

Pantheon Report

Generated at 2018-02-19 18:11:44 (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).

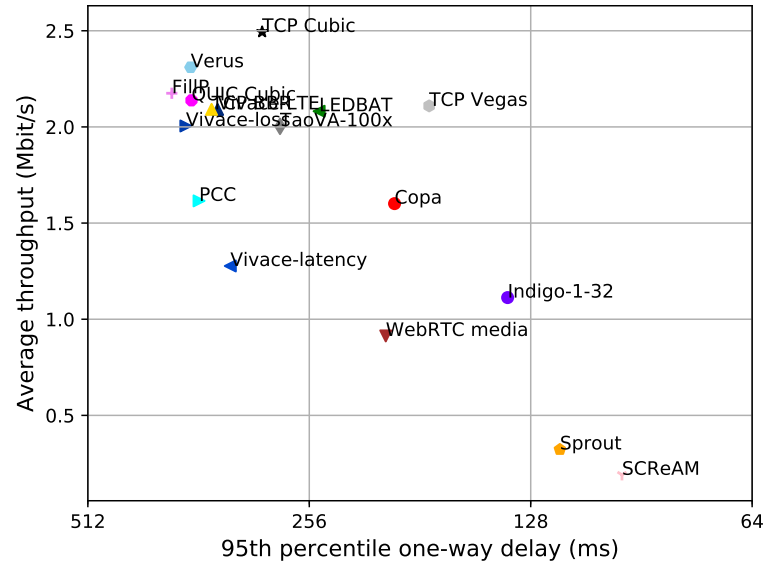
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

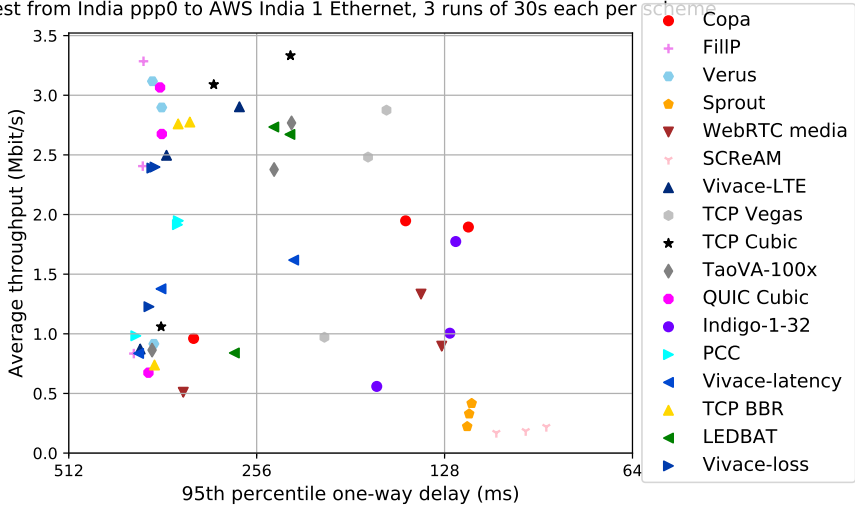
Git summary:

```
branch: master @ f12c42a2c63fdd9a862eefa0468859bf379b6623
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeab30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/vivace @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from 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



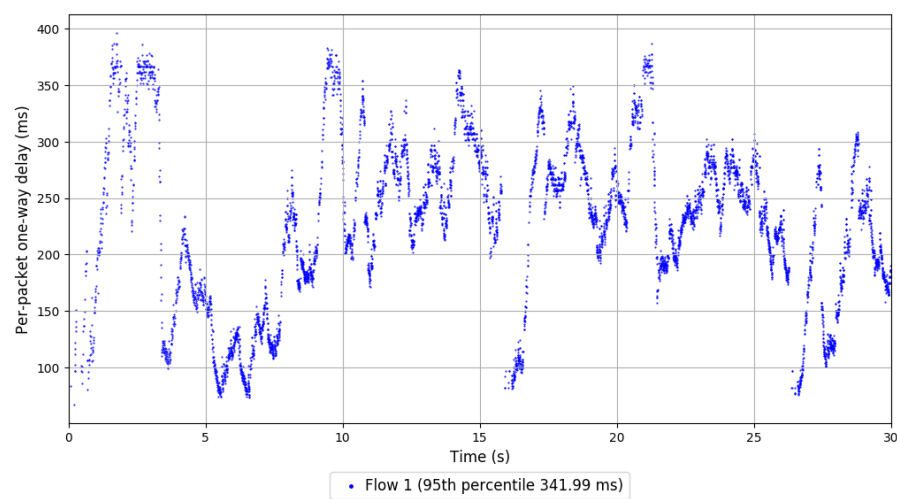
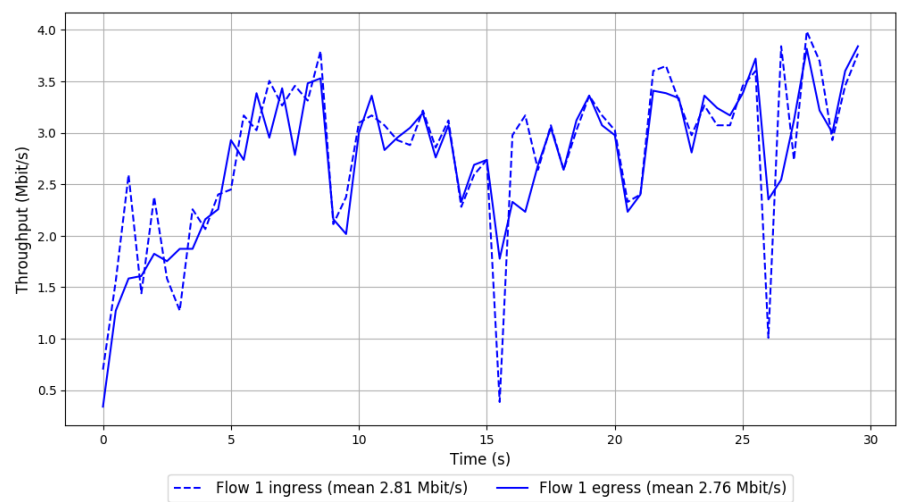
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	2.09	347.59	3.06
TCP Cubic	3	2.49	296.70	2.05
LEDBAT	3	2.08	248.27	0.76
PCC	3	1.62	361.48	45.03
QUIC Cubic	3	2.14	370.16	6.11
SCReAM	3	0.19	96.20	0.23
WebRTC media	3	0.91	201.52	1.11
Sprout	3	0.32	116.83	0.32
TaoVA-100x	3	2.00	280.56	9.00
TCP Vegas	3	2.11	175.91	0.72
Verus	3	2.31	371.14	23.84
Copa	3	1.60	196.02	1.59
FillP	3	2.17	393.67	93.43
Indigo-1-32	3	1.11	137.59	0.84
Vivace-latency	3	1.28	327.81	15.10
Vivace-loss	3	2.01	376.71	22.50
Vivace-LTE	3	2.09	341.08	13.13

Run 1: Statistics of TCP BBR

Start at: 2018-02-19 16:17:34
End at: 2018-02-19 16:18:04
Local clock offset: -24.941 ms
Remote clock offset: -22.453 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 341.993 ms
Loss rate: 1.88%
-- Flow 1:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 341.993 ms
Loss rate: 1.88%

Run 1: Report of TCP BBR — Data Link

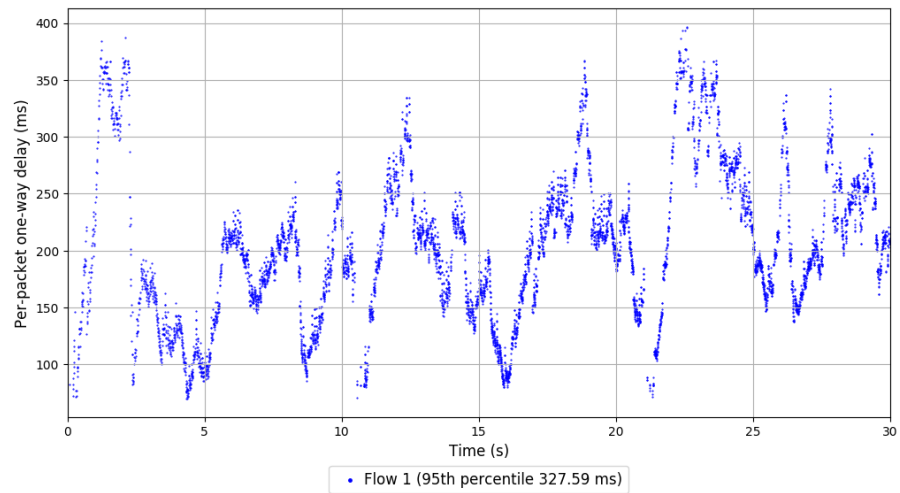
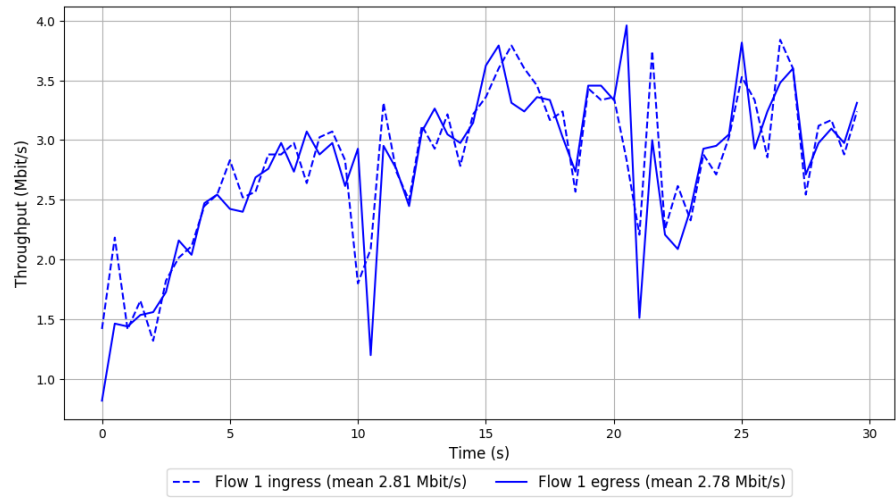


Run 2: Statistics of TCP BBR

Start at: 2018-02-19 16:37:17
End at: 2018-02-19 16:37:47
Local clock offset: -21.74 ms
Remote clock offset: -22.855 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.78 Mbit/s
95th percentile per-packet one-way delay: 327.588 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 2.78 Mbit/s
95th percentile per-packet one-way delay: 327.588 ms
Loss rate: 1.47%

Run 2: Report of TCP BBR — Data Link

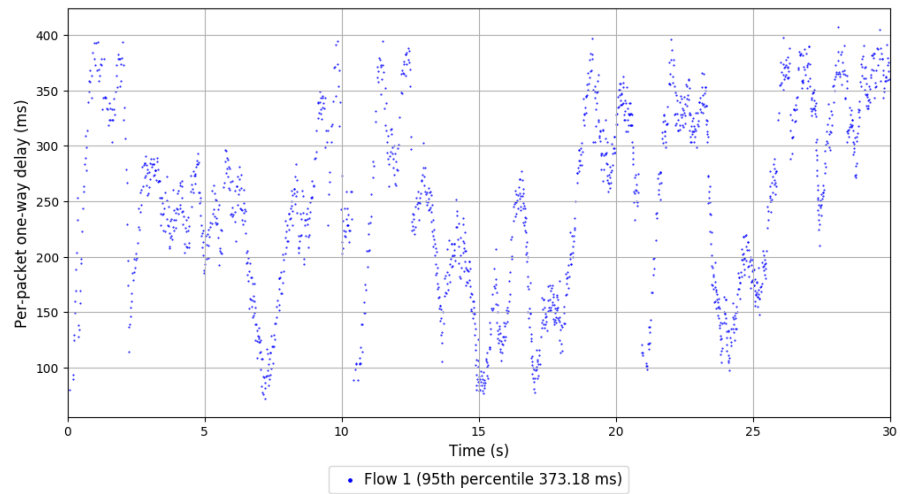
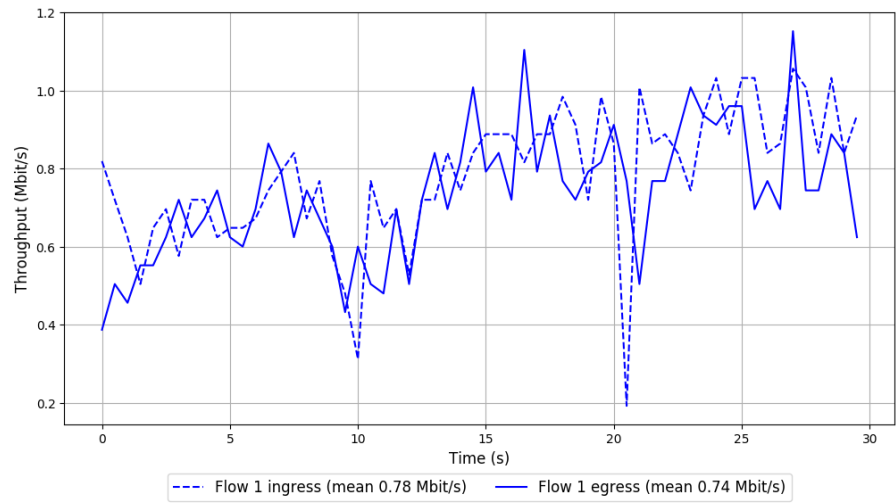


Run 3: Statistics of TCP BBR

Start at: 2018-02-19 16:56:55
End at: 2018-02-19 16:57:25
Local clock offset: -24.326 ms
Remote clock offset: -20.252 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 373.178 ms
Loss rate: 5.83%
-- Flow 1:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 373.178 ms
Loss rate: 5.83%

Run 3: Report of TCP BBR — Data Link

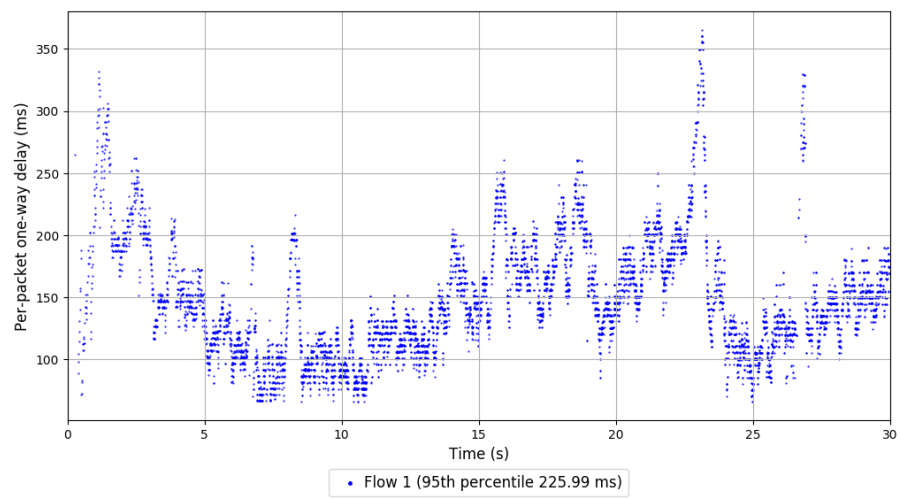
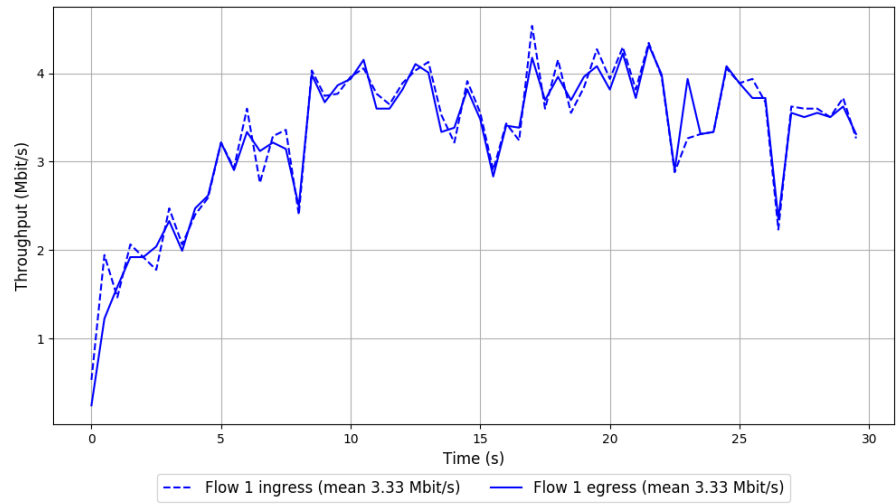


Run 1: Statistics of TCP Cubic

Start at: 2018-02-19 16:28:35
End at: 2018-02-19 16:29:05
Local clock offset: -34.491 ms
Remote clock offset: -24.085 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 225.993 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 225.993 ms
Loss rate: 0.85%

Run 1: Report of TCP Cubic — Data Link

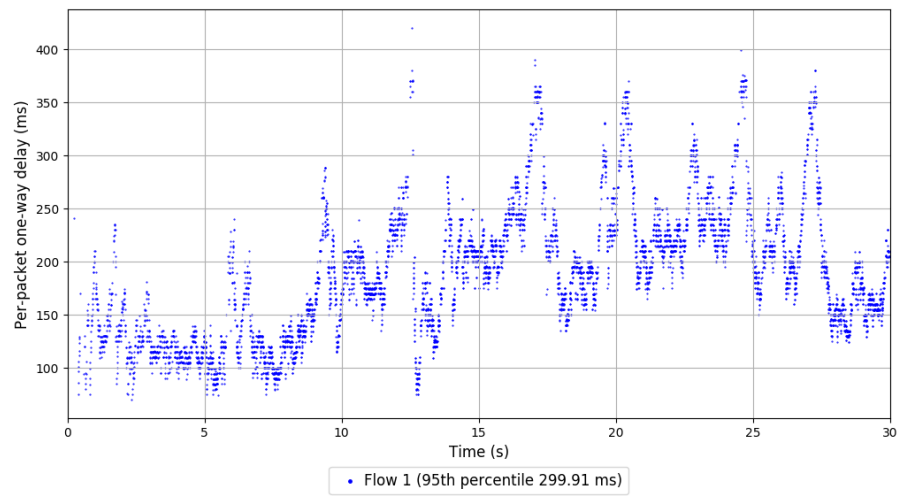
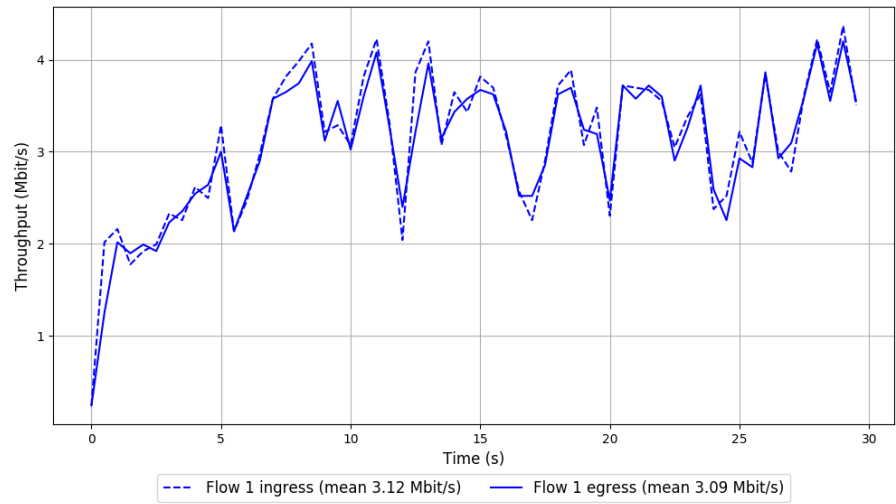


Run 2: Statistics of TCP Cubic

Start at: 2018-02-19 16:48:12
End at: 2018-02-19 16:48:42
Local clock offset: -24.355 ms
