

Pantheon Report

Generated at 2019-06-28 03:05:16 (UTC).
Tested in mahimahi: mm-link 12mbps.trace 12mbps.trace
Repeated the test of 18 congestion control schemes once.
Each test lasted for 30 seconds running 1 flow.

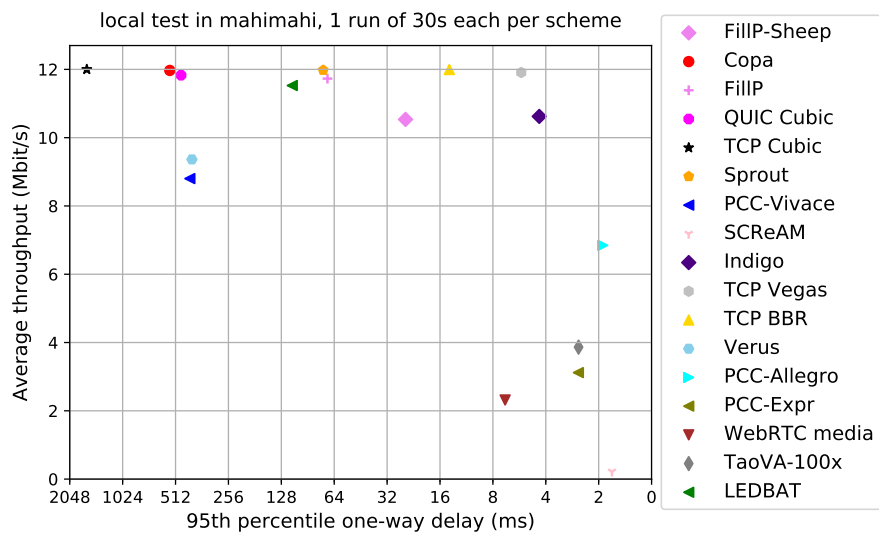
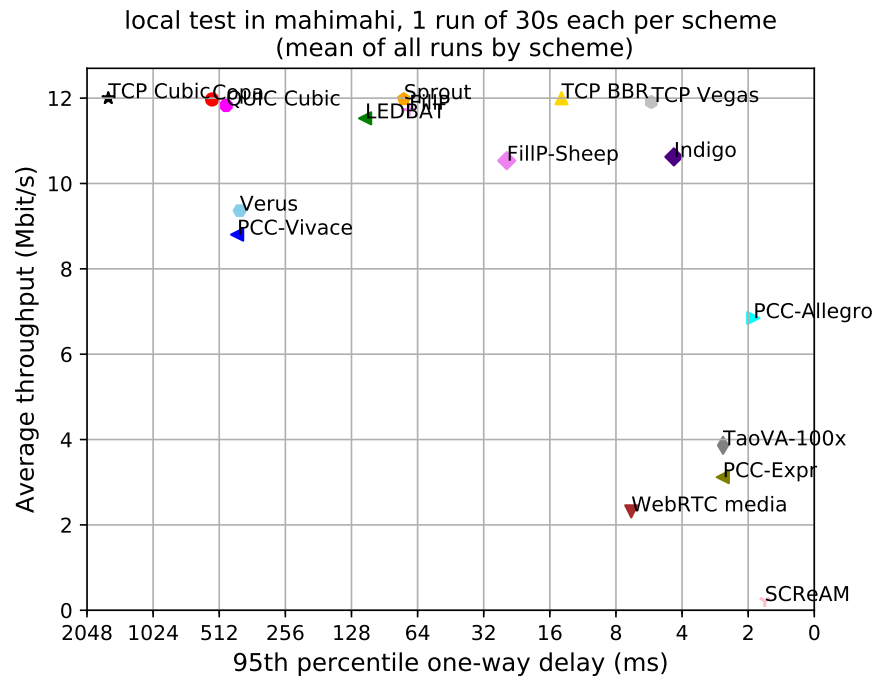
System info:

Linux 4.15.0-52-generic
net.core.default_qdisc = fq_codel
net.core.rmem_default = 212992
net.core.rmem_max = 212992
net.core.wmem_default = 212992
net.core.wmem_max = 212992
net.ipv4.tcp_rmem = 4096 87380 6291456
net.ipv4.tcp_wmem = 4096 16384 4194304

Git summary:

branch: master @ 6046651c5d8dab56af633e110c39c7dabf297a17
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/gold @ b6948a72b216f2705f13bf3b588bc5ab5ff8ff9a
third_party/goldLSTM @ 24ebd38b3679ed4ba5e939bf878e8816c40a109a
M sender-receiver/sender_receiver.egg-info/requires.txt
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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 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	1	12.00	14.16	0.04
Copa	1	11.97	551.90	1.98
TCP Cubic	1	12.00	1638.62	2.93
FillP	1	11.73	69.92	0.24
FillP-Sheep	1	10.53	25.14	0.04
GOLD	0	N/A	N/A	N/A
Indigo	1	10.62	4.36	0.01
LEDBAT	1	11.53	110.97	0.39
PCC-Allegro	1	6.85	1.84	0.01
PCC-Expr	1	3.12	2.61	0.00
QUIC Cubic	1	11.83	476.30	1.72
SCReAM	1	0.22	1.50	0.00
Sprout	1	11.98	73.95	0.24
TaoVA-100x	1	3.86	2.60	0.00
TCP Vegas	1	11.91	5.52	0.01
Verus	1	9.36	413.04	0.07
PCC-Vivace	1	8.80	424.56	0.00
WebRTC media	1	2.32	6.81	0.00

Run 1: Statistics of TCP BBR

Start at: 2019-06-28 02:41:03

End at: 2019-06-28 02:41:33

Below is generated by plot.py at 2019-06-28 03:04:46

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 12.00 Mbit/s (100.0% utilization)

95th percentile per-packet one-way delay: 14.156 ms

Loss rate: 0.04%

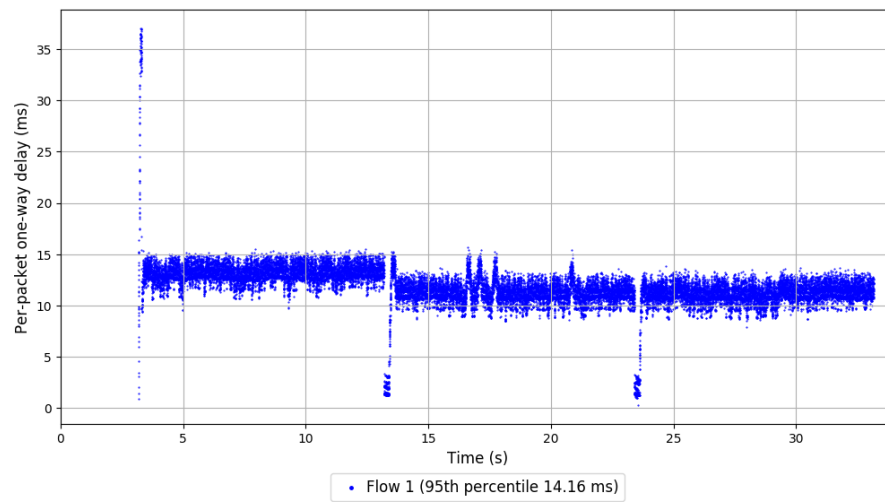
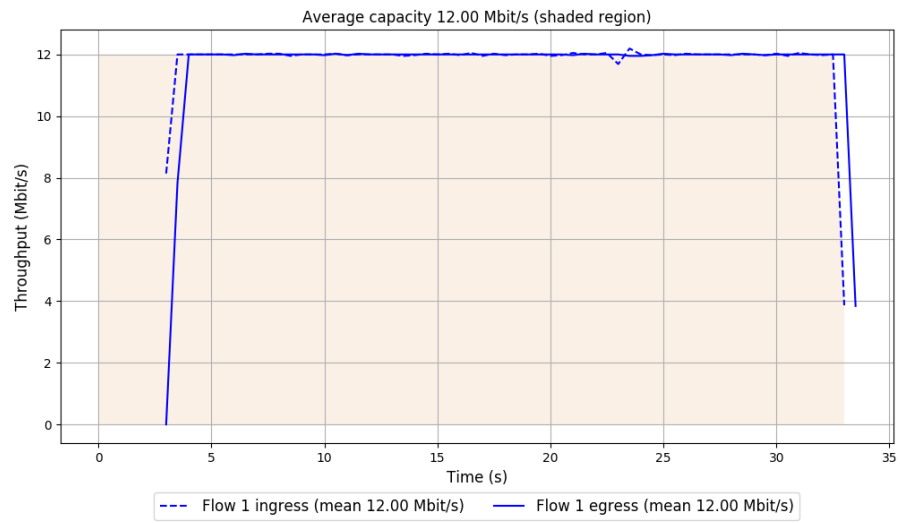
-- Flow 1:

Average throughput: 12.00 Mbit/s

95th percentile per-packet one-way delay: 14.156 ms

Loss rate: 0.04%

Run 1: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2019-06-28 02:36:29

End at: 2019-06-28 02:36:59

Below is generated by plot.py at 2019-06-28 03:04:50

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 11.97 Mbit/s (99.7% utilization)

95th percentile per-packet one-way delay: 551.903 ms

Loss rate: 1.98%

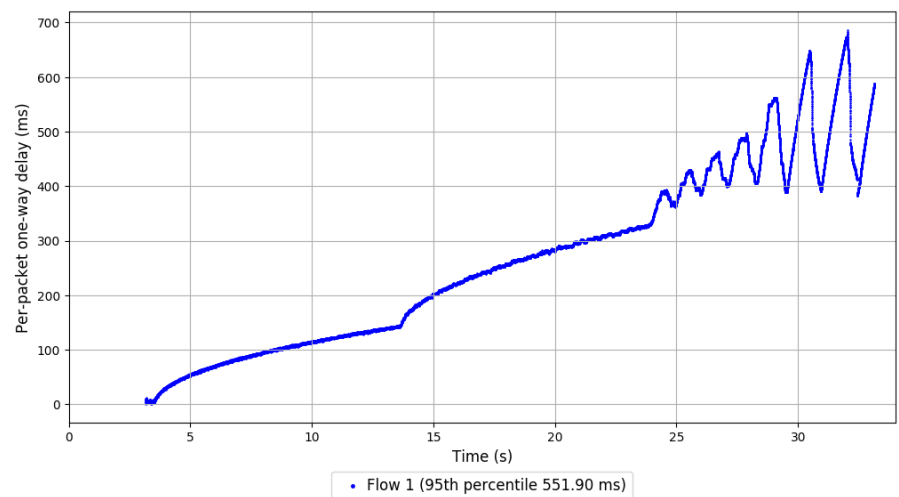
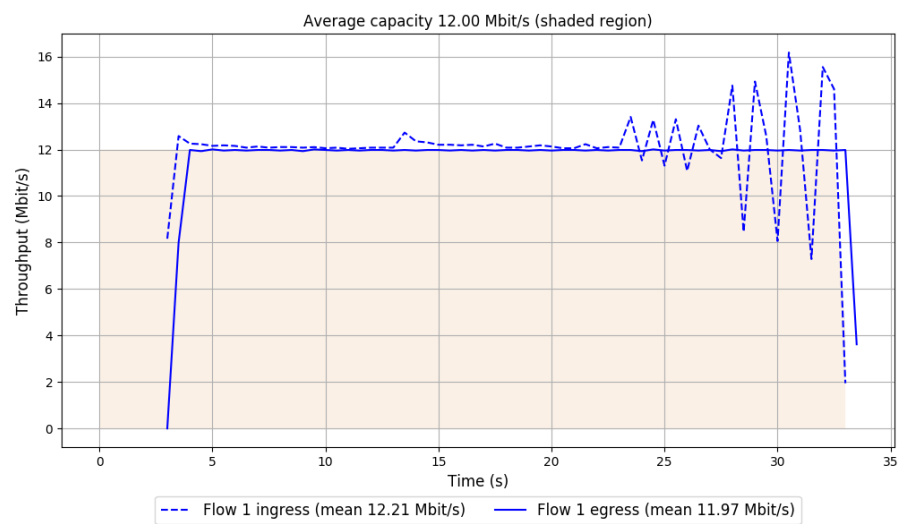
-- Flow 1:

Average throughput: 11.97 Mbit/s

95th percentile per-packet one-way delay: 551.903 ms

Loss rate: 1.98%

Run 1: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2019-06-28 02:38:46

End at: 2019-06-28 02:39:16

Below is generated by plot.py at 2019-06-28 03:04:50

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 12.00 Mbit/s (100.0% utilization)

95th percentile per-packet one-way delay: 1638.620 ms

Loss rate: 2.93%

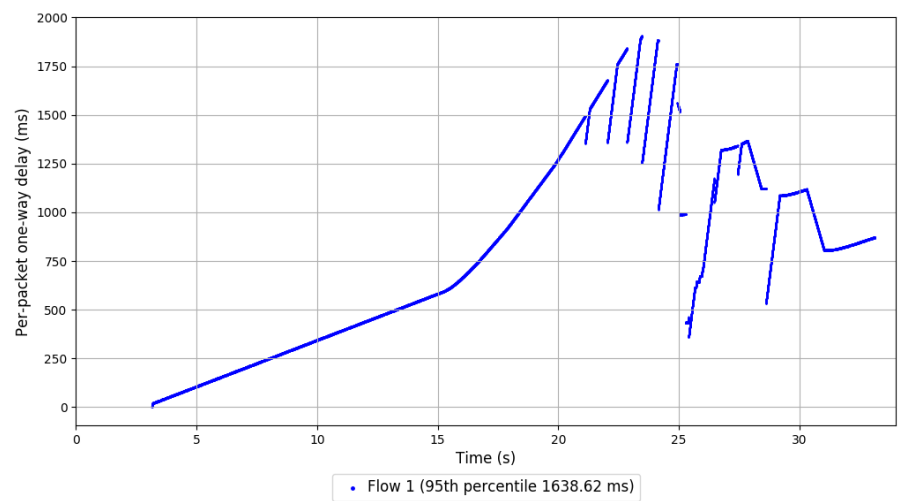
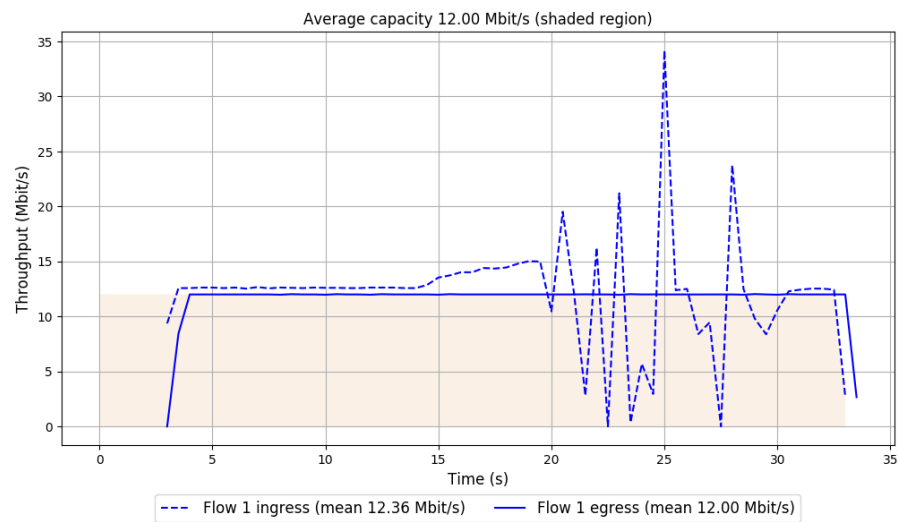
-- Flow 1:

