INSTITUTO FEDERAL DO ESPÍRITO SANTO

Roteamento Estático

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Código utilizado para configuração da topologia de rede:

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#!/usr/bin/python
from mininet.log import setLogLevel, info
from mn_wifi.cli import CLI
from mn_wifi.net import Mininet_wifi

def topology(remote_controller):
    "Create a network."
    net = Mininet_wifi()

    info("*** Adding stations/hosts\n")

    h1s1 = net.addHost("h1s1", ip="200.15.35.1/24")
    h2s1 = net.addHost("h2s1", ip="200.15.35.2/24")
    h1s2 = net.addHost("h1s2", ip="198.98.99.65/27")
    h1s3 = net.addHost("h1s3", ip="200.57.59.1/24")
    h2s3 = net.addHost("h2s3", ip="200.57.59.2/24")
    h1s4 = net.addHost("h1s4", ip="198.98.99.33/27")
    h2s4 = net.addHost("h2s4", ip="198.98.99.34/27")

    roteador1 = net.addHost("roteador1")
    roteador2 = net.addHost("roteador2")
    roteador3 = net.addHost("roteador3")
    roteador4 = net.addHost("roteador4")

    info("*** Adding P4Switches (core)\n")

    switch1 = net.addSwitch("switch1")
    switch2 = net.addSwitch("switch2")
    switch3 = net.addSwitch("switch3")
    switch4 = net.addSwitch("switch4")

    info("*** Creating links\n")

    net.addLink(h1s1, switch1, bw=1000)
    net.addLink(h2s1, switch1, bw=1000)
    net.addLink(roteador1, switch1, bw=1000)
    net.addLink(h1s2, switch2, bw=1000)
    net.addLink(roteador2, switch2, bw=1000)
    net.addLink(h2s3, switch3, bw=1000)
    net.addLink(h1s3, switch3, bw=1000)
    net.addLink(roteador3, switch3, bw=1000)
    net.addLink(h1s4, switch4, bw=1000)
    net.addLink(h2s4, switch4, bw=1000)
    net.addLink(roteador4, switch4, bw=1000)

    net.addLink(roteador1, roteador2, bw=1000)
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net.addLink(roteador1, roteador3, bw=1000)
net.addLink(roteador2, roteador4, bw=1000)
net.addLink(roteador3, roteador4, bw=1000)

info("*** Starting network\n")
net.start()
net.staticArp()

info("*** Applying switches configurations\n")

switch1.cmd('ovs-ofctl add-flow {} "actions=output:NORMAL"'.format(switch1.name))
switch2.cmd('ovs-ofctl add-flow {} "actions=output:NORMAL"'.format(switch2.name))
switch3.cmd('ovs-ofctl add-flow {} "actions=output:NORMAL"'.format(switch3.name))
switch4.cmd('ovs-ofctl add-flow {} "actions=output:NORMAL"'.format(switch4.name))

info("*** Applying hosts and routers configurations\n")

roteador1.cmd("ifconfig roteador1-eth0 200.15.35.254/24")
roteador1.cmd("ifconfig roteador1-eth1 200.1.2.1/26")
roteador1.cmd("ifconfig roteador1-eth2 200.1.2.65/26")

roteador2.cmd("ifconfig roteador2-eth0 198.98.99.94/27")
roteador2.cmd("ifconfig roteador2-eth1 200.1.2.2/26")
roteador2.cmd("ifconfig roteador2-eth2 200.1.2.129/26")

roteador3.cmd("ifconfig roteador3-eth0 200.57.59.254/24")
roteador3.cmd("ifconfig roteador3-eth1 200.1.2.66/26")
roteador3.cmd("ifconfig roteador3-eth2 200.1.2.193/26")

roteador4.cmd("ifconfig roteador4-eth0 198.98.99.62/27")
roteador4.cmd("ifconfig roteador4-eth1 200.1.2.130/26")
roteador4.cmd("ifconfig roteador4-eth2 200.1.2.194/26")

h1s1.cmd("ip route add default via 200.15.35.254")
h2s1.cmd("ip route add default via 200.15.35.254")
h1s2.cmd("ip route add default via 198.98.99.94")
h1s3.cmd("ip route add default via 200.57.59.254")
h2s3.cmd("ip route add default via 200.57.59.254")
h1s4.cmd("ip route add default via 198.98.99.62")
h2s4.cmd("ip route add default via 198.98.99.62")

