DOCKER SWARM WORKSHOP

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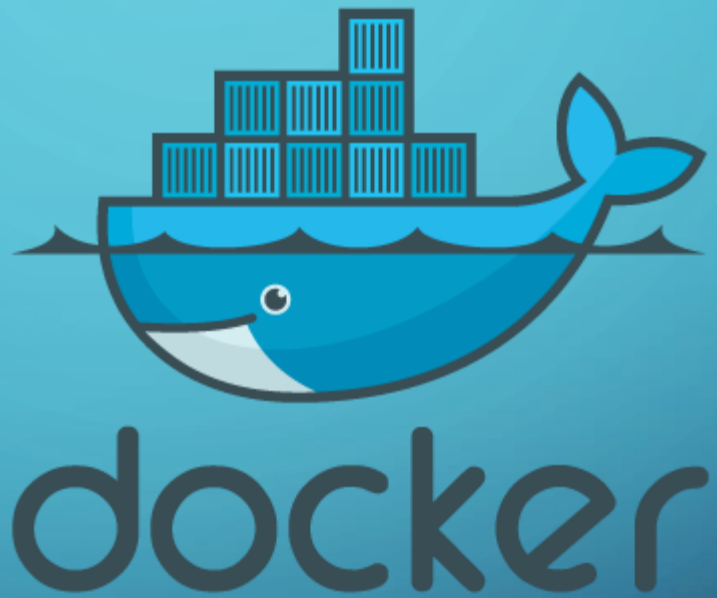
WORKSHOP GOALS

- Recap the basics of Docker
- Get an overview of Docker Swarm
- Understand when to use it and how to create it

AGENDA

- Docker Basics
- Docker Swarm Overview
- Swarm vs Kubernetes
- Quiz
- Practical part
- Q & A

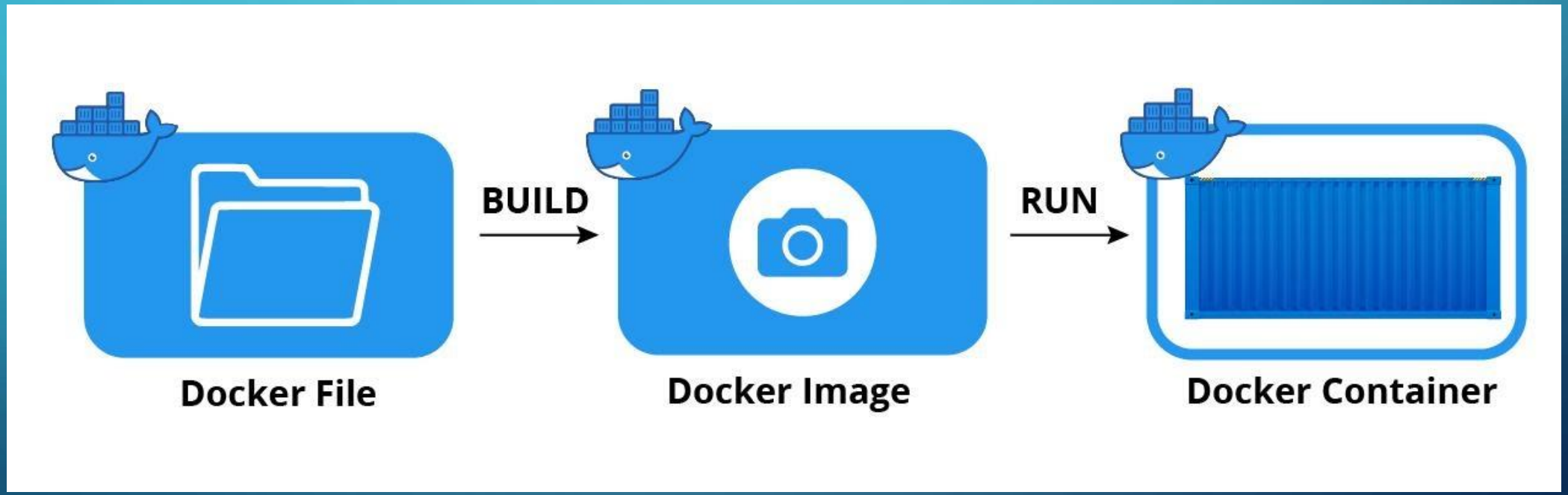
DOCKER BASICS



DOCKER BASICS

- Package and run an app in a loosely isolated environment
- Isolation enables simultaneous execution of environments on a host
- Environments provide everything needed for the application (developers do not need to rely on the host)
- Environments are easily sharable between developers, e.g. within a team
- Environment = Container

