

Pantheon Report

Generated at 2017-12-05 07:59:51 (UTC).

Data path: AWS California 1 Ethernet (*local*) → Stanford ppp0 (*remote*).

Repeated the test of 14 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

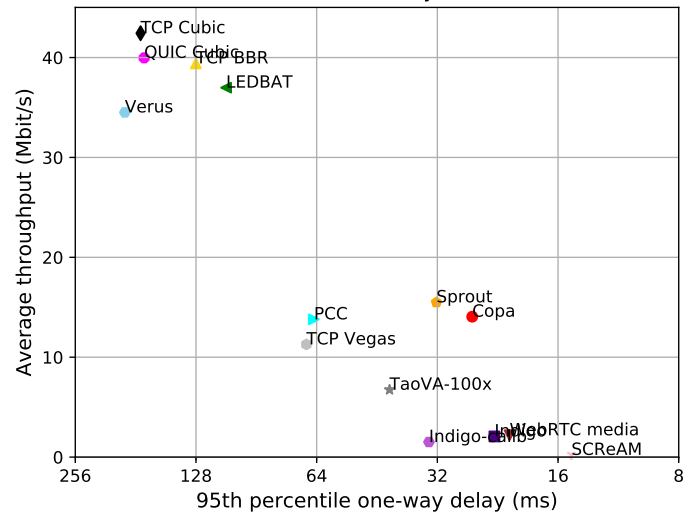
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

