Leveling up your MySQL Skills

07 Mar 2025

Presenter

Syed Usman Ahmad

Sr. Developer Advocate

About me

What I do?

My previous roles?

What I do beside work?

↘

github.com/usmangt

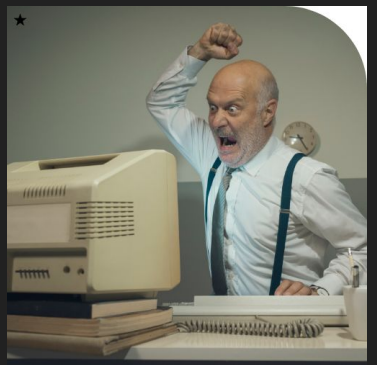
Grafana Labs
Memory / CPU
logins
Memory
Sign ups
265
Logouts
Sign outs
262
server requests
client side full page load
Why we are here
Today?🤔

Common User Problems

Collaboration

Performance

Clear Visual



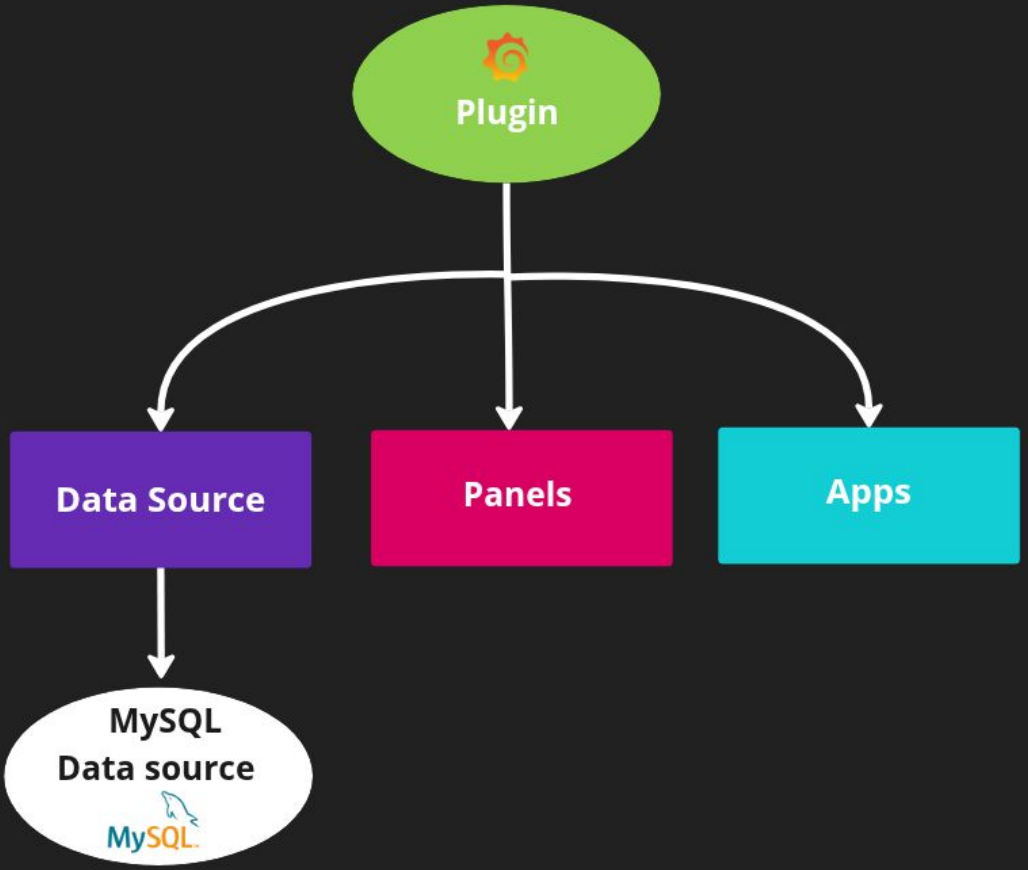
Permissions

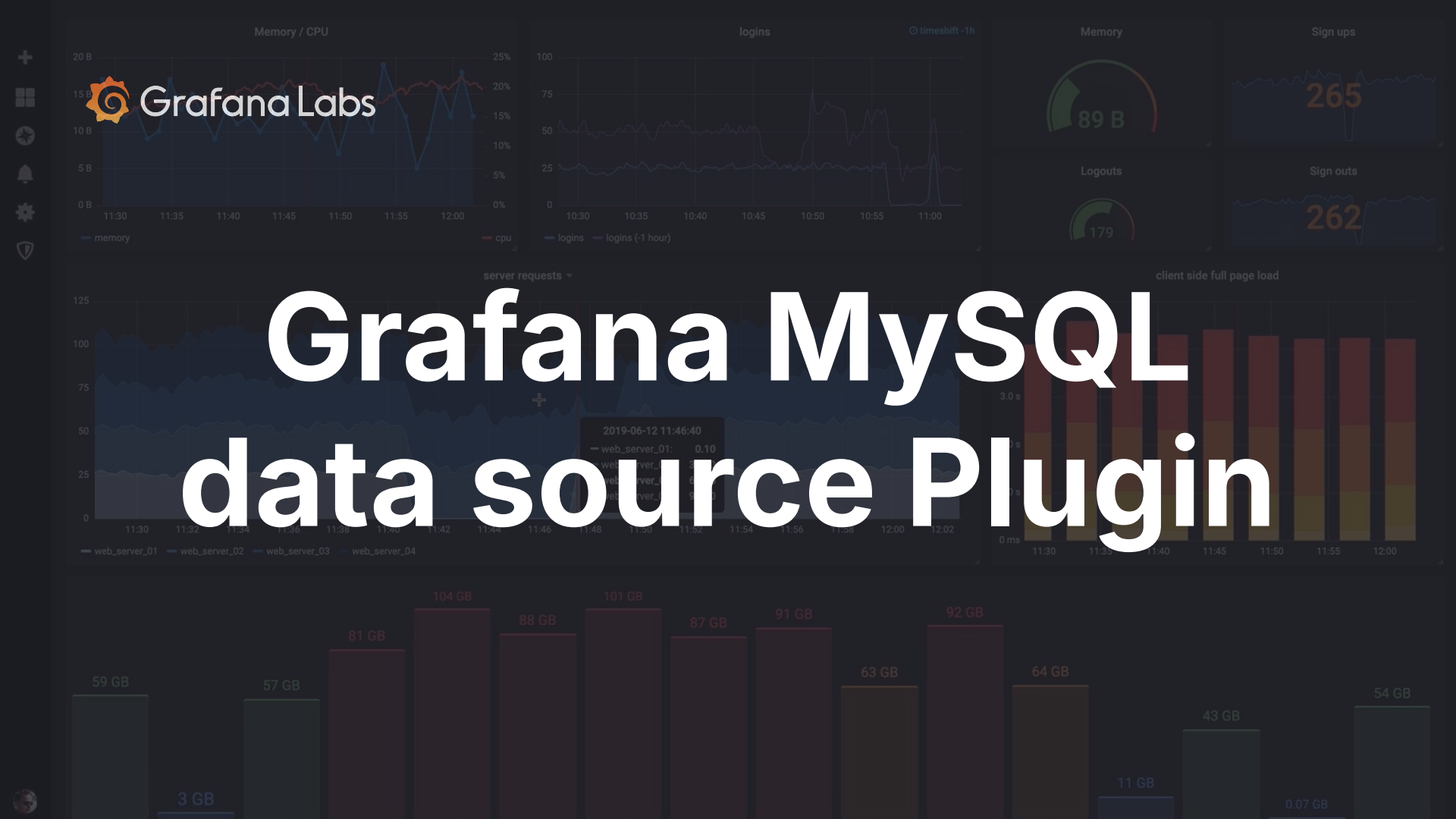
What is the Solution?

Using Grafana

1. Available on all Platforms ✅
2. Support various Visualisation formats 📊
3. Only need a source of Data 📡

Grafana Plugin Breakdown

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client side full page load
Grafana MySQL
data source Plugin

MySQL data source Plugin

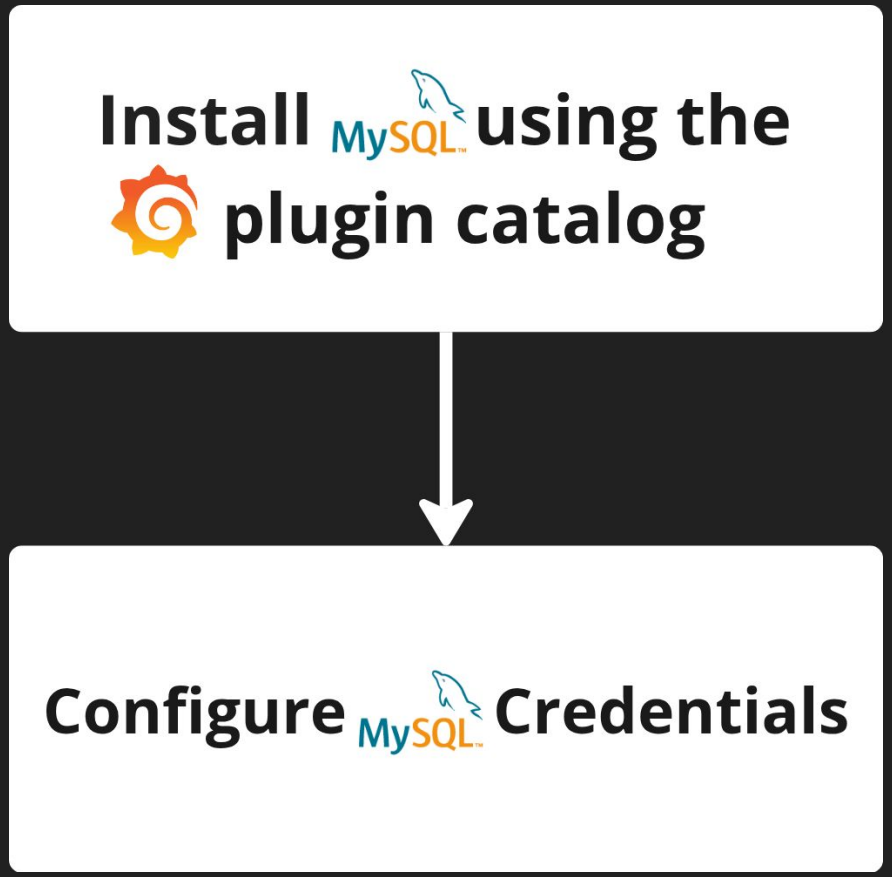
1. Available in all Grafana versions
2. Support various Visualisation formats
3. Easy to Setup & Integrate

