Sheng Wang

Mininet Lab 4

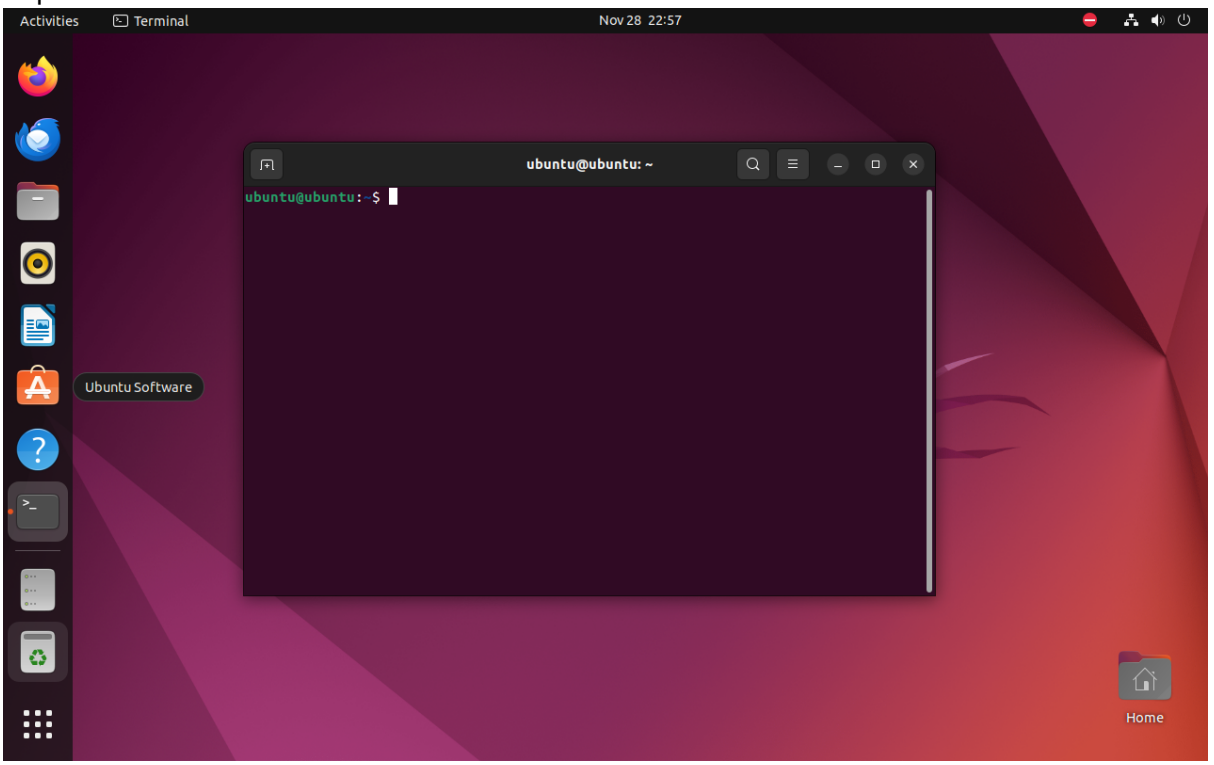
EE450

Abstract:

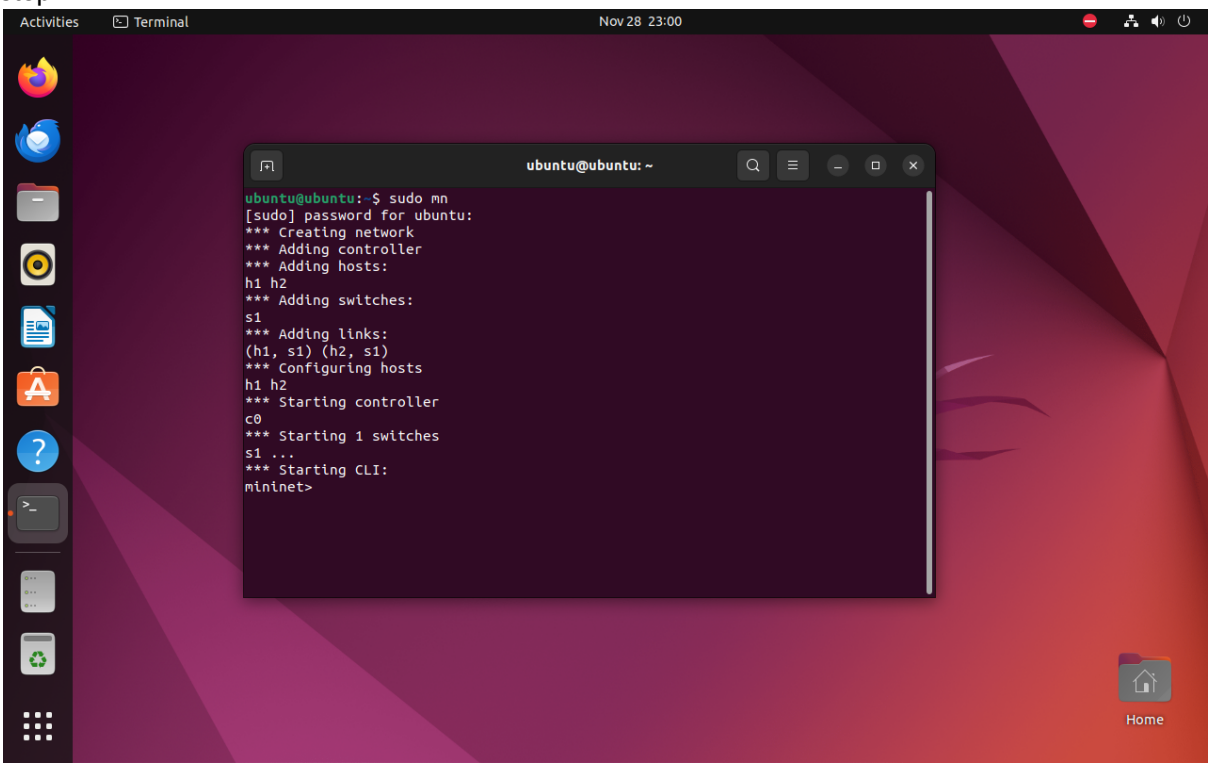
In this Lab1, the basic tutorial of mininet was shown below. Two clients and one switch will be created in the mininet editor and they will be saved in a file. In addition, the method of allocating IP addresses will also be shown below.

2.1

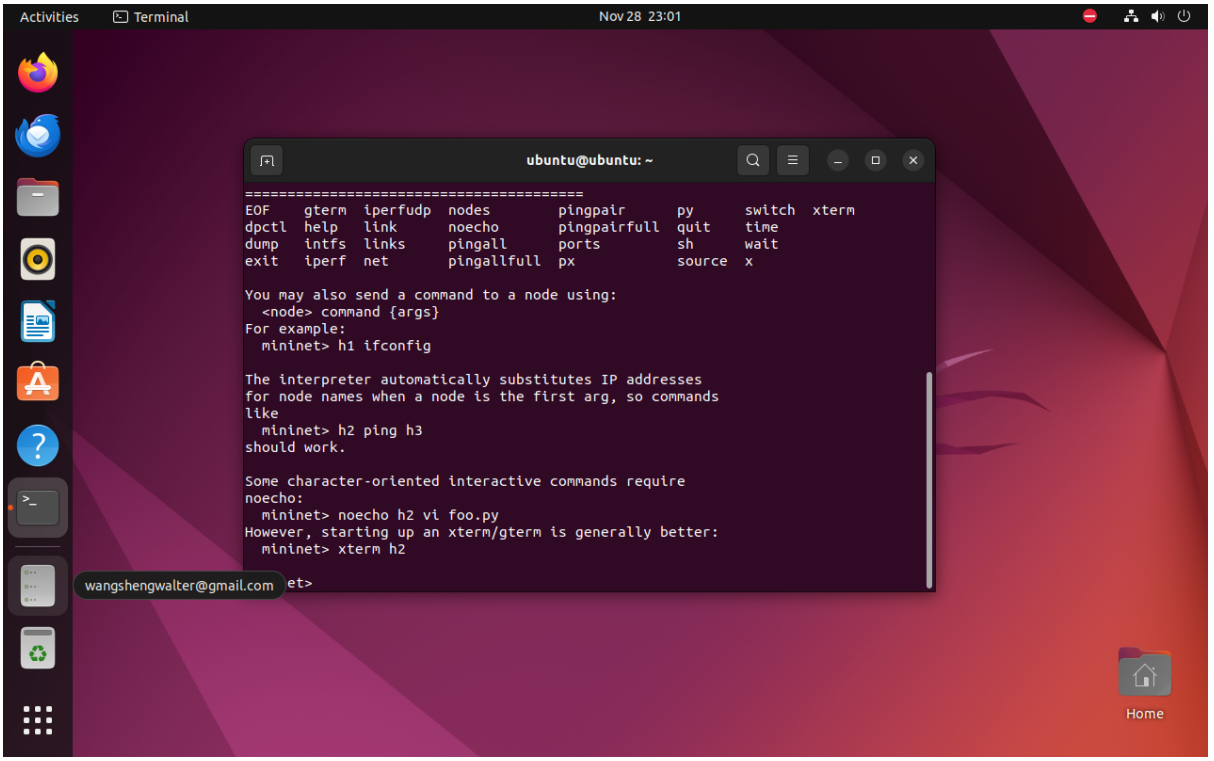
1. step 1



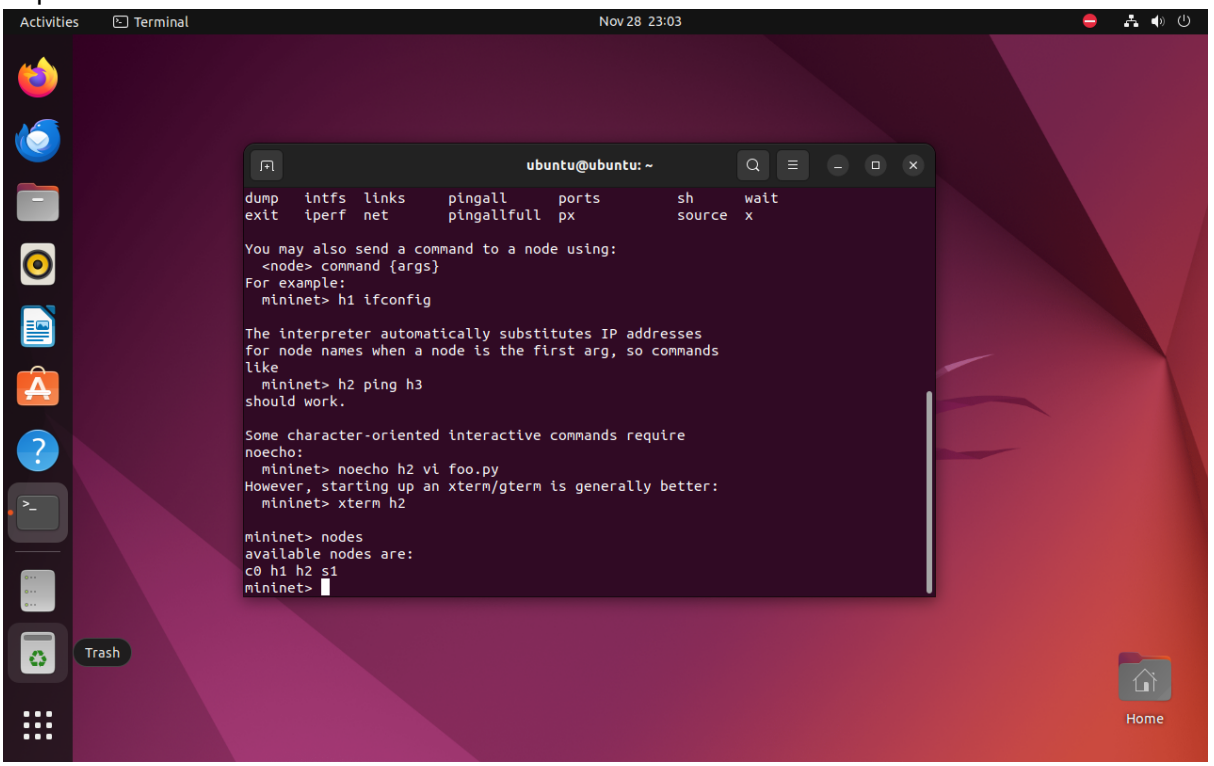
2. step



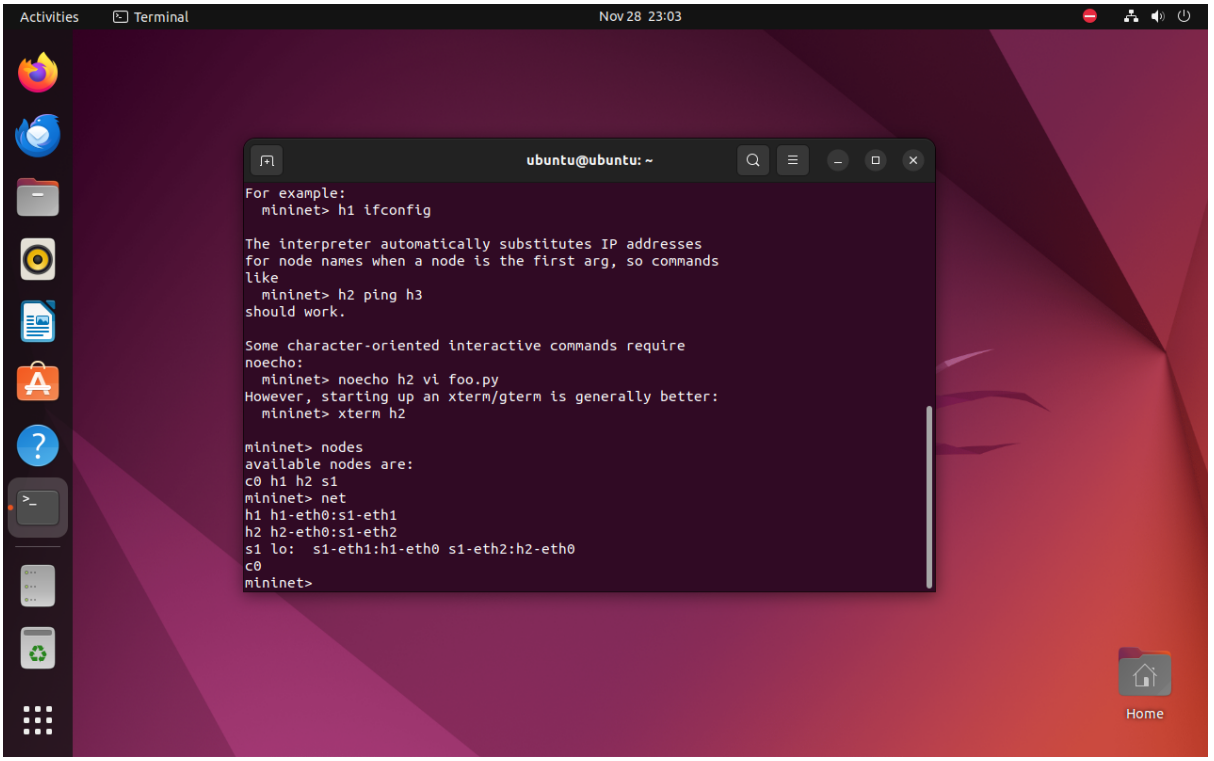
3. step


Activities
Terminal
Nov 28 23:01
ubuntu@ubuntu: ~
EOF gterm iperfudp nodes pingpair py switch xterm
dpctl help link noecho pingpairfull quit time
dump intfs links pingall ports sh wait
exit iperf net pingallfull px source x
You may also send a command to a node using:
<node> command {args}
For example:
mininet> h1 ifconfig
The interpreter automatically substitutes IP addresses
for node names when a node is the first arg, so commands
like
mininet> h2 ping h3
should work.
Some character-oriented interactive commands require
noecho:
mininet> noecho h2 vi foo.py
However, starting up an xterm/gterm is generally better:
mininet> xterm h2
wangshengwalter@gmail.com
Home

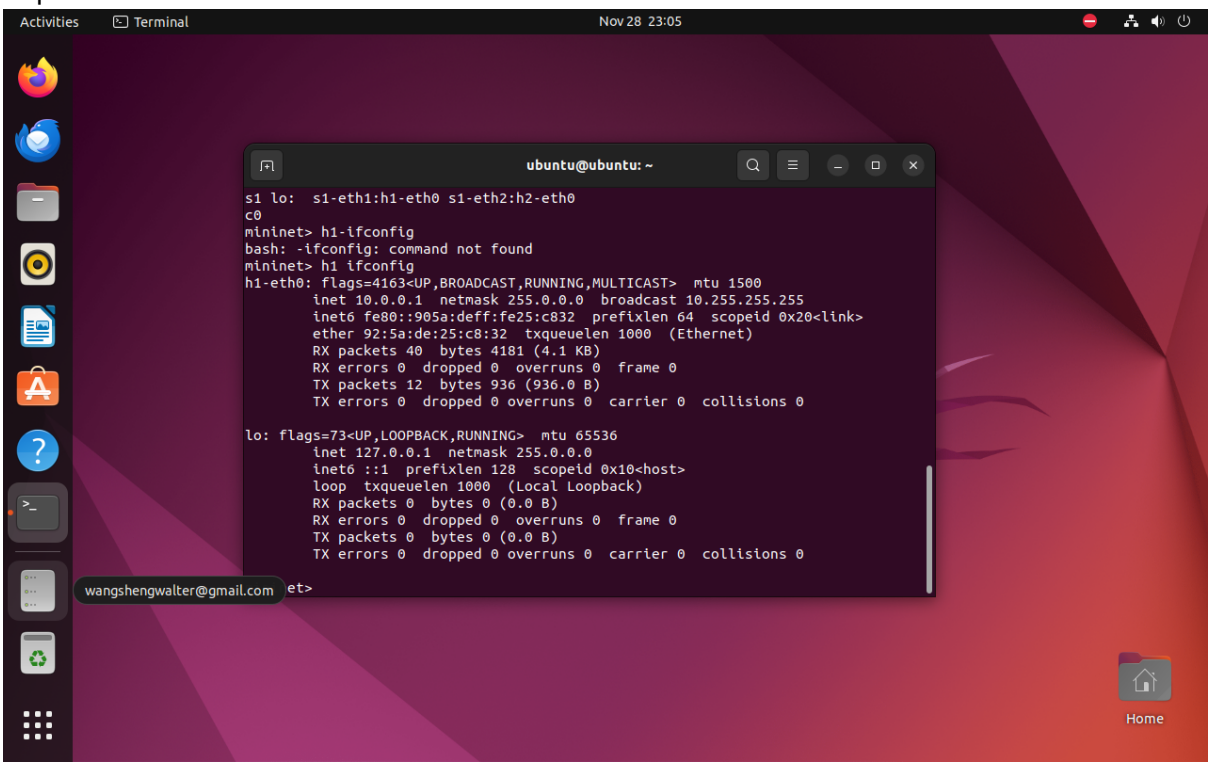
4. step


Activities
Terminal
Nov 28 23:03
ubuntu@ubuntu: ~
dump intfs links pingall ports sh wait
exit iperf net pingallfull px source x
You may also send a command to a node using:
<node> command {args}
For example:
mininet> h1 ifconfig
The interpreter automatically substitutes IP addresses
for node names when a node is the first arg, so commands
like
mininet> h2 ping h3
should work.
Some character-oriented interactive commands require
noecho:
mininet> noecho h2 vi foo.py
However, starting up an xterm/gterm is generally better:
mininet> xterm h2
mininet> nodes
available nodes are:
c0 h1 h2 s1
mininet>
Trash
Home

