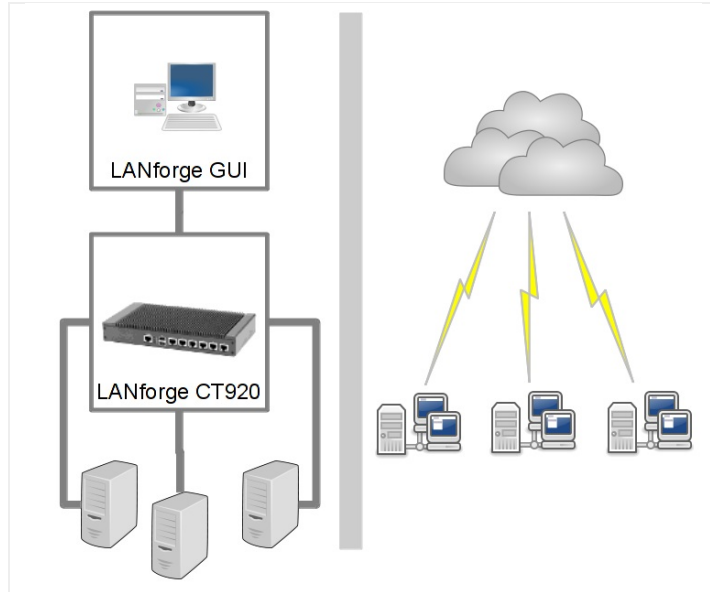


Bridging Multiple WAN-links

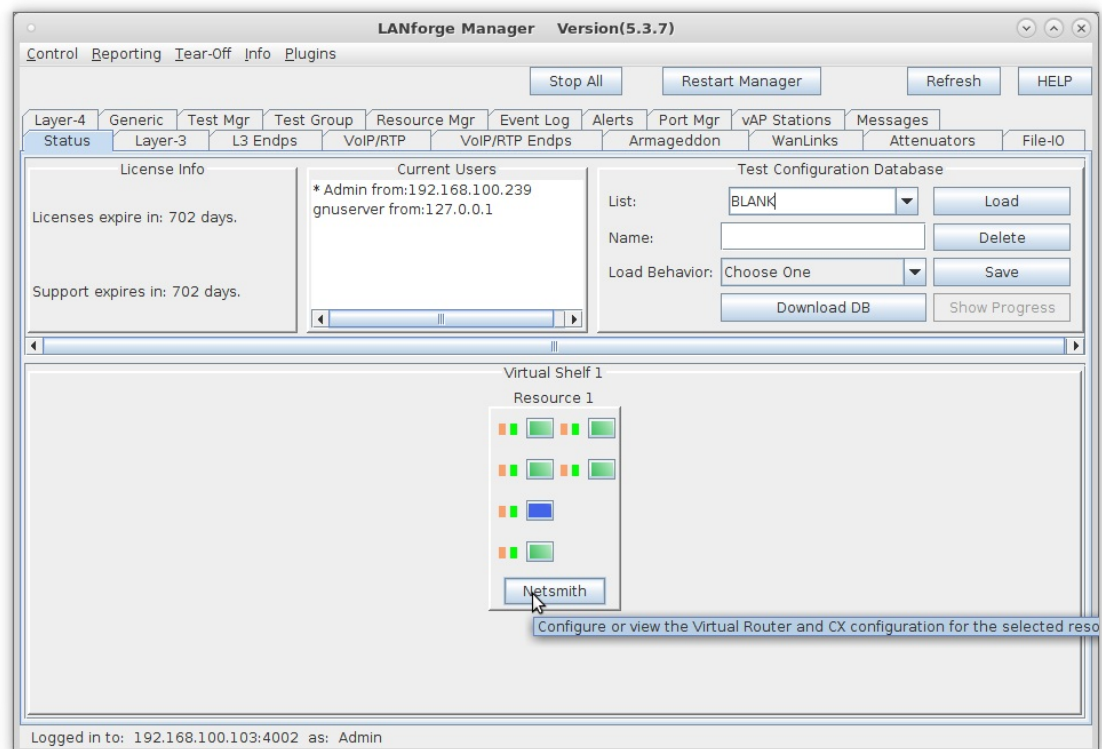
Goal: Create a star topology network similar to a central VPN server with remote offices.

Using LANforge Netsmith, we connect three ethernet ports with WAN-links. Each WAN-link has an ethernet port on one side and a virtual redirect on the other. The redirects are then bridged. We can then model the WAN environment by changing the latency (and other parameters) of the WANlinks. In this example, we are using ports **eth2**, **eth3** and **eth4**. This emulates a bridged network, but it is also possible to do a similar configuration using a Virtual Router instead of a bridge to emulate a routed network.



