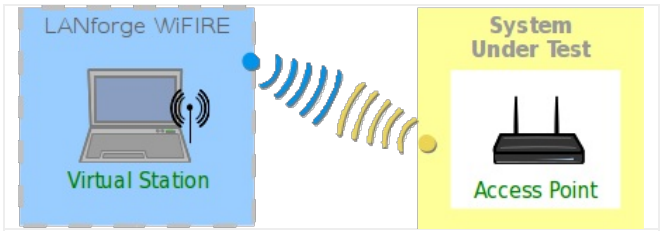
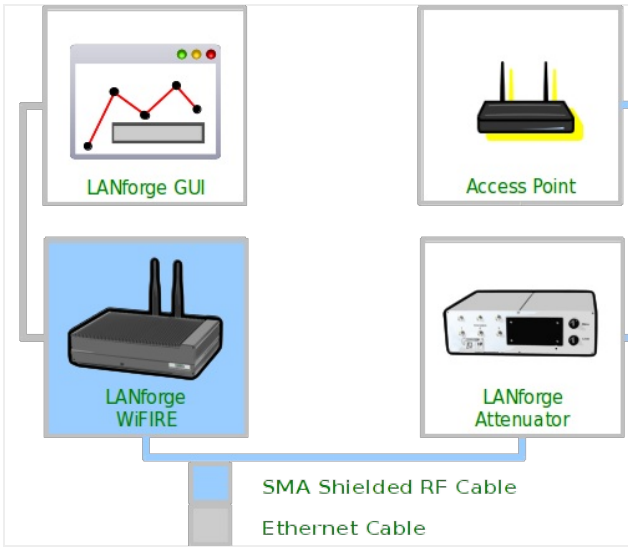
sales@candelatech.com
support@candelatech.com
+1 (360) 380-1618 [PST, GMT -8]

LANforge WiFi Rate v. Range Test

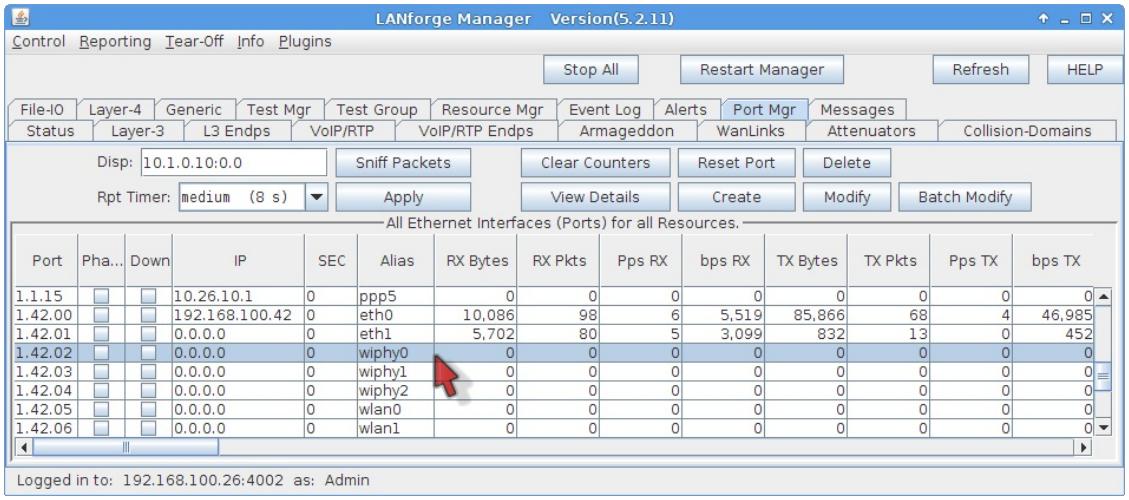
Goal: Compare WiFi performance for 'upload' traffic (client to AP) using a WiFi access point, a LANforge Attenuator and a LANforge Virtual Station. Traffic is generated by a RFC-2544 script on a Layer-3 UDP connection.

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). This requires LANforge release 5.2.7 or higher.



