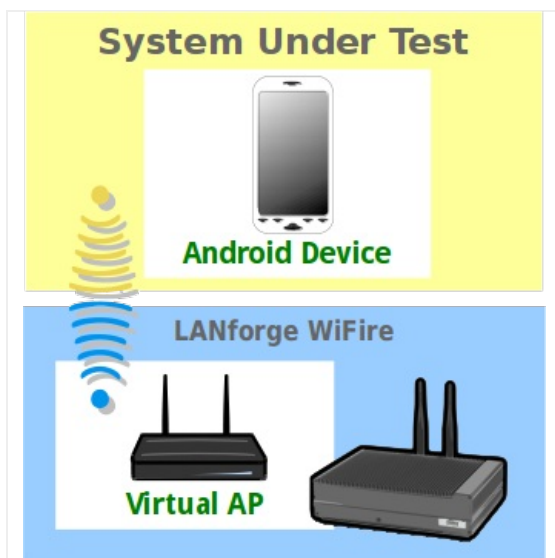
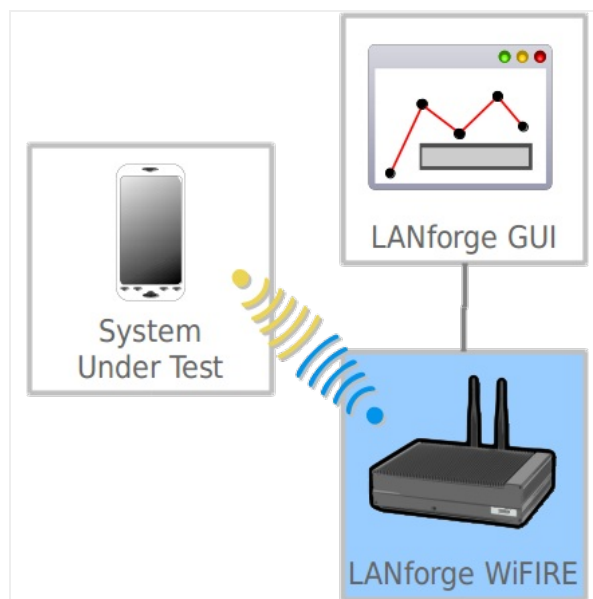


## Running UDP Traffic with Android

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

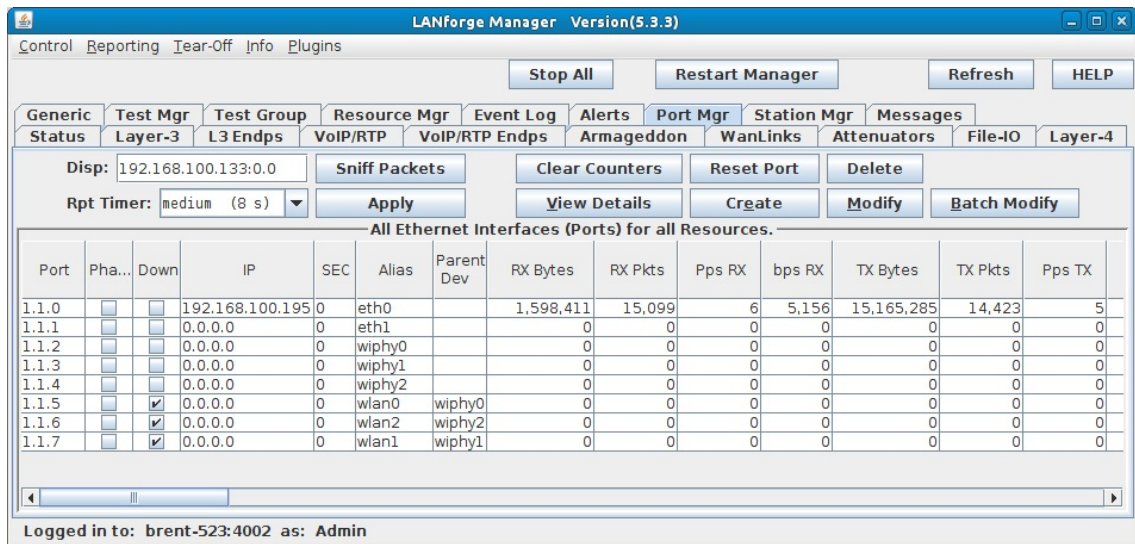
Requires LANforge 5.3.3 or later. Make sure to configure a realm other than 255 for the VAP system, this is because the Android device needs to be in the same realm to be managed. This cookbook will be using realm 195. You can find information on configuring realms using Ifconfig starting from step 4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

