



podman

SnowCamp 2024

Florent Benoit

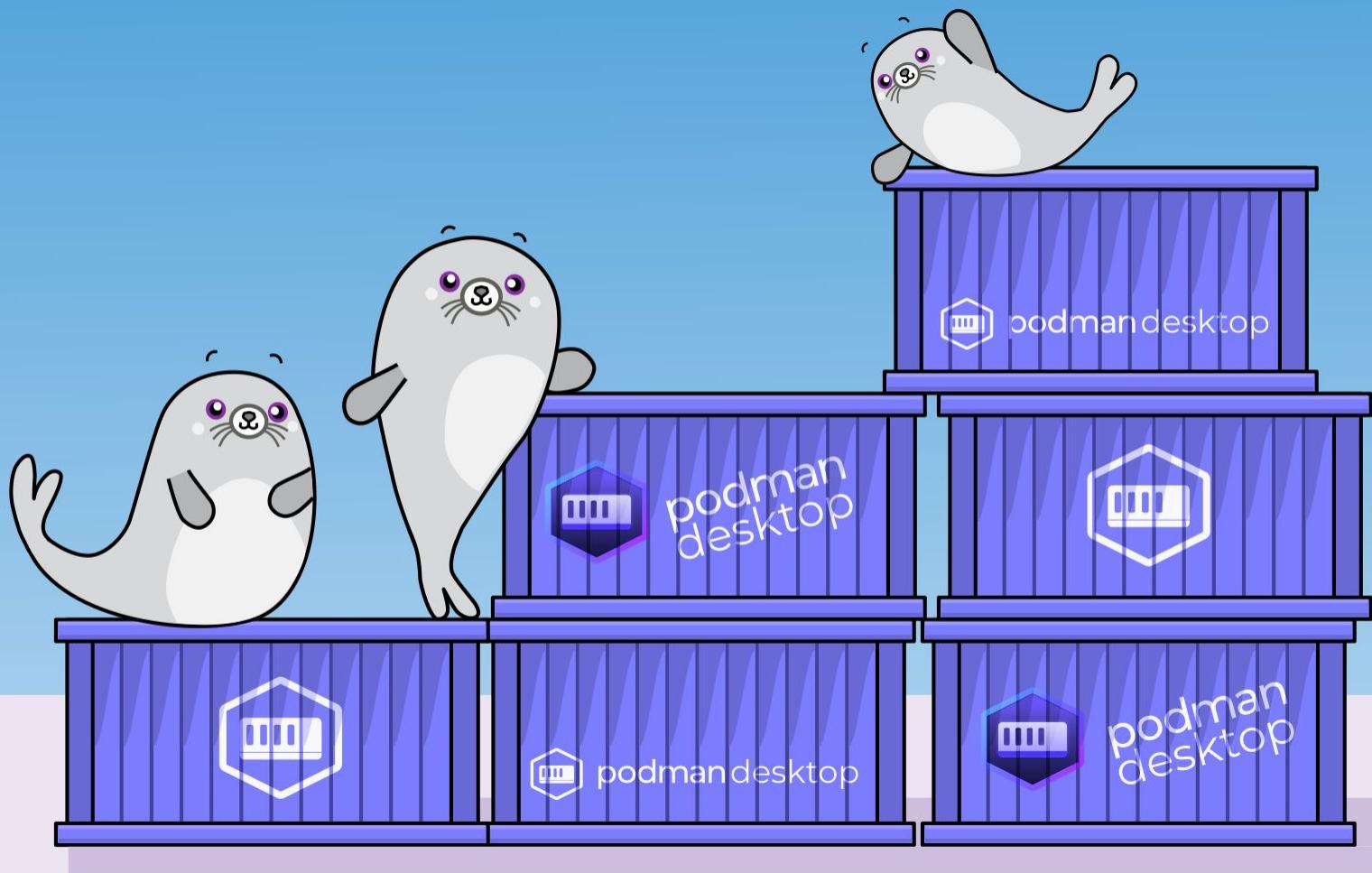
@florentbenoit

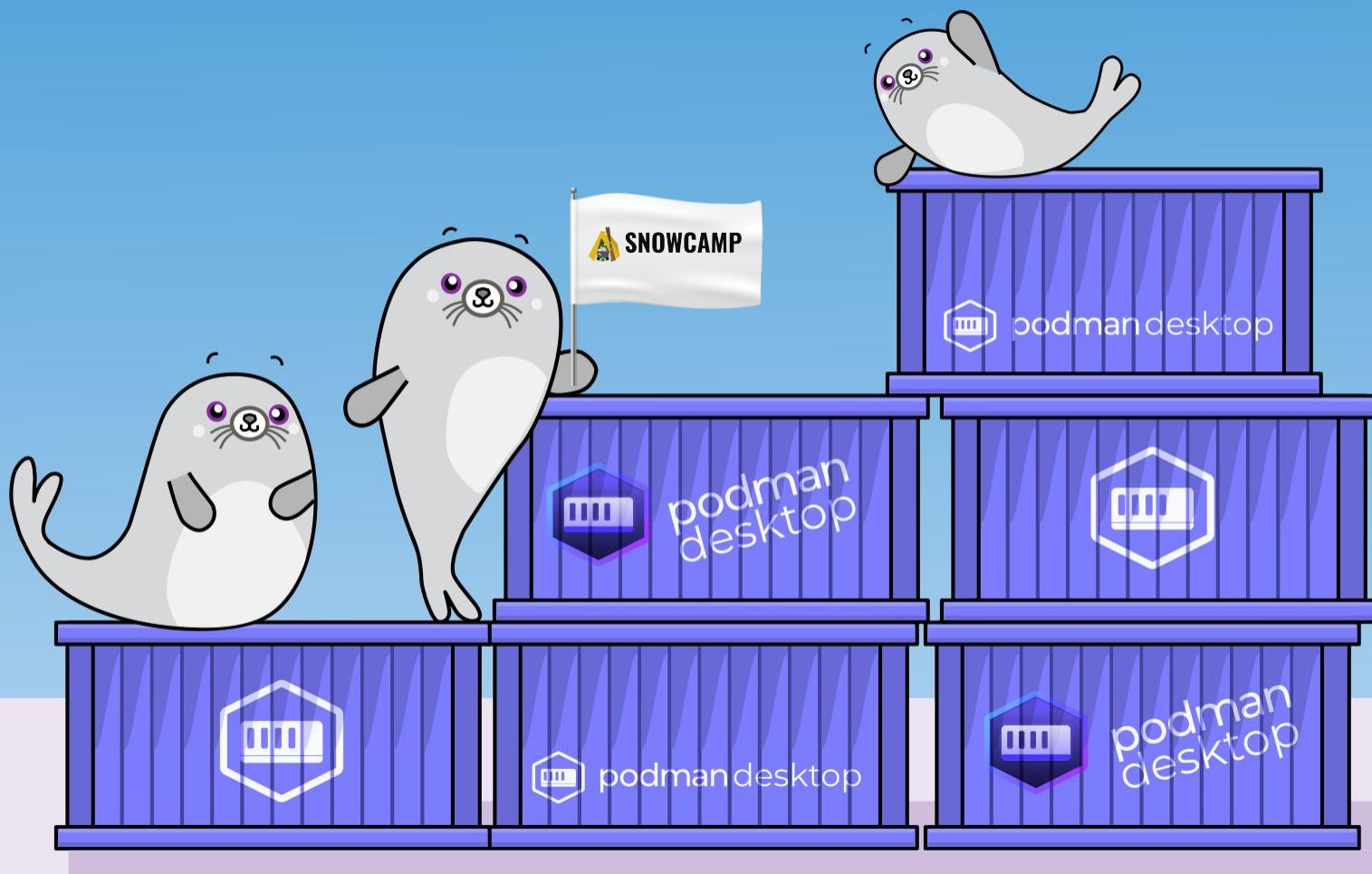
florent.benoit@mastodon.social



@Podman_io #podman #PodmanDesktop

What's Podman?





What is Podman?

A seamless way to work with containers (& Kubernetes!)



Fast and light

Daemonless, using the fastest technologies for a snappy experience.



Secure

Rootless containers allow you to contain privileges without compromising functionality.



Open

Podman is open source first and won't lock you in. Podman Desktop even supports Docker as an engine!



