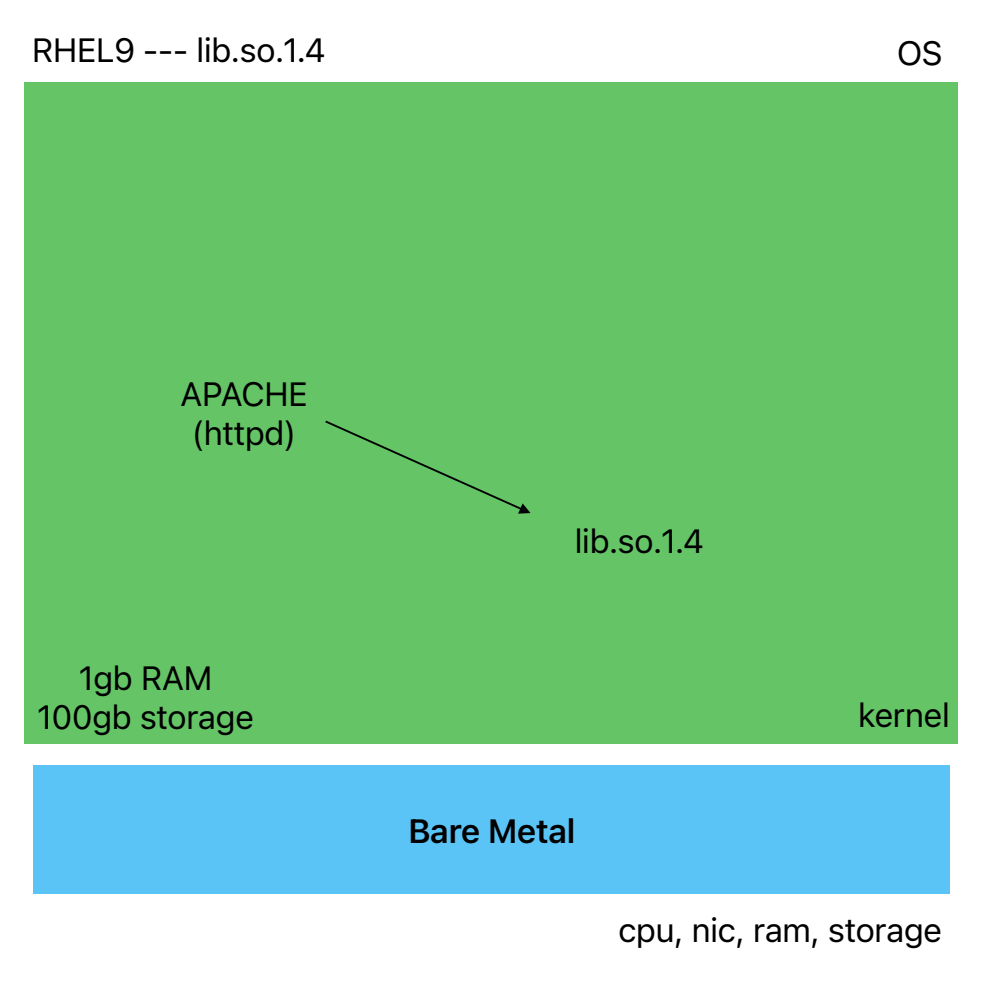
