

Pantheon Report

Generated at 2018-02-19 18:35:59 (UTC).

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

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).

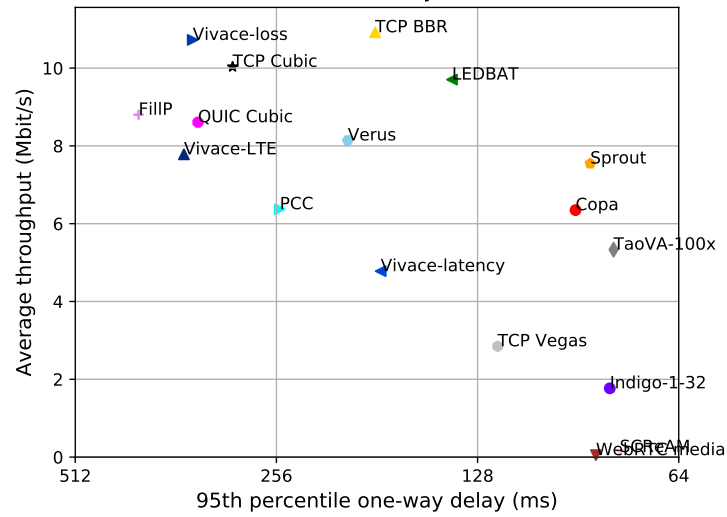
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

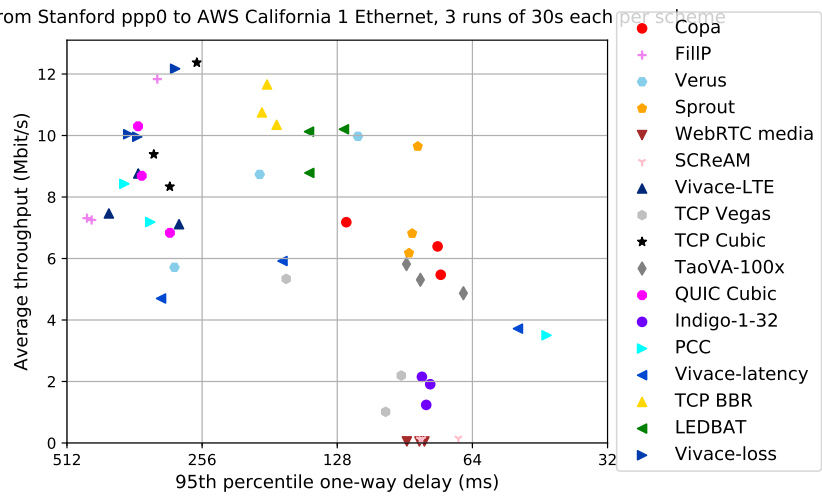
Git summary:

```
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 @ f1a14bffe749737437f61b1eae30b267cde681
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 Stanford ppp0 to AWS California 1 Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



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



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	10.92	182.18	0.53
TCP Cubic	3	10.03	297.75	1.17
LEDBAT	3	9.70	139.81	0.45
PCC	3	6.37	253.09	1.51
QUIC Cubic	3	8.61	335.50	2.12
SCReAM	3	0.13	78.46	0.16
WebRTC media	3	0.05	85.14	0.00
Sprout	3	7.55	86.82	1.03
TaoVA-100x	3	5.33	80.11	0.29
TCP Vegas	3	2.85	119.46	0.17
Verus	3	8.14	200.22	2.52
Copa	3	6.35	91.33	0.21
FillP	3	8.80	411.71	55.65
Indigo-1-32	3	1.77	81.16	0.62
Vivace-latency	3	4.78	178.75	0.80
Vivace-loss	3	10.72	341.62	19.18
Vivace-LTE	3	7.79	352.10	6.40

Run 1: Statistics of TCP BBR

Start at: 2018-02-19 16:17:18

End at: 2018-02-19 16:17:48

Local clock offset: 2.152 ms

Remote clock offset: -6.558 ms

Below is generated by plot.py at 2018-02-19 18:35:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 11.66 Mbit/s

95th percentile per-packet one-way delay: 183.494 ms

Loss rate: 0.55%

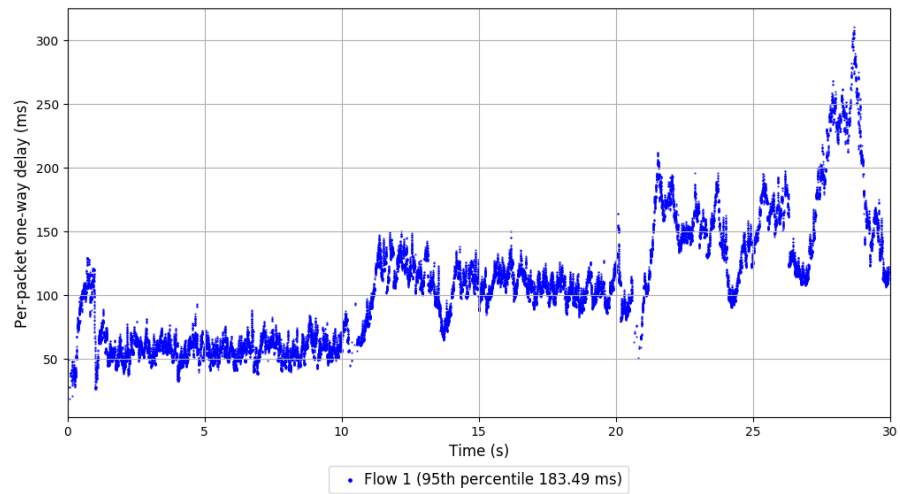
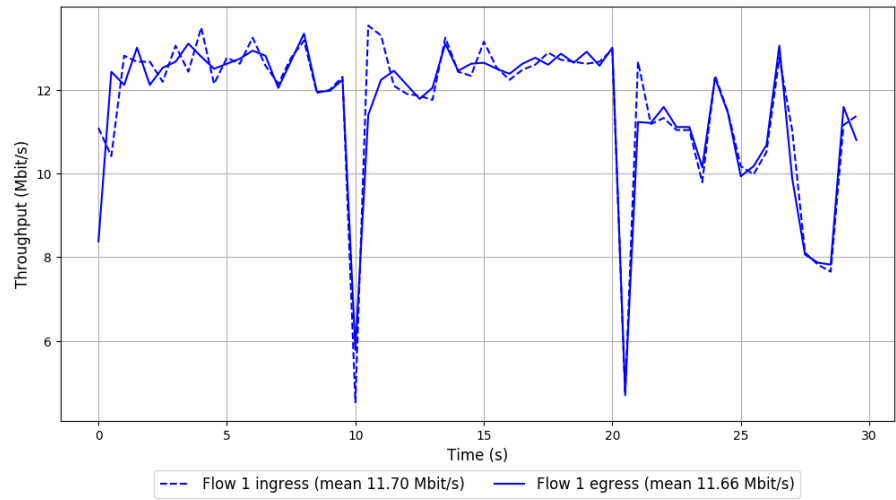
-- Flow 1:

Average throughput: 11.66 Mbit/s

95th percentile per-packet one-way delay: 183.494 ms

Loss rate: 0.55%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-02-19 16:40:53

End at: 2018-02-19 16:41:23

Local clock offset: 2.336 ms

Remote clock offset: -4.945 ms

Below is generated by plot.py at 2018-02-19 18:35:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.35 Mbit/s

95th percentile per-packet one-way delay: 174.673 ms

Loss rate: 0.59%

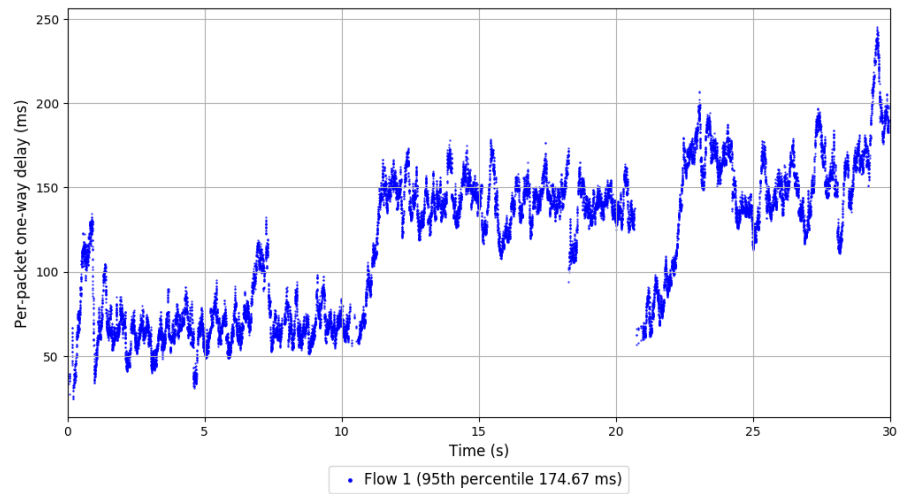
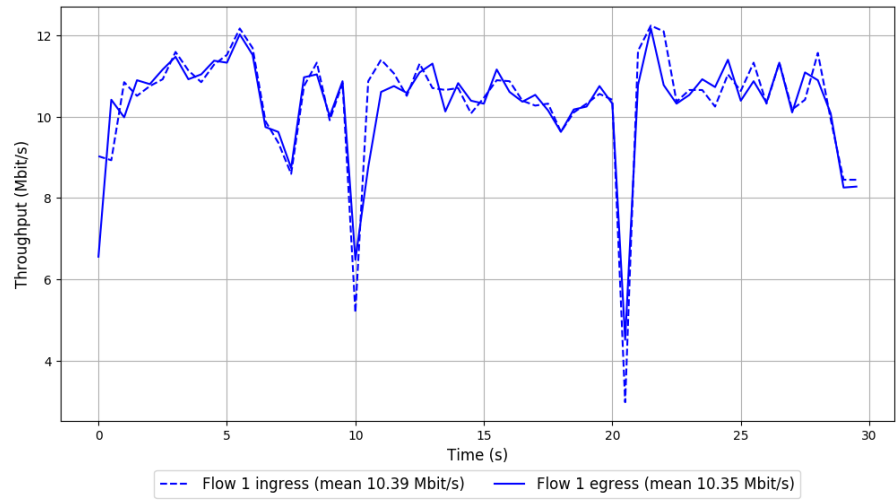
-- Flow 1:

Average throughput: 10.35 Mbit/s

95th percentile per-packet one-way delay: 174.673 ms

Loss rate: 0.59%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-02-19 17:04:27

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

Local clock offset: 1.717 ms

Remote clock offset: -4.853 ms

Below is generated by plot.py at 2018-02-19 18:35:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.75 Mbit/s

95th percentile per-packet one-way delay: 188.358 ms

Loss rate: 0.44%

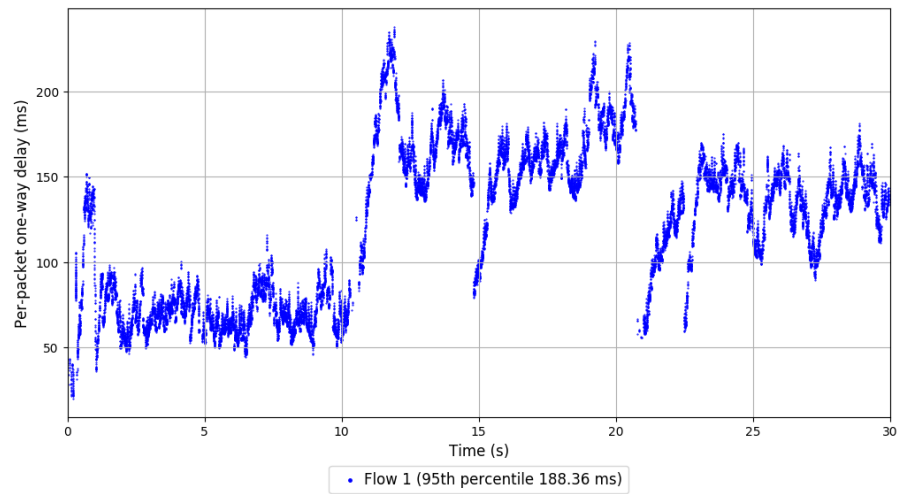
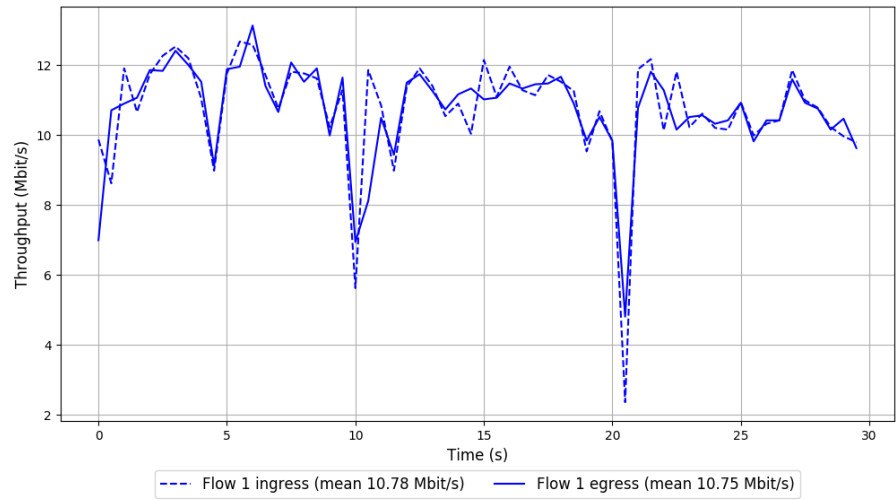
-- Flow 1:

Average throughput: 10.75 Mbit/s

95th percentile per-packet one-way delay: 188.358 ms

Loss rate: 0.44%

Run 3: Report of TCP BBR — Data Link

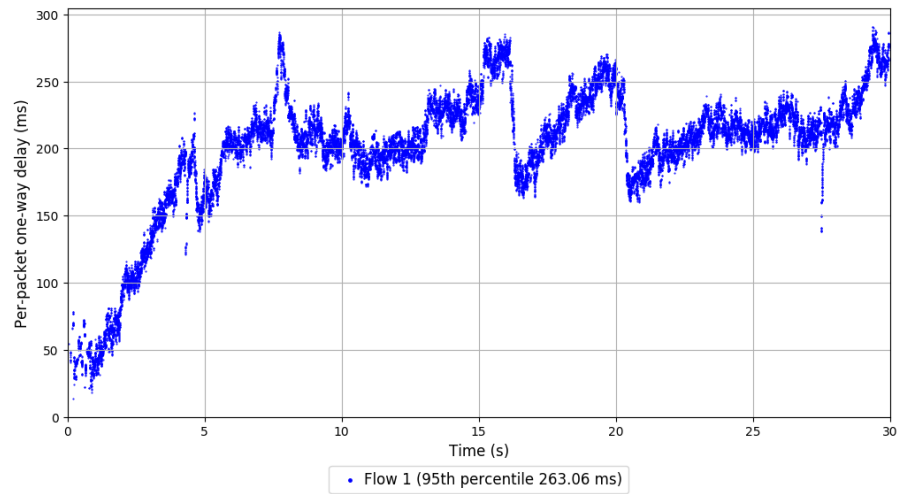
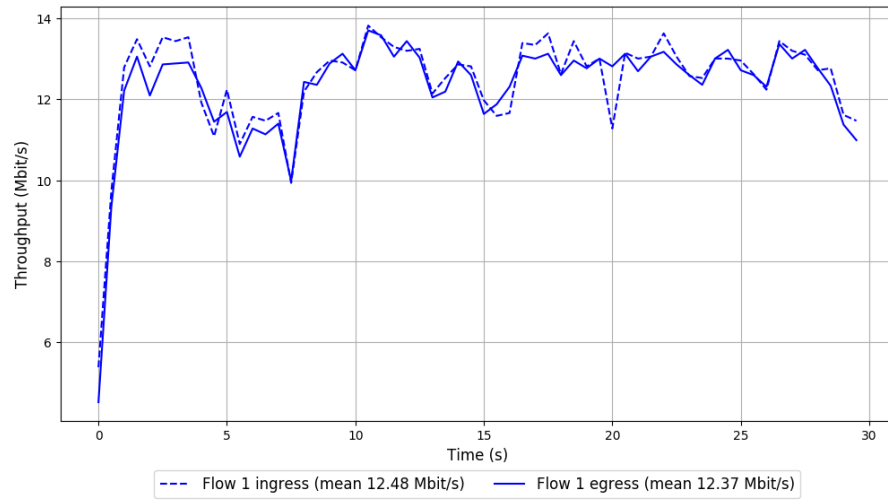


Run 1: Statistics of TCP Cubic

Start at: 2018-02-19 16:13:22
End at: 2018-02-19 16:13:52
Local clock offset: 2.177 ms
Remote clock offset: -6.589 ms

Below is generated by plot.py at 2018-02-19 18:35:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 12.37 Mbit/s
95th percentile per-packet one-way delay: 263.061 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 12.37 Mbit/s
95th percentile per-packet one-way delay: 263.061 ms
Loss rate: 1.14%

Run 1: Report of TCP Cubic — Data Link

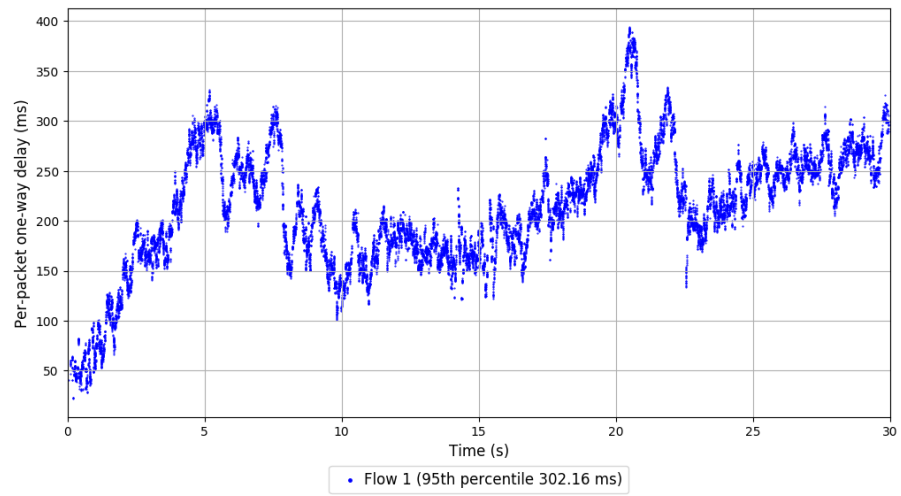
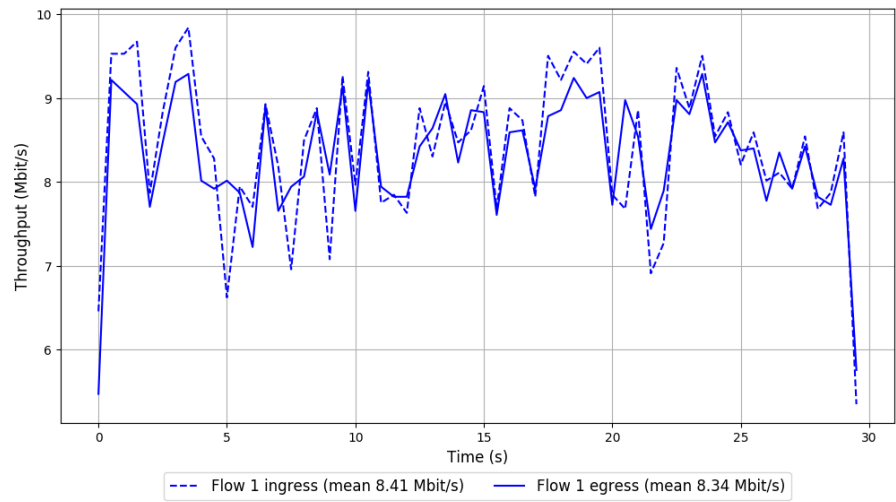


Run 2: Statistics of TCP Cubic

Start at: 2018-02-19 16:36:57
End at: 2018-02-19 16:37:27
Local clock offset: 2.365 ms
Remote clock offset: -5.201 ms

Below is generated by plot.py at 2018-02-19 18:35:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.34 Mbit/s
95th percentile per-packet one-way delay: 302.158 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 8.34 Mbit/s
95th percentile per-packet one-way delay: 302.158 ms
Loss rate: 1.03%

Run 2: Report of TCP Cubic — Data Link

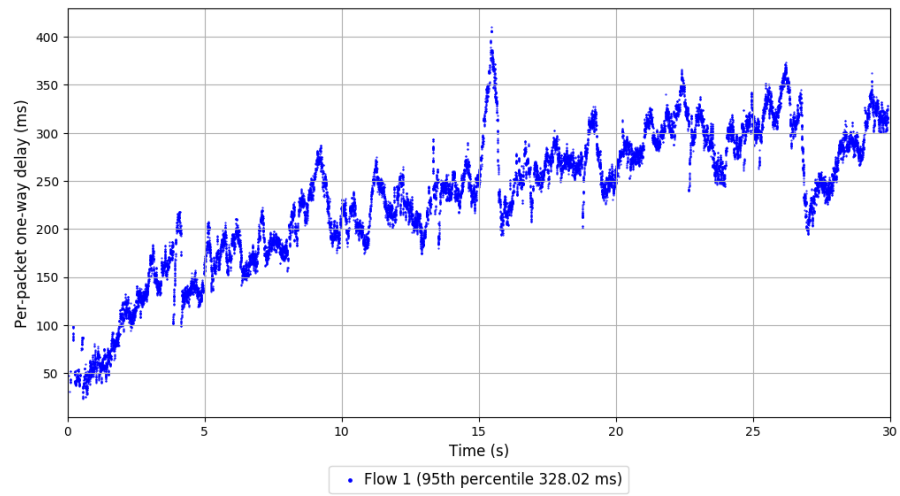
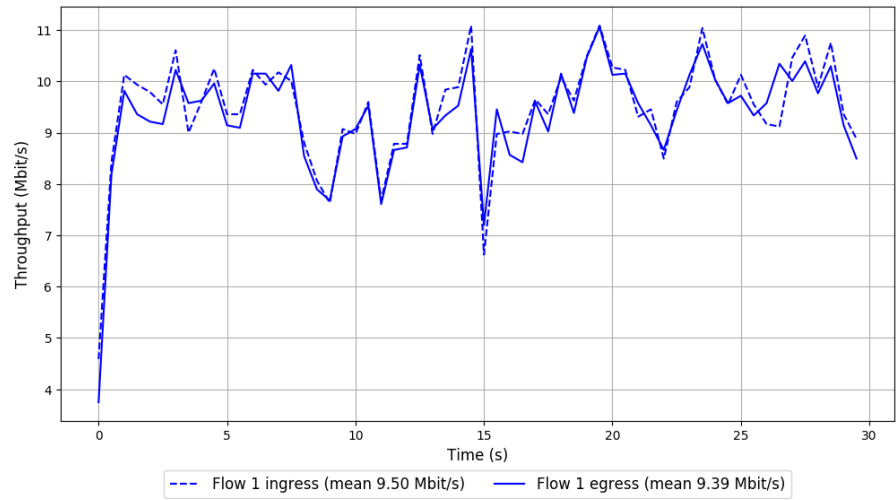


Run 3: Statistics of TCP Cubic

Start at: 2018-02-19 17:00:31
End at: 2018-02-19 17:01:01
Local clock offset: 1.67 ms
Remote clock offset: -4.192 ms

Below is generated by plot.py at 2018-02-19 18:35:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.39 Mbit/s
95th percentile per-packet one-way delay: 328.016 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 9.39 Mbit/s
95th percentile per-packet one-way delay: 328.016 ms
Loss rate: 1.33%

Run 3: Report of TCP Cubic — Data Link

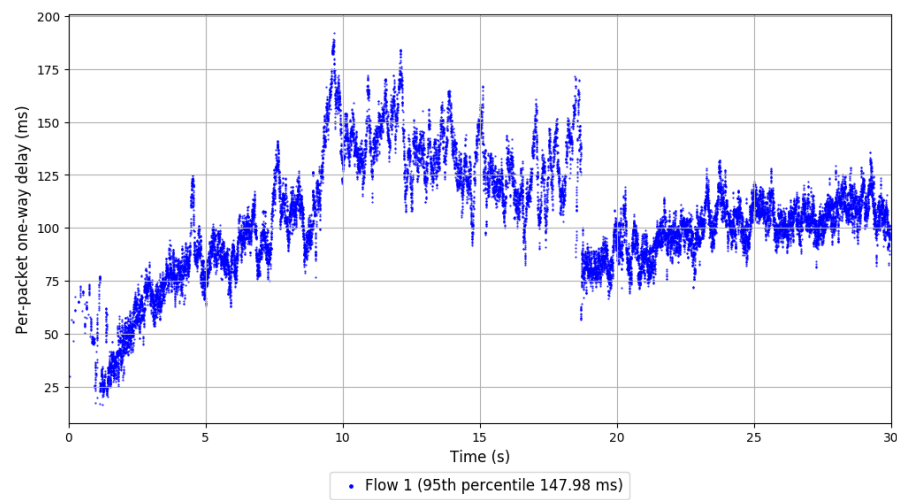
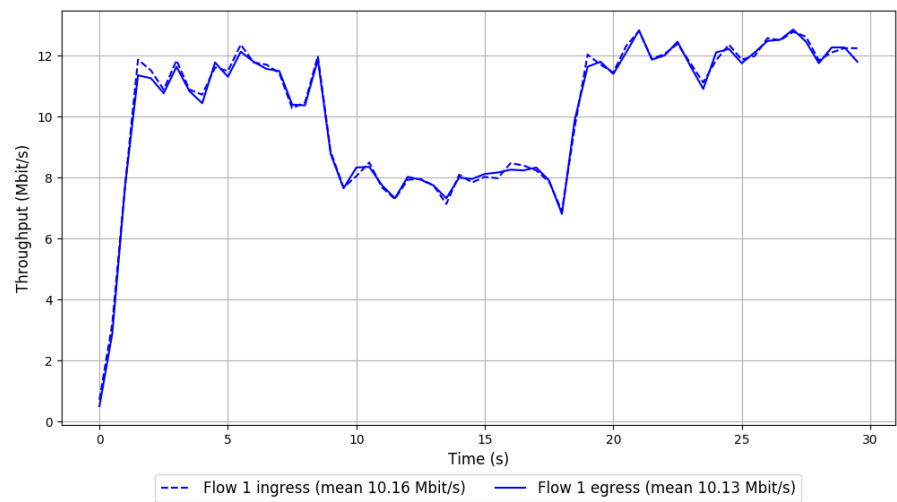


