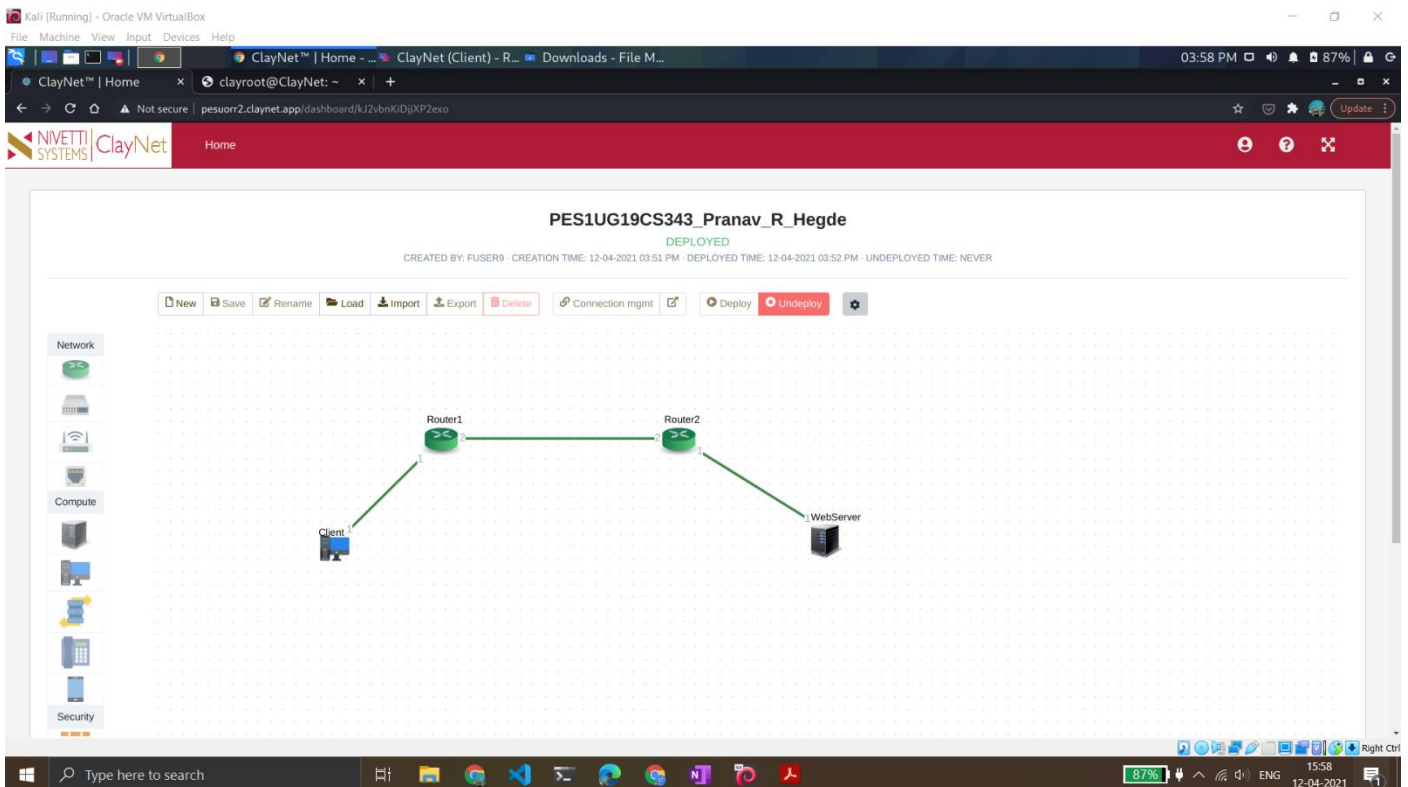


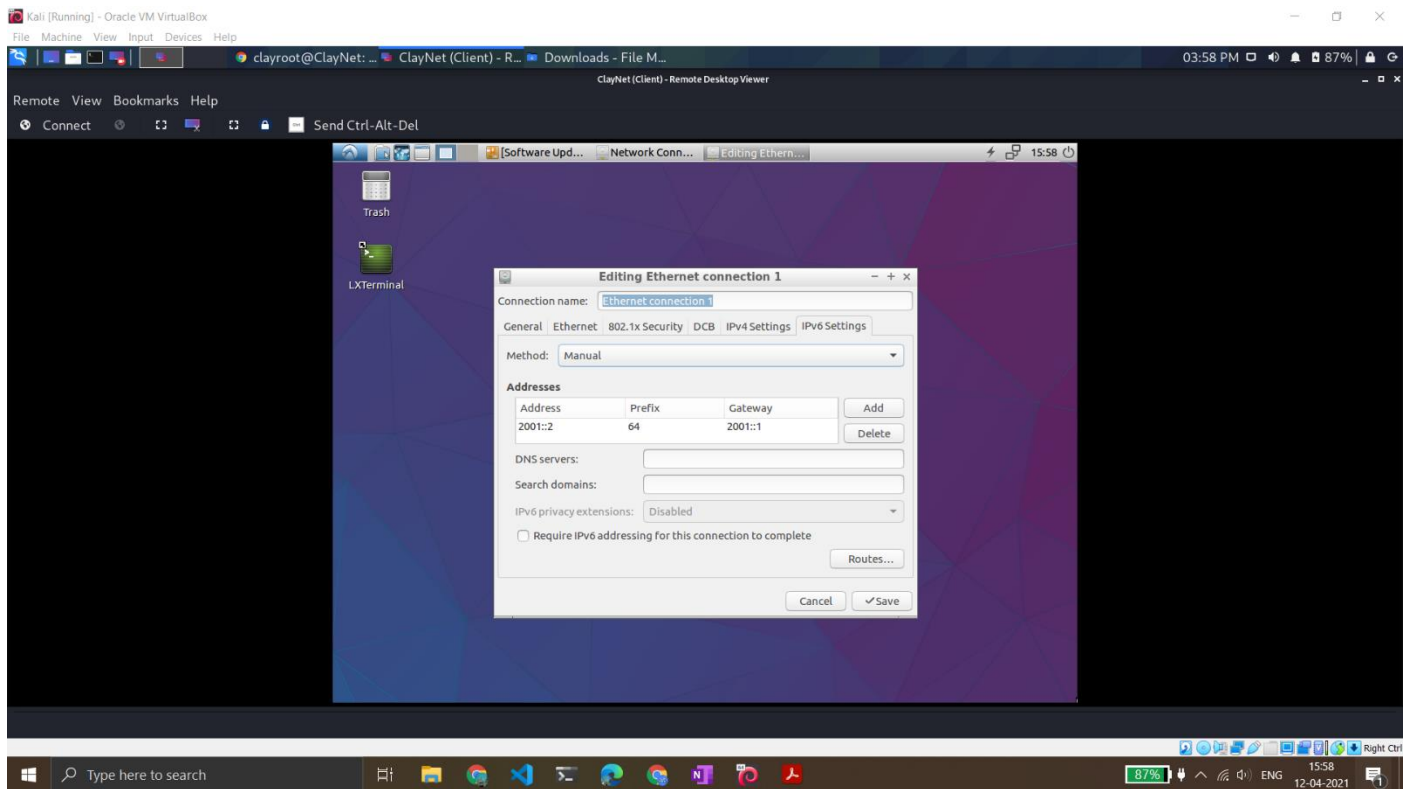
Computer networks laboratory week 10

