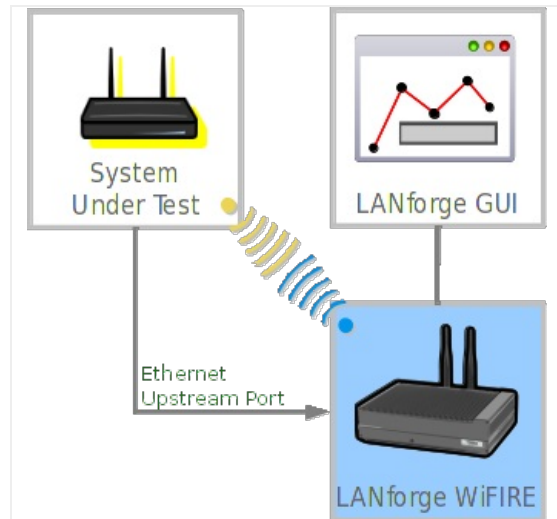


## Comparing performance of different AP configurations

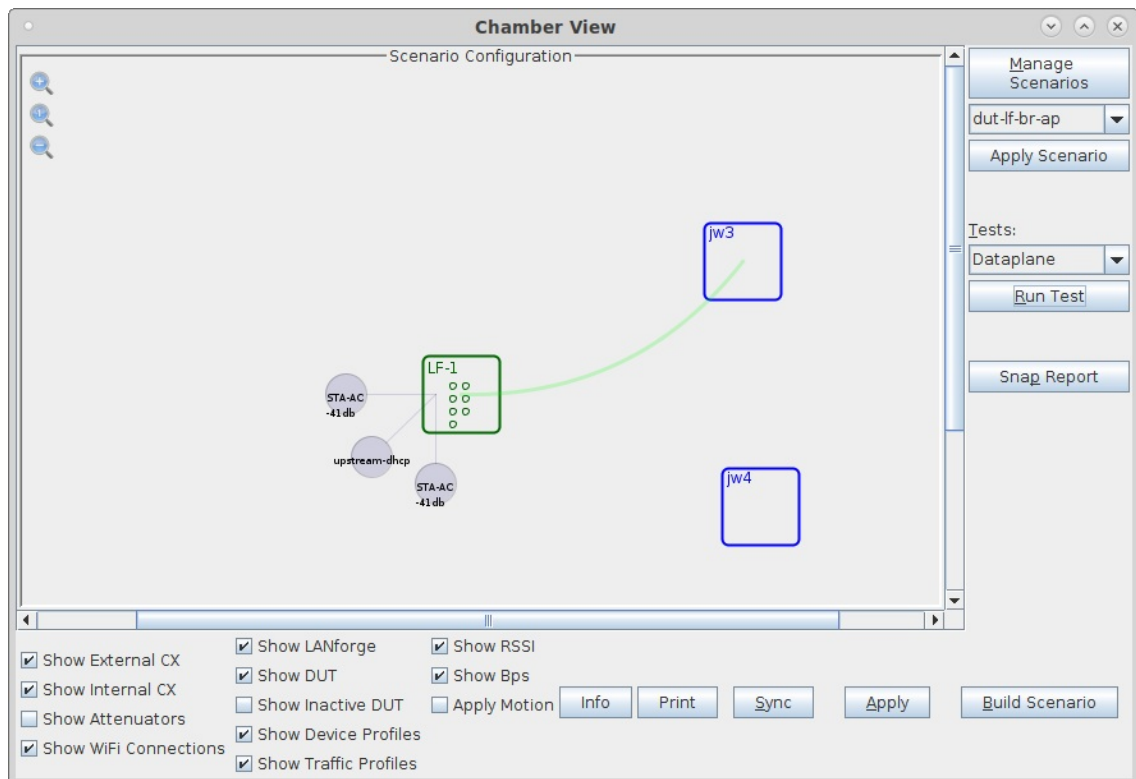
**Goal:** Compare dataplane throughput for several different APs set up in a similar manner. This allows comparing different hardware performance, and a similar test case can compare different firmware/software versions or other configuration changes.

In this test scenario, the LANforge CT522 is used to create a station and generate packets at different packet sizes to and from a series of APs. We will run one set of iterations of the dataplane test, pause it, make changes to use a different SSID, and then restart the test. The result is a report showing the differences in performance of the different APs under test. This specific test case is run over-the-air in an office. It would perform better and be more repeatable if RF chambers like the CT820a were used.



### 1. Configure Chamber View for DUT testing.

- A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. If you have an appropriate scenario already created, then skip to the next section, otherwise you will need to build a scenario that matches your system. You can right-click in Chamber-View to create various objects.



