

## ScriptHunt with Test Groups

**Goal:** Create a Test Group that uses ScriptHunt to maximize the total rate of multiple connections based on desired constraints.

ScriptHunt is a script that runs connections or 'iterates' and changes tx-rates until a maximum acceptable tx-rate is reached. This can be done for multiple payload sizes and attenuations. Using a Test Group along with ScriptHunt allows you to test multiple connections at the same time.

This cookbook assumes ports and connections are already created and configured. The following areas will be covered:

- Creating and Configuring Test Groups
- ScriptHunt setup
- Running ScriptHunt and checking results
- Using additional Test Groups for alternate tests

1. It is a good idea to verify connections are running as expected before getting started. The connections below are testing UDP download on 10 wireless stations.

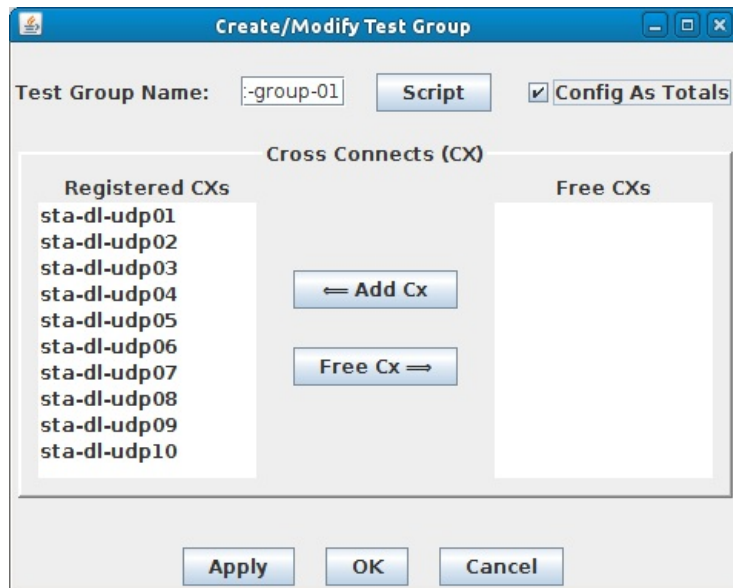
The screenshot shows the LANforge Manager interface. At the top, there are buttons for 'Stop All', 'Restart Manager', 'Refresh', and 'HELP'. Below these are tabs for 'Generic', 'Test Mgr', 'Test Group', 'Resource Mgr', 'Event Log', 'Alerts', 'Port Mgr', 'vAP Stations', and 'Messages'. The 'Test Mgr' tab is active, showing sub-tabs for 'Layer-3', 'L3 Endps', 'VoIP/RTP', 'VoIP/RTP Endps', 'Armageddon', 'WanLinks', 'Attenuators', 'File-IO', and 'Layer-4'. The 'Layer-3' sub-tab is selected. Below the tabs, there are controls for 'Rpt Timer' (set to 'default (5 s)'), 'Test Manager' (set to 'all'), and 'View' (set to '0 - 200'). There are also buttons for 'Select All', 'Start', 'Stop', 'Quiesce', 'Clear', 'Display', 'Create', 'Modify', and 'Delete'. The main area displays a table titled 'Cross Connects for Selected Test Manager' with the following data:

Name	Type	State	Pkt Rx A	Pkt Rx B	Bps Rx A	Bps Rx B	Rx Drop % A	Rx Drop % B	Drop Pkts A	Drop Pkts
sta-dl-udp01	LF/UDP	Run	0	112	0	55,175	0	0	0	
sta-dl-udp02	LF/UDP	Run	0	113	0	55,579	0	0	0	
sta-dl-udp03	LF/UDP	Run	0	114	0	55,609	0	0	0	
sta-dl-udp04	LF/UDP	Run	0	115	0	55,638	0	0	0	
sta-dl-udp05	LF/UDP	Run	0	116	0	55,892	0	0	0	
sta-dl-udp06	LF/UDP	Run	0	112	0	55,563	0	0	0	
sta-dl-udp07	LF/UDP	Run	0	112	0	55,563	0	0	0	
sta-dl-udp08	LF/UDP	Run	0	113	0	55,829	0	0	0	
sta-dl-udp09	LF/UDP	Run	0	113	0	55,829	0	0	0	
sta-dl-udp10	LF/UDP	Run	0	113	0	55,829	0	0	0	

At the bottom of the window, it says 'Logged in to: brent-6port:4002 as: Admin'.

