

Cloud Native Computing Foundation

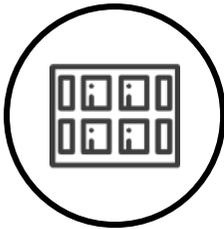
이제응 (Jerry Lee) 한국 Linux 재단 대표
Korea Director @ Linux Foundation APAC
CNCF, Cloud Foundry, Hyperledger, LF EDGE, LF AI, etc.



Linux는 세계에서 가장 중요한 Software Platform 성장

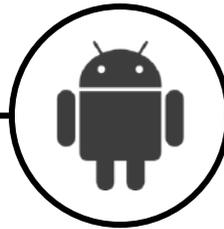
100%

Supercomputer Market



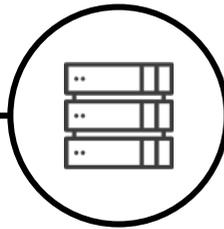
82%

Smartphone Market Share



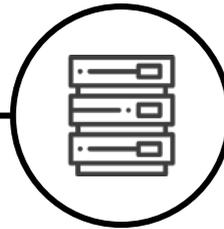
2nd

To Windows in Enterprise



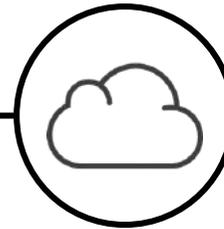
90%

Mainframe Customers



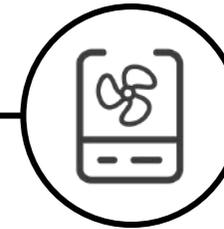
90%

Public Cloud Workload



62%

Embedded Systems Market



#1

Internet Client



Linux가 도입된 영역마다 최강자로 시장 석권!



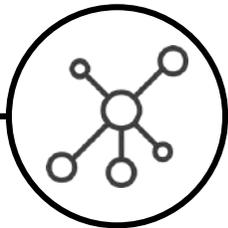
Open-source Projects; +100 Project 운영 중

Security



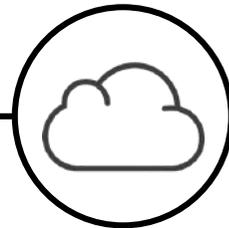
We are securing the internet as home to world's largest certificate authority securing 100M web sites.

Networking



We are home to 9 of the top 10 open source networking projects in the world backed by the majority of global network providers.

Cloud



We are creating a portability layer for the cloud, driving standards and developing reference tools for cloud native development.

Automotive

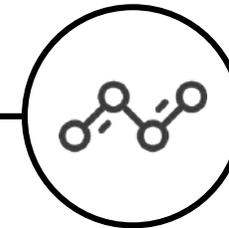


Our Automotive Grade Linux platform is backed by 12 automakers and is either in or slated for production in millions of vehicles worldwide.

Blockchain Edge/Embedded

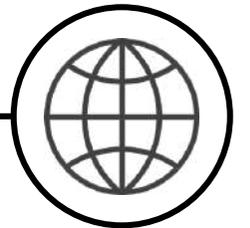


We are creating a permanent, secure distributed ledger that makes it easier to create cost-efficient, decentralized business networks.



We are creating projects used in building the majority of embedded Linux distributions and rationalizing edge computing.

Web



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



오픈소스는 초고속 성장 중

23M+

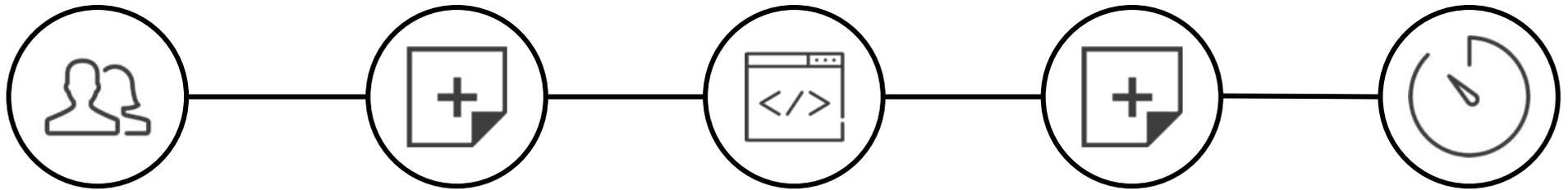
오픈소스 개발자

41B+

코드 라인 수

10,000+

신규 버전/1일



64M+

GitHub의 Repository 수

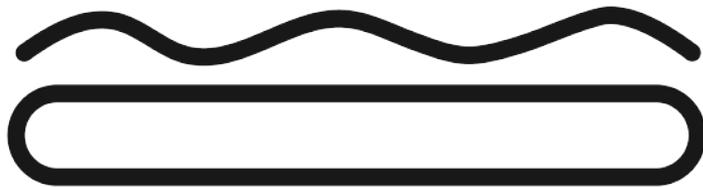
1,100+

신규 프로젝트/1일

* Source: Sourceclear, Sonatype, Github



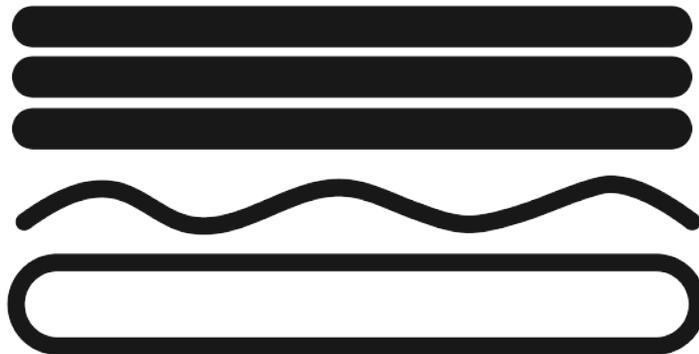
Code Club (Sandwich)