5. step

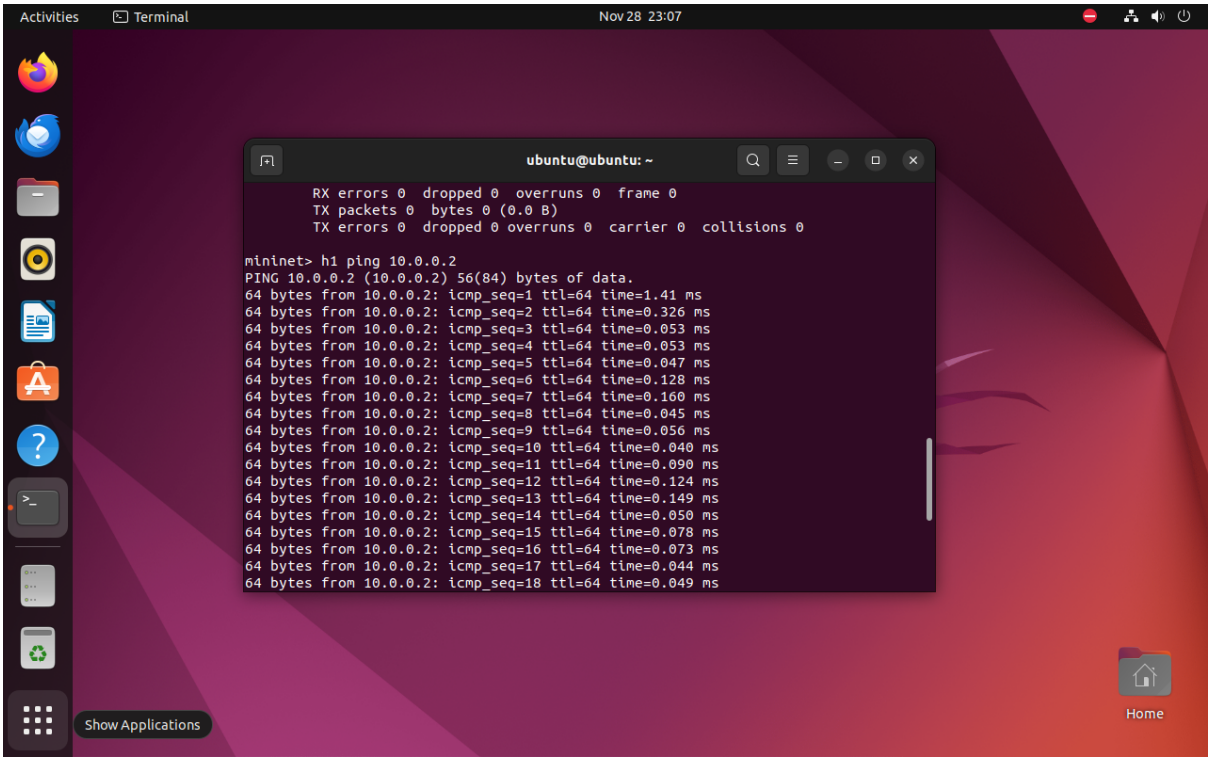


6. step

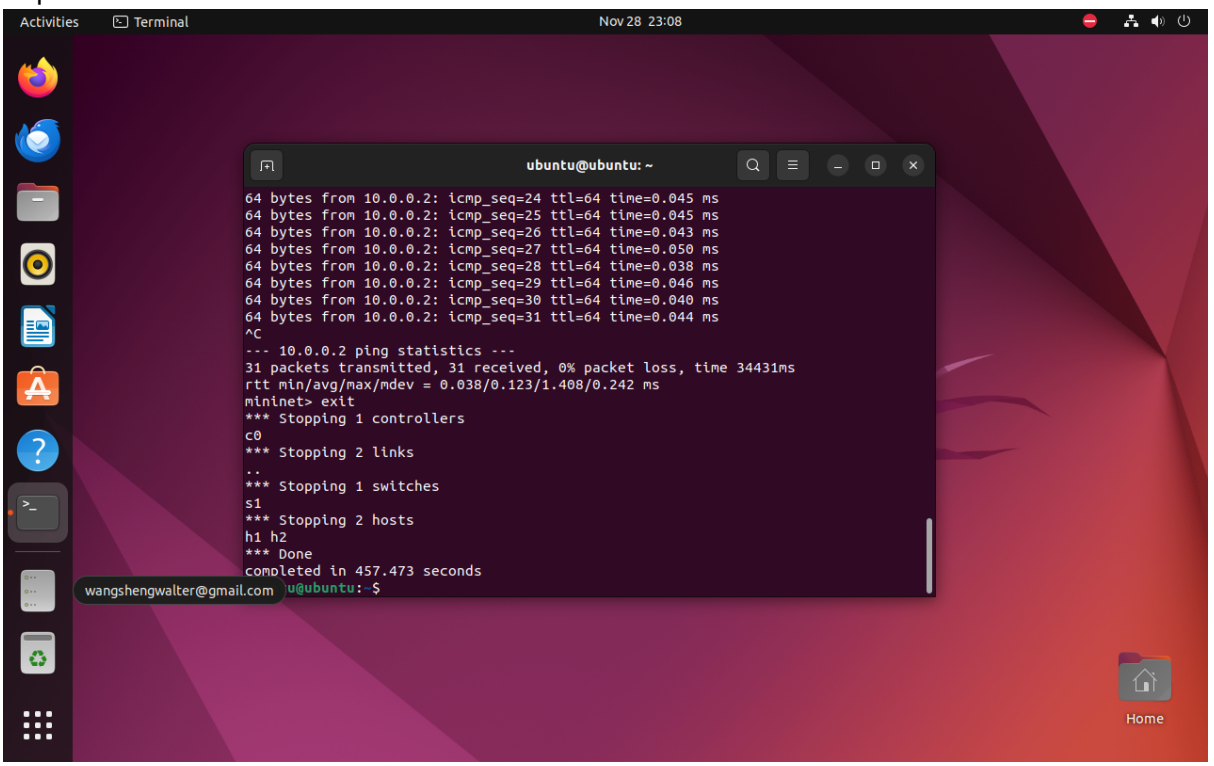


2.2

1. step

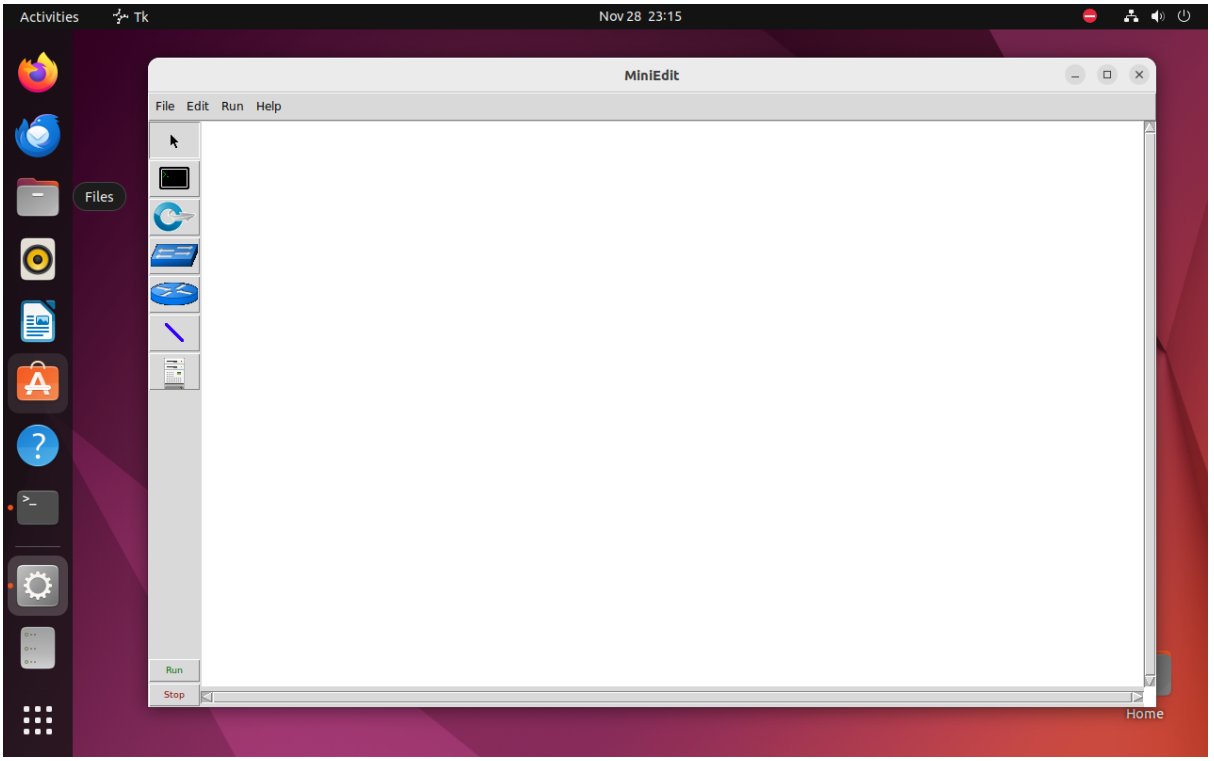


2. step

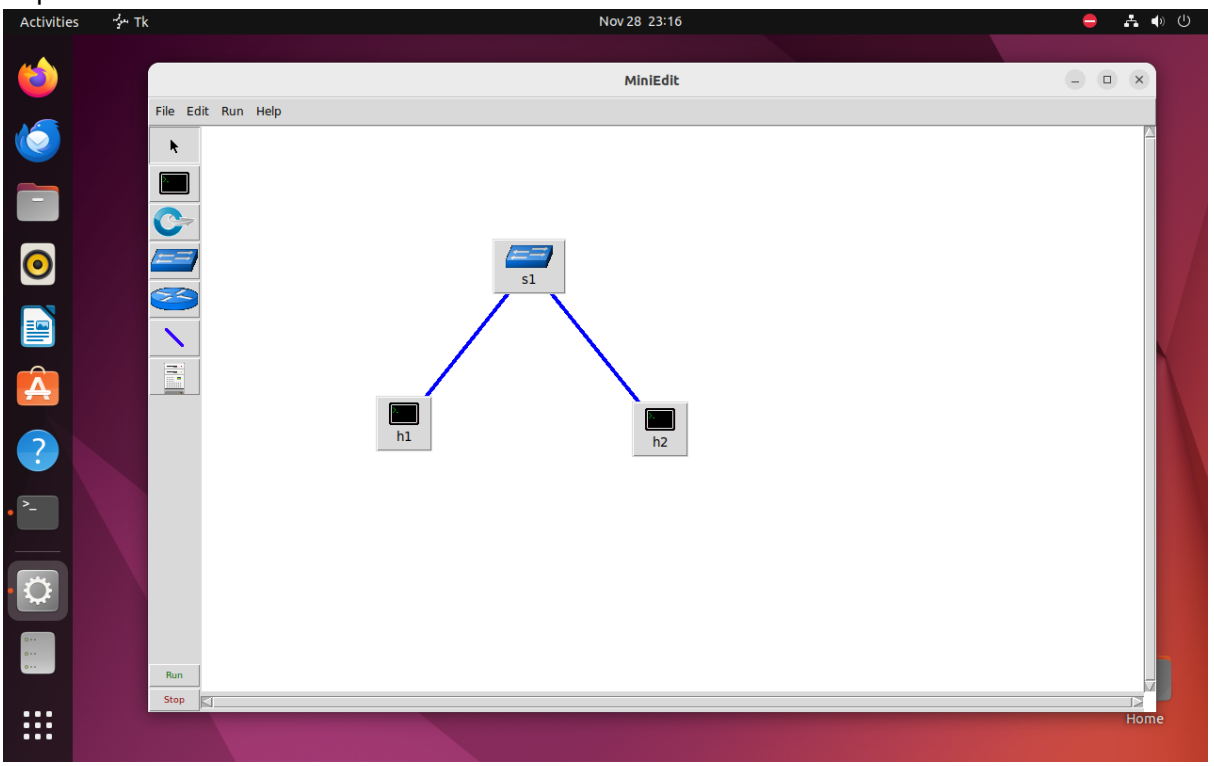


3.1

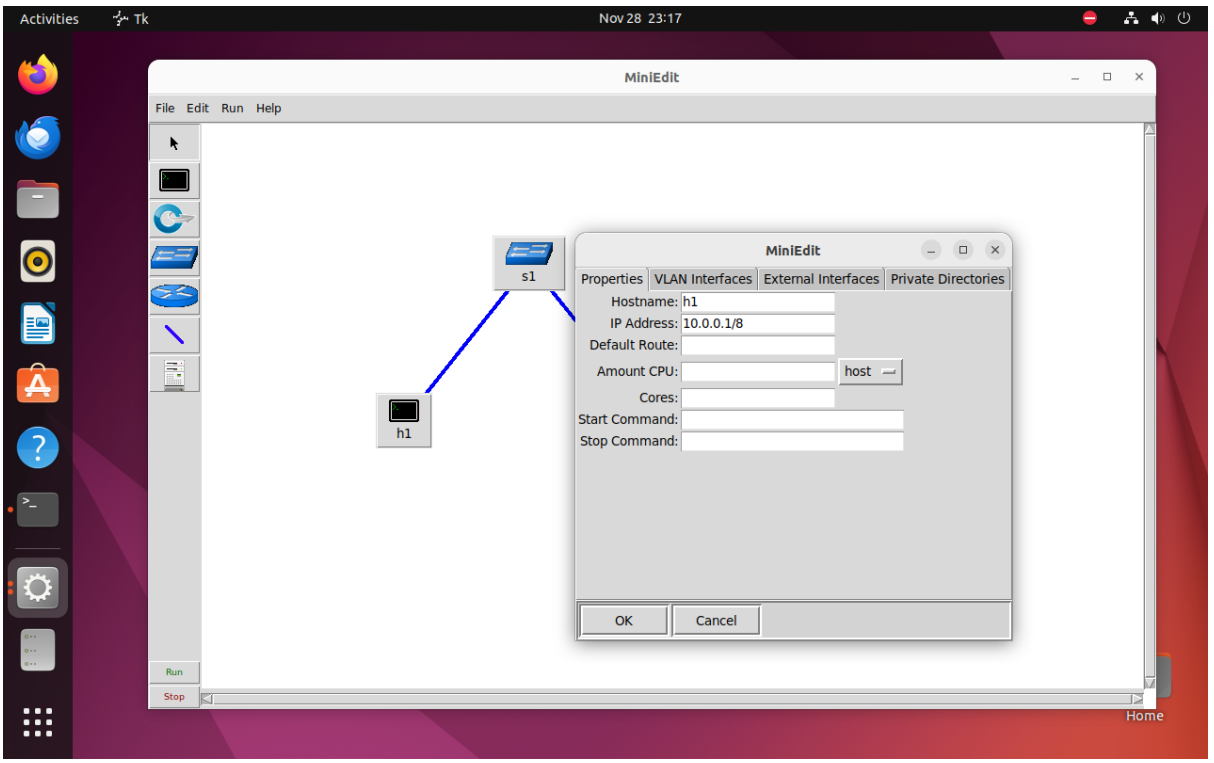
1. step

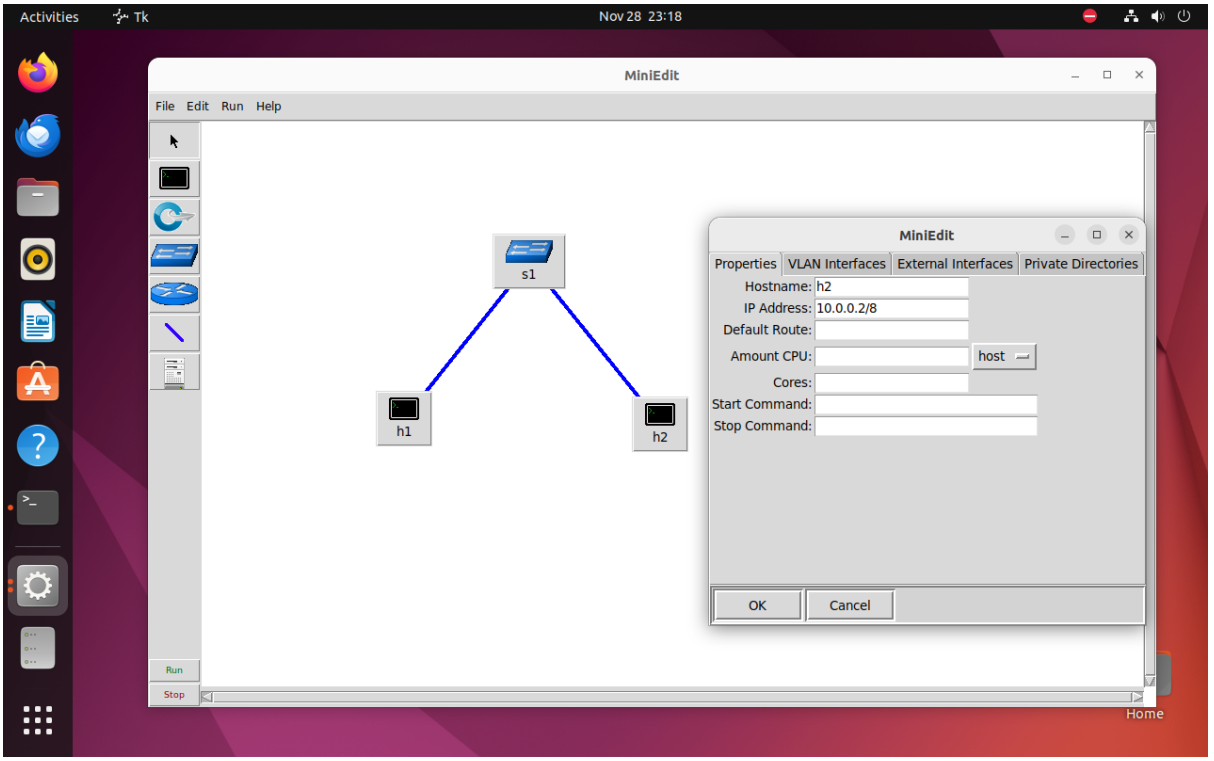

Activities
Tk
Nov 28 23:15
MiniEdit
File Edit Run Help
Files
Run
Stop
Home

2. step


Activities
Tk
Nov 28 23:16
MiniEdit
File Edit Run Help
s1
h1
h2
Run
Stop
Home

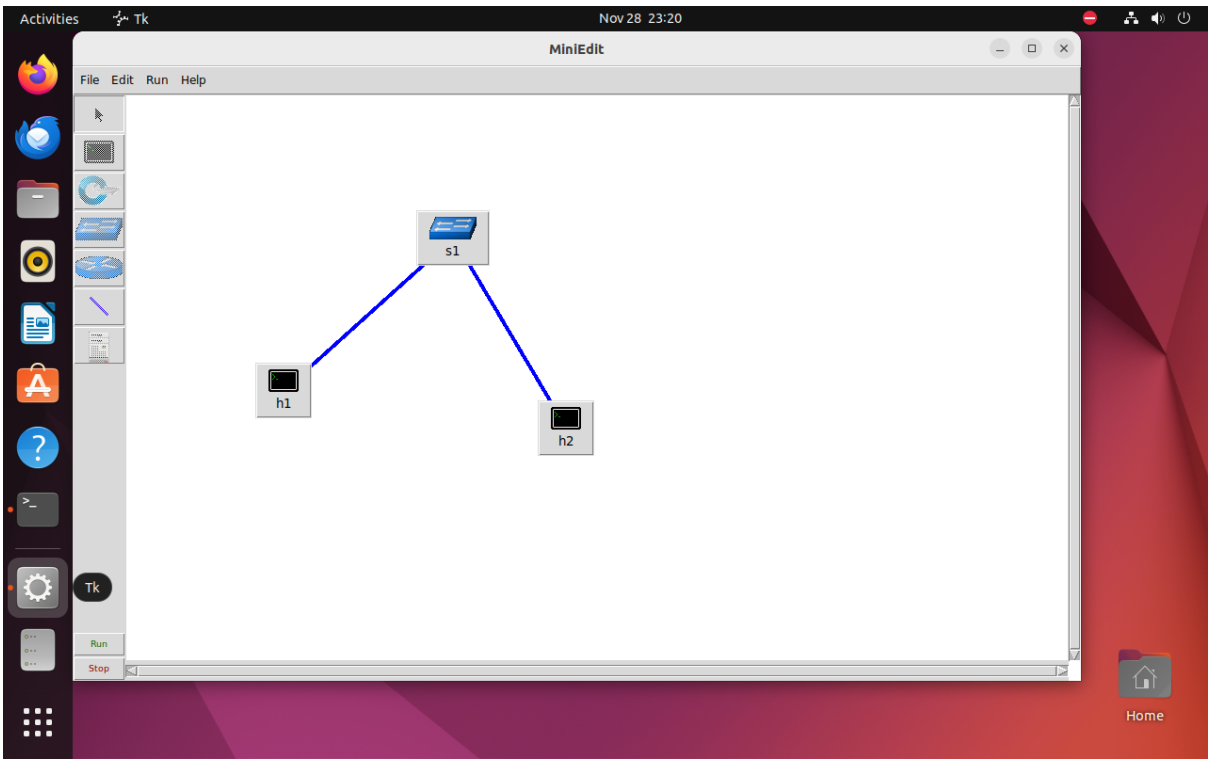
3. step


Activities
Tk
Nov 28 23:17
MiniEdit
File Edit Run Help
s1
h1
MiniEdit
Properties VLAN Interfaces External Interfaces Private Directories
Hostname: h1
IP Address: 10.0.0.1/8
Default Route:
Amount CPU:
host
Cores:
Start Command:
Stop Command:
OK
Cancel
Run
Stop
Home

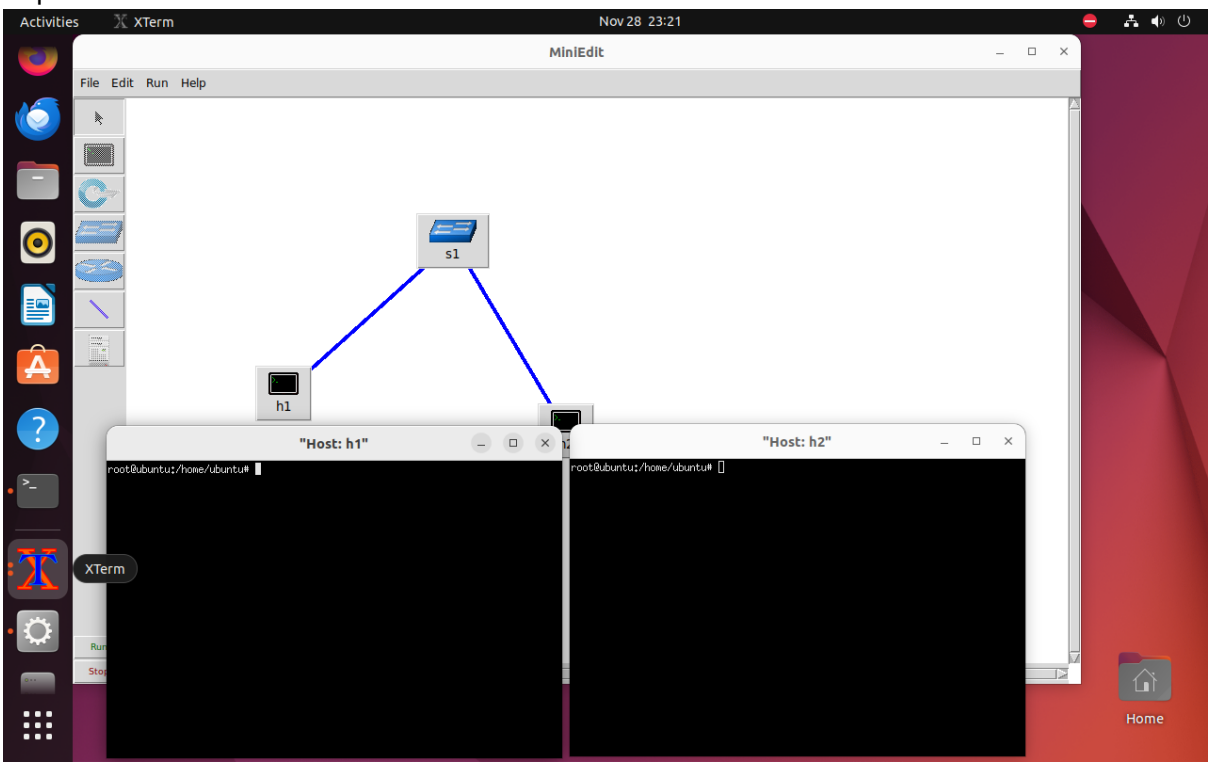

Activities
Tk
Nov 28 23:18
MiniEdit
File Edit Run Help
s1
h1
h2
MiniEdit
Properties VLAN Interfaces External Interfaces Private Directories
Hostname: h2
IP Address: 10.0.0.2/8
Default Route:
Amount CPU:
host
Cores:
Start Command:
Stop Command:
OK
Cancel
Run
Stop
Home