BASICS – WORKFLOW



BASICS – DOCKERFILE

`FROM ubuntu` ← image name pulled from registry (Docker Hub)

`RUN apt-get update` ← instructions executed during the build

`CMD [“echo”, “Hello world!”]` ← only once, execution behaviour

`docker build -t helloworld:1.0 .` ← Creating an image

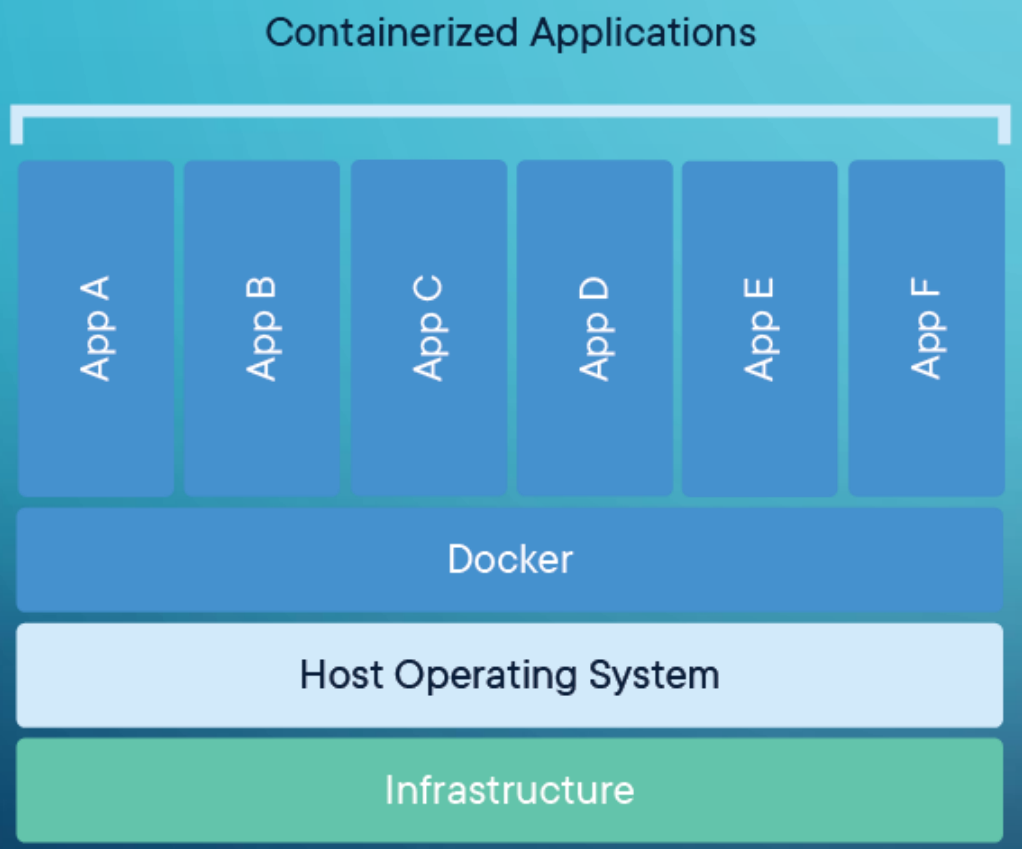
`docker run helloworld` ← Running an image

