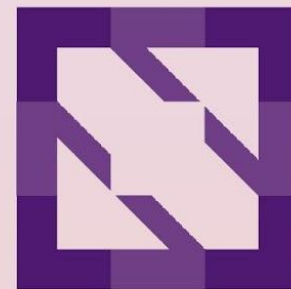




KubeCon



CloudNativeCon

North America 2023





KubeCon



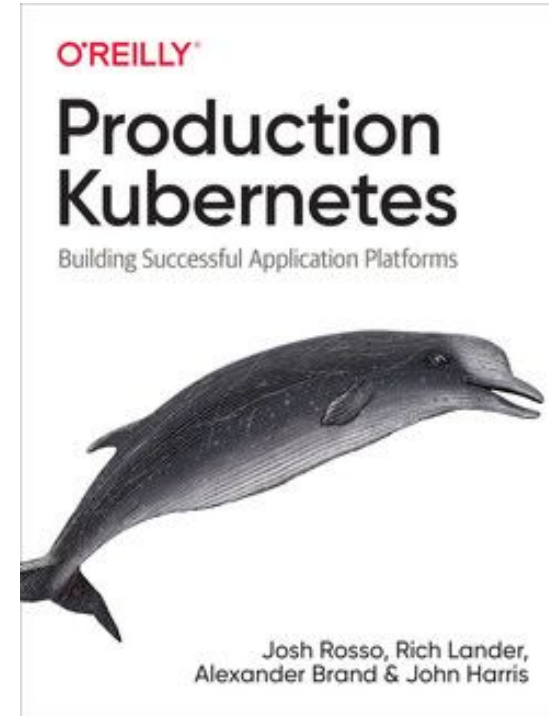
CloudNativeCon

North America 2023

Nix, Kubernetes, and the Pursuit of Reproducibility

joshrosso

@joshrosso



Free PDF Download:

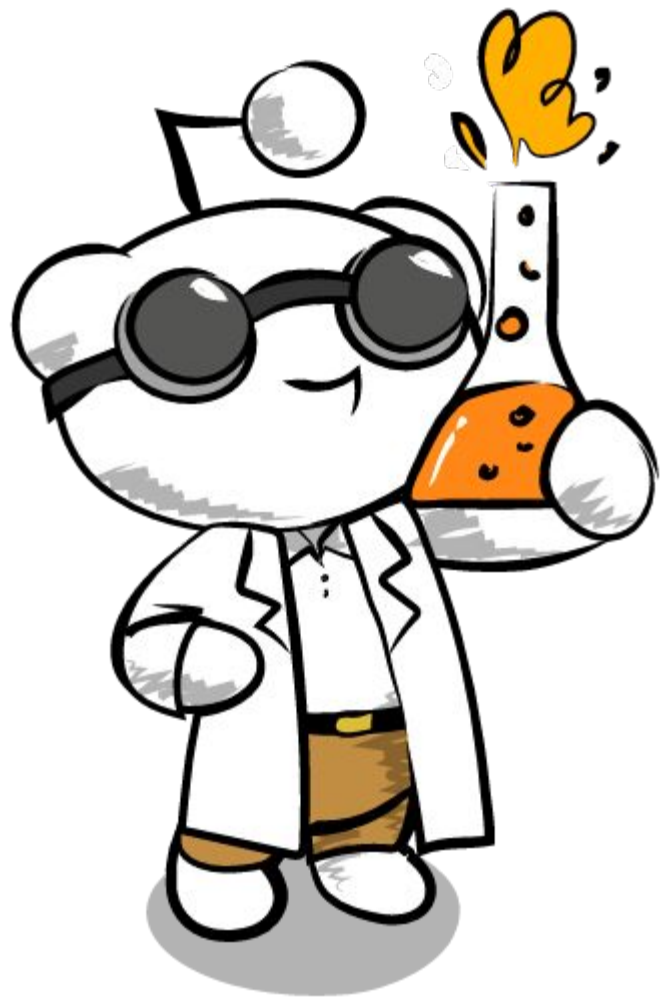
<https://tanzu.vmware.com/content/ebooks/production-kubernetes>

Reddit Engineering

<https://www.redditinc.com/careers>

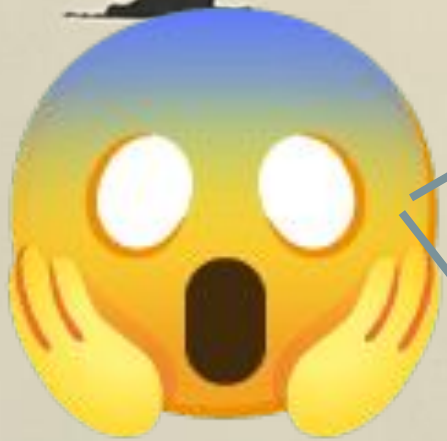
come work with me!





