KubeCon

CloudNativeCon

Europe 2018

Kata Containers: Getting started with the Kata community

Contents

Project Overview

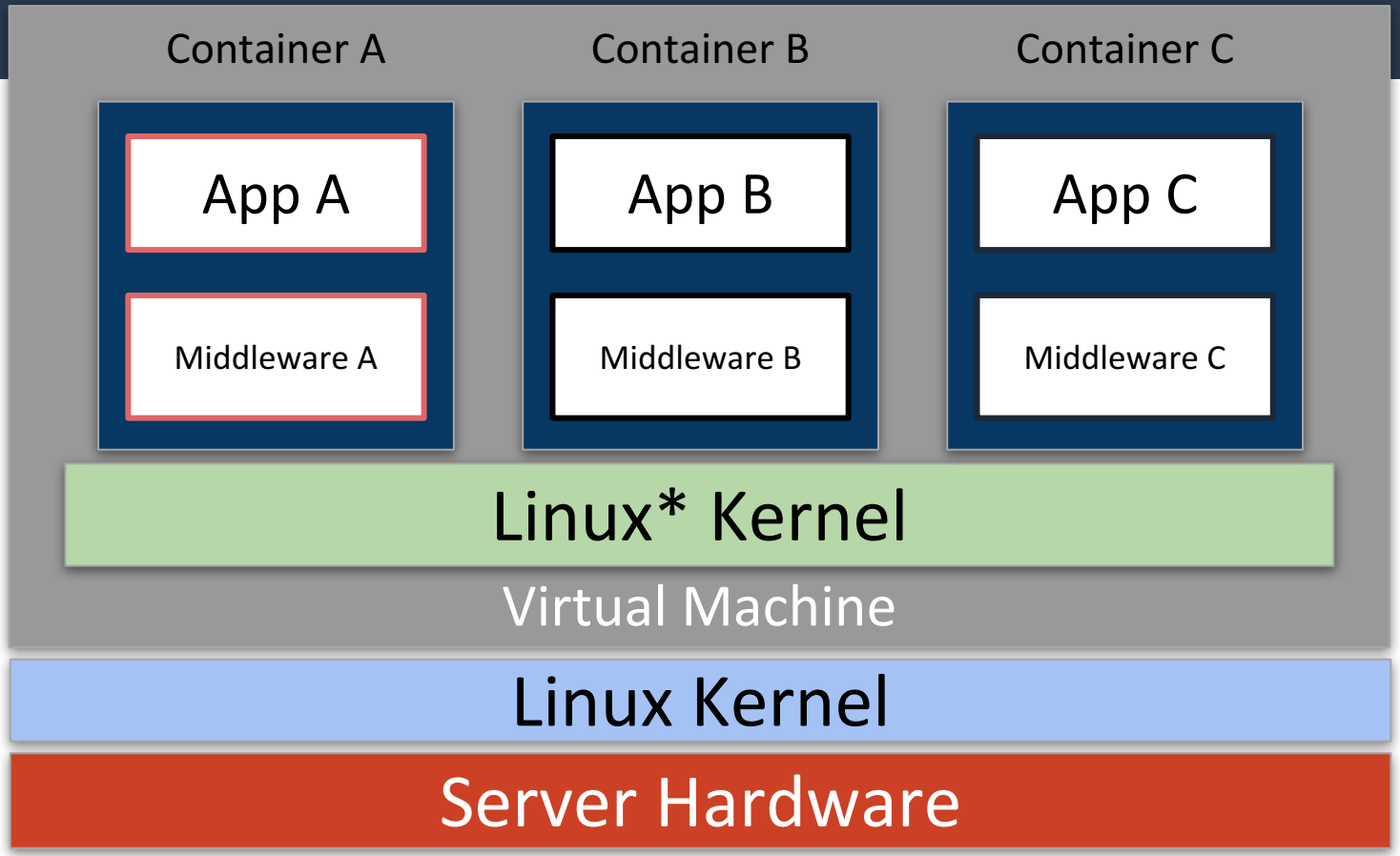
Status

Contributing

The speed of containers,