3.2

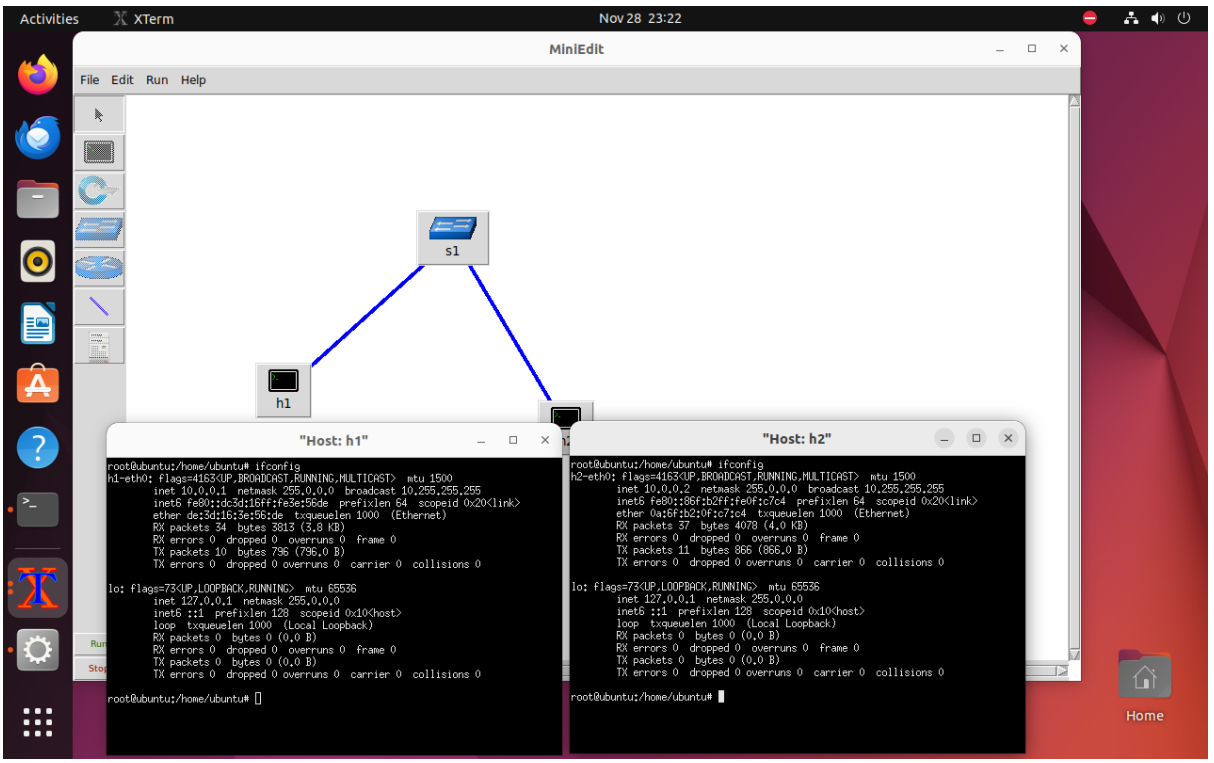
1. step


Activities
Tk
Nov 28 23:20
MiniEdit
File Edit Run Help
s1
h1
h2
Tk
Run
Stop
Home

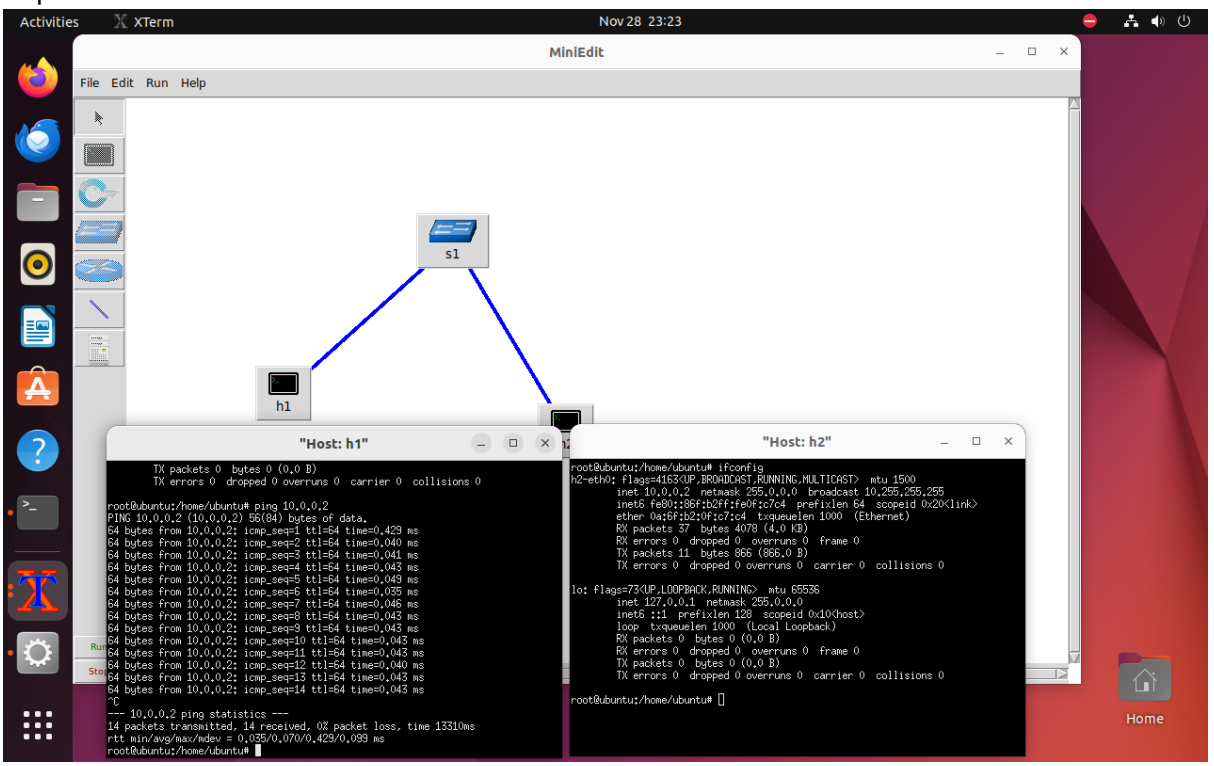
2. step


Activities
XTerm
Nov 28 23:21
MiniEdit
File Edit Run Help
s1
h1
"Host: h1"
root@ubuntu:/home/ubuntu#
"Host: h2"
root@ubuntu:/home/ubuntu#
XTerm
Home

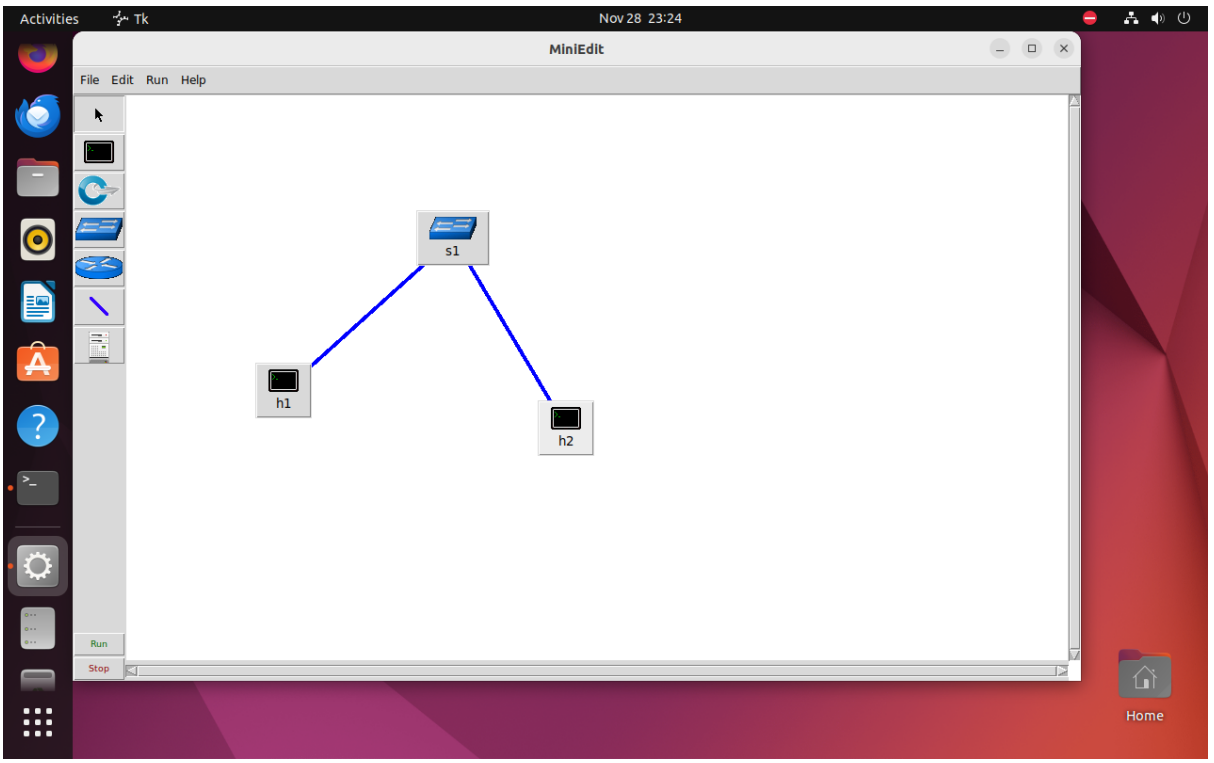
3. step


Activities
XTerm
Nov 28 23:22
MiniEdit
File Edit Run Help
s1
h1
"Host: h1"
"Host: h2"
Home

4. step

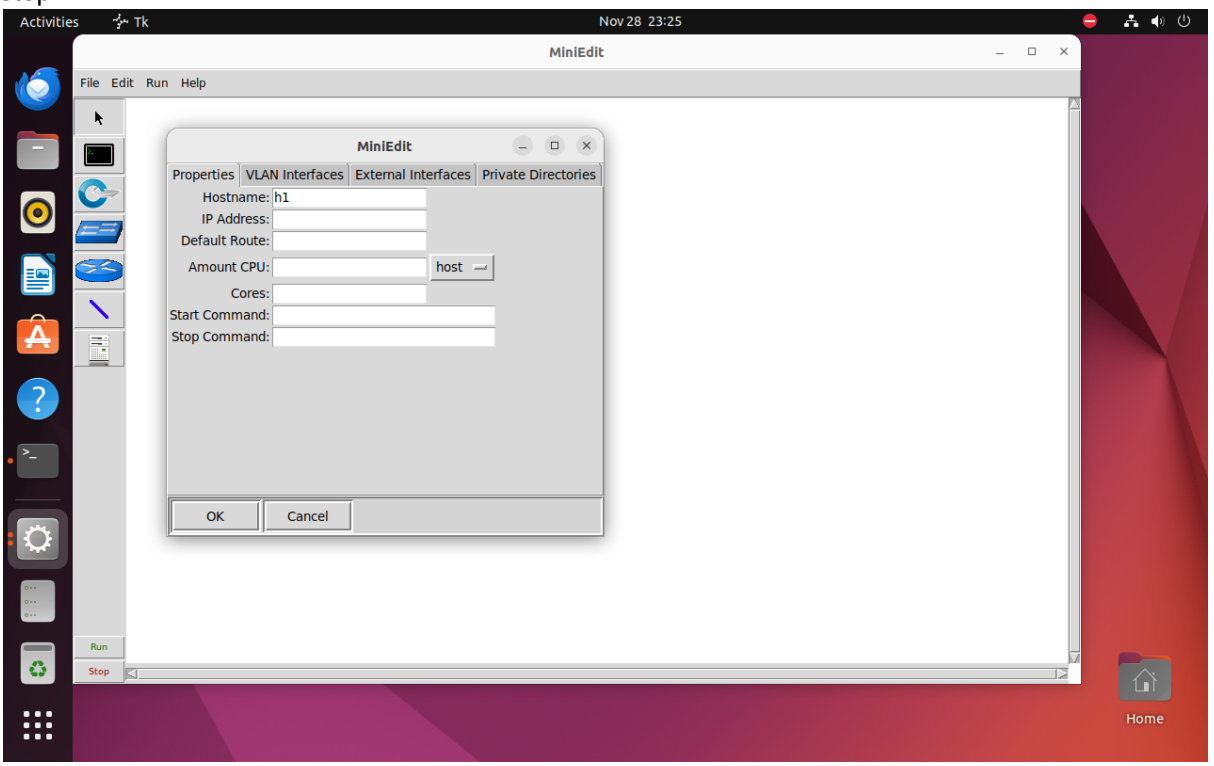

Activities
XTerm
Nov 28 23:23
MiniEdit
File Edit Run Help
s1
h1
"Host: h1"
"Host: h2"
Home

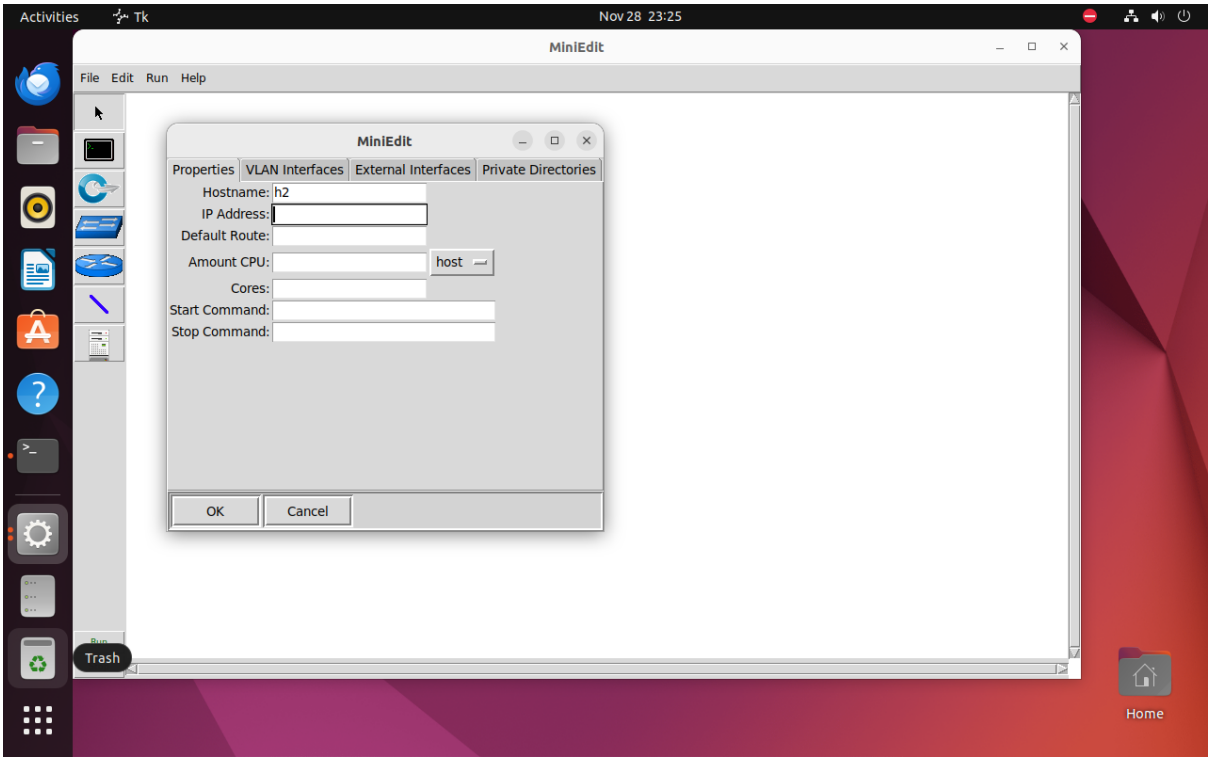
5. step


Activities
Tk
Nov 28 23:24
MiniEdit
File Edit Run Help
s1
h1
h2
Run
Stop
Home

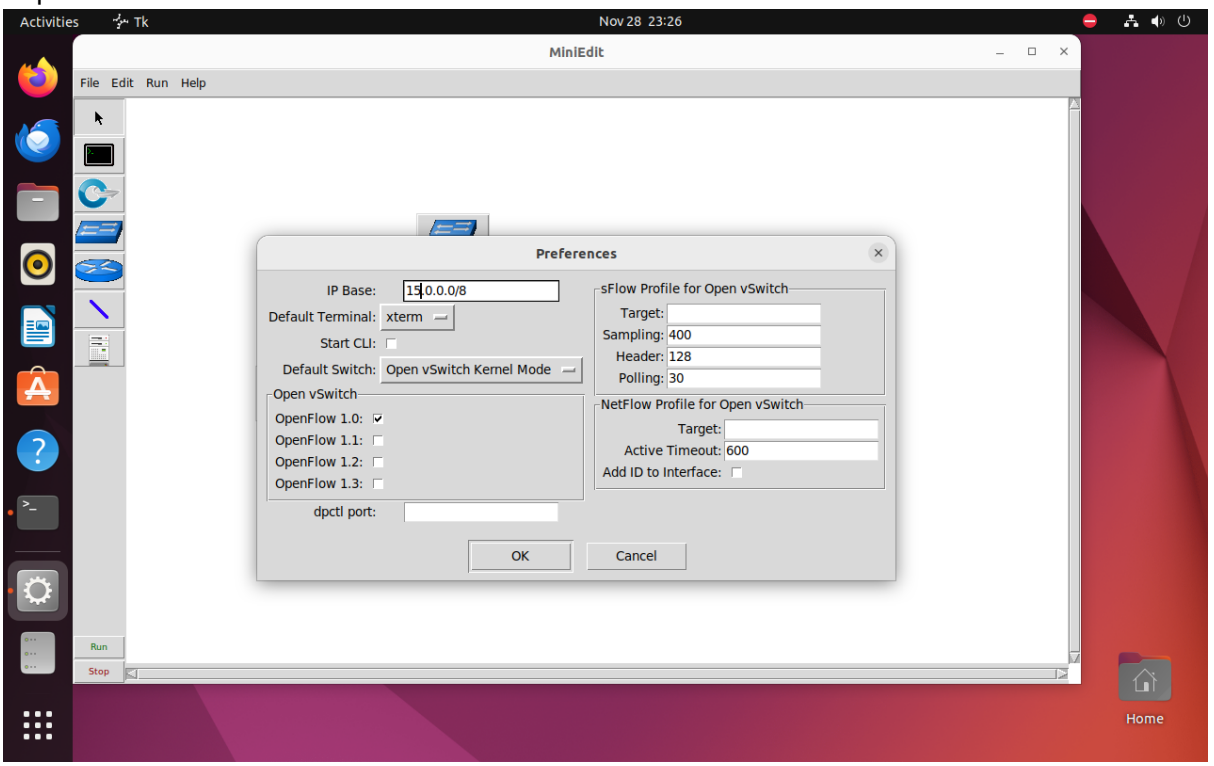
3.3

1. step

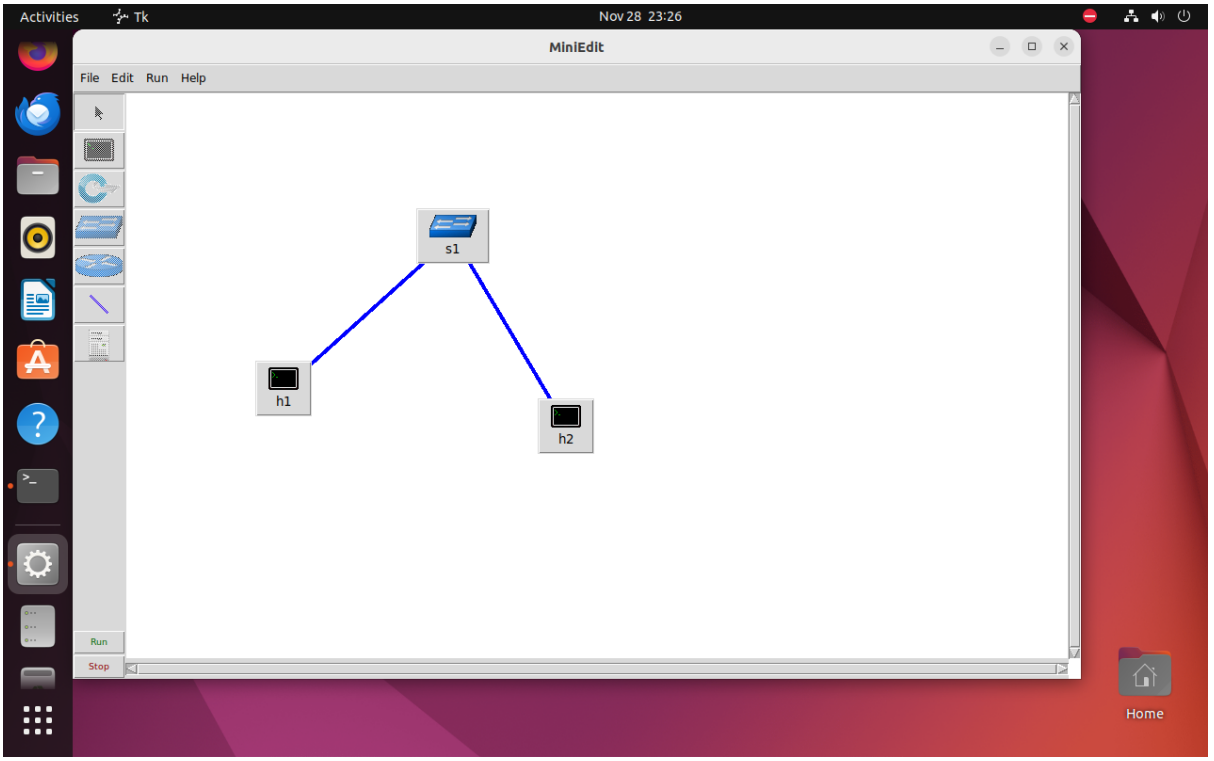

Activities
Tk
Nov 28 23:25
MiniEdit
File Edit Run Help
MiniEdit
Properties
VLAN Interfaces
External Interfaces
Private Directories
Hostname: h1
IP Address:
Default Route:
Amount CPU:
host
Cores:
Start Command:
Stop Command:
OK
Cancel
Run
Stop
Home