Remote clock offset: -23.471 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.09 Mbit/s
95th percentile per-packet one-way delay: 299.912 ms
Loss rate: 1.76%
-- Flow 1:
Average throughput: 3.09 Mbit/s
95th percentile per-packet one-way delay: 299.912 ms
Loss rate: 1.76%

Run 2: Report of TCP Cubic — Data Link

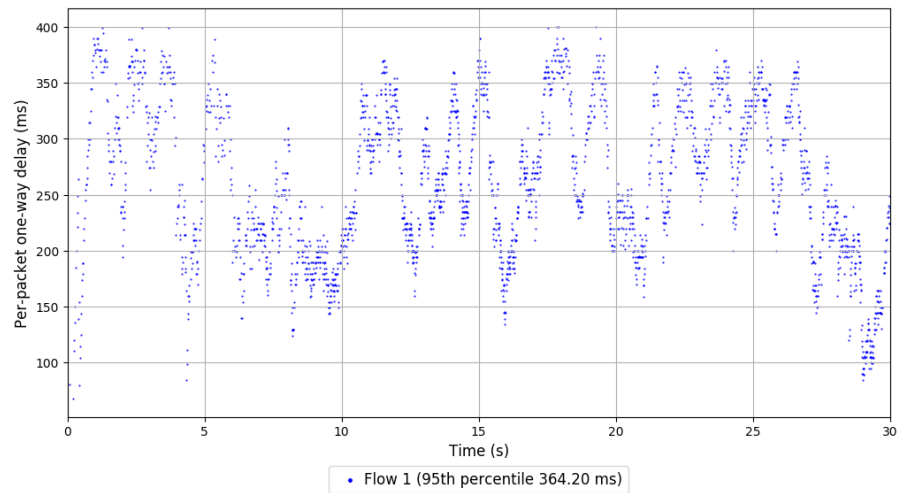
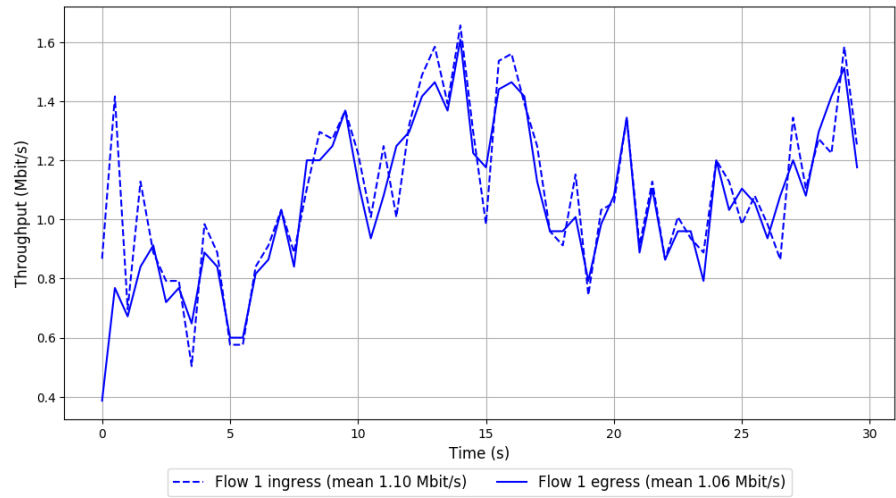


Run 3: Statistics of TCP Cubic

Start at: 2018-02-19 17:07:50
End at: 2018-02-19 17:08:20
Local clock offset: -33.898 ms
Remote clock offset: -19.59 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 364.204 ms
Loss rate: 3.54%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 364.204 ms
Loss rate: 3.54%

Run 3: Report of TCP Cubic — Data Link

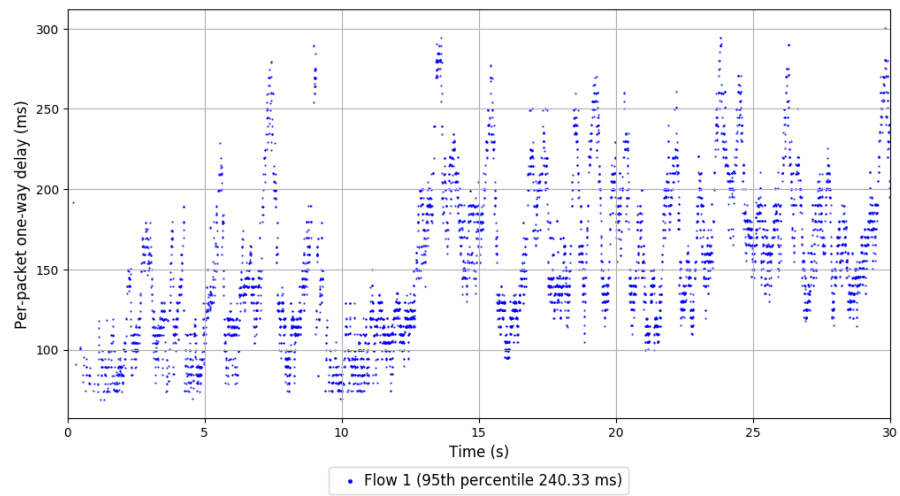
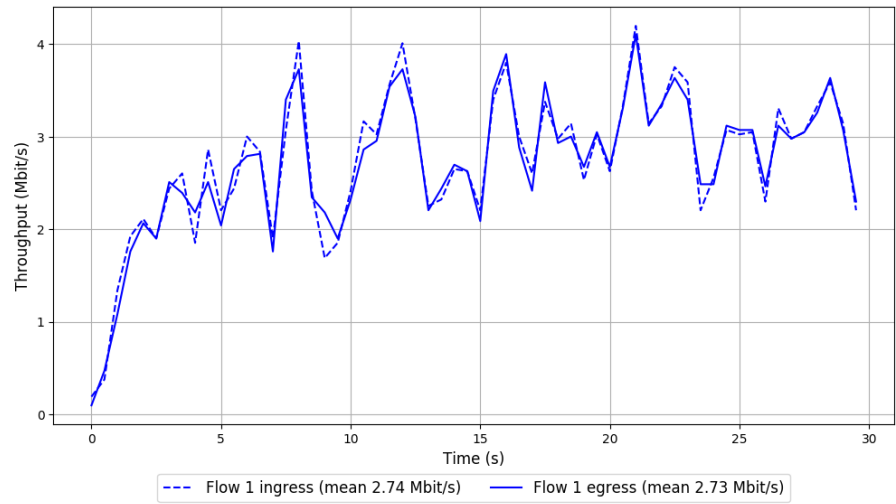


```
Run 1: Statistics of LEDBAT

Start at: 2018-02-19 16:16:28
End at: 2018-02-19 16:16:58
Local clock offset: -24.277 ms
Remote clock offset: -22.154 ms

# Below is generated by plot.py at 2018-02-19 18:11:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 240.332 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 240.332 ms
Loss rate: 0.74%
```


Run 1: Report of LEDBAT — Data Link

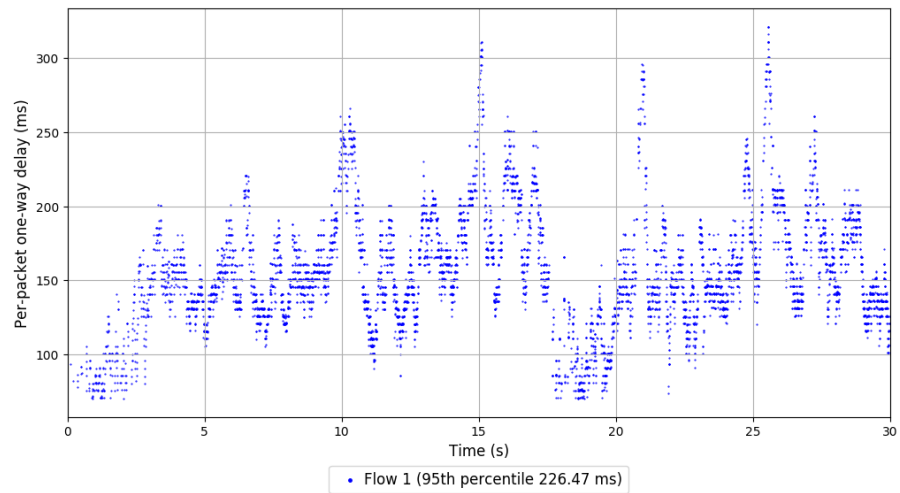
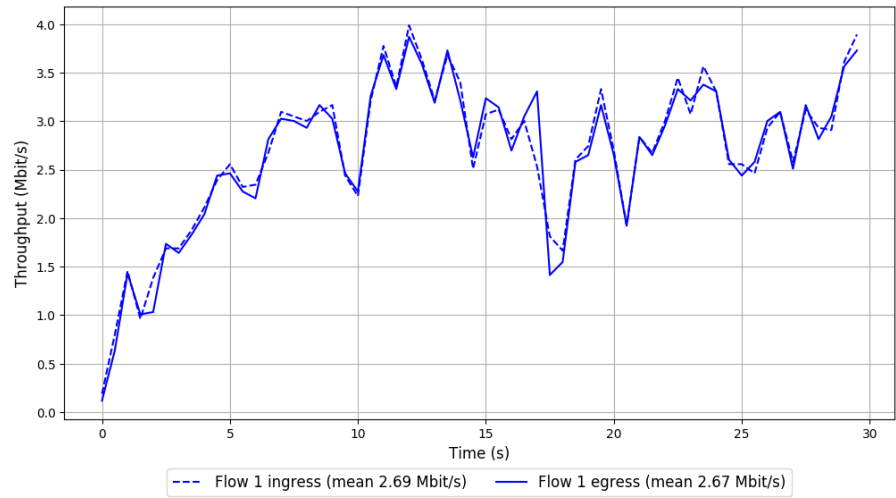


Run 2: Statistics of LEDBAT

Start at: 2018-02-19 16:36:11
End at: 2018-02-19 16:36:41
Local clock offset: -21.868 ms
Remote clock offset: -23.125 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.67 Mbit/s
95th percentile per-packet one-way delay: 226.473 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 2.67 Mbit/s
95th percentile per-packet one-way delay: 226.473 ms
Loss rate: 0.95%

Run 2: Report of LEDBAT — Data Link

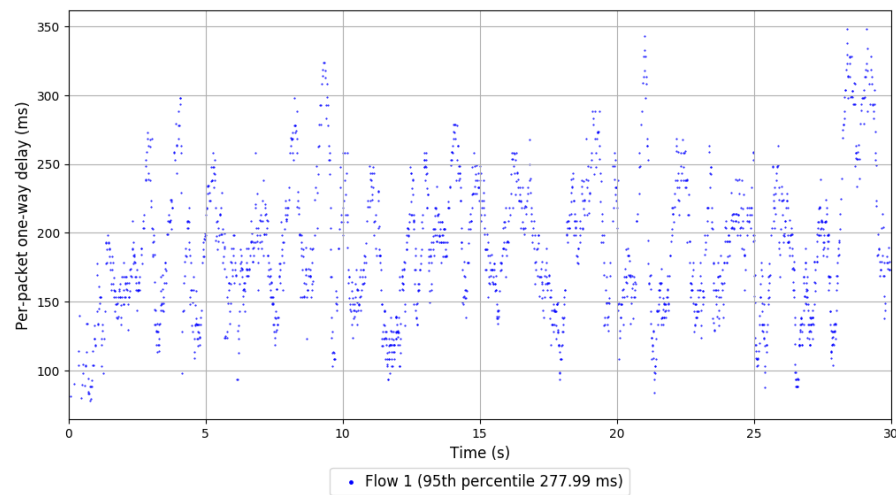
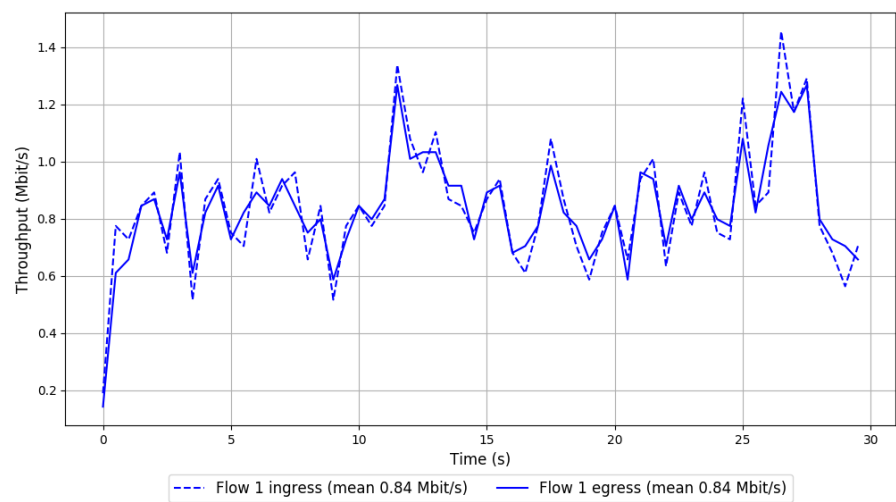


Run 3: Statistics of LEDBAT

Start at: 2018-02-19 16:55:50
End at: 2018-02-19 16:56:20
Local clock offset: -24.717 ms
Remote clock offset: -20.845 ms

Below is generated by plot.py at 2018-02-19 18:11:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 277.991 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 277.991 ms
Loss rate: 0.60%

Run 3: Report of LEDBAT — Data Link

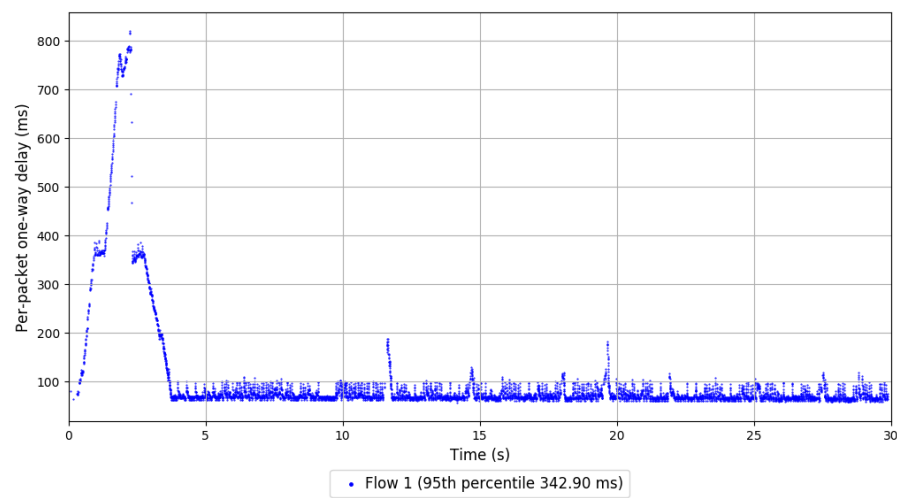
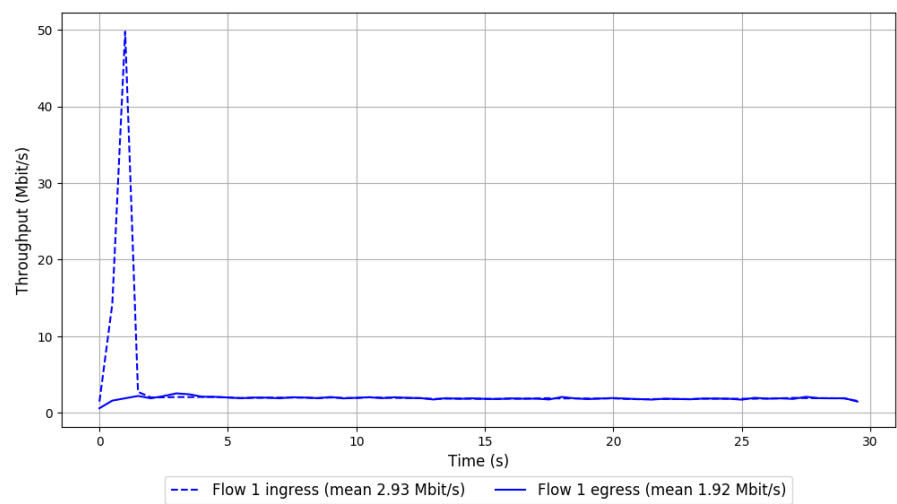


Run 1: Statistics of PCC

Start at: 2018-02-19 16:26:24
End at: 2018-02-19 16:26:54
Local clock offset: -48.105 ms
Remote clock offset: -24.162 ms

Below is generated by plot.py at 2018-02-19 18:11:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 342.898 ms
Loss rate: 34.82%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 342.898 ms
Loss rate: 34.82%

Run 1: Report of PCC — Data Link

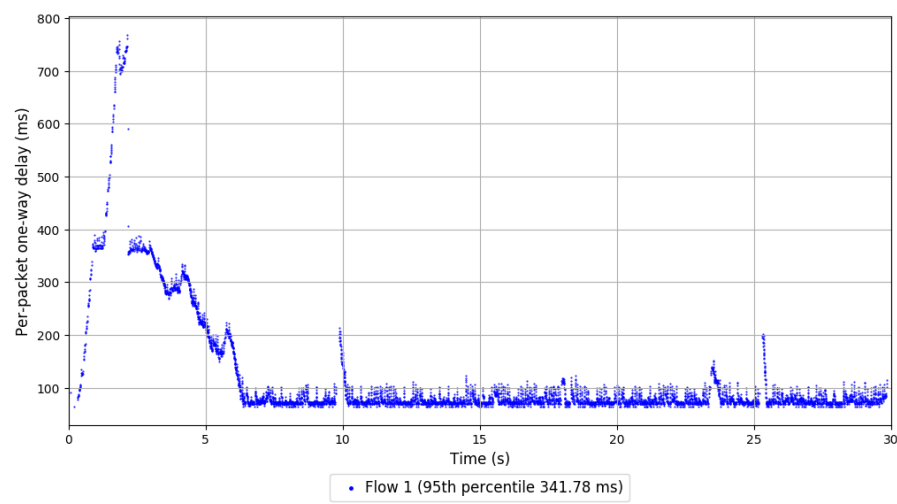
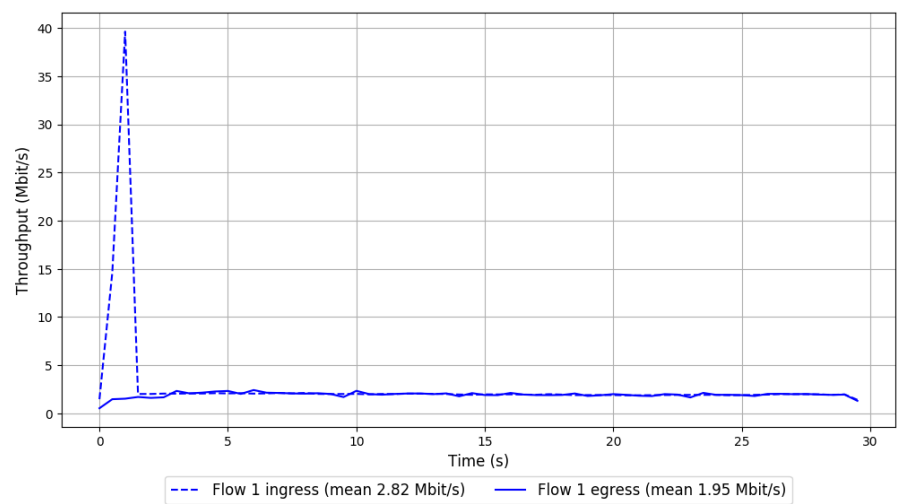


Run 2: Statistics of PCC

Start at: 2018-02-19 16:46:02
End at: 2018-02-19 16:46:32
Local clock offset: -23.528 ms
Remote clock offset: -20.993 ms

Below is generated by plot.py at 2018-02-19 18:11:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 341.777 ms
Loss rate: 31.06%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 341.777 ms
Loss rate: 31.06%