the security of VMs

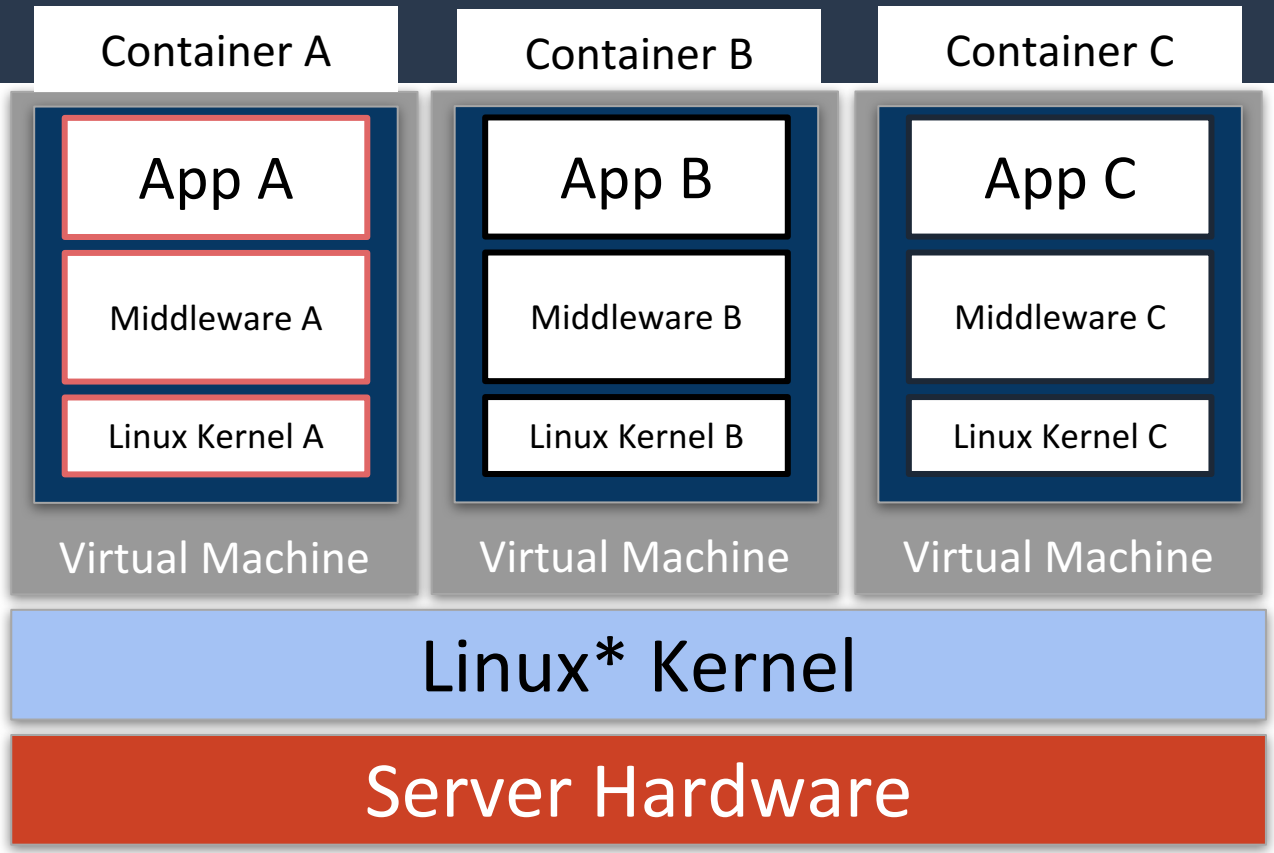
What’s the problem we’re trying to solve?

Traditional Containers



*Other names and brands may be claimed as the property of others.

