

Pantheon Report

Generated at 2022-04-05 20:42:36 (UTC).
Tested in mahimahi: mm-link wired48 trace-3109898-bus
Repeated the test of 14 congestion control schemes once.
Each test lasted for 30 seconds running 1 flow.

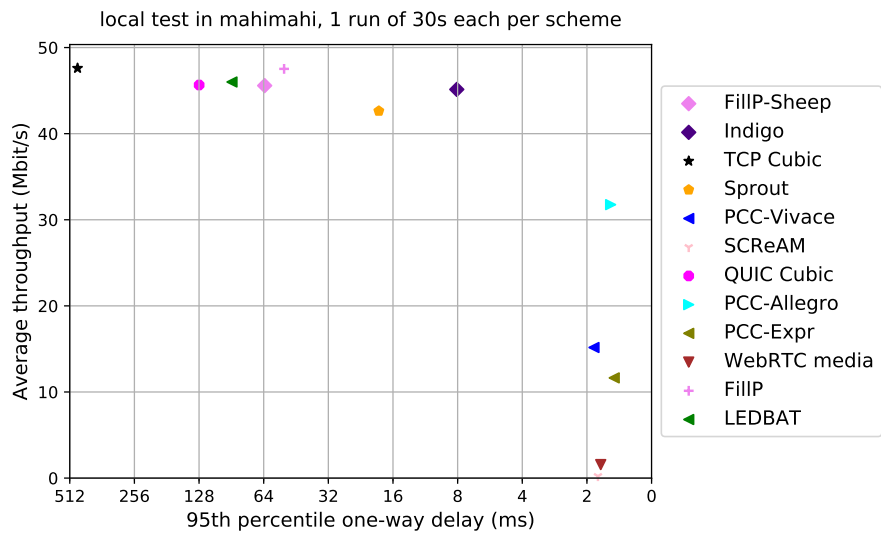
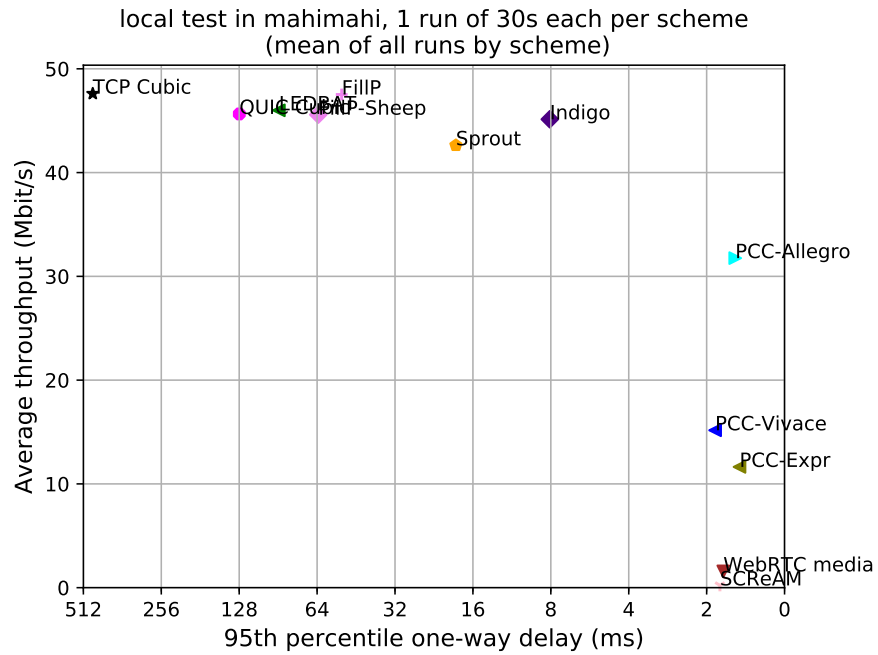
System info:

Linux 5.13.0-39-generic
net.core.default_qdisc = fq_codel
net.core.rmem_default = 212992
net.core.rmem_max = 50000000
net.core.wmem_default = 212992
net.core.wmem_max = 1048576
net.ipv4.tcp_rmem = 4096 131072 6291456
net.ipv4.tcp_wmem = 4096 16384 4194304

Git summary:

branch: master @ 932ea819529bc7318f767ee187f6f0482584470f
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
M makefile
M python-wrapper.cc
third_party/indigo @ 463d89b09699a57bfdfbae351646df6a60040b90
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
M configure.ac
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M src/verus_server.cpp
M tools/plot.py

third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	0	N/A	N/A	N/A
TCP Cubic	1	47.60	471.01	1.29
FillP	1	47.52	51.42	0.15
FillP-Sheep	1	45.58	63.34	0.06
Indigo	1	45.14	8.07	0.01
LEDBAT	1	46.00	89.96	0.31
PCC-Allegro	1	31.76	1.27	0.00
PCC-Expr	1	11.64	1.16	0.00
QUIC Cubic	1	45.65	127.87	0.46
SCReAM	1	0.22	1.66	0.00
Sprout	1	42.63	18.62	0.02
TCP Vegas	0	N/A	N/A	N/A
PCC-Vivace	1	15.17	1.78	0.00
WebRTC media	1	1.57	1.57	0.00

Run 1: Statistics of TCP BBR

Start at: 2022-04-05 20:24:36

End at: 2022-04-05 20:25:06

Run 1: Report of TCP BBR — Data Link

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Run 1: Statistics of TCP Cubic

Start at: 2022-04-05 20:21:45

End at: 2022-04-05 20:22:15

Below is generated by plot.py at 2022-04-05 20:42:33

Datalink statistics

-- Total of 1 flow:

Average capacity: 48.00 Mbit/s

Average throughput: 47.60 Mbit/s (99.2% utilization)

