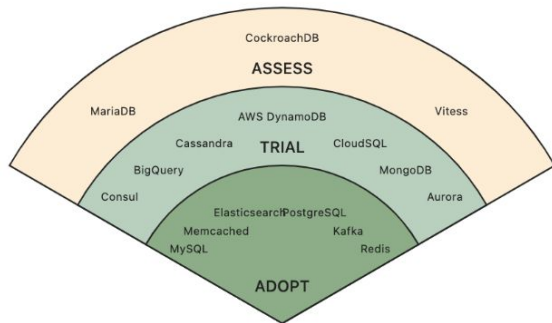
10. SOFTWARE DISTRIBUTION

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

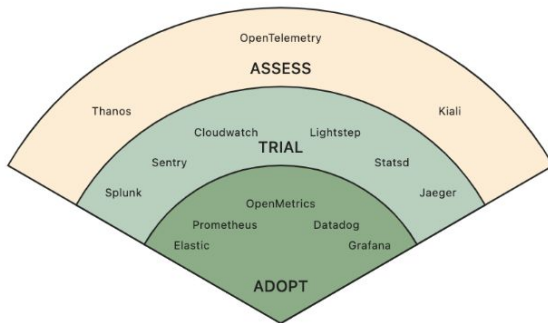


CNCF Radars

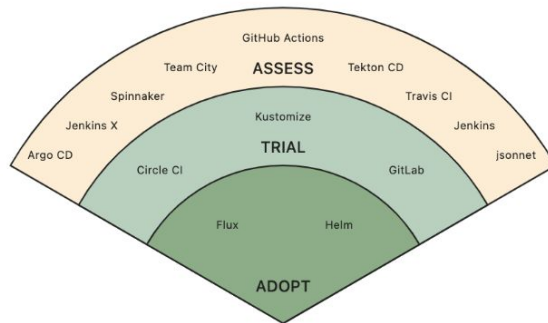
Other Radars



Database Storage, November 2020



Observability, September 2020



Continuous Delivery, June 2020

MAKE CLOUD NATIVE UBIQUITOUS

CNCF is the open source, vendor-neutral hub of **cloud native computing**, hosting projects like Kubernetes and Prometheus to make cloud native universal and sustainable.

ABOUT CNCF

132
Projects

170K
Contributors

10.2M
Contributions

187
Countries

FinOps

CLOUD COMPUTING > PERFORMANCE MANAGEMENT

Low's

FinOps Foundation Brings New Focus to Cloud Costs

The FinOps Foundation is joining the Linux Foundation to accelerate its efforts to bring the costs of the cloud in line with financial accounting within companies.

