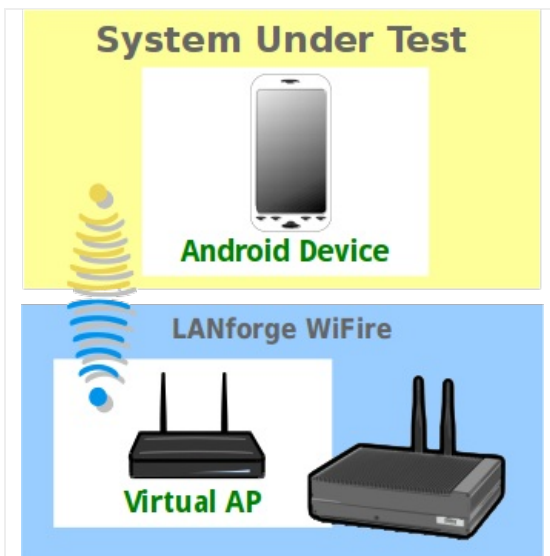
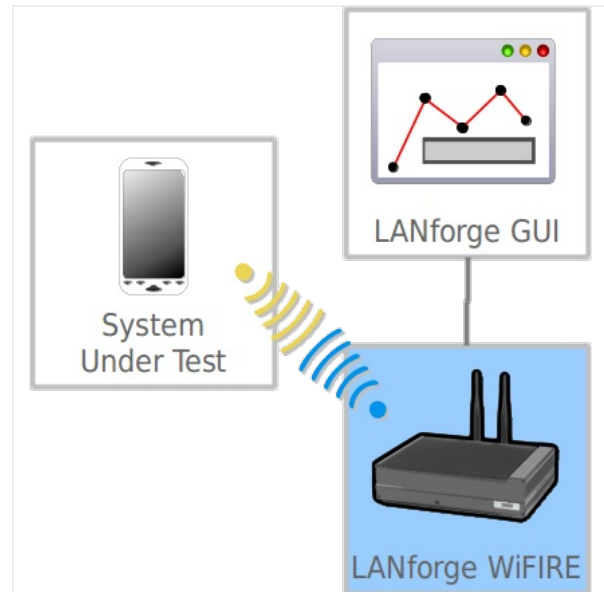


Running UDP Traffic with Android

Goal: Set up Android to be a LANforge resource and then run UDP traffic.

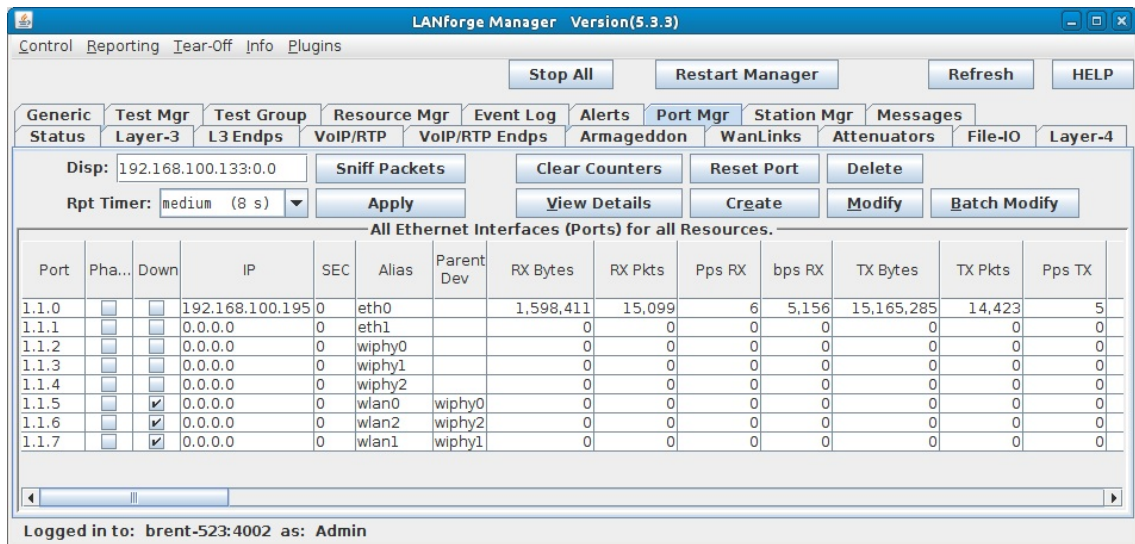
Requires LANforge 5.3.3 or later. Make sure to configure a realm other than 255 for the VAP system, this is because the Android device needs to be in the same realm to be managed. This cookbook will be using realm 195. You can find information on configuring realms using Ifconfig starting from step 4 [here](#).

This cookbook will go through installing and configuring LANforge on an Android device, then setting up a Layer-3 UDP connection between the Android device and another LANforge system. Multiple VAPs will be set up to demonstrate roaming. A bridged VAP setup is used (with the bridge as DHCP server) so the device can retain the same IP during roaming, this prevents the device from having to renew its IP saving some time between rooms.

