



# PSI3541 2023

## SISTEMAS EMBARCADOS DISTRIBUIDOS

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AULA 11 09/05/2023

ATIVIDADE 11 BANCO DE DADOS DE SERIES TEMPORAIS

PROF. SERGIO TAKEO KOFUJI - KOFUJI@USP.BR

# OBJETIVO

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- IMPLEMENTAR UM BANCO DE DADOS AO CONTROLE AO AQUECEDOR A CASA INTELIGENTE

# ATIVIDADES

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- ATIVIDADE 12.1 CRIAR UM BUCKET NO INFLUXDB
  - ATIVIDADE12
  - USAR O FLUXO NODE-RED FLOW12.JSON
  - ENVIAR DADOS DOS SENSORES VIRTUAIS AO BUCKET ATIVIDADE12
- ATIVIDADE 12.2 CRIAR UMA CONTA NO GRAFANA CLOUD
- ATIVIDADE 12.3 CONFIGURAR UMA FONTE DE DADOS
  - INFLUXDB COM QUERY FLUX
- ATIVIDADE 12.4 CRIAR UM DASHBOARD
  - GRAFICO DE TEMPERATURA
  - GRAFICO DE UMIDADE
  - GRAFICO DE TEMPERATURA E UMIDADE

# ATIVIDADE 12.1

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subflows

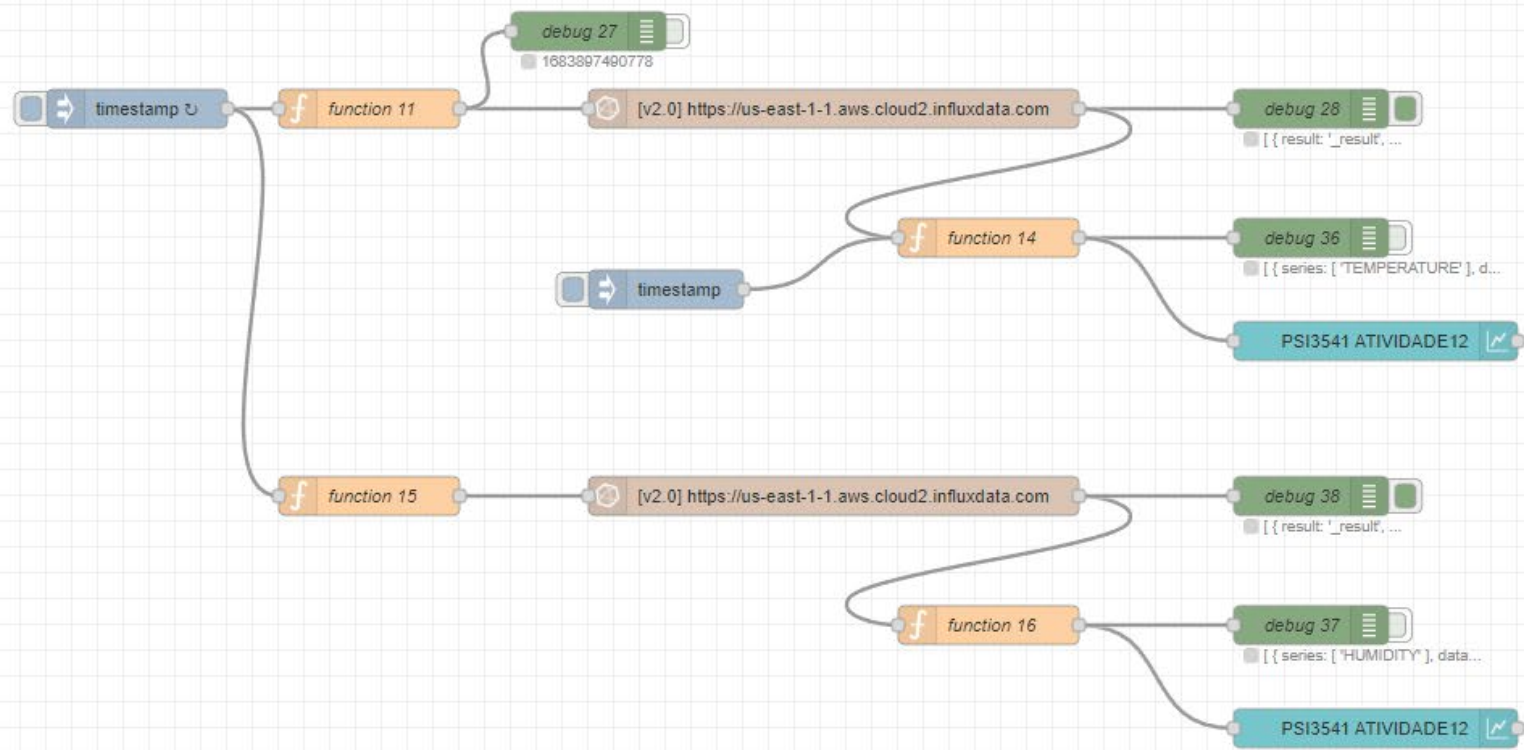
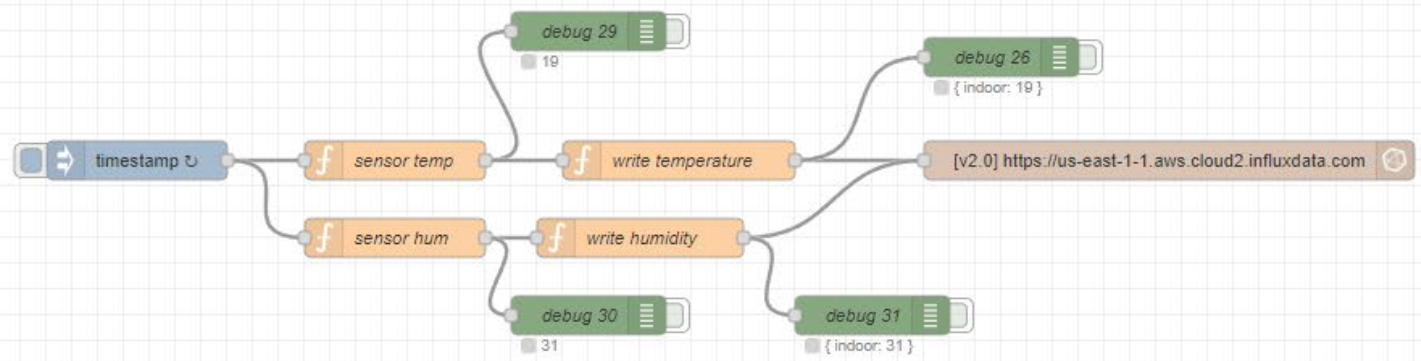
- Process Simulation