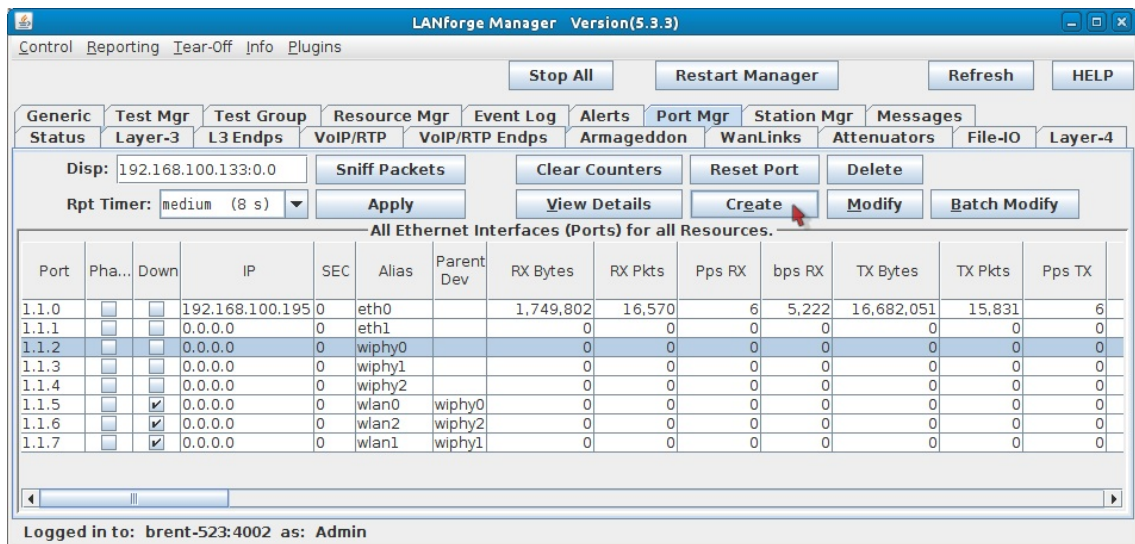


1. First, we will set up the LANforge system so the Android device can connect.
2. Create the first VAP.

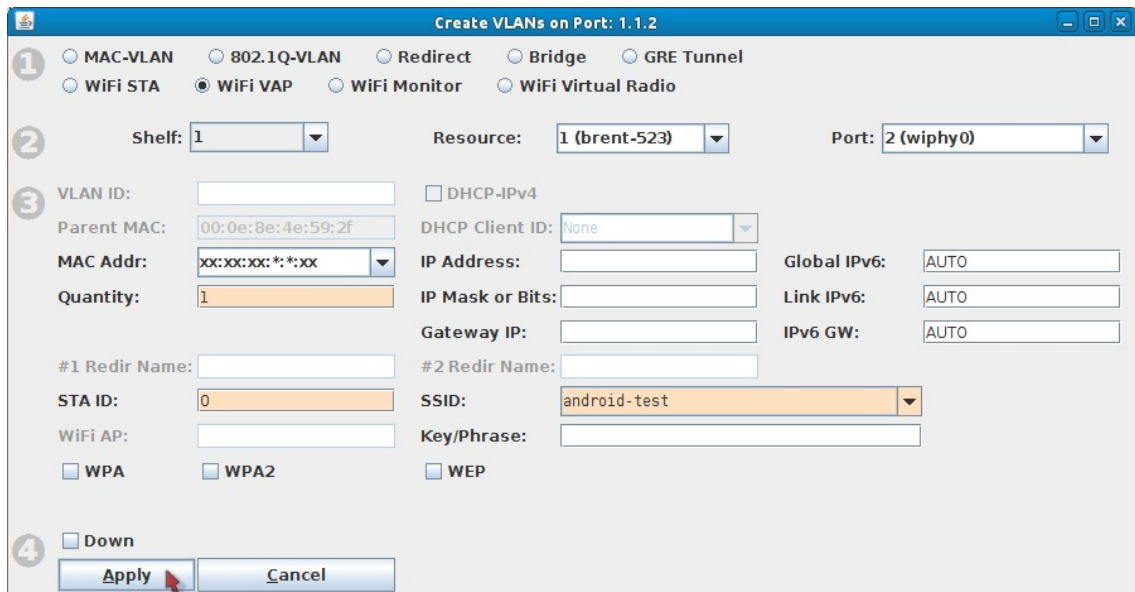
A. Go to the **Port Mgr** tab.



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.

1  MAC-VLAN  802.1Q-VLAN  Redirect  Bridge  GRE Tunnel  
 WiFi STA  WiFi VAP  WiFi Monitor  WiFi Virtual Radio

2 Shelf: 1 Resource: 1 (brent-523) Port: 3 (wiphy1)

3 VLAN ID:   DHCP-IPv4  
Parent MAC: 04:f0:21:11:e7:36 DHCP Client ID: None  
MAC Addr: xx:xx:xx:\*:xx IP Address:  Global IPv6: AUTO  
Quantity: 1 IP Mask or Bits:  Link IPv6: AUTO  
Gateway IP:  IPv6 GW: AUTO  
#1 Redir Name:  #2 Redir Name:   
STA ID: 1 SSID: android-test2  
WiFi AP:  Key/Phrase:   
 WPA  WPA2  WEP

4  Down  
**Apply** **Cancel**

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).

, Load Behavior: Choose One, buttons: Load, Delete, Save, Download DB, Show Progress). At the bottom, there is a 'Virtual Shelf 1' section for 'Resource 1' with a 'Netsmith' button. The status bar at the bottom reads 'Logged in to: brent-523:4002 as: Admin'."/>

LANforge Manager Version(5.3.3)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr Station Mgr Messages  
Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO Layer-4

License Info  
Licenses expire in: 118 days.  
Support expires in: 118 days.

Current Users  
\* Admin from:192.168.100.133  
gnuserver from:127.0.0.1

Test Configuration Database  
List: BLANK Load  
Name:  Delete  
Load Behavior: Choose One Save  
Download DB Show Progress

Virtual Shelf 1  
Resource 1  
Netsmith

Logged in to: brent-523:4002 as: Admin

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: 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: Key/Phrase:

WiFi AP:  WPA  WPA2  WEP

Down

Apply Cancel

A. Quantity: 1

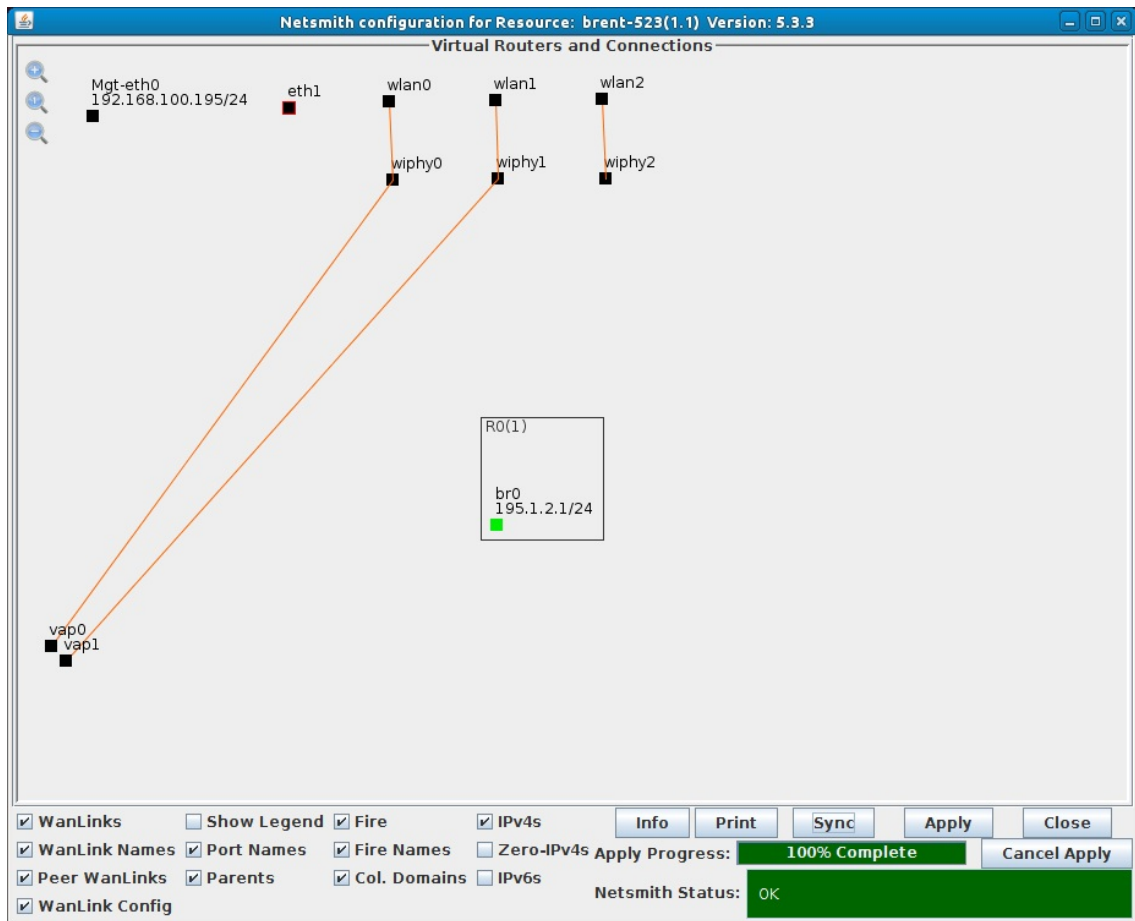
B. Bridge Name: br0

C. IP Address: 195.1.2.1/24

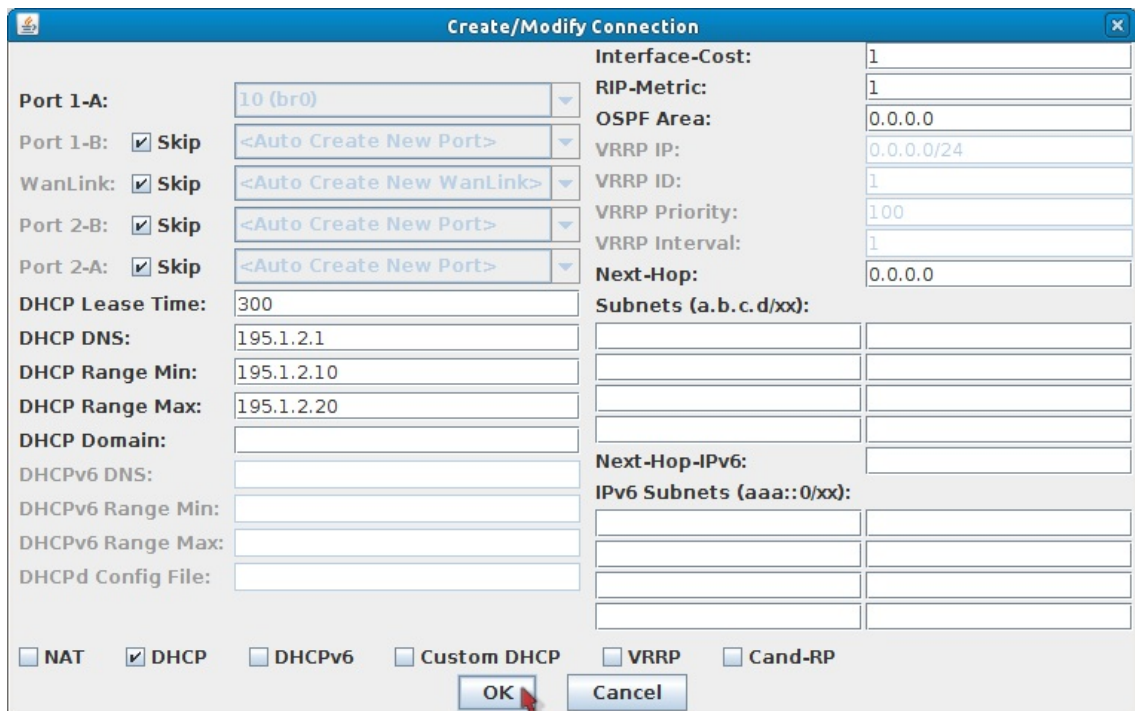
D. Click **Apply** and close the Create Port window.

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.