2. Create and Configure Test Group(s).

A. In the Test Group tab, click **Create**.



- Give the Test Group a **Name**. The name used here is 'scripthunt-group-01'
- Under Free CXs, shift-select the connections you want in the group and click **Add Cx**.
- Select the **Config As Totals** checkbox. This makes it so the tx-rate is based on a combination of all connections instead of individually.
- The Test Group must be created before setting up the script. Click **Apply** to create it.

B. Click **Script** to open the Add/Modify Script window.

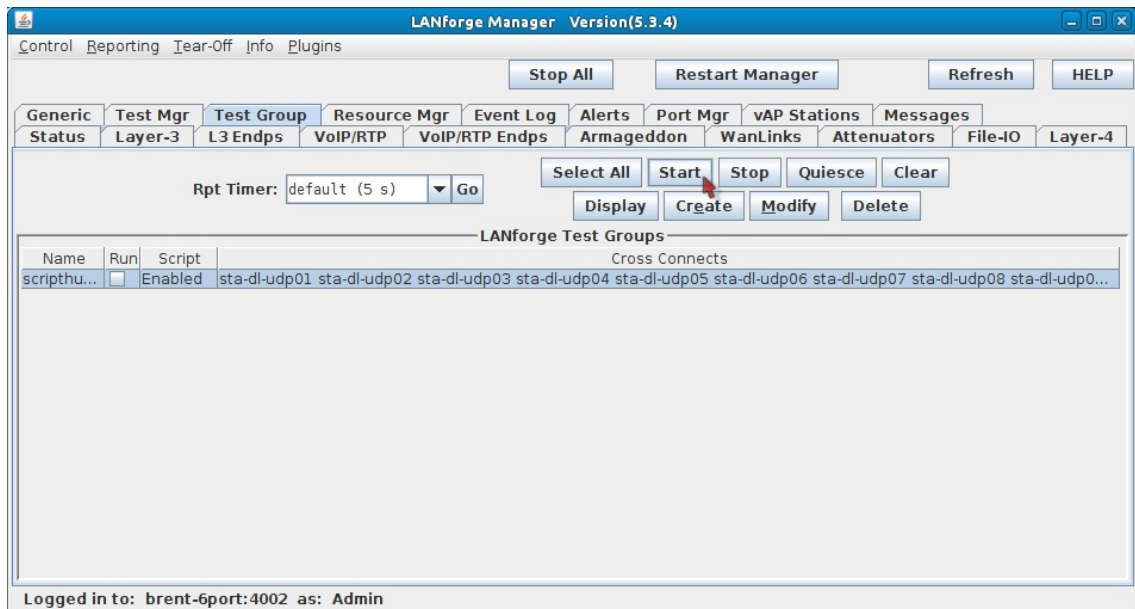
A. In the **Script Type** drop-down menu, select **ScriptHunt**.

**Note:** Most options will be left default for now (all but Run Duration and Payload Sizes A). Below are quick summaries of the drop-down options.

