Continuous Monitoring on Docker with ELK Stack

Project Objective :

CM on Docker with ELK stack is the process that helps developers to monitor the application in real-time using Kibana.

Used Technologies :

● Docker
● Docker Compose
● Elasticsearch
● Logstash
● Kibana
● Spring Boot application

Developer Detail :

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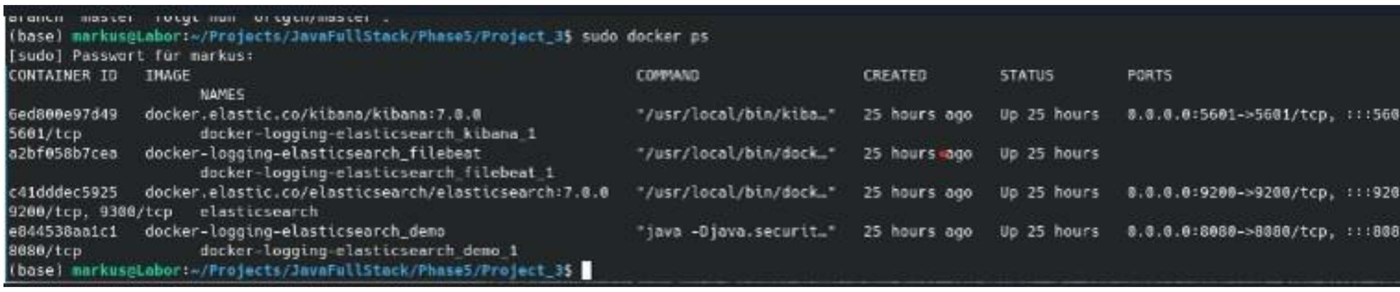
Link Of Github Repository :

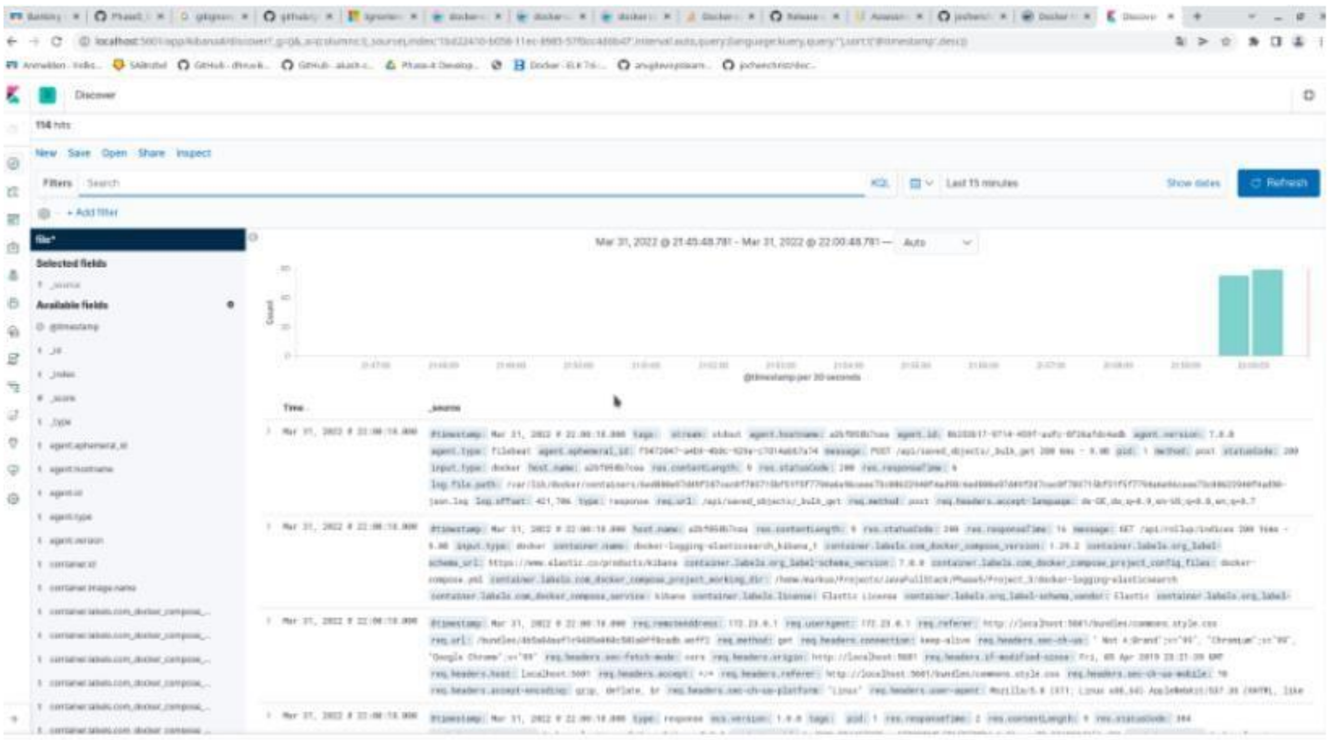
By clicking on the following link one can see the different files stored in the github repository.

