

Pantheon Report

Generated at 2017-10-12 19:06:34 (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).

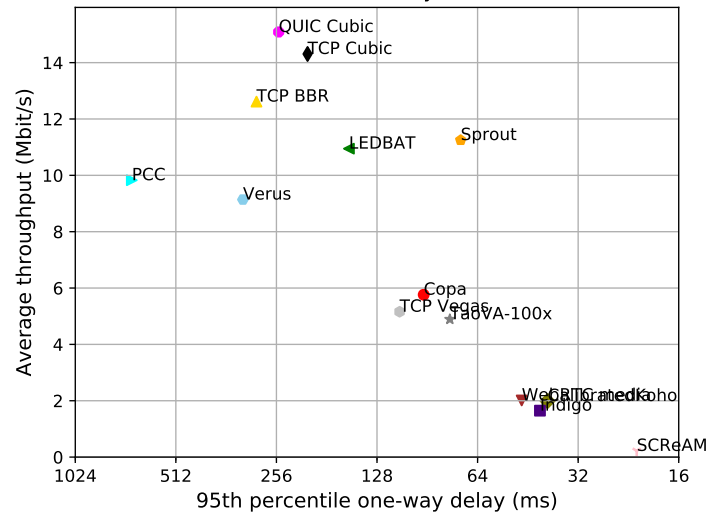
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

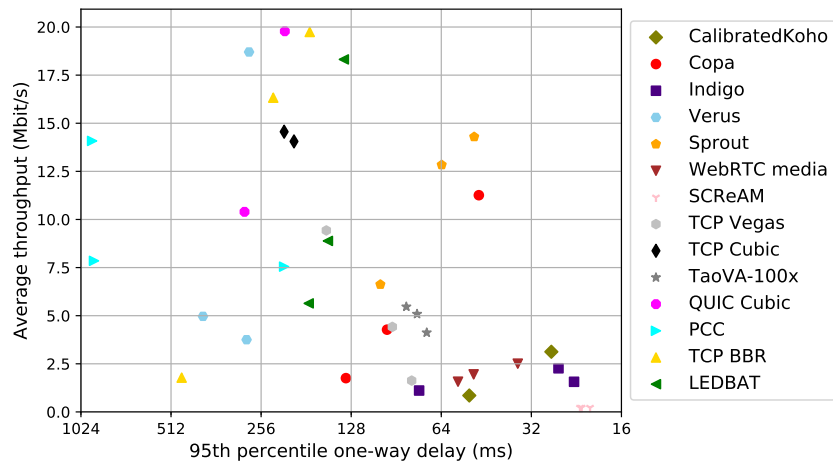
Git summary:

```
branch: indigos @ 45998d6404be7c5106956530acb9cfc43bd06e7d
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ f7ca42f251bf49b432bb71de6d13fa903515c366
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	12.62	293.70	0.90
TCP Cubic	2	14.31	206.60	0.27
LEDBAT	3	10.95	155.36	0.30
PCC	3	9.83	693.48	4.87
QUIC Cubic	2	15.09	252.08	0.53
SCReAM	3	0.22	21.37	0.00
WebRTC media	3	2.01	47.23	0.00
Sprout	3	11.25	71.91	0.08
TaoVA-100x	3	4.89	77.48	0.01
TCP Vegas	3	5.16	109.54	0.00
Verus	3	9.14	322.51	0.83
Copa	3	5.76	92.79	0.07
CalibratedKoho	2	1.99	39.52	0.01
Indigo	3	1.65	41.64	0.01

Run 1: Statistics of TCP BBR

Start at: 2017-10-12 18:25:15

End at: 2017-10-12 18:25:45

Local clock offset: 1.111 ms

Remote clock offset: -2.218 ms

Below is generated by plot.py at 2017-10-12 19:06:00

Datalink statistics

-- Total of 1 flow:

Average throughput: 19.74 Mbit/s

95th percentile per-packet one-way delay: 176.113 ms

Loss rate: 0.31%

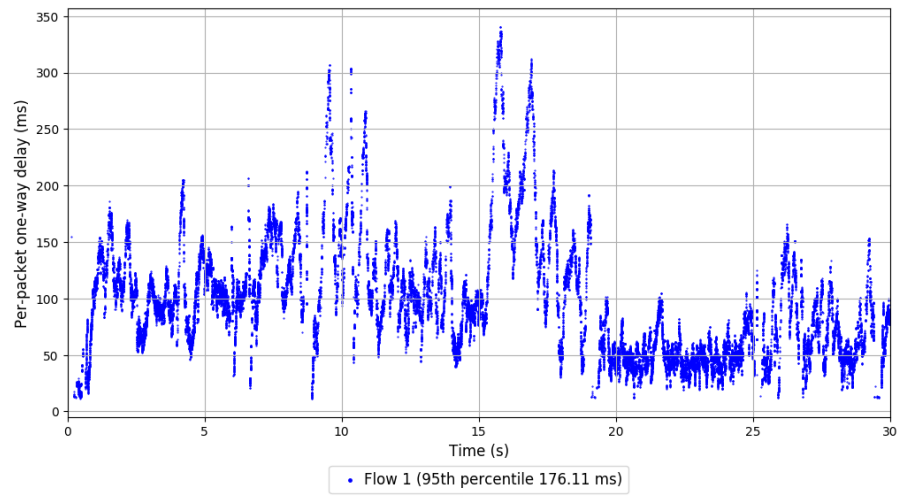
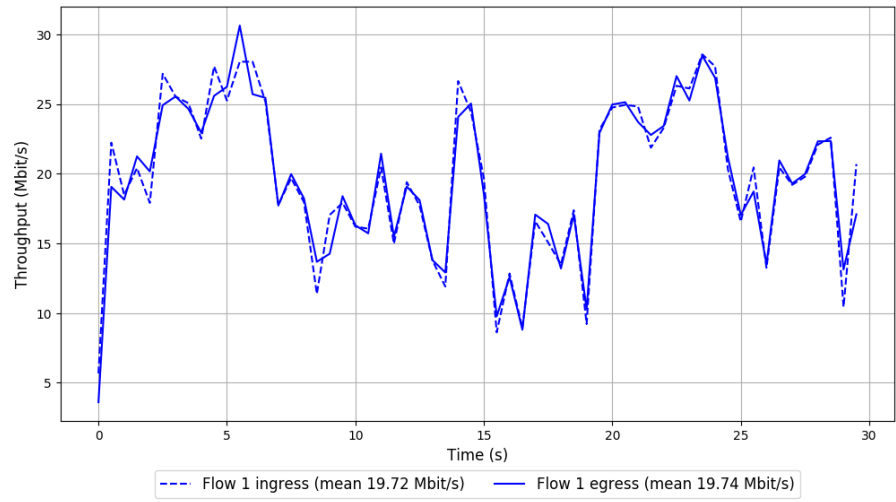
-- Flow 1:

Average throughput: 19.74 Mbit/s

95th percentile per-packet one-way delay: 176.113 ms

Loss rate: 0.31%

Run 1: Report of TCP BBR — Data Link

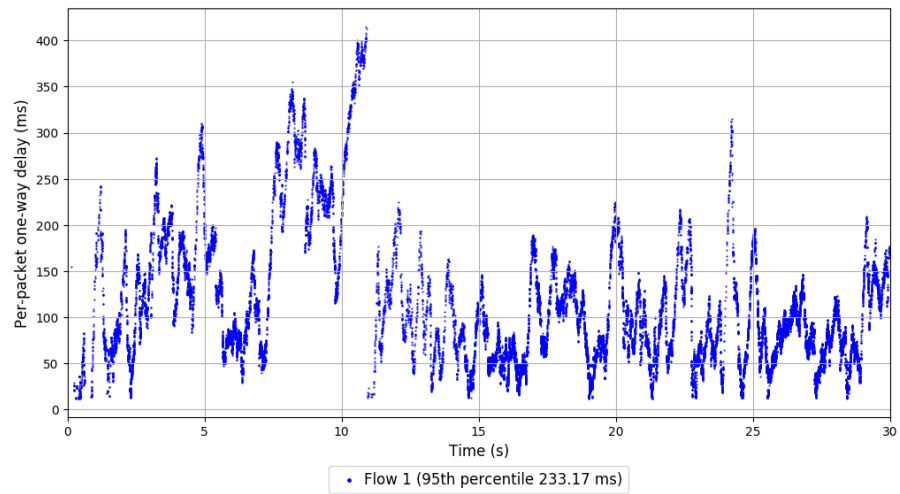
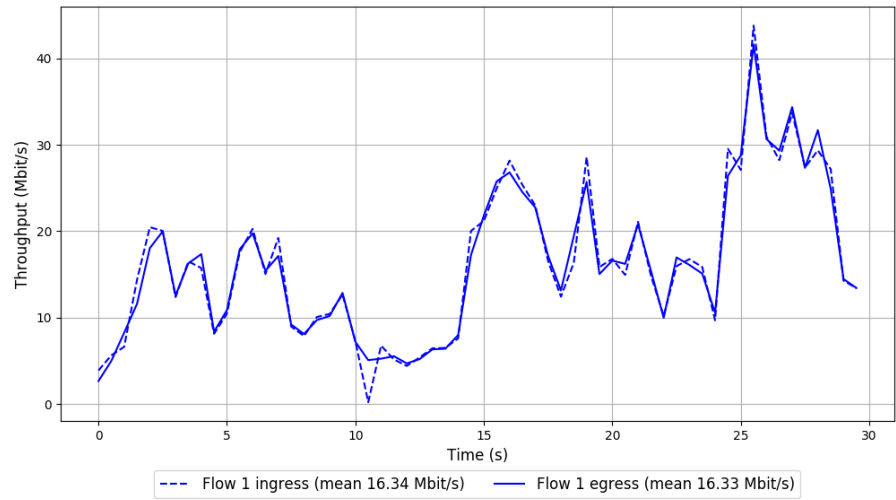


Run 2: Statistics of TCP BBR

Start at: 2017-10-12 18:41:46
End at: 2017-10-12 18:42:16
Local clock offset: 0.926 ms
Remote clock offset: -2.255 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 16.33 Mbit/s
95th percentile per-packet one-way delay: 233.166 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 16.33 Mbit/s
95th percentile per-packet one-way delay: 233.166 ms
Loss rate: 0.47%

Run 2: Report of TCP BBR — Data Link

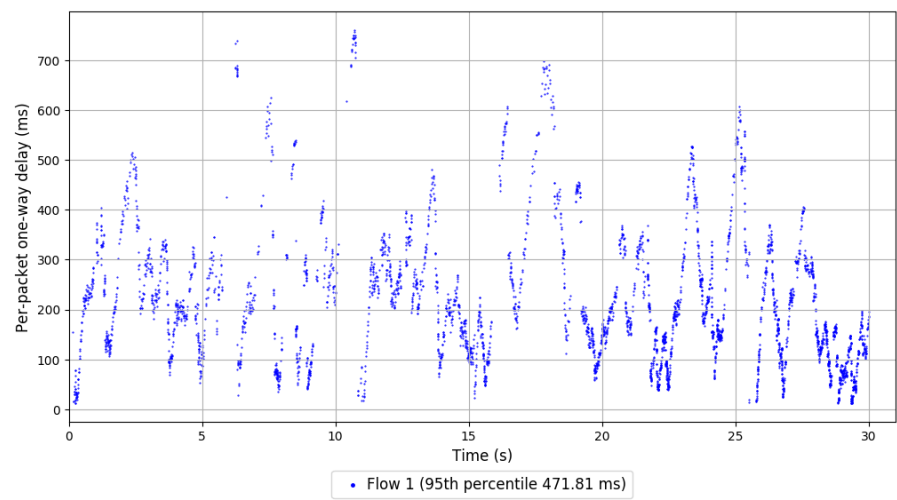
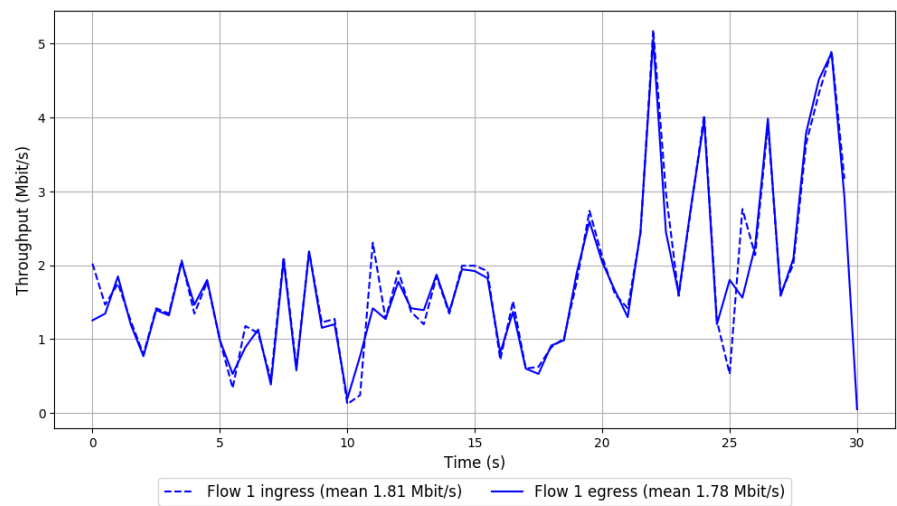


Run 3: Statistics of TCP BBR

Start at: 2017-10-12 18:58:14
End at: 2017-10-12 18:58:44
Local clock offset: 0.787 ms
Remote clock offset: -2.245 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 471.807 ms
Loss rate: 1.93%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 471.807 ms
Loss rate: 1.93%

Run 3: Report of TCP BBR — Data Link

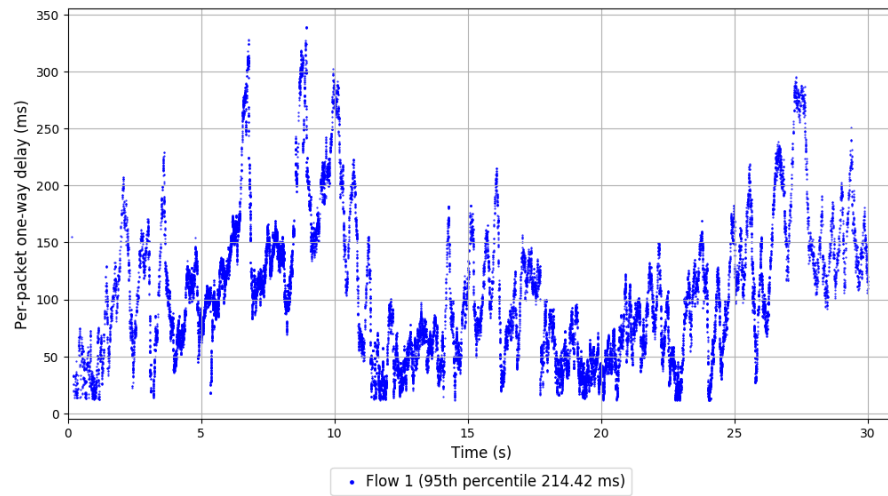
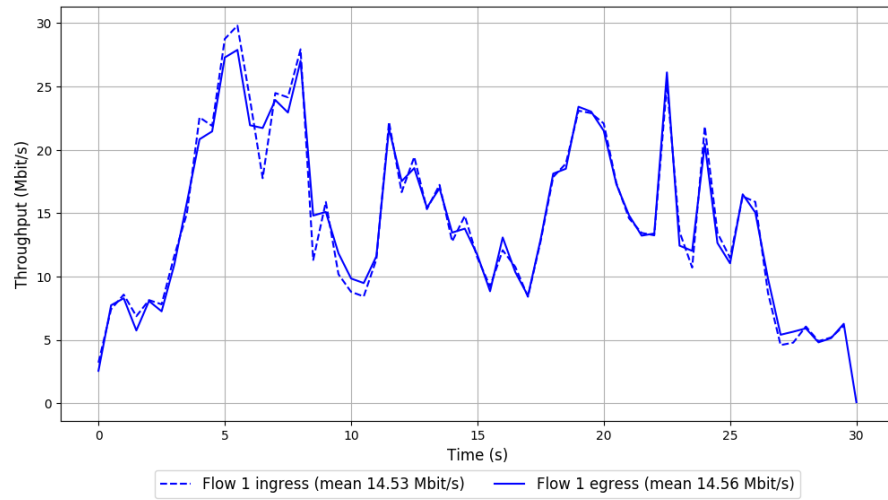


Run 1: Statistics of TCP Cubic

Start at: 2017-10-12 18:29:58
End at: 2017-10-12 18:30:28
Local clock offset: 1.061 ms
Remote clock offset: -2.135 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.56 Mbit/s
95th percentile per-packet one-way delay: 214.418 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 14.56 Mbit/s
95th percentile per-packet one-way delay: 214.418 ms
Loss rate: 0.19%

Run 1: Report of TCP Cubic — Data Link

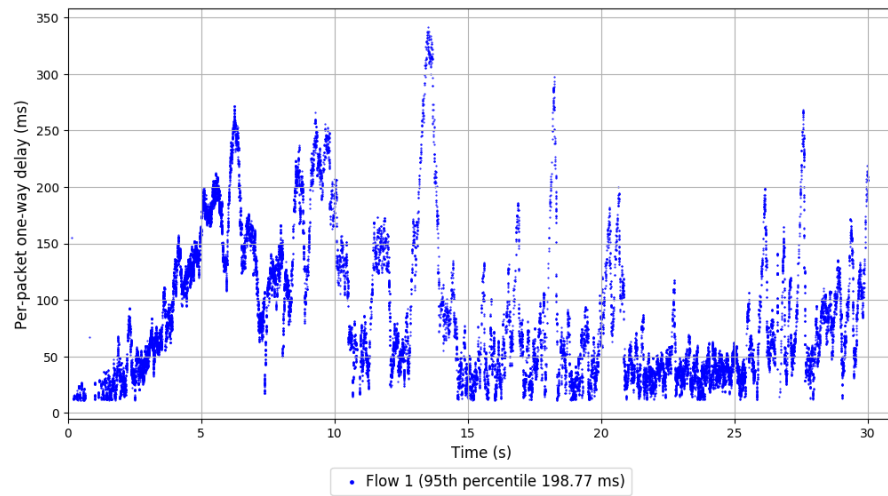
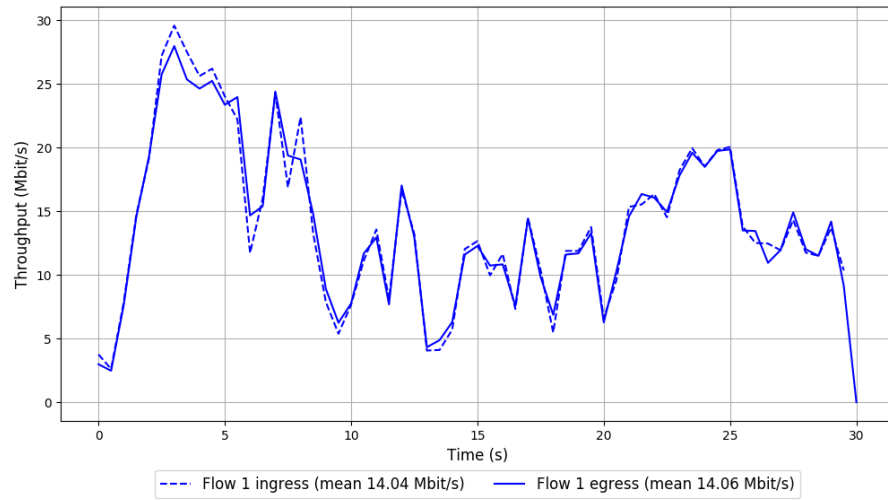


Run 2: Statistics of TCP Cubic

Start at: 2017-10-12 18:46:29
End at: 2017-10-12 18:46:59
Local clock offset: 0.982 ms
Remote clock offset: -2.258 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.06 Mbit/s
95th percentile per-packet one-way delay: 198.774 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 14.06 Mbit/s
95th percentile per-packet one-way delay: 198.774 ms
Loss rate: 0.34%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

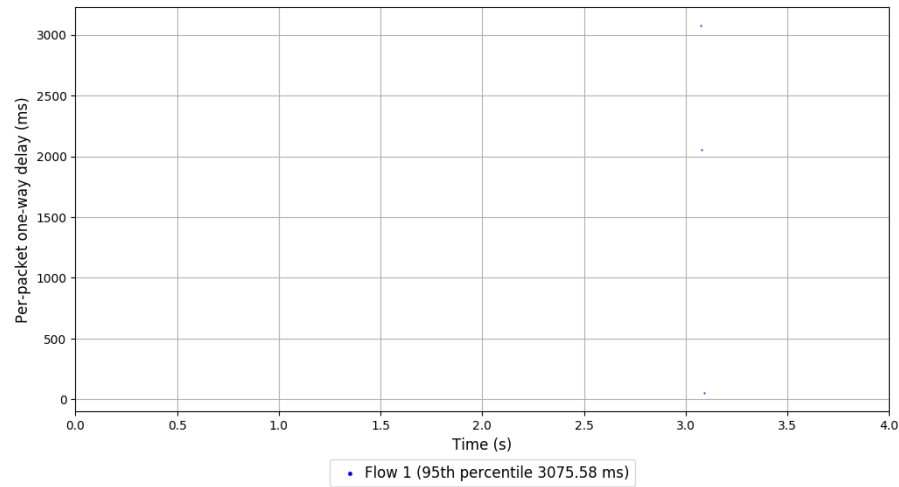
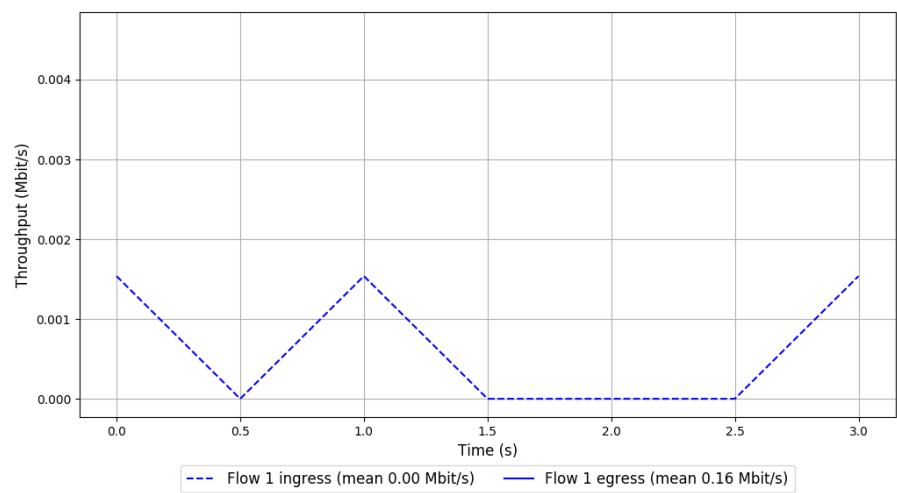
Start at: 2017-10-12 19:02:55

End at: 2017-10-12 19:03:25

Local clock offset: 0.852 ms

Remote clock offset: -2.23 ms

Run 3: Report of TCP Cubic — Data Link

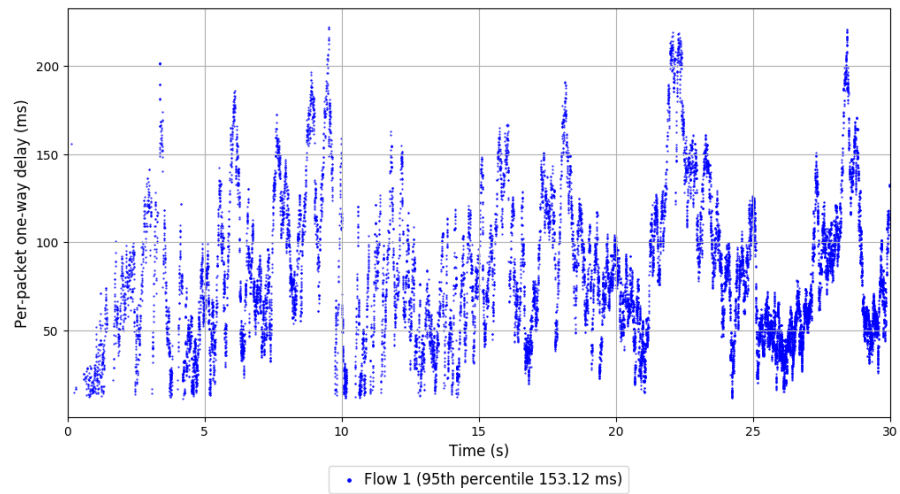
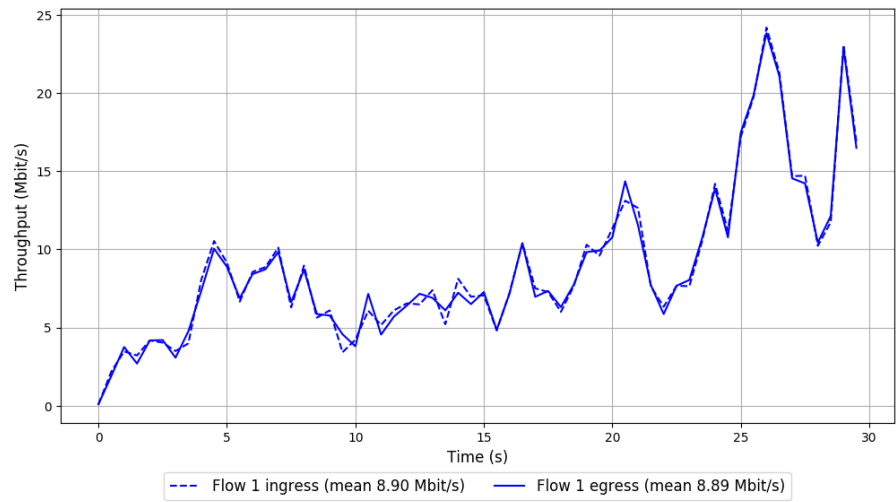