Choose a Framework



Code Club (Sandwich)

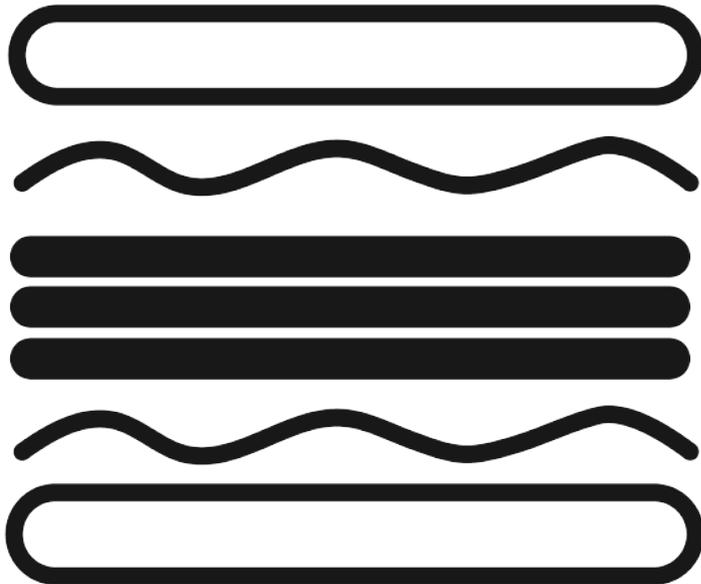


Write Custom Code

Choose a Framework



Code Club (Sandwich)



Use Open Source
Libraries to Solve Problems

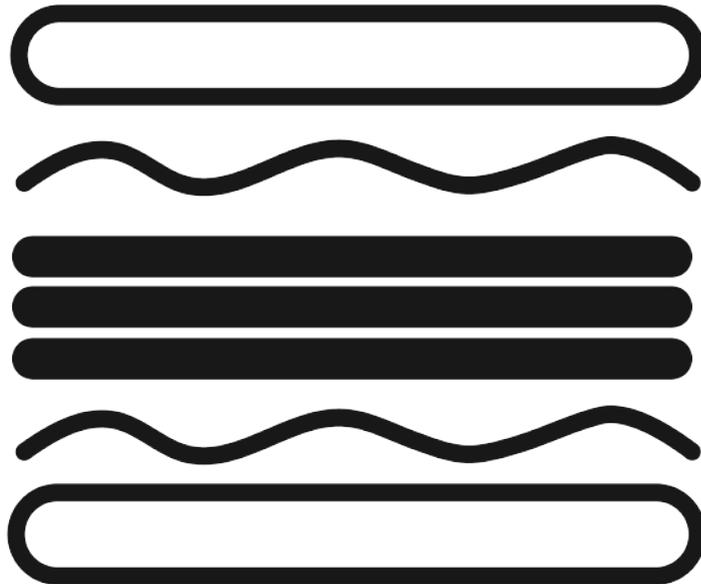
Write Custom Code

Choose a Framework



Code Club (Sandwich)

Open Source Code = ~ 90%



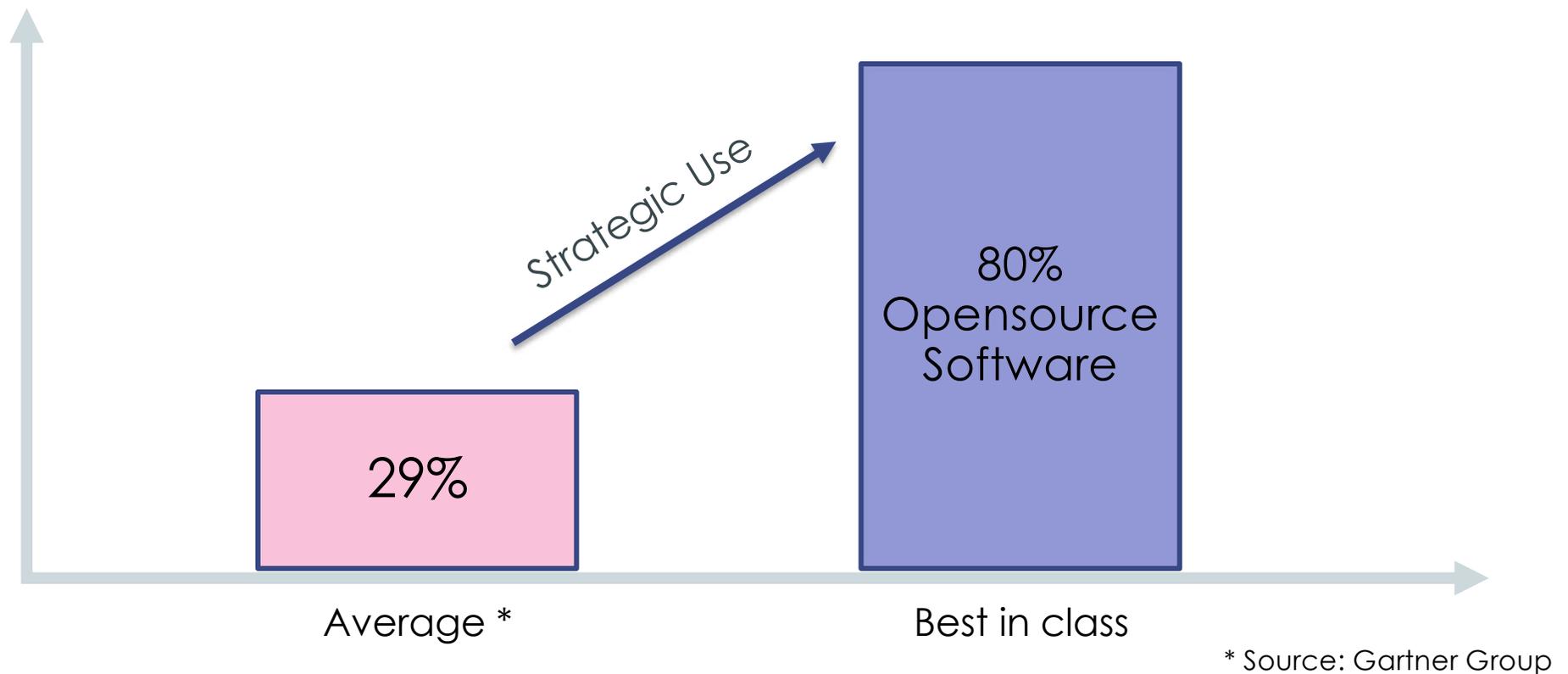
Use Open Source
Libraries to Solve Problems
Open Source Code (~70%)

