

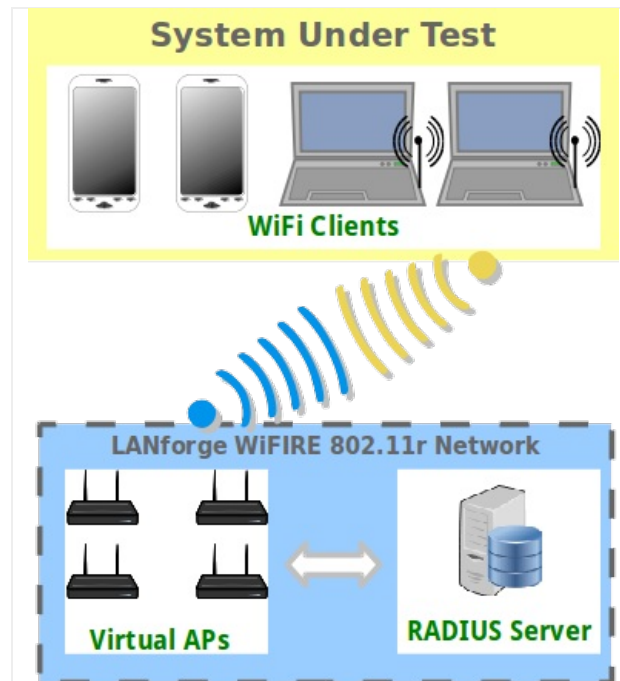
LANforge WiFi Access Point Network with 802.11r

Goal: Configure four virtual APs in an 802.11r network to test fast transition (FT) clients.

Configure four virtual Access Points to use 802.11r with FT-EAP. This example uses a LANforge CT525 system but a similar procedure will work on all multi-radio systems.

The wifi clients under test are also 802.11r enabled so that they can initiate FT Requests and roam. Here we are using another LANforge WiFi as the system under test to emulate 802.11r stations and force them to roam.

In LANforge, each virtual access point will be running its own hostapd process configured to enable 802.11r and bridged to other virtual access points. The bridged VAP network will emulate the Distributed System (DS) for FT over-the-DS roaming.



1. Setup a virtual access points on a wifi NIC and configure it for a channel and SSID.

- A. Go to the Port Mgr tab, select the parent device such as wiphy0, select Create, then fill out appropriate information and create a virtual access point.

- B. Modify the new vap, select the **Advanced Configuration** tab in the Port-Modify window and check the box Advanced/802.1x and fill in the RADIUS IP/Port/Secret. Here the RADIUS server will be a freeradius process configured on localhost. The default RADIUS secret is **lanforge** and the default login is **testuser/testpasswd** when freeradius is installed via `lf_install.pl --do_radius`.

- C. Repeat above steps A and B to create a single vap on wiphy1, wiphy2 and wiphy3 for a total of four virtual access points.

Create VLANs on Port: 1.1.07

1 ☐ MAC-VLAN ☐ 802.1Q-VLAN ☐ Redirect ☐ Bridge ☐ GRE Tunnel
☐ WIFI STA ☒ WIFI VAP ☐ WIFI Monitor ☐ WIFI Virtual Radio

2 Shelf: 1 Resource: 1 (ben-5pci) Port: 7 (wiphy1)

3 VLAN ID: ☐ DHCP-IPv4
Parent MAC: 04:f0:21:20:37:03 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: roamer
WIFI AP: Key/Phrase:
☐ WPA ☒ WPA2 ☐ WEP

4 ☐ Down
Apply Cancel Ready

Create VLANs on Port: 1.1.08

1 ☐ MAC-VLAN ☐ 802.1Q-VLAN ☐ Redirect ☐ Bridge ☐ GRE Tunnel
☐ WIFI STA ☒ WIFI VAP ☐ WIFI Monitor ☐ WIFI Virtual Radio

2 Shelf: 1 Resource: 1 (ben-5pci) Port: 8 (wiphy2)

3 VLAN ID: ☐ DHCP-IPv4
Parent MAC: 04:f0:21:20:37:06 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: 2 SSID: roamer
WIFI AP: Key/Phrase:
☐ WPA ☒ WPA2 ☐ WEP

4 ☐ Down
Apply Cancel Ready

Create VLANs on Port: 1.1.09

1 ☐ MAC-VLAN ☐ 802.1Q-VLAN ☐ Redirect ☐ Bridge ☐ GRE Tunnel
☐ WIFI STA ☒ WIFI VAP ☐ WIFI Monitor ☐ WIFI Virtual Radio

2 Shelf: 1 Resource: 1 (ben-5pci) Port: 9 (wiphy3)

3 VLAN ID: ☐ DHCP-IPv4
Parent MAC: 04:f0:21:20:37:0b 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: 3 SSID: roamer
WIFI AP: Key/Phrase:
☐ WPA ☒ WPA2 ☐ WEP