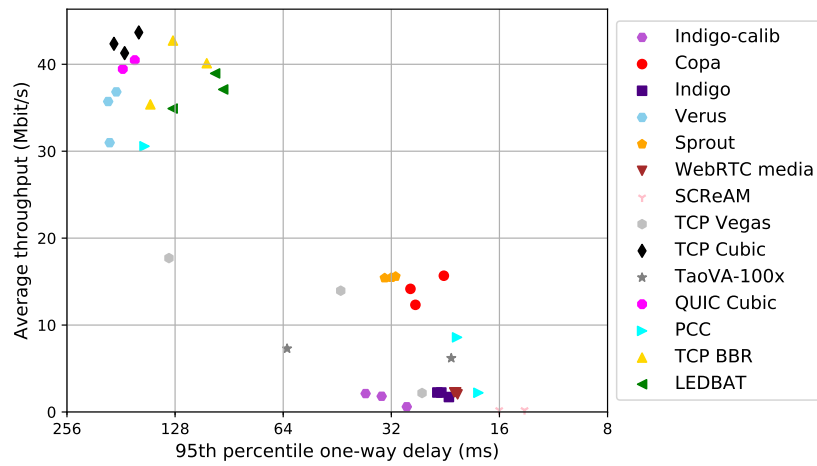
Git summary:

```
branch: indigos @ e3a57ad5ac5cfcaca0e3f983c8dd4cc3509e0262
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ b5b7c38e8391001927dc41c6cfa2627d03dde737
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fab936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaaeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  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/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from AWS California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	39.41	128.06	0.14
TCP Cubic	3	42.43	175.95	0.56
LEDBAT	3	36.99	107.69	0.16
PCC	3	13.79	65.00	0.59
QUIC Cubic	2	39.97	172.36	0.39
SCReAM	2	0.22	14.82	0.00
WebRTC media	3	2.19	21.14	0.00
Sprout	3	15.49	32.18	0.08
TaoVA-100x	2	6.75	42.11	0.16
TCP Vegas	3	11.28	67.89	0.00
Verus	3	34.51	192.59	11.62
Copa	3	14.06	26.19	0.00
Indigo	3	2.07	23.06	0.00
Indigo-calib	3	1.51	33.58	0.00

Run 1: Statistics of TCP BBR

Start at: 2017-12-05 07:08:45

End at: 2017-12-05 07:09:15

Local clock offset: 3.958 ms

Remote clock offset: -2.468 ms

Below is generated by plot.py at 2017-12-05 07:58:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 40.12 Mbit/s

95th percentile per-packet one-way delay: 104.476 ms

Loss rate: 0.12%

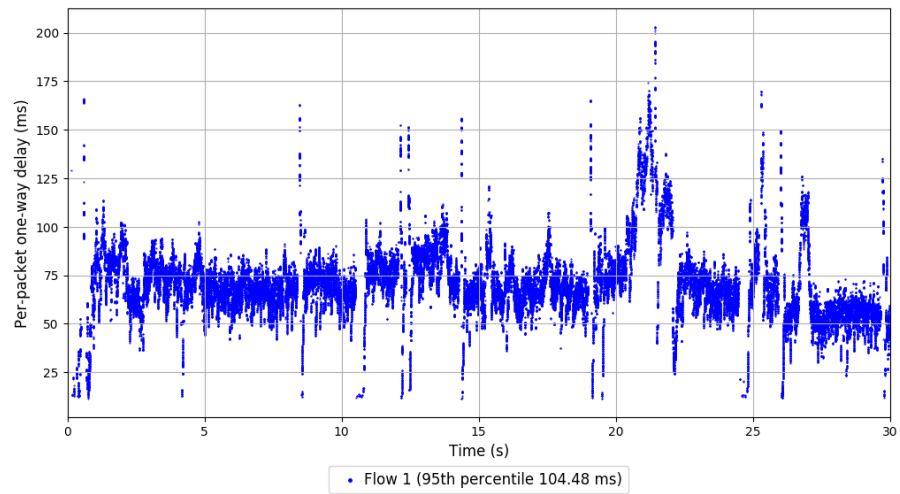
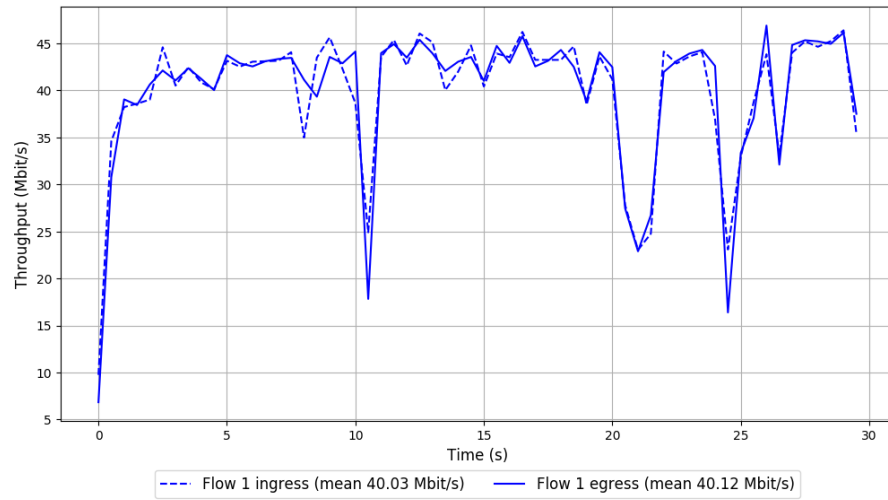
-- Flow 1:

Average throughput: 40.12 Mbit/s

95th percentile per-packet one-way delay: 104.476 ms

Loss rate: 0.12%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2017-12-05 07:25:20

End at: 2017-12-05 07:25:51

Local clock offset: 3.287 ms

Remote clock offset: -2.43 ms

Below is generated by plot.py at 2017-12-05 07:58:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 35.39 Mbit/s

95th percentile per-packet one-way delay: 149.973 ms

Loss rate: 0.22%

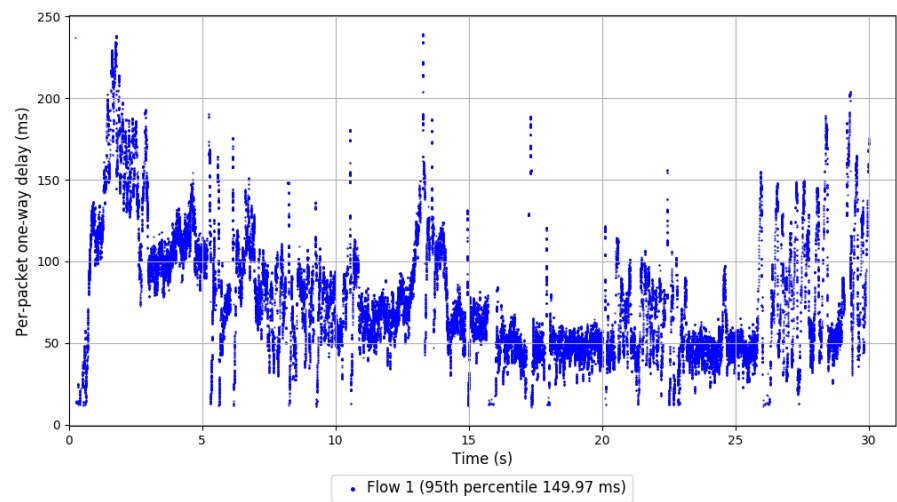
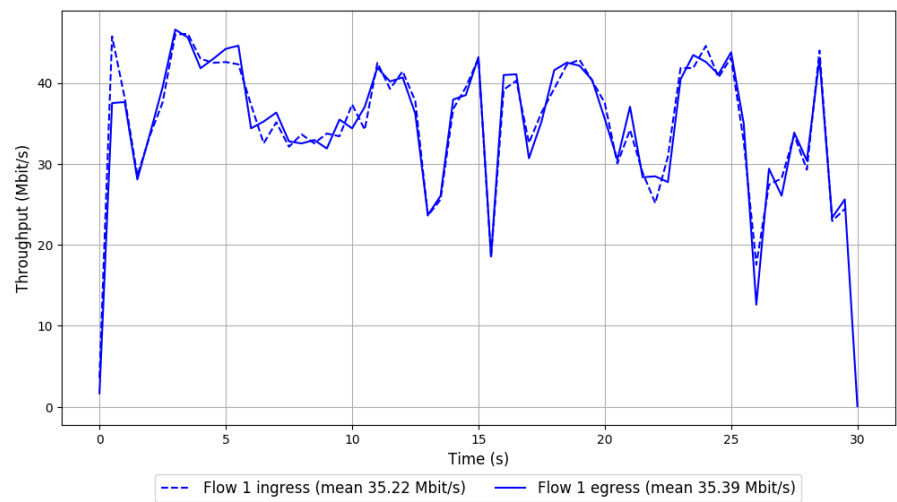
-- Flow 1:

Average throughput: 35.39 Mbit/s

95th percentile per-packet one-way delay: 149.973 ms

Loss rate: 0.22%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2017-12-05 07:41:58

End at: 2017-12-05 07:42:28

Local clock offset: 3.287 ms

Remote clock offset: -2.601 ms

Below is generated by plot.py at 2017-12-05 07:58:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 42.73 Mbit/s

95th percentile per-packet one-way delay: 129.730 ms

Loss rate: 0.08%

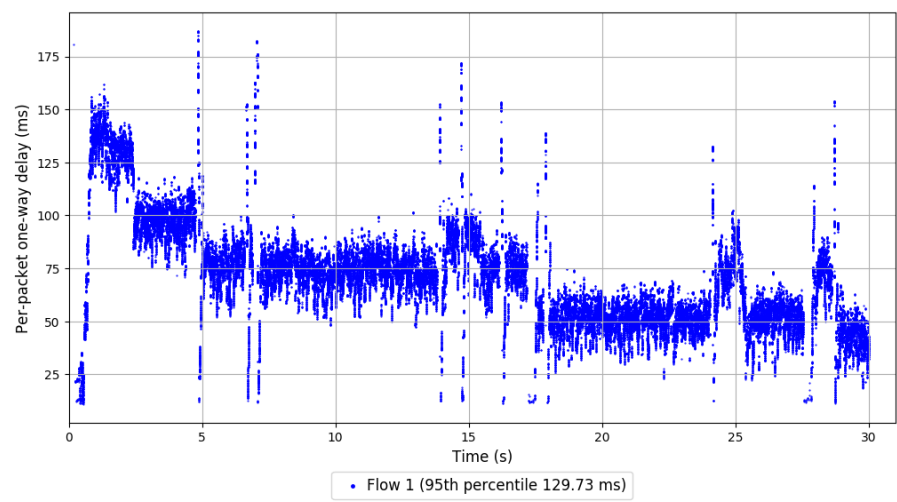
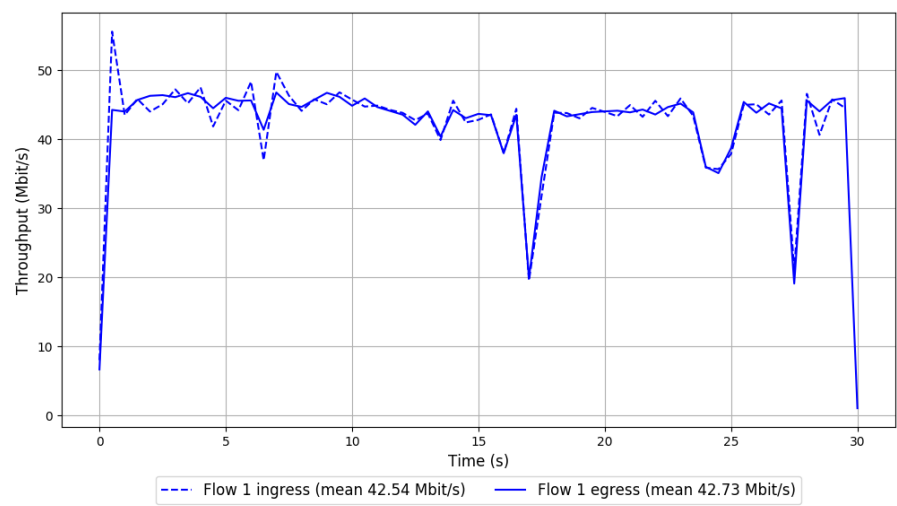
-- Flow 1:

Average throughput: 42.73 Mbit/s

95th percentile per-packet one-way delay: 129.730 ms

Loss rate: 0.08%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2017-12-05 07:21:47

End at: 2017-12-05 07:22:17

Local clock offset: 3.509 ms

Remote clock offset: -2.328 ms

Below is generated by plot.py at 2017-12-05 07:58:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 42.35 Mbit/s

95th percentile per-packet one-way delay: 189.412 ms

Loss rate: 0.46%

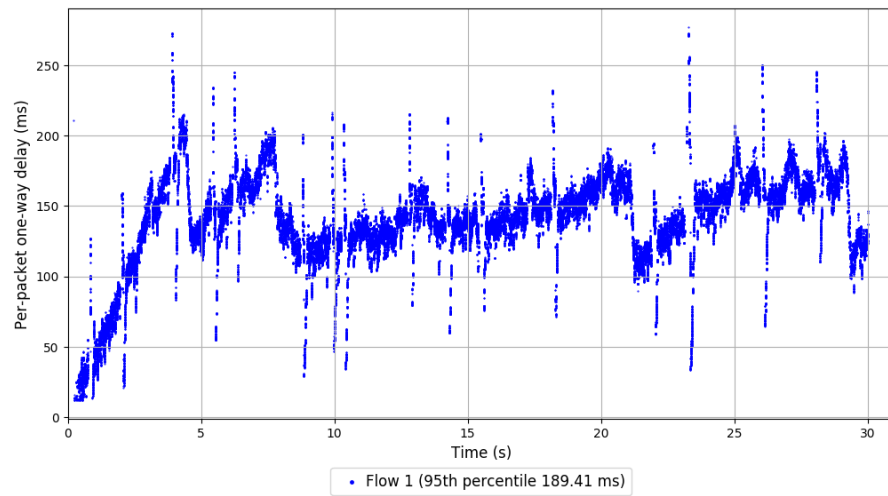
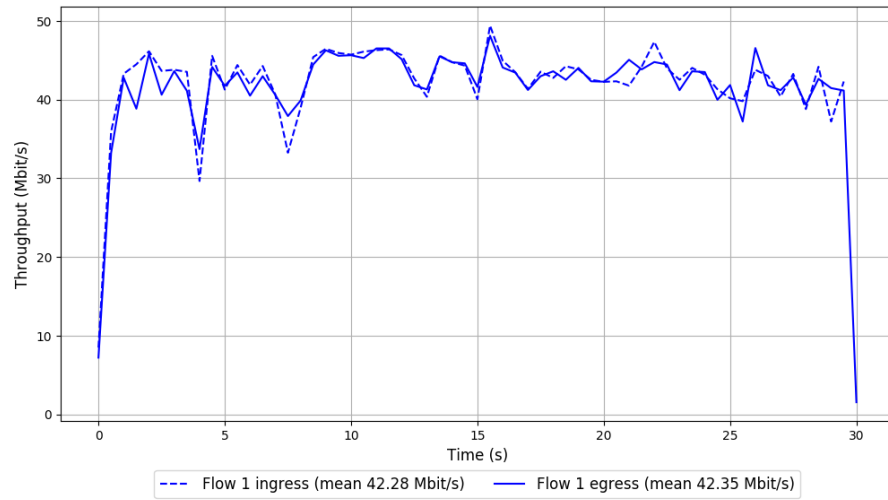
-- Flow 1:

Average throughput: 42.35 Mbit/s

95th percentile per-packet one-way delay: 189.412 ms

