* Course Overview
  + Spinning up multiple containers on a single machine is easy
  + In production environment it may need to span multiple nodes so there is enough capacity
* The Magic of Docker Should W..
  + Some point containers will require more resources than a single machine can handle
  + Spin up containers that can talk to each other across multiple nodes(machines)
  + Swarm mode built into docker engine 1.12 and above
* What Are Some of the Concern..
  + Containers are just process that are running software
    - New way of running software
  + Will run out of resources from a single machine eventually
  + In production environment you will want to have containers over multiple machines
    - Fault tolerance: can lose one machine
  + Dont want to manage each machine individually
  + Docker swarm manage the machines for you
  + Containers will run on top of nodes(machines)
  + Docker swarm will also manage where to place containers based on resource requirements
* What You Should Already Know
  + Getting started with docker on windows
  + Containers and Images: The Big Picture
  + Will need multiple machines(VMs)
* What if a Single Container Isn’t …
  + In production environment you will need to handle alot of requests
  + Can run more containers or optimize api to handle more requests
* Scaling Capacity by Scaling Containers
  + Can add more containers on the same machine if it has enough resources
    - Requests will need to be routed to the containers
  + How to route requests to each of these instances
  + Hot to load balance incoming traffic to spread it out to multiple instance of the application
* What About Balancing Load A..
* What Happens When a Container..
  + What if application dies inside of container
  + Concerns:
  + Scaling Capacity
    - Multiple containers
    - Load balancing
  + Container failure
    - Restart, not good for production
  + Restart, type ‘docker run --rm -d -p [host port]:[container port] --restart=[option] [image]
    - Options are
    - ‘always’
    - ‘no’
    - ‘on-faliure’
    - ‘unless-stopped’
* What Happens When A Node Fails
  + If containers fails when can just restart
  + If node fails, all the containers fails with it
    - Reboot machine
  + In production
    - We will need to bring up capacity somewhere else
    - And then load balance
  + Node Failure
    - Redistribute containers
    - Replace node
    - Placement
    - Node Maintenance
* What About Internal Communication
  + Set environment variable connect to other containers
* User Defined Networks to Con…