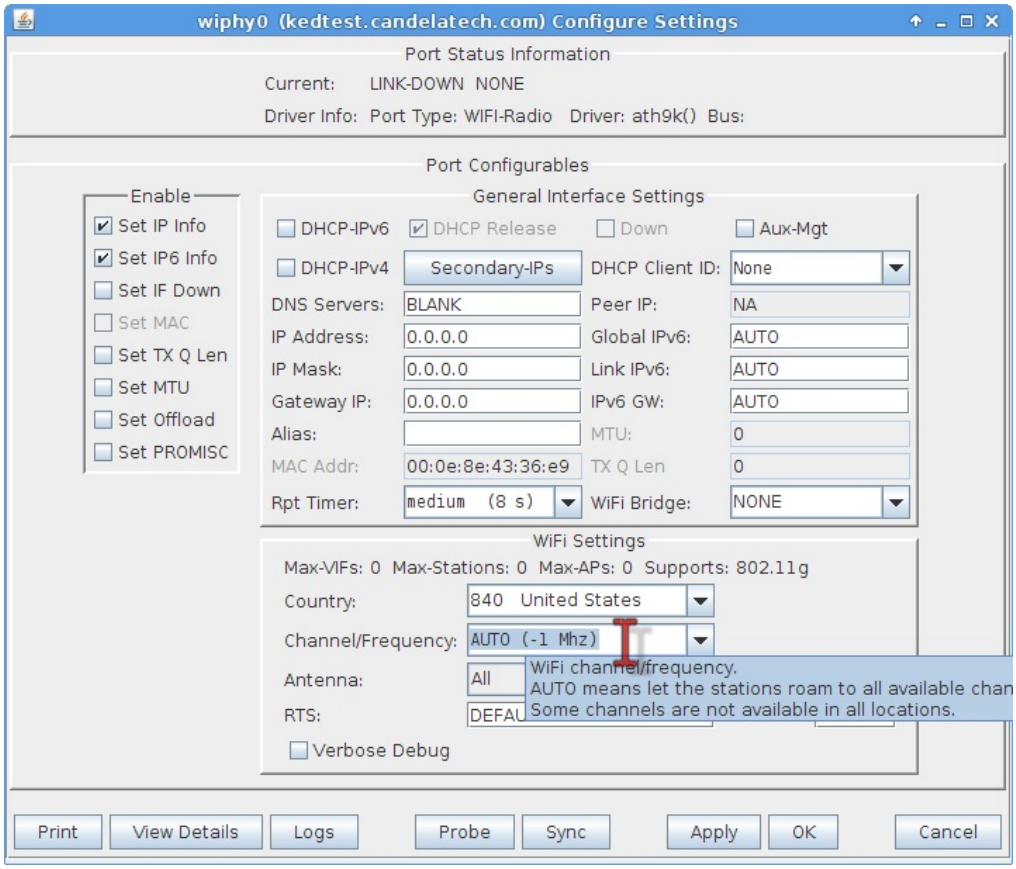


1. Create Virtual Station



   A. Select radio `wiphy1` and click **Modify**

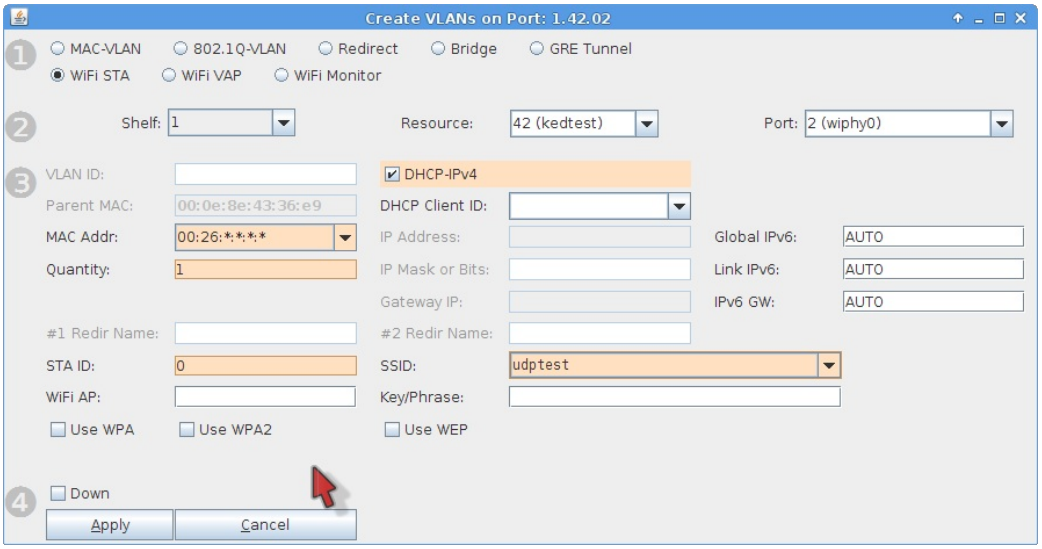
B. Set the frequency of the radio to **Auto**