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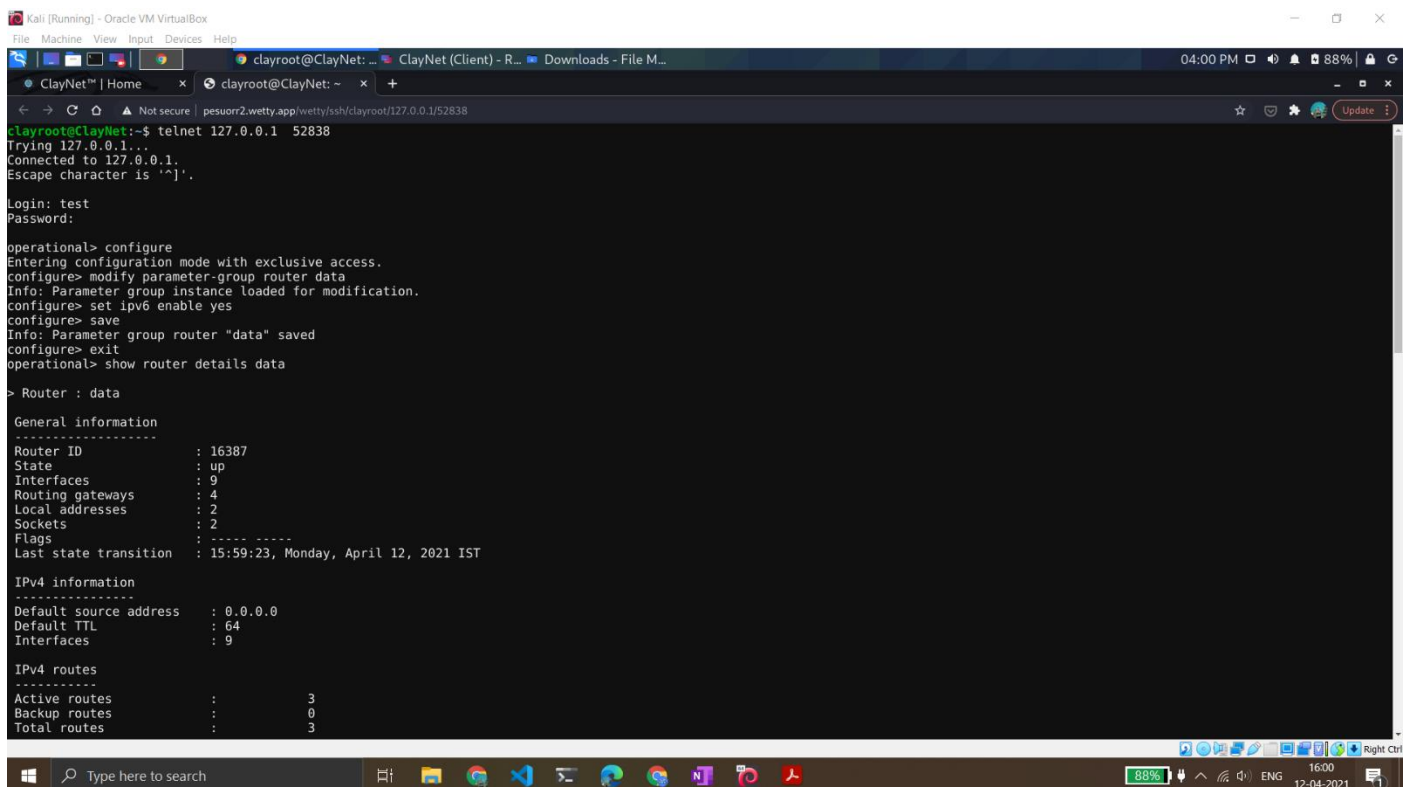
IPv6 static routing and addressing



