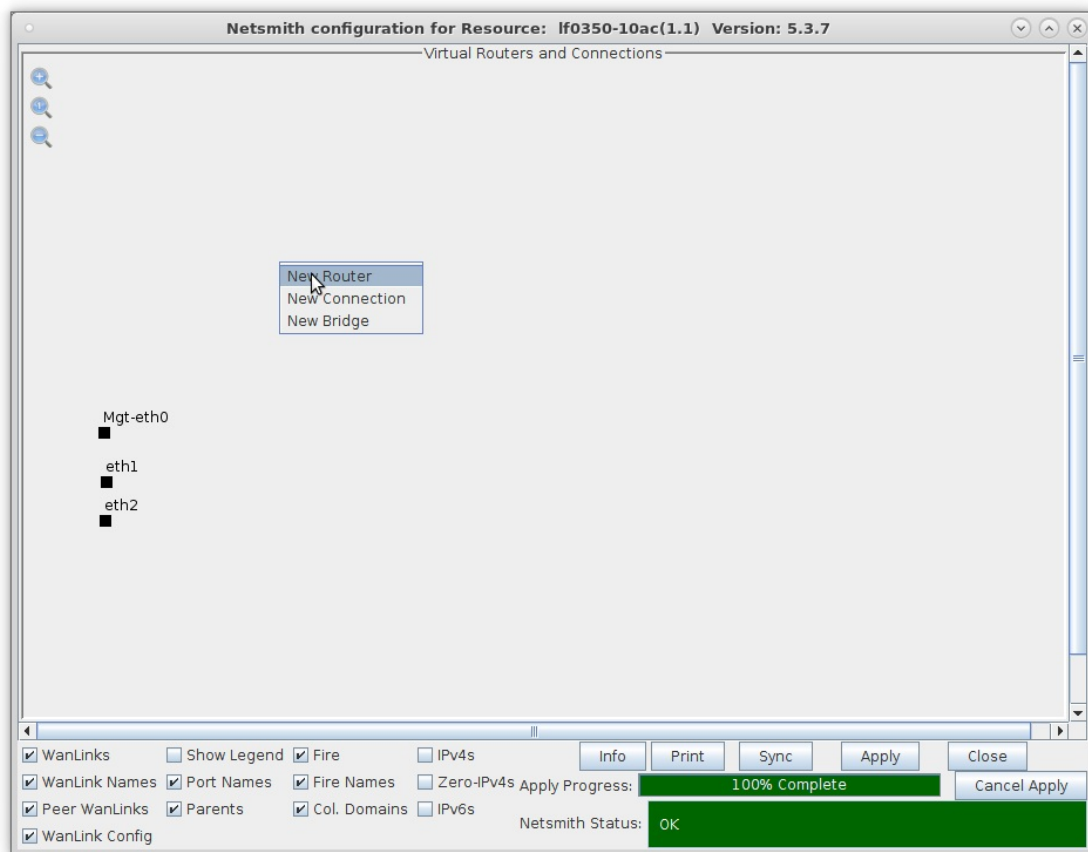


Virtual Router with NAT

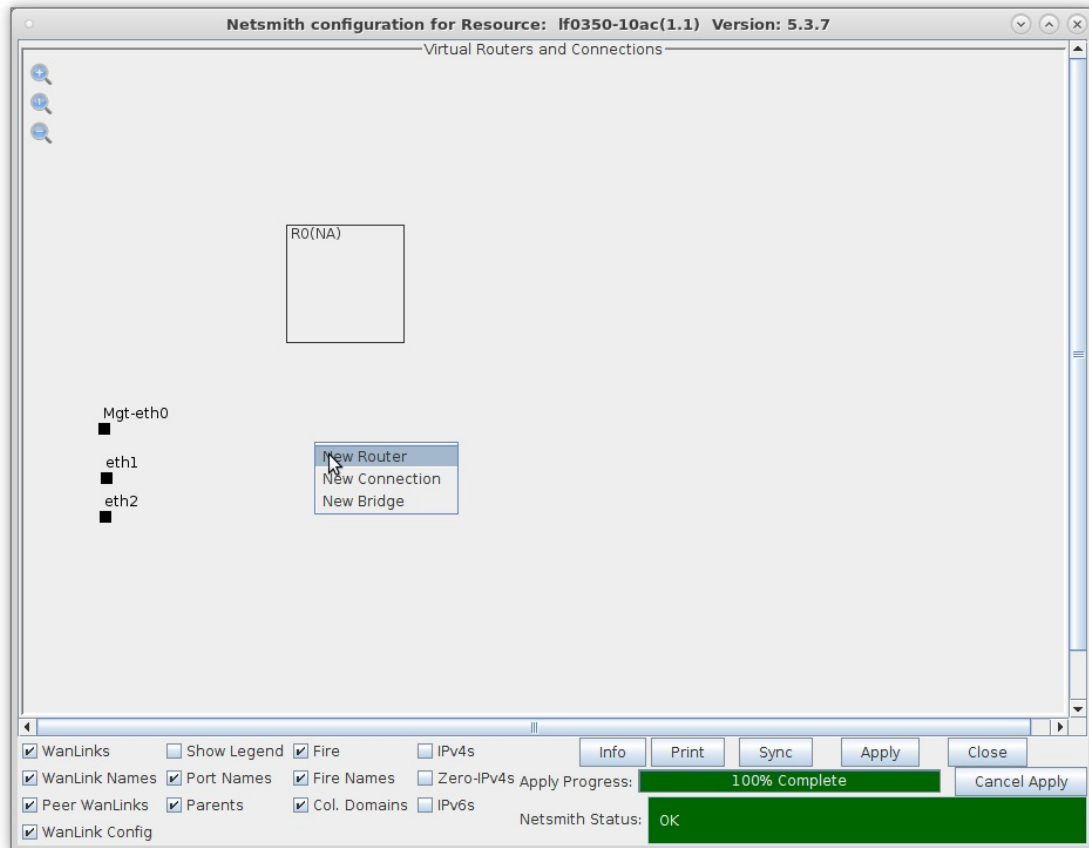
Goal: Setup a Virtual Router with one interface performing NAT on outgoing traffic.

In this test scenario, a pair of Virtual Routers are connected with a Redirected Interface connection with one side of the connection performing NAT on outgoing traffic. Two additional Redirected Interface connections are configured to pass traffic and demonstrate NAT.

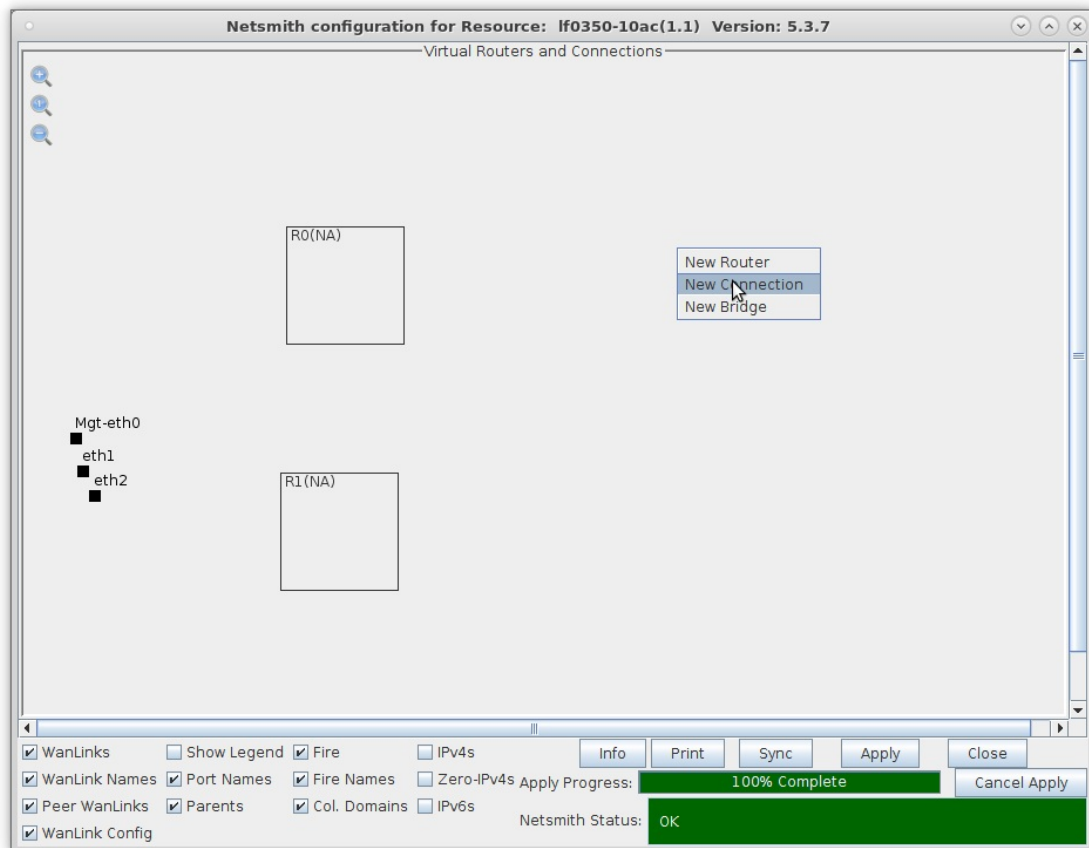
1. Setup two Virtual Routers and three Netsmith Connections.
 - A. Right-click inside the Netsmith window and select **New Router**