Run 2: Report of PCC — Data Link

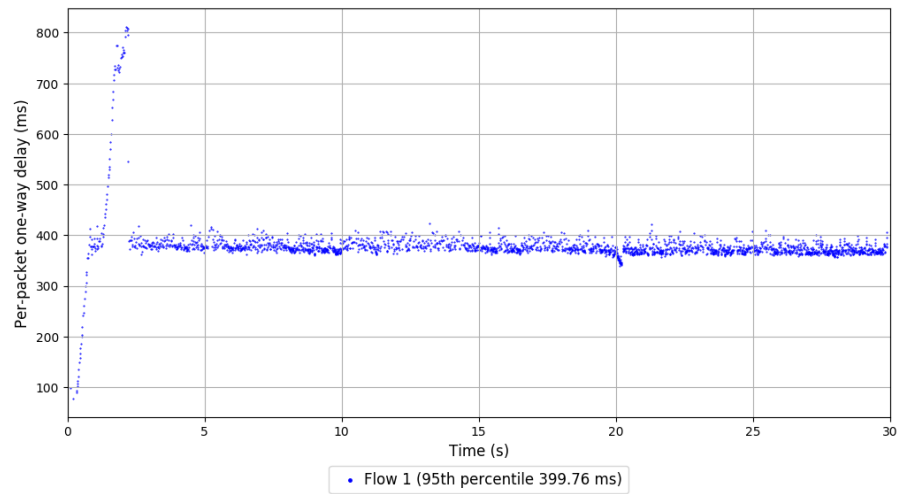
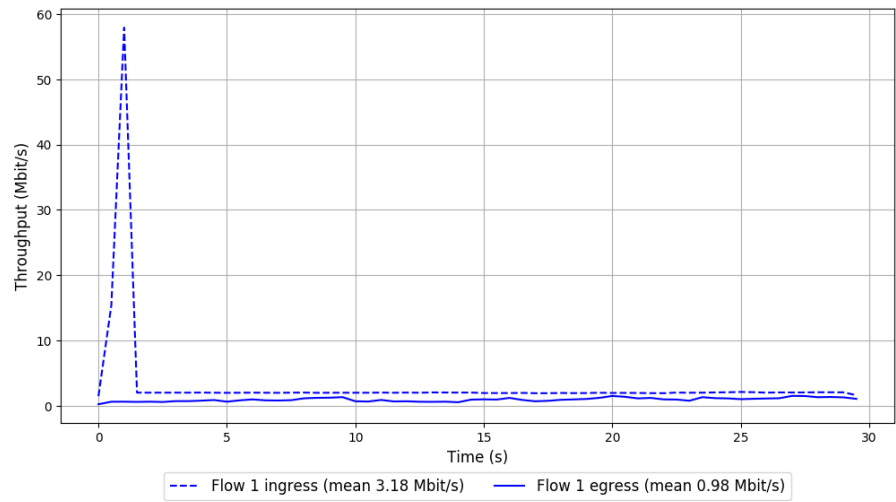


Run 3: Statistics of PCC

Start at: 2018-02-19 17:05:39
End at: 2018-02-19 17:06:09
Local clock offset: -31.199 ms
Remote clock offset: -20.566 ms

Below is generated by plot.py at 2018-02-19 18:11:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 399.761 ms
Loss rate: 69.21%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 399.761 ms
Loss rate: 69.21%

Run 3: Report of PCC — Data Link

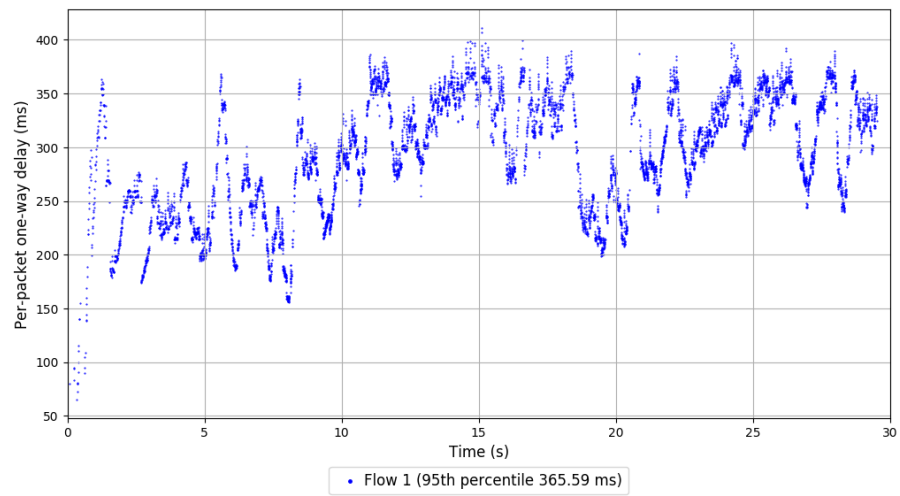
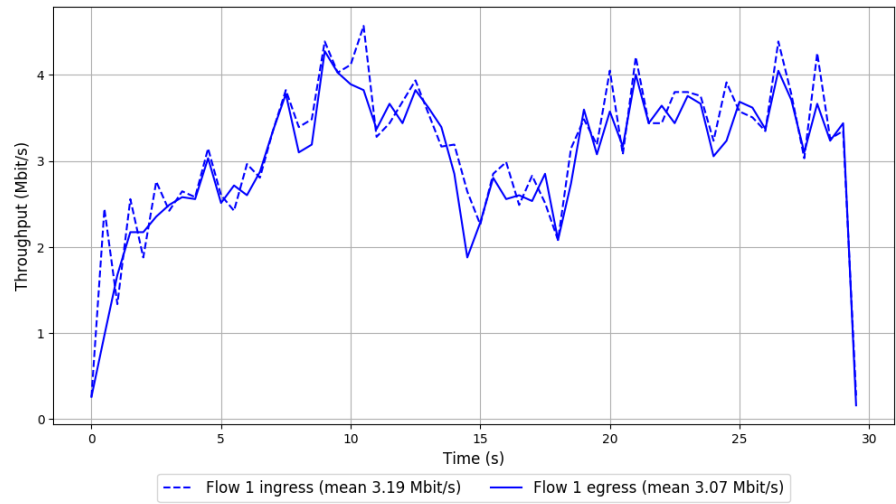


Run 1: Statistics of QUIC Cubic

Start at: 2018-02-19 16:18:42
End at: 2018-02-19 16:19:12
Local clock offset: -31.469 ms
Remote clock offset: -24.507 ms

Below is generated by plot.py at 2018-02-19 18:11:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.07 Mbit/s
95th percentile per-packet one-way delay: 365.594 ms
Loss rate: 4.04%
-- Flow 1:
Average throughput: 3.07 Mbit/s
95th percentile per-packet one-way delay: 365.594 ms
Loss rate: 4.04%

Run 1: Report of QUIC Cubic — Data Link

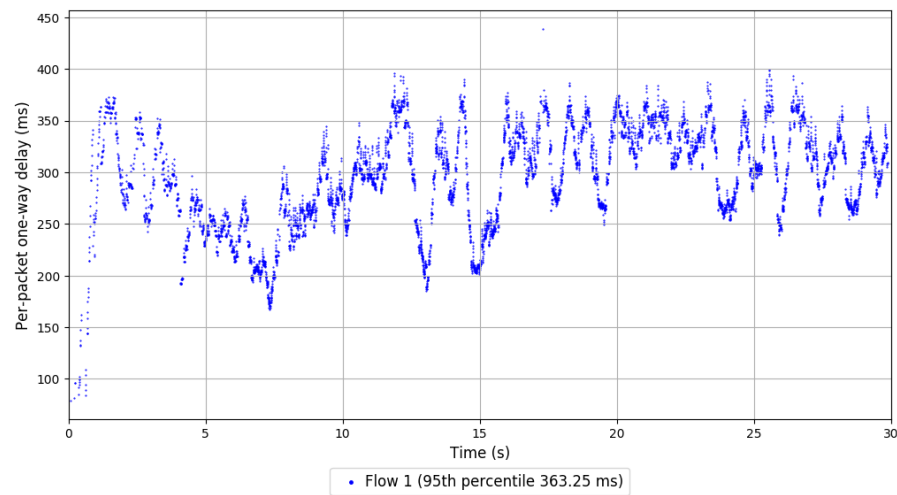
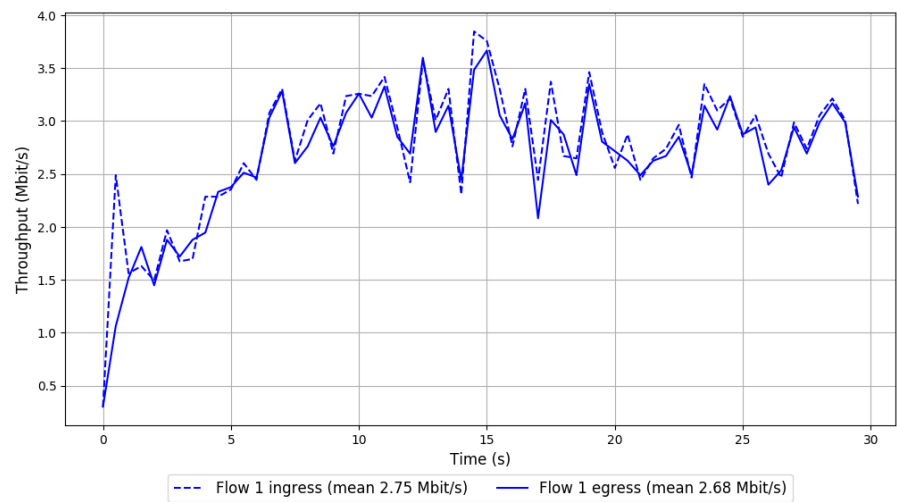


Run 2: Statistics of QUIC Cubic

Start at: 2018-02-19 16:38:22
End at: 2018-02-19 16:38:52
Local clock offset: -20.526 ms
Remote clock offset: -23.17 ms

Below is generated by plot.py at 2018-02-19 18:11:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.68 Mbit/s
95th percentile per-packet one-way delay: 363.246 ms
Loss rate: 3.07%
-- Flow 1:
Average throughput: 2.68 Mbit/s
95th percentile per-packet one-way delay: 363.246 ms
Loss rate: 3.07%

Run 2: Report of QUIC Cubic — Data Link

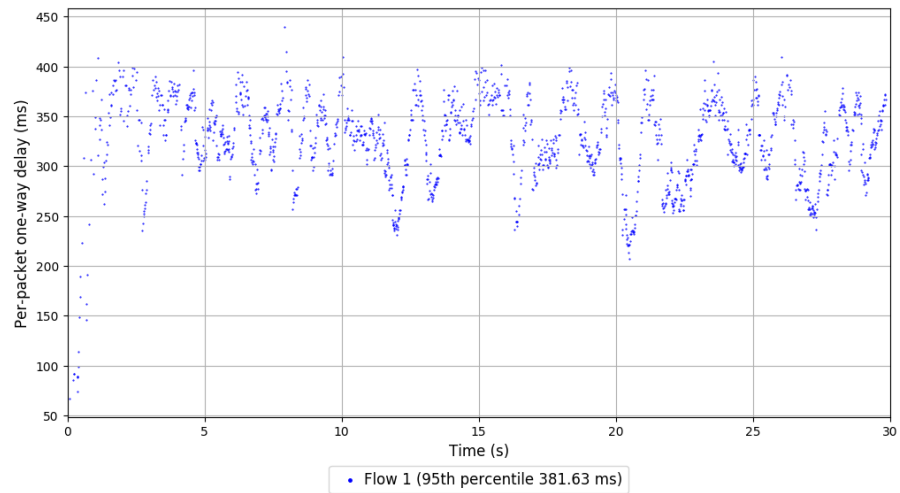
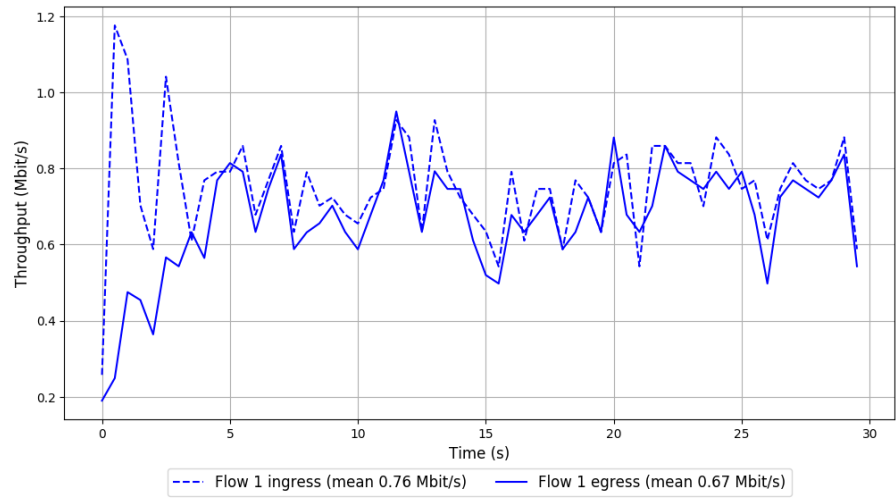


Run 3: Statistics of QUIC Cubic

Start at: 2018-02-19 16:58:00
End at: 2018-02-19 16:58:30
Local clock offset: -25.316 ms
Remote clock offset: -18.971 ms

Below is generated by plot.py at 2018-02-19 18:11:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 381.628 ms
Loss rate: 11.21%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 381.628 ms
Loss rate: 11.21%

Run 3: Report of QUIC Cubic — Data Link

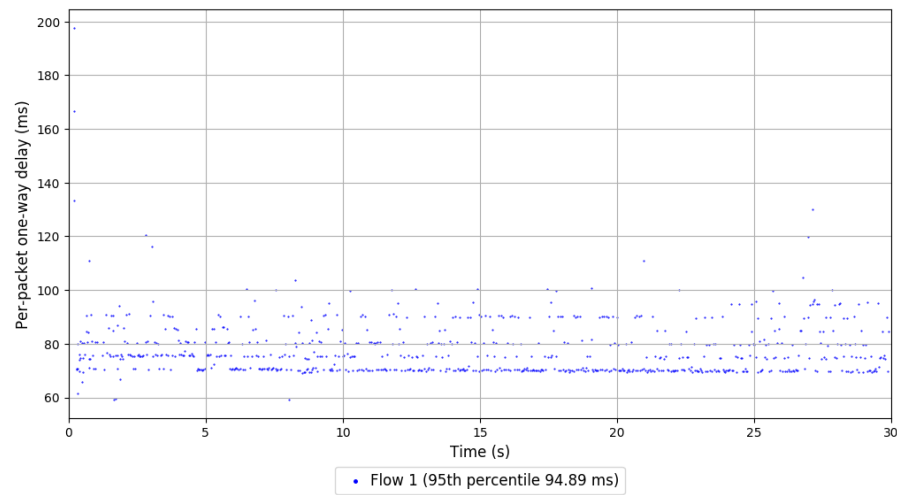
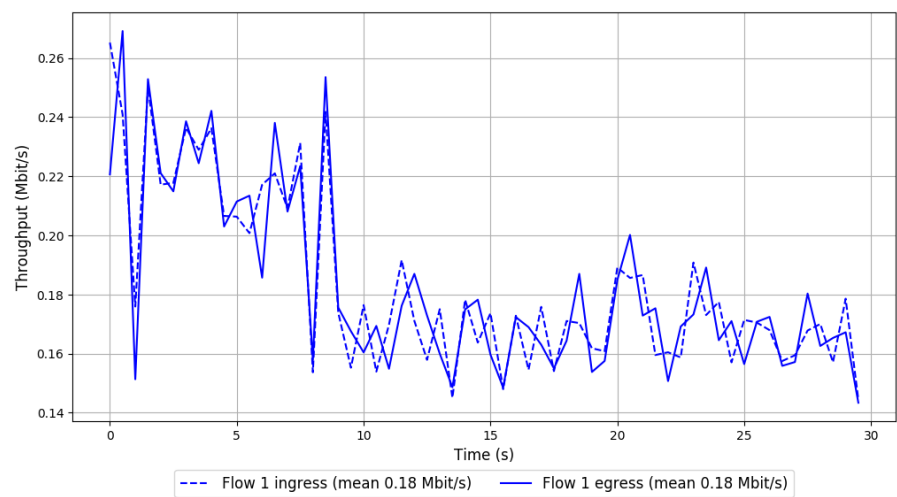


Run 1: Statistics of SCReAM

Start at: 2018-02-19 16:30:45
End at: 2018-02-19 16:31:15
Local clock offset: -24.627 ms
Remote clock offset: -24.863 ms

Below is generated by plot.py at 2018-02-19 18:11:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 94.891 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 94.891 ms
Loss rate: 0.24%

Run 1: Report of SReAM — Data Link

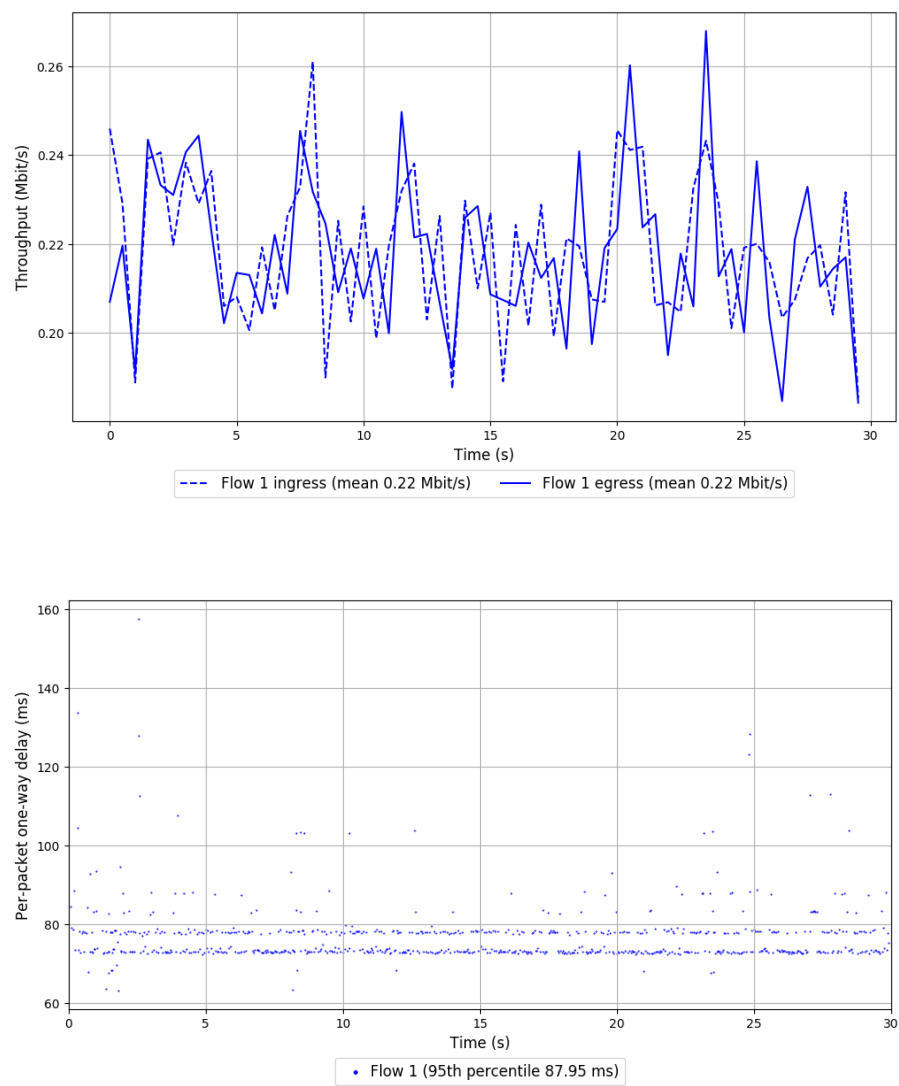


Run 2: Statistics of SCReAM

Start at: 2018-02-19 16:50:23
End at: 2018-02-19 16:50:53
Local clock offset: -22.921 ms
Remote clock offset: -20.314 ms

Below is generated by plot.py at 2018-02-19 18:11:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.950 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.950 ms
Loss rate: 0.26%

Run 2: Report of SReAM — Data Link

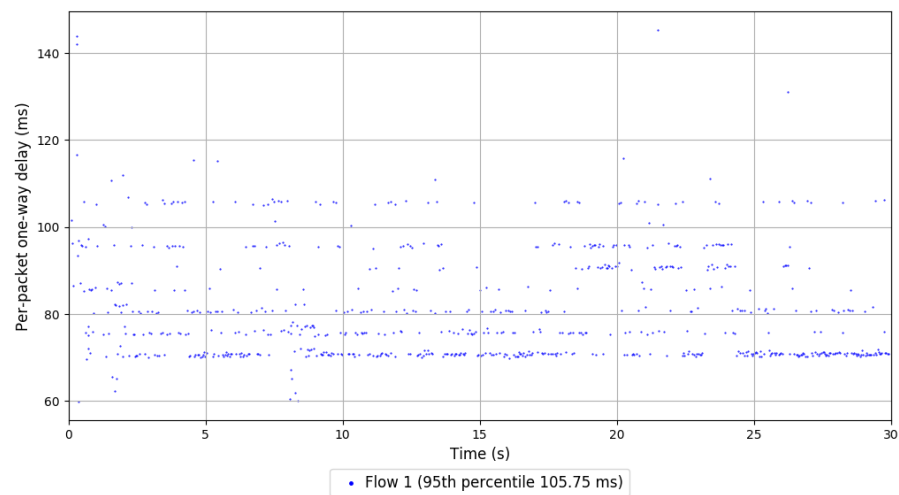
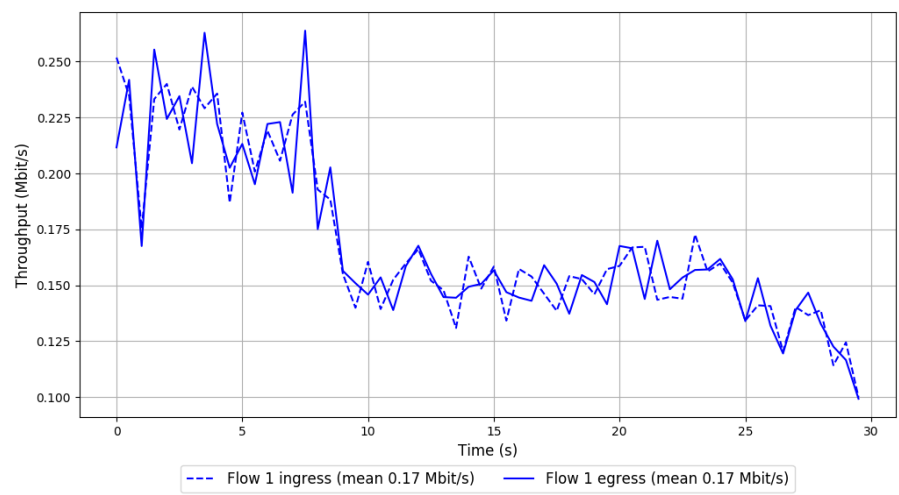