A. Click **OK**

C. On the Port Modify tab, click **Create**

D. Create virtual station with these paramters:



A. Select **Wifi STA**

B. Choose **DHCP-IPv4**

C. Quantity **1**

D. Station ID `0`

E. SSID `'udptest'`

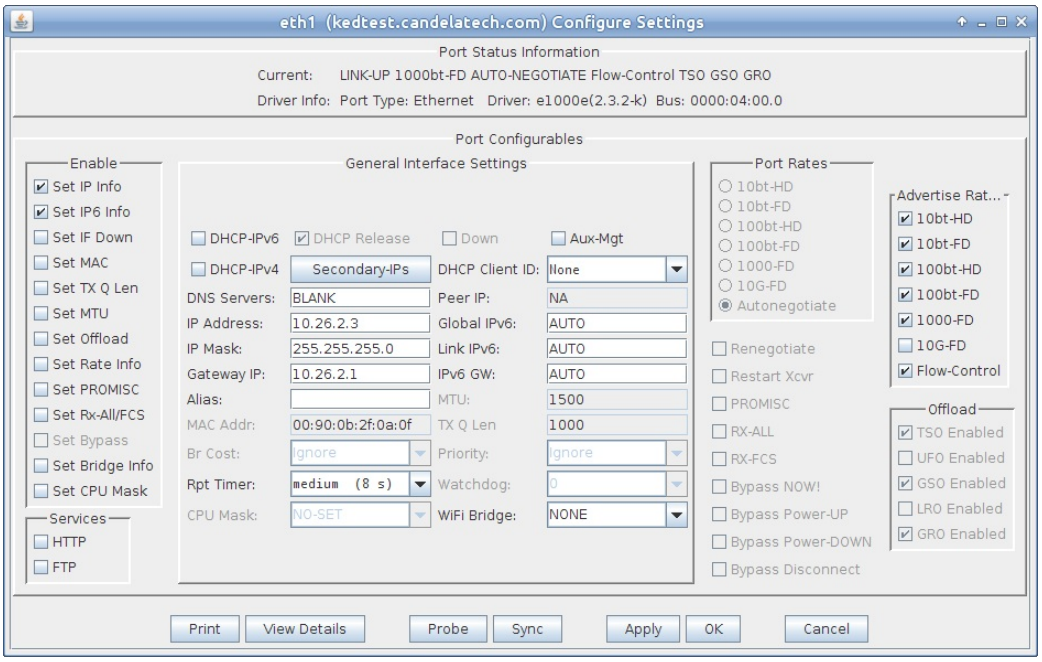
F. Click **Apply**

2. Create upstream port wired to AP

A. Wire the `eth1` port into the upstream connection of the AP under test.

B. On the **Ports** tab, click on the `eth1` port

C. Configure `eth1` port with an upstream IP, like 10.26.2.3

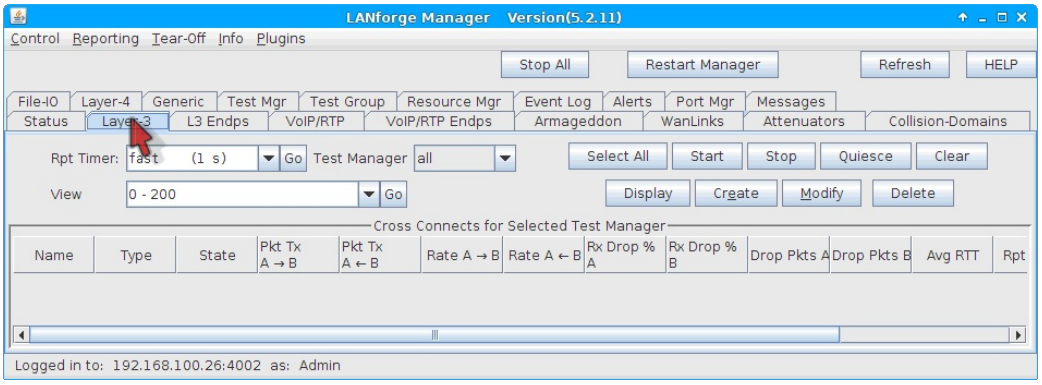


D. Set the **Gateway** to the AP wired interface IP.

E. Click **OK**

