Real-time metrics with netdata

Aurelijus Banelis

VilniusPHP 0x3D
2017-12-05

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PGP 0x320205E7539B6203
130D C446 1F1A 2E50 D6E3
3DA8 3202 05E7 539B 6203


Real-time metrics
with netdata
for PHP

INTRO	**What are metrics, types and tradeoffs**
PHP	**Tools and tips for PHP ecosystem**
DEMO	**How it feels to use real-time metrics**

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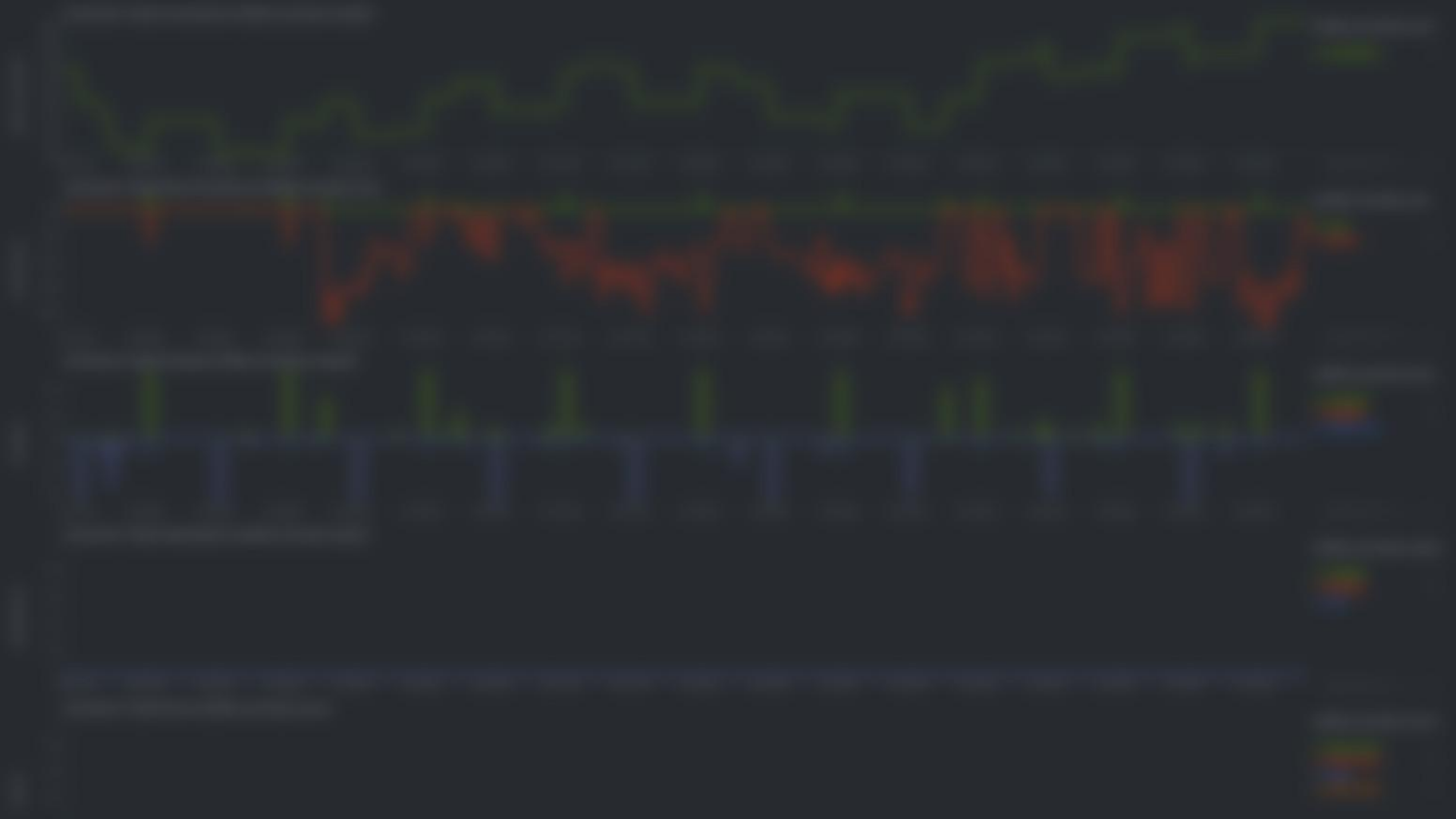
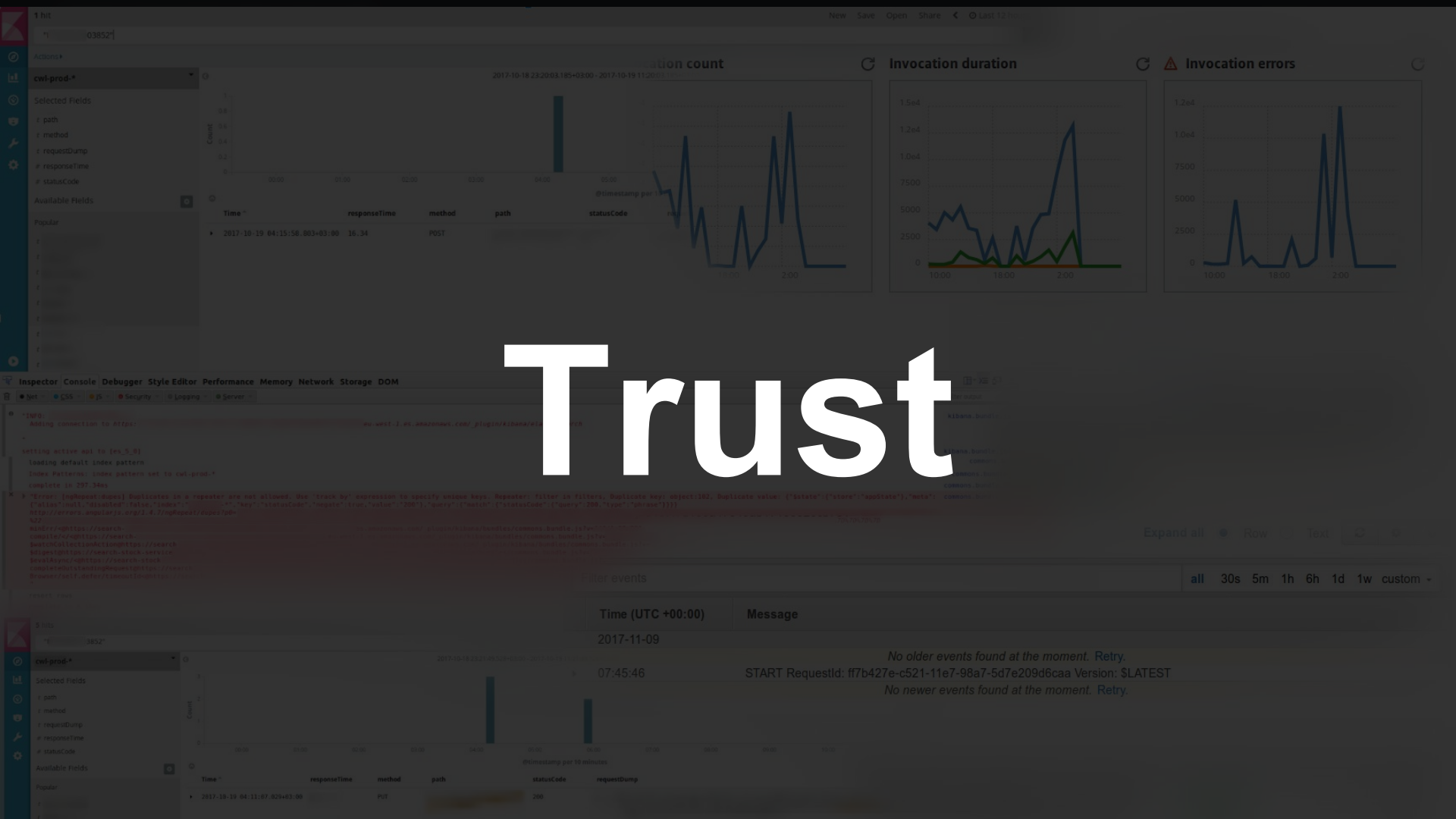
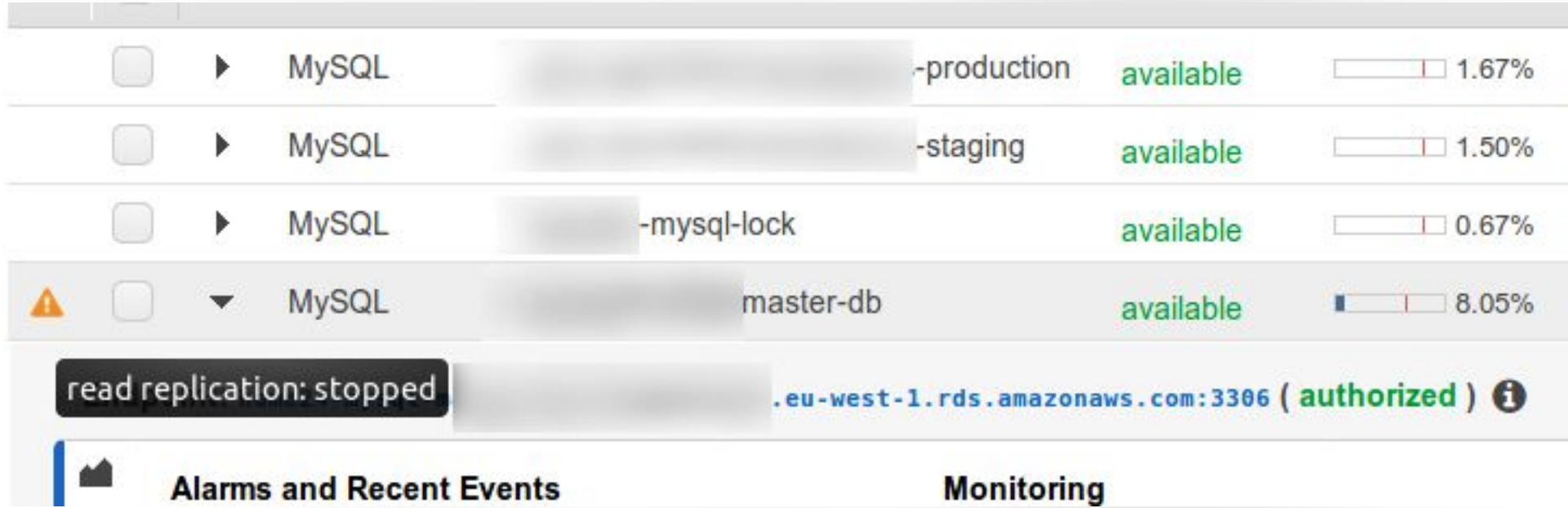
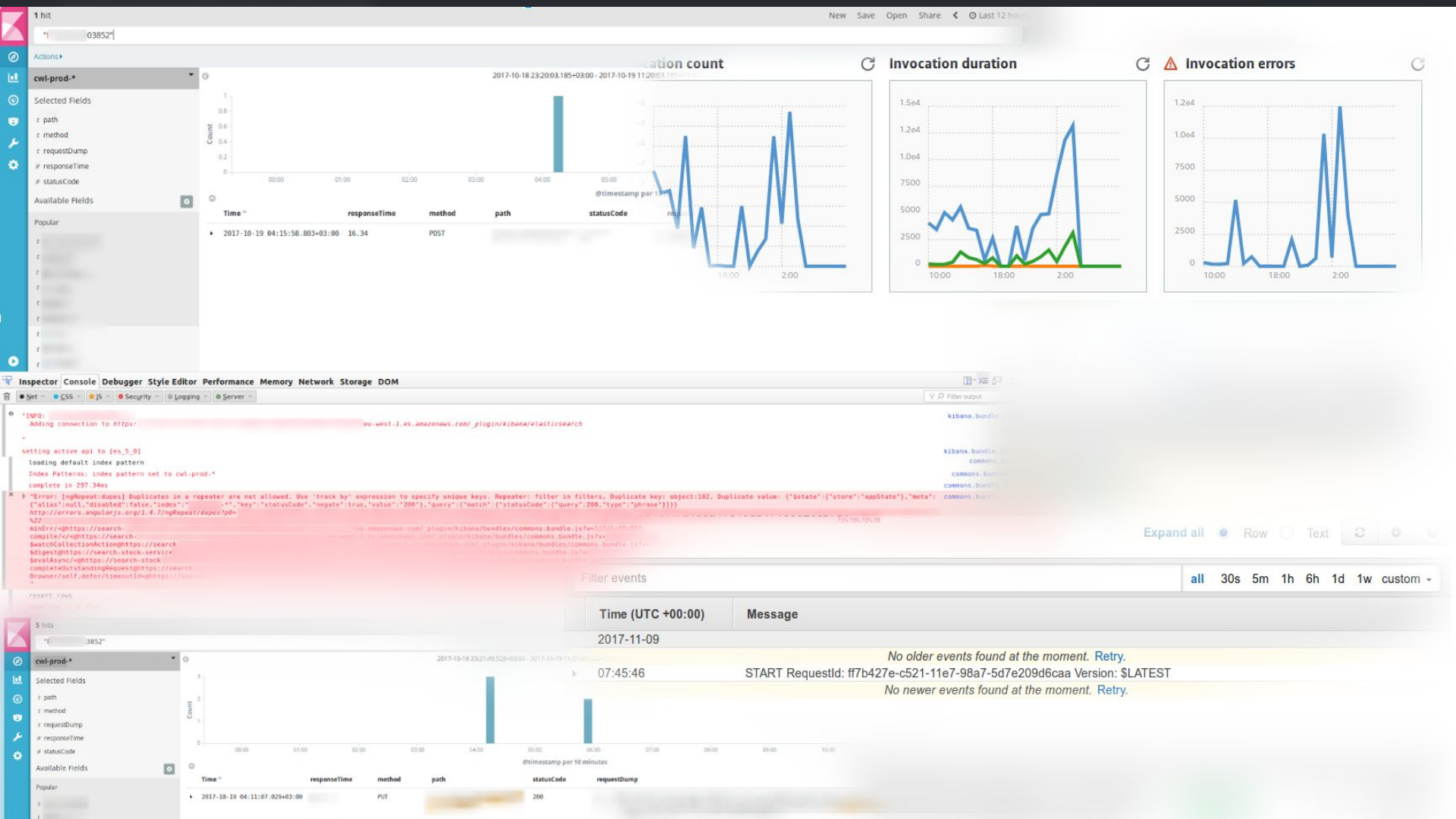
Used Memory without Cache for cgroup mysql_ab_lt (cgroup_mysql_ab_lt.mem_usage)
Tue, Oct 17, 2017
22:34:35
MB
ram 62.55
Memory Usage for cgroup mysql_ab_lt (cgroup_mysql_ab_lt.mem)
Tue, Oct 17, 2017
22:34:35
MB
cache 4.2
rss 60.8
rss_huge 52.0
mapped_f... 1.8
Memory Limit Failures for cgroup mysql_ab_lt (cgroup_mysql_ab_lt.mem_failcnt)
Tue, Oct 17, 2017
22:34:35
count
failures 0
Writeback Memory for cgroup mysql_ab_lt (cgroup_mysql_ab_lt.writeback)
Tue, Oct 17, 2017
22:34:35
KB
dirty 0.00
Memory Activity for cgroup mysql_ab_lt (cgroup_mysql_ab_lt.mem_activity)
Tue, Oct 17, 2017
22:34:35
MB/s
in 0.0
out 0.0

