360° Monitoring of Your Microservices

Logs, Metrics, Pings, Traces

Philipp Krenn @xeraa

elastic

Honest Status Page
@honest_update
Follow
We replaced our monolith with micro services so that every outage could be more like a murder mystery.
RETWEETS
2,882
LIKES
2,256
4:10 PM - 7 Oct 2015

THIS IS FINE.

TH-
THIS IS NOT FINE!!
OH MY GOD EVERY THINGS ON FIRE
WHAT THE HELL IS MY PROBLEM

Sam Newman
@samnewman
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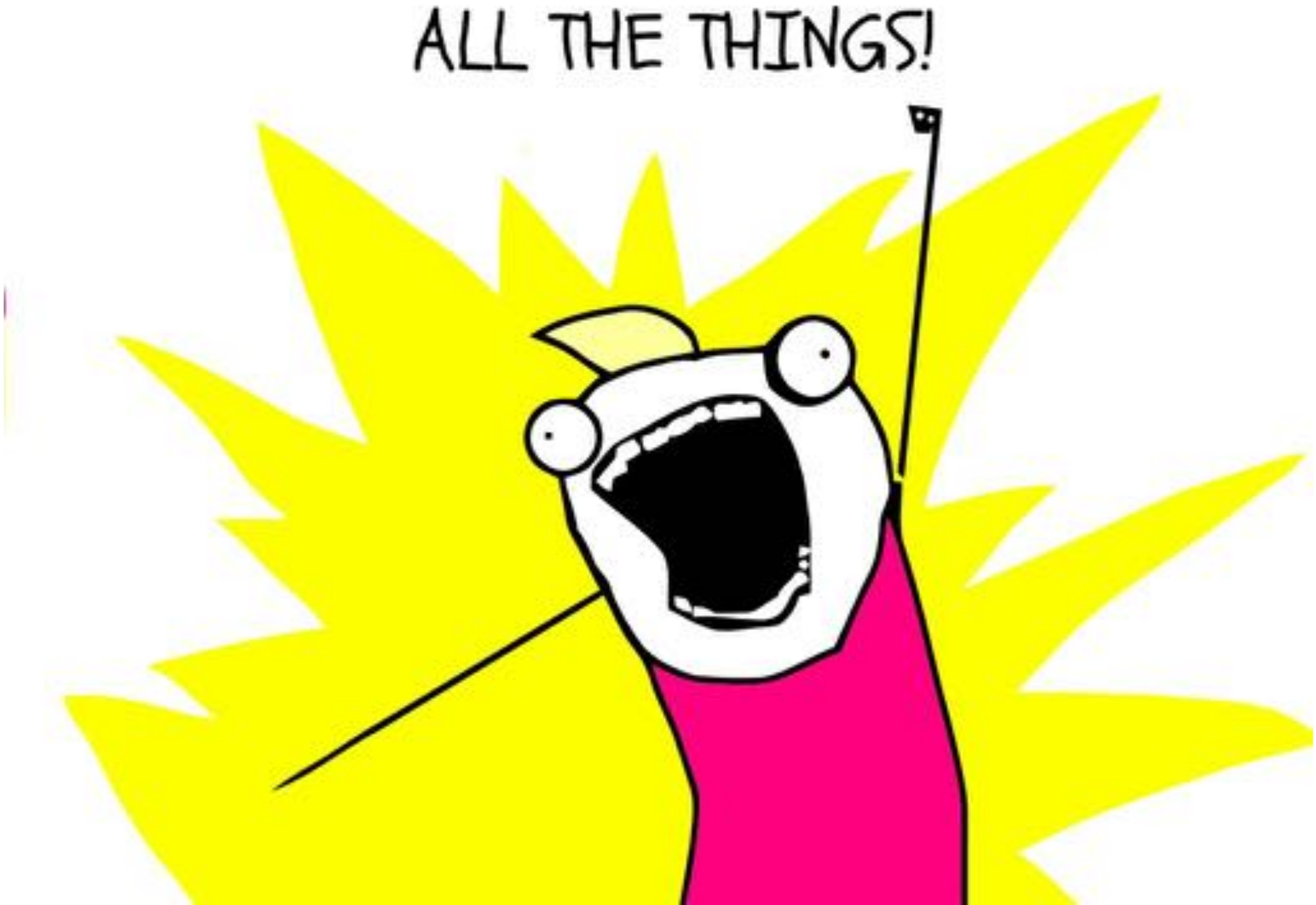
If you want to implement microservices, the 1st thing you need to do is implement aggregated logging. The 2nd is implement correlation IDs
RETWEETS
337
LIKES
462
12:39 PM - 10 May 2017


