Test Report

The test report provides a comprehensive overview of the performance of BATS, TCP, and UDP protocols under varying conditions. The report is structured into sections for each protocol, with detailed tables presenting the summarized results.

Setup

The testbed consists of one router (running openWRT) and several computers (e.g., Raspberry Pis) interconnected by Ethernet cables. This physical network serves as the foundation for our experiments. In contrast, the network used for testing is a virtual construct, simulated by the interactions within the physical network, and is referred to as the test network.

The test network comprises multiple network nodes, each simulated by a computer. Each of these computers can simulate one or more network nodes within the test network. The network topology, governing the connections between these simulated nodes, is defined by the router. All inter-node communications traverse the router, allowing simulation of diverse network link behaviors such as packet loss, latency, wireless interference, and more.

The test topology for this report is as follows:

n-hop router | (enp5s0: 10.0.0.3) → (eth0: 10.0.0.11) n-hop slave1
|_(enp4s0: 10.0.0.2) → (eth0: 10.0.0.12) n-hop slave2

The bandwidth of the link between the n-hop router and n-hop slave is set to 100Mbps.

BATS Test Summary

The BATS section of the report outlines the test outcomes for the BATS protocol. It highlights the impact of link loss rates and coding methods on various performance metrics. The table displays the following details for each unique link status configuration:

- Link Loss Rate: The percentage of simulated link loss.
- Coding Method: The coding strategy employed, categorized as "identity," "random," or "unknown" based on parameters.
- Throughput: The average received throughput in the given configuration.
- Link Send Rate: The average send rate of network interface of client.
- Link Recv Rate: The average received rate of network interface of server.
- Latency: The average latency of packet observed.
- Reliability: The reliability percentage, indicating the proportion of received data to sent data.
- Feedback: Indicates whether the feedback mechanism is restricted or unrestricted.

BATS Test Result

link Loss Rate	Coding Method	Throughput	Link Send Rate	Link Recv Rate	Reliability	Feedback
0%	identity	79.58 Mbps	94.98 Mbps	94.67 Mbps	99.34%	restricted
0%	identity	80.12 Mbps	95.96 Mbps	95.89 Mbps	100.0%	unrestricted
0%	random	78.81 Mbps	97.47 Mbps	97.48 Mbps	98.36%	restricted
0%	random	78.73 Mbps	97.49 Mbps	97.46 Mbps	98.27%	unrestricted
5%	identity	75.04 Mbps	90.24 Mbps	90.07 Mbps	93.66%	restricted
5%	identity	79.13 Mbps	97.55 Mbps	97.56 Mbps	98.76%	unrestricted
5%	random	73.82 Mbps	94.08 Mbps	93.93 Mbps	92.14%	restricted
5%	random	76.64 Mbps	97.48 Mbps	97.46 Mbps	95.66%	unrestricted
10%	identity	58.17 Mbps	85.44 Mbps	85.34 Mbps	72.6%	restricted
10%	identity	76.13 Mbps	97.49 Mbps	97.48 Mbps	95.02%	unrestricted
10%	random	47.44 Mbps	89.13 Mbps	88.87 Mbps	59.21%	restricted
10%	random	73.39 Mbps	97.49 Mbps	97.48 Mbps	91.6%	unrestricted
15%	identity	38.12 Mbps	80.68 Mbps	80.61 Mbps	47.58%	restricted
15%	identity	73.91 Mbps	97.49 Mbps	97.49 Mbps	92.25%	unrestricted
15%	random	21.77 Mbps	84.22 Mbps	84.14 Mbps	27.17%	restricted
15%	random	70.32 Mbps	97.51 Mbps	97.51 Mbps	87.77%	unrestricted
20%	identity	21.49 Mbps	75.96 Mbps	75.93 Mbps	26.82%	restricted
20%	identity	72.68 Mbps	97.58 Mbps	97.55 Mbps	90.71%	unrestricted
20%	random	7.46 Mbps	78.06 Mbps	78.0 Mbps	9.31%	restricted
20%	random	67.7 Mbps	97.48 Mbps	97.48 Mbps	84.5%	unrestricted

BATS Protocol Version: v1.0.0(ce02ec5) Build date: Aug 1 2023 18:10:16 Compiler: gcc10.2.1

TCP Test Summary

The TCP section of the report focuses on TCP protocol testing results. It analyzes the effects of different link loss rates and congestion conditions on performance. The summary table for TCP includes the following information for each unique link status:

- Link Loss Rate: The percentage of simulated link loss.
- Congestion: The congestion state during testing.
- Throughput: The average received throughput achieved.
- Link Send Rate: The average send rate of network interface of client.
- Link Recv Rate: The average received rate of network interface of server.
- Reliability: The reliability is uniformly set at 100% due to TCP's inherent reliability mechanisms.

TCP Test Result

Link Loss Rate	Congestion	Throughput	Link Send Rate	Link Recv Rate	Reliability
0%	cubic	95.11 Mbps	97.55 Mbps	97.13 Mbps	100%
0%	reno	94.86 Mbps	97.55 Mbps	96.8 Mbps	100%
0%	bbr	92.56 Mbps	97.39 Mbps	94.47 Mbps	100%
5%	cubic	30.39 Mbps	31.11 Mbps	31.01 Mbps	100%
5%	reno	39.96 Mbps	40.9 Mbps	40.53 Mbps	100%
5%	bbr	81.56 Mbps	86.8 Mbps	83.24 Mbps	100%
10%	cubic	2.75 Mbps	2.82 Mbps	2.82 Mbps	100%
10%	reno	4.57 Mbps	4.69 Mbps	4.68 Mbps	100%
10%	bbr	51.44 Mbps	54.7 Mbps	51.45 Mbps	100%
15%	cubic	0.34 Mbps	0.35 Mbps	0.35 Mbps	100%
15%	reno	0.93 Mbps	0.96 Mbps	0.96 Mbps	100%
15%	bbr	17.65 Mbps	19.32 Mbps	18.0 Mbps	100%
20%	cubic	0.05 Mbps	0.06 Mbps	0.06 Mbps	100%
20%	reno	0.15 Mbps	0.16 Mbps	0.16 Mbps	100%
20%	bbr	4.43 Mbps	4.95 Mbps	4.6 Mbps	100%

UDP Test Summary

In the UDP section, the report delves into the outcomes of UDP protocol testing. It evaluates the impact of varying link loss rates and Iperf send bandwidths on performance. The UDP summary table presents the following data for each distinct link status:

- Link Loss Rate: The percentage of simulated link loss.
- Iperf Send Bandwidth: The bandwidth used for Iperf send operations.
- Throughput: The average received throughput observed.
- Link Send Rate: The average send rate of network interface of client.
- Link Recv Rate: The average received rate of network interface of server.
- Reliability: The reliability percentage, indicating the proportion of received data to sent data.

UDP Test Result

Link Loss Rate	Iperf Send Bandwidth	Throughput	Link Send Rate	Link Recv Rate	Reliability
0%	97.2m	97.13 Mbps	97.54 Mbps	97.56 Mbps	99.93%
5%	97.2m	92.27 Mbps	92.65 Mbps	92.74 Mbps	94.93%
10%	97.2m	87.12 Mbps	87.48 Mbps	87.51 Mbps	89.63%
15%	97.2m	82.37 Mbps	82.73 Mbps	82.74 Mbps	84.74%
20%	97.2m	77.69 Mbps	77.46 Mbps	77.46 Mbps	79.93%

Please refer to the appendix for more detailed testing information.

Appendix - BATS Test Statics.

BATS Test Summary

Items	Count
Total BATS Test Num	20
Succeed Test Num	20
Failed Test Num	0

#BATS Test1

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.086 sec Total send packet number: 29338 Average Latency: 0.003 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 35.5%, User: 0.4%, System: 3.7%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.087 sec Total receive packet number: 29141 Loss rate: 0.67% Recv Throughput: 79.46 Mbps CPU Utilization: Total: 42.5%, User: 0.0%, System: 6.9%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28813 Fail: 0, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 144 CHUNK_IDENTITY, task count: 27707 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 144 CHUNK_IDENTITY, task count: 27683 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 8772.74 packet/s Send Throughput: 94.98 Mbps
Server Network Traffic	Recv Packet: 8744.41 packet/s Recv Throughput: 94.67 Mbps

#BATS Test2

Items	**Result**
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.089 sec Total send packet number: 29340 Average Latency: 6.208 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 34.2%, User: 0.4%, System: 3.9%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.091 sec Total receive packet number: 27479 Loss rate: 6.34% Recv Throughput: 74.92 Mbps CPU Utilization: Total: 41.3%, User: 0.0%, System: 4.8%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28814 Fail: 7, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 132 CHUNK_IDENTITY, task count: 27707 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 129 CHUNK_IDENTITY, task count: 27688 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 8335.03 packet/s Send Throughput: 90.24 Mbps
Server Network Traffic	Recv Packet: 8320.0 packet/s Recv Throughput: 90.07 Mbps

#BATS Test3

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 5.953 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 34.8%, User: 0.4%, System: 4.1%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.120 sec Total receive packet number: 21303 Loss rate: 27.39% Recv Throughput: 58.06 Mbps CPU Utilization: Total: 40.5%, User: 0.0%, System: 5.0%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28795 Fail: 9, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 134 CHUNK_IDENTITY, task count: 27729 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 132 CHUNK_IDENTITY, task count: 27690 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 7891.33 packet/s Send Throughput: 85.44 Mbps
Server Network Traffic	Recv Packet: 7882.32 packet/s Recv Throughput: 85.34 Mbps

#BATS Test4

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 11.654 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 35.6%, User: 0.9%, System: 4.7%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.091 sec Total receive packet number: 13960 Loss rate: 52.42% Recv Throughput: 38.06 Mbps CPU Utilization: Total: 37.6%, User: 0.1%, System: 4.0%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28814 Fail: 6, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 122 CHUNK_IDENTITY, task count: 27708 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 119 CHUNK_IDENTITY, task count: 27688 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 7452.33 packet/s Send Throughput: 80.68 Mbps
Server Network Traffic	Recv Packet: 7446.6 packet/s Recv Throughput: 80.61 Mbps

#BATS Test5

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 11.727 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 35.0%, User: 0.6%, System: 4.0%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.091 sec Total receive packet number: 7870 Loss rate: 73.18% Recv Throughput: 21.46 Mbps CPU Utilization: Total: 36.3%, User: 0.0%, System: 4.1%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28812 Fail: 9, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 125 CHUNK_IDENTITY, task count: 27734 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 117 CHUNK_IDENTITY, task count: 27712 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 7016.16 packet/s Send Throughput: 75.96 Mbps
Server Network Traffic	Recv Packet: 7013.17 packet/s Recv Throughput: 75.93 Mbps

#BATS Test6

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 0.081 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 38.5%, User: 1.5%, System: 6.2%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.090 sec Total receive packet number: 29339 Loss rate: 0.00% Recv Throughput: 80.00 Mbps CPU Utilization: Total: 47.2%, User: 0.0%, System: 7.4%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28813 Fail: 0, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 144 CHUNK_IDENTITY, task count: 27734 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 144 CHUNK_IDENTITY, task count: 27712 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 8863.42 packet/s Send Throughput: 95.96 Mbps
Server Network Traffic	Recv Packet: 8857.55 packet/s Recv Throughput: 95.89 Mbps

#BATS Test7

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.087 sec Total send packet number: 29339 Average Latency: 3.439 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 40.7%, User: 1.0%, System: 5.5%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.082 sec Total receive packet number: 28980 Recv Throughput: 79.03 Mbps CPU Utilization: Total: 48.9%, User: 0.0%, System: 9.3%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28739 Fail: 8, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 139 CHUNK_IDENTITY, task count: 27710 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 135 CHUNK_IDENTITY, task count: 27612 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 9009.88 packet/s Send Throughput: 97.55 Mbps
Server Network Traffic	Recv Packet: 9010.75 packet/s Recv Throughput: 97.56 Mbps

