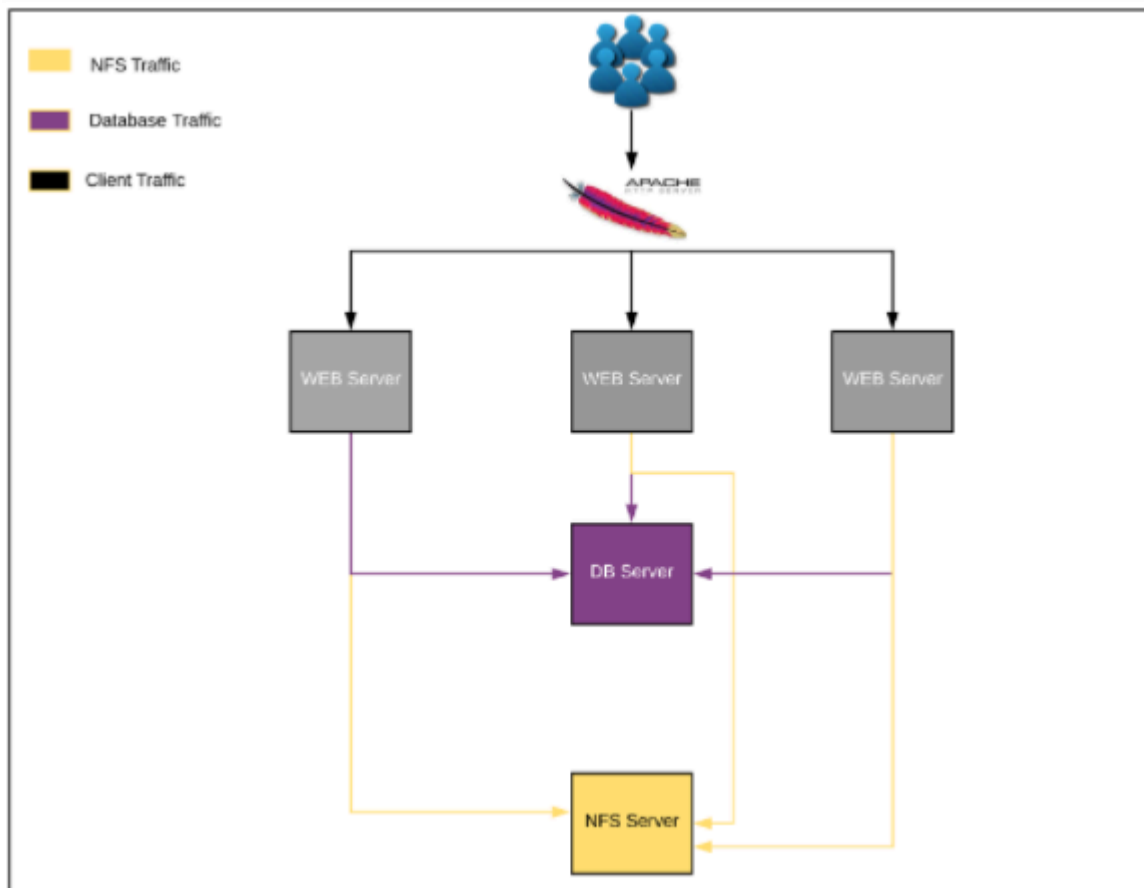


# Load Balancer Solution With Haproxy



Apache-LB - 165.232.37.154

Web 1 - 161.35.160.194

Web 2 - 161.35.168.231

Web 3 - 165.232.40.31

NFS -

DB - 144.126.201.99

Load balancing provides better performance, availability, and redundancy because it spreads work among many back-end servers. This will:

- Reduce the load on each individual machine.
- Let you do maintenance, upgrade software, deploy websites, or swap out servers without disrupting service.
- Enable your website or service to handle more traffic.
- Increase overall performance.

