

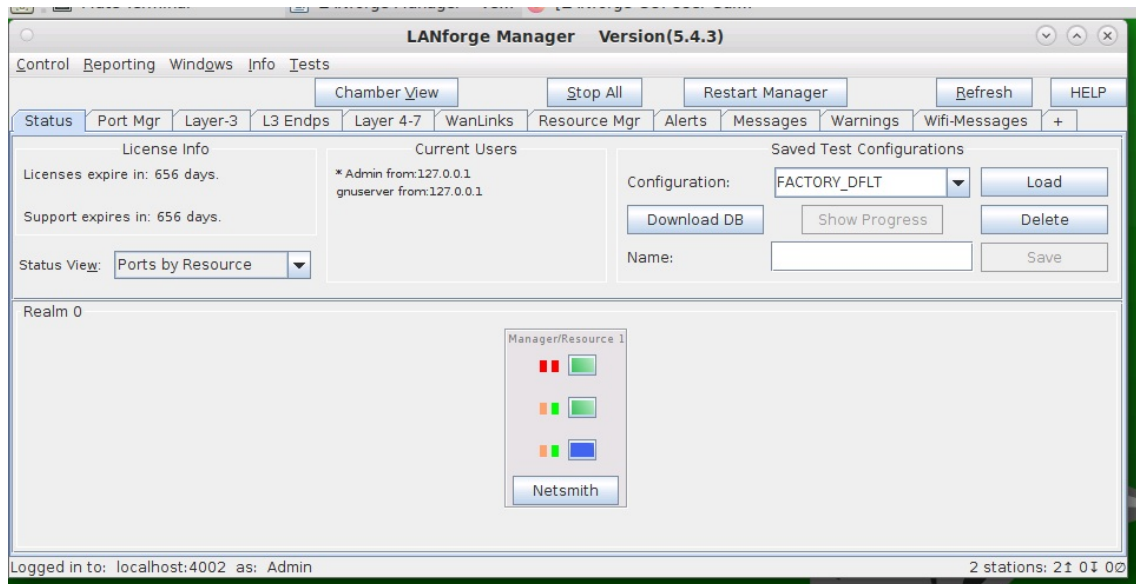
Routed Mode WanLink with WanPaths

Goal: Setup a Routed Mode WanLink with WanPaths.

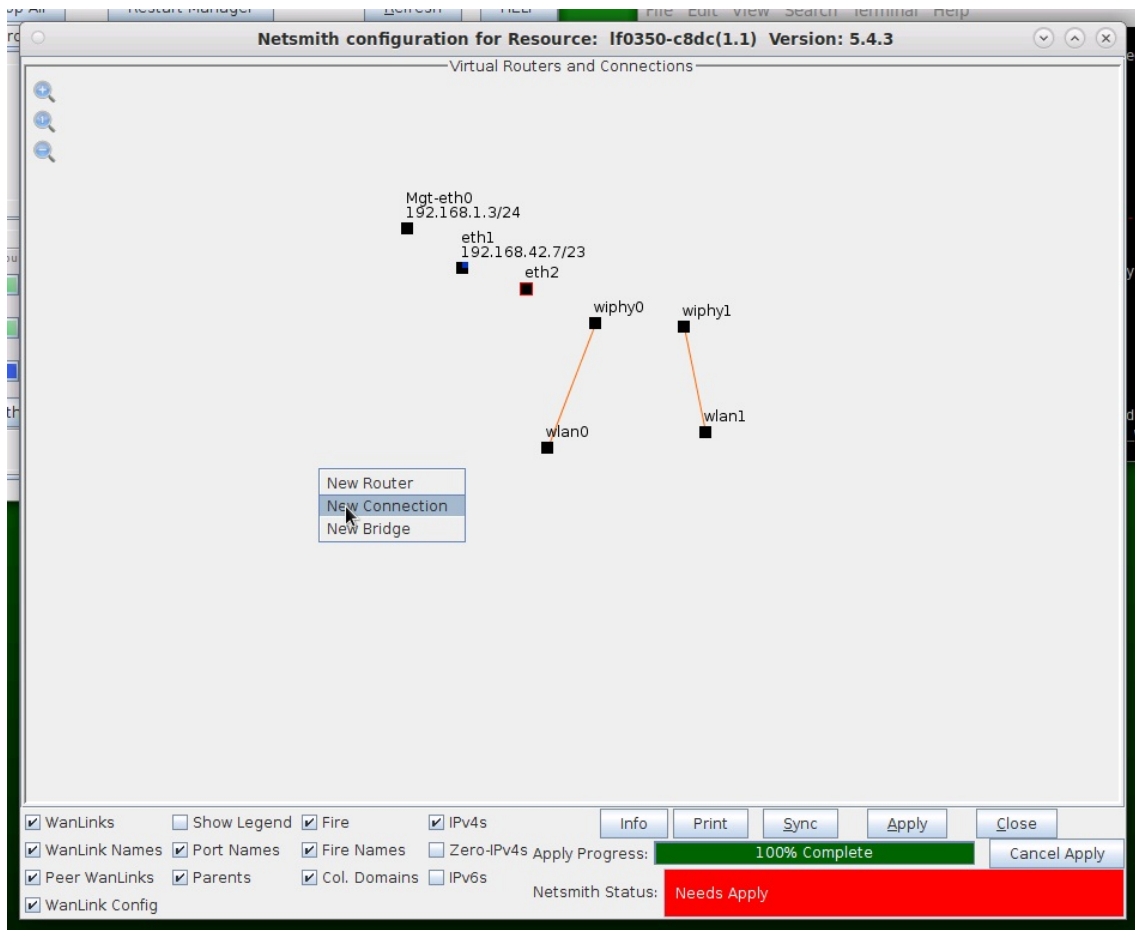
In this test scenario, LANforge-ICE is used to filter traffic by IP address on a WanLink with the use of WanPaths.

1. Setup a Netsmith connection.

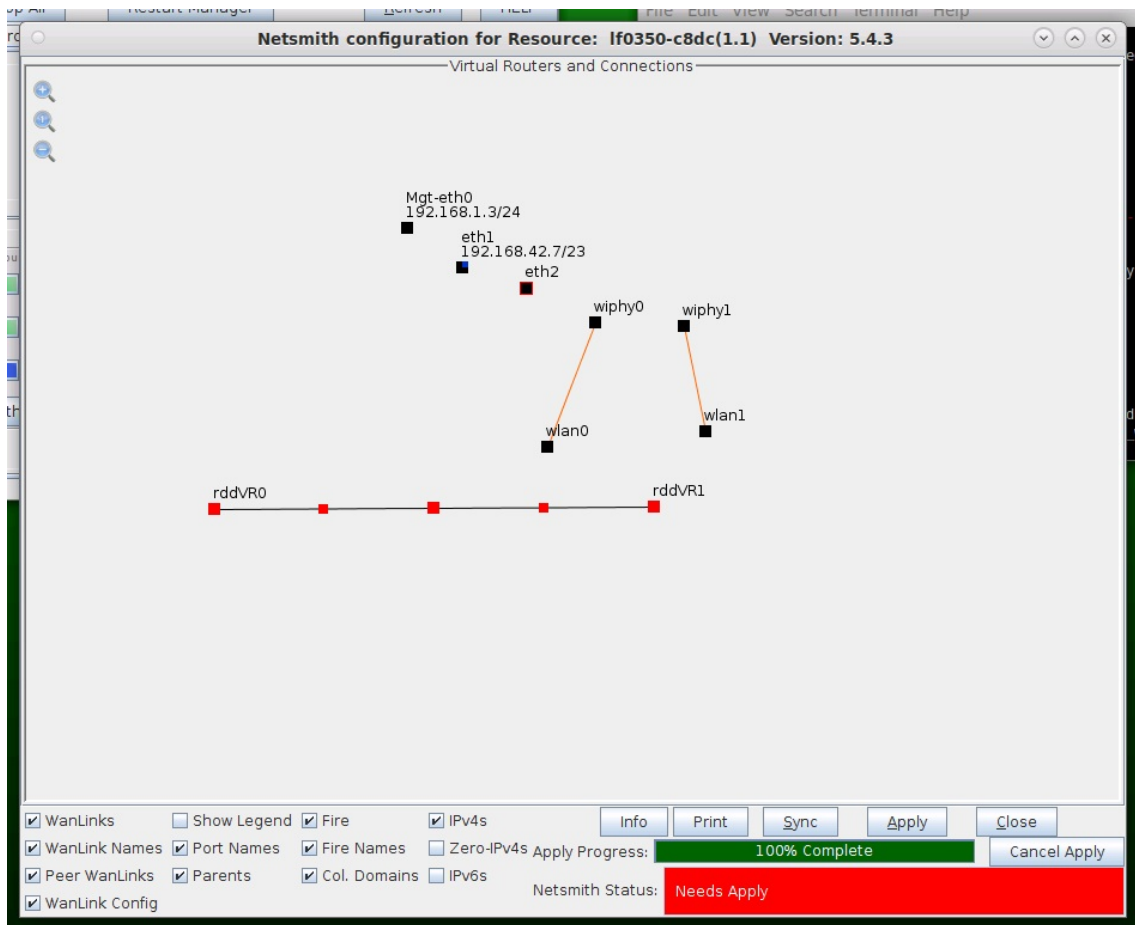
A. Go to the **Status** tab and click **Netsmith**



