**Lesson 5**

**Deploying ELK Stack on Docker Container**

**Create Spring REST Project**

package com.example.howtodoinjava.hellodocker;

import java.util.Date;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

import org.springframework.web.bind.annotation.PathVariable;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RestController;

@SpringBootApplication

public class HelloDockerApplication {

    public static void main(String[] args) {

        SpringApplication.run(HelloDockerApplication.class, args);

    }

}

@RestController

class HelloDockerRestController {

    @RequestMapping("/hello/{name}")

    public String helloDocker(@PathVariable(value = "name") String name) {

        String response = "Hello " + name + " Response received on : " + new Date();

System.out.println(response);

        return response;

    }

}

**application.properties :**

server.port = 9080

**Dockerfile**

FROM openjdk:8-jdk-alpine

VOLUME /tmp

ADD target/hello-docker-0.0.1-SNAPSHOT.jar hello-docker-app.jar

ENV JAVA\_OPTS=""

ENTRYPOINT [ "sh", "-c", "java $JAVA\_OPTS -Djava.security.egd=file:/dev/./urandom -jar /hello-docker-app.jar" ]

**pom.xml**

<plugin>

    <groupId>com.spotify</groupId>

    <artifactId>dockerfile-maven-plugin</artifactId>

    <version>1.3.4</version>

    <configuration>

        <repository>${docker.image.prefix}/${project.artifactId}</repository>

    </configuration>

</plugin>

<plugin>

    <groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-dependency-plugin</artifactId>

    <executions>

        <execution>

            <id>unpack</id>

            <phase>package</phase>

            <goals>

                <goal>unpack</goal>

            </goals>

            <configuration>

                <artifactItems>

                    <artifactItem>

                        <groupId>${project.groupId}</groupId>

                        <artifactId>${project.artifactId}</artifactId>

                        <version>${project.version}</version>

                    </artifactItem>

                </artifactItems>

            </configuration>

        </execution>

    </executions>

</plugin>

**SpringBootDemoApplication.java**

import java.util.Arrays;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

import org.springframework.boot.autoconfigure.security.SecurityAutoConfiguration;

import org.springframework.context.ApplicationContext;

@SpringBootApplication (exclude = SecurityAutoConfiguration.class)

public class SpringBootDemoApplication {

   public static void main(String[] args)

   {

      ApplicationContext ctx = SpringApplication.run(SpringBootDemoApplication.class, args);

        String[] beanNames = ctx.getBeanDefinitionNames();

        Arrays.sort(beanNames);

        for (String beanName : beanNames)

        {

            System.out.println(beanName);

        }

   }

}

**EmployeeController.java**

import java.util.ArrayList;

import java.util.List;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RestController;

import com.howtodoinjava.demo.model.Employee;

@RestController

public class EmployeeController

{

   @RequestMapping("/")

    public List<Employee> getEmployees()

{

      List<Employee> employeesList = new ArrayList<Employee>();

      employeesList.add(new Employee(1,"lokesh","gupta","howtodoinjava@gmail.com"));

      return employeesList;

    }

}

**Employee.java**

public class Employee {

   public Employee() {

   }

   public Employee(Integer id, String firstName, String lastName, String email) {

      super();

      this.id = id;

      this.firstName = firstName;

      this.lastName = lastName;

      this.email = email;

   }

private Integer id;

   private String firstName;

   private String lastName;

   private String email;

   //getters and setters

   @Override

   public String toString() {

      return "Employee [id=" + id + ", firstName=" + firstName

            + ", lastName=" + lastName + ", email=" + email + "]";

   }

}

**ElkExampleSpringBootApplication.java**

package com.example.howtodoinjava.elkexamplespringboot;

import java.io.PrintWriter;

import java.io.StringWriter;

import java.util.Date;

import org.apache.log4j.Level;

import org.apache.log4j.Logger;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

import org.springframework.context.annotation.Bean;

import org.springframework.core.ParameterizedTypeReference;

import org.springframework.http.HttpMethod;

import org.springframework.web.bind.annotation.RequestMapping;

import org.springframework.web.bind.annotation.RestController;

import org.springframework.web.client.RestTemplate;

@SpringBootApplication

public class ElkExampleSpringBootApplication {

    public static void main(String[] args) {

        SpringApplication.run(ElkExampleSpringBootApplication.class, args);

    }

}

@RestController

class ELKController {

    private static final Logger LOG = Logger.getLogger(ELKController.class.getName());

    @Autowired

    RestTemplate restTemplete;

    @Bean

    RestTemplate restTemplate() {

        return new RestTemplate();

    }

    @RequestMapping(value = "/elkdemo")

    public String helloWorld() {

        String response = "Hello user ! " + new Date();

