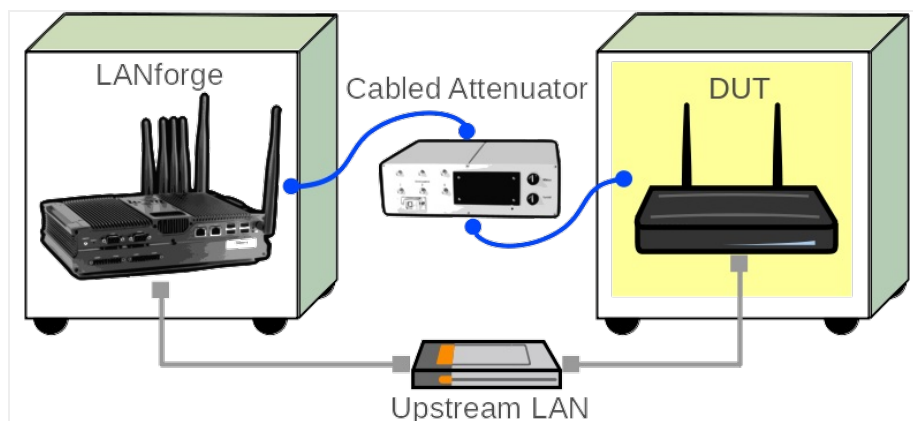


Testing AP Dataplane throughput at different packet sizes

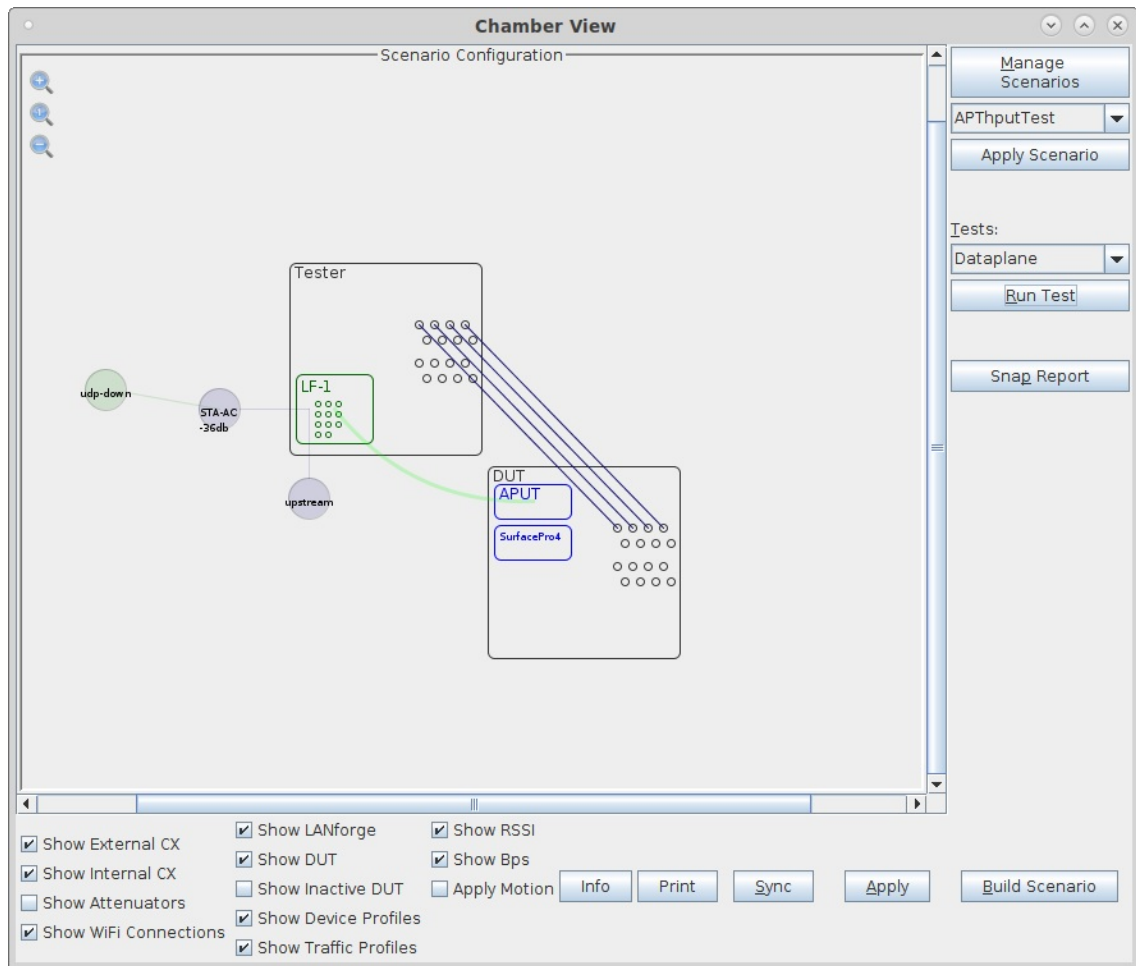
Goal: Setup and run a Dataplane test for an AP using the LANforge CT523c or similar system in order to test how well the AP can handle sending and receiving packets with different packet sizes.

