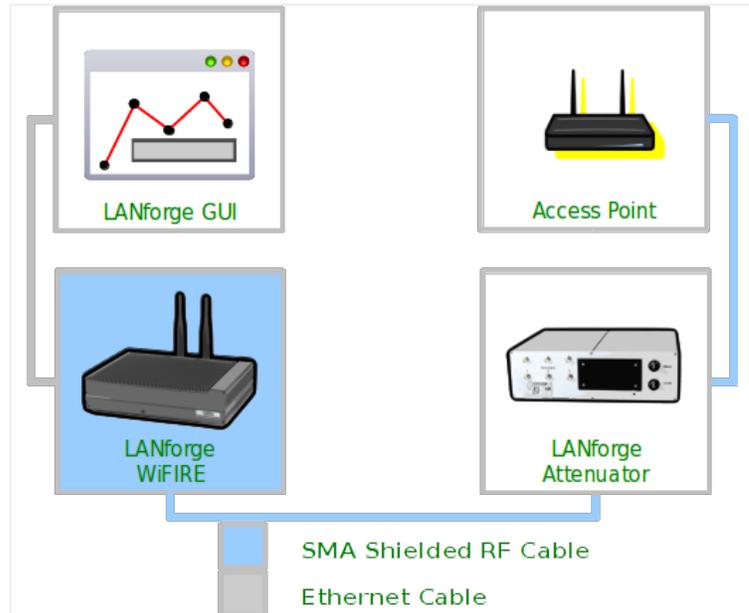


LANforge WiFi Attenuation vs PDU Size Test

Goal: Compare WiFi performance for 'download' traffic (AP to Client) as Payload Size and RF Attenuation levels change using a WiFi access point, a LANforge Attenuator and a LANforge Virtual Station. Traffic is generated by a RFC-2544 script on a Layer-3 UDP connection.

This demo consists of one WiFi access point and one CT523 LANforge WiFIRE machine connected to the LANforge Attenuator with coax SMA cables. (This is **not** over the air testing).



1. Create Layer-3 Cross Connect

A. Go to the **Layer 3** tab

LANforge Manager Version(5.3.3)

Control Reporting Tear-Off Info Plugins

Stop All Restart Manager Refresh HELP

File-I/O 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

Rpt Timer: default (5 s) Go Test Manager all Select All Start Stop Quiesce Clear

View 0 - 200 Go Display Create Modify Delete

Cross Connects for Selected Test Manager

Name	Type	State	Pkt Rx A	Pkt Rx B	Bps Rx A	Bps Rx B	Rx Drop % A	Rx Drop % B	Drop Pkts A

A. Click **Create**

B. Create a cross connect with these settings:

	Endpoint A	Endpoint B
CX Name:	atten-vs-pdu	
CX Type:	LANforge / UDP	
Resource:	1 (dmz-lf-2u-1)	1 (dmz-lf-2u-1)
Port:	2 (eth2)	11 (wlan0)
Min Tx Rate:	900000000 (900 Mbps)	Zero (0 bps)
Max Tx Rate:	Same	Same
Min PDU Size:	AUTO	AUTO
Max PDU Size:	Same	Same
IP ToS:	Best Effort (0)	Best Effort (0)
Pkts To Send:	Infinite	Infinite

- A. Make sure Endpoint A is **eth2** or the wired port to the AP
- B. Make sure Endpoint B is **wlan0** or the station associated with the AP
- C. Min PDU Size for both should be **AUTO**
- D. **NOTE:** These rate and PDU size settings will be manipulated by the script we setup later.

C. Verify that the connection is operational before adding a script.

2. Configure Scripting for Cross Connect

- A. On the **Layer-3** tab, click **Modify**
- B. In the Level 2 box, click Endpoint A **Script** button

	Endpoint A	Endpoint B
Report Timer:	fast (1 s)	
PId Pattern:	increasing	increasing
Min IP Port:	AUTO	AUTO
Max IP Port:	Same	Same
Min Duration:	Forever	Forever
Max Duration:	Same	Same
Min Reconn:	0 (0 ms)	0 (0 ms)
Max Reconn:	Same	Same
Multi-Conn:	Normal (0)	Normal (0)