- B. **Run Duration:** Determines how long each iteration lasts. This should be about 15-20 seconds minimum. This test will use **20s**.
- C. **Pause Duration:** Sets how long the script waits between each iteration.
- D. **Starting Rate:** Sets the first tx-rate the script attempts.
- E. **Max Iterations:** Allows you to choose a maximum amount of times you want the script to iterate as it adjusts the rate.
- F. **Max Drop Percent:** Determines the acceptable range of drops for an iteration. In this case if there are more than 5% drops, the current iteration will fail and the next will attempt to make adjustments so there are less drops.
- G. **Max-Tx-Underrun:** With the current setting of 10%, if the actual tx-rate is running 10% slower than the attempted tx-rate, the iteration will fail.
- H. **Max Jitter:** Determines the acceptable maximum jitter for an iteration.
- I. **Max RT Latency:** This determines the maximum acceptable round-trip latency for an iteration.
- J. **Threshold:** If the percent difference of tx-rate from iteration to iteration reaches the value here or less, the script will finish unless there are additional payloads/attenuations to test.
- K. ScriptHunt will find the highest acceptable rate for each payload size listed in **Payload Sizes A and B**. The existing values are suggestions, but any desired value(s) can be entered here. If you wish to test Payload Size B, the **Symmetric** checkbox must be enabled. **Attenuations (ddb)** are tested similarly, a Candela attenuator is required and must be connected then selected in the Attenuations drop-down menu. In this specific test, ScriptHunt will just test a payload of 1472 (on endpoint A only) and no attenuations.
- L. Click **OK** to add the script.
- M. Click **OK** in the Create/Modify Test Group window to close it.

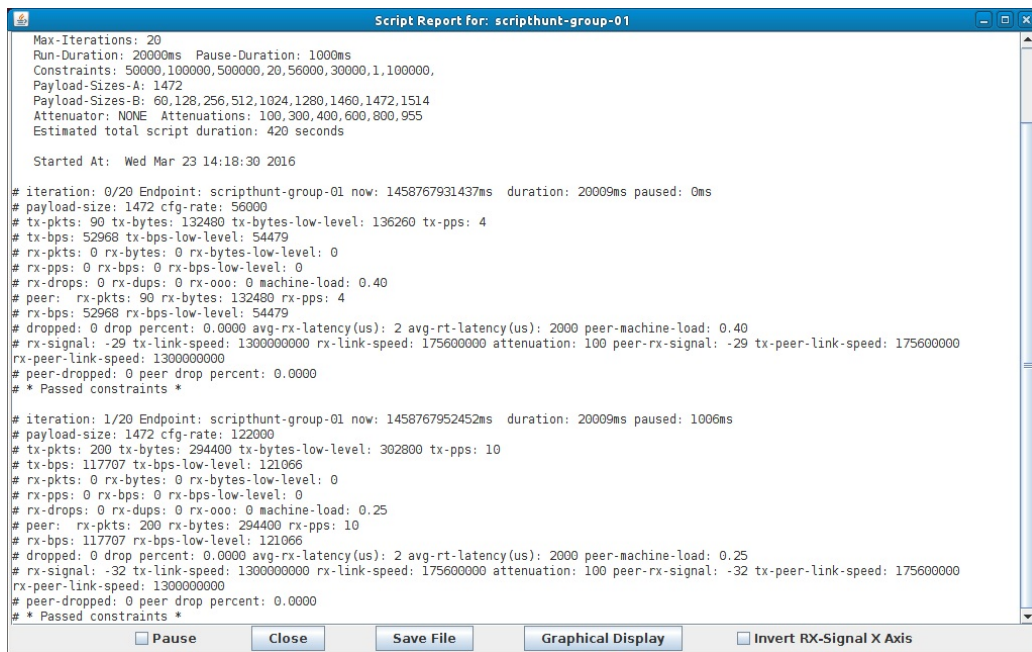
3. Start the Test Group and view the results.

A. Select the Test Group and click **Start**.



B. Examine the results.

A. After each iteration completes, the results will update with various information on said iteration.



- B. When ScriptHunt finishes, the results will show a summary of all iterations. This data shows how high the rates reached and which failure constraints the iterations hit. This particular test reached about 429 Mbps tx-rate within the specified constraints. Notice how the configured rate (cfg-rate (bps)) adjusts up and down as the drop percent (drop% peer) goes lower and higher than the 5% constraint set earlier.