[Sean Michael Kerner](#) | Jun 30, 2020

#2 Open Source

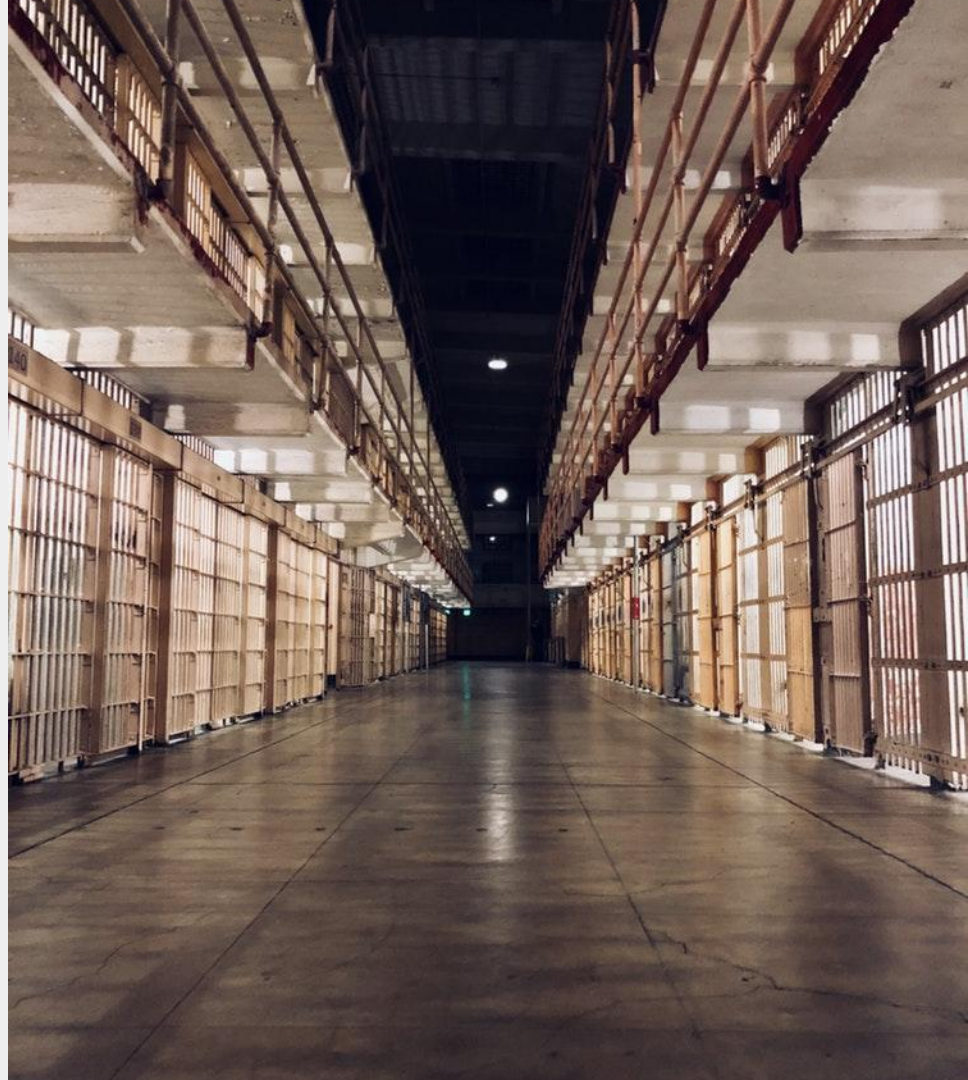
RANK	ORGANIZATION	ACTIVE CONTRIBUTORS		TOTAL COMMUNITY		
1	Google	5910	+489	11785	+731	>
2	Microsoft	5738	+470	12142	+858	>
3	Red Hat	3822	+156	5615	+195	>
4	Intel	2444	+207	5061	+317	>
5	IBM	2264	+175	5394	+345	>
6	Amazon	2191	+228	5250	+473	>
7	Facebook	1618	+145	5992	+520	>
8	GitHub	1303	+107	3232	+276	>
9	VMware	1043	+59	1936	+108	>
10	SAP	922	+65	1901	+127	>

Source: <https://opensourceindex.io/> for 2022

hacktoberfest

by  DigitalOcean
+Sponsors

Open source
software stack
enables deployment
on any public,
private cloud or
hybrid cloud





