



KubeCon



CloudNativeCon

North America 2022

BUILDING FOR THE ROAD AHEAD

**DETROIT 2022**

# What Container Runtime do I need?

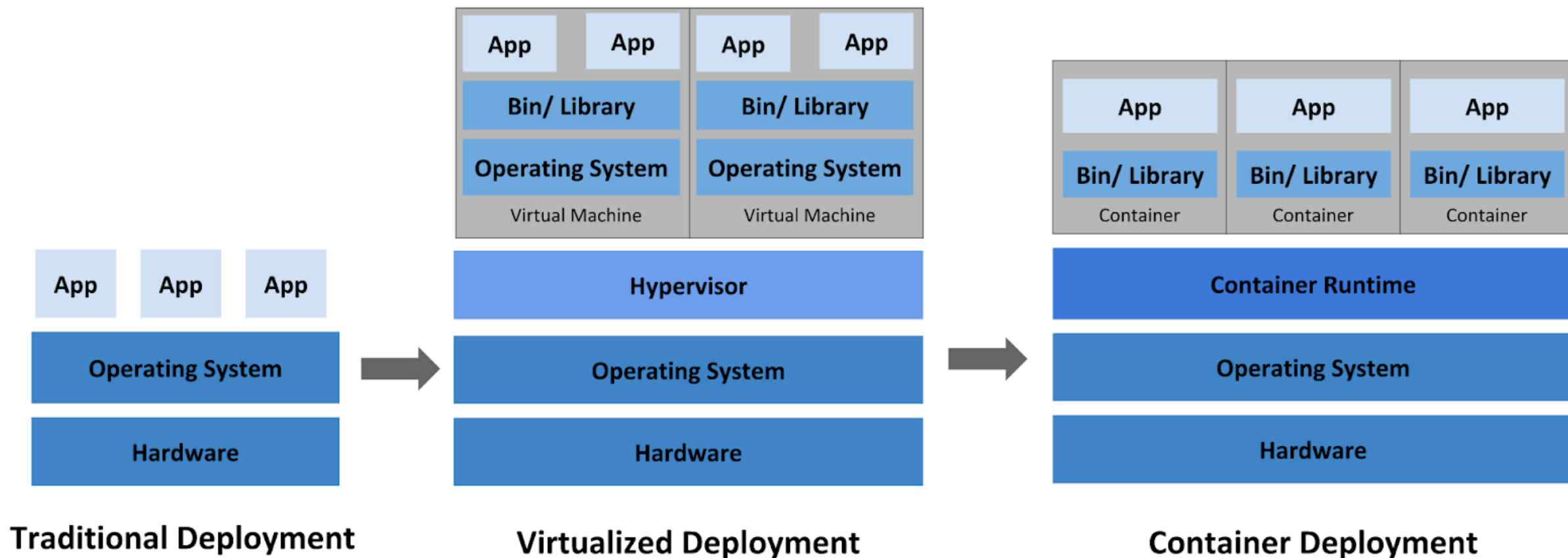
*Abubakar Siddiq Ango, Gitlab*

## Abubakar Siddiq Ango

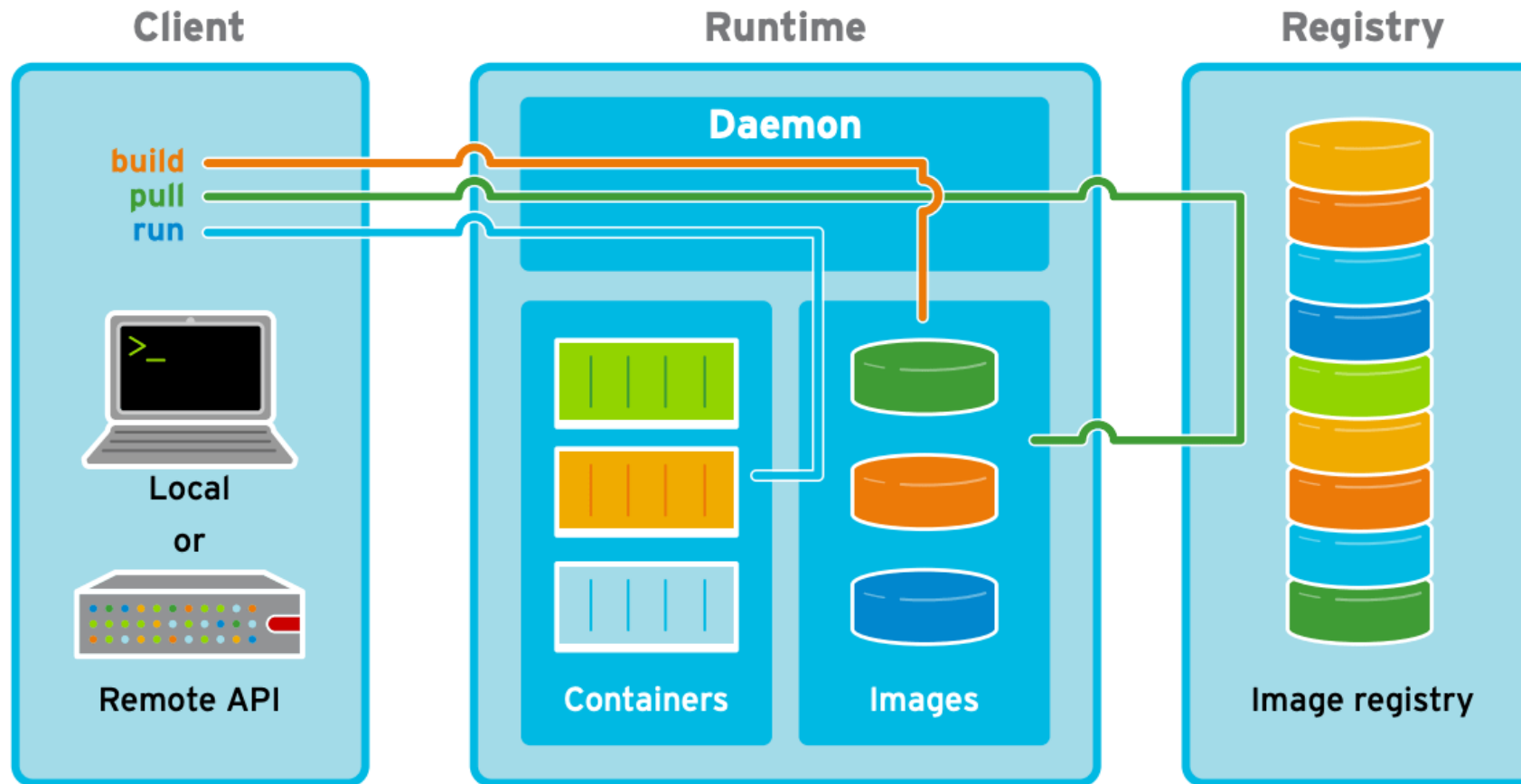
- Developer Evangelism Program Manager at GitLab
- Google Developer Expert (Cloud) & CNCF Ambassador
- Interest in Kubernetes, OpenStack, DevSecOps & Supply Chain Security
- Based in The Hague, Netherlands
- Website: <https://abuango.me>