Script Report for: scripthunt-group-01

Summary data for each iteration:

##	pld-size (bytes)	cfg-rate (bps)	tx-bps	rx-bps peer	rx-bps-LL peer	tx-pps	rx-pps peer	tx-pkts	rx-pkts peer	cx-drops peer	drop% peer	rx-lat(ms) peer
0*	1472	56000	52968	52968	54479	4	4	90	90	0	0.000	2
1*	1472	122000	117707	117707	121066	10	10	200	200	0	0.000	2
2*	1472	198000	194207	194207	199748	16	16	330	330	0	0.000	2
3*	1472	406000	400204	400204	411623	34	34	680	680	0	0.000	2
4*	1472	1228000	1223970	1223970	1258893	104	104	2080	2080	0	0.000	2
5*	1472	4922000	4914269	4914269	5054485	417	417	8350	8350	0	0.000	1
6*	1472	24620000	24605425	24601894	25303850	2089	2089	41810	41804	6	0.014	1
7*	1472	147730000	147008451	146991385	151185433	12484	12482	249812	249783	29	0.012	2
8	1472	1034120000	1032603954	293173554	301538560	87687	24896	1754620	498166	1256454	71.608	73
---	Failed drop-percent constraint, reported: 71.6083% max: 5											
9	1472	590925000	588184423	355069646	365200709	49948	30152	999454	603341	396113	39.633	51
---	Failed drop-percent constraint, reported: 39.6329% max: 5											
10*	1472	369327500	368777122	368710832	379230291	31316	31310	626633	626519	114	0.018	3
11	1472	480126250	477208437	381443173	392326742	40524	32392	810841	648123	162718	20.068	43
---	Failed drop-percent constraint, reported: 20.0678% max: 5											
12*	1472	424726875	423121467	417510962	429423639	35931	35454	718940	709407	9533	1.326	8
13	1472	452426562	449089913	389657894	400775850	38136	33089	763102	662114	100988	13.234	36
---	Failed drop-percent constraint, reported: 13.2339% max: 5											
14	1472	436576718	434606731	396467887	407780150	36906	33667	738455	673652	64803	8.775	27
---	Failed drop-percent constraint, reported: 8.77548% max: 5											
15*	1472	431651796	429019767	417360297	429268675	36432	35442	728962	709151	19811	2.718	14

Peer Endpoint Summary data for each iteration:  
WARNING: Script is not symmetric. Peer endpoint will not be paused by this script, so the packet drop calculations will probably be slightly inaccurate due to races between transmitting and receiving.

##	pld-size (bytes)	cfg-rate (bps)	tx-bps	rx-bps peer	rx-bps-LL peer	tx-pps	rx-pps peer	tx-pkts	rx-pkts peer	cx-drops peer	drop% peer	rx-lat(ms) peer
0	0	0	0	0	0	0	0	0	0	0	0.000	0
1	0	0	0	0	0	0	0	0	0	0	0.000	0
2	0	0	0	0	0	0	0	0	0	0	0.000	0
3	0	0	0	0	0	0	0	0	0	0	0.000	0
4	0	0	0	0	0	0	0	0	0	0	0.000	0
5	0	0	0	0	0	0	0	0	0	0	0.000	0
6	0	0	0	0	0	0	0	0	0	0	0.000	0
7	0	0	0	0	0	0	0	0	0	0	0.000	0
8	0	0	0	0	0	0	0	0	0	0	0.000	0
9	0	0	0	0	0	0	0	0	0	0	0.000	0
10	0	0	0	0	0	0	0	0	0	0	0.000	0
11	0	0	0	0	0	0	0	0	0	0	0.000	0
12	0	0	0	0	0	0	0	0	0	0	0.000	0
13	0	0	0	0	0	0	0	0	0	0	0.000	0
14	0	0	0	0	0	0	0	0	0	0	0.000	0
15	0	0	0	0	0	0	0	0	0	0	0.000	0

System Load at end of test: 0.70

End of Report, date: Wed Mar 23 14:24:07 2016

Buttons:  Pause, Close, Save File, Graphical Display,  Invert RX-Signal X Axis

4. Create another Test Group with alternate ScriptHunt settings.

- A. We will essentially copy the last Test Group, then change ScriptHunt settings. Select 'scripthunt-group-01' and click **Modify**.

