Certified Kubernetes Administrator (CKA) Exam Curriculum 0.9

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This document provides the curriculum outline of the Knowledge, Skills and Abilities that a Certified Kubernetes Administrator (CKA) can be expected to demonstrate.

CKA Curriculum V 0.9

5% - Scheduling

- ☐ Use label selectors to schedule Pods.
- ☐ Understand the role of DaemonSets.
- ☐ Understand how resource limits can affect Pod scheduling.
- ☐ Understand how to run multiple schedulers and how to configure Pods to use them.
- ☐ Manually schedule a pod without a scheduler.
- ☐ Display scheduler events.
- ☐ Know how to configure the Kubernetes scheduler.

5% - Logging/Monitoring

- ☐ Understand how to monitor all cluster components.
- ☐ Understand how to monitor applications.
- ☐ Manage cluster component logs.
- ☐ Manage application logs.

8% - Application Lifecycle Management

- ☐ Understand Deployments and how to perform rolling updates and rollbacks.
- ☐ Know various ways to configure applications.
- ☐ Know how to scale applications.
- ☐ Understand the primitives necessary to create a self-healing application.

11% - Cluster Maintenance

- ☐ Understand Kubernetes cluster upgrade process.
- ☐ Facilitate operating system upgrades.
- ☐ Implement backup and restore methodologies.

12% - Security

- ☐ Know how to configure authentication and authorization.
- ☐ Understand Kubernetes security primitives.
- ☐ Know to configure network policies.
- ☐ Create and manage TLS certificates for cluster components.
- ☐ Work with images securely.
- ☐ Define security contexts.
- ☐ Secure persistent key value store.

7% - Storage

- ☐ Understand persistent volumes and know how to create them.
- ☐ Understand access modes for volumes.
- ☐ Understand persistent volume claims primitive.
- ☐ Understand Kubernetes storage objects.
- ☐ Know how to configure applications with persistent storage.

10% - Troubleshooting

- ☐ Troubleshoot application failure.
- ☐ Troubleshoot control plane failure.
- ☐ Troubleshoot worker node failure.
- ☐ Troubleshoot networking.

19% - Core Concepts

- ☐ Understand the Kubernetes API primitives.
- ☐ Understand the Kubernetes cluster architecture.
- ☐ Understand Services and other network primitives.

11% - Networking

- ☐ Understand the networking configuration on the cluster nodes.
- ☐ Understand Pod networking concepts.
- ☐ Understand service networking.
- ☐ Deploy and configure network load balancer.
- ☐ Know how to use Ingress rules.
- ☐ Know how to configure and use the cluster DNS.
- ☐ Understand CNI.

12% - Installation, Configuration & Validation

- ☐ Design a Kubernetes cluster.
- ☐ Install Kubernetes masters and nodes.
- ☐ Configure secure cluster communications.
- ☐ Configure a Highly-Available Kubernetes cluster.
- ☐ Know where to get the Kubernetes release binaries.
- ☐ Provision underlying infrastructure to deploy a Kubernetes cluster.
- ☐ Choose a network solution.
- ☐ Choose your Kubernetes infrastructure configuration.
- ☐ Run end-to-end tests on your cluster.
- ☐ Analyse end-to-end tests results.
- ☐ Run Node end-to-end tests.

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Cloud native computing uses an open source software stack to deploy applications as microservices, packaging each part into its own container, and dynamically orchestrating those containers to optimize resource utilization. The Cloud Native Computing Foundation (CNCF) hosts critical components of those software stacks including Kubernetes, Fluentd, Linkerd, Prometheus, OpenTracing and gRPC; brings together the industry's top developers, end users, and vendors; and serves as a neutral home for collaboration. CNCF is part of The Linux Foundation, a nonprofit organization. For more information about CNCF, please visit: https://cncf.io/.