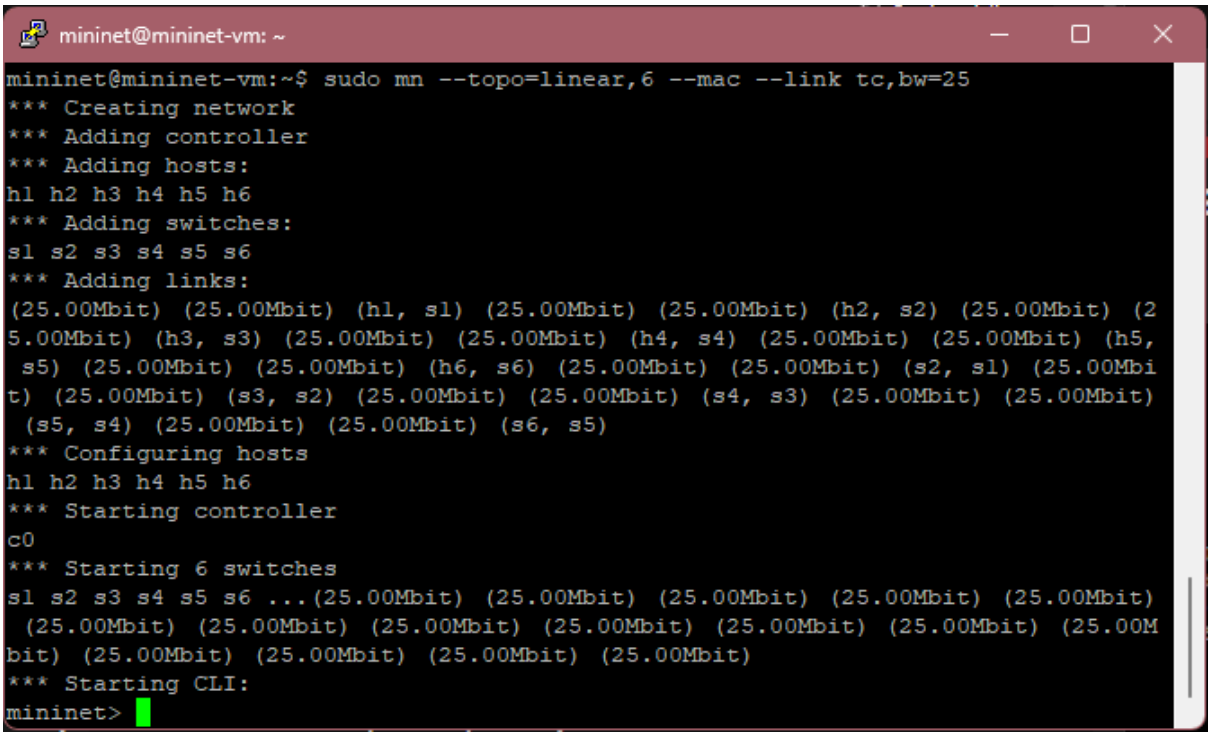
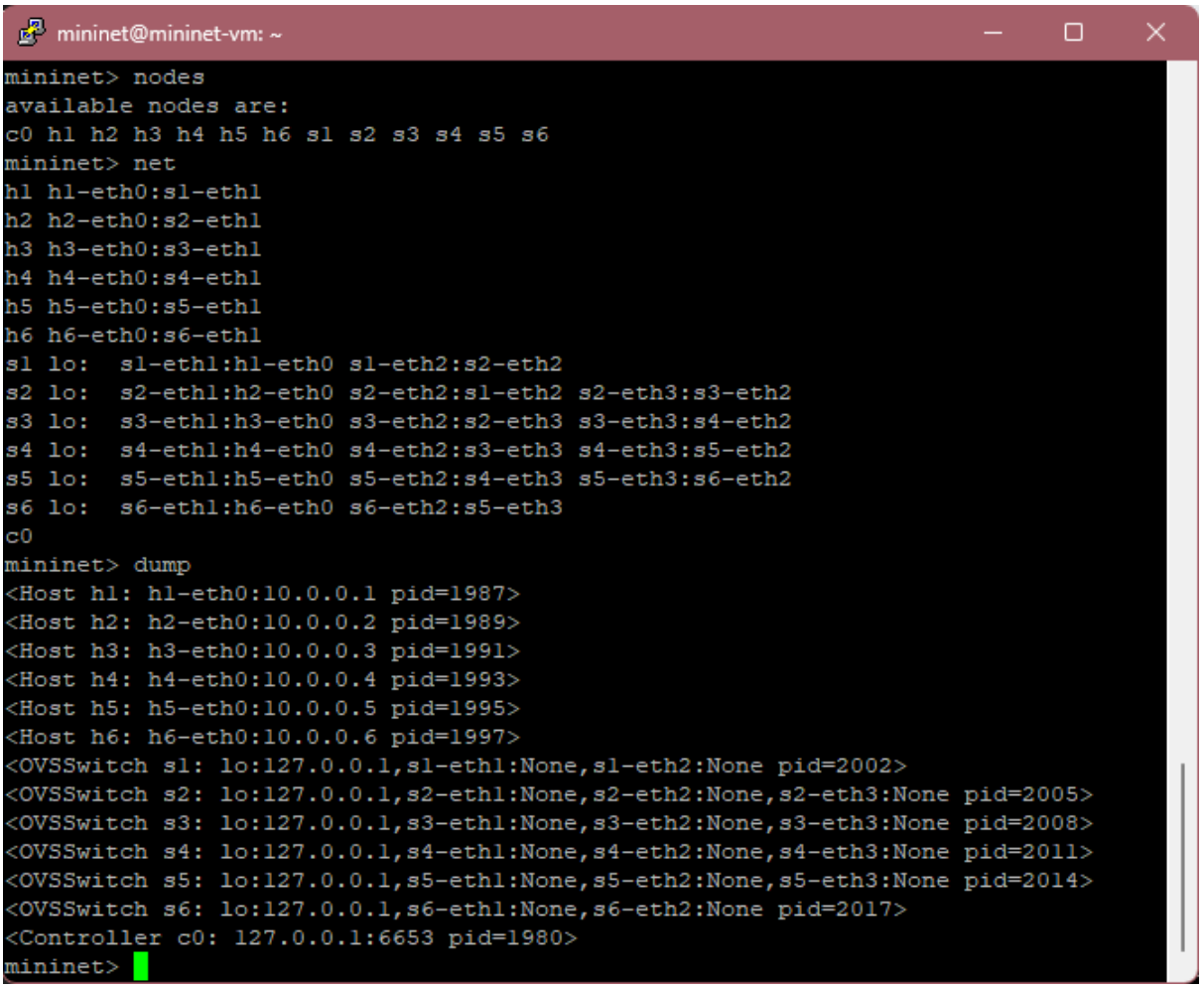
Trabalho Mininet: Topologia linear com 6 switchs

