



Kubernetes Community Days



Kubernetes
Community Days

SIG-Node & kubeadm 介绍 - 如何参与/如何贡献？

Paco Xu (@pacoxu)
DaoCloud

个人介绍



- Kubernetes 项目
 - [sig-node reviewer](#)
 - [kubeadm reviewer](#)
- 就职于 DaoCloud
 - 开源 & AD 团队负责人



SIG Node Intro



Previous update from SIG Node



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SIG Node Intro & Deep Dive

Dawn Chen (@dchen1107), Google

Derek Carr (@derekwaynecarr), Red Hat

Elana Hashman (@ehashman), Red Hat

Sergey Kanzhelev (@SergeyKanzhelev), Google



- Covered up to 1.23 roadmap at KubeCon NA 2021
 - [Recording](#): Kubernetes SIG Node Intro and Deep Dive - Derek Carr & Elana Hashman, Red Hat & Dawn Chen & Sergey Kanzhelev, Google
 - [Sched](#): Oct 15th 2021
 - [Slides](#): KubeCon NA 2021

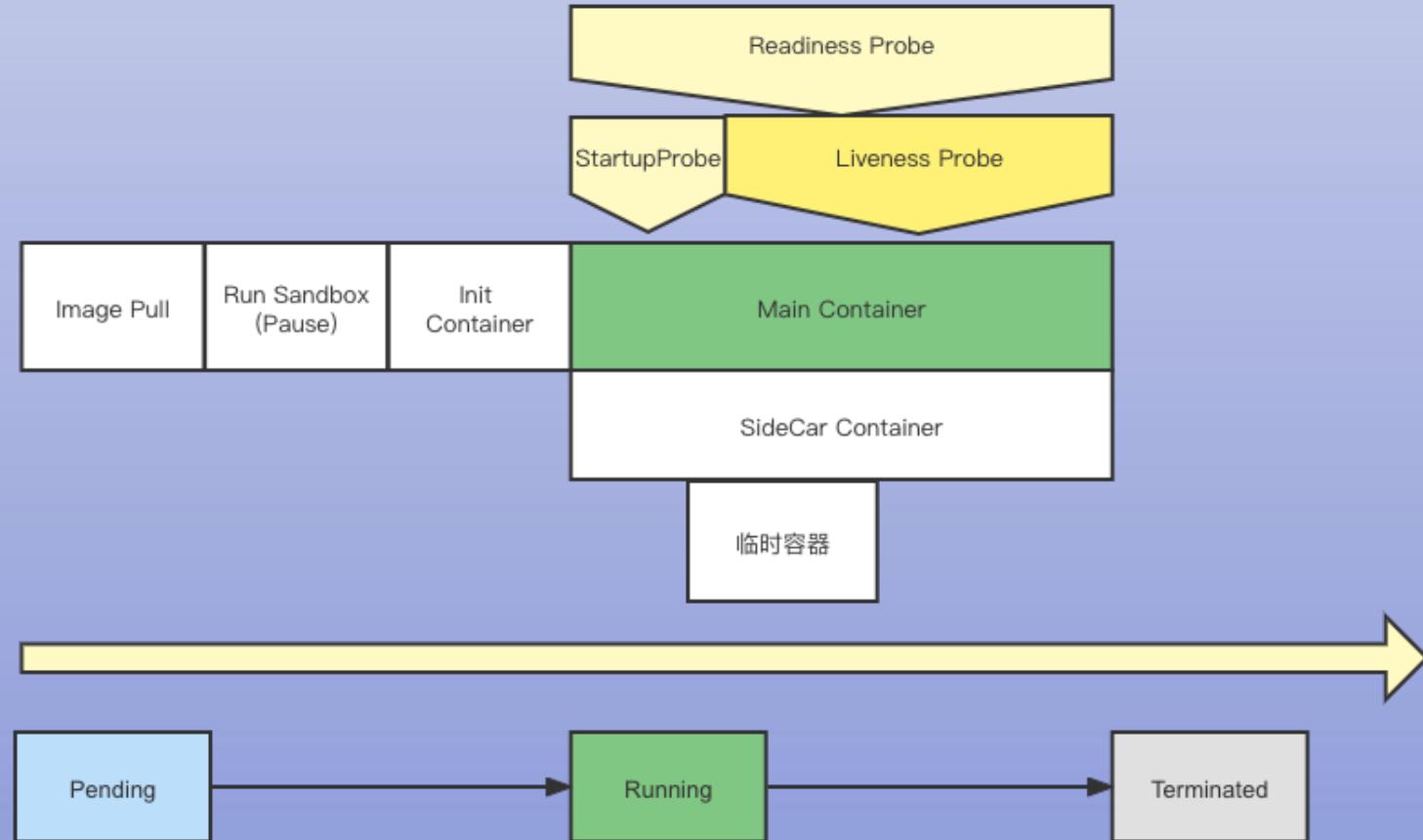
- Covered up to 1.22 roadmap at KubeCon EU 2021
 - [Recording](#): Kubernetes SIG Node Intro and Deep Dive - Elana Hashman, Red Hat & Sergey Kanzhelev, Google
 - [Sched](#): May 5th 2021
 - [Slides](#): KubeCon EU 2021

