

Install Elasticsearch

- ## Download Elasticsearch

Choose platform:

2. Extract the tar, navigate to `${location}/elasticsearch-8.12.2/bin`
3. Run `./elasticsearch`

```
srikanthjossyula@Srikanths-Air bin % ./elasticsearch
warning: ignoring JAVA_HOME=Users/srikanthjossyula/Documents/software/jdk-11.0.16; using bundled JDK
CompileCommand: exclude org/apache/lucene/util/MSBRadixSorter.computeCommonPrefixLengthAndBuildHistogram bool exclude = true
CompileCommand: exclude org/apache/lucene/util/RadixSelector.computeCommonPrefixLengthAndBuildHistogram bool exclude = true
Mar 03, 2024 10:39:24 AM sun.util.locale.provider.LocaleProviderAdapter <clinit>
WARNING: COMPAT locale provider will be removed in a future release
[2024-03-03T10:39:26.084][INFO ][o.a.l.i.v.PanamaVectorizationProvider] [Srikanths-Air.hitronhub.home] Java vector incubator API enabled
[2024-03-03T10:39:26.486][INFO ][o.e.n.Node] [Srikanths-Air.hitronhub.home] version[8.12.2], pid[29211], build[tdr/48a287a
S/Mac OS X/13.2.1/aarch64], JVM[Oracle Corporation/OpenJDK 64-Bit Server VM/21.0.2/21.0.2+13-58]
[2024-03-03T10:39:26.487][INFO ][o.e.n.Node] [Srikanths-Air.hitronhub.home] JVM home [/Users/srikanthjossyula/Documents/sc
DK [true]
[2024-03-03T10:39:26.487][INFO ][o.e.n.Node] [Srikanths-Air.hitronhub.home] JVM arguments [-Des.networkaddress.cache.ttl=
er=allow, -XX:+AlwaysPreTouch, -Xssml, -Djava.awt.headless=true, -Dfile.encoding=UTF-8, -Djna.nosys=true, -XX:-OmitStackTraceInFastThrow
io.netty.recycler.maxCapacityPerThread=0, -Dlog4j.shutdownHookEnabled=false, -Dlog4j2.disable.jmx=true, -Dlog4j2.formatMsgNoLookups=true
org.elasticsearch.preallocate, -XX:+UseG1GC, -Djava.io.tmpdir=/var/folders/gv/f9f9vtn7zbb6r15b_x09_c000gn/T/elasticsearch-16263242925
clude, org.apache.lucene.util.MSBRadixSorter::computeCommonPrefixLengthAndBuildHistogram, -XX:CompileCommand=exclude,org.apache.lucene.ut
eapDumpOnOutOfMemoryError, -XX:+ExitOnOutOfMemoryError, -XX:HeapDumpPath=data, -XX:ErrorFile=logs/hs_err_pid%p.log, -Xlog:gc*,gc-arena
size=64m, -Xms8192m, -Xmx8192m, -XX:MaxDirectMemorySize=4294967296, -XX:InitiatingHeapOccupancyPercent=30, -XX:G1ReservePercent=25, -D
```

```

✓ Elasticsearch security features have been automatically configured!
✓ Authentication is enabled and cluster connections are encrypted.

# Password for the elastic user (reset with 'bin/elasticsearch-reset-password -u elastic'):
grfMor_sZC_dFOQmY6M

# HTTP CA certificate SHA-256 fingerprint:
8a47ff496ffa281fe3168ce615e140973534938415b4b5d38b408d35e4f5fab

# Configure Kibana to use this cluster:

• Run Kibana and click the configuration link in the terminal when Kibana starts.
• Copy the following enrollment token and paste it into Kibana in your browser (valid for the next 30 minutes):
eyJ2ZXN1OjI0LjEwLjE1IiwiaXNjaHkiOiIsImVkljIjE2ODAwMTJlbnRvOTcudnB0Tm90Tm9DND1yIjRlNWQzOGI5MDhkMzVLNGVhYyIsImtleSI6IkVxM3JCSTRNZNiUuQWk3M0JhOHUwmxKMEQ2am
RAUTVPVlxaDNWmkpkanCIFq==

# Configure other nodes to join this cluster:

• On this node:
  - Create an enrollment token with 'bin/elasticsearch-create-enrollment-token -s node'.
  - Uncomment the transport.host setting at the end of config/elasticsearch.yml.
  - Restart Elasticsearch.
• On other nodes:
  - Start Elasticsearch with 'bin/elasticsearch --enrollment-token <token>', using the enrollment token that you generated.
```