MySQL Data source Features

- Query Builder (easy) / Code Mode
- Alerting + Logging (Loki)
- Annotations
- Transformations
- Time Series / Cross Sectional

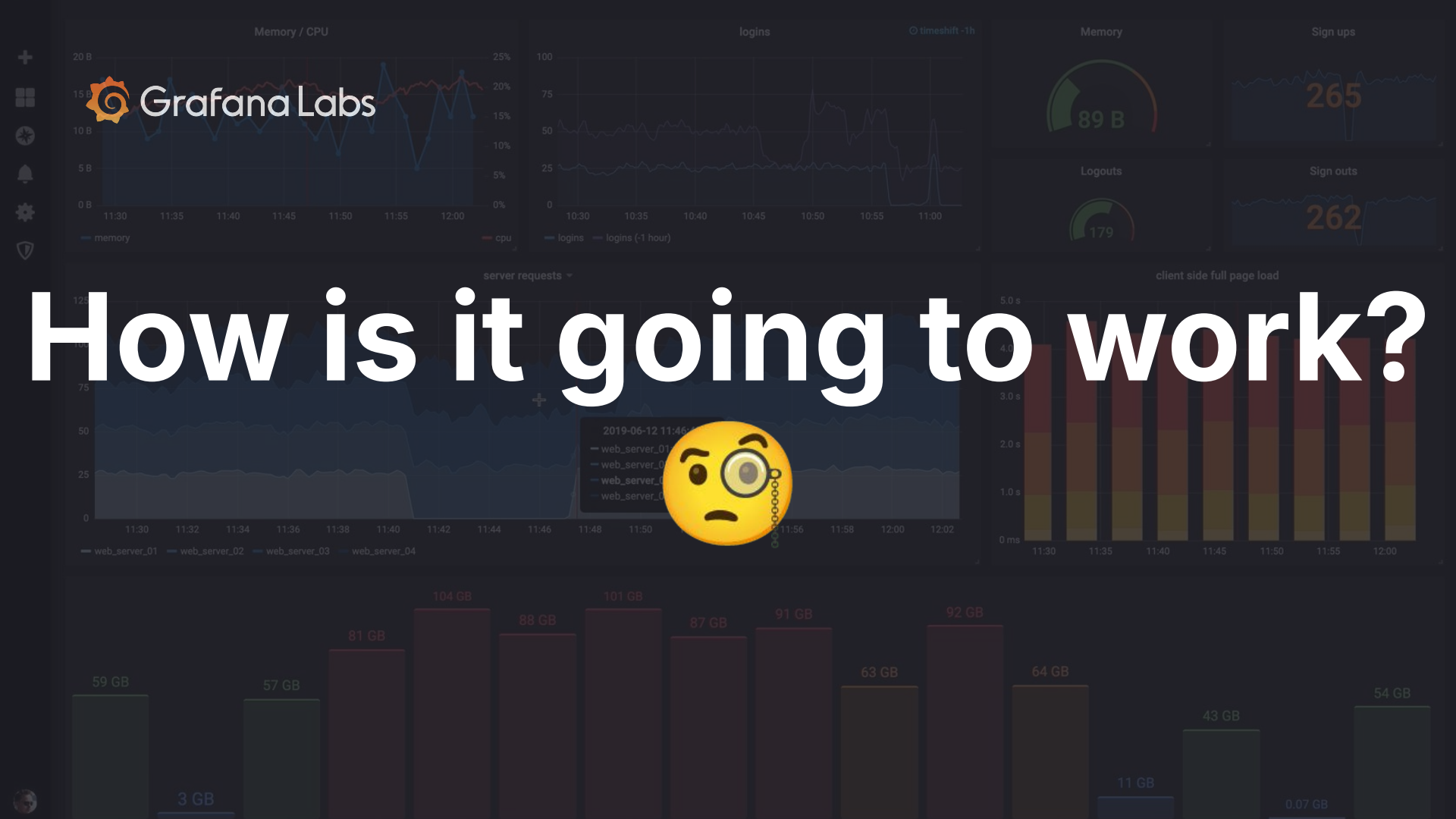
Grafana Labs
Configuring the data source

2 Step process

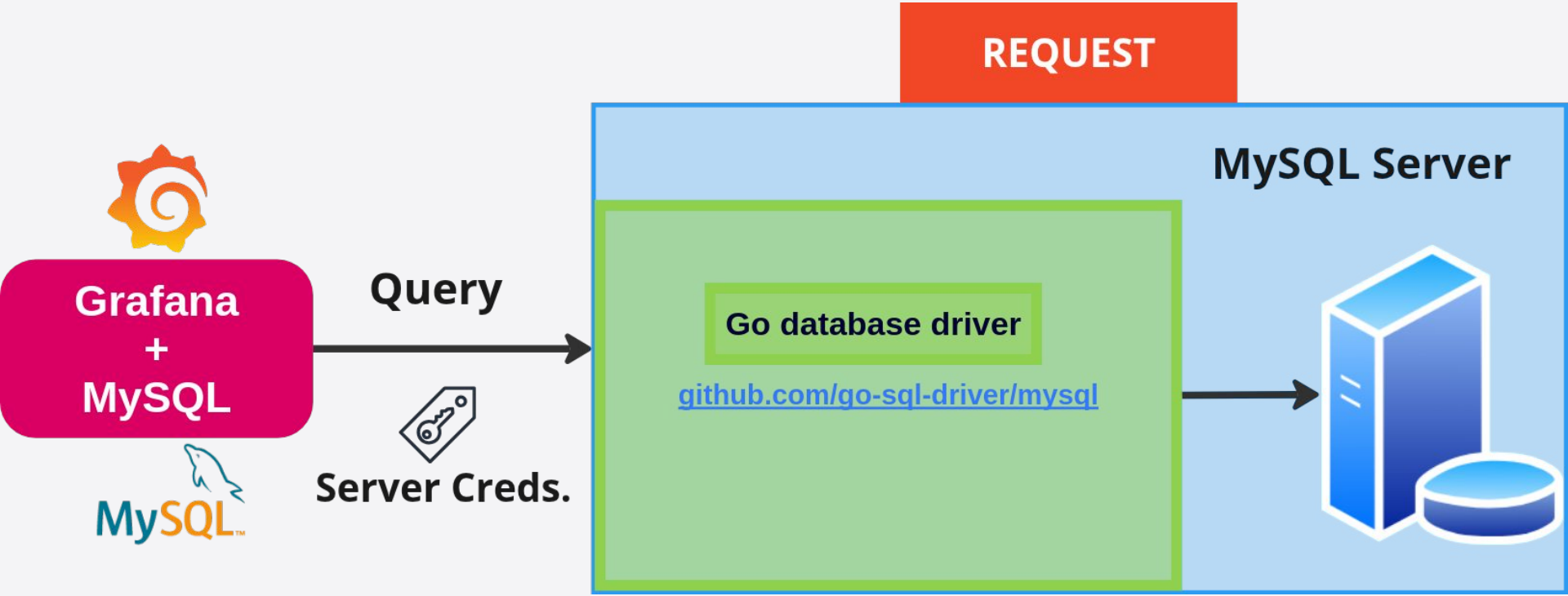


```
CREATE USER 'grafanaReader' IDENTIFIED BY 'password';
GRANT ALL ON mydatabase.mytable TO 'grafanaReader';
```

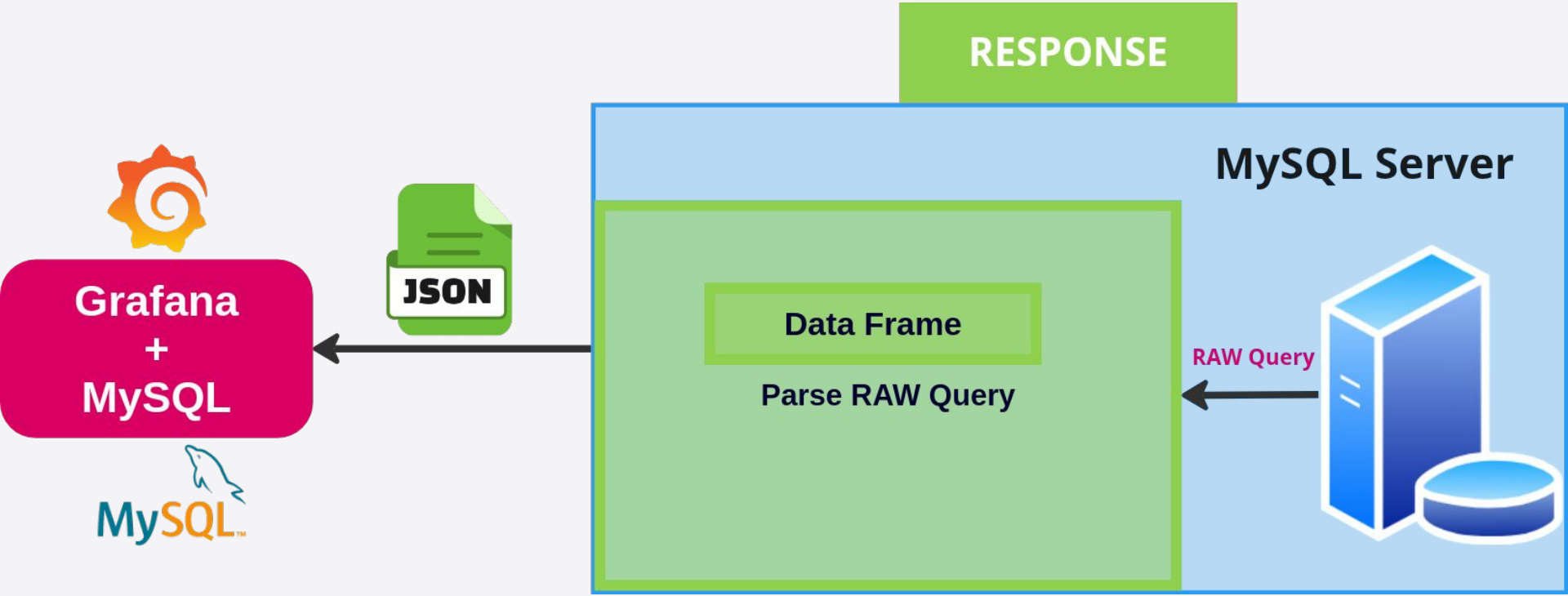
```
CREATE USER 'grafanaReader' IDENTIFIED BY 'password';
GRANT SELECT ON mydatabase.mytable TO 'grafanaReader';
```


Grafana Labs
Memory / CPU
logins
Memory
89 B
Sign ups
265
Logouts
179
Sign outs
262
server requests
client side full page load
How is it going to work?
🧐