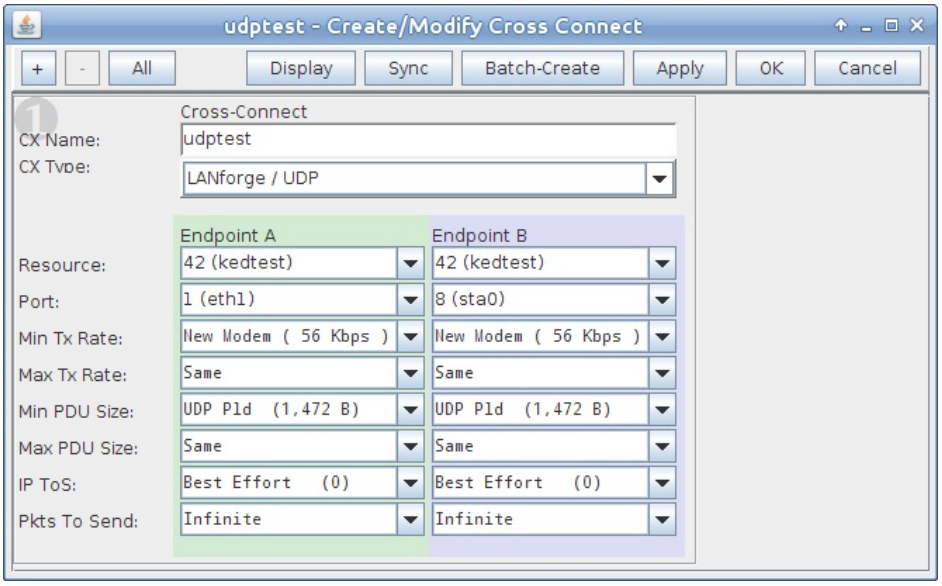
3. Create and Test Cross Connect

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



A. Click **Create**

B. Create a cross connect with these qualities:



A. Make sure Endpoint A is **eth1**

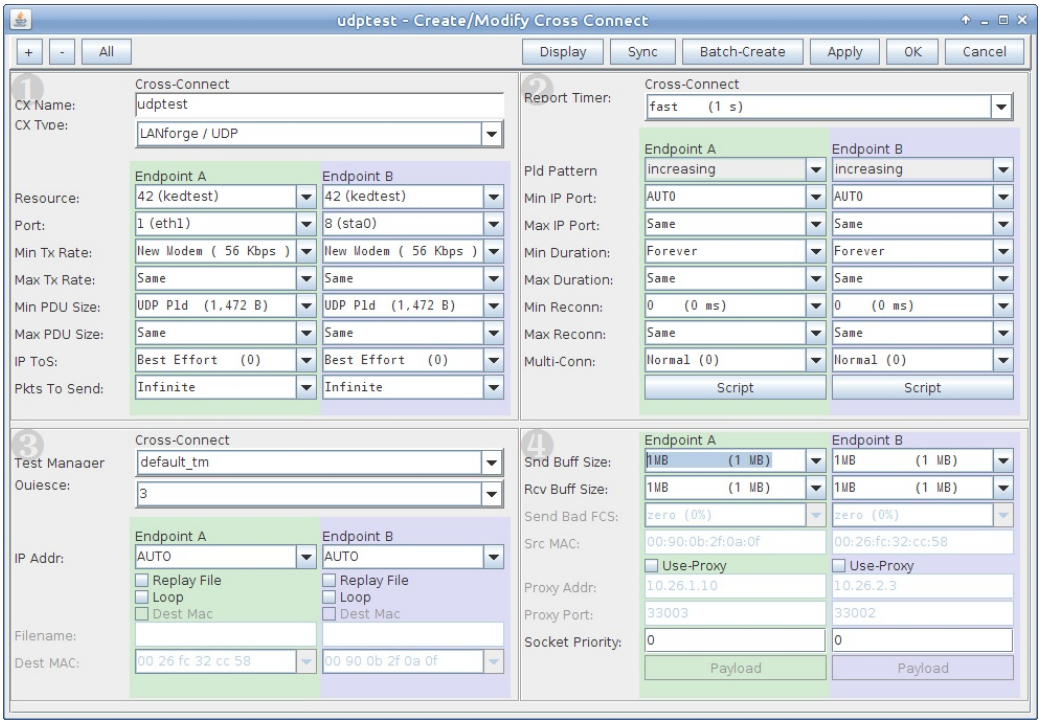
B. Make sure Endpoint B is **sta0**

C. Min PDU Size for both should be `1472`

D. **NOTE:** These rate and PDU size settings will be manipulated by the script we setup later.

C. Next, expand the screen to **Level 4** using the [+] button.

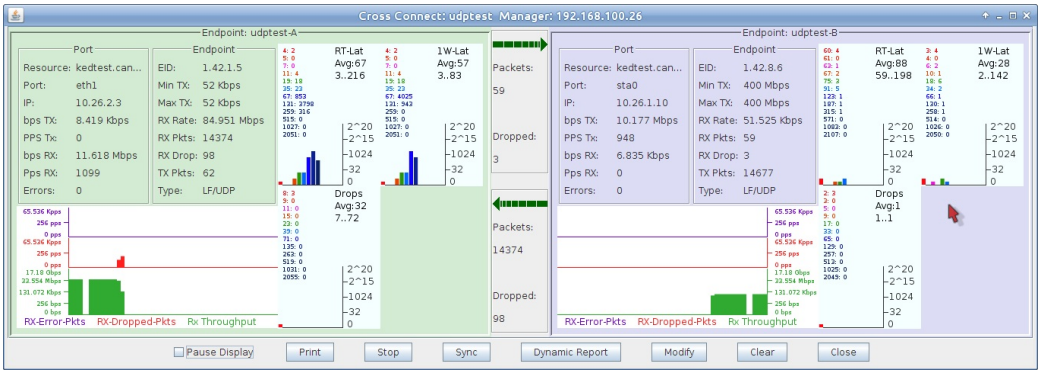
D. Configure the send buffer on **Endpoint B** to `1 MB`



