



mininet> dump

```
<Host h1: h1-eth0:10.0.0.1 pid=1044>
<Host h2: h2-eth0:10.0.0.2 pid=1046>
<Host h3: h3-eth0:10.0.0.3 pid=1048>
<Host h4: h4-eth0:10.0.0.4 pid=1050>
<Host h5: h5-eth0:10.0.0.5 pid=1052>
<Host h6: h6-eth0:10.0.0.6 pid=1054>
<Host h7: h7-eth0:10.0.0.7 pid=1056>
<Host h8: h8-eth0:10.0.0.8 pid=1058>
<Host h9: h9-eth0:10.0.0.9 pid=1060>
<Host h10: h10-eth0:10.0.0.10 pid=1062>
<Host h11: h11-eth0:10.0.0.11 pid=1064>
<Host h12: h12-eth0:10.0.0.12 pid=1066>
<Host h13: h13-eth0:10.0.0.13 pid=1068>
<Host h14: h14-eth0:10.0.0.14 pid=1070>
<Host h15: h15-eth0:10.0.0.15 pid=1072>
<Host h16: h16-eth0:10.0.0.16 pid=1074>
<Host h17: h17-eth0:10.0.0.17 pid=1076>
<Host h18: h18-eth0:10.0.0.18 pid=1078>
<Host h19: h19-eth0:10.0.0.19 pid=1080>
<Host h20: h20-eth0:10.0.0.20 pid=1082>
<Host h21: h21-eth0:10.0.0.21 pid=1084>
<Host h22: h22-eth0:10.0.0.22 pid=1086>
<Host h23: h23-eth0:10.0.0.23 pid=1088>
<Host h24: h24-eth0:10.0.0.24 pid=1090>
<Host h25: h25-eth0:10.0.0.25 pid=1092>
<Host h26: h26-eth0:10.0.0.26 pid=1094>
<Host h27: h27-eth0:10.0.0.27 pid=1096>
<OVSSwitch s1: lo:127.0.0.1,s1-eth1:None,s1-eth2:None,s1-eth3:None pid=1101>
<OVSSwitch s2: lo:127.0.0.1,s2-eth1:None,s2-eth2:None,s2-eth3:None,s2-eth4:None pid=1104>
<OVSSwitch s3: lo:127.0.0.1,s3-eth1:None,s3-eth2:None,s3-eth3:None,s3-eth4:None pid=1107>
<OVSSwitch s4: lo:127.0.0.1,s4-eth1:None,s4-eth2:None,s4-eth3:None,s4-eth4:None pid=1110>
<OVSSwitch s5: lo:127.0.0.1,s5-eth1:None,s5-eth2:None,s5-eth3:None,s5-eth4:None pid=1113>
<OVSSwitch s6: lo:127.0.0.1,s6-eth1:None,s6-eth2:None,s6-eth3:None,s6-eth4:None pid=1116>
<OVSSwitch s7: lo:127.0.0.1,s7-eth1:None,s7-eth2:None,s7-eth3:None,s7-eth4:None pid=1119>
<OVSSwitch s8: lo:127.0.0.1,s8-eth1:None,s8-eth2:None,s8-eth3:None,s8-eth4:None pid=1122>
<OVSSwitch s9: lo:127.0.0.1,s9-eth1:None,s9-eth2:None,s9-eth3:None,s9-eth4:None pid=1125>
<OVSSwitch s10: lo:127.0.0.1,s10-eth1:None,s10-eth2:None,s10-eth3:None,s10-eth4:None pid=1128>
<OVSSwitch s11: lo:127.0.0.1,s11-eth1:None,s11-eth2:None,s11-eth3:None,s11-eth4:None pid=1131>
<OVSSwitch s12: lo:127.0.0.1,s12-eth1:None,s12-eth2:None,s12-eth3:None,s12-eth4:None pid=1134>
<OVSSwitch s13: lo:127.0.0.1,s13-eth1:None,s13-eth2:None,s13-eth3:None,s13-eth4:None pid=1137>
<Controller c0: 127.0.0.1:6653 pid=1037>
```

```
mininet> h1 ifconfig
h1-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.1 netmask 255.0.0.0 broadcast 10.255.255.255
    ether 00:00:00:00:00:01 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
mininet> h15 ifconfig
h15-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.15 netmask 255.0.0.0 broadcast 10.255.255.255
    ether 00:00:00:00:00:0f txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
mininet> h22 ifconfig
h22-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.0.22 netmask 255.0.0.0 broadcast 10.255.255.255
    ether 00:00:00:00:00:16 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
mininet> pingall
*** Ping: testing ping reachability
h1 -> h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h2 -> h1 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h3 -> h1 h2 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h4 -> h1 h2 h3 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h5 -> h1 h2 h3 h4 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h6 -> h1 h2 h3 h4 h5 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h7 -> h1 h2 h3 h4 h5 h6 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h8 -> h1 h2 h3 h4 h5 h6 h7 