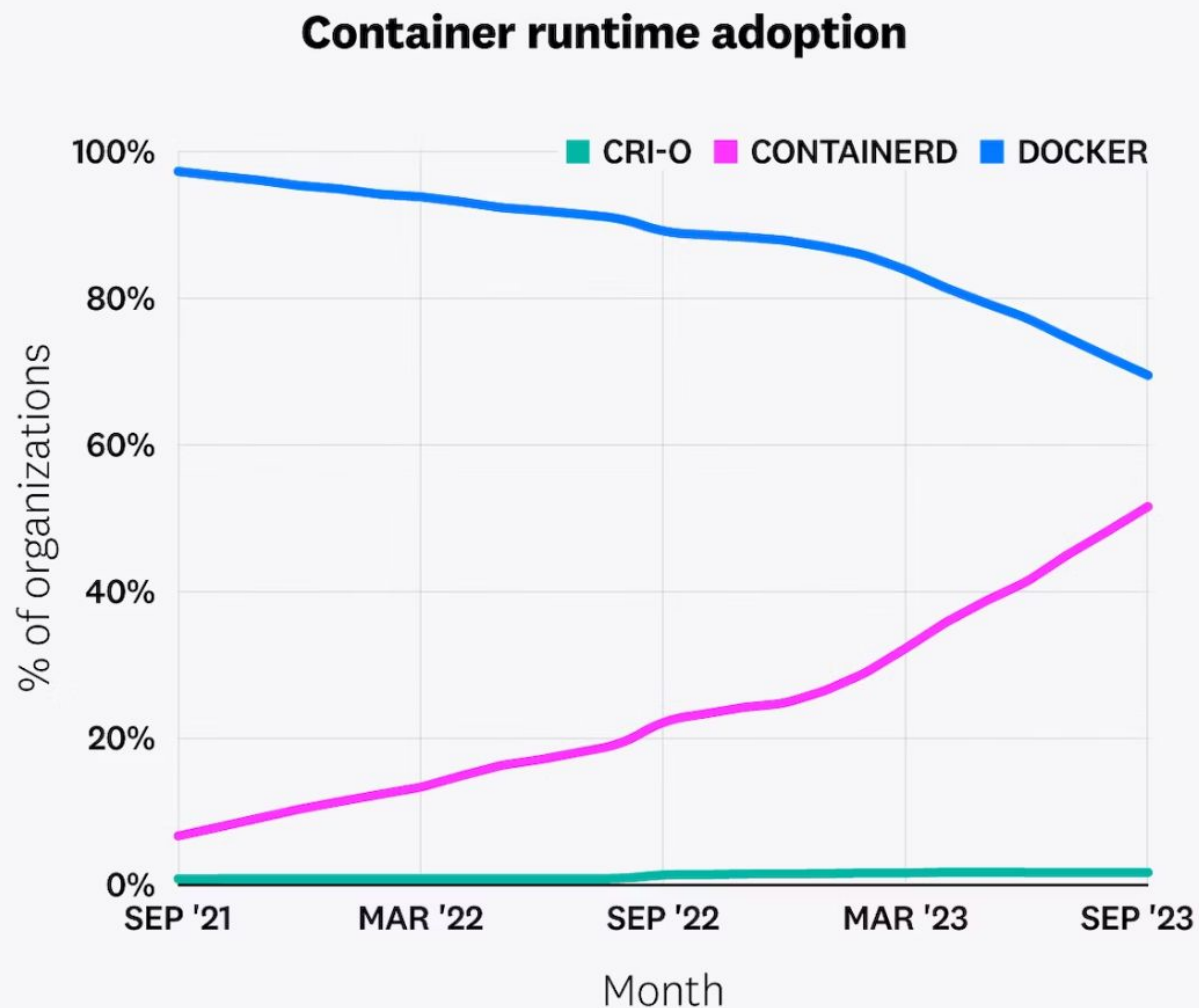

What's new in containerd 2.0

*Phil Estes, Principal Engineer, AWS
Containerd project core maintainer*

Containerd usage growth

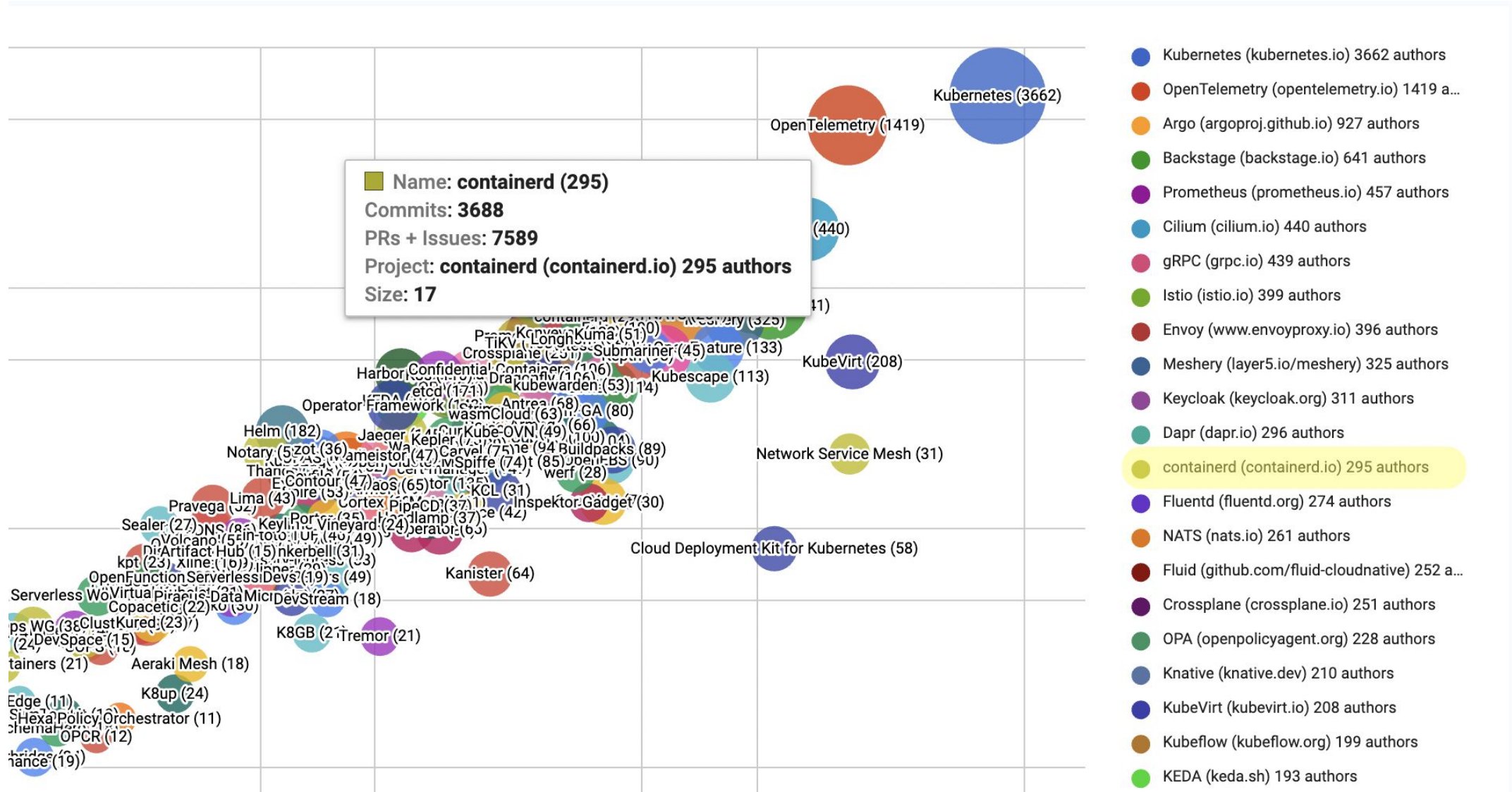


**CONTAINERD
ADOPTION HAS
MORE THAN
DOUBLED IN THE
LAST YEAR**

Source: Datadog

<https://www.datadoghq.com/container-report/>

Community growth



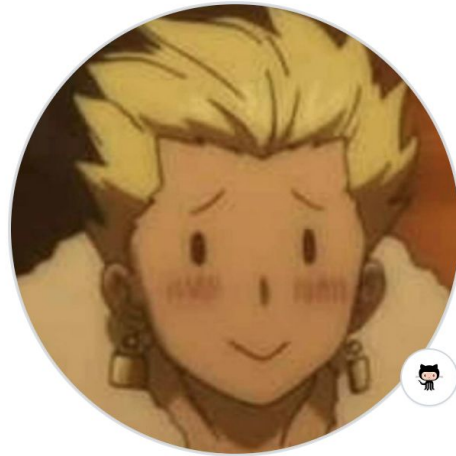
New maintainers



Laura Brehm
laurazard · she/her



kiashok · she/her



Iceber Gu
Iceber



Krisztian Litkey
klihub



Henry Wang
henry118



Ruiwen Zhao
ruiwen-zhao



Akhil Mohan
akhilem

containerd adoption in K8s distros

- Alibaba Cloud Container Service for Kubernetes
- Amazon Elastic Kubernetes Service
- Azure Kubernetes Service
- Google Kubernetes Engine
- Huawei Cloud Cloud Container Engine
- IBM Cloud Kubernetes Service
- Rancher K3s
- VMware Tanzu
- Volcengine Kubernetes Engine



