

阿里云 × CLOUD NATIVE
COMPUTING FOUNDATION
云原生技术公开课

第 28 讲

理解容器运行时接口CRI

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CRI介绍

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CRI实现

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相关工具

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思考时间

CRI的由来

在CRI之前 (Kubernetes v1.5之前)

- Docker作为第一个容器运行时, Kubelet通过内嵌其中的dockershim操作Docker API来操作容器
- rkt作为一种容器运行时也合入了kubelet代码中
 - 进一步提高维护的复杂度
- hyber.sh加入社区后想成为第三个容器运行时

CRI的由来

kubernetes / kubernetes

Watch

3.1k

Unstar

60.9k

Fork

21.5k

<> Code

Issues 2,237

Pull requests 1,063

Actions

Projects 9

Security

Insights


Add a client/server implementation of the container runtime

#13768

New issue

Closed

brendandburns opened this issue on 10 Sep 2015 · 31 comments



brendandburns commented on 10 Sep 2015

Contributor + 🗨️ ⋮

Currently, any container runtime has to be linked into the kubelet. This makes experimentation difficult, and prevents users from landing an alternate container runtime without landing code in core kubernetes.

To facilitate experimentation and to enable user choice, we should add a client/server implementation of the container runtime interface.

This implementation will simply encode the requests, send them to a server where they will be decoded and sent into an instance of the container runtime interface.

However, this enables container runtime implementations to be built and maintained outside of the core kubernetes tree.