```
Run 1: Statistics of LEDBAT

Start at: 2018-02-19 16:30:24
End at: 2018-02-19 16:30:54
Local clock offset: 2.307 ms
Remote clock offset: -5.796 ms

# Below is generated by plot.py at 2018-02-19 18:35:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.13 Mbit/s
95th percentile per-packet one-way delay: 147.982 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 10.13 Mbit/s
95th percentile per-packet one-way delay: 147.982 ms
Loss rate: 0.50%
```


Run 1: Report of LEDBAT — Data Link

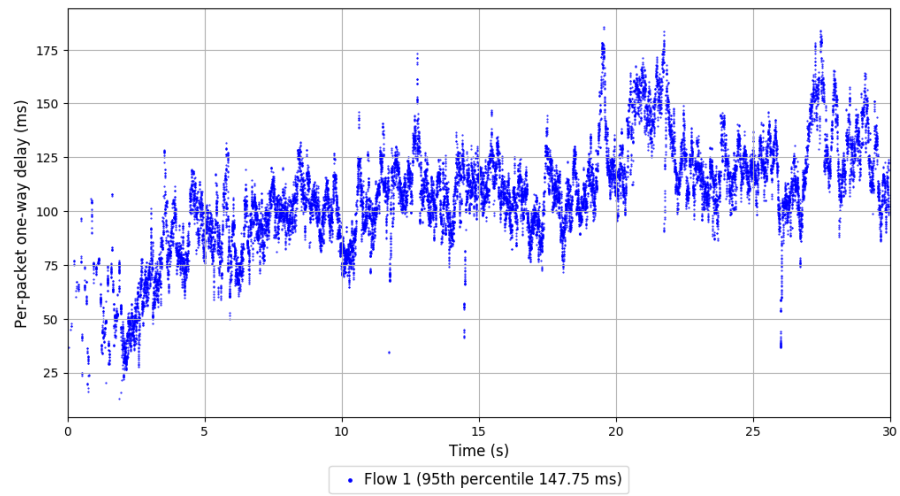
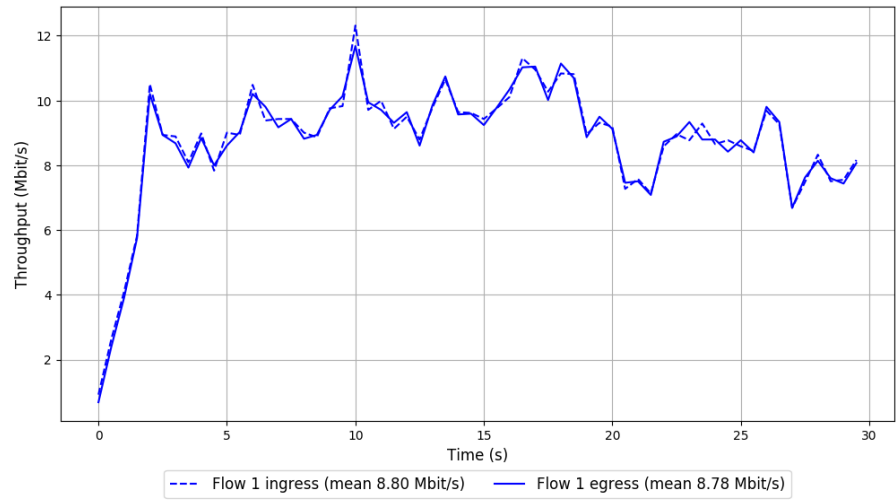


Run 2: Statistics of LEDBAT

Start at: 2018-02-19 16:53:58
End at: 2018-02-19 16:54:28
Local clock offset: 1.77 ms
Remote clock offset: -4.022 ms

Below is generated by plot.py at 2018-02-19 18:35:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.78 Mbit/s
95th percentile per-packet one-way delay: 147.750 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 8.78 Mbit/s
95th percentile per-packet one-way delay: 147.750 ms
Loss rate: 0.40%

Run 2: Report of LEDBAT — Data Link

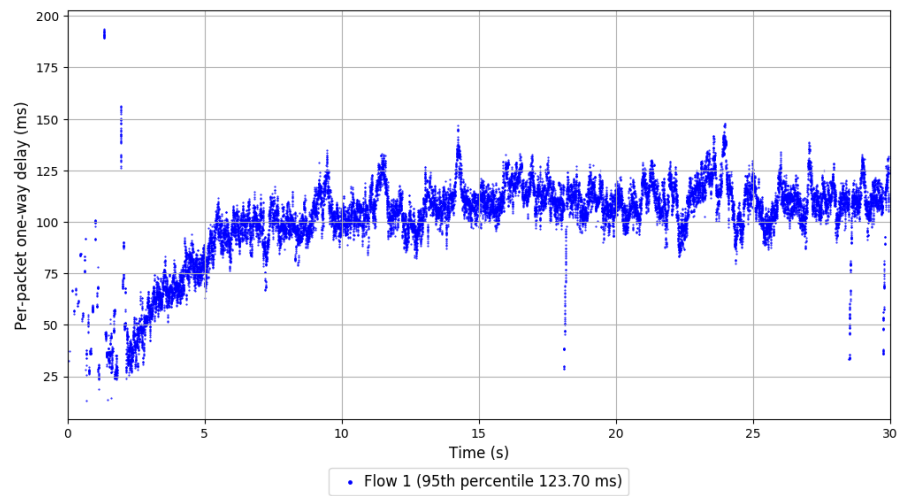
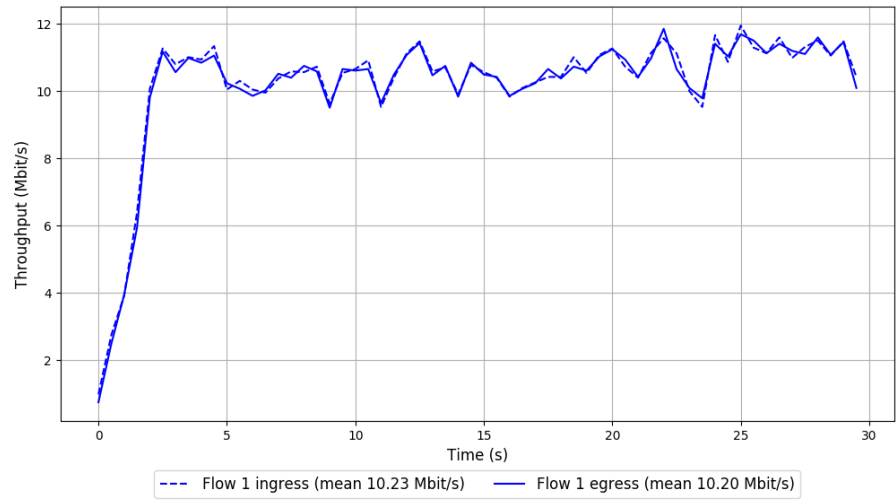


Run 3: Statistics of LEDBAT

Start at: 2018-02-19 17:17:33
End at: 2018-02-19 17:18:03
Local clock offset: 1.368 ms
Remote clock offset: -5.429 ms

Below is generated by plot.py at 2018-02-19 18:35:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.20 Mbit/s
95th percentile per-packet one-way delay: 123.704 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 10.20 Mbit/s
95th percentile per-packet one-way delay: 123.704 ms
Loss rate: 0.46%

Run 3: Report of LEDBAT — Data Link

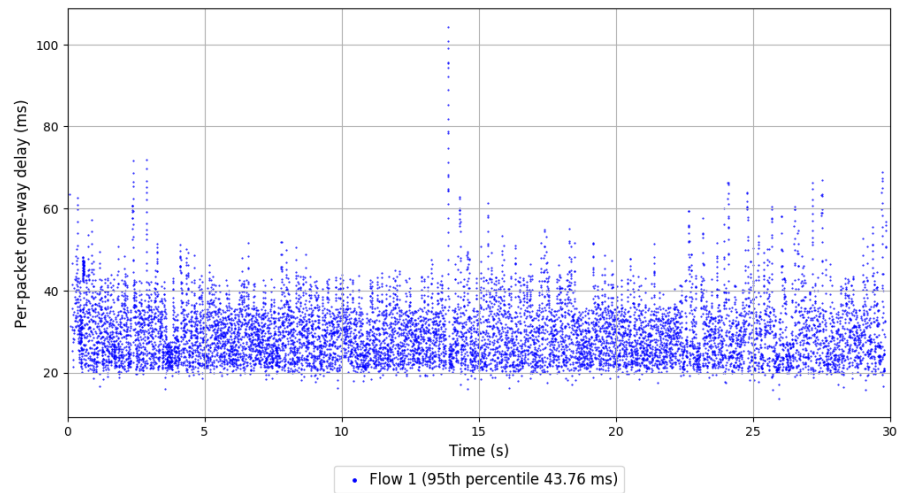
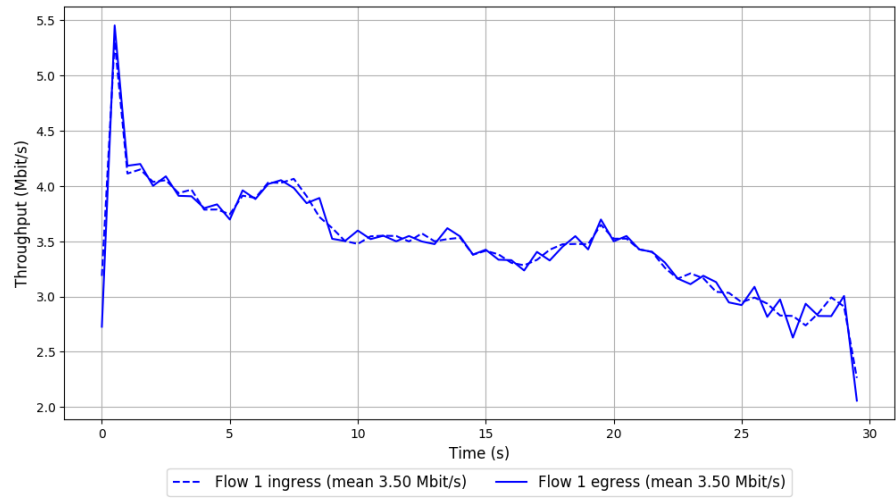


Run 1: Statistics of PCC

Start at: 2018-02-19 16:21:14
End at: 2018-02-19 16:21:44
Local clock offset: 2.229 ms
Remote clock offset: -6.616 ms

Below is generated by plot.py at 2018-02-19 18:35:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.50 Mbit/s
95th percentile per-packet one-way delay: 43.755 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 3.50 Mbit/s
95th percentile per-packet one-way delay: 43.755 ms
Loss rate: 0.22%

Run 1: Report of PCC — Data Link

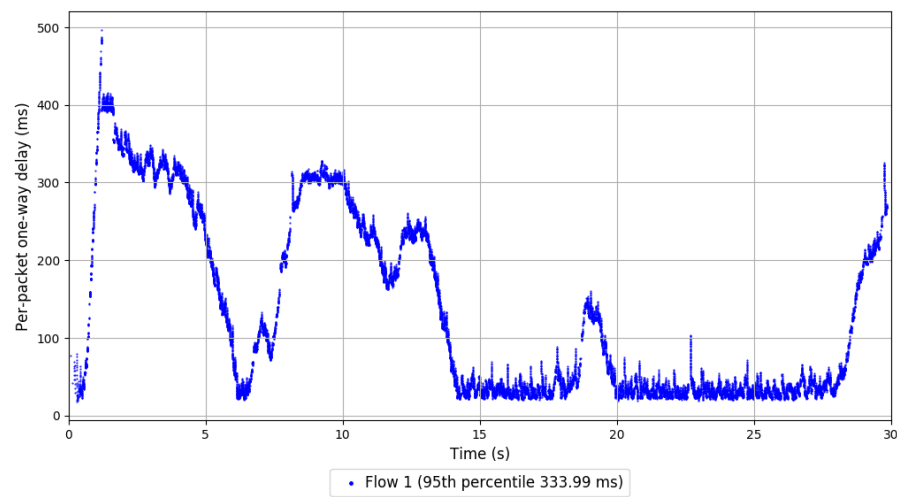
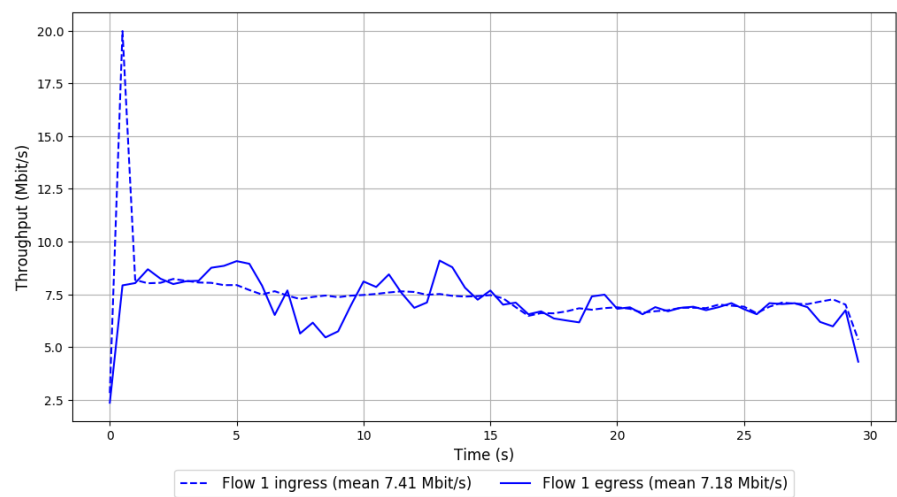


Run 2: Statistics of PCC

Start at: 2018-02-19 16:44:49
End at: 2018-02-19 16:45:19
Local clock offset: 2.228 ms
Remote clock offset: -4.596 ms

Below is generated by plot.py at 2018-02-19 18:35:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.18 Mbit/s
95th percentile per-packet one-way delay: 333.992 ms
Loss rate: 3.40%
-- Flow 1:
Average throughput: 7.18 Mbit/s
95th percentile per-packet one-way delay: 333.992 ms
Loss rate: 3.40%

Run 2: Report of PCC — Data Link



Run 3: Statistics of PCC

Start at: 2018-02-19 17:08:23

End at: 2018-02-19 17:08:53

Local clock offset: 1.729 ms

Remote clock offset: -5.15 ms

Below is generated by plot.py at 2018-02-19 18:35:14

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.43 Mbit/s

95th percentile per-packet one-way delay: 381.529 ms

Loss rate: 0.91%

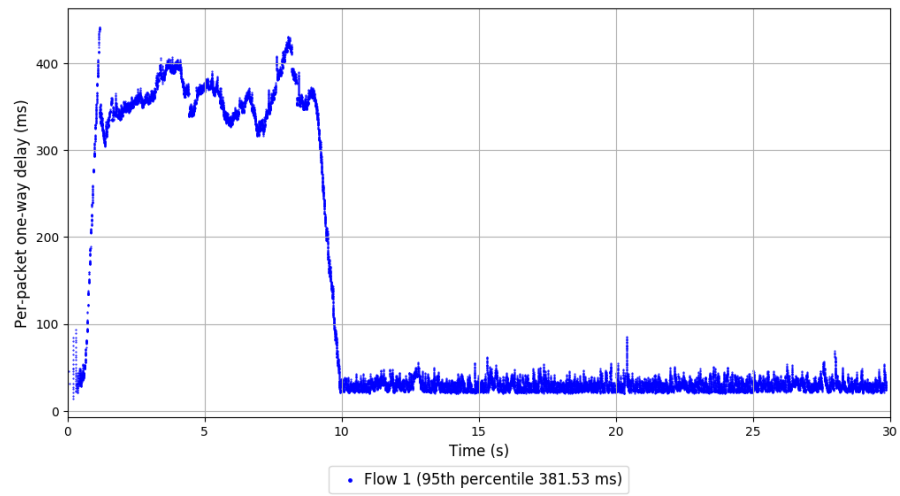
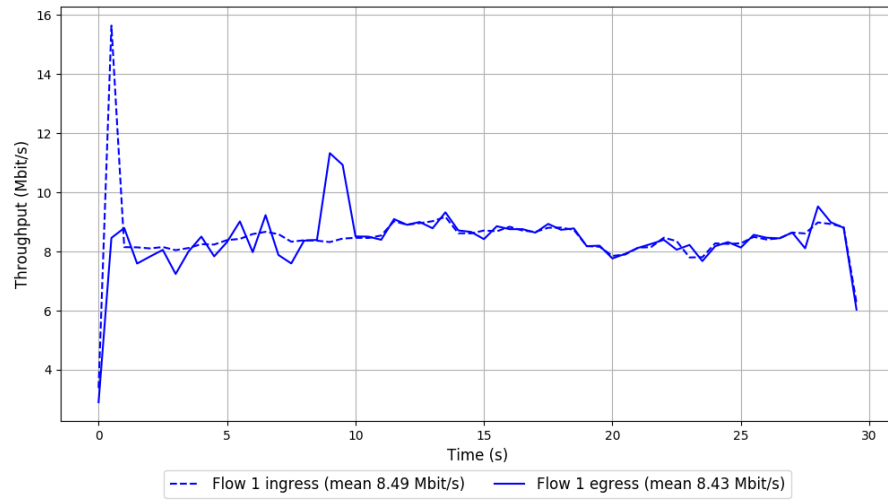
-- Flow 1:

Average throughput: 8.43 Mbit/s

95th percentile per-packet one-way delay: 381.529 ms

Loss rate: 0.91%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-02-19 16:22:33

End at: 2018-02-19 16:23:03

Local clock offset: 2.121 ms

Remote clock offset: -6.562 ms

Below is generated by plot.py at 2018-02-19 18:35:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.30 Mbit/s

95th percentile per-packet one-way delay: 355.613 ms

Loss rate: 1.60%

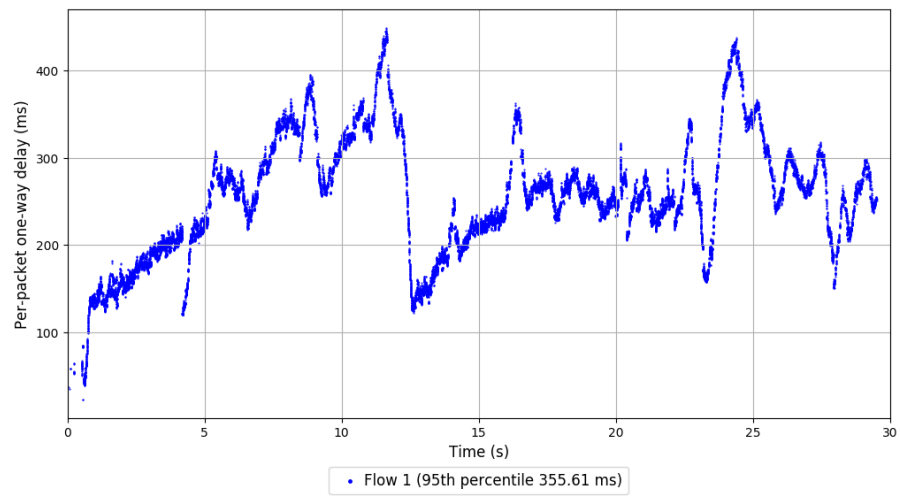
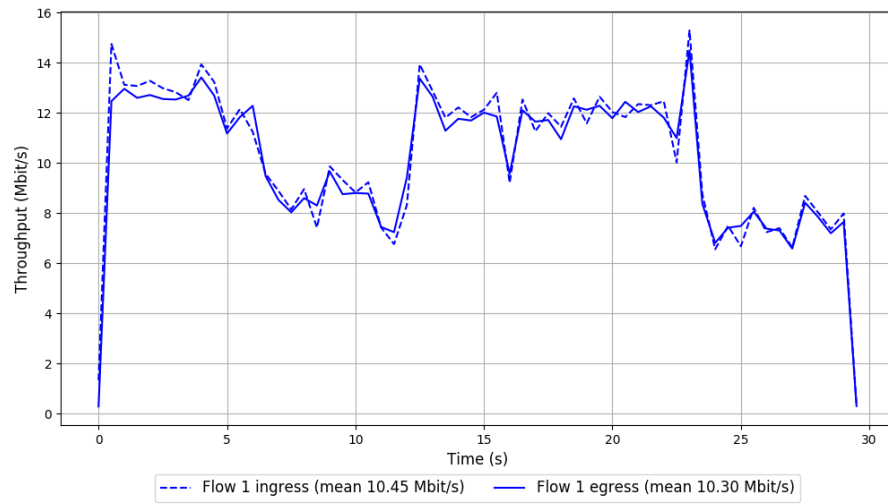
-- Flow 1:

Average throughput: 10.30 Mbit/s

95th percentile per-packet one-way delay: 355.613 ms

Loss rate: 1.60%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-02-19 16:46:07

End at: 2018-02-19 16:46:37

Local clock offset: 2.138 ms

Remote clock offset: -4.607 ms

Below is generated by plot.py at 2018-02-19 18:35:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.84 Mbit/s

95th percentile per-packet one-way delay: 301.971 ms

Loss rate: 2.22%

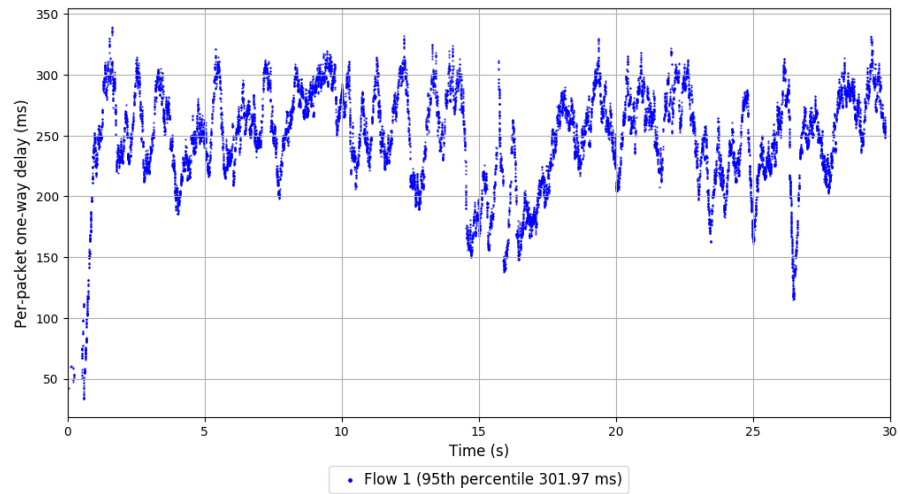
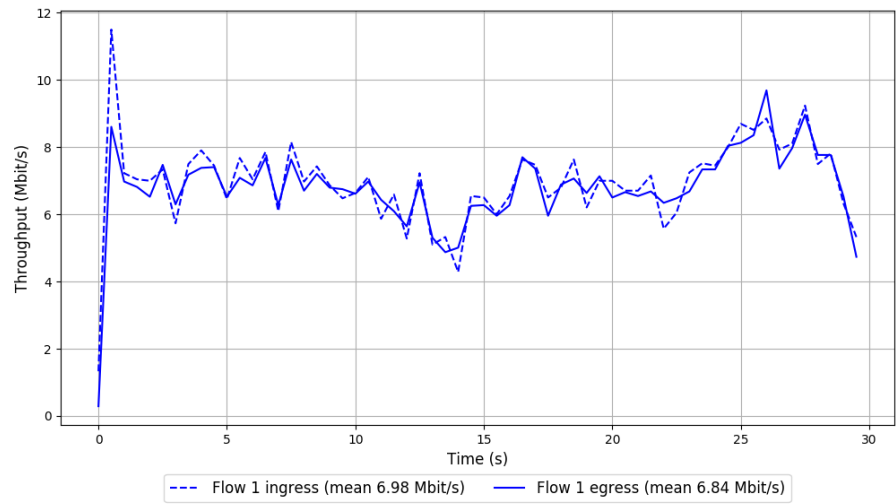
-- Flow 1:

Average throughput: 6.84 Mbit/s

95th percentile per-packet one-way delay: 301.971 ms

Loss rate: 2.22%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-02-19 17:09:41

End at: 2018-02-19 17:10:11

Local clock offset: 1.696 ms

Remote clock offset: -5.281 ms

Below is generated by plot.py at 2018-02-19 18:35:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.69 Mbit/s

95th percentile per-packet one-way delay: 348.905 ms

Loss rate: 2.53%

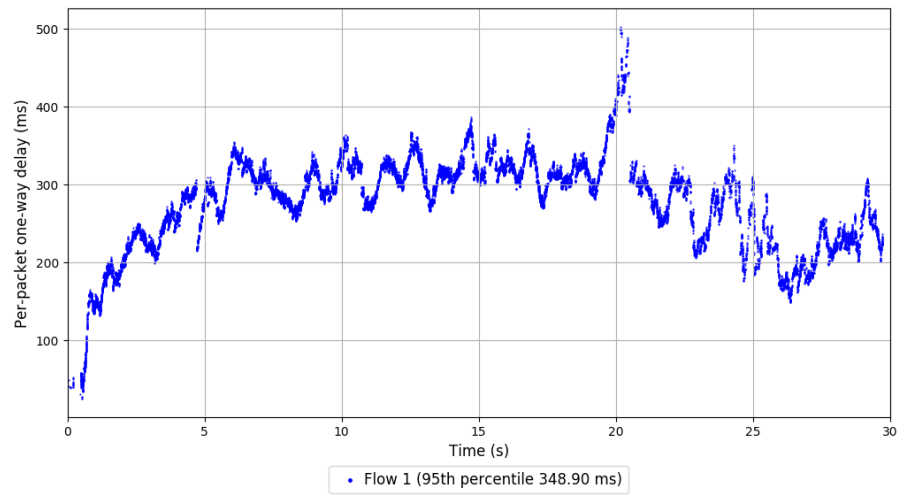
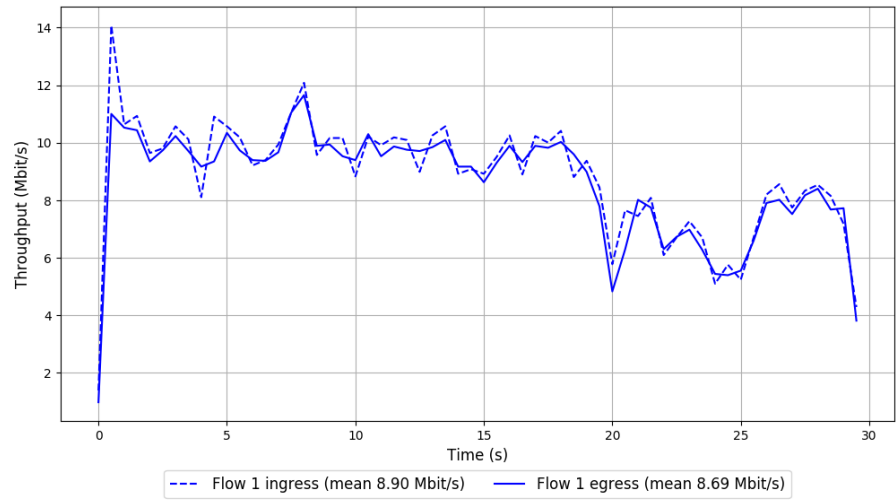
-- Flow 1:

Average throughput: 8.69 Mbit/s

95th percentile per-packet one-way delay: 348.905 ms

Loss rate: 2.53%

Run 3: Report of QUIC Cubic — Data Link

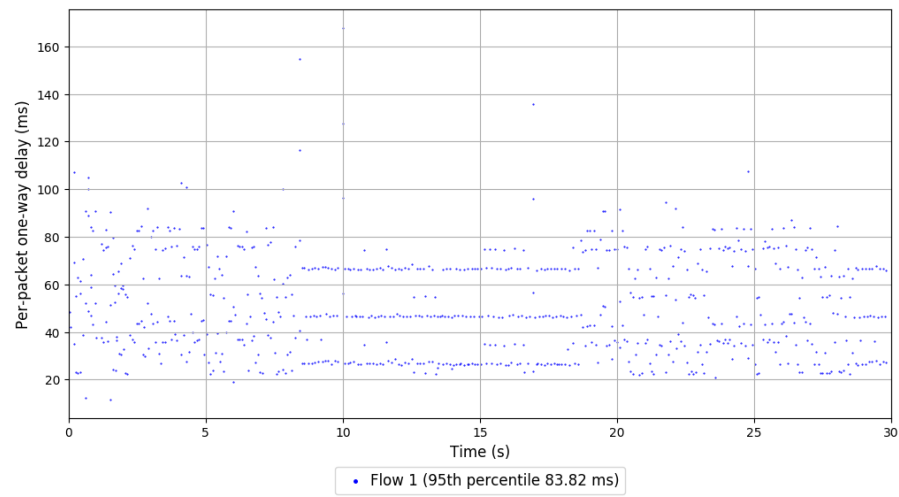
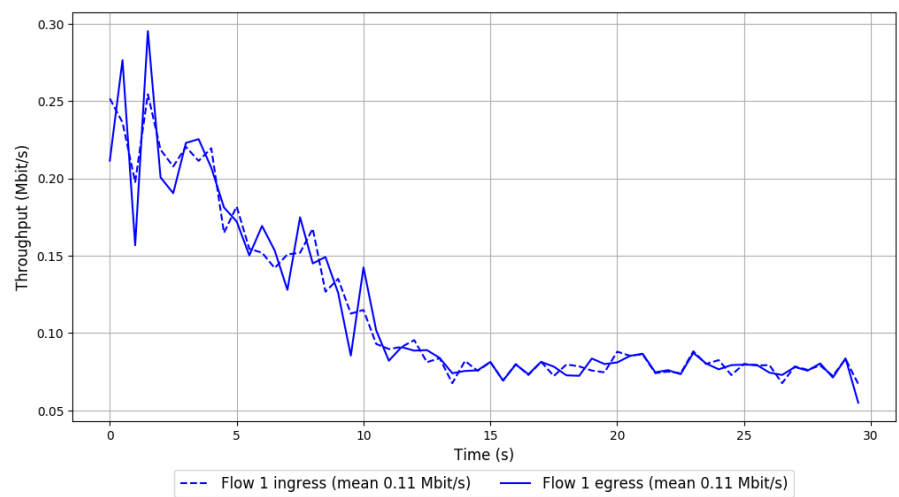