common

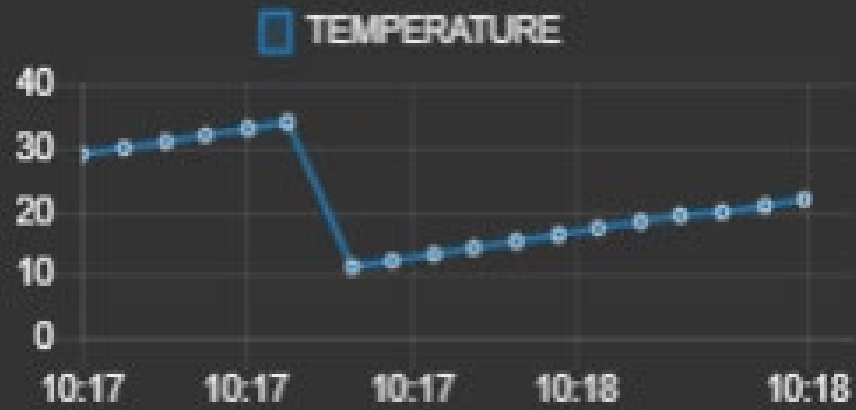
- inject
- debug
- complete
- catch
- status
- link in
- link call
- link out
- comment

function

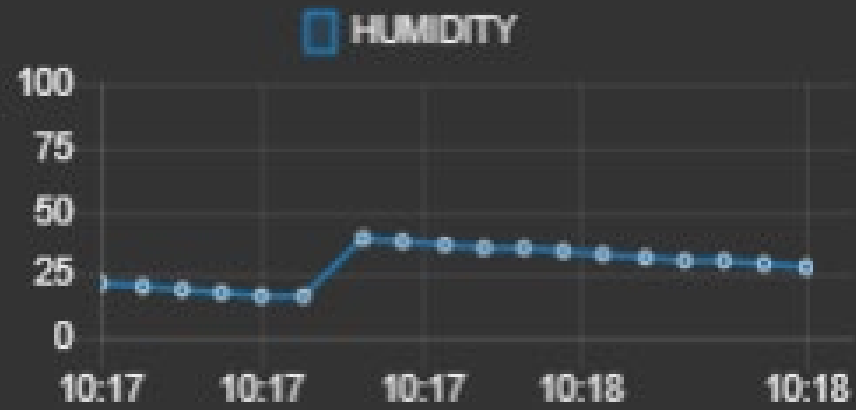
- function
- switch
- change
- range
- template
- delay
- trigger
- exec
- filter
- Azure IoT Central



### PSI3541 ATIVIDADE12




### PSI3541 ATIVIDADE12





# ATIVIDADE 12.2


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**CORE LGTM STACK**

 **Logs**  
powered by Grafana Loki

 **Grafana**  
for visualization

 **Traces**  
powered by Grafana Tempo

 **Metrics**  
powered by Grafana Mimir and Prometheus

**EXPAND THE STACK**

**Plugins**  
Connect Grafana to data sources, apps, and more

**Incident Response & Management**  
with Grafana Alerting, Grafana Incident, and Grafana OnCall

**Performance testing**  
powered by Grafana k6

**DEPLOY THE STACK**

**Grafana Cloud**  
Fully managed

**Grafana Enterprise**  
Self-managed

**Pricing**  
Hint: It starts at FREE

**GET STARTED**



**Free Forever plan:**

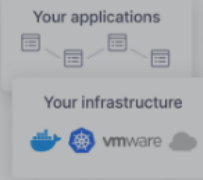
- 10,000 series metrics
- 14-day retention
- 50 GB of logs
- 50 GB of traces
- 500 VUH of k6 testing
- 3 team members
- Grafana, of course

