COMPUTER NETWORKS LABORATORY

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5 'A'

WEEK – 9 - IPv6 Configuration and Static Routing

Date: 16/11/2020

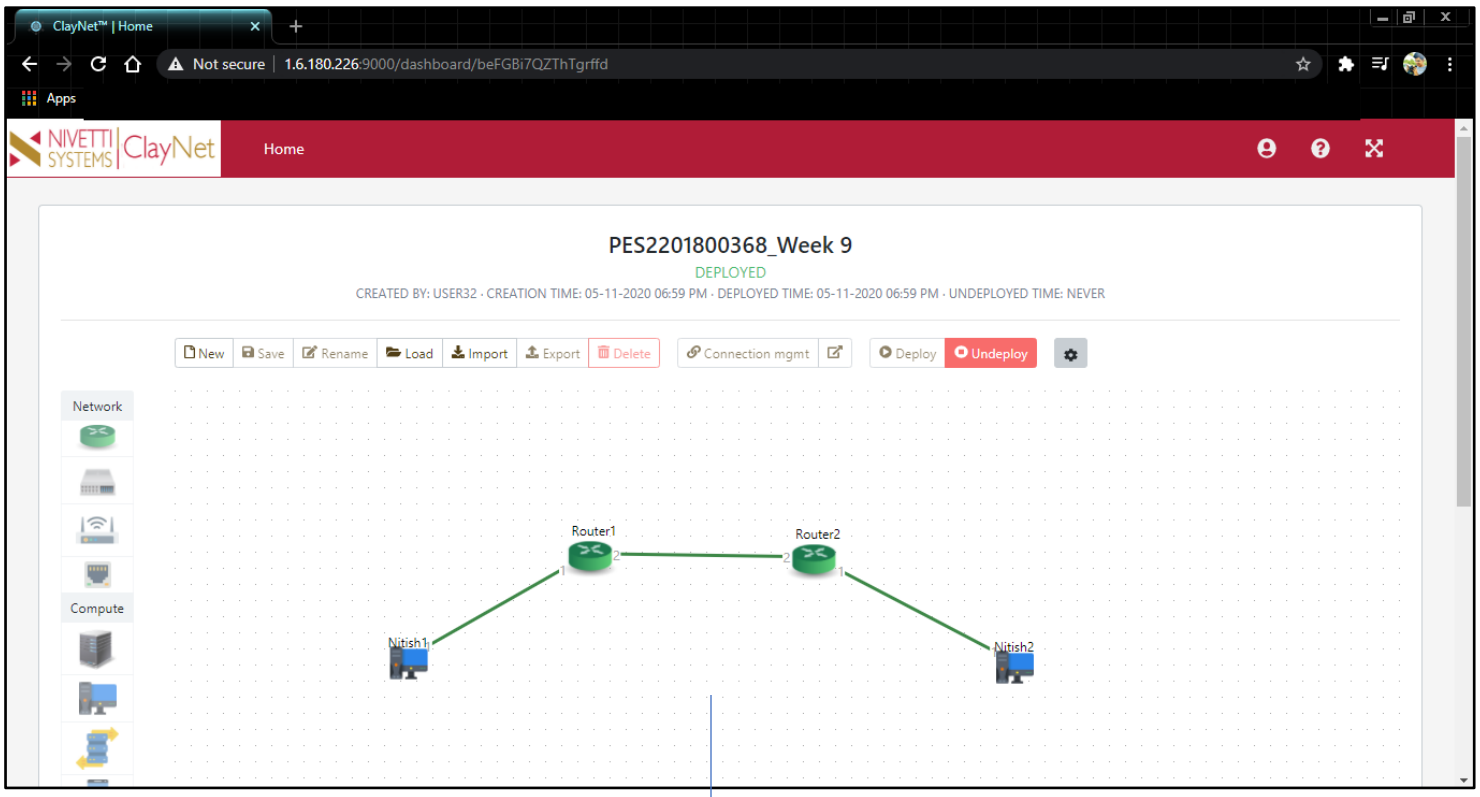
Learning Objectives:

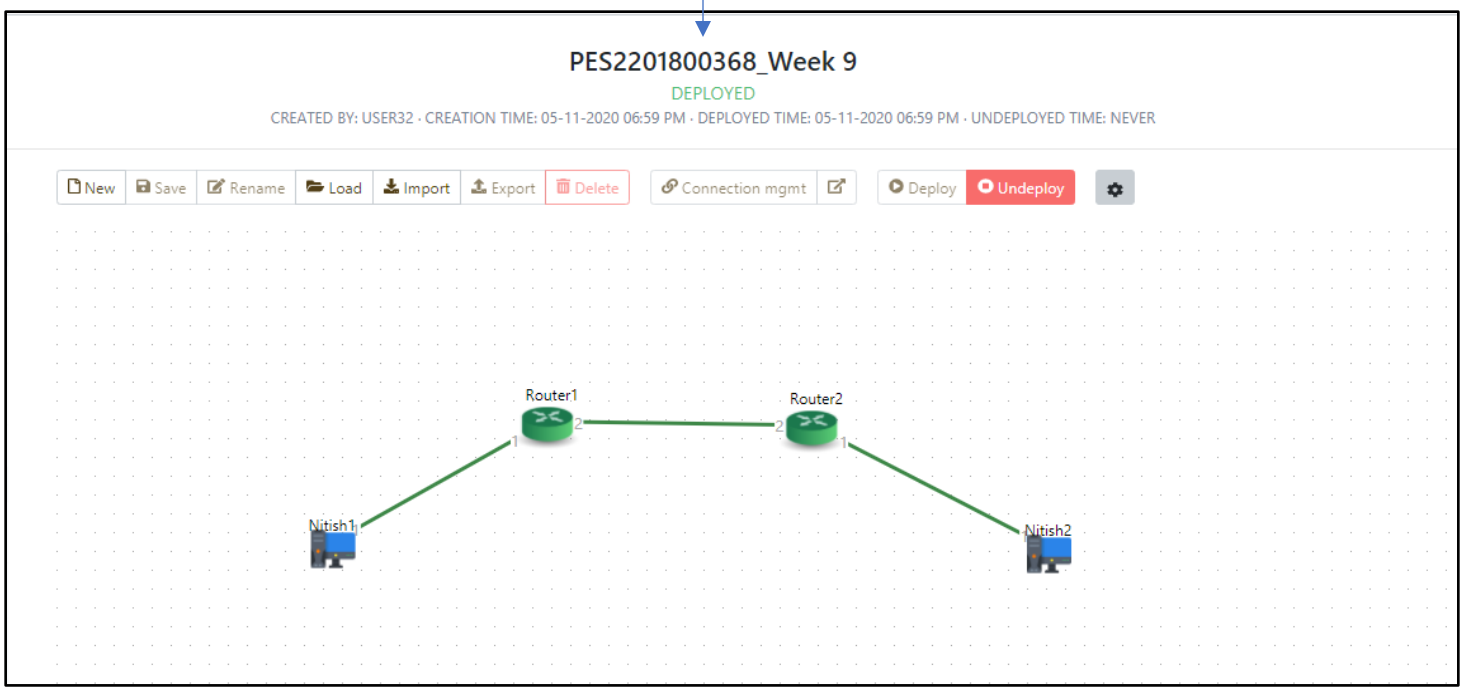
-Perform basic IPv6 configurations on a Desktop and Router.
-Distinguish between IPv4 and IPv6 addresses
-Configure IPv6 static routes in Router
-Observe traffic flow using IPv6 static routes.
-IPv6 neighbor cache entries
-Understanding IPv6 Link Local Address
-Working with ping6 and tracepath6

To access ClayNet, type **http://1.6.180.226:9000/** in browser**.**

TOPOLOGY: -

Create a topology in ClayNet, as shown in following figure.





All the configurations and connections to the topology are made by following the instructions given. The configurations to the router and routing table entries are manually provided using commands in the router console.

CONFIGURATIONS TO THE DESKTOP:-

- **Nitish1**
  IPv6 address –2001::02/64 , Gateway –2001::01

- **Nitish2**
  IPv6 address –2003::02/64 , Gateway –2003::01

FOR ROUTER1:-

Configure IPv6 global address 2001::01/64 to interface if-port-1.

Configure IPv6 global address 2002::01/64 to interface if-port-2.

Configure a static route to reach 2003:00/64 network (Nitish1) with gateway as 2002::02(Router-2).