Run 3: Statistics of SCReAM

Start at: 2018-02-19 17:10:00
End at: 2018-02-19 17:10:30
Local clock offset: -35.878 ms
Remote clock offset: -18.036 ms

Below is generated by plot.py at 2018-02-19 18:11:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 105.753 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 105.753 ms
Loss rate: 0.18%

Run 3: Report of SReAM — Data Link

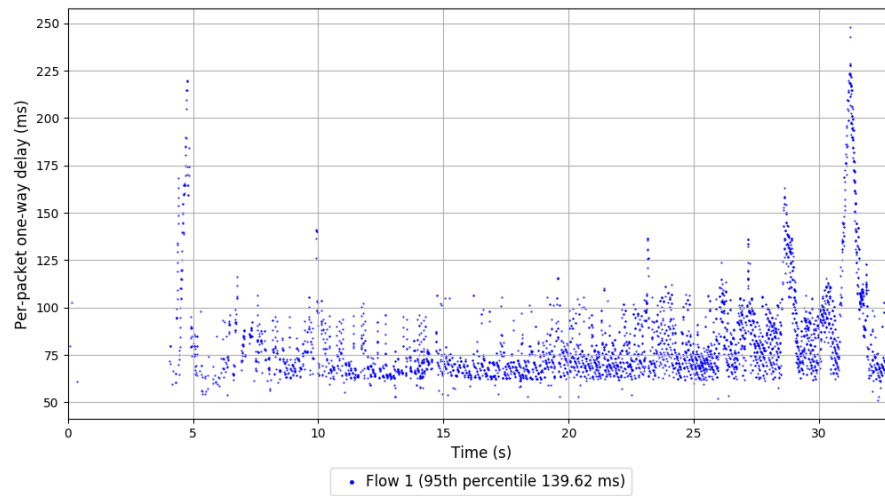
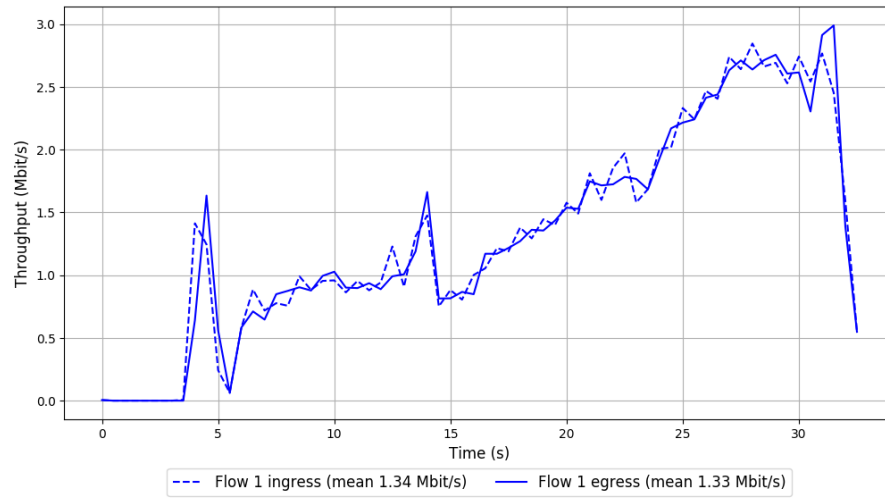


Run 1: Statistics of WebRTC media

Start at: 2018-02-19 16:27:30
End at: 2018-02-19 16:28:00
Local clock offset: -41.066 ms
Remote clock offset: -22.939 ms

Below is generated by plot.py at 2018-02-19 18:11:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 139.615 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 139.615 ms
Loss rate: 0.43%

Run 1: Report of WebRTC media — Data Link

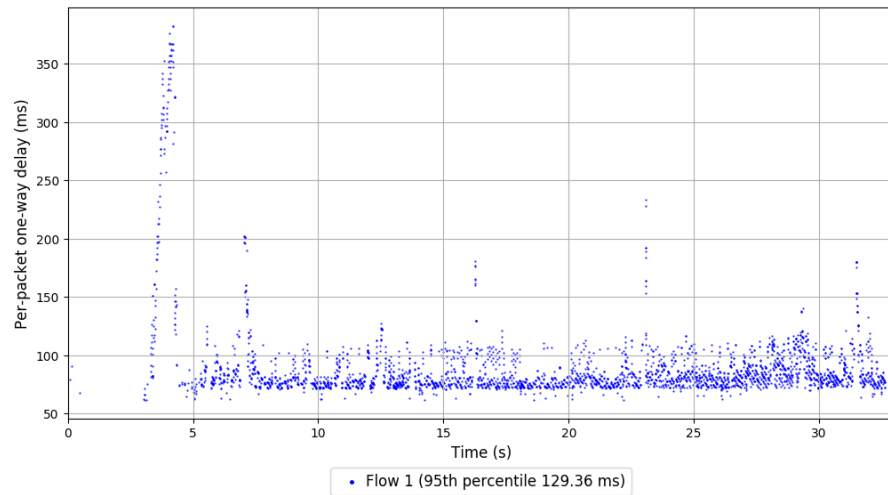
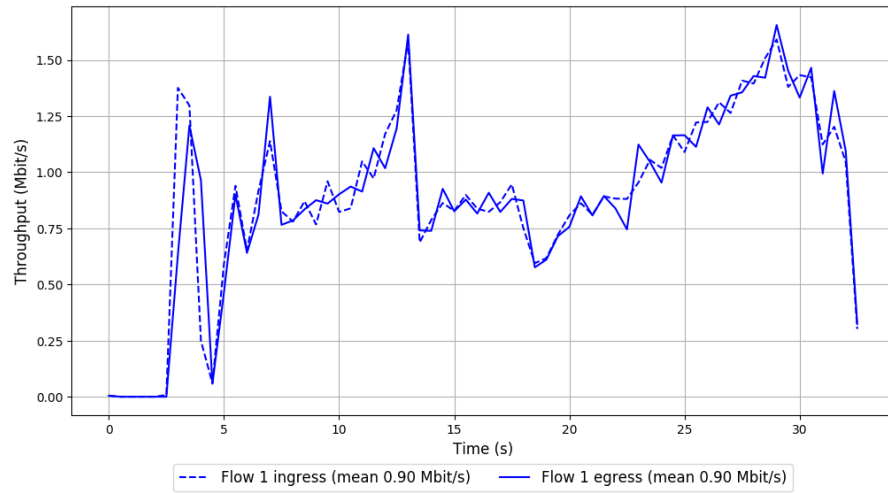


Run 2: Statistics of WebRTC media

Start at: 2018-02-19 16:47:07
End at: 2018-02-19 16:47:37
Local clock offset: -21.334 ms
Remote clock offset: -22.187 ms

Below is generated by plot.py at 2018-02-19 18:11:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 129.358 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 129.358 ms
Loss rate: 0.44%

Run 2: Report of WebRTC media — Data Link

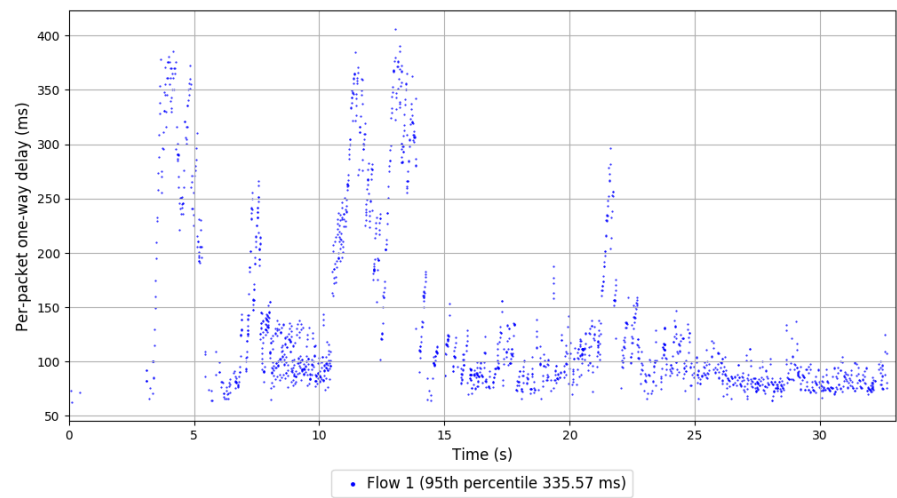
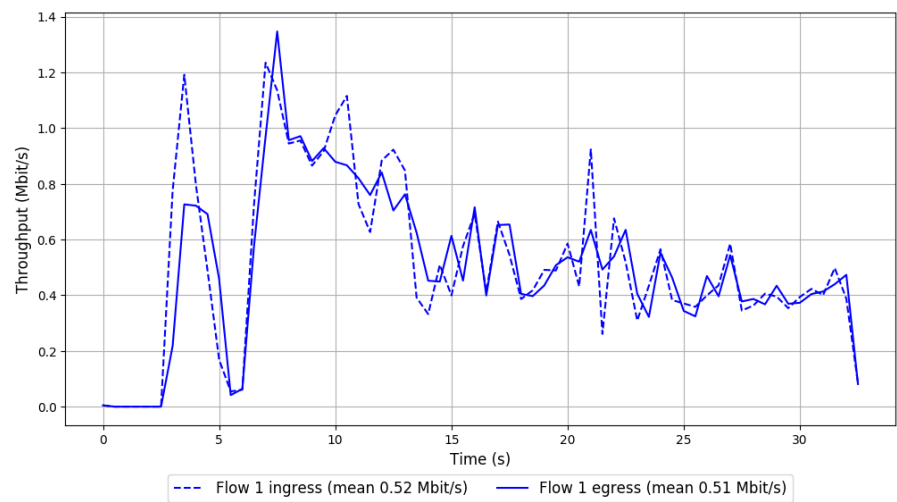


Run 3: Statistics of WebRTC media

Start at: 2018-02-19 17:06:45
End at: 2018-02-19 17:07:15
Local clock offset: -31.765 ms
Remote clock offset: -19.016 ms

Below is generated by plot.py at 2018-02-19 18:11:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 335.573 ms
Loss rate: 2.45%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 335.573 ms
Loss rate: 2.45%

Run 3: Report of WebRTC media — Data Link

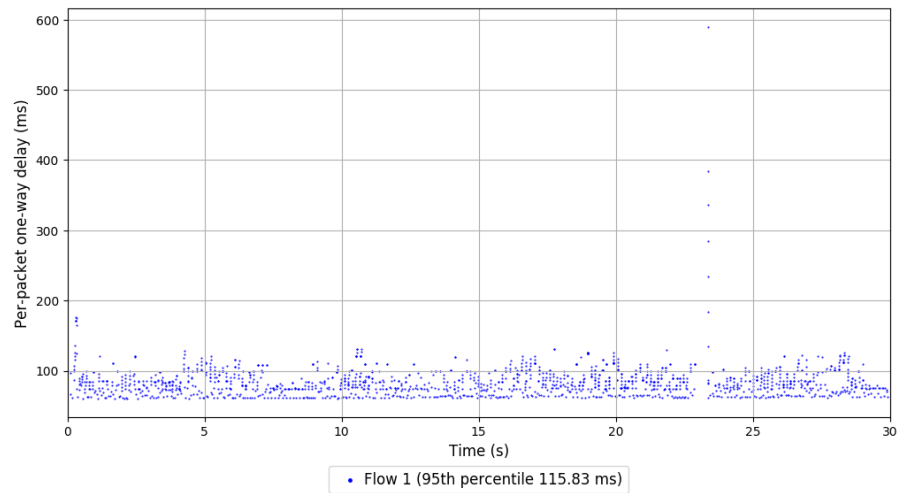
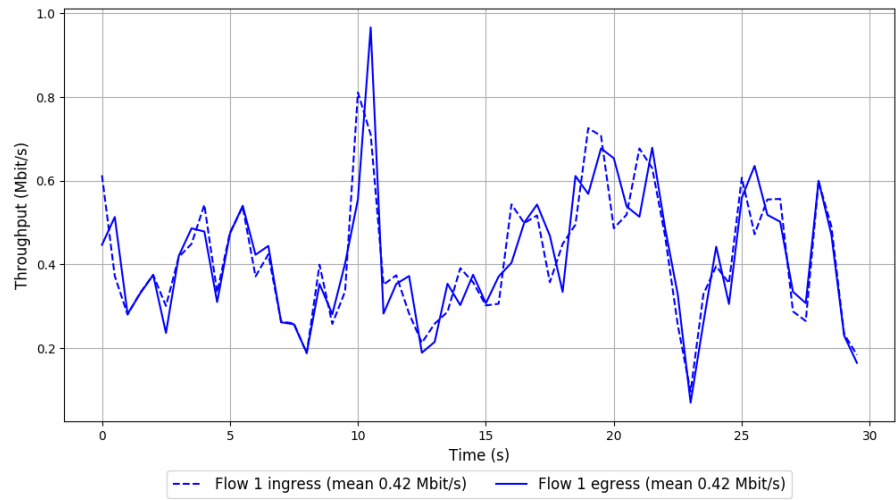


Run 1: Statistics of Sprout

Start at: 2018-02-19 16:15:23
End at: 2018-02-19 16:15:53
Local clock offset: -20.423 ms
Remote clock offset: -22.762 ms

Below is generated by plot.py at 2018-02-19 18:11:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 115.834 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 115.834 ms
Loss rate: 0.28%

Run 1: Report of Sprout — Data Link

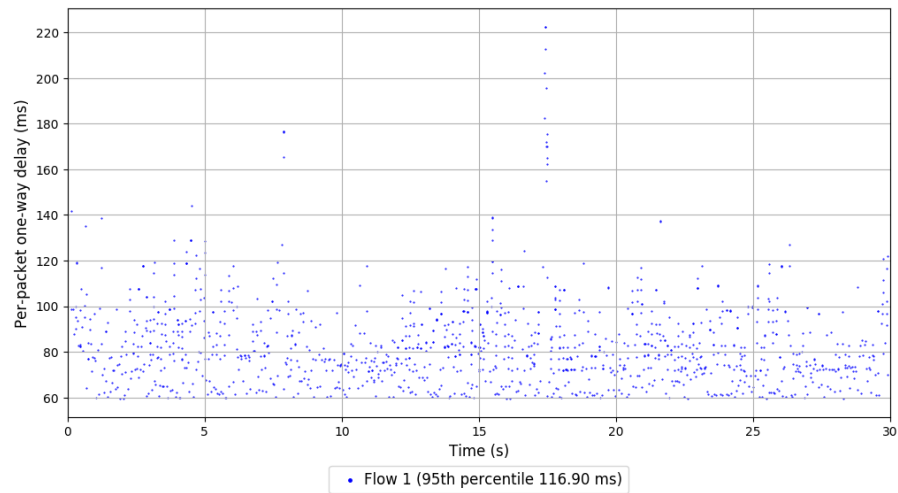
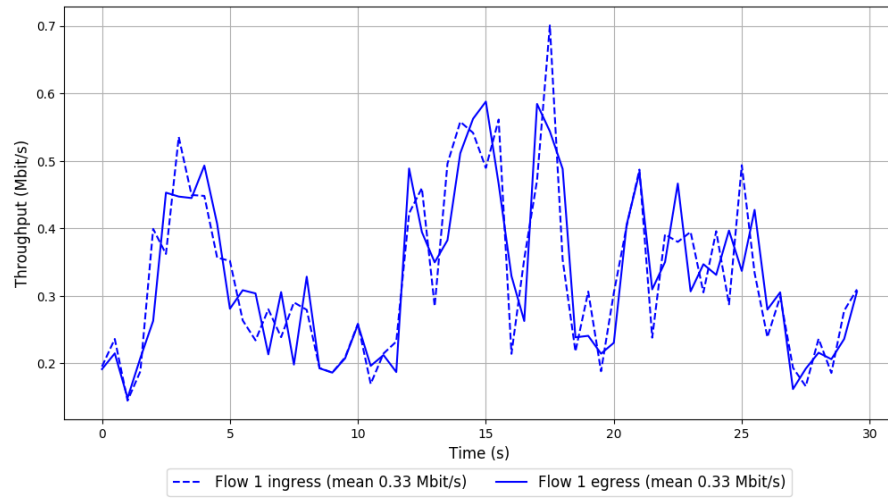


Run 2: Statistics of Sprout

Start at: 2018-02-19 16:35:06
End at: 2018-02-19 16:35:36
Local clock offset: -22.291 ms
Remote clock offset: -27.173 ms

Below is generated by plot.py at 2018-02-19 18:11:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 116.901 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 116.901 ms
Loss rate: 0.36%

Run 2: Report of Sprout — Data Link

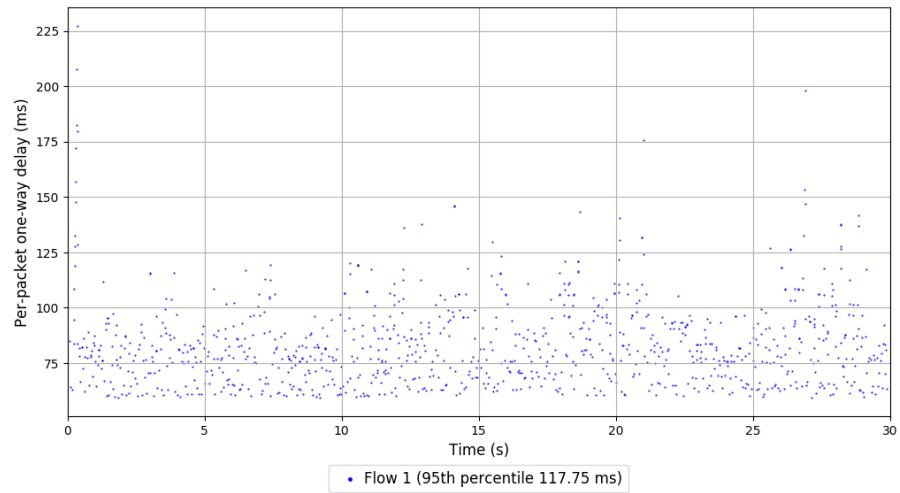
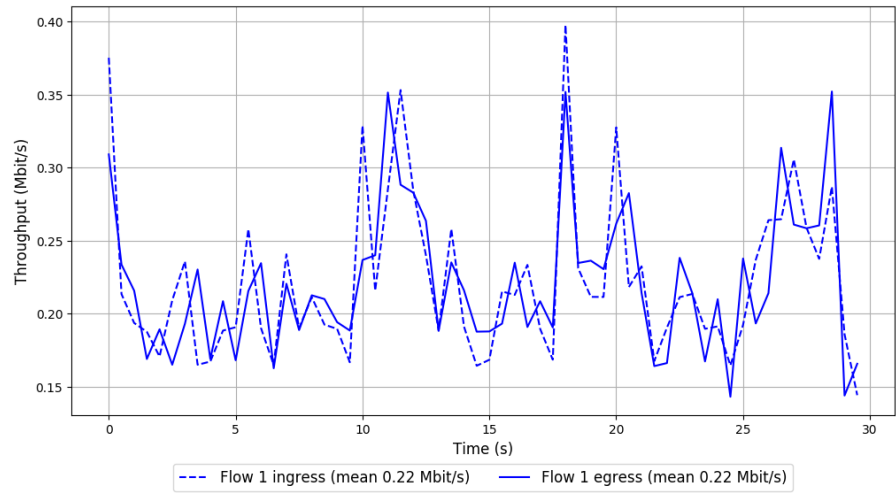


Run 3: Statistics of Sprout

Start at: 2018-02-19 16:54:45
End at: 2018-02-19 16:55:15
Local clock offset: -25.073 ms
Remote clock offset: -21.078 ms

Below is generated by plot.py at 2018-02-19 18:11:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.753 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.753 ms