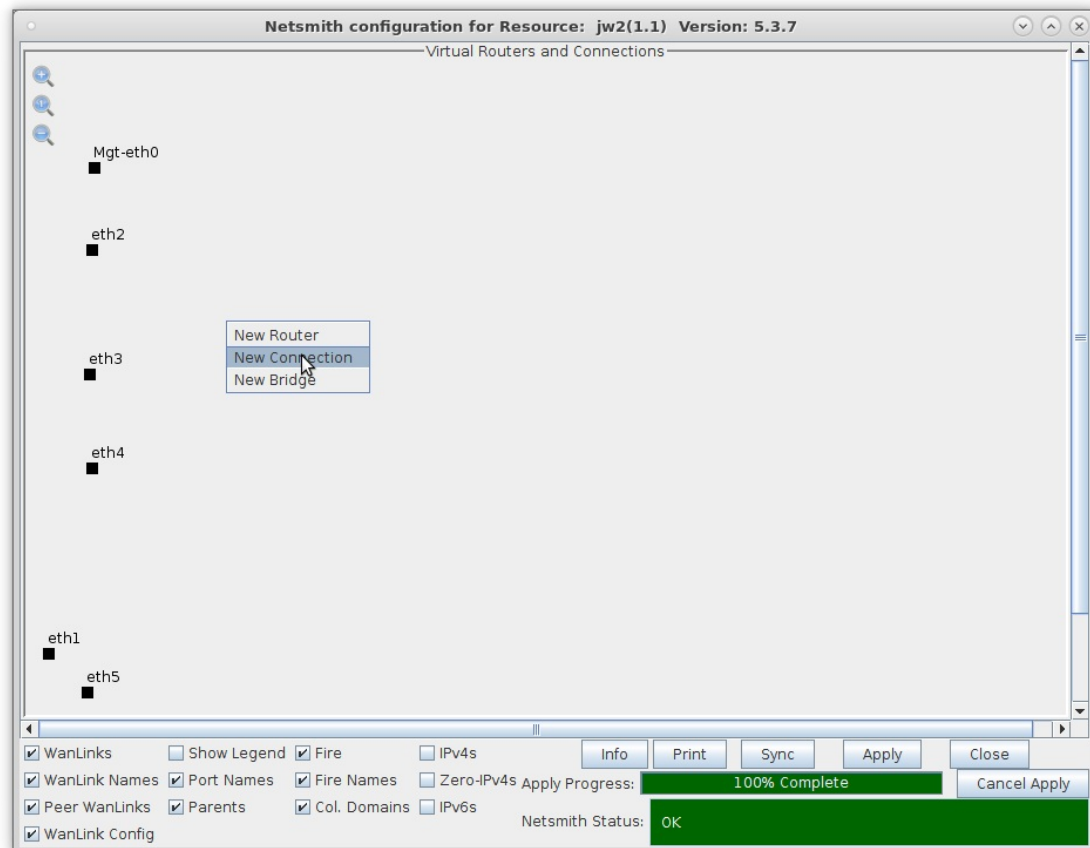
1. Use Netsmith to create three WAN links

