



Version 5.9

Background Process Monitoring Using Grafana Manual

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Concept

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Concept

1 Concept

Grafana is an Open Source software used for analysing and visualising metrics (time series). Grafana collects parameters from the system (applications) and presents them in the desired format (curve, column, etc.). The data visualised make it possible to draw conclusions about, for example, the duration of processes or the utilization of memory space.

Visualisation requires the Grafana application and a database to be used as a data source. The following data sources are supported:

- Graphite
- Elasticsearch
- InfluxDB (used by FORCAM)
- OpenTSDB

i Grafana is currently only available in English language.

The data to be shown are compiled in dashboards. A dashboard consists of several panels. Each panel shows a defined information item (e.g. CPU load, memory utilization etc.).



Fig. 1: Dashboard containing several panels

i Configuring a panel is only possible with administrator permissions.

At present, FORCAM uses four different dashboards showing different data:

Concept

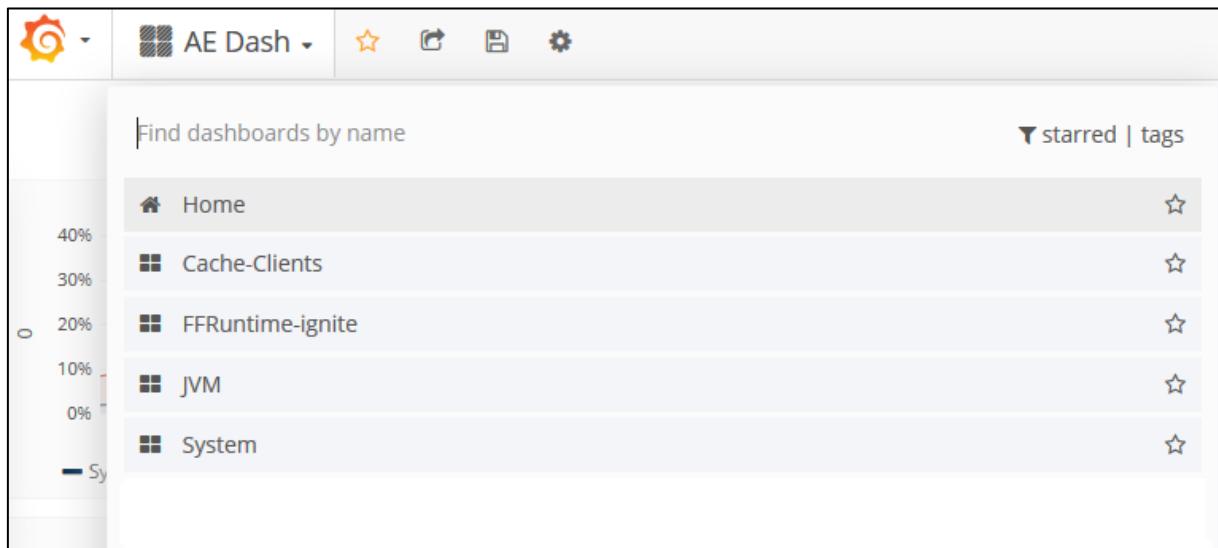


Fig. 2: List of all dashboards available

- System:
CPU load, user processes, network, disk space, memory, swap
- FFRuntime-ignite:
Ignite server metrics for all caches available
- Cache-Clients:
Cache performance, queries
- JVM:
Data from the specific application (Tomcat) such as memory, garbage collection, threads

Grafana allows restricting access and viewing permissions. This makes it possible to set up a guest account in addition to the administrator account. The following set of permissions is currently in use:

Table 1: Roles currently used by FORCAM and the associated permissions

Function	Guest	Admin
Display dashboard	✓	✓
Show/hide curves	✓	✓
Zoom	✓	✓
Move panel	✓	✓
Change panel size		✓
Configure values to be displayed		✓
Create dashboard		✓
Save changes to dashboard		✓

2 Basic Functions

Grafana offers numerous different configuration options and functions. It is particularly flexible regarding modifying the visual appearance. The basic functions are summarized below.

2.1 Setting a Time Range

You can either select the time range of the data displayed from a set of predefined time ranges or define it freely. The (optional) refresh rate updates the data automatically at the selected time interval. The dialog for configuring the time range opens when you click on the time range field at the upper right:

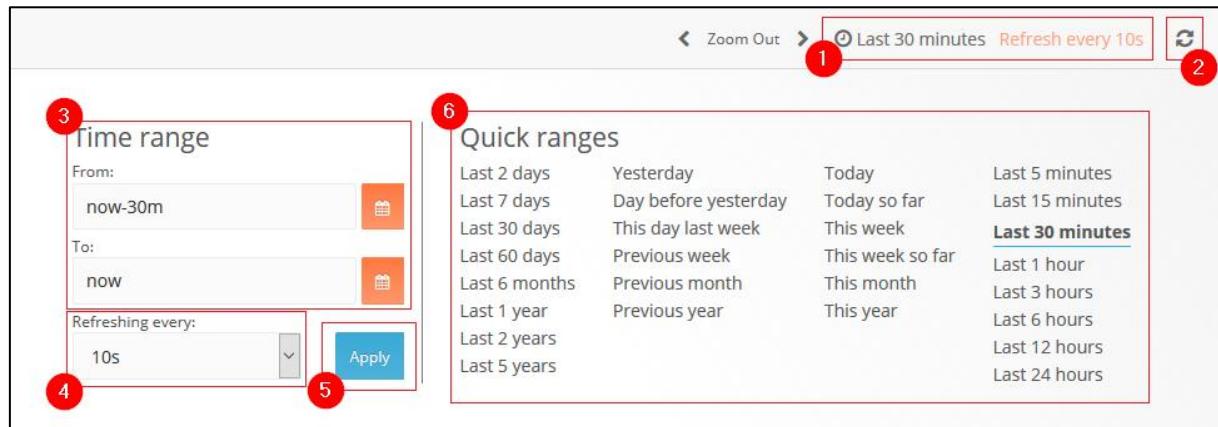


Fig. 3: Configuring the time range for data displayed

- (1) Open and close the dialog.
- (2) Refresh the data manually.
- (3) Enter a time range manually.
Example: **now-30m** specifies the time range of the **Last 30 minutes**.
- (4) Select an automatic refresh rate.
- (5) Apply the manual entry or selected refresh rate.
- (6) Select predefined time ranges.
When you click on a time range, it is adopted immediately.

2.2 Viewing Options

Grafana offers various options to configure the view of the user interface and the way the data are presented. The essential viewing options are described below.

- ⓘ These options can be applied under a guest profile but you cannot save any changes. You can only save the theme change.

Basic Functions

Change the user interface theme

Grafana offers a **Dark** and **Light** theme by default. The theme selected is adopted for the current profile.

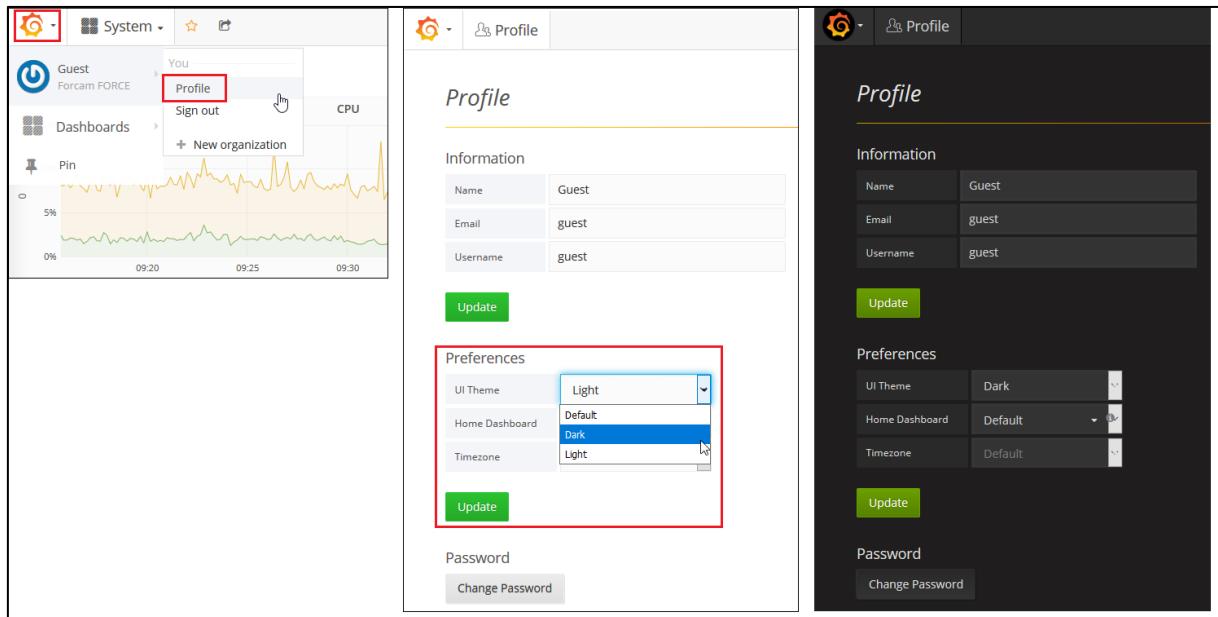


Fig. 4: Changing the theme

To change the user interface theme:

1. Click on the Grafana logo.
2. Go to [User] and click **Profile**.
3. Select the desired theme in the next dialog from the **UI Theme** field.
4. Click **Update**.