        LOG.log(Level.INFO, "/elkdemo - &gt; " + response);

        return response;

    }

    @RequestMapping(value = "/elk")

    public String helloWorld1() {

        String response = restTemplete.exchange("<http://localhost:8080/elkdemo>", HttpMethod.GET, null, new ParameterizedTypeReference() {

        }).getBody();

        LOG.log(Level.INFO, "/elk - &gt; " + response);

        try {

            String exceptionrsp = restTemplete.exchange("<http://localhost:8080/exception>", HttpMethod.GET, null, new ParameterizedTypeReference() {

            }).getBody();

            LOG.log(Level.INFO, "/elk trying to print exception - &gt; " + exceptionrsp);

            response = response + " === " + exceptionrsp;

        } catch (Exception e) {

            // exception should not reach here. Really bad practice :)

        }

        return response;

    }

    @RequestMapping(value = "/exception")

    public String exception() {

        String rsp = "";

        try {

            int i = 1 / 0;

            // should get exception

        } catch (Exception e) {

            e.printStackTrace();

            LOG.error(e);

            StringWriter sw = new StringWriter();

            PrintWriter pw = new PrintWriter(sw);

            e.printStackTrace(pw);

            String sStackTrace = sw.toString(); // stack trace as a string

            LOG.error("Exception As String :: - &gt; "+sStackTrace);

            rsp = sStackTrace;

        }

        return rsp;

    }

}

**application.properties**

logging.file=elk-example.log

spring.application.name = elk-example

**Logstash Configuration**

input {

  file {

    type => "java"

    path => "F:/Study/eclipse\_workspace\_mars/elk-example-spring-boot/elk-example.log"

    codec => multiline {

      pattern => "^%{YEAR}-%{MONTHNUM}-%{MONTHDAY} %{TIME}.\*"

      negate => "true"

      what => "previous"

    }

  }

}

filter {

  #If log line contains tab character followed by 'at' then we will tag that entry as stacktrace

  if [message] =~ "\tat" {

    grok {

      match => ["message", "^(\tat)"]

      add\_tag => ["stacktrace"]

    }

  }

 grok {

    match => [ "message",

               "(?<timestamp>%{YEAR}-%{MONTHNUM}-%{MONTHDAY} %{TIME})  %{LOGLEVEL:level} %{NUMBER:pid} --- \[(?<thread>[A-Za-z0-9-]+)\] [A-Za-z0-9.]\*\.(?<class>[A-Za-z0-9#\_]+)\s\*:\s+(?<logmessage>.\*)",

               "message",

               "(?<timestamp>%{YEAR}-%{MONTHNUM}-%{MONTHDAY} %{TIME})  %{LOGLEVEL:level} %{NUMBER:pid} --- .+? :\s+(?<logmessage>.\*)"

             ]

  }

  date {

    match => [ "timestamp" , "yyyy-MM-dd HH:mm:ss.SSS" ]

  }

}

output {

  stdout {

    codec => rubydebug

  }

  # Sending properly parsed log events to elasticsearch

  elasticsearch {

    hosts => ["localhost:9200"]

  }

}

**Kibana Configuration**

pipeline {

agent {

docker {

image 'maven:3-alpine'

args '-v /root/.m2:/root/.m2'

}

}

stages {

stage('Build') {

steps {

sh 'mvn -B -DskipTests clean package'

}

}

}

}

**test stage to your Pipeline**

stage('Test') {

steps {

sh 'mvn test'

}

post {

always {

junit 'target/surefire-reports/\*.xml'

}

}

}

pipeline {

agent {

docker {

image 'maven:3-alpine'

args '-v /root/.m2:/root/.m2'

}

}

stages {

stage('Build') {

steps {

sh 'mvn -B -DskipTests clean package'

}

}

stage('Test') {

steps {

sh 'mvn test'

}

post {

always {

junit 'target/surefire-reports/\*.xml'

}

}

}

}

}

**Test stage of your Jenkinsfile:**

1. stage('Deliver') {
2. steps {
3. sh './jenkins/scripts/deliver.sh'
4. }

}

and add a skipStagesAfterUnstable option so that you end up with:

pipeline {

agent {

docker {

image 'maven:3-alpine'

args '-v /root/.m2:/root/.m2'

}

}

options {

skipStagesAfterUnstable()

}

stages {

stage('Build') {

steps {

sh 'mvn -B -DskipTests clean package'

}

}

stage('Test') {

steps {

sh 'mvn test'

}

post {

always {

junit 'target/surefire-reports/\*.xml'

}

}

}

stage('Deliver') {

steps {

sh './jenkins/scripts/deliver.sh'

}

}

}

}