- 章程: SIG-NODE 为容器组和主机资源交互相关的组件负责。
- SIG Node 是一个垂直型的组织
 - 和存储和网络 SIG 会有很多协作
- 子项目:
 - Kubelet
 - Container Runtime Interface (CRI)
 - Node Problem Detector
 - CRI 工具
 - ... and more!

Pod 生命周期



- CNI
- Init Container
- Probe 探针
- 资源管理
- 驱逐
- Volume 挂载
- Image 管理



Roadmap

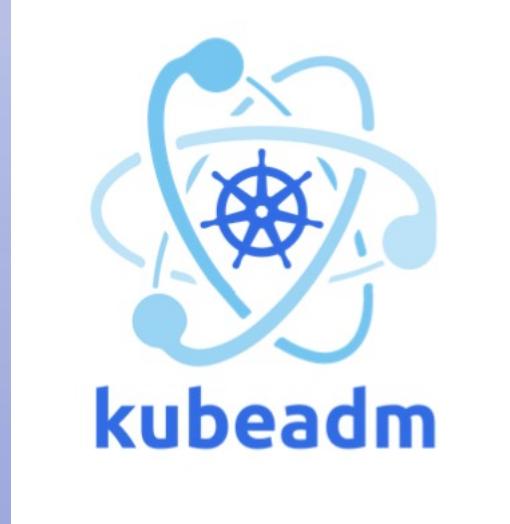


- Upcoming features
 - Swap support (alpha target 1.22) #2400
 - Pod overhead (GA target 1.22) #688
 - User namespace support (alpha target 1.22) #127
 - CRI API to beta (GA target 1.22) #2040
 - cgroups v2 (beta target 1.22) #2254
 - Dockershim removal (GA target 1.24) #2221
 - ... and more!
- 1.22 为例
 - 13/24 完成；完成的数量是最多的一次；遗憾的是有很多功能没能推进完成。（在 Code Freeze 之前，增加了一个功能的升级 Deadline，这个主要目标是防止在 Code Freeze 前合入太大的改动，比如 API-Change 或者功能升降级，可能会带来潜在的 Bug 进而导致发布延期或者回滚。）