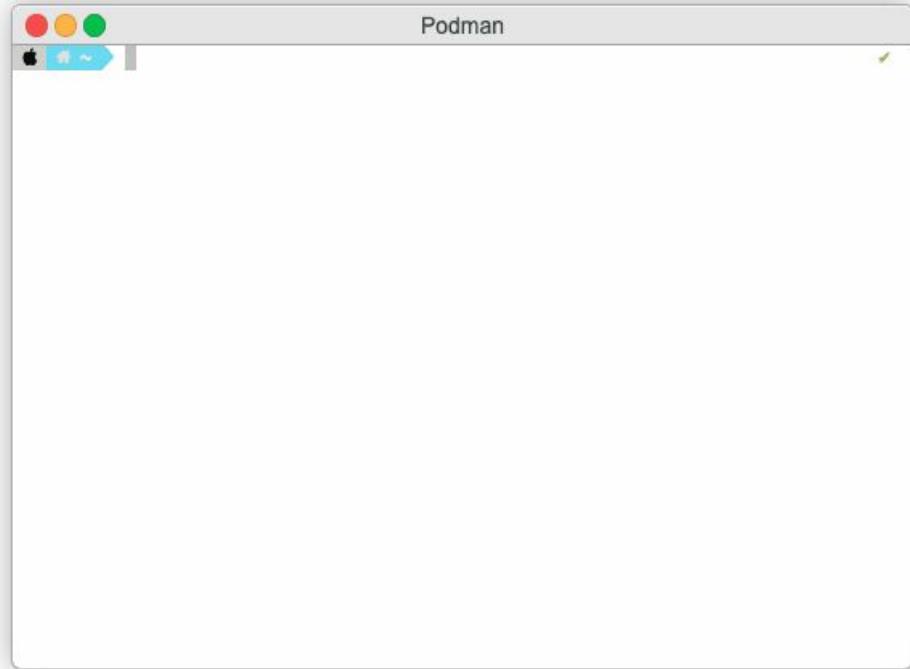
Compatible

Compatible with other OCI compliant container formats including Docker, as well as docker-compose files.

Podman in Action

It's easy to get started with Podman to manage containers and container images!

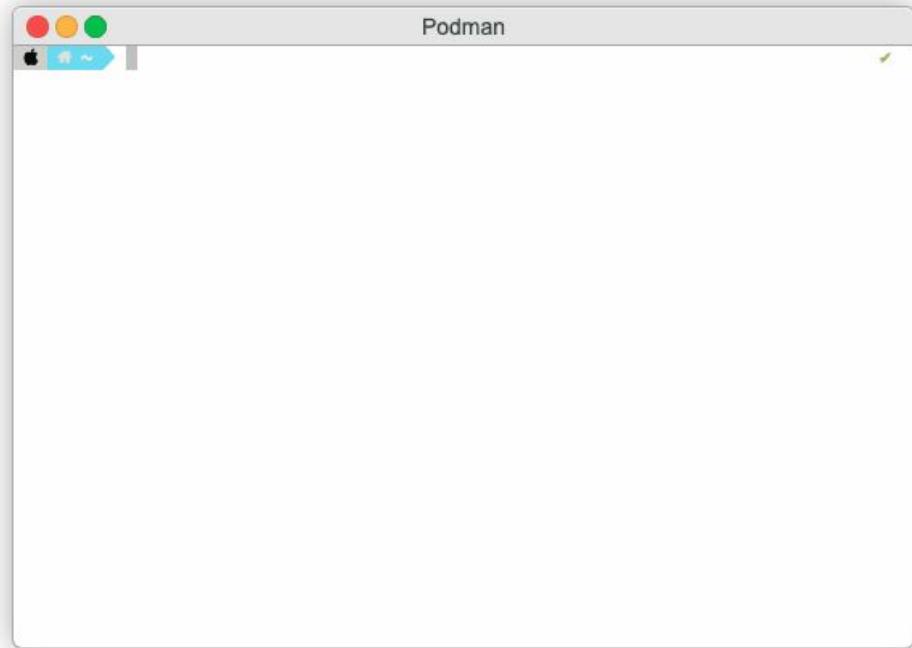
- ▶ Pulling, building, pushing images
- ▶ Running containers & debugging
- ▶ Working with Kubernetes
- ▶ & much more!



Podman in Action: **Images**

Container Images: Lightweight and isolated packages that encapsulate an application & its dependencies.