#BATS Test8

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.087 sec Total send packet number: 29339 Average Latency: 6.952 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 41.2%, User: 0.6%, System: 6.0%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.082 sec Total receive packet number: 27881 Recv Throughput: 76.03 Mbps CPU Utilization: Total: 48.7%, User: 0.1%, System: 8.8%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28316 Fail: 7, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 132 CHUNK_IDENTITY, task count: 27729 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 127 CHUNK_IDENTITY, task count: 27215 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 9004.5 packet/s Send Throughput: 97.49 Mbps
Server Network Traffic	Recv Packet: 9003.95 packet/s Recv Throughput: 97.48 Mbps

#BATS Test9

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 9.301 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 40.5%, User: 0.4%, System: 6.2%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.078 sec Total receive packet number: 27066 Recv Throughput: 73.81 Mbps CPU Utilization: Total: 48.6%, User: 0.1%, System: 9.3%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28149 Fail: 5, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 124 CHUNK_IDENTITY, task count: 27736 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 118 CHUNK_IDENTITY, task count: 27062 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 9004.97 packet/s Send Throughput: 97.49 Mbps
Server Network Traffic	Recv Packet: 9004.38 packet/s Recv Throughput: 97.49 Mbps

#BATS Test10

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 14.076 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 40.4%, User: 0.5%, System: 6.1%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.081 sec Total receive packet number: 26615 Recv Throughput: 72.58 Mbps CPU Utilization: Total: 49.0%, User: 0.0%, System: 9.3%
Coding View	CodingMethods: CHUNK_IDENTITY Task: 28268 Fail: 9, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 114 CHUNK_IDENTITY, task count: 27687 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 111 CHUNK_IDENTITY, task count: 27141 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 0 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 9012.86 packet/s Send Throughput: 97.58 Mbps
Server Network Traffic	Recv Packet: 9010.78 packet/s Recv Throughput: 97.55 Mbps

#BATS Test11

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 0.729 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 46.7%, User: 0.9%, System: 5.9%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.076 sec Total receive packet number: 28859 Recv Throughput: 78.70 Mbps CPU Utilization: Total: 65.9%, User: 0.0%, System: 11.2%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28356 Fail: 6, Enough pkt fail: 0
Client Task View	TRANSPARENT, task count: 142 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27730 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 140 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27262 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 15347.34 packet/s Send Throughput: 97.47 Mbps
Server Network Traffic	Recv Packet: 15347.92 packet/s Recv Throughput: 97.48 Mbps

#BATS Test12

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.087 sec Total send packet number: 29339 Average Latency: 3.450 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 43.5%, User: 1.4%, System: 7.2%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.087 sec Total receive packet number: 27032 Recv Throughput: 73.71 Mbps CPU Utilization: Total: 57.6%, User: 0.0%, System: 7.8%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28812 Fail: 4, Enough pkt fail: 10
Client Task View	TRANSPARENT, task count: 136 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27732 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 134 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27716 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 14812.5 packet/s Send Throughput: 94.08 Mbps
Server Network Traffic	Recv Packet: 14789.53 packet/s Recv Throughput: 93.93 Mbps

#BATS Test13

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 2.747 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 47.2%, User: 0.4%, System: 6.6%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.092 sec Total receive packet number: 17374 Loss rate: 40.78% Recv Throughput: 47.37 Mbps CPU Utilization: Total: 51.5%, User: 0.1%, System: 4.9%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28820 Fail: 1, Enough pkt fail: 15
Client Task View	TRANSPARENT, task count: 130 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27737 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 134 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27719 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 14034.48 packet/s Send Throughput: 89.13 Mbps
Server Network Traffic	Recv Packet: 13992.95 packet/s Recv Throughput: 88.87 Mbps

#BATS Test14

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 10.652 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 43.5%, User: 0.4%, System: 6.6%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.091 sec Total receive packet number: 7971 Loss rate: 72.83% Recv Throughput: 21.73 Mbps CPU Utilization: Total: 46.1%, User: 0.1%, System: 4.3%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28817 Fail: 3, Enough pkt fail: 10
Client Task View	TRANSPARENT, task count: 126 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27713 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 119 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27692 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 13260.49 packet/s Send Throughput: 84.22 Mbps
Server Network Traffic	Recv Packet: 13248.42 packet/s Recv Throughput: 84.14 Mbps

#BATS Test15

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.089 sec Total send packet number: 29340 Average Latency: 11.594 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 47.2%, User: 1.0%, System: 7.4%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.093 sec Total receive packet number: 2733 Loss rate: 90.69% Recv Throughput: 7.45 Mbps CPU Utilization: Total: 44.0%, User: 0.0%, System: 4.0%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28815 Fail: 4, Enough pkt fail: 10
Client Task View	TRANSPARENT, task count: 120 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27238 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 127 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27215 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 12290.35 packet/s Send Throughput: 78.06 Mbps
Server Network Traffic	Recv Packet: 12280.84 packet/s Recv Throughput: 78.0 Mbps

#BATS Test16

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.087 sec Total send packet number: 29339 Average Latency: 0.494 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 52.3%, User: 0.7%, System: 9.0%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.076 sec Total receive packet number: 28831 Recv Throughput: 78.63 Mbps CPU Utilization: Total: 70.5%, User: 0.0%, System: 12.2%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28366 Fail: 4, Enough pkt fail: 4
Client Task View	TRANSPARENT, task count: 143 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27494 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 141 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27027 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 15350.25 packet/s Send Throughput: 97.49 Mbps
Server Network Traffic	Recv Packet: 15346.2 packet/s Recv Throughput: 97.46 Mbps

#BATS Test17

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.087 sec Total send packet number: 29339 Average Latency: 5.021 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 52.9%, User: 0.5%, System: 8.3%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.071 sec Total receive packet number: 28067 Recv Throughput: 76.55 Mbps CPU Utilization: Total: 71.1%, User: 0.0%, System: 11.8%
Coding View	CodingMethods: CHUNK_RANDOM Task: 28158 Fail: 4, Enough pkt fail: 23
Client Task View	TRANSPARENT, task count: 134 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27735 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 134 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27071 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 15348.33 packet/s Send Throughput: 97.48 Mbps
Server Network Traffic	Recv Packet: 15345.08 packet/s Recv Throughput: 97.46 Mbps

#BATS Test18

Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 3.935 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 52.4%, User: 1.0%, System: 9.6%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.086 sec Total receive packet number: 26878 Recv Throughput: 73.29 Mbps CPU Utilization: Total: 71.9%, User: 0.0%, System: 12.0%
Coding View	CodingMethods: CHUNK_RANDOM Task: 27931 Fail: 9, Enough pkt fail: 125
Client Task View	TRANSPARENT, task count: 135 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27724 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 130 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 26843 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 15350.34 packet/s Send Throughput: 97.49 Mbps
Server Network Traffic	Recv Packet: 15348.53 packet/s Recv Throughput: 97.48 Mbps

#BATS Test19

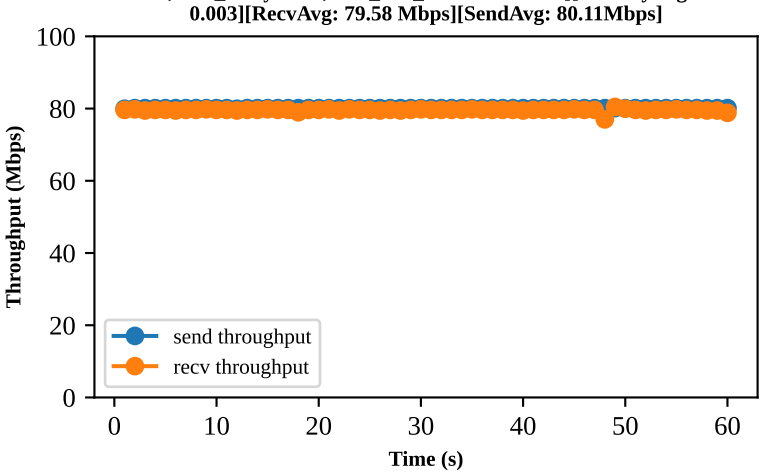
Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.087 sec Total send packet number: 29339 Average Latency: 3.996 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 55.0%, User: 1.4%, System: 10.5%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.087 sec Total receive packet number: 25753 Recv Throughput: 70.22 Mbps CPU Utilization: Total: 69.5%, User: 0.1%, System: 12.0%
Coding View	CodingMethods: CHUNK_RANDOM Task: 27702 Fail: 0, Enough pkt fail: 312
Client Task View	TRANSPARENT, task count: 130 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27737 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 125 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 26650 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 15352.75 packet/s Send Throughput: 97.51 Mbps
Server Network Traffic	Recv Packet: 15353.02 packet/s Recv Throughput: 97.51 Mbps

#BATS Test20

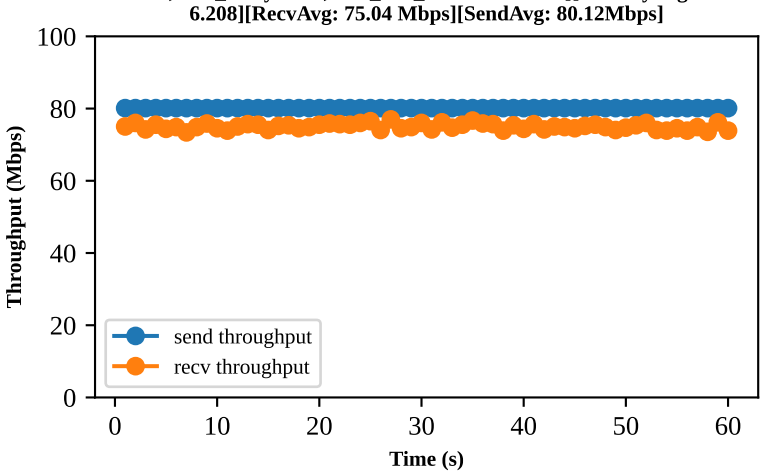
Items	Result
BATS Specific Parameters	bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Client Summary	server ip: 10.0.0.12, server port: 12345 Total send time span: 60.088 sec Total send packet number: 29339 Average Latency: 12.010 sec Send Throughput: 80.00 Mbps CPU Utilization: Total: 54.1%, User: 0.6%, System: 9.9%
Server Summary	server ip: 10.0.0.12, server port: 12345 Total receive time span: 60.087 sec Total receive packet number: 24793 Recv Throughput: 67.60 Mbps CPU Utilization: Total: 71.7%, User: 0.0%, System: 11.3%
Coding View	CodingMethods: CHUNK_RANDOM Task: 27473 Fail: 6, Enough pkt fail: 509
Client Task View	TRANSPARENT, task count: 122 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 27733 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Server Task View	TRANSPARENT, task count: 120 CHUNK_IDENTITY, task count: 0 CHUNK_RANDOM_BINARY, task count: 0 CHUNK_RANDOM, task count: 26426 CHUNK_SYSTEMATIC, task count: 0 SYSTEMATIC_AGGREGATION_IDENTITY, task count: 0
Client Network Traffic	Send Packet: 15348.9 packet/s Send Throughput: 97.48 Mbps
Server Network Traffic	Recv Packet: 15348.15 packet/s Recv Throughput: 97.48 Mbps

Appendix - BATS Test Figures.