Activities
Tk
Nov 28 23:25
MiniEdit
File Edit Run Help
MiniEdit
Properties
VLAN Interfaces
External Interfaces
Private Directories
Hostname: h2
IP Address:
Default Route:
Amount CPU:
host
Cores:
Start Command:
Stop Command:
OK
Cancel
Trash
Home

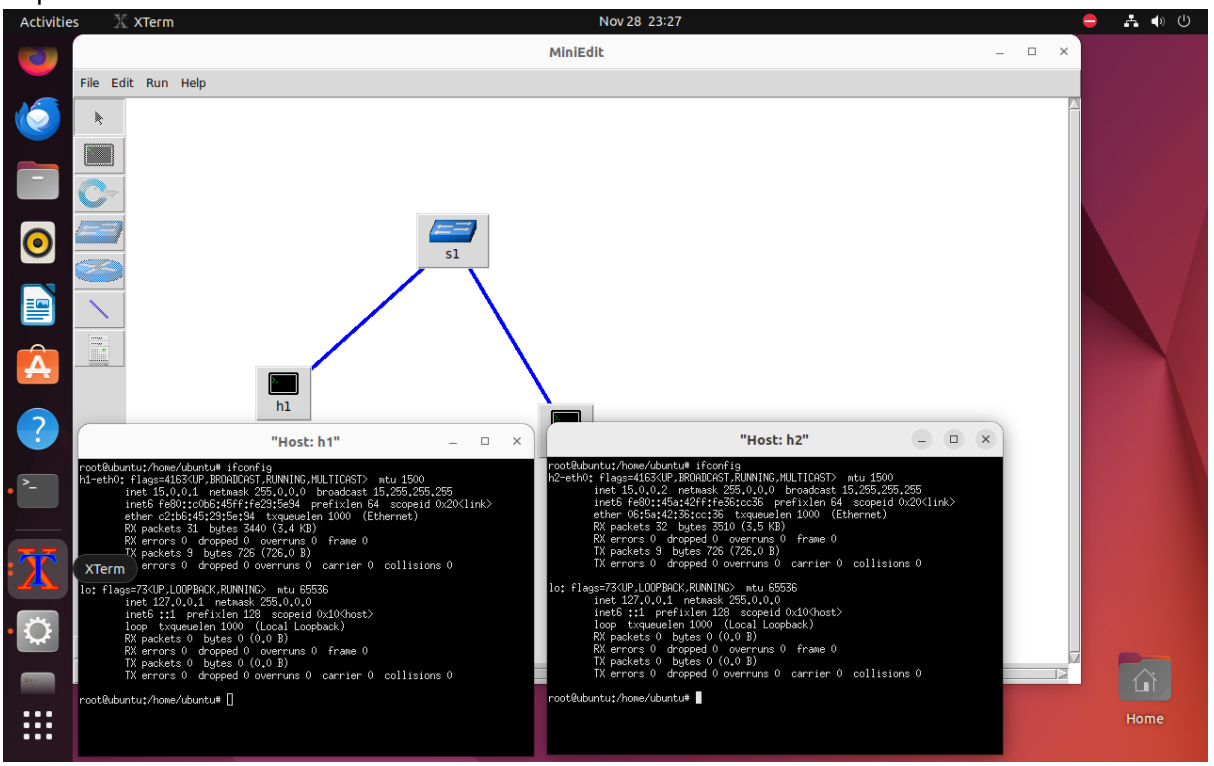
2. step


Activities
Tk
Nov 28 23:26
MiniEdit
File Edit Run Help
Preferences
IP Base: 10.0.0.0/8
Default Terminal: xterm
Start CLI:
Default Switch: Open vSwitch Kernel Mode
Open vSwitch
OpenFlow 1.0:
OpenFlow 1.1:
OpenFlow 1.2:
OpenFlow 1.3:
dpctl port:
sFlow Profile for Open vSwitch
Target:
Sampling: 400
Header: 128
Polling: 30
NetFlow Profile for Open vSwitch
Target:
Active Timeout: 600
Add ID to Interface:
OK
Cancel
Run
Stop
Home

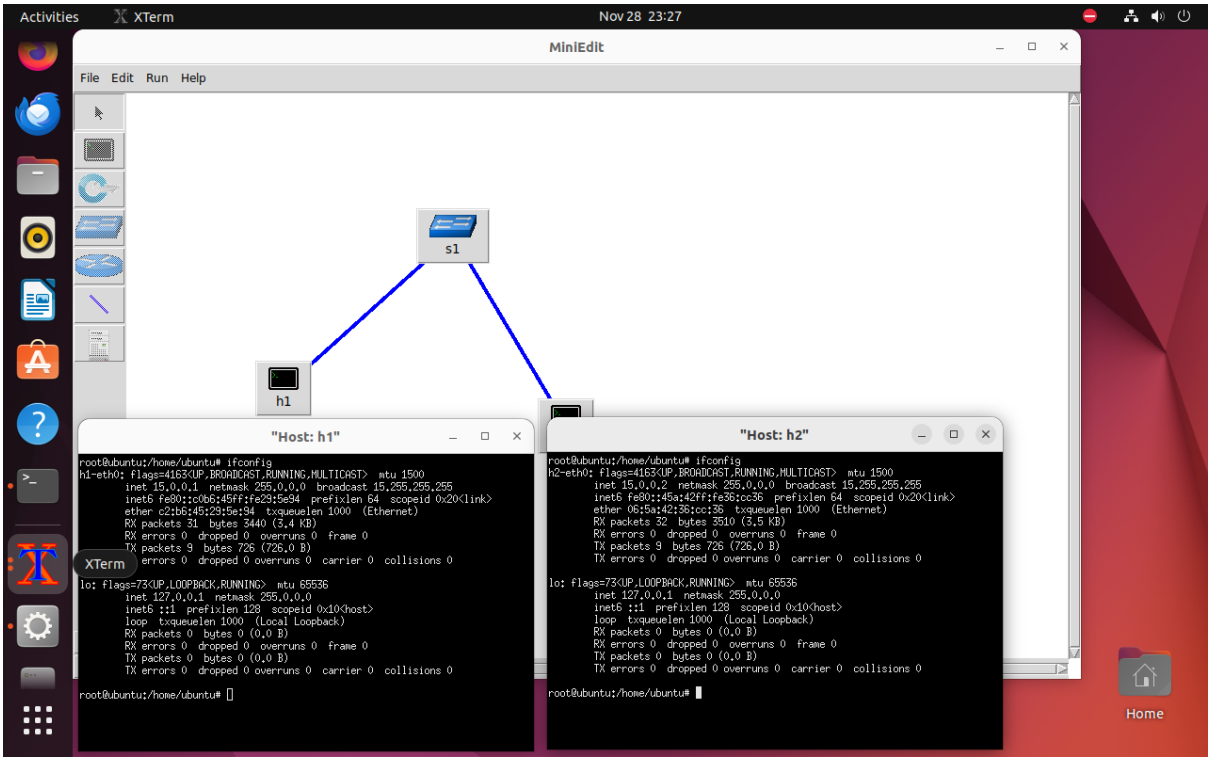
3. step


Activities
Tk
Nov 28 23:26
MiniEdit
File Edit Run Help
s1
h1
h2
Run
Stop
Home

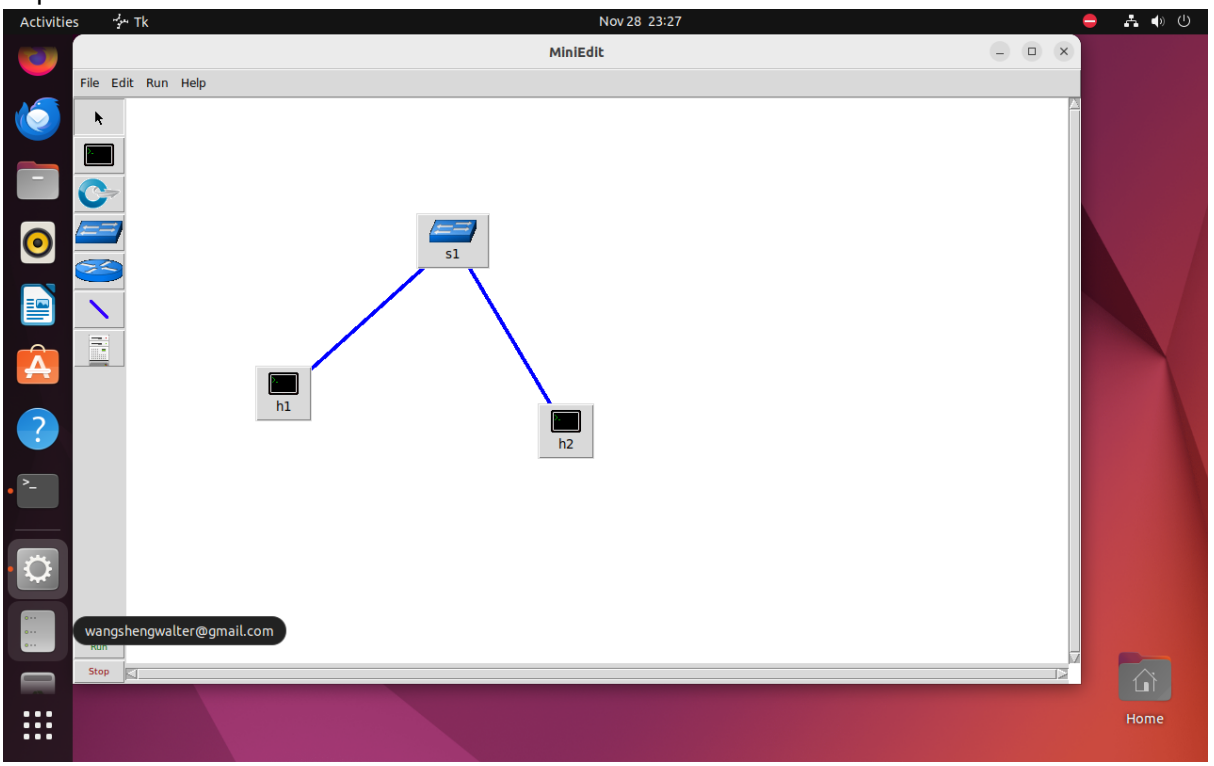
4. step


Activities
XTerm
Nov 28 23:27
MiniEdit
File Edit Run Help
s1
h1
"Host: h1"
root@ubuntu:/home/ubuntu# ifconfig
h1-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 15.0.0.1 netmask 255.0.0.0 broadcast 15.255.255.255
inet6 fe80::c0b6:45ff:fe23:5e94 prefixlen 64 scopeid 0x20<link>
ether c2:b6:45:23:5e:94 txqueuelen 1000 (Ethernet)
RX packets 31 bytes 3440 (3.4 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 9 bytes 726 (726.0 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
inet6 ::1 prefixlen 128 scopeid 0x10<host>
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
root@ubuntu:/home/ubuntu#
"Host: h2"
root@ubuntu:/home/ubuntu# ifconfig
h2-eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 15.0.0.2 netmask 255.0.0.0 broadcast 15.255.255.255
inet6 fe80::45a:42ff:fe36:cc36 prefixlen 64 scopeid 0x20<link>
ether 06:5a:42:36:cc:36 txqueuelen 1000 (Ethernet)
RX packets 32 bytes 3510 (3.5 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 9 bytes 726 (726.0 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
inet6 ::1 prefixlen 128 scopeid 0x10<host>
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
root@ubuntu:/home/ubuntu#
XTerm
Home

5. step

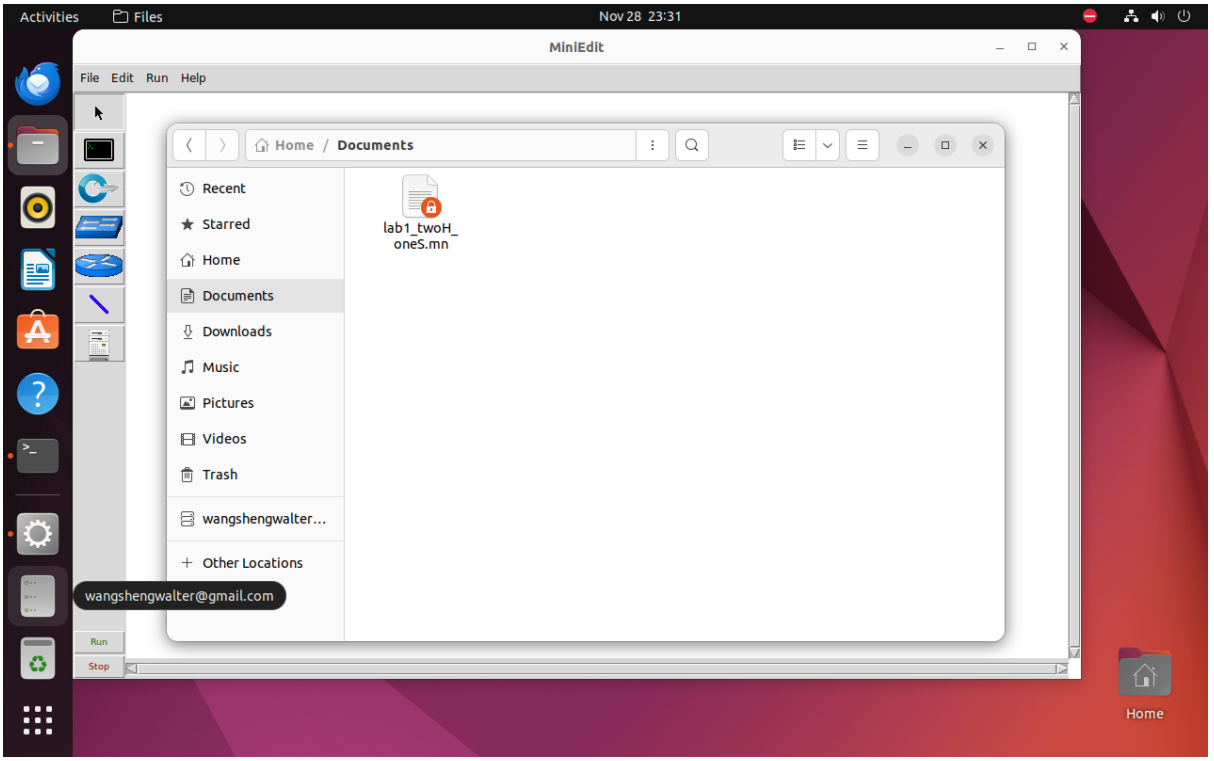


6. step

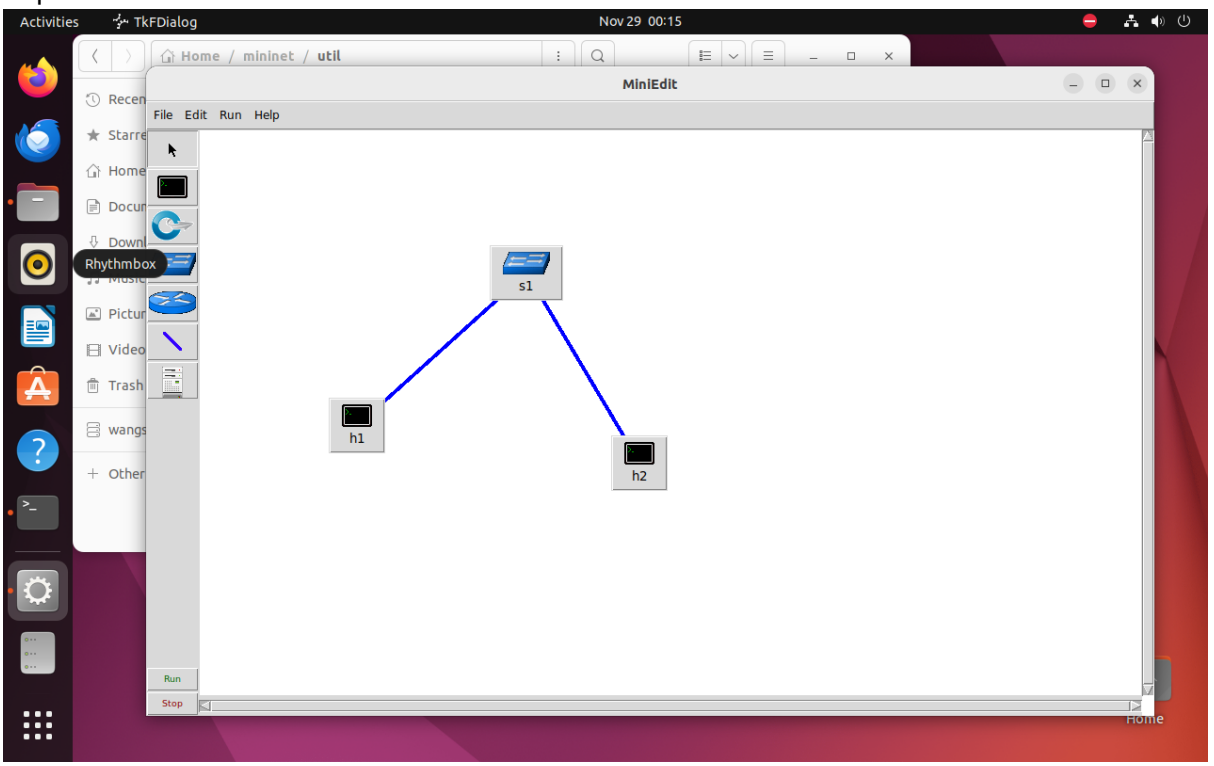


3.4

1. step



2. step



Conclusion:

In this lab, I learnt how to use mininet to check the network we build, how to use miniedit to create a network and give an ip address to the host. Then we know how to open the terminal of each host. Finally, I know how to save the network we built and reopen that network again.

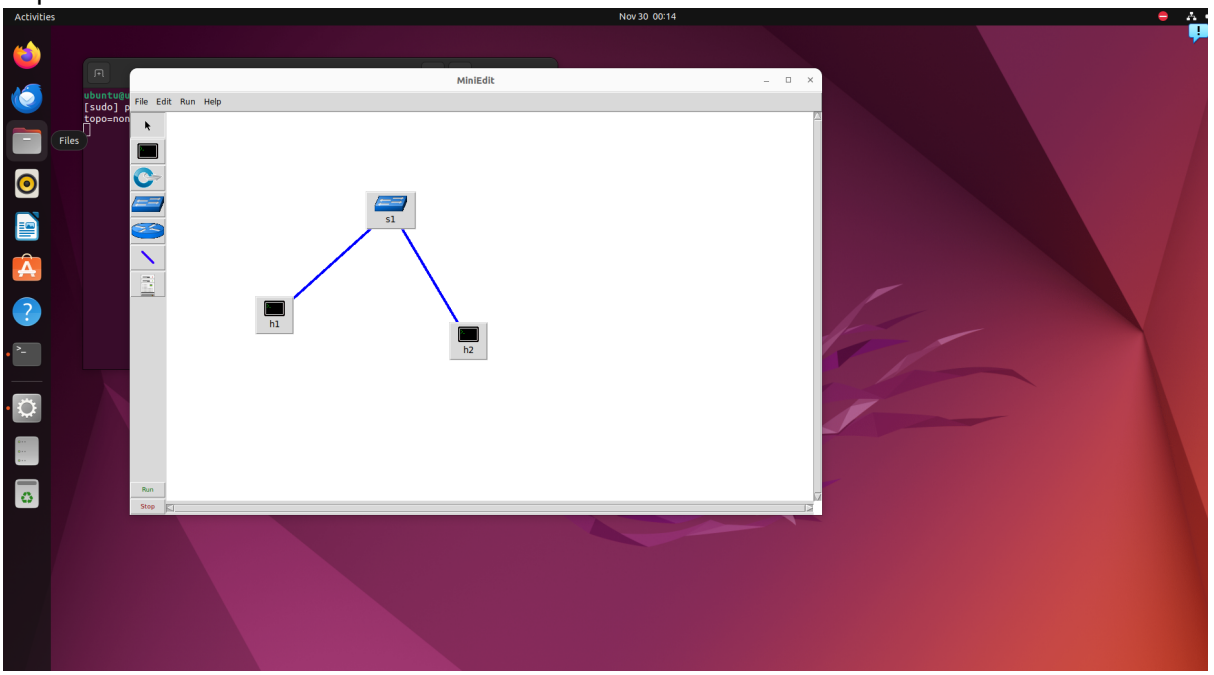
Lab2

Abstract:

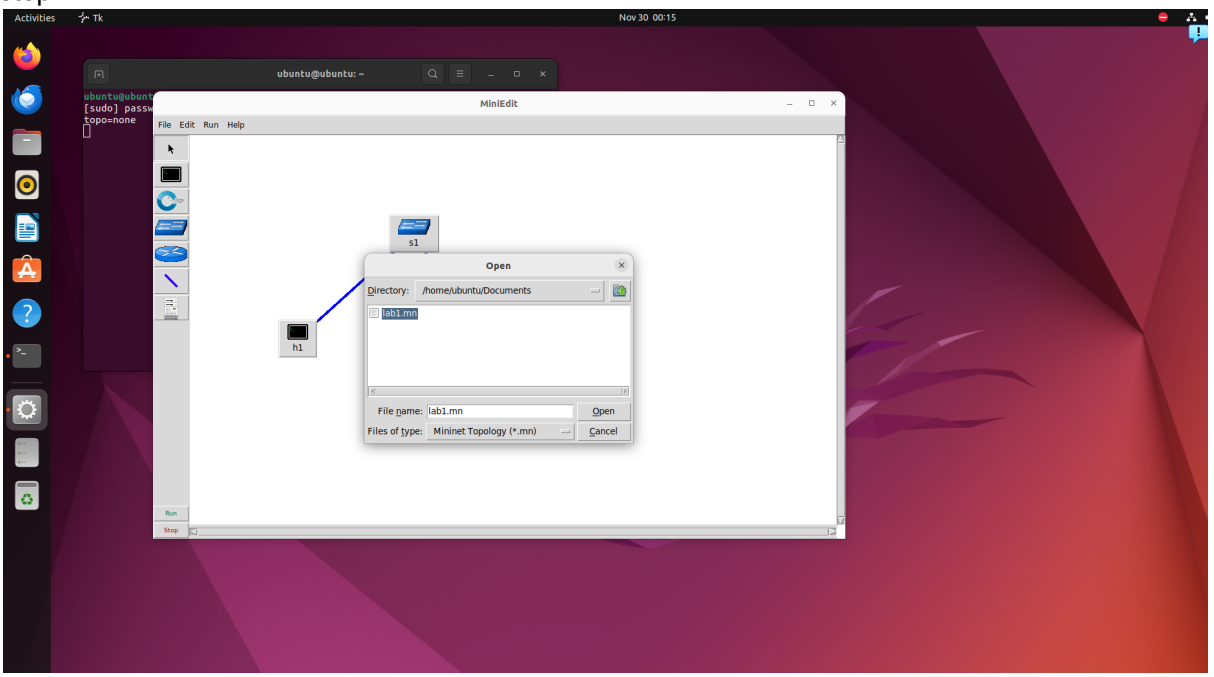
In this lab2, different commands for running clients and servers will be shown below. In addition, the statistical results were made into a json file. Then plot iperf was used to generate the pdf file by using the json file above.