Loss rate: 0.46%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2017-12-05 07:38:24

End at: 2017-12-05 07:38:54

Local clock offset: 3.148 ms

Remote clock offset: -2.545 ms

Below is generated by plot.py at 2017-12-05 07:58:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 43.66 Mbit/s

95th percentile per-packet one-way delay: 161.543 ms

Loss rate: 0.65%

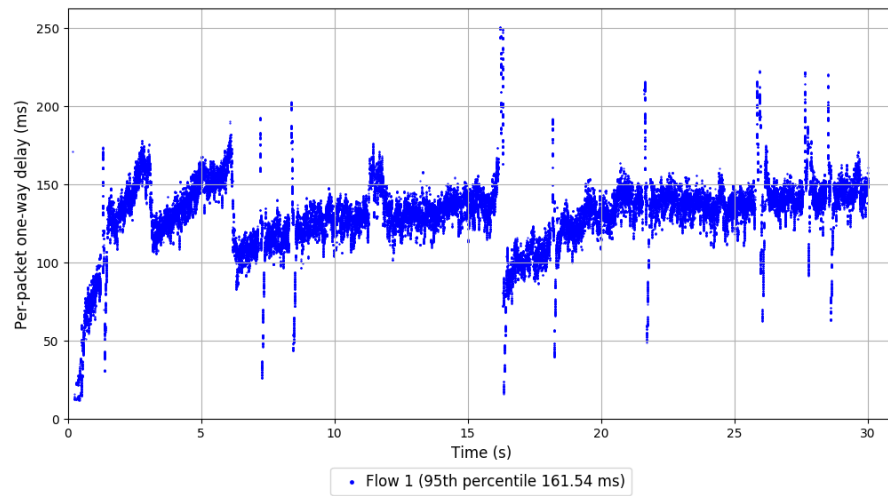
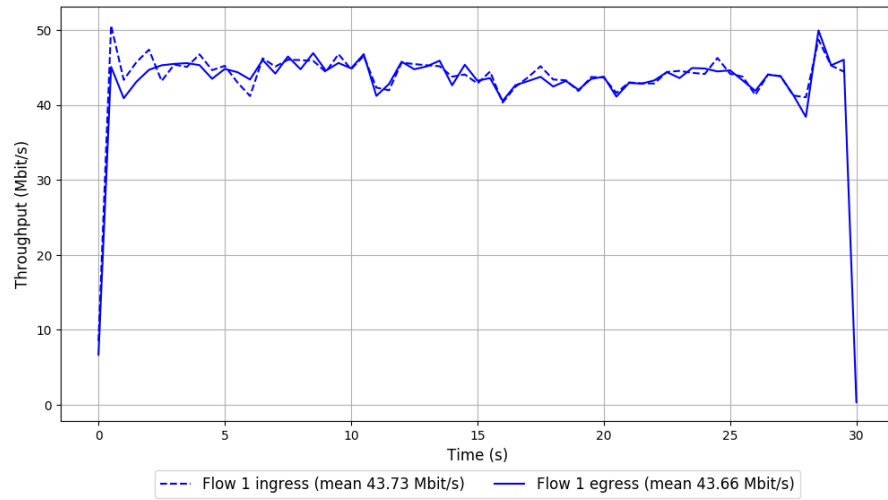
-- Flow 1:

Average throughput: 43.66 Mbit/s

95th percentile per-packet one-way delay: 161.543 ms

Loss rate: 0.65%

Run 2: Report of TCP Cubic — Data Link

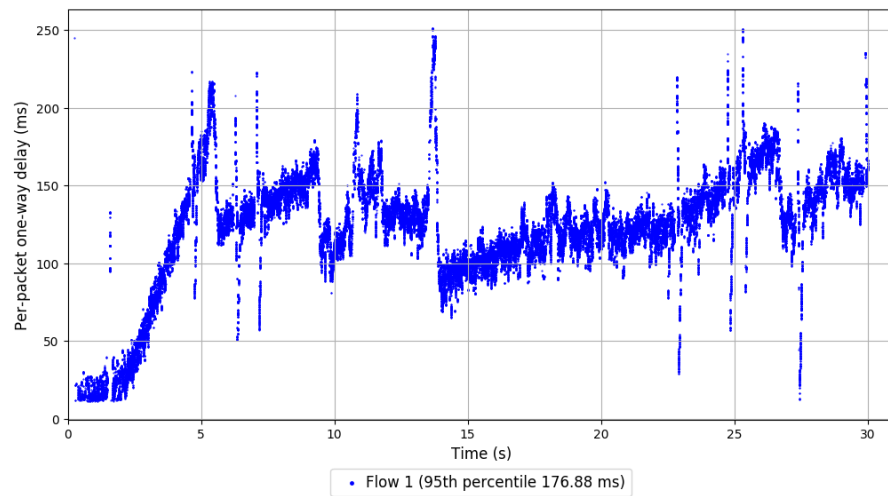
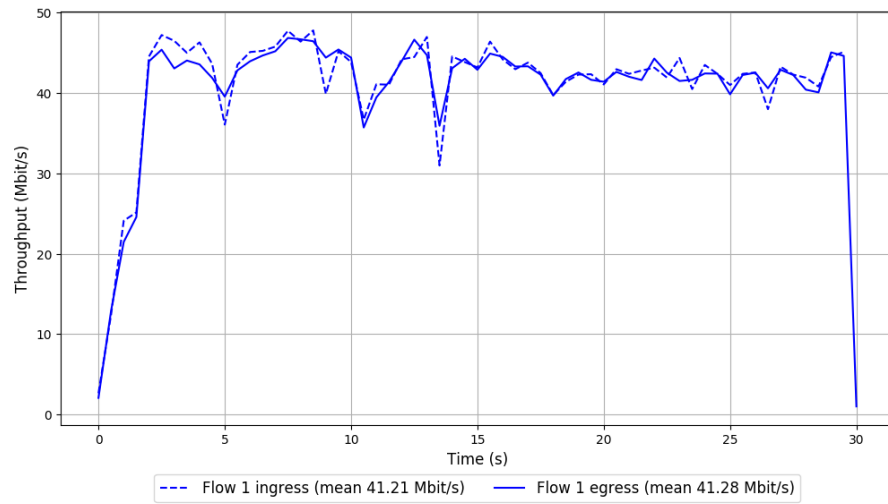


Run 3: Statistics of TCP Cubic

Start at: 2017-12-05 07:55:00
End at: 2017-12-05 07:55:30
Local clock offset: 3.705 ms
Remote clock offset: -2.656 ms

Below is generated by plot.py at 2017-12-05 07:58:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 41.28 Mbit/s
95th percentile per-packet one-way delay: 176.881 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 41.28 Mbit/s
95th percentile per-packet one-way delay: 176.881 ms
Loss rate: 0.58%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of LEDBAT

Start at: 2017-12-05 07:17:03

End at: 2017-12-05 07:17:33

Local clock offset: 3.728 ms

Remote clock offset: -2.315 ms

Below is generated by plot.py at 2017-12-05 07:58:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 38.95 Mbit/s

95th percentile per-packet one-way delay: 99.017 ms

Loss rate: 0.23%

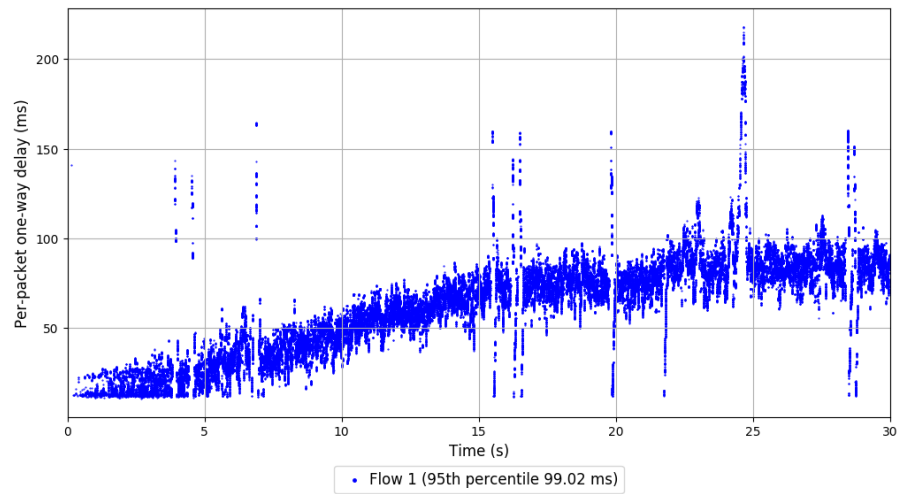
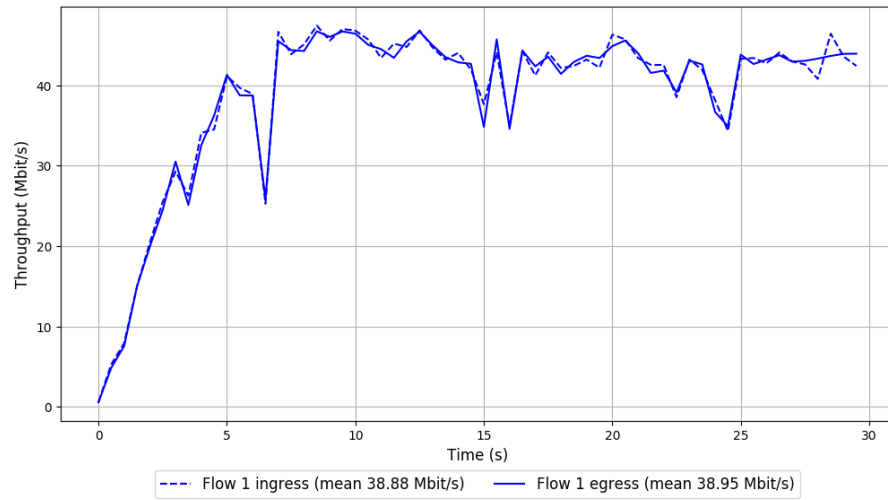
-- Flow 1:

Average throughput: 38.95 Mbit/s

95th percentile per-packet one-way delay: 99.017 ms

Loss rate: 0.23%

Run 1: Report of LEDBAT — Data Link

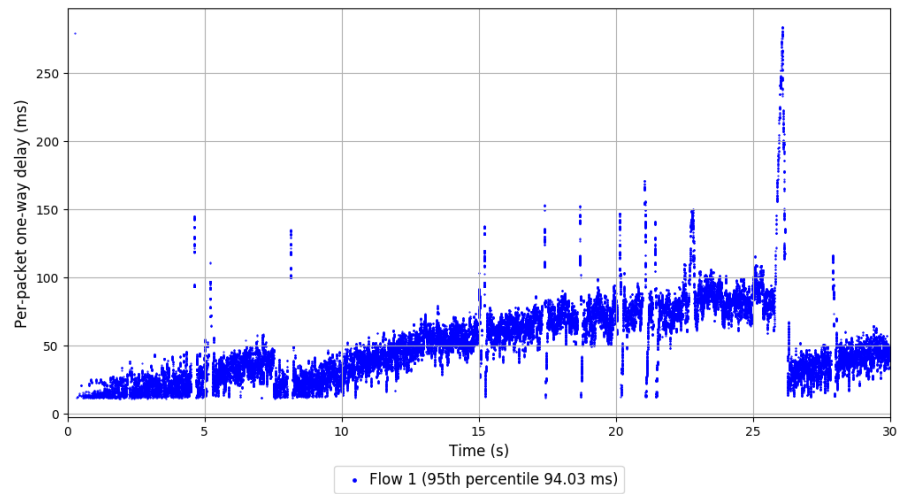
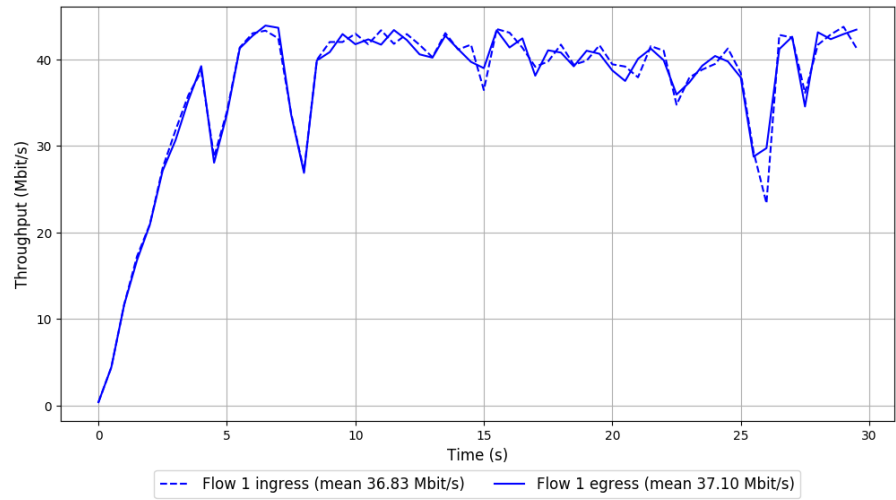


Run 2: Statistics of LEDBAT

Start at: 2017-12-05 07:33:40
End at: 2017-12-05 07:34:10
Local clock offset: 3.135 ms
Remote clock offset: -2.486 ms

Below is generated by plot.py at 2017-12-05 07:58:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 37.10 Mbit/s
95th percentile per-packet one-way delay: 94.030 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 37.10 Mbit/s
95th percentile per-packet one-way delay: 94.030 ms
Loss rate: 0.12%

Run 2: Report of LEDBAT — Data Link

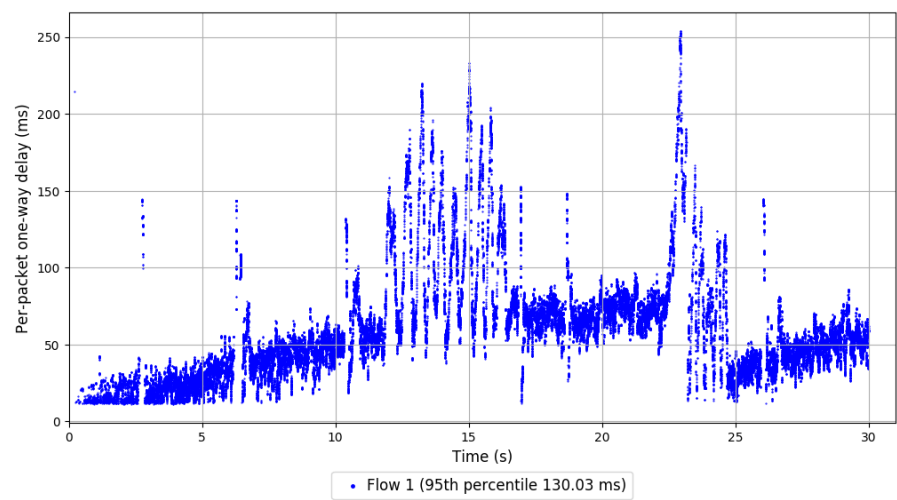
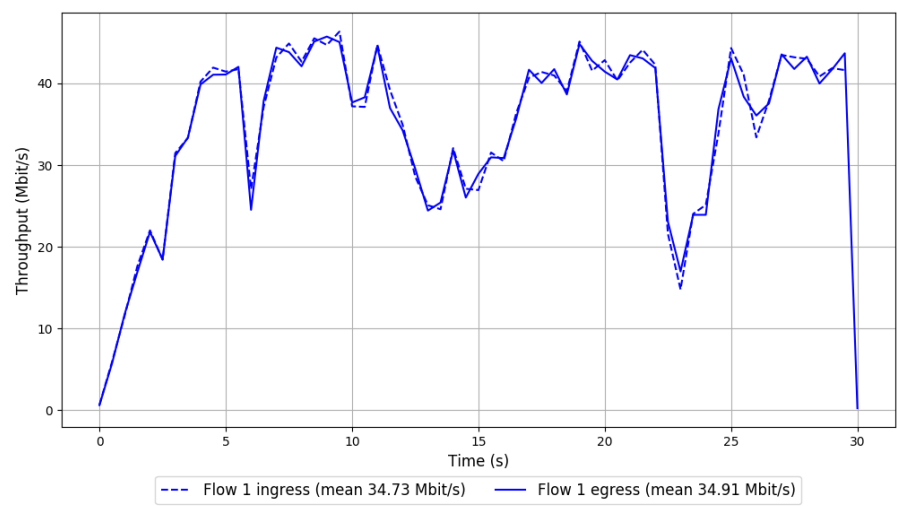


Run 3: Statistics of LEDBAT

Start at: 2017-12-05 07:50:16
End at: 2017-12-05 07:50:46
Local clock offset: 3.606 ms
Remote clock offset: -2.639 ms

Below is generated by plot.py at 2017-12-05 07:59:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.91 Mbit/s
95th percentile per-packet one-way delay: 130.034 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 34.91 Mbit/s
95th percentile per-packet one-way delay: 130.034 ms
Loss rate: 0.14%

Run 3: Report of LEDBAT — Data Link

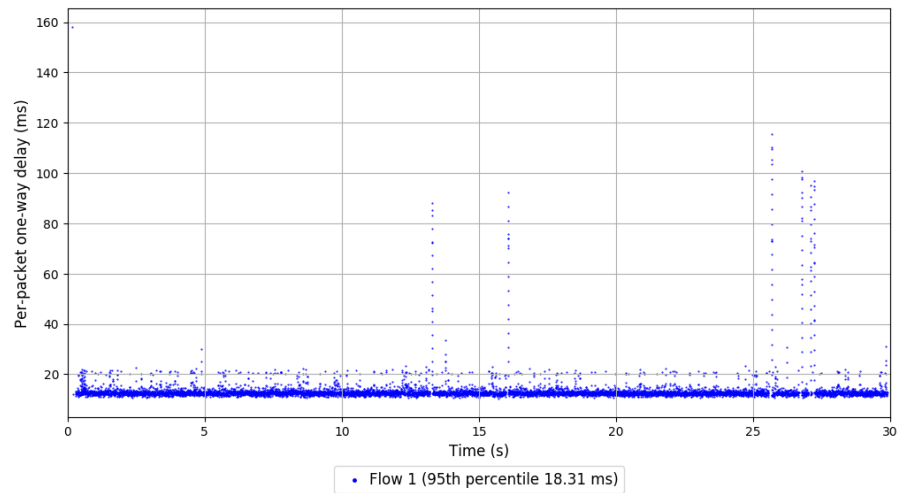
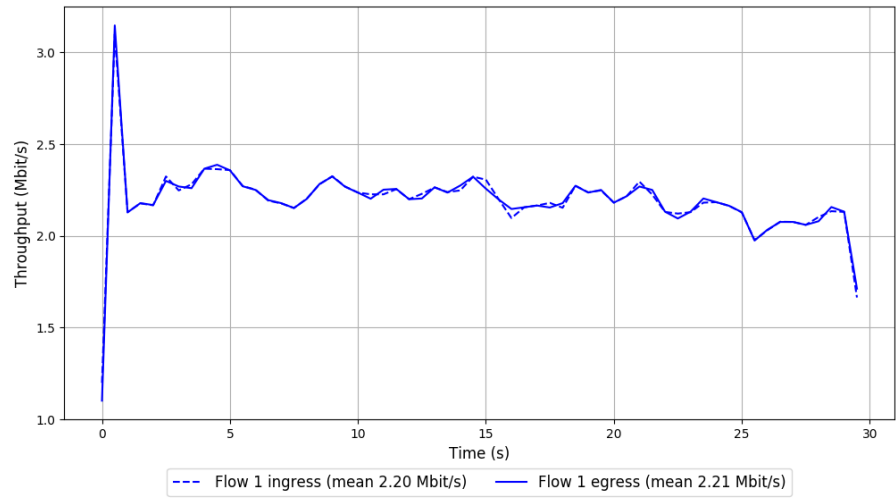


Run 1: Statistics of PCC

Start at: 2017-12-05 07:12:19
End at: 2017-12-05 07:12:49
Local clock offset: 3.787 ms
Remote clock offset: -2.273 ms

