Integrate Springboot Application With ELK And Filebeat

kobe73er (http://www.andrew-programming.com/author/kobe73er/) -
September 18, 2018 -
DevOps Tutorial (http://www.andrew-programming.com/category/devops-2/devops/) / ELK Tutorial (http://www.andrew-programming.com/category/devops-2/elk-tutorial/) -
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Contents [hide]

Overview

This tutorial will show you how to integrate the Springboot application with ELK and Filebeat.

Springboot application will create some log messages to a log file and Filebeat will send them to Logstash and Logstash will send them to Elasticsearch and then you can check them in Kibana.

Find more tutorials on http://www.andrew-programming.com

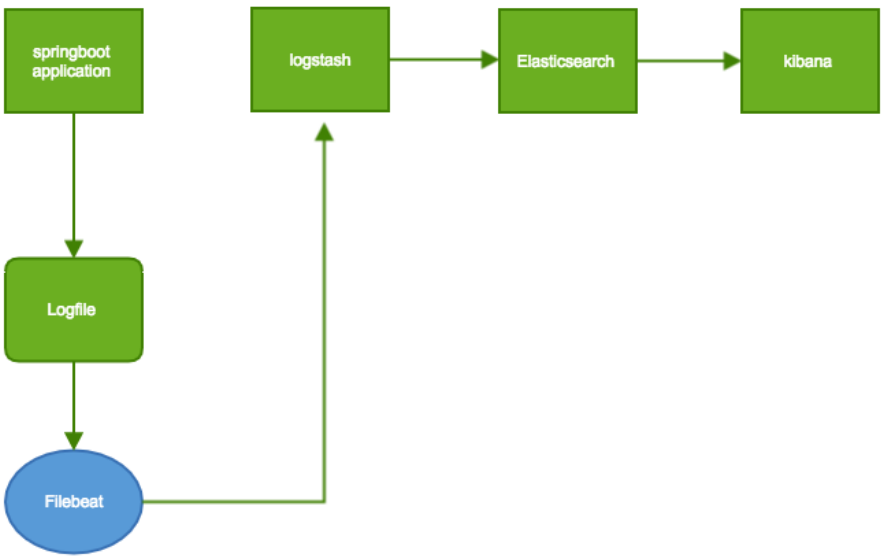
Technologies Used

- Elasticsearch version: 6.4.0
- Kibana version: 6.4.0
- Logstash version: 6.4.0
- Filebeat version: 6.4.0
- Springboot
- Maven
- JDK 1.8

Steps

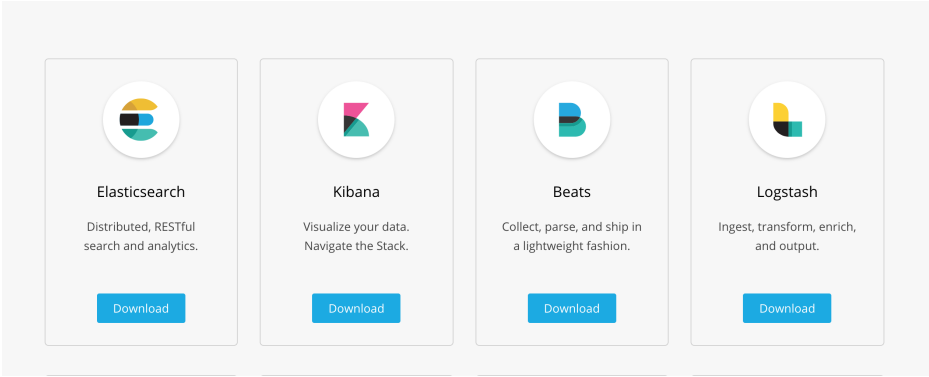
1. Setup Elasticsearch
2. Setup Kibana
3. Setup Logstash
4. Setup Filebeat
5. Create a new Springboot application
6. Integrate them together

Workflow



Config ELK

Go to the office website (https://www.elastic.co/downloads) and download the needed component one by one



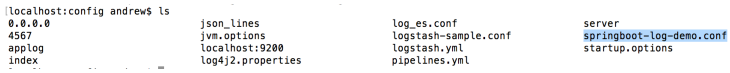
For each product dive into the Download page and follow the instruction to install them.