C. The Cross Connect Script window displays with *Script Type: NONE*

The screenshot shows the 'Add/Modify Script' dialog box. The 'Script Type' dropdown is set to 'NONE'. The 'Endpoint Name' is 'atten-vs-pdu-A', 'Script Name' is 'my-script', and 'Group Action' is 'All'. The 'Loop Count' is 'Forever' and 'Script Iterations' is 'NA'. The 'Estimated Duration' is 'NA'. There are checkboxes for 'Enable Script', 'Show Reports', 'Symmetric', 'Loop', 'Hide Iteration Details', 'Hide Legend', and 'Hide CSV'. At the bottom, there are buttons for 'Show Previous Report', 'Sync', 'Apply', 'OK', and 'Cancel'.

D. Select *Script Type: RFC-2544* and default values appear:

The screenshot shows the 'Add/Modify Script' dialog box with 'Script Type' set to 'RFC-2544'. The 'Script Iterations' is now '27 (27)' and the 'Estimated Duration' is '15.75 m (15.75 m)'. The 'Script Configuration' section is expanded, showing options for 'Show Dups', 'Show OOO', 'Show Attenuation', 'Hide Latency Distributions', and 'Hide Constraints'. Below these are fields for 'Run Duration' (30 s), 'Pause Duration' (5 s), 'Max Drop Percent' (5%), 'Max-Tx-Underrun' (10%), 'Max jitter' (high), and 'Max RT Latency' (500ms). At the bottom, there are five list boxes: 'Rates A' (bps, 10Mbps, 100Mbps, 1Gbps), 'Rates B' (bps, 10Mbps, 100Mbps, 1Gbps), 'Payload Sizes A' (60, 128, 256, 512, 1024, 1280, 1460, 1472, 1514), 'Payload Sizes B' (60, 128, 256, 512, 1024, 1280, 1460, 1472, 1514), and 'Attenuations (ddB)' (NONE, 100, 300, 400, 600, 800, 955). Buttons for 'Show Previous Report', 'Sync', 'Apply', 'OK', and 'Cancel' are at the bottom.

A. Select **Show Attenuation**. This displays attenuation levels in the report.

B. Run Duration: **30 sec**. This is how long each iteration will run.

C. Pause Duration: **5 sec**. We give it some time to transition.

- E. Setup Pass/Fail Criteria and Iteration Steps for the script. For each Attenuation Level, the script will step through each PDU size at the desired rate. If there were multiple rates then for each Attenuation Level, the script would step through each PDU size for each rate.

- A. Max Drop Percent 20%
- B. Max Jitter 200ms
- C. Max RT Latency 1000ms
- D. Rates A: 900Mbps. This sets the client download target rate.
- E. Pld A: 64, 512, 1024, 1472
- F. Attenuator Resource: 1.1.35. You can find your attenuator resources in the **Attenuator** tab.
- G. Attenuation: 0..+50..955. This is shorthand for: Begin at zero dB attenuation, increase in 5.0dB steps, until 955 dB of attenuation. Individual dB steps could also be specified.
- H. Click **OK**

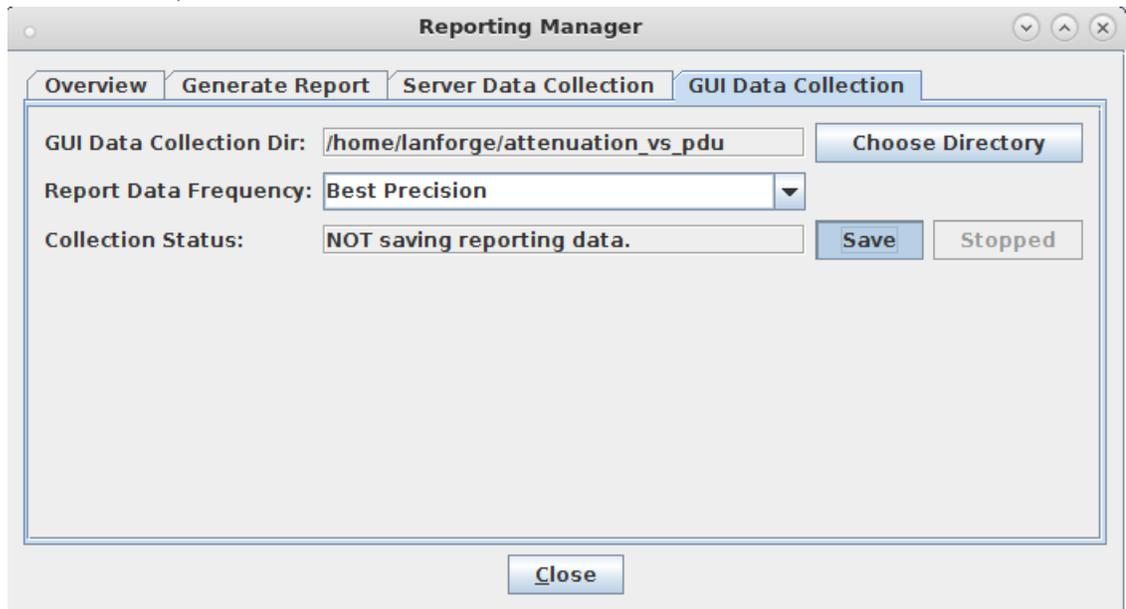
- F. On the **Create/Modify Cross Connect** window, click **OK**