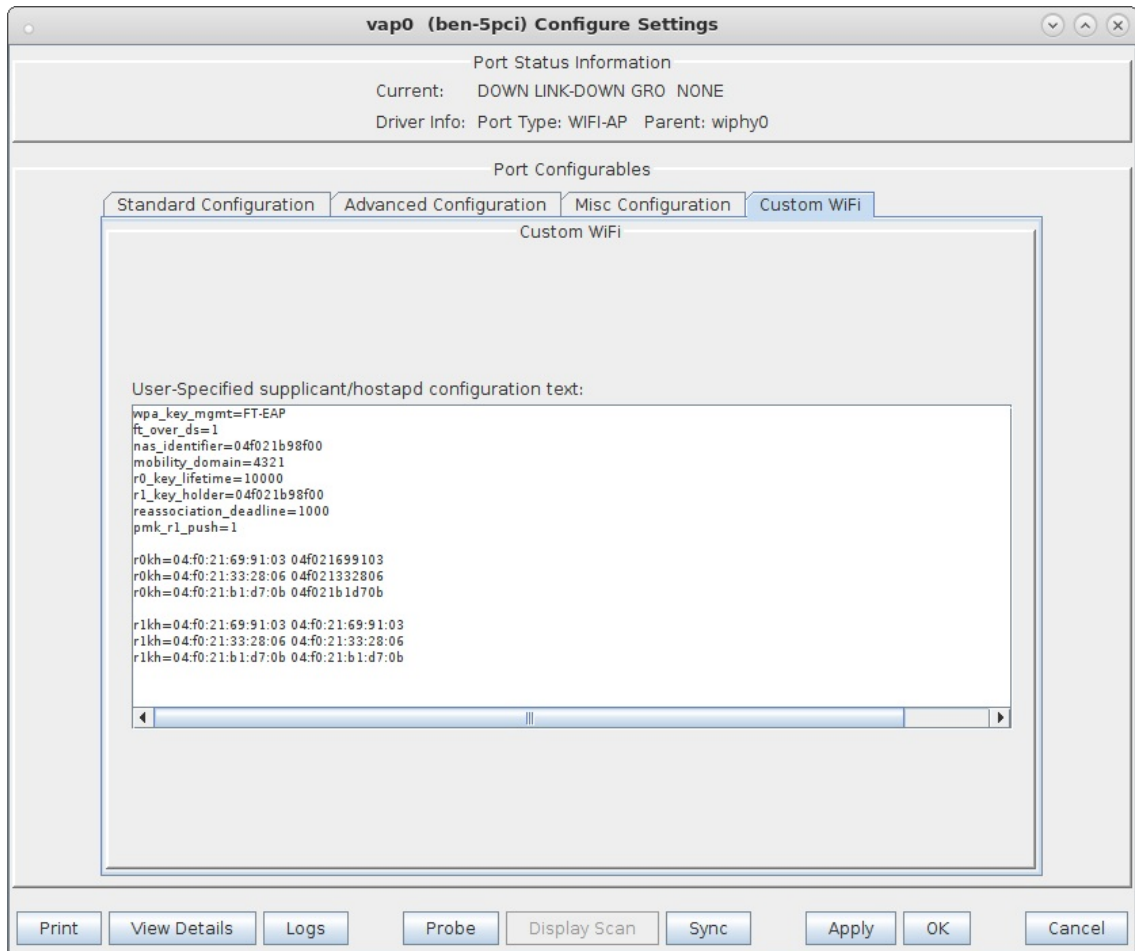
4 ☐ Down
Apply Cancel Ready

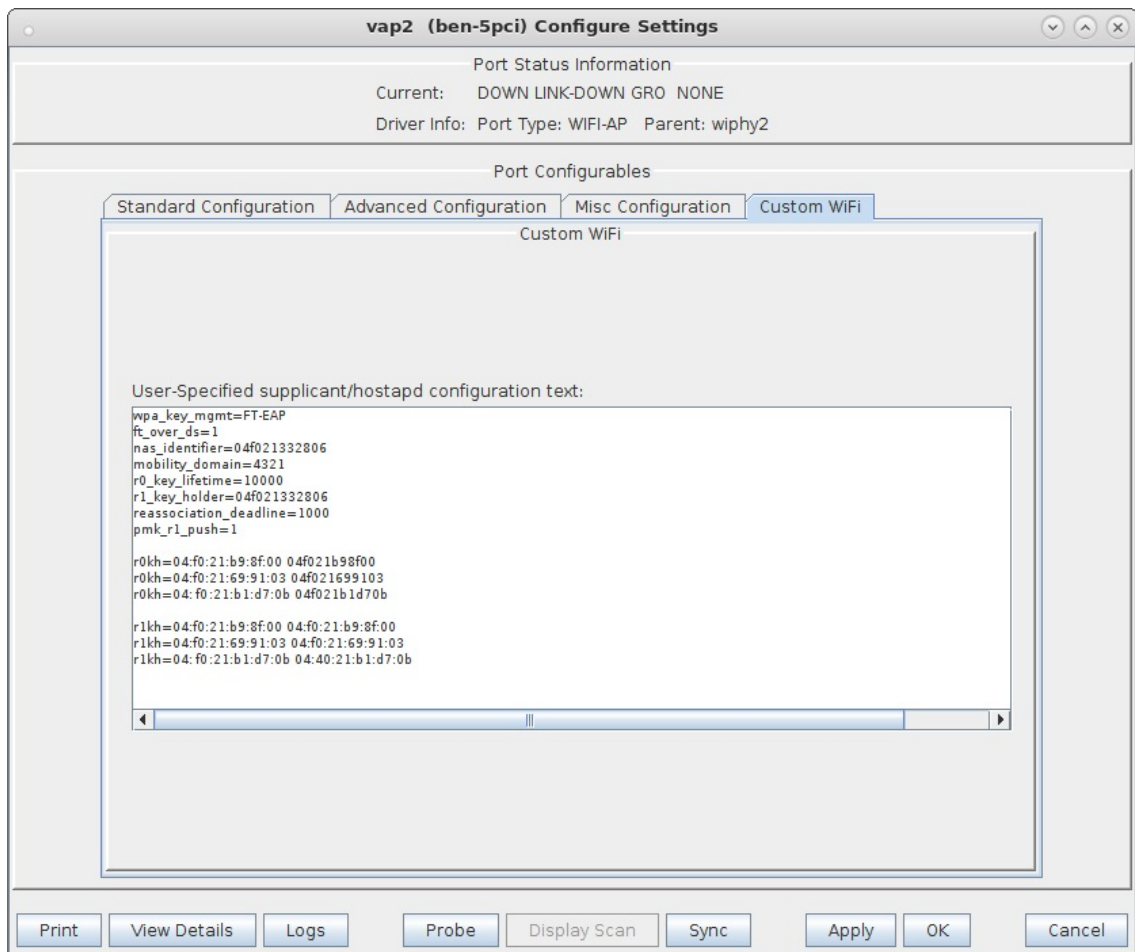
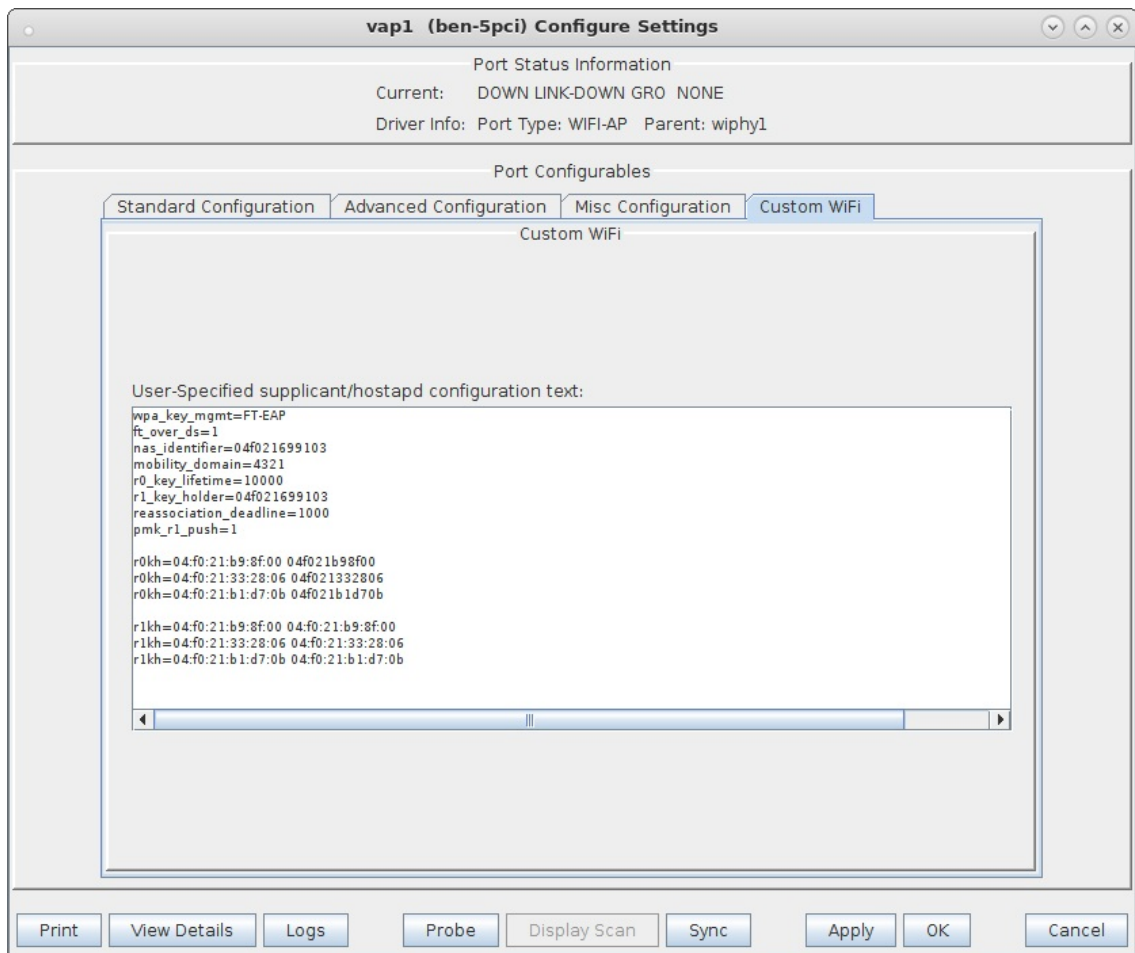
2. Modify each vap, select the **Custom Wifi** tab and enter the additional lines that will be appended to each vap hostapd configuration file.
 - A. For each vap, fill in the first 8 lines to enable 802.11r as well as the **first** part of the 3 r0kh entries and 3 r1kh

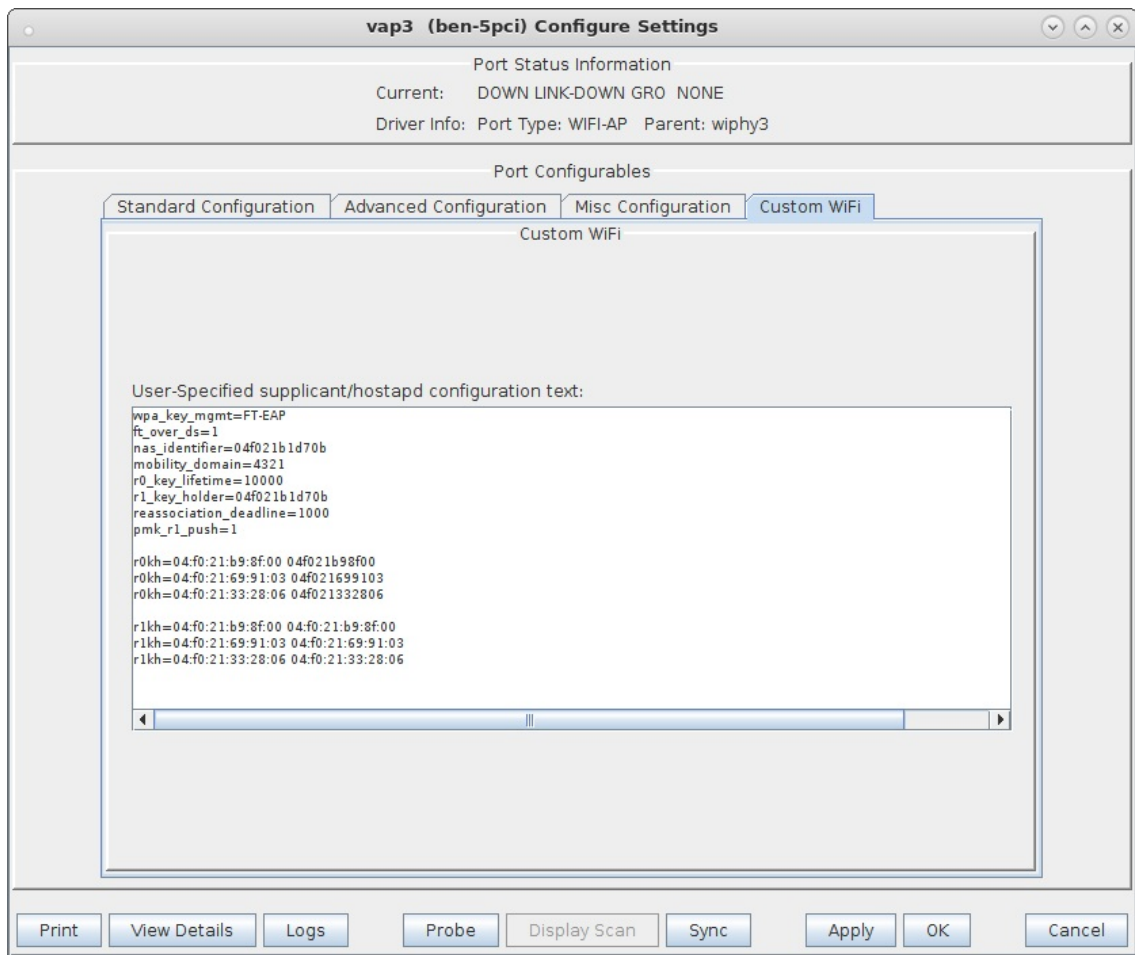
entries for neighboring vap's.

