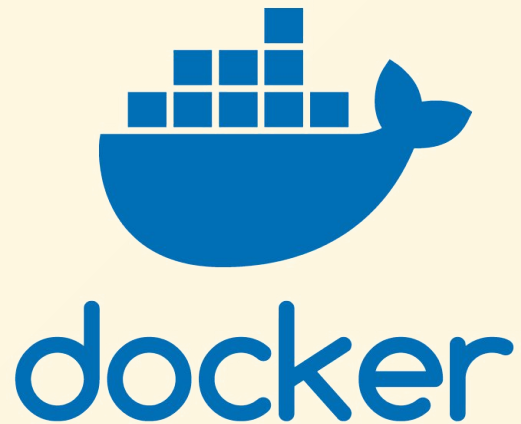# Kubernetes

An Introductory Guide

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kubernetes

In the beginning there was Docker

- Solves the "It works on my machine" problem
- Allows users to build and package and deploy applications
- Example: `docker run -p 80:80 nginx`
  - runs nginx binding to the host port **80**

Docker Challenges

- Managing Configuration is hard
- Managing the flags passed into the cli can be challenging
  - ```
    docker run -v log_volume:/var/log -v data_volume:/var/data -v
    config_volume:/var/config -p 8080:8080 --link mysql
    image_name
    ```
- You have to manage a fleet of vms runing docker
- You have to balance resource utilization yourself

Docker Compose: Solving some of the problems

- Configurations are managed via yaml
  - No longer need to manage cli flags
- Services spun up together can be easily linked
  - ie `depends_on: mysql`
  - Generates dns entries for the dependant services
- Still need to balance the load on the virtual machines yourself.
- Still need to manage configuration applications yourself
- Single Docker engine setup

Notable Mention: Docker Swarm

- Container Orchestrator
- Built on top of docker
- Allows you to convert from docker-compose without much pain
- Multi node

Kubernetes: An Ecosystem for Orchestration

- Designed to be multi-node
    - Uses a pool of nodes and obscures it from the user
- Handles load balancing
- Automated rollouts and rollbacks
- Self healing
- Configuration Management
- Service Discovery
- Extensible

Pod: The smallest unit of measurement

- A pod is a group of containers