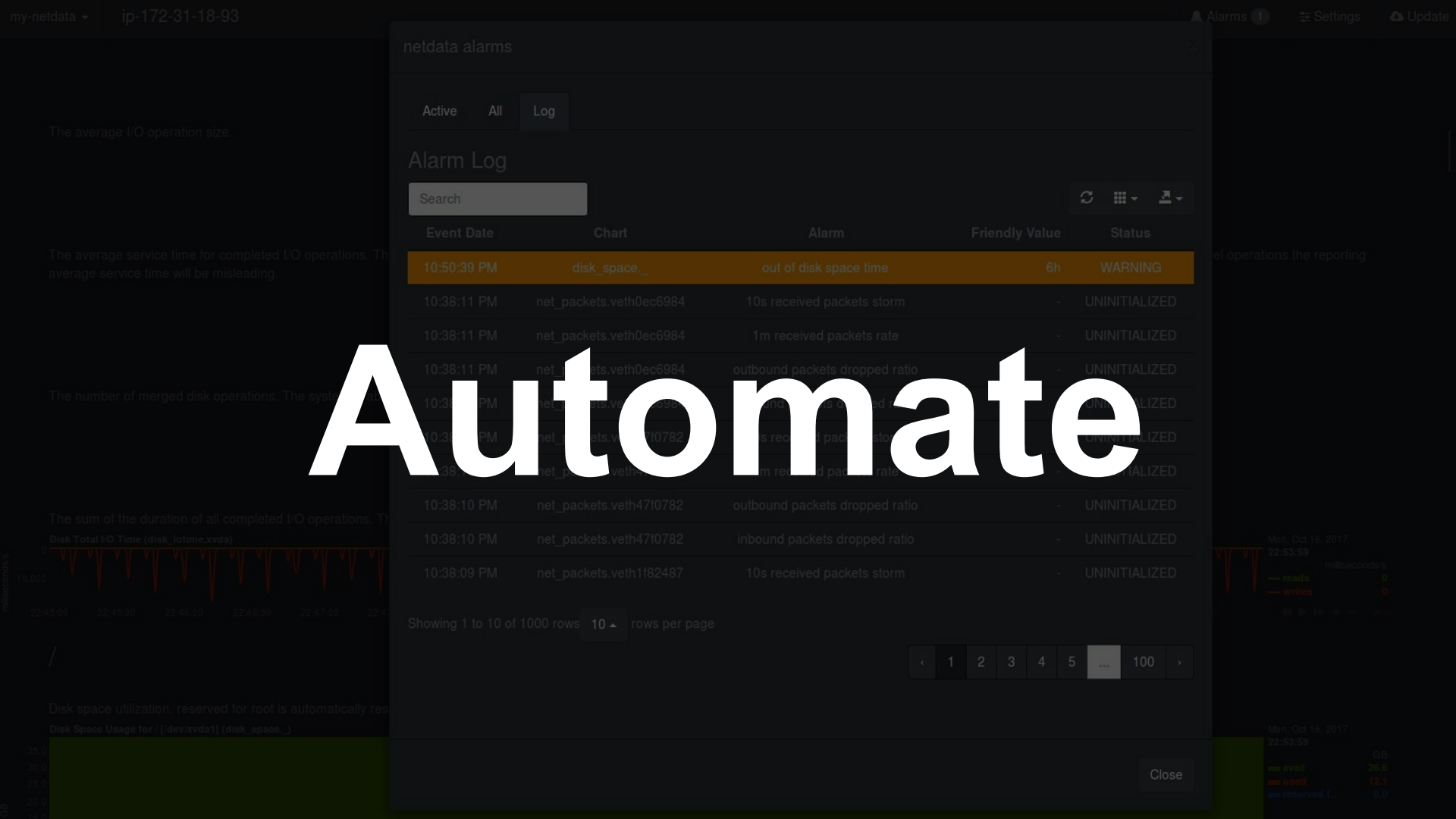


3 Advantages


Invocation count
Invocation duration
Invocation errors
Trust


MySQL -production available 1.67%
MySQL -staging available 1.50%
MySQL -mysql-lock available 0.67%
MySQL master-db available 8.05%
read replication: stopped .eu-west-1.rds.amazonaws.com:3306 (authorized)
Alarms and Recent Events
Monitoring


1 hit
New Save Open Share Last 12 hours
Actions
cwl-prod-*
Selected Fields
path
method
requestDump
responseTime
statusCode
Available Fields
Popular
Invocation count
Invocation duration
Invocation errors
Time
responseTime
method
path
statusCode
2017-10-19 04:15:58.803+03:00 16.34 POST
Inspector Console Debugger Style Editor Performance Memory Network Storage DOM
Expand all Row Text
Filter events
all 30s 5m 1h 6h 1d 1w custom
Time (UTC +00:00) Message
2017-11-09
No older events found at the moment. Retry.
07:45:46 START RequestId: ff7b427e-c521-11e7-98a7-5d7e209d6caa Version: $LATEST
No newer events found at the moment. Retry.
5 hits
requestDump
2017-10-19 04:11:07.029+03:00 PUT 200


my-netdata
ip-172-31-18-93
Alarms 1
Settings
Update
netdata alarms
Active
All
Log
Alarm Log
Search
Event Date
Chart
Alarm
Friendly Value
Status
10:50:39 PM
disk_space._
out of disk space time
6h
WARNING
10:38:11 PM
net_packets.veth0ec6984
10s received packets storm
-
UNINITIALIZED
10:38:11 PM
net_packets.veth0ec6984
1m received packets rate
-
UNINITIALIZED
10:38:11 PM
outbound packets dropped ratio
10:38:10 PM
net_packets.veth47f0782
outbound packets dropped ratio
10:38:10 PM
net_packets.veth47f0782
inbound packets dropped ratio
10:38:09 PM
net_packets.veth1f82487
10s received packets storm
Showing 1 to 10 of 1000 rows
10
rows per page
1
2
3
4
5
100
Close
Automate

The average I/O operation size.