Loss rate: 0.33%

Run 3: Report of Sprout — Data Link

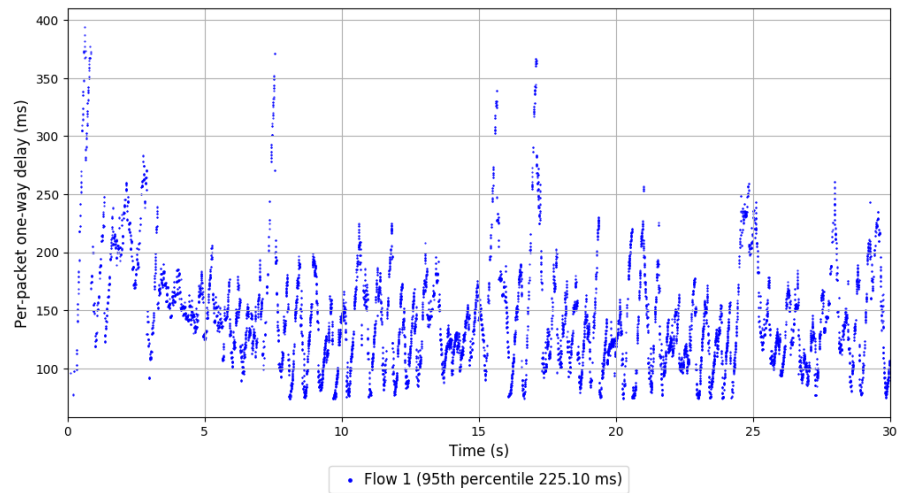
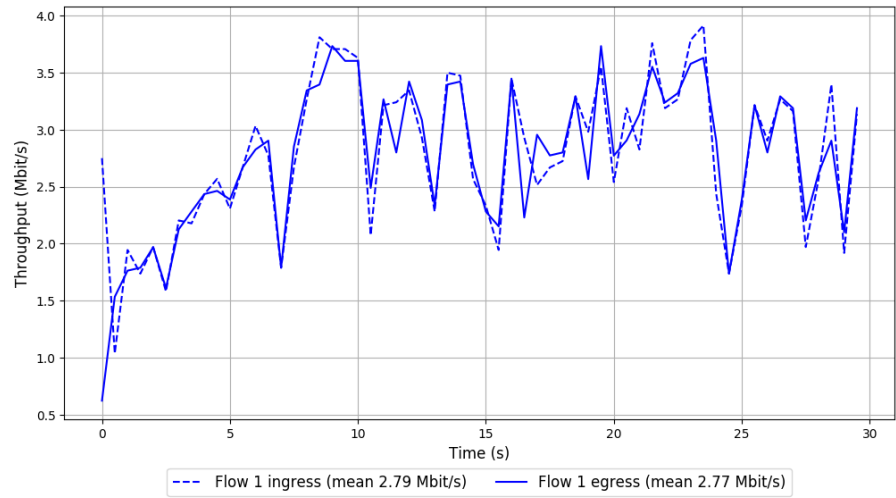


Run 1: Statistics of TaoVA-100x

Start at: 2018-02-19 16:20:55
End at: 2018-02-19 16:21:25
Local clock offset: -34.27 ms
Remote clock offset: -24.153 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.77 Mbit/s
95th percentile per-packet one-way delay: 225.102 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 2.77 Mbit/s
95th percentile per-packet one-way delay: 225.102 ms
Loss rate: 1.07%

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

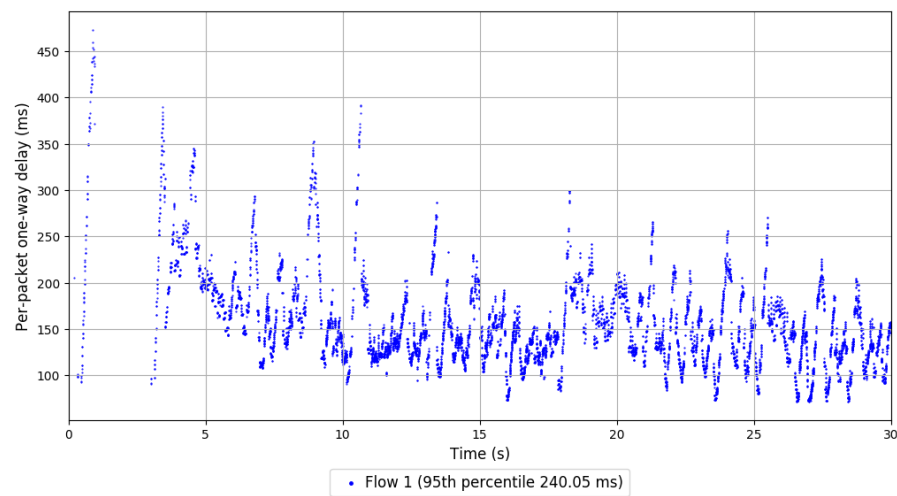
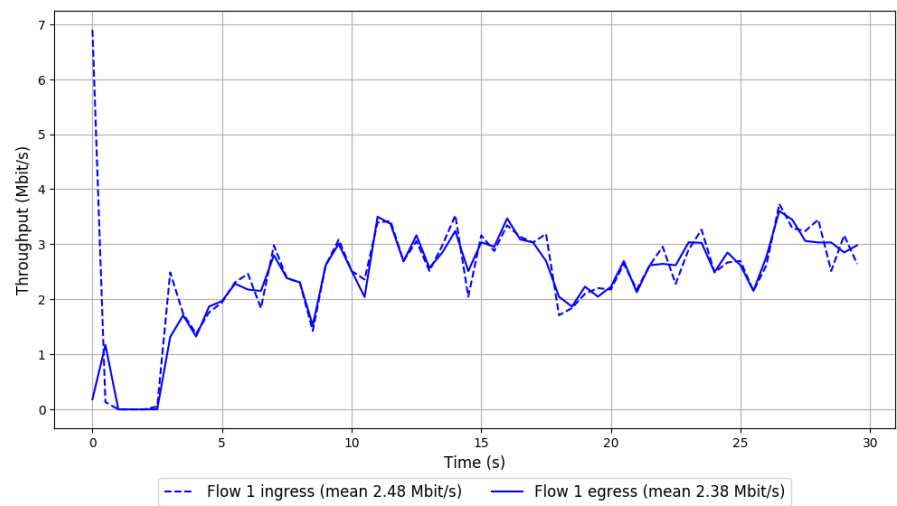


Run 2: Statistics of TaoVA-100x

Start at: 2018-02-19 16:40:34
End at: 2018-02-19 16:41:04
Local clock offset: -21.437 ms
Remote clock offset: -21.086 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 240.053 ms
Loss rate: 4.70%
-- Flow 1:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 240.053 ms
Loss rate: 4.70%

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

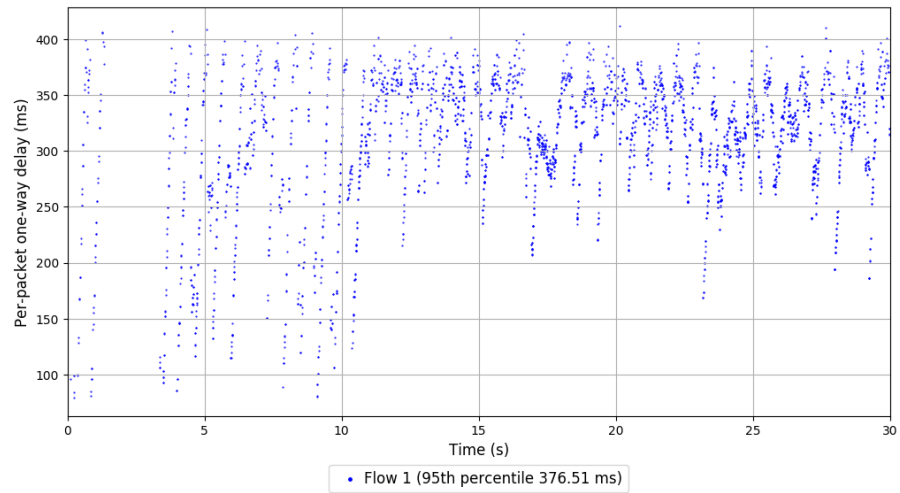
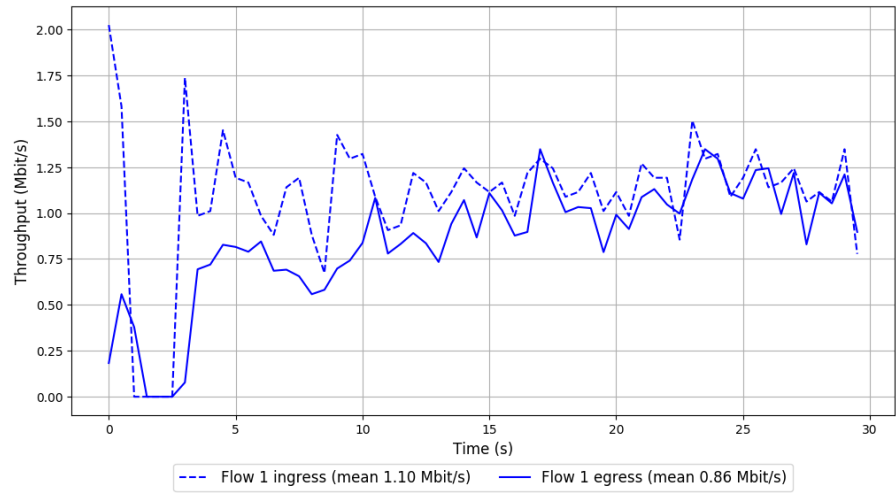


Run 3: Statistics of TaoVA-100x

Start at: 2018-02-19 17:00:13
End at: 2018-02-19 17:00:43
Local clock offset: -26.3 ms
Remote clock offset: -20.348 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 376.510 ms
Loss rate: 21.23%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 376.510 ms
Loss rate: 21.23%

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

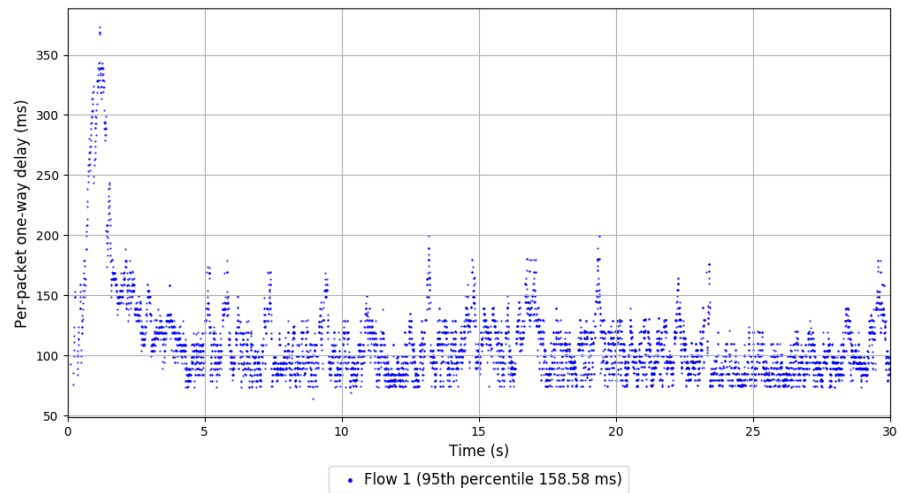
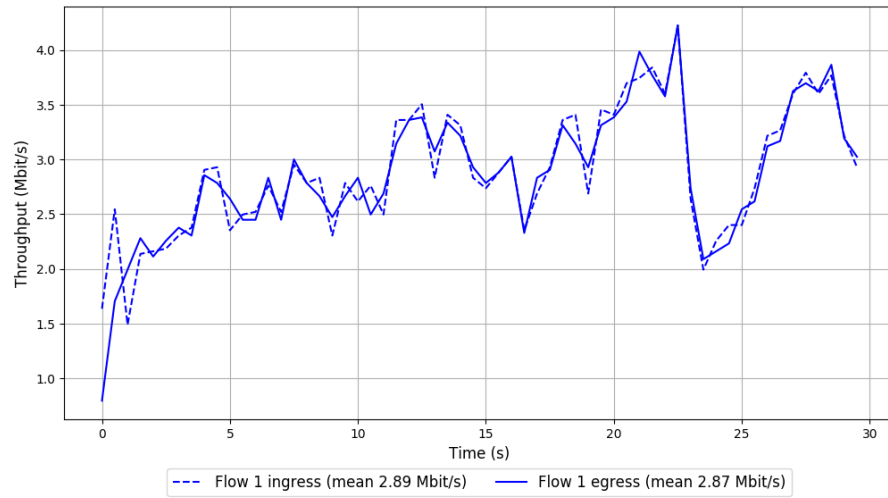


Run 1: Statistics of TCP Vegas

Start at: 2018-02-19 16:25:18
End at: 2018-02-19 16:25:48
Local clock offset: -47.309 ms
Remote clock offset: -23.667 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 158.584 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 158.584 ms
Loss rate: 0.79%

Run 1: Report of TCP Vegas — Data Link

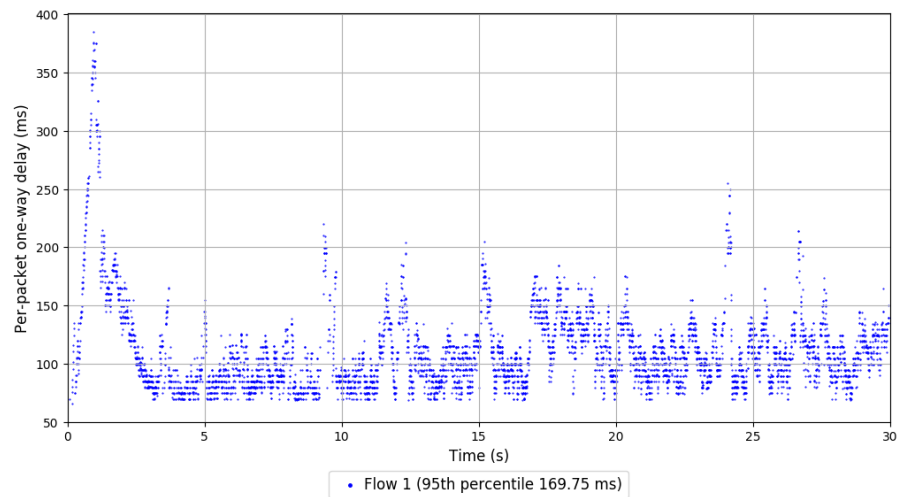
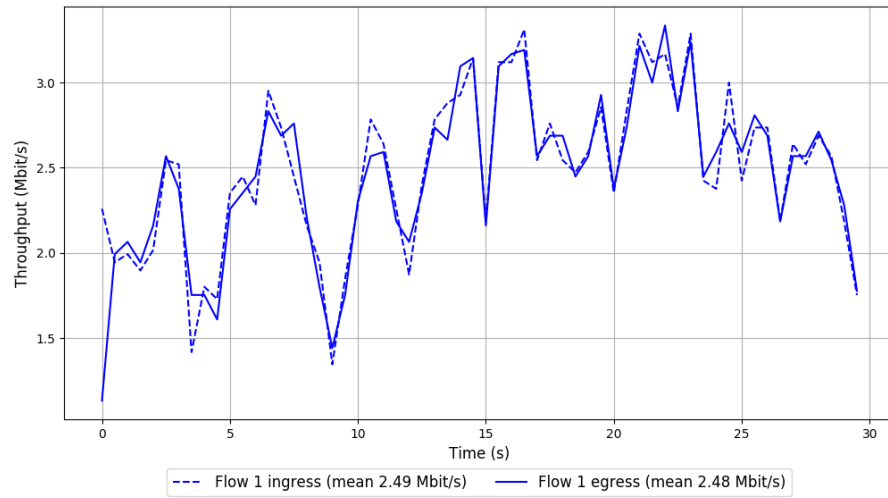


Run 2: Statistics of TCP Vegas

Start at: 2018-02-19 16:44:57
End at: 2018-02-19 16:45:27
Local clock offset: -24.14 ms
Remote clock offset: -21.345 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 169.753 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 169.753 ms
Loss rate: 0.60%

Run 2: Report of TCP Vegas — Data Link

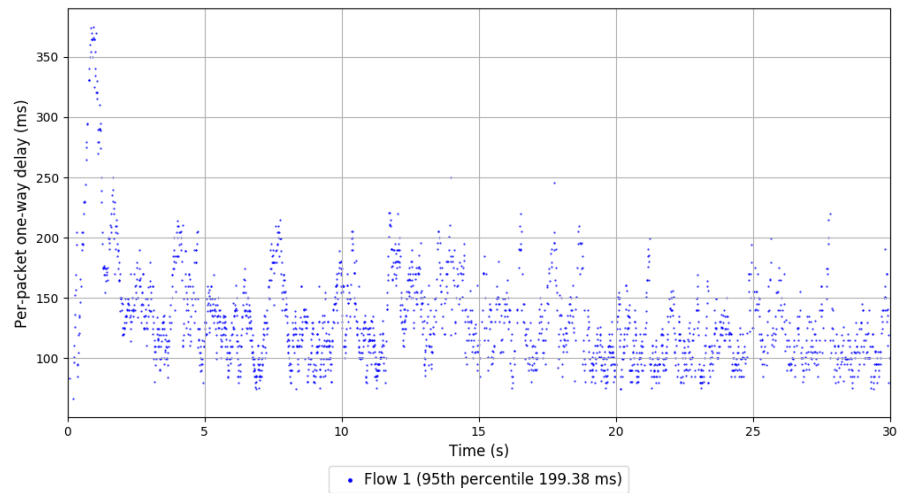
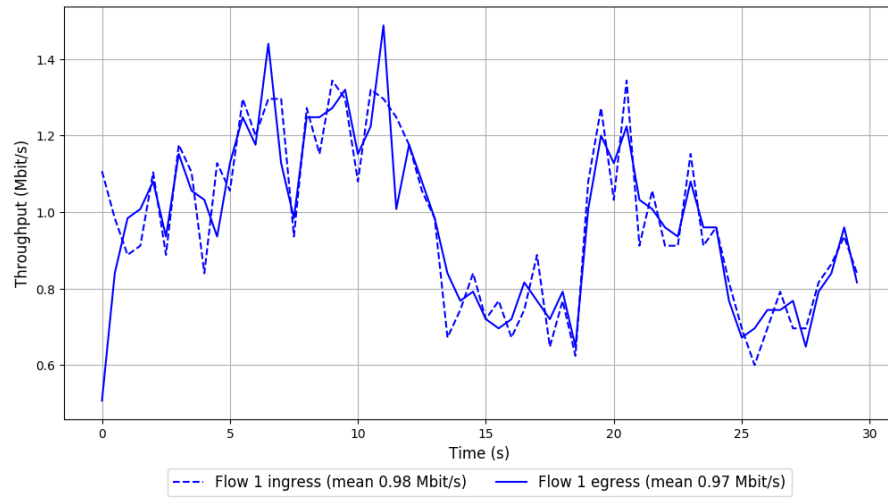


Run 3: Statistics of TCP Vegas

Start at: 2018-02-19 17:04:34
End at: 2018-02-19 17:05:04
Local clock offset: -31.675 ms
Remote clock offset: -19.387 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 199.385 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 199.385 ms
Loss rate: 0.78%

Run 3: Report of TCP Vegas — Data Link

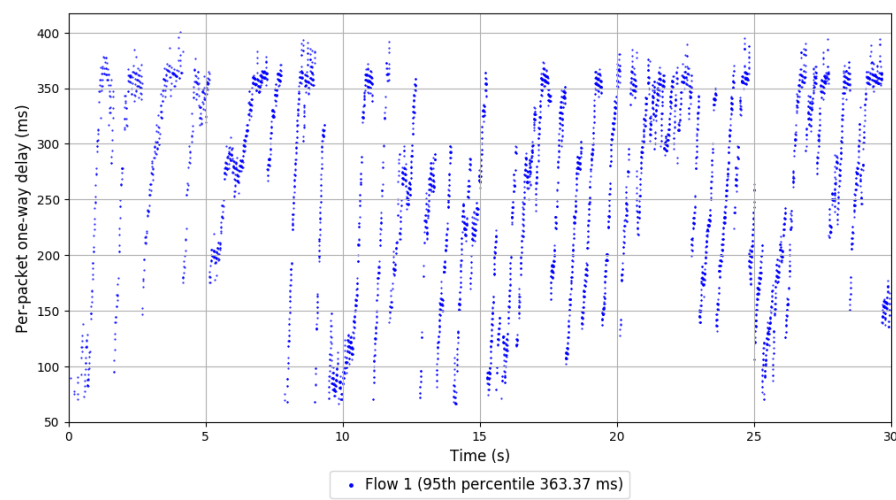
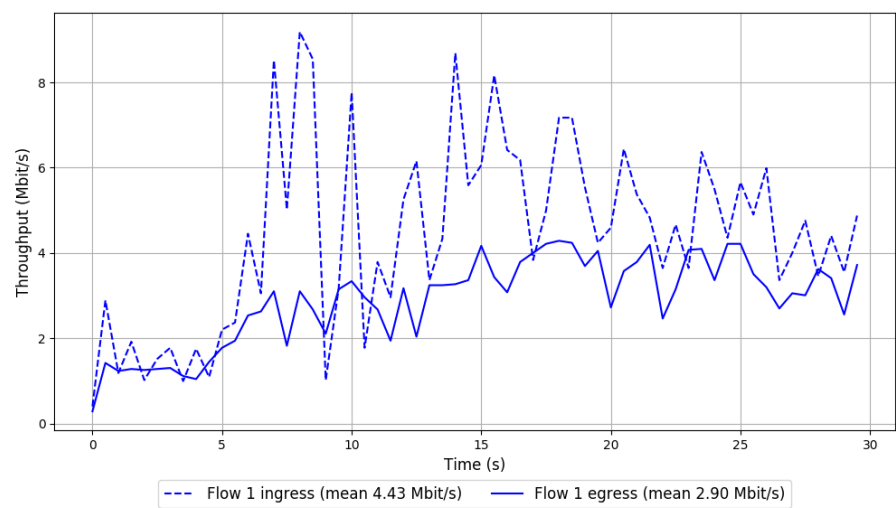


Run 1: Statistics of Verus

Start at: 2018-02-19 16:29:40
End at: 2018-02-19 16:30:10
Local clock offset: -28.628 ms
Remote clock offset: -23.541 ms

Below is generated by plot.py at 2018-02-19 18:11:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 363.370 ms
