

Pantheon Report

Generated at 2018-02-19 18:22:16 (UTC).

Data path: AWS Brazil 2 Ethernet (*local*) → Colombia ppp0 (*remote*).

Repeated the test of 17 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).

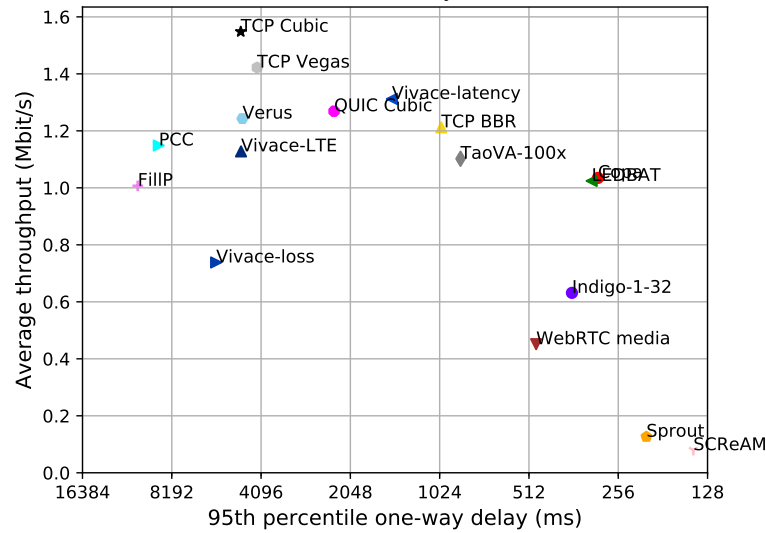
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against **gps.ntp.br** and have been applied to correct the timestamps in logs.

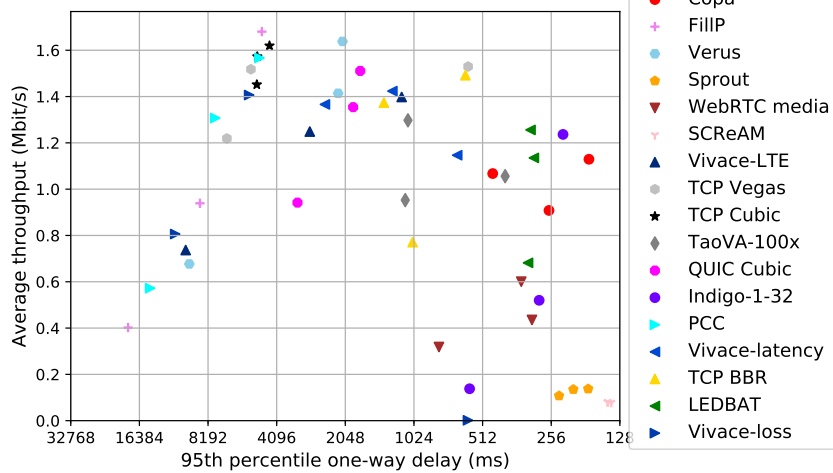
Git summary:

```
branch: master @ f12c42a2c63fdd9a862eefa0468859bf379b6623
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeab30b267cde681
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/vivace @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webRTC @ a488197ddd041ace68a42849b2540ad834825f42
```

test from AWS Brazil 2 Ethernet to Colombia ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS Brazil 2 Ethernet to Colombia 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	1.21	1011.30	1.55
TCP Cubic	3	1.55	4796.81	19.04
LEDBAT	3	1.03	314.78	0.63
PCC	3	1.15	9059.68	88.70
QUIC Cubic	3	1.27	2324.36	6.80
SCReAM	3	0.08	142.95	0.13
WebRTC media	3	0.45	484.31	0.07
Sprout	3	0.13	205.83	0.35
TaoVA-100x	3	1.10	871.08	0.72
TCP Vegas	3	1.42	4225.22	16.68
Verus	3	1.24	4735.02	9.60
Copa	3	1.04	299.65	0.19
FillP	3	1.01	10671.11	97.04
Indigo-1-32	3	0.63	366.71	0.16
Vivace-latency	3	1.31	1484.14	0.77
Vivace-loss	3	0.74	5804.27	29.77
Vivace-LTE	3	1.13	4786.08	21.29

Run 1: Statistics of TCP BBR

Start at: 2018-02-19 17:35:22

End at: 2018-02-19 17:35:52

Local clock offset: -7.808 ms

Remote clock offset: 1.21 ms

Below is generated by plot.py at 2018-02-19 18:21:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 1387.245 ms

Loss rate: 2.37%

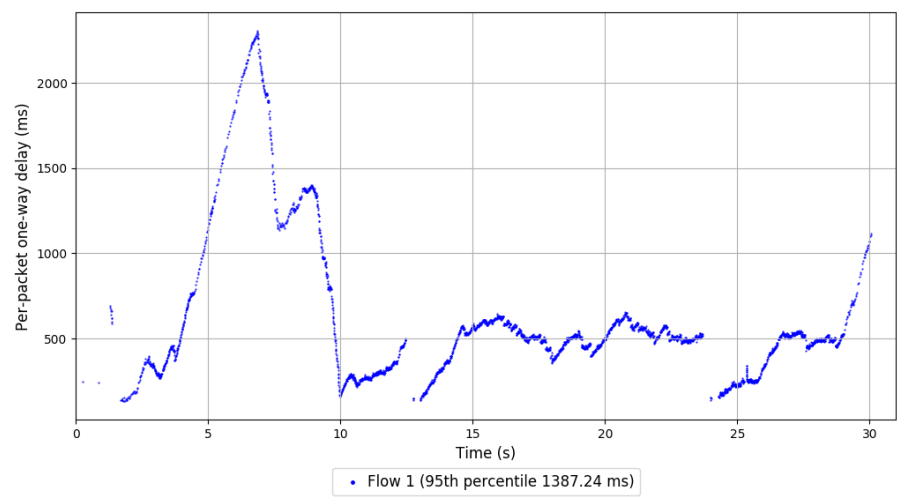
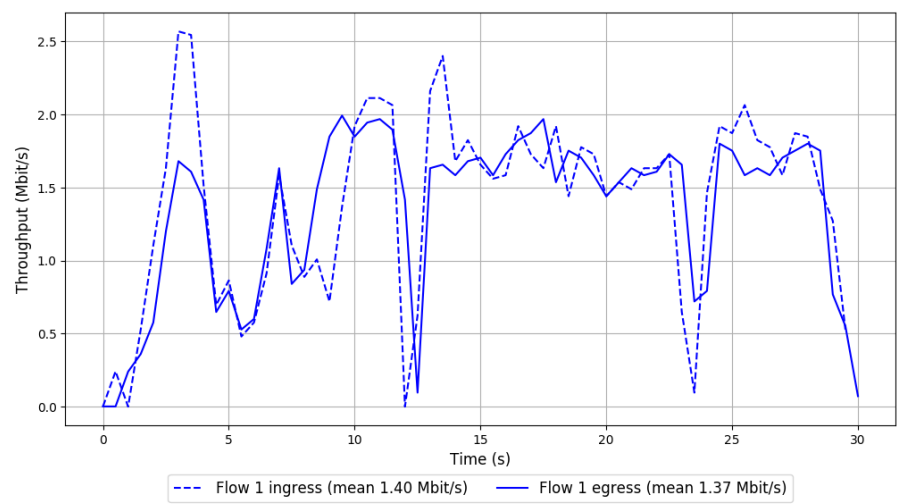
-- Flow 1:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 1387.245 ms

Loss rate: 2.37%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-02-19 17:56:34

End at: 2018-02-19 17:57:04

Local clock offset: -7.541 ms

Remote clock offset: 1.222 ms

Below is generated by plot.py at 2018-02-19 18:21:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.77 Mbit/s

95th percentile per-packet one-way delay: 1037.672 ms

Loss rate: 1.59%

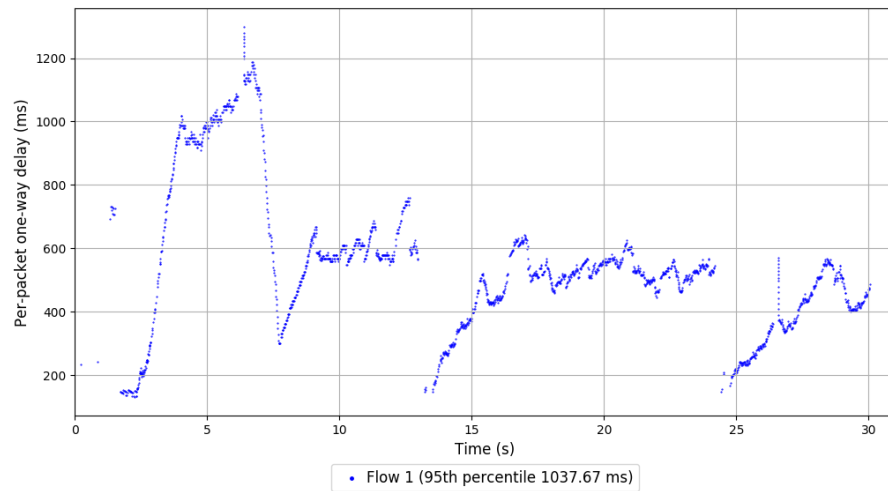
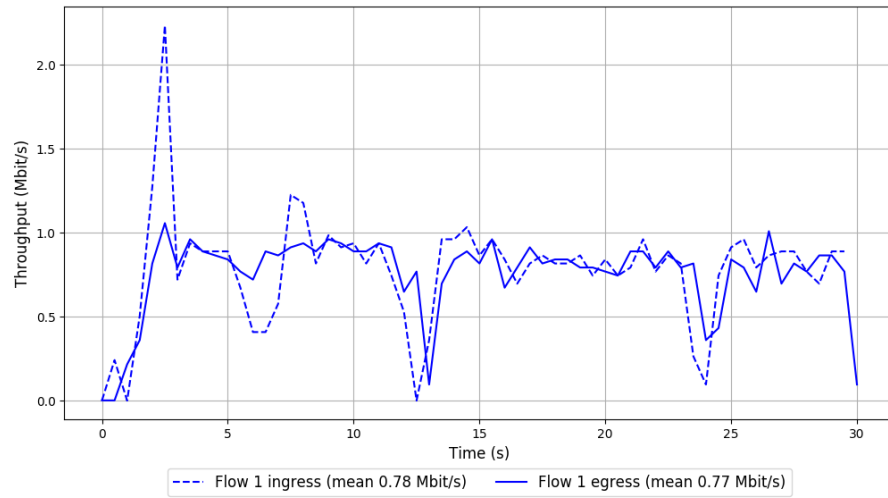
-- Flow 1:

Average throughput: 0.77 Mbit/s

95th percentile per-packet one-way delay: 1037.672 ms

Loss rate: 1.59%

Run 2: Report of TCP BBR — Data Link

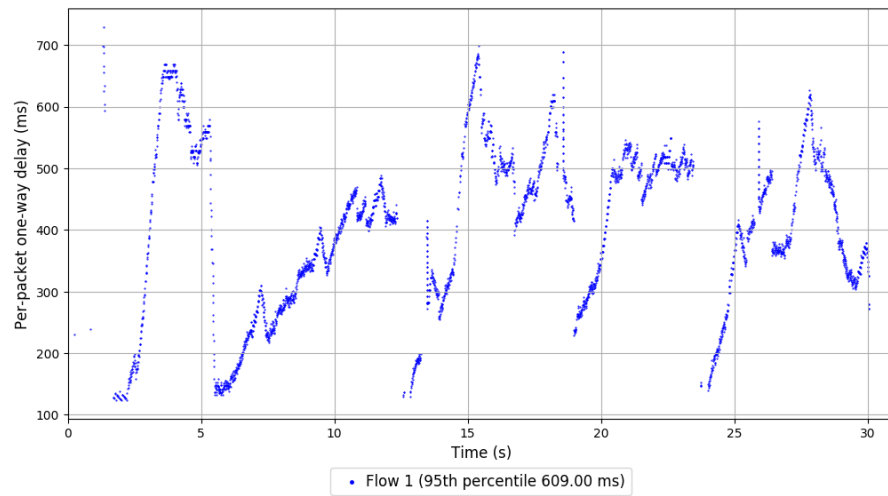
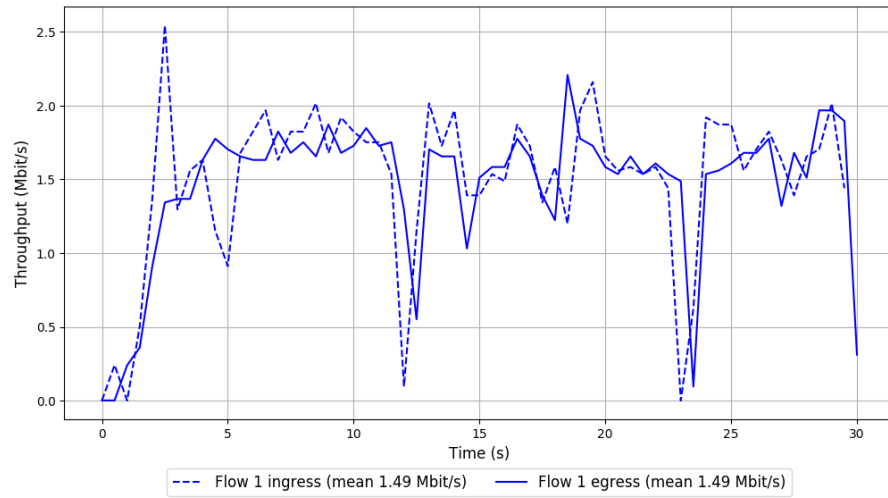


Run 3: Statistics of TCP BBR

Start at: 2018-02-19 18:17:46
End at: 2018-02-19 18:18:16
Local clock offset: -7.863 ms
Remote clock offset: -3.637 ms

Below is generated by plot.py at 2018-02-19 18:21:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 608.995 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 608.995 ms
Loss rate: 0.70%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-02-19 17:37:43

End at: 2018-02-19 17:38:13

Local clock offset: -7.664 ms

Remote clock offset: 0.355 ms

Below is generated by plot.py at 2018-02-19 18:21:40

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.62 Mbit/s

95th percentile per-packet one-way delay: 4404.139 ms

Loss rate: 20.65%

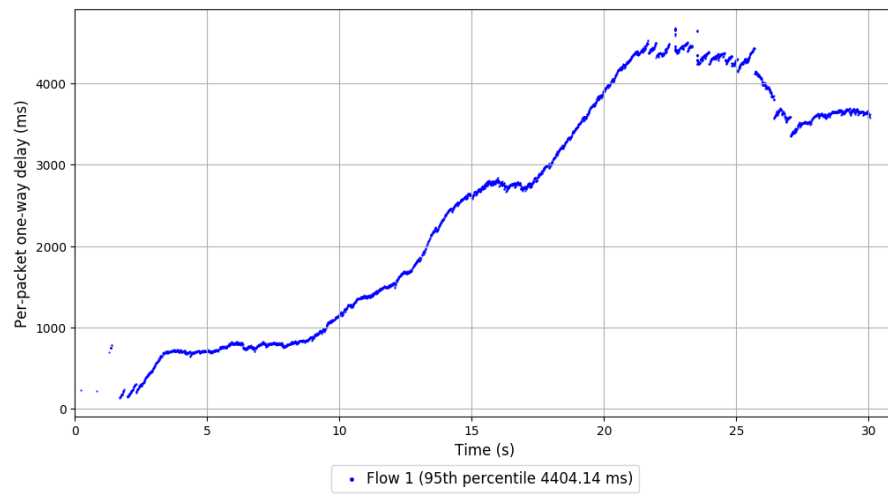
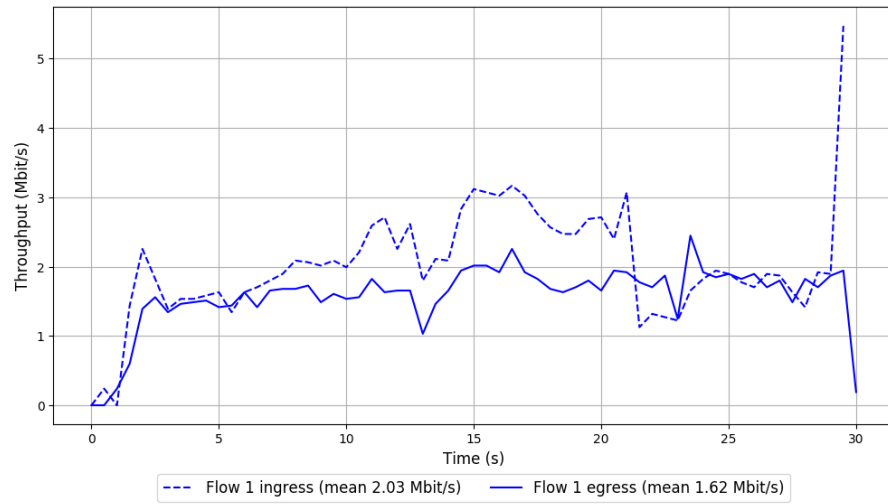
-- Flow 1:

Average throughput: 1.62 Mbit/s

95th percentile per-packet one-way delay: 4404.139 ms

Loss rate: 20.65%

Run 1: Report of TCP Cubic — Data Link

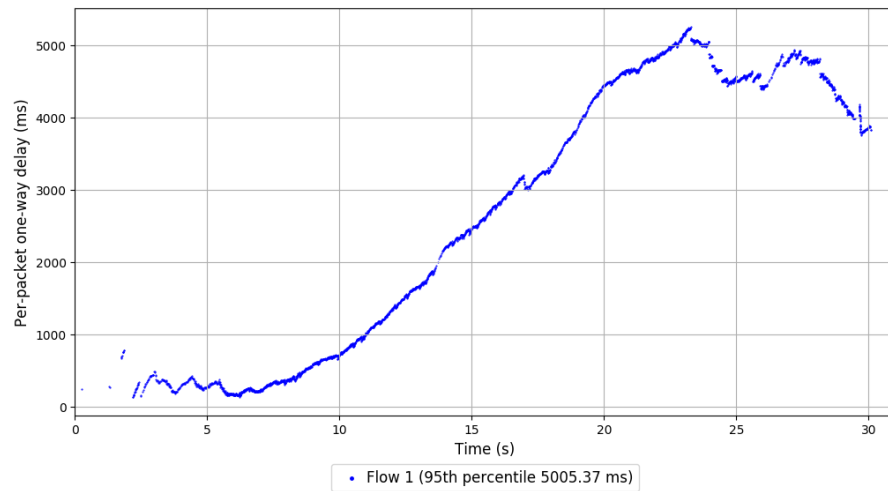
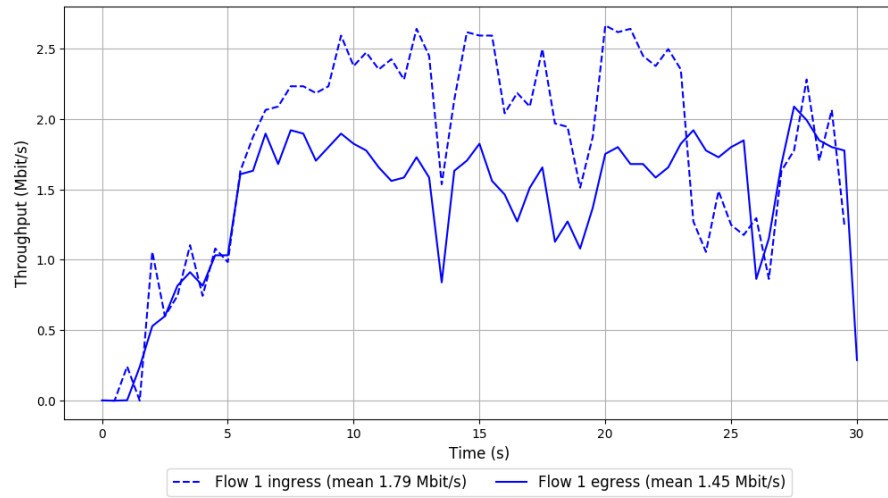


Run 2: Statistics of TCP Cubic

Start at: 2018-02-19 17:58:54
End at: 2018-02-19 17:59:24
Local clock offset: -7.329 ms
Remote clock offset: -3.577 ms

Below is generated by plot.py at 2018-02-19 18:21:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 5005.370 ms
Loss rate: 19.05%
-- Flow 1:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 5005.370 ms
Loss rate: 19.05%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-02-19 18:20:07