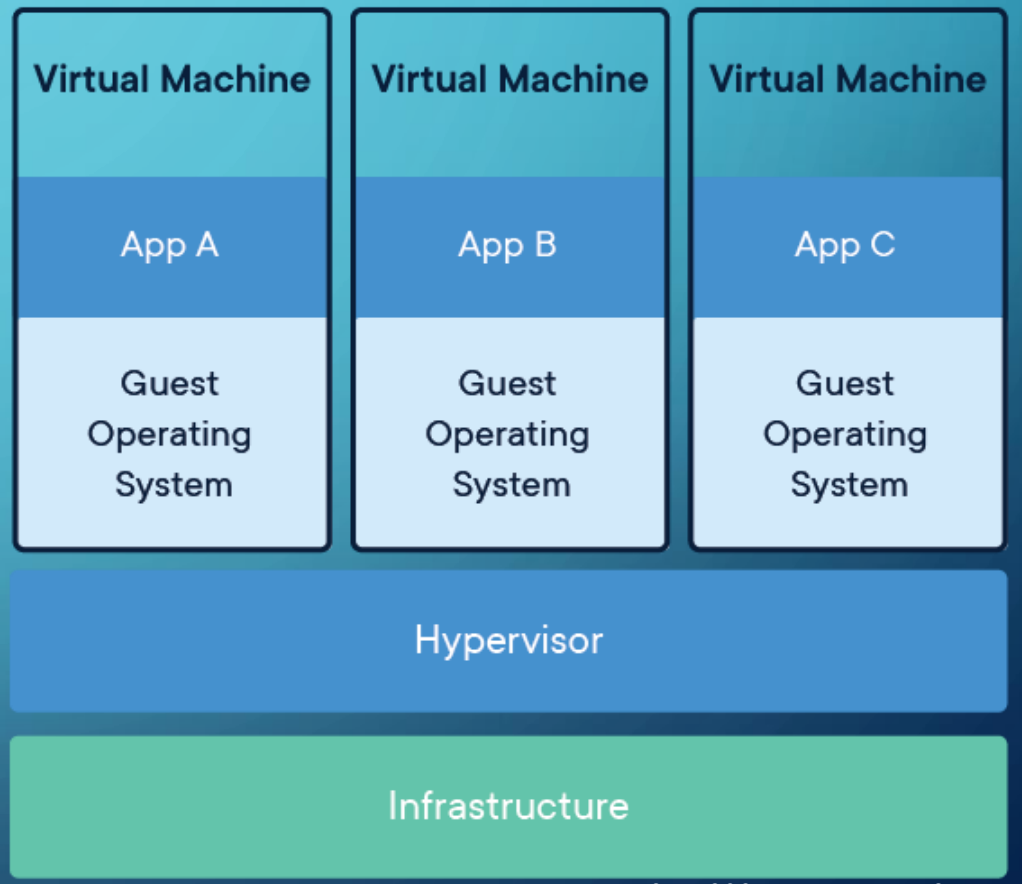
`Hello world!` ← Output from container

BASICS – DOCKER IMAGE

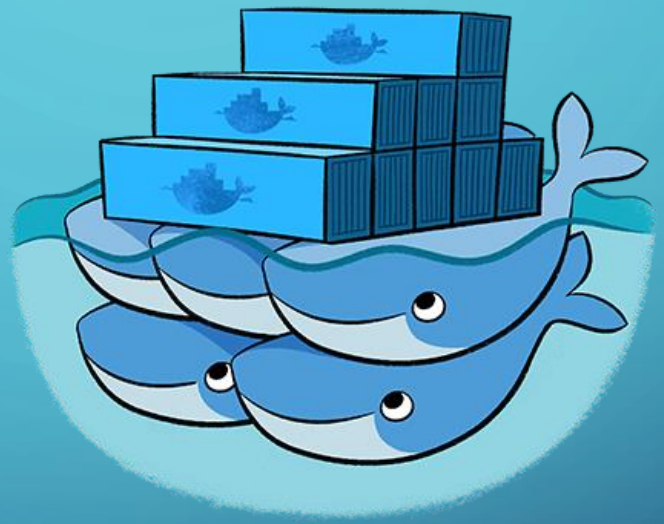
- A way to package application with all the necessary dependencies and configuration in an isolated environment
- Portable artifact, easily shared and moved around → more efficient development
- Includes any configuration (no further environmental config needed)