#TuxTurns30

Join us in
celebrating
**30 years of
Linux**
1991 - 2021

2017: AKS & EKS

2016: Kubernetes
adoption by CNCF

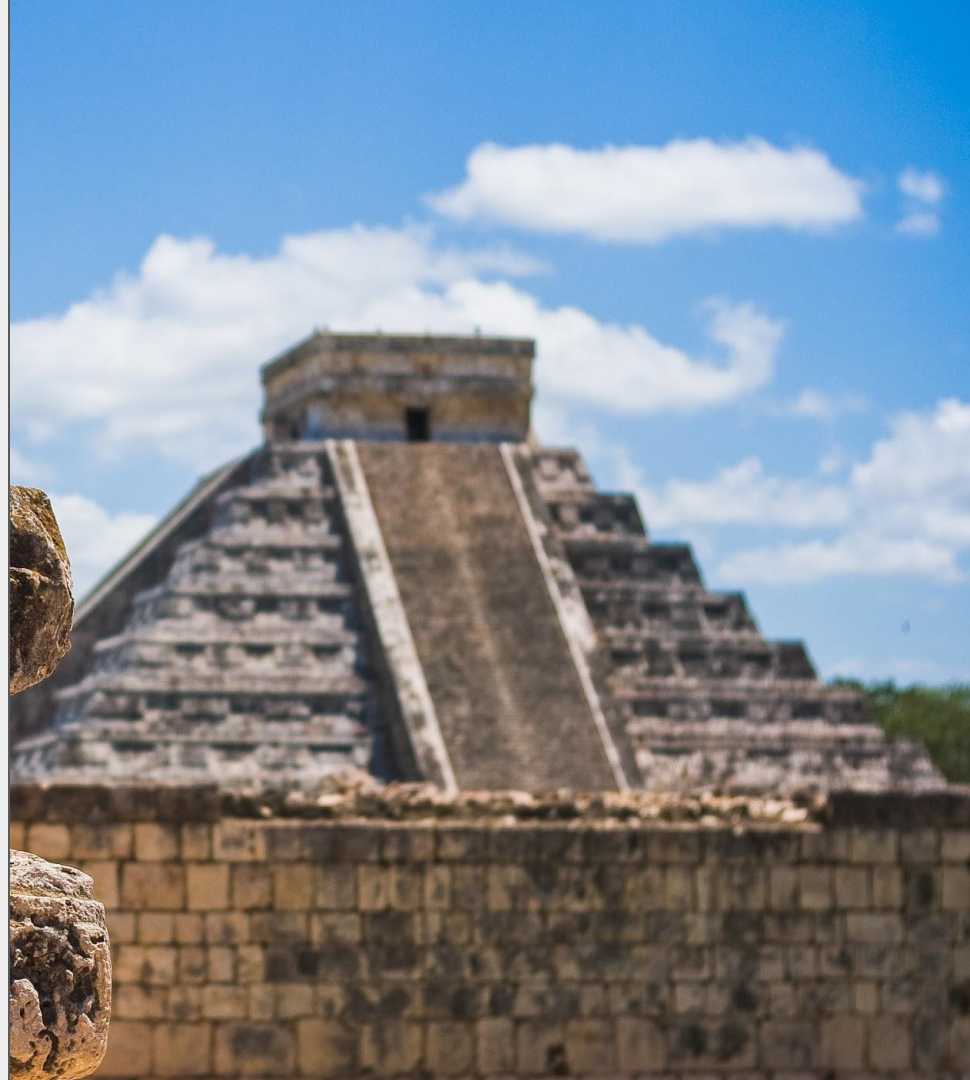
2015: GKE

2014: Kubernetes

2013: Docker

2008: LXC

2007: cgroups



Kubernetes adoption



AWS

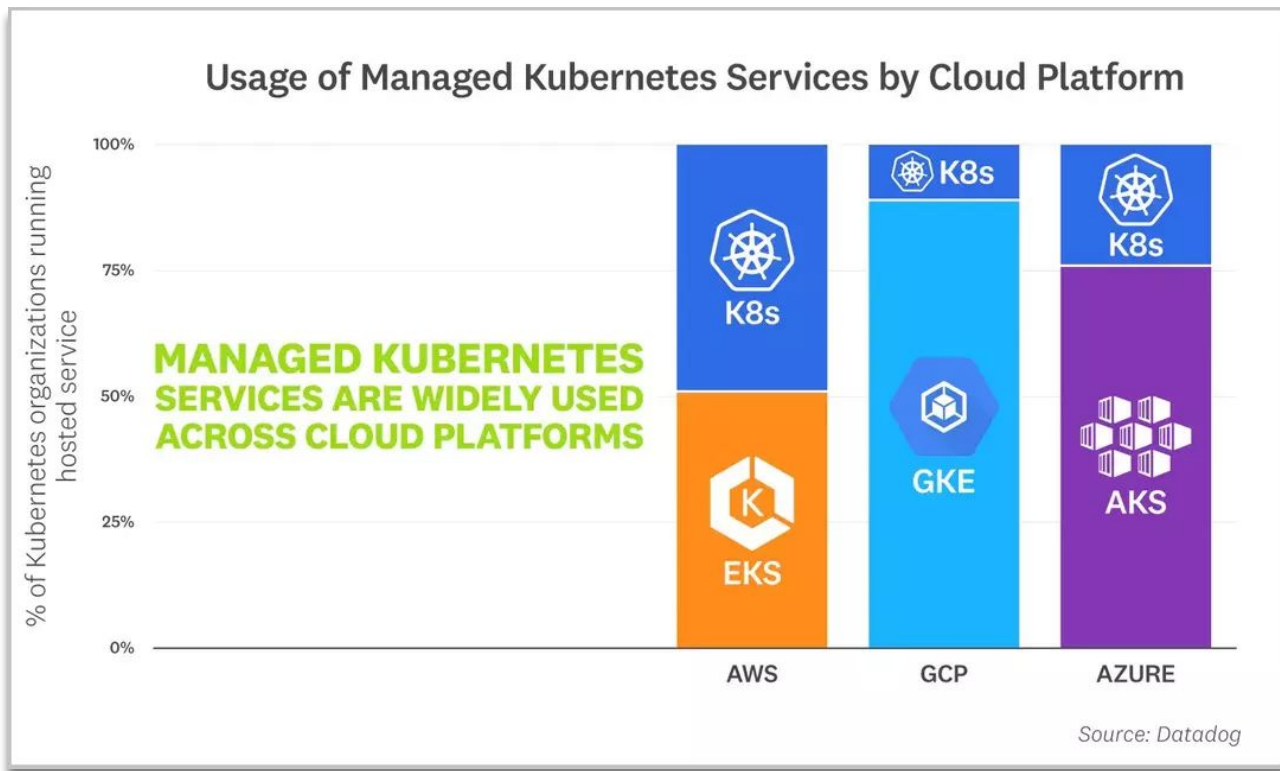


AZURE



GCP

Kubernetes usage



<https://www.datadoghq.com/container-report/>

Open Source Stack: Big success



TypeScript



Bootstrap



NETFLIX | OSS

Partner Ecosystem: Azure

Azure open-source ecosystem

Our partners are engineering-centric and committed to open source—and we focus on building, operating, and supporting services through a unified code base. Together, we create a seamless experience across identity, security, and billing.



Source: <https://azure.microsoft.com/en-us/overview/open-source/>

Partner Ecosystem: Google Cloud

Embraces partner ecosystem

Open cloud embraces its partner ecosystem rather than competing against it. With that in mind, we offer [managed open source services operated by our partners](#) that are tightly integrated into Google Cloud, providing a seamless user experience across management, billing, and support. This makes it easier for our enterprise customers to build on open source technologies.



Source: <https://cloud.google.com/open-cloud/>

Partner Ecosystem: AWS



Partnering with open source leaders

One important way we contribute to open source is by helping to enable the success of open source partners. We partner closely with leading open source companies – from Hashicorp to MongoDB to Confluent to Red Hat – and help them exceed customer expectations. We also support foundations such as the Cloud Native Computing Foundation and Apache Software Foundation to sustain and accelerate open source innovation.

