

善用开源 基于Linux 基金会开源项目 构建企业IoT平台

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2019 年 12 月17日

 THE **LINUX** FOUNDATION

Linux Foundation: **Foundation of Foundations!**

- **1500+** Members From 40+ Countries
- **100%** of Fortune100 Tech & Telecom
- **30000+** Developers Contributing Code
- **200+** Open Source Projects
- **\$16B+** Shared Value

Security



Networking



Cloud



Automotive



CLOUDFOUNDRY

Blockchain



Edge/IoT



Web



AI



CI/CD



The LF is an innovation engine for open source



Path to Success: Open Source & Collaboration

1. The **OPEN SOURCE EDGE COLLABORATION**

- › De-facto path with Global Collaboration and Harmonization

2. The **UNIFIED EDGE**

- › Unifying IOT, Telecom, Enterprise, Cloud Edges
- › Telecom, Cloud, Enterprise - automotive, energy, insurance, banking, payments, supply chain + Networking/5G, AI, SDN/NFV, embedded, Blockchain, Cloud native

3. **TECHNOLOGIES & INDUSTRY INTERDEPENDENCE/COLLABORATION**

- › CNCF (Kubernetes) + LF Edge + LF AI + Hyperledger (Blockchain) + CDF (CI/CD) & LF Networking & Cloud Foundry (PaaS)...
- › Vertical Specific Solutions in Open Source

4. **THE LINUX FOUNDATION TRAINING & CERTIFICATIONS**

Cloud + IOT + Enterprise + Telecom

- › Unified Community for Edge Computing across Cloud, IOT, Telecom and Enterprise
- › Builds on EdgeX Foundry & Akraino with 5 founding projects & 60 founding members
- › Harmonization with SDO, Consortiums (ETSI, IIC, AECC...) at launch
- › Major Support from China

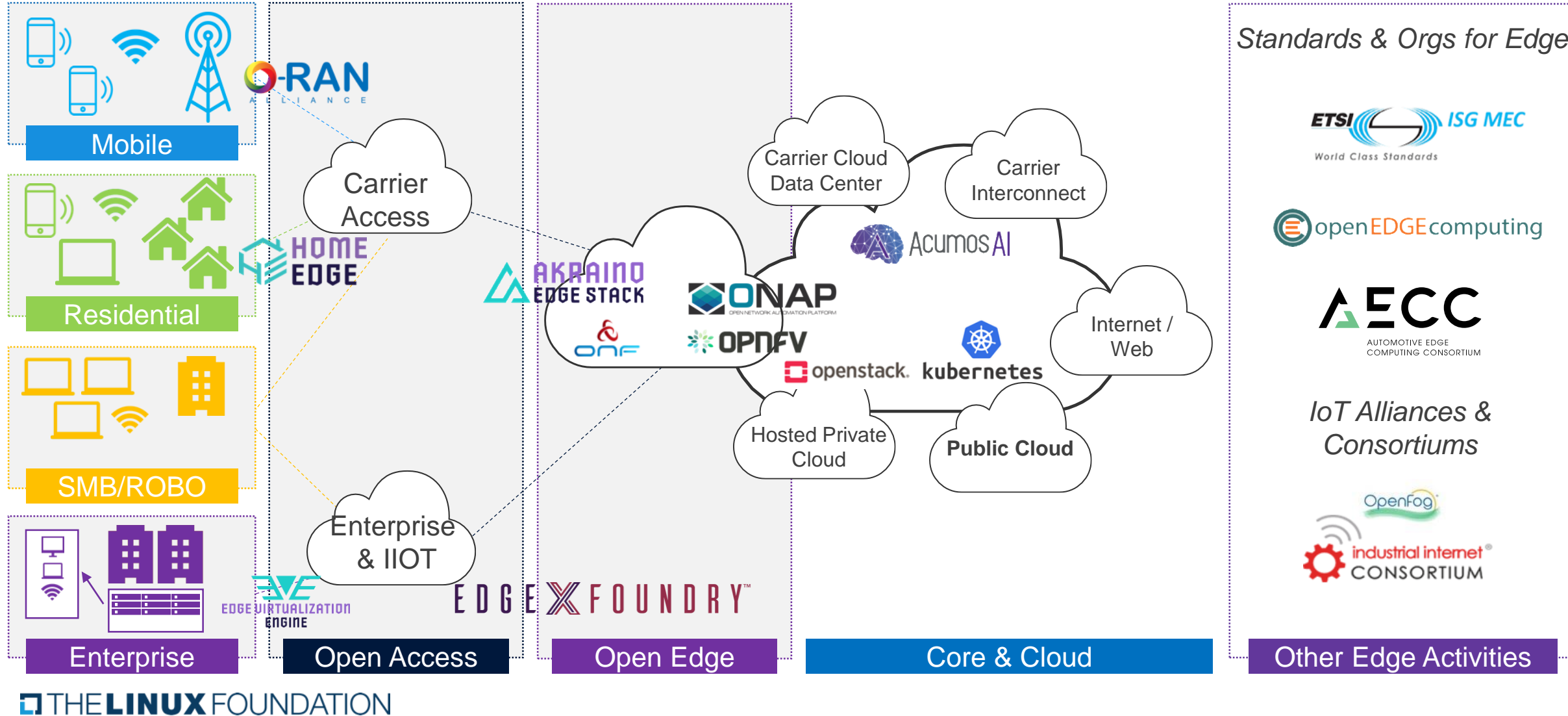
LF Edge Builds Momentum with Growing List of New Members, Blueprints as Community Works Towards Interoperability for Open Edge Computing