```
Run 1: Statistics of SCReAM

Start at: 2018-02-19 16:26:29
End at: 2018-02-19 16:26:59
Local clock offset: 2.161 ms
Remote clock offset: -6.289 ms

# Below is generated by plot.py at 2018-02-19 18:35:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 83.820 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 83.820 ms
Loss rate: 0.26%
```

Run 1: Report of SReAM — Data Link

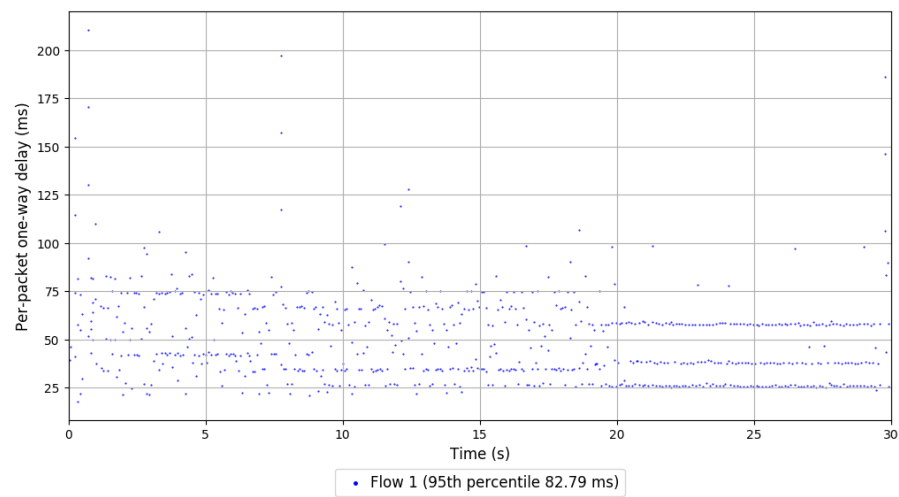
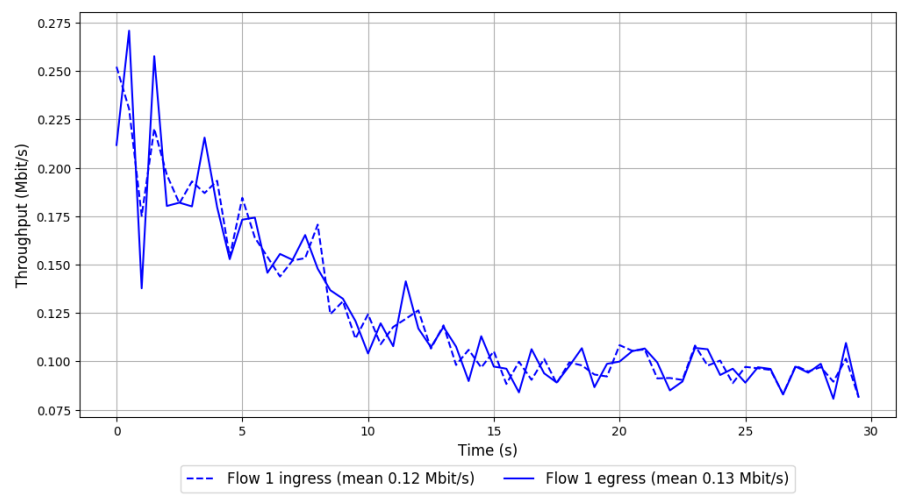


Run 2: Statistics of SCReAM

Start at: 2018-02-19 16:50:03
End at: 2018-02-19 16:50:33
Local clock offset: 1.888 ms
Remote clock offset: -4.361 ms

Below is generated by plot.py at 2018-02-19 18:35:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 82.786 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 82.786 ms
Loss rate: 0.10%

Run 2: Report of SReAM — Data Link

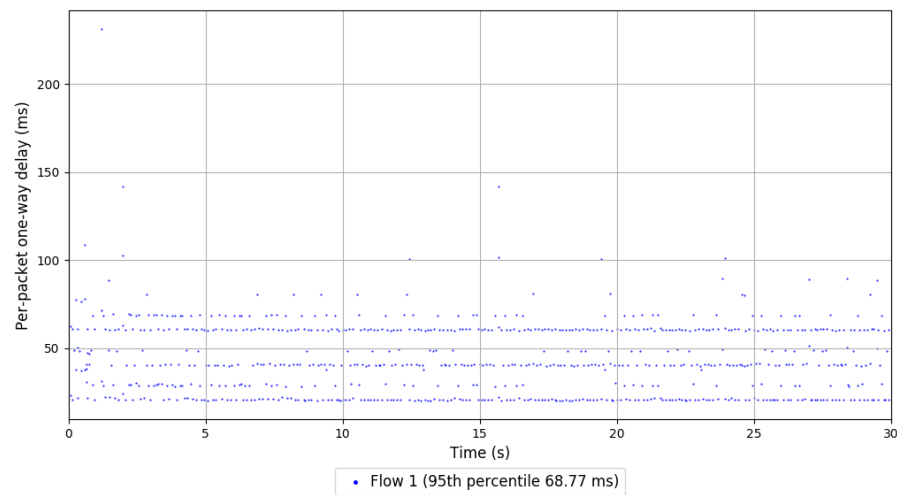
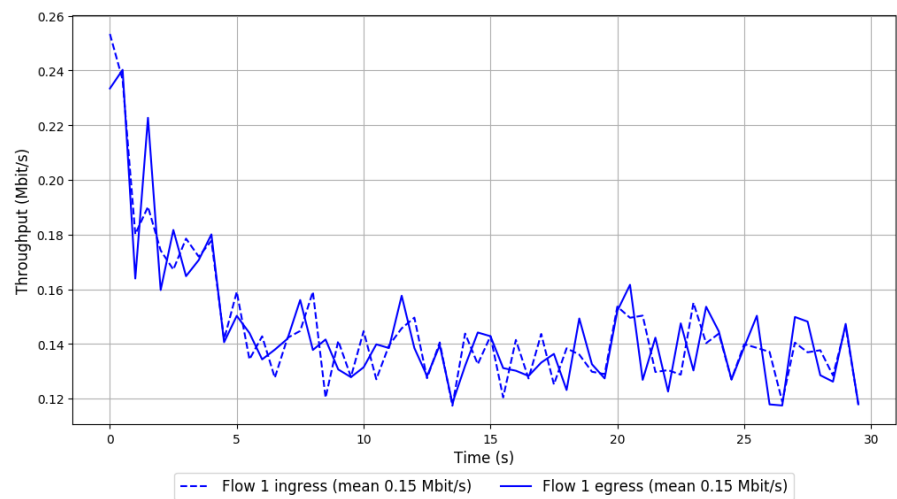


Run 3: Statistics of SCReAM

Start at: 2018-02-19 17:13:37
End at: 2018-02-19 17:14:07
Local clock offset: 1.665 ms
Remote clock offset: -5.451 ms

Below is generated by plot.py at 2018-02-19 18:35:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 68.772 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 68.772 ms
Loss rate: 0.12%

Run 3: Report of SReAM — Data Link

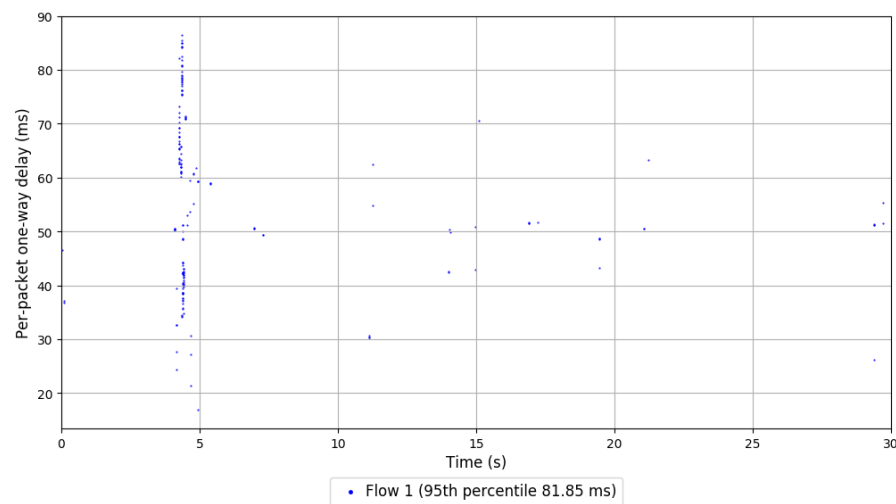
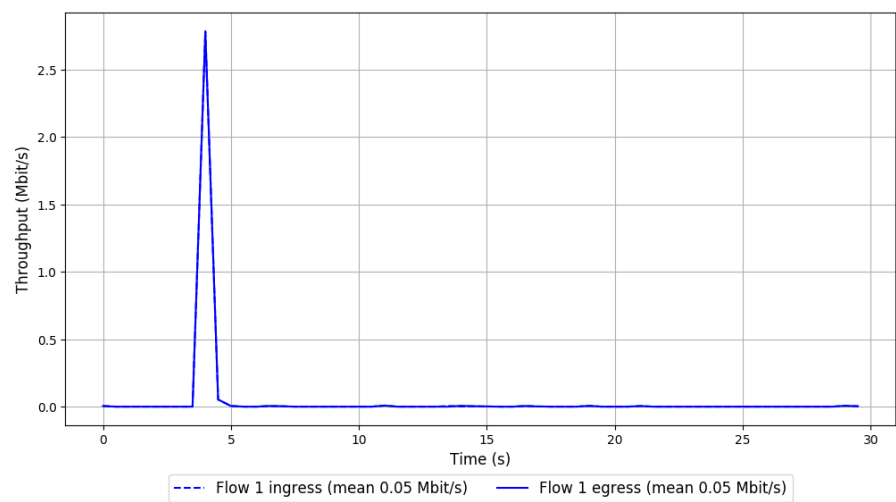


