

Pantheon Report

Generated at 2018-03-20 07:55:01 (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).

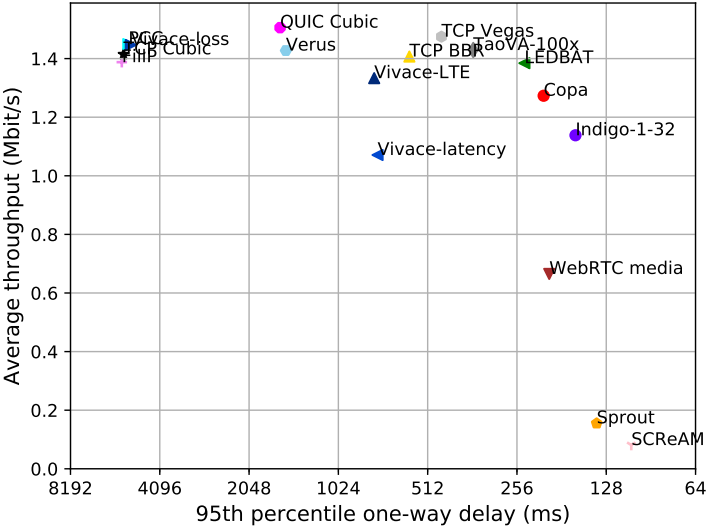
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

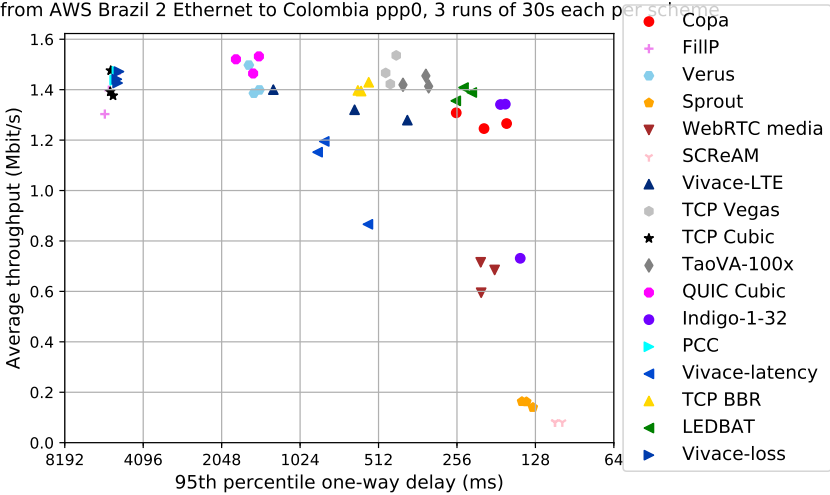
Git summary:

```
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-quic @ 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	1.41	590.08	1.13
TCP Cubic	3	1.42	5428.59	20.60
LEDBAT	3	1.39	241.68	0.46
PCC	3	1.45	5227.31	74.08
QUIC Cubic	3	1.50	1609.86	5.46
SCReAM	3	0.08	105.40	0.00
WebRTC media	3	0.66	199.28	0.16
Sprout	3	0.15	137.89	0.09
TaoVA-100x	3	1.43	359.46	0.22
TCP Vegas	3	1.48	459.99	0.20
Verus	3	1.43	1539.36	3.31
Copa	3	1.28	208.11	0.03
FillP	3	1.39	5499.96	97.12
Indigo-1-32	3	1.14	162.56	0.16
Vivace-latency	3	1.07	755.66	1.20
Vivace-loss	3	1.45	5126.72	29.70
Vivace-LTE	3	1.33	775.52	2.17

Run 1: Statistics of TCP BBR

Start at: 2018-03-20 07:02:06

End at: 2018-03-20 07:02:36

Local clock offset: -9.837 ms

Remote clock offset: 4.944 ms

Below is generated by plot.py at 2018-03-20 07:54:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.43 Mbit/s

95th percentile per-packet one-way delay: 558.382 ms

Loss rate: 1.08%

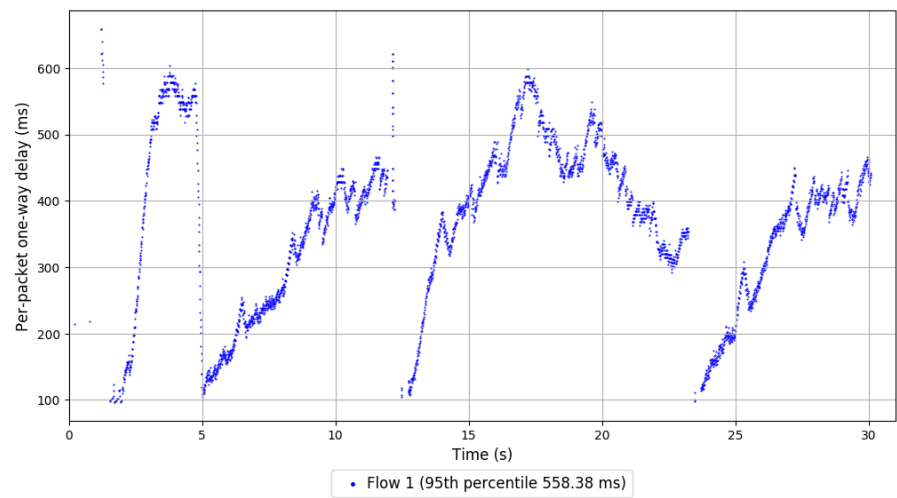
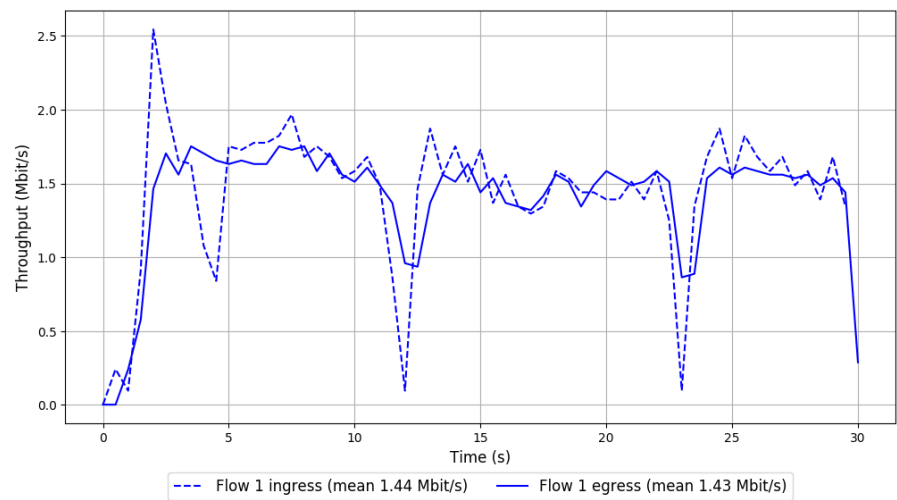
-- Flow 1:

Average throughput: 1.43 Mbit/s

95th percentile per-packet one-way delay: 558.382 ms

Loss rate: 1.08%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-03-20 07:23:20

End at: 2018-03-20 07:23:50

Local clock offset: -9.607 ms

Remote clock offset: 8.447 ms

Below is generated by plot.py at 2018-03-20 07:54:24

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 614.517 ms

Loss rate: 1.17%

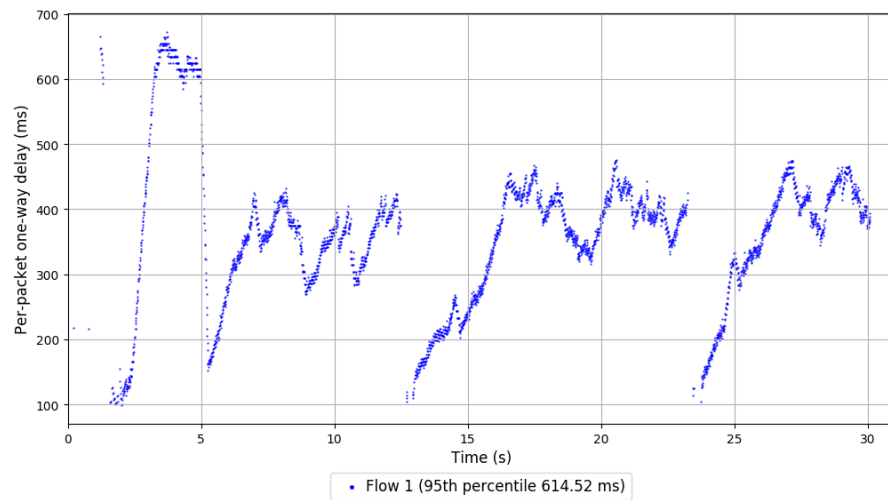
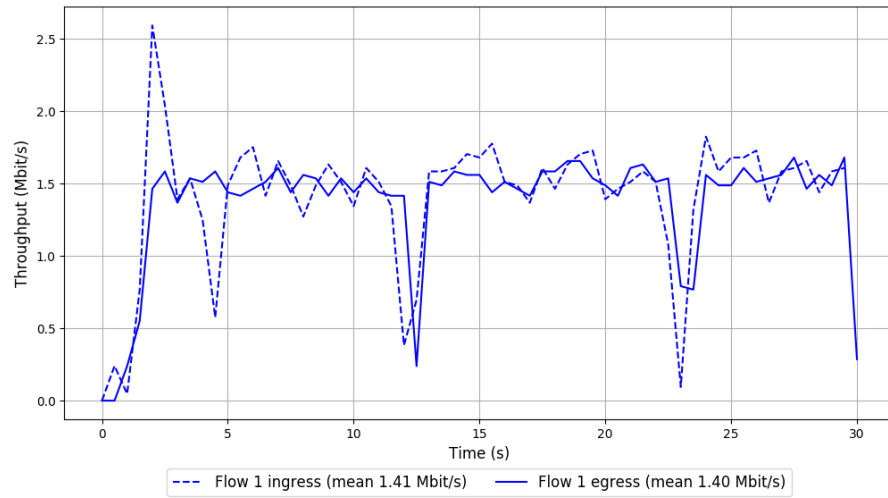
-- Flow 1:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 614.517 ms

Loss rate: 1.17%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-03-20 07:44:36

End at: 2018-03-20 07:45:06

Local clock offset: -8.296 ms

Remote clock offset: 8.267 ms

Below is generated by plot.py at 2018-03-20 07:54:24

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.39 Mbit/s

95th percentile per-packet one-way delay: 597.334 ms

Loss rate: 1.14%

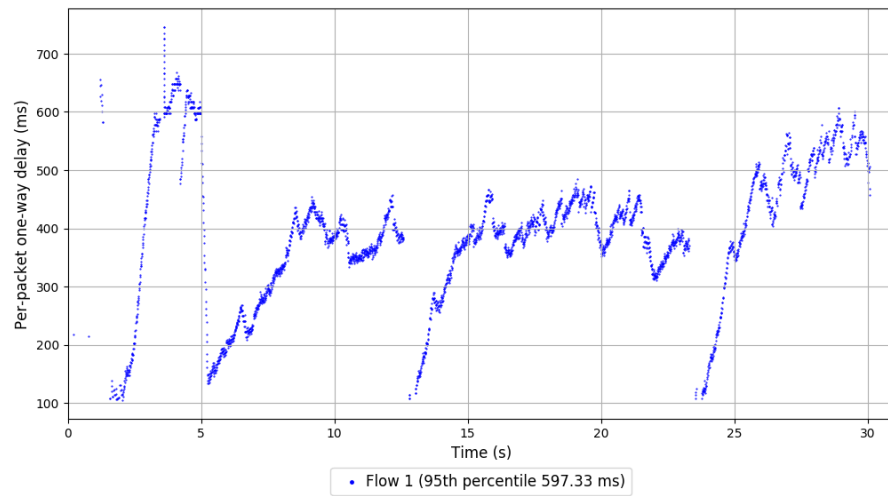
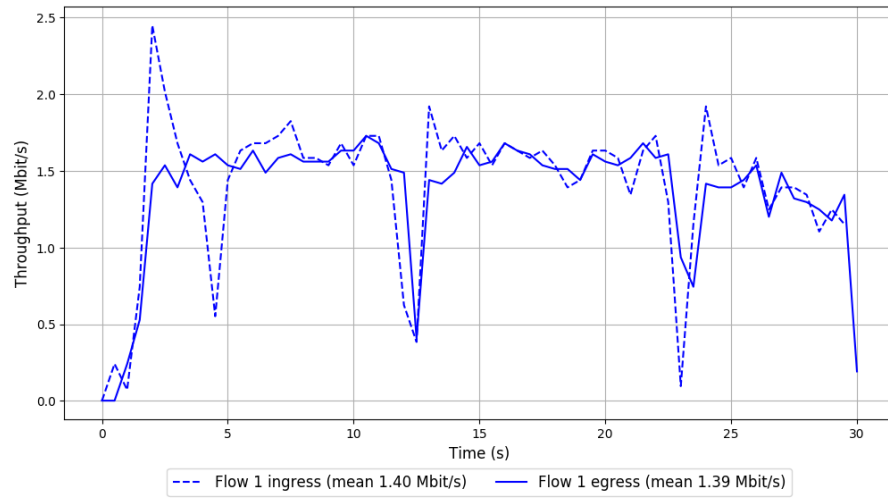
-- Flow 1:

Average throughput: 1.39 Mbit/s

95th percentile per-packet one-way delay: 597.334 ms

Loss rate: 1.14%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-03-20 07:00:55

End at: 2018-03-20 07:01:25

Local clock offset: -10.04 ms

Remote clock offset: 10.5 ms

Below is generated by plot.py at 2018-03-20 07:54:24

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.38 Mbit/s

95th percentile per-packet one-way delay: 5348.472 ms

Loss rate: 20.49%

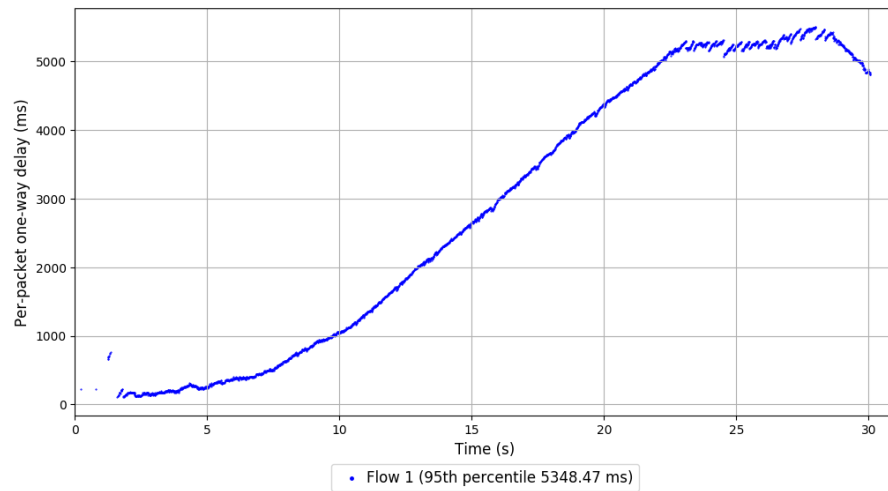
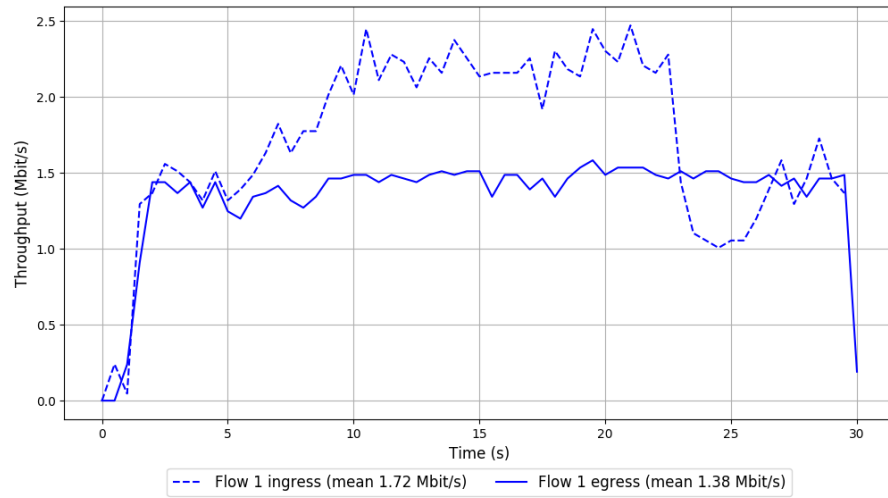
-- Flow 1:

Average throughput: 1.38 Mbit/s

95th percentile per-packet one-way delay: 5348.472 ms

Loss rate: 20.49%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-03-20 07:22:09

End at: 2018-03-20 07:22:39

Local clock offset: -9.607 ms

Remote clock offset: 5.392 ms

Below is generated by plot.py at 2018-03-20 07:54:24

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.39 Mbit/s