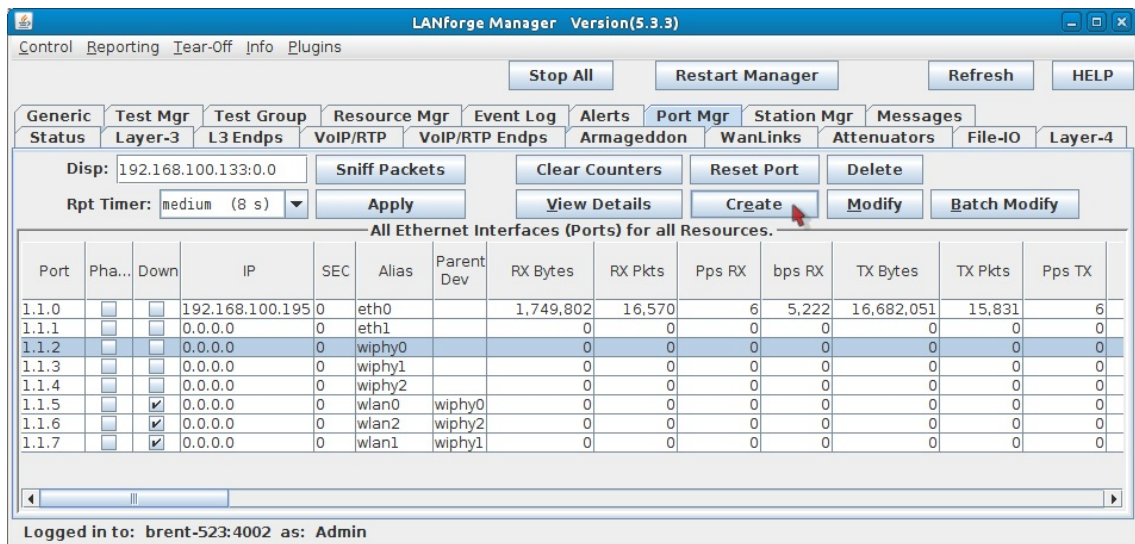


1. First, we will set up the LANforge system so the Android device can connect.
2. Create the first VAP.

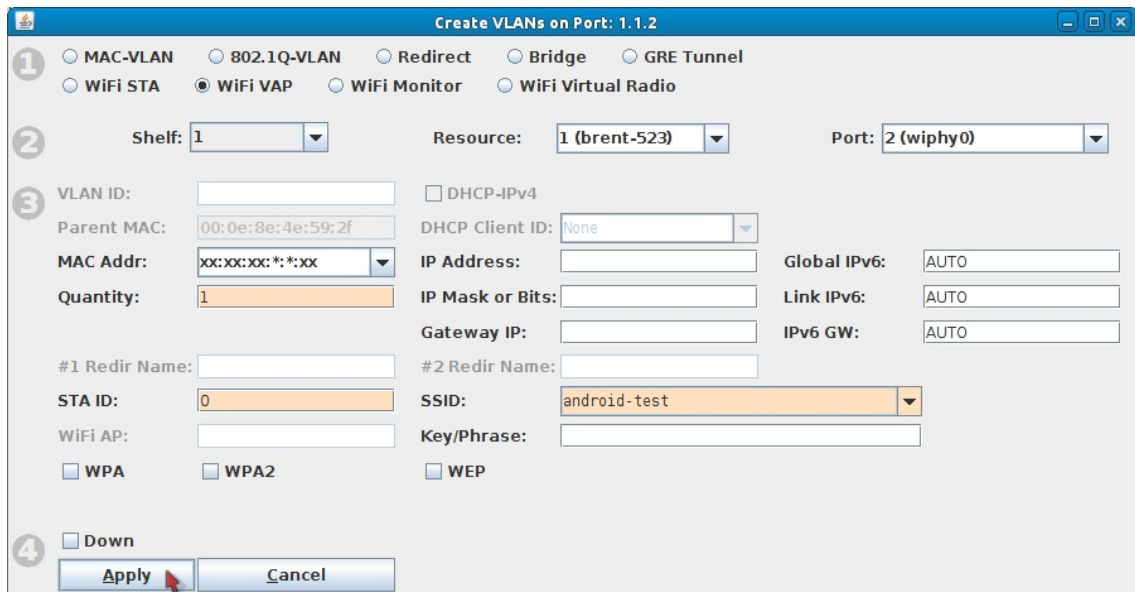
A. Go to the **Port Mgr** tab.



B. Select wiphy0 and click **Create**.



C. Select **WiFi VAP** and enter in the below values.



A. Quantity **1**

B. STA ID: **0**

C. SSID: **android-test**

D. Click **Apply**.

A. **Note:** we will keep this window open for creating the second VAP.

3. Create the second VAP.

A. Select **wiphy1** from the port drop-down menu.

B. Update the **STA ID** and **SSID** with the below values.

A. STA ID: **1**

B. SSID: **android-test2**

C. Click **Apply** and close the Create Port window.

4. Set up a bridge for both VAPs.

A. Go to the **Status** tab, and click the **Netsmith** button for the AP system (Resource 1 in this example).

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

Create/Modify Virtual Router

Name: <-Auto Create New Name-> Width: 100 Height: 100

Use OSPF
 Multicast Routing
 Use OLSR
 RIPv2
 RIP Dfrit Route
 Xorp SHA
 IPv6 Router
 IPv6 RADV

Use Existing Cfg
 BGP Router
 BGP 4B AS
 BGP Reflector
 BGP Confederation
 BGP Damping

Notes about this Virtual Router

BGP Configuration Information

Router ID: 0.0.0.0 Local AS: 0 Cluster ID: 0.0.0.0

Confederation ID: 0 Damping Half Life: 3 Damping Max Suppress: 3

Damping Reuse: 3 Damping Suppress: 3

BGP Peer Flags		Peer AS	Peer ID	Local Iface	Nexthop	Nexthop6	Hold Time	Delay Open
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0
<input type="checkbox"/> Active	<input type="checkbox"/> Client	<input type="checkbox"/> Confed	<input checked="" type="checkbox"/> Ucast	0	0.0.0.0	0.0.0.0	5	0

OK Cancel

A. Click **OK** to accept the default values.

B. Click **Apply** in Netsmith.

C. Right-click in the Netsmith window and select **New Bridge**. Then set the below values.

Create VLANs on Port:

MAC-VLAN
 802.1Q-VLAN
 Redirect
 Bridge
 GRE Tunnel

WiFi STA
 WiFi VAP
 WiFi Monitor
 WiFi Virtual Radio

Shelf: 1 Resource: 1 (brent-523) Port: 1 (eth1)

VLAN ID: DHCP-IPv4

Parent MAC: 00:90:0b:37:2c:bd DHCP Client ID: None

MAC Addr: xx:xx:xx:*:*:xx IP Address: 195.1.2.1/24 Global IPv6: AUTO

Quantity: 1 IP Mask or Bits: Link IPv6: AUTO

Bridge Name: br0 Gateway IP: IPv6 GW: AUTO

#2 Redir Name:

STA ID: SSID:

WiFi AP: Key/Phrase:

WPA
 WPA2
 WEP

Down

Apply Cancel

A. Quantity: 1

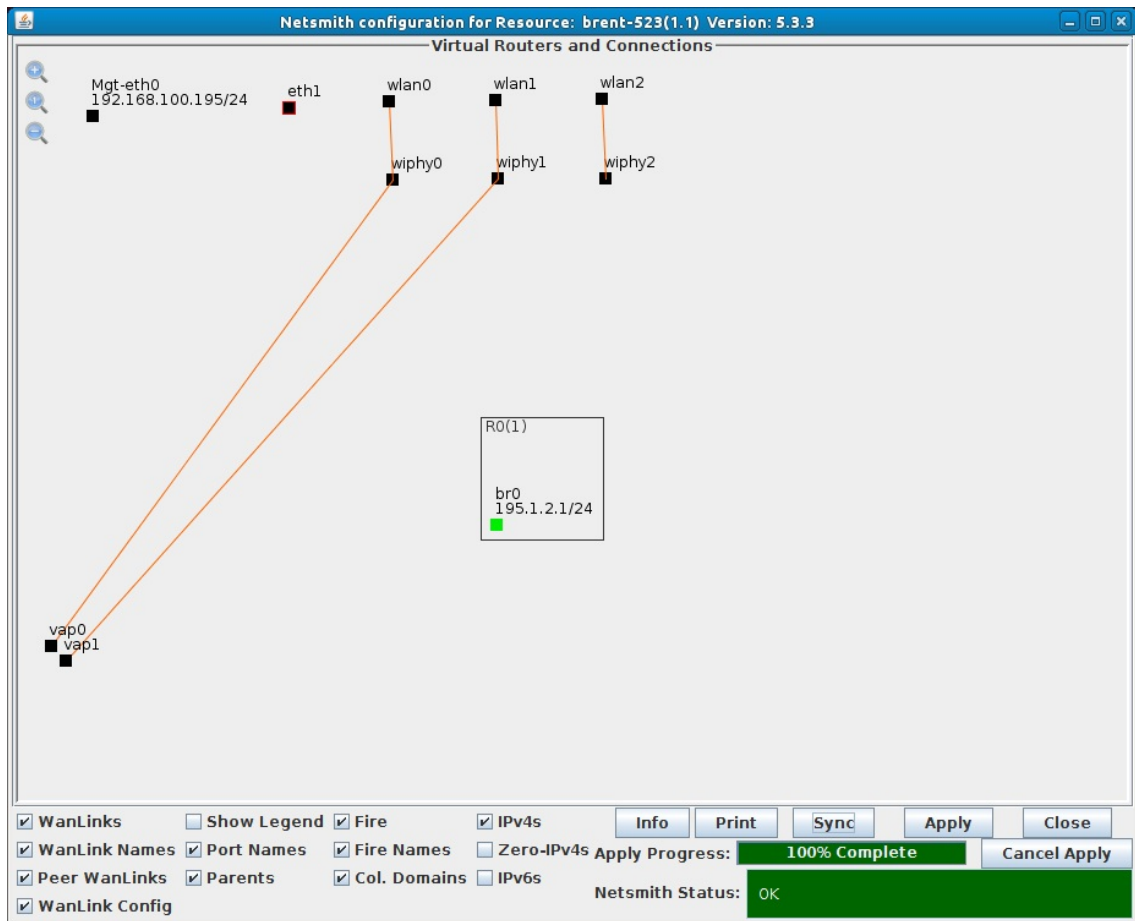
B. Bridge Name: br0

C. IP Address: 195.1.2.1/24

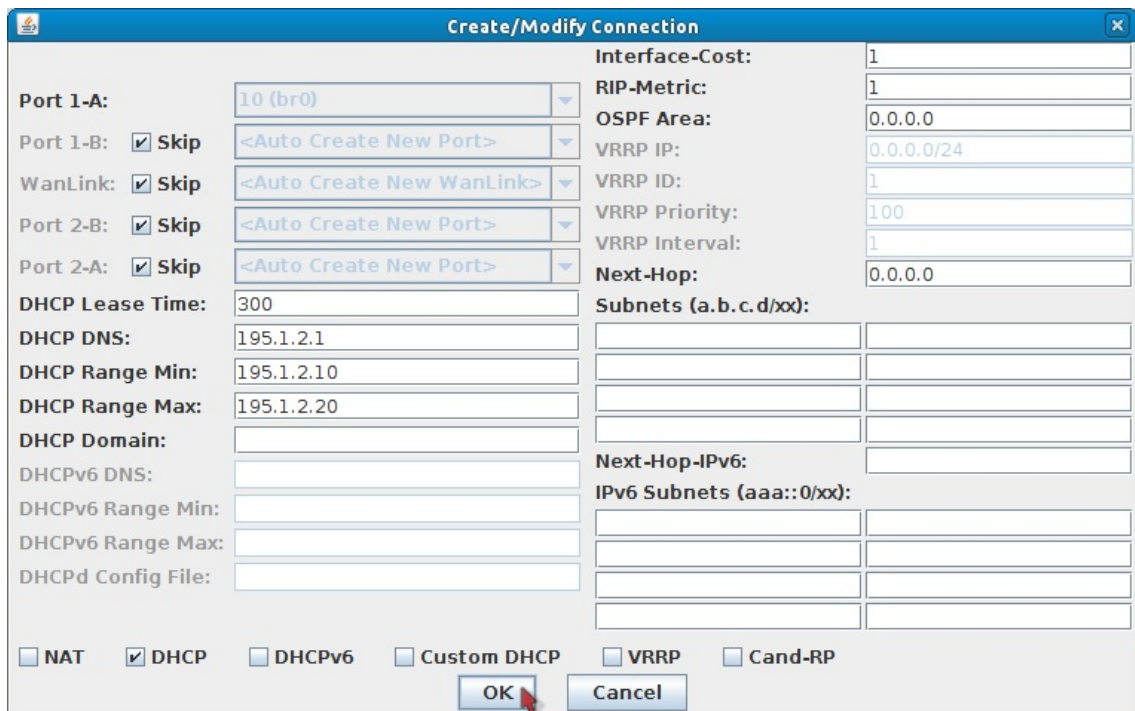
D. Click **Apply** and close the Create Port window.