Average throughput: 12.00 Mbit/s

95th percentile per-packet one-way delay: 1638.620 ms

Loss rate: 2.93%

Run 1: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2019-06-28 02:42:12

End at: 2019-06-28 02:42:42

Below is generated by plot.py at 2019-06-28 03:04:50

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 11.73 Mbit/s (97.7% utilization)

95th percentile per-packet one-way delay: 69.917 ms

Loss rate: 0.24%

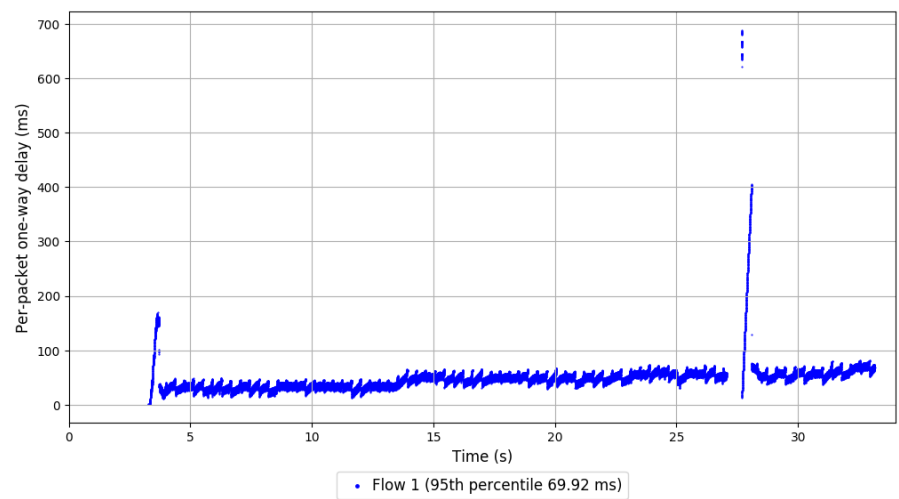
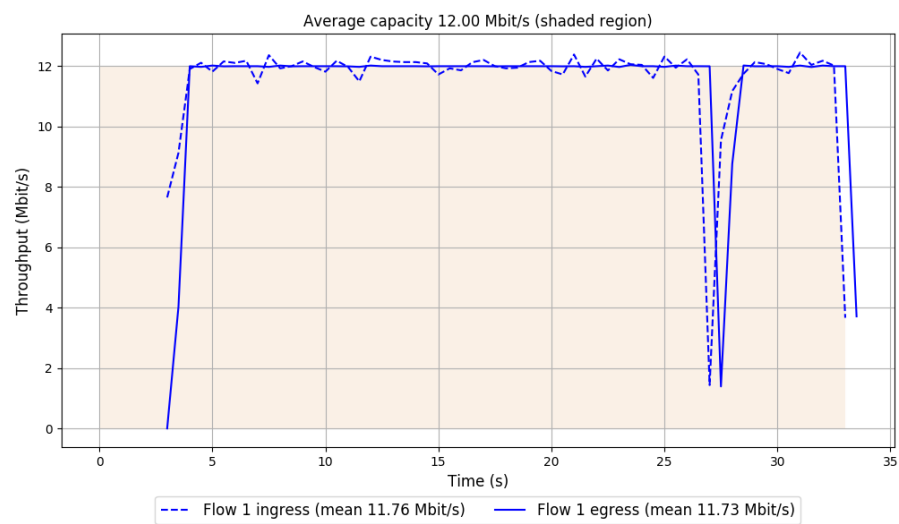
-- Flow 1:

Average throughput: 11.73 Mbit/s

95th percentile per-packet one-way delay: 69.917 ms

Loss rate: 0.24%

Run 1: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2019-06-28 02:35:55

End at: 2019-06-28 02:36:25

Below is generated by plot.py at 2019-06-28 03:04:57

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 10.53 Mbit/s (87.8% utilization)

95th percentile per-packet one-way delay: 25.137 ms

Loss rate: 0.04%

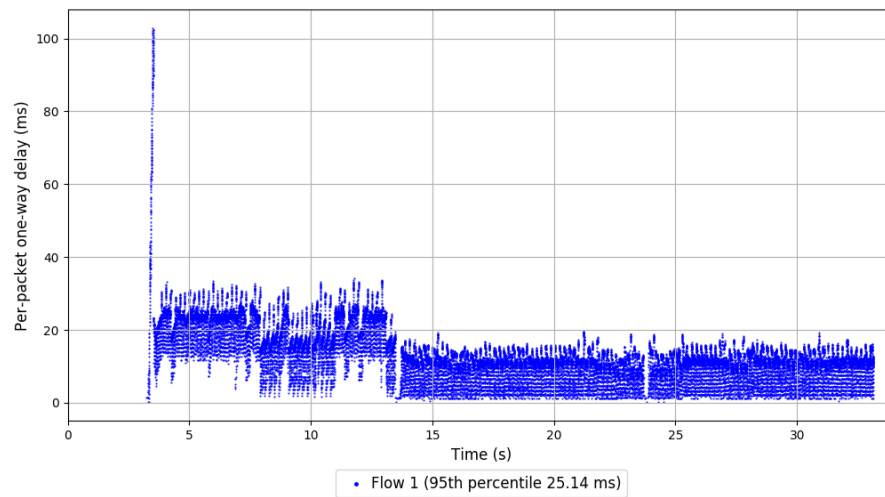
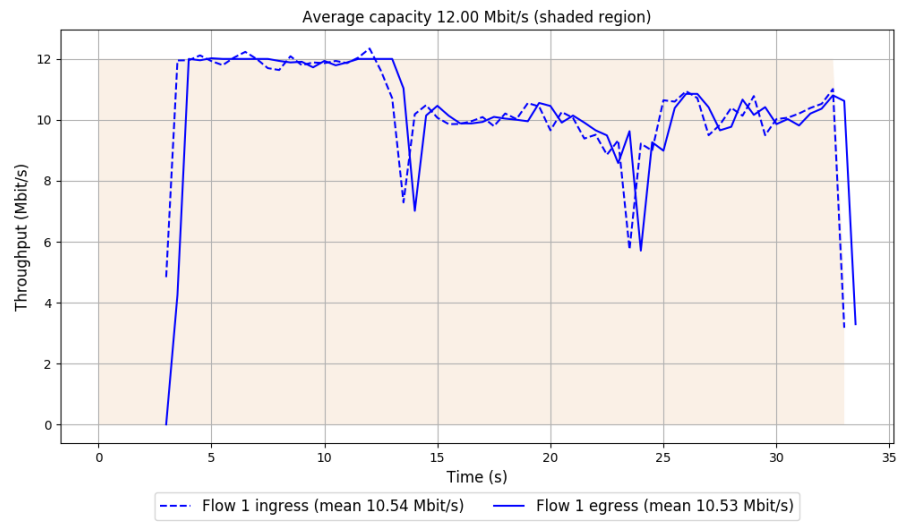
-- Flow 1:

Average throughput: 10.53 Mbit/s

95th percentile per-packet one-way delay: 25.137 ms

Loss rate: 0.04%

Run 1: Report of FillP-Sheep — Data Link



Run 1: Statistics of GOLD

Start at: 2019-06-28 02:38:13

End at: 2019-06-28 02:38:43

Run 1: Report of GOLD — Data Link

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Figure is missing

Run 1: Statistics of Indigo

Start at: 2019-06-28 02:37:04

End at: 2019-06-28 02:37:34

Below is generated by plot.py at 2019-06-28 03:04:57

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 10.62 Mbit/s (88.5% utilization)

