

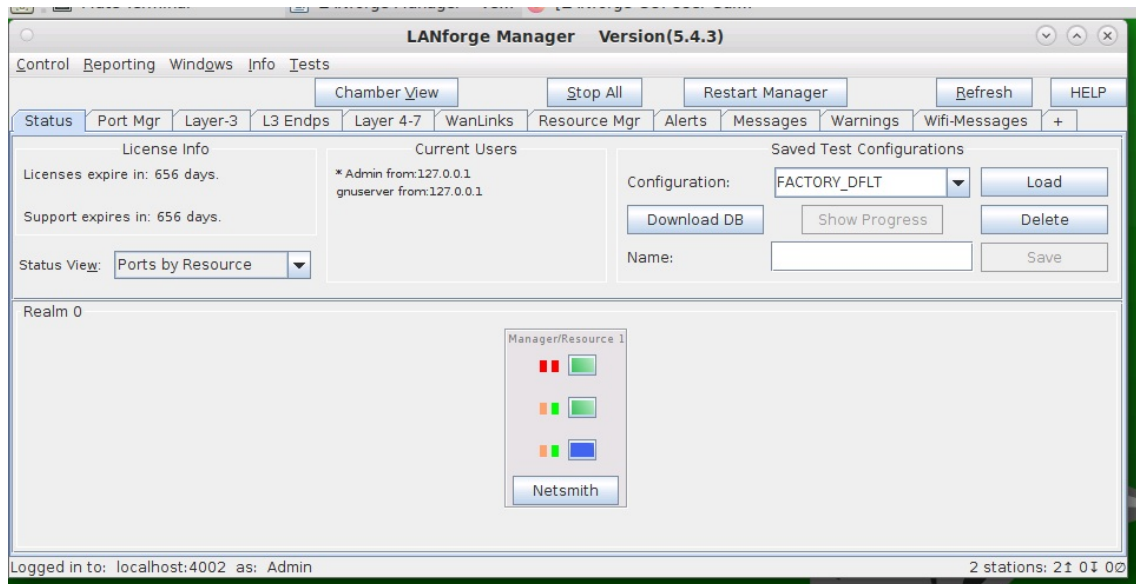
## Routed Mode WanLink with WanPaths

**Goal:** Setup a Routed Mode WanLink with WanPaths.

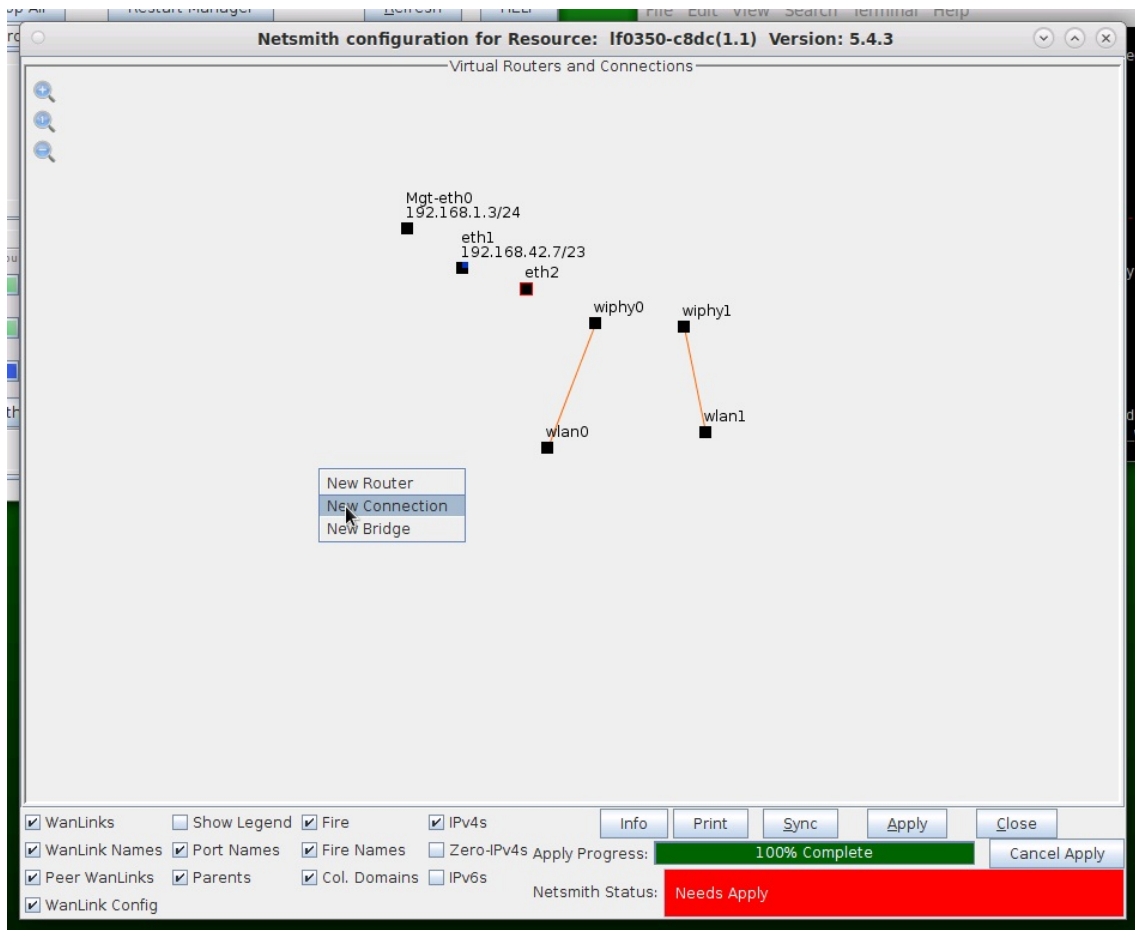
In this test scenario, LANforge-ICE is used to filter traffic by IP address on a WanLink with the use of WanPaths.

1. Setup a Netsmith connection.

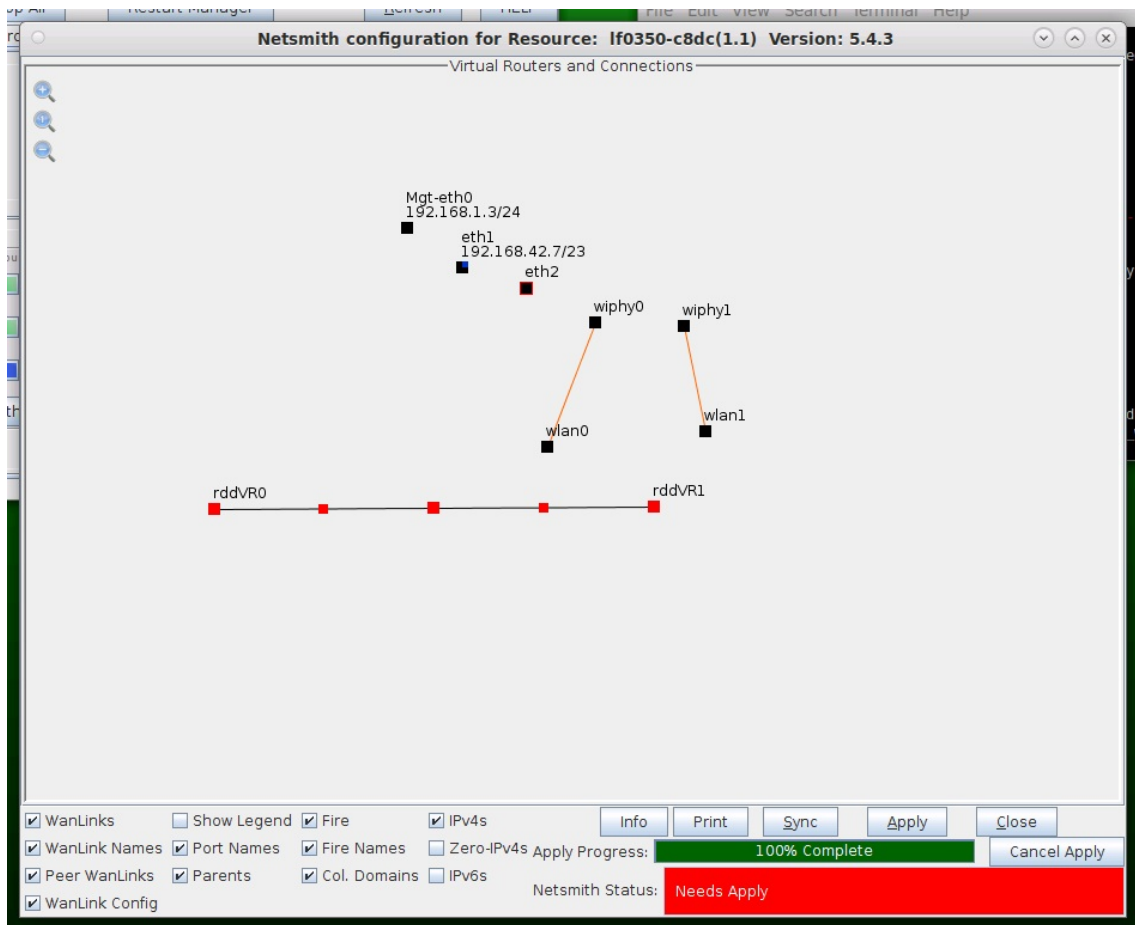
A. Go to the **Status** tab and click **Netsmith**