A. In the **Status** tab, click the **Netsmith** button

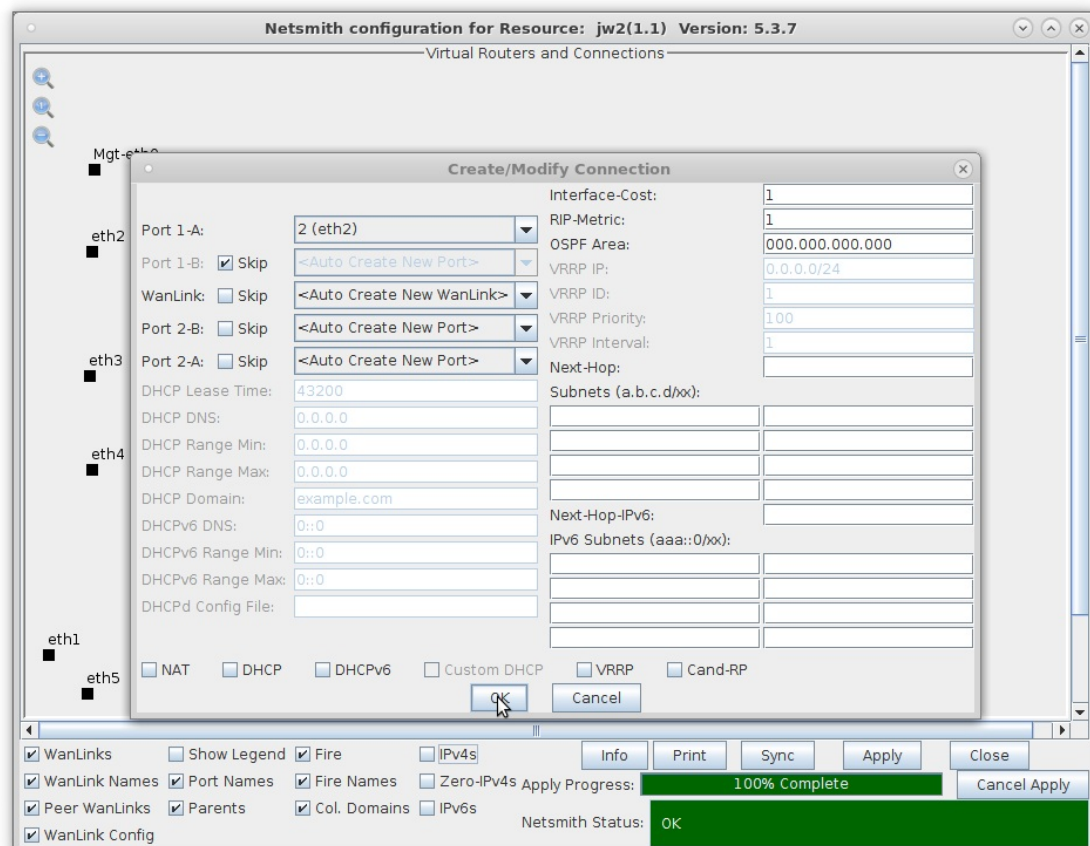


B. Right click in the Netsmith window

C. Select **New Connection**



D. Create new WAN link connection

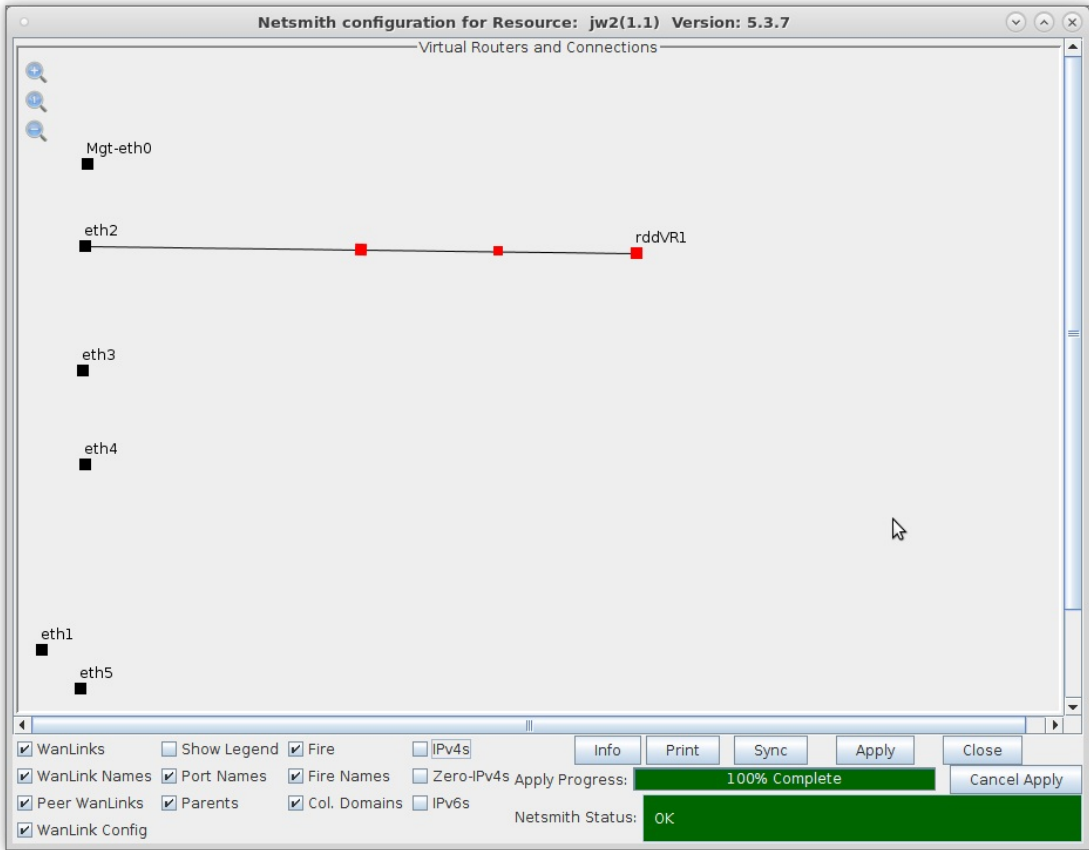


A. Select Port 1-A: **eth2**

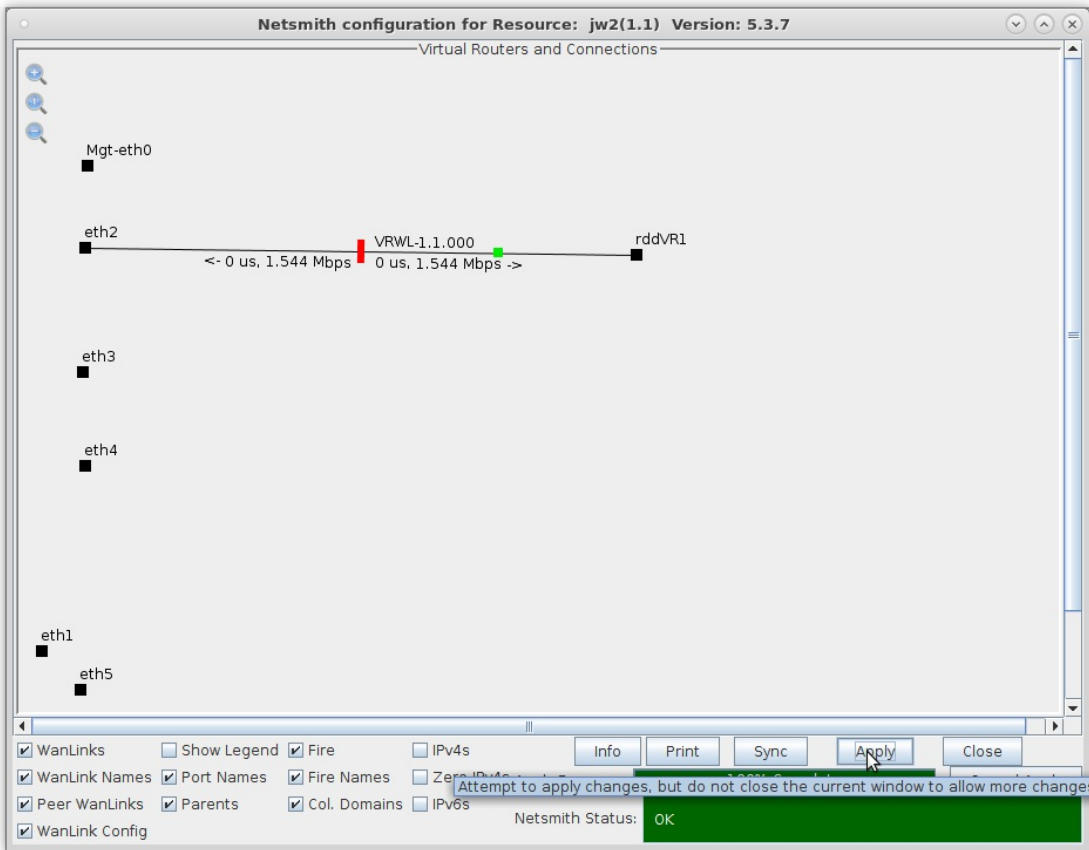
B. Select Port 1-B: Skip

