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Setting Up Web Servers Load Balancing Using 'POUND' on RHEL/CentOS

by [Thilina Uvindasiri](#) | Published: July 10, 2015 | Last Updated: July 16, 2015



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POUND is a load balancing program developed by ITSECURITY Company. It is a lightweight open source reverse proxy tool which can be used as a web-server load balancer to distribute load among several servers. There are several advantages POUND gives to end user which are very convenient and does the job right.

- Supports virtual hosts.
- Configurable.
- When a backend server is failed or recovered from a failure, it detects it automatically and bases its load balancing decisions according to that.
- It rejects incorrect requests.
- No specified browser or webservers.

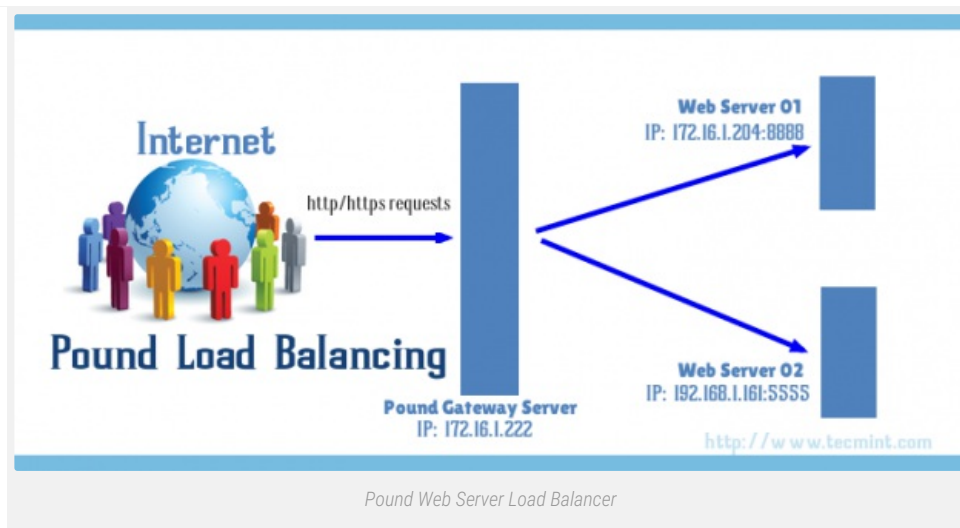
Let's have a look at how can get this hack done.

First of all you will need a scenario for better understanding about getting this done. So I will use a scenario where there are two webservers and one gateway server which needs to balance the requests comes to gateway server to webservers.

Pound Gateway Server : 172.16.1.222

Web Server 01 : 172.16.1.204

Web Server 02 : 192.168.1.161



Step1: Install Pound Load Balancer on Gateway Server

1. The easiest way to install Pound is using pre-compiled RPM packages, you can find RPMs for RedHat based distributions at:

- <http://www.invocha.ch/pub/packages/pound/>

Alternatively, Pound can be easily installed from the [EPEL repository](#) as shown below.

```
# yum install epel-release
# yum install Pound
```

After Pound installed, you can verify whether it is installed by issuing this command.

```
# rpm -qa |grep Pound
```

```
[root@Tecmint etc]# rpm -qa |grep Pound
Pound-2.6-2.el6.1.x86_64
[root@Tecmint etc]#
```

Install Pound Load Balancer

2. Secondly, you need **two web-servers** to balance the load and make sure you have clear identifiers in order to test the pound configuration works fine.

Here I have two servers bearing IP addresses 172.16.1.204 and 192.168.1.161.

For ease of use, I have created python SimpleHTTPServer to create an instant webserver on both servers. Read about [python SimpleHTTPServer](#)

In my scenario, I have my **webserver01** running on 172.16.1.204 through port 8888 and **webserver02** running on 192.168.1.161 through port 5555.

```
[root@test webserver01]# python -m SimpleHTTPServer 8888
Serving HTTP on 0.0.0.0 port 8888 ...
```

Pound Webserver 1

```
[root@localhost webserver2]# python -m SimpleHTTPServer 5555
Serving HTTP on 0.0.0.0 port 5555 ...
```

Pound Webserver 2

Step 2: Configure Pound Load Balancer

3. Now it's time to make the configurations done. Once you have installed pound successfully, it creates the pound's config file in `/etc`, namely `pound.cfg`.

