

Pantheon Report

Generated at 2018-03-26 22:07:08 (UTC).

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

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

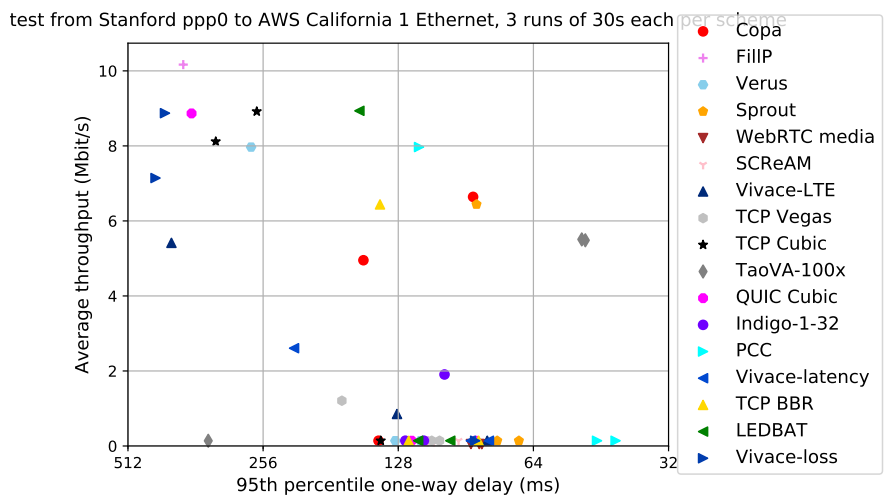