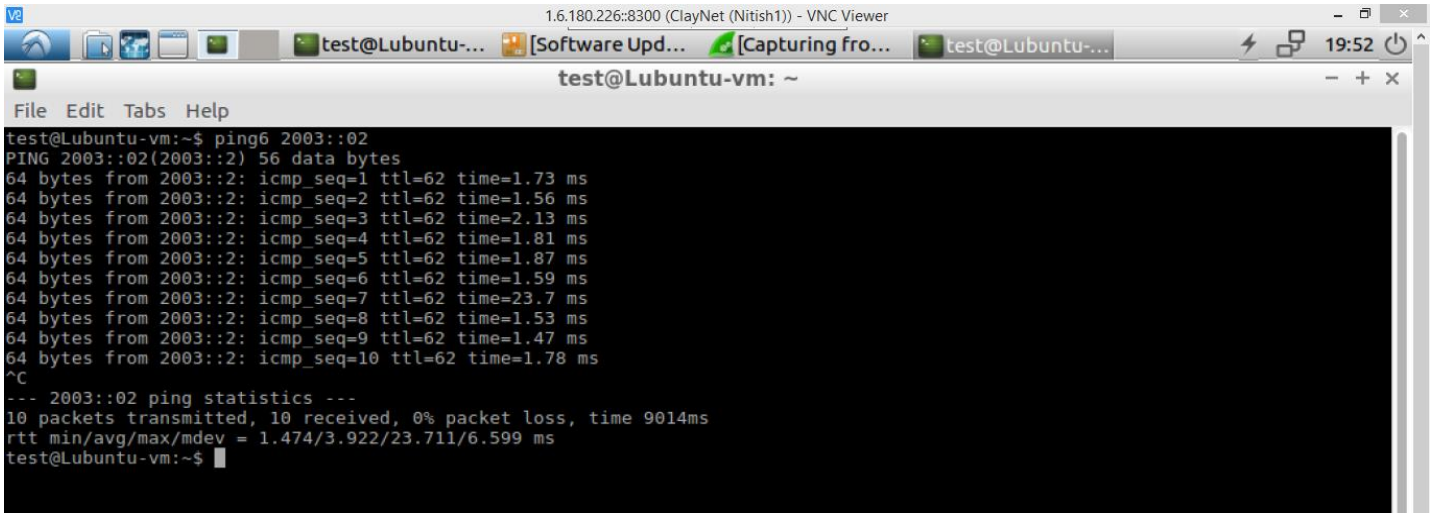
FOR ROUTER2:-

Configure IPv6 global address 2003::01/64 to interface if-port-1.