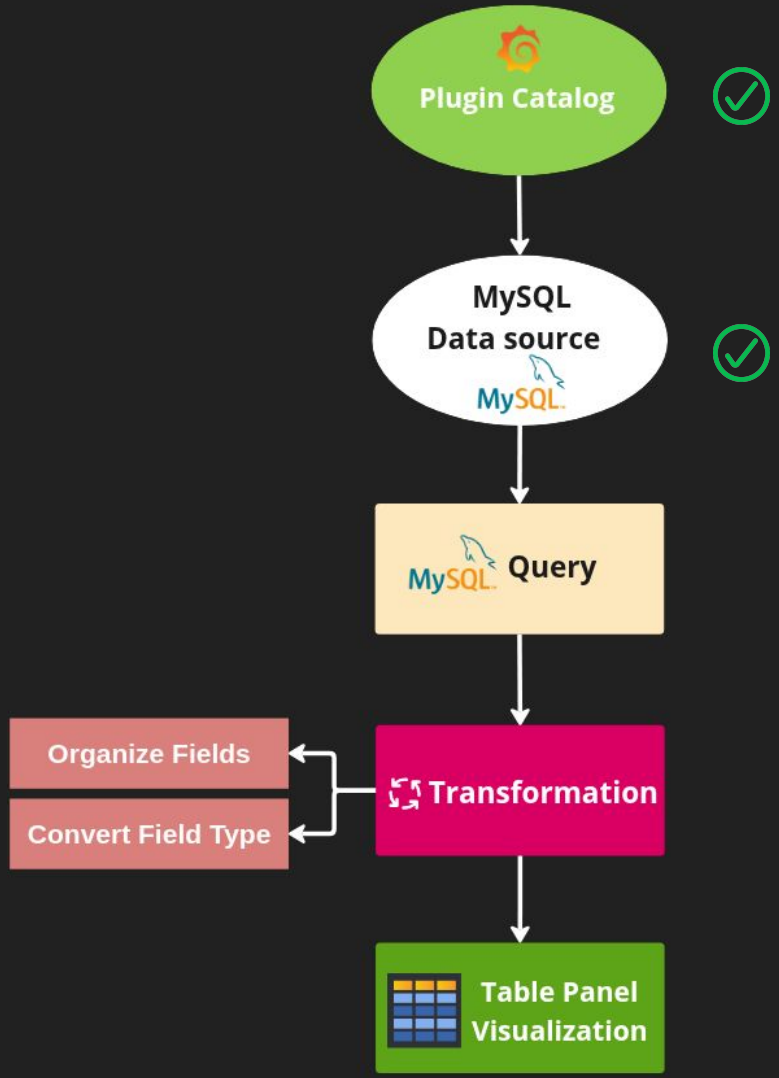
Sending Request



Receiving Response



Creating a Dashboard panel


Plugin Catalog
MySQL
Data source
MySQL
MySQL
Query
Organize Fields
Convert Field Type
Transformation
Table Panel
Visualization

Grafana Labs
Memory / CPU
logins
Memory
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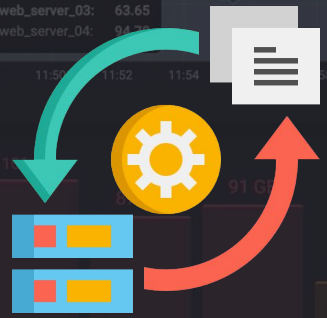
server requests
client side full page load
Demo

Grafana Labs

Transformations



Grafana Transformation

1. A powerful way to manipulate data
2. Happens before the visualization

Transformation Types

Grafana Labs
Memory / CPU
logins
Memory
Sign ups
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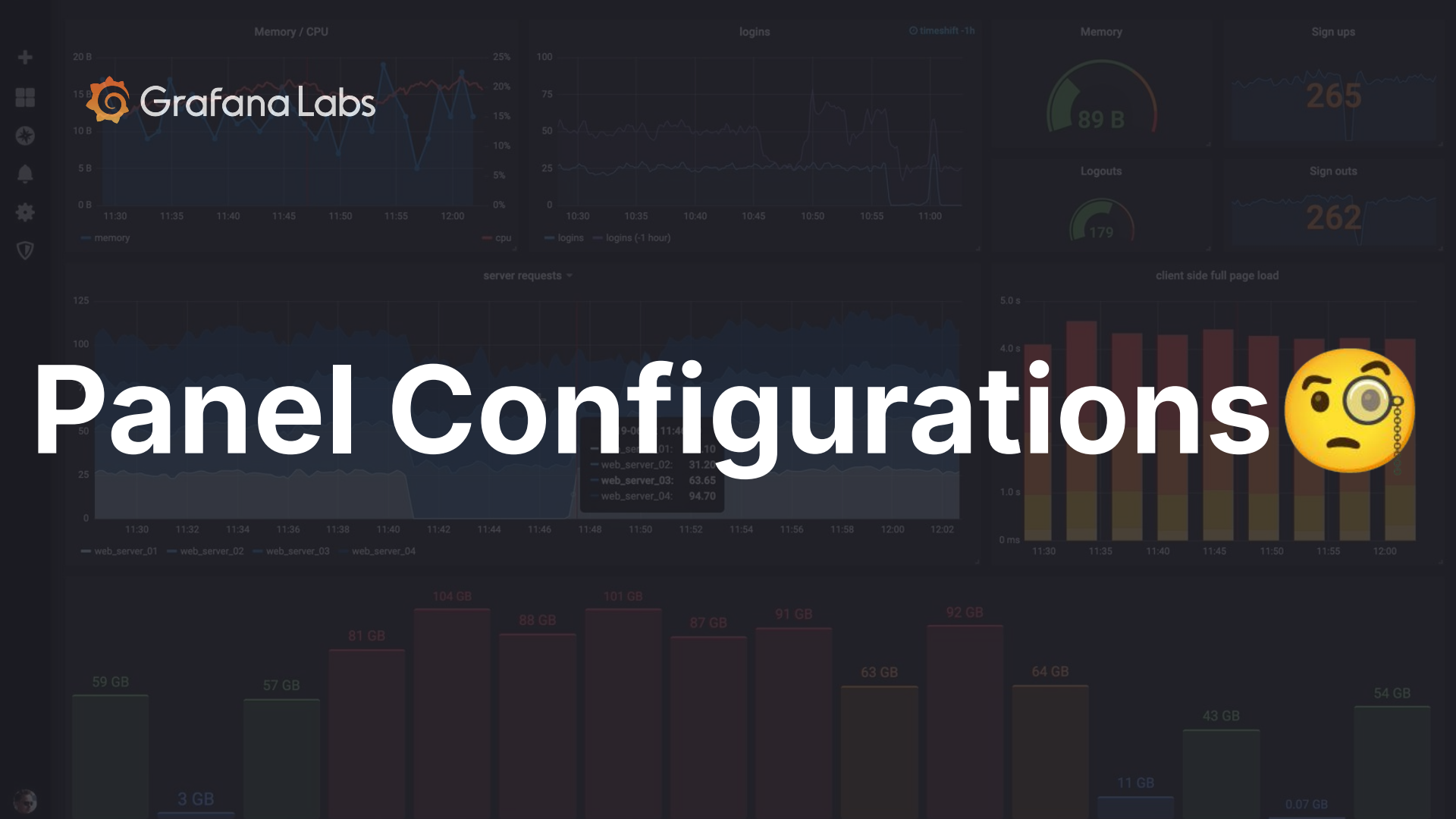
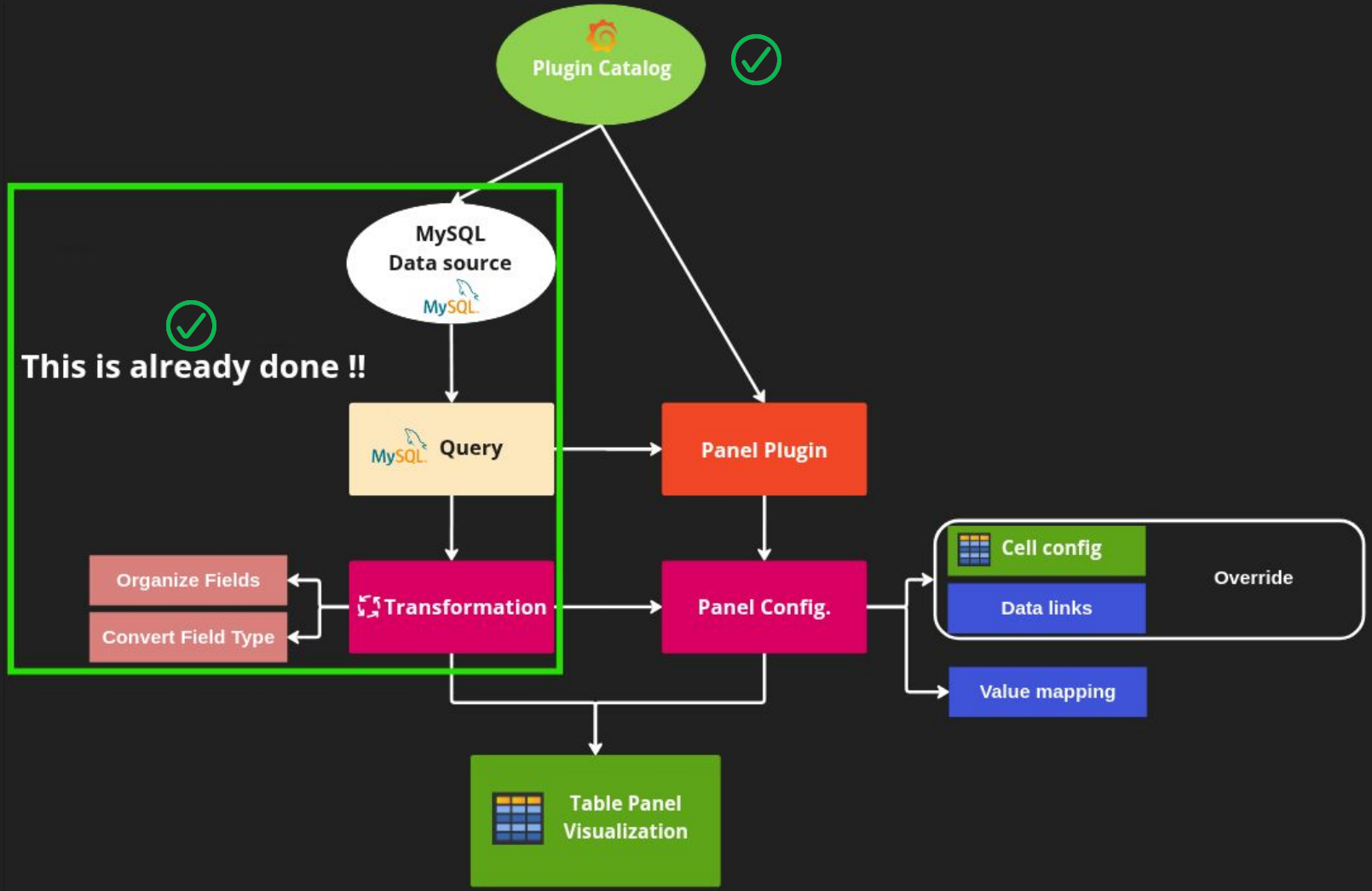
Logouts
Sign outs
262
server requests
client side full page load
Demo

