**PROMETHEUS AND GRAFANA**

**Course Objective:**

Candidates will understand the Advanced concepts of Prometheus monitoring tool.

**Duration:**

5 days (4 hours per day)

**Delivery Mode:**

Theoretical + Demo + Lab + Exercises + MCQs

**Target Audience:**

The course is designed for DevOps Engineers, Software Engineers and SRE who want to excel in this

monitoring tool.

**Knowledge Prerequisites:**

Monitoring basic knowledge and understanding of Metrics, Logs and events. Good understanding of

traditional Monitoring tools.

**Lab Prerequisites:**

Laptop with open Internet connectivity

AWS account for everyone with Admin Access (can be provided from our end, based on separate

commercial)

**Day 1 (4 hours):**

**Observability Concepts:**

Metrics

Understand logs and events

Tracing and Spans

Push vs Pull

Service Discovery

Basics of SLOs, SLAs, and SLIs

**Prometheus fundamentals:**

System Architecture

Prometheus Installation

a. Binary package

b. Docker

c. Helm chart

Configuration and Scraping

Understanding Prometheus Limitations

Data Model and Labels

Exposition Format

**Day 2 (4 hours):**

**PromQL:**

Selecting Data

Rates and Derivatives

Aggregating over time

Aggregating over dimensions

Binary operators

Histograms

Timestamp Metrics

**Instrumentation and Exporters:**

Client Libraries

Instrumentation

Exporters

Node Exporter

a. Installation and configuration

b. Integration with Prometheus

c. Metrics collection

Push Gateway

a. Installation and configuration

b. Integration with Prometheus

c. Metrics pushing

Service Discovery Configuration

Structuring and naming metrics

**Day 3 (4 hours):**

**Alerting & Dashboarding:**

Dashboarding basics

Alerting Architecture

Alert Manager Installation

a. Binary package

b. Docker

c. Helm Chart

Alerting Rules Overview

Configuring Alerting rules

The “for” field

Alert Labels

Adding Annotations

Understand and Use Alert manager

Alerting basics (when, what, and why)

**Day 4 (4 hours):**

**Alerting advanced:**

Notification Pipeline

Configuring Routes

Configuring Receivers

Configuring Inhibit Rules

Viewing Alerts in Alert manager

Setting Silences

Testing Inhibit Rules

Automating Alert manager Actions

**Day 5(4 hours):**

**Prometheus Federation:**

Setting Up Prometheus Federation

Hierarchical Monitoring with Prometheus Federation

Data Aggregation and Querying

Scaling Prometheus with Federation

Troubleshooting Federation Issues

**Grafana:**

Grafana introduction

Why do we need it?

How Grafana works?

Grafana Architecture

Grafana installation

Integrating Prometheus with Grafana

Data sources in Grafana

**Real world Architectural designs and economics around same Q & A**