

July 2023 openHistorian Grafana Training for Entergy
Agenda – Draft 2

DAY 1 – GRAFANA & OPENHISTORIAN

Attendees will learn about the openHistorian database tables that Grafana gets its data from, how to add custom data, and administrative management of Grafana, followed by a course in Grafana Dashboard and Plugin basics. Attendees (with appropriate access) will be able to:

- Identify the tables from which Grafana pulls data.
- Add custom metadata to be visualized in Grafana.
- Manage Grafana users and understand the available roles and their permissions.
- Restart Grafana within openHistorian.
- Find, download, and deploy new Plugins.
- Implement best practices when creating a new Dashboard.
- Create, populate, import, and export a Dashboard.

1. SQL Database (2 hrs)

Overview of openHistorian database schema, how Grafana accesses and uses the data, and how to add additional metadata sources to Grafana.

1.1. Important Tables for Grafana and metadata requirements

1.1.1. PointTag column/field

1.2. Adding Custom Data

1.2.1. ConfigurationEntity table

2. Admin Items (30 mins)

User/security managements and how and when to reinitialize Grafana within openHistorian.

2.1. Managing Users and their Roles and Permissions

2.1.1. openHistorian and Grafana Roles and their Permissions

2.1.2. Adding, editing, and removing Users

2.2. Reinitializing Grafana within openHistorian

3. Grafana 101 (5.5 hrs)

An overview of Grafana Plugins and Dashboards.

3.1. Plugins

3.1.1. Definition of a plugin

3.1.2. How to find new plugins

3.1.3. How to download and deploy

3.1.4. Example

3.2. Dashboards

3.2.1. Before Creation – Best Practices

3.2.1.1. Planning new dashboards

3.2.1.2. Control Room Human Factors (HMI) Design and Colors

3.2.2. Panels

3.2.2.1. Library Panels

3.2.3. Variables

3.2.4. URL Variables (for Screen Linking)

3.2.5. Importing and Exporting Dashboards using JSON Models

DAY 2 – GRAFANA USAGE

Attendees will learn about openHistorian-specific and Grafana-native functions to make their visualizations more powerful. Attendees will be able to:

- Construct effective Filter Expressions to tailor the data being shown.
- Perform functions/transformations on series and groups.
- Annotate visualizations and manage annotations.
- Set and manage Grafana Managed alerts.

1. Filter Expressions (1.5 hrs)

How to filter inputs and outputs for streams, subscribers, and adapters, including the semantics of expressions and examples.

1.1. Syntax

1.1.1. Required keywords – FILTER & WHERE

1.1.2. Optional keywords – TOP & ORDER BY

2. Grafana Functions for openHistorian (3 hrs)

Performing functions/transformations on data, to include use and syntax of Series and Group Operations, the list of available functions, overview and examples of commonly used functions, and a high-level overview of more complex functions.

2.1. Series Functions

2.2. Group Operations

2.3. Available Functions

2.4. Commonly used Functions

2.5. Complex Functions

3. Annotations (1.5 hrs)

How to use the Grafana-native tool to annotate time series data, including how to filter currently visible annotations.

3.1. Adding, editing, and deleting an annotation

3.2. Annotation Query

4. Grafana-Managed Alerts (2 hrs)

Overview of Grafana's native alerts, how to set thresholds, and retrieving triggered alerts.

4.1. Adding, editing, and deleting alerts.

4.2. Single/Classic condition vs. Multi-Dimensional Rule

4.3. No data and error handling