@dchen1107 @smarterclayton
@kubernetes/goog-node

Assignees

No one assigned

Labels

area/extensibility

priority/awaiting-more-evidence

sig/node

Projects

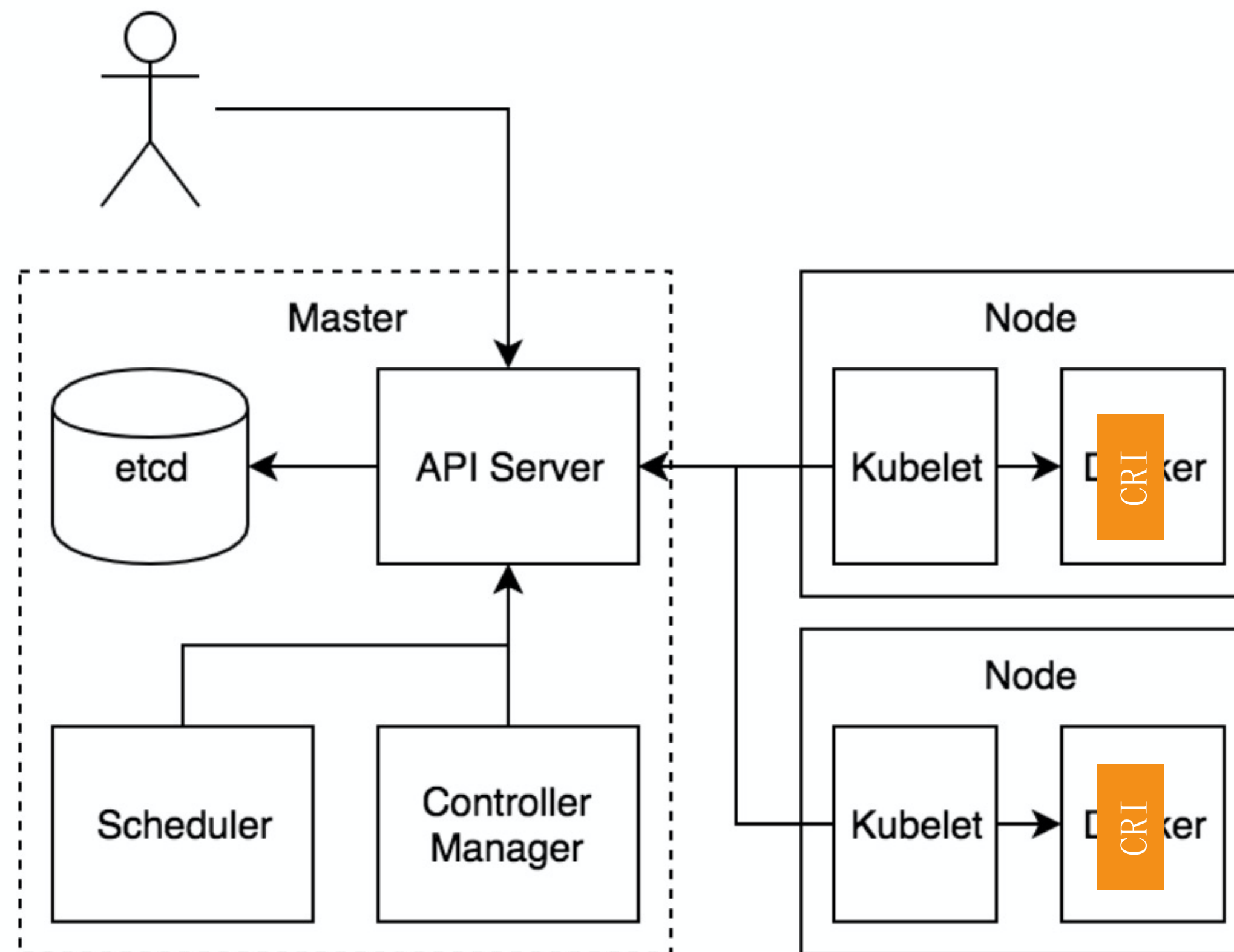
