



# Everything You Wanted to Know About Containers but were Afraid to Ask

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Photo by [nikko osaka](#) on Unsplash

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# Slides

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<https://github.com/dmikusa/everything-about-containers>



# Why are we here today?

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# Learn & Understand Containers

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Also, because ...

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quickmeme.com

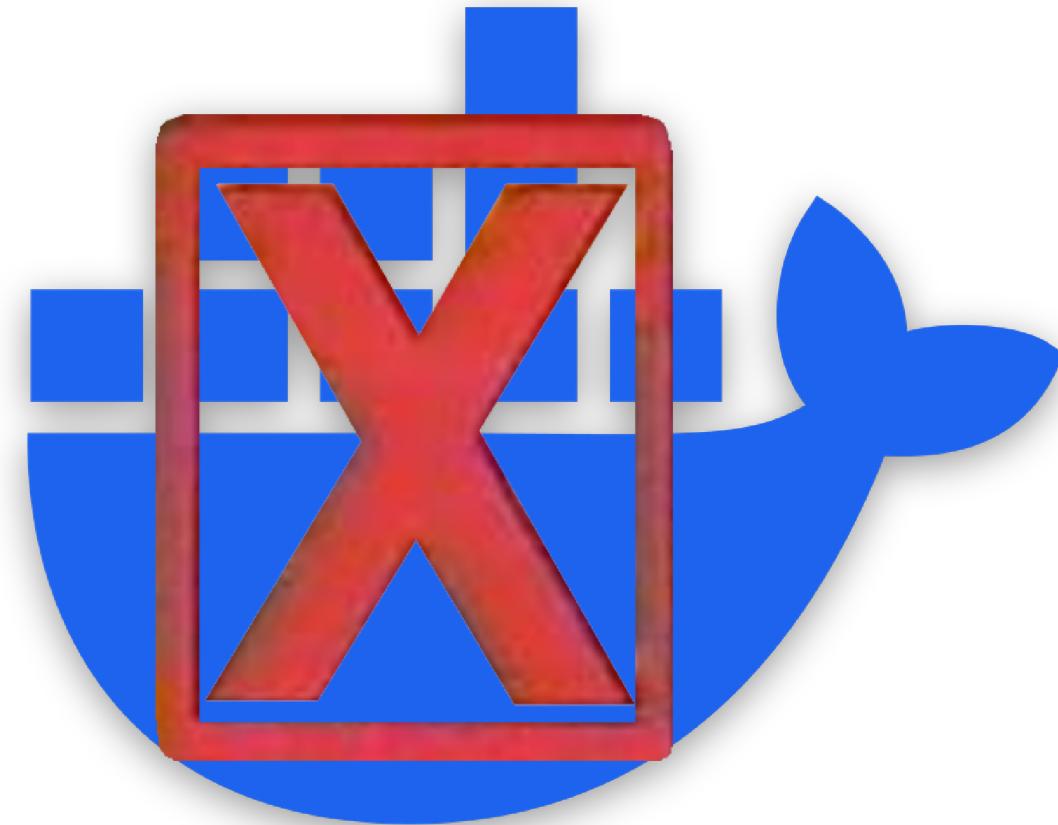
# What is a container?