Install Order should be :

1. Elasticsearch
2. Kibana
3. Logstash
   A. Create a new file spring-boot-log-demo.conf under the /config/ with content below:

```
input {
  tcp {
  port => 4560
  codec => json_lines
  }
  beats {
    host => "127.0.0.1"
    port => "5044"
  }
}
output{
  elasticsearch {
  hosts => ["localhost:9200"]
  index => "app-%{+YYYY.MM.dd}"
  document_type => "%{[@metadata][type]}"
  }
  stdout { codec => rubydebug }
}
```

   B. Below is the file in my Mac:



   C. Start running Logstash with command

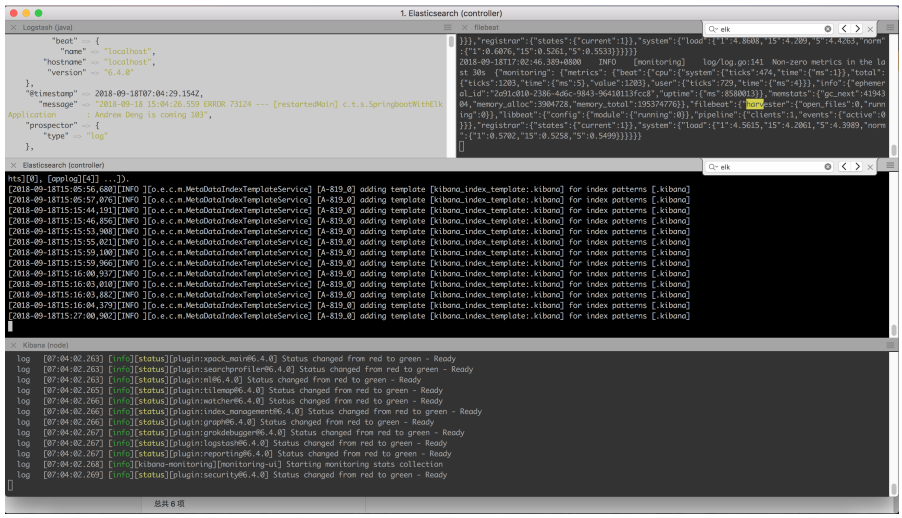
```
bin/logstash -f springboot-log-demo.conf
```

4. Filebeat
   - Modify `filebeat.yml`under *[your path to Filebeat directory]/filebeat.yml* with content below:

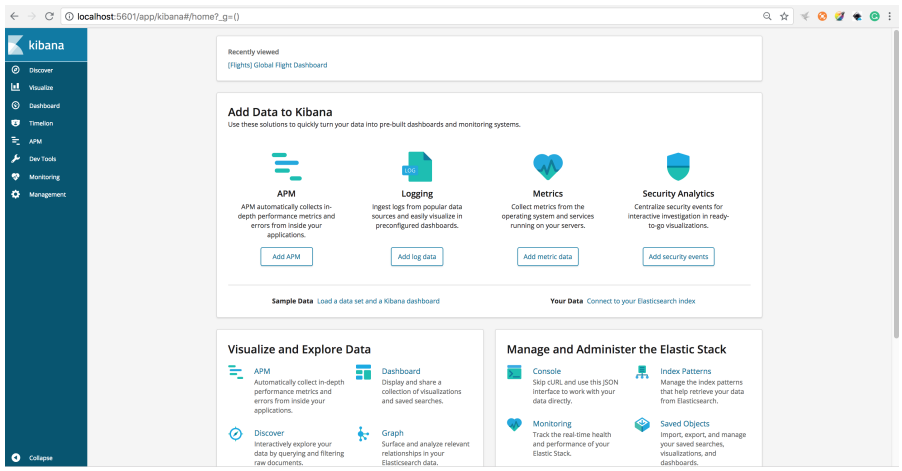
```
filebeat.inputs:

- type: log
```

```
4.
5.  enabled: true
6.
7.  paths:
8.    - /tmp/filebeatDemoApp.log
9.
10. output.logstash:
11. hosts: ["localhost:5044"]
```

