

Grafana Advance Training

Duration: 5 Days

Overview

Grafana is an open-source visualization and analytics software. It allows you to query, visualize, alert, and trace your metrics, no matter where they are stored. It gives you the tools to convert your time-series database (TSDB) data into beautiful graphs and visualizations.

Course Outcomes:

By the end of this course, participants will be able to:

- Set up and secure Grafana in production environments.
- Connect and visualize data from AWS services like CloudWatch, CloudWatch Logs, X-Ray, and others.
- Create complex dashboards with templating, transformations, and drill-downs.
- Integrate alerting and notification systems (SNS, Slack, Teams).
- Use Grafana Loki for log visualization and Grafana Tempo for tracing.
- Build end-to-end observability pipelines in AWS.
- Manage dashboards and provisioning using Terraform and JSON.
- Set up multi-tenant monitoring using Grafana.

Prerequisites:

- Solid understanding of monitoring and metrics.
- Working knowledge of AWS (IAM, EC2, CloudWatch).
- Basic Linux commands and shell scripting.
- Familiarity with Prometheus, InfluxDB, or any time-series DB is a plus.
- Basic understanding of Docker and Terraform (optional but beneficial).



Lab Setup Requirements:

- AWS Account (IAM access, CloudWatch, X-Ray, S3, EC2 permissions)
- EC2 instance (Ubuntu) with Docker installed.
- Docker-compose installed.
- Terraform CLI (for provisioning Grafana dashboards)
- Git and VS Code
- Internet connectivity for plugin installations
- Slack or Teams webhook (for alerting integrations)
- Pre-uploaded CloudWatch metrics or logs

Course Topics:

Day 1

Module 1 – Introduction and Overview

- What is Grafana?
- Why do we need it?
- Advantage and Disadvantage of Grafana
- Grafana Comparing with other tools
- How Grafana works!
- Grafana Architecture

Module 2 – Installation

- Requirements
- Run Grafana Prometheus using helm Kubernetes
- Configuring Receivers like Slack, PagerDuty etc.,
- Upgrade Grafana

Module 3 – Getting Started with Grafana

- With Grafana
- With Grafana and Prometheus
- With Grafana and MS SQL Server
- Time Series
- Time Series Dimensions
- Histograms and Heatmaps
- Glossary

Day 2

Module 4 – Data sources in Grafana

- PostgreSQL
- Prometheus



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Module 5 – Data sources in Grafana

- Add data source
- AWS CloudWatch
- Cloud Monitoring
- Azure Monitor
- Elasticsearch
- Graphite
- InfluxDB
- Jaeger
- Loki
- Tempo
- Microsoft SQL Server
- MySQL
- OpenTSDB
- TestData
- Zipkin

Module 6 – Panels in Grafana

- Add a Panel
- Panel Editor
- Calculations list
- Queries
- Thresholds
- Transformations
- Share query results
- Inspect a panel
- Field options and overrides
- Visualizations

Day 3

Module 7 – Dashboards & Explore in Grafana

- Annotations
- Dashboard Folders
- Playlist
- Search
- Keyboard shortcuts
- Time range controls
- Reporting
- Dashboard Version History
- Share dashboard
- Share panel
- Export and import



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- JSON model
- Scripted dashboards

Module 8 – Alerts in Grafana

- Alert notifications
- Create alerts
- Pause alert rule
- View alerts
- Troubleshoot alerts

Module 9- Introduction to Grafana in the Cloud

- Overview of Grafana architecture (OSS vs Enterprise vs Cloud)
- Introduction to observability in AWS
- Installing Grafana on EC2 / Docker / Terraform
- Creating the first dashboard using CloudWatch metrics
- Securing Grafana access (Users, Roles, SSO)
- Lab: Set up Grafana on EC2 with CloudWatch as a data source

Advanced Visualizations and Templating

- Dashboard variables and templating
- Repeat panels and drill-down links
- Working with annotations and regions
- Transformations and complex queries
- CloudWatch Logs insights in dashboards
- Lab: Create a dashboard for EC2 health, network, and logs

Alerting & Notification Integrations

- Grafana Alerting 2.0: architecture and configuration
- CloudWatch Alarm vs Grafana alerts
- Notification channels: AWS SNS, Slack, MS Teams
- Alert conditions, silence, and alert grouping
- Audit logging and alert history
- Lab: Create CPU, Memory, Disk alerts for EC2 using CloudWatch metrics with Slack/SNS notifications

Logs, Traces, and Multi-Source Observability

- Loki: centralized log aggregation (setup and queries)
- Tempo: distributed tracing with AWS X-Ray integration
- Working with AWS OpenTelemetry Collector
- Grafana dashboards from AWS RDS, ELB, Lambda metrics
- Lab: End-to-end setup: metrics + logs + traces from Lambda/API Gateway to Grafana

Module 10 – Authentication in Grafana

- Overview
- Grafana Authentication
- Auth Proxy
- LDAP Authentication
- Enhanced LDAP Integration
- OAuth authentication
- Google OAuth2 Authentication
- Azure AD OAuth2 authentication
- GitHub OAuth2 Authentication
- GitLab OAuth2 Authentication
- Okta OAuth2 authentication

- SAML Authentication
- Team Sync

Day 4

Module 11 – Administration in Grafana

- Grafana CLI
- Image rendering
- Internal Grafana metrics
- Provisioning
- Jaeger instrumentation
- Change the default home dashboard
- Change your password
- Change your preferences
- Configuration
- View server settings
- Configure Grafana Docker image
- Security
- View server stats
- Set up Grafana for high availability

Module 12 – Linking

- Linking overview
- Dashboard links
- Panel links
- URL variables
- Data links

Day 5

Module 13 – Templates and variables

- Variable syntax
- Variables types
- Variable examples
- Enter variable Selection Options
- Enter Value tags
- Advanced variable format Options
- Multi-value variables
- Filter variables with regex
- Repeat panels or rows

Module 14 – Manage users

- Add or remove a user
- Enable or disable a user
- Add or remove a user from a team
- Create or remove a team

Module 15 – Permissions

- Organization roles
- Dashboard and Folder Permissions
- Datasource Permissions

Module 16 – Grafana Enterprise

- License Expiration
- Data source permissions

- Enhanced LDAP Integration
- Enterprise configuration
- Reporting
- SAML Authentication
- Team sync
- Auditing
- Usage-insights
- Vault
- White labelling
- Export dashboard as PDF

Module 17 – Plugins

- Install plugins
- Plugin signatures



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