- B. Create a Device Under Test (DUT) Profile that matches your AP. The BSSID is important to configured so that LANforge knows when it is connected to the correct AP. Create additional DUTs as needed.

The screenshot shows the 'Create/Modify DUT' dialog box for a device named 'jw3'. The dialog is organized into several sections:

- Name:** jw3
- Image file:** NONE, with a 'Choose Image' button.
- SW Info:** (empty field)
- HW Info:** complex 3x3, 2x2, wave1
- Model Number:** (empty field)
- Serial Number:** (empty field)
- Serial port:** (empty field)
- WAN:** (empty field)
- LAN:** (empty field)
- API version:** 0
- SSID-1:** jw3-0
- SSID-2:** jw3-1
- SSID-3:** (empty field)
- Password-1:** (empty field)
- Password-2:** (empty field)
- Password-3:** (empty field)
- Mgt IP:** 0.0.0.0
- Ant-1:** 0
- Ant-2:** 0
- Ant-3:** 0
- BSSID-1:** 04:f0:21:7b:37:2a
- BSSID-2:** 04:f0:21:f2:ea:bd
- BSSID-3:** 00:00:00:00:00:00
- Active:**
- AP DUT:**
- STA DUT:**
- WEP:**
- WPA:**
- WPA2:**
- WPA3:**
- Provides DHCP on LAN:**
- Provides DHCP on WAN:**
- Notes:** (empty text area)

Buttons at the bottom: Apply, OK, Cancel.

- C. This example uses a second DUT as well.

The screenshot shows the 'Create/Modify DUT' dialog box for a device named 'jw4'. The dialog is organized into several sections:

- Name:** jw4
- Image file:** NONE, with a 'Choose Image' button.
- SW Info:** (empty field)
- HW Info:** dr900vx, compex 9984
- Model Number:** (empty field)
- Serial Number:** (empty field)
- Serial port:** (empty field)
- WAN:** (empty field)
- LAN:** (empty field)
- API version:** 0
- SSID-1:** jw3-2
- SSID-2:** jw3-3
- SSID-3:** (empty field)
- Password-1:** (empty field)
- Password-2:** (empty field)
- Password-3:** (empty field)
- Mgt IP:** 0.0.0.0
- Ant-1:** 0
- Ant-2:** 0
- Ant-3:** 0
- BSSID-1:** c4:4b:d1:25:e0:47
- BSSID-2:** 04:f0:21:a3:6e:cf
- BSSID-3:** 00:00:00:00:00:00
- Active:**
- AP DUT:**
- STA DUT:**
- WEP:**
- WPA:**
- WPA2:**
- WPA3:**
- Provides DHCP on LAN:**
- Provides DHCP on WAN:**
- Notes:** (empty text area)

Buttons at the bottom: Apply, OK, Cancel.

D. Configure an Upstream profile using eth1 on the LANforge system.

**Create/Modify Profile**

Name:  Type:

Mode:  Antennas:

Instances:  Frequency:

SSID:

Pattern:

WPA  WPA2  DHCP Server  WEP

802.1x EAP-TTLS  Restart DHCP on Connect  WPA3  802.11r

Notes:

E. Configure an STA profile on the LANforge system.

**Create/Modify Profile**

Name:  Type:

Mode:  Antennas:

Instances:  Frequency:

SSID:

Pattern:

WPA  WPA2  DHCP Server  WEP

802.1x EAP-TTLS  Restart DHCP on Connect  WPA3  802.11r

Notes:

F. Configure a Chamber View Scenario and add the STA profile (mapped to desired wiphyX radio and DUT). Add an upstream profile mapped to DUT LAN side (or possibly WAN side if that is more appropriate for your DUT). Please note that we will manually configure the station to connect to the second DUT as part of the test steps below.