The deployed topology



Setting the client machine IP address.



Displaying router1 details data.

The screenshot shows a Kali Linux terminal window with the following commands and output:

```
configure> show draft -e
[ interface:"if-port-1" > ip > ipv6 ]
enable no
address 0000:0000:0000:0000:0000:0000:0000:0000
netmask 0000:0000:0000:0000:0000:0000:0000:0000
peer-address 0000:0000:0000:0000:0000:0000:0000:0000
peer-netmask 0000:0000:0000:0000:0000:0000:0000:0000
link-local-address 0000:0000:0000:0000:0000:0000:0000:0000
link-local-netmask 0000:0000:0000:0000:0000:0000:0000:0000
preference 1
metric 1
ndp {
  cache-timeout 1200
  unsolicited-learning enable
}
vrrp {
  enable no
  virtual-router [+] {
  }
}
}

configure> set enable yes
configure> set address 2001::01/64
configure> save
Info: Parameter group interface "if-port-1" saved
configure>
configure>
configure>
configure>
configure>
configure>
configure>
configure>
configure>
configure> modify parameter-group interface if-port-2
Info: Parameter group instance loaded for modification.
configure> default ip ipv4
configure> set ip ipv6 enable yes
configure> set ip ipv6 address 2002::01/64
configure> save
Info: Parameter group interface "if-port-2" saved
configure>
```

Setting the router1 IP address.

