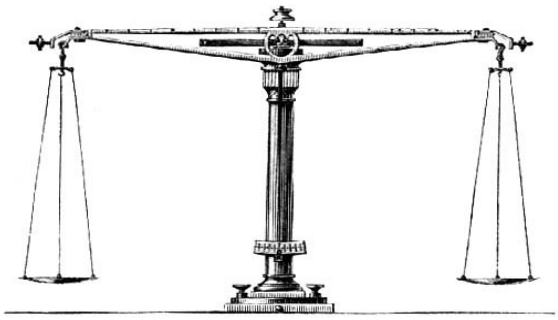
BalanceNG® V3

A Modern Software Load Balancer for Linux and Solaris

Proof of Concept

Connecting to local TCP/IP stack using BNG “tap” interfaces



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1 Rationale

This proof of concept shows how to connect to the local host OS TCP/IP stack using BNG “tap” interfaces and DSR simultaneously. This technique is useful to connect to local running co-processes which may implement SSL offloading, HTTP header inspection, SIP multiplexing/demultiplexing and many other useful functionalities.

2 rp_filter

The Linux “rp_filter” Kernel parameters needs to be set as follows:

```
# for i in /proc/sys/net/ipv4/conf/*/rp_filter ; do echo 0 > $i ; done
```

3 loopback alias

The loopback alias needs to be established as follows (using the virtual server 1 IP address):

```
# ifconfig lo:0 172.17.2.90 netmask 255.255.255.255 -arp up
```

4 ARP flux prevention

The following two Kernel parameters need to be set as follows (as usual and needed for DSR):

```
# echo 1 > /proc/sys/net/ipv4/conf/all/arp_ignore
# echo 2 > /proc/sys/net/ipv4/conf/all/arp_announce
```

5 bng.conf

```
//        configuration taken Fri Feb 10 20:02:35 2012
//        BalanceNG 3.373 (created 2012/02/08)
license   INLAB 39ed5ff716d8a118a7c61f777cbb0446
modules   vrrp,arp,ping,hc,master,slb,tnat,nat,rt
set       localdsr 1
interface 1 {
          name eth0
          access raw
}
interface 2 {
          name bng0
          access tap
          init "ip addr add 10.20.20.20/24 dev bng0; ip link set bng0 up"
}
register  interfaces 1,2
enable    interfaces 1,2
vrrp      {
          vrid 79
          priority 200
          network 1
}
network   1 {
          addr 172.17.2.0
          mask 255.255.255.0
          real 172.17.2.55
          virt 172.17.2.56
          interface 1
}
network   2 {
          addr 10.20.20.0
          mask 255.255.255.0
          real 10.20.20.1
          virt 10.20.20.2
          interface 2
}
register  networks 1,2
enable    networks 1,2
server    1 {
          ipaddr 172.17.2.90
          port 22
          protocol tcp
          target 1
}
```


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```
register  server 1
enable    server 1
target    1 {
          ipaddr 10.20.20.20
          port 22
          protocol tcp
          ping 2,10
          dsr enable
}
register  target 1
enable    target 1
//        end of configuration
```

6 POC

Connecting with telnet from a third test client succeeds immediately (thus connecting to the local sshd):

```
t@src:~ $ telnet 172.17.2.90 22
Trying 172.17.2.90...
Connected to 172.17.2.90.
Escape character is '^]'.
SSH-2.0-OpenSSH_5.8p1 Debian-7ubuntu1

Protocol mismatch.
Connection to 172.17.2.90 closed by foreign host.
t@src:~ $
```

The expected session table entry has been created:

```
# bng control
BalanceNG: connected to PID 25512
bng# sh sessions
  0 sessions
bng# sh sessions
  1 session
  srv tgt  age timeout ftimeout SYNC session-id
  --- --- ---- ------- -------- ---- ------------------
    1   1   62     600        0      172.17.2.92:0
bng#
```


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