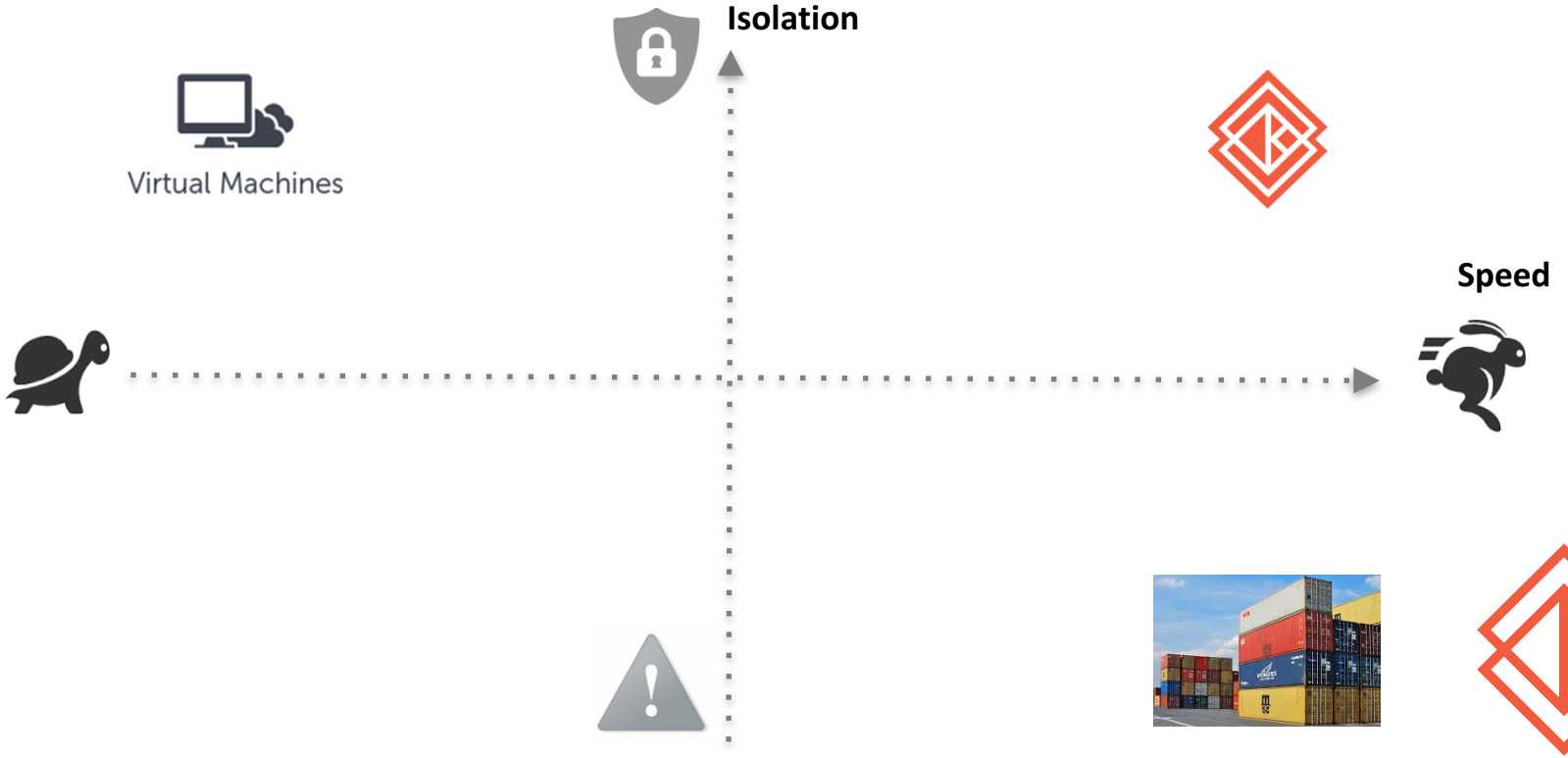
Kata Containers



- Each container/pod is hypervisor isolated
- Seamless integration with the container ecosystem and management layers

*Other names and brands may be claimed as the property of others.

Speed vs Security



History

- Hyper runV + Intel Clear Containers
- Virtualized containers to get security of VMs with container performance
- Donated code to the OpenStack Foundation for governance
- Open sourced current code base