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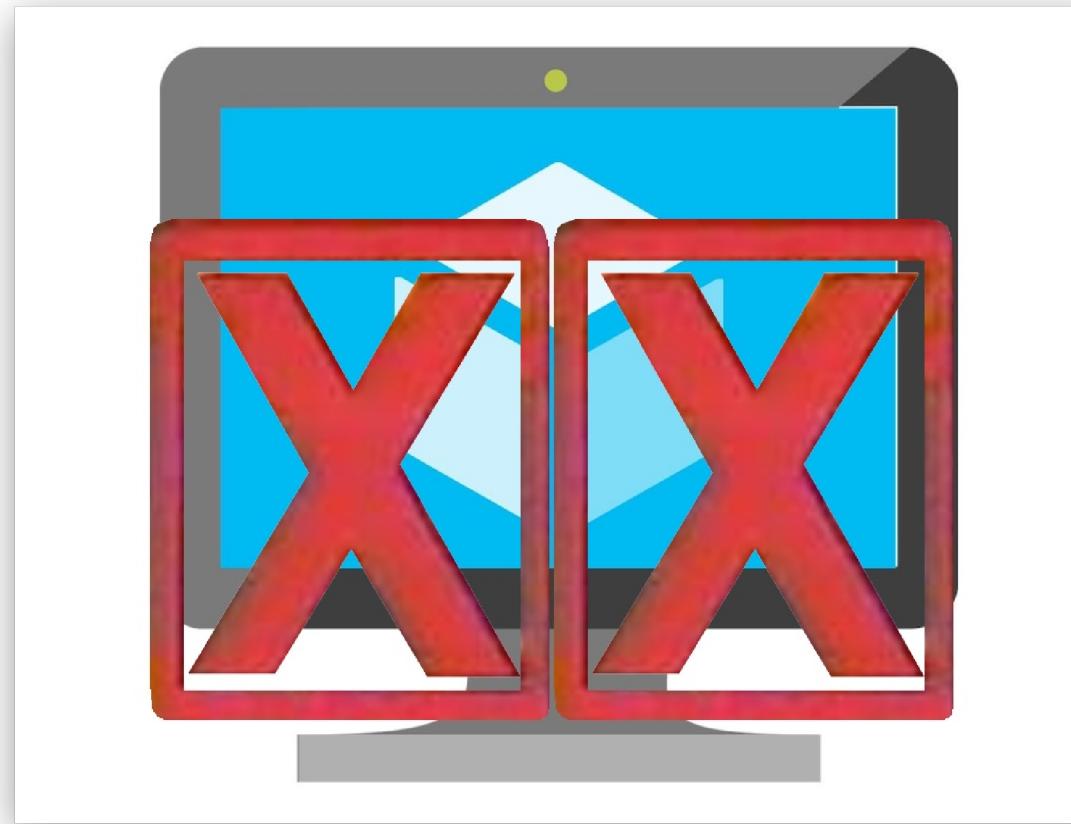


# What's **NOT** a container?

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# What's **NOT** a container?



# So What is a container then?

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**It's an isolated process.**

**Using**

- Linux Kernel CGroups
- Linux Kernel Namespaces
- App Armor / capabilities restrictions
- Union FS or Overlay FS
- Base Image
- Configuration

# Container Strengths & Weaknesses

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## Strengths

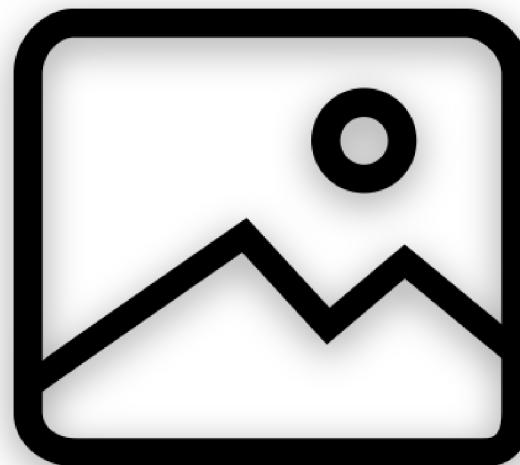
- Cheap/Fast
- Easy way to package code
- Ubiquitous & battle tested
- Strong tooling & libraries
- Standardized (OCI)
- Efficient distribution protocol

## Weaknesses

- Weaker isolation
- Container security config \*
- CPU shares are challenging
- Noisy neighbors