The screenshot shows a Kali Linux terminal window displaying the output of the 'show ip ipv6 route' command:

```
> IPv6 active routes

>> Destination : ::1/128
Gateway(s) : { ^loopback-16387
::1 }
Source : direct
Flags : -

>> Destination : 2001::/64
Gateway(s) : { if-port-1
:: }
Source : direct
Flags : -

>> Destination : 2002::/64
Gateway(s) : { if-port-2
:: }
Source : direct
Flags : -

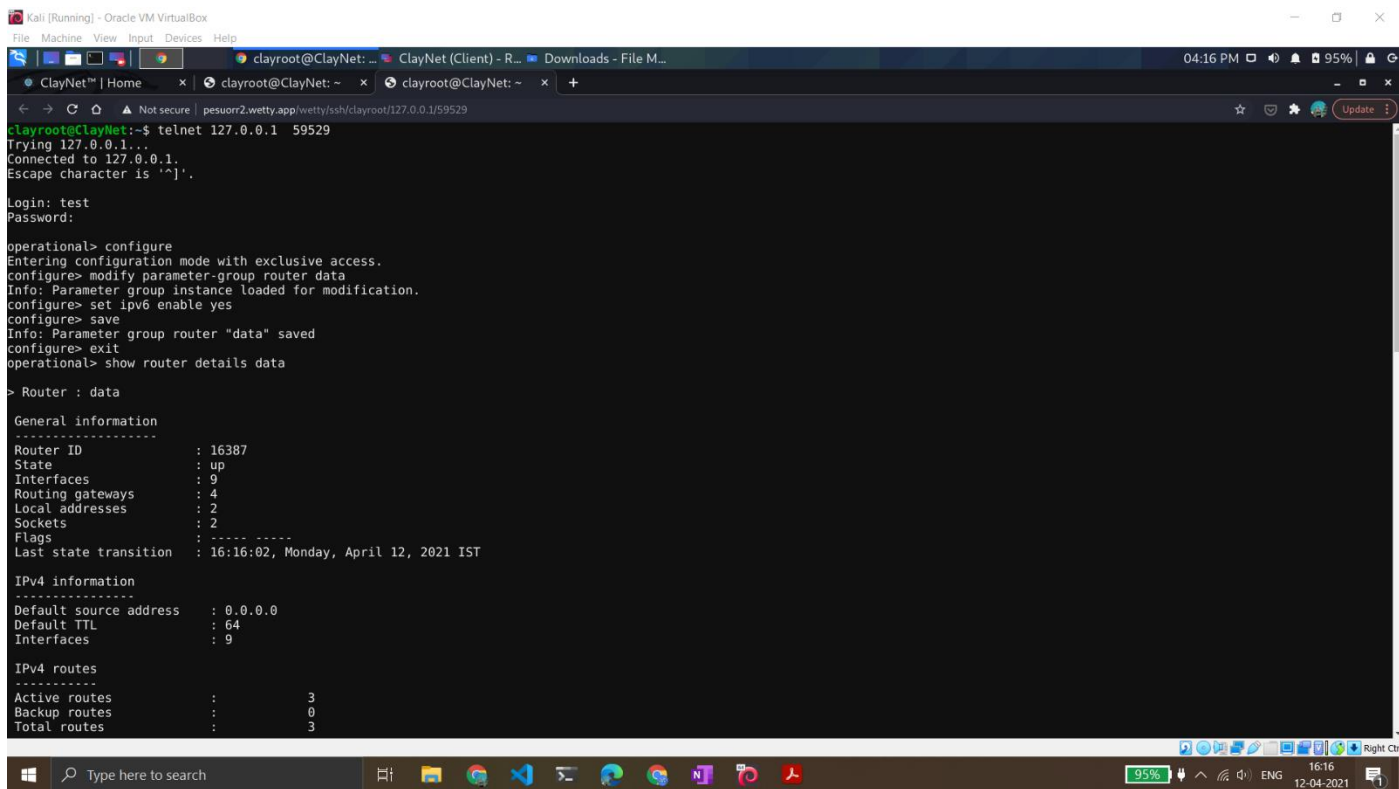
>> Destination : 2003::/64
Gateway(s) : { if-port-2
2002::2 }
Source : static
Flags : -

>> Destination : fe80::/64
Gateway(s) : { if-port-1
:: }
Source : direct
Flags : -

>> Destination : fe80::/64
Gateway(s) : { if-port-2
:: }
Source : direct
Flags : -

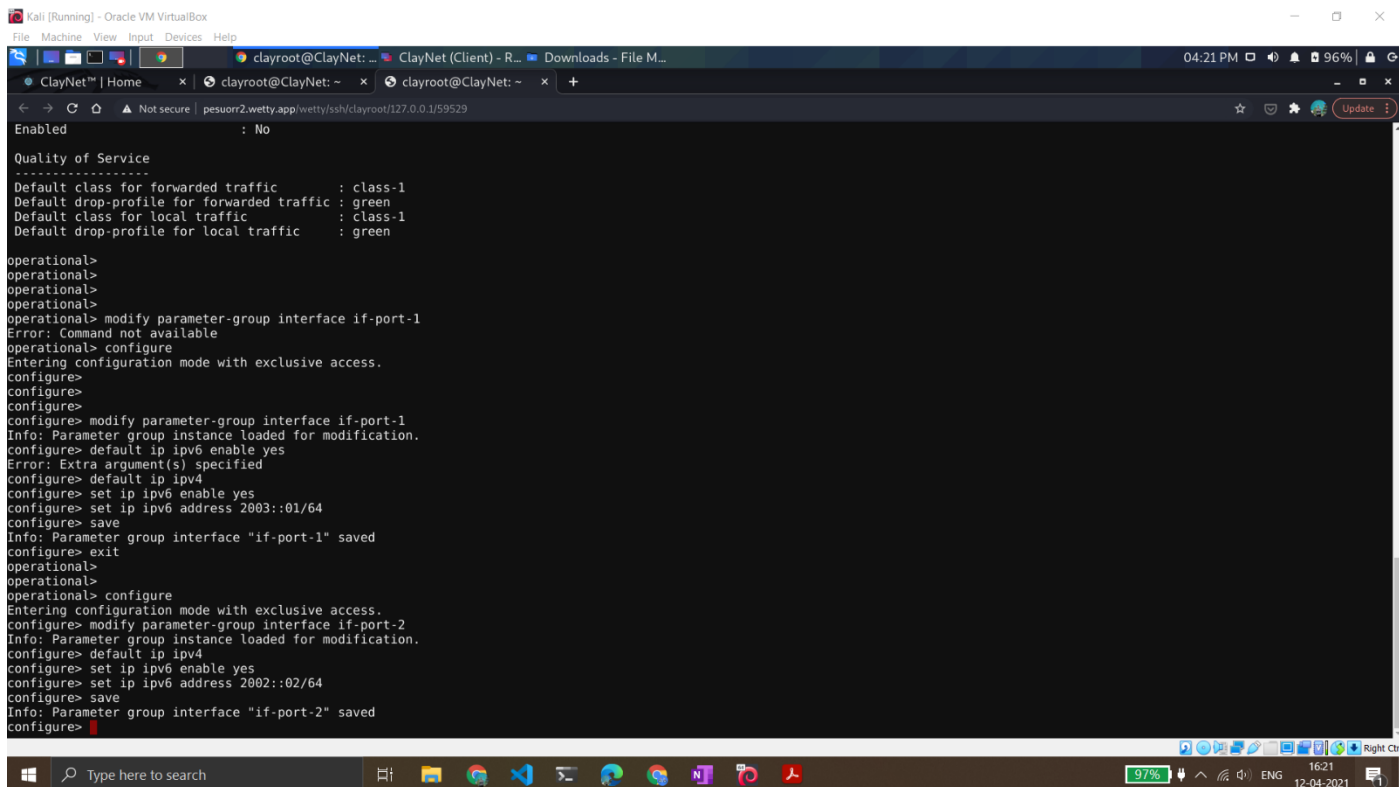
Total number of IPv6 active routes displayed : 6
No IPv6 backup routes are available
```

Displaying the available interfaces after adding two new interfaces for both the routes.