[Create free account](#)

50GB traces + 500VUH k6 testing

[Create free account](#)

(No credit card required)



10M+ USERS ACROSS OVER A MILLION GLOBAL INSTANCES

SIEMENS

salesforce

PayPal

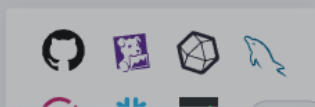
ebay

Pernod Ricard

verizon

[Success stories →](#)

Compose and scale observability with one or all pieces of the stack



API


Plugins

Dashboards


Your observability



## Sign up for Grafana Cloud

 Google  GitHub  Microsoft  Amazon


or




Send me news and feature updates.

Have an account? [Log in](#)

### Account includes

 **Grafana Pro**  
**14-day trial**  
Unlimited metrics, logs, traces, and users, long-term retention and premium team collaboration features.

 **Free Forever Cloud**  
3 users  
10,000 active series for metrics  
50 GB of logs  
50 GB of traces  
500 virtual user hours  
30 notifications for OnCall  
14-day retention

By creating an account, you agree to our [Terms and Conditions](#) and [Master Services Agreement](#).



## Let's create your Grafana Stack

Team URL

stkofuji .grafana.net ✓

Awesome, that URL is all yours!

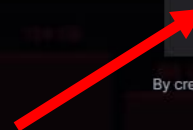
One word. Lowercase. No dots, dashes, underscores, or spaces.

Deployment region

AWS US East ▾

Finish setup

By creating an account, you agree to our [Terms and Conditions](#) and [Master Services Agreement](#).



