

Pantheon Report

Generated at 2018-02-12 21:17:36 (UTC).

Data path: India ppp0 (*remote*) → AWS India 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).

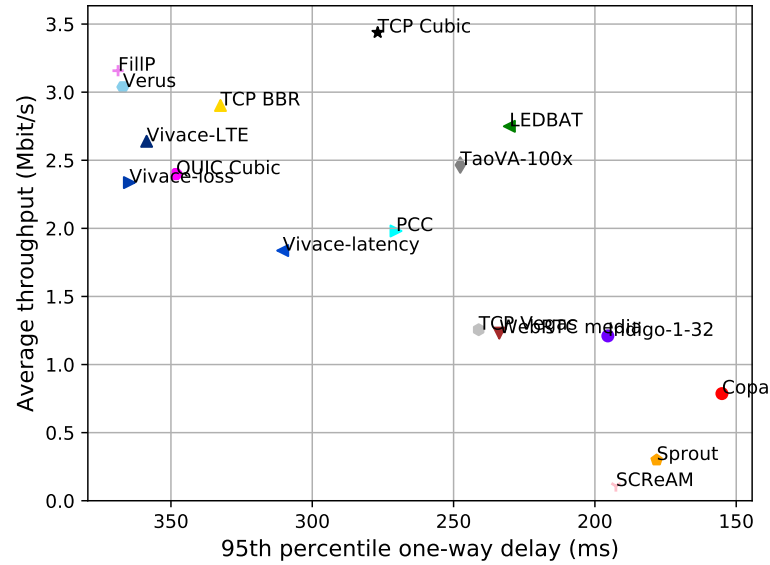
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against **nets.org.sg** and have been applied to correct the timestamps in logs.

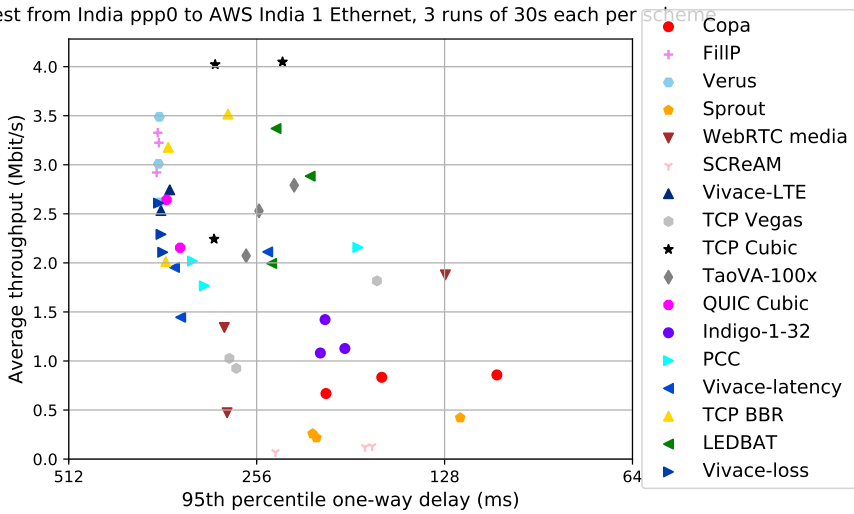
Git summary:

```
branch: master @ 2efdad57c2c56a9458b0d01ff33345e11732665
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeab30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/vivace @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

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



test from India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per



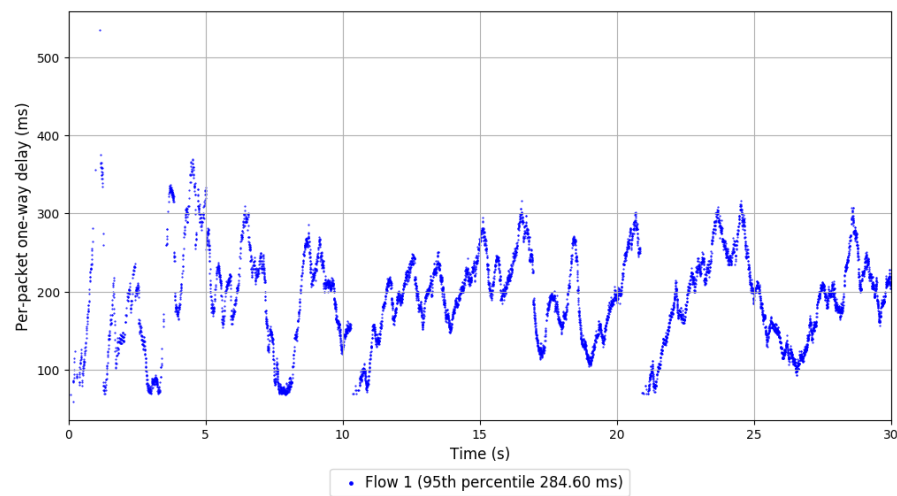
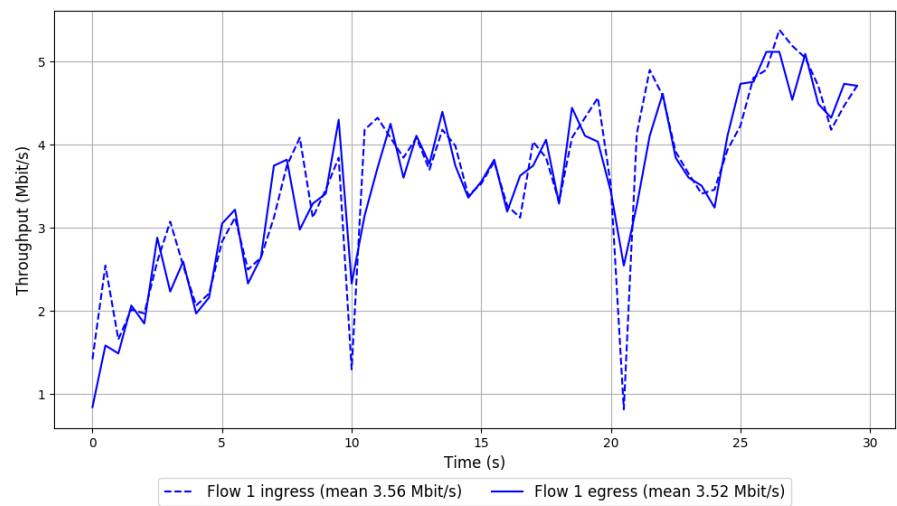
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	2.90	332.47	6.59
TCP Cubic	3	3.44	276.87	2.19
LEDBAT	3	2.75	230.27	1.24
PCC	3	1.98	270.37	9.93
QUIC Cubic	2	2.40	348.20	5.75
SCReAM	3	0.11	192.58	1.41
WebRTC media	3	1.23	233.83	1.20
Sprout	3	0.30	178.16	0.86
TaoVA-100x	3	2.46	247.63	5.11
TCP Vegas	3	1.26	241.12	2.25
Verus	3	3.04	367.03	29.02
Copa	3	0.79	155.06	1.61
FillP	3	3.16	368.71	90.96
Indigo-1-32	3	1.21	195.42	2.46
Vivace-latency	3	1.84	310.46	4.15
Vivace-loss	3	2.34	364.70	22.10
Vivace-LTE	2	2.63	358.60	6.43

Run 1: Statistics of TCP BBR

Start at: 2018-02-12 19:32:13
End at: 2018-02-12 19:32:43
Local clock offset: -4.154 ms
Remote clock offset: -23.654 ms

Below is generated by plot.py at 2018-02-12 21:16:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 284.597 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 284.597 ms
Loss rate: 1.31%

Run 1: Report of TCP BBR — Data Link

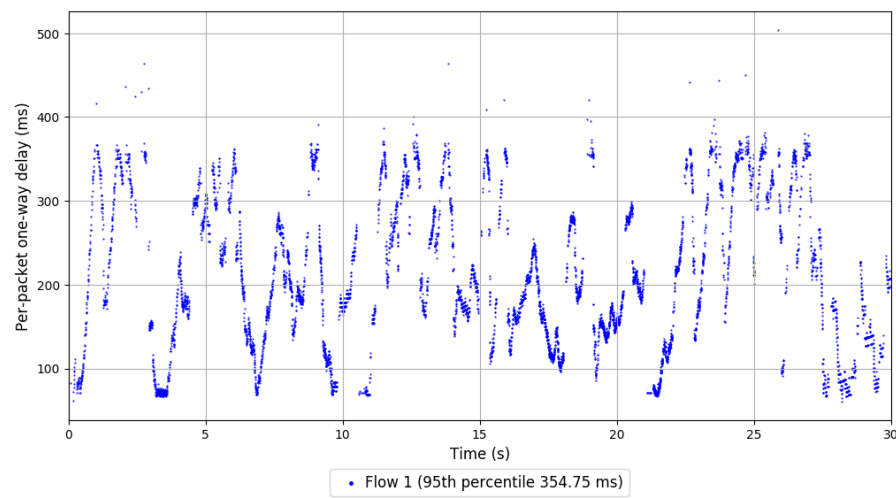
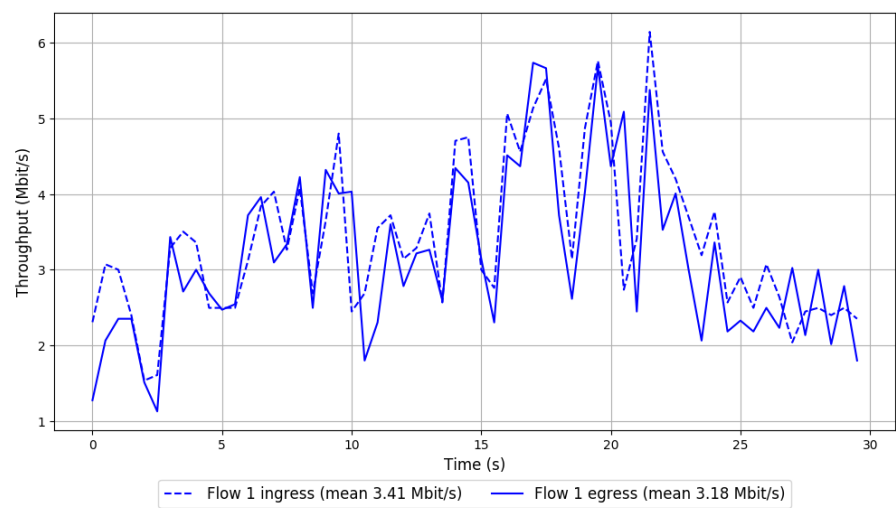


Run 2: Statistics of TCP BBR

Start at: 2018-02-12 19:51:51
End at: 2018-02-12 19:52:21
Local clock offset: -3.646 ms
Remote clock offset: -19.316 ms

Below is generated by plot.py at 2018-02-12 21:16:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 354.750 ms
Loss rate: 7.15%
-- Flow 1:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 354.750 ms
Loss rate: 7.15%

Run 2: Report of TCP BBR — Data Link

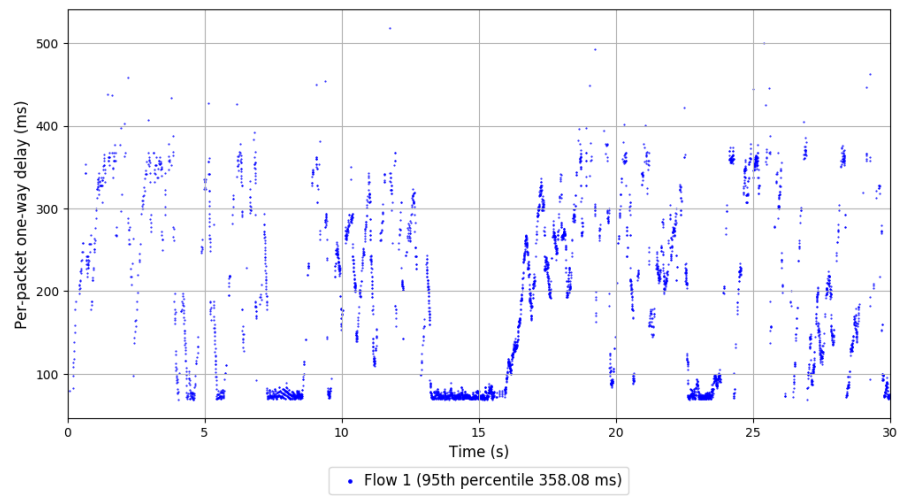
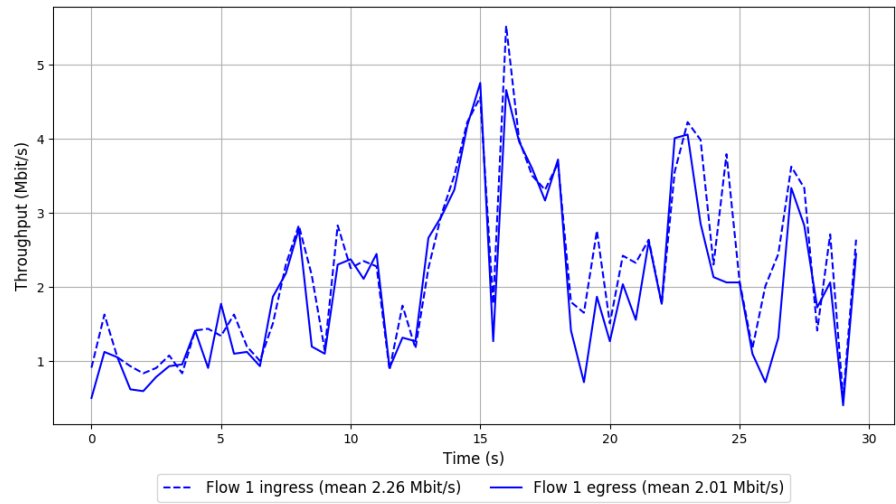


Run 3: Statistics of TCP BBR

Start at: 2018-02-12 20:11:34
End at: 2018-02-12 20:12:04
Local clock offset: -7.174 ms
Remote clock offset: -18.486 ms

Below is generated by plot.py at 2018-02-12 21:16:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 358.078 ms
Loss rate: 11.30%
-- Flow 1:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 358.078 ms
Loss rate: 11.30%

Run 3: Report of TCP BBR — Data Link

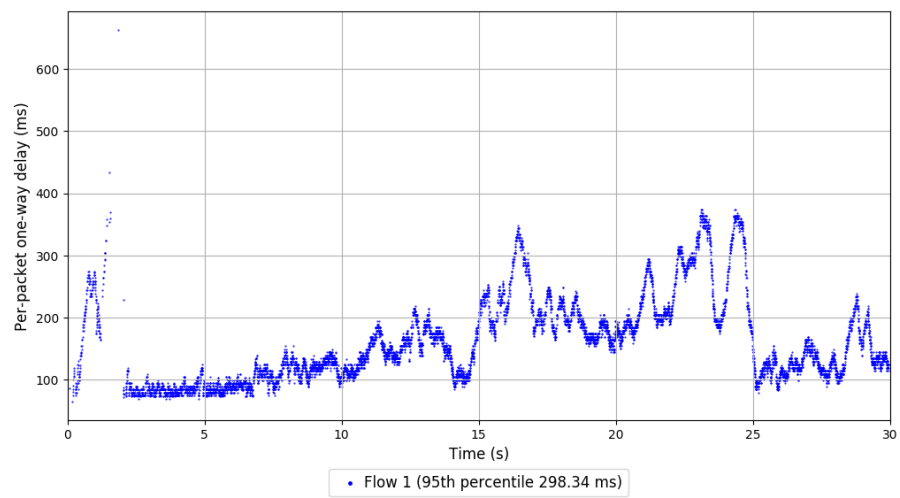
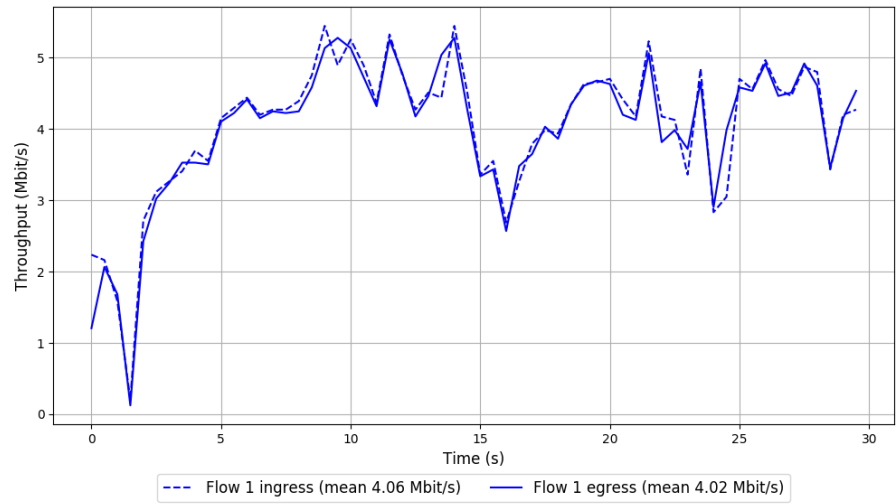


Run 1: Statistics of TCP Cubic

Start at: 2018-02-12 19:19:08
End at: 2018-02-12 19:19:38
Local clock offset: -0.795 ms
Remote clock offset: -21.999 ms

Below is generated by plot.py at 2018-02-12 21:16:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 298.339 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 298.339 ms