Running Result

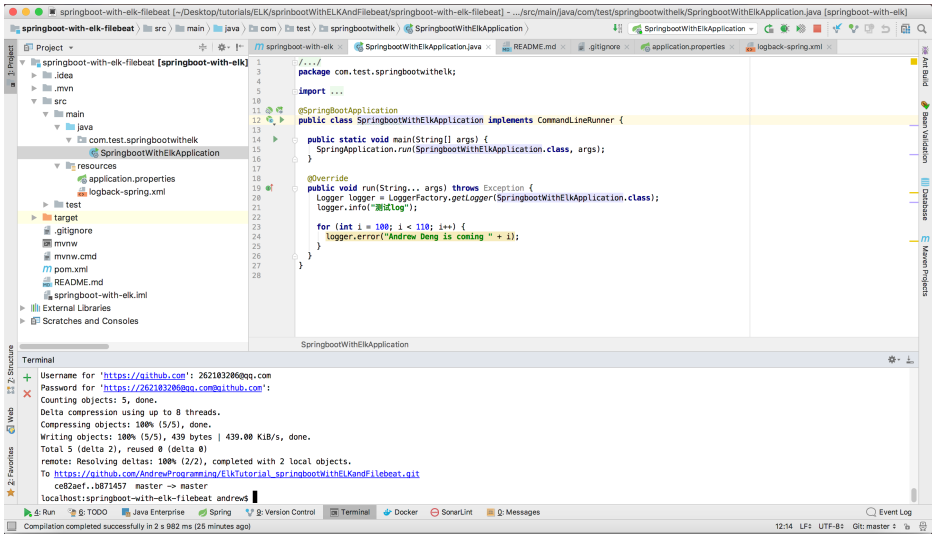


Once everything is done you can browse the Kibana by visiting http://localhost:5601 and you should see below page:



Config Springboot Program

Project Structure



Application.Properties

```
logging.file=/tmp/filebeatDemoApp.log
```

Logback-Spring.Xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE configuration>
<configuration>
  <appender name="LOGSTASH"
class="net.logstash.logback.appender.LogstashTcpSocketAppe
nder">
    <destination>localhost:4560</destination>
    <encoder charset="UTF-8"
class="net.logstash.logback.encoder.LogstashEncoder" />
  </appender>

  <include
resource="org/springframework/boot/logging/logback/base.xm
l"/>

  <root level="INFO">
    <!--<appender-ref ref="LOGSTASH" />-->
    <appender-ref ref="CONSOLE" />
  </root>

</configuration>
```

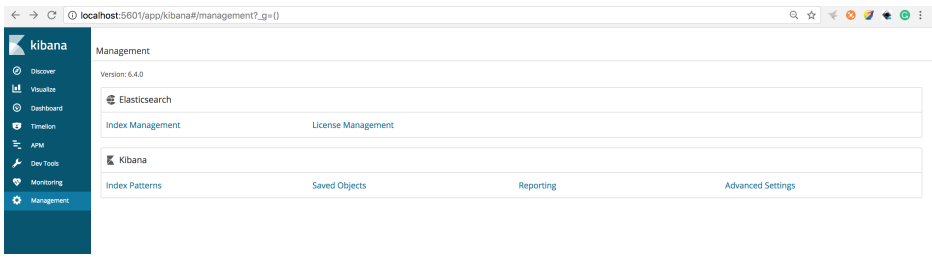
Pom.Xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
 <modelVersion>4.0.0</modelVersion>

 <groupId>com.test</groupId>
 <artifactId>springboot-with-elk</artifactId>
 <version>0.0.1-SNAPSHOT</version>
 <packaging>jar</packaging>

 <name>springboot-with-elk</name>
 <description>Demo project for Spring Boot</description>
```