The first part of the **r0kh** is the neighboring vap MAC address and NAS identifier which in this example is the MAC without colon delimiters.

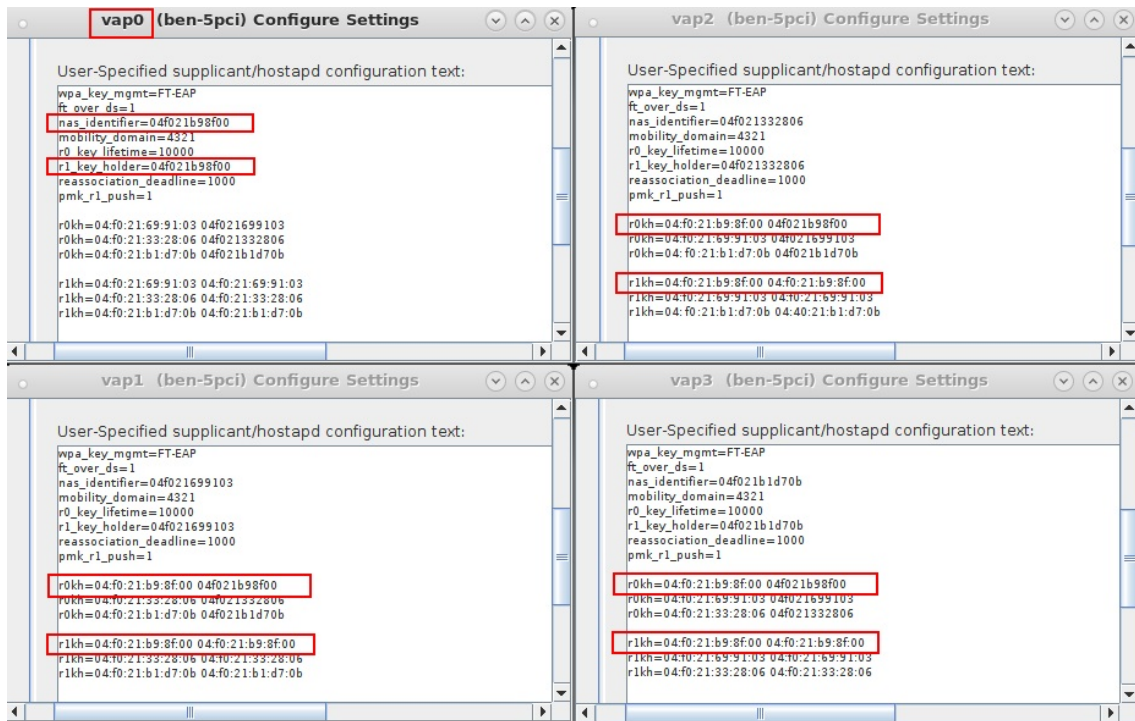
The first part of the **r1kh** is the neighboring vap MAC address and r1kh-id which in this example are the same.



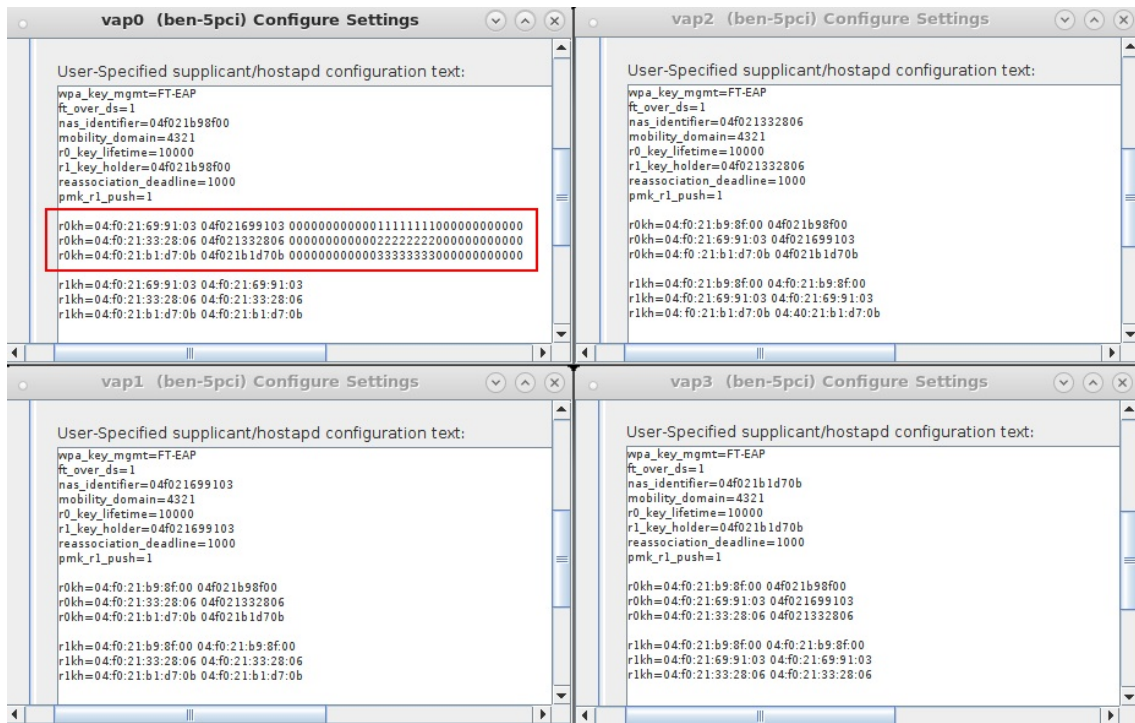




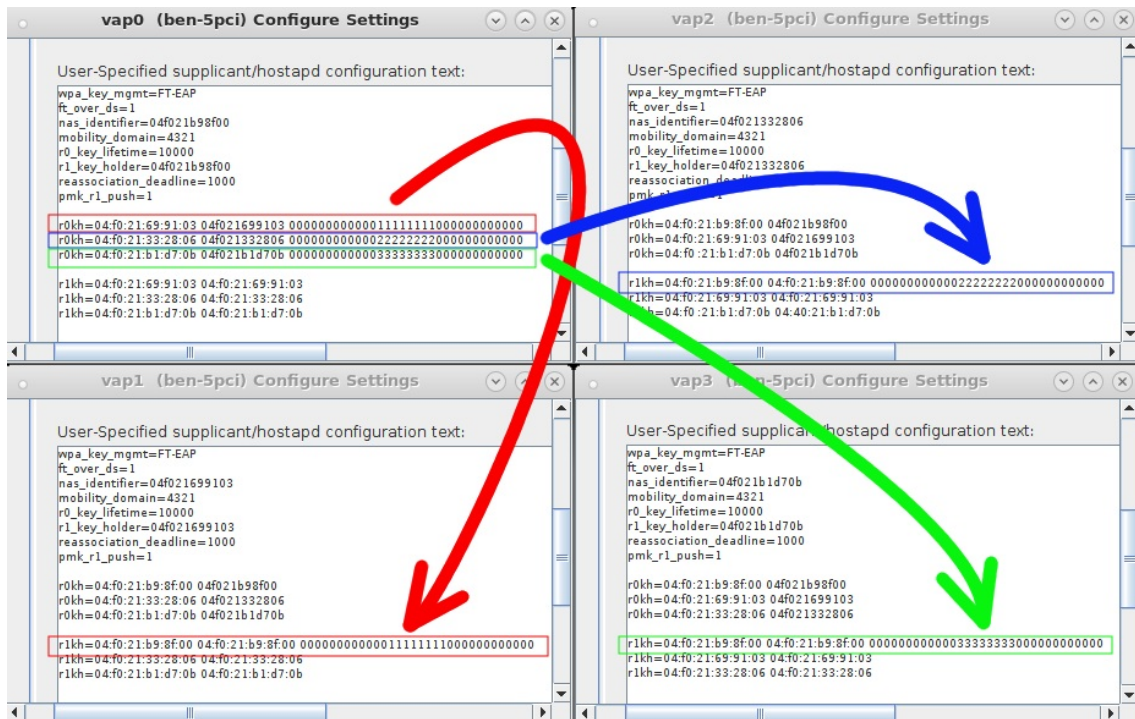
- B. Each vap will be represented by a corresponding r0kh and r1kh entry in all of the neighboring vap's custom configuration sections. Here vap0 entries are highlighted.



