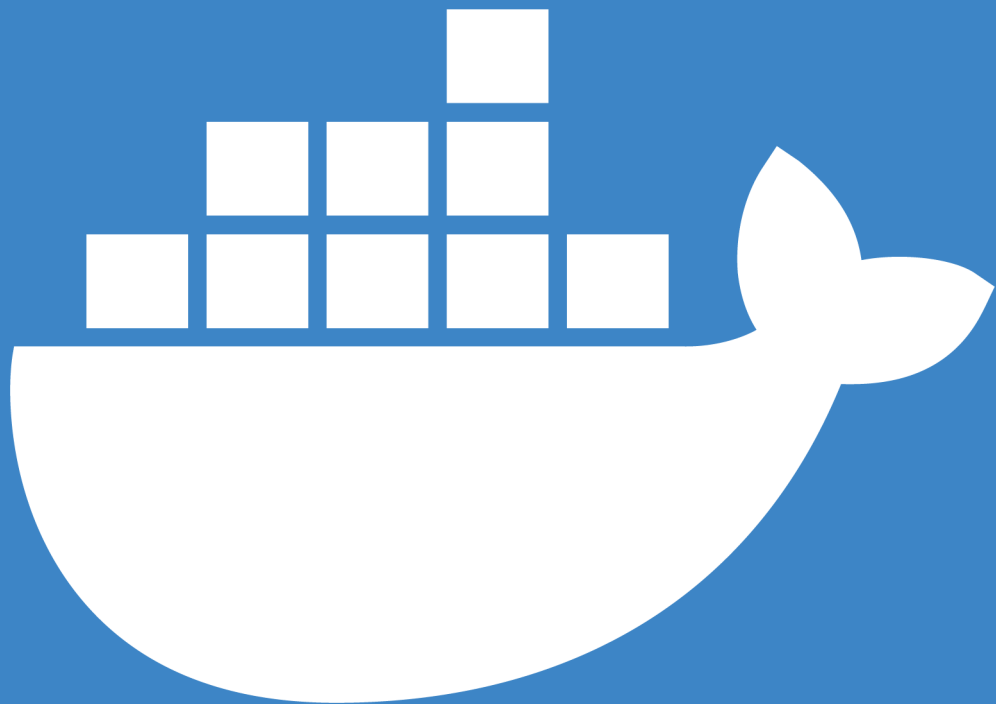


# DOCKER

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**Mohammad Yavari**  
**Matin Mokhtari**



# What is **Docker?**

A tool that can  
package  
software into  
**CONTAINERS**  
that run  
reliably in any  
environment.