3. Save Data to be able to view past results.

Name	Type	State	Pkt Rx A	Pkt Rx B	Bps Rx A	Bps Rx B	Rx Drop % A	Rx Drop % B	Drop Pkts A
atten-vs-pdu	LF/UDP	Stopped	0	0	0	0	0	0	0

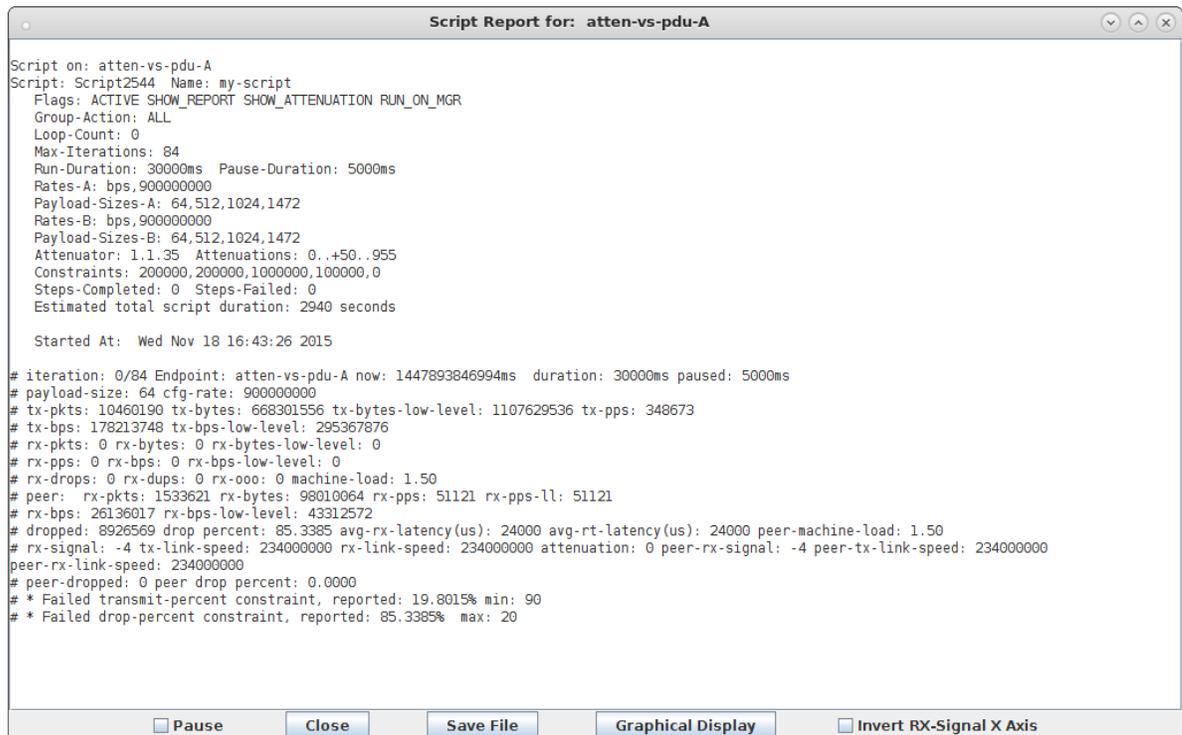
- A. Go to Reporting Menu and select Reporting Manager
- B. Select the GUI Data Collection tab