NixOS





container

container

container

container

container

container

container

container

container

container

container

container

VM

VM

VM

Hypervisor

“Nix lets you **compose software** at build time with **maximum flexibility**, and with builds being **as reproducible as possible.**”

Hypervisor

libvirt

A toolkit to interact with the virtualization capabilities of recent versions of Linux and other OSes

Name: `libvirt` Version: `9.2.0` [Homepage](#) [Source](#)

License: [GNU Library General Public License v2 or later](#)

▲▲▲ Hide package details ▲▲▲

How to install *libvirt*?

[NixOS Configuration](#)

[nix-shell](#)

[nix-env](#)

A nix-shell will temporarily modify your \$PATH environment variable. This can be used to try a piece of software before deciding to permanently install it.

```
$ nix-shell -p libvirt
```

Programs provided

```
virt-login-shell virtchd virtnwfilterd virtsecret  
virtnetworkd virtlockd virt-xml-validate libvirtd virsh  
virt-ssh-helper virt-qemu-run virtvboxd virt-pki-validate  
virtqemud virt-pki-query-dn virtnodedevd virtlogd  
virtinterfaced virt-admin virtstoraged virtlxcd  
virt-qemu-qmp-proxy virt-host-validate virtproxyd  
virt-qemu-sev-validate
```



Nix::Packages



/etc/nixos/configuration.nix

```
{  
    # List packages installed in system profile. To  
    # search, run:  
    # $ nix search wget  
    environment.systemPackages = with pkgs; [  
        neovim  
        wget  
        jq  
        curl  
        virt-manager  
        htop  
        prometheus  
        prometheus-node-exporter  
        prometheus-process-exporter  
    ];  
}
```

Nix::Options

🔍 Search more than **10 000 options**

environment.systemPackages

Search

Channel:

23.05

unstable

Showing results 1-8 of **8 options**.

Sort: Best match ▾

[environment.systemPackages](#)

Name

environment.systemPackages

Description

The set of packages that appear in /run/current-system/sw. These packages are automatically available to all users, and are automatically updated every time you rebuild the system configuration. (The latter is the main difference with installing them in the default profile, `/nix/var/nix/profiles/default`).

Type

list of package

Default

[]