Source: <https://aws.amazon.com/fr/opensource/>

#3 Community



Azure Heroes / MVP & Meetups



Meetups: 160

MVP (Cloud) : 534

Azure Heroes Badgers: 12250

Source: <https://mvp.microsoft.com/fr-FR/>
<https://www.azureheroes.community/map>
<https://www.meetup.com/fr-FR/pro/azuretechgroups/>



GDE & GDG



Cloud Meetups: 200
(GDGs: 1,000)

GDE : 148

Source: <https://developers.google.com/community>
<https://www.meetup.com/fr-FR/pro/gdg/>



AWS Heroes & Meetups



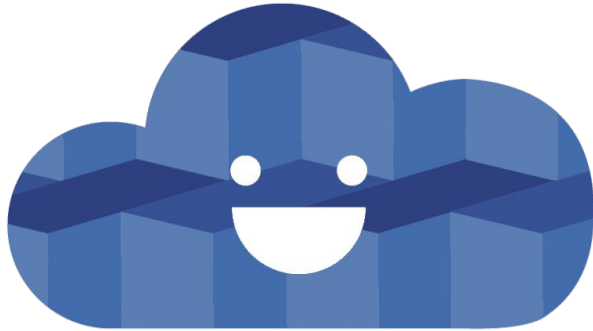
Meetups: 427

AWS Heroes: 248

Source: <https://aws.amazon.com/developer/community/>



CNCF Ambassadors & Meetups



AMBASSADOR

Meetups: 195+ début 2021

⚠ Réseau pour le moment suspendu ⚠

CNAs: 129

Source: <https://www.cncf.io/people/ambassadors/>
<https://www.meetup.com/fr-FR/pro/cncf/>



Main Events

AWS re:Invent



#Case study

Kubernetes & Google Cloud



Kubernetes Success

- Google Cloud starts with a PaaS AppEngine
- Containerization becomes popular
- Kubernetes is the biggest player in the container ecosystem
- ...and it's created by Google



Google Cloud



Kubernetes Companies statistics (Commits, Range: Last year), bots excluded

Rank ^	Company	Number
	All	39469
1	Google LLC	7934
2	Microsoft Corporation	4228
3	VMware Inc.	3695
4	Red Hat Inc.	2890
5	International Business Machines Corporation	2036
6	Independent	1039
7	Intel Corporation	914
8	DaoCloud Network Technology Co. Ltd.	859
9	Sematech	773
10	Amazon	695
11	Sportradar	649
12	Cisco	646
13	Chainguard Inc.	526
14	NEC Corporation	435
15	Mattermost Inc.	398
16	Alibaba.com	367
17	MinSheng Fintech	313

Source: https://k8s.devstats.cncf.io/d/9/companies-table?orgId=1&var-period_name=Last%20year&var-metric=commits



Killed by Google

Search

All (273)



Your new development career awaits. Check out the latest listings.

