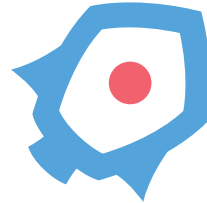# rkt Introduction

What is rkt?

Iago López Galeiras, Kinvolk
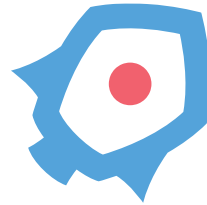Alban Créquy, Kinvolk

About us

- Living in Berlin
- Kinvolk co-founders
- Worked a lot on rkt and rktlet
- Currently maintainers of rkt and rktlet

```
* github: https://github.com/iaguis
          https://github.com/alban
* twitter: @iaguis
           @albcr
```
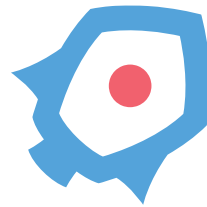
Plan

- What is rkt?
- How does rkt work? (rkt internals)
- What's new?
- What's missing?

a modern, secure, composable container runtime

an implementation of appc (image format,
execution environment)

appc

a standard application container
open specification
associated tooling

appc

- github.com/appc/spec ("appc spec")
- github.com/appc/acserver
- github.com/appc/docker2aci
- github.com/~~appc/~~containernetworking/cni
- github.com/appc/...

appc spec in a nutshell

- Image Format (ACI)
  - what does an application consist of?
- Image Discovery
  - how can an image be located?
- Pods
  - how can applications be grouped and run?
- Executor (runtime)
  - what does the execution environment look like?
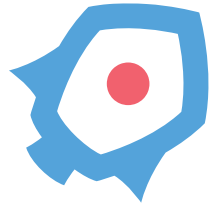
simple CLI tool
golang + Linux
self-contained
init system/distro agnostic

simple CLI tool

no (mandatory) daemon
apps run directly under spawning process

simple CLI tool

```
bash/systemd/runit
 └── rkt (stage0)
      └── pod (stage1)
           ├── app1 (stage2)
           └── app2 (stage2)
```

- stage0
  - rkt binary (CLI)
  - discover, fetch, manage application images
  - set up pod filesystems
- stage1
  - exec environment for pods
  - process lifecycle management
  - resource constraints
- stage2
  - actual application

stage1 (swappable)

- default implementation
  - Linux namespaces + cgroups for isolation
  - based on `systemd-nspawn` + `systemd`
- kvm implementation
  - hardware virtualization for isolation
  - based on `qemu` + `systemd`
- fly
  - no isolation
  - just a `chroot`
- others

rkt: recent developments

- Share host IPC namespace
- Fixes to make rktlet possible
  - Bugfixes, especially within the rkt experiments
  - Integration between `RKT_EXPERIMENT_ATTACH` and k8s
- Switched default kvm flavor from lkvm to qemu
- Bugfixes

rkt: recent developments (2)

- rkt documentation

Filters ▾   🔍 el:kind/documentation closed:>2017-11-01   **Labels**   **Milestones**

❌ **Clear current search query, filters, and sorts**

☐   ⊘ 0 Open   ✔ **31 Closed**   Author ▾   Labels ▾

rkt: what's missing?

- Update CNI version to 0.6.0
- Stabilize rkt experiments and remove `RKT_EXPERIMENT_*` env variables
- Experiment with using `runc` to set up stage2 runtime
- Possible native OCI support
- General bugfixing :)

Demo

rktlet k8s cluster on kube-spawn

kin
volk

Thank You!

Questions?