- http client did not trust this server's certificate

which means that you need to tell your browser to trust the server certificate. it is self-signed by default, so that's probably the reason. Or you can simply disable SSL in your elasticsearch.yml configuration, that would also work

6. Once loaded you should see as below when localhost:9200 is called

```
{
  "name" : "Srikanths-Air.hitronhub.home",
  "cluster_name" : "elasticsearch",
  "cluster_uuid" : "rdJ4Xs3xQV-T8QgbkPS-0A",
  "version" : {
    "number" : "8.12.2",
    "build_flavor" : "default",
    "build_type" : "tar",
    "build_hash" : "48a287ab9497e852de30327444b0809e55d46466",
    "build_date" : "2024-02-19T10:04:32.774273190Z",
    "build_snapshot" : false,
    "lucene_version" : "9.9.2",
    "minimum_wire_compatibility_version" : "7.17.0",
    "minimum_index_compatibility_version" : "7.0.0"
  },
  "tagline" : "You Know, for Search"
}
```

Install Logstash

1. Download the file from <https://www.elastic.co/downloads/logstash>

Download Logstash

- 1 Download and unzip Logstash

Choose platform:

macOS aarch64



macOS aarch64



sha



asc

2. In the same page we can see that its mentioned to logstash.conf

- 2 Configure Logstash

Prepare a logstash.conf [config file](#).

- 3 Run Logstash

Run `bin/logstash -f logstash.conf`

3. We need to create `logstash.conf`, where we can mention about the location where our file is present for the Elasticsearch to know where to pick from

```
srikanthjosyula@Srikanths-Air bin % cat logstash.conf
input {
  file {
    path => "/Users/srikanthjosyula/Documents/GitHub-Projects/springboot-elk-stack-example/logs/springboot-elk.log"
    start_position => "beginning"
  }
}

output{
  stdout {
    codec => json
  }
  elasticsearch {
    hosts => ["localhost:9200"]
    index => "springboot-elk"
  }
}
```

4. In input we give from where the file needs to be picked from and output is where our elasticsearch is hosted

```
srikanthjosyula@Srikanths-Air bin % ls
benchmark.bat      dependencies-report  logstash            logstash-plugin    logstash.conf      pqcheck.bat        ruby
benchmark.sh       ingest-convert.bat  logstash-keystore  logstash-plugin.bat logstash.lib.sh    pqlrepair          setup.bat
cpdump             ingest-convert.sh   logstash-keystore.bat logstash.bat        pqcheck            pqlrepair.bat      system-install
srikanthjosyula@Srikanths-Air bin %
```

5. We need to run the logstash now. To start it we need to run the command

```
./logstash -f /Users/srikanthjosyula/Documents/software/logstash-8.12.2/bin/logstash.conf
```

```
[2024-03-03T14:38:55,551][INFO] [logstash.runner] Jackson default value override logstash.jackson.stream.read.constraints.max_num_lines=1000000000
[2024-03-03T14:38:55,581][WARN] [logstash.config.source.multilocal] Ignoring the 'pipelines.yml' file because modules or command line option
[2024-03-03T14:38:55,589][INFO] [logstash.agent] Successfully started Logstash API endpoint {:port=>9600, :ssl_enabled=>false}
[2024-03-03T14:38:56,027][INFO] [org.reflections.Reflections] Reflections took 66 ms to scan 1 url, producing 132 keys and 468 values
/Users/srikanthosyula/Documents/softwares/logstash-8.12.2/vendor/bundle/jruby/3.1.0/gems/amazing_print-1.5.0/lib/amazing_print/formatter.rb
[2024-03-03T14:38:56,236][INFO] [logstash.javapipeline] Pipeline 'main' is configured with 'pipeline.ecs_compatibility: v8' setting. All
v8 unless explicitly configured otherwise.
```