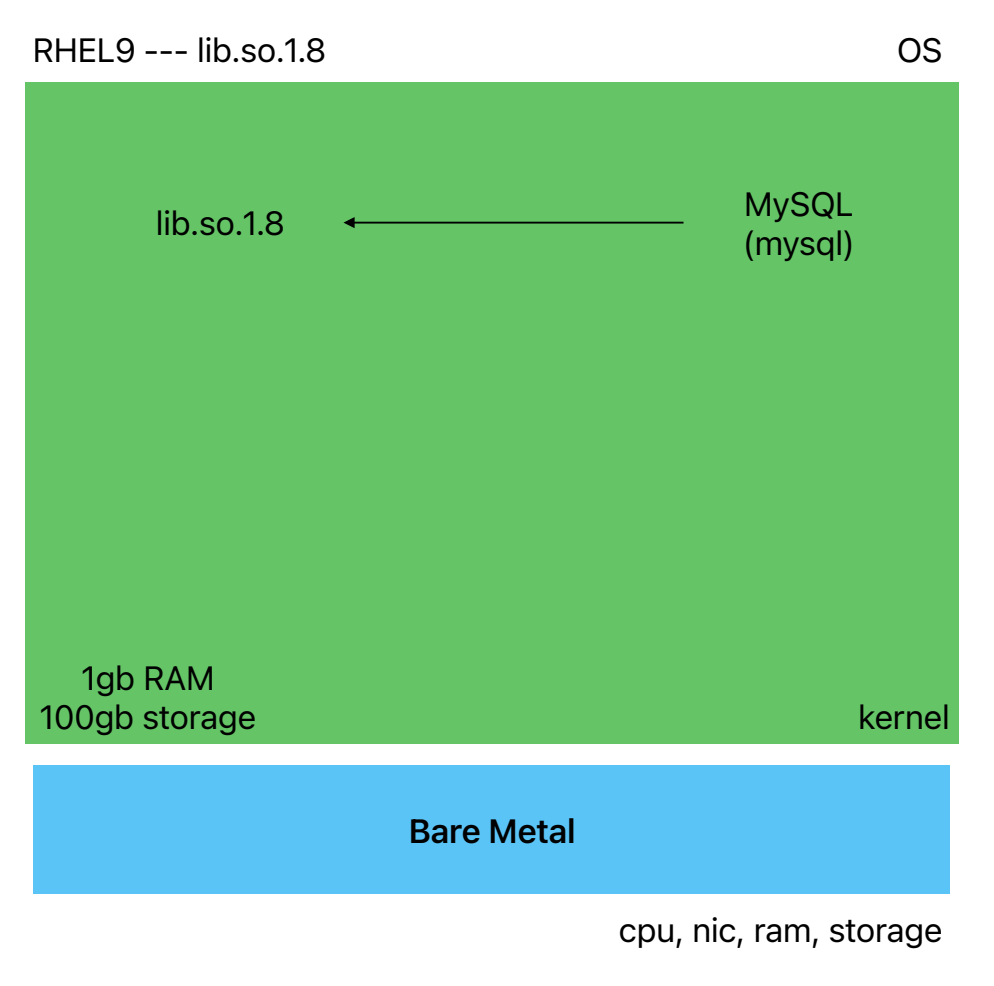
Deploy a Webserver