# What are Containers?



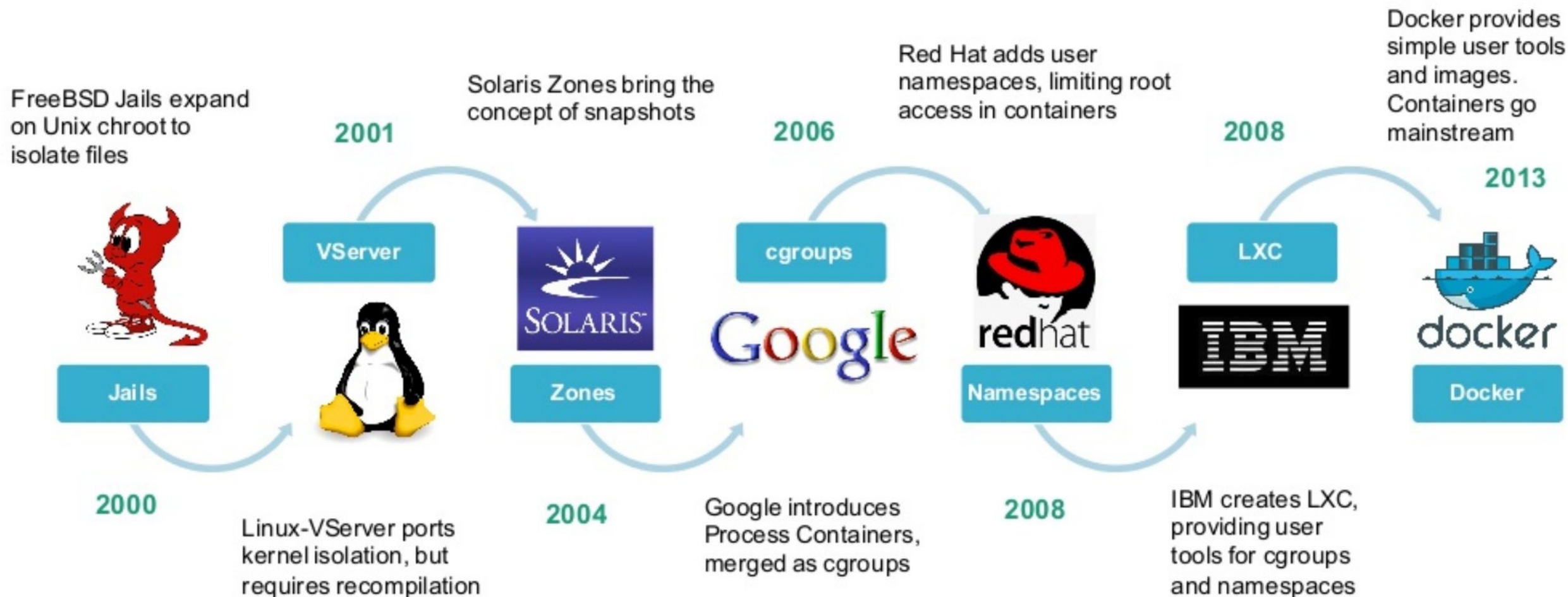
# What are Containers?



