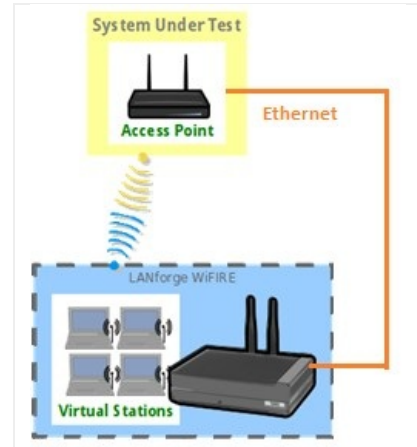


Basic AP Testing with LANforge (using Chamber View)

Goal: Set up virtual stations using a LANforge system, connect them to an AP under test, send traffic, and make measurements.

In this test scenario a LANforge system is used to create 5 virtual WiFi stations and configured to connect to a real WiFi AP under test. The AP's ethernet interface is connected to a LANforge ethernet interface allowing the LANforge system to create both the wireless stations and ethernet server. The test is then configured to send simple upstream and downstream UDP traffic between the server and the 5 WiFi stations through the AP under test.

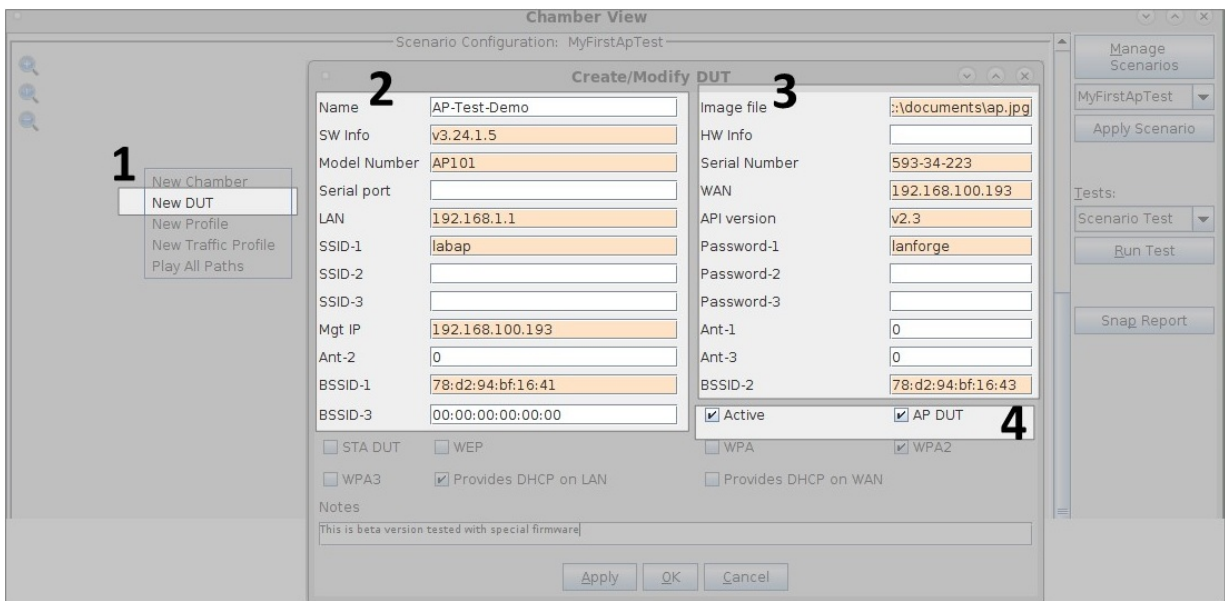


1. Click on the Chamber View button in the LANforge GUI to launch the Chamber View screen.

The screenshot shows the LANforge Manager GUI (Version 5.3.9) with the 'Chamber View' button highlighted. Below the navigation tabs, there is a table titled 'All Ethernet Interfaces (Ports) for all Resources.' The table contains the following data:

Port	Pha...	Down	IP	SEC	Alias	Parent Dev	RX Bytes	RX Pkts	Pps RX	bps RX	TX Bytes	TX Pkts	Pps TX	bps TX	Cc
1.1.00			192.168.100.115	0	eth0		175,026,306	2,396,899	14	10,594	120,939,485	202,964	15	120,877	
1.1.01			192.168.1.2	0	eth1		38,128,262...	104,724...	59	31,420	985,775,12...	828,421...	2,380	28,381...	
1.1.02			0.0.0.0	0	wiphy0		0	1,546	0	0	0	0	0	0	
1.1.03			0.0.0.0	0	wiphy1		0	1,050	0	0	0	0	0	0	
1.1.04			0.0.0.0	0	wiphy2		960,264,44...	184,882...	605	27,852...	40,178,460...	104,816...	58	39,416	2.2
1.1.05			0.0.0.0	0	wiphy3		37,357,777...	25,060,...	0	0	0	0	0	0	