Show/hide data

In a panel showing several data items (e.g. several curves overlaid), click on a designation in the legend to show only the data pertaining to this item.

Keep the Shift key pressed and click on a designation to hide only the data pertaining to this item.

Basic Functions



Fig. 5: Showing/hiding data

Zoom

Drag an area with the mouse key within a panel to enlarge the area.

Click **Zoom Out** at the upper right to increase the time range of all panels.

Reset zoom by reselecting a time range.



Fig. 6: Zoom into a section within a panel

Basic Functions

Change the colour of data displayed

Click on a coloured line in the legend to select a different colour for this data item.



Fig. 7: Changing the colour of data displayed

Assign data to a different Y-axis

Click on a coloured line in the legend and then click **Left** or **Right** in the upper area of the pop-up menu to assign the data of this item to the left or right Y-axis, respectively.

Basic Functions

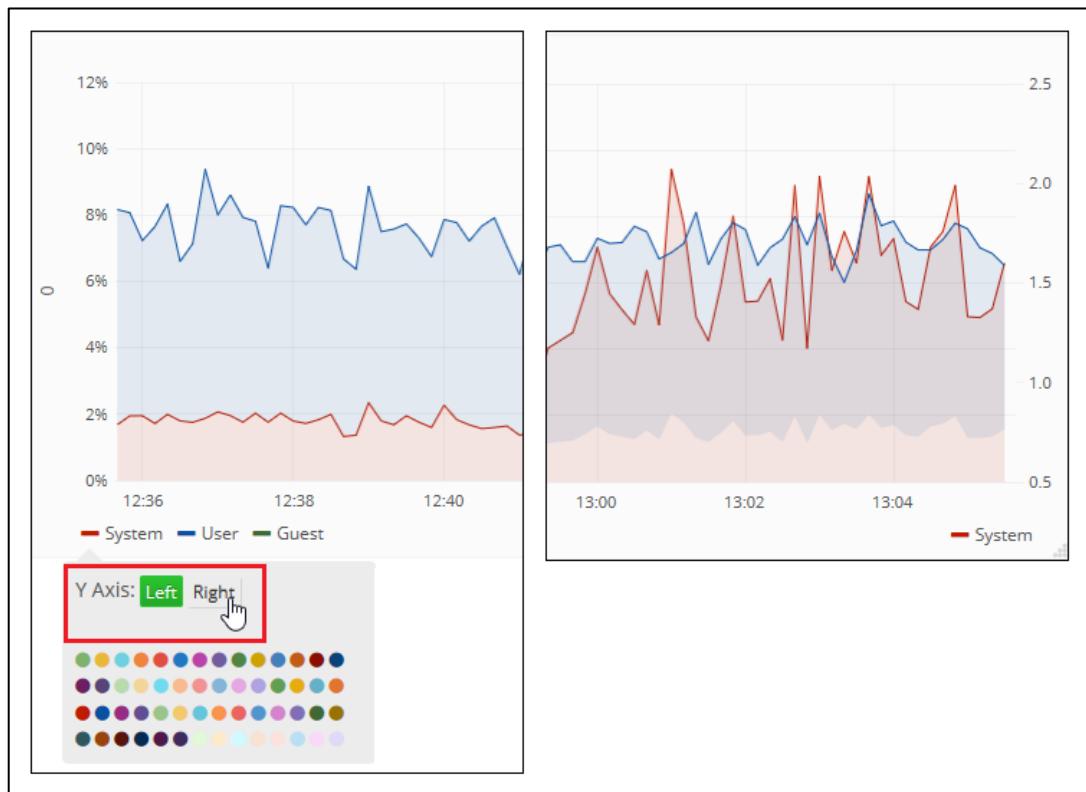


Fig. 8: Assigning data of a Y-axis to another one

Move panel

Take the panel by its top edge and use drag-and-drop to move it to the new position.

Change panel size

Enlarge/reduce the panel size by dragging the bottom right edge.

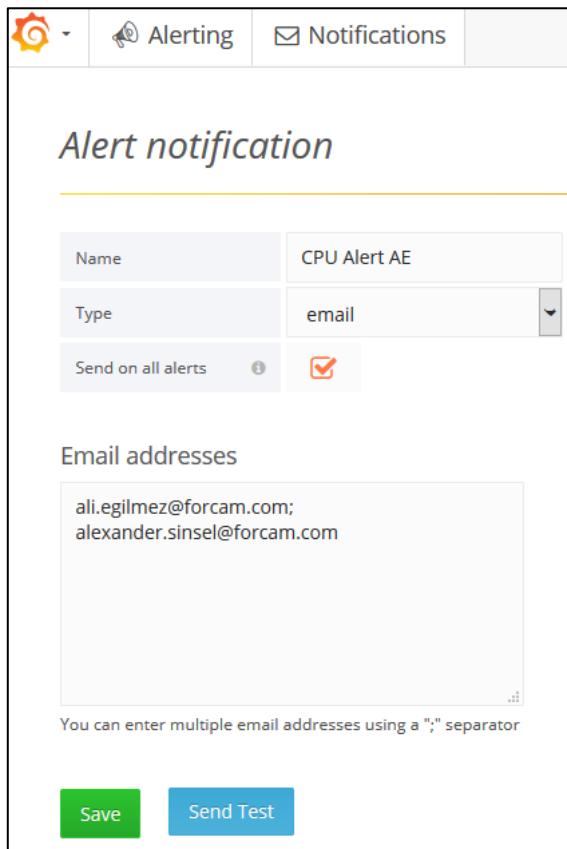
Basic Functions

2.3 Alerting

Alerting is sending a notification by email when a defined data set reaches, exceeds or falls short of a defined value, as appropriate. Alerts are available across profiles and may be used by any user.

i This function is only available to users with administrator permissions.

You must create an email recipient before you can configure an alert. You can add several email recipients to an alert.



The screenshot shows the Grafana Alerting interface. At the top, there are three tabs: a yellow gear icon labeled 'Alerting', a megaphone icon labeled 'Alerting', and an envelope icon labeled 'Notifications'. Below the tabs, the title 'Alert notification' is displayed. The form fields are as follows:

Name	CPU Alert AE
Type	email
Send on all alerts	<input checked="" type="checkbox"/>

Below the form, under 'Email addresses', two email addresses are listed: 'ali.egilmez@forcam.com; alexander.sinsel@forcam.com'. A note below the list says, 'You can enter multiple email addresses using a ";" separator'. At the bottom of the screen are two buttons: a green 'Save' button and a blue 'Send Test' button.

Fig. 9: Creating email recipients

To add an email recipient:

1. Click on the Grafana logo.
2. Go to **Alerting** and click **Notifications**.
3. Click **New Notification** at the top.
4. Enter a name for the notification.
5. Select **email** for the type.
6. Enter email address(es) into the field below.
Separate multiple addresses by semicolon (;).
7. You may send a test alert by clicking **Send Test** (optional).
8. Save.

i If a check mark is set for **Send on all alerts**, the recipient is addressed by every alert.

Basic Functions

To configure an alert:

- ✓ A metric needs to be configured (see section 3.5.1.2).
1. Click on the top edge of the panel for which you want to configure an alert.
 2. Click **Edit** in the context menu.
 3. The panel changes to editing mode.
 4. Select the **Alert** tab at the bottom and click **Create Alert**.
 5. Enter the name of the alert.
 6. Enter the polling interval next to **Evaluate every**.
The alert function polls the data using this interval.
 7. Drag the slider on the right to the appropriate height.
OR:
 - Configure the condition(s) manually.
 - a. Select a range of values next to **WHEN** (e.g. **sum()** for a total).
 - b. Select the metric next to **OF**.
Example: **query (A, 5m, now)** defines the configured metric A with the time range **Last 5 minutes**.
 - c. Enter the appropriate limit value next to **IS ABOVE**.
Click on **IS ABOVE** to select a different operator.
 - d. Click on the **+** symbol to configure additional conditions (optional).
Click on **AND** to select a different conjunction.
 7. Go to **Notifications** in the left-hand area.
 8. Select the recipient(s) of the notification by clicking on the **+** symbol next to **Send to**.
The notification subsequently written is sent to the recipients listed in the notification.
 9. Enter the desired message next to **Message**.
 10. Save the dashboard.



Fig. 10: Configuring an alert for a defined value

The alert in Fig. 10 was configured as follows:

- Metric A is the relevant metric. It measures the CPU load generated by users of the corresponding application.
- An alert is triggered when the threshold of 7% is exceeded.
- The alert function polls the data of the metric every 60 seconds.
- When the alert is activated, an email is sent to the recipients configured.