Loss rate: 1.09%

Run 1: Report of TCP Cubic — Data Link

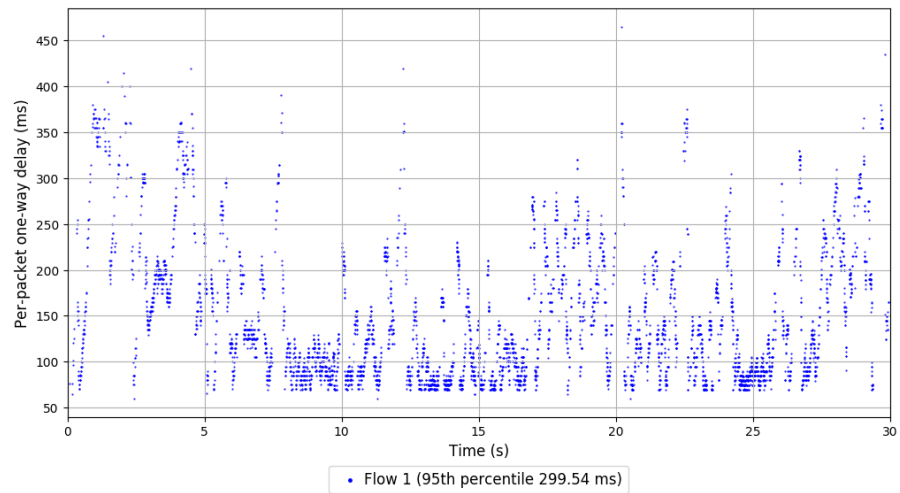
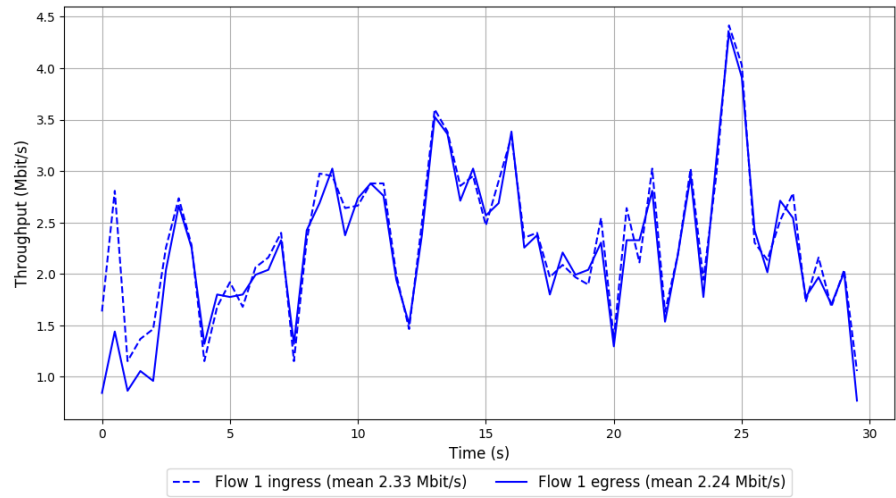


Run 2: Statistics of TCP Cubic

Start at: 2018-02-12 19:38:45
End at: 2018-02-12 19:39:15
Local clock offset: -7.509 ms
Remote clock offset: -21.09 ms

Below is generated by plot.py at 2018-02-12 21:16:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 299.541 ms
Loss rate: 4.07%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 299.541 ms
Loss rate: 4.07%

Run 2: Report of TCP Cubic — Data Link

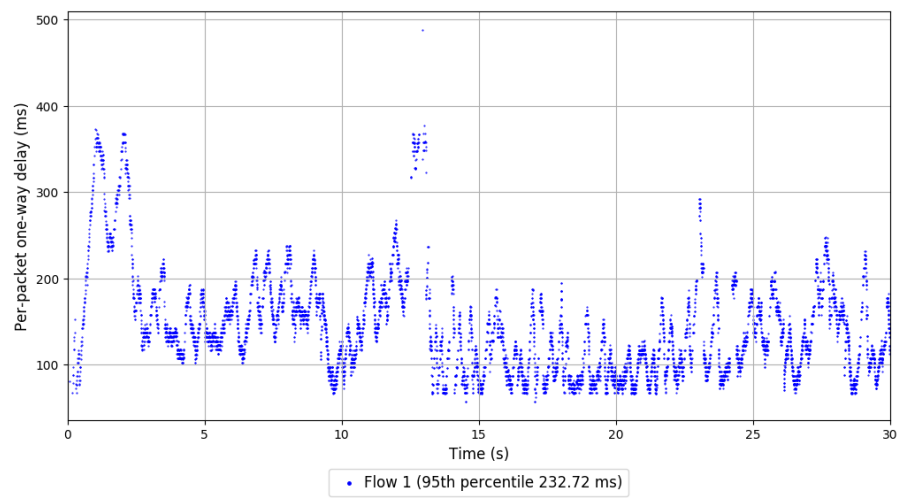
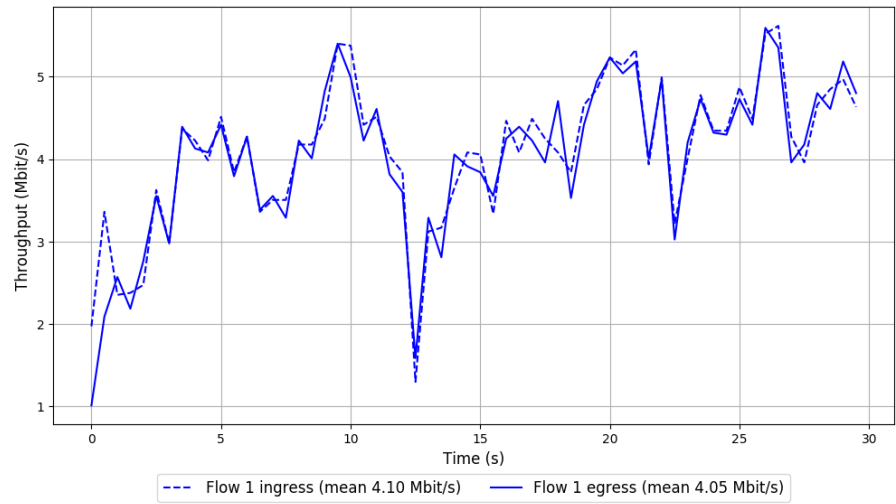


Run 3: Statistics of TCP Cubic

Start at: 2018-02-12 19:58:26
End at: 2018-02-12 19:58:56
Local clock offset: -6.61 ms
Remote clock offset: -19.544 ms

Below is generated by plot.py at 2018-02-12 21:16:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 4.05 Mbit/s
95th percentile per-packet one-way delay: 232.721 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 4.05 Mbit/s
95th percentile per-packet one-way delay: 232.721 ms
Loss rate: 1.41%

Run 3: Report of TCP Cubic — Data Link

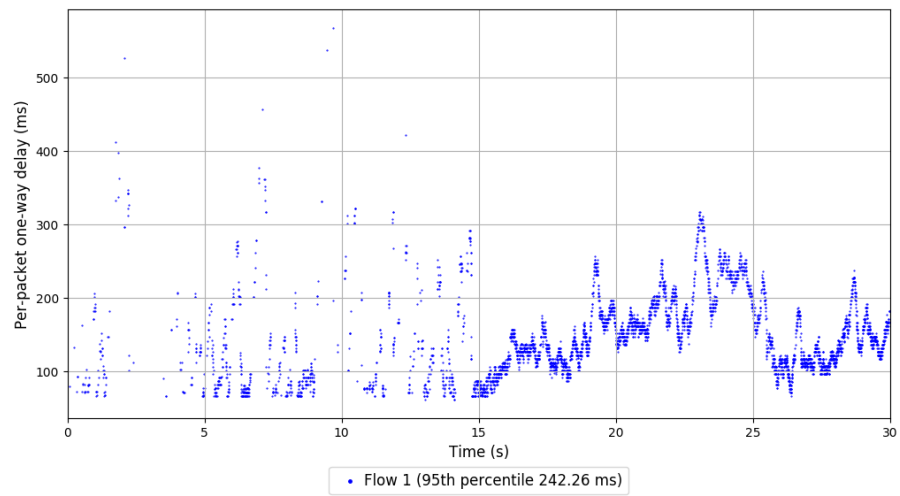
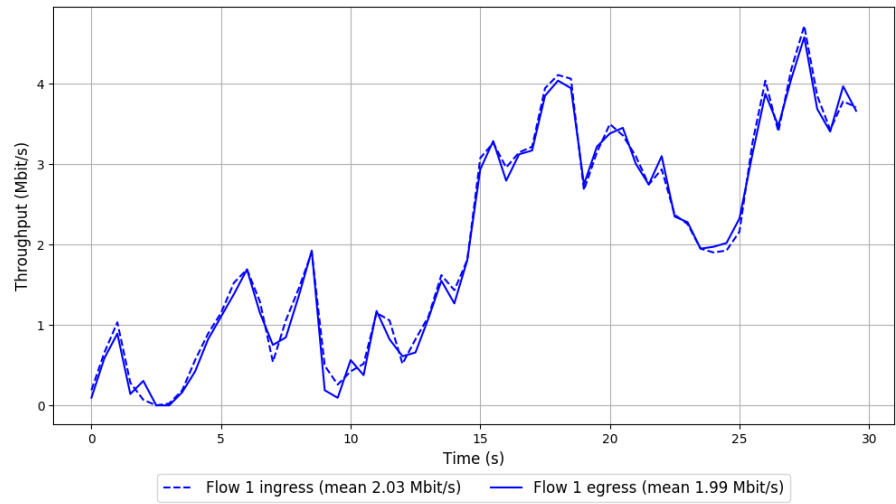


```
Run 1: Statistics of LEDBAT

Start at: 2018-02-12 19:31:07
End at: 2018-02-12 19:31:37
Local clock offset: -6.213 ms
Remote clock offset: -22.995 ms

# Below is generated by plot.py at 2018-02-12 21:16:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 242.265 ms
Loss rate: 2.08%
-- Flow 1:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 242.265 ms
Loss rate: 2.08%
```

Run 1: Report of LEDBAT — Data Link

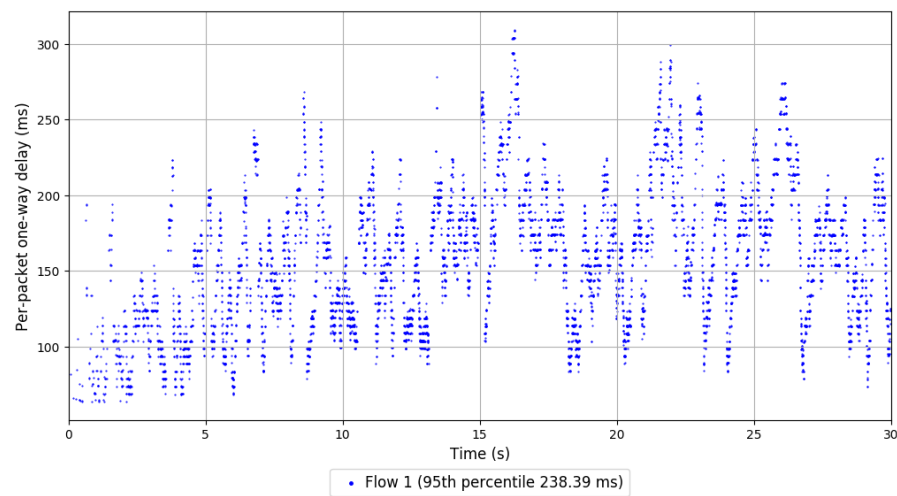
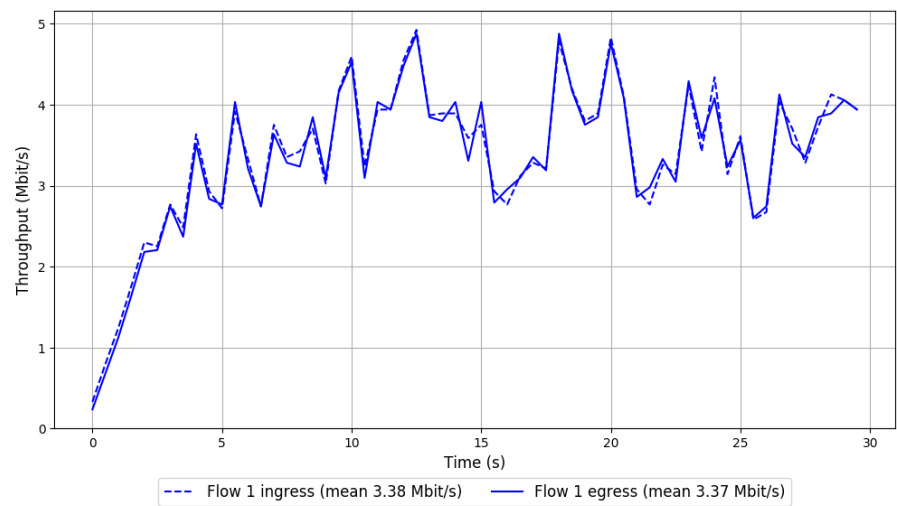


Run 2: Statistics of LEDBAT

Start at: 2018-02-12 19:50:45
End at: 2018-02-12 19:51:15
Local clock offset: -5.084 ms
Remote clock offset: -18.144 ms

Below is generated by plot.py at 2018-02-12 21:16:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 238.391 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 238.391 ms
Loss rate: 0.65%

Run 2: Report of LEDBAT — Data Link

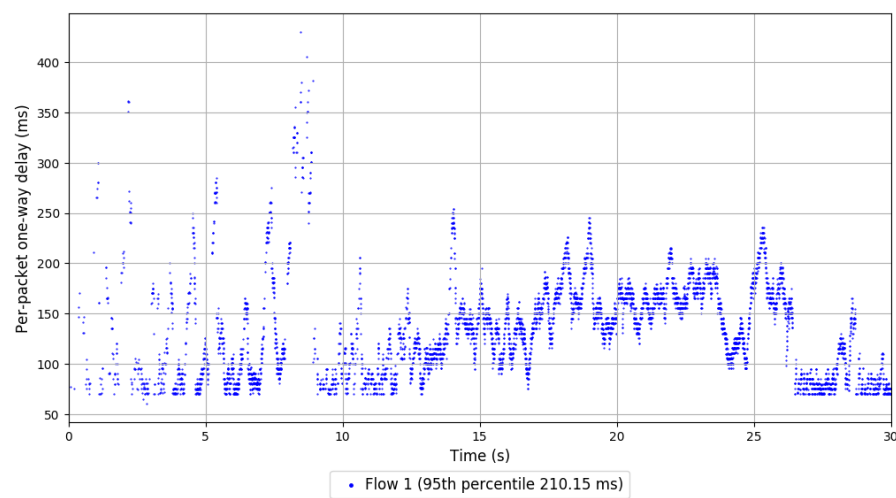
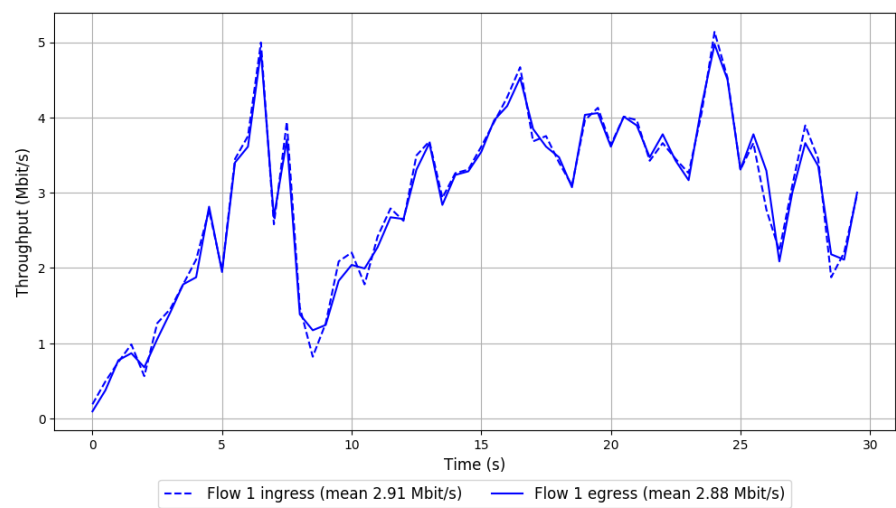


Run 3: Statistics of LEDBAT

Start at: 2018-02-12 20:10:28
End at: 2018-02-12 20:10:58
Local clock offset: -10.383 ms
Remote clock offset: -19.768 ms

Below is generated by plot.py at 2018-02-12 21:17:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 210.152 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 210.152 ms
Loss rate: 1.00%

Run 3: Report of LEDBAT — Data Link

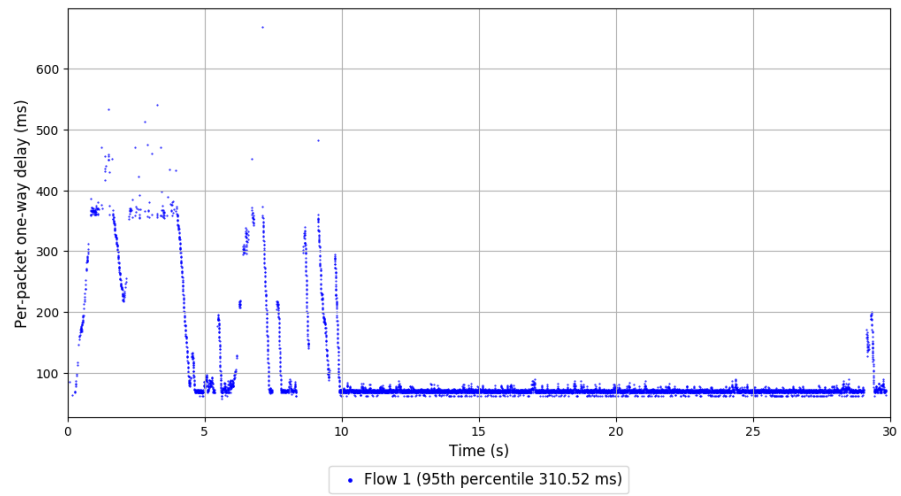
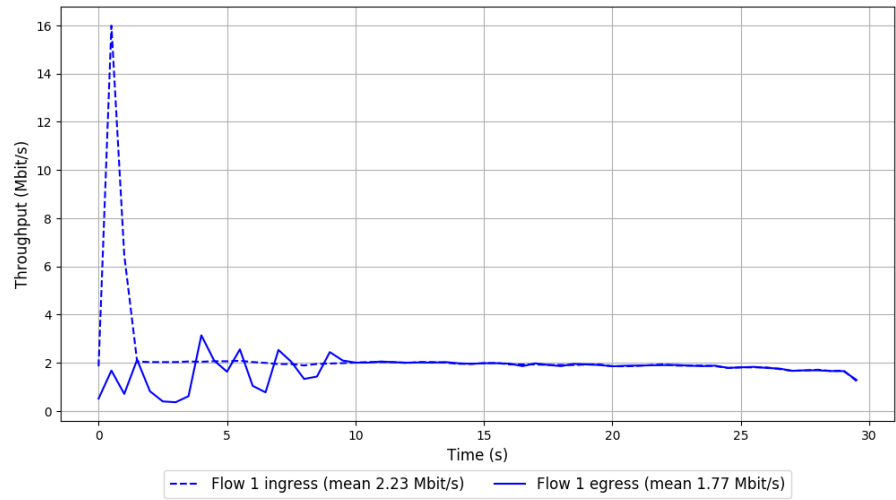


Run 1: Statistics of PCC

Start at: 2018-02-12 19:20:14
End at: 2018-02-12 19:20:44
Local clock offset: -2.086 ms
Remote clock offset: -22.394 ms

Below is generated by plot.py at 2018-02-12 21:17:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 310.521 ms
Loss rate: 21.09%
-- Flow 1:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 310.521 ms
Loss rate: 21.09%

Run 1: Report of PCC — Data Link

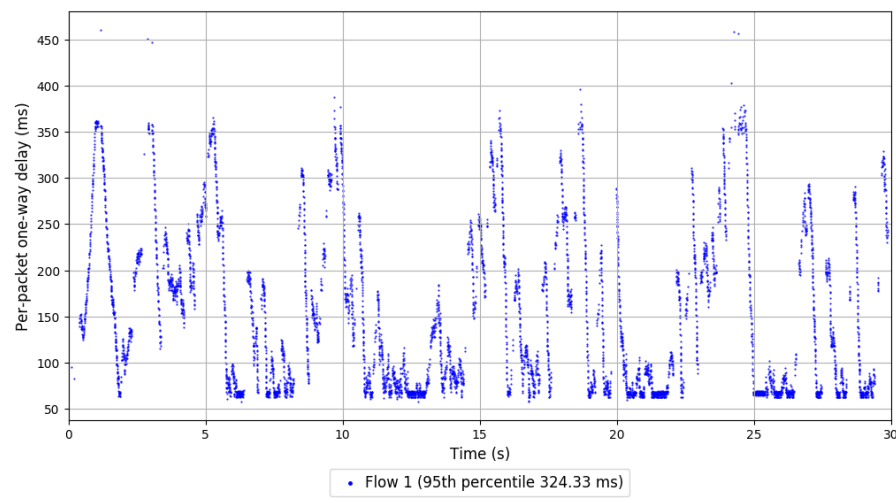
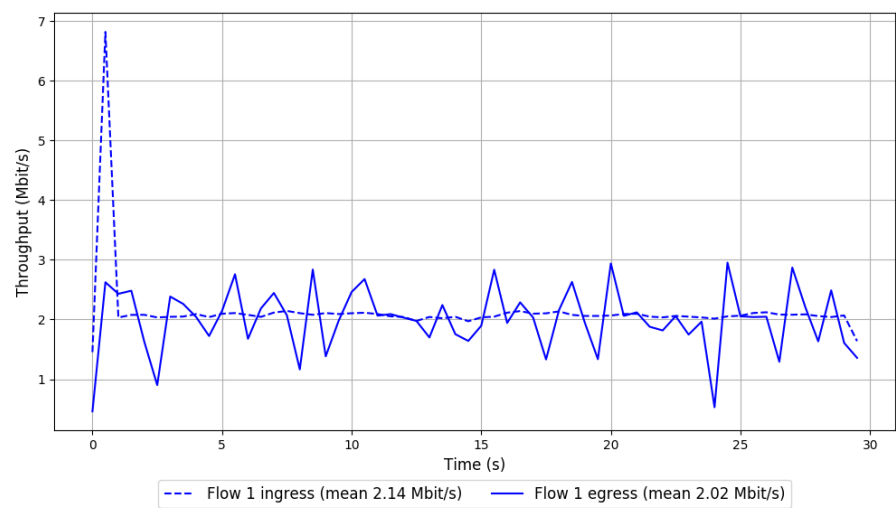