```
Run 1: Statistics of WebRTC media

Start at: 2018-02-19 16:18:37
End at: 2018-02-19 16:19:07
Local clock offset: 2.225 ms
Remote clock offset: -6.639 ms

# Below is generated by plot.py at 2018-02-19 18:35:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 81.852 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 81.852 ms
Loss rate: 0.00%
```


Run 1: Report of WebRTC media — Data Link

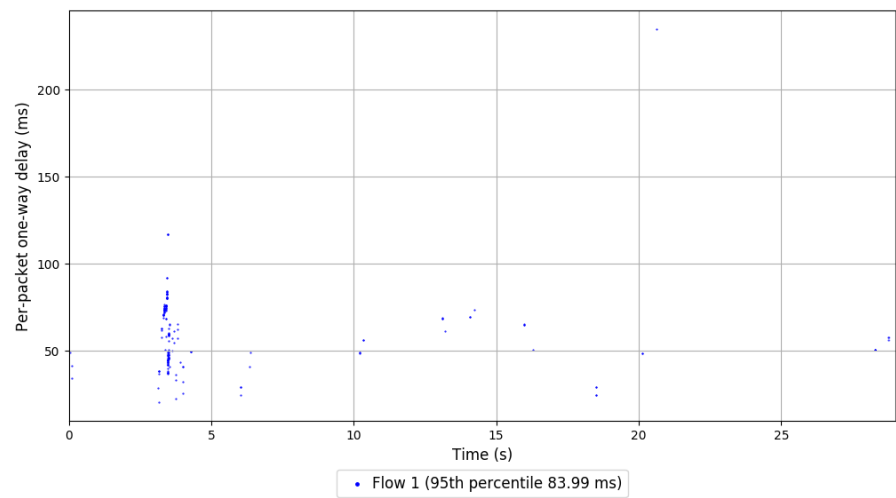
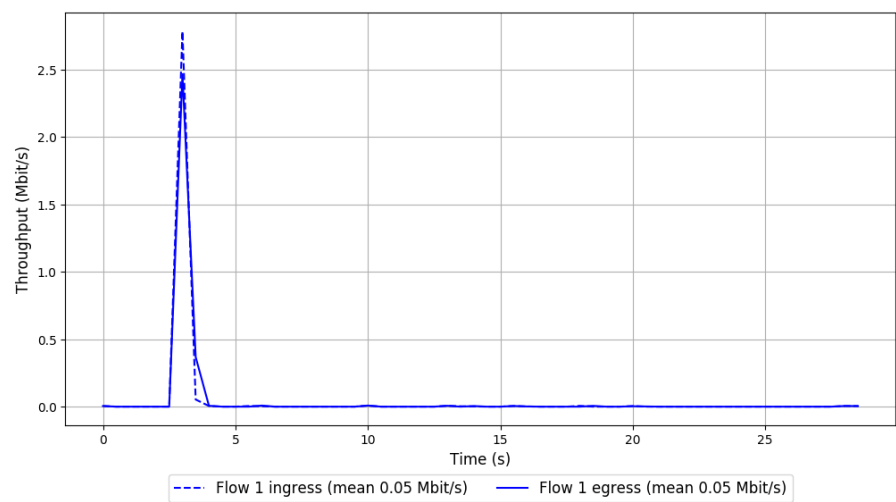


Run 2: Statistics of WebRTC media

Start at: 2018-02-19 16:42:12
End at: 2018-02-19 16:42:42
Local clock offset: 2.408 ms
Remote clock offset: -4.833 ms

Below is generated by plot.py at 2018-02-19 18:35:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 83.991 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 83.991 ms
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

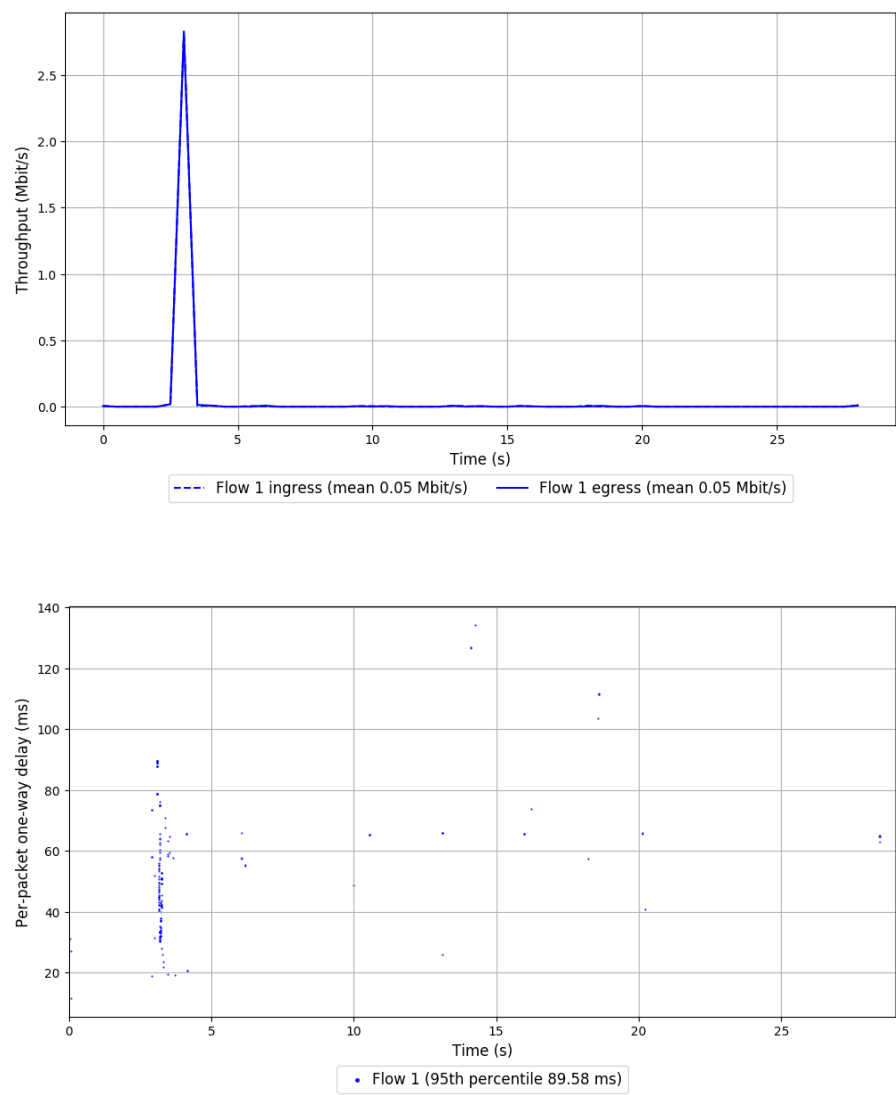


Run 3: Statistics of WebRTC media

Start at: 2018-02-19 17:05:46
End at: 2018-02-19 17:06:16
Local clock offset: 1.721 ms
Remote clock offset: -4.987 ms

Below is generated by plot.py at 2018-02-19 18:35:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 89.575 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 89.575 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

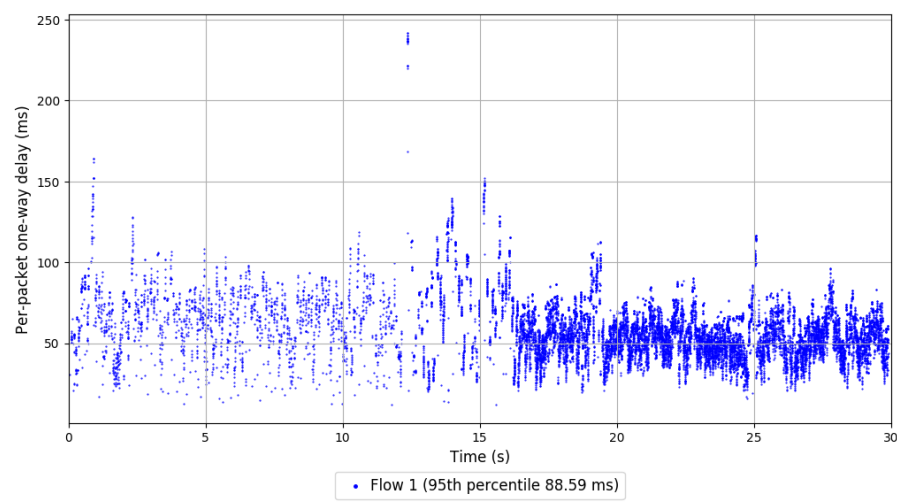
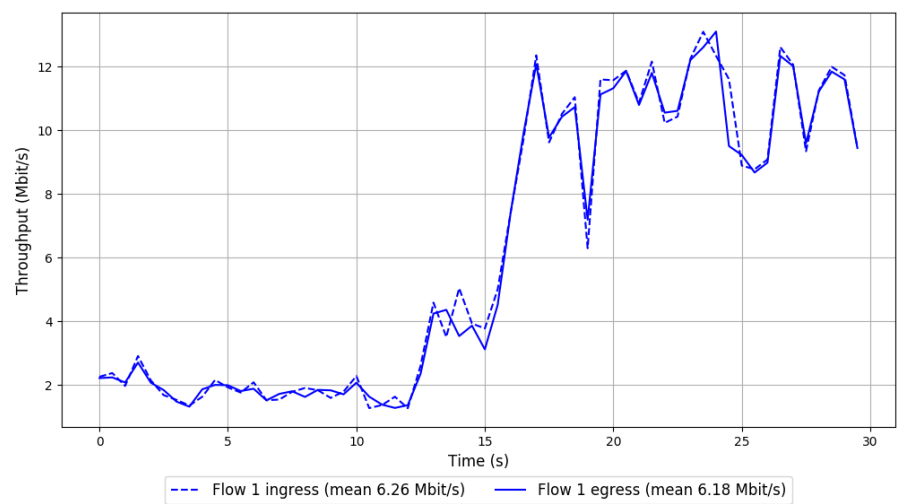


Run 1: Statistics of Sprout

Start at: 2018-02-19 16:25:10
End at: 2018-02-19 16:25:40
Local clock offset: 2.251 ms
Remote clock offset: -6.491 ms

Below is generated by plot.py at 2018-02-19 18:35:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.18 Mbit/s
95th percentile per-packet one-way delay: 88.588 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 6.18 Mbit/s
95th percentile per-packet one-way delay: 88.588 ms
Loss rate: 1.34%

Run 1: Report of Sprout — Data Link

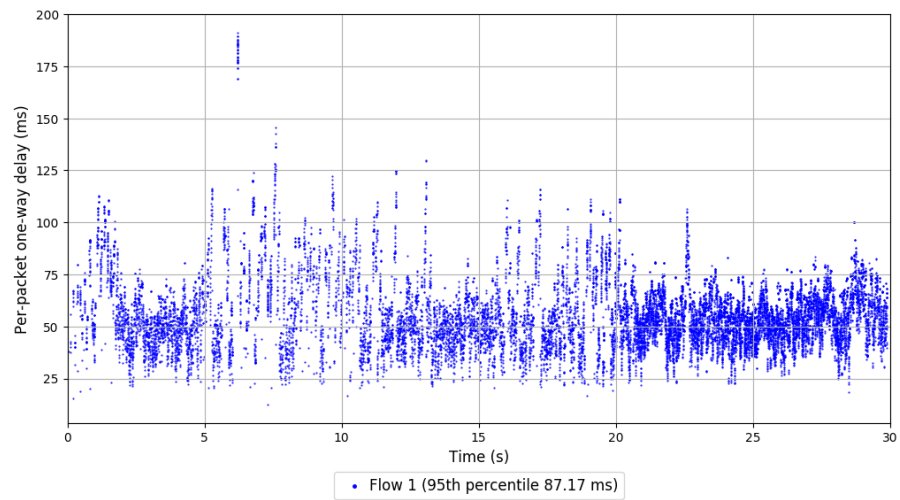
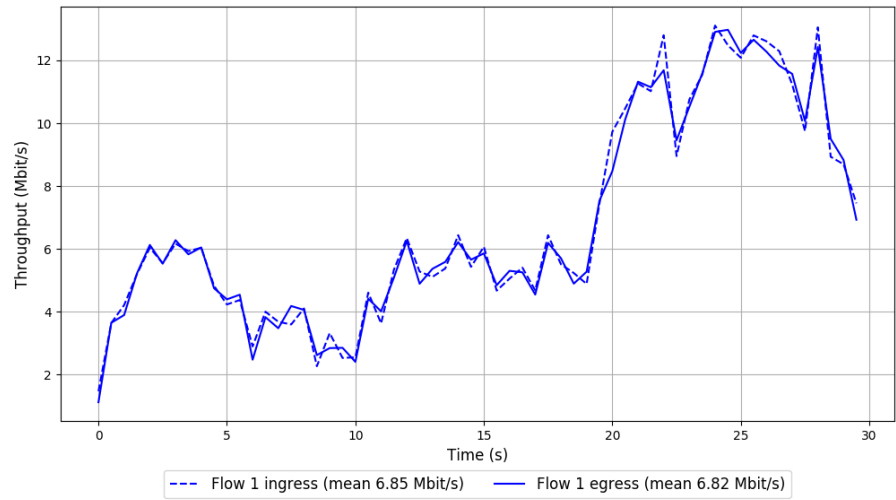


Run 2: Statistics of Sprout

Start at: 2018-02-19 16:48:44
End at: 2018-02-19 16:49:14
Local clock offset: 2.014 ms
Remote clock offset: -4.432 ms

Below is generated by plot.py at 2018-02-19 18:35:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.82 Mbit/s
95th percentile per-packet one-way delay: 87.170 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 6.82 Mbit/s
95th percentile per-packet one-way delay: 87.170 ms
Loss rate: 0.74%

Run 2: Report of Sprout — Data Link

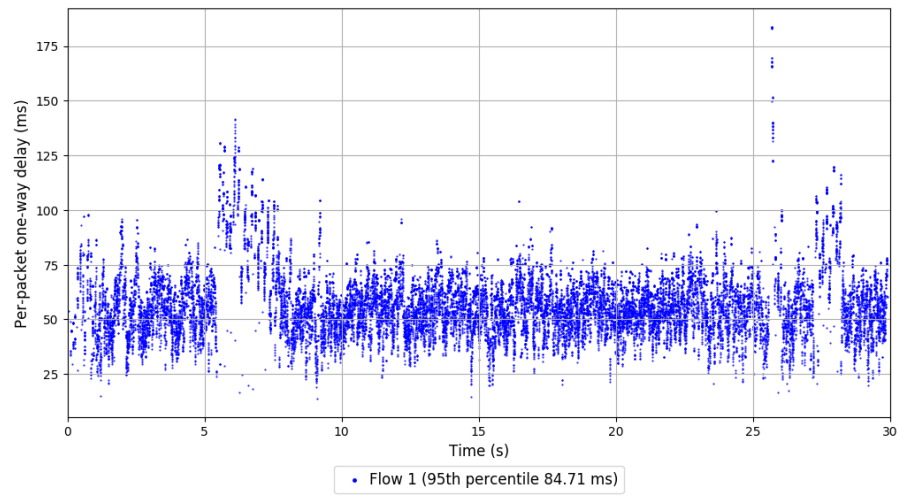
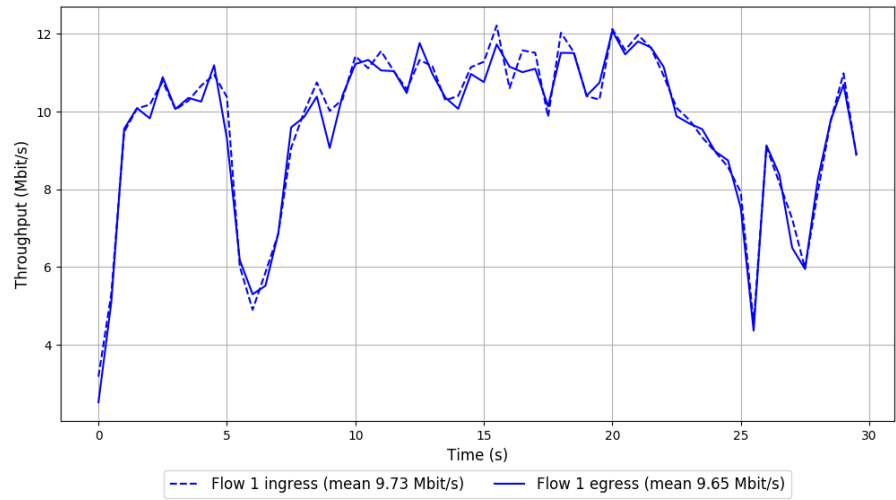


Run 3: Statistics of Sprout

Start at: 2018-02-19 17:12:19
End at: 2018-02-19 17:12:49
Local clock offset: 1.677 ms
Remote clock offset: -5.358 ms

Below is generated by plot.py at 2018-02-19 18:35:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.65 Mbit/s
95th percentile per-packet one-way delay: 84.711 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 9.65 Mbit/s
95th percentile per-packet one-way delay: 84.711 ms
Loss rate: 1.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-02-19 16:15:59

End at: 2018-02-19 16:16:29

Local clock offset: 2.261 ms

Remote clock offset: -6.531 ms

Below is generated by plot.py at 2018-02-19 18:35:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.82 Mbit/s

95th percentile per-packet one-way delay: 89.755 ms

Loss rate: 0.16%

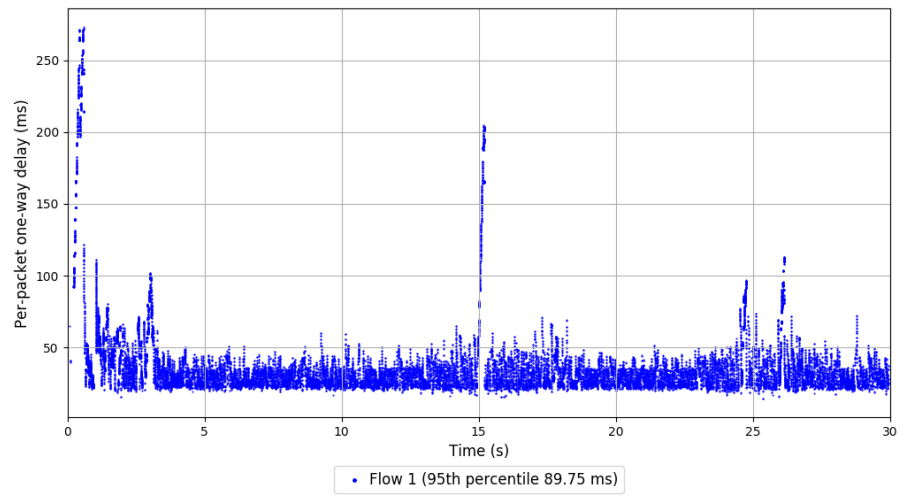
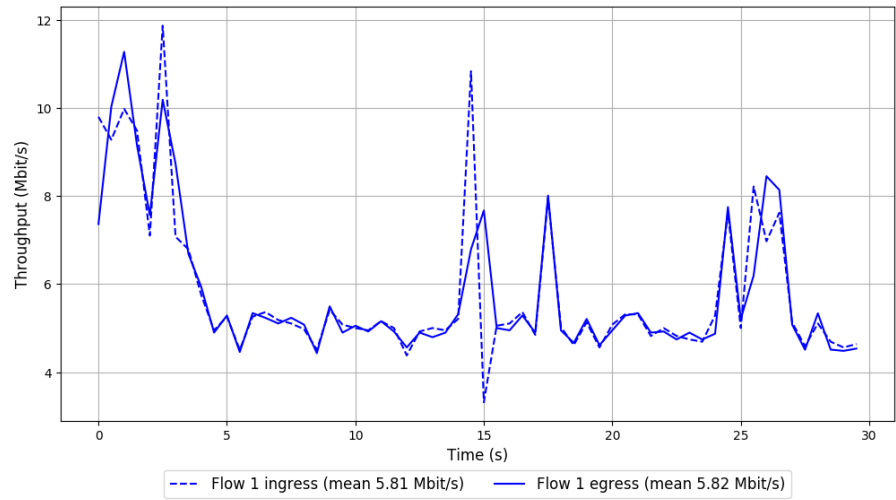
-- Flow 1:

Average throughput: 5.82 Mbit/s

95th percentile per-packet one-way delay: 89.755 ms

Loss rate: 0.16%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-02-19 16:39:34