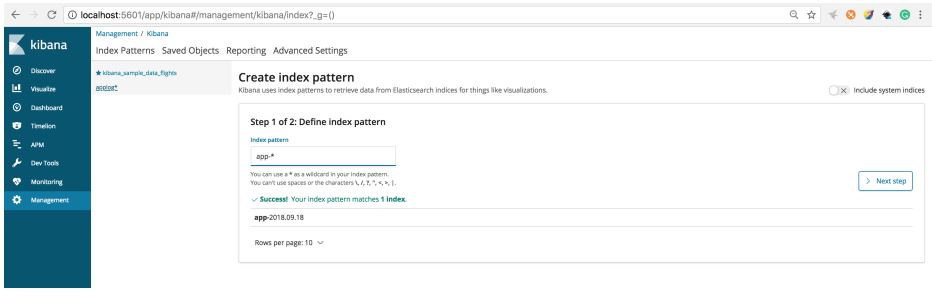
```
13.
14.  <parent>
15.   <groupId>org.springframework.boot</groupId>
16.   <artifactId>spring-boot-starter-parent</artifactId>
17.   <version>2.0.2.RELEASE</version>
18.   <relativePath/> <!-- lookup parent from repository -->
19.  </parent>
20.
21.  <properties>
22.   <project.build.sourceEncoding>UTF-
    8</project.build.sourceEncoding>
23.   <project.reporting.outputEncoding>UTF-
    8</project.reporting.outputEncoding>
24.   <java.version>1.8</java.version>
25.  </properties>
26.
27.  <dependencies>
28.   <dependency>
29.    <groupId>org.springframework.boot</groupId>
30.    <artifactId>spring-boot-starter-web</artifactId>
31.   </dependency>
32.   <dependency>
33.    <groupId>net.logstash.logback</groupId>
34.    <artifactId>logstash-logback-encoder</artifactId>
35.    <version>5.1</version>
36.   </dependency>
37.   <dependency>
38.    <groupId>org.springframework.boot</groupId>
39.    <artifactId>spring-boot-devtools</artifactId>
40.    <scope>runtime</scope>
41.   </dependency>
42.   <dependency>
43.    <groupId>org.springframework.boot</groupId>
44.    <artifactId>spring-boot-starter-test</artifactId>
45.    <scope>test</scope>
46.   </dependency>
47.  </dependencies>
48.
49.  <build>
50.   <plugins>
51.    <plugin>
52.     <groupId>org.springframework.boot</groupId>
53.     <artifactId>spring-boot-maven-plugin</artifactId>
54.    </plugin>
55.   </plugins>
56.  </build>
57.
58. </project>
```

Config Kibana

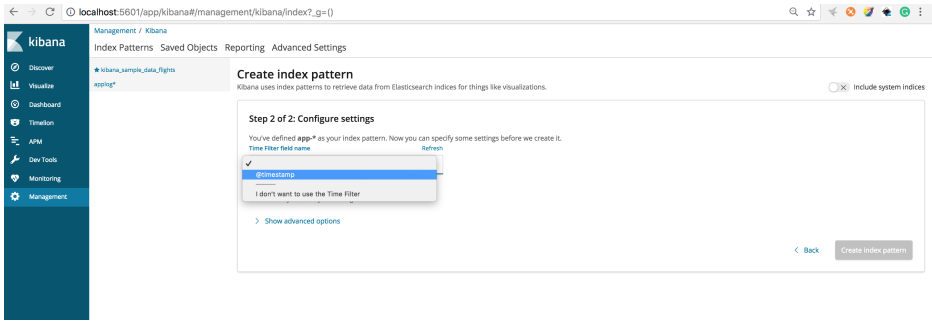
Open Kibana at http://localhost:5601 and create a new index for the application and choose Management->index Patterns->Create Index Pattern



