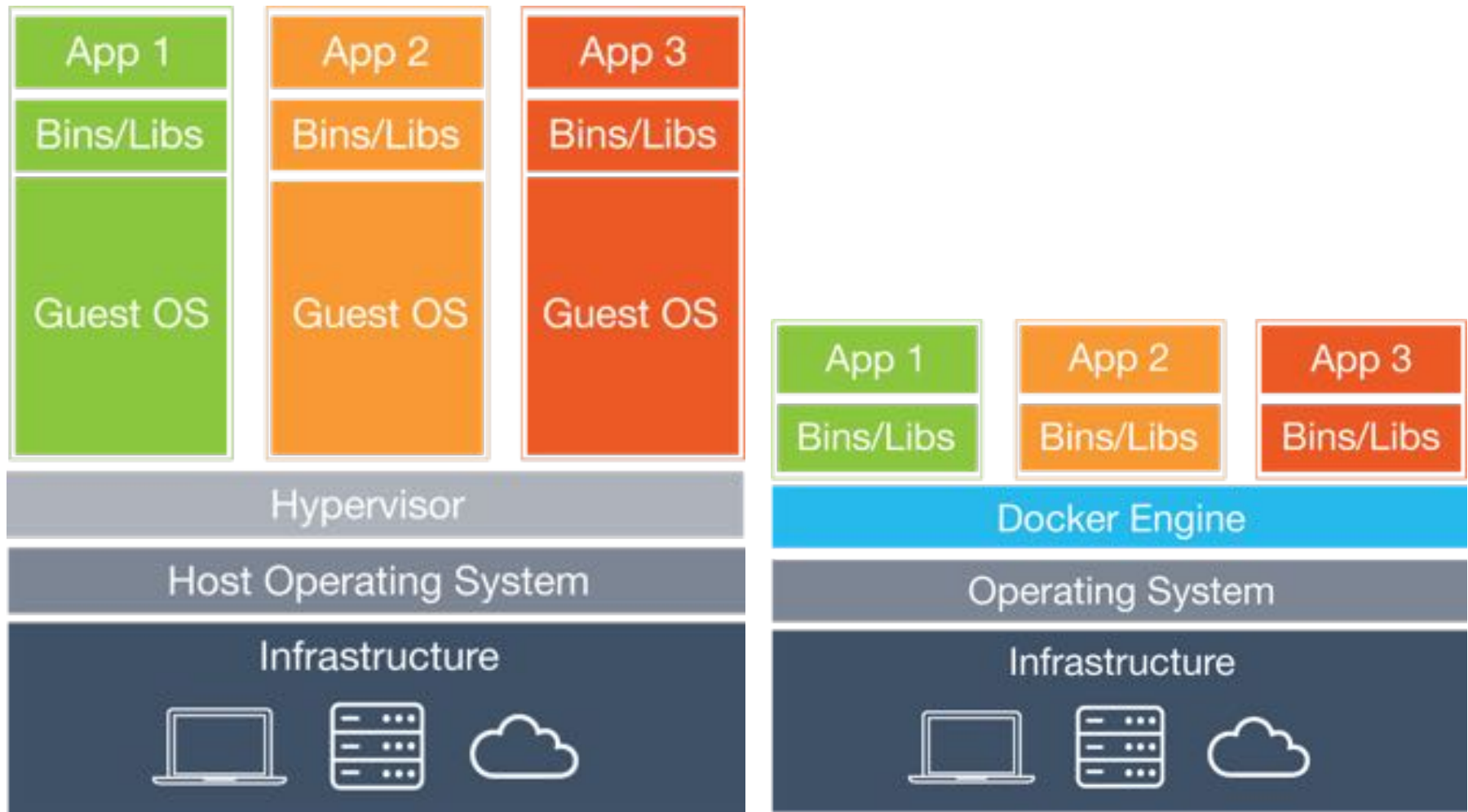# Oracle Coherence & Docker

Jonathan Knight

Briefly, What Is Docker?

- A container technology for applications

- Open source

- Easy to build and manage images and containers
  - Images configured in a Dockerfile

- Central image repository – Docker Hub

- Runs on Linux
  - Runs on other O/S using VMs

Briefly, What Is Docker?

Terminology: Images & Containers

- Union File System

- Images

  - A read-only template from which containers are launched

  - Images are made up of layers

- Containers

  - Built from an image

  - Adds a read-write layer on top of the image's file system

Coherence on Docker

- A Coherence base image Dockerfile
  - Use suitable base image
    - Official Oracle Linux versions on Docker Hub
  - Dockerfile steps:
    - Copy Java installer
    - Install Java
    - Copy Coherence installer
    - Create oracle user
    - Expose cluster port
    - Switch to oracle user
    - Install Coherence

Dockerizing Coherence Applications

- Extend Coherence base image with application
  - Use previous Coherence image as base
  - Dockerfile steps:
    - Copy application binaries and configuration
    - Copy start scripts
    - Optionally expose extend proxy port
    - Set image entry point

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Challenges

- Networking
  - Multicast
    - Needs a software network stack – e.g. Weave
  - Dynamic port forwarding
  - Cannot Use:
    - Coherence Name Service to look up Extend connections
    - Extend load balancing
  - Docker team are improving networking functionality

Challenges

- Data Partitioning – It Might Not Really Be Machine-Safe
  - Each container will appear to Coherence like a different machine, even though all the containers are on one machine

- Many of the same considerations as a virtual machine base infrastructure
  - Performance
  - Resource Contention, Network, CPU, Memory

Challenges

- Data Files
  - The file system is owned by the container
  - When the container is gone the data is gone

  Good for throw-away environments such as build and test, not so good for production
    - Use exposed volumes to map to the host's file system

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