For the purpose of this task, I shall be using the following domain, hostnames and IP addresses.

```
Domain:      fefe.lan
```

```
apache-LB.fefe.lan 165.232.37.154
```

```
webserver-1.fefe.lan 161.35.160.194
```

```
webserver-2.fefe.lan 161.35.168.231
```

```
webserver-3.fefe.lan 165.232.40.31
```

```
server-DB.fefe.lan 144.126.201.99
```

## ON LOAD BALANCER

Set device hostnames in the file `$/etc/hostname`

```
[root@apache-LB ~]# cat /etc/hostname  
apache-LB.fefe.lan  
[root@apache-LB ~]# █
```

## Set Static IP for LB

```
vi /etc/sysconfig/network
```

```
#  
HOSTNAME=apache-LB.fefe.lan  
GATEWAY=165.232.32.1  
NETWORKING_IPV6=no  
IPV6INIT=no  
NETWORKING=yes
```

```
vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

```
BOOTPROTO=none  
DEFROUTE=yes  
DEVICE=eth0  
GATEWAY=165.232.32.1  
HWADDR=6e:3d:a5:b7:ef:5f  
IPADDR=165.232.37.154  
#IPADDR1=10.16.0.8  
MTU=1500  
NETMASK=255.255.240.0  
#NETMASK1=255.255.0.0  
ONBOOT=yes  
STARTMODE=auto  
TYPE=Ethernet  
USERCTL=no  
DNS1=4.4.4.4  
DNS2=8.8.8.8  
HOSTNAME=apache-LB.fefe.lan  
~  
~  
~
```

## Setup Local DNS

```
Vi /etc/hosts
```

```
:::1 localhost6.localdomain6 localhost6  
  
161.35.160.194 webserver-1.fefe.lan  
165.232.37.154 apache-LB.fefe.lan  
161.35.168.231 webserver-2.fefe.lan  
165.232.40.31 webserver-3.fefe.lan  
144.126.201.99 server-DB.fefe.lan  
~  
~
```

## Test Local DNS Resolution -from load balancer to web server

```
ping -c 6 webserver-1.fefe.lan
```

```
[root@apache-LB ~]#  
[root@apache-LB ~]# ping -c 6 webserver-1.fefe.lan  
PING webserver-1.fefe.lan (161.35.160.194) 56(84) bytes of data.  
64 bytes from webserver-1.fefe.lan (161.35.160.194): icmp_seq=1 ttl=63 time=2.45 ms  
64 bytes from webserver-1.fefe.lan (161.35.160.194): icmp_seq=2 ttl=63 time=0.558 ms  
64 bytes from webserver-1.fefe.lan (161.35.160.194): icmp_seq=3 ttl=63 time=0.715 ms  
64 bytes from webserver-1.fefe.lan (161.35.160.194): icmp_seq=4 ttl=63 time=0.619 ms  
64 bytes from webserver-1.fefe.lan (161.35.160.194): icmp_seq=5 ttl=63 time=1.12 ms  
64 bytes from webserver-1.fefe.lan (161.35.160.194): icmp_seq=6 ttl=63 time=0.618 ms
```

## Configure Hostname and Static IP on 3 Web servers

```
$ sudo hostnamectl set-hostname webserver-1.fefe.lan
```

```
vi /etc/sysconfig/network
```

```
# Created by cloud-init on instance boot automatically  
#  
HOSTNAME=webserver-1.fefe.lan  
GATEWAY=161.35.160.1  
NETWORKING_IPV6=no  
IPV6INIT=no  
NETWORKING=yes  
~  
~
```

```
vi /etc/sysconfig/network-scripts/ifcfg-eth0
```

```
#
BOOTPROTO=none
DEFROUTE=yes
DEVICE=eth0
GATEWAY=161.35.160.1
HWADDR=22:b1:fd:a4:b4:3c
IPADDR=161.35.160.194
#IPADDR1=10.16.0.5
MTU=1500
NETMASK=255.255.240.0
#NETMASK1=255.255.0.0
ONBOOT=yes
STARTMODE=auto
TYPE=Ethernet
USERCTL=no
DNS1=8.8.8.8
DNS2=4.4.4.4
HOSTNAME=webserver-1.fefe.lan
~
```

## Setup Local DNS

```
Vi /etc/hosts
```

```
:::1 localhost6.localdomain6 localhost6
161.35.160.194 webserver-1.fefe.lan
165.232.37.154 apache-LB.fefe.lan
161.35.168.231 webserver-2.fefe.lan
165.232.40.31 webserver-3.fefe.lan
144.126.201.99 server-DB.fefe.lan
~
~
```

## Test Local DNS Resolution - from webserver to load balancer