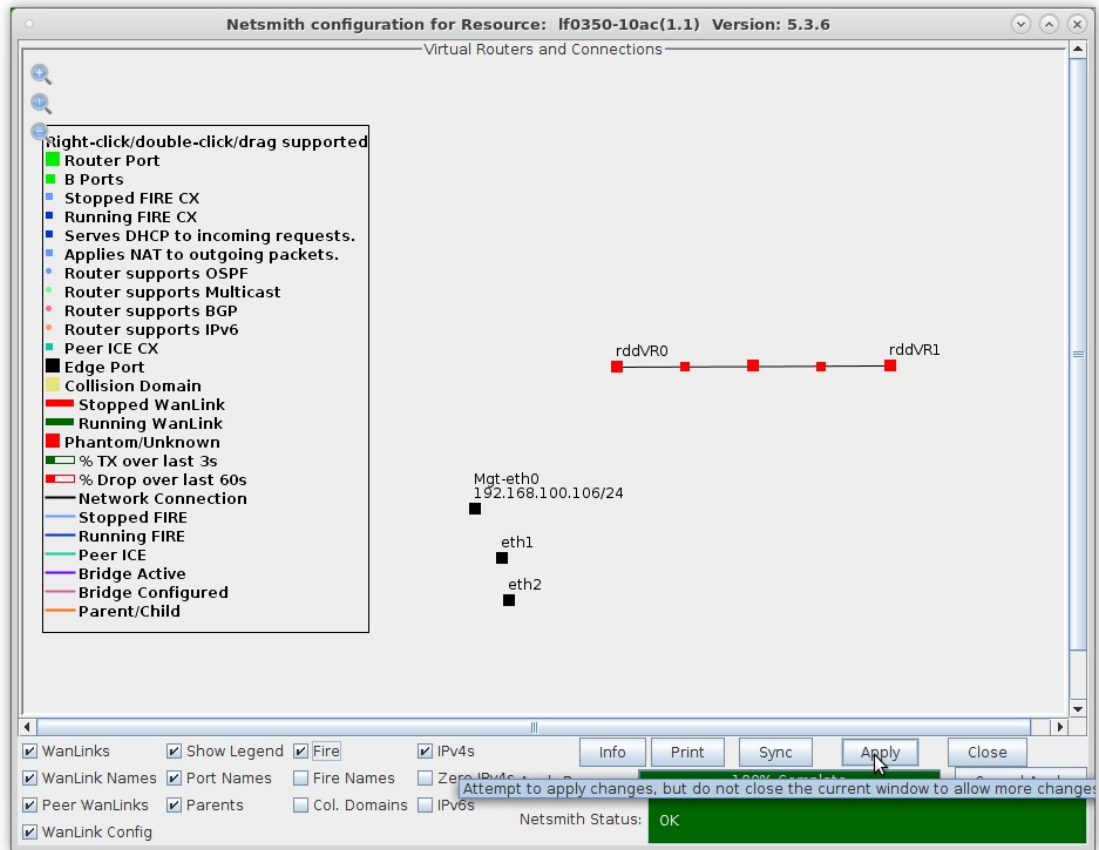
B. Right-click in the Netsmith window and select **New Connection**



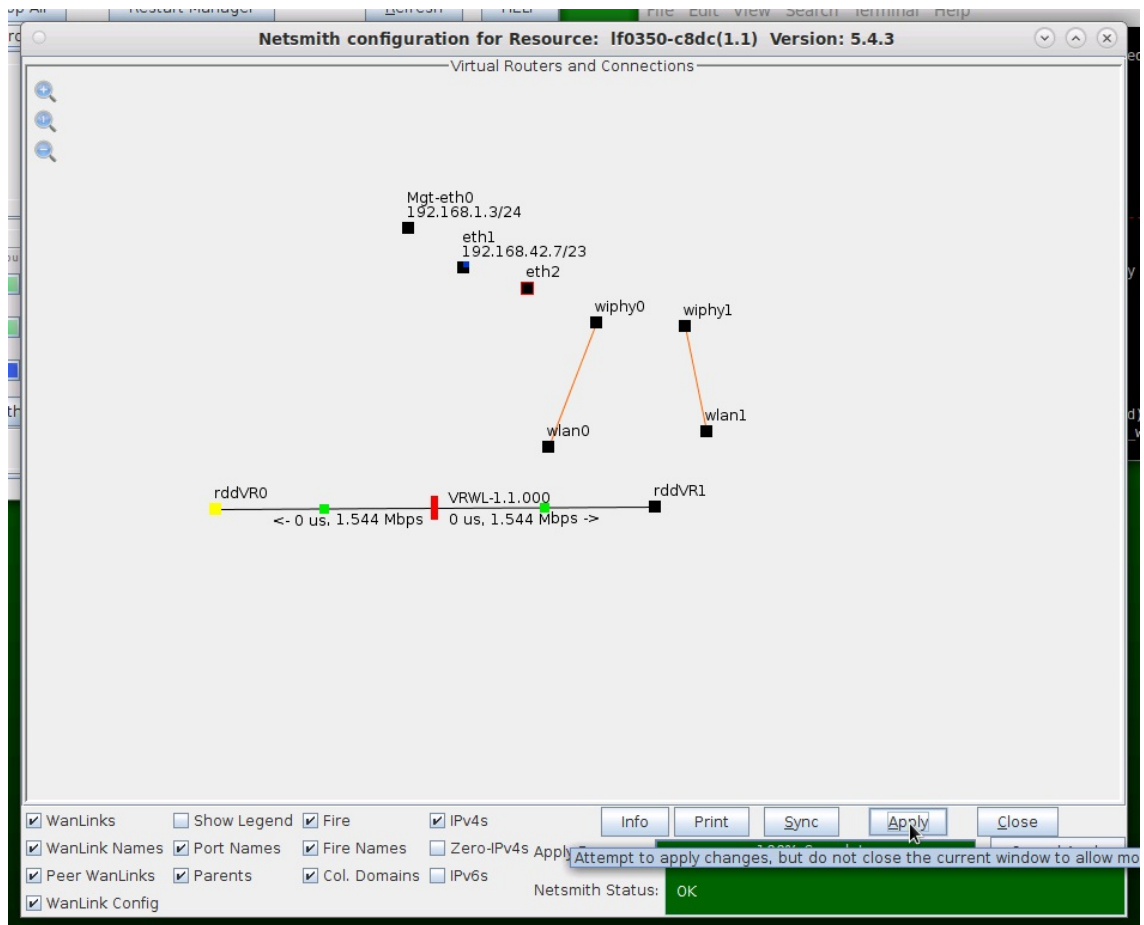
C. Accept defaults, **Auto Create** everything and click **OK**



D. Click **Apply** in the Netsmith window to create the connection



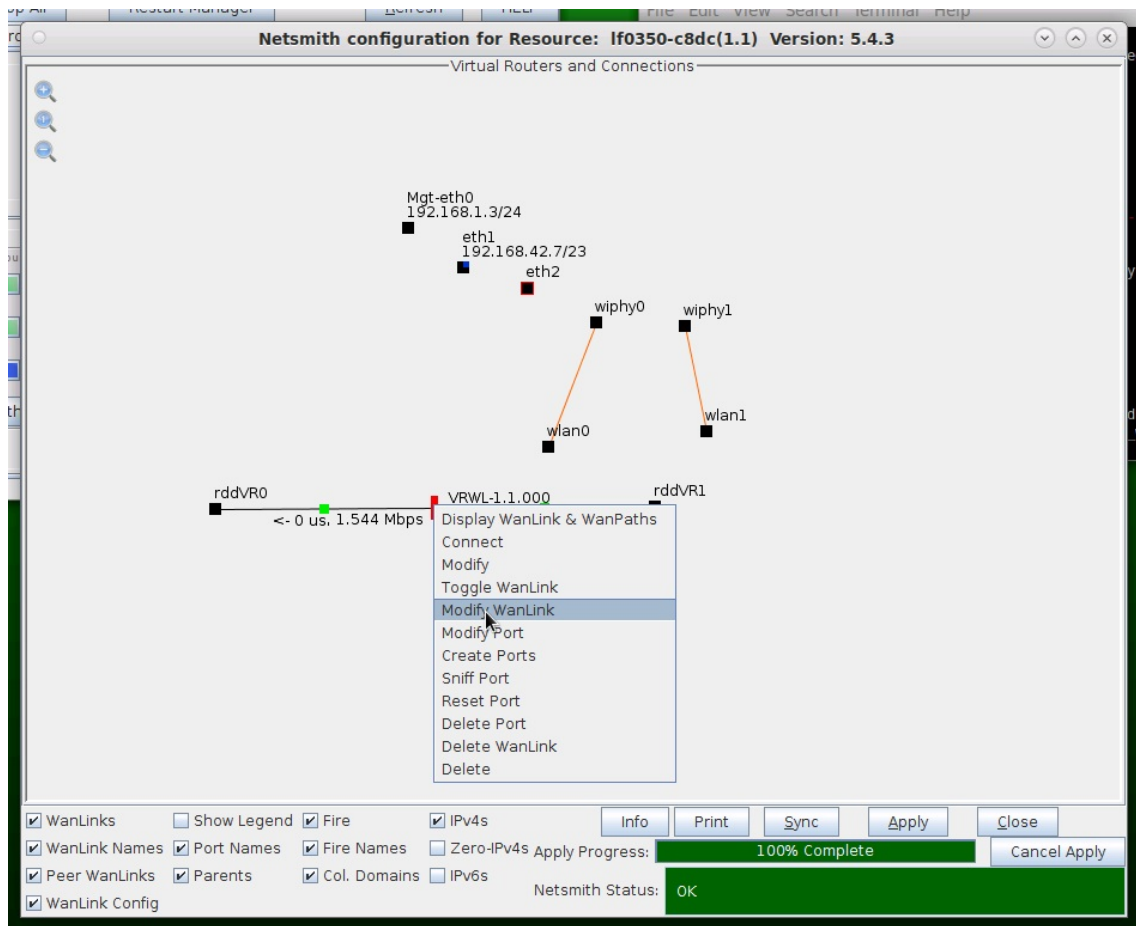
E. The Netsmith window after applying changes