6. Logstash is started on port 9600 <http://localhost:9600/>

```

{"host": "Srikanths-Air.hitronhub.home", "version": "8.12.2", "http_address": "127.0.0.1:9600", "id": "bf5a883f-ae92-466b-a47d-16157849f495", "name": "Srikanths-Air.hitronhub.home", "ephemeral_id": "161852fc-b355-4e08-8a12-33c7cddeb15e", "status": "green", "snapshot": "false", "pipeline": "workers", "batch_size": 125, "batch_delay": 50, "build_date": "2024-02-16T15:59:20+00:00", "build_sha": "e9d7d3326de956568b47be75497c7bb165634", "build_snapshot": false}

```

[illegible]

7. Logs will be see on console with logstash

Install Kibana

1. Download the file from <https://www.elastic.co/downloads/kibana>

Download Kibana

- 1 Download and unzip Kibana

Choose platform:

macOS aarch64 |

macOS aarch64

sha asc

2. Extract the tar file,

```
srikanthjoshi@Srikanth-Air ~ % cd ~/Documents/softwares/kibana-8.12.2
srikanthjoshi@Srikanth-Air kibana-8.12.2 % ls
LICENSE.txt  README.txt  config      logs          node_modules  packages      src
NOTICE.txt   bin         data        node          package.json  plugins       x-pack
srikanthjoshi@Srikanth-Air kibana-8.12.2 %
```

3. Before we start Kibana, we need to make sure its connecting to elasticsearch, so navigate to `$(Home_Location)/kibana-8.12.2/config`

```
srikanthjoshi@Srikanth-Air config % ls
kibana.yml  node.options
srikanthjoshi@Srikanth-Air config %
```

4. Open the .yml file, and enable the elasticsearch host. As we need to let Kibana to talk to elastic search to capture logs/data


```
## ENABLED by SRIKANTH
elasticsearch.hosts: ["http://localhost:9200"]
```

5. Now, navigate to bin folder of Kibana `$(HOME_LOC)/kibana-8.12.2/bin`
6. Start the kibana.sh


```
srikanthjoshi@Srikanth-Air bin % ./kibana
Kibana is currently running with legacy OpenSSL providers enabled! For details and instructions on how to disable see https://www.elastic.co/guide/en/kibana/8.12/production.html#openssl-legacy-provider
{"log.level":"info","@timestamp":"2024-03-03T14:49:33.968Z","log.logger":"elastic-apm-node","ecs.version":"8.10.0","agent.version":"4.2.0","env":{"pid":3832,"proctitle":"./bin/node"},"os":{"darwin 22.3.0","arch":"arm64","host":"Srikanth-Air.hitronhub.home","timezone":"UTC-0400","runtime":"Node.js v18.18.2"},"config":{"active":{"source":"start","value":true},"breakdownMetrics":{"source":"start","value":false},"captureBody":{"source":"start","value":false},"captureHeaders":{"source":"start","value":false},"contextPropagation":{"source":"start","value":true},"environment":{"source":"start","value":"production"},"globalLabels":{"source":"start","value":{"git_rev":"f5bd489c5ff9c676c4f861c42da6a99ae350832"},"sourceValue":{"git_rev":"f5bd489c5ff9c676c4f861c42da6a99ae350832"},"log_level":{"source":"default","value":"info","commonName":"log_level"},"metricsInterval":{"source":"start","value":120,"sourceValue":"120s"},"serverUrl":{"source":"start","value":"https://kibana-cloud-apm.apm.us-east-1.aws.found.io/","commonName":"server_url"},"transactionSampleRate":{"source":"start","value":0.1,"commonName":"transaction_sample_rate"},"captureStackTrace":{"source":"start","sourceValue":false},"secretToken":{"source":"start","value":"[REDACTED]","commonName":"secret_token"},"serviceName":{"source":"start","value":"kibana","commonName":"service_name"},"serviceVersion":{"source":"start","value":"8.12.2","commonName":"service_version"},"activationMethod":"require","message":"Elastic APM Node.js Agent v4.2.0"},"@version":true}
[2024-03-03T10:49:35.252-04:00][INFO][root] Kibana is starting
[2024-03-03T10:49:35.275-04:00][INFO][node] Kibana process configured with roles: [background_tasks, ui]
[2024-03-03T10:49:41.062-04:00][INFO][plugins-service] Plugin "cloudChat" is disabled.
[2024-03-03T10:49:41.063-04:00][INFO][plugins-service] Plugin "cloudExperiments" is disabled.
[2024-03-03T10:49:41.064-04:00][INFO][plugins-service] Plugin "cloudFullStory" is disabled.
[2024-03-03T10:49:41.431-04:00][INFO][plugins-service] Plugin "profilingDataAccess" is disabled.
[2024-03-03T10:49:41.431-04:00][INFO][plugins-service] Plugin "profiling" is disabled.
```