ALL THE THINGS!

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Infrastructure | Developer Advocate

Disclaimer

I build highly monitored Hello World apps

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How do you log and monitor?

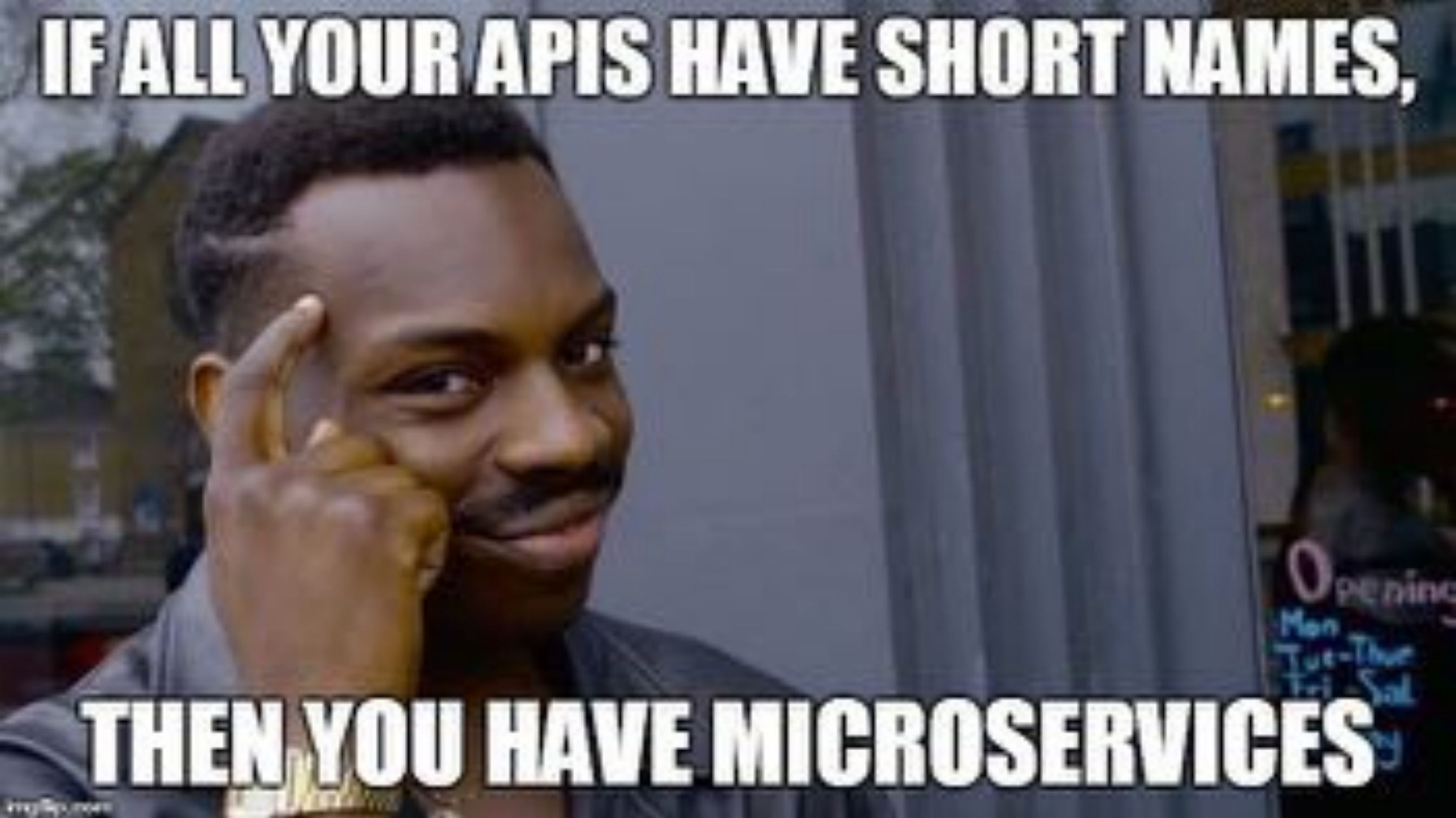
Example

https://github.com/xeraa/microservice-monitoring

Application

Simple

No discovery, load-balancing,...


IF ALL YOUR APIS HAVE SHORT NAMES,
THEN YOU HAVE MICROSERVICES

Cloud
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Amazon Lightsail

TERRAFORM

cloud

LOCAL
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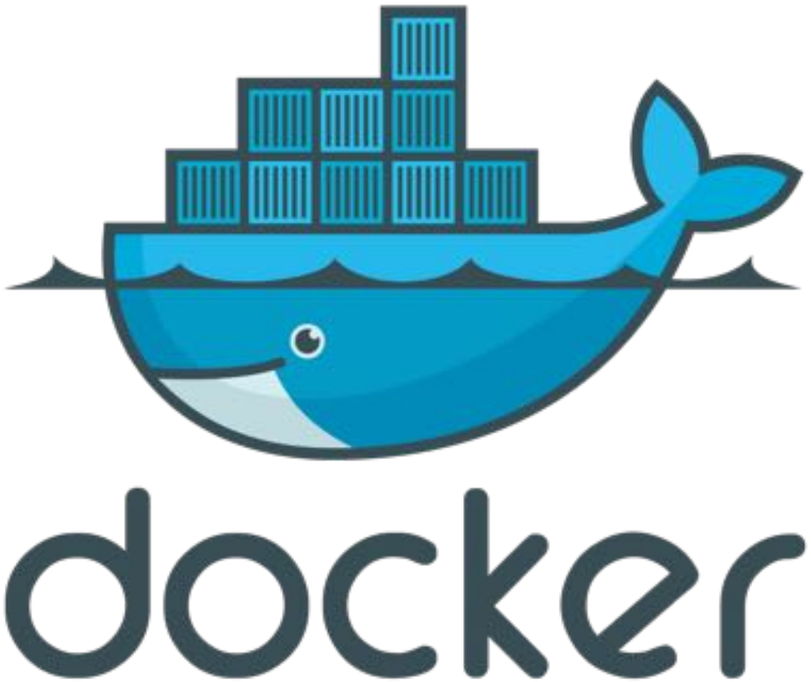