End at: 2018-02-19 16:40:04

Local clock offset: 2.404 ms

Remote clock offset: -5.021 ms

Below is generated by plot.py at 2018-02-19 18:35:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.87 Mbit/s

95th percentile per-packet one-way delay: 67.022 ms

Loss rate: 0.35%

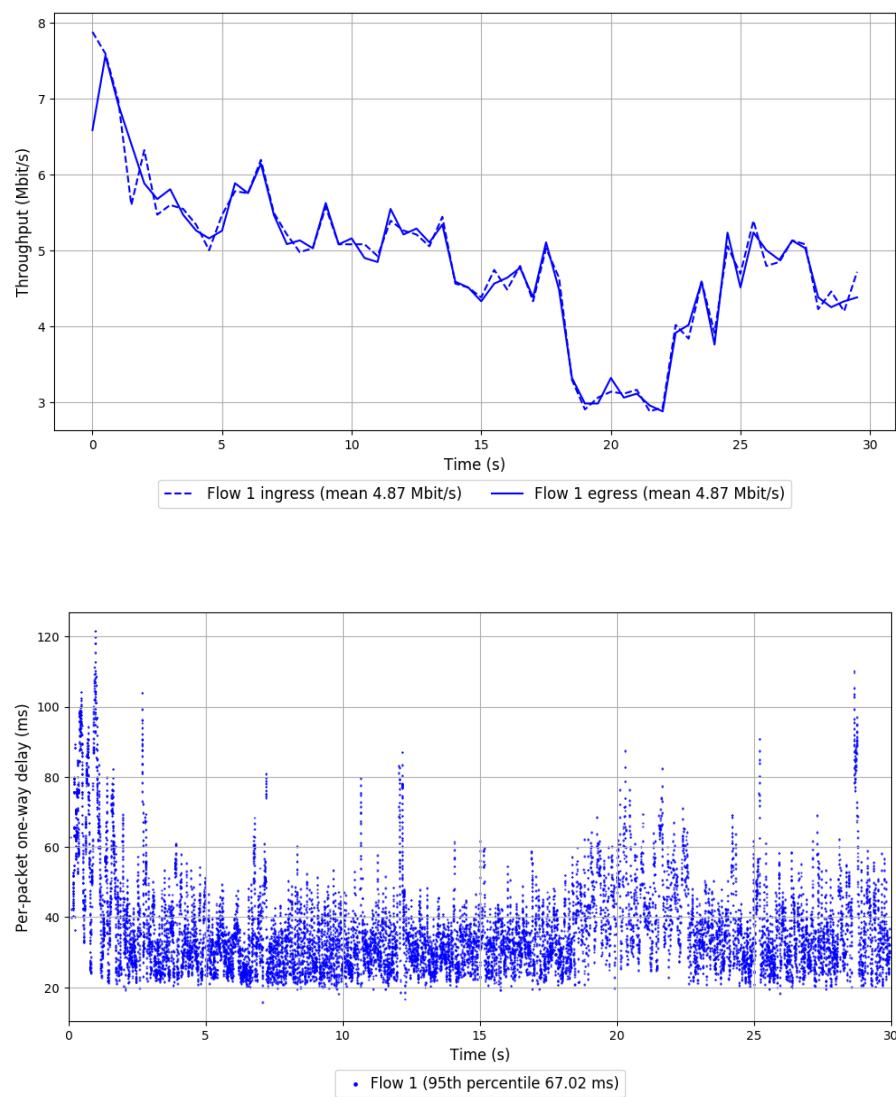
-- Flow 1:

Average throughput: 4.87 Mbit/s

95th percentile per-packet one-way delay: 67.022 ms

Loss rate: 0.35%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-02-19 17:03:08

End at: 2018-02-19 17:03:38

Local clock offset: 1.737 ms

Remote clock offset: -4.681 ms

Below is generated by plot.py at 2018-02-19 18:35:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.31 Mbit/s

95th percentile per-packet one-way delay: 83.566 ms

Loss rate: 0.35%

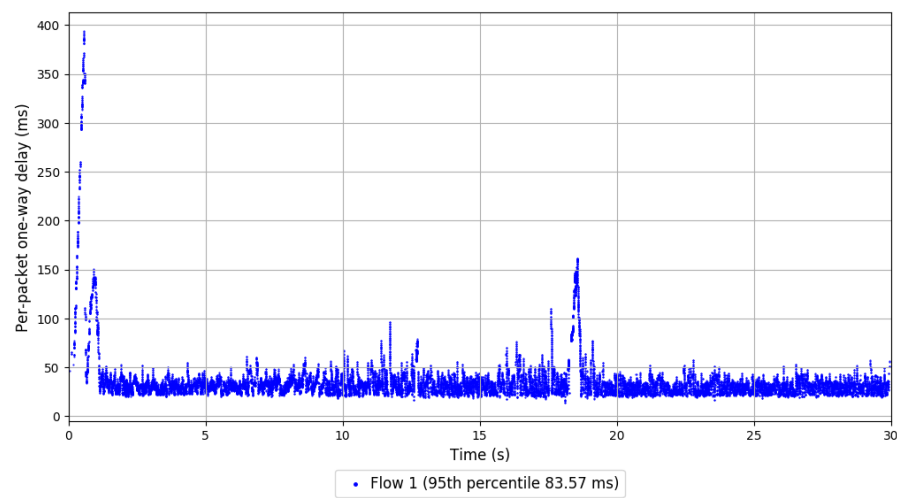
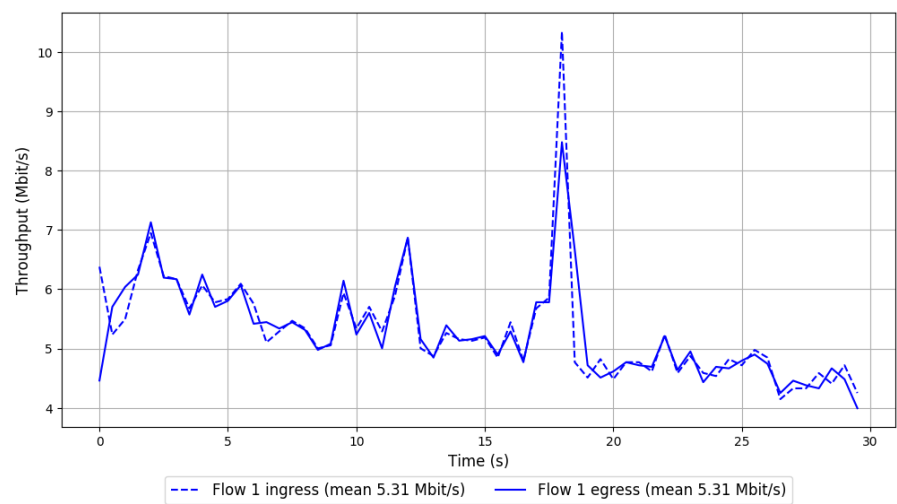
-- Flow 1:

Average throughput: 5.31 Mbit/s

95th percentile per-packet one-way delay: 83.566 ms

Loss rate: 0.35%

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

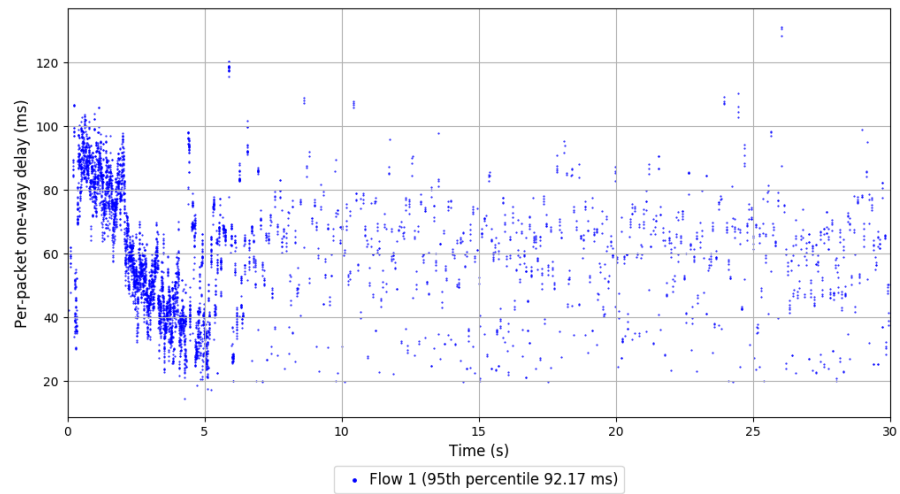
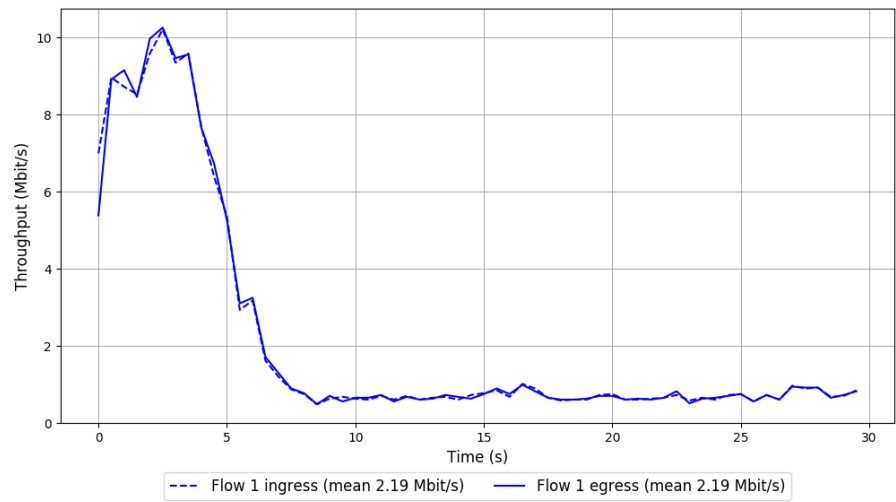


Run 1: Statistics of TCP Vegas

Start at: 2018-02-19 16:34:20
End at: 2018-02-19 16:34:50
Local clock offset: 2.342 ms
Remote clock offset: -5.377 ms

Below is generated by plot.py at 2018-02-19 18:35:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 92.170 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 92.170 ms
Loss rate: 0.09%

Run 1: Report of TCP Vegas — Data Link

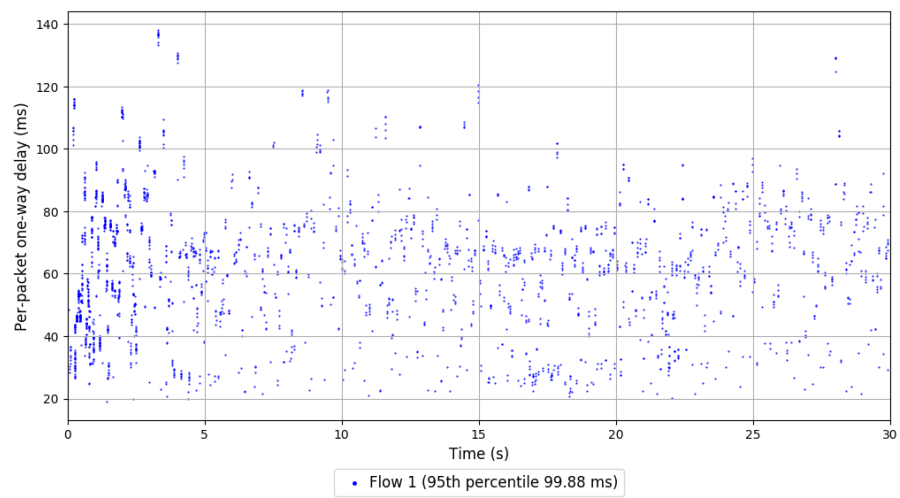
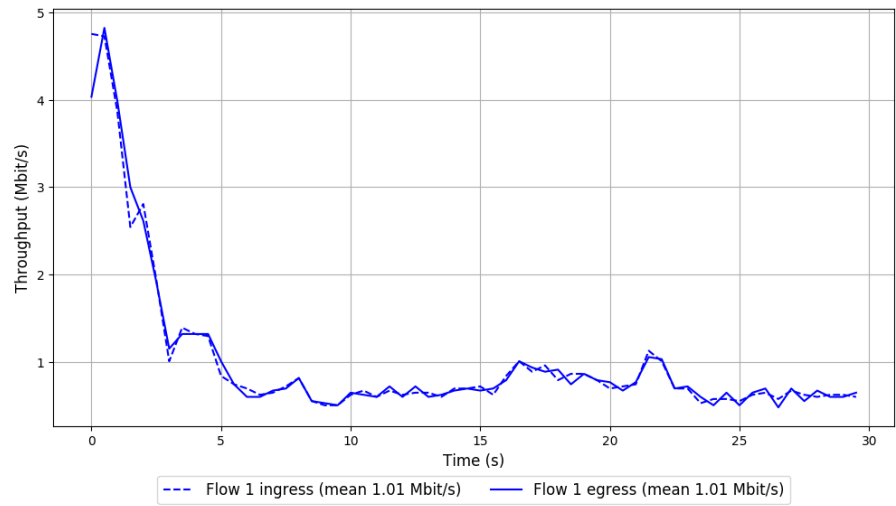


Run 2: Statistics of TCP Vegas

Start at: 2018-02-19 16:57:54
End at: 2018-02-19 16:58:24
Local clock offset: 1.8 ms
Remote clock offset: -3.853 ms

Below is generated by plot.py at 2018-02-19 18:35:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 99.884 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 99.884 ms
Loss rate: 0.12%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-02-19 17:21:28

End at: 2018-02-19 17:21:58

Local clock offset: 0.814 ms

Remote clock offset: -5.44 ms

Below is generated by plot.py at 2018-02-19 18:35:29

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.34 Mbit/s

95th percentile per-packet one-way delay: 166.313 ms

Loss rate: 0.31%

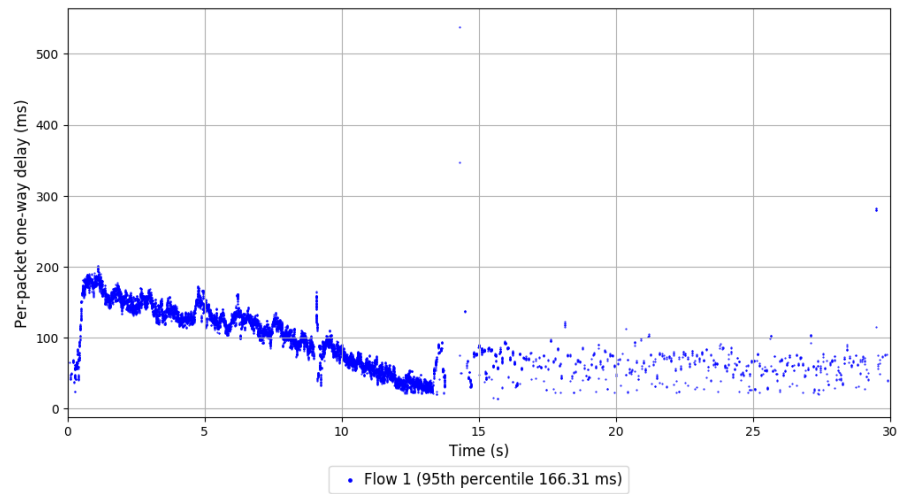
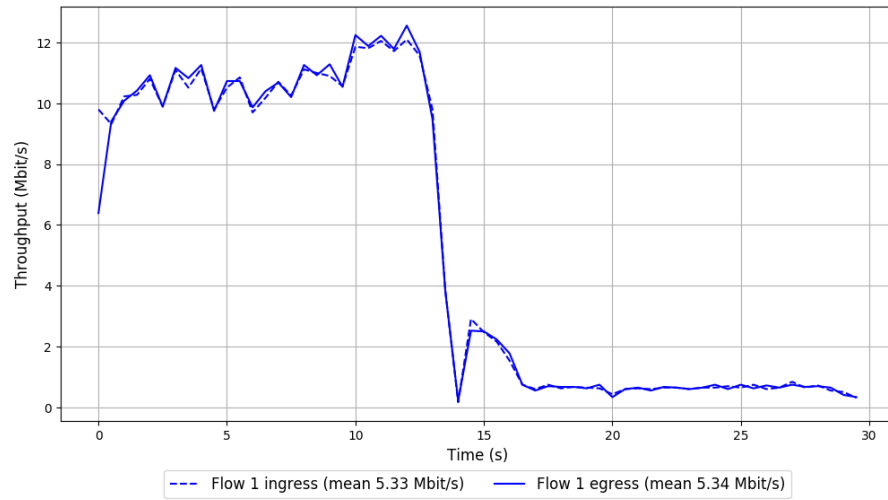
-- Flow 1:

Average throughput: 5.34 Mbit/s

95th percentile per-packet one-way delay: 166.313 ms

Loss rate: 0.31%

Run 3: Report of TCP Vegas — Data Link

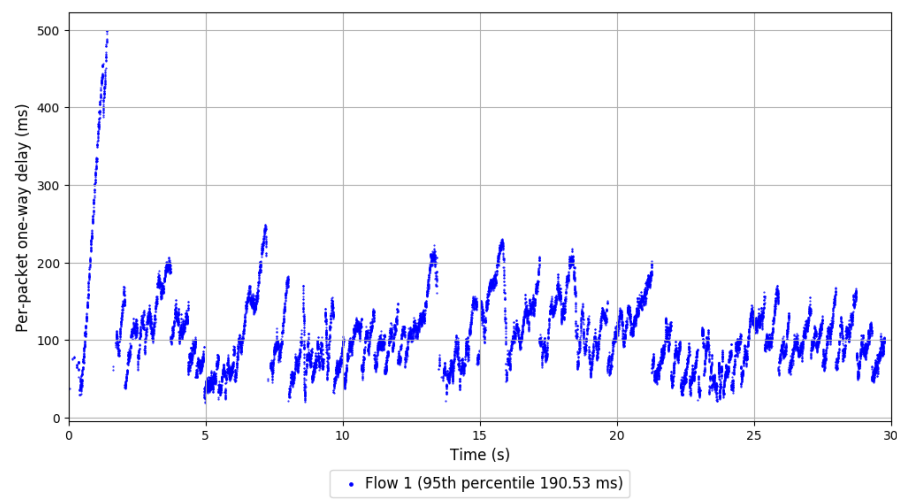
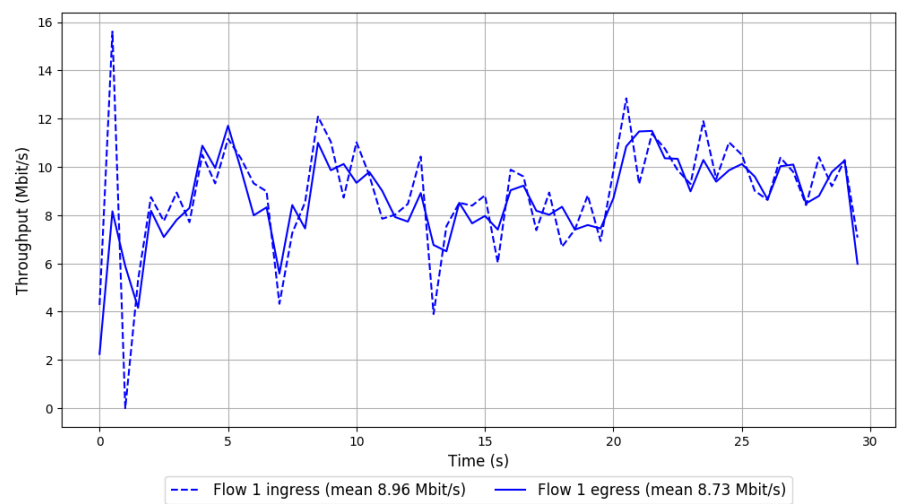


Run 1: Statistics of Verus

Start at: 2018-02-19 16:23:52
End at: 2018-02-19 16:24:22
Local clock offset: 2.25 ms
Remote clock offset: -6.637 ms

Below is generated by plot.py at 2018-02-19 18:35:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.73 Mbit/s
95th percentile per-packet one-way delay: 190.535 ms
Loss rate: 2.68%
-- Flow 1:
Average throughput: 8.73 Mbit/s
95th percentile per-packet one-way delay: 190.535 ms
Loss rate: 2.68%

Run 1: Report of Verus — Data Link

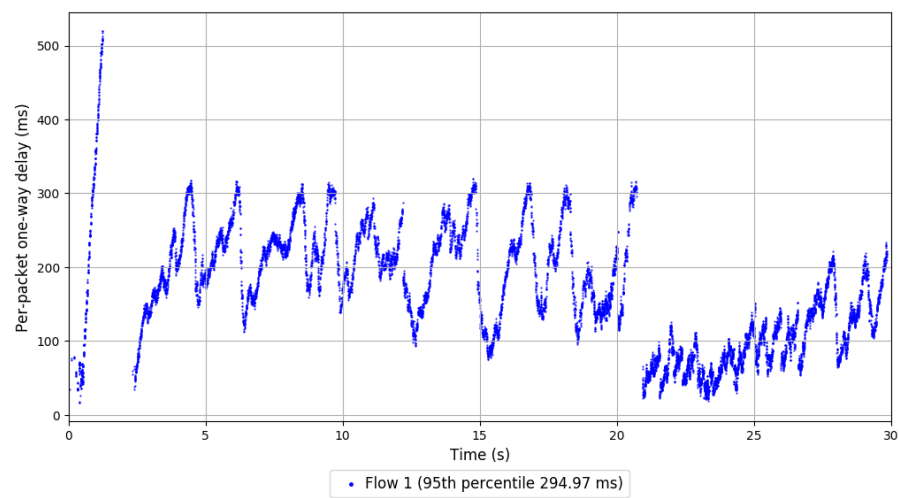
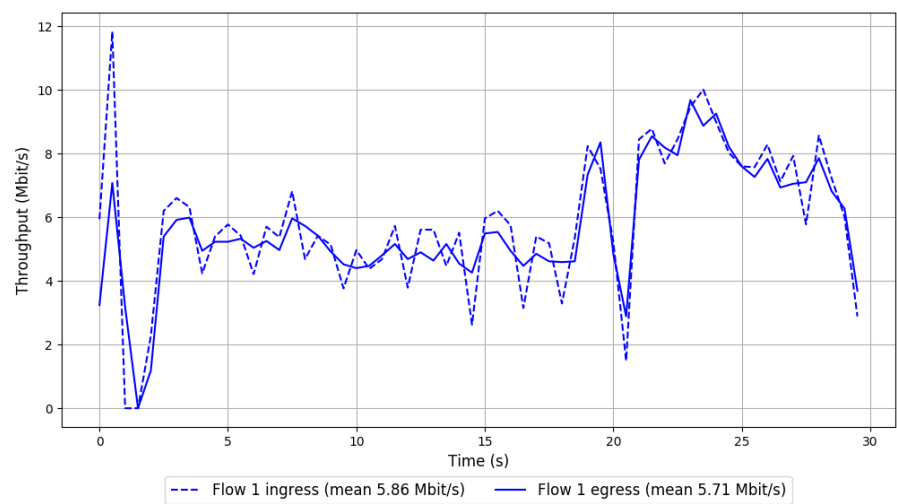


Run 2: Statistics of Verus

Start at: 2018-02-19 16:47:25
End at: 2018-02-19 16:47:55
Local clock offset: 2.066 ms
Remote clock offset: -4.528 ms

Below is generated by plot.py at 2018-02-19 18:35:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.71 Mbit/s
95th percentile per-packet one-way delay: 294.969 ms
Loss rate: 2.58%
-- Flow 1:
Average throughput: 5.71 Mbit/s
95th percentile per-packet one-way delay: 294.969 ms
Loss rate: 2.58%

Run 2: Report of Verus — Data Link

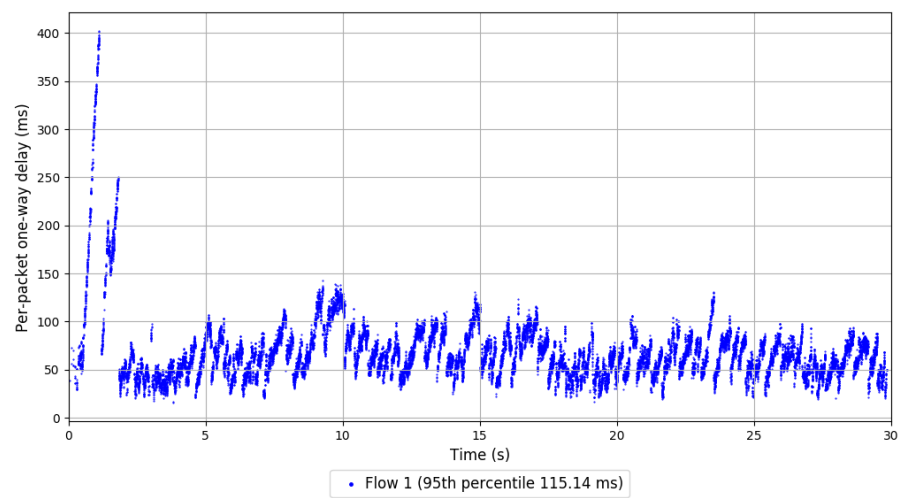
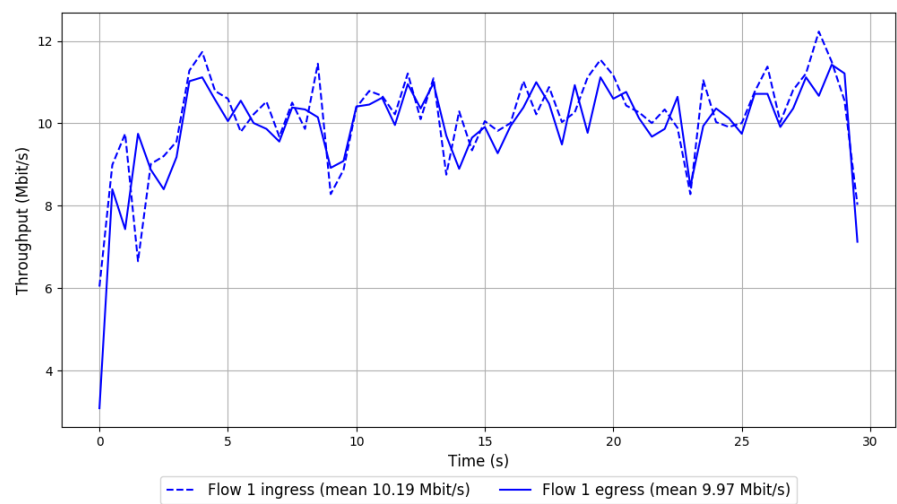


Run 3: Statistics of Verus

Start at: 2018-02-19 17:11:00
End at: 2018-02-19 17:11:30
Local clock offset: 1.684 ms
Remote clock offset: -5.289 ms

Below is generated by plot.py at 2018-02-19 18:35:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.97 Mbit/s
95th percentile per-packet one-way delay: 115.145 ms
Loss rate: 2.29%
-- Flow 1:
Average throughput: 9.97 Mbit/s
95th percentile per-packet one-way delay: 115.145 ms
Loss rate: 2.29%

Run 3: Report of Verus — Data Link

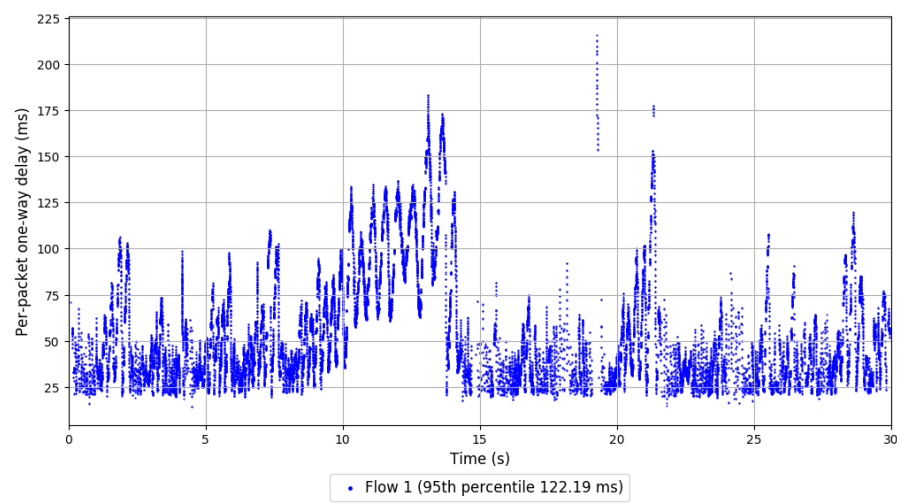
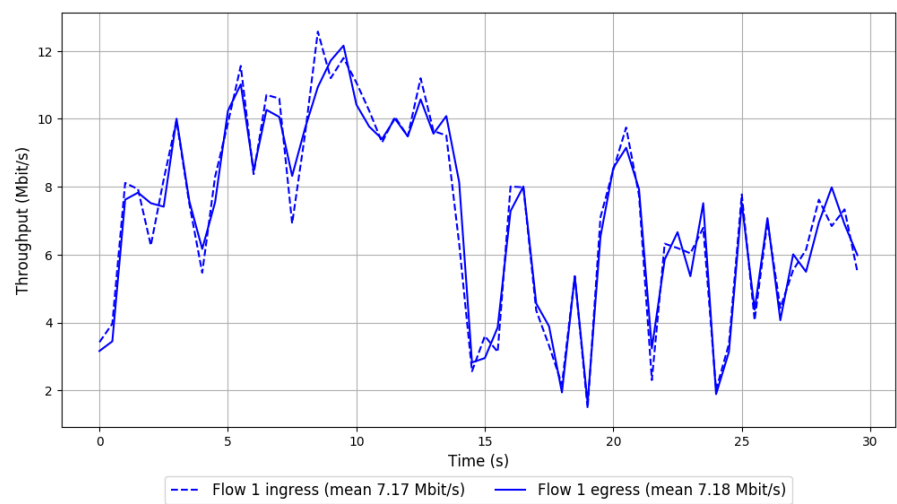


Run 1: Statistics of Copa

Start at: 2018-02-19 16:35:38
End at: 2018-02-19 16:36:08
Local clock offset: 2.353 ms
Remote clock offset: -5.259 ms

Below is generated by plot.py at 2018-02-19 18:35:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.18 Mbit/s
95th percentile per-packet one-way delay: 122.192 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 7.18 Mbit/s
95th percentile per-packet one-way delay: 122.192 ms
Loss rate: 0.07%

Run 1: Report of Copa — Data Link

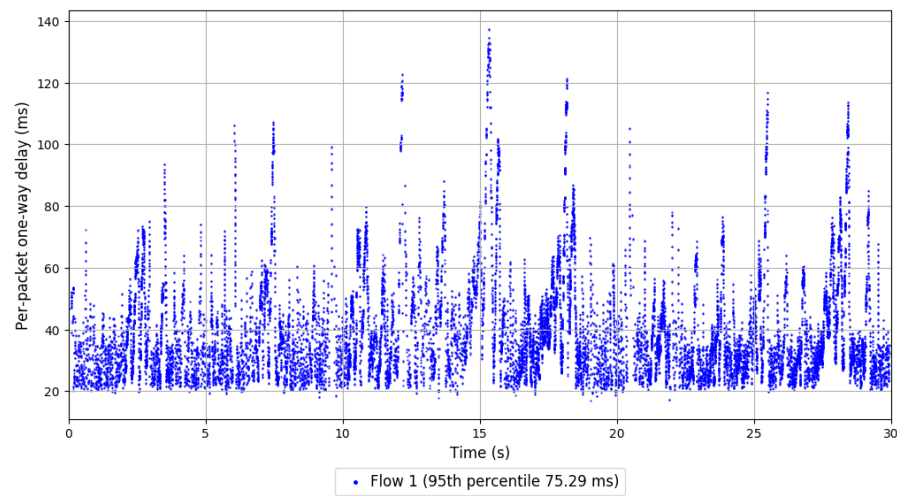
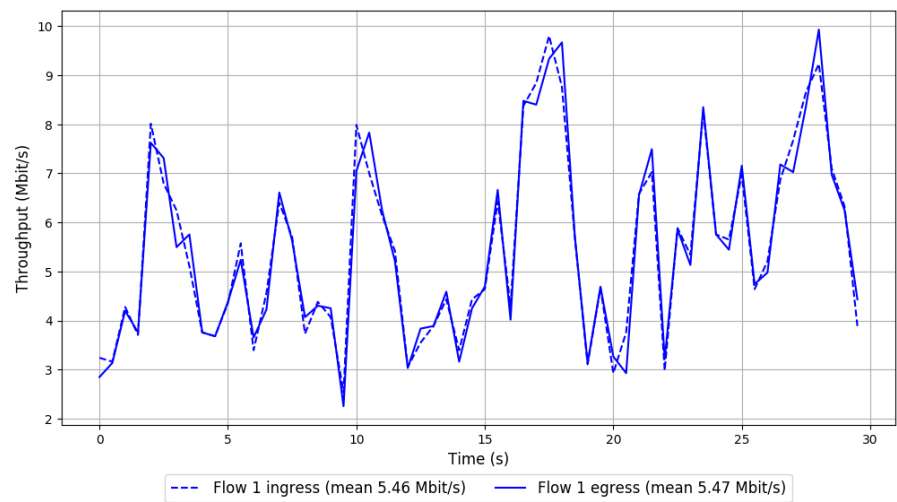


Run 2: Statistics of Copa

Start at: 2018-02-19 16:59:12
End at: 2018-02-19 16:59:42
Local clock offset: 1.774 ms
Remote clock offset: -3.963 ms

Below is generated by plot.py at 2018-02-19 18:35:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.47 Mbit/s
95th percentile per-packet one-way delay: 75.287 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 5.47 Mbit/s
95th percentile per-packet one-way delay: 75.287 ms
Loss rate: 0.08%

Run 2: Report of Copa — Data Link

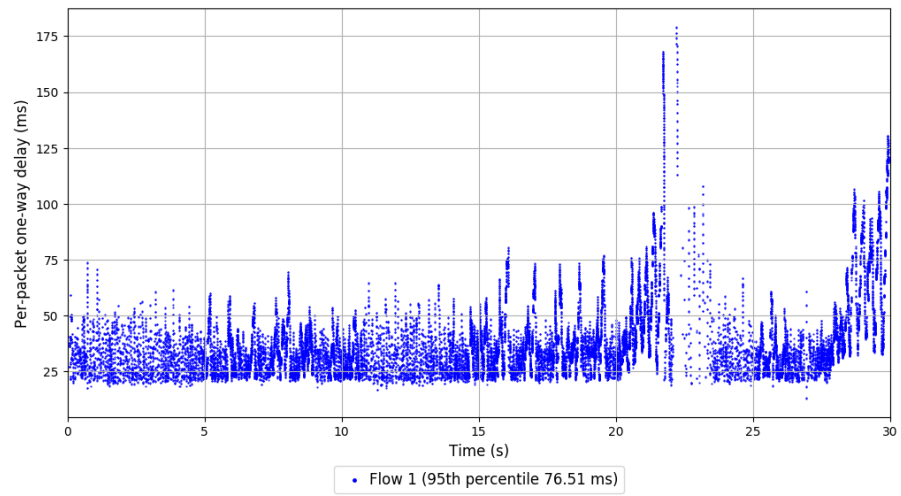
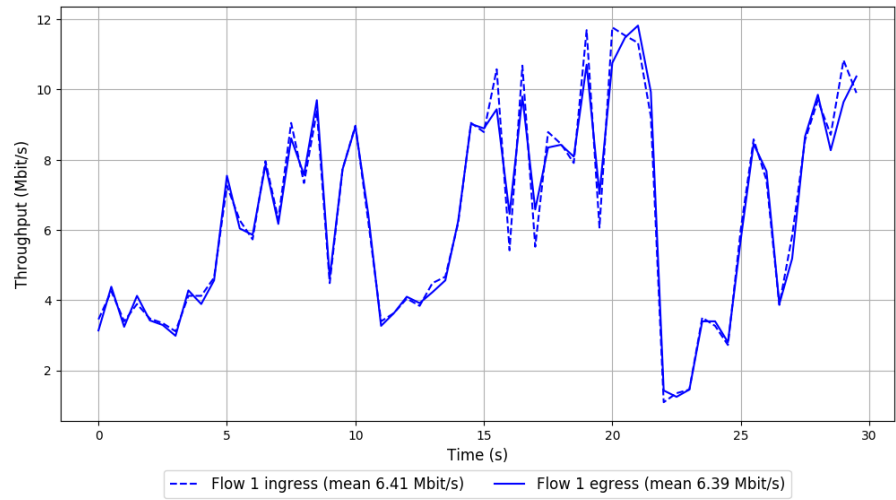


Run 3: Statistics of Copa

Start at: 2018-02-19 17:22:47
End at: 2018-02-19 17:23:17
Local clock offset: 0.584 ms
Remote clock offset: -5.554 ms

Below is generated by plot.py at 2018-02-19 18:35:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.39 Mbit/s
95th percentile per-packet one-way delay: 76.508 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 6.39 Mbit/s
95th percentile per-packet one-way delay: 76.508 ms
Loss rate: 0.47%

Run 3: Report of Copa — Data Link

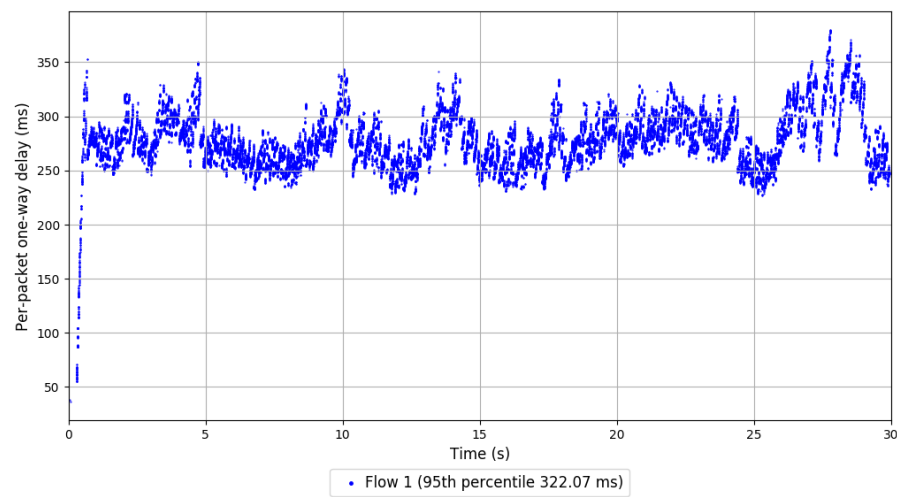
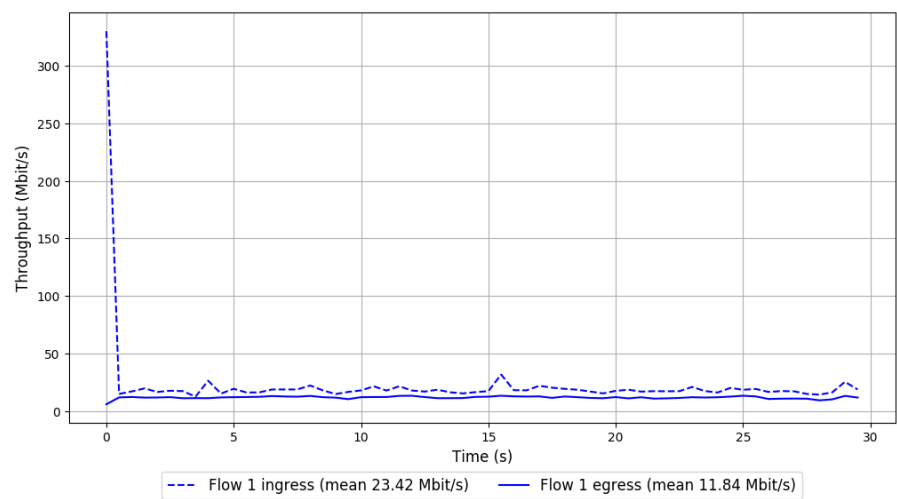


Run 1: Statistics of FillP

Start at: 2018-02-19 16:14:40
End at: 2018-02-19 16:15:10
Local clock offset: 2.164 ms
Remote clock offset: -6.578 ms

Below is generated by plot.py at 2018-02-19 18:35:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 322.067 ms
Loss rate: 49.56%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 322.067 ms
Loss rate: 49.56%

Run 1: Report of FillP — Data Link

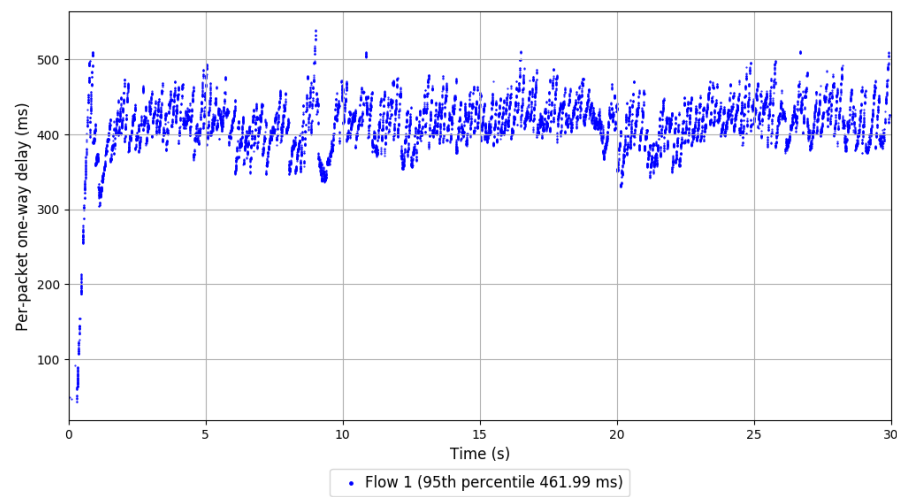
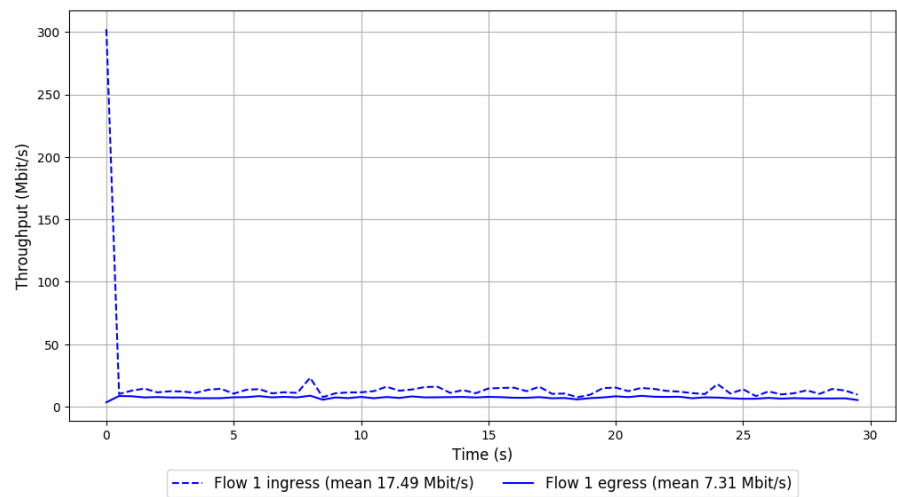


Run 2: Statistics of FillP

Start at: 2018-02-19 16:38:16
End at: 2018-02-19 16:38:46
Local clock offset: 2.275 ms
Remote clock offset: -5.105 ms

Below is generated by plot.py at 2018-02-19 18:35:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.31 Mbit/s
95th percentile per-packet one-way delay: 461.986 ms
Loss rate: 58.29%
-- Flow 1:
Average throughput: 7.31 Mbit/s
95th percentile per-packet one-way delay: 461.986 ms
Loss rate: 58.29%

Run 2: Report of FillP — Data Link

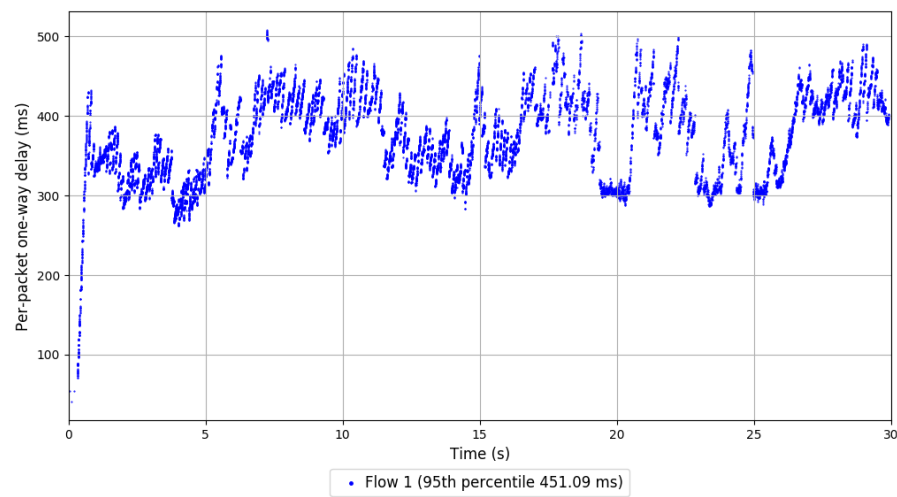
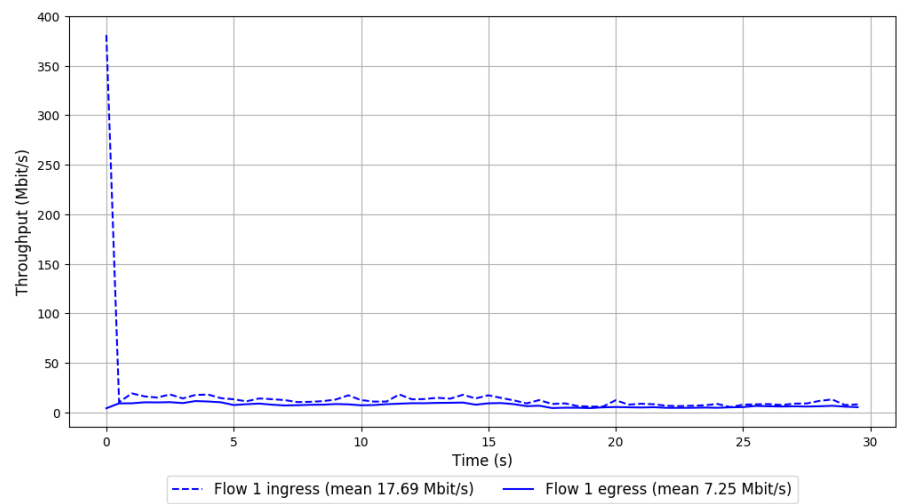


Run 3: Statistics of FillP