Credit: <https://techviewleo.com/manage-docker-containers-and-mages-in-linux/>

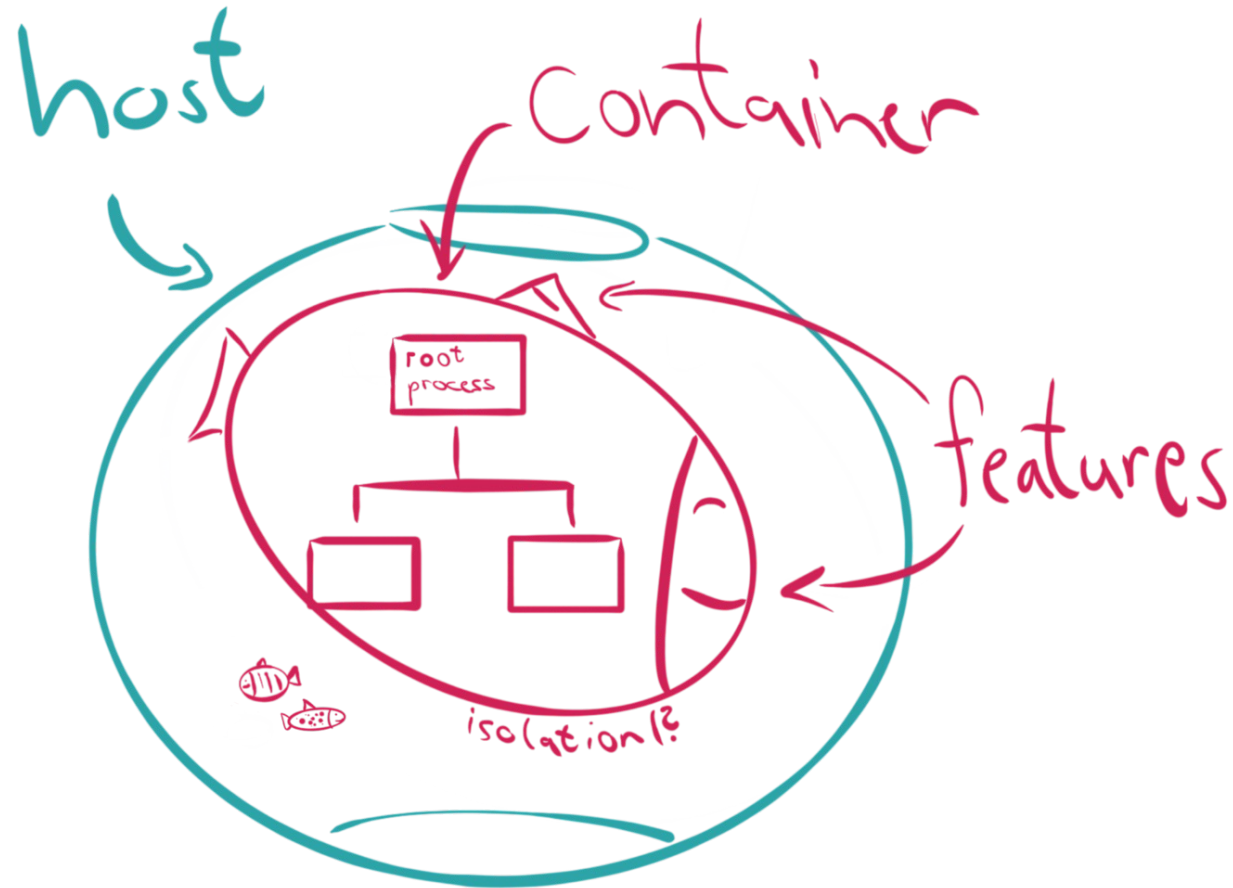


# What are Containers?



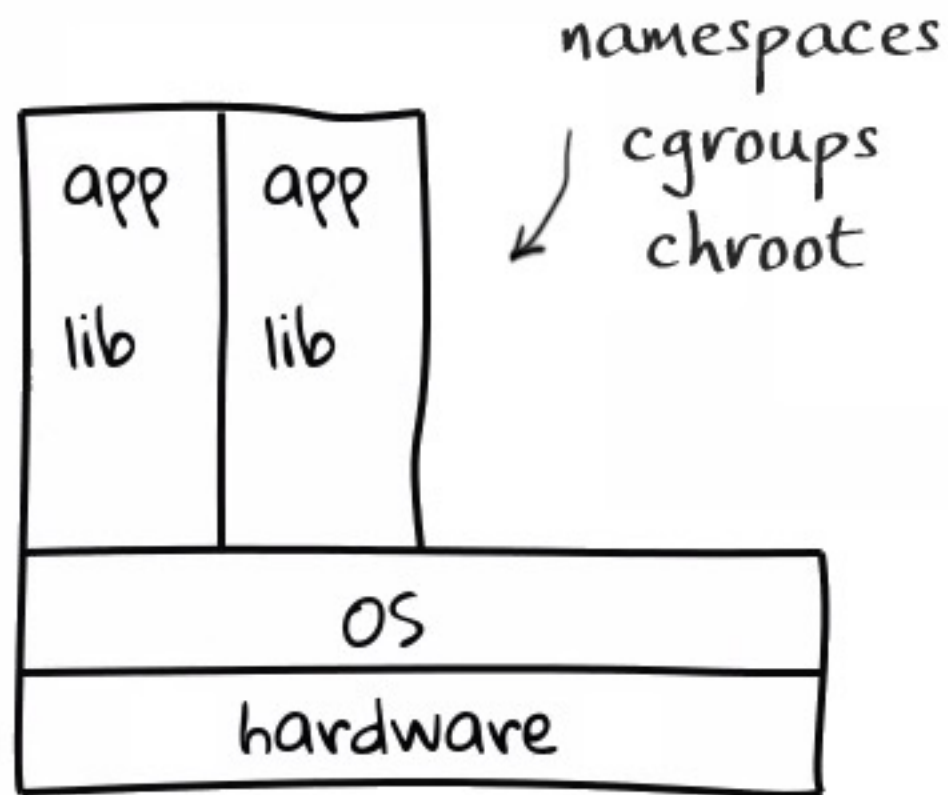
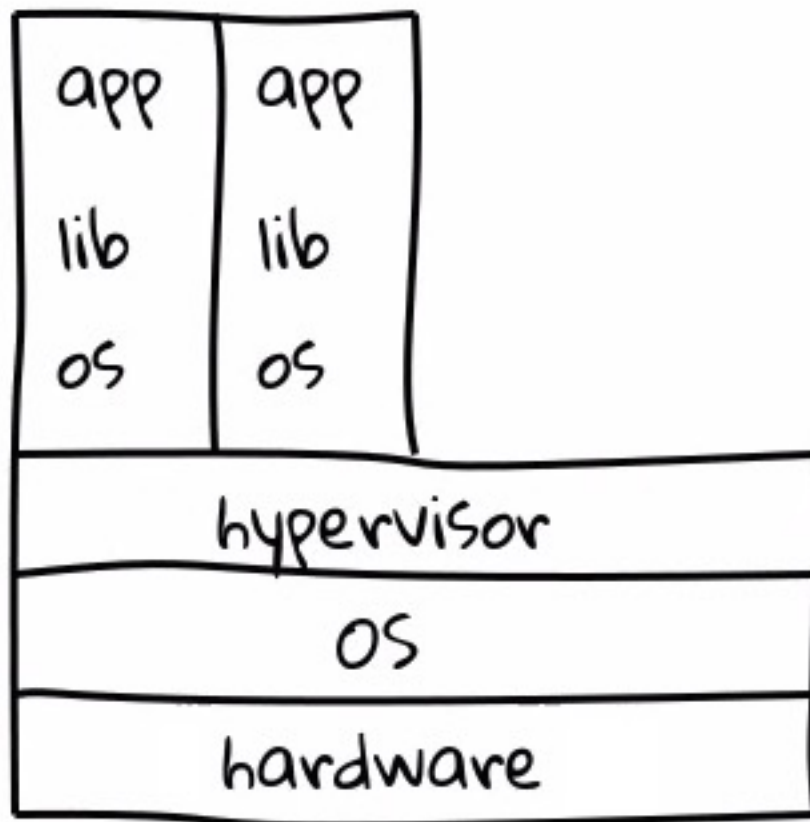
Credit: <https://borosan.gitbook.io/docker-handbook/containerization-history>

# Under the hood



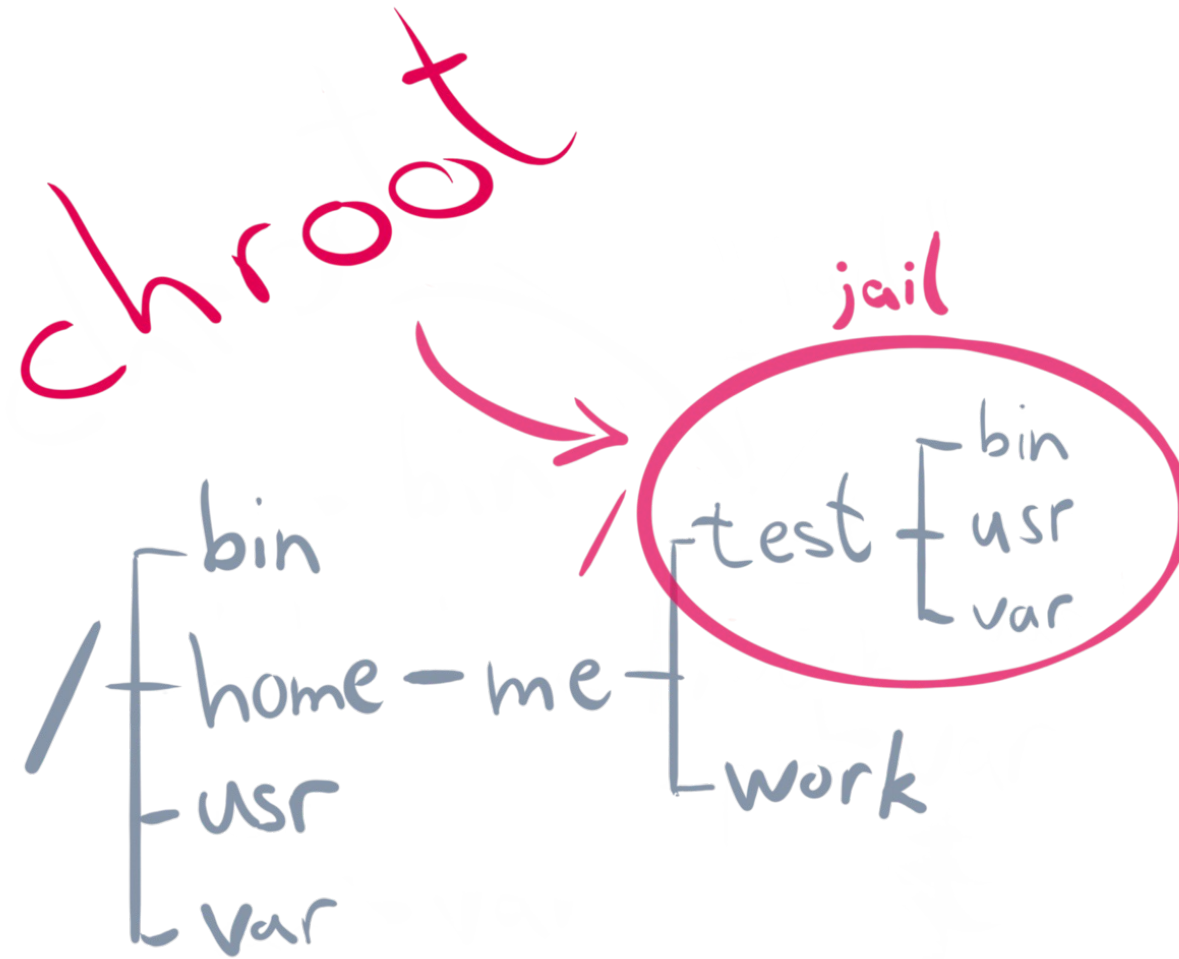
<https://medium.com/@saschagrunert/demystifying-containers-part-i-kernel-space-2c53d6979504>

