



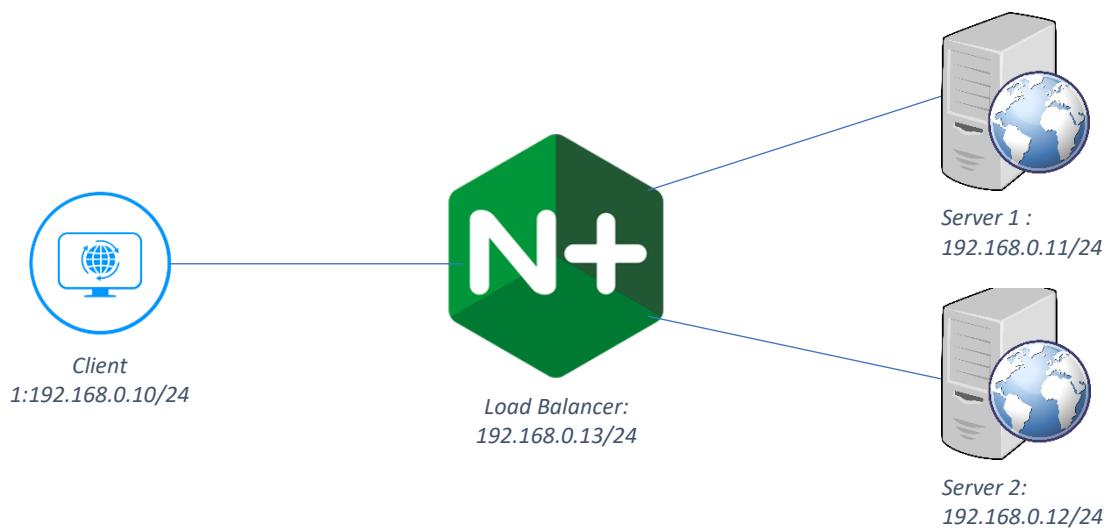
Dinas Komunikasi dan Informatika Kota Tangerang

HTTP Load Balancing with Nginx in Centos 8

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LOAD BALANCING WITH NGINX [NETWORK TOPOLOGY]



I am assuming that you have configured the IP address of each server as in the network topology above.

Requirements:

Server 1 (Webserver)

- Operating System : Centos 8
- Webserver : Nginx
- Port Opened : 22 (ssh), 82 (http)
- IP Address : 192.168.0.11/24
- Gateway : 192.168.0.1
- DNS : 8.8.8.8

Server 2 (Webserver)

- Operating System : Centos 8
- Webserver : Nginx
- Port Opened : 22 (ssh), 8080 (http)
- IP Address : 192.168.0.12/24
- Gateway : 192.168.0.1
- DNS : 8.8.8.8

Load Balancer

- Operating System : Centos 8
- Load Balancer : Nginx
- Port Opened : 22 (ssh), 80 (http)
- IP Address : 192.168.0.13/24
- Gateway : 192.168.0.
- DNS : 8.8.8.8

A. CONFIGURE SERVER 1

1. Update and Reboot

```
# dnf update -y && dnf upgrade -y  
# reboot
```

2. Install and Configure Nginx

```
# dnf install nginx -y  
# nano /etc/nginx/nginx.conf  
Change nginx http default port to port 82
```

```
server {  
    listen      82 default_server;  
    listen      [::]:82 default_server;  
    server_name ;  
    root        /usr/share/nginx/html;
```

3. Allow HTTP Service to use port 82

```
# firewall-cmd --perma --add-port=82/tcp  
# firewall-cmd --reload  
# yum install -y setroubleshoot-server selinux-policy-devel  
# semanage port -a -t http_port_t -p tcp 82
```

4. Change the index.html file to distinguish page views from other servers

```
# nano /usr/share/nginx/html/index.html
```

5. Start Nginx Service

```
# systemctl start nginx  
# systemctl enable nginx
```

B. CONFIGURE SERVER 2

1. Update and Reboot

```
# dnf update -y && dnf upgrade -y  
# reboot
```

2. Install and Configure Nginx

```
# dnf install nginx -y  
# nano /etc/nginx/nginx.conf  
Change nginx http default port to port 8080
```

```
server {
    listen      8080 default_server;
    listen      [::]:8080 default_server;
    server_name _;
    root        /usr/share/nginx/html;
```

3. Open port 8080 in firewall

```
# firewall-cmd --perma --add-port=8080/tcp
# firewall-cmd --reload
```

4. Change the index.html file to distinguish page views from other servers

```
# nano /usr/share/nginx/html/index.html
```

5. Start Nginx Service

```
# systemctl start nginx
# systemctl enable nginx
```

C. CONFIGURE LOAD BALANCER

1. Update and Reboot

```
# dnf update -y && dnf upgrade -y
# reboot
```

2. Install and Configure Nginx

```
# dnf install nginx -y
# nano /etc/nginx/nginx.conf
Create new configuration file in /etc/nginx/conf.d/
# nano /etc/nginx/conf.d/load-balancing.conf
```