Loss rate: 34.83%
-- Flow 1:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 363.370 ms
Loss rate: 34.83%

Run 1: Report of Verus — Data Link

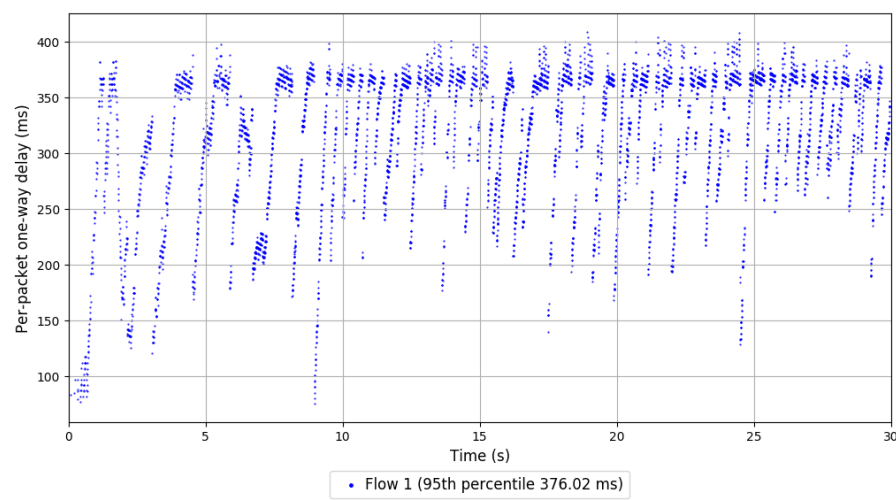
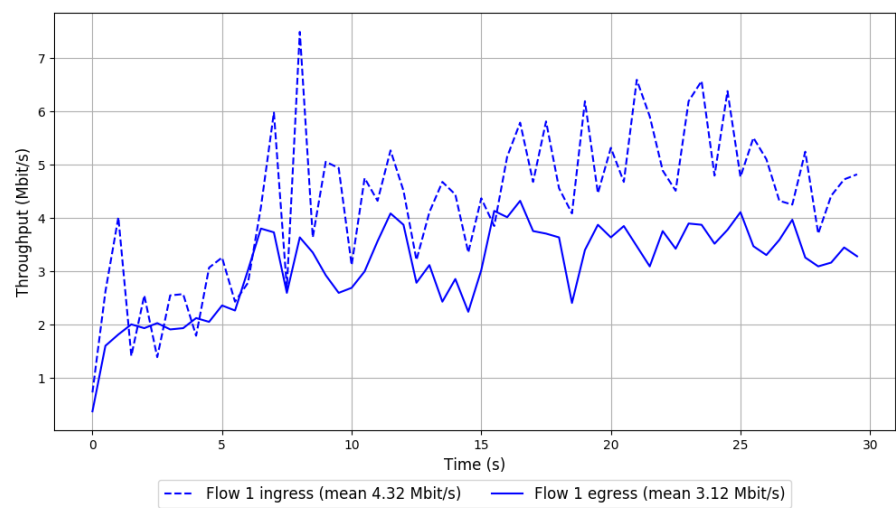


Run 2: Statistics of Verus

Start at: 2018-02-19 16:49:17
End at: 2018-02-19 16:49:47
Local clock offset: -21.264 ms
Remote clock offset: -22.259 ms

Below is generated by plot.py at 2018-02-19 18:11:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 376.017 ms
Loss rate: 28.04%
-- Flow 1:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 376.017 ms
Loss rate: 28.04%

Run 2: Report of Verus — Data Link

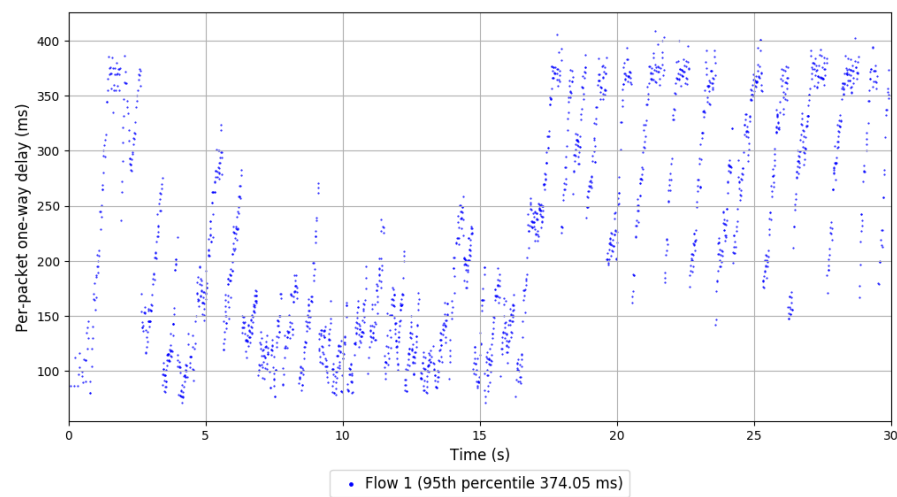
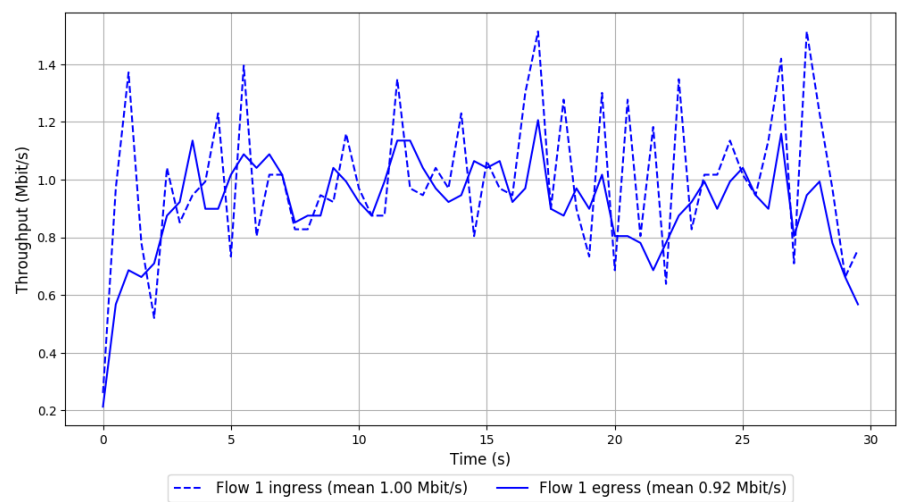


Run 3: Statistics of Verus

Start at: 2018-02-19 17:08:55
End at: 2018-02-19 17:09:25
Local clock offset: -37.705 ms
Remote clock offset: -22.491 ms

Below is generated by plot.py at 2018-02-19 18:11:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 374.047 ms
Loss rate: 8.66%
-- Flow 1:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 374.047 ms
Loss rate: 8.66%

Run 3: Report of Verus — Data Link

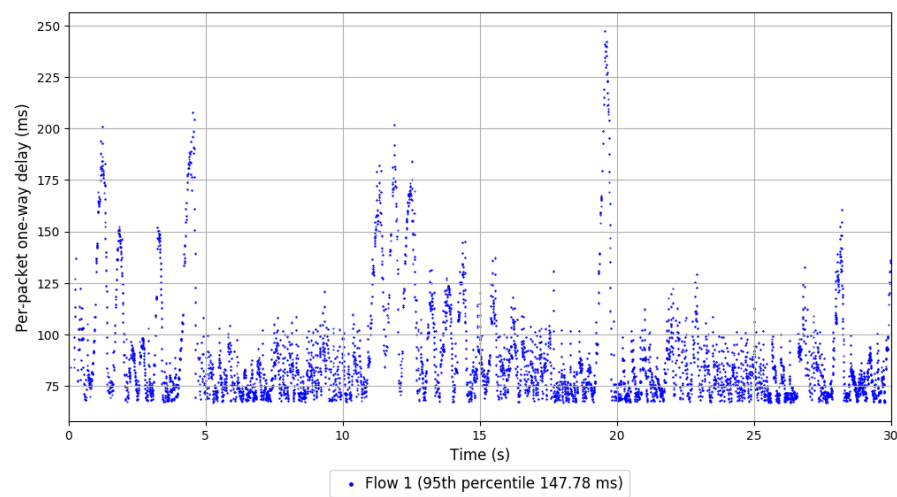
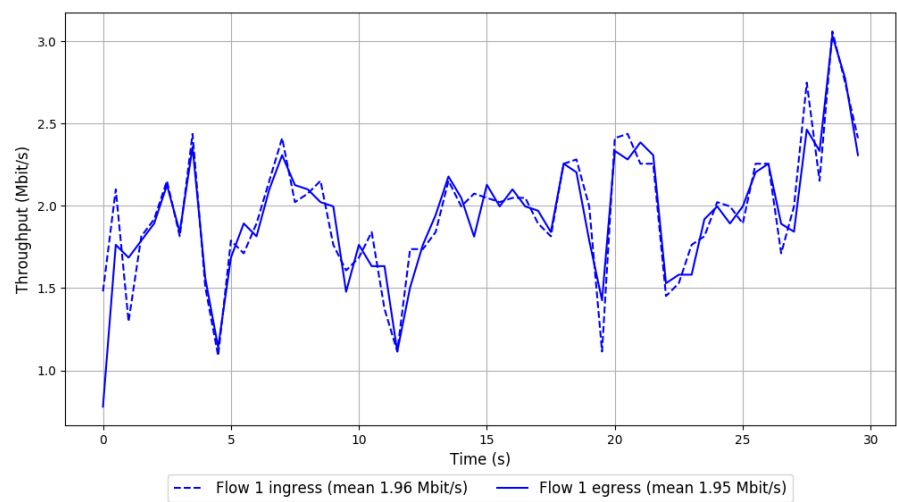


Run 1: Statistics of Copa

Start at: 2018-02-19 16:31:50
End at: 2018-02-19 16:32:20
Local clock offset: -23.093 ms
Remote clock offset: -23.462 ms

Below is generated by plot.py at 2018-02-19 18:11:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 147.780 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 147.780 ms
Loss rate: 0.82%

Run 1: Report of Copa — Data Link

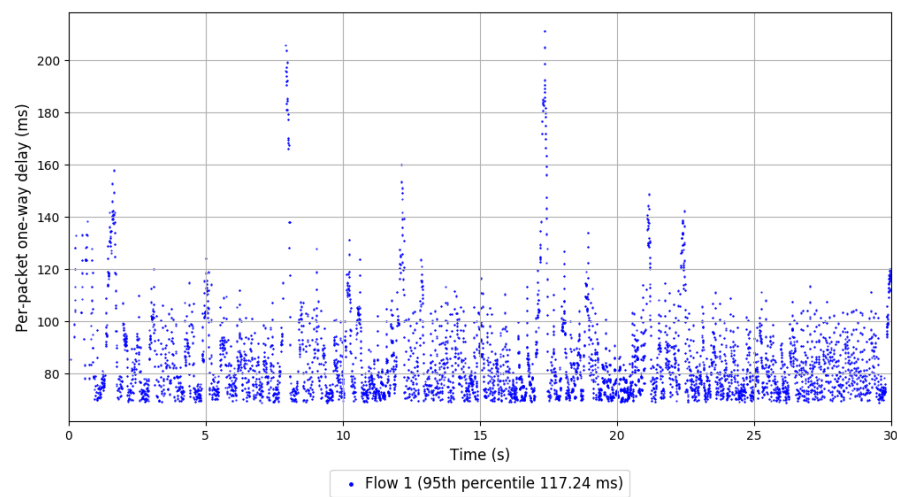
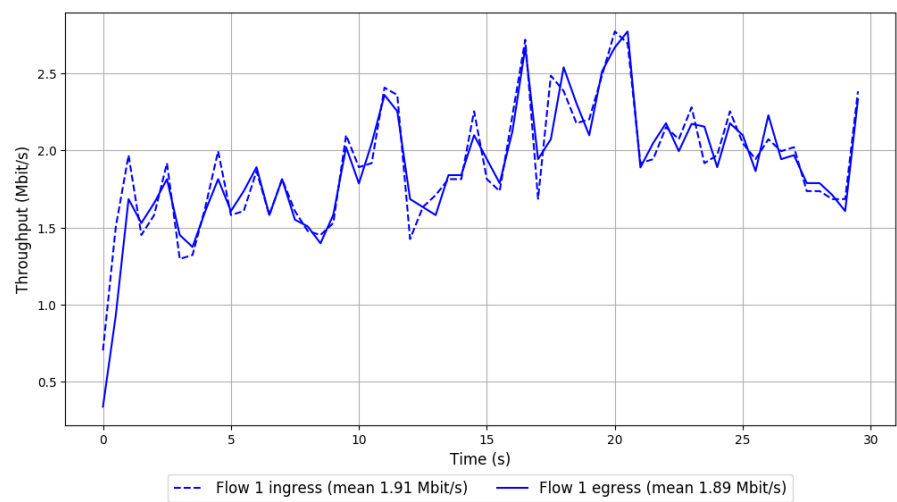


Run 2: Statistics of Copa

Start at: 2018-02-19 16:51:27
End at: 2018-02-19 16:51:57
Local clock offset: -23.112 ms
Remote clock offset: -20.104 ms

Below is generated by plot.py at 2018-02-19 18:11:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 117.240 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 117.240 ms
Loss rate: 0.98%

Run 2: Report of Copa — Data Link

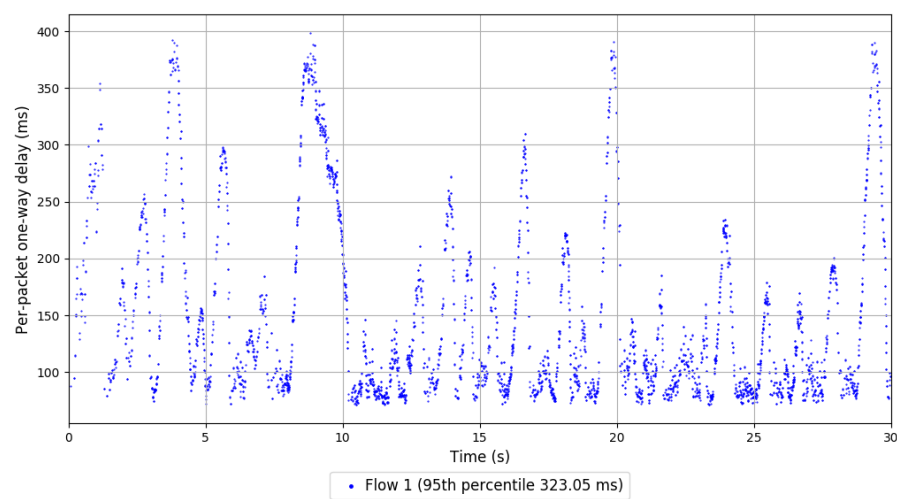
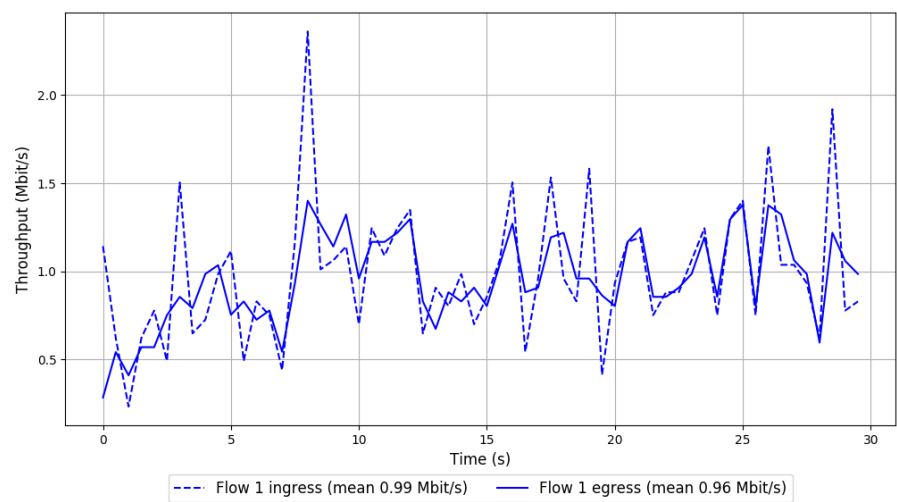


Run 3: Statistics of Copa

Start at: 2018-02-19 17:11:05
End at: 2018-02-19 17:11:35
Local clock offset: -36.272 ms
Remote clock offset: -18.673 ms

Below is generated by plot.py at 2018-02-19 18:11:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 323.050 ms
Loss rate: 2.97%
-- Flow 1:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 323.050 ms
Loss rate: 2.97%

Run 3: Report of Copa — Data Link

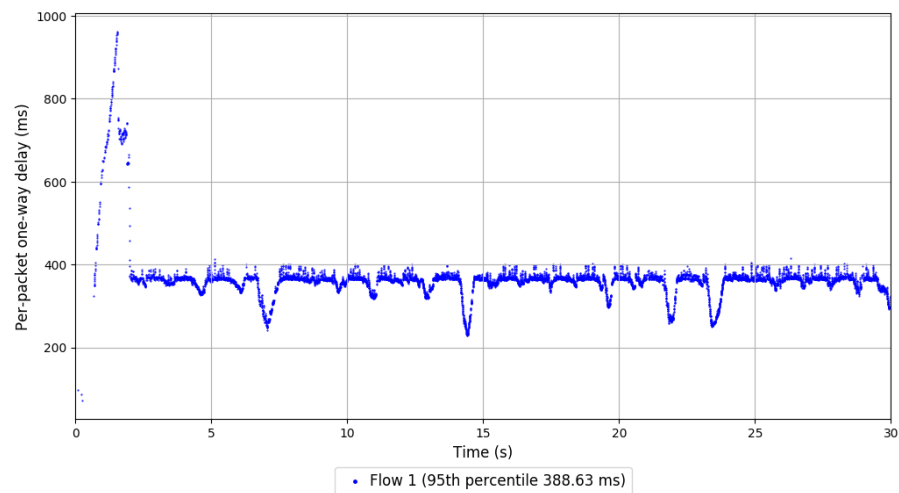
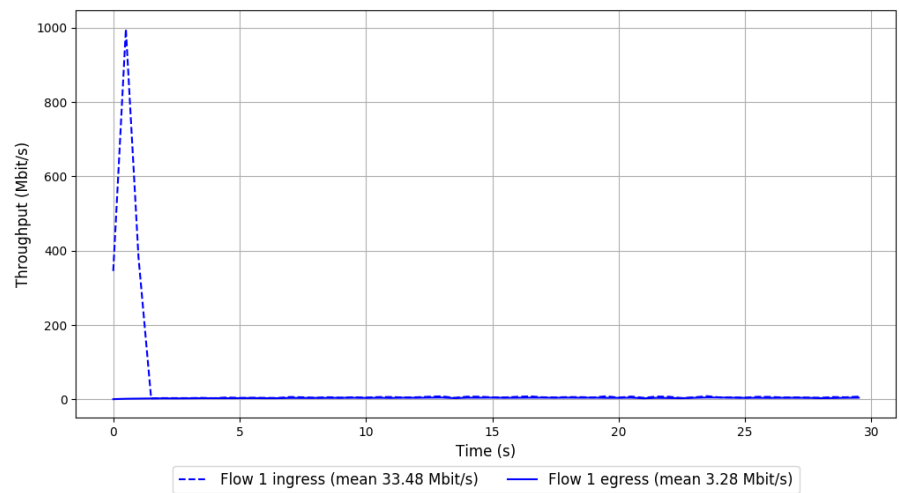


Run 1: Statistics of FillP

Start at: 2018-02-19 16:19:47
End at: 2018-02-19 16:20:17
Local clock offset: -31.145 ms
Remote clock offset: -23.303 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 388.628 ms
Loss rate: 90.22%
-- Flow 1:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 388.628 ms
Loss rate: 90.22%

Run 1: Report of FillP — Data Link

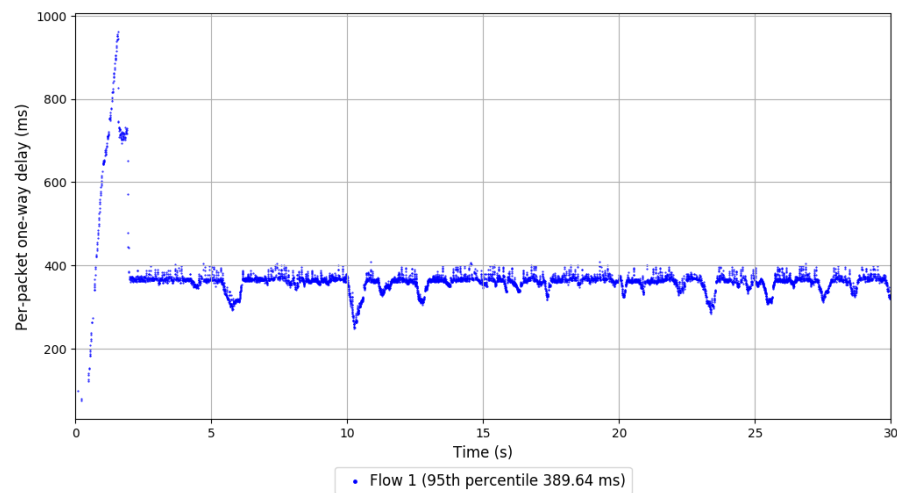
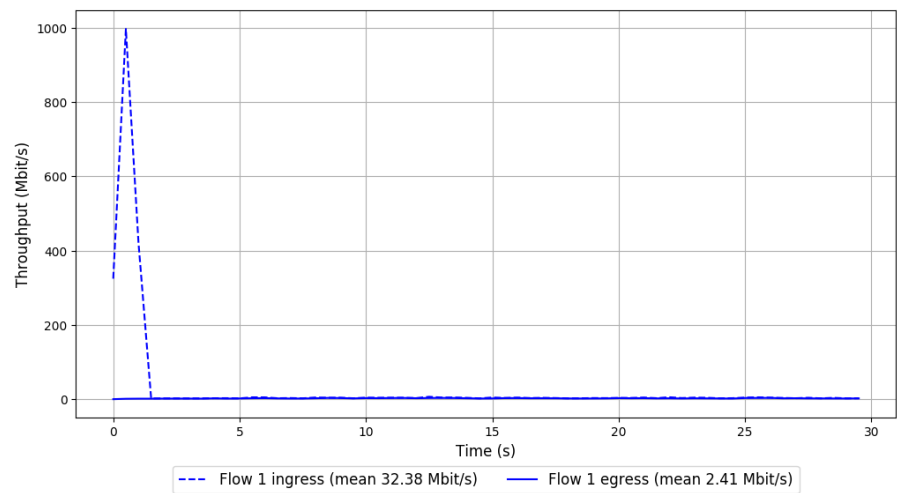


Run 2: Statistics of FillP