```
$ ping -c 6 apache-LB.fefe.lan
```

```
[root@centos-s-1vcpu-1gb-lon1-web1 ~]# ping -c 6 apache-LB.fefe.lan
PING apache-LB.fefe.lan (165.232.37.154) 56(84) bytes of data:
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=1 ttl=63 time=2.53 ms
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=2 ttl=63 time=0.552 ms
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=3 ttl=63 time=0.753 ms
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=4 ttl=63 time=0.663 ms
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=5 ttl=63 time=0.557 ms
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=6 ttl=63 time=0.541 ms

--- apache-LB.fefe.lan ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 140ms
rtt min/avg/max/mdev = 0.541/0.933/2.534/0.720 ms
[root@centos-s-1vcpu-1gb-lon1-web1 ~]#
```

## Configure Static IP and Host name for Database Server

\*\*If your Ubuntu cloud instance is provisioned with cloud-init, you'll need to disable it. To do so create the following file

```
$ vi /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg
```

Add entry -->

```
network: {config: disabled}
```

\*\*

```
$ hostnamectl set-hostname server-DB.fefe.lan
```

## Configure nameservers

```
Vi /etc/netpla/50-cloud-init.yaml
```

```
# network: {config: disabled}
network:
  version: 2
  ethernets:
    eth0:
      addresses:
        - 144.126.201.99/20
        - 10.16.0.9/16
      gateway4: 144.126.192.1
      match:
        macaddress: 66:65:50:23:05:f5
      nameservers:
        addresses:
          - 8.8.8.8
          - 8.8.4.4
        search: []
```

## Edit /etc/hosts

```
ff02::2 ip6-allrouters
ff02::3 ip6-allhosts

161.35.160.194 webserver-1.fefe.lan
165.232.37.154 apache-LB.fefe.lan
161.35.168.231 webserver-2.fefe.lan
165.232.40.31 webserver-3.fefe.lan
144.126.201.99 server-DB.fefe.lan
~
~
```

```
$ sudo netplan apply
```

Test Local DNS Resolution - from webserver to load balancer

```
#ping -c 6 apache-LB.fefe.lan
```

```
root@ubuntu-s-1vcpu-1gb-lon1-DB:~#  
root@ubuntu-s-1vcpu-1gb-lon1-DB:~# ping -c 6 apache-LB.fefe.lan  
PING apache-LB.fefe.lan (165.232.37.154) 56(84) bytes of data:  
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=1 ttl=63 time=2.22 ms  
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=2 ttl=63 time=0.583 ms  
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=3 ttl=63 time=0.656 ms  
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=4 ttl=63 time=0.556 ms  
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=5 ttl=63 time=0.631 ms  
64 bytes from apache-LB.fefe.lan (165.232.37.154): icmp_seq=6 ttl=63 time=0.507 ms  
  
--- apache-LB.fefe.lan ping statistics ---  
6 packets transmitted, 6 received, 0% packet loss, time 5091ms  
rtt min/avg/max/mdev = 0.507/0.859/2.224/0.612 ms  
root@ubuntu-s-1vcpu-1gb-lon1-DB:~# █
```

Test Local DNS Resolution - from load balancer to database server

```
# ping -c 6 server-DB.fefe.lan
```

```
[root@apache-LB ~]#  
[root@apache-LB ~]# ping -c 6 server-DB.fefe.lan  
PING server-DB.fefe.lan (144.126.201.99) 56(84) bytes of data:  
64 bytes from server-DB.fefe.lan (144.126.201.99): icmp_seq=1 ttl=63 time=2.10 ms  
64 bytes from server-DB.fefe.lan (144.126.201.99): icmp_seq=2 ttl=63 time=0.545 ms  
64 bytes from server-DB.fefe.lan (144.126.201.99): icmp_seq=3 ttl=63 time=0.617 ms  
64 bytes from server-DB.fefe.lan (144.126.201.99): icmp_seq=4 ttl=63 time=0.732 ms  
64 bytes from server-DB.fefe.lan (144.126.201.99): icmp_seq=5 ttl=63 time=0.586 ms  
64 bytes from server-DB.fefe.lan (144.126.201.99): icmp_seq=6 ttl=63 time=0.598 ms  
  
--- server-DB.fefe.lan ping statistics ---  
6 packets transmitted, 6 received, 0% packet loss, time 103ms  
rtt min/avg/max/mdev = 0.545/0.863/2.102/0.557 ms  
[root@apache-LB ~]# █
```

## Installing HAProxy

```
#sudo yum install haproxy
```

## Configure the load balancer

create a configuration file `/etc/haproxy/haproxy.cfg` containing the necessary settings and configurations.