ADS VIA CARBON



August
2023

Service

Google Cloud IoT Core

Biting the big one in 11 months, Google Cloud IoT Core was a managed service designed to let customers securely connect, manage, and ingest data from globally dispersed devices. It will be over 5 years old.



June
2023

Service

Conversational Actions

To be turned off in 9 months, Conversational Actions extended the functionality of Google Assistant by allowing 3rd party developers to create custom experiences, or conversations, for users of Google Assistant. It will be over 6 years old.



March
2023

Service

Google Currents (2019)

Sentenced to death in 7 months, Google Currents was service that provided social media features similar to Google+ for Google Workspace customers. It will be almost 4 years old.



December
2022

Service

YouTube Originals

To be flushed in 4 months, YouTube Originals was a variety of original content including scripted series, educational videos, and music and celebrity programming. It will be over 6 years old.



December
2022

Hardware

Google OnHub

Running out of juice in 3 months, Google OnHub was a series of residential wireless routers manufactured by Asus and TP-Link that were powered by Google software, managed by Google apps, and offered



Cloud Run Success



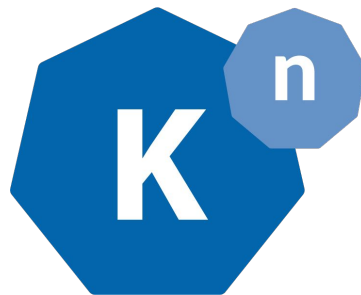
Cloud Run

Fully managed, deploy your workloads and don't see the cluster.



Cloud Run on Anthos

Deploy into Anthos, run serverless side-by-side with your existing workloads.



Knative Everywhere

Use the same APIs and tooling anywhere you run Kubernetes with Knative.

#Case study

**AWS & Open Distro for
ElasticSearch**



Open Source Monetization

- Redis with Redis Labs
- MongoDB with MongoDB Inc
- ElasticSearch with Elastic
- Kafka with Confluent
- ...

2018 🖱️ sudden changes to their licenses with the adoption of SSPL





Mongo

Why did you base the SSPL on GPL v3 instead of AGPL?

The AGPL is a modified version of GPL v3. The only additional requirement of AGPL is in section 13: if you run a modified program on a server and let other users communicate with it there, you must open source the source code corresponding to your modified version, known as the "Remote Network Interaction" provision of AGPL.

There is some confusion in the marketplace about the trigger and scope of the Remote Network Interaction provision of AGPL.

As a result, we decided to base the SSPL on GPL v3 and to add a new section 13 which clearly and explicitly sets forth the conditions to offering the licensed program as a third-party service.

🤔 AWS & Open Source

“Monetizing open source was always the big challenge for open source vendors, and more so in the cloud era,”

-- Ofer Bengal, CEO at Redis Labs

“But running an open source project isn't as simple as throwing some code over the wall and putting up a web page, as AWS has done. It's about things like shepherding and supporting the community, encouraging committers, and having momentum on a compelling vision.”

-- Raj Dutt, CEO at Grafana Labs





Reactions

[Red Hat drops MongoDB over concerns related to its Server Side Public License \(SSPL\)](https://hub.packtpub.com/red-hat-drops-mongodb-over-concerns-related-to-its-server-side-public-license-sspl/)

To consider the SSPL to be “Free” or “Open Source” causes that shadow to be cast across all other licenses in the FOSS ecosystem, even though none of them carry that risk

— Fedora

The SSPL is clearly not in the spirit of the DFSG (Debian’s free software guidelines), let alone complimentary to the Debian’s goals of promoting software or user freedom”

— Debian

Source:

<https://hub.packtpub.com/red-hat-drops-mongodb-over-concerns-related-to-its-server-side-public-license-sspl/>

Open Distro for Elasticsearch

An Apache 2.0-licensed distribution of Elasticsearch
enhanced with enterprise security, alerting, SQL, and
more

[Download](#)[Contribute](#)

Source: <https://opendistro.github.io/for-elasticsearch/>



Welcome to OpenSearch

OpenSearch is a community-driven, Apache 2.0-licensed open source search and analytics suite that makes it easy to ingest, search, visualize, and analyze data. Developers build with OpenSearch for use cases such as application search, log analytics, data observability, data ingestion, and more.

It's time to upgrade to OpenSearch!

Source: <https://opensearch.org/>



Last drama

“We Believe In A Model Of Sustainable Open Source”



PRODUCTS ▾

CASE STUDIES

PARTNERS

ABOUT LIGHTBEND ▾

CONTACT

September 7, 2022

akka

Why We Are Changing the License for Akka



Jonas Bonér
CEO & Founder, Lightbend, Inc.