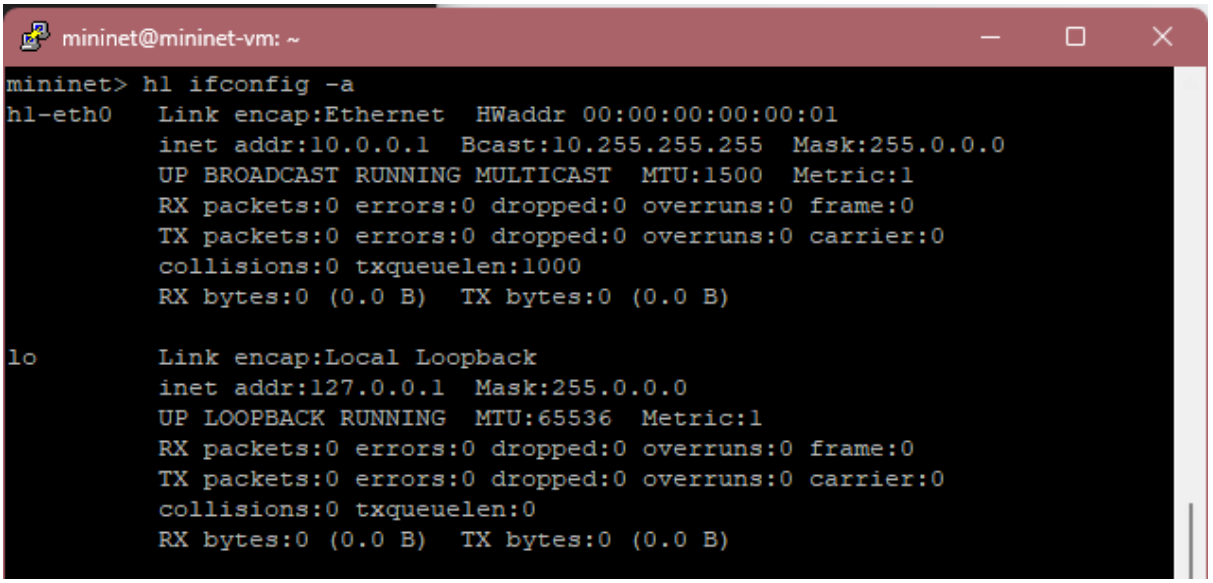
0) Preparar o ambiente

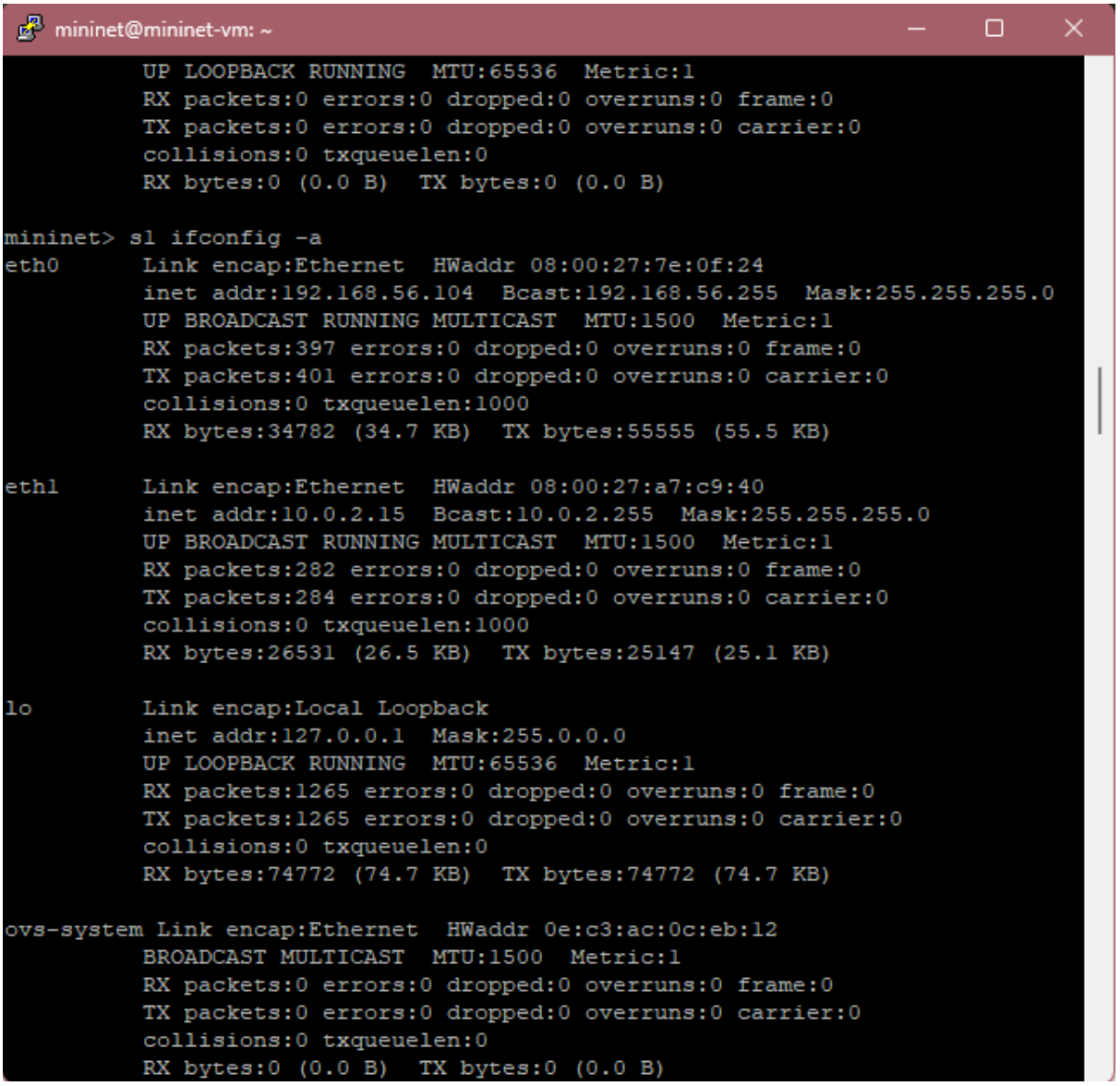