2.0

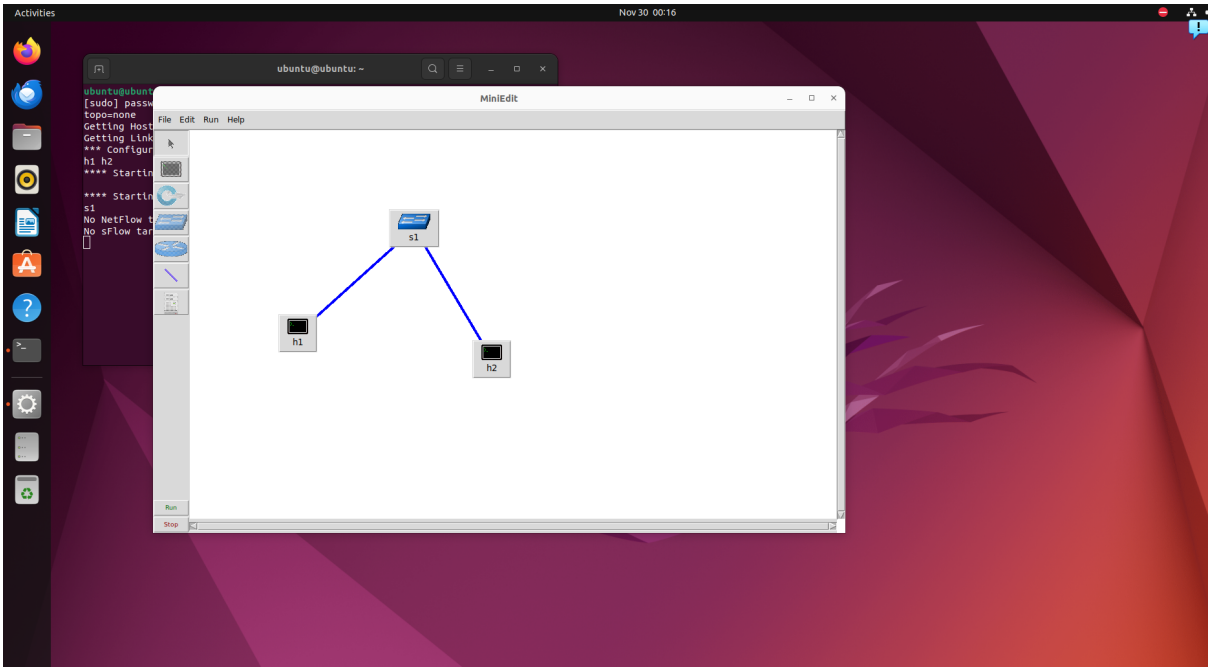
1. step



2. step

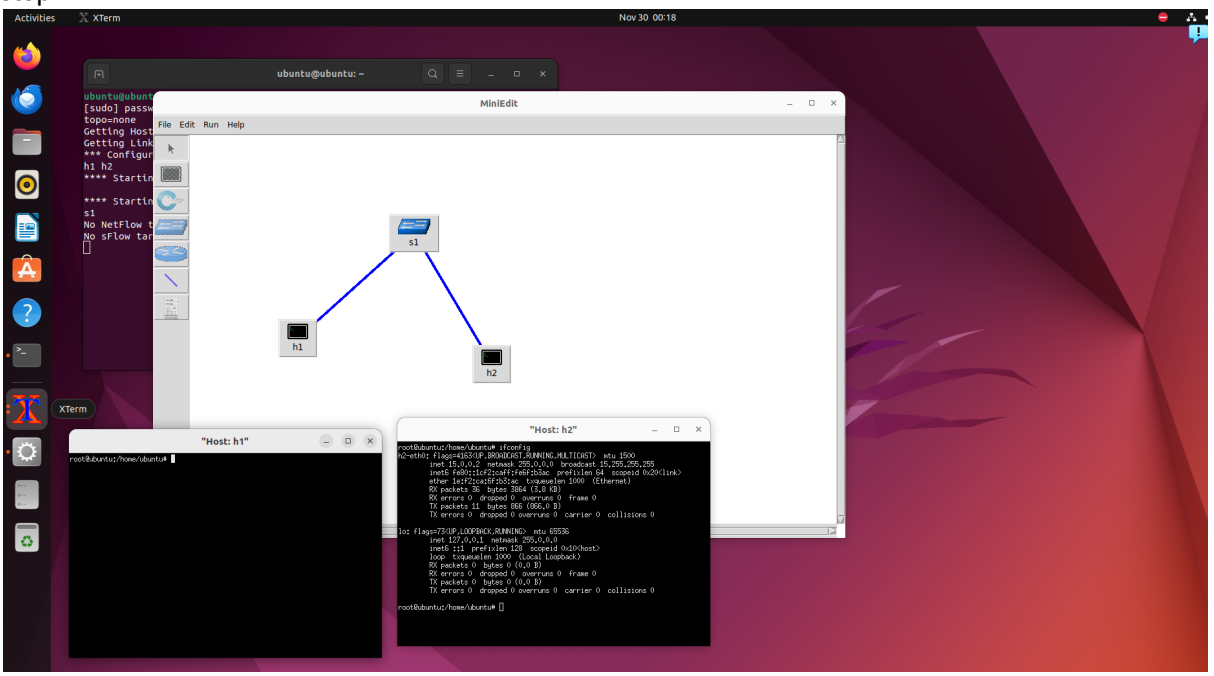


3. step

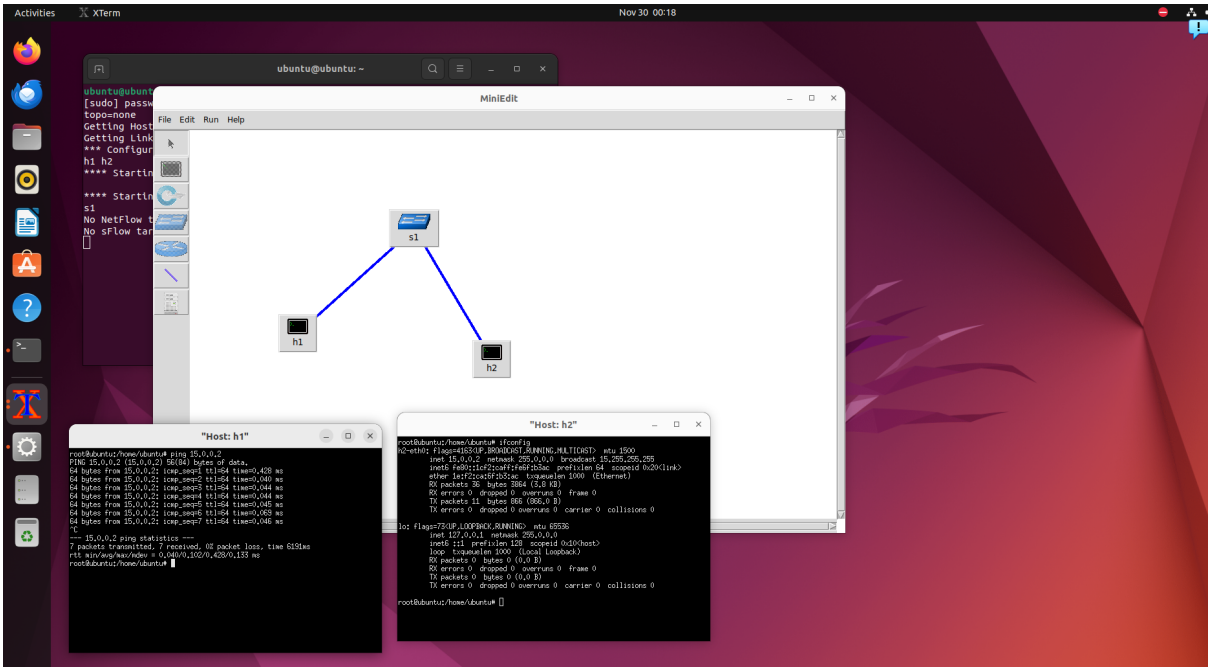


2.1

1. step

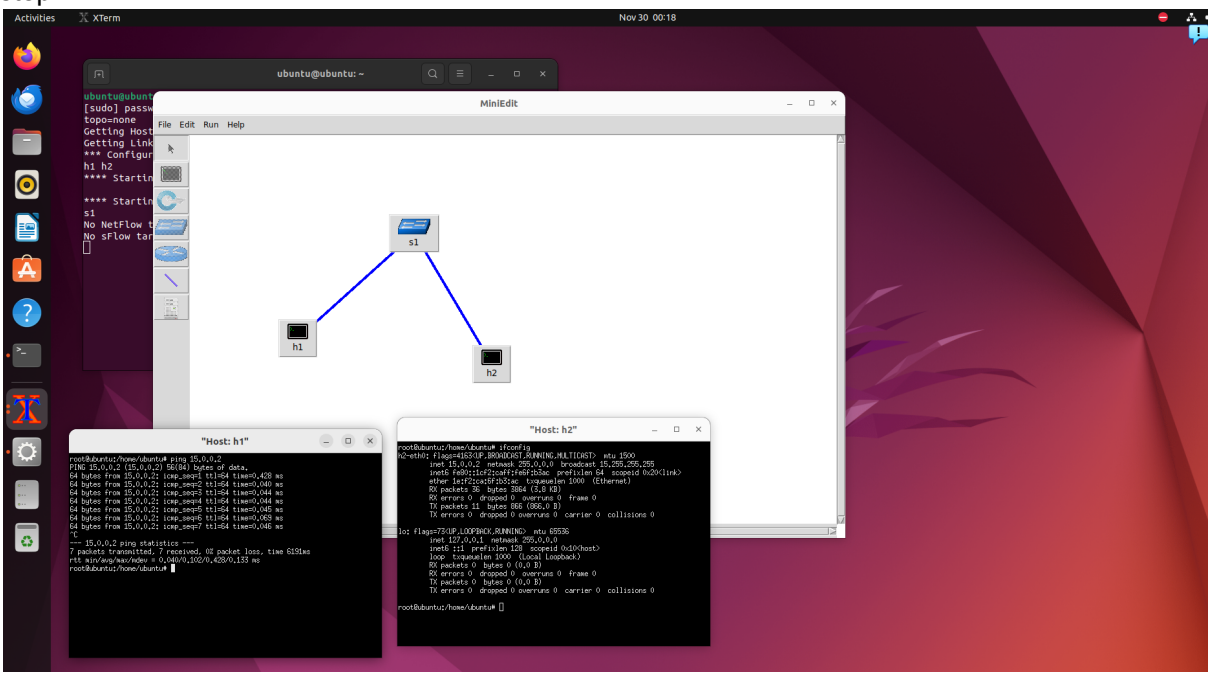


2. step

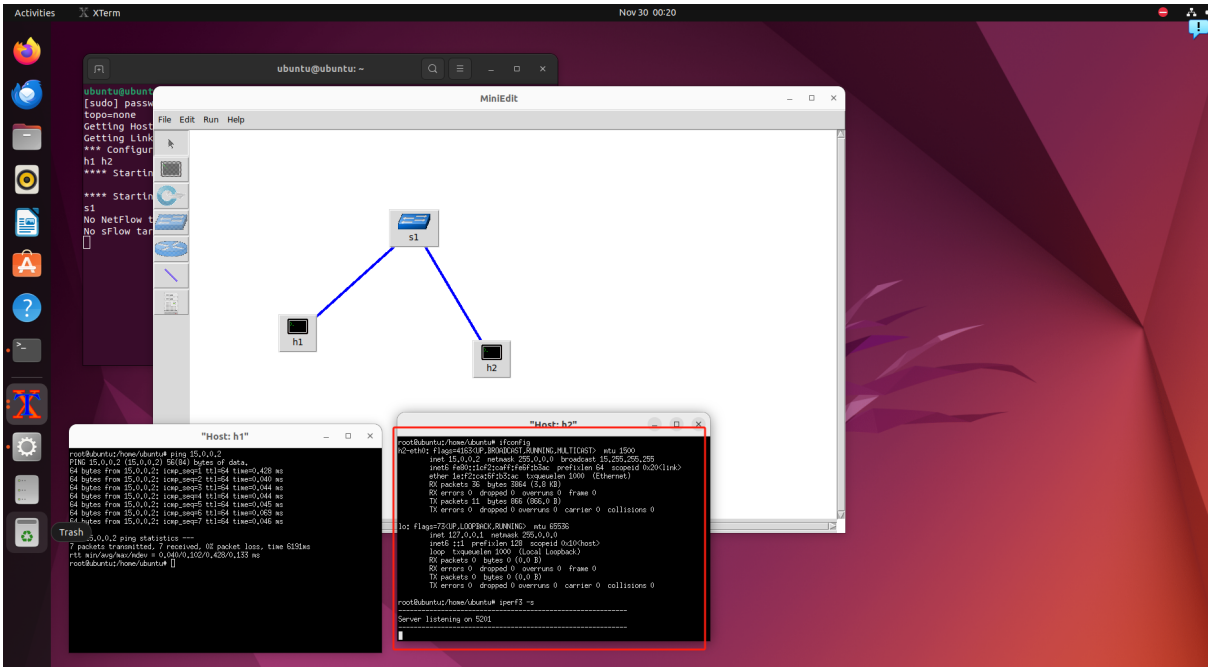


3.1

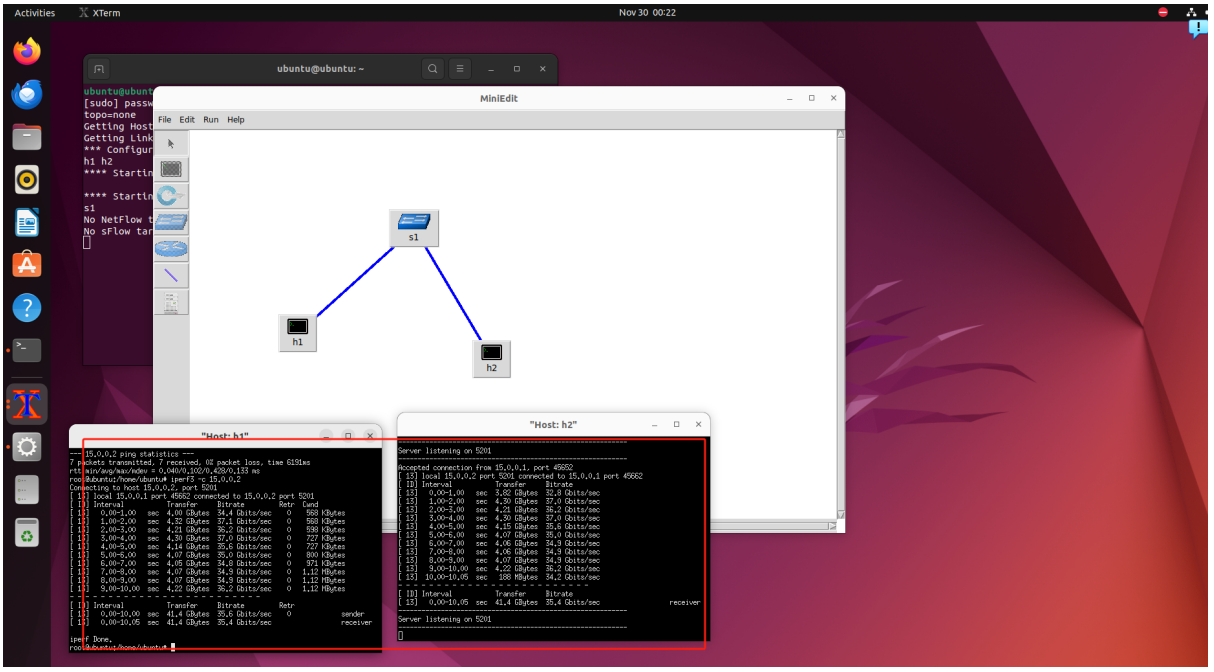
1. step



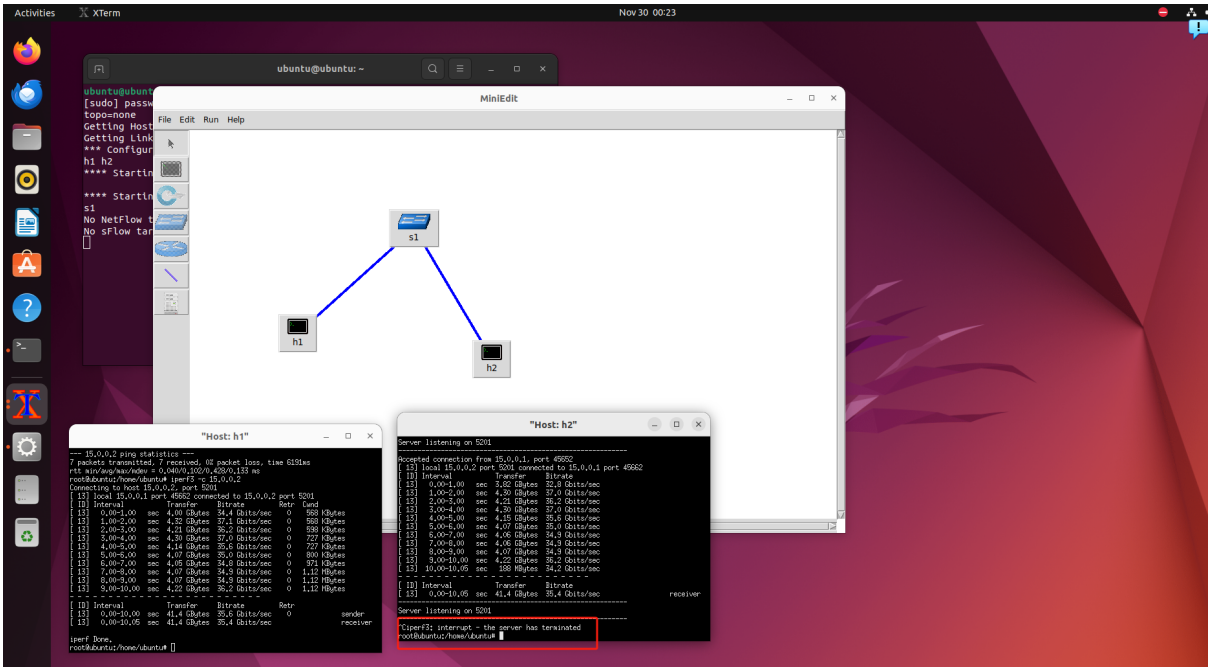
2. step


Activities
XTerm
Nov 30 00:20
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

3. step

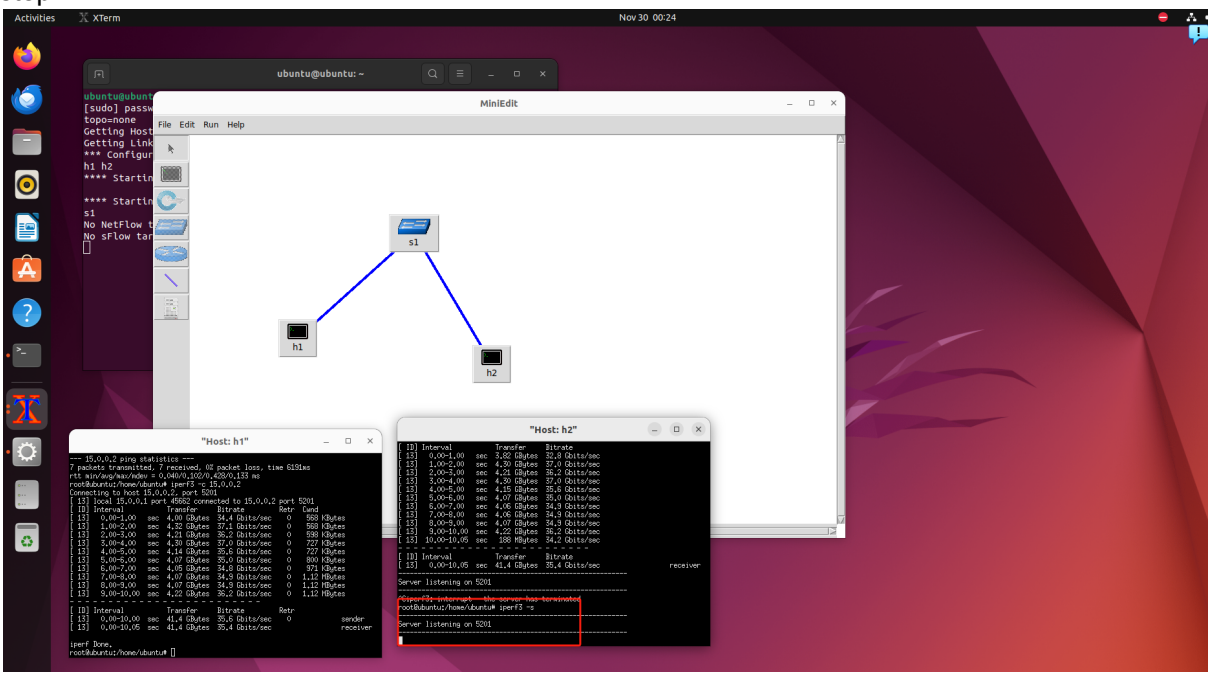

Activities
XTerm
Nov 30 00:22
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

