

Pantheon Report

Generated at 2018-01-18 10:51:59 (UTC).

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

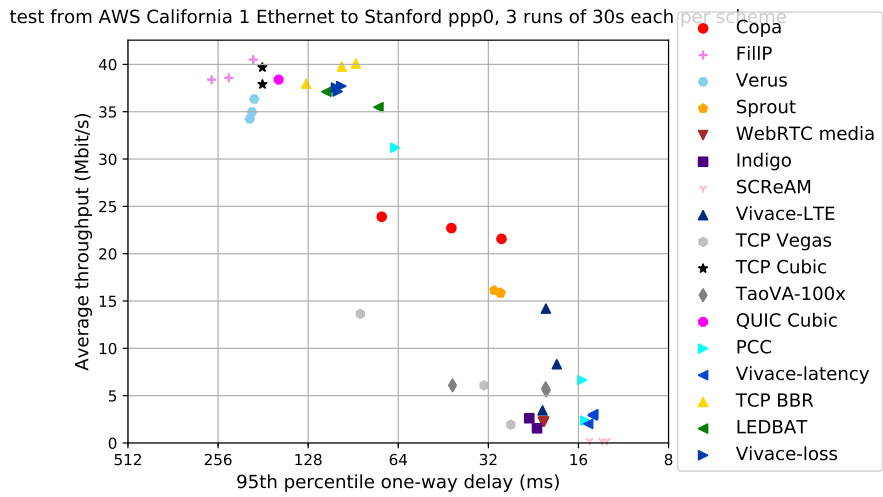
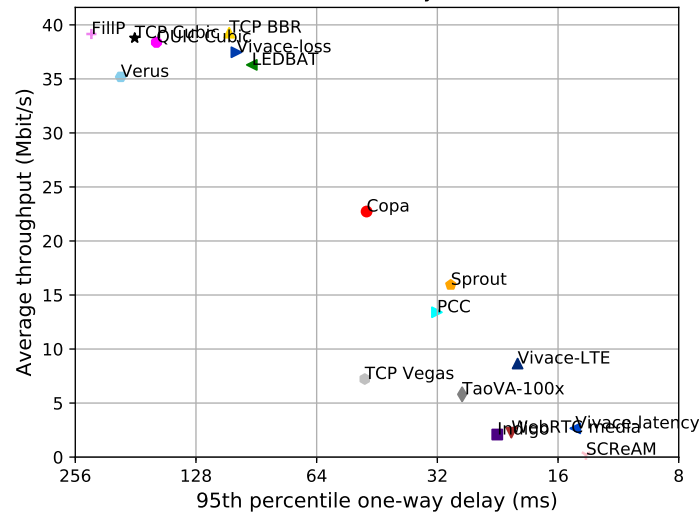
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

Git summary:

```
branch: master @ 54510ce29f849c716ac5c8199ca1604b6abdfbc3
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ ec9585325218d5048c4d4152fa42240af54c6e67
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
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 @ f1a14bffe749737437f61b1eaeeb30b267cde681
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 @ 423cbca3e8ea1d599e7b5cf725835e8a2b6bfac6
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

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



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	39.28	105.79	0.23
TCP Cubic	2	38.78	181.98	0.58
LEDBAT	2	36.30	92.89	0.17
PCC	3	13.40	32.07	0.15
QUIC Cubic	1	38.39	160.60	0.52
SCReAM	3	0.22	13.63	0.00
WebRTC media	3	2.26	20.92	0.00
Sprout	3	15.94	29.63	0.03
TaoVA-100x	3	5.81	27.75	0.02
TCP Vegas	3	7.23	48.56	0.00
Verus	3	35.19	197.20	6.62
Copa	3	22.72	48.04	0.00
FillP	3	39.15	233.38	38.38
Indigo	2	2.09	22.68	0.00
Vivace-latency	3	2.66	14.49	0.00
Vivace-loss	3	37.47	101.48	12.68
Vivace-LTE	3	8.65	20.18	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-01-18 09:59:34

End at: 2018-01-18 10:00:04

Local clock offset: 2.34 ms

Remote clock offset: -1.52 ms

Below is generated by plot.py at 2018-01-18 10:50:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 37.97 Mbit/s

95th percentile per-packet one-way delay: 129.883 ms

Loss rate: 0.33%

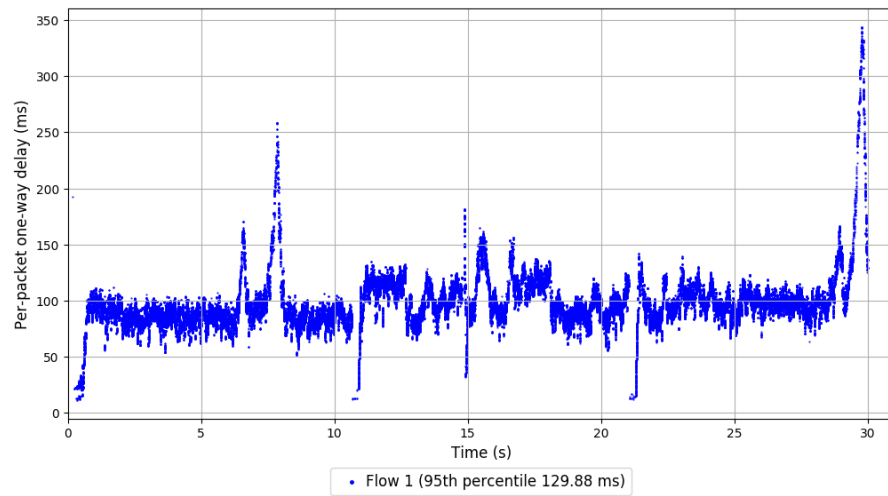
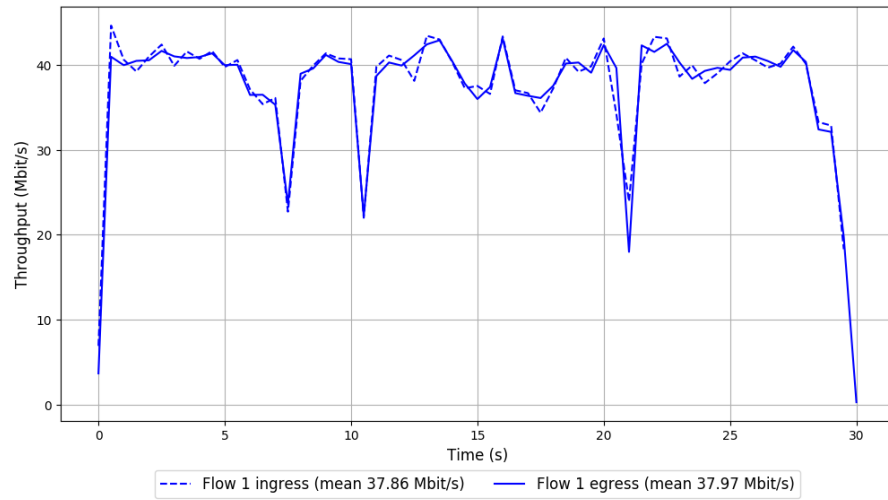
-- Flow 1:

Average throughput: 37.97 Mbit/s

95th percentile per-packet one-way delay: 129.883 ms

Loss rate: 0.33%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-01-18 10:20:54

End at: 2018-01-18 10:21:24

Local clock offset: 2.698 ms

Remote clock offset: -1.908 ms

Below is generated by plot.py at 2018-01-18 10:50:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 40.10 Mbit/s

95th percentile per-packet one-way delay: 88.713 ms

Loss rate: 0.12%

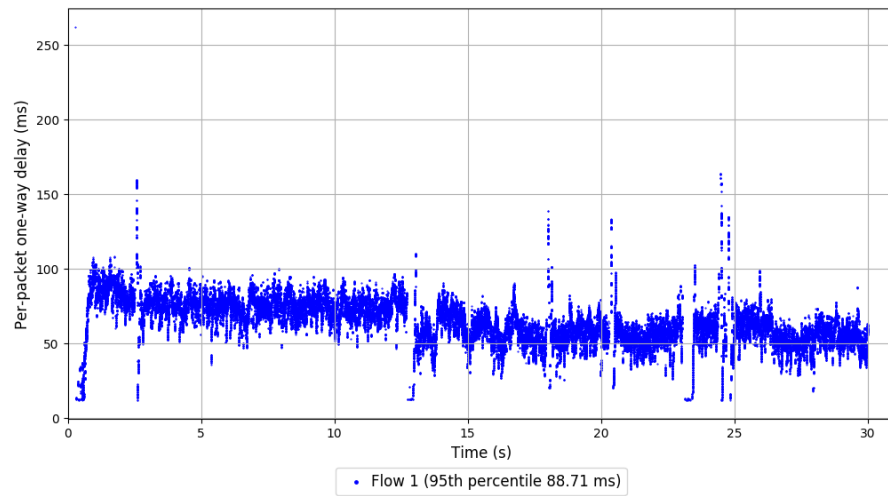
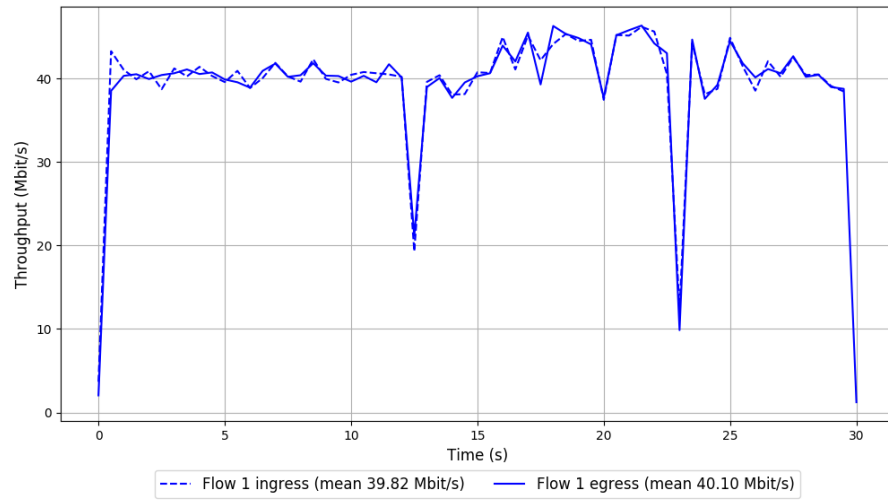
-- Flow 1:

Average throughput: 40.10 Mbit/s

95th percentile per-packet one-way delay: 88.713 ms

Loss rate: 0.12%

Run 2: Report of TCP BBR — Data Link

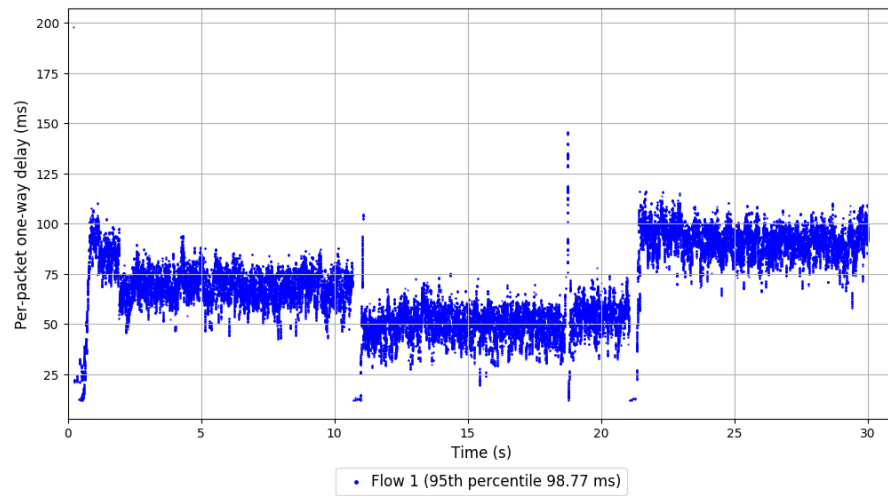
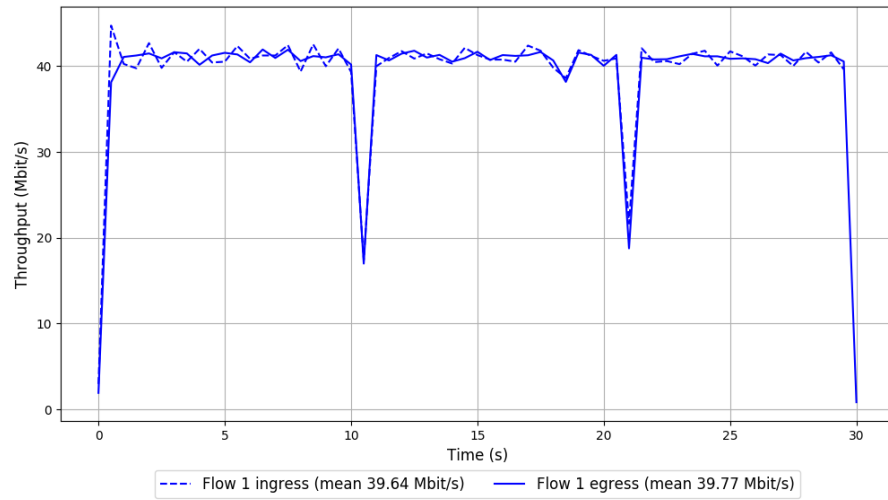


Run 3: Statistics of TCP BBR

Start at: 2018-01-18 10:42:18
End at: 2018-01-18 10:42:48
Local clock offset: 2.738 ms
Remote clock offset: -2.131 ms

Below is generated by plot.py at 2018-01-18 10:50:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 39.77 Mbit/s
95th percentile per-packet one-way delay: 98.772 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 39.77 Mbit/s
95th percentile per-packet one-way delay: 98.772 ms
Loss rate: 0.24%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-01-18 09:45:20

End at: 2018-01-18 09:45:50

Local clock offset: 1.739 ms

Remote clock offset: -1.785 ms

Run 1: Report of TCP Cubic — Data Link

Figure is missing

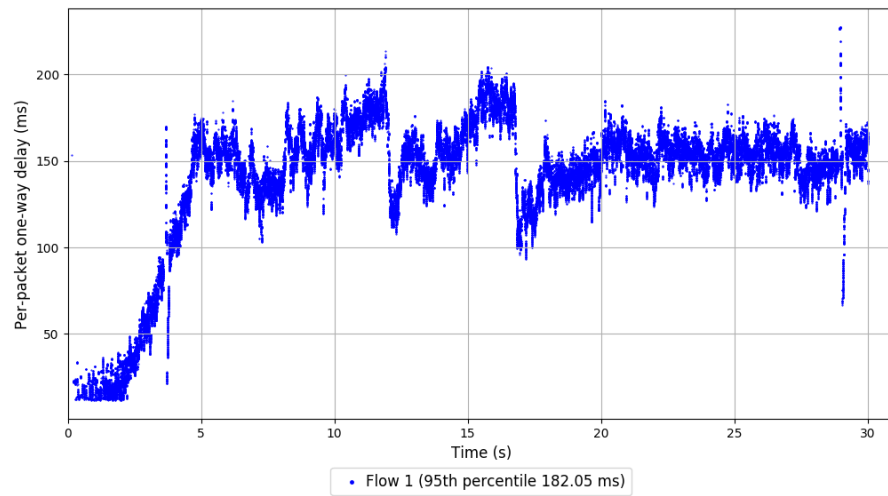
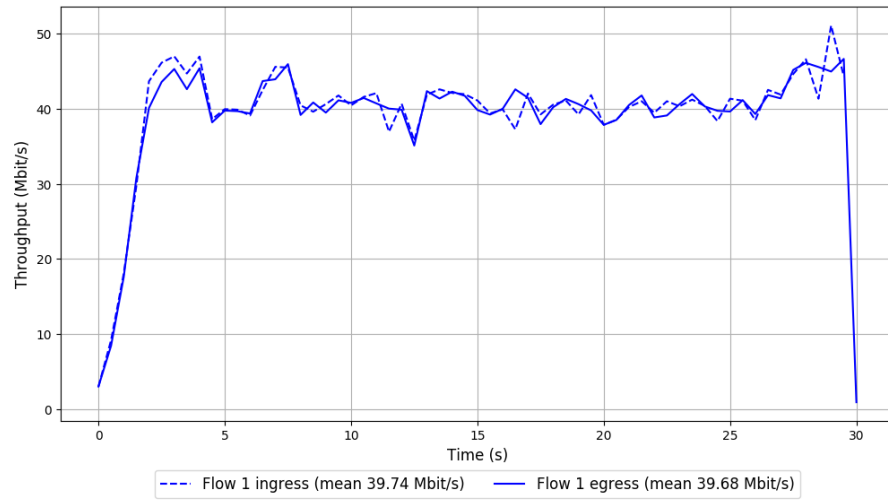
Figure is missing

Run 2: Statistics of TCP Cubic

Start at: 2018-01-18 10:06:42