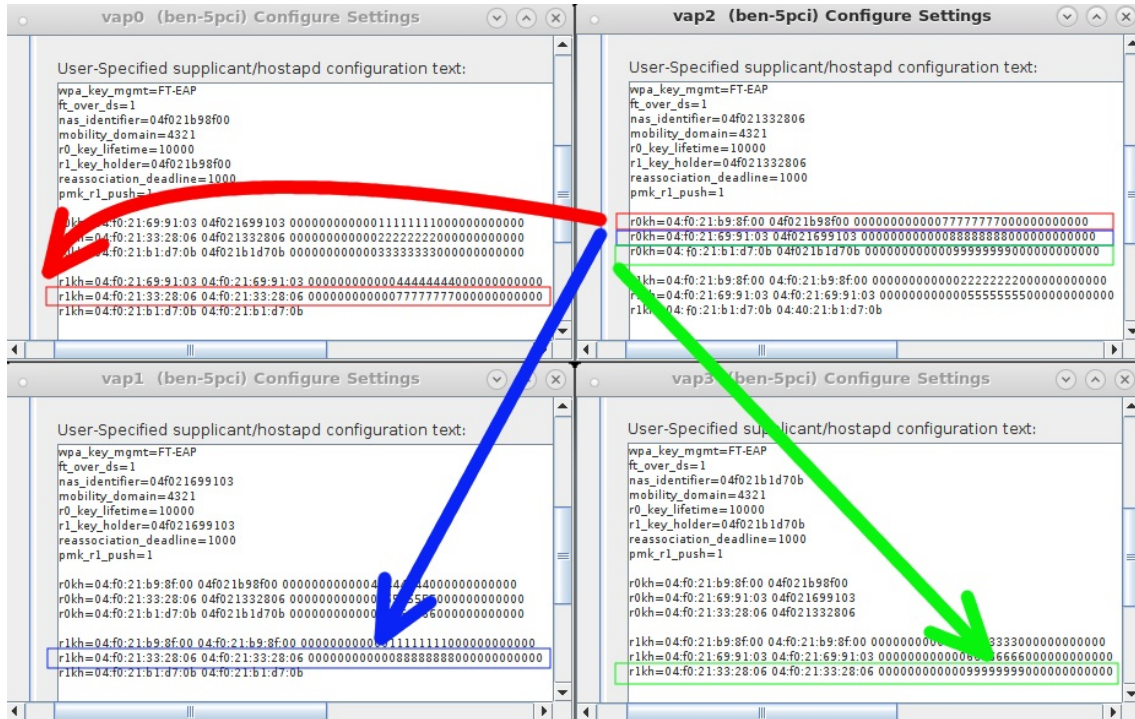
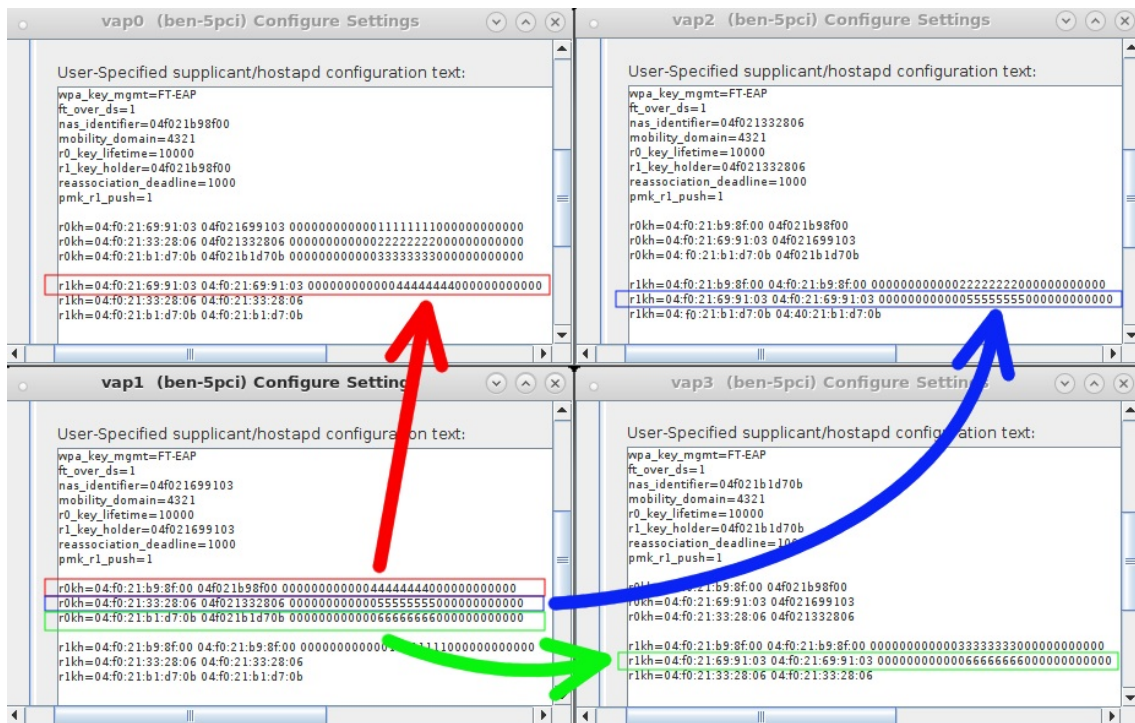
C. Generate a unique 128-bit AES hex key for each r0kh entry in the vap.

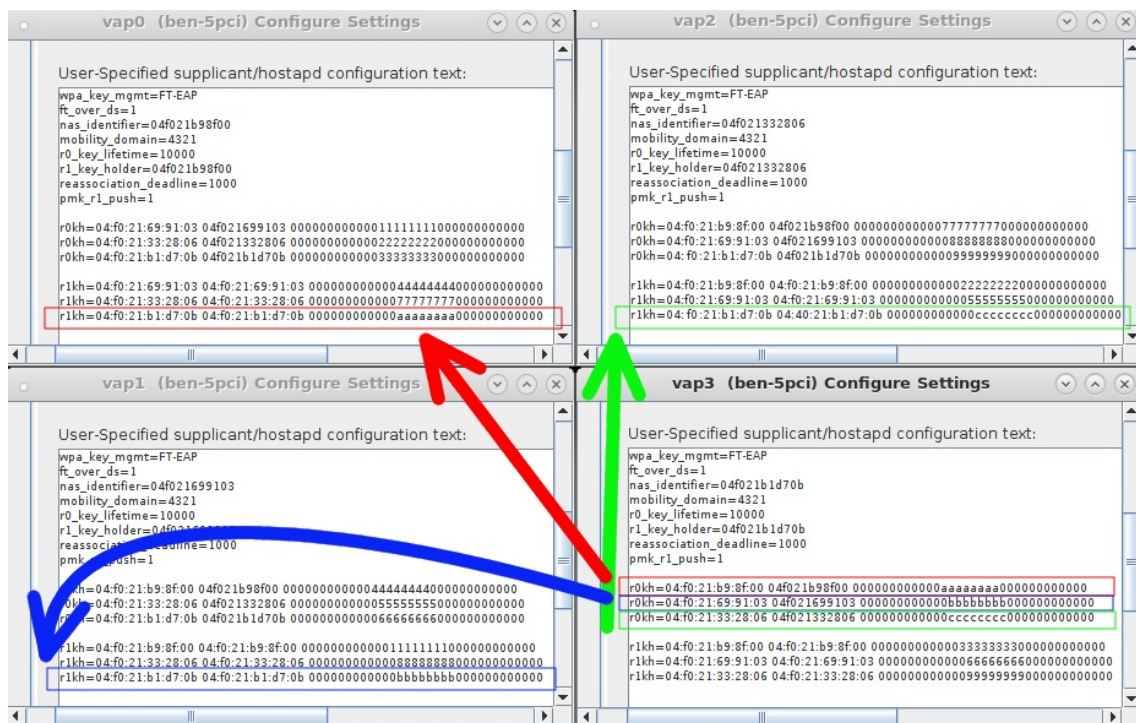


D. Copy the r0kh keys to the r1kh lines that correspond to the vap.



E. Repeat steps C and D for the other three vap's.





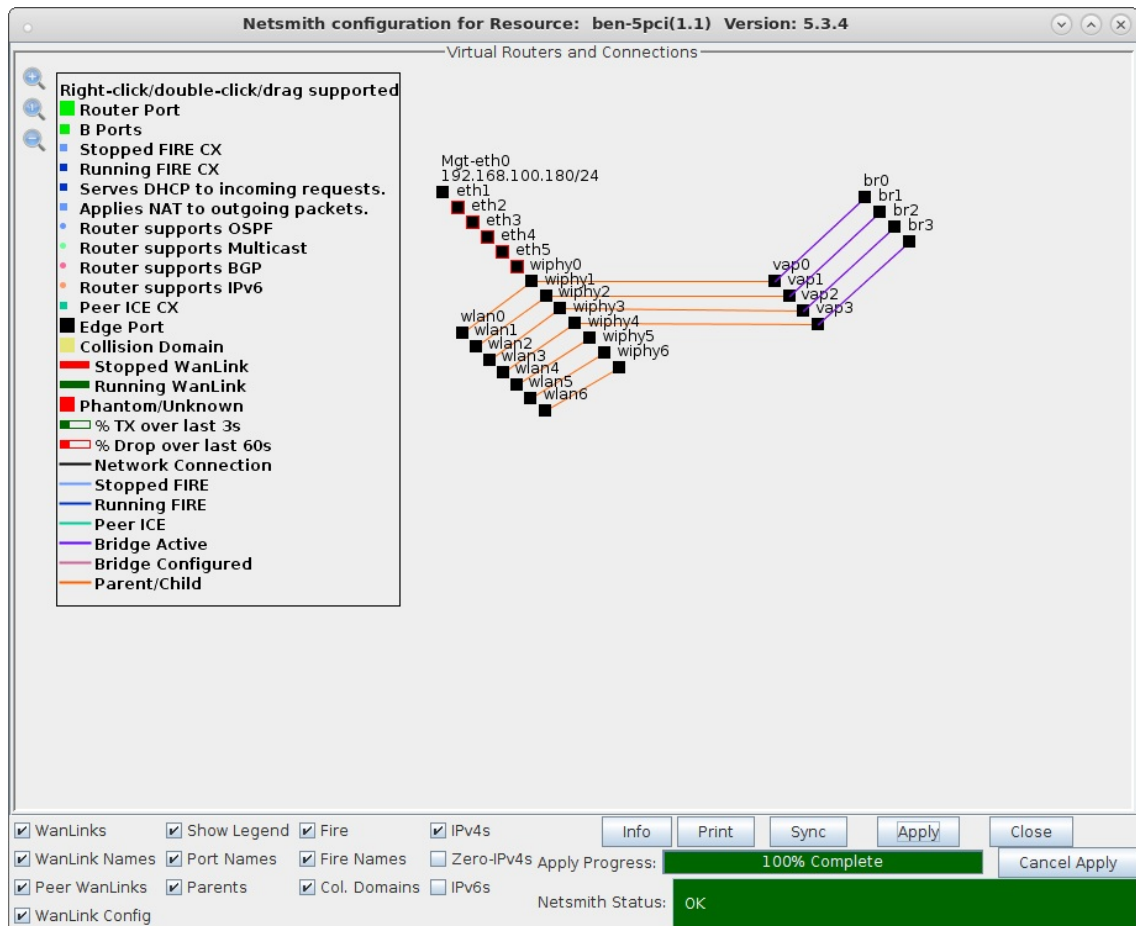
vap0: full hostapd configuration file
 vap1: full hostapd configuration file
 vap2: full hostapd configuration file
 vap3: full hostapd configuration file