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Open Source
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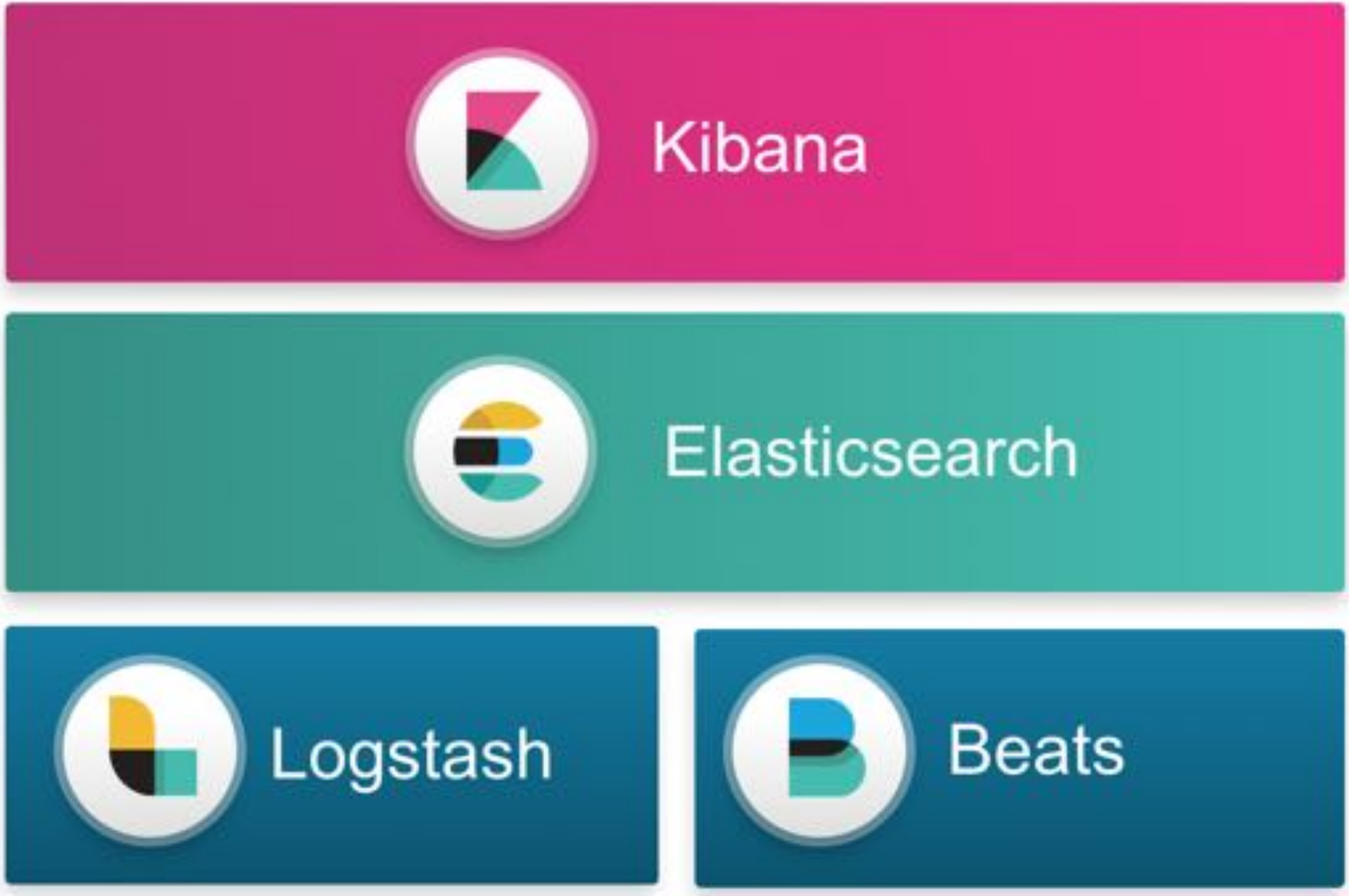
Kibana
Elasticsearch
Logstash
Beats

MONITORING
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Metricbeat: System

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Packetbeat
elastic

Metricbeat: nginx

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Filebeat Modules
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Filebeat + JSON
MDC, context, stack hash
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Heartbeat