E. Click **Sync** in Netsmith and the br0 interface should appear.

F. Drag the br0 interface into the virtual router. The interface box should change from black to green.



G. Right click br0 and select modify.

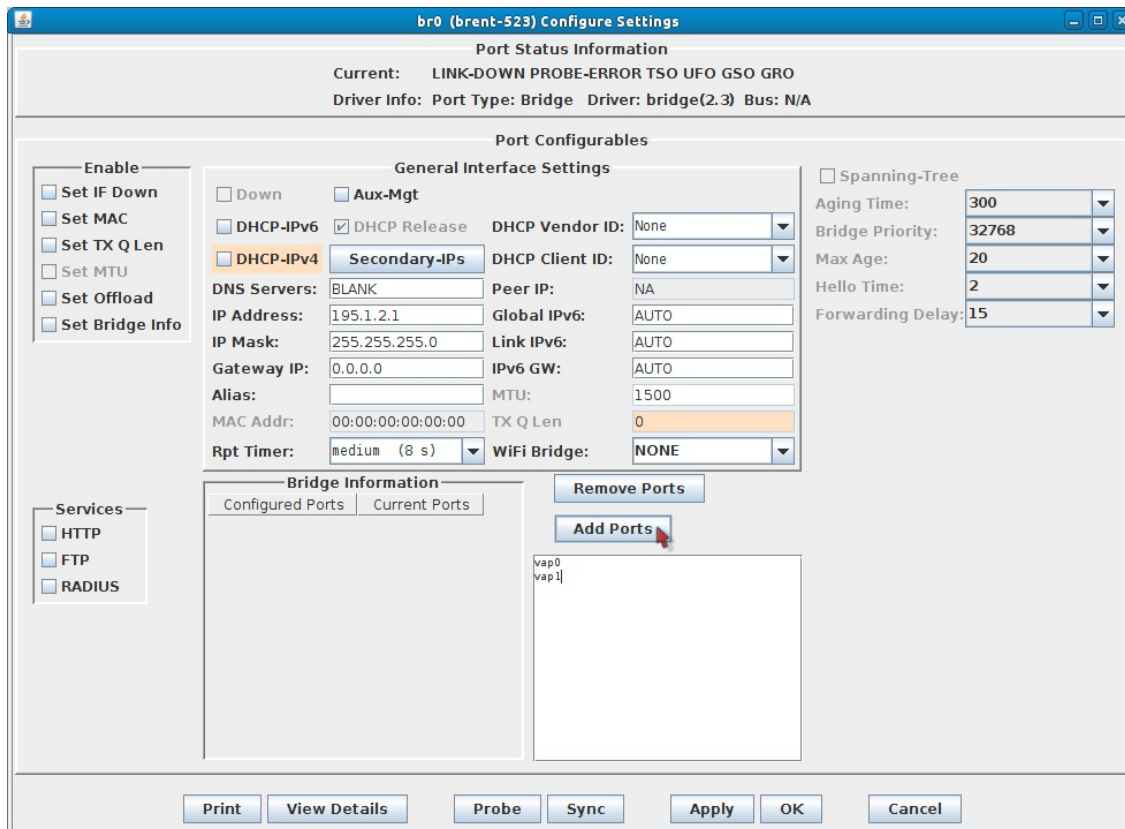


H. Select **DHCP** and use the below values.

- A. DHCP Lease Time: 300
- B. DHCP DNS: 195.1.2.1
- C. DHCP Range Min: 195.1.2.10
- D. DHCP Range Max: 195.1.2.20

I. Click **OK**.

J. Right click br0 and select **Modify Port**.



- A. Enter `vap0` and `vap1` into the text box as shown above.
- B. Click **Add Ports**.
- C. Click **Apply** then **Sync**. The Current Ports column should now show `vap0` and `vap1`.

Configured Ports	Current Ports
<code>vap0</code>	<code>vap0</code>
<code>vap1</code>	<code>vap1</code>

- D. Click **OK** to close the window.

K. Click **Apply** in Netsmith.

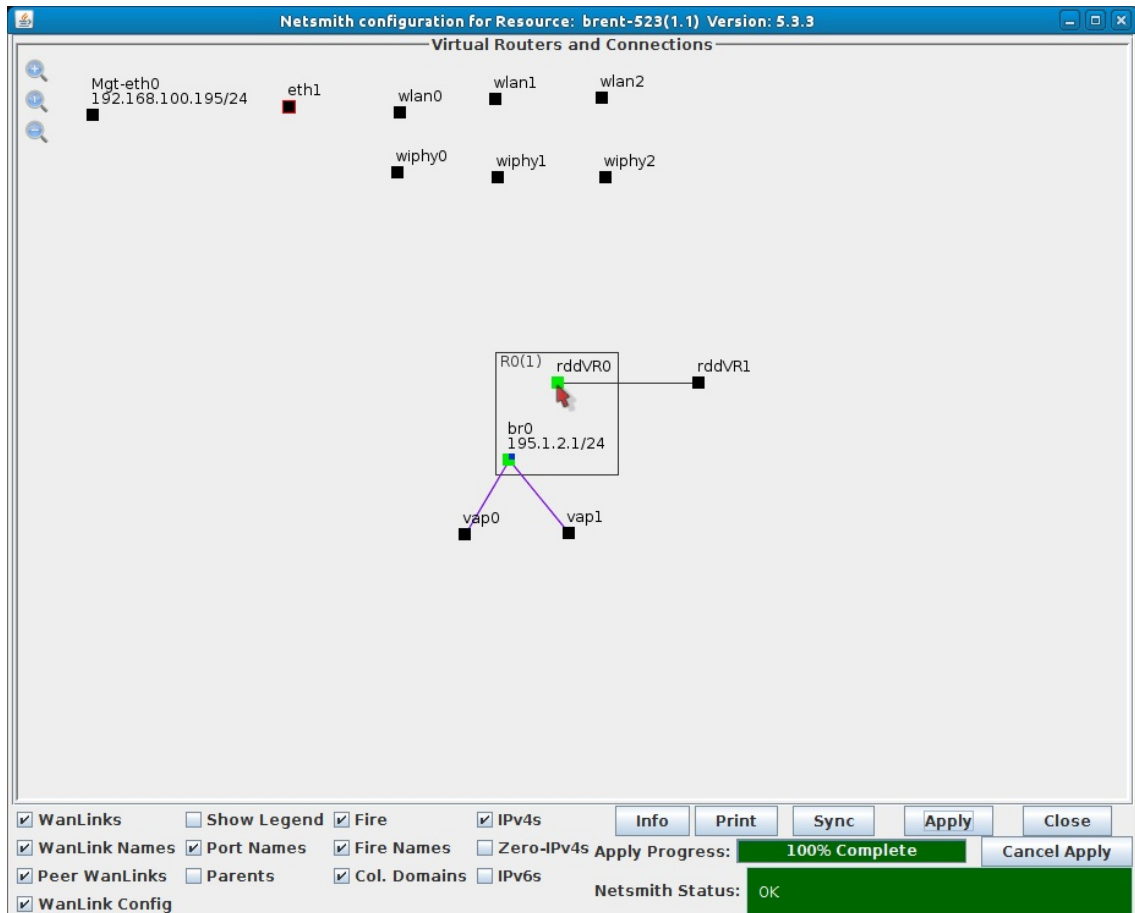
5. Create a redirect-device inside the virtual router. The Android will connect to this port for management purposes.