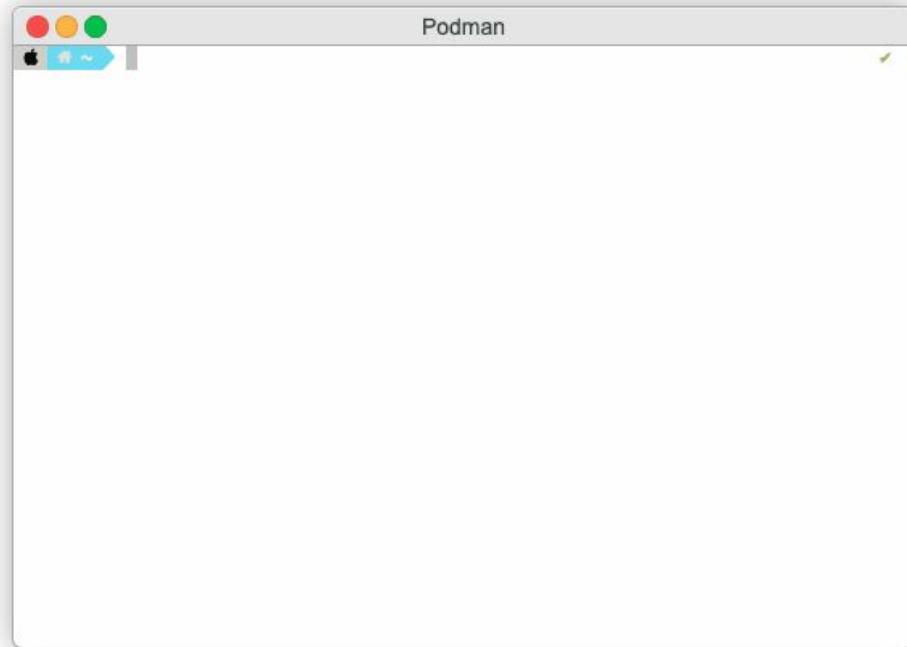
- ▶ podman search <image>
- ▶ podman pull <image>
- ▶ podman images
- ▶ podman build .
- ▶ podman push <image>



Podman in Action: **Containers**

Containers: Running instance of a container image, sharing host OS kernel and is ephemeral.

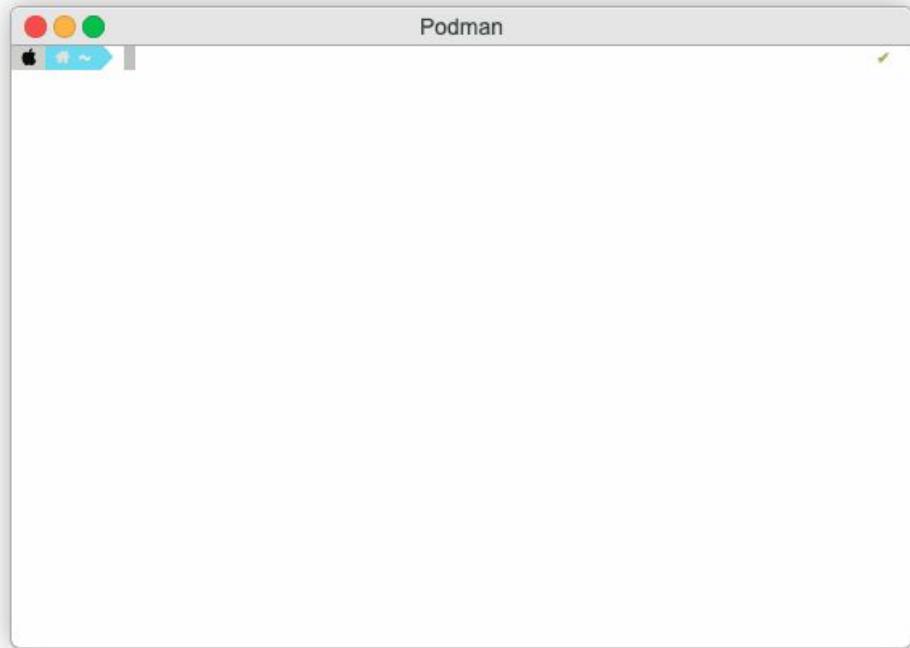
- ▶ podman run <image>
- ▶ podman ps
- ▶ podman attach
- ▶ podman logs <container>



Podman in Action: **Pods**

Pods: Group of containers that run together and share the same storage & network as a single unit.

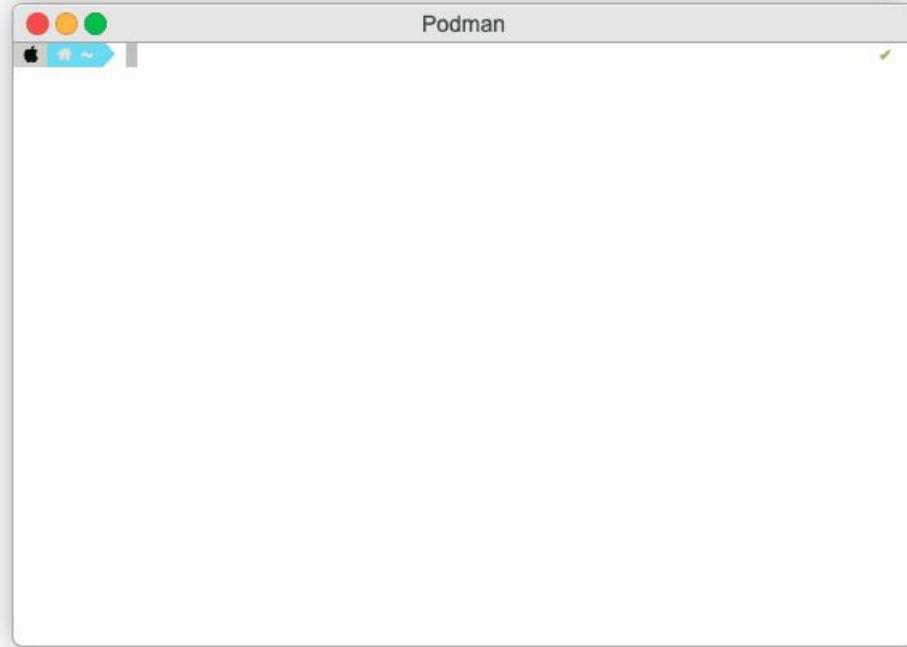
- ▶ podman pod create <name>
- ▶ podman pod ps
- ▶ podman generate kube
- ▶ podman run --pod
- ▶ podman generate kube
- ▶ podman play kube