C. Click **OK**

E. A tentative WAN link is displayed

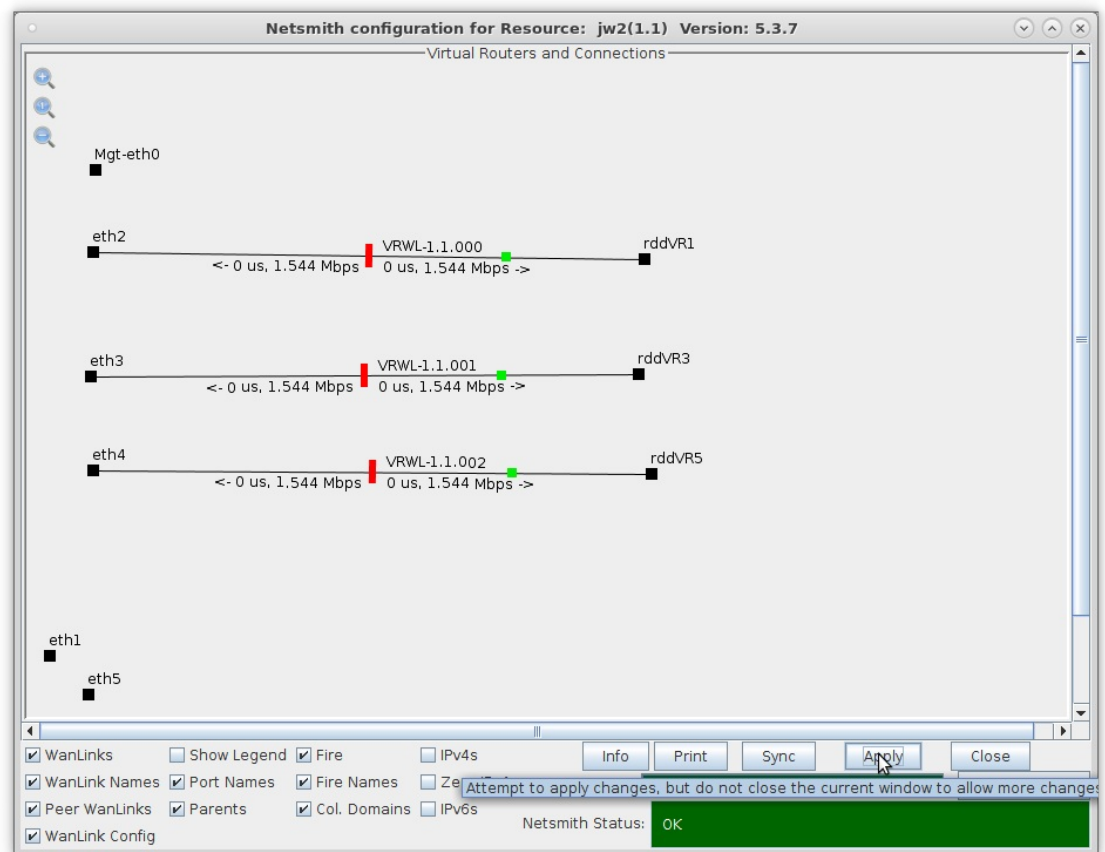


F. Click the **Apply** button at the bottom of the Netsmith window. This commits the WAN link to the resource.



G. Creating two more WAN links is a similar process

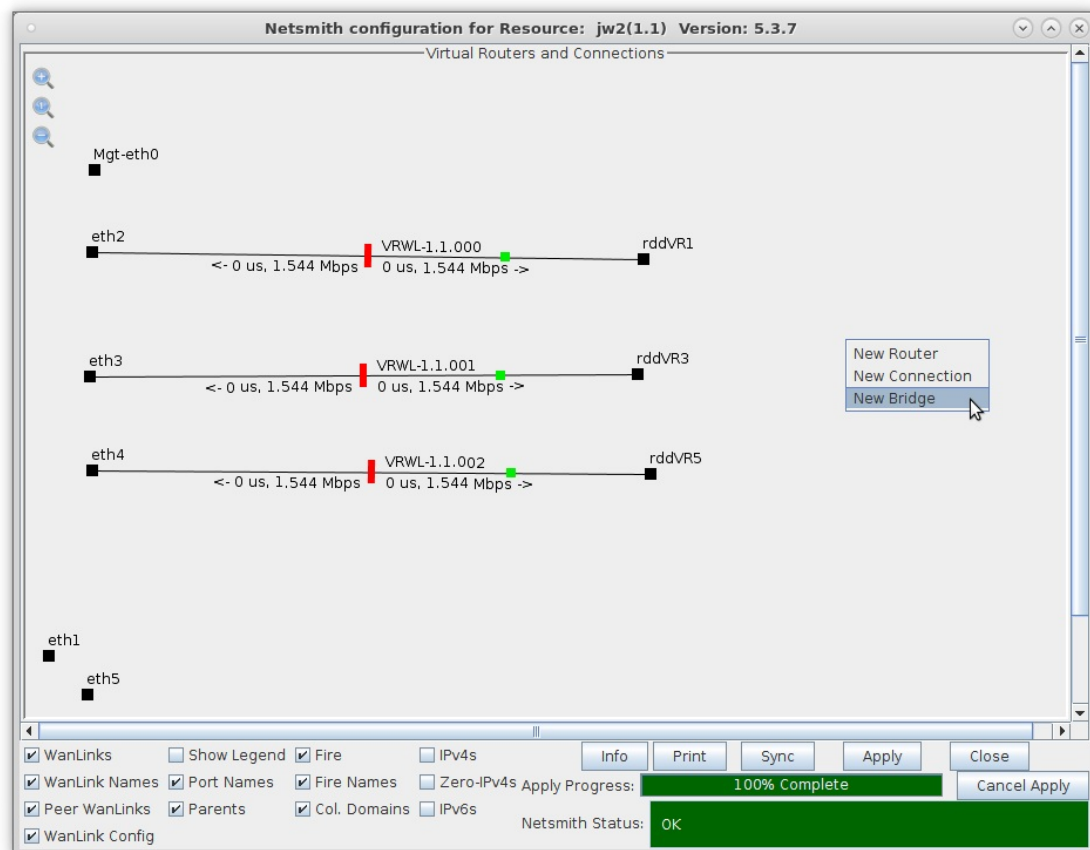
H. Repeat these steps:



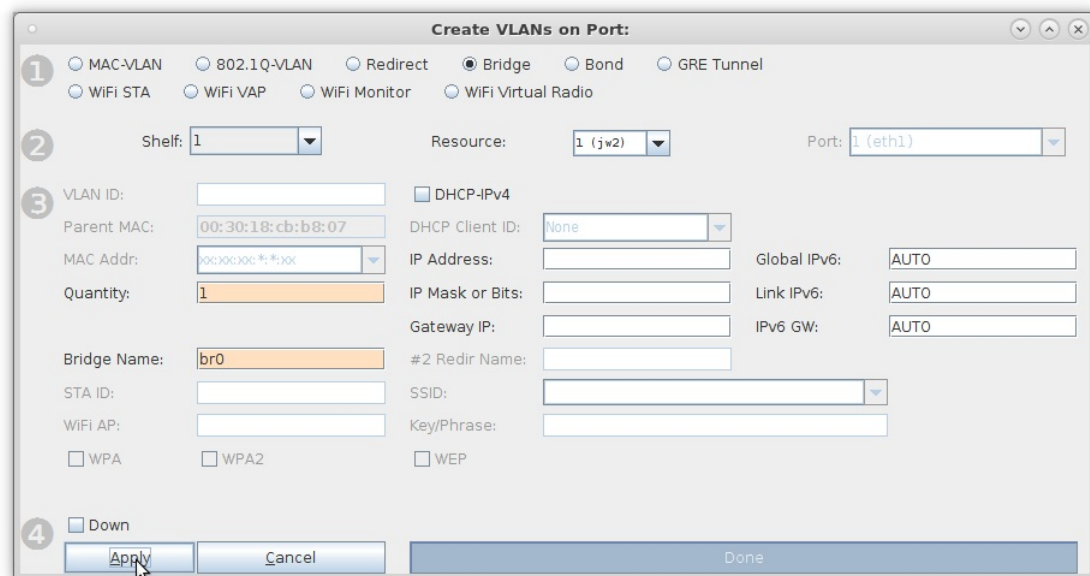
- Right click, **New Connection**
- Choose **eth3** for port 1-A and **Skip** for port 1-B, then **OK**
- Click NetSmith **Apply** to commit connection.
- Right click, **New Connection**
- Choose **eth4** for port 1-A and **Skip** for port 1-B, then **OK**
- Click NetSmith **Apply** to commit connection.