Run 2: Statistics of PCC

Start at: 2018-02-12 19:39:50
End at: 2018-02-12 19:40:20
Local clock offset: -8.005 ms
Remote clock offset: -20.696 ms

Below is generated by plot.py at 2018-02-12 21:17:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 324.333 ms
Loss rate: 5.97%
-- Flow 1:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 324.333 ms
Loss rate: 5.97%

Run 2: Report of PCC — Data Link

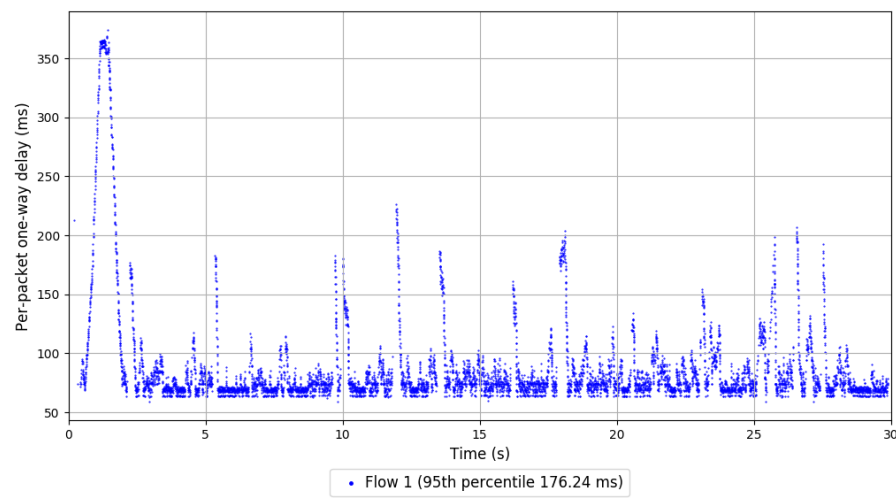
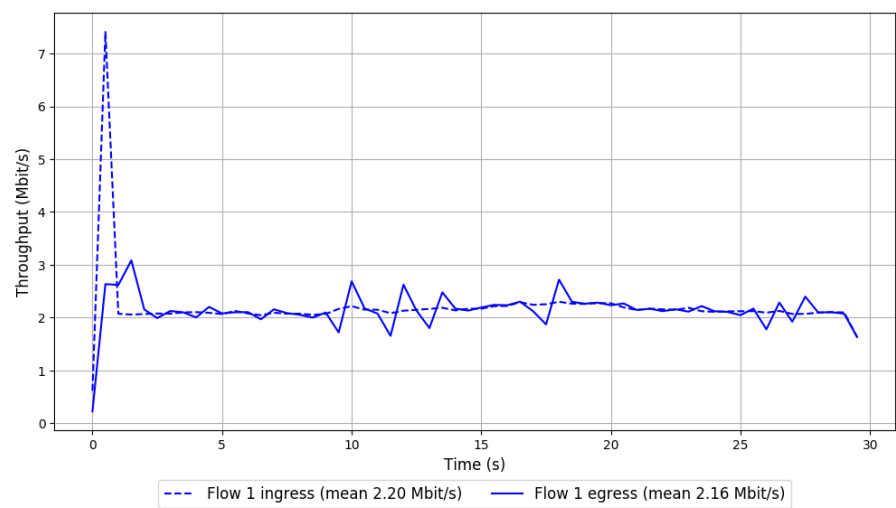


Run 3: Statistics of PCC

Start at: 2018-02-12 19:59:32
End at: 2018-02-12 20:00:02
Local clock offset: -6.885 ms
Remote clock offset: -21.59 ms

Below is generated by plot.py at 2018-02-12 21:17:04
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 176.242 ms
Loss rate: 2.72%
-- Flow 1:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 176.242 ms
Loss rate: 2.72%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

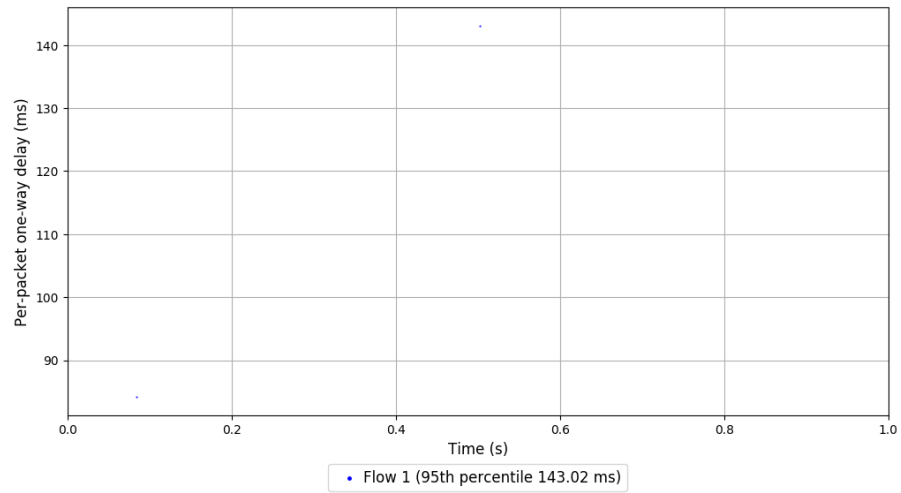
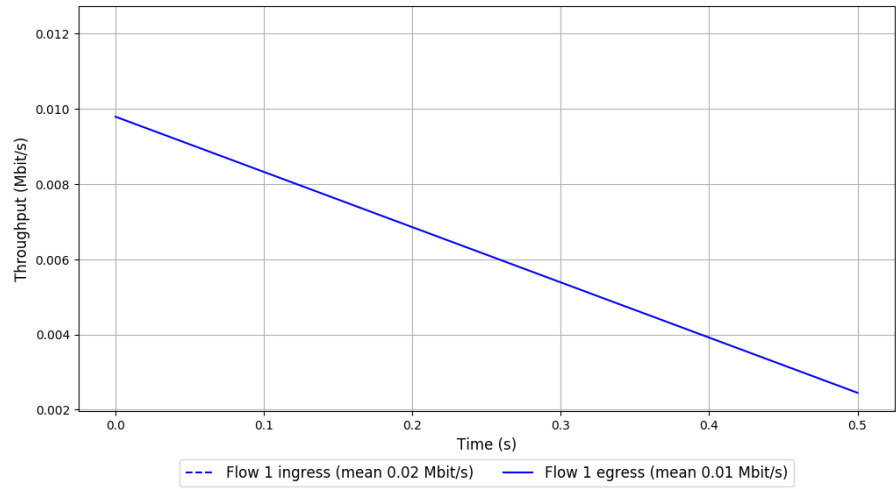
Start at: 2018-02-12 19:28:56

End at: 2018-02-12 19:29:26

Local clock offset: -4.861 ms

Remote clock offset: -23.23 ms

Run 1: Report of QUIC Cubic — Data Link

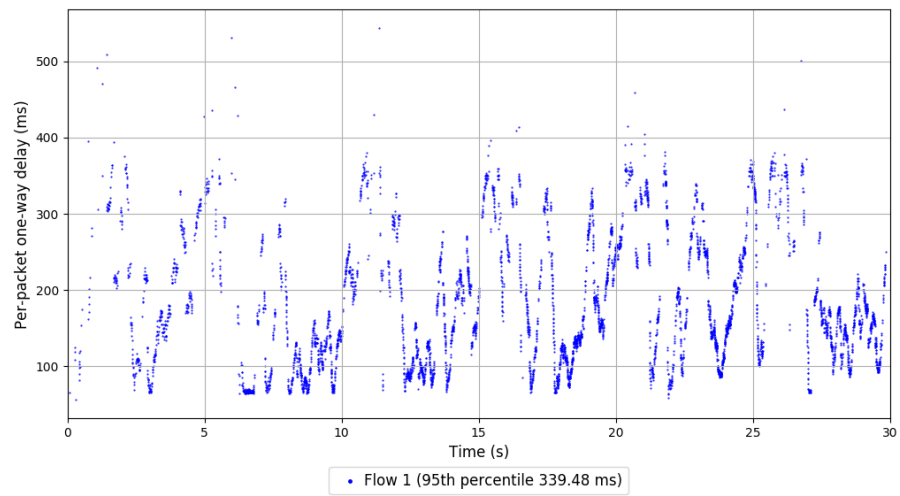
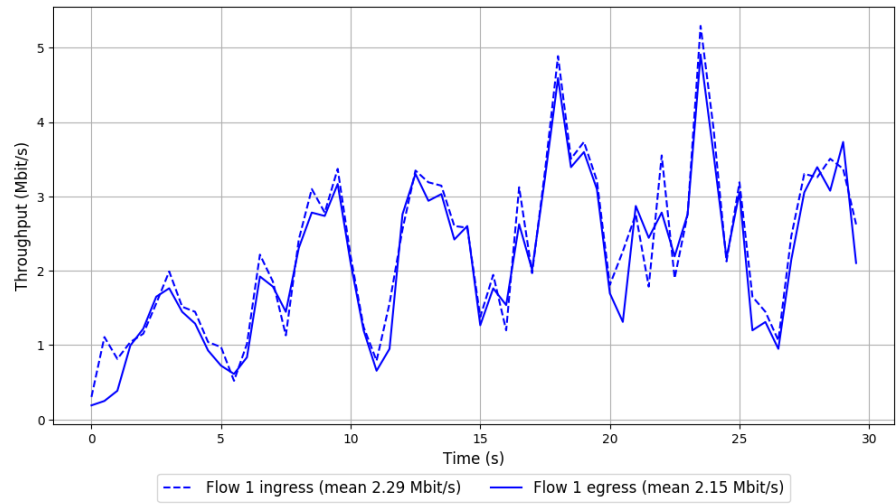


Run 2: Statistics of QUIC Cubic

Start at: 2018-02-12 19:48:34
End at: 2018-02-12 19:49:04
Local clock offset: -5.19 ms
Remote clock offset: -19.258 ms

Below is generated by plot.py at 2018-02-12 21:17:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 339.480 ms
Loss rate: 6.30%
-- Flow 1:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 339.480 ms
Loss rate: 6.30%

Run 2: Report of QUIC Cubic — Data Link

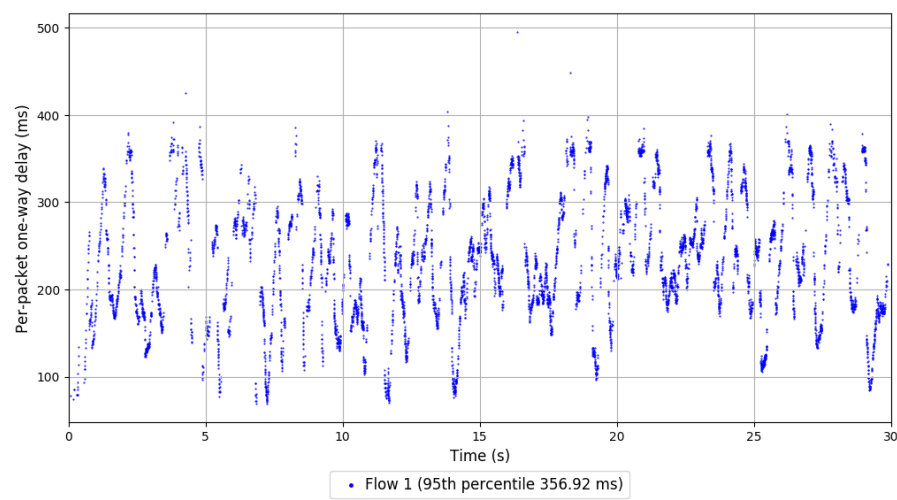
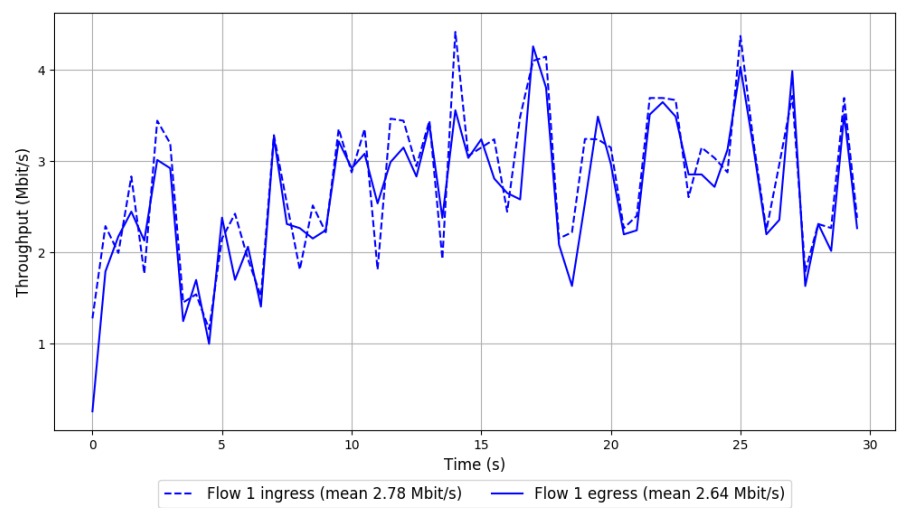


Run 3: Statistics of QUIC Cubic

Start at: 2018-02-12 20:08:16
End at: 2018-02-12 20:08:46
Local clock offset: -6.344 ms
Remote clock offset: -19.668 ms

Below is generated by plot.py at 2018-02-12 21:17:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.64 Mbit/s
95th percentile per-packet one-way delay: 356.915 ms
Loss rate: 5.19%
-- Flow 1:
Average throughput: 2.64 Mbit/s
95th percentile per-packet one-way delay: 356.915 ms
Loss rate: 5.19%

Run 3: Report of QUIC Cubic — Data Link

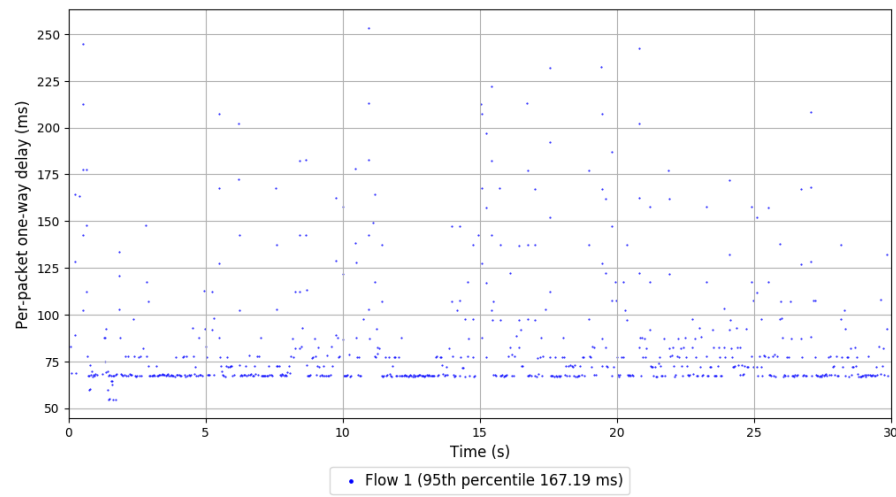
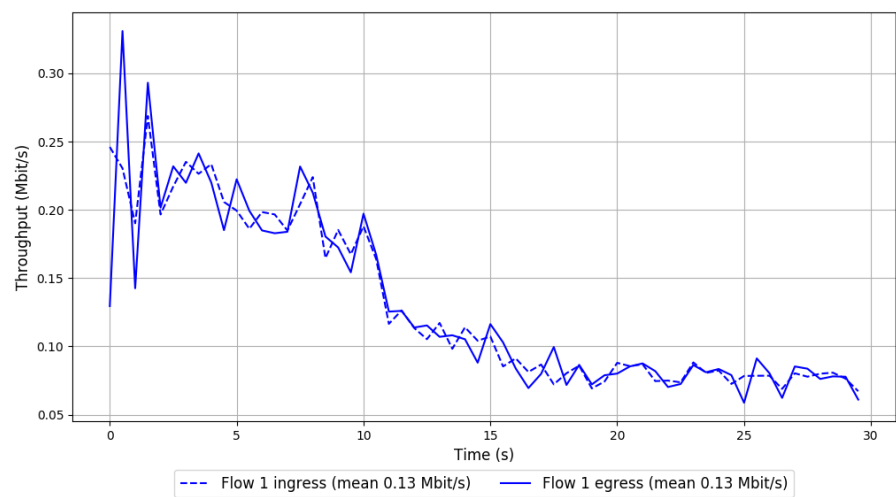


Run 1: Statistics of SCReAM

Start at: 2018-02-12 19:34:23
End at: 2018-02-12 19:34:53
Local clock offset: -6.944 ms
Remote clock offset: -21.368 ms

Below is generated by plot.py at 2018-02-12 21:17:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 167.190 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 167.190 ms
Loss rate: 0.23%

Run 1: Report of SReAM — Data Link

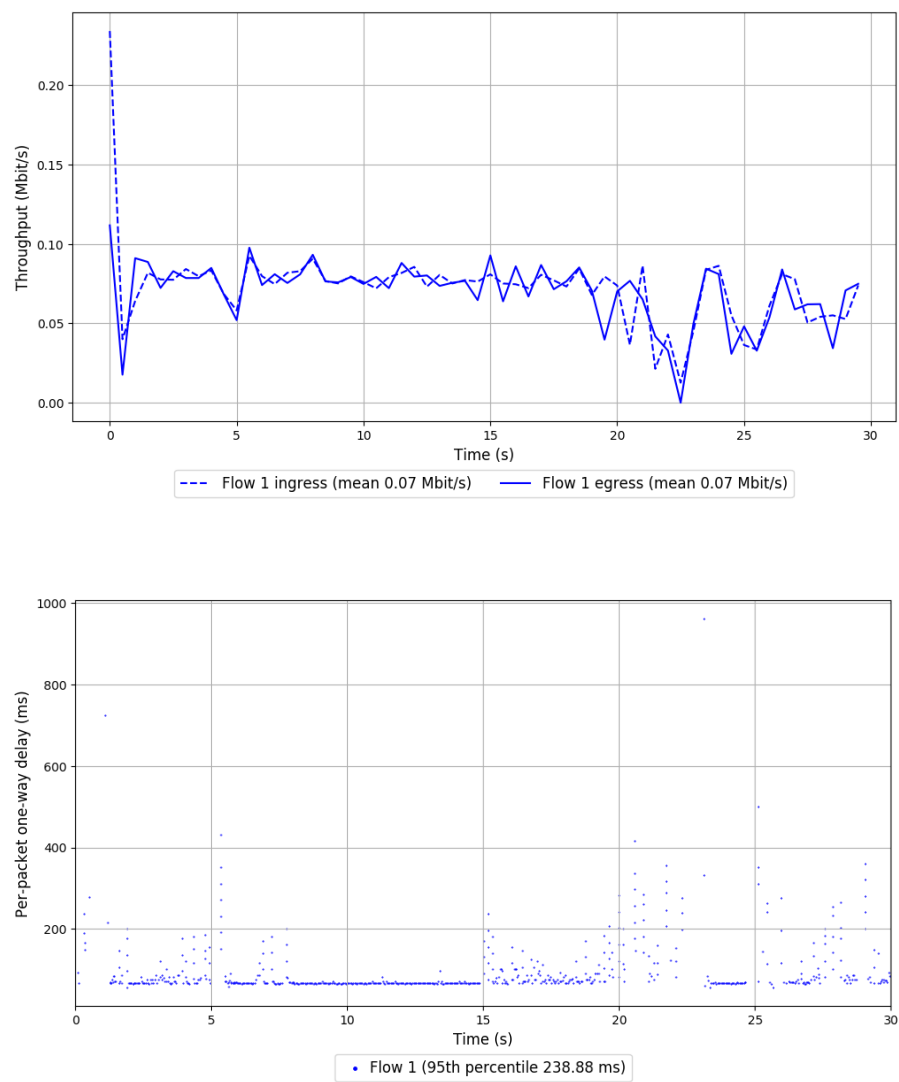


Run 2: Statistics of SCReAM

Start at: 2018-02-12 19:54:02
End at: 2018-02-12 19:54:32
Local clock offset: -5.498 ms
Remote clock offset: -20.766 ms

Below is generated by plot.py at 2018-02-12 21:17:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 238.883 ms
Loss rate: 3.84%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 238.883 ms
Loss rate: 3.84%