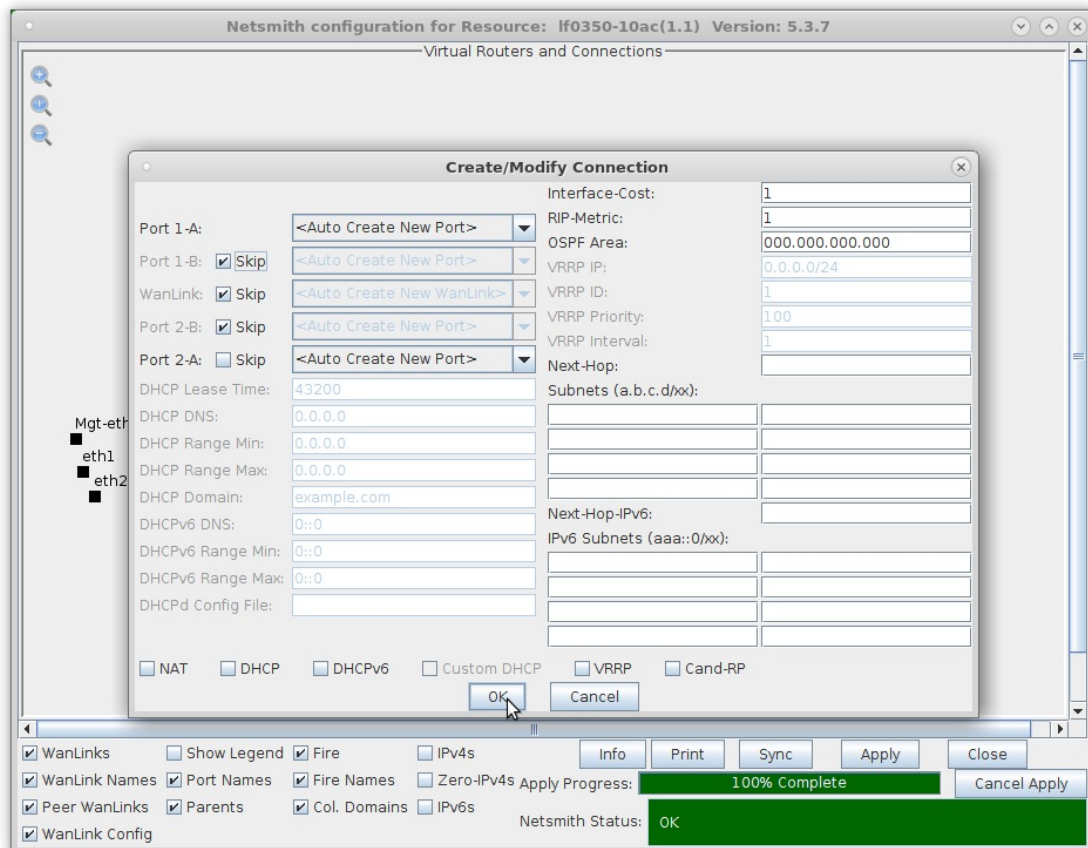
B. Repeat to create another virtual router



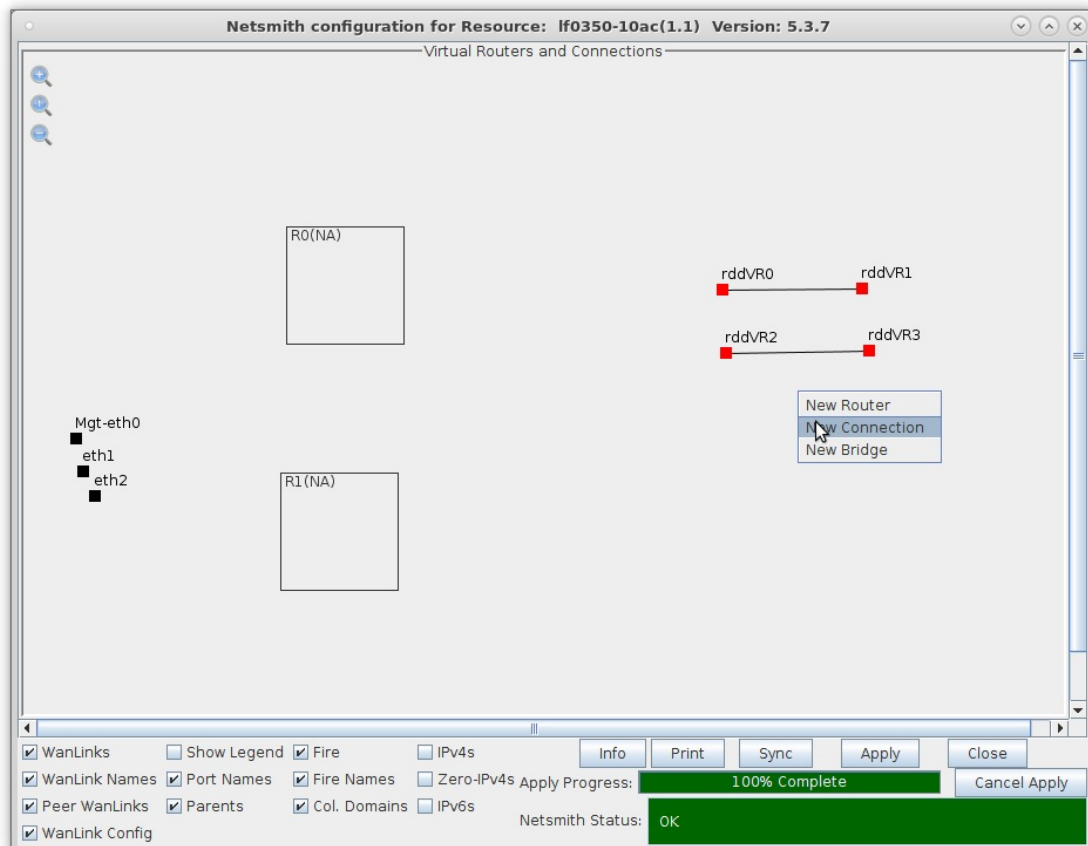
C. Right-click inside the Netsmith window and select **New Connection**