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

- A. Select the **Skip** checkbox for Port 1-B, WanLink, and Port 2-B.
 B. Click **OK**

- B. Click **Apply** in Netsmith.

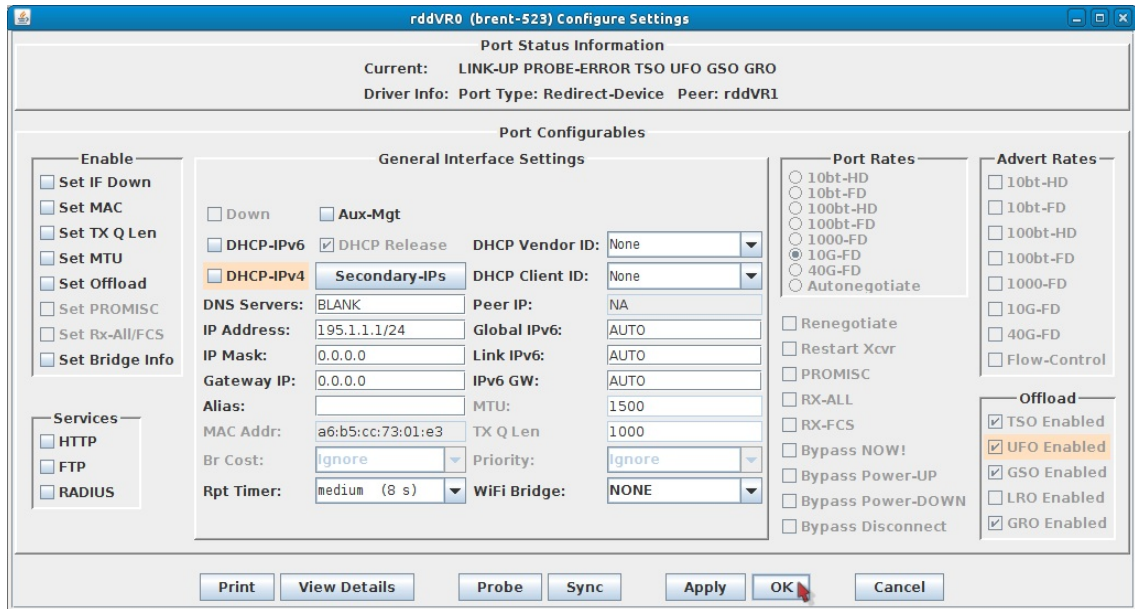
- C. Drag one of the rdd interfaces into the virtual router (rddVr0 is used in this example). The interface box should change to green.



- A. **Note:** The other rdd (rddVr1 in this case) will not be used and can be ignored.

- D. Click **Apply** in Netsmith.

E. Right click rddVR0 and select **Modify Port**.



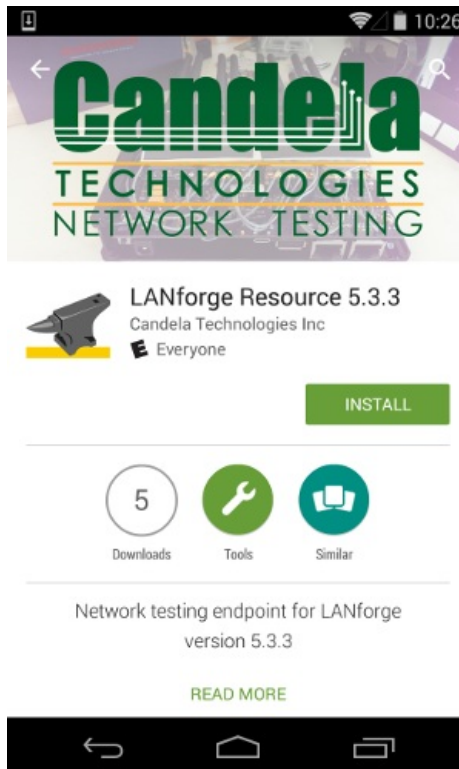
A. Set the **IP Address** to 195.1.1.1/24

B. Click **OK**.

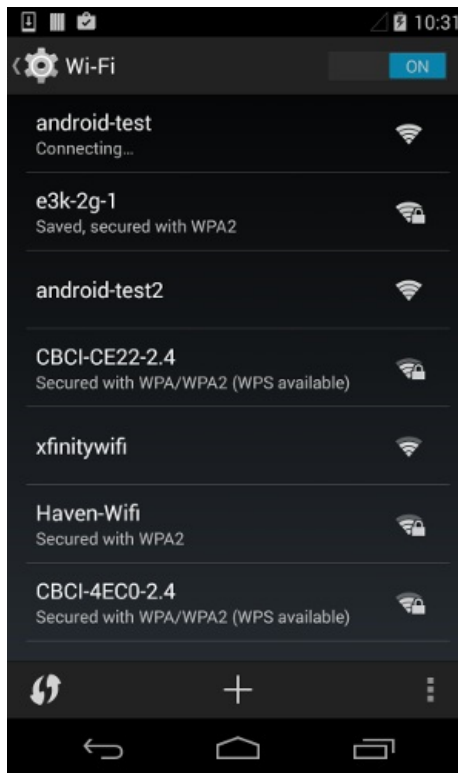
F. Close Netsmith.

6. Set up the Android device.

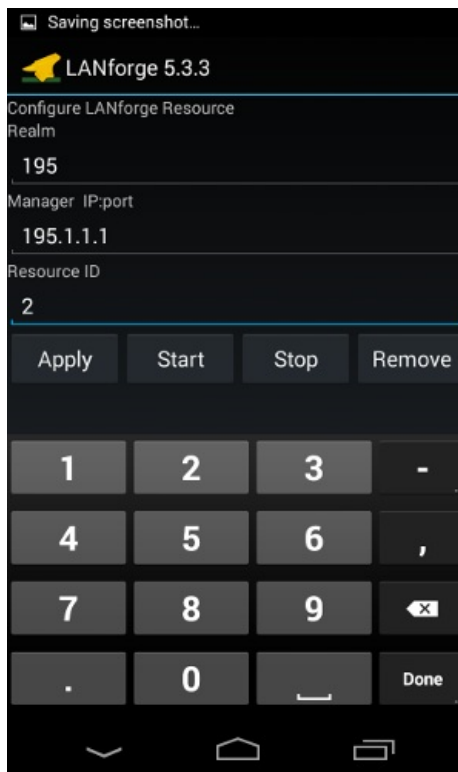
A. Install LANforge Resource from the Google Play Store.