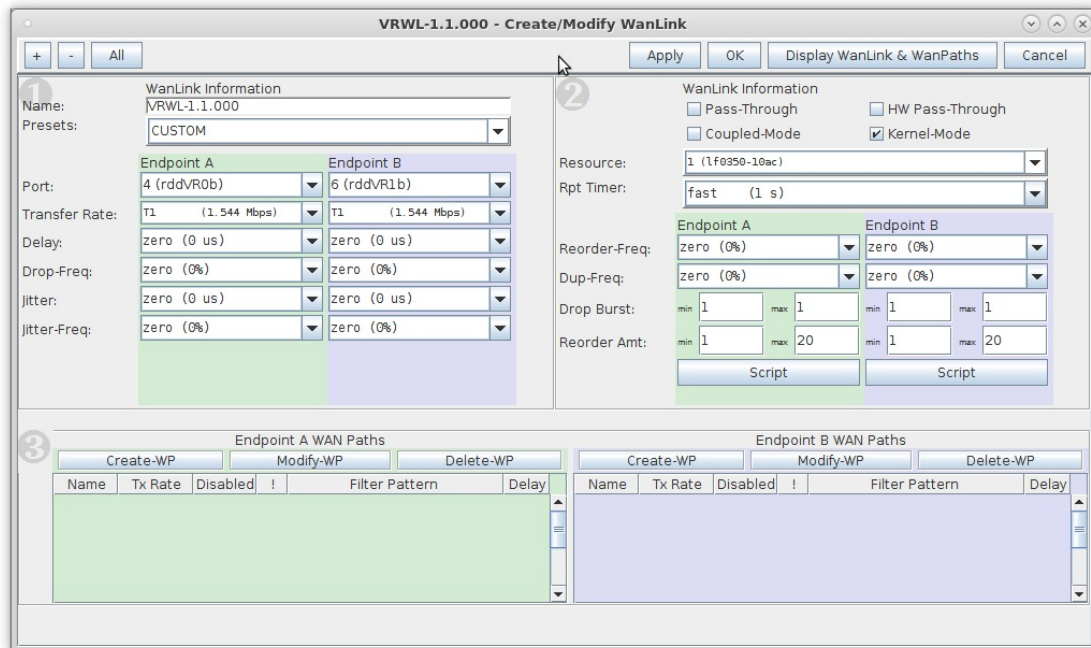
For more information see [LANforge-GUI User Guide: Netsmith](#)

2. Setup the WanLink.

A. Right-click the WanLink and select **Modify WanLink**



B. Setup the WanLink with values larger than what each of the WanPaths will use



- A. WanPaths are subordinate to WanLinks. WanLinks, therefore, should be configured with sufficient bandwidth and buffering required by all of its WanPaths
- B. Click **Apply** and leave the Create/Modify WanLink window open

3. Setup the WanPaths.

- A. Click **Create-WP** on Entry Point A to create a new WanPath on this WanLink

Create/Modify WanPath for Endpoint: VRWL-1.1.000-A

Name: ep-1 Backlog Buffer: AUTO

PCAP Filter:

Source IP/MAC: 172.1.1.100 Source Mask: 32

Dest IP/MAC: 172.2.2.100 Dest Mask: 32

Transfer Rate: 64 Kbps (64 Kbps) Delay: zero (0 us)

Jitter: zero (0 us) Drop-Freq: zero (0%)

Min Drop Burst: 1 Max Drop Burst: 1

Min Reorder Amount: 1 Max Reorder Amount: 20

Reorder-Freq: zero (0%) Dup-Freq: zero (0%)

Jitter-Freq: zero (0%) Test Manager:

ICeCap Replay Replay File: Dir

Disabled Loop Replay Replay Latency Replay Loss

Same As WanLink Replay Dup Replay Bandwidth Use Pcap Filter

Inverse Match Drop-Xth Duplicate-Xth Reorder-Xth

Corruption #0

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #1

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #2

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #3

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #4

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #5

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

- A. **NOTE:** In order to filter by specific IP address, use a Source and Dest Mask of 32 to exactly match the IP coming in on the Entry Point

- B. Click **OK** to create the WanPath

B. Click **Create-WP** on Entry Point B to create a new WanPath on this WanLink

Create/Modify WanPath for Endpoint: VRWL-1.1.000-B

Name: ep-2 Backlog Buffer: AUTO

PCAP Filter:

Source IP/MAC: 172.2.2.100 Source Mask: 32

Dest IP/MAC: 172.1.1.100 Dest Mask: 32

Transfer Rate: 64 Kbps (64 Kbps) Delay: zero (0 us)

Jitter: zero (0 us) Drop-Freq: zero (0%)

Min Drop Burst: 1 Max Drop Burst: 1

Min Reorder Amount: 1 Max Reorder Amount: 20

Reorder-Freq: zero (0%) Dup-Freq: zero (0%)

Jitter-Freq: zero (0%) Test Manager:

ICEcap Replay Replay File: Dir

Disabled Loop Replay Replay Latency Replay Loss

Same As WanLink Replay Dup Replay Bandwidth Use Pcap Filter

Inverse Match Drop-Xth Duplicate-Xth Reorder-Xth

Corruption #0

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #1

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #2

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #3

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #4

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

Corruption #5

Rate: 0 Corruption: Random Write

Byte-to-Write: 0 Min Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum

A. **NOTE:** The Source and Destination IPs for this WanPath are the reverse of those for Entry Point A

B. Click **OK** to create the WanPath

C. Create a second WanPath for this WanLink using the next set of IP addresses

Create/Modify WanPath for Endpoint: VRWL-1.1.000-A

Name: ep-3 Backlog Buffer: AUTO

PCAP Filter:

Source IP/MAC: 172.1.1.101 Source Mask: 255.255.255.0

Dest IP/MAC: 172.2.2.101 Dest Mask: 255.255.255.0

Transfer Rate: 64 Kbps Delay: zero (0 us)

Jitter: zero (0 us) Drop-Freq: zero (0%)

Min Drop Burst: 1 Max Drop Burst: 1

Min Reorder Amount: 1 Max Reorder Amount: 20

Reorder-Freq: zero (0%) Dup-Freq: zero (0%)

Jitter-Freq: zero (0%) Test Manager:

ICEcap Replay Replay File: Dir

Disabled Loop Replay Replay Latency Replay Loss

Same As WanLink Replay Dup Replay Bandwidth Use Pcap Filter

Inverse Match Drop-Xth Duplicate-Xth Reorder-Xth

Corruption #0	Corruption #1	Corruption #2
Rate: 0	Rate: 0	Rate: 0
Corruption: Random Write	Corruption: Random Write	Corruption: Random Write
Byte-to-Write: 0	Byte-to-Write: 0	Byte-to-Write: 0
Min Offset: 0	Min Offset: 0	Min Offset: 0
Max Offset: 0	Max Offset: 0	Max Offset: 0
<input type="checkbox"/> Chain-to-Next <input type="checkbox"/> Do Checksum	<input type="checkbox"/> Chain-to-Next <input type="checkbox"/> Do Checksum	<input type="checkbox"/> Chain-to-Next <input type="checkbox"/> Do Checksum

Corruption #3	Corruption #4	Corruption #5
Rate: 0	Rate: 0	Rate: 0
Corruption: Random Write	Corruption: Random Write	Corruption: Random Write
Byte-to-Write: 0	Byte-to-Write: 0	Byte-to-Write: 0
Min Offset: 0	Min Offset: 0	Min Offset: 0
Max Offset: 0	Max Offset: 0	Max Offset: 0
<input type="checkbox"/> Chain-to-Next <input type="checkbox"/> Do Checksum	<input type="checkbox"/> Chain-to-Next <input type="checkbox"/> Do Checksum	<input type="checkbox"/> Chain-to-Next <input type="checkbox"/> Do Checksum

D. Reverse the Source and Destination IPs for this corresponding WanPath

Create/Modify WanPath for Endpoint: VRWL-1.1.000-B

Name: ep-4 Backlog Buffer: AUTO

PCAP Filter:

Source IP/MAC: 172.2.2.101 Source Mask: 255.255.255.255

Dest IP/MAC: 172.1.1.101 Dest Mask: 255.255.255.255

Transfer Rate: 64 Kbps Delay: zero (0 us)

Jitter: zero (0 us) Drop-Freq: zero (0%)

Min Drop Burst: 1 Max Drop Burst: 1

Min Reorder Amount: 1 Max Reorder Amount: 20

Reorder-Freq: zero (0%) Dup-Freq: zero (0%)

Jitter-Freq: zero (0%) Test Manager:

ICEcap Replay Replay File:

Disabled Loop Replay Replay Latency Replay Loss
 Same As WanLink Replay Dup Replay Bandwidth Use Pcap Filter
 Inverse Match Drop-Xth Duplicate-Xth Reorder-Xth

Corruption #0 Corruption #1 Corruption #2

Rate: 0 Rate: 0 Rate: 0

Corruption: Random Write Corruption: Random Write Corruption: Random Write

Byte-to-Write: 0 Byte-to-Write: 0 Byte-to-Write: 0

Min Offset: 0 Min Offset: 0 Min Offset: 0

Max Offset: 0 Max Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum Chain-to-Next Do Checksum Chain-to-Next Do Checksum

Corruption #3 Corruption #4 Corruption #5

Rate: 0 Rate: 0 Rate: 0

Corruption: Random Write Corruption: Random Write Corruption: Random Write

Byte-to-Write: 0 Byte-to-Write: 0 Byte-to-Write: 0

Min Offset: 0 Min Offset: 0 Min Offset: 0

Max Offset: 0 Max Offset: 0 Max Offset: 0

Chain-to-Next Do Checksum Chain-to-Next Do Checksum Chain-to-Next Do Checksum

E. Verify that the WanPaths on this WanLink are setup correctly, then click **OK** on the Create/Modify WanLink window shown here

VRWL-1.1.000 - Create/Modify WanLink

Apply OK Display WanLink & WanPaths Cancel

1 WanLink Information

Name: VRWL-1.1.000 Presets: CUSTOM

Endpoint A Endpoint B

Port: 4 (rddVR0b) 6 (rddVR1b)

Transfer Rate: T1 (1.544 Mbps) T1 (1.544 Mbps)

Delay: zero (0 us) zero (0 us)

Drop-Freq: zero (0%) zero (0%)

Jitter: zero (0 us) zero (0 us)

Jitter-Freq: zero (0%) zero (0%)

2 WanLink Information

Pass-Through HW Pass-Through

Coupled-Mode Kernel-Mode

Resource: 1 (LF0550-10ac)

Rpt Timer: fast (1 s)

Endpoint A Endpoint B

Reorder-Freq: zero (0%) zero (0%)

Dup-Freq: zero (0%) zero (0%)