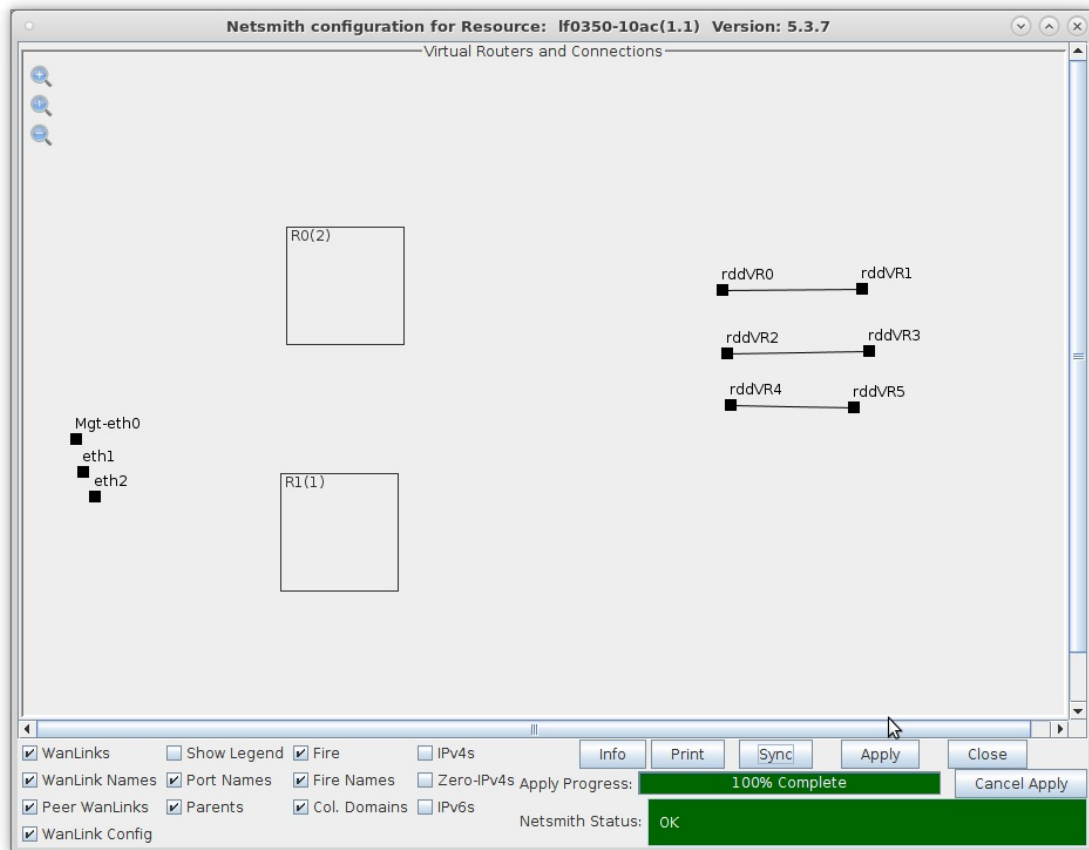
D. Select the 'Skip' option on Port 1-B, WanLink and Port 2-B, then click **OK**



E. Repeat and create two more connections



F. Click the **Apply** button followed by the **Sync** button

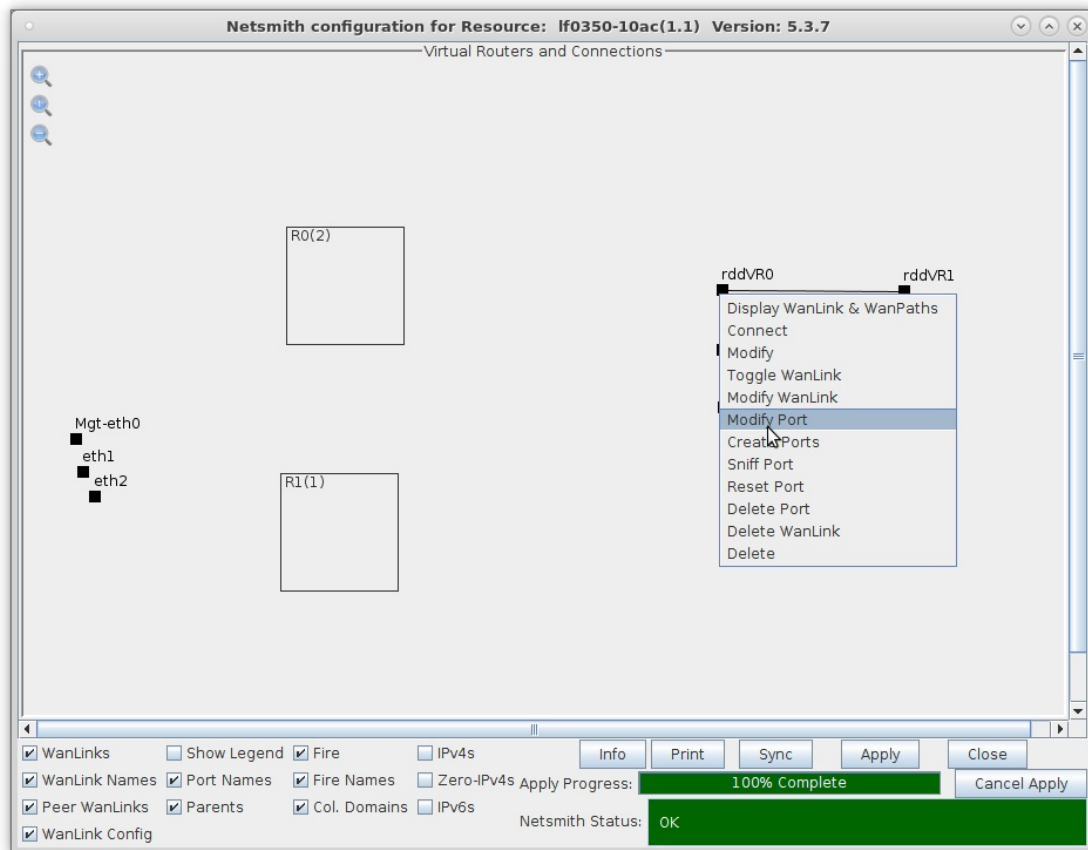


- A. **NOTE:** Modifications in Netsmith are only sent to the LANforge-Server after Applying them
- B. Clicking **Sync** makes sure any changes are synchronized with the current database

For more information see [LANforge-GUI User Guide: Virtual Interfaces](#)

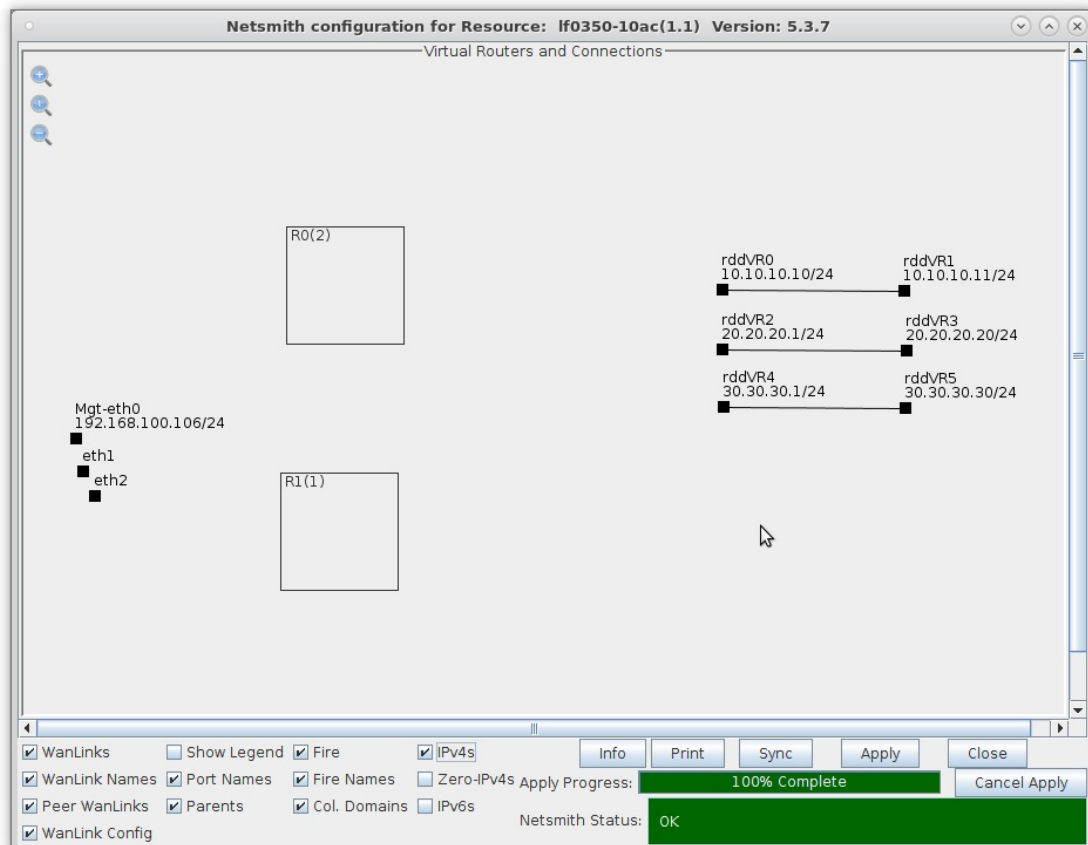
2. Setup the Ports.