A. Click **OK**

E. On the **Layer 3** tab, click **Start** to verify the AP and Station can connect

F. Click the **Display** button to monitor throughput

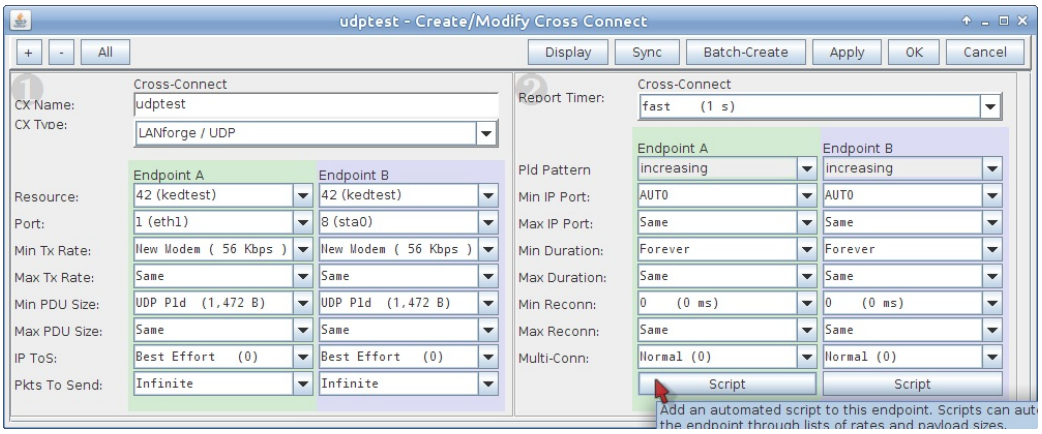


G. Only a short confirmation is necessary, click **Stop** on the Layer 3 tab

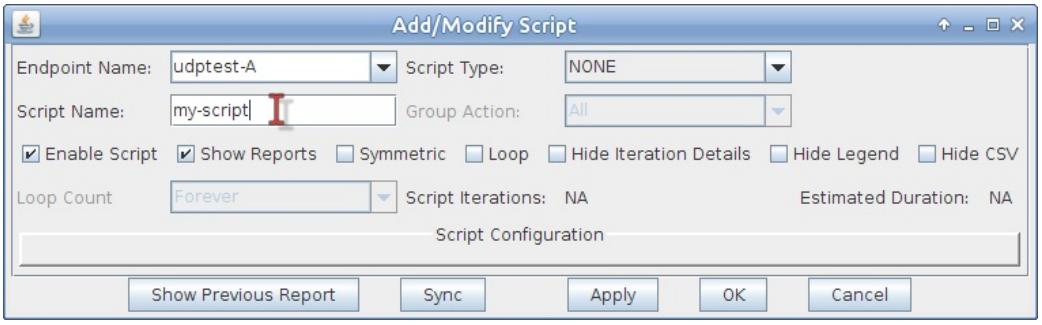
4. Configure Scripting for Cross Connect

