श्री गणेशाय नमः ①

DRS:

Docker:- (developing, shipping & running application)

Open ✓ platform

→ Seperate application from infrastructure (to deliver s/w quickly)

soln docker.

⇒ **Dependency hell in s/w development:-**

→ Complex web of interdependencies among s/w components.

→ Causing conflict

→ Version issues. & inconsistent behaviour.

Consequence:- delayed services.

Soln:- (docker):- encapsulating applications & their dependencies into self-contained units

⇒ **How docker address the problem:-**

→ Consistent environment

→ Version control.

→ Reproducible builds

→ Scalability & flexibility

→ faster development workflow.

(2)

⇒ Implementing docker in your development workflow:-

Install docker → Create Dockerfile → Build the docker image
↓
Scale & deploy ← Run Container

⇒ Docker Container:-

→ light weight
→ standalone
→ executable package
→ secure. (isolation capabilities)

⇒ Docker desktop:- is a complete end to end applicat for docker environment on desktop machine for developers.

⇒ Docker engine:- Server side installation, will be prefered for servers, cloud machines & it's only compatible with linux.

→ Docker CE (free)
→ Docker EE (paid)
→ EE = support + Enterprise support

⇒ Docker backbone

• Build → Ship → Run

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Note:- hyperversion allows multiple VMs to run on a single machine.

Note:- Inside a Container all the necessary executable, binary codes, libraries & Configuration files.

→ Container do not Contain O.S images. this makes them more lightweight & portable with significantly less overhead.

⇒ Docker is all about speed.

→ develop faster
→ Build faster
→ Test faster
→ Deploy faster
→ update faster
→ Recover faster.

very large gigabytes

lots of system memory

↓

VMs → more secure

(piece of s/w allows you to install other s/w inside of it)

more s/w Are

Container

↓

- shared OS kernel.
- lightweight
- standalone

⇒ Internal processing of docker:

Look for the image in image cache (local memory)

↓

look in remote docker repository
(default hub.docker.com)
(we can create our own rep.)

↓

download latest version of image

↓

create new container based on the image

↓

give it a virtual IP on private n/w inside docker engine

↓

open port 80 on host machine & route to port 80 inside container

↓

start container

** types of n/w driver

- → bridge (default)
- → host
- → none
- → overlay
- → ipvlan
- → macvlan.

→ Docker image:- Read only template.

→ A dockerfile is a text file that contains instructions for building image

- → base image
- → configure setting.

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⇒ Docker compose:- It is a ~~[illegible]~~ tool used to define & run multi-container docker applications

- It uses a YAML file (docker-compose.yml) to specify services, networks, & volumes for an application, allowing developers to define & manage complex application environments with ease.

⇒ Docker Swarm:- to create & manage a cluster of docker host called nodes to deploy & scale containerized application across multiple machines

Note:- Docker Swarm is a simpler built-in orchestration tool provided by docker, while kubernetes is a more feature rich, standalone container orchestration platform.

kubernetes offers advanced capabilities for scaling, self-healing & managing containerized application at scale, making it suitable for complex production-grade ~~[illegible]~~ environment

⇒ Docker Container Can share data Using docker volumes or bind mounts

→ Volumes are managed by docker & persist data even if the Container is stopped or removed.

→ Bind mount link a directory on the host machine to a directory in the Container, allowing for direct access of host files

⇒ Dockerhub

- → Cloud based repository
- → Storing & sharing docker
- → Centralized image location
- → find distribute & Collaborate
- → Image versioning
- Automated builds.

Docker

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