A. Right-click the rdd ports and select **Modify Port**

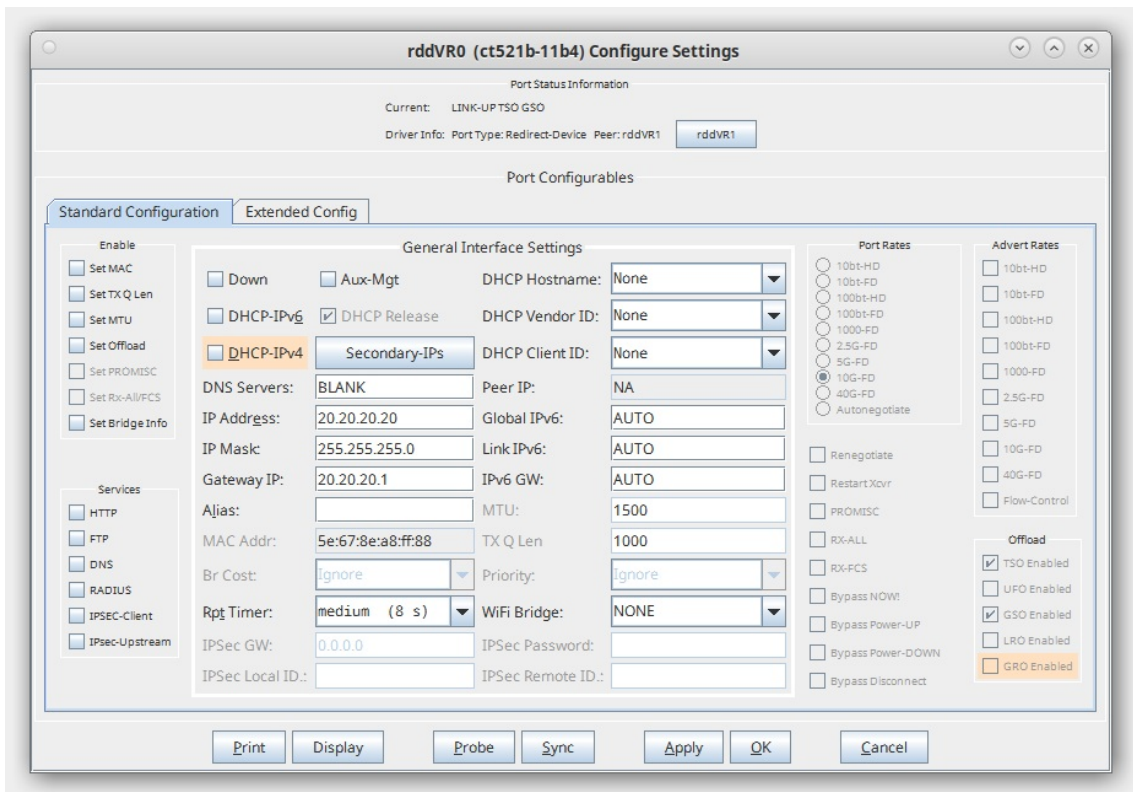


A. Assign each pair of rdd ports a unique subnet and IP address

B. Select the 'IPv4s' checkbox to view the IP addresses of the rdd ports



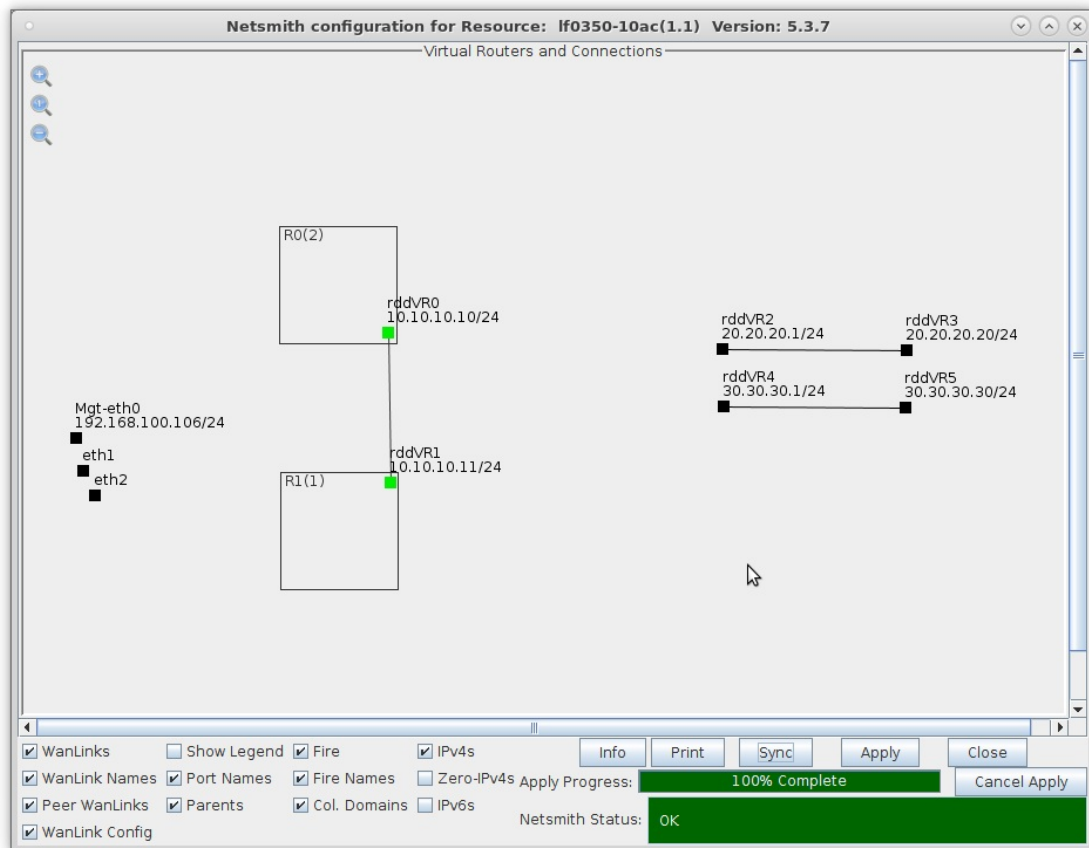
C. Configure rddVR3 and rddVR5 with a Gateway IP that corresponds to their peer rdd interface



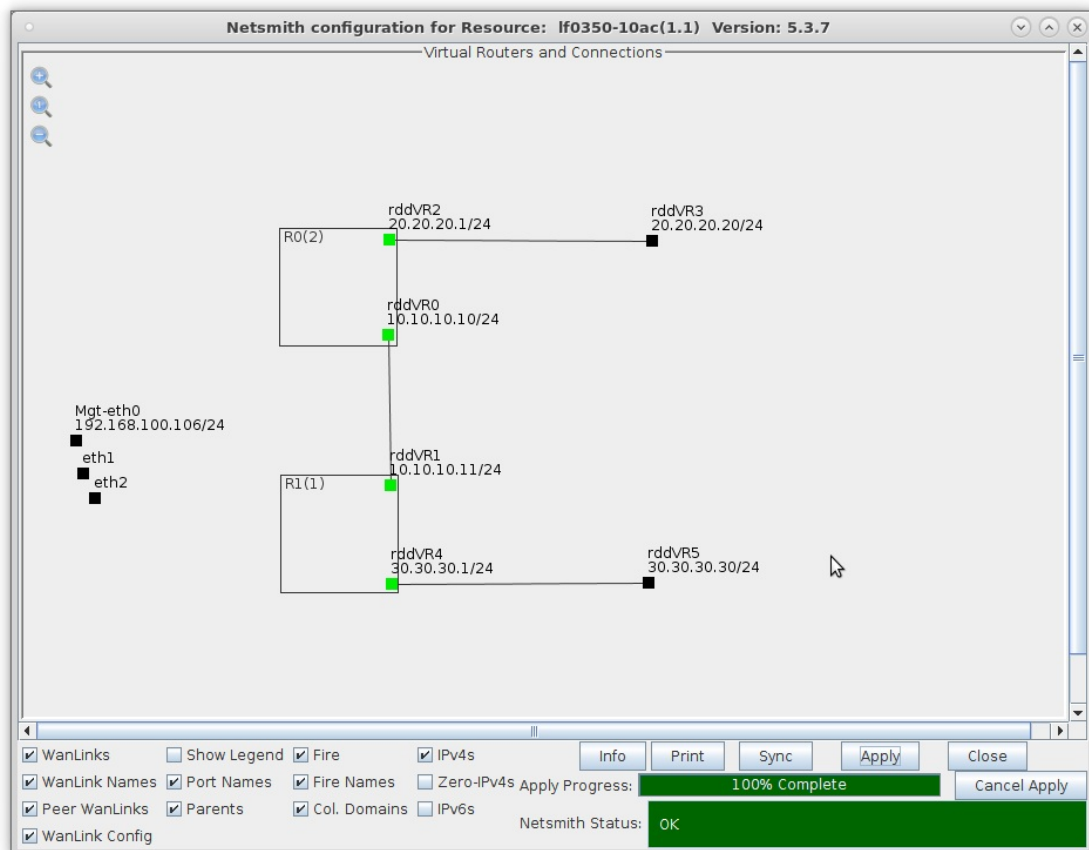
A. **NOTE:** In this example, rddVR3 has a Gateway IP of 20.20.20.1 and rddVR5 has a Gateway IP of 30.30.30.1