Basic Functions

A panel with an alert assigned has a grey heart next to the title. When an alert is enabled, the heart turns green. When an alarm is triggered (if the configured limit value is exceeded), the heart turns red and the panel flashes in a red frame.

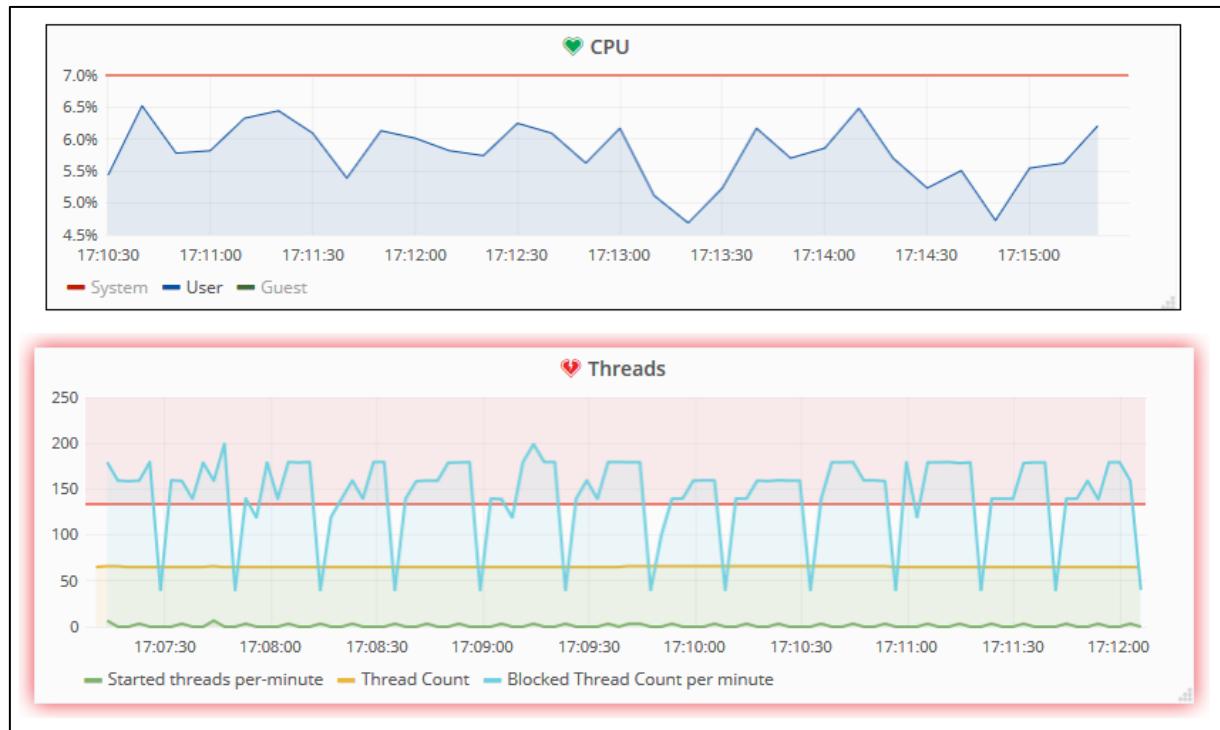


Fig. 11: Panels with alerts assigned, with limit value not reached and exceeded, respectively

2.4 Enlarging a Panel (View)

You can enlarge a panel to have a better view. The panel is then displayed in full screen mode. Other panels, or the dashboard, are hidden by this view.

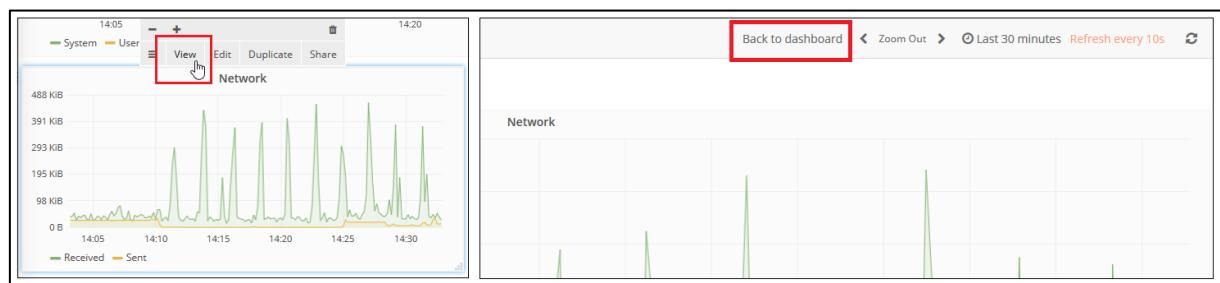


Fig. 12: Enlarging and reducing a panel

To enlarge a panel:

1. Click on the upper edge of the appropriate panel and select **View** from the context menu.
- The panel is displayed in full screen mode.
2. To reduce the panel to its previous size, click **Back to dashboard** at the top right.

Basic Functions

2.5 Sharing a Panel

You can output a link for a panel, communicate the link to other users to share the panel or embed it into a web page. The appropriate read and/or write permissions are required to open a shared panel.

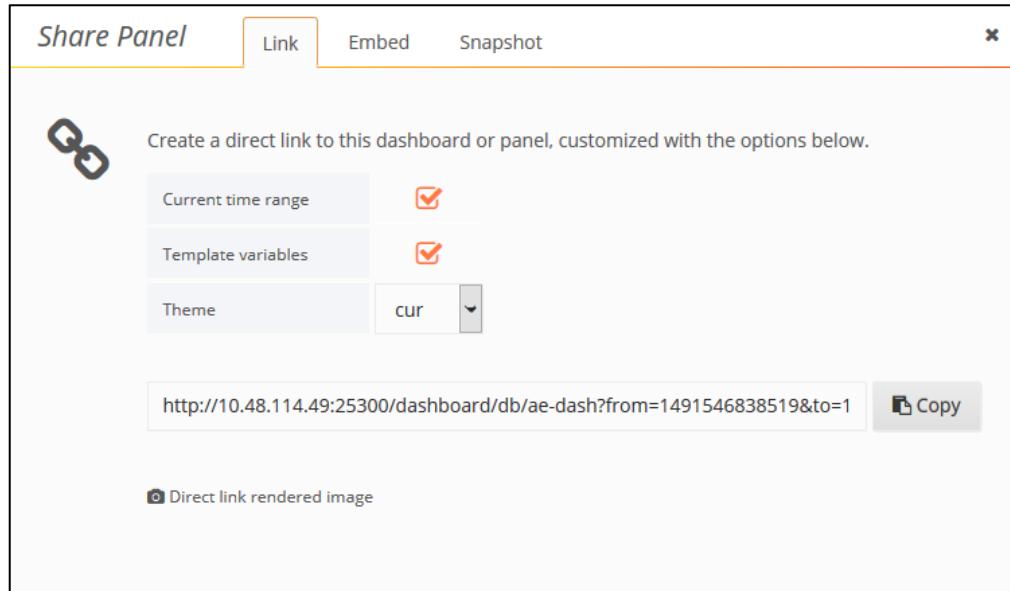


Fig. 13: Sharing a panel

The configuration options for a panel are either active or restricted after sharing, depending on the method used. The following methods are available:

- Link:
Plain address of the panel. Display in full screen mode. Menu bar available.
- Embed:
HTML code for embedding the panel into a web page. Display in full screen mode. Menu bar hidden.
- Snapshot:
Address of a panel without sensitive data: Metrics, templates and annotations are hidden.
You can optionally select an expiry date (**Expire**) after which the link becomes inactive.

Shared panels show data for the time range configured (e.g. last 5 minutes). If a check mark is set for **Current time range**, the data relate to the point of time of generating the link including the time range (e.g. (last) 5 minutes on 07 April 2017 from 9:07 to 9:12 o'clock).

When generating a link, or embed code, you can select a **Theme** to be displayed when opening the panel.

To share a panel:

1. Click on the upper edge of the appropriate panel and select **Share** from the context menu.
2. Change to the appropriate method (tab) in the next dialog.
3. Define the data/theme to be displayed and/or set the expiry date (optional).
4. For the Snapshot method, click on **Local Snapshot** to generate a link.
5. Copy the link and share it as appropriate.

3 Configuration

You can create any number of dashboards with any number of panels in Grafana. However, configuring dashboards and metrics is only possible with administrator permissions.

