

# **Grafana Plugin Beta Documentation**

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# Overview of Grafana Plugin Beta

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Grafana Plugin Beta is designed to offer IBM mainframe administrators a user-friendly solution for monitoring and overseeing mainframes.

It serves as a collection of services specifically built for Grafana. Through custom-designed dashboards, Grafana Plugin Beta seamlessly integrates OMEGAMON into Grafana, providing a comprehensive monitoring and management experience.

Grafana Plugin Beta offers customers a user-friendly interface for conveniently accessing data from a range of OMEGAMON monitoring agents, allowing for seamless monitoring and analysis of various system metrics and performance indicators.

Grafana Plugin Beta displays data from IBM Z® OMEGAMON® AI for z/OS®.

## Getting started

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### Prerequisites to install Grafana Plugin Beta

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You must complete certain tasks before you install Grafana Plugin Beta.

- Installation of Tivoli® Enterprise Monitoring Server (TEMS) with PTF OA65625.
- TEMS must be connected to the Zowe API Mediation Layer.
- You must defined the ESM mapping between distributed identity and SAF userid.

### Installing Grafana Plugin Beta

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You must install Grafana Plugin Beta to analyze and visualize data from the OM monitoring agents.

### Creating data sources

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
Tivoli® Enterprise Monitoring Server (TEMS) collects and control all the necessary information and data. To access the monitoring data and alerts from monitoring agents, it is essential to connect to TEMS by adding it as a data source.

- You must have installed Grafana Plugin Beta. See [Installing Grafana Plugin Beta](#) on page 3.
- You must know the URI of TEMS API running behind the Zowe's API ML.

1. Go to **Connection > Data sources**.



**Note:** The navigation of the user interface can differ based on the Grafana version that is currently installed.

2. Click + **Add new data source**, and then search for Grafana Plugin Beta to choose a data source type.
3. Enter a name for the data source in the **Name** field.
4. Optional: Set **Default**  to ON to make the added data source the default one.
5. Enter the URL of Tivoli® Enterprise Monitoring Server in the **TEMS address** field.
6. Choose any one of the methods described in the following table to choose the authentication methods:

Methods	Action
<b>Forward OAuth Identity</b>	No action.
<b>Forward Cookies</b>	Add the new tag name in the <b>Allowed cookies</b> field.
<b>Basic authentication</b>	Enter the credentials of the TEMS in the <b>User</b> and <b>Password</b> fields.

7. Choose any one of the TLS methods described in the following table to provide additional security measures that can be applied on top of authentication:

Methods	Action
Select the <b>Add self-signed certificate</b> checkbox.	Enter the Certificate Authority (CA) certificate on top of one generated by the certificate authorities for additional security measures in the <b>CA Certificate</b> field.
Select the <b>TLS Client Authentication</b> checkbox.	<p><b>a.</b> Enter the <b>ServerName</b> used to verify the hostname on the returned certificate.</p> <p><b>b.</b> Enter the <b>Client Certificate</b> generated from a Certificate Authority or a self-signed one.</p> <p><b>c.</b> Enter the <b>Client Key</b> generated from a Certificate Authority or a self-signed one.</p>
Select the <b>Skip TLS certificate validation</b> checkbox.	Select the <b>Skip TLS certificate validation</b> option if you are accepting any certificate presented by the TEMS and any hostname listed in that certificate. However, this practice is not considered secure and is typically used in development or testing environments.

8. Specify the cache time (in seconds) for the data source in the **Metadata cache time** field.



**Remember:** The default value is 300.

9. Specify the HTTP timeout (in seconds) for the data source in the **HTTP request timeout** field.



**Remember:** The default value is 600.

10. Click **Save & test**.

The `Data source is working` message is displayed if the connection to TEMS succeeds.

You have added the TEMS data source.

## Dashboards

Grafana Plugin Beta provides custom panels for the OMEGAMON data source and dashboard that consists of Charts, Reporting, and Time Series dashboards.

Grafana Plugin Beta offers a wide range of pre-configured dashboards specifically designed for monitoring different mainframe systems such as Db2 and z/OS. You have the flexibility to create new dashboards or customize existing ones to meet your specific monitoring requirements. The dashboards are equipped with comprehensive monitoring features similar to those found in old OMEGAMON UI products, with the added benefits of being highly flexible, intuitive, and user-friendly for configuration.

For more information about creating and managing dashboards, refer to the [Grafana](#) documentation.