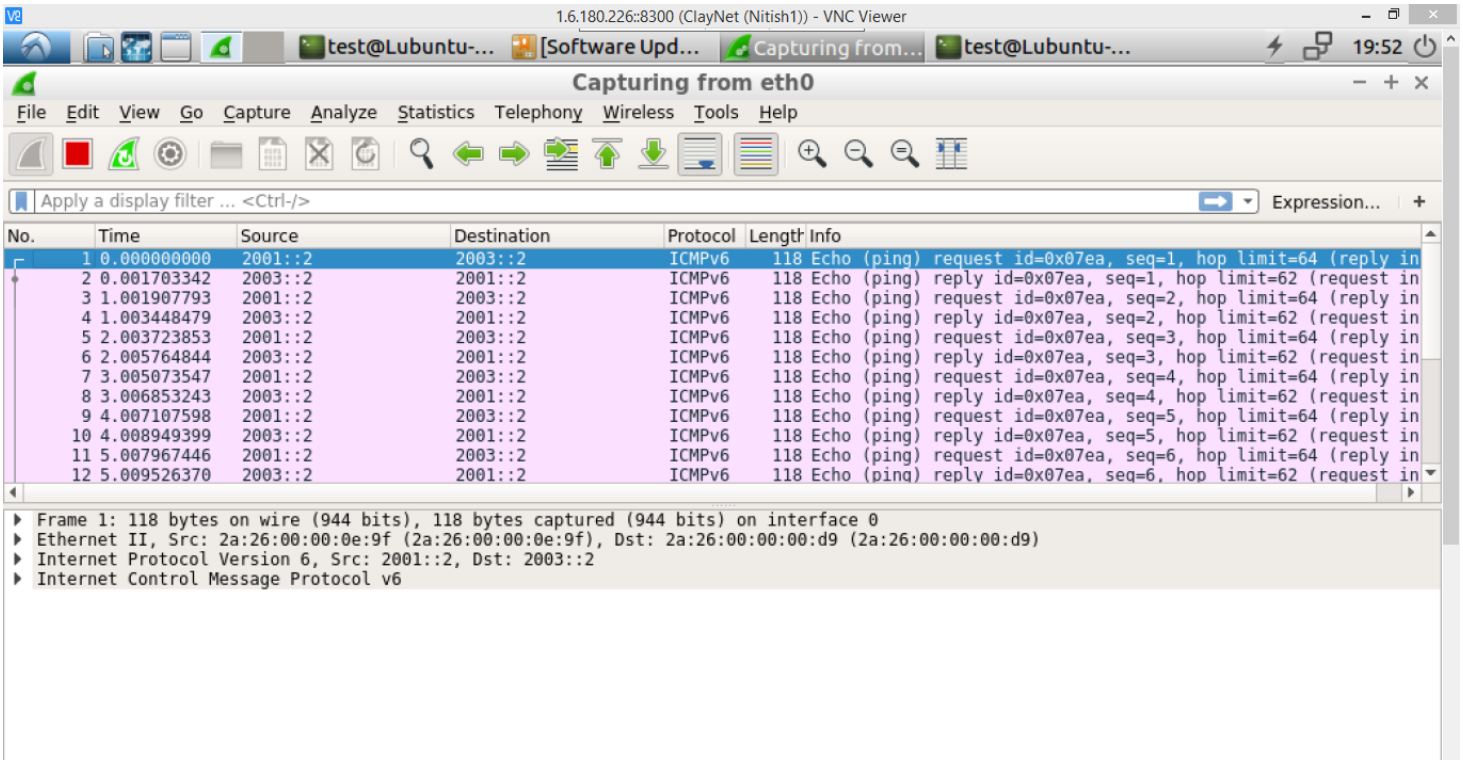
Configure IPv6 global address 2002::02/64 to interface if-port-2.

Configure a static route to reach 2001:00/64 network (Nitish2) with gateway as 2002::01(Router-1).

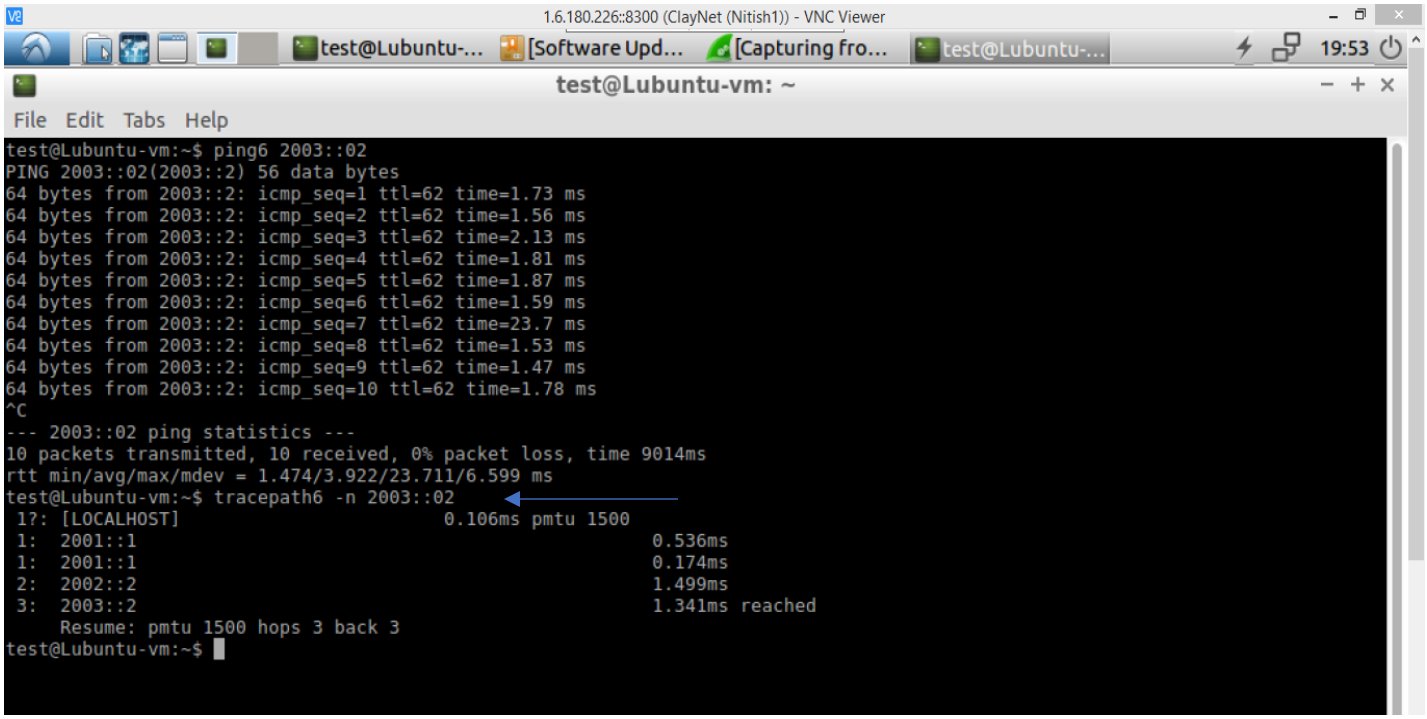
From the remote Desktop in ‘Nitish1’, we ping the Desktop ‘Nitish2’ using the IP address. If all the connections and routing table entries are correct, we can capture packets transferred to and received from Nitish2.