```
#vi /etc/haproxy/haproxy.cfg
```

```
[root@apache-LB ~]# systemctl status haproxy
● haproxy.service - HAProxy Load Balancer
   Loaded: loaded (/usr/lib/systemd/system/haproxy.service; enabled; vendor preset: disabled)
   Active: active (running) since Sat 2020-12-12 00:13:19 UTC; 48min ago
     Main PID: 11135 (haproxy)
        Tasks: 2 (limit: 4763)
       Memory: 2.9M
      CGroup: /system.slice/haproxy.service
             └─11135 /usr/sbin/haproxy -Ws -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid
             └─11137 /usr/sbin/haproxy -Ws -f /etc/haproxy/haproxy.cfg -p /run/haproxy.pid

Dec 12 00:13:19 apache-LB.fefe.lan systemd[1]: Starting HAProxy Load Balancer...
Dec 12 00:13:19 apache-LB.fefe.lan systemd[1]: Started HAProxy Load Balancer.
[root@apache-LB ~]#
```

## Load Balancing

Put HAProxy in front of the web servers.

At the bottom of the `/etc/haproxy/haproxy.cfg` file, I will add more new sections.

- **frontend**: Defines a reverse proxy which will listen for incoming requests on a specific IP address and port.
- **backend**: Defines a pool of servers that the **frontend** will forward requests to.
- **listen**: A shorthand notation which combines **frontend** and **backend** features into a single command.

```
$ sudo vi /etc/haproxy/haproxy.cfg
```

```
global
```

```
    log /dev/log local0
    log /dev/log local1 notice
    chroot /var/lib/haproxy
    stats timeout 30s
    user haproxy
    group haproxy
    daemon
```

```
defaults
```

```
    log global
    mode http
    option httplog
    option dontlognull
    timeout connect 5000
    timeout client 50000
    timeout server 50000
```

```
frontend http_front
```

```
    bind *:80
    stats uri /haproxy?stats
    default_backend http_back
```

```
backend http_back
```

```
    Balance roundrobin
    server webserver-1.fefe.lan 161.35.160.194:80 check
    server webserver-2.fefe.lan 161.35.168.231:80 check
    server webserver-3.fefe.lan 165.232.40.31:80 check
```

**Restart the Haproxy service**