Drop Burst: min 1 max 1 min 1 max 1

Reorder Amt: min 1 max 20 min 1 max 20

Script Script

3

Endpoint A WAN Paths

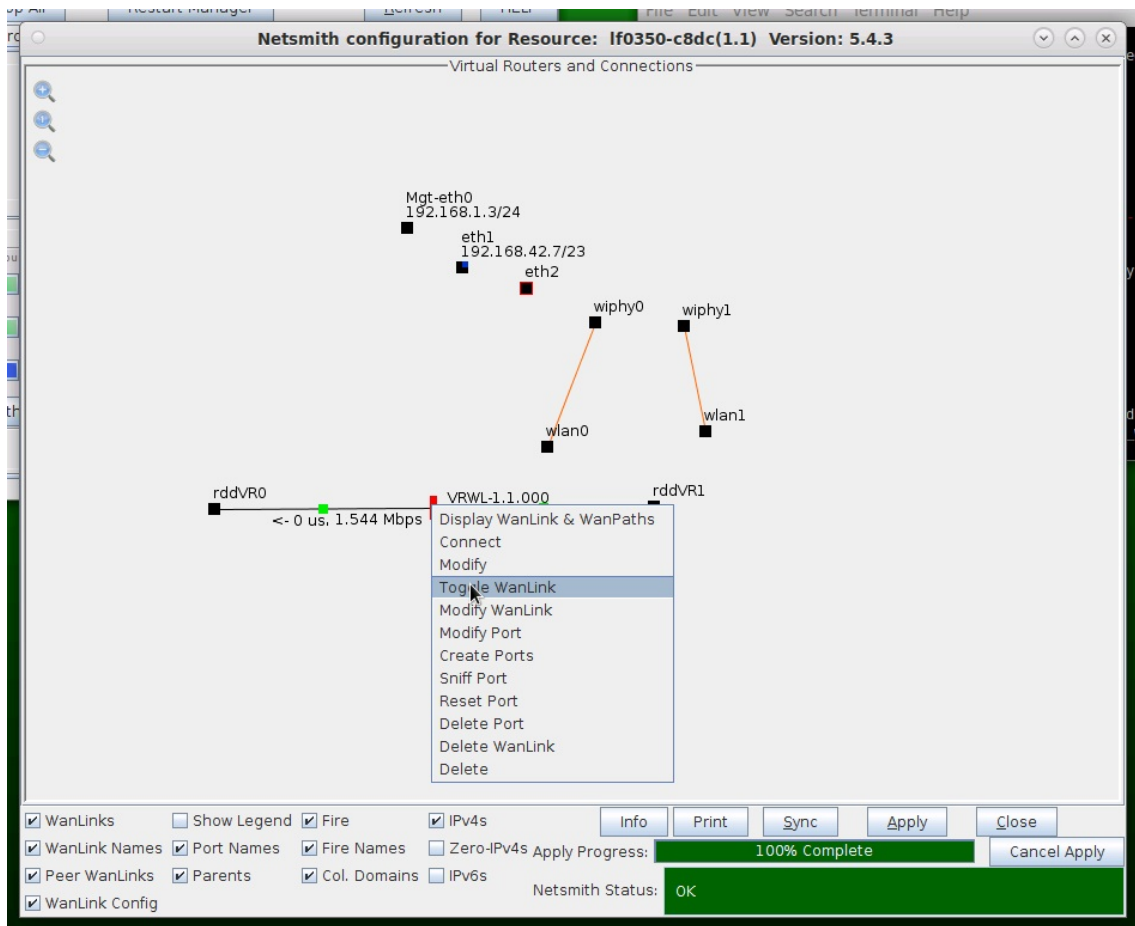
Name	Tx Rate	Disabled	!	Filter Pattern	Delay
ep-1	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.1.1.100/32 Dest: 1...	0
ep-3	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.1.1.101/24 Dest: 1...	0

Endpoint B WAN Paths

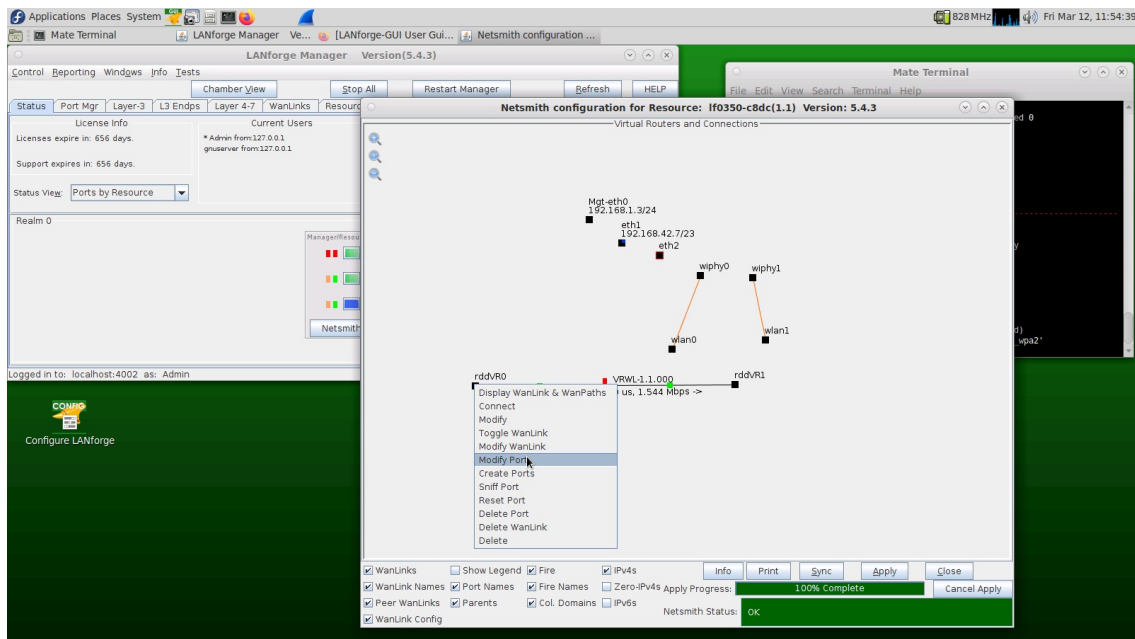
Name	Tx Rate	Disabled	!	Filter Pattern	Delay
ep-2	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.2.2.100/32 Dest: 1...	0
ep-4	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.2.2.101/32 Dest: 1...	0

4. Setup the ports with IP addresses.

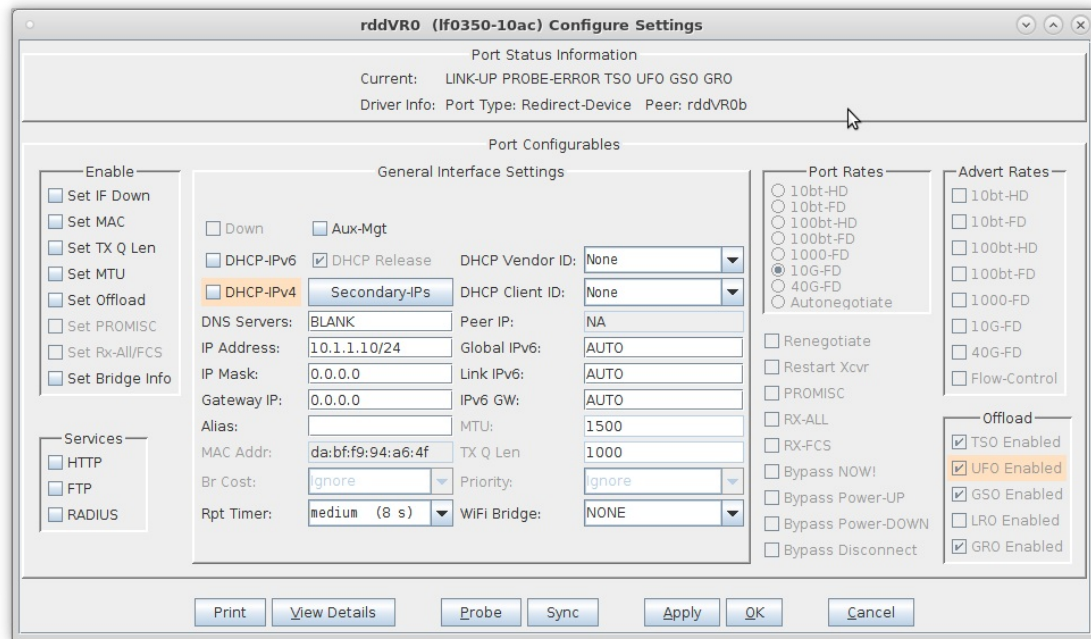
- A. Right-click on the WanLink and select **Toggle WanLink**



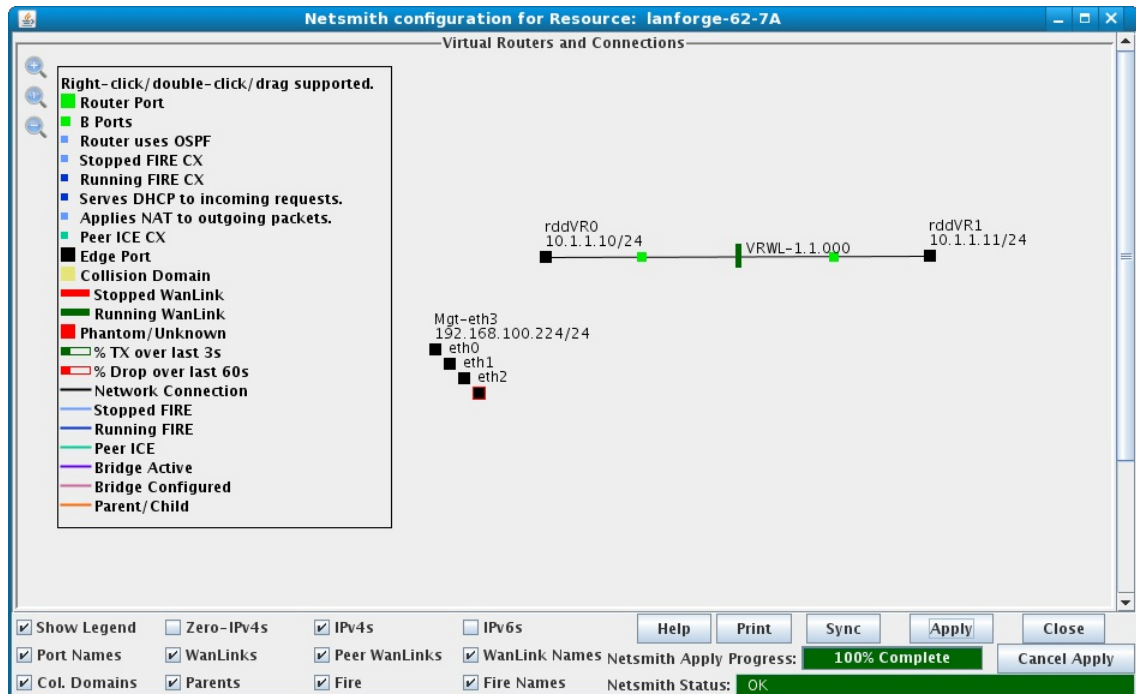
- B. Right-click port **rddvR0** and select **Modify Port**