For more information see [LANforge-GUI User Guide: Ports \(Interfaces\)](#)

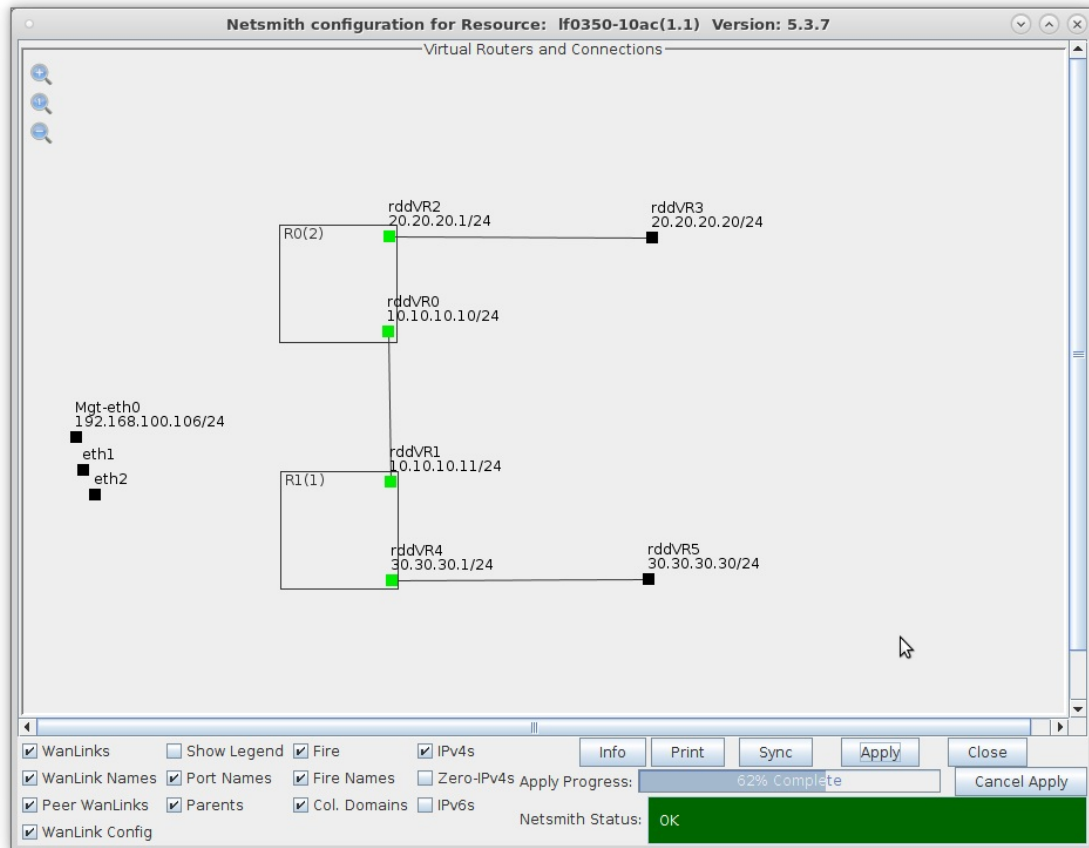
3. Move the Redirected Interfaces into their desired positions.
A. Drag rddVR0 into Router R0(2) and rddVR1 into Router R1(1)



- B. Drag rddVR2 into Router R0(2) and rddVR4 into Router R1(1)



C. Click Netsmith **Apply** to commit the changes



4. Create a TCP connection and sniff traffic without NAT.

A. Go to the **Layer-3** tab and click **Create**

LANforge Manager Version (5.4.3)

Control Reporting Windows Info Tests

Chamber View Stop All Restart Manager Refresh HELP

Status Port Mgr Layer-3 L3 Endps Layer 4-7 WanLinks Resource Mgr Alerts Messages Warnings Wifi-Messages +

Rpt Timer: fast (1 s) Go Test Manager all Select All Start + Stop - Quiesce Clear

View 0 - 500 Go Display Create Modify Delete

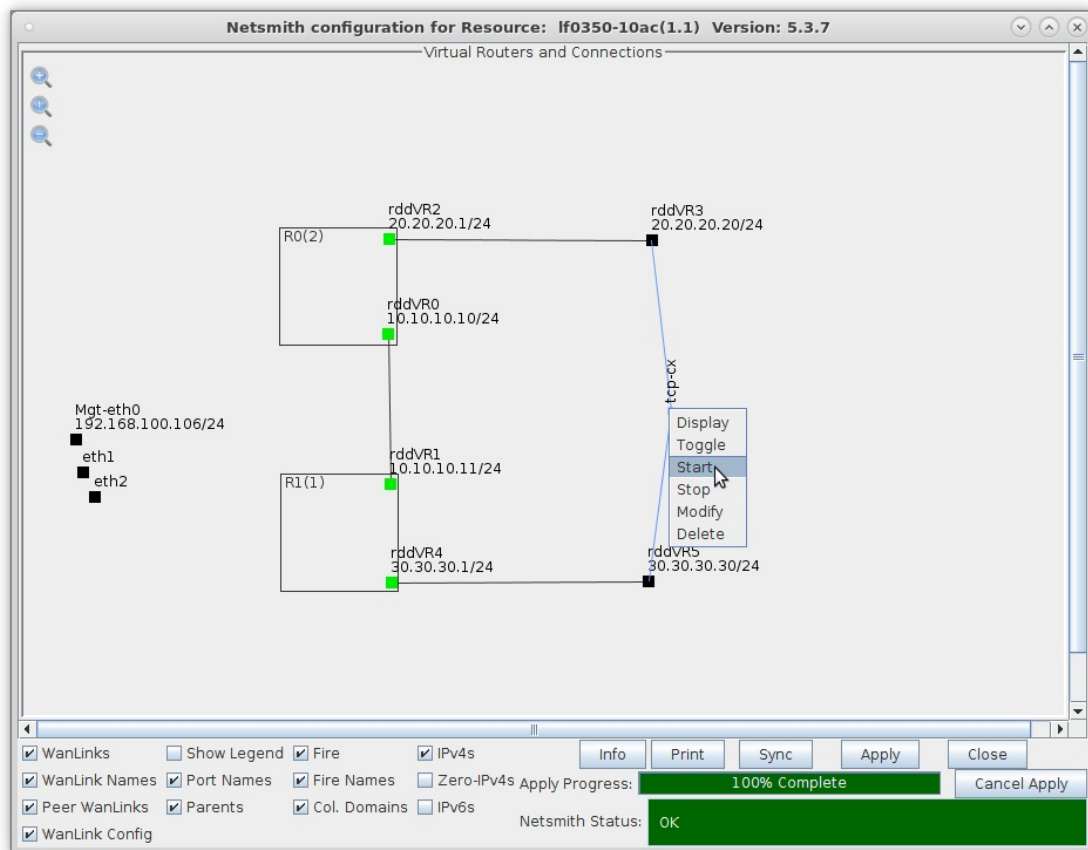
Cross Connects for Selected Test Manager