95th percentile per-packet one-way delay: 471.008 ms

Loss rate: 1.29%

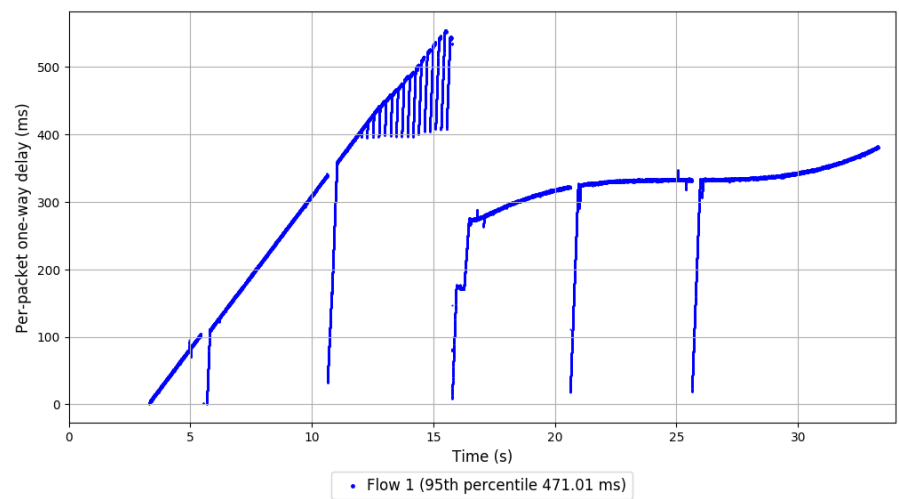
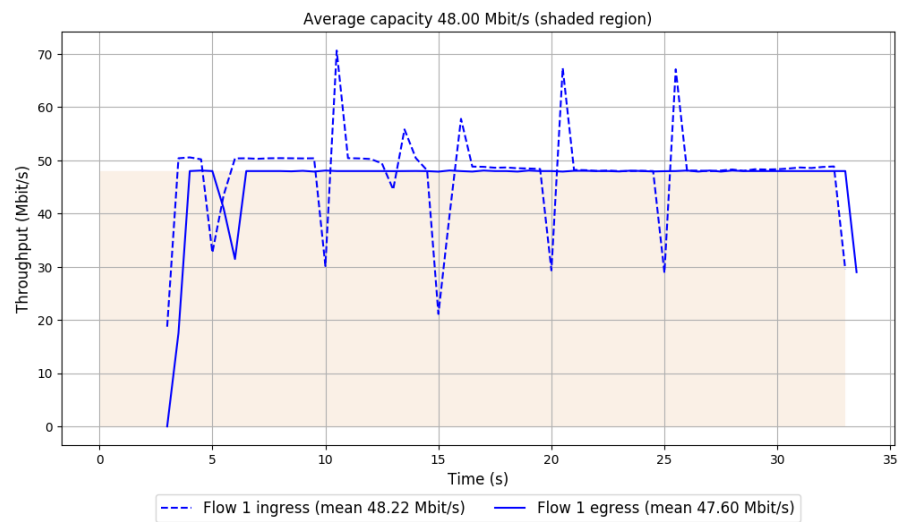
-- Flow 1:

Average throughput: 47.60 Mbit/s

95th percentile per-packet one-way delay: 471.008 ms

Loss rate: 1.29%

Run 1: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2022-04-05 20:21:10

End at: 2022-04-05 20:21:40

Below is generated by plot.py at 2022-04-05 20:42:35

Datalink statistics

-- Total of 1 flow:

Average capacity: 48.00 Mbit/s

Average throughput: 47.52 Mbit/s (99.0% utilization)

95th percentile per-packet one-way delay: 51.425 ms

Loss rate: 0.15%

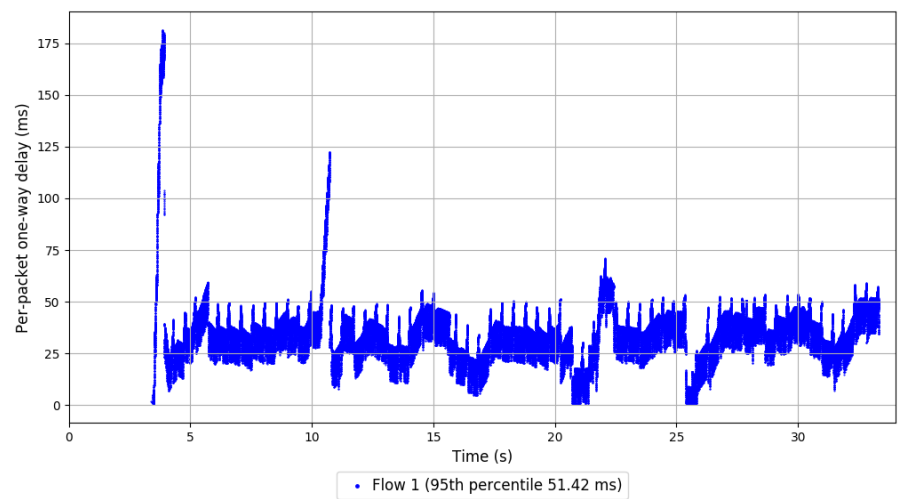
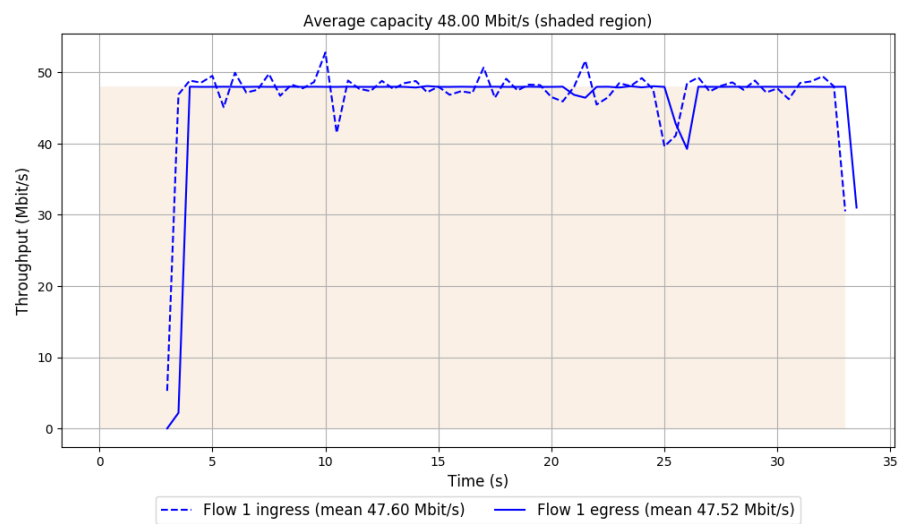
-- Flow 1:

Average throughput: 47.52 Mbit/s

95th percentile per-packet one-way delay: 51.425 ms

Loss rate: 0.15%

Run 1: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2022-04-05 20:20:35

End at: 2022-04-05 20:21:05

Below is generated by plot.py at 2022-04-05 20:42:35

Datalink statistics

-- Total of 1 flow:

Average capacity: 48.00 Mbit/s

Average throughput: 45.58 Mbit/s (95.0% utilization)

95th percentile per-packet one-way delay: 63.345 ms

Loss rate: 0.06%

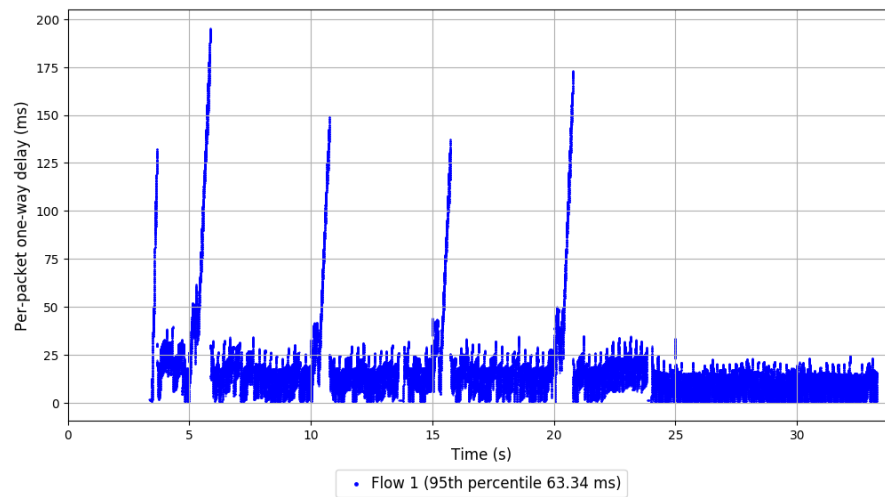
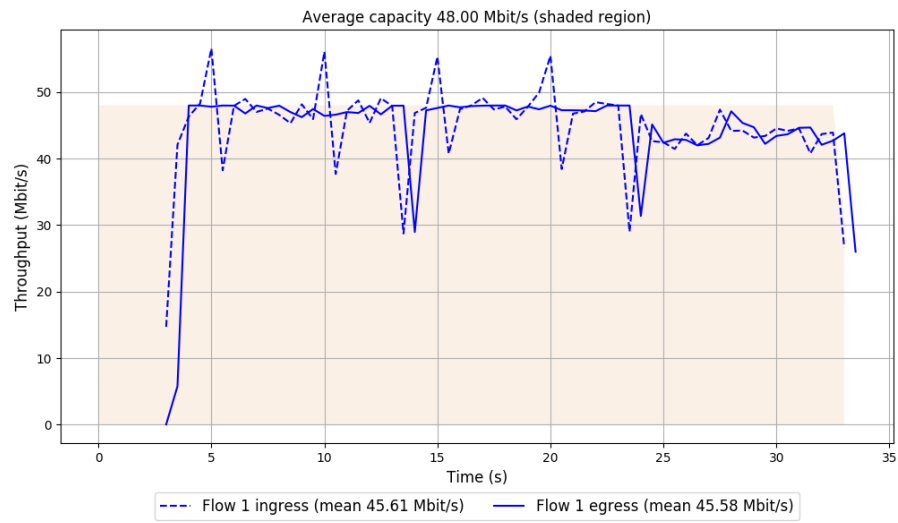
-- Flow 1:

Average throughput: 45.58 Mbit/s

95th percentile per-packet one-way delay: 63.345 ms

Loss rate: 0.06%

Run 1: Report of FillP-Sheep — Data Link

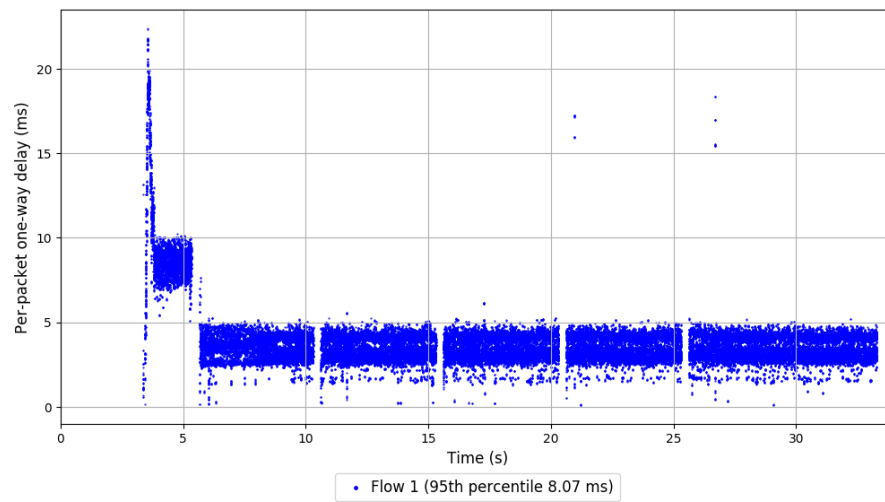
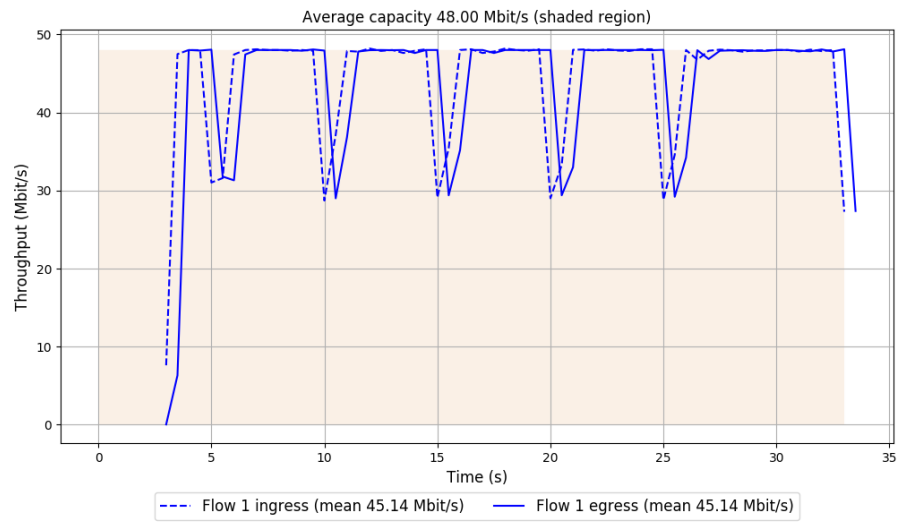


```
Run 1: Statistics of Indigo

Start at: 2022-04-05 20:26:20
End at: 2022-04-05 20:26:50

# Below is generated by plot.py at 2022-04-05 20:42:35
# Datalink statistics
-- Total of 1 flow:
Average capacity: 48.00 Mbit/s
Average throughput: 45.14 Mbit/s (94.0% utilization)
95th percentile per-packet one-way delay: 8.074 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 45.14 Mbit/s
95th percentile per-packet one-way delay: 8.074 ms
Loss rate: 0.01%
```

Run 1: Report of Indigo — Data Link

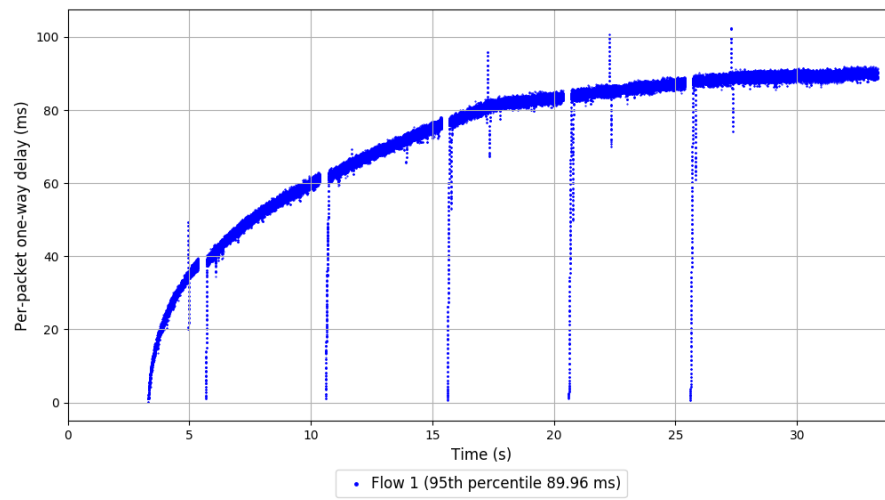
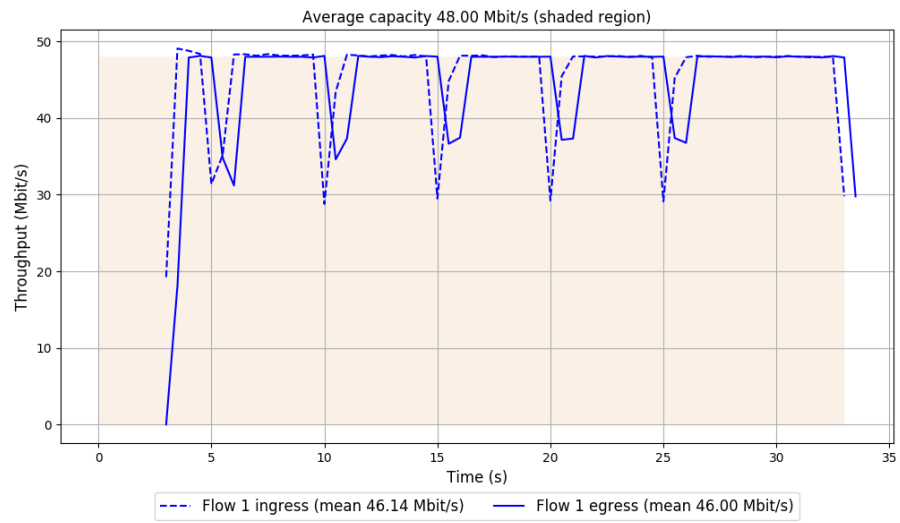


```
Run 1: Statistics of LEDBAT

Start at: 2022-04-05 20:27:29
End at: 2022-04-05 20:27:59

# Below is generated by plot.py at 2022-04-05 20:42:35
# Datalink statistics
-- Total of 1 flow:
Average capacity: 48.00 Mbit/s
Average throughput: 46.00 Mbit/s (95.8% utilization)
95th percentile per-packet one-way delay: 89.956 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 46.00 Mbit/s
95th percentile per-packet one-way delay: 89.956 ms
Loss rate: 0.31%
```