End at: 2018-01-18 10:07:12
Local clock offset: 2.623 ms
Remote clock offset: -1.737 ms

Below is generated by plot.py at 2018-01-18 10:50:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 39.68 Mbit/s
95th percentile per-packet one-way delay: 182.050 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 39.68 Mbit/s
95th percentile per-packet one-way delay: 182.050 ms
Loss rate: 0.54%

Run 2: Report of TCP Cubic — Data Link

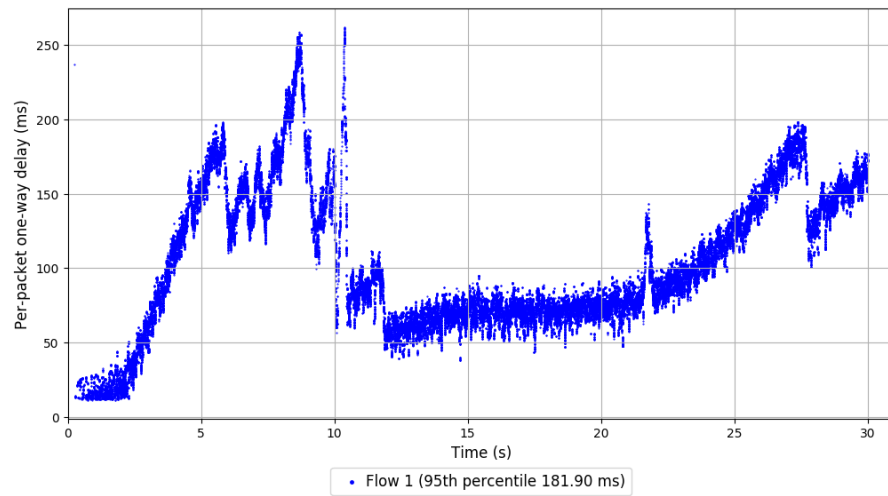
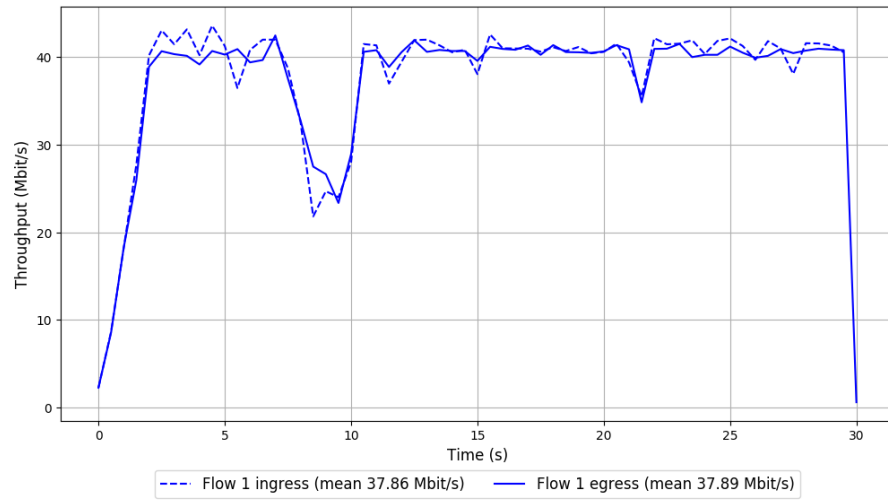


Run 3: Statistics of TCP Cubic

Start at: 2018-01-18 10:28:03
End at: 2018-01-18 10:28:33
Local clock offset: 2.775 ms
Remote clock offset: -2.028 ms

Below is generated by plot.py at 2018-01-18 10:50:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 37.89 Mbit/s
95th percentile per-packet one-way delay: 181.903 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 37.89 Mbit/s
95th percentile per-packet one-way delay: 181.903 ms
Loss rate: 0.62%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of LEDBAT

Start at: 2018-01-18 09:54:47

End at: 2018-01-18 09:55:17

Local clock offset: 2.218 ms

Remote clock offset: -1.69 ms

Below is generated by plot.py at 2018-01-18 10:50:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 37.11 Mbit/s

95th percentile per-packet one-way delay: 111.235 ms

Loss rate: 0.26%

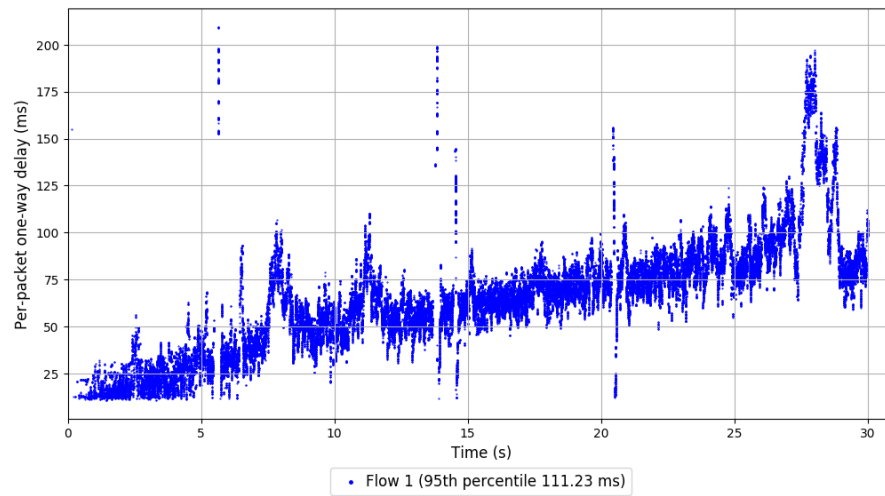
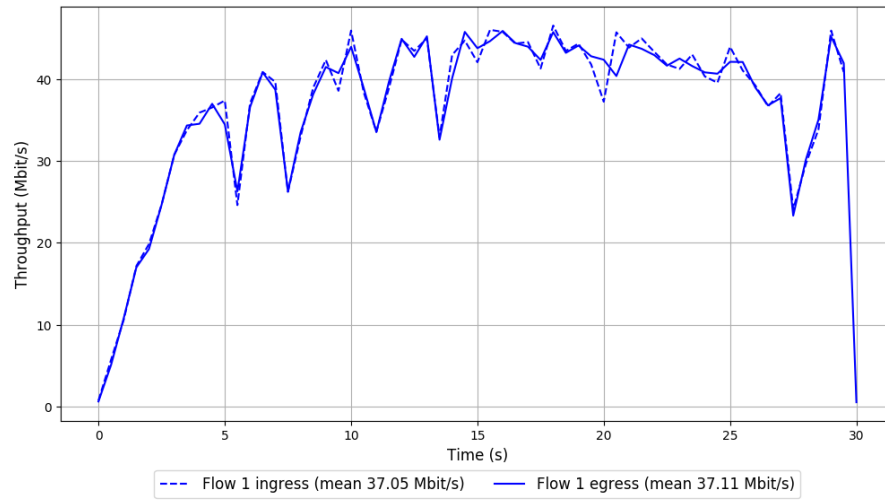
-- Flow 1:

Average throughput: 37.11 Mbit/s

95th percentile per-packet one-way delay: 111.235 ms

Loss rate: 0.26%

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

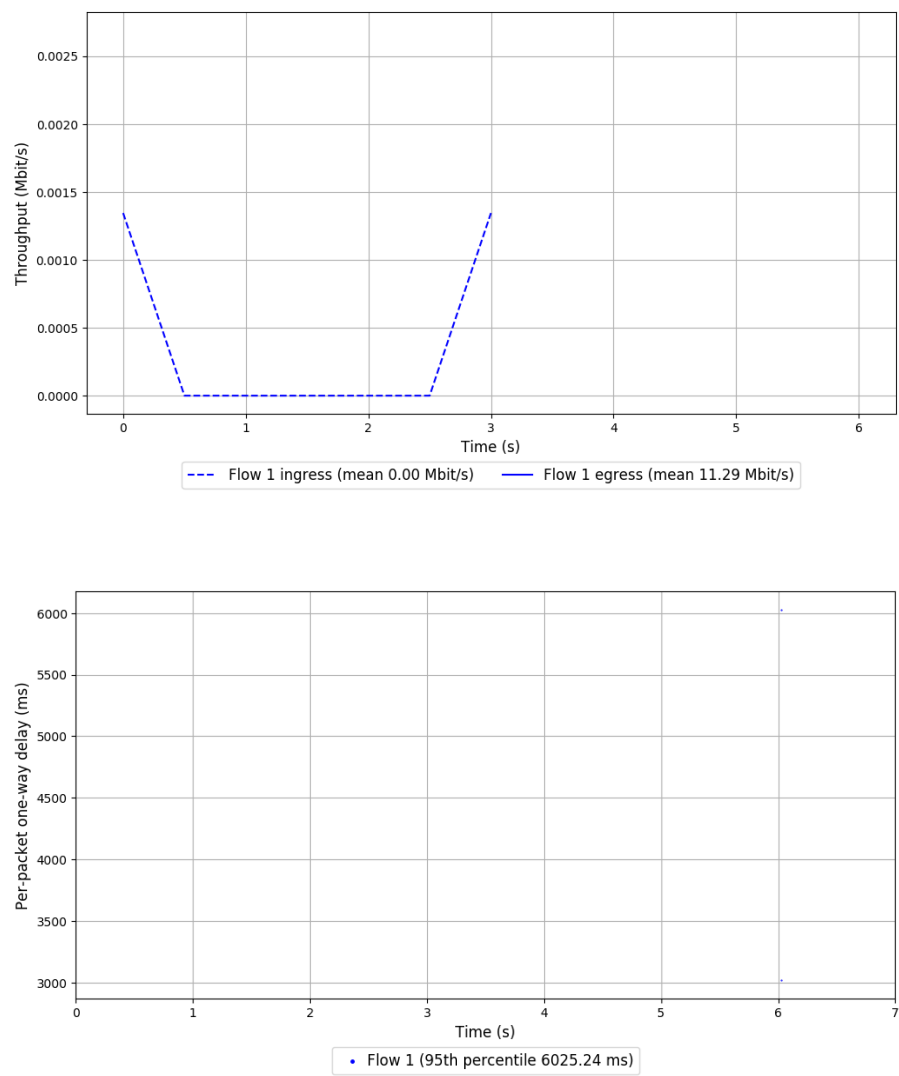
Start at: 2018-01-18 10:16:10

End at: 2018-01-18 10:16:40

Local clock offset: 2.589 ms

Remote clock offset: -1.971 ms

Run 2: Report of LEDBAT — Data Link

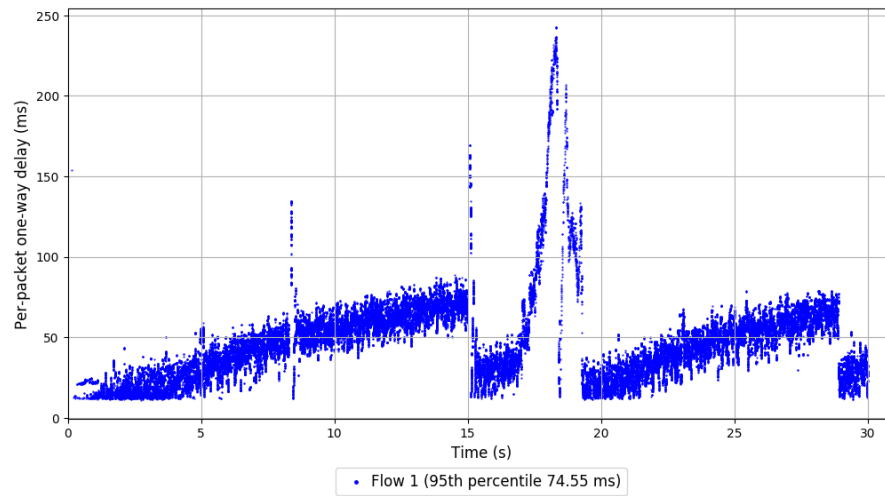
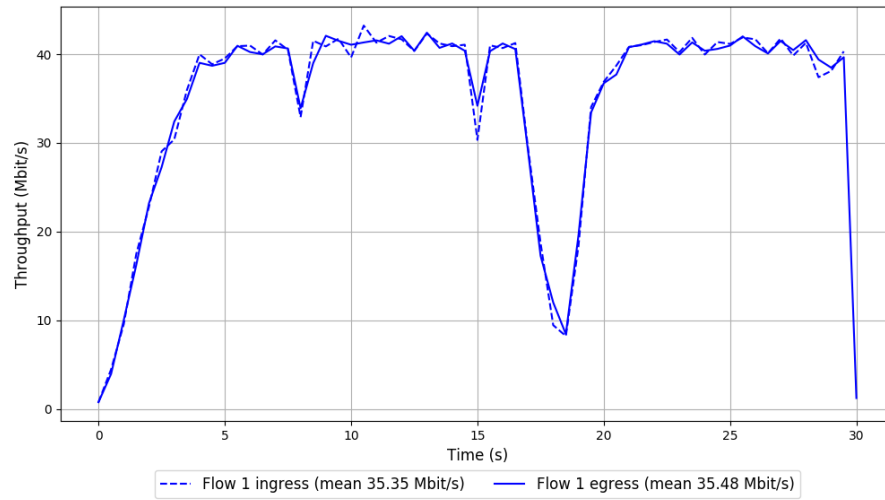


Run 3: Statistics of LEDBAT

Start at: 2018-01-18 10:37:32
End at: 2018-01-18 10:38:02
Local clock offset: 2.946 ms
Remote clock offset: -2.037 ms

Below is generated by plot.py at 2018-01-18 10:50:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 35.48 Mbit/s
95th percentile per-packet one-way delay: 74.547 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 35.48 Mbit/s
95th percentile per-packet one-way delay: 74.547 ms
Loss rate: 0.09%

Run 3: Report of LEDBAT — Data Link

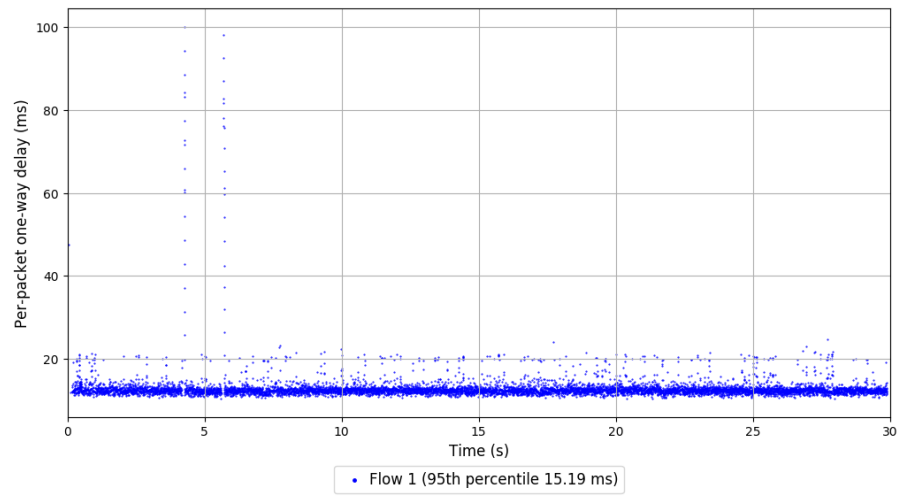
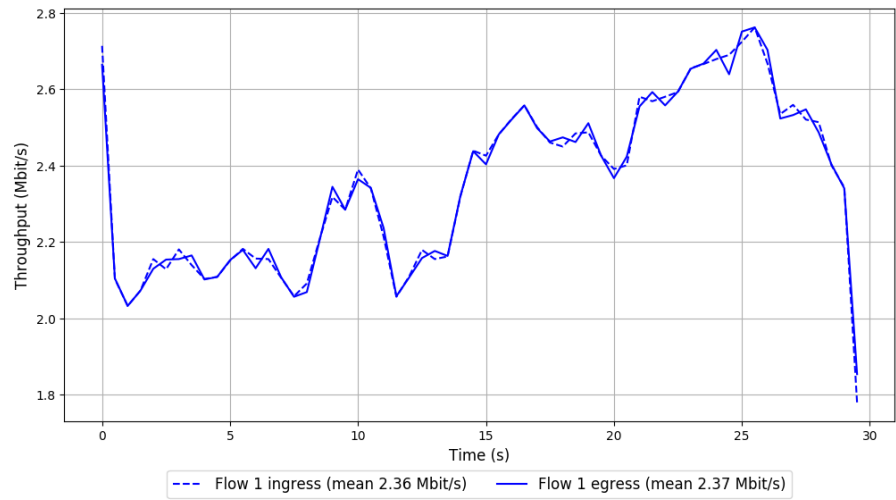


```
Run 1: Statistics of PCC

Start at: 2018-01-18 09:56:00
End at: 2018-01-18 09:56:30
Local clock offset: 2.281 ms
Remote clock offset: -1.608 ms

# Below is generated by plot.py at 2018-01-18 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 15.189 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 15.189 ms
Loss rate: 0.00%
```

Run 1: Report of PCC — Data Link

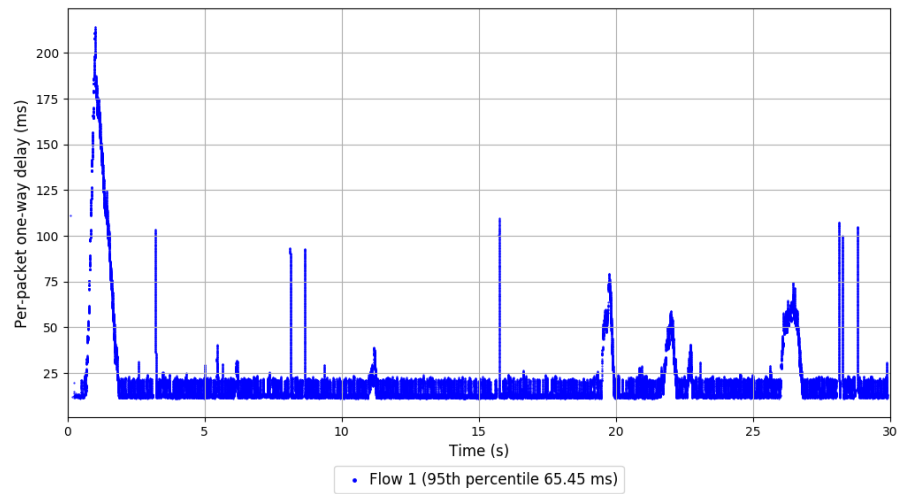
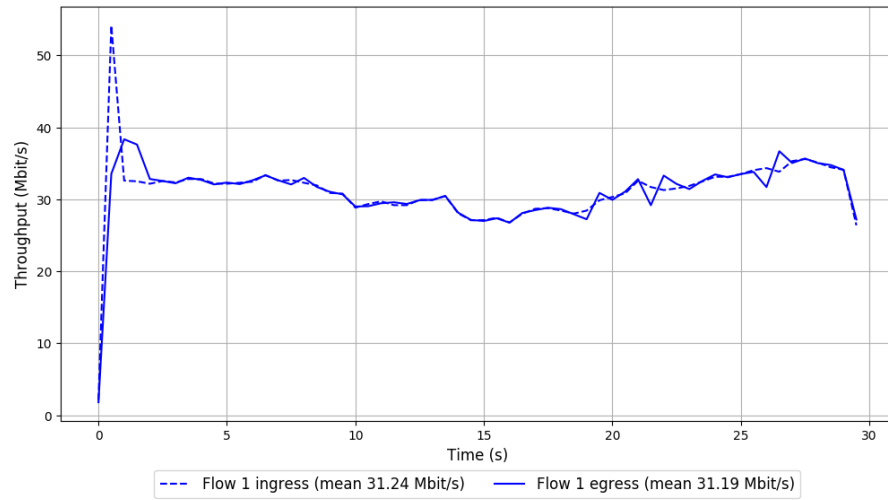


Run 2: Statistics of PCC

Start at: 2018-01-18 10:17:20
End at: 2018-01-18 10:17:50
Local clock offset: 2.589 ms
Remote clock offset: -1.986 ms

Below is generated by plot.py at 2018-01-18 10:50:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 31.19 Mbit/s
95th percentile per-packet one-way delay: 65.450 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 31.19 Mbit/s
95th percentile per-packet one-way delay: 65.450 ms