Today, we are announcing a change to Akka's license model so that Akka can be a thriving project for many decades.

I created [Akka](#) 13 years ago out of love for programming, distributed systems, learning new things, and open source. It's been a fantastic journey so far (read about Akka's inception and early days [here](#)). Today, Akka is exceptionally reliable, scalable, and performant. It is the runtime core for 1000s of products, many built by the Global 2000, including household names such as Apple, Disney, GM, HPE, Norwegian Cruise Lines, Starbucks, and Tesla.

For many years, Akka was ahead of its time. Its actor-based programming model—channeling the essence of distributed systems honestly, leveraging concepts like asynchronous messaging and computation, eventual

Search..

```
Install Kalix CLI
$ brew install lightbend/brew/kalix
Create an account
$ kalix auth signup
Create a project
$ kalix projects new my-kalix-proj 'My Kalix Project' --r
Deploy your first API
kalix services deploy shopping-cart get.io/kalix-public/r
```

#Case study

Multi Cloud

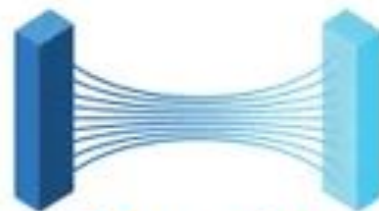
☁ Kubernetes-based hybrid-cloud solutions



- Avoid vendor lock-in
- Deploy in any cloud
- Blur the traditional lines between cloud and on-prem environments
- Now manage on-prem and cloud clusters
- Need more observability, consistency and interoperability 👉 **Open Source**



Anthos



Azure Arc



Amazon EKS Distro

Download and build
Kubernetes clusters with
your own tooling



Self-managed resources

Bare metal, virtual
machines, or Amazon
EC2 instances



Run Kubernetes apps

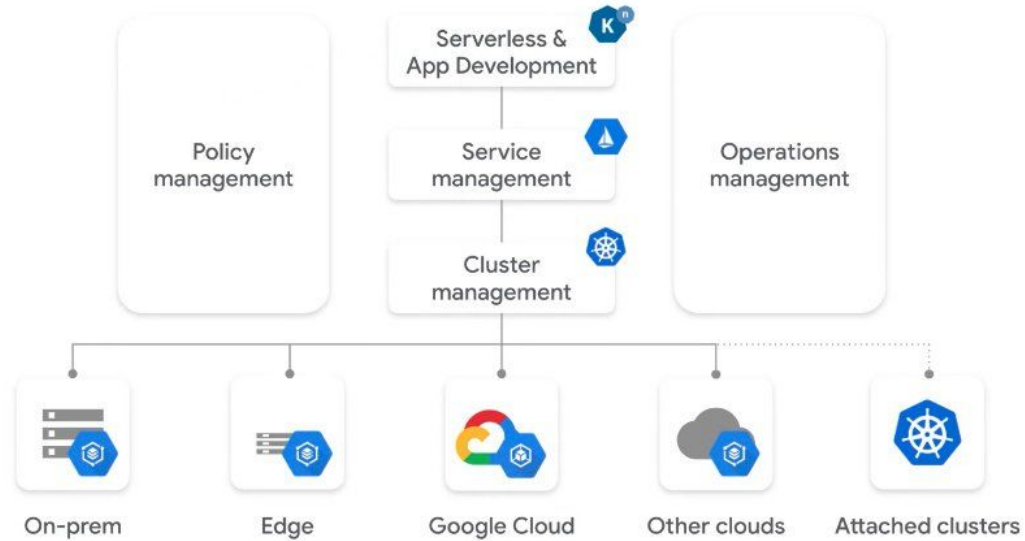


Amazon EKS dashboard in the AWS console

View and explore running
Kubernetes apps



Kubernetes as a tech foundation for Anthos



#What's next?



Bet on Open Source Serverless products





#Diversity+Inclusion

Prioritizing inclusion—our commitment to building healthy open source communities >

May 4, 2021



By [Emma Irwin](#), Senior Program Manager, Microsoft Open Source Programs Office (OSPO).

Microsoft products and services run on trust, an extension of our commitment to building healthy open source communities....[Read more](#)

TRAINING COURSE

Inclusive Speaker Orientation (LFC101)

Created in collaboration with the National Center for Women & Information Technology (NCWIT), this free orientation course is designed to provide you with essential background knowledge and practical skills to promote inclusivity in presentations, messaging and other communications.



