Dockers and Kubernetes

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Day 1

Introduction
* What can you use Docker for?
* How Docker fits into the development lifecycle
* How Docker ensures consistency from development through UAT and staging, and on to production
* Example use cases of Docker in the real world

The components of Docker * Underlying technology
* Docker client and server * Filesystem images
* Registries * Containers * Networking

Getting set up to start using Docker
* Getting set up on Windows
* Trying out our first container
* Getting set up for production on Linux
* Tweaking your production environment for best performance

Container management
* Container naming
* Starting and stopping containers
* Attaching to a container
* Seeing what is happening in a container
* Running a process inside a container
* Daemonizing a container
* Automatic container restarts
* Deleting containers when we are finished with them

Docker images and repositories

* Docker images explained
* How Docker images work
* Getting a list of images
* Searching for images on a repository * Pulling an image

Day 2

* Creating our own image
* Specify an image in a Dockerfile
* Building Dockerfile images
* Using the build cache for templating
* Viewing the image we have created
* Launching a container using our new image

Registries
* What is the Docker hub?
* Pushing images to the Docker hub
* Running your own internal Docker registry * Testing the internal registry

A simple use case
* A single container static website
* Setting up a container running Nginx
* Launching our static site
* Updating our static site from git or bitbucket

Day 3

Introduction to Kubernetes
- Brief history of Deployment era
- Features of Containers
- Introduction to Kubernetes
- Working of Kubernetes (overview)
- Installation of Kubernetes

Kubernetes Architecture
- Understand Kubernetes Architecture
- What are Kubernetes objects?

- What are YAML files?
- Name, Namespaces, Labels & selectors , Annotations

Introduction to Pods and Services
- What are Pods?
- What are Replication Controllers?
- What is a Deployment?
- Introduction to Kube Services and its types
- Stateful and Demon sets
- Jobs
- Introduction to autoscaling
- The Horizontal Pod Autoscaler

Day 4

- The Kubernetes metrics registry
- Exposing metrics from your apps
- Installing and configuring Prometheus
- Understanding custom and external metrics adapters
- Tuning the Horizontal Pod Autoscaler

Introduction to Volumes
- What are volumes?
- Types of volumes
- Persistent volumes
- Introduction to secrets
- Taints and tolerations

Day 5

Ingress, Dashboard and Kubernetes best security practices
- What is Ingress
- What is a Kubernetes Dashboard?
- Setting up Kubernetes Dashboard
- Security practices for Kubernetes

Monitoring
- Introduction to Federation
- Kubernetes Monitoring

- Setting up Prometheus
- Setting up Grafana

Security

Role Based Authentication