In this test scenario, the LANforge CT523c is used to generate packets of different sizes in the upstream and downstream direction through an AP. This example assumes you have some experience with Chamber View, and that you have a LANforge system, a programmable attenuator like the CT704b and two isolation chambers like the CT820a. The AP should be in one chamber, the LANforge system is in the other chamber, and the attenuator is cabled between them. In this example, the Attenuator is left at an optimal configuration, but you can also use this same Dataplane test to generate a report at different RF signal levels using the Attenuator. This feature requires LANforge version 5.3.9 or higher.



1. Configure Chamber View for Dataplane and Similar Tests.

- 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.

The screenshot shows the 'Create/Modify DUT' dialog box. It contains fields for Name, SW Info, Model Number, Serial port, LAN, SSID-1, SSID-2, SSID-3, Mgt IP, Ant-2, BSSID-1, BSSID-2, BSSID-3, Image file, HW Info, Serial Number, WAN, API version, Password-1, Password-2, Password-3, Ant-1, Ant-3, BSSID-2, Active, AP DUT, WPA, WPA2, WPA3, Provides DHCP on LAN, Provides DHCP on WAN, and Notes. The 'Name' field is set to 'APUT', 'SW Info' to 'v5.62.1', 'Model Number' to 'AP640', 'Serial Number' to '234-23-sd-35', 'SSID-1' to 'labap', 'BSSID-1' to '78:d2:94:bf:16:43', and 'BSSID-2' to '00:00:00:00:00:00'. The 'Active' checkbox is checked, and the 'AP DUT' checkbox is also checked. The 'WPA2' checkbox is checked, and the 'Provides DHCP on LAN' checkbox is checked. The 'Notes' field is empty.

- C. Create a chamber object to hold the DUT, and add the DUT to that chamber. If you have no chambers, you can create a fake chamber, but your test will not be isolated and may not function as desired.

Create/Modify Chamber

Name: DUT Width: 150 Height: 150
Chamber Type: TOJOIN-MED (1) Isolation: 80
☐ Phantom ☐ Virtual ☐ Open

DUT-1	APUT	DUT-2	SurfacePro4
DUT-3		DUT-4	
LANforge-1	None	LANforge-2	None
LANforge-3	None	LANforge-4	None

Int CX A	Int CX B	Int Atten	Ext CX A	Ext CX B	Ext Atten	Atten Floor
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)

OK Cancel

- D. Create a chamber object to hold the LANforge system, and add the LANforge to it. Add connections from this chamber to the DUT chamber, specifying the proper Attenuator modules. Please view our other cookbook on [setting up attenuator connections in LANforge](#).

Create/Modify Chamber

Name:

Width:

Height:

Chamber Type:

Isolation:

☐ Phantom
☐ Virtual
☐ Open

DUT-1:

DUT-2:

DUT-3:

DUT-4:

LANforge-1:

LANforge-2:

LANforge-3:

LANforge-4:

Int CX A	Int CX B	Int Atten	Ext CX A	Ext CX B	Ext Atten	Atten Floor
			Chamber.Tester.0	Chamber.DUT.0	1.1.71.0	OTA (0)
			Chamber.Tester.1	Chamber.DUT.1	1.1.71.1	OTA (0)
			Chamber.Tester.2	Chamber.DUT.2	1.1.71.2	OTA (0)
			Chamber.Tester.3	Chamber.DUT.3	1.1.71.3	OTA (0)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)
						Long Cable (100)

OK

Cancel

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

Create/Modify Profile

Name: Type:

Mode: Antennas:

Instances: Frequency:

SSID:

Pattern:

☐ DHCP Server ☐ WEP

☐ WPA ☐ WPA2 ☐ WPA3 ☐ 802.11r

☐ 802.1x EAP-TTLS ☒ Restart DHCP on Connect

Notes:

F. Configure an STA profile on the LANforge system.

Create/Modify Profile

Name: Type:

Mode: Antennas:

Instances: Frequency:

SSID:

Pattern:

☐ DHCP Server ☐ WEP

☐ WPA ☐ WPA2 ☐ WPA3 ☐ 802.11r

☐ 802.1x EAP-TTLS ☒ Restart DHCP on Connect

Notes:

G. 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).

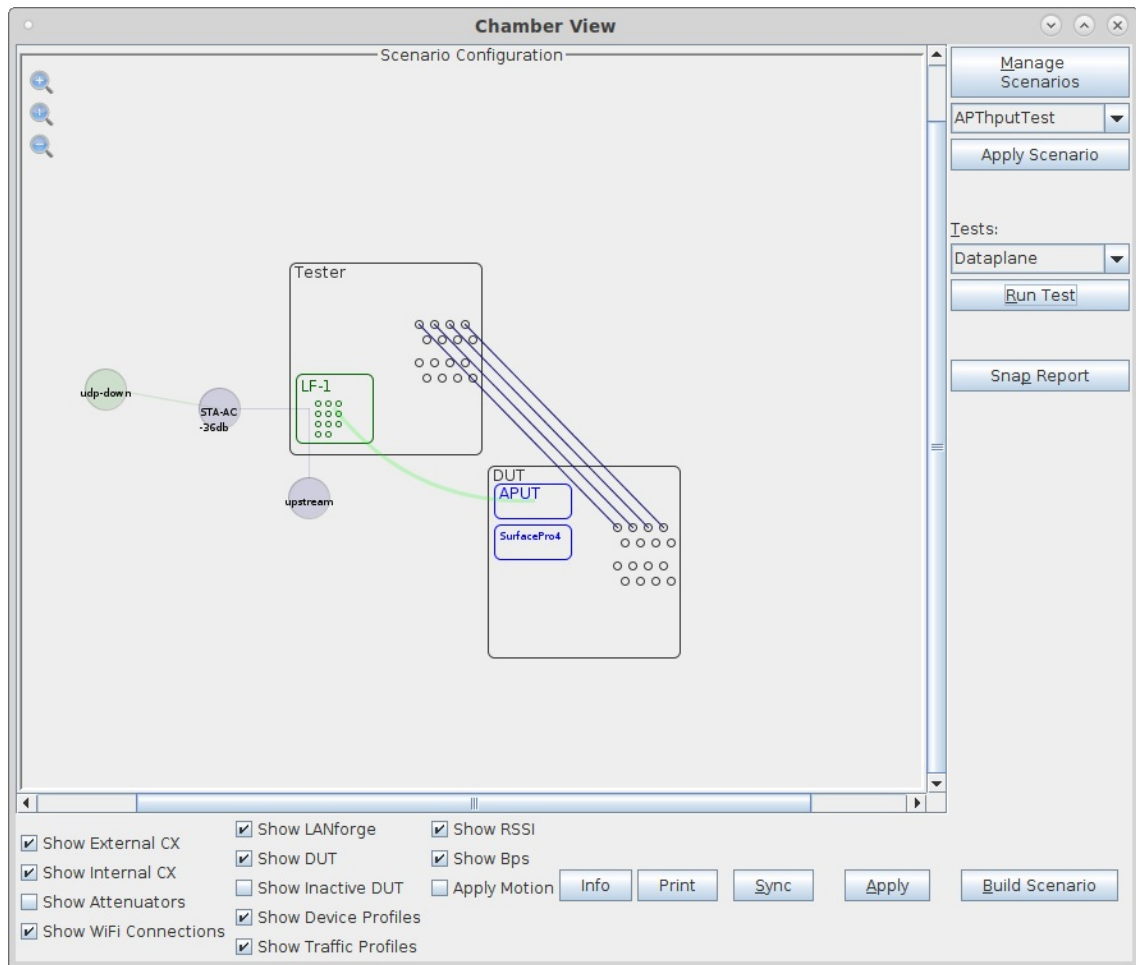
Create/Modify Scenario

Scenario Name:

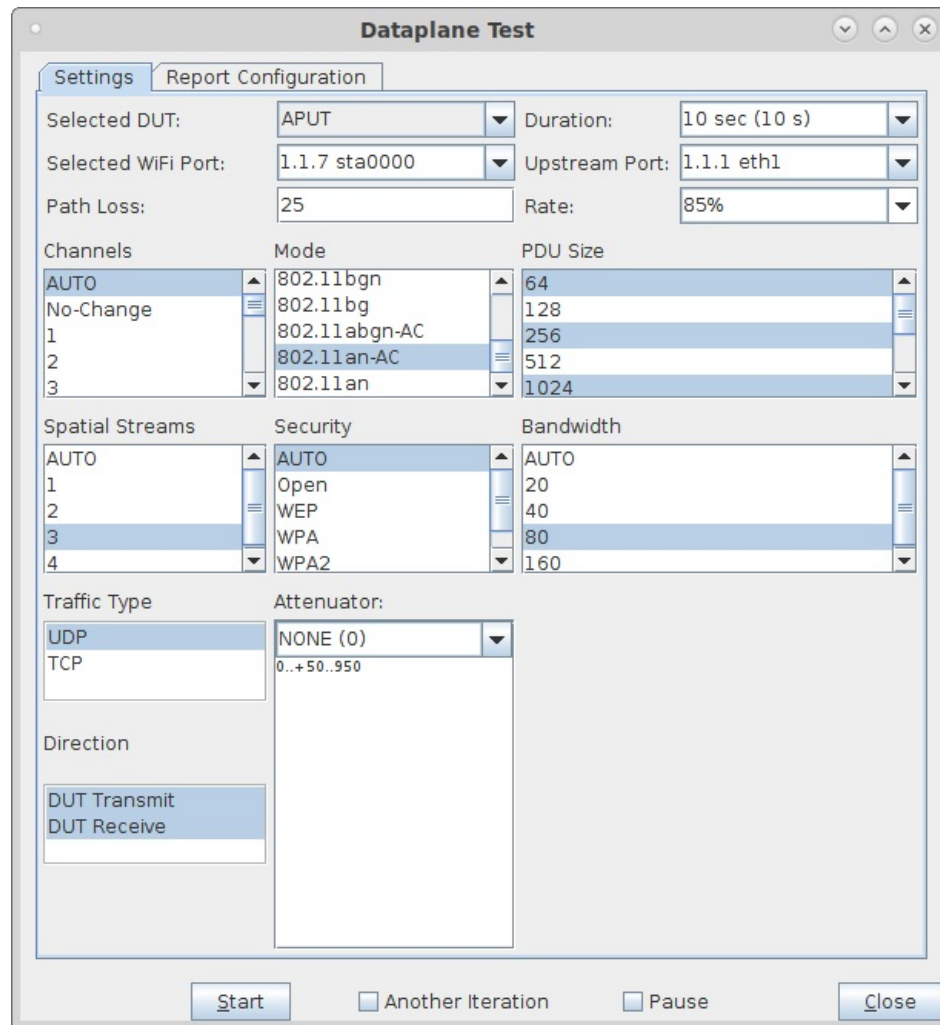
Del	Resource Profile	Mod	Amount	Uses-1	Uses-2	Frequency	Maps To	Traffic-1	Traffic-2	Traffic-3
☒	1.1 STA: STA-AC		1 (1)	wiphy0	AUTO	157 (5785 Mhz)	DUT: APUT Radio-1	udp-down	udp-up	NA
☒	1.1 Upstream: upstream		1 (1)	eth1	AUTO	AUTO (-1 Mhz)	DUT: APUT LAN	NA	NA	NA

2. Use Chamber View for Dataplane test.

- A. Open Chamber View by clicking on the 'Chamber View' button in the LANforge-GUI. Load appropriate scenario. Apply the Scenario, then Build the scenario.



- B. Select the **Dataplane** test and click **Run Test**. You should see the Dataplane 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 and packet sizes you wish to send.:

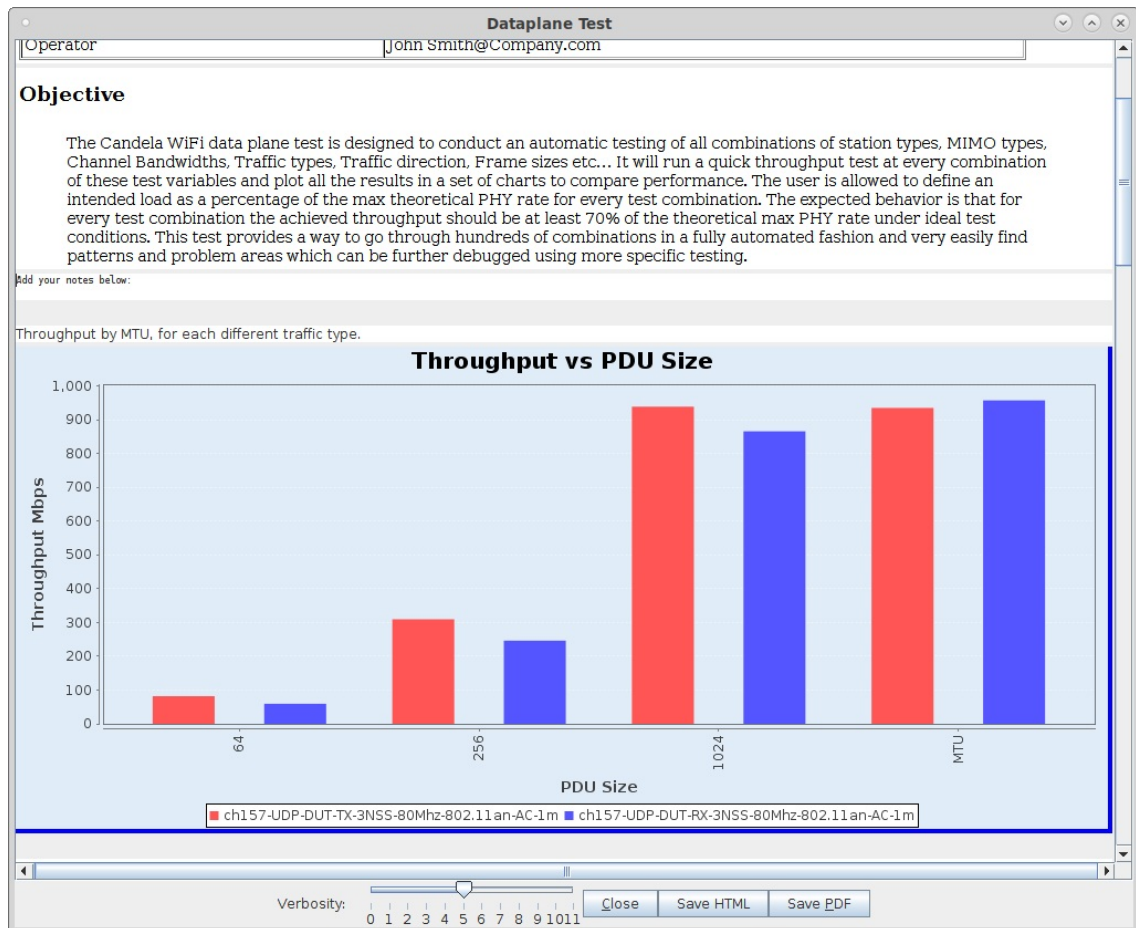


The image shows a 'Dataplane Test' configuration window with two tabs: 'Settings' and 'Report Configuration'. The 'Settings' tab is active. The window contains several configuration sections:

- Selected DUT:** A dropdown menu set to 'APUT'.
- Selected WiFi Port:** A dropdown menu set to '1.1.7 sta0000'.
- Duration:** A dropdown menu set to '10 sec (10 s)'.
- Upstream Port:** A dropdown menu set to '1.1.1 eth1'.
- Path Loss:** A text input field set to '25'.
- Rate:** A dropdown menu set to '85%'.
- Channels:** A list box with 'AUTO', 'No-Change', '1', '2', and '3'. '1' is selected.
- Mode:** A list box with '802.11bgn', '802.11bg', '802.11abgn-AC', '802.11an-AC', and '802.11an'. '802.11an-AC' is selected.
- PDU Size:** A list box with '64', '128', '256', '512', and '1024'. '256' is selected.
- Spatial Streams:** A list box with 'AUTO', '1', '2', '3', and '4'. '3' is selected.
- Security:** A list box with 'AUTO', 'Open', 'WEP', 'WPA', and 'WPA2'. 'WPA2' is selected.
- Bandwidth:** A list box with 'AUTO', '20', '40', '80', and '160'. '80' is selected.
- Traffic Type:** A list box with 'UDP' and 'TCP'. 'UDP' is selected.
- Attenuator:** A dropdown menu set to 'NONE (0)'.
- Direction:** A list box with 'DUT Transmit' and 'DUT Receive'. 'DUT Transmit' is selected.

At the bottom of the window, there are four buttons: 'Start', 'Another Iteration', 'Pause', and 'Close'.

- C. 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.



- D. 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 Report](#).