The dashboard interface offers several customization options for data presentation. For more information about available features in the Dashboard and their descriptions, refer to the [Grafana](#) documentation.

## Query editor

In Grafana, queries are essential for fetching and transforming OMEGAMON data from data sources.

Executing a query is a process that involves defining the data source, specifying the desired data to retrieve, and applying relevant filters or transformations. Grafana Plugin Beta provides a user-friendly query editor that maximizes its unique capabilities. Grafana panels retrieve data for visualization from data sources via queries.

When working on Dashboards, you can either modify the existing query or create a new one. The **Query** tab provides two choices - **Form** and **Situation**.

For more information about attributes of AI for z/OS®, refer to the [IBM Z® OMEGAMON® AI for z/OS®](#) documentation.

For more information about attributes of Db2® Performance Expert on z/OS®, refer to the [IBM OMEGAMON® for Db2® Performance Expert on z/OS®](#) documentation.

Under the **Form** tab, you find a range of options allowing you to build your query, which determines the data displayed in your chosen visualization. Here are the options available in the **Form** tab:

- **Applications:** This option provides a list of OMEGAMON monitoring agents.
- **Attribute group:** This field lists the corresponding attributes depending on the chosen application.
- **Managed systems:** This option provides a list of systems to select where the data will be collected from.
- **Group by:** This option groups the result rows based on the value of one or more attributes.
- **Display attribute names:** This option provides a list of attributes to be displayed in the visualization.
- **Filters:** You can add filters based on your defined criteria to limit the data returned.
- **System Params:** This field can be used to pass input parameters to OMEGAMON agent or TEMS.
- **Order by:** Sort the result rows in ascending or descending order of a chosen attribute.
- **Get near-term history data:** This option retrieves historical data from a specified time frame from the Persistent Data Store (PDS).
- **Formula:** The **Formula** field facilitates building the query based on the values selected from each field.

## Using the query editor

By adding panels to dashboards, you can effectively present your data in a visual format. Each panel must require at least one query to display a significant visualization.

1. Identify the dashboard for which you want to add visualization.
2. Perform one of the steps described in the following table:

Step description	Step #
If there are no panels added to the dashboard	Perform step 3 on page 5.
If at least one panel is added to the dashboard	Perform step 5 on page 5.

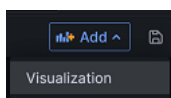
3. Click + **Add visualization** to add visualization to your data.



**Note:** The navigation of the user interface can differ based on the Grafana version that is currently installed.

The **Edit panel** is displayed.


4. Go to step 6 on page 6.
5. Click **Add > Visualization** from the dashboard header.



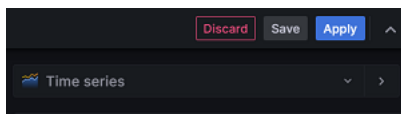
The **Edit panel** is displayed.

6. Enter a name for the panel in the **Title** field.

Optionally you can also provide a description for the panel that you are creating.


When you add the description for the panel, a notification icon  is displayed after the **Panel** title.








7. Select one of the visualization types from the drop-down menu:



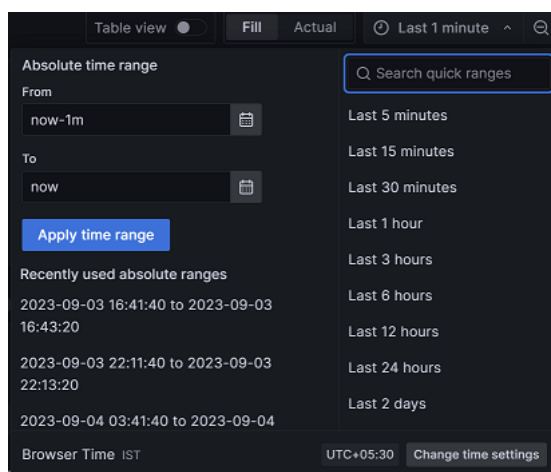
You can choose built-in Grafana visualization types from the drop-down list.