95th percentile per-packet one-way delay: 5479.041 ms

Loss rate: 19.99%

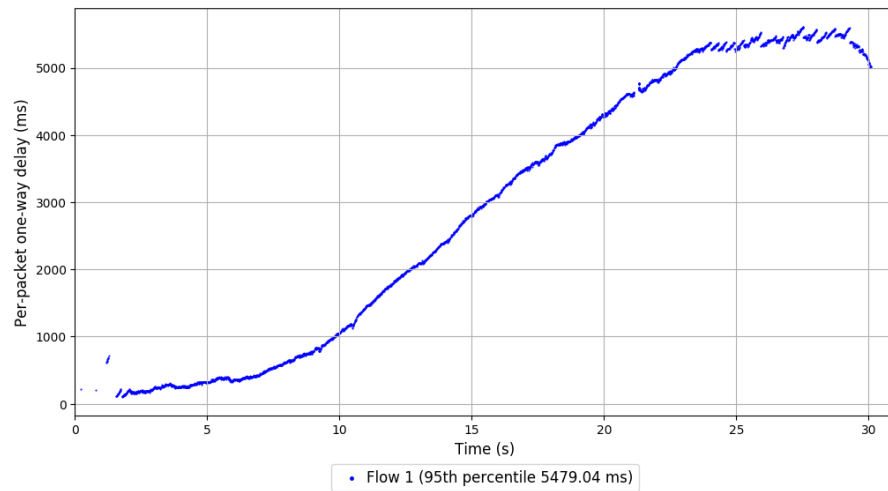
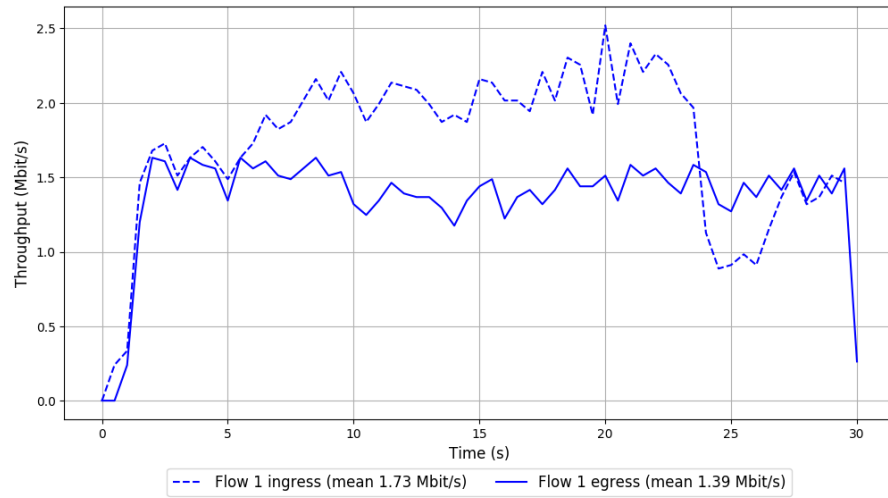
-- Flow 1:

Average throughput: 1.39 Mbit/s

95th percentile per-packet one-way delay: 5479.041 ms

Loss rate: 19.99%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-03-20 07:43:25

End at: 2018-03-20 07:43:55

Local clock offset: -8.348 ms

Remote clock offset: 5.257 ms

Below is generated by plot.py at 2018-03-20 07:54:24

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.48 Mbit/s

95th percentile per-packet one-way delay: 5458.261 ms

Loss rate: 21.31%

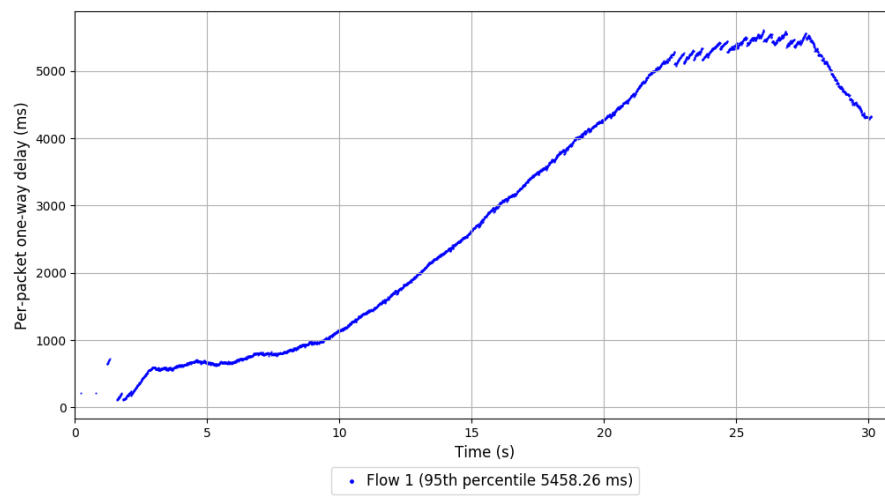
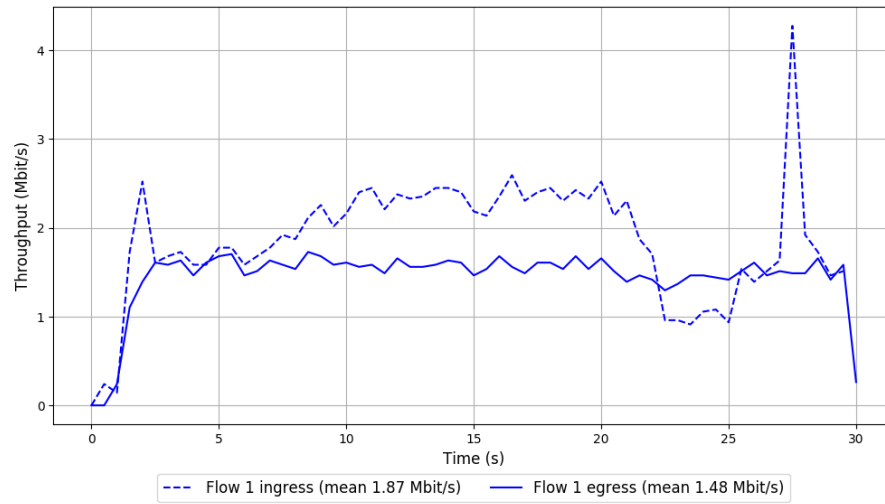
-- Flow 1:

Average throughput: 1.48 Mbit/s

95th percentile per-packet one-way delay: 5458.261 ms

Loss rate: 21.31%

Run 3: Report of TCP Cubic — Data Link

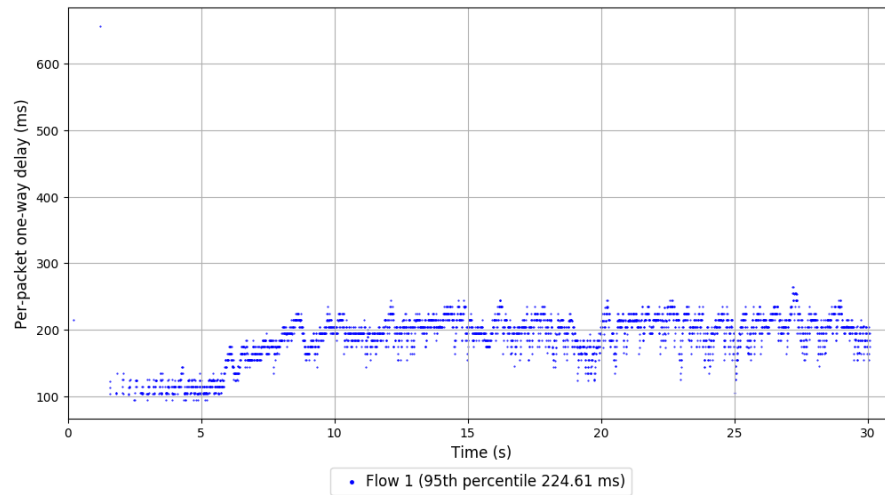
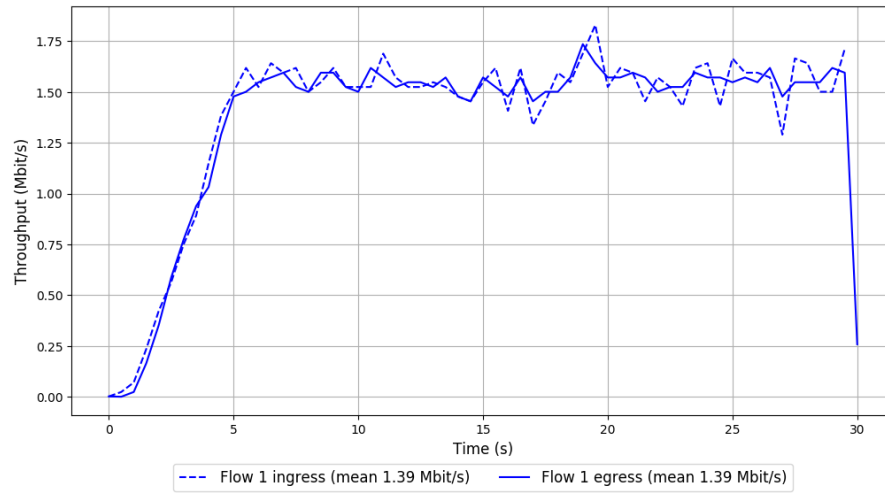


```
Run 1: Statistics of LEDBAT

Start at: 2018-03-20 07:03:17
End at: 2018-03-20 07:03:47
Local clock offset: -9.594 ms
Remote clock offset: 5.796 ms

# Below is generated by plot.py at 2018-03-20 07:54:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 224.610 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 224.610 ms
Loss rate: 0.45%
```


Run 1: Report of LEDBAT — Data Link

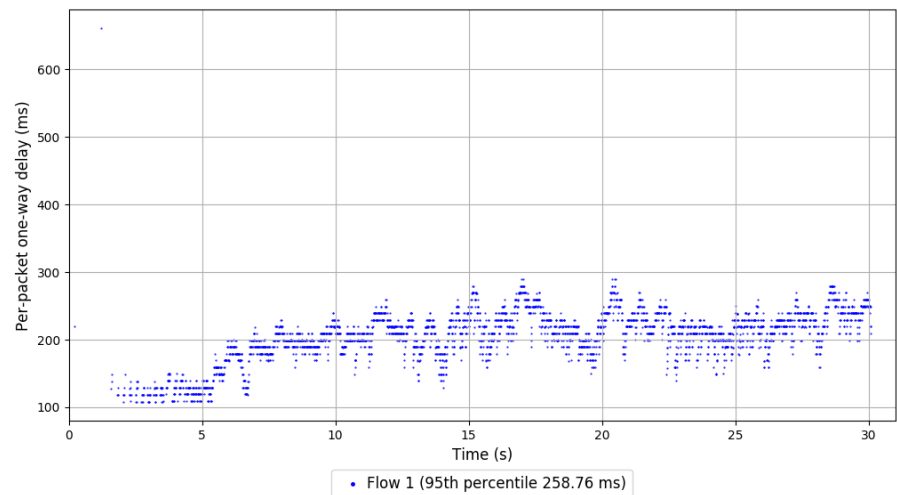
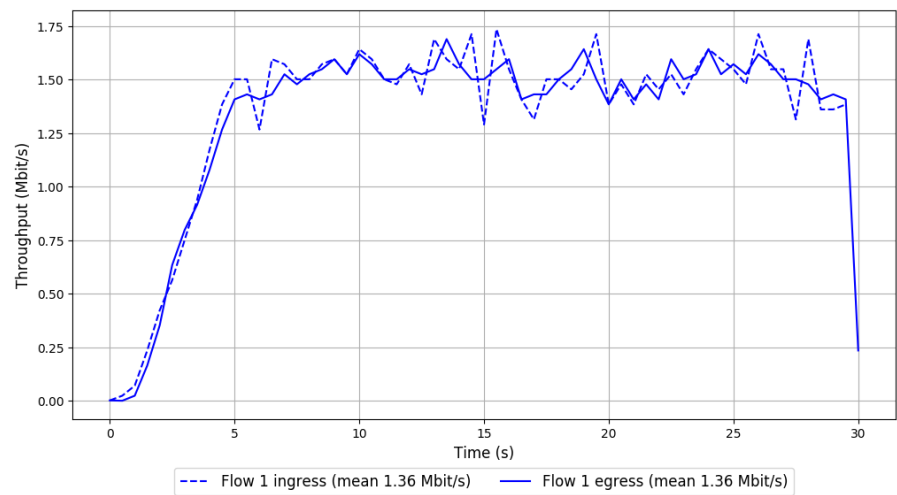


Run 2: Statistics of LEDBAT

Start at: 2018-03-20 07:24:31
End at: 2018-03-20 07:25:01
Local clock offset: -9.75 ms
Remote clock offset: 10.042 ms

Below is generated by plot.py at 2018-03-20 07:54:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 258.757 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 258.757 ms
Loss rate: 0.43%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-03-20 07:45:46

End at: 2018-03-20 07:46:16

Local clock offset: -8.319 ms

Remote clock offset: 5.272 ms

Below is generated by plot.py at 2018-03-20 07:54:26

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 241.684 ms

Loss rate: 0.50%

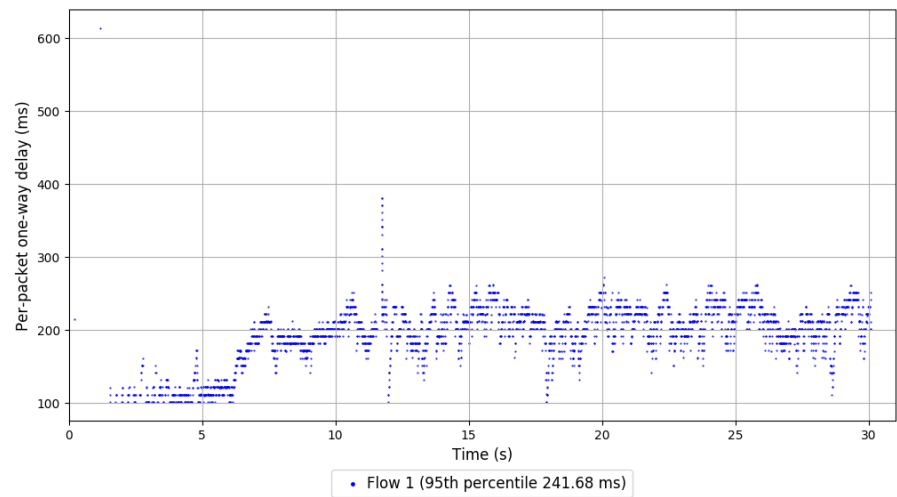
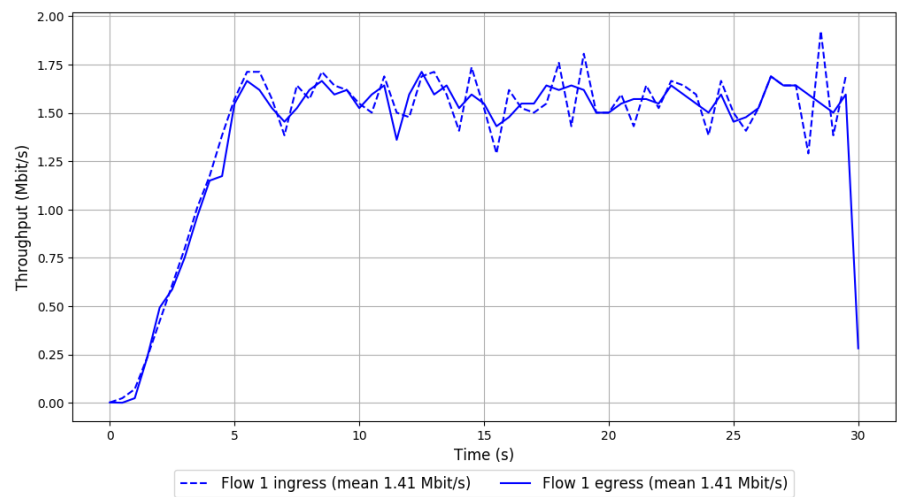
-- Flow 1:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 241.684 ms

Loss rate: 0.50%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: 2018-03-20 07:05:39

End at: 2018-03-20 07:06:09

Local clock offset: -9.184 ms

Remote clock offset: 4.863 ms

Below is generated by plot.py at 2018-03-20 07:54:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 5260.249 ms

Loss rate: 75.08%

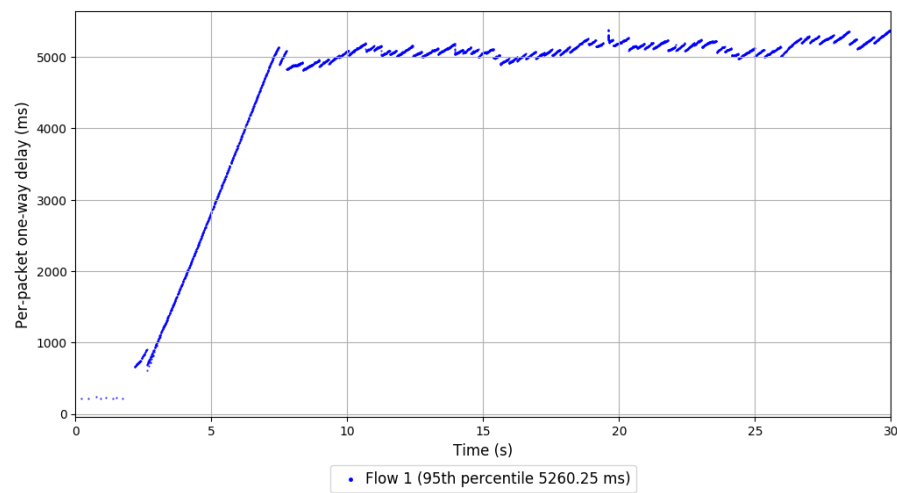
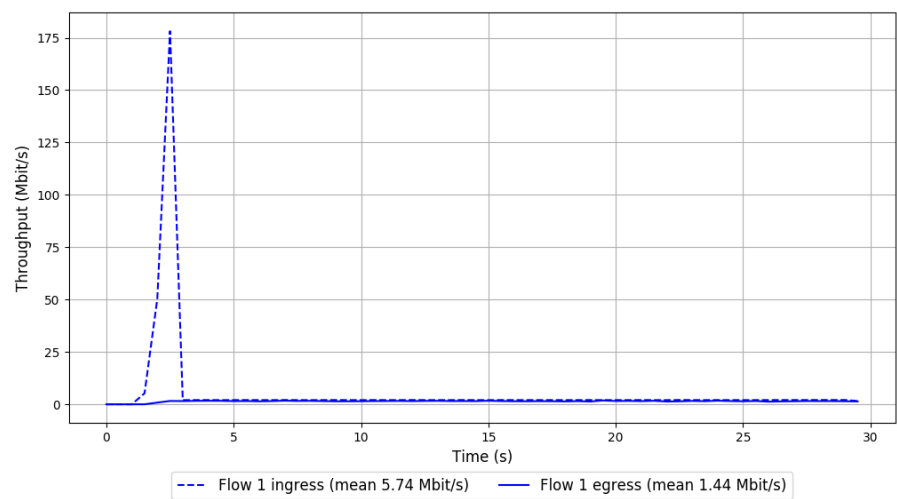
-- Flow 1:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 5260.249 ms

Loss rate: 75.08%

Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

Start at: 2018-03-20 07:26:52

End at: 2018-03-20 07:27:22

Local clock offset: -9.527 ms

Remote clock offset: 9.253 ms

Below is generated by plot.py at 2018-03-20 07:54:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 5166.644 ms

Loss rate: 71.94%

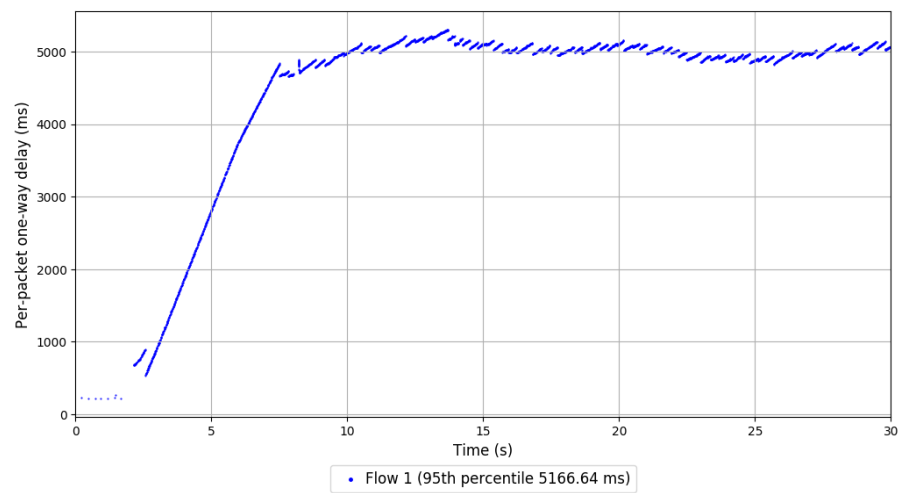
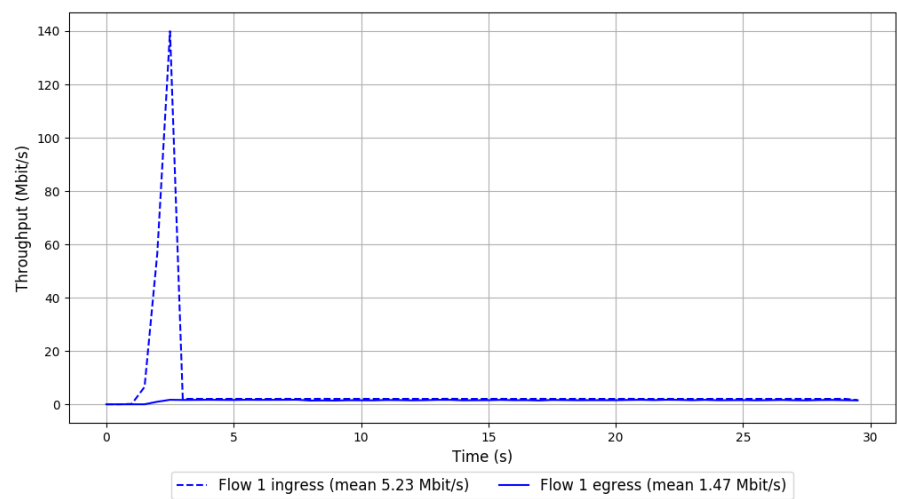
-- Flow 1:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 5166.644 ms

Loss rate: 71.94%