I'm already familiar with Grafana

⚙️ GET STARTED

We'll guide you through your initial setup to help you get started



Create a dashboard

Visualize and/or monitor data



Scale and centralize existing data

Fully-managed service for your existing metrics, logs and traces



Monitor Kubernetes

Visibility into health and performance of your clusters



Performance testing

The best developer experience for load and performance testing



Quickstart

Simplest & fastest way to try out Grafana Cloud with your data

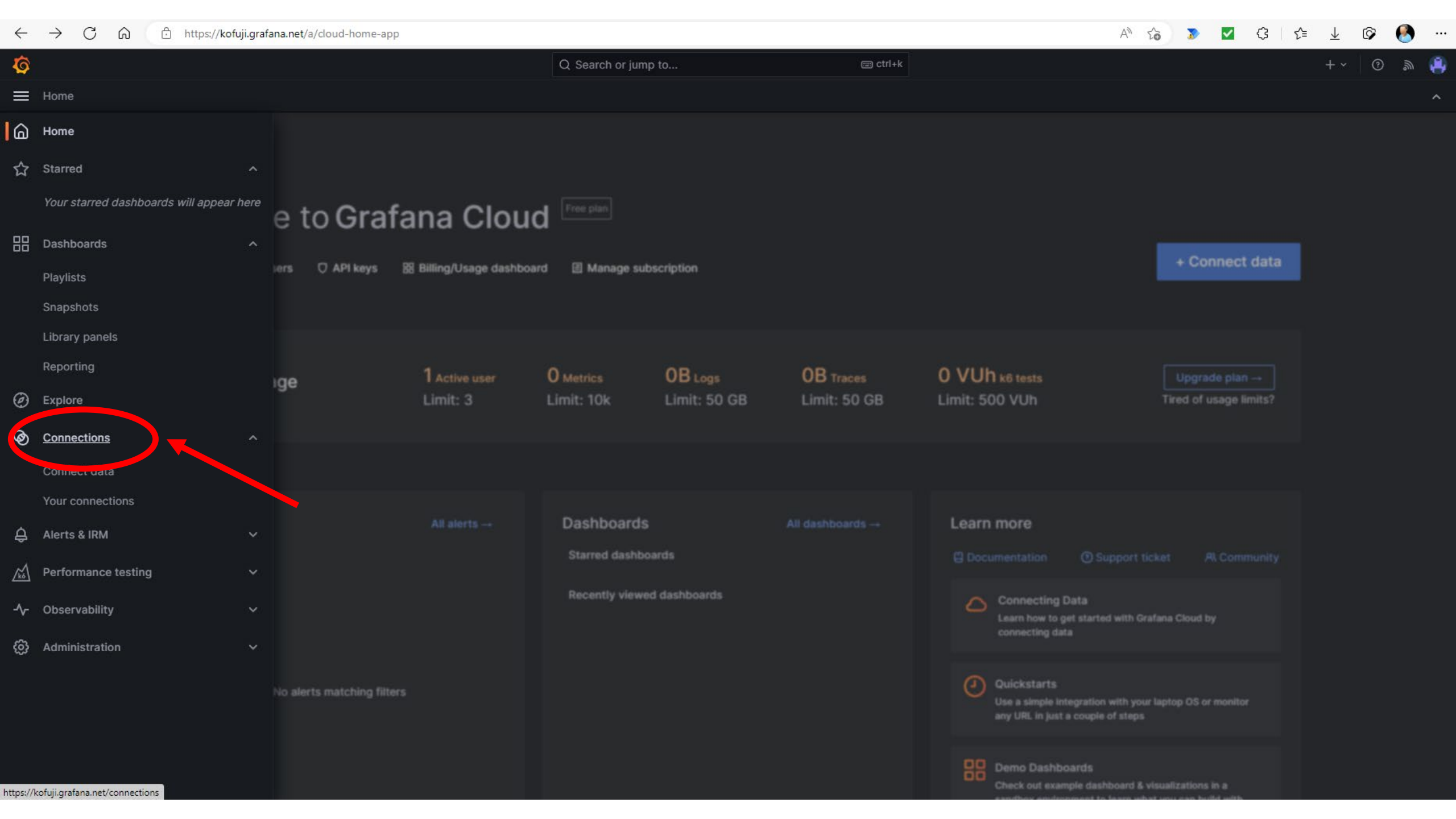


Explore & learn

See what you can do with Grafana Cloud and learn more

# ATIVIDADE 12.3 CONFIGURAR UMA FONTE DE DADOS NO GRAFANA

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- Home
- Starred
- Your starred dashboards will appear here
- Dashboards
- Playlists
- Snapshots
- Library panels
- Reporting
- Explore
- Connections**
- Alerts & IRM
- Performance testing
- Observability
- Administration

# Welcome to Grafana Cloud

Free plan

API keys Billing/Usage dashboard Manage subscription

+ Connect data

1 Active user	0 Metrics	0B Logs	0B Traces	0 VUh k6 tests	Upgrade plan -->
Limit: 3	Limit: 10k	Limit: 50 GB	Limit: 50 GB	Limit: 500 VUh	Tired of usage limits?

All alerts -->

## Dashboards

All dashboards -->

Starred dashboards

Recently viewed dashboards

## Learn more

Documentation Support ticket Community

**Connecting Data**  
Learn how to get started with Grafana Cloud by connecting data

**Quickstarts**  
Use a simple integration with your laptop OS or monitor any URL in just a couple of steps

**Demo Dashboards**  
Check out example dashboard & visualizations in a ready-to-use environment to learn what you can build with

Connections

Connect data

Your connections

Data sources

Infrastructure

# Connect data


Browse and create new connections

- New all ✓
- Infrastructure
- Custom data
- Cloud app
- Data source

- All
- Installed
- New Updates

## Data sources

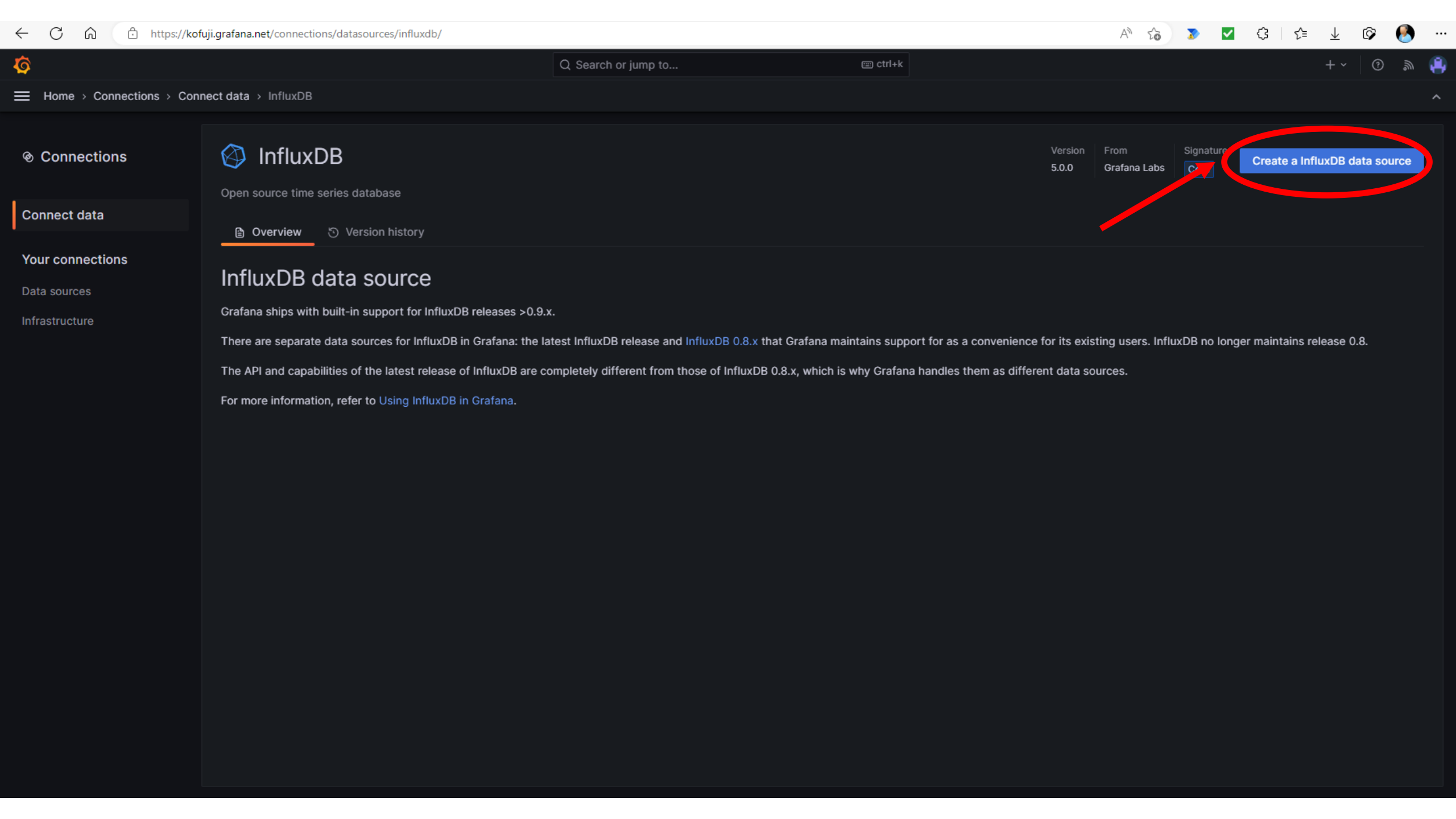
Use data sources to build visualizations and queries for your external service data without having to move the data around. [Data sources](#)