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Metricbeat: HTTP

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ID	Description	Sensitive Default
`actuator`	Provides a hypermedia-based "discovery page" for the other endpoints. Requires Spring HATEOAS to be on the classpath.	true
`autoconfig`	Displays an auto-configuration report showing all auto-configuration candidates and the reason why they 'were' or 'were not' applied.	true
`beans`	Displays a complete list of all the Spring beans in your application.	true
`configprops`	Displays a collated list of all `@ConfigurationProperties`.	true
`dump`	Performs a thread dump.	true
`env`	Exposes properties from Spring's `ConfigurableEnvironment`.	true
`flyway`	Shows any Flyway database migrations that have been applied.	true
`health`	Shows application health information (when the application is secure, a simple 'status' when accessed over an unauthenticated connection or full message details when authenticated).	false
`info`	Displays arbitrary application info.	false
`liquibase`	Shows any Liquibase database migrations that have been applied.	true
`metrics`	Shows 'metrics' information for the current application.	true
`mappings`	Displays a collated list of all `@RequestMapping` paths.	true
`shutdown`	Allows the application to be gracefully shutdown (not enabled by default).	true
`trace`	Displays trace information (by default the last few HTTP requests).	true

Metricbeat: Jolokia

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Time Series Visual Builder & Annotations