Run 2: Report of PCC — Data Link



Run 3: Statistics of PCC

Start at: 2018-03-20 07:48:08

End at: 2018-03-20 07:48:38

Local clock offset: -8.398 ms

Remote clock offset: 9.862 ms

Below is generated by plot.py at 2018-03-20 07:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 5255.047 ms

Loss rate: 75.22%

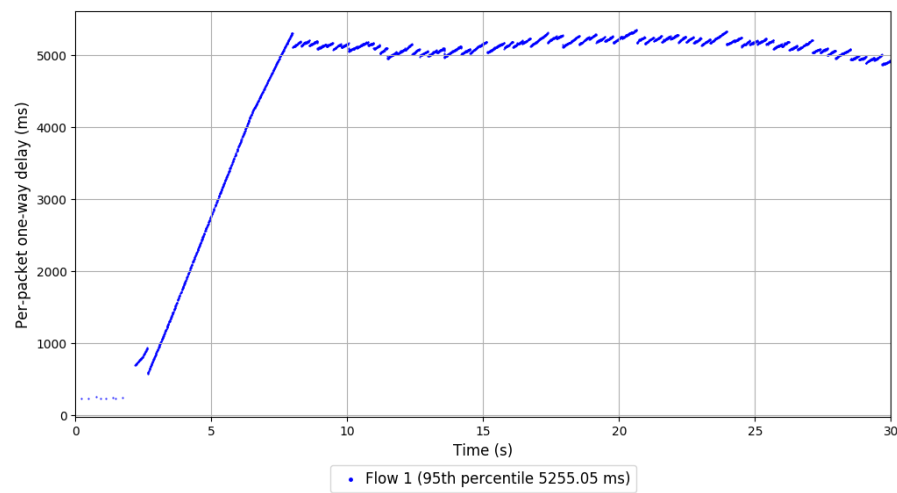
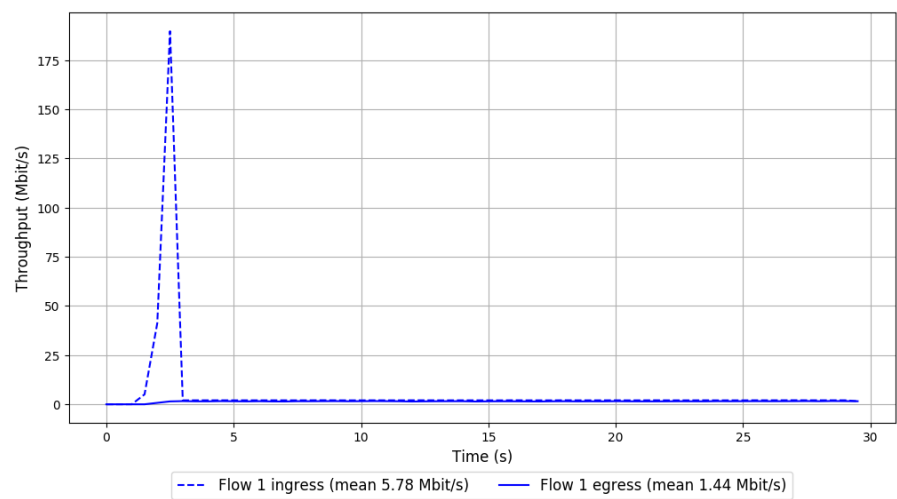
-- Flow 1:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 5255.047 ms

Loss rate: 75.22%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-03-20 07:04:28

End at: 2018-03-20 07:04:58

Local clock offset: -9.35 ms

Remote clock offset: 5.796 ms

Below is generated by plot.py at 2018-03-20 07:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.46 Mbit/s

95th percentile per-packet one-way delay: 1550.778 ms

Loss rate: 5.38%

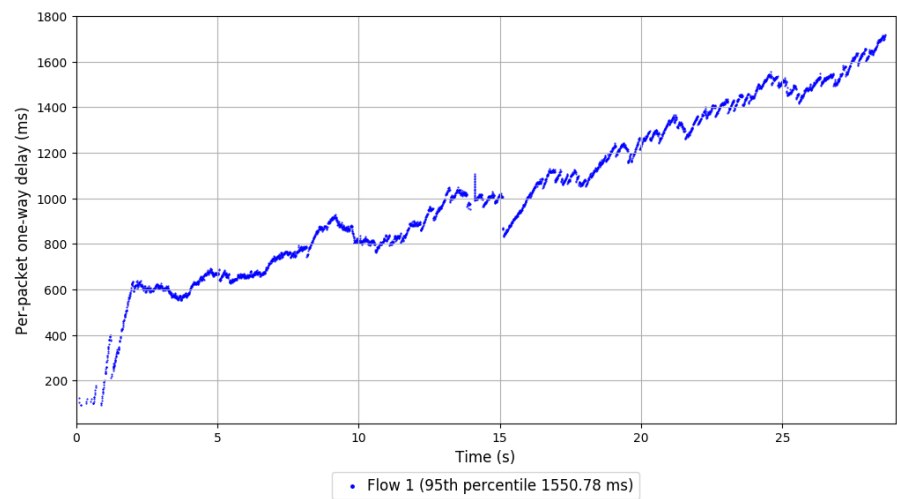
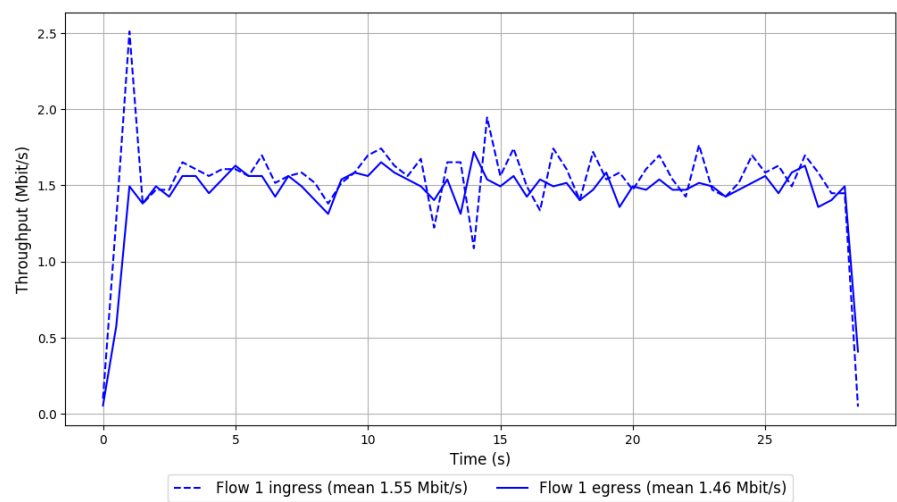
-- Flow 1:

Average throughput: 1.46 Mbit/s

95th percentile per-packet one-way delay: 1550.778 ms

Loss rate: 5.38%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-03-20 07:25:42

End at: 2018-03-20 07:26:12

Local clock offset: -9.823 ms

Remote clock offset: 10.116 ms

Below is generated by plot.py at 2018-03-20 07:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.53 Mbit/s

95th percentile per-packet one-way delay: 1473.703 ms

Loss rate: 5.13%

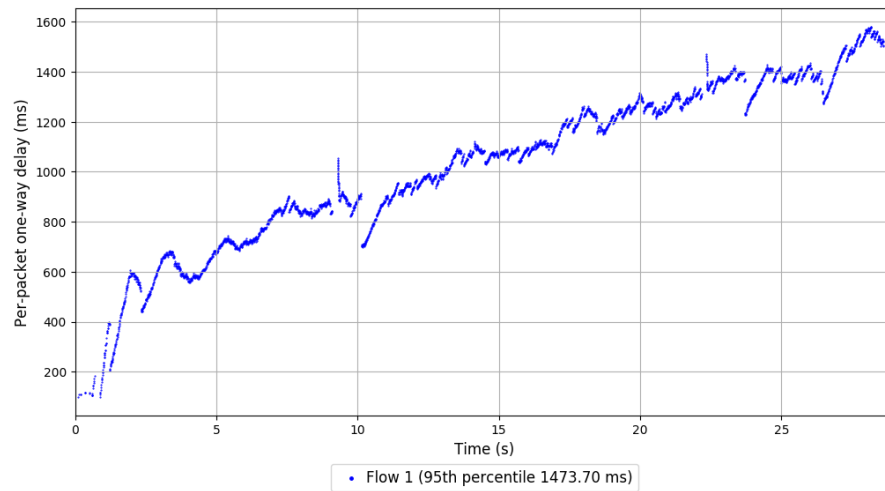
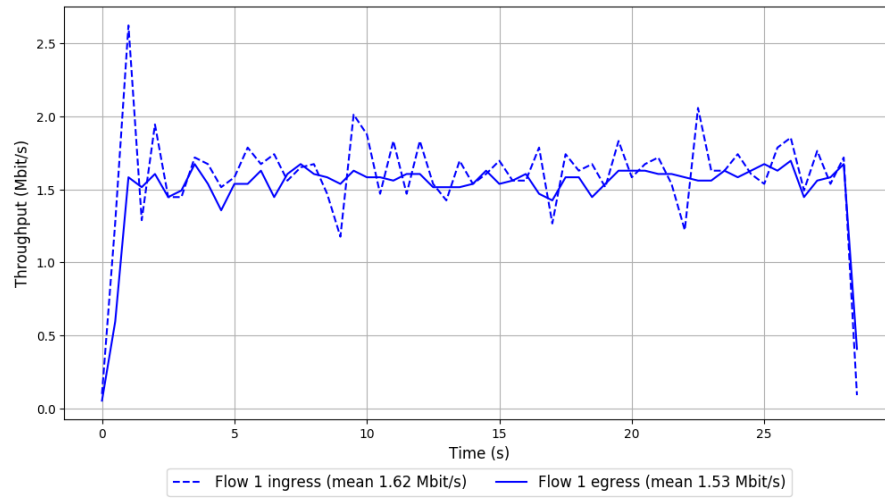
-- Flow 1:

Average throughput: 1.53 Mbit/s

95th percentile per-packet one-way delay: 1473.703 ms

Loss rate: 5.13%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-03-20 07:46:57

End at: 2018-03-20 07:47:27

Local clock offset: -8.401 ms

Remote clock offset: 8.243 ms

Below is generated by plot.py at 2018-03-20 07:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.52 Mbit/s

95th percentile per-packet one-way delay: 1805.090 ms

Loss rate: 5.88%

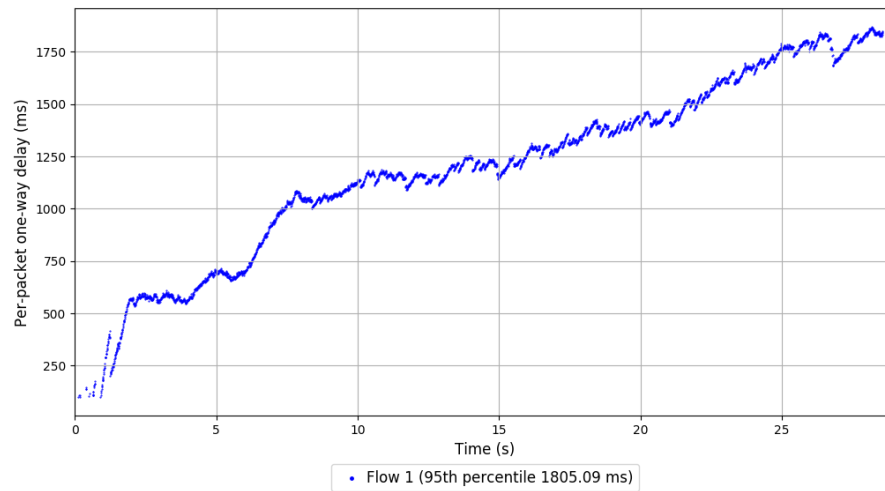
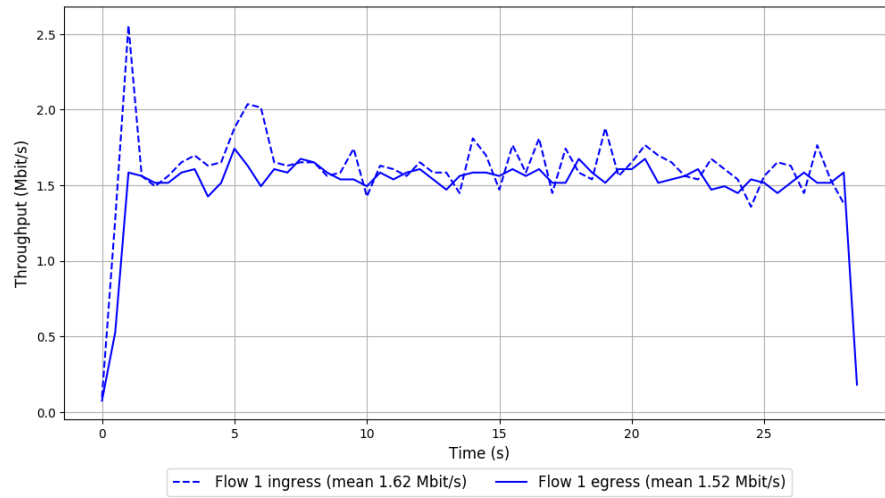
-- Flow 1:

Average throughput: 1.52 Mbit/s

95th percentile per-packet one-way delay: 1805.090 ms

Loss rate: 5.88%

Run 3: Report of QUIC Cubic — Data Link

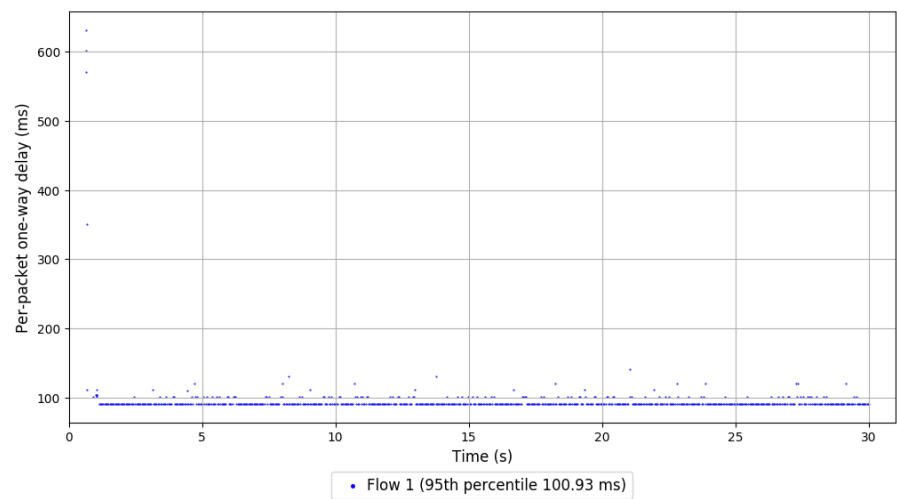
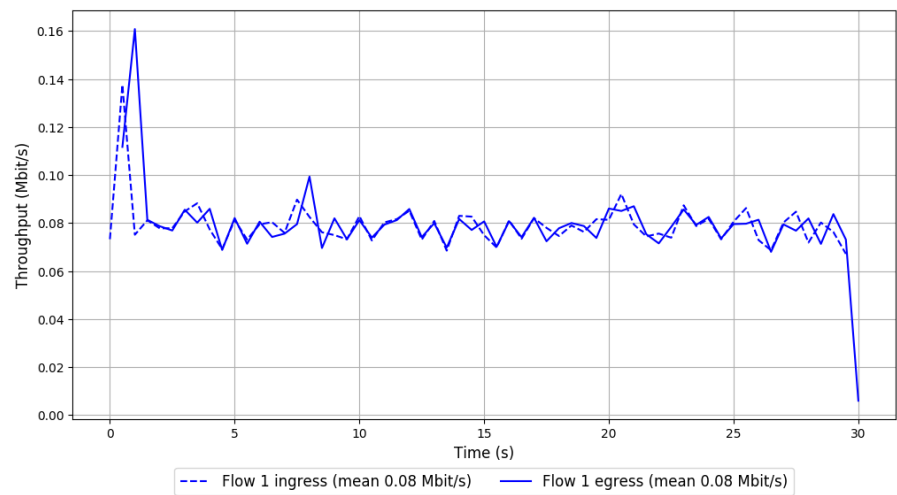


Run 1: Statistics of SCReAM

Start at: 2018-03-20 06:56:12
End at: 2018-03-20 06:56:42
Local clock offset: -11.957 ms
Remote clock offset: 4.965 ms

Below is generated by plot.py at 2018-03-20 07:54:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 100.926 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 100.926 ms
Loss rate: 0.00%

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-03-20 07:17:27

End at: 2018-03-20 07:17:57

Local clock offset: -9.244 ms

Remote clock offset: 9.276 ms

Below is generated by plot.py at 2018-03-20 07:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 107.465 ms

Loss rate: 0.00%

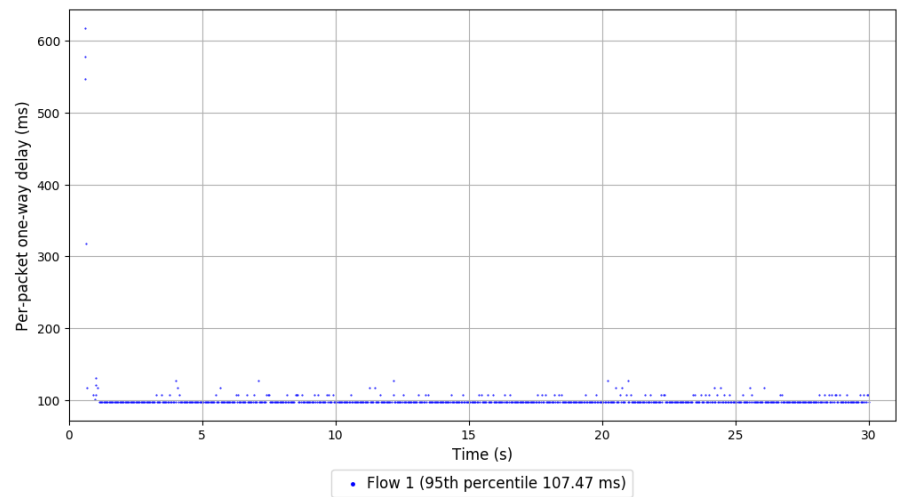
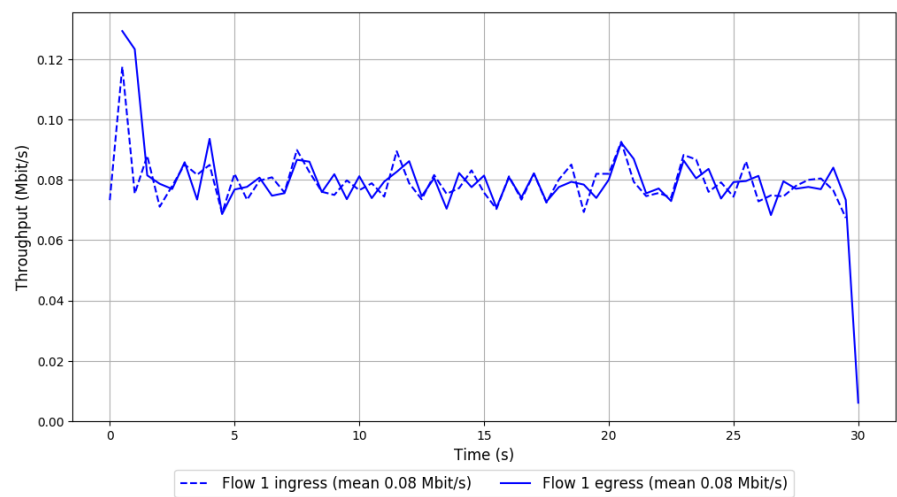
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 107.465 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-03-20 07:38:42

End at: 2018-03-20 07:39:12

Local clock offset: -8.24 ms

Remote clock offset: 9.211 ms

Below is generated by plot.py at 2018-03-20 07:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 107.819 ms