Write Custom Code
Custom Code (~10%)

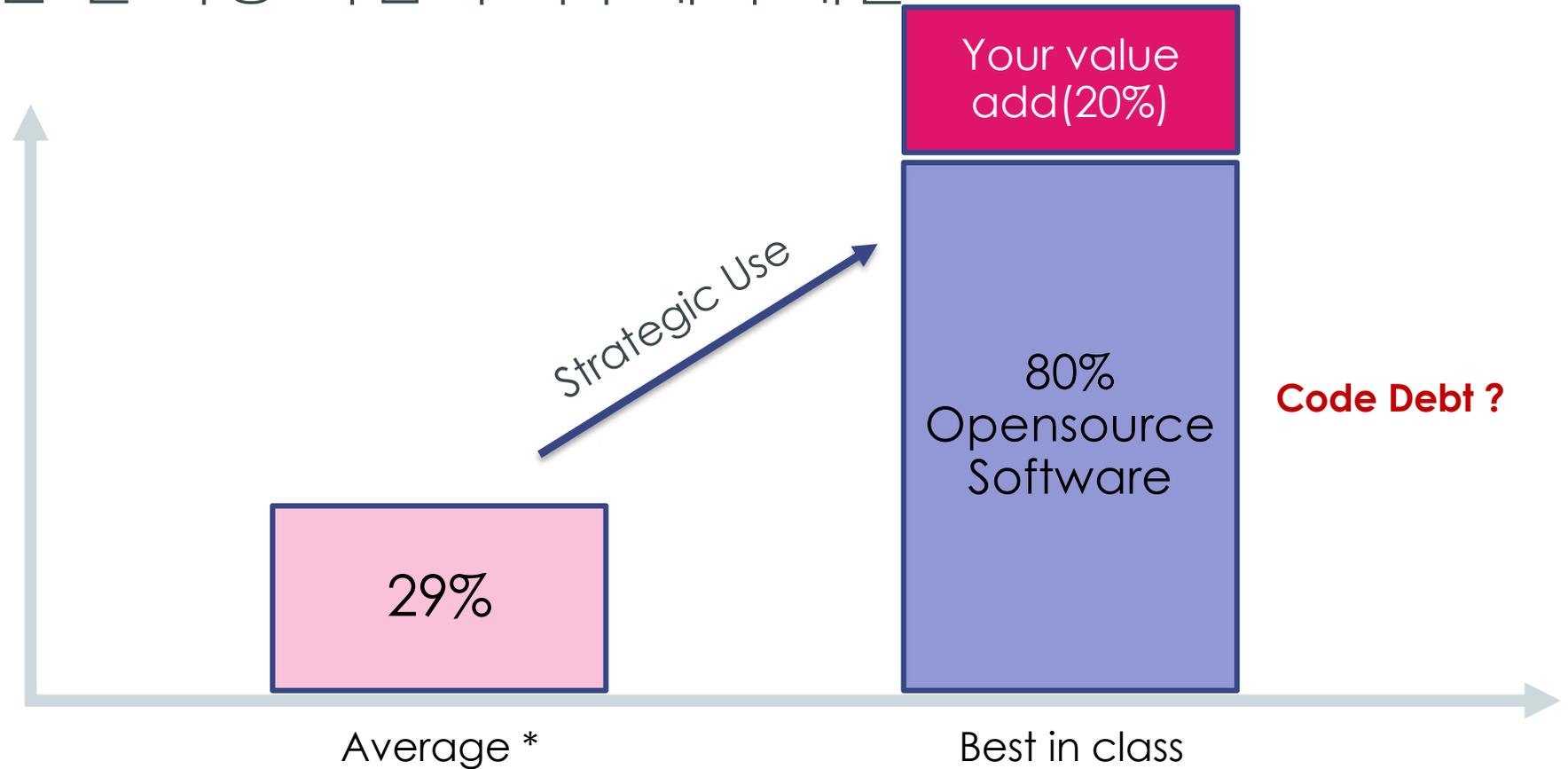
Choose a Framework
Open Source Code (~20%)