Below is generated by plot.py at 2017-12-05 07:59:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 18.309 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 18.309 ms
Loss rate: 0.00%

Run 1: Report of PCC — Data Link

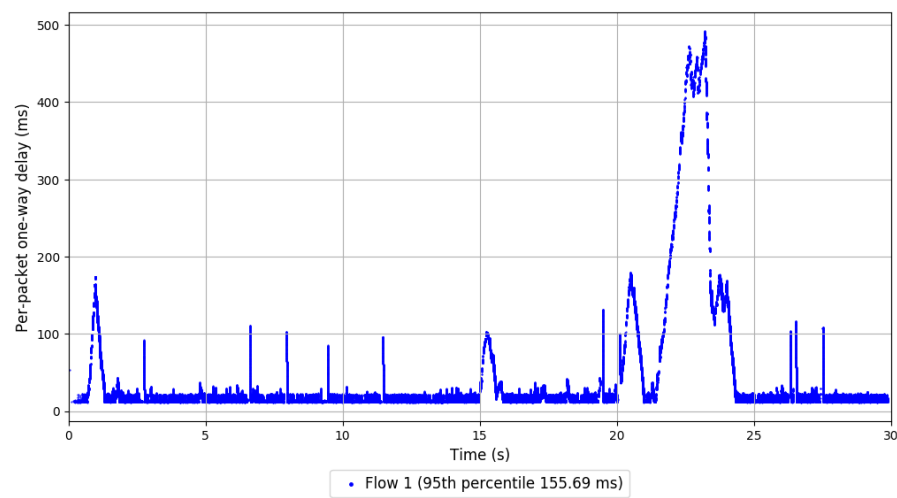
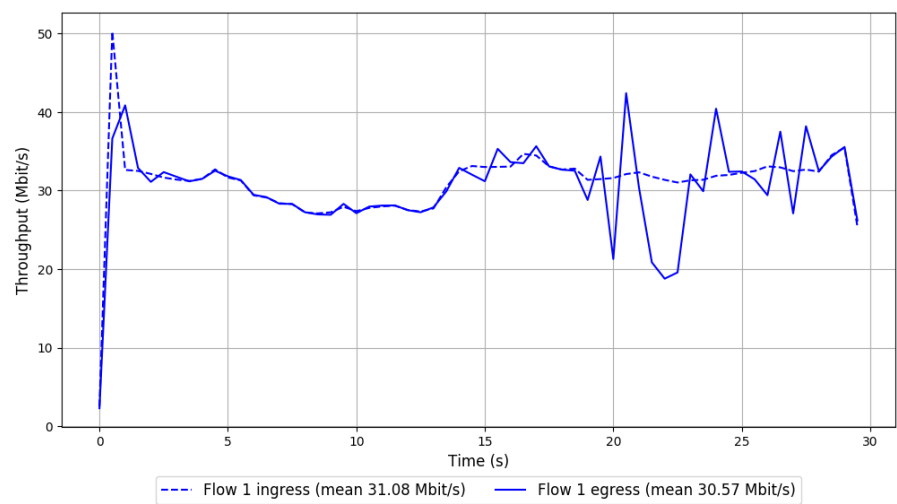


Run 2: Statistics of PCC

Start at: 2017-12-05 07:28:56
End at: 2017-12-05 07:29:26
Local clock offset: 3.061 ms
Remote clock offset: -2.453 ms

Below is generated by plot.py at 2017-12-05 07:59:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 30.57 Mbit/s
95th percentile per-packet one-way delay: 155.694 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 30.57 Mbit/s
95th percentile per-packet one-way delay: 155.694 ms
Loss rate: 1.78%

Run 2: Report of PCC — Data Link

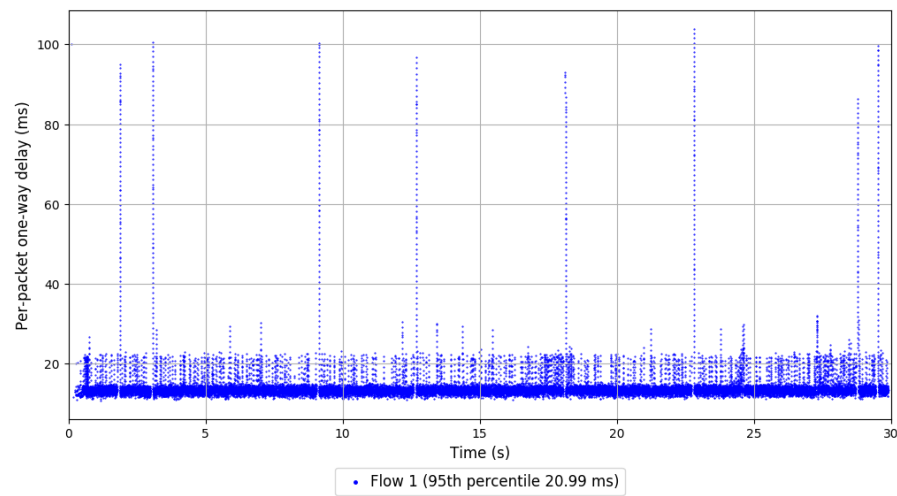
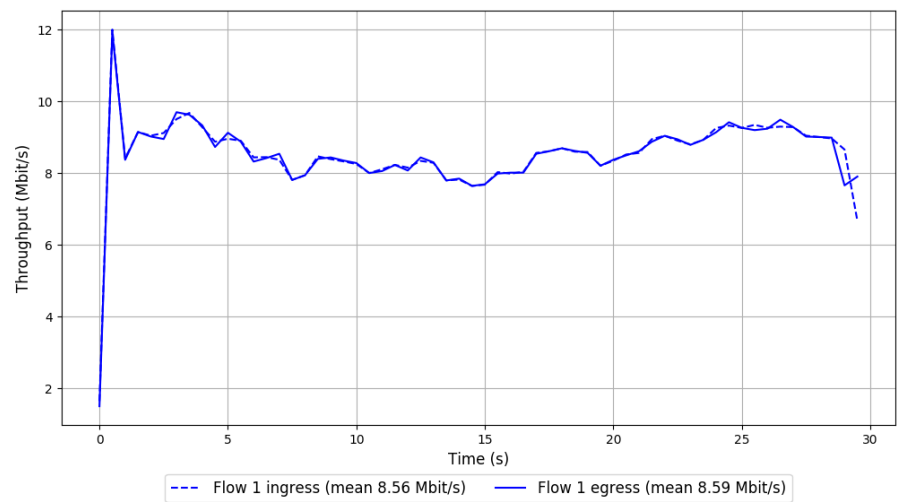


Run 3: Statistics of PCC

Start at: 2017-12-05 07:45:34
End at: 2017-12-05 07:46:04
Local clock offset: 3.362 ms
Remote clock offset: -2.581 ms

Below is generated by plot.py at 2017-12-05 07:59:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.59 Mbit/s
95th percentile per-packet one-way delay: 20.993 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 8.59 Mbit/s
95th percentile per-packet one-way delay: 20.993 ms
Loss rate: 0.00%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

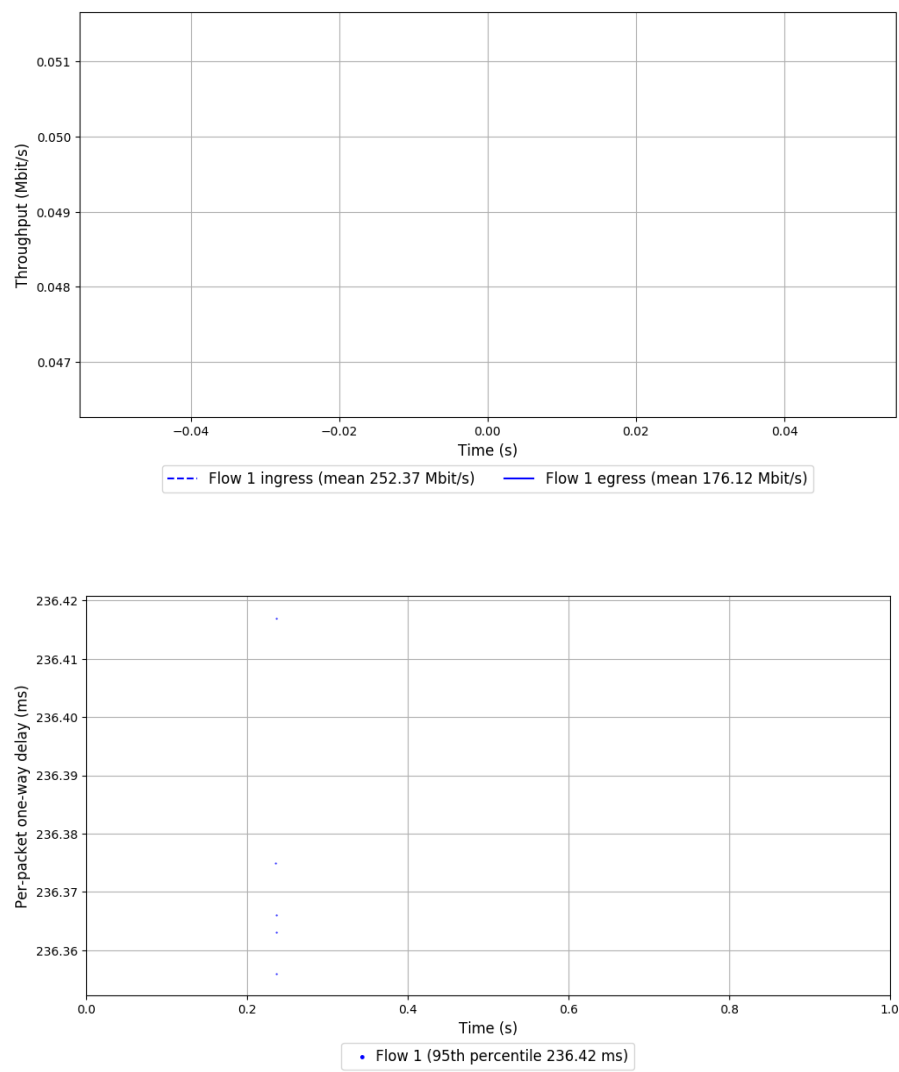
Start at: 2017-12-05 07:09:57

End at: 2017-12-05 07:10:27

Local clock offset: 3.963 ms

Remote clock offset: -2.357 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2017-12-05 07:26:32

End at: 2017-12-05 07:27:02

Local clock offset: 3.151 ms

Remote clock offset: -2.429 ms

Below is generated by plot.py at 2017-12-05 07:59:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 39.46 Mbit/s

95th percentile per-packet one-way delay: 178.988 ms

Loss rate: 0.49%

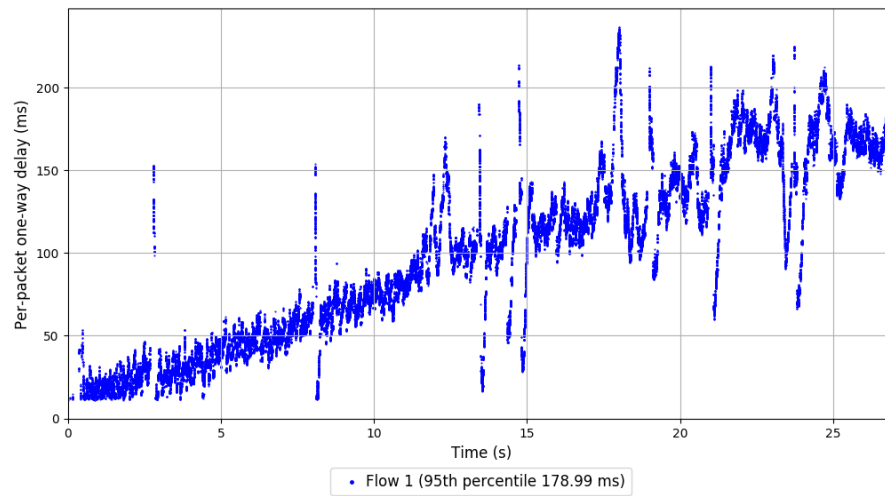
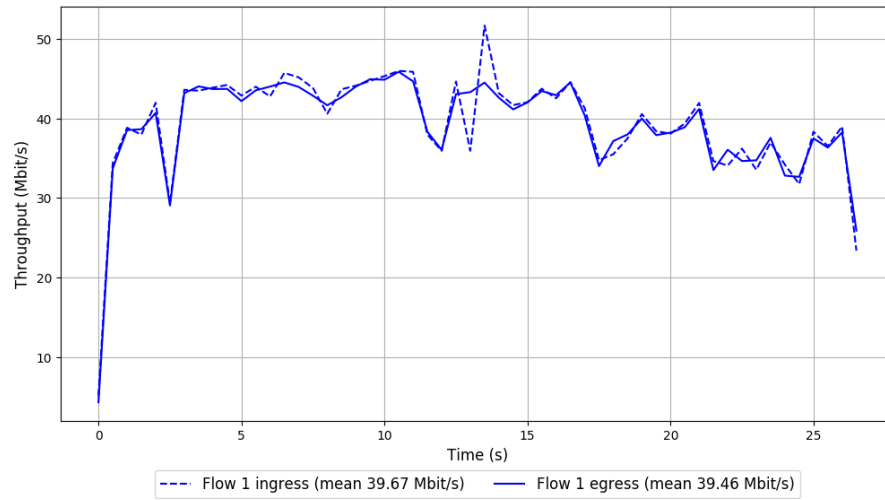
-- Flow 1:

Average throughput: 39.46 Mbit/s

95th percentile per-packet one-way delay: 178.988 ms

Loss rate: 0.49%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2017-12-05 07:43:10

End at: 2017-12-05 07:43:40

Local clock offset: 3.253 ms

Remote clock offset: -2.572 ms

Below is generated by plot.py at 2017-12-05 07:59:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 40.48 Mbit/s

95th percentile per-packet one-way delay: 165.737 ms

Loss rate: 0.29%

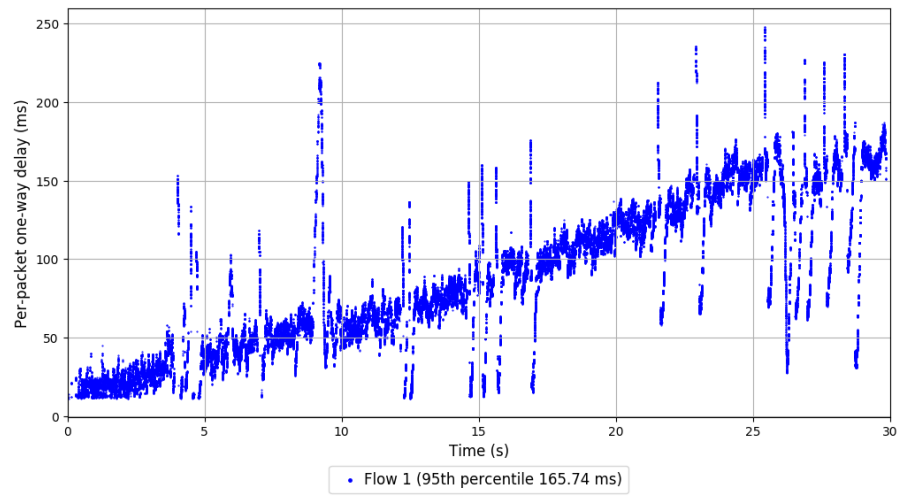
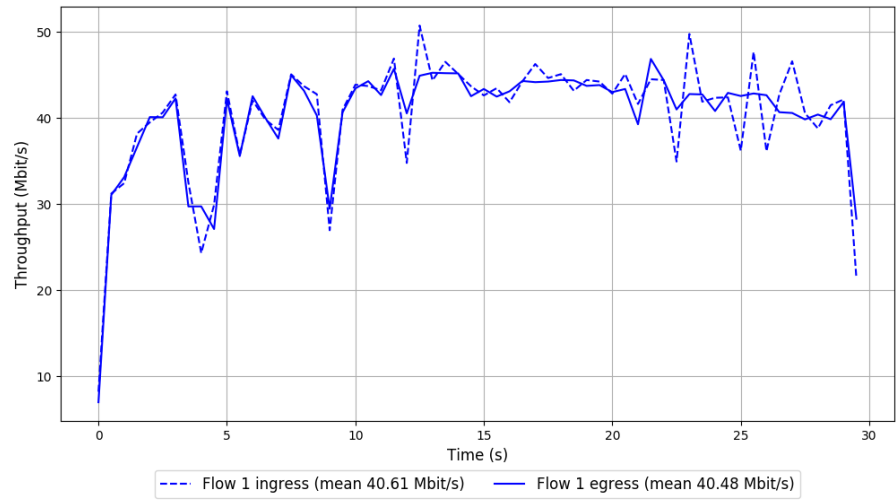
-- Flow 1:

Average throughput: 40.48 Mbit/s

95th percentile per-packet one-way delay: 165.737 ms

Loss rate: 0.29%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

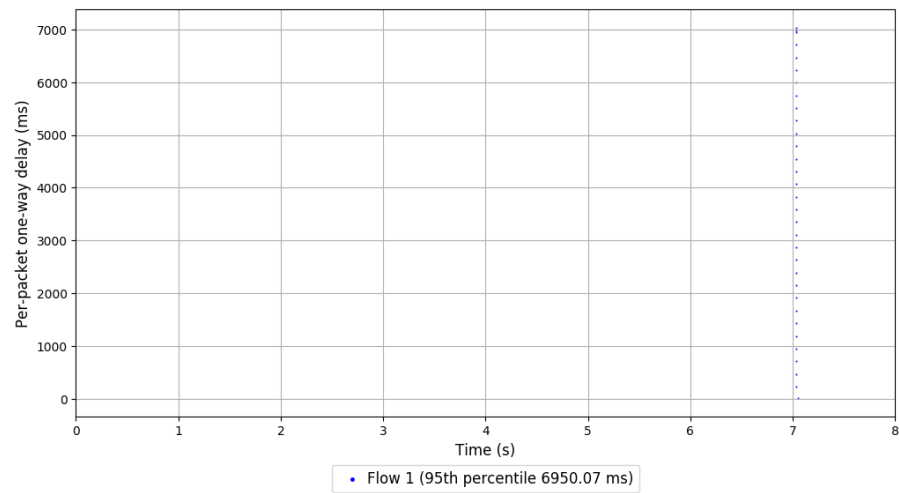
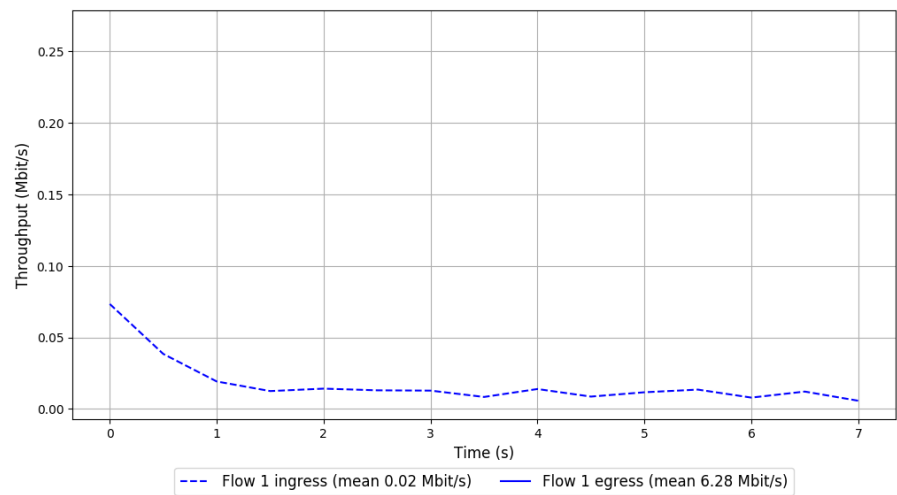
Start at: 2017-12-05 07:19:26

End at: 2017-12-05 07:19:56

Local clock offset: 3.644 ms

Remote clock offset: -2.346 ms

Run 1: Report of SReAM — Data Link

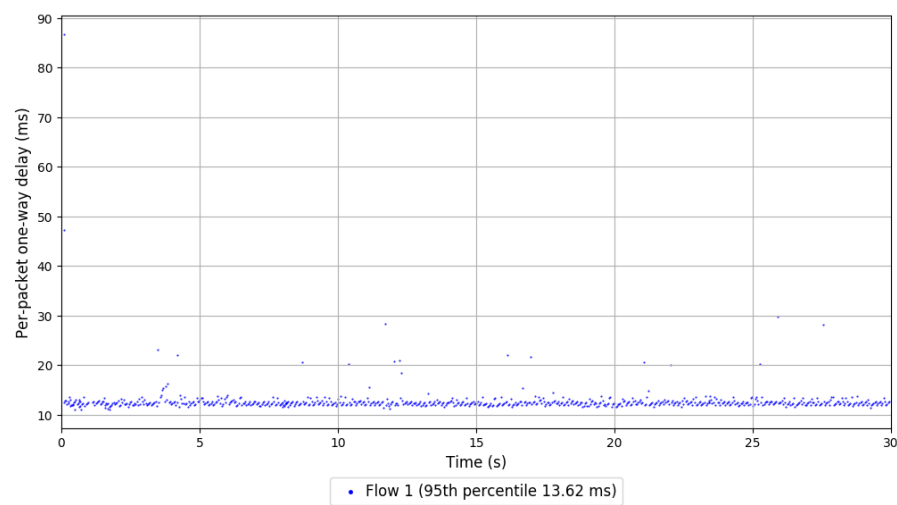
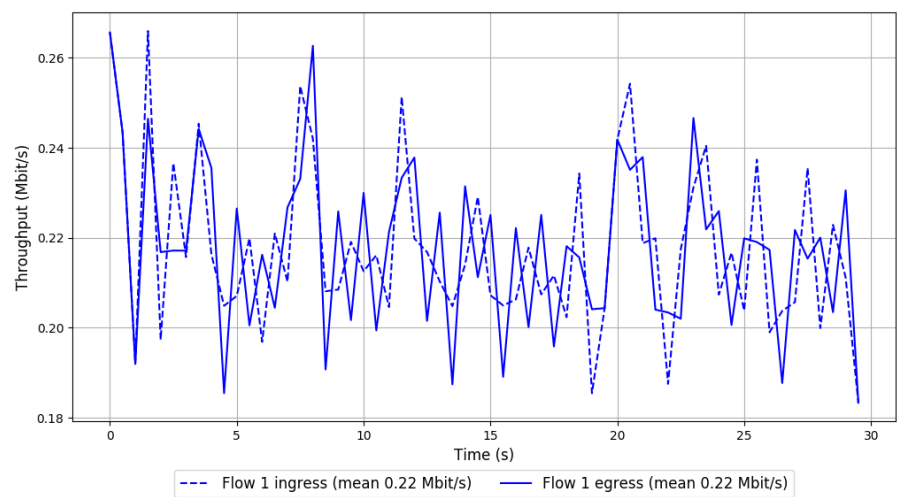


Run 2: Statistics of SCReAM

Start at: 2017-12-05 07:36:03
End at: 2017-12-05 07:36:33
Local clock offset: 3.02 ms