Loss rate: 0.00%

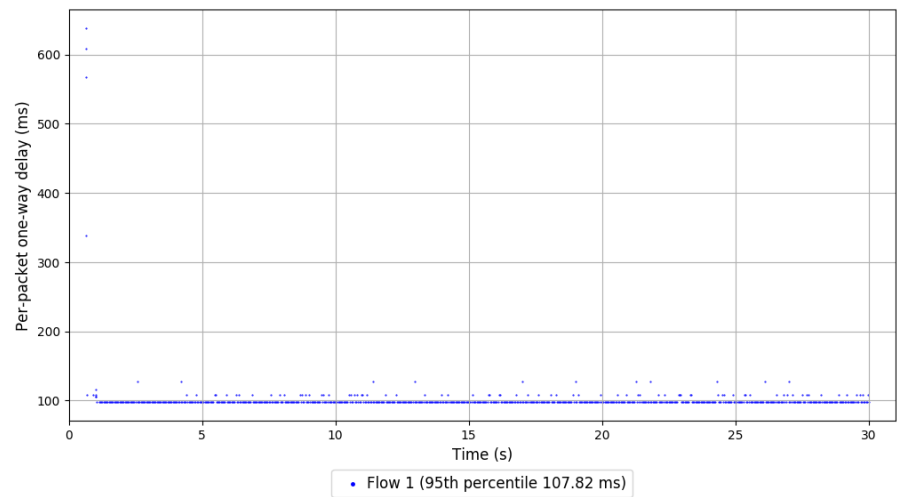
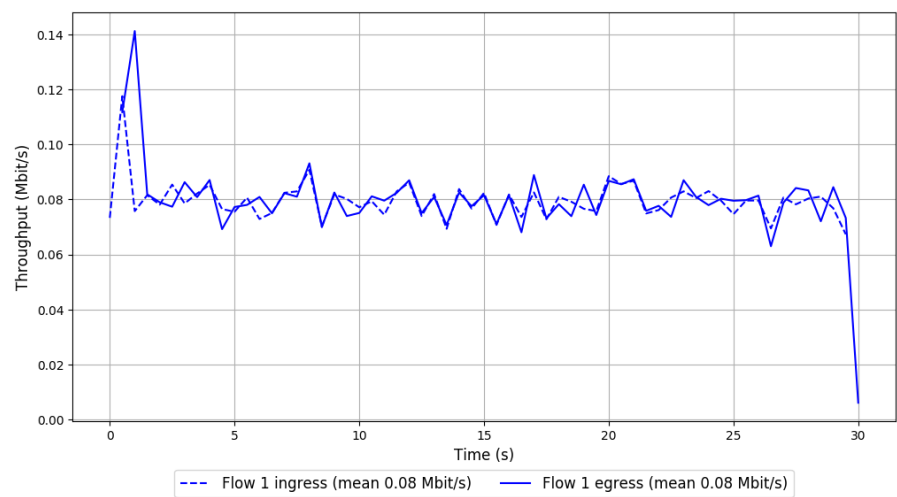
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 107.819 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-03-20 07:10:22

End at: 2018-03-20 07:10:52

Local clock offset: -8.975 ms

Remote clock offset: 4.721 ms

Below is generated by plot.py at 2018-03-20 07:54:35

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 206.720 ms

Loss rate: 0.00%

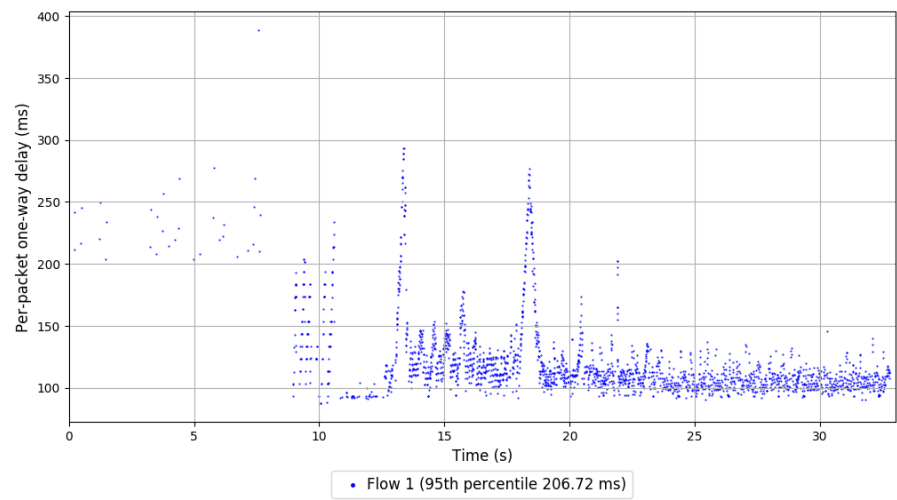
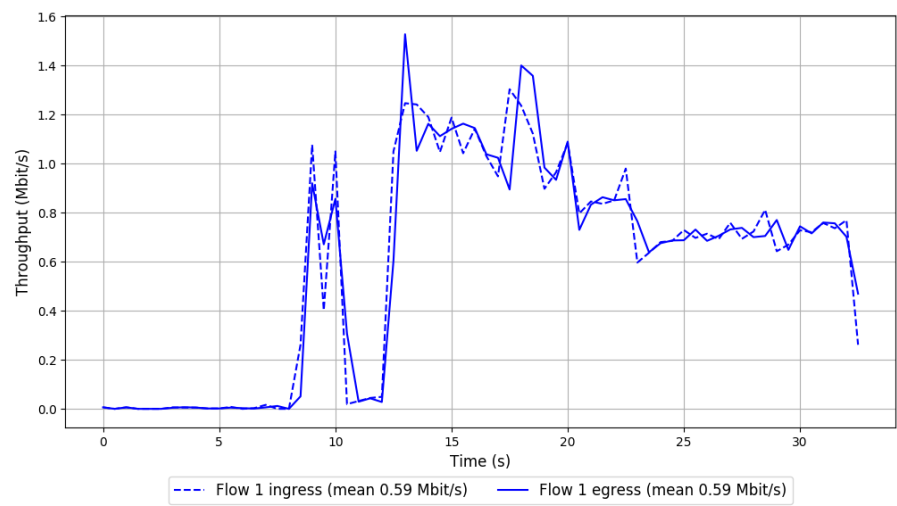
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 206.720 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-03-20 07:31:37

End at: 2018-03-20 07:32:07

Local clock offset: -8.739 ms

Remote clock offset: 8.409 ms

Below is generated by plot.py at 2018-03-20 07:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 207.582 ms

Loss rate: 0.47%

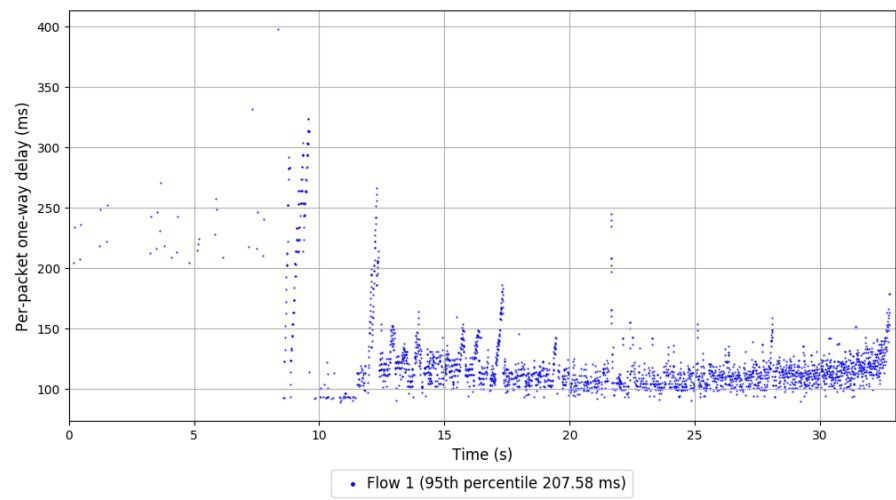
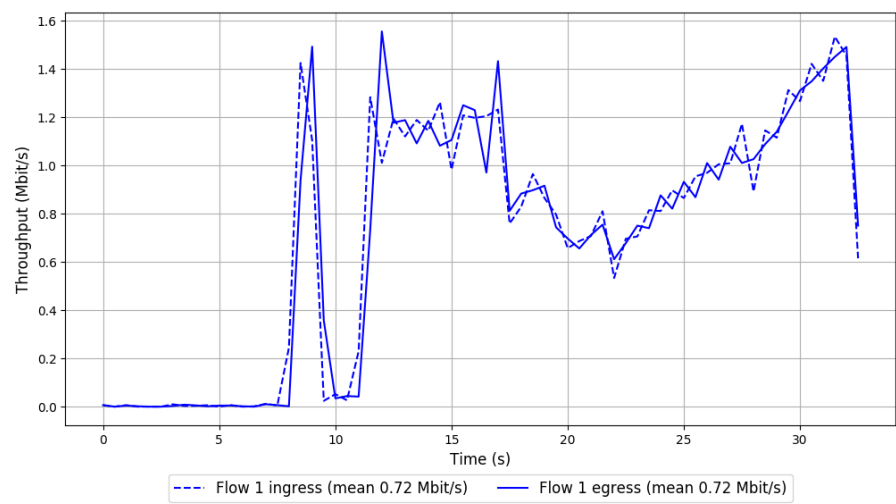
-- Flow 1:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 207.582 ms

Loss rate: 0.47%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-03-20 07:52:51

End at: 2018-03-20 07:53:22

Local clock offset: -8.662 ms

Remote clock offset: 4.338 ms

Below is generated by plot.py at 2018-03-20 07:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 183.529 ms

Loss rate: 0.00%

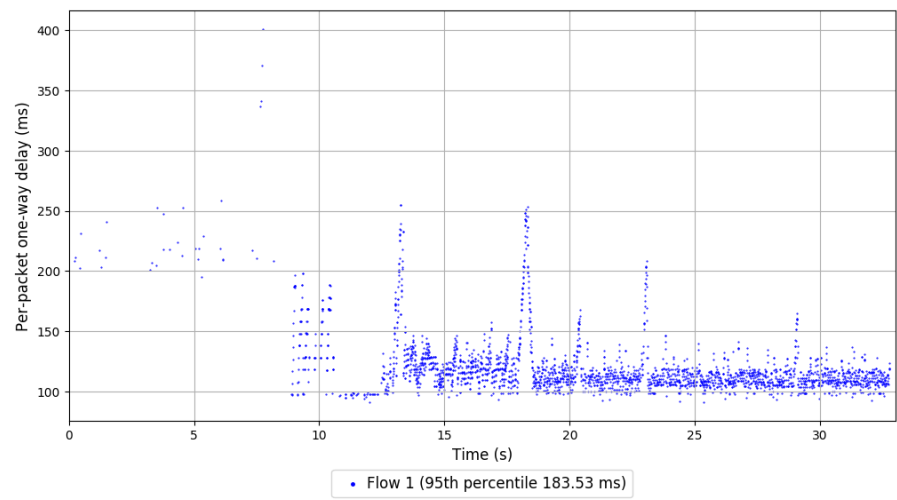
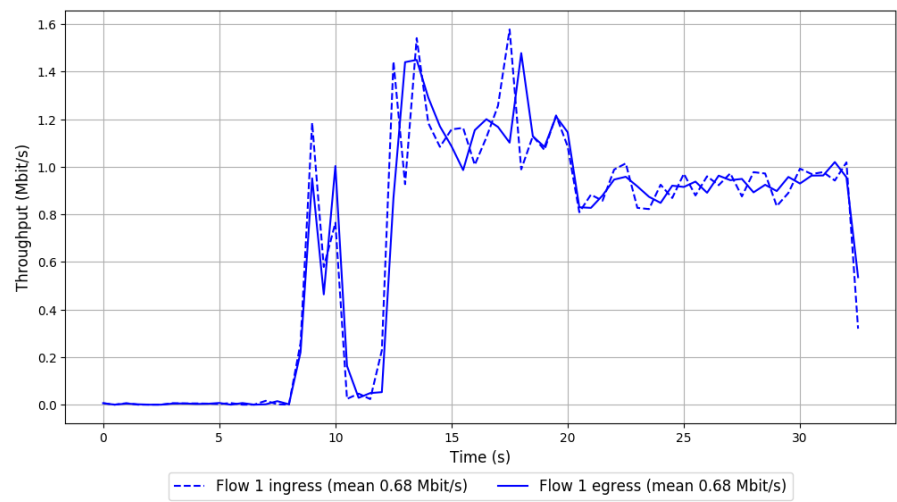
-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 183.529 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

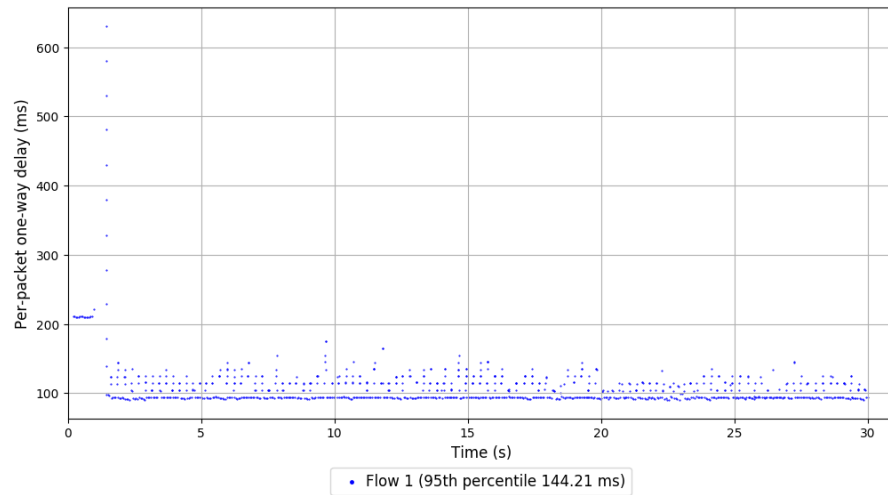
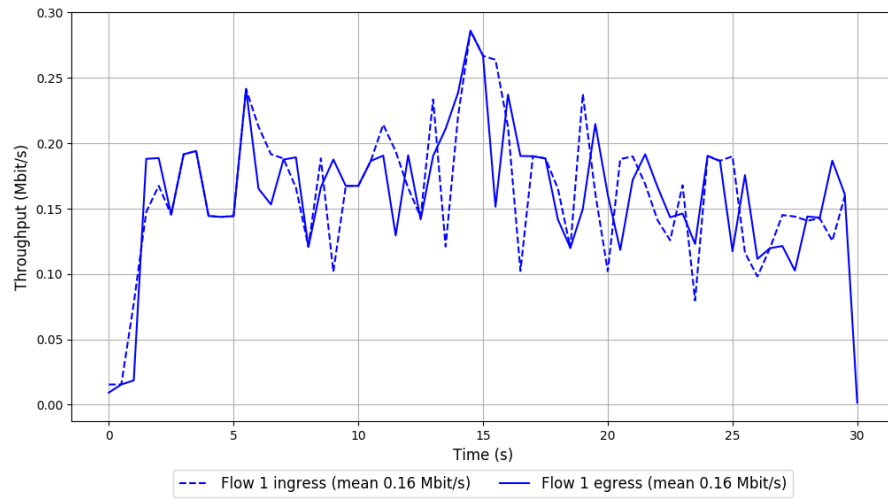


Run 1: Statistics of Sprout

Start at: 2018-03-20 06:50:19
End at: 2018-03-20 06:50:49
Local clock offset: -14.824 ms
Remote clock offset: 9.845 ms

Below is generated by plot.py at 2018-03-20 07:54:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 144.209 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 144.209 ms
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-03-20 07:11:34

End at: 2018-03-20 07:12:04

Local clock offset: -8.962 ms

Remote clock offset: 4.695 ms

Below is generated by plot.py at 2018-03-20 07:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 138.592 ms

Loss rate: 0.00%

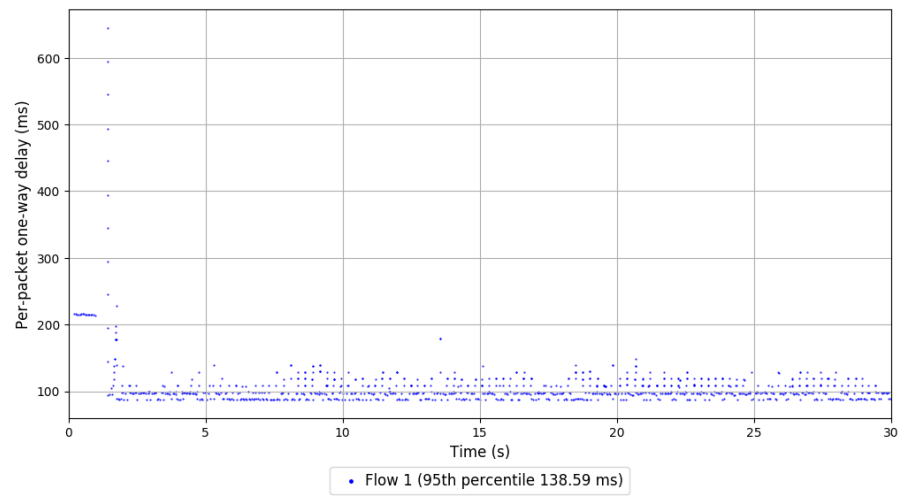
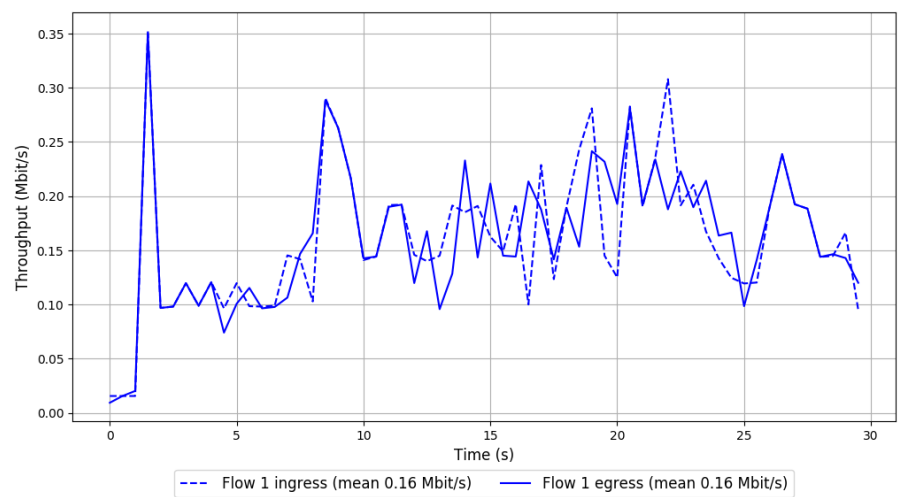
-- Flow 1:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 138.592 ms

Loss rate: 0.00%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-03-20 07:32:48

End at: 2018-03-20 07:33:18

Local clock offset: -8.575 ms

Remote clock offset: 5.333 ms

Below is generated by plot.py at 2018-03-20 07:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 130.860 ms

Loss rate: 0.28%

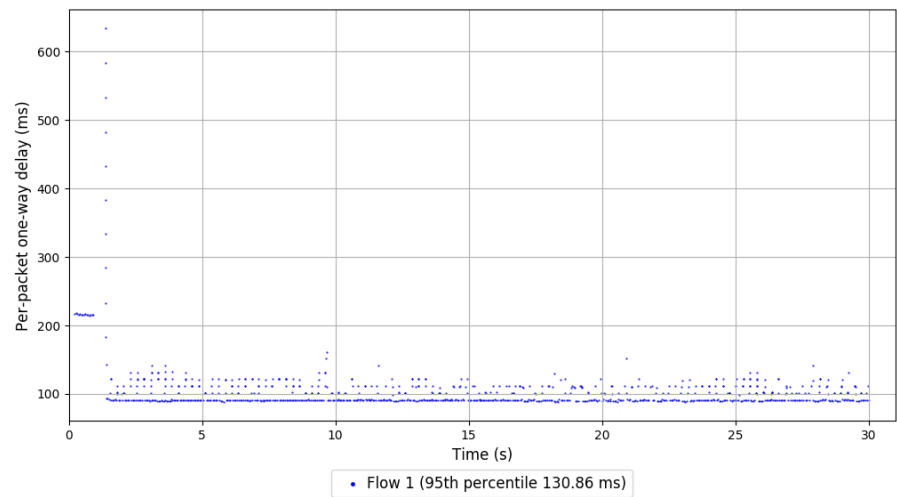
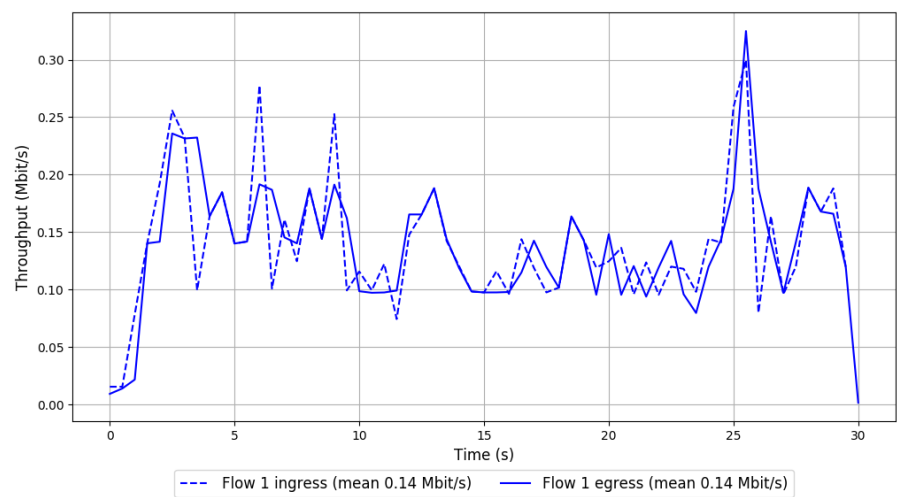
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 130.860 ms

Loss rate: 0.28%

Run 3: Report of Sprout — Data Link

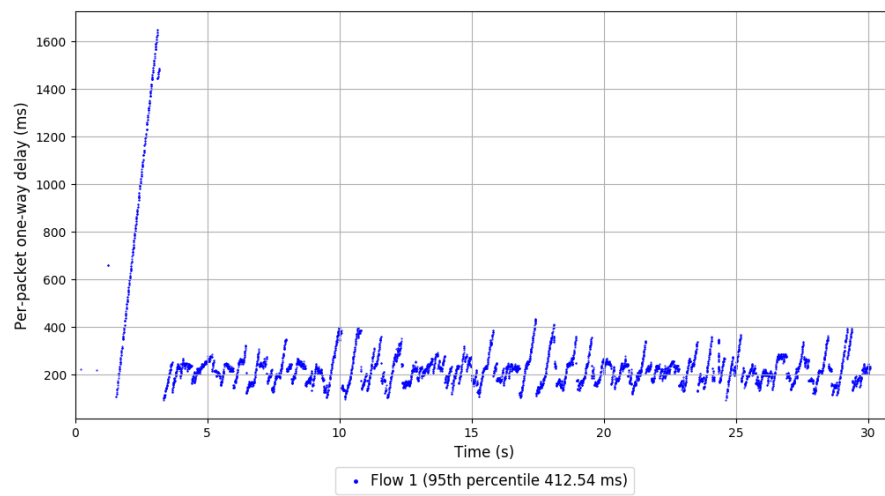
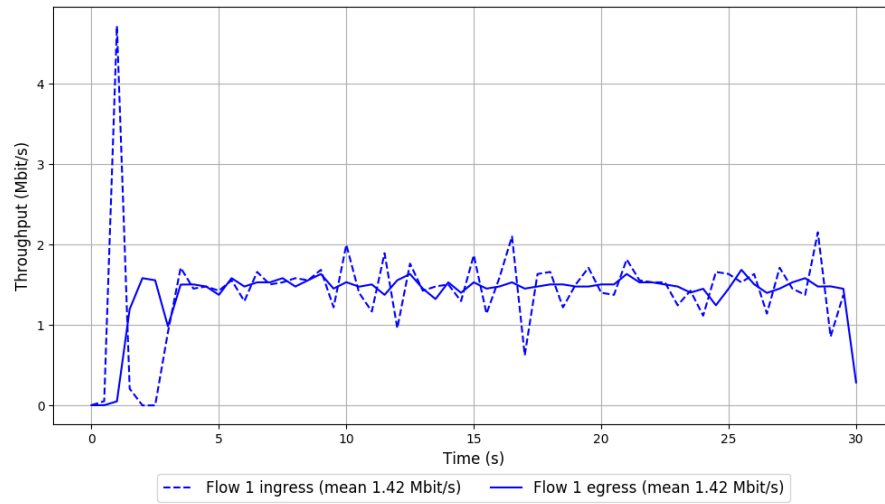


Run 1: Statistics of TaoVA-100x

Start at: 2018-03-20 06:58:34
End at: 2018-03-20 06:59:04
Local clock offset: -10.798 ms
Remote clock offset: 5.831 ms