None yet

Milestone

next-candidate

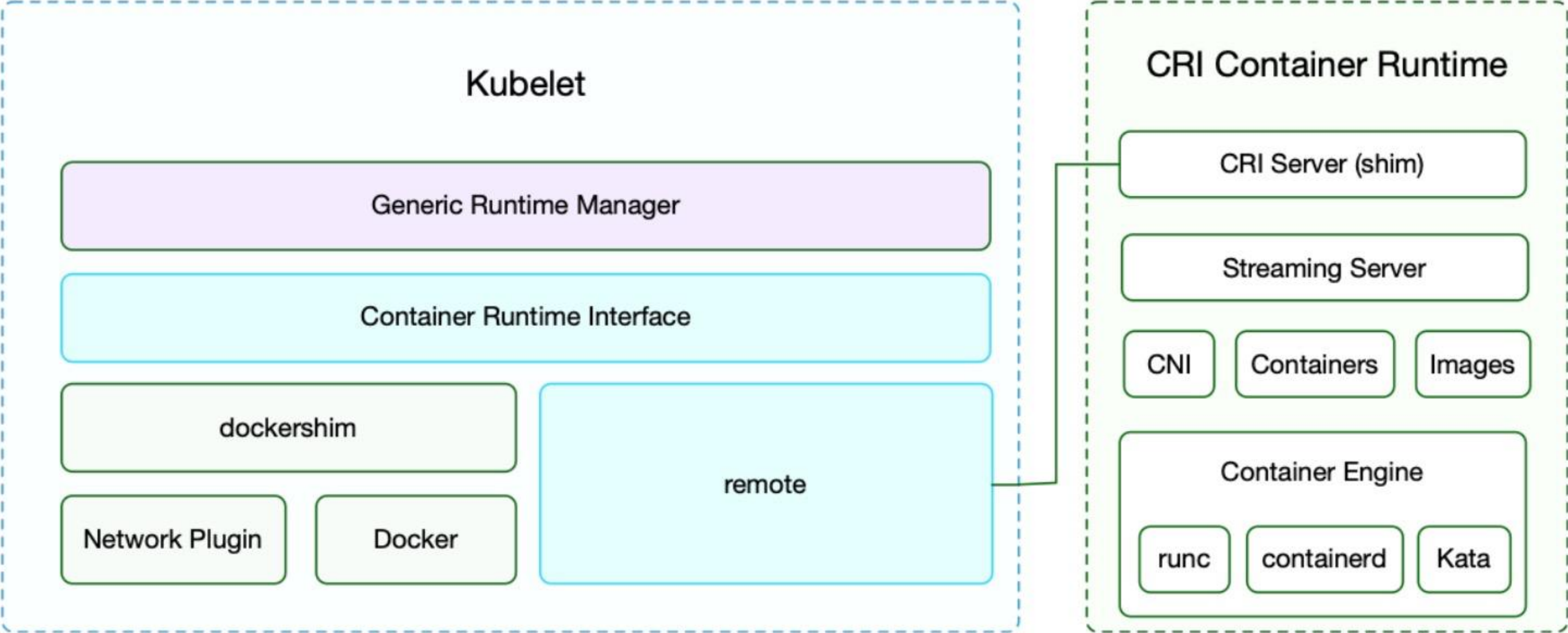
CRI的由来

- 抽象一套POD级别的容器接口，解耦Kubelet与容器运行时
- 定义通过gRPC协议通讯
 - gRPC在当时刚刚开源
 - gRPC性能优于http/REST模式