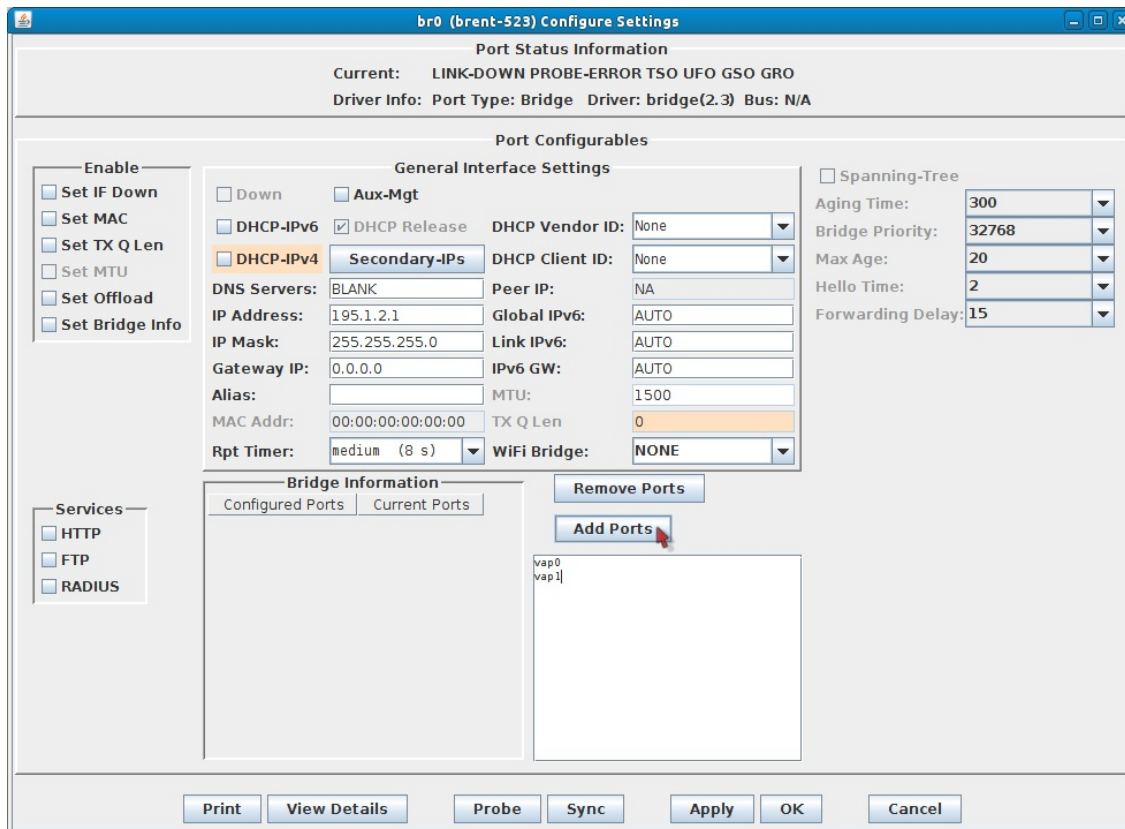


H. Select **DHCP** and use the below values.

- 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.

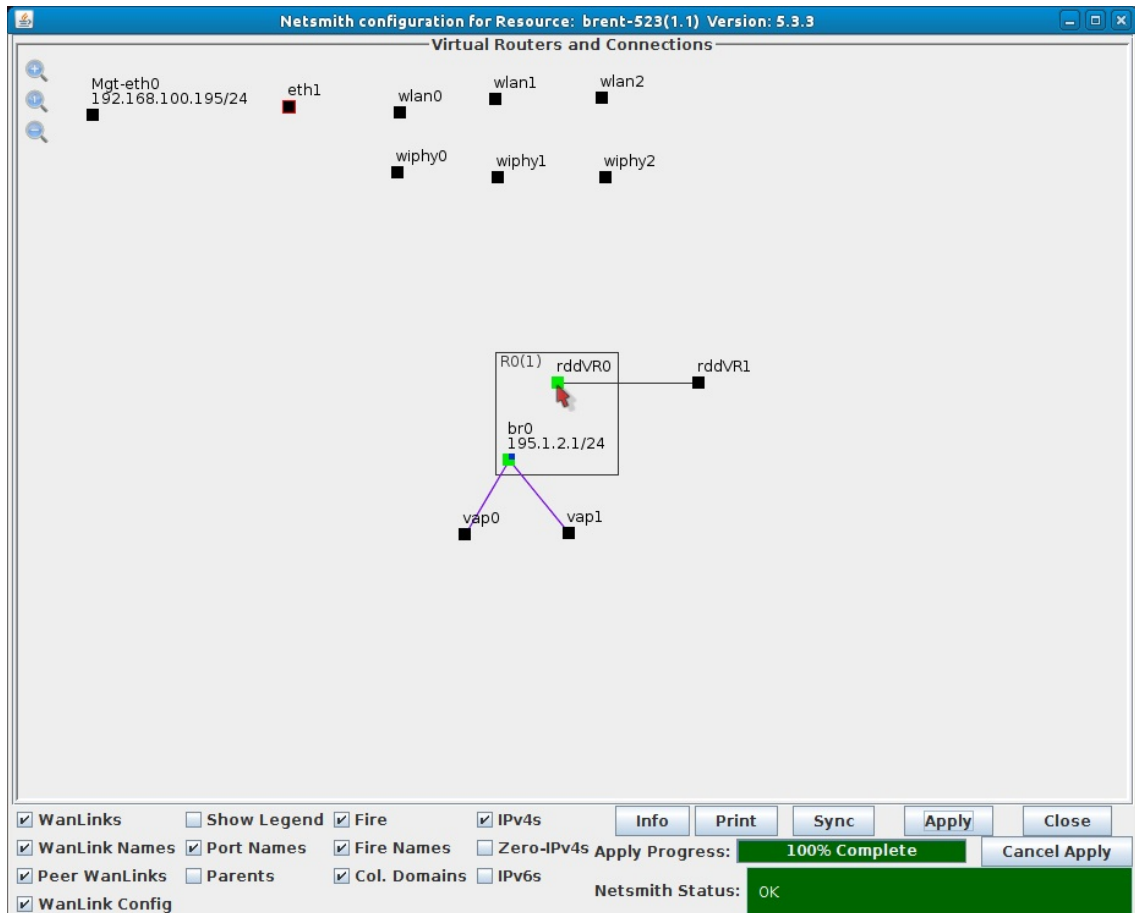
5. Create a redirect-device inside the virtual router. The Android will connect to this port for management purposes.

- 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.