InfluxDB

Data source

✓ Installed



# InfluxDB

Open source time series database

Overview Version history

## InfluxDB data source

Grafana ships with built-in support for InfluxDB releases >0.9.x.

There are separate data sources for InfluxDB in Grafana: the latest InfluxDB release and [InfluxDB 0.8.x](#) that Grafana maintains support for as a convenience for its existing users. InfluxDB no longer maintains release 0.8.

The API and capabilities of the latest release of InfluxDB are completely different from those of InfluxDB 0.8.x, which is why Grafana handles them as different data sources.

For more information, refer to [Using InfluxDB in Grafana](#).

Version	From	Signature
5.0.0	Grafana Labs	 <a href="#">Create a InfluxDB data source</a>

Alerting supported

Name  Default

### Query Language

**Support for Flux in Grafana is currently in beta**  
Please report any issues to: <https://github.com/grafana/grafana/issues>

### HTTP

URL	<input type="text" value="https://us-east-1-1.aws.cloud2.influxdata.c..."/>
Allowed cookies	<input type="text" value="New tag (enter key to add)"/> <input type="button" value="Add"/>
Timeout	<input type="text" value="Timeout in seconds"/>

### Auth

Basic auth	<input checked="" type="checkbox"/>	With Credentials	<input type="checkbox"/>
TLS Client Auth	<input checked="" type="checkbox"/>	With CA Cert	<input type="checkbox"/>
Skip TLS Verify	<input type="checkbox"/>		
Forward OAuth Identity	<input type="checkbox"/>		