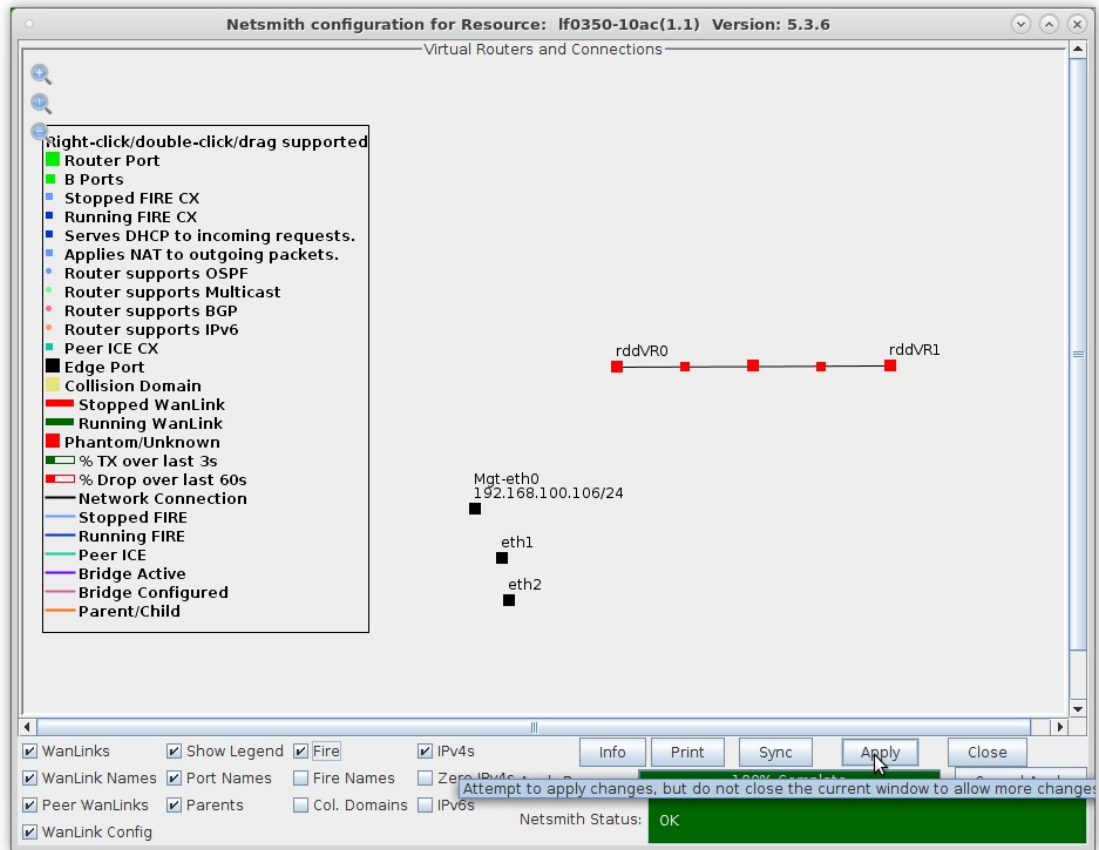
B. Right-click in the Netsmith window and select **New Connection**



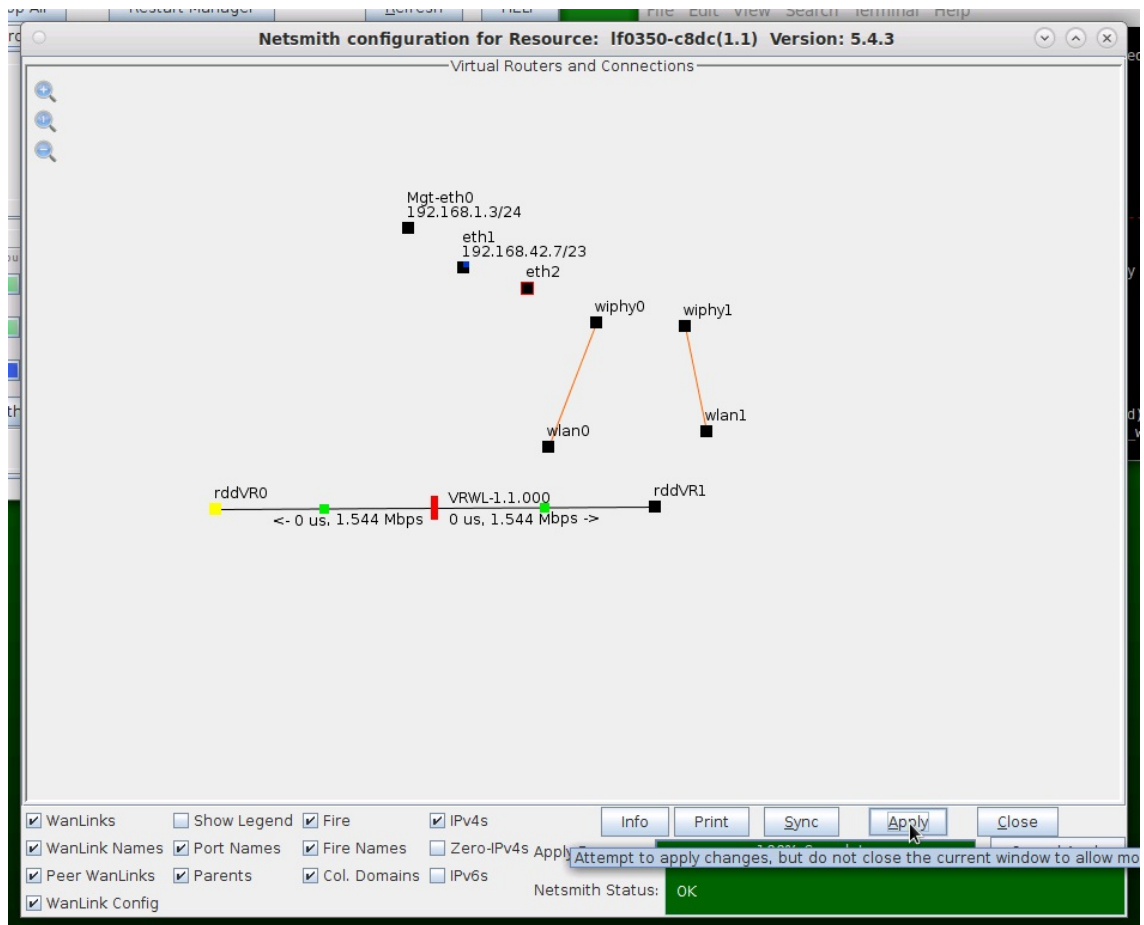
C. Accept defaults, **Auto Create** everything and click **OK**



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



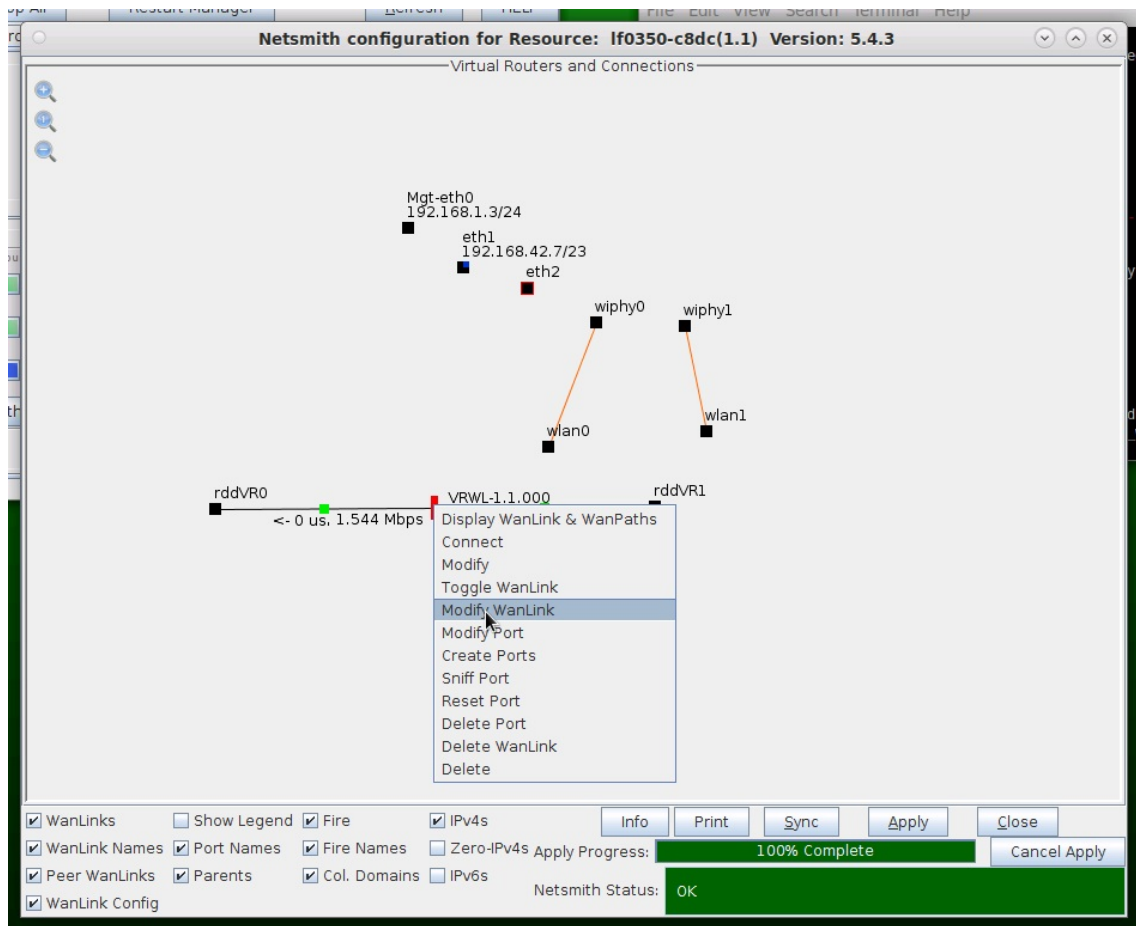
E. The Netsmith window after applying changes