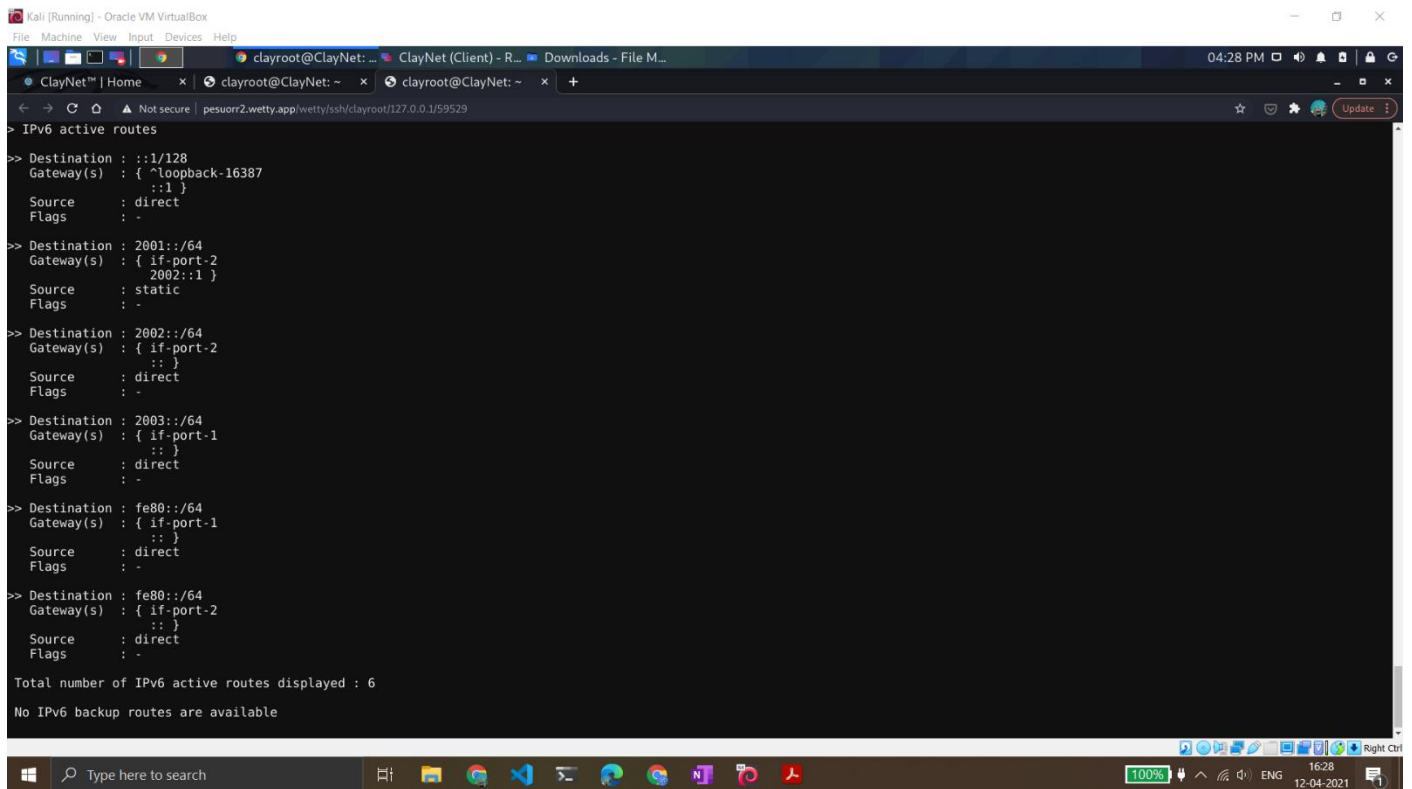
```
Kali [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
clayroot@ClayNet: ~
ClayNet (Client) - R... Downloads - File M...
04:16 PM 95%
ClayNet™ | Home x clayroot@ClayNet: ~ x clayroot@ClayNet: ~ x +
Not secure | pesuor2.wetty.app/wetty/ssh/clayroot/127.0.0.1/59529
clayroot@ClayNet:~$ telnet 127.0.0.1 59529
Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is '^]'.
Login: test
Password:
operational> configure
Entering configuration mode with exclusive access.
configure> modify parameter-group router data
Info: Parameter group instance loaded for modification.
configure> set ipv6 enable yes
configure> save
Info: Parameter group router "data" saved
configure> exit
operational> show router details data
> Router : data
General information
-----
Router ID      : 16387
State         : up
Interfaces    : 9
Routing gateways : 4
Local addresses : 2
Sockets       : 2
Flags         : -----
Last state transition : 16:16:02, Monday, April 12, 2021 IST
IPv4 information
-----
Default source address : 0.0.0.0
Default TTL            : 64
Interfaces             : 9
IPv4 routes
-----
Active routes : 3
Backup routes : 0
Total routes  : 3
```