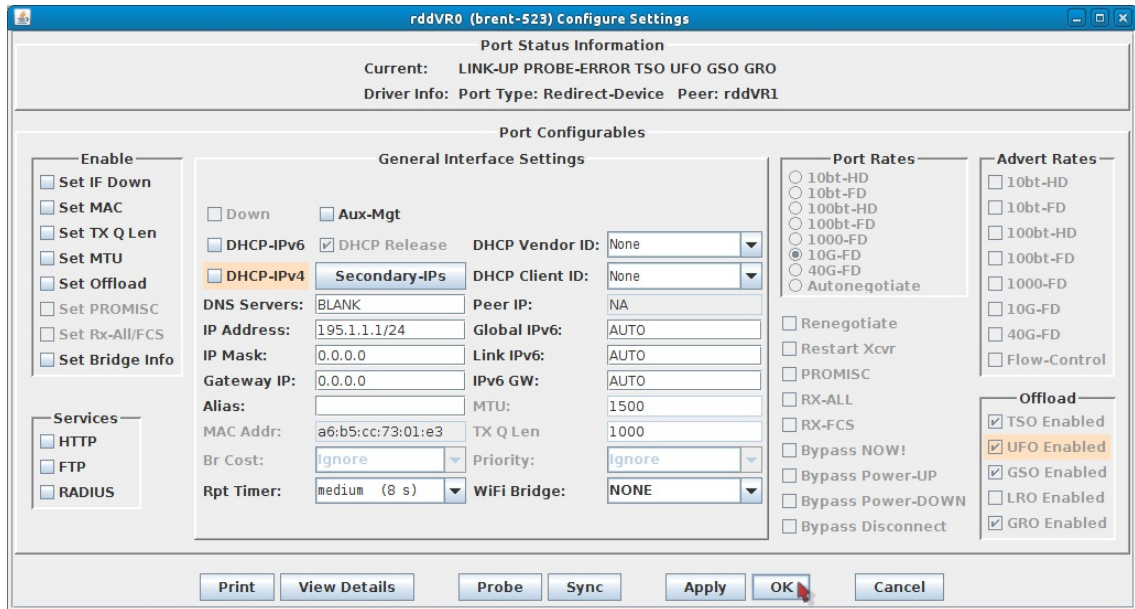
- C. Drag one of the rdd interfaces into the virtual router (rddVr0 is used in this example). The interface box should change to green.



- 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**.



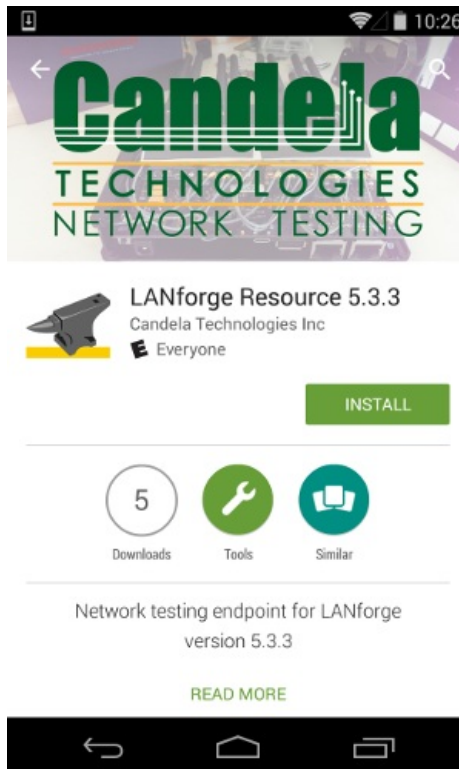
A. Set the **IP Address** to 195.1.1.1/24

B. Click **OK**.

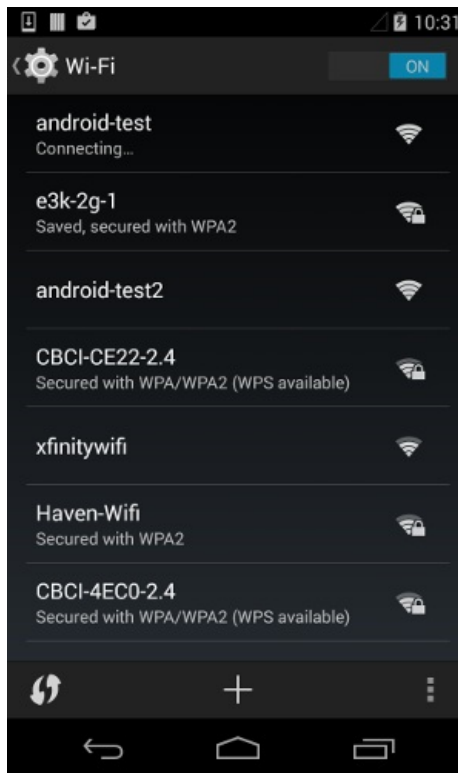
F. Close Netsmith.

6. Set up the Android device.

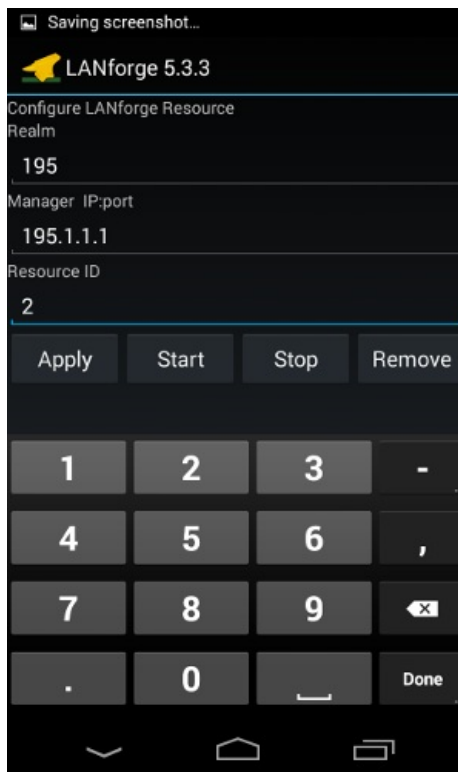
A. Install LANforge Resource from the Google Play Store.