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h9 -> h1 h2 h3 h4 h5 h6 h7 h8 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h10 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h11 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h12 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h13 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h14 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h15 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h16 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h17 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h18 h19 h20 h21 h22 h23 h24 h25 h26 h27
h18 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h19 h20 h21 h22 h23 h24 h25 h26 h27
h19 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h20 h21 h22 h23 h24 h25 h26 h27
h20 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h21 h22 h23 h24 h25 h26 h27
h21 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h22 h23 h24 h25 h26 h27
h22 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h23 h24 h25 h26 h27
h23 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h24 h25 h26 h27
h24 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h25 h26 h27
h25 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h26 h27
h26 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h27
h27 -> h1 h2 h3 h4 h5 h6 h7 h8 h9 h10 h11 h12 h13 h14 h15 h16 h17 h18 h19 h20 h21 h22 h23 h24 h25 h26
*** Results: 0% dropped (702/702 received)
```



```
h7 h7-eth0:s5-eth1
h8 h8-eth0:s5-eth2
h9 h9-eth0:s5-eth3
h10 h10-eth0:s7-eth1
h11 h11-eth0:s7-eth2
h12 h12-eth0:s7-eth3
h13 h13-eth0:s8-eth1
h14 h14-eth0:s8-eth2
h15 h15-eth0:s8-eth3
h16 h16-eth0:s9-eth1
h17 h17-eth0:s9-eth2
h18 h18-eth0:s9-eth3
h19 h19-eth0:s11-eth1
h20 h20-eth0:s11-eth2
h21 h21-eth0:s11-eth3
h22 h22-eth0:s12-eth1
h23 h23-eth0:s12-eth2
h24 h24-eth0:s12-eth3
h25 h25-eth0:s13-eth1
h26 h26-eth0:s13-eth2
h27 h27-eth0:s13-eth3
s1 lo: s1-eth1:s2-eth4 s1-eth2:s6-eth4 s1-eth3:s10-eth4
s2 lo: s2-eth1:s3-eth4 s2-eth2:s4-eth4 s2-eth3:s5-eth4 s2-eth4:s1-eth1
s3 lo: s3-eth1:h1-eth0 s3-eth2:h2-eth0 s3-eth3:h3-eth0 s3-eth4:s2-eth1
s4 lo: s4-eth1:h4-eth0 s4-eth2:h5-eth0 s4-eth3:h6-eth0 s4-eth4:s2-eth2
s5 lo: s5-eth1:h7-eth0 s5-eth2:h8-eth0 s5-eth3:h9-eth0 s5-eth4:s2-eth3
s6 lo: s6-eth1:s7-eth4 s6-eth2:s8-eth4 s6-eth3:s9-eth4 s6-eth4:s1-eth2
s7 lo: s7-eth1:h10-eth0 s7-eth2:h11-eth0 s7-eth3:h12-eth0 s7-eth4:s6-eth1
s8 lo: s8-eth1:h13-eth0 s8-eth2:h14-eth0 s8-eth3:h15-eth0 s8-eth4:s6-eth2
s9 lo: s9-eth1:h16-eth0 s9-eth2:h17-eth0 s9-eth3:h18-eth0 s9-eth4:s6-eth3
s10 lo: s10-eth1:s11-eth4 s10-eth2:s12-eth4 s10-eth3:s13-eth4 s10-eth4:s1-eth3
s11 lo: s11-eth1:h19-eth0 s11-eth2:h20-eth0 s11-eth3:h21-eth0 s11-eth4:s10-eth1
s12 lo: s12-eth1:h22-eth0 s12-eth2:h23-eth0 s12-eth3:h24-eth0 s12-eth4:s10-eth2
s13 lo: s13-eth1:h25-eth0 s13-eth2:h26-eth0 s13-eth3:h27-eth0 s13-eth4:s10-eth3
c0
mininet>
```

```
mininet@mininet-vm:~$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    ether 08:00:27:af:41:79 txqueuelen 1000 (Ethernet)
    RX packets 284 bytes 26881 (26.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 286 bytes 25774 (25.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    loop txqueuelen 1000 (Local Loopback)
    RX packets 55614 bytes 6297022 (6.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 55614 bytes 6297022 (6.2 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

mininet@mininet-vm:~$ sudo dhclient eth1
Cannot find device "eth1"
mininet@mininet-vm:~$
```