Nginx

# Installation

Preferred: https://futurestud.io/tutorials/how-to-use-nginx-as-a-load-balancer

<https://www.digitalocean.com/community/tutorials/how-to-install-nginx-on-ubuntu-16-04>

# Configure cluster

cd **/etc/nginx/sites-available/**

**ls**

**You will find a file named default**

**Copy this file elsewhere for backup.**

**Edit default with nano**

**Sudo nano default**

Remove all its contents or comment it with #

Put below contents:

upstream springbootcluster {

server 127.0.0.1:9005;

server 127.0.0.1:9006;

server 127.0.0.1:9007;

}

server {

listen 80 default\_server;

listen [::]:80 default\_server;

location / {

proxy\_set\_header X-Real-IP $remote\_addr;

proxy\_set\_header X-Forwarded-For $proxy\_add\_x\_forwarded\_for;

proxy\_set\_header Host $http\_host;

proxy\_set\_header X-NginX-Proxy true;

proxy\_pass http://springbootcluster/;

proxy\_redirect off;

}

}

# Dockerize Spring boot application

https://dzone.com/articles/run-simple-jar-application-in-docker-container-1

mkdir springboottest

cd springboottest

Copy the Dockerfile and spring boot jar in this folder

**Dockerfile contents:**

FROM java:8

WORKDIR /

ADD gs-spring-boot-docker-0.1.0.jar app.jar

EXPOSE 9001

CMD java -jar app.jar

sudo docker build -t springbootapp .

sudo docker images

sudo docker run -d -p 9005:9005 -e "server.port=9005" springbootapp

sudo docker run -d -p 9006:9006 -e "server.port=9006" springbootapp

sudo docker run -d -p 9007:9007 -e "server.port=9007" springbootapp

If you want to pass the custom port at runtime, or pass active profile to springboot app, use –e option. Its for providing environment variables to spring boot app.

ubuntu@ip-172-31-85-11:~$ cd springboottest/

ubuntu@ip-172-31-85-11:~/springboottest$ ls

Dockerfile gs-spring-boot-docker-0.1.0.jar

ubuntu@ip-172-31-85-11:~/springboottest$ cat Dockerfile

FROM java:8

WORKDIR /

ADD gs-spring-boot-docker-0.1.0.jar app.jar

EXPOSE 9001

CMD java -jar app.jar

ubuntu@ip-172-31-85-11:~$ sudo docker run -d -p 9004:9004 -e "server.port=9004" springbootapp

5fe2e230c3051a4ab06ba3b541be9444359f27d9243a6844579e7d3874e85d3f

ubuntu@ip-172-31-85-11:~$ sudo docker logs 5fe2

. \_\_\_\_ \_ \_\_ \_ \_

/\\ / \_\_\_'\_ \_\_ \_ \_(\_)\_ \_\_ \_\_ \_ \ \ \ \

( ( )\\_\_\_ | '\_ | '\_| | '\_ \/ \_` | \ \ \ \

\\/ \_\_\_)| |\_)| | | | | || (\_| | ) ) ) )

' |\_\_\_\_| .\_\_|\_| |\_|\_| |\_\\_\_, | / / / /

=========|\_|==============|\_\_\_/=/\_/\_/\_/

:: Spring Boot :: (v1.5.10.RELEASE)

2018-02-24 10:10:29.654 INFO 5 --- [ main] hello.GsSpringBootDockerApplication : Starting GsSpringBootDockerApplication v0.1.0 on 5fe2e230c305 with PID 5 (/app.jar started by root in /)

2018-02-24 10:10:29.672 INFO 5 --- [ main] hello.GsSpringBootDockerApplication : No active profile set, falling back to default profiles: default

2018-02-24 10:10:29.855 INFO 5 --- [ main] ationConfigEmbeddedWebApplicationContext : Refreshing org.springframework.boot.context.embedded.AnnotationConfigEmbeddedWebApplicationContext@6d5380c2: startup date [Sat Feb 24 10:10:29 UTC 2018]; root of context hierarchy

2018-02-24 10:10:32.783 INFO 5 --- [ main] s.b.c.e.t.TomcatEmbeddedServletContainer : Tomcat initialized with port(s): 9004 (http)

2018-02-24 10:10:32.815 INFO 5 --- [ main] o.apache.catalina.core.StandardService : Starting service [Tomcat]

2018-02-24 10:10:32.820 INFO 5 --- [ main] org.apache.catalina.core.StandardEngine : Starting Servlet Engine: Apache Tomcat/8.5.27

2018-02-24 10:10:33.010 INFO 5 --- [ost-startStop-1] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext

2018-02-24 10:10:33.010 INFO 5 --- [ost-startStop-1] o.s.web.context.ContextLoader : Root WebApplicationContext: initialization completed in 3158 ms

2018-02-24 10:10:33.288 INFO 5 --- [ost-startStop-1] o.s.b.w.servlet.ServletRegistrationBean : Mapping servlet: 'dispatcherServlet' to [/]