Remote clock offset: -2.513 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 13.621 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 13.621 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

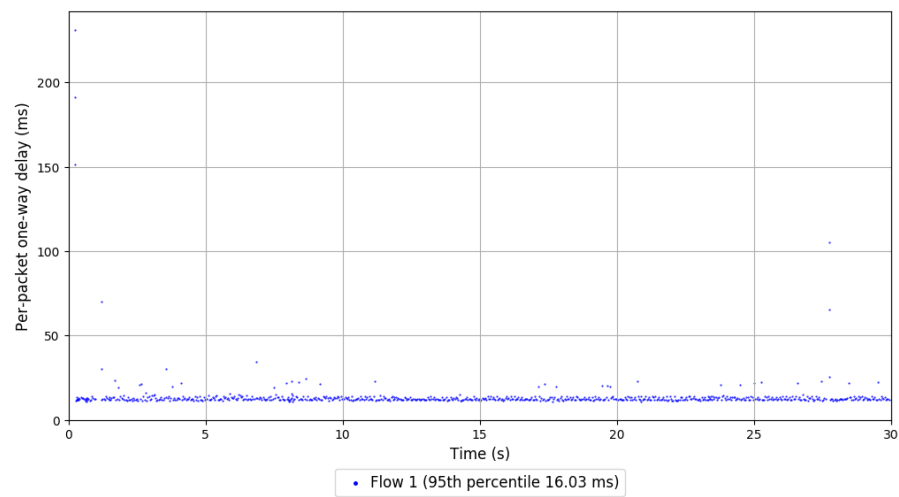
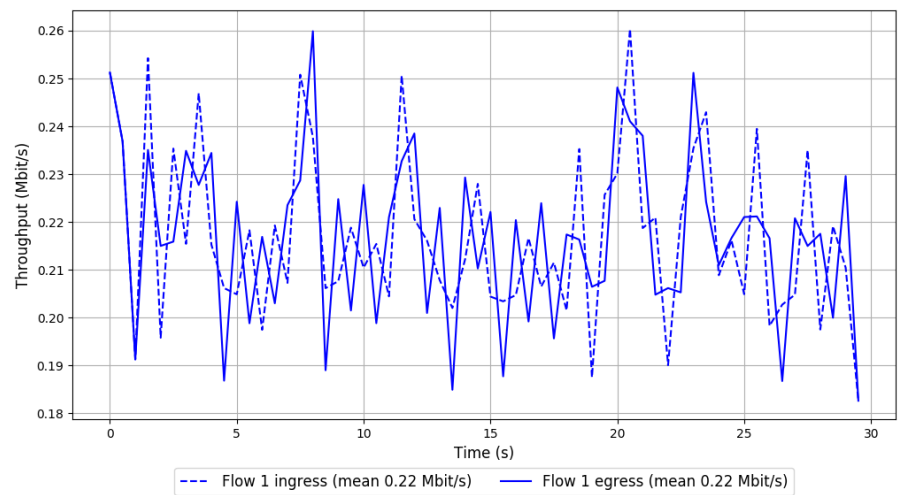


Run 3: Statistics of SCReAM

Start at: 2017-12-05 07:52:40
End at: 2017-12-05 07:53:10
Local clock offset: 3.718 ms
Remote clock offset: -2.713 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 16.026 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 16.026 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

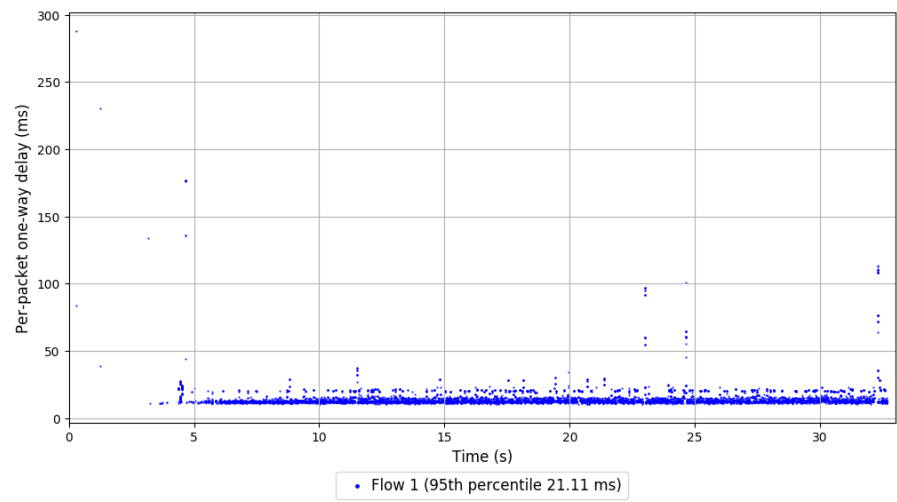
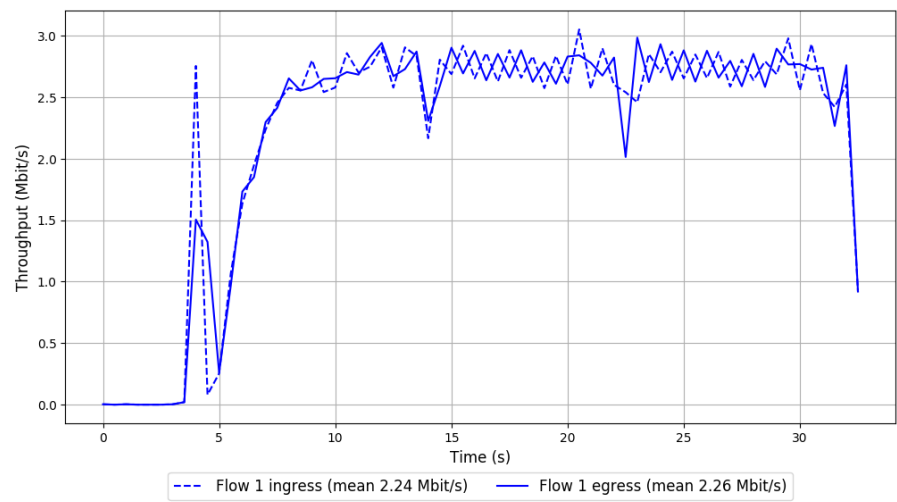


Run 1: Statistics of WebRTC media

Start at: 2017-12-05 07:15:52
End at: 2017-12-05 07:16:22
Local clock offset: 3.714 ms
Remote clock offset: -2.297 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 21.105 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 21.105 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link

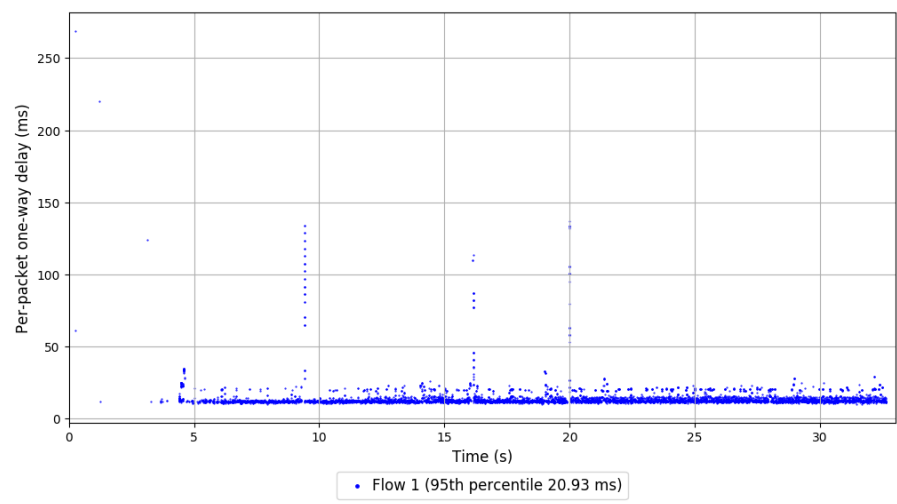
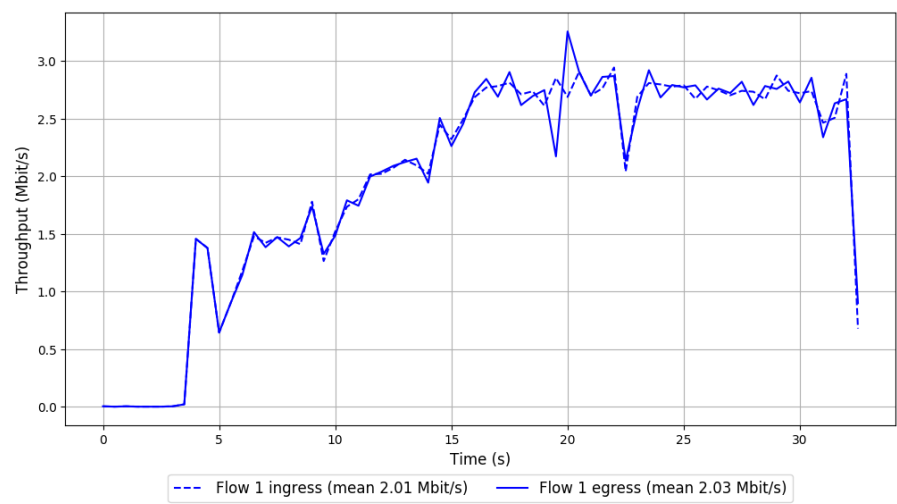


Run 2: Statistics of WebRTC media

Start at: 2017-12-05 07:32:29
End at: 2017-12-05 07:32:59
Local clock offset: 3.128 ms
Remote clock offset: -2.471 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 20.925 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 20.925 ms
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

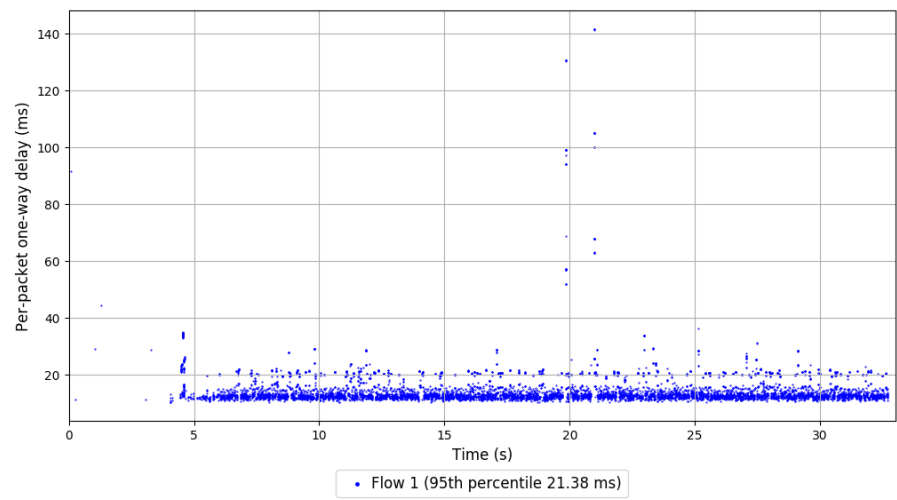
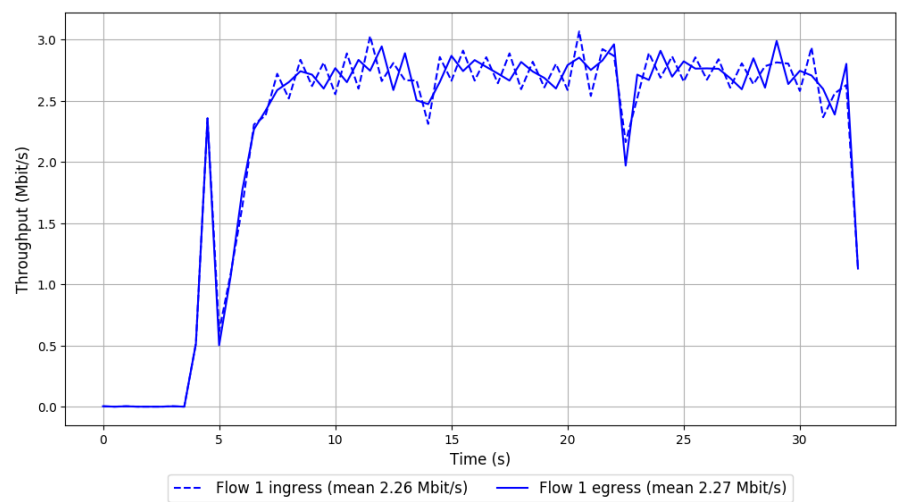


Run 3: Statistics of WebRTC media

Start at: 2017-12-05 07:49:06
End at: 2017-12-05 07:49:36
Local clock offset: 3.561 ms
Remote clock offset: -2.681 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 21.382 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 21.382 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link



Run 1: Statistics of Sprout

Start at: 2017-12-05 07:07:35

End at: 2017-12-05 07:08:05

Local clock offset: 3.914 ms

Remote clock offset: -2.53 ms

Below is generated by plot.py at 2017-12-05 07:59:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 15.42 Mbit/s

95th percentile per-packet one-way delay: 33.398 ms

Loss rate: 0.01%

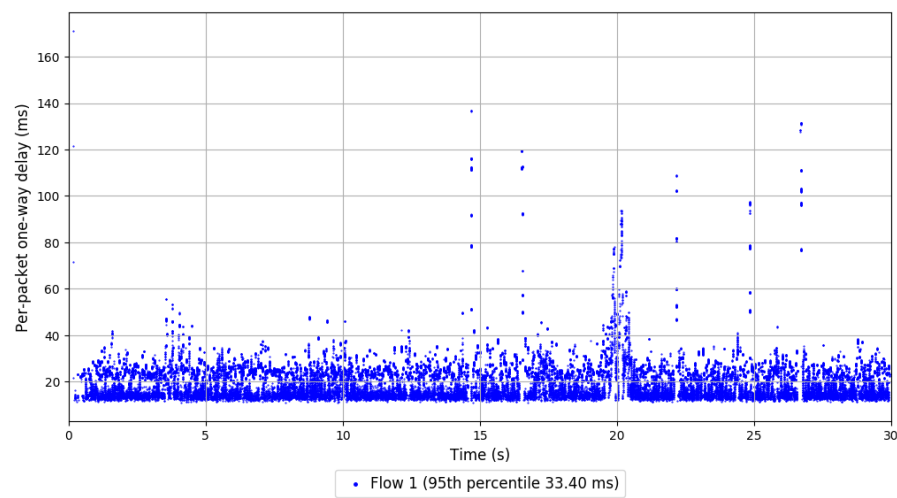
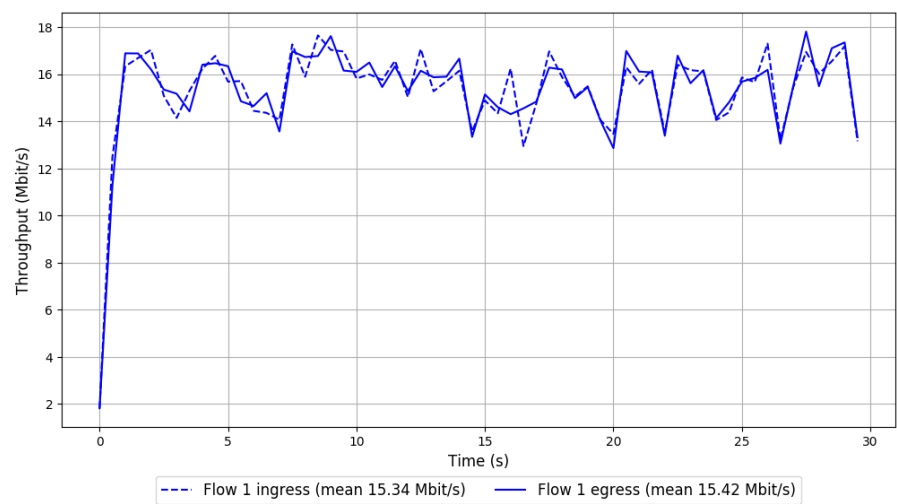
-- Flow 1:

Average throughput: 15.42 Mbit/s

95th percentile per-packet one-way delay: 33.398 ms

Loss rate: 0.01%

Run 1: Report of Sprout — Data Link

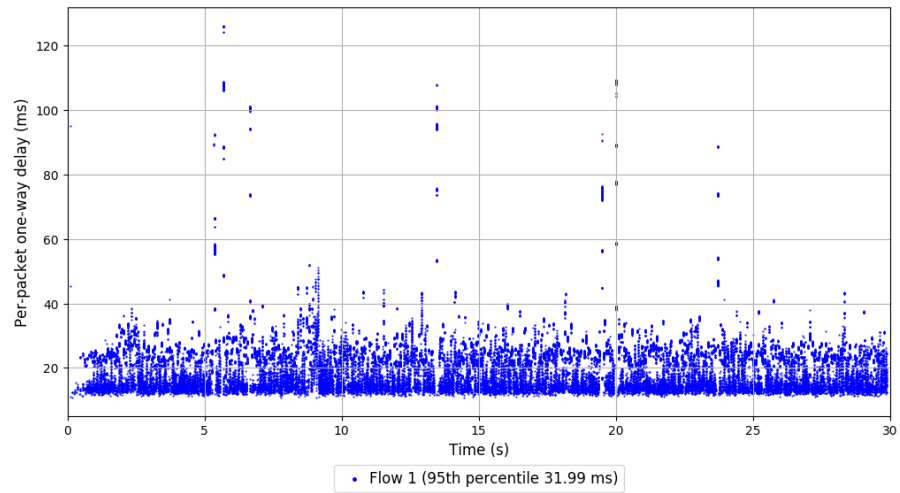
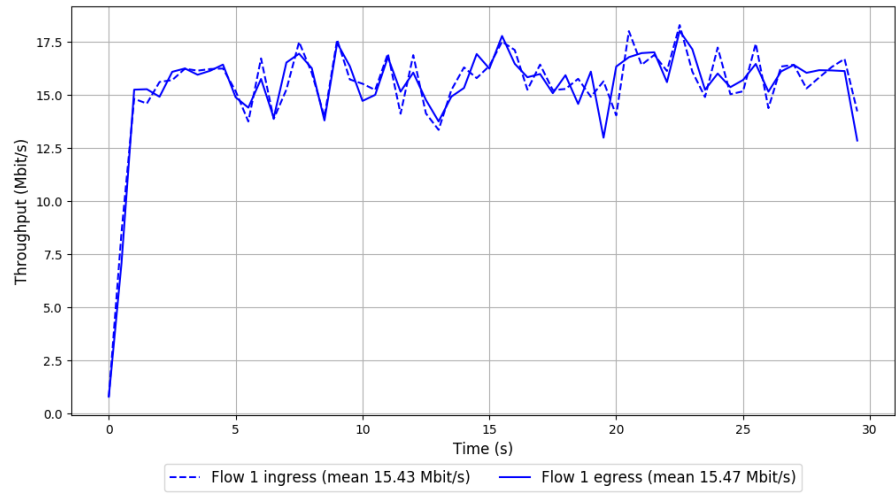


Run 2: Statistics of Sprout

Start at: 2017-12-05 07:24:09
End at: 2017-12-05 07:24:39
Local clock offset: 3.366 ms
Remote clock offset: -2.368 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 15.47 Mbit/s
95th percentile per-packet one-way delay: 31.990 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 15.47 Mbit/s
95th percentile per-packet one-way delay: 31.990 ms
Loss rate: 0.23%

Run 2: Report of Sprout — Data Link

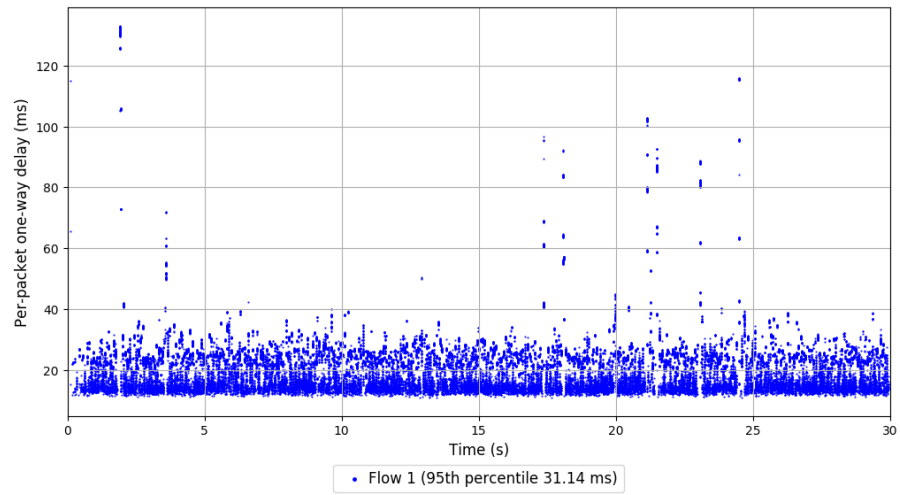
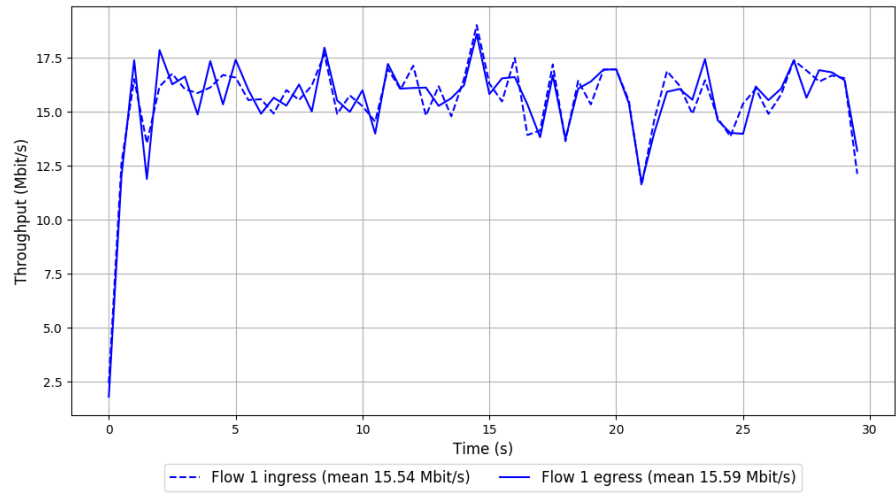


Run 3: Statistics of Sprout

Start at: 2017-12-05 07:40:47
End at: 2017-12-05 07:41:17
Local clock offset: 3.136 ms
