Adaptive Observability with AWS

This course provides a deep dive into **Adaptive Observability with AWS**, covering **AWS-native monitoring, tracing, and visualization solutions** to enhance system reliability and performance. Participants will learn how to use **Amazon CloudWatch, AWS X-Ray, Amazon Managed Service for Prometheus (AMP), and Amazon Managed Grafana** for real-time insights into application behavior. The course also explores the **Observability Maturity Model**, its stages, and best practices to progressively enhance observability in cloud environments. Through hands-on exercises, attendees will gain practical skills in implementing **metrics, logs, traces, and dashboards** for end-to-end system observability.

Course objectives

- Understand Adaptive Observability and its role in cloud-native application monitoring.
- Leverage AWS-native observability services like Amazon CloudWatch, AWS X-Ray, AMP, and Amazon Managed Grafana.
- Implement metrics, logging, and tracing to monitor and troubleshoot applications effectively.
- Explore and apply the Observability Maturity Model to assess and improve observability practices.
- Implement adaptive observability strategies to optimize application performance and incident response.

Prerequisites

- AWS Technical Essentials or AWS Cloud Practitioner Essentials.
- Familiarity with logging, monitoring, and system metrics (recommended but not mandatory).

Target Audience

- Cloud Engineers & Architects
- Site Reliability Engineers (SREs)
- DevOps Professionals
- Application Developers
- IT Operations & Security Teams

Course outline

Module 1: Introduction to Adaptive Observability

- What is Observability?

- Differences between monitoring and observability

- Understanding the Observability Maturity Model and its stages

- Benefits of adaptive observability in cloud-native environments

Module 2: AWS Native Observability Solutions Overview

- Introduction to Amazon CloudWatch, AWS X-Ray, Amazon Managed Service for Prometheus, and Amazon Managed Grafana

- Choosing the right AWS service for observability needs

- Integrating AWS observability tools with applications

Hands-on Lab: Setting up CloudWatch and X-Ray for an AWS workload

Module 3: Monitoring & Logging with Amazon CloudWatch

- CloudWatch Logs, Metrics, and Alarms

- Application monitoring with CloudWatch ServiceLens

- Custom metrics and log analytics using CloudWatch Logs Insights

Hands-on Lab: Creating dashboards and setting up anomaly detection in CloudWatch

Module 4: Distributed Tracing with AWS X-Ray

- Introduction to AWS X-Ray for application tracing

- Instrumenting applications for end-to-end request tracing

- Analyzing latency, errors, and bottlenecks in microservices

Hands-on Lab: Tracing an API request flow using X-Ray