# Under the hood (chroot)

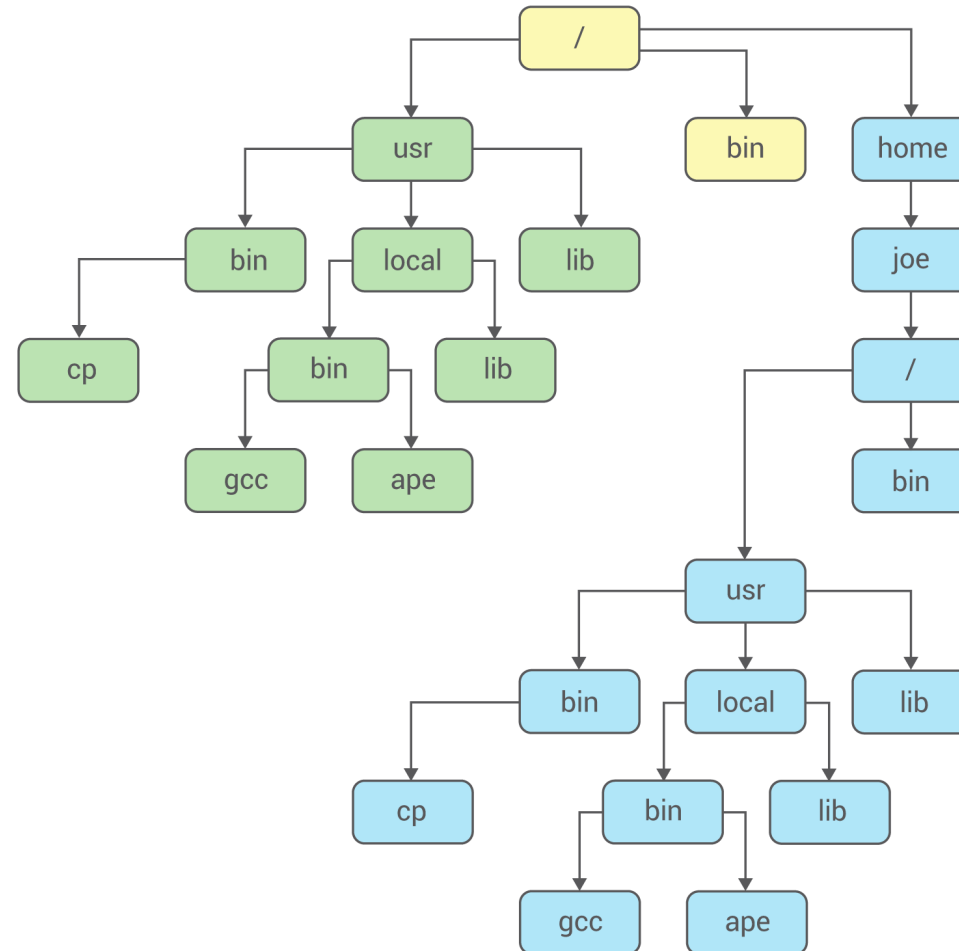




# Under the hood



# Under the hood (chroot)



# Under the hood (namespaces)

namespace	Isolates
PID	PID processes
NETWORK	Network devices, stacks, ports, etc.
USER	User and group IDs
MOUNT	Mount points
IPC	SystemV IPC, POSIX messages
UTS	Host and NIS domain name