Create/Modify Test Group

Test Group Name:    Config As Totals

Cross Connects (CX)

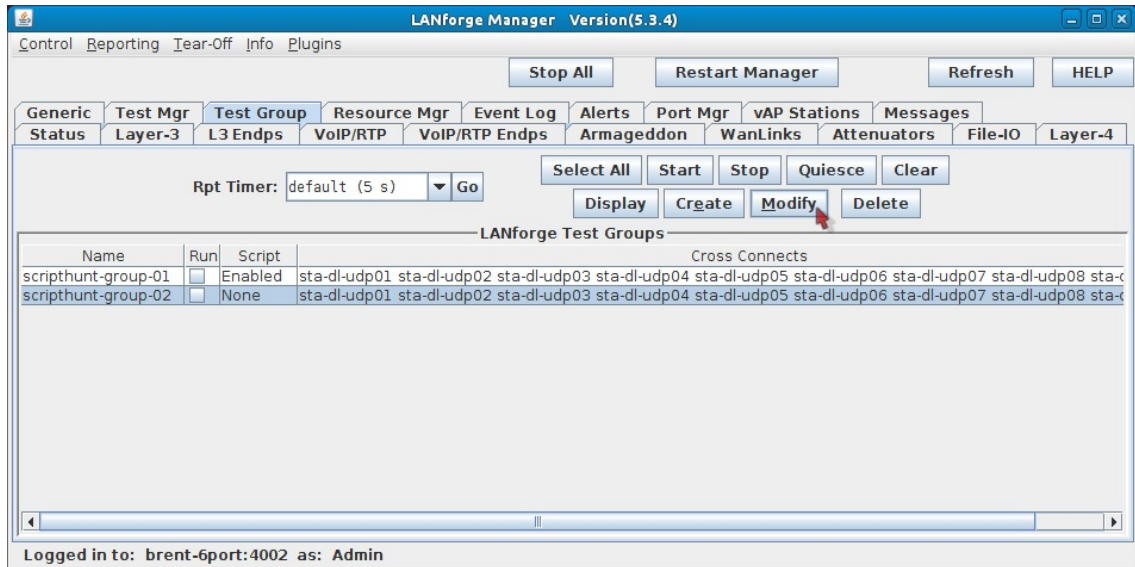
Registered CXs

- sta-dl-udp01
- sta-dl-udp02
- sta-dl-udp03
- sta-dl-udp04
- sta-dl-udp05
- sta-dl-udp06
- sta-dl-udp07
- sta-dl-udp08
- sta-dl-udp09
- sta-dl-udp10