For more information see [Two WiFi Access Point Network with 802.11r](#)

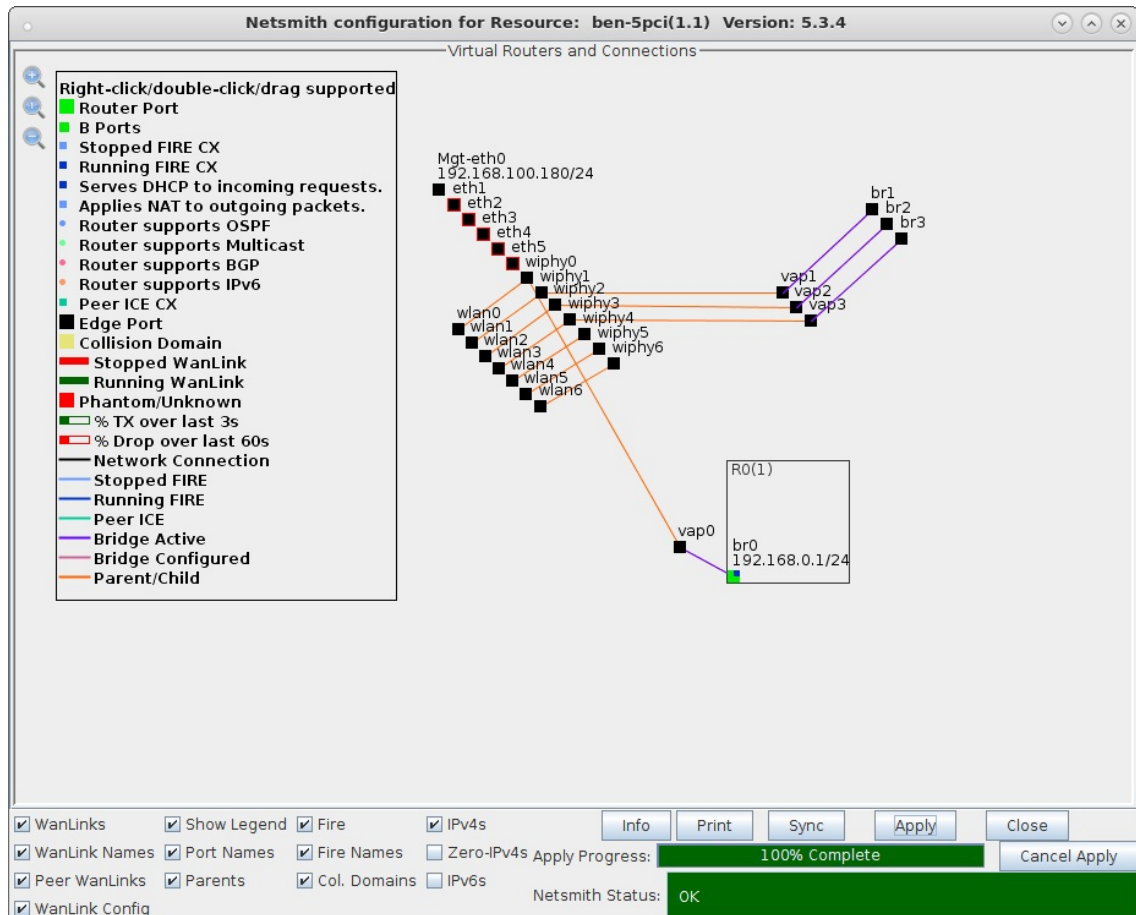
3. Create four bridge devices, one for each virtual access point.

- A. Go to the port manager tab, select Create, then select Bridge and enter Quantity 4 and a Bridge Name, then Apply to create the bridges.

- B. Modify each bridge device to add a vap. NetSmith will show a purple line when each vap has been added as bridge member.



- C. Add a single virtual router, drag br0 into the router, then give it an IP address and make it a DHCP server.



For more information see [Virtual Router with DHCP Cookbook \(skip the wanlink portion\)](#)

4. Each bridge will share a connection to a redirect device (rdd) pair so that FT messages can be sent and received.

- A. In Netsmith, right-click in a free area and select New Connection to create an rdd pair. Select **Skip** for Port 1-B, WanLink and Port 2-B then select OK. Select Netsmith Apply after creating the 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):

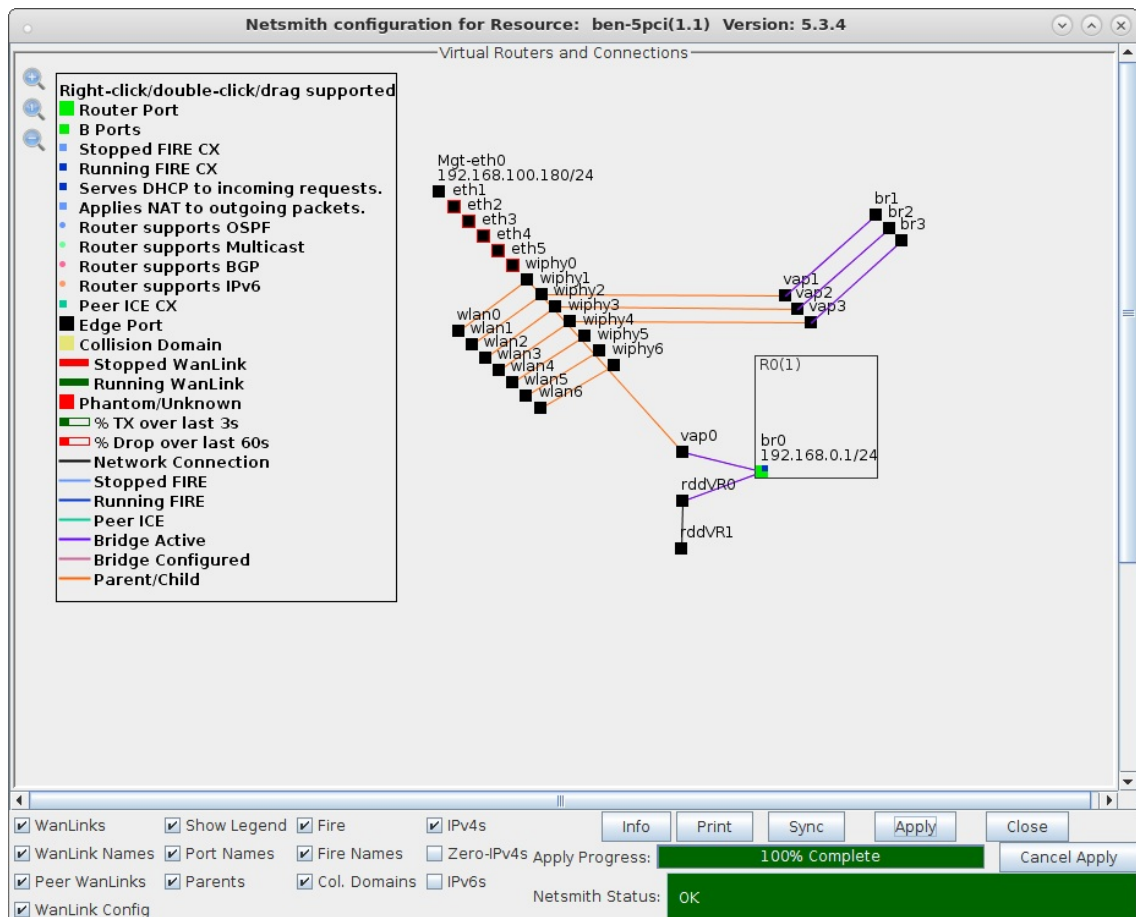
Next-Hop-IPv6:

IPv6 Subnets (aaa::0/xx):