### Custom HTTP Headers

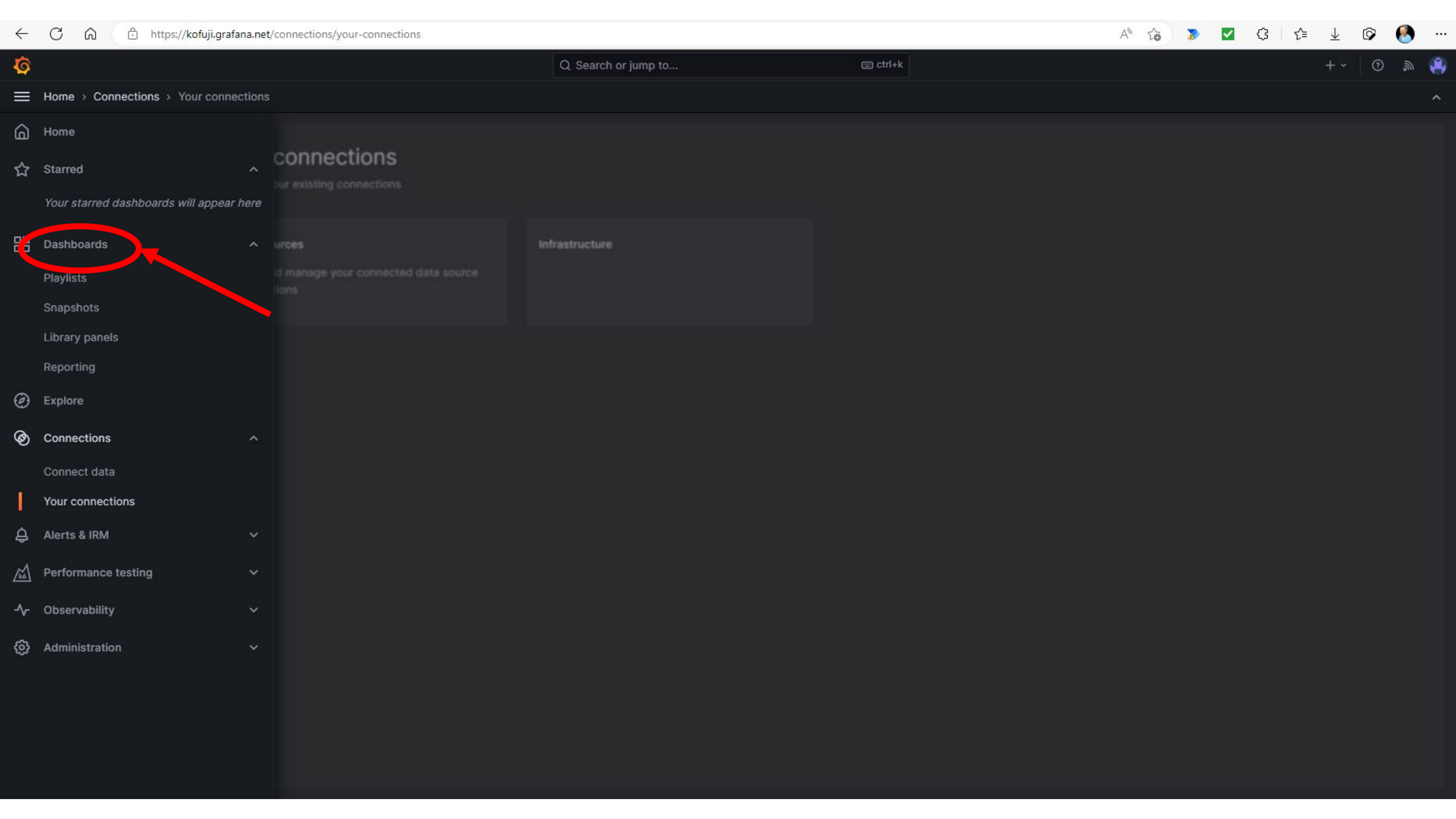
### InfluxDB Details

Organization	<input type="text" value="PSI35412023"/>
Token	<input type="text" value="....."/>
Default Bucket	<input type="text" value="atividade10.3"/>
Min time interval	<input type="text" value="10s"/>
Max series	<input type="text" value="1000"/>



# ATIVIDADE 12.4 CRIAR UM DASHBOARD

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- Home
- Starred
  - Your starred dashboards will appear here
- Dashboards**
  - Playlists
  - Snapshots
  - Library panels
  - Reporting
- Explore
- Connections**
  - Connect data
  - Your connections**
- Alerts & IRM
- Performance testing
- Observability
- Administration

# connections

Your existing connections

## Resources

and manage your connected data source  
ions

## Infrastructure

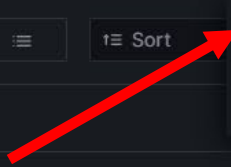
- Dashboards
- Playlists
- Snapshots
- Library panels
- Reporting

# Dashboards

Create and manage dashboards to visualize your data

Search for dashboards

Filter by tag  Starred

Sort 

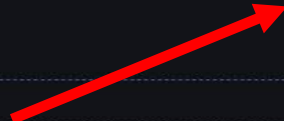
New Dashboard  
New Folder  
Import

General  
 GrafanaCloud

## Start your new dashboard by adding a visualization

Select a data source and then query and visualize your data with charts, stats and tables or create lists, markdowns and other widgets.

**+ Add visualization**



### Add a row

Group your visualizations into expandable sections.