Remote clock offset: -2.596 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 15.59 Mbit/s
95th percentile per-packet one-way delay: 31.138 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 15.59 Mbit/s
95th percentile per-packet one-way delay: 31.138 ms
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2017-12-05 07:13:30

End at: 2017-12-05 07:14:00

Local clock offset: 3.831 ms

Remote clock offset: -2.265 ms

Below is generated by plot.py at 2017-12-05 07:59:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.29 Mbit/s

95th percentile per-packet one-way delay: 62.425 ms

Loss rate: 0.32%

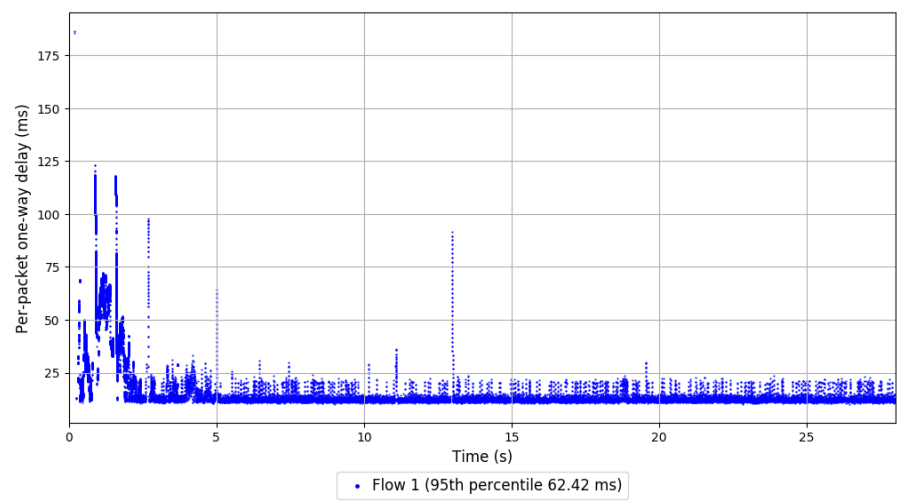
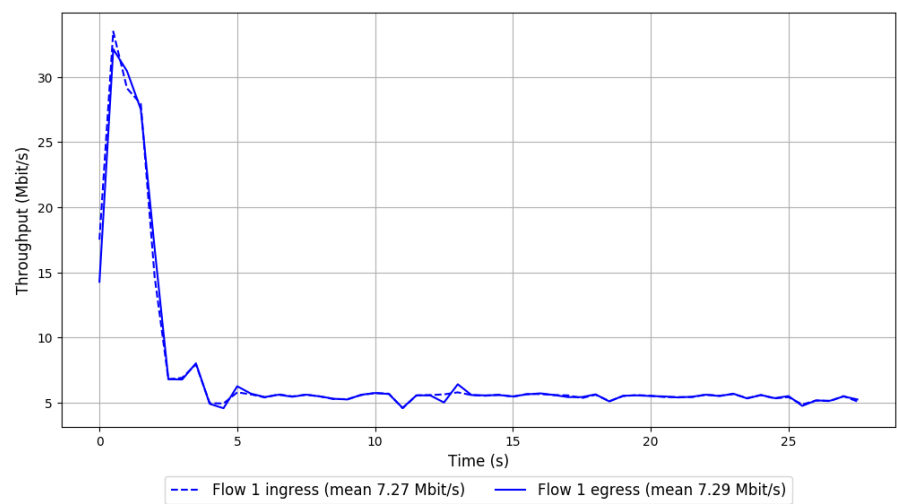
-- Flow 1:

Average throughput: 7.29 Mbit/s

95th percentile per-packet one-way delay: 62.425 ms

Loss rate: 0.32%

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



Run 2: Statistics of TaoVA-100x

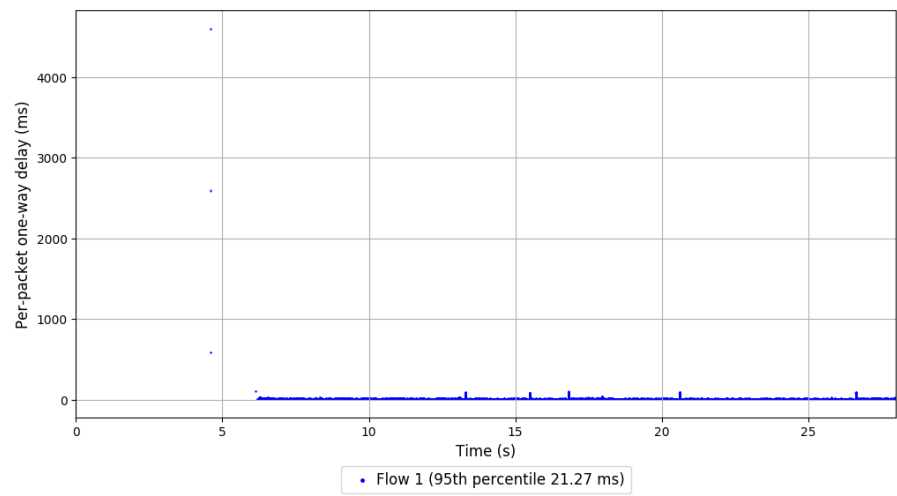
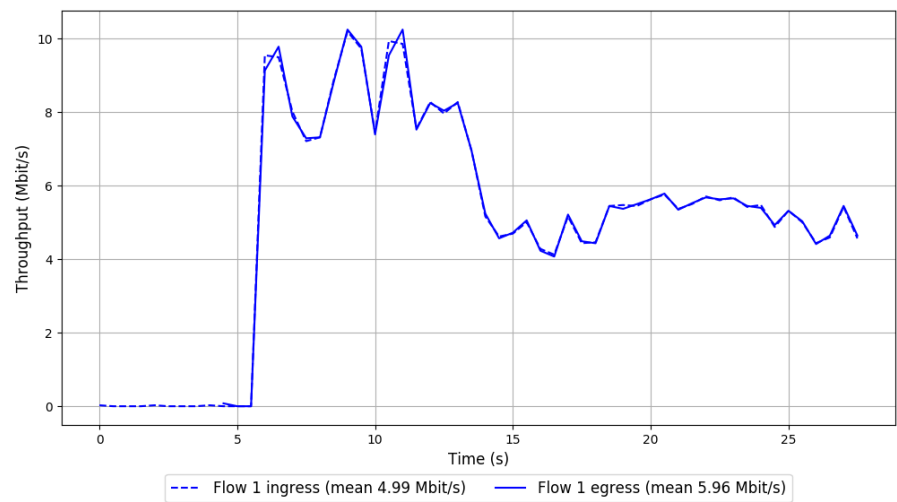
Start at: 2017-12-05 07:30:08

End at: 2017-12-05 07:30:38

Local clock offset: 3.048 ms

Remote clock offset: -2.456 ms

Run 2: Report of TaoVA-100x — Data Link



Run 3: Statistics of TaoVA-100x

Start at: 2017-12-05 07:46:45

End at: 2017-12-05 07:47:15

Local clock offset: 3.391 ms

Remote clock offset: -2.648 ms

Below is generated by plot.py at 2017-12-05 07:59:28

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.20 Mbit/s

95th percentile per-packet one-way delay: 21.790 ms

Loss rate: 0.00%

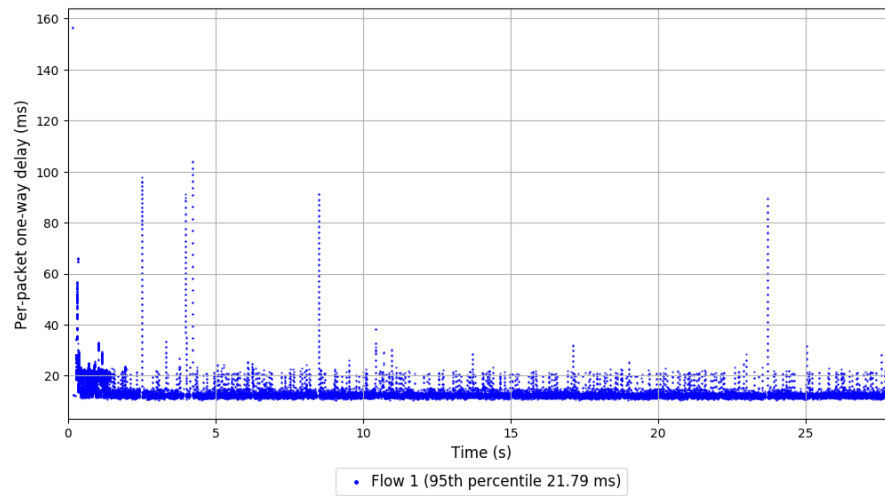
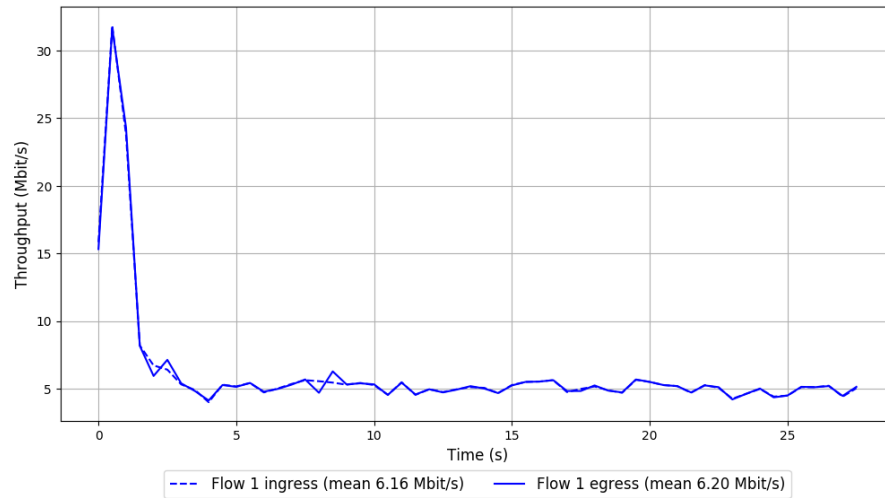
-- Flow 1:

Average throughput: 6.20 Mbit/s

95th percentile per-packet one-way delay: 21.790 ms

Loss rate: 0.00%

Run 3: Report of TaoVA-100x — Data Link

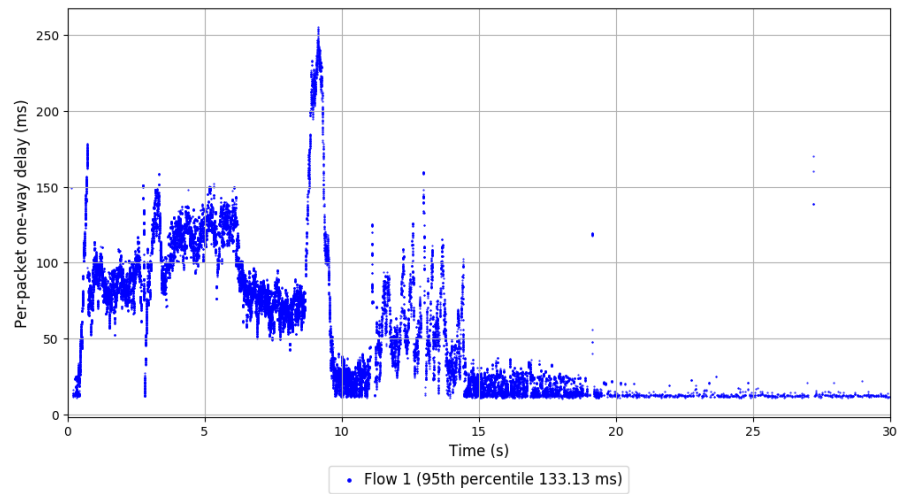
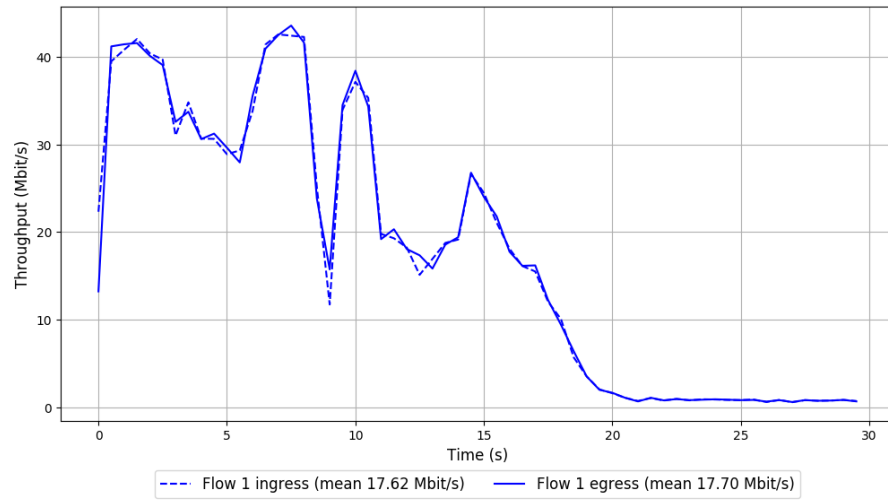


Run 1: Statistics of TCP Vegas

Start at: 2017-12-05 07:14:41
End at: 2017-12-05 07:15:11
Local clock offset: 3.769 ms
Remote clock offset: -2.322 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 17.70 Mbit/s
95th percentile per-packet one-way delay: 133.131 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 17.70 Mbit/s
95th percentile per-packet one-way delay: 133.131 ms
Loss rate: 0.01%

Run 1: Report of TCP Vegas — Data Link

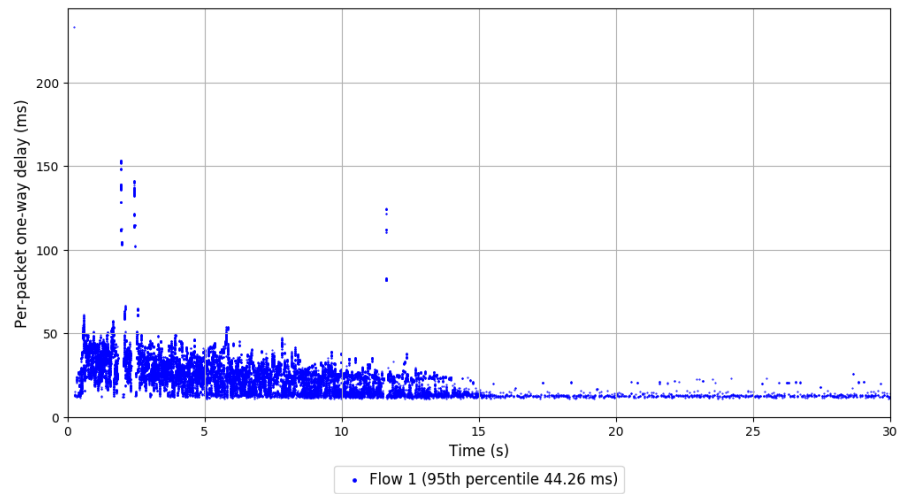
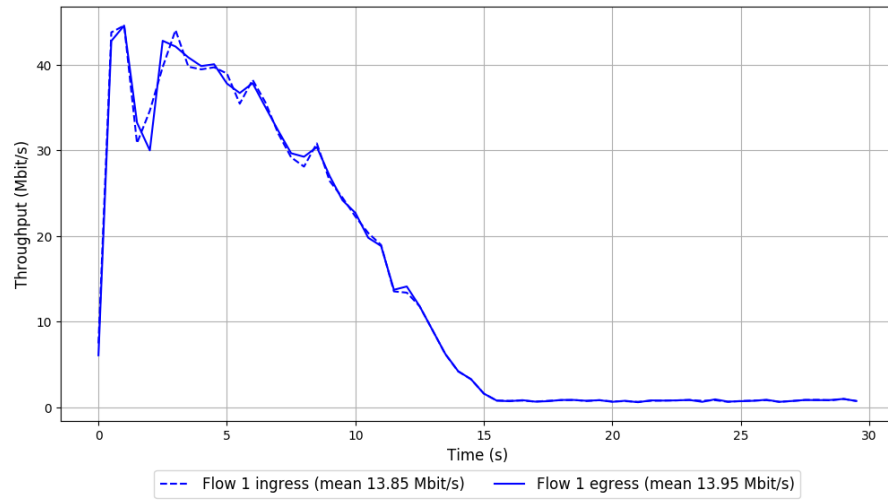


Run 2: Statistics of TCP Vegas

Start at: 2017-12-05 07:31:18
End at: 2017-12-05 07:31:48
Local clock offset: 3.105 ms
Remote clock offset: -2.353 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 13.95 Mbit/s
95th percentile per-packet one-way delay: 44.260 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 13.95 Mbit/s
95th percentile per-packet one-way delay: 44.260 ms
Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link

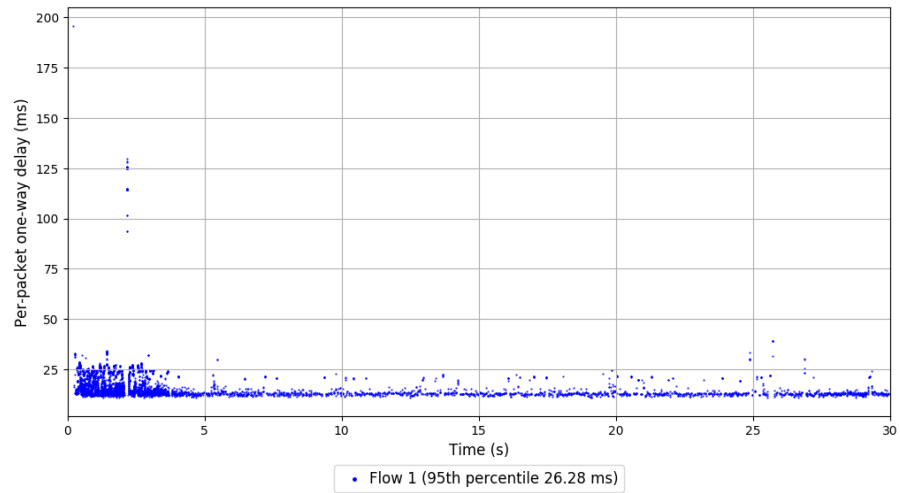
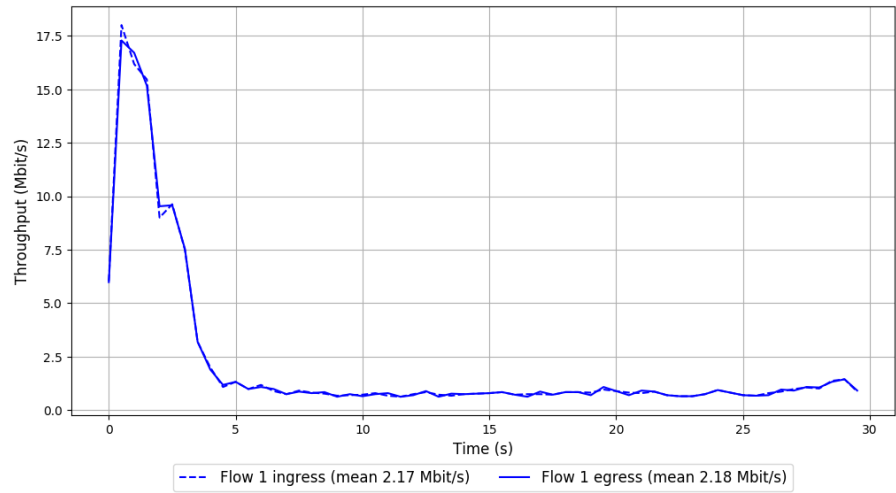


Run 3: Statistics of TCP Vegas

Start at: 2017-12-05 07:47:55
End at: 2017-12-05 07:48:25
Local clock offset: 3.42 ms
Remote clock offset: -2.662 ms

Below is generated by plot.py at 2017-12-05 07:59:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 26.277 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 26.277 ms
Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link

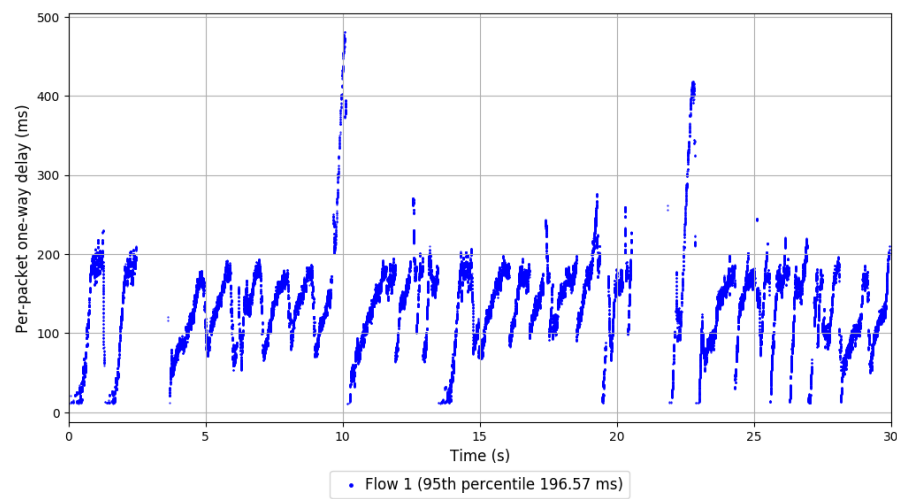
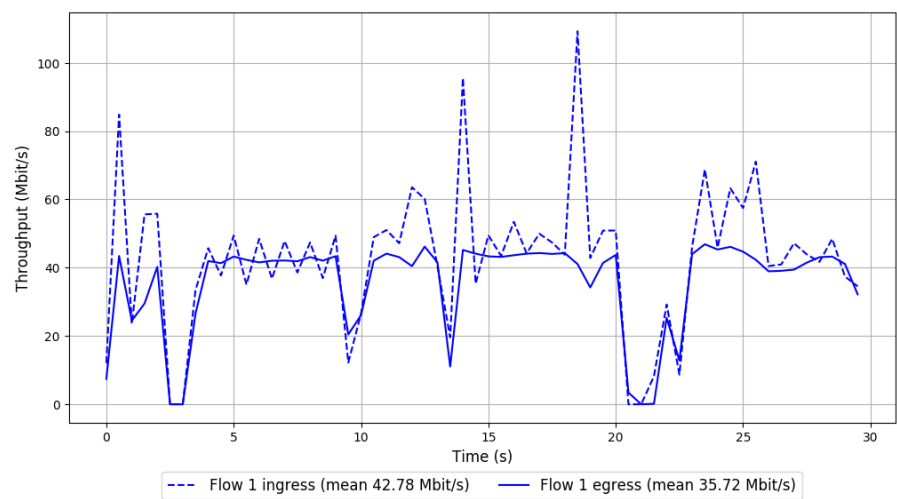


Run 1: Statistics of Verus

Start at: 2017-12-05 07:11:07
End at: 2017-12-05 07:11:37
Local clock offset: 3.95 ms
Remote clock offset: -2.431 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 35.72 Mbit/s
95th percentile per-packet one-way delay: 196.574 ms
Loss rate: 16.43%
-- Flow 1:
Average throughput: 35.72 Mbit/s
95th percentile per-packet one-way delay: 196.574 ms
Loss rate: 16.43%

Run 1: Report of Verus — Data Link

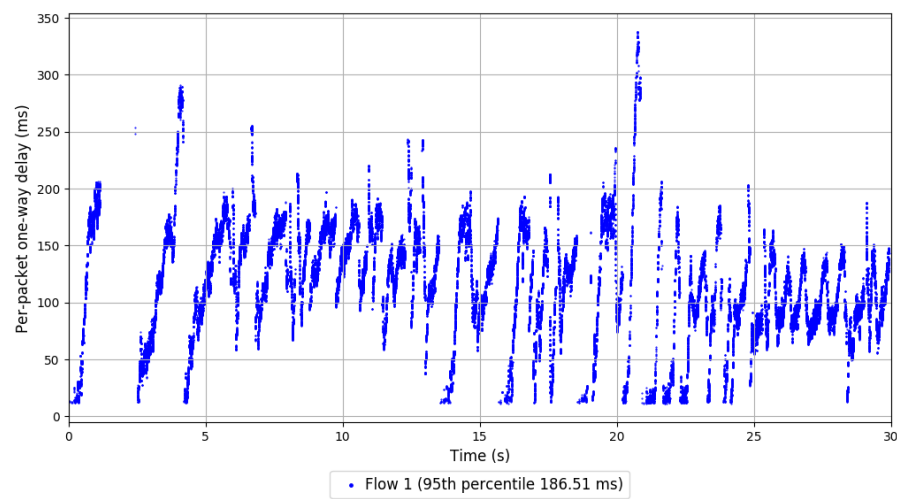
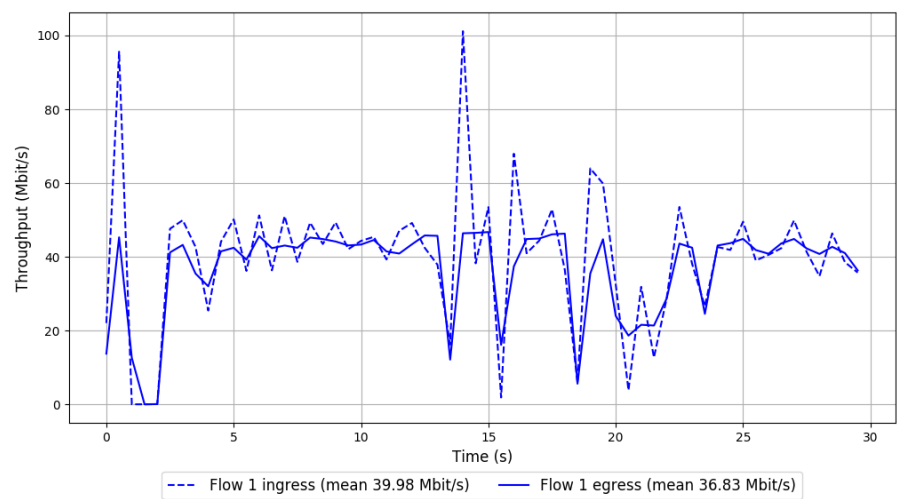


Run 2: Statistics of Verus

Start at: 2017-12-05 07:27:44
End at: 2017-12-05 07:28:14
Local clock offset: 3.201 ms
Remote clock offset: -2.389 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 36.83 Mbit/s
95th percentile per-packet one-way delay: 186.512 ms
Loss rate: 7.85%
-- Flow 1:
Average throughput: 36.83 Mbit/s
95th percentile per-packet one-way delay: 186.512 ms
Loss rate: 7.85%

Run 2: Report of Verus — Data Link

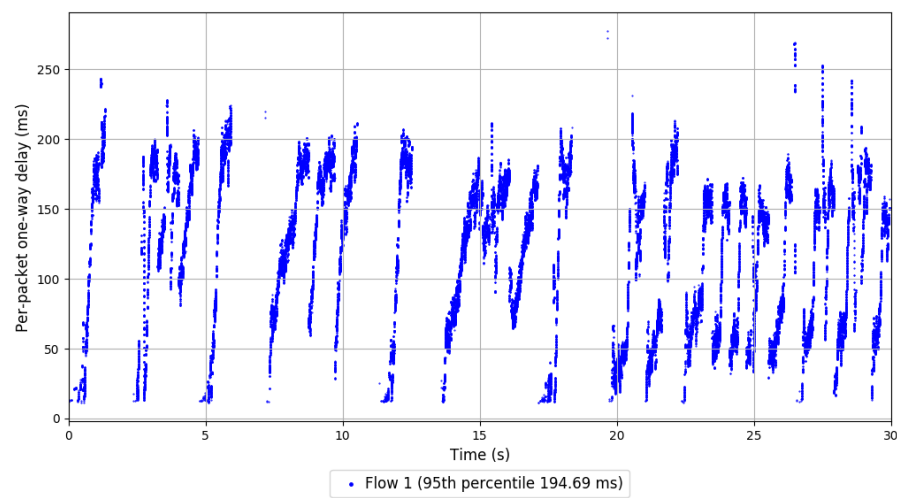
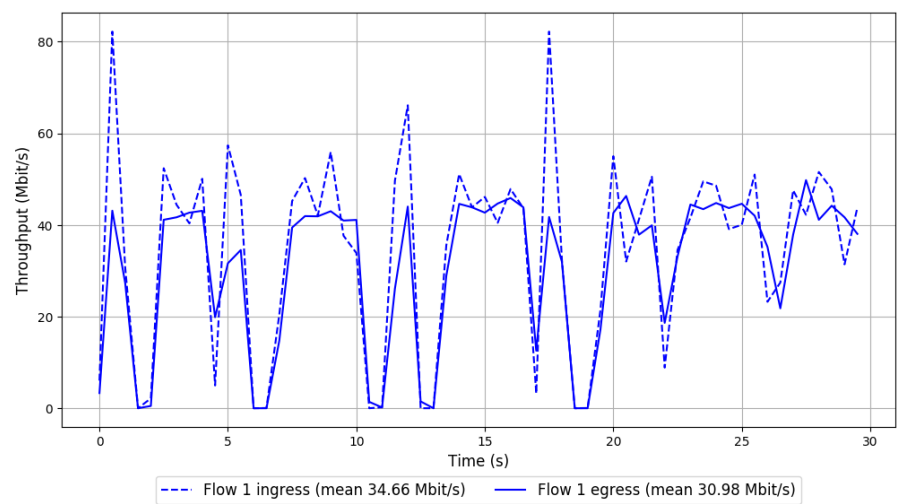


Run 3: Statistics of Verus

Start at: 2017-12-05 07:44:22
End at: 2017-12-05 07:44:52
Local clock offset: 3.327 ms
Remote clock offset: -2.566 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 30.98 Mbit/s
95th percentile per-packet one-way delay: 194.690 ms
Loss rate: 10.58%
-- Flow 1:
Average throughput: 30.98 Mbit/s
95th percentile per-packet one-way delay: 194.690 ms
Loss rate: 10.58%

Run 3: Report of Verus — Data Link

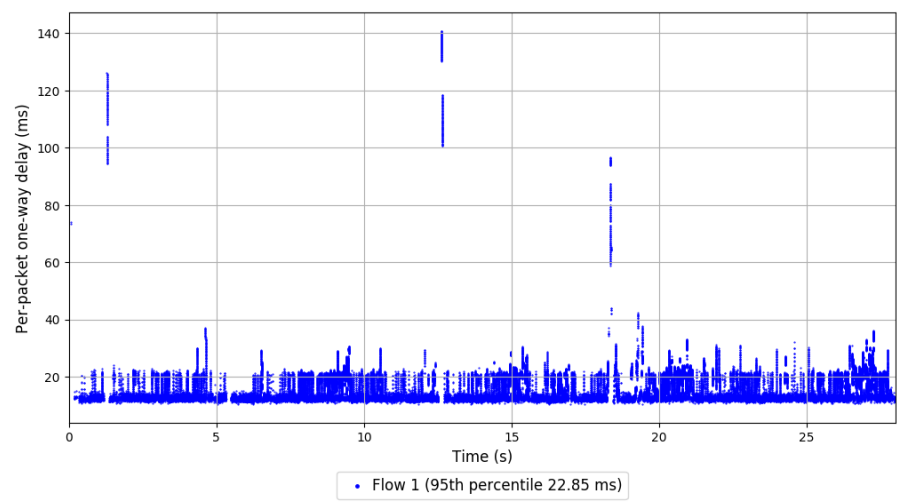
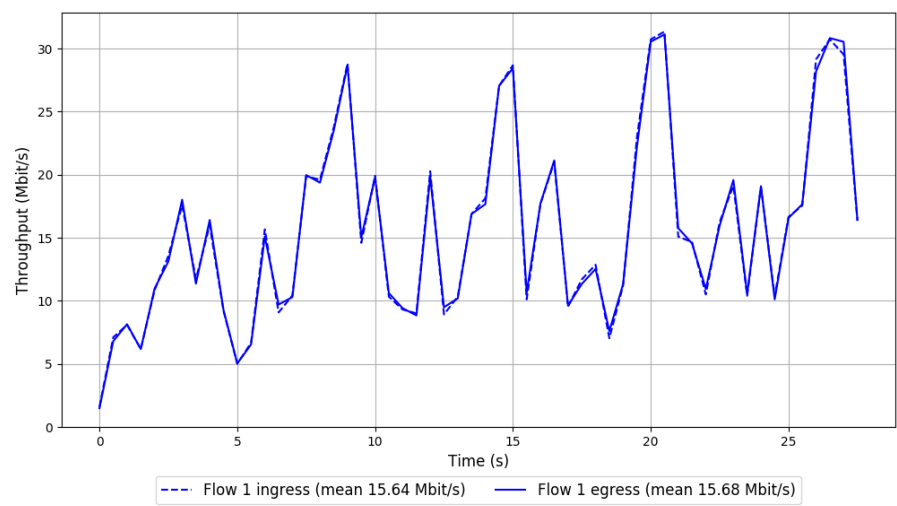


Run 1: Statistics of Copa

Start at: 2017-12-05 07:18:15
End at: 2017-12-05 07:18:45
Local clock offset: 3.735 ms
Remote clock offset: -2.276 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 15.68 Mbit/s
95th percentile per-packet one-way delay: 22.851 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 15.68 Mbit/s
95th percentile per-packet one-way delay: 22.851 ms
Loss rate: 0.00%

Run 1: Report of Copa — Data Link

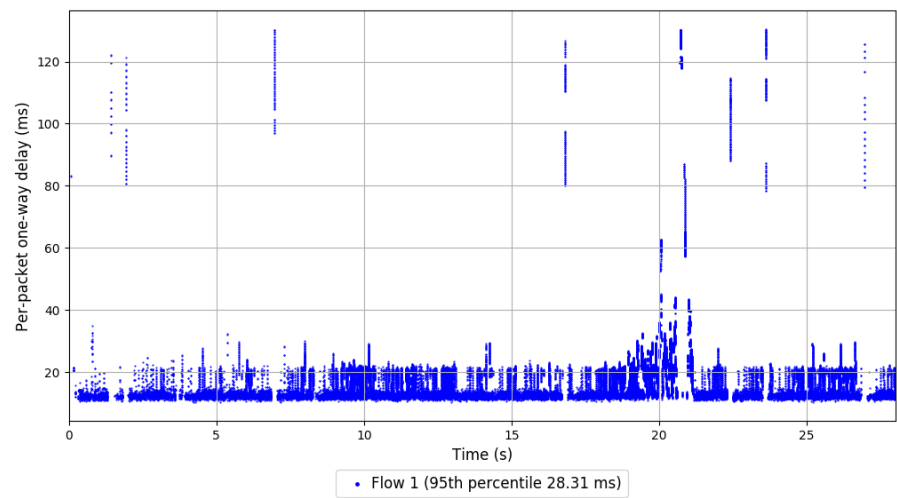
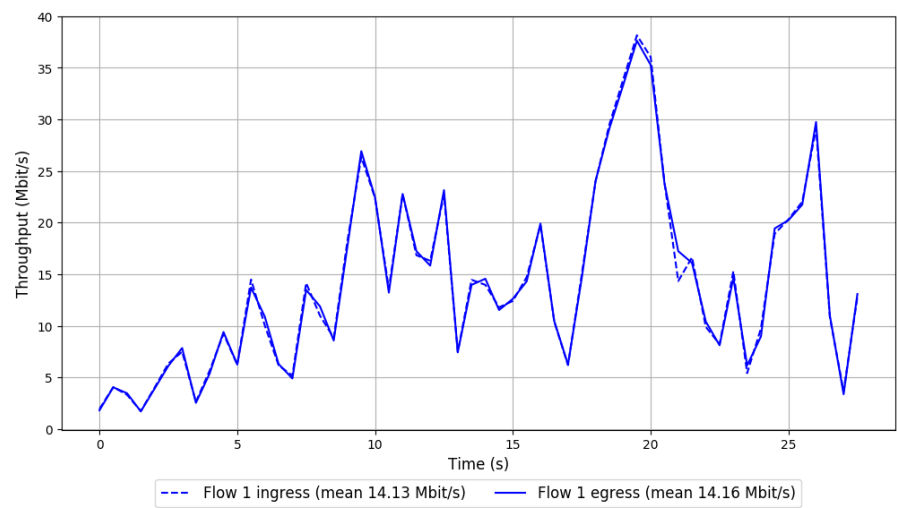


Run 2: Statistics of Copa

Start at: 2017-12-05 07:34:52
End at: 2017-12-05 07:35:22
Local clock offset: 3.107 ms
Remote clock offset: -2.494 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.16 Mbit/s
95th percentile per-packet one-way delay: 28.306 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 14.16 Mbit/s
95th percentile per-packet one-way delay: 28.306 ms
Loss rate: 0.00%

Run 2: Report of Copa — Data Link

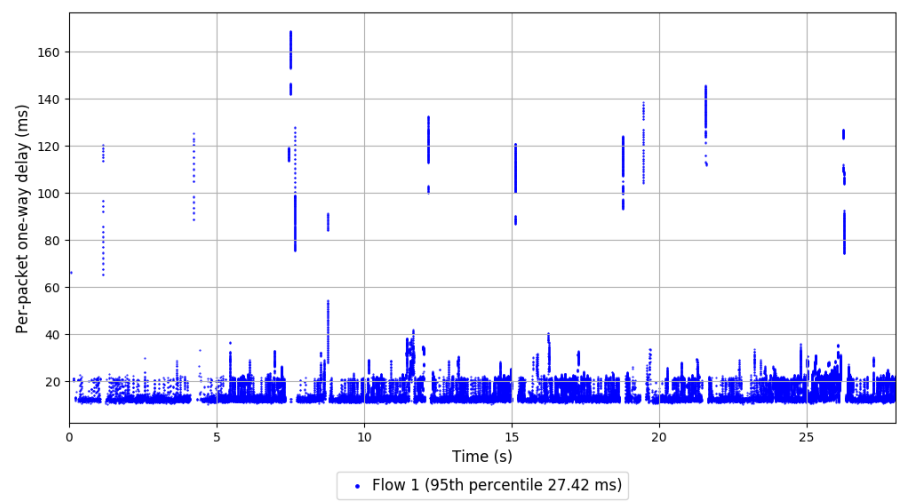
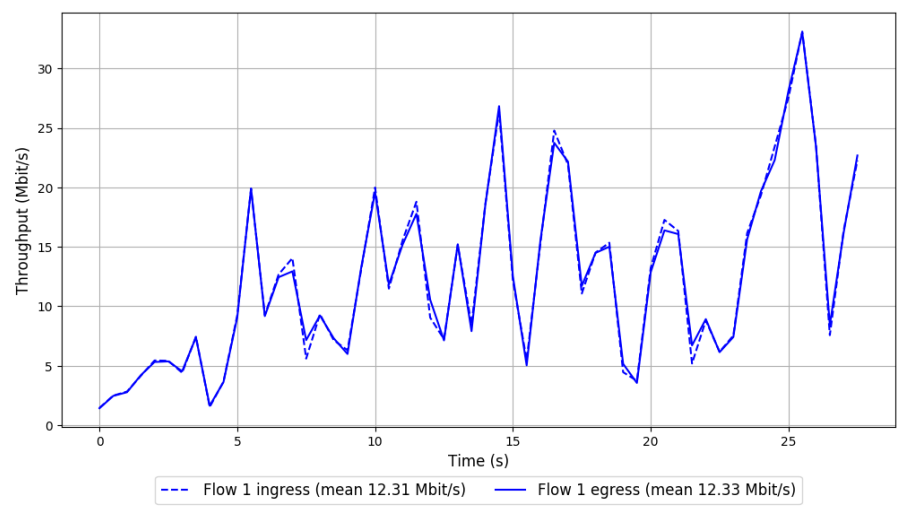


Run 3: Statistics of Copa

Start at: 2017-12-05 07:51:28
End at: 2017-12-05 07:51:58
Local clock offset: 3.649 ms
Remote clock offset: -2.698 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 27.420 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 27.420 ms
Loss rate: 0.00%

Run 3: Report of Copa — Data Link

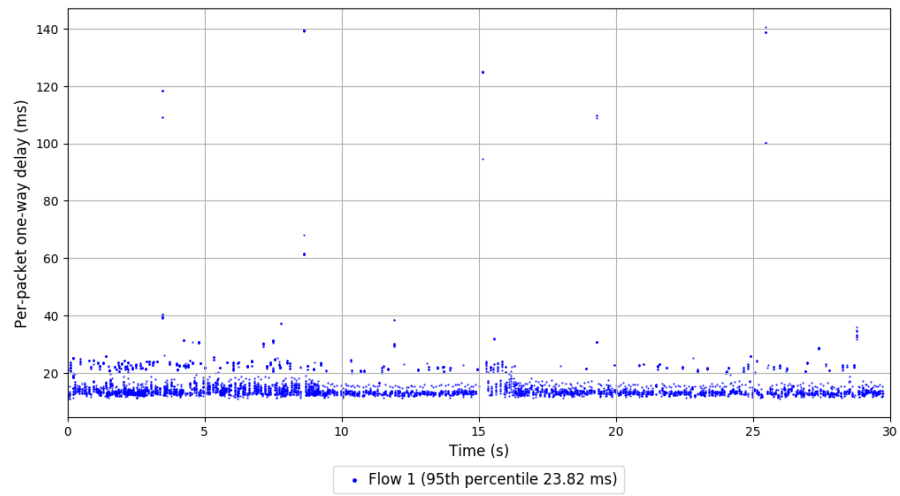
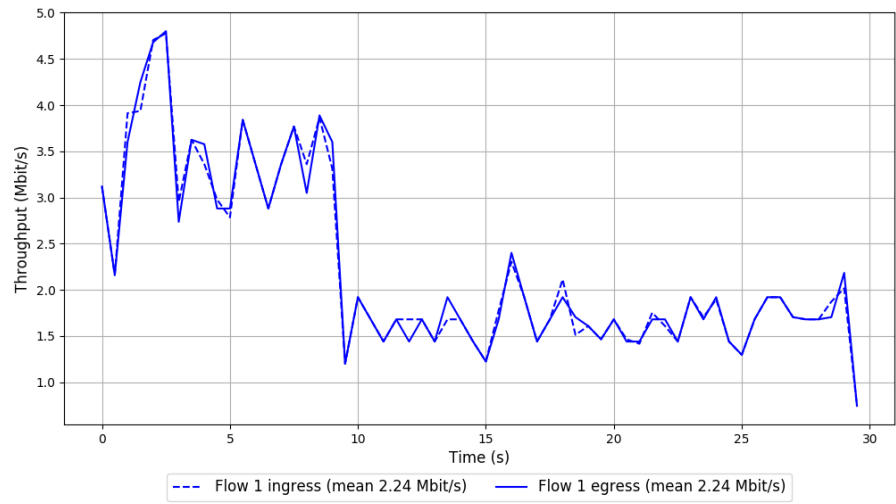