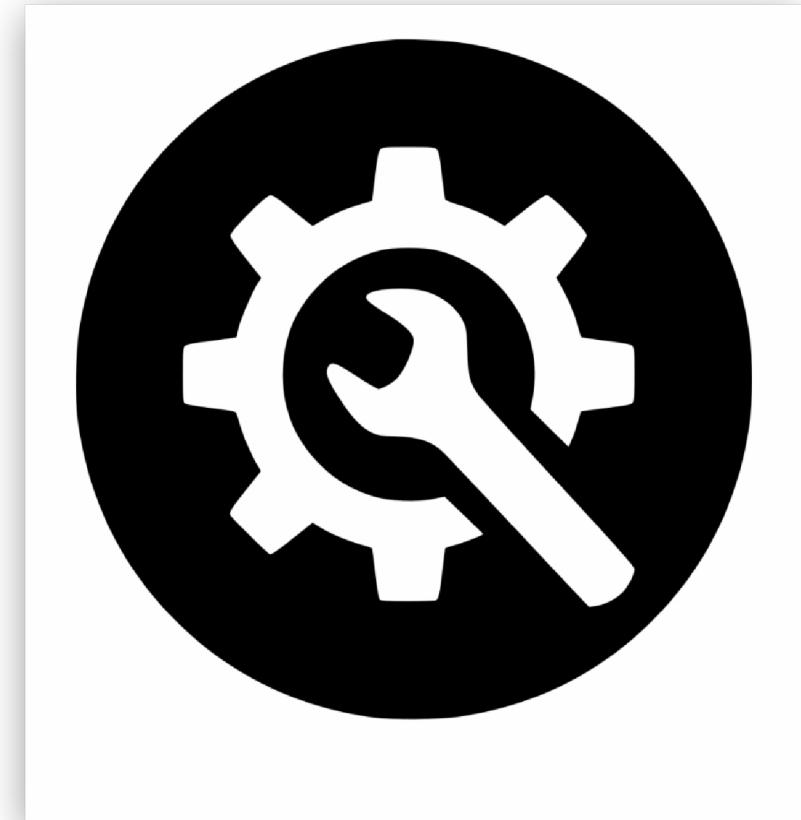
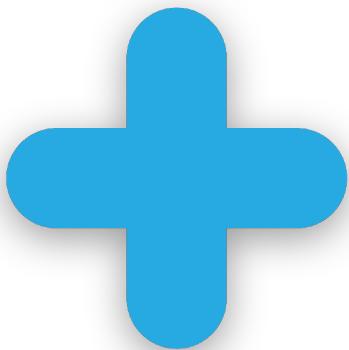
# What else do we need?

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# What's an image?

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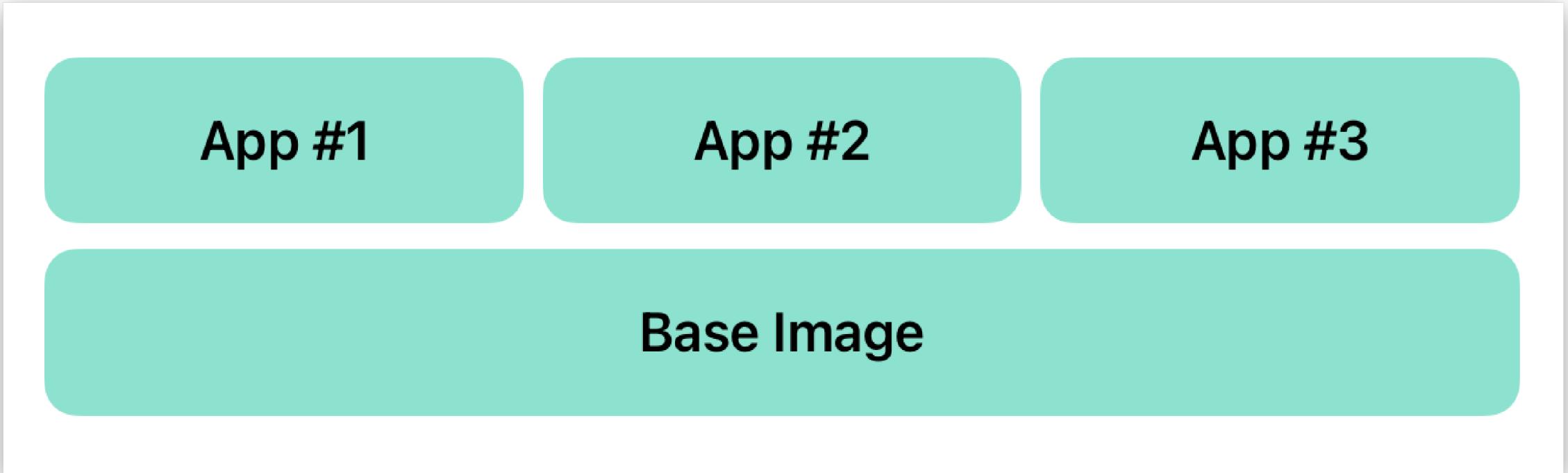
# Layers