End at: 2018-02-19 18:20:37

Local clock offset: -8.011 ms

Remote clock offset: 1.991 ms

Below is generated by plot.py at 2018-02-19 18:21:40

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.57 Mbit/s

95th percentile per-packet one-way delay: 4980.909 ms

Loss rate: 17.43%

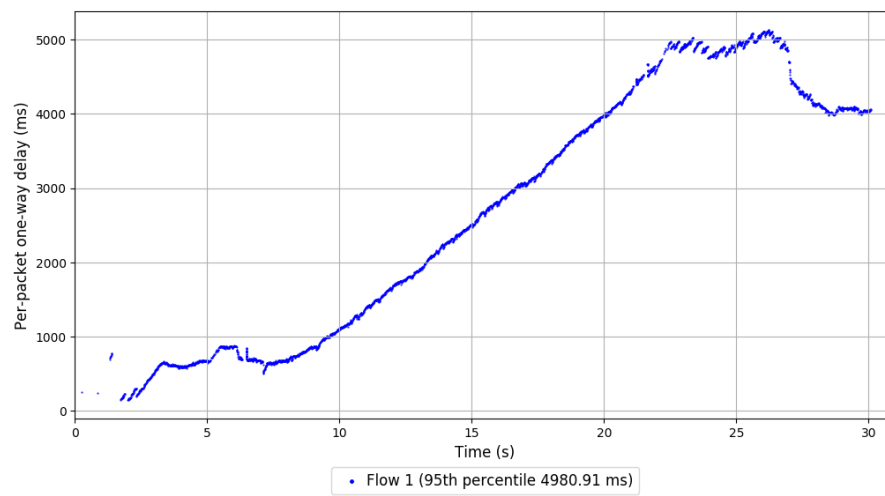
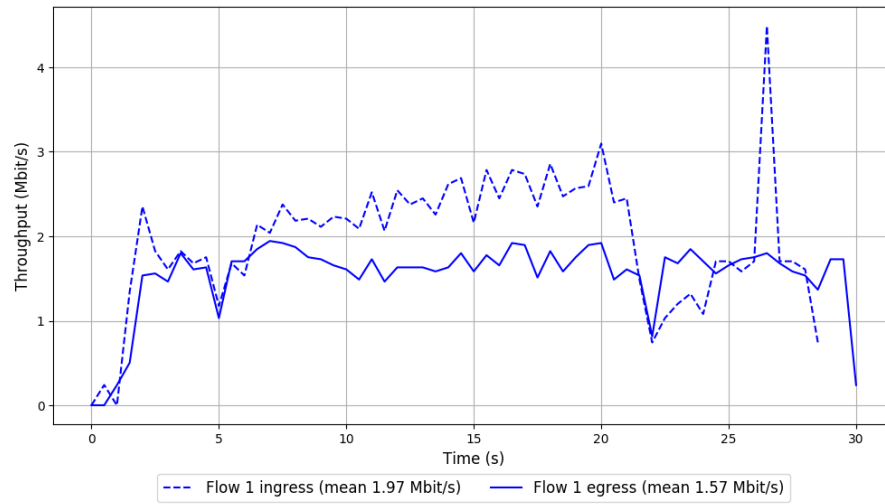
-- Flow 1:

Average throughput: 1.57 Mbit/s

95th percentile per-packet one-way delay: 4980.909 ms

Loss rate: 17.43%

Run 3: Report of TCP Cubic — Data Link

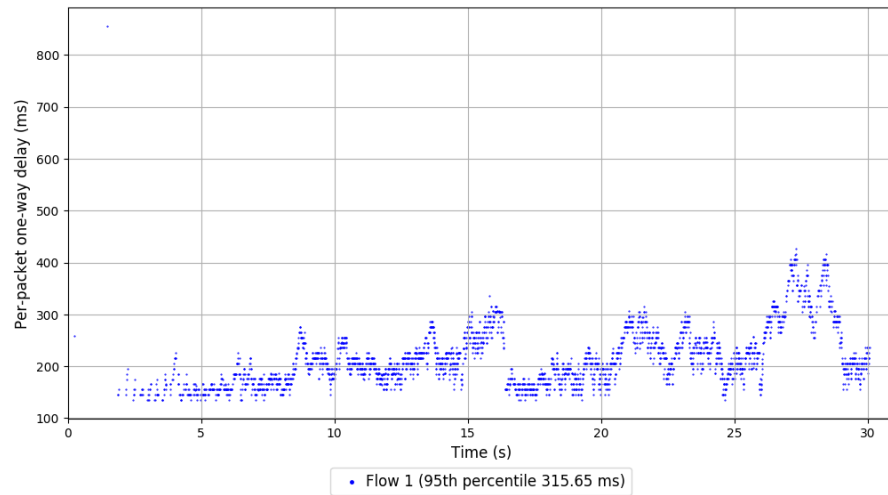
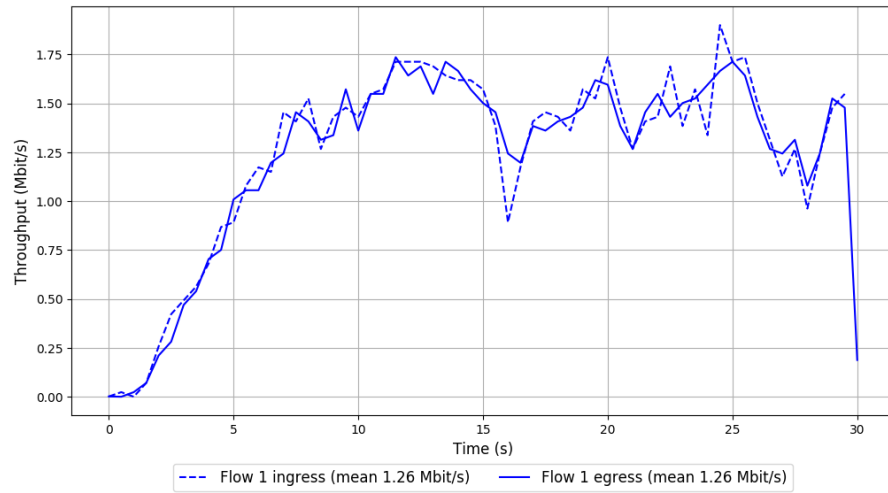


Run 1: Statistics of LEDBAT

Start at: 2018-02-19 17:32:59
End at: 2018-02-19 17:33:29
Local clock offset: -8.062 ms
Remote clock offset: -3.586 ms

Below is generated by plot.py at 2018-02-19 18:21:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 315.649 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 315.649 ms
Loss rate: 0.62%

Run 1: Report of LEDBAT — Data Link

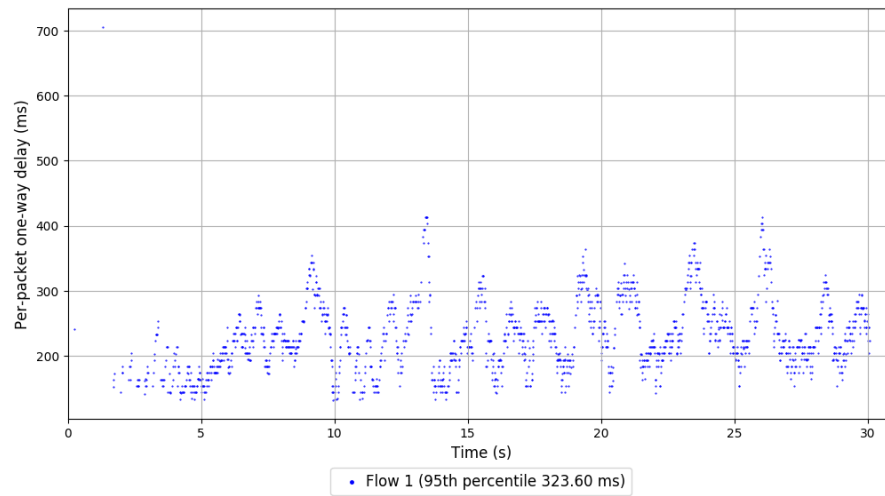
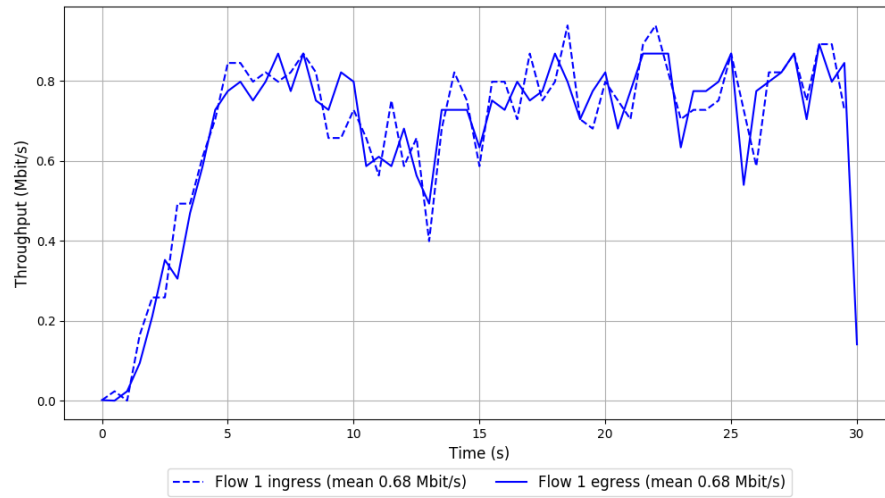


Run 2: Statistics of LEDBAT

Start at: 2018-02-19 17:54:13
End at: 2018-02-19 17:54:43
Local clock offset: -7.787 ms
Remote clock offset: -3.585 ms

Below is generated by plot.py at 2018-02-19 18:21:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 323.596 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 323.596 ms
Loss rate: 0.57%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-02-19 18:15:25

End at: 2018-02-19 18:15:55

Local clock offset: -7.698 ms

Remote clock offset: 1.164 ms

Below is generated by plot.py at 2018-02-19 18:21:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.14 Mbit/s

95th percentile per-packet one-way delay: 305.102 ms

Loss rate: 0.69%

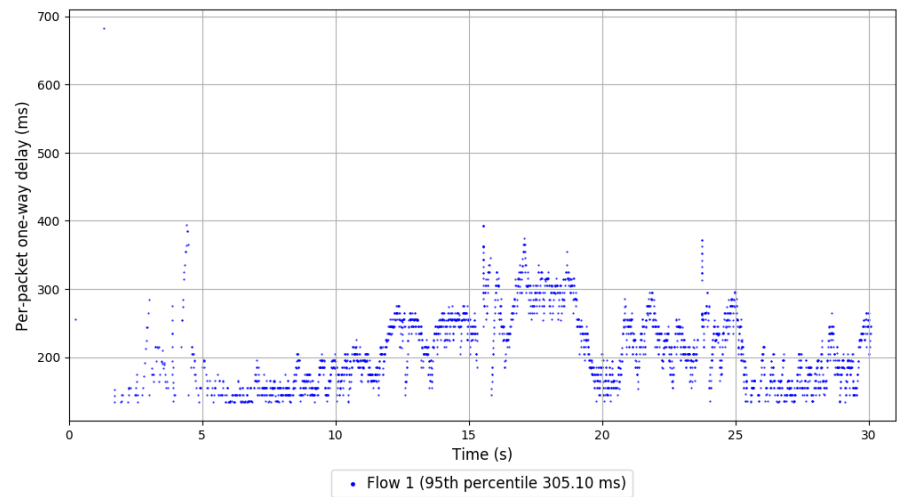
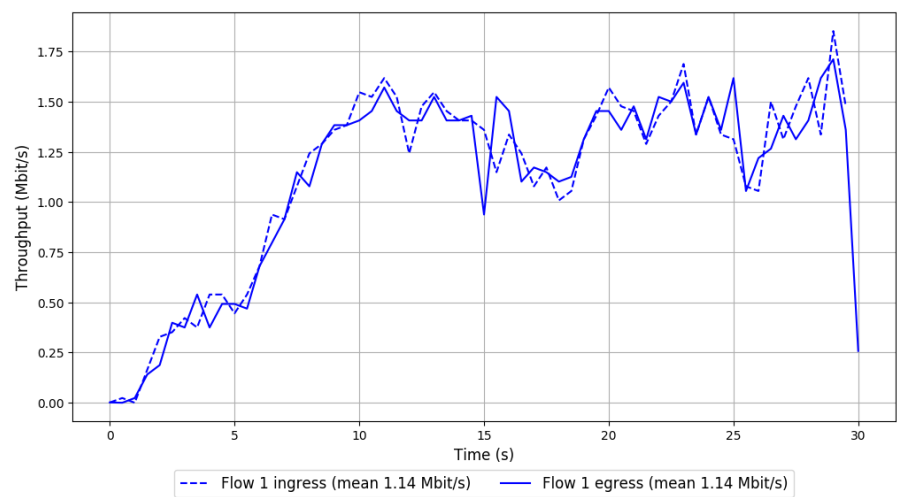
-- Flow 1:

Average throughput: 1.14 Mbit/s

95th percentile per-packet one-way delay: 305.102 ms

Loss rate: 0.69%

Run 3: Report of LEDBAT — Data Link

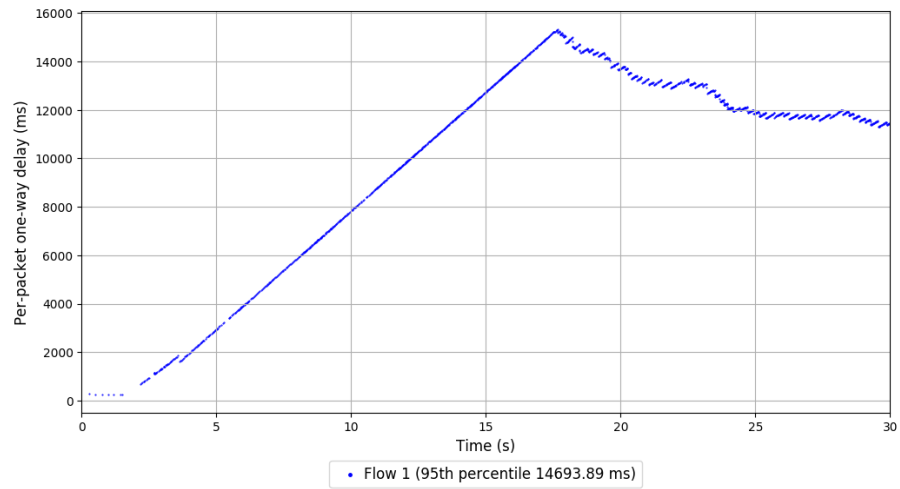
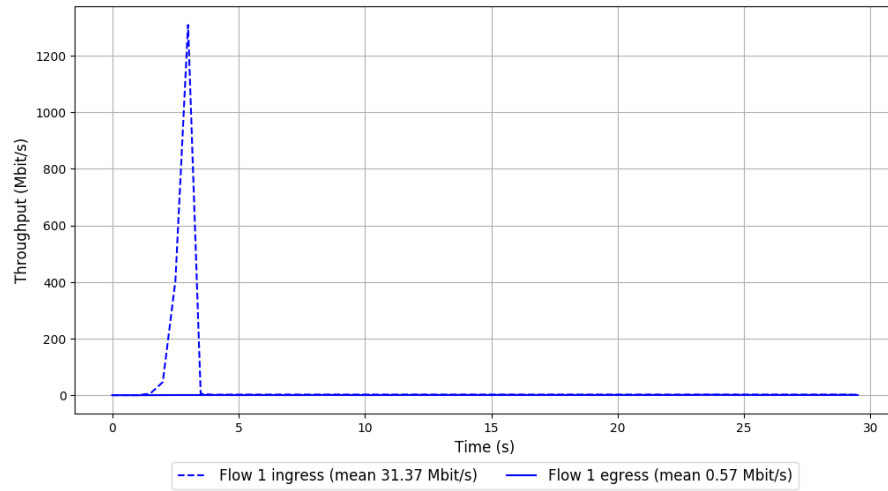


Run 1: Statistics of PCC

Start at: 2018-02-19 17:21:14
End at: 2018-02-19 17:21:44
Local clock offset: -13.593 ms
Remote clock offset: 0.401 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 14693.887 ms
Loss rate: 98.19%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 14693.887 ms
Loss rate: 98.19%

Run 1: Report of PCC — Data Link

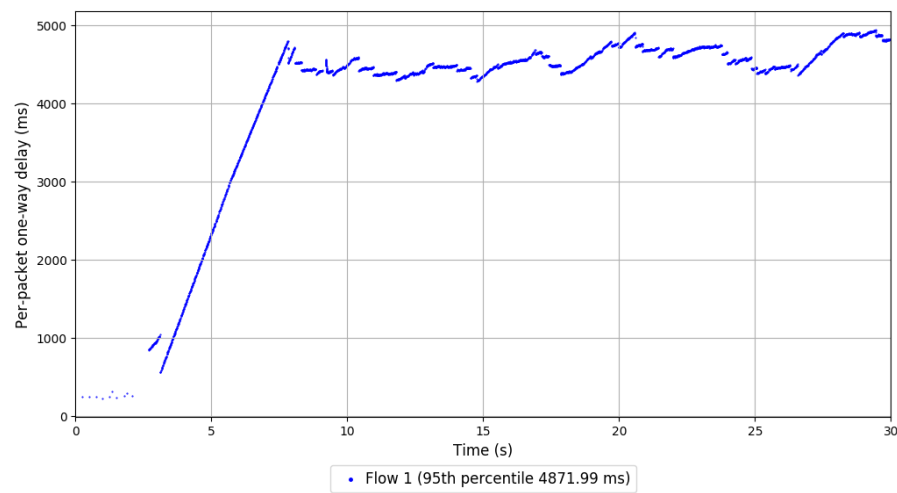
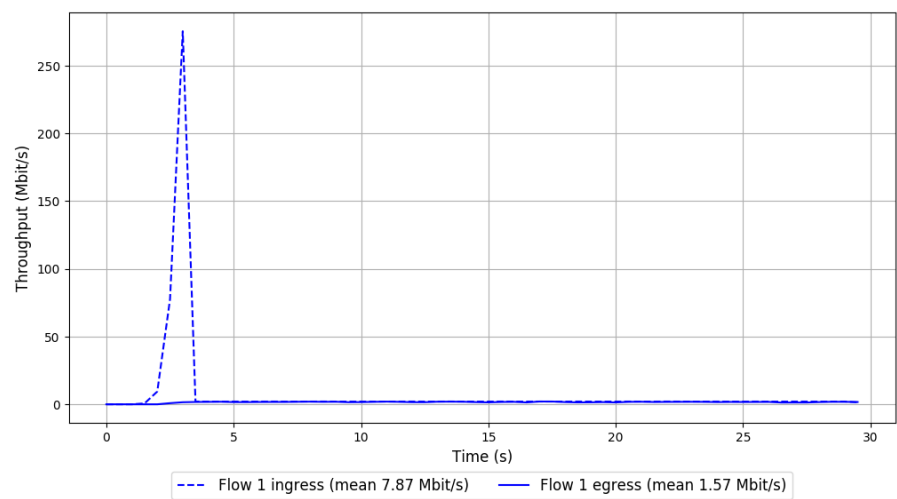


Run 2: Statistics of PCC

Start at: 2018-02-19 17:42:24
End at: 2018-02-19 17:42:54
Local clock offset: -7.67 ms
Remote clock offset: -3.591 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 4871.986 ms
Loss rate: 80.21%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 4871.986 ms
Loss rate: 80.21%

Run 2: Report of PCC — Data Link



Run 3: Statistics of PCC

Start at: 2018-02-19 18:03:41

End at: 2018-02-19 18:04:11

Local clock offset: -7.223 ms

Remote clock offset: 2.033 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.31 Mbit/s

