

**Azure Kubernetes Service (AKS) Fundamentals**

**Course Number:** CLD-138WA
**Duration:** 2 days

**Overview**

This AKS Fundamentals course gives learners a solid understanding of Kubernetes concepts, deployment strategies, monitoring, logging, and troubleshooting techniques. By the end of the class, students will have the skills to optimize Kubernetes deployments, troubleshoot issues, and manage workloads effectively in production environments.

**Prerequisites**

Attendees must have taken [Linux Systems Administration I course](https://www.exitcertified.com/it-training/linux-foundation/linux-system-administration-65187-detail.html) or have the equivalent knowledge.

**Materials**

All Azure Kubernetes Service (AKS) training attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computers for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will work well.

**Objectives**

* Understand Azure Kubernetes Service architecture
* Understand Kubernetes resource configurations and deployment strategies
* Use and manage Kubernetes volumes, ConfigMaps, and secrets effectively
* Implement robust monitoring and logging strategies using Azure Monitor
* Troubleshoot Kubernetes workloads, including debugging pods, resolving scaling issues, and handling YAML syntax errors
* Optimize Kubernetes resource usage with constraints, labels, and selectors
* Create and manage secure connections and troubleshoot node-level issues

**Outline**

* Introduction
* Kubernetes Core Concepts and Resource Management
	+ Understanding Kubernetes Architecture
	+ Using Pods to Group Containers
	+ Labels, Annotations, and Selectors
	+ Managing API Versions
	+ Resource Quotas and Scaling
* Deployment Strategies and Workloads
	+ Deploying to Kubernetes and AKS Overview
	+ Stateless and Stateful Applications
	+ Sample Deployment and Stateful Manifest Files
	+ Rolling Updates and DaemonSets
	+ Managing Kubernetes Workloads
* Managing Volumes and Persistent Storage
	+ Kubernetes Volume Types and Specs
	+ Persistent Volume Claims and Dynamic Volume Provisioning
	+ Using ConfigMaps and Secrets from Files and Literals
	+ Deployment Configuration Status and Security Contexts
* Monitoring Kubernetes Clusters
	+ Differences Between Logging and Monitoring
	+ Creating a Cloud Monitoring Strategy
	+ Enabling Azure Monitor on AKS Clusters
	+ Layered Monitoring with Container Insights
	+ Querying Log Analytics with KQL
* Logging and Observability
	+ SQL to KQL Cheat Sheet
	+ Prometheus and Grafana Components
	+ Integrating Dynatrace and Fluentd for Logging
	+ AKS Cluster Upgrade Process
* Troubleshooting Kubernetes Workloads
	+ Debugging Pods, Nodes, and Replication Controllers
	+ Troubleshooting Resource Issues During Scaling
	+ Handling YAML Syntax Exceptions
	+ Resolving Image Pull Failures
	+ Creating Secure SSH Connections into Nodes
* Conclusion