Podman in Action: **docker socket** (/var/run/docker.sock)

docker CLI usage.: podman engine can bind /var/run/docker.sock

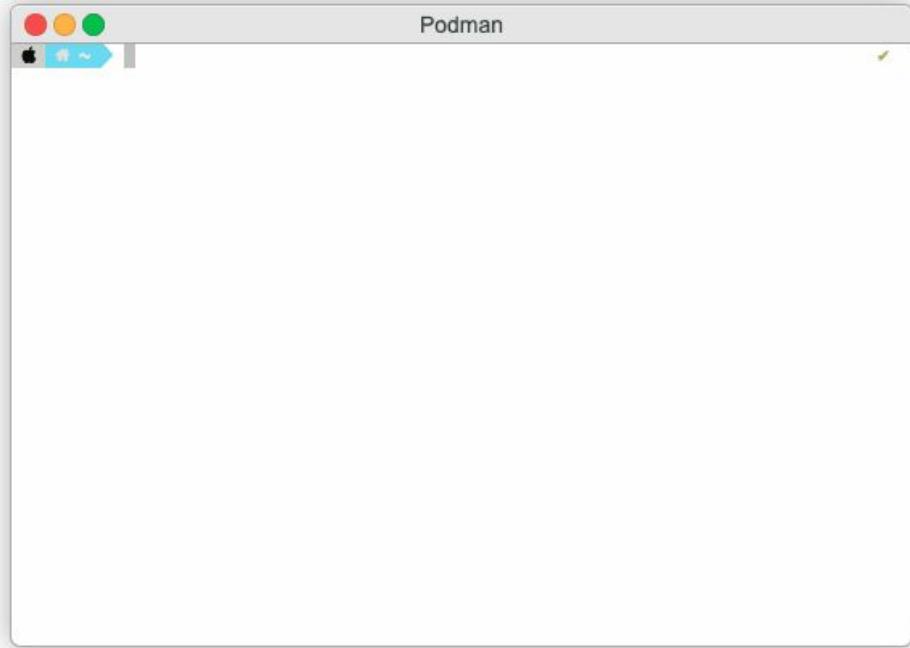
- ▶ docker ps
- ▶ docker images
- ▶ docker run
- ▶ docker ...



Podman in Action: **compose**

compose: handle compose files with 3rd party tools.

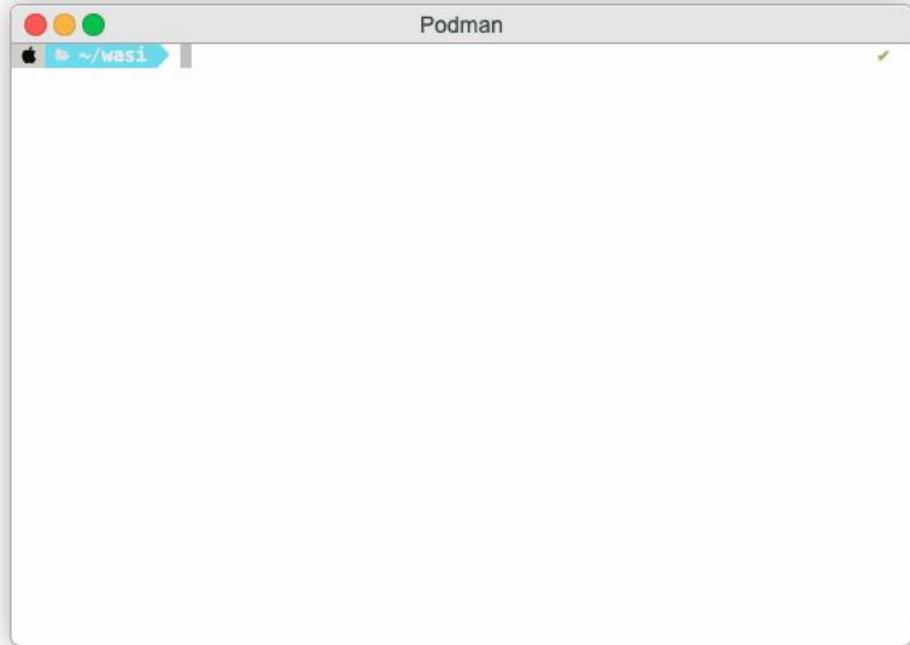
- ▶ `podman compose up`
- ▶ `podman compose list`



Podman in Action: **WebAssembly**

WASM/Wasi: system interface that extends WebAssembly's capabilities beyond the browser, making it suitable for a wider range of environments, including servers.

- ▶ `podman run --platform wasi/wasm`
- ▶ `podman build --platform=wasi/wasm`



Let's back up for just a second!



Containers organization



<https://github.com/containers>

- ▶ There's no one-size-fits-all solution
- ▶ Tools cover specific use-cases with:
 - Open standards, open development, open source, and open community!



100+ repositories

Podman & Podman Desktop + friends!



Podman

A tool for managing OCI containers and pods.

podman.io



Podman Desktop

A graphical tool for developing on containers and Kubernetes.

podman-desktop.io



Buildah

A tool that facilitates building OCI images.

buildah.io



Skopeo

A tool to work with remote images registries – retrieving information, images, signing content.

github.com/containers/skopeo



Crunchy

A fast and lightweight fully-featured OCI runtime and C library for running containers.

github.com/containers/crun

Podman 101's



Secure Rootless Containers

User namespace mapping, seccomp profiles, and SELinux support

No Daemon Process

Podman launches containers as child processes, fork/exec model

Kubernetes Support

Supports Kubernetes YAML & testing before cluster deployment

Platform Compatible

Runs on Linux, as well as Windows, macOS



What's Podman Desktop?

What's going on between local and prod environments?

"Local developer environments have become **impractical** and **lack of consistency** with production."



Additional complexity

Exposed level of complexity and additional overhead required to go cloud native.