- ⓘ Grafana offer configuration instructions in digital format on their own homepage:
<http://docs.grafana.org/>

3.1 Creating a Dashboard

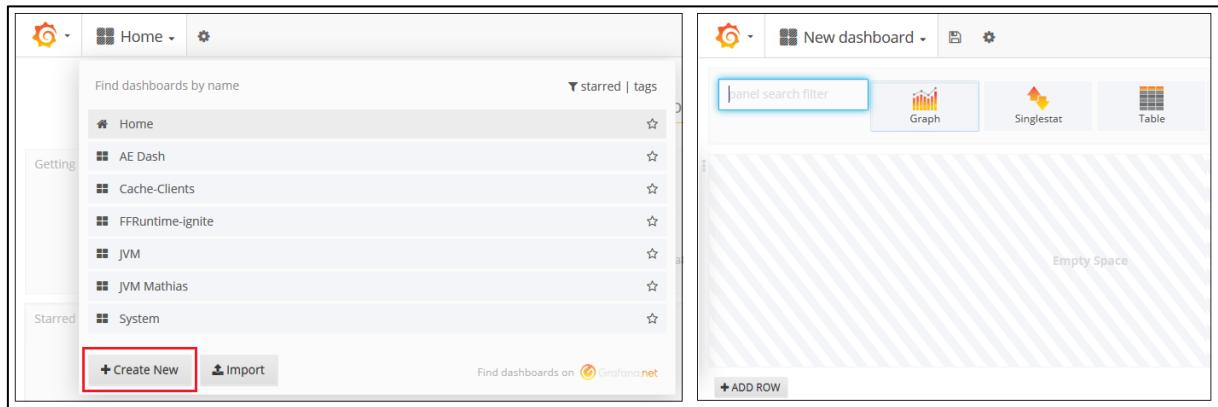


Fig. 14: Creating a new dashboard

To create a new dashboard:

1. Click on the Grafana logo.
2. Go to **Dashboards** and click **New**.
- The next dialog is the editing page for the new dashboard. The cursor is in an input field where you can search for different display formats (**panel search filter**).
3. Click on the appropriate display format.
4. Configure the display format per your necessities (see section 3.5).
5. Click the save icon at the upper edge of the screen.
6. Enter a name for the dashboard in the next dialog and click **Save**.

Configuration

3.2 Editing a Dashboard

You can edit a dashboard later, for example, to change its name or remove excess blank space (**Empty Space**).

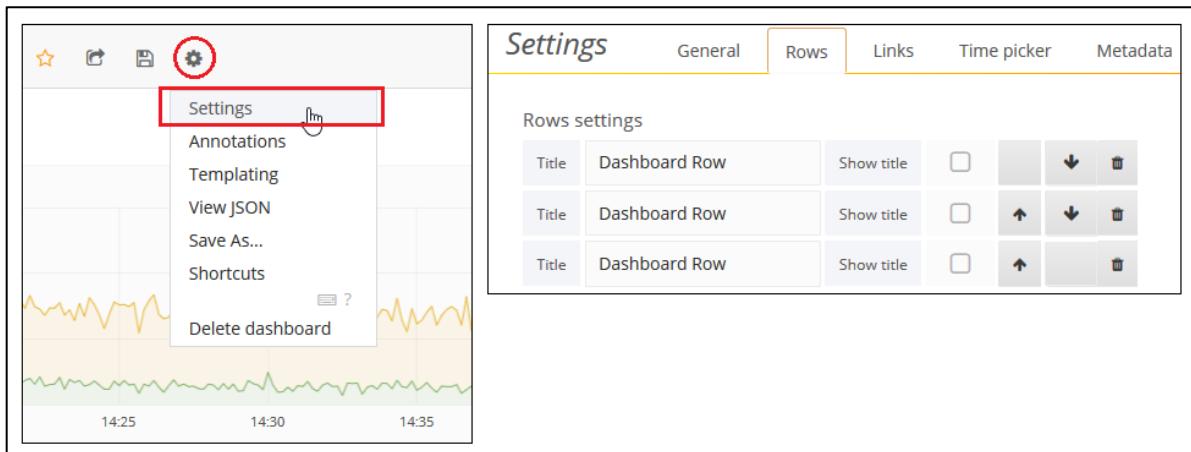


Fig. 15: Settings for dashboard editing

To edit a dashboard:

1. Click the edit icon at the upper edge of the screen.
2. Click **Settings**.
3. Make the settings as necessary (see below).
4. Save the dashboard.

The following settings are available in this dialog:

- General:
General settings such as name and description. Tags appear in the list of available dashboards and can be defined to give a first indication about the contents. You can search for tagged dashboards, for example, in the dashboard list (see section 3.5.7).
- Rows (see Fig. 15):
Sorting (arrow icons) and removing (trash icon) dashboard lines. You can show or hide titles of rows.
- Links:
Configuration of buttons with links appearing at the upper right of the dashboard. The buttons can link to dashboards configured or to any URL.
- Time picker:
Configuration of time range values.
You can add a desired refresh rate to the numbers specified for **Auto-refresh** (e.g. 1s for refreshing every second).
The value specified for **Now delay now-** sets the target value for manual input of the time range. You can replace the default value of **now** by any value that is less than the start value (e.g. From: now-30m To: now-1m, i.e. the last 30 minutes until one minute ago). This field can only take one value.
- Metadata:
Information about the dashboard such as creation date, change date, version etc.

Configuration

3.3 Display Formats

Grafana offers various display formats that can be used to visualise data. The following display formats are available:



Fig. 16: Display formats in Grafana

- Graph:
A graph with bars, lines or points
- Singlestat:
Shows an individual value as a number or text (e.g. cache size)
- Table:
Presentation of data in table format
- Text:
Displays static text
- Alert List:
List of all alerts configured (active and inactive ones)
- Dashboard List:
List of all dashboards configured
- Plugin List:
List of all plugins installed

Different configurations may be required, depending on the display format selected. The following Table 2 summarizes the configuration options described in section 3.5.

Table 2: Configuration options for the individual display formats

Display format	General	Metrics	Options	Value Mappings	Axes	Legend	Display	Alert	Time range
Graph	x	x			x	x	x	x	x
Singlestat	x	x	x	x					x
Table	x	x	x						x
Text	x		x						
Alert List	x		x						
Dashboard List	x		x						
Plugin list	x		x						

3.4 Creating a Panel

You can create panels immediately after creating a dashboard by selecting a display format (see section 3.3). You can add more panels to a dashboard at any time.

When you create a panel, a blank area (**Empty Space**) is generated first. You can freely define the number of blank areas (see section 3.2).

To create a panel:

1. Click **ADD ROW** at the bottom of the dashboard.
- A blank area is inserted at the bottom.
2. Click on the appropriate display format.
The panel is assigned the display format but does not contain any data yet and needs to be configured.
3. Save the dashboard.

3.5 Editing a Panel

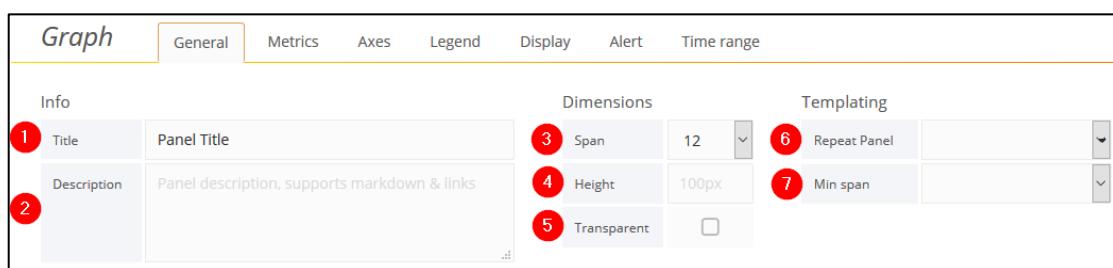
You can edit panels if you have the appropriate permissions. The configurations are flexible and determine title, data, layout, time range, etc. Some configuration elements are available in every display format; others depend on the display format selected.

3.5.1 General Configuration

The configuration elements described in this section are valid for all display formats.

3.5.1.1 General

Basic settings of a panel such as name and size.



Info		Dimensions	Templating
1 Title	Panel Title	3 Span 12	6 Repeat Panel
2 Description	Panel description, supports markdown & links	4 Height 100px	7 Min span
		5 Transparent <input type="checkbox"/>	

Fig. 17: Basic settings of a panel

- (1) Title
Appears at the top of the panel within the dashboard. **Panel Title** is set by default.
- (2) Panel description (optional)
- (3) Span
A span of 12 is equivalent to the display screen width. 6 is equivalent to half the display screen width.
- (4) Height in pixels
- (5) Transparent
If a check mark is set, the panel background is suppressed.
- (6) Select a user-defined variable

Configuration

(7) Minimum span of the variable

3.5.1.2 Metrics

Select the database data to be visualised.

You can configure several metrics for a panel. The data will then be displayed in an overlapping layout. You can show/hide a metric by clicking on the eye symbol on the right.



Fig. 18: Configuration of a metric displaying the system's CPU load

To configure a metric:

1. Select a database from the drop-down menu next to **Panel data source** and click **Add query**. All metrics configured will access this database. You can modify the selection later.
 → The query configuration fields appear. The fields next to **SELECT** and **GROUP BY** are predefined.
2. In the field next to **FROM**, click **select measurement** and select the appropriate data source. Example: Select **OperatingSystemMXBean_systemCpuLoad** to visualise the CPU load of the system.
 → The selected data source is shown in the panel. The legend text is the same as the data source.
3. You may restrict the data source to one application (optional).
 - a. In the field next to **WHERE**, click on the + symbol and select **application**.
 - b. Click on the operator to select a different operator as necessary.
 - c. Click **select tag value** and select the appropriate application.
 → The data will be displayed for this application only.
4. In the field next to **SELECT**, click on the + symbol to change the display value (optional). Example: **sum** for total, **first** for the first one, etc.
5. In the field next to **GROUP BY**, click **(\$interval)** and select a time value to be used for grouping (optional). Example: Specifying **10s** means grouping every 10 seconds.
6. Enter a label for the legend next to **ALIAS BY**.
7. Select a display format next to **Format as**. Example: Time series, table
8. Save the dashboard.

