Cloud Native Operations Bootcamp

Duration: 5 Days   Course Code: CN251   Delivery Method: Company Event

Overview:

CN251 is an intensive cloud native training bootcamp for IT professionals looking to develop skills in deploying and administering containerized applications in Kubernetes. Over the course of five days, students will start with learning about first principles for application containerization followed by learning how to stand up a containerized application in Kubernetes, and, finally, ramping up the skills for day-1 operating tasks for managing a Kubernetes production environment. CN251 is an ideal course for those who need to accelerate the development of their IT skills for a rapidly-changing technology landscape.

Company Events

These events can be delivered exclusively for your company at our locations or yours, specifically for your delegates and your needs. The Company Events can be tailored or standard course deliveries.

Target Audience:

General technical audiences & IT professionals

Prerequisites:

Attendees should meet the following prerequisites:

- At least six months experience in cloud infrastructure administration
- Familiarity with the Bash shell
- Filesystem navigation and manipulation
- Command line text editors like vim or nano
- Common tooling like curl, wget and ping
- Familiarity with YAML and JSON notation

Follow-on-Courses:
- CN320 - Advanced Kubernetes Operations

Content:

This course combines all topics of CN100, CN120, and CN220

Containerization motivations and implementation

- Usecases
- Comparison to virtual machines

Creating, managing and auditing containers

- Container implementation from the Linux kernel
- Container lifecycle details
- Core container creation, auditing and management CLI

Best practices in container image design

- Layered filesystem implementation and performance implications
- Creating images with Dockerfiles
- Optimising image builds with multi-stage builds and image design best practices

Single-host container networking

- Docker native networking model
- Software defined networks for containers
- Docker-native single-host service discovery and routing

Provisioning external storage

- Docker volume creation and management
- Best practices and usecases for container-external storage.

Kubernetes Application Essentials

- Make effective use of pod architecture
- Deploy workloads as Kubernetes controllers
- Provision configuration at runtime to Kubernetes workloads
- Network pods together across a cluster using native services
- Provision highly available storage to Kubernetes workloads
- Package an application as a Helm chart

Kubernetes High Availability

- Review the basic architecture of a Kubernetes cluster
- Install a well-validated HA Kubernetes cluster on a collection of hosts
- Load balance kubectl commands across an HA Kubernetes cluster

Managing Application Deployment

- Review how pods are scheduled on worker nodes
- Examine the node selector
- Discuss implementing the impact of taints and tolerations for Kubernetes workloads
- Review both pod and node affinity and anti-affinity

Releasing Application Updates

- Discuss releasing updates to applications running on the Kubernetes platform
- Explore native tooling for updating application
- Examine how Helm manages updating applications

Application High Availability

- Review the architecture required to achieve high availability for applications
- Discuss best practices for using liveness and readiness probes
- Explore Kubernetes auto-scaling of applications
- Discuss how to prioritizing Kubernetes workloads

Routing Network Traffic

- Discuss network routing options within Kubernetes
- Discuss the benefits of the Ingress controller and object
- Examine the Ingress object and controller pattern

Provisioning Storage

- Review available storage options for applications
- Discuss constraints of persistent storage in a standard Kubernetes cluster deployment
- Examine the storageClass object

Kube Security: Implementing RBAC

- Discuss RBAC implementation within Kubernetes
- Examine Kubernetes RBAC components
- Review Auditing within Kubernetes
- Determine how to enable Auditing within a Kubernetes cluster

Kubernetes Network Security

- Review the the Kubernetes Networking Model
- Discuss how Network Security is managed within the Kubernetes cluster
- Examine managing network security with native and non-native Kubernetes tooling
- Explain the native method of creating Network Policies

Securing an Application Workload

- Identify security mechanisms available to security between containers, pods, and the Kubernetes cluster
- Discuss strategies for enabling flexibility within security policy while maintaining security compliance
- Examine how to enable Pod Security Policies

Multi-Tenancy in Kubernetes

- Discuss multi-tenancy in a Kubernetes cluster
- Examine native Kubernetes objects used for enabling multi-tenancy capability
- Discuss multi-tenancy methods for Kubernetes

Additional Information:

Lab Requirements:
Laptop with WiFi connectivity Attendees should have the latest Chrome or Firefox installed, and a free account at strigo.io.

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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