BASICS – DOCKER CONTAINER VS VIRTUAL MACHINES





DOCKER SWARM



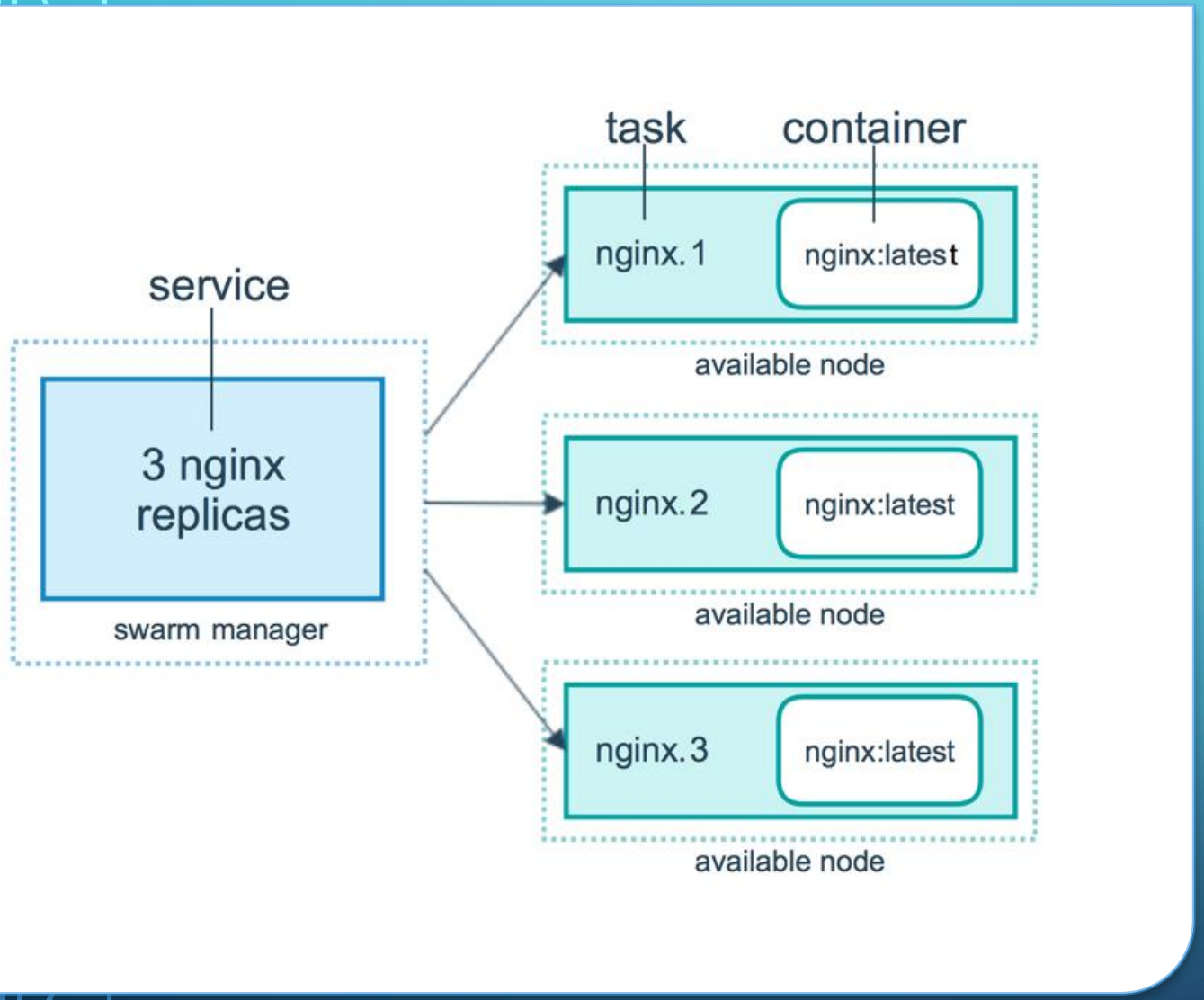
SWARM – OVERVIEW

- Swarm = Cluster
- Has one to n nodes
- Nodes = workers, one or more can be managers