Apart from this step-by-step configuration process, you may also enter a query line directly. Queries are not written in a language such as SQL but in the form of a function applied to one metric only.

- i** For information about query language in Grafana, refer to
https://docs.influxdata.com/influxdb/v1.2/query_language/

Configuration



A screenshot of the Grafana query editor. The query field contains: `SELECT mean("usage_system") FROM "cpu" WHERE $timeFilter GROUP BY time(10s) fill(null)`. Below the query are buttons for **ALIAS BY** (highlighted), **System**, **Format as**, and **Time series**.

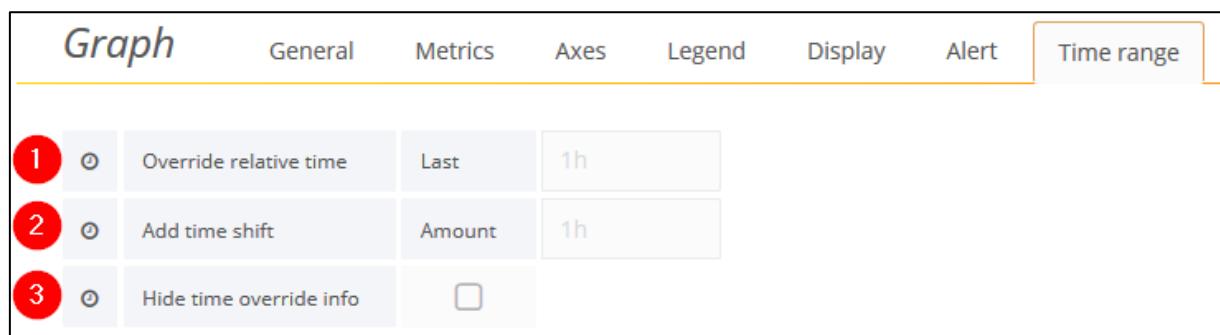
Fig. 19: Metric for displaying the system's CPU load defined in a query

To enter a query directly:

1. Click on the menu icon at the right of the query field and then click **Toggle Edit Mode** in the context menu.
- The query field can now be freely edited.
2. Enter the appropriate query.
3. Enter a label for the legend next to **ALIAS BY**.
4. Select a display format next to **Format as**.
Example: Time series, table
5. Save the dashboard.

3.5.1.3 Time range

Local time settings that are valid only for the current panel and override the (global) time range. If a change is made, a time override info appears in the top right corner of the panel.



A screenshot of the Grafana Time range settings panel. The tabs at the top are General, Metrics, Axes, Legend, Display, Alert, and Time range (highlighted). Below are three settings:

- 1. Override relative time: Last, 1h
- 2. Add time shift: Amount, 1h
- 3. Hide time override info:

Fig. 20: Settings for a local time range

- (1) Modifies the time range by the value entered here. The data will be displayed for the specified time.
Example: Entering 1h = Shows the data of the past hour.
- (2) Modifies the time range by the value entered here. The global time range is considered.
Example: Global time range: last 5 minutes; entry 1h = The data of the last 5 minutes one hour ago will be displayed.
- (3) If a check mark is set, the time override info in the top right corner of the panel is hidden.

Configuration

3.5.2 Graph

The configuration elements in this section relate only to the **Graph** display format. The data visualised appear in the form of a graph here.

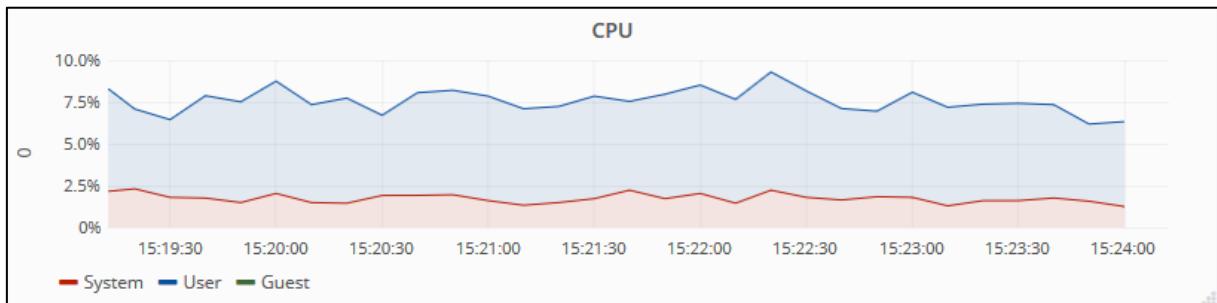


Fig. 21: Graph display format

3.5.2.1 Axes

Formatting of the X and Y axes of the graph.

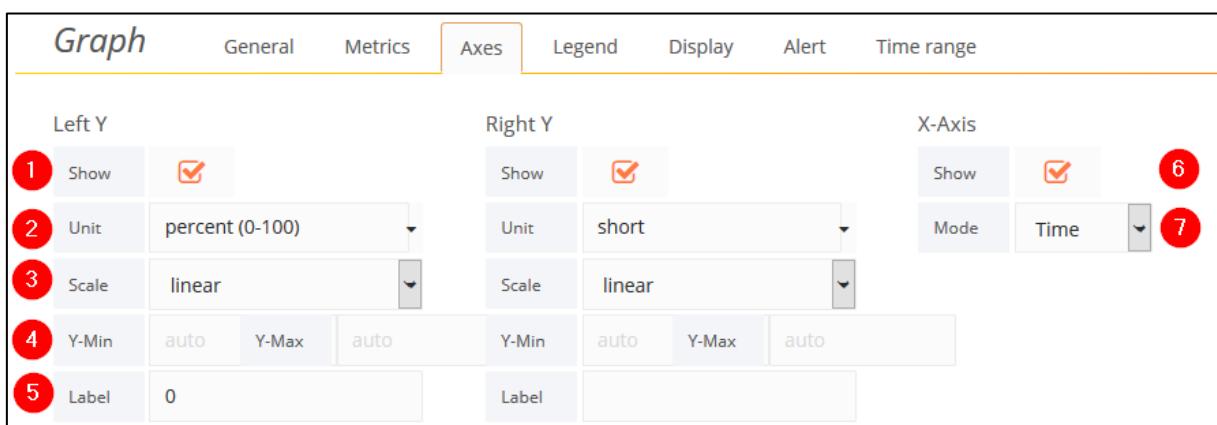


Fig. 22: Formatting axes in a graph

- (1) If the check mark is removed, the left/right Y-axis is hidden.
- (2) Unit for the left/right Y-axis.
- (3) Scaling for the left/right Y-axis.
Setting the maximum value to 2/10/32/1024 or linear.
- (4) Minimum and maximum values of the left/right Y-axis.
The data are not scaled but shown only as a section of this range.
- (5) Label for the left/right Y-axis.
- (6) If the check mark is removed, the X-axis is hidden.
- (7) Display mode for the data on the X-axis.
Time segments or values shown as bars.

Configuration

3.5.2.2 Legend

Configuring the legend of the graph.

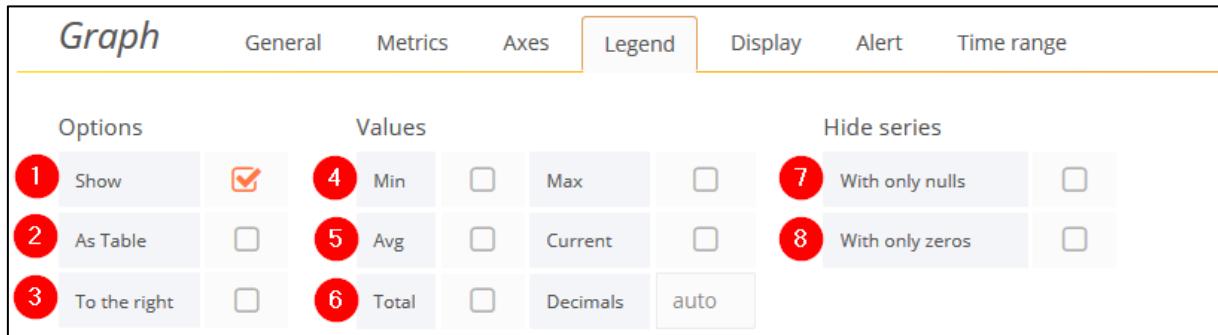


Fig. 23: Configuring the legend of a graph

- (1) Show/hide the legend.
- (2) Show the legend as a table.
- (3) Move the legend to the right of the panel.
- (4) Show/hide the minimum/maximum values.
- (5) Show/hide the average (**Avg**) or **Current** values.
- (6) Show/hide the totals (**Total**) and set the number of decimal places of the totals (**Decimals**).
- (7) If a check mark is set, data series without (relevant) data are not included in the legend.
- (8) If a check mark is set, data series containing only zero values are not included in the legend.