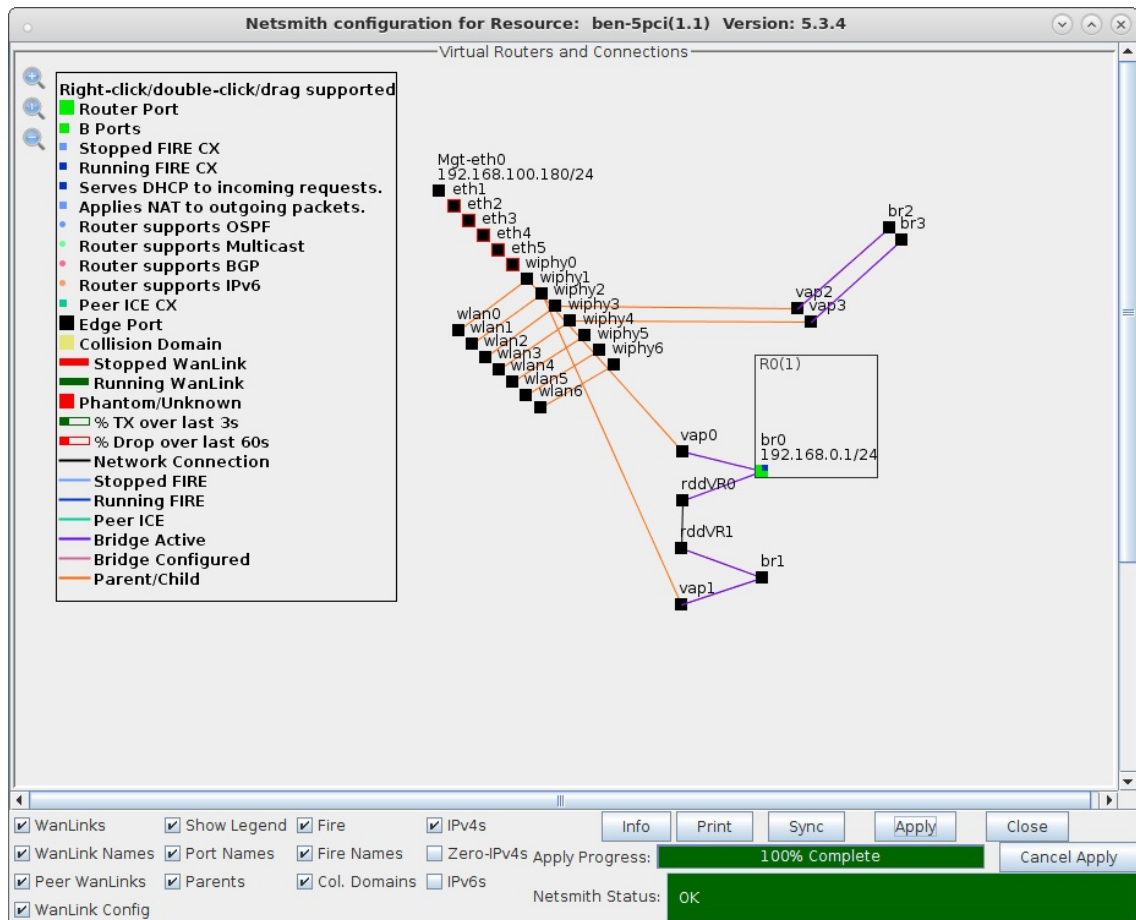
☐ NAT ☐ DHCP ☐ DHCPv6 ☐ Custom DHCP ☐ VRRP ☐ Cand-RP

OK Cancel

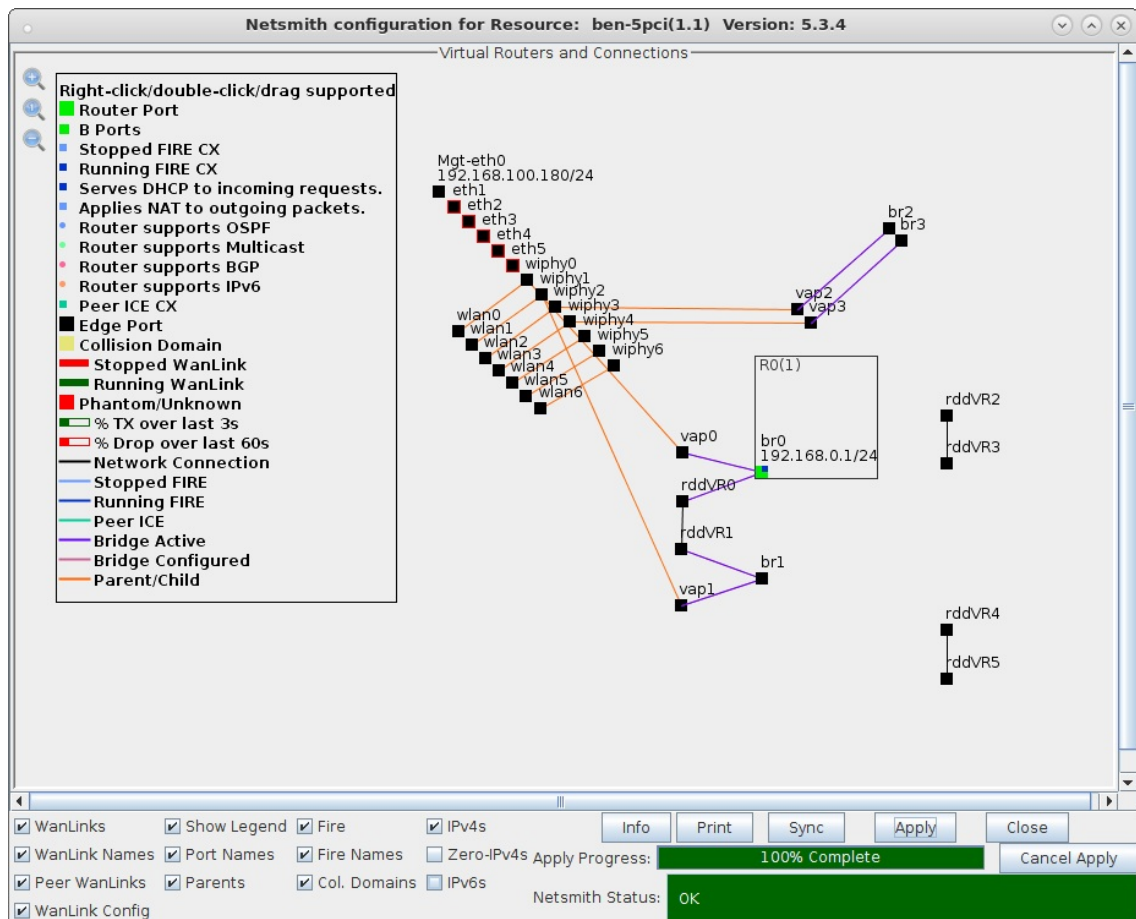
- B. Right-click and select Modify Port br0, then add rddVR0 to br0. Your rddVRX numbering may differ depending on what other Netsmith objects are created.



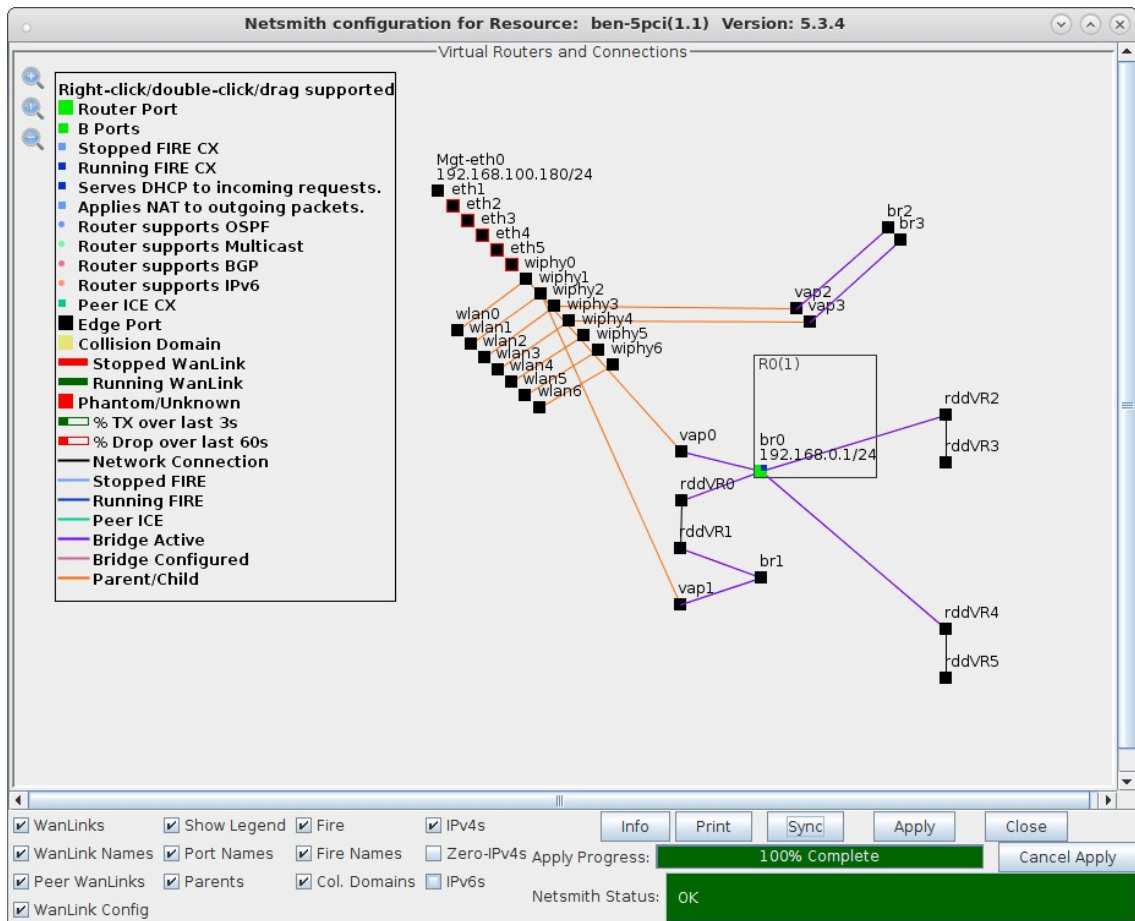
- C. Right-click and select Modify Port br1, then add rddVR1 to br1. Your rddVRX numbering may differ depending on what other Netsmith objects are created.