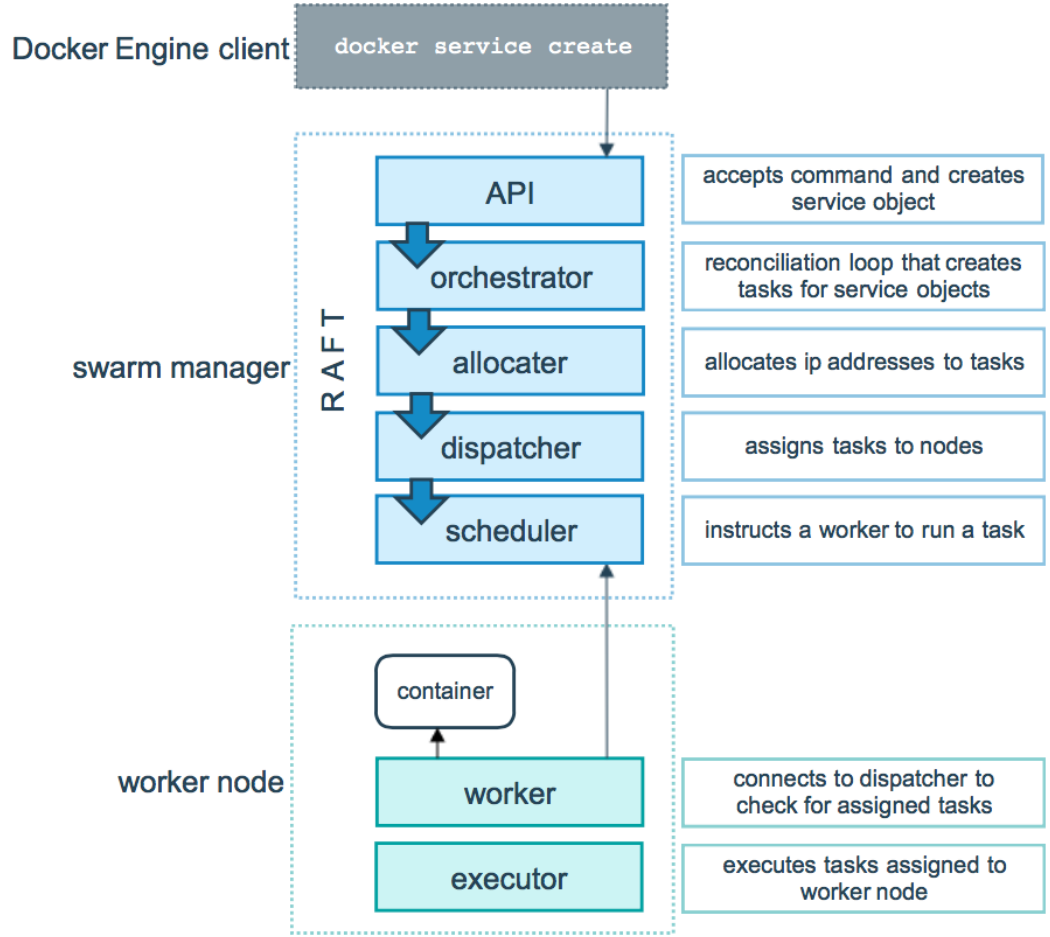
SWARM - OVERVIEW

- Cluster management integrated with Docker Engine
- Decentralized design
- Scaling
- Desired state reconciliation