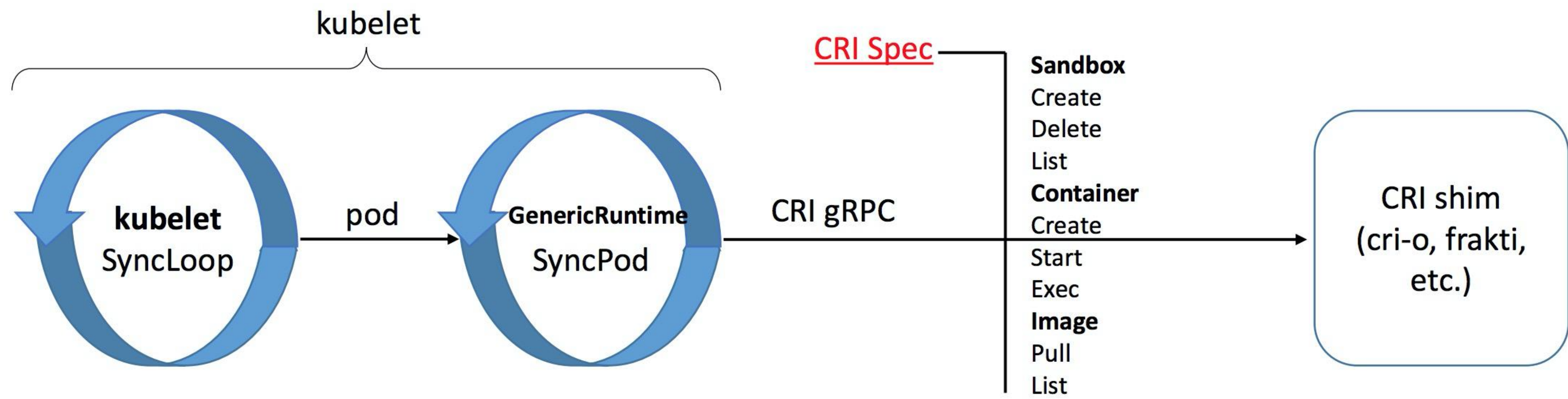


CRI的设计



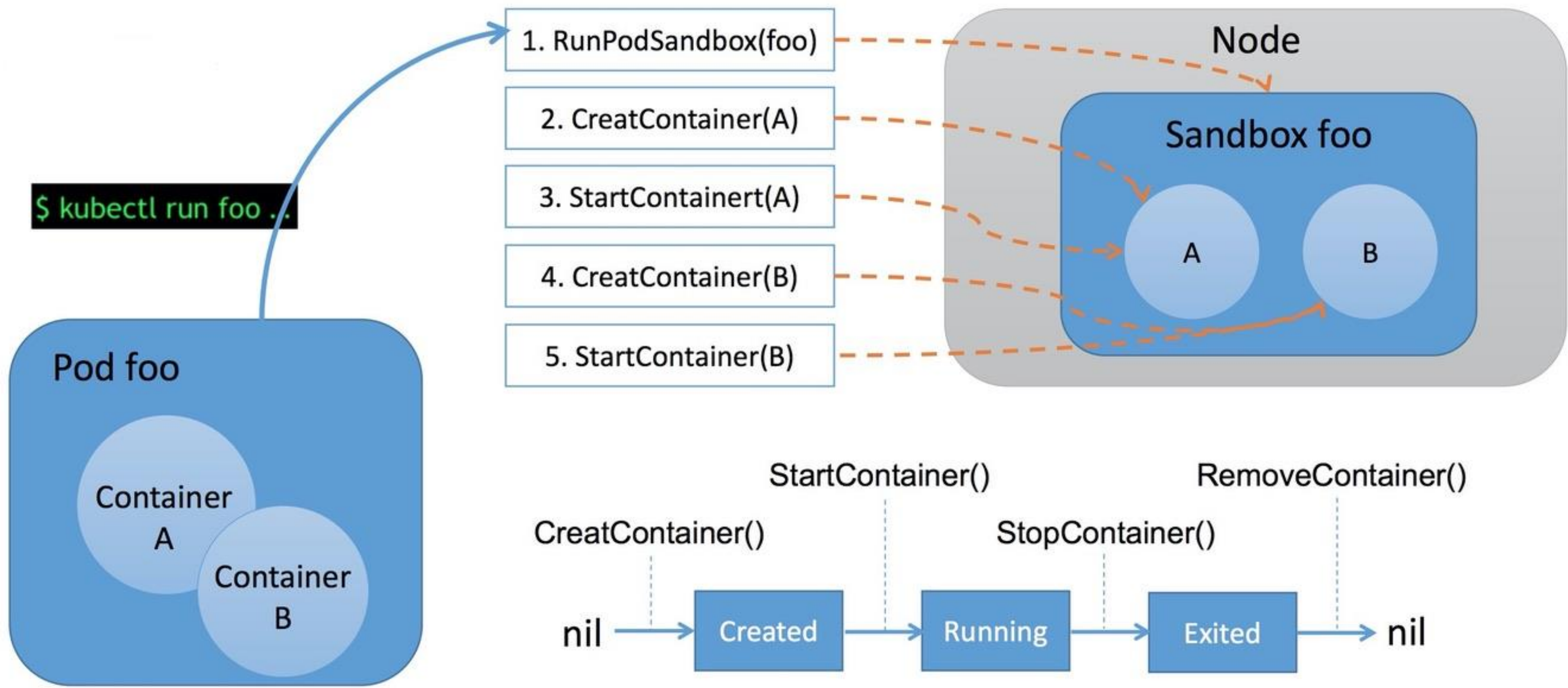
引入CRI之后，Kubelet的架构

CRI的设计

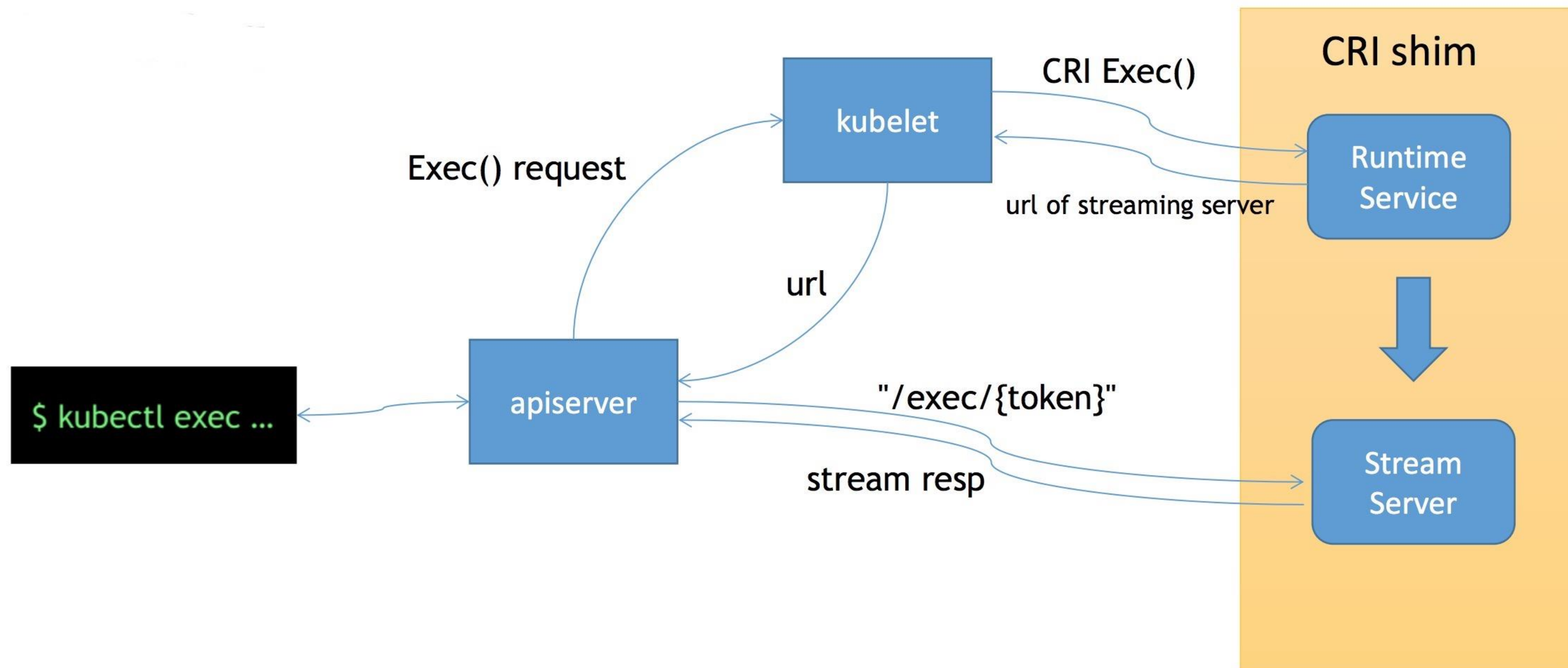


CRI描述了kubelet期望的容器运行时行为

通过CRI操作容器的生命周期



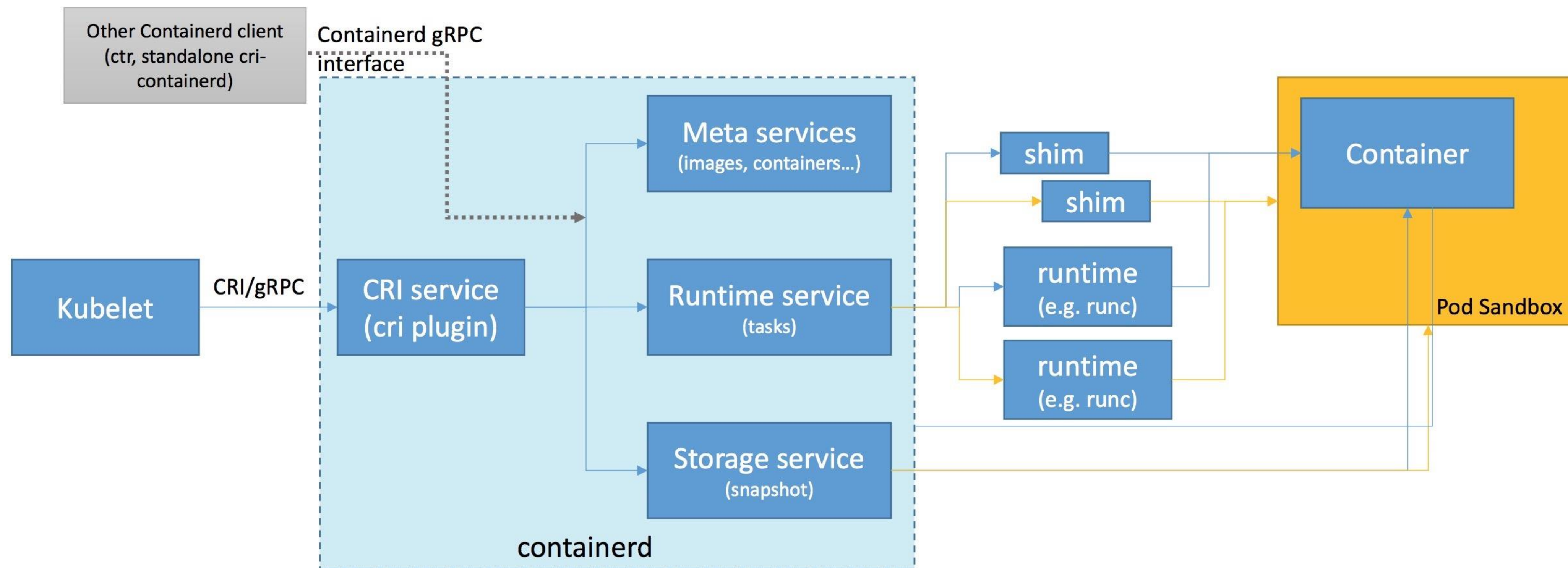