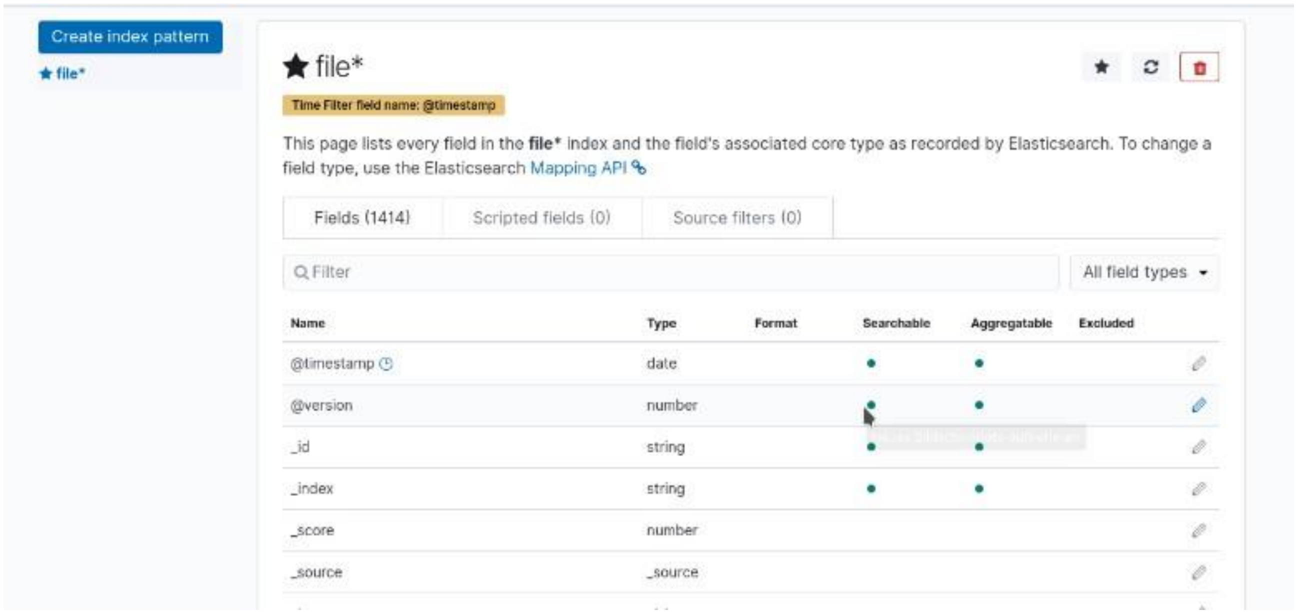
https://github.com/SuvarnaValli/Simpli-Learn.git