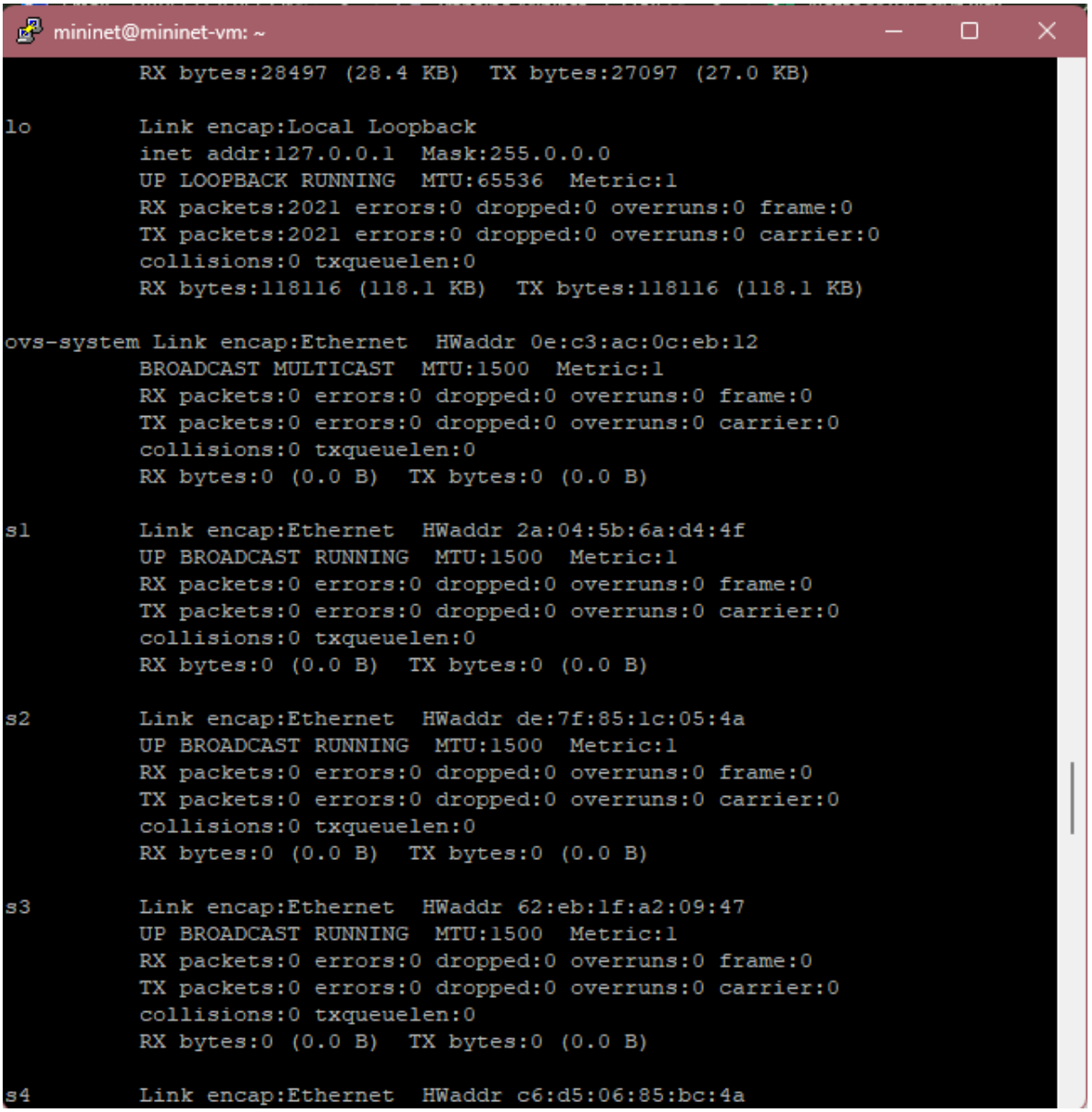
1) Criar a topologia linear com 6 switches, MAC padronizado e 25 Mbps