C. Setup an IP address that is on a different network than the WanPath entry points



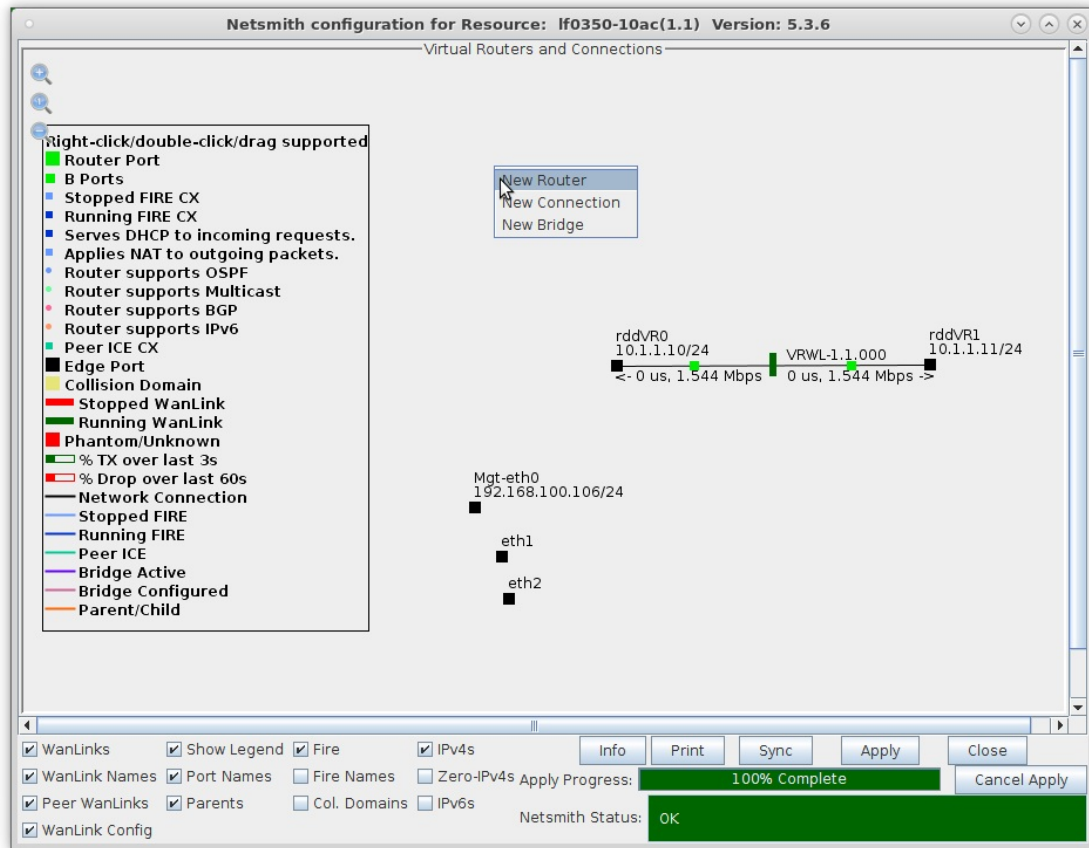
D. Setup an IP address on port rddvR1 that is on the same network as rddvR0



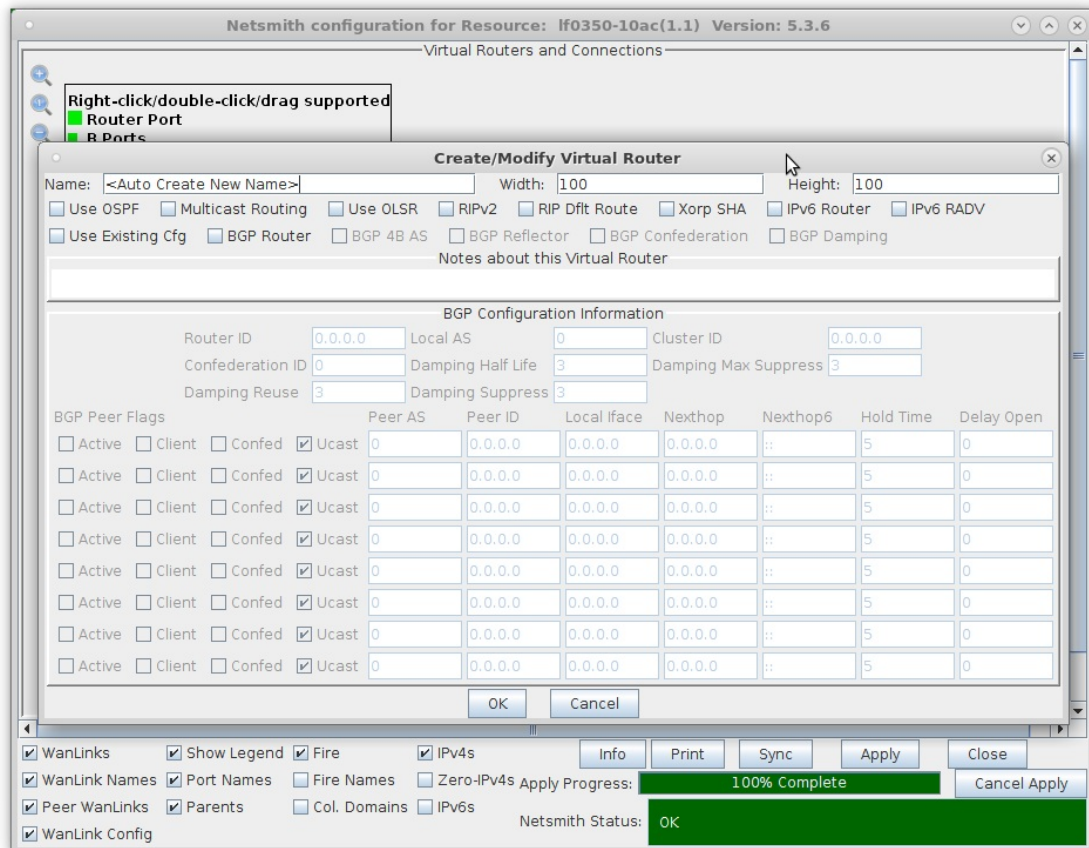
For more information see [LANforge-GUI User Guide: WanLinks](#)

5. Add the Virtual Routers.

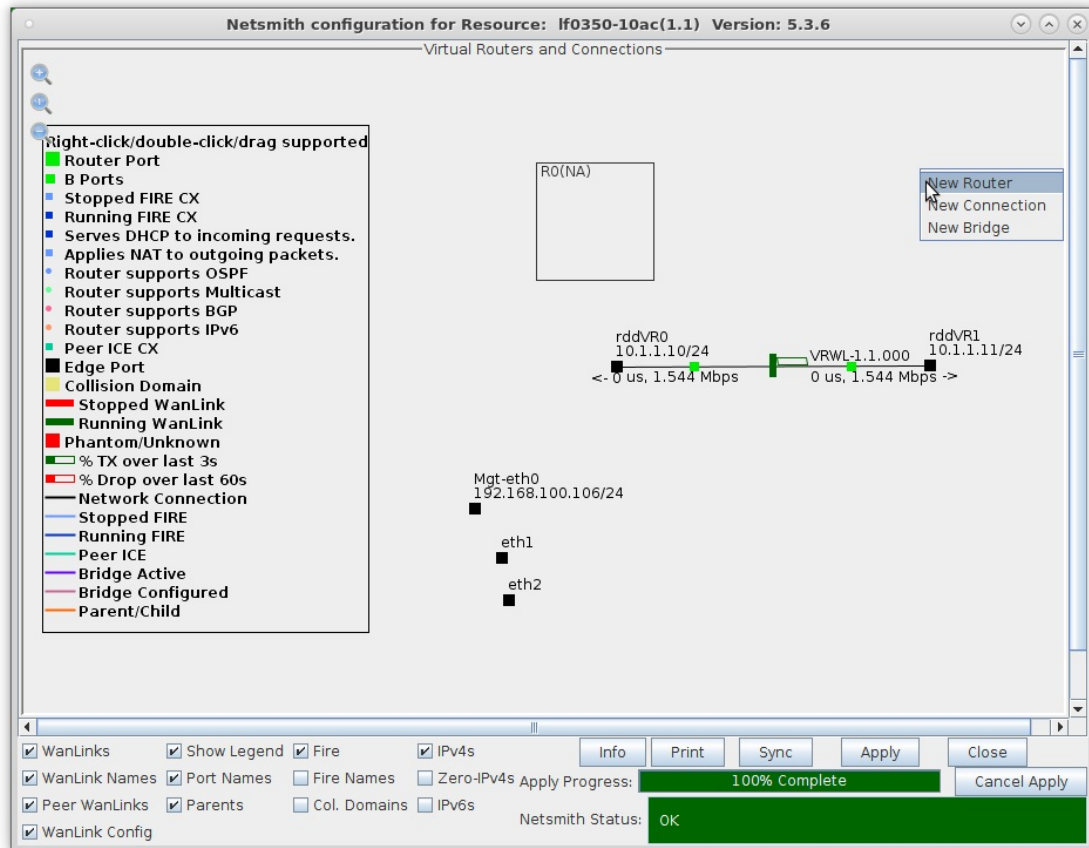
A. Right-click in the Netsmith window and select **New Router**