New Open Edge Demos from Akraino and Project EVE to Debut at Open Networking Summit North America

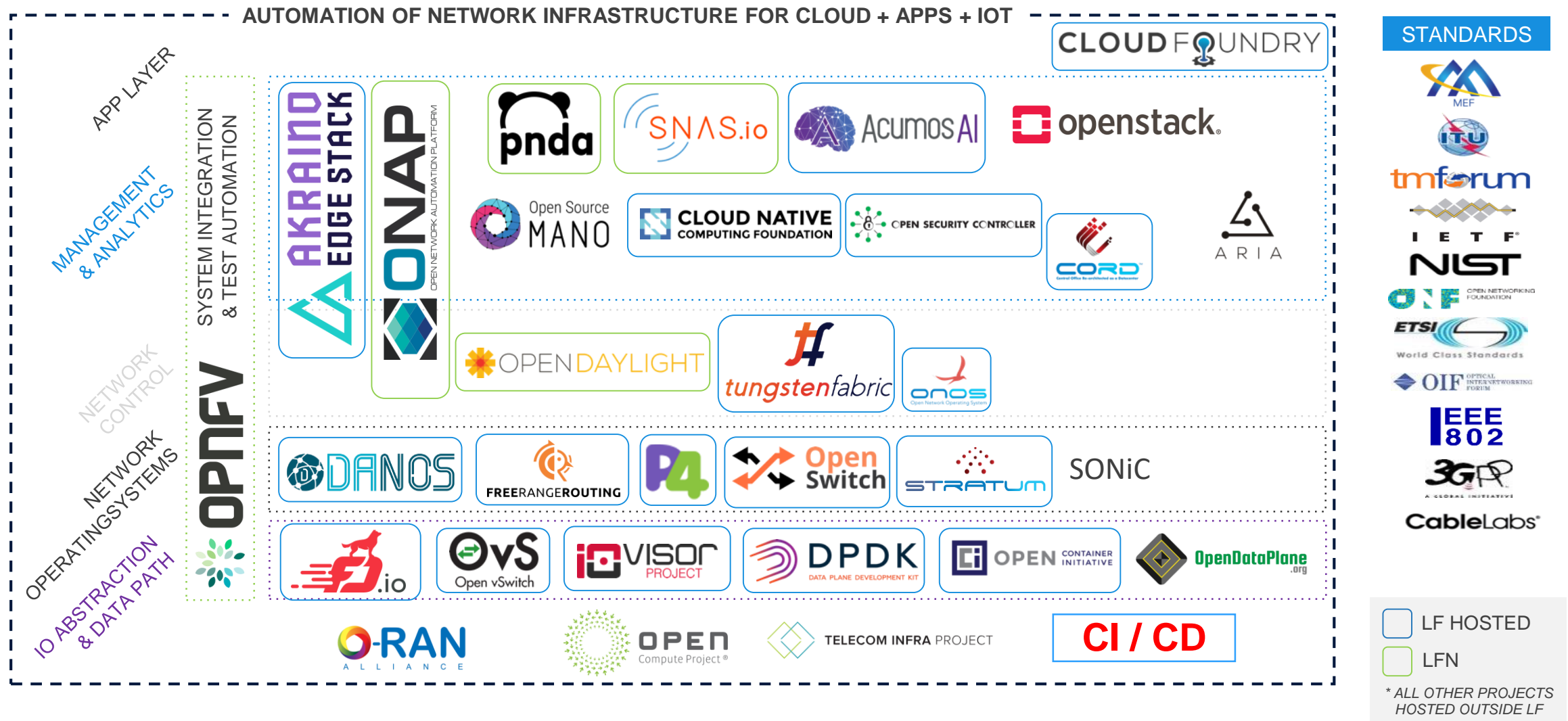
OPEN NETWORKING SUMMIT, SAN JOSE, Calif., April 2, 2019 – [LF Edge](#), an umbrella organization within the [Linux Foundation](#) that aims to establish an open, interoperable framework for edge computing independent of hardware, silicon, cloud, or operating system, today announced growing momentum with new blueprints from [Akraino Edge Stack](#) and four new General members