95th percentile per-packet one-way delay: 7613.152 ms

Loss rate: 87.71%

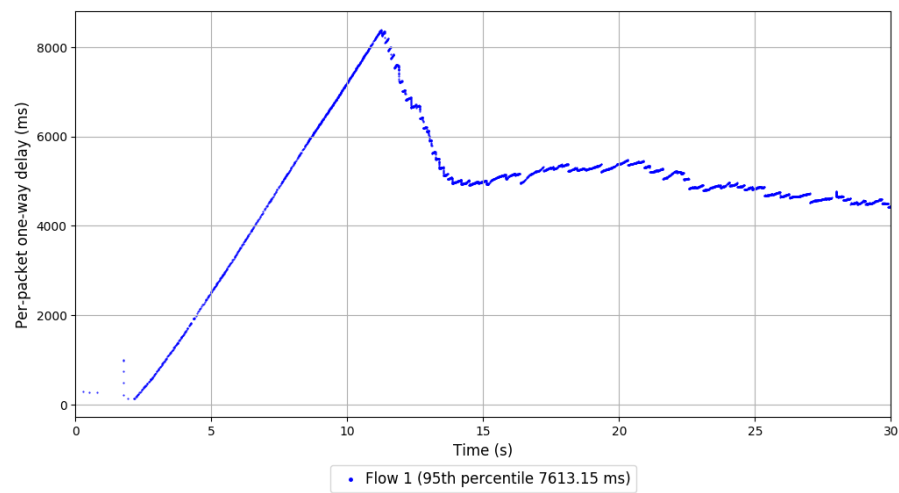
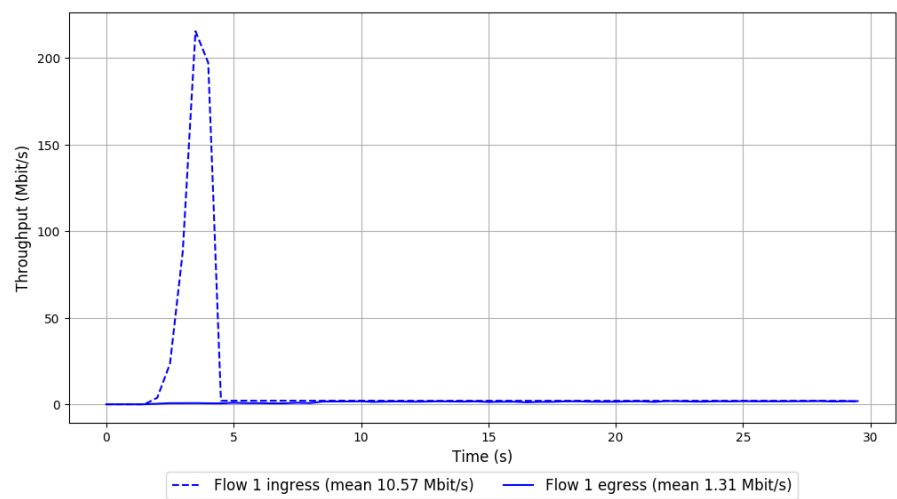
-- Flow 1:

Average throughput: 1.31 Mbit/s

95th percentile per-packet one-way delay: 7613.152 ms

Loss rate: 87.71%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-02-19 17:30:38

End at: 2018-02-19 17:31:08

Local clock offset: -8.55 ms

Remote clock offset: -4.44 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.94 Mbit/s

95th percentile per-packet one-way delay: 3319.751 ms

Loss rate: 8.71%

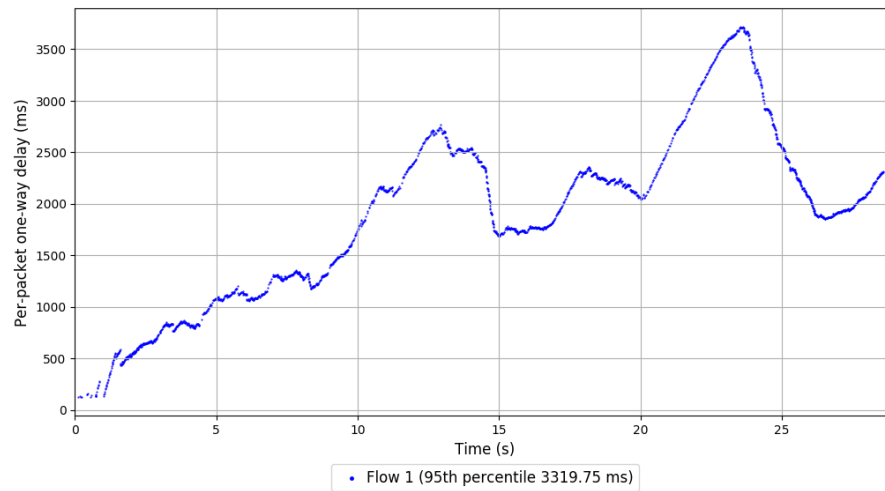
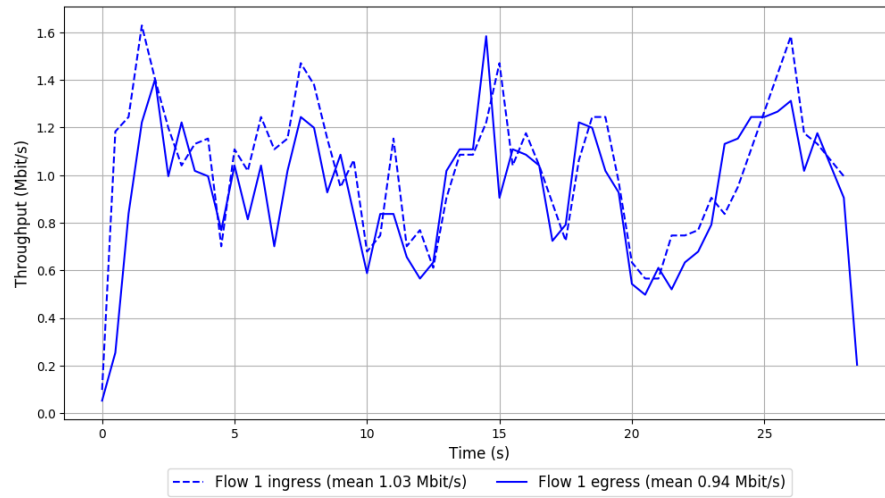
-- Flow 1:

Average throughput: 0.94 Mbit/s

95th percentile per-packet one-way delay: 3319.751 ms

Loss rate: 8.71%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-02-19 17:51:52

End at: 2018-02-19 17:52:22

Local clock offset: -8.209 ms

Remote clock offset: -4.362 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.35 Mbit/s

95th percentile per-packet one-way delay: 1892.049 ms

Loss rate: 5.64%

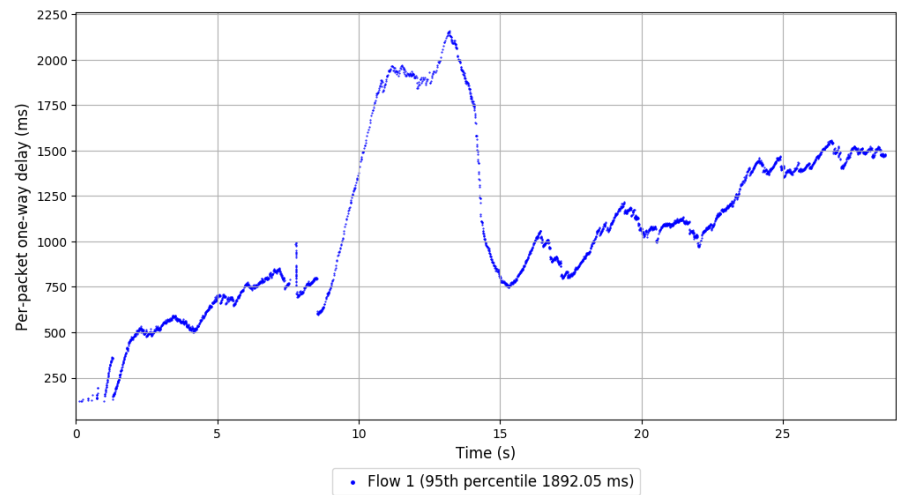
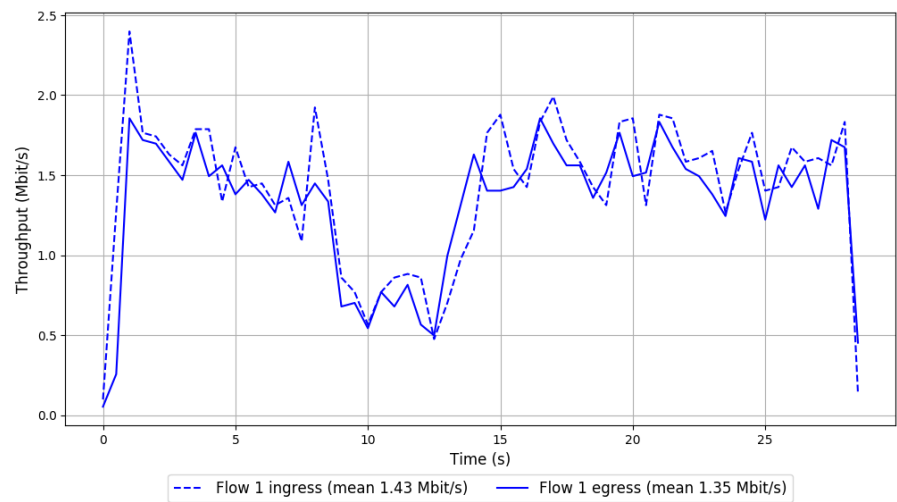
-- Flow 1:

Average throughput: 1.35 Mbit/s

95th percentile per-packet one-way delay: 1892.049 ms

Loss rate: 5.64%

Run 2: Report of QUIC Cubic — Data Link

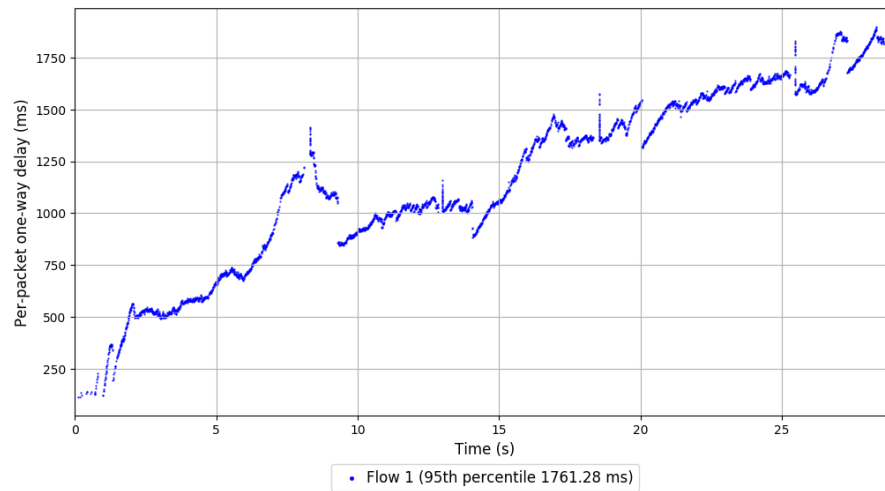
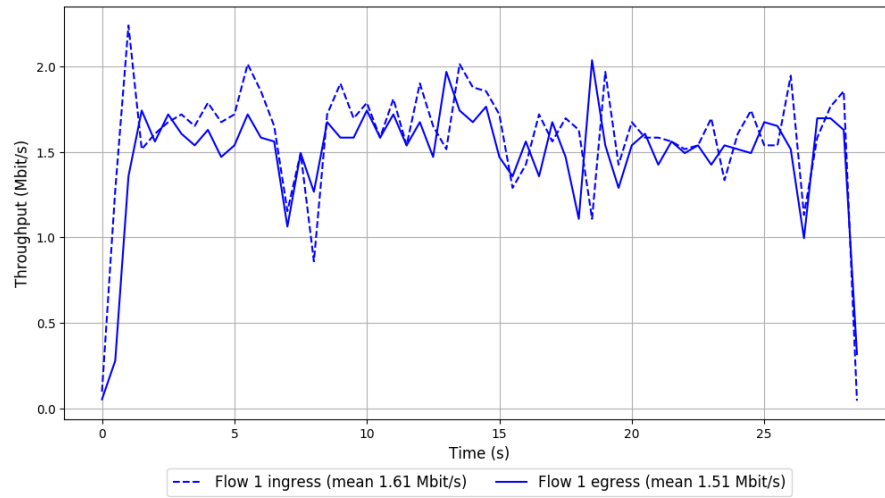


Run 3: Statistics of QUIC Cubic

Start at: 2018-02-19 18:13:05
End at: 2018-02-19 18:13:35
Local clock offset: -7.572 ms
Remote clock offset: -3.582 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 1761.284 ms
Loss rate: 6.05%
-- Flow 1:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 1761.284 ms
Loss rate: 6.05%