```
Run 1: Statistics of LEDBAT

Start at: 2017-10-12 18:24:04
End at: 2017-10-12 18:24:34
Local clock offset: 1.197 ms
Remote clock offset: -2.24 ms

# Below is generated by plot.py at 2017-10-12 19:06:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.89 Mbit/s
95th percentile per-packet one-way delay: 153.123 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 8.89 Mbit/s
95th percentile per-packet one-way delay: 153.123 ms
Loss rate: 0.60%
```


Run 1: Report of LEDBAT — Data Link

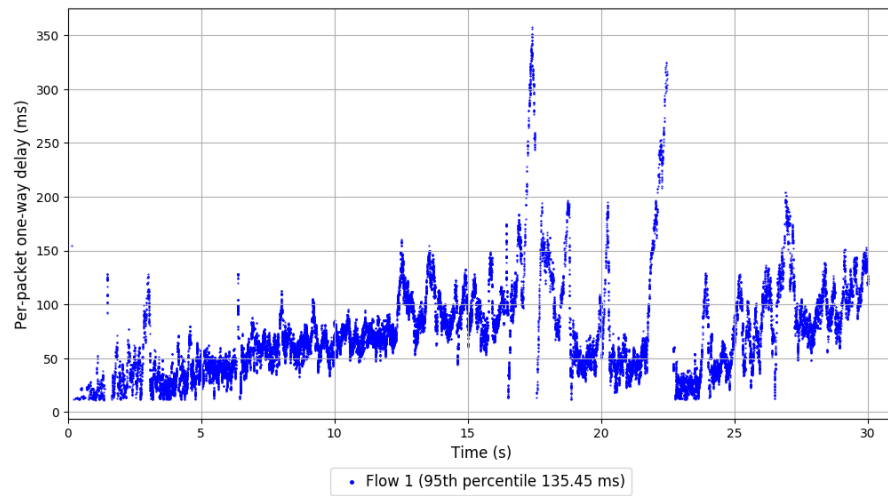
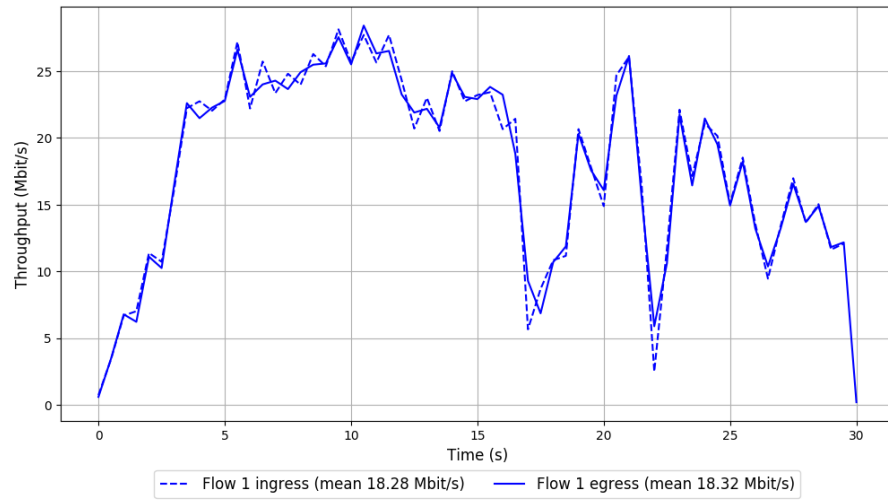


Run 2: Statistics of LEDBAT

Start at: 2017-10-12 18:40:35
End at: 2017-10-12 18:41:05
Local clock offset: 0.957 ms
Remote clock offset: -2.272 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.32 Mbit/s
95th percentile per-packet one-way delay: 135.454 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 18.32 Mbit/s
95th percentile per-packet one-way delay: 135.454 ms
Loss rate: 0.24%

Run 2: Report of LEDBAT — Data Link

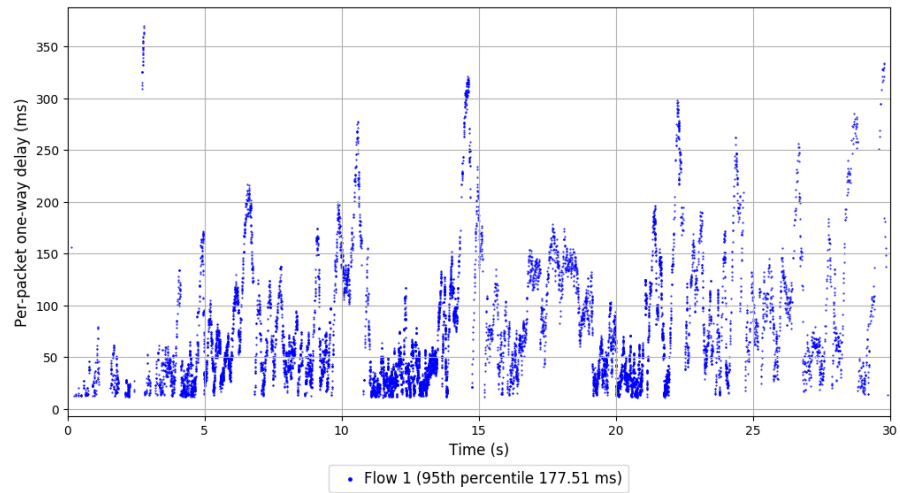
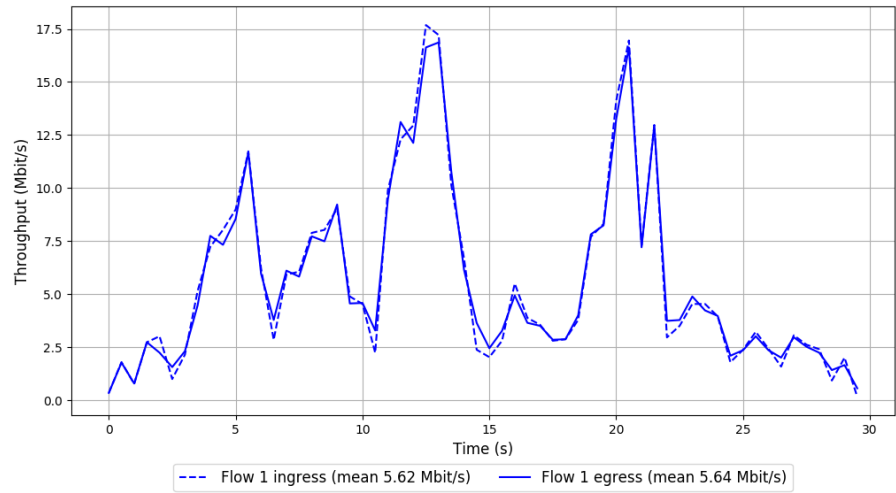


Run 3: Statistics of LEDBAT

Start at: 2017-10-12 18:57:03
End at: 2017-10-12 18:57:33
Local clock offset: 0.782 ms
Remote clock offset: -2.179 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 177.513 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 177.513 ms
Loss rate: 0.07%

Run 3: Report of LEDBAT — Data Link

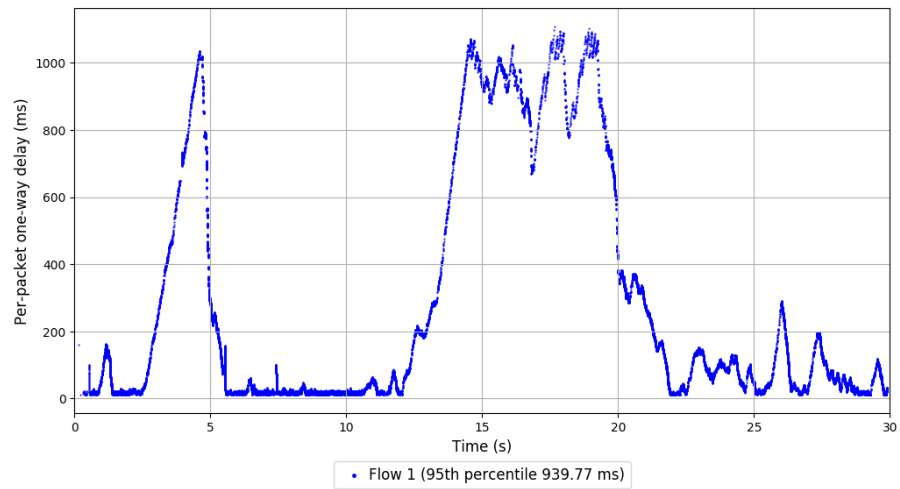
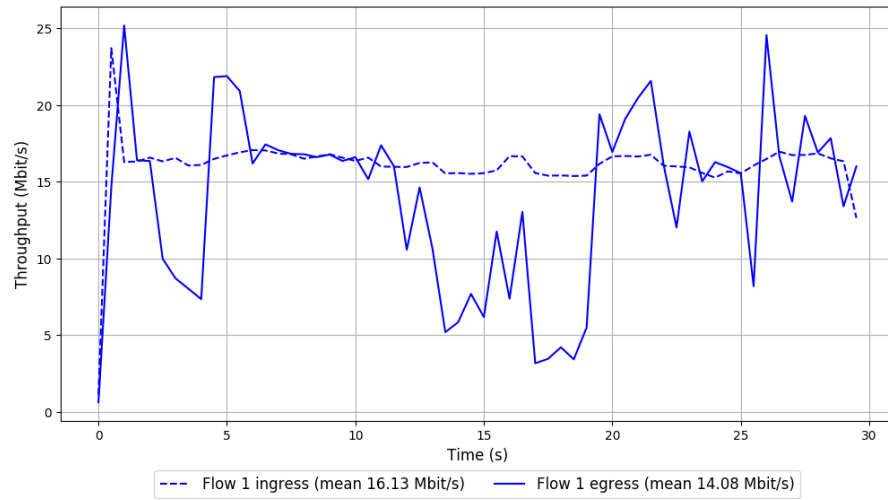


Run 1: Statistics of PCC

Start at: 2017-10-12 18:20:33
End at: 2017-10-12 18:21:03
Local clock offset: 1.151 ms
Remote clock offset: -2.293 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.08 Mbit/s
95th percentile per-packet one-way delay: 939.768 ms
Loss rate: 13.13%
-- Flow 1:
Average throughput: 14.08 Mbit/s
95th percentile per-packet one-way delay: 939.768 ms
Loss rate: 13.13%

Run 1: Report of PCC — Data Link

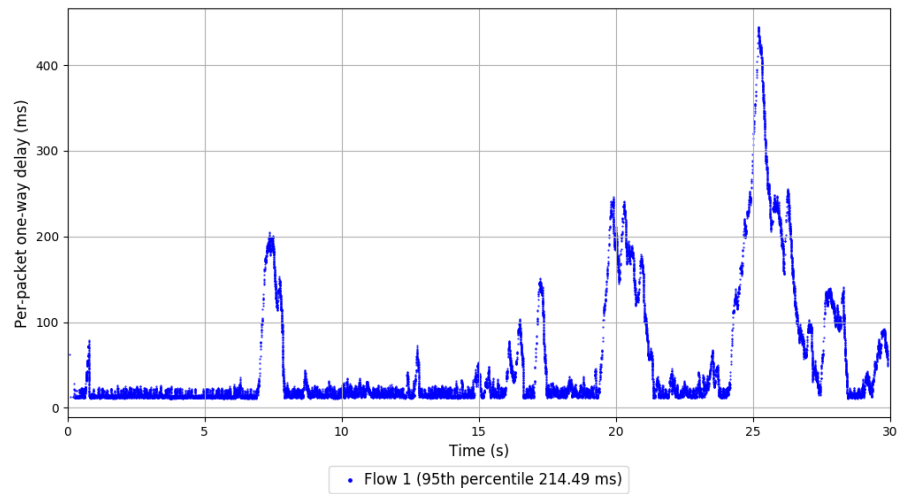
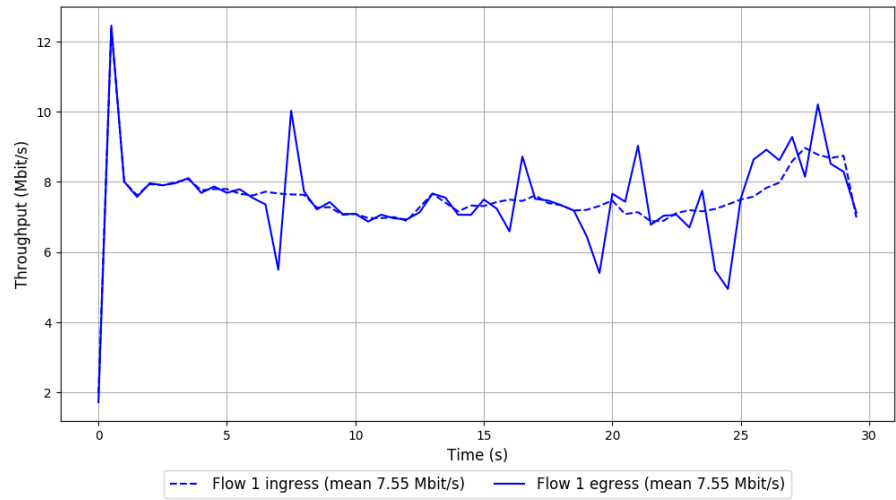


Run 2: Statistics of PCC

Start at: 2017-10-12 18:37:03
End at: 2017-10-12 18:37:33
Local clock offset: 1.061 ms
Remote clock offset: -2.221 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.55 Mbit/s
95th percentile per-packet one-way delay: 214.486 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 7.55 Mbit/s
95th percentile per-packet one-way delay: 214.486 ms
Loss rate: 0.19%

Run 2: Report of PCC — Data Link

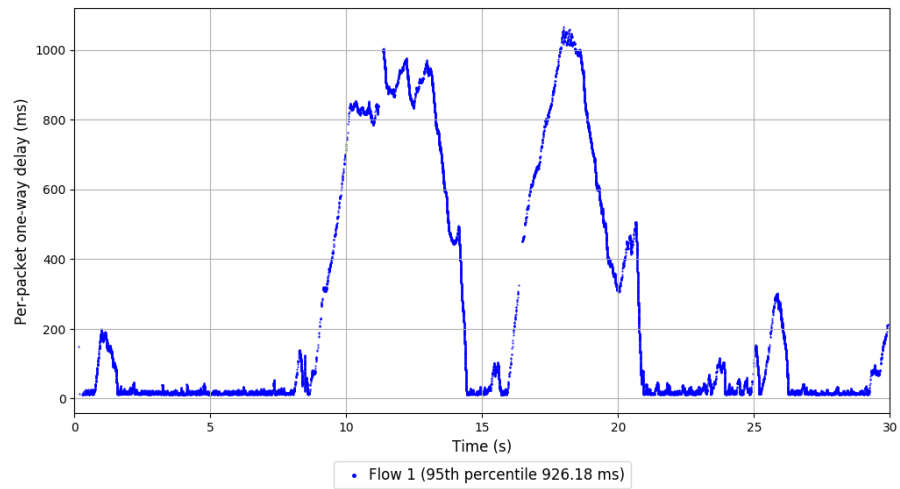
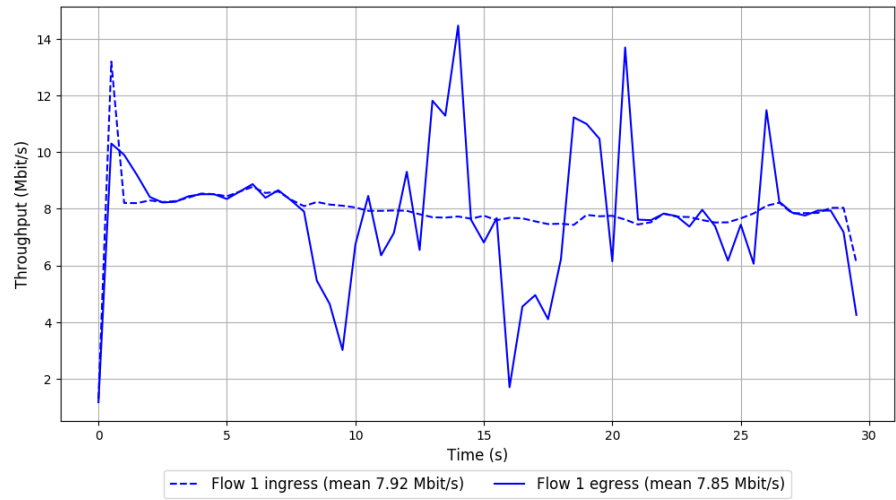


Run 3: Statistics of PCC

Start at: 2017-10-12 18:53:32
End at: 2017-10-12 18:54:02