B. Accept the defaults or change the Virtual Router name and graphical size



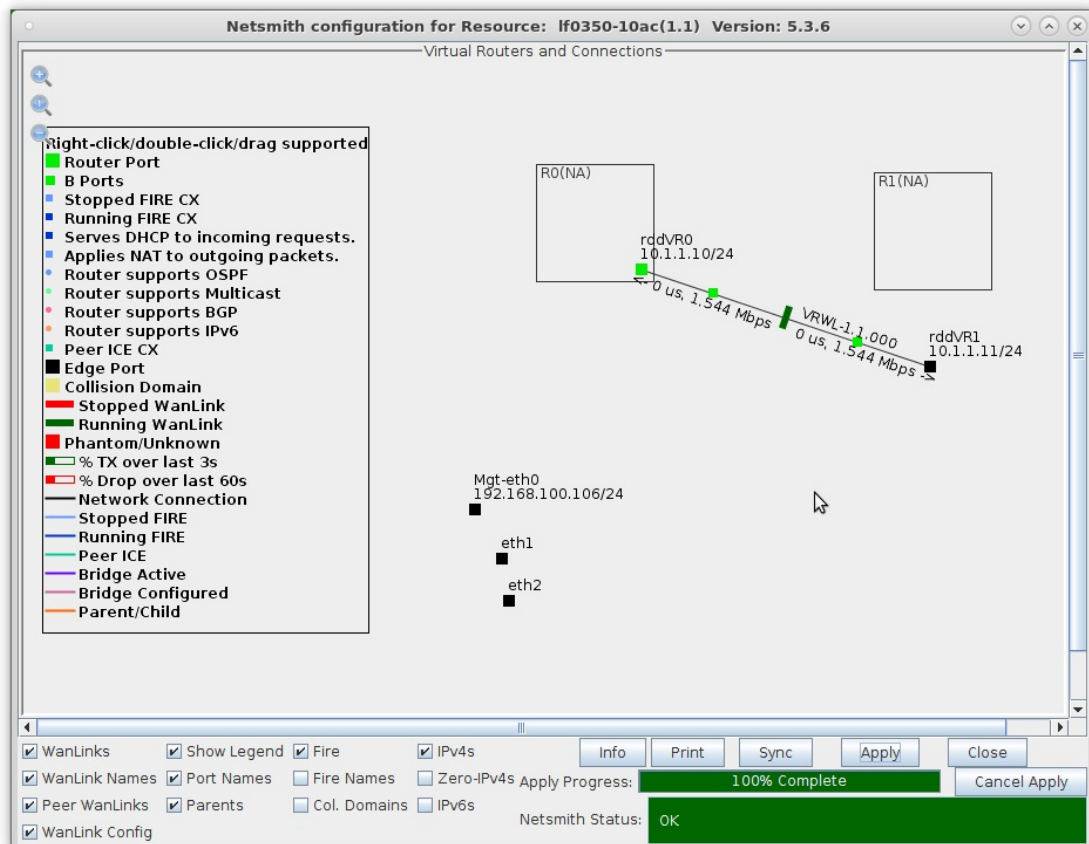
C. Click the **Apply** button and repeat for the second Virtual Router



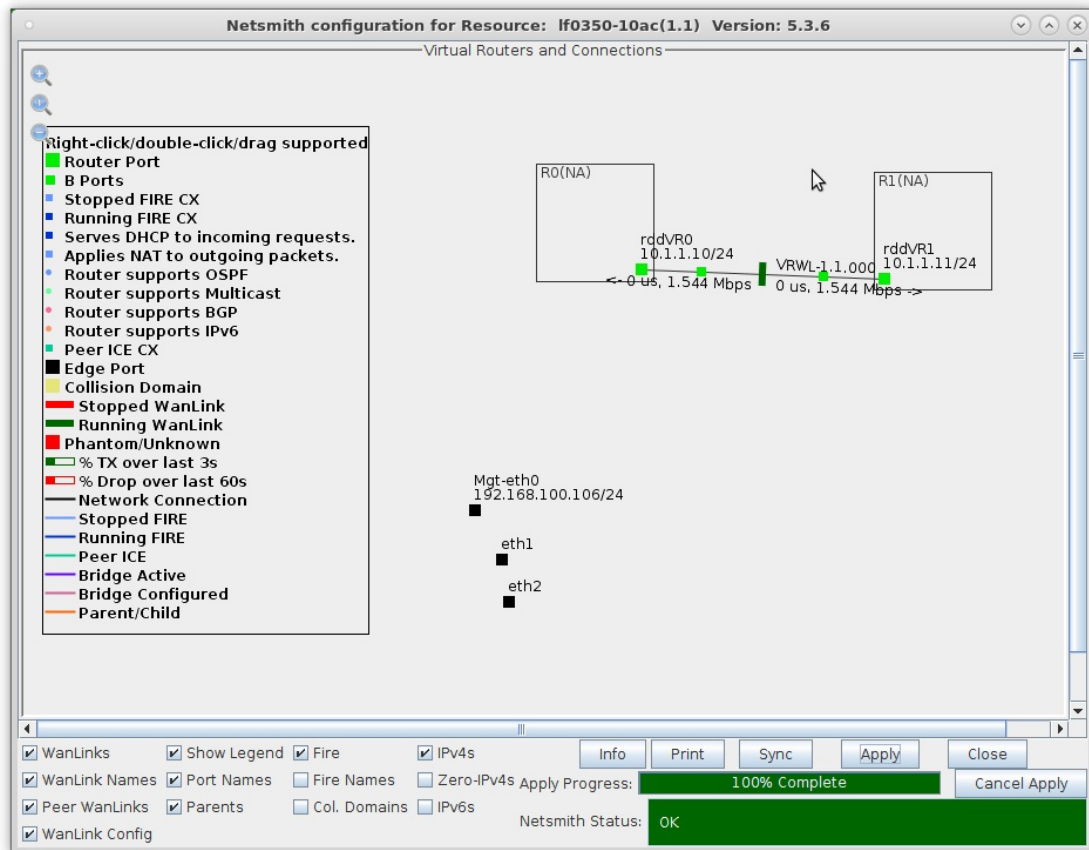
A. **NOTE:** After making any changes to the Netsmith window, you must click **Apply** or your changes will NOT be implemented and could be lost

B. **NOTE:** Clicking **Sync** makes sure any changes are synchronized with the current database

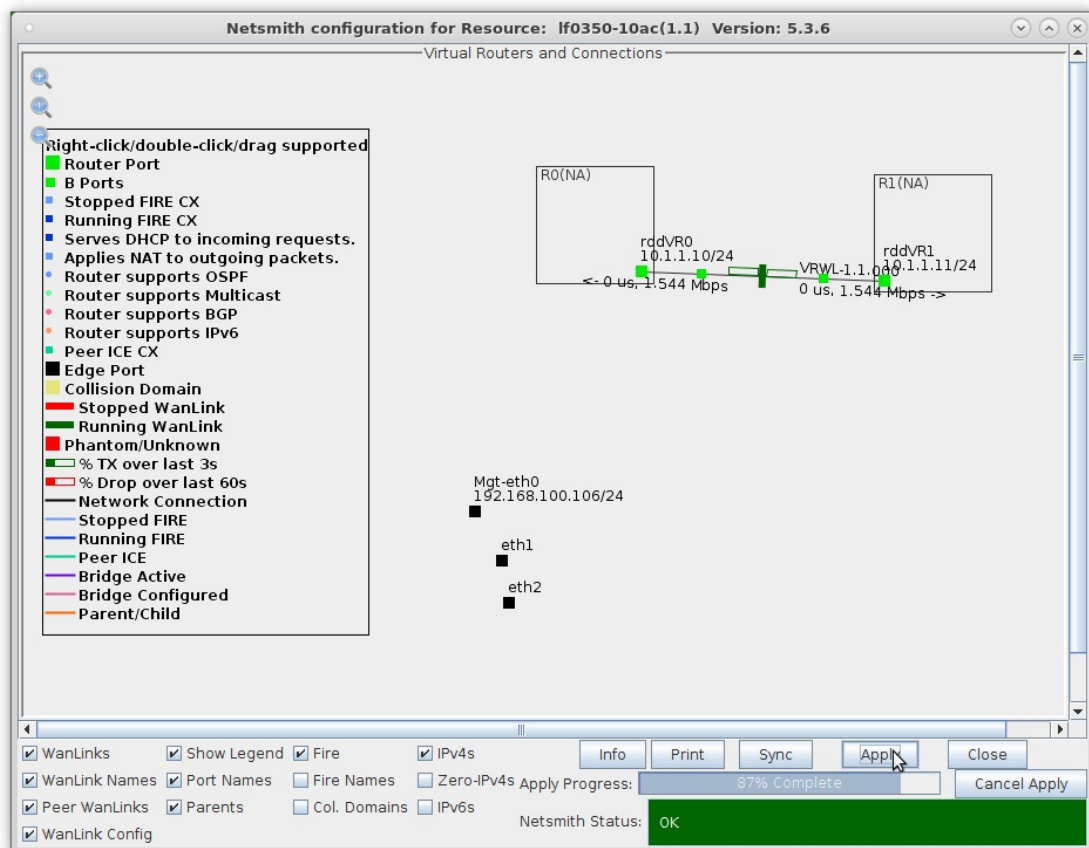
D. Left-click **rddvR0** and drag it inside Router **R0(1)**