현재 IT 기술에 사용되는 System & Service Code는 대부분 실 사용 기업의 외부에서 개발



현재 IT 기술에 사용되는 System & Service Code는 대부분 실 사용 기업의 외부에서 개발

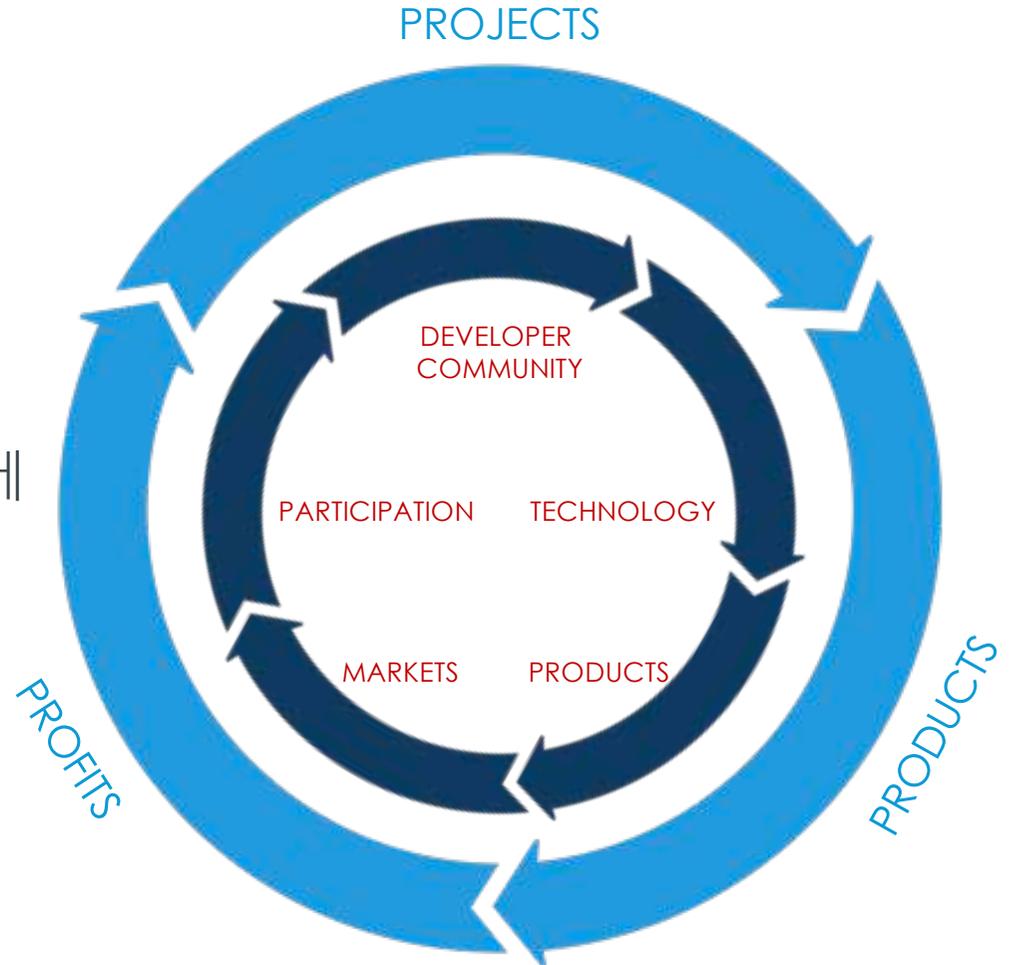


* Source: Gartner Group



신뢰를 바탕으로한 생태계 구축

지속 가능한 프로젝트는 개발자 커뮤니티를 가지고 있으며, 프로젝트에 재투자해주며, 커뮤니티의 개발자를 고용하는 기업을 가지고 있다.





CNCNF 소개

CNCF 한눈에 보기



50+

Projects

97,000

Contributors

177+

Countries

13억

Lines of code

550+

Members

144

End users



CNCF(Cloud Native Computing Foundation) 소개



- 2015년 12월, Linux 비영리 재단 산하 Project 재단 <https://www.cncf.io/>

Graduated

 kubernetes Orchestration	 Prometheus Monitoring	 envoy Network Proxy	 CoreDNS Service Discovery	 containerd Container Runtime	 fluentd Logging
 JAEGER Distributed Tracing	 Vitess Storage	 TUF Software Update Spec	 HELM Package Management	 HARBOR Registry	

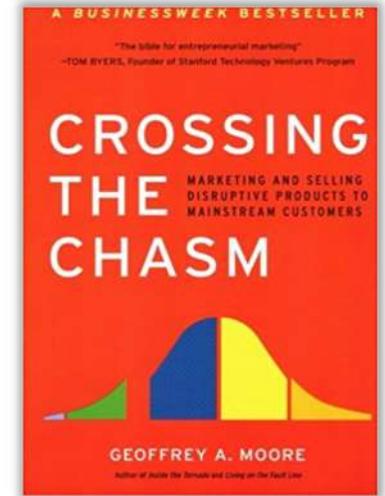
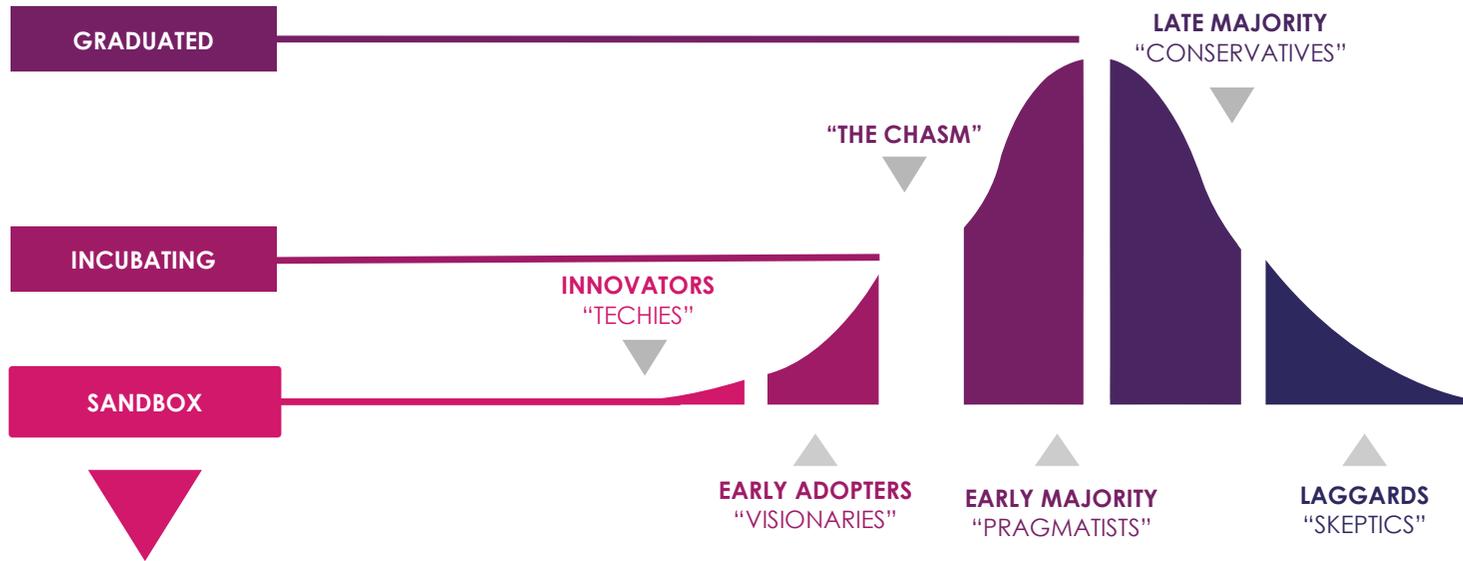
Incubating