Leveling up to Next Level (More than a DB) 🚀


Grafana Labs
Memory / CPU
logins
Memory
Sign ups
265
Logouts
Sign outs
262
server requests
client side full page load
web_server_01
web_server_02
web_server_03
web_server_04
Panel Configurations


Plugin Catalog
MySQL
Data source
MySQL
This is already done !!
MySQL
Query
Panel Plugin
Organize Fields
Convert Field Type
Transformation
Panel Config.
Cell config
Data links
Override
Value mapping
Table Panel
Visualization

Grafana Override Function

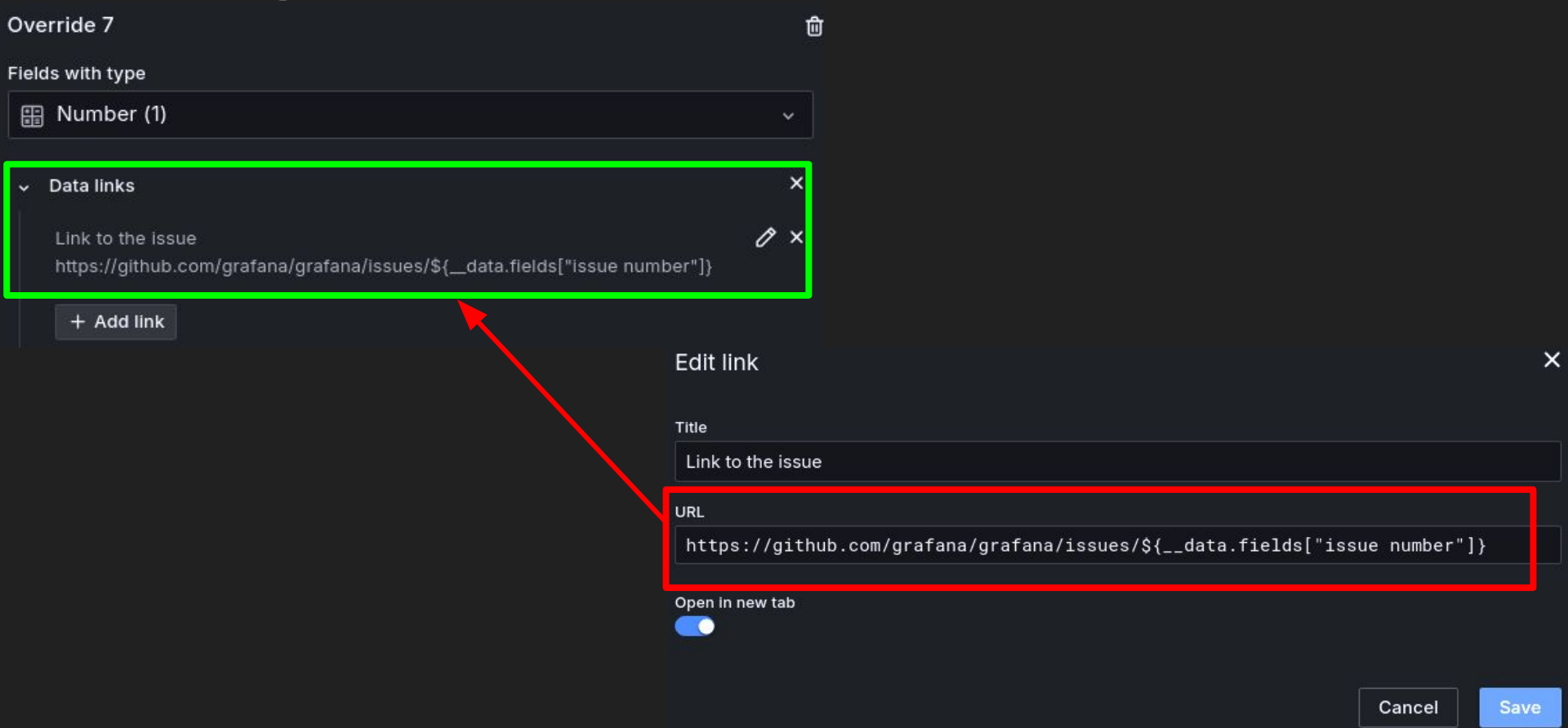
1. Allow you to customize visualization settings for specific fields or series
2. Lets you define multiple options for how that field is displayed

Using Override - Cell type

Using Overrides

issue number	title	created_at	repo	closed ↓	author	closed_at
85081	Add Reporting tab in scenes ShareModal	2024-03-25 15:38:39	grafana/grafana	true	juanicabanas	2024-03-25 20:36:57.000
85202	Explore/logsInfiniteScrolling: UI slowdowr	2024-03-26 18:51:44	grafana/grafana	true	ddelemeny	2024-03-26 20:52:00.000
85066	Grafana: folder admin can not edit alert e	2024-03-25 12:19:35	grafana/grafana	false	mhulscher	
85067	Auth: allowed_groups not working for Goc	2024-03-25 12:24:36	grafana/grafana	false	Pionerd	
85069	DataSourceAPI: Add optional `queries` pa	2024-03-25 12:36:16	grafana/grafana	false	dprokop	
85070	AdHocFilters: Allow providing a free text	2024-03-25 12:43:58	grafana/grafana	false	dprokop	
85074	AdHocFilters: Allow picking multiple value	2024-03-25 13:31:18	grafana/grafana	false	dprokop	

Using Override - Data links



Using Override - Data links

issue number	title	created_at	repo	closed ↓	author
85081	Add Reporting tab in scenes ShareModal	2024-03-25 15:38:39	grafana/grafana	true	juanicabanas
85202	Explore/logsInfiniteScrolling: UI slowdowr	2024-03-26 18:51:44	grafana/grafana	true	ddelemeny
85066	Grafana: folder admin can not edit alert e	2024-03-25 12:19:35	grafana/grafana	false	mhulscher
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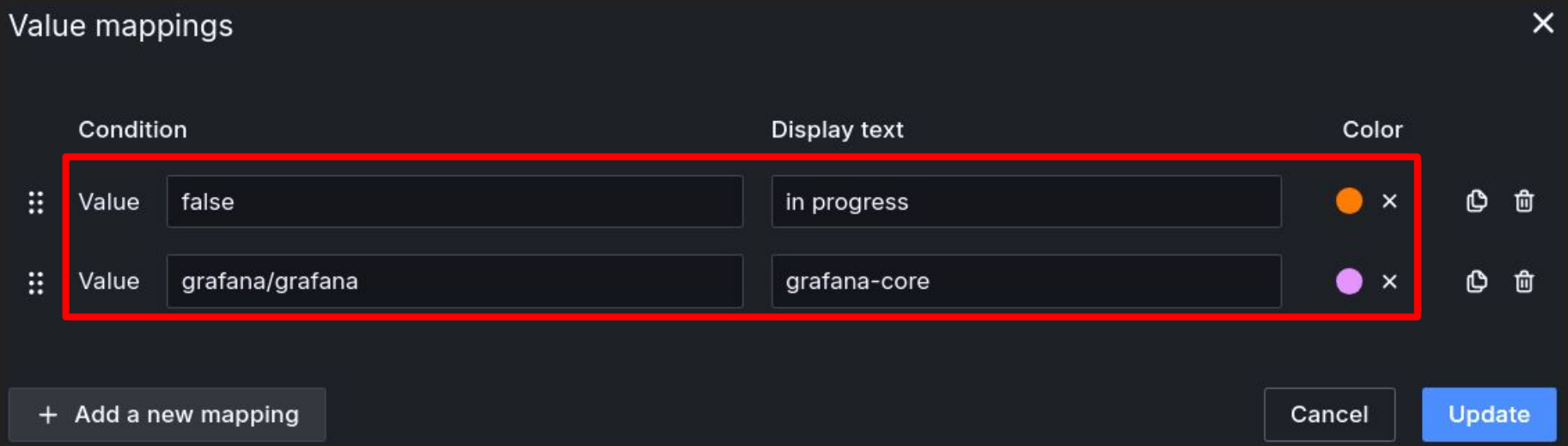
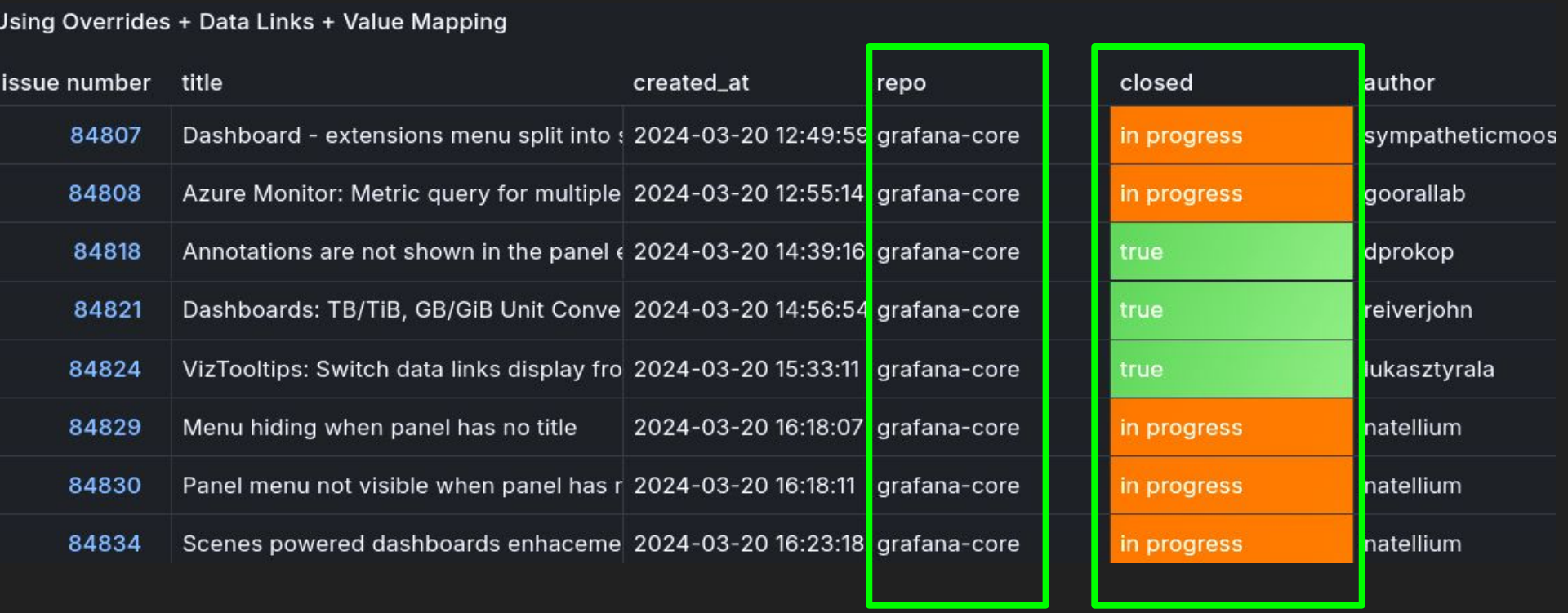
85069	DataSourceAPI: Add optional `queries` pa	2024-03-25 12:36:16	grafana/grafana	false	dprokop
85070	AdHocFilters: Allow providing a free text	2024-03-25 12:43:58	grafana/grafana	false	dprokop