\$0

Login Using My Portal Before Enrolling

Enroll Today

[Get a Quote](#)



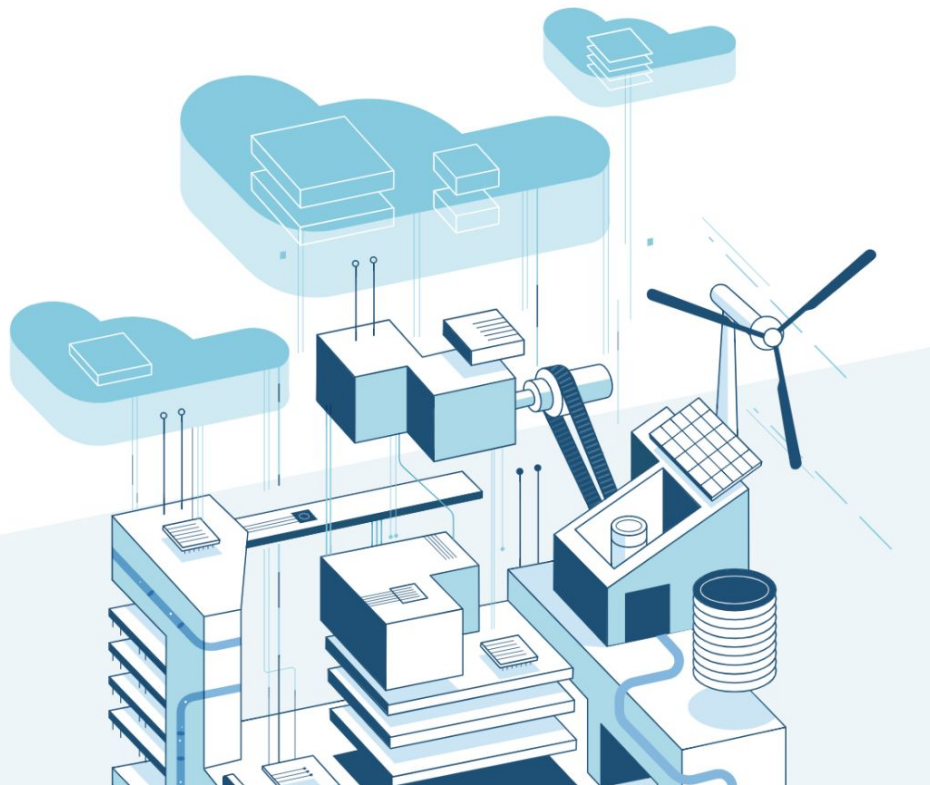
Learning Path

- | | |
|--|----------|
| 1. Inclusive Speaker Orientation (LFC101) | Training |
| 2. Inclusive Open Source Community Orientation (LFC102) | Training |
| 3. Inclusive Strategies for Open Source (LFC103) | Training |
| 4. Ethics for Open Source Development (LFC104) | Training |
| 5. A Beginner's Guide to Open Source Software Development (LFD102) | Training |
| 6. Secure Software Development: Requirements, Design, and Reuse (LFD104x) | Training |
| 7. Secure Software Development: Implementation (LFD105x) | Training |
| 8. Secure Software Development: Verification and More Specialized Topics (LFD106x) | Training |
| 9. Open Source Licensing Basics for Software Developers (LFC191) | Training |

#Sustainability

Sustainability in the Cloud

Amazon Web Services (AWS) is committed to running our business in the most environmentally friendly way possible and achieving 100% renewable energy usage for our global infrastructure.



Evolving beyond an operational approach

Sustainability is often viewed from an operational point of view, with the environmental mission treated as a cost center in the business, as a risk or compliance to be managed. But for Azure, datacenters and sustainable cloud infrastructure are more than just business—they provide an incredible opportunity to give back to the communities where we operate.

Azure has committed to focus on **four key areas of environmental impact to local communities—carbon, water, waste, and ecosystems.**

100%

renewable energy by 2025

Water positive by 2030

replenish more water than
we consume by 2030

Zero-waste

certification by 2030

Net-zero

deforestation from new
construction

Carbon Neutrality

(Offsetting emissions)



Since 2007

Google has purchased enough high-quality carbon offsets and renewable energy to bring our net operational emissions to zero.

100% Renewable Energy

(Reducing emissions)

Google Cloud Region Picker

This tool helps you pick a Google Cloud region considering carbon footprint, price and latency.

What do you want to optimize for?