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

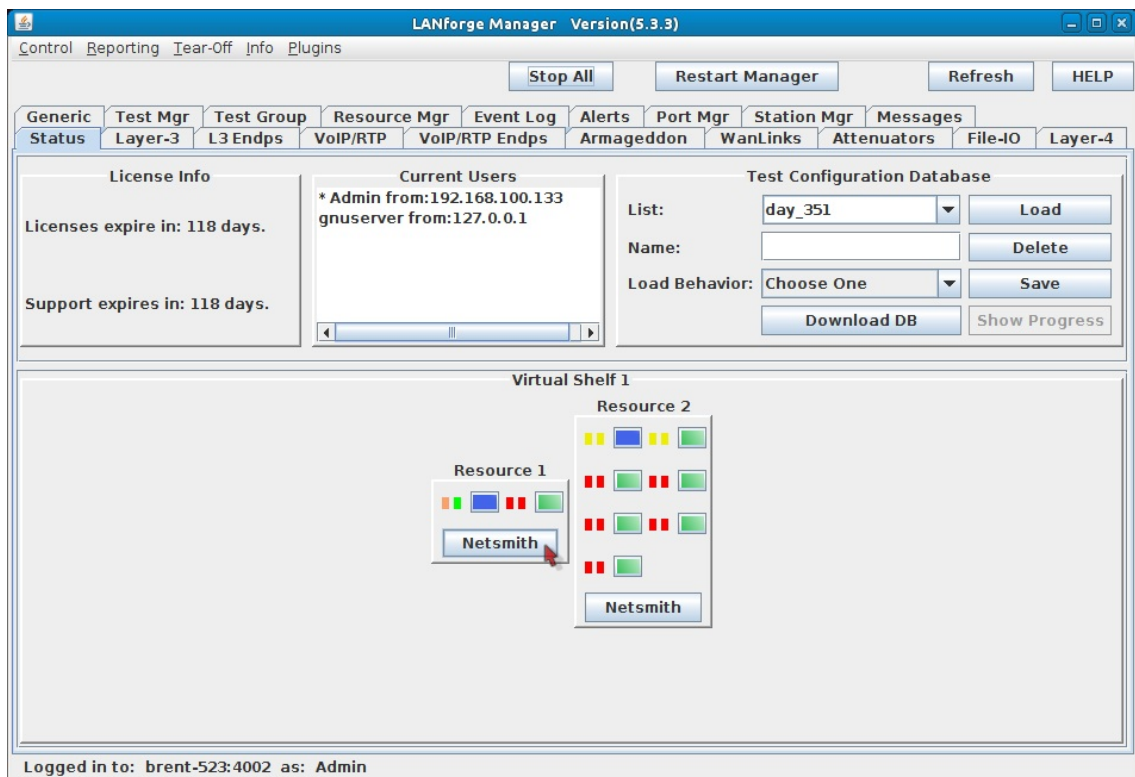
# chmod 755 /data/data/com.candela.lfresource2/
android_install.sh
Exception running SU command:
chmod 755 /data/data/com.candela.lfresource2/
android_install.sh
Error: Error running exec(). Command: [su] Working
Directory: null Environment: null
Exception Type: java.io.IOExceptionWARNING: Root (su) 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**.

**Create/Modify Connection**

Port 1-A: <Auto Create New Port>  
Port 1-B:  Skip <Auto Create New Port>  
WanLink:  Skip <Auto Create New WanLink>  
Port 2-B:  Skip <Auto Create New Port>  
Port 2-A:  Skip <Auto Create New Port>

DHCP Lease Time: 43200  
DHCP DNS: 0.0.0.0  
DHCP Range Min: 0.0.0.0  
DHCP Range Max: 0.0.0.0  
DHCP Domain: example.com  
DHCPv6 DNS: 0::0  
DHCPv6 Range Min: 0::0  
DHCPv6 Range Max: 0::0  
DHCPd Config File:

Interface-Cost: 1  
RIP-Metric: 1  
OSPF Area: 000.000.000.000  
VRRP IP: 0.0.0.0/24  
VRRP ID: 1  
VRRP Priority: 100  
VRRP Interval: 1  
Next-Hop:

Subnets (a.b.c.d/xx):  
Next-Hop-IPv6:  
IPv6 Subnets (aaa::0/xx):

NAT  DHCP  DHCPv6  Custom DHCP  VRRP  Cand-RP

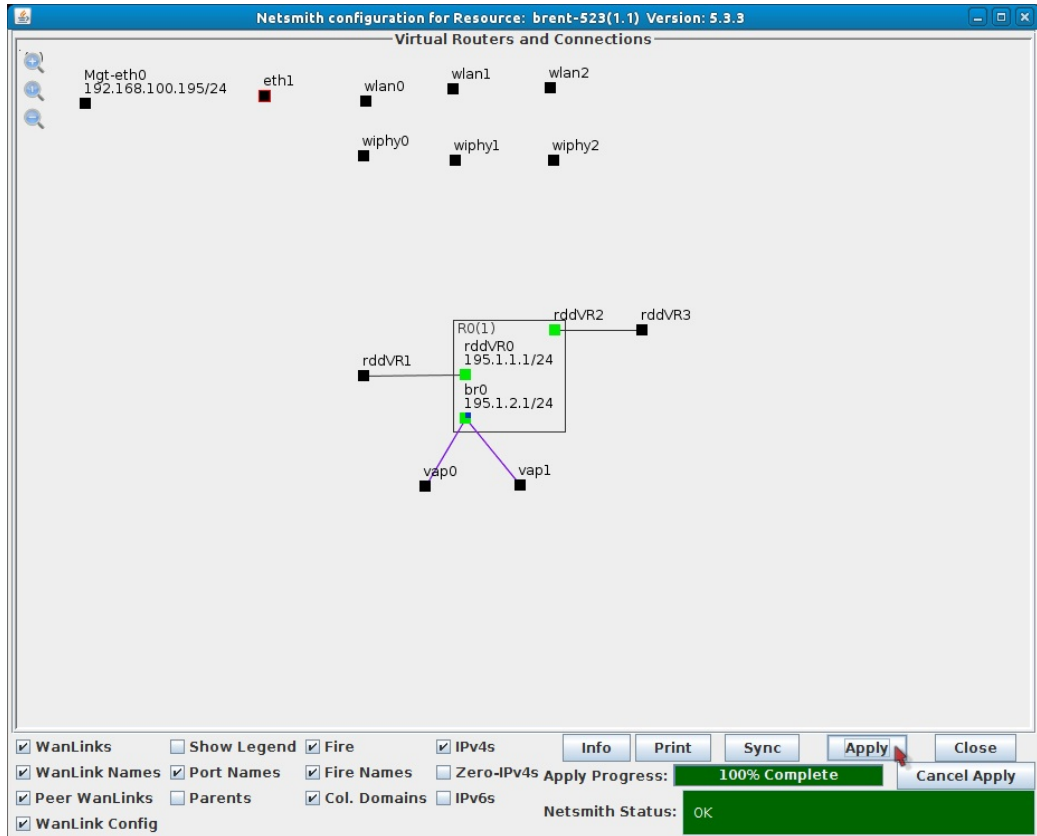
OK Cancel

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**.