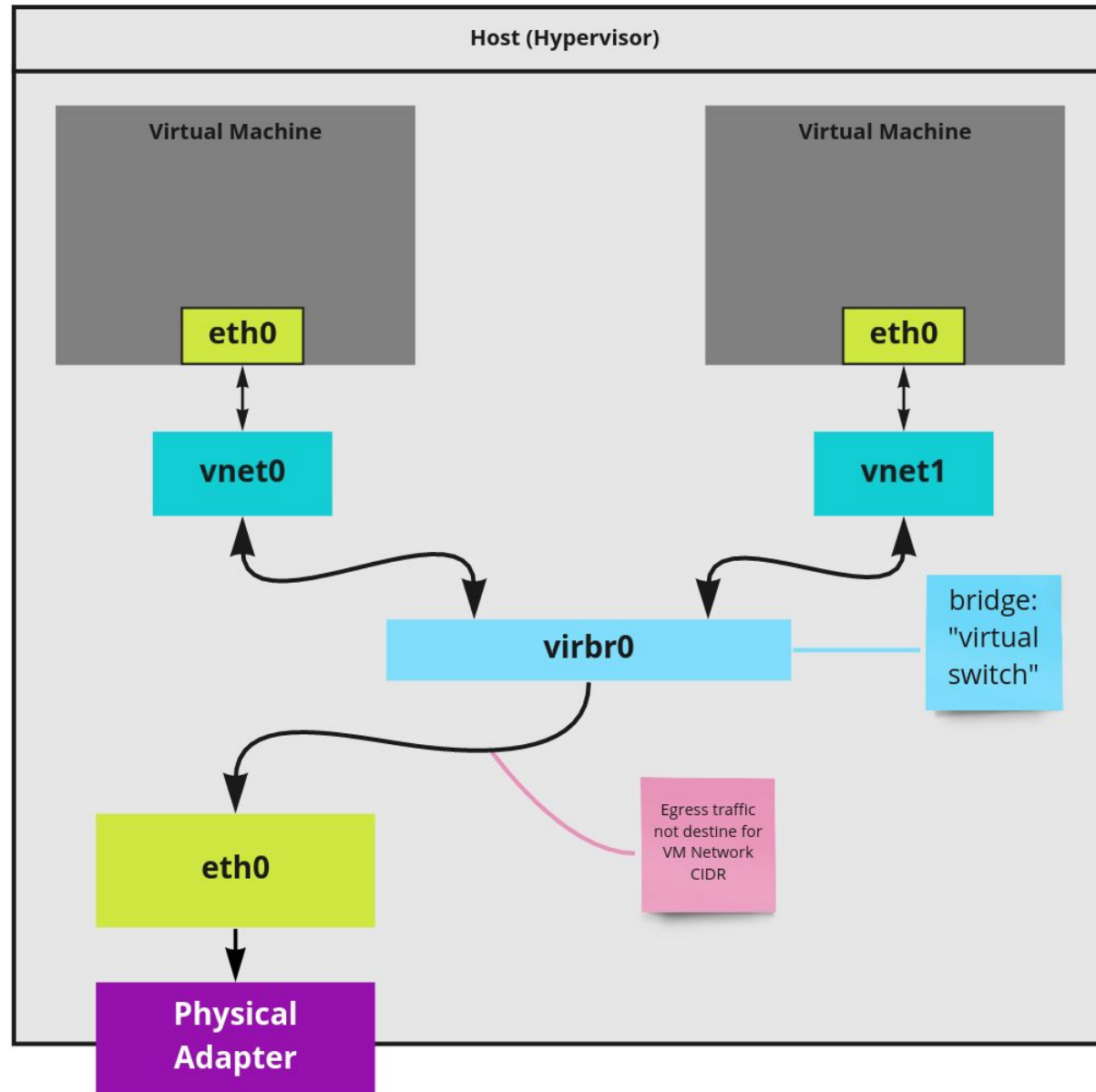
Example

[pkgs.firefox pkgs.thunderbird]

Declared in

[nixos/modules/config/system-path.nix](#)

Hypervisor



Nix::Options

🔍 Search more than **10 000 options**

networking.dhcp

Search

Channel:

23.05

unstable

Showing results 1-8 of **8 options**.

Sort: Best match ▾

[networking.dhcpd.wait](#)

[networking.dhcpd.enable](#)

Name

networking.dhcpd.enable

Description

Whether to enable dhcpd for device configuration. This is mainly to explicitly disable dhcpd (for example when using networkd).



Type

boolean

Default

true

Declared in

[nixos/modules/services/networking/dhcpd.nix](#)

Nix::Options

🔍 Search more than **10 000 options**

Search

Channel:

23.05

unstable

Showing results 1-2 of **2 options**.

Sort: Best match ▼

[systemd.network.enable](#)

[boot.initrd.systemd.network.enable](#)

First

Previous

Next

Last

Hypervisor



“Not only that, due to its nature deploying systems in the cloud is so easy, consistent, and reliable that **in the Nix world all existing self-containment and orchestration tools are deprecated by NixOps.**”