Output Screenshots :



```
(base) markus@Labor:~/Projects/JavaFullStack/Phase5/Project_3$ sudo docker ps
[sudo] Passwort für markus:
CONTAINER ID   IMAGE                                                  COMMAND                  CREATED          STATUS          PORTS
                   NAMES
6ed800e97d49   docker.elastic.co/kibana/kibana:7.0.0                  "/usr/local/bin/kiba…"   25 hours ago     Up 25 hours     0.0.0.0:5601->5601/tcp, :::560
5601/tcp           docker-logging-elasticsearch_kibana_1
a2bf058b7cea   docker-logging-elasticsearch_filebeat                  "/usr/local/bin/dock…"   25 hours ago     Up 25 hours
                   docker-logging-elasticsearch_filebeat_1
c41dddec5925   docker.elastic.co/elasticsearch/elasticsearch:7.0.0    "/usr/local/bin/dock…"   25 hours ago     Up 25 hours     0.0.0.0:9200->9200/tcp, :::920
9200/tcp, 9300/tcp   elasticsearch
e844538aa1c1   docker-logging-elasticsearch_demo                      "java -Djava.securit…"   25 hours ago     Up 25 hours     0.0.0.0:8080->8080/tcp, :::808
8080/tcp           docker-logging-elasticsearch_demo_1
(base) markus@Labor:~/Projects/JavaFullStack/Phase5/Project_3$
```





★ file*

Time Filter field name: @timestamp

This page lists every field in the **file*** index and the field's associated core type as recorded by Elasticsearch. To change a field type, use the Elasticsearch Mapping API

Fields (1414) Scripted fields (0) Source filters (0)

Filter All field types

Name	Type	Format	Searchable	Aggregatable	Excluded
@timestamp	date		●	●	
@version	number		●	●	
_id	string		●	●	
_index	string		●	●	
_score	number				
_source	_source				

<u>Docker Compose :</u>

```
 version: '3.2'
services:
demo:
# run `./mvnw clean package` before
build: ./demo
ports:
- 8080:8080
```

```
filebeat:
build: ./filebeat
volumes:
- /var/lib/docker/containers:/var/lib/docker/containers:ro
- /var/run/docker.sock:/var/run/docker.sock
networks:
- es
depends_on:
- elasticsearch
kibana:
image: docker.elastic.co/kibana/kibana:7.0.0
ports:
- 5601:5601
environment:
ELASTICSEARCH_URL: http://elasticsearch:9200
networks:
- es
depends_on:
- elasticsearch
elasticsearch:
image: docker.elastic.co/elasticsearch/elasticsearch:7.0.0
container_name: elasticsearch
environment:
- cluster.name=docker-cluster
- "ES_JAVA_OPTS=-Xms512m -Xmx512m"
- "network.host=0.0.0.0"
- "discovery.zen.minimum_master_nodes=1"
- "discovery.type=single-node"
ulimits:
memlock:
soft: -1
hard: -1
volumes:
- esdata:/usr/share/elasticsearch/data
ports:
- 9200:9200
networks:
- es
volumes:
esdata:
driver: local
networks:
 es:
```

FileBeat

```
FROM docker . e l a s t i c . co/beats / f i l e b e a t : 7 . 0 . 0
COPY  f i l e b e a t . yml  /usr / share / f i l e b e a t / f i l e b e a t . yml
# must run as root  to  a c c e s s  /var / l i b / docker  and  /var /run/ docker .
sock  USER root
RUN chown root  /usr / share / f i l e b e a t / f i
l e b e a t . yml # dont run  with  ─e ,  to  d i s
a b l e output  to  s t d e r r CMD [ ” ” ]
```

```
 # filebeat.yml

filebeat.inputs:
- type: docker
containers.ids: '*'
json.message_key: message
json.keys_under_root: true
json.add_error_key: true
json.overwrite_keys: true

processors:
- add_docker_metadata: ~
output.elasticsearch:
hosts: ["elasticsearch:9200"]
logging.to_files: true
     logging.to_s
     yslog: false
```

DemoApplication :

```
 package com.example.demo;
import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.boot.SpringApplication;
import
org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.RestController;
@SpringBootApplication
@RestController
public class DemoApplication {
private static final Logger logger =
LoggerFactory.getLogger(DemoApplication.class);
public static void main(String[] args) {
SpringApplication.run(DemoApplication.class, args);
}
@GetMapping("/")
public String hello() {
logger.info("Hello World");
logger.error("Ooops, there was an error", new
RuntimeException("I am a runtime exception"));
return "Hello World";
}

}
```