STUDYGYAAN

Deploy Spring Boot App on VM using Nginx, HTTPS Domain

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In this tutorial, you will learn how to deploy a Spring Boot Application on Digital Ocean Droplet. We will be using Nginx as webserver with Reverse Proxy for pointing to Domain. We will be using Lets Encrypt for making application secure with HTTPS.

Prepare Virtual Machine Server

We will be using Virtual Server for deploying our project. For this tutorial, I am using Ubuntu VM which is deployed on Digital Ocean.

Please create a VM on Digital Ocean using my referral link and get $200 credits to use over 2 months.

Please add your machine ssh key while creating the droplet. Examples to create ssh key `ssh-keygen -t rsa` and to view/copy ssh key – `cat ~/.ssh/id_rsa.pub`

Access Server

Logon to your Server like bellow, I am using Ubuntu Terminal, you can use anything like Putty, MobaXterm etc.

```
ssh root@SERVER_IP_ADDRESS
```

Prerequisites Software's

For this project, we will require following softwares

- Java Development Kit
- Apache Maven
- Nginx

Install Java Development Kit

```
sudo add-apt-repository ppa:linuxuprising/java -y
sudo apt update
sudo apt-get install oracle-java17-installer oracle-java17-set
```

Install Maven

```
sudo apt install maven
```

Install Nginx Web server

```
sudo apt update
sudo apt install nginx
sudo ufw allow 'Nginx Full'
systemctl status nginx
```

Setup Project on Server

After install above software's, please get your project on server. For this project i'm using git to pull my project which is hosted on Github. Here's the starter project for demo purpose.

```
sudo apt install git
```

git clone https://github.com/studygyaan/spring-boot-starter.git

Navigate to the project folder `cd spring-boot-starter/` and run the project using maven.

```
./mvnw spring-boot:run
```

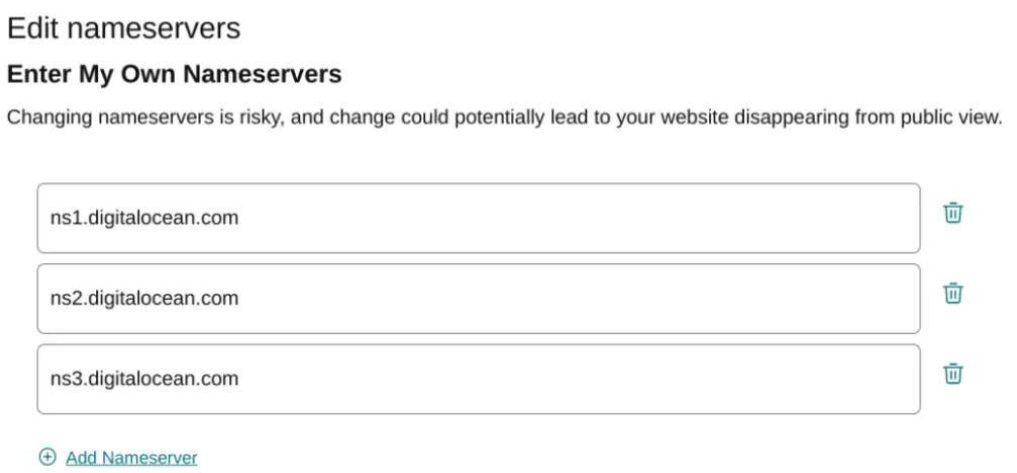
Now your project is running on port 8080, as specified in file – `src/main/resources/application.properties`

Now go to browser and type your server ip address with port number. Example – SERVER_`IP_ADDRESS:8080`

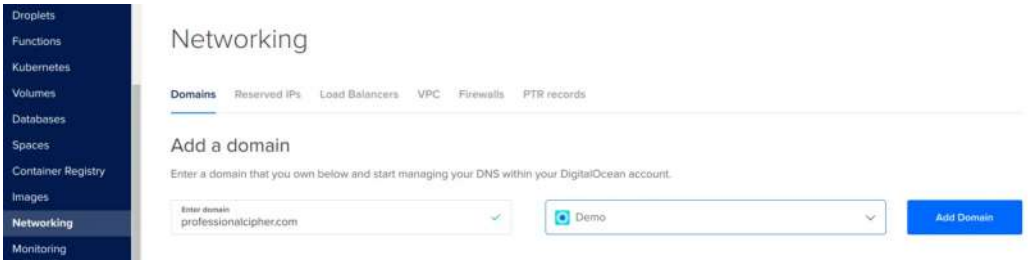
Now lets stop the project `Ctrl+C` and run the same project using Nginx Server.

Change Nameservers and Add Domain to Digital Ocean

Before deploying project on Nginx, we need a domain. Change the Nameserver in your domain provider and add it to Digital Ocean Domain.

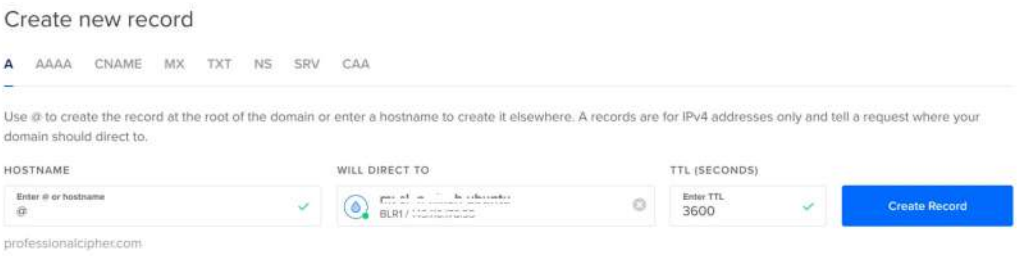


Point to DigitalOcean Nameservers in Godaddy



Adding Domain to Digital Ocean

Now lets add record, which will point our domain ip address, like bellow image.



Create Record to Point Ip Address In Digital Ocean

Setup Spring Boot Project using Nginx Reverse Proxy

On the server, Nginx is already installed. Create an Nginx configuration for the website with the command below. For demo purpose, we are using domain `example.com`. Please replace with your domain appropriately

```
sudo vi /etc/nginx/sites-available/example.com
```

And please add bellow code inside it.

```
server {
    server_name example.com;
    index index.html index.htm;
    access_log /var/log/nginx/example.log;
    error_log  /var/log/nginx/example-error.log error;

    location / {
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarde
        proxy_set_header X-Forwarded-Proto $scheme;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header Host $http_host;
        proxy_pass http://127.0.0.1:8080;
        proxy_redirect off;
    }
}
```

Note: Please replace `example.com` w... your domain.

Now enable the website

```
sudo ln -s /etc/nginx/sites-available/example.com /etc/nginx/s
```

Let's verify if there is no Nginx error, then reload it to take the changes into account:

```
sudo nginx -t
sudo nginx -s reload
```

Lets re-run the project – `./mvnw spring-boot:run`

Navigate to you domain to see the running project.

Optional: For easy spring boot project running i have written shell script, you can find in project: `startup.sh, restart.sh and`

`shutdown.sh`

For running project – `sh startup.sh`

For stop project – `sh shutdown.sh`

Add SSL Certificate using Lets Enrypt

Install Certbot, which is the tool responsible for certificate generation

```
sudo apt install snapd
sudo snap install --classic certbot
```

Generate and install an SSL certificate for our domain. Please replace **example.com** with your domain name.

```
sudo certbot --nginx -d example.com
```

Reload Nginx configuration: `sudo ng -s reload` and go to your website, you will see secure website.

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