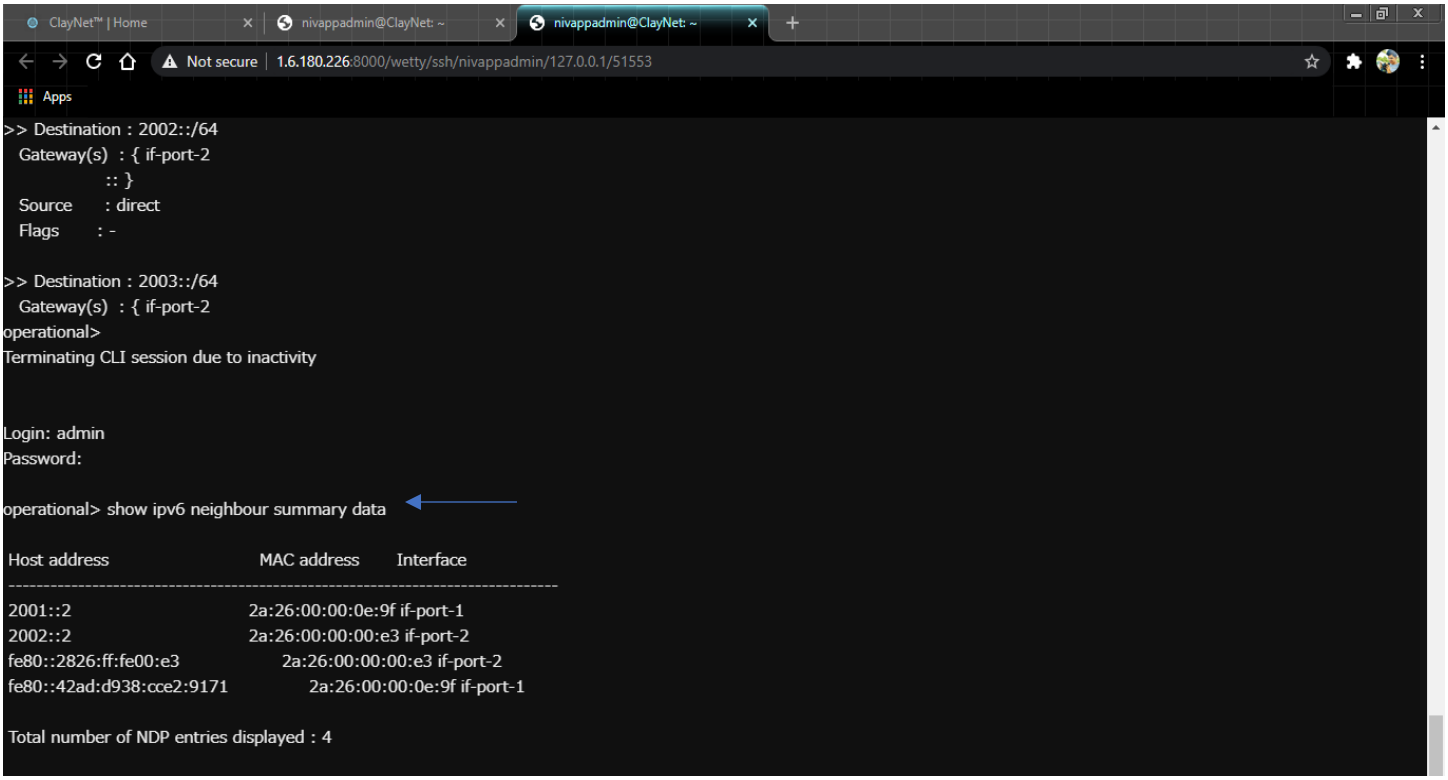
WIRESHARK CAPTURE:-



From Nitish1 workstation run tracepath to Nitish2's IP. Observe the intermediate hops