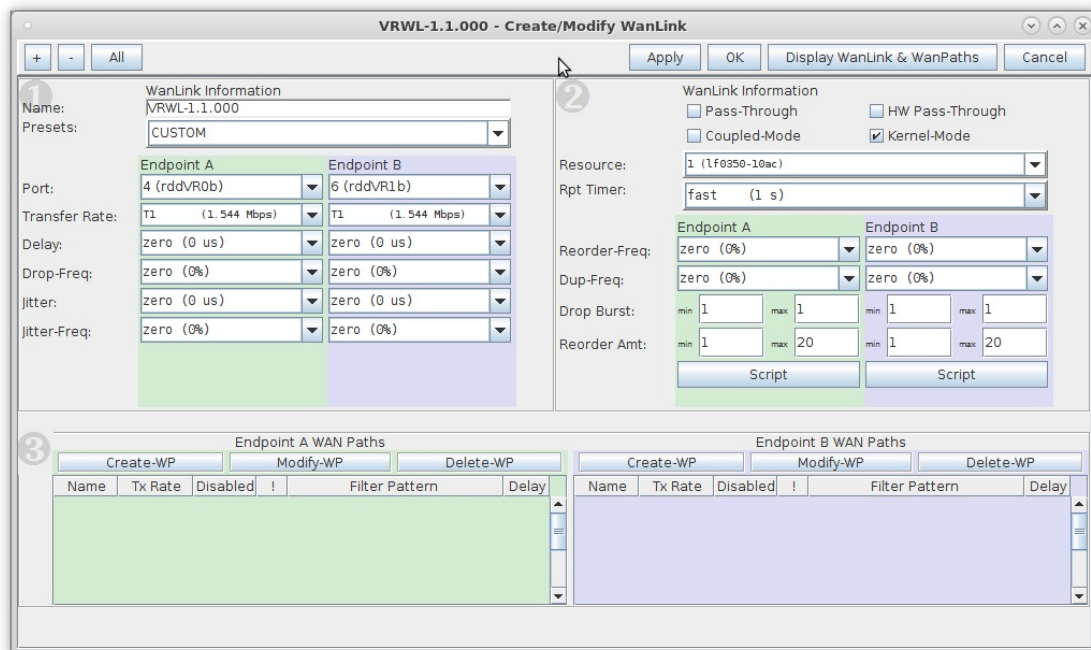
For more information see [LANforge-GUI User Guide: Netsmith](#)

## 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 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

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

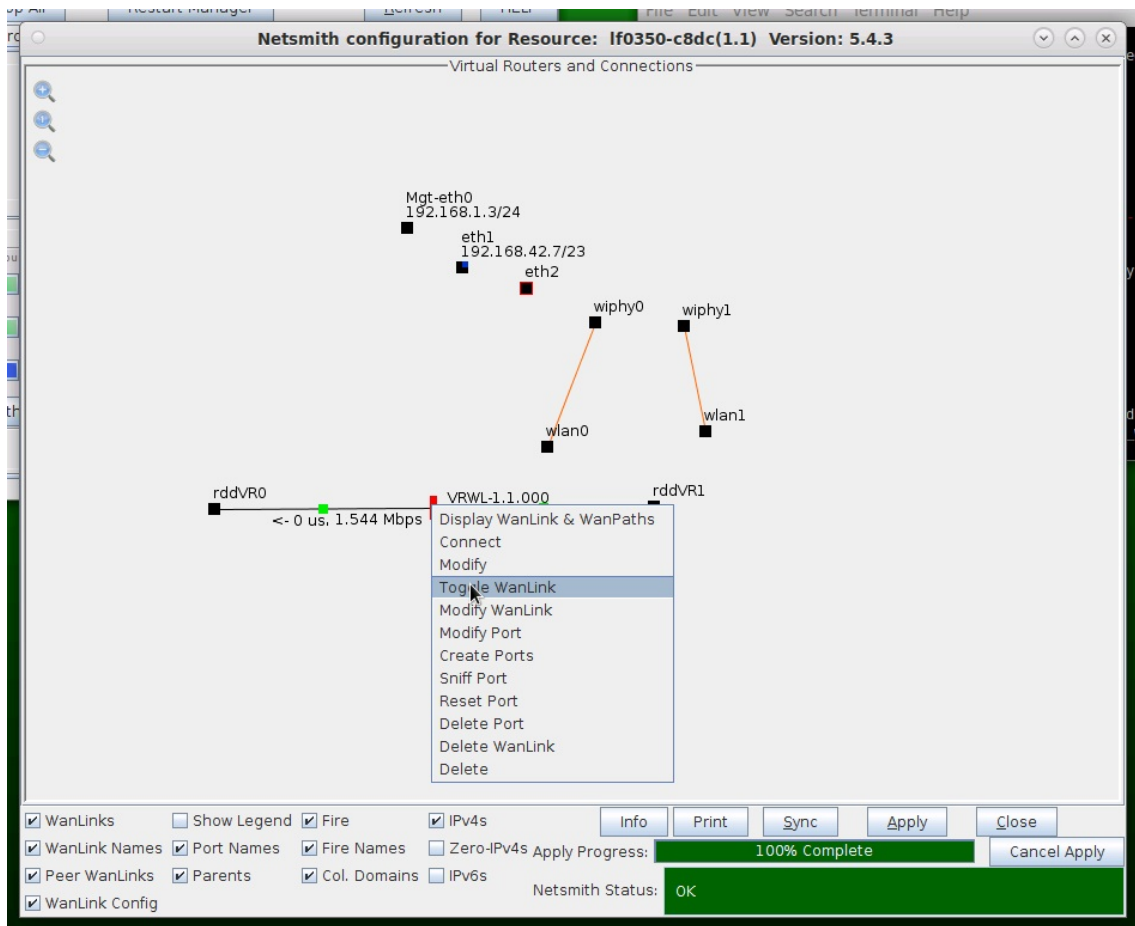
E. Verify that the WanPaths on this WanLink are setup correctly, then click **OK** on the Create/Modify WanLink window shown here

Endpoint A WAN Paths						Endpoint B WAN Paths					
Name	Tx Rate	Disabled	!	Filter Pattern	Delay	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-2	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.2.2.100/32 Dest: 1...	0
ep-3	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.1.1.101/24 Dest: 1...	0	ep-4	64 K	<input type="checkbox"/>	<input type="checkbox"/>	Src: 172.2.2.101/32 Dest: 1...	0