Start at: 2018-02-19 16:39:27
End at: 2018-02-19 16:39:57
Local clock offset: -22.034 ms
Remote clock offset: -24.485 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 389.644 ms
Loss rate: 92.59%
-- Flow 1:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 389.644 ms
Loss rate: 92.59%

Run 2: Report of FillP — Data Link

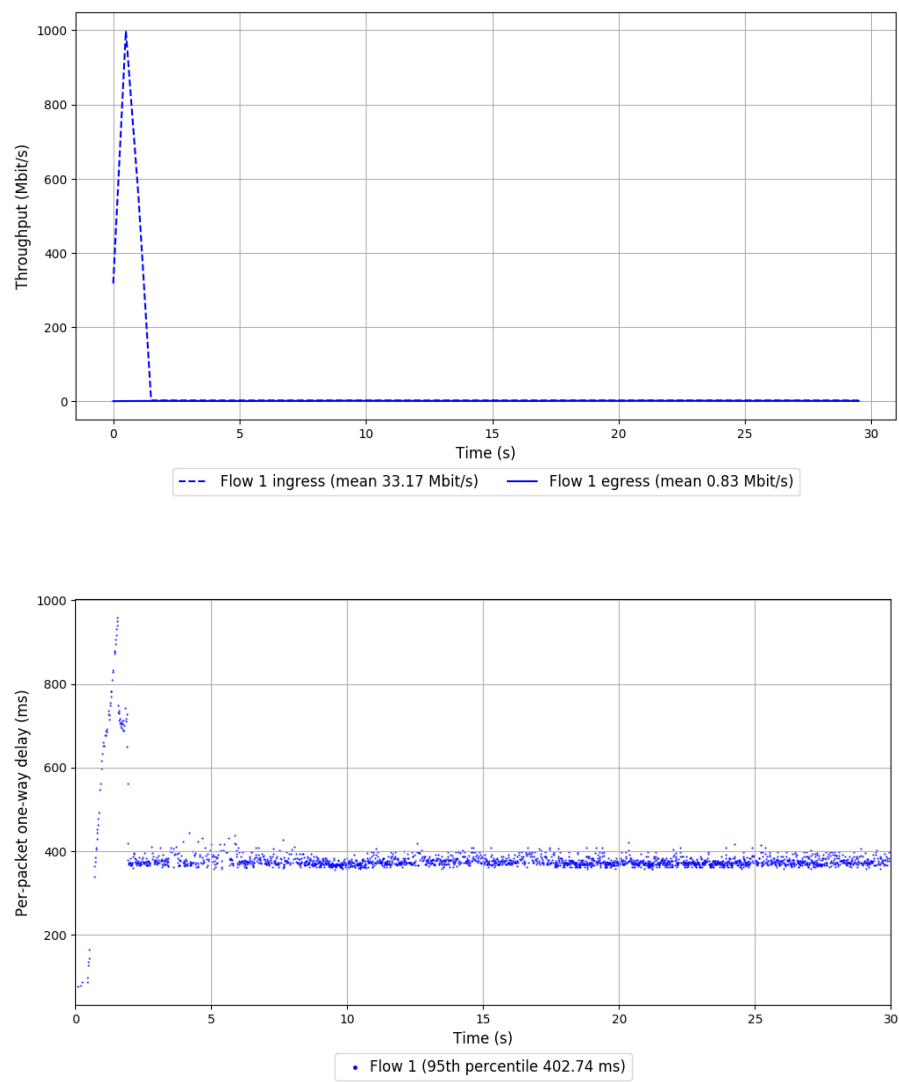


Run 3: Statistics of FillP

Start at: 2018-02-19 16:59:05
End at: 2018-02-19 16:59:35
Local clock offset: -26.315 ms
Remote clock offset: -20.966 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 402.743 ms
Loss rate: 97.49%
-- Flow 1:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 402.743 ms
Loss rate: 97.49%

Run 3: Report of FillP — Data Link

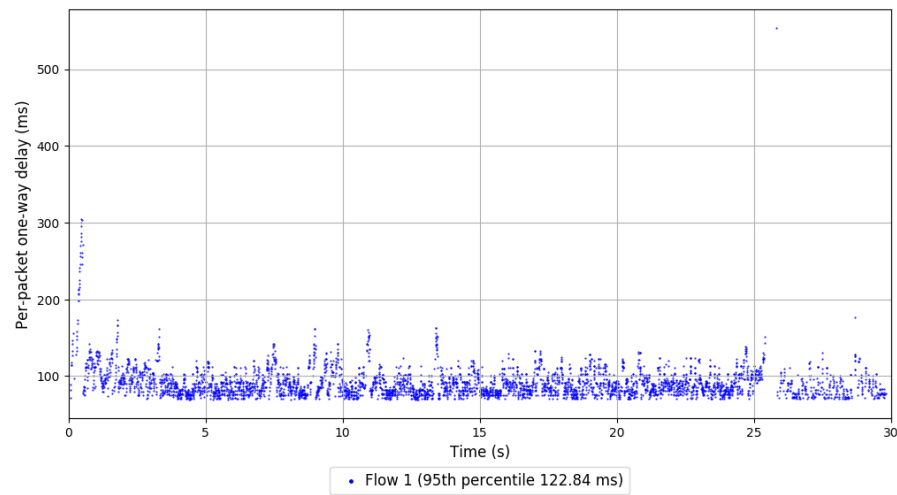
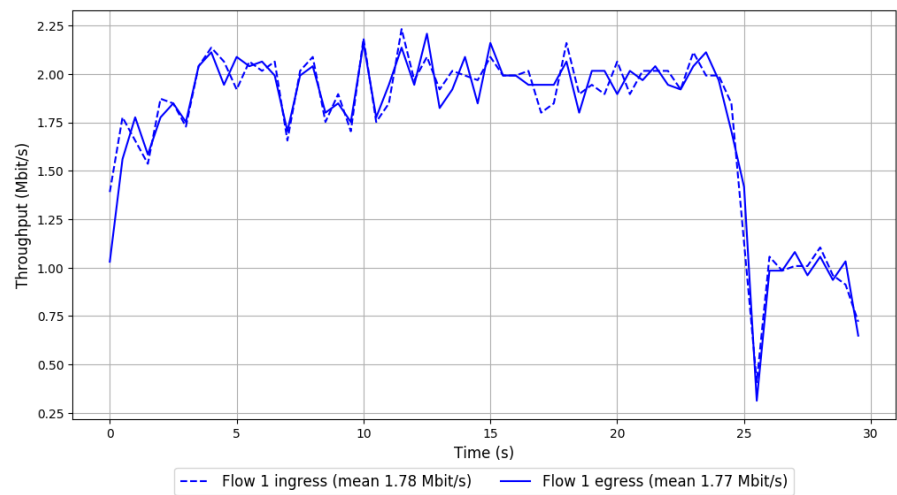


```
Run 1: Statistics of Indigo-1-32

Start at: 2018-02-19 16:23:06
End at: 2018-02-19 16:23:36
Local clock offset: -42.649 ms
Remote clock offset: -22.804 ms

# Below is generated by plot.py at 2018-02-19 18:11:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 122.838 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 122.838 ms
Loss rate: 0.48%
```

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



Run 2: Statistics of Indigo-1-32

Start at: 2018-02-19 16:42:46

End at: 2018-02-19 16:43:16

Local clock offset: -24.37 ms

Remote clock offset: -21.124 ms

Below is generated by plot.py at 2018-02-19 18:11:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.01 Mbit/s

95th percentile per-packet one-way delay: 125.545 ms

Loss rate: 0.48%

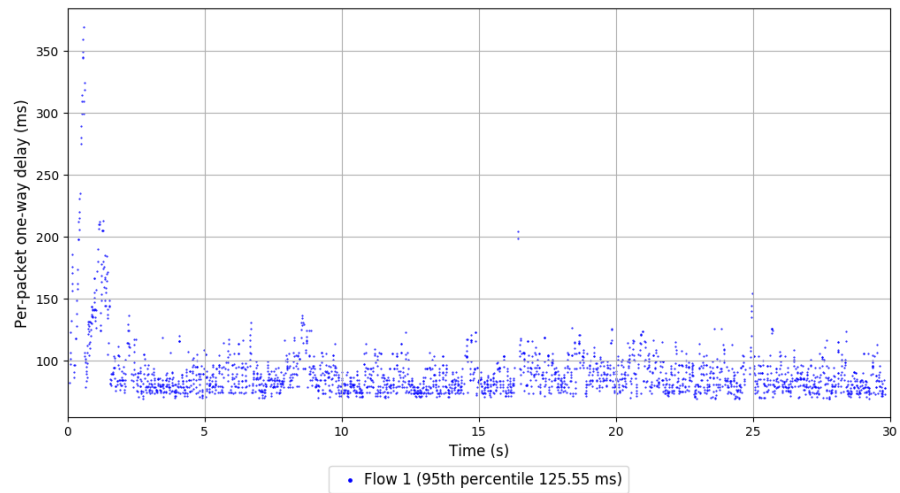
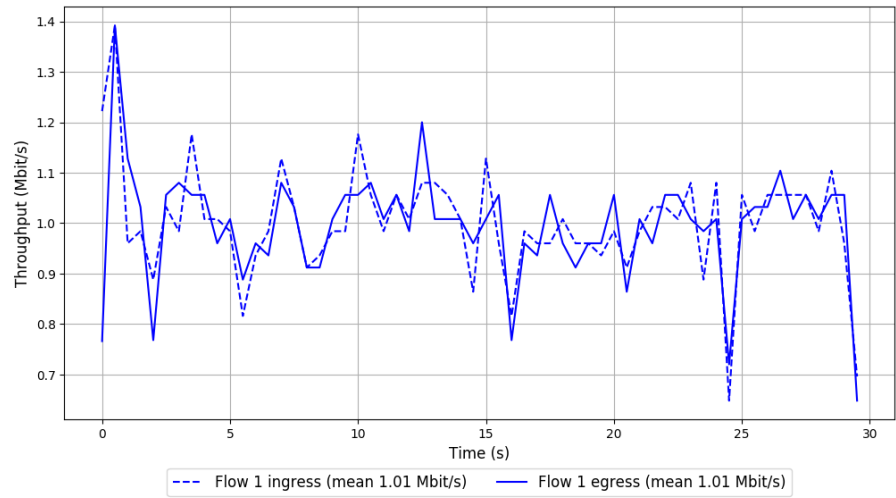
-- Flow 1:

Average throughput: 1.01 Mbit/s

95th percentile per-packet one-way delay: 125.545 ms

Loss rate: 0.48%

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



Run 3: Statistics of Indigo-1-32

Start at: 2018-02-19 17:02:24

End at: 2018-02-19 17:02:54

Local clock offset: -28.768 ms

Remote clock offset: -20.164 ms

Below is generated by plot.py at 2018-02-19 18:11:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 164.392 ms

Loss rate: 1.57%

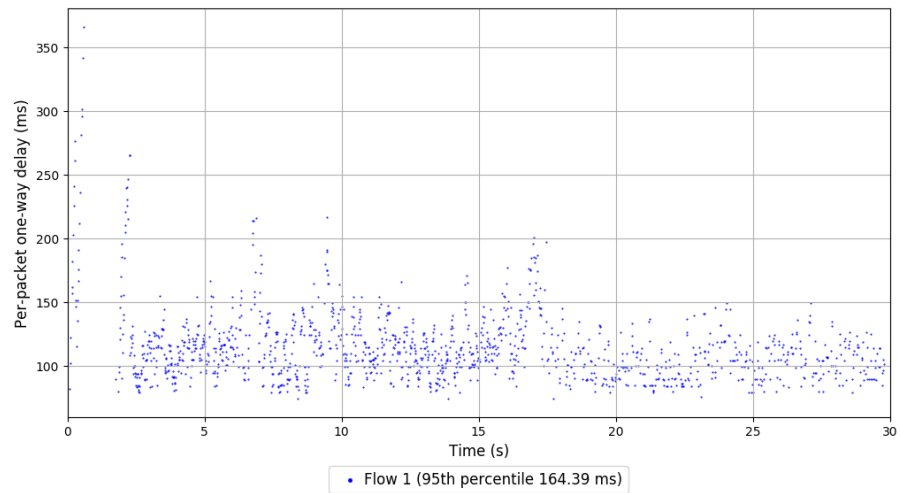
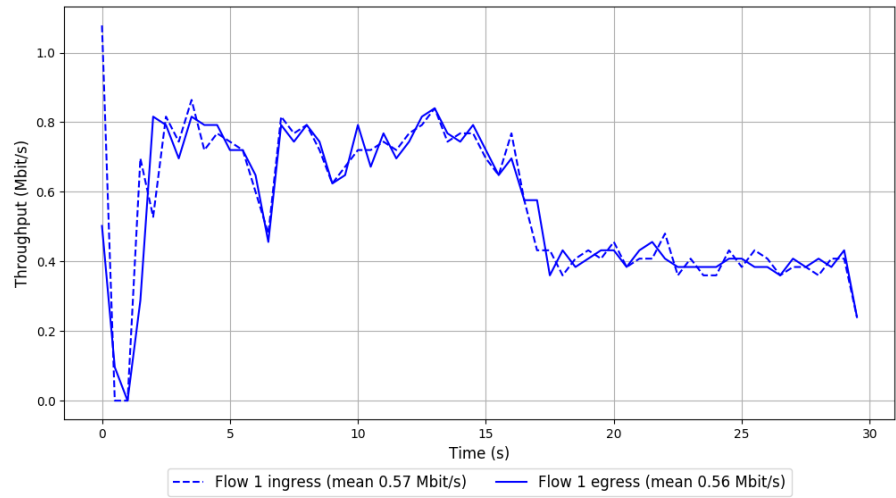
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 164.392 ms

Loss rate: 1.57%

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

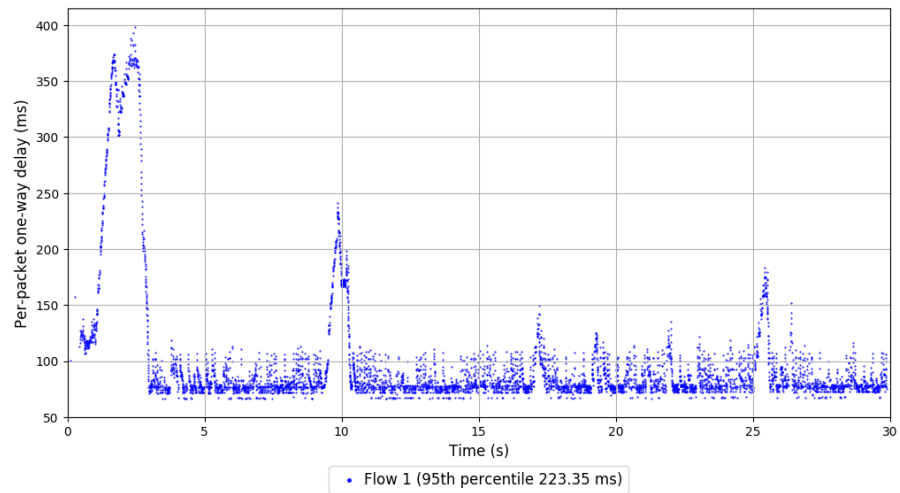
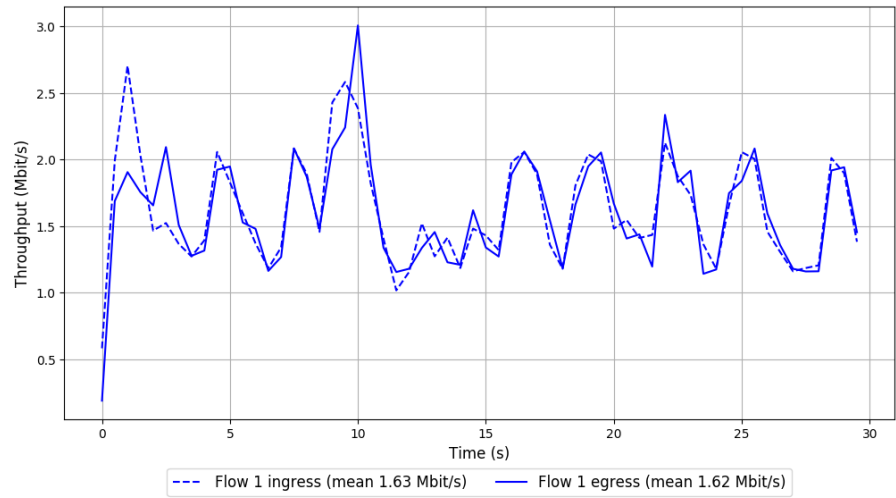


Run 1: Statistics of Vivace-latency

Start at: 2018-02-19 16:22:00
End at: 2018-02-19 16:22:30
Local clock offset: -37.784 ms
Remote clock offset: -24.921 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 223.354 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 223.354 ms
Loss rate: 1.01%

Run 1: Report of Vivace-latency — Data Link

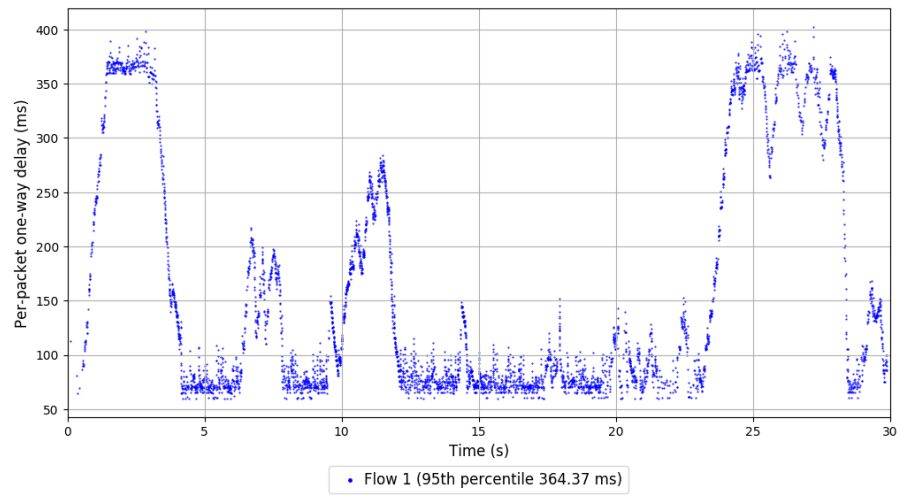
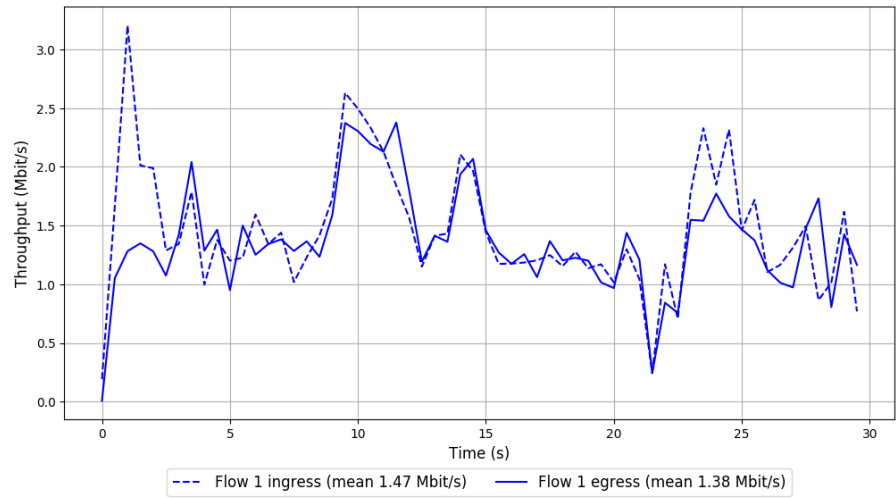


Run 2: Statistics of Vivace-latency

Start at: 2018-02-19 16:41:40
End at: 2018-02-19 16:42:10
Local clock offset: -24.783 ms
Remote clock offset: -20.63 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 364.367 ms
Loss rate: 6.35%
-- Flow 1:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 364.367 ms
Loss rate: 6.35%

Run 2: Report of Vivace-latency — Data Link

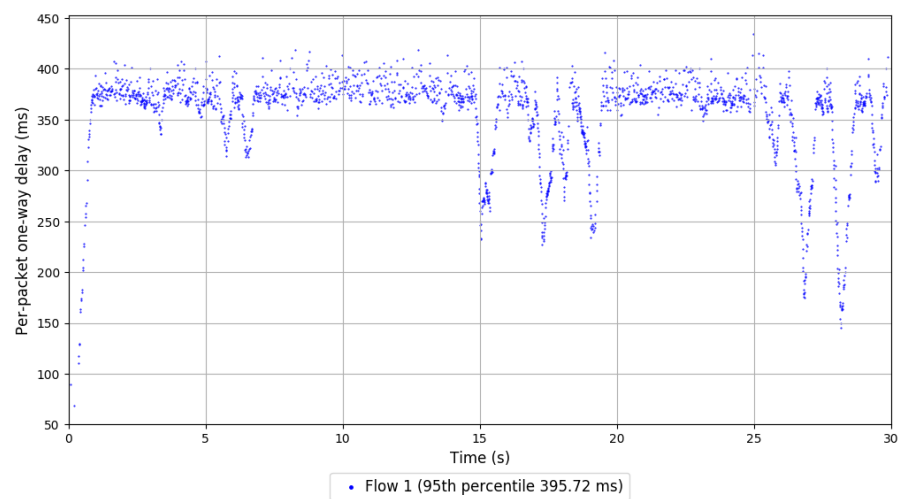
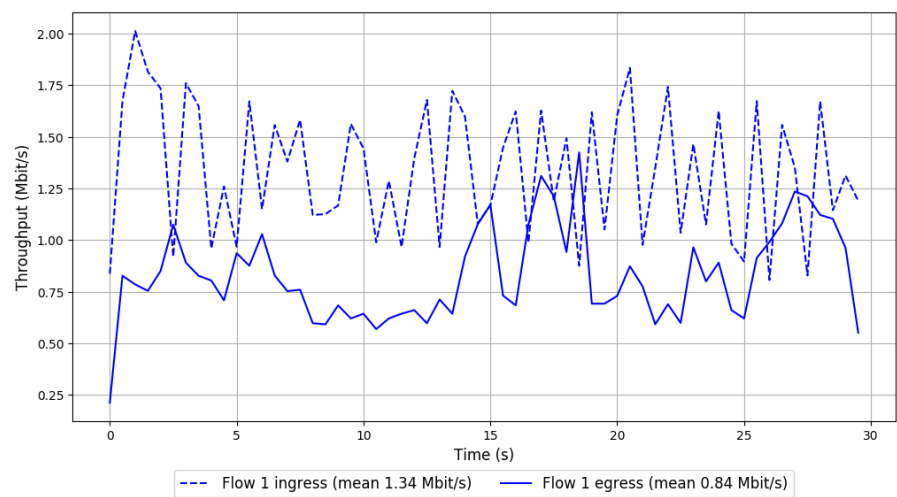


Run 3: Statistics of Vivace-latency

Start at: 2018-02-19 17:01:19
End at: 2018-02-19 17:01:49
Local clock offset: -27.391 ms
Remote clock offset: -20.961 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 395.720 ms
Loss rate: 37.95%
-- Flow 1:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 395.720 ms
Loss rate: 37.95%

Run 3: Report of Vivace-latency — Data Link

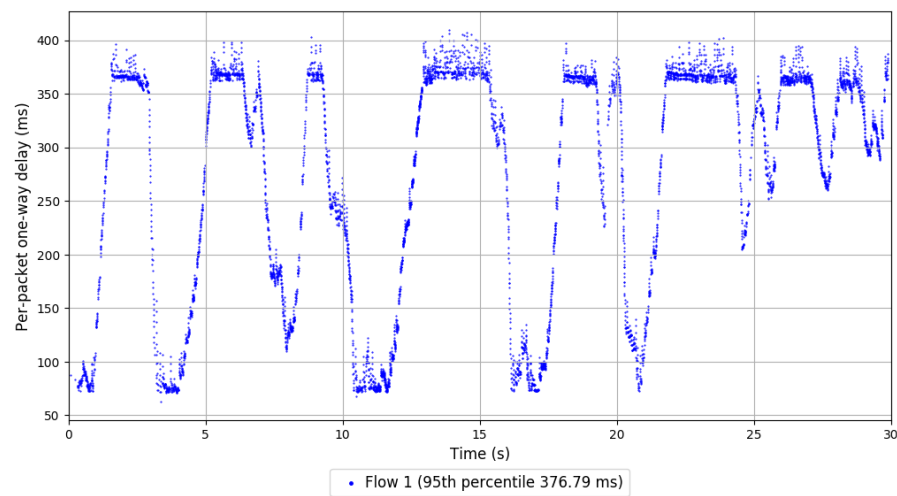
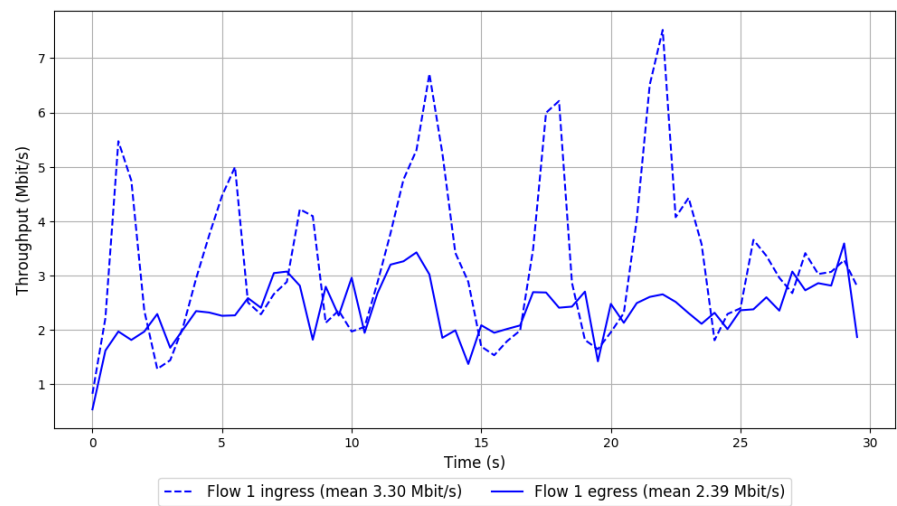


Run 1: Statistics of Vivace-loss

Start at: 2018-02-19 16:13:10
End at: 2018-02-19 16:13:40
Local clock offset: -13.527 ms
Remote clock offset: -21.86 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 376.793 ms
Loss rate: 27.69%
-- Flow 1:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 376.793 ms
Loss rate: 27.69%

Run 1: Report of Vivace-loss — Data Link

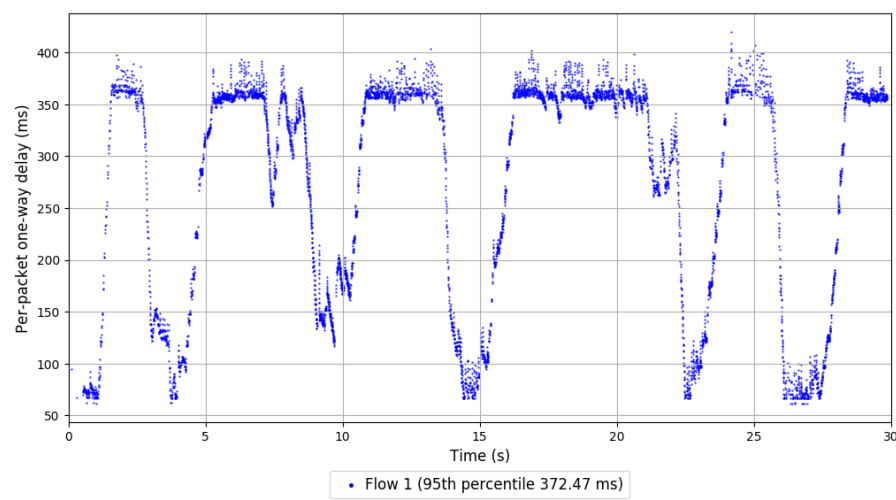
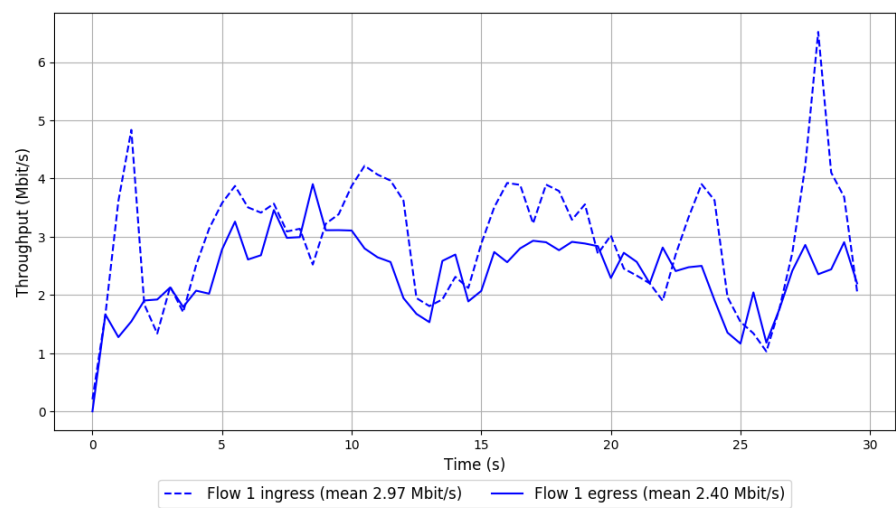


Run 2: Statistics of Vivace-loss

Start at: 2018-02-19 16:32:56
End at: 2018-02-19 16:33:26
Local clock offset: -21.157 ms
Remote clock offset: -22.277 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 372.470 ms
Loss rate: 19.48%
-- Flow 1:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 372.470 ms
Loss rate: 19.48%

Run 2: Report of Vivace-loss — Data Link

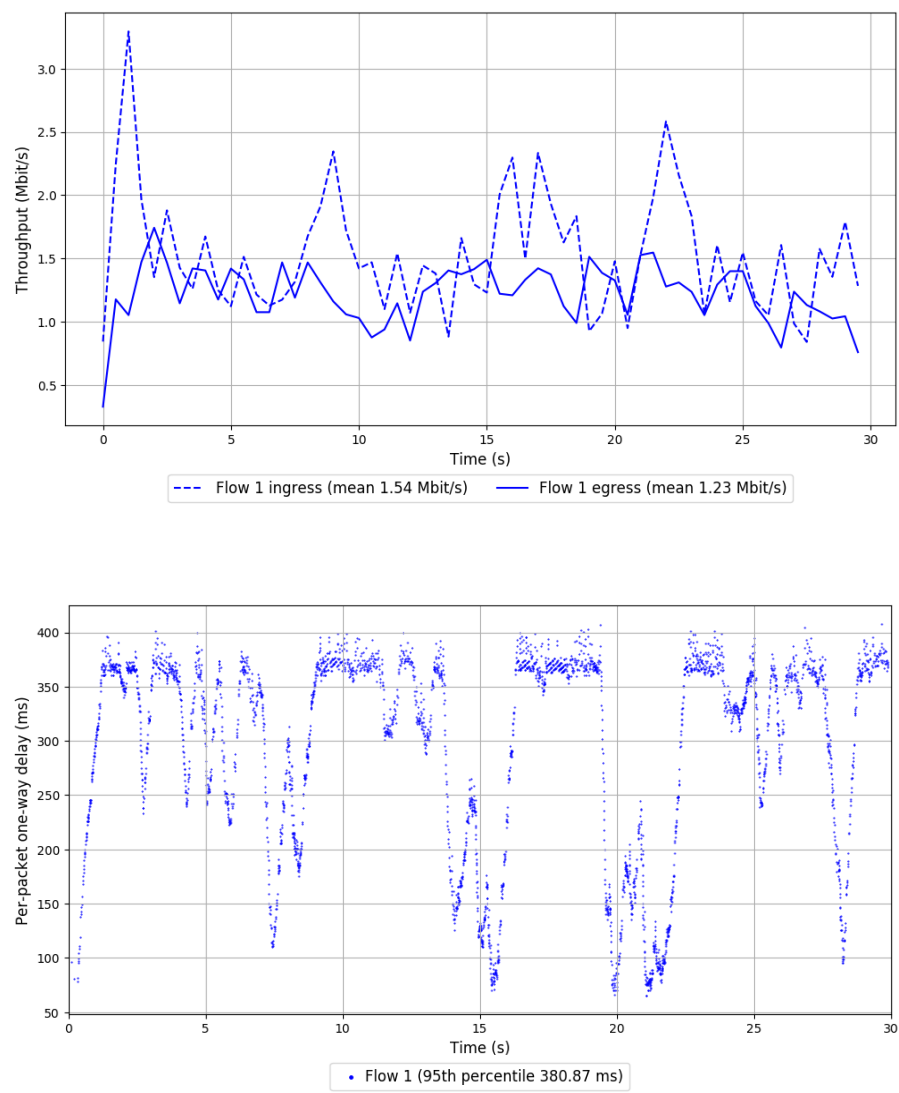


Run 3: Statistics of Vivace-loss

Start at: 2018-02-19 16:52:35
End at: 2018-02-19 16:53:05
Local clock offset: -22.608 ms
Remote clock offset: -20.773 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 380.872 ms
Loss rate: 20.34%
-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 380.872 ms
Loss rate: 20.34%

Run 3: Report of Vivace-loss — Data Link

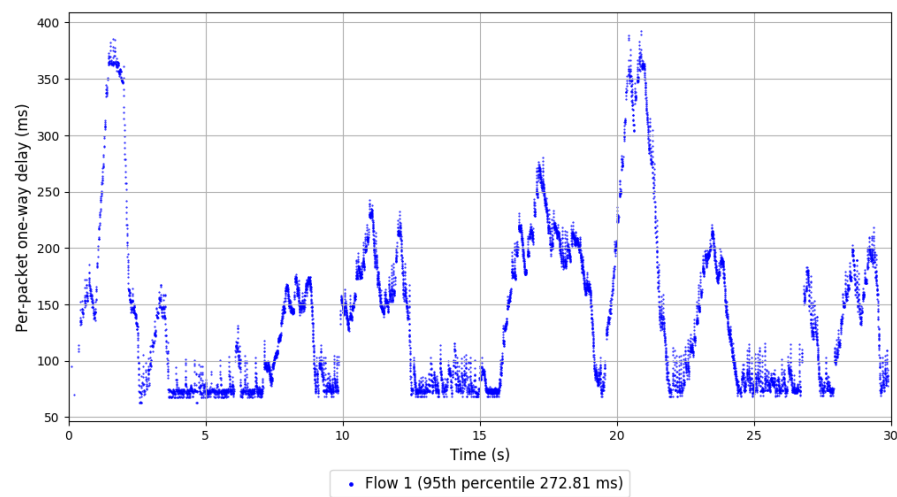
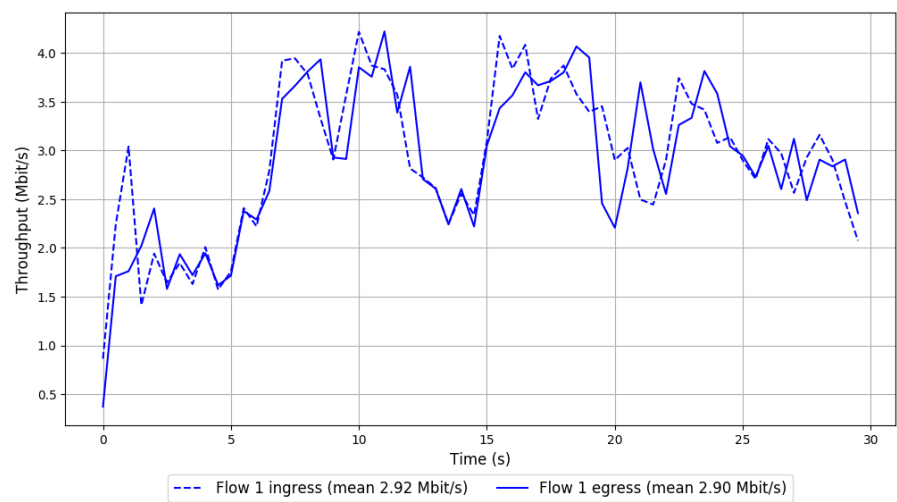


Run 1: Statistics of Vivace-LTE

Start at: 2018-02-19 16:24:12
End at: 2018-02-19 16:24:42
Local clock offset: -45.144 ms
Remote clock offset: -22.887 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 272.810 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 272.810 ms
Loss rate: 0.89%

Run 1: Report of Vivace-LTE — Data Link

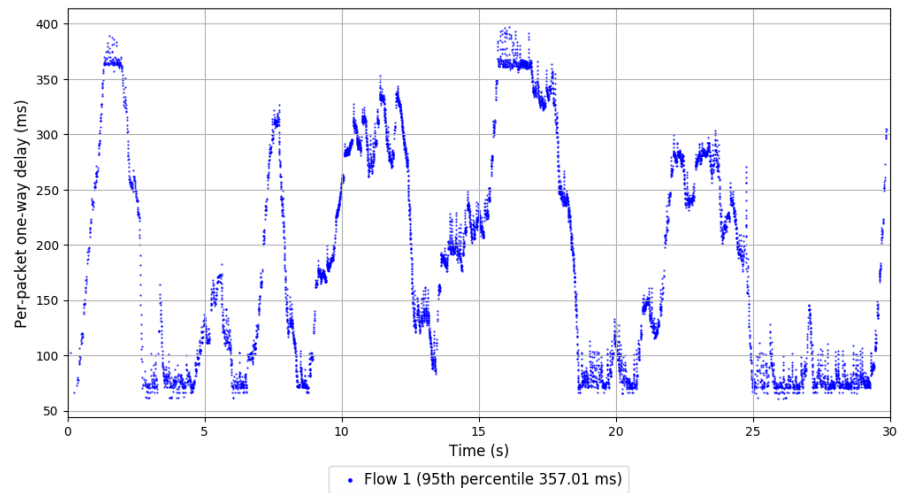
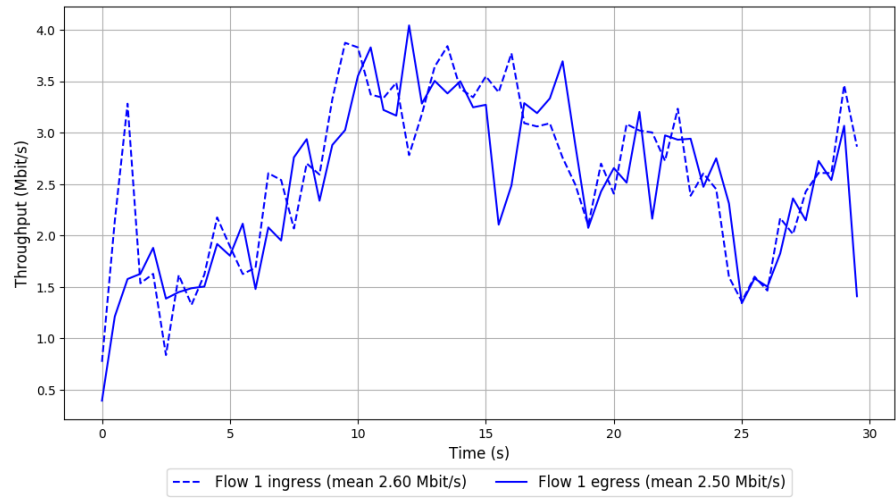


Run 2: Statistics of Vivace-LTE

Start at: 2018-02-19 16:43:52
End at: 2018-02-19 16:44:22
Local clock offset: -24.032 ms
Remote clock offset: -21.583 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 357.012 ms
Loss rate: 4.18%
-- Flow 1:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 357.012 ms
Loss rate: 4.18%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-02-19 17:03:29
End at: 2018-02-19 17:03:59
Local clock offset: -28.019 ms
Remote clock offset: -20.137 ms

Below is generated by plot.py at 2018-02-19 18:11:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 393.425 ms
Loss rate: 34.33%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 393.425 ms
Loss rate: 34.33%

Run 3: Report of Vivace-LTE — Data Link