The average service time for completed I/O operations. Th… el operations the reporting average service time will be misleading.

The number of merged disk operations. The system is able…

The sum of the duration of all completed I/O operations. Th…

Disk Total I/O Time (disk_iotime.xvda)

/

Disk space utilization. reserved for root is automatically res…

Disk Space Usage for / [/dev/xvda1] (disk_space._)

netdata alarms

Active All Log

Alarm Log

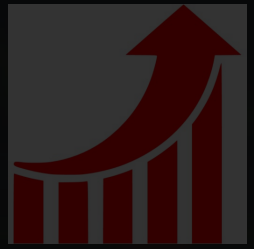
Search

Event Date	Chart	Alarm	Friendly Value	Status
10:50:39 PM	disk_space._	out of disk space time	6h	WARNING
10:38:11 PM	net_packets.veth0ec6984	10s received packets storm	-	UNINITIALIZED
10:38:11 PM	net_packets.veth0ec6984	1m received packets rate	-	UNINITIALIZED
10:38:11 PM	net_packets.veth0ec6984	outbound packets dropped ratio	-	UNINITIALIZED
10:38:11 PM	net_packets.veth0ec6984	inbound packets dropped ratio	-	UNINITIALIZED
10:38:10 PM	net_packets.veth47f0782	10s received packets storm	-	UNINITIALIZED
10:38:10 PM	net_packets.veth47f0782	1m received packets rate	-	UNINITIALIZED
10:38:10 PM	net_packets.veth47f0782	outbound packets dropped ratio	-	UNINITIALIZED
10:38:10 PM	net_packets.veth47f0782	inbound packets dropped ratio	-	UNINITIALIZED
10:38:09 PM	net_packets.veth1f82487	10s received packets storm	-	UNINITIALIZED

Showing 1 to 10 of 1000 rows 10 rows per page

‹ 1 2 3 4 5 … 100 ›

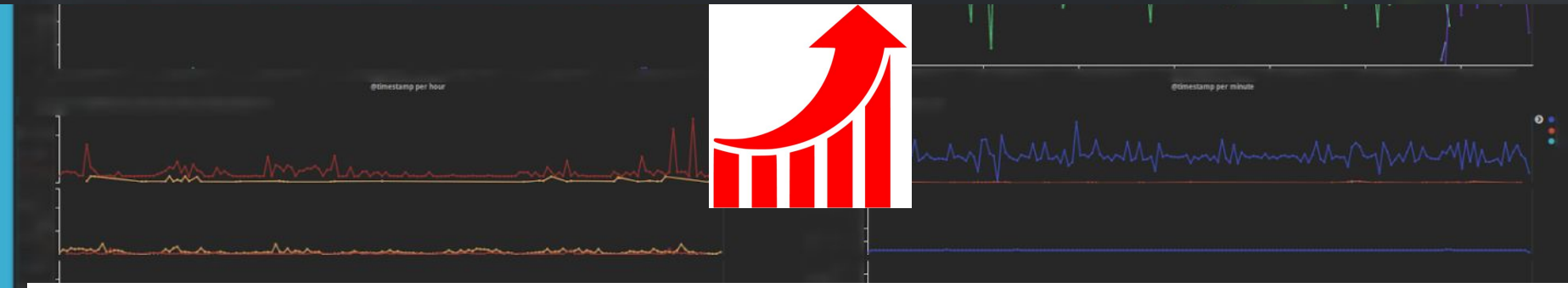
Close



- **Amazingly fast**
  respo s to all queries in less than 0.5 ms per metric, even on low-end hardw e
- **High efficien**
  colle arg metri per server pe d, w ust U lizat n of si e fo M and no disk I/O at all

Low overhead



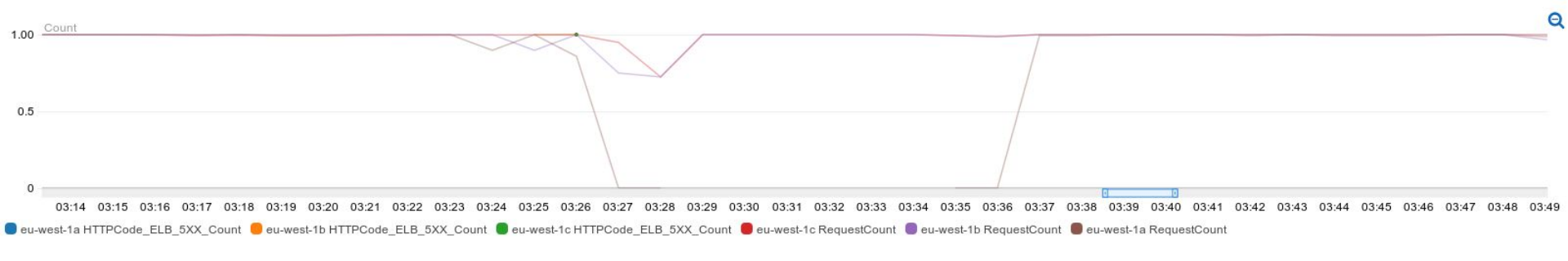
- **Amazingly fast**
  responds to all queries in less than 0.5 ms per metric, even on low-end hardware

- **Highly efficient**
  collects thousands of metrics per server per second, with just 1% CPU utilization of a single core, a few MB of RAM and no disk I/O at all

3 Tradeoffs


Count
1.00
0.5
0
03:14 03:15 03:16 03:17 03:18 03:19 03:20 03:21 03:22 03:23 03:24 03:25 03:26 03:27 03:28 03:29 03:30 03:31 03:32 03:33 03:34 03:35 03:36 03:37 03:38 03:39 03:40 03:41 03:42 03:43 03:44 03:45 03:46 03:47 03:48 03:49
eu-west-1a HTTPCode_ELB_5XX_Count
eu-west-1b HTTPCode_ELB_5XX_Count
eu-west-1c HTTPCode_ELB_5XX_Count
eu-west-1c RequestCount
eu-west-1b RequestCount
eu-west-1a RequestCount

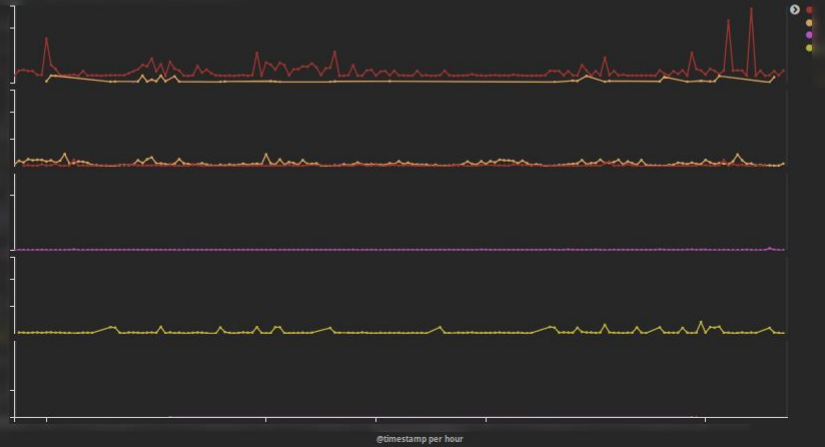
Lost data

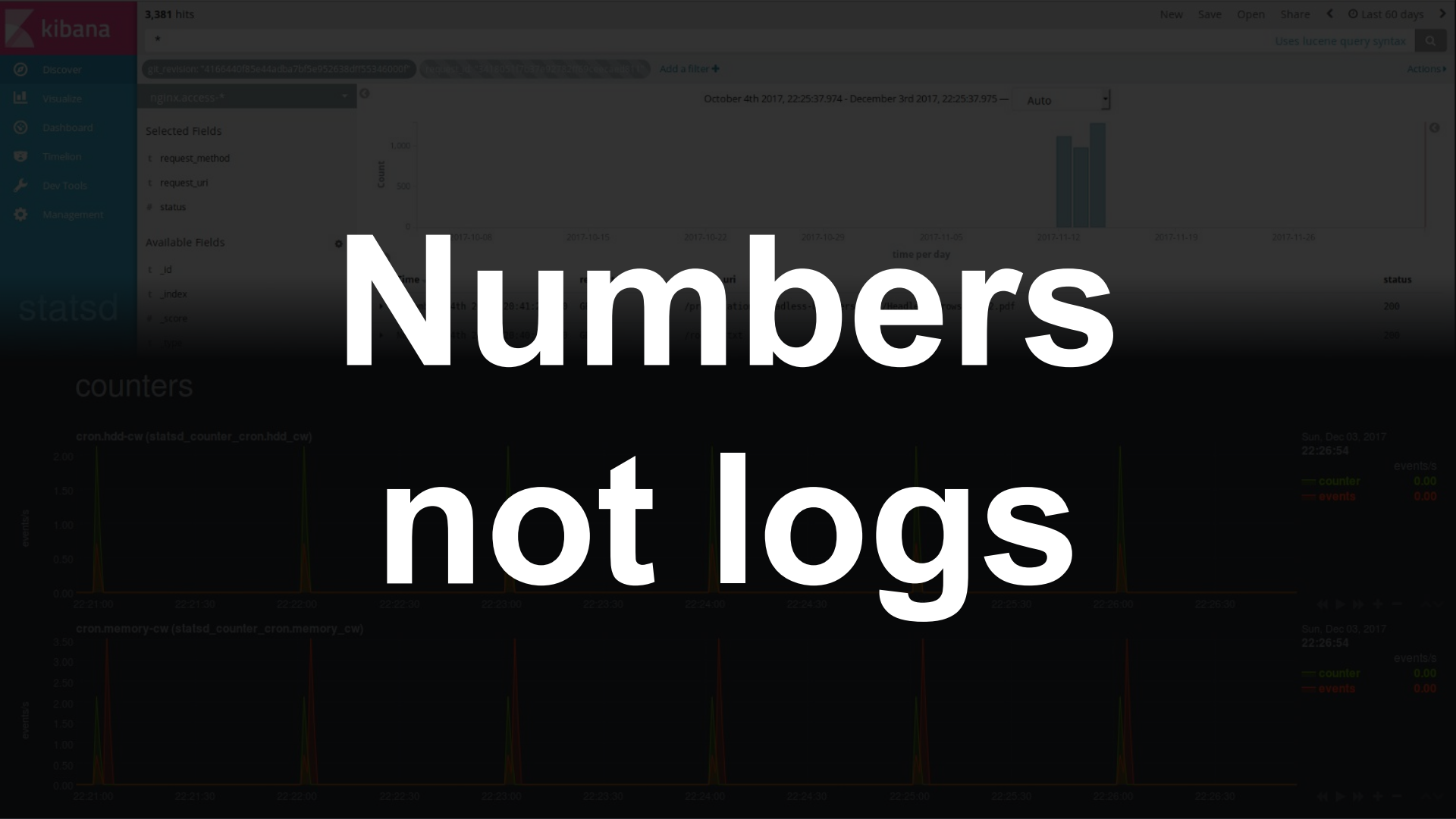

Count
1.00
0.5
0
03:14 03:15 03:16 03:17 03:18 03:19 03:20 03:21 03:22 03:23 03:24 03:25 03:26 03:27 03:28 03:29 03:30 03:31 03:32 03:33 03:34 03:35 03:36 03:37 03:38 03:39 03:40 03:41 03:42 03:43 03:44 03:45 03:46 03:47 03:48 03:49
eu-west-1a HTTPCode_ELB_5XX_Count
eu-west-1b HTTPCode_ELB_5XX_Count
eu-west-1c HTTPCode_ELB_5XX_Count
eu-west-1c RequestCount
eu-west-1b RequestCount
eu-west-1a RequestCount

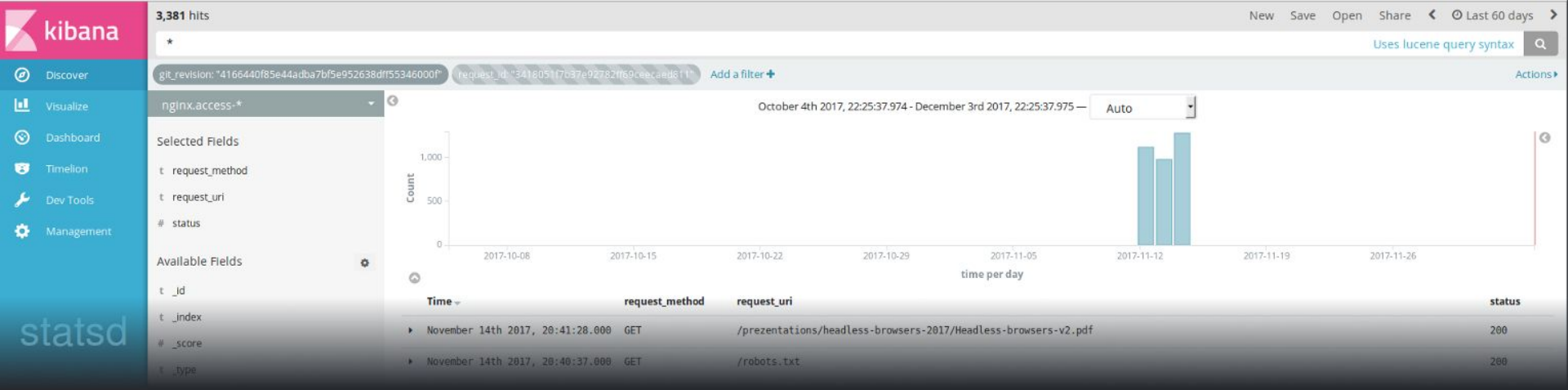

Dashboard /
Add
Save
Share
Options
Last 7 days
0
Count
No results found
@timestamp per hour
@timestamp per minute
Relation

0
Count

No results found




kibana
3,381 hits
Discover
Visualize
Dashboard
Timelion
Dev Tools
Management
statsd
counters
Numbers
not logs



statsd

counters

INTRO — What are metrics, types and tradeoffs

PHP — Tools and tips for PHP ecosystem

DEMO — How it feels to use real-time metrics

INTRO	**What are metrics, types and tradeoffs**
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Statsd

netdata statsd

netdata is a fully featured statsd server. It can collect statsd formatted metrics, visualize them on its dashboards, stream them to other netdata servers or archive them to backend time-series databases.

statsd-php

A PHP client library for the statistics daemon (statsd) in order to send metrics from PHP applications.