Below is generated by plot.py at 2018-03-20 07:54:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 412.539 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 412.539 ms
Loss rate: 0.21%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-03-20 07:19:48

End at: 2018-03-20 07:20:18

Local clock offset: -9.337 ms

Remote clock offset: 5.37 ms

Below is generated by plot.py at 2018-03-20 07:54:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 328.834 ms

Loss rate: 0.43%

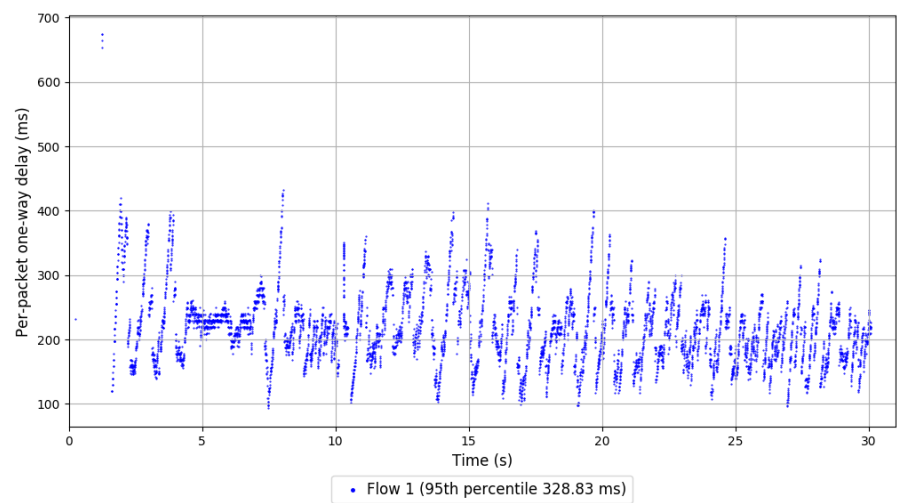
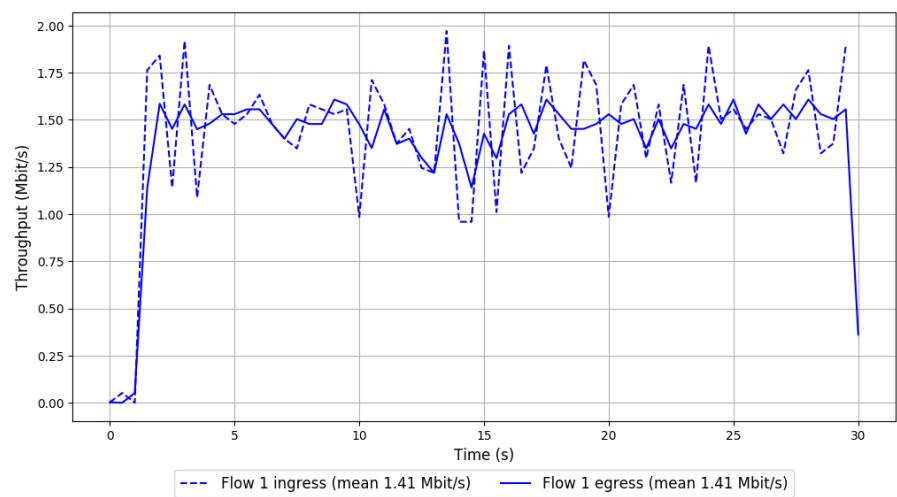
-- Flow 1:

Average throughput: 1.41 Mbit/s

95th percentile per-packet one-way delay: 328.834 ms

Loss rate: 0.43%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-03-20 07:41:03

End at: 2018-03-20 07:41:33

Local clock offset: -8.231 ms

Remote clock offset: 4.435 ms

Below is generated by plot.py at 2018-03-20 07:54:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.45 Mbit/s

95th percentile per-packet one-way delay: 336.993 ms

Loss rate: 0.03%

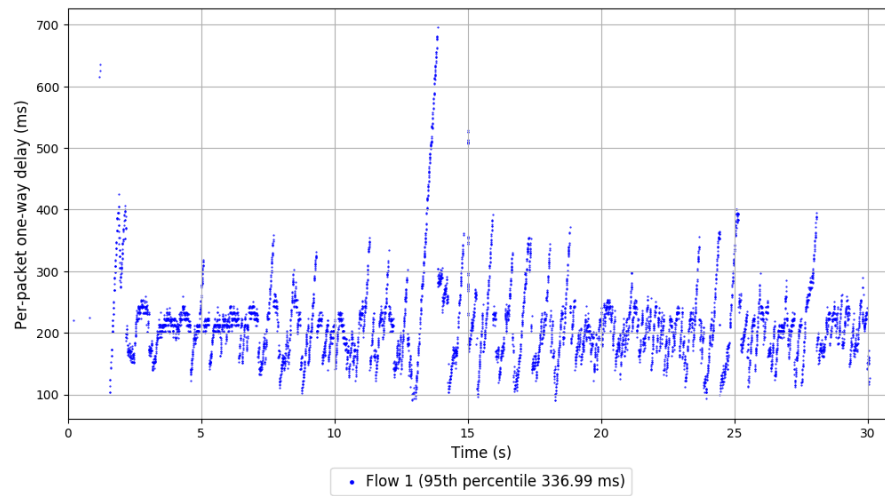
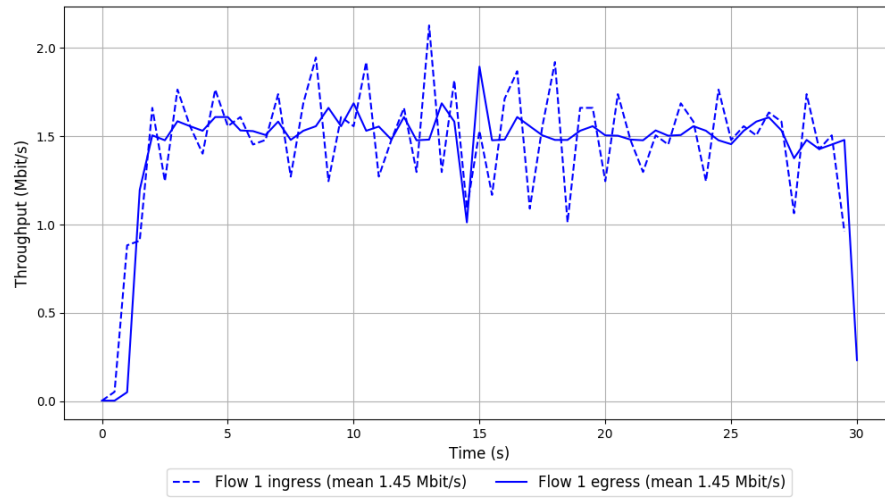
-- Flow 1:

Average throughput: 1.45 Mbit/s

95th percentile per-packet one-way delay: 336.993 ms

Loss rate: 0.03%

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

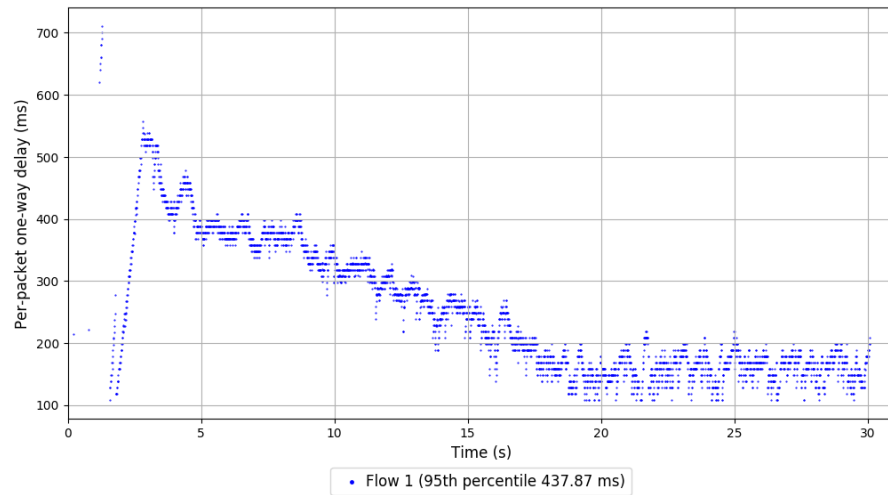
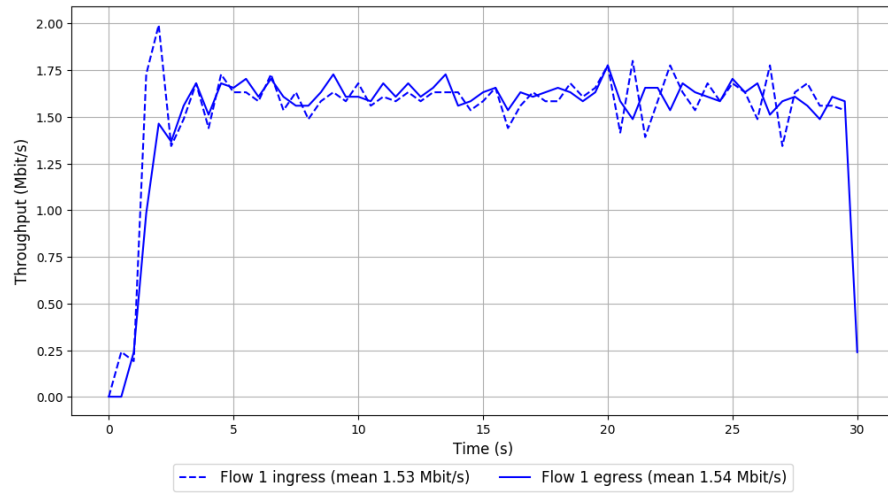


Run 1: Statistics of TCP Vegas

Start at: 2018-03-20 06:52:40
End at: 2018-03-20 06:53:10
Local clock offset: -14.441 ms
Remote clock offset: 4.966 ms

Below is generated by plot.py at 2018-03-20 07:54:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 437.870 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 437.870 ms
Loss rate: 0.26%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-03-20 07:13:55

End at: 2018-03-20 07:14:25

Local clock offset: -9.016 ms

Remote clock offset: 5.497 ms

Below is generated by plot.py at 2018-03-20 07:54:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 480.761 ms

Loss rate: 0.16%

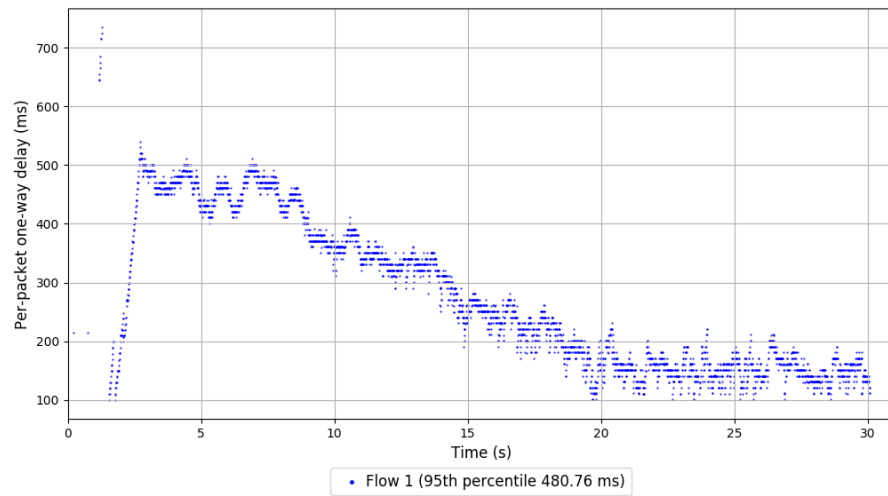
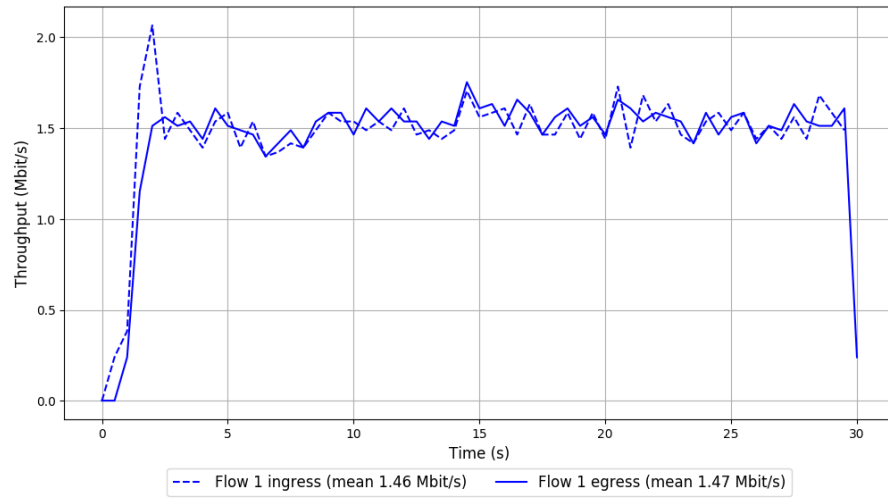
-- Flow 1:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 480.761 ms

Loss rate: 0.16%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-03-20 07:35:10

End at: 2018-03-20 07:35:40

Local clock offset: -8.434 ms

Remote clock offset: 5.32 ms

Below is generated by plot.py at 2018-03-20 07:54:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 461.353 ms

Loss rate: 0.17%

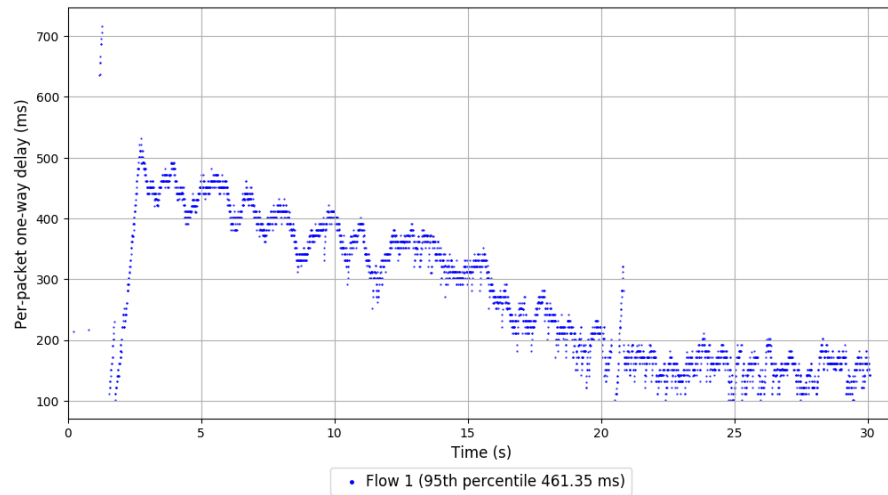
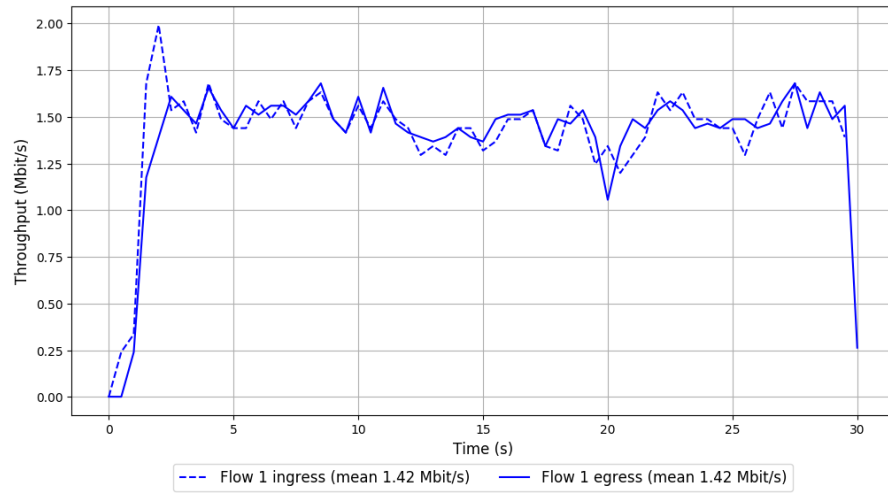
-- Flow 1:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 461.353 ms

Loss rate: 0.17%

Run 3: Report of TCP Vegas — Data Link

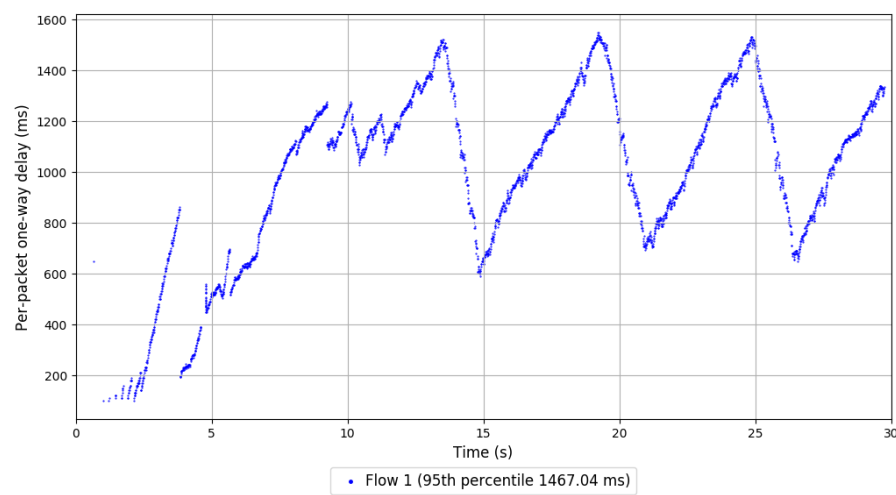
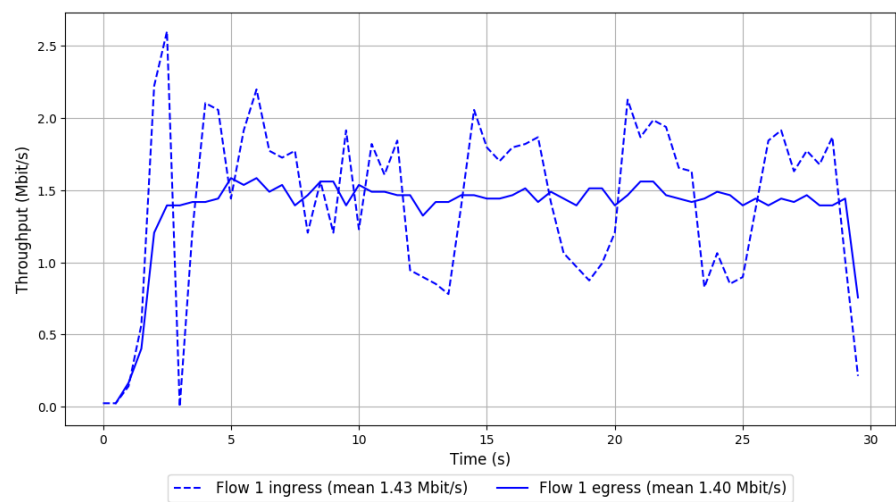


Run 1: Statistics of Verus

Start at: 2018-03-20 06:57:23
End at: 2018-03-20 06:57:53
Local clock offset: -11.352 ms
Remote clock offset: 4.918 ms

Below is generated by plot.py at 2018-03-20 07:54:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 1467.038 ms
Loss rate: 3.99%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 1467.038 ms
Loss rate: 3.99%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-03-20 07:18:37

End at: 2018-03-20 07:19:07

Local clock offset: -9.323 ms