Configuration

3.5.2.3 Display

Display settings for the data visualised.

Draw options

Selection and formatting of draw modes for the data visualised.

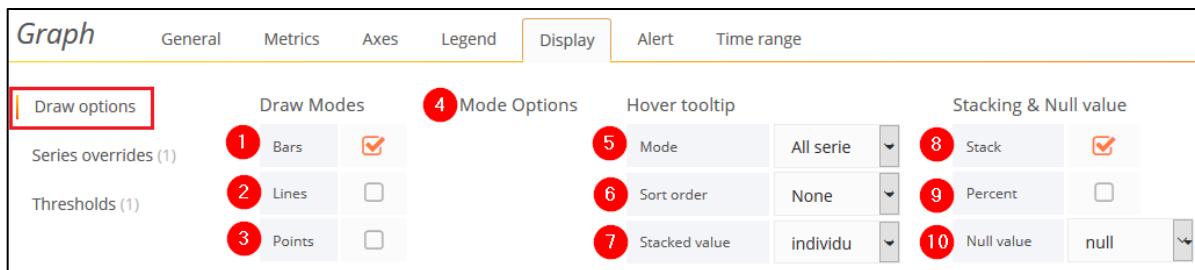


Fig. 24: Configuring the layout of a graph

- (1) Column chart
- (2) Line chart
- (3) Point chart
- (4) Formatting the draw mode selected
 - For column chart: None
 - For line chart: Filling level (**fill**), **Line Width**, interpolation (**Staircase**)
 - For point chart: **Point Radius**
- (5) Mode for **All series** or only a **Single** data series in the tool tip
- (6) Sort order for data in the tool tip **Increasing** or **Decreasing**
- (7) Stacking of data in the tool tip (only if check mark is set for item 8)
- (8) Stacking of data in the graph
- (9) Stacking in percent (only if check mark is set for item 8)
- (10) Null value of data hidden (**null**), shown as 0 (**null as zero**) or **connected**

Series overrides

Formatting of a data series overriding the formatting specified for **Draw options**. This makes it possible to arrange the layout for a data series independently of others.

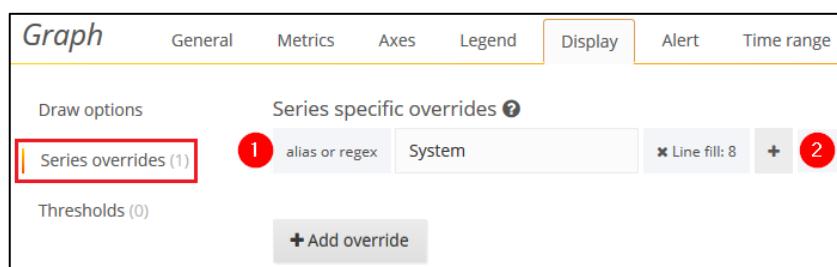


Fig. 25: Formatting a data series independently of the global format

- (1) Select the data series to be formatted specifically.
- (2) Select the desired format element.
Add other format elements by clicking on the + symbol.

Configuration

Thresholds

Show/hide and configure an upper or lower limit in a graph.

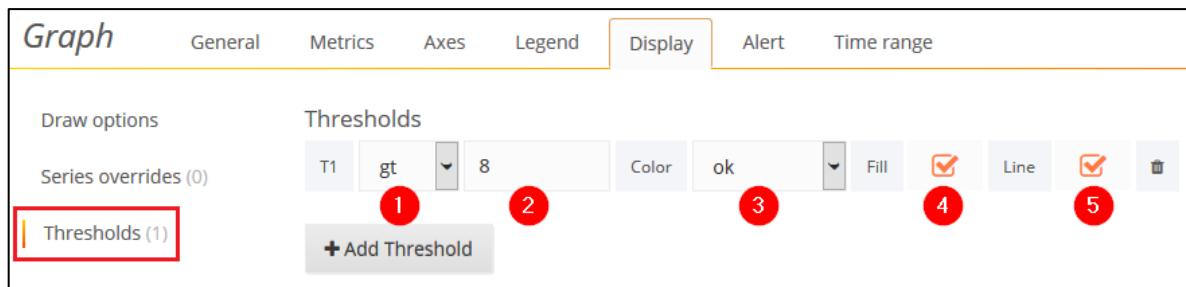


Fig. 26: Configuring an upper and/or lower limit for a graph

- (1) Select the upper (**gt**) or lower limit (**lt**)
- (2) Threshold
- (3) Colour of the threshold bar or line
- (4) Fill of the threshold
- (5) Threshold line

3.5.2.4 Alert

The alert configuration dialog is opened by clicking **Create Alert**. For a description of how to configure an alert, refer to section 2.3.

3.5.3 Singlestat

Show a single dynamic value. The configuration elements in this section relate only to the **Singlestat** display format.



Fig. 27: Singlestat display format

Configuration

3.5.3.1 Options

Dialog for formatting a single data source previously configured in **Metrics**.

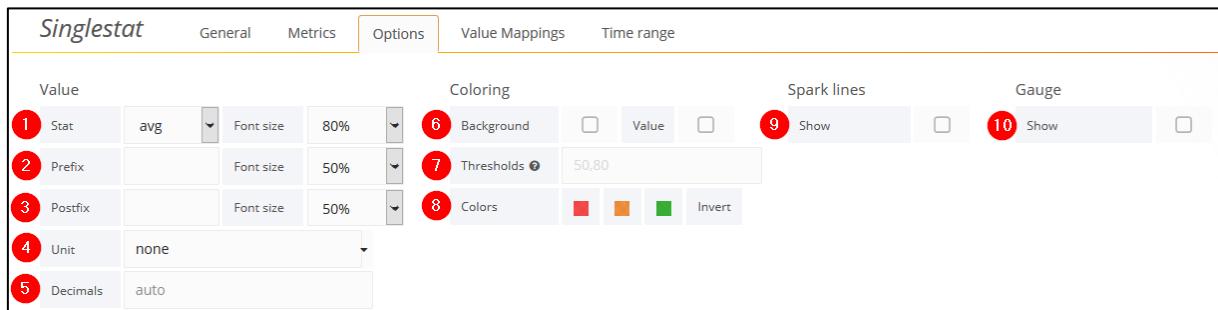


Fig. 28: Formatting a single dynamic value

- (1) Statistical unit and its font size as a percentage.
Example: Average (**avg**), **current**, difference (**delta**)
- (2) Statistical prefix of the value and its font size.
- (3) Statistical suffix of the value and its font size.
- (4) Unit of the value.
Example: **Euro**, **Hertz**, **Megabyte**
- (5) User-defined decimal value.
By default, the decimal value is set automatically based on the unit selected. A value entered here will override the automatic decimal value.
Example: Enter **3** for 3 decimal places.
- (6) Dynamic adjustment of the colour of the panel **Background** or **Value**.
The colour is specified in item (8).
- (7) Threshold value for using the colour specified.
Example: Entry **50,80** = If the value is <50, it is shown in green, from 50 to 80 in amber and >80 in red. The colour is specified in item (8).
- (8) Colour settings for dynamic colour adjustment.
- (9) Show/hide spark lines.
- (10) Show/hide a tachometer.
The threshold value is specified in item (7), colour in item (8).

Configuration

3.5.3.2 Value Mappings

Show a single dynamic value as text.

Value to text

Transform a single dynamic value to text.

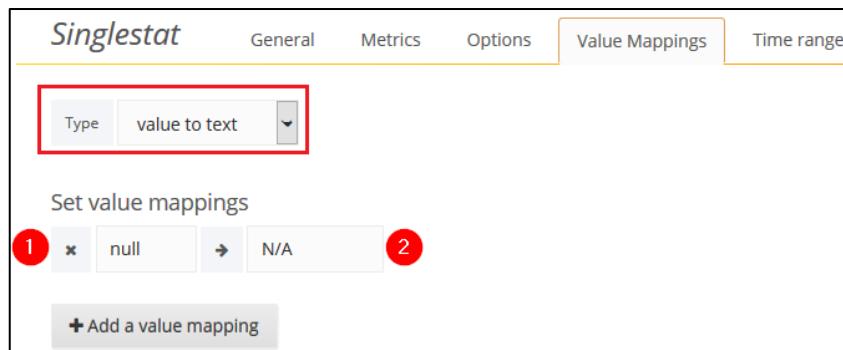


Fig. 29: Transforming a value to text

- (1) Value (numerical) to be transformed.
- (2) Text to substitute the value.

Example: Entry 50 -> Critical = When a value reaches 50, **Critical** is displayed in place of the value.

Range to text

Transforming a range of values to configurable text.