Local clock offset: 0.913 ms
Remote clock offset: -2.143 ms

Below is generated by plot.py at 2017-10-12 19:06:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.85 Mbit/s
95th percentile per-packet one-way delay: 926.180 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 7.85 Mbit/s
95th percentile per-packet one-way delay: 926.180 ms
Loss rate: 1.28%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

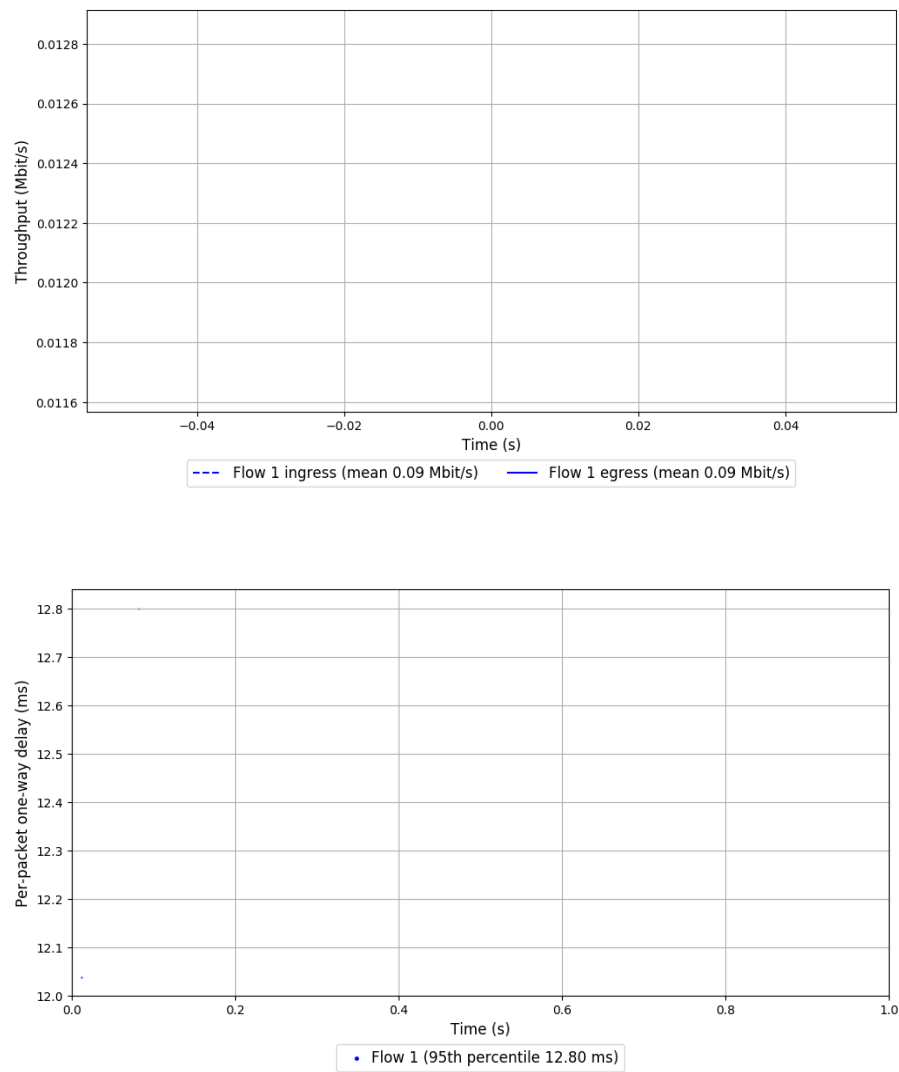
Start at: 2017-10-12 18:17:02

End at: 2017-10-12 18:17:32

Local clock offset: 1.266 ms

Remote clock offset: -2.379 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2017-10-12 18:33:31

End at: 2017-10-12 18:34:01

Local clock offset: 1.015 ms

Remote clock offset: -2.14 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 19.78 Mbit/s

95th percentile per-packet one-way delay: 213.302 ms

Loss rate: 0.44%

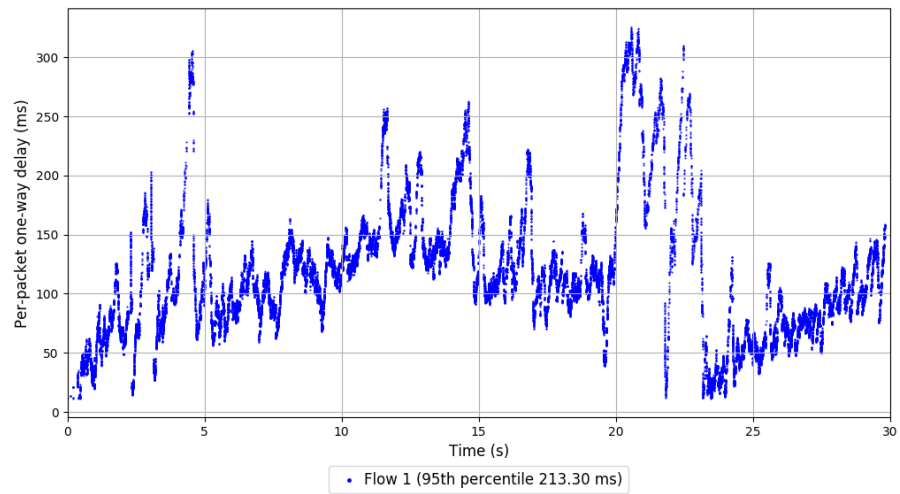
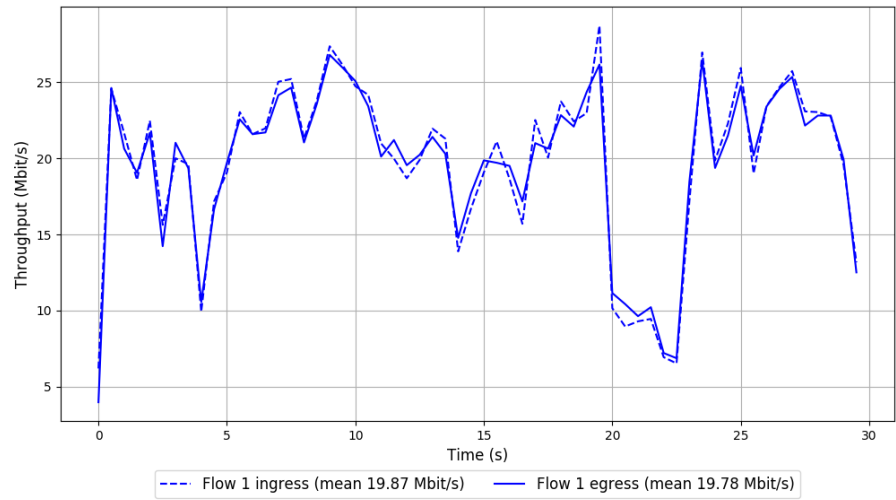
-- Flow 1:

Average throughput: 19.78 Mbit/s

95th percentile per-packet one-way delay: 213.302 ms

Loss rate: 0.44%

Run 2: Report of QUIC Cubic — Data Link

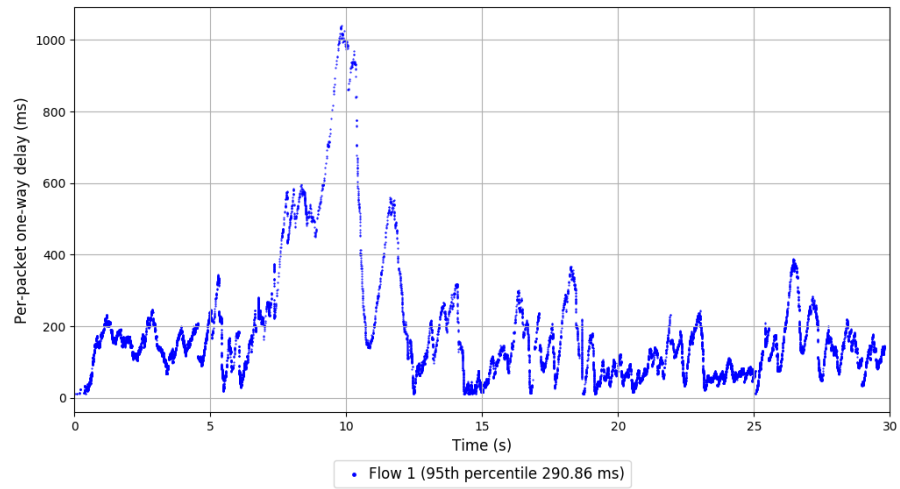
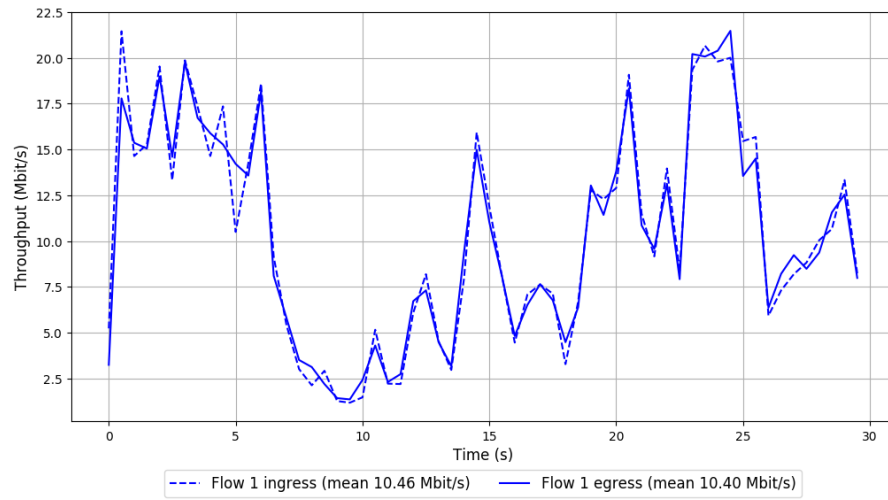


Run 3: Statistics of QUIC Cubic

Start at: 2017-10-12 18:50:01
End at: 2017-10-12 18:50:31
Local clock offset: 0.937 ms
Remote clock offset: -2.123 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.40 Mbit/s
95th percentile per-packet one-way delay: 290.863 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 10.40 Mbit/s
95th percentile per-packet one-way delay: 290.863 ms
Loss rate: 0.62%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

Start at: 2017-10-12 18:22:54

End at: 2017-10-12 18:23:24

Local clock offset: 1.136 ms

Remote clock offset: -2.26 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 20.374 ms

Loss rate: 0.00%

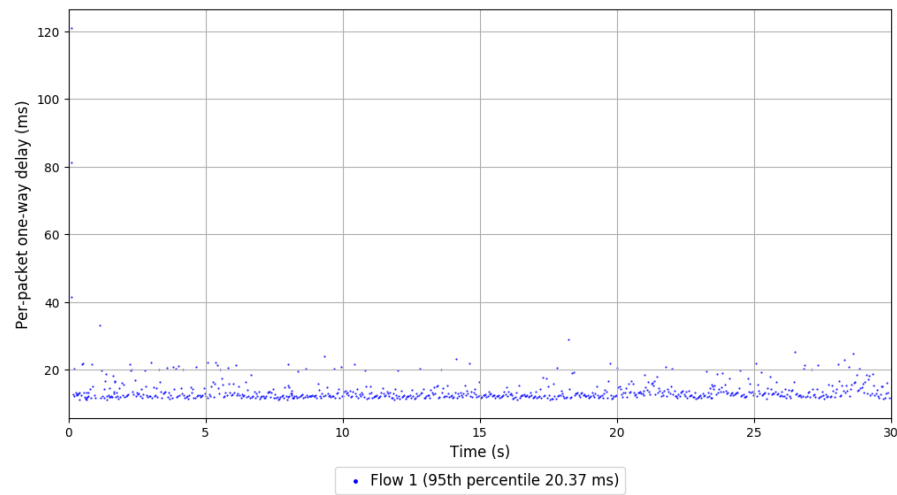
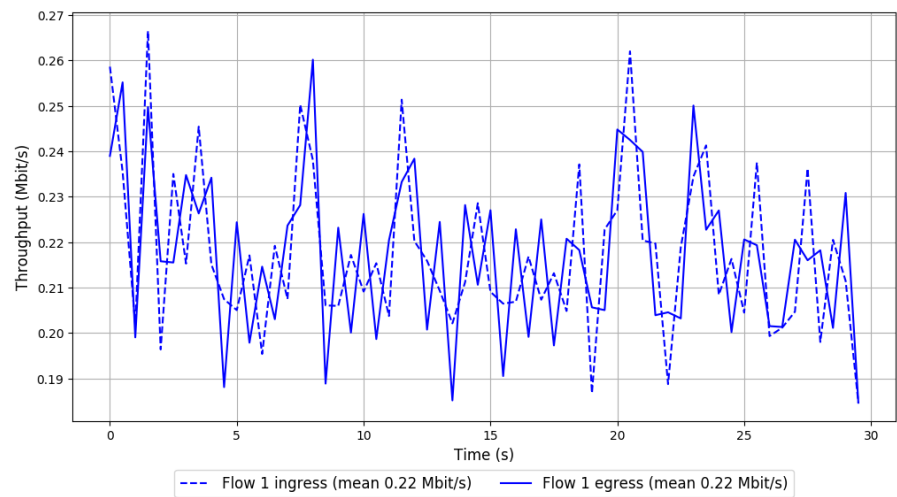
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 20.374 ms

Loss rate: 0.00%

Run 1: Report of SReAM — Data Link

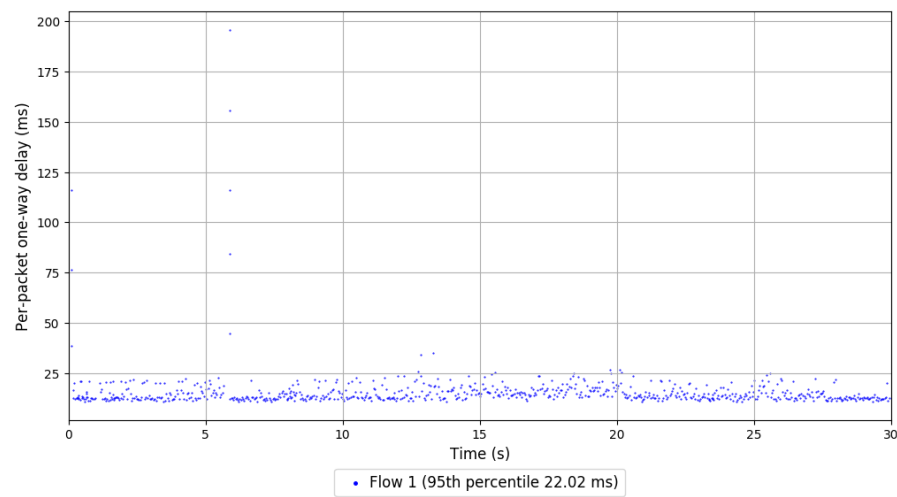
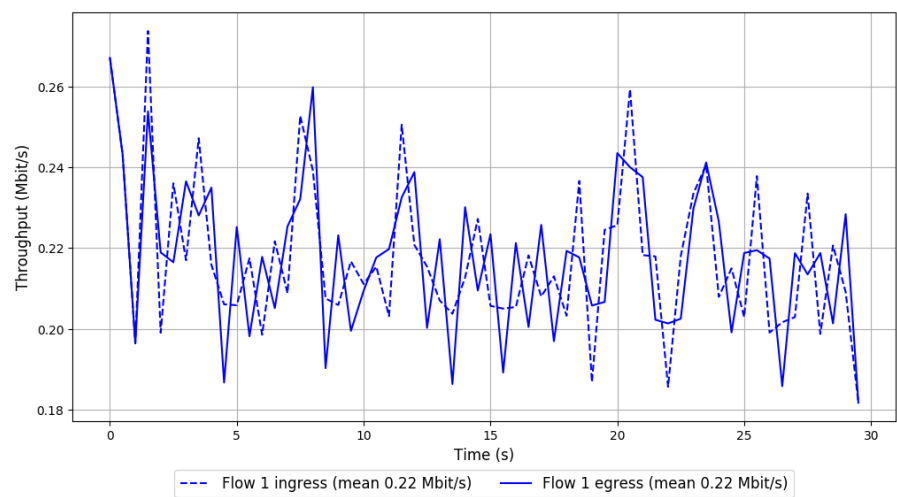


Run 2: Statistics of SCReAM

Start at: 2017-10-12 18:39:24
End at: 2017-10-12 18:39:54
Local clock offset: 1.06 ms
Remote clock offset: -2.209 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 22.016 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 22.016 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2017-10-12 18:55:53

End at: 2017-10-12 18:56:23

Local clock offset: 0.909 ms

Remote clock offset: -2.26 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 21.732 ms