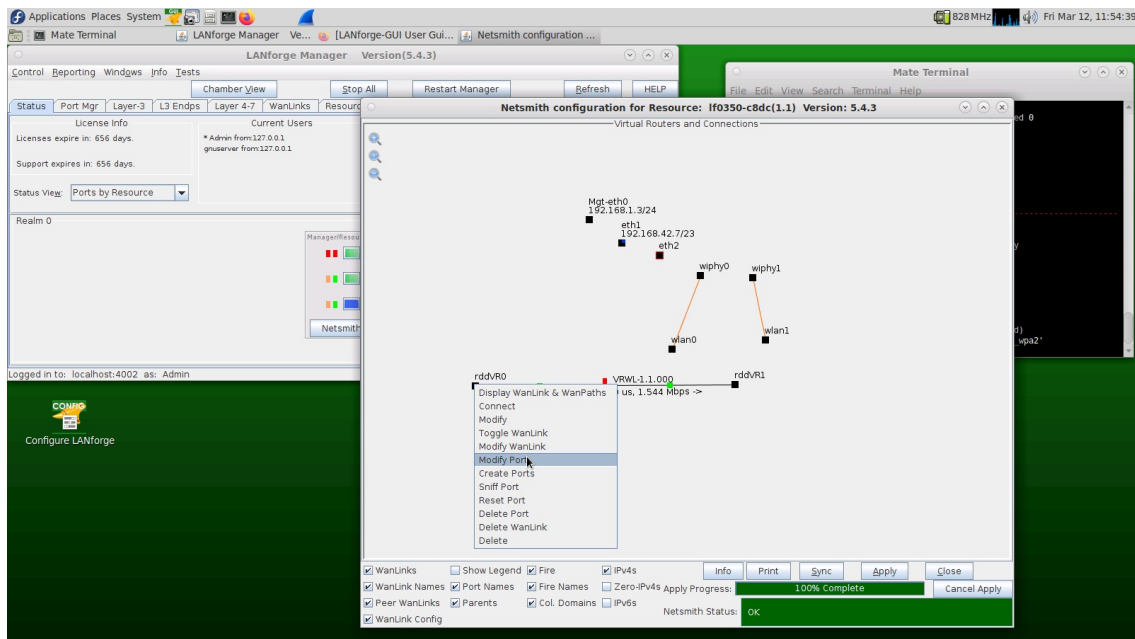


4. Setup the ports with IP addresses.

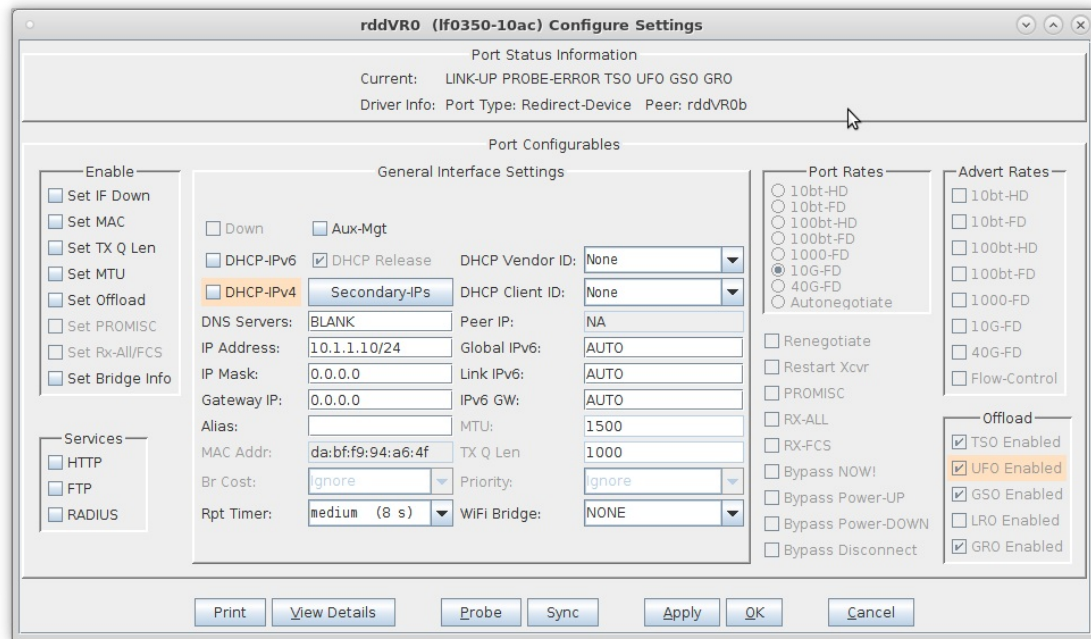
- A. Right-click on the WanLink and select **Toggle WanLink**



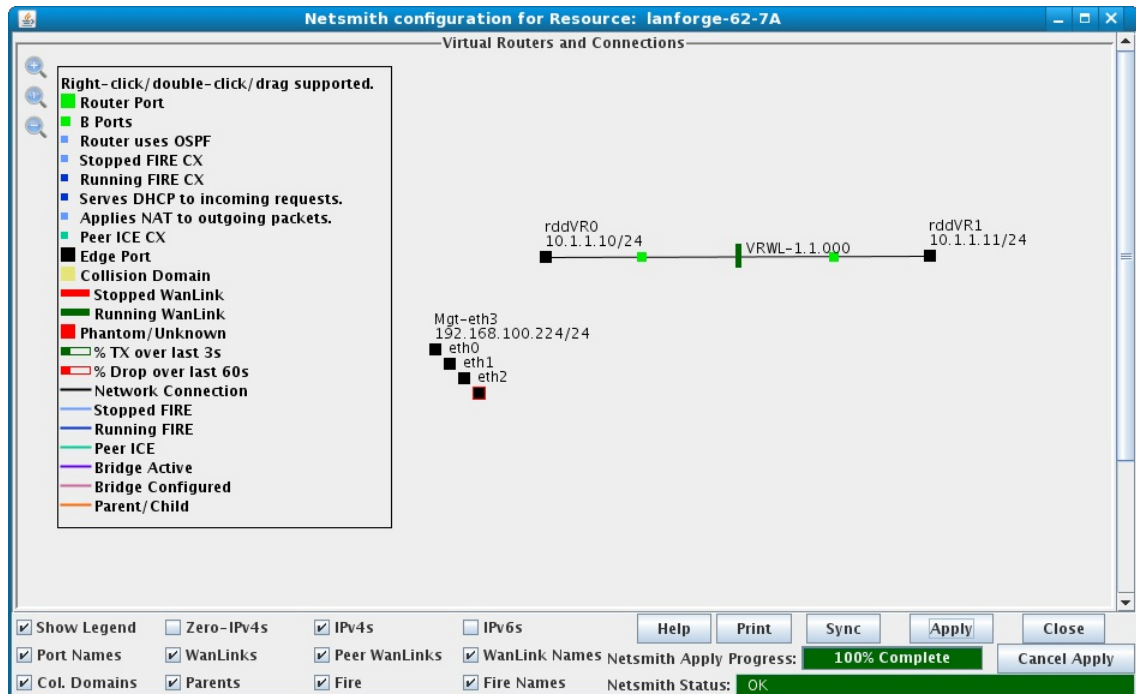
- B. Right-click port **rddvR0** and select **Modify Port**



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



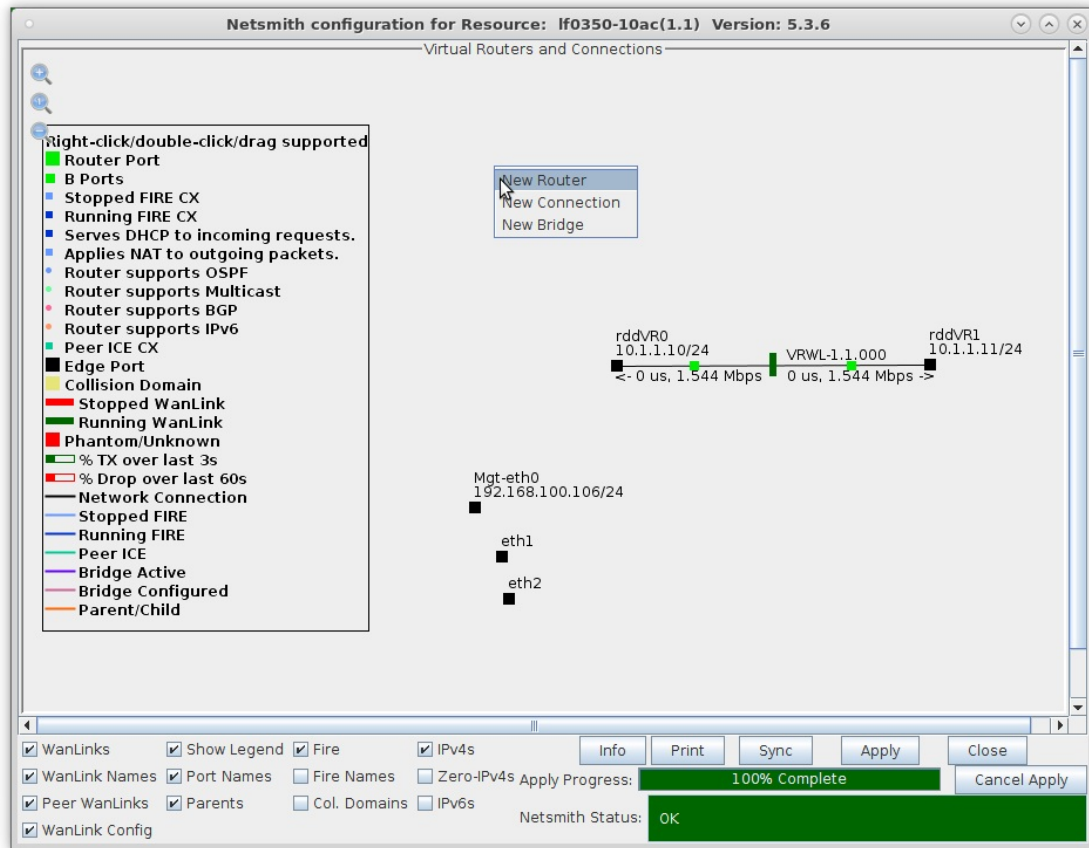
D. Setup an IP address on port rddvR1 that is on the same network as rddvR0



