

LANforge WiFi Degraded vAP Testing

Goal: Create 1 vAP on a single a/b/g/n/AC radio and configure it to drop 50% of management frames to test that station devices can handle lost management frames properly.

Requires LANforge 5.3.2 or later. Configure 1 vAP, add the vAP to a bridge and set up DHCP. The Device Under Test (DUT) in this case is a mobile handset or other wifi station device. Verify that station can handle associating with an AP that drops many management frames. This example uses a LANforge CT523 system but the procedure should work on all CT520, CT521, CT522, CT523 and CT525 systems.

1. In the **Ports** tab, select the radio **wiphy2** and click **Create**. Configure the values appropriately and click create.

Create VLANs on Port: 1.2.04

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

2 Shelf: 1 Resource: 2 (ben-ota2) Port: 4 (wiphy2)

3 VLAN ID: DHCP-IPv4
 Parent MAC: 04:f0:21:11:e7:3b DHCP Client ID: None
 MAC Addr: xx:xx:xx:*:*:xx IP Address: Global IPv6: AUTO
 Quantity: IP Mask or Bits: Link IPv6: AUTO
 Gateway IP: IPv6 GW: AUTO
 #1 Redir Name: #2 Redir Name:
 STA ID: 200 SSID: ben-ota-w2-1-a
 WiFi AP: Key/Phrase:
 WPA WPA2 WEP

4 Down

2. In the **Ports** tab you will see the new WiFi vAP:

LANforge Manager Version(5.3.3) ben-title

Control Reporting Tear-Off Info Plugins

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

Disp: 192.168.100.149:0.0
 Rpt Timer: medium (8 s)

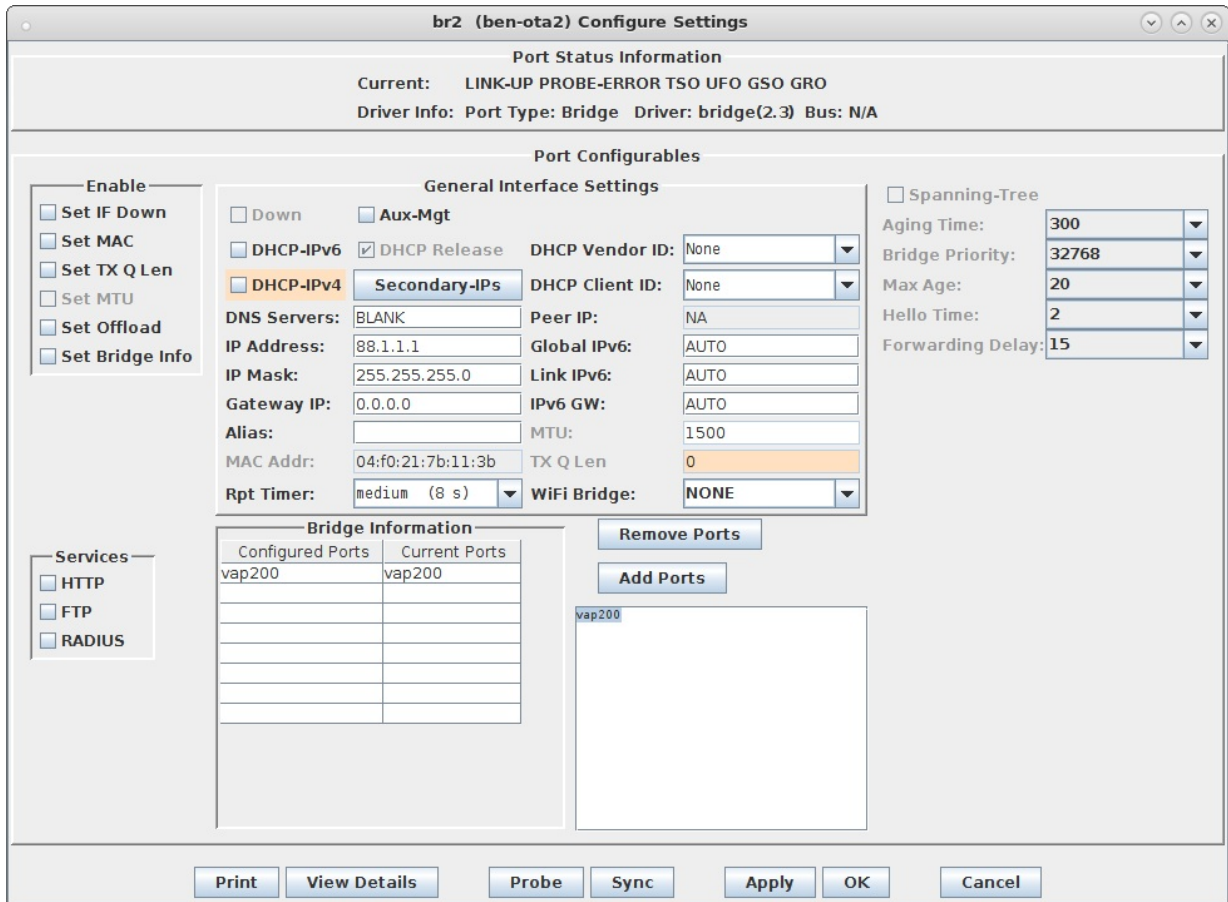
All Ethernet Interfaces (Ports) for all Resources.