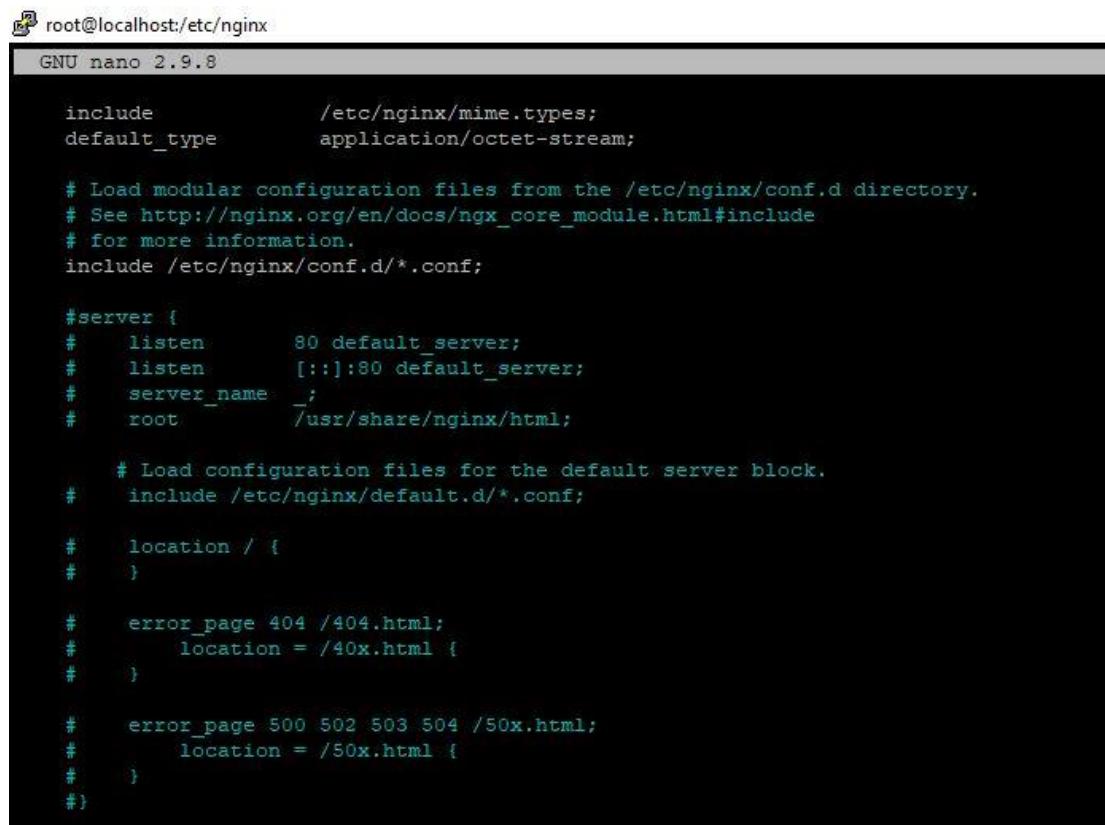
```
upstream backend {
    least_conn;
    server 192.168.0.11:82;
    server 192.168.0.12:8080;
}

server {
    listen 80;

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

3. Comment server block in nginx main configuration file

```
# nano /etc/nginx/nginx.conf
```



```
root@localhost:/etc/nginx
GNU nano 2.9.8

include          /etc/nginx/mime.types;
default_type    application/octet-stream;

# Load modular configuration files from the /etc/nginx/conf.d directory.
# See http://nginx.org/en/docs/ngx_core_module.html#include
# for more information.
include /etc/nginx/conf.d/*.conf;

server {
#   listen      80 default_server;
#   listen      [::]:80 default_server;
#   server_name ;
#   root       /usr/share/nginx/html;

#   # Load configuration files for the default server block.
#   include /etc/nginx/default.d/*.conf;

#   location / {
#   }

#   error_page 404 /404.html;
#   location = /40x.html {
#   }

#   error_page 500 502 503 504 /50x.html;
#   location = /50x.html {
#   }
#}
```

4. Open Port 80 in firewall

```
# firewall-cmd --perma --add-port=80/tcp
```

```
# firewall-cmd --reload
```

5. Enable Selinux Permission for HTTP Load Balancing

```
# setsebool -P httpd_can_network_connect 1
```

6. Start Nginx Service

```
# systemctl start nginx
```

```
# systemctl enable nginx
```

D. TESTING

Try to access <http://192.168.0.13> from browser's client. If the configuration is correct and success, your client can access Server 1 page or Server 2 page.



Now, try to disable nginx server in Server 2 (192.168.0.12/24), and refresh the browser or access <http://192.168.0.13>.

```
[root@localhost ~]# TX packets 12 bytes 1020 (1020.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@localhost ~]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.0.12 netmask 255.255.255.0 broadcast 192.168.0.255
inet6 fe80::a00:27ff:fe21:2 prefixlen 64 scopeid 0x20<link>
ether 08:00:27:ff:e2:12 txqueuelen 1000 (Ethernet)
RX packets 1512 bytes 152989 (149.4 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 999 bytes 191422 (186.9 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 12 bytes 1020 (1020.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 12 bytes 1020 (1020.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@localhost ~]# systemctl stop nginx
[root@localhost ~]#
```

Load Balancing will redirect your client to Server 1 (192.168.0.11/24).

