

DevOps ASSIGNMENT 2

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1) Hypervisor and Docker

Applications can be developed, shipped, and run on Docker, an open platform. Docker lets you quickly deliver software by separating your applications from your infrastructure. You can manage your infrastructure just like you manage your applications with Docker.

A hypervisor, otherwise called a virtual machine screen or VMM, is programming that makes and runs virtual machines (VMs). By virtually sharing its resources, such as memory and processing power, a hypervisor enables a single host computer to support multiple guest virtual machines (VMs).

Comparison on different functionalities

Working Mechanism

The bare metal hypervisor runs directly on the hardware, whereas the type two hypervisor runs on top of the operating system.

In contrast, Docker depends on the host kernel itself. As a result, multiple operating system instances cannot be created by the user. Instead, they make containers that the user can use as virtual application environments.

The number of supported application instances

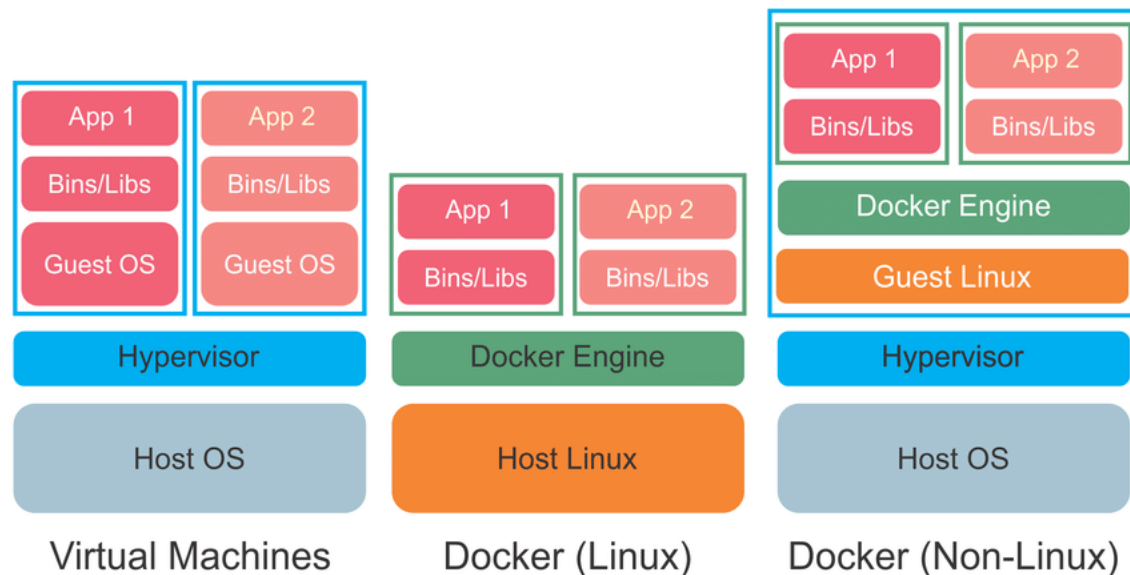
Users can create multiple instances of complete operating systems using a hypervisor.

Dockers are able to run multiple applications at the same time or multiple instances of a single application. This is done using containers.

Memory Requirement

Users can run multiple instances of complete operating systems thanks to hypervisors. As a result, they lack resources. They require dedicated resources from the shared hardware that the hypervisor allocates during boot for each instance.

However, there are no such requirements for Dockers. Any number of containers can be made. Docker provides processing power to the containers in accordance with the requirements of the application and its availability.



Boot time

Dockers can be created quickly to get started because they do not require such resource allocations.

The speed with which Dockers and containers can be set up is one of the main factors driving their popularity.

It could take a hypervisor up to a minute to boot the operating system and get up and running.

Docker can make compartments in a moment or two, and clients can begin in the blink of an eye.

2) Comparison between Containers and Virtual machines

Container:

It is elevated above the host operating system of a physical server. They operate on the same operating system, which necessitates regular maintenance for patches and bug fixes. Compared to virtual machines, they are more mobile and agile.

Virtual Machine:

Between the virtual machine and the hardware, it runs on top of an emulated software called the hypervisor. Virtualization is made possible by the hypervisor. It deals with the sharing of actual assets into virtual machines. Each virtual machine runs its own visitor working framework. Compared to containers, they are less mobile and agile.

| Containers | Virtual Machines (VM) |
|---|---|
| Software that provides independent access to a variety of an application's functions is known as a container. | A virtual machine (VM) is a piece of software that lets you install additional software inside of it so that you can virtually control it rather than installing the software directly on the computer. |
| A single operating system is shared by applications in a container environment. | On a VM system, applications can run on different operating systems. |
| Containers virtualize the operating system only. | VM virtualizes the computer system. |
| Containers take a few seconds to run. | VM takes minutes to run, due to large size. |
| Containers are useful when we are required to maximise the running applications using minimal servers. | VM's are useful when we require all of OS resources to run various applications. |
| Size of container is very light, i.e. a few megabytes. | VM size is very large. |
| Examples of containers are: Rancher OS, Photon OS, Containers by Docker. | Examples of VM are: KVM, Xen, VMware. |