95th percentile per-packet one-way delay: 4.357 ms

Loss rate: 0.01%

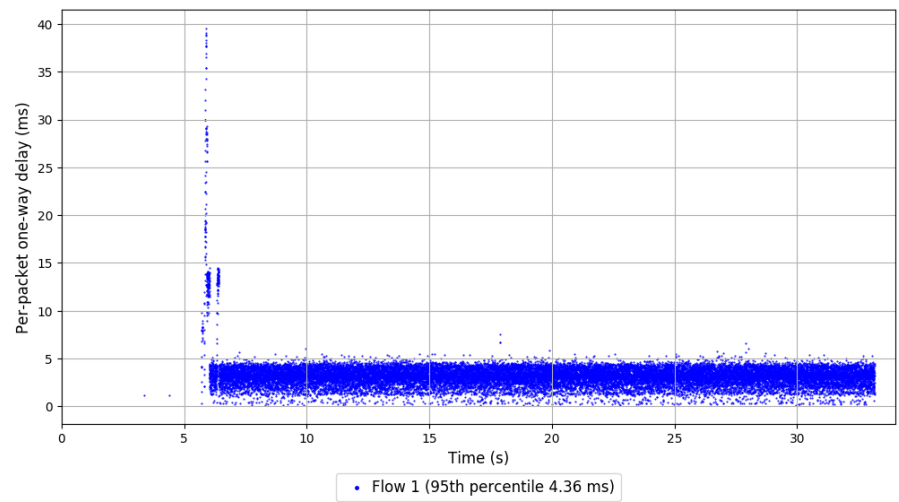
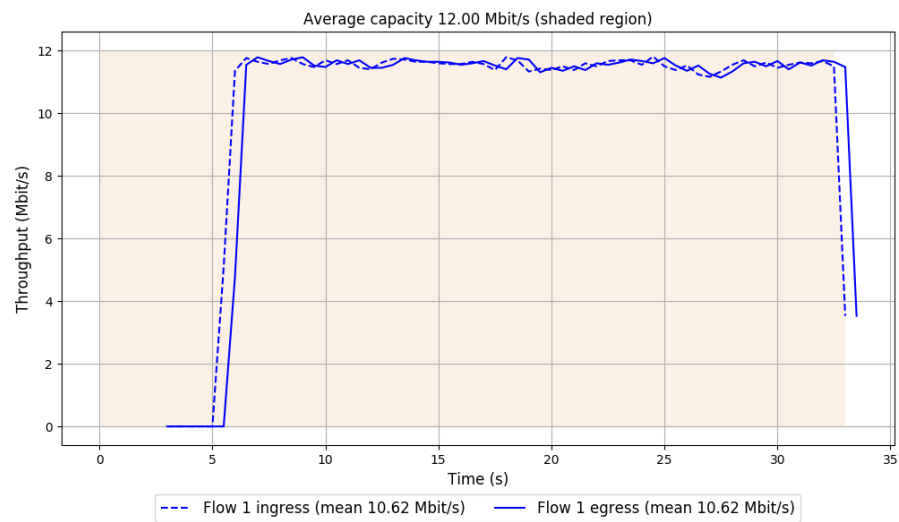
-- Flow 1:

Average throughput: 10.62 Mbit/s

95th percentile per-packet one-way delay: 4.357 ms

Loss rate: 0.01%

Run 1: Report of Indigo — Data Link

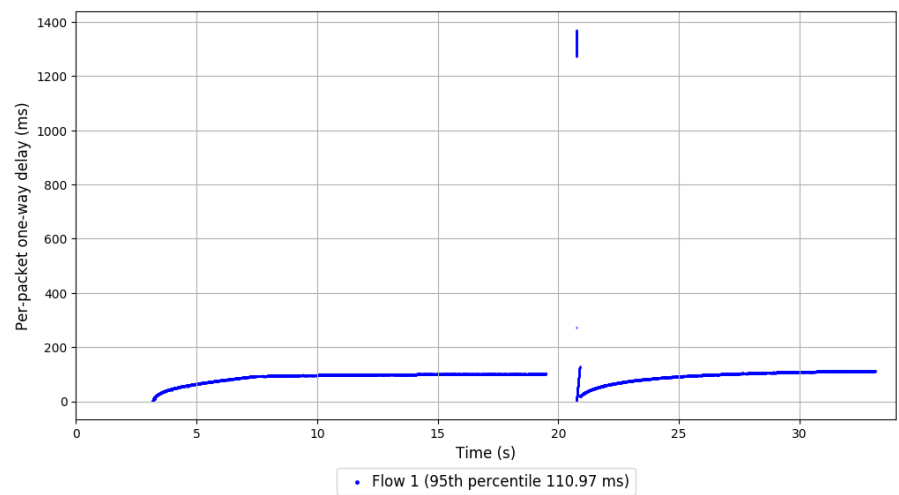
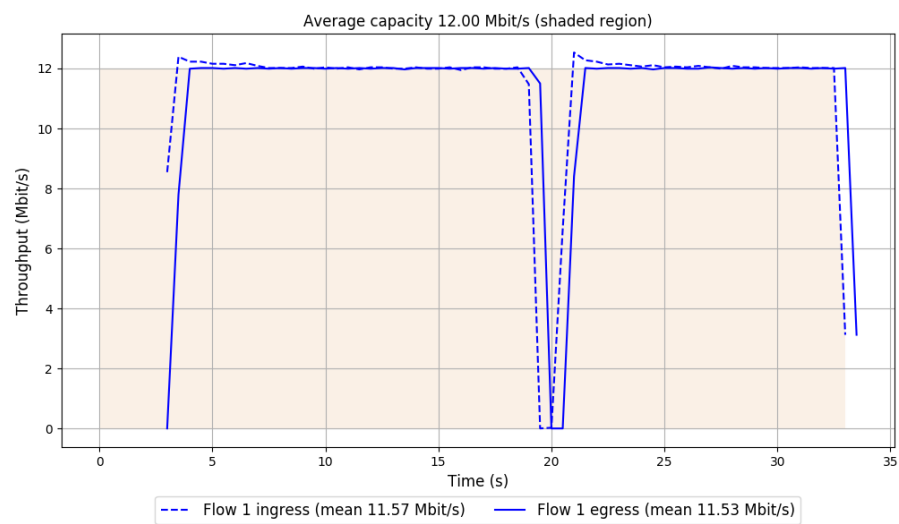


```
Run 1: Statistics of LEDBAT

Start at: 2019-06-28 02:45:02
End at: 2019-06-28 02:45:32

# Below is generated by plot.py at 2019-06-28 03:04:57
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 11.53 Mbit/s (96.1% utilization)
95th percentile per-packet one-way delay: 110.965 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 11.53 Mbit/s
95th percentile per-packet one-way delay: 110.965 ms
Loss rate: 0.39%
```