B. Once installed, connect your device to **android-test** using Android's WiFi setup.



C. Launch the LANforge Resource app and set the values below.



A. Realm 195

B. Manager IP:port: 195.1.1.1

C. Resource ID: 2

- D. Push the **Apply** button to apply changes and start LANforge. After 20-30 seconds the LANforge system should see the Android device connect.



```
Configure LANforge 5.3.3
Configuring LANforge Resource.
Copying LANforge-Server native binaries to:
/data/data/com.candela.lfresource2/
Finished Copying LANforge-Server native binaries.
Installing LANforge-Server native binaries to:
/data/data/com.candela.lfresource2/lfserver

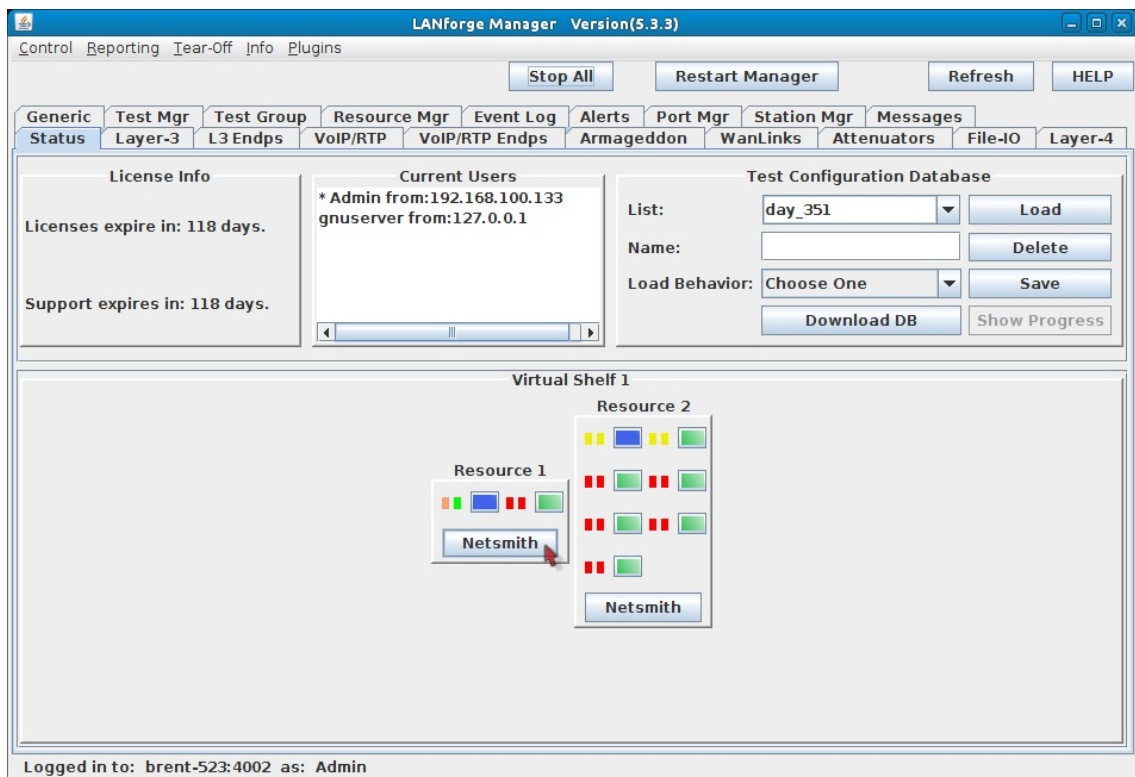
# chmod 755 /data/data/com.candela.lfresource2/
android_install.sh
Exception running SU command:
chmod 755 /data/data/com.candela.lfresource2/
android_install.sh
Error: Error running exec(). Command: [su] Working
Directory: null Environment: null
Exception Type: java.io.IOExceptionWARNING: Root (su) is
not available.
Will try non-root mode.

$ chmod 755 /data/data/com.candela.lfresource2/
android_install.sh

$ /data/data/com.candela.lfresource2/android_install.sh
LANforgeServer-5.3.3_Linux-ARM.tar 5.3.3 /data/data/
com.candela.lfresource2/ lfserver
>PWD: /
>FNAME: LANforgeServer-5.3.3_Linux-ARM.tar
>LFVER: 5.3.3
>DEST: /data/data/com.candela.lfresource2/
>RDIR: lfserver
>Attempting un-tar of LANforgeServer-5.3.3_Linux-ARM.tar
>Installing LANforge binaries to:
```

7. Create and run a Layer-3 UDP connection.

- A. Go to the **Status** tab, and click the **Netsmith** button for the AP system (Resource 1 in this example).



- B. Create a redirect-device inside the virtual router.

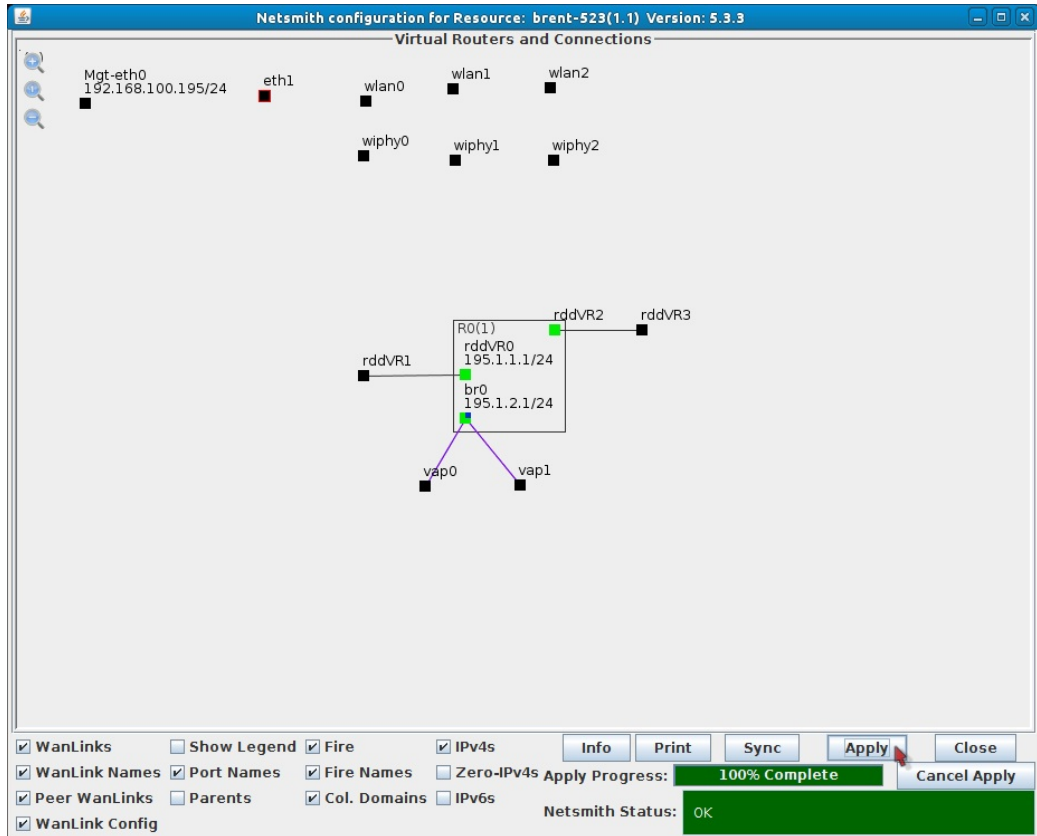
A. Right-click in the Netsmith window and select **New Connection**.