roteador1.cmd("ip route add 198.98.99.64/27 via 200.1.2.2 ")
roteador1.cmd("ip route add 200.57.59.0/24 via 200.1.2.66")
roteador1.cmd("ip route add 198.98.99.32/27 via 200.1.2.2")
roteador2.cmd("ip route add 198.98.99.32/27 via 200.1.2.130")
roteador2.cmd("ip route add 200.57.59.0/24 via 200.1.2.130")
roteador2.cmd("ip route add 200.15.35.0/24 via 200.1.2.1")
roteador3.cmd("ip route add 200.15.35.0/24 via 200.1.2.65")
roteador3.cmd("ip route add 198.98.99.32/27 via 200.1.2.194")
roteador3.cmd("ip route add 198.98.99.64/27 via 200.1.2.194")
roteador4.cmd("ip route add 198.98.99.64/27 via 200.1.2.129")
```

```
    roteador4.cmd("ip route add 200.57.59.0/24 via 200.1.2.193")
    roteador4.cmd("ip route add 200.15.35.0/24 via 200.1.2.193")

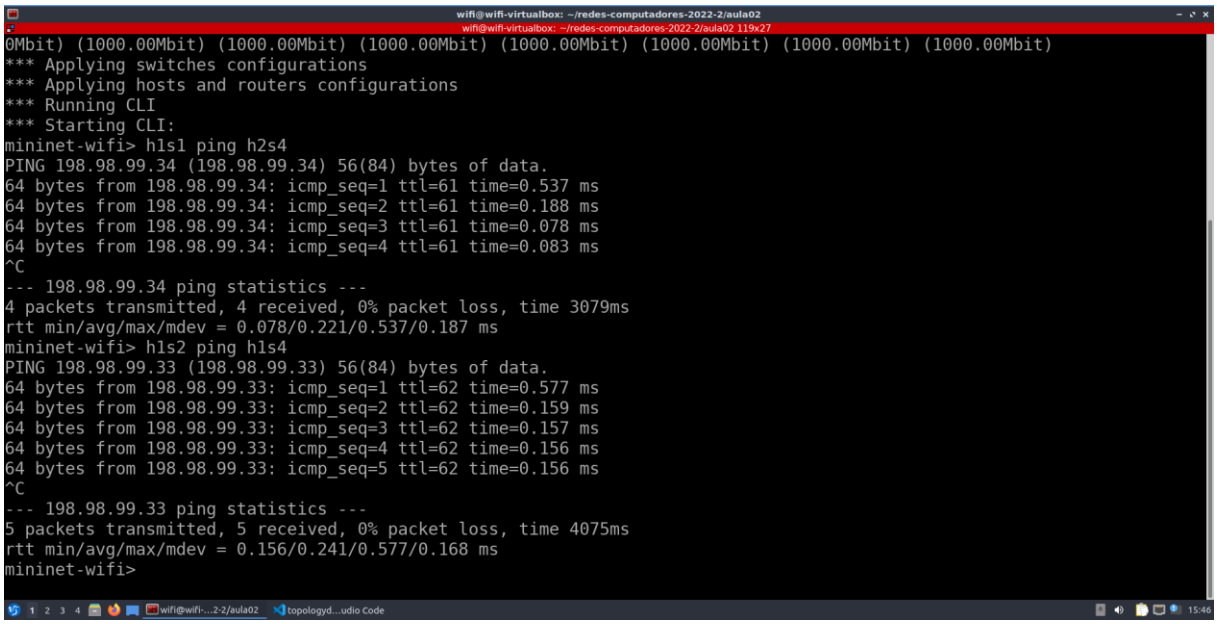


    info("*** Running CLI\n")
    CLI(net)

    info("*** Stopping network\n")
    net.stop()

