

Containerization - It is the process of packaging an application and everything it needs (like code, libraries and settings) into one standard box called a container.

Before containers, developers often said "it works on my computer" but apps didn't work the same on other computer. Container solve this by with environment consistency, fast scalability and lightweight deployment across platforms.

Docker -

Docker is an open-source tools that helps you create, run and manage containers. It puts your app and everything, it needs into a container, so the app runs the same on any computer.

Sunday 03

Why docker :-

- 1.) Consistency Across Environments
- 2.) Faster Deployment
- 3.) Lightweight and Efficient
- 4.) Easy scalability

VM vs Docker

VM and Docker both are used to run applications in isolated environments, but their architecture, performance and use cases are very different.

"A VM runs a full operating system along with virtual hardware. It needs more memory, more time to start and uses more system resources."

"Docker runs the app using the host's OS. It doesn't need a full OS, so it's lightweight, starts quickly and uses fewer resources."

So it's faster and better for DevOps."

In example :-

VM is like a whole restaurant - separate kitchen, staff, tables etc. Just to serve one dish!

Docker is like a tiffin box - same kitchen, just packs your food (app + stuff) and sends it.

Docker History

- 1) Docker was first world release in march 2013. It is developed by 'Solomon Hykes' and 'Sebastian Pahl'.

Docker is an open-source centralised platform designed to create deploy and run applications.

- 2) Docker uses container on the host OS to run application. It allows applications to use the same linux kernel as a system on the host computer rather than creating a whole virtual OS.
- 3) We can install docker on any OS but docker engine runs natively on linux distribution.
- 4) Docker written in 'Go' language.
- 5) Docker is a tool that performs OS level virtualization also known as Containerization.
- 6) Before Docker many users faces the problem that a particuler code is running in the developer system but not in the user's system.

Advantages of Docker

No pre-allocation of RAM - Docker doesn't need fixed RAM before starting, it uses resources only when required.

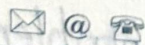
CI efficiency - You can build one container image and use the same image in all stages (dev, test, prod).

Less cost - Containers use fewer resources, so overall cost is low.

Lightweight - Containers are very small compared to virtual machines.

Runs anywhere - Same container can run on physical server, VM or cloud.

Reusability - You can reuse images instead of creating everything again.



Fast creation - Container starts in seconds, unlike VM which takes minutes.