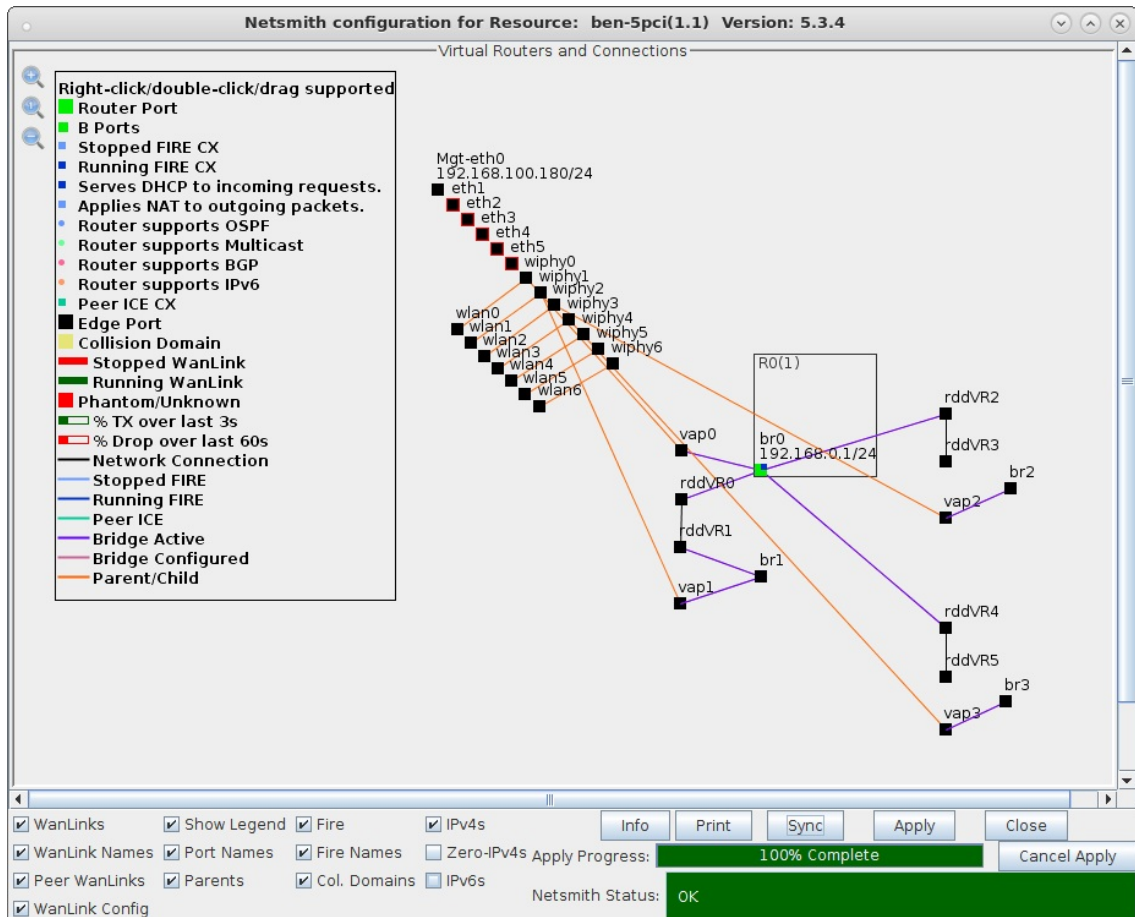
- D. Create two more rdd pairs for bridges br2 and br3.



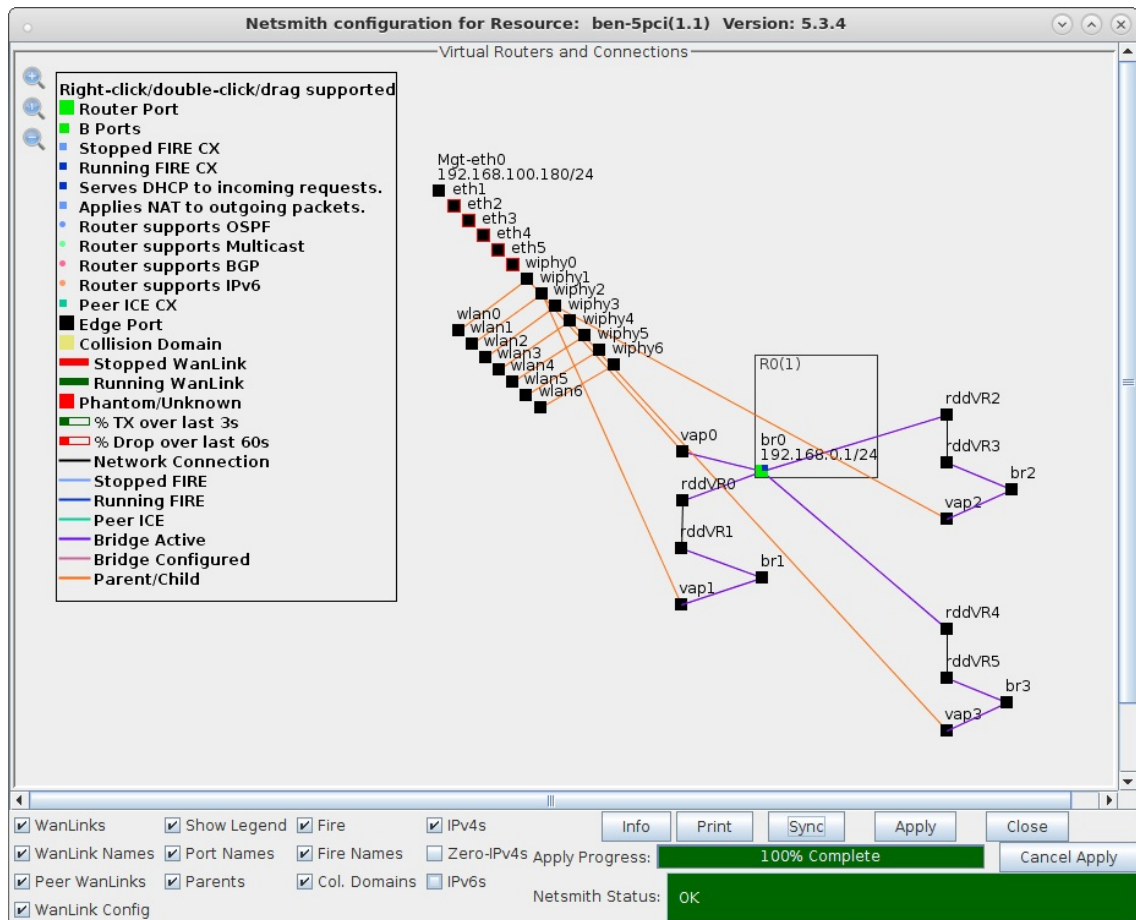
E. Add rddVR2 and rddVR3 to bridge br0.



F. The objects vap2/br2 and vap3/br3 can be moved so that their logical relationships can be visualized. Add rddVR3 to br2, then add rddVR5 to br3.



- G. The final Netsmith display should show all four of the bridged virtual access points connected by a rdd pair, with br0 as the central bridge.



5. Connect LANforge clients and force them to roam from vap to vap. This can be accomplished with a wpa_cli command for one or two clients or the Mobility Plugin Script for many clients.

- A. Client connected to vap0 04:f0:21:b9:8f:00.

LANforge Manager Version(5.3.4)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 127.0.0.1:1.0 Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

I	bps TX LL	Bytes TX LL	bps RX LL	Bytes RX...	Reset	TX-Rate	RX-Rate	Status	AP	Activity	Signal	Noise
0	53	11,670	257	599,001	Complete	0 bps	0 bps			101		
0	595	191,113	485	18,061,...	Complete	0 bps	0 bps			101		
0	560	187,718	174	23,413,...	Complete	0 bps	0 bps			101		
0	613	228,655	84	16,332,...	Complete	0 bps	0 bps			101		
0	45	24,105	7,156	20,578,...	Complete	0 bps	0 bps			2,744		
0	0	0	0	0	Complete	0 bps	0 bps			0		
0	0	0	0	0	Complete	0 bps	0 bps			0		
0	0	12,211	0	27,071	Complete	6 Mbps	6 Mbps	Authorized	04:F0:21:B9:8F:00	2,737	-14 dBm	-84 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	101	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	850	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	1,246	Complete	0 Mbps	0 bps			0		
0	0	1,200	0	850	Complete	0 Mbps	0 bps			0		
0	0	2,520	0	8,268	Complete	0 Mbps	0 bps			0		
0	0	2,460	0	60	Complete	0 Mbps	0 bps			0		
0	0	60	0	2,460	Complete	0 Mbps	0 bps			0		
0	0	9,500	0	3,204	Complete	0 Mbps	0 bps			0		
0	0	3,204	1	9,500	Complete	0 Mbps	0 bps			0		

Logged in to: localhost:4002 as: Admin

B. Client roams to vap1 04:f0:21:69:91:03.

```
root@ben-5pci:~  
File Edit View Search Terminal Help  
[root@ben-5pci ~]# wpa_cli -i wlan4 scan  
OK  
[root@ben-5pci ~]# wpa_cli -i wlan4 roam 04:f0:21:69:91:03 DS  
OK  
[root@ben-5pci ~]# iwconfig wlan4  
wlan4 IEEE 802.11abgn ESSID:"roamer"  
Mode:Managed Frequency:5.745 GHz Access Point: 04:F0:21:69:91:03  
Bit Rate=6 Mb/s Tx-Power=19 dBm  
Retry short limit:7 RTS thr:off Fragment thr=2346 B  
Encryption key:off  
Power Management:off  
Link Quality=70/70 Signal level=0 dBm  
Rx invalid nwid:0 Rx invalid crypt:0 Rx invalid frag:0  
Tx excessive retries:0 Invalid misc:0 Missed beacon:0  
[root@ben-5pci ~]#
```