Bringing It All Together – LF Edge, Access & Core

Cloud, IOT, Enterprise and Telco Edge

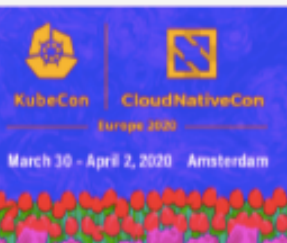


Path to Success: Open Source & Collaboration



FIND OPEN SOURCES RESOURCES FOR YOUR IOT PROJECTS





LF Edge Interactive Landscape

The LF Edge landscape (png, pdf) is dynamically generated below. It is modeled after the CNCF landscape and based on the same open source code. Please open a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2019-12-13 05:22:57Z

You are viewing 152 cards with a total of 83,544 stars, market cap of \$367.69T and funding of \$3.41B.

Landscape

Card Mode

<http://l.lfedge.org>

Tweet 0

Stage 2 Growth (3)

**HOME
EDGE**

Home Edge ★7
LF Edge

**OPEN GLOSSARY
OF EDGE COMPUTING**

Open Glossary of Edge Computing ★82
LF Edge

**EDGE VIRTUALIZATION
ENGINE**

Project EVE ★119
LF Edge

Stage 3 Impact (2)

**AKRAINO
EDGE STACK**

Akraio 0
LF Edge

EDGE X FOUNDRY™

EdgeX Foundry ★492
LF Edge

LF Edge Members (75)

LF AI Foundation Interactive Landscape

The LF AI Foundation landscape ([png](#), [pdf](#)) is dynamically generated below. It is modeled after the [CNCf landscape](#) and based on the same open source code. Please [open](#) a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2019-12-12 04:57:36Z

You are viewing 240 cards with a total of 1,218,063 stars, market cap of \$9.74T and funding of \$26.04B.


Landscape

Card Mode

[Tweet](#) 55


<http://l.fai.foundation>

Graduated LFAI Projects (2)



Acumos ★ 10

LF Artificial Intelligence Foundation



ONNX ★ 7,564

LF Artificial Intelligence Foundation

Incubating LFAI Projects (5)



Adlik ★ 31

LF Artificial Intelligence Foundation




Angel-ML ★ 5,512

LF Artificial Intelligence Foundation




Elastic Deep Learning (EDL) ★ 51

LF Artificial Intelligence Foundation



Horovod ★ 8,117

LF Artificial Intelligence Foundation



Pyro ★ 5,829

LF Artificial Intelligence Foundation

LFAI Members (22)

[Reset Filters](#)

Grouping

LFAI Relation [▼](#)

Sort By

Alphabetical (a to z) [▼](#)

Category

Any [▼](#)

LFAI Relation

Any [▼](#)

License

Any [▼](#)

Organization

Any [▼](#)

Headquarters Location

Any [▼](#)

Example filters:

[Open source cards by age](#)

[Apache-2.0 landscape](#)

[Cards in categories](#)

[Cards by stars](#)

[Group by location](#)

[Cards by MCap/Funding](#)