 OPENTRACING Distributed Tracing API	 gRPC Remote Procedure Call	 CNI Networking API	 notary Security	 NATS Messaging	 LINKERD Service Mesh	 ROOK Storage	 etcd Key/Value Store	
 Open Policy Agent Policy	 cri-o Container Runtime	 TiKV Key/Value Store	 cloudevents Serverless	 Falco Container Security	 argo Continuous Integration & Deployment	 Dragonfly Image Distribution	 spiffe Identity Spec	 SPIRE Identity

- Platinum Member :



CNCF 프로젝트 성숙도



Sandbox										
spiffe	SPIRE		OPENMETRICS	cortex	Buildpacks.io	Dragonfly	Virtual Kubelet	KubeEdge	BRIGADE	Network Service Mesh
Identity Spec	Identity	Tooling	Metrics Spec	Monitoring	Packaging Spec	Image Distribution	Nodeless	Edge	Scripting	Networking
OpenTelemetry	OpenEBS	Thanos	flux	STRIMZI	in-toto	KubeVirt	LONGHORN	ChubaoFS	KEDA	SMI
Telemetry Spec	Storage	Monitoring	GitOps	Kafka Operator	Security	VM Operator	Storage	Storage	Event-driven Autoscaling	Service Mesh



CNCF에 참여해야 하는 이유



- 재단의 중립성이 더 많은 공헌(Contribution) 유입
- CNCF 기술 자문 위원회(Technical Oversight Committee) 보증(Certification) 및 지원
- End User 및 Service 제공자가 속한 CNCF Community와 교류 활성화
- Full-time Press 및 System 분석팀 지원
- Documentation, Case Study 및 Support Service에 연간 수천만 달러 지원
- 중립 기반의 Committer들을 보유하고, 각 project 고유의 Governance 정의
- Full-time Support 지원 (CNCF Staff)
- KubeCon + CloudNativeCon + Kubernetes Forum 행사 및 CNCF Event에 참여하여, Member사 Project 소개
- 전 세계의 Meetup 참여 기회 제공
- CI(Cross-Cloud Integration) 및 Scale Testing을 위한 Cloud Resource 지원



신뢰할 수 있는 정책 반영

Trustworthy Governance

벤더 중립성

Open Governance

Conformance Program 및 Trademark 관리

Cloud Native Trail Map

Trail Map: l.cncf.io



CLOUD NATIVE TRAIL MAP

The Cloud Native Landscape l.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/kscsp

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 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

v20191107



- ### 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
- ### 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
- ### 3. ORCHESTRATION & APPLICATION DEFINITION

 - Kubernetes is the market-leading orchestration solution
 - You should select a Certified Kubernetes Distribution, Hosted Platform, or installer: cncf.io/ck
 - Helm Charts help you define, install, and upgrade even the most complex Kubernetes application
- ### 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
- ### 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
- ### 6. NETWORKING & POLICY

To enable more flexible networking, use a CNH-compliant network, project like Calico, Flannel, or Weave Net. Open Policy Agent (OPA) is a general-purpose policy engine with uses ranging from 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, Vitess is a good option for running MySQL at scale through sharding. Rook is a storage orchestrator that integrates a diverse set of storage solutions into Kubernetes. Serving as the "brain" of Kubernetes, etcd provides a reliable way to store data across a cluster of machines. TiKV is a high performance distributed transactional key-value store written in Rust.
- ### 8. STREAMING & MESSAGING

When you need higher performance than JSON-RPC, 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. CloudEvents is a specification for describing event data in common ways.
- ### 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.
- ### 10. SOFTWARE DISTRIBUTION

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

The landscape is organized into several functional categories:

- App Definition and Development:** Database, Streaming & Messaging, Application Definition & Image Build, Continuous Integration & Delivery.
- Orchestration & Management:** Scheduling & Orchestration, Coordination & Service Discovery, Remote Procedure Call, Service Proxy, API Gateway, Service Mesh.
- Runtime:** Cloud Native Storage, Container Runtime, Cloud Native Network.
- Provisioning:** Automation & Configuration, Container Registry, Security & Compliance, Key Management.
- Platform:** Certified Kubernetes - Distribution, Certified Kubernetes - Hosted, Certified Kubernetes - Installer, PaaS/Container Service.
- Observability and Analysis:** Monitoring, Logging, Tracing, Chaos Engineering.
- Serverless:** Serverless.
- Special:** Kubernetes Certified Service Provider, Kubernetes Training Partner.
- Members:** Members.