Using Value mapping



Using Value mapping



Using Overrides + Data Links + Value Mapping

issue number	title	created_at	repo	closed	author
84807	Dashboard - extensions menu split into s	2024-03-20 12:49:59	grafana-core	in progress	sympatheticmoos
84808	Azure Monitor: Metric query for multiple	2024-03-20 12:55:14	grafana-core	in progress	goorallab
84818	Annotations are not shown in the panel e	2024-03-20 14:39:16	grafana-core	true	dprokop
84821	Dashboards: TB/TiB, GB/GiB Unit Conve	2024-03-20 14:56:54	grafana-core	true	reiverjohn
84824	VizTooltips: Switch data links display fro	2024-03-20 15:33:11	grafana-core	true	lukasztyrala
84829	Menu hiding when panel has no title	2024-03-20 16:18:07	grafana-core	in progress	natellium
84830	Panel menu not visible when panel has r	2024-03-20 16:18:11	grafana-core	in progress	natellium
84834	Scenes powered dashboards enhaceme	2024-03-20 16:23:18	grafana-core	in progress	natellium

Grafana Labs

Dynamic Dashboard Variables

Grafana Dashboard Variables

1. Also known as templating
2. Create interactive and dynamic dashboards
3. **NO** hard-coding !!

Dynamic dashboard variables

Grafana Labs
Memory / CPU
logins
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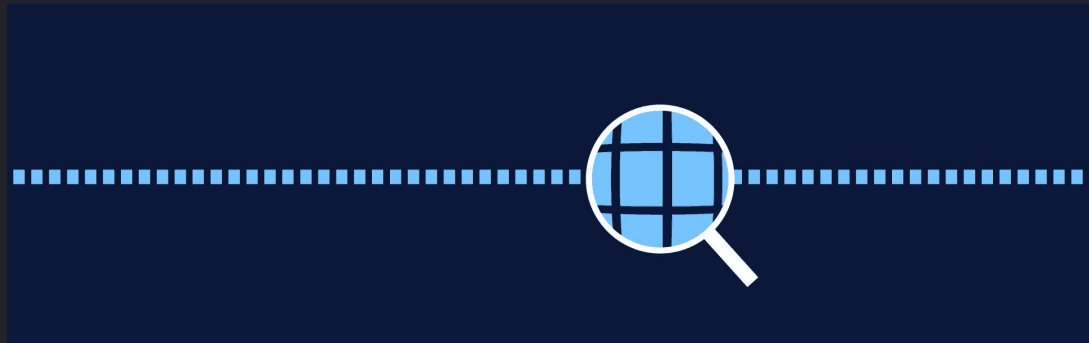
client side full page load
Demo

Max up to 💯

Alerting Simplified

Teams need to get Alerting ✅|❌|⁉️

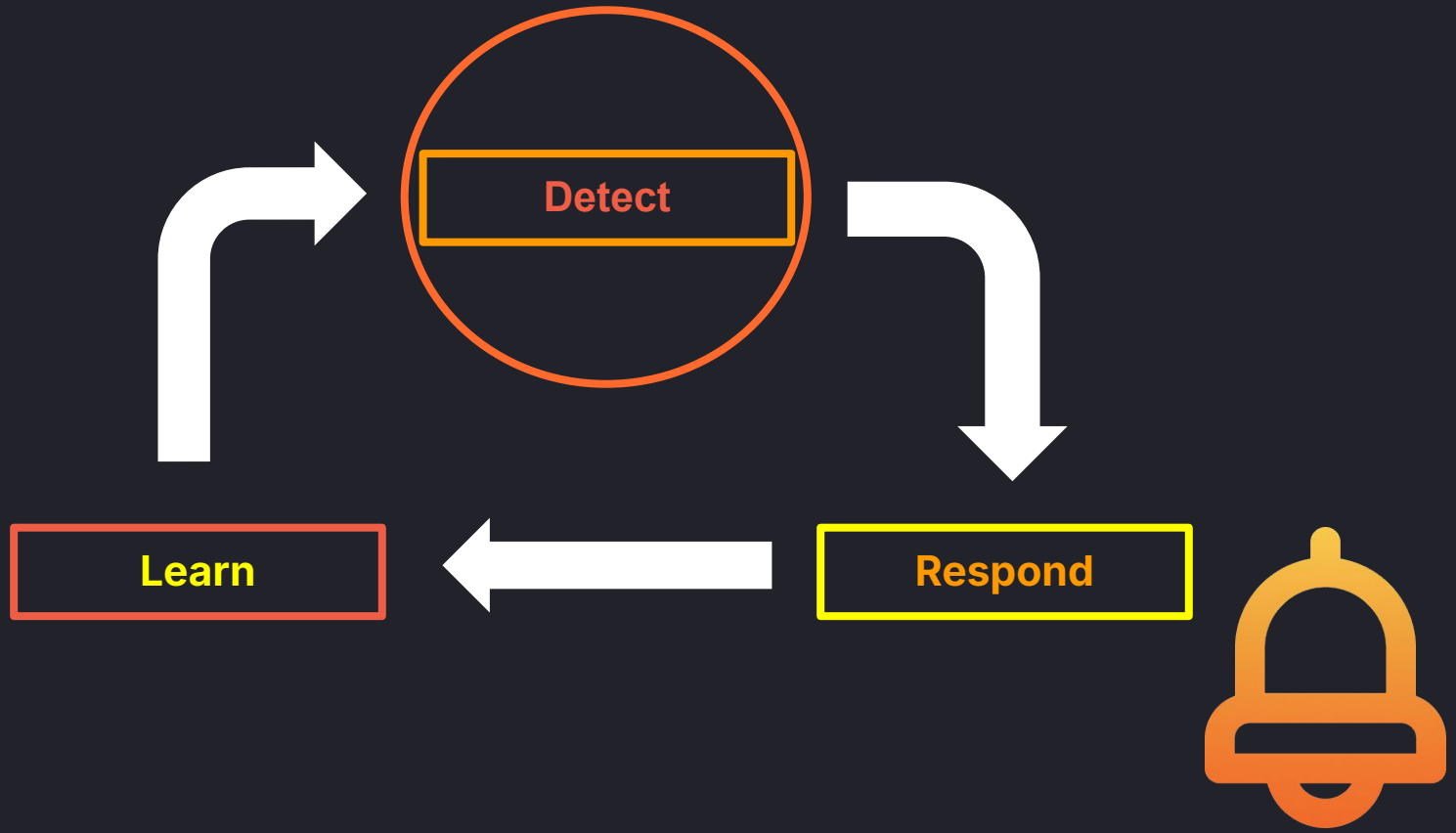
We make it easy to
detect, **respond**, and **learn** from
incidents with minimal toil