build passing donate paypal

Installation

The best way to install statsd-php is to use Composer and add the following to your project's `composer.json` file:

```
{
    "require": {
        "domnikl/statsd": "~2.0"
    }
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web log apache
Information extracted from a server log file. web_log plugin incrementally parses the server log file to provide, in real-time, a break down of key server performance metric
used (for nginx and apache) offering timing information and bandwidth for both requests and responses. web_log plugin may also be configured to provide a break do
/web_log.conf).
Successful
1
0
requests/s
Redirects
0
6
0
requests/s
Bad Requests
0
6
0
requests/s
Server Errors
0
6
0
requests/s
responses
Web server responses by type. success includ
error includes 5xx, redirect in
3xx except 304, bad includes 4xx, other are
Response Statuses (web_log_apache.response_statuses)
requests
5.00
4.00
3.00
2.00
1.00
0.00
18:06:00
18:06:30
18:07:00
18:07:30
18:08:00
18:08:30
18:09:00
18:09:30
18:10:00
Web server responses by code family. According to the standards 1xx are informational responses, 2xx are successful responses, 3xx are redirects (although
requests, 5xx are internal server errors, other are non-standard responses, unmatched counts the lines in the log file that are not matched by the plugin (let u
Response Codes (web_log_apache.response_codes)
requests
5.00
4.00
3.00
2.00
1.00
0.00
18:06:00
18:06:30
18:07:00
18:07:30
18:08:00
18:08:30
18:09:00
18:09:30
18:10:00
Python Modules
apache
elasticsearch
haproxy
memcached
mongodb
mysql
nginx

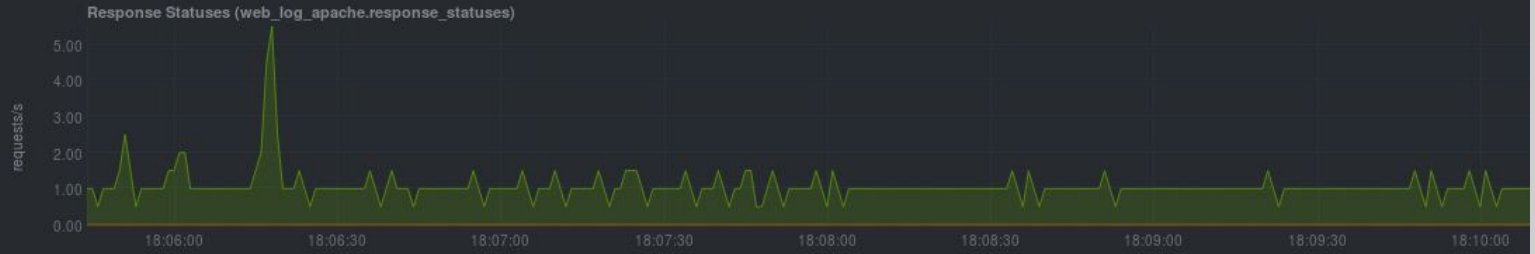
Plugins

web log apache

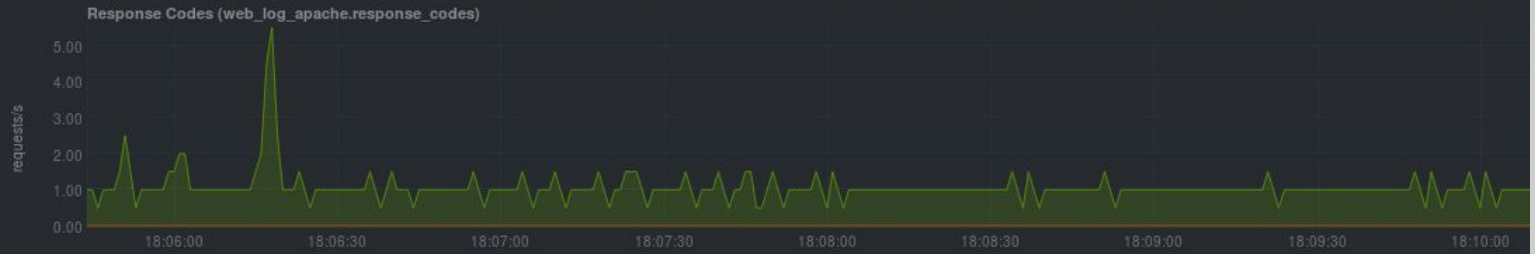
Information extracted from a server log file. `web_log` plugin incrementally parses the server log file to provide, in real-time, a break down of key server performance metric
used (for `nginx` and `apache`) offering timing information and bandwidth for both requests and responses. `web_log` plugin may also be configured to provide a break do
`/web_log.conf`).

responses

Web server responses by type. `success` includes **1xx**, **2xx** and **304**, `error` includes **5xx**, `redirect` includes **3xx** except **304**, `bad` includes **4xx**, `other` are a



Web server responses by code family. According to the standards `1xx` are informational responses, `2xx` are successful responses, `3xx` are redirects (although
requests, `5xx` are internal server errors, `other` are non-standard responses, `unmatched` counts the lines in the log file that are not matched by the plugin (let u



Python Modules

- apache
- elasticsearch
- haproxy
- memcached
- mongodb
- mysql
- nginx


Read Disk I/O
0
Write Disk I/O
0
Received eth0
0.0
Sent eth0
0.0
auginte.blog
cpu
mem
disk
net eth0
Tue, Dec 05, 2017
18:18:04
cpu0
0.00
Docker


Read Disk I/O
0
0
B/s
Write Disk I/O
0
0
KB/s
Received eth0
0.0
0.0
kilobits/s
256.1
Sent eth0
0.0
0.0
kilobits/s
38.2
auginte.blog
cpu
mem
disk
net eth0
te.blog.cpu)
Tue, Dec 05, 2017
18:18:04
%
user
0.00
system
0.00
13:30
18:14:00
18:14:30
18:15:00
18:15:30
18:16:00
18:16:30
18:17:00
18:17:30
18:18:00
oup_auginte.blog.cpu_per_core)
Tue, Dec 05, 2017
18:18:04
%
cpu0
0.00

INTRO What are metrics, types and tradeoffs

PHP Tools and tips for PHP ecosystem

DEMO How it feels to use real-time metrics

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DEMO

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Metrics mindset

Real-time metrics with netdata

Thank you

Aurelijus Banelis

Real-time metrics with netdata

Questions?

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Real-time metrics with netdata

Aurelijus Banelis

References

- https://aws.amazon.com/about-aws/whats-new/2017/07/amazon-cloudwatch-introduces-high-resolution-custom-metrics-and-alarms/
- https://gist.github.com/jboner/2841832
- https://en.wikipedia.org/wiki/Circular_buffer
- https://github.com/firehol/netdata/wiki/monitoring-ephemeral-nodes
- https://12factor.net/
- https://github.com/firehol/netdata/issues/217
- http://riemann.io/
- https://github.com/firehol/netdata/wiki/Custom-Dashboards
- https://github.com/firehol/netdata/wiki/Monitoring-ephemeral-nodes
- https://marcan.st/2017/12/debugging-an-evil-go-runtime-bug/