Run 1: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2022-04-05 20:25:45

End at: 2022-04-05 20:26:15

Below is generated by plot.py at 2022-04-05 20:42:35

Datalink statistics

-- Total of 1 flow:

Average capacity: 48.00 Mbit/s

Average throughput: 31.76 Mbit/s (66.2% utilization)

95th percentile per-packet one-way delay: 1.266 ms

Loss rate: 0.00%

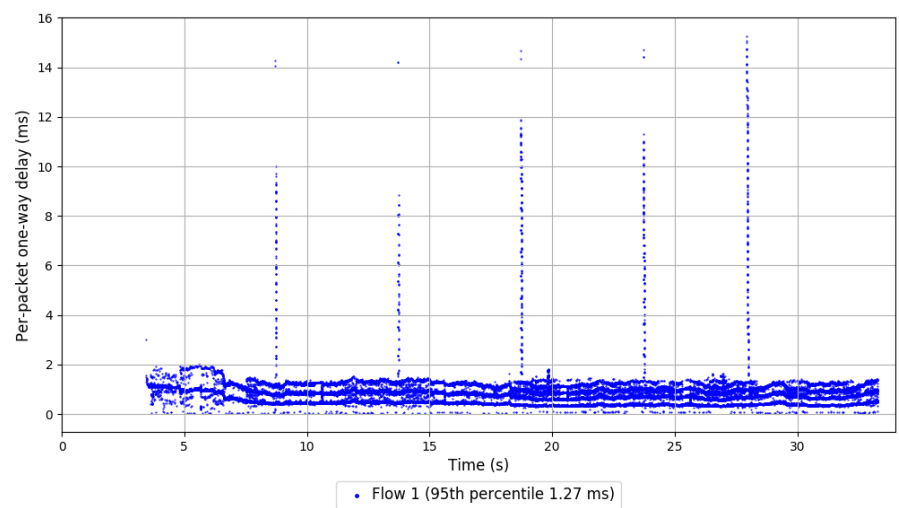
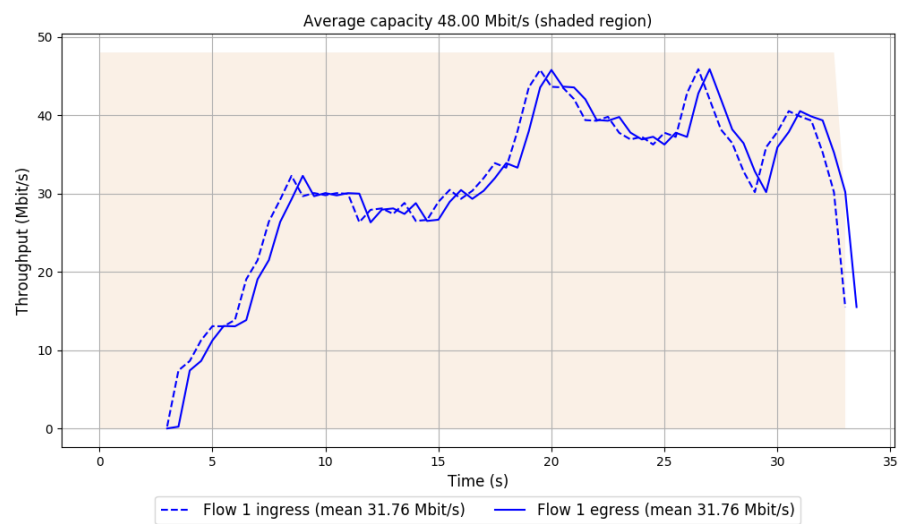
-- Flow 1:

Average throughput: 31.76 Mbit/s

95th percentile per-packet one-way delay: 1.266 ms

Loss rate: 0.00%

Run 1: Report of PCC-Allegro — Data Link

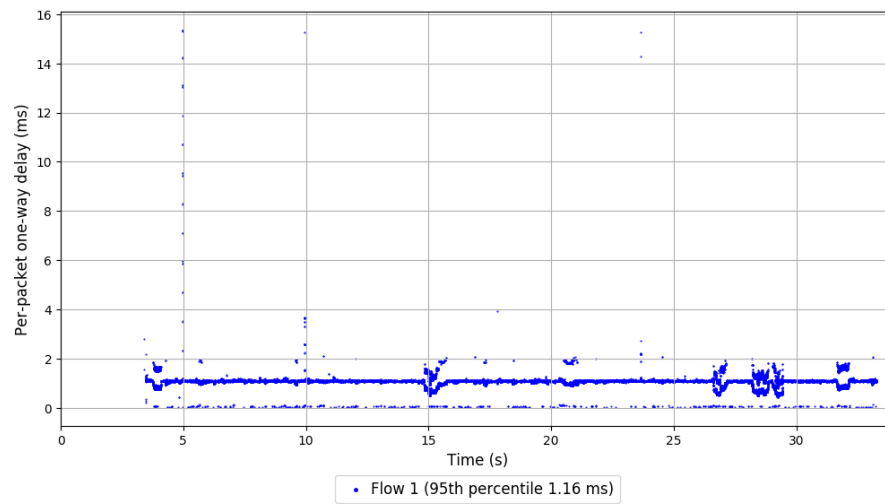
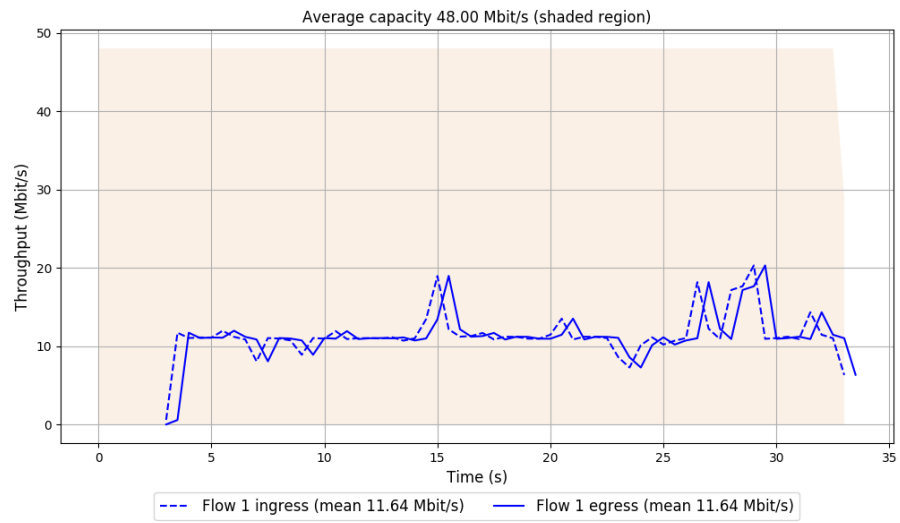


```
Run 1: Statistics of PCC-Expr

Start at: 2022-04-05 20:28:05
End at: 2022-04-05 20:28:35

# Below is generated by plot.py at 2022-04-05 20:42:35
# Datalink statistics
-- Total of 1 flow:
Average capacity: 48.00 Mbit/s
Average throughput: 11.64 Mbit/s (24.2% utilization)
95th percentile per-packet one-way delay: 1.157 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.64 Mbit/s
95th percentile per-packet one-way delay: 1.157 ms
Loss rate: 0.00%
```

Run 1: Report of PCC-Expr — Data Link

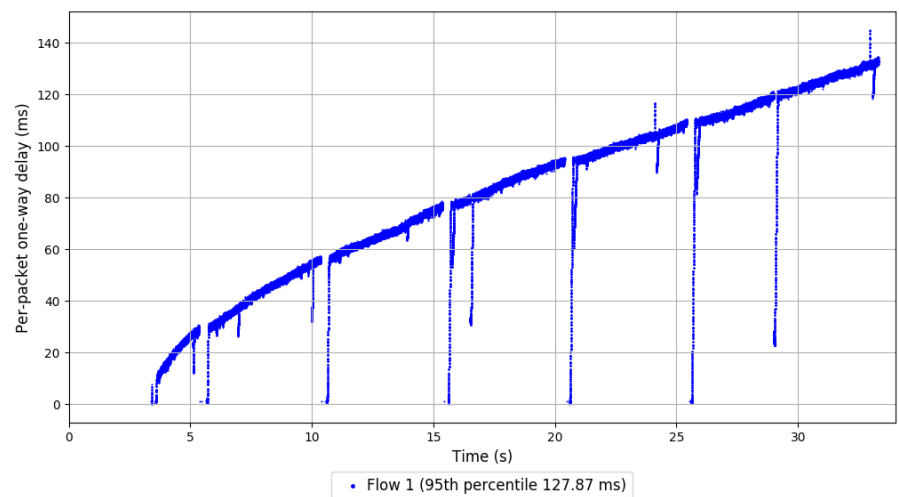
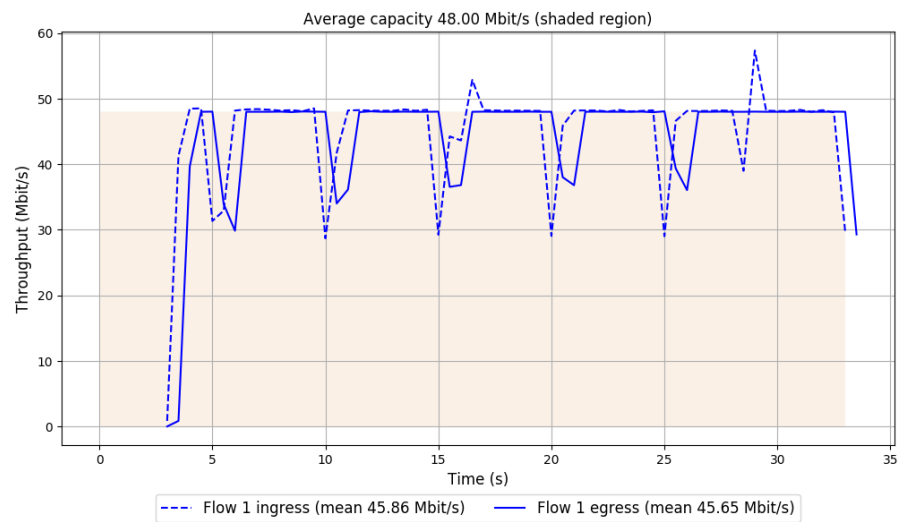


```
Run 1: Statistics of QUIC Cubic

Start at: 2022-04-05 20:25:10
End at: 2022-04-05 20:25:40

# Below is generated by plot.py at 2022-04-05 20:42:35
# Datalink statistics
-- Total of 1 flow:
Average capacity: 48.00 Mbit/s
Average throughput: 45.65 Mbit/s (95.1% utilization)
95th percentile per-packet one-way delay: 127.868 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 45.65 Mbit/s
95th percentile per-packet one-way delay: 127.868 ms
Loss rate: 0.46%
```