# Under the hood (cgroups)



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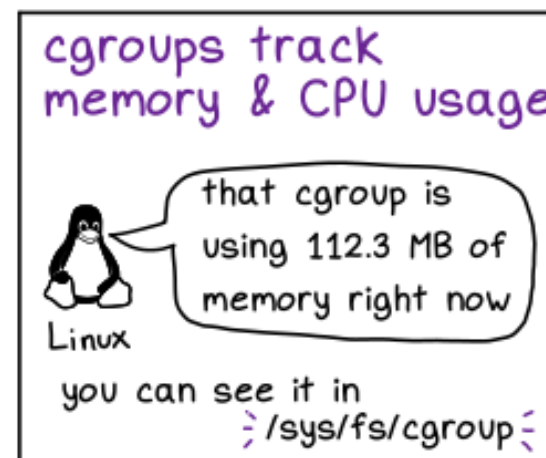
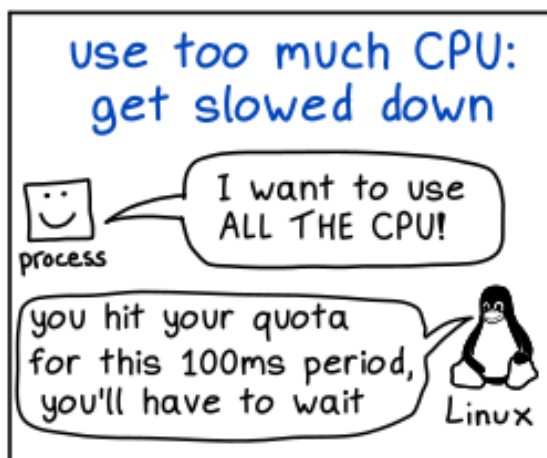
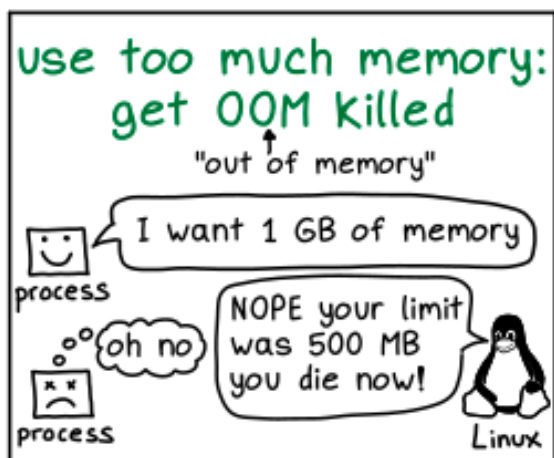
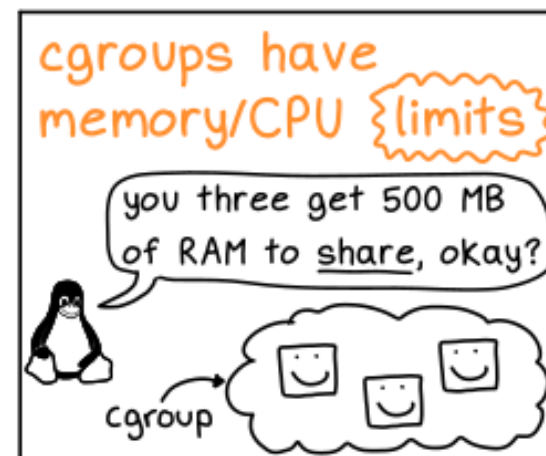
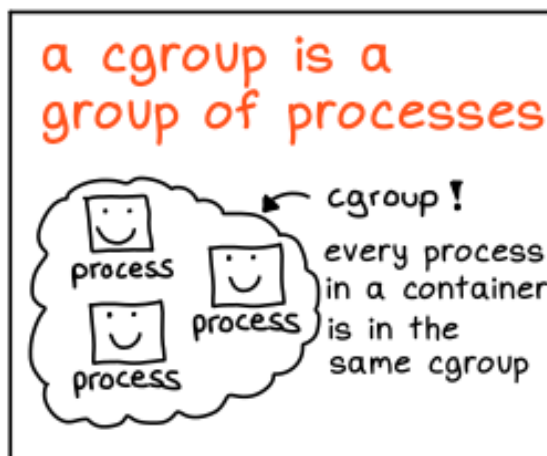
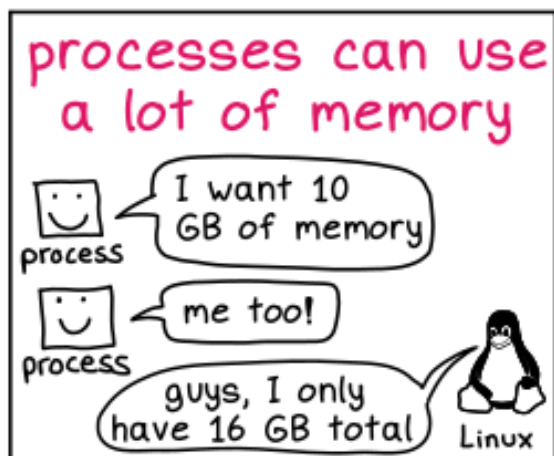
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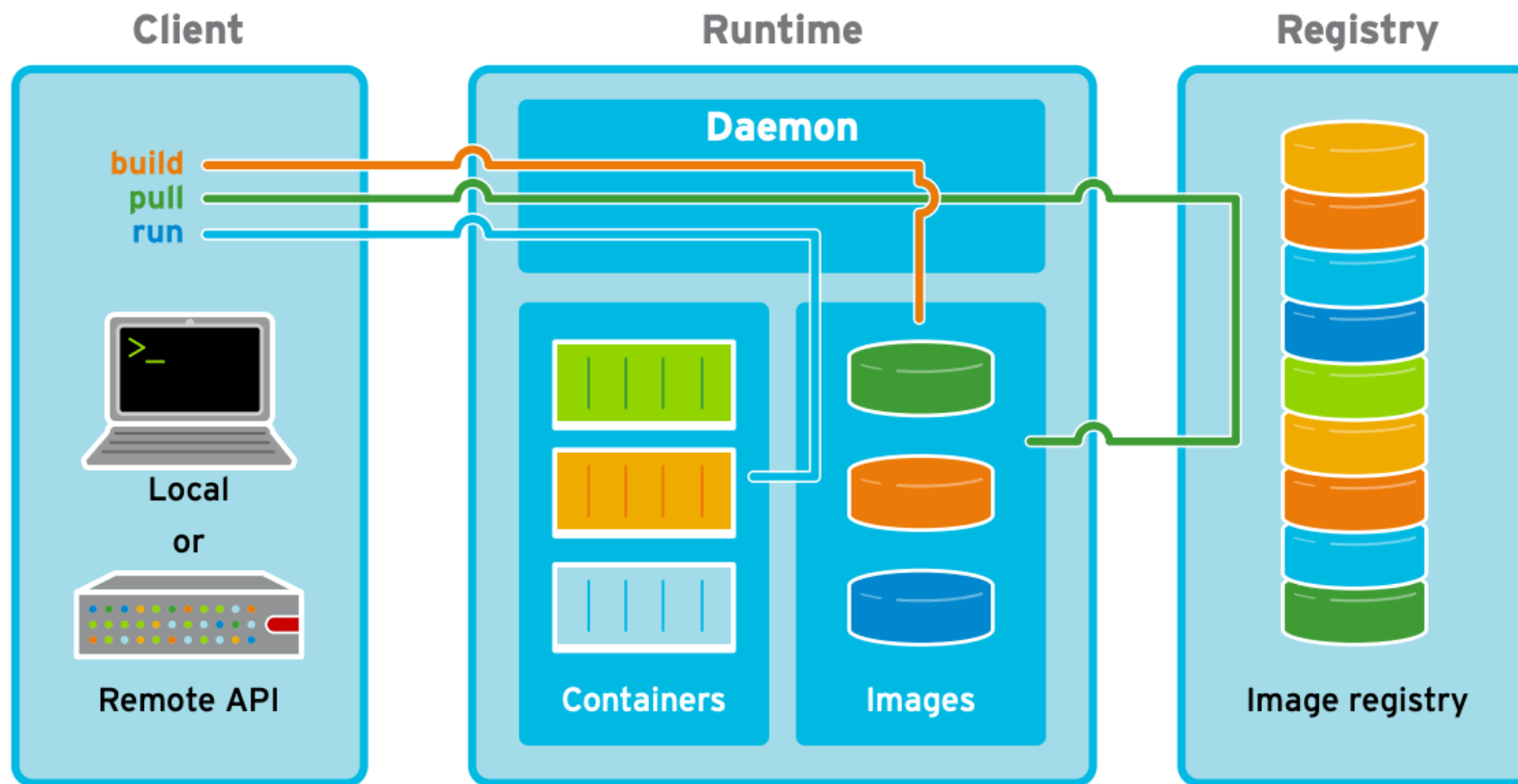
JULIA EVANS  
@b0rk