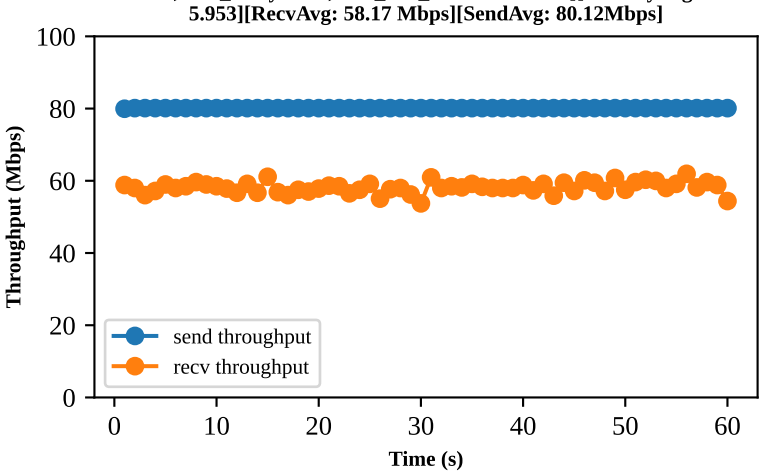
#BATS Test1, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 0, link_delay: 0ms, link_loss_model: random][LatencyAvg: 0.003][RecvAvg: 79.58 Mbps][SendAvg: 80.11Mbps]



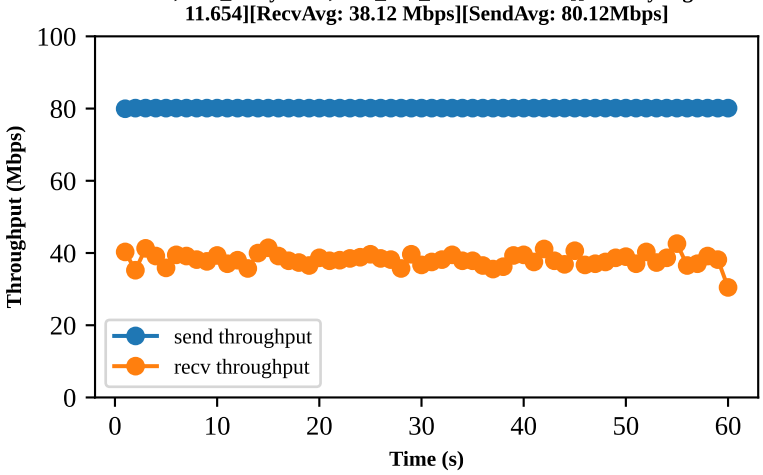
#BATS Test2, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 5, link_delay: 0ms, link_loss_model: random][LatencyAvg: 6.208][RecvAvg: 75.04 Mbps][SendAvg: 80.12Mbps]



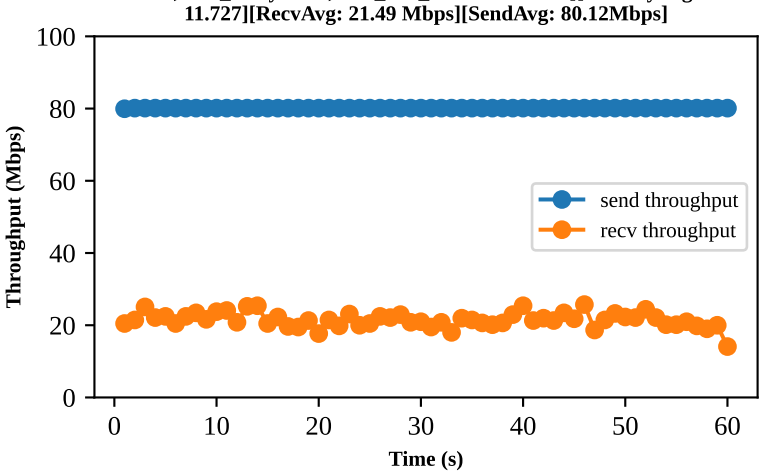
#BATS Test3, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 10, link_delay: 0ms, link_loss_model: random][LatencyAvg: 5.953][RecvAvg: 58.17 Mbps][SendAvg: 80.12Mbps]



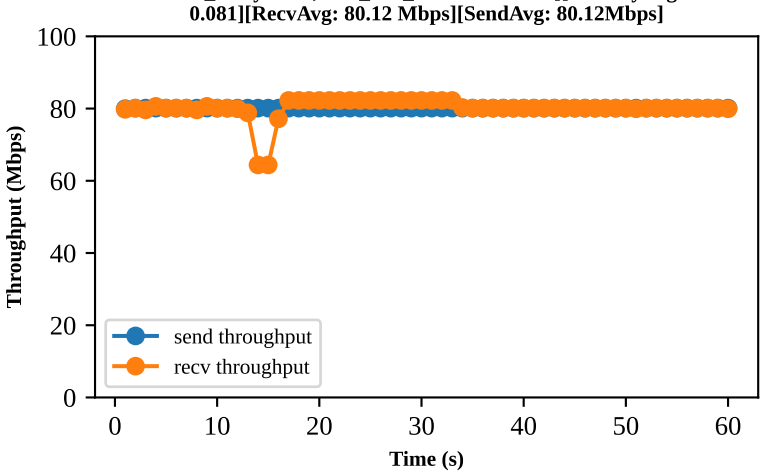
#BATS Test4, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 15, link_delay: 0ms, link_loss_model: random][LatencyAvg: 11.654][RecvAvg: 38.12 Mbps][SendAvg: 80.12Mbps]



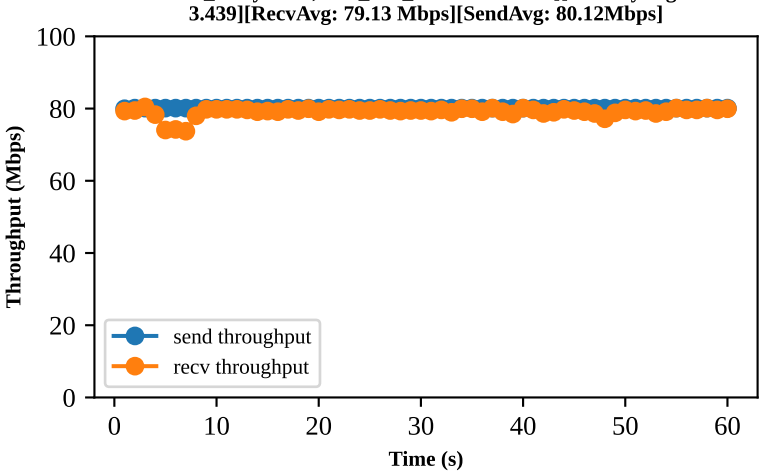
#BATS Test5, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 20, link_delay: 0ms, link_loss_model: random][LatencyAvg: 11.727][RecvAvg: 21.49 Mbps][SendAvg: 80.12Mbps]



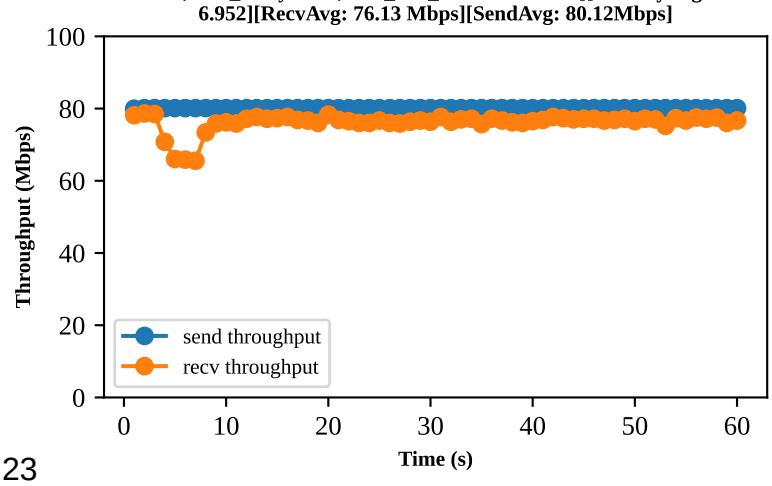
#BATS Test6, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 0, link_delay: 0ms, link_loss_model: random][LatencyAvg: 0.081][RecvAvg: 80.12 Mbps][SendAvg: 80.12Mbps]

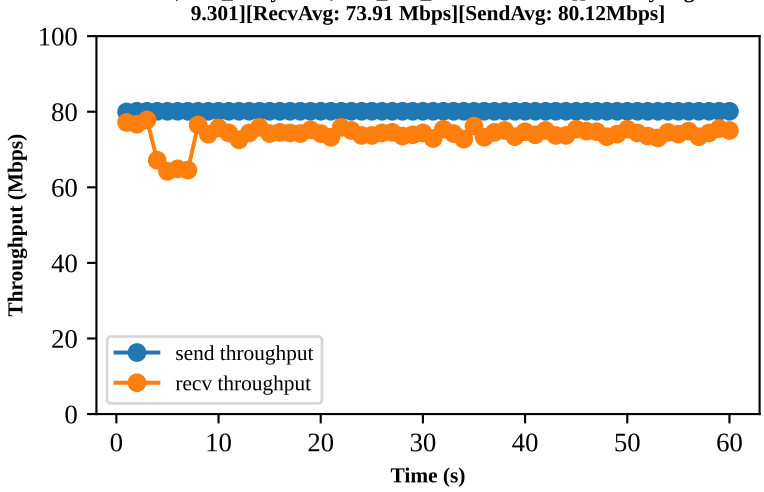


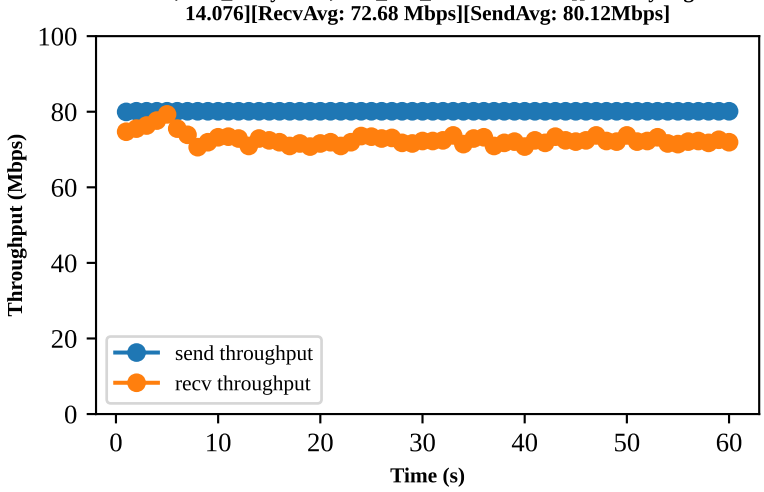
#BATS Test7, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 5, link_delay: 0ms, link_loss_model: random][LatencyAvg: 3.439][RecvAvg: 79.13 Mbps][SendAvg: 80.12Mbps]

