HA Proxy Load Balancer

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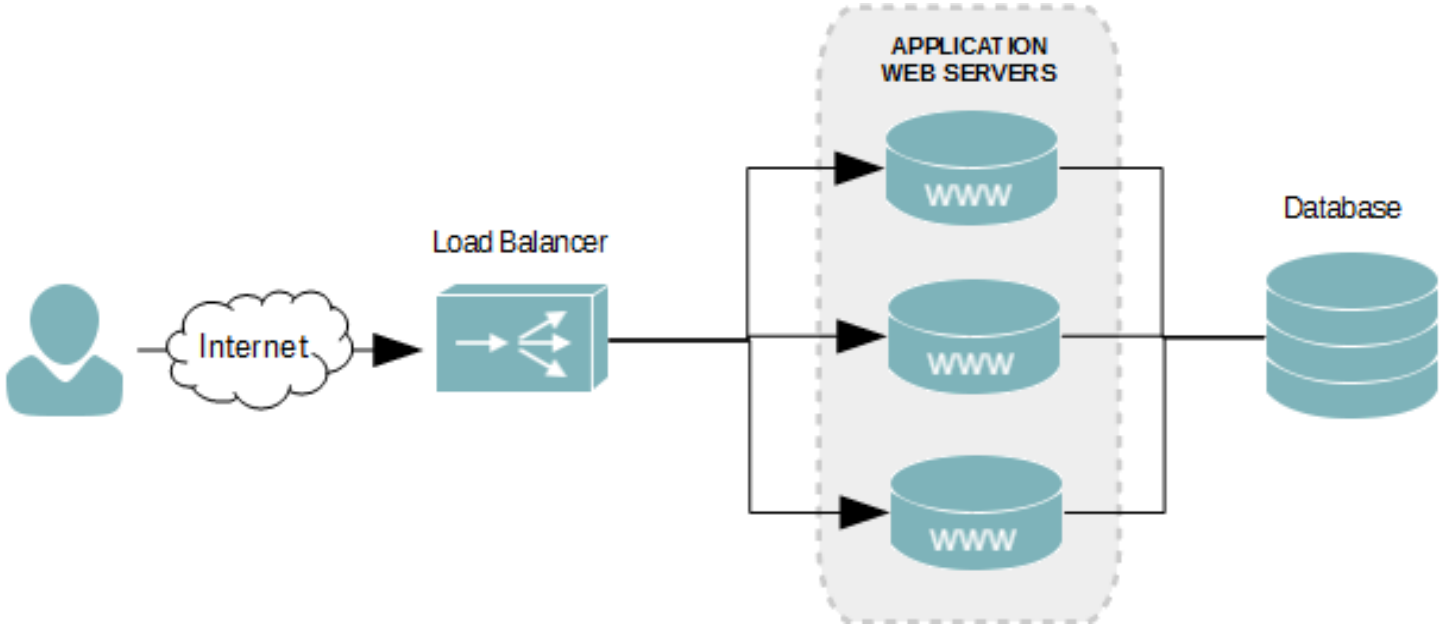
What is a Load Balancer?

- A load balancer distributes network load across multiple servers in the most efficient manner, ensuring reliability by sending requests only to servers that are online and capable of fulfilling those requests.



Few Load Balancing Software

1. HA Proxy
2. Nginx
3. Kemp LoadMaster
4. AWS Loadbalancer
5. Critix ADC
6. Baracuda Loadbalancer ADC
7. ZEVENET

HAProxy is a free, very fast and reliable solution offering high availability, load balancing, and proxying for TCP and HTTP-based applications. It is particularly suited for very high traffic web sites and powers quite a number of the world's most visited ones.

Reputed brands in the world, like below.