Loss rate: 0.46%

Run 2: Report of PCC — Data Link

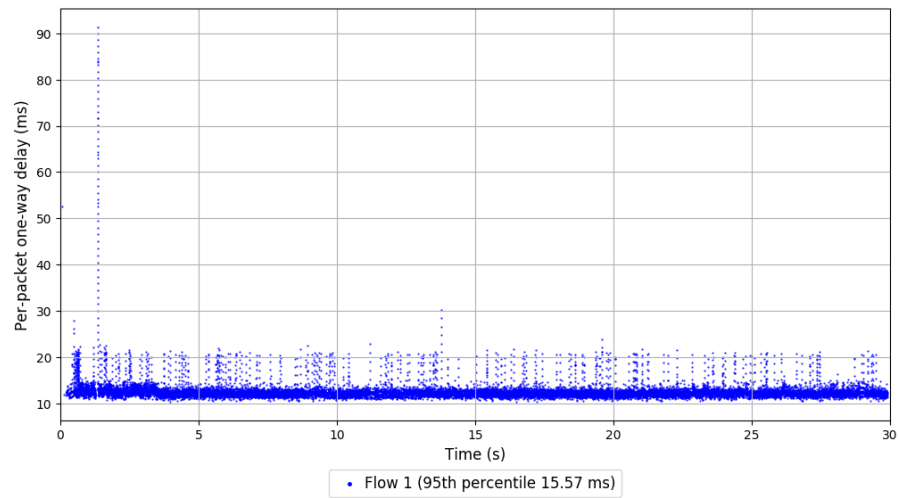
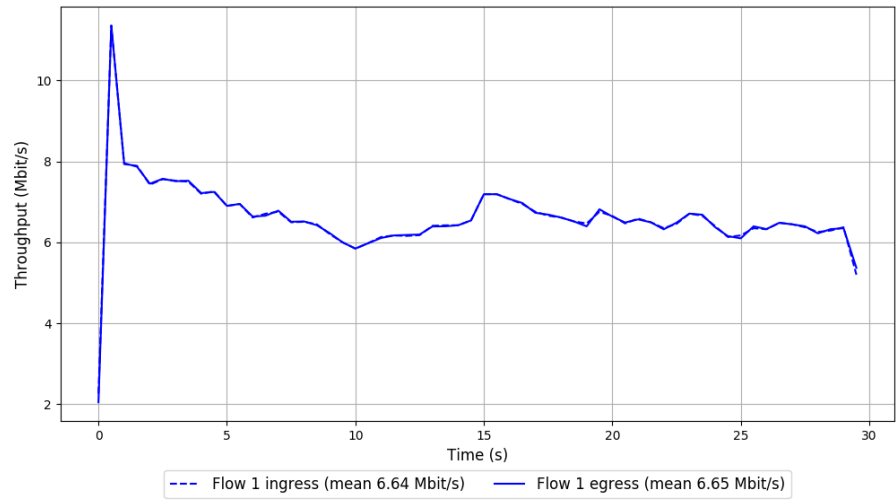


Run 3: Statistics of PCC

Start at: 2018-01-18 10:38:44
End at: 2018-01-18 10:39:14
Local clock offset: 2.978 ms
Remote clock offset: -2.147 ms

Below is generated by plot.py at 2018-01-18 10:50:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.65 Mbit/s
95th percentile per-packet one-way delay: 15.566 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 6.65 Mbit/s
95th percentile per-packet one-way delay: 15.566 ms
Loss rate: 0.00%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

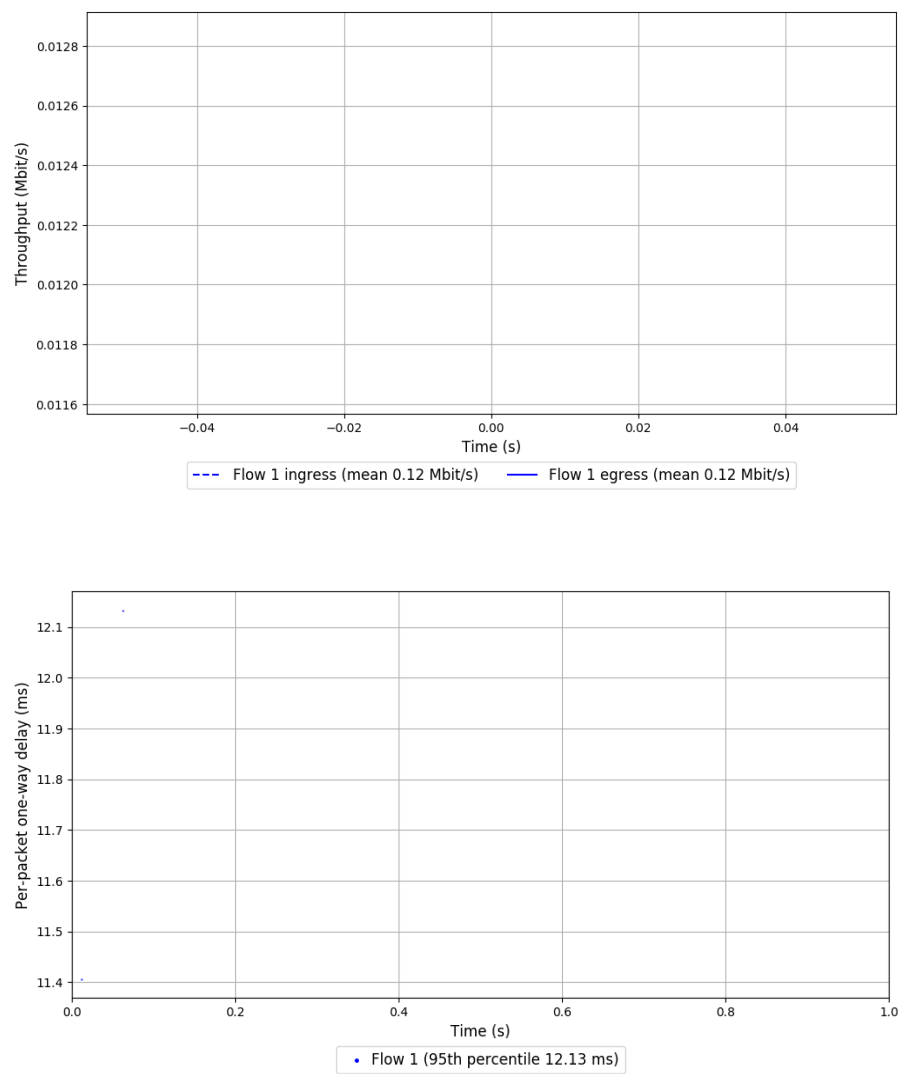
Start at: 2018-01-18 10:03:07

End at: 2018-01-18 10:03:37

Local clock offset: 2.477 ms

Remote clock offset: -1.619 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-01-18 10:24:27

End at: 2018-01-18 10:24:57

Local clock offset: 2.728 ms

Remote clock offset: -2.061 ms

Below is generated by plot.py at 2018-01-18 10:50:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 38.39 Mbit/s

95th percentile per-packet one-way delay: 160.601 ms

Loss rate: 0.52%

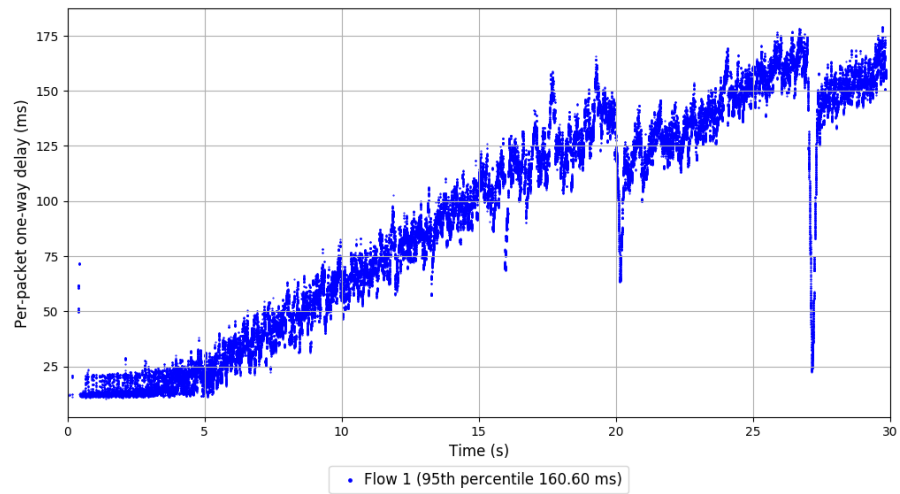
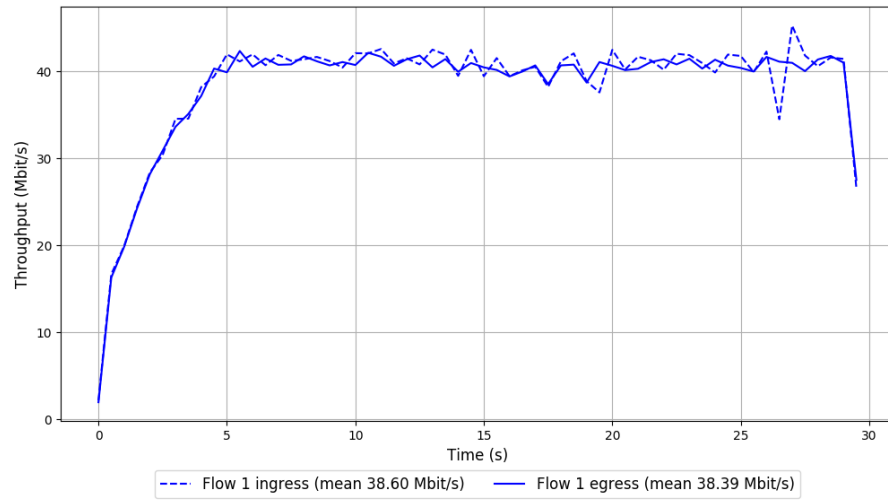
-- Flow 1:

Average throughput: 38.39 Mbit/s

95th percentile per-packet one-way delay: 160.601 ms

Loss rate: 0.52%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

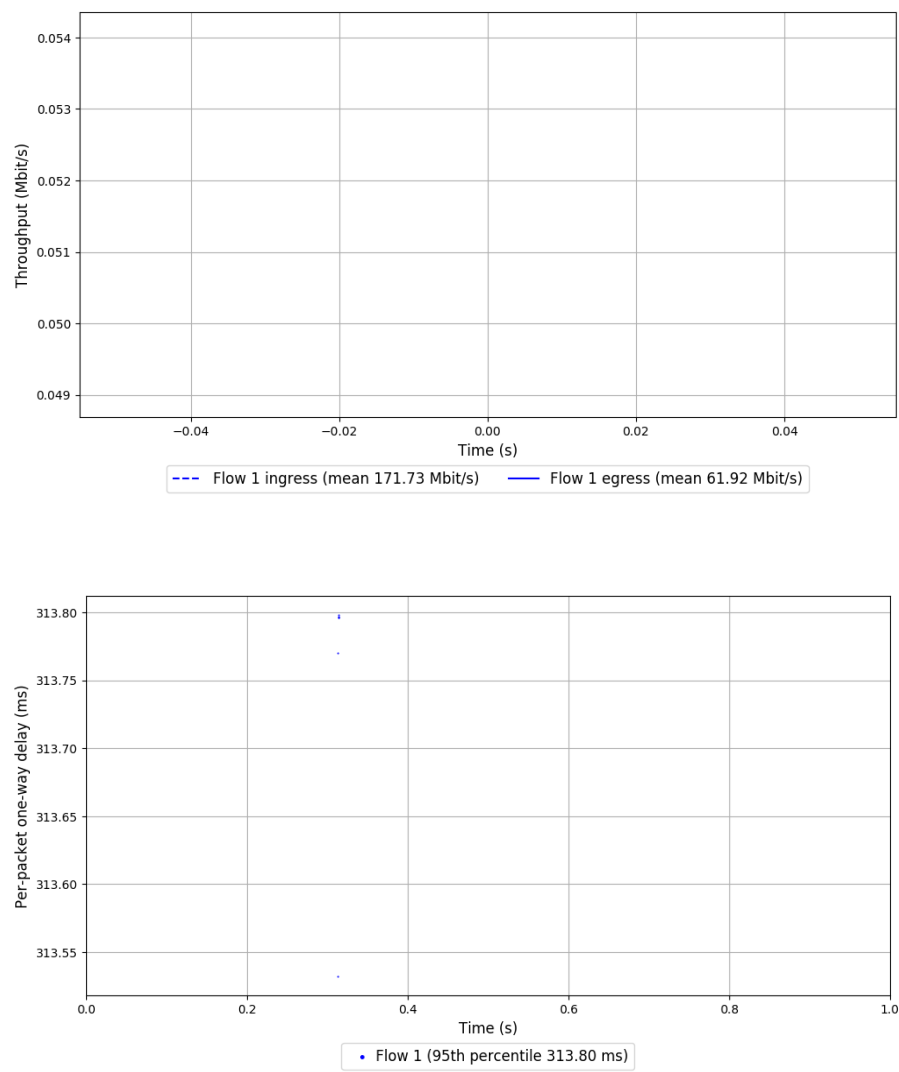
Start at: 2018-01-18 10:45:51

End at: 2018-01-18 10:46:21

Local clock offset: 2.708 ms

Remote clock offset: -2.153 ms

Run 3: Report of QUIC Cubic — Data Link

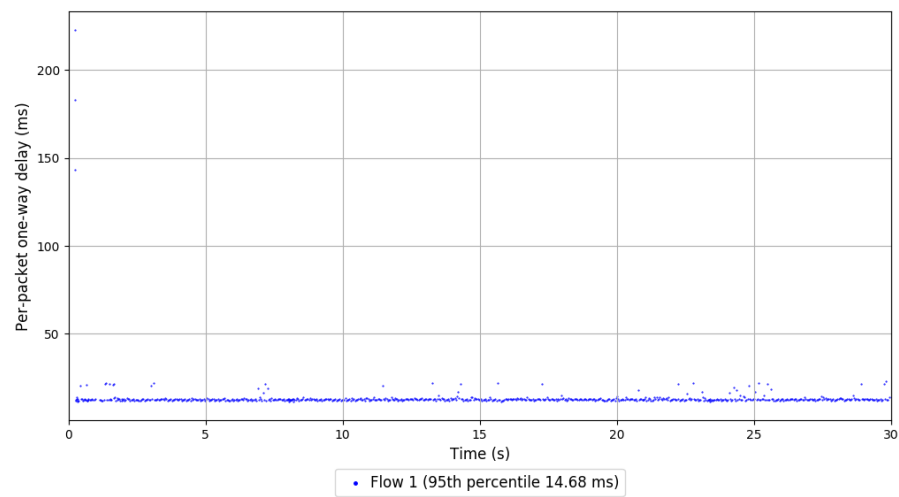
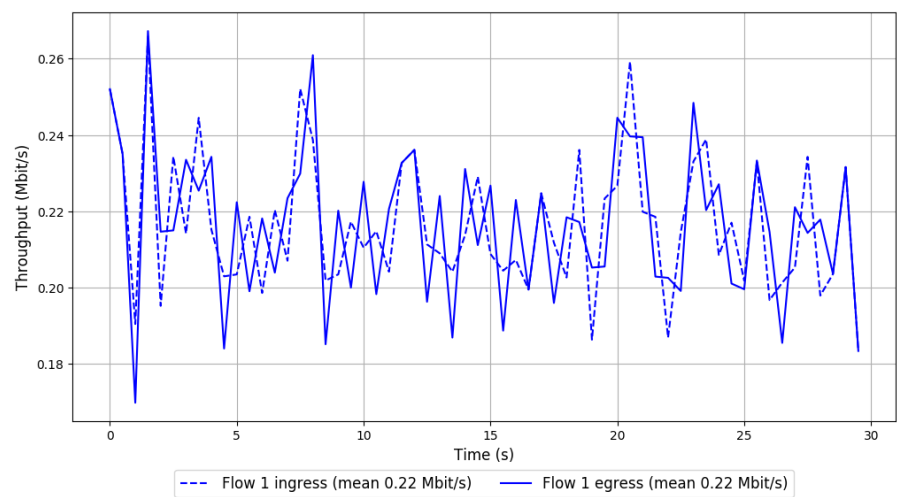


Run 1: Statistics of SCReAM

Start at: 2018-01-18 10:00:46
End at: 2018-01-18 10:01:16
Local clock offset: 2.449 ms
Remote clock offset: -1.472 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 14.684 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 14.684 ms
Loss rate: 0.00%

Run 1: Report of SReAM — Data Link

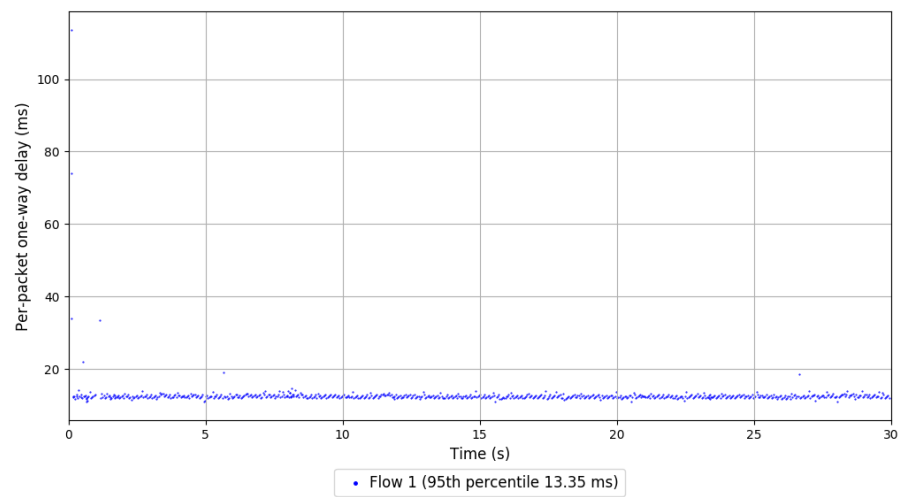
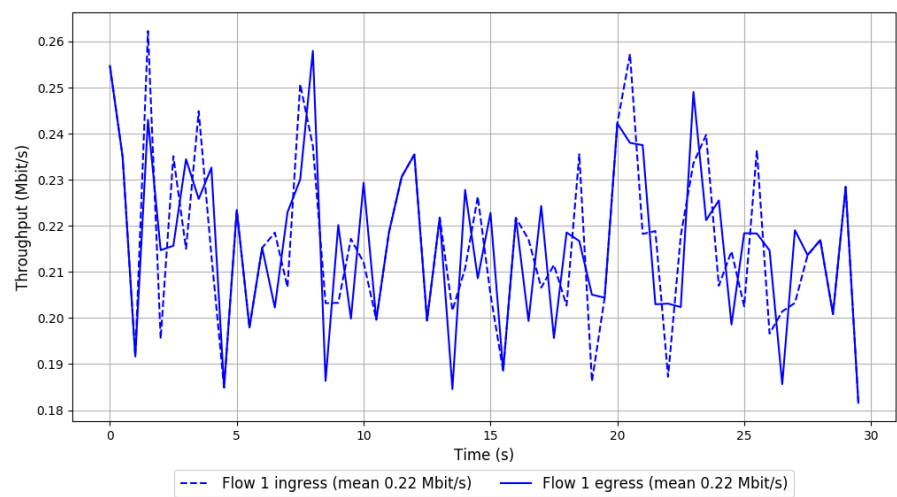


Run 2: Statistics of SCReAM

Start at: 2018-01-18 10:22:06
End at: 2018-01-18 10:22:36
Local clock offset: 2.712 ms
Remote clock offset: -1.929 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 13.354 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 13.354 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-01-18 10:43:30

End at: 2018-01-18 10:44:00

Local clock offset: 2.763 ms

Remote clock offset: -2.18 ms

Below is generated by plot.py at 2018-01-18 10:50:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 12.855 ms

Loss rate: 0.00%

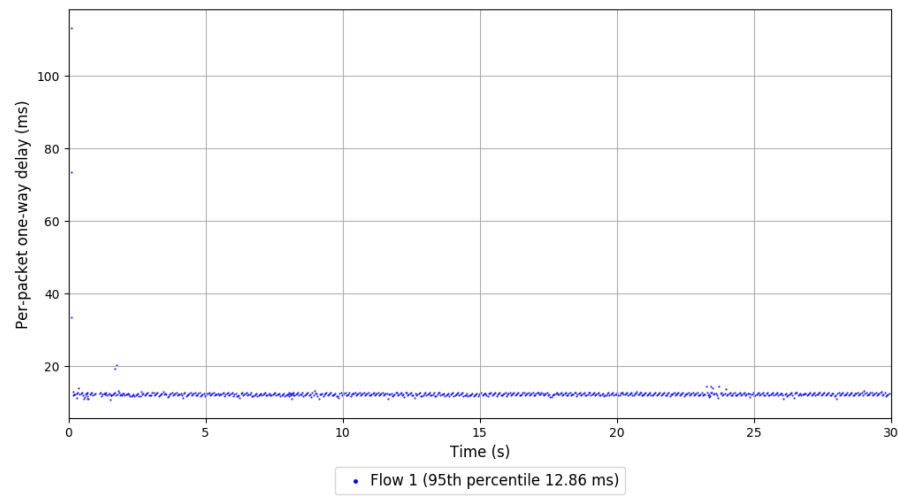
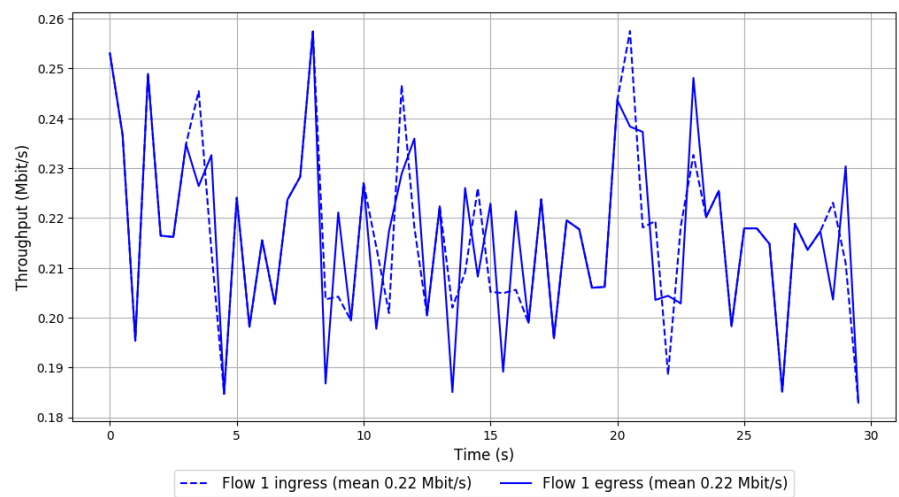
-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 12.855 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

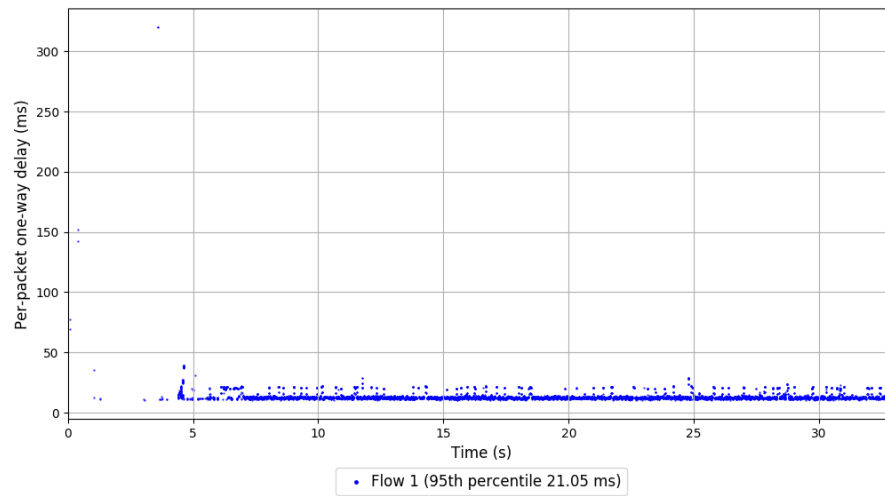
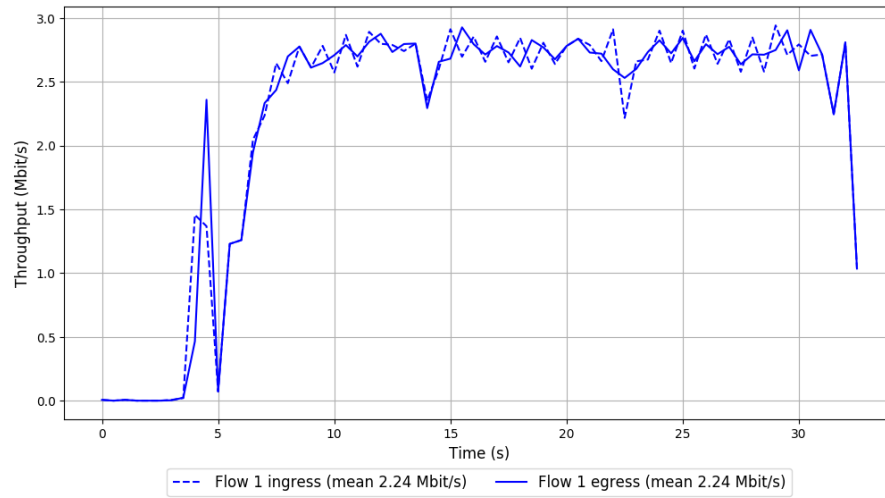


```
Run 1: Statistics of WebRTC media

Start at: 2018-01-18 09:52:27
End at: 2018-01-18 09:52:57
Local clock offset: 2.125 ms
Remote clock offset: -1.676 ms

# Below is generated by plot.py at 2018-01-18 10:50:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 21.050 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 21.050 ms
Loss rate: 0.00%
```


Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-01-18 10:13:49