CLOUD NATIVE Landscape
CLOUD NATIVE COMPUTING FOUNDATION
Redpoint Amplify



This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path.

l.cncf.io

Special

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: 2019-07-16 22:17:13Z

You are viewing 1,158 cards with a total of 1,725,127 stars, market cap of \$10.38T and funding of \$57.68B.

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

Tweet 694

Landscape Card Mode Serverless Members

No Grouping (1158)

 <p>kubernetes Kubernetes Cloud Native Computing Foundation (CNCF) ★ 55,292</p>	 <p>elastic Elastic ★ 42,628 MCap: \$7.09B</p>	 <p>NETDATA Netdata ★ 39,579</p>	 <p>ANSIBLE Ansible Red Hat ★ 38,340 MCap: \$33.43B</p>	 <p>redis Redis Redis Labs ★ 37,543 Funding: \$146.6M</p>	 <p>serverless Serverless ★ 30,993 Funding: \$13M</p>
 <p>Grafana Grafana Labs ★ 29,826 Funding: \$1.23M</p>	 <p>No Code No Code ★ 29,736</p>	 <p>DUBBO Dubbo Apache Software Foundation ★ 27,880</p>	 <p>etcd etcd Cloud Native Computing Foundation (CNCF) ★ 26,033</p>	 <p>Prometheus Prometheus Cloud Native Computing Foundation (CNCF) ★ 25,134</p>	 <p>traefik Traefik Containous ★ 23,355 Funding: \$1.06M</p>
 <p>APACHE Spark Apache Spark Apache Software Foundation ★ 22,617</p>	 <p>Kong Kong ★ 22,580 Funding: \$69.1M</p>	 <p>RethinkDB RethinkDB Linux Foundation ★ 22,388</p>	 <p>gRPC gRPC Cloud Native Computing Foundation (CNCF) ★ 22,130</p>	 <p>GitLab GitLab ★ 21,901 Funding: \$168.2M</p>	 <p>SENTRY Sentry ★ 21,457 Funding: \$26.5M</p>

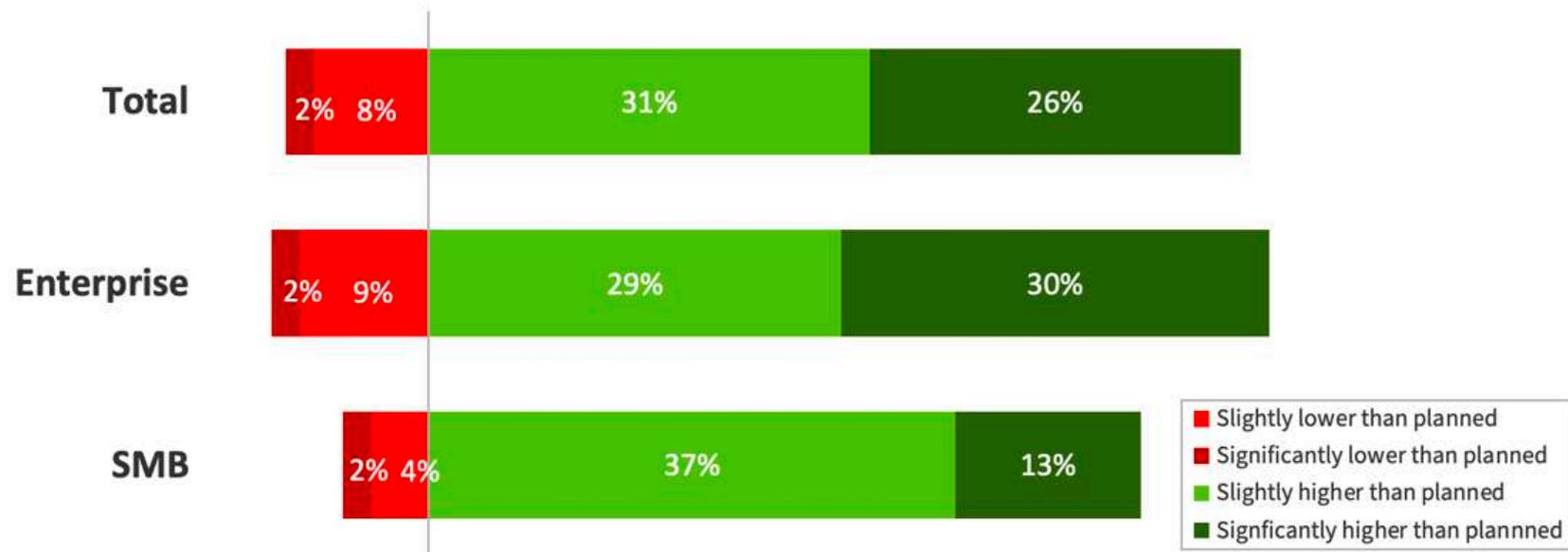


 Nov. 18 - 21 San Diego, CA


 March 30 - April 2 Amsterdam

Pandemic 시대 이후에 Cloud가 점점 중요해지는 이유...