A. On the **Layer-3** tab, click **Modify**

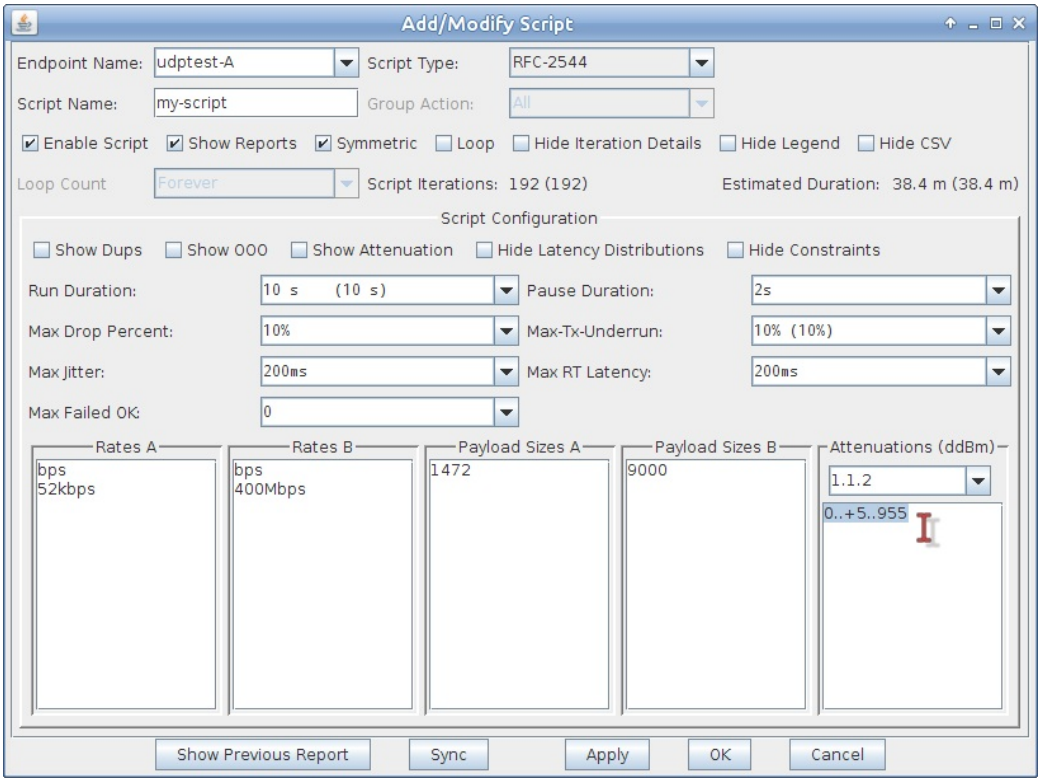
B. In the Level 2 box, click Endpoint A **Script** button



C. The Cross Connect Script window displays with no parameters



D. Select Script Type: **RFC-2544**. Set the following parameters:



A. Select **Symmetric**. This will increment both the A and B rates and payload sizes. (Instead of just side A).

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

C. Run Duration: `10 sec`. This is how long each rate setting will be held.

D. Pause Duration: `2 sec`. We give it some time to transition.

E. Max Drop Percent `10%`

F. Max Jitter `200ms`

G. Max RT Latency `200ms`

H. Rates A: `56kbps`. This sets the client upload target rate.

I. Rates B: `400Mbs`. This sets the client download target rate.

J. Pld A: `1472` This sets the client (sta0) MTU. This is a 1500 byte wire packet.

K. Pld B: `9000` This sets the upstream (eth1) MTU.

L. Attenuator Resource: **1.1.2**. You can find your attenuator resources in the **Attenuator** tab.

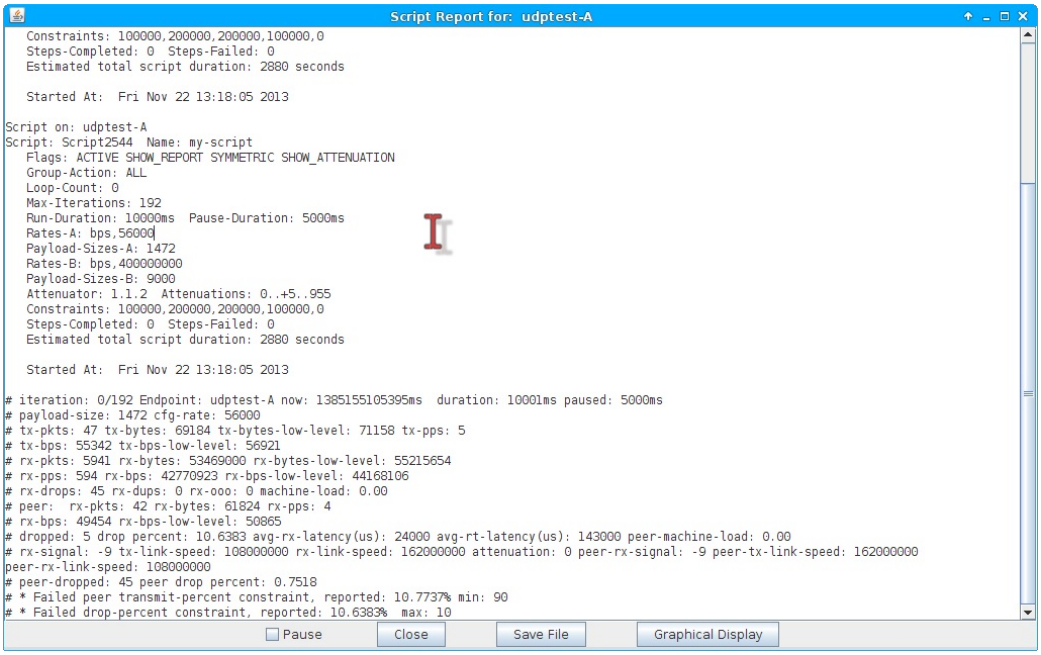
M. Attenuation: `0..+5..955`. This is shorthand for: Begin at zero dB attenuation, increase in 0.5dB steps, until 955 dB of attenuation. Individual dB steps could also be specified.