7. We can see the Kibana started on port 5601


```
[2024-03-03T11:02:49.205-04:00][INFO] ][plugins.fleet] Task Fleet-Usage-Sender-1.1.4 scheduled with interval 1h
[2024-03-03T11:02:49.206-04:00][INFO] ][plugins.fleet.fleet:check-deleted-files-task:1.0.1] Started with interval of [1d] and timeout
[2024-03-03T11:02:49.206-04:00][INFO] ][plugins.fleet] Task Fleet-Metrics-Task:1.0.0 scheduled with interval 1h
[2024-03-03T11:02:49.212-04:00][INFO] ][plugins.monitoring.monitoring] config sourced from: production cluster
[2024-03-03T11:02:49.242-04:00][INFO] ][plugins.observability] Installing SLO shared resources
[2024-03-03T11:02:49.243-04:00][INFO] ][plugins.observability] Installing SLO component template [.slo-observability.sli-mappings]
[2024-03-03T11:02:49.243-04:00][INFO] ][plugins.observability] Installing SLO component template [.slo-observability.sli-settings]
[2024-03-03T11:02:49.244-04:00][INFO] ][plugins.observability] Installing SLO component template [.slo-observability.summary-mappings]
[2024-03-03T11:02:49.244-04:00][INFO] ][plugins.observability] Installing SLO component template [.slo-observability.summary-settings]
[2024-03-03T11:02:49.248-04:00][INFO] ][plugins.alerting] Installing ILM policy .alerts-ilm-policy
[2024-03-03T11:02:49.249-04:00][INFO] ][plugins.alerting] Installing component template .alerts-framework-mappings
[2024-03-03T11:02:49.250-04:00][INFO] ][plugins.alerting] Installing component template .alerts-legacy-alert-mappings
[2024-03-03T11:02:49.264-04:00][INFO] ][plugins.alerting] Installing component template .alerts-ecs-mappings
[2024-03-03T11:02:49.268-04:00][INFO] ][plugins.ruleRegistry] Installing component template .alerts-technical-mappings
[2024-03-03T11:02:50.110-04:00][INFO] ][http.server.Kibana] http server running at http://localhost:5601
[2024-03-03T11:02:50.160-04:00][INFO] ][plugins.fleet] Task Fleet-Usage-Logger-Task scheduled with interval 15m
[2024-03-03T11:02:50.177-04:00][INFO] ][plugins.telemetry] Telemetry collection is enabled. For more information on telemetry settings
gs-kbn.html.
[2024-03-03T11:02:50.196-04:00][INFO] ][plugins.monitoring.monitoring.kibana-monitoring] Starting monitoring stats collection
[2024-03-03T11:02:50.203-04:00][ERROR][plugins.observabilityAIAssistant] Failed to resolve ELSE model definition: Error: Platinum, E
```