Run 2: Report of SReAM — Data Link

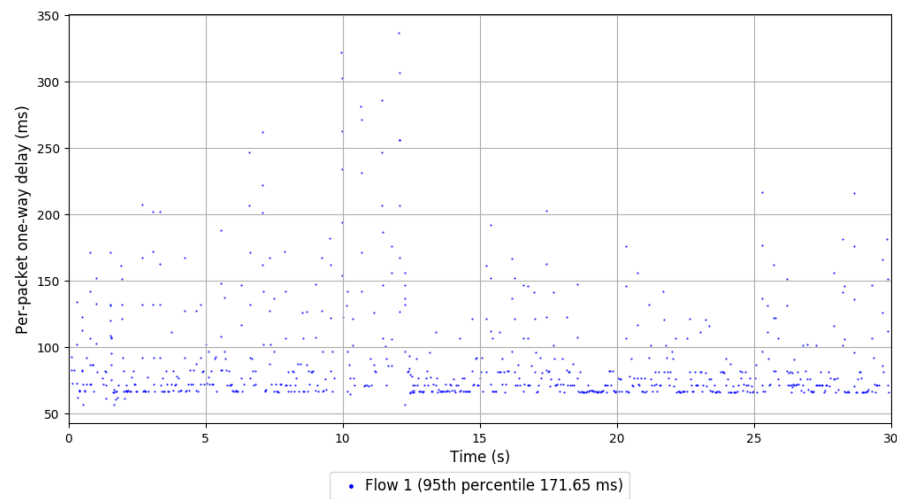
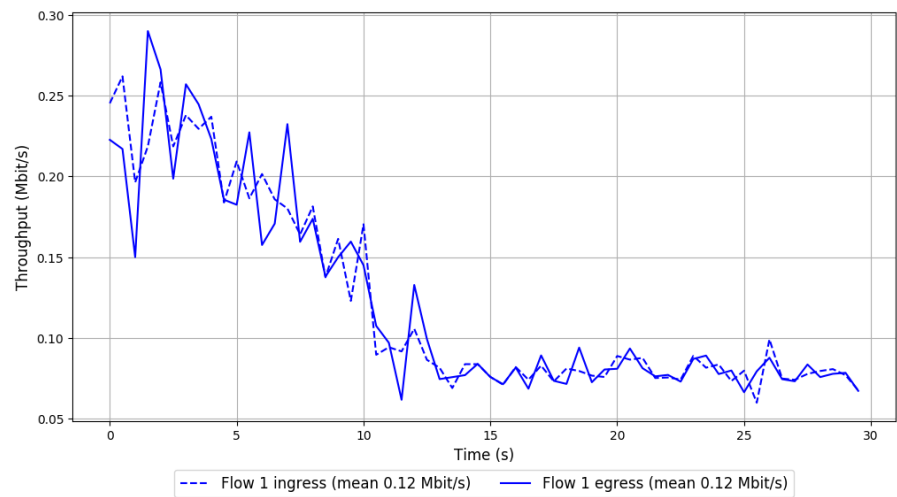


Run 3: Statistics of SCReAM

Start at: 2018-02-12 20:13:44
End at: 2018-02-12 20:14:14
Local clock offset: -10.302 ms
Remote clock offset: -18.228 ms

Below is generated by plot.py at 2018-02-12 21:17:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 171.654 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 171.654 ms
Loss rate: 0.17%

Run 3: Report of SReAM — Data Link

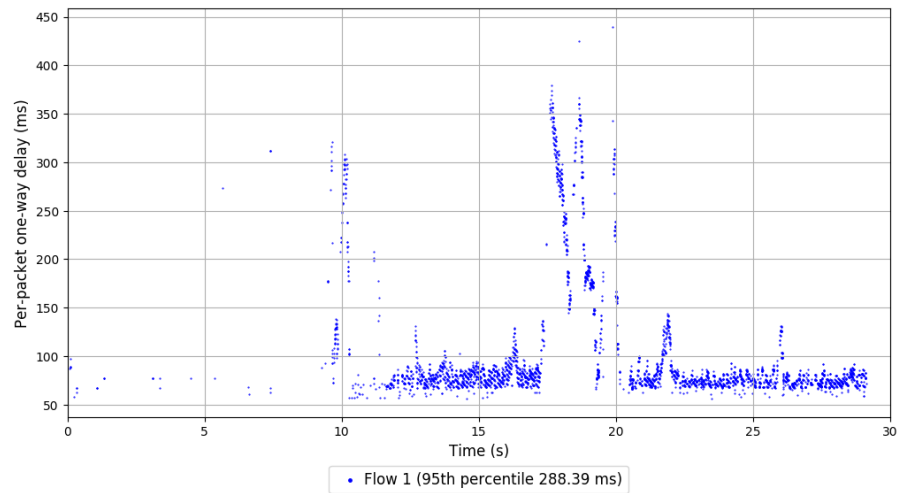
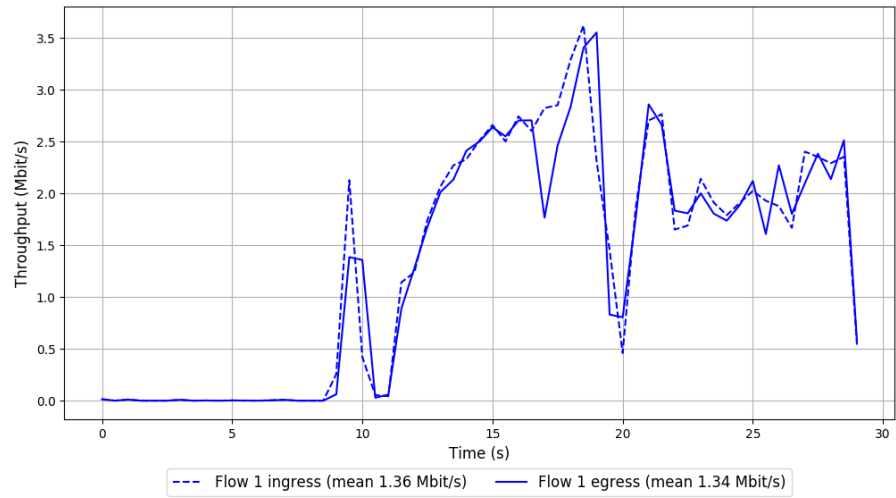


Run 1: Statistics of WebRTC media

Start at: 2018-02-12 19:33:18
End at: 2018-02-12 19:33:48
Local clock offset: -4.022 ms
Remote clock offset: -21.072 ms

Below is generated by plot.py at 2018-02-12 21:17:09
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 288.387 ms
Loss rate: 1.85%
-- Flow 1:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 288.387 ms
Loss rate: 1.85%

Run 1: Report of WebRTC media — Data Link

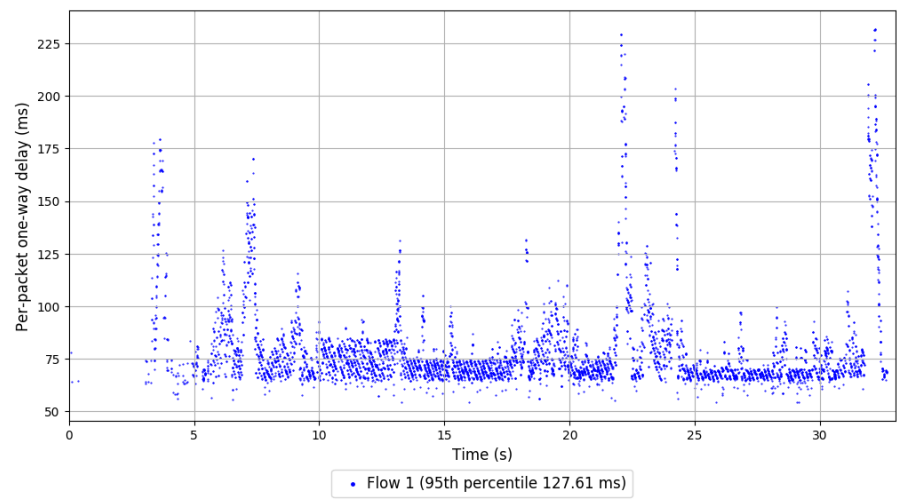
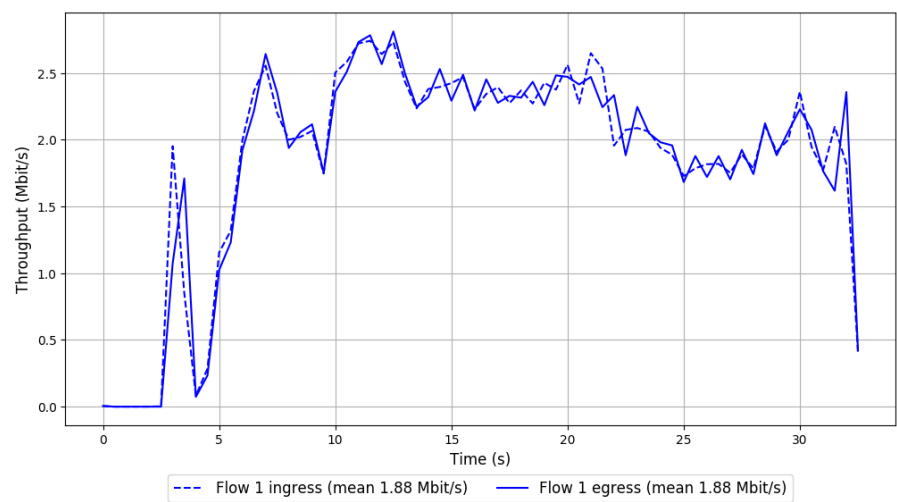


Run 2: Statistics of WebRTC media

Start at: 2018-02-12 19:52:57
End at: 2018-02-12 19:53:27
Local clock offset: -5.934 ms
Remote clock offset: -20.019 ms

Below is generated by plot.py at 2018-02-12 21:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 127.610 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 127.610 ms
Loss rate: 0.16%

Run 2: Report of WebRTC media — Data Link

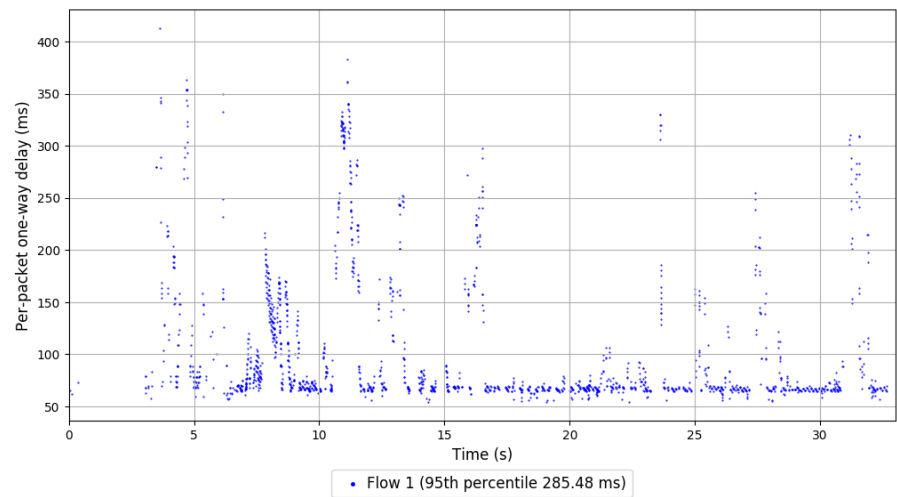
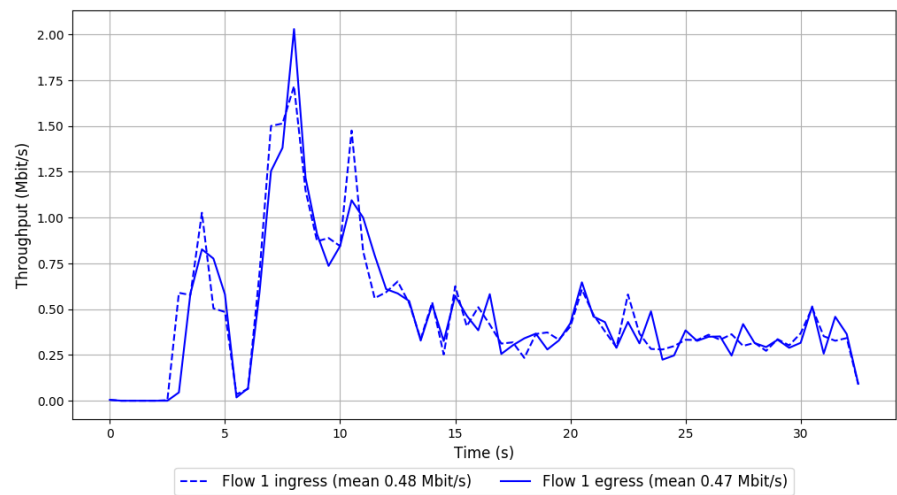


Run 3: Statistics of WebRTC media

Start at: 2018-02-12 20:12:39
End at: 2018-02-12 20:13:09
Local clock offset: -11.585 ms
Remote clock offset: -19.466 ms

Below is generated by plot.py at 2018-02-12 21:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 285.482 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 285.482 ms
Loss rate: 1.59%

Run 3: Report of WebRTC media — Data Link

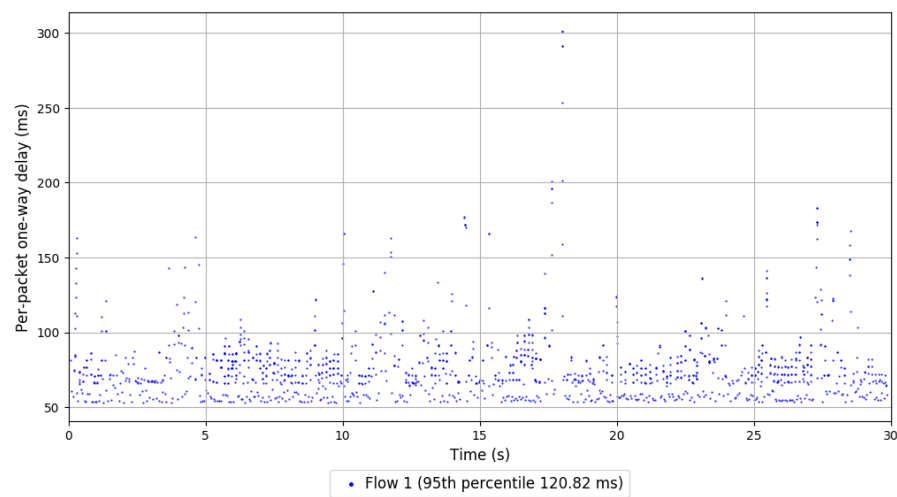
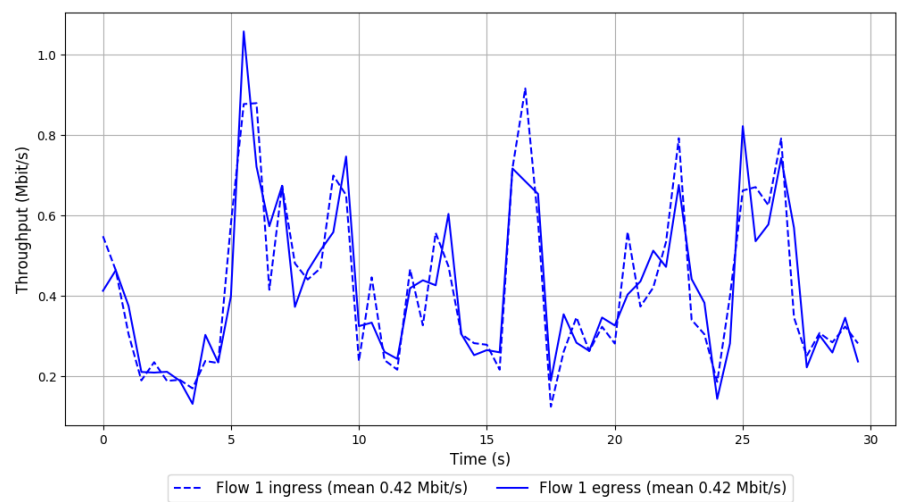


Run 1: Statistics of Sprout

Start at: 2018-02-12 19:37:39
End at: 2018-02-12 19:38:09
Local clock offset: -8.099 ms
Remote clock offset: -19.858 ms

Below is generated by plot.py at 2018-02-12 21:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 120.824 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 120.824 ms
Loss rate: 0.45%

Run 1: Report of Sprout — Data Link

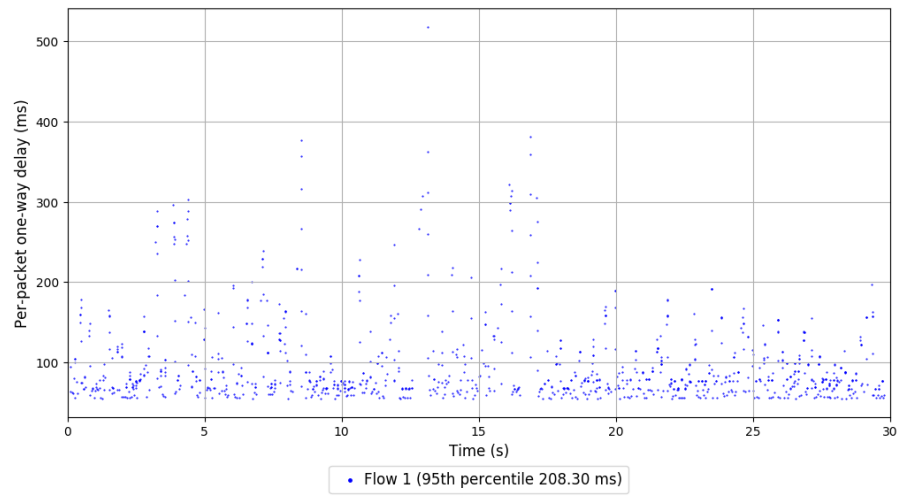
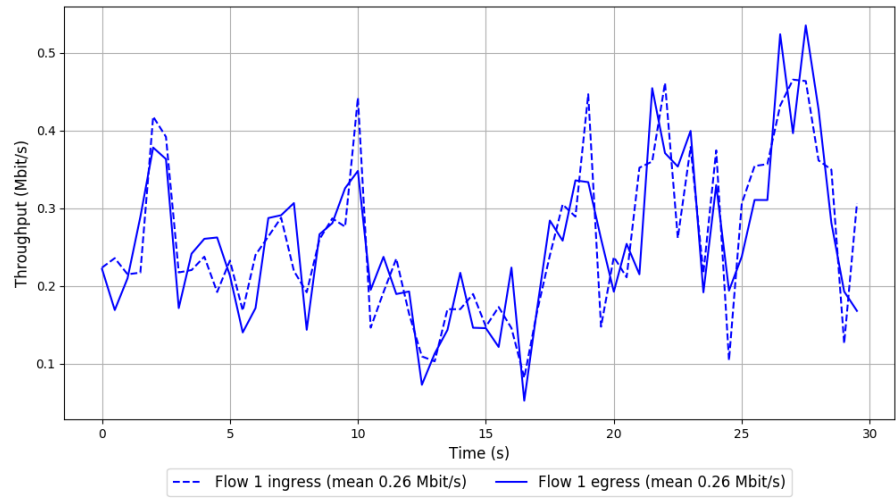


Run 2: Statistics of Sprout

Start at: 2018-02-12 19:57:20
End at: 2018-02-12 19:57:50
Local clock offset: -5.064 ms
Remote clock offset: -19.574 ms

Below is generated by plot.py at 2018-02-12 21:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 208.304 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 208.304 ms
Loss rate: 1.06%

Run 2: Report of Sprout — Data Link

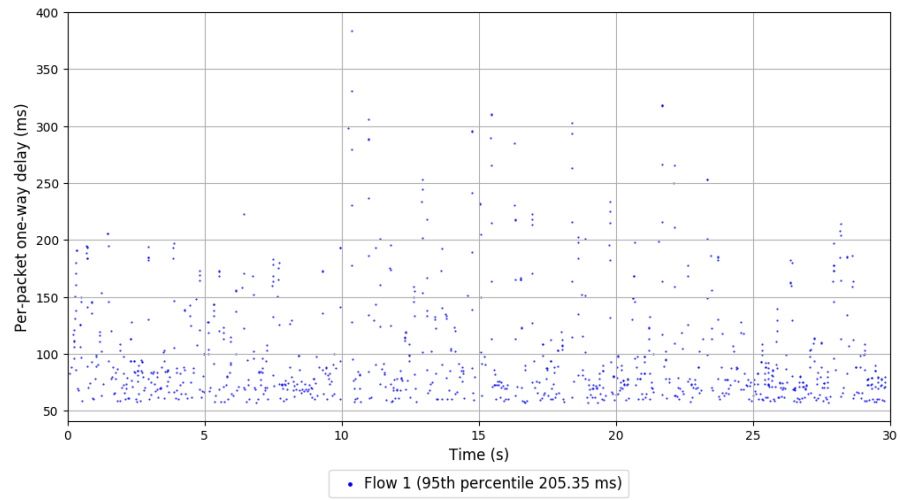
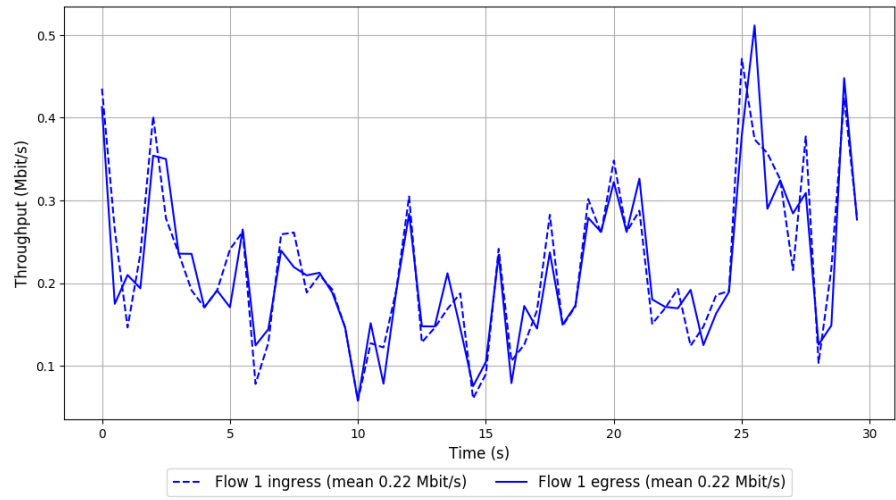


Run 3: Statistics of Sprout

Start at: 2018-02-12 20:17:02
End at: 2018-02-12 20:17:32
Local clock offset: -3.616 ms
Remote clock offset: -18.279 ms