End at: 2018-01-18 10:14:19

Local clock offset: 2.66 ms

Remote clock offset: -1.91 ms

Below is generated by plot.py at 2018-01-18 10:50:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.27 Mbit/s

95th percentile per-packet one-way delay: 20.811 ms

Loss rate: 0.00%

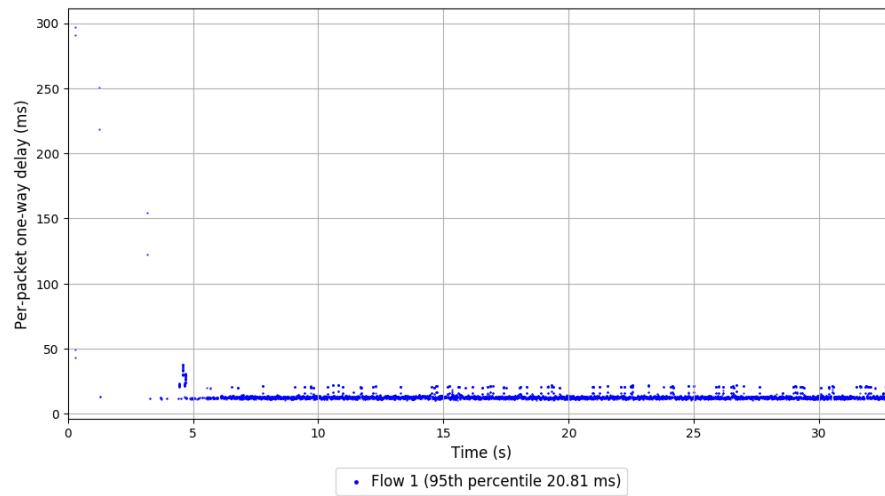
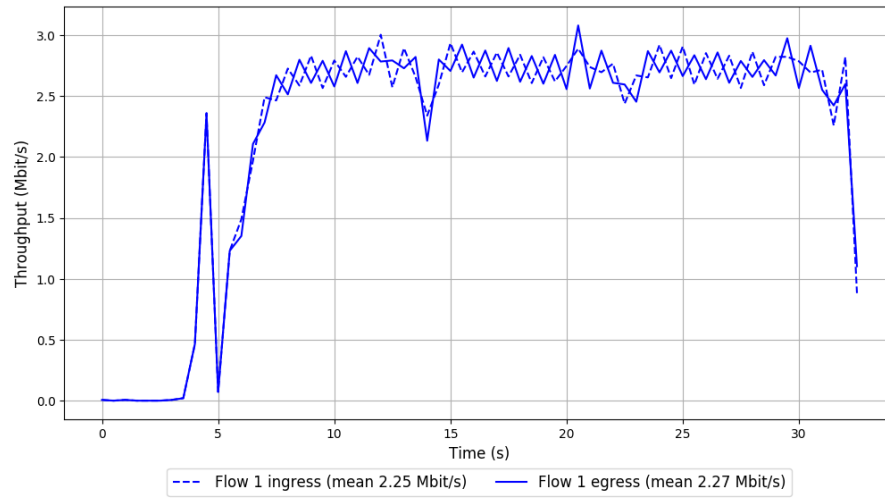
-- Flow 1:

Average throughput: 2.27 Mbit/s

95th percentile per-packet one-way delay: 20.811 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

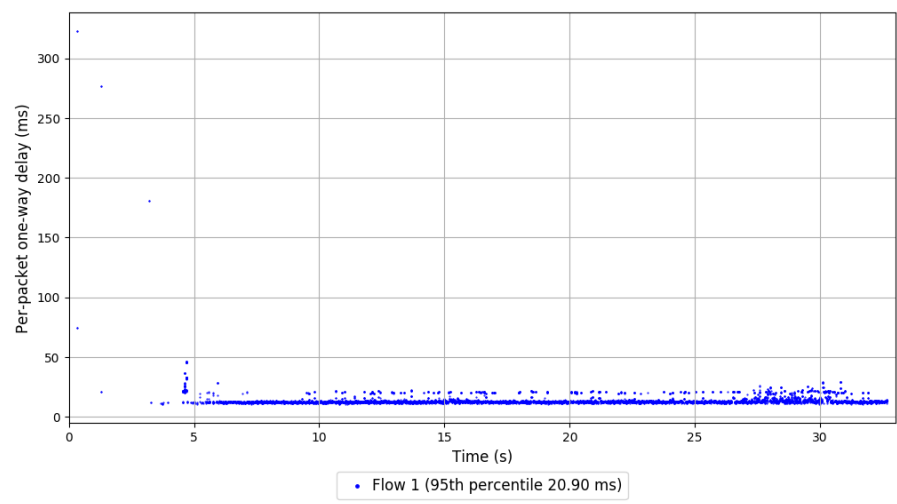
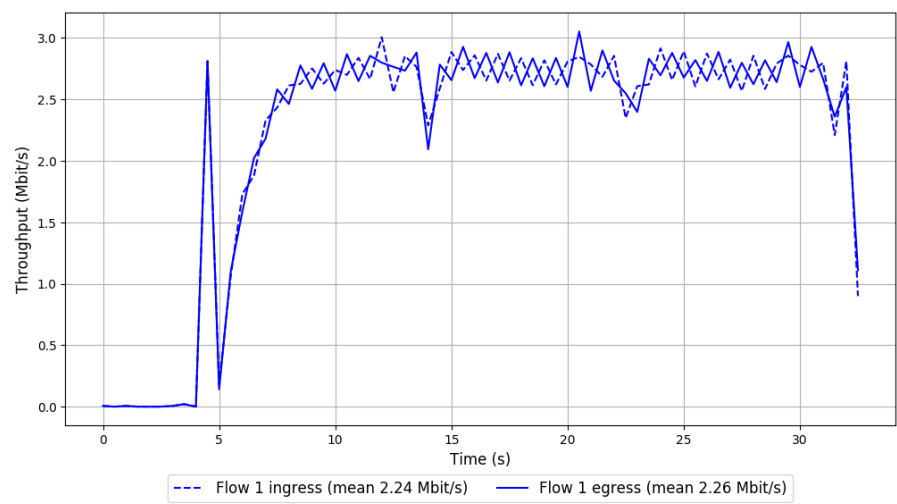


Run 3: Statistics of WebRTC media

Start at: 2018-01-18 10:35:11
End at: 2018-01-18 10:35:41
Local clock offset: 2.836 ms
Remote clock offset: -2.137 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 20.901 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 20.901 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

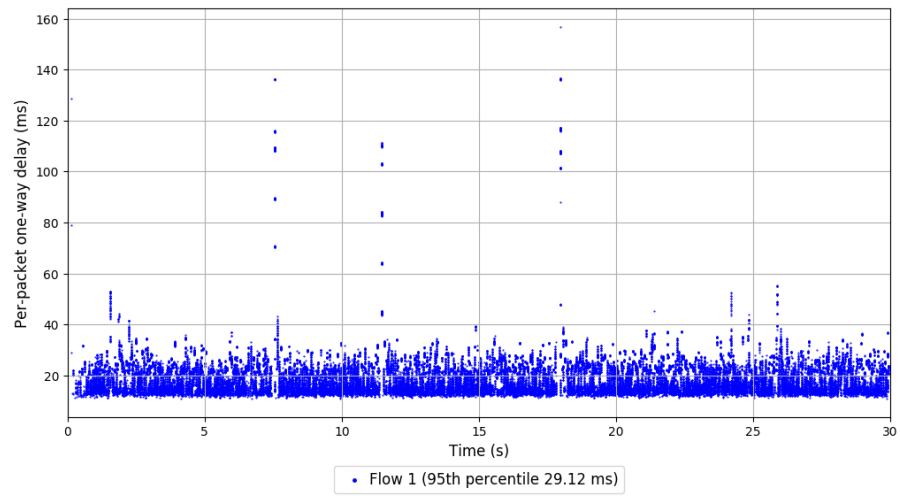
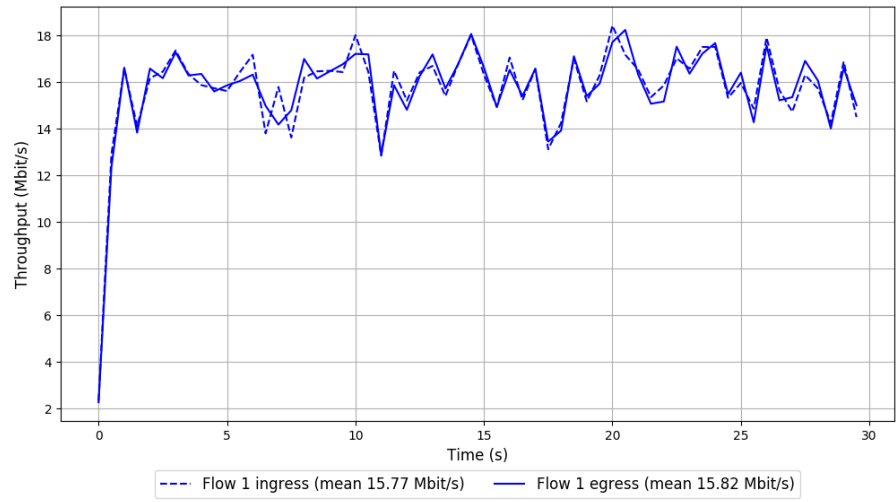


Run 1: Statistics of Sprout

Start at: 2018-01-18 10:01:56
End at: 2018-01-18 10:02:26
Local clock offset: 2.531 ms
Remote clock offset: -1.603 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 15.82 Mbit/s
95th percentile per-packet one-way delay: 29.123 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 15.82 Mbit/s
95th percentile per-packet one-way delay: 29.123 ms
Loss rate: 0.02%

Run 1: Report of Sprout — Data Link

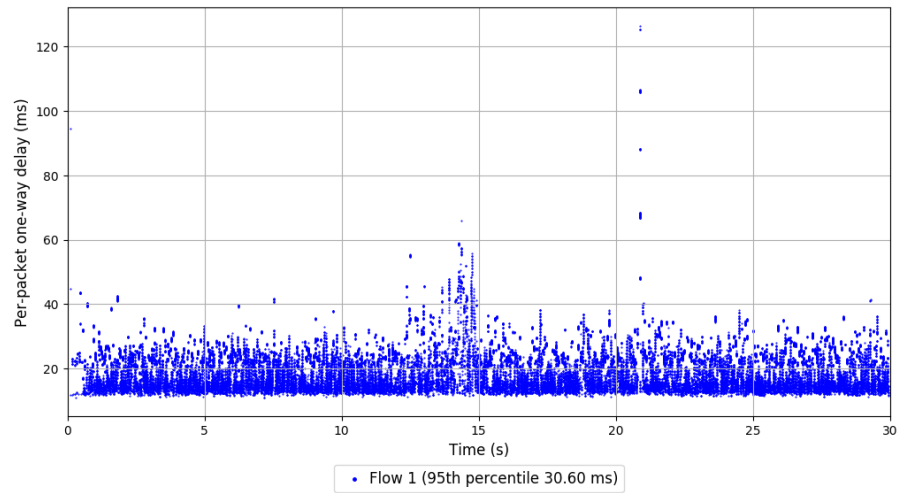
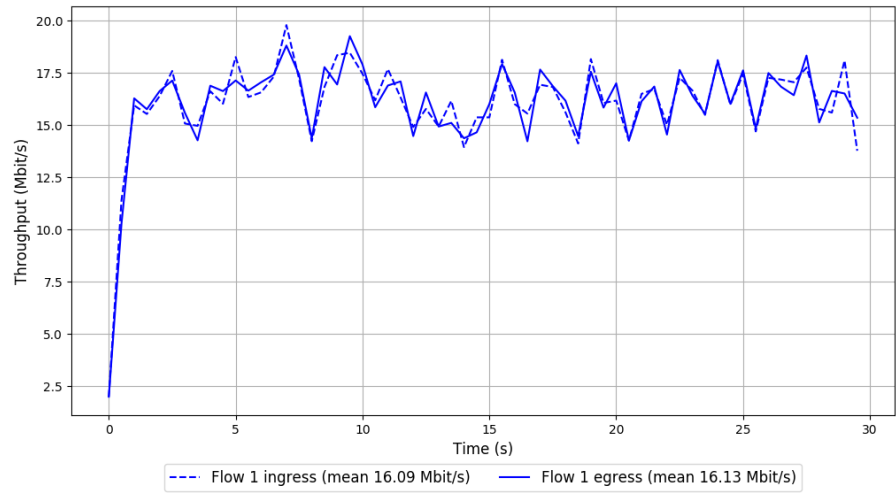


Run 2: Statistics of Sprout

Start at: 2018-01-18 10:23:16
End at: 2018-01-18 10:23:46
Local clock offset: 2.716 ms
Remote clock offset: -2.039 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 16.13 Mbit/s
95th percentile per-packet one-way delay: 30.603 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 16.13 Mbit/s
95th percentile per-packet one-way delay: 30.603 ms
Loss rate: 0.02%

Run 2: Report of Sprout — Data Link

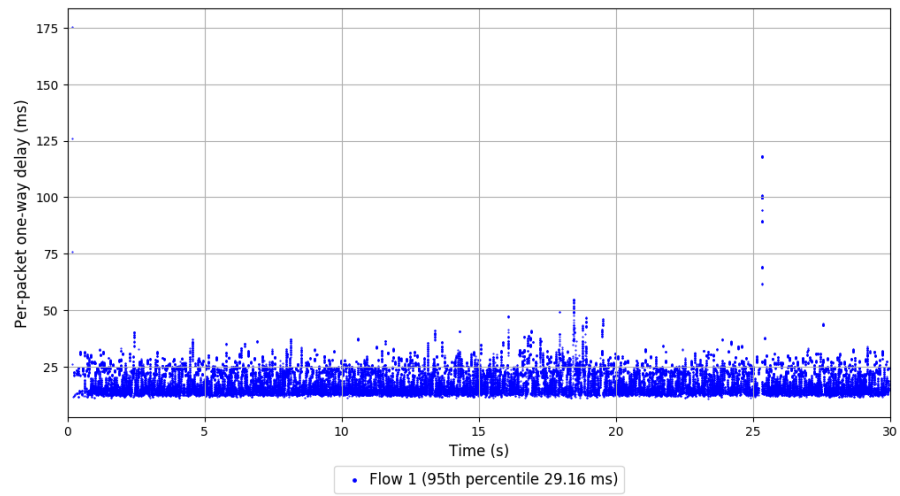
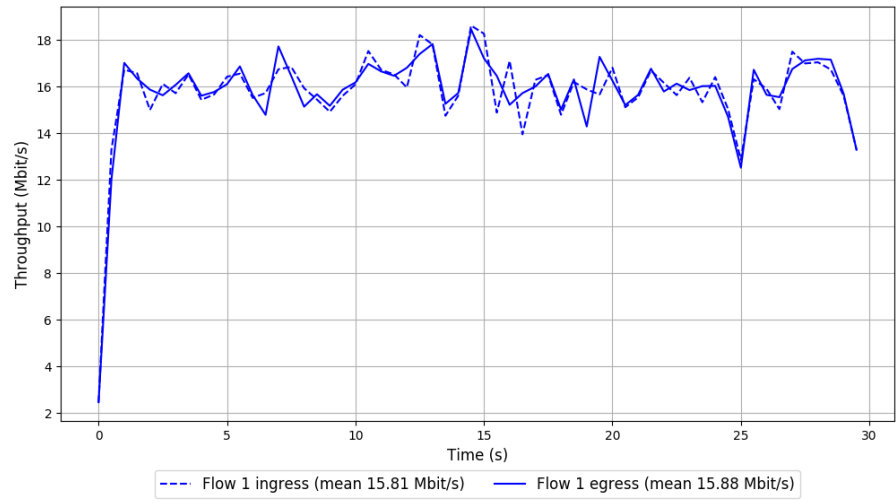


Run 3: Statistics of Sprout

Start at: 2018-01-18 10:44:40
End at: 2018-01-18 10:45:10
Local clock offset: 2.663 ms
Remote clock offset: -2.183 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 15.88 Mbit/s
95th percentile per-packet one-way delay: 29.156 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 15.88 Mbit/s
95th percentile per-packet one-way delay: 29.156 ms
Loss rate: 0.04%

Run 3: Report of Sprout — Data Link

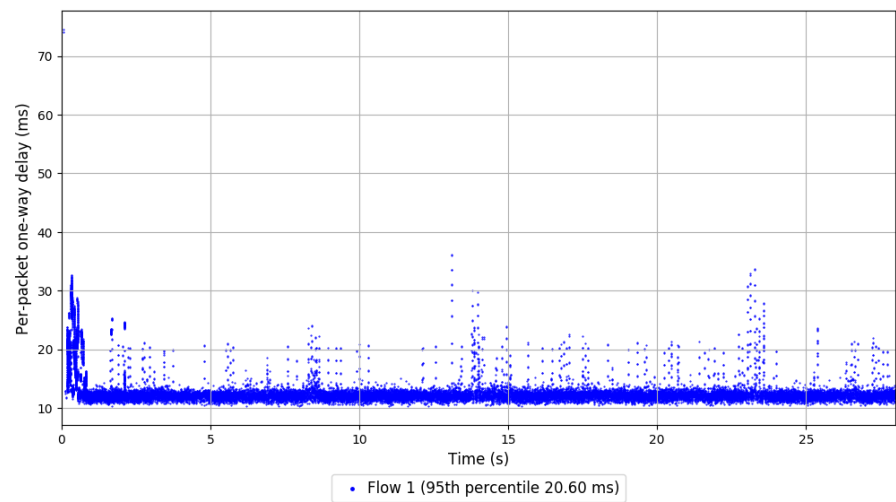
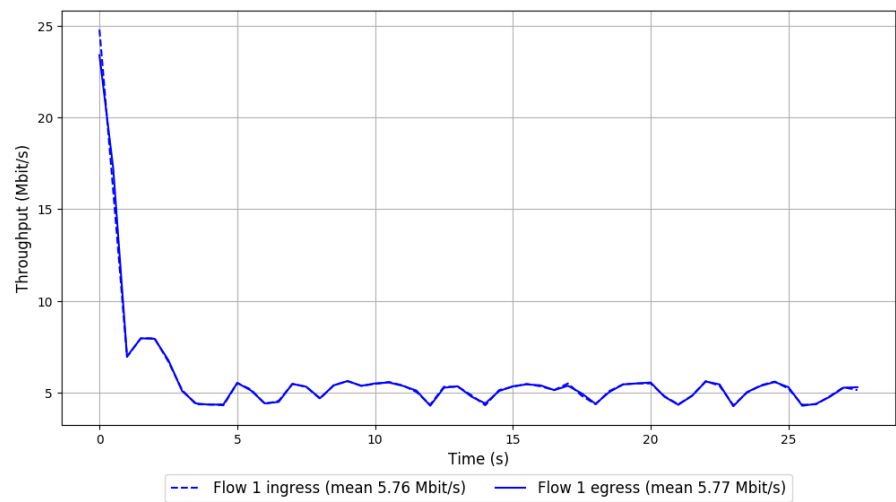


Run 1: Statistics of TaoVA-100x

Start at: 2018-01-18 09:46:31
End at: 2018-01-18 09:47:01
Local clock offset: 1.888 ms
Remote clock offset: -1.742 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.77 Mbit/s
95th percentile per-packet one-way delay: 20.597 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 5.77 Mbit/s
95th percentile per-packet one-way delay: 20.597 ms
Loss rate: 0.01%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-01-18 10:07:53

End at: 2018-01-18 10:08:23

Local clock offset: 2.755 ms

Remote clock offset: -1.766 ms

Below is generated by plot.py at 2018-01-18 10:50:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 5.56 Mbit/s

95th percentile per-packet one-way delay: 20.504 ms

Loss rate: 0.00%

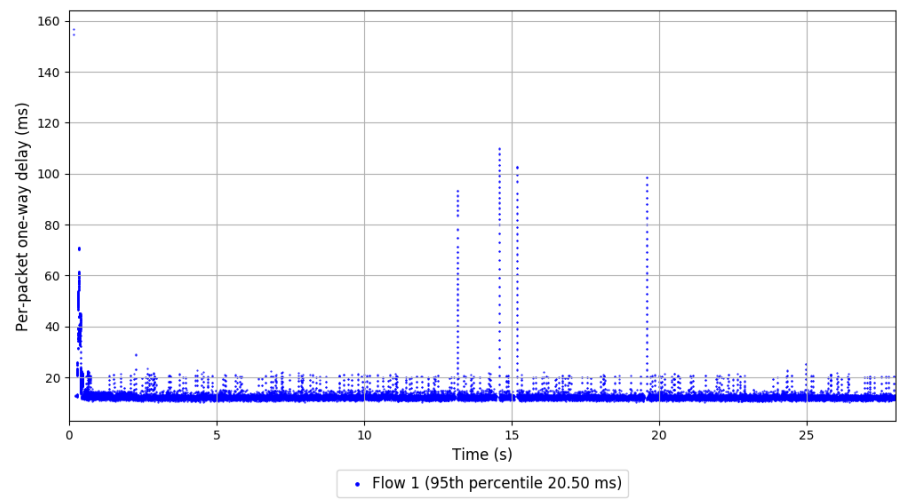