Run 1: Report of QUIC Cubic — Data Link

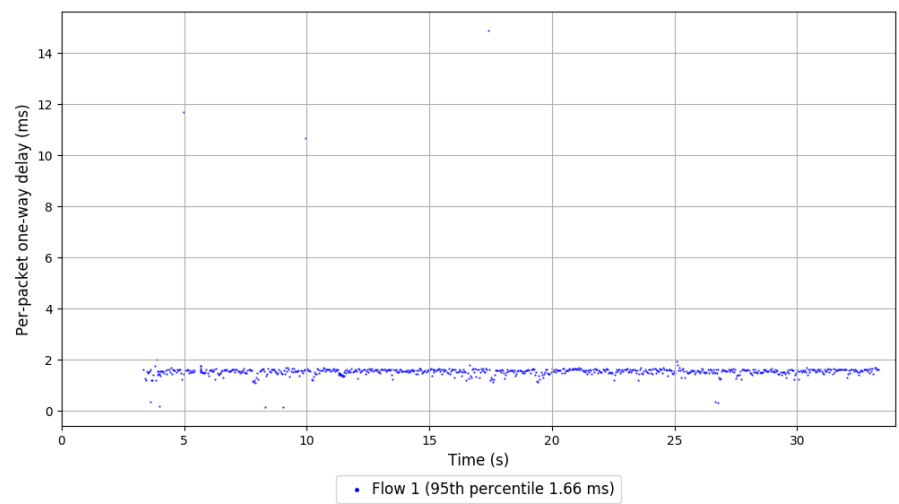
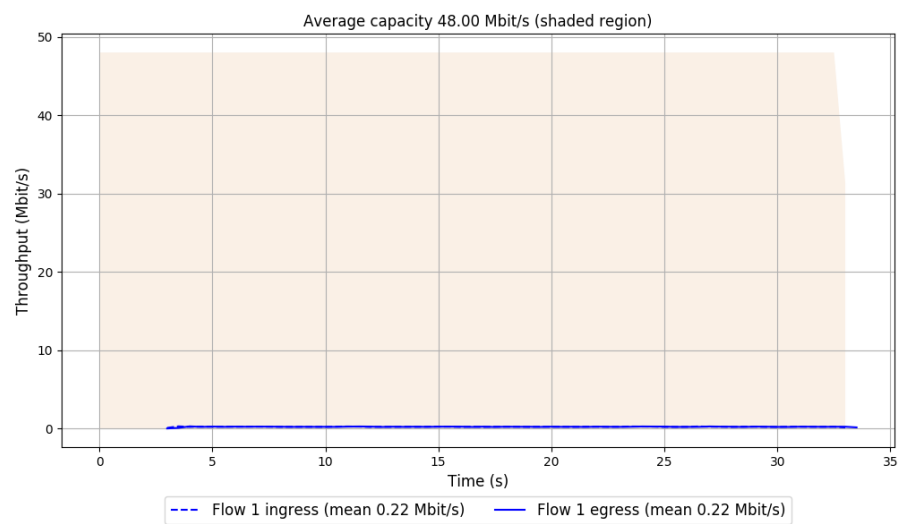


```
Run 1: Statistics of SCReAM

Start at: 2022-04-05 20:23:29
End at: 2022-04-05 20:23:59

# Below is generated by plot.py at 2022-04-05 20:42:35
# Datalink statistics
-- Total of 1 flow:
Average capacity: 48.00 Mbit/s
Average throughput: 0.22 Mbit/s (0.5% utilization)
95th percentile per-packet one-way delay: 1.659 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.659 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2022-04-05 20:22:20

End at: 2022-04-05 20:22:50

Below is generated by plot.py at 2022-04-05 20:42:35

Datalink statistics

-- Total of 1 flow:

Average capacity: 48.00 Mbit/s

Average throughput: 42.63 Mbit/s (88.8% utilization)

95th percentile per-packet one-way delay: 18.621 ms

Loss rate: 0.02%

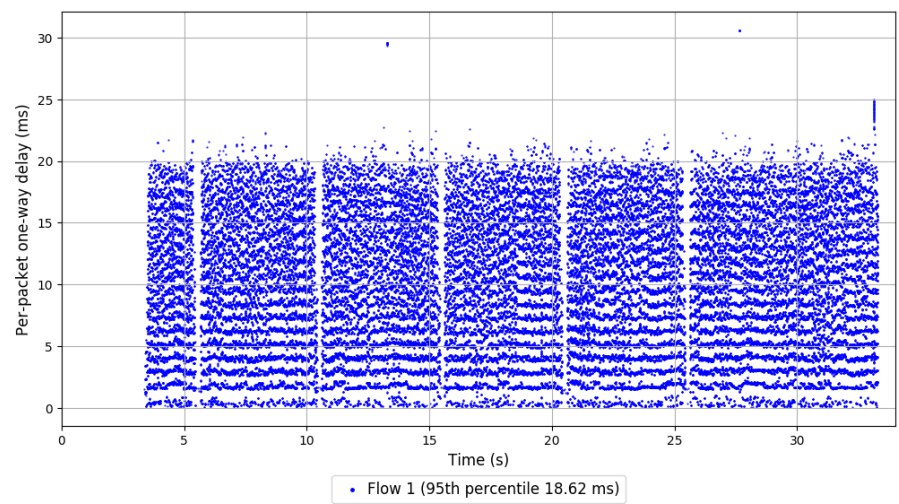
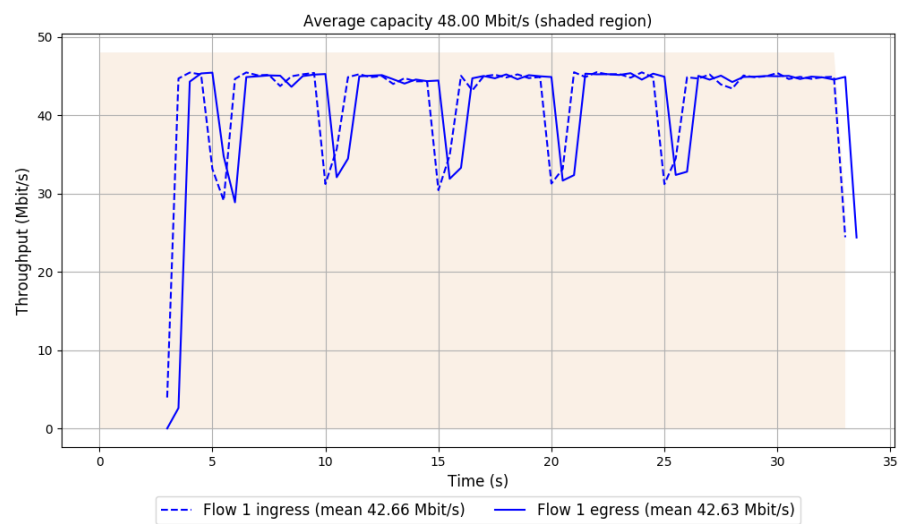
-- Flow 1:

Average throughput: 42.63 Mbit/s

95th percentile per-packet one-way delay: 18.621 ms

Loss rate: 0.02%

Run 1: Report of Sprout — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2022-04-05 20:24:03