Loss rate: 0.00%

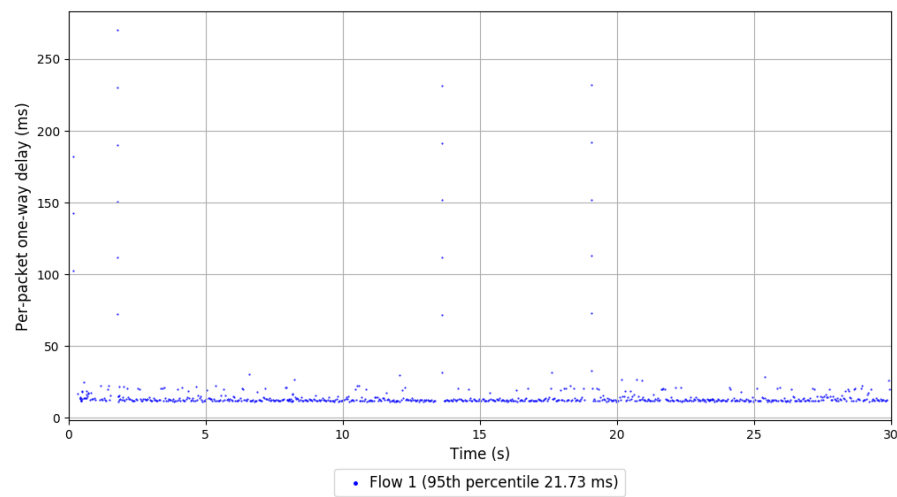
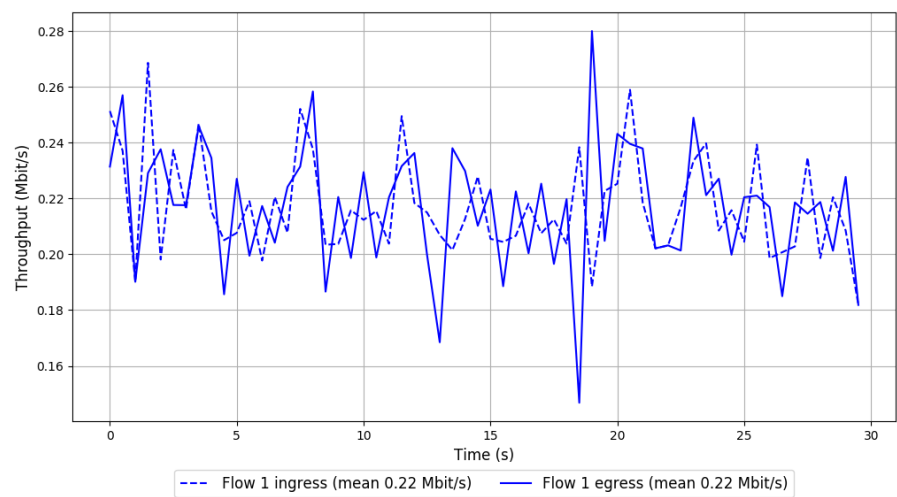
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 21.732 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of WebRTC media

Start at: 2017-10-12 18:21:44

End at: 2017-10-12 18:22:14

Local clock offset: 1.236 ms

Remote clock offset: -2.207 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.57 Mbit/s

95th percentile per-packet one-way delay: 56.267 ms

Loss rate: 0.00%

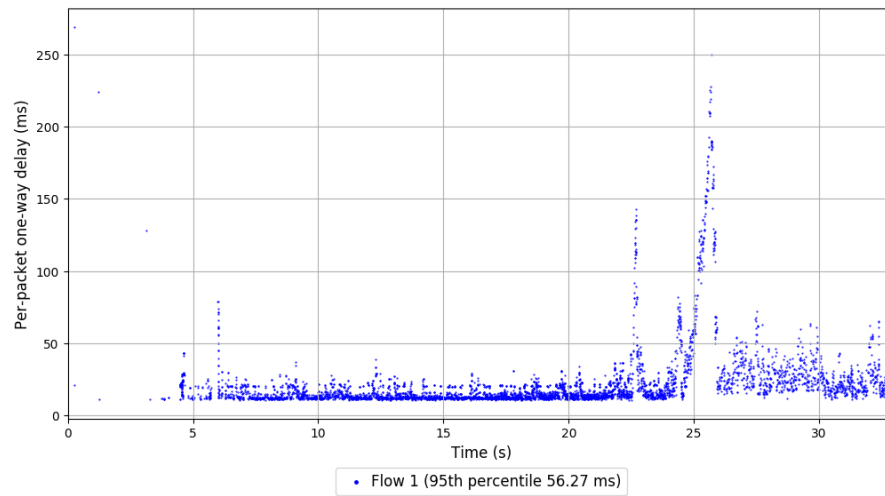
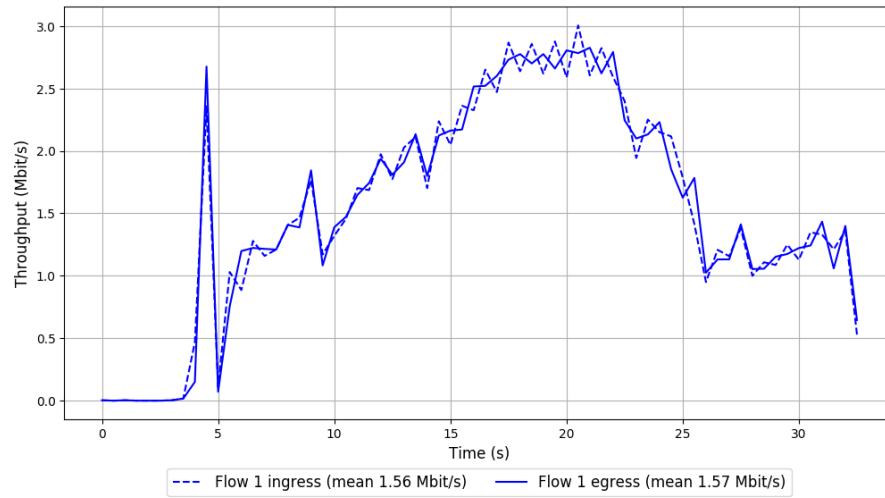
-- Flow 1:

Average throughput: 1.57 Mbit/s

95th percentile per-packet one-way delay: 56.267 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link

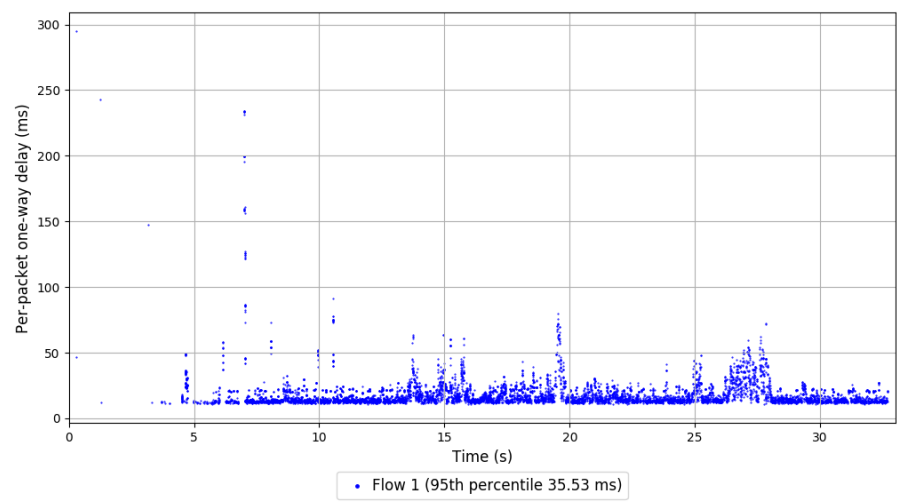
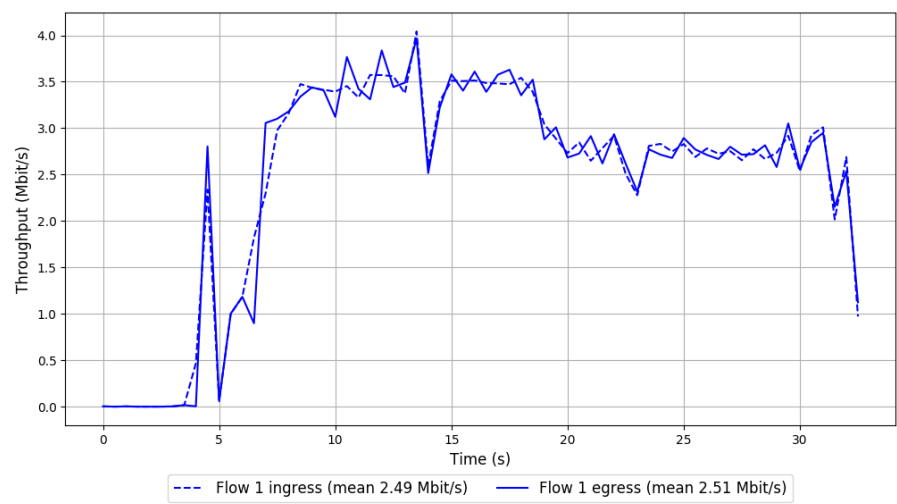


Run 2: Statistics of WebRTC media

Start at: 2017-10-12 18:38:14
End at: 2017-10-12 18:38:44
Local clock offset: 0.956 ms
Remote clock offset: -2.215 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 35.530 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 35.530 ms
Loss rate: 0.01%

Run 2: Report of WebRTC media — Data Link

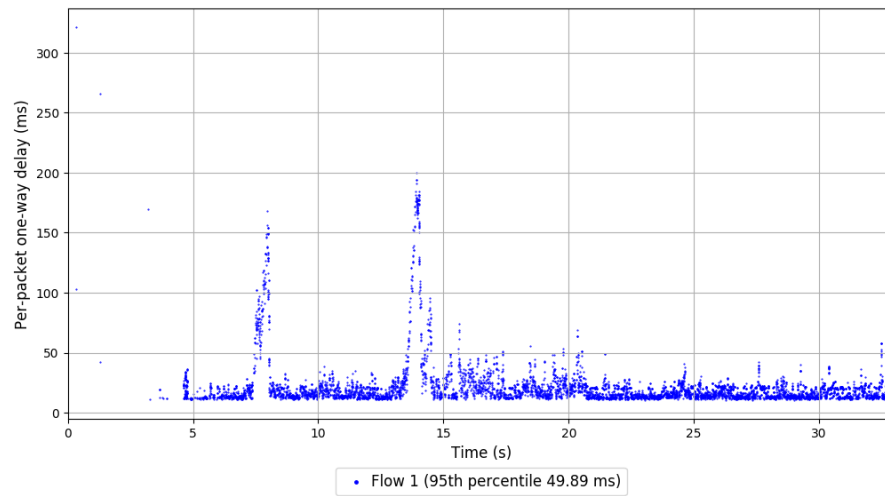
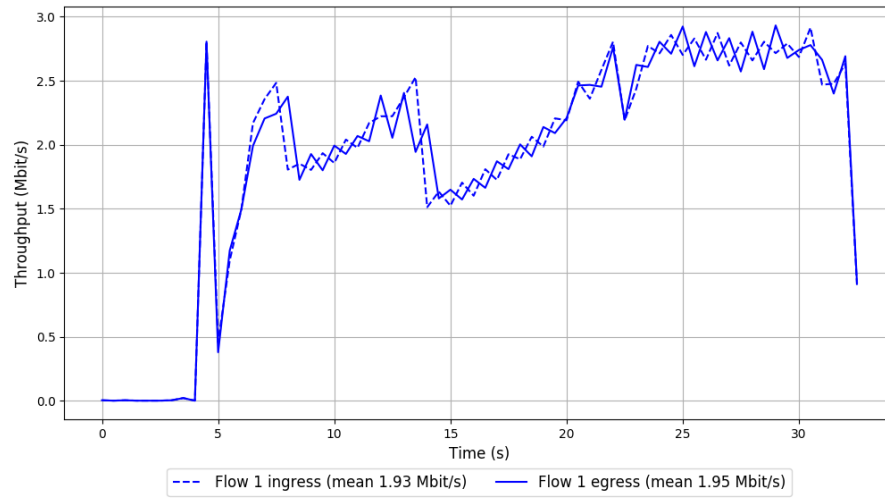


Run 3: Statistics of WebRTC media

Start at: 2017-10-12 18:54:43
End at: 2017-10-12 18:55:13
Local clock offset: 0.799 ms
Remote clock offset: -2.166 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 49.891 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 49.891 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

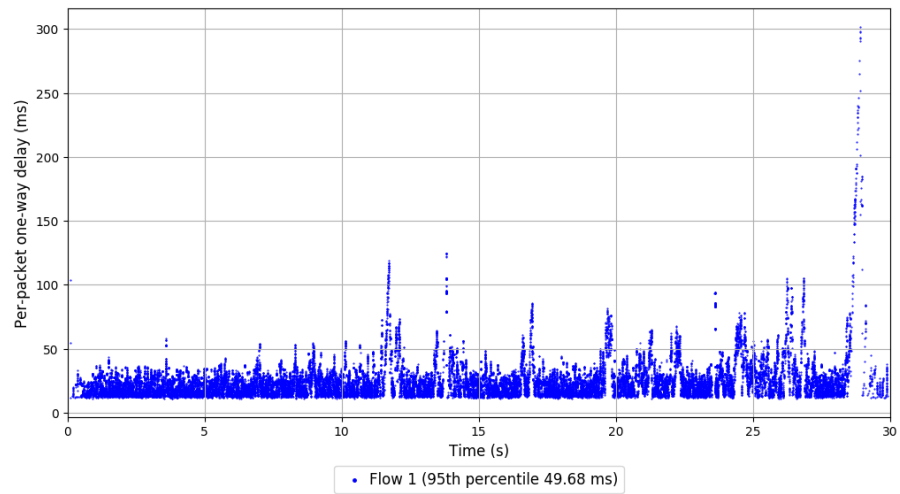
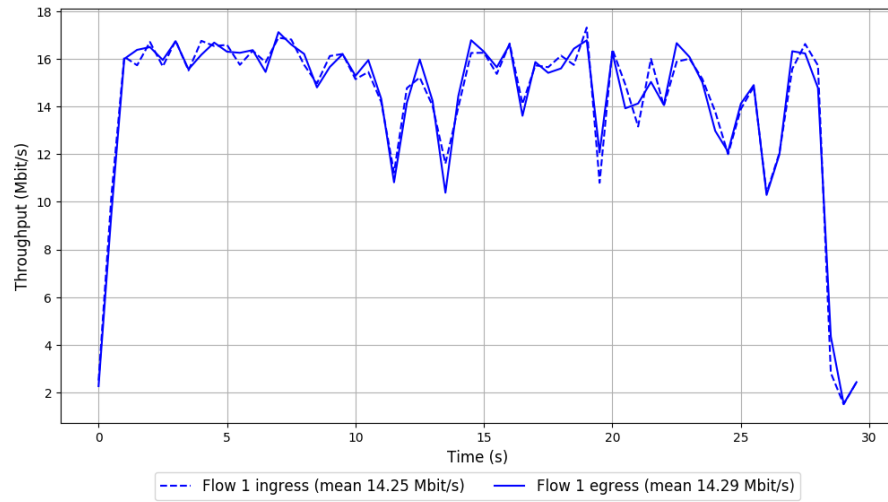


Run 1: Statistics of Sprout

Start at: 2017-10-12 18:15:52
End at: 2017-10-12 18:16:22
Local clock offset: 1.206 ms
Remote clock offset: -2.339 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.29 Mbit/s
95th percentile per-packet one-way delay: 49.684 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 14.29 Mbit/s
95th percentile per-packet one-way delay: 49.684 ms
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

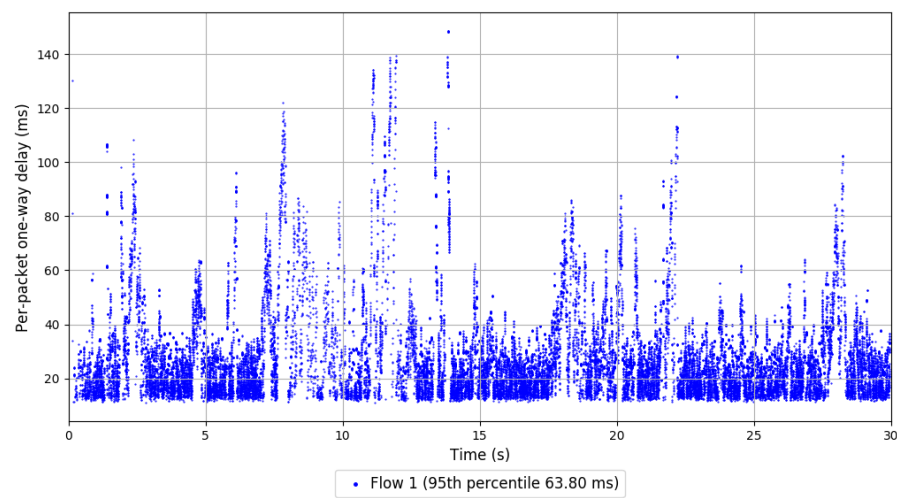
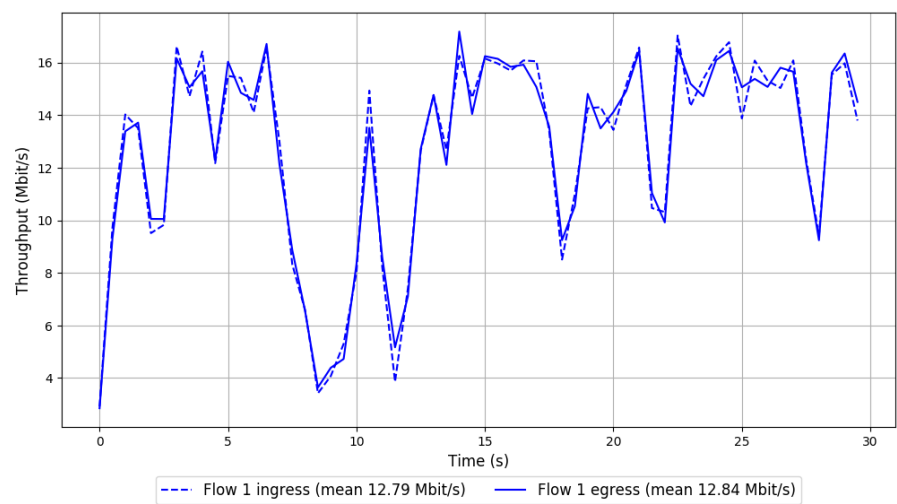


Run 2: Statistics of Sprout

Start at: 2017-10-12 18:32:20
End at: 2017-10-12 18:32:50
Local clock offset: 1.025 ms
Remote clock offset: -2.094 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.84 Mbit/s
95th percentile per-packet one-way delay: 63.797 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.84 Mbit/s
95th percentile per-packet one-way delay: 63.797 ms
Loss rate: 0.00%

Run 2: Report of Sprout — Data Link