N. Click **OK**

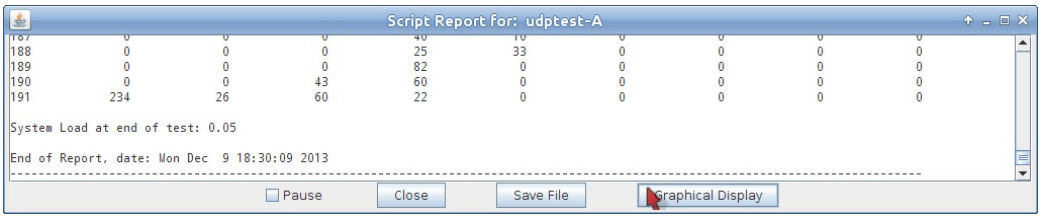
E. On the **Create/Modify Cross Connect** window, click **OK**

5. Run the Cross Connect and Generate a Report

A. On the **Layer-3** tab, click **Start**



B. The Scripting Report window will appear

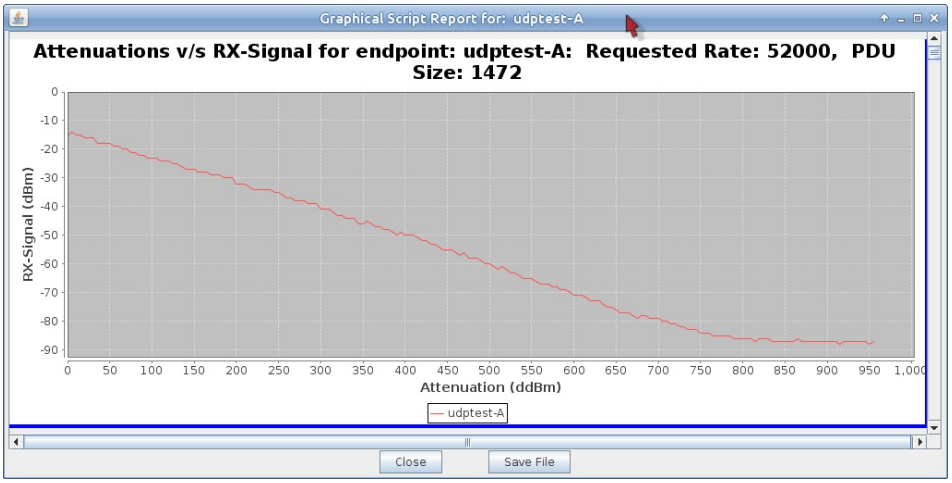


A. When the script completes, you can view the graphed results.

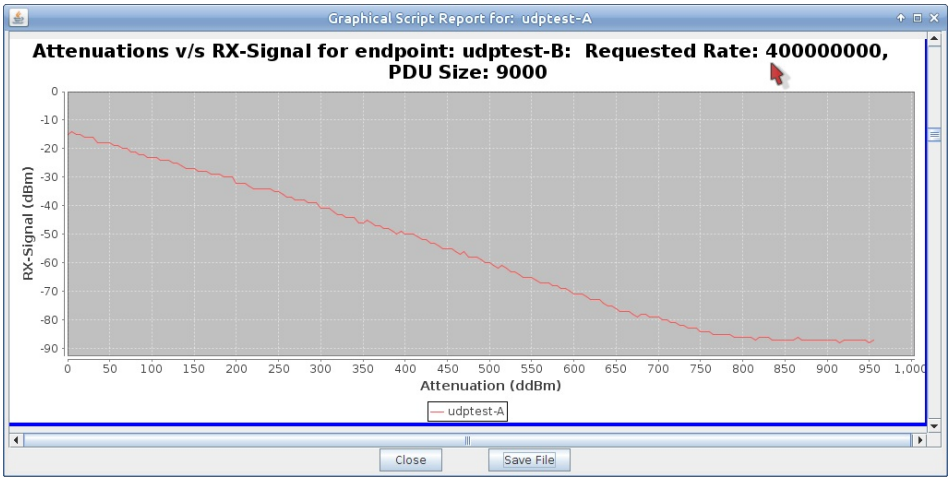
B. Click on **Graphical Display** and a window with the graphical report will display