Skills Gap

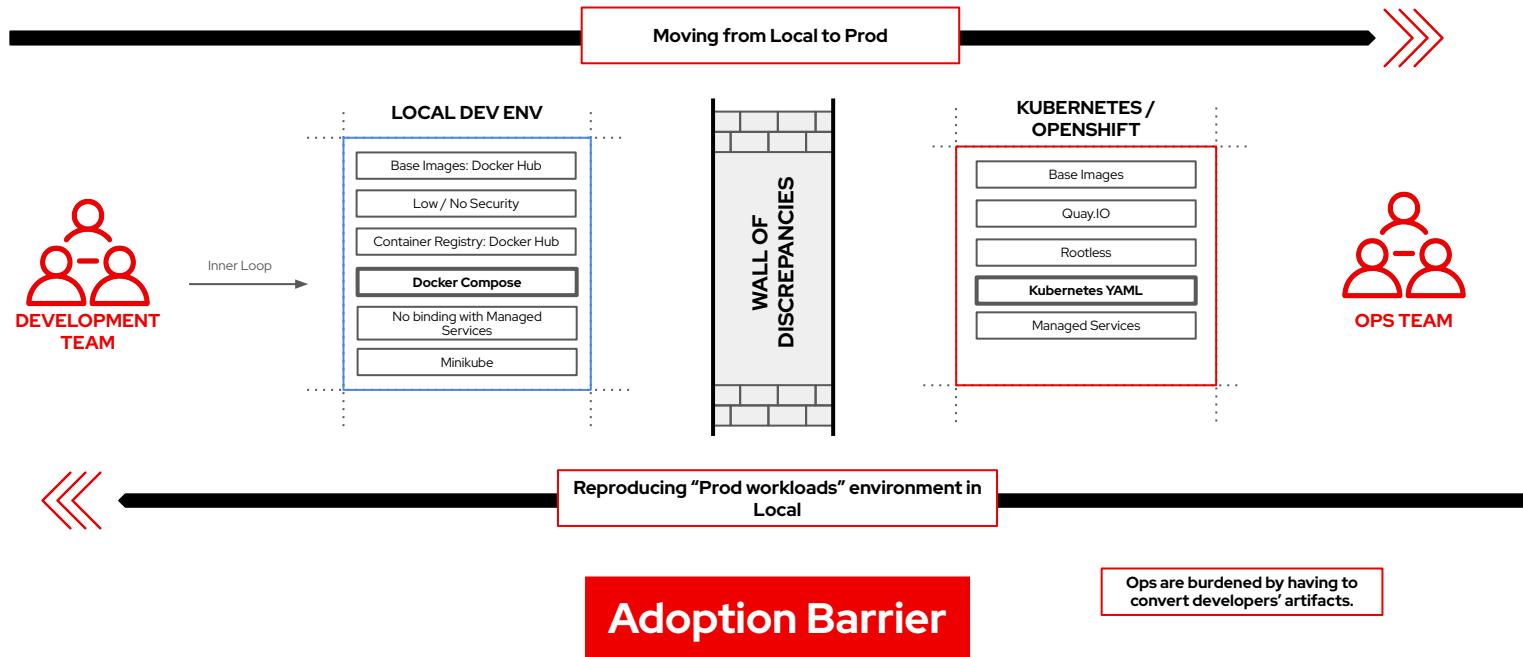
Lack of skilled workforce and technological expertise. 70% IT departments have a single expert team on Kubernetes. (1)



Devs & Ops disconnect

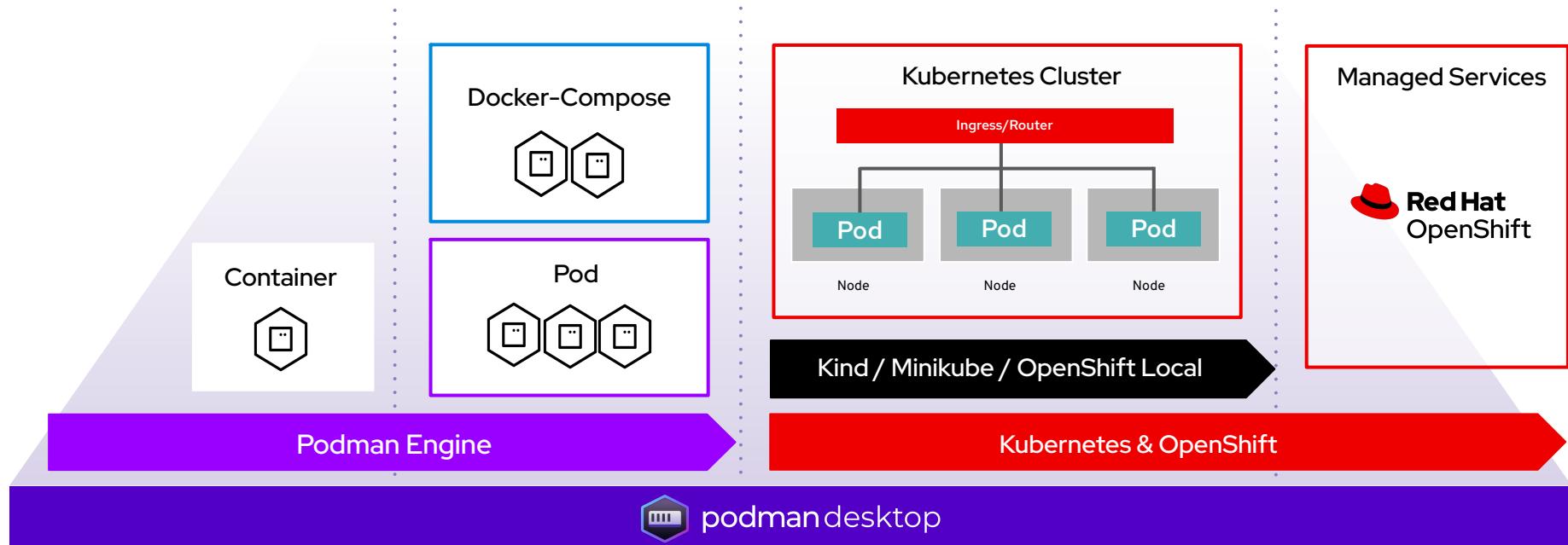
82% IT departments claim Kubernetes creates conflicts. (2)

Challenges from local developer environments to deployments on production



Simplistic onboarding.

From applications to containers, to pods, to Kubernetes.