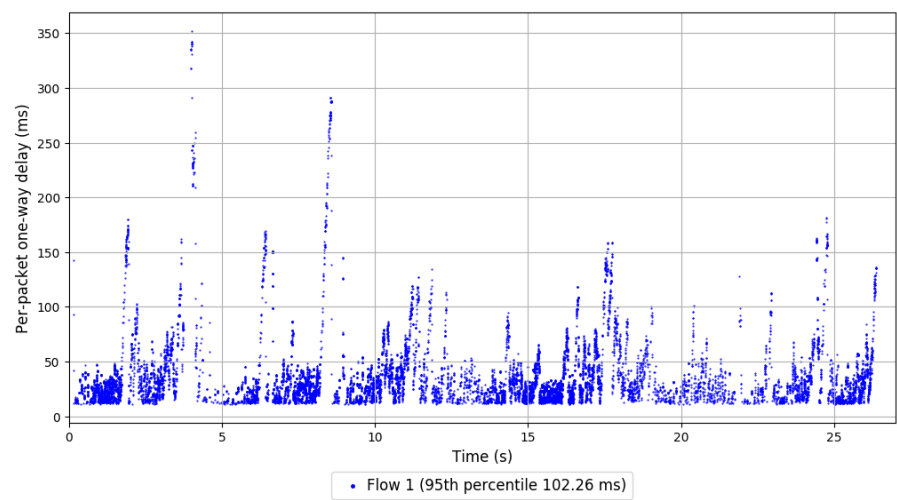
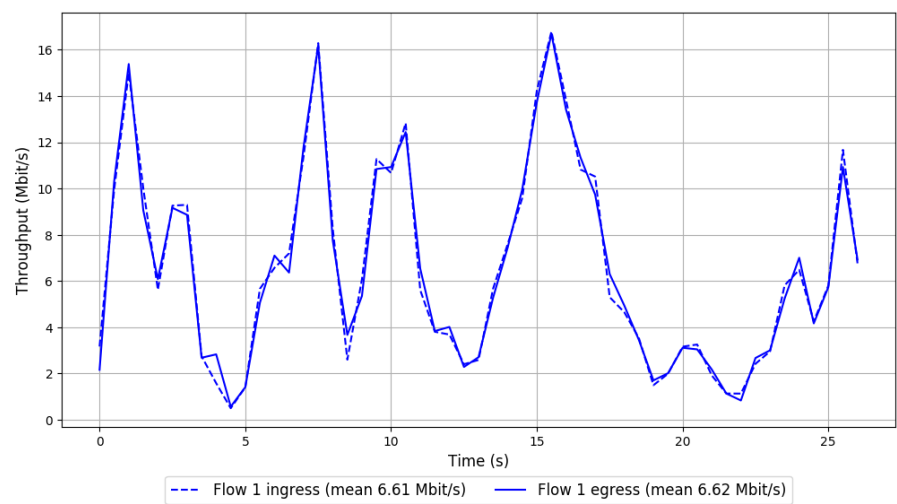


Run 3: Statistics of Sprout

Start at: 2017-10-12 18:48:51
End at: 2017-10-12 18:49:21
Local clock offset: 0.87 ms
Remote clock offset: -2.193 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.62 Mbit/s
95th percentile per-packet one-way delay: 102.261 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 6.62 Mbit/s
95th percentile per-packet one-way delay: 102.261 ms
Loss rate: 0.24%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2017-10-12 18:18:12

End at: 2017-10-12 18:18:42

Local clock offset: 1.198 ms

Remote clock offset: -2.256 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.47 Mbit/s

95th percentile per-packet one-way delay: 83.742 ms

Loss rate: 0.01%

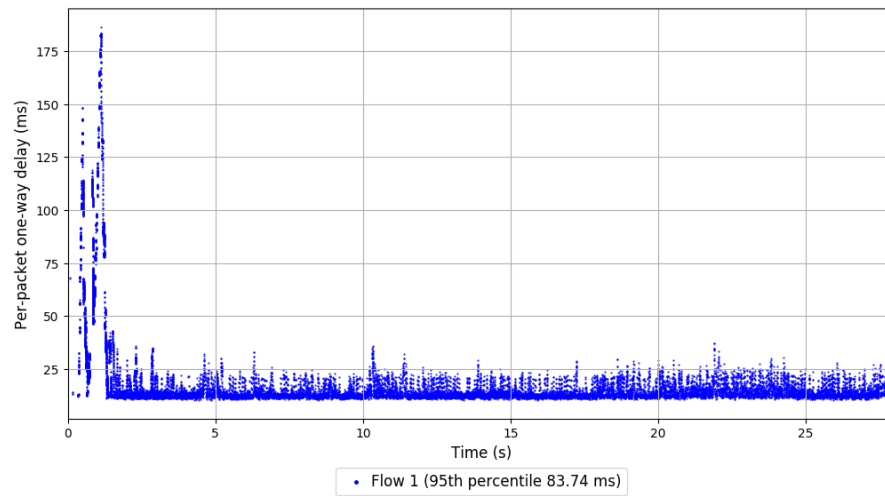
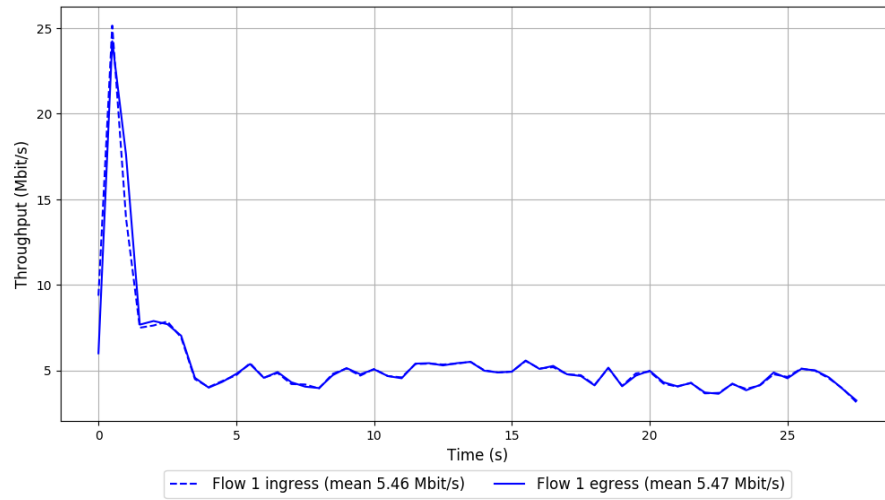
-- Flow 1:

Average throughput: 5.47 Mbit/s

95th percentile per-packet one-way delay: 83.742 ms

Loss rate: 0.01%

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



Run 2: Statistics of TaoVA-100x

Start at: 2017-10-12 18:34:42

End at: 2017-10-12 18:35:12

Local clock offset: 1.012 ms

Remote clock offset: -2.233 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.09 Mbit/s

95th percentile per-packet one-way delay: 77.118 ms

Loss rate: 0.01%

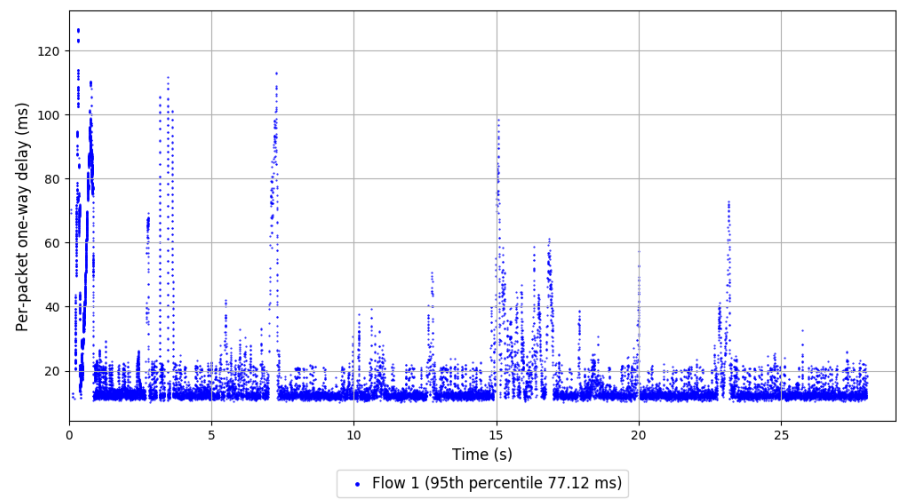
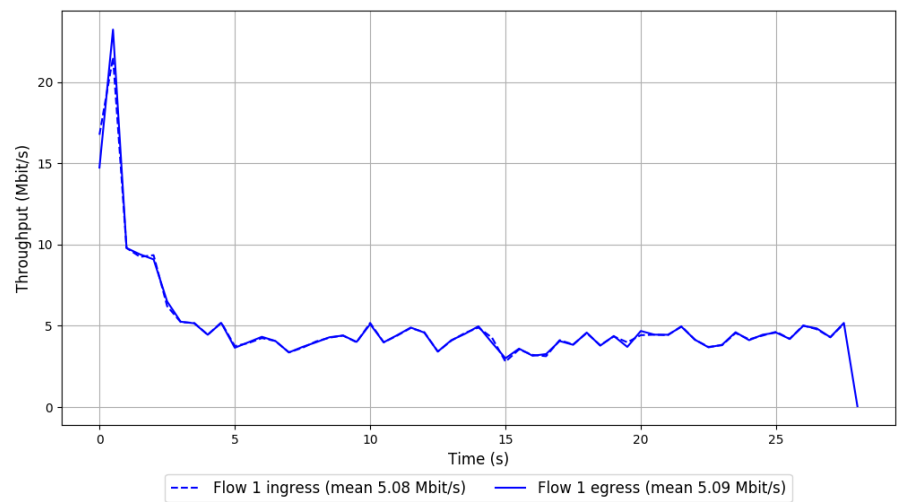
-- Flow 1:

Average throughput: 5.09 Mbit/s

95th percentile per-packet one-way delay: 77.118 ms

Loss rate: 0.01%

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



Run 3: Statistics of TaoVA-100x

Start at: 2017-10-12 18:51:12

End at: 2017-10-12 18:51:42

Local clock offset: 0.943 ms

Remote clock offset: -2.17 ms

Below is generated by plot.py at 2017-10-12 19:06:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.12 Mbit/s

95th percentile per-packet one-way delay: 71.592 ms

Loss rate: 0.01%

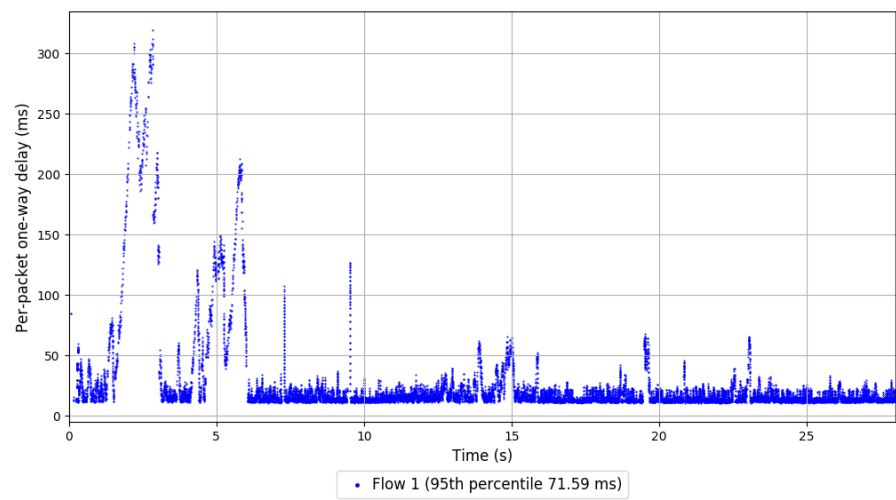
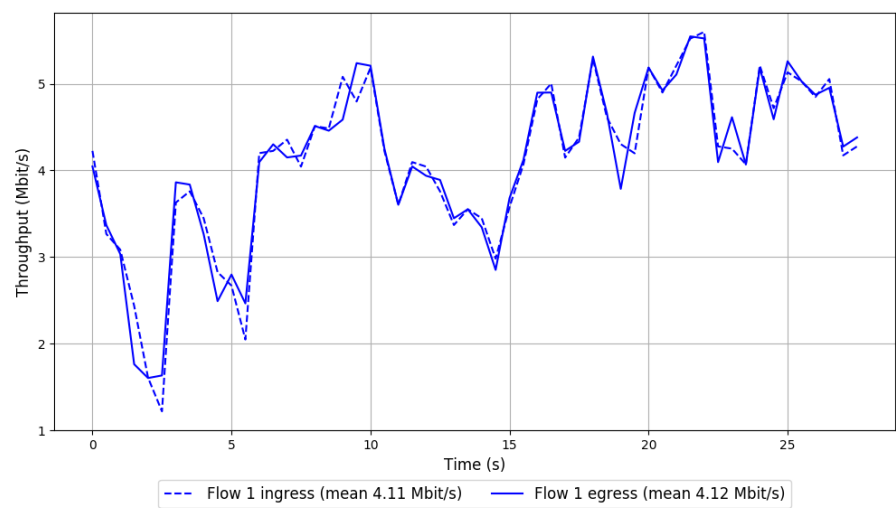
-- Flow 1:

Average throughput: 4.12 Mbit/s

95th percentile per-packet one-way delay: 71.592 ms

Loss rate: 0.01%

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

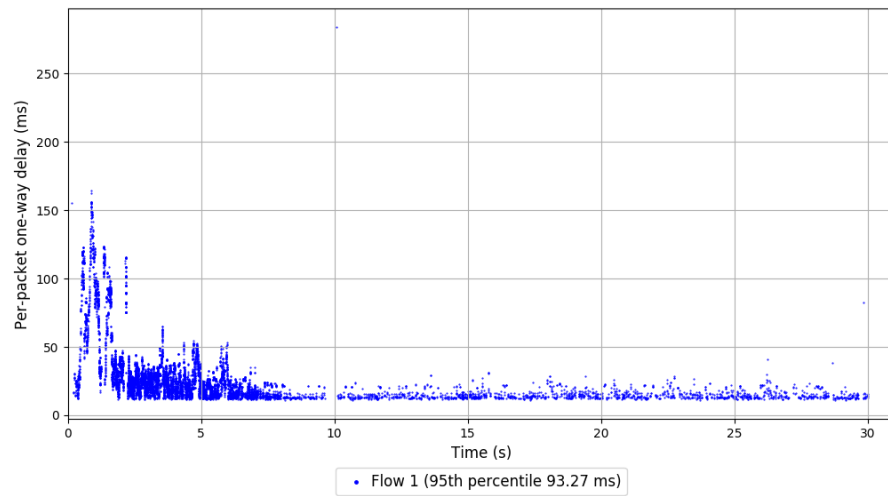
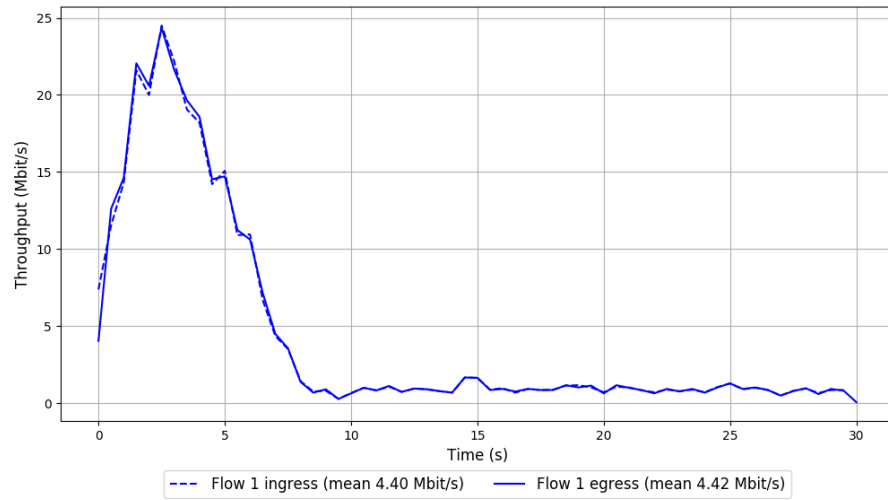


Run 1: Statistics of TCP Vegas

Start at: 2017-10-12 18:26:26
End at: 2017-10-12 18:26:56
Local clock offset: 1.185 ms
Remote clock offset: -2.198 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.42 Mbit/s
95th percentile per-packet one-way delay: 93.273 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 4.42 Mbit/s