Lower Carbon Footprint

Not Important ————— Important

Lower Price

Not Important ————— Important

Lower Latency

Not Important ————— Important

Show Recommendations

All Recommended Regions

1. **us-west1**
Oregon, USA 🔍 ⚙️ \$ 🌱 See all options
2. **uk-west1**
Ipswich, UK 🔍 ⚙️ \$ 🌱 See all options
3. **eu-central1**
Frankfurt, Germany 🔍 ⚙️ \$ 🌱
4. **northamerica-northeast1**
Montreal, Canada 🔍 ⚙️ \$ 🌱
5. **eu-west1**
London, UK 🔍 ⚙️ \$ 🌱

View more

Since 2017

<https://googlecloudplatform.github.io/region-picker/>

electricity use with wind and solar purchases. However, our facilities still rely on carbon-based power in some places and times.

24/7 Carbon-free Energy

(Eliminating emissions)



By 2030

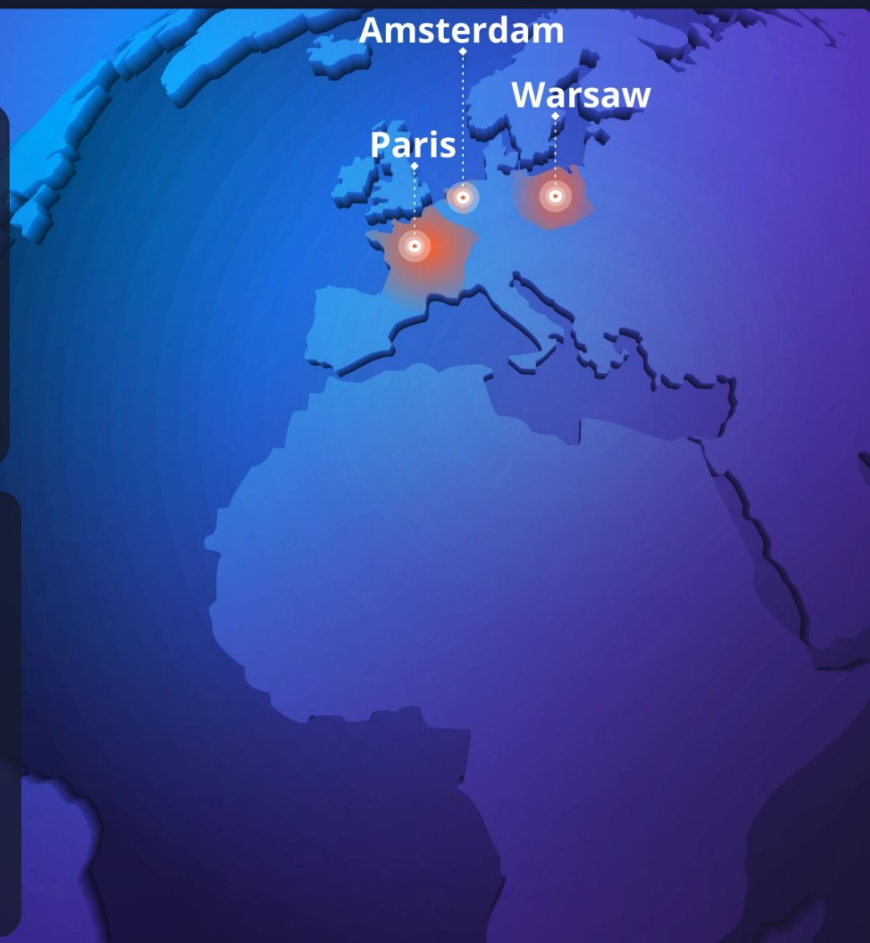
Google will match our operational electricity use with nearby (on the same regional grid) carbon-free energy sources in every hour of every year.

Souveraineté des données client

La dépendance est l'ennemie de la résilience. Vos clients souhaitent que leurs données soient hébergées par un fournisseur régional. Gagnez en souveraineté avec nos outils et infrastructures multi-cloud.

Nos datacenters neutres en carbone

Nous recyclons nos équipements physiques et nos fournisseurs d'eau et d'électricité sont sélectionnés rigoureusement. De plus, notre indicateur d'efficacité énergétique (PUE) est disponible en ligne et en temps réel.





Merci !
Des questions ?

Cloud, OpenSource & Communautés

Julien Landuré
@jlandure

Cloud, OpenSource and Community

— Julien Landuré —
Jeudi 3 novembre 2022 15:05



<https://roti.express/r/atn2022-34>