Run 3: Report of QUIC Cubic — Data Link

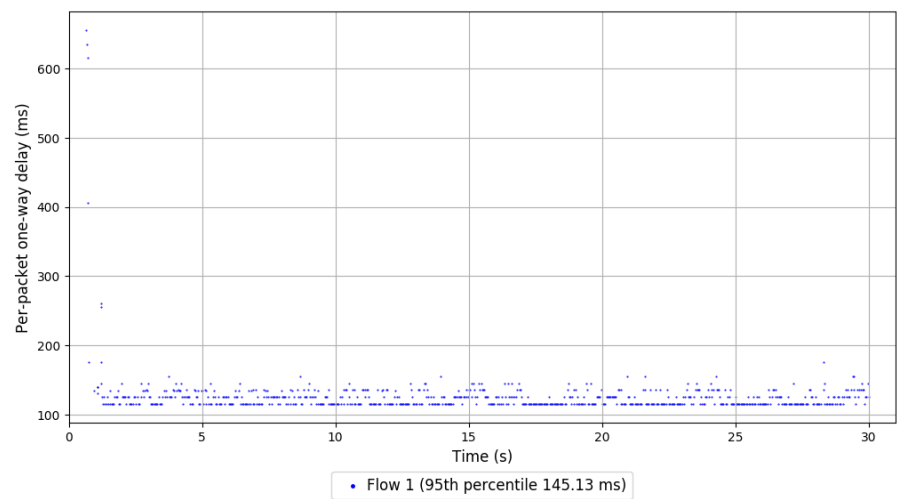
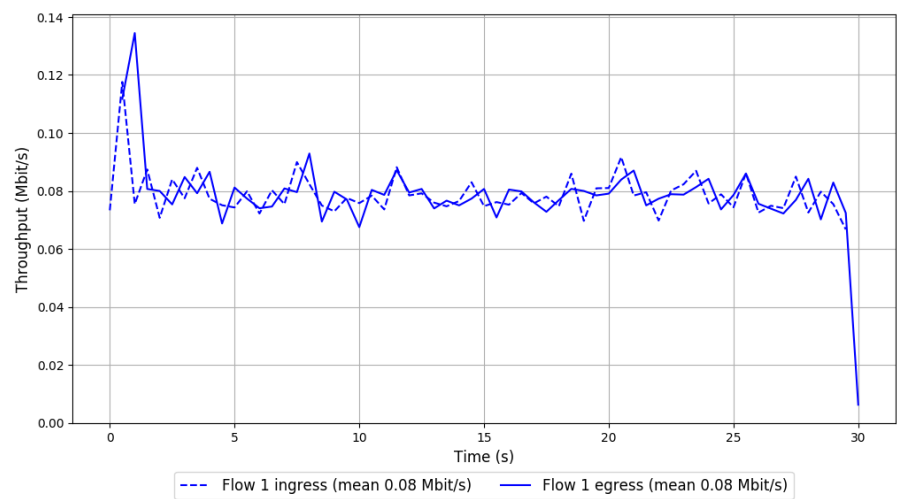


```
Run 1: Statistics of SCReAM

Start at: 2018-02-19 17:18:53
End at: 2018-02-19 17:19:23
Local clock offset: -15.928 ms
Remote clock offset: -4.496 ms

# Below is generated by plot.py at 2018-02-19 18:22:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 145.134 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 145.134 ms
Loss rate: 0.13%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-02-19 17:40:04

End at: 2018-02-19 17:40:34

Local clock offset: -7.64 ms

Remote clock offset: 1.272 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 144.245 ms

Loss rate: 0.13%

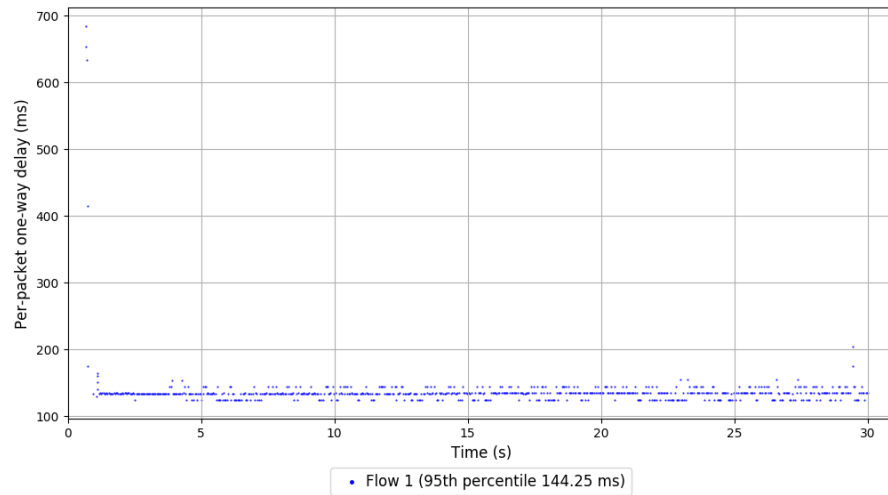
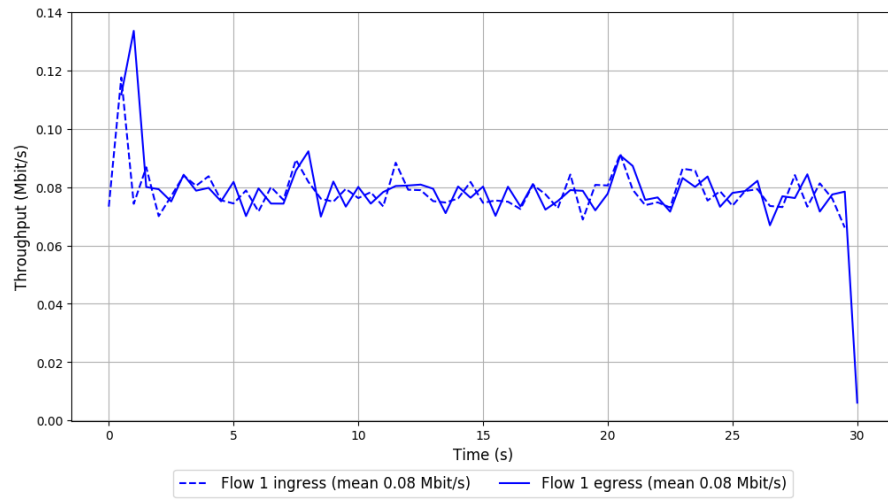
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 144.245 ms

Loss rate: 0.13%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-02-19 18:01:15

End at: 2018-02-19 18:01:45

Local clock offset: -7.247 ms

Remote clock offset: -3.53 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 139.478 ms

Loss rate: 0.13%

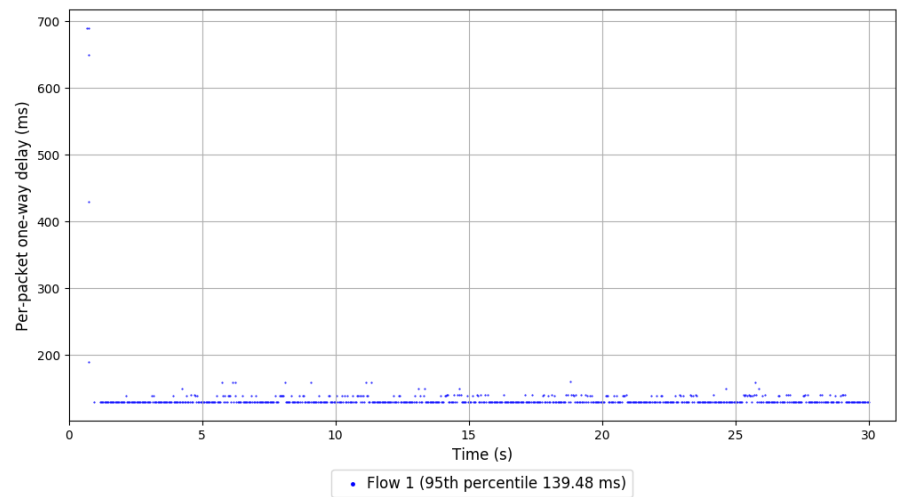
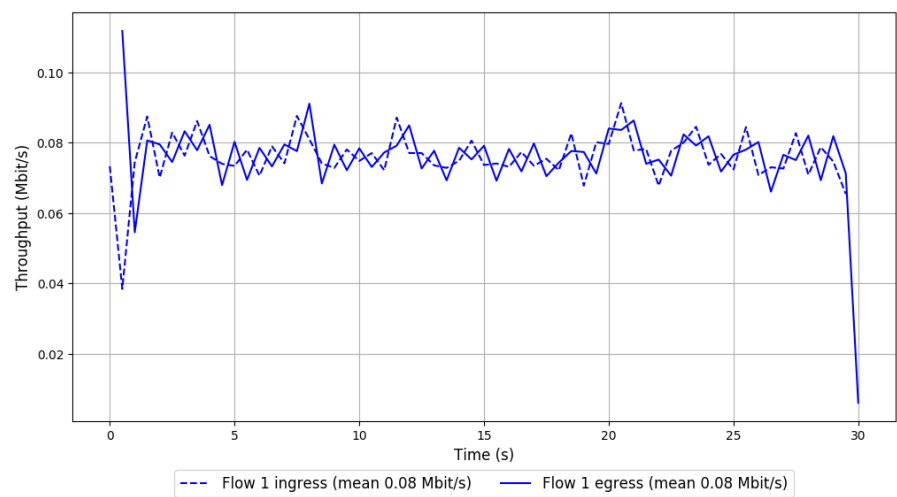
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 139.478 ms

Loss rate: 0.13%

Run 3: Report of SReAM — Data Link

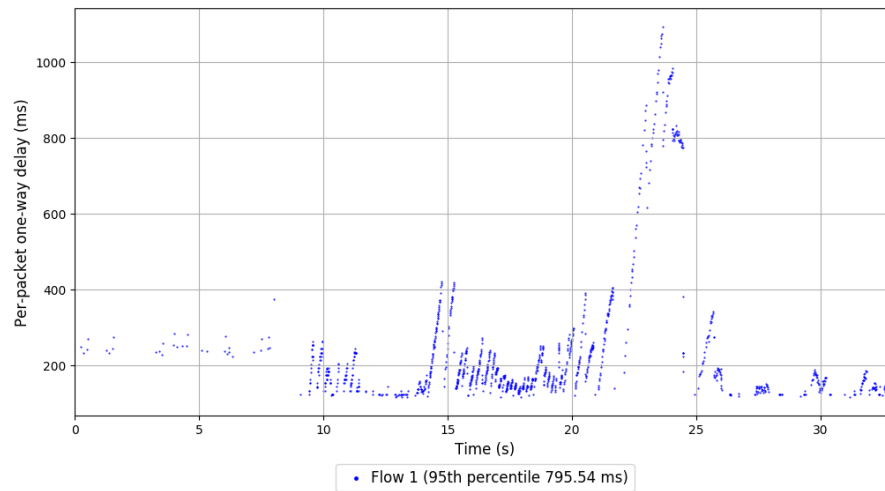
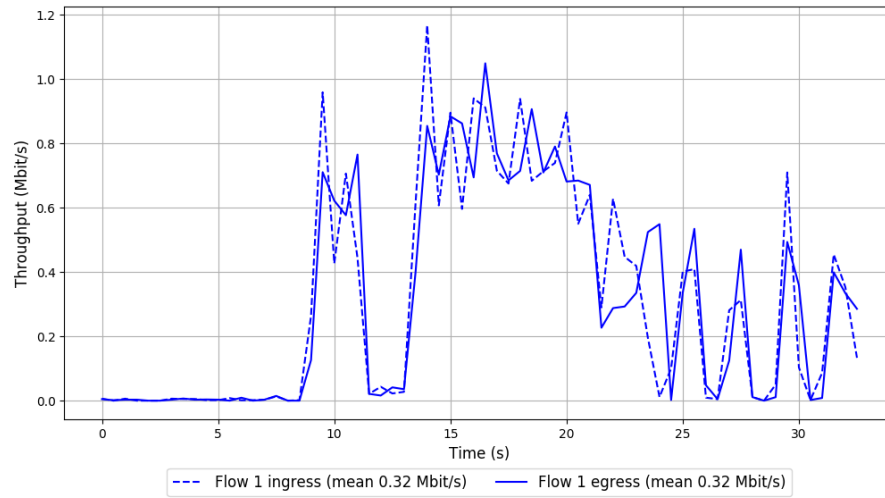


Run 1: Statistics of WebRTC media

Start at: 2018-02-19 17:27:07
End at: 2018-02-19 17:27:37
Local clock offset: -9.726 ms
Remote clock offset: -3.636 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 795.544 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 795.544 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-02-19 17:48:19

End at: 2018-02-19 17:48:49

Local clock offset: -7.979 ms

Remote clock offset: 1.273 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 346.410 ms

Loss rate: 0.21%

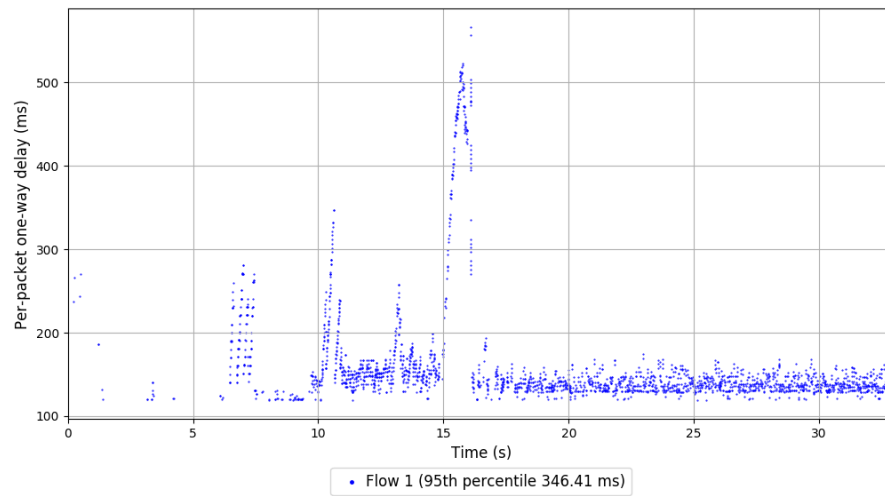
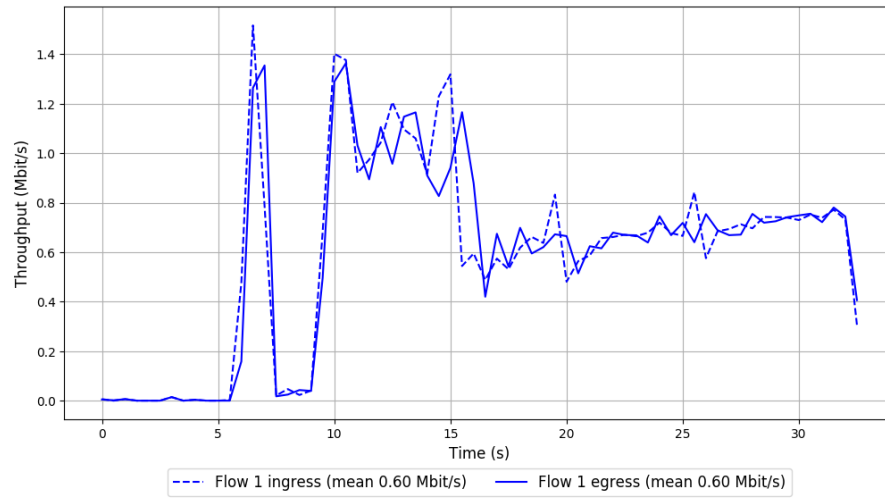
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 346.410 ms

Loss rate: 0.21%

Run 2: Report of WebRTC media — Data Link

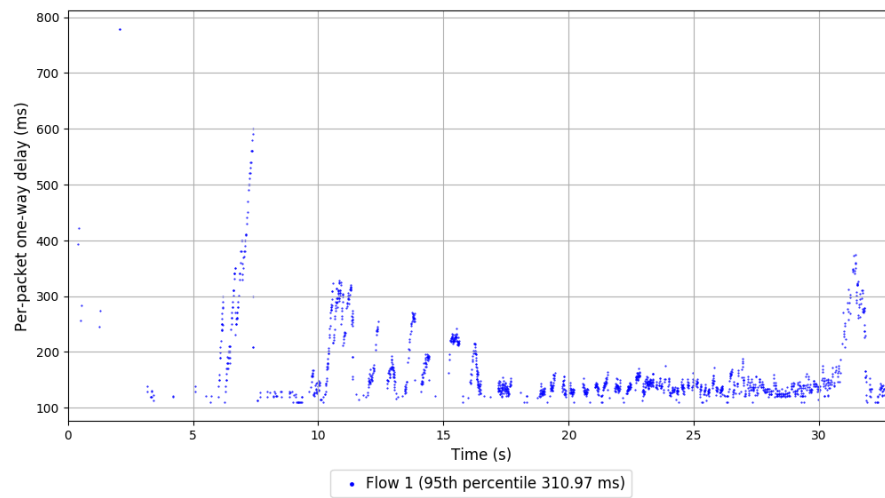
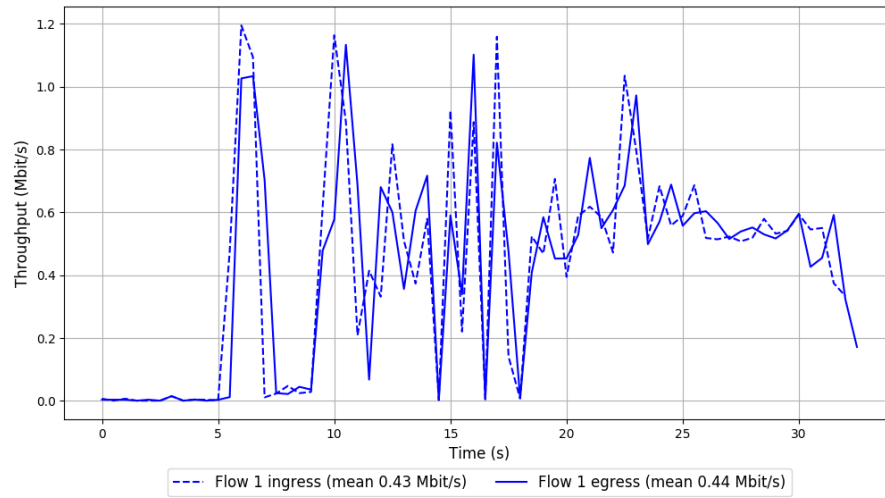


Run 3: Statistics of WebRTC media

Start at: 2018-02-19 18:09:33
End at: 2018-02-19 18:10:03
Local clock offset: -7.385 ms
Remote clock offset: -4.495 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 310.966 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 310.966 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

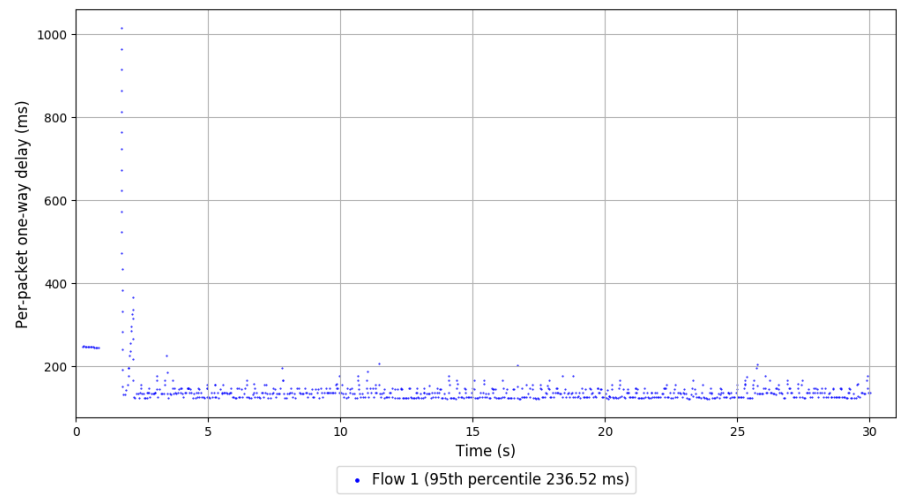
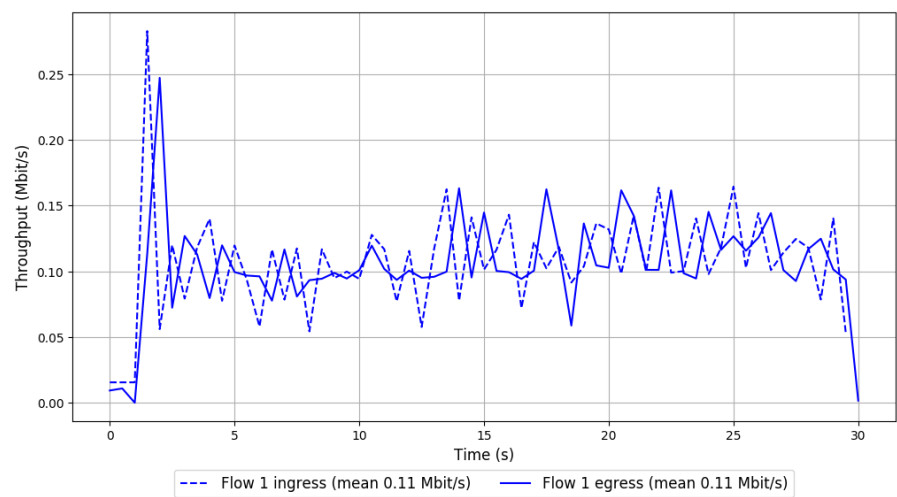


Run 1: Statistics of Sprout

Start at: 2018-02-19 17:20:04
End at: 2018-02-19 17:20:34
Local clock offset: -14.743 ms
Remote clock offset: 2.166 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 236.518 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 236.518 ms
Loss rate: 0.05%

Run 1: Report of Sprout — Data Link

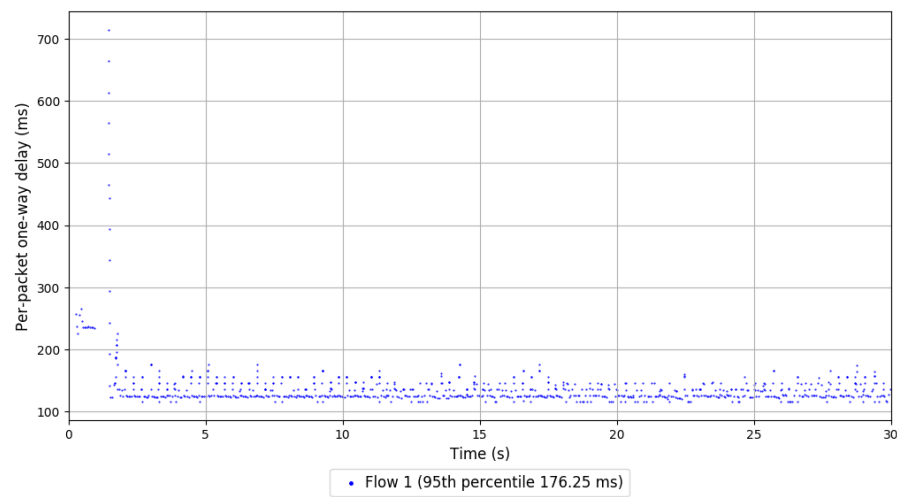
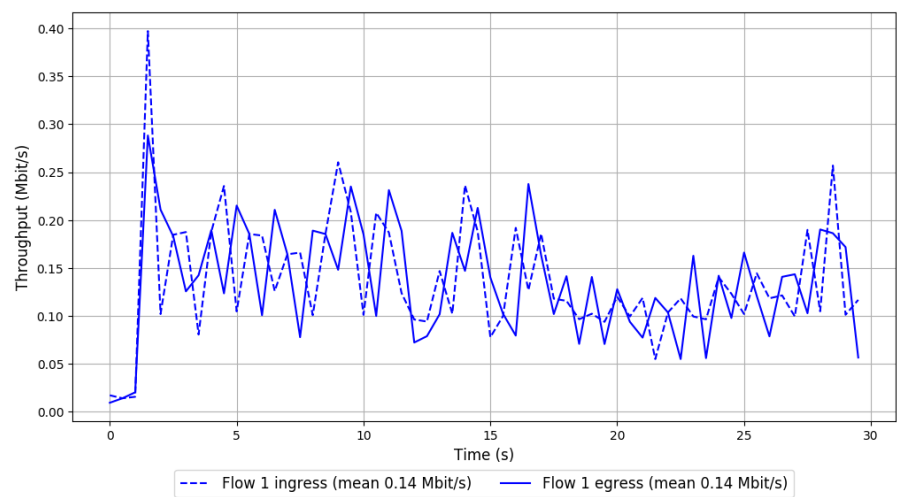


Run 2: Statistics of Sprout

Start at: 2018-02-19 17:41:14
End at: 2018-02-19 17:41:44
Local clock offset: -7.642 ms