Displaying the router2 details data.



```
Kali [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
clayroot@ClayNet: ~
ClayNet (Client) - R... Downloads - File M...
04:21 PM 96%
ClayNet™ | Home x clayroot@ClayNet: ~ x clayroot@ClayNet: ~ x +
Not secure | pesuor2.wetty.app/wetty/ssh/clayroot/127.0.0.1/59529
Enabled : No
Quality of Service
-----
Default class for forwarded traffic : class-1
Default drop-profile for forwarded traffic : green
Default class for local traffic : class-1
Default drop-profile for local traffic : green
operational>
operational>
operational>
operational>
operational> modify parameter-group interface if-port-1
Error: Command not available
operational> configure
Entering configuration mode with exclusive access.
configure>
configure>
configure> modify parameter-group interface if-port-1
Info: Parameter group instance loaded for modification.
configure> default ip ipv6 enable yes
Error: Extra argument(s) specified
configure> default ip ipv4
configure> set ip ipv6 enable yes
configure> set ip ipv6 address 2003::01/64
configure> save
Info: Parameter group interface "if-port-1" saved
configure> exit
operational>
operational>
operational> configure
Entering configuration mode with exclusive access.
configure> modify parameter-group interface if-port-2
Info: Parameter group instance loaded for modification.
configure> default ip ipv4
configure> set ip ipv6 enable yes
configure> set ip ipv6 address 2002::02/64
configure> save
Info: Parameter group interface "if-port-2" saved
configure>
```

Setting the IP addresses and gateway for router2.



The screenshot shows a Kali Linux terminal window with the command prompt `clayroot@ClayNet: ~`. The user has entered the command `IPv6 active routes`, which displays the following output:

```
>> Destination : ::1/128
Gateway(s) : { ^loopback-16387
Source : direct
Flags : -

>> Destination : 2001::/64
Gateway(s) : { if-port-2
Source : static
Flags : -

>> Destination : 2002::/64
Gateway(s) : { if-port-2
Source : direct
Flags : -

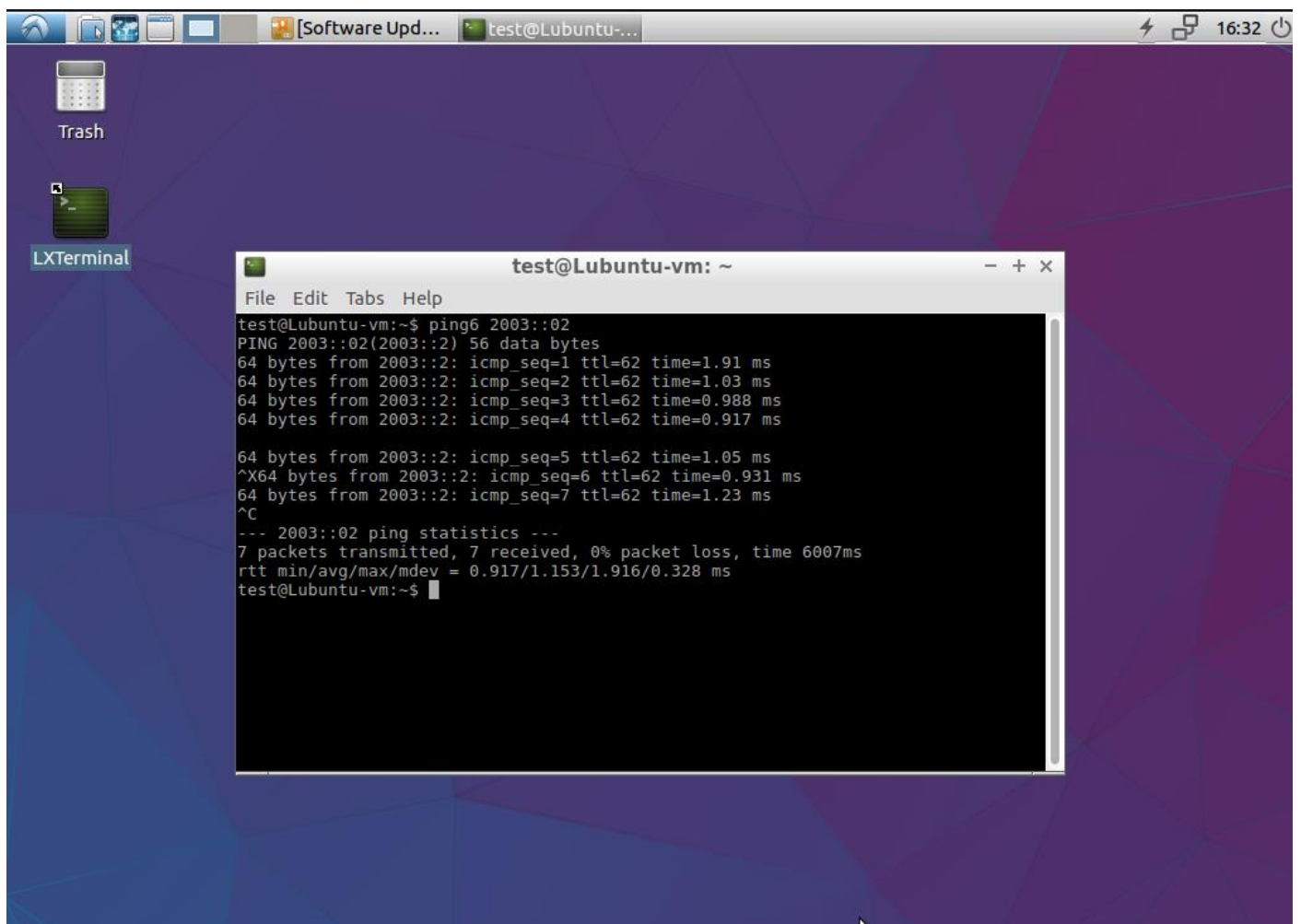
>> Destination : 2003::/64
Gateway(s) : { if-port-1
Source : direct
Flags : -

>> Destination : fe80::/64
Gateway(s) : { if-port-1
Source : direct
Flags : -

>> Destination : fe80::/64
Gateway(s) : { if-port-2
Source : direct
Flags : -

Total number of IPv6 active routes displayed : 6
No IPv6 backup routes are available
```