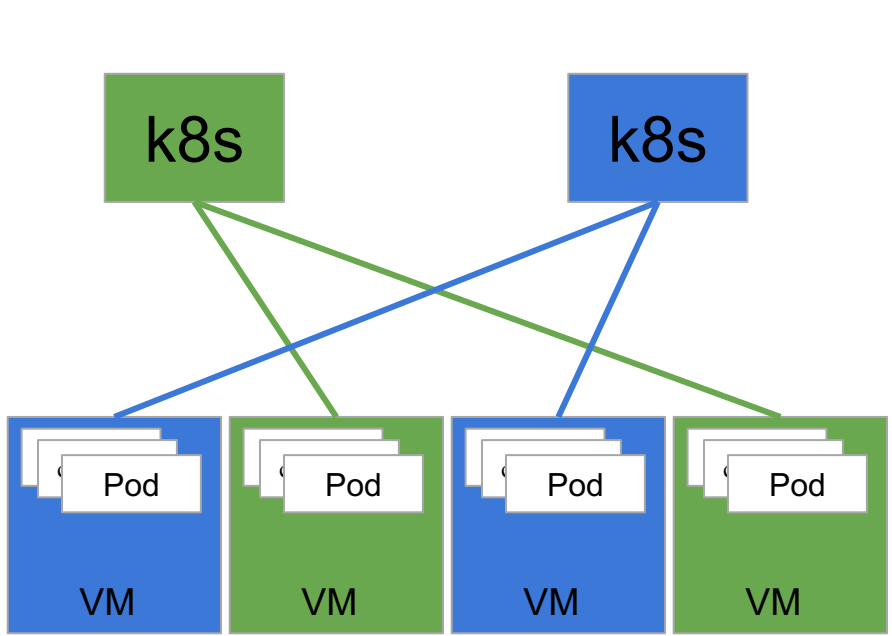
Technical Vision

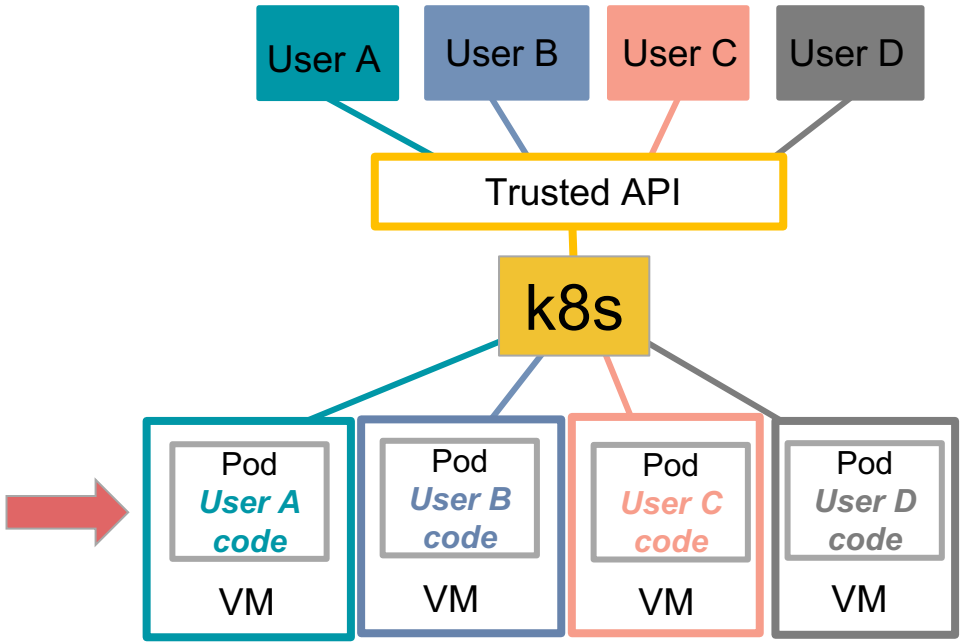
- Light and fast VM-based containers
- OCI compatible container runtime
- No container packaging changes
- Seamless integration with Kubernetes (CRI) and Docker
- CRI compatible APIs
- Seamless integration with all major networking plugins
- Support multiple architectures
- Support multiple hypervisors

Kata Containers sweet spots

- Regulated and sensitive production environments
- Mixed workloads production environments
- Multi tenants container clusters
- Bare metal infrastructure
- Legacy workloads with kernel-dependent features

Multi-tenant Kubernetes*





IaaS

SaaS

*Other names and brands may be claimed as the property of others.