End at: 2022-04-05 20:24:33

Run 1: Report of TCP Vegas — Data Link

Figure is missing

Figure is missing

Run 1: Statistics of PCC-Vivace

Start at: 2022-04-05 20:22:55

End at: 2022-04-05 20:23:25

Below is generated by plot.py at 2022-04-05 20:42:35

Datalink statistics

-- Total of 1 flow:

Average capacity: 48.00 Mbit/s

Average throughput: 15.17 Mbit/s (31.6% utilization)

95th percentile per-packet one-way delay: 1.783 ms

Loss rate: 0.00%

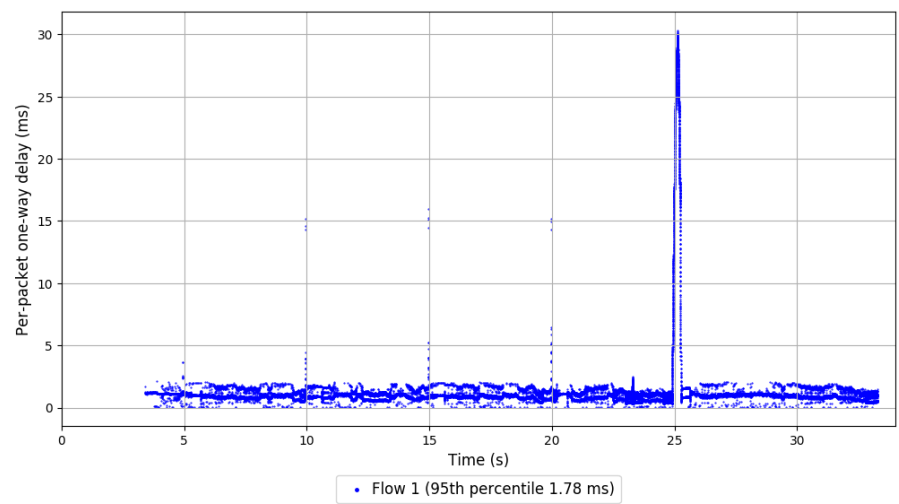
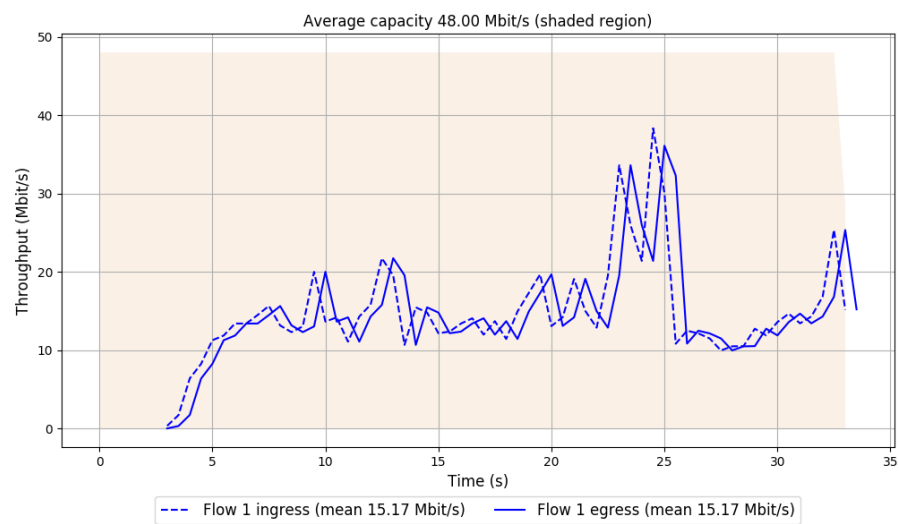
-- Flow 1:

Average throughput: 15.17 Mbit/s

95th percentile per-packet one-way delay: 1.783 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



```
Run 1: Statistics of WebRTC media

Start at: 2022-04-05 20:26:55
End at: 2022-04-05 20:27:25

# Below is generated by plot.py at 2022-04-05 20:42:35
# Datalink statistics
-- Total of 1 flow:
Average capacity: 48.00 Mbit/s
Average throughput: 1.57 Mbit/s (3.3% utilization)
95th percentile per-packet one-way delay: 1.573 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 1.573 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