## cgroups

13

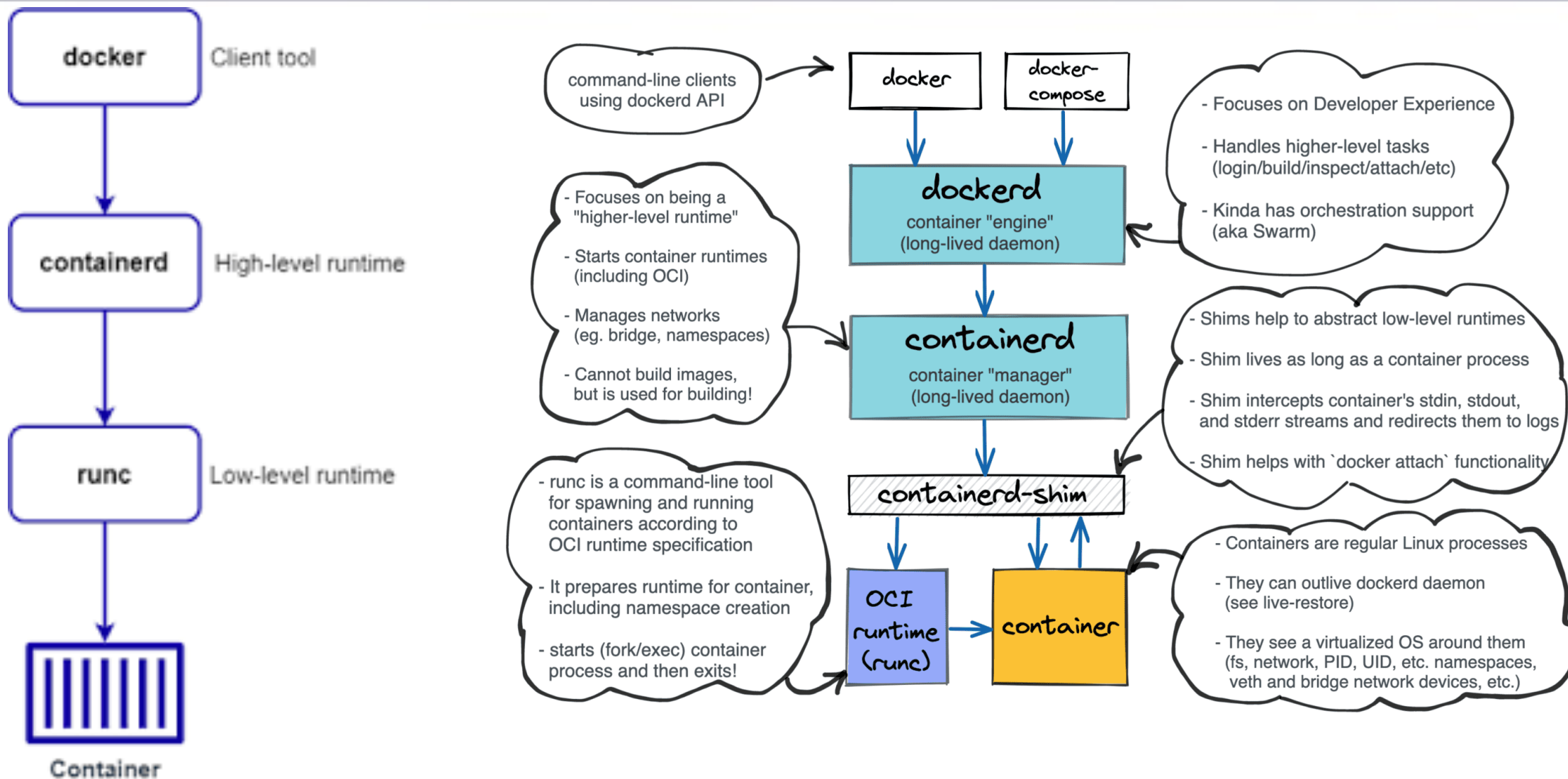


# Container Runtime



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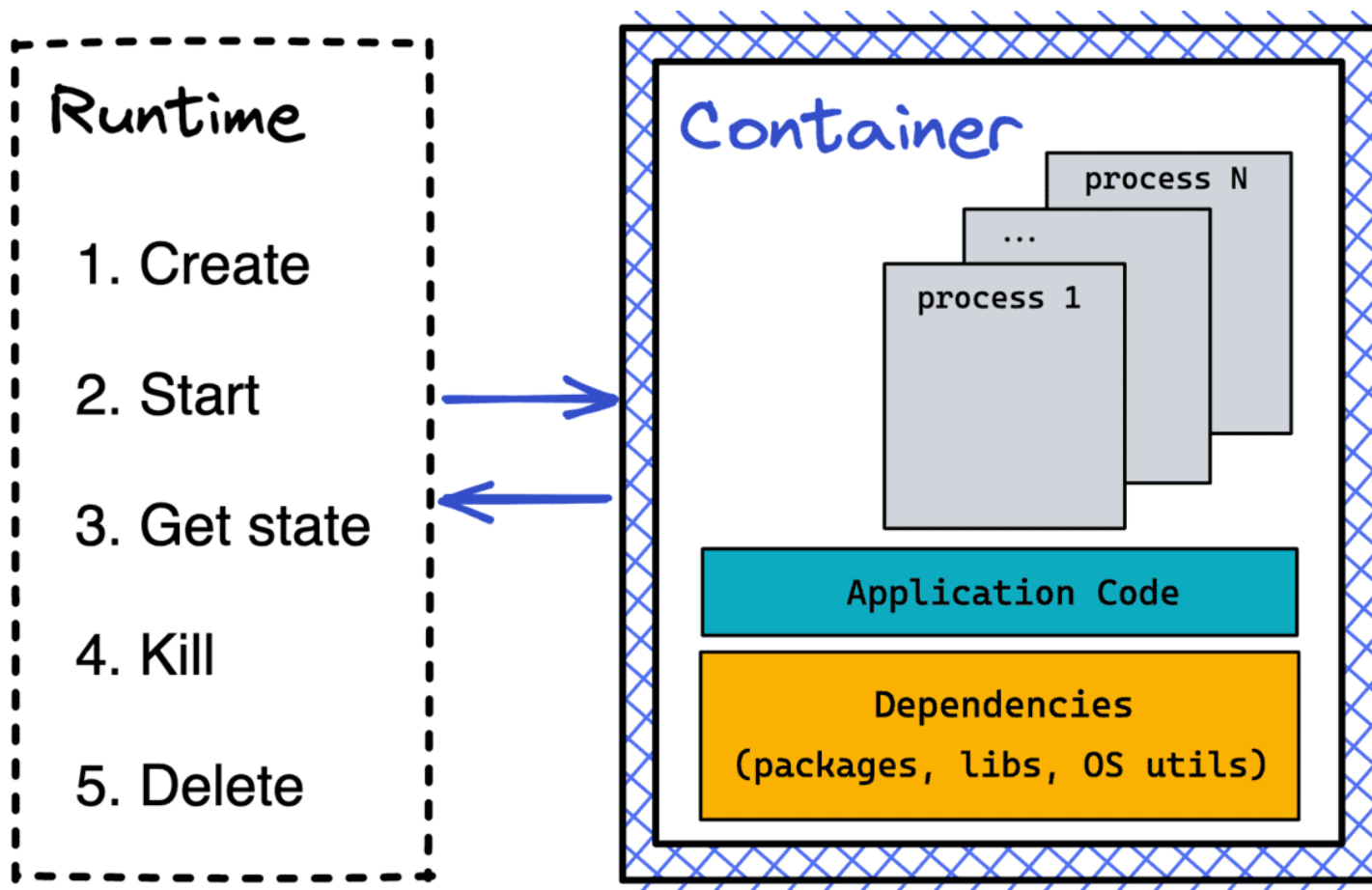
# Under the hood