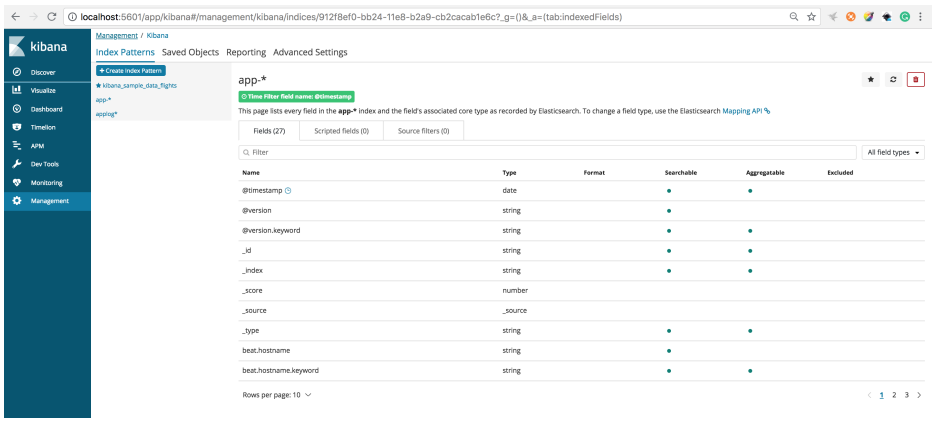
Type `app-*` in the textbook and then click Next step



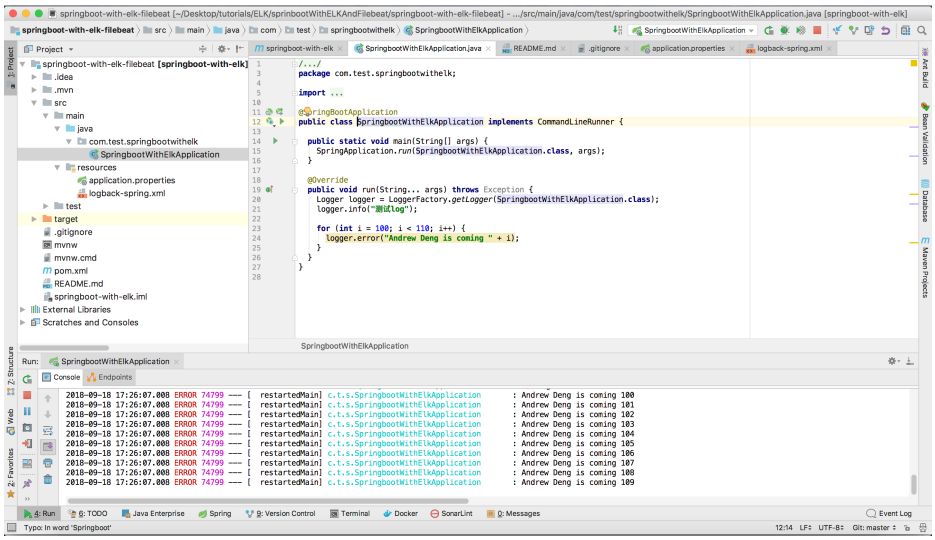
Choose Next step



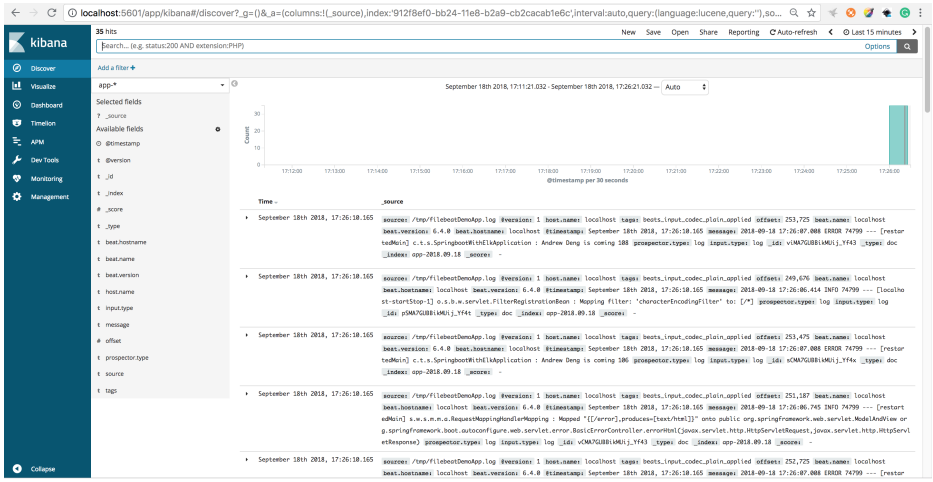
Choose `@timestamp` and click Create index pattern you should see this below



