Dataplane Test

Fri May 28 10:15:49 PDT 2021

Test Setup Information				
Device Under Test	Name	TIP-cig		
	Software Version	1.1.0-rc2	Hardware Version	CIG194c
	Model Number	CIG194c	Serial Number	089B4BB2F10C
	SSIDs	Default-SSID-2G Default-SSID-5G		
	Passwords	12345678 12345678		
	BSSIDs	00:03:7f:12:5c:5b 00:03:7f:12:5b:5b		
	Notes	[BLANK]		

Objective

The Candela WiFi data plane test is designed to conduct an automatic testing of all combinations of station types, MIMO types, Channel Bandwidths, Traffic types, Traffic direction, Frame sizes etc… It will run a quick throughput test at every combination of these test variables and plot all the results in a set of charts to compare performance. The user is allowed to define an intended load as a percentage of the max theoretical PHY rate for every test combination. The expected behavior is that for every test combination the achieved throughput should be at least 70% of the theoretical max PHY rate under ideal test conditions. This test provides a way to go through hundreds of combinations in a fully automated fashion and very easily find patterns and problem areas which can be further debugged using more specific testing.

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Add your notes below:

cig194c . Configured for bridge mode and WPA2 PSK.

LANforge test gear uses a 4x4 /ac station for this test.
Connected via 1Gbps Ethernet port.

Connectivity is OTA inside an RF chamber. 20db inline attenuators are placed on LANforge
to make sure signal is not too strong.
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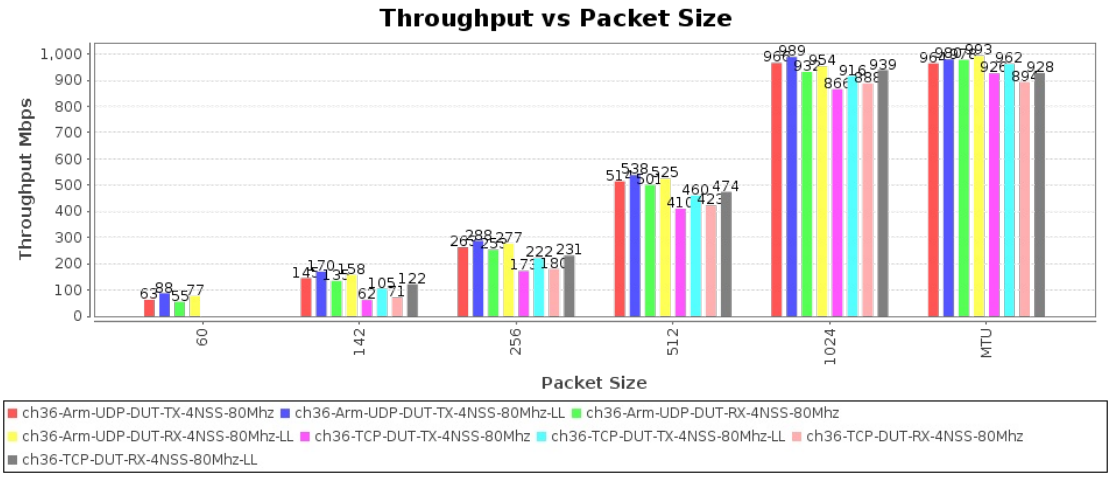
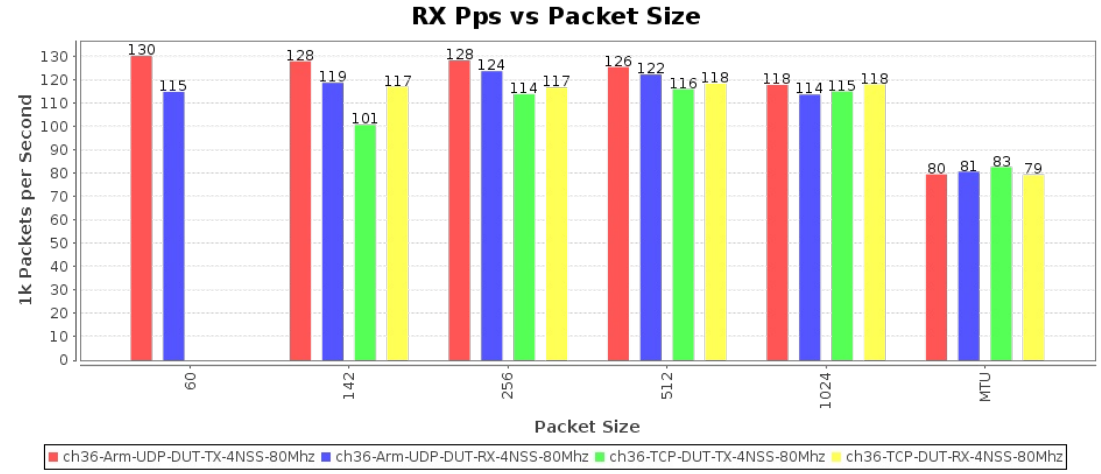
Throughput for each different traffic type. Datasets with names ending in '-LL' will include the IP, TCP, UDP and Ethernet header bytes in their calculation. For Armageddon traffic only, low-level throughput includes the Ethernet FCS and preamble. Other datasets report 'goodput' for the protocol.

