My Assumptions

I’m assumed you want all other hosts other than those defined to reachable.

I’m assumed since it says h6 can only “send” to h1 that it can’t receive from h1 other than ssh or telnet, therefore a ping from h6 would not be successful.

Overall connectivity

mininet> pingall

\*\*\* Ping: testing ping reachability

h1 -> h2 h3 h4 X X h7 h8

h2 -> h1 h3 h4 h5 h6 h7 h8

h3 -> h1 h2 X h5 h6 h7 h8

h4 -> h1 h2 X h5 h6 h7 h8

h5 -> X h2 h3 h4 h6 h7 h8

h6 -> X h2 h3 h4 h5 h7 h8

h7 -> h1 h2 h3 h4 h5 h6 h8

h8 -> h1 h2 h3 h4 h5 h6 h7

\*\*\* Results: 10% dropped (50/56 received)

H1 and H2 should be able to exchange any kind of traffic with each other (reachability functionality).

PING 10.0.0.2 (10.0.0.2) 56(84) bytes of data.

64 bytes from 10.0.0.2: icmp\_seq=1 ttl=64 time=0.153 ms

64 bytes from 10.0.0.2: icmp\_seq=2 ttl=64 time=0.035 ms

64 bytes from 10.0.0.2: icmp\_seq=3 ttl=64 time=0.038 ms

^C

--- 10.0.0.2 ping statistics ---

3 packets transmitted, 3 received, 0% packet loss, time 1998ms

rtt min/avg/max/mdev = 0.035/0.075/0.153/0.055 ms

H3 and H4 should never be able to communicate with each other (traffic isolation, similar to VLAN functionality).

mininet> h3 ping h4

PING 10.0.0.4 (10.0.0.4) 56(84) bytes of data.

^C

--- 10.0.0.4 ping statistics ---

86 packets transmitted, 0 received, 100% packet loss, time 85392ms

H3 tcp dump

root@mininet:~# tcpdump

tcpdump: verbose output suppressed, use -v or -vv for full protocol decode

listening on h3-eth0, link-type EN10MB (Ethernet), capture size 262144 bytes

14:43:19.845154 IP 10.0.0.3 > 10.0.0.4: ICMP echo request, id 13675, seq 1, length 64

14:43:20.846010 IP 10.0.0.3 > 10.0.0.4: ICMP echo request, id 13675, seq 2, length 64

14:43:21.846751 IP 10.0.0.3 > 10.0.0.4: ICMP echo request, id 13675, seq 3, length 64

14:43:22.846706 IP 10.0.0.3 > 10.0.0.4: ICMP echo request, id 13675, seq 4, length 64

14:43:22.867189 LLDP, length 27

H1 should be able to telnet and SSH to H5, but no other traffic should be allowed through (stateless firewall functionality).

mininet> h1 ssh h5

ssh: connect to host 10.0.0.5 port 22: Connection refused

mininet> h1 telnet h5

Trying 10.0.0.5...

telnet: Unable to connect to remote host: Connection refused

Both refused by h5 as no ssh/telnet server running on h5 but proves reachability

H5 tcpdump

tcpdump: verbose output suppressed, use -v or -vv for full protocol decode

listening on h5-eth0, link-type EN10MB (Ethernet), capture size 262144 bytes

14:54:14.540803 IP 10.0.0.1.47292 > 10.0.0.5.ssh: Flags [S], seq 3527416427, win 29200, options [mss 1460,sackOK,TS val 13406097 ecr 0,nop,wscale 9], length 0

14:54:14.540813 IP 10.0.0.5.ssh > 10.0.0.1.47292: Flags [R.], seq 0, ack 3527416428, win 0, length 0

14:54:14.878626 LLDP, length 27

14:54:21.495608 LLDP, length 27

^C

4 packets captured

4 packets received by filter

0 packets dropped by kernel

H1 should be able to telnet and SSH to H6, and H6 should be able to send any kind of traffic to H1 (stateful firewall functionality).

mininet> h1 ssh h6

ssh: connect to host 10.0.0.6 port 22: Connection refused

mininet> h1 telnet h6

Trying 10.0.0.6...

telnet: Unable to connect to remote host: Connection refused

Both refused by h5 as no ssh/telnet server running on h6 but proves reachability

H6 tcpdump

root@mininet:~# tcpdump

tcpdump: verbose output suppressed, use -v or -vv for full protocol decode

listening on h6-eth0, link-type EN10MB (Ethernet), capture size 262144 bytes

15:32:46.567585 IP 10.0.0.1.55442 > 10.0.0.6.ssh: Flags [S], seq 1834810377, win 29200, options [mss 1460,sackOK,TS val 13984104 ecr 0,nop,wscale 9], length 0