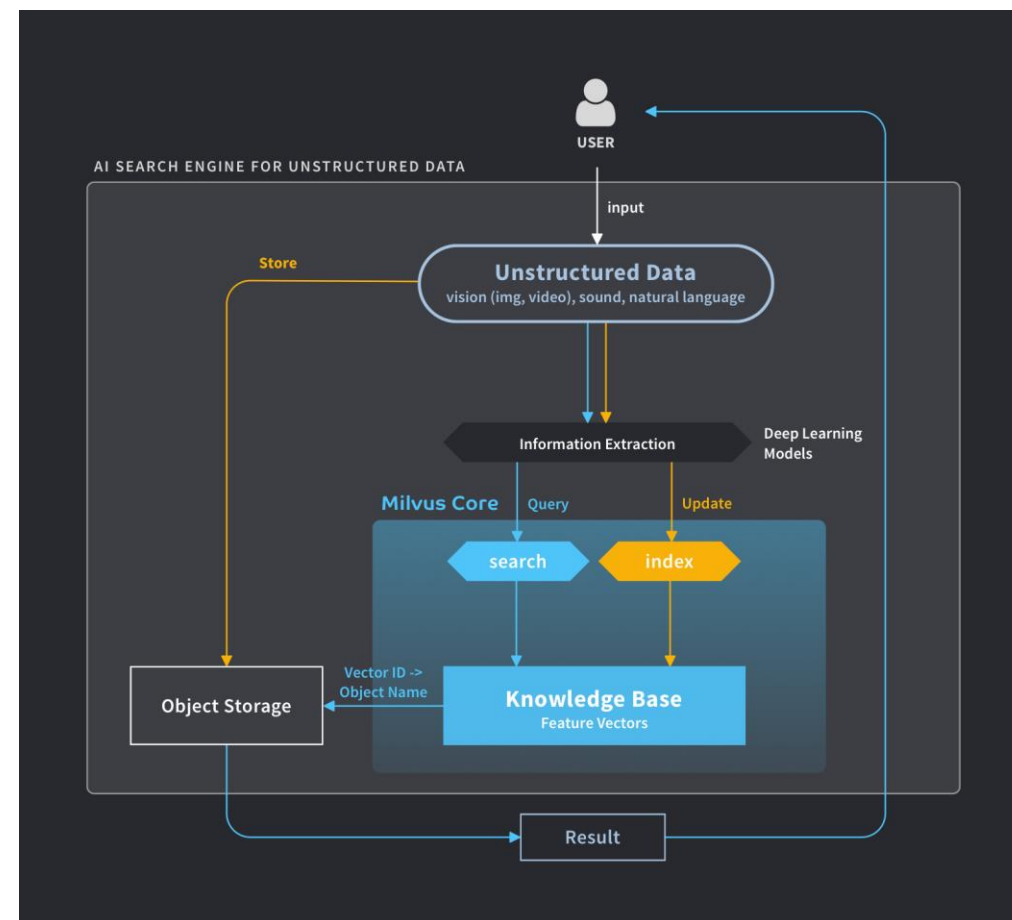
[Download as CSV](#)



边缘节点上的 Milvus 向量搜索引擎

<https://github.com/milvus-io/milvus>

- › 为深度学习应用提供向量搜索服务
 - › 典型应用场景：机器视觉、NLP等
 - › 支持主流深度学习模型
- › 易于使用
 - › 提供多种 SDK：C++/Python/Java
- › 支持多种边缘计算平台
 - › X86, ARM 等处理器
- › 高性能
 - › ARM A57 处理器, 百万级向量搜索仅需 30 ms
 - › X86 Skylake 处理器, 百万级向量搜索仅需 3 ms



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

Cards in categories

Cards by stars

Cards from China

Certified K8s/KCSP/KTP

Cards by MCap/Funding

Download as CSV




KubeCon CloudNativeCon

May 20 - 23 Barcelona, Spain




KubeCon CloudNativeCon

OPEN SOURCE SUMMIT

June 24 - 26 | Shanghai, China

The Cloud Native Trail Map (png, pdf) is CNCF's recommended path through the cloud native landscape. The cloud native landscape (png, pdf) and serverless landscape (png, pdf) are dynamically generated below. Please open a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2019-04-28 04:31:53Z

You are viewing 672 cards with a total of 1,577,050 stars, market cap of \$7.13T and funding of \$36.7B.