C. Scroll to the top of the window to view the graphs. Highlights are shown below.

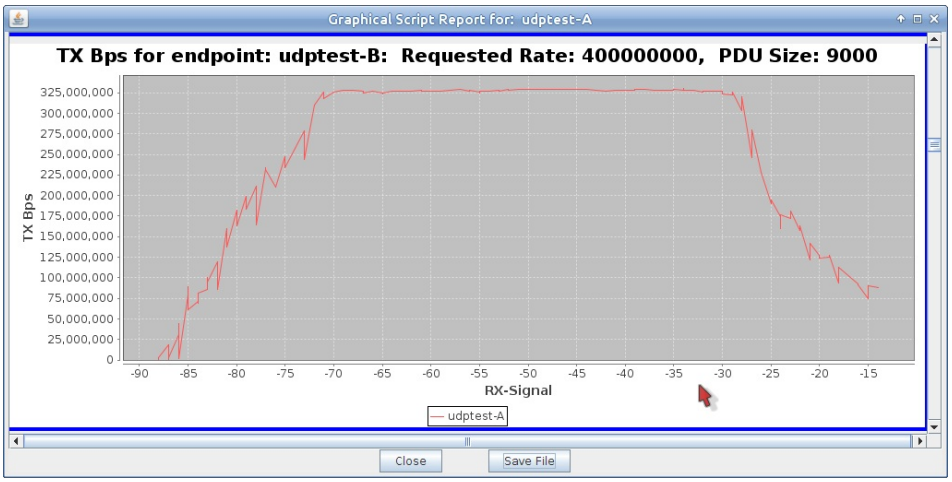
D. Attenuation v. RX signal, endpoint A



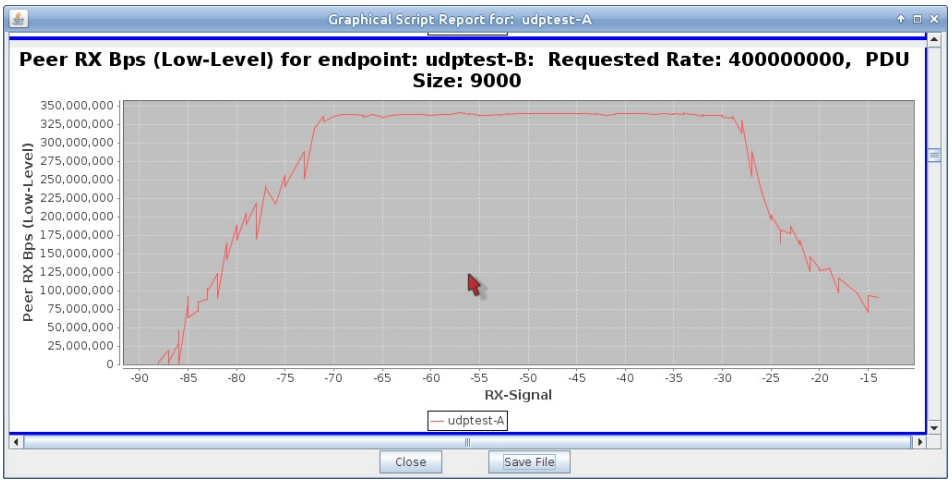
E. Attenuation v. RX signal, endpoint B



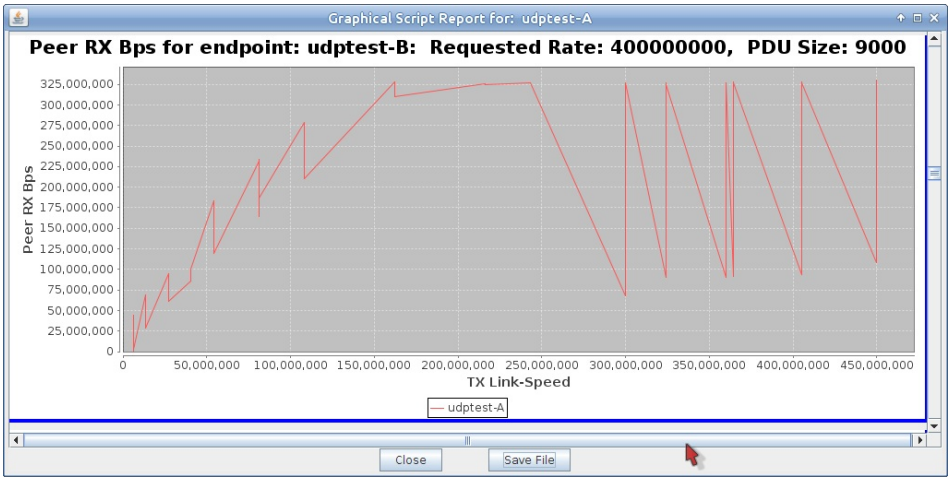
F. TX rate (UDP payload) v. RX signal, endpoint B



G. RX rate including frame headers (UDP payload with frame headers) v. RX signal, endpoint B



H. RX rate v. TX link speed. You see a sawtooth pattern becuase all attenuations are included.



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