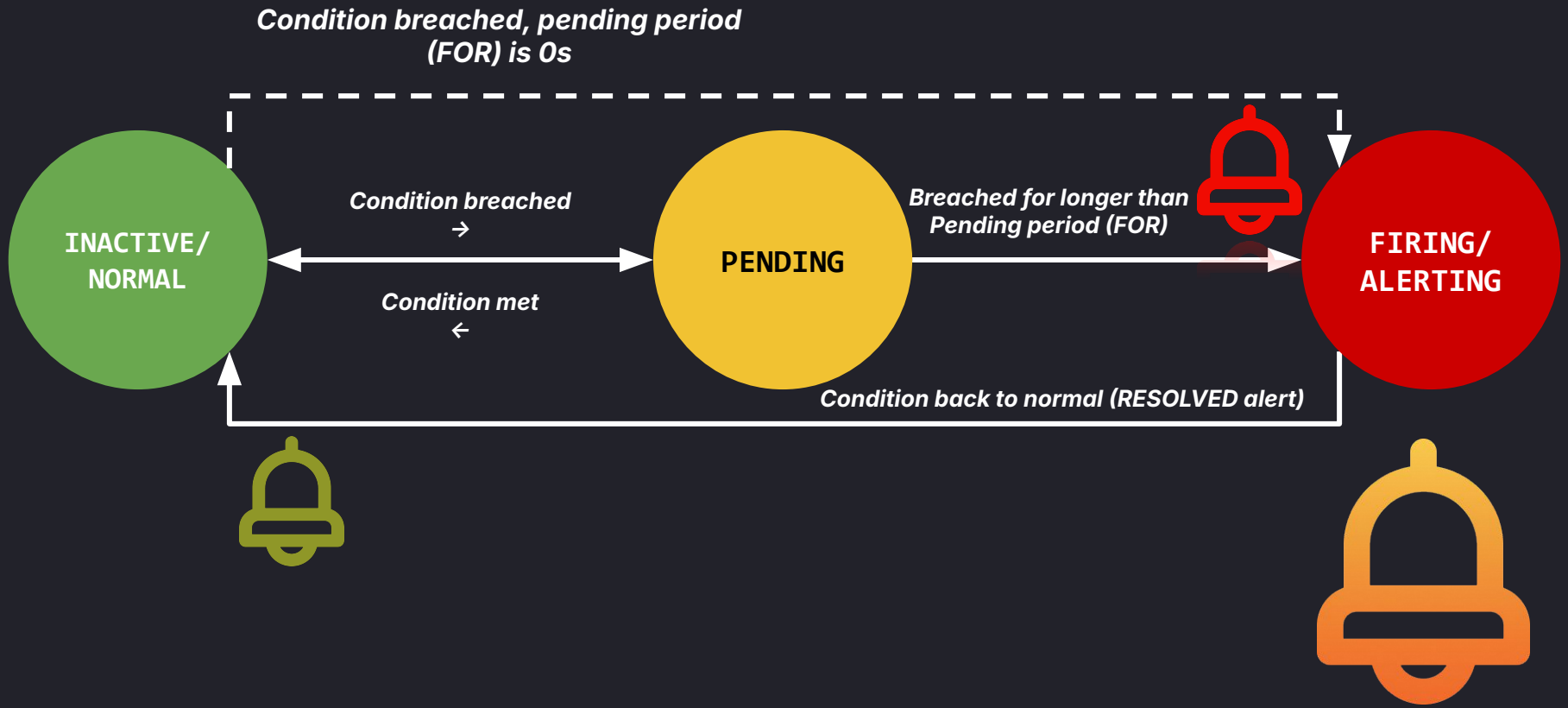
Alerting

1. Send Alerts **Easily** 🚩
2. Support various contact points 💬
3. Incorporate into an **IRM** 🆘

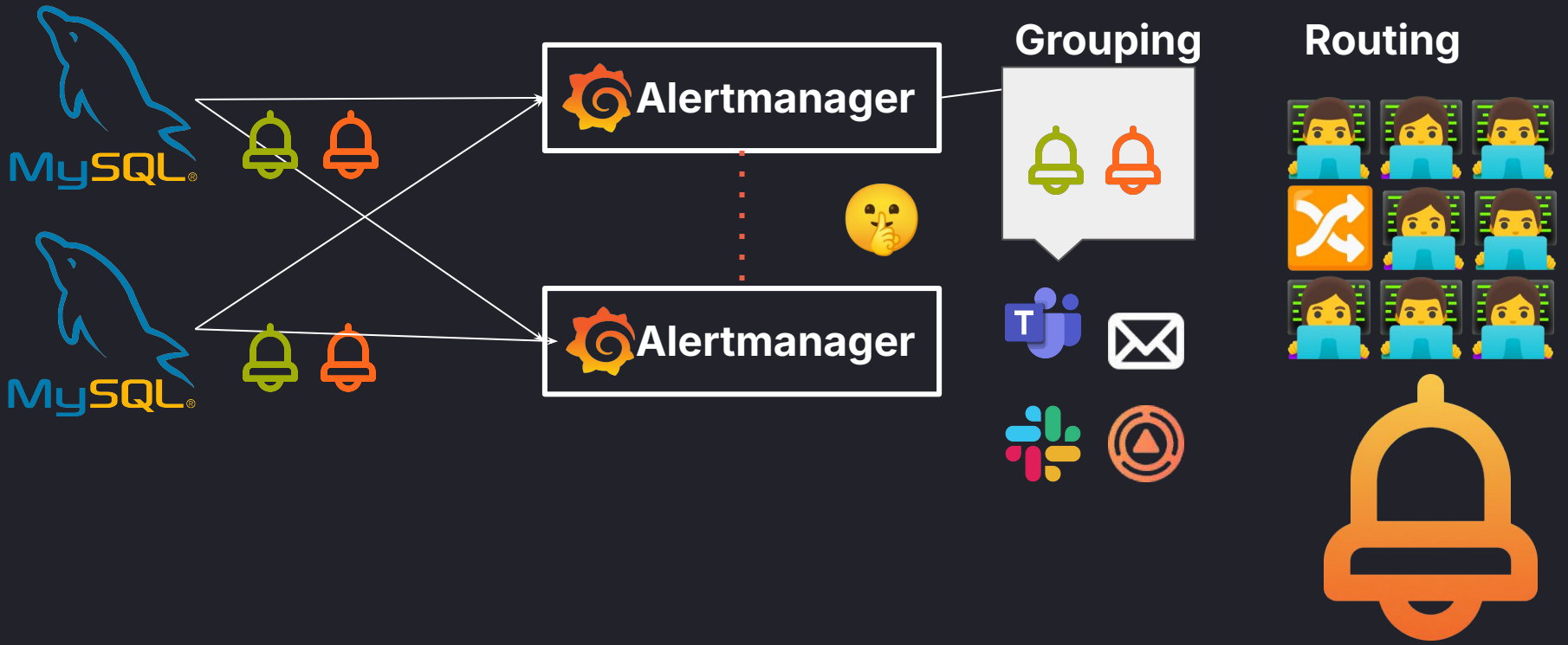
Alerting Basics



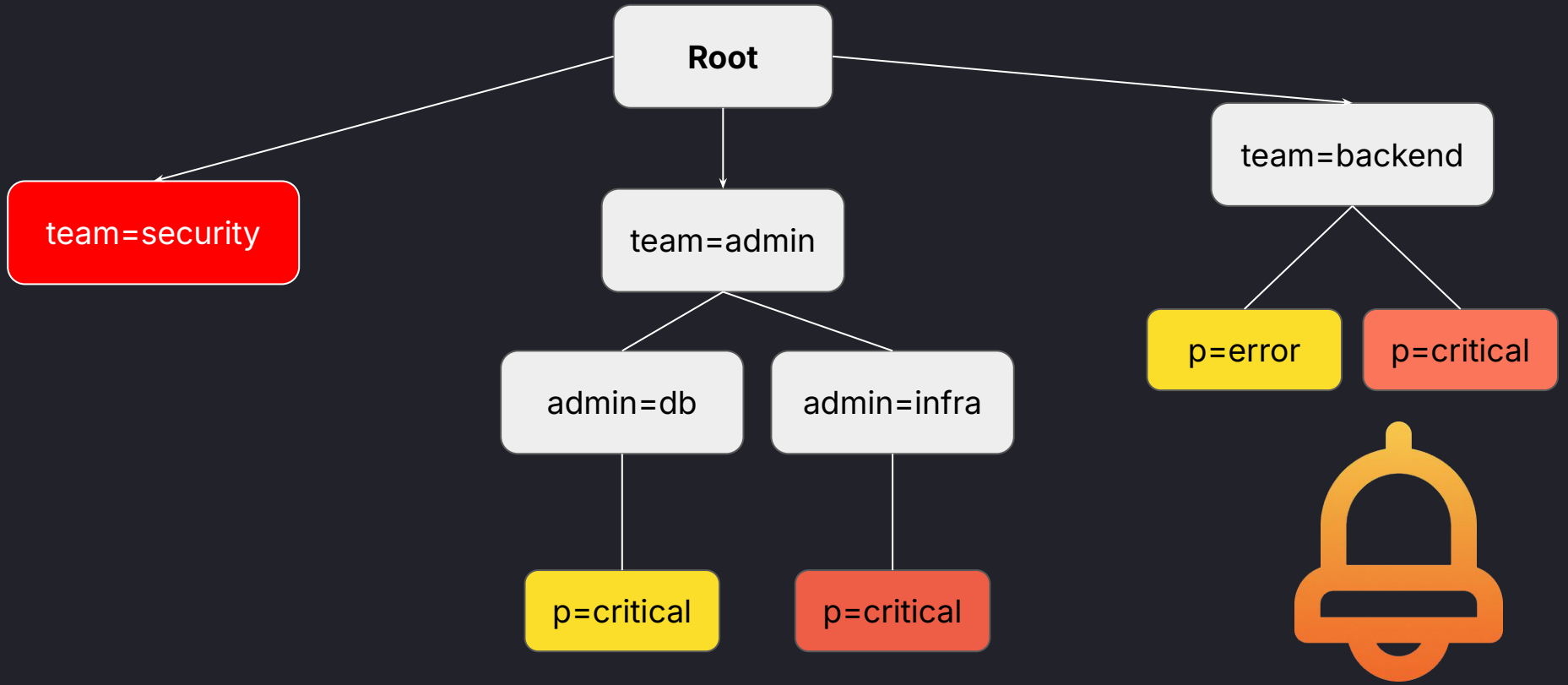
How Alerting Works



Notification



Routing - Notification Policies



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Logs

"I didn't click on that $20 gift card phishing email and get the company hacked, the logs are lying"
Logs don't lie!
IT/Cyber:

Challenges with log aggregation platforms

Format and schema dependencies hinder rapid start and increase toil

Dev teams under pressure to log less to control increasing costs

Context-less dispersed logs accerbates outage resolution

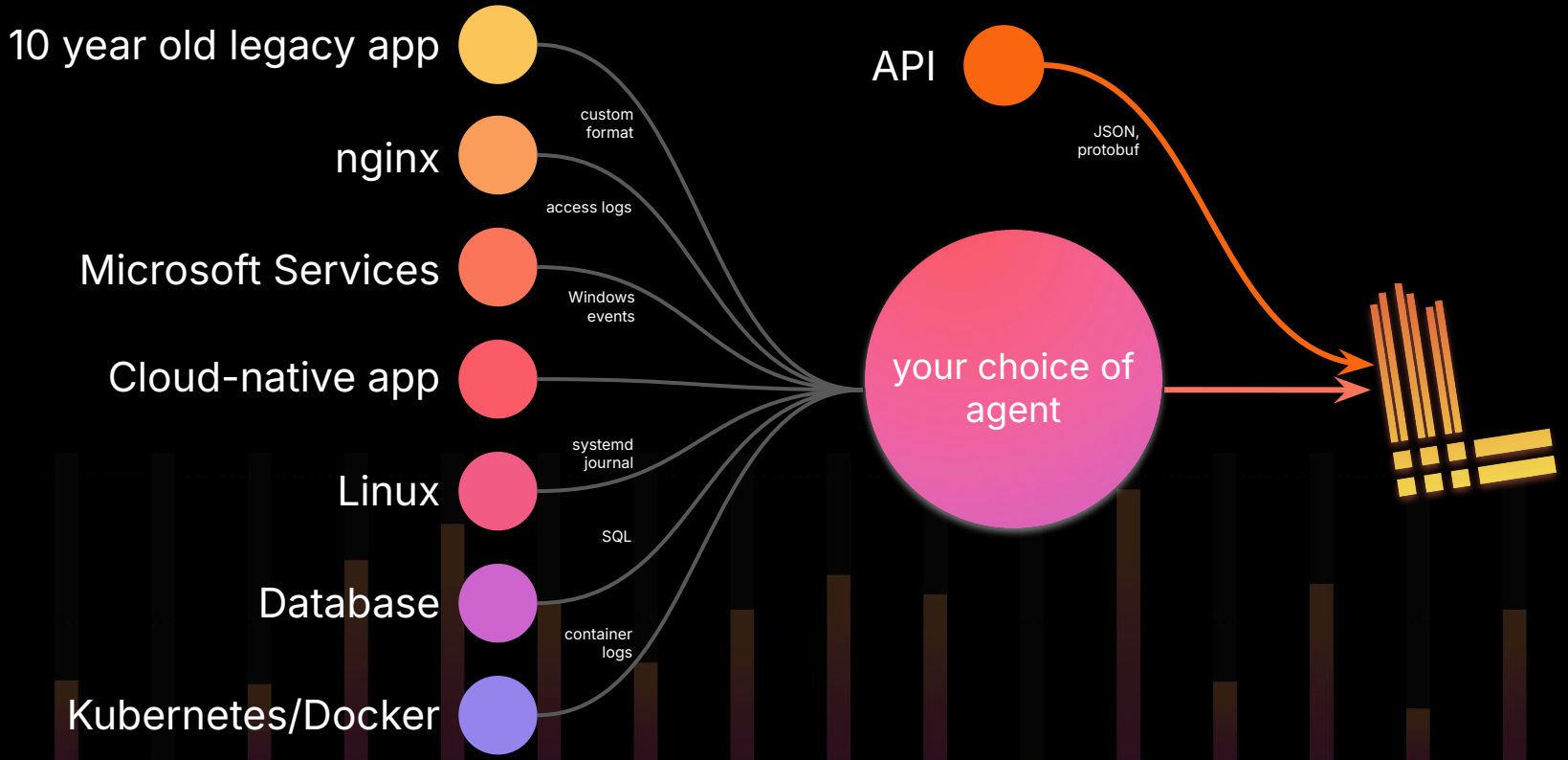
Grafana Loki target use cases

Effective Debugging and troubleshooting of applications

Visualise and alert on services/apps performance metrics

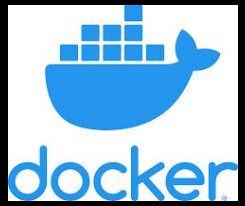
Build actionable insights from log data and other supported data sources

Loki accepts it all



Promtail

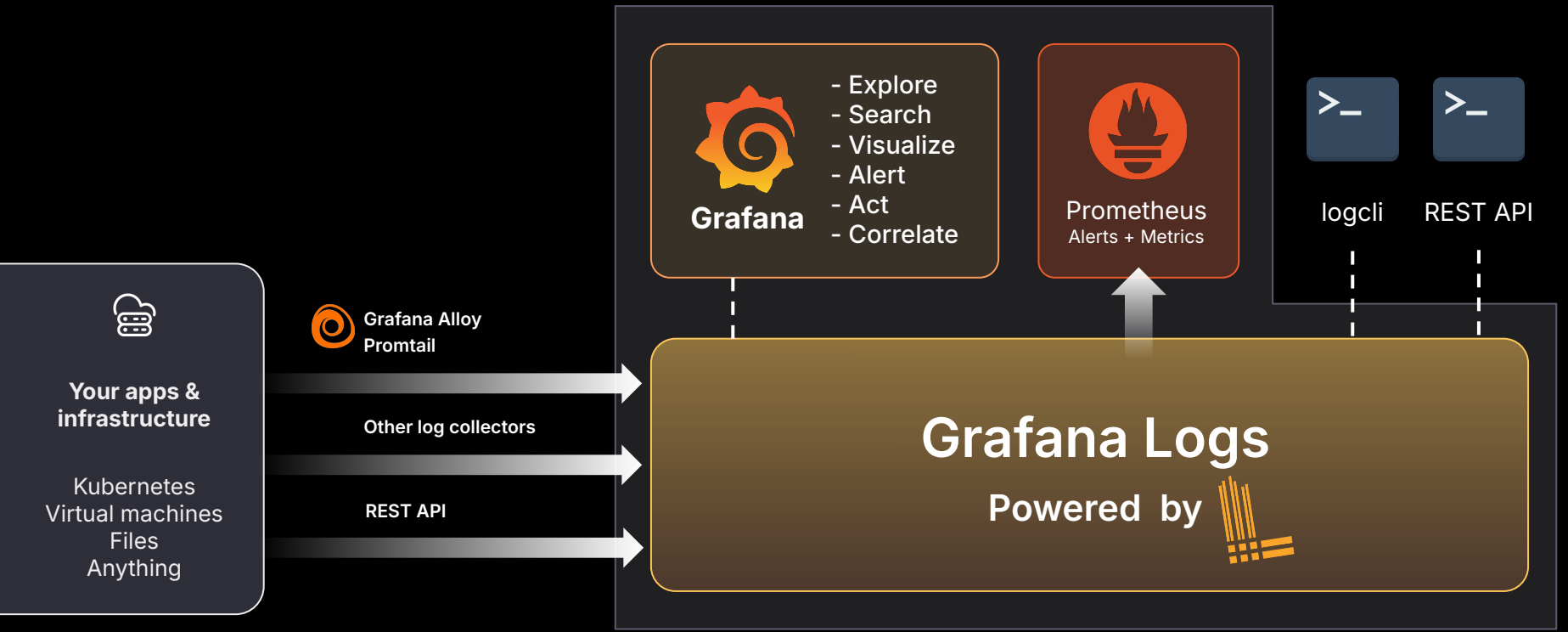
Grafana Alloy



Promtail

Grafana Alloy

How does Grafana Logs work?



How Grafana Loki does indexing

2019-12-11T10:01:02.123456789Z {app="nginx", env="dev"} GET /about 1034 Debug "page not found"