## What are Containers?

First we have to take a  
look at

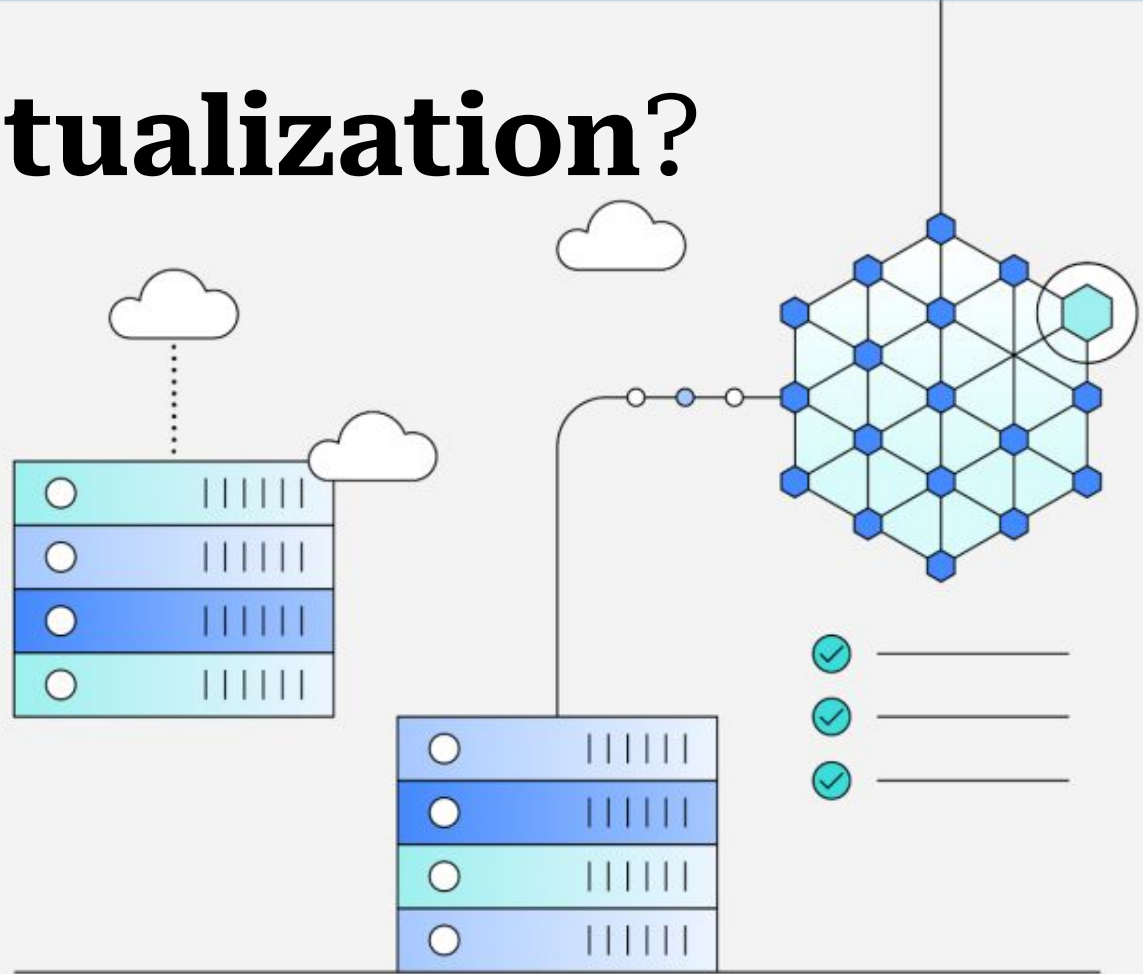
### **Virtual Machines**

## What is a **Virtual Machine**?

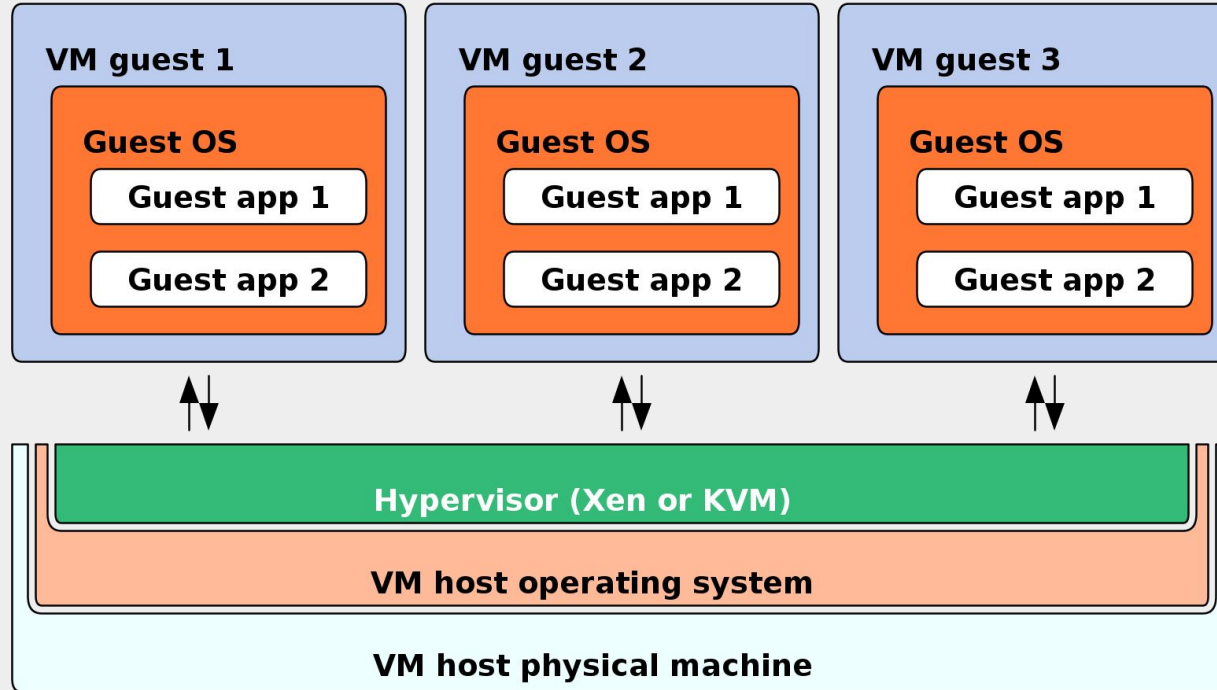
A virtual machine is a virtual representation, or emulation, of a physical computer. They are often referred to as a **guest** while the physical machine they run on is referred to as the **host**.