4. step

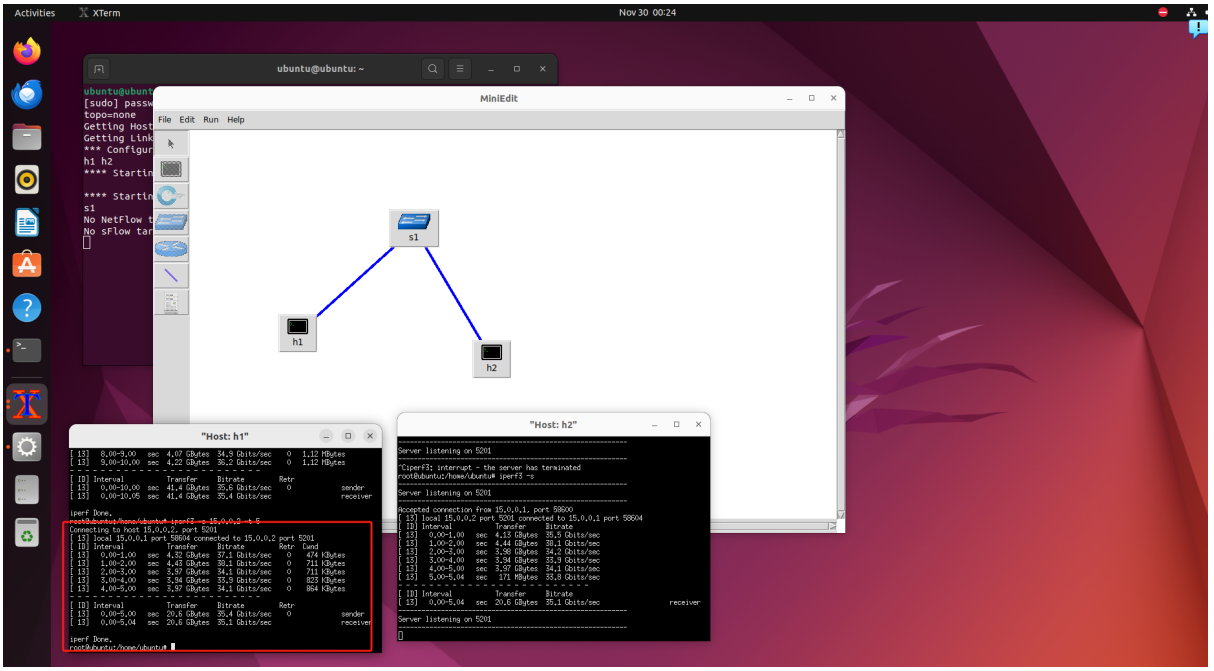


3.2

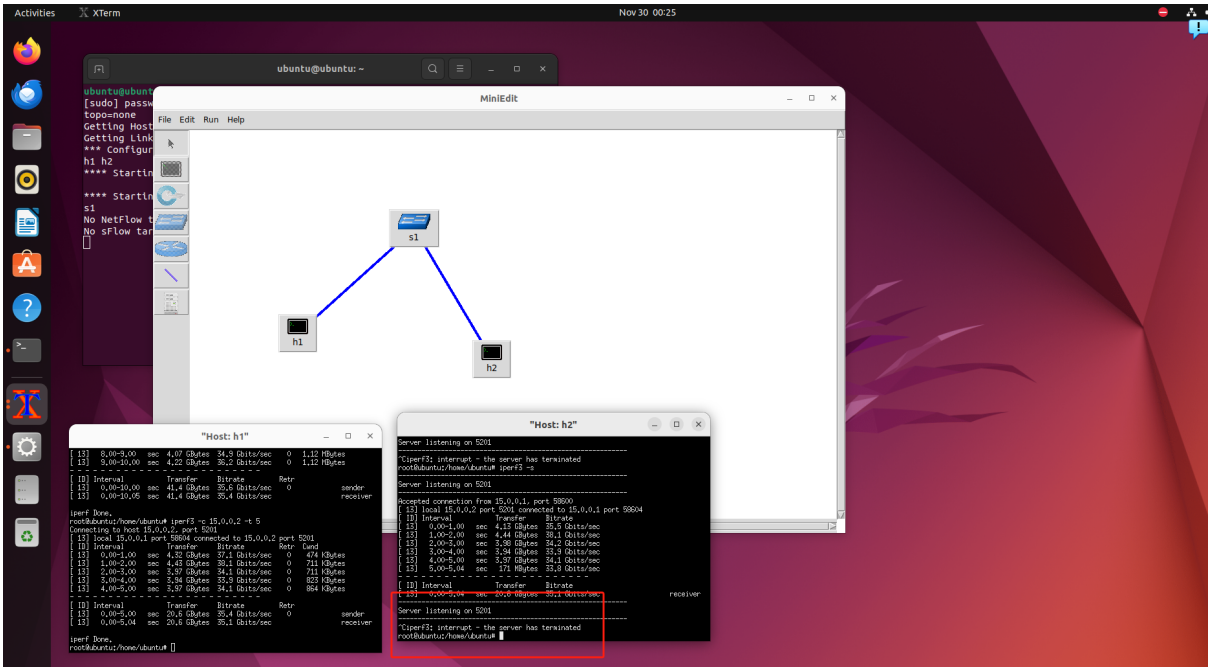
1. step



2. step

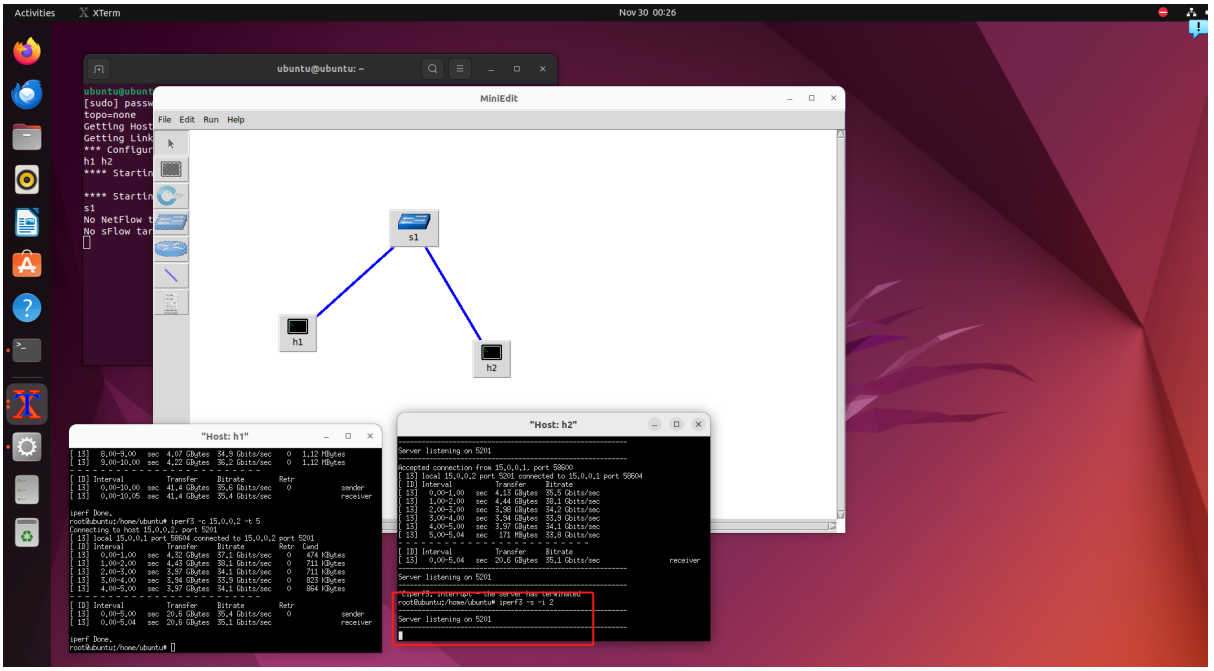


3. step

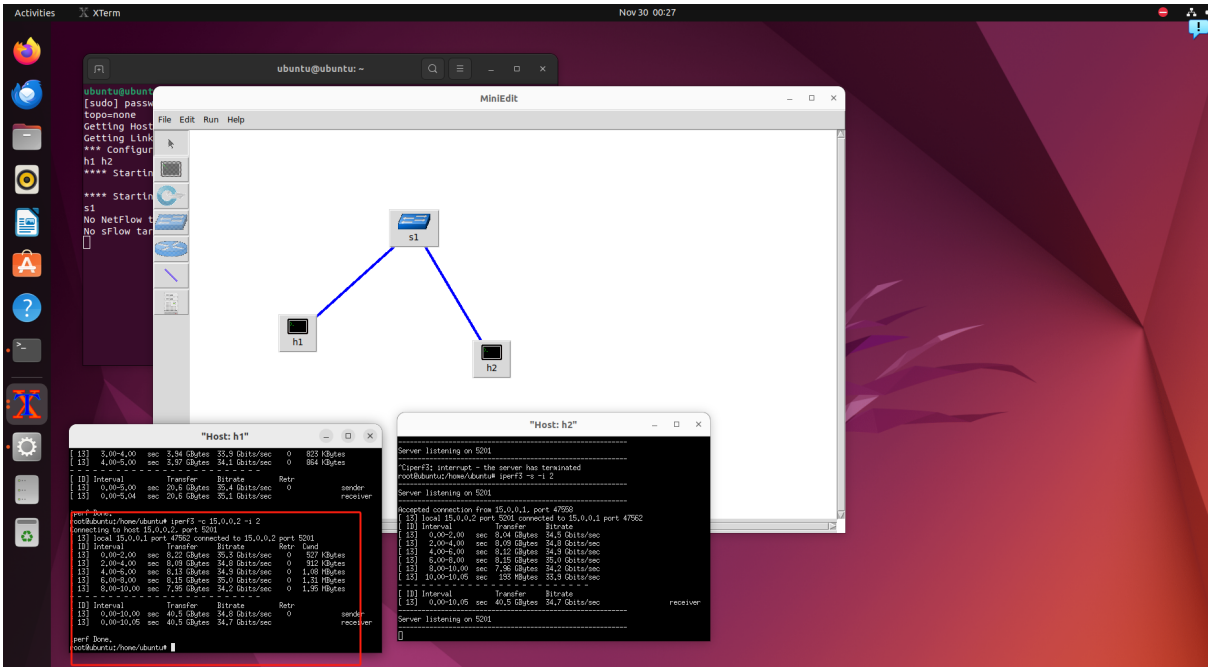


3.3

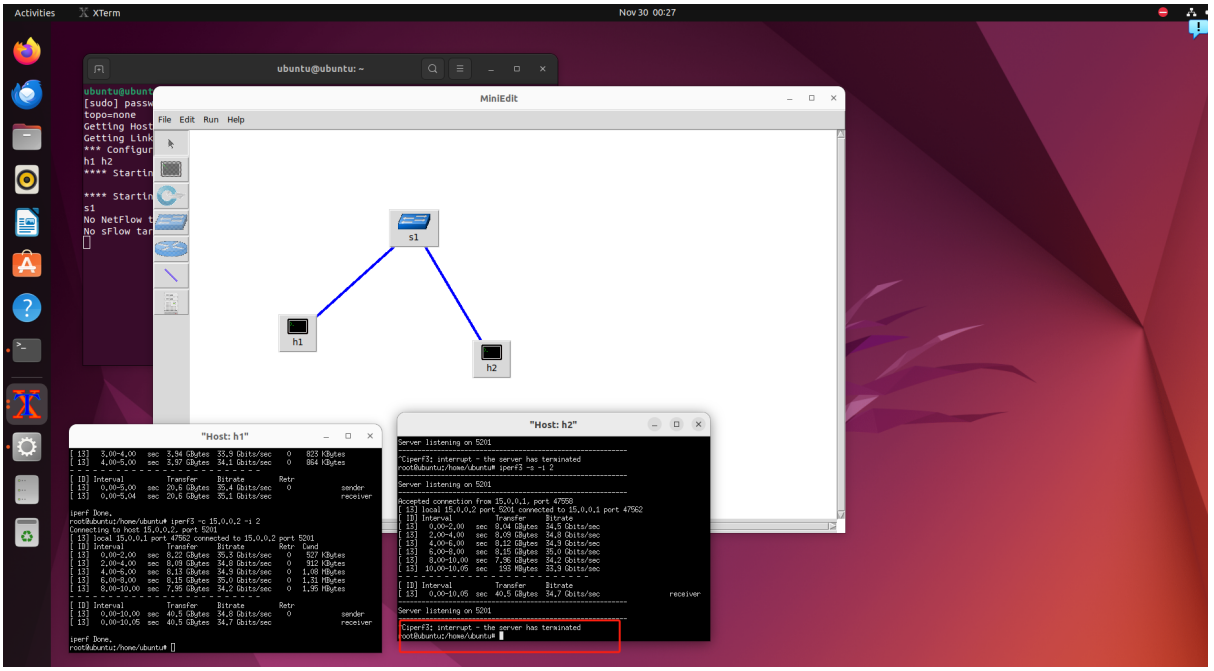
1. step


Activities
XTerm
Nov 30 00:26
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

2. step

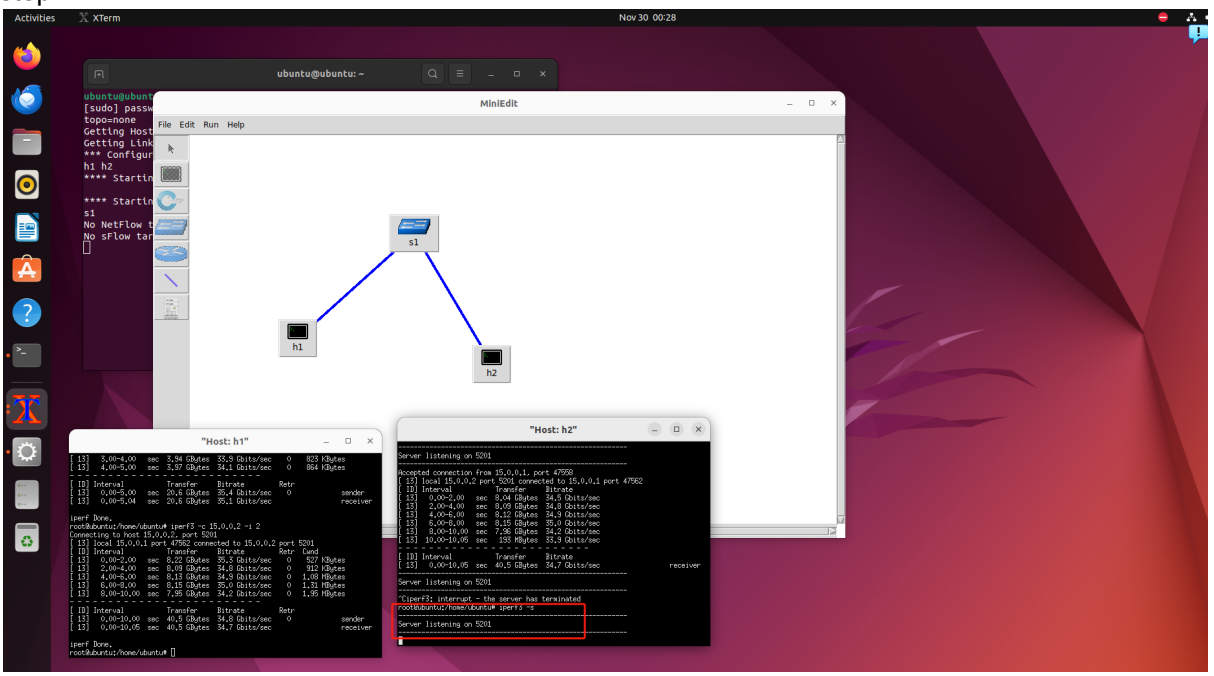

Activities
XTerm
Nov 30 00:27
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

