



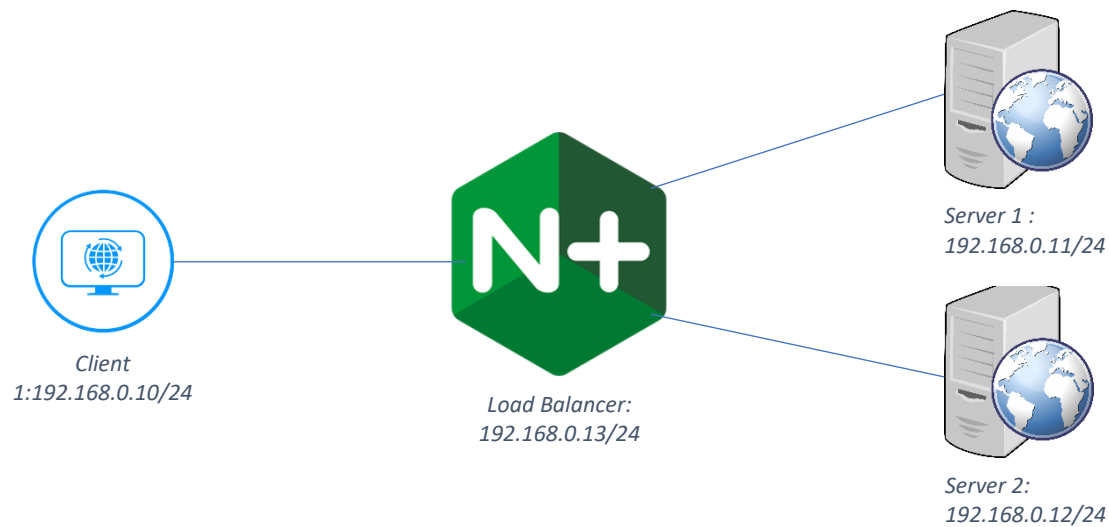
Dinas Komunikasi dan Informatika Kota Tangerang

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/nginx_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:~# ifconfig
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:feff:e212  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).