Below is generated by plot.py at 2018-02-12 21:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 205.350 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 205.350 ms
Loss rate: 1.06%

Run 3: Report of Sprout — Data Link

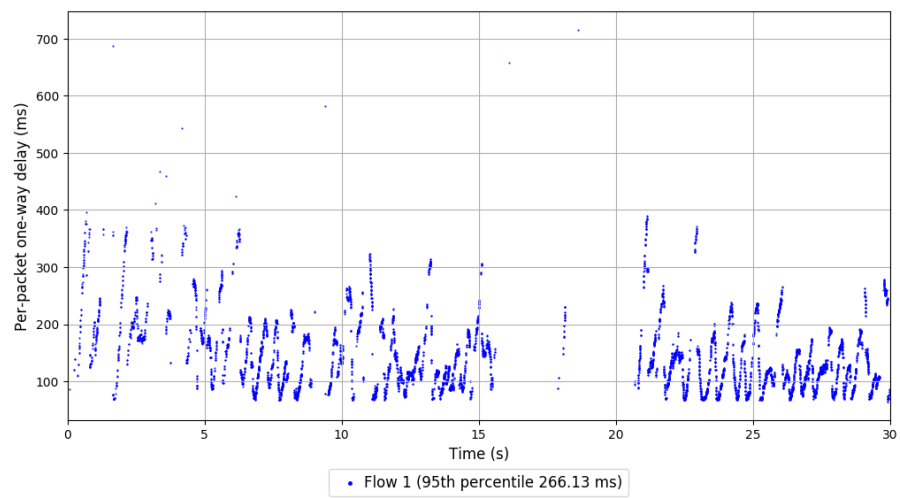
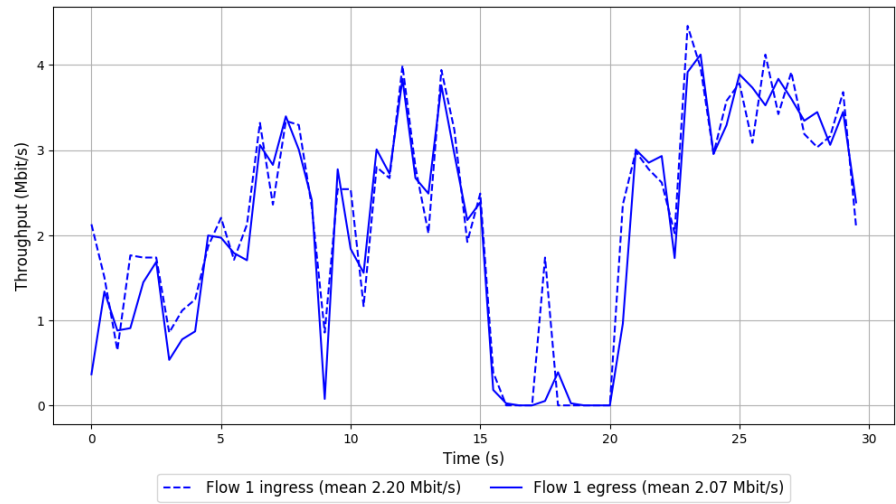


Run 1: Statistics of TaoVA-100x

Start at: 2018-02-12 19:30:01
End at: 2018-02-12 19:30:31
Local clock offset: -3.936 ms
Remote clock offset: -23.362 ms

Below is generated by plot.py at 2018-02-12 21:17:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 266.131 ms
Loss rate: 5.84%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 266.131 ms
Loss rate: 5.84%

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

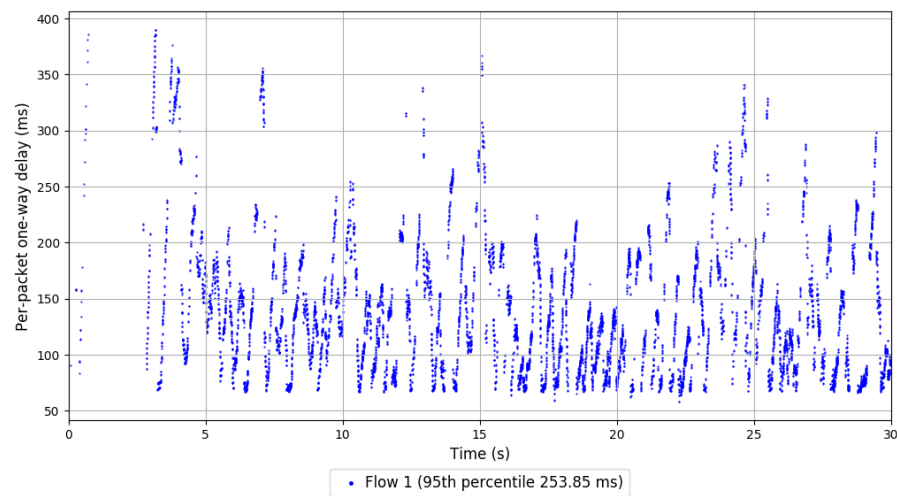
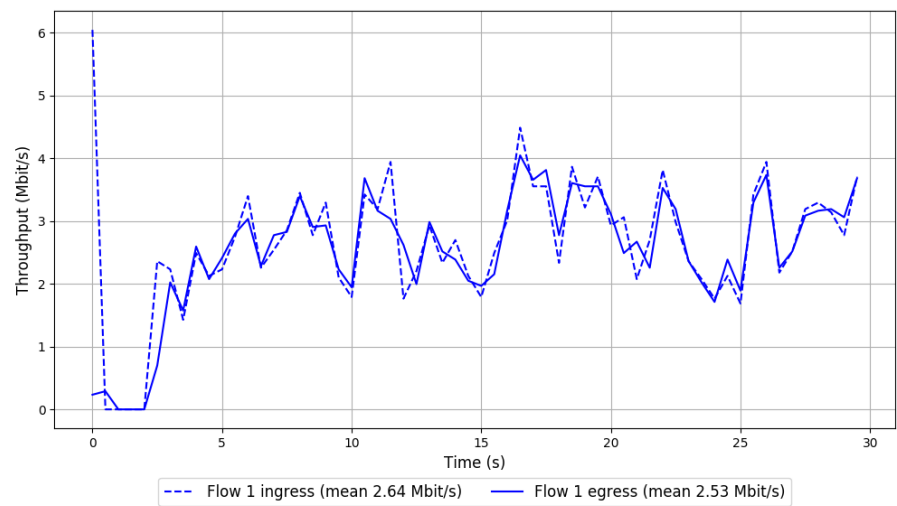


Run 2: Statistics of TaoVA-100x

Start at: 2018-02-12 19:49:39
End at: 2018-02-12 19:50:09
Local clock offset: -3.029 ms
Remote clock offset: -19.925 ms

Below is generated by plot.py at 2018-02-12 21:17:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 253.852 ms
Loss rate: 4.49%
-- Flow 1:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 253.852 ms
Loss rate: 4.49%

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

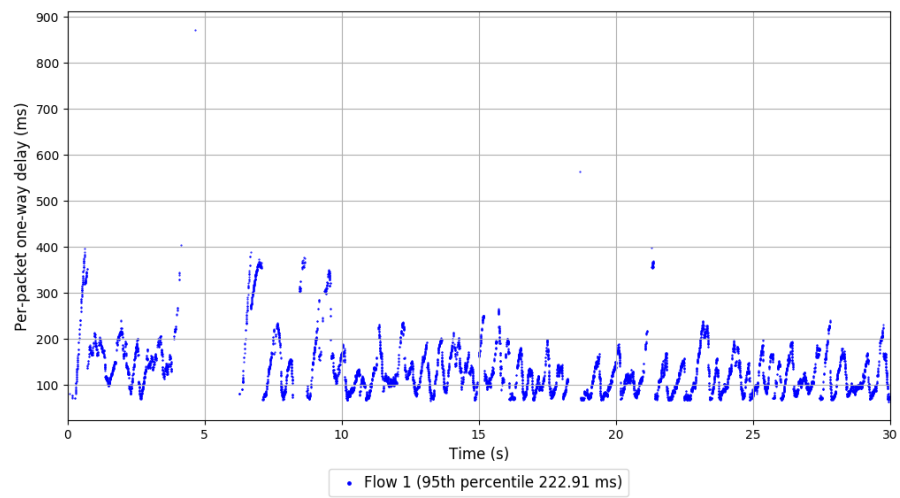
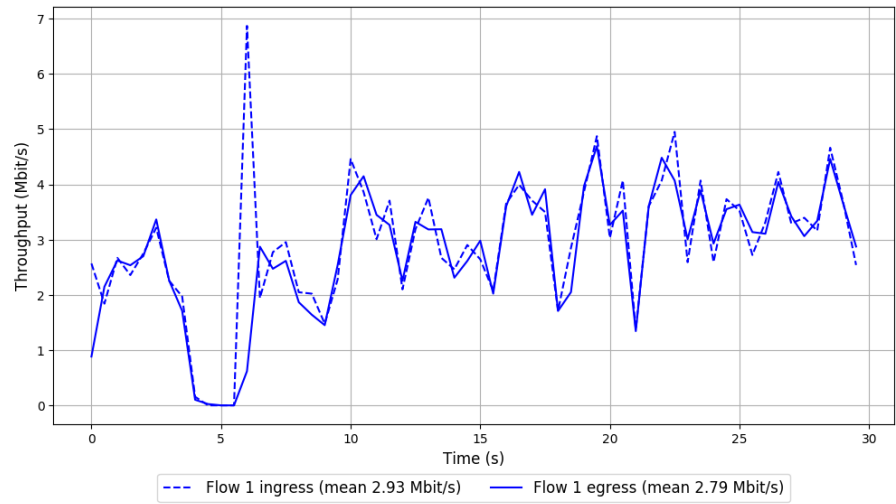


Run 3: Statistics of TaoVA-100x

Start at: 2018-02-12 20:09:22
End at: 2018-02-12 20:09:52
Local clock offset: -7.87 ms
Remote clock offset: -18.401 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 222.909 ms
Loss rate: 4.99%
-- Flow 1:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 222.909 ms
Loss rate: 4.99%

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

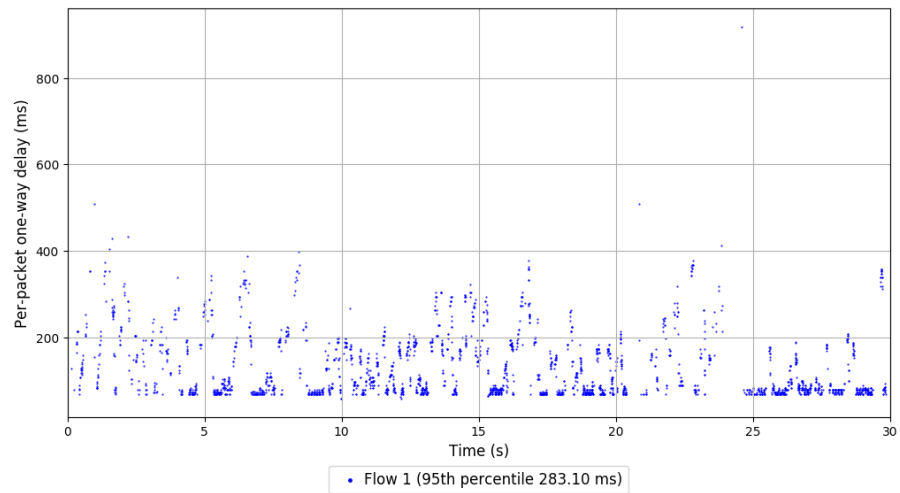
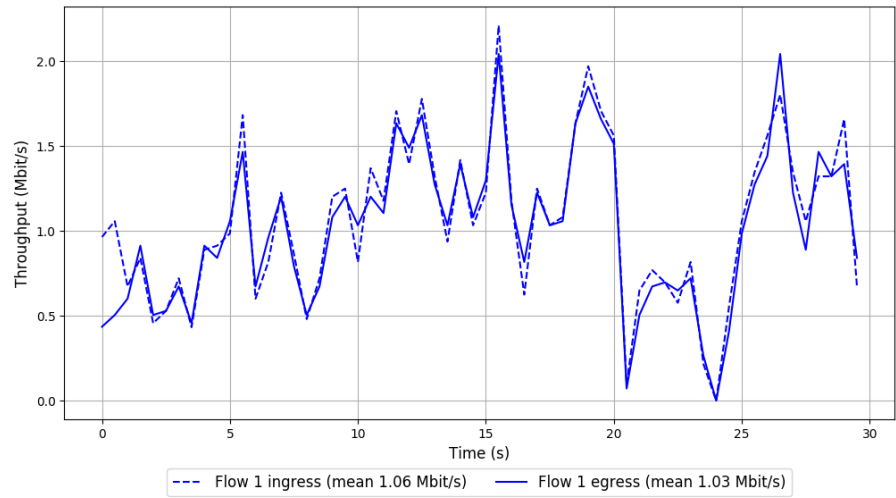


Run 1: Statistics of TCP Vegas

Start at: 2018-02-12 19:27:51
End at: 2018-02-12 19:28:21
Local clock offset: -3.653 ms
Remote clock offset: -21.828 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 283.097 ms
Loss rate: 3.46%
-- Flow 1:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 283.097 ms
Loss rate: 3.46%

Run 1: Report of TCP Vegas — Data Link

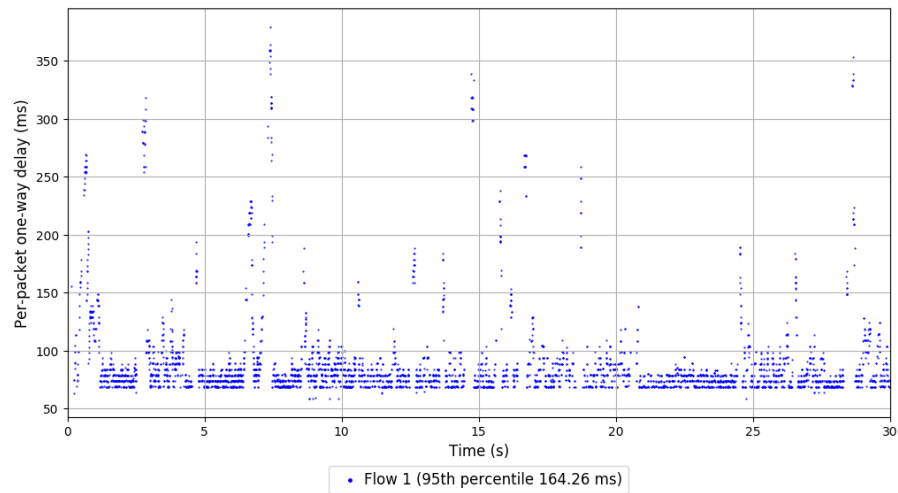
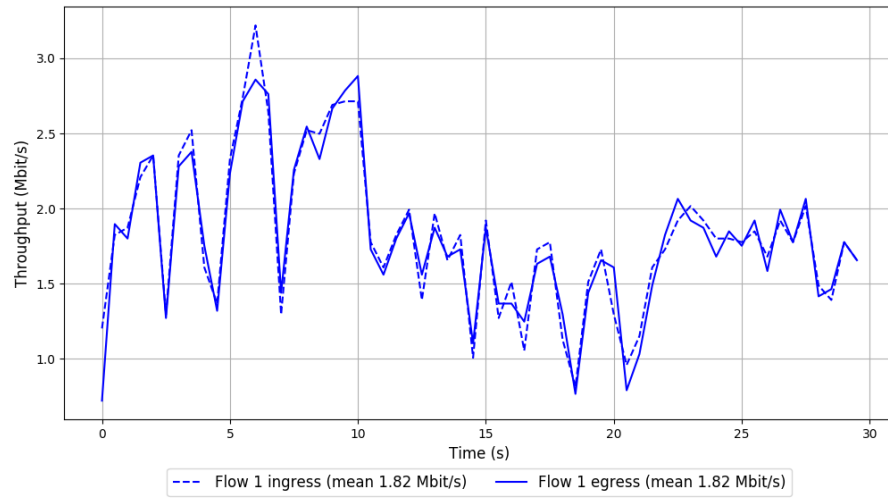


Run 2: Statistics of TCP Vegas

Start at: 2018-02-12 19:47:28
End at: 2018-02-12 19:47:58
Local clock offset: -3.763 ms
Remote clock offset: -20.669 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 164.260 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 164.260 ms
Loss rate: 0.75%

Run 2: Report of TCP Vegas — Data Link

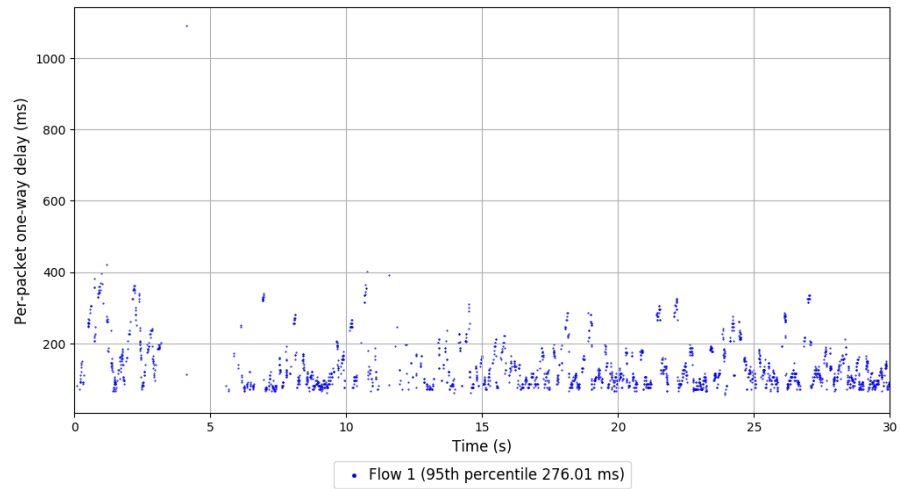
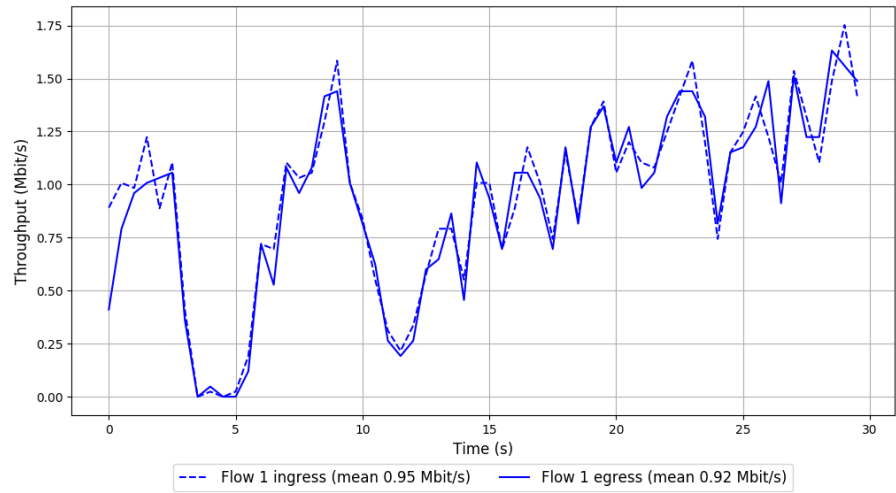


Run 3: Statistics of TCP Vegas

Start at: 2018-02-12 20:07:11
End at: 2018-02-12 20:07:41
Local clock offset: -8.869 ms
Remote clock offset: -19.489 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 276.007 ms
Loss rate: 2.54%
-- Flow 1:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 276.007 ms
Loss rate: 2.54%

Run 3: Report of TCP Vegas — Data Link

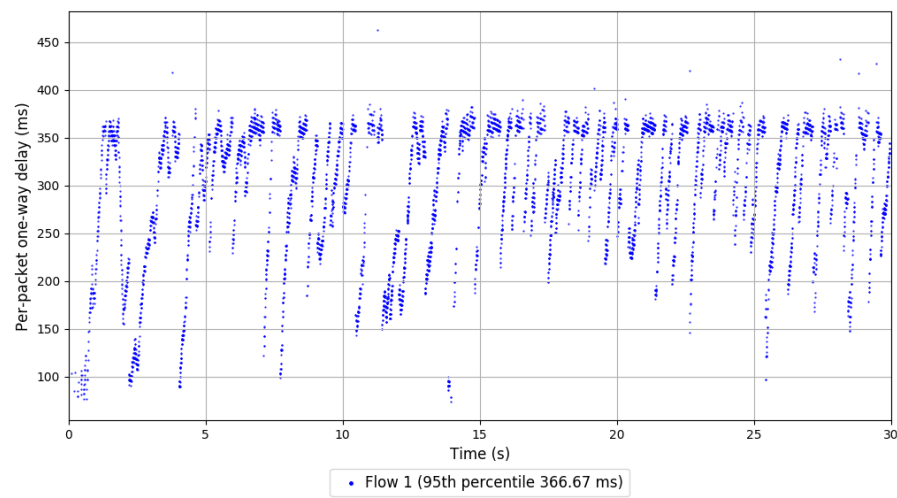
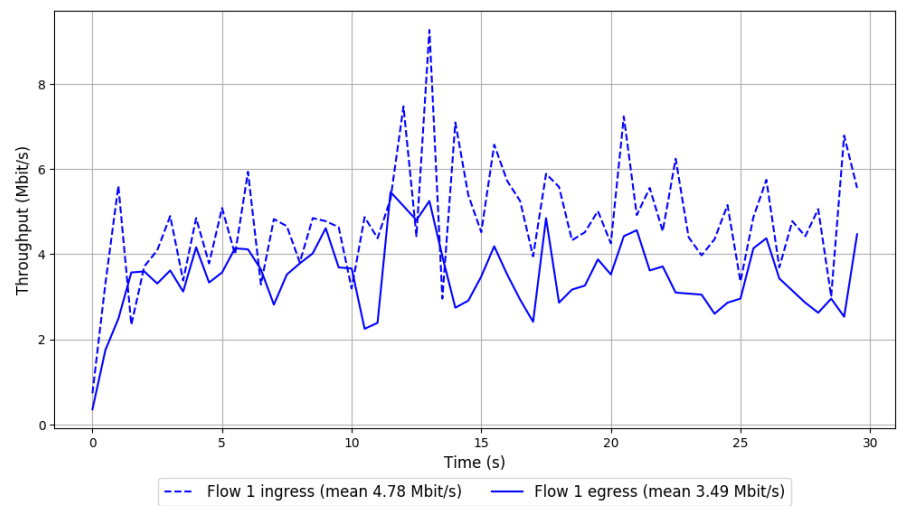


Run 1: Statistics of Verus

Start at: 2018-02-12 19:23:30