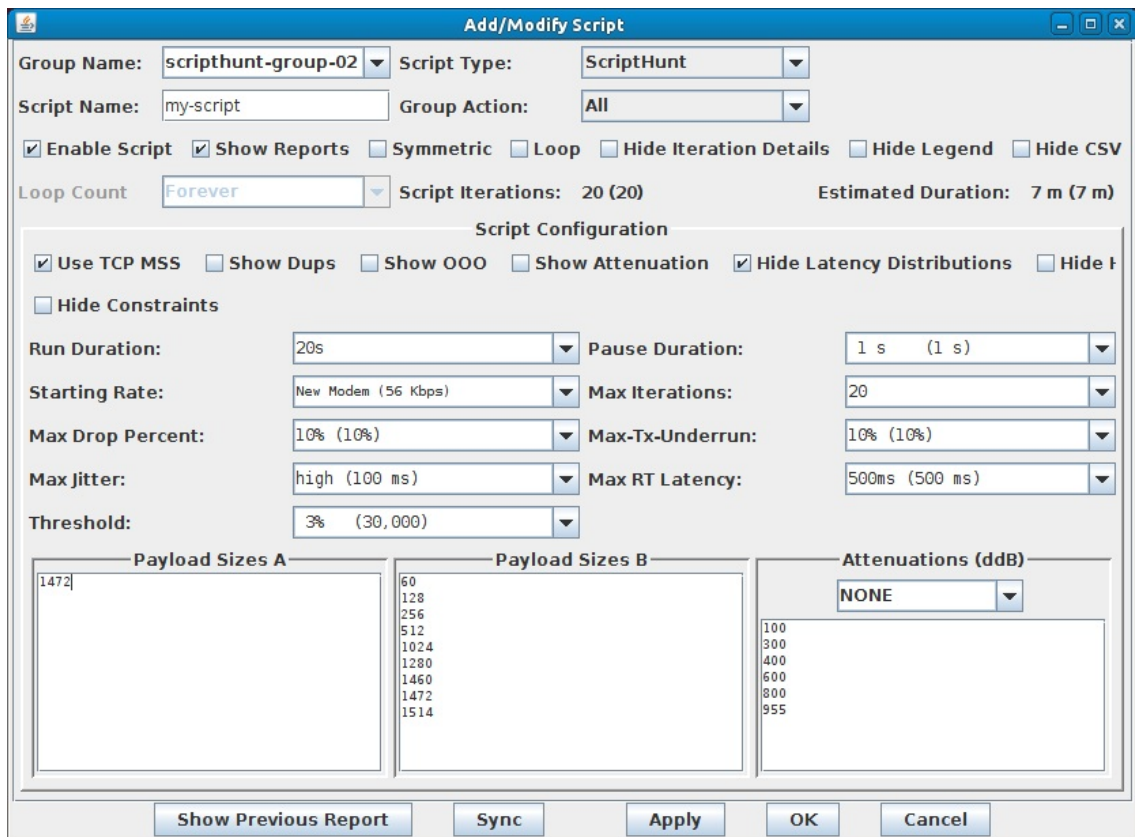
Free CXs

- A. Change the **Test Group Name** to 'scripthunt-group-02'.
- B. Click **OK**.

- B. Select scripthunt-group-02 and click **Modify**.



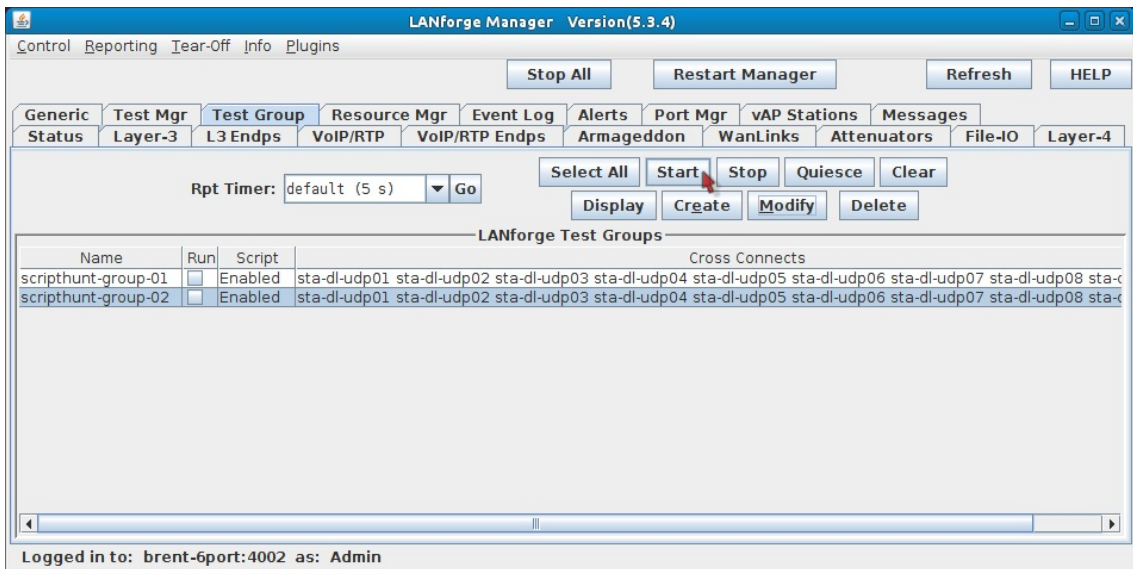
- C. Click **Script**.