 elastic

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View Logs Kibana

Step1 : Check the Indexes for the logs in Elasticsearch

1. Open http://localhost:9200/_cat, we will get all the categories

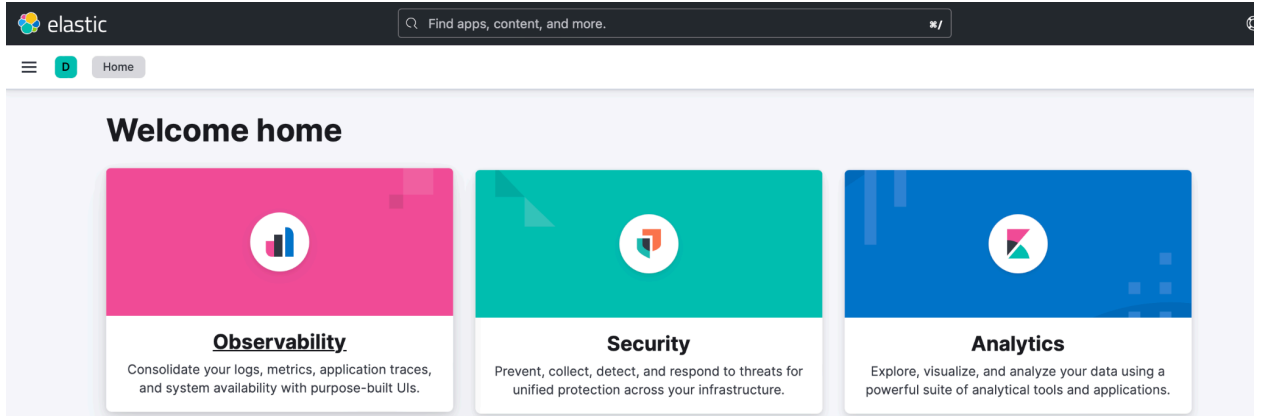
```
=^.^=  
/_cat/allocation  
/_cat/shards  
/_cat/shards/{index}  
/_cat/master  
/_cat/nodes  
/_cat/tasks  
/_cat/indices  
/_cat/indices/{index}  
/_cat/segments  
/_cat/segments/{index}  
/_cat/count  
/_cat/count/{index}  
/_cat/recovery  
/_cat/recovery/{index}  
/_cat/health  
/_cat/pending_tasks  
/_cat/aliases  
/_cat/aliases/{alias}  
/_cat/thread_pool  
/_cat/thread_pool/{thread_pools}  
/_cat/plugins  
/_cat/fielddata  
/_cat/fielddata/{fields}  
/_cat/nodeattrs  
/_cat/repositories  
/_cat/snapshots/{repository}  
/_cat/templates  
/_cat/component_templates/_cat/ml/anomaly_detectors  
/_cat/ml/anomaly_detectors/{job_id}  
/_cat/ml/datafeeds  
/_cat/ml/datafeeds/{datafeed_id}  
/_cat/ml/trained_models  
/_cat/ml/trained_models/{model_id}  
/_cat/ml/data_frame/analytics  
/_cat/ml/data_frame/analytics/{id}  
/_cat/transforms  
/_cat/transforms/{transform_id}
```

2. Navigate to Indexes http://localhost:9200/_cat/indices
3. We can see our indexes . These are the indexes internally created by ELK, we can view this content in kibana

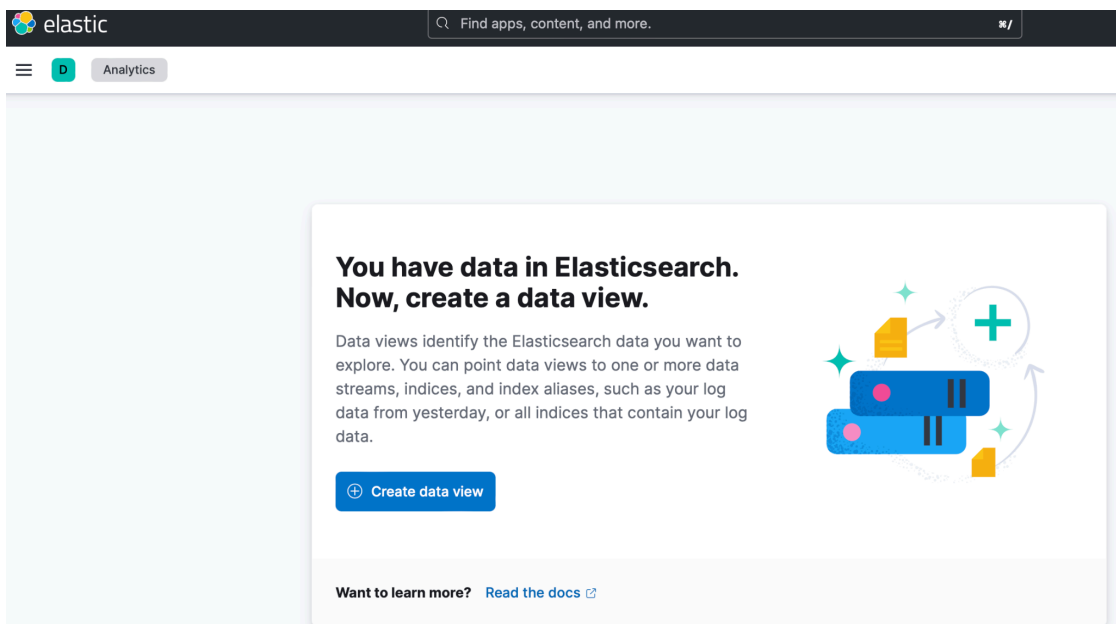
```
yellow open springboot-elk oIX7r4oqT3CBZ0HjZlXcaQ 1 1 35 0 109.6kb 109.6kb 109.6kb  
yellow open .ds-logs-generic-default-2024.03.03-000001 cnJd5v7oQt-p_A7sC3DlcQ 1 1 35 0 132.4kb 132.4kb 132.4kb
```