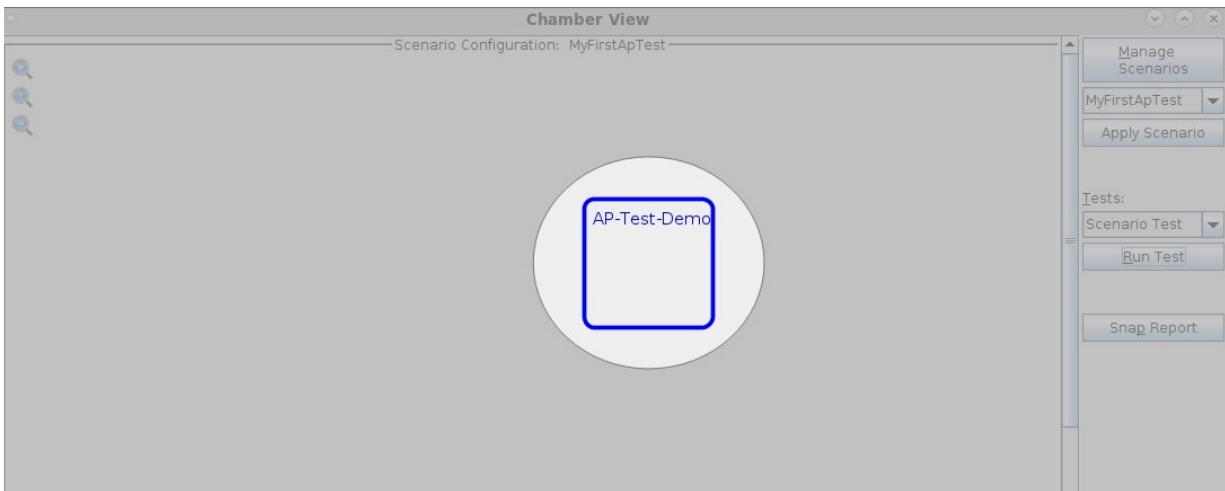
2. Configure an AP under test (DUT).



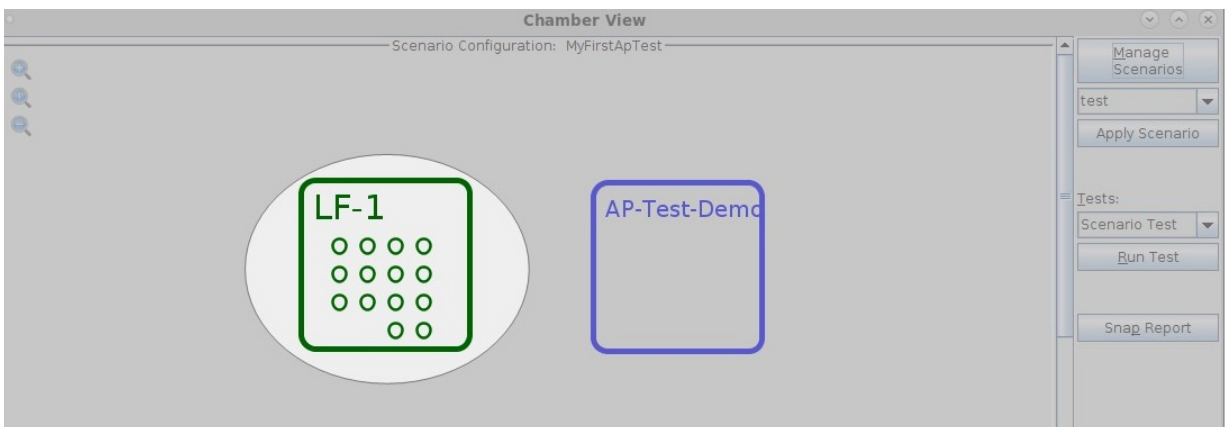
3. To configure the DUT:

- A. Right click anywhere on the canvas in Chamber View and select "New DUT" from the menu.
- B. Enter all the known details about the AP under test including the SSID (multiple SSIDs if the AP has multiple SSIDs), BSSID (multiple BSSIDs if the AP has multiple radios with the same SSID).
- C. If the AP has security enabled, enter the security information.
- D. Set the DUT to Active by checking the 'Active' checkbox.
- E. Select the 'AP DUT' checkbox to indicate that this DUT is an Access Point.