**Virtualization** makes it possible to create multiple virtual machines, each with their own operating system (OS) and applications, on a single physical machine with help the of a **Hypervisor**. A VM cannot interact directly with a physical computer.

# What is **Virtualization**?



**Virtualization** is a technology that provides a way for a machine (VM Host Server) to run another operating system (VM Guest) on top of the host operating system.



# What is a **Hypervisor**

A hypervisor is the **software layer** that coordinates VMs. It serves as an interface between the VM and the underlying physical hardware, ensuring that each has access to the physical resources it needs to execute. It also ensures that the VMs don't interfere with each other by impinging on each other's memory space or compute cycles.

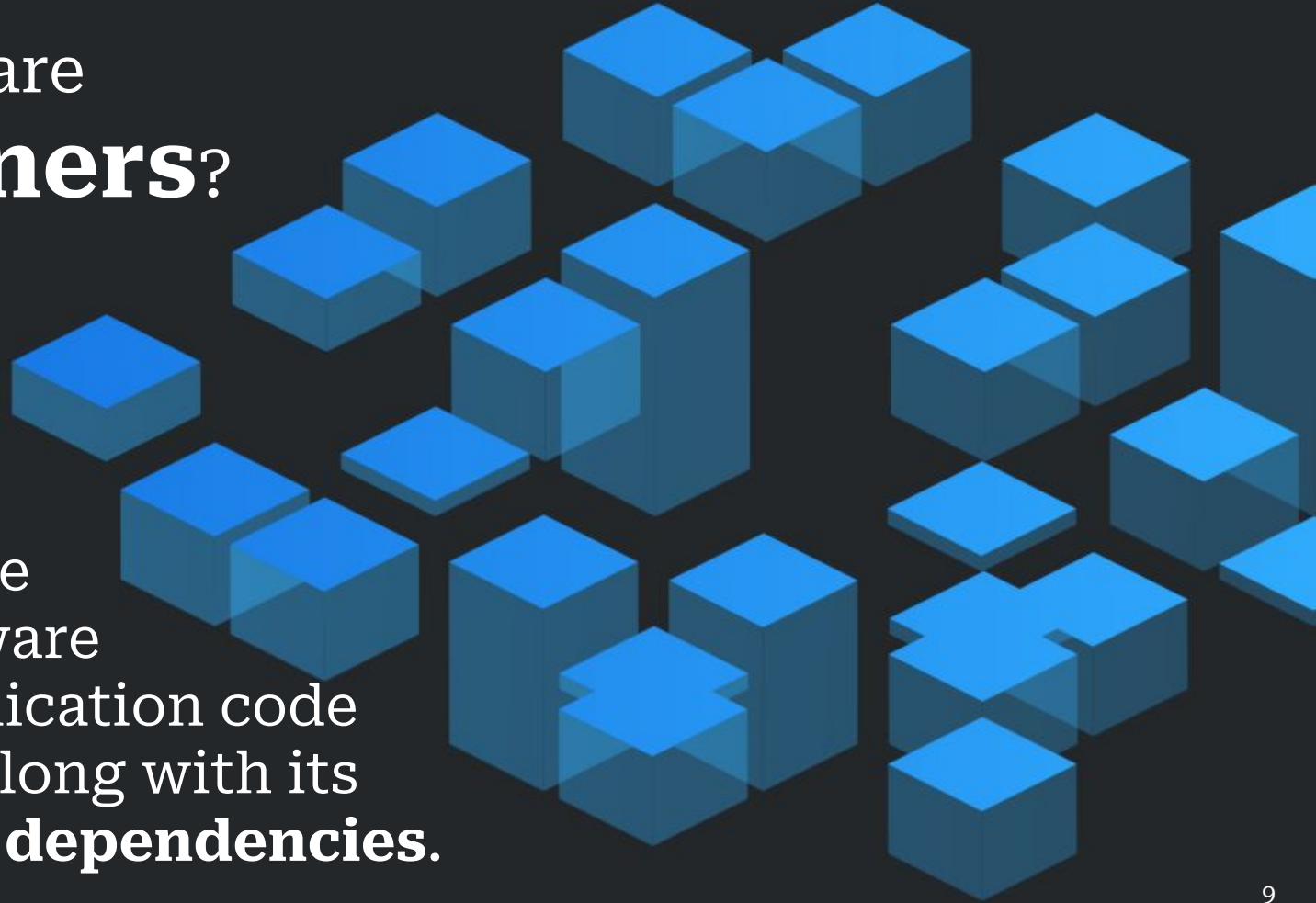
# Characteristics of **Hypervisors**

- ❖ Performance
- ❖ Ecosystem
- ❖ Management tools
- ❖ Live migration
- ❖ Cost

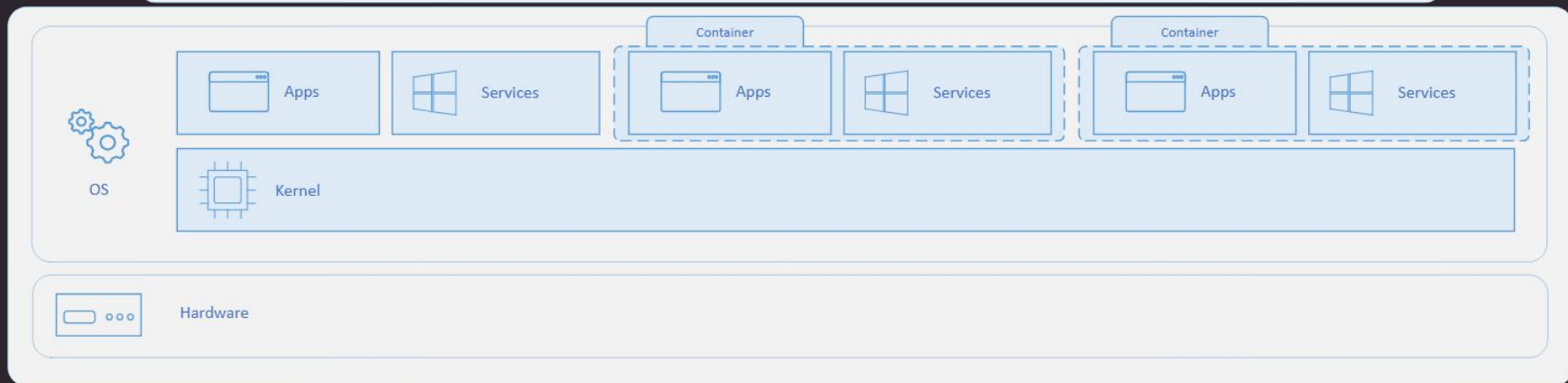
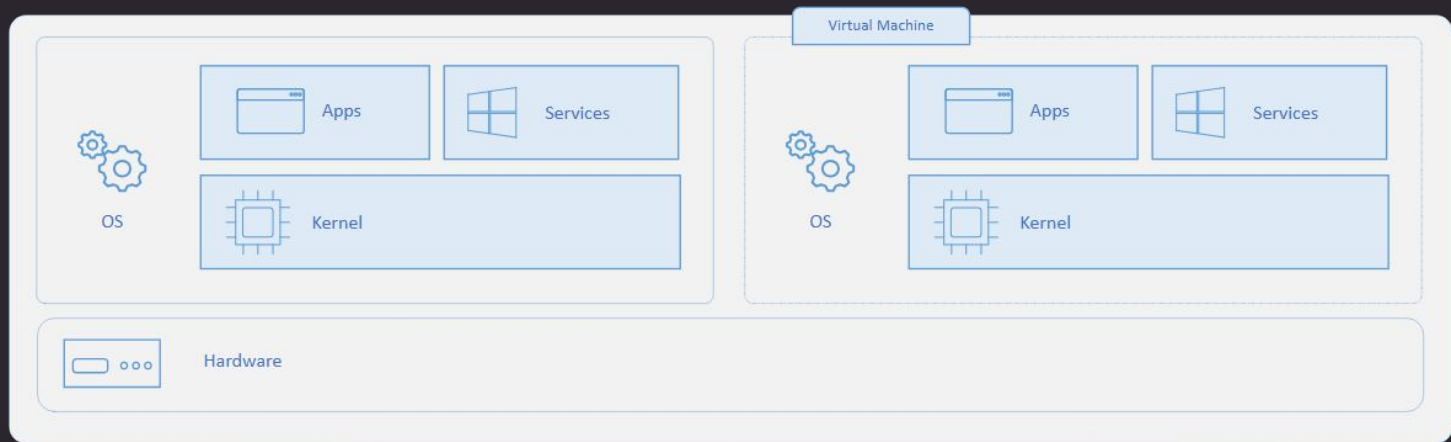