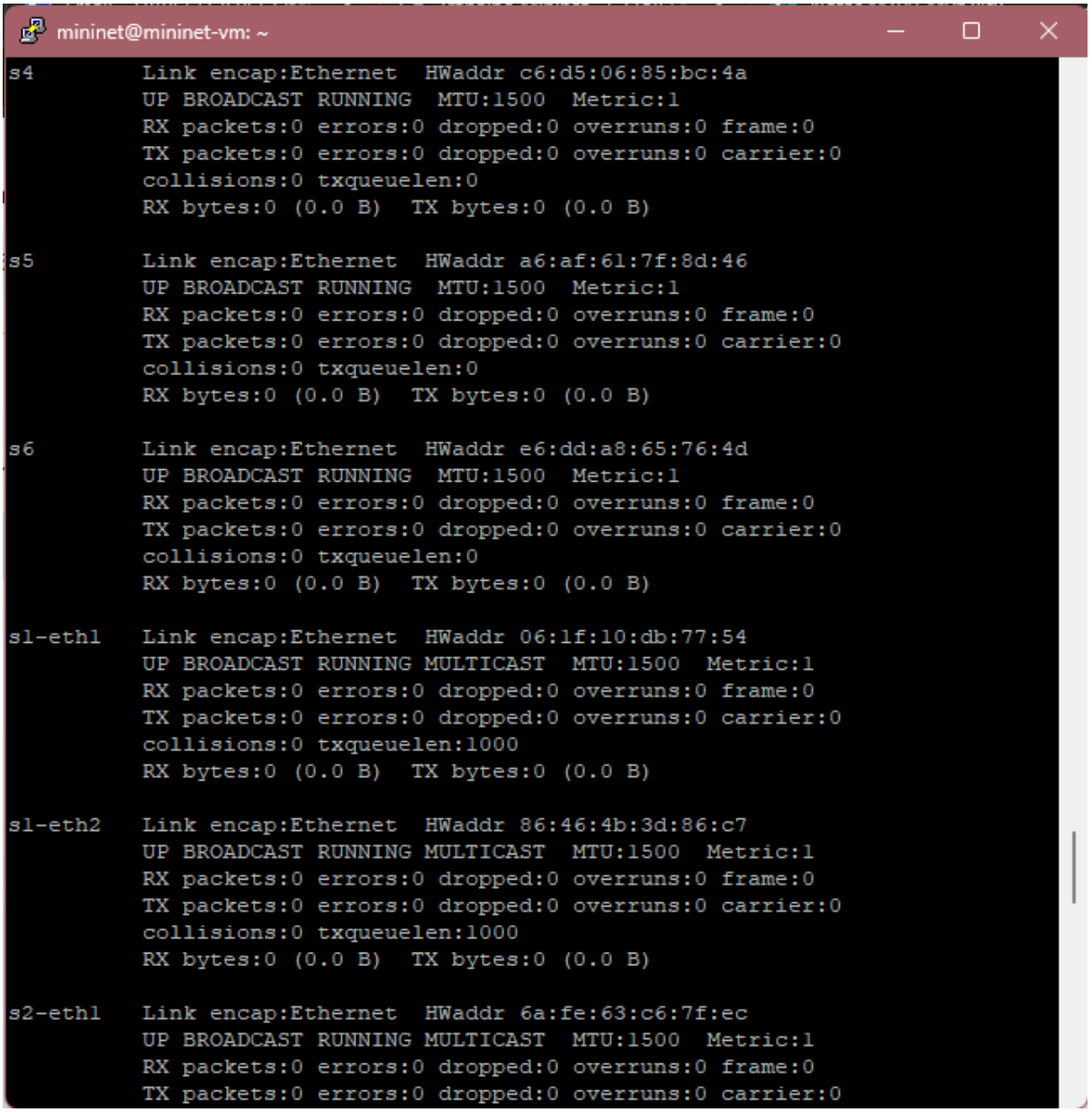


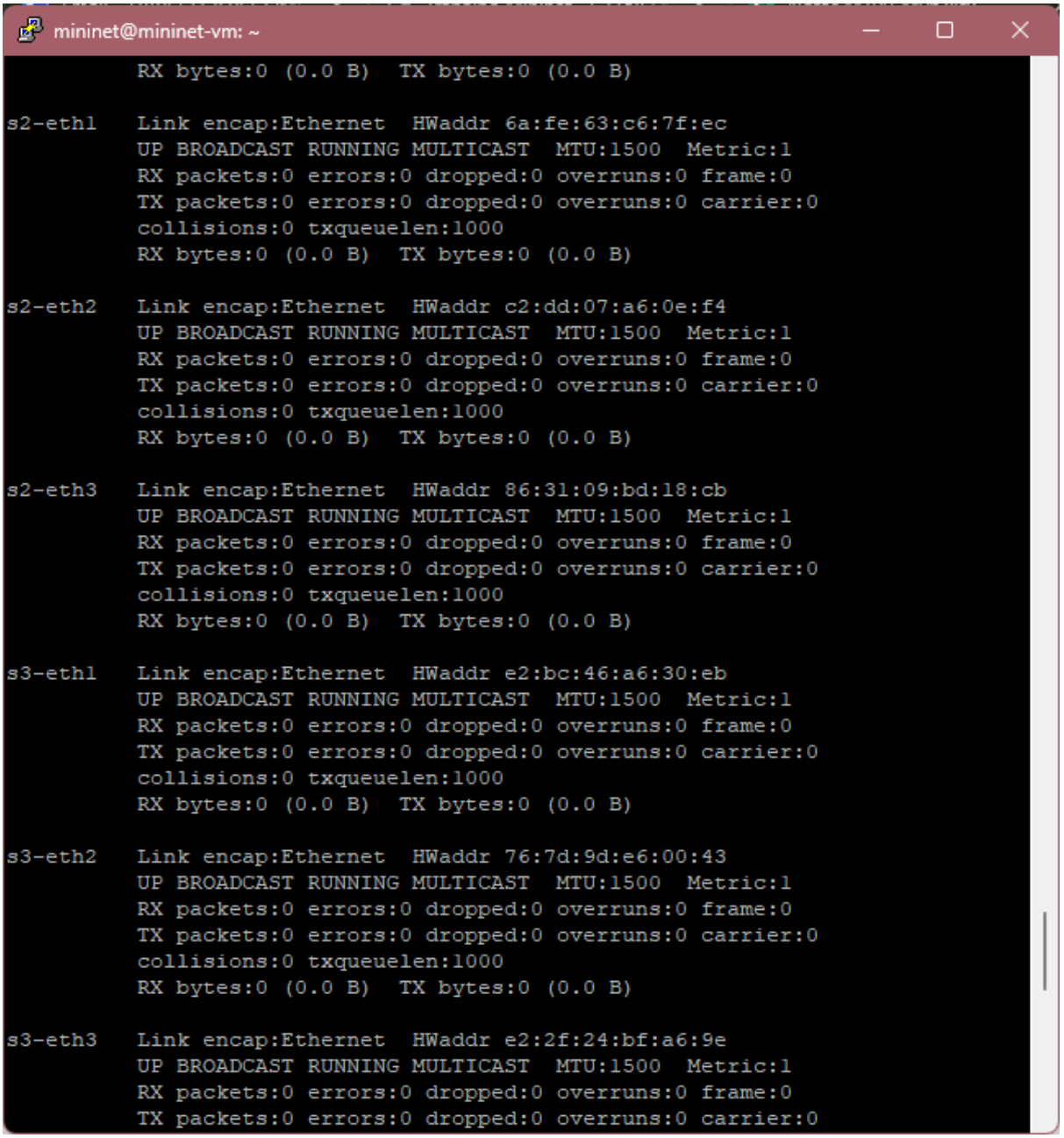
2) Inspecionar interfaces, MAC, IP e porta:

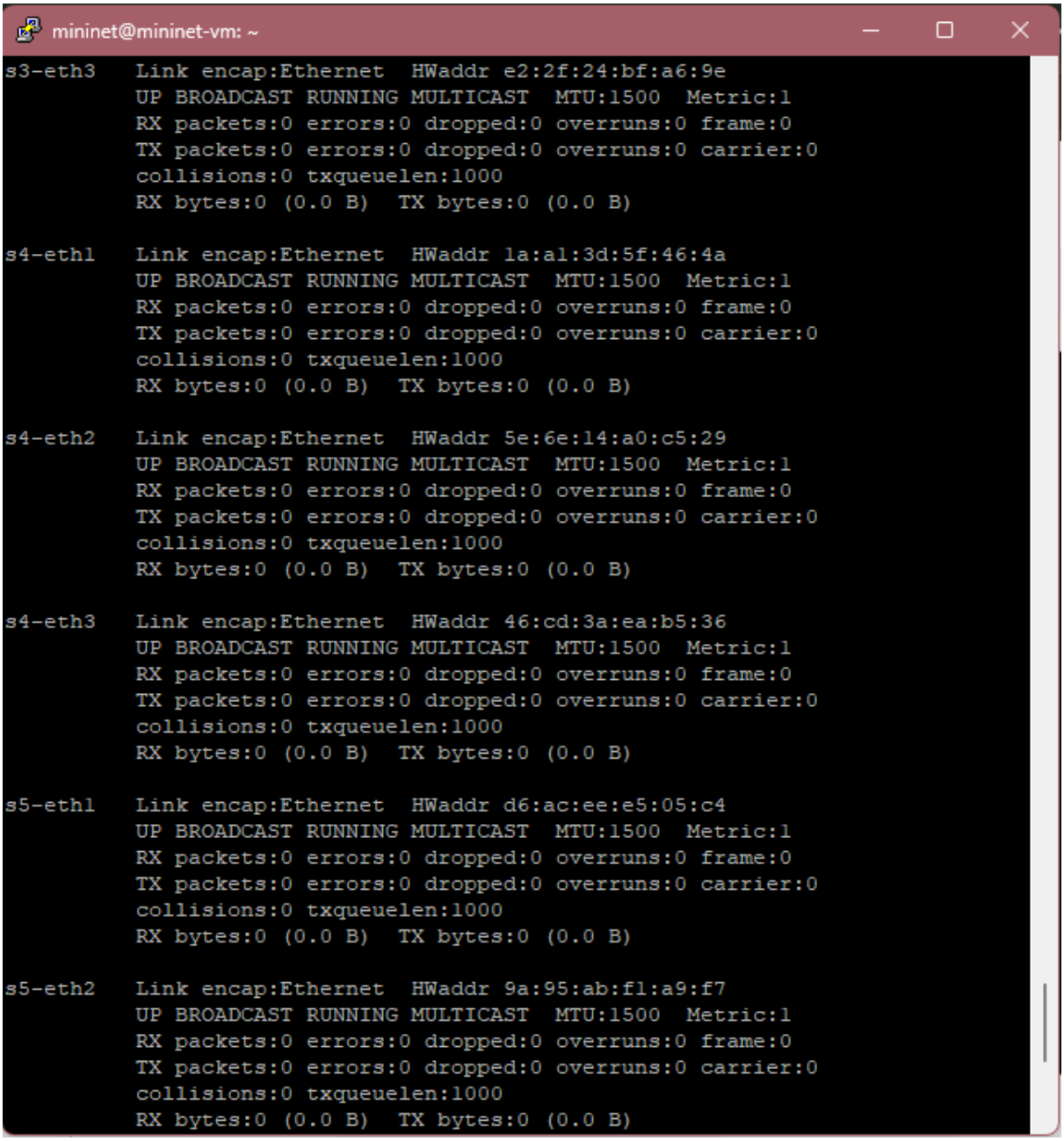


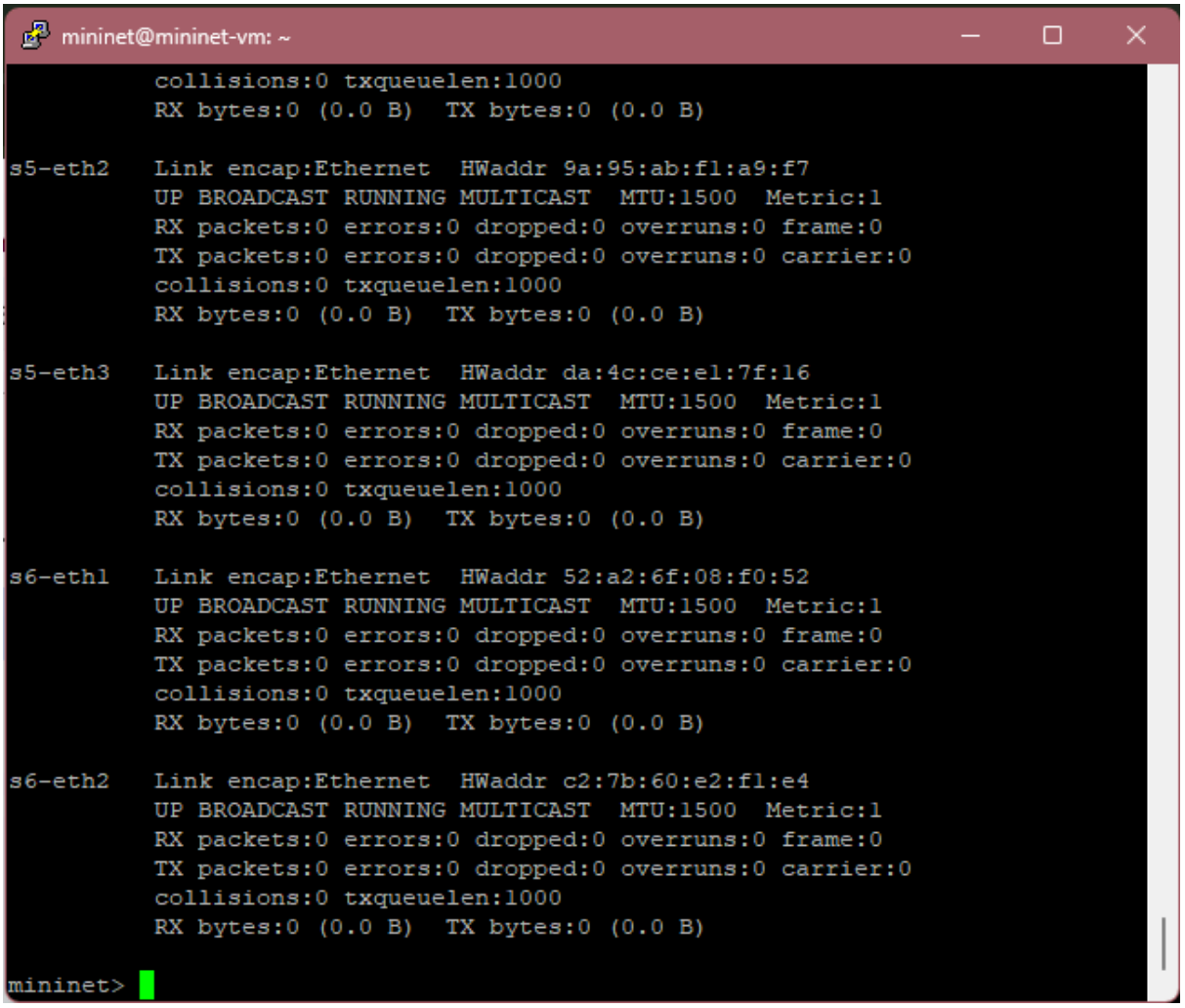

mininet@mininet-vm: ~
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
mininet> sl ifconfig -a
eth0 Link encap:Ethernet HWaddr 08:00:27:7e:0f:24
inet addr:192.168.56.104 Bcast:192.168.56.255 Mask:255.255.255.0
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:397 errors:0 dropped:0 overruns:0 frame:0
TX packets:401 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:34782 (34.7 KB) TX bytes:55555 (55.5 KB)
eth1 Link encap:Ethernet HWaddr 08:00:27:a7:c9:40
inet addr:10.0.2.15 Bcast:10.0.2.255 Mask:255.255.255.0
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:282 errors:0 dropped:0 overruns:0 frame:0
TX packets:284 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:26531 (26.5 KB) TX bytes:25147 (25.1 KB)
lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:1265 errors:0 dropped:0 overruns:0 frame:0
TX packets:1265 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:74772 (74.7 KB) TX bytes:74772 (74.7 KB)
ovs-system Link encap:Ethernet HWaddr 0e:c3:ac:0c:eb:12
BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