Port	Pha...	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX
1.2.07	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.0.0.0	0	wlan2	wiphy2	0	0	0	0	0	0	0
1.2.08	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.0.0.0	0	vap1	wiphy1	0	0	0	0	312	3	0
1.2.09	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.0.0.0	0	vap2	wiphy1	0	0	0	0	216	2	0
1.2.10	<input type="checkbox"/>	<input type="checkbox"/>	0.0.0.0	0	vap200	wiphy2	93,751,752	61,990	0	0	1,972,450	22,802	0

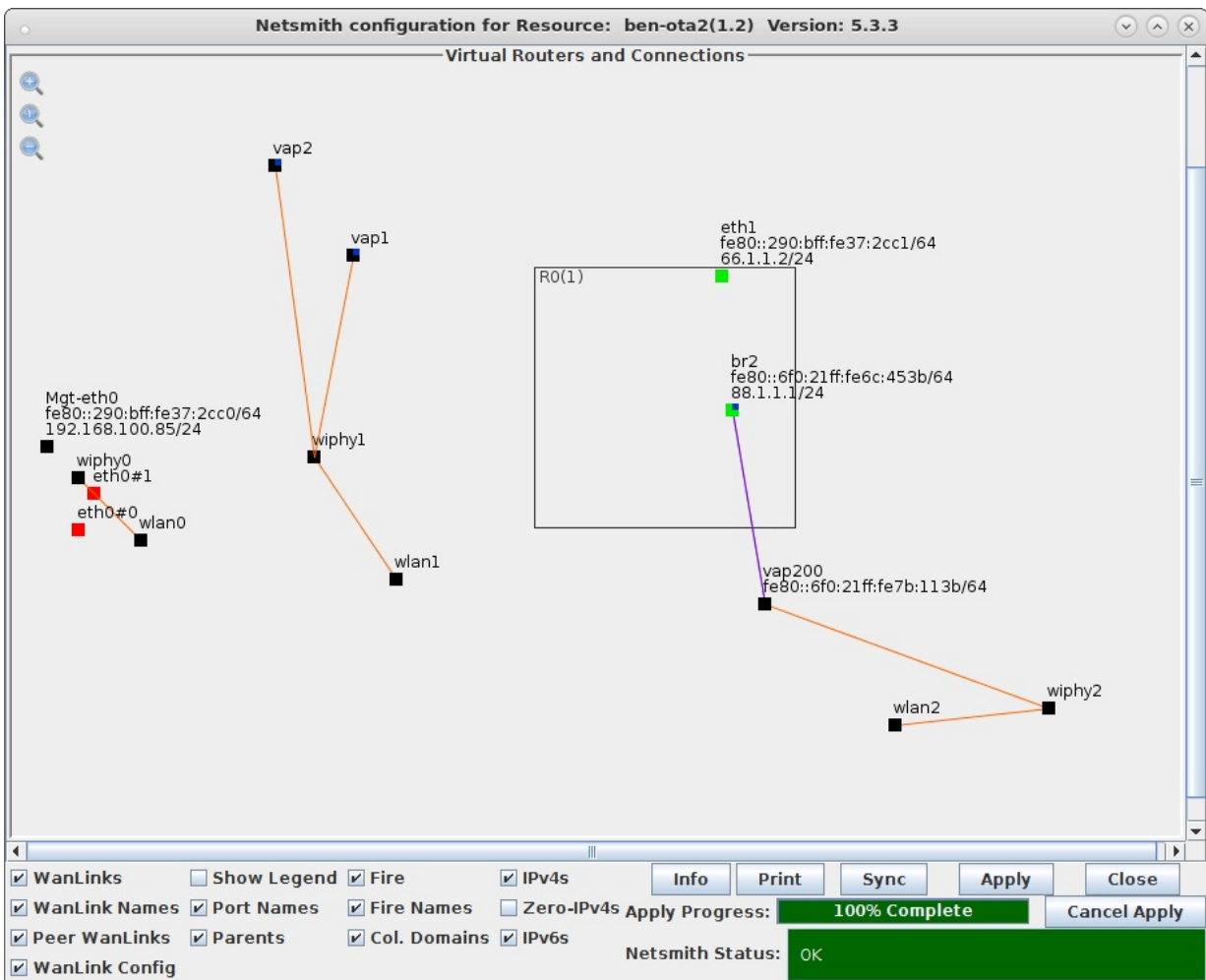