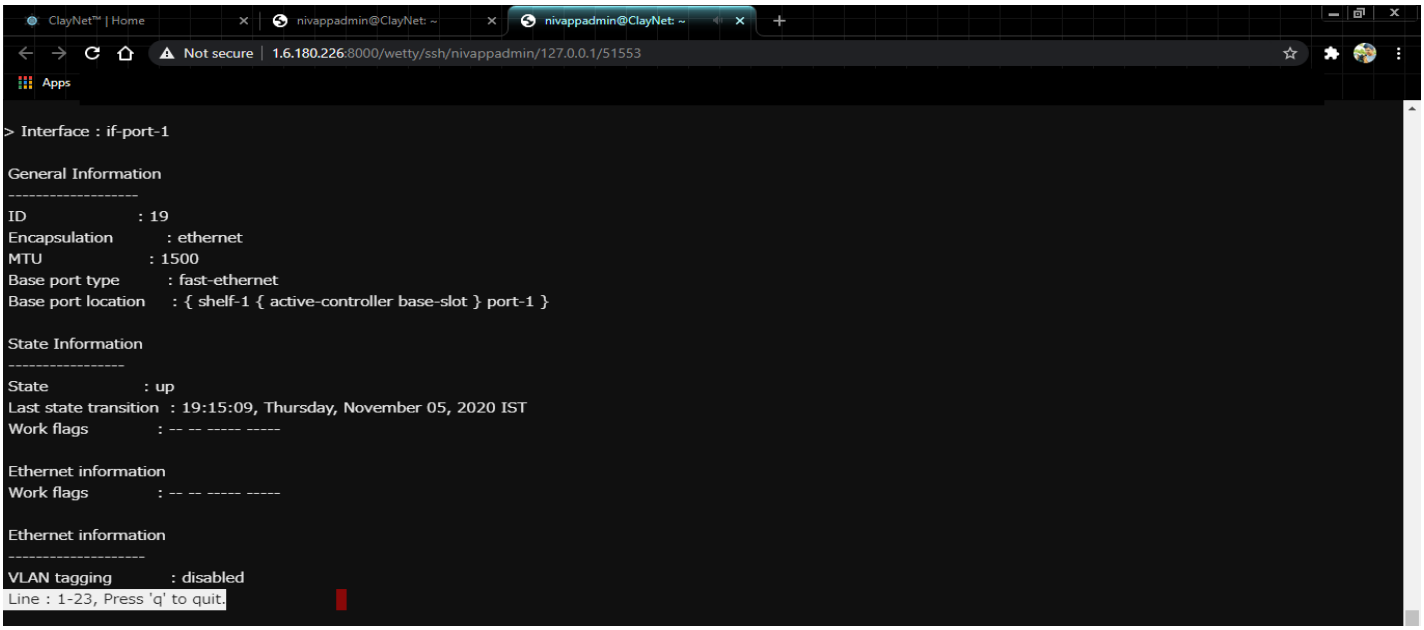


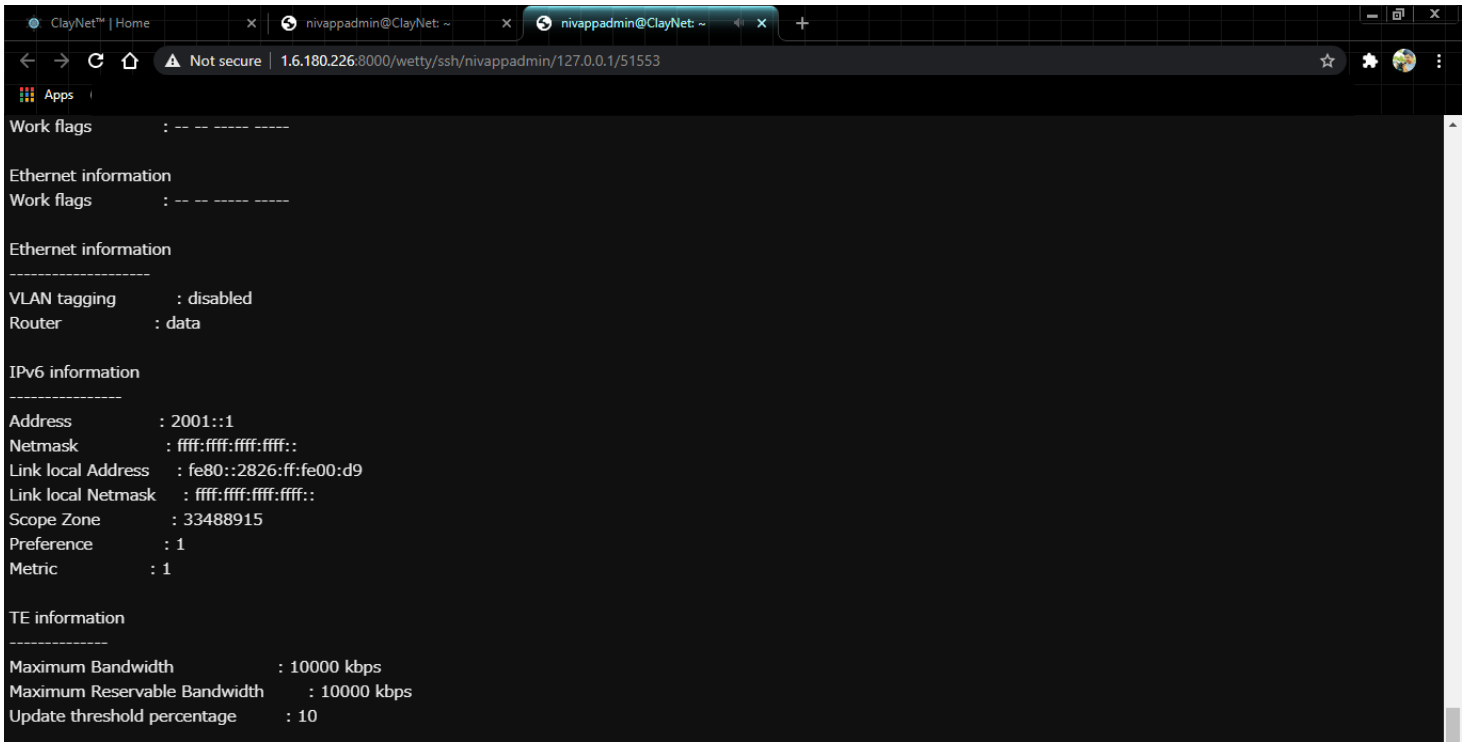
Check IPv6 NDP table on Router-1:-



Verify auto-configured Link Local Address on IPv6 interfaces:

operational> show interface details if-port-1





operational> show fast-ethernet details { shelf-1 { active-controller base-slot } port-1 }

```
operational> show fast-ethernet details { shelf-1 { active-controller base-slot } port-1 }

> Port : { shelf-1 { active-controller base-slot } port-1 }

Port details
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Name :
MAC address : 2a:26:00:00:00:d9
POST : passed
Media : copper
Loop back mode : no-loopback
State : up
Duplex mode : half-duplex
Speed : ten-mbps
Work flags : ---- ----
```

Check the connectivity between Router-1 and Router-2 using Link Local Address

Login to Router-2 and get the link-local address of interface connected to Router-1.

Now, Login to Router-1 and ping the link-local address on Router-2 and observe the response. When pinging link-local address, the the name if out-going interface should be specified in the command. If no interface or wrong interface name is specified, ping will result in error or unsuccessful.