RKE2



IBM Cloud



Google Cloud



RANCHER



VMware Tanzu



HUAWEI CLOUD

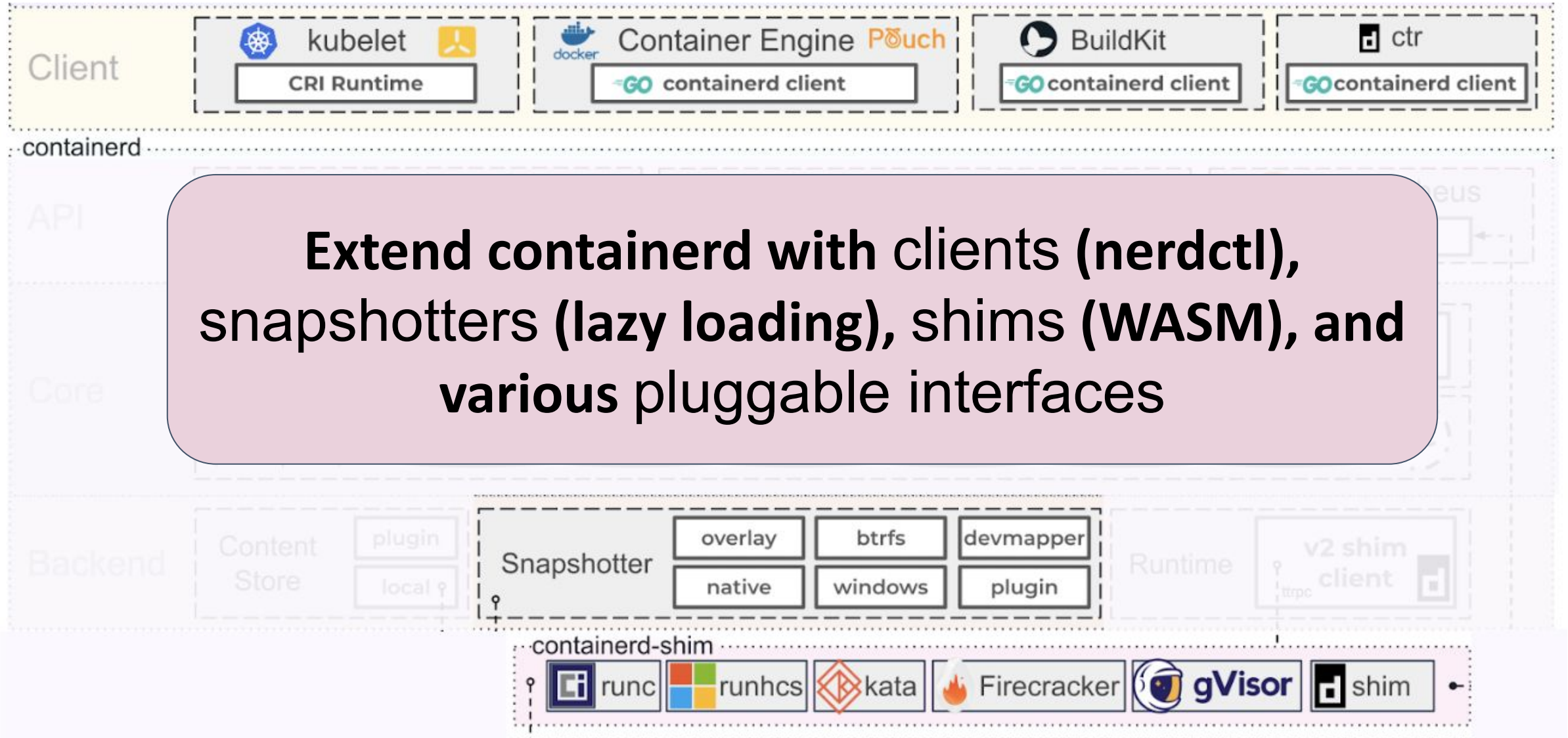


火山引擎



K3S

Built for Extensibility



Containerd Clients

ctr

command-line dev tool, part of core containerd project

nerdctl

non-core containerd project, Docker-like CLI

added features for lazy-loaded, image encryption, signing

crictl

a CLI for the CRI API; a Kubernetes project (cri-tools)

docker(moby)

further integration with containerd image store

allows use of snapshotters, containerd features

- **developer platforms using containerd** -

- **Colima** - container runtimes on macOS (and Linux) with minimal setup
- **Finch** - Docker-like CLI for MacOS
- **Rancher Desktop** - Docker-like experience on MacOS, Windows, and Linux

Snapshotters

Extendable via **proxy plugins**

Built In/Core Snapshotters

- overlayfs (Linux)
- devmapper (Linux)
- btrfs (Linux)
- native (Linux/Unix/Windows)
- blockfile (**New!** Linux/Unix)
- zfs (Linux/Unix)
- LCOW (Windows)
- Windows (Windows)

Remote Snapshotters

- stargz (Filesystem, non-core project)
- overlaybd (Block, non-core project)
- nydus (Filesystem, non-core project)
- SOCI (Filesystem, OSS vendor project)
- GKE image streaming (Filesystem, vendor project)