Introducing Podman Desktop

Containers and Kubernetes for Application Developers

Podman and Kubernetes/OpenShift Local

- Install and run anywhere: Windows, Mac and Linux
- Keep it up-to-date

Containers and Pods

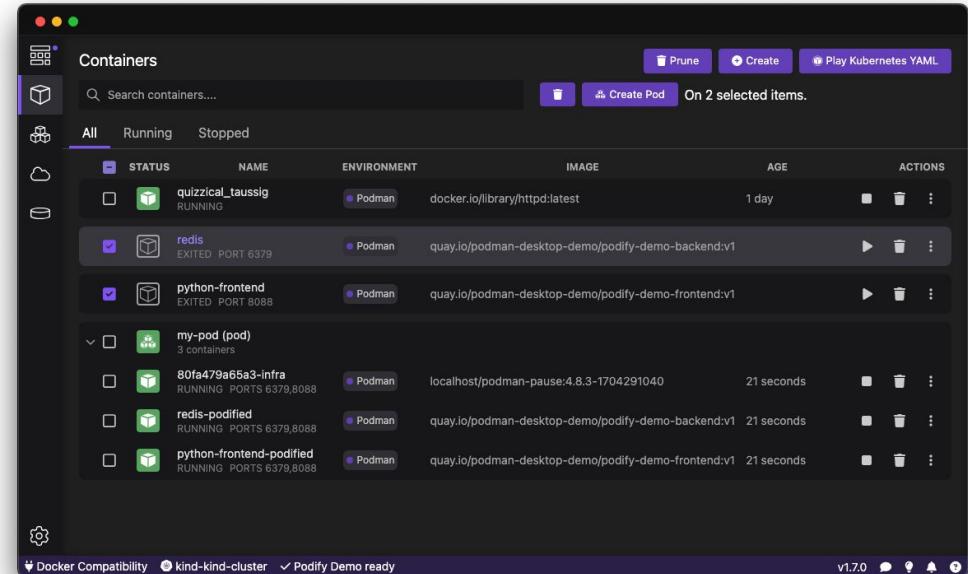
- Build, run, manage and debug Containers and Pods
- Run Pods with or without Kubernetes
- Manage multiple container Engines
- Compatibility with Docker and Compose

Enterprise Readiness

- VPN and Proxies configuration
- Image registry management
- AirGapped Installation

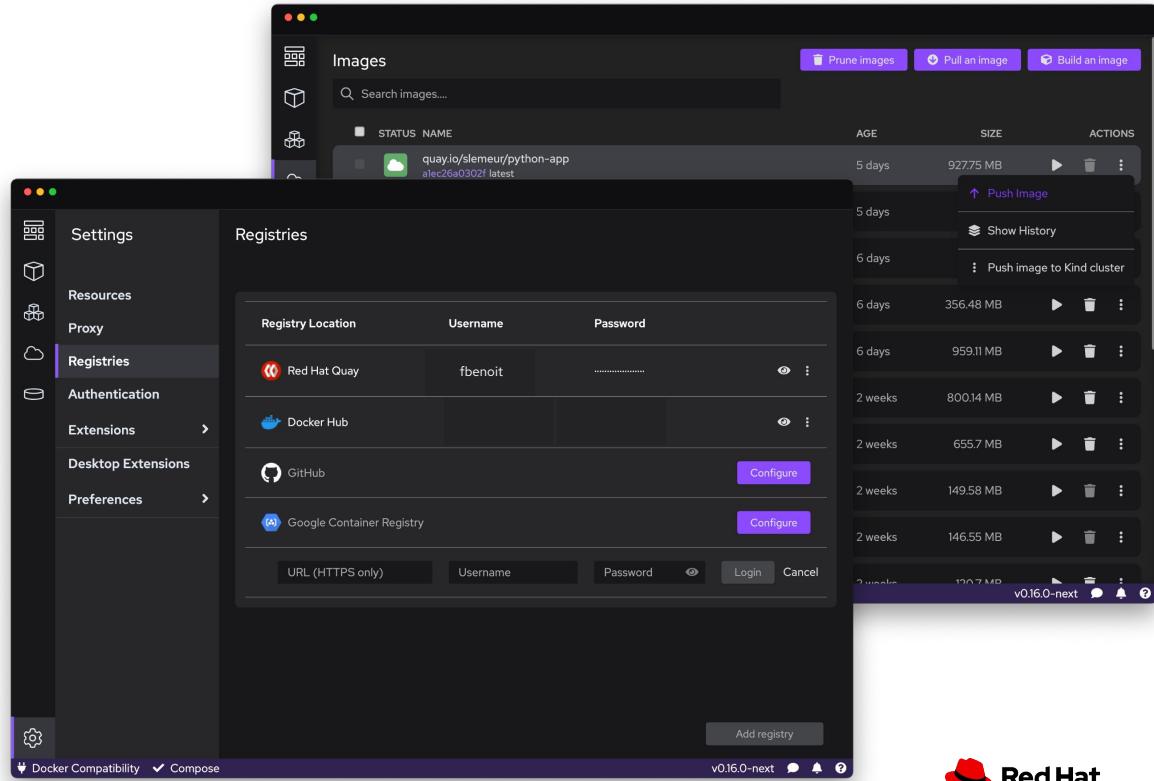
Bridge between local and remote

- Connect and deploy to remote Kubernetes clusters
- Enable remote managed services locally



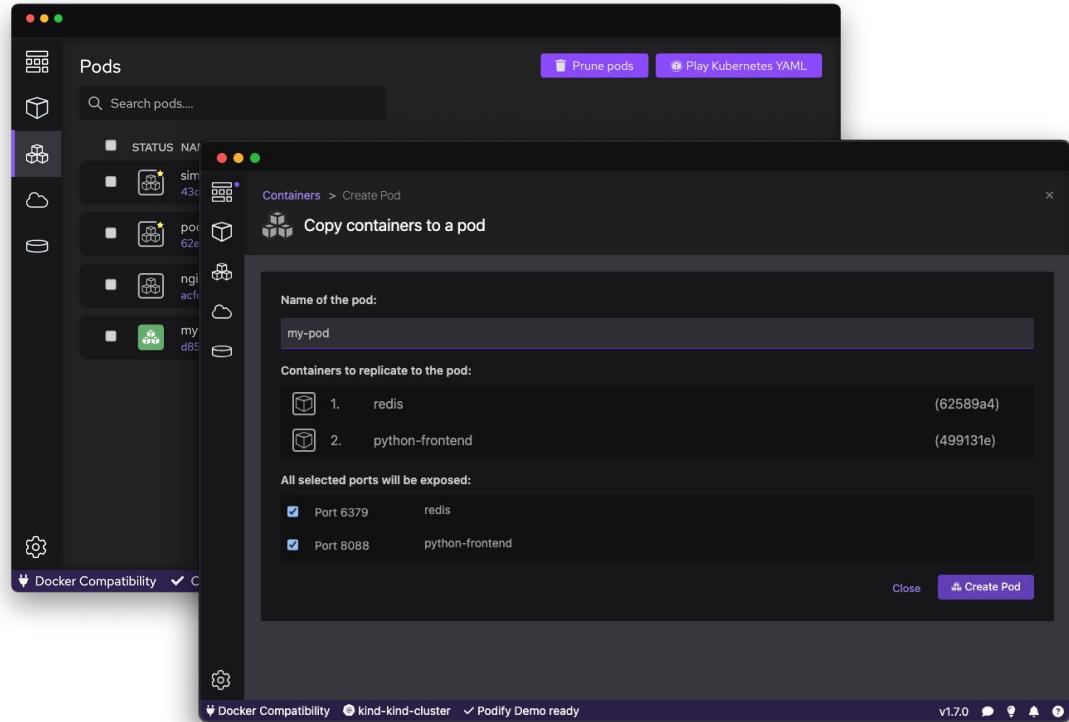
Podman Desktop: Support for OCI Registries