# What are **Containers?**

Containers  
are executable  
units of software  
in which application code  
is packaged along with its  
**libraries** and **dependencies**.



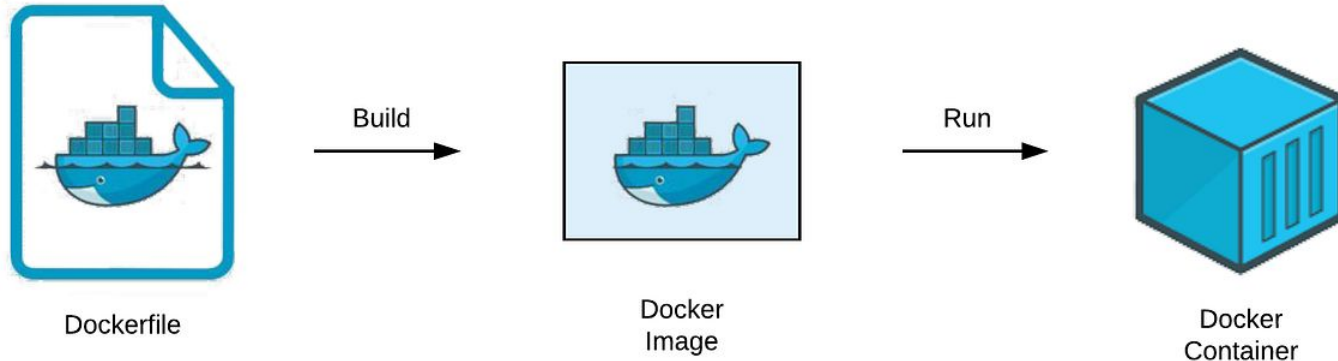
# Containers vs. Virtual Machines



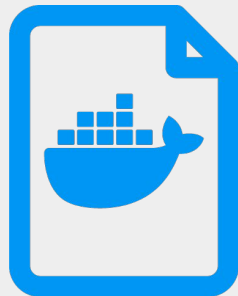
- ★ Lighter weight
- ★ Portability
- ★ Modern
- ★ Utilization

## **Benefits of using Containers**

# 3 Main Tools of Docker



**DockerFile:** A text file with instructions to automate the creation of Docker images.



**Docker images:** Executable files with application code and dependencies to run as containers.



**Docker containers:** Live, ephemeral instances of Docker images that can be interacted with and adjusted.



# References

- IBM - [What are virtual machines? | IBM](#) - [What is Virtualization? | IBM](#) - [What are hypervisors? | IBM](#) - [What is Docker? | IBM](#) - [What are containers? | IBM](#)
- Fireship - [Docker in 100 Seconds](#)
- Suse - [Virtualization: Basic concept \(suse.com\)](#)
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- Medium - [Understand Dockerfile. Dockerfile is the basic concept for... | by Rocky Chen | The Startup | Medium](#)
- Docker Docs - [Docker Docs](#)