95th percentile per-packet one-way delay: 93.273 ms
Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link

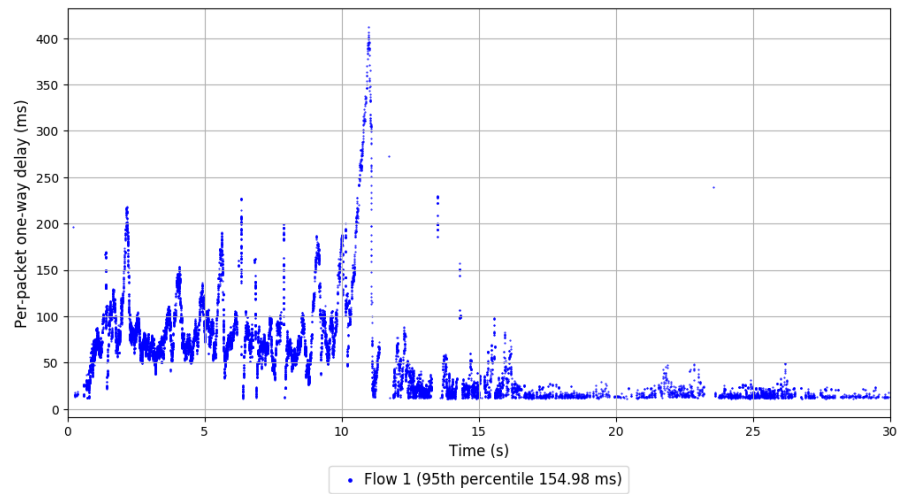
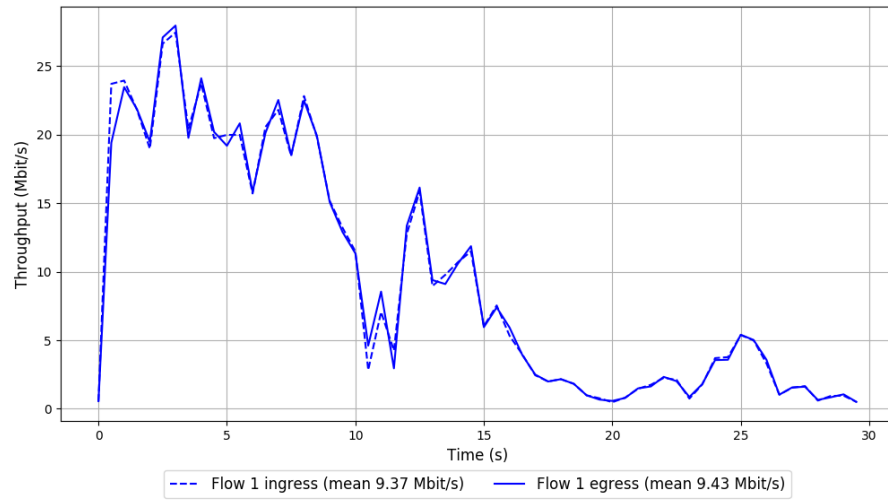


Run 2: Statistics of TCP Vegas

Start at: 2017-10-12 18:42:57
End at: 2017-10-12 18:43:27
Local clock offset: 0.915 ms
Remote clock offset: -2.223 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.43 Mbit/s
95th percentile per-packet one-way delay: 154.981 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 9.43 Mbit/s
95th percentile per-packet one-way delay: 154.981 ms
Loss rate: 0.01%

Run 2: Report of TCP Vegas — Data Link

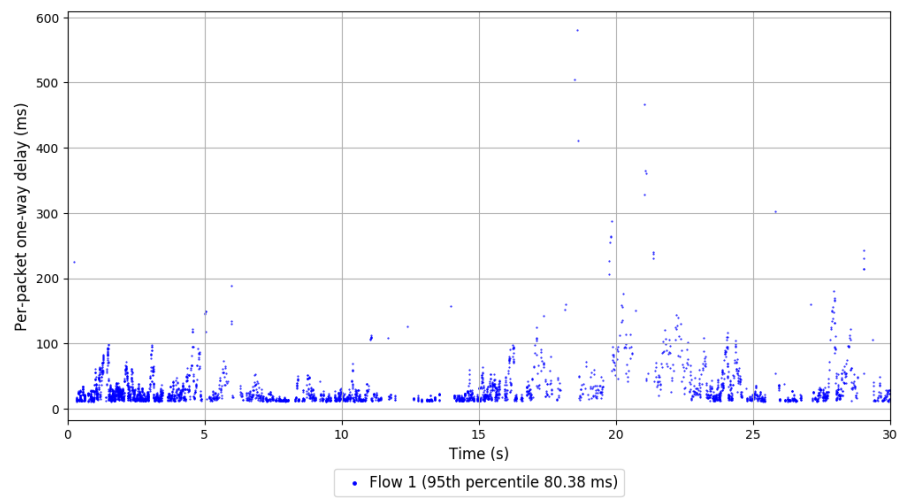
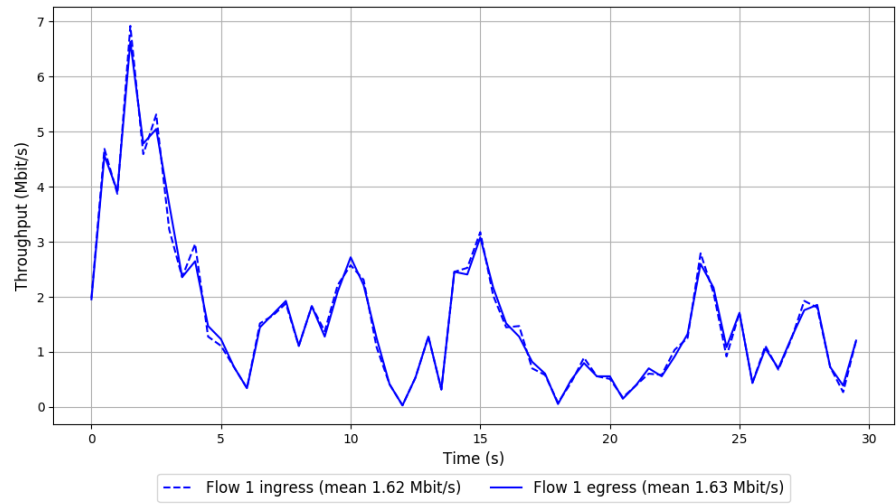


Run 3: Statistics of TCP Vegas

Start at: 2017-10-12 18:59:24
End at: 2017-10-12 18:59:54
Local clock offset: 0.883 ms
Remote clock offset: -2.241 ms

Below is generated by plot.py at 2017-10-12 19:06:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 80.375 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 80.375 ms
Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link

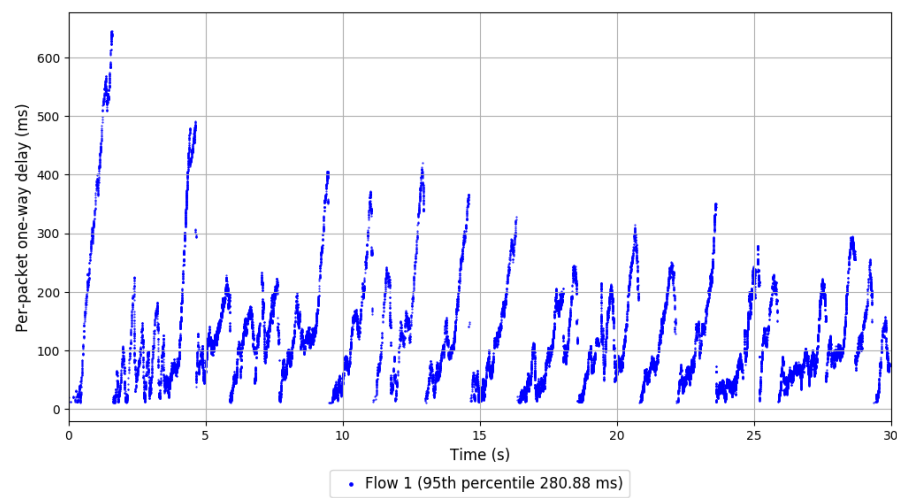
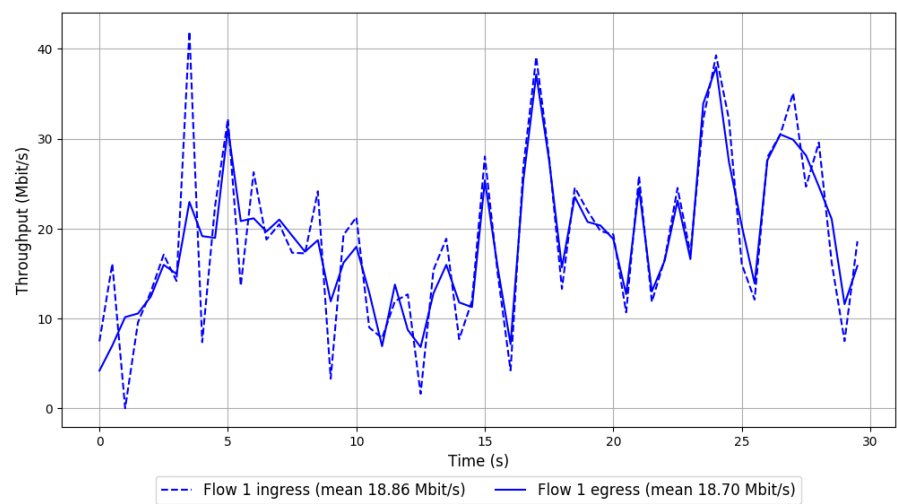


Run 1: Statistics of Verus

Start at: 2017-10-12 18:31:09
End at: 2017-10-12 18:31:39
Local clock offset: 1.057 ms
Remote clock offset: -2.156 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.70 Mbit/s
95th percentile per-packet one-way delay: 280.884 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 18.70 Mbit/s
95th percentile per-packet one-way delay: 280.884 ms
Loss rate: 0.83%

Run 1: Report of Verus — Data Link

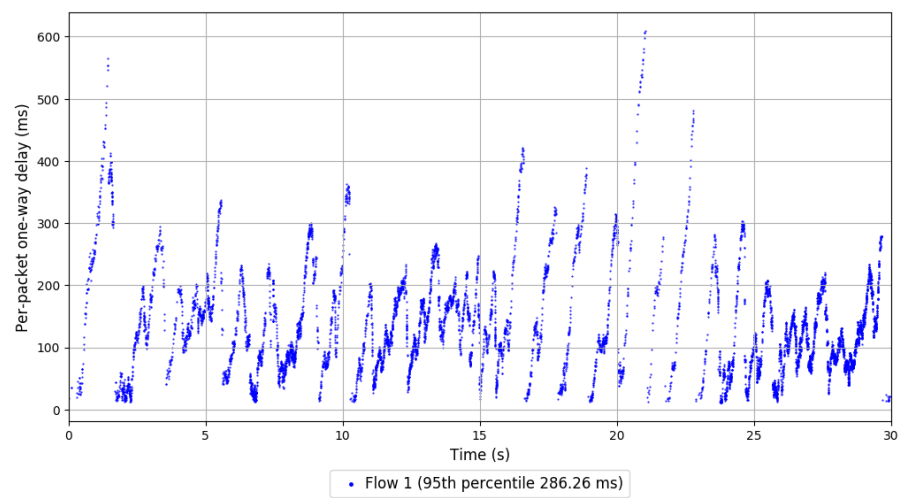
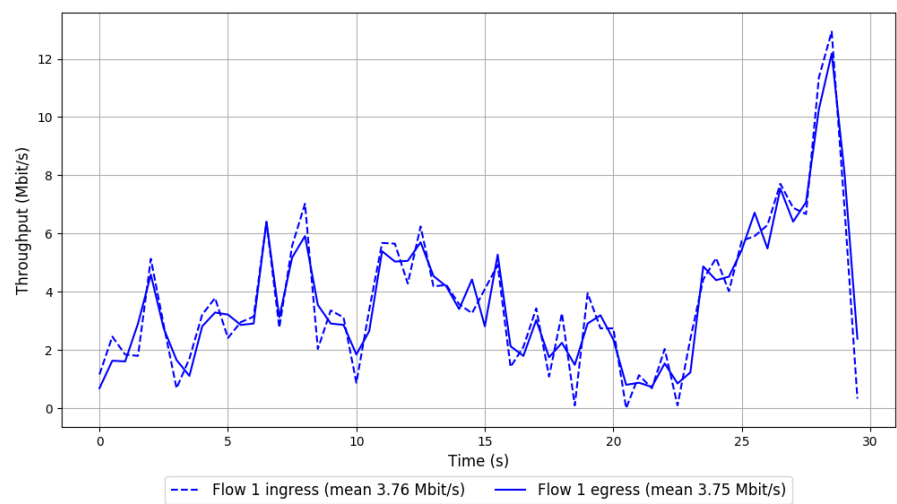


Run 2: Statistics of Verus

Start at: 2017-10-12 18:47:40
End at: 2017-10-12 18:48:10
Local clock offset: 0.963 ms
Remote clock offset: -2.248 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 286.262 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 286.262 ms
Loss rate: 0.30%

Run 2: Report of Verus — Data Link

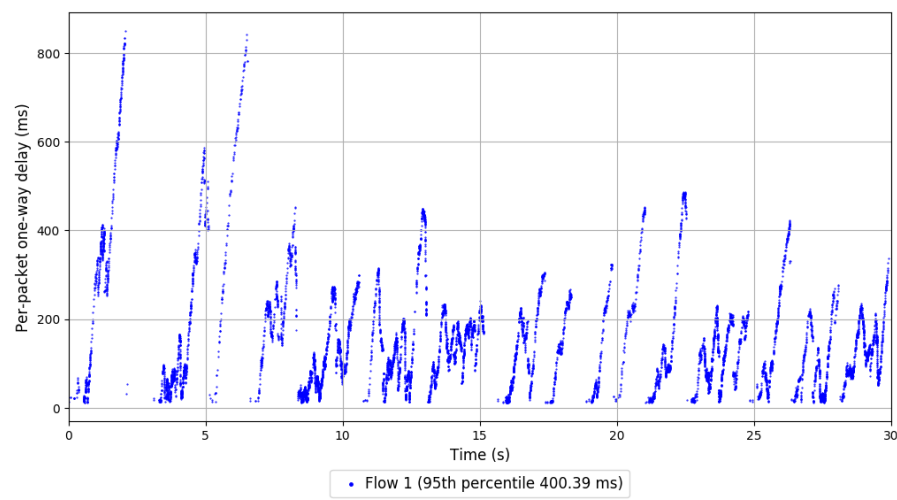
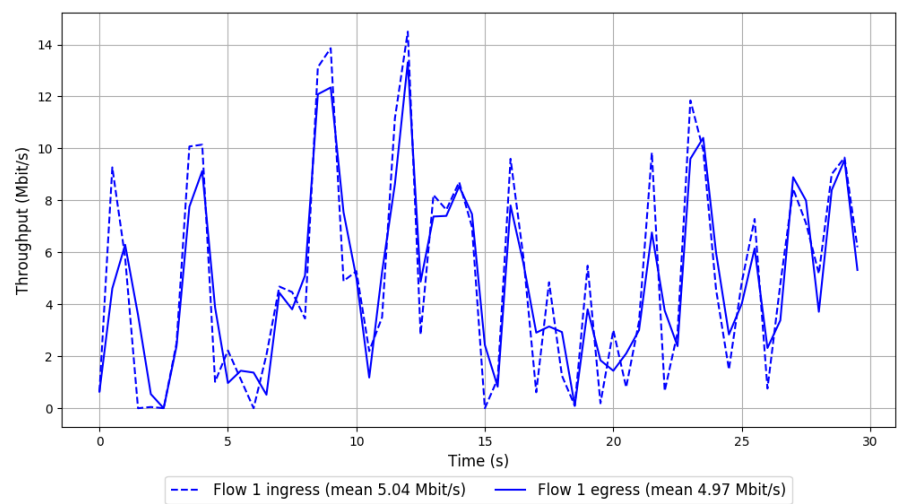


Run 3: Statistics of Verus

Start at: 2017-10-12 19:04:06
End at: 2017-10-12 19:04:36
Local clock offset: 0.773 ms
Remote clock offset: -2.106 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.97 Mbit/s
95th percentile per-packet one-way delay: 400.393 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 4.97 Mbit/s
95th percentile per-packet one-way delay: 400.393 ms
Loss rate: 1.37%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

Start at: 2017-10-12 18:27:36

End at: 2017-10-12 18:28:06