We have to edit the server and backend details in order to balance the load among the web servers. Go to `/etc` and open `pound.cfg` file for editing.

```
# vi /etc/pound.cfg
```

Make the changes as suggested below.

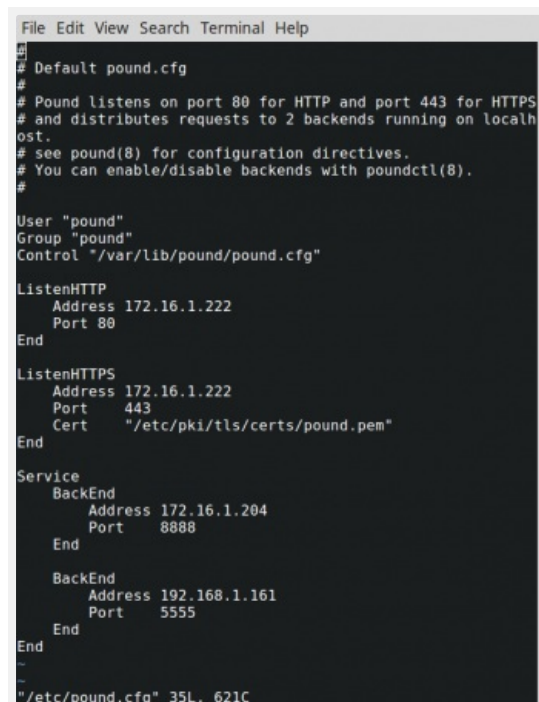
```
ListenHTTP
  Address 172.16.1.222
  Port 80
End

ListenHTTPS
  Address 172.16.1.222
  Port 443
  Cert "/etc/pki/tls/certs/pound.pem"
End

Service
  BackEnd
    Address 172.16.1.204
    Port 8888
  End

  BackEnd
    Address 192.168.1.161
    Port 5555
  End
End
```

This is how my `pound.cfg` file looks like.



```
File Edit View Search Terminal Help
#
# Default pound.cfg
#
# Pound listens on port 80 for HTTP and port 443 for HTTPS
# and distributes requests to 2 backends running on localh
# ost.
# see pound(8) for configuration directives.
# You can enable/disable backends with poundctl(8).
#
User "pound"
Group "pound"
Control "/var/lib/pound/pound.cfg"

ListenHTTP
  Address 172.16.1.222
  Port 80
End

ListenHTTPS
  Address 172.16.1.222
  Port 443
  Cert "/etc/pki/tls/certs/pound.pem"
End

Service
  BackEnd
    Address 172.16.1.204
    Port 8888
  End

  BackEnd
    Address 192.168.1.161
    Port 5555
  End
End
~
~
"/etc/pound.cfg" 35L, 621C
```

Configure Pound Load Balancer

Under the "ListenHTTP" and "ListenHTTPS" tags, you have to enter the IP address of the server you have installed POUND.

By default a server handles HTTP requests through port 80 and HTTPS requests through port 443. Under the "Service" tag, you can add any amount of sub tags called "Backend". Backend tags bears the IP addresses and the port numbers which the web servers are running on.

Now save the file after editing it correctly and restart the POUND service by issuing one of below commands.