Dedicated Server

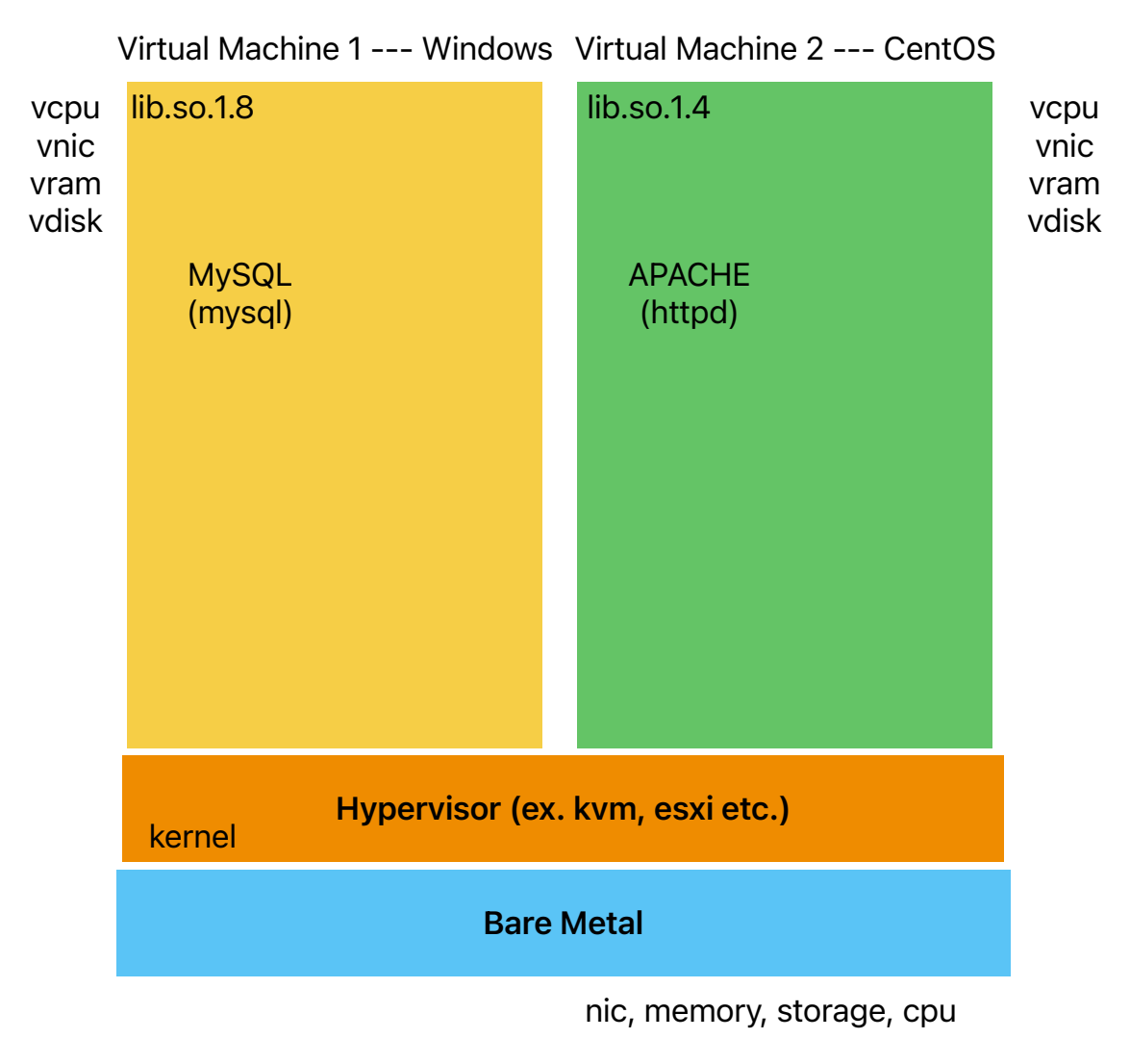


Problems:

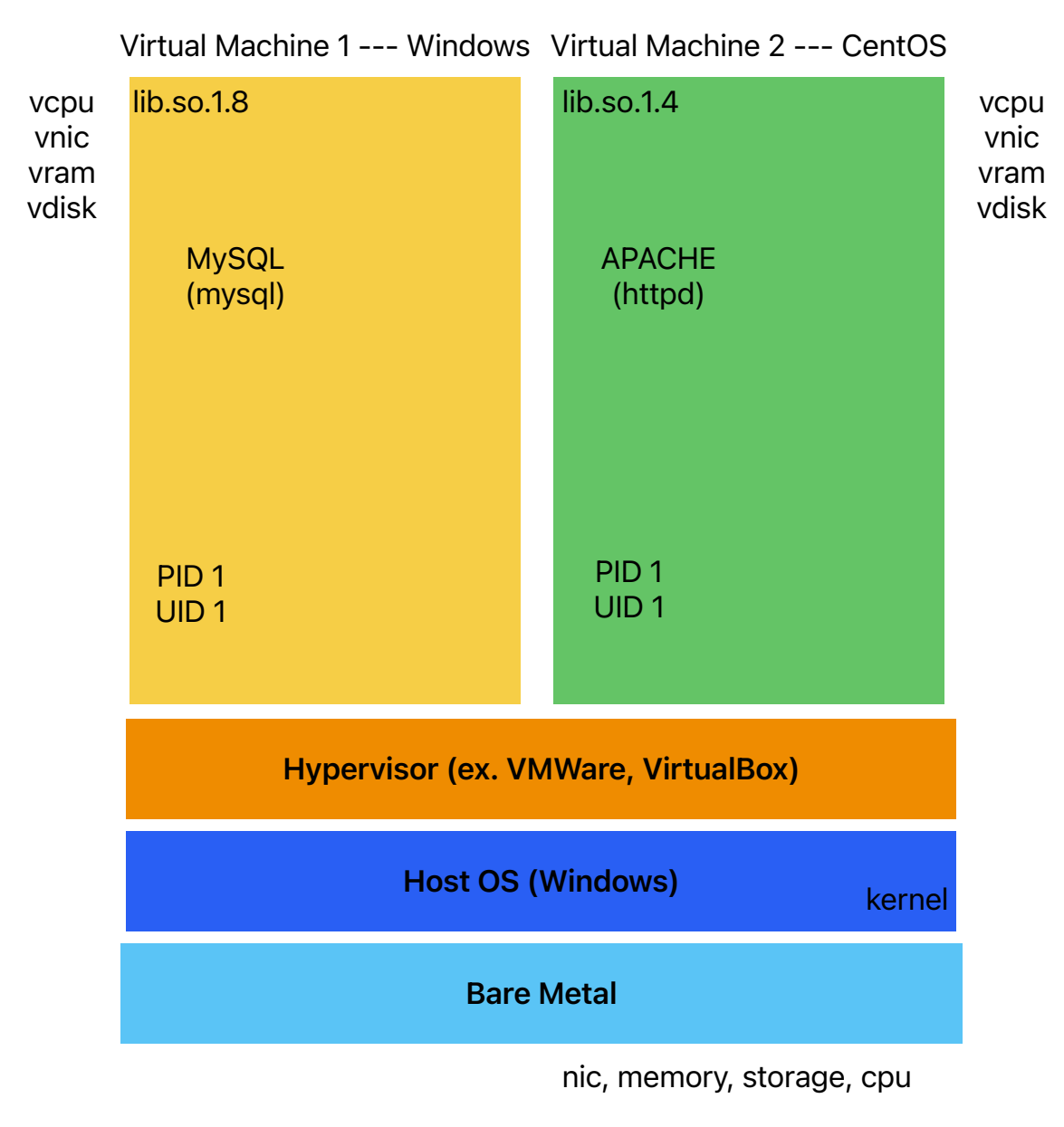
- RHEL Update lib.so.1.4 --> lib.so.1.6
- MySQL Application ---> lib.so.1.8
- Migration is very time taking
- Resource Utilisation --- is not optimistic
- Default Programs
- MySQL --- New Baremetal is required