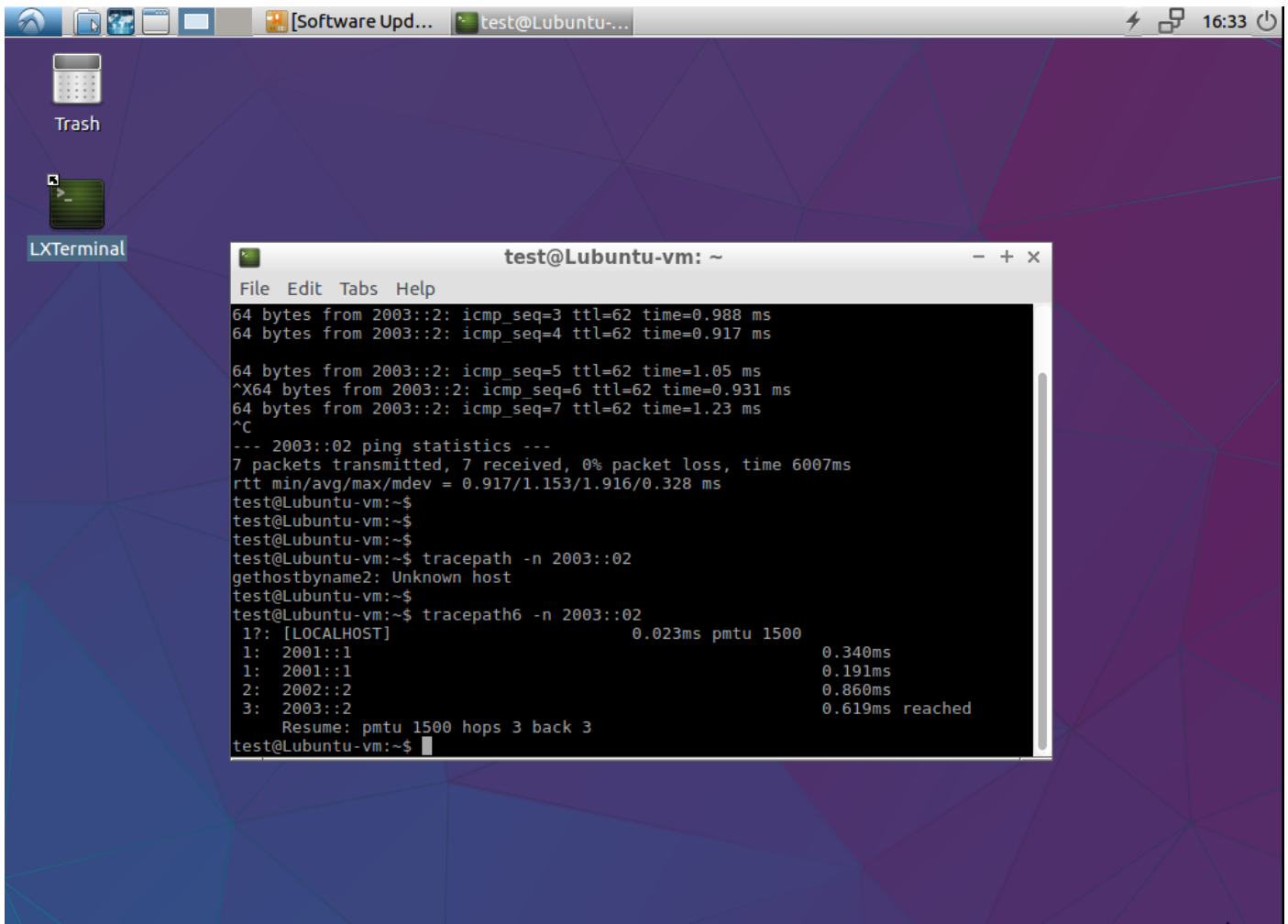
Displaying the available interfaces after adding two interfaces.