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Kubeadm Intro

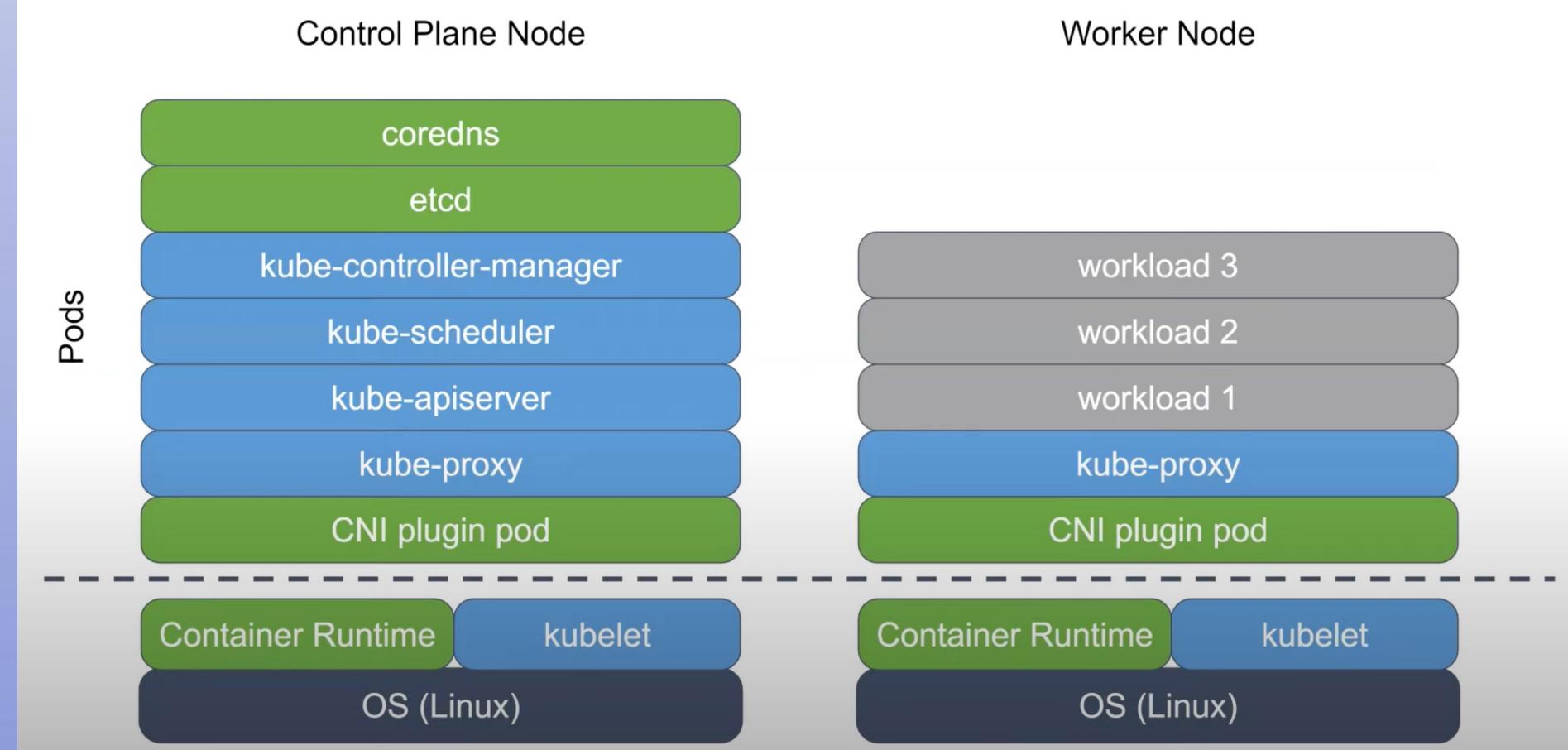


- 领域聚焦
 - 集群安装引导、集群配置
- 极简设计
 - Kubeadm init 初始化集群
 - Kubeadm join 添加节点
 - Kubeadm upgrade 升级节点/集群