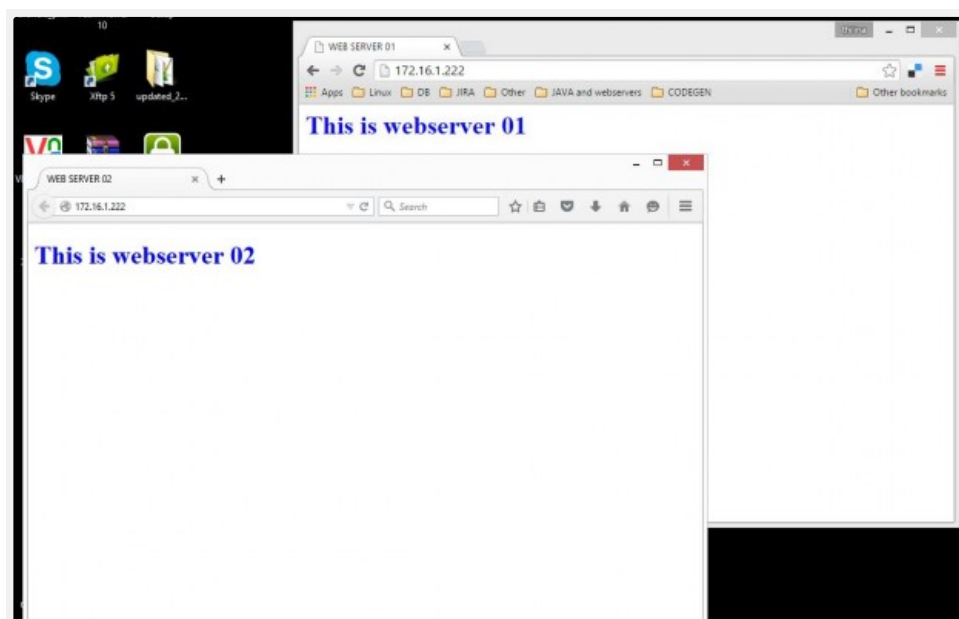
```
# /etc/init.d/pound restart
OR
# service pound restart
OR
# systemctl restart pound.service
```

```
[root@Tecmint etc]# /etc/init.d/pound restart
Stopping Pound: [ OK ]
Starting Pound: pound: /usr/lib64/libcrypto.so.10: no version information available (required by pound)
pound: /usr/lib64/libssl.so.10: no version information available (required by pound)
starting... [ OK ]
[root@Tecmint etc]#
```

Start Pound Load Balancer

4. Now it's time to check. Open two web browsers to check whether our configurations work fine. In the address bar type your POUND gateway's IP address and see what appears.

First request should load the first webserver01 and second request from the other web browser should load the second webserver02.



Check Pound Load Balancing

Furthermore, think of a scenario like if you have two web servers to load balance and one of the server's performance is good and other's performance is not so good.

So when load balancing among them, you will have to consider for which server you have to put more weight on. Obviously for the server with good performance specs.

To balance the load like that, you just have to add a single parameter inside the `pound.cfg` file. Let's have a look at it.

Think server 192.168.1.161:5555 is the better server. Then you need put more requests flow to that server. Under the "Backend" tag which is configured for 192.168.1.161 server, add the parameter "Priority" before the End tag.

Look at below example.

```
File Edit View Search Terminal Help
[root@localhost ~]# cat /etc/pound.cfg
#
# Default pound.cfg
#
# Pound listens on port 80 for HTTP and port 443 for HTTPS
# and distributes requests to 2 backends running on localh
ost.
# see pound(8) for configuration directives.
# You can enable/disable backends with poundctl(8).
#
User "pound"
Group "pound"
Control "/var/lib/pound/pound.cfg"

ListenHTTP
  Address 172.16.1.222
  Port 80
End

ListenHTTPS
  Address 172.16.1.222
  Port 443
  Cert "/etc/pki/tls/certs/pound.pem"
End

Service
  BackEnd
    Address 172.16.1.204
    Port 8888
  End
  BackEnd
    Address 192.168.1.161
    Port 5555
    Priority 6
  End
End
[root@localhost ~]#
```

Pound Load Balancing Priority

The range we can use for the **Priority** parameter is between 1-9. If we do not define it, default value of 5 will be assigned.