- Configure multiple OCI registries
- Authenticate to registries
- Pull, tag and push images to your registries



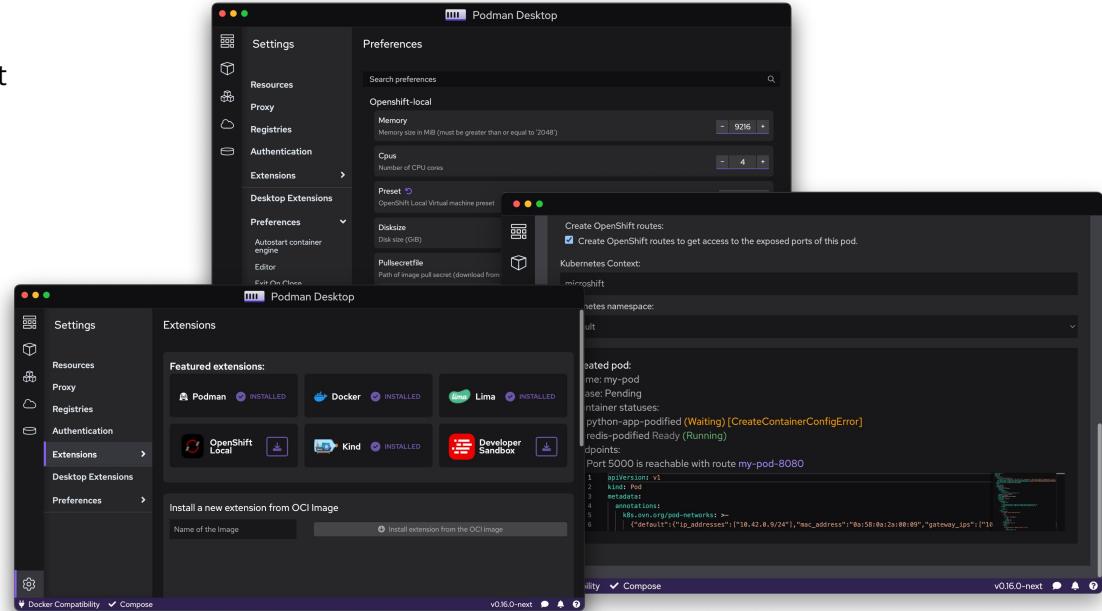
Podman Desktop: Pods

- Create and start Pods with Podman
- Select containers to run as a Pod
- Play Kubernetes YAML locally without Kubernetes
- Generate Kubernetes YAML from Pods



Podman Desktop: OpenShift and Dev Sandbox Integration

- OpenShift Local extension
 - **Light and optimized** - Powered by Microshift (experimental)
 - For Developers
 - Minimal services set
 - Fast and lightweight
 - **Single-node OpenShift** - Powered by OpenShift Container Platform
 - Full services set
 - Complete and more resource-intensive
- Support for Dev Sandbox

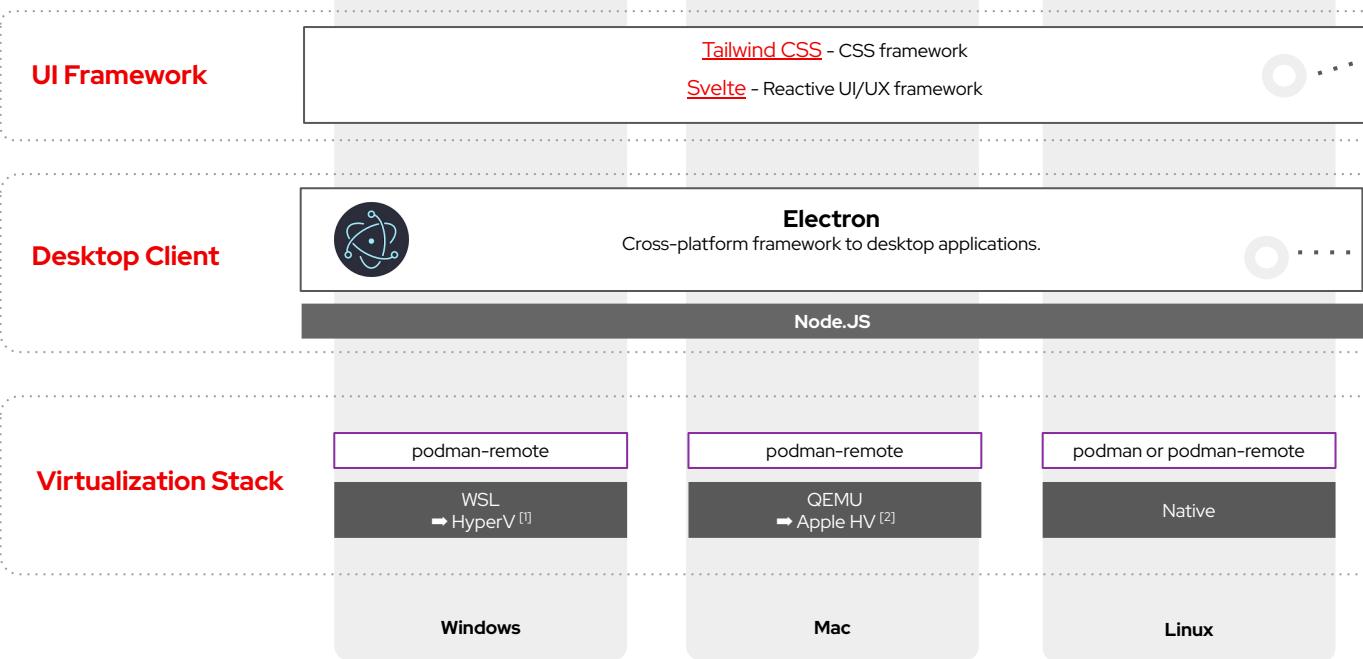


Demo Time!