LANforge Manager Version(5.3.4)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 127.0.0.1:1.0 Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

	bps TX LL	Bytes TX LL	bps RX LL	Bytes RX...	Reset	TX-Rate	RX-Rate	Status	AP	Activity	Signal	Noise
0	70	12,528	331	601,603	Complete		0 bps			101		
0	554	195,854	581	18,066,...	Complete		0 bps			101		
0	492	191,858	503	23,417,...	Complete		0 bps			101		
0	571	233,623	63	16,333,...	Complete		0 bps			101		
0	51	24,715	7,341	20,645,...	Complete		0 bps			2,562		
0	0	0	0	0	Complete		0 bps			0		
0	0	0	0	0	Complete		0 bps			0		
0	0	12,211	0	27,071	Complete	6 Mbps	6 Mbps	Authorized	04:F0:21:69:91:03	2,544	-27 dBm	-84 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	856	Complete					0		
0	0	0	0	1,252	Complete					0		
0	0	1,200	0	856	Complete					0		
0	0	2,520	0	8,274	Complete					0		
0	0	2,460	2	80	Complete					0		
0	2	80	0	2,460	Complete					0		
0	2	9,520	0	3,204	Complete					0		
0	0	3,204	1	9,520	Complete					0		

Logged in to: localhost:4002 as: Admin

C. Client roams to vap2 04:f0:21:33:28:06.

```
root@ben-5pci:~  
File Edit View Search Terminal Help  
[root@ben-5pci ~]# wpa_cli -i wlan4 scan  
OK  
[root@ben-5pci ~]# wpa_cli -i wlan4 roam 04:f0:21:33:28:06 DS  
OK  
[root@ben-5pci ~]# iwconfig wlan4  
wlan4 IEEE 802.11abgn ESSID:"roamer"  
Mode:Managed Frequency:5.745 GHz Access Point: 04:F0:21:33:28:06  
Bit Rate=6 Mb/s Tx-Power=19 dBm  
Retry short limit:7 RTS thr:off Fragment thr=2346 B  
Encryption key:off  
Power Management:off  
Link Quality=70/70 Signal level=2 dBm  
Rx invalid nwid:0 Rx invalid crypt:0 Rx invalid frag:0  
Tx excessive retries:0 Invalid misc:0 Missed beacon:0  
[root@ben-5pci ~]#
```

LANforge Manager Version(5.3.4)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 127.0.0.1:1.0 Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

	bps TX LL	Bytes TX LL	bps RX LL	Bytes RX...	Reset	TX-Rate	RX-Rate	Status	AP	Activity	Signal	Noise
0	42	12,972	63	602,269	Complete		0 bps			0		
0	430	201,473	264	18,070,...	Complete		0 bps			101		
0	486	197,814	148	23,419,...	Complete		0 bps			101		
0	444	239,212	0	16,333,...	Complete		0 bps			0		
0	68	25,443	7,327	20,742,...	Complete		0 bps			2,481		
0	0	0	0	0	Complete		0 bps			0		
0	0	0	0	0	Complete		0 bps			0		
0	0	0	0	0	Complete		0 bps			0		
0	0	12,211	0	27,071	Complete	6 Mbps	6 Mbps	Authorized	04:F0:21:33:28:06	2,466	-14 dBm	-84 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	101	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	101	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	862	Complete					0		
0	0	0	0	1,258	Complete					0		
0	0	1,200	0	862	Complete					0		
0	0	2,520	0	8,280	Complete					0		
0	1	2,480	0	80	Complete					0		
0	0	80	1	2,480	Complete					0		
0	0	9,520	1	3,224	Complete					0		
0	2	3,224	0	9,520	Complete					0		

Logged in to: localhost:4002 as: Admin

D. Client roams to vap3 04:f0:21:b1:d7:0b.

```
root@ben-5pci:~  
File Edit View Search Terminal Help  
[root@ben-5pci ~]# wpa_cli -i wlan4 scan  
OK  
[root@ben-5pci ~]# wpa_cli -i wlan4 roam 04:f0:21:b1:d7:0b DS  
OK  
[root@ben-5pci ~]# iwconfig wlan4  
wlan4 IEEE 802.11abgn ESSID:"roamer"  
Mode:Managed Frequency:5.745 GHz Access Point: 04:F0:21:B1:D7:0B  
Bit Rate=6 Mb/s Tx-Power=19 dBm  
Retry short limit:7 RTS thr:off Fragment thr=2346 B  
Encryption key:off  
Power Management:off  
Link Quality=70/70 Signal level=-8 dBm  
Rx invalid nwid:0 Rx invalid crypt:0 Rx invalid frag:0  
Tx excessive retries:1 Invalid misc:0 Missed beacon:0  
[root@ben-5pci ~]#
```

LANforge Manager Version(5.3.4)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 127.0.0.1:1.0 Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

	bps TX LL	Bytes TX LL	bps RX LL	Bytes RX...	Reset	TX-Rate	RX-Rate	Status	AP	Activity	Signal	Noise
0	18	13,239	123	603,379	Complete		0 bps			101		
0	331	204,845	218	18,072,...	Complete		0 bps			101		
0	362	201,600	146	23,421,...	Complete		0 bps			0		
0	463	244,547	45	16,333,...	Complete		0 bps			101		
0	43	26,074	4,455	20,785,...	Complete		0 bps			2,464		
0	0	0	0	0	Complete		0 bps			0		
0	0	0	0	0	Complete		0 bps			0		
0	0	12,211	0	27,071	Complete	6 Mbps	6 Mbps	Authorized	04:F0:21:B1:D7:0B	2,445	-41 dBm	-85 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	1	874	Complete					0		
0	0	0	1	1,270	Complete					0		
0	0	1,200	1	874	Complete					0		
0	0	2,520	1	8,292	Complete					0		
0	4	2,520	0	80	Complete					0		
0	0	80	4	2,520	Complete					0		
0	4	9,560	0	3,224	Complete					0		
0	0	3,224	3	9,560	Complete					0		

Logged in to: localhost:4002 as: Admin

E. Client roams back to vap0 04:f0:21:b9:8f:00.

```
root@ben-5pci:~  
File Edit View Search Terminal Help  
[root@ben-5pci ~]# wpa_cli -i wlan4 scan  
OK  
[root@ben-5pci ~]# wpa_cli -i wlan4 roam 04:f0:21:b9:8f:00 DS  
OK  
[root@ben-5pci ~]# iwconfig wlan4  
wlan4 IEEE 802.11abgn ESSID:"roamer"  
Mode:Managed Frequency:5.745 GHz Access Point: 04:F0:21:B9:8F:00  
Bit Rate=6 Mb/s Tx-Power=19 dBm  
Retry short limit:7 RTS thr:off Fragment thr=2346 B  
Encryption key:off  
Power Management:off  
Link Quality=70/70 Signal level=-17 dBm  
Rx invalid nwid:0 Rx invalid crypt:0 Rx invalid frag:0  
Tx excessive retries:0 Invalid misc:0 Missed beacon:0  
[root@ben-5pci ~]#
```

LANforge Manager Version(5.3.4)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

Layer-4 Generic Test Mgr Test Group Resource Mgr Event Log Alerts Port Mgr vAP Stations Messages

Status Layer-3 L3 Endps VoIP/RTP VoIP/RTP Endps Armageddon WanLinks Attenuators File-IO

Disp: 127.0.0.1:1.0 Sniff Packets Clear Counters Reset Port Delete

Rpt Timer: medium (8 s) Apply View Details Create Modify Batch Modify

All Ethernet Interfaces (Ports) for all Resources.

	bps TX LL	Bytes TX LL	bps RX LL	Bytes RX...	Reset	TX-Rate	RX-Rate	Status	AP	Activity	Signal	Noise
0	74	14,047	142	604,267	Complete		0 bps			101		
0	374	206,738	55	18,072,...	Complete		0 bps			101		
0	416	203,493	111	23,421,...	Complete		0 bps			0		
0	411	246,233	55	16,334,...	Complete		0 bps			101		
0	56	26,636	2,664	20,802,...	Complete		0 bps			2.47		
0	0	0	0	0	Complete		0 bps			0		
0	0	0	0	0	Complete		0 bps			0		
0	0	0	0	0	Complete		0 bps			0		
0	0	12,211	0	27,071	Complete	6 Mbps	6 Mbps	Authorized	04:F0:21:B9:8F:00	2.467	-16 dBm	-85 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	101	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	0	0	Complete	0 Mbps	0 bps	NONE	Not-Associated	0	0 dBm	-1 dBm
0	0	0	1	880	Complete					0		
0	0	0	1	1,276	Complete					0		
0	0	1,200	1	880	Complete					0		
0	0	2,520	1	8,298	Complete					0		
0	4	2,540	0	80	Complete					0		
0	0	80	4	2,540	Complete					0		
0	4	9,580	0	3,224	Complete					0		
0	0	3,224	2	9,580	Complete					0		

Logged in to: localhost:4002 as: Admin

For more information see [Two WiFi Access Point Network with 802.11r](#)
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