Kubernetes
Kubernetes is an open-source system for automating deployment, scaling, and management of containerized applications.
Kubernetes - the Linux of the Cloud

- #1 by GitHub activity
- #2 by authors
- #3 of the 30 highest velocity open source projects.

https://github.com/cncf/velocity
Ecosystem
Cloud Native Computing Foundation

• Non-profit, part of the Linux Foundation; founded Dec 2015

Graduated

- **kubernetes**
  - Orchestration
- **Prometheus**
  - Monitoring
- **OPENTRACING**
  - Distributed Tracing API
- **fluentd**
  - Logging
- **gRPC**
  - Remote Procedure Call
- **mesos**
  - Security
- **Vitess**
  - Storage
- **CoreDNS**
  - Service Discovery
- **NATS**
  - Messaging
- **LINKERD**
  - Service Mesh
- **HELM**
  - Package Management
- **ROOK**
  - Storage

Incubating

- **rkt**
  - Container Runtime
- **CNI**
  - Networking API
- **envoy**
  - Service Mesh
- **JAEGER**
  - Distributed Tracing

• Platinum members:
CNCF Project Maturities

- **GRADUATED**
  - Innovators
    - "Techies"
  - Early Adopters
    - "Visionaries"
  - Early Majority
    - "Pragmatists"
  - Late Majority
    - "Conservatives"
  - Laggards
    - "Skeptics"

- **INCUBATING**
  - Sandbox
  - Graduated
  - Incubating
  - Sandbox

- **SANDBOX**
  - Identity Spec
  - Identity Policy
  - Open Policy Agent
  - Serverless
  - Tooling
  - Registry
  - OpenMetrics
  - Metrics Spec
  - Distributed K/V
  - Monitoring
  - Packaging Spec
  - Container Security
CONGRATS kubernetes
CLASS OF 2018

Love,
CNCF
2018 OSCON Most Impact Award
$9M from Google will allow Kubernetes community to self-manage cloud resources
30 Highest Velocity Open Source Projects

https://www.cncf.io/blog/2017/06/05/30-highest-velocity-open-source-projects
Kubernetes in Search Trends

**Google Trends**

**WeChat**
Kubernetes is the dominating technology (CNCF Survey’2018)
Kubernetes Environment vs. Other Container Environments

- Alibaba Cloud: 3% (Container), 2% (Kubernetes)
- Amazon Web Services: 7% (Container), 63% (Kubernetes)
- Digital Ocean: 7% (Container), 4% (Kubernetes)
- Google Cloud Platform: 32% (Container), 22% (Kubernetes)
- IBM Bluemix: 8% (Container), 6% (Kubernetes)
- Microsoft Azure: 29% (Container), 23% (Kubernetes)
- On-Premise Servers: 43% (Container), 34% (Kubernetes)
- OpenStack: 15% (Container), 16% (Kubernetes)
- Oracle Cloud: 3% (Container), 2% (Kubernetes)
- Other: 5% (Container), 5% (Kubernetes)
- Packet: 1% (Container), 1% (Kubernetes)
- SAP Cloud Platform: 3% (Container), 2% (Kubernetes)
- VMware: 15% (Container), 2% (Kubernetes)
KubeCon + CloudNativeCon

- China
  - Shanghai: November 13-15, 2018
- North America
  - Seattle: December 11 - 13, 2018
- Europe
  - Barcelona: May 21 - 23, 2019
Getting Started with the Community

- Weekly Meetings
- Meetup Groups
- Slack Channels
- Mailing Lists
- Special Interest Groups (SIGs)
- Stack Overflow
- CNCF Events
  - KubeCon + CloudNativeCon Europe
  - KubeCon + CloudNativeCon China
  - KubeCon + CloudNativeCon North America
Mentorship programs

- Kubernetes Mentoring initiative
- Kubernetes Contributing guide
- Kubernetes Office Hours
- “Meet our Contributors”
- Outreachy
- Google Summer of Code (GSoC)
Project Organization & Governance
SIGs & WGs:
- own code, make decisions, inform most direction choices
- open membership, fully public activities