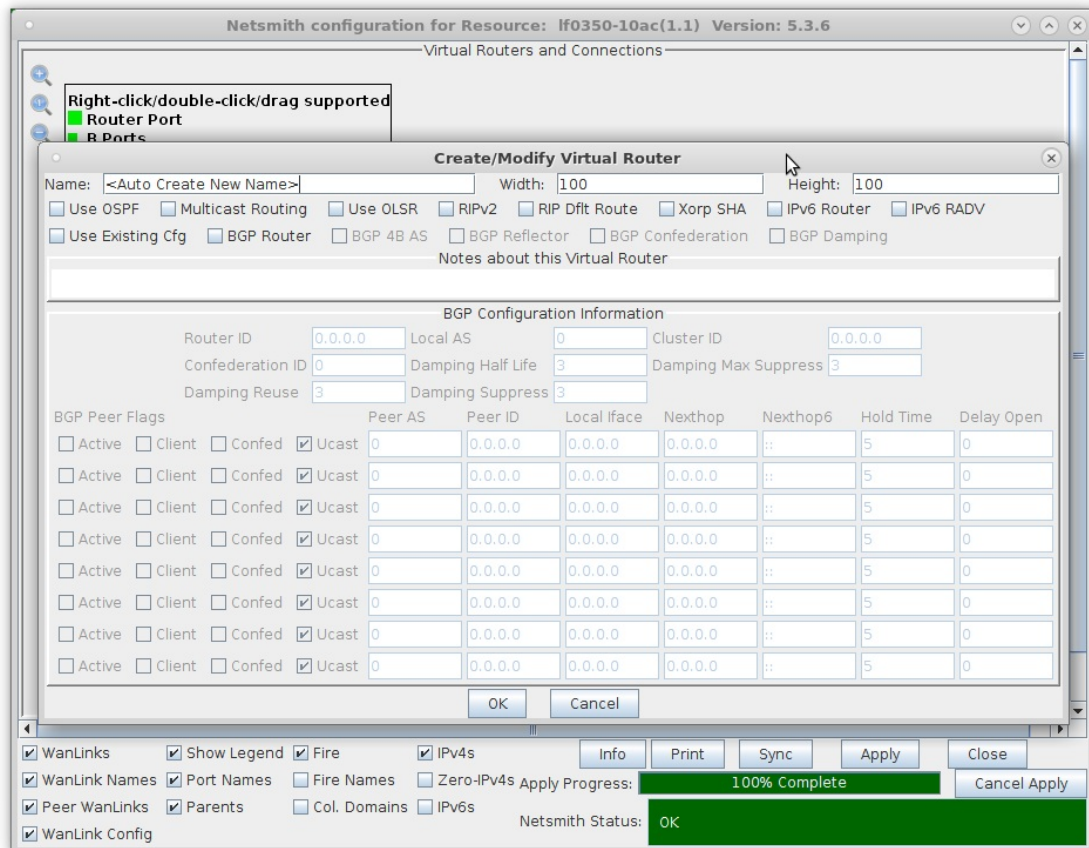
For more information see [LANforge-GUI User Guide: WanLinks](#)

5. Add the Virtual Routers.

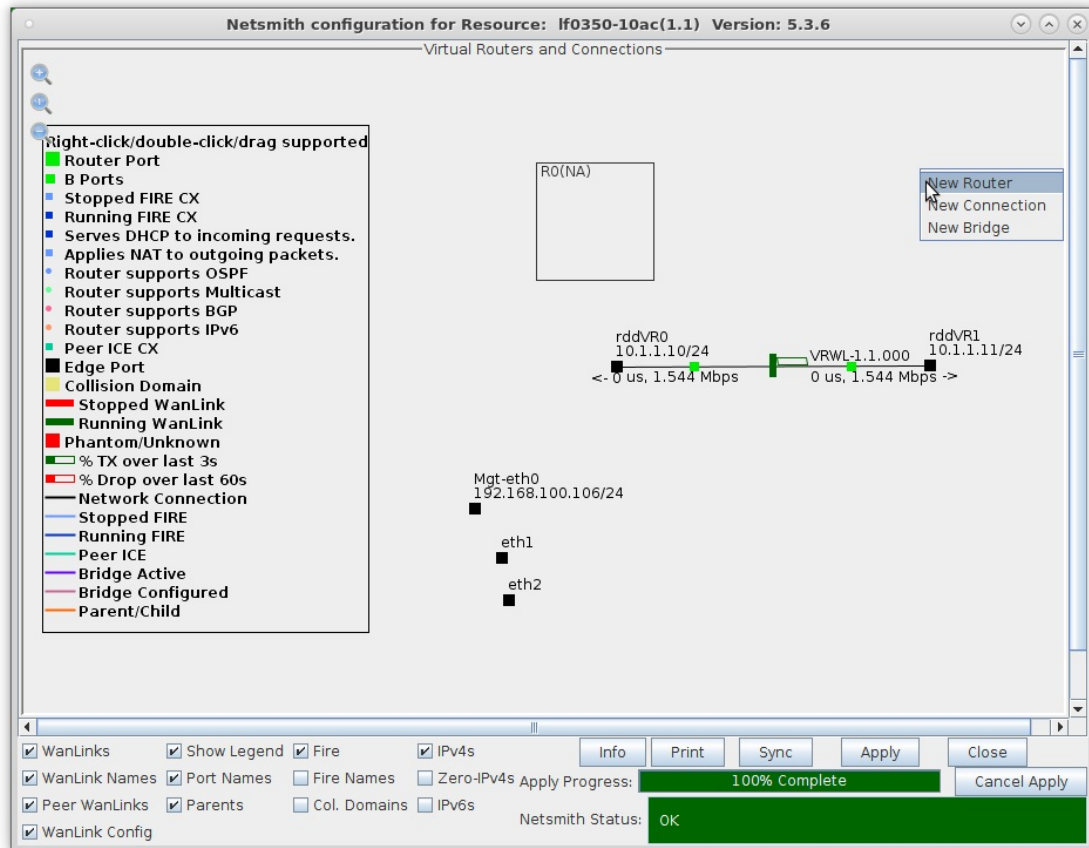
A. Right-click in the Netsmith window and select **New Router**