```
$ sudo systemctl restart haproxy
```

# Testing the setup

With the HAProxy configured and running, open your load balancer server's public IP in a web browser and check for connectivity to the backend. The parameter stats uri in the configuration enables the statistics page at the defined address as seen below.

http://apache-LB.fefe.lan/haproxy?stats

When the statistics page is loaded and all of the servers are listed in green, that means the configuration was successful.

**HAProxy version 1.8.23, released 2019/11/25**  
**Statistics Report for pid 22310**

> **General process information**

pid = 22310 (process #1, nbproc = 1, nbthread = 1)  
 uptime = 0d 0h02m59s  
 system limits: memmax = unlimited; ulimit-n = 8043  
 maxsock = 8043; maxconn = 4000; maxpipes = 0  
 current conns = 1; current pipes = 0/0; conn rate = 0/sec  
 Running tasks: 1/17; idle = 100 %

■ active UP  
■ active UP, going down  
■ active DOWN, going up  
■ active or backup DOWN  
■ active or backup DOWN for maintenance (MAINT)  
■ active or backup SOFT STOPPED for maintenance  
■ backup UP  
■ backup UP, going down  
■ backup DOWN, going up  
■ not checked

Note: "NOLB"/"DRAIN" = UP with load-balancing disabled.

Display option:  
 • Scope :   
 • [Hide "DOWN" servers](#)  
 • [Refresh now](#)  
 • [CSV export](#)

main		Queue		Session rate			Sessions				Bytes		Denied	Errors		Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Ch	
Frontend	0	0	-	0	0	0	3	000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

http front		Queue		Session rate			Sessions				Bytes		Denied	Errors		Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Ch	
Frontend	0	1	-	1	2	3	000	6	0	0	0	0	9	674	482	858	0	0	0	0	0	0	0	0	0	0

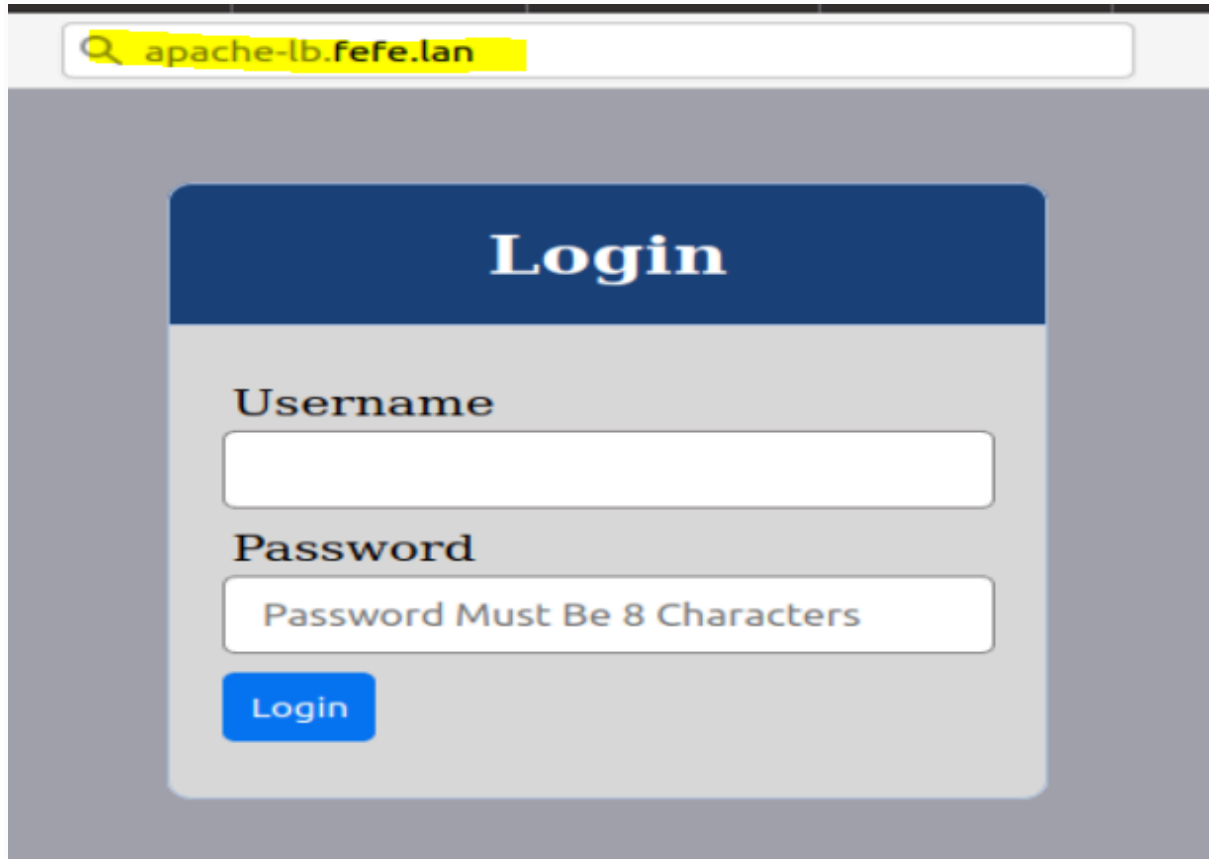
static		Queue		Session rate			Sessions				Bytes		Denied	Errors		Warnings		Server							
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Ch
static	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2m59s	DOWN	L4CON	in 0ms	1	0
Backend	0	0	-	0	0	0	0	0	300	0	0	0	0	0	0	0	0	0	0	2m59s	DOWN	L4CON	in 0ms	0	0

app		Queue		Session rate			Sessions				Bytes		Denied	Errors		Warnings		Server							
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Ch
app1	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2m58s	DOWN	L4CON	in 0ms	1	0
app2	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2m58s	DOWN	L4CON	in 0ms	1	0
app3	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2m58s	DOWN	L4CON	in 0ms	1	0
app4	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2m58s	DOWN	L4CON	in 0ms	1	0
Backend	0	0	-	0	0	0	0	0	300	0	0	0	0	0	0	0	0	0	0	2m58s	DOWN	L4CON	in 0ms	0	0

http_back		Queue		Session rate			Sessions				Bytes		Denied	Errors		Warnings		Server								
	Cur	Max	Limit	Cur	Max	Limit	Cur	Max	Limit	Total	LbTot	Last	In	Out	Req	Conn	Resp	Retr	Redis	Status	LastChk	Wght	Act	Bck	Ch	
webserv-1.fefe.lan	0	0	-	0	1	0	0	1	0	1	1	2m48s	0	0	0	0	0	0	0	1	15s	DOWN	L4CON	in 0ms	1	
webserv-2.fefe.lan	0	0	-	0	1	0	0	1	0	1	2	1m23s	0	0	0	0	0	0	0	2	7s	UP	2/3	1	0	
webserv-3.fefe.lan	0	0	-	0	1	0	0	1	0	8	8	14s	3	344	8	320	0	0	0	0	0	2m59s	UP	L4CON	in 0ms	1
Backend	0	0	-	0	1	0	2	300	8	11	14s	3	344	8	320	0	0	0	0	3	2m59s	UP	L4CON	in 0ms	1	

## Verify that all 3 web servers are serving requests.

Use the loadbalacer's address on the browser to send repeated requests to the web servers while using the tail command below to capture the requests on the 3 web server terminals.