E. Left-click `rddvR1` and drag it inside `Router R1(2)`



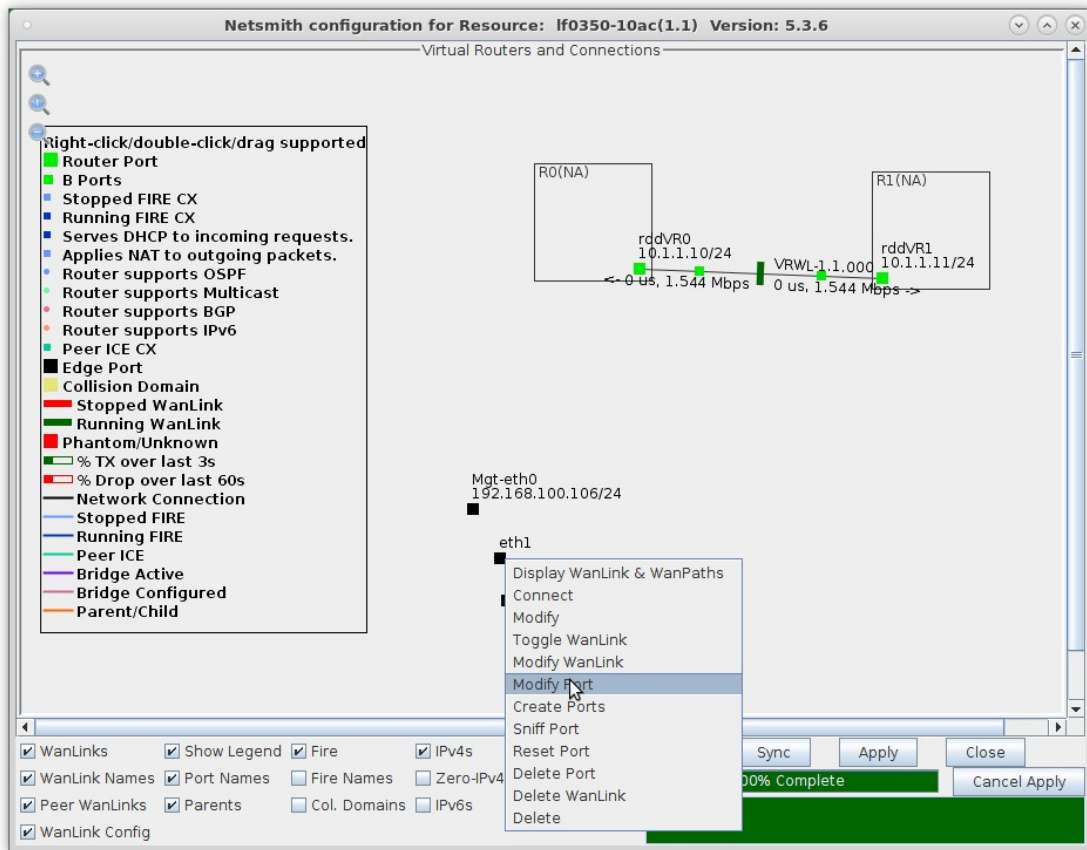
F. Apply your changes in Netsmith



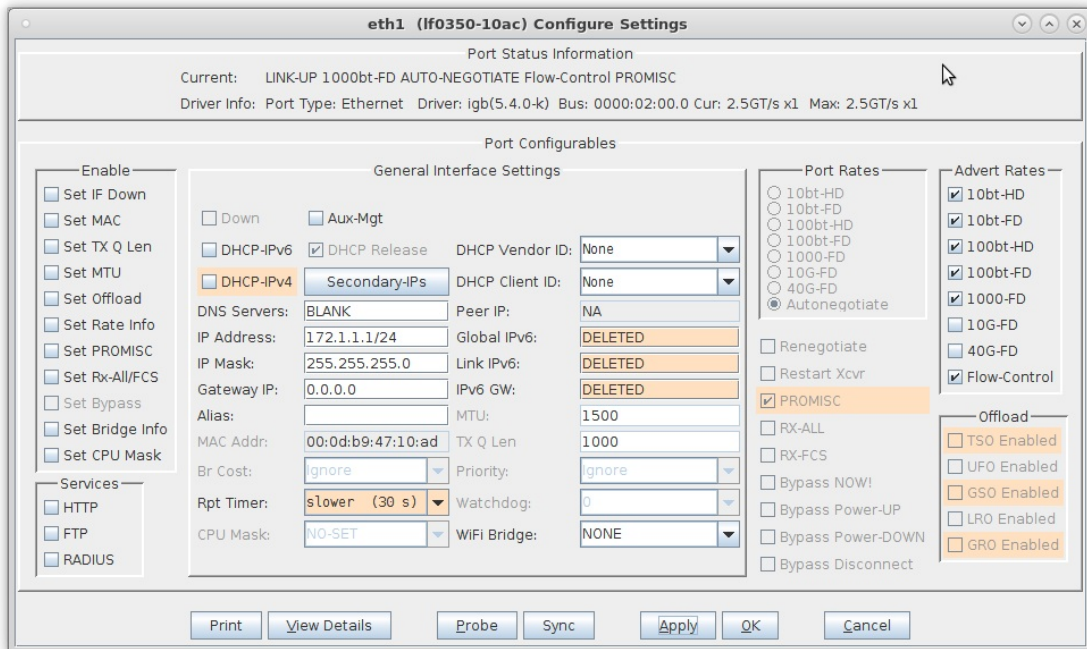
For more information see [LANforge-GUI User Guide: WanLinks](#)

6. Setup the external interfaces.

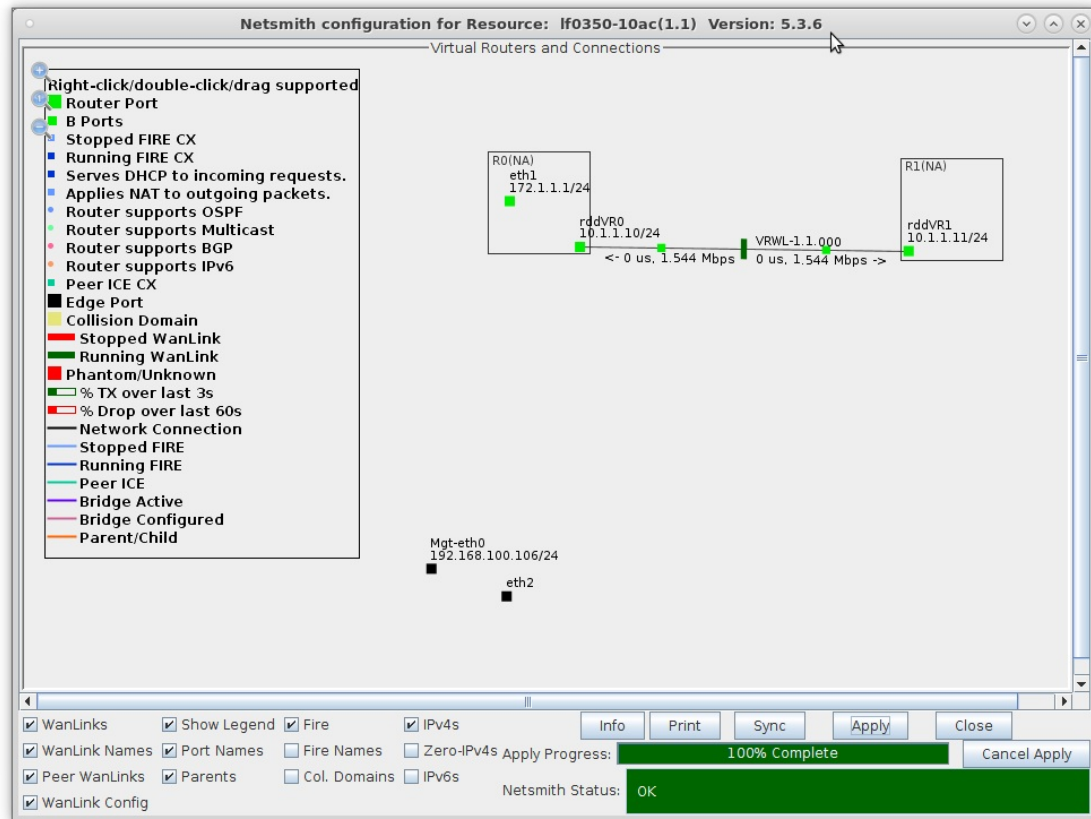
A. Right-click port `eth1` and select **Modify Port**



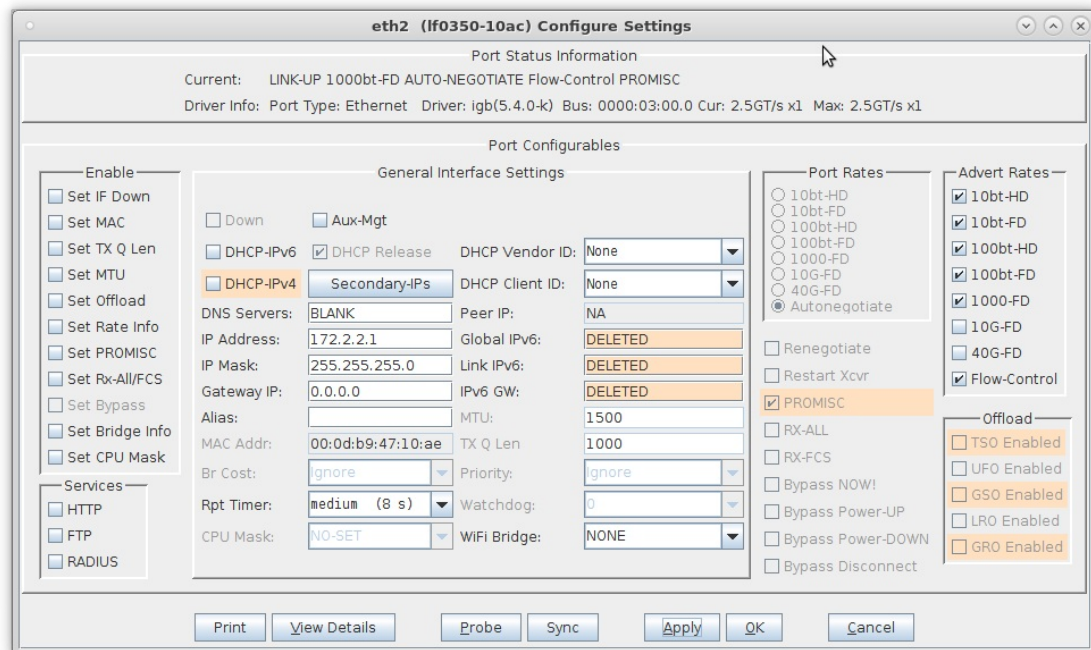
B. Setup `eth1` with a valid IP address and IP mask that is on the same network as the WanPath entry points `ep-1` and `ep-3`