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

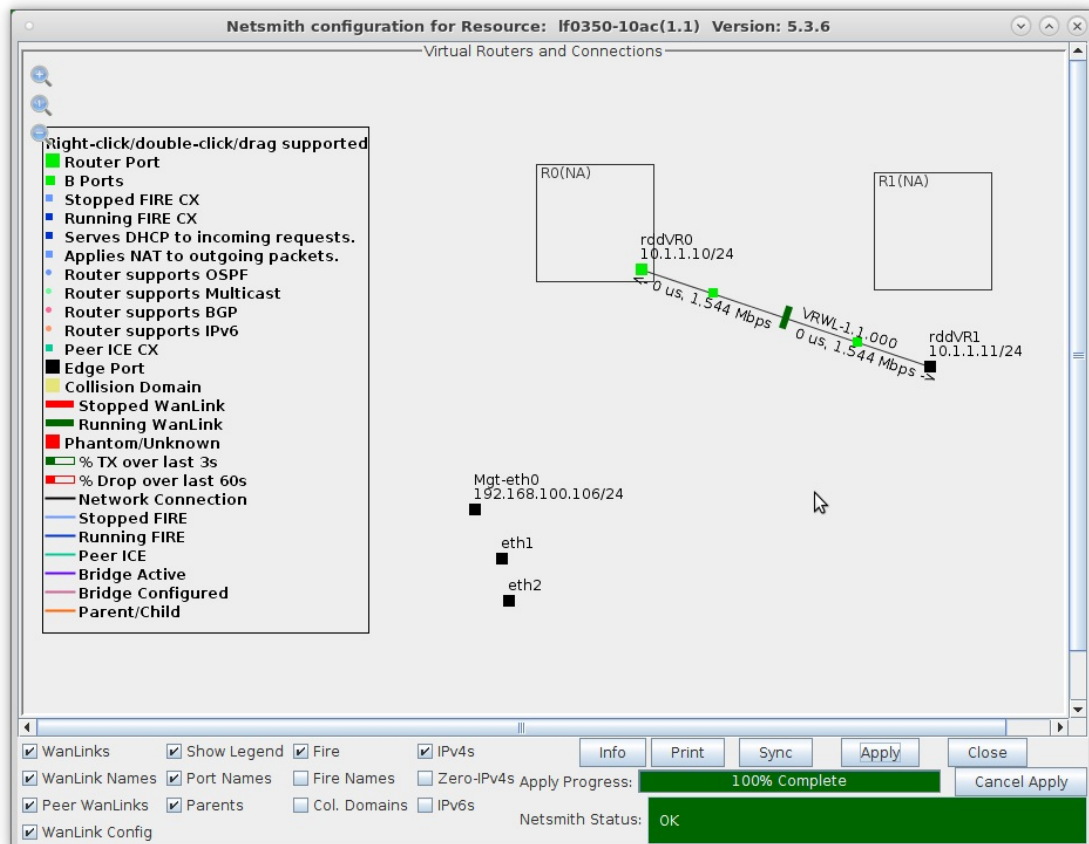


C. Click the **Apply** button and repeat for the second Virtual Router

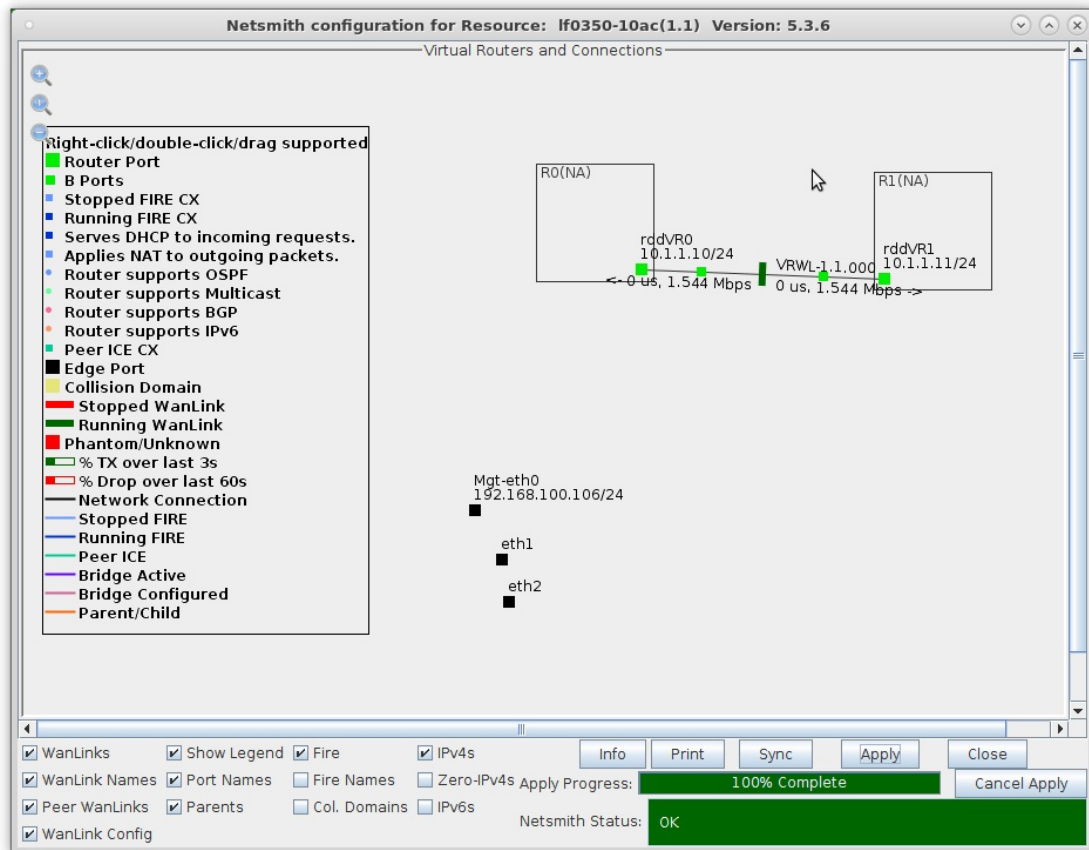


- A. **NOTE:** After making any changes to the Netsmith window, you must click **Apply** or your changes will NOT be implemented and could be lost
- B. **NOTE:** Clicking **Sync** makes sure any changes are synchronized with the current database

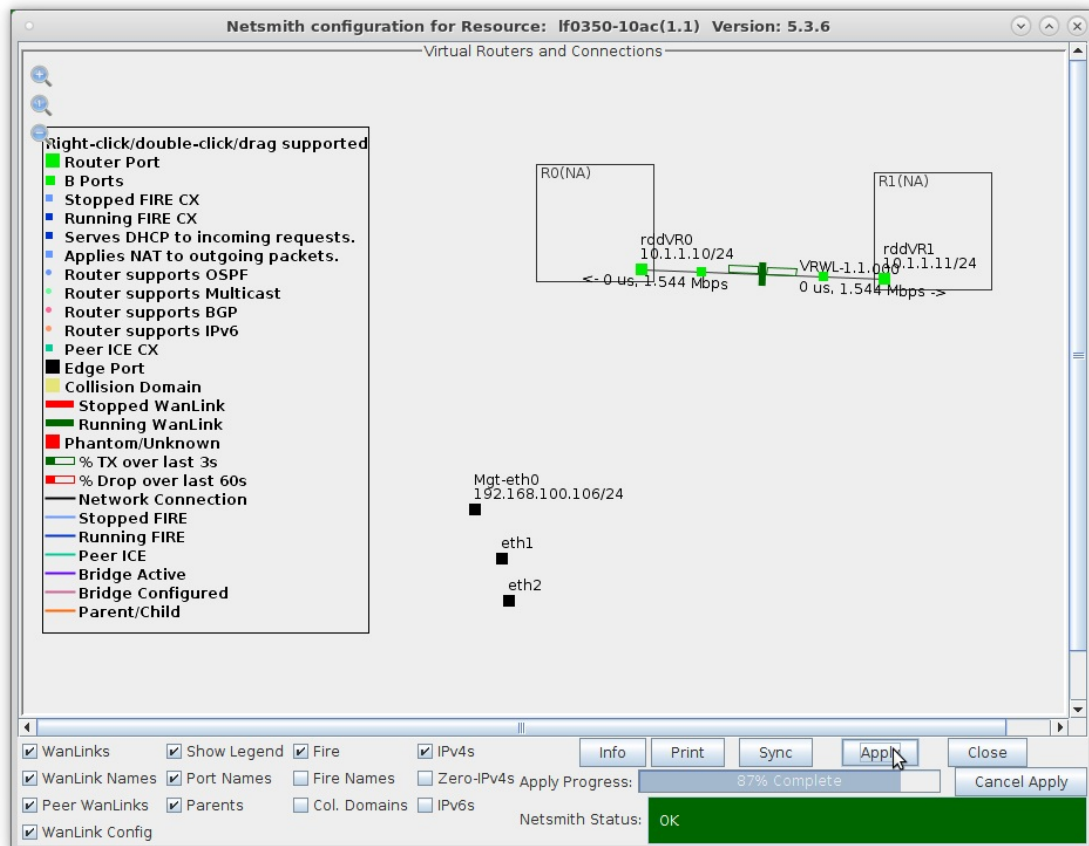
D. Left-click **rddVR0** and drag it inside Router **R0(1)**