Name	Type	State	Pkt Rx A	Pkt Rx B	Bps Rx A	Bps Rx B	Rx Drop % A	Rx Drop % B	Drop Pkts A	Drop Pkts B
------	------	-------	----------	----------	----------	----------	-------------	-------------	-------------	-------------

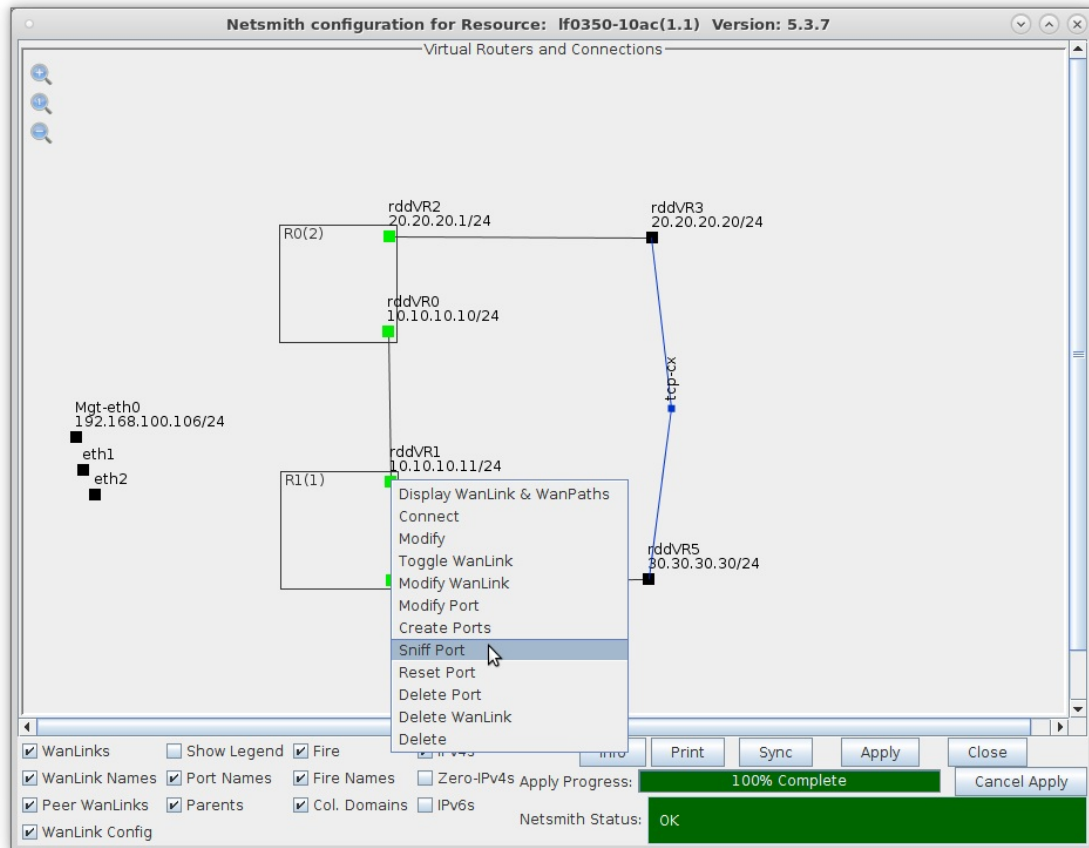
Logged in to: localhost:4002 as: Admin 2 stations: 2 1 0 1 0 0

B. Create a Layer-3 TCP connection between endpoints rddVR3 and rddVR5 then click **OK**

C. In NetSmith, right-click the TCP connection and click **Start**



D. Right-click port rddVR1 and click **Sniff Port**



A. **NOTE:** You must have Wireshark properly installed as described here: [Installing Wireshark](#)

E. After Wireshark begins, notice that the source and destination IP addresses are from 20.20.20.20 (rddVR3) and 30.30.30.30 (rddVR5) as expected without NAT enabled

Capturing from rddVR1 [Wireshark 2.1.1 (Git Rev Unknown from unknown)] (on If0350-10ac(1.1))

Filter: Expression... Clear Apply

No.	Time	Source	Destination	Protocol	Length	Info
98	8.000934117	30.30.30.30	20.20.20.20	LANforge	366	Seq: 120
99	8.001000995	20.20.20.20	30.30.30.30	TCP	66	33005-3300
100	8.249724778	20.20.20.20	30.30.30.30	LANforge	366	Seq: 121
101	8.249845941	30.30.30.30	20.20.20.20	LANforge	366	Seq: 121
102	8.249902666	20.20.20.20	30.30.30.30	TCP	66	33005-3300
103	8.499655313	20.20.20.20	30.30.30.30	LANforge	366	Seq: 122

Frame 1: 366 bytes on wire (2928 bits), 366 bytes captured (2928 bits) on interface 0

Ethernet II, Src: 12:e2:26:fd:47:d7 (12:e2:26:fd:47:d7), Dst: da:bc:e5:ef:bd:e9 (da:bc:e5:ef:bd:e9)

Internet Protocol Version 4, Src: 20.20.20.20, Dst: 30.30.30.30

Transmission Control Protocol, Src Port: 33005, Dst Port: 33006, Seq: 1, Ack: 1, Len: 300

LANforge Traffic Generator

0000 da bc e5 ef bd e9 12 e2 26 fd 47 d7 08 00 45 00 &.G...E.

0010 01 60 b1 06 40 00 3f 06 25 2e 14 14 14 1e 1e ...@.?.%.....

0020 1e 1e 80 ed 80 ee c0 bd a5 e9 92 46 1d 57 80 18F.W...

0030 00 79 65 b6 00 00 01 01 08 0a 0a a9 e5 88 0a a9 .ye.....

0040 e4 8e 00 00 00 00 1a 2b 3c 4d 00 25 00 26 01 08+<M.%.&..

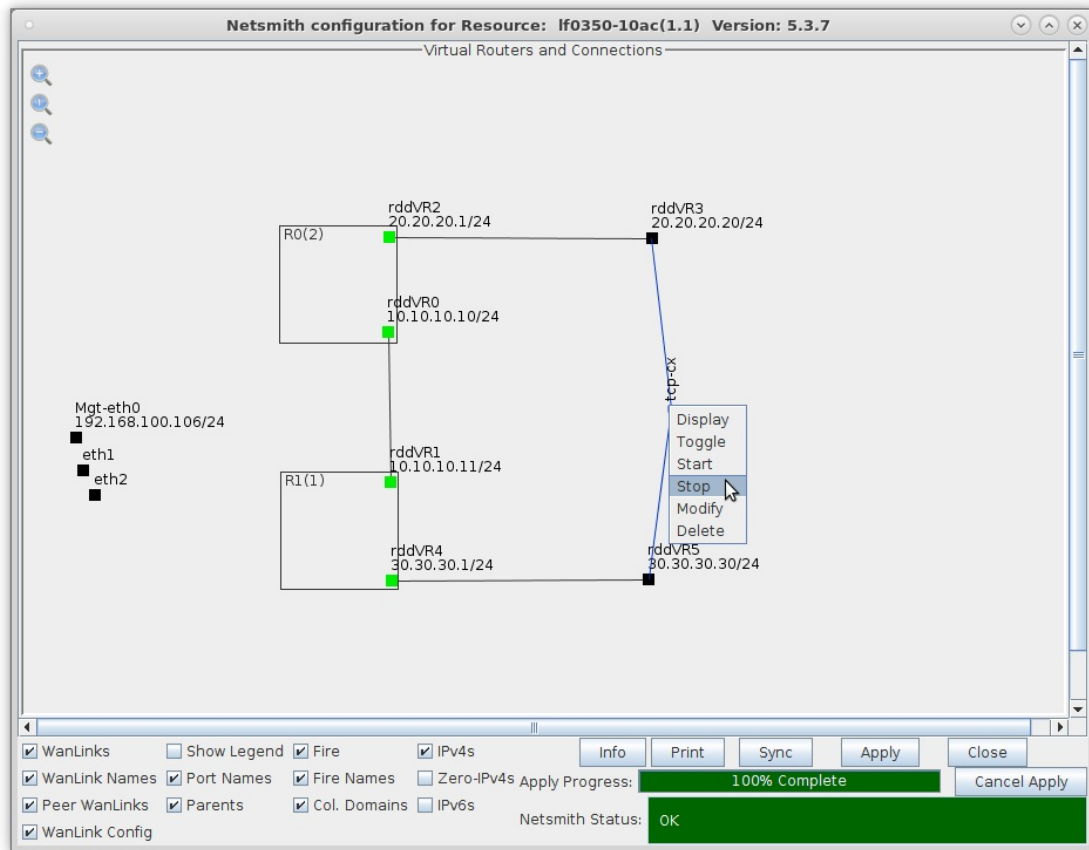
0050 00 00 00 00 00 58 59 9f 3e a0 1e 83 18 a0 00 01XY.>.....