Local clock offset: 1.157 ms

Remote clock offset: -2.091 ms

Below is generated by plot.py at 2017-10-12 19:06:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.27 Mbit/s

95th percentile per-packet one-way delay: 97.143 ms

Loss rate: 0.01%

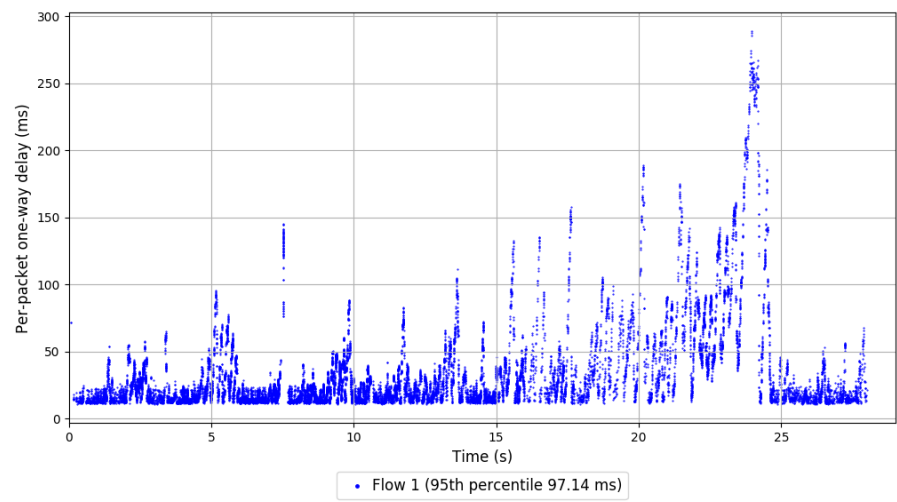
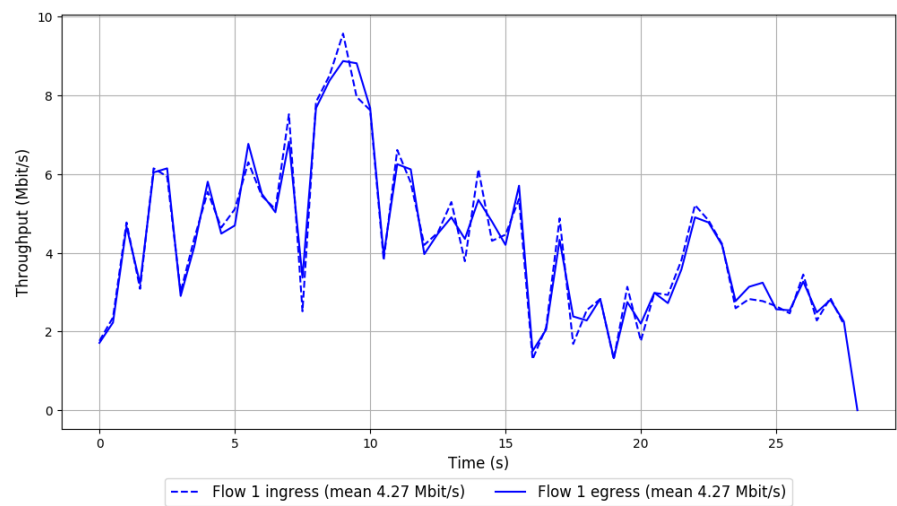
-- Flow 1:

Average throughput: 4.27 Mbit/s

95th percentile per-packet one-way delay: 97.143 ms

Loss rate: 0.01%

Run 1: Report of Copa — Data Link

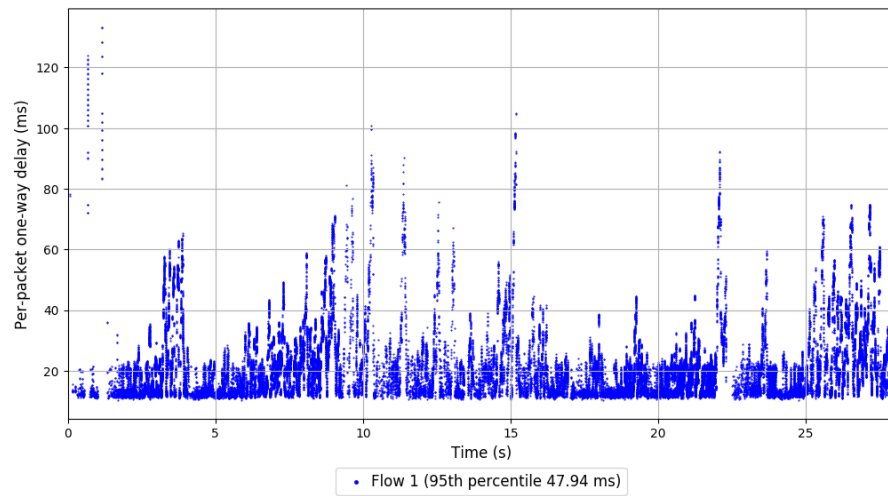
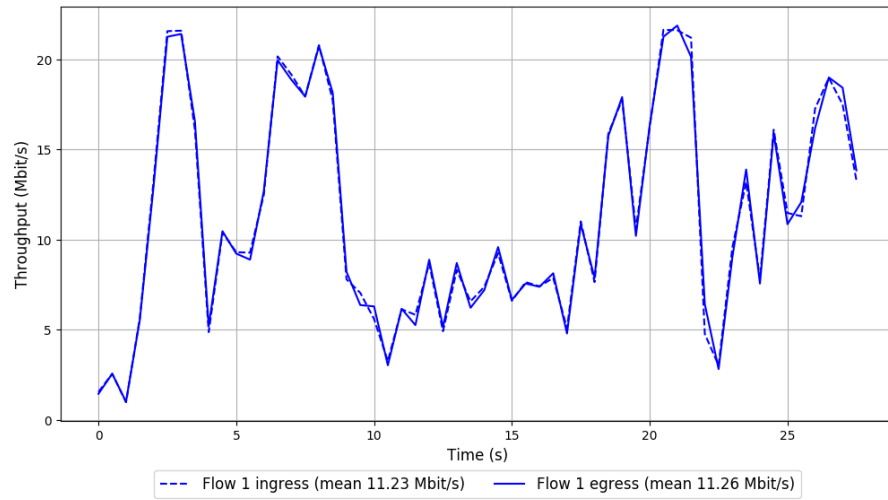


Run 2: Statistics of Copa

Start at: 2017-10-12 18:44:08
End at: 2017-10-12 18:44:38
Local clock offset: 0.993 ms
Remote clock offset: -2.254 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 11.26 Mbit/s
95th percentile per-packet one-way delay: 47.938 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.26 Mbit/s
95th percentile per-packet one-way delay: 47.938 ms
Loss rate: 0.00%

Run 2: Report of Copa — Data Link

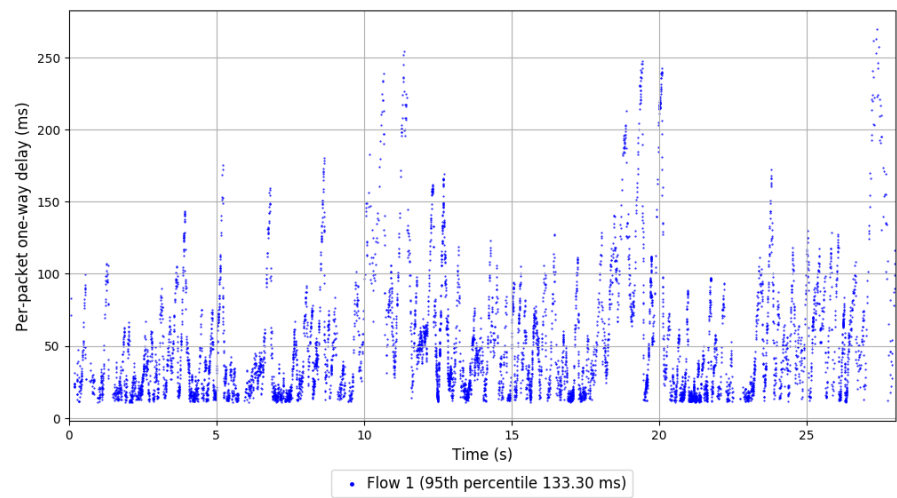
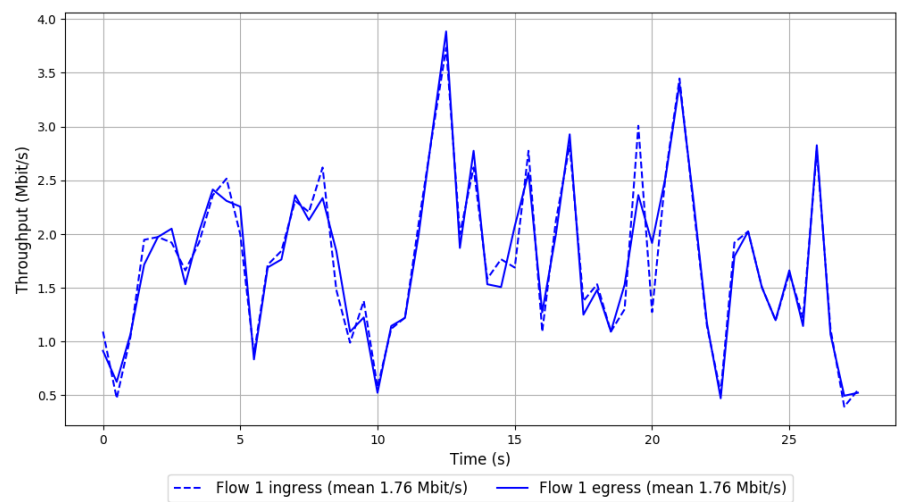


Run 3: Statistics of Copa

Start at: 2017-10-12 19:00:35
End at: 2017-10-12 19:01:05
Local clock offset: 0.874 ms
Remote clock offset: -2.239 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 133.297 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 133.297 ms
Loss rate: 0.19%

Run 3: Report of Copa — Data Link



Run 1: Statistics of CalibratedKoho

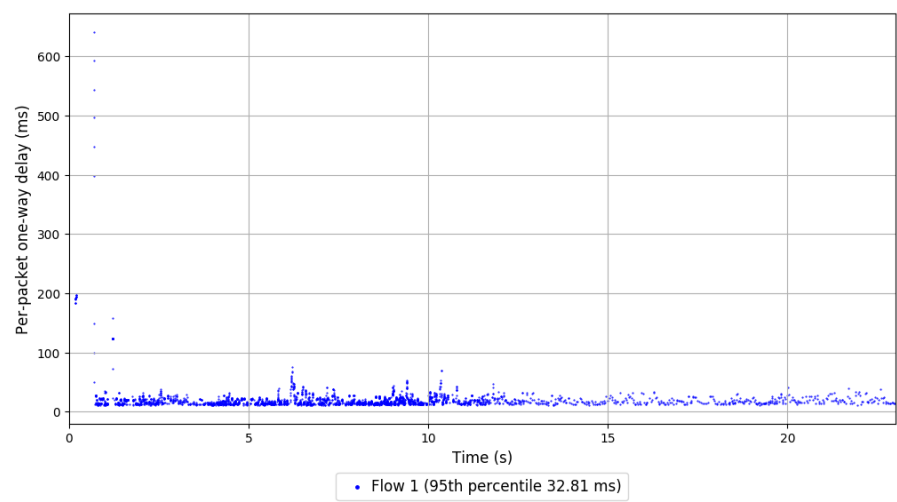
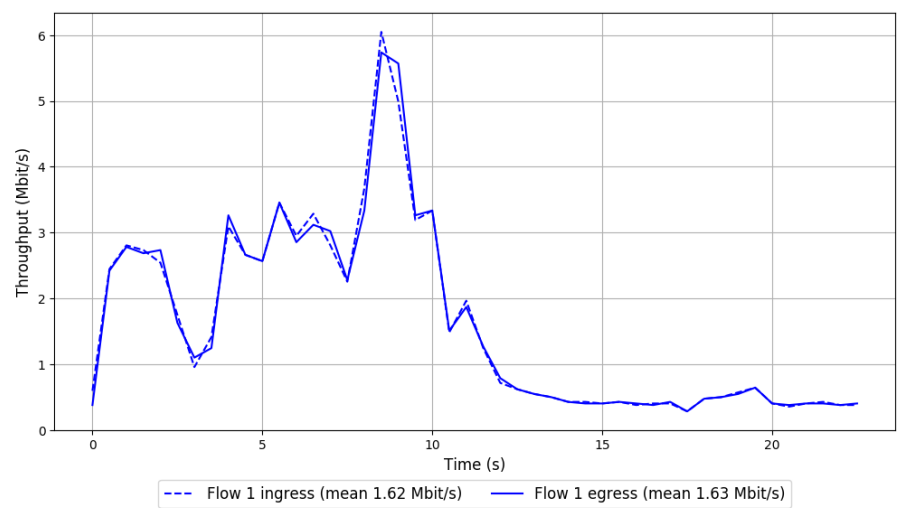
Start at: 2017-10-12 18:28:47

End at: 2017-10-12 18:29:17

Local clock offset: 1.155 ms

Remote clock offset: -2.15 ms

Run 1: Report of CalibratedKoho — Data Link

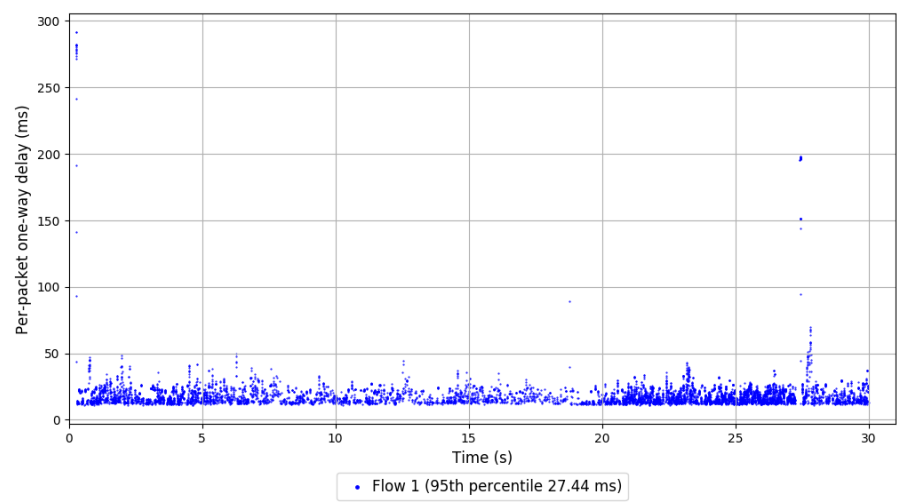
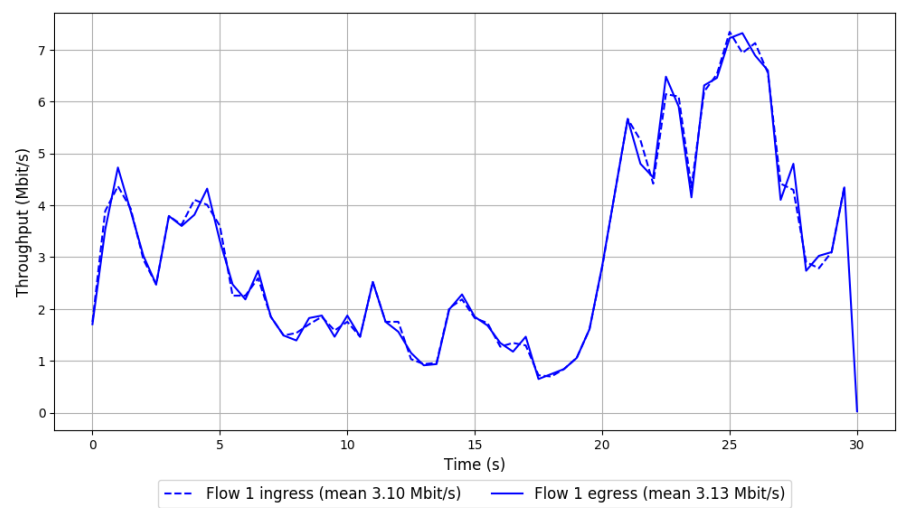


Run 2: Statistics of CalibratedKoho

Start at: 2017-10-12 18:45:19
End at: 2017-10-12 18:45:49
Local clock offset: 0.895 ms
Remote clock offset: -2.262 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 27.441 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 27.441 ms
Loss rate: 0.01%

Run 2: Report of CalibratedKoho — Data Link

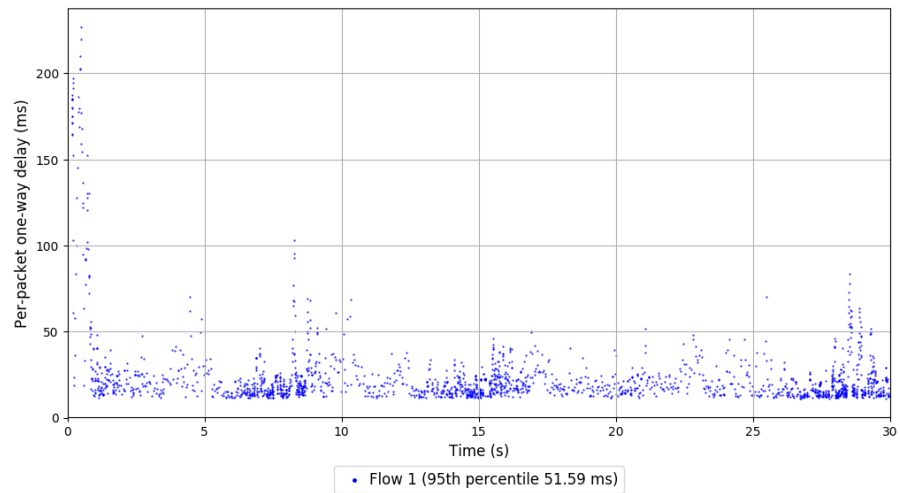
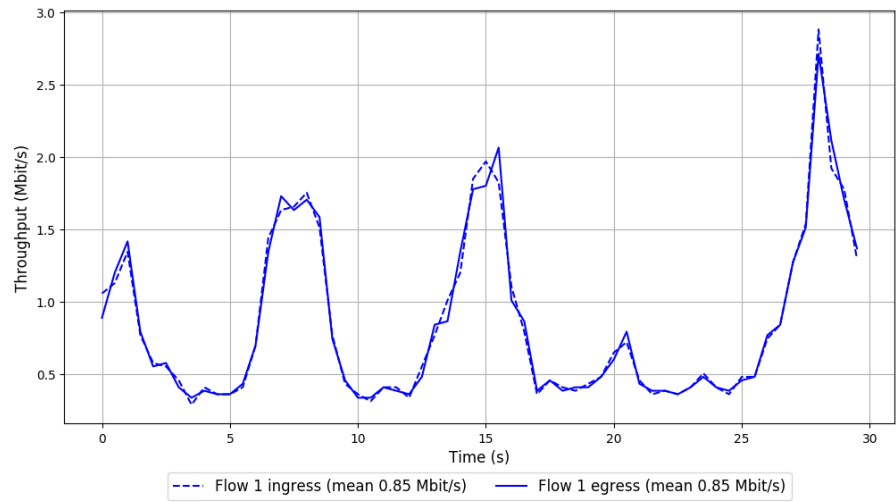


Run 3: Statistics of CalibratedKoho

Start at: 2017-10-12 19:01:45
End at: 2017-10-12 19:02:15
Local clock offset: 0.768 ms
Remote clock offset: -2.226 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 51.589 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 51.589 ms
Loss rate: 0.00%

Run 3: Report of CalibratedKoho — Data Link

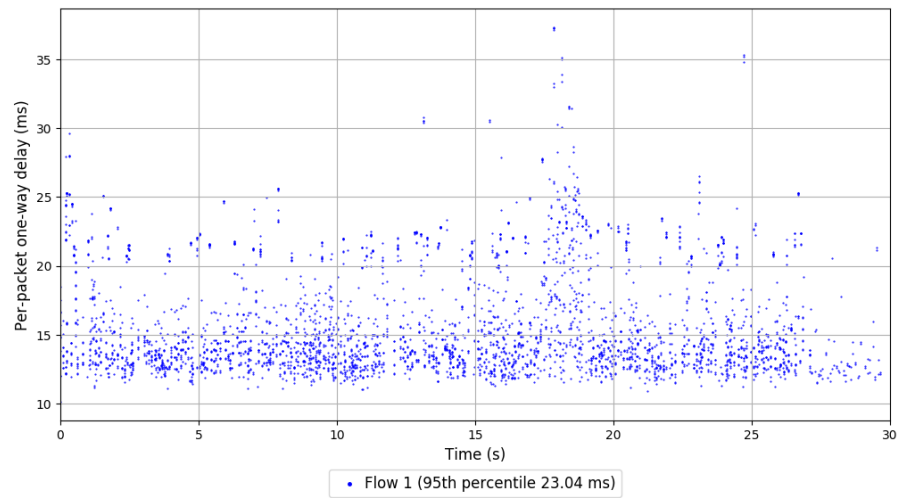
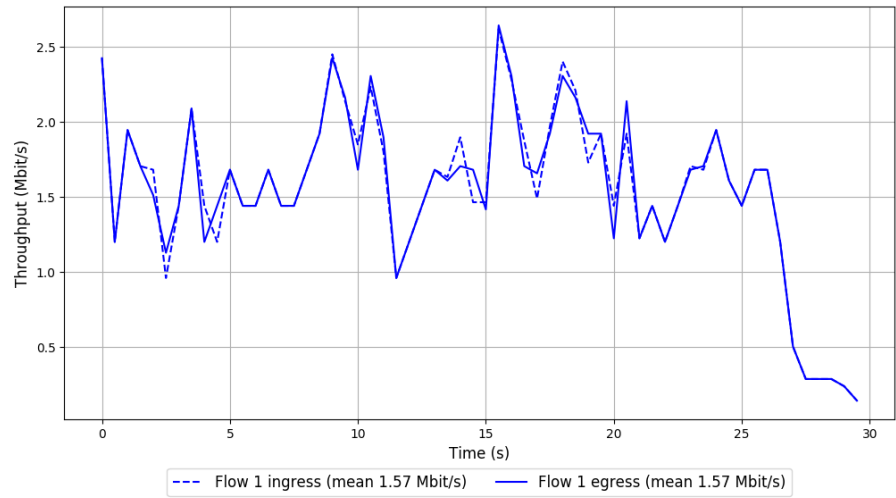