Change from Planned Cloud Usage Due to COVID-19
% of respondents

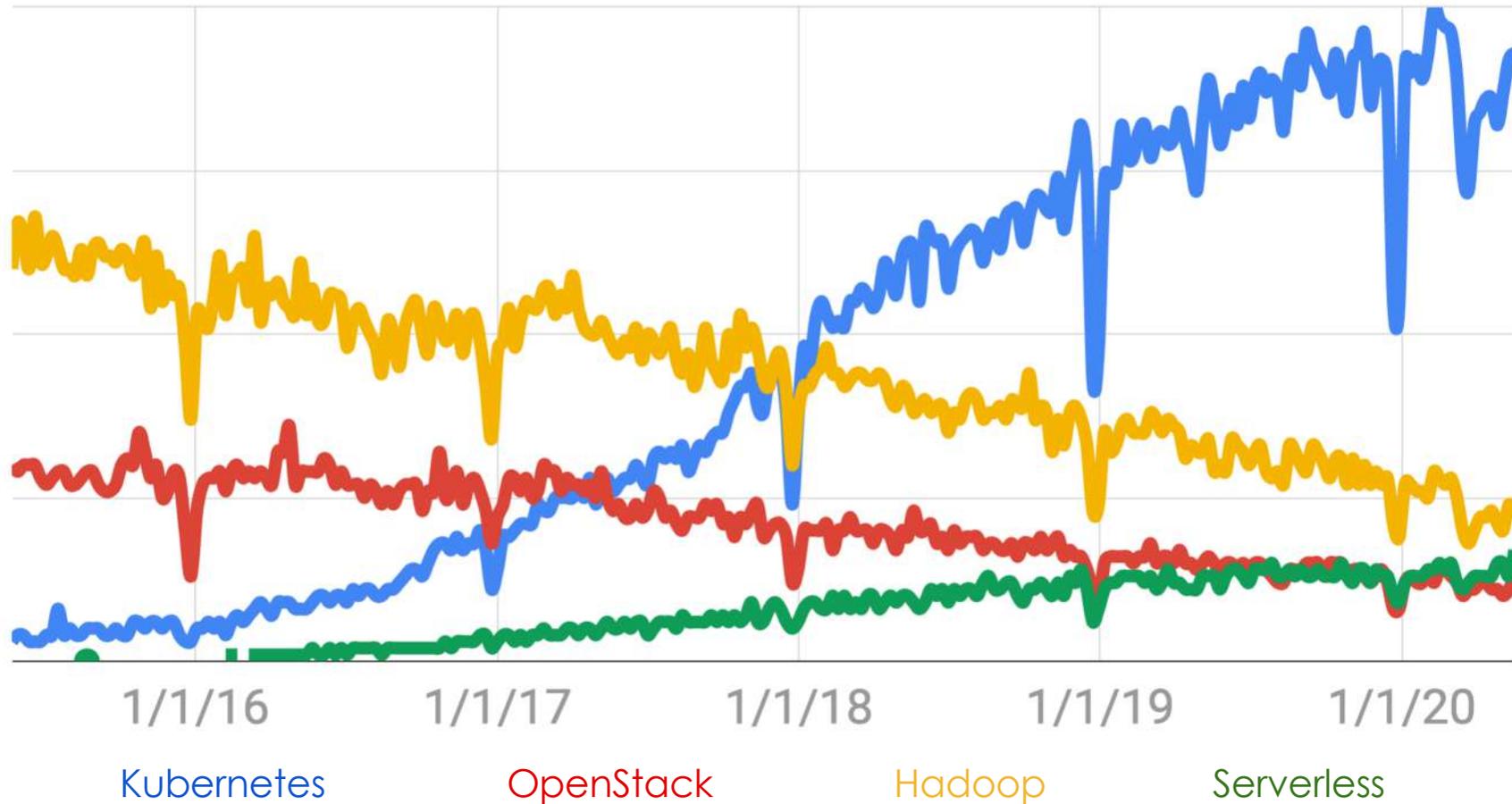


N=187, asked only of later respondents

Source: Flexera 2020 State of the Cloud Report



Kubernetes(K8S) 검색 추이



550+ Member사와 지속적인 성장

Platinum Members



Gold Members



Academic/Nonprofit Members



한국 Member사의 성장

13

Korea Members



한국 Members

Silver Member

Acornsoft

 **common
computer**

IN's Lab
INTUITIVE SOFTWARE LAB

 **kbsys**

 **n3n
CLOUD**

namu

 **NC SOFT®**


NexClipper

 **OPEN SOURCE
CONSULTING**

SAMSUNG

TmaxA&C

Non Profit Member

 **KETI** Korea Electronics
Technology Institute

 **TTA** 한국정보통신기술협회
Telecommunications Technology Association



144 End User Community





CNCF News

Certified Kubernetes Conformance



- CNCF는 Kubernetes Certified Program 출시
 - Implementation을 통한 적합성 확인 및 결과 Upload
 - Kubernetes 구현의 준수 여부를 위한 신규 Mark와 더 유연한 Kubernetes Trademark의 사용
 - <https://www.cncf.io/certification/software-conformance/>



105 Certified Kubernetes Conformance



국내 Certified Kubernetes Conformance

CLOUD NATIVE Landscape

Reset Filters

Grouping
Category

Sort By
Alphabetical (a to z)

Category
Certified Kubernetes - Dist...

CNCF Relation
CNCF Member Products/...

License
Any

Organization
Any

Headquarters Location
South Korea

Example filters:

- Cards by age
- Open source landscape
- Member cards
- Cards by stars
- Cards from China
- Certified K8s/KCSP/KTP
- Cards by MCap/Funding

You are viewing 7 cards.