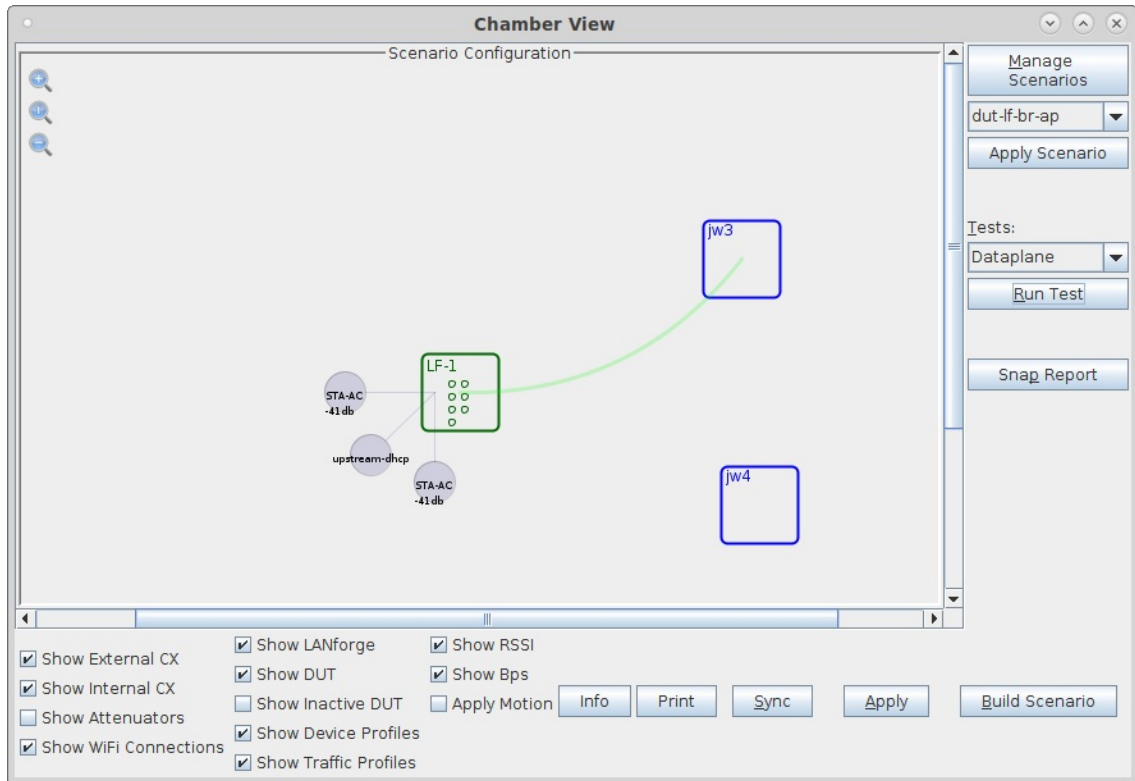
**Create/Modify Scenario**

Scenario Name:

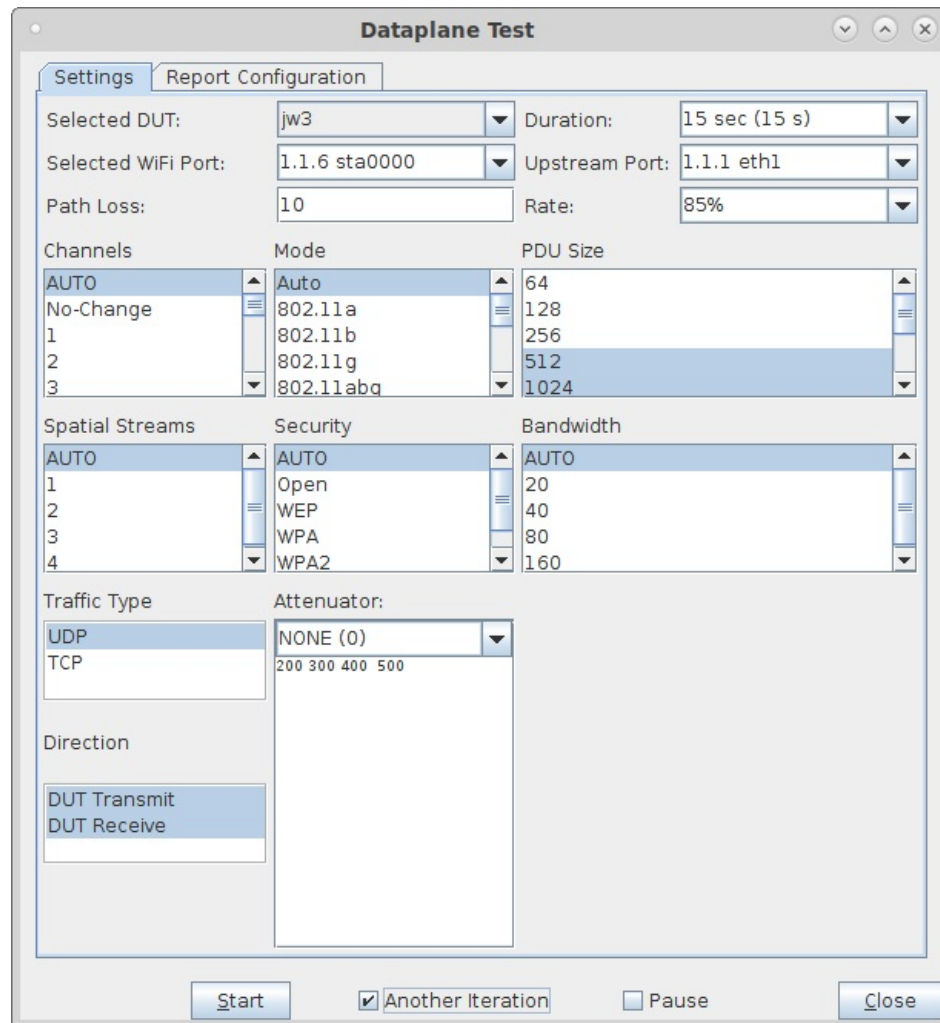
Del	Resource	Profile	Mod	Amount	Uses-1	Uses-2	Frequency	Maps To
X	1.1	STA: STA-AC		1 (1)	wiphy1	AUTO	AUTO (-1 Mhz)	DUT: jw3 Radio-1
X	1.1	Upstream: upstream-dhcp		1 (1)	eth1	AUTO	AUTO (-1 Mhz)	DUT: jw3 LAN
X	1.1	STA: STA-AC		1 (1)	wiphy0	AUTO	AUTO (-1 Mhz)	DUT: jw3 Radio-2