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



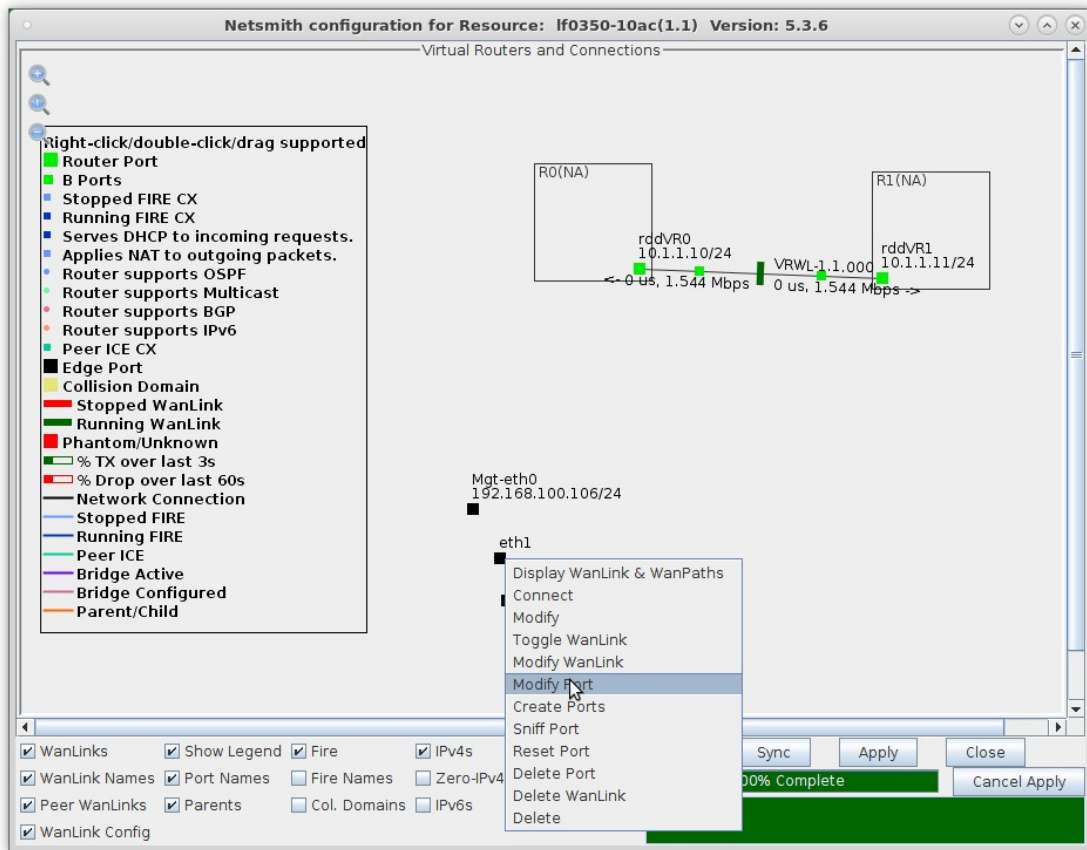
F. Apply your changes in Netsmith



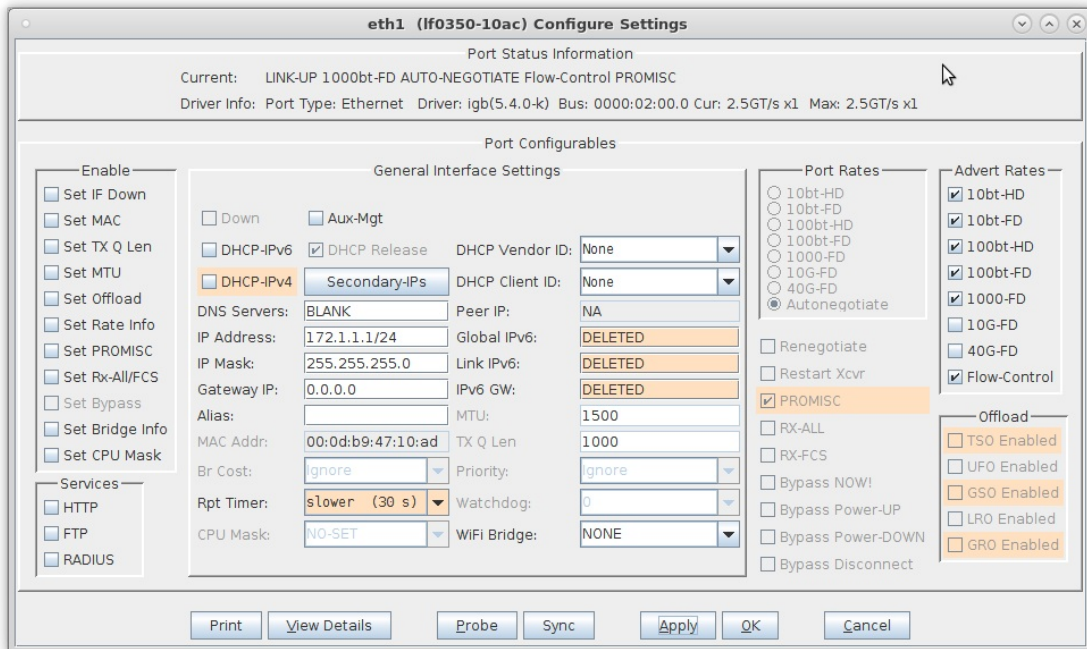
For more information see [LANforge-GUI User Guide: WanLinks](#)

6. Setup the external interfaces.

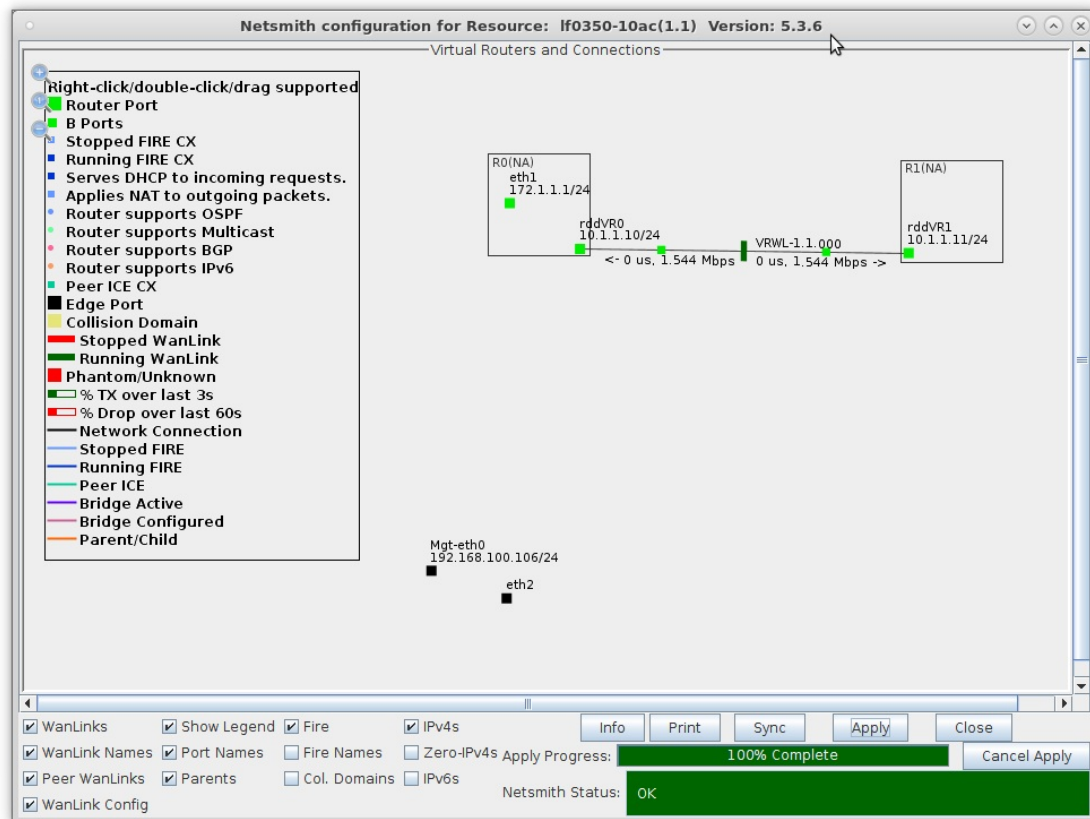
A. Right-click port `eth1` and select **Modify Port**



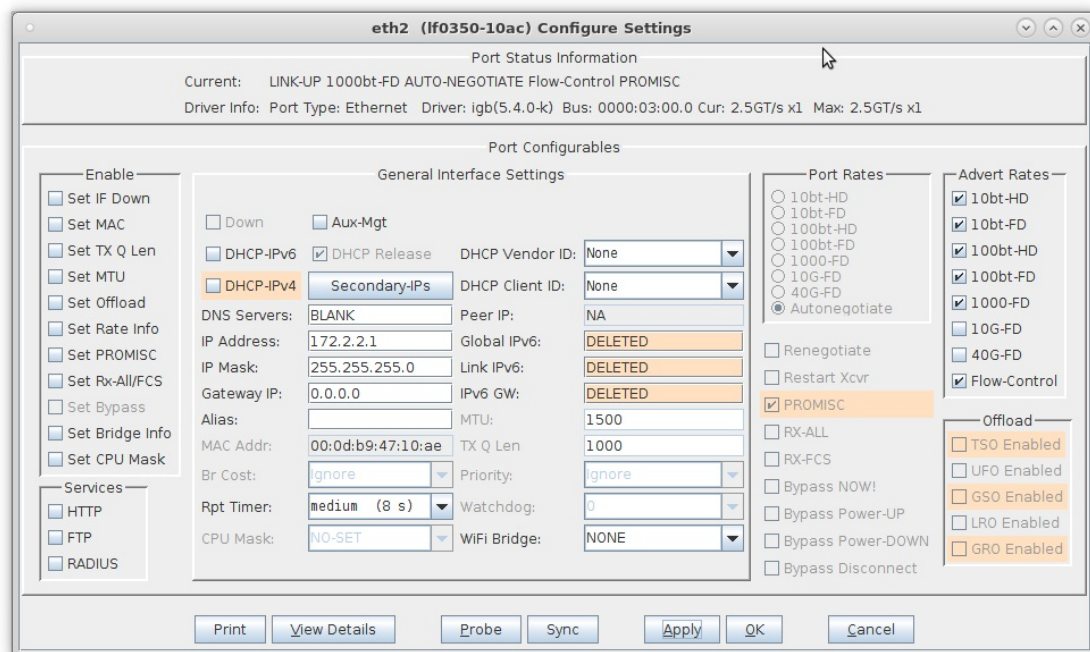
B. Setup `eth1` with a valid IP address and IP mask that is on the same network as the WanPath entry points `ep-1` and `ep-3`