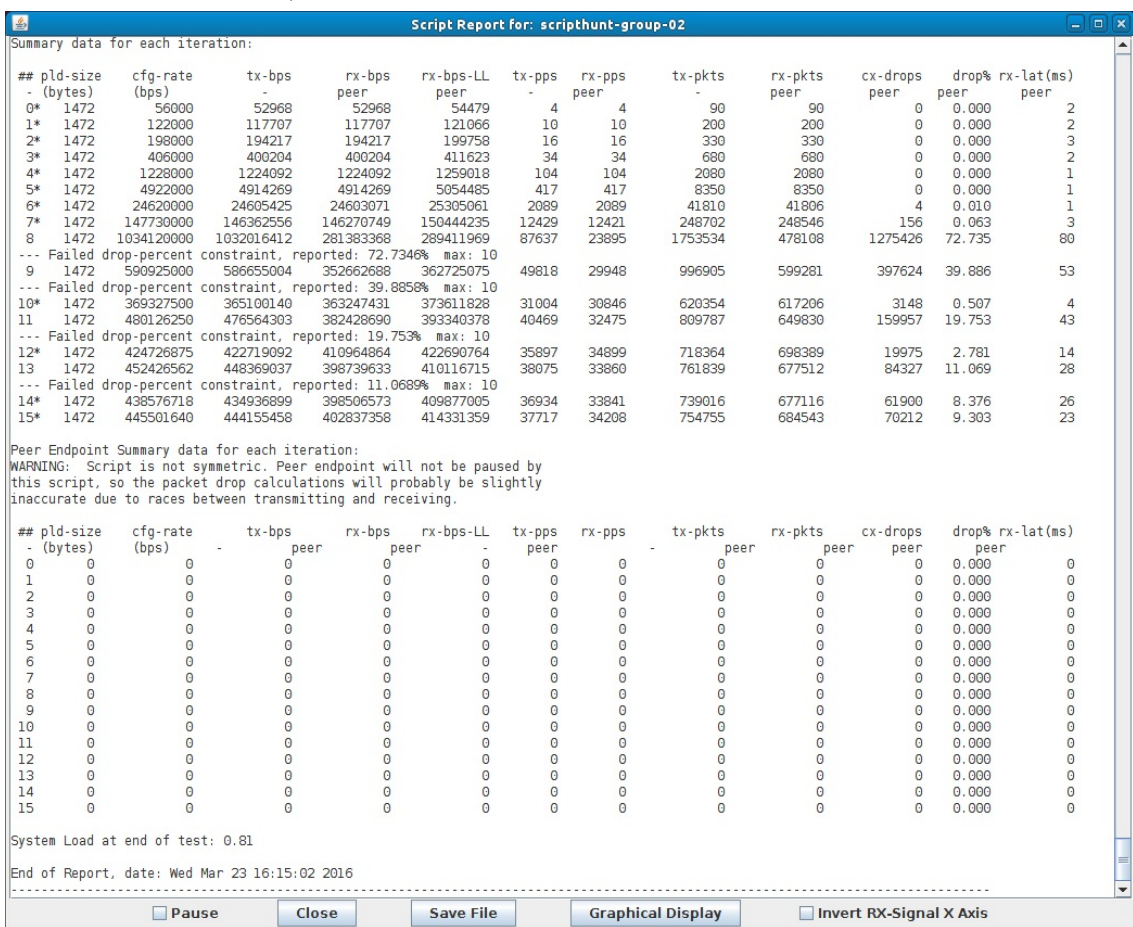
- Set the **Script Type** to **ScriptHunt**.
- Again, **Run Duration** should be 15-20s minimum. It is set to **20s** for this test.
- Since the only constraint limiting the first Test Group was **Max Drop Percent**, we'll raise it to **10%** and compare the results.
- Remove all but **1472** in **Payload Sizes A**.
- Click **OK**.
- Click **OK** in the Create/Modify Test Group window.

- D. Be sure 'scripthunt-group-01' is stopped! If you have two different ScriptHunts running on the same connection(s), they will try to fight each other.

E. Select 'scripthunt-group-02' and click **Start**.



F. Observe the results summary.



A. Compare the two results final tx-bps. The first test group got 429 Mbps at 5% maximum drops. Because the second Test Group's ScriptHunt was set at 10% maximum drops, it was able to achieve a higher tx-bps of 444 Mbps.