3. step

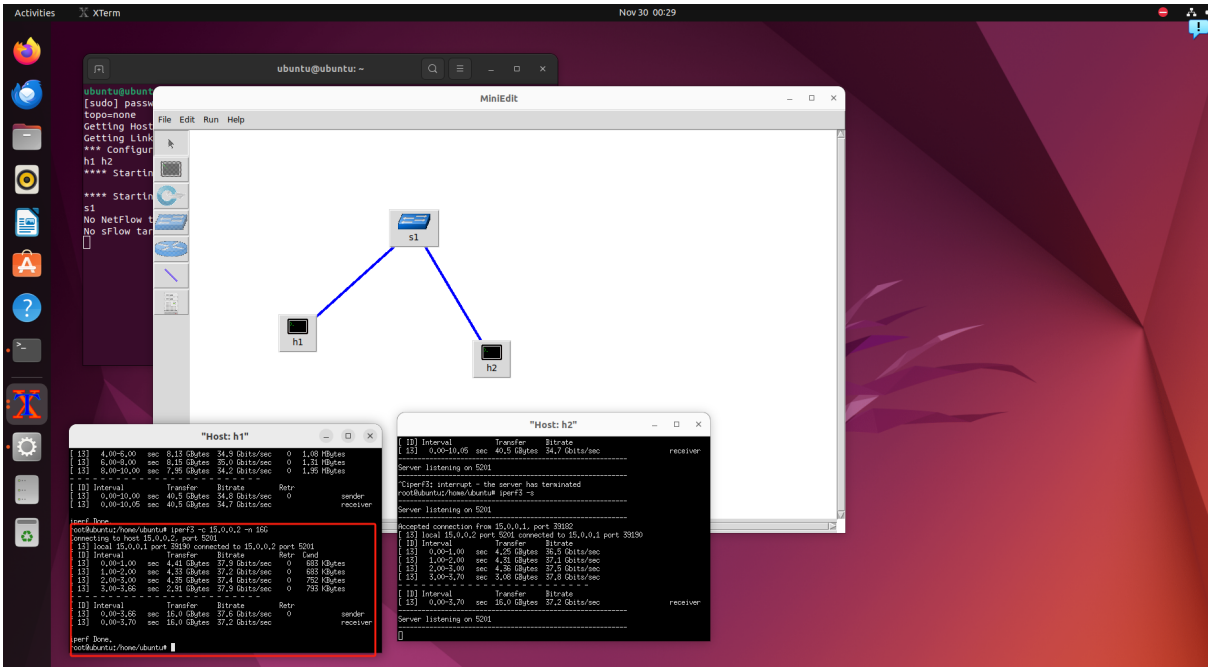


3.4

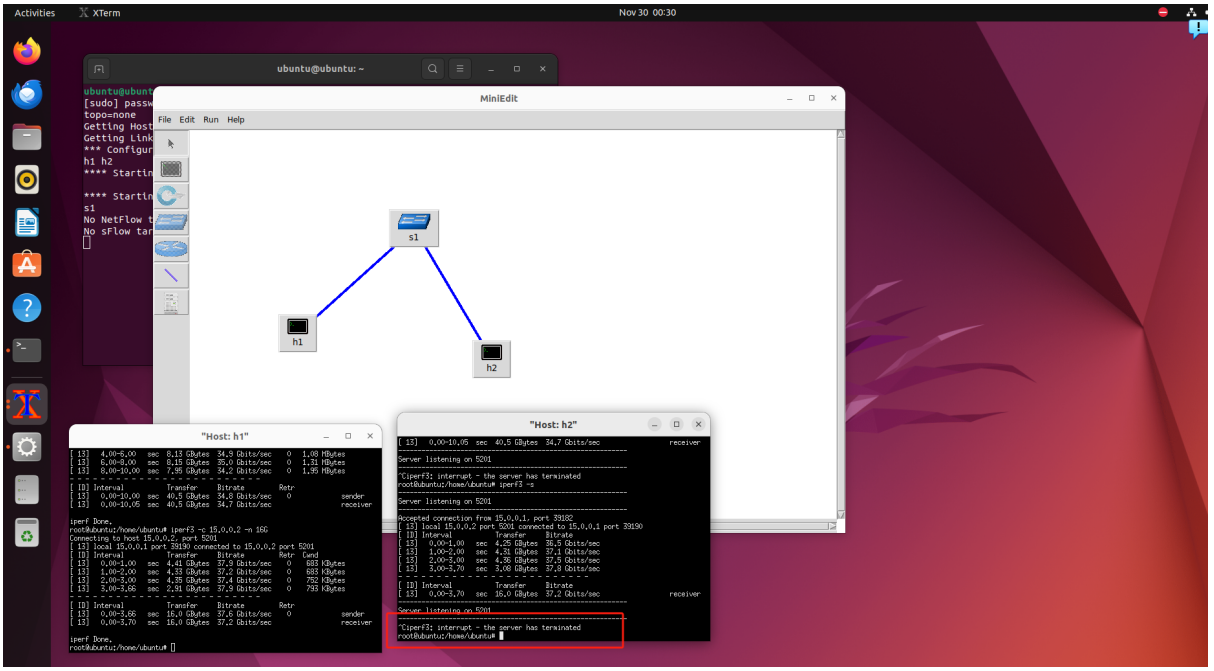
1. step



2. step

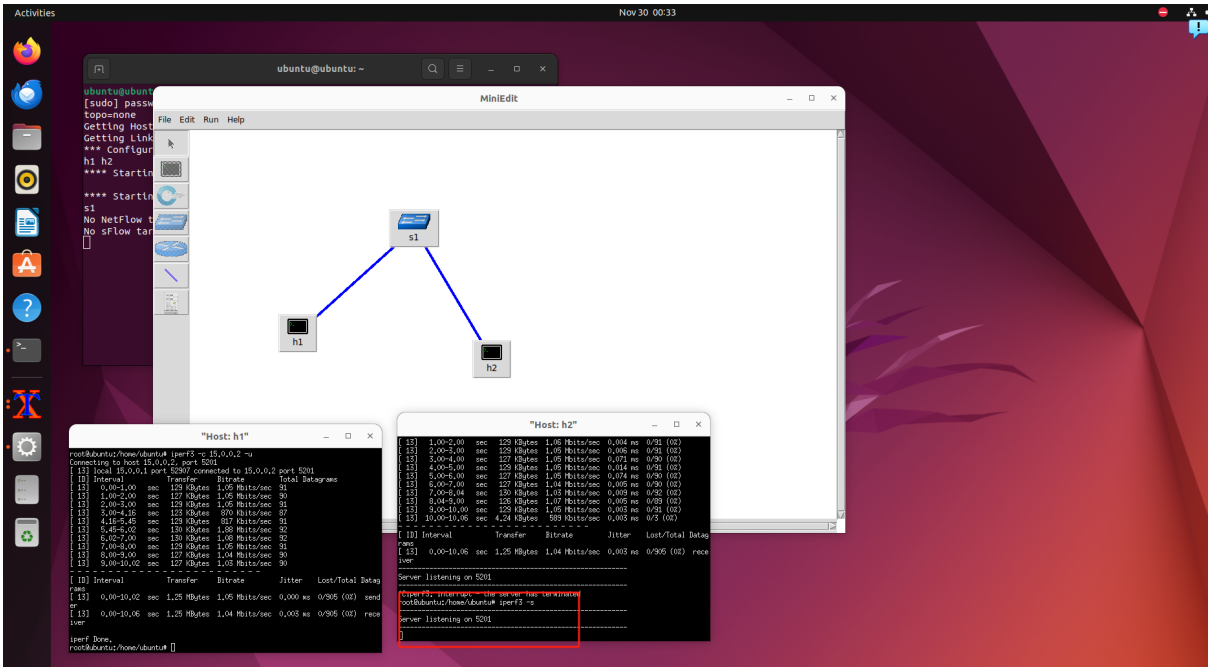


3. step

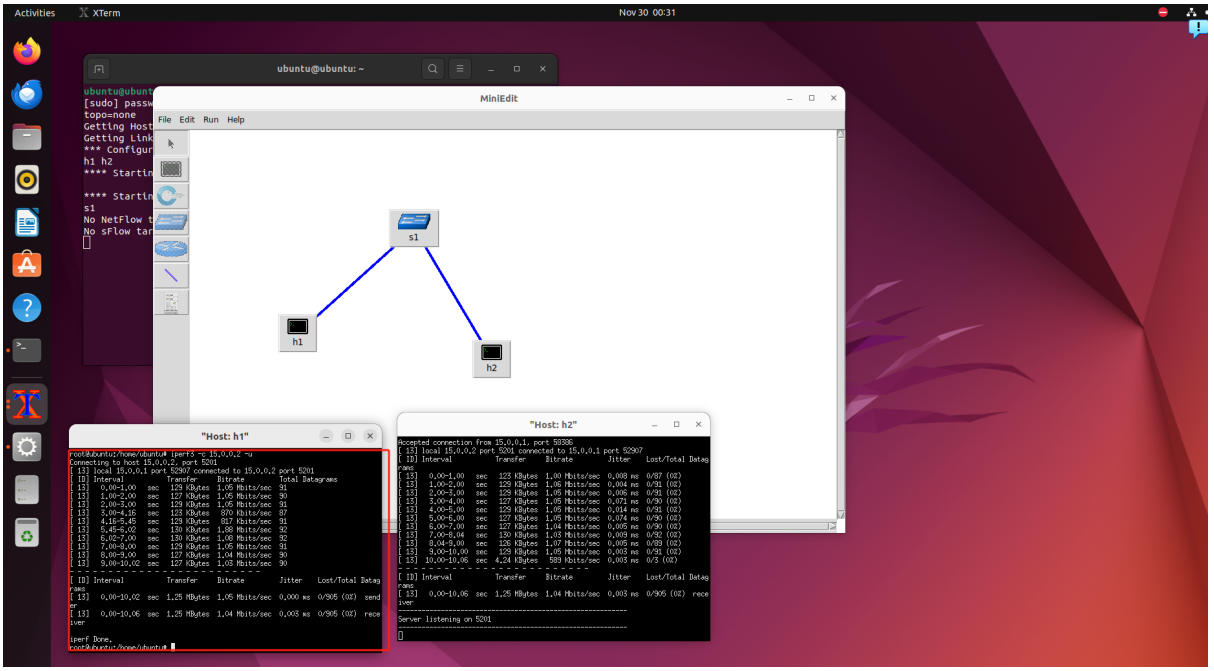


3.5

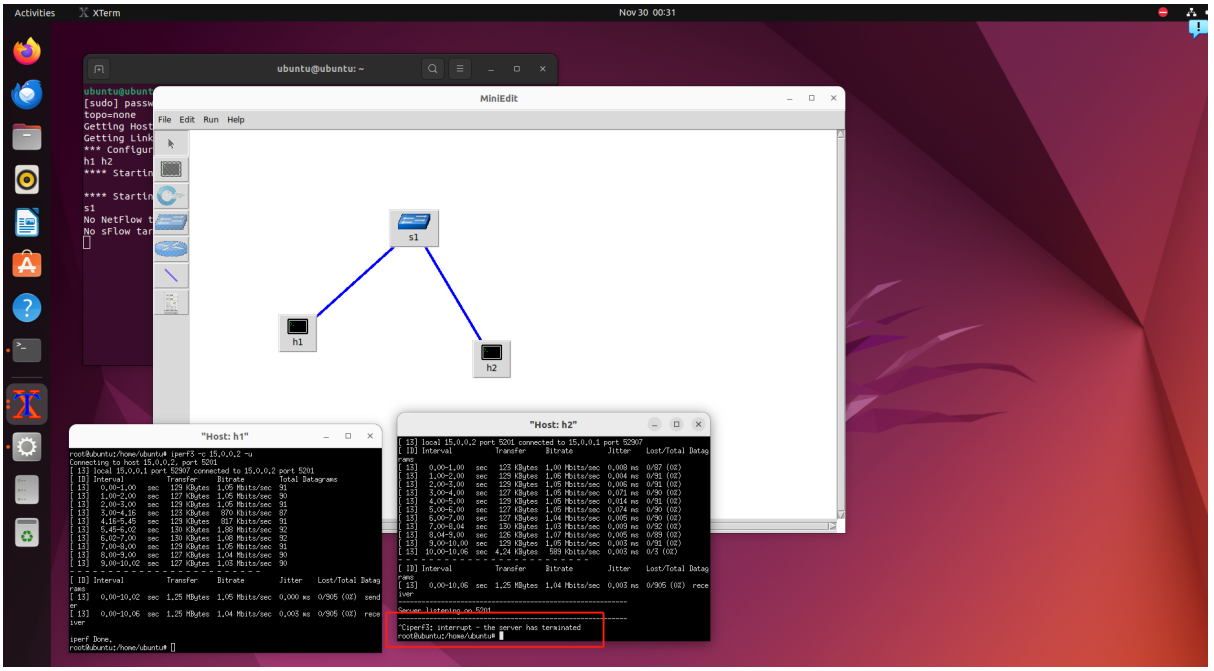
1. step


Activities
Nov 30 00:33
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

2. step

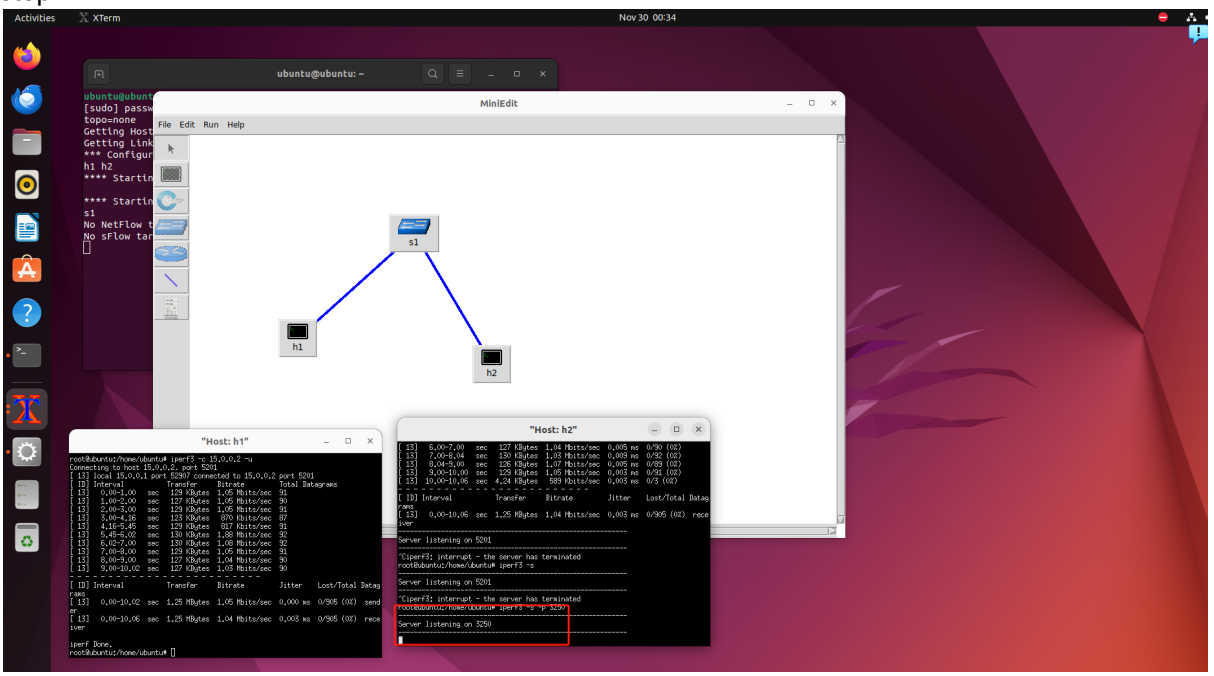

Activities
XTerm
Nov 30 00:31
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

3. step

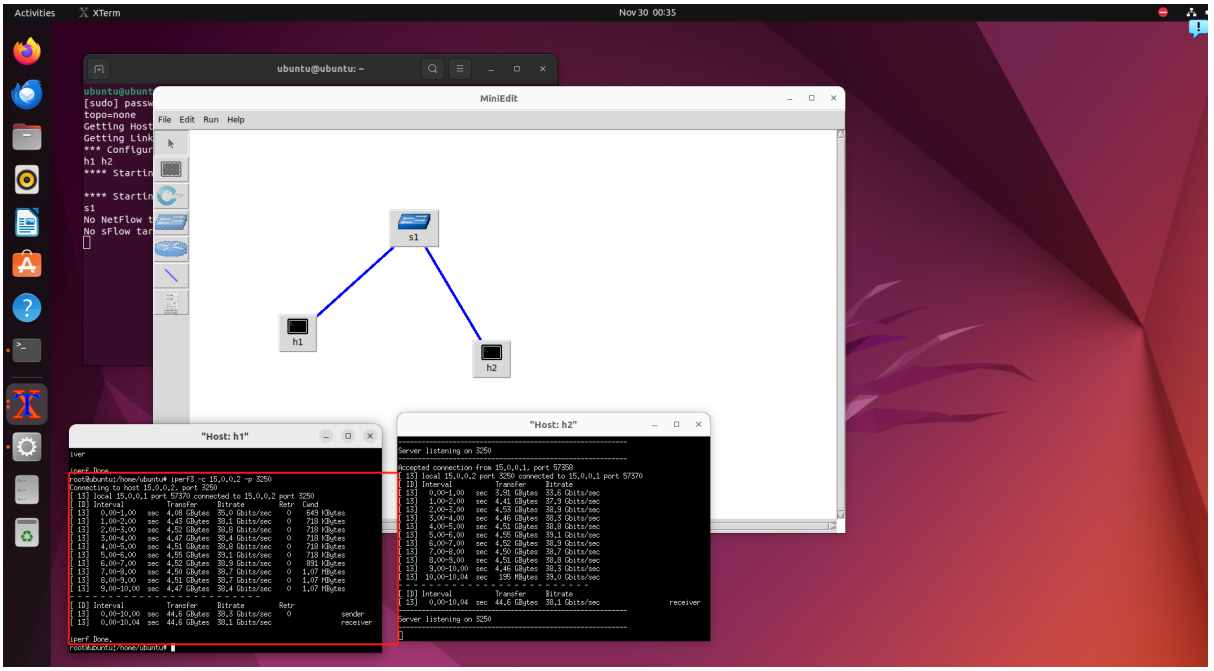


3.6

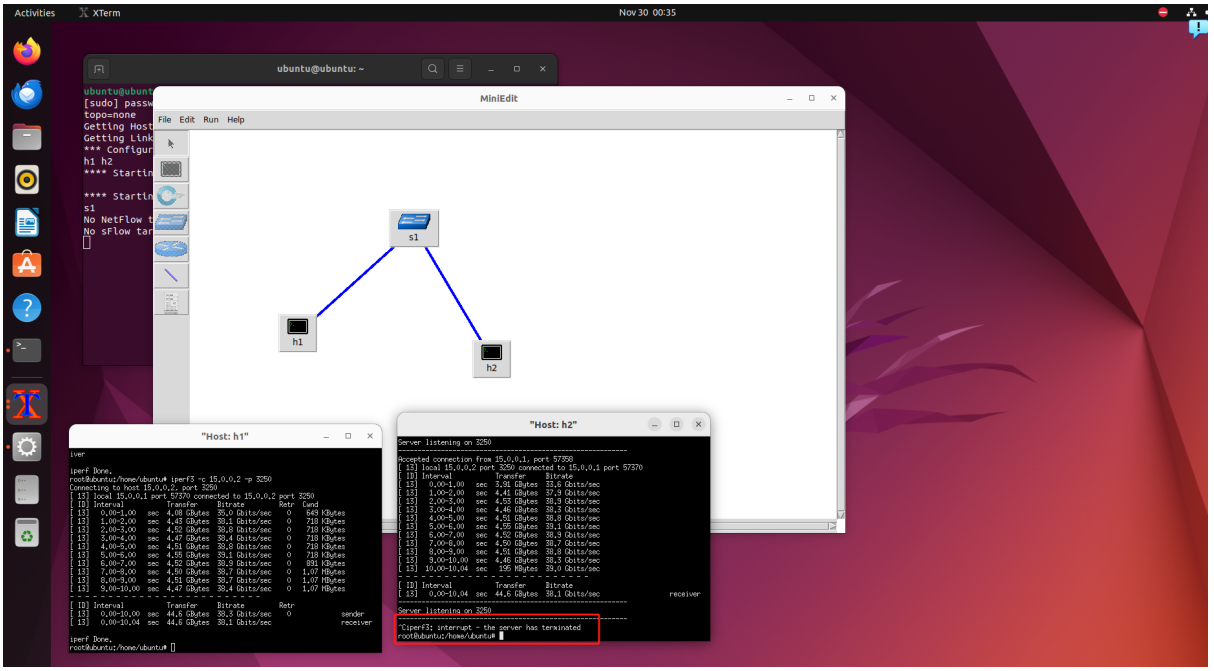
1. step



2. step

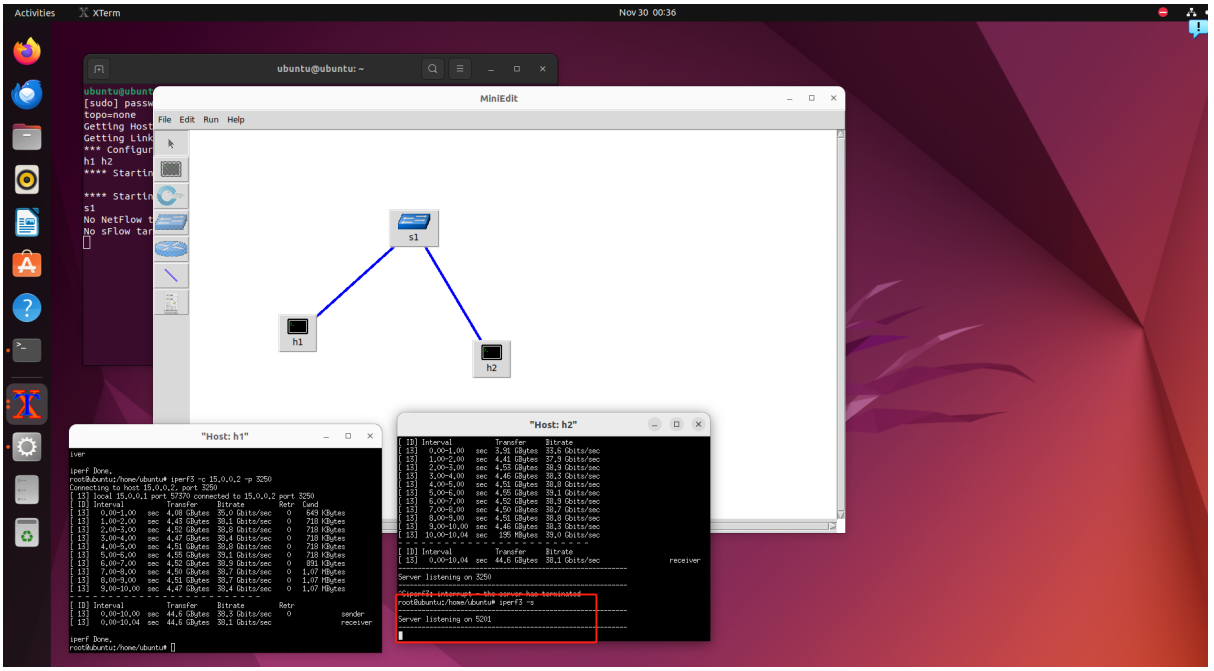


3. step

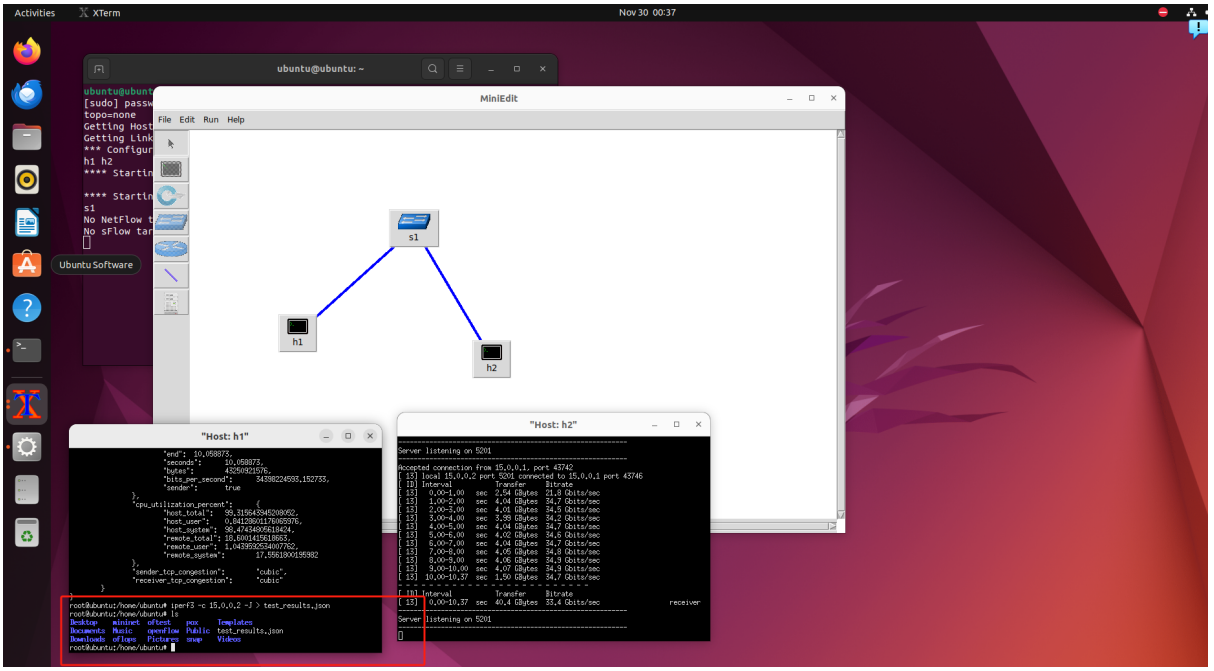


3.7

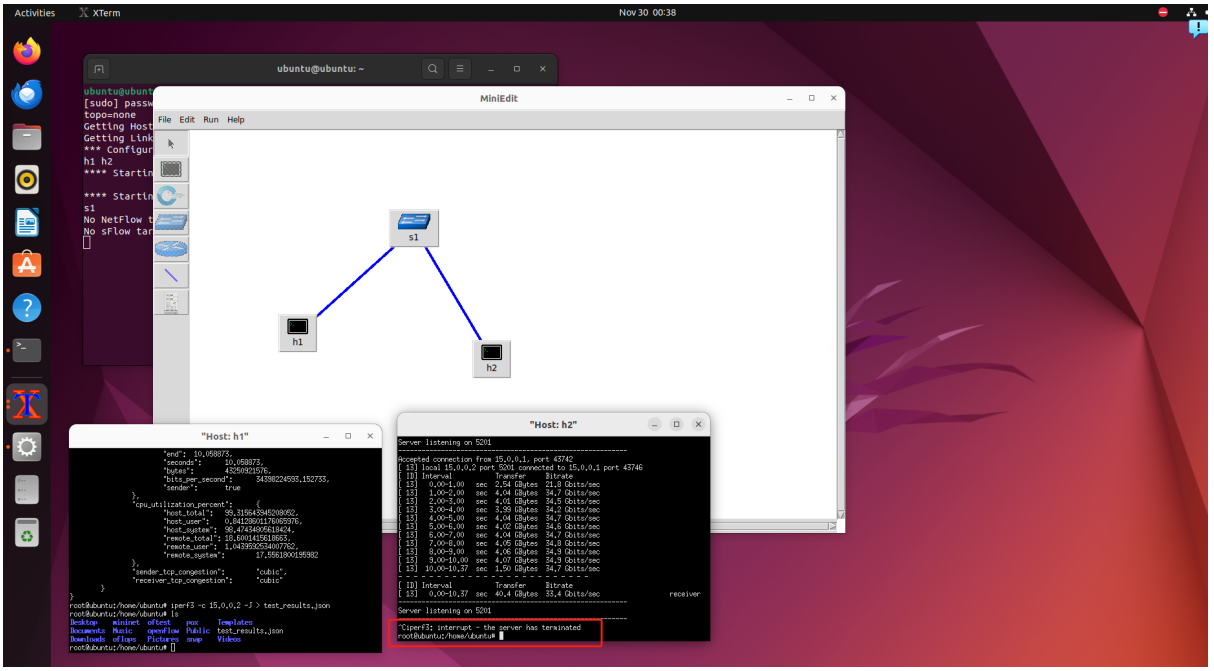
1. step


Activities
XTerm
Nov 30 00:36
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