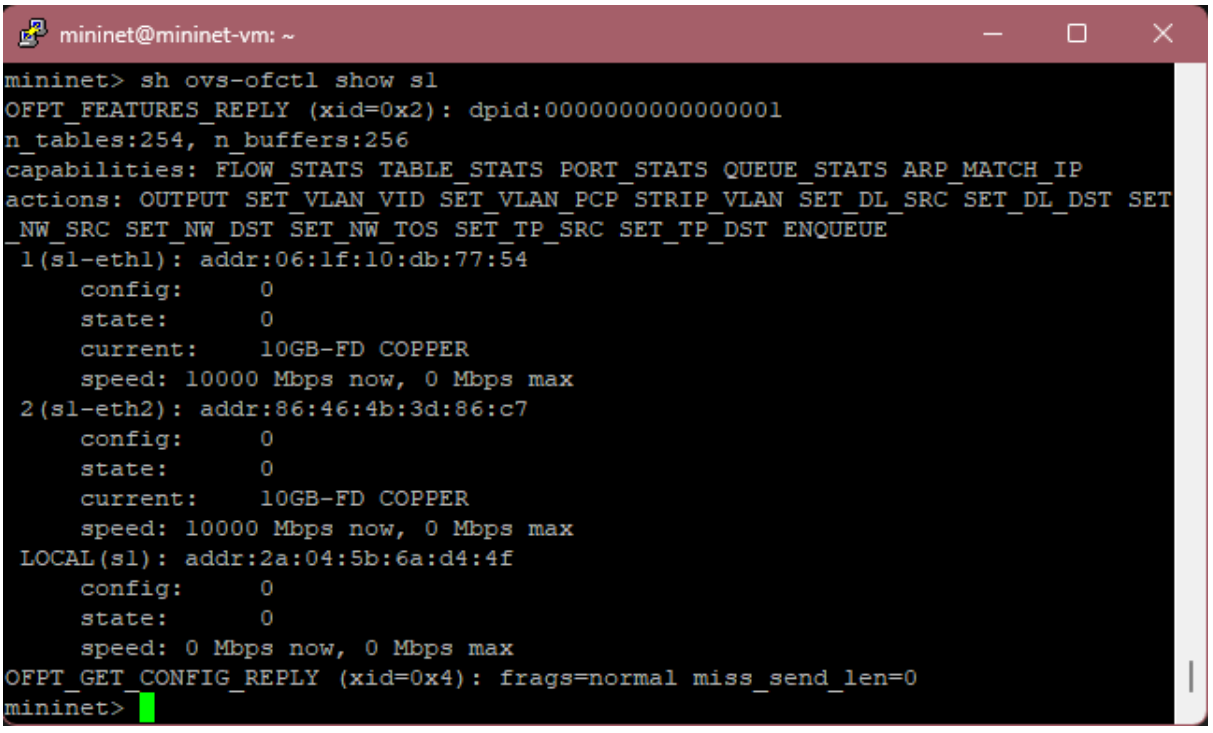

mininet@mininet-vm: ~
RX bytes:28497 (28.4 KB) TX bytes:27097 (27.0 KB)
lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:2021 errors:0 dropped:0 overruns:0 frame:0
TX packets:2021 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:118116 (118.1 KB) TX bytes:118116 (118.1 KB)
ovs-system Link encap:Ethernet HWaddr 0e:c3:ac:0c:eb:12
BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s1 Link encap:Ethernet HWaddr 2a:04:5b:6a:d4:4f
UP BROADCAST RUNNING MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s2 Link encap:Ethernet HWaddr de:7f:85:1c:05:4a
UP BROADCAST RUNNING MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s3 Link encap:Ethernet HWaddr 62:eb:1f:a2:09:47
UP BROADCAST RUNNING MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s4 Link encap:Ethernet HWaddr c6:d5:06:85:bc:4a


mininet@mininet-vm: ~
s4 Link encap:Ethernet HWaddr c6:d5:06:85:bc:4a
UP BROADCAST RUNNING MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s5 Link encap:Ethernet HWaddr a6:af:61:7f:8d:46
UP BROADCAST RUNNING MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s6 Link encap:Ethernet HWaddr e6:dd:a8:65:76:4d