CSV Data for Throughput vs Packet Size



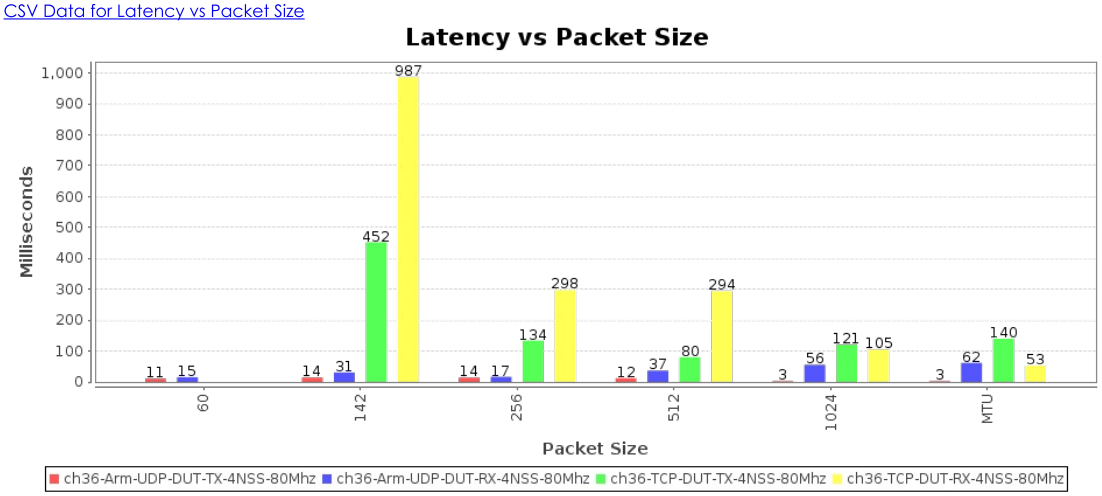
Pps throughput for each different traffic type. The values are estimated packets-per-second over the DUT, but some protocols such as TCP make this difficult to know for certain, so the value is extrapolated.

CSV Data for RX Pps vs Packet Size



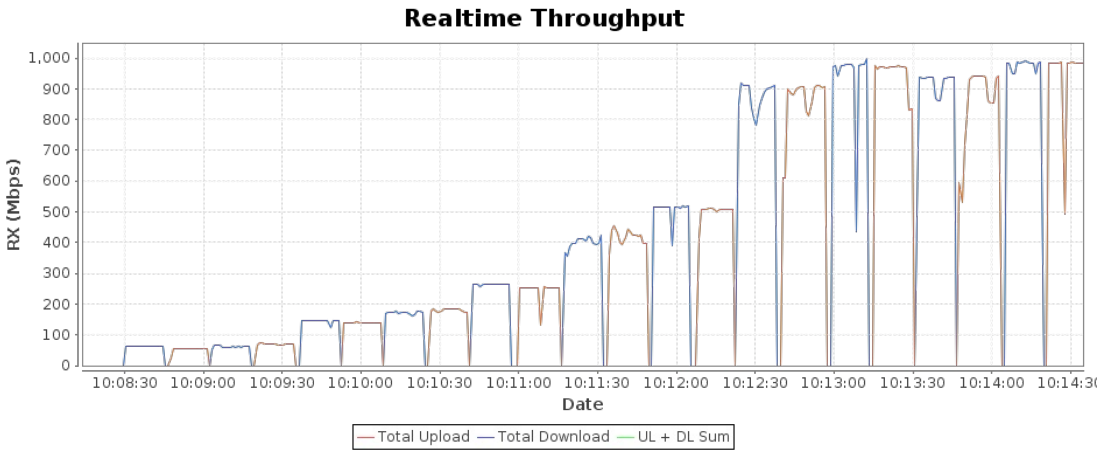
Latency for each different traffic type. If opposite-direction traffic is non-zero, then round-trip time will be reported. Otherwise, one-way latency will be reported.