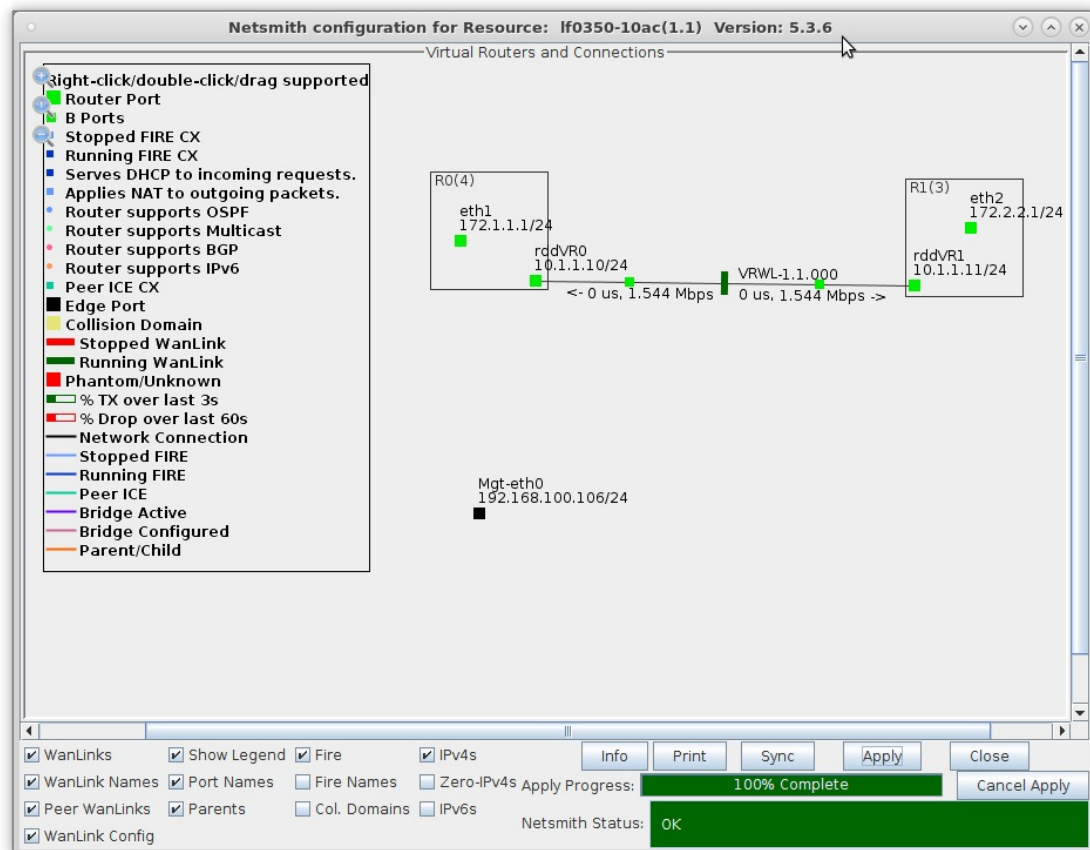
C. Left-click port `eth1` and drag it inside `Router R0(1)`



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

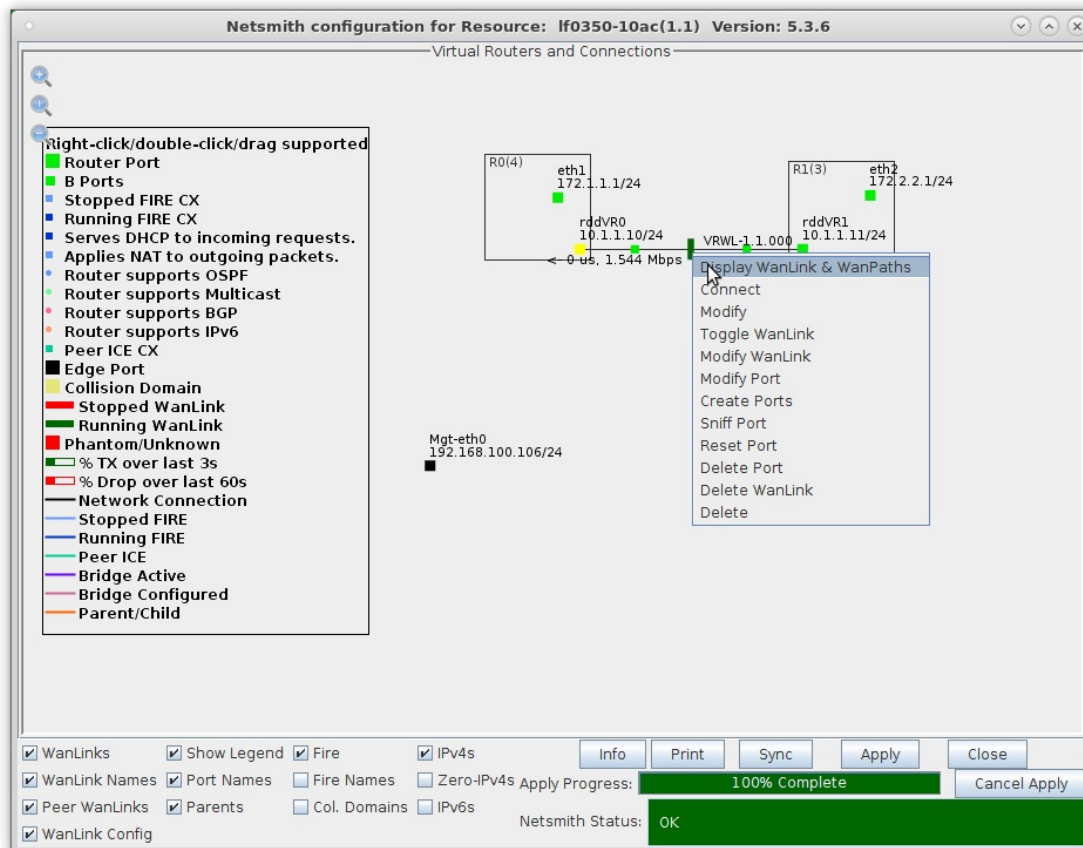


For more information see [LANforge-GUI User Guide: WanLinks](#)

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

**Cross Connect: VRWL-1.1.000 Manager: 192.168.100.224**

**Endpoint: VRWL-1.1.000-A (1.1.5.1)**

WAN Speed: 1544000    bps TX: 16202  
 bps RX: 12160    TX Pkts: 51  
 Dropped: 0    Duplicated: 0  
 Reordered: 0    TX Failed: 0

Rx Bytes Dropped [Record-Dropped]

Rx Throughput [Recorded]

**Endpoint: VRWL-1.1.000-B (1.1.7.2)**

WAN Speed: 1544000    bps TX: 16213  
 bps RX: 12152    TX Pkts: 51  
 Dropped: 0    Duplicated: 0  
 Reordered: 0    TX Failed: 0

Rx Bytes Dropped [Record-Dropped]

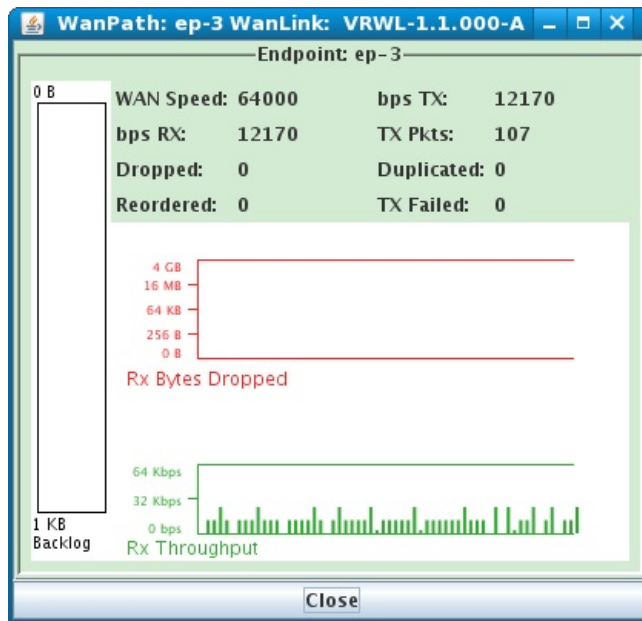
Rx Throughput [Recorded]

WanPaths for WanLink Endpoint: VRWL-1.1.000-A											
Name	Tx Rate	Stop	I	IF	Source-Addr	Dest-Addr	Tx Pkts	Rx Pkts	TX Bytes	RX Bytes	Dropped
ep-1	64000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	172.1.1.100/32	172.2.2.100/32	0	0	0	0	0
ep-3	64000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	172.1.1.101/32	172.2.2.101/32	48	47	72672	71158	0

WanPaths for WanLink Endpoint: VRWL-1.1.000-B											
Name	Tx Rate	Stop	I	IF	Source-Addr	Dest-Addr	Tx Pkts	Rx Pkts	TX Bytes	RX Bytes	Dropped
ep-2	64000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	172.2.2.100/32	172.1.1.100/32	0	0	0	0	0
ep-4	64000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	172.2.2.101/32	172.1.1.101/32	48	47	72672	71158	0

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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