Remote clock offset: 1.334 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 176.248 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 176.248 ms
Loss rate: 0.79%

Run 2: Report of Sprout — Data Link

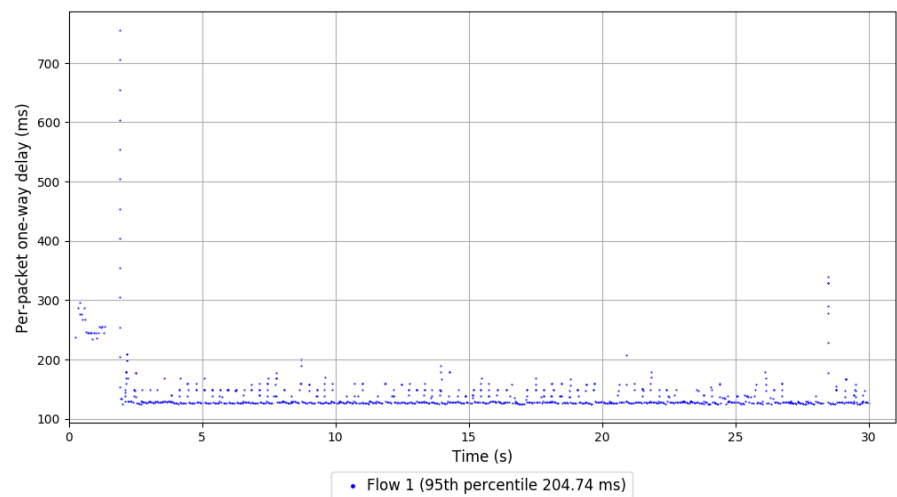
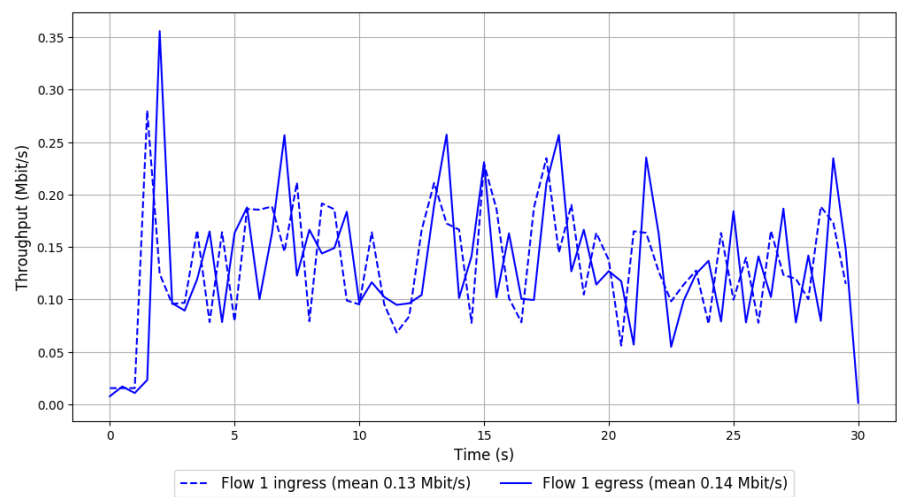


Run 3: Statistics of Sprout

Start at: 2018-02-19 18:02:28
End at: 2018-02-19 18:02:58
Local clock offset: -7.254 ms
Remote clock offset: 1.287 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 204.737 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 204.737 ms
Loss rate: 0.20%

Run 3: Report of Sprout — Data Link

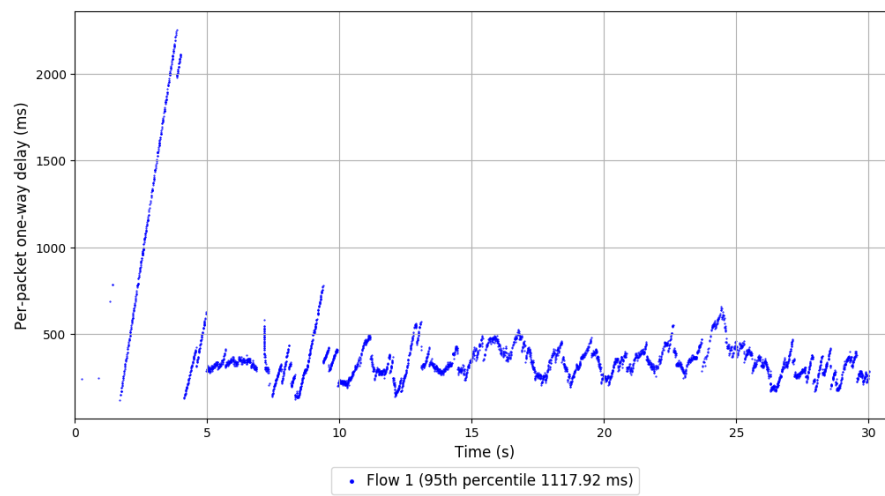
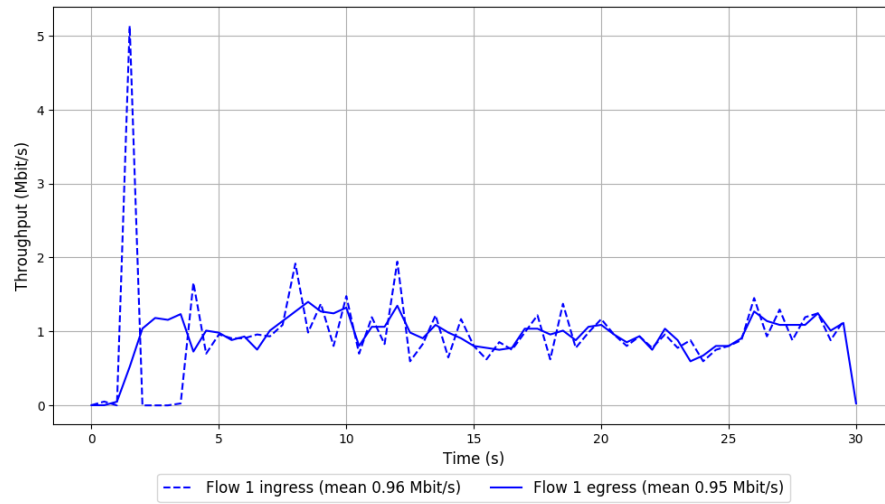


Run 1: Statistics of TaoVA-100x

Start at: 2018-02-19 17:24:46
End at: 2018-02-19 17:25:16
Local clock offset: -10.795 ms
Remote clock offset: -4.382 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 1117.923 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 1117.923 ms
Loss rate: 0.99%

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

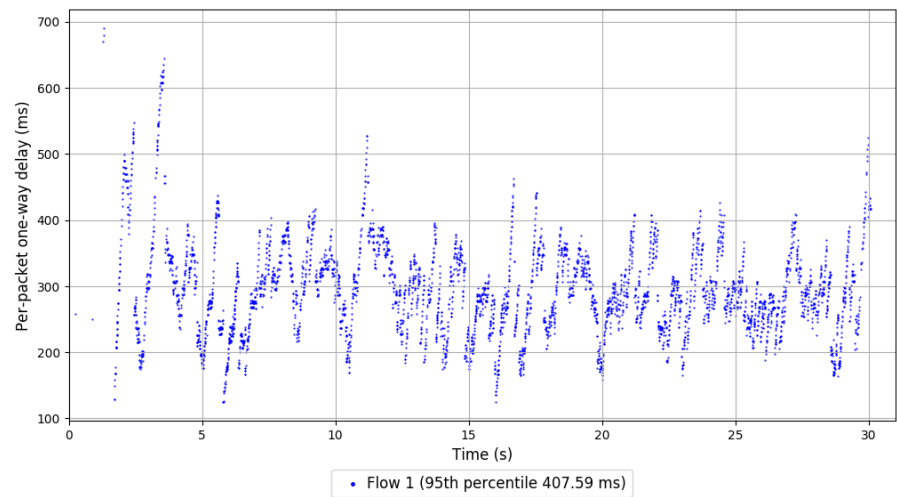
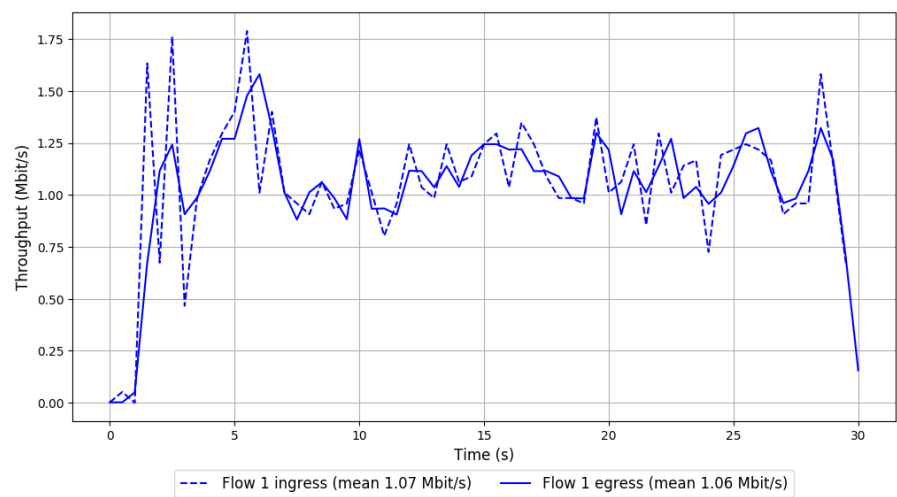


Run 2: Statistics of TaoVA-100x

Start at: 2018-02-19 17:45:56
End at: 2018-02-19 17:46:26
Local clock offset: -7.868 ms
Remote clock offset: -3.562 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 407.593 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 407.593 ms
Loss rate: 0.78%

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

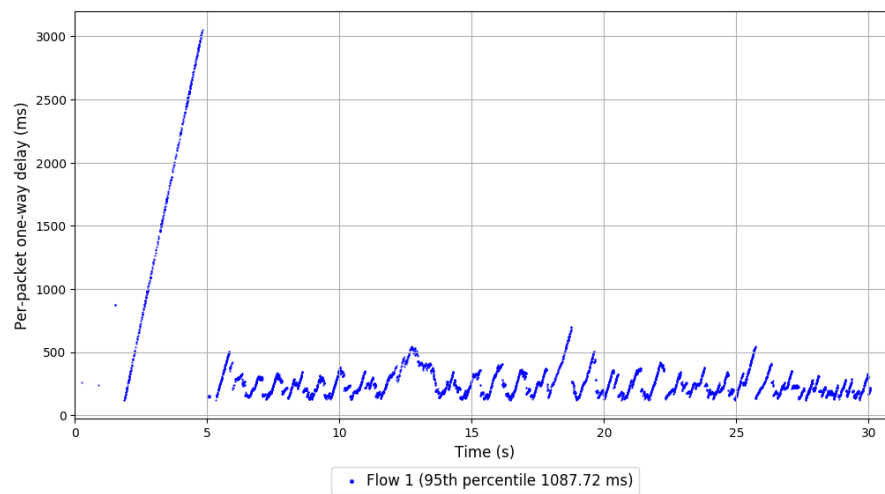
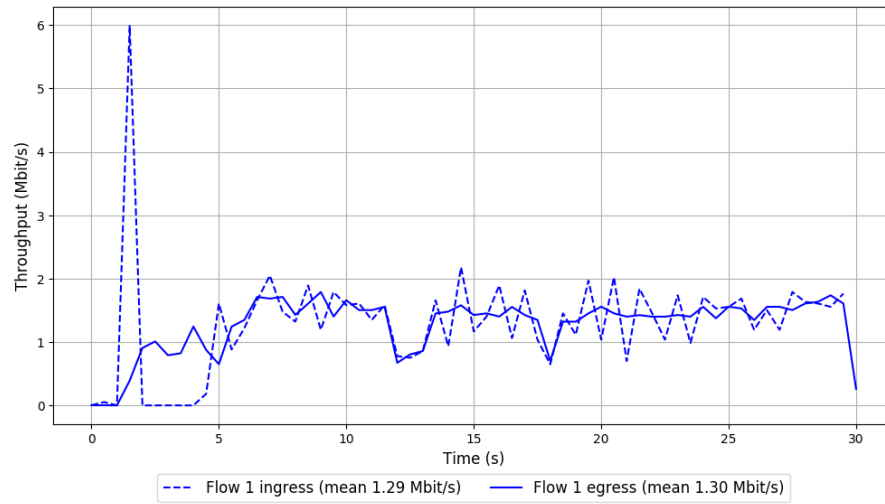


Run 3: Statistics of TaoVA-100x

Start at: 2018-02-19 18:07:12
End at: 2018-02-19 18:07:42
Local clock offset: -7.296 ms
Remote clock offset: -3.572 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 1087.720 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 1087.720 ms
Loss rate: 0.40%

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

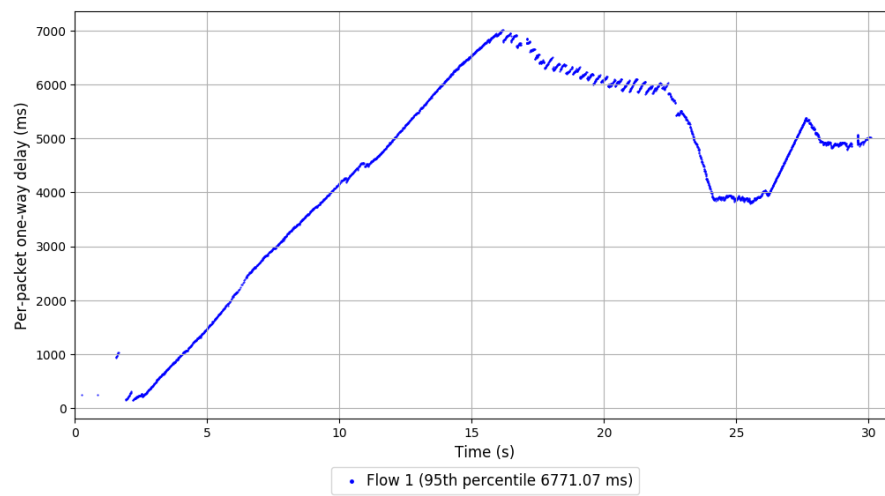
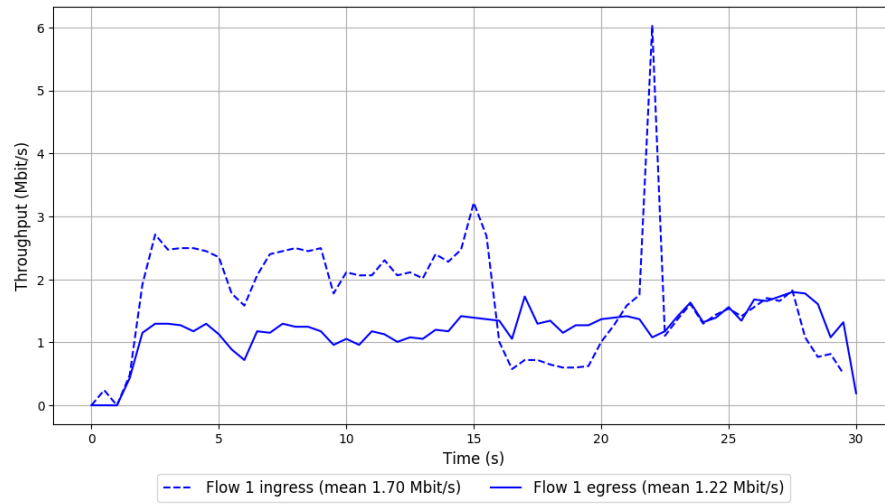


Run 1: Statistics of TCP Vegas

Start at: 2018-02-19 17:17:43
End at: 2018-02-19 17:18:13
Local clock offset: -17.905 ms
Remote clock offset: -3.69 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 6771.067 ms
Loss rate: 28.53%
-- Flow 1:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 6771.067 ms
Loss rate: 28.53%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-02-19 17:38:54

End at: 2018-02-19 17:39:24

Local clock offset: -7.642 ms

Remote clock offset: 2.044 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.53 Mbit/s

95th percentile per-packet one-way delay: 592.558 ms

Loss rate: 0.29%

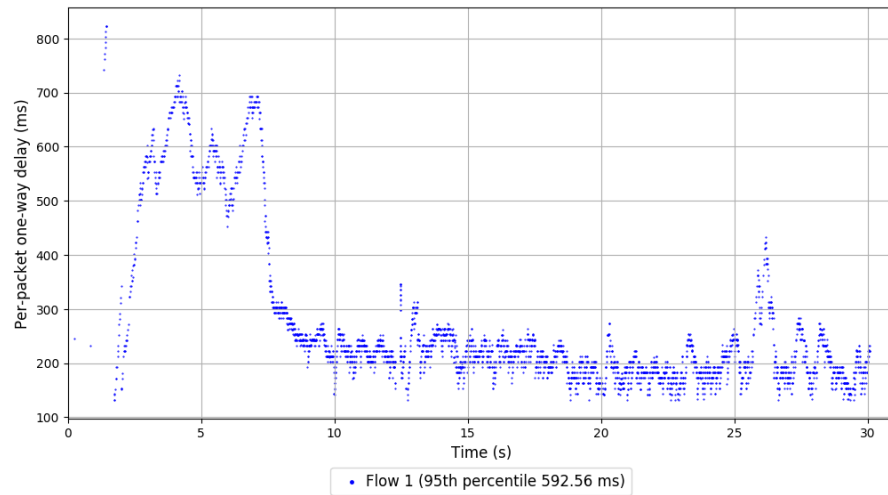
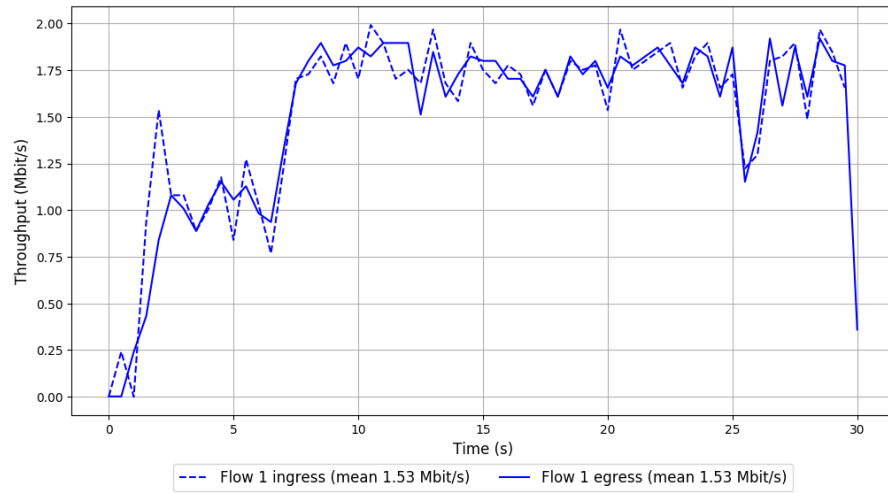
-- Flow 1:

Average throughput: 1.53 Mbit/s

95th percentile per-packet one-way delay: 592.558 ms

Loss rate: 0.29%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-02-19 18:00:05

End at: 2018-02-19 18:00:35

Local clock offset: -7.335 ms

Remote clock offset: 2.057 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.52 Mbit/s

95th percentile per-packet one-way delay: 5312.032 ms

Loss rate: 21.23%

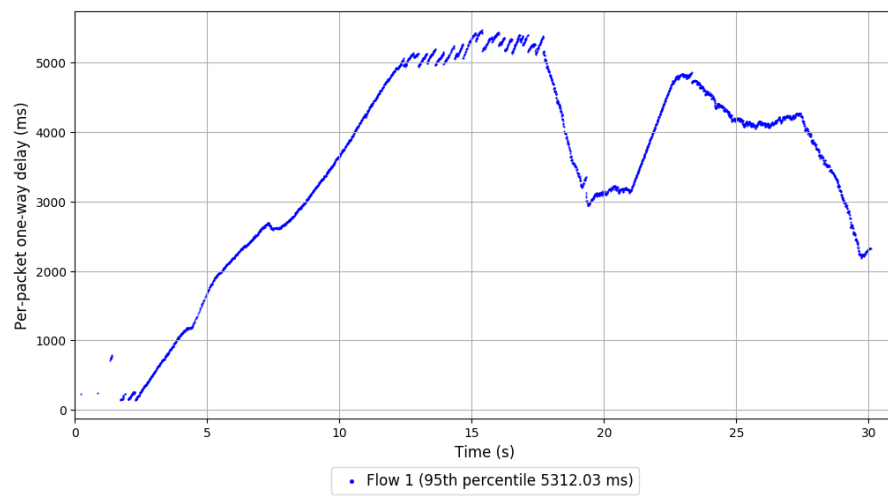
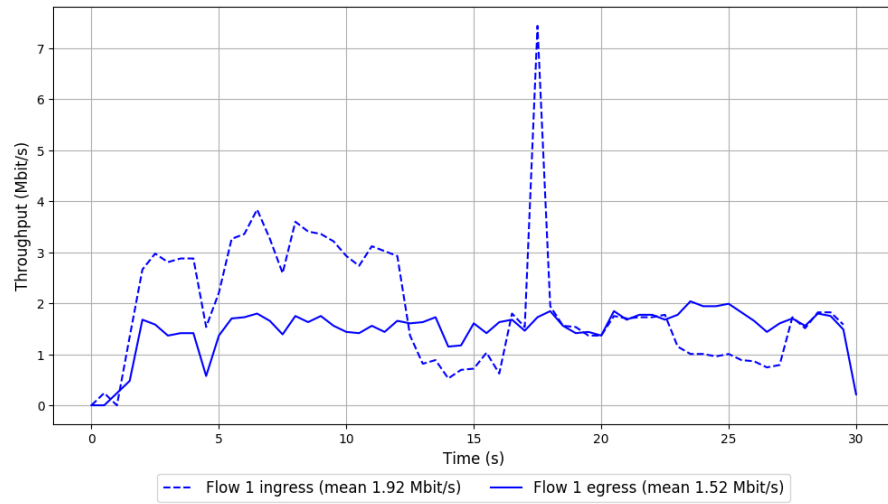
-- Flow 1:

Average throughput: 1.52 Mbit/s

95th percentile per-packet one-way delay: 5312.032 ms