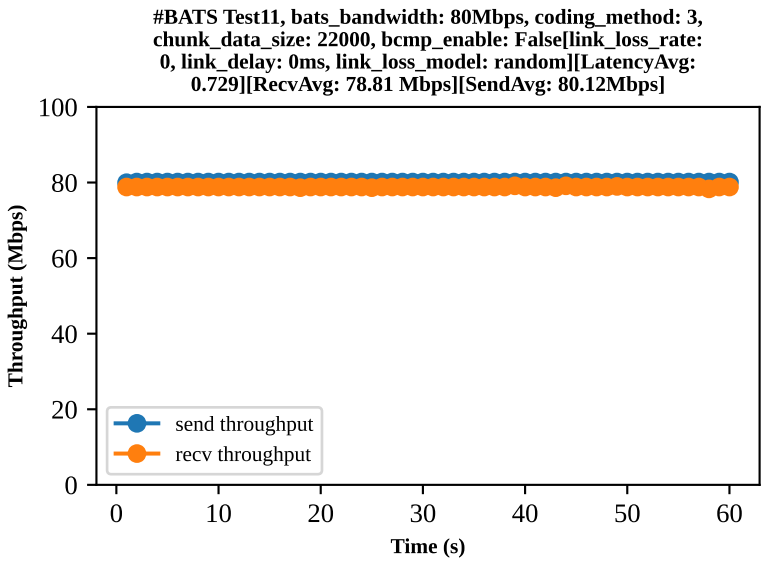


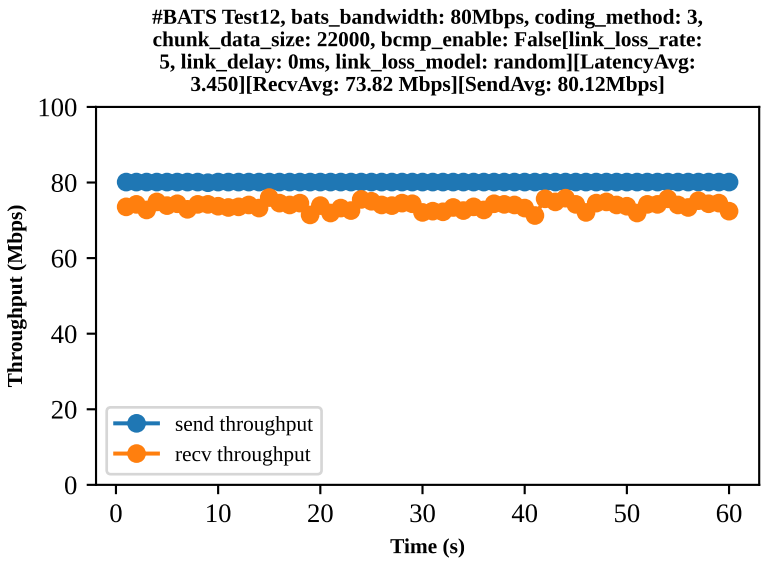
#BATS Test8, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 10, link_delay: 0ms, link_loss_model: random][LatencyAvg: 6.952][RecvAvg: 76.13 Mbps][SendAvg: 80.12Mbps]

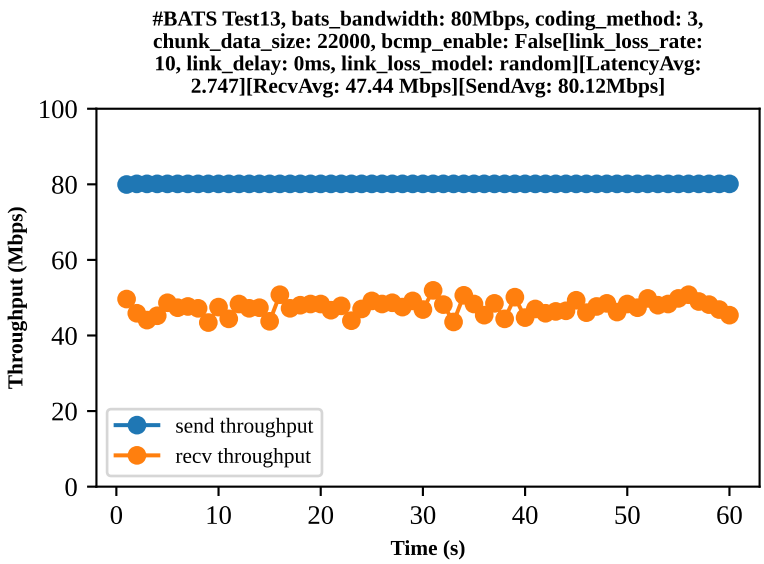


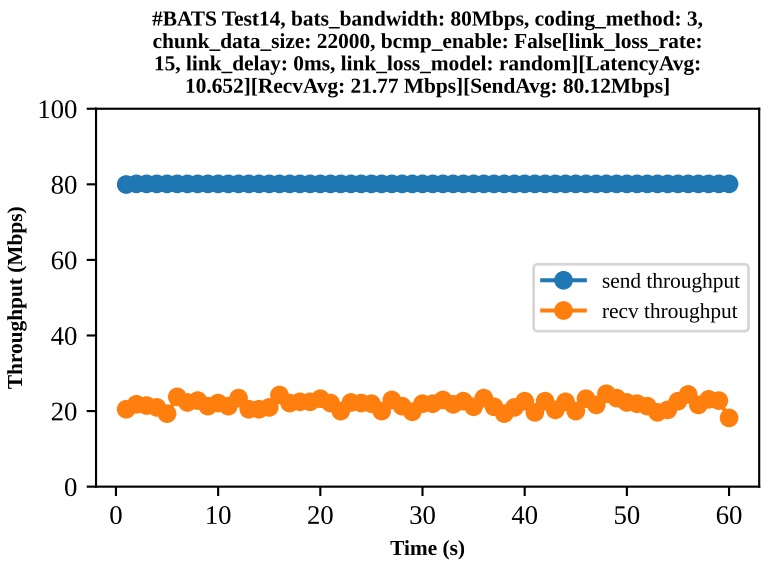

#BATS Test9, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 15, link_delay: 0ms, link_loss_model: random][LatencyAvg: 9.301][RecvAvg: 73.91 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput

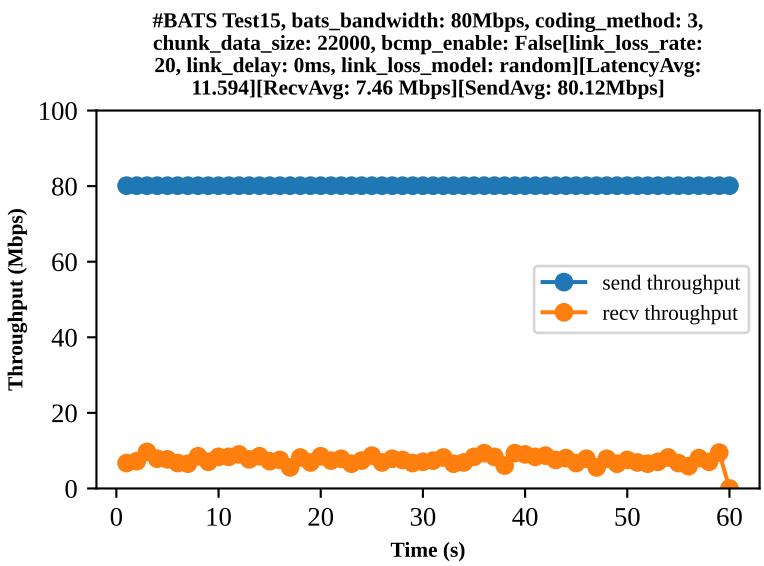

#BATS Test10, bats_bandwidth: 80Mbps, coding_method: 1, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 20, link_delay: 0ms, link_loss_model: random][LatencyAvg: 14.076][RecvAvg: 72.68 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput

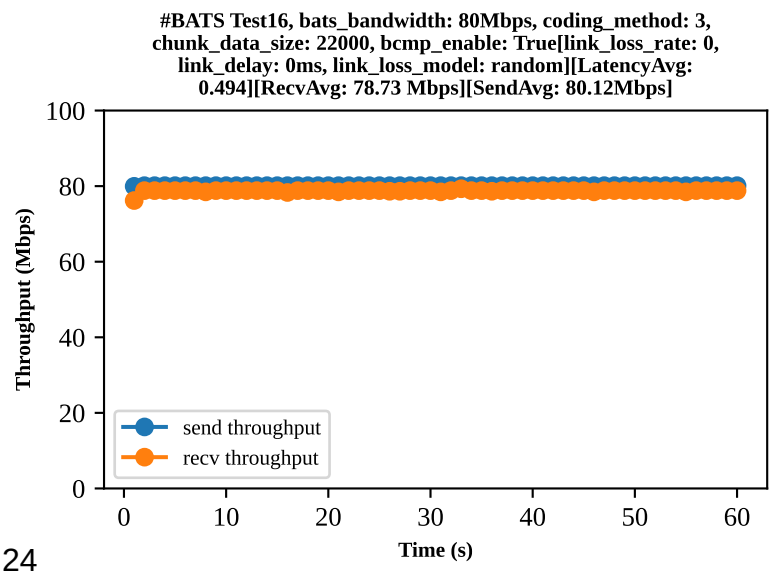

#BATS Test11, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 0, link_delay: 0ms, link_loss_model: random][LatencyAvg: 0.729][RecvAvg: 78.81 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput

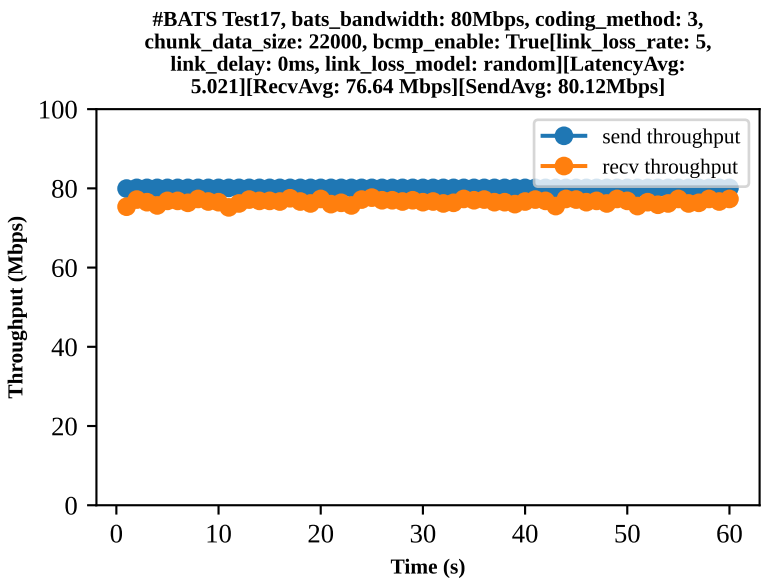

#BATS Test12, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 5, link_delay: 0ms, link_loss_model: random][LatencyAvg: 3.450][RecvAvg: 73.82 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput

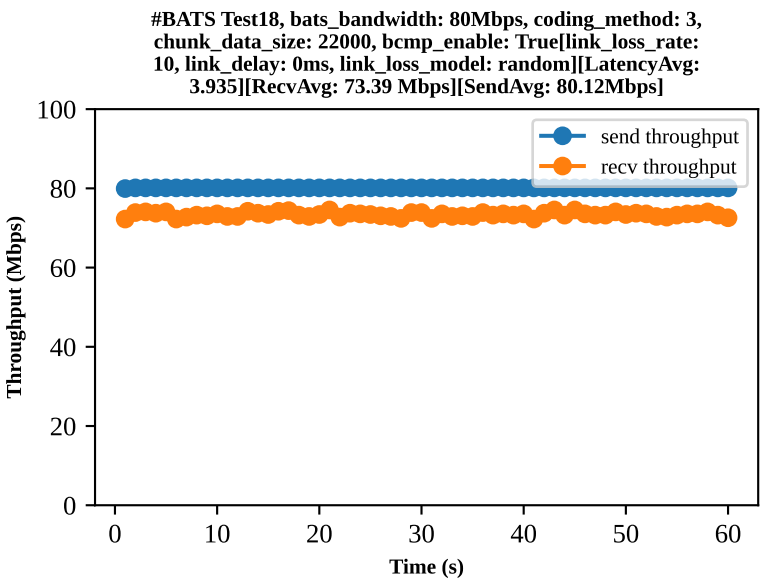

#BATS Test13, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 10, link_delay: 0ms, link_loss_model: random][LatencyAvg: 2.747][RecvAvg: 47.44 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput

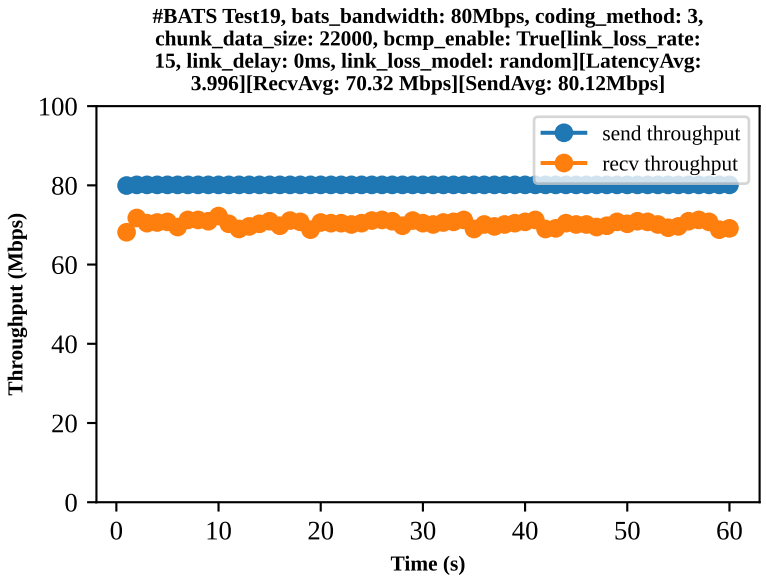

#BATS Test14, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 15, link_delay: 0ms, link_loss_model: random][LatencyAvg: 10.652][RecvAvg: 21.77 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput

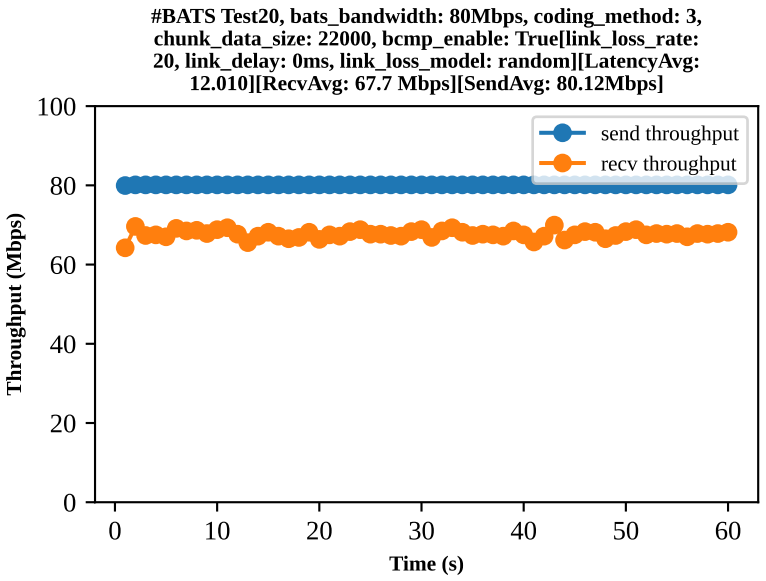

#BATS Test15, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: False[link_loss_rate: 20, link_delay: 0ms, link_loss_model: random][LatencyAvg: 11.594][RecvAvg: 7.46 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput


#BATS Test16, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 0, link_delay: 0ms, link_loss_model: random][LatencyAvg: 0.494][RecvAvg: 78.73 Mbps][SendAvg: 80.12Mbps]
Throughput (Mbps)
Time (s)
send throughput
recv throughput


#BATS Test17, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 5, link_delay: 0ms, link_loss_model: random][LatencyAvg: 5.021][RecvAvg: 76.64 Mbps][SendAvg: 80.12Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#BATS Test18, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 10, link_delay: 0ms, link_loss_model: random][LatencyAvg: 3.935][RecvAvg: 73.39 Mbps][SendAvg: 80.12Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#BATS Test19, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 15, link_delay: 0ms, link_loss_model: random][LatencyAvg: 3.996][RecvAvg: 70.32 Mbps][SendAvg: 80.12Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#BATS Test20, bats_bandwidth: 80Mbps, coding_method: 3, chunk_data_size: 22000, bcmp_enable: True[link_loss_rate: 20, link_delay: 0ms, link_loss_model: random][LatencyAvg: 12.010][RecvAvg: 67.7 Mbps][SendAvg: 80.12Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)

Appendix - TCP Test Statics.

TCP Test Summary

Items	Count
Total TCP Test Num	15
Succeed Test Num	15
Failed Test Num	0

#TCP Test1

Items	Result
TCP Specific Parameters	tcp_congestion_type: cubic
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:12:39 GMT Connecting to host 10.0.0.12, port 12345 Cookie: jp3cczmuymt2ueoi6wp6tbzuu7lfu2lqbcmx TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 681 MBytes 95.2 Mbits/sec 2443 sender [5] 0.00-60.04 sec 681 MBytes 95.1 Mbits/sec receiver CPU Utilization: local/sender 2.0% (0.1%u/1.9%s), remote/receiver 23.8% (2.5%u/21.4%s) snd_tcp_congestion cubic rcv_tcp_congestion cubic
Client Network Traffic	Send Packet: 8247.3 packet/s Send Throughput: 97.55 Mbps
Server Network Traffic	Recv Packet: 8211.93 packet/s Recv Throughput: 97.13 Mbps

#TCP Test2

Items	Result
TCP Specific Parameters	tcp_congestion_type: cubic
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:14:48 GMT Connecting to host 10.0.0.12, port 12345 Cookie: eccltjgl2rszv3ydi4w5tdh4ndhxyjcw6lsh TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 218 MBytes 30.5 Mbits/sec 9029 sender [5] 0.00-60.04 sec 218 MBytes 30.4 Mbits/sec receiver CPU Utilization: local/sender 1.0% (0.1%u/0.9%s), remote/receiver 7.5% (0.7%u/6.8%s) snd_tcp_congestion cubic rcv_tcp_congestion cubic
Client Network Traffic	Send Packet: 2630.08 packet/s Send Throughput: 31.11 Mbps
Server Network Traffic	Recv Packet: 2621.47 packet/s Recv Throughput: 31.01 Mbps

#TCP Test3

Items	Result
TCP Specific Parameters	tcp_congestion_type: cubic
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:15:53 GMT Connecting to host 10.0.0.12, port 12345 Cookie: as4rcxvac3pnsepitdq2hrwb7uv3qducppbf TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 19.8 MBytes 2.76 Mbits/sec 1781 sender [5] 0.00-60.00 sec 19.6 MBytes 2.75 Mbits/sec receiver CPU Utilization: local/sender 0.5% (0.1%u/0.4%s), remote/receiver 0.9% (0.1%u/0.8%s) snd_tcp_congestion cubic rcv_tcp_congestion cubic
Client Network Traffic	Send Packet: 238.83 packet/s Send Throughput: 2.82 Mbps
Server Network Traffic	Recv Packet: 239.19 packet/s Recv Throughput: 2.82 Mbps

#TCP Test4

Items	Result
TCP Specific Parameters	tcp_congestion_type: cubic
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:16:58 GMT Connecting to host 10.0.0.12, port 12345 Cookie: ufiobrny2nl42xgz5ympjey5lfcrmvlcc2r5 TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 2.48 MBytes 347 Kbits/sec 375 sender [5] 0.00-60.04 sec 2.40 MBytes 336 Kbits/sec receiver CPU Utilization: local/sender 0.1% (0.0%u/0.1%s), remote/receiver 0.1% (0.0%u/0.1%s) snd_tcp_congestion cubic rcv_tcp_congestion cubic
Client Network Traffic	Send Packet: 29.92 packet/s Send Throughput: 0.35 Mbps
Server Network Traffic	Recv Packet: 29.92 packet/s Recv Throughput: 0.35 Mbps

#TCP Test5

Items	Result
TCP Specific Parameters	tcp_congestion_type: cubic
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:18:02 GMT Connecting to host 10.0.0.12, port 12345 Cookie: vhvh3zk3x7vwbumw5xbsmwonsfflf7eqmwvy TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.01 sec 550 KBytes 75.1 Kbits/sec 97 sender [5] 0.00-60.01 sec 386 KBytes 52.7 Kbits/sec receiver CPU Utilization: local/sender 0.7% (0.1%u/0.6%s), remote/receiver 0.0% (0.0%u/0.0%s) snd_tcp_congestion cubic rcv_tcp_congestion cubic
Client Network Traffic	Send Packet: 4.9 packet/s Send Throughput: 0.06 Mbps
Server Network Traffic	Recv Packet: 4.9 packet/s Recv Throughput: 0.06 Mbps

#TCP Test6

Items	Result
TCP Specific Parameters	tcp_congestion_type: reno
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:19:06 GMT Connecting to host 10.0.0.12, port 12345 Cookie: epf7w2vivqlz6d6j7b4vpmkwxwqxgjvayxug TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 679 MBytes 95.0 Mbits/sec 3790 sender [5] 0.00-60.04 sec 679 MBytes 94.9 Mbits/sec receiver CPU Utilization: local/sender 2.0% (0.1%u/1.9%s), remote/receiver 23.5% (2.6%u/20.9%s) snd_tcp_congestion reno rcv_tcp_congestion reno
Client Network Traffic	Send Packet: 8247.42 packet/s Send Throughput: 97.55 Mbps
Server Network Traffic	Recv Packet: 8184.24 packet/s Recv Throughput: 96.8 Mbps

#TCP Test7

Items	Result
TCP Specific Parameters	tcp_congestion_type: reno
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:20:11 GMT Connecting to host 10.0.0.12, port 12345 Cookie: sjfkpig52c7eh7qa42xluusrqmblemx2xi4i TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 286 MBytes 40.0 Mbits/sec 13404 sender [5] 0.00-60.04 sec 286 MBytes 39.9 Mbits/sec receiver CPU Utilization: local/sender 1.2% (0.1%u/1.1%s), remote/receiver 10.5% (1.2%u/9.3%s) snd_tcp_congestion reno rcv_tcp_congestion reno
Client Network Traffic	Send Packet: 3457.67 packet/s Send Throughput: 40.9 Mbps
Server Network Traffic	Recv Packet: 3427.23 packet/s Recv Throughput: 40.53 Mbps

#TCP Test8

Items	Result
TCP Specific Parameters	tcp_congestion_type: reno
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:21:15 GMT Connecting to host 10.0.0.12, port 12345 Cookie: vglvzfihhztuhrqwaxdvp5ncpp3sibmwhzga TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.01 sec 33.0 MBytes 4.61 Mbits/sec 2925 sender [5] 0.00-60.21 sec 32.7 MBytes 4.55 Mbits/sec receiver CPU Utilization: local/sender 0.5% (0.1%u/0.4%s), remote/receiver 1.4% (0.2%u/1.2%s) snd_tcp_congestion reno rcv_tcp_congestion reno
Client Network Traffic	Send Packet: 396.7 packet/s Send Throughput: 4.69 Mbps
Server Network Traffic	Recv Packet: 396.13 packet/s Recv Throughput: 4.68 Mbps