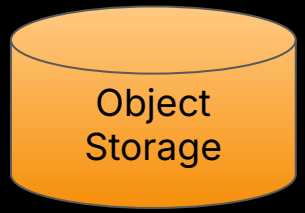
Timestamp
with nanosecond precision

Labels/Selectors
key-value pairs

Content log line

Indexed in TSDB format

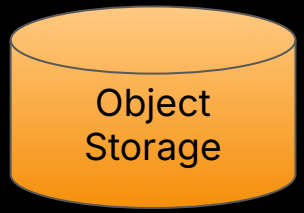
Unindexed

10TB = 

Log Data

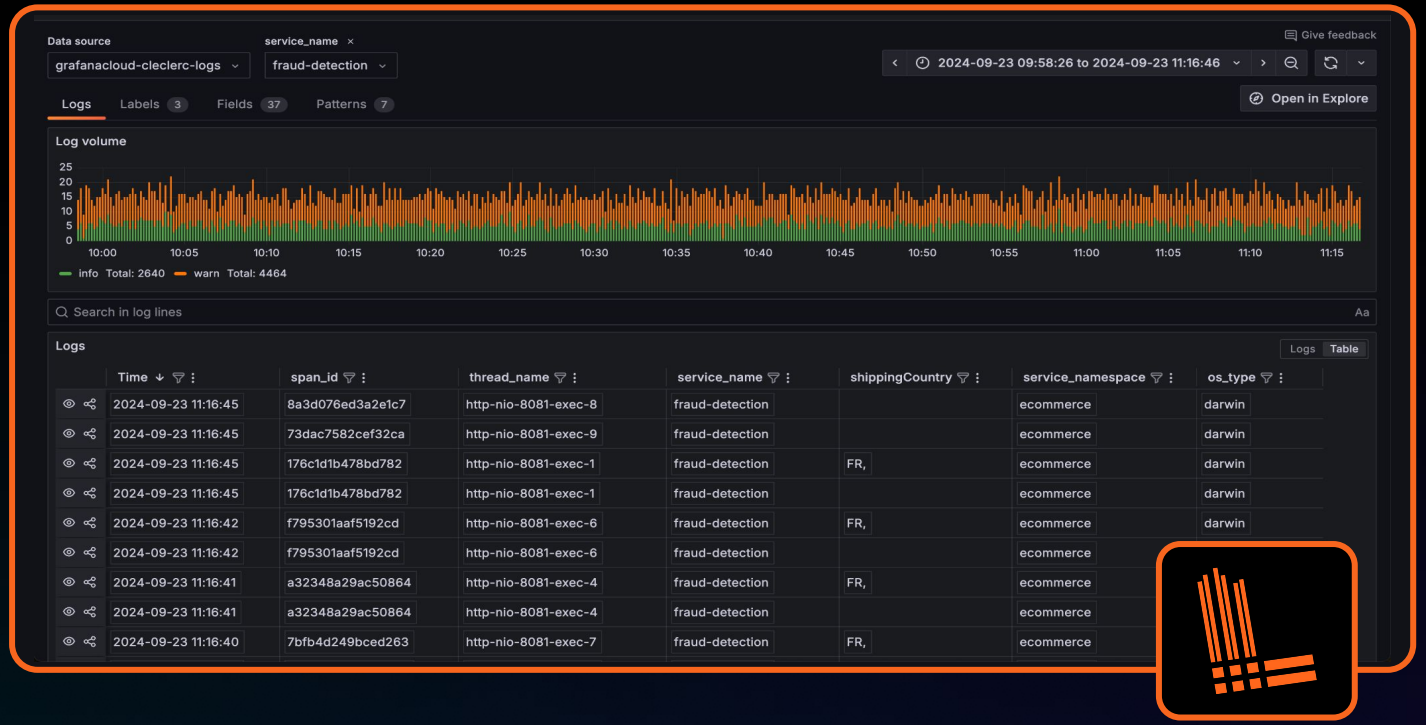
50MB+

Index



~3TB

Compressed log data



Explore Logs

General Availability | OSS | Cloud

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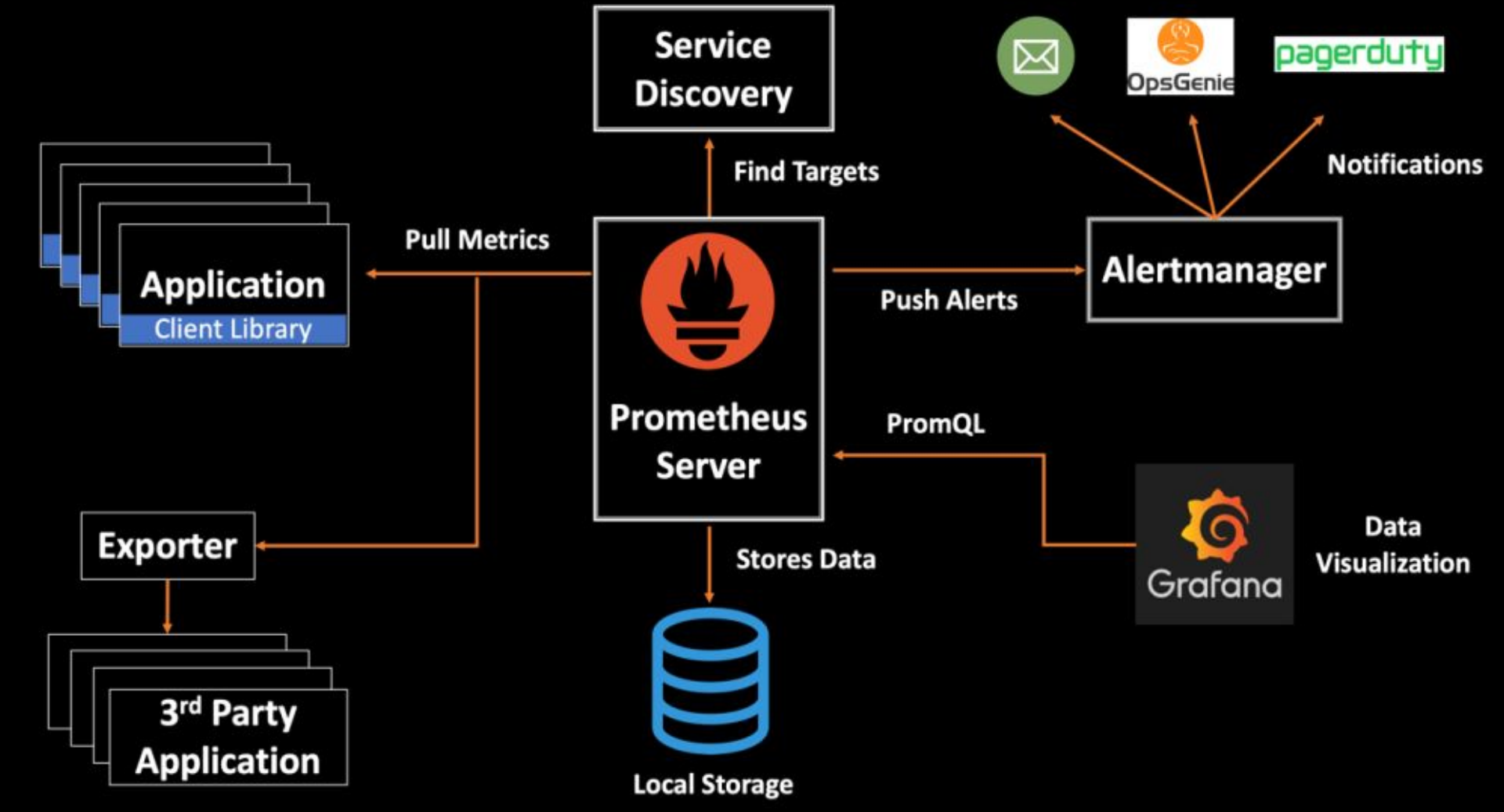
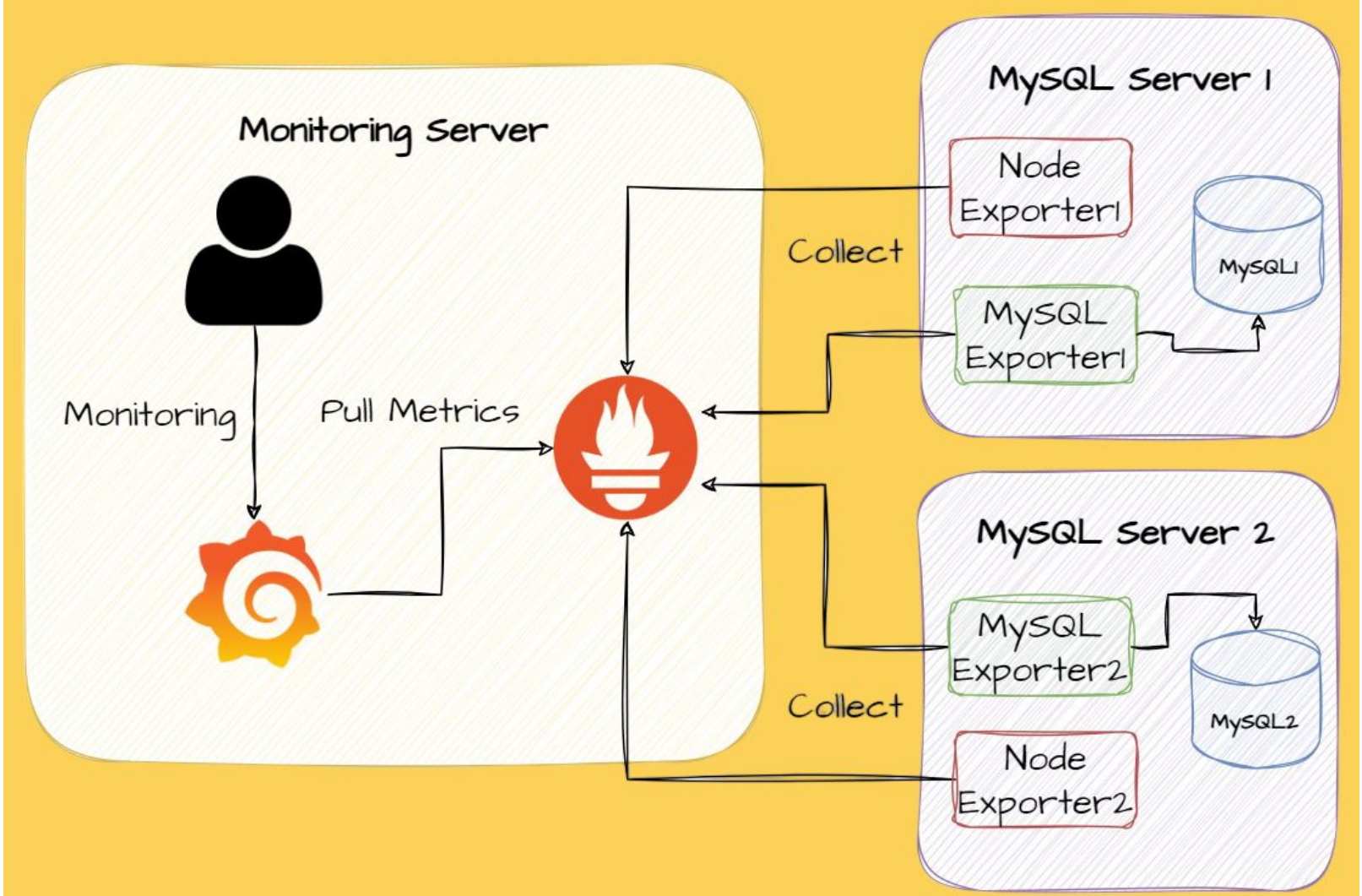
Metrics 🔥: What's New?


Service Discovery
Find Targets
Notifications
OpsGenie
pagerduty
Application
Client Library
Pull Metrics
Prometheus Server
Push Alerts
Alertmanager
PromQL
Exporter
Stores Data
Grafana
Data Visualization
3rd Party Application
Local Storage


Monitoring Server
Monitoring
Pull Metrics
Collect
Collect
MySQL Server 1
Node Exporter1
MySQL1
MySQL Exporter1
MySQL Server 2
MySQL Exporter2
MySQL2
Node Exporter2

Explore Metrics

General Availability | OSS | Cloud

Explore Logs

General Availability | OSS | Cloud

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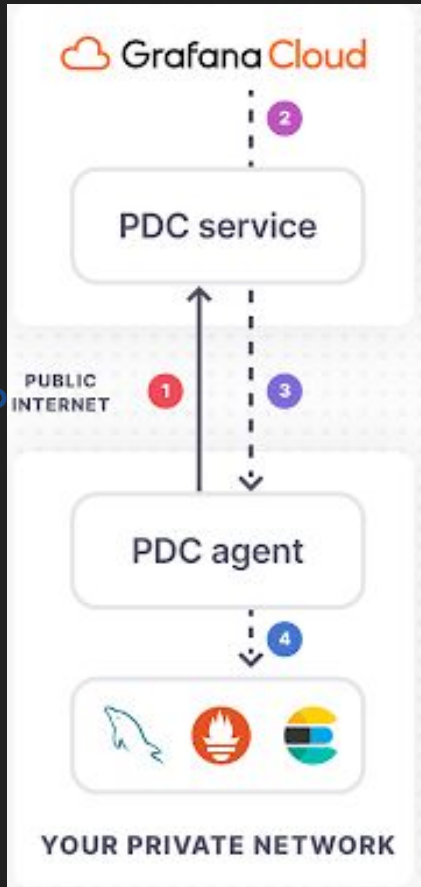
Private Data Source Connect

Why Private Data source Connect?

Why Private Data source Connect?



1. **Agent creates tunnel**
   The PDC agent creates a secure tunnel with PDC service.
   The agent wraps openssh. (ssh -R option).

2. **Grafana issues query**
   Data source queries are routed securely to the client via the PDC service.

3. **Socks over SSH**
   The query is forwarded by the service to the agent over the tunnel
   The protocol is Socks-over-SSH.

4. **Agent forwards**
   The agent resolves the target DNS entry and forwards the query to the correct destination.

PDC Advantages & Features

1. Install via Docker, Kubernetes, Binary
2. Data is secure **Encrypted !!**
3. Support many Data sources

Assemble Your Stack

Your open and composable observability stack

Big Tent Data Sources

Keep data where it is

Performance Testing

- Load Testing
- Browser Testing

Application Observability

- Frontend
- Service Maps
- Serverless
- eBPF

Infrastructure Observability

- Kubernetes
- Server/VM
- MySQL Database
- aws Cloud Providers

Incident Response Management

- SLO
- Alerting
- OnCall
- Incident

Cost Management | Security & Governance | Configuration (as code)

Your Environment

Applications and Infrastructure

Grafana Agent

Composable Stack

OSS or Commercial

- **Loki** — Logs
- **Grafana** — Visualizations
- **Tempo** — Traces
- **Mimir** — Metrics
- **Pyroscope** — Profiles

- Native
  OTel, Prometheus
- No Lock-in
  Open standard

COMMUNITY

The 3 Pillars

1. To report bugs, feature-request:
   - **GitHub** repo

grafana-grafana

2. Other useful resources:
   - **Slack** channel #grafana

#grafana

   - Community forum

community.grafana.com

Takeaways

1. Enhanced Experience
2. Built-in Integrated Features
3. Wide Community Support

Grafana Labs
Open and composable observability stack
Grafana

Grafana Labs

Thanks for participating!

Contact me:

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linkedin.com/in/usmanlinux/