CRI streaming接口



CRI的实现

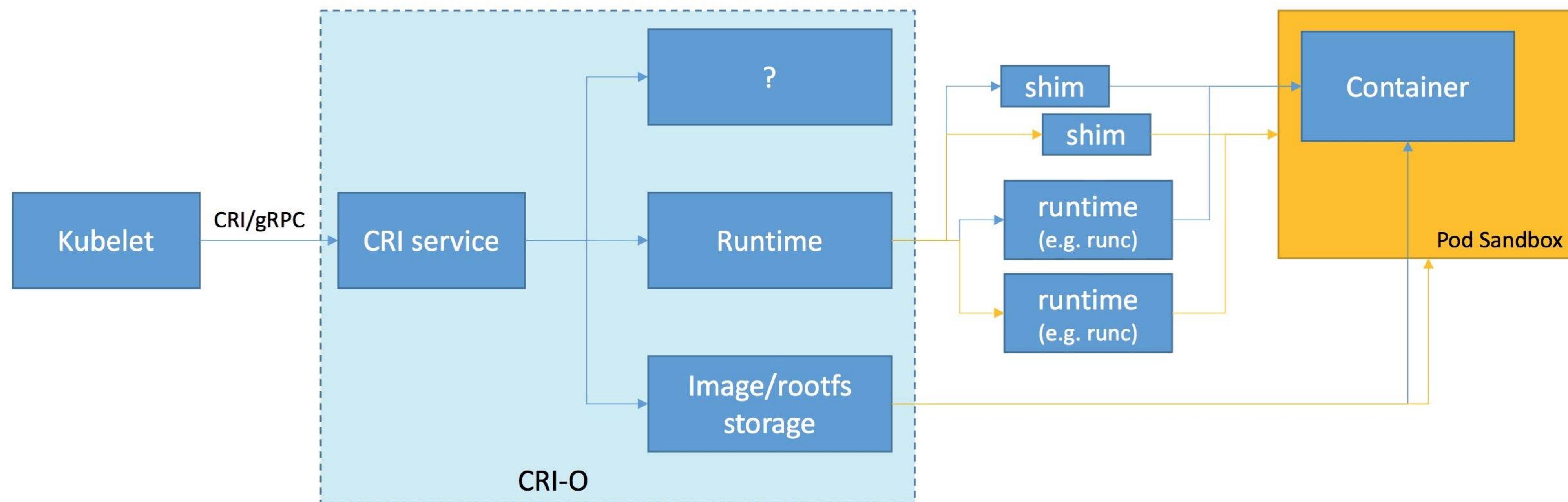
- CRI-containerd
- CRI-O
- PouchContainer @alibaba
- ...

CRI-containerd



基于containerd实现，由独立进程演进为插件

CRI-O



直接在OCI上包装容器接口、同时实现对镜像存储的管理



cri-tools

- crictl: 类docker的命令行工具, 帮助用户和开发者调试容器问题
- critest: 用于验证CRI接口的测试工具, 验证是否满足Kubelet要求
- 性能工具: 测试接口性能

项目链接: <https://github.com/kubernetes-sigs/cri-tools>



思考时间

- 目前CRI接口处于v1 alpha2版本，CRI规范能不能更完善？
- 如何通过annotation方式自定义runtime行为？

谢谢观看
THANK YOU



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