```
$ tail -f /var/log/httpd/access_log
```

```
[root@webserver-1 ~]#  
[root@webserver-1 ~]# tail -f /var/log/httpd/access_log  
113.236.87.17 - - [12/Dec/2020:20:30:48 +0000] "GET /pmd/index.php HTTP/1.1" 404 196 "-" "  
42.86.118.197 - - [12/Dec/2020:21:09:02 +0000] "GET /phpmyadmin/index.php HTTP/1.1" 404 196 "-" "Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/69.0.3464.0 Safari/537.36"  
42.86.118.197 - - [12/Dec/2020:21:09:02 +0000] "GET /pmd/index.php HTTP/1.1" 404 196 "-" "Mozilla/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/69.0.3464.0 Safari/537.36"  
:::1 - - [12/Dec/2020:21:43:47 +0000] "GET / HTTP/1.1" 302 2455 "-" "curl/7.61.1"  
165.232.37.154 - - [12/Dec/2020:21:57:57 +0000] "GET /login.php HTTP/1.1" 504 247 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"  
165.232.37.154 - - [12/Dec/2020:22:06:12 +0000] "GET / HTTP/1.1" 504 247 "-" "Mozilla/5.0 (compatible; Googlebot/2.1; +http://www.google.com/bot.html)"  
165.232.37.154 - - [12/Dec/2020:22:08:57 +0000] "GET / HTTP/1.1" 504 247 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"  
165.232.37.154 - - [12/Dec/2020:22:09:13 +0000] "GET /login.php HTTP/1.1" 200 717 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
```

```
[root@webserver-2 ~]# tail -f /var/log/httpd/access_log
165.232.37.154 - - [12/Dec/2020:22:09:20 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:09:38 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:09:46 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:09:48 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:09:51 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:09:58 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:10:15 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
165.232.37.154 - - [12/Dec/2020:22:36:15 +0000] "GET / HTTP/1.1" 302 2455 "-" "
Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox/83.0"
91.199.118.137 - - [13/Dec/2020:00:01:04 +0000] "CONNECT aahwwx.52host.xyz:443
HTTP/1.1" 302 2455 "-" "Go-http-client/1.1"
165.232.37.154 - - [13/Dec/2020:01:26:00 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
```

```
[root@webserver-3 ~]#
[root@webserver-3 ~]# tail -f /var/log/httpd/access_log
165.232.37.154 - - [13/Dec/2020:01:07:55 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
/83.0"
165.232.37.154 - - [13/Dec/2020:01:08:09 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
/83.0"
165.232.37.154 - - [13/Dec/2020:01:09:05 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
/83.0"
165.232.37.154 - - [13/Dec/2020:01:09:07 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
/83.0"
165.232.37.154 - - [13/Dec/2020:01:09:20 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
/83.0"
165.232.37.154 - - [13/Dec/2020:01:09:45 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
/83.0"
165.232.37.154 - - [13/Dec/2020:01:10:19 +0000] "GET /login.php HTTP/1.1" 200 7
17 "-" "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:83.0) Gecko/20100101 Firefox
```