SIG Architecture: cross-SIG design cohesion

Committees:
- named sets of people that are chartered to take on sensitive topics
- examples: Steering, Security Response, Code of Conduct
- ...may include private communications

Steering Committee:
- Define, evolve, and defend the vision, values, mission, and scope of the project
- Annual election for ~½ of members
SIGs and WGs

- **SIG: Special Interest Group**
  - Focused on a topic
    - Technology verticals: Storage, Networking, Scheduling, Node
    - Cross-technology horizontals: Contributor Experience, Docs, Release, Testing
  - Owns code
  - Community chaired
  - Public charter
  - May have subprojects

- **WG: Working Group**
  - Cross SIG purpose: Multitenancy, Resource Management, Security Audit
  - Time limited focus of addressing specific issue
  - Does not own code
OWNERS

● OWN == review, approve, maintain
● Automation via files in repos, for example:
  ○ Our contributor guide:
    ■ http://git.k8s.io/community/OWNERS
    ■ http://git.k8s.io/community/contributors/guide/OWNERS
  ○ A random piece of code...”kubectl”:
    ■ http://git.k8s.io/kubernetes/OWNERS
    ■ http://git.k8s.io/kubernetes/cmd/kubectl/OWNERS
      ● YAML

approvers:
  - sig-cli-maintainers
reviewers:
  - sig-cli
labels:
  - area/kubectl
  - sig/cli
SIG Contact Info

- SIGs List:
  - [https://git.k8s.io/community/sig-list.md](https://git.k8s.io/community/sig-list.md)

- Per SIG README.md:
  - [https://git.k8s.io/community/sig-cli/README.md](https://git.k8s.io/community/sig-cli/README.md)

- GitHub Teams:
  - [https://github.com/orgs/kubernetes/teams/sig-cli-maintainers/members](https://github.com/orgs/kubernetes/teams/sig-cli-maintainers/members)

- Google Groups: [https://groups.google.com/forum/#!forum/kubernetes-sig-cli](https://groups.google.com/forum/#!forum/kubernetes-sig-cli)

- Slack: [https://kubernetes.slack.com/messages/C2GL57FJ4 #sig-cli](https://kubernetes.slack.com/messages/C2GL57FJ4 #sig-cli)

- Zoom Meetings:
  - join Google Group for invite
  - meetings are open, but have abused so calendar only visible with membership
Release Process & Lifecycle
Large and Rapidly Growing Project!!!

In past year alone:

- 2048 commit authors generated
  - 21911 commits
- 15126 contributors generated
  - 717681 GitHub contribution events

Kubernetes internal developers, cluster operators, end users all need

“…high quality releases on a reliable schedule”

SIG-Release mission statement http://git.k8s.io/sig-release
Quarterly Releases

Feature Discussion (per SIG): ongoing

Feature Freeze: week ~4

Release Branch Creation: week ~7
Code Slush / Freeze: week ~8

...bugs, testing, bugs, fixing, bugs, ...iterating

End Code Freeze: week ~12
Release: week ~13

Feature Definition
Feature Work
Bug Fixing
Release

3 Month Cycle
1.10.x Patch Releases

K8S Releases
1.12 Release Highlights
1.13 Release Preview
1.13

- Enhancements freeze Oct. 23
  - 40+ already in tracking
  - ...stability focus?
- Code freeze Nov. 15
- Release target Dec. 3

....shorter cycle due to holidays and KubeCon

1.12

- 60+ tracked enhancements...
- 40+ completed enhancements
  - 14 new alpha
  - 20 graduated to beta
  - 7 graduated to stable/GA
- Diffstat:
  - 7508 files changed
  - 875812 insertions(+)
  - 213557 deletions(-)

Enhancement Themes for 2H2018
- stateful workload storage
- non-Linux and non-x86 container workloads
- cluster lifecycle management
- horizontal/vertical scaling
- debuggability
- security
Questions?

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