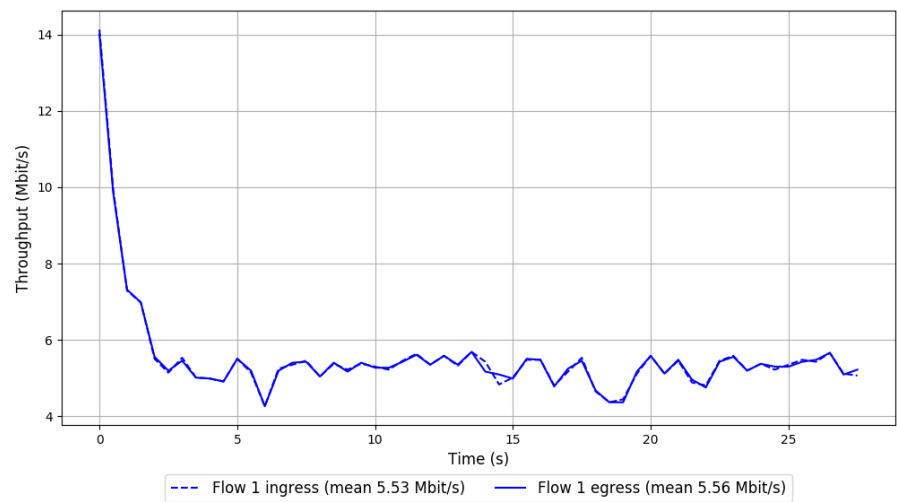
-- Flow 1:

Average throughput: 5.56 Mbit/s

95th percentile per-packet one-way delay: 20.504 ms

Loss rate: 0.00%

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

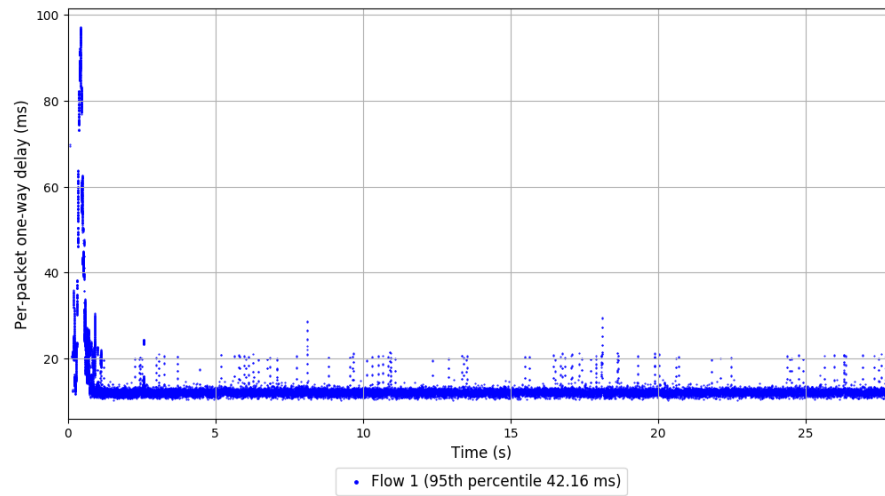
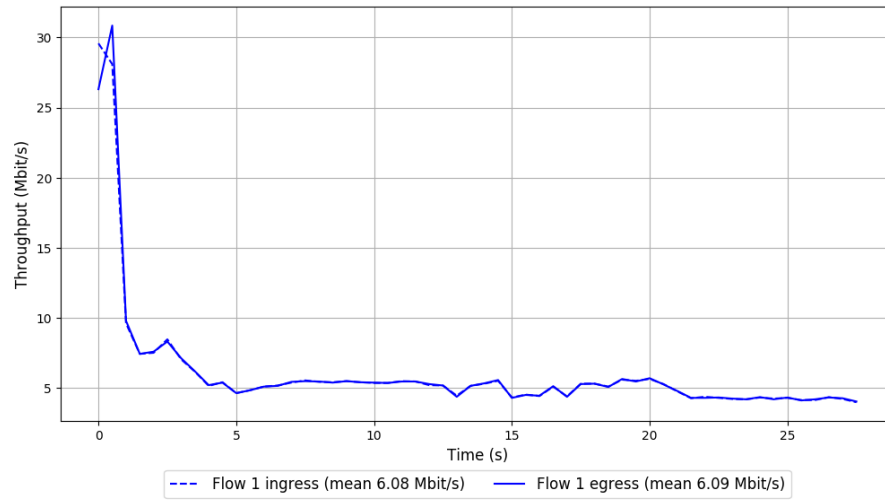


Run 3: Statistics of TaoVA-100x

Start at: 2018-01-18 10:29:15
End at: 2018-01-18 10:29:45
Local clock offset: 2.712 ms
Remote clock offset: -2.087 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.09 Mbit/s
95th percentile per-packet one-way delay: 42.162 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 6.09 Mbit/s
95th percentile per-packet one-way delay: 42.162 ms
Loss rate: 0.05%

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

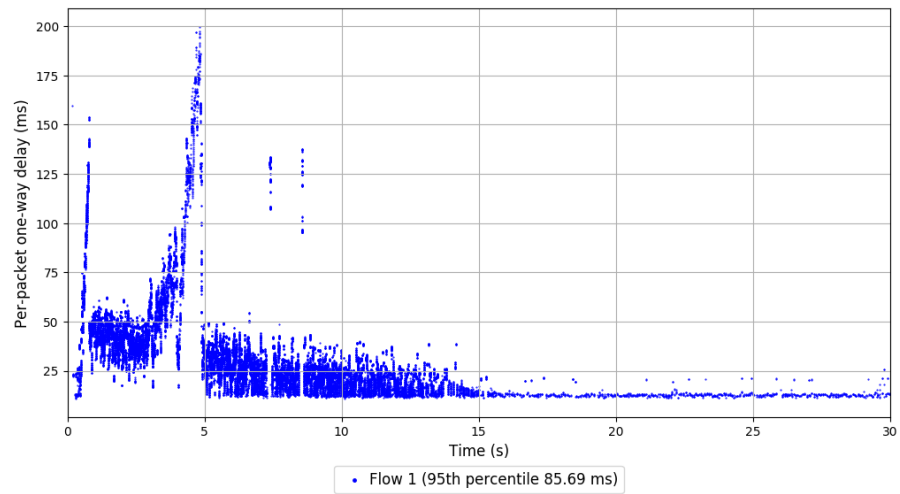
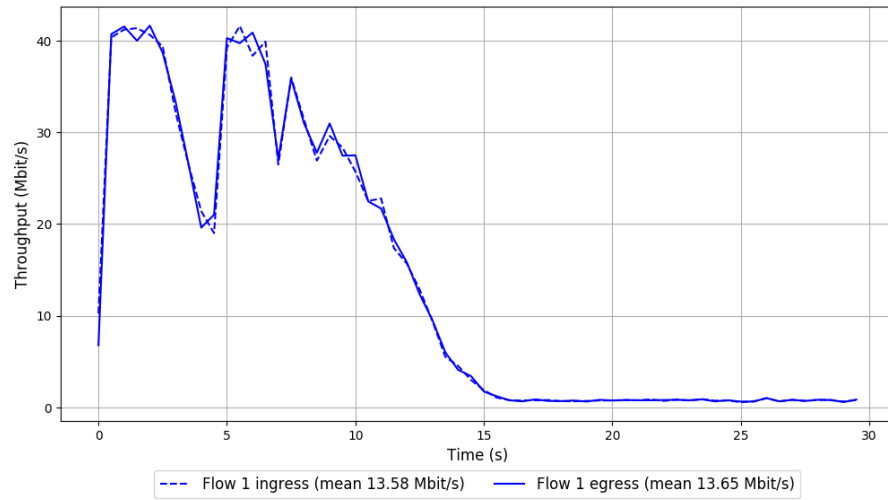


Run 1: Statistics of TCP Vegas

Start at: 2018-01-18 09:50:03
End at: 2018-01-18 09:50:33
Local clock offset: 2.015 ms
Remote clock offset: -1.754 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 13.65 Mbit/s
95th percentile per-packet one-way delay: 85.690 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 13.65 Mbit/s
95th percentile per-packet one-way delay: 85.690 ms
Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link

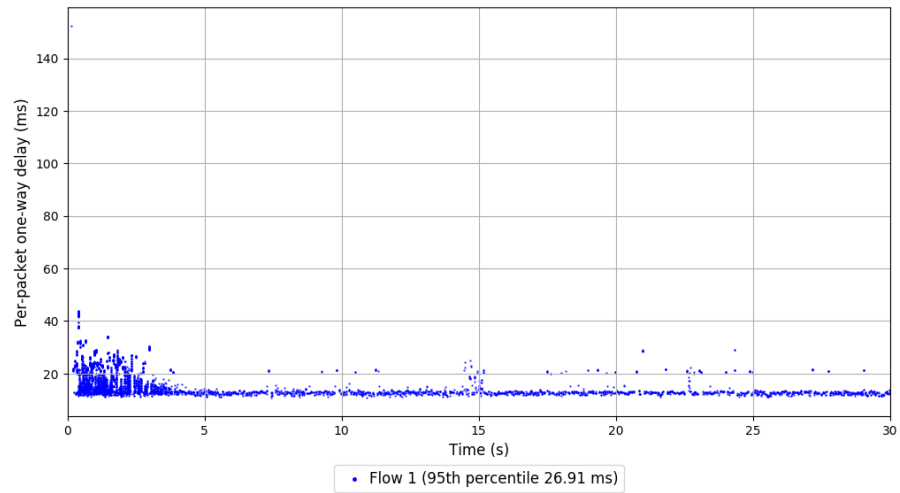
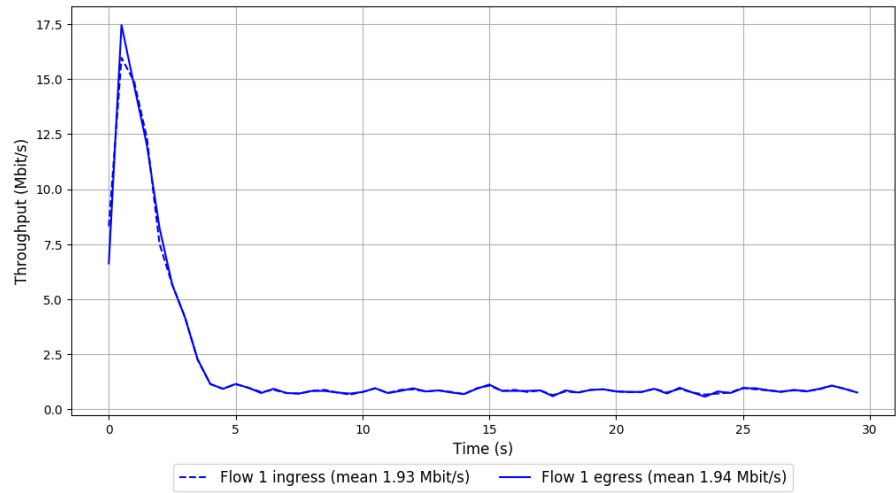


Run 2: Statistics of TCP Vegas

Start at: 2018-01-18 10:11:26
End at: 2018-01-18 10:11:56
Local clock offset: 2.699 ms
Remote clock offset: -1.792 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 26.914 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 26.914 ms
Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link

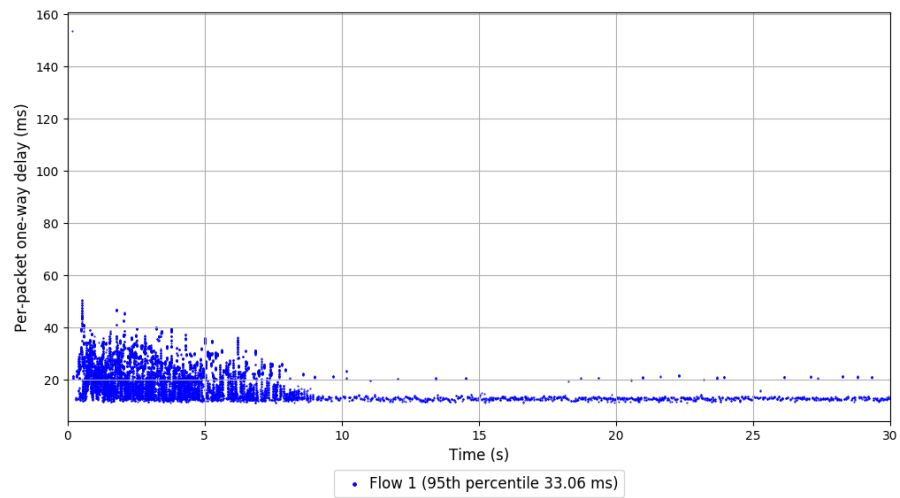
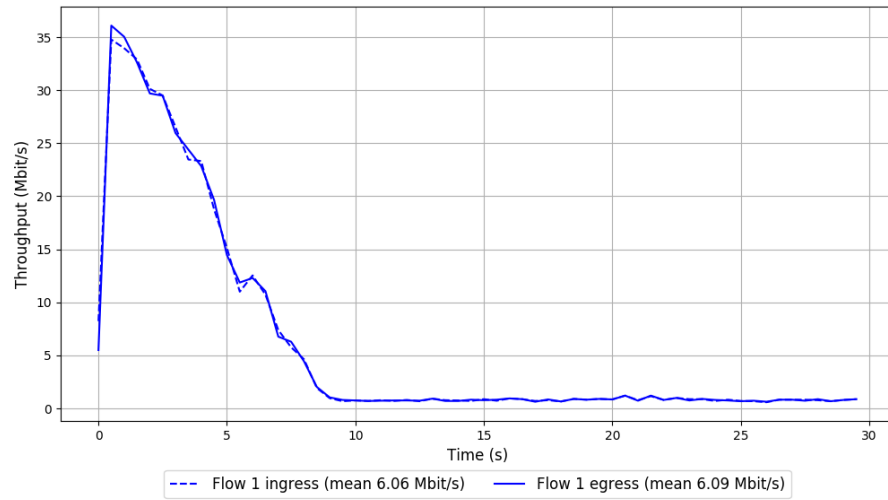


Run 3: Statistics of TCP Vegas

Start at: 2018-01-18 10:32:48
End at: 2018-01-18 10:33:18
Local clock offset: 2.872 ms
Remote clock offset: -2.099 ms

Below is generated by plot.py at 2018-01-18 10:50:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.09 Mbit/s
95th percentile per-packet one-way delay: 33.062 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 6.09 Mbit/s
95th percentile per-packet one-way delay: 33.062 ms
Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link

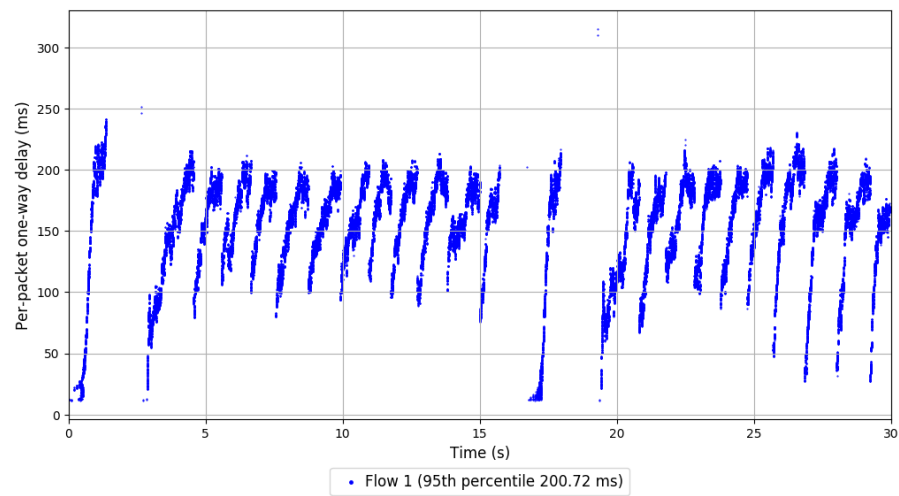
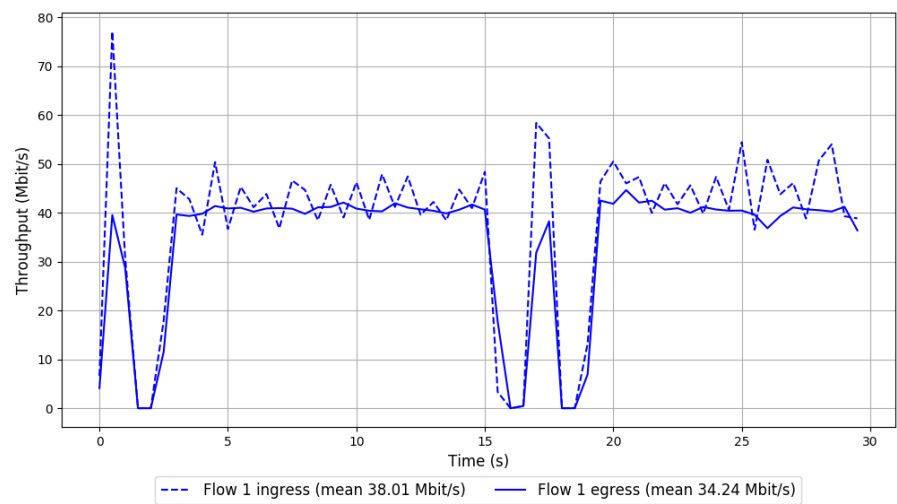


Run 1: Statistics of Verus

Start at: 2018-01-18 09:51:14
End at: 2018-01-18 09:51:44
Local clock offset: 2.086 ms
Remote clock offset: -1.635 ms

Below is generated by plot.py at 2018-01-18 10:51:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.24 Mbit/s
95th percentile per-packet one-way delay: 200.719 ms
Loss rate: 9.89%
-- Flow 1:
Average throughput: 34.24 Mbit/s
95th percentile per-packet one-way delay: 200.719 ms
Loss rate: 9.89%

Run 1: Report of Verus — Data Link

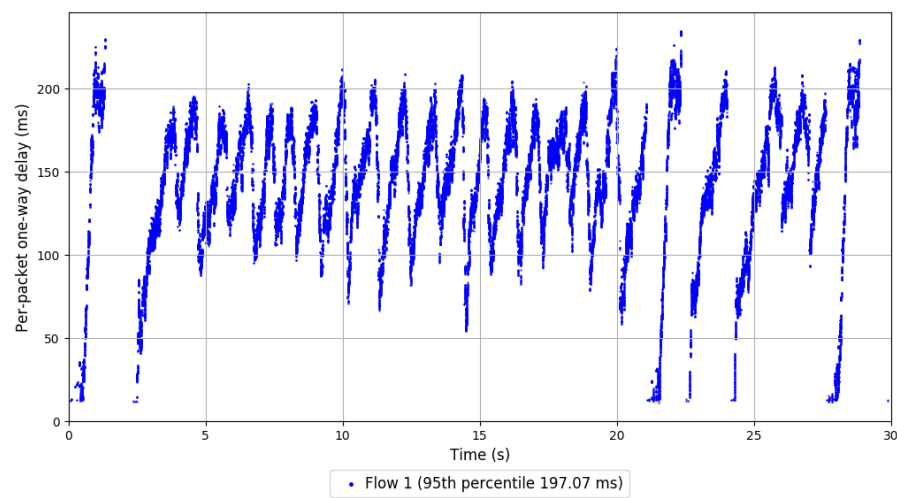
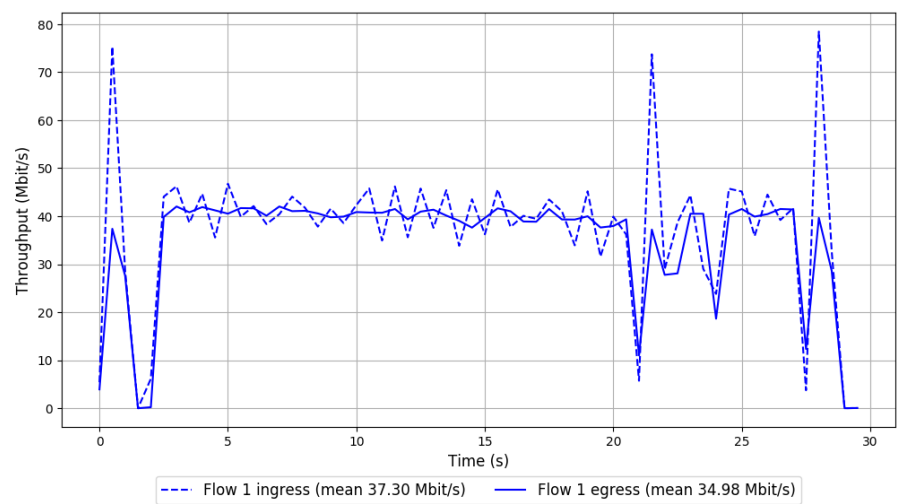


Run 2: Statistics of Verus

Start at: 2018-01-18 10:12:37
End at: 2018-01-18 10:13:07
Local clock offset: 2.597 ms
Remote clock offset: -1.888 ms

Below is generated by plot.py at 2018-01-18 10:51:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 34.98 Mbit/s
95th percentile per-packet one-way delay: 197.066 ms
Loss rate: 6.22%
-- Flow 1:
Average throughput: 34.98 Mbit/s
95th percentile per-packet one-way delay: 197.066 ms