The screenshot shows the 'rddVR2 (brent-523) Configure Settings' window. At the top, it displays 'Port Status Information' with 'Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO' and 'Driver Info: Port Type: Redirect-Device Peer: rddVR3'. The main area is titled 'Port Configurables' and is divided into several sections:

- Enable:** A list of checkboxes for 'Set IF Down', 'Set MAC', 'Set TX Q Len', 'Set MTU', 'Set Offload', 'Set PROMISC', 'Set Rx-All/FCS', and 'Set Bridge Info'. Below this is a 'Services' section with 'HTTP', 'FTP', and 'RADIUS' checkboxes.
- General Interface Settings:** Contains fields for 'Down', 'Aux-Mgt', 'DHCP-IPv6', 'DHCP Release', 'DHCP Vendor ID', 'DHCP Client ID', 'DNS Servers', 'Peer IP', 'IP Address' (195.1.3.1/24), 'Global IPv6', 'IP Mask' (0.0.0.0), 'Link IPv6', 'Gateway IP' (0.0.0.0), 'IPv6 GW', '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)), and 'WiFi Bridge' (NONE).
- Port Rates:** Radio buttons for '10bt-HD', '10bt-FD', '100bt-HD', '100bt-FD', '1000-FD', '10G-FD' (selected), '40G-FD', and 'Autonegotiate'. Below are checkboxes for 'Renegotiate', 'Restart Xcvr', 'PROMISC', 'RX-ALL', 'RX-FCS', 'Bypass NOW!', 'Bypass Power-UP', 'Bypass Power-DOWN', and 'Bypass Disconnect'.
- Advert Rates:** Checkboxes for '10bt-HD', '10bt-FD', '100bt-HD', '100bt-FD', '1000-FD', '10G-FD', '40G-FD', and 'Flow-Control'.
- Offload:** Checkboxes for 'TSO Enabled', 'UFO Enabled' (checked), 'GSO Enabled', 'LRO Enabled', and 'GRO Enabled'.

At the bottom, there are buttons for 'Print', 'View Details', 'Probe', 'Sync', 'Apply', 'OK', and 'Cancel'.

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

II. Click **OK**.

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

The screenshot shows the 'rddVR3 (brent-523) Configure Settings' window. At the top, it displays 'Port Status Information' with 'Current: LINK-UP PROBE-ERROR TSO UFO GSO GRO' and 'Driver Info: Port Type: Redirect-Device Peer: rddVR2'. The main area is titled 'Port Configurables' and is divided into several sections:

- Enable:** A list of checkboxes for 'Set IF Down', 'Set MAC', 'Set TX Q Len', 'Set MTU', 'Set Offload', 'Set PROMISC', 'Set Rx-All/FCS', and 'Set Bridge Info'. Below this is a 'Services' section with 'HTTP', 'FTP', and 'RADIUS' checkboxes.
- General Interface Settings:** Contains fields for 'Down', 'Aux-Mgt', 'DHCP-IPv6', 'DHCP Release', 'DHCP Vendor ID', 'DHCP Client ID', 'DNS Servers', 'Peer IP', 'IP Address' (195.1.3.2/24), 'Global IPv6', 'IP Mask' (0.0.0.0), 'Link IPv6', 'Gateway IP' (195.1.3.1), 'IPv6 GW', '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)), and 'WiFi Bridge' (NONE).
- Port Rates:** Radio buttons for '10bt-HD', '10bt-FD', '100bt-HD', '100bt-FD', '1000-FD', '10G-FD' (selected), '40G-FD', and 'Autonegotiate'. Below are checkboxes for 'Renegotiate', 'Restart Xcvr', 'PROMISC', 'RX-ALL', 'RX-FCS', 'Bypass NOW!', 'Bypass Power-UP', 'Bypass Power-DOWN', and 'Bypass Disconnect'.
- Advert Rates:** Checkboxes for '10bt-HD', '10bt-FD', '100bt-HD', '100bt-FD', '1000-FD', '10G-FD', '40G-FD', and 'Flow-Control'.
- Offload:** Checkboxes for 'TSO Enabled', 'UFO Enabled' (checked), 'GSO Enabled', 'LRO Enabled', and 'GRO Enabled'.

At the bottom, there are buttons for 'Print', 'View Details', 'Probe', 'Sync', 'Apply', 'OK', and 'Cancel'.

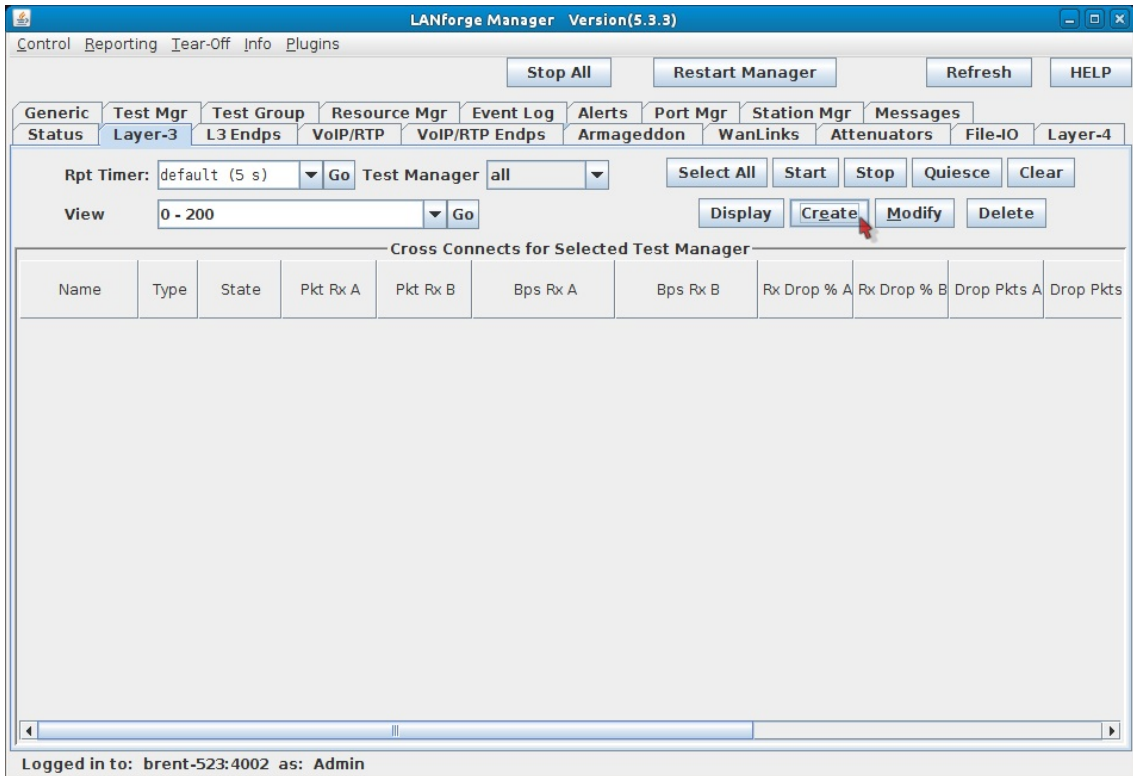
I. Set the **IP Address** to 195.1.3.2/24