```
Run 1: Statistics of Indigo

Start at: 2017-10-12 18:19:23
End at: 2017-10-12 18:19:53
Local clock offset: 1.269 ms
Remote clock offset: -2.32 ms

# Below is generated by plot.py at 2017-10-12 19:06:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 23.041 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 23.041 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2017-10-12 18:35:52

End at: 2017-10-12 18:36:22

Local clock offset: 0.974 ms

Remote clock offset: -2.253 ms

Below is generated by plot.py at 2017-10-12 19:06:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.27 Mbit/s

95th percentile per-packet one-way delay: 25.973 ms

Loss rate: 0.00%

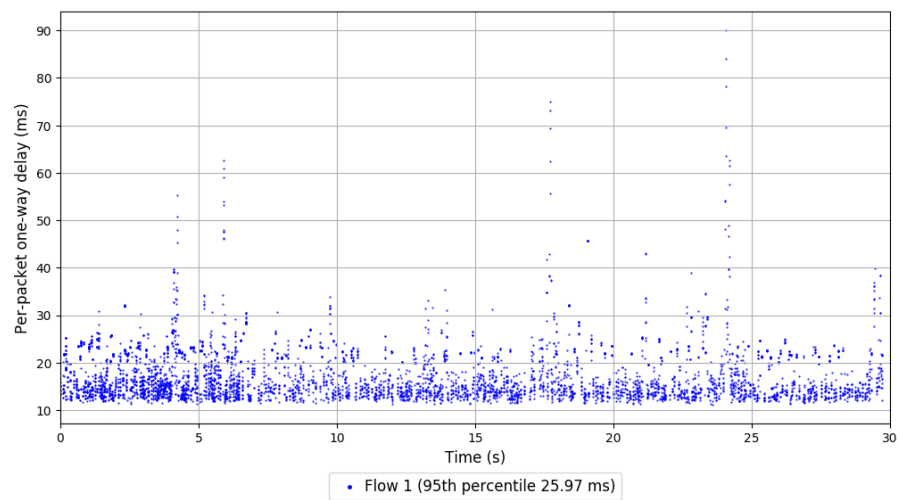
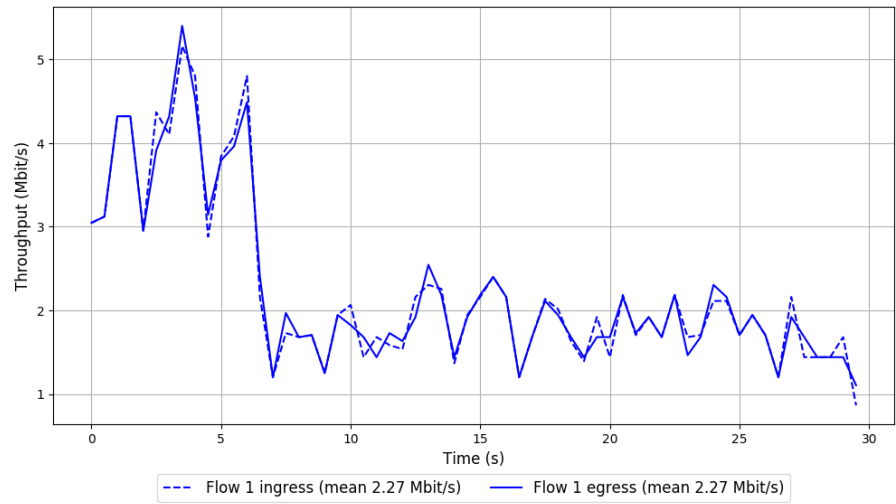
-- Flow 1:

Average throughput: 2.27 Mbit/s

95th percentile per-packet one-way delay: 25.973 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2017-10-12 18:52:22
End at: 2017-10-12 18:52:52
Local clock offset: 0.845 ms
Remote clock offset: -2.188 ms

Below is generated by plot.py at 2017-10-12 19:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 75.897 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 75.897 ms
Loss rate: 0.04%

Run 3: Report of Indigo — Data Link

