ZoomRx DevSecOps Challenge

Reverse Proxy with load balancer

Approximate solving time: 2 Hours

Set Up an Nginx server and configure it to Load Balance between two backends of your choice. Have two HTML Pages and make nginx forward requests to both the backends in a round robin fashion.

One of the first thing we will do to setup a new host that will serve your load balancer. We all know that currently, nginx packages are available on latest version of CentOS, Debian and Ubuntu

NGINX is extremely fast. It can serve thousands of requests per second. NGINX is also very lightweight. It's optimized to serve static files.

Commands to pull centos from Dockerhub

Docker pull centos (It will pull the centos latest image)

Creating a container from Image.

Docker run -it centos /bin/bash

In centos we are installing the nginx

Commands to install nginx

1. **sudo apt-get update**
2. **sudo apt-get install nginx**

#Centos

Install the extra packages repository

3. **sudo yum install epel-release**
4. **sudo yum update**
5. **sudo yum install nginx**

Once nginx installed change directory in to nginx main configuration folder

6. **cd /etc/nginx**

Now depending on your OS, the webserver configuration files will be in one of two places.

Use the command below to enable any new virtual host files

7. **sudo ln -s /etc/nginx/sites-available/vhost/etc/nginx/sites-enabledvhost**

CentOS users can find their host configuration files under /etc/nginx/conf.d in which ant .conftype virtual host gets loaded.

Command to test the server replies to HTTP requests. Open the load balancer server's public IP address in your web browser.

8. **Sudo systemct1 restart nginx**

If you have troubleshoot loading the page, check that firewall is not blocking your connection.

Try the commands given below

9. **sudo firewall-cmd –add-service=http –permanent**
10. **sudo firewall-cmd –reload**

after reload the browser. If everything works fine go to another setup.

After Installing the nginx you basically have nginx folder need to go inside the conf folder and we have file named nginx.conf
Command to go to this path
vim /usr/local/etc/nginx/nginx.conf

In this file we need to specify the two changes the first change is inside http we have to specify the what are the servers and further also specify the nginx server is listening on the port no 86 and forward the request to the upstream backend ports.

Eg - Whenever I got a request from localhost port no 86, then It will forward the request to the upstream backend ports.

When one server is taking up 30k requests per second, on this time load balancer comes in we will see what the load balancer will do.

In this load balancer server we will clone the servers and make multiple copies of that server, if we have 30k requests, the loadbalancer will equally distribute the load among all servers.
Usually the load balancer uses the algorithm roundrobin to select the next server to which the request is redirected

Now we are creating a new folder
Mkdir nginx-load-balancer

Install the npm package in it, after installing npm, we will have index.js file and create a two html files that have connect with the index.js file. And open the index.js file and the port to be env.PORT and the run the index.js that have the reference with two html files run the index.js and open in localhost.

After open **the nginx.conf file** this is the configuration where you want to configure everything.

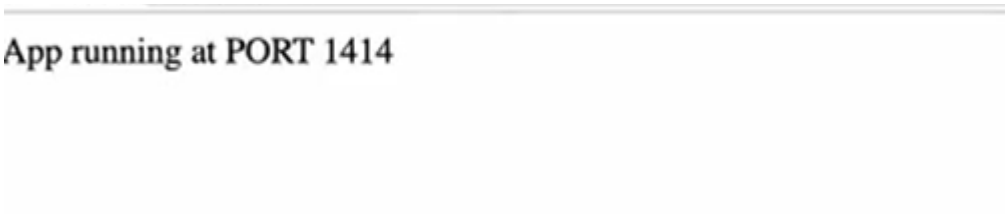
```
http {
   upstream backend {
      server 127.0.0.1:1212;
      server 127.0.0.1:1313;
      server 127.0.0.1:1414;
   }

   server {
      listen 80;
      root /Users/lakshmiprasad/Desktop/nginx-load-balancer/;

      location / {
         proxy_pass http://backend;
      }
   }
}

events { }
```

After run the command nginx -s reload



We need to build the container to a image,

docker build -t container name
docker run -it container name
after building and run the container we need to push the image to the docker hub.

We can write dockerfile to build an image.