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

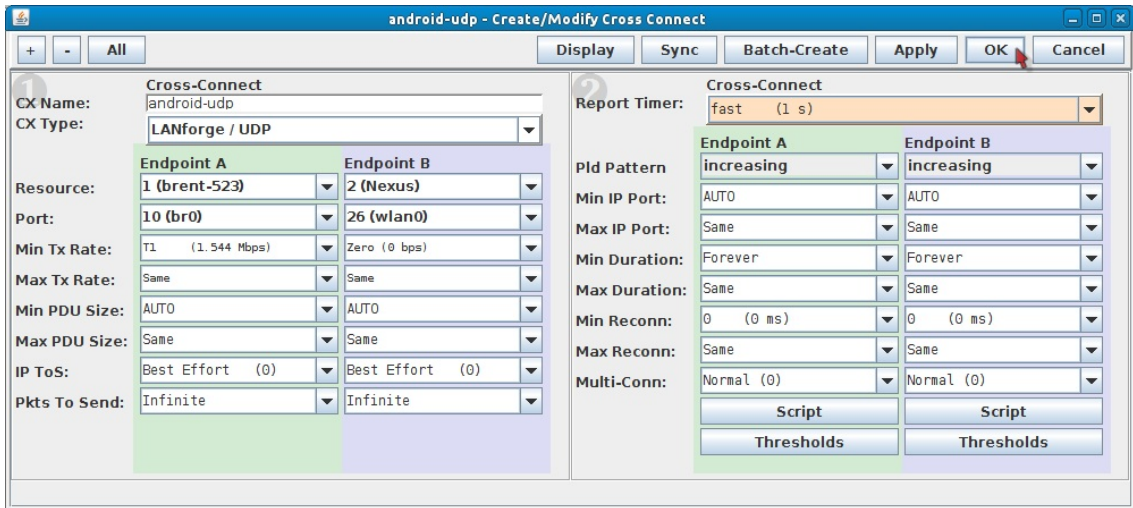
III. Click **OK**.

I. Close Netsmith.

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

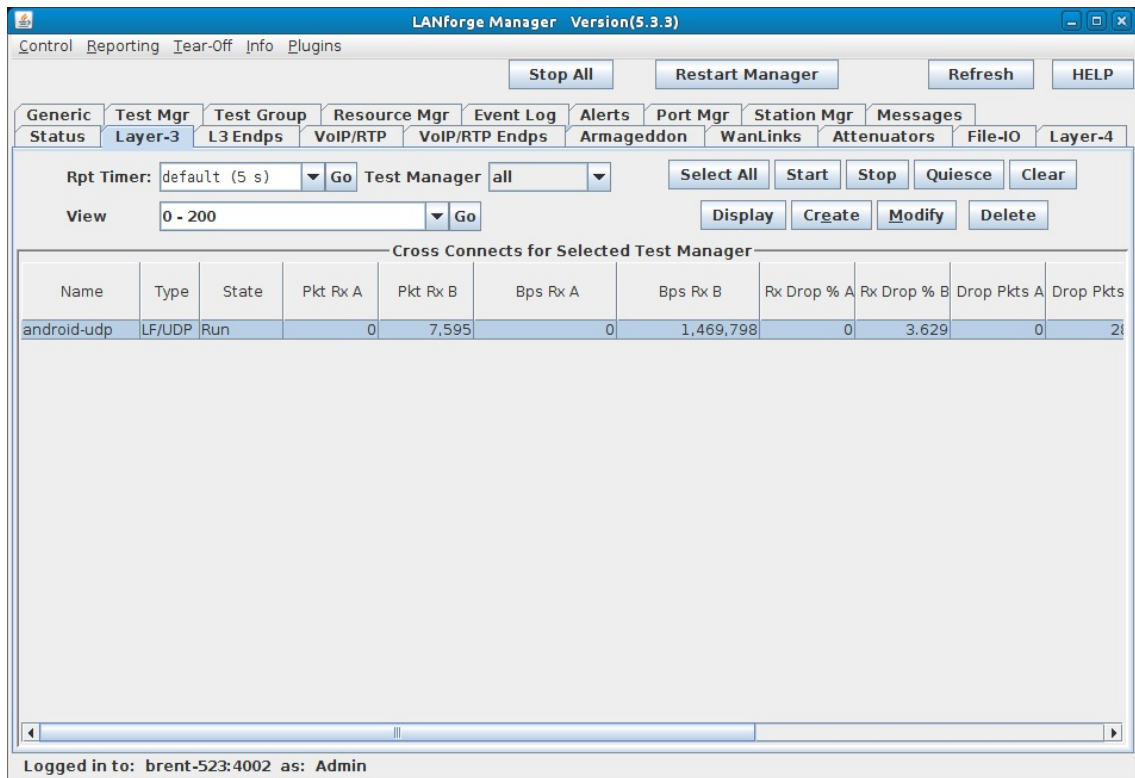


D. Set the below values. Note that Endpoint B Resource will differ depending on the Android device type.



- 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.