8. Select the data sources from the **Data source** drop-down list.
9. Click the **Query** tab and provide the following details for the **Form**:

Options	Actions																
<b>Application</b>	Select the OMEGAMON product from the <b>Application</b> drop-down list for which you want to monitor the data.																
<b>Attribute group</b>	Select the attribute of the corresponding application from the <b>Attribute group</b> drop-down list.																
<b>Managed systems</b>	Select the system to retrieve collected data from the <b>Managed systems</b> drop-down list.																
<b>Group by</b>	<b>Optional:</b> Use the <b>Group by</b> option to group the result set based on the selected value.																
<b>Display attribute names</b>	Select the attributes to be displayed in the graph from the <b>Display attribute names</b> drop-down list.																
<b>Filters</b>	<p><b>Optional:</b> Use the <b>Filters</b> option to narrow down the data of your interest when requesting a list of values.</p> <p>Perform the following steps to create a filter:</p> <ol style="list-style-type: none"> <li>Expand the <b>Filters</b> option.</li> <li>Click <b>Create filter</b>.</li> <li>Choose the attribute from the drop-down list.</li> <li>Select the one of the operator from the drop-down list.</li> </ol> <p>The available operators are as follows:</p> <table border="1"> <thead> <tr> <th>Operators</th><th>Meaning</th></tr> </thead> <tbody> <tr> <td>=</td><td>Equals to</td></tr> <tr> <td>&lt; &gt;</td><td>Not equals to</td></tr> <tr> <td>&lt;</td><td>Less than</td></tr> <tr> <td>&lt; =</td><td>Less than or equal to</td></tr> <tr> <td>&gt;</td><td>Greater than</td></tr> <tr> <td>&gt; =</td><td>Greater than or equal to</td></tr> <tr> <td><b>LIKE</b></td><td>The value is similar to specified pattern</td></tr> </tbody> </table> <ol style="list-style-type: none"> <li>Enter a value for the chosen filter.</li> </ol> <p> <b>Note:</b> The <b>Filters</b> can accept variable values.</p>	Operators	Meaning	=	Equals to	< >	Not equals to	<	Less than	< =	Less than or equal to	>	Greater than	> =	Greater than or equal to	<b>LIKE</b>	The value is similar to specified pattern
Operators	Meaning																
=	Equals to																
< >	Not equals to																
<	Less than																
< =	Less than or equal to																
>	Greater than																
> =	Greater than or equal to																
<b>LIKE</b>	The value is similar to specified pattern																

Options	Actions
	 <b>Remember:</b> You can click the  icon and choose between <b>AND</b> or <b>OR</b> to add multiple filters to the query. You can also delete any unnecessary filters using the  icon.
<b>System.Parma</b>	<p><b>Optional:</b> Use the system parameters to manage different aspects of system operation and performance.</p> <p>Perform the following steps to define a system parameter:</p> <ol style="list-style-type: none"> <li>Expand the <b>System.Parma</b> option.</li> <li>Enter the parameter name in the designated field.</li> <li>Input the desired value in the corresponding field.</li> </ol> <p> <b>Note:</b> The <b>System.Parma</b> can accept variable values.</p> <ol style="list-style-type: none"> <li>Specify the length of the parameter.</li> </ol> <p>For instance, if you have set <code>TIMEOUT</code> as a system parameter with a value of 300, the query waits for 300 seconds. If there is no activity even after this duration, TEMS will consider it a timeout condition for the TCP/IP connection and terminate the request.</p> <p> <b>Remember:</b> You can delete any system parameter you have added using the  icon.</p>
<b>Order by</b>	Use the <b>Order by</b> option to arrange the attribute values in either ascending or descending order.
<b>Get near-term history data</b>	Enable the <b>Get near-term history data</b> setting  to ON to retrieve historical data from the persistent data store.
<b>Formula</b>	When you choose values, they appear as a query in the <b>Formula</b> section. If you change the options, the query in the <b>Formula</b> section is updated accordingly. You can also adjust the values by modifying the query, and the corresponding options are modified.

10. Click the **Time Picker** drop-down list to select relative time range options and set custom absolute time ranges.



11. Click the **Refresh dashboard**  icon to query the OMEGAMON data source.

Grafana provides you with a preview of your query results along with the corresponding visualization.

12. Optional: Click **Apply** to view your changes applied to the dashboard.

13. Click **Save**, and then enter a note describing the changes you have made.

**14.** Click **Save** to store the changes made to the dashboard.

You have applied visualization to your data.

Grafana provides a range of visualizations that cater to different use cases. For more information about the built-in panels, options, and typical usage, refer to the [Grafana](#) documentation.

You can also configure the panel options based on your requirements. For more information refer to the [Grafana](#) documentation.

## Enterprise visualization

### Detail metrics visualizations

## Using near-term history

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## Troubleshooting

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You can find information about how to analyze and address typical issues that may arise when using Grafana Plugin Beta.

## Error messages

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