Kata Components

- Agent
- Proxy
- Shim
- Kernel
- QEMU package
- Runtime

I/O

OCI cmd/spec

Shim

Shim

Runtime

gRPC

gRPC

Proxy

gRPC over Yamux

Virtual Machine

Container Command

Container Exec

Container namespaces

Agent

Kernel

Hypervisor

Hypervisor serial interface

*Other names and brands may be claimed as the property of others.

I/O

OCI cmd/spec

Shim

Shim

Runtime

gRPC

gRPC

Virtual Machine

Container Command

Container Exec

Container namespaces

Agent

Kernel

Hypervisor

Hypervisor VSOCK socket

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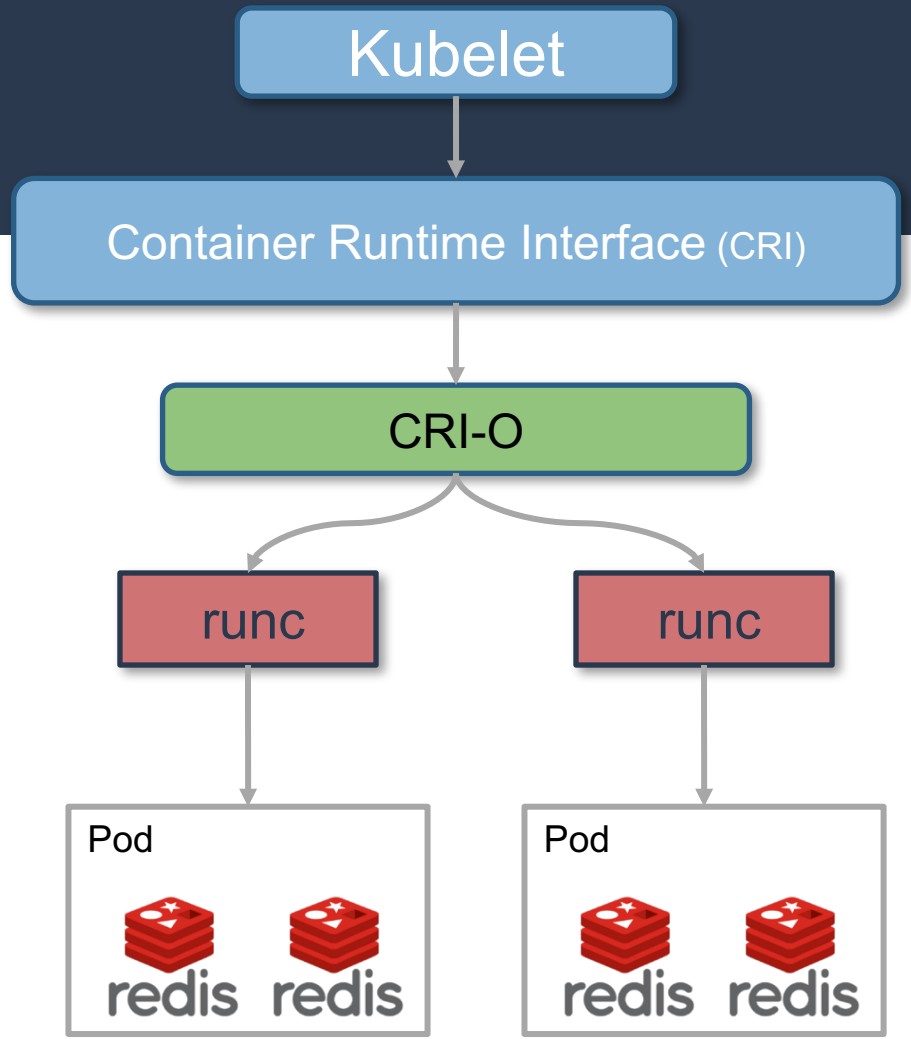
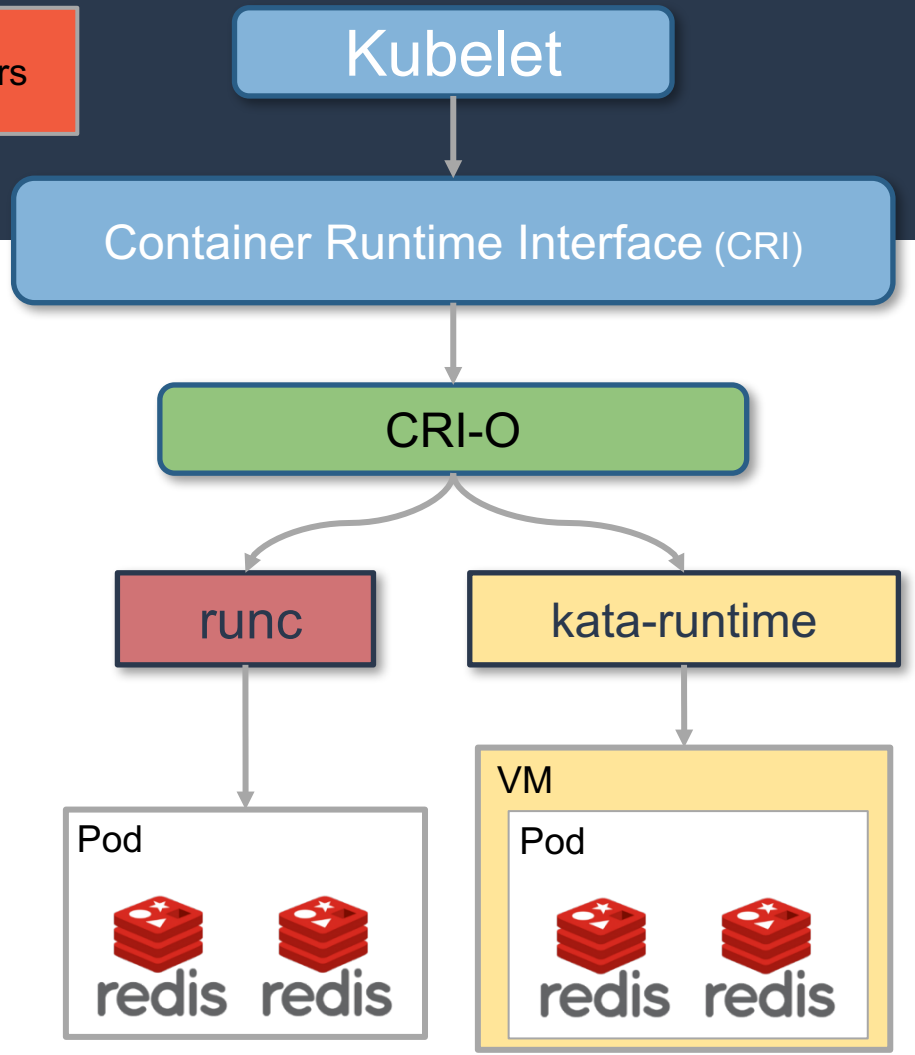
CRI-O and regular containers