Virtualisation



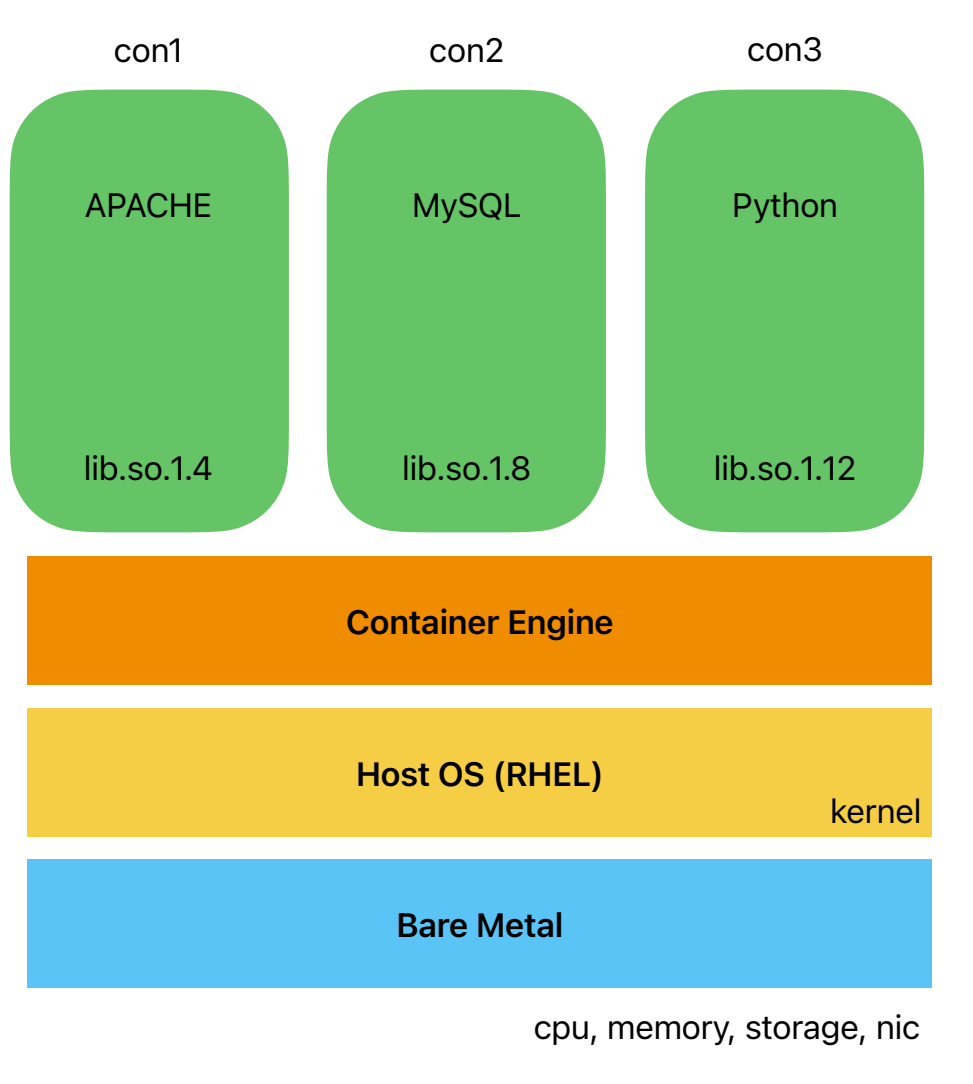
Problems:	Solved or not
- RHEL Update lib.so.1.4 --> lib.so.1.6	- Not Solved
- MySQL Application ---> lib.so.1.8	- Not Solved
- Migration is very time taking	- Migration is much better
- Resource Utilisation --- is not optimistic	- Solved
- Default Programs	- Not Solved
- MySQL --- New Baremetal is required	- Solved (Another VM)



Cloud

It provides the concept of virtualisation without the need of
physical and/or on-premise server.

Containerisation



Problems:	Solved:
- RHEL Update lib.so.1.4 --> lib.so.1.6	- Solved
- MySQL Application ---> lib.so.1.8	- Solved
- Migration is very time taking	- Even more easier
- Resource Utilisation --- is not optimistic	- Solved
- Default Programs	- Solved
- MySQL --- New Baremetal is required	- Solved