Remote clock offset: 8.525 ms

Below is generated by plot.py at 2018-03-20 07:54:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.50 Mbit/s

95th percentile per-packet one-way delay: 1610.521 ms

Loss rate: 2.72%

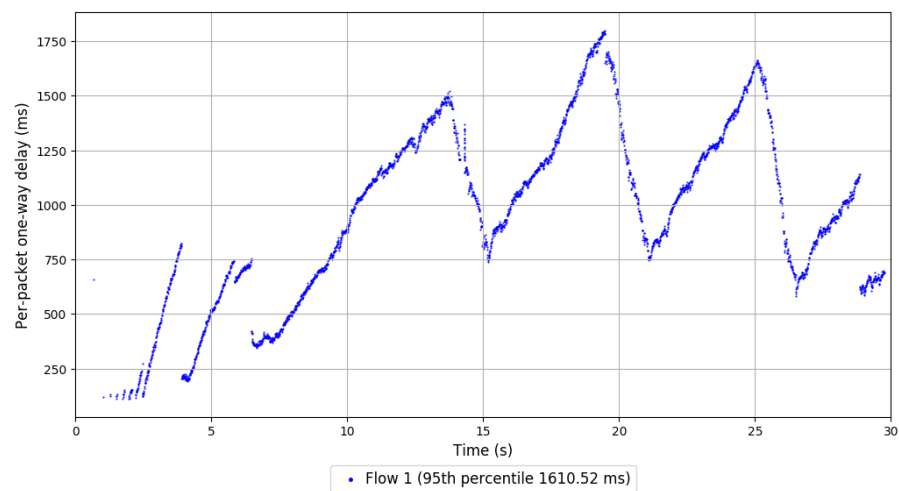
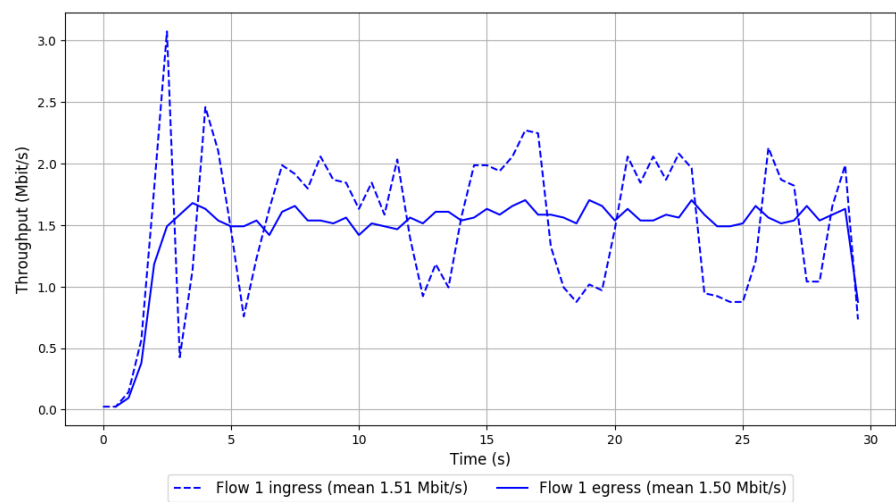
-- Flow 1:

Average throughput: 1.50 Mbit/s

95th percentile per-packet one-way delay: 1610.521 ms

Loss rate: 2.72%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-03-20 07:39:52

End at: 2018-03-20 07:40:22

Local clock offset: -8.254 ms

Remote clock offset: 4.438 ms

Below is generated by plot.py at 2018-03-20 07:54:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.39 Mbit/s

95th percentile per-packet one-way delay: 1540.509 ms

Loss rate: 3.21%

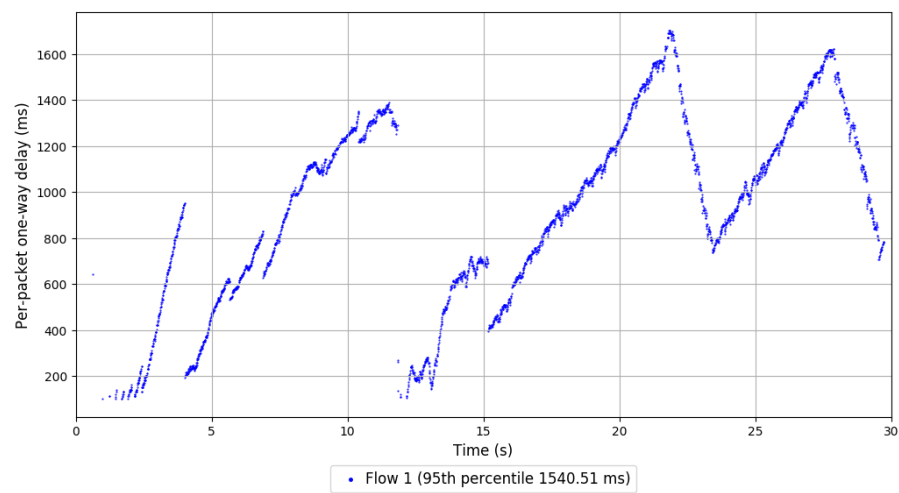
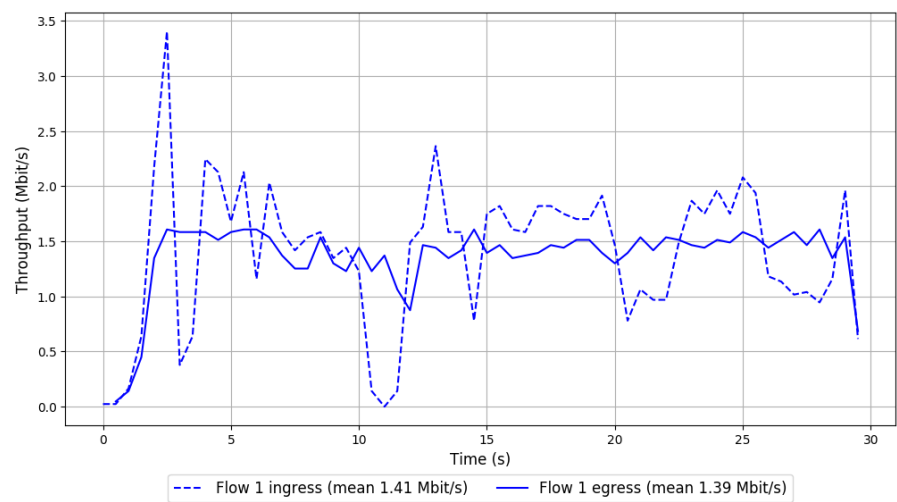
-- Flow 1:

Average throughput: 1.39 Mbit/s

95th percentile per-packet one-way delay: 1540.509 ms

Loss rate: 3.21%

Run 3: Report of Verus — Data Link

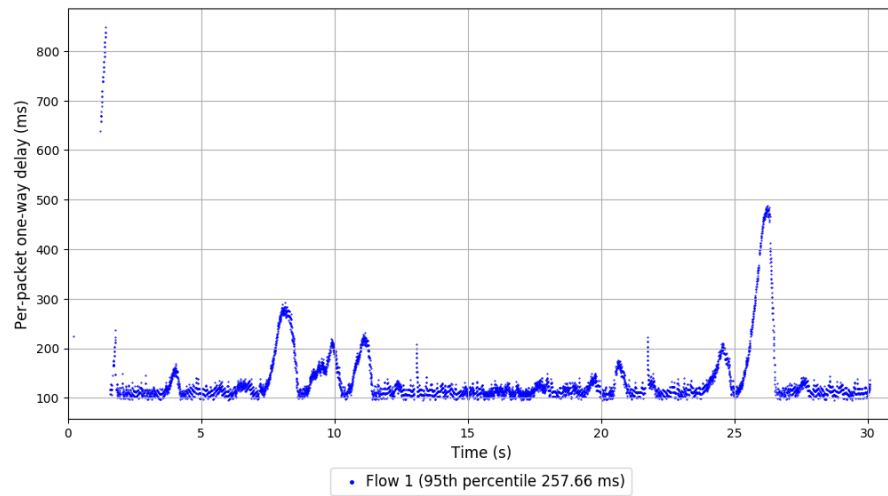
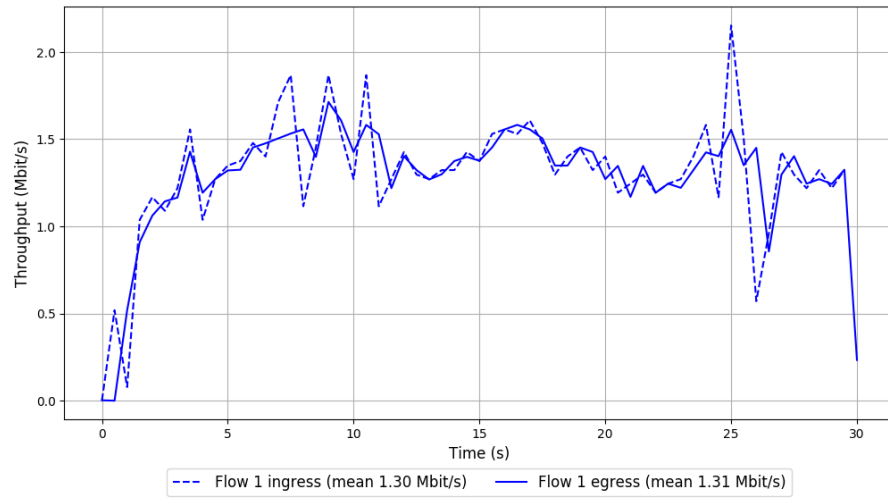


Run 1: Statistics of Copa

Start at: 2018-03-20 06:55:02
End at: 2018-03-20 06:55:32
Local clock offset: -12.624 ms
Remote clock offset: 10.536 ms

Below is generated by plot.py at 2018-03-20 07:54:46
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 257.657 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 257.657 ms
Loss rate: 0.10%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-03-20 07:16:16

End at: 2018-03-20 07:16:46

Local clock offset: -9.183 ms

Remote clock offset: 5.42 ms

Below is generated by plot.py at 2018-03-20 07:54:46

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 201.566 ms

Loss rate: 0.00%

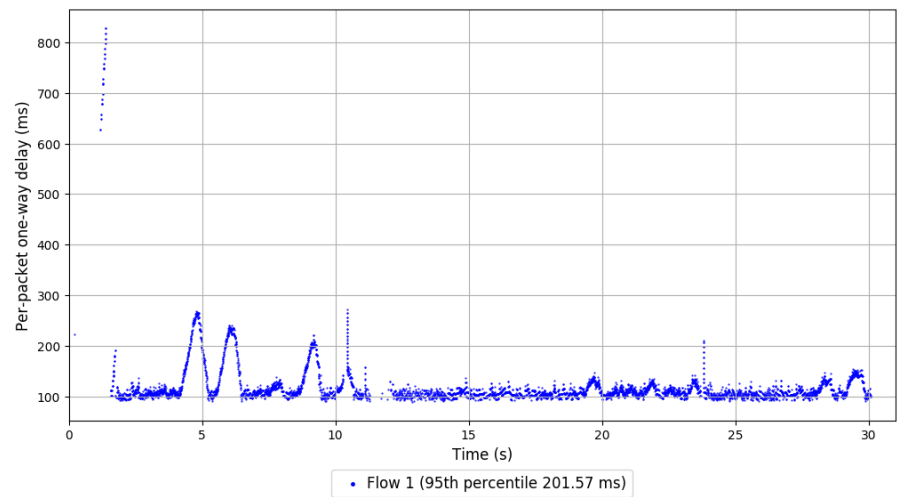
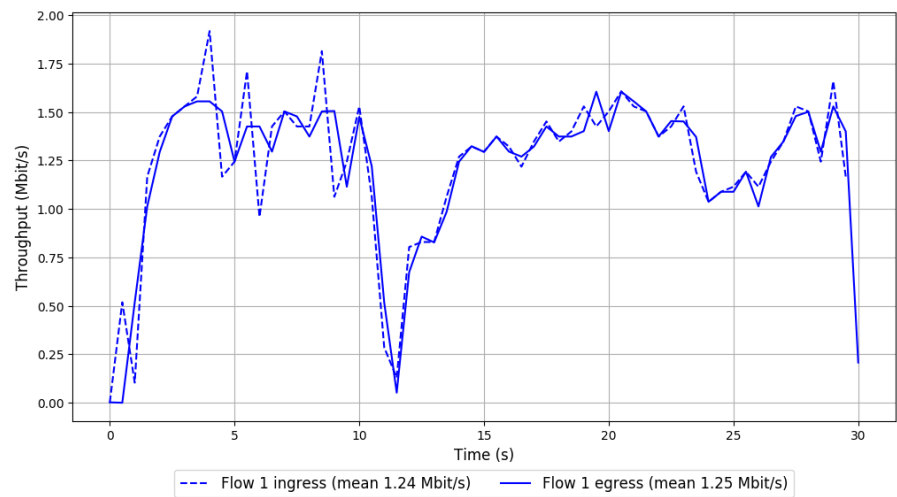
-- Flow 1:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 201.566 ms

Loss rate: 0.00%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-03-20 07:37:31

End at: 2018-03-20 07:38:01

Local clock offset: -8.272 ms

Remote clock offset: 5.169 ms

Below is generated by plot.py at 2018-03-20 07:54:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.27 Mbit/s

95th percentile per-packet one-way delay: 165.109 ms

Loss rate: 0.00%

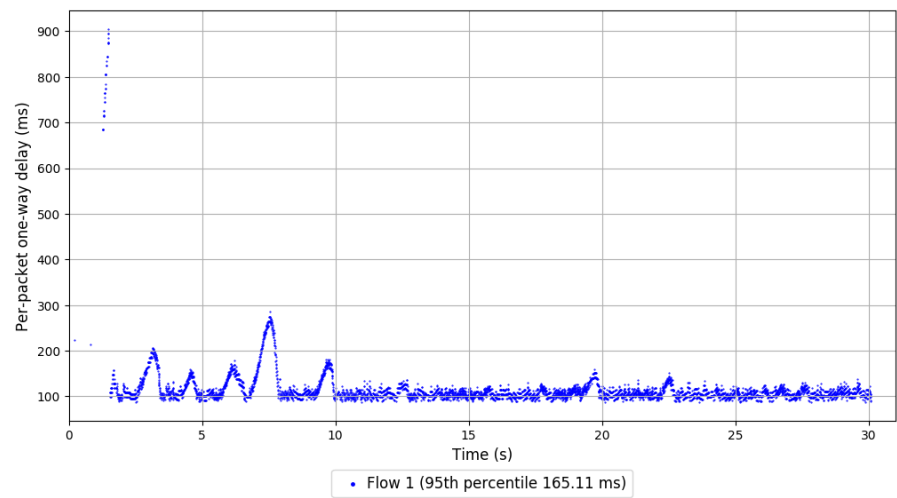
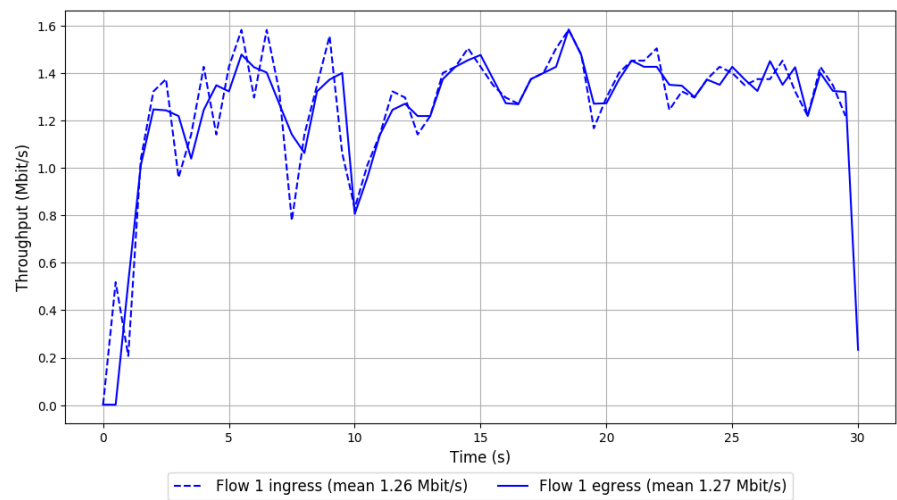
-- Flow 1:

Average throughput: 1.27 Mbit/s

95th percentile per-packet one-way delay: 165.109 ms

Loss rate: 0.00%

Run 3: Report of Copa — Data Link



Run 1: Statistics of FillP

Start at: 2018-03-20 07:09:11

End at: 2018-03-20 07:09:41

Local clock offset: -9.005 ms

Remote clock offset: 4.796 ms

Below is generated by plot.py at 2018-03-20 07:54:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 5549.716 ms

Loss rate: 96.04%

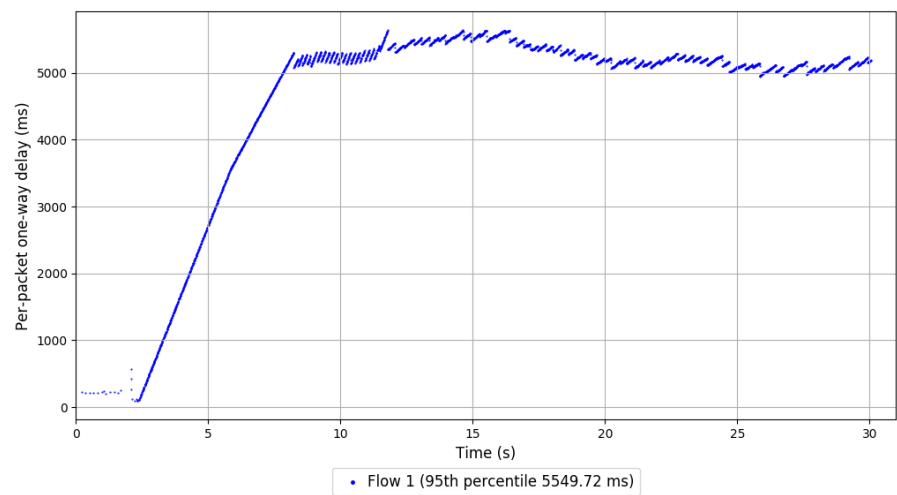
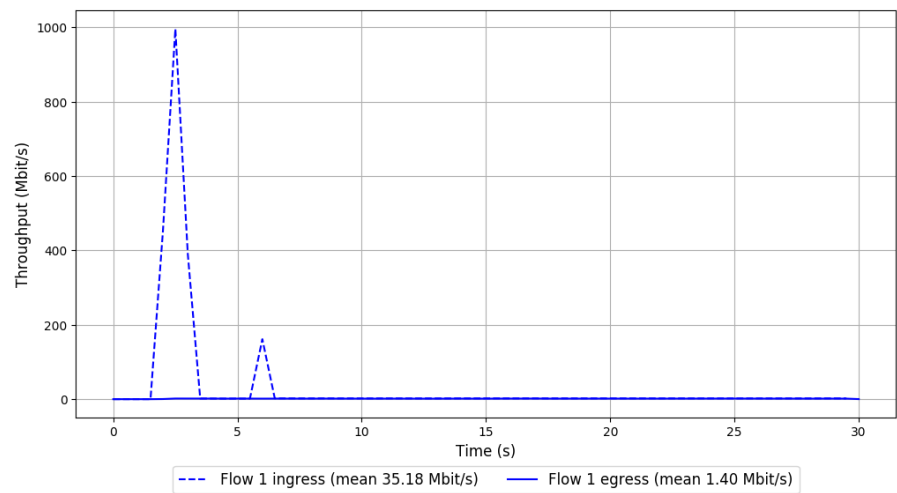
-- Flow 1:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 5549.716 ms

Loss rate: 96.04%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-03-20 07:30:25

End at: 2018-03-20 07:30:55

Local clock offset: -8.834 ms

Remote clock offset: 9.147 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.30 Mbit/s

95th percentile per-packet one-way delay: 5749.096 ms