Free, Open and Extensible by Default

Podman Desktop: Behind the Scenes



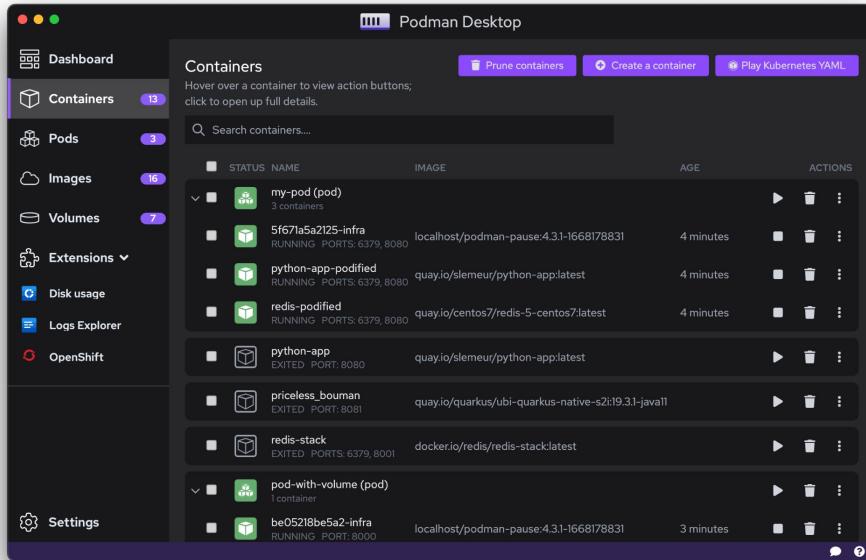
^[1] HyperV since podman 4.8

^[2] Apple Hypervisor support in 4.9 (default is 5.0)

Extensibility with Podman Desktop

Enabling extension points and other container/K8s technologies

Supports Docker
Desktop extensions



But Podman Desktop extensions can also do much more:

- Container engine providers
- Kubernetes providers
- Add actions
- Add menus
- Add configuration
- Add default registries
- Add to status bar
- Add to system tray

Current
extensions:



Podman



Kind

Lima



Docker



OpenShift Local

& more!

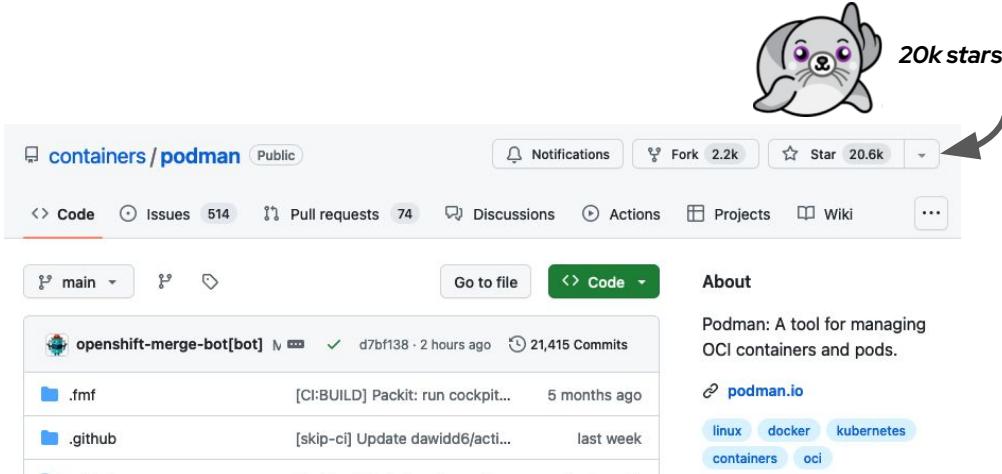


What's next & How to get started!

What's next for Podman?

A seamless way to work with containers (& Kubernetes!)

- ▶ Improvements for Podman Machine
 - Native Apple hypervisor support
 - Windows Hyper-V hypervisor support
- ▶ Faster container startup
- ▶ Enhancements for Podman's Kubernetes yaml support
- ▶ Better rootless networking



The screenshot shows the GitHub repository page for `containers/podman`. At the top right, there is a cartoon dog icon with the text "20k stars!" and an arrow pointing to the star count. The repository has 20.6k stars. Below the header, there are tabs for Code, Issues (514), Pull requests (74), Discussions, Actions, Projects, and Wiki. The Code tab is selected. The main area shows a list of commits from the `main` branch. The first commit is by `openshift-merge-bot[bot]` and is dated 2 hours ago. It includes a link to Packit: run cockpit... and 21,415 Commits. Other commits listed include `.fmf` (5 months ago) and `.github` (last week). On the right side, there is an "About" section with a brief description of Podman: "A tool for managing OCI containers and pods." It also features a link to `podman.io` and categories like linux, docker, kubernetes, containers, and oci.

What's next for Podman Desktop?



Containers tooling

- Native Hypervisors support
- Onboarding experience
- Simpler Docker compatibility configuration

[Contribute](#)



Kubernetes Capabilities

- Improvements in Podify and Kubify flows
- Kubernetes Objects Explorer
- Compose to Kubernetes

[Contribute](#)



OpenShift Support

- DevSandbox account creation and token renewal flow
- Image checker
- Continue exploration on Microshift for developers



Efficient developer flows

Simple transitions to Kubernetes

Tighter OpenShift Integration

Get started with Podman & Podman Desktop!

Get involved with Podman and adopt a seal (figuratively)!



On the Web

Learn how to install Podman

podman.io

podman-desktop.io

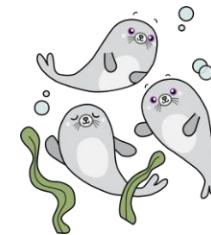


Github

Contribute and report issues

github.com/containers/podman

github.com/containers/podman-desktop



Chat

Get connected with the community

podman.io/community



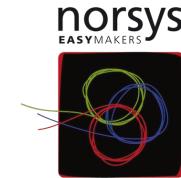
Thanks !

openfeedback,



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END