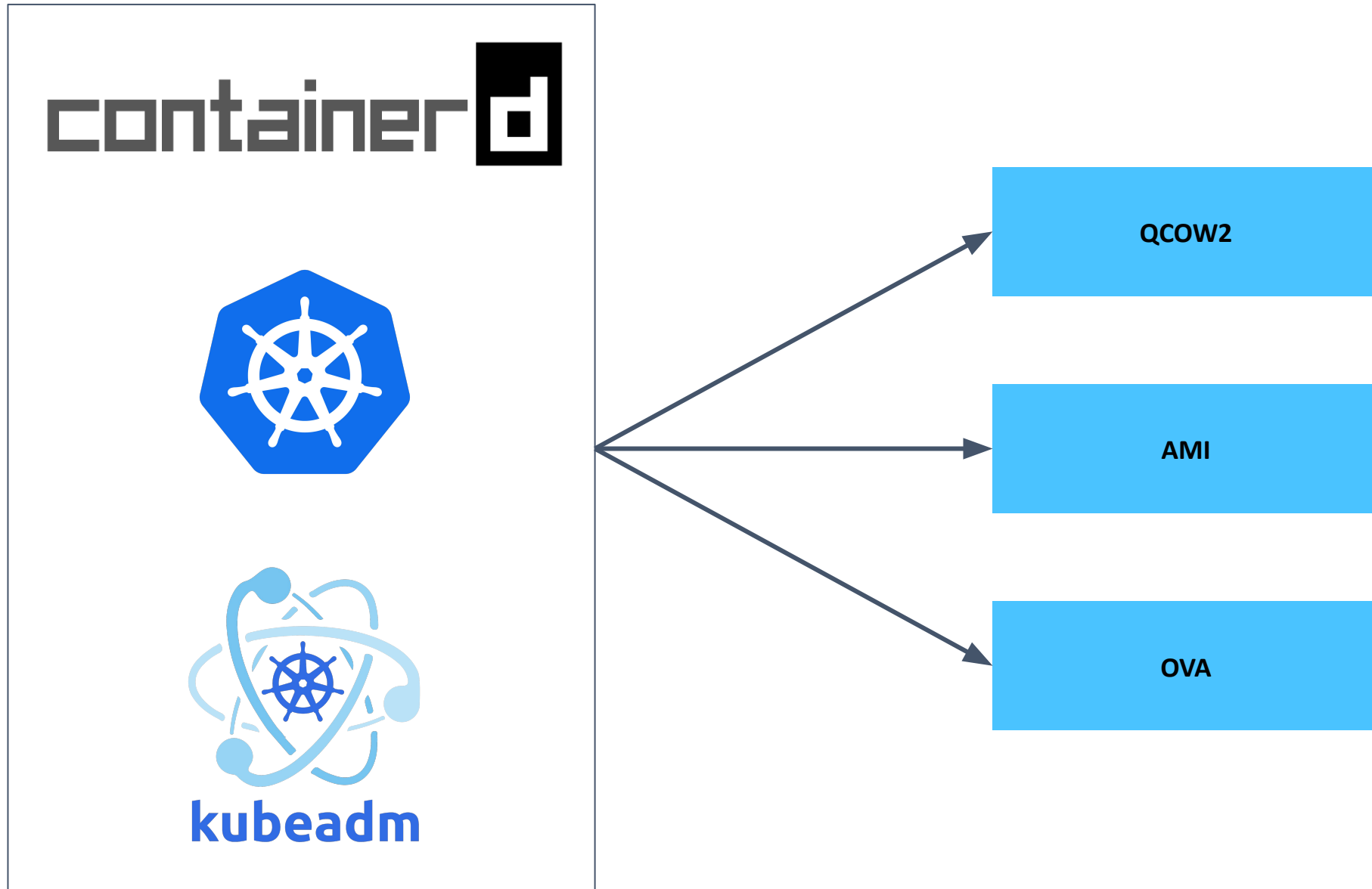


VM

containerd



VM



VM

.drv

/nix/store/

/var/lib/

Containers

```
{ pkgs ? import <nixpkgs> { }  
  , pkgsLinux ? import <nixpkgs> { system = "x86_64-linux"; }  
}:
```

```
pkgs.dockerTools.buildImage {  
  name = "hello-docker";  
  config = {  
    Cmd = [ "${pkgsLinux.hello}/bin/hello" ];  
  };  
}
```

Would you introduce Nix/NixOS at Reddit?

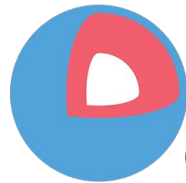
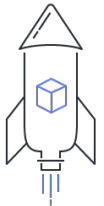
no.

- **For Hypervisors?**

- Today, we don't control these (all AWS and GCP).
- This would be the best candidate.

- **For VMs?**

- Could be a contender for [far] future state.
- Biggest competition is how it stacks up to container-native distros



(jk ... pour one out)

- **For Containers**

- API / language is far too complicated to roll out to the org.
- Maybe if we designed a higher-level API to make it more sustainable?
 - *would struggle to weigh the cost of this with the actual benefit.*



PromCon
North America 2021

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sent via email before the event

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