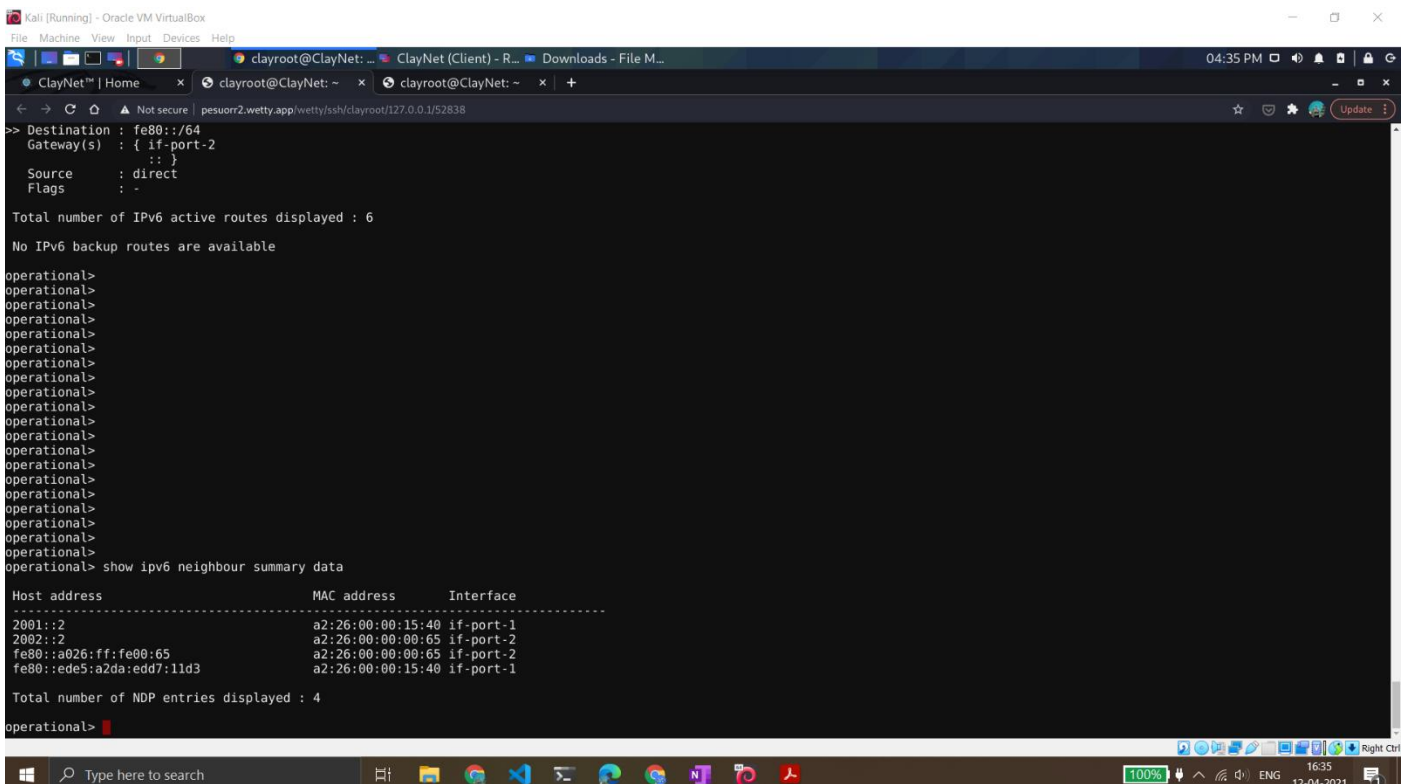
The screenshot shows a Ubuntu VM desktop with a purple background. A terminal window titled `test@Lubuntu-vm: ~` is open, displaying the output of a `ping6` command. The output shows successful pings to the address `2003::02` with a TTL of 62.

```
test@Lubuntu-vm:~$ ping6 2003::02
PING 2003::02(2003::2) 56 data bytes
64 bytes from 2003::2: icmp_seq=1 ttl=62 time=1.91 ms
64 bytes from 2003::2: icmp_seq=2 ttl=62 time=1.03 ms
64 bytes from 2003::2: icmp_seq=3 ttl=62 time=0.988 ms
64 bytes from 2003::2: icmp_seq=4 ttl=62 time=0.917 ms
64 bytes from 2003::2: icmp_seq=5 ttl=62 time=1.05 ms
^X64 bytes from 2003::2: icmp_seq=6 ttl=62 time=0.931 ms
64 bytes from 2003::2: icmp_seq=7 ttl=62 time=1.23 ms
^C
--- 2003::02 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6007ms
rtt min/avg/max/mdev = 0.917/1.153/1.916/0.328 ms
test@Lubuntu-vm:~$
```

Pinging webserver from the client machine. Observe the TTL to be 62 due to the presence of two routers in between.



Executing the tracepath6 command in order to checking the traffic flow between Alice(client) and Bob (Webserver).



Neighbour summary data on router1.