CSV Data for Latency vs Packet Size



Realtime Graph shows summary download and upload RX Goodput rate of connections created by this test. Goodput does not include Ethernet, IP, UDP/TCP header overhead.

CSV Data for Realtime Throughput



Test Information

Message
Starting dataplane test with: 24 iterations.
Skipping packet size not supported by TCP: 60
Skipping packet size not supported by TCP: 60

Channel	Frequency	Security	NSS	Cfg-Mode	Bandwidth	Pkt	Traffic-Type	Direction	Atten	Rotation	Duration	Offered-1m	Rx-Bps	Rx-Bps-1m	Rx-Bps-LL	Rx-Bps-3s	RSSI	Tx-Failed	Tx-Failed%	Tx-Rate	Rx-Rate	Rpt-Mode	Rpt-Mode-Brief
36	5180	WPA2	4	AUTO	80	60	Arm-UDP	DUT-TX	NA	NA	15	696.327 Mbps	62.337 Mbps	62.571 Mbps	87.599 Mbps	63.156 Mbps	-53	0 / 21953772	0	390.2 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	60	Arm-UDP	DUT-RX	NA	NA	15	446.834 Mbps	55.034 Mbps	55.167 Mbps	77.234 Mbps	56.358 Mbps	-52	380 / 1837925	0.021	1733.3 Mbps	6 Mbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	142	TCP	DUT-TX	NA	NA	15	61.854 Mbps	61.902 Mbps	61.923 Mbps	105.467 Mbps	62.564 Mbps	-52	0 / 1647918	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	142	TCP	DUT-RX	NA	NA	15	72.21 Mbps	71.216 Mbps	71.27 Mbps	121.91 Mbps	72.043 Mbps	-54	191 / 1879637	0.01	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	142	Arm-UDP	DUT-TX	NA	NA	15	858.122 Mbps	144.346 Mbps	145.473 Mbps	170.06 Mbps	147.349 Mbps	-52	0 / 11219732	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	142	Arm-UDP	DUT-RX	NA	NA	15	1.018 Gbps	134.938 Mbps	134.967 Mbps	157.779 Mbps	91.459 Mbps	-52	382 / 1898966	0.02	1300 Mbps	6 Mbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	256	TCP	DUT-TX	NA	NA	15	172.428 Mbps	172.433 Mbps	172.519 Mbps	221.76 Mbps	180.625 Mbps	-53	0 / 1831753	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	256	TCP	DUT-RX	NA	NA	15	180.404 Mbps	179.872 Mbps	180.086 Mbps	230.551 Mbps	184.457 Mbps	-52	381 / 1899586	0.02	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	256	Arm-UDP	DUT-TX	NA	NA	15	918.264 Mbps	260.891 Mbps	262.915 Mbps	287.564 Mbps	263.92 Mbps	-52	0 / 7158501	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	256	Arm-UDP	DUT-RX	NA	NA	15	1.49 Gbps	251.419 Mbps	253.493 Mbps	277.258 Mbps	253.413 Mbps	-52	191 / 2208736	0.009	1560 Mbps	6 Mbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	512	TCP	DUT-TX	NA	NA	15	410.197 Mbps	407.582 Mbps	410.219 Mbps	460.39 Mbps	420.451 Mbps	-52	0 / 1828434	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	512	TCP	DUT-RX	NA	NA	15	422.898 Mbps	420.028 Mbps	422.996 Mbps	474.158 Mbps	401.773 Mbps	-52	382 / 1705592	0.022	1300 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	512	Arm-UDP	DUT-TX	NA	NA	15	959.281 Mbps	510.439 Mbps	514.313 Mbps	538.422 Mbps	517.171 Mbps	-52	0 / 3716625	0	1560 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	512	Arm-UDP	DUT-RX	NA	NA	15	1.481 Gbps	497.052 Mbps	501.127 Mbps	524.618 Mbps	507.904 Mbps	-52	381 / 1907511	0.02	1733.3 Mbps	6 Mbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	1024	TCP	DUT-TX	NA	NA	15	866.019 Mbps	865.576 Mbps	865.951 Mbps	915.7 Mbps	844.13 Mbps	-52	0 / 1745566	0	1170 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	1024	TCP	DUT-RX	NA	NA	15	887.435 Mbps	886.525 Mbps	887.555 Mbps	938.619 Mbps	905.733 Mbps	-54	190 / 2079182	0.009	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	1024	Arm-UDP	DUT-TX	NA	NA	15	976.451 Mbps	963.874 Mbps	966.047 Mbps	988.689 Mbps	973.342 Mbps	-53	0 / 1905124	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	1024	Arm-UDP	DUT-RX	NA	NA	15	1.468 Gbps	928.829 Mbps	931.826 Mbps	953.666 Mbps	833.978 Mbps	-52	381 / 2004072	0.019	1040 Mbps	6 Mbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	MTU	TCP	DUT-TX	NA	NA	15	926.443 Mbps	922.186 Mbps	926.293 Mbps	962.03 Mbps	940.373 Mbps	-53	0 / 1151101	0	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	MTU	TCP	DUT-RX	NA	NA	15	896.012 Mbps	891.575 Mbps	893.601 Mbps	927.888 Mbps	941.148 Mbps	-54	382 / 1215550	0.031	1733.3 Mbps	1.733 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	MTU	Arm-UDP	DUT-TX	NA	NA	15	984.648 Mbps	961.85 Mbps	964.342 Mbps	979.628 Mbps	982.456 Mbps	-52	0 / 1293561	0	1733.3 Mbps	1.56 Gbps	802.11an-AC	802.11ac
36	5180	WPA2	4	AUTO	80	MTU	Arm-UDP	DUT-RX	NA	NA	15	1.47 Gbps	973.804 Mbps	977.911 Mbps	993.413 Mbps	982.436 Mbps	-53	192 / 1835904	0.01	1733.3 Mbps	6 Mbps	802.11an-AC	802.11ac