15:32:46.567597 IP 10.0.0.6.ssh > 10.0.0.1.55442: Flags [R.], seq 0, ack 1834810378, win 0, length 0

15:32:48.915184 LLDP, length 27

^C

3 packets captured

3 packets received by filter

H1 tcpdump receives icmp request and sends echo but switch drops any packet from h1 to h6 unless its ssh/telnet

root@mininet:~# tcpdump

tcpdump: verbose output suppressed, use -v or -vv for full protocol decode

listening on h1-eth0, link-type EN10MB (Ethernet), capture size 262144 bytes

21:14:11.853132 IP 10.0.0.6 > 10.0.0.1: ICMP echo request, id 29071, seq 25, length 64

21:14:11.853143 IP 10.0.0.1 > 10.0.0.6: ICMP echo reply, id 29071, seq 25, length 64

21:14:12.853010 IP 10.0.0.6 > 10.0.0.1: ICMP echo request, id 29071, seq 26, length 64

21:14:12.853022 IP 10.0.0.1 > 10.0.0.6: ICMP echo reply, id 29071, seq 26, length 64

^C

4 packets captured

4 packets received by filter

0 packets dropped by kernel

For HTTP traffic going from H1 to H7/H8, every second flow should go to H7, and every other flow to H8 (load balancer functionality).

mininet> h1 wget -O - 10.0.0.10

--2017-12-27 20:51:28--  http://10.0.0.10/

Connecting to 10.0.0.10:80... connected.

HTTP request sent, awaiting response... 200 OK

Length: 2084 (2.0K) [text/html]

Saving to: ‘STDOUT’

-                     0%[                    ]       0  --.-KB/s               <!DOCTYPE html PUBLIC "-//W3C//DTD HTML 3.2 Final//EN"><html>

<title>Directory listing for /</title>

<body>

<h2>Directory listing for /</h2>

<hr>

<ul>

<li><a href=".atom/">.atom/</a>

<li><a href=".bash\_history">.bash\_history</a>

<li><a href=".bash\_logout">.bash\_logout</a>

<li><a href=".bashrc">.bashrc</a>

<li><a href=".cache/">.cache/</a>

<li><a href=".config/">.config/</a>

<li><a href=".createTop.py.swp">.createTop.py.swp</a>

<li><a href=".dbus/">.dbus/</a>

<li><a href=".gnome/">.gnome/</a>

<li><a href=".java/">.java/</a>

<li><a href=".local/">.local/</a>

<li><a href=".mininet\_history">.mininet\_history</a>

<li><a href=".nano/">.nano/</a>

<li><a href=".pki/">.pki/</a>

<li><a href=".profile">.profile</a>

<li><a href=".PyCharm2016.3/">.PyCharm2016.3/</a>

<li><a href=".rnd">.rnd</a>

<li><a href=".ssh/">.ssh/</a>

<li><a href=".sudo\_as\_admin\_successful">.sudo\_as\_admin\_successful</a>

<li><a href=".viminfo">.viminfo</a>

<li><a href=".wireshark/">.wireshark/</a>

<li><a href=".Xauthority">.Xauthority</a>

<li><a href="ass.py">ass.py</a>

<li><a href="Ass1.py">Ass1.py</a>

<li><a href="ass2.py">ass2.py</a>

<li><a href="ass2Pox.py">ass2Pox.py</a>

<li><a href="createTop.py">createTop.py</a>

<li><a href="createTop.py.save">createTop.py.save</a>

<li><a href="CustomTopo.py">CustomTopo.py</a>

<li><a href="CustomTopo.pyc">CustomTopo.pyc</a>

<li><a href="CustomTopoTest.py">CustomTopoTest.py</a>

<li><a href="firstpy.py">firstpy.py</a>

<li><a href="l2\_learning.py">l2\_learning.py</a>

<li><a href="LinearTopo.py">LinearTopo.py</a>

<li><a href="mininet/">mininet/</a>

<li><a href="MininetTopAss1.py">MininetTopAss1.py</a>

<li><a href="mininettut">mininettut</a>

<li><a href="openflow/">openflow/</a>

<li><a href="pox/">pox/</a>

<li><a href="pox\_dart/">pox\_dart/</a>

<li><a href="pox\_new/">pox\_new/</a>

<li><a href="PycharmProjects/">PycharmProjects/</a>

<li><a href="sdntopo1.py">sdntopo1.py</a>

<li><a href="swmonitor">swmonitor</a>

<li><a href="tcpdump.pcap">tcpdump.pcap</a>

<li><a href="test.py">test.py</a>

</ul>

<hr>

</body>

</html>

-                   100%[===================>]   2.04K  --.-KB/s    in 0s

2017-12-27 20:51:28 (630 MB/s) - written to stdout [2084/2084]

wireshark from s8 all interfaces

