Introduction to Docker

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Nothing in this presentation should be viewed to reflect any opinion or infrastructure detail of any employer, past or present, or any other organization. What I present is mine.

This should not be perceived to reflect the actual implementation of any specific real-world technology or infrastructure deployment, unless otherwise explicitly stated.

Notes about this workshop

- This is an INTRO
- Invent your own "right" way
- All resources online
    - https://github.com/Mierdin/intro-to-docker-workshop

We will accomplish...

- Understanding "Why Docker?"
- Basics of Docker
- Interactive "take-home" examples for each topic

Why Docker?

Docker Use Cases

- Faster Development
- Dev-to-Prod simplification
- Less overhead, more density

Docker Under the Hood

- Namespaces
  - pid
  - mount
  - net
- UnionFS
- cgroups

Lab 01 - Docker Basics

Images

- Docker Images != VMs (very lightweight)
  - UnionFS
  - Identified by UUID (like everything else)
  - Intermediate Containers

Lab 02 - Docker Images

Volumes

- Volumes are a data persistence mechanism
- Image != (App) Data

Lab 03 - Docker Volumes

The Docker Family

- Engine = Core Tech
- Machine = Automated Provisioning
- Swarm = Clustering, Scheduling
- Compose = Define Multi-Container Apps
- Registry = "Private Docker Hub"
- Kitematic = Desktop GUI

Container Cluster Scheduling

- Datacenter-as-a-machine
- Usually provides a provisioning API

Docker Swarm

- Brings the Docker API to a cluster of hosts
- Schedules Containers - like OS scheduler, but for cluster
- Requires dist. K/V store (etcd, consul, etc)

Lab 04 - Docker Swarm

Docker Networking

- "Old-school networking" (pre 1.9)
- Socketplane Acquisition and Libnetwork

Lab 05 - Multi-Host Networking

Docker Compose

- Containers don't usually run in isolation
- Compose is a DSL for mapping containers to form an application

Lab 06 - Docker Compose

Resources

- https://twitter.com/mierdin
- https://keepingitclassless.net
- https://github.com/Mierdin/intro-to-docker-workshop