C. Choose a directory and select Save



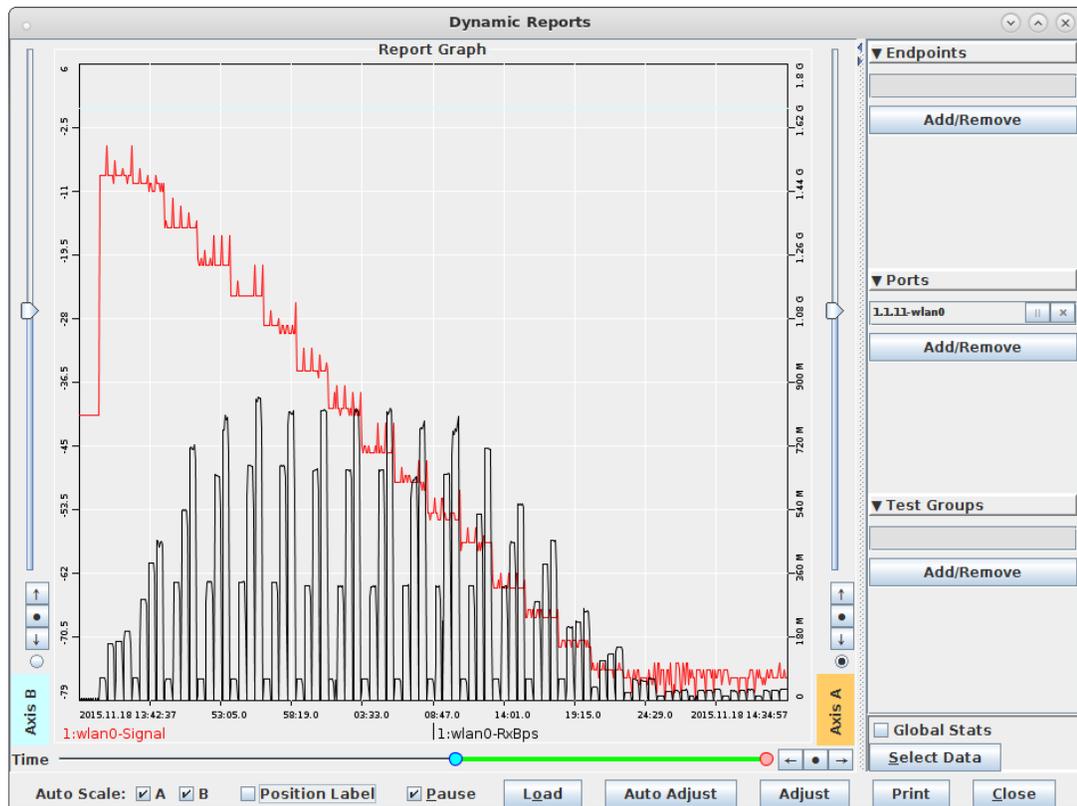
4. Run the Cross Connect and Generate a Report

A. On the **Layer-3** tab, click **Start**, and the Script Report window will appear.



B. View the Dynamic Report

- A. While the script is running, you can view the real-time results of the running script.
- B. Right-Click on **wlan0** and select Dynamic Report
- C. Setup the Dynamic Report to view the data you are interested in.
- D. wlan0: RX Signal level shown on Axis-B and RX bps shown on Axis-A