Runtimes & Shims

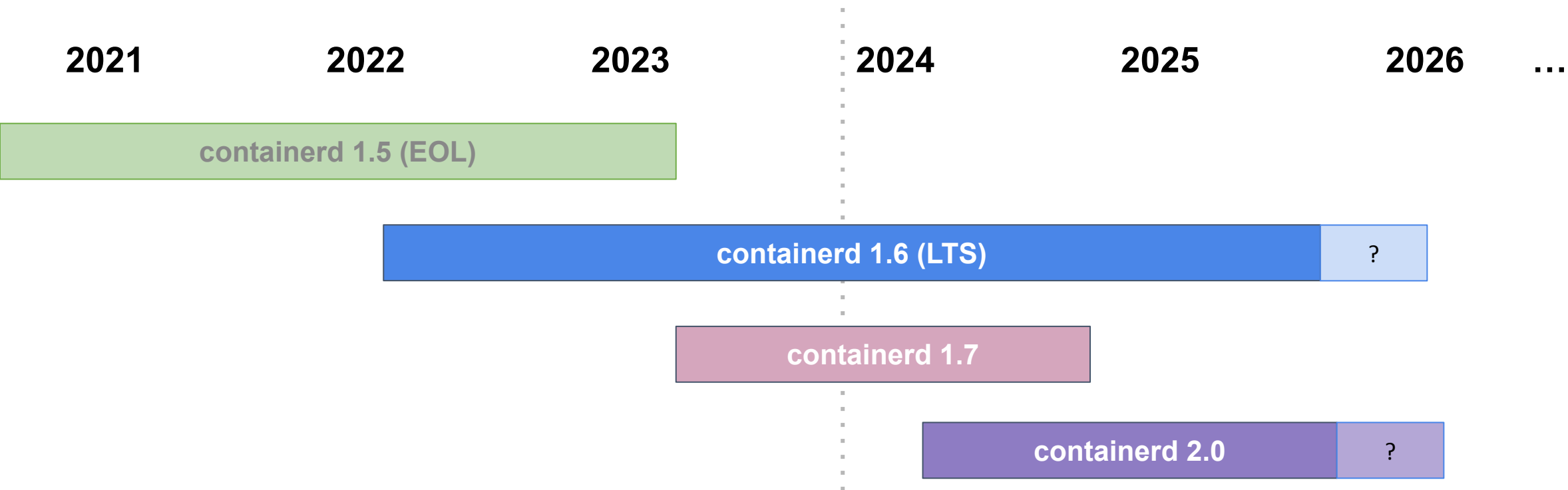
OCI Runtimes

- **runc** - [default](#) Linux OCI runtime
- **crun** - alternative Linux OCI runtime in C
- **youki** - alternative Linux OCI runtime in Rust
- **runj** - experimental FreeBSD OCI runtime

External Shim Projects

- **hcsshim/runhcs** - shim and OCI runtime for Windows
- **runwasi** - (**New!** Non-core project) - WASM shim
- **Kata Containers** - hypervisor-based isolation for pods
- **gVisor/runsc** - independent kernel for isolation
- **firecracker-containerd** - hypervisor-based isolation for containers based on Firecracker
- **inclavare-containers** - shim for hardware-assisted Trusted Execution Environment (TEE)
- **kuasar** - shim supporting multiple sandbox techniques