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# Sharing Layers

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# Image Hashes

**App #1**

sha256:~~fffc122~~

**App #2**

sha256:d12faa

**App #3**

sha256:6751aa

**Base Image**

sha256:cc12df

sha256:32acffd

# Demo: Deconstructing a Container Image

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# Image Distribution

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# Demo: Fetching Images

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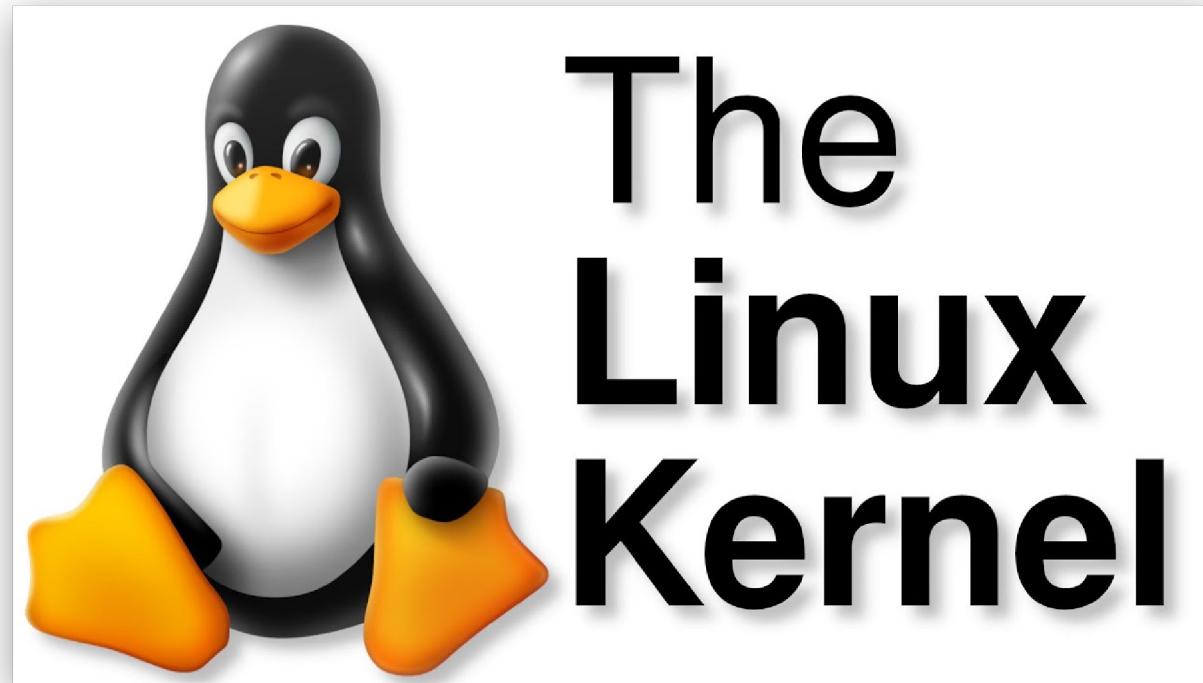
# Running Containers

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# What's Really Required to Run a Container

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# Linux Kernel Primitives

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- CGroups
- Namespaces
- Capabilities
- Seccomp
- AppArmor

# A Filesystem

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# Configuration / Settings

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## Run Docker Run

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- docker run
- podman run
- kubectl apply
- AWS ECS, Lambda (or other Cloud Provider)

# The Hard Way

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# Demo: namespaces & cgroups

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# Questions?

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