Kubeadm 部署了那些组件



- 启动配置 kubelet、
Apiserver、控制
器、调度器、
ETCD、DNS、
Kube-Proxy。
- 不涉及安装容器运
行时、不安装
CNI。



kuebadm 阶段分解



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➤ kubeadm init

```
[root@pacoall ~]# ./kubeadm version
kubeadm version: &version.Info{Major:"1", Minor:"23+", GitVersion:"v1.23.0-alpha.2.167+857d4c107c7a56", GitCommit:"857d4c107c7a56e
:04:12Z", GoVersion:"go1.17.1", Compiler:"gc", Platform:"linux/amd64"}
[root@pacoall ~]# ./kubeadm init --help
Run this command in order to set up the Kubernetes control plane

The "init" command executes the following phases:
```
preflight Run pre-flight checks
certs Certificate generation
 /ca Generate the self-signed Kubernetes CA to provision identities for other Kubernetes components
 /apiserver Generate the certificate for serving the Kubernetes API
 /apiserver-kubelet-client Generate the certificate for the API server to connect to kubelet
 /front-proxy-ca Generate the self-signed CA to provision identities for front proxy
 /front-proxy-client Generate the certificate for the front proxy client
 /etcd-ca Generate the self-signed CA to provision identities for etcd
 /etcd-server Generate the certificate for serving etcd
 /etcd-peer Generate the certificate for etcd nodes to communicate with each other
 /etcd-healthcheck-client Generate the certificate for liveness probes to healthcheck etcd
 /apiserver-etcd-client Generate the certificate the apiserver uses to access etcd
 /sa Generate a private key for signing service account tokens along with its public key
kubeconfig Generate all kubeconfig files necessary to establish the control plane and the admin kubeconfig file
 /admin Generate a kubeconfig file for the admin to use and for kubeadm itself
 /kubelet Generate a kubeconfig file for the kubelet to use *only* for cluster bootstrapping purposes
 /controller-manager Generate a kubeconfig file for the controller manager to use
 /scheduler Generate a kubeconfig file for the scheduler to use
kubelet-start Write kubelet settings and (Re)start the kubelet
control-plane Generate all static Pod manifest files necessary to establish the control plane
 /apiserver Generates the kube-apiserver static Pod manifest
 /controller-manager Generates the kube-controller-manager static Pod manifest
 /scheduler Generates the kube-scheduler static Pod manifest
etcd Generate static Pod manifest file for local etcd
 /local Generate the static Pod manifest file for a local, single-node local etcd instance
upload-config Upload the kubeadm and kubelet configuration to a ConfigMap
 /kubeadm Upload the kubeadm ClusterConfiguration to a ConfigMap
 /kubelet Upload the kubelet component config to a ConfigMap
upload-certs Upload certificates to kubeadm-certs
mark-control-plane Mark a node as a control-plane
bootstrap-token Generates bootstrap tokens used to join a node to a cluster
kubelet-finalize Updates settings relevant to the kubelet after TLS bootstrap
 /experimental-cert-rotation Enable kubelet client certificate rotation
addon Install required addons for passing conformance tests
 /coredns Install the CoreDNS addon to a Kubernetes cluster
 /kube-proxy Install the kube-proxy addon to a Kubernetes cluster
```

# kubeadm join controlplane

- preflight
  - control-plane-prepare
  - kubelet-start
  - control-plane-join

## kubeadm join node

- preflight
  - kubelet-start

开发调试或者使用可以尝试

- Dry run
  - --v log-level

## 其他能力

- 证书管理
  - Token 生成
  - 升级
  - 卸载

# Kubeadm feature gate



- Rootless Control Plane

- Kube 的主要控制容器组（ apiserver、 调度器、 控制器、 etcd ）都适用非 root user/group 运行

<https://github.com/kubernetes/kubeadm/issues/2473>

- IPv6DualStack

- 试用文档 : <https://kubernetes.io/docs/setup/production-environment/tools/kubeadm/dual-stack-support/>



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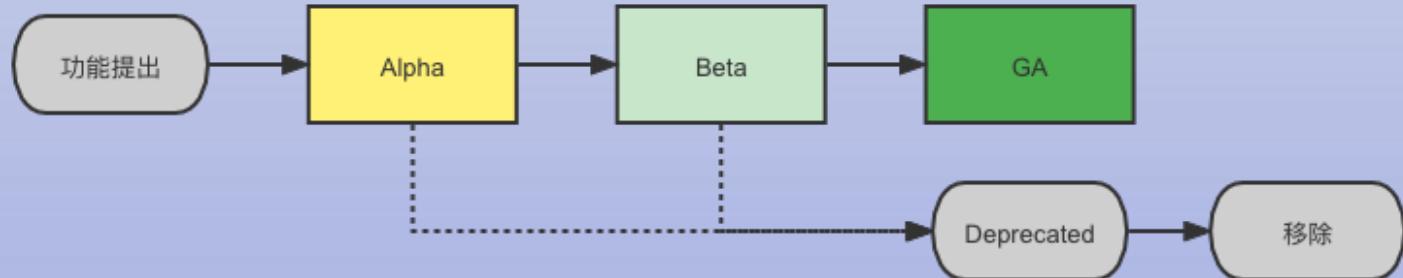
# 如何参与其中？

# 贡献优先级



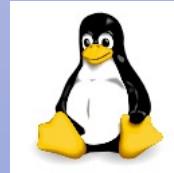
## Kubeadm

- 提升安装过程的体验
- 适配多集群管理的一些体验提升



## SIG-Node

- 稳定压倒一切
  - 测试 > Bug 修复/创建 Issues > 功能
  - 测试基础设施的监控和健康
- 改善使用者和开发者的体验
  - 文档
  - 增强日志和监控指标 Metrics
  - 保持对高优先级的 PRs 和 Issues 的关注



Longterm release kernels

| Version | Maintainer                       | Released   | Projected EOL |