2. Use Chamber View to run a Dataplane comparison test.

- A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. Load appropriate scenario or create a new scenario as needed. Apply the Scenario, then Build the scenario.



- B. Select the **Dataplane** test and click **Run Test**. You should see the RX Sensitivity Test configuration window pop up. It will remember the last configuration for most fields. Select the DUT and WiFi station device, and select the combinations of traffic types you wish to send. Select the **Another Iteration** checkbox to allow comparison graphs.:



- C. We have 4 total BSSIDs that we wish to test. The Scenario creation logic will have chosen one of the BSSIDs for the station, but we will need to override that for each of our comparison runs. Go to the Port-Mgr tab in the LANforge-GUI, double-click the station, and make sure that its SSID is correct. In case you are using different passwords you could change that at this time as well. When complete, click Apply. You can leave the window open as you will need it in future steps:

**sta0000 (lf0313-6477) Configure Settings**

Port Status Information  
 Current: LINK-UP GRO Authorized  
 Driver Info: Port Type: WIFI-STA Parent: wiphy1 wiphy1...

Port Configurables

Standard Configuration | Advanced Configuration | Misc Configuration | Corruptions | Custom WiFi

**General Interface Settings**

Down     Aux-Mgt  
 DHCP-IPv6     DHCP Release    DHCP Vendor ID: None  
 DHCP-IPv4    Secondary-IPs    DHCP Client ID: None  
 DNS Servers: 8.8.8.8    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: 04:f0:21:1f:ca:f3    TX Q Len: 1000  
 Rpt Timer: faster (1 s)    WiFi Bridge: NONE

**WiFi Settings**

SSID: jw3-0    AP: DEFAULT  
 Key/Phrase:    Mode: (Auto)  
 Freq/Channel: 5180/36    Rate: OS Default  
 WPA     WPA2     WPA3     OSEN     WEP  
 Disable HT40     Enable VHT160     Disable SGI