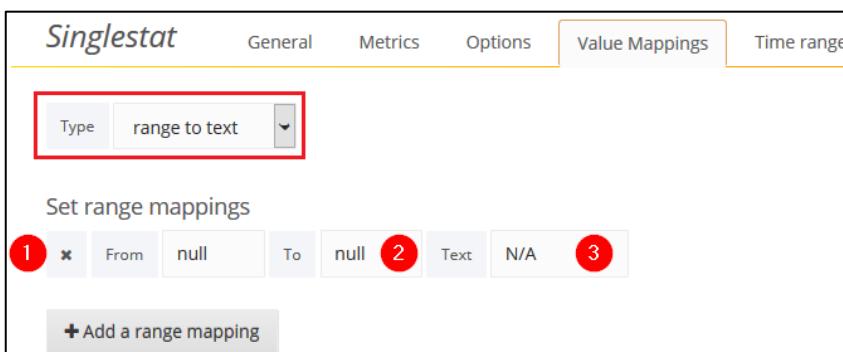


Fig. 30: Transforming a range of values to text

- (1) Start value
- (2) End value
- (3) Text to substitute the range of values.

Example: Entry: From 40 To 60 Text Normal = For values from 40 to 60, **Normal** is displayed in place of the value.

Configuration

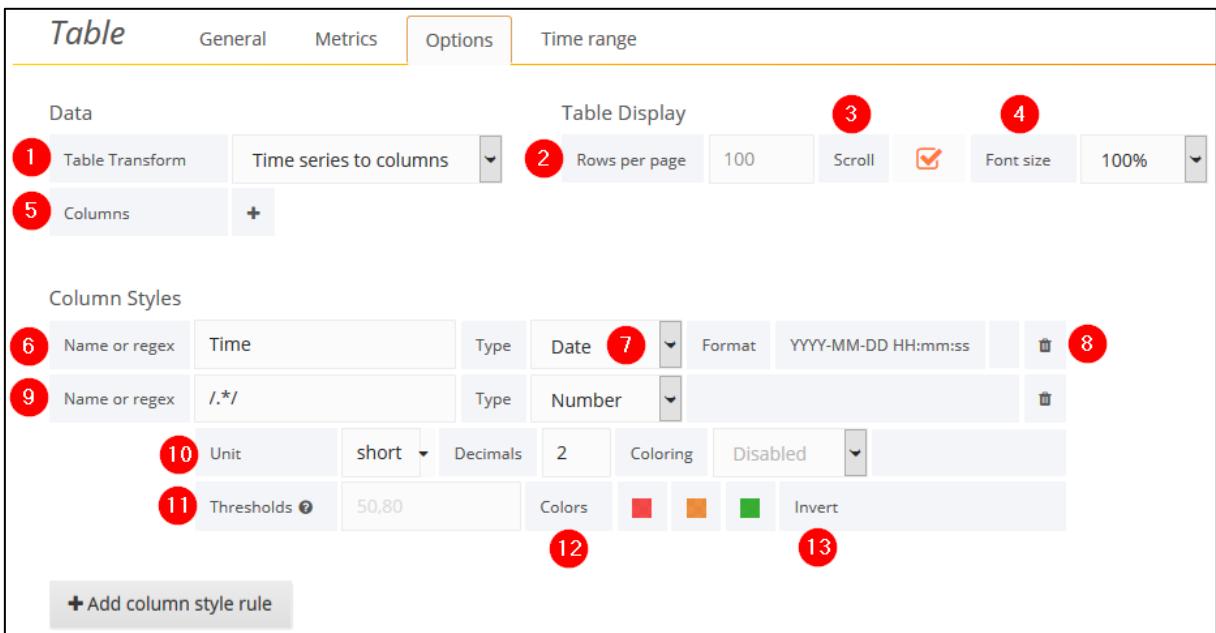
3.5.4 Table

Show data series in a dynamic table.

Table	
Time ▾	GarbageCollectorMXBean_collectionTime.mean
2017-04-25 15:23:23	-
2017-04-25 15:23:23	-
2017-04-25 15:23:22	42.82 K
2017-04-25 15:23:22	10.23 K

1 2 3 4 5 6 7

Fig. 31: Table display format



The screenshot shows the 'Table' configuration panel with several numbered callouts pointing to specific controls:

- 1**: Table Transform dropdown, currently set to 'Time series to columns'.
- 2**: Rows per page input field set to 100.
- 3**: Scroll checkbox checked.
- 4**: Font size dropdown set to 100%.
- 5**: Columns button.
- 6**: Column style rule for 'Time' column: Name or regex 'Time', Type 'Date', Format 'YYYY-MM-DD HH:mm:ss'.
- 7**: Date dropdown menu open.
- 8**: Delete icon for the 'Time' column style rule.
- 9**: Column style rule for '.*' column: Name or regex '.*', Type 'Number'.
- 10**: Unit dropdown menu open.
- 11**: Thresholds input field set to '50,80'.
- 12**: Colors dropdown menu open.
- 13**: Invert checkbox.
- General**, **Metrics**, **Options** tabs at the top.
- Time range** tab at the top.
- + Add column style rule** button at the bottom left.

Fig. 32: Configuring a dynamic table

- (1) Transformation of the table.
Example: Time values from the data source listed in rows or columns.
- (2) Rows per page.
- (3) Scroll capability of the table.
If the check mark is removed, the panel expands to the actual size of the table.
- (4) Size of all fonts in the table as a percentage.
- (5) Selects the statistical unit to be used in a column.
Only possible with the transformation setting **Time series aggregations**.
- (6) Selects the column that makes the configured metric available.
Time is the default setting.
- (7) Data type of the column.
Example: **Date**, **String**, **Hidden**
- (8) Date format of the column.
- (9) Additional settings for the column.

Configuration

Number is set by default to be able to format the numbers in the table.

(10)Unit for the numbers, decimal places and colouring (**Value**) for **Cell** or **Row**.

(11)Threshold value for using the colour specified.

Example: Entry 50,80 = If the value is <50, it is shown in green, from 50 to 80 in amber and

>80 in red. The colour is specified in item (12).

(12)Colour settings for dynamic colour adjustment.

(13)Invert colours.

Swaps red and green.

3.5.5 Text

Show static text as HTML, Markdown or plain text.

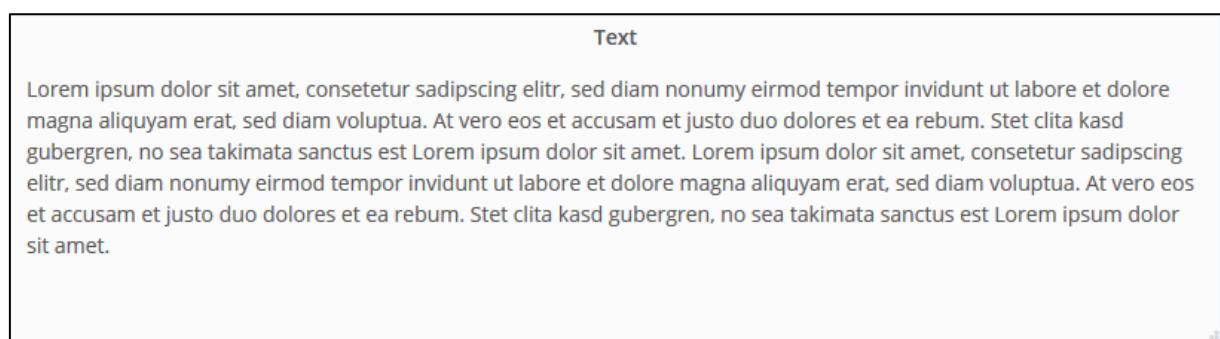


Fig. 33: Text display format

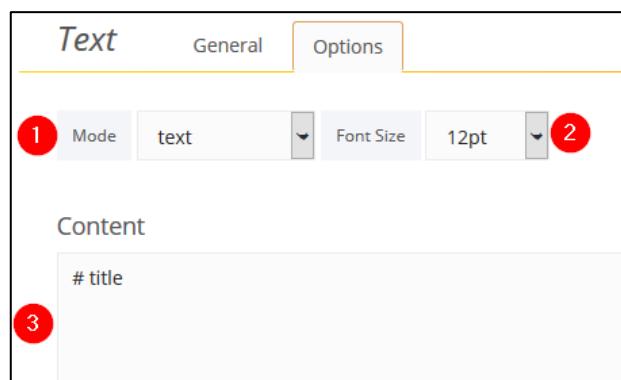


Fig. 34: Configuring static text

(1) Set the mode (**HTML**, **Markdown** or plain **Text**)

(2) Font size in points

(3) Text input field

Configuration

3.5.6 Alert List

A list of all alerts configured (see section 2.3) in a panel. Clicking on an alert in a panel takes you directly to its configuration.