#TCP Test9

Items	Result
TCP Specific Parameters	tcp_congestion_type: reno
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:22:20 GMT Connecting to host 10.0.0.12, port 12345 Cookie: 7eqrpt4hcvzf57p7ezhj73sferg7gij7zf4t TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 6.87 MBytes 961 Kbits/sec 921 sender [5] 0.00-60.00 sec 6.62 MBytes 925 Kbits/sec receiver CPU Utilization: local/sender 0.4% (0.1%u/0.3%s), remote/receiver 0.3% (0.0%u/0.3%s) snd_tcp_congestion reno rcv_tcp_congestion reno
Client Network Traffic	Send Packet: 81.49 packet/s Send Throughput: 0.96 Mbps
Server Network Traffic	Recv Packet: 81.05 packet/s Recv Throughput: 0.96 Mbps

#TCP Test10

Items	Result
TCP Specific Parameters	tcp_congestion_type: reno
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:26:44 GMT Connecting to host 10.0.0.12, port 12345 Cookie: v53m4o7nc22dn6e2asm7pwiq7l64mhs4ogzi TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.01 sec 1.34 MBytes 188 Kbits/sec 286 sender [5] 0.00-60.22 sec 1.10 MBytes 153 Kbits/sec receiver CPU Utilization: local/sender 0.4% (0.0%u/0.3%s), remote/receiver 0.1% (0.0%u/0.1%s) snd_tcp_congestion reno rcv_tcp_congestion reno
Client Network Traffic	Send Packet: 14.08 packet/s Send Throughput: 0.16 Mbps
Server Network Traffic	Recv Packet: 13.98 packet/s Recv Throughput: 0.16 Mbps

#TCP Test11

Items	Result
TCP Specific Parameters	tcp_congestion_type: bbr
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:27:49 GMT Connecting to host 10.0.0.12, port 12345 Cookie: 7k5xpkvptwfo2rcdr42rw3g3umeqkh2qiqbl TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 663 MBytes 92.7 Mbits/sec 15030 sender [5] 0.00-60.04 sec 662 MBytes 92.6 Mbits/sec receiver CPU Utilization: local/sender 1.6% (0.1%u/1.5%s), remote/receiver 18.1% (1.9%u/16.2%s) snd_tcp_congestion bbr rcv_tcp_congestion bbr
Client Network Traffic	Send Packet: 8234.31 packet/s Send Throughput: 97.39 Mbps
Server Network Traffic	Recv Packet: 7986.9 packet/s Recv Throughput: 94.47 Mbps

#TCP Test12

Items	Result
TCP Specific Parameters	tcp_congestion_type: bbr
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:28:54 GMT Connecting to host 10.0.0.12, port 12345 Cookie: fxblgu5pl5d7qgeuhev6rktswbehxtzqnykn TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 585 MBytes 81.7 Mbits/sec 41476 sender [5] 0.00-60.04 sec 584 MBytes 81.6 Mbits/sec receiver CPU Utilization: local/sender 1.3% (0.1%u/1.2%s), remote/receiver 15.2% (1.8%u/13.4%s) snd_tcp_congestion bbr rcv_tcp_congestion bbr
Client Network Traffic	Send Packet: 7338.85 packet/s Send Throughput: 86.8 Mbps
Server Network Traffic	Recv Packet: 7037.55 packet/s Recv Throughput: 83.24 Mbps

#TCP Test13

Items	Result
TCP Specific Parameters	tcp_congestion_type: bbr
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:29:58 GMT Connecting to host 10.0.0.12, port 12345 Cookie: lfvqw3k6bixkzp6c7rogyc3fiudwbxmn5ewq TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 371 MBytes 51.9 Mbits/sec 48408 sender [5] 0.00-60.21 sec 370 MBytes 51.6 Mbits/sec receiver CPU Utilization: local/sender 1.2% (0.1%u/1.1%s), remote/receiver 10.4% (1.2%u/9.2%s) snd_tcp_congestion bbr rcv_tcp_congestion bbr
Client Network Traffic	Send Packet: 4624.62 packet/s Send Throughput: 54.7 Mbps
Server Network Traffic	Recv Packet: 4349.84 packet/s Recv Throughput: 51.45 Mbps

#TCP Test14

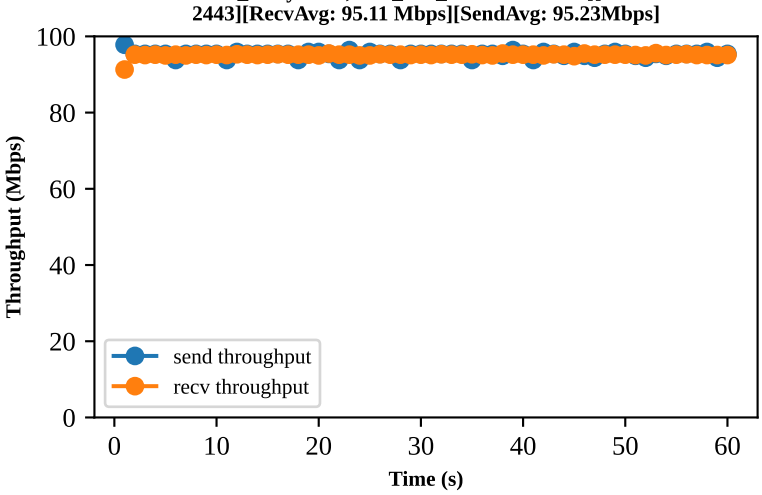
Items	Result
TCP Specific Parameters	tcp_congestion_type: bbr
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:31:02 GMT Connecting to host 10.0.0.12, port 12345 Cookie: 3yaodz5jbhg25yd2rdswx3dtuf5maqwj56l2 TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.00 sec 128 MBytes 17.9 Mbits/sec 24347 sender [5] 0.00-60.04 sec 127 MBytes 17.7 Mbits/sec receiver CPU Utilization: local/sender 0.4% (0.0%u/0.4%s), remote/receiver 3.7% (0.3%u/3.3%s) snd_tcp_congestion bbr rcv_tcp_congestion bbr
Client Network Traffic	Send Packet: 1633.8 packet/s Send Throughput: 19.32 Mbps
Server Network Traffic	Recv Packet: 1522.65 packet/s Recv Throughput: 18.0 Mbps

#TCP Test15

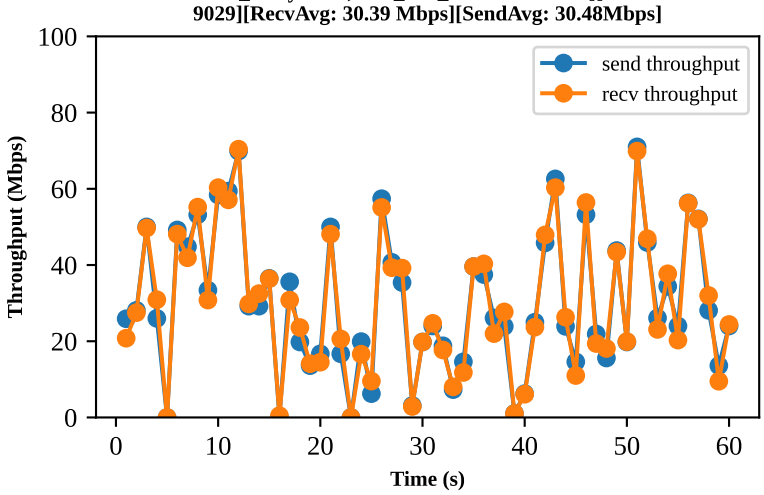
Items	Result
TCP Specific Parameters	tcp_congestion_type: bbr
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Time: Wed, 09 Aug 2023 14:32:07 GMT Connecting to host 10.0.0.12, port 12345 Cookie: n5bidyvznompeo6jt5id7fepqbao52qrt7dv TCP MSS: 1448 (default)
Summary	[ID] Interval Transfer Bitrate Retr [5] 0.00-60.01 sec 32.3 MBytes 4.52 Mbits/sec 8101 sender [5] 0.00-60.05 sec 31.6 MBytes 4.42 Mbits/sec receiver CPU Utilization: local/sender 0.2% (0.0%u/0.2%s), remote/receiver 1.0% (0.1%u/0.9%s) snd_tcp_congestion bbr rcv_tcp_congestion bbr
Client Network Traffic	Send Packet: 418.36 packet/s Send Throughput: 4.95 Mbps
Server Network Traffic	Recv Packet: 388.92 packet/s Recv Throughput: 4.6 Mbps

Appendix - TCP Test Figures.

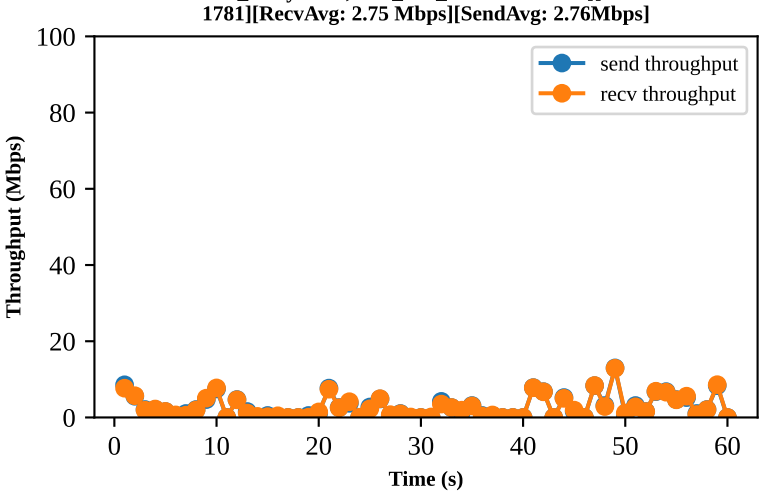
#TCP Test1, tcp_congestion_type: cubic[link_loss_rate: 0, link_delay: 0ms, link_loss_model: random][Retr: 2443][RecvAvg: 95.11 Mbps][SendAvg: 95.23Mbps]



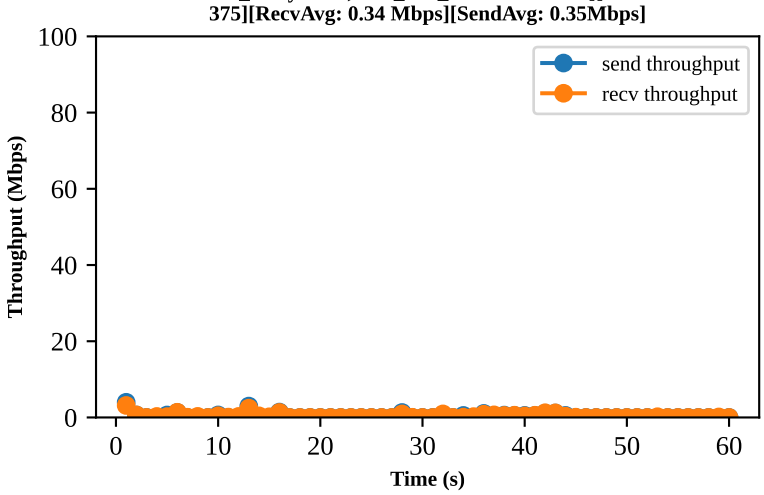
#TCP Test2, tcp_congestion_type: cubic[link_loss_rate: 5, link_delay: 0ms, link_loss_model: random][Retr: 9029][RecvAvg: 30.39 Mbps][SendAvg: 30.48Mbps]