End at: 2018-02-12 19:24:00
Local clock offset: -2.386 ms
Remote clock offset: -22.743 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.49 Mbit/s
95th percentile per-packet one-way delay: 366.671 ms
Loss rate: 27.20%
-- Flow 1:
Average throughput: 3.49 Mbit/s
95th percentile per-packet one-way delay: 366.671 ms
Loss rate: 27.20%

Run 1: Report of Verus — Data Link

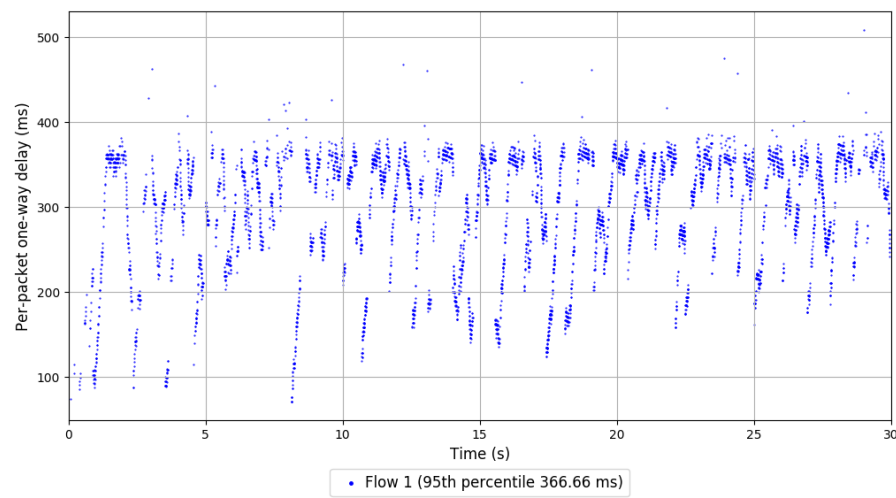
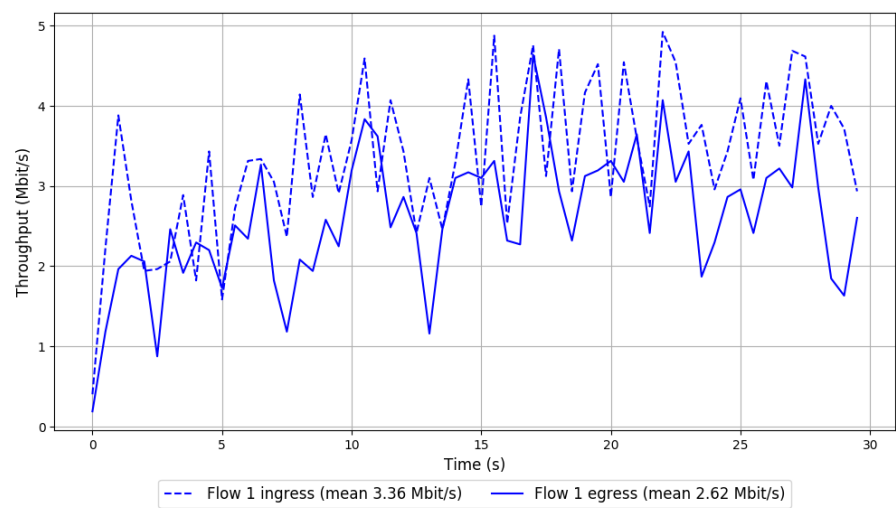


Run 2: Statistics of Verus

Start at: 2018-02-12 19:43:06
End at: 2018-02-12 19:43:36
Local clock offset: -3.982 ms
Remote clock offset: -22.196 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 366.656 ms
Loss rate: 22.23%
-- Flow 1:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 366.656 ms
Loss rate: 22.23%

Run 2: Report of Verus — Data Link

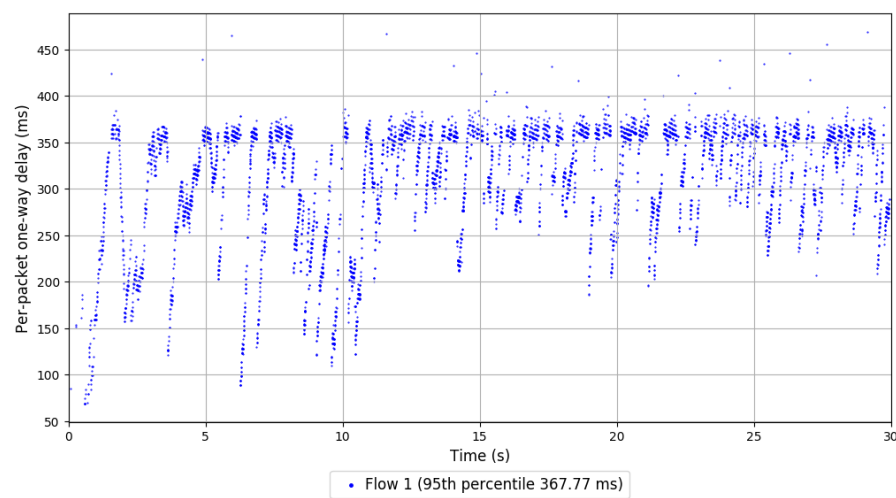
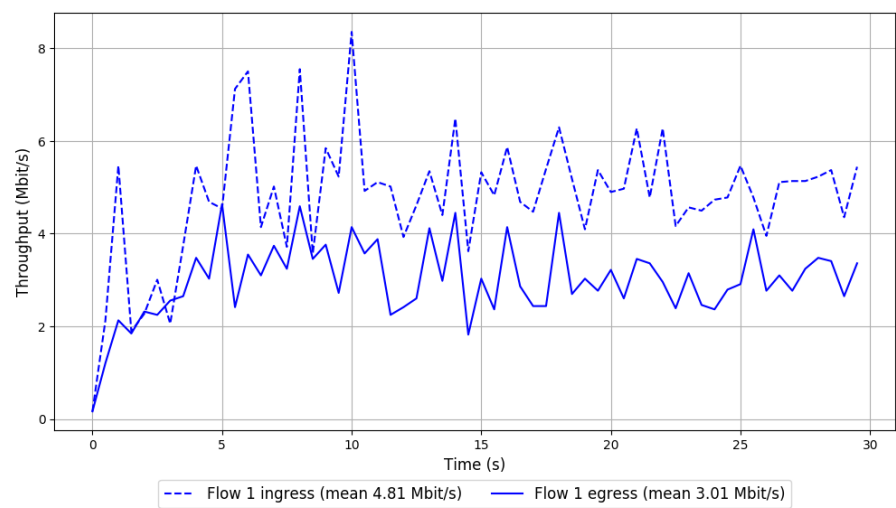


Run 3: Statistics of Verus

Start at: 2018-02-12 20:02:49
End at: 2018-02-12 20:03:19
Local clock offset: -6.764 ms
Remote clock offset: -21.498 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.01 Mbit/s
95th percentile per-packet one-way delay: 367.769 ms
Loss rate: 37.64%
-- Flow 1:
Average throughput: 3.01 Mbit/s
95th percentile per-packet one-way delay: 367.769 ms
Loss rate: 37.64%

Run 3: Report of Verus — Data Link

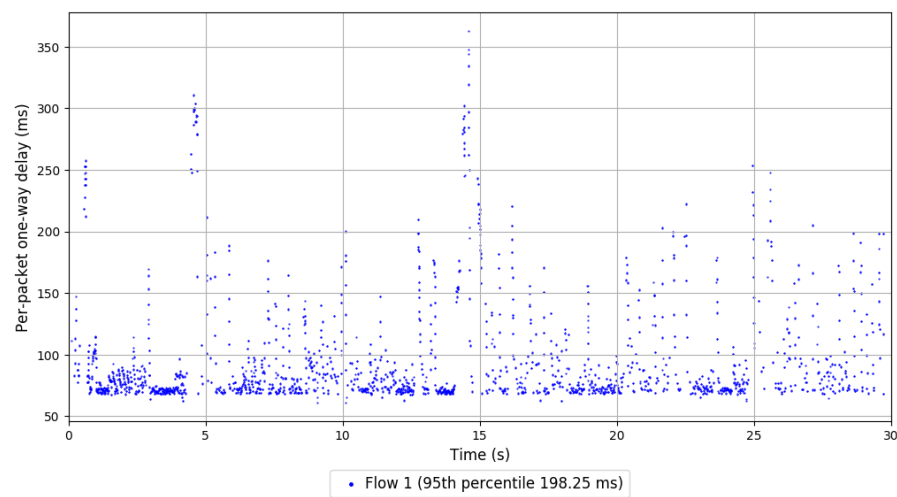
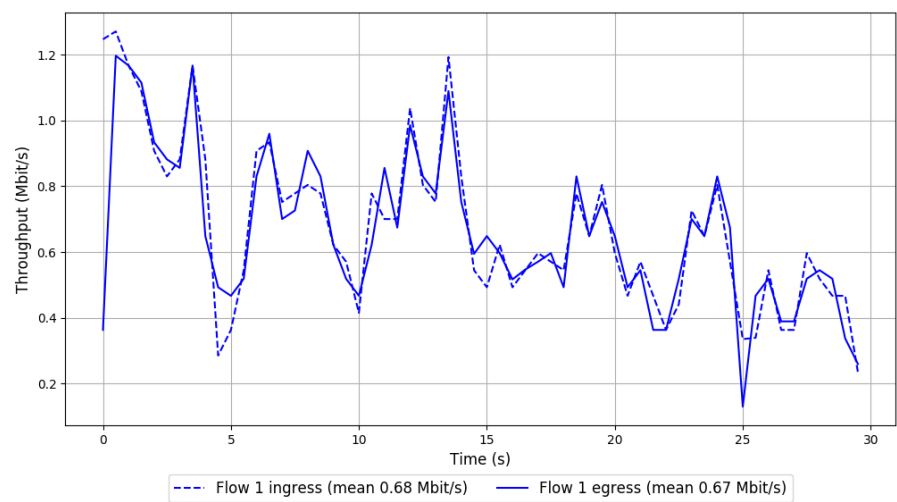


Run 1: Statistics of Copa

Start at: 2018-02-12 19:21:19
End at: 2018-02-12 19:21:49
Local clock offset: -3.183 ms
Remote clock offset: -22.884 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 198.248 ms
Loss rate: 2.24%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 198.248 ms
Loss rate: 2.24%

Run 1: Report of Copa — Data Link

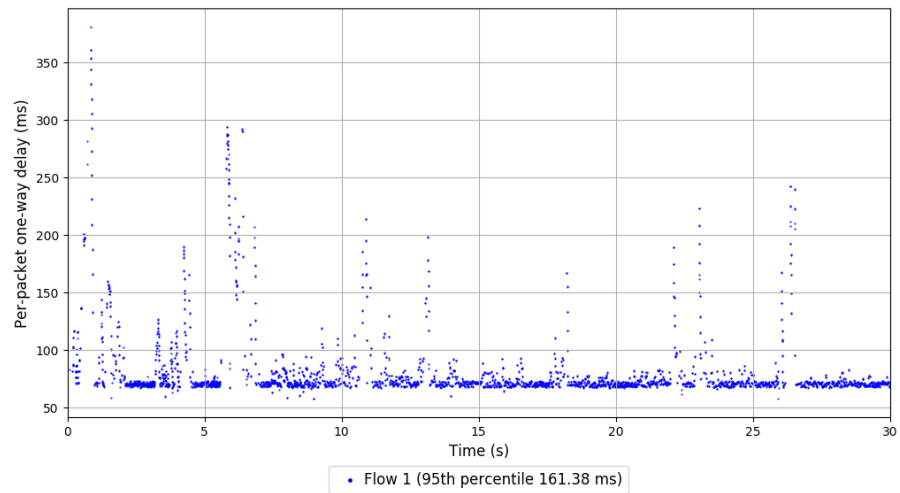
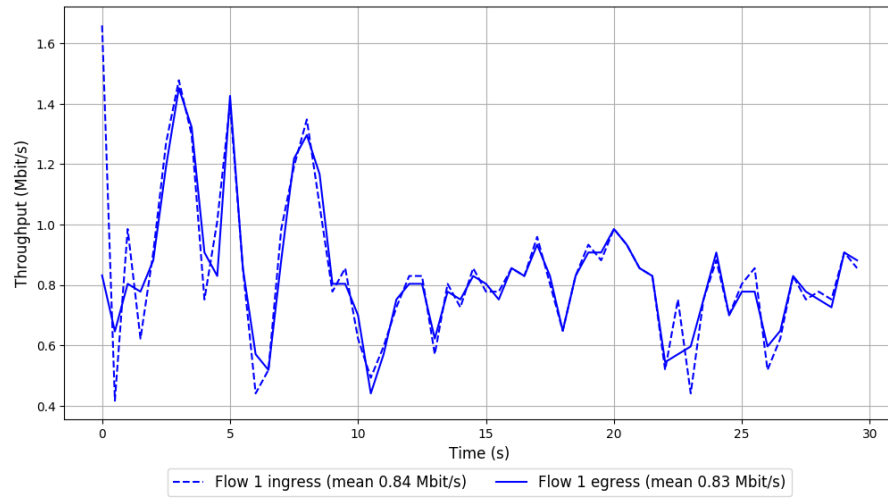


Run 2: Statistics of Copa

Start at: 2018-02-12 19:40:55
End at: 2018-02-12 19:41:25
Local clock offset: -5.137 ms
Remote clock offset: -21.541 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 161.384 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 161.384 ms
Loss rate: 1.24%

Run 2: Report of Copa — Data Link

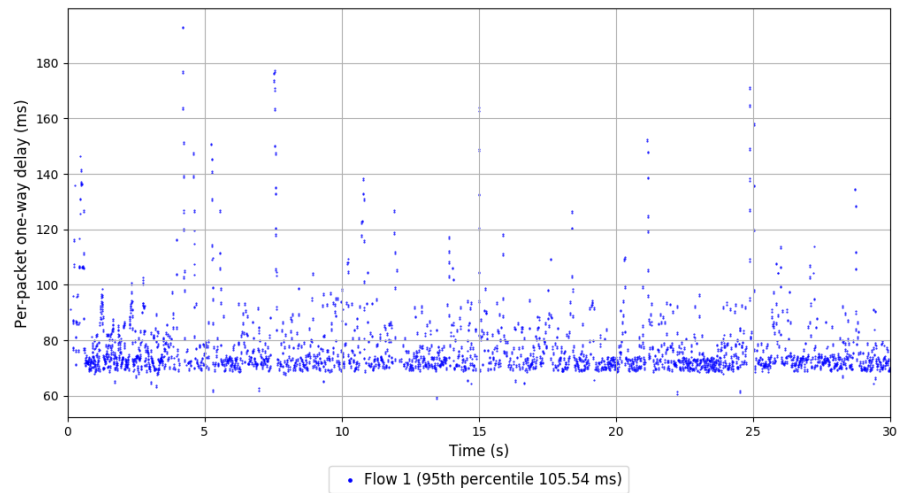
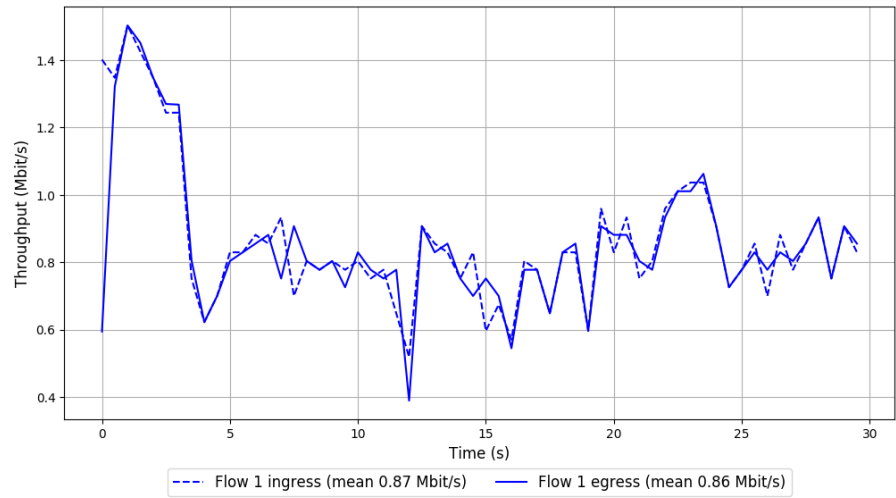


Run 3: Statistics of Copa

Start at: 2018-02-12 20:00:39
End at: 2018-02-12 20:01:09
Local clock offset: -9.259 ms
Remote clock offset: -26.247 ms

Below is generated by plot.py at 2018-02-12 21:17:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 105.540 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 105.540 ms
Loss rate: 1.35%

Run 3: Report of Copa — Data Link

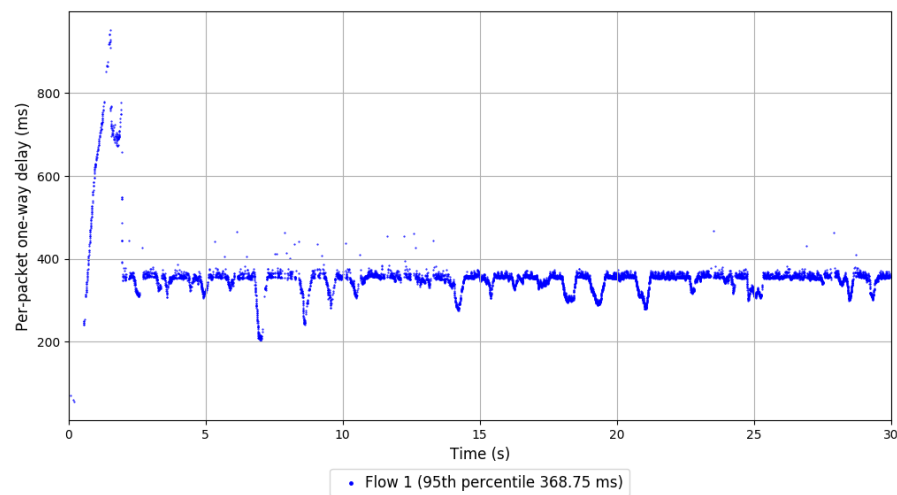
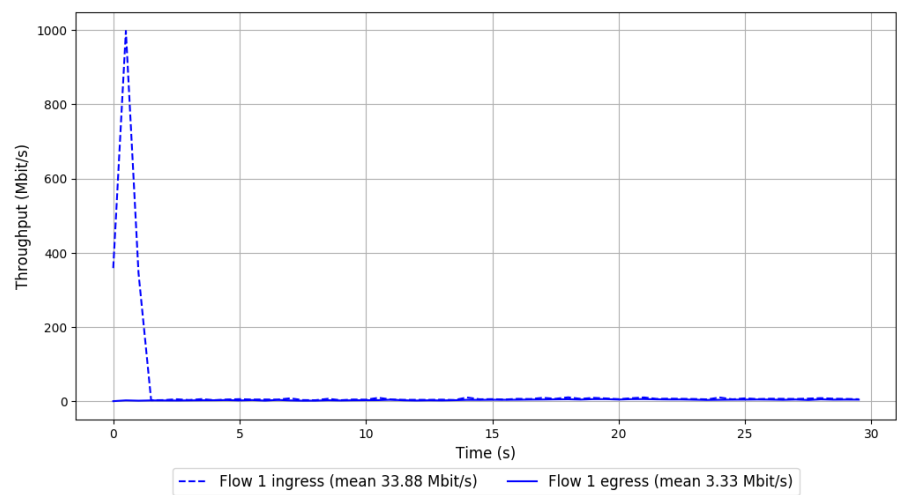


Run 1: Statistics of FillP

Start at: 2018-02-12 19:36:33
End at: 2018-02-12 19:37:03
Local clock offset: -6.922 ms
Remote clock offset: -19.438 ms

Below is generated by plot.py at 2018-02-12 21:17:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 368.749 ms
Loss rate: 90.20%
-- Flow 1:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 368.749 ms
Loss rate: 90.20%

Run 1: Report of FillP — Data Link

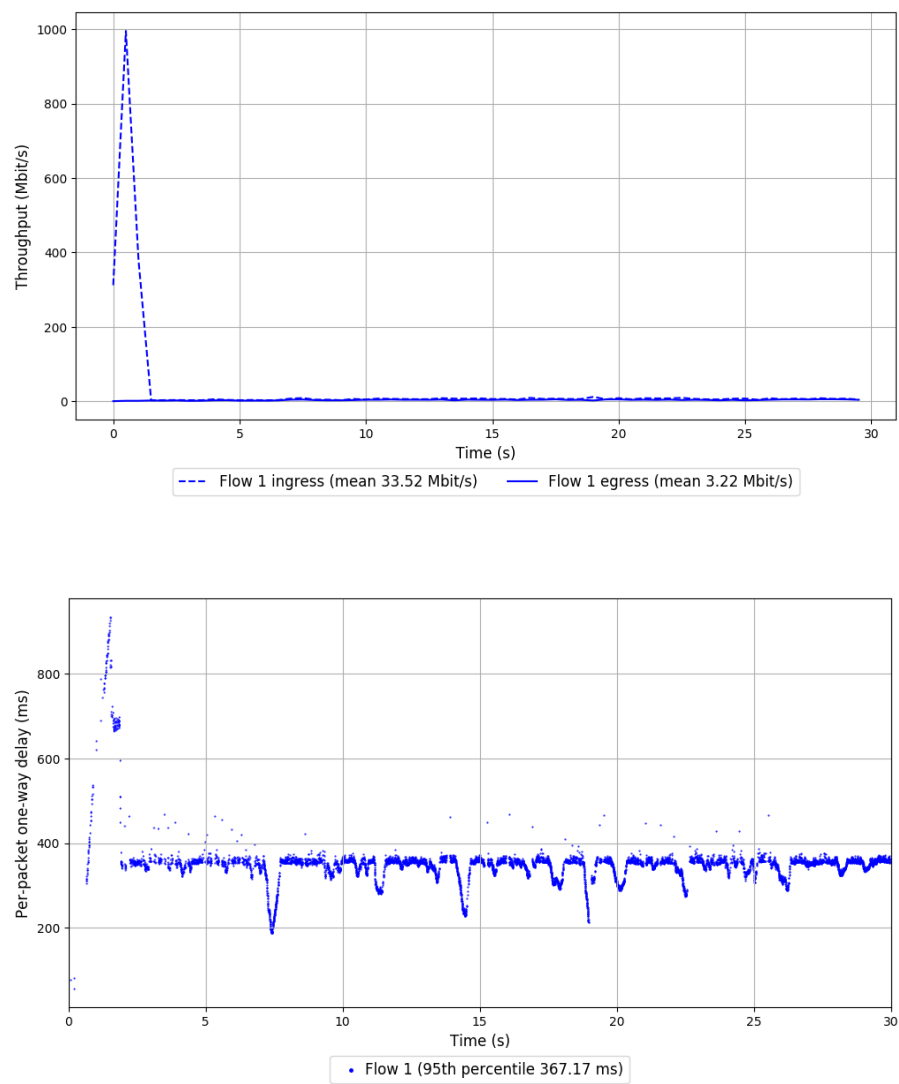


