

ASSIGNMENT - 2

DEVOPS (IS7I04)

Submitted by

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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.

OS Support

Hypervisors are OS agnostic. They can run across Windows, Mac, and Linux.

Dockers, on the other hand, are limited to Linux only. That, however, is not a deterrent for Dockers since Linux is a strong eco-system. Many major players are entering into the Dockers' fray



2. Comparison between Containers and Virtual machines

Characteristic	Containers	Virtual Machines
Portability and Deployment	An individual container is deployed through the CLI interface, while the orchestrator can be used to deploy multiple containers	An individual VM is deployed through the CLI interface, while a virtualization management application like VMware's vSphere can be used to deploy multiple VMs
Persistent storage	Use local storage for a single node, or SMB shares for storage shared by multiple nodes or servers.	Use a virtual hard disk (VHD) for local storage for a single VM, or an SMB file share for storage shared by multiple servers.
Load balancing	Orchestrators facilitate start and stop of containers to manage use of resources based on load and availability.	The hypervisor facilitates start and stop of VMs. VM load balancing to manage load and improve availability, can also involve moving running VMs to other servers in a cluster.
Fault tolerance	The orchestrator recreates a new cluster node, inserting any containers that were running, in a failed cluster node.	The hypervisor moves VMs to a new fail-over server cluster, if the existing one fails. The hypervisor restarts the VM OS on the working cluster.
Networking	Containers use virtual network adapters.	VMs use an isolated view of a virtual network adaptor.