Landscape

Card Mode

Serverless

Tweet

593


<https://l.cncf.io>

No Grouping (672)




kubernetes

Kubernetes ★ 51,809
Cloud Native Computing Foundation (CNCF)




elastic

Elastic ★ 40,515
Elastic MCap: \$6.34B




netdata

Netdata ★ 37,666
Netdata MCap: \$32.2B




ANSIBLE

Ansible ★ 36,747
Red Hat MCap: \$32.2B



redis

Redis ★ 36,005
Redis Labs Funding: \$147M



serverless

Serverless ★ 29,611
Serverless Funding: \$13M




Grafana

Grafana ★ 28,351
Grafana Labs Funding: \$1.23M



No Code

No Code ★ 28,229
No Code




DUBBO

Dubbo ★ 26,086
Apache Software Foundation




etcd

etcd ★ 24,418
Cloud Native Computing Foundation (CNCF)




Prometheus

Prometheus ★ 23,570
Cloud Native Computing Foundation (CNCF)



RethinkDB

RethinkDB ★ 22,051
Linux Foundation




traefik

Traefik ★ 22,043
Containous Funding: \$1.06M




GitLab

GitLab ★ 21,751
GitLab Funding: \$166M



APACHE Spark

Apache Spark ★ 21,576
Apache Software Foundation




Kong

Kong ★ 21,271
Kong Funding: \$69.1M



gRPC

gRPC ★ 20,800
Cloud Native Computing Foundation (CNCF)



SENTRY

Sentry ★ 20,651
Sentry Funding: \$26.5M

Continuous Delivery Landscape

The Continuous Delivery Foundation landscape ([png](#), [pdf](#)) is dynamically generated below. It is modeled after the [CNCF landscape](#) and based on the same open source code. Please [open](#) a pull request to correct any issues. Greyed logos are not open source. Last Updated: 2019-12-13 07:05:15Z

You are viewing 66 cards with a total of 113,945 stars, market cap of \$3.78T and funding of \$2.36B.

Landscape

Card Mode

<https://l.cd.foundation>

Tweet 3


Graduated CDF Projects (4)



Jenkins
Continuous Delivery Foundation (CDF)
★ 14,535



JenkinsX
Continuous Delivery Foundation (CDF)
★ 3,243



Spinnaker
Continuous Delivery Foundation (CDF)
★ 6,749




Tekton Pipelines
Continuous Delivery Foundation (CDF)
★ 4,050


CDF Members (32)




Alauda (member) Funding: \$15M
Alauda




Alibaba Cloud (member) MCap: \$64.96B
Alibaba Cloud




Anchore (member) Funding: \$6M
Anchore



Armory (member) Funding: \$42M
Armory



Autodesk (member) MCap: \$39.14B
Autodesk




Capital One (member) MCap: \$48.45B
Capital One



cloudbees



cycloid



Boomi



ebay

Reset Filters

Grouping

CDF Relation

Sort By

Alphabetical (a to z)

Category

Any

CDF Relation

Any

License

Any

Organization

Any

Headquarters Location

Any

Example filters:

Open source cards by age

Apache-2.0 landscape

Cards in categories

Cards by stars

Group by location

Cards by MCap/Funding

Download as CSV



CDF Mission

- CDF believes in the power of Continuous Delivery to empower developers and teams and to produce high quality software more rapidly
- CDF believes in the open-source solutions collectively addressing the whole Software Delivery LifeCycle
- CDF fosters and sustains the ecosystem of open-source, vendor neutral projects through collaborations and interoperability
- CDF advocates this idea and encourages collaborations among practitioners to share and improve their practices

Cloud Foundry



Project Eirini is passing core functional tests and is now mature enough that early adopters have begun to deploy it into production environments.

Announced at EU Summit 2018, Eirini has full-time engineers from Google and Pivotal, and continued contributions from IBM, SAP and SUSE.



Open Service Broker API

The Open Service Broker API (OSBAPI) project allows developers, ISVs, and SaaS vendors a single, simple, and elegant way to deliver services to applications running within cloud native platforms such as Cloud Foundry, OpenShift, and Kubernetes.

The project includes individuals from Fujitsu, Google, IBM, Pivotal, RedHat and SAP.