Loss rate: 99.00%

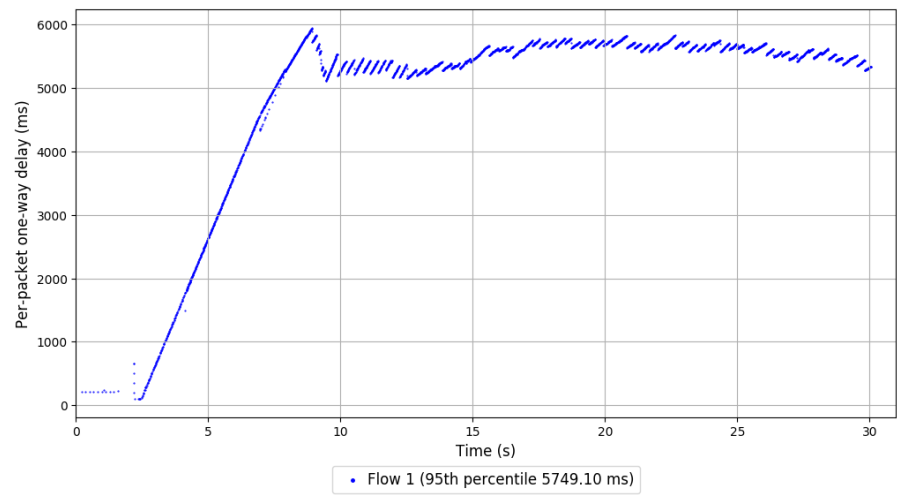
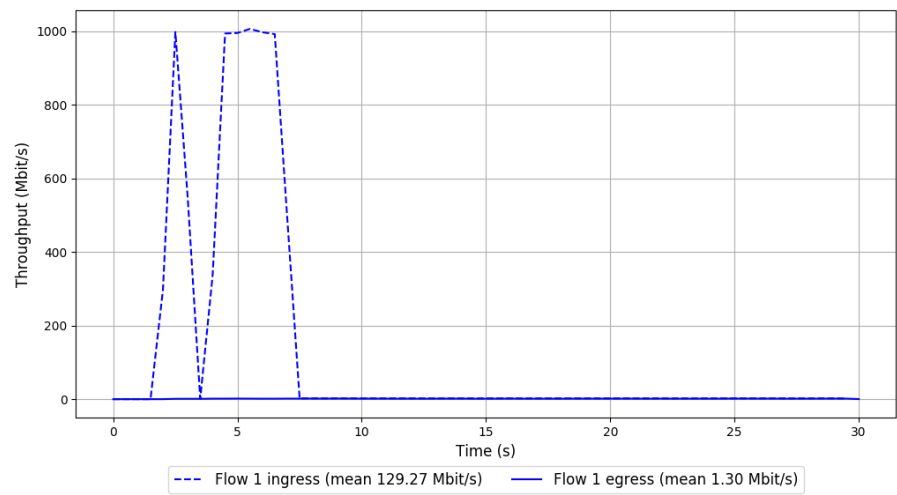
-- Flow 1:

Average throughput: 1.30 Mbit/s

95th percentile per-packet one-way delay: 5749.096 ms

Loss rate: 99.00%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-03-20 07:51:40

End at: 2018-03-20 07:52:10

Local clock offset: -8.584 ms

Remote clock offset: 5.079 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.46 Mbit/s

95th percentile per-packet one-way delay: 5201.072 ms

Loss rate: 96.31%

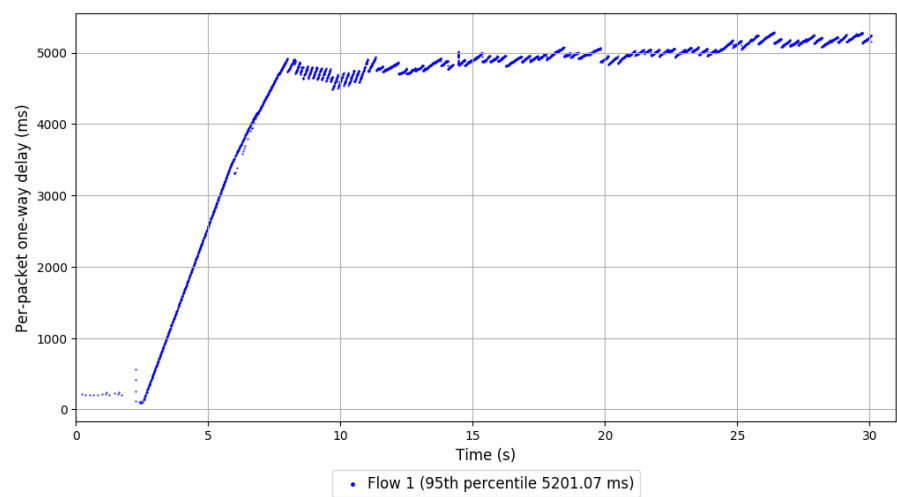
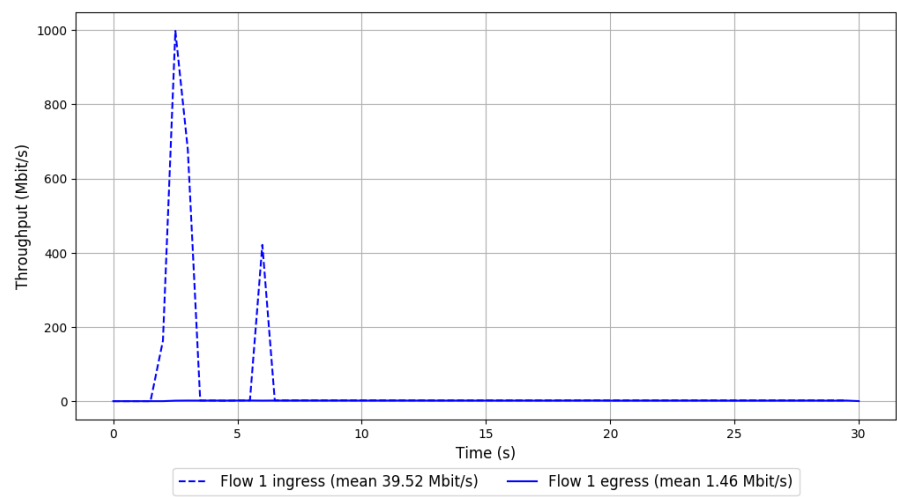
-- Flow 1:

Average throughput: 1.46 Mbit/s

95th percentile per-packet one-way delay: 5201.072 ms

Loss rate: 96.31%

Run 3: Report of FillP — Data Link

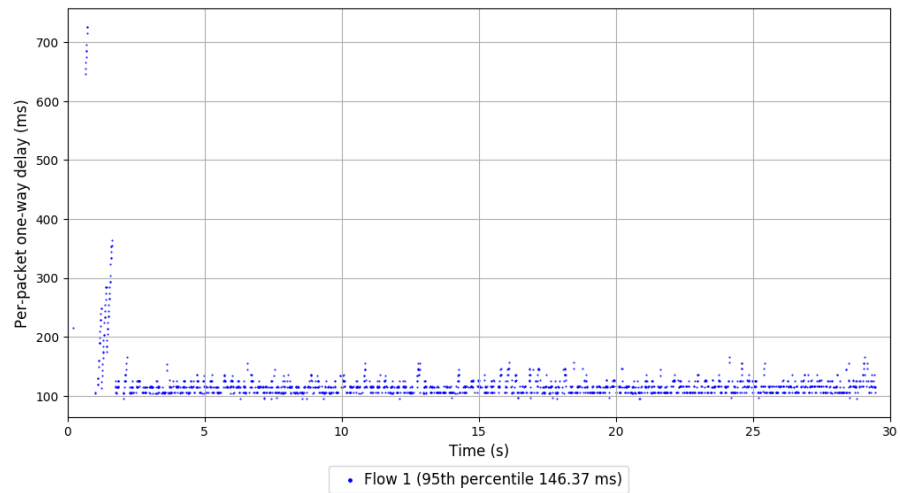
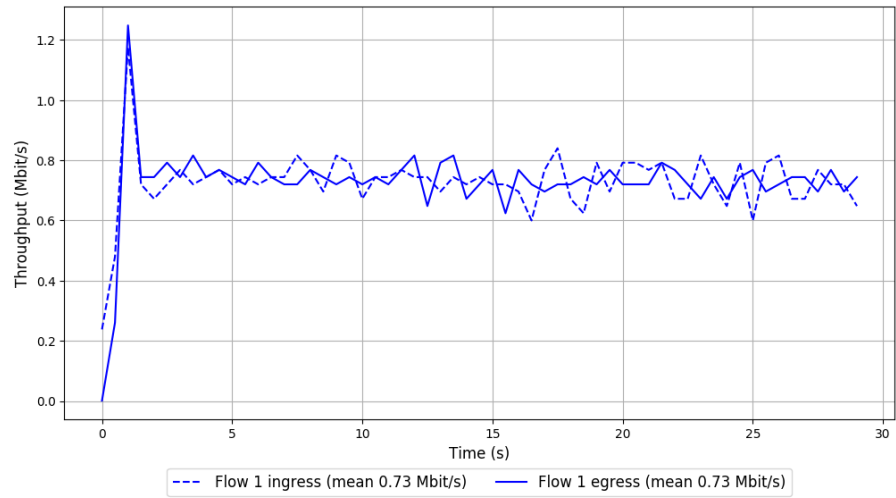


Run 1: Statistics of Indigo-1-32

Start at: 2018-03-20 06:51:30
End at: 2018-03-20 06:52:00
Local clock offset: -15.084 ms
Remote clock offset: 5.922 ms

Below is generated by plot.py at 2018-03-20 07:54:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 146.370 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 146.370 ms
Loss rate: 0.22%

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



Run 2: Statistics of Indigo-1-32

Start at: 2018-03-20 07:12:44

End at: 2018-03-20 07:13:14

Local clock offset: -9.054 ms

Remote clock offset: 4.683 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 167.016 ms

Loss rate: 0.15%

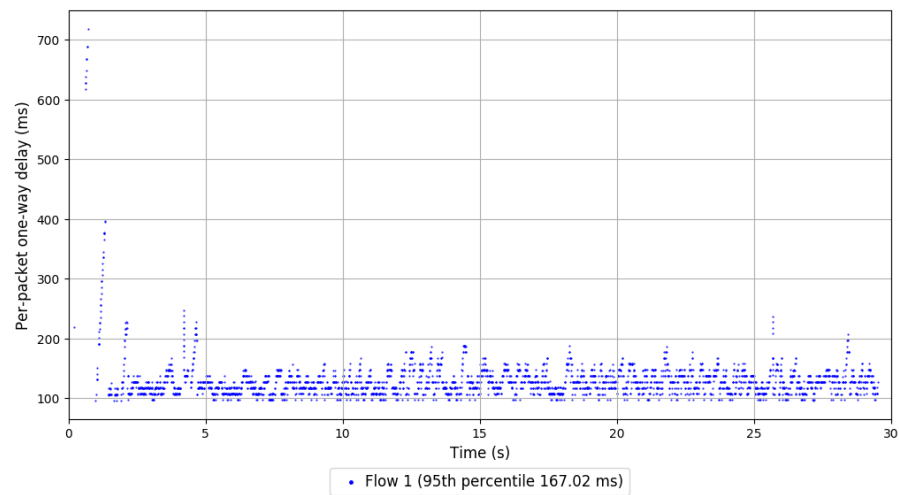
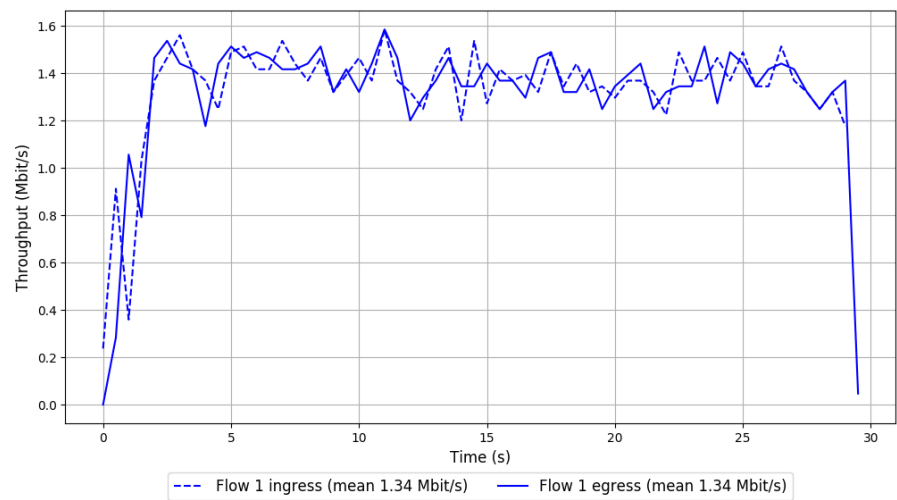
-- Flow 1:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 167.016 ms

Loss rate: 0.15%

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



Run 3: Statistics of Indigo-1-32

Start at: 2018-03-20 07:33:59

End at: 2018-03-20 07:34:29

Local clock offset: -8.438 ms

Remote clock offset: 9.933 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 174.282 ms

Loss rate: 0.12%

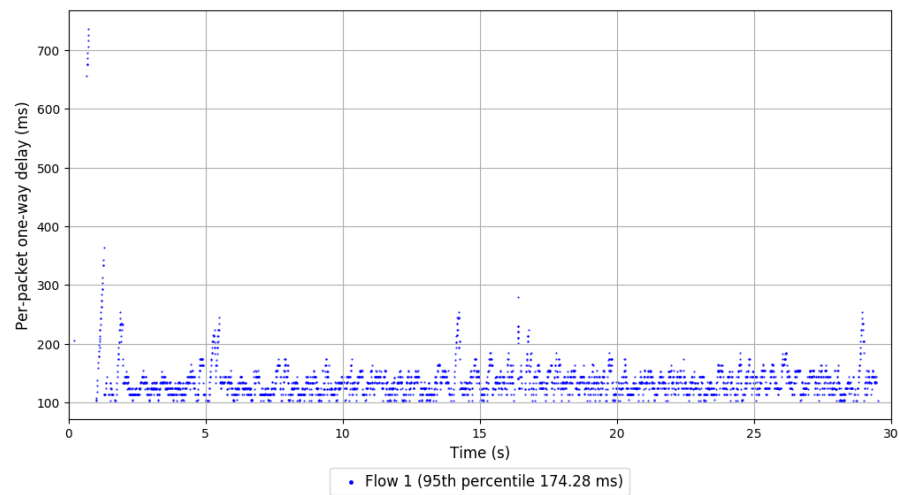
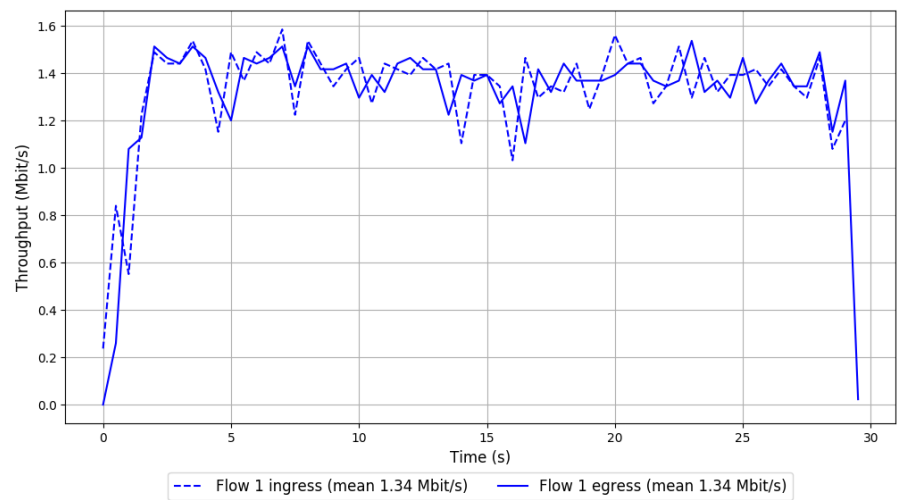
-- Flow 1:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 174.282 ms

Loss rate: 0.12%

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

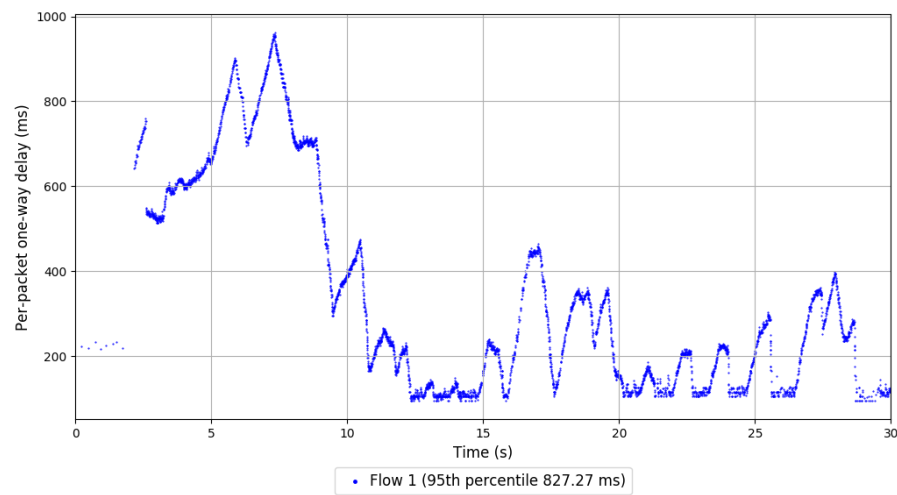
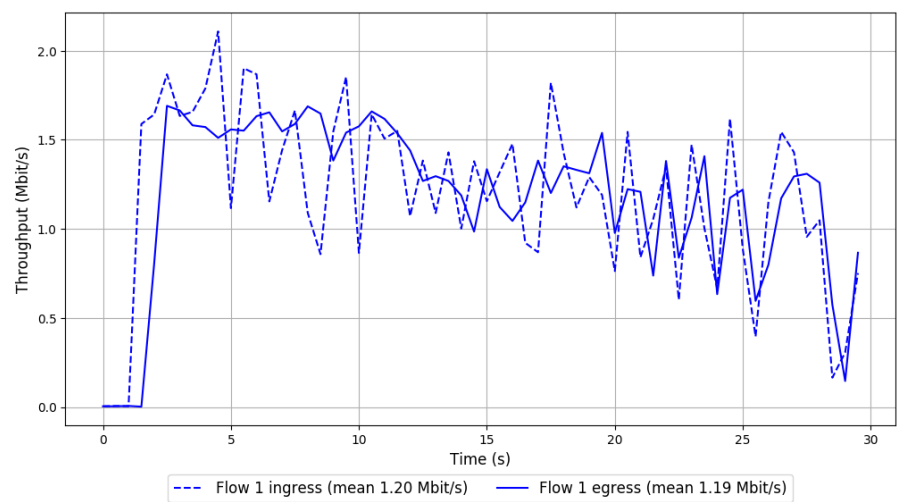


Run 1: Statistics of Vivace-latency

Start at: 2018-03-20 06:59:44
End at: 2018-03-20 07:00:14
Local clock offset: -10.409 ms
Remote clock offset: 9.74 ms

Below is generated by plot.py at 2018-03-20 07:54:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 827.275 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 827.275 ms
Loss rate: 1.02%

Run 1: Report of Vivace-latency — Data Link



Run 2: Statistics of Vivace-latency

Start at: 2018-03-20 07:20:59

End at: 2018-03-20 07:21:29

Local clock offset: -9.498 ms

Remote clock offset: 9.314 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.87 Mbit/s

95th percentile per-packet one-way delay: 562.443 ms

Loss rate: 1.44%

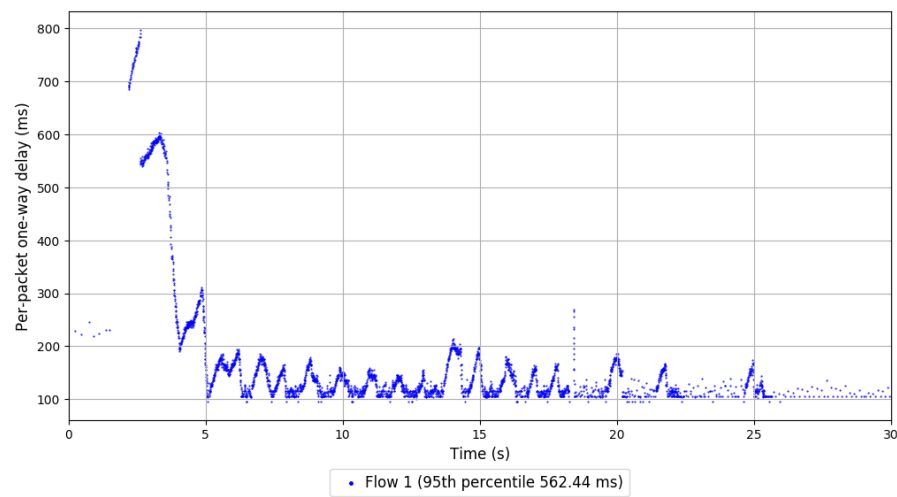
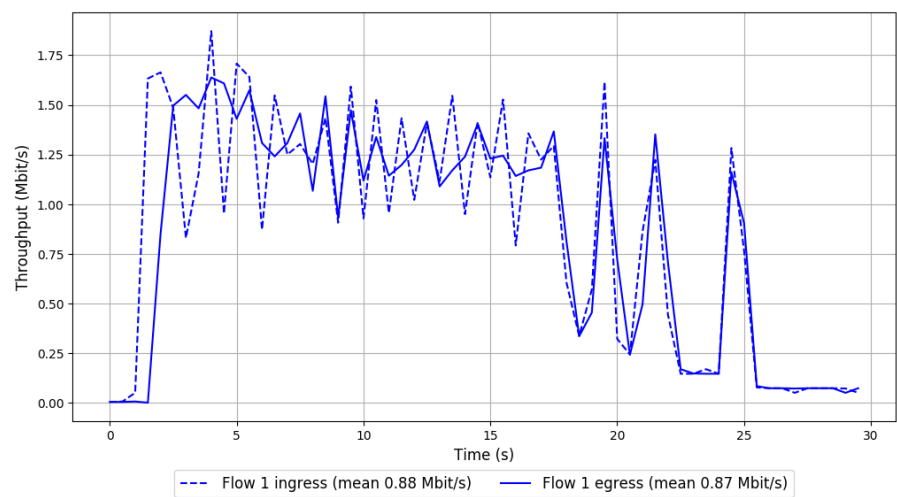
-- Flow 1:

Average throughput: 0.87 Mbit/s

95th percentile per-packet one-way delay: 562.443 ms

Loss rate: 1.44%

Run 2: Report of Vivace-latency — Data Link



Run 3: Statistics of Vivace-latency

