Using Kieker with Elastic APM: An Experience Report

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SSP 2018 @ Hildesheim, Germany
Elastic Stack

https://www.elastic.co/*
Elastic APM

Elasticsearch for APM

• APM Agent
  • Performs instrumentation in platform language
  • Instrumenting web frameworks, database drivers, calls to caching servers, and HTTP libraries for requests to external services

• APM Server
  • Receives data from agents through a JSON HTTP API
  • Creates documents from the data and stores it into Elasticsearch

• Elasticsearch
  • Alerting
  • Trace data can be combined with infrastructure logs, server metrics, and security events

• Kibana
  • Dashboards adapted for APM
Storing Data from Kieker into Elastic APM
ElasticAPMWriter

- Builds a span tree with Kieker related data
- Buffers data until the tree has been built completely
- Generates objects for each span
- Serializes data to JSON
- Sends data to the APM Server (Intake API)

```java
public void kieker.examples.userguide.ch5bookstore.Bookstore.searchBook()

public void kieker.examples.userguide.ch5bookstore.Catalog.getBook(boolean)

public void kieker.examples.userguide.ch5bookstore.Catalog.getBook(boolean)

public void kieker.examples.userguide.ch5bookstore.CRM.getOffers()
```
...And Now with TeaStore
TeaStore in Kibana

Response times

- Avg. 134 ms
- 95th percentile
- 99th percentile

Requests per minute

- 0 rpm

Response time distribution

Transaction sample

Transaction sample

Timestamp
5 hours ago (November 8th 2018, 18:10:20.000)

Duration
135 ms

URL
N/A

Result
N/A

User ID
N/A

Transaction sample:

javax.servlet.http.HttpServlet

javax.servlet.http.HttpServlet

tools.descartes.teastore.entities.ImageSize

tools.descartes.teastore.entities.ImageSize

tools.descartes.teastore.registryclient.rest.LoadBalancedStoreOperations.isLoggedIn
diagnoseIT
Reading from Elasticsearch

OPEN.xtrace adapter
ElasticAPM Adapter for OPEN.xtrace

- Does transaction request to Elasticsearch to get new traces
- If trace exists → Does request to receive all spans of the new trace
- Builds an OPEN.xtrace trace with the following structure:
Conclusion

- Available at: https://github.com/ValeSayfa/Elastic-APM-Demo-Setup
- Next steps:
  - develop diagnoseIT view for Kibana
  - more experiments
  - use Elasticsearch for the analysis