Run 2: Statistics of FillP

Start at: 2018-02-12 19:56:13
End at: 2018-02-12 19:56:43
Local clock offset: -6.325 ms
Remote clock offset: -19.523 ms

Below is generated by plot.py at 2018-02-12 21:17:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.22 Mbit/s
95th percentile per-packet one-way delay: 367.169 ms
Loss rate: 90.40%
-- Flow 1:
Average throughput: 3.22 Mbit/s
95th percentile per-packet one-way delay: 367.169 ms
Loss rate: 90.40%

Run 2: Report of FillP — Data Link

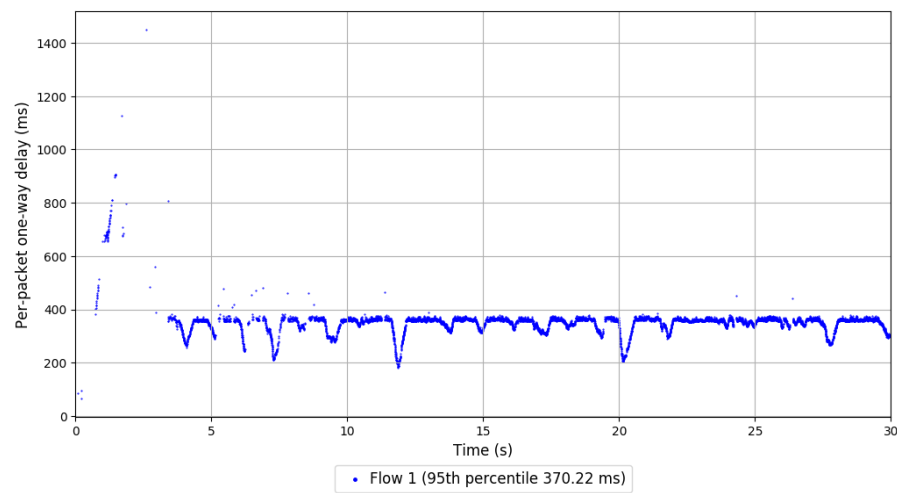
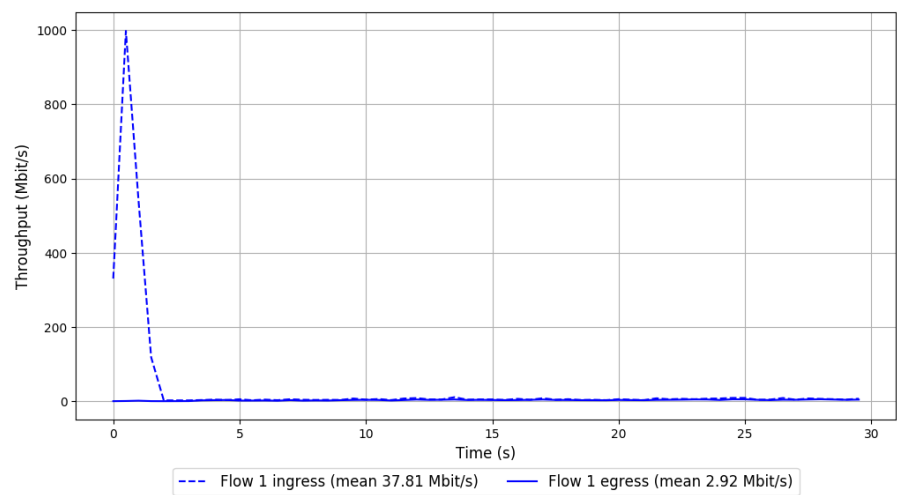


Run 3: Statistics of FillP

Start at: 2018-02-12 20:15:55
End at: 2018-02-12 20:16:25
Local clock offset: -3.612 ms
Remote clock offset: -17.353 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 370.223 ms
Loss rate: 92.29%
-- Flow 1:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 370.223 ms
Loss rate: 92.29%

Run 3: Report of FillP — Data Link

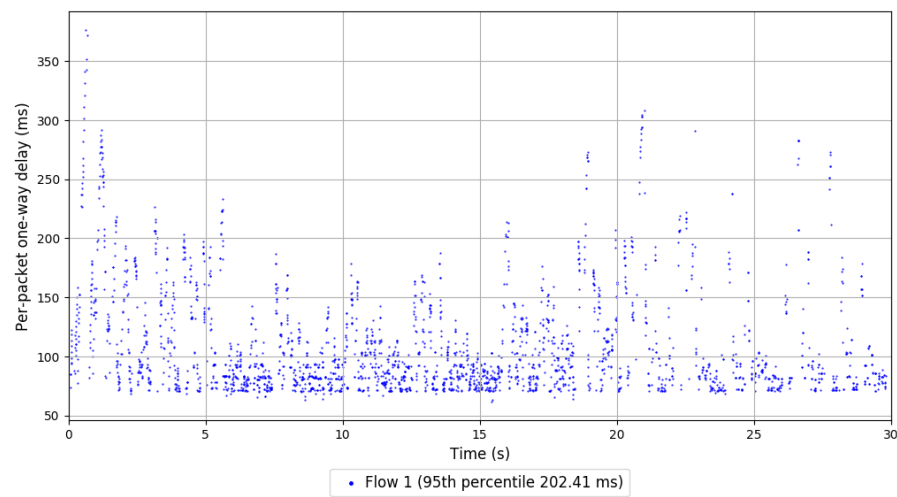
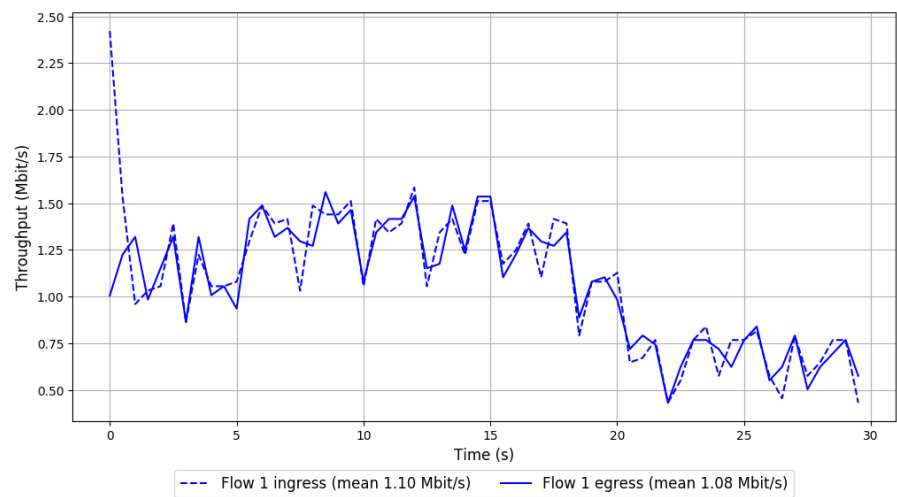


```
Run 1: Statistics of Indigo-1-32

Start at: 2018-02-12 19:35:28
End at: 2018-02-12 19:35:58
Local clock offset: -4.501 ms
Remote clock offset: -21.942 ms

# Below is generated by plot.py at 2018-02-12 21:17:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 202.413 ms
Loss rate: 1.80%
-- Flow 1:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 202.413 ms
Loss rate: 1.80%
```

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

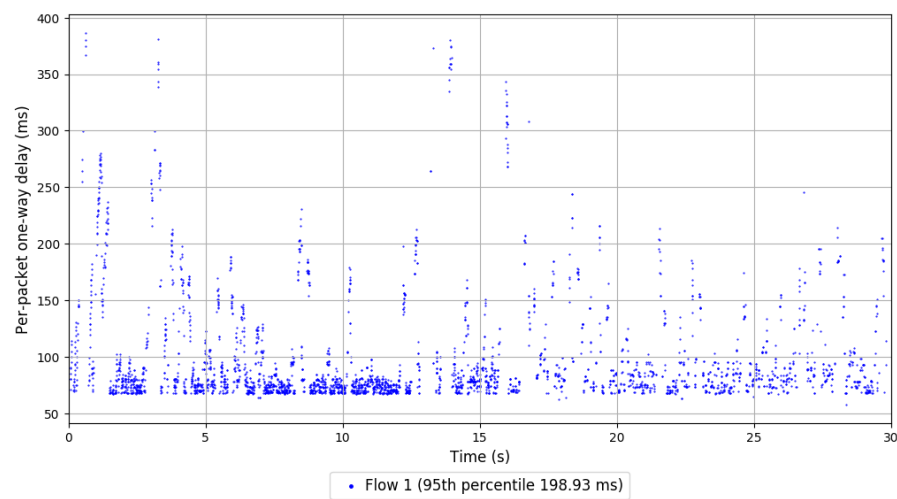
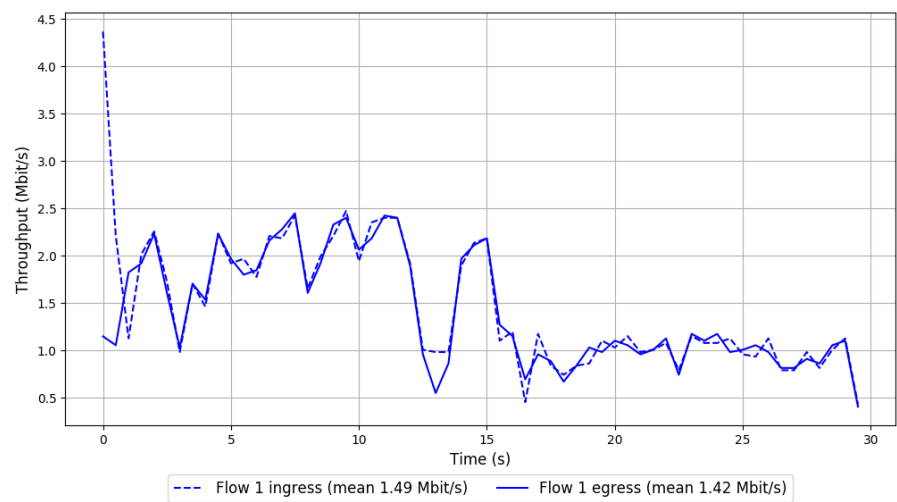


Run 2: Statistics of Indigo-1-32

Start at: 2018-02-12 19:55:07
End at: 2018-02-12 19:55:37
Local clock offset: -4.519 ms
Remote clock offset: -19.998 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 198.932 ms
Loss rate: 4.81%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 198.932 ms
Loss rate: 4.81%

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

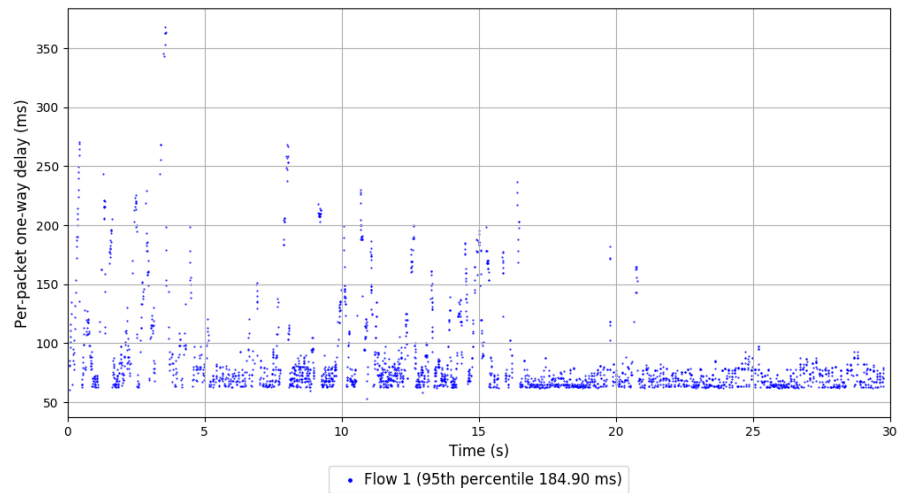
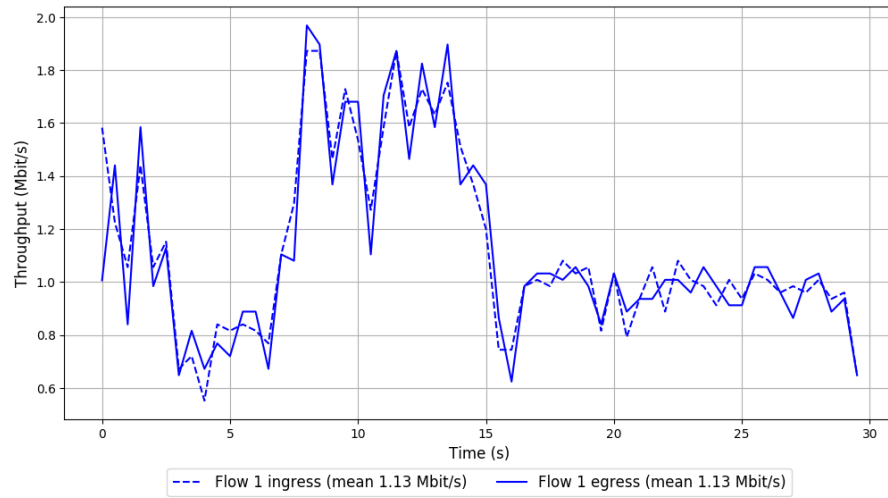


Run 3: Statistics of Indigo-1-32

Start at: 2018-02-12 20:14:49
End at: 2018-02-12 20:15:19
Local clock offset: -8.978 ms
Remote clock offset: -16.75 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 184.901 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 184.901 ms
Loss rate: 0.78%

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

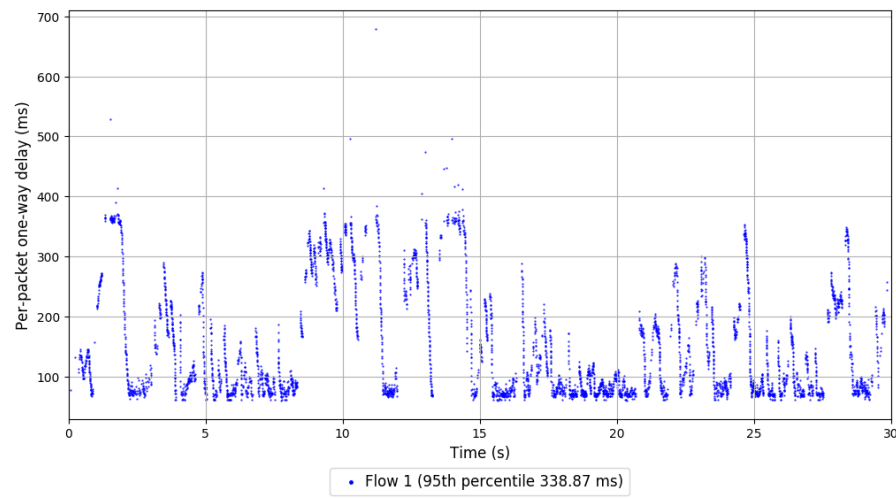
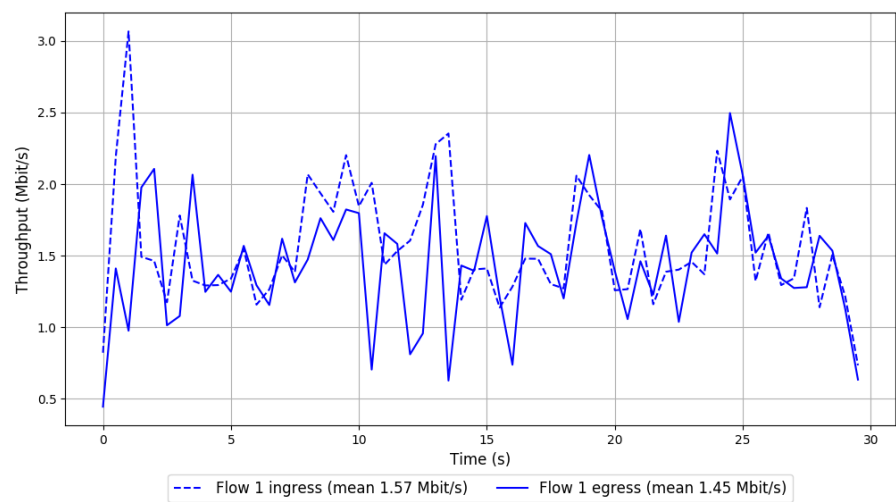


Run 1: Statistics of Vivace-latency

Start at: 2018-02-12 19:24:35
End at: 2018-02-12 19:25:05
Local clock offset: -1.542 ms
Remote clock offset: -22.894 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 338.870 ms
Loss rate: 8.33%
-- Flow 1:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 338.870 ms
Loss rate: 8.33%

Run 1: Report of Vivace-latency — Data Link

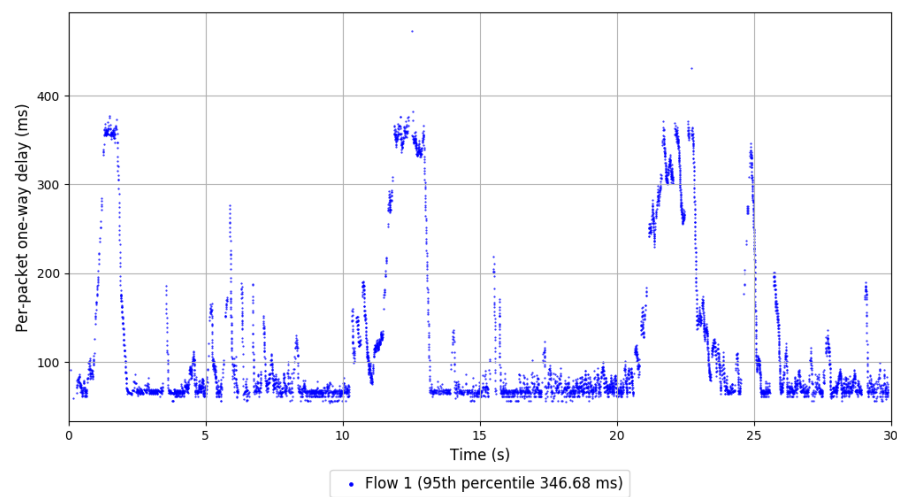
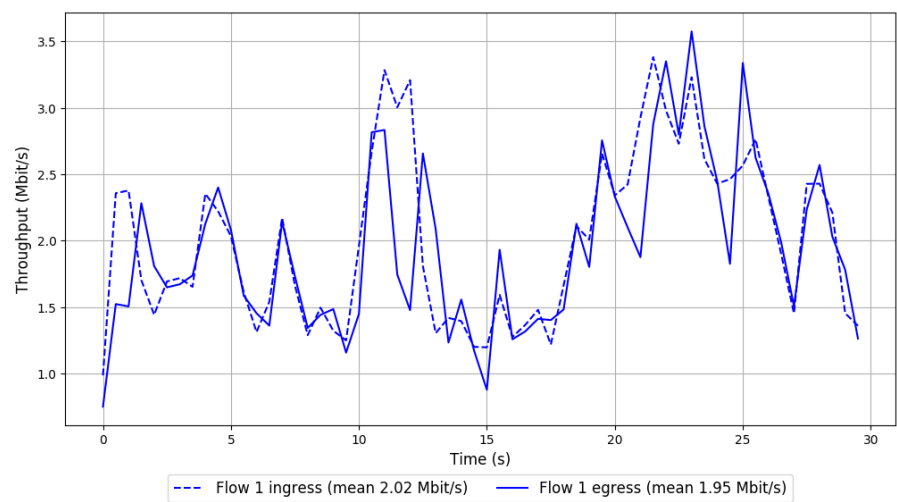


Run 2: Statistics of Vivace-latency

Start at: 2018-02-12 19:44:12
End at: 2018-02-12 19:44:42
Local clock offset: -6.174 ms
Remote clock offset: -19.533 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 346.681 ms