UP BROADCAST RUNNING MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s1-eth1 Link encap:Ethernet HWaddr 06:1f:10:db:77:54
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s1-eth2 Link encap:Ethernet HWaddr 86:46:4b:3d:86:c7
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s2-eth1 Link encap:Ethernet HWaddr 6a:fe:63:c6:7f:ec
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0

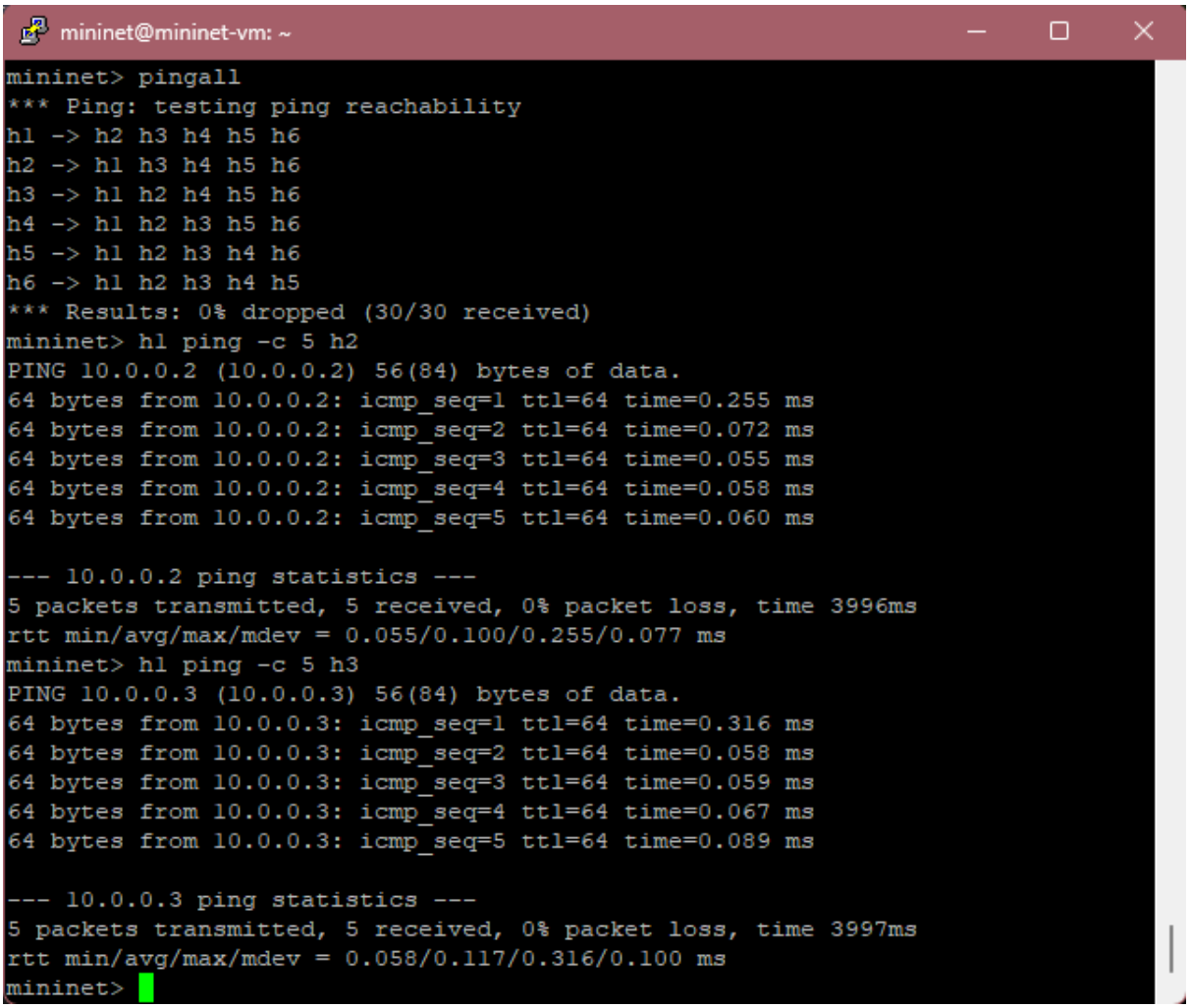

mininet@mininet-vm: ~
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s2-eth1 Link encap:Ethernet HWaddr 6a:fe:63:c6:7f:ec
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s2-eth2 Link encap:Ethernet HWaddr c2:dd:07:a6:0e:f4
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s2-eth3 Link encap:Ethernet HWaddr 86:31:09:bd:18:cb
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s3-eth1 Link encap:Ethernet HWaddr e2:bc:46:a6:30:eb
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s3-eth2 Link encap:Ethernet HWaddr 76:7d:9d:e6:00:43
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s3-eth3 Link encap:Ethernet HWaddr e2:2f:24:bf:a6:9e
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0