2018-02-24 10:10:33.296 INFO 5 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean : Mapping filter: 'characterEncodingFilter' to: [/\*]

2018-02-24 10:10:33.297 INFO 5 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean : Mapping filter: 'hiddenHttpMethodFilter' to: [/\*]

2018-02-24 10:10:33.297 INFO 5 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean : Mapping filter: 'httpPutFormContentFilter' to: [/\*]

2018-02-24 10:10:33.297 INFO 5 --- [ost-startStop-1] o.s.b.w.servlet.FilterRegistrationBean : Mapping filter: 'requestContextFilter' to: [/\*]

2018-02-24 10:10:34.013 INFO 5 --- [ main] s.w.s.m.m.a.RequestMappingHandlerAdapter : Looking for @ControllerAdvice: org.springframework.boot.context.embedded.AnnotationConfigEmbeddedWebApplicationContext@6d5380c2: startup date [Sat Feb 24 10:10:29 UTC 2018]; root of context hierarchy

2018-02-24 10:10:34.174 INFO 5 --- [ main] s.w.s.m.m.a.RequestMappingHandlerMapping : Mapped "{[/]}" onto public java.lang.String hello.GsSpringBootDockerApplication.home()

2018-02-24 10:10:34.181 INFO 5 --- [ main] s.w.s.m.m.a.RequestMappingHandlerMapping : Mapped "{[/error]}" onto public org.springframework.http.ResponseEntity<java.util.Map<java.lang.String, java.lang.Object>> org.springframework.boot.autoconfigure.web.BasicErrorController.error(javax.servlet.http.HttpServletRequest)

2018-02-24 10:10:34.184 INFO 5 --- [ main] s.w.s.m.m.a.RequestMappingHandlerMapping : Mapped "{[/error],produces=[text/html]}" onto public org.springframework.web.servlet.ModelAndView org.springframework.boot.autoconfigure.web.BasicErrorController.errorHtml(javax.servlet.http.HttpServletRequest,javax.servlet.http.HttpServletResponse)

2018-02-24 10:10:34.250 INFO 5 --- [ main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/webjars/\*\*] onto handler of type [class org.springframework.web.servlet.resource.ResourceHttpRequestHandler]

2018-02-24 10:10:34.251 INFO 5 --- [ main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/\*\*] onto handler of type [class org.springframework.web.servlet.resource.ResourceHttpRequestHandler]

2018-02-24 10:10:34.335 INFO 5 --- [ main] o.s.w.s.handler.SimpleUrlHandlerMapping : Mapped URL path [/\*\*/favicon.ico] onto handler of type [class org.springframework.web.servlet.resource.ResourceHttpRequestHandler]

2018-02-24 10:10:34.594 INFO 5 --- [ main] o.s.j.e.a.AnnotationMBeanExporter : Registering beans for JMX exposure on startup

2018-02-24 10:10:34.726 INFO 5 --- [ main] s.b.c.e.t.TomcatEmbeddedServletContainer : Tomcat started on port(s): 9004 (http)

2018-02-24 10:10:34.737 INFO 5 --- [ main] hello.GsSpringBootDockerApplication : Started GsSpringBootDockerApplication in 5.866 seconds (JVM running for 6.617)

ubuntu@ip-172-31-85-11:~$ curl http://localhost:9004

Hello Docker Worldubuntu@ip-172-31-85-11:~$

ubuntu@ip-172-31-85-11:~$

Gracefull reload (restart) of Nginx:

Currently 3 nodes added: 9005, 9006, 9007

Now new node to be added is 9008

ubuntu@ip-172-31-85-11:~/springboottest$ sudo docker run -d -p 9008:9008 -e "server.port=9008" springbootapp2

968d8e5e4ca7107a360bf535e397c367e8d9cf04201c7f6042a0524a5140d06c

ubuntu@ip-172-31-85-11:~/springboottest$ sudo nano /etc/nginx/sites-available/default

Add below in the cluster

server 127.0.0.1:9008;

Now reload gracefully with below command:

ubuntu@ip-172-31-85-11:~/springboottest$ sudo service nginx reload

Keep refreshing in the browser:

<http://35.153.128.239/>

It will keep responding with 9005, 9006 and 9007.

After couple of seconds, you can see requests getting routed to 9008 also.

ubuntu@ip-172-31-85-11:~/springboottest$

# Choosing load balancing method

<https://www.nginx.com/resources/admin-guide/load-balancer/>

<https://stackoverflow.com/questions/19866203/nginx-configuration-to-pass-site-directly-to-tomcat-webapp-with-context>

# DevOps with Kubernetes

<https://techbeacon.com/one-year-using-kubernetes-production-lessons-learned>

<https://dzone.com/articles/achieving-cicd-with-kubernetes>

<https://www.znetlive.com/blog/compare-top-devops-tools-docker-kubernetes-puppet-chef-ansible/>