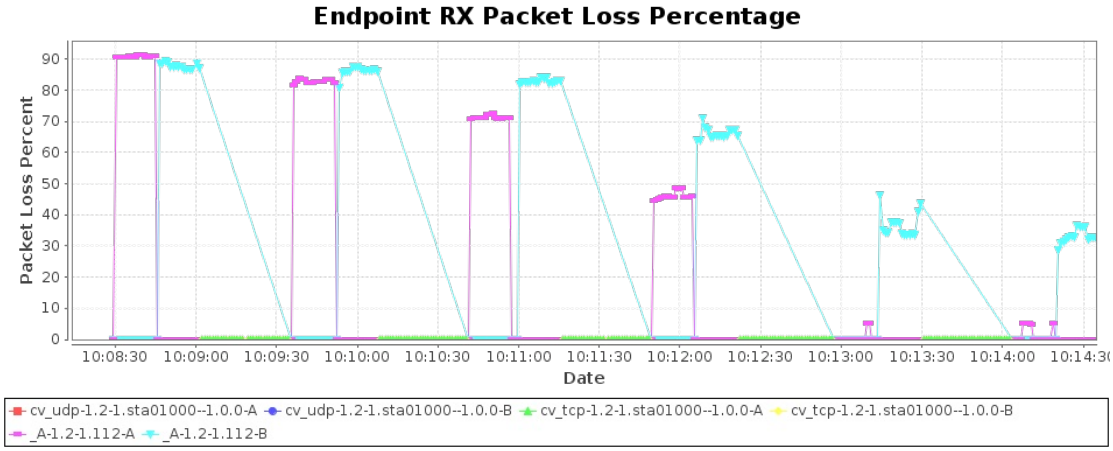
Brief csv report, may be imported into third-party tools.

