

Docker For HIS Project Deployment

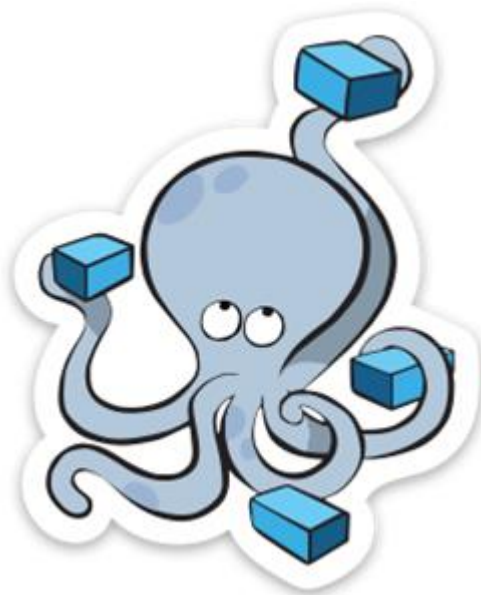
Sohail Dua
High Integrity Systems
Frankfurt University of Applied Sciences
sohail.dua@stud.fra-uas.de

Tasks

- Researching about Docker Deployment
- Bat file for Development includes
 - Bat commands
 - Docker commands
- Bat file for Deployment includes
 - Bat commands
 - Docker commands
- Found solution for mongodb volume issue

Agenda

- Introduction to Docker
 - What is Docker
 - Docker container , images
 - Docker Compose
 - Docker commands
- Demo of Docker Commands



Why Use Docker ?

Avoid "Works on my machine and does not work on my production"



Improves Productivity

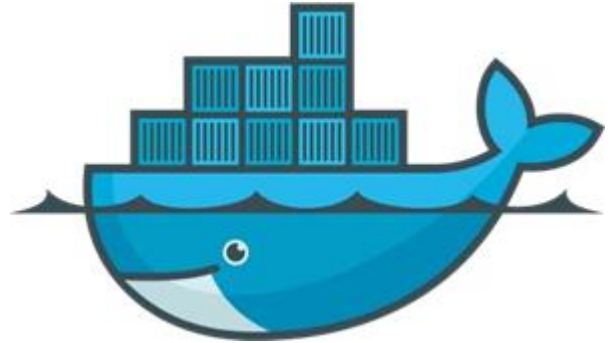


Enables Networking



What is Docker or Docker Engine?

- Lightweight, open, secure platform
- Simplify building, shipping, running apps
- Runs natively on Linux or Windows Server
- Runs on Windows with Hyper-V or Mac Development machines
- Relies on "images" and "containers"



What is a image?

- An immutable template for containers
- Can be pulled and pushed towards a registry
- Image names have the form [registry/][user/]name[:tag]
- The default for the tag is latest

Docker Image



Docker Container



Note-Images can exist without containers, whereas a container needs to run an image to exist. Therefore, containers are dependent on images and use them to construct a run-time environment and run an application.

DockerFile

- Docker images are built from a base image
- Base images are built up using sample instruction such as-
 - Run a command
 - Add file or directory
 - Create a environment variable
 - What process to run when launching a container from this image

Dockerfile

```
# Sample Dockerfile

# Indicates that the windowsservercore image will be used as the base image.
FROM mcr.microsoft.com/windows/servercore:ltsc2019

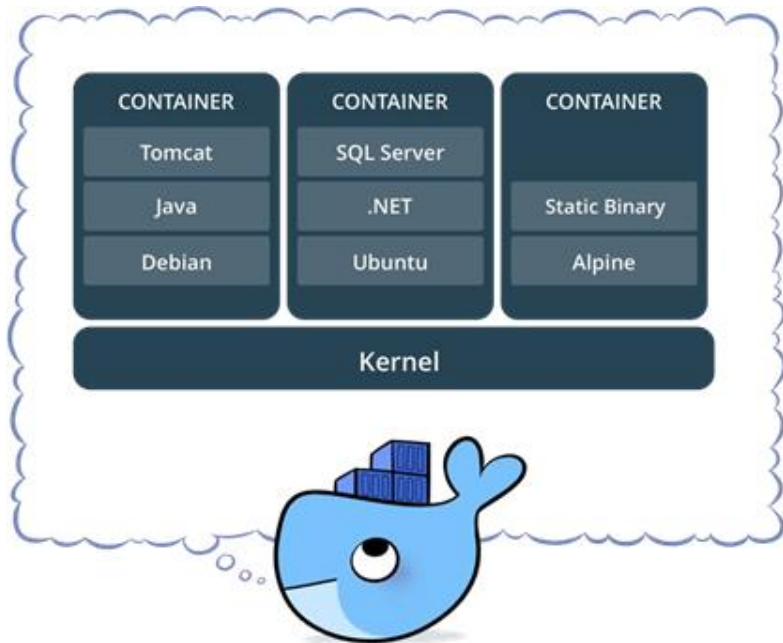
# Metadata indicating an image maintainer.
LABEL maintainer="jshelton@contoso.com"

# Uses dism.exe to install the IIS role.
RUN dism.exe /online /enable-feature /all /featurename:iis-webserver /NoRestart

# Creates an HTML file and adds content to this file.
RUN echo "Hello World - Dockerfile" > c:\inetpub\wwwroot\index.html

# Sets a command or process that will run each time a container is run from the new image.
CMD [ "cmd" ]
```

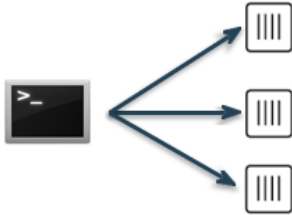
What is a container?



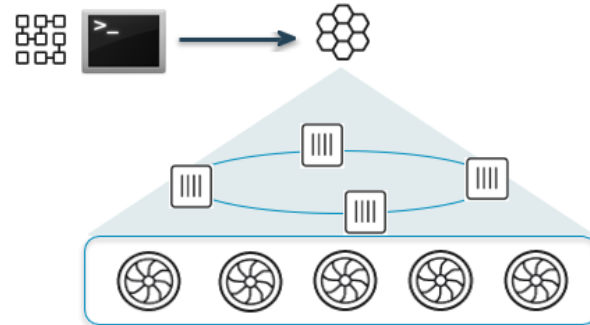
- An instance of an image
- Can be started, stopped, restarted, ...
- Maintains changes within the filesystems
- New image can be created from current container state (not recommended, use Dockerfile instead)

Docker Compose: Multi Container Applications

- Build and run one container at a time
- Manually connect containers together
- Must be careful with dependencies and start up order



- Define multi container app in compose.yml file
- Single command to deploy entire app
- Handles container dependencies
- Works with Docker Swarm, Networking, Volumes, Universal Control Plane



Basic Docker Commands

```
$ docker image pull node:latest
```

```
$ docker image ls
```

```
$ docker container run -d -p 5000:5000 --name node node:latest
```

```
$ docker container ps
```

```
$ docker container stop node(or <container id>)
```

```
$ docker container rm node (or <container id>)
```

```
$ docker image rmi (or <image id>)
```

```
$ docker build -t node:2.0 .
```

```
$ docker image push node:2.0
```

```
$ docker --help
```

```
$ docker-compose [-f <arg>...] [options] [COMMAND] [ARGS...]
```

DEMO

References

- <https://docs.docker.com/docker-for-windows/>
- <https://www.docker.com/products/windows-containers>
- <https://stackoverflow.com/questions/tagged/docker-for-window>

- Footers
- Time
- No references

THANKYOU