Loss rate: 6.22%

Run 2: Report of Verus — Data Link

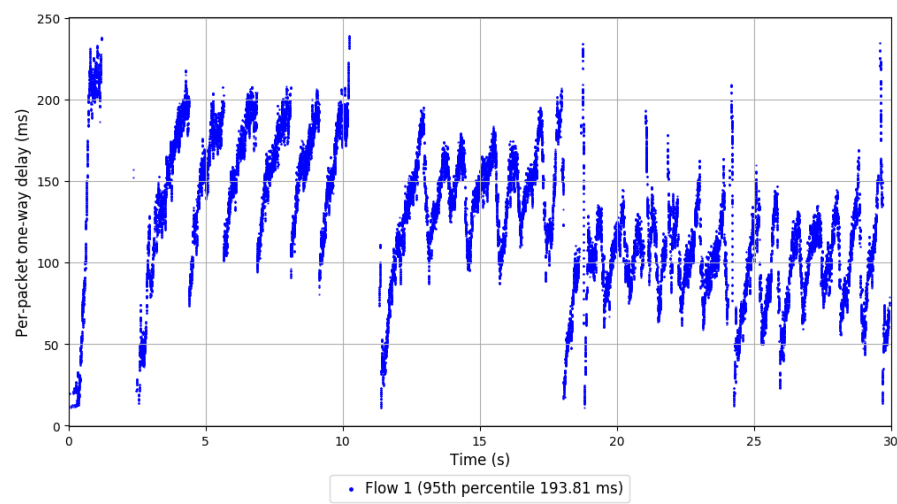
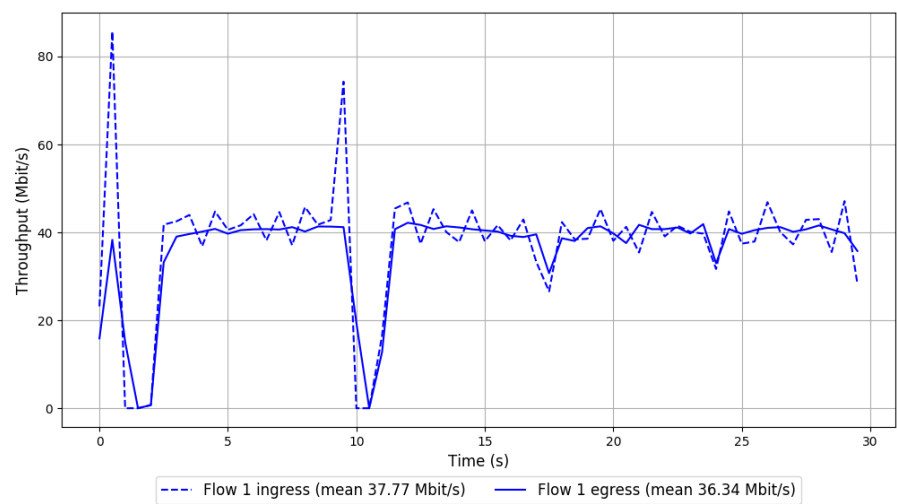


Run 3: Statistics of Verus

Start at: 2018-01-18 10:33:58
End at: 2018-01-18 10:34:28
Local clock offset: 2.824 ms
Remote clock offset: -2.115 ms

Below is generated by plot.py at 2018-01-18 10:51:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 36.34 Mbit/s
95th percentile per-packet one-way delay: 193.810 ms
Loss rate: 3.76%
-- Flow 1:
Average throughput: 36.34 Mbit/s
95th percentile per-packet one-way delay: 193.810 ms
Loss rate: 3.76%

Run 3: Report of Verus — Data Link

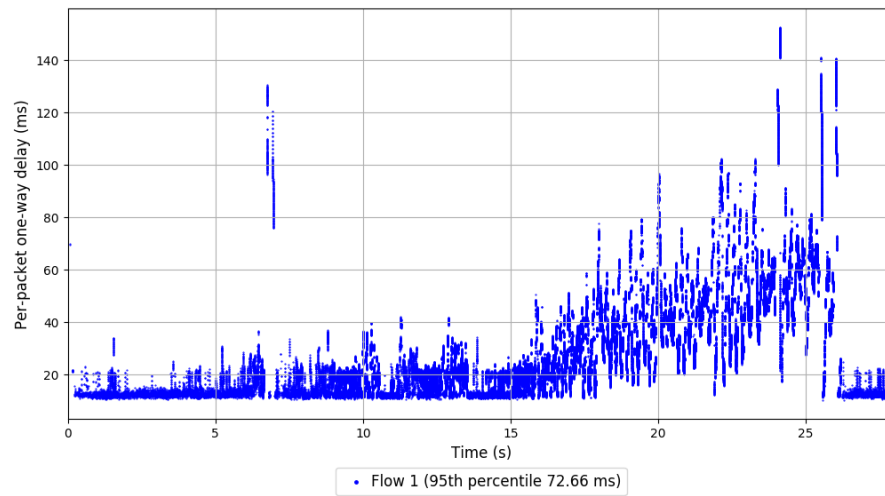
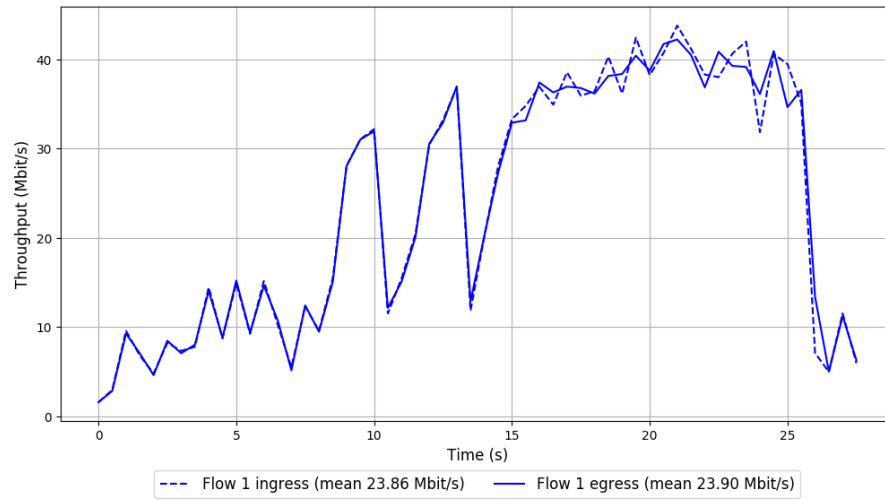


Run 1: Statistics of Copa

Start at: 2018-01-18 09:48:52
End at: 2018-01-18 09:49:22
Local clock offset: 1.961 ms
Remote clock offset: -1.722 ms

Below is generated by plot.py at 2018-01-18 10:51:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 23.90 Mbit/s
95th percentile per-packet one-way delay: 72.660 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 23.90 Mbit/s
95th percentile per-packet one-way delay: 72.660 ms
Loss rate: 0.00%

Run 1: Report of Copa — Data Link

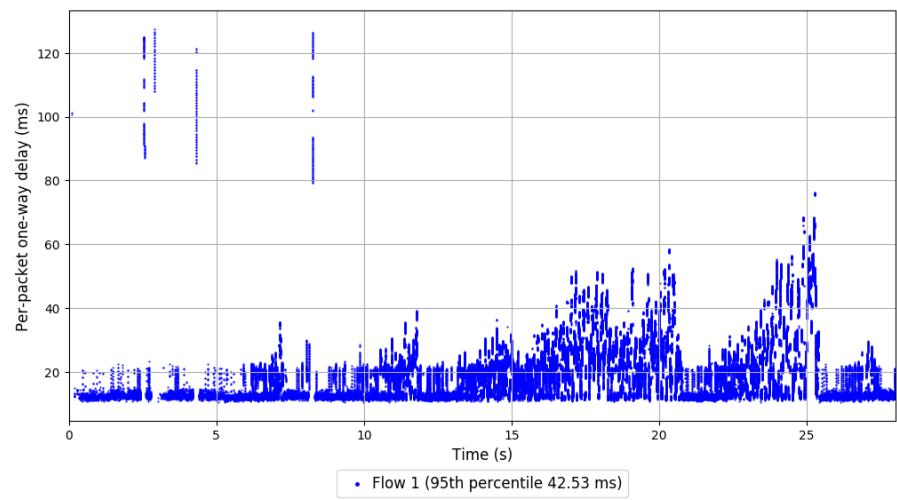
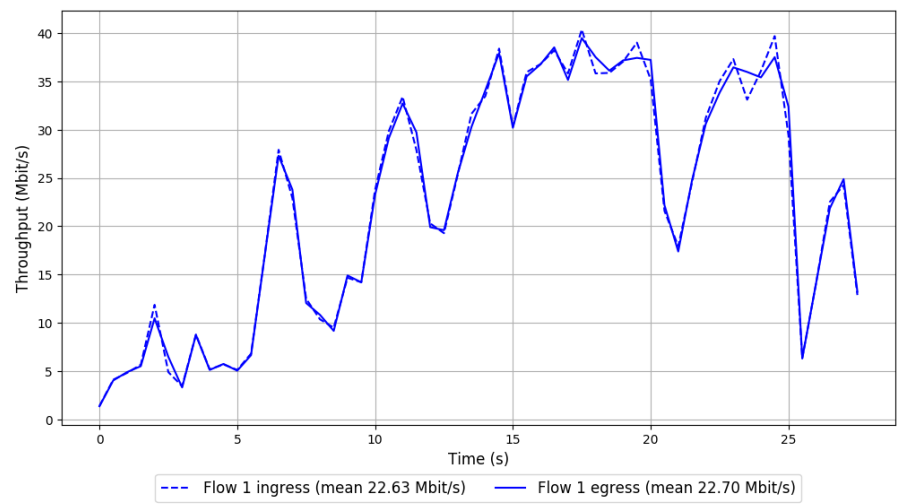


Run 2: Statistics of Copa

Start at: 2018-01-18 10:10:15
End at: 2018-01-18 10:10:45
Local clock offset: 2.683 ms
Remote clock offset: -1.776 ms

Below is generated by plot.py at 2018-01-18 10:51:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 22.70 Mbit/s
95th percentile per-packet one-way delay: 42.529 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 22.70 Mbit/s
95th percentile per-packet one-way delay: 42.529 ms
Loss rate: 0.00%

Run 2: Report of Copa — Data Link

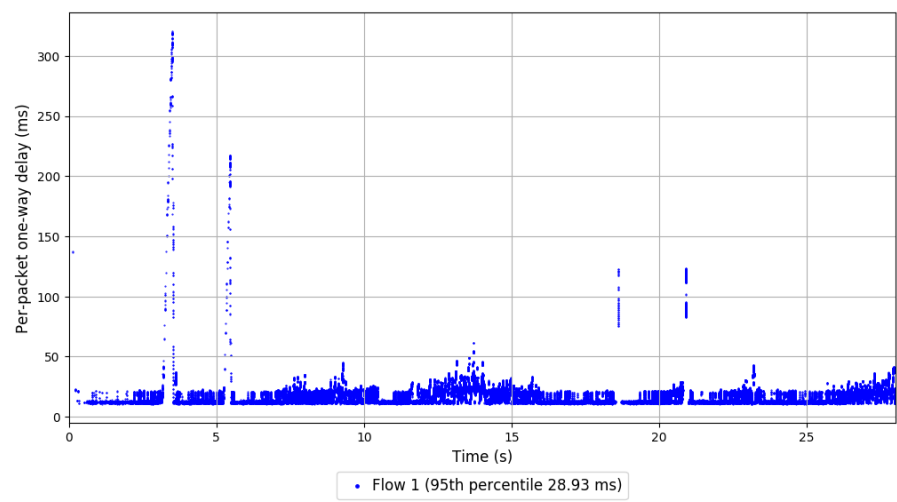
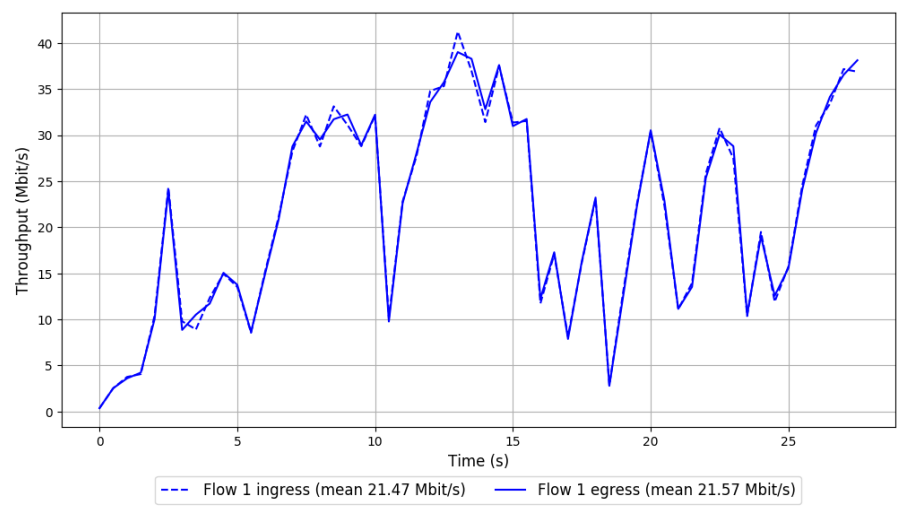


Run 3: Statistics of Copa

Start at: 2018-01-18 10:31:36
End at: 2018-01-18 10:32:06
Local clock offset: 2.853 ms
Remote clock offset: -2.044 ms

Below is generated by plot.py at 2018-01-18 10:51:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 21.57 Mbit/s
95th percentile per-packet one-way delay: 28.933 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 21.57 Mbit/s
95th percentile per-packet one-way delay: 28.933 ms
Loss rate: 0.01%

Run 3: Report of Copa — Data Link

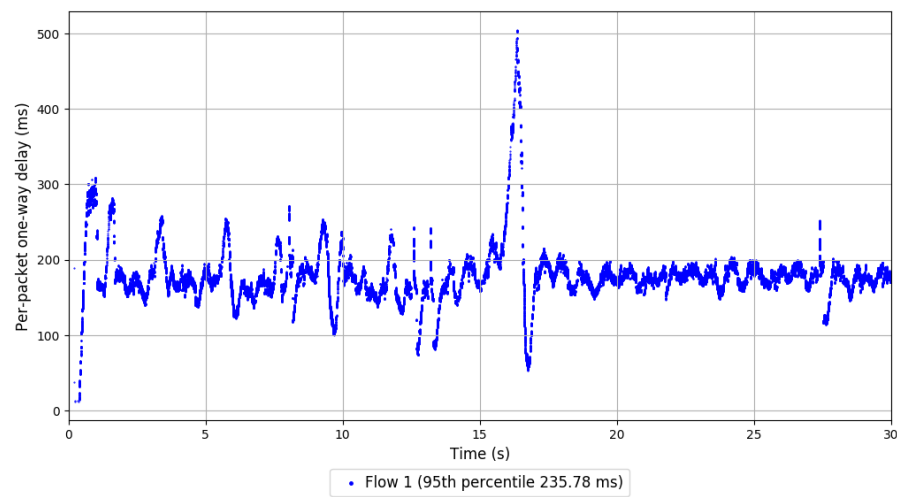
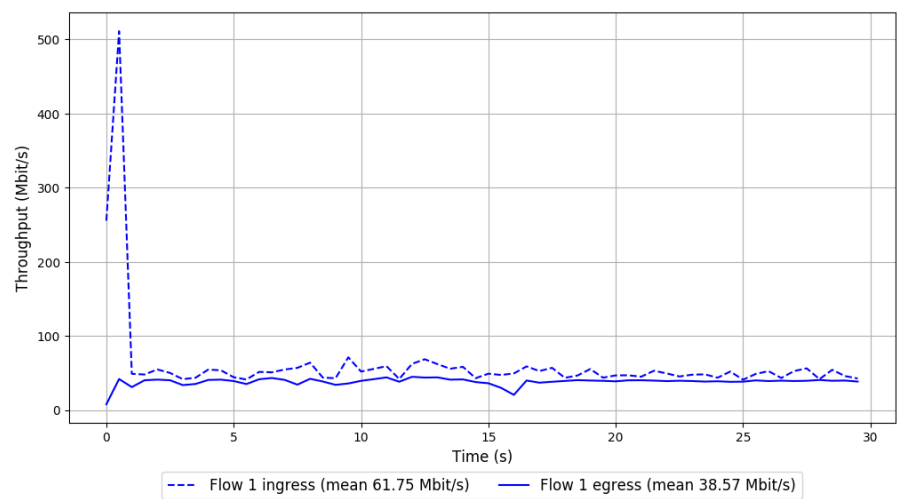


Run 1: Statistics of FillP

Start at: 2018-01-18 09:58:22
End at: 2018-01-18 09:58:52
Local clock offset: 2.373 ms
Remote clock offset: -1.638 ms

Below is generated by plot.py at 2018-01-18 10:51:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 38.57 Mbit/s
95th percentile per-packet one-way delay: 235.782 ms
Loss rate: 37.88%
-- Flow 1:
Average throughput: 38.57 Mbit/s
95th percentile per-packet one-way delay: 235.782 ms
Loss rate: 37.88%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-01-18 10:19:42

End at: 2018-01-18 10:20:12

Local clock offset: 2.569 ms

Remote clock offset: -1.99 ms

Below is generated by plot.py at 2018-01-18 10:51:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 38.38 Mbit/s

95th percentile per-packet one-way delay: 269.007 ms

Loss rate: 39.47%

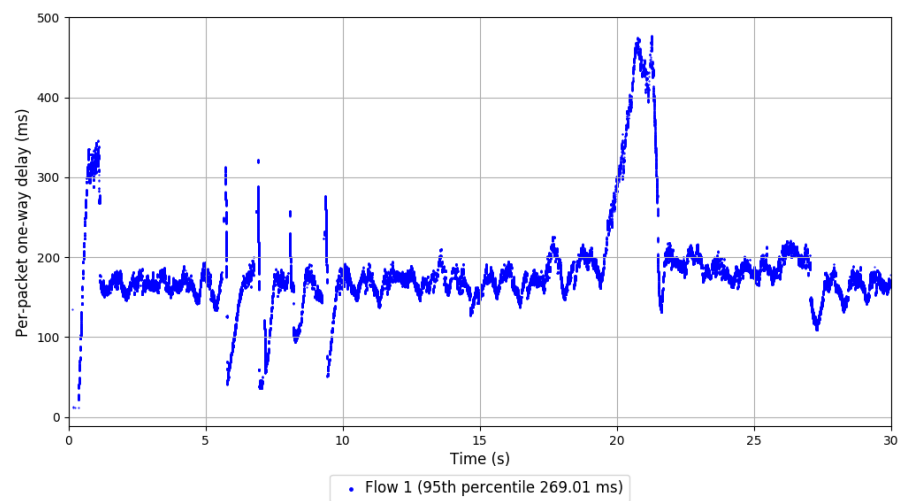
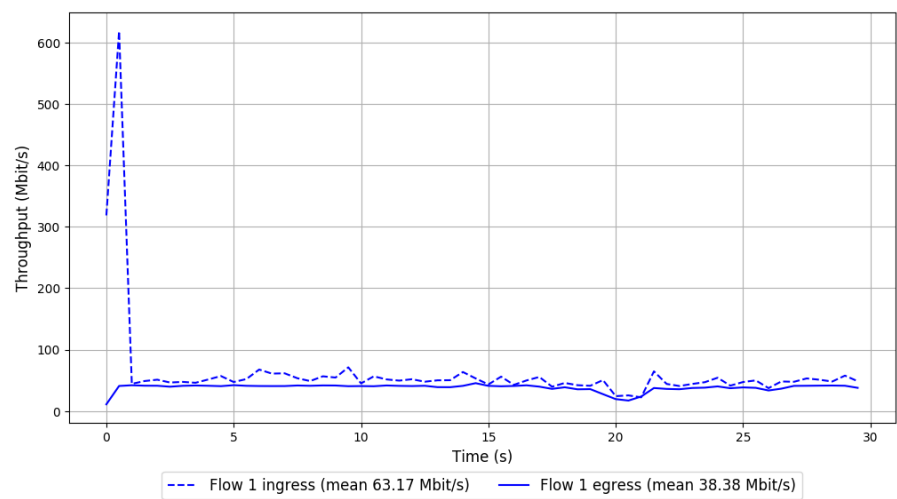
-- Flow 1:

Average throughput: 38.38 Mbit/s