Airbnb
GitHub
Imgur
Reddit

Algorithm of HA Proxy

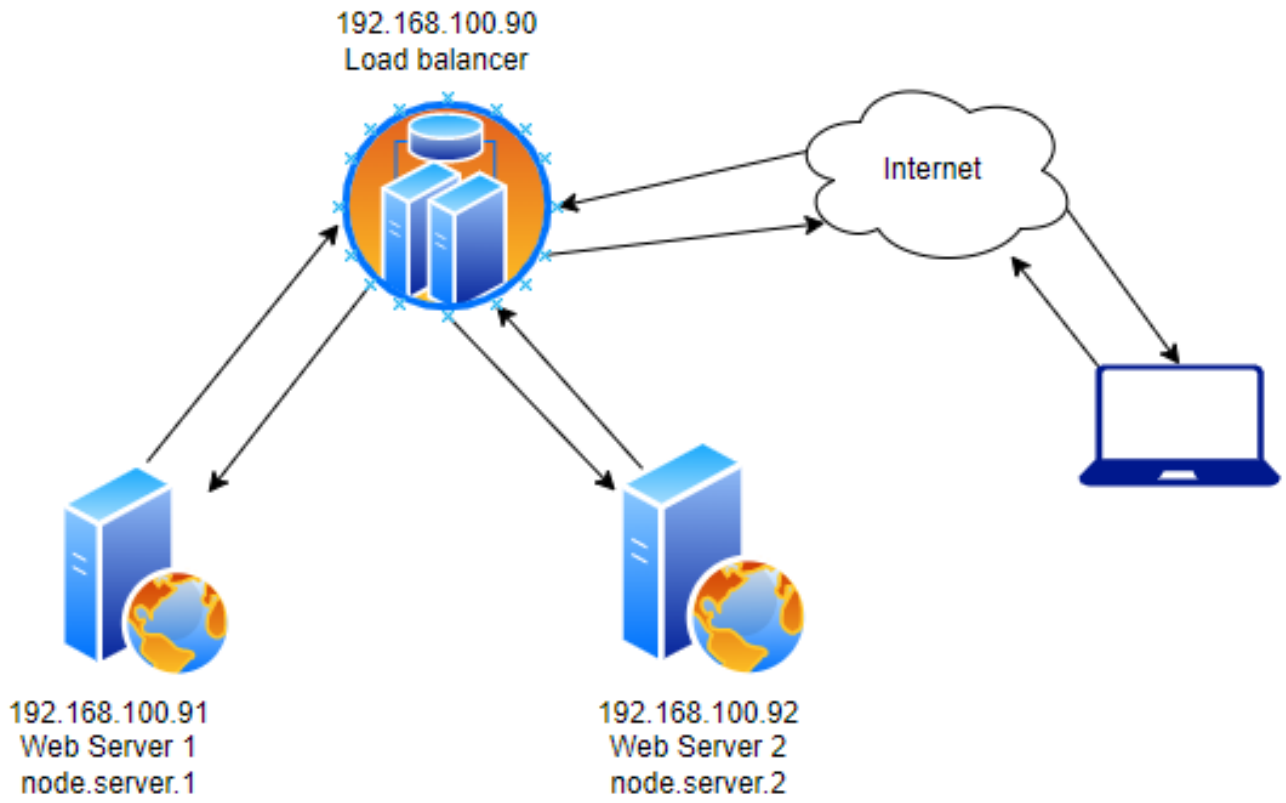
Roundrobin: Each server is used in turns according to their weights. This is the smoothest and fairest algorithm when the servers' processing time remains equally distributed. This algorithm is dynamic, which allows server weights to be adjusted on the.

Leastconn: The server with the lowest number of connections is chosen. Round-robin is performed between servers with the same load. Using this algorithm is recommended with long sessions, such as LDAP, SQL, TSE, etc, but it is not very well suited for short sessions such as HTTP.

First: The first server with available connection slots receives the connection. The servers are chosen from the lowest numeric identifier to the highest, which defaults to the server's position on the farm. Once a server reaches its maxconn value, the next server is used.

Source: The source IP address is hashed and divided by the total weight of the running servers to designate which server will receive the request. This way the same client IP address will always reach the same server while the servers stay the same.

Installation & Configuration of HA Proxy



Installation & Configuration of HA Proxy

Setting Up hostname for each server

cat /etc/hostname
hostnamectl set-hostname node.test.com

Configuring the balancer server

Go to /etc/hosts and put the below lines on every node

192.168.100.90 node.test.com
192.168.100.91 node.server.1
192.168.100.92 node.server.2

Installing HA Proxy on balancer

yum info haproxy
yum install gcc pcre-devel tar make -y
wget http://www.haproxy.org/download/2.0/src/haproxy-2.0.7.tar.gz
tar xzvf haproxy.tar.gz
cd haproxy-2.0.7
make TARGET=linux-glibc
make install
mkdir -p /etc/haproxy
mkdir -p /var/lib/haproxy
touch /var/lib/haproxy/stats
ln -s /usr/local/sbin/haproxy /usr/sbin/haproxy
cp ~/haproxy-2.0.7/examples/haproxy.init /etc/init.d/haproxy
chmod 755 /etc/init.d/haproxy
systemctl daemon-reload
systemctl enable haproxy
useradd -r haproxy
haproxy -v
firewall-cmd --permanent --add-service=http
firewall-cmd --permanent --add-port=8181/tcp
firewall-cmd --reload
firewall-cmd --list-all

Files and directories

Config File & Directory
✓ /etc/haproxy
Configuration directory
✓ /etc/haproxy/haproxy.cfg
Configuration file
✓ /var/log/ haproxy.log
Log file

HA Proxy Configuration

View the Conf file from /etc/haproxy/haproxy.cfg
Take backup of this file
cp /etc/haproxy/haproxy.cfg /etc/haproxy/haproxy.cfg.bkp
Now Configure as below

vi /etc/haproxy/haproxy.cfg, put this line

```
global
   log /dev/log local0
   log /dev/log local1 notice
   chroot /var/lib/haproxy
   stats socket /run/haproxy/admin.sock mode 660 level admin
   stats timeout 30s
   user haproxy
   group haproxy
   daemon

defaults
   log global
   mode http
```

HA Proxy Configuration

```
    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 192.168.100.91:80 check
    server 192.168.100.92:80 check
```

Test The balancer

http://192.168.100.90

Thanks