Then load will be balanced equally. If we define the Priority number, POUND will load the server with higher priority number more often. So in this case, 192.168.1.161:5555 will be loaded more often than the server 172.16.1.204:8888.

Step 3: Planning Emergency Breakdowns

Emergency Tag: This tag is used to load a server in case of all the back end servers are dead. You can add it before the last End tag of **pound.cfg** as follows.

```
"Emergency
  Address 192.168.5.10
  Port 8080
End"
```

6. POUND always keep track of which backend servers are alive and which are not. We can define after how many seconds POUND should checkout the backend servers by adding **"Alive"** parameter in **pound.cfg**.

You can use the parameter as **"Alive 30"** for set it to 30 seconds. Pound will temporarily disable the backend servers which are not responding. When we say not responding server may be dead or cannot establish a connection at that moment.

POUND will check the disabled backend server after every time period you have defined in the **pound.cfg** file in case if the server could establish a connection, then POUND can get back to work with the server.

7. POUND daemon will be handled by **poundctl** command. By having that we don't need to edit the **pound.cfg** file and we can issue **Listner Server, BackEnd** servers and sessions etc. via a single command.

Syntax: **poundctl -c /path/to/socket [-L/-l] [-S/-s] [-B/-b] [-N/-n] [-H] [-X]**

- -c defines path to your socket.
- -L / -l defines the listener of your architecture.
- -S / -s defines the service.
- -B / -b defines the backend servers.

See **poundctl** man pages for more information.

Hope you enjoy this hack and discover more options regarding this. Feel free to comment below for any suggestions and ideas. Keep connected with Tecmint for handy and latest How To's.

Read Also: [Installing XR Crossroads Load Balancer for Web Servers](#)

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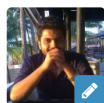
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Tags: [Apache](#) [load balancer](#) [pound](#)



Thilina Uvindasiri

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I'm a BSc Special (Hons) graduate in Information Technology and works as an Engineer-Systems. Love to work, explore and research Linux and play rugby as a hobby.

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Pankaj Gupta · July 11, 2018 at 1:44 pm

Hi,

I have 4 Pound servers on Linux environment where Dynamic configuration is done. Is there any method to take backup of Dynamic Configuration. Cause when ever the pound is restarted the configuration is lost.

Please suggest

Best Regards

Pankaj

[Reply](#)

Surender · August 2, 2016 at 12:47 pm

Dear Thilina Uvindasiri,

I want to learn apace load balancing or HA clustering concept without sharing storage.

So please help me to learn this concept.

[Reply](#)



Ravi Saive · August 2, 2016 at 12:57 pm

@Surendra,

For Apache Load Balancing and HA clustering concept I suggest you to read our articles:

[Setup High-Availability Load Balancer with HAProxy to Control Apache Traffic](#)

[Setup High-Performance HHVM with Apache](#)

[Reply](#)

surender · August 2, 2016 at 1:24 pm

Dear Saive,

if there any way to upload and update the document root of apache (centos) . it will reflect to fail over node or may another server.

[Reply](#)



Ravi Saive · August 2, 2016 at 3:19 pm

@Surendra,

A better way to update or sync apache web server files using rsync, for more details read our article [Sync Two Apache Web Server Files Using Rsync](#)

[Reply](#)

Paresh · July 15, 2015 at 3:35 pm

Hi

what kind of redundancy option available for gateway server?

Reply



Thilina Dhanushka · July 16, 2015 at 12:33 pm

Hi Paresh,

Setting up a fail-over for the LB server would do that. Upcoming RedHat clustering for a failover scenario lessons will help you do that.

Reply



Thilina Uvindasiri · July 13, 2015 at 11:46 am

Hi Konrad,

POUND is designed for load balancing of application traffic. To my knowledge, you can't use POUND for balancing domain traffic.

Reply

konrad · July 10, 2015 at 7:11 pm

Hi,

can I configure POUND for openLDAP ?

Reply

GOT SOMETHING TO SAY? JOIN THE DISCUSSION.

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