**Enable**  
 Set MAC  
 Set TX Q Len  
 Set MTU  
 Set Offload  
 Set PROMISC

**Services**  
 HTTP  
 FTP  
 RADIUS

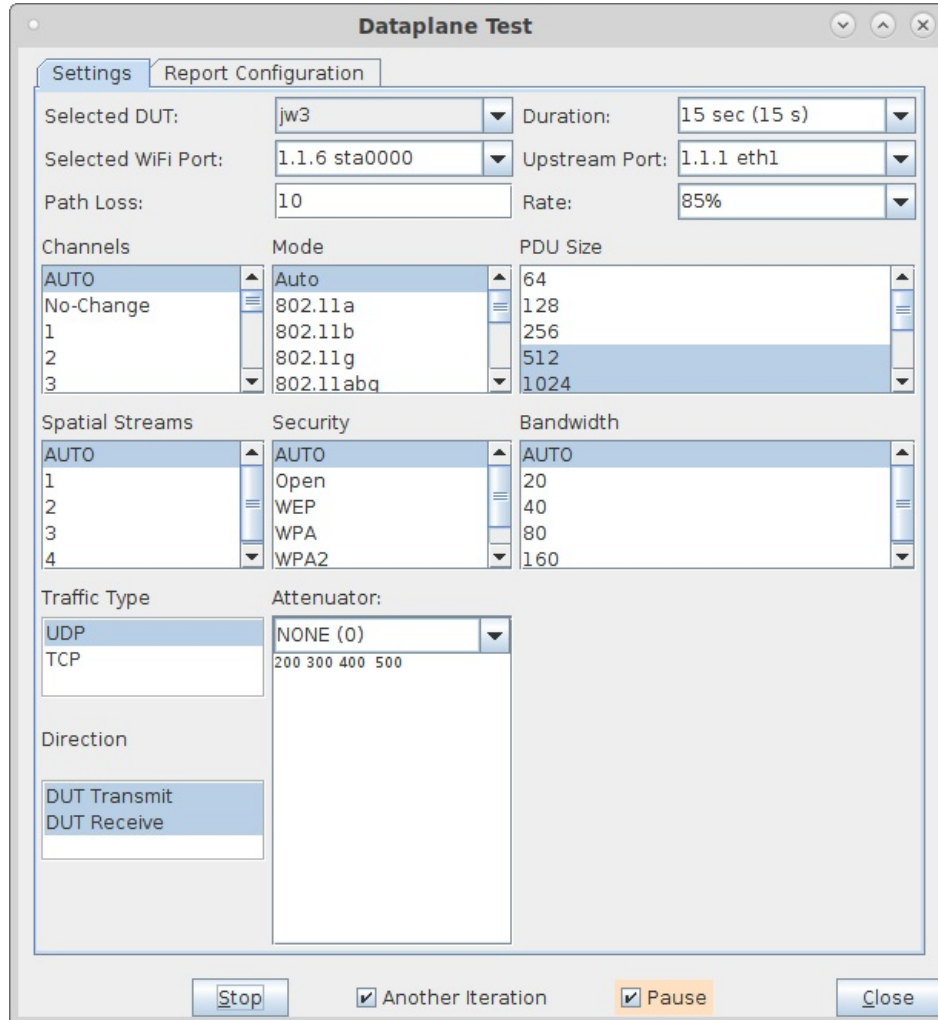
**Low Level**  
 PROMISC  
 TSO Enabled  
 UFO Enabled  
 GSO Enabled  
 LRO Enabled  
 GRO Enabled

Print    Display    Probe    Display Scan    Sync    Apply    OK    Cancel

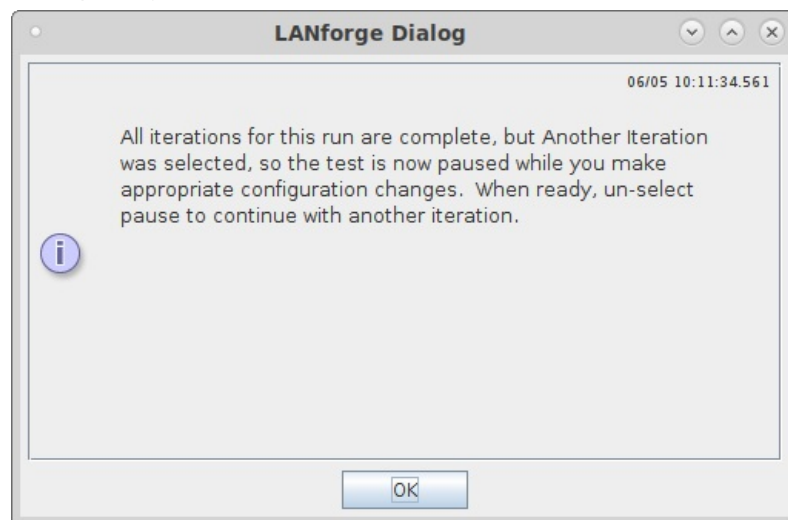
- D. When the configuration is complete, click the **Start** button (which will change to 'Stop' once start is clicked) to start the test. An interactive report window will be created and will be updated as the test runs.



- E. When the first comparison run is complete, a pop up window will be shown, and the **Paused** checkbox will be selected. Select new BSSID by reconfiguring the station with a new BSSID, and when the reconfiguration is complete, un-select the Paused checkbox on the Dataplane test to do the next comparison run. Continue to run new comparisons in this manner until the full test is complete. When complete, unselect the **Another Iteration**, and then unselect 'Paused\*' to have the test complete:



- F. This is the pause message, it is just informational and you can close it after it pops up.



- G. When the test is complete, click the **Save HTML** button to save an HTML report and generate the PDF. The PDF file will be linked from the HTML page. You can also click 'Save PDF' and the browser will be directed to open the pdf file directly. Please see this [example Dataplane Comparison Report](#)