Start at: 2018-02-19 17:01:49
End at: 2018-02-19 17:02:19
Local clock offset: 1.738 ms
Remote clock offset: -4.443 ms

Below is generated by plot.py at 2018-02-19 18:35:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.25 Mbit/s
95th percentile per-packet one-way delay: 451.087 ms
Loss rate: 59.09%
-- Flow 1:
Average throughput: 7.25 Mbit/s
95th percentile per-packet one-way delay: 451.087 ms
Loss rate: 59.09%

Run 3: Report of FillP — Data Link



Run 1: Statistics of Indigo-1-32

Start at: 2018-02-19 16:27:47

End at: 2018-02-19 16:28:17

Local clock offset: 2.287 ms

Remote clock offset: -6.079 ms

Below is generated by plot.py at 2018-02-19 18:35:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.15 Mbit/s

95th percentile per-packet one-way delay: 82.918 ms

Loss rate: 0.54%

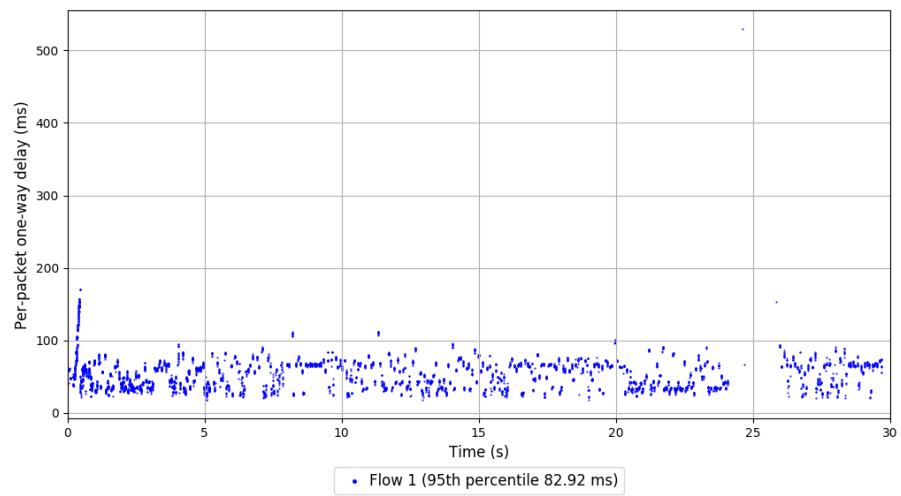
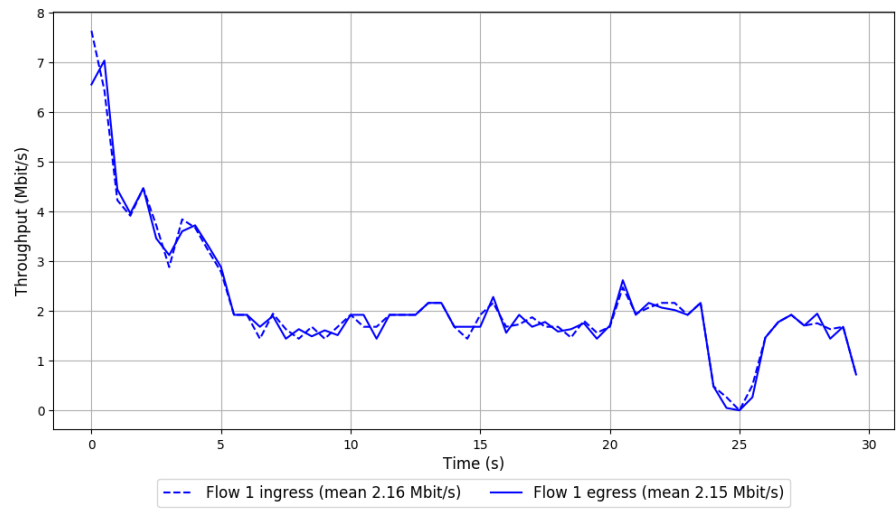
-- Flow 1:

Average throughput: 2.15 Mbit/s

95th percentile per-packet one-way delay: 82.918 ms

Loss rate: 0.54%

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

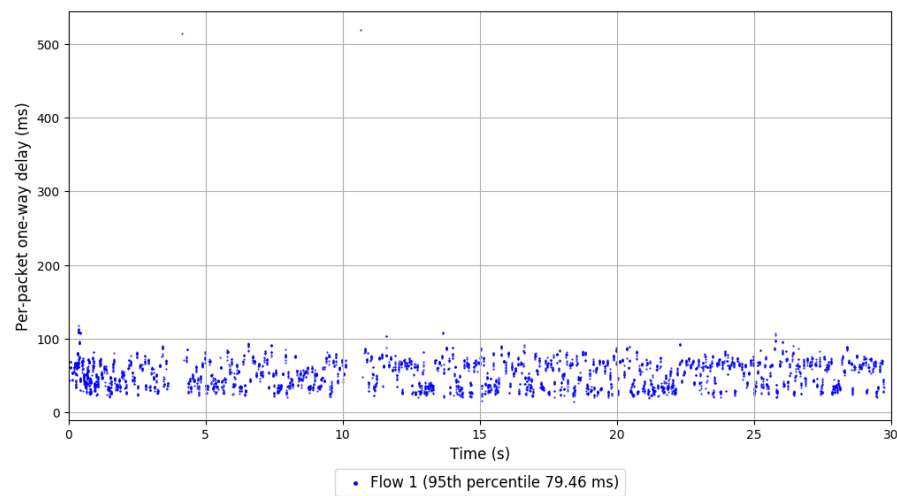
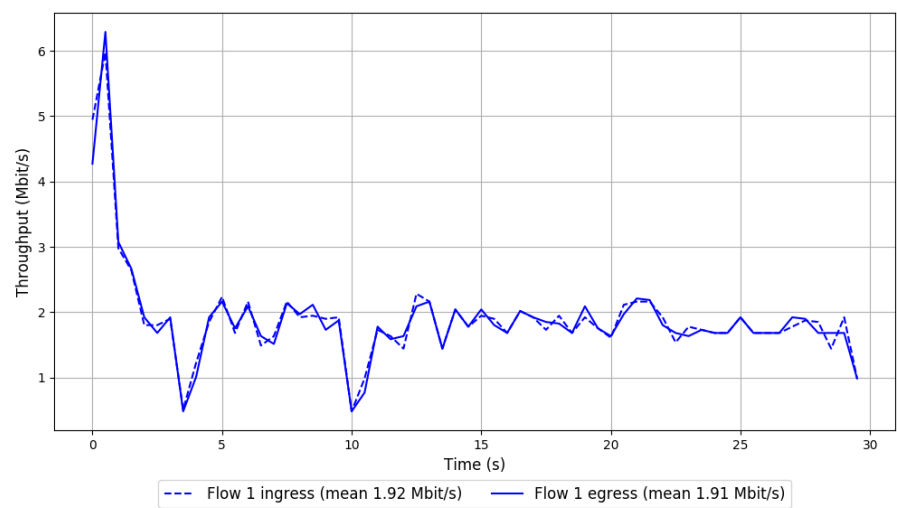


Run 2: Statistics of Indigo-1-32

Start at: 2018-02-19 16:51:21
End at: 2018-02-19 16:51:51
Local clock offset: 1.924 ms
Remote clock offset: -4.184 ms

Below is generated by plot.py at 2018-02-19 18:35:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 79.464 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 79.464 ms
Loss rate: 0.59%

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



Run 3: Statistics of Indigo-1-32

Start at: 2018-02-19 17:14:56

End at: 2018-02-19 17:15:26

Local clock offset: 1.576 ms

Remote clock offset: -5.471 ms

Below is generated by plot.py at 2018-02-19 18:35:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 81.107 ms

Loss rate: 0.74%

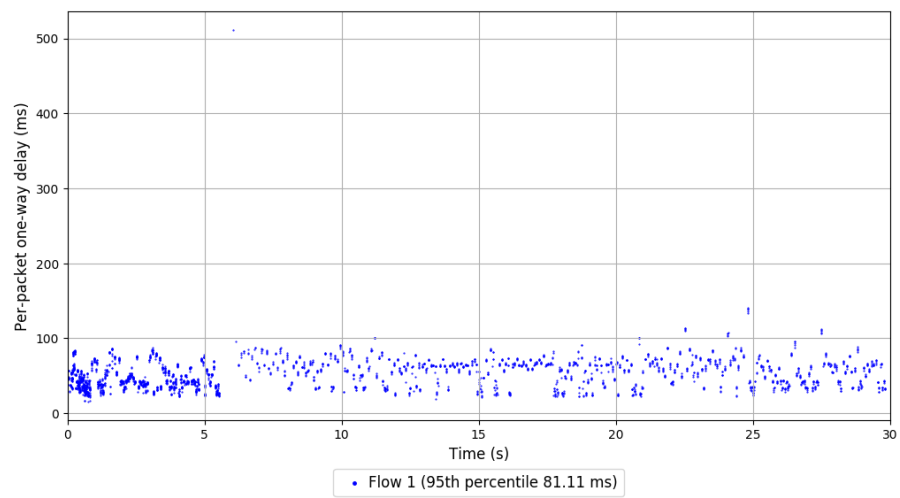
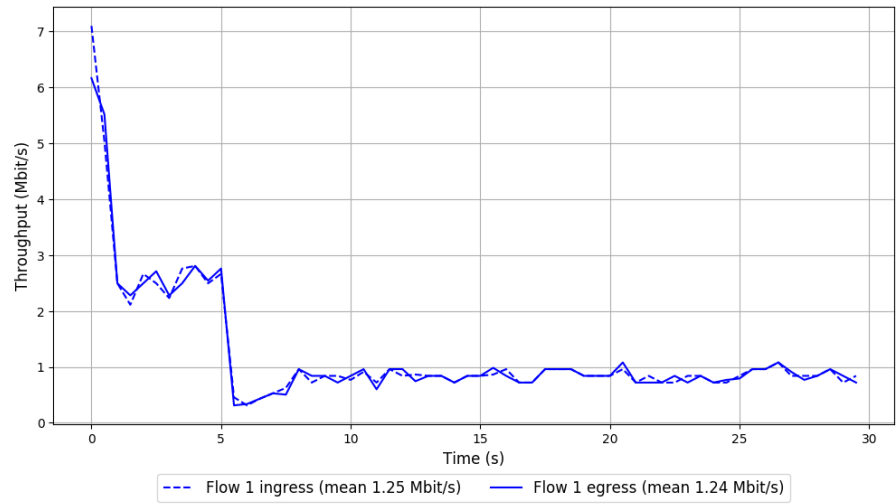
-- Flow 1:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 81.107 ms

Loss rate: 0.74%

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

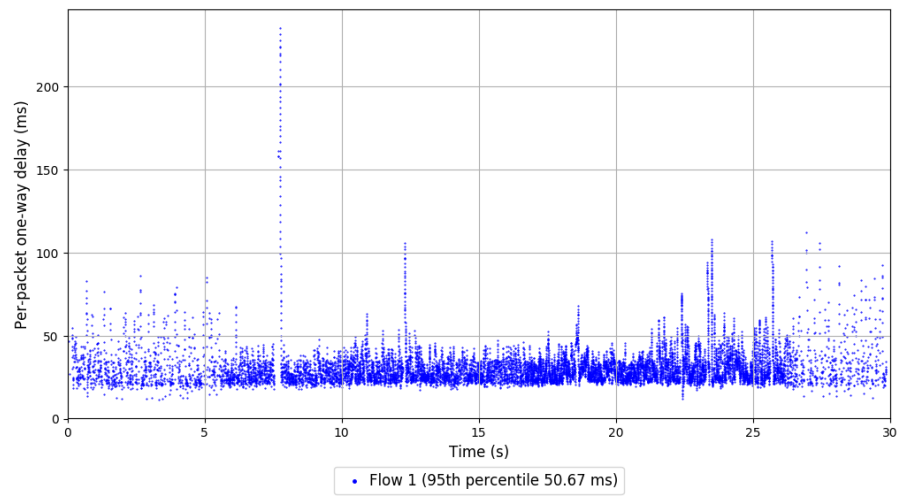
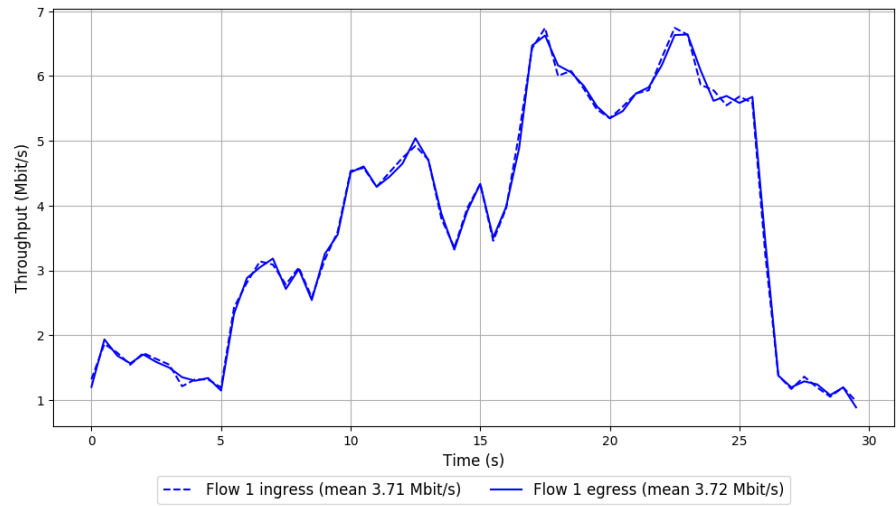


Run 1: Statistics of Vivace-latency

Start at: 2018-02-19 16:33:01
End at: 2018-02-19 16:33:31
Local clock offset: 2.324 ms
Remote clock offset: -5.561 ms

Below is generated by plot.py at 2018-02-19 18:35:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.72 Mbit/s
95th percentile per-packet one-way delay: 50.675 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 3.72 Mbit/s
95th percentile per-packet one-way delay: 50.675 ms
Loss rate: 0.07%

Run 1: Report of Vivace-latency — Data Link

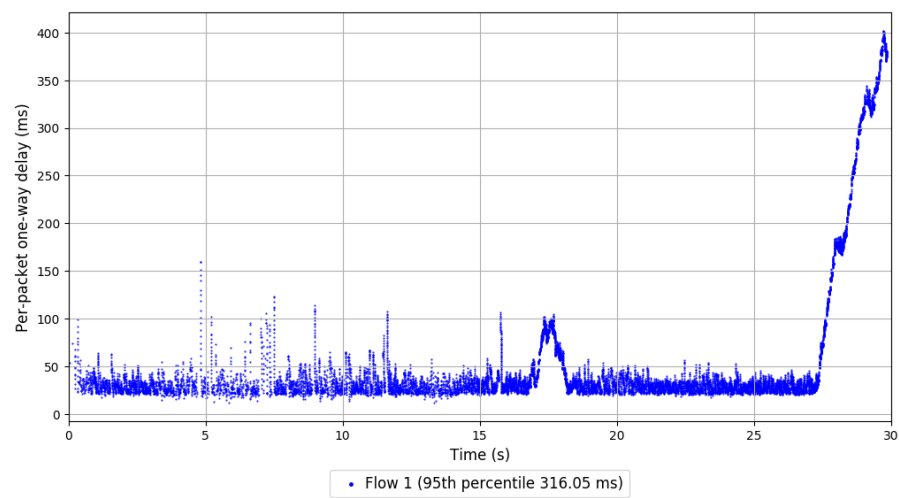
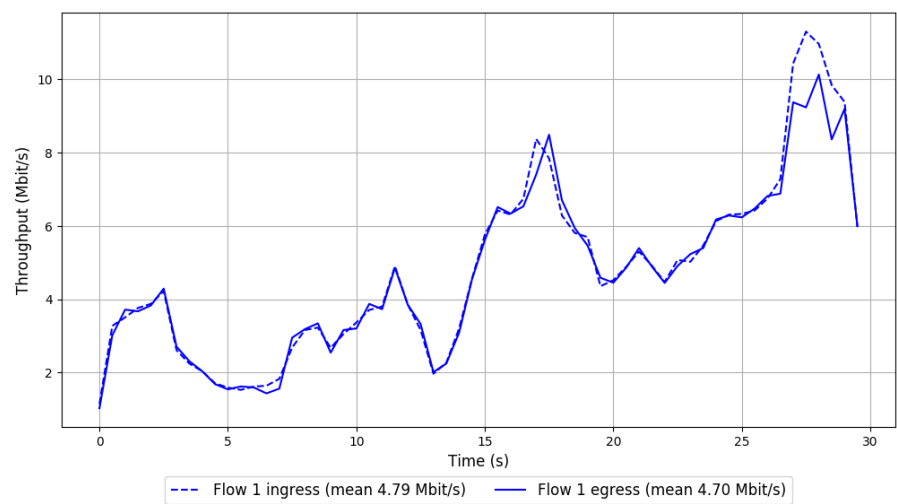


Run 2: Statistics of Vivace-latency

Start at: 2018-02-19 16:56:35
End at: 2018-02-19 16:57:05
Local clock offset: 1.804 ms
Remote clock offset: -3.902 ms

Below is generated by plot.py at 2018-02-19 18:35:49
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.70 Mbit/s
95th percentile per-packet one-way delay: 316.054 ms
Loss rate: 2.18%
-- Flow 1:
Average throughput: 4.70 Mbit/s
95th percentile per-packet one-way delay: 316.054 ms
Loss rate: 2.18%

Run 2: Report of Vivace-latency — Data Link

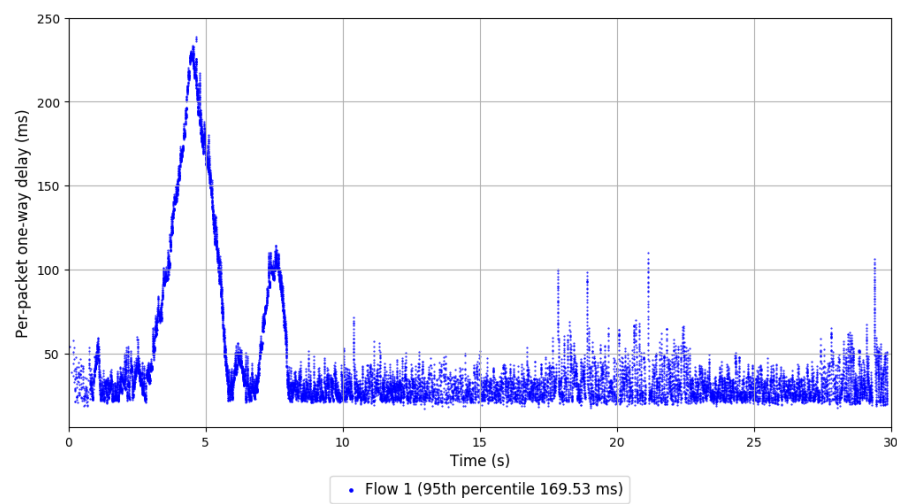
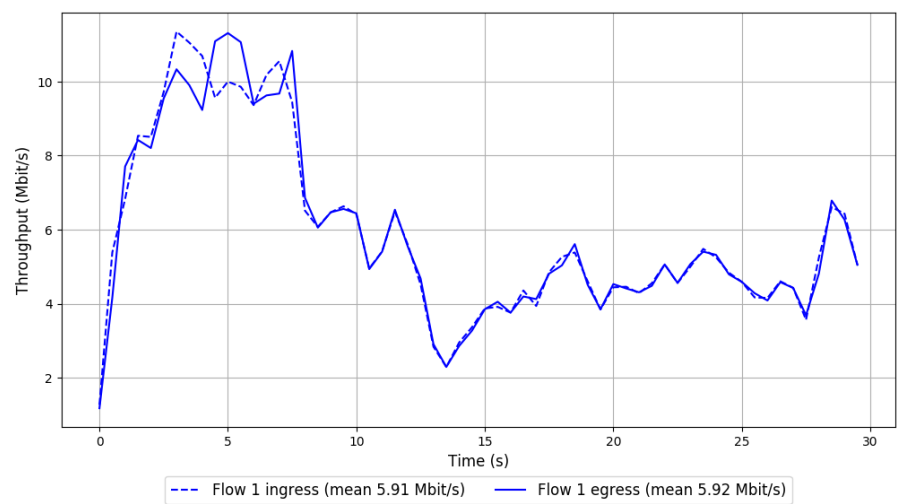


Run 3: Statistics of Vivace-latency

Start at: 2018-02-19 17:20:10
End at: 2018-02-19 17:20:40
Local clock offset: 0.979 ms
Remote clock offset: -5.542 ms

Below is generated by plot.py at 2018-02-19 18:35:50