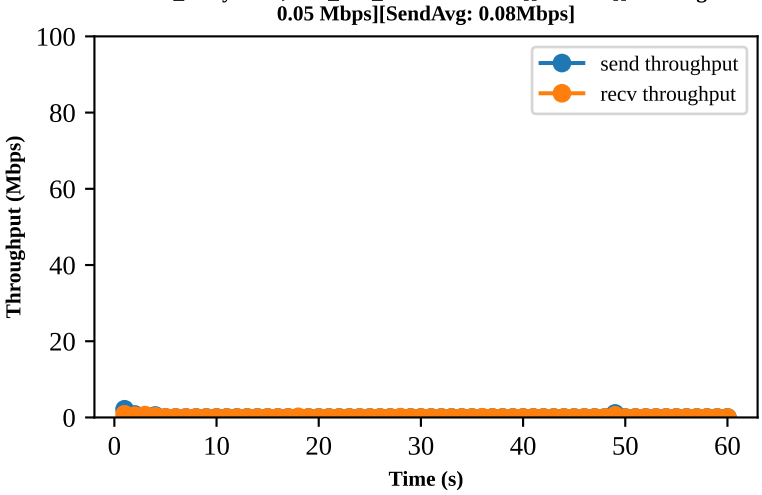
#TCP Test3, tcp_congestion_type: cubic[link_loss_rate: 10, link_delay: 0ms, link_loss_model: random][Retr: 1781][RecvAvg: 2.75 Mbps][SendAvg: 2.76Mbps]



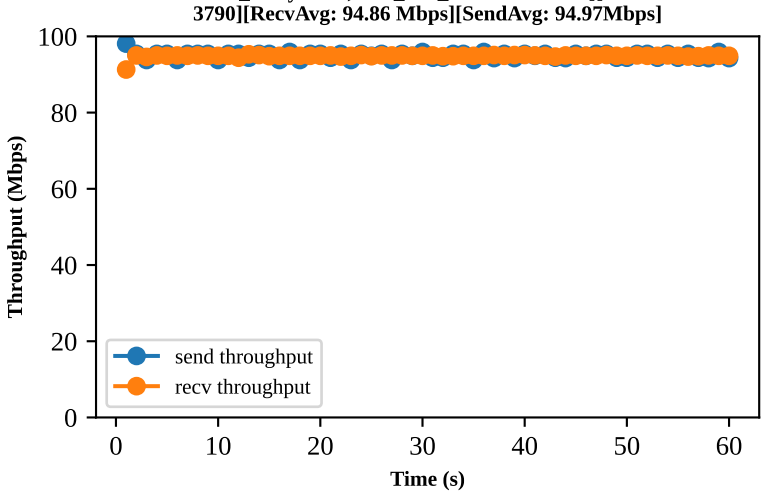
#TCP Test4, tcp_congestion_type: cubic[link_loss_rate: 15, link_delay: 0ms, link_loss_model: random][Retr: 375][RecvAvg: 0.34 Mbps][SendAvg: 0.35Mbps]



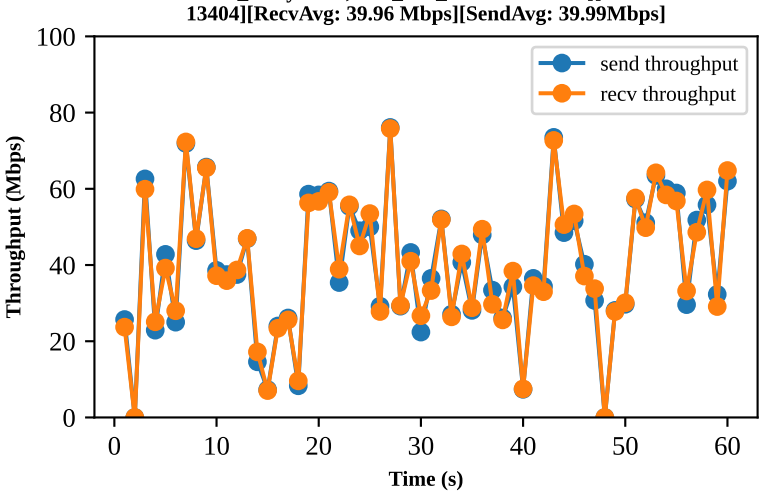
#TCP Test5, tcp_congestion_type: cubic[link_loss_rate: 20, link_delay: 0ms, link_loss_model: random][Retr: 97][RecvAvg: 0.05 Mbps][SendAvg: 0.08Mbps]



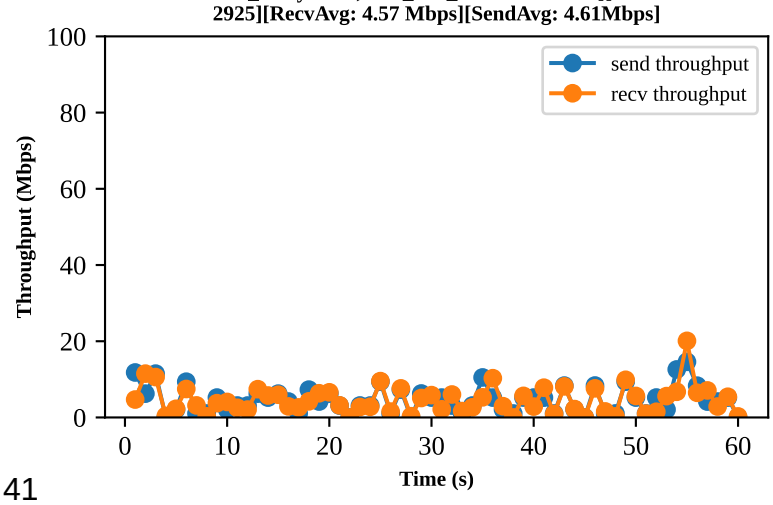
#TCP Test6, tcp_congestion_type: reno[link_loss_rate: 0, link_delay: 0ms, link_loss_model: random][Retr: 3790][RecvAvg: 94.86 Mbps][SendAvg: 94.97Mbps]

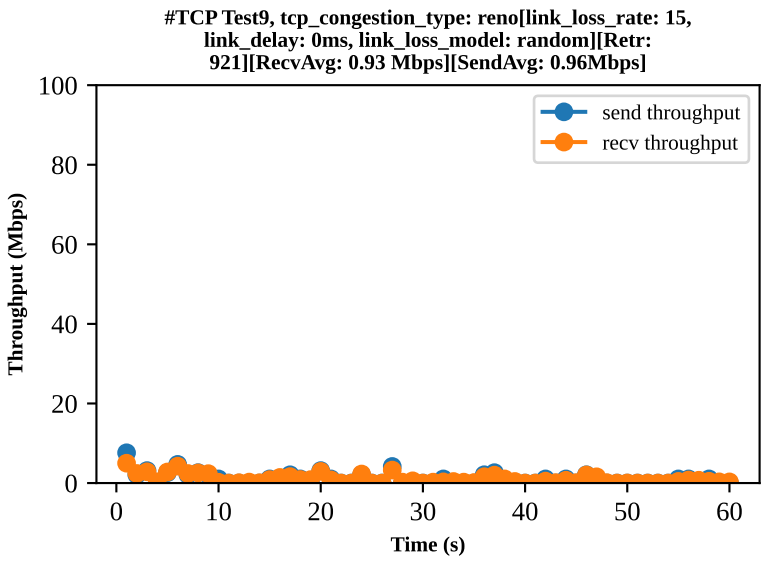


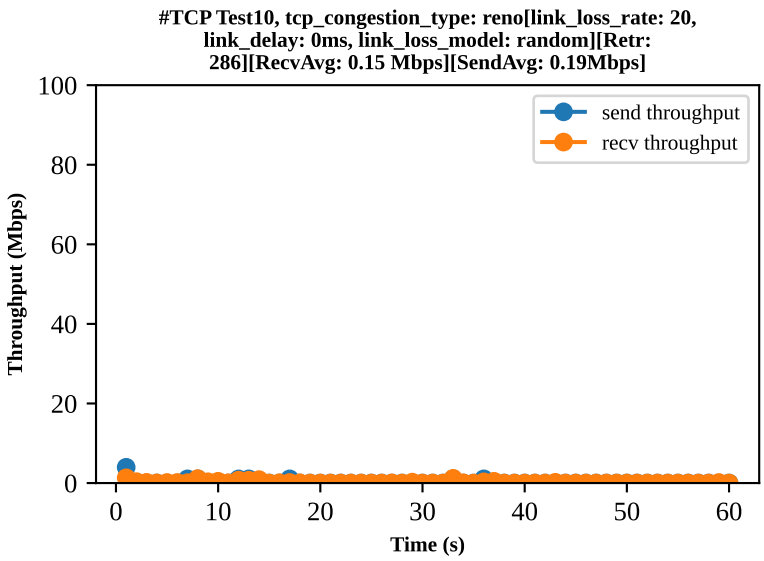
#TCP Test7, tcp_congestion_type: reno[link_loss_rate: 5, link_delay: 0ms, link_loss_model: random][Retr: 13404][RecvAvg: 39.96 Mbps][SendAvg: 39.99Mbps]

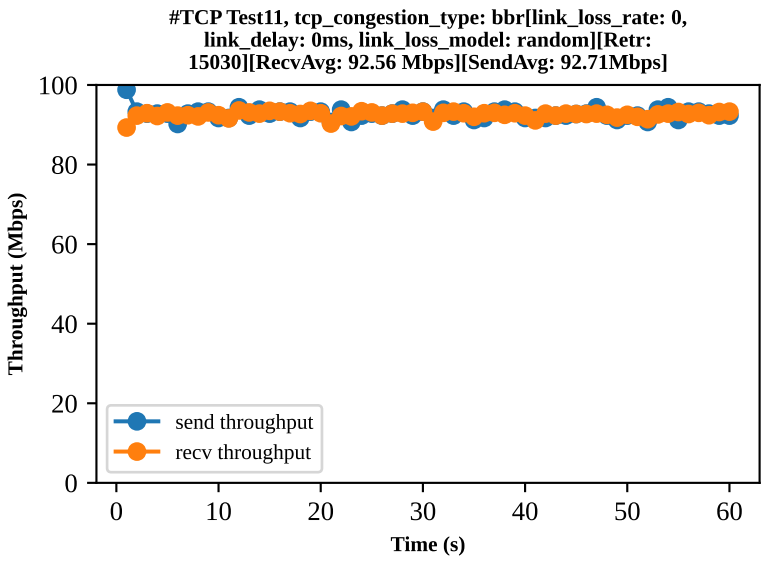


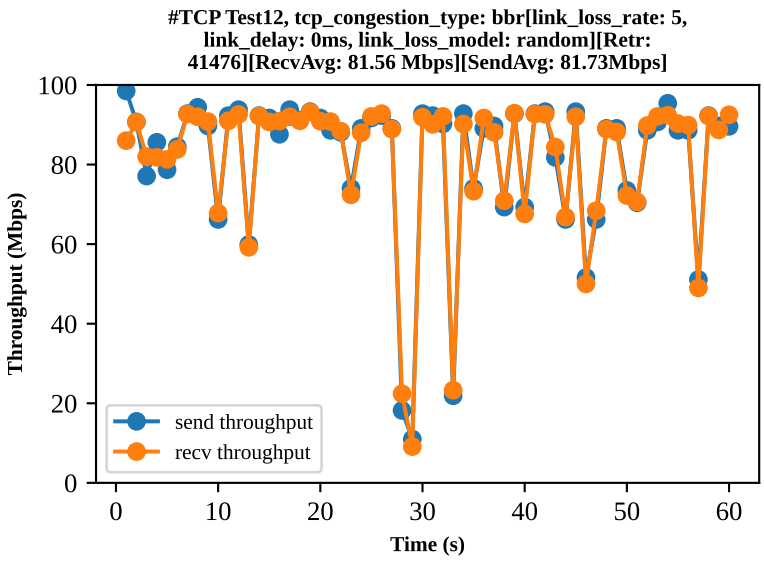
#TCP Test8, tcp_congestion_type: reno[link_loss_rate: 10, link_delay: 0ms, link_loss_model: random][Retr: 2925][RecvAvg: 4.57 Mbps][SendAvg: 4.61Mbps]