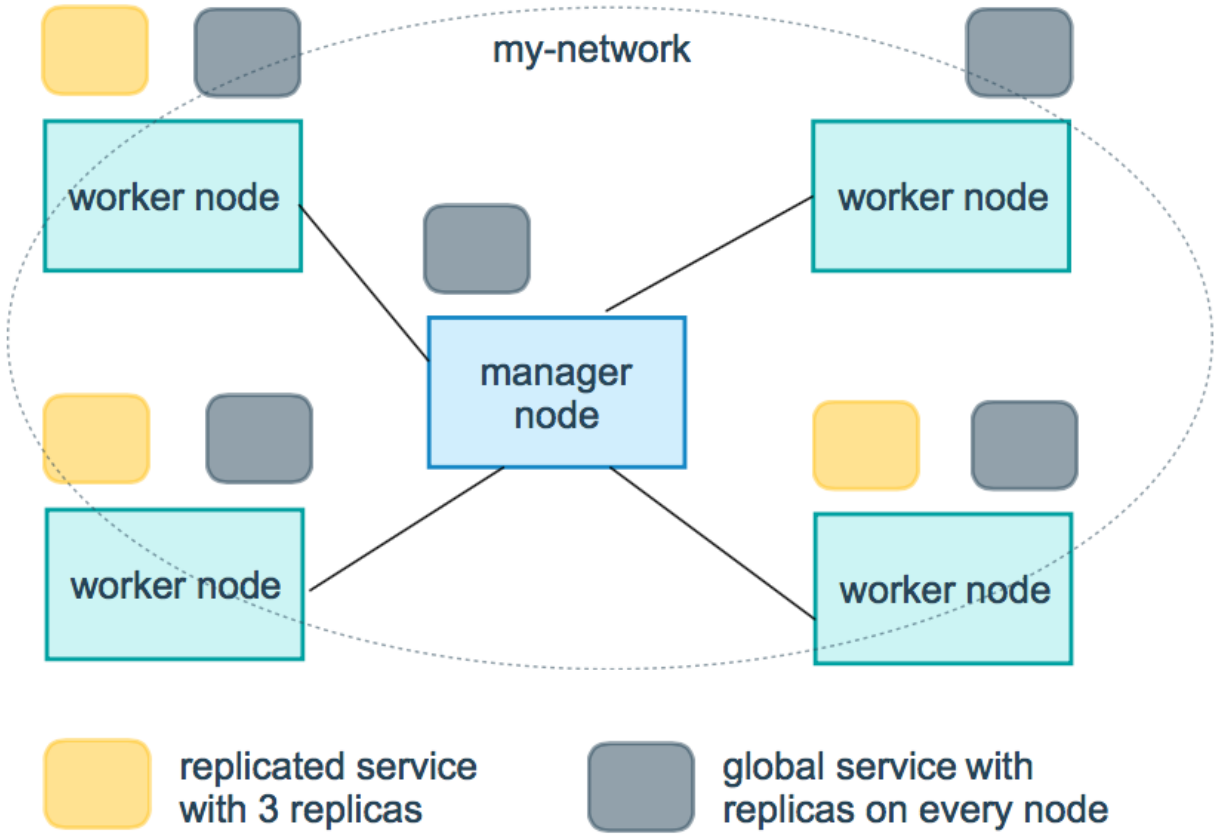
SWARM – SIMPLE EXAMPLE



SWARM – IN DETAIL



SWARM – REPLICATED VS GLOBAL SERVICES



SWARM – COMPARISON WITH KUBERNETES

Kubernetes	Docker Swarm
Complex installation	Easier setup
More complex with a high learning curve, but more powerful	More lightweight and easier to use, but limited functionality
Supports auto-scaling	Manual scaling
Built-in monitoring	Needs third party tools for monitoring (portainer)
Manual setup of load balancer	Auto load balancing
Need for separate CLI tool	Integrates Docker CLI

QUIZ

HTTPS://QUIZIZZ.COM/JOIN

BREAK

DOCKER SWARM DEMO

DOCKER SWARM ASSIGNMENT

QUESTIONS & ANSWERS

THANK YOU VERY MUCH FOR LISTENING AND PARTICIPATING! ☺👍

SOURCES

- https://docs.docker.com/get-started/overview/
- https://www.docker.com/resources/what-container
- https://docs.docker.com/engine/reference/builder/
- https://docs.docker.com/engine/swarm/
- https://docs.docker.com/engine/swarm/how-swarm-mode-works/
- https://stackoverflow.com/
- https://youtu.be/3c-iBn73dDE
- https://youtu.be/Tm0Q5zr3FL4
- https://youtu.be/e1BOFzxgQQY