Loss rate: 21.23%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-02-19 17:23:35

End at: 2018-02-19 17:24:05

Local clock offset: -11.64 ms

Remote clock offset: 2.085 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 9897.481 ms

Loss rate: 19.89%

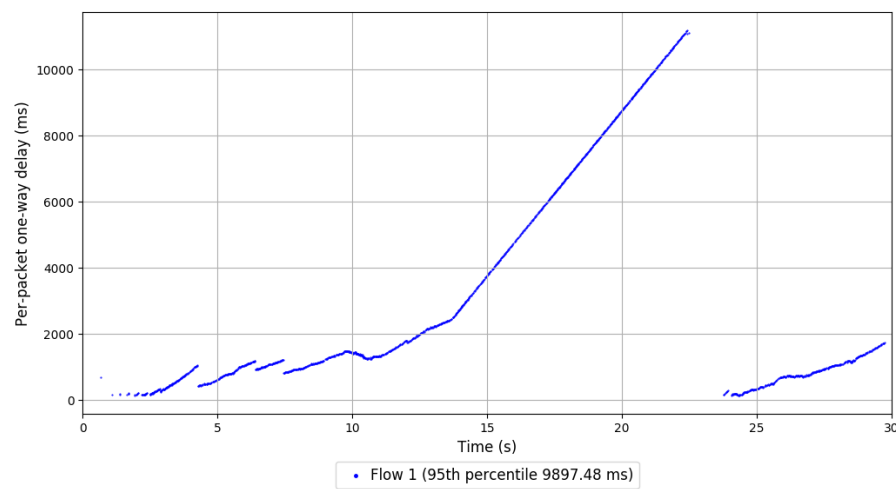
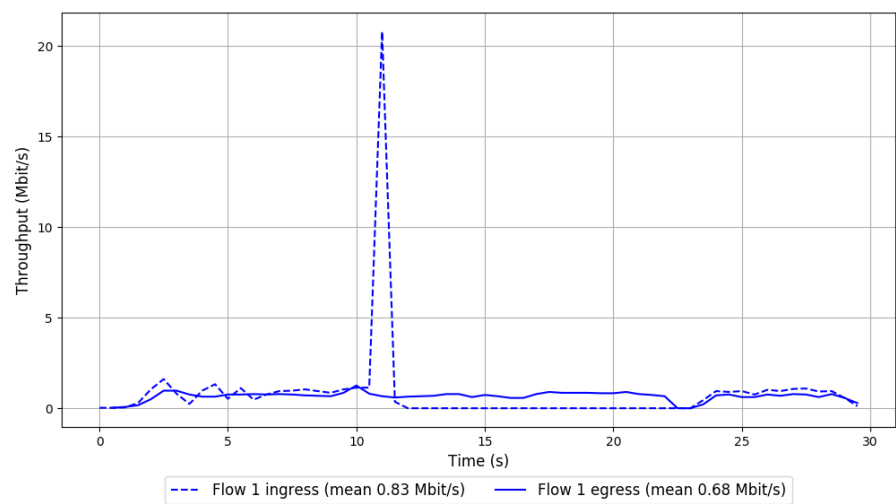
-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 9897.481 ms

Loss rate: 19.89%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-02-19 17:44:46

End at: 2018-02-19 17:45:16

Local clock offset: -7.8 ms

Remote clock offset: 2.154 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.64 Mbit/s

95th percentile per-packet one-way delay: 2106.028 ms

Loss rate: 4.26%

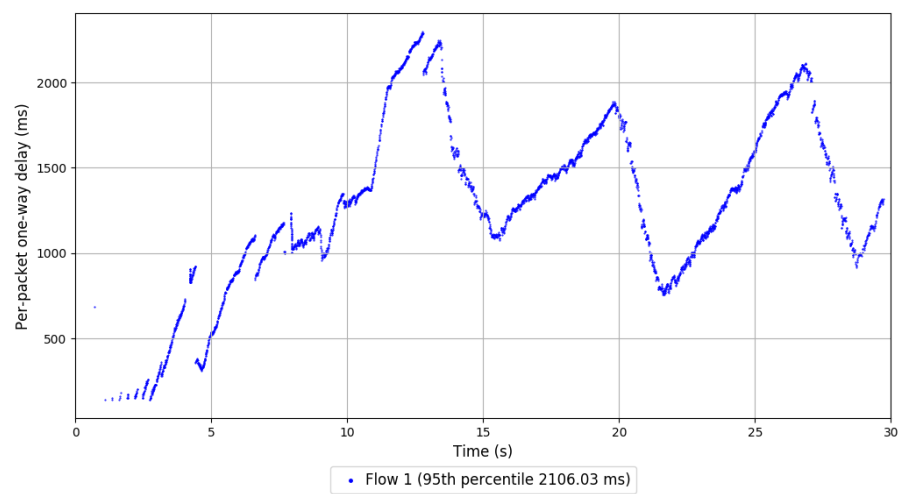
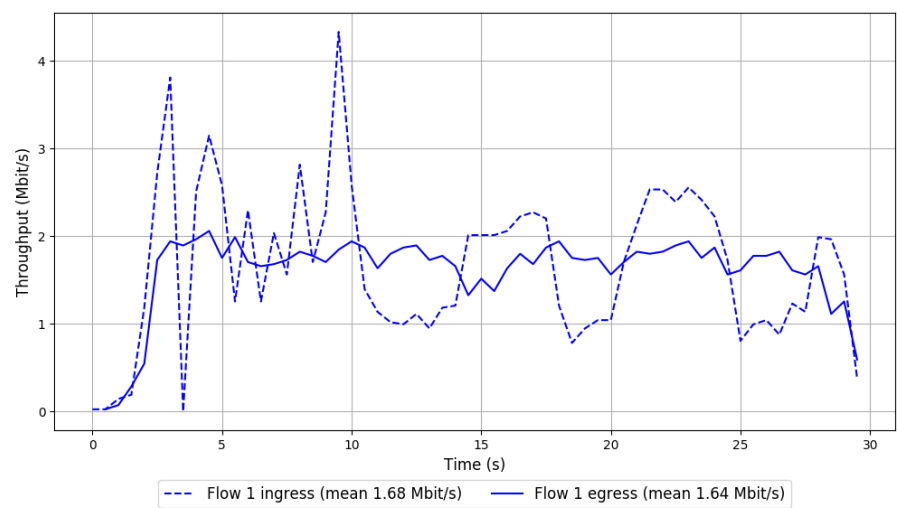
-- Flow 1:

Average throughput: 1.64 Mbit/s

95th percentile per-packet one-way delay: 2106.028 ms

Loss rate: 4.26%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-02-19 18:06:02

End at: 2018-02-19 18:06:32

Local clock offset: -7.333 ms

Remote clock offset: 1.289 ms

Below is generated by plot.py at 2018-02-19 18:22:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 2201.538 ms

Loss rate: 4.64%

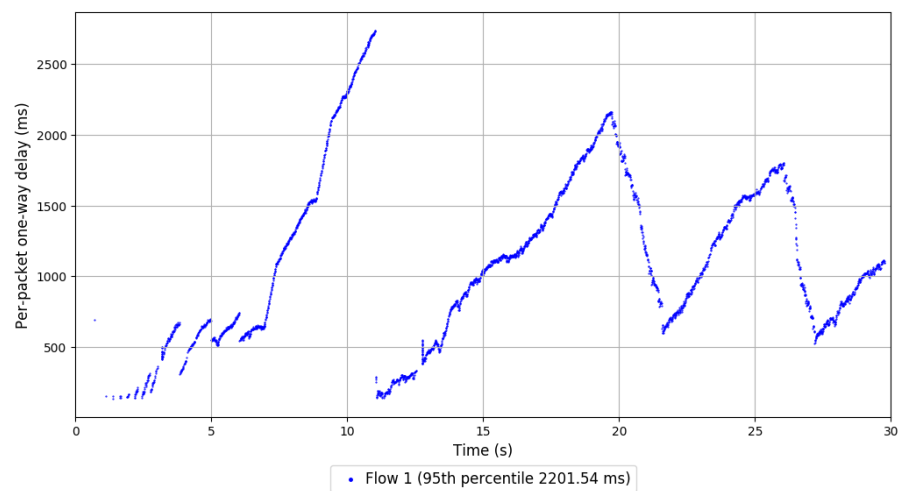
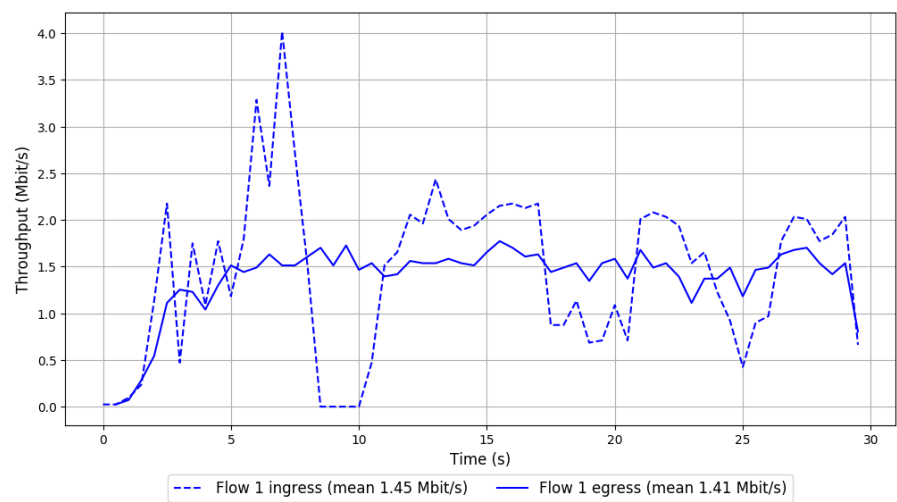
-- Flow 1:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 2201.538 ms

Loss rate: 4.64%

Run 3: Report of Verus — Data Link

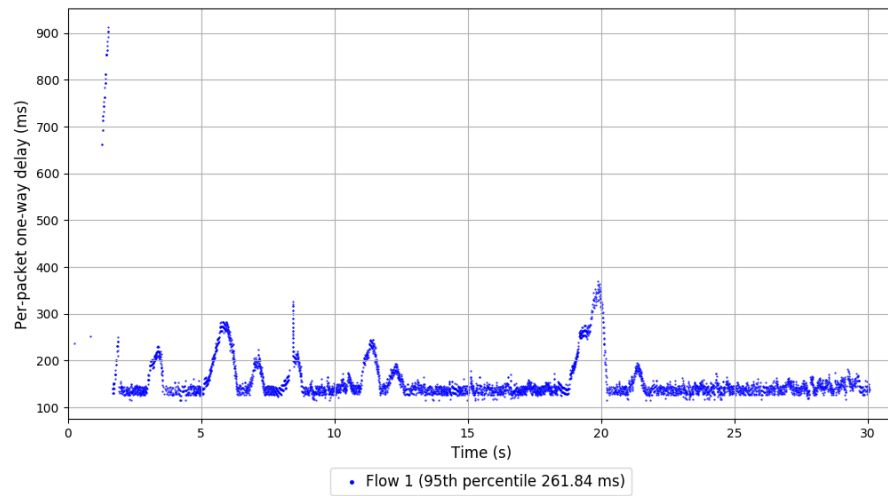
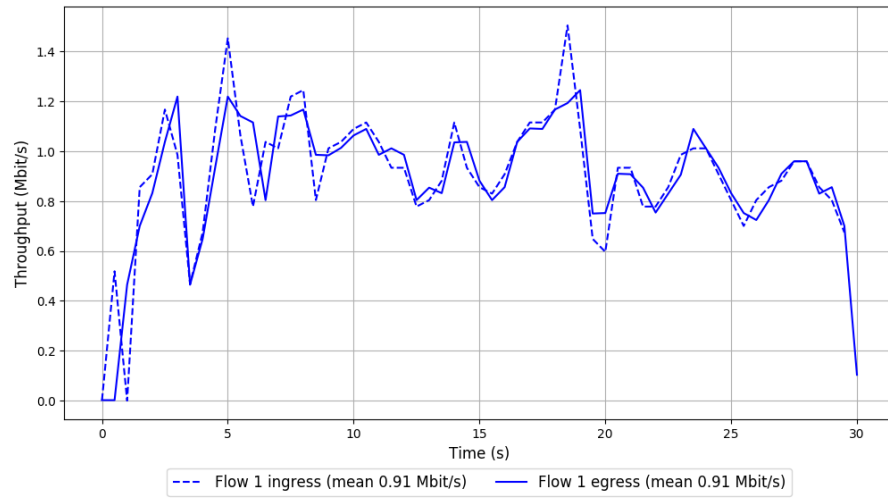


Run 1: Statistics of Copa

Start at: 2018-02-19 17:29:27
End at: 2018-02-19 17:29:57
Local clock offset: -8.868 ms
Remote clock offset: -4.417 ms

Below is generated by plot.py at 2018-02-19 18:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 261.837 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 261.837 ms
Loss rate: 0.19%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-02-19 17:50:42

End at: 2018-02-19 17:51:12

Local clock offset: -8.204 ms

Remote clock offset: 1.237 ms

Below is generated by plot.py at 2018-02-19 18:22:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.07 Mbit/s

95th percentile per-packet one-way delay: 462.211 ms

Loss rate: 0.20%

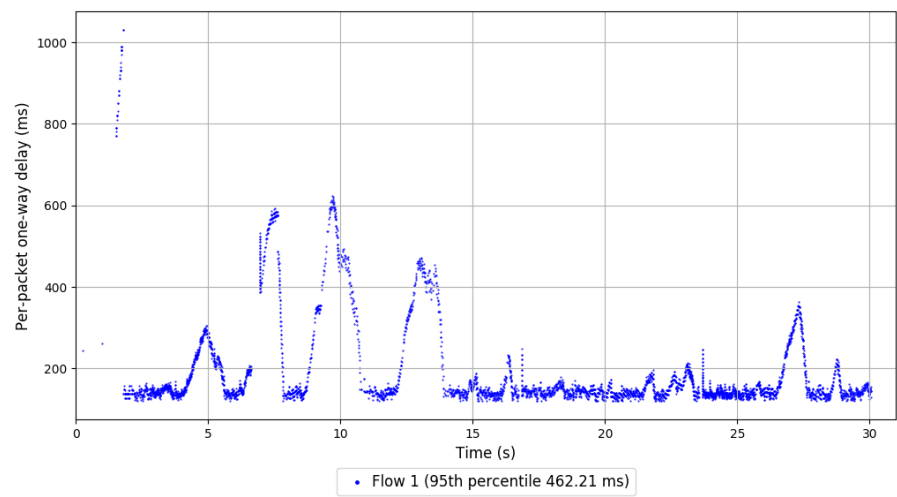
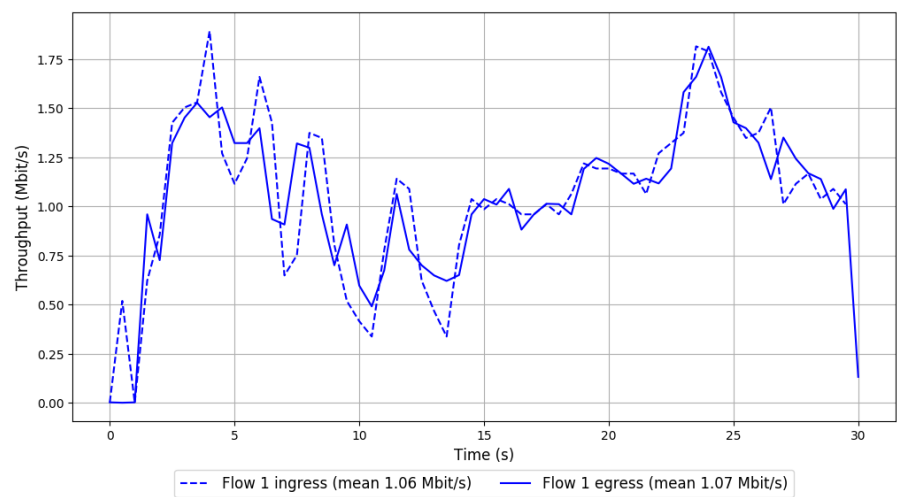
-- Flow 1:

Average throughput: 1.07 Mbit/s

95th percentile per-packet one-way delay: 462.211 ms

Loss rate: 0.20%

Run 2: Report of Copa — Data Link

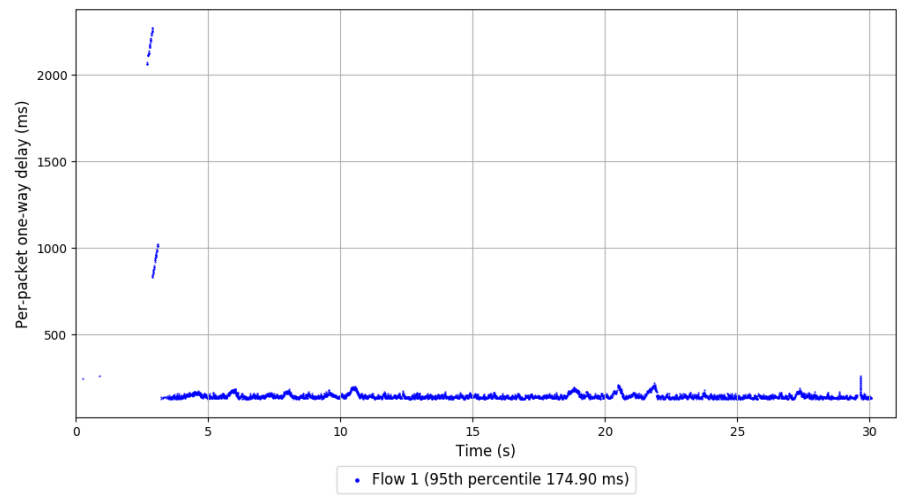
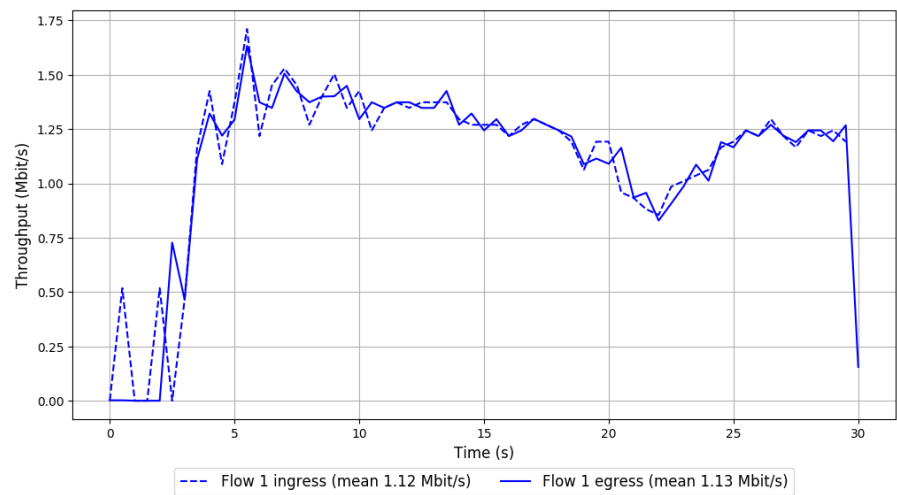


Run 3: Statistics of Copa

Start at: 2018-02-19 18:11:54
End at: 2018-02-19 18:12:24
Local clock offset: -7.569 ms
Remote clock offset: 1.22 ms

Below is generated by plot.py at 2018-02-19 18:22:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 174.902 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 174.902 ms
Loss rate: 0.19%

Run 3: Report of Copa — Data Link

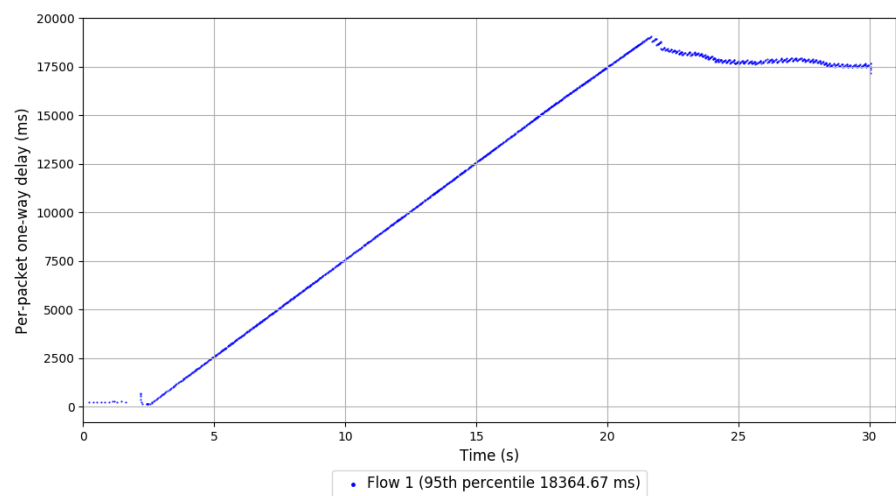
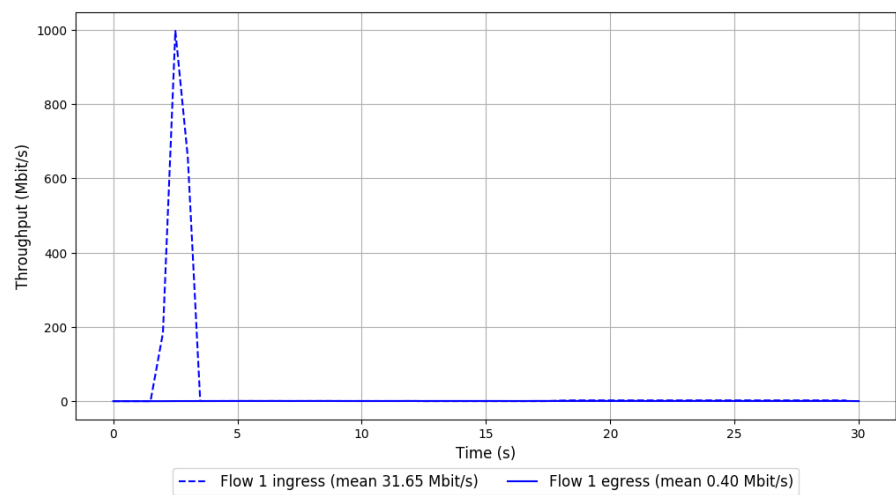


Run 1: Statistics of FillP

Start at: 2018-02-19 17:22:24
End at: 2018-02-19 17:22:54
Local clock offset: -12.415 ms
Remote clock offset: 1.264 ms

Below is generated by plot.py at 2018-02-19 18:22:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 18364.674 ms