mininet@mininet-vm: ~
s3-eth3 Link encap:Ethernet HWaddr e2:2f:24:bf:a6:9e
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s4-eth1 Link encap:Ethernet HWaddr 1a:a1:3d:5f:46:4a
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s4-eth2 Link encap:Ethernet HWaddr 5e:6e:14:a0:c5:29
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s4-eth3 Link encap:Ethernet HWaddr 46:cd:3a:ea:b5:36
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s5-eth1 Link encap:Ethernet HWaddr d6:ac:ee:e5:05:c4
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s5-eth2 Link encap:Ethernet HWaddr 9a:95:ab:f1:a9:f7
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

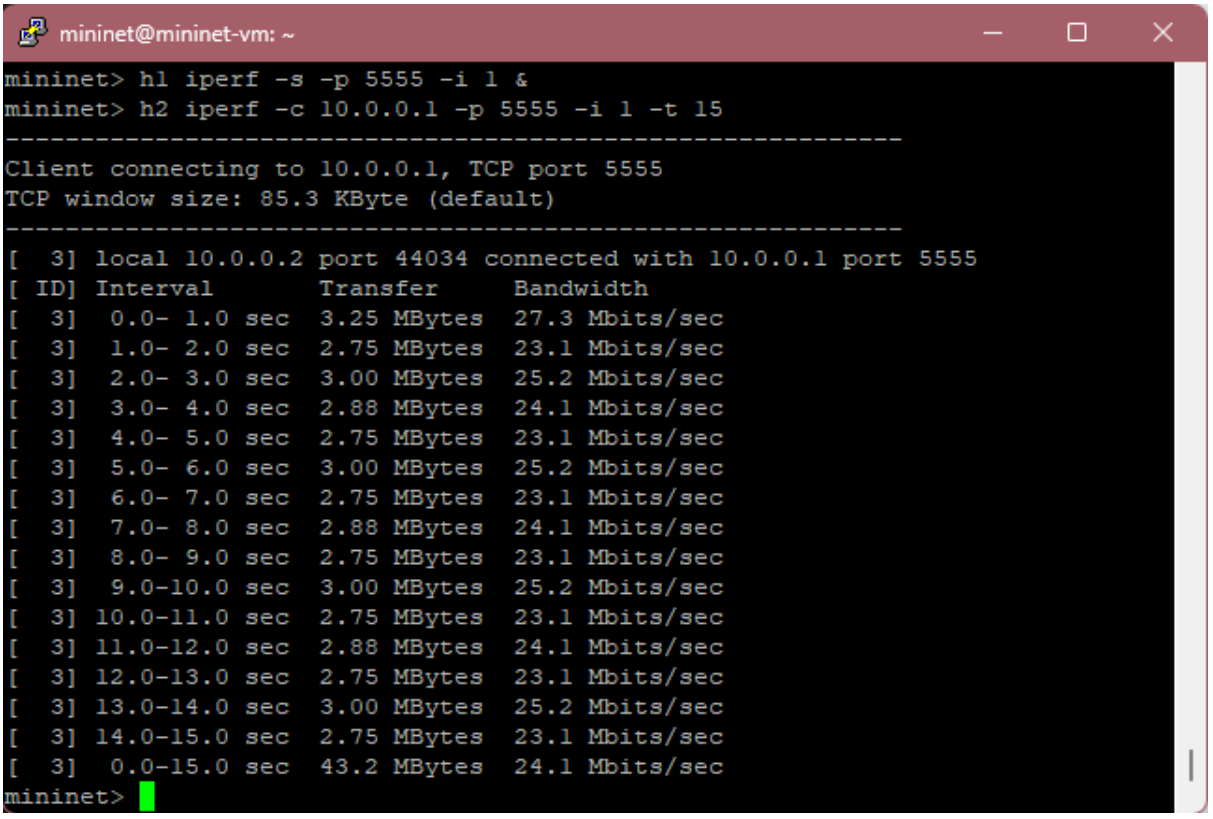

mininet@mininet-vm: ~
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s5-eth2 Link encap:Ethernet HWaddr 9a:95:ab:f1:a9:f7
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s5-eth3 Link encap:Ethernet HWaddr da:4c:ce:e1:7f:16
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s6-eth1 Link encap:Ethernet HWaddr 52:a2:6f:08:f0:52
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
s6-eth2 Link encap:Ethernet HWaddr c2:7b:60:e2:f1:e4
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)
mininet>


mininet@mininet-vm: ~
mininet> sh ovs-ofctl show s1
OFPT_FEATURES_REPLY (xid=0x2): dpid:0000000000000001
n_tables:254, n_buffers:256
capabilities: FLOW_STATS TABLE_STATS PORT_STATS QUEUE_STATS ARP_MATCH_IP
actions: OUTPUT SET_VLAN_VID SET_VLAN_PCP STRIP_VLAN SET_DL_SRC SET_DL_DST SET
_NW_SRC SET_NW_DST SET_NW_TOS SET_TP_SRC SET_TP_DST ENQUEUE
1(s1-eth1): addr:06:1f:10:db:77:54
config: 0
state: 0
current: 10GB-FD COPPER
speed: 10000 Mbps now, 0 Mbps max
2(s1-eth2): addr:86:46:4b:3d:86:c7
config: 0
state: 0
current: 10GB-FD COPPER
speed: 10000 Mbps now, 0 Mbps max
LOCAL(s1): addr:2a:04:5b:6a:d4:4f
config: 0
state: 0
speed: 0 Mbps now, 0 Mbps max
OFPT_GET_CONFIG_REPLY (xid=0x4): frags=normal miss_send_len=0
mininet>

3) Testes de ping



4) iperf TCP (h1 = servidor, h2 = cliente, porta 5555, 1 s por 15



5) Encerrar e limpar