4. Once OK is clicked, check to make sure the DUT appears in Chamber View as shown below.



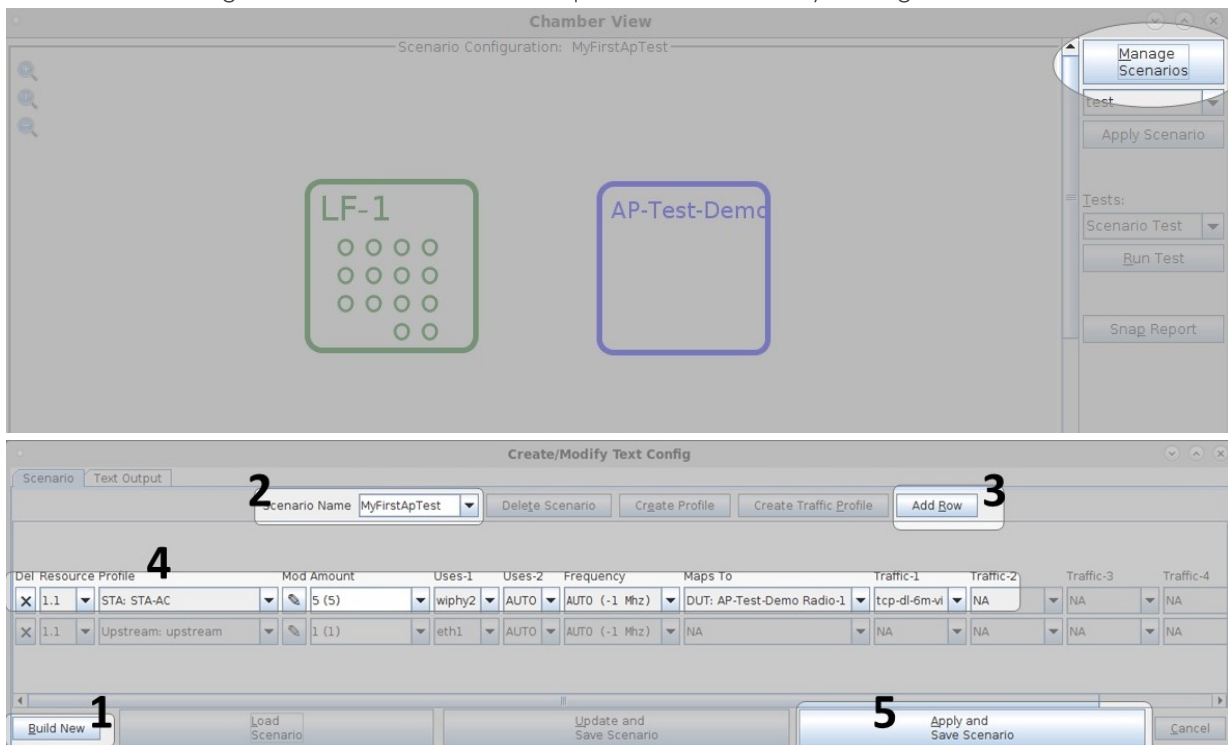
5. Select the LANforge system to be used in the test.



6. All active LANforge systems will automatically appear in Chamber View. Select the unit being used in the test and drag to the middle of the canvas next to the AP under test. The small circles inside the LANforge box represent the SMA connectors. The columns of circles represent the individual radios in the system. For instance, in the screenshot about LF-1 has 4 columns of circles indicating 4 radios. The first two are 3x3 radios and the second two are 4x4 radios with 4 circles each.

7. Create the test scenario

Click on the "Manage Scenarios" button and then open a "Create/Modify" dialog box.



8. In the Create/Modify dialog box

- A. Click on "Build New" button to create a new scenario.
- B. Enter a scenario name e.g: MyFirstApTest (no spaces allowed)
- C. Click "Add Row" button to add one or more rows.