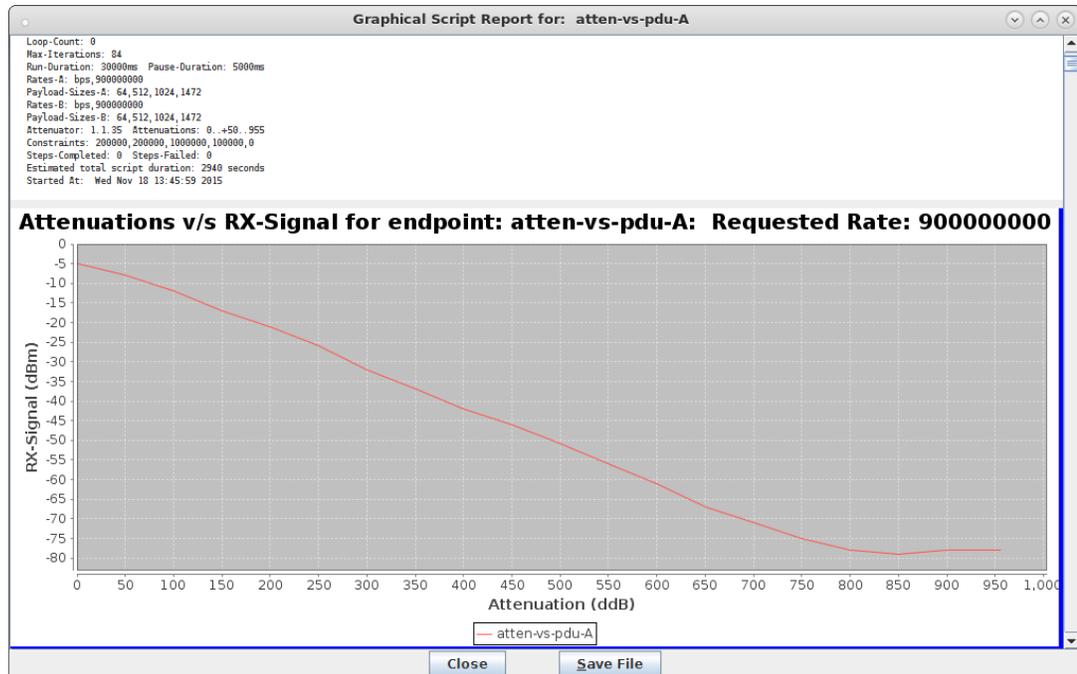
- E. To view Dynamic Report data after the test completes:
- F. Set the Reporting Manager, Generate Report to the directory containing saved data.
- G. Adjust the time scale and Load the data in the Dynamic Report window.

C. View the graphical results of the script when it completes.

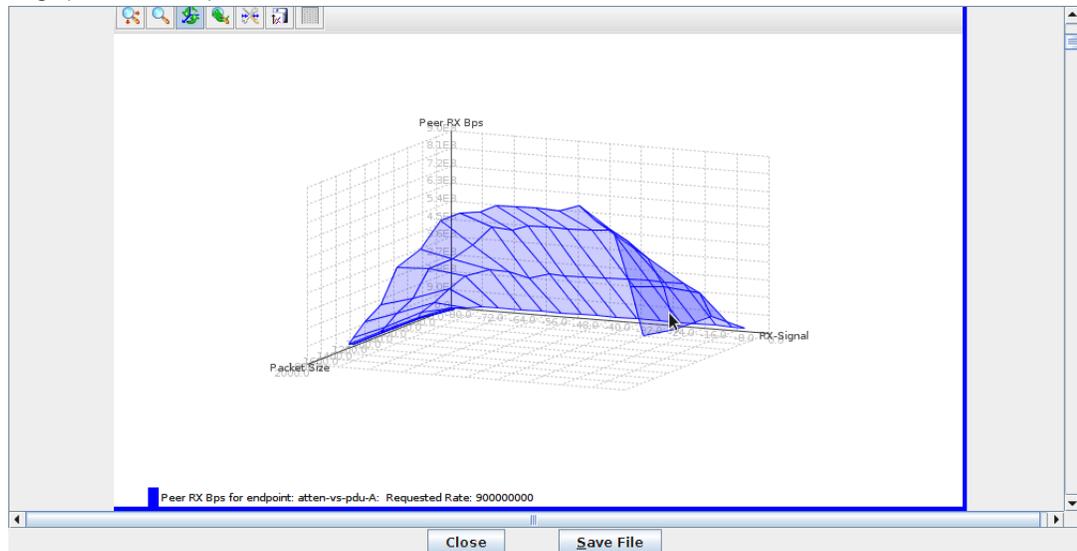
A. In the Script Report window, click on **Graphical Display** and a window with the graphical report will display

B. Scroll to the top of the window to view the graphs. Examples are shown below.

C. Attenuation v. RX signal, endpoint A



D. 3D graph of Peer RX Bps



E. Click on **Save File** and your browser will appear the the HTML copy of the report.

See also: [Full Report](#) [Raw Report Text](#)