95th percentile per-packet one-way delay: 269.007 ms

Loss rate: 39.47%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-01-18 10:41:06

End at: 2018-01-18 10:41:36

Local clock offset: 2.761 ms

Remote clock offset: -2.06 ms

Below is generated by plot.py at 2018-01-18 10:51:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 40.51 Mbit/s

95th percentile per-packet one-way delay: 195.349 ms

Loss rate: 37.80%

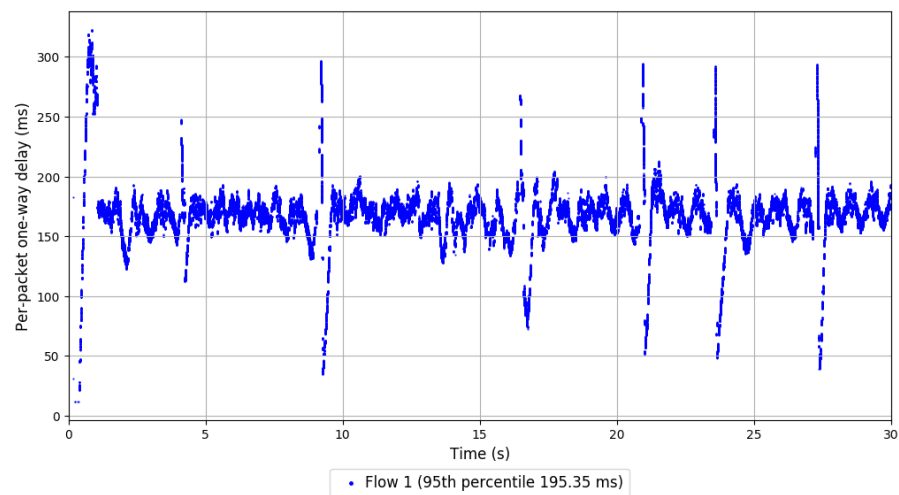
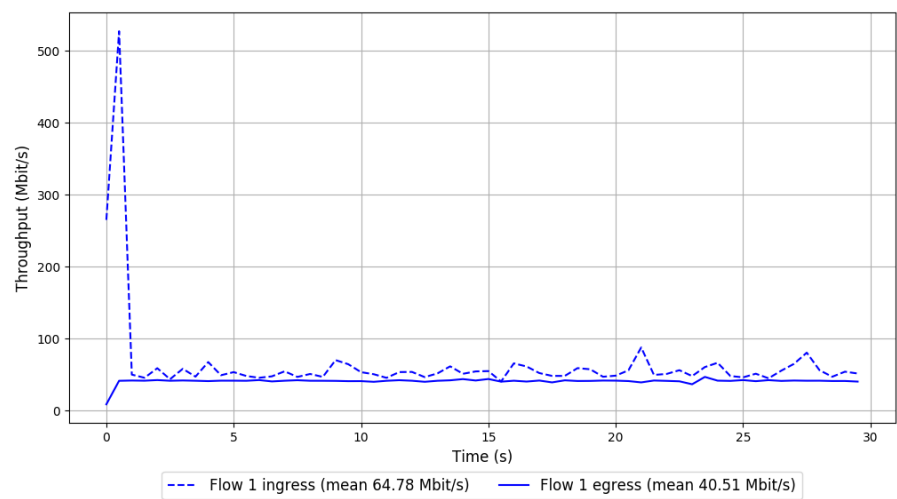
-- Flow 1:

Average throughput: 40.51 Mbit/s

95th percentile per-packet one-way delay: 195.349 ms

Loss rate: 37.80%

Run 3: Report of FillP — Data Link

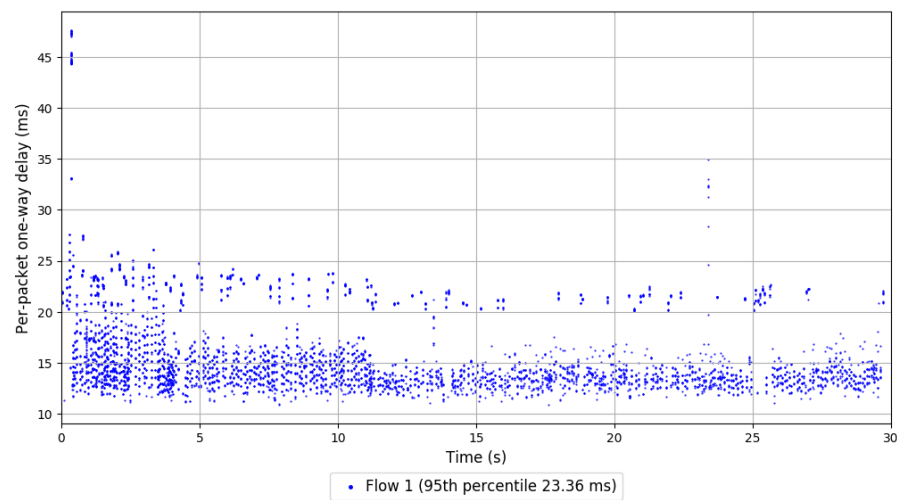
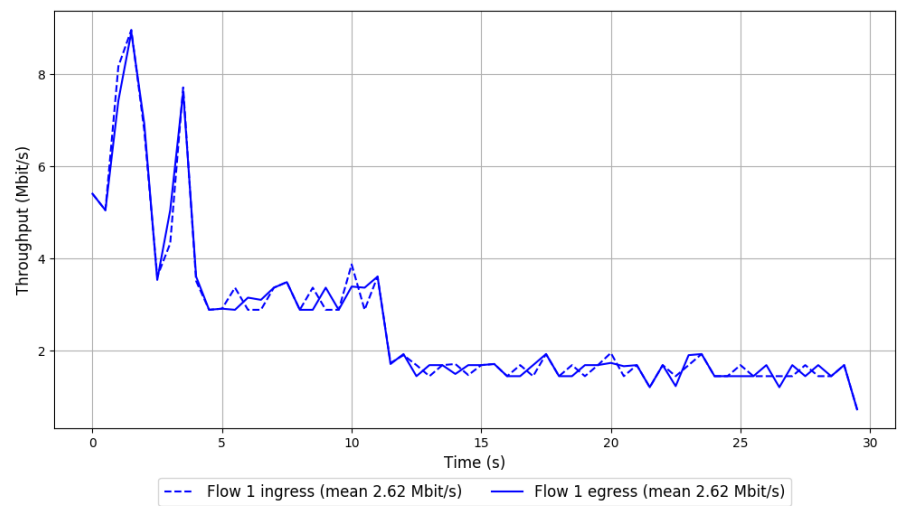


Run 1: Statistics of Indigo

Start at: 2018-01-18 09:47:41
End at: 2018-01-18 09:48:11
Local clock offset: 1.92 ms
Remote clock offset: -1.777 ms

Below is generated by plot.py at 2018-01-18 10:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 23.362 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 23.362 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

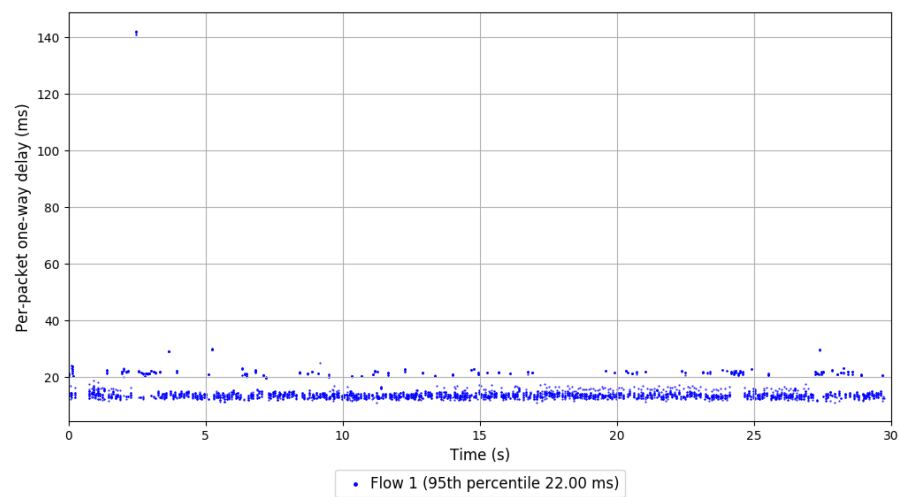
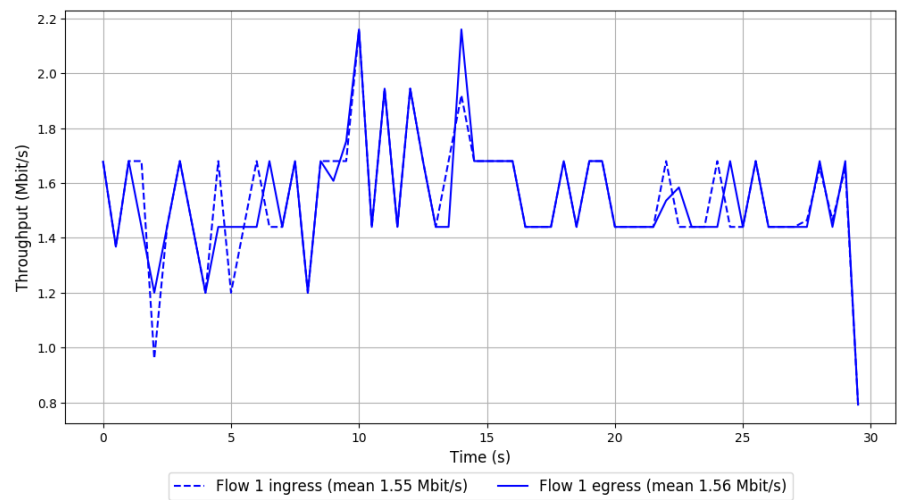


Run 2: Statistics of Indigo

Start at: 2018-01-18 10:09:04
End at: 2018-01-18 10:09:34
Local clock offset: 2.622 ms
Remote clock offset: -1.765 ms

Below is generated by plot.py at 2018-01-18 10:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 22.005 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 22.005 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

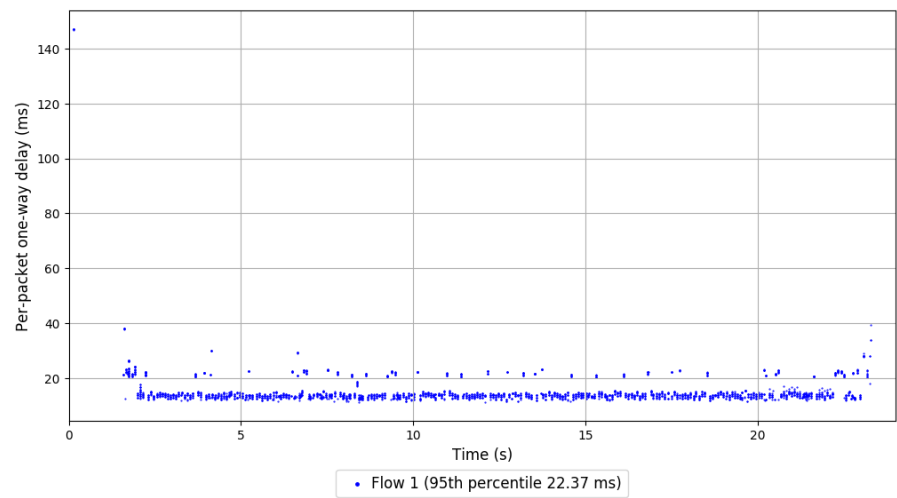
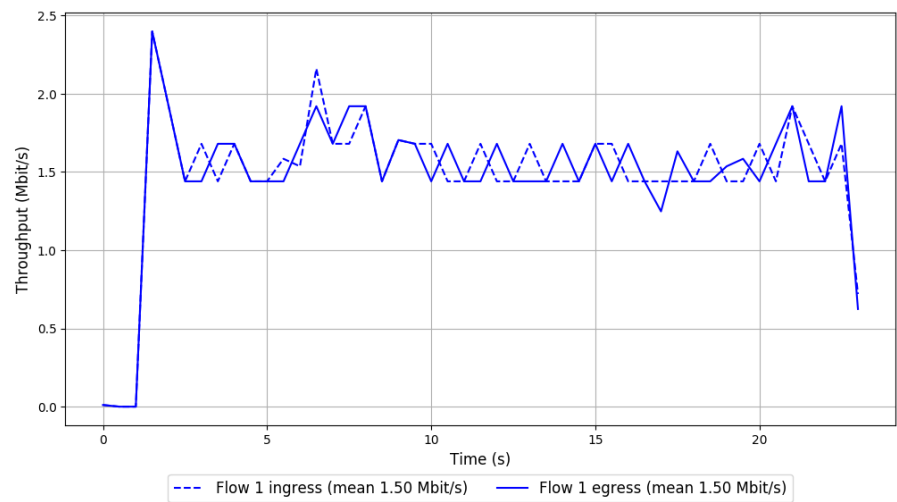
Start at: 2018-01-18 10:30:25

End at: 2018-01-18 10:30:55

Local clock offset: 2.731 ms

Remote clock offset: -1.996 ms

Run 3: Report of Indigo — Data Link

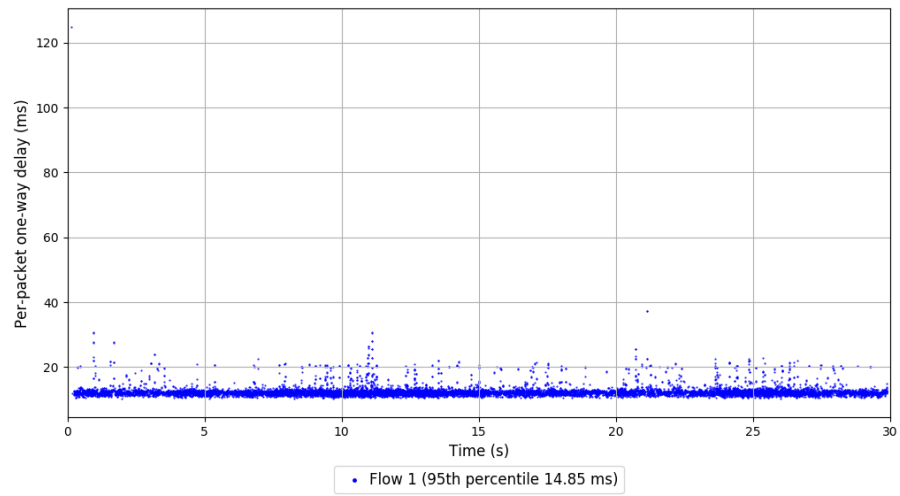
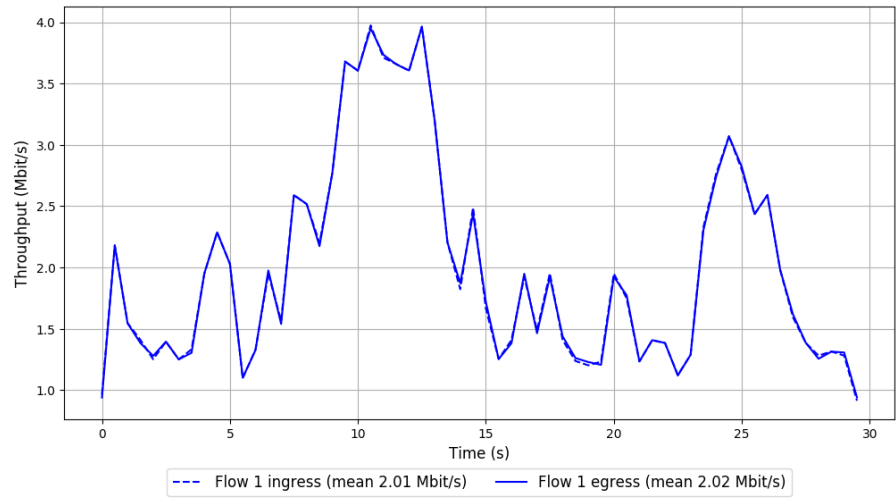


Run 1: Statistics of Vivace-latency

Start at: 2018-01-18 09:53:37
End at: 2018-01-18 09:54:07
Local clock offset: 2.175 ms
Remote clock offset: -1.716 ms

Below is generated by plot.py at 2018-01-18 10:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 14.850 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 14.850 ms
Loss rate: 0.00%

Run 1: Report of Vivace-latency — Data Link

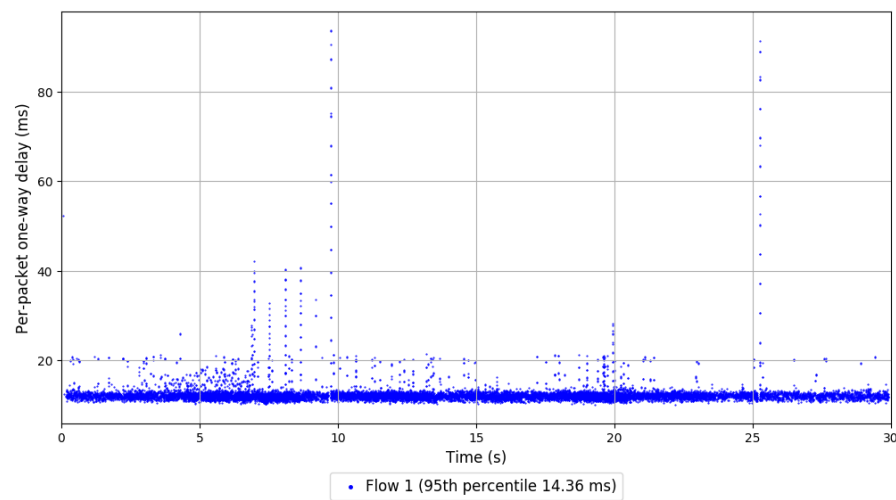
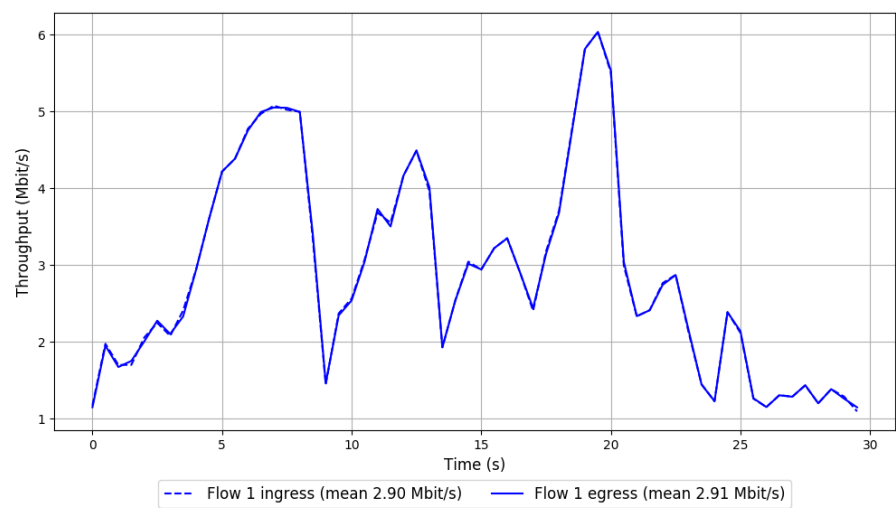


Run 2: Statistics of Vivace-latency

Start at: 2018-01-18 10:14:59
End at: 2018-01-18 10:15:29
Local clock offset: 2.646 ms
Remote clock offset: -1.951 ms

Below is generated by plot.py at 2018-01-18 10:51:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 14.357 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 14.357 ms
Loss rate: 0.00%

Run 2: Report of Vivace-latency — Data Link



Run 3: Statistics of Vivace-latency

Start at: 2018-01-18 10:36:21

End at: 2018-01-18 10:36:52

Local clock offset: 2.934 ms

Remote clock offset: -2.04 ms

Below is generated by plot.py at 2018-01-18 10:51:47

Datalink statistics

-- Total of 1 flow:

Average throughput: 3.05 Mbit/s

95th percentile per-packet one-way delay: 14.276 ms

Loss rate: 0.00%

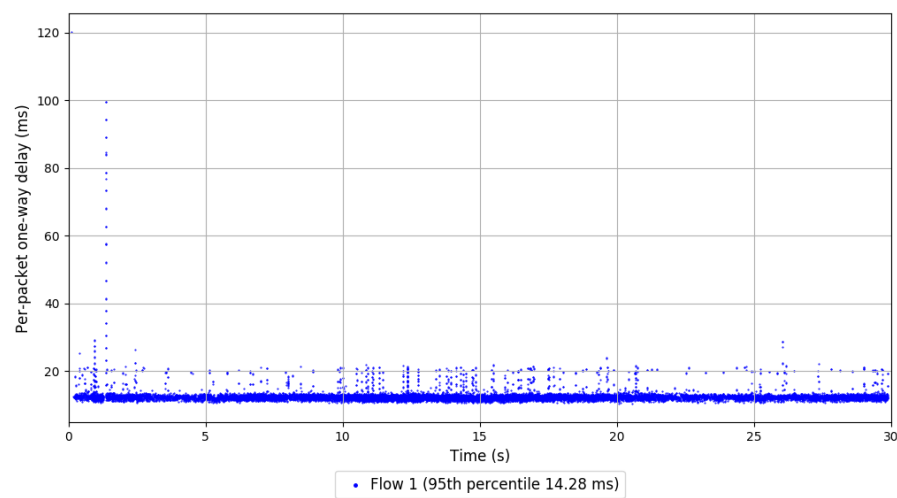
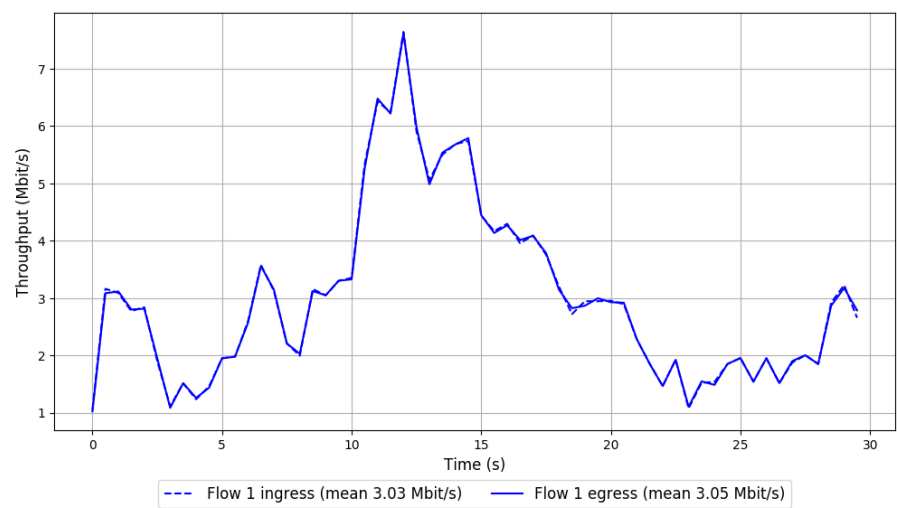
-- Flow 1:

Average throughput: 3.05 Mbit/s

95th percentile per-packet one-way delay: 14.276 ms

Loss rate: 0.00%

Run 3: Report of Vivace-latency — Data Link

