Training on PROMETHEUS AND GRAFANA

Course Objective:
Candidates will understand the Advanced concepts of Prometheus monitoring tool.

Duration: 24 Hours

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.

Linked Certification:
https://training.linuxfoundation.org/certification/prometheus-certified-associate/

Day 1 :
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.Hocker
- c.Helm chart

- Configuration and Scraping
- Understanding Prometheus
- Limitations Data Model and Labels
- Exposition Format

PromQL:
- Selecting Data
- Rates and Derivatives
- Aggregating over time
- Aggregating over dimensions
- Binary operators
- Histograms
  Timestamp Metrics

Day 2 :

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

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 Alertmanager
- Alerting basics (when, what, and why)

Day 3 :
Alerting advanced:
- Notification Pipeline
- Configuring Routes
- Configuring Receivers
- Configuring Inhibit
- Rules
- Viewing Alerts in Alertmanager
- Viewing Notifications in Mattermost
- Setting Silences
    Testing Inhibit Rules
    Automating Alertmanager Actions

Alert Manager HA:
- Setting Up Alertmanager in HA
- Mode Synchronizing Alerts Across
- Instances Alertmanager State
- Replication Testing and Validating
- HA Setup
- Scaling Alertmanager Clusters
    Monitoring and Troubleshooting HA Alertmanager
    Automating Alertmanager Actions

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