B. Select the **Skip** checkbox for Port 1-B, WanLink, and Port 2-B.

C. Click **OK**.

D. Click **Apply** in Netsmith.

E. Drag rddVR2 into the virtual router. The interface box should change to green.



F. Click **Apply** in Netsmith.

G. Right click rddVR2 and select **Modify Port**.

Port Status Information
Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO
Driver Info: Port Type: Redirect-Device Peer: rddVR3

Port Configurables

General Interface Settings

Enable

- Set IF Down
- Set MAC
- Set TX Q Len
- Set MTU
- Set Offload
- Set PROMISC
- Set Rx-All/FCS
- Set Bridge Info

Services

- HTTP
- FTP
- RADIUS

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: 195.1.3.1/24 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: 2e:e8:dd:7a:00:a9 TX Q Len: 1000

Br Cost: ignore Priority: ignore

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

Port Rates

- 10bt-HD
- 10bt-FD
- 100bt-HD
- 100bt-FD
- 1000-FD
- 10G-FD
- 40G-FD
- Autonegotiate

Advert Rates

- 10bt-HD
- 10bt-FD
- 100bt-HD
- 100bt-FD
- 1000-FD
- 10G-FD
- 40G-FD
- Flow-Control

Offload

- TSO Enabled
- UFO Enabled
- GSO Enabled
- LRO Enabled
- GRO Enabled

Buttons: Print View Details Probe Sync Apply OK Cancel

I. Set the **IP Address** to 195.1.3.1/24

II. Click **OK**.

H. Right click rddVR3 and select **Modify Port**

Port Status Information
Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO
Driver Info: Port Type: Redirect-Device Peer: rddVR2

Port Configurables

General Interface Settings

Enable

- Set IF Down
- Set MAC
- Set TX Q Len
- Set MTU
- Set Offload
- Set PROMISC
- Set Rx-All/FCS
- Set Bridge Info

Services

- HTTP
- FTP
- RADIUS

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: 195.1.3.2/24 Global IPv6: AUTO

IP Mask: 0.0.0.0 Link IPv6: AUTO

Gateway IP: 195.1.3.1 IPv6 GW: AUTO

Alias: MTU: 1500

MAC Addr: 02:85:d7:b0:4f:50 TX Q Len: 1000

Br Cost: ignore Priority: ignore

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

Port Rates

- 10bt-HD
- 10bt-FD
- 100bt-HD
- 100bt-FD
- 1000-FD
- 10G-FD
- 40G-FD
- Autonegotiate

Advert Rates

- 10bt-HD
- 10bt-FD
- 100bt-HD
- 100bt-FD
- 1000-FD
- 10G-FD
- 40G-FD
- Flow-Control

Offload

- TSO Enabled
- UFO Enabled
- GSO Enabled
- LRO Enabled
- GRO Enabled

Buttons: Print View Details Probe Sync Apply OK Cancel

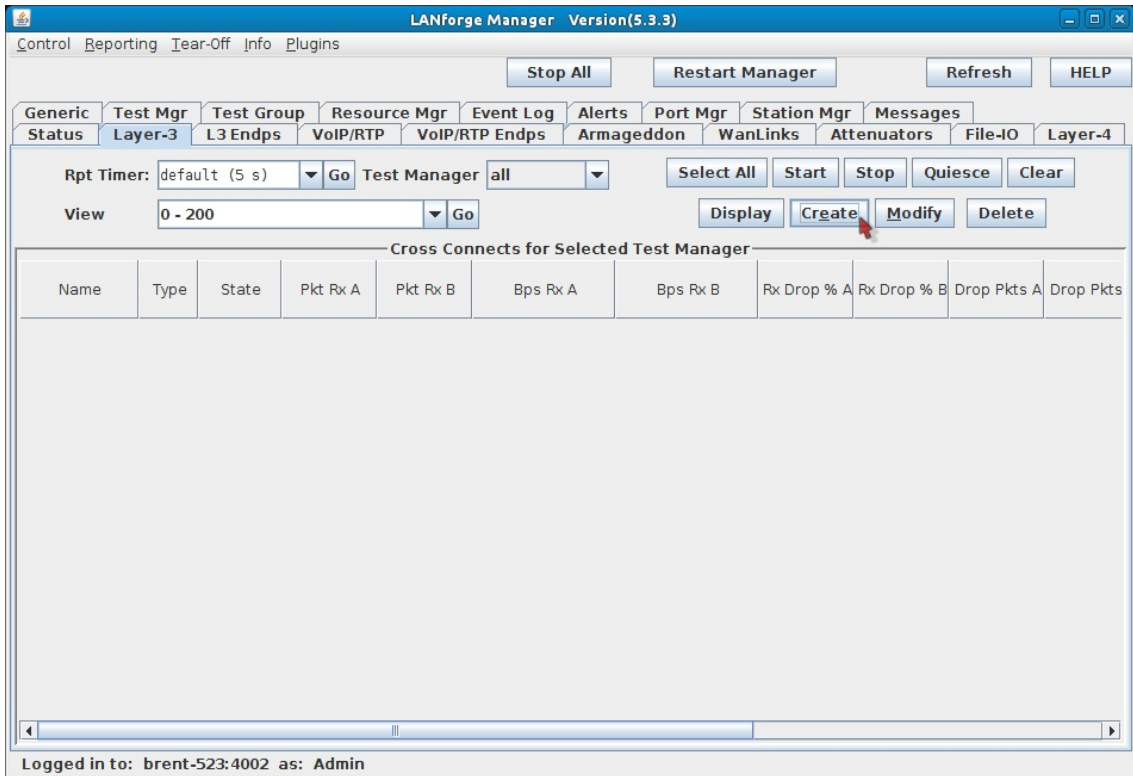
I. Set the **IP Address** to 195.1.3.2/24