What is a Container

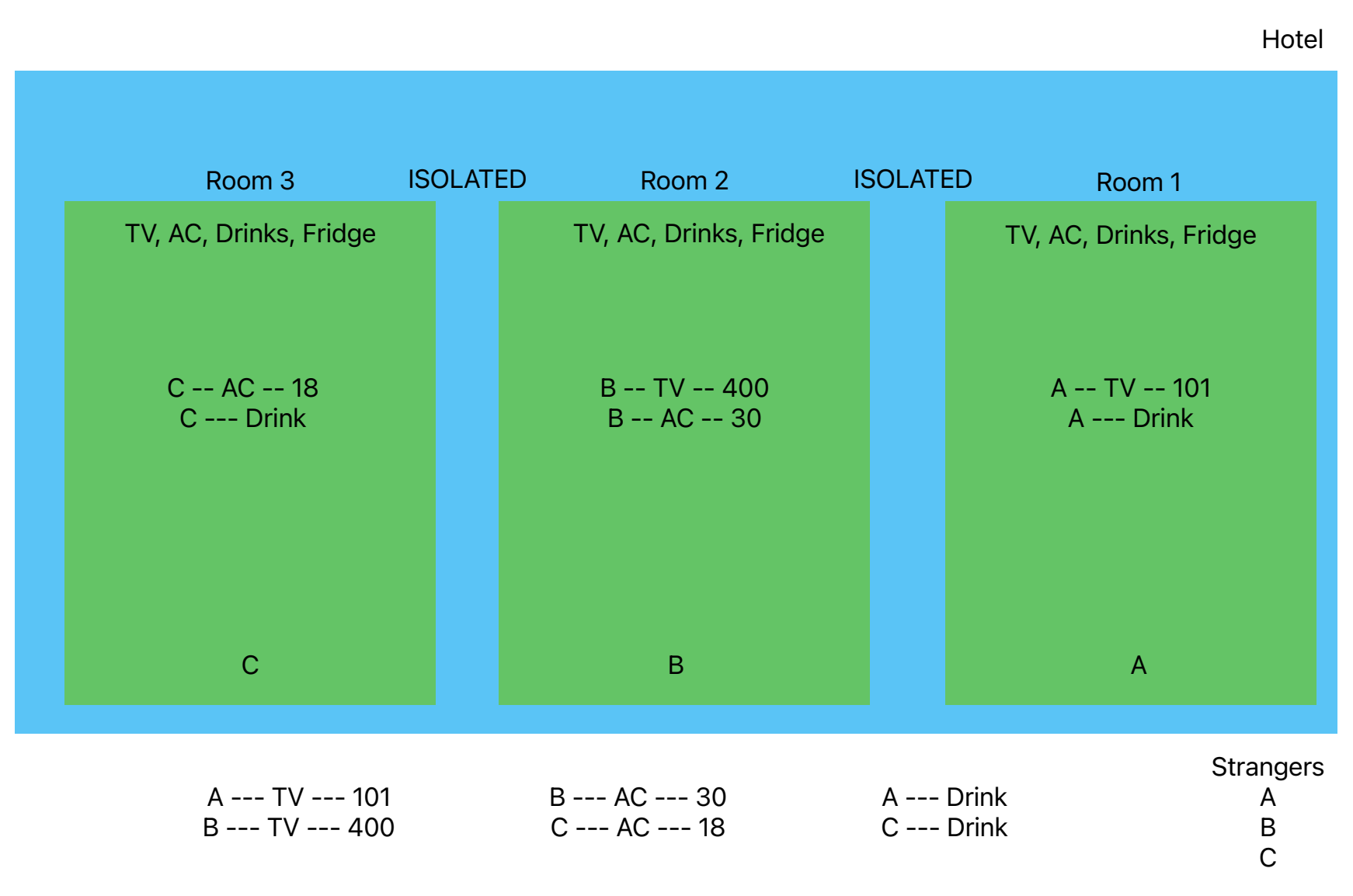
A container is a set of one or more processes that are isolated from the rest of the system.
A container is a standard unit of software that packages a single process, all its dependencies, and not contain any unnecessary tools or packages by default.