2. step

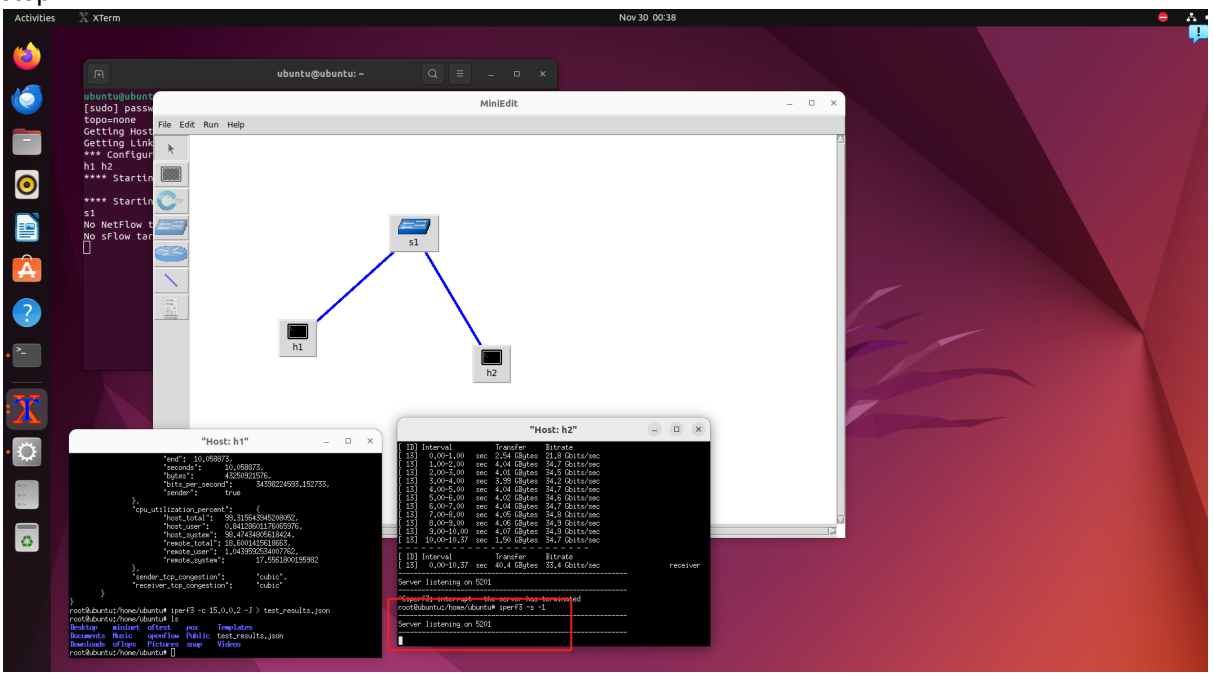

Activities
XTerm
Nov 30 00:37
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
Ubuntu Software
s1
h1
h2
"Host: h1"
"Host: h2"

3. step

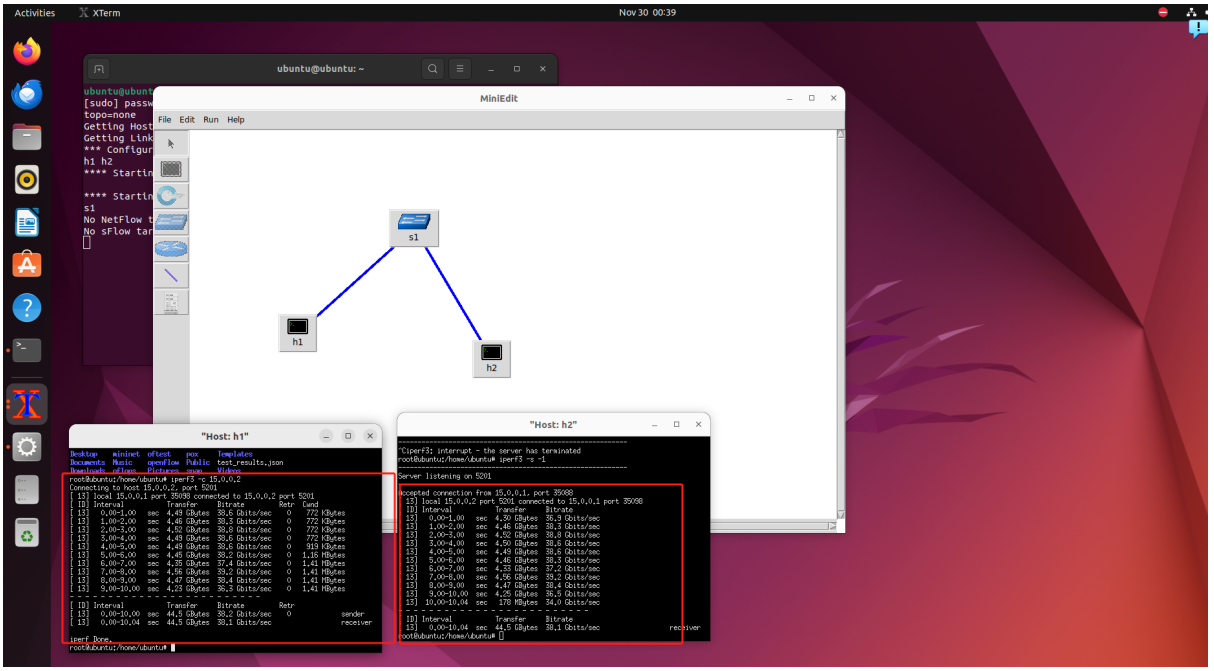


3.8

1. step

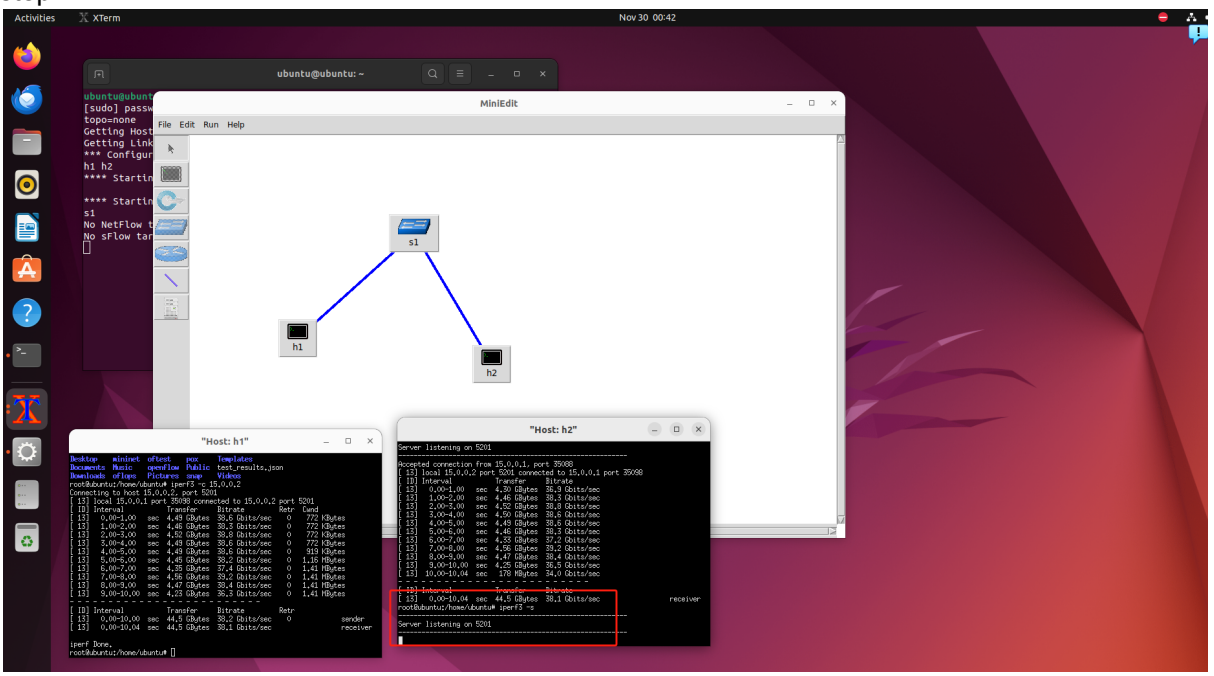


2. step

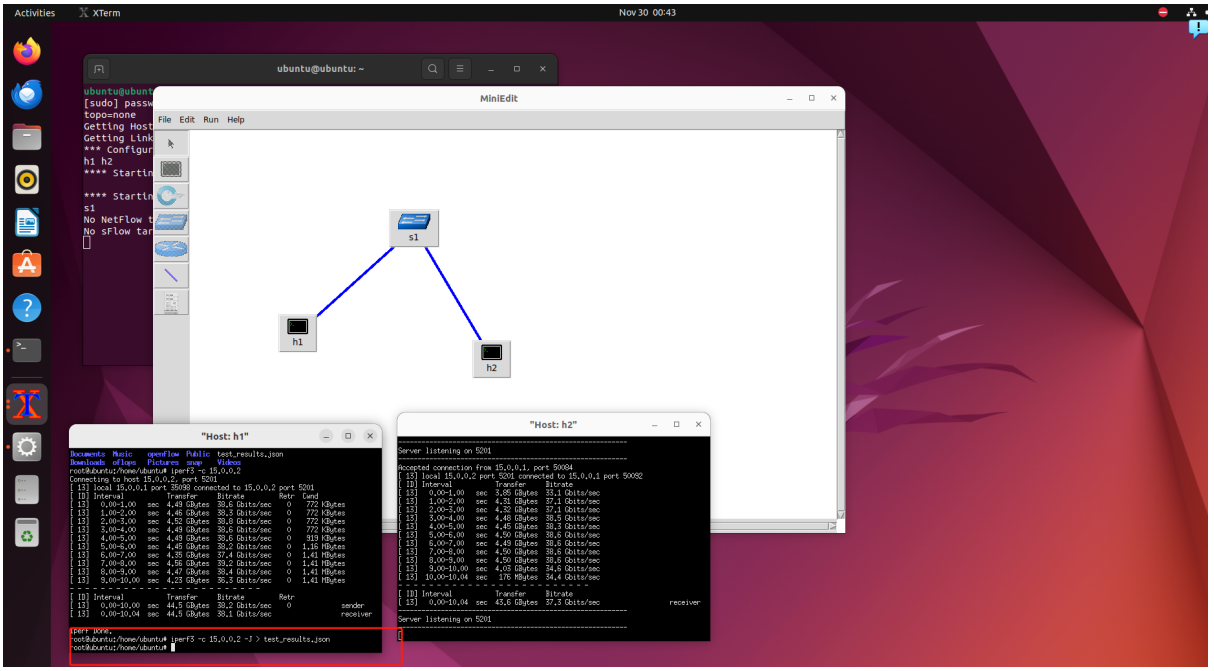


4.0

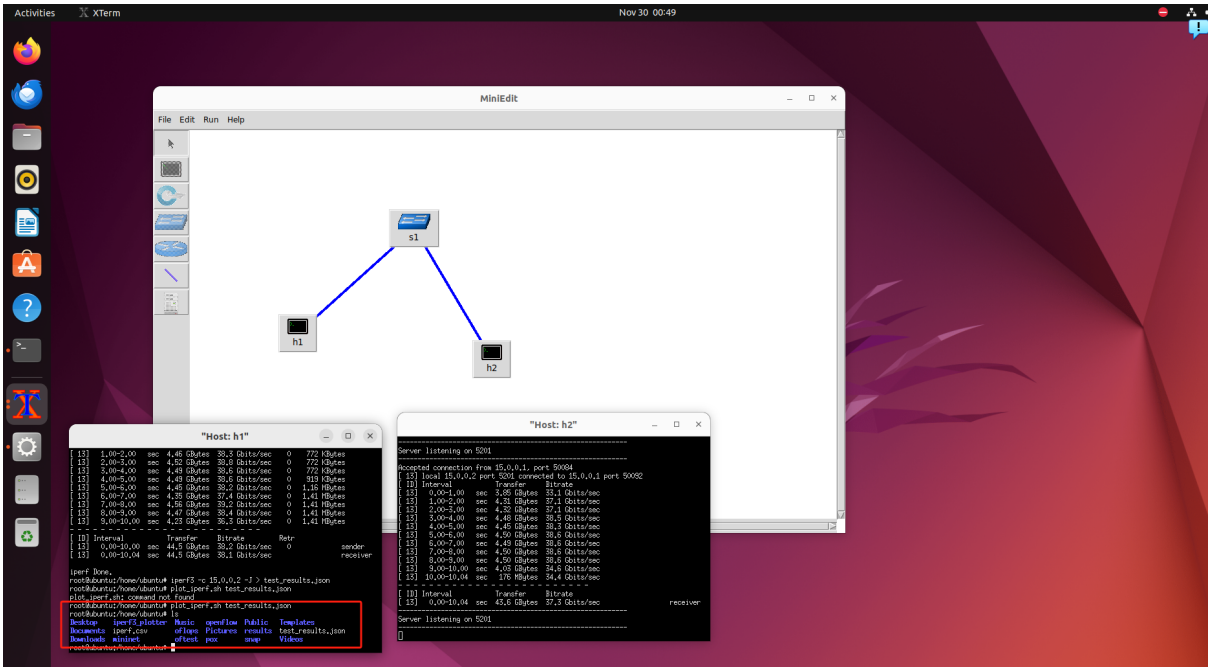
1. step



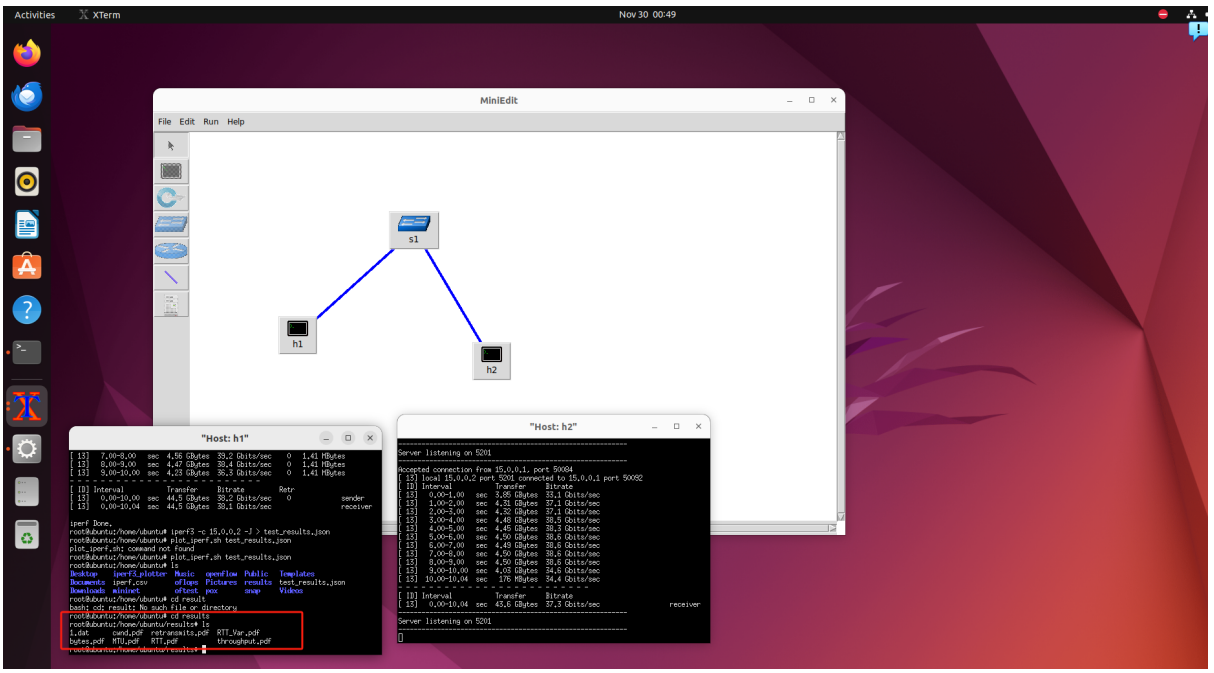
2. step


Activities
XTerm
Nov 30 00:43
ubuntu@ubuntu: ~
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

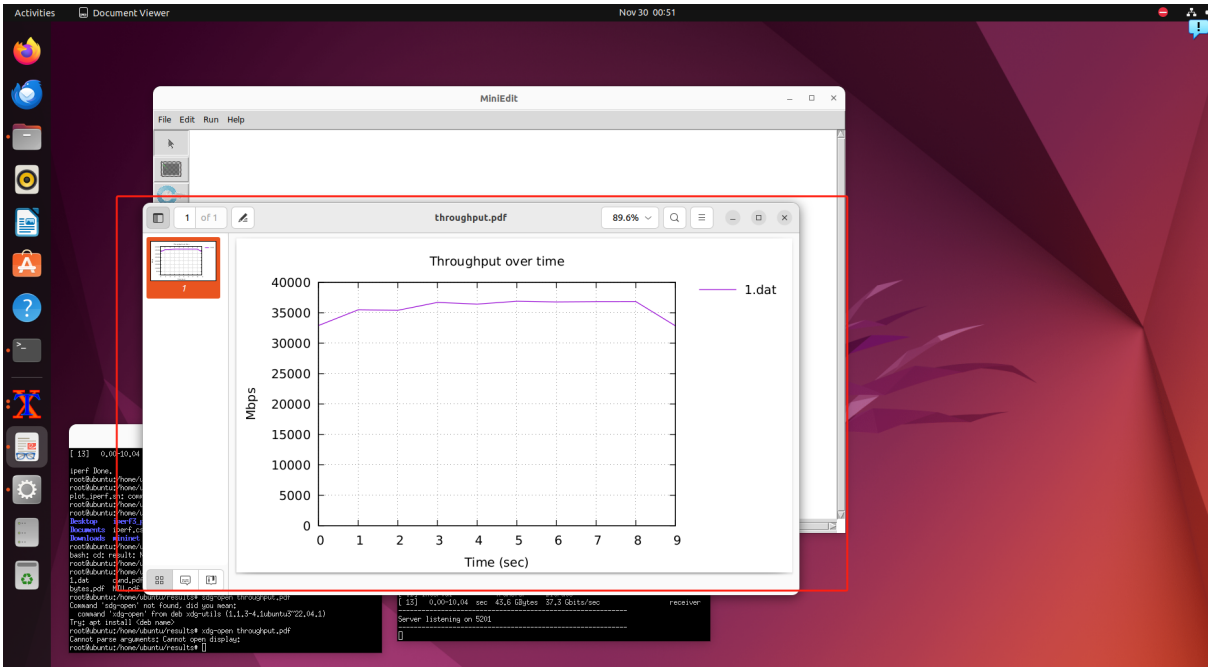
3. step


Activities
XTerm
Nov 30 00:49
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

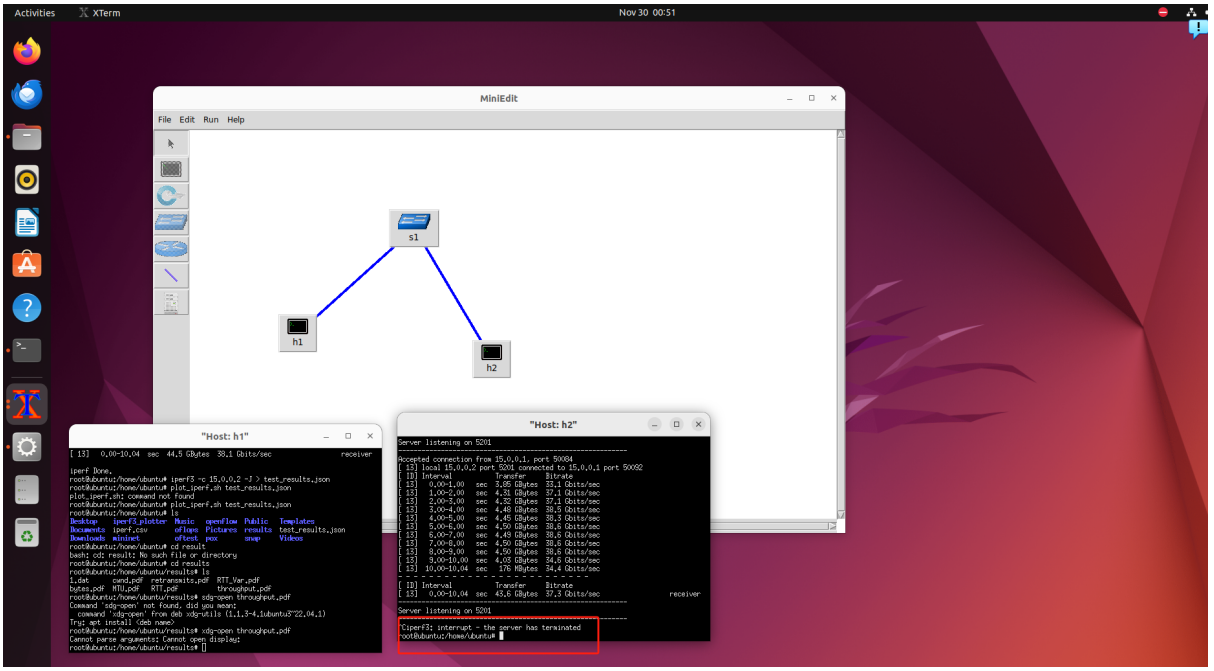
4. step


Activities
XTerm
Nov 30 00:49
MiniEdit
File Edit Run Help
s1
h1
h2
"Host: h1"
"Host: h2"

5. step


Activities
Document Viewer
Nov 30 00:51
MiniEdit
File Edit Run Help
throughput.pdf
Throughput over time
1.dat
Mbps
Time (sec)
0
5000
10000
15000
20000
25000
30000
35000
40000
0 1 2 3 4 5 6 7 8 9

6. step



Conclusion:

In lab2, I learnt how to use the minilab editor to simulate a server and client. Different commands were used to simulate different situations. In addition, We can output the result into a json file and draw them into a pdf file.