2. Use NetSmith to create a bridge port

A. Right click, Select **New Bridge**



B. Create the bridge with the following attributes:

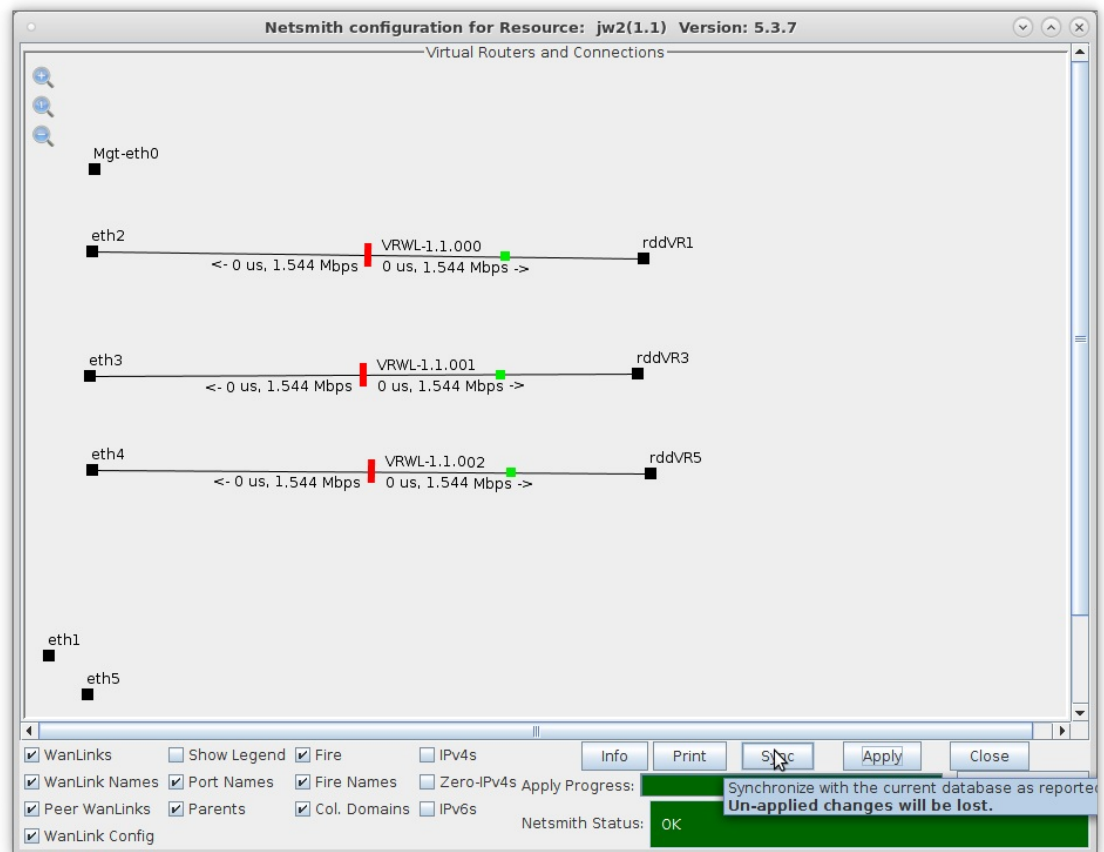


A. Select **Bridge**

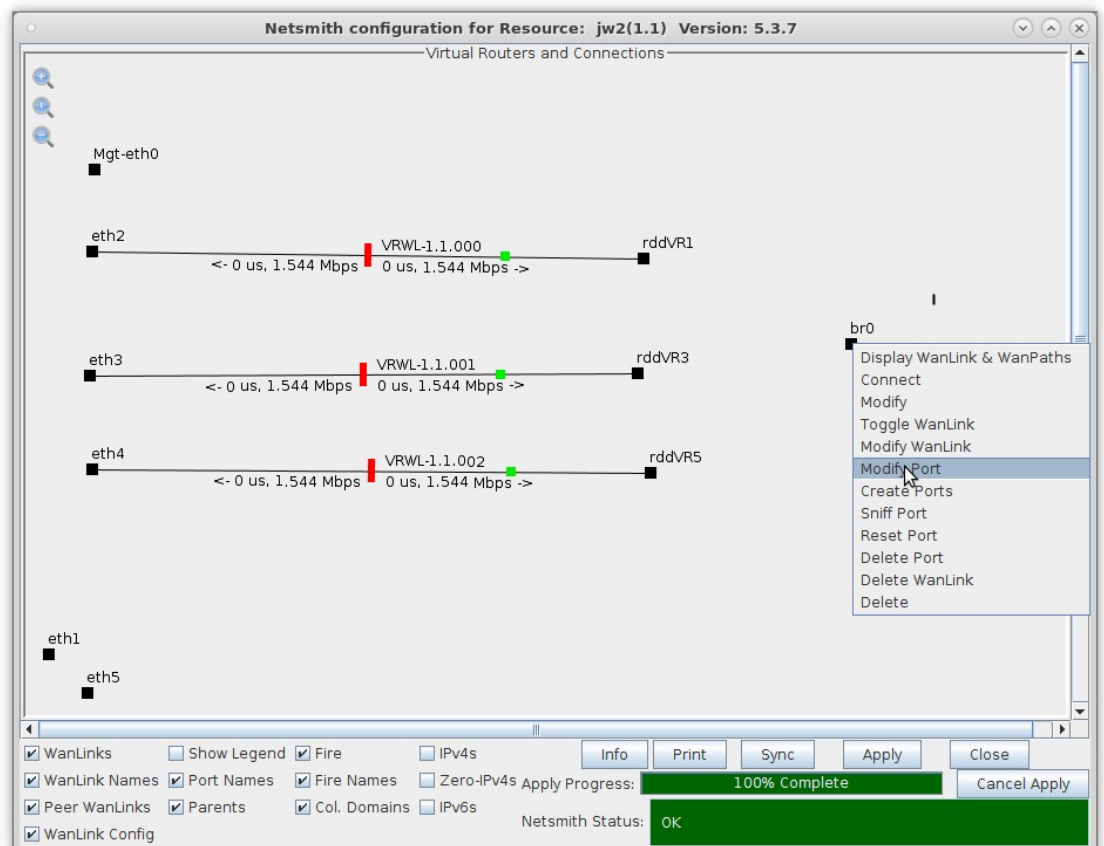
B. Quantity: 1

C. Bridge Name: **br0**

C. Click NetSmith **Sync** to bring the **br0** port onto the NetSmith screen



D. Right click the br0 port and select **Modify Port**



E. In the text area below the **Add Ports** button, add the three virtual WAN link endpoints:

br0 (jw2) Configure Settings

Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO
Driver Info: Port Type: Bridge Driver: bridge(2.3) Bus: N/A

Port Configurables

Enable

- ☐ Set IF Down
- ☐ Set MAC
- ☐ Set TX Q Len
- ☐ Set MTU
- ☐ Set Offload
- ☐ Set Bridge Info

General Interface Settings

☐ Down ☐ Aux-Mgt

☐ DHCP-IPv6 ☒ DHCP Release DHCP Vendor ID: None

☒ DHCP-IPv4 **Secondary-IPs** DHCP Client ID: None

DNS Servers: BLANK Peer IP: NA

IP Address: 0.0.0.0 Global IPv6: AUTO

IP Mask: 0.0.0.0 Link IPv6: AUTO

Gateway IP: 0.0.0.0 IPv6 GW: AUTO

Alias: MTU: 1500

MAC Addr: 02:c9:69:85:f4:5b TX Q Len: 1000

Rpt Timer: medium (8 s) WiFi Bridge: NONE

☐ Spanning-Tree

Aging Time: 300

Bridge Priority: 32768

Max Age: 20

Hello Time: 2

Forwarding Delay: 15

Bridge Information

Configured Ports Current Ports

Remove Ports

Add Ports

rddvR1
rddvR3
rddvR5