OPEN **SERVICE BROKER** API™

<https://www.openservicebrokerapi.org/>

Projects:

- › Open Service Broker API

Activities:

- › Remove CF-isms
- › Broker defined schemas for parameters and binding credentials
- › Define approach to extensions / experiments
- › Support for Backup / Restore
- › Broker "Actions"

CLOUD FOUNDRY USERS

ENGINEERING | MANUFACTURING

SIEMENS



Honeywell



B/S/H/



We Accelerate Innovation Through The Linux Foundation Training and Certification



Example User Training Courses

- > Introduction to Linux (free through EdX)
- > Introduction to Cloud Infrastructure Technologies (free through EdX)
- > Essentials of System Administration
- > Linux Networking and Administration
- > Linux Security Fundamentals
- > OpenStack Administration Fundamentals
- > Open Source Virtualization

Example Developer Training

- > Compliance Basics for Developers
- > Introduction to Linux, Open Source Development, and GIT
- > Developing Applications For Linux
- > Inside Android: An Intro to Android Internals
- > Linux Kernel Internals and Development
- > Developing Linux Device Drivers
- > Linux Kernel Debugging and Security
- > Embedded Linux Development

We have a cutting edge user and developer catalog

Training from the developers of open source technology



Linux Internals



Open Source Developer Compliance



Systems Administration



Security



Networking



Cloud

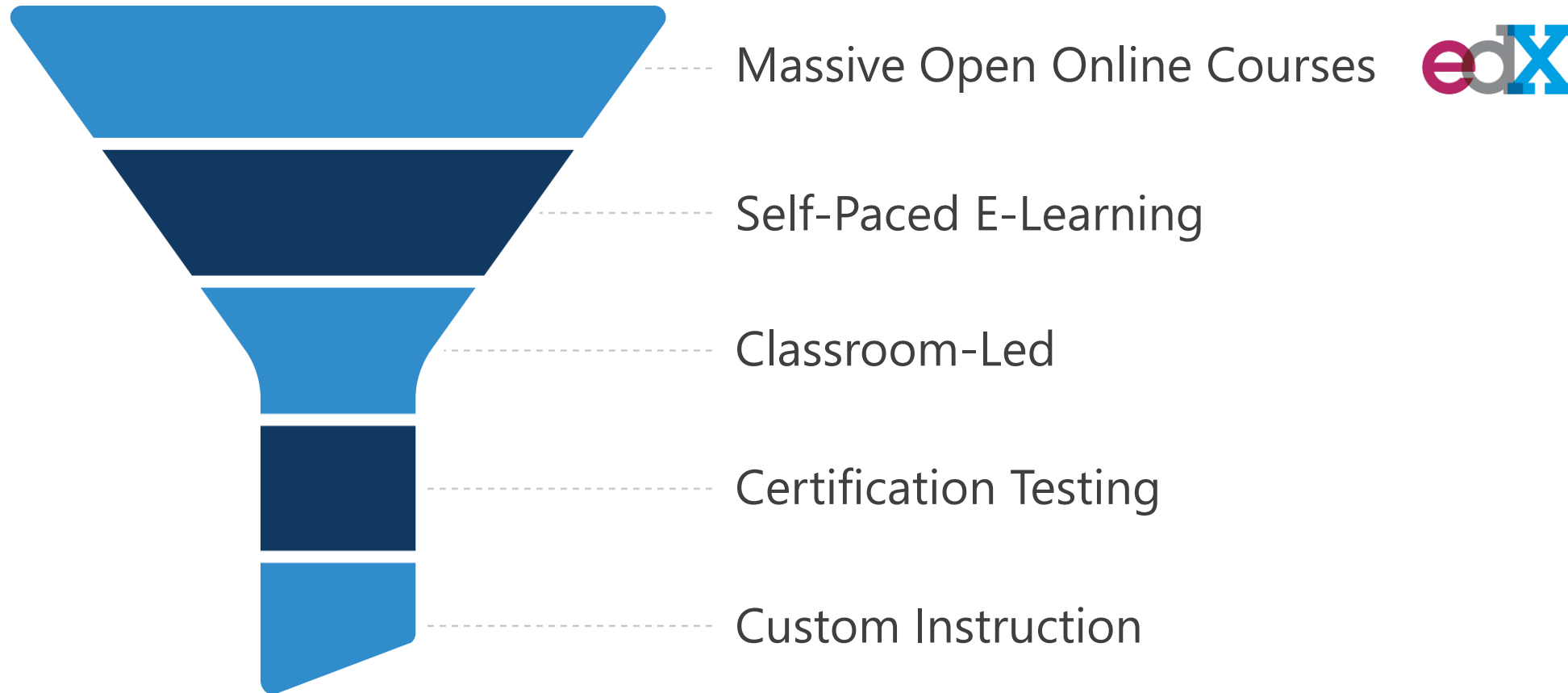
We are growing fast for the most up-to-date courses visit – tlfttraining.org