Run 1: Report of LEDBAT — Data Link

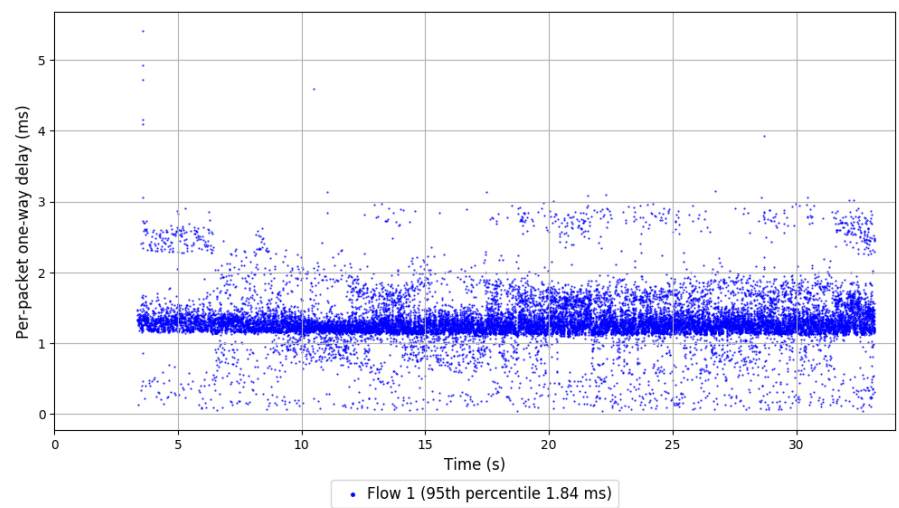
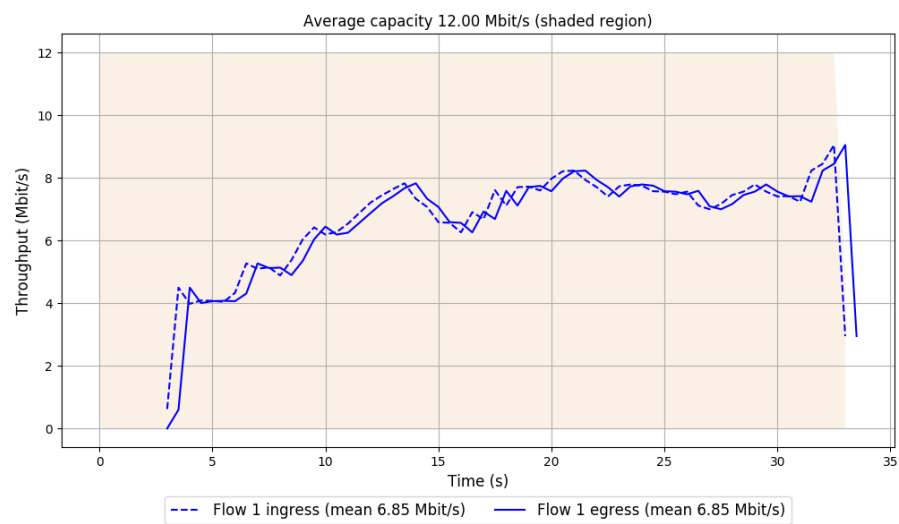


```
Run 1: Statistics of PCC-Allegro

Start at: 2019-06-28 02:43:54
End at: 2019-06-28 02:44:24

# Below is generated by plot.py at 2019-06-28 03:04:58
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 6.85 Mbit/s (57.1% utilization)
95th percentile per-packet one-way delay: 1.844 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 6.85 Mbit/s
95th percentile per-packet one-way delay: 1.844 ms
Loss rate: 0.01%
```

Run 1: Report of PCC-Allegro — Data Link

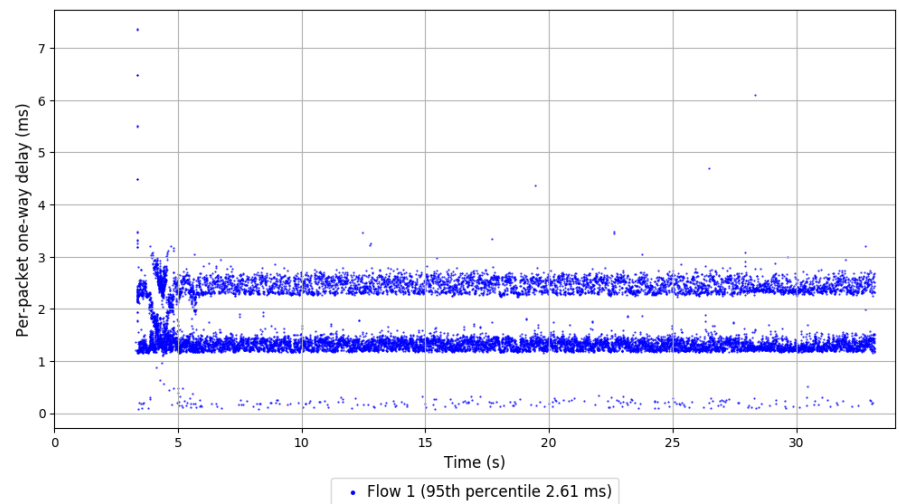
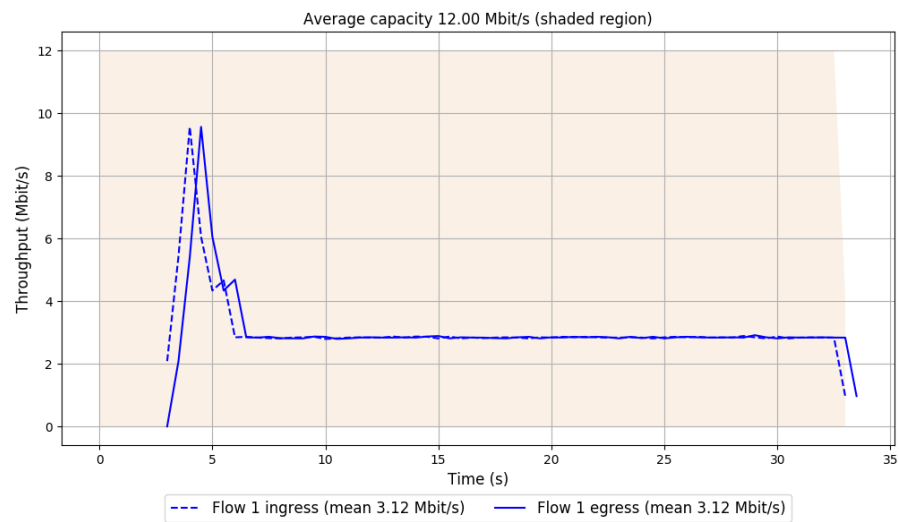


```
Run 1: Statistics of PCC-Expr

Start at: 2019-06-28 02:45:36
End at: 2019-06-28 02:46:06

# Below is generated by plot.py at 2019-06-28 03:04:59
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 3.12 Mbit/s (26.0% utilization)
95th percentile per-packet one-way delay: 2.610 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 2.610 ms
Loss rate: 0.00%
```

Run 1: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-06-28 02:43:20

End at: 2019-06-28 02:43:50

Below is generated by plot.py at 2019-06-28 03:05:04

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 11.83 Mbit/s (98.6% utilization)