rddVR1: <live capture in progr... Packets: 1104 · Displayed: 110... Profile: Default

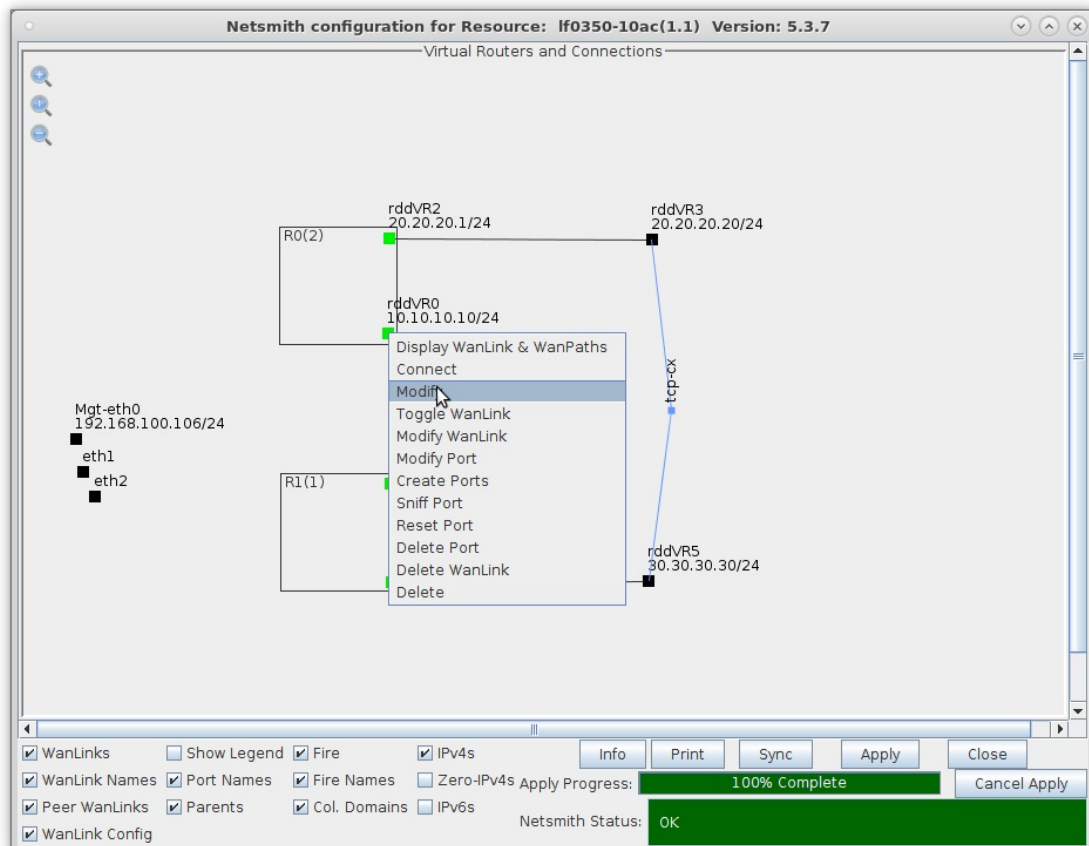
5. Enable NAT and sniff traffic on the same port.

NOTE It is important that Endpoint-A of the connection is **behind** the NAT port because it is the side that initiates the connection. Reversing the endpoint ports will cause the connection to fail.

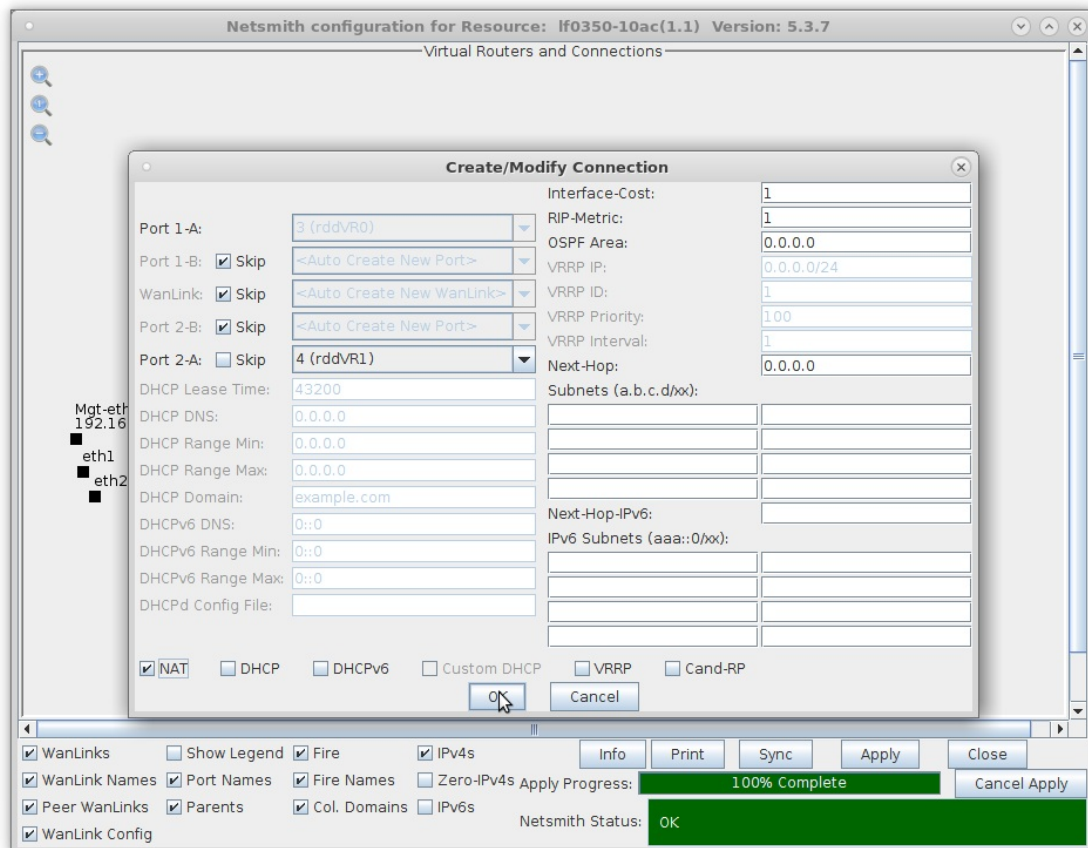
A. Right-click on the TCP connection and select **Stop**