Print View Details Probe Sync Apply OK Cancel

- A. rddvR1
- B. rddvR3
- C. rddvR5

F. Click **Add Ports** to enter the selection. You will see them show up in the Bridge Information table.

br0 (jw2) Configure Settings

Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO
Driver Info: Port Type: Bridge Driver: bridge(2.3) Bus: N/A

Port Configurables

Enable

- ☐ Set IF Down
- ☐ Set MAC
- ☐ Set TX Q Len
- ☐ Set MTU
- ☐ Set Offload
- ☐ Set Bridge Info

General Interface Settings

☐ Down ☐ Aux-Mgt

☐ DHCP-IPv6 ☒ DHCP Release DHCP Vendor ID: None

☒ DHCP-IPv4 **Secondary-IPs** DHCP Client ID: None

DNS Servers: BLANK Peer IP: NA

IP Address: 0.0.0.0 Global IPv6: AUTO

IP Mask: 0.0.0.0 Link IPv6: AUTO

Gateway IP: 0.0.0.0 IPv6 GW: AUTO

Alias: MTU: 1500

MAC Addr: 02:c9:69:85:f4:5b TX Q Len: 1000

Rpt Timer: medium (8 s) WiFi Bridge: NONE

☐ Spanning-Tree

Aging Time: 300

Bridge Priority: 32768

Max Age: 20

Hello Time: 2

Forwarding Delay: 15

Bridge Information

Configured Ports	Current Ports
rddvR1	
rddvR3	
rddvR5	

Remove Ports

Add Ports

Print View Details Probe Sync Apply OK Cancel

G. Click **Apply** to commit the change.

H. Click **Sync** to read-in the ports to the screen. You will see them show up in the Bridge Information table.

br0 (jw2) Configure Settings

Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO
Driver Info: Port Type: Bridge Driver: bridge(2.3) Bus: N/A