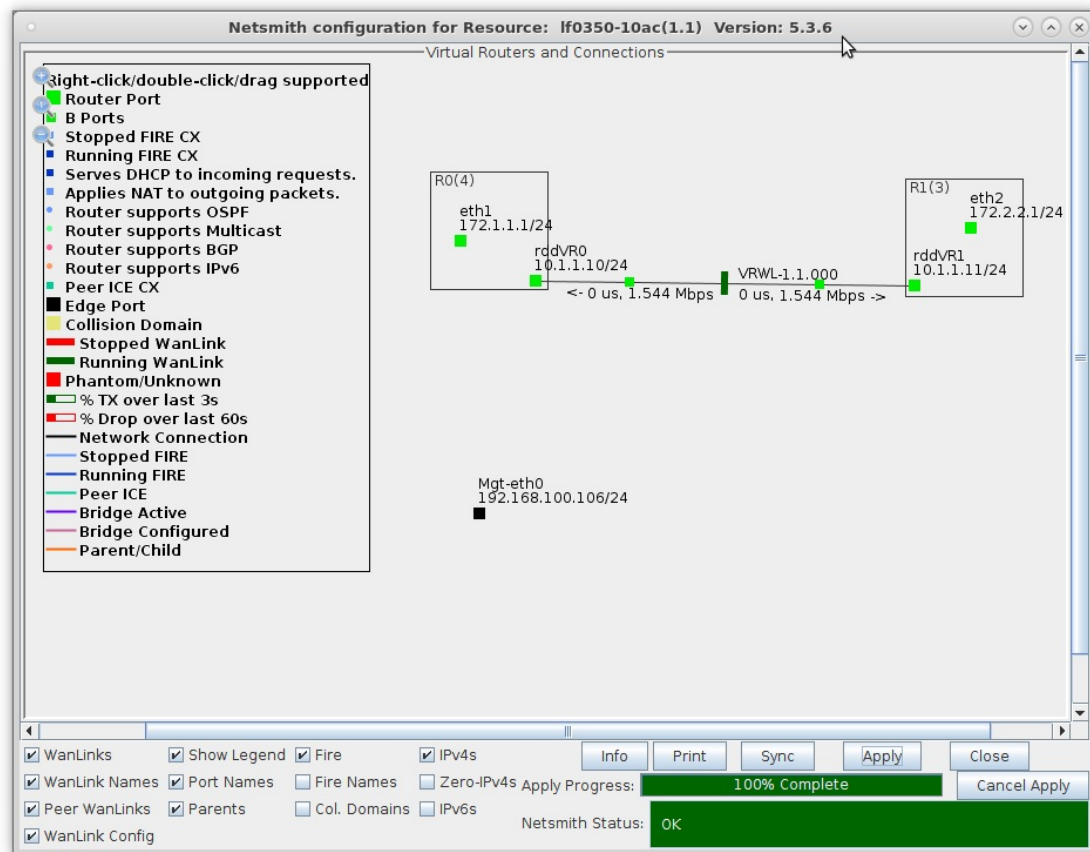
C. Left-click port `eth1` and drag it inside `Router R0(1)`



D. Setup `eth2` with a valid IP address and IP mask that is on the same network as the WanPath entry points `ep-2` and `ep-4`



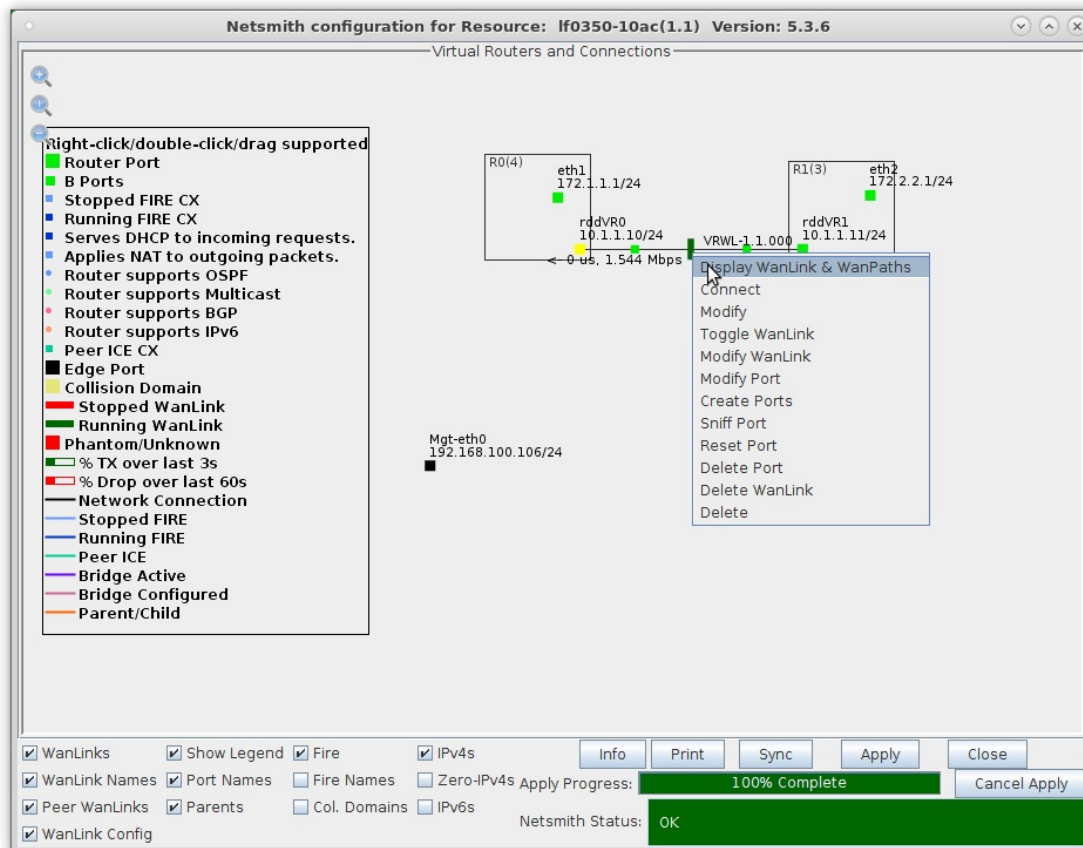
E. Drag `eth2` inside `Router R1(2)` and Apply changes in Netsmith



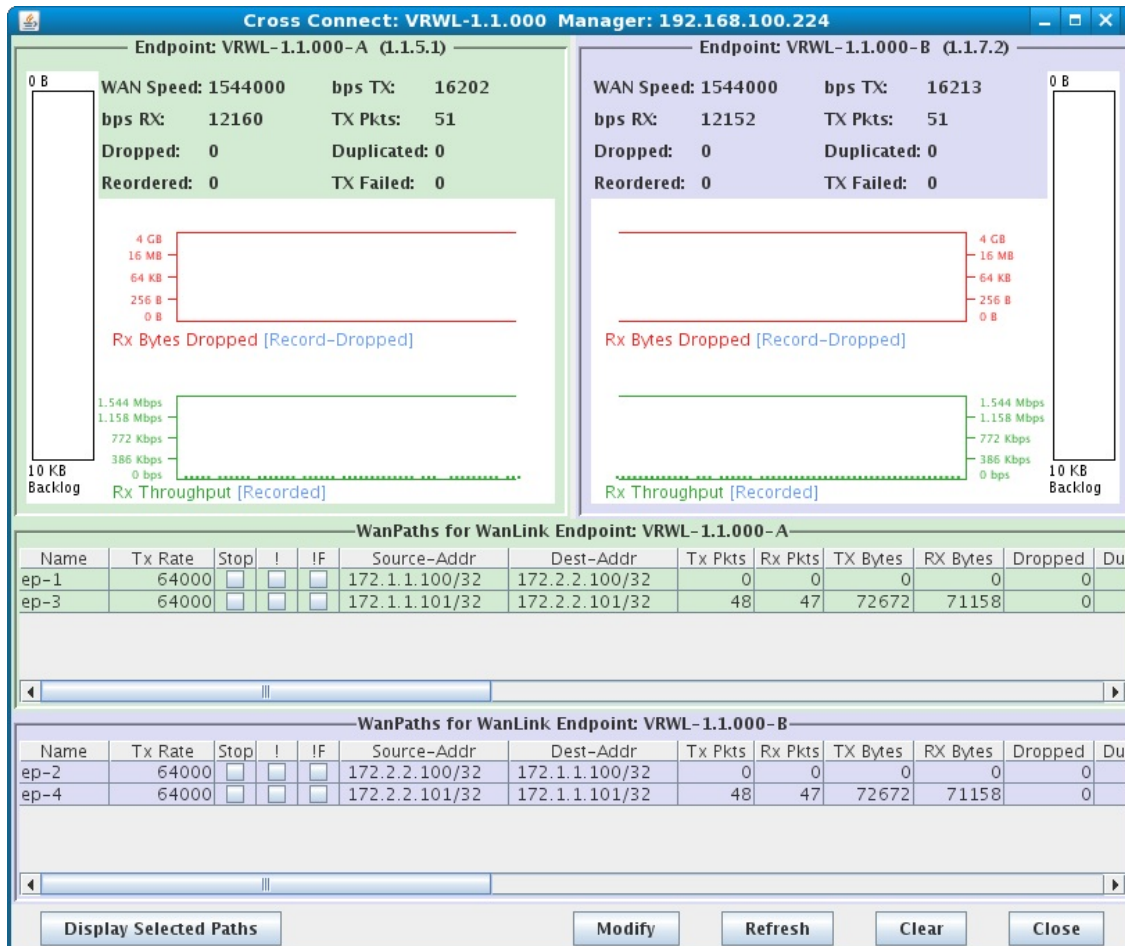
For more information see [LANforge-GUI User Guide: WanLinks](#)

7. Run traffic to LANforge-ICE ports `eth1` and `eth2`, then display results. Refer to the [LANforge FIRE Cookbook](#) to run traffic.

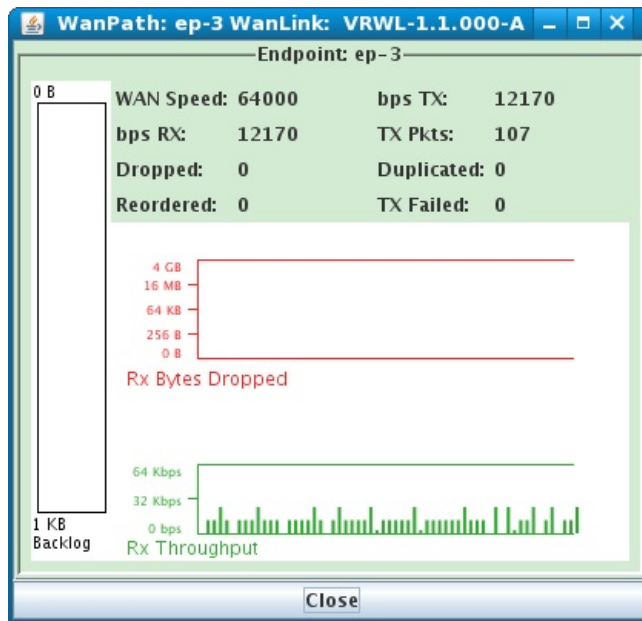
A. Right-click the WanLink and select **Display WanLink & WanPaths**



B. The lower half of the WanLink display shows traffic passing on WanPath entry points **ep-3** and **ep-4** and other IP address are excluded from passing on the WanLink



C. Select a WanPath and click **Display Selected Paths** in the lower left corner of the WanLink display window



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

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