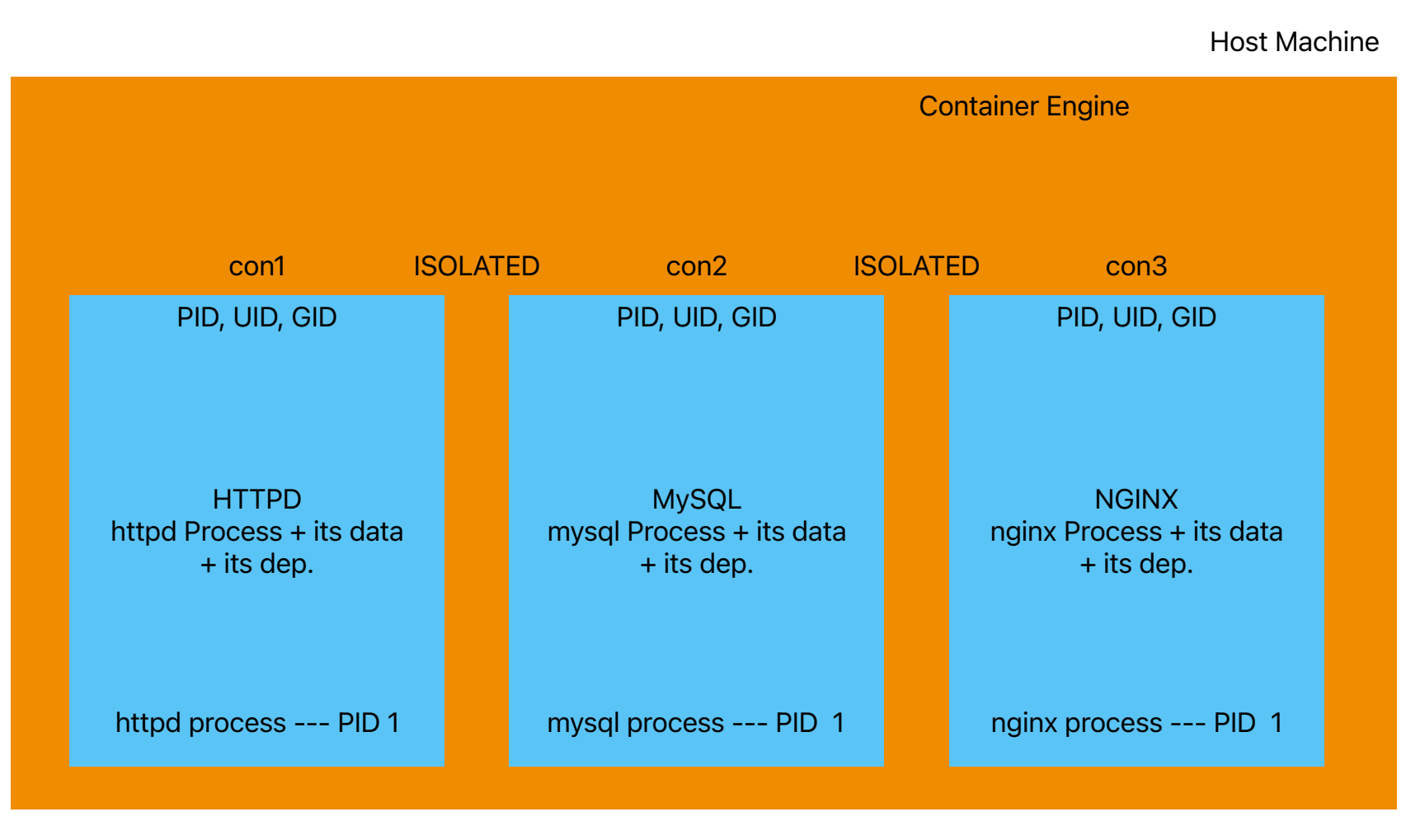
BENEFITS:
- Extremely Lightweight
- Low Hardware Footprint
- Environment Isolation
- Quick Deployment
- Reusability

ISO Image (10gb)
BaseOS (BaseFS) (100mb) + Many Programs + Their Data + Their Libraries + Their Dependencies + A Kernel === OS