Start at: 2018-03-20 07:42:14

End at: 2018-03-20 07:42:44

Local clock offset: -8.236 ms

Remote clock offset: 9.07 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 877.274 ms

Loss rate: 1.15%

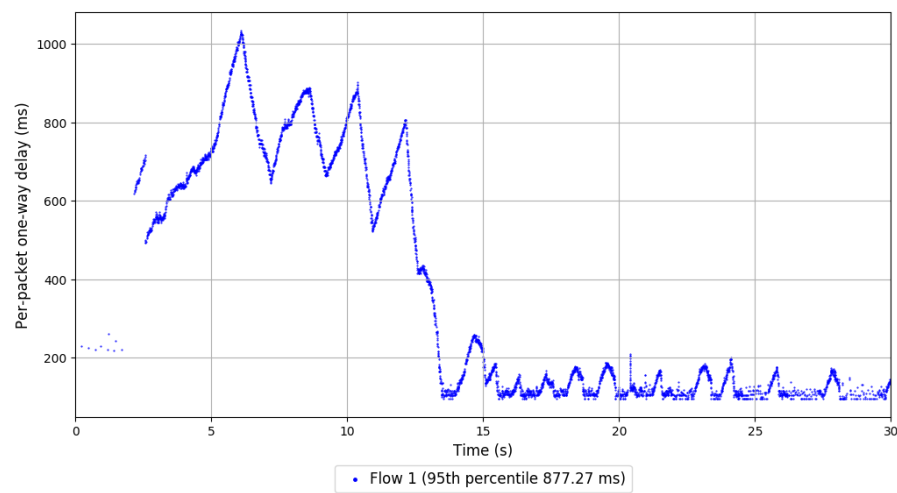
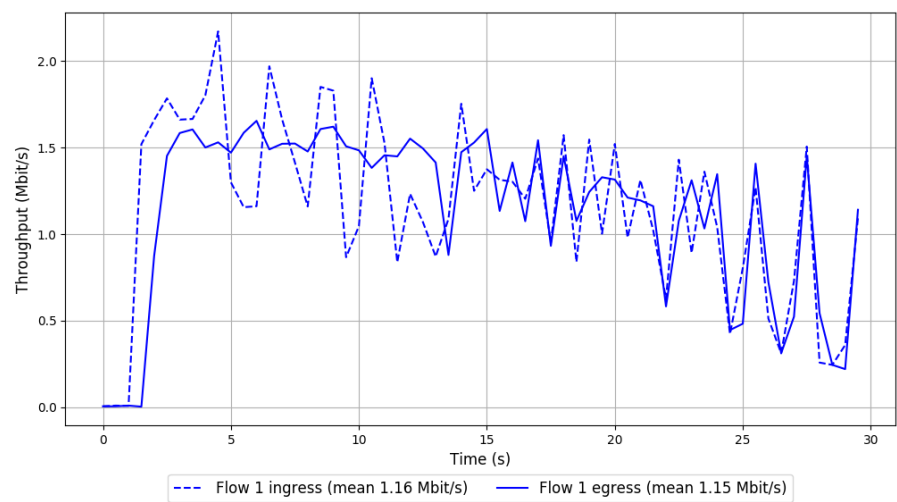
-- Flow 1:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 877.274 ms

Loss rate: 1.15%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-03-20 07:08:00

End at: 2018-03-20 07:08:30

Local clock offset: -9.093 ms

Remote clock offset: 8.7 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.43 Mbit/s

95th percentile per-packet one-way delay: 5134.178 ms

Loss rate: 29.97%

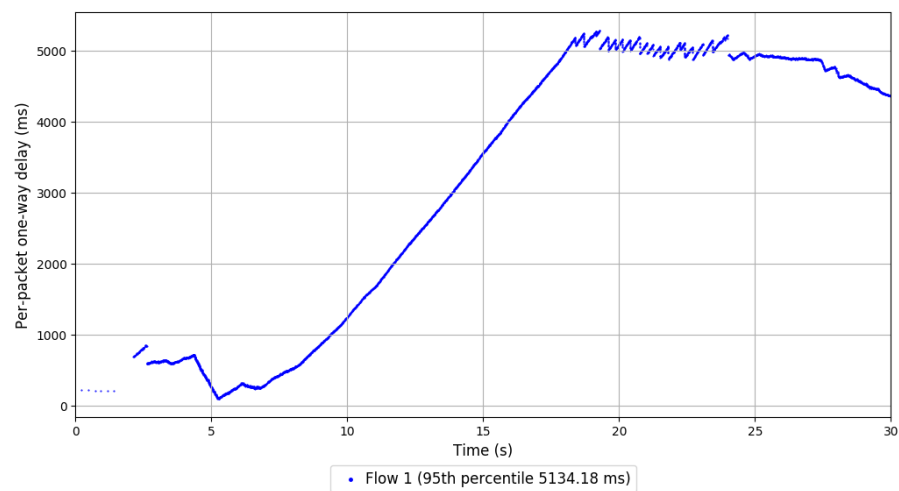
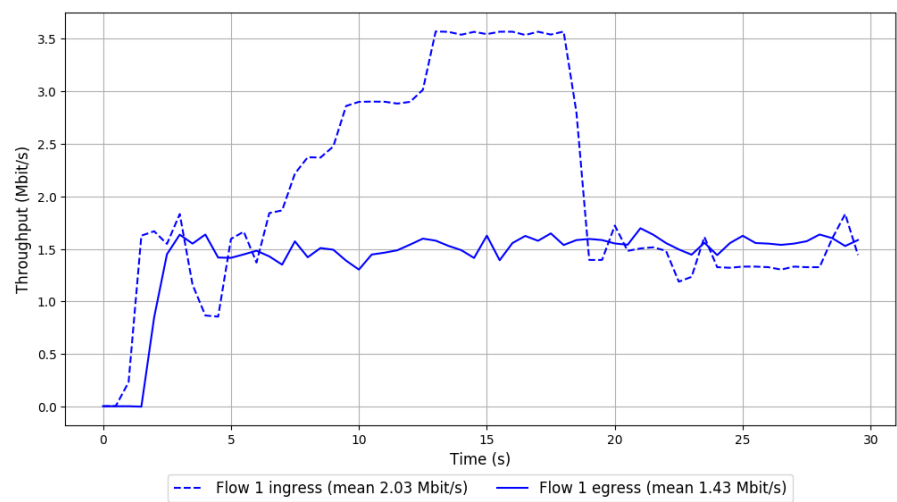
-- Flow 1:

Average throughput: 1.43 Mbit/s

95th percentile per-packet one-way delay: 5134.178 ms

Loss rate: 29.97%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-03-20 07:29:14

End at: 2018-03-20 07:29:44

Local clock offset: -9.033 ms

Remote clock offset: 4.414 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 5172.512 ms

Loss rate: 30.45%

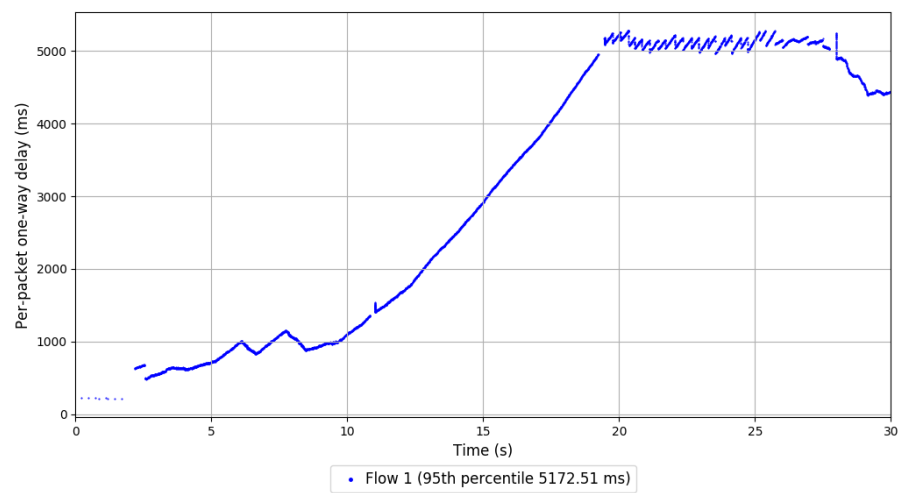
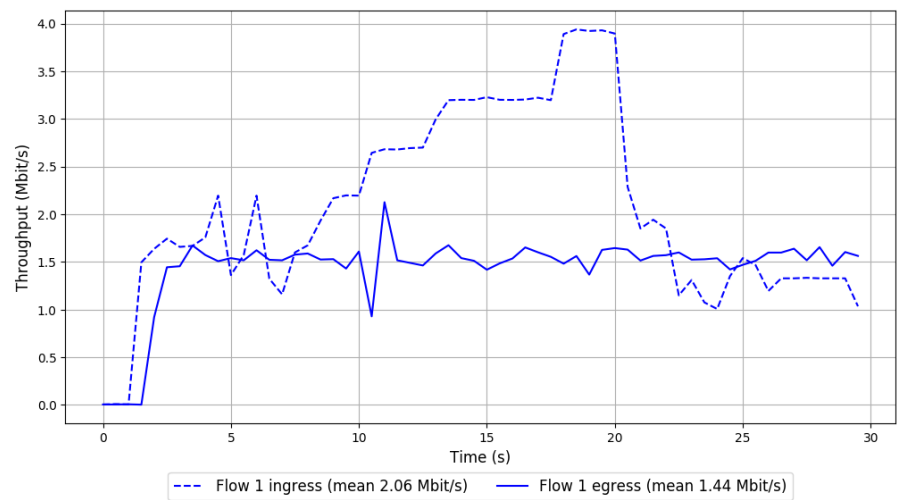
-- Flow 1:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 5172.512 ms

Loss rate: 30.45%

Run 2: Report of Vivace-loss — Data Link



Run 3: Statistics of Vivace-loss

Start at: 2018-03-20 07:50:29

End at: 2018-03-20 07:50:59

Local clock offset: -8.503 ms

Remote clock offset: 9.032 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 5073.468 ms

Loss rate: 28.68%

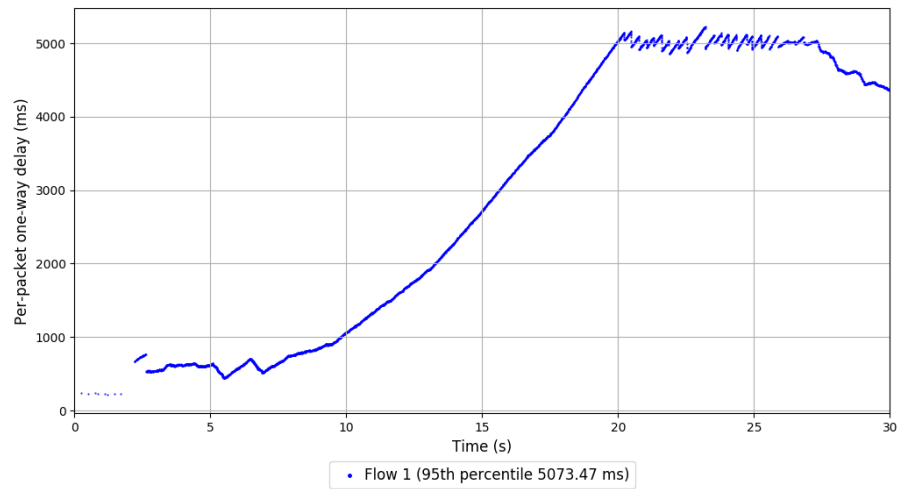
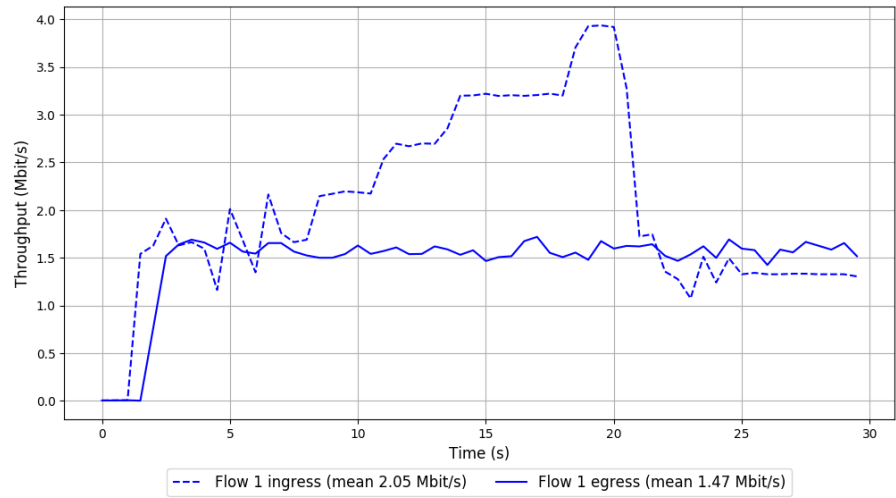
-- Flow 1:

Average throughput: 1.47 Mbit/s

95th percentile per-packet one-way delay: 5073.468 ms

Loss rate: 28.68%

Run 3: Report of Vivace-loss — Data Link



Run 1: Statistics of Vivace-LTE

Start at: 2018-03-20 07:06:50

End at: 2018-03-20 07:07:20

Local clock offset: -9.109 ms

Remote clock offset: 4.815 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 1297.031 ms

Loss rate: 1.36%

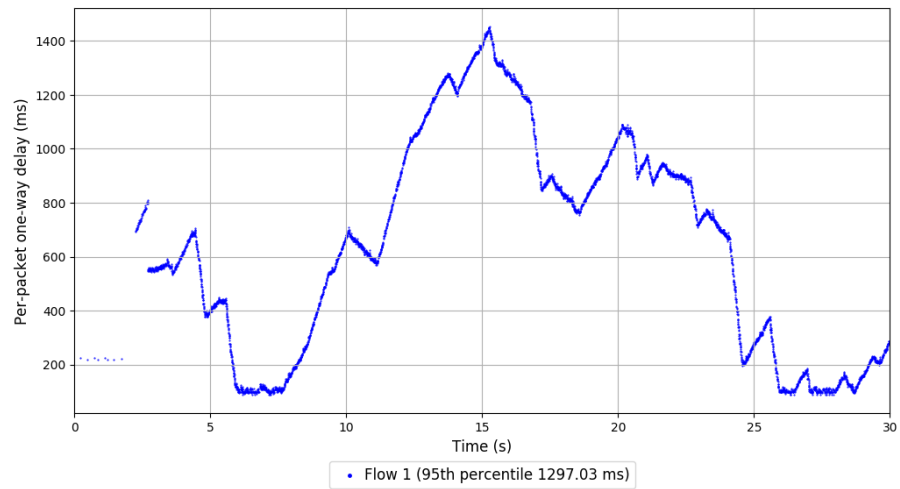
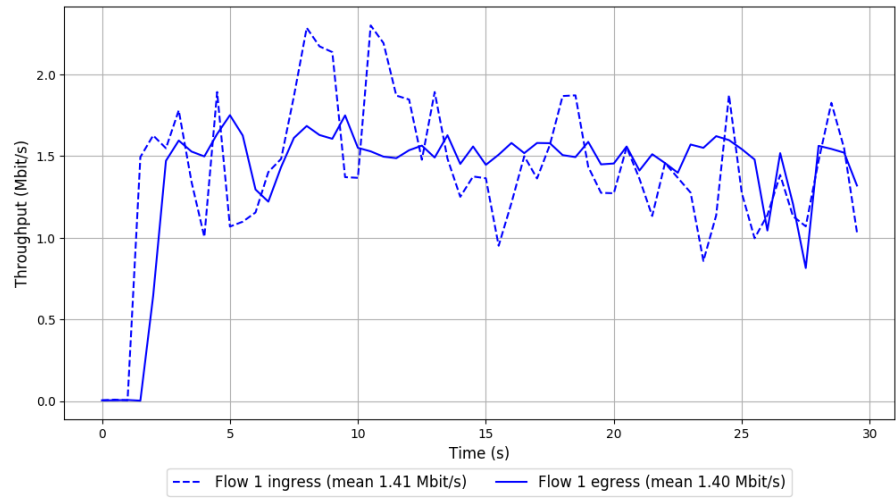
-- Flow 1:

Average throughput: 1.40 Mbit/s

95th percentile per-packet one-way delay: 1297.031 ms

Loss rate: 1.36%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-03-20 07:28:03

End at: 2018-03-20 07:28:33

Local clock offset: -9.335 ms

Remote clock offset: 4.445 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.28 Mbit/s

95th percentile per-packet one-way delay: 396.797 ms

Loss rate: 0.95%

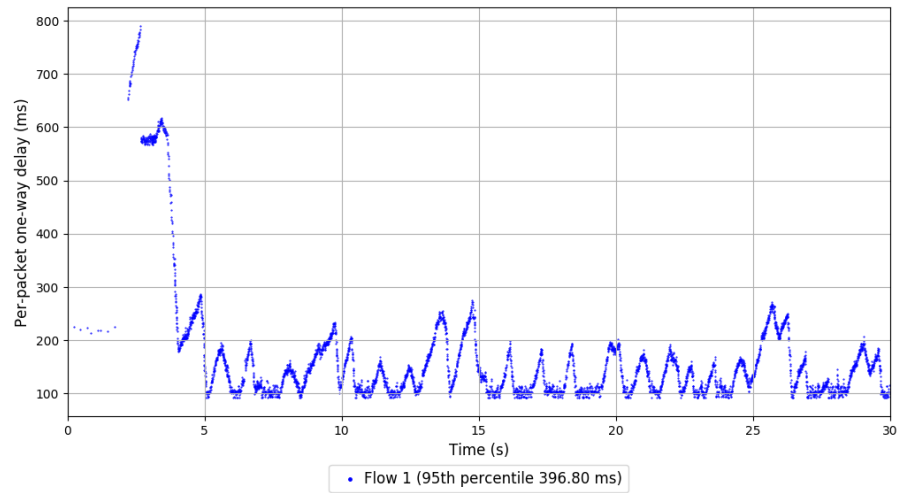
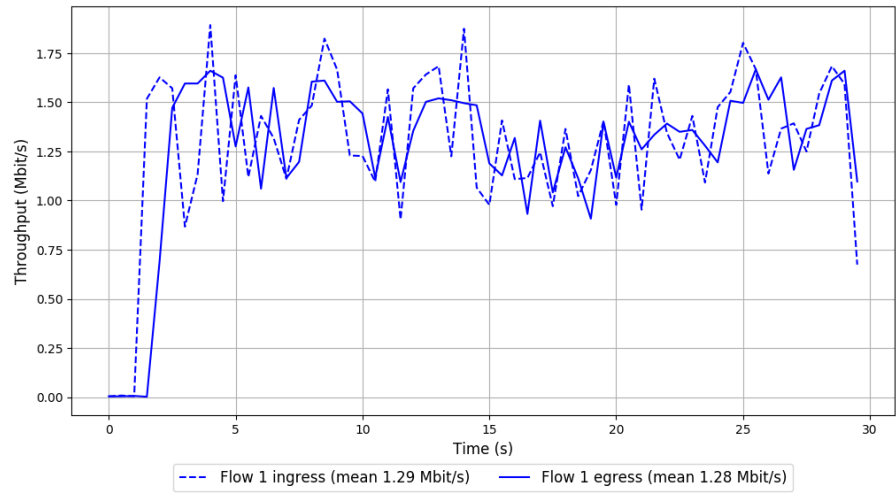
-- Flow 1:

Average throughput: 1.28 Mbit/s

95th percentile per-packet one-way delay: 396.797 ms

Loss rate: 0.95%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-03-20 07:49:18

End at: 2018-03-20 07:49:48

Local clock offset: -8.478 ms

Remote clock offset: 4.377 ms

Below is generated by plot.py at 2018-03-20 07:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.32 Mbit/s

95th percentile per-packet one-way delay: 632.720 ms

Loss rate: 4.19%

-- Flow 1:

Average throughput: 1.32 Mbit/s

95th percentile per-packet one-way delay: 632.720 ms

Loss rate: 4.19%

Run 3: Report of Vivace-LTE — Data Link

