What is a container?

- Standardized packaging for software and dependencies
- Isolate apps from each other
- Share the same OS kernel
- Works for all major Linux distributions
- Containers native to Windows Server 2016
Docker containers are NOT VMs

- Easy connection to make
- Fundamentally different architectures
- Fundamentally different benefits
Docker Containers Versus Virtual Machines

Virtual Machines

Docker Containers

w/o Virtual Machines

w. Virtual Machines
What Is Docker?

- Lightweight, open, secure platform
- Simplify building, shipping, running apps
- Runs natively on Linux or Windows Server
- Runs on Windows or Mac Development machines (with a virtual machine), Simplified by Docker Desktop
- Relies on "images" and "containers"
The Role of Images and Containers

Example: Ubuntu with Node.js and Application Code

Created by using an image. Runs your application.
Using Docker: Build, Ship, Run Workflow

Developers

BUILD
Development Environments

IT Operations

SHIP
Create & Store Images

RUN
Deploy, Manage, Scale

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Some Docker vocabulary

**Docker Image**
The basis of a Docker container. Represents a full application

**Docker Container**
The standard unit in which the application service resides and executes

**Docker Engine**
Creates, ships and runs Docker containers deployable on a physical or virtual, host locally, in a datacenter or cloud service provider

**Registry Service (Docker Hub(Public) or Docker Trusted Registry(Private))**
Cloud or server based storage and distribution service for your images
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
Dockerfile – Linux Example

- Instructions on how to build a Docker image
- Looks very similar to “native” commands
- Important to optimize your Dockerfile
Tutorials / Links / Docs

https://www.docker.com/get-started/
https://docs.docker.com/get-started/
https://www.docker.com/101-tutorial/

https://docker-curriculum.com/

https://www.tutorialspoint.com/docker/index.htm