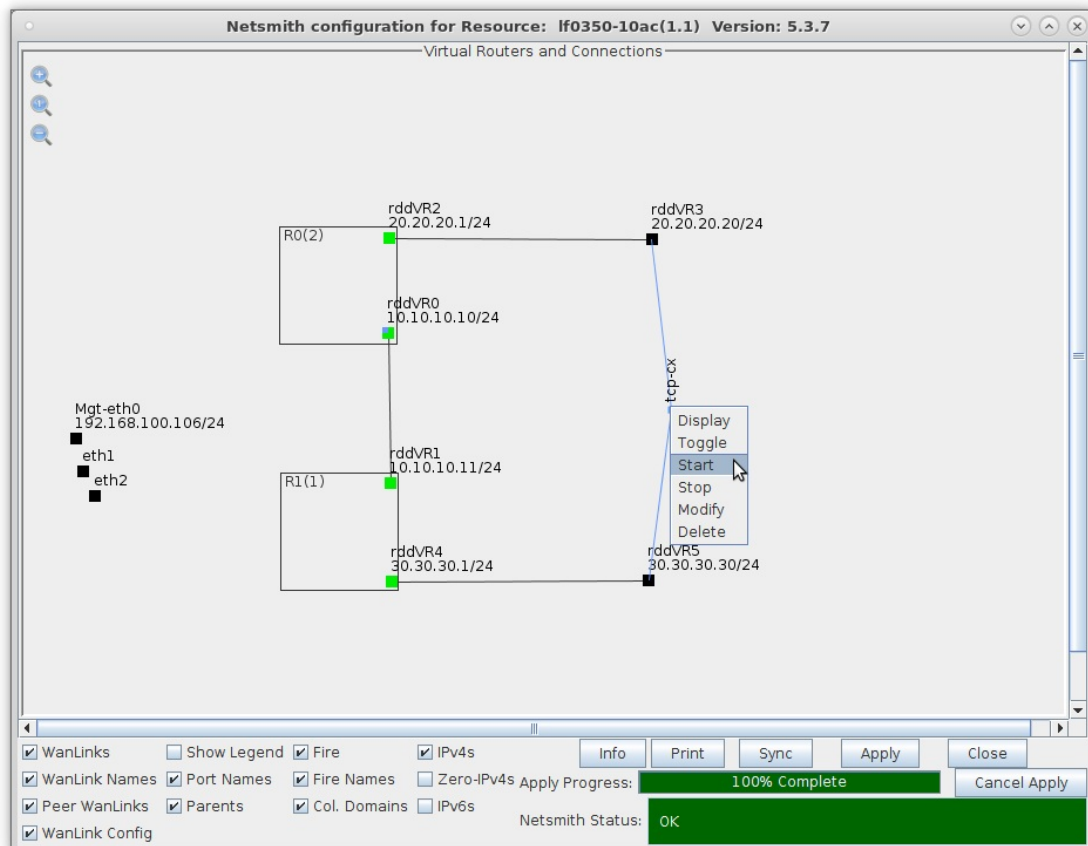
B. Right-click rddVR0 and select **Modify**



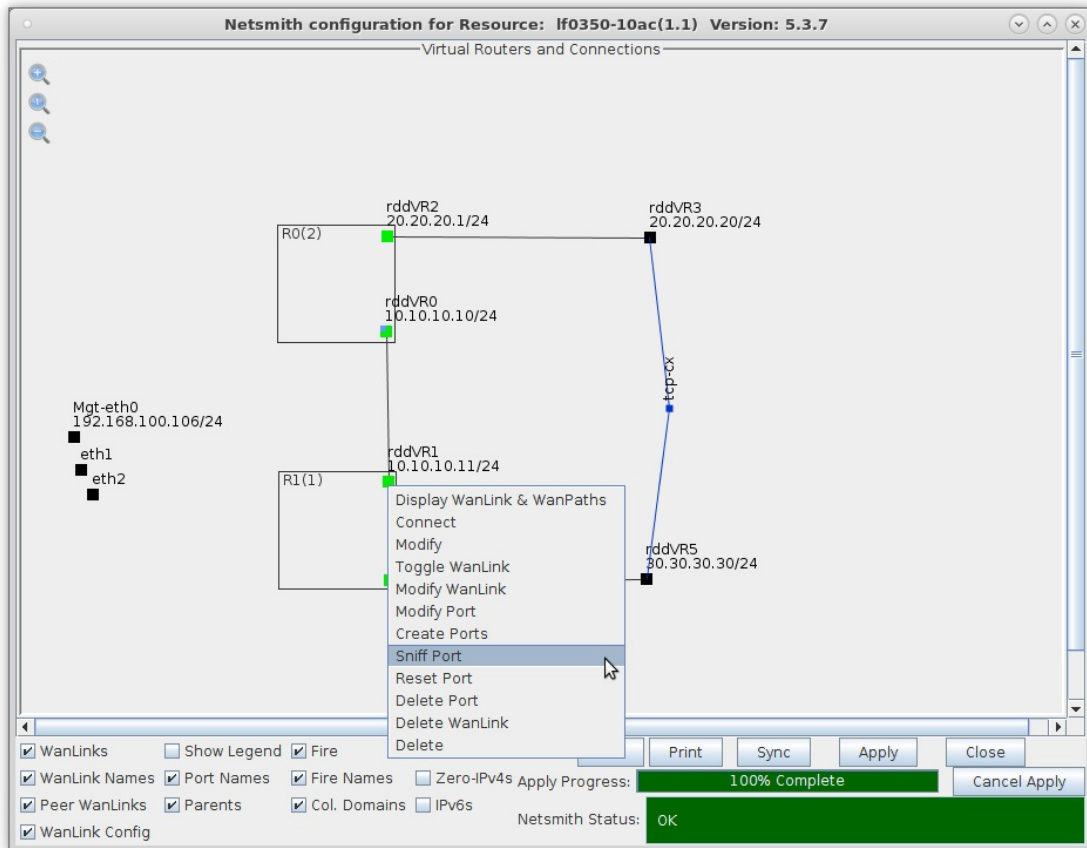
C. Select the 'NAT' checkbox and click **OK**, then click the Netsmith **Apply** button



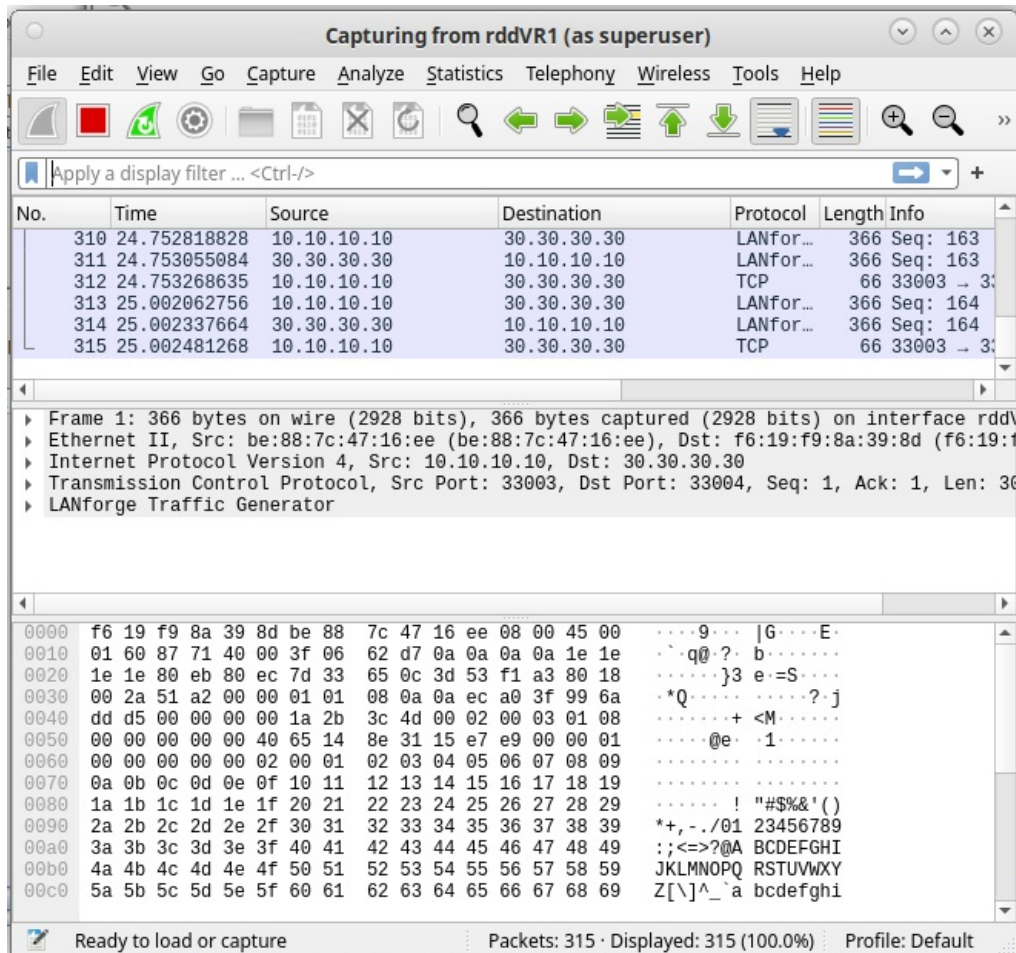
D. Right-click on the TCP connection and select **Start**



E. Right-click port rddVR1 and select **Sniff Port**



F. After Wireshark begins, notice that any source or destination IP address from or to 20.20.20.20 (rddVR3) has been NAT'd to be 10.10.10.10 because rddVR0 is now performing NAT on all outgoing traffic



For more information see [LANforge-GUI User Guide](#)

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