Лабораторная работа 3

Петрушов Дмитрий, 1032212287

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Российский университет дружбы народов, Москва, Россия

Выполнение

Загрузка всего нужного

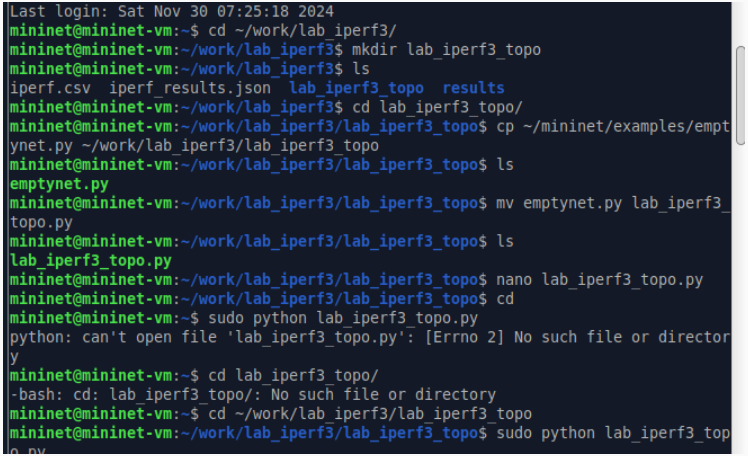

Рис. 1: Установка

Внесение изменений в скрипт

```
    h1 = net.addHost( 'h1', ip='10.0.0.1' )
    h2 = net.addHost( 'h2', ip='10.0.0.2' )

    info( '*** Adding switch\n' )
    s3 = net.addSwitch( 's3' )

    info( '*** Creating links\n' )
    net.addLink( h1, s3 )
    net.addLink( h2, s3 )

    info( '*** Starting network\n')
    net.start()

    print( "Host", h1.name, "has IP address", h1.IP(), "and MAC address", h1.MAC() )
    print( "Host", h2.name, "has IP address", h2.IP(), "and MAC address", h2.MAC() )

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

    info( '*** Stopping network' )
    net.stop()


f __name__ == '__main__':
```

Рис. 2: изменения

Проверка

```
"""
This example shows how to create an empty Mininet object
(without a topology object) and add nodes to it manually.
"""
from mininet.node import CPULimitedHost
from mininet.link import TCLink
from mininet.net import Mininet
from mininet.node import Controller
from mininet.cli import CLI
from mininet.log import setLogLevel, info

def emptyNet():

    "Create an empty network and add nodes to it."

    net = Mininet( controller=Controller, waitConnected=True,host = CPULimitedHost, link = TCLink )

    info( '*** Adding controller\n' )
    net.addController( 'c0' )

    info( '*** Adding hosts\n' )
    h1 = net.addHost( 'h1', ip='10.0.0.1', cpu=50 )
    h2 = net.addHost( 'h2', ip='10.0.0.2', cpu=50 )

    info( '*** Adding switch\n' )
    s3 = net.addSwitch( 's3' )

    info( '*** Creating links\n' )
    net.addLink( h1, s3,s3, bw=10, delay='5ms', max_queue_size=1000, loss=10, use_htb=True )
    net.addLink( h2, s3 )
```

Рис. 3: изменения

Внесение изменений в файл lab_iperf3.py

```
def emptyNet():

    "Create an empty network and add nodes to it."

    net = Mininet( controller=Controller, waitConnected=True,host = CPULimitedHost, link = TCLink )

    info( '*** Adding controller\n' )
    net.addController( 'c0' )

    info( '*** Adding hosts\n' )
    h1 = net.addHost( 'h1', ip='10.0.0.1')
    h2 = net.addHost( 'h2', ip='10.0.0.2')

    info( '*** Adding switch\n' )
    s3 = net.addSwitch( 's3' )

    info( '*** Creating links\n' )
    net.addLink( h1, s3, bw=100, delay='75ms')
    net.addLink( h2, s3 )

    info( '*** Starting network\n')
    net.start()
    info( '*** Starting network\n')
    info( '*** Traffic generation\n')
    h2.cmdPrint( 'iperf3 -s -D -1' )
    time.sleep(10) # Wait 10 seconds for servers to start
    h1.cmdPrint( 'iperf3 -c', h2.IP(), '-J > iperf_result.json' )

    print( "Host", h1.name, "has IP address", h1.IP(), "and MAC address", h1.MAC() )
    print( "Host", h2.name, "has IP address", h2.IP(), "and MAC address", h2.MAC() )

    #info( '*** Running CLI\n' )
    #CLI( net )
```

Рис. 4: .

Написание Makefile

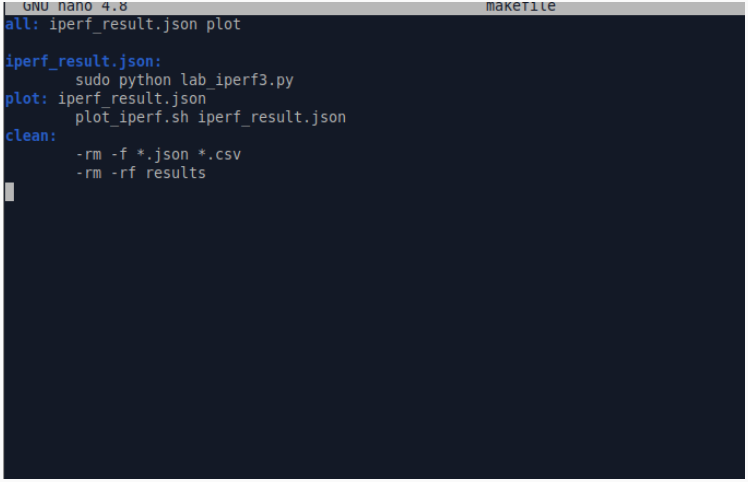

Рис. 5: Makefile

Проверка

```
mininet@mininet-vm:~/work/lab_iperf3/iperf3$ make clean
rm -f *.json *.csv
rm -rf results
mininet@mininet-vm:~/work/lab_iperf3/iperf3$ make
sudo python lab_iperf3.py
*** Adding controller
*** Adding hosts
*** Adding switch
*** Creating links
(100.00Mbit 75ms delay) (100.00Mbit 75ms delay) *** Starting network
*** Configuring hosts
h1 (cfs -1/100000us) h2 (cfs -1/100000us)
*** Starting controller
c0
*** Starting 1 switches
s3 (100.00Mbit 75ms delay) ...(100.00Mbit 75ms delay)
*** Waiting for switches to connect
s3
*** Starting network
*** Traffic generation
*** h2 : ('iperf3 -s -D -1',)
*** h1 : ('iperf3 -c', '10.0.0.2', '-J > iperf_result.json')
Host h1 has IP address 10.0.0.1 and MAC address 46:e0:53:83:52:3e
Host h2 has IP address 10.0.0.2 and MAC address 32:38:dc:8f:96:d4
*** Stopping network*** Stopping 1 controllers
c0
*** Stopping 2 links
..
*** Stopping 1 switches
s3
*** Stopping 2 hosts
h1 h2
*** Done
plot_iperf.sh iperf_result.json
mininet@mininet-vm:~/work/lab_iperf3/iperf3$
```

Вывод

Мы познакомились с инструментом для измерения пропускной способности сети в режиме реального времни - iperf3, а также получили навыки проведения воспроизводимого эксперимента по измерению пропускной способности моделируемой сери в среде Mininet.