Loss rate: 98.74%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 18364.674 ms
Loss rate: 98.74%

Run 1: Report of FillP — Data Link

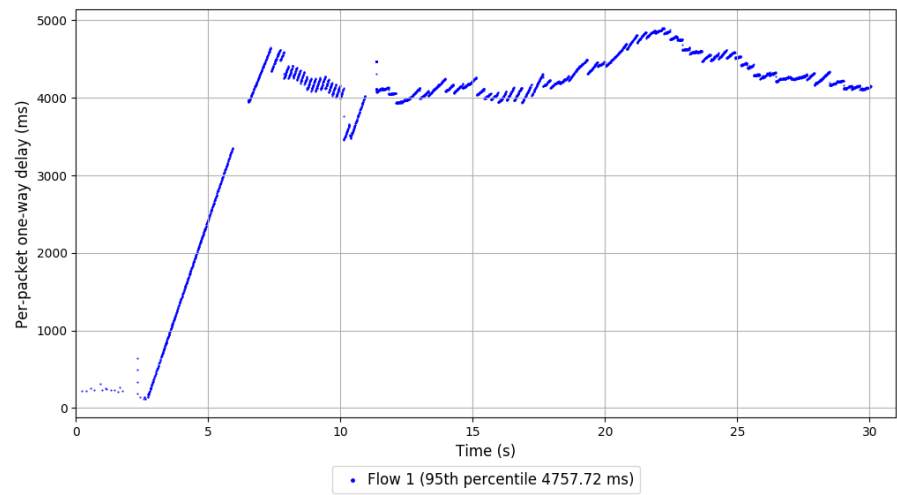
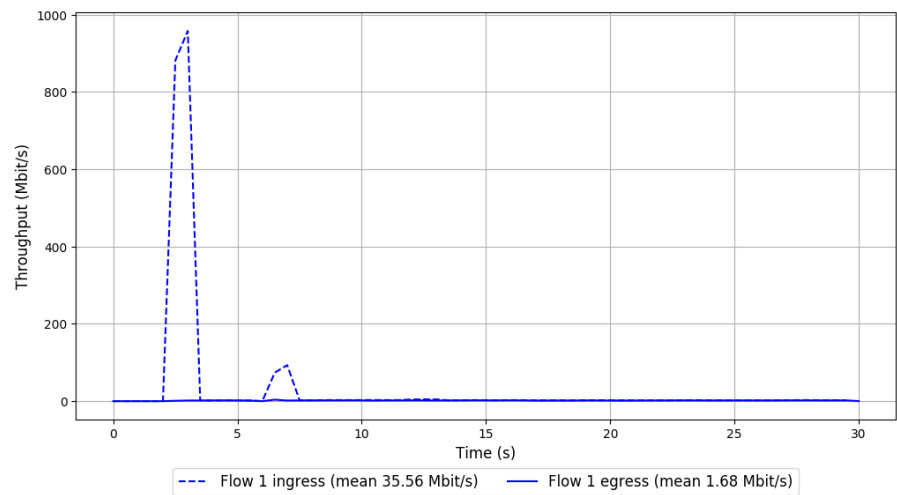


Run 2: Statistics of FillP

Start at: 2018-02-19 17:43:34
End at: 2018-02-19 17:44:05
Local clock offset: -7.807 ms
Remote clock offset: -3.566 ms

Below is generated by plot.py at 2018-02-19 18:22:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 4757.716 ms
Loss rate: 95.30%
-- Flow 1:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 4757.716 ms
Loss rate: 95.30%

Run 2: Report of FillP — Data Link

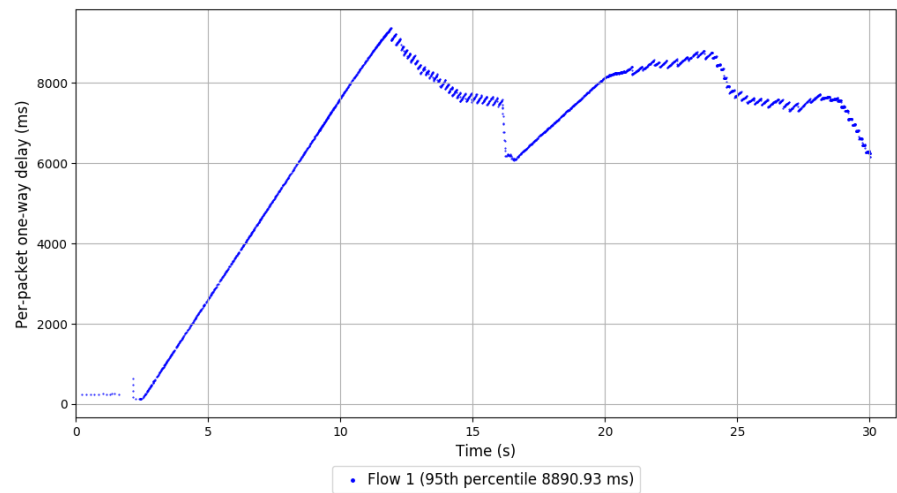
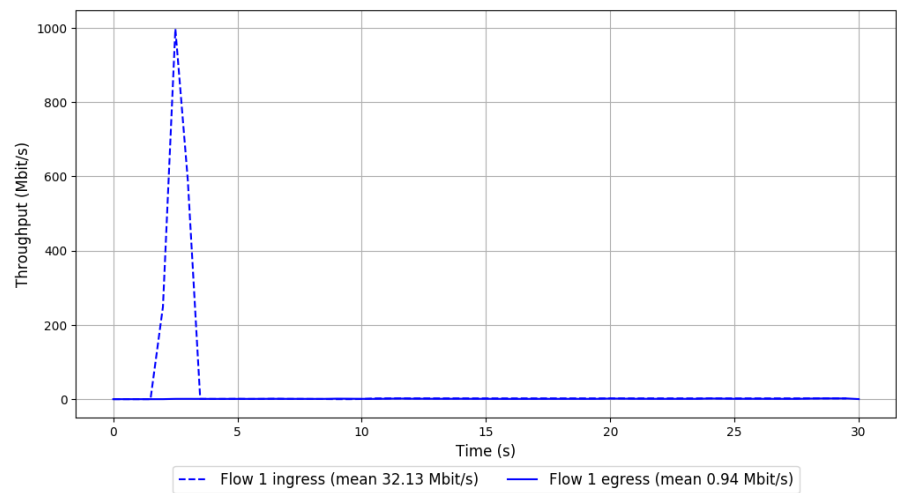


Run 3: Statistics of FillP

Start at: 2018-02-19 18:04:51
End at: 2018-02-19 18:05:21
Local clock offset: -7.235 ms
Remote clock offset: -3.586 ms

Below is generated by plot.py at 2018-02-19 18:22:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 8890.933 ms
Loss rate: 97.09%
-- Flow 1:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 8890.933 ms
Loss rate: 97.09%

Run 3: Report of FillP — Data Link

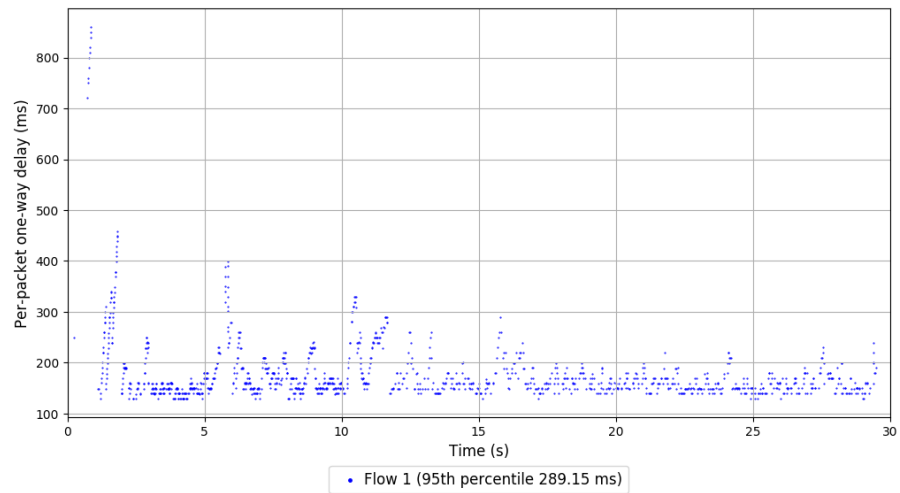
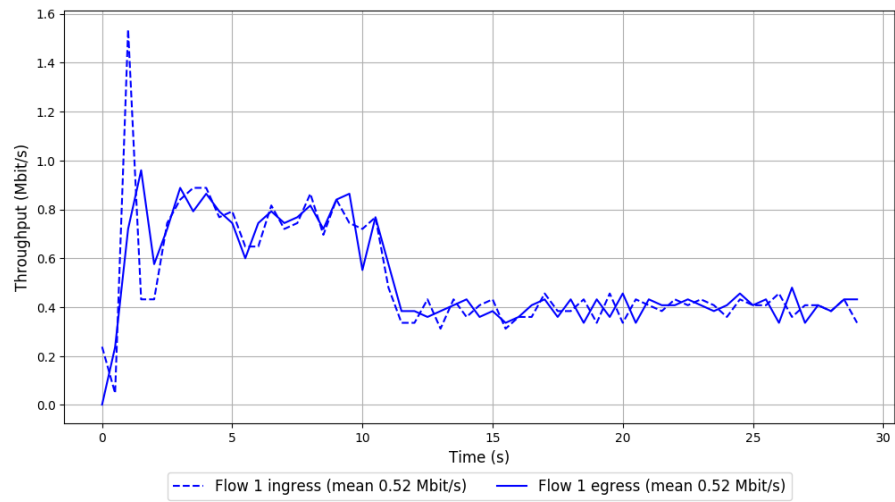


Run 1: Statistics of Indigo-1-32

Start at: 2018-02-19 17:25:57
End at: 2018-02-19 17:26:27
Local clock offset: -10.317 ms
Remote clock offset: 1.187 ms

Below is generated by plot.py at 2018-02-19 18:22:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 289.155 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 289.155 ms
Loss rate: 0.16%

Run 1: Report of Indigo-1-32 — Data Link



Run 2: Statistics of Indigo-1-32

Start at: 2018-02-19 17:47:07

End at: 2018-02-19 17:47:37

Local clock offset: -7.928 ms

Remote clock offset: 0.393 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 227.230 ms

Loss rate: 0.33%

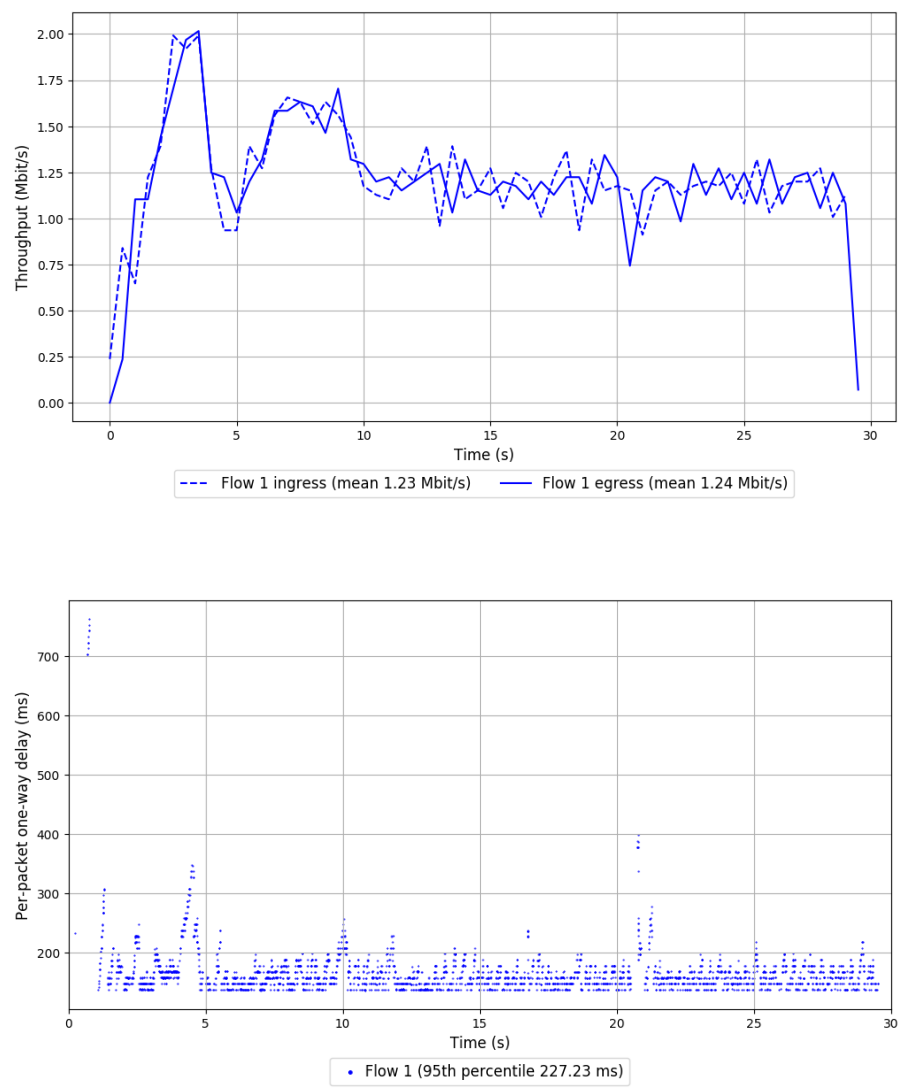
-- Flow 1:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 227.230 ms

Loss rate: 0.33%

Run 2: Report of Indigo-1-32 — Data Link



Run 3: Statistics of Indigo-1-32

Start at: 2018-02-19 18:08:23

End at: 2018-02-19 18:08:53

Local clock offset: -7.341 ms

Remote clock offset: 1.235 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 583.735 ms

Loss rate: 0.00%

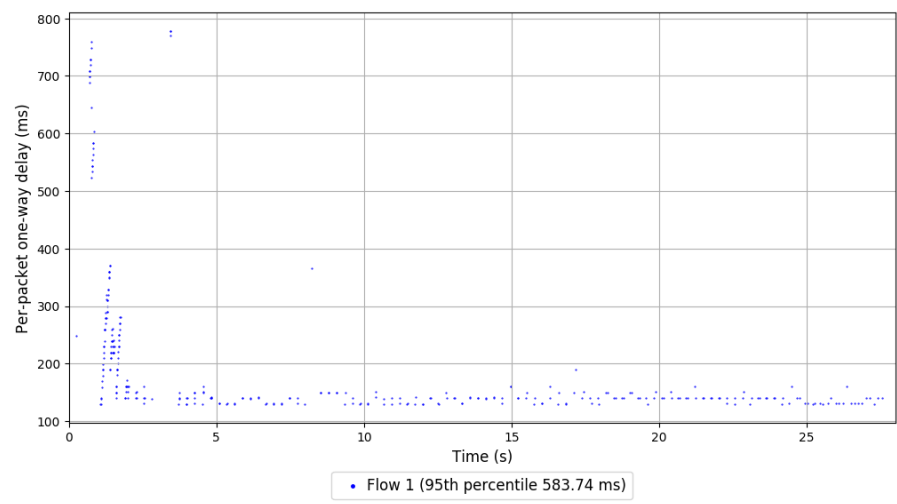
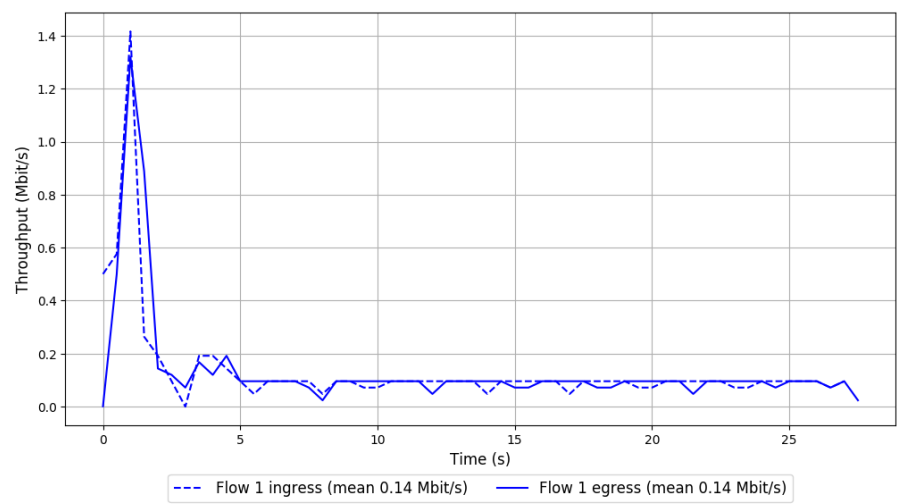
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 583.735 ms

Loss rate: 0.00%

Run 3: Report of Indigo-1-32 — Data Link

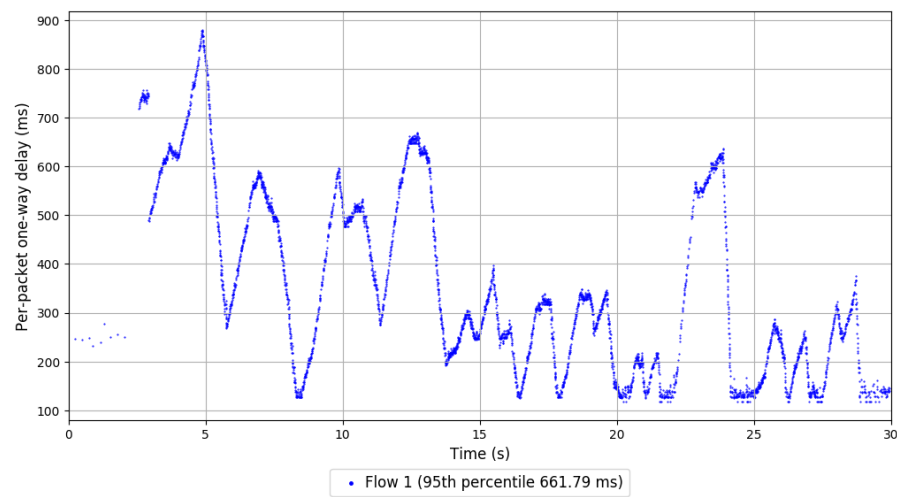
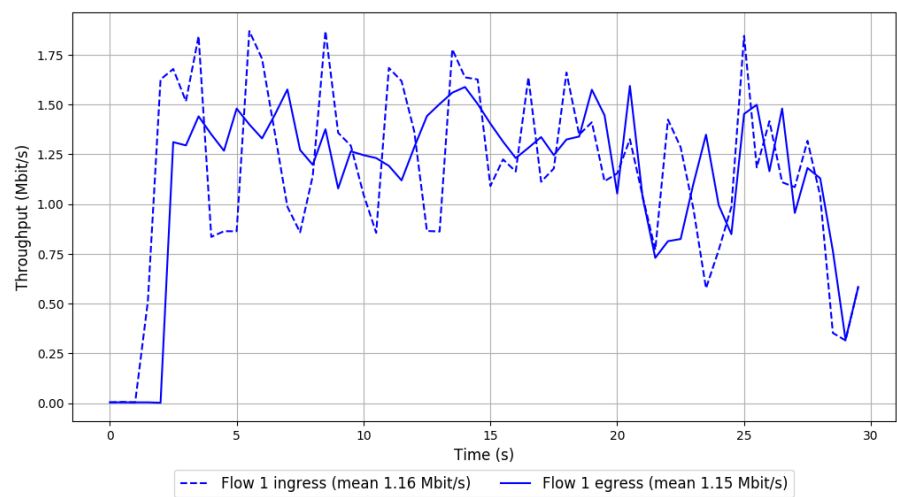


Run 1: Statistics of Vivace-latency

Start at: 2018-02-19 17:28:17
End at: 2018-02-19 17:28:47
Local clock offset: -9.303 ms
Remote clock offset: -3.672 ms

Below is generated by plot.py at 2018-02-19 18:22:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 661.790 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 661.790 ms
Loss rate: 1.33%

Run 1: Report of Vivace-latency — Data Link



Run 2: Statistics of Vivace-latency

Start at: 2018-02-19 17:49:31

End at: 2018-02-19 17:50:01

Local clock offset: -8.085 ms

Remote clock offset: 0.358 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 1273.783 ms

Loss rate: 0.88%