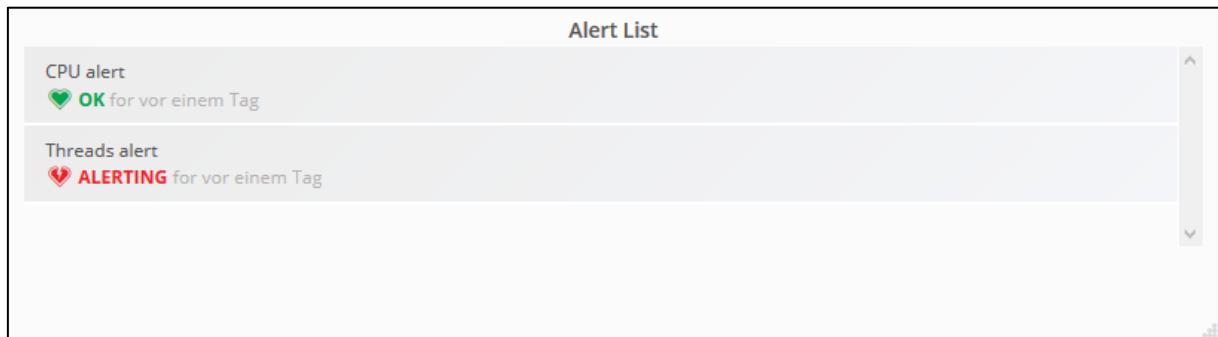


Fig. 35: Alert List display format

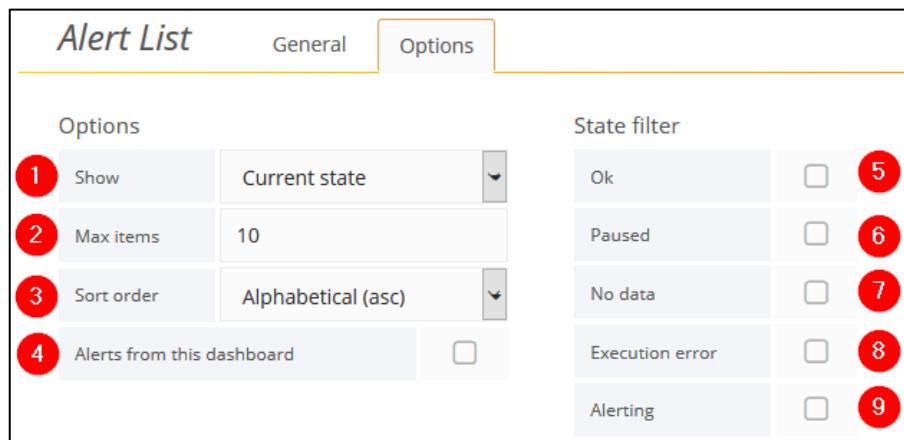


Fig. 36: Configuring an alert list

- (1) Display alerts with their **Current state** or a log of those alerts, the state of which has changed (**Recent state changes**).
- (2) Maximum number of alerts displayed.
- (3) Sort order of the alerts displayed.
- (4) If a check mark is set, only alerts relating to this dashboard are displayed.
- (5) Shows only alerts with **Ok** state.
- (6) Shows only alerts with **Paused** state.
- (7) Shows only alerts with **No data** state.
- (8) Shows only alerts with **Execution error** state.
- (9) Shows only alerts with **Alerting** state.

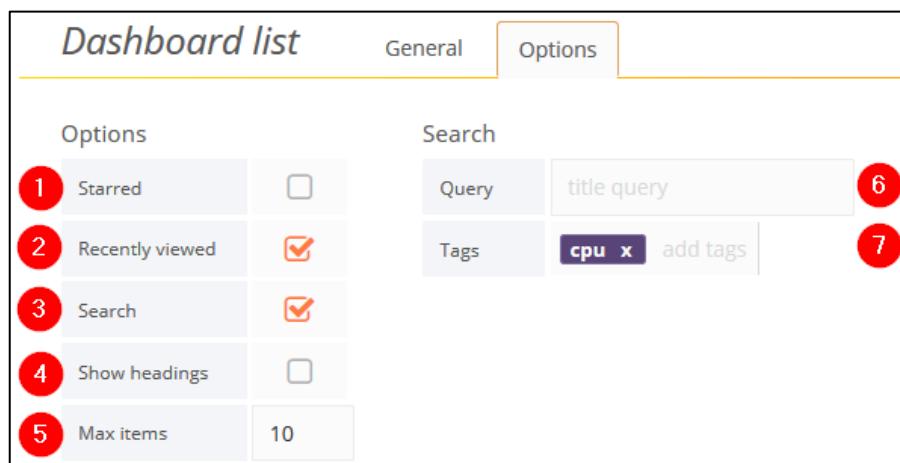
3.5.7 Dashboard List

A list of all dashboards configured in a panel. Clicking on a dashboard in a panel takes you directly to the dashboard.



The screenshot shows a list titled "Recently viewed dashboards". It contains three items: "AE Dash", "System", and "FFRuntime-ignite", each with a star icon to its right. The background is white with light gray horizontal lines separating the items.

Fig. 37: Dashboard List display format



The screenshot shows the "Dashboard list" configuration interface. It has two tabs: "General" and "Options", with "Options" selected. On the left, there is a section titled "Options" containing five items numbered 1 to 5. On the right, there is a "Search" section with a "Query" input field containing "title query", a "Tags" section with a "cpu" tag, and a "Max items" input field set to 10. Red circles with numbers 1 through 7 are overlaid on the interface to indicate specific configuration points:

- 1 Starred
- 2 Recently viewed
- 3 Search
- 4 Show headings
- 5 Max items
- 6 Search by query
- 7 Tags

Fig. 38: Configuring a dashboard list

- (1) Displays only those dashboards marked as favourites (Starred).
- (2) Displays only those dashboards that have been viewed since logging in to Grafana.
- (3) Displays all dashboards configured.
- (4) Displays the filter criterion as the heading.
Example: The dashboards last viewed are listed with the heading **Recently viewed**.
- (5) Maximum number of dashboards displayed.
- (6) Search by query.
Shows only dashboards with this query.
- (7) Tags
Shows only dashboards with these tags.

Configuration

3.5.8 Plugin List

A list of all plugins installed in a panel. This display format does not require defining a configuration. You may only define the maximum number of plugins shown (**Limit number to**).

Plugin List

Installed Apps	None installed. Browse Grafana.net
Installed Panels	None installed. Browse Grafana.net
Installed Datasources	None installed. Browse Grafana.net

Fig. 39: Plugin List display format (without plugins installed)

4 Annex

4.1 Keyboard Shortcuts

Grafana offers keyboard shortcuts that facilitate quick and convenient operation. The following keyboard shortcuts are available:

- i** Two keys specified side by side require pressing them one after the other within a short time.
Two keys linked by a "+" symbol have to be pressed simultaneously.

Table 3: Keyboard shortcuts in Grafana

Location	Shortcut	Function
Global	G H	Go to home dashboard (initial screen)
	G P	Go to profiles
	S O	Open search (for dashboards)
	S S	Open dashboard list containing starred (favourite) dashboards
	S T	Open dashboard list containing tagged dashboards
	Esc	Finish editing
Dashboard	Ctrl + S	Save dashboard
	D R	Refresh all panels
	D R	Open dashboard settings
	D K	Hide top menu bar
	Ctrl + O	Press once to adopt the mouse pointer position of one graphic panel in all graphic panels. Press twice to show the tool tips of all graphic panels.
Dashboard/Panel	T Z	Zoom out
	T ←	Go back in time
	T →	Go forward in time
Mouse pointer in panel	E	Activate editing mode for the panel
	V	View panel in full screen mode

Annex

	P S	Open panel split dialog
	P R	Remove panel
Mouse pointer on dashboard row	R C	Collapse dashboard row
	R R	Remove dashboard row

4.2 Abbreviations and Terms

Table 4: Abbreviations used

Abbreviation	Description
s	second
m	minute
h	hour
d	day
w	week

Table 5: Terms used

Term	Description
Cursor	Indicator used to show the current position for user interaction
Dashboard	View in which several panels can be displayed in an overall view
Drag-and-drop	Drag a screen element with the mouse and drop it at the new position
Interpolation	A mathematical method to determine an unknown function value by approximation using known adjacent function values
Markdown	A simplified markup language
Panel	Single view within a dashboard
Query	Statement for data retrieval
Sparkline	Graphic representation of the historical development of a numerical value
SQL statement	A command or line written in SQL language
Tag	Marking element

Annex

Tool tip	A short description of an element or button that appears when the mouse pointer hovers over it
Zoom	Zoom in/zoom out

4.3 Document Conventions

Table 6: Document Conventions

Convention	Description
Bold type	The names of buttons and options are printed in bold type.
Requirement	Requirements are identified by ✓.
Action step	Action steps are indicated by numbers at the beginning of the sentence. The sequence of the numbers specifies the order of actions.
Alternative action	Alternative actions are identified by "OR:".
Substeps of an action	Substeps of an action are indented and provided with unique symbols on each action level. The order of levels is as follows: 1. a. i. 1. etc.
Action result	Results of an action are identified by ➔.
Note	Notes are identified by ⓘ.
Legend in graphic	Explanations relating to numbered items in a graphic appear with numbers in parentheses. The number of the legend text refers to the same number in the graphic.

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