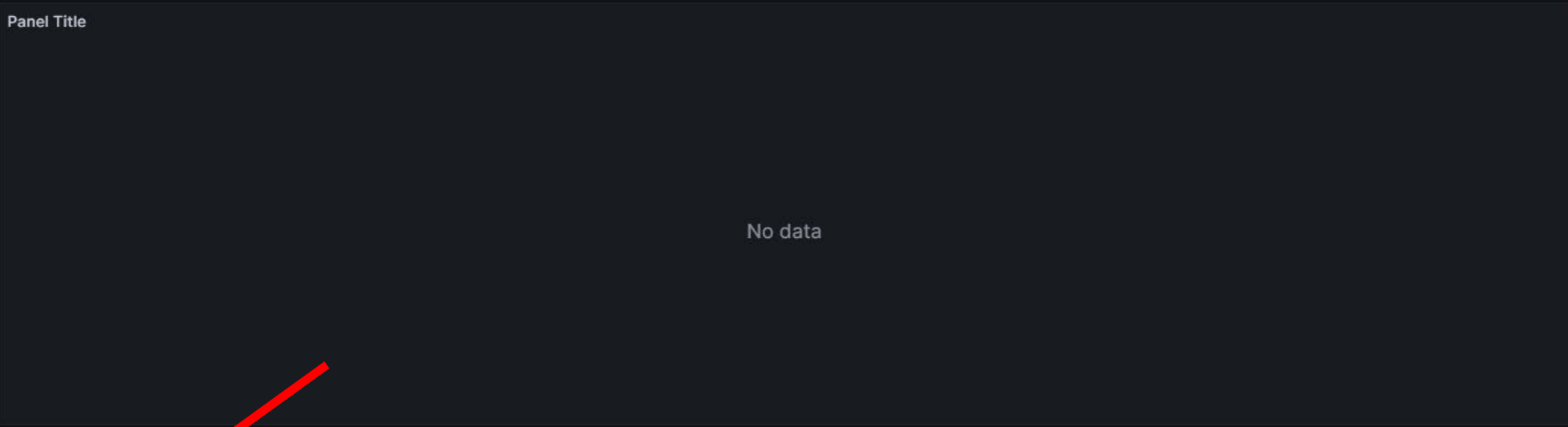
+ Add row

### Import panel

Import visualizations that are shared with other dashboards.

+ Import library panel

Table view  Fill Actual Last 6 hours [Refresh] [Zoom]



Search options: All, Overrides

Panel options

Title: Panel Title

Description: [Text area]

Transparent background:

Panel links

Repeat options

Tooltip

Tooltip mode: Single, All, Hidden

Legend

Visibility:

Mode: List, Table

Placement: Bottom, Right

Values: Select values or calculations to show in legend

Query 1 Transform 0 Alert 0

Data source: **InfluxDB** Query options MD = auto = 1433 Interval = 1m Query inspector

```
1 [Query editor area]
```

Flux language syntax Sample Query Help

Table view  Fill Actual Last 6 hours [refresh] [search]

name 18d8acabbe9fe87b	id 18d8acabbe9fe87b	retentionPolicy 18d8acabbe9fe87b	retentionPeriod 18d8acabbe9fe87b
_monitoring	0cd37507123c09ed		6048000000000000
_tasks	79d6764b8d21e3fb		2592000000000000
atividade10	c2b3110e278b9964		2592000000000000
atividade10.3	df91d8f409d326de		2592000000000000

Search options: All Overrides

Panel options

Title: Panel Title

Description: [text area]

Transparent background:

Panel links

Repeat options

Query 1 Transform 0

Data source: InfluxDB

Interval = 15s

Query inspector

1 buckets()

Flux language syntax [search]

Help

**Show buckets**  
List the available buckets (table)

**Simple query**  
filter by measurement and field

**Grouped Query**  
Group by (min/max/sum/median)

**Filter by value**  
Results between a min/max

**Schema Exploration: (measurements)**  
Get a list of measurement using flux

Table

Show table header:

Cell height: Small Medium Large

Enable pagination:

Minimum column width: 150

Column width: auto

Column alignment: auto left center right

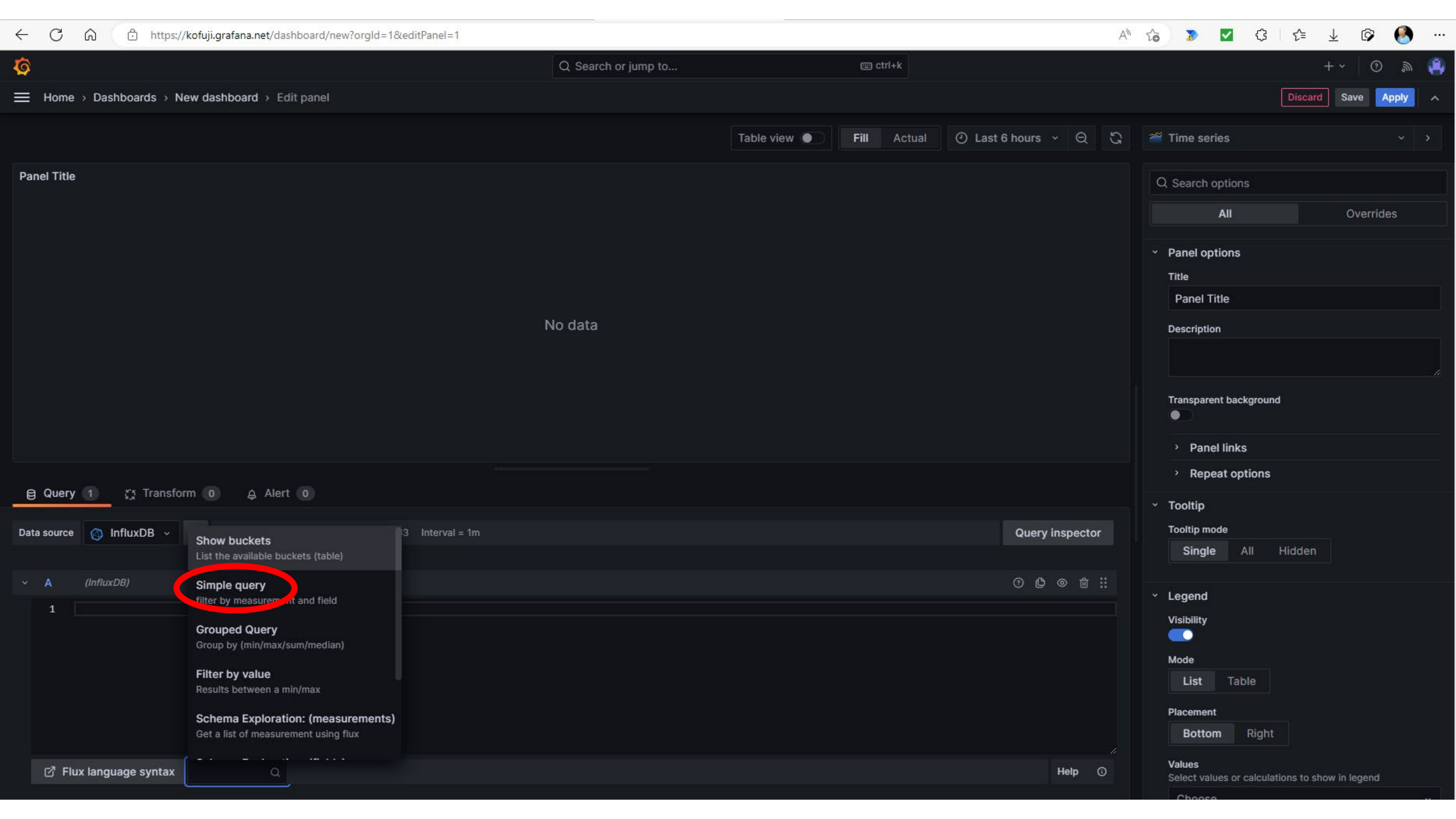


Table view

Fill Actual

Last 6 hours

Time series

Panel Title

No data

Search options

All Overrides

Panel options

Title: Panel Title

Description

Transparent background

Panel links

Repeat options

Tooltip

Tooltip mode: Single All Hidden

Legend

Visibility: [On]

Mode: List Table

Placement: Bottom Right

Values

Query 1 Transform 0 Alert 0

Data source: InfluxDB

Show buckets  
List the available buckets (table)

**Simple query**  
filter by measurement and field

Grouped Query  
Group by (min/max/sum/median)

Filter by value  
Results between a min/max

Schema Exploration: (measurements)  
Get a list of measurement using flux

Flux language syntax

Interval = 1m

Query inspector

Help

Table view  Fill Actual Last 6 hours

Panel Title

No data

Query 1 Transform 0

Data source InfluxDB Query options MD = auto = 1433 Interval = 15s

Query inspector

```
1 from(bucket: "db/rp")
2   |> range(start: v.timeRangeStart, stop:v.timeRangeStop)
3   |> filter(fn: (r) =>
4     r._measurement == "example-measurement" and
5     r._field == "example-field"
6   )
```

Flux language syntax Sample Query

Help

Search options

All Overrides

Panel options

Title: Panel Title

Description

Transparent background

Panel links

Repeat options

Table

Show table header

Cell height: Small Medium Large

Enable pagination

Minimum column width: 150

Column width: auto

Column alignment: auto left center right



Panel Title

No data

Table view  Fill Actual Last 6 hours

Table

Search options

All Overrides

Panel options

Title: Panel Title

Description

Transparent background

Panel links

Repeat options

Table

Show table header

Cell height: Small Medium Large

Enable pagination

Minimum column width: 150

Column width: auto

Column alignment

Query 1 Transform 0

Data source: InfluxDB

Query options: MD = auto = 1433 Interval = 15s

Query inspector

```
1 from(bucket: "atividade10.3")
2   |> range(start: v.timeRangeStart, stop:v.timeRangeStop)
3   |> filter(fn: (r) =>
4     | r._measurement == "temperature" and
5     | r._field == "indoor"
6   )
```

Flux language syntax Sample Query Help



Query 1 Transform 0 Alert 0

Data source: InfluxDB

Query options: MD = auto = 1433 Interval = 15s

```
1 from(bucket: "atividade10.3")
2   |> range(start: v.timeRangeStart, stop:v.timeRangeStop)
3   |> filter(fn: (r) =>
4     r._measurement == "temperature" and
5     r._field == "indoor"
6   )
```

Flux language syntax | Sample Query | Help

- Search for...
- Visualizations
  - Suggestions
  - Library panels
- Time series**  
Time based line, area and bar charts
  - Bar chart**  
Categorical charts with group support
  - 12.4 Stat**  
Big stat values & sparklines
  - Gauge**  
Standard gauge visualization
  - Bar gauge**  
Horizontal and vertical gauges
  - Table**  
Supports many column styles
  - Pie chart**  
The new core pie chart visualization
  - State timeline**  
State changes and durations
  - Heatmap**  
Like a histogram over time
  - Status history**  
Periodic status history
  - Histogram**
  - Text**  
Supports markdown and html content
  - Alert list**  
Shows list of alerts and their current status

# DÚVIDAS?

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