Landscape **Card Mode** Serverless Members

Platform - Certified Kubernetes - Distribution (2)

 Cocktail Cloud Acornsoft	 HyperCloud TmaxA&C
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Special - Kubernetes Certified Service Provider (4)

 Acornsoft (KCSP) Acornsoft	 INS Lab (KCSP) INSLab	 N3N CLOUD (KCSP) N3N Cloud	 Namutech (KCSP) NAMUTECH
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CNCF MOOC 및 On-line Training



- edX 상에 무료 Introduction to Kubernetes Self-pace Course 개설
- Kubernetes Fundamentals Course
 - Certified Kubernetes Administrator (CKA) 시험 대비 Course
 - \$299, 중간 개발자 Level
- Training을 필요로하는 기업을 위한 Open-source curriculum 준비
 - CKA 시험 Coupon – 대량 구매 시, 할인가 적용



Online, Proctored Kubernetes Exams



- Online, 감독 주관하의 Kubernetes 숙련도 시험
 - Scenarios로 구성된 시험 문제를 Command Line을 통해 해결하는 시험이며, 객관식 문제는 없음
 - 시험시간 : 3 시간
 - 응시비용 : \$300
 - Quarterly exam updates to match K8s releases
- Certified Kubernetes Administrator (CKA)
 - Over 1,500 registrations already
 - <https://www.cncf.io/certification/expert/cka/>
- Certified Kubernetes Application Developer (CKAD)
 - Certifies that users can design, build, configure, and expose cloud native applications for Kubernetes
 - <https://www.cncf.io/certification/expert/cka/ckad/>



Kubernetes Certified Service Provider (KCSP)



- KCSP 인증을 획득한 Member사는 Kubernetes를 성공적으로 도입할 수 있도록 Support, Consulting, Profession Service 및 Training 등의 지원 가능한지를 사전 검증하여 Kubernetes 전문 Service 기업임을 증명
- 혜택
 - Website 상단에 노출 <https://kubernetes.io/partners/>
 - CNCF 의 Cloud 기반 Project Leader, TOC Member, 및 Governing Board 대표와 Monthly Meeting 참여
 - Website를 통해 Supporter를 찾는 End User Lead에 대한 Access 제공
- 요구 사항
 - 3명 이상의 Certified Engineer 보유(CKA)
 - Kubernetes Community에서 적극적인 공헌 및 활동 기록 증명
 - Enterprise End User를 Support 가능한 Business Model 보유



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



133 Kubernetes Certified Service Providers



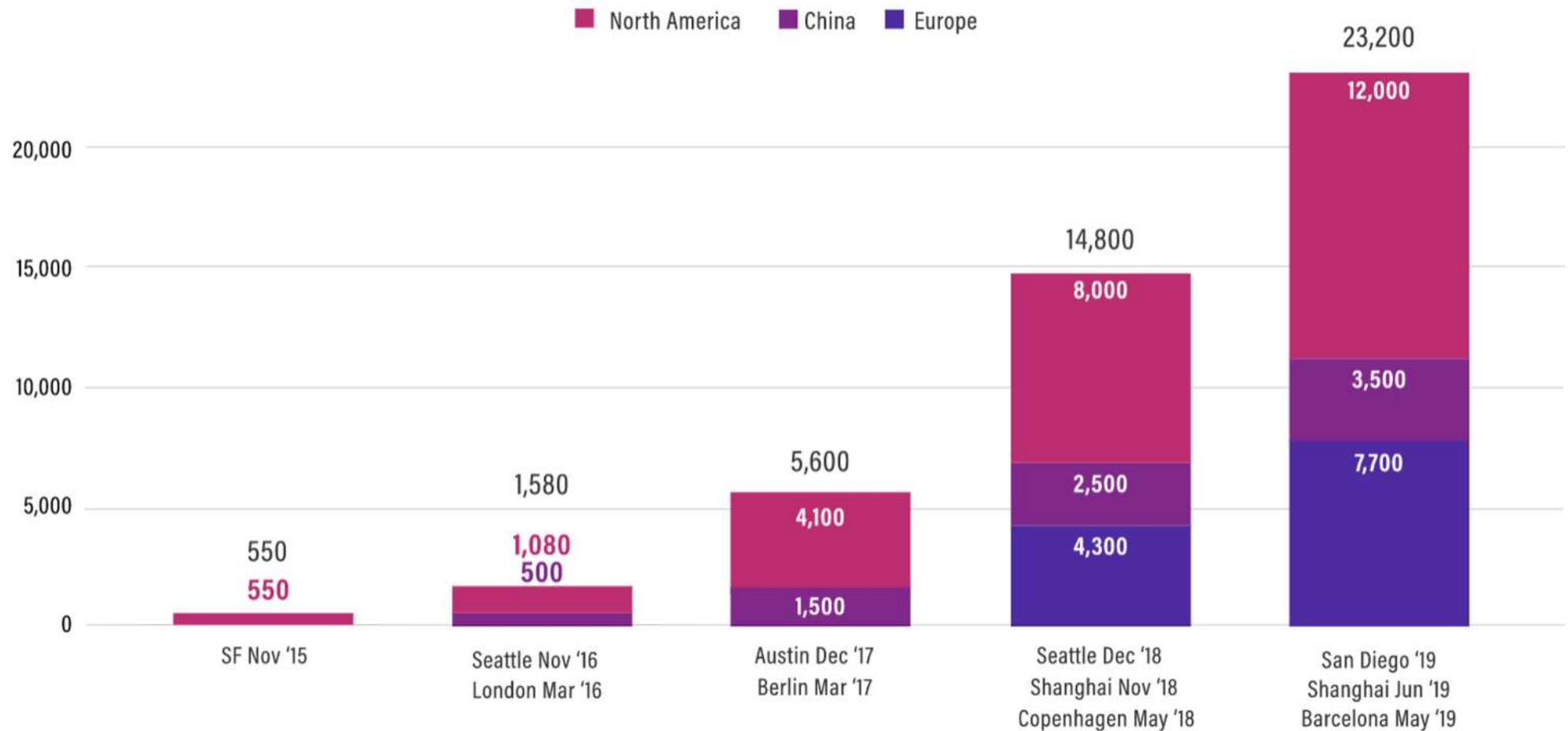
KubeCon + CloudNativeCon 관련 행사



kubcon.io



KubeCon + CloudNativeCon Attendance



감사합니다.

550+ Member사와 지속적인 성장 (Silver)



550+ Member사와 지속적인 성장 (Silver) - 계속



550+ Member사와 지속적인 성장 (Silver) - 계속