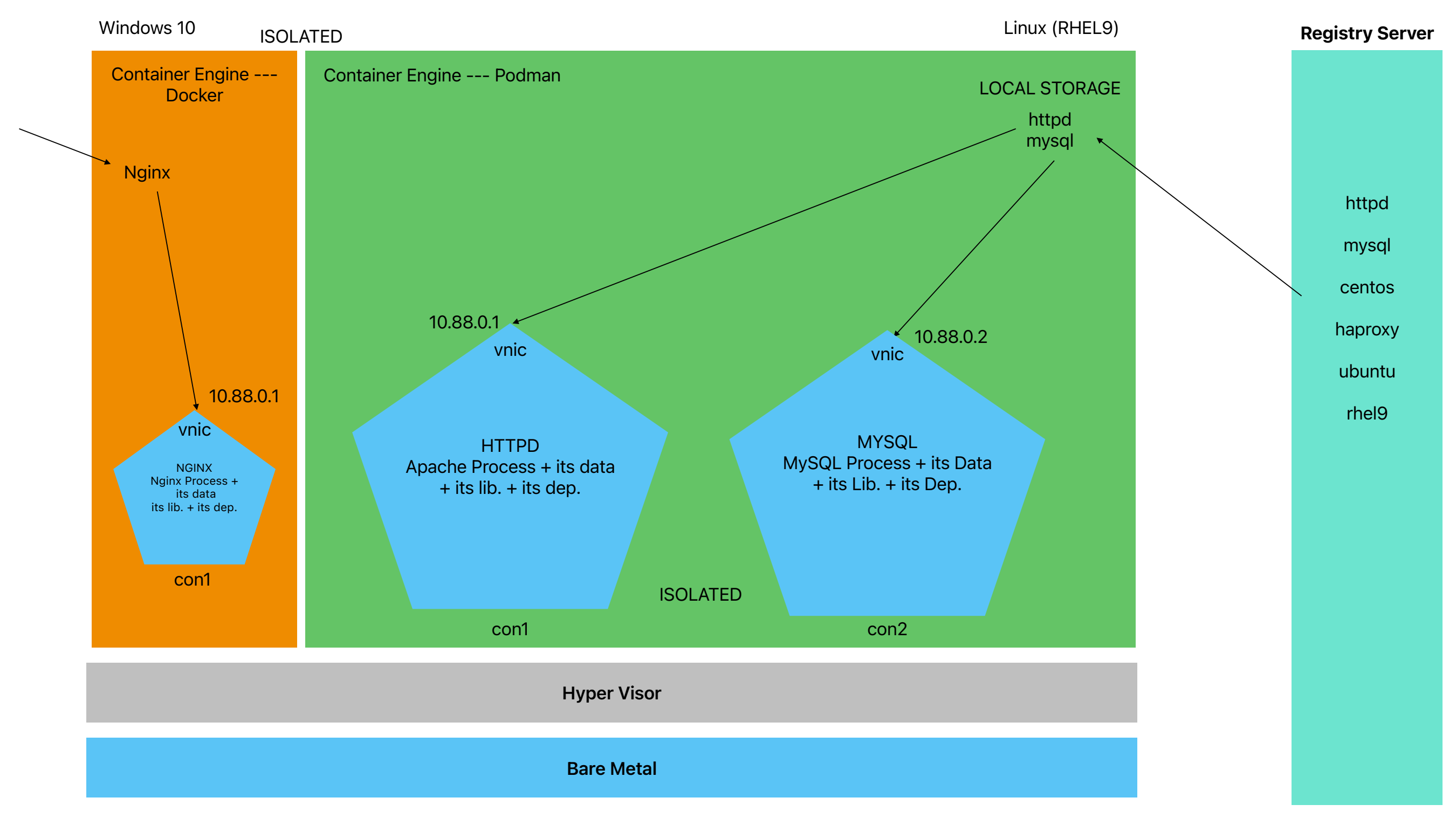
Container Image (350mb)
BaseOS (BaseFS) (100mb) + One Program + Its Data + Its Libraries + Its Dependencies + (No Kernel) === Container

Name Space





THE ARCHITECTURE



Podman

Part of the Red Hat Suite.
Container Engine
Open Source Tool for managing containers and container images
It is daemon-less, it is a linux native tool.
Podman is very similar to Docker (alias docker=podman)
Podman helps save the images locally.
Podman is compatible with Kubernetes and OpenShift.
Complies to the OCI.

Open Container Initiative

size -- 1cm -- US
size -- 1cm -- India
size -- 1cm -- Italy

Organisation that monitors and keeps a check that all
container engines maintain a uniform approach.

Container Images

Container Image (350mb)

BaseOS (BaseFS) (100mb) + One Program/Process/Application + Its Data + Its Libraries + Its Dependencies + (No Kernel) === Container

Two Types of Images:

1. Daemon Based Image
Images which contain a particular process.
Ex. httpd, mysql, nginx, haproxy

2. OS (Operating System) Based Image
Images which do not contain a particular process.
Ex. RHEL, Ubuntu, CentOS
You can create Daemon Based Images using OS Based Images

Syntax:

Tag --- means Version

registry_server_name/namespace(username)/image_name:tag

Example:
docker.io/dtg2468/my-httpd:1.0

REGISTRY SERVER

A Repository of Container Images

- Public Registry
Registry Servers where anyone can pull or push their own images as well.
No authentication
Ex. docker.io , quay.io

- Private Registry
Registry Server which are owned by a individual or firm.
Authentication might be required.
Ex. catlog.redhat.com , Private

Running Containers

podman run

```
-d : detached (Container runs in background)
-- name : To give custom name to container
-p : To connect with Ports
-v : To attach Volumes
-e : To define an Environment Variable
--rm : Remove Container after it exits
```