Credit: @iximiuz



# Open Container Initiative (OCI)



Containers  
work the same way on



laptop



server

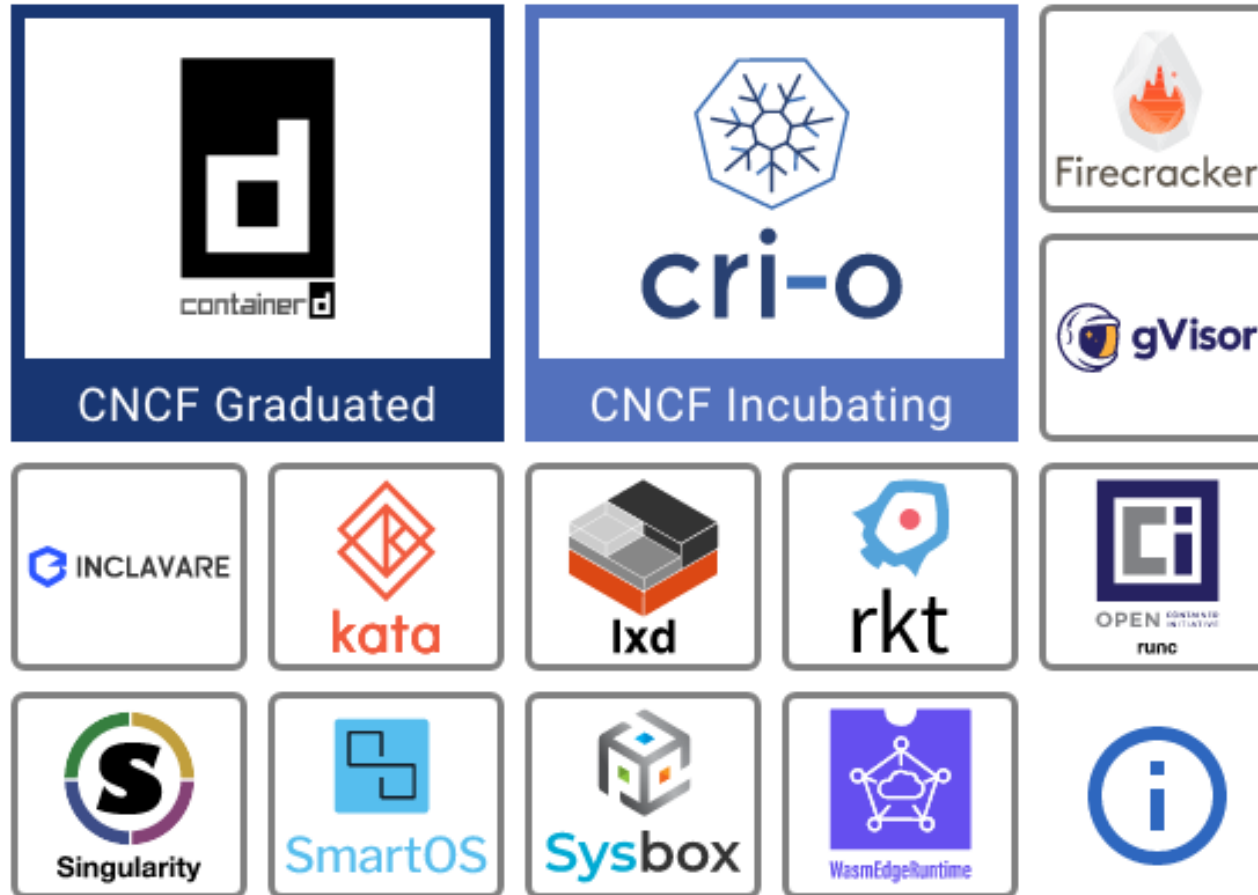


cloud

with

Docker/Kubernetes/Podman  
etc.

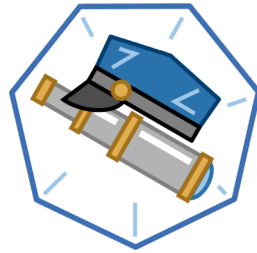
# Container Runtimes



Credit: [landscape.cncf.io](https://landscape.cncf.io)

# Container Runtime/Tools (High Level)

containerd



skopeo



cri-o



crun



docker



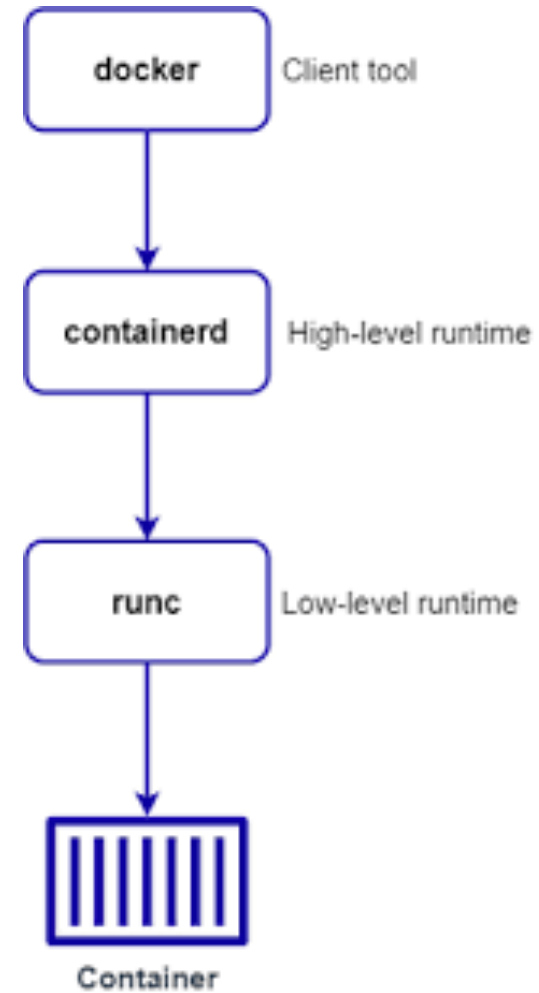
podman



buildah

Credit: [landscape.cncf.io](https://landscape.cncf.io)

# Container Runtimes (Low Level)



# Container Runtimes (Sandboxed)



# Container Runtime Usecases

## Build Systems

Developer Machines or build systems like CI Runners.