Step2 : Check Logs on Kibana

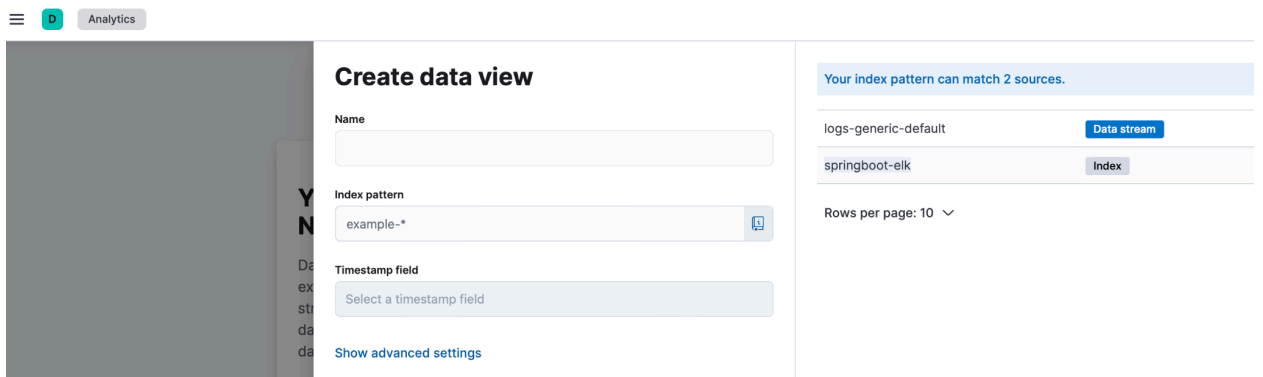
1. Open Kibana which is running on <http://localhost:5601/app/home#/>
2. Navigate to Analytics



3. Click on create data view



4. We can see our index patterns there



5. Provide your index pattern and save the view

Create data view

Name

Index pattern

Timestamp field

Select a timestamp field for use with the global time filter.

[Show advanced settings](#)

✓ Your index pattern matches 1 source.

All sources **Matched**

springboot-elk **Index**

Rows per page: 10

- Once we click on discover, we can see the hits and logs, where we can see our logs and other details in json format

The screenshot shows the Elastic Discover interface. The top bar includes the Elastic logo, a search bar, and navigation links like 'Discover', 'Visualize', 'Dashboard', 'Settings', 'Alerts', 'Inspect', and 'Save'. The main area is divided into several sections:

- Left Sidebar:** Contains 'Available fields' (e.g., @timestamp, @version, event.original, host.name, log.file.path, message) and 'Empty fields'.
- Top Bar:** Shows the search field 'Sample Springbook ELK Logging' and a search bar with the placeholder 'Filter your data using KQL syntax'.
- Search Results:** Displays 95 hits. A table shows the first three hits, each with a timestamp, version, event.original, host.name, log.file.path, and message.
- Field Statistics:** A chart showing the distribution of the selected fields.
- Expanded Document:** A detailed view of a single document, showing fields like _id, _index, _score, @timestamp, @version, event.original, host.name, log.file.path, and message.

The 'Expanded document' section shows the following details:

- _id:** 57WuCY480buhYhQe5vJ
- _index:** springboot-elk
- _score:** -
- @timestamp:** Mar 4, 2024 @ 09:36:49.476
- @version:** 1
- event.original:** 2024-03-03 16:23:46.906 INFO 5734 --- [http-nio-8090-exec-10] c.sample.elk.controller.UserController : Requesting to fetch user by id: 1
- host.name:** Srikanths-Air.hitronhub.home
- log.file.path:** /Users/srikanthjoshi/Documents/GitHub-Projects/springboot-elk-stack-example/logs/springboot-elk.log
- message:** 2024-03-03 16:23:46.906 INFO 5734 --- [http-nio-8090-exec-10] c.sample.elk.controller.UserController : Requesting to fetch user by id: 1