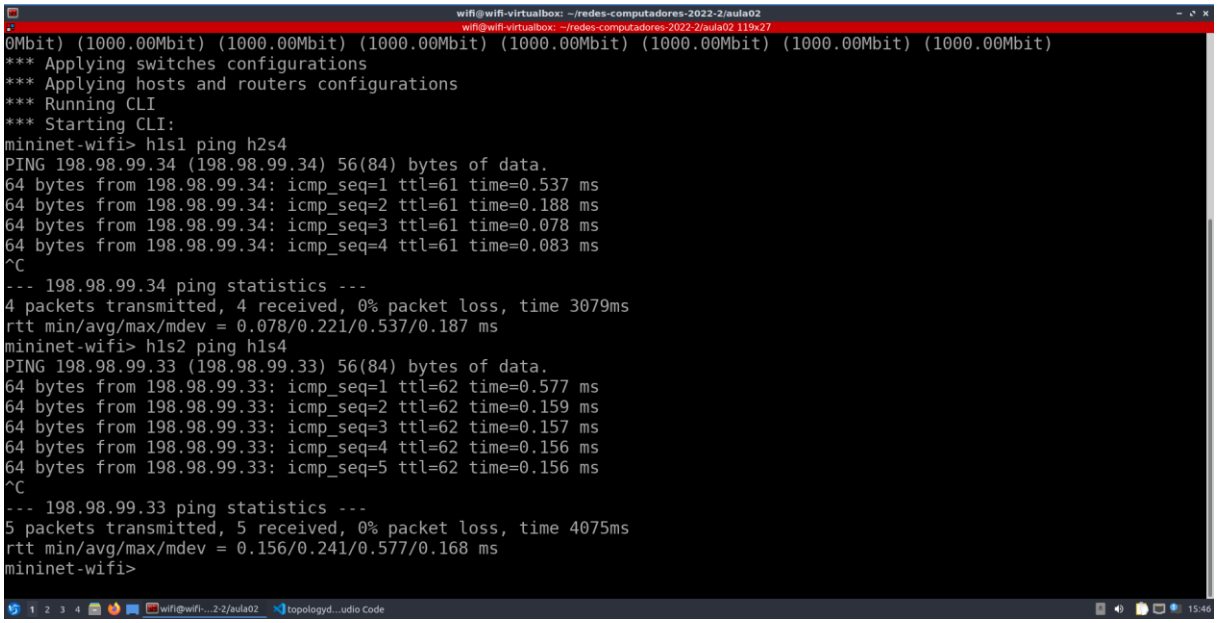

if __name__ == "__main__":
    setLogLevel("info")
    remote_controller = False

topology(remote_controller)
```

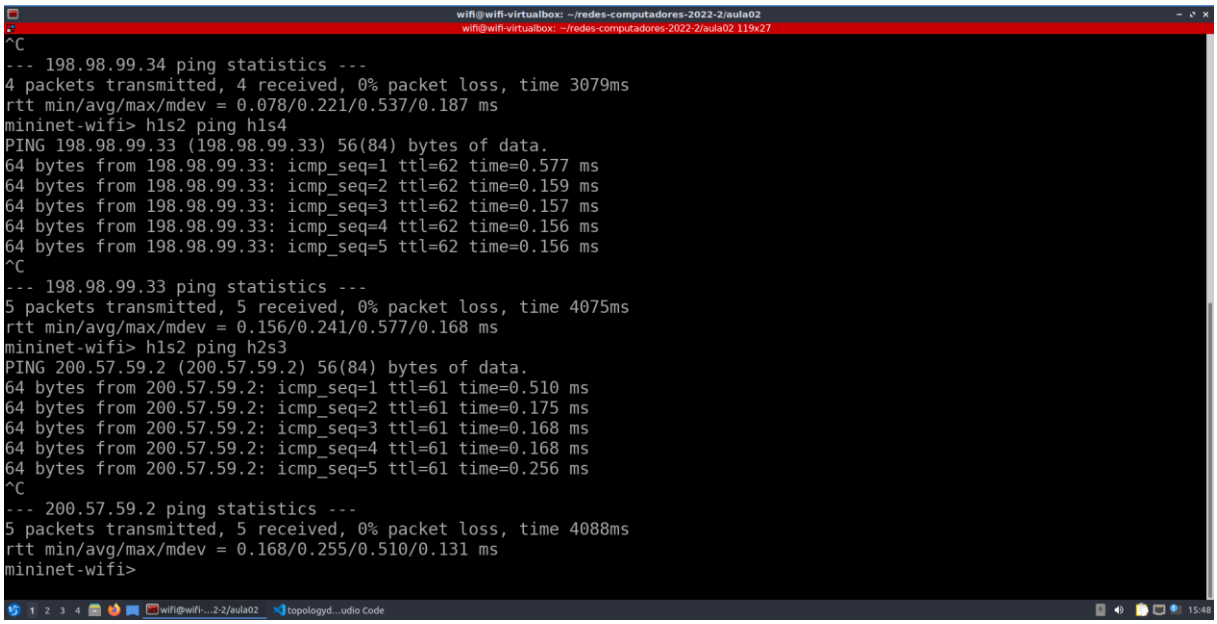


- Captura de tela mostrando conectividade entre H1 ligado ao roteador R1 e H2 que está ligado no roteador R4.

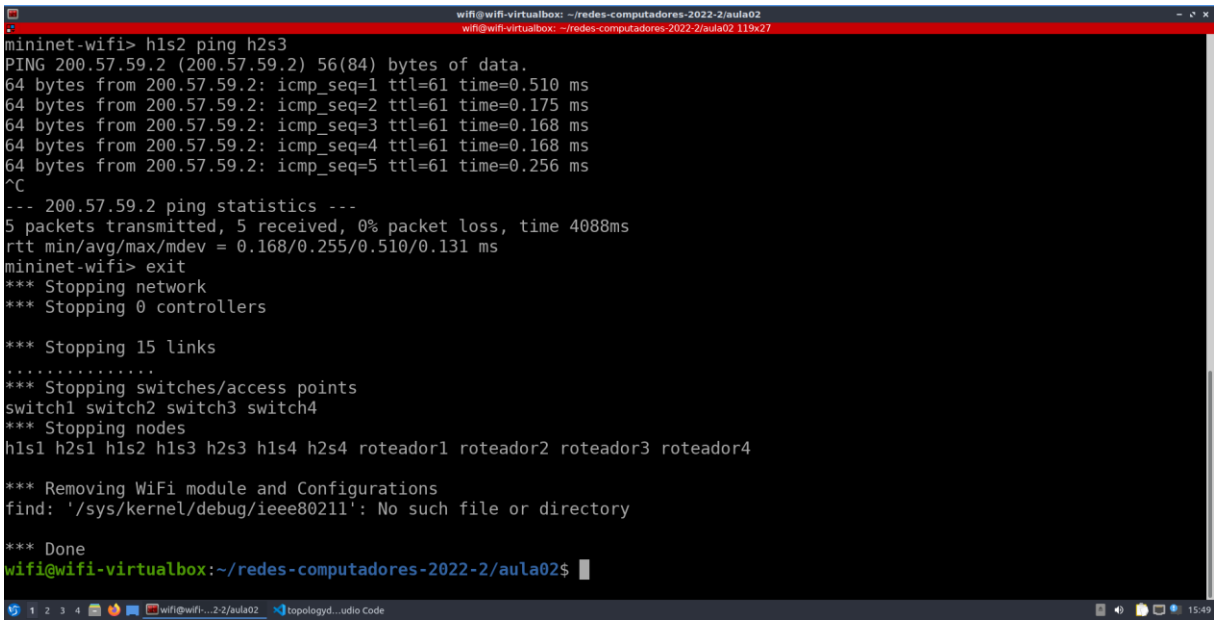
- Captura de tela mostrando conectividade entre H1 ligado ao roteador R2 e H1 que está ligado no roteador R4.



- Captura de tela mostrando conectividade entre H1 ligado ao roteador R2 e H2 que está ligado no roteador R3.



EXIT


wifi@wifi-virtualbox: ~/redes-computadores-2022-2/aula02
wifi@wifi-virtualbox: ~/redes-computadores-2022-2/aula02 119x27
mininet-wifi> h1s2 ping h2s3
PING 200.57.59.2 (200.57.59.2) 56(84) bytes of data.
64 bytes from 200.57.59.2: icmp_seq=1 ttl=61 time=0.510 ms
64 bytes from 200.57.59.2: icmp_seq=2 ttl=61 time=0.175 ms
64 bytes from 200.57.59.2: icmp_seq=3 ttl=61 time=0.168 ms
64 bytes from 200.57.59.2: icmp_seq=4 ttl=61 time=0.168 ms
64 bytes from 200.57.59.2: icmp_seq=5 ttl=61 time=0.256 ms
^C
--- 200.57.59.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4088ms
rtt min/avg/max/mdev = 0.168/0.255/0.510/0.131 ms
mininet-wifi> exit
*** Stopping network
*** Stopping 0 controllers
*** Stopping 15 links
....
*** Stopping switches/access points
switch1 switch2 switch3 switch4
*** Stopping nodes
h1s1 h2s1 h1s2 h1s3 h2s3 h1s4 h2s4 roteador1 roteador2 roteador3 roteador4
*** Removing WiFi module and Configurations
find: '/sys/kernel/debug/ieee80211': No such file or directory
*** Done
wifi@wifi-virtualbox:~/redes-computadores-2022-2/aula02$
1 2 3 4
wifi@wifi-...2-2/aula02
topologyd...udio Code
15:49