Devops Assignment 2

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1. Comparison between hypervisor and docker?

Functioning Mechanism

The most significant difference between hypervisors and Dockers is the way they boot up and consume resources.

- Hypervisors are of two types – the bare metal works directly on the hardware while type two hypervisor works on top of the operating system.
- Docker, on the other hand, works on the host kernel itself. Hence, it does not allow the user to create multiple instances of operating systems.

Instead, they create containers that act as virtual application environments for the user to work on.

Number of Application Instances Supported

A hypervisor allows the users to generate multiple instances of complete operating systems. Dockers can run multiple applications or multiple instances of a single application. It does this with containers.

Memory Requirement

Hypervisors enable users to run multiple instances of complete operating systems. This makes them resource hungry.

They need dedicated resources for any particular instance among the shared hardware which the hypervisor allocates during boot.

Dockers, however, do not have any such requirements. One can create as many containers as needed.

Based on the application requirement and availability of processing power, the Docker provides it to the containers.

Boot-Time

As Dockers do not require such resource allocations for creating containers, they can be created quickly to get started.

One of the primary reasons why the use of Dockers and containers is gaining traction is their capability to get started in seconds.

A hypervisor might consume up to a minute to boot the OS and get up and running.

Docker can create containers in seconds, and users can get started in no time.

Architecture Structure

If we consider both hypervisor and Docker's architecture, we can notice that the Docker engine sits right on top of the host OS.

It only creates instances of the application and libraries.

Hypervisor though, has the host OS and then also has the guest OS further. This creates two layers of the OS that are running on the hardware.

2. Comparison between Containers and Virtual machines?

Virtual Machines	Containers
VMs have a large size.	Containers are very light (some megabytes).
VM runs in minutes due to its large size.	Containers run in seconds.
The hardware is virtualized to execute several Operating system instances with VMs.	Containers facilitate a way for virtualizing the operating system so that several workloads can execute on an individual operating system instance
Higher overhead	Lower overhead
VM facilitates a way for virtualizing any computer system.	Container only virtualizes the OS.
It is highly secured.	It is less secure.
VM examples: VMware, Xen, KVM	Container examples: Containers via Docker, PhotonOS, RancherOS.