Step Index	Position [Deg]	Attenuation [dB]	Throughput [Mbps]	Beacon RSSI [dBm]	Data RSSI [dBm]
0	NA	0	62.34	-51	-53
1	NA	0	55.03	-52	-52
2	NA	0	61.90	-52	-52
3	NA	0	71.22	-50	-54
4	NA	0	144.35	-50	-52

5	NA	0	134.94	-51	-52
6	NA	0	172.43	-50	-53
7	NA	0	179.87	-51	-52
8	NA	0	260.89	-51	-52
9	NA	0	251.42	-52	-52
10	NA	0	407.58	-51	-52
11	NA	0	420.03	-51	-52
12	NA	0	510.44	-51	-52
13	NA	0	497.05	-52	-52
14	NA	0	865.58	-52	-52
15	NA	0	886.52	-51	-54
16	NA	0	963.87	-51	-53
17	NA	0	928.83	-52	-52
18	NA	0	922.19	-51	-53
19	NA	0	891.58	-51	-54
20	NA	0	961.85	-51	-52
21	NA	0	973.80	-53	-53

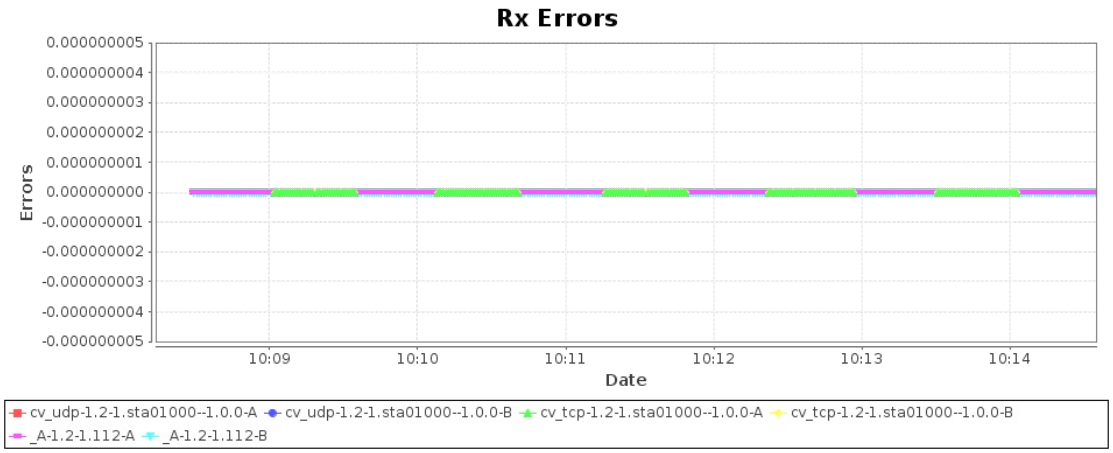
Packet Loss Percentage graph shows the percentage of lost packets as detected by the receiving endpoint due to packet gaps. If there is full packet loss, then this will not report any loss since there will be no gap to detect.

CSV Data for Endpoint RX Packet Loss Percentage



Error Graph shows occurances of packet errors.

CSV Data for Rx Errors



Test configuration and LANforge software version	
Path Loss	10
Requested Speed	85%
Requested Opposite	

Speed	0Kbps
Multi-Conn	1
Armageddon Multi-Pkt	0
ToS	0
Duration:	15 sec (15 s)
Settle Time:	1 sec (1 s)
Send Buffer Size:	OS Default
Receive Buffer Size:	OS Default
Channels	AUTO
Spatial Streams	AUTO
Bandwidth	AUTO
Attenuator-1	0
Attenuation-1	0..+50..950
Attenuator-2	0
Attenuation-2	0..+50..950
Turntable Chamber	0
Turntable Angles	0..+45..359
Modes	Auto
Packet Size	60, 142, 256, 512, 1024, MTU
Security	AUTO
Traffic Type	TCP, Arm-UDP
Direction	DUT Transmit, DUT Receive
Upstream Port	1.1.2 eth2 Firmware: 0x80000aef, 1.1876.0 Resource: ct523c-cc40
WiFi Port	1.1.112 sta01000 Firmware: 10.4b-ct-9984-xtH-13-774502ee5 Resource: ct523c-cc40
Outer Loop is Attenuation	false
Show Events	true
Auto Save Report	false
Build Date	Fri 28 May 2021 09:54:57 AM PDT
Build Version	5.4.3
Git Version	e6a6e20f12a47cefe6de9acbad2570cea4adf844

Key Performance Indicators CSV