II. Set the **Gateway IP** to 195.1.3.1

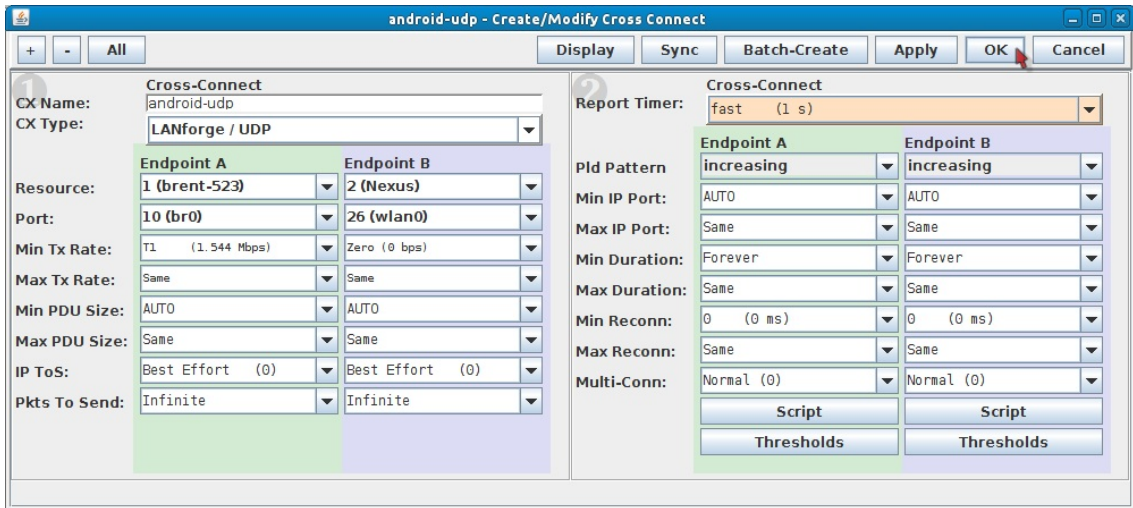
III. Click **OK**.

I. Close Netsmith.

C. Go to the **Layer-3** tab, click **Create**.

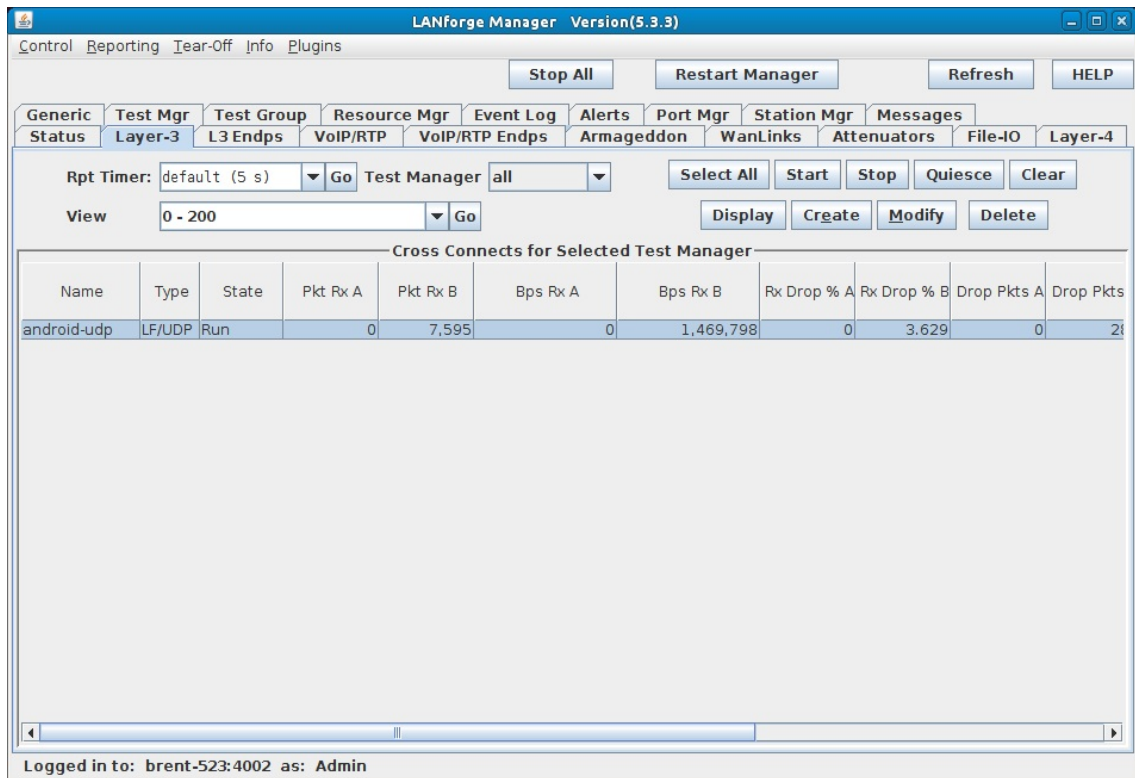


D. Set the below values. Note that Endpoint B Resource will differ depending on the Android device type.



- A. CX Name: android-udp
- B. Endpoint A Resource: brent-523
- C. Endpoint B Resource: Nexus
- D. Endpoint A Port: br0
- E. Endpoint B Port: wlan0
- F. Endpoint A Min Tx Rate: T1 (1.544 Mbps)
- G. Endpoint B Min Tx Rate: Zero (0 bps)
- H. Report Timer: fast (1 s)
- I. Click OK.

E. Start running traffic.



- A. Select the android-udp connection.
- B. Click **Start**.

F. Connect your Android device to **android-test2**. Traffic should start flowing again after about 20-30 seconds.