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.92 Mbit/s
95th percentile per-packet one-way delay: 169.525 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 5.92 Mbit/s
95th percentile per-packet one-way delay: 169.525 ms
Loss rate: 0.16%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-02-19 16:19:55

End at: 2018-02-19 16:20:25

Local clock offset: 2.225 ms

Remote clock offset: -6.576 ms

Below is generated by plot.py at 2018-02-19 18:35:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 12.17 Mbit/s

95th percentile per-packet one-way delay: 293.951 ms

Loss rate: 13.04%

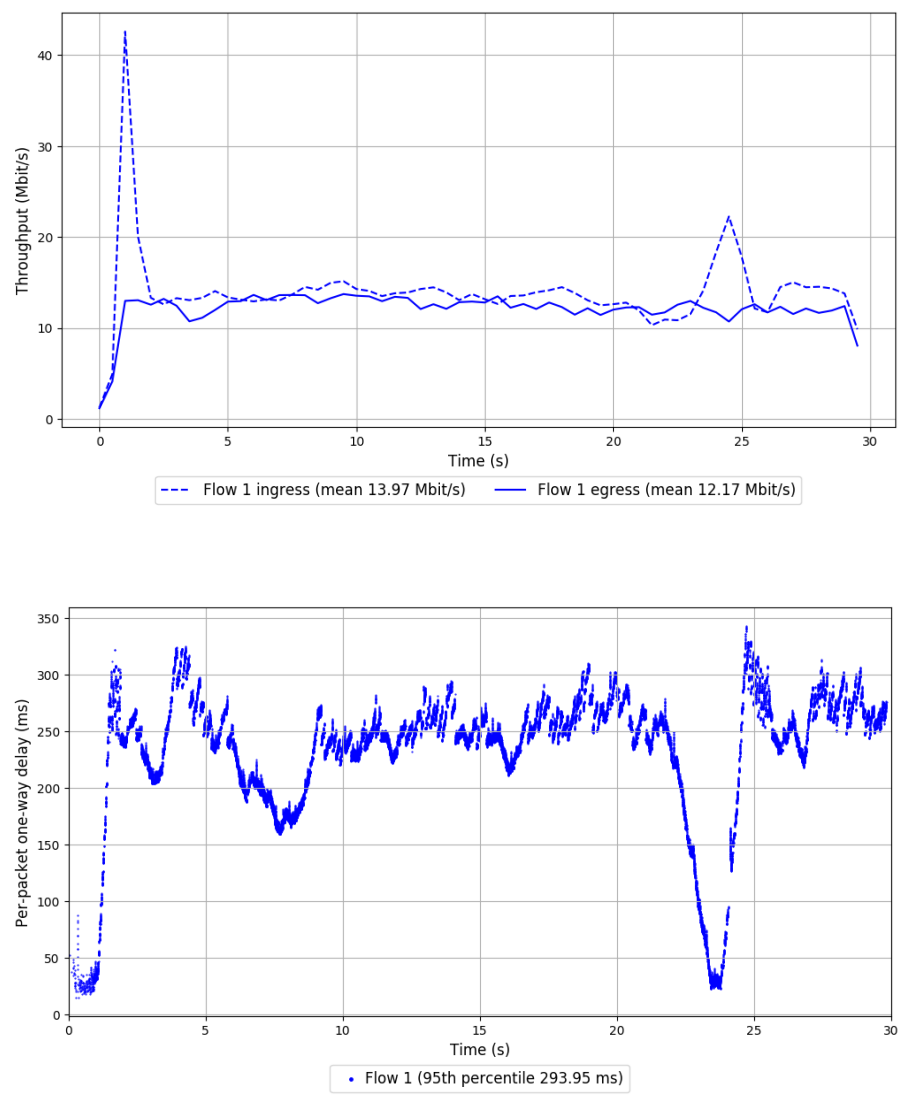
-- Flow 1:

Average throughput: 12.17 Mbit/s

95th percentile per-packet one-way delay: 293.951 ms

Loss rate: 13.04%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-02-19 16:43:30

End at: 2018-02-19 16:44:00

Local clock offset: 2.202 ms

Remote clock offset: -4.766 ms

Below is generated by plot.py at 2018-02-19 18:35:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 9.96 Mbit/s

95th percentile per-packet one-way delay: 356.982 ms

Loss rate: 16.07%

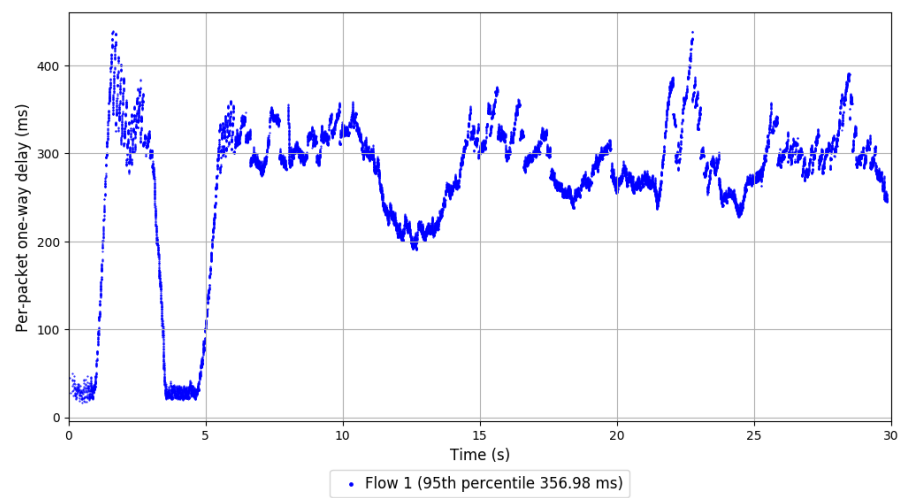
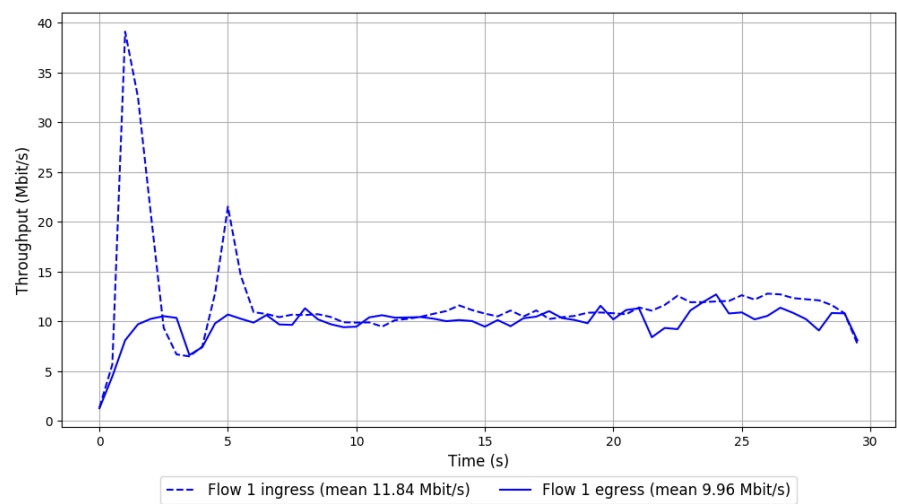
-- Flow 1:

Average throughput: 9.96 Mbit/s

95th percentile per-packet one-way delay: 356.982 ms

Loss rate: 16.07%

Run 2: Report of Vivace-loss — Data Link



Run 3: Statistics of Vivace-loss

Start at: 2018-02-19 17:07:04

End at: 2018-02-19 17:07:34

Local clock offset: 1.712 ms

Remote clock offset: -5.11 ms

Below is generated by plot.py at 2018-02-19 18:35:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.04 Mbit/s

95th percentile per-packet one-way delay: 373.931 ms

Loss rate: 28.44%

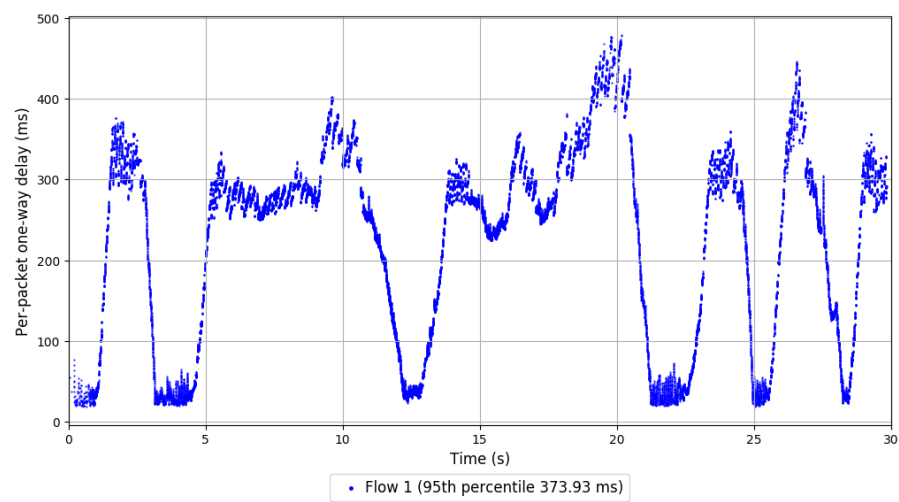
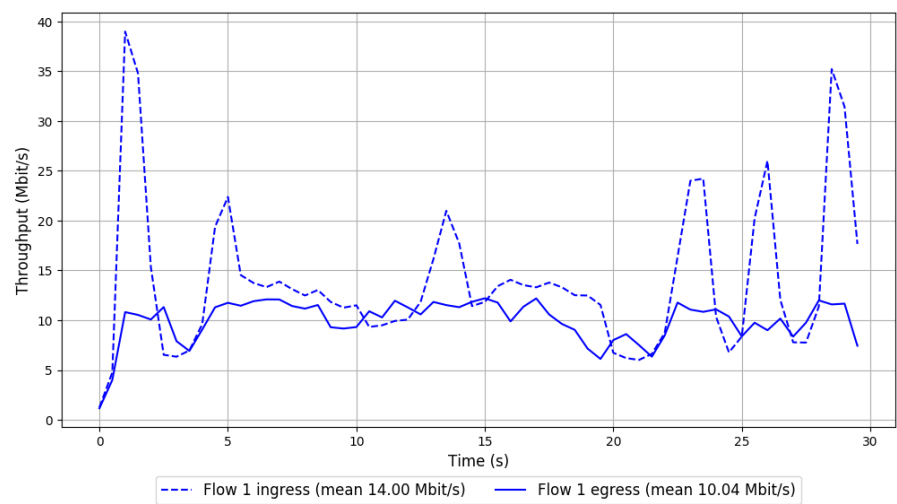
-- Flow 1:

Average throughput: 10.04 Mbit/s

95th percentile per-packet one-way delay: 373.931 ms

Loss rate: 28.44%

Run 3: Report of Vivace-loss — Data Link



Run 1: Statistics of Vivace-LTE

Start at: 2018-02-19 16:29:05

End at: 2018-02-19 16:29:35

Local clock offset: 2.262 ms

Remote clock offset: -5.968 ms

Below is generated by plot.py at 2018-02-19 18:35:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.77 Mbit/s

95th percentile per-packet one-way delay: 355.160 ms

Loss rate: 6.41%

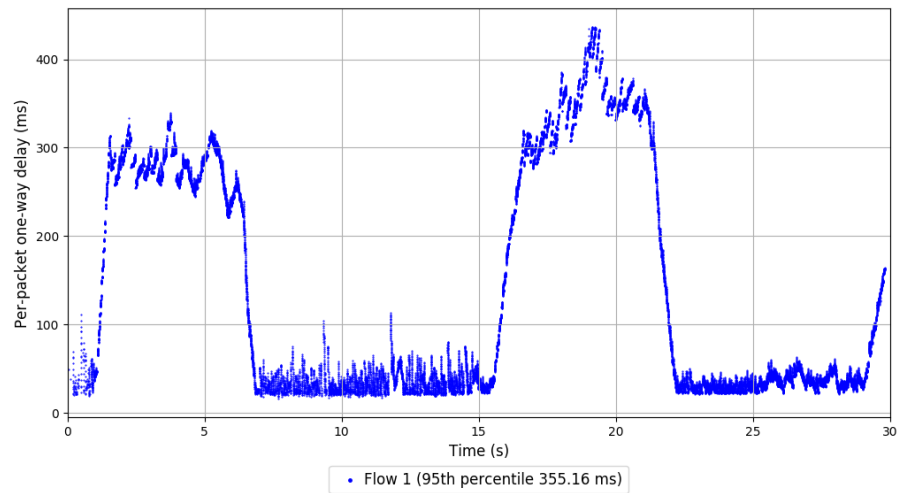
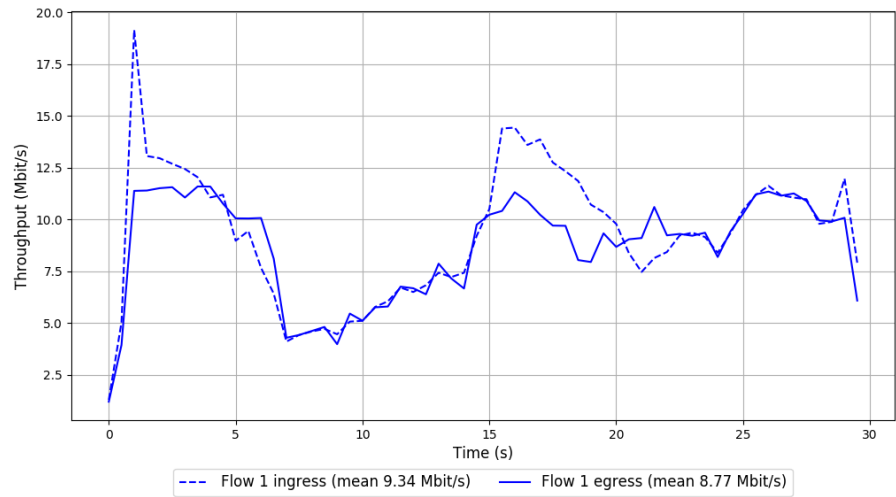
-- Flow 1:

Average throughput: 8.77 Mbit/s

95th percentile per-packet one-way delay: 355.160 ms

Loss rate: 6.41%

Run 1: Report of Vivace-LTE — Data Link

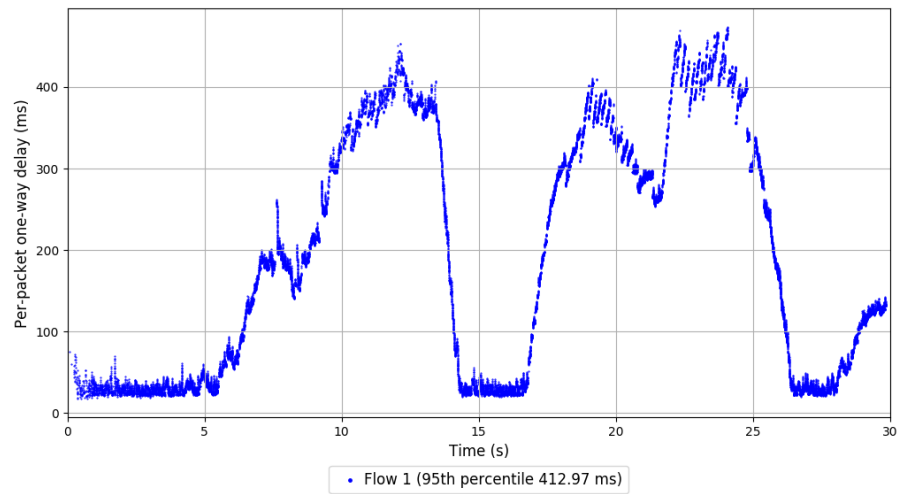
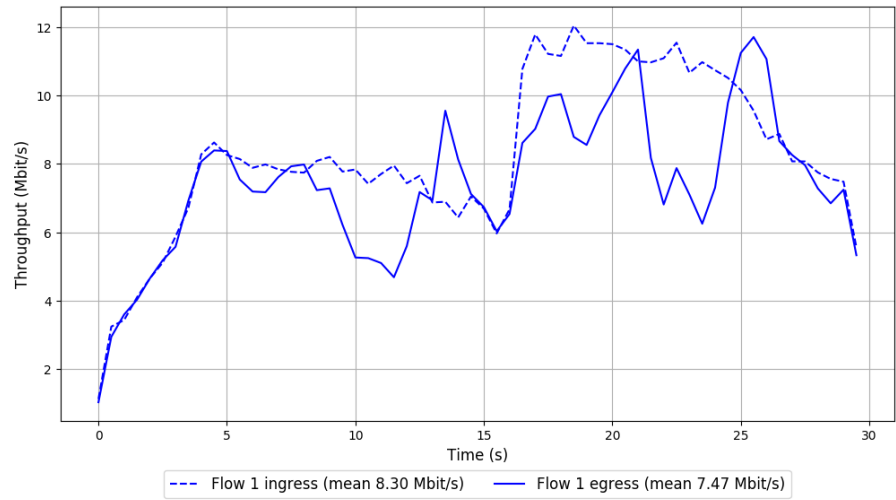


Run 2: Statistics of Vivace-LTE

Start at: 2018-02-19 16:52:40
End at: 2018-02-19 16:53:10
Local clock offset: 1.795 ms
Remote clock offset: -4.112 ms

Below is generated by plot.py at 2018-02-19 18:35:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.47 Mbit/s
95th percentile per-packet one-way delay: 412.968 ms
Loss rate: 10.28%
-- Flow 1:
Average throughput: 7.47 Mbit/s
95th percentile per-packet one-way delay: 412.968 ms
Loss rate: 10.28%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-02-19 17:16:14
End at: 2018-02-19 17:16:44
Local clock offset: 1.501 ms
Remote clock offset: -5.425 ms

Below is generated by plot.py at 2018-02-19 18:35:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.12 Mbit/s
95th percentile per-packet one-way delay: 288.160 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 7.12 Mbit/s
95th percentile per-packet one-way delay: 288.160 ms
Loss rate: 2.50%

Run 3: Report of Vivace-LTE — Data Link