- **embedshim** - An eBPF-based container task runtime manager

Supported Releases



Release	Status	Start	End of Life
1.5	End of Life	May 3, 2021	February 28, 2023
1.6	LTS	February 15, 2022	max(February 15, 2025 or next LTS + 6 months)
1.7	Active	March 10, 2023	max(March 10, 2024 or release of 2.0 + 6 months)
2.0	Next	TBD	TBD

containerd v1.6 - first LTS!

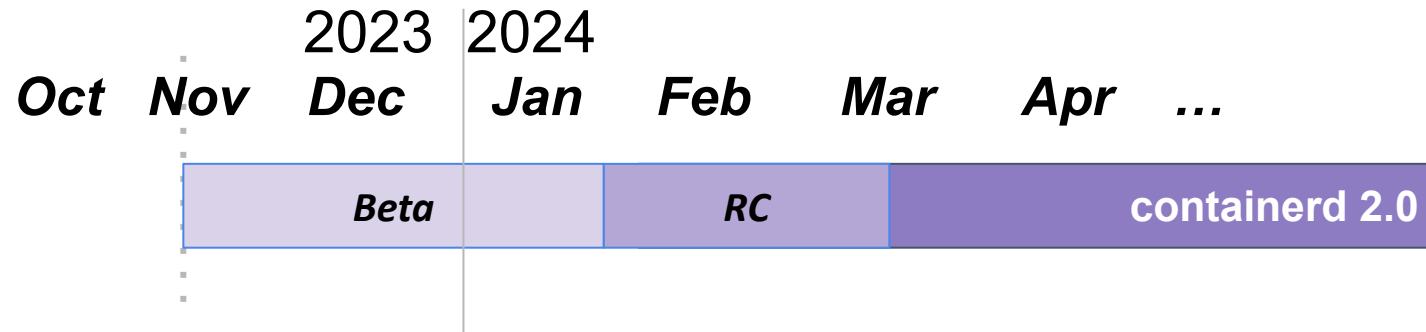


- Supported at least until **Feb 2025**
- Project has **expanded scope** for backports to LTS line:
 - updating library dependencies
 - stay with supported toolchain versions (Go releases)
 - keeping compatibility with current Kubernetes versions
- Will move to Active release with stricter backport criteria ~ **Aug 2024**