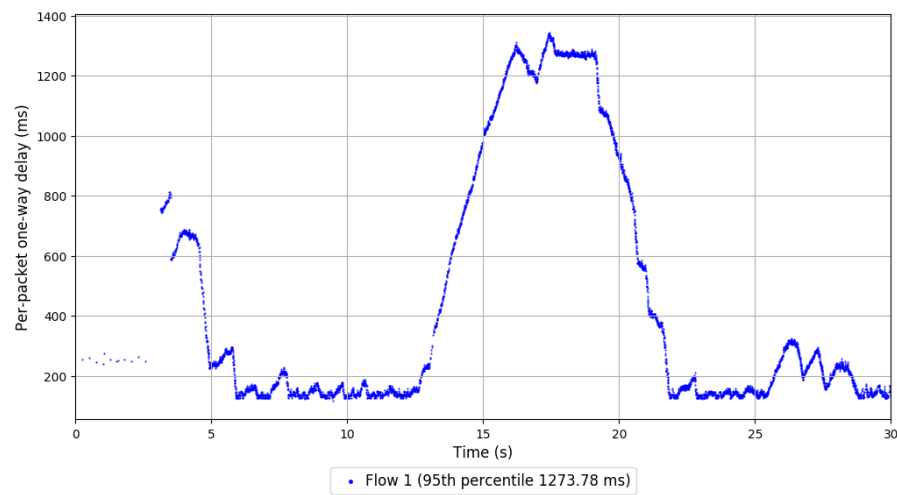
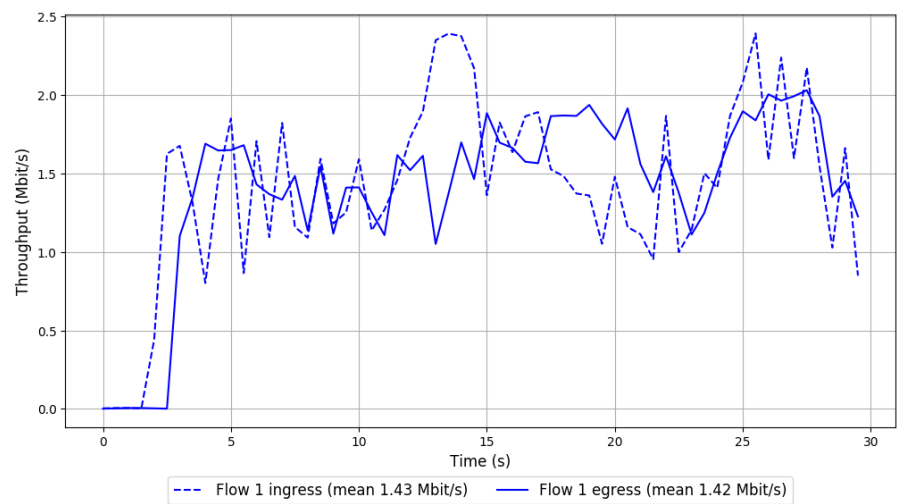
-- Flow 1:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 1273.783 ms

Loss rate: 0.88%

Run 2: Report of Vivace-latency — Data Link



Run 3: Statistics of Vivace-latency

Start at: 2018-02-19 18:10:43

End at: 2018-02-19 18:11:13

Local clock offset: -7.459 ms

Remote clock offset: 0.414 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 2516.839 ms

Loss rate: 0.09%

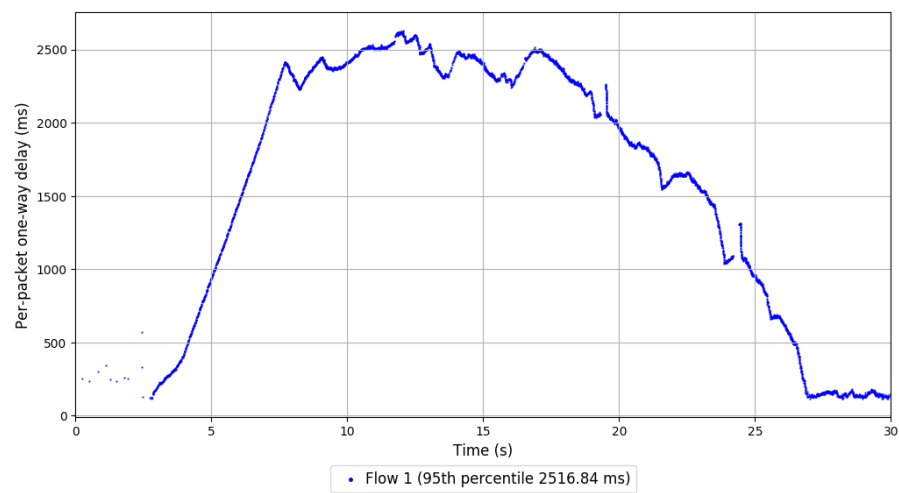
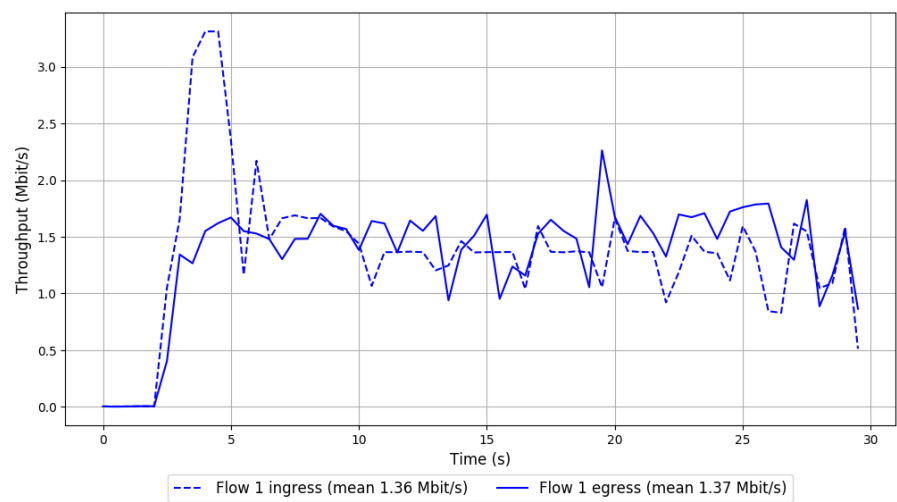
-- Flow 1:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 2516.839 ms

Loss rate: 0.09%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-02-19 17:31:48

End at: 2018-02-19 17:32:18

Local clock offset: -8.306 ms

Remote clock offset: -4.47 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 11412.041 ms

Loss rate: 60.17%

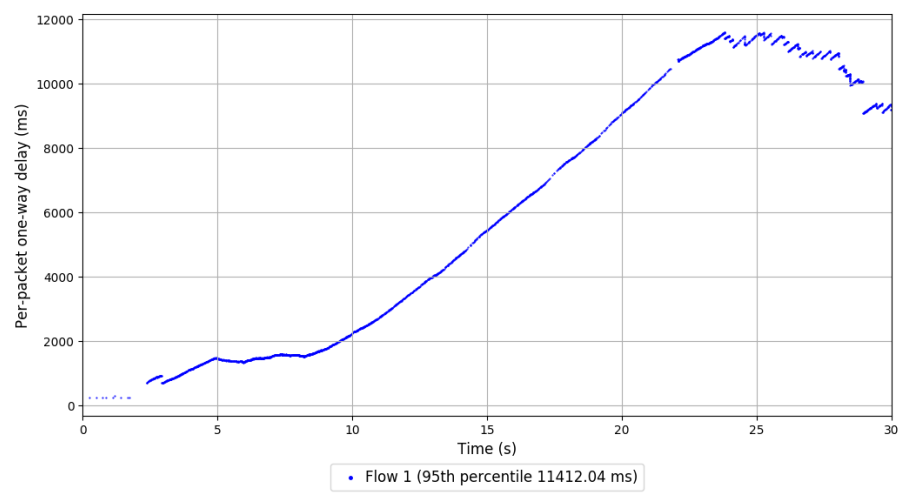
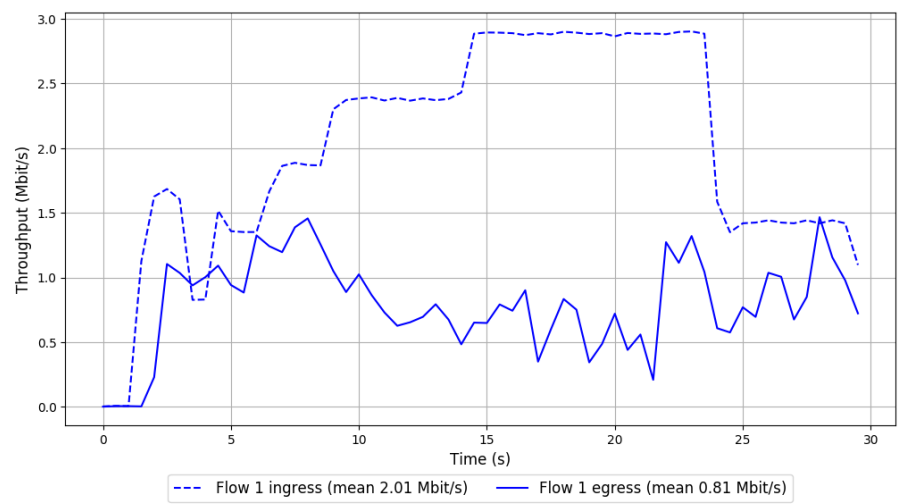
-- Flow 1:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 11412.041 ms

Loss rate: 60.17%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-02-19 17:53:03

End at: 2018-02-19 17:53:33

Local clock offset: -8.009 ms

Remote clock offset: 0.461 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 5407.533 ms

Loss rate: 29.13%

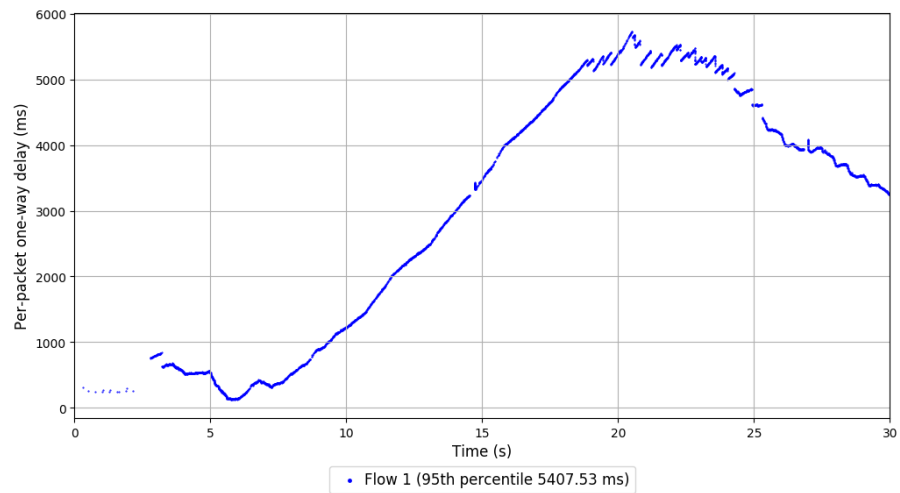
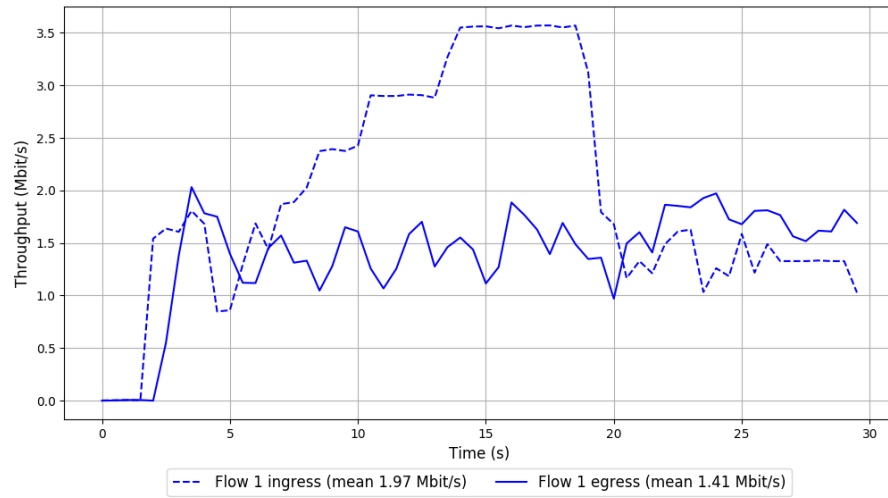
-- Flow 1:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 5407.533 ms

Loss rate: 29.13%

Run 2: Report of Vivace-loss — Data Link

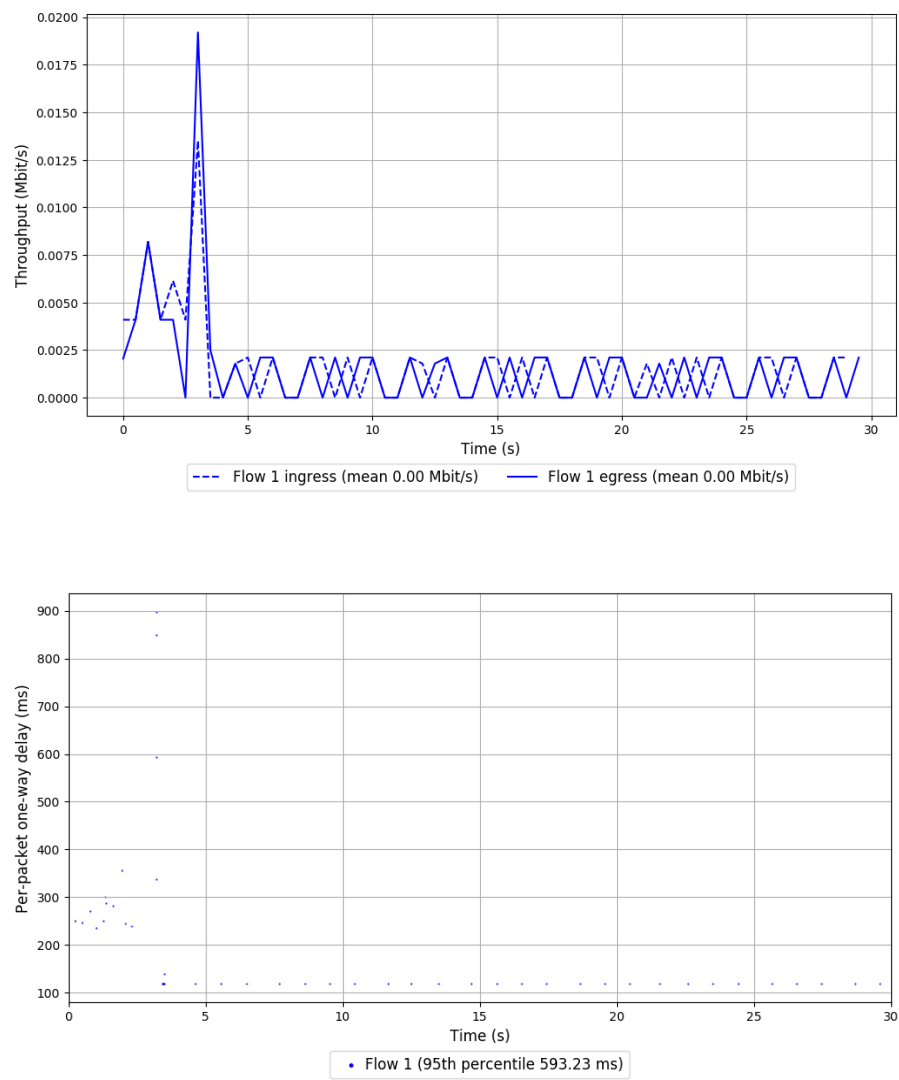


Run 3: Statistics of Vivace-loss

Start at: 2018-02-19 18:14:15
End at: 2018-02-19 18:14:45
Local clock offset: -7.707 ms
Remote clock offset: -3.573 ms

Below is generated by plot.py at 2018-02-19 18:22:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 593.233 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 593.233 ms
Loss rate: 0.00%

Run 3: Report of Vivace-loss — Data Link



Run 1: Statistics of Vivace-LTE

Start at: 2018-02-19 17:34:09

End at: 2018-02-19 17:34:40

Local clock offset: -7.955 ms

Remote clock offset: 2.167 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 1159.247 ms

Loss rate: 7.92%

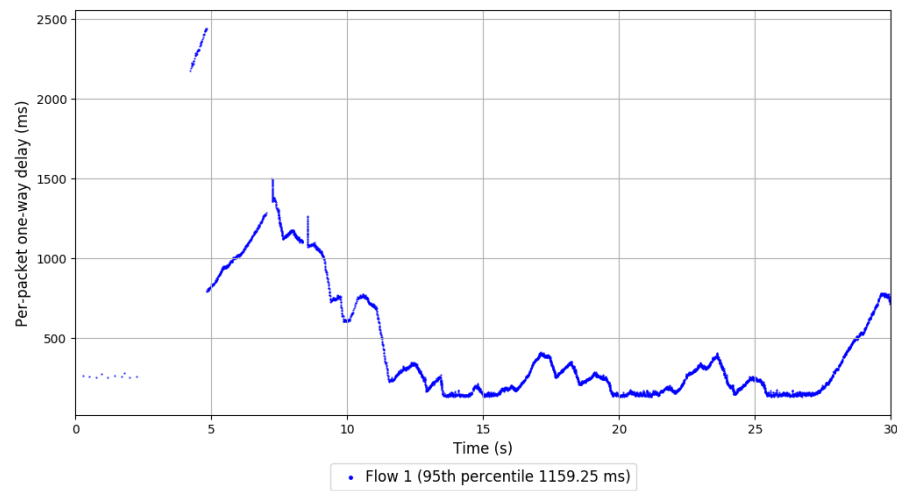
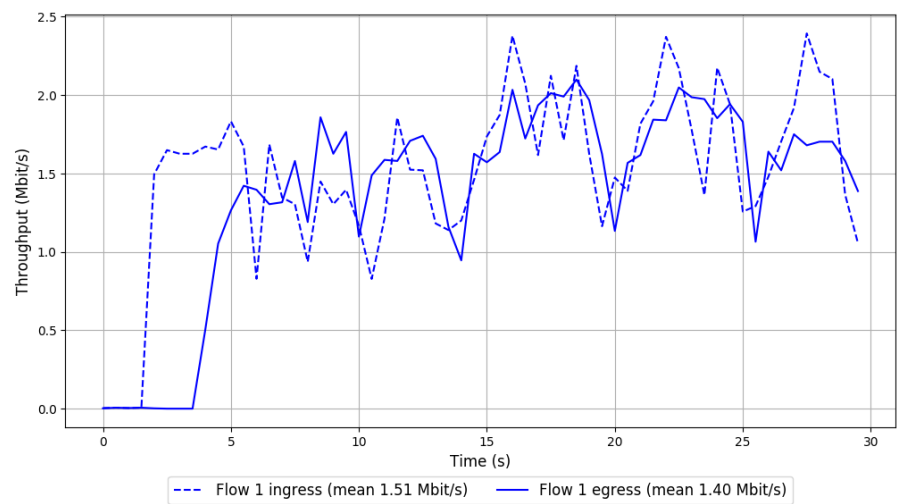
-- Flow 1:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 1159.247 ms

Loss rate: 7.92%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-02-19 17:55:23

End at: 2018-02-19 17:55:53

Local clock offset: -7.615 ms

Remote clock offset: 1.283 ms

Below is generated by plot.py at 2018-02-19 18:22:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 10267.041 ms

Loss rate: 45.72%

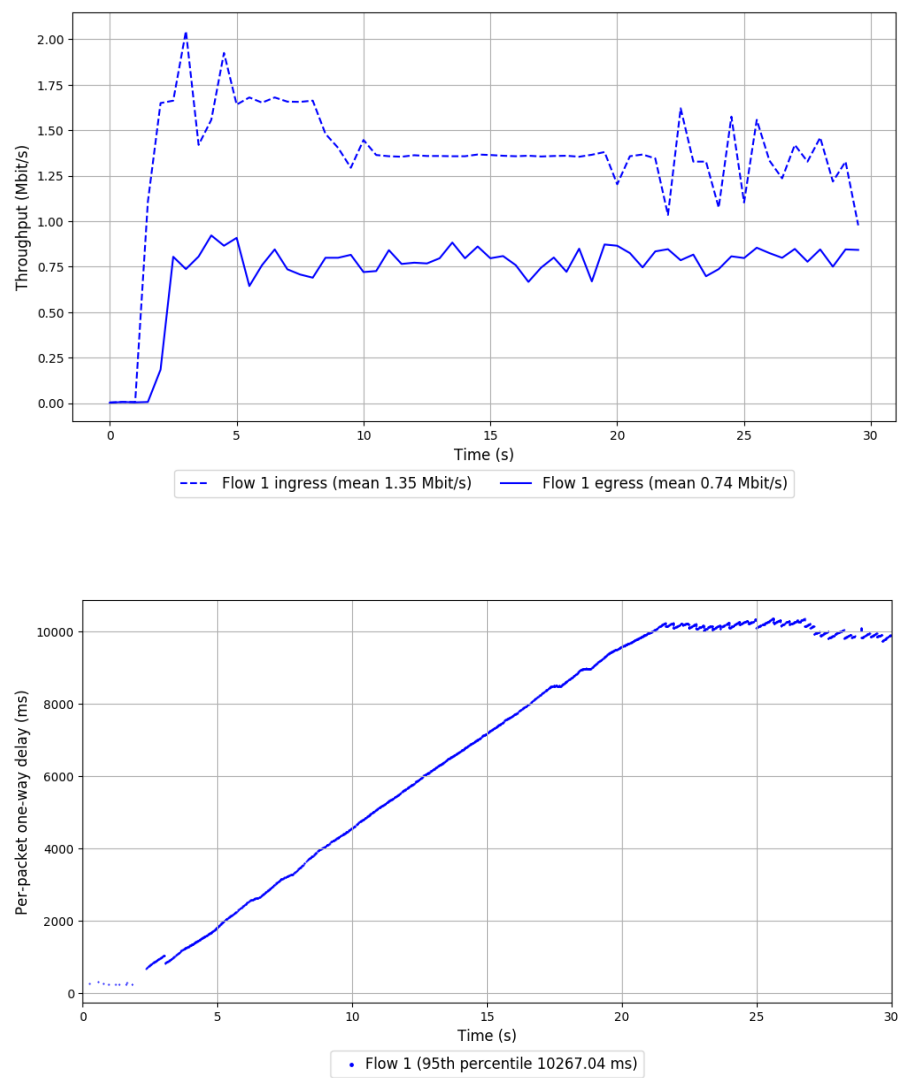
-- Flow 1:

Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 10267.041 ms

Loss rate: 45.72%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-02-19 18:16:36
End at: 2018-02-19 18:17:06
Local clock offset: -7.861 ms
Remote clock offset: -3.627 ms

Below is generated by plot.py at 2018-02-19 18:22:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 2931.946 ms
Loss rate: 10.24%
-- Flow 1:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 2931.946 ms
Loss rate: 10.24%

Run 3: Report of Vivace-LTE — Data Link