9. Create 5 WiFi Stations, map them to the AP under test and create traffic streams.

Row1 is used to create the 5 WiFi stations. Do the following in Row1:

- A. The "Resource" indicates the ID of the LANforge system being used in the test. Since we are using LF-1 for this test, select resource "1.1".
- B. For the "Profile" column, pick "STA:STA-AC" profile which is one of the existing default station profiles that will create 11ac WiFi stations. The user can select from existing profiles or create new profiles by clicking on the "Create Profile" button at the top.
- C. In the "Amount" drop down, enter 5 to indicate the 5 stations being created.
- D. The "Uses-1" drop down indicates the primary hardware interface on which the user intends to create these clients. Here, select the right radio interface on which the WiFi stations are to be created.
- E. The "Uses-2" is for bridge mode and it can be left as "AUTO" for this scenario.
- F. Under the Frequency section, the user can select the channel on which to create the stations. If left to Auto, the stations will scan across all channels and find the target AP. So in this case we leave this setting to "AUTO"
- G. The "Maps To" represents which target AP the Stations should connect to. Since we have already configured the DUT in step 1, we can simply select the DUT.

H. For traffic, the GUI allows user to run up to 5 traffic streams on each client. In this case we are choosing one of the default traffic profiles "tcp-dl-6m-vi" which is a 6Mbps downstream tcp traffic stream. Once this is selected, the test will create 5 traffic streams of this type, one for each station. Users can create their own custom traffic streams by clicking on the "Create Traffic Profile" button.

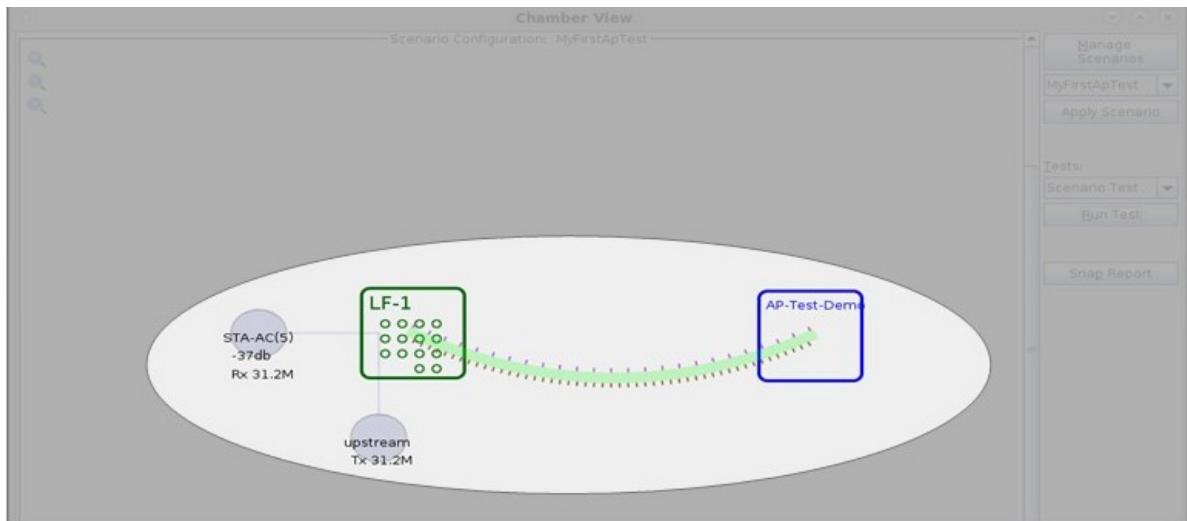
10. Create an upstream server

Add a new row to create an upstream server. For this new row.

- A. Select resource "1.1" as the upstream server is being created on the same LANforge system.
- B. Select the profile as "Upstream" to represent an Upstream endpoint.
- C. Set Amount to 1 as we are creating only 1 upstream server
- D. Set "Uses-1" to eth1 as we are creating the server on "Eth1" interface on the LANforge system.
- E. Now click on "Apply and Save Scenario" to save the test scenario.

11. Load and Run Test Scenario

The next step is to load the scenario and run the test.



- A. Once the scenario is applied, click on the "Build Scenario" button and this action will configure the 5 stations and the traffic streams.
- B. Then in order to run the test scenario, select the "Scenario Test" option from the Tests drop down and click on the "Run Test" button.
- C. The test then starts running and the 5 stations will connect to the AP under test.
- D. Once the connections are complete (indicated by the thick green line between the LANforge system and the AP under test", the traffic streams are started (indicated by the dotted lines on both sides of the thick green line).
- E. In the above example the Upstream shows a Tx stat of 31Mbps representing a total of about 30Mbps of downstream traffic (5 stations each doing 6Mbps) and the stations show an aggregate receive of about the same 31Mbps
- F. "STA-AC (5)" indicates the 5 802.11ac stations connected to the AP under test and the -37db indicated the current signal strength the LANforge stations are seeing from the AP.