containerd v1.7 - last 1.x release

- **Sandbox Service and API (New! - Experimental)**
 - Shim-level API to support groups of containers
 - Preview CRI Plugin v2 - `ENABLE_CRI_SANDBOXES=1`
- **Node Resource Interface (Updated - Experimental)**
 - Extensions for OCI-compatible container runtimes
 - TTRPC
- **Transfer Service (New! - Experimental)**
 - Support to transfer artifact objects between any source and destination
- **CRI User-Namespace Support (New! - Experimental)**
- **gRPC Shim Support (New! - Experimental)**

v2.0 - Release Plan



Component	Initial Release	Target Supported Release
Sandbox Service	containerd v1.7	containerd v2.0
Sandbox CRI Server	containerd v1.7	containerd v2.0
Transfer Service	containerd v1.7	containerd v2.0
NRI in CRI Support	containerd v1.7	containerd v2.0
gRPC Shim	containerd v1.7	containerd v2.0
CRI Runtime Specific Snapshotter	containerd v1.7	containerd v2.0
CRI Support for User Namespaces	containerd v1.7	containerd v2.0

v2.0 - Removed Features



Component	Deprecation release	Target release for removal	Recommendation
Runtime V1 API and implementation (<code>io.containerd.runtime.v1.linux</code>)	containerd v1.4	containerd v2.0	Use <code>io.containerd.runc.v2</code>
Runc V1 implementation of Runtime V2 (<code>io.containerd.runc.v1</code>)	containerd v1.4	containerd v2.0	Use <code>io.containerd.runc.v2</code>
<code>config.toml version = 1</code>	containerd v1.5	containerd v2.0	Use <code>config.toml version = 2</code>
Built-in <code>aufs</code> snapshotter	containerd v1.5	containerd v2.0	Use <code>overlayfs</code> snapshotter
Container label <code>containerd.io/restart.logpath</code>	containerd v1.5	containerd v2.0	Use <code>containerd.io/restart.loguri</code> label
<code>cri-containerd-*.tar.gz</code> release bundles	containerd v1.6	containerd v2.0	Use <code>containerd-*.tar.gz</code> bundles
Pulling Schema 1 images (<code>application/vnd.docker.distribution.manifest.v1+json</code>)	containerd v1.7	containerd v2.0	Use Schema 2 or OCI images
CRI <code>v1alpha2</code>	containerd v1.7	containerd v2.0	Use CRI <code>v1</code>
Legacy CRI implementation of podsandbox support	containerd v2.0	containerd v2.1	Disabled by default in 2.0 in favor of core sandboxed CRI plugin (use <code>DISABLE_CRI_SANDBOXES=1</code> to fallback to prior CRI podsandbox implementation)

Future & In-Development

- **Transfer Service in CRI (in development)**
 - Credential Management
 - Image Validation
- **Shim Plugins (in development)**
- **Higher level image service**
 - Replace CRI image cache
 - Simplify clients such as nerdctl and Moby
- **Higher level container service**
 - Simpler interface for starting containers
 - Use of streaming service for IO through the API

Getting involved

- [#containerd](#) and [#containerd-dev](#) channel on
 - CNCF Slack (<https://slack.cncf.io>)
- **Community Meeting on the 2nd and 4th Thursday of every month**
 - See CNCF Calendar for your timezone (<https://cncf.io/calendar>)
- Build something in the ecosystem!
- Discussion, issues and pull requests welcome!
 - <https://github.com/containerd/containerd>