Port Configurables

Enable

- ☐ Set IF Down
- ☐ Set MAC
- ☐ Set TX Q Len
- ☐ Set MTU
- ☐ Set Offload
- ☒ Set Bridge Info

General Interface Settings

- ☐ Down
- ☐ Aux-Mgt
- ☐ DHCP-IPv6
- ☒ DHCP Release
- DHCP Vendor ID: None
- ☐ DHCP-IPv4
- Secondary-IPs
- DHCP Client ID: None
- DNS Servers: BLANK
- Peer IP: NA
- IP Address: 0.0.0.0
- Global IPv6: AUTO
- IP Mask: 0.0.0.0
- Link IPv6: AUTO
- Gateway IP: 0.0.0.0
- IPv6 GW: AUTO
- Alias:
- MTU: 1500
- MAC Addr: 0a:22:85:97:12:22
- TX Q Len: 1000
- Rpt Timer: medium (8 s)
- WiFi Bridge: NONE

☐ Spanning-Tree

Aging Time: 300
Bridge Priority: 32768
Max Age: 20
Hello Time: 2
Forwarding Delay: 15

Bridge Information

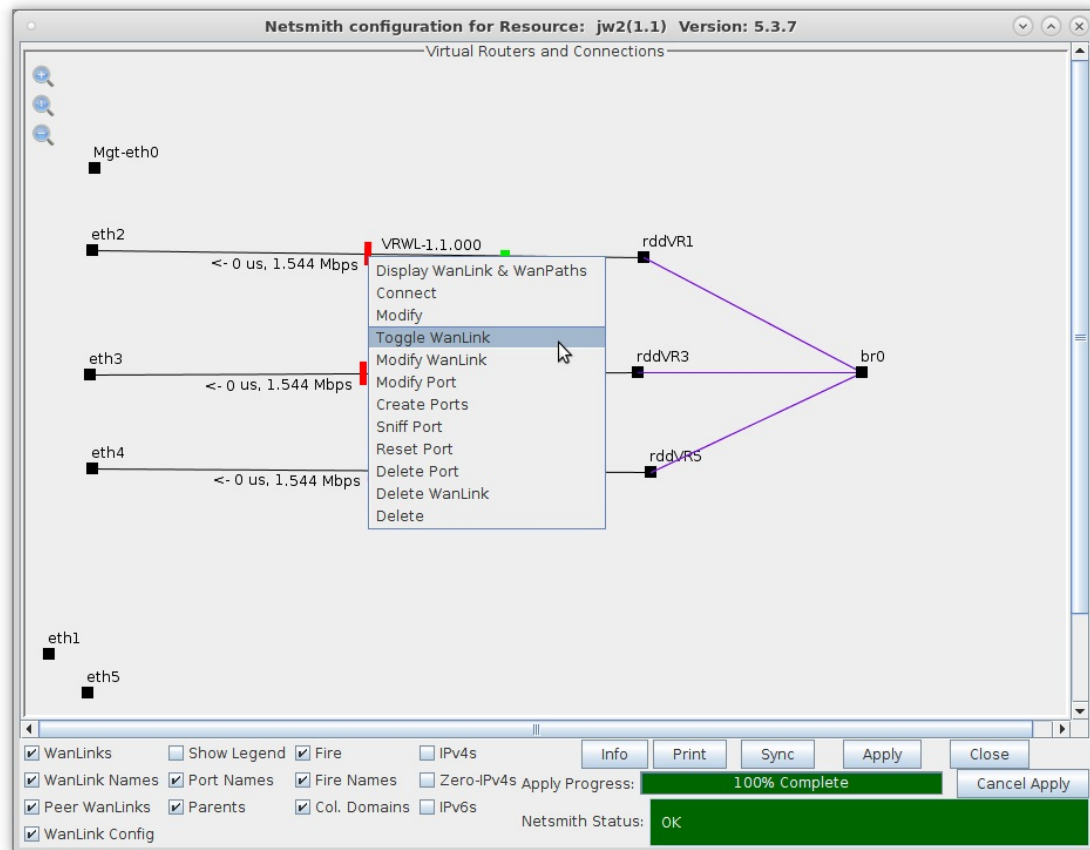
Configured Ports	Current Ports
rddVR1	rddVR1
rddVR3	rddVR3
rddVR5	rddVR5

Synchronize with the current database as reported by the server.
Un-applied changes will be lost.

I. Click **Cancel** to close the window.

3. Enable the WAN links in Netsmith

A. In the Netsmith window, click **Sync** to bring the changes into view



B. Right click on VRWL-1.1 and select **Toggle WanLink**

C. Repeat the toggle for the next two WanLinks