CRI-O and Kata Containers



Project Status

May 22: 1.0.0 release

- Clear Containers and runV merged into single implementation
- Has surpassed capabilities of CC 3.0; close to runV
- CRI integration: Frakti, CRI-O, containerd-cri
- Full documentation (including upgrade paths for existing runV and CC users)

Give Kata a Try

- Dev Guide
  - github.com/kata-containers/documentation

You can contribute

- Contributor Guide
  - github.com/kata-containers/community
- Things to know:
  - Project written in Go
  - Apache 2.0 license (same as K8s)
  - Use Signed-off-by from the Linux kernel community

Contribution Areas

- “Help wanted” and “Good first issue” labels in GitHub
- Tests
  - Jump into the /test repo
- Docs
  - Reviewers, editors

Contribution Areas

- Feature requests
  - What's your use case?
  - File a GitHub issue

Contribution Areas

- Community engagement
  - Spread the word
    - Meetup talks, host a Kata speaker at your Meetup
    - Demo Kata for your organization
  - Content
    - Blogs, demos

Contribution Areas

- Future release planning at the OpenStack Summit Vancouver, May 21-24
- Organizing for 1.1.0 and future features
- Community development

openstack.org/summit/vancouver-2018

You can contribute

- Communication
  - GitHub: github.com/kata-containers
  - IRC freenode: #kata-dev #kata-general
  - Slack: bit.ly/KataSlack
  - Mailing List: lists.katacontainers.io
  - Katacontainers.io

Join Us!

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kata containers