Requires Runtimes & tools to:

- Build Images
- Run Images
- Distribute Images

## Container Orchestration

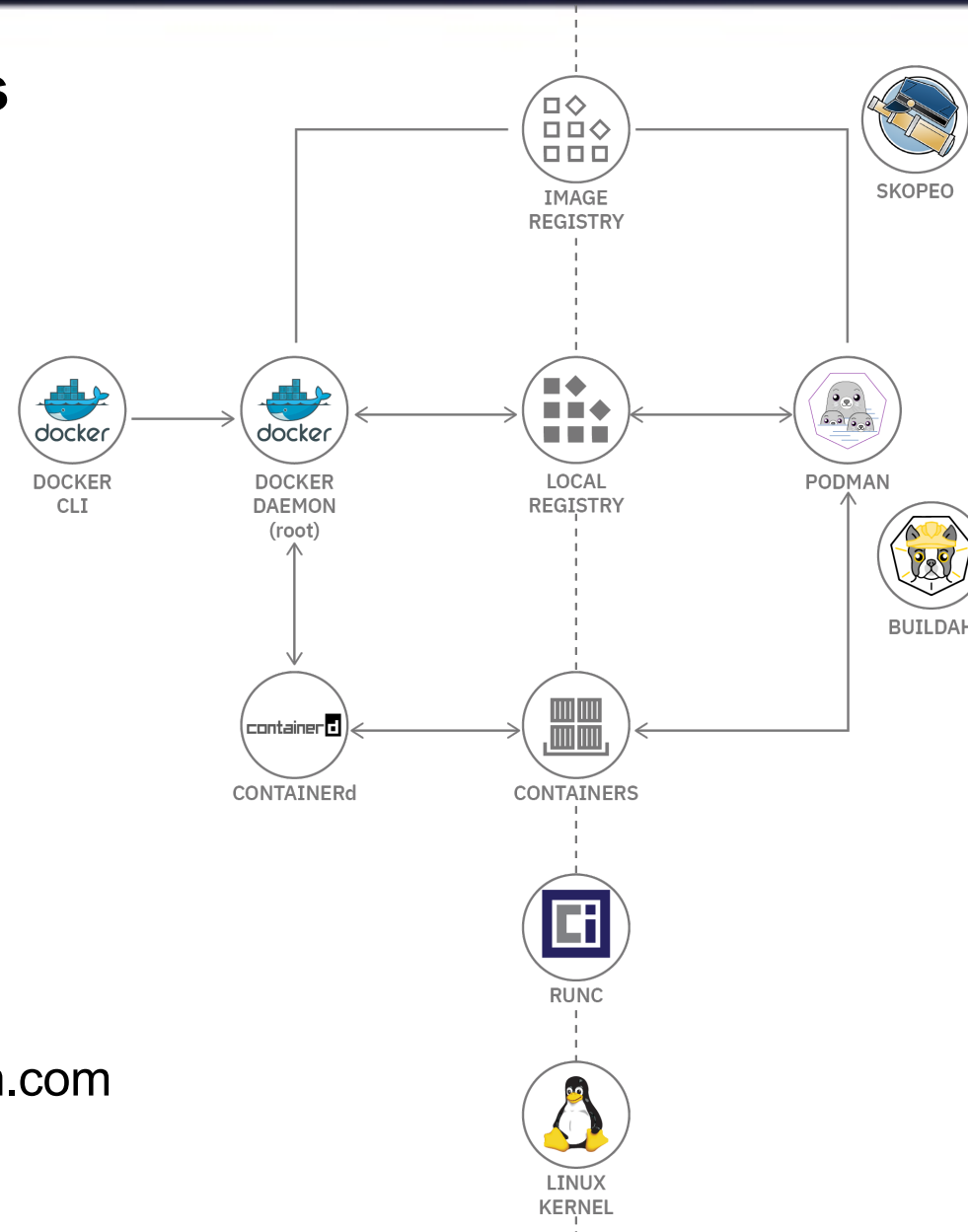
Systems Running containers at scale like Kubernetes

Major requirement is to run images



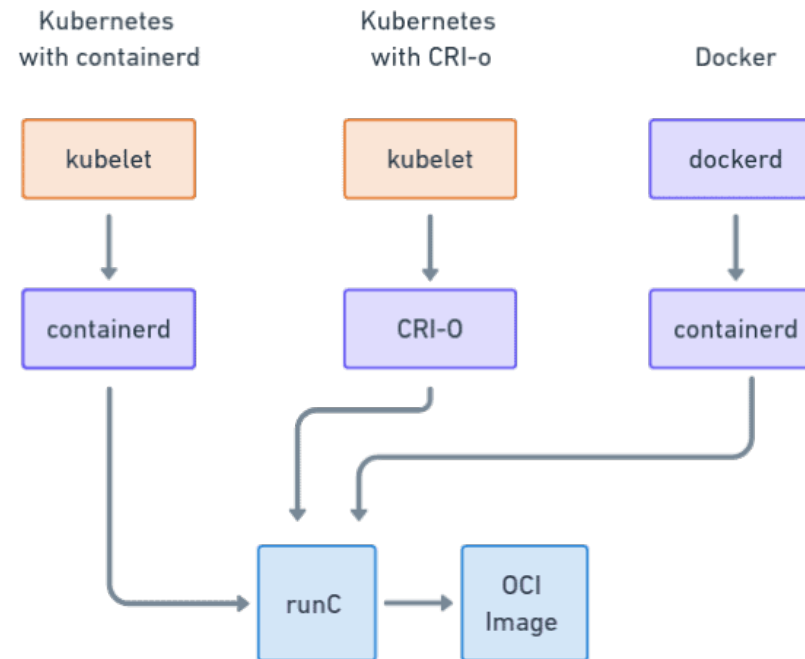
# Container Runtime Usecases

## Build Systems



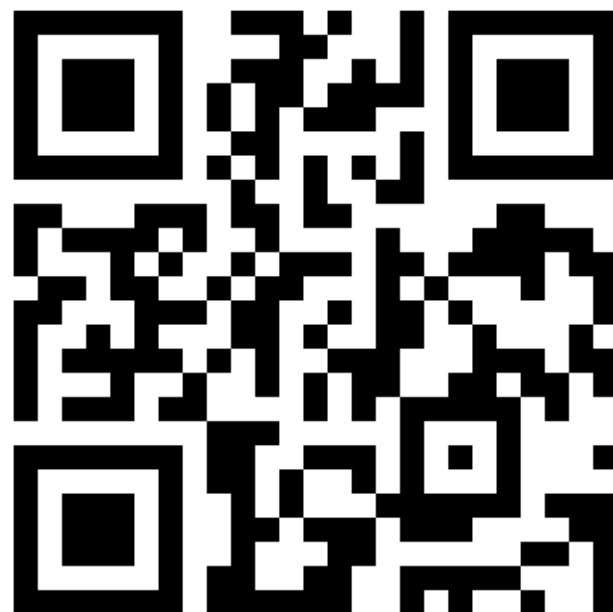
Credit: [developer.ibm.com](https://developer.ibm.com)

## Container Orchestration



# Thank you

**@sarki247 | abuangame**



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**October 24-28, 2021**



**Abubakar Siddiq Ango**

Developer Evangelism PM, *GitLab*