Loss rate: 3.37%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 346.681 ms
Loss rate: 3.37%

Run 2: Report of Vivace-latency — Data Link

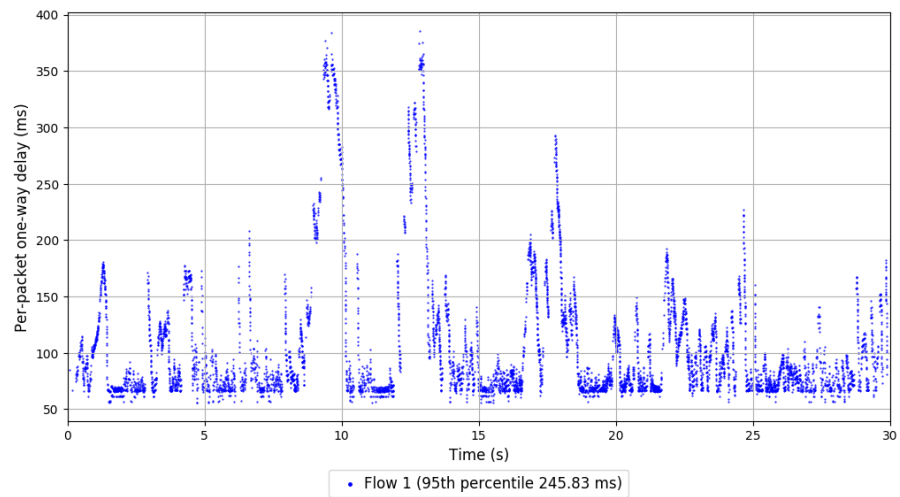
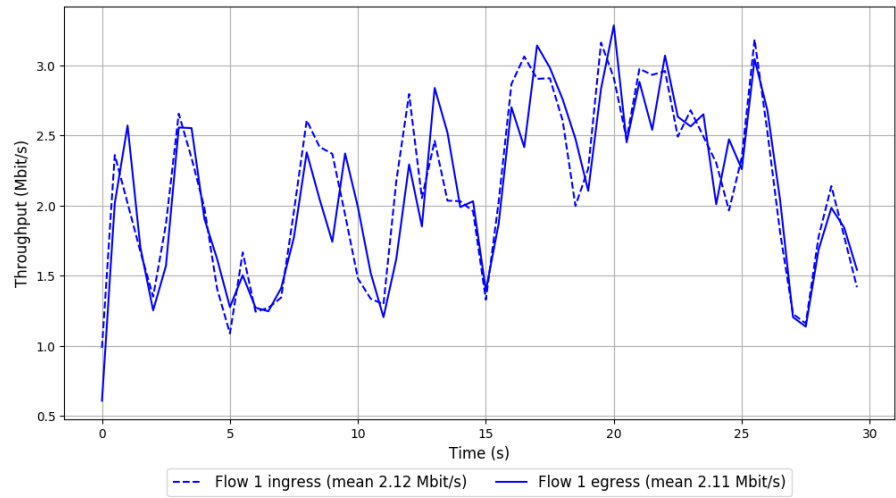


Run 3: Statistics of Vivace-latency

Start at: 2018-02-12 20:03:55
End at: 2018-02-12 20:04:25
Local clock offset: -8.541 ms
Remote clock offset: -21.281 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 245.829 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 245.829 ms
Loss rate: 0.75%

Run 3: Report of Vivace-latency — Data Link

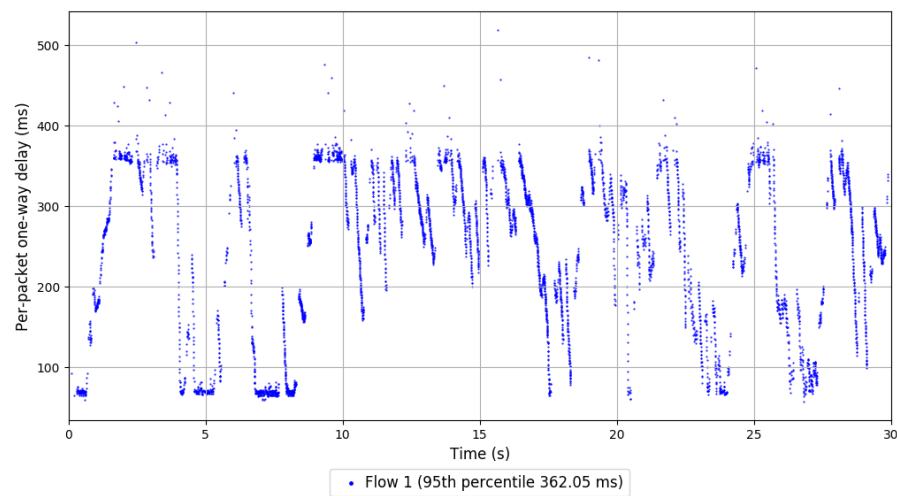
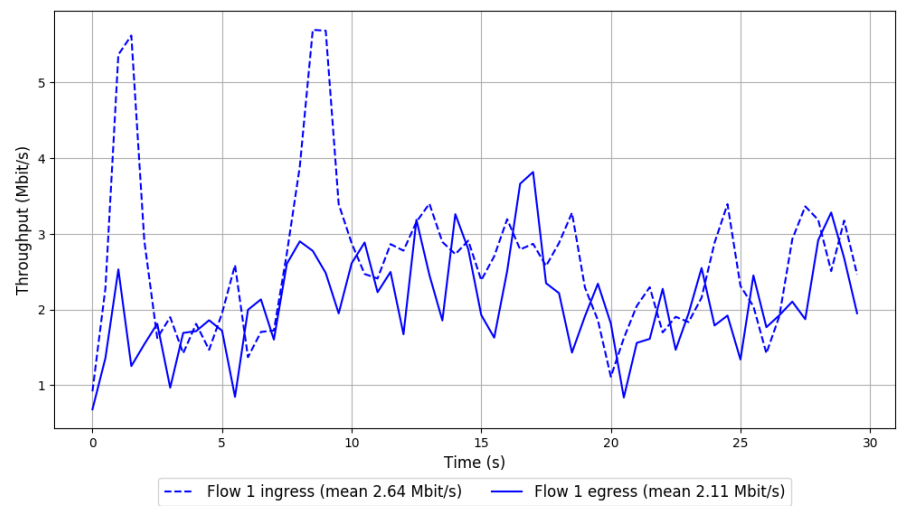


Run 1: Statistics of Vivace-loss

Start at: 2018-02-12 19:25:40
End at: 2018-02-12 19:26:10
Local clock offset: -2.044 ms
Remote clock offset: -21.784 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 362.047 ms
Loss rate: 20.25%
-- Flow 1:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 362.047 ms
Loss rate: 20.25%

Run 1: Report of Vivace-loss — Data Link

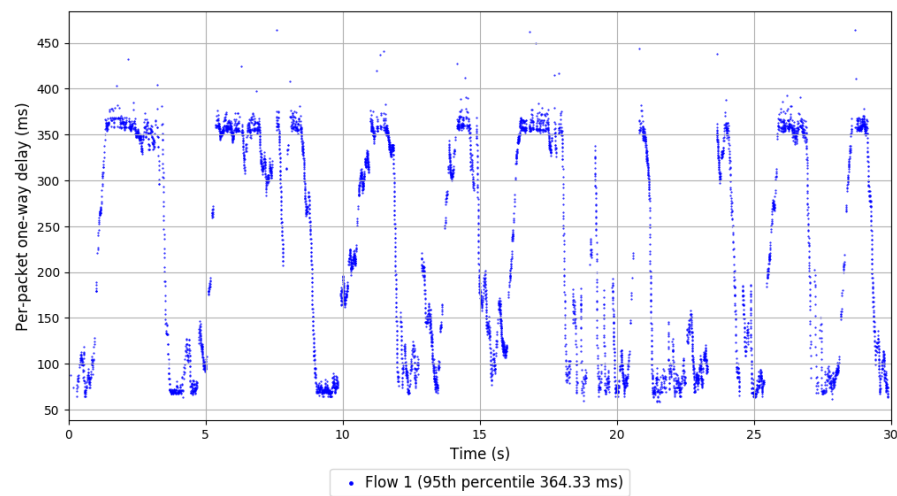
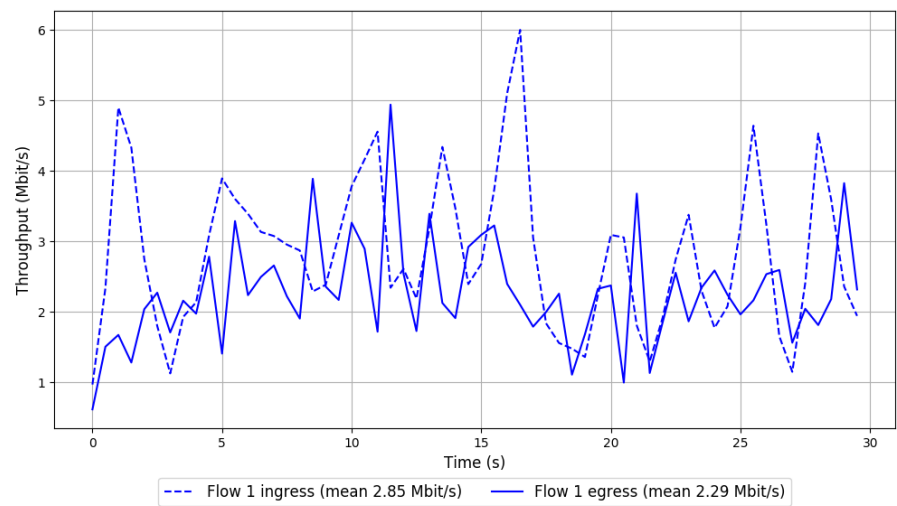


Run 2: Statistics of Vivace-loss

Start at: 2018-02-12 19:45:17
End at: 2018-02-12 19:45:47
Local clock offset: -4.519 ms
Remote clock offset: -21.228 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.29 Mbit/s
95th percentile per-packet one-way delay: 364.335 ms
Loss rate: 19.77%
-- Flow 1:
Average throughput: 2.29 Mbit/s
95th percentile per-packet one-way delay: 364.335 ms
Loss rate: 19.77%

Run 2: Report of Vivace-loss — Data Link

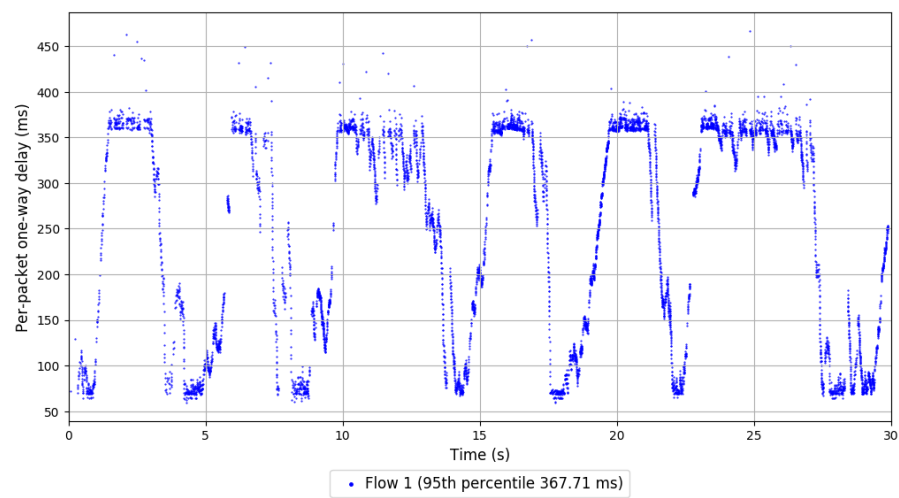
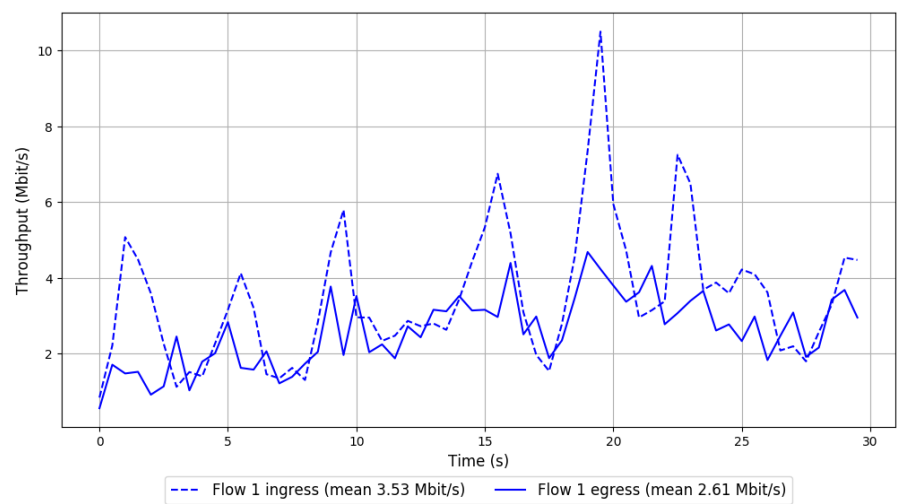


Run 3: Statistics of Vivace-loss

Start at: 2018-02-12 20:05:00
End at: 2018-02-12 20:05:30
Local clock offset: -5.01 ms
Remote clock offset: -20.606 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 367.713 ms
Loss rate: 26.27%
-- Flow 1:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 367.713 ms
Loss rate: 26.27%

Run 3: Report of Vivace-loss — Data Link

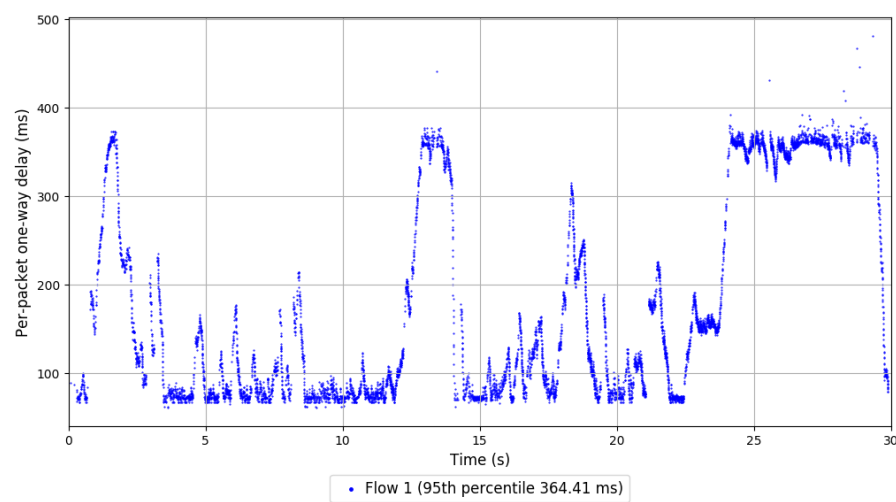
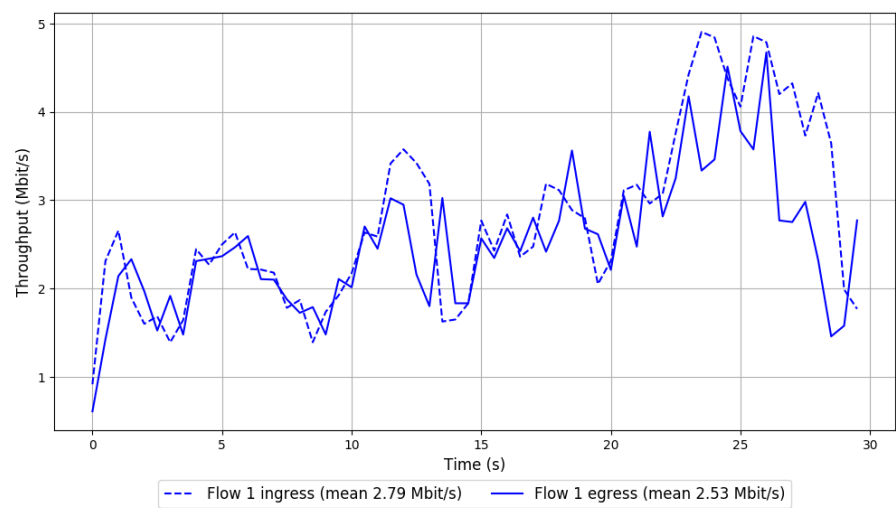


Run 1: Statistics of Vivace-LTE

Start at: 2018-02-12 19:26:46
End at: 2018-02-12 19:27:16
Local clock offset: -1.449 ms
Remote clock offset: -23.915 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 364.407 ms
Loss rate: 9.45%
-- Flow 1:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 364.407 ms
Loss rate: 9.45%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-02-12 19:46:23

End at: 2018-02-12 19:46:53

Local clock offset: -4.202 ms

Remote clock offset: -21.836 ms

Run 2: Report of Vivace-LTE — Data Link

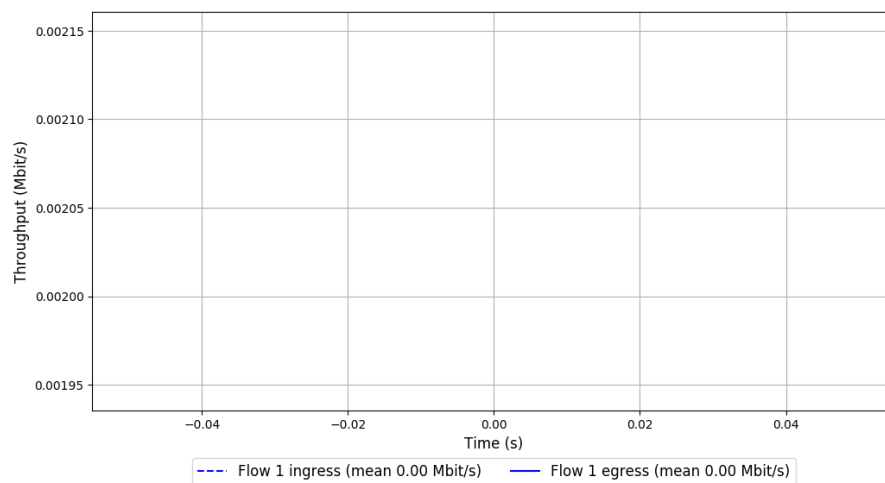


Figure is missing

Run 3: Statistics of Vivace-LTE

Start at: 2018-02-12 20:06:05
End at: 2018-02-12 20:06:35
Local clock offset: -6.524 ms
Remote clock offset: -19.332 ms

Below is generated by plot.py at 2018-02-12 21:17:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.74 Mbit/s
95th percentile per-packet one-way delay: 352.799 ms
Loss rate: 3.42%
-- Flow 1:
Average throughput: 2.74 Mbit/s
95th percentile per-packet one-way delay: 352.799 ms
Loss rate: 3.42%

Run 3: Report of Vivace-LTE — Data Link