Logged in to: ben-ota-1:4002 as: Admin

3. Select the **Status** panel in the LANforge GUI, and click the Netsmith button for the appropriate resource. Right-click and select the 'New Bridge' option. In this example, I selected 'br2' as the bridge name. After creating

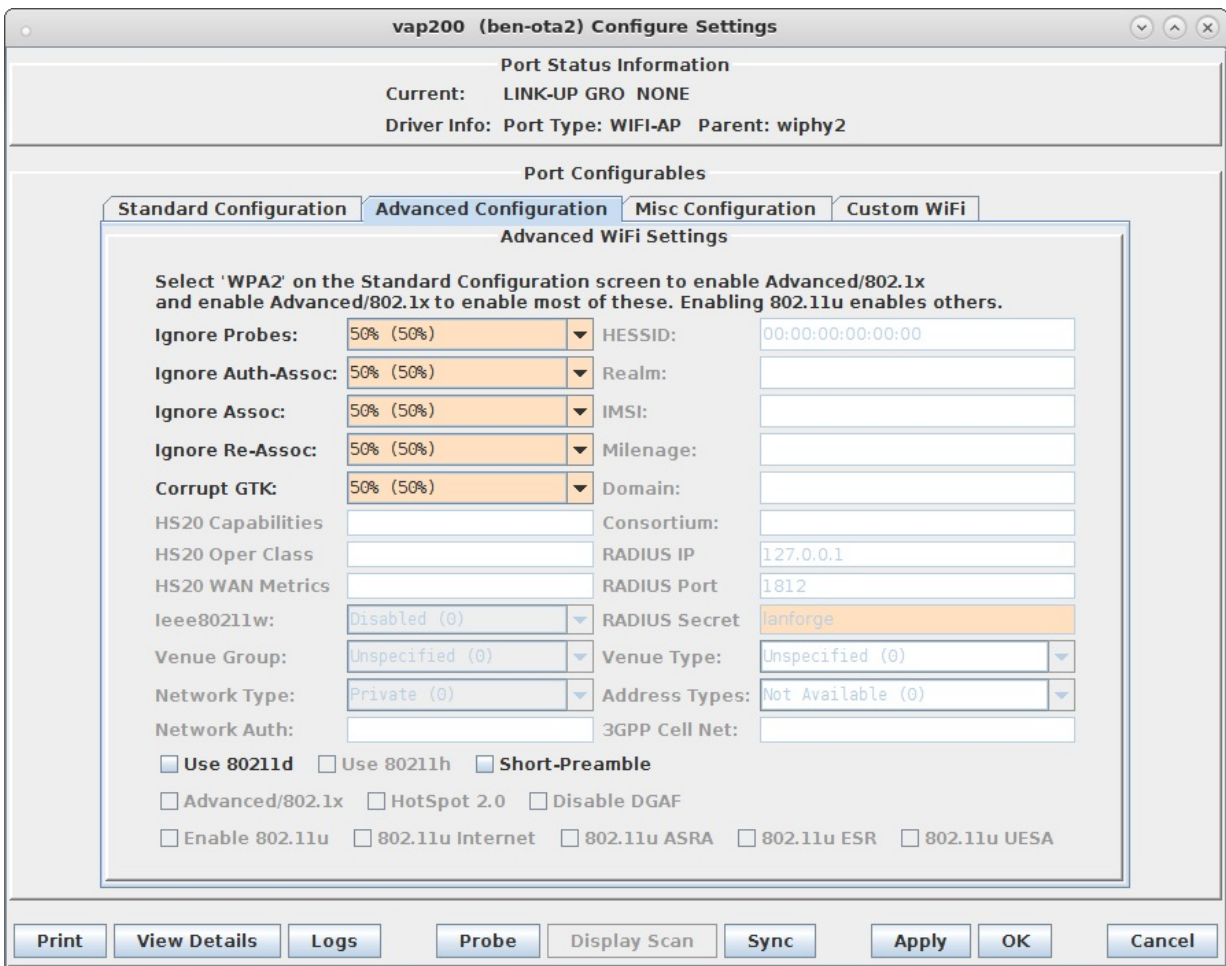
the bridge, click Sync to show the new bridge device. Right-click on br2 and select Modify Port. Add the vAP you just created to the bridge with the Add Ports button and then apply:



4. Create a virtual router in Netsmith and add br2, and optionally a wired port (eth1) to the router. Double-click the br2 port and configure DHCP to match its IP address. When complete, Netsmith should look something like this:

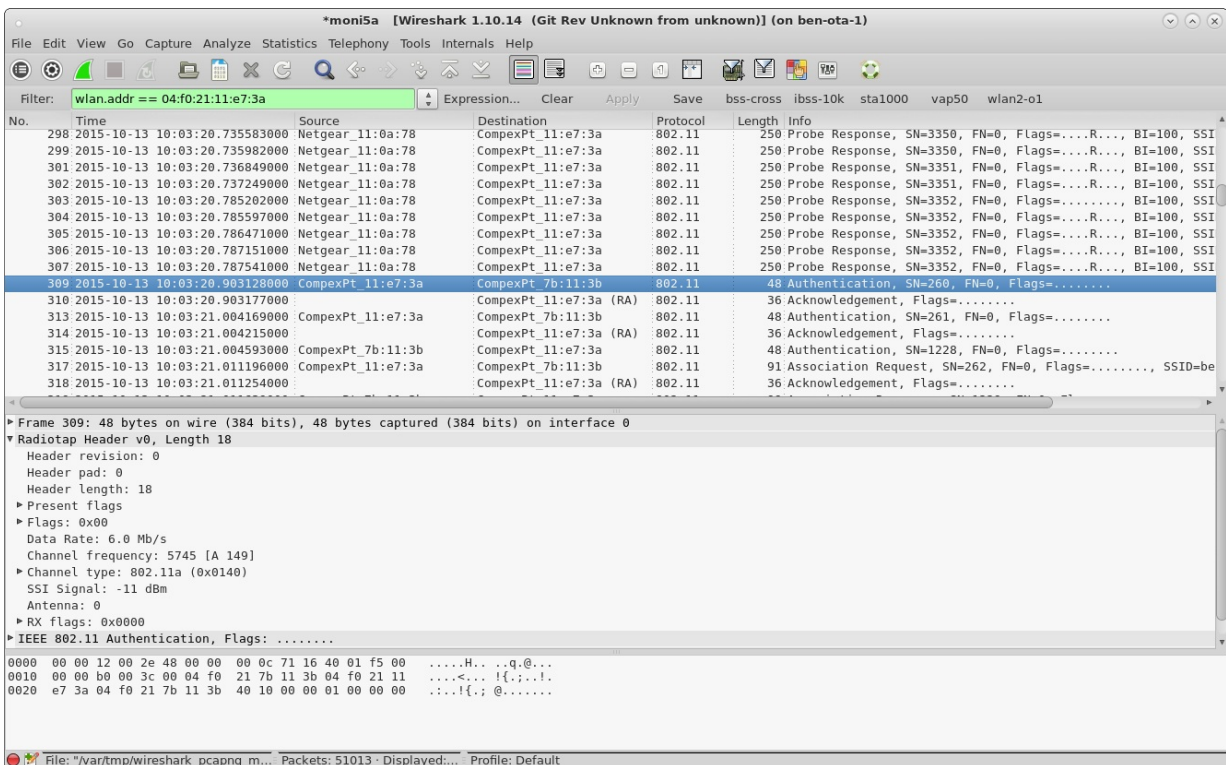


- Now, we should have 1 vAP able to accept stations and give out DHCP addresses. For an initial test, make sure the DUT can connect to the vAP and get an IP address. Once that is verified, right-click and choose Port Modify on the vap200 vAP. We will now configure it to not respond to 50% of the management frames sent to it:



6. In this case, we are using open authentication, but it would also be good to test with encryption (WPA2 PSK, for instance) to make sure that the DUT can handle failures of the 4-way authentication handshake, for instance.

7. To verify the results, use a sniffer to watch the association requests and responses. A LANforge radio configured for monitor mode could verify this, as could third-party sniffers. In the capture below you can see that the station had to make two Authentication requests before the AP would answer (because the AP is set to randomly ignore 50% of the association requests):



- A. Also in Wireshark, go to the **Statistics** menu and select **IO Graphs** to display up to 5 graphs based on the available frames in the capture file.
- B. The two images below have been annotated to show the behavior of 10 stations being reset every 30 seconds while their vAP has increasing impairment of management frames.