Running the application to generate some log messages



Check the result in Kibana



Source Code

Github (https://github.com/AndrewProgramming/ElkTutorial_springbootWithELKandFilebeat)

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September 13, 2018

Setup ELK By Using Docker And Send Log Messages To It (Http://Www.Andrew-Programming.Com/2019/04/16/Setup-Elk-By-Using-Docker-And-Send-Log-Messages-To-It/)

April 16, 2019

Log Management Comparison: ELK Vs Graylog (Http://Www.Andrew-Programming.Com/2018/09/11/Log-Management-Comparison-Elk-Vs-Graylog/)

September 11, 2018

This Post Has 15 Comments

Binh Thanh Nguyen

23 JAN 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=133#RESPOND)

Thanks, nice tip

Kobe73er

23 JAN 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=134#RESPOND)

Glad this helps you!

Michael

14 MAR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=148#RESPOND)

I'm having trouble creating an index pattern keep getting – Couldn't find any Elasticsearch data
You'll need to index some data into Elasticsearch before you can create an index pattern.
Any ideas?

Michael

15 MAR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=149#RESPOND)

Hi, I am having issues getting this working, I cannot create an index pattern in kibana because it couldnt find any data, any ideas?

Kobe73er

17 MAR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=150#RESPOND)

Make sure you use the right index pattern to filter your data

Bez

24 APR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=153#RESPOND)

The above example does not use filebeat. The applications logs are directly sent to logstash.

Kobe73er

28 APR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=154#RESPOND)

No.It use filebeat to send log messages to logstash

Bez

24 APR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=151#RESPOND)

The example above does not use filebeats, the application logs seem to be sent directly to logstash over tcp.
localhost:4560
The logback-spring.xml states the logs to be sent to logstash and not using filebeats.

Kobe73er

28 APR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=156#RESPOND)

No.It use filebeat to send log messages to logstash

Bez

24 APR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=152#RESPOND)

The example above does not use filebeats, the application logs seem to be sent directly to logstash over tcp.
The logback-spring.xml states the logs to be sent to logstash and not using filebeats.

Kobe73er

28 APR 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=155#RESPOND)

No.It use filebeat to send log messages to logstash

Satya

14 MAY 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=158#RESPOND)

The above comment is right not using filebeats. In logstash config file
input {
tcp {
port => 4560
codec => json_lines
}

beats {
host => “127.0.0.1”
port => “5044”
}
}
and within the Java application in
logback.xml
localhost:4560
It clearly states that the logs are pushed to the poirt on which the logstash is listening. To confirm, I shutdown filebeats container but can still see the logs on kibana getting refreshed. The logback.xml needs to have a file or console appender and the file beat needs to read from that log folder.

Bez

15 MAY 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=159#RESPOND)

Can you explain what is the filebeats doing here. After the docker-compose up, I shut down the filebeats container, but can still see the logs getting refreshed through Kibana, without filebeats.

Nathan

29 MAY 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=160#RESPOND)

The example does not use filebeats collect application logs send to logstash.

What

29 DEC 2019 REPLY (/2018/09/18/INTEGRATE-SPRINGBOOT-APPLICATION-WITH-ELK-AND-FILEBEAT/?REPLYTOCOM=167#RESPOND)

Are you still not agree “Kobe73er”, that you doesn’t use filebeat here?

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