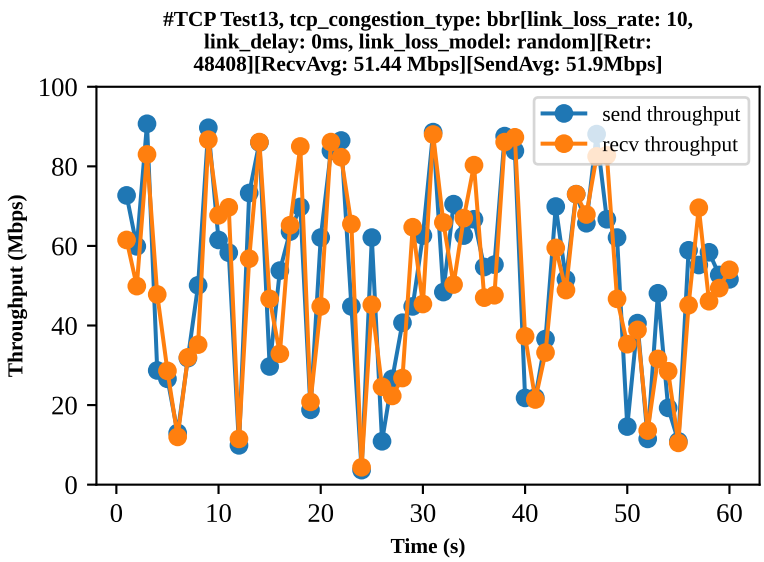


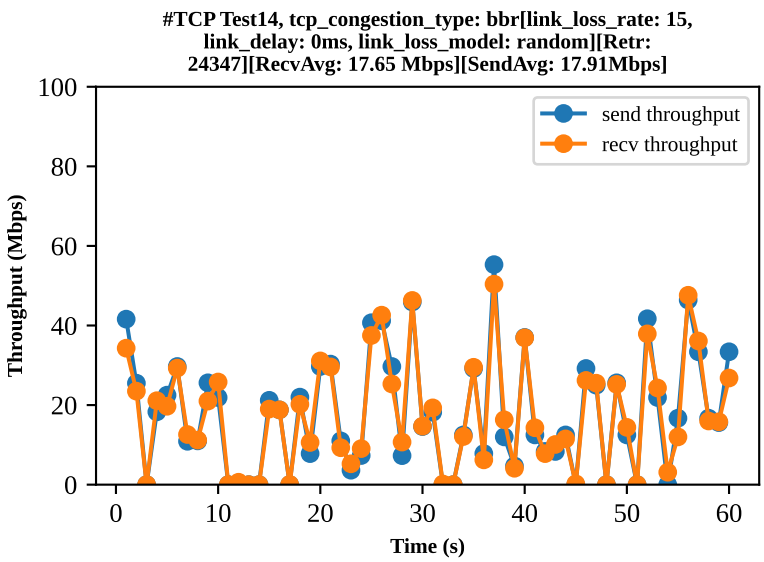

#TCP Test9, tcp_congestion_type: reno[link_loss_rate: 15,
link_delay: 0ms, link_loss_model: random][Retr:
921][RecvAvg: 0.93 Mbps][SendAvg: 0.96Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)

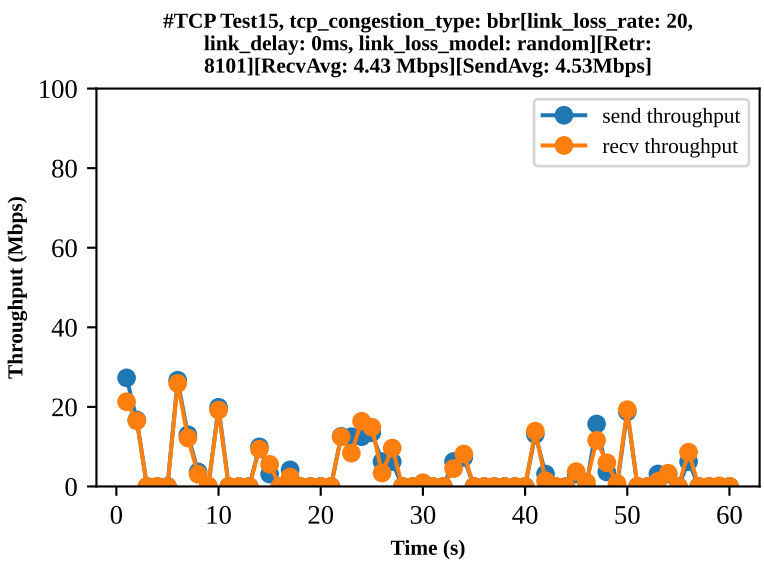

#TCP Test10, tcp_congestion_type: reno[link_loss_rate: 20,
link_delay: 0ms, link_loss_model: random][Retr:
286][RecvAvg: 0.15 Mbps][SendAvg: 0.19Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#TCP Test11, tcp_congestion_type: bbr[link_loss_rate: 0,
link_delay: 0ms, link_loss_model: random][Retr:
15030][RecvAvg: 92.56 Mbps][SendAvg: 92.71Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#TCP Test12, tcp_congestion_type: bbr[link_loss_rate: 5,
link_delay: 0ms, link_loss_model: random][Retr:
41476][RecvAvg: 81.56 Mbps][SendAvg: 81.73Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#TCP Test13, tcp_congestion_type: bbr[link_loss_rate: 10,
link_delay: 0ms, link_loss_model: random][Retr:
48408][RecvAvg: 51.44 Mbps][SendAvg: 51.9Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#TCP Test14, tcp_congestion_type: bbr[link_loss_rate: 15,
link_delay: 0ms, link_loss_model: random][Retr:
24347][RecvAvg: 17.65 Mbps][SendAvg: 17.91Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)


#TCP Test15, tcp_congestion_type: bbr[link_loss_rate: 20,
link_delay: 0ms, link_loss_model: random][Retr:
8101][RecvAvg: 4.43 Mbps][SendAvg: 4.53Mbps]
send throughput
recv throughput
Throughput (Mbps)
Time (s)

Appendix - UDP Test Statics.

UDP Test Summary

Items	Count
Total UDP Test Num	5
Succeed Test Num	5
Failed Test Num	0

#UDP Test1

Items	Result
UDP Specific Parameters	udp_bandwidth: 97.2m
Link Status	link_loss_rate: 0, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Setting UDP block size to 1448 Time: Wed, 09 Aug 2023 14:33:12 GMT Connecting to host 10.0.0.12, port 12345 Cookie: tmze4ctst4zchrydpraku7pvzuz5wnnlxa2d Target Bitrate: 97200000
Summary	[ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams [5] 0.00-60.00 sec 695 MBytes 97.2 Mbits/sec 0.000 ms 0/503445 (0%) sender [5] 0.00-60.05 sec 695 MBytes 97.1 Mbits/sec 0.028 ms 56/503443 (0.011%) receiver CPU Utilization: local/sender 25.0% (3.7%u/21.4%s), remote/receiver 23.8% (3.1%u/20.7%s)
Client Network Traffic	Send Packet: 8379.32 packet/s Send Throughput: 97.54 Mbps
Server Network Traffic	Recv Packet: 8380.97 packet/s Recv Throughput: 97.56 Mbps

#UDP Test2

Items	Result
UDP Specific Parameters	udp_bandwidth: 97.2m
Link Status	link_loss_rate: 5, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Setting UDP block size to 1448 Time: Wed, 09 Aug 2023 14:34:17 GMT Connecting to host 10.0.0.12, port 12345 Cookie: cpa4vjn3xuqpx5aonygbdubmno4p5dgya5di Target Bitrate: 97200000
Summary	[ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams [5] 0.00-60.00 sec 695 MBytes 97.2 Mbits/sec 0.000 ms 0/503449 (0%) sender [5] 0.00-60.04 sec 660 MBytes 92.3 Mbits/sec 0.062 ms 25243/503449 (5%) receiver CPU Utilization: local/sender 26.8% (0.1%u/26.8%s), remote/receiver 23.3% (3.6%u/19.8%s)
Client Network Traffic	Send Packet: 7959.66 packet/s Send Throughput: 92.65 Mbps
Server Network Traffic	Recv Packet: 7966.58 packet/s Recv Throughput: 92.74 Mbps

#UDP Test3

Items	Result
UDP Specific Parameters	udp_bandwidth: 97.2m
Link Status	link_loss_rate: 10, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Setting UDP block size to 1448 Time: Wed, 09 Aug 2023 14:35:21 GMT Connecting to host 10.0.0.12, port 12345 Cookie: 3vvf24fs3m2xoqibhheyy73p6ao54smoby6q Target Bitrate: 97200000
Summary	[ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams [5] 0.00-60.00 sec 695 MBytes 97.2 Mbits/sec 0.000 ms 0/503449 (0%) sender [5] 0.00-60.25 sec 626 MBytes 87.1 Mbits/sec 0.059 ms 50309/503449 (10%) receiver CPU Utilization: local/sender 28.4% (3.0%u/25.3%s), remote/receiver 21.6% (3.1%u/18.5%s)
Client Network Traffic	Send Packet: 7515.53 packet/s Send Throughput: 87.48 Mbps
Server Network Traffic	Recv Packet: 7518.2 packet/s Recv Throughput: 87.51 Mbps

#UDP Test4

Items	Result
UDP Specific Parameters	udp_bandwidth: 97.2m
Link Status	link_loss_rate: 15, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Setting UDP block size to 1448 Time: Wed, 09 Aug 2023 14:36:25 GMT Connecting to host 10.0.0.12, port 12345 Cookie: npbxcmx6yzvckew44wbbop4cwn7iup5fbwd7 Target Bitrate: 97200000
Summary	[ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams [5] 0.00-60.00 sec 695 MBytes 97.2 Mbits/sec 0.000 ms 0/503448 (0%) sender [5] 0.00-60.21 sec 591 MBytes 82.4 Mbits/sec 0.066 ms 75349/503447 (15%) receiver CPU Utilization: local/sender 29.3% (3.4%u/25.9%s), remote/receiver 21.0% (3.2%u/17.8%s)
Client Network Traffic	Send Packet: 7106.9 packet/s Send Throughput: 82.73 Mbps
Server Network Traffic	Recv Packet: 7107.9 packet/s Recv Throughput: 82.74 Mbps

#UDP Test5

Items	Result
UDP Specific Parameters	udp_bandwidth: 97.2m
Link Status	link_loss_rate: 20, link_delay: 0ms, link_loss_model: random
Information	Linux raspberrypi 6.1.21-v8+ #1642 SMP PREEMPT Mon Apr 3 17:24:16 BST 2023 aarch64 Control connection MSS 1448 Setting UDP block size to 1448 Time: Wed, 09 Aug 2023 14:38:36 GMT Connecting to host 10.0.0.12, port 12345 Cookie: i5mwtkrp2novqpfdu6ml64unvss2ahpjbj2t Target Bitrate: 97200000
Summary	[ID] Interval Transfer Bitrate Jitter Lost/Total Datagrams [5] 0.00-60.00 sec 695 MBytes 97.2 Mbits/sec 0.000 ms 0/503448 (0%) sender [5] 0.00-60.29 sec 556 MBytes 77.4 Mbits/sec 0.080 ms 100710/503448 (20%) receiver CPU Utilization: local/sender 28.7% (4.0%u/24.7%s), remote/receiver 20.0% (3.2%u/16.8%s)
Client Network Traffic	Send Packet: 6654.37 packet/s Send Throughput: 77.46 Mbps
Server Network Traffic	Recv Packet: 6654.34 packet/s Recv Throughput: 77.46 Mbps

Appendix - UDP Test Figures.