LF Certification Capabilities

- > 100% online, performance-based exam platform
- > Deep track record - exams for multiple projects
- > Experienced staff can work with experts to build and deploy exams
- > Focus is on entry level Certification, allows specialized providers to thrive



The Linux Foundation University is looking for a platform to build open source software talent for China



Kernel Development



- › **LFD301** Introduction to Linux, Open Source Development, and GIT
- › **LFD420** Linux Kernel Internals and Development
- › **LFD430** Developing Linux Device Drivers
- › **LFD432** Optimizing Linux Device Drivers for Power Efficiency
- › **LFD440** Linux Kernel Debugging and Security

Embedded Development



- › **LFD301** Introduction to Linux, Open Source Development, and GIT
- › **LFD415** Inside Android: An Intro to Android Internals
- › **LFD420** Linux Kernel Internals and Development
- › **LFD435** Developing Embedded Linux Device Drivers
- › **LFD450** Embedded Linux Development
- › **LFD460** Embedded Linux Development with Yocto Project

Application Development



- › **LFD401** Developing Applications For Linux
- › **LFS171** Blockchain for Business - An Introduction to Hyperledger Technologies
- › **LFS232** Cloud Foundry for Developers
- › **LFS254** Containers for Developers and Quality Assurance

Systems Engineering/ Architecture



- › [LFS201](#) Essentials of Linux System Administration
- › [LFS211](#) Linux Networking and Administration
- › [LFS216](#) Linux Security Fundamentals
- › [LFS311](#) Advanced Linux System Administration and Networking
- › [LFS422](#) High Availability Linux Architecture
- › [LFS430](#) Linux Enterprise Automation
- › [LFS462](#) Open Source Virtualization

System Administration



- › LFS101 Introduction to Linux
- › LFS158 Introduction to Kubernetes
- › LFS201 Essentials of Linux System Administration
- › LFS205 Administering Linux on Azure
- › LFS211 Linux Networking and Administration
- › LFS216 Linux Security Fundamentals
- › LFS258 Kubernetes Fundamentals
- › LFS300 Fundamentals of Linux
- › LFS301 Linux System Administration
- › LFS305 Deploying and Managing Linux on Azure
- › LFS311 Advanced Linux System Administration and Networking
- › LFS416 Linux Security
- › LFS422 High Availability Linux Architecture
- › LFS426 Linux Performance Tuning
- › LFS430 Linux Enterprise Automation
- › LFS458 Kubernetes Administration
- › LFS462 Open Source Virtualization

DevOps/ Site Reliability



- › **LFS158** Introduction to Kubernetes
- › **LFS161** Introduction to DevOps: Transforming and Improving Operations
- › **LFS201** Essentials of Linux System Administration
- › **LFS216** Linux Security Fundamentals
- › **LFS253** Containers Fundamentals
- › **LFS254** Containers for Developers and Quality Assurance
- › **LFS258** Kubernetes Fundamentals
- › **LFS261** Implementing Continuous Delivery

Cloud & Containers



- › [LFS132](#) Introduction to Cloud Foundry and Cloud Native Software Architecture
- › [LFS151](#) Introduction to Cloud Infrastructure Technologies
- › [LFS152](#) Introduction to OpenStack
- › [LFS201](#) Essentials of Linux System Administration
- › [LFS216](#) Linux Security Fundamentals
- › [LFS232](#) Cloud Foundry for Developers
- › [LFS252](#) OpenStack Administration Fundamentals
- › [LFS452](#) Essentials of OpenStack

Networking



- › **LFS201** Essentials of Linux System Administration
- › **LFS211** Linux Networking and Administration
- › **LFS265** Software Defined Networking Fundamentals
- › **LFS465** Software Defined Networking with OpenDaylight

Blockchain



- › [LFS171](#) Blockchain for Business - An Introduction to Hyperledger Technologies
- › [LFD271](#) – Hyperledger Fabric Fundamentals

Compliance



- › **LFC191** Compliance Basics for Developers
- › **LFC210** Fundamentals of Professional Open Source Management



 **LF** AI  **LF** EDGE  **LF** NETWORKING



**CLOUD NATIVE
COMPUTING
FOUNDATION**



CLOUD  **FOUNDRY**

THANK YOU!



 **THE LINUX** FOUNDATION