95th percentile per-packet one-way delay: 476.303 ms

Loss rate: 1.72%

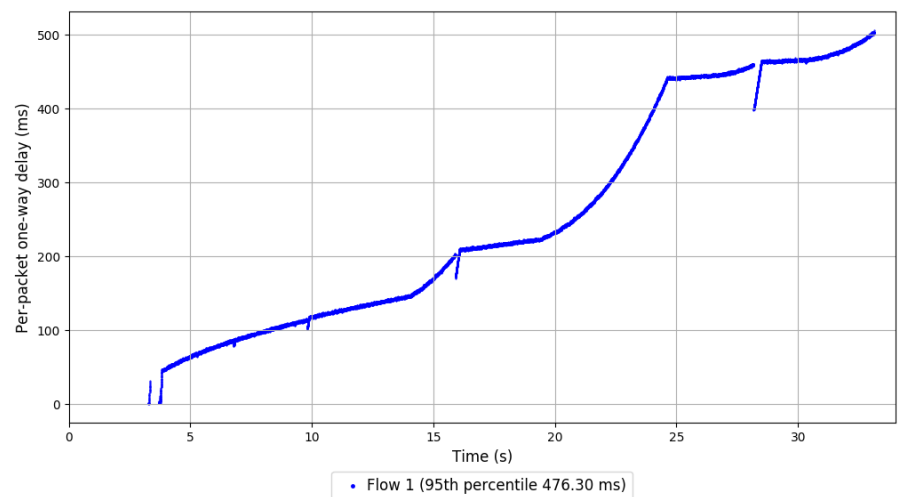
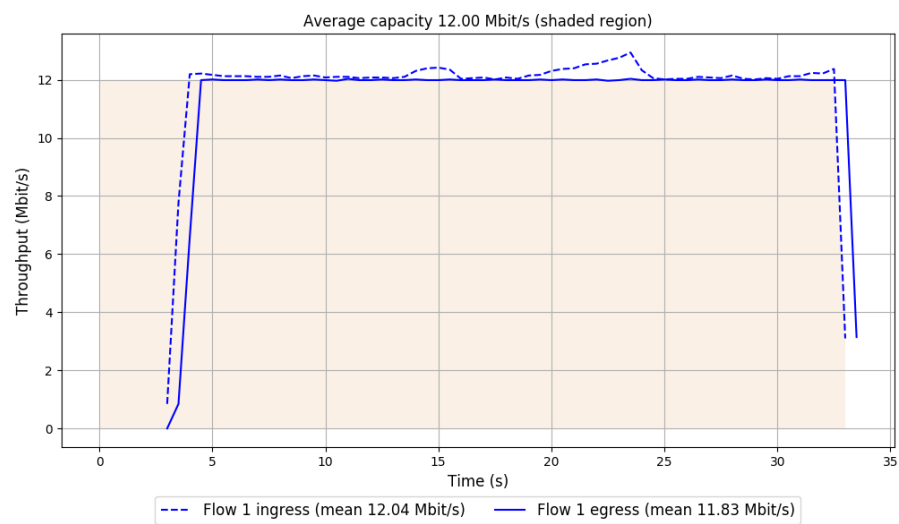
-- Flow 1:

Average throughput: 11.83 Mbit/s

95th percentile per-packet one-way delay: 476.303 ms

Loss rate: 1.72%

Run 1: Report of QUIC Cubic — Data Link

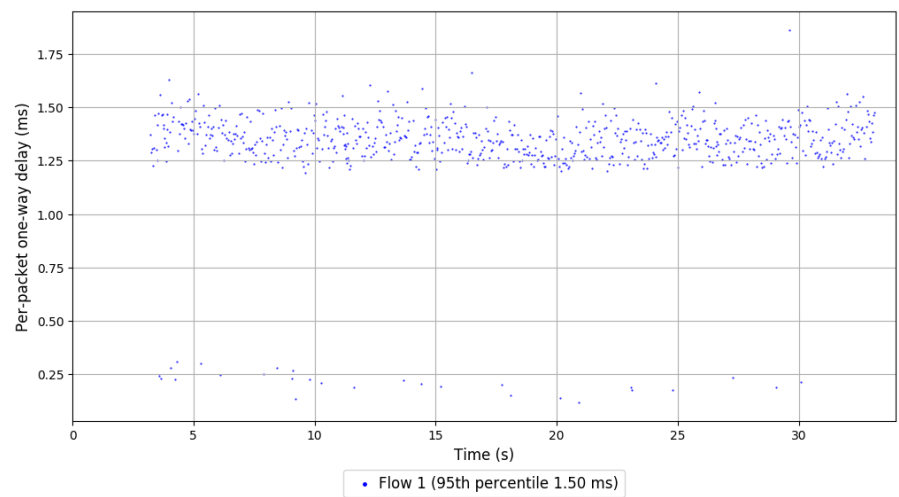
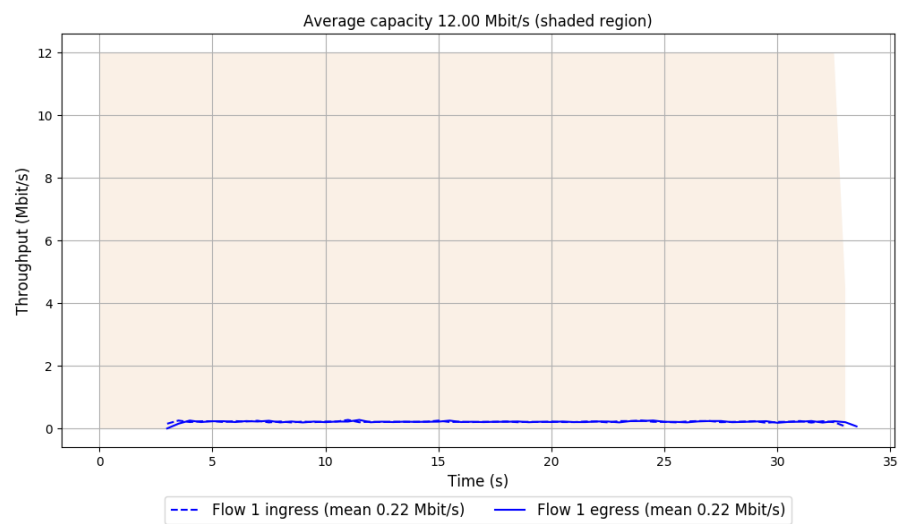


```
Run 1: Statistics of SCReAM

Start at: 2019-06-28 02:42:46
End at: 2019-06-28 02:43:16

# Below is generated by plot.py at 2019-06-28 03:05:04
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 0.22 Mbit/s (1.8% utilization)
95th percentile per-packet one-way delay: 1.499 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.499 ms
Loss rate: 0.00%
```

Run 1: Report of SCRaM — Data Link



Run 1: Statistics of Sprout

Start at: 2019-06-28 02:39:21

End at: 2019-06-28 02:39:51

Below is generated by plot.py at 2019-06-28 03:05:08

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 11.98 Mbit/s (99.8% utilization)

95th percentile per-packet one-way delay: 73.951 ms

Loss rate: 0.24%

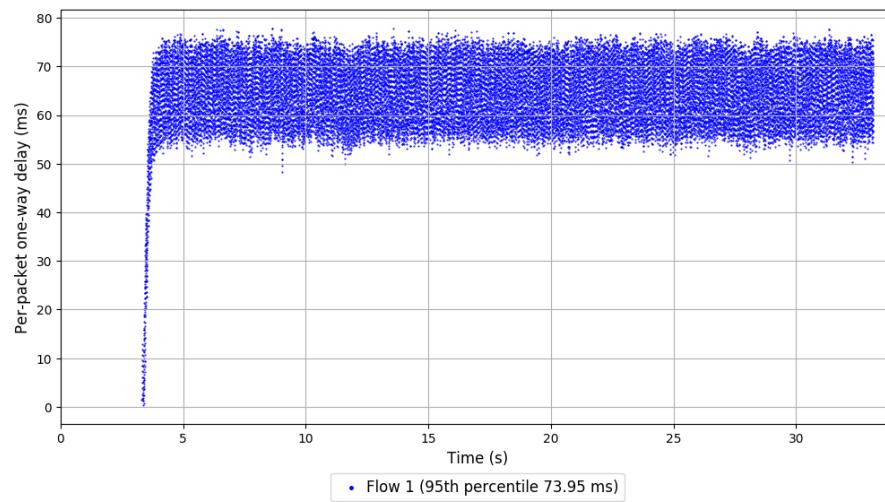
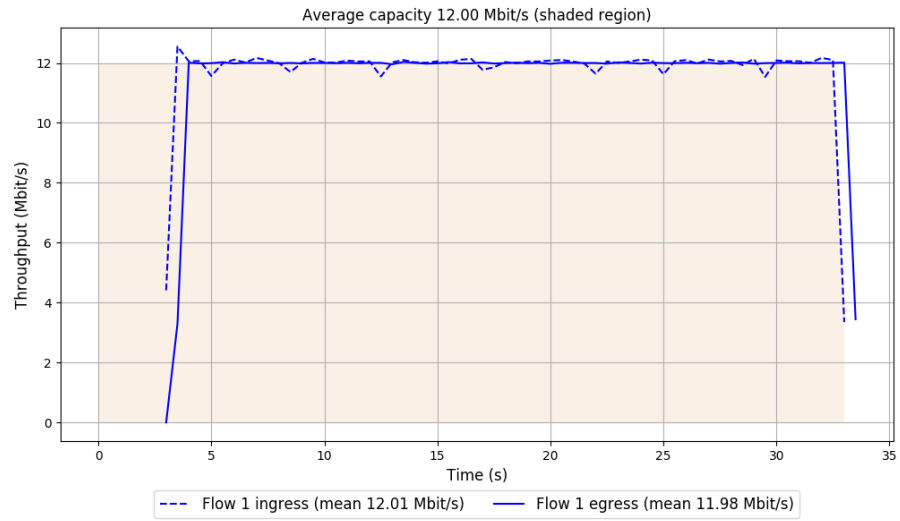
-- Flow 1:

Average throughput: 11.98 Mbit/s

95th percentile per-packet one-way delay: 73.951 ms

Loss rate: 0.24%

Run 1: Report of Sprout — Data Link

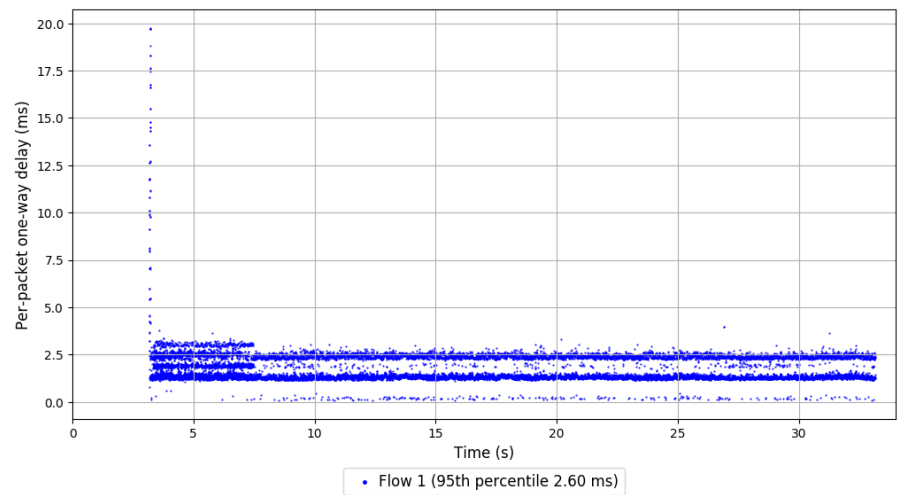
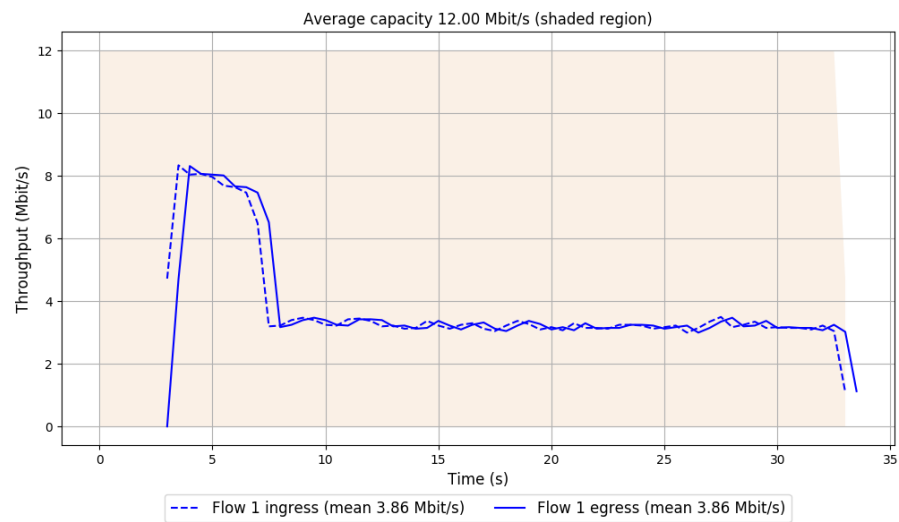


```
Run 1: Statistics of TaoVA-100x

Start at: 2019-06-28 02:41:37
End at: 2019-06-28 02:42:08

# Below is generated by plot.py at 2019-06-28 03:05:08
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 3.86 Mbit/s (32.2% utilization)
95th percentile per-packet one-way delay: 2.603 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.86 Mbit/s
95th percentile per-packet one-way delay: 2.603 ms
Loss rate: 0.00%
```

Run 1: Report of TaoVA-100x — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2019-06-28 02:40:29

End at: 2019-06-28 02:40:59

Below is generated by plot.py at 2019-06-28 03:05:11

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 11.91 Mbit/s (99.2% utilization)

95th percentile per-packet one-way delay: 5.518 ms

Loss rate: 0.01%

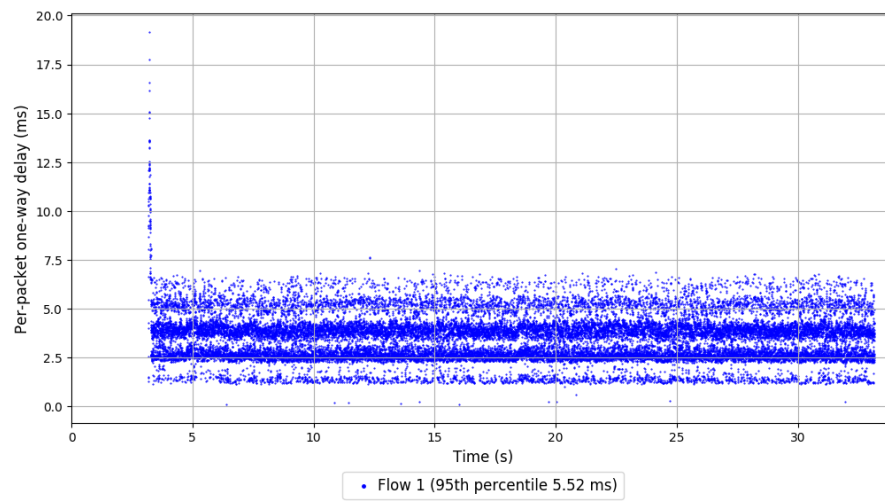
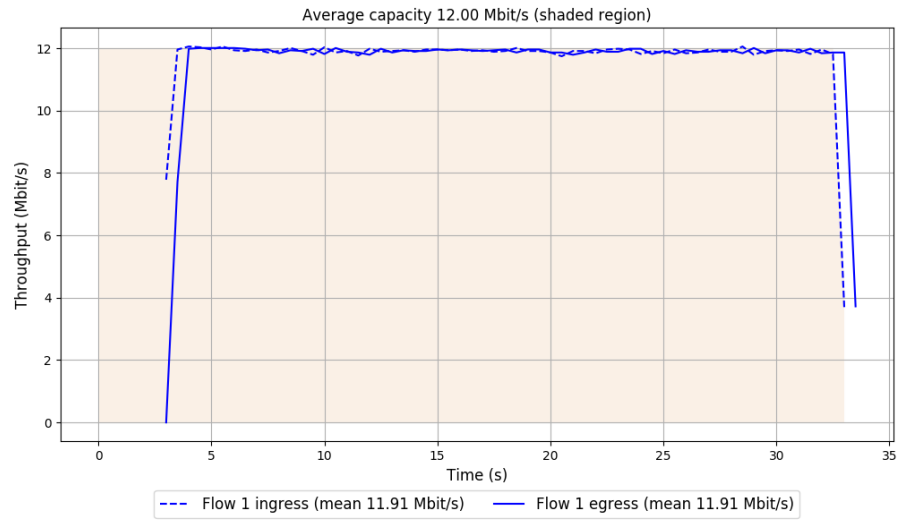
-- Flow 1:

Average throughput: 11.91 Mbit/s

95th percentile per-packet one-way delay: 5.518 ms

Loss rate: 0.01%

Run 1: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2019-06-28 02:37:38

End at: 2019-06-28 02:38:08

Below is generated by plot.py at 2019-06-28 03:05:12

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 9.36 Mbit/s (78.0% utilization)

95th percentile per-packet one-way delay: 413.036 ms

Loss rate: 0.07%

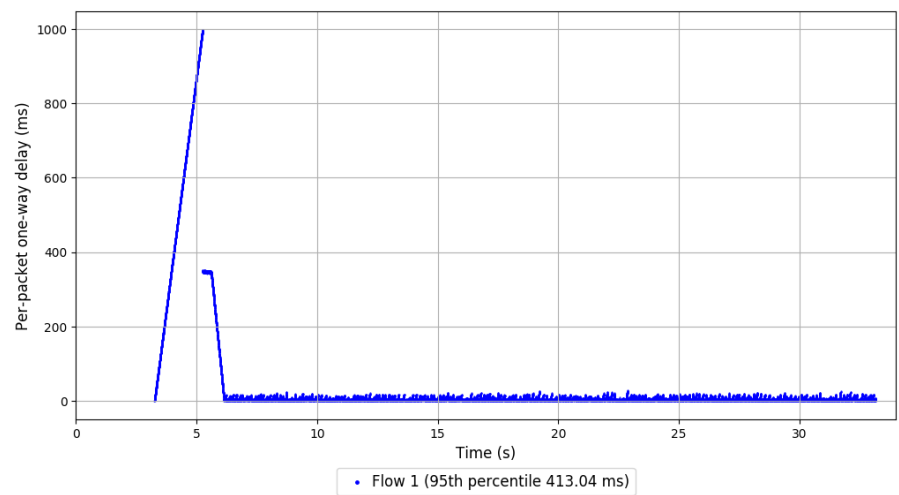
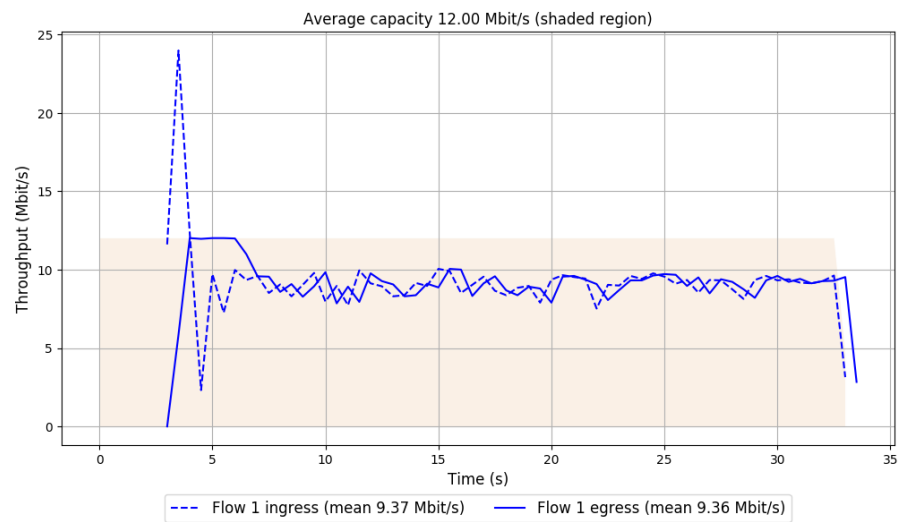
-- Flow 1:

Average throughput: 9.36 Mbit/s

95th percentile per-packet one-way delay: 413.036 ms

Loss rate: 0.07%

Run 1: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-06-28 02:39:55

End at: 2019-06-28 02:40:25

Below is generated by plot.py at 2019-06-28 03:05:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 12.00 Mbit/s

Average throughput: 8.80 Mbit/s (73.3% utilization)

95th percentile per-packet one-way delay: 424.559 ms

Loss rate: 0.00%

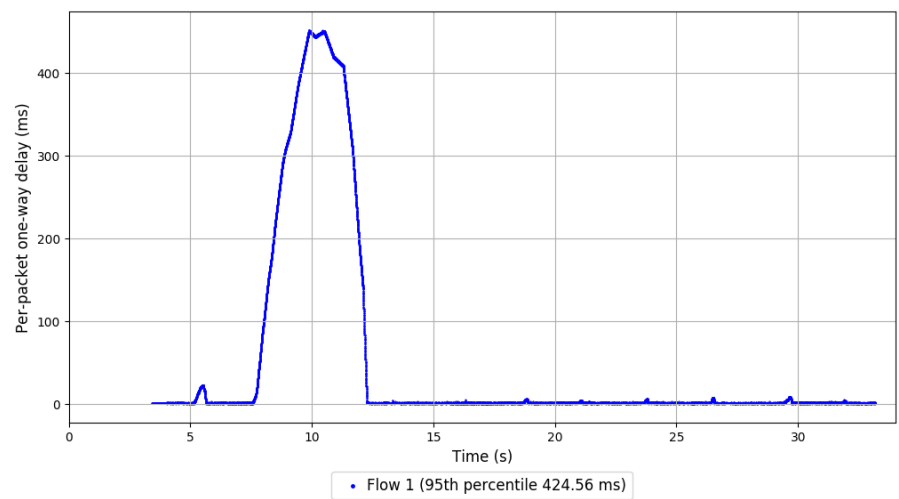
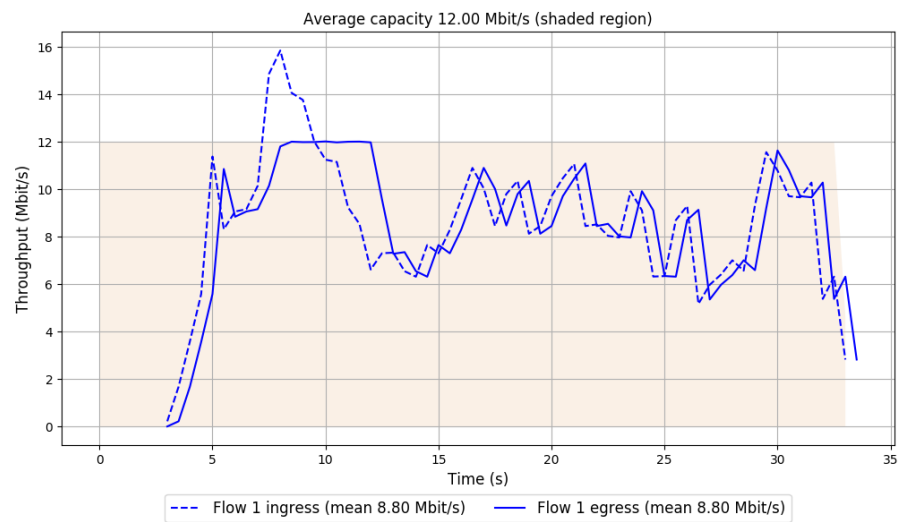
-- Flow 1:

Average throughput: 8.80 Mbit/s

95th percentile per-packet one-way delay: 424.559 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link



```
Run 1: Statistics of WebRTC media

Start at: 2019-06-28 02:44:28
End at: 2019-06-28 02:44:58

# Below is generated by plot.py at 2019-06-28 03:05:14
# Datalink statistics
-- Total of 1 flow:
Average capacity: 12.00 Mbit/s
Average throughput: 2.32 Mbit/s (19.3% utilization)
95th percentile per-packet one-way delay: 6.814 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 6.814 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