```
Run 1: Statistics of Indigo

Start at: 2017-12-05 07:22:59
End at: 2017-12-05 07:23:29
Local clock offset: 3.392 ms
Remote clock offset: -2.34 ms

# Below is generated by plot.py at 2017-12-05 07:59:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 23.823 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 23.823 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2017-12-05 07:39:36

End at: 2017-12-05 07:40:06

Local clock offset: 3.089 ms

Remote clock offset: -2.475 ms

Below is generated by plot.py at 2017-12-05 07:59:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.72 Mbit/s

95th percentile per-packet one-way delay: 22.124 ms

Loss rate: 0.00%

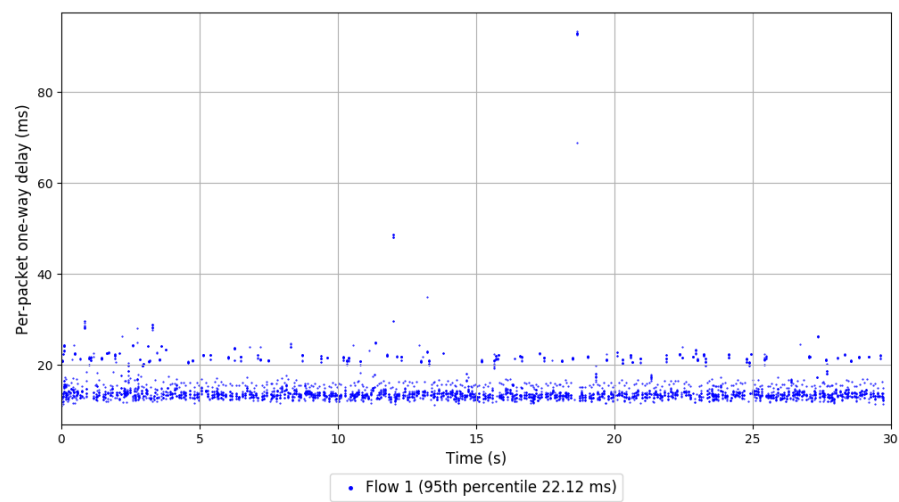
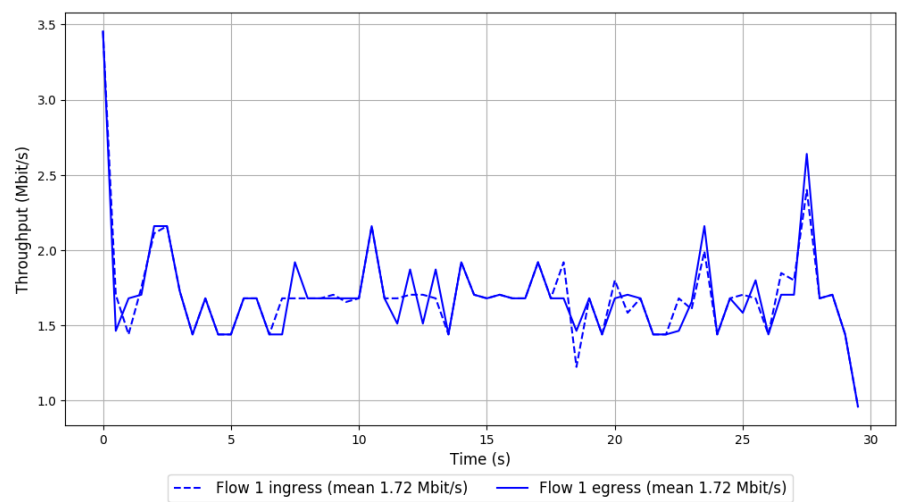
-- Flow 1:

Average throughput: 1.72 Mbit/s

95th percentile per-packet one-way delay: 22.124 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

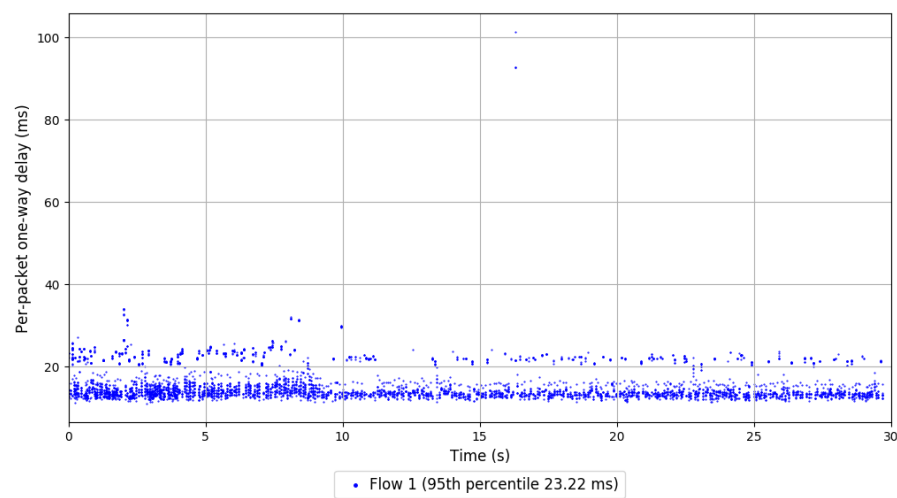
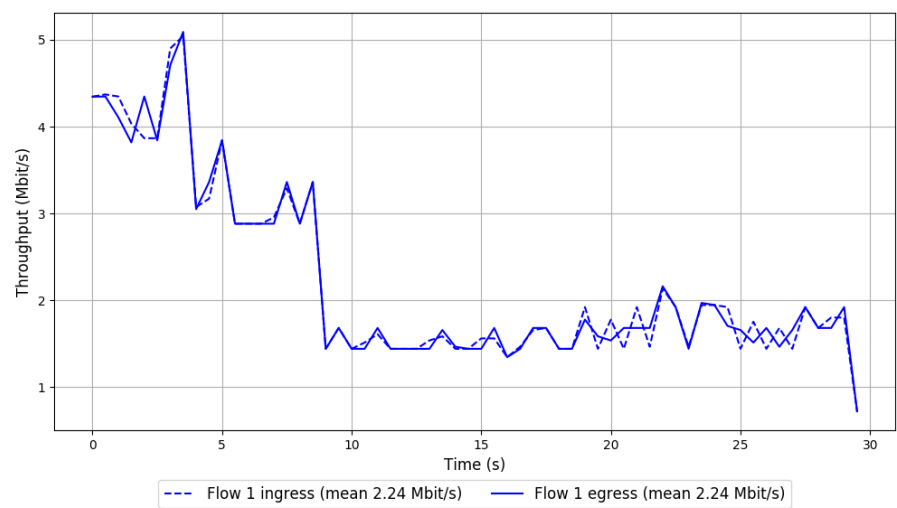


Run 3: Statistics of Indigo

Start at: 2017-12-05 07:56:12
End at: 2017-12-05 07:56:42
Local clock offset: 3.662 ms
Remote clock offset: -2.697 ms

Below is generated by plot.py at 2017-12-05 07:59:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 23.223 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 23.223 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link

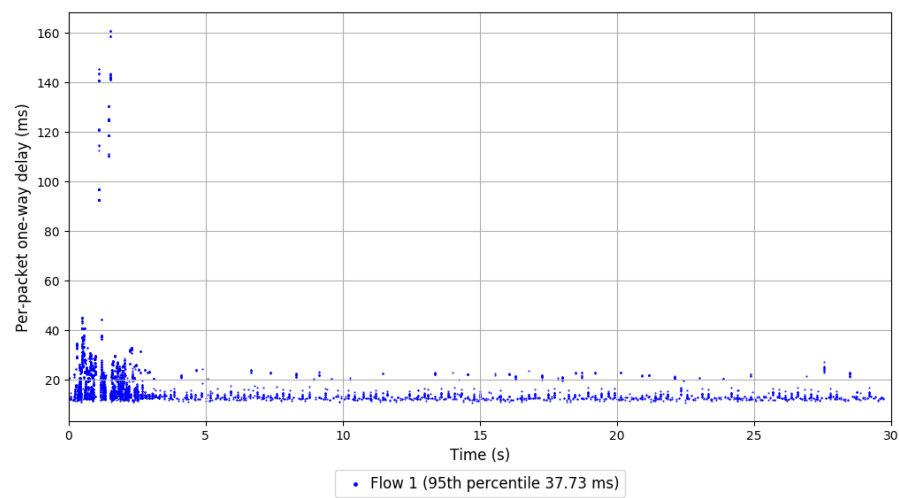
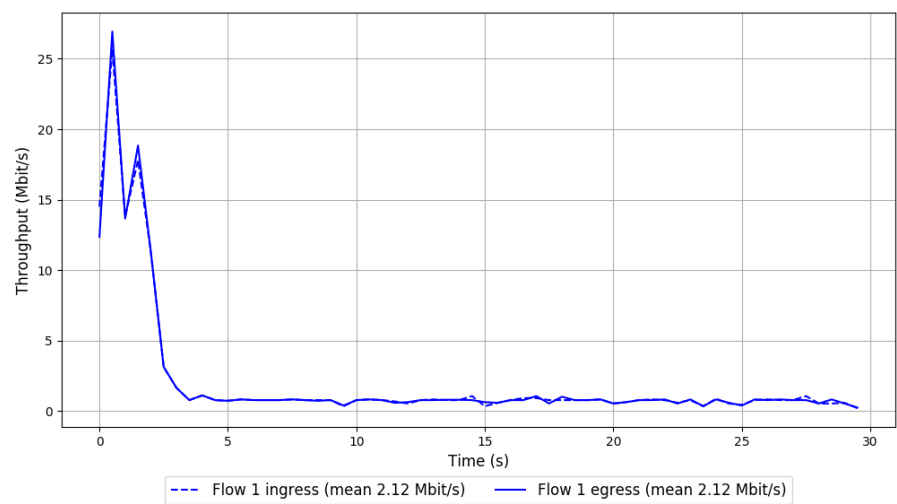


```
Run 1: Statistics of Indigo-calib

Start at: 2017-12-05 07:20:36
End at: 2017-12-05 07:21:06
Local clock offset: 3.692 ms
Remote clock offset: -2.373 ms

# Below is generated by plot.py at 2017-12-05 07:59:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 37.732 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 37.732 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-calib — Data Link



Run 2: Statistics of Indigo-calib

Start at: 2017-12-05 07:37:14

End at: 2017-12-05 07:37:44

Local clock offset: 3.117 ms

Remote clock offset: -2.54 ms

Below is generated by plot.py at 2017-12-05 07:59:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.81 Mbit/s

95th percentile per-packet one-way delay: 34.041 ms

Loss rate: 0.00%

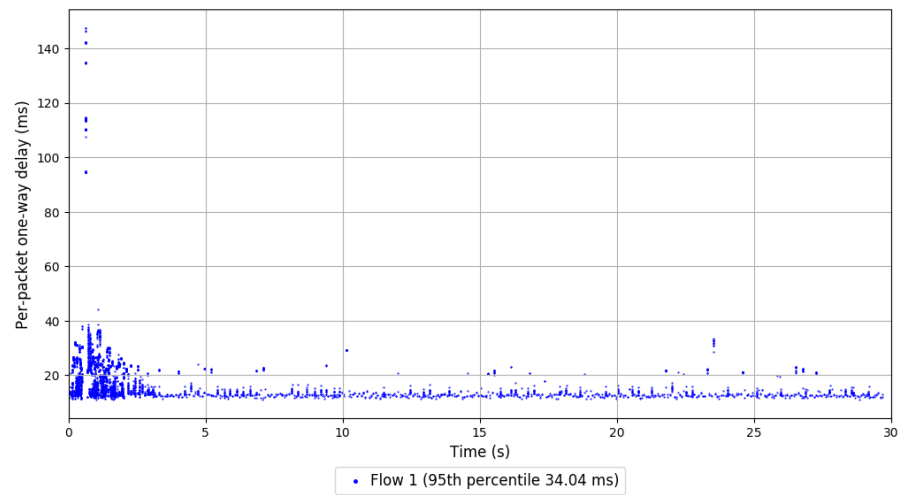
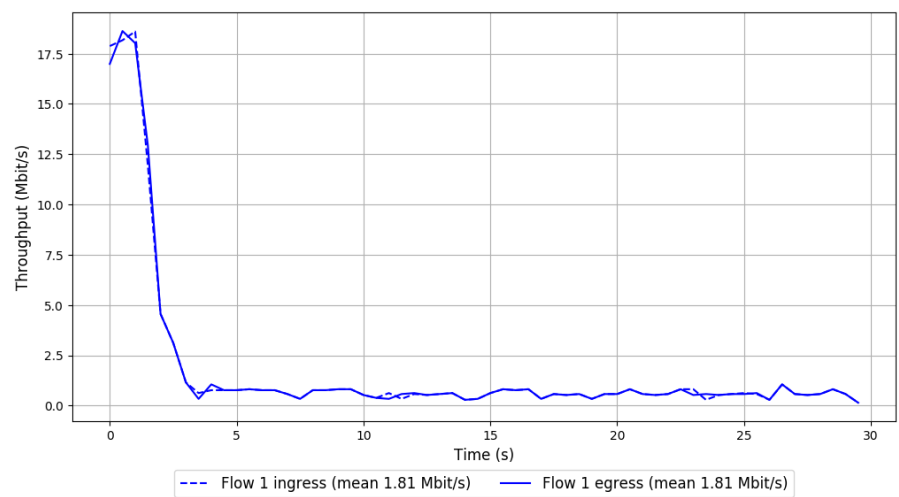
-- Flow 1:

Average throughput: 1.81 Mbit/s

95th percentile per-packet one-way delay: 34.041 ms

Loss rate: 0.00%

Run 2: Report of Indigo-calib — Data Link



Run 3: Statistics of Indigo-calib

Start at: 2017-12-05 07:53:50

End at: 2017-12-05 07:54:20

Local clock offset: 3.63 ms

Remote clock offset: -2.727 ms

Below is generated by plot.py at 2017-12-05 07:59:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 28.977 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 28.977 ms

Loss rate: 0.00%

Run 3: Report of Indigo-calib — Data Link