|---------|----------------------------------|------------|---------------|
| 5.10    | Greg Kroah-Hartman & Sasha Levin | 2020-12-13 | Dec, 2026     |
| 5.4     | Greg Kroah-Hartman & Sasha Levin | 2019-11-24 | Dec, 2025     |
| 4.19    | Greg Kroah-Hartman & Sasha Levin | 2018-10-22 | Dec, 2024     |
| 4.14    | Greg Kroah-Hartman & Sasha Levin | 2017-11-12 | Jan, 2024     |
| 4.9     | Greg Kroah-Hartman & Sasha Levin | 2016-12-11 | Jan, 2023     |
| 4.4     | Greg Kroah-Hartman & Sasha Levin | 2016-01-10 | Feb, 2022     |

# 如何贡献？



- 参加 SIG 会议！ 🤝
  - SIG 周会通常涉及功能、KEP 等
  - CI/Triage 的会议规模更小，更聚焦
    - 可以帮助你了解如何读问题进行分类，如何改善 CI
- 参与 PR Review，问题回复，文档! 🧑‍🤝‍🧑
  - 可以参考 标签（优先级/类型/SIG）引导
  - 主要的 Node 看板和 CI，以及测试看板
- 使用新功能并给出反馈 🎁
  - 在真实环境中的测试对功能最终毕业非常关键

# 如何联系 SIG ?



- SIG 会议:
  - SIG NODE 周会, 每周二凌晨 1点 , 北京时间 😭
  - SIG NODE CI/Triage 周会, 每周三凌晨 1点 , 北京时间 😭
  - Kubeadm 属于 SIG-clusterlifecycle 曾提议调整周会时间到 北京时间 11点。 👍
- Slack 频道: #sig-node
- 邮件组: kubernetes-sig-node
- 首席: Dawn Chen @Google , Derek Carr @RedHat

# 进阶过程



|                     | 初期                                                                                                                                                                                                                                             | 中期                                                          | 后期                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| 跟进单位                | PR/Issue                                                                                                                                                                                                                                       | Feature                                                     | Feature                                                     |
| 目标                  | 成为 member                                                                                                                                                                                                                                      | 成为 reviewer                                                 | 成为 approver                                                 |
| watch               | 精力够的话，可以试着watch all activity 一段时间                                                                                                                                                                                                              | 尽可能多的参与到 SIG 周会，并跟进（学习和参与）当前发布周期的相关功能                       | 按社区的需求和产品需要，参与到 SIG RoadMap 和日常事务的推进                        |
| 参与方式                | <ul style="list-style-type: none"><li>- 针对 Issue: 尝试重现、分类、定义优先级、提 PR 尝试修复</li><li>- 能够定期参加 sig weekly meeting; 或者观看之前的周会录像</li><li>- SIG CI 维护</li><li>- SIG KEP 和 PR review</li><li>- SIG 活动参与：比如 Bug Scrub 组织、Kubecon 话题、MeetUp 参与</li></ul> |                                                             |                                                             |
| 工作内容                | 1. 学习 50%+<br>2. 看 Issue 25%+<br>3. 提 PR 20%-                                                                                                                                                                                                  | 1. 学习<br>2. 尝试多写 KEP 20%<br>3. 提 PR<br>4. Review PR/KEP 10% | 1. 学习<br>2. Review PR 和 KEP 30%+<br>3. 提 PR<br>4. 写 kep 20% |
| 入手点                 | 1. good first issue<br>2. test failure/flake<br>3. sig help-wanted                                                                                                                                                                             | 1. 参与 sig 的 roadmap<br>2. 完善已有功能，参与新设计实现<br>3. 对疑难杂症做一些梳理总结 | 1. 尝试制定 sig roadmap<br>2. Review KEP<br>3. 提出解决方案，做一些新的设计   |
| 对自己的要求<br>(做有价值的事情) | 了解流程<br>回答了解的问题<br>修复力所能及的 Bug                                                                                                                                                                                                                 | Review 自己负责领域的 PR<br>参与到功能开发和完善中<br>了解 sig 开发中的功能以及路线图      | 帮助项目和他人成长<br>了解 roadmap 和提升技术能力和影响力                         |

# Thanks