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Auditbeat

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Sleuth

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```
2017-03-29 08:08:35.090  INFO
  [frontend,69a851ed700bf1fa,69a851ed700bf1fa,true]
  23575 --- [p-nio-80-exec-2]
  n.x.MicroserviceMonitoringApplication    :
  Calling home
2017-03-29 08:08:36.149  INFO
  [frontend,69a851ed700bf1fa,10b1f0a0e2de1253,true]
  23575 --- [p-nio-80-exec-3]
  n.x.MicroserviceMonitoringApplication    :
  You called home
```

Application: `frontend`

Trace ID: `69a851ed700bf1fa`

Span ID: `10b1f0a0e2de1253`

Send to Zipkin: `true`

Zipkin

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Zipkin Chrome Extension

https://github.com/openzipkin/zipkin-browser-extension

MORE
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Matching the following condition
beat.name (1 of 3): frontend.xeraa.wtf
Alerts*
Will perform 1 action once met
Add new action
Logging
* X-Pack and part of the Elastic Cloud

Matching the following condition

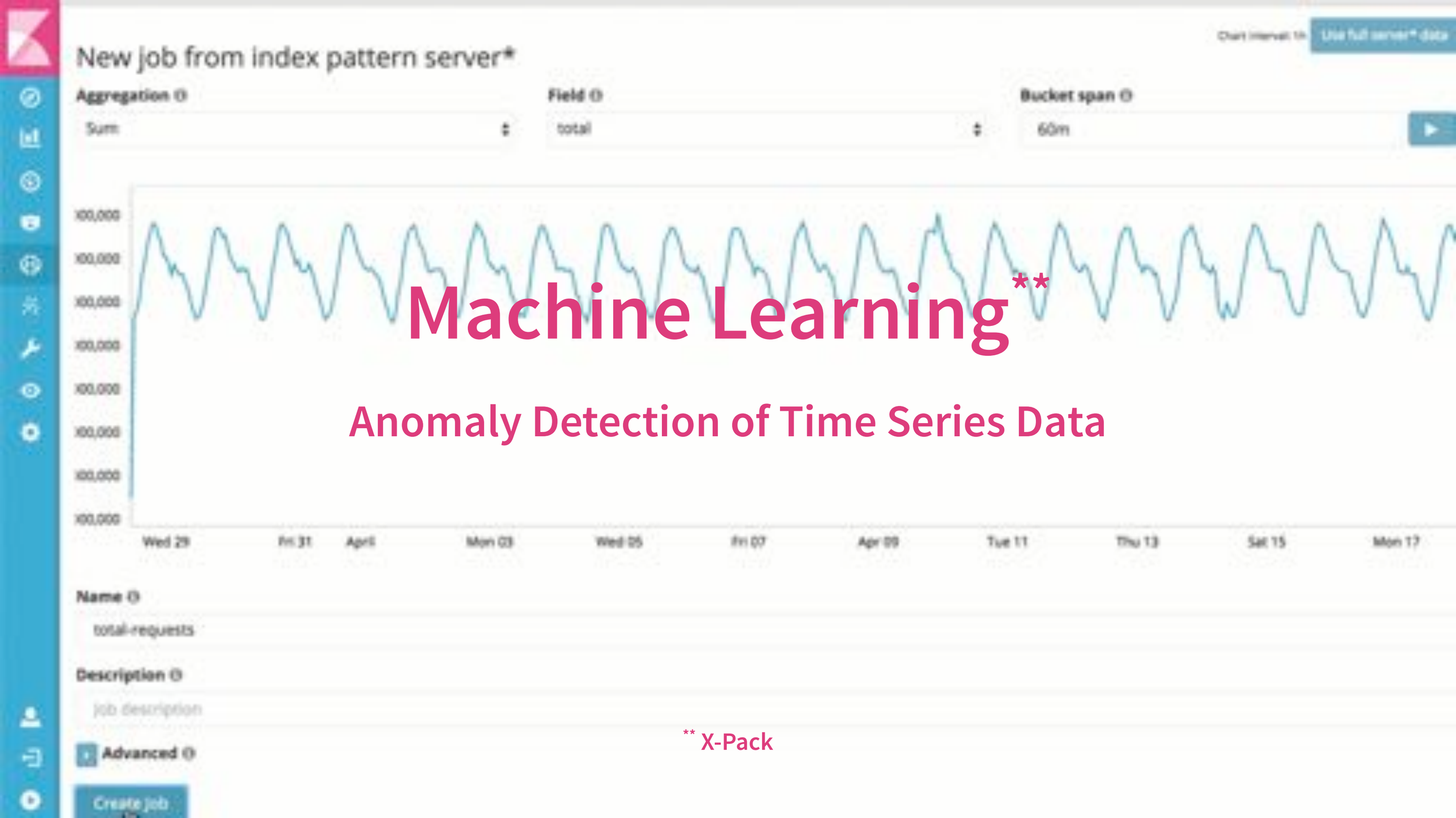
WHEN max() OF jolokia.metrics.memory.heap_usage.used GROUPED OVER top 5 'beat.name' IS ABOVE 50000000 FOR THE LAST 5 minutes

beat.name (1 of 3): frontend.xeraa.wtf

Will perform 1 action once met

Add new action

> Logging
Log message 'Heap is too large'



Machine Learning**

Anomaly Detection of Time Series Data