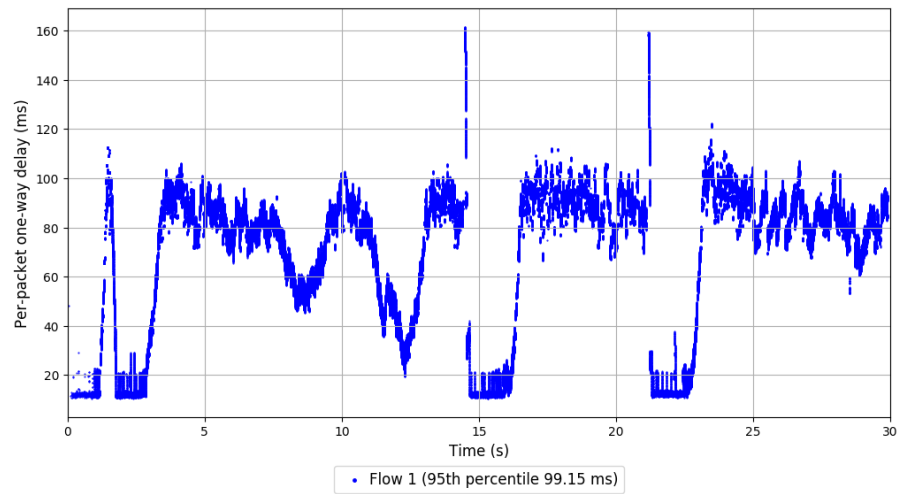
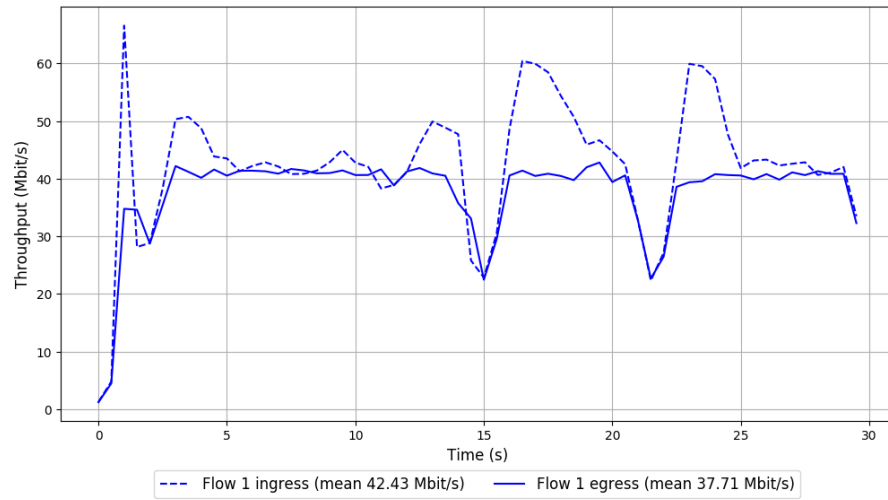


```
Run 1: Statistics of Vivace-loss

Start at: 2018-01-18 09:44:07
End at: 2018-01-18 09:44:37
Local clock offset: 1.762 ms
Remote clock offset: -1.872 ms

# Below is generated by plot.py at 2018-01-18 10:51:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.71 Mbit/s
95th percentile per-packet one-way delay: 99.151 ms
Loss rate: 11.21%
-- Flow 1:
Average throughput: 37.71 Mbit/s
95th percentile per-packet one-way delay: 99.151 ms
Loss rate: 11.21%
```

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-01-18 10:05:28

End at: 2018-01-18 10:05:58

Local clock offset: 2.556 ms

Remote clock offset: -1.62 ms

Below is generated by plot.py at 2018-01-18 10:51:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 37.55 Mbit/s

95th percentile per-packet one-way delay: 103.286 ms

Loss rate: 13.82%

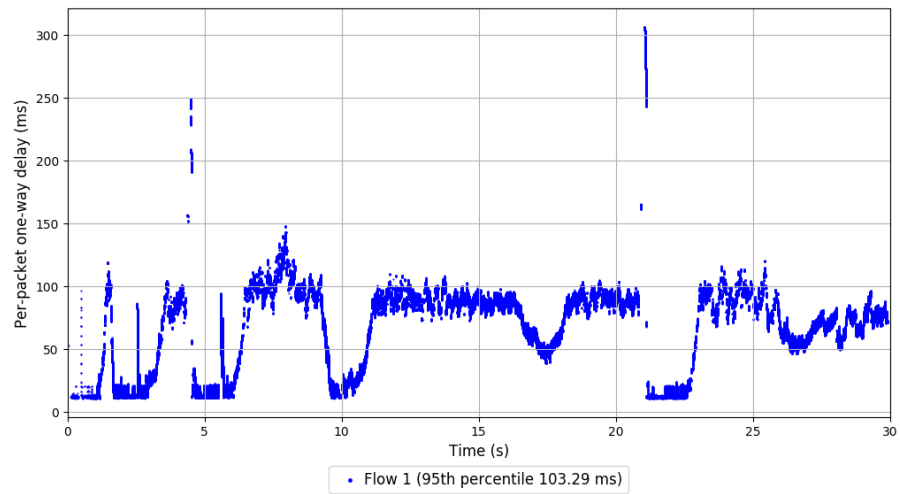
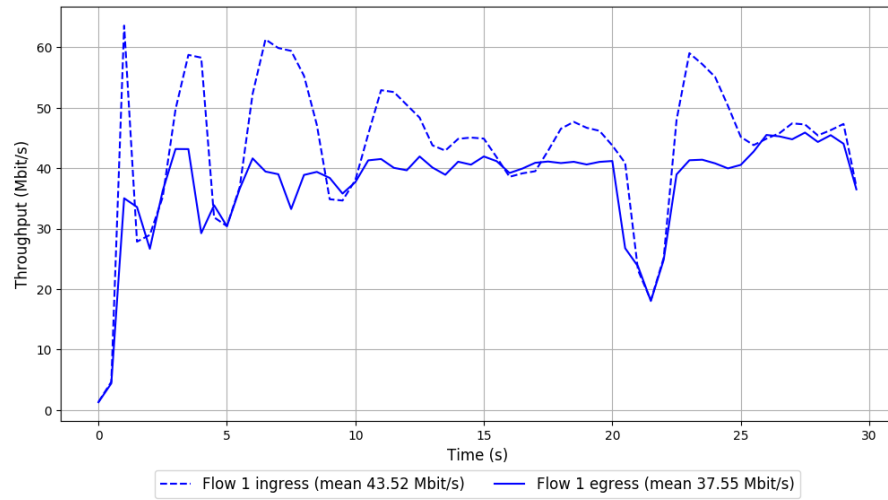
-- Flow 1:

Average throughput: 37.55 Mbit/s

95th percentile per-packet one-way delay: 103.286 ms

Loss rate: 13.82%

Run 2: Report of Vivace-loss — Data Link



Run 3: Statistics of Vivace-loss

Start at: 2018-01-18 10:26:50

End at: 2018-01-18 10:27:20

Local clock offset: 2.763 ms

Remote clock offset: -1.962 ms

Below is generated by plot.py at 2018-01-18 10:51:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 37.14 Mbit/s

95th percentile per-packet one-way delay: 101.993 ms

Loss rate: 13.01%

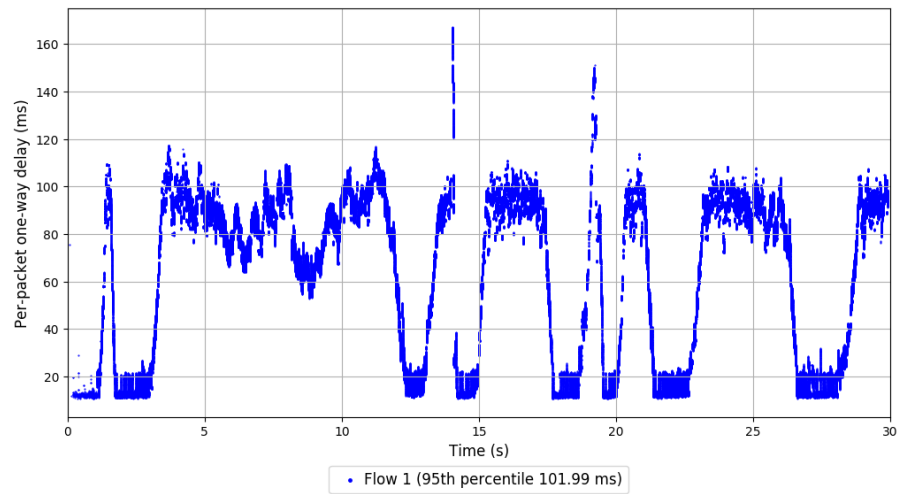
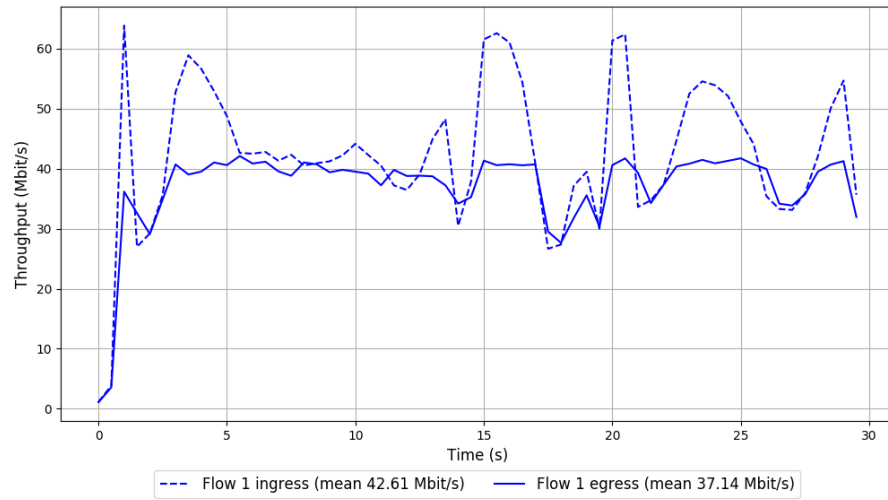
-- Flow 1:

Average throughput: 37.14 Mbit/s

95th percentile per-packet one-way delay: 101.993 ms

Loss rate: 13.01%

Run 3: Report of Vivace-loss — Data Link

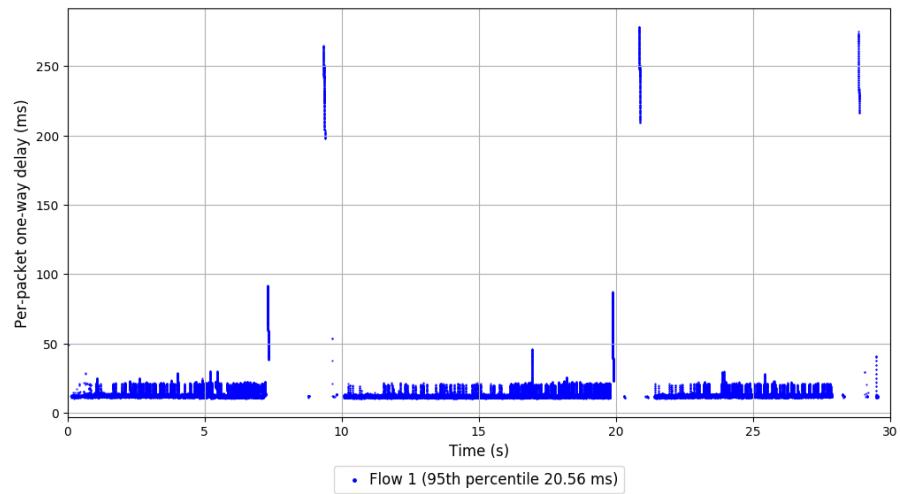
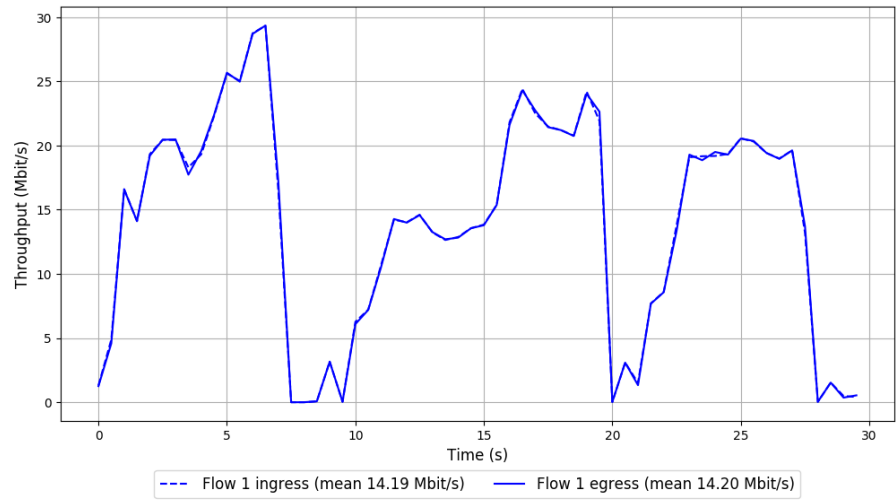


Run 1: Statistics of Vivace-LTE

Start at: 2018-01-18 09:57:10
End at: 2018-01-18 09:57:40
Local clock offset: 2.32 ms
Remote clock offset: -1.638 ms

Below is generated by plot.py at 2018-01-18 10:51:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 14.20 Mbit/s
95th percentile per-packet one-way delay: 20.556 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 14.20 Mbit/s
95th percentile per-packet one-way delay: 20.556 ms
Loss rate: 0.00%

Run 1: Report of Vivace-LTE — Data Link

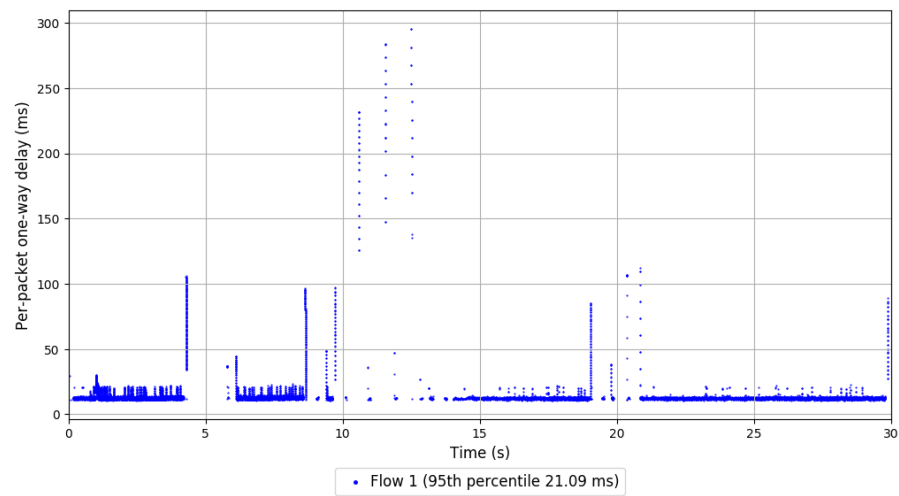
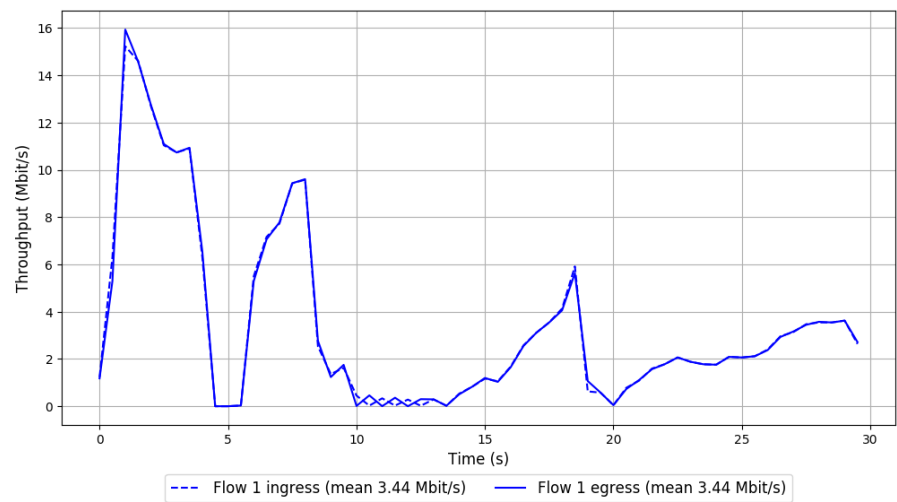


Run 2: Statistics of Vivace-LTE

Start at: 2018-01-18 10:18:31
End at: 2018-01-18 10:19:01
Local clock offset: 2.602 ms
Remote clock offset: -1.921 ms

Below is generated by plot.py at 2018-01-18 10:51:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.44 Mbit/s
95th percentile per-packet one-way delay: 21.094 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.44 Mbit/s
95th percentile per-packet one-way delay: 21.094 ms
Loss rate: 0.00%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-01-18 10:39:55
End at: 2018-01-18 10:40:25
Local clock offset: 2.813 ms
Remote clock offset: -2.137 ms

Below is generated by plot.py at 2018-01-18 10:51:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.32 Mbit/s
95th percentile per-packet one-way delay: 18.899 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 8.32 Mbit/s
95th percentile per-packet one-way delay: 18.899 ms
Loss rate: 0.00%

Run 3: Report of Vivace-LTE — Data Link