** X-Pack

New job from index pattern server*

Aggregation

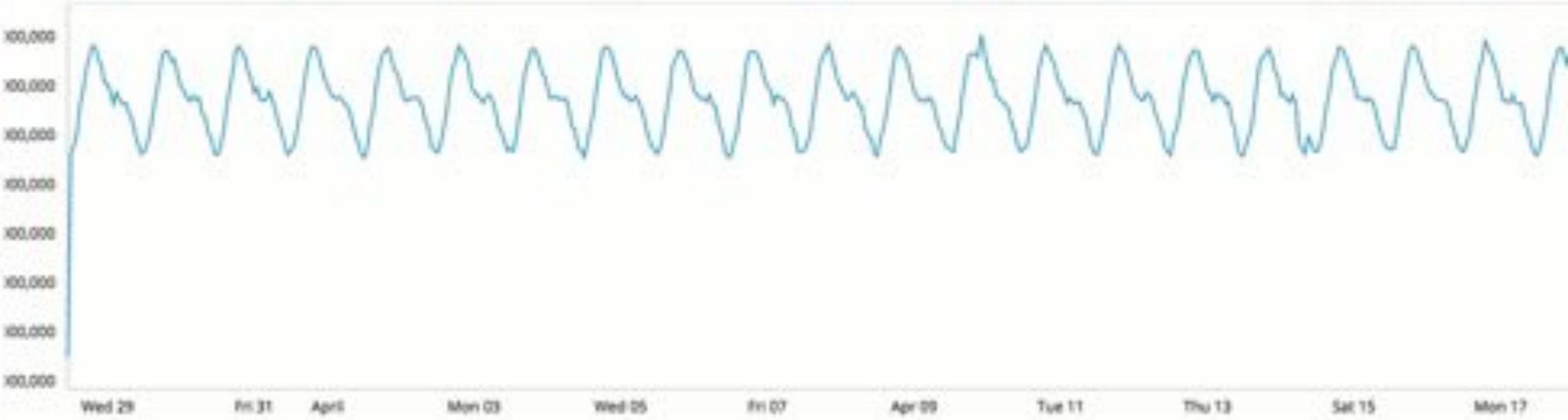
Sum

Field

total

Bucket span

60m



Name

total-requests

Description

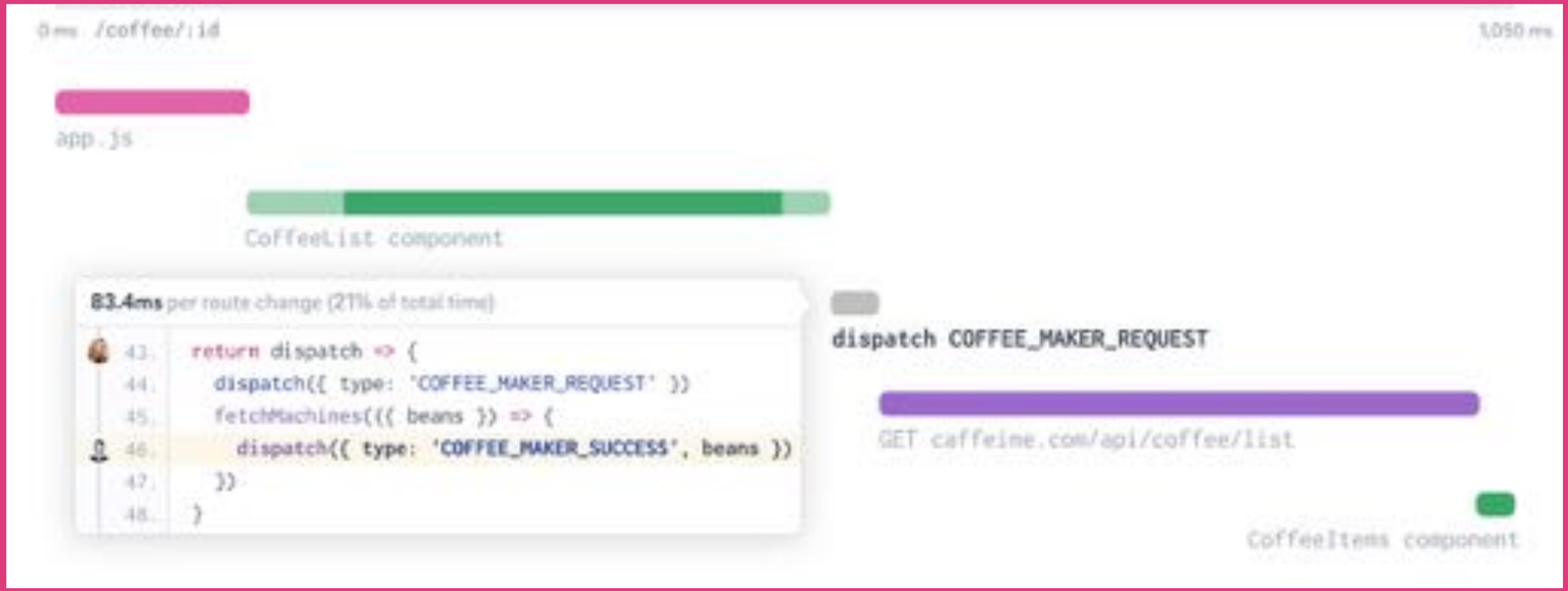
job description

Advanced

Create job

Future

Opbeat



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Conclusion

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System metrics & network

Filebeat modules & Auditbeat

Application logs

Uptime

Application metrics

Request tracing

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Next

https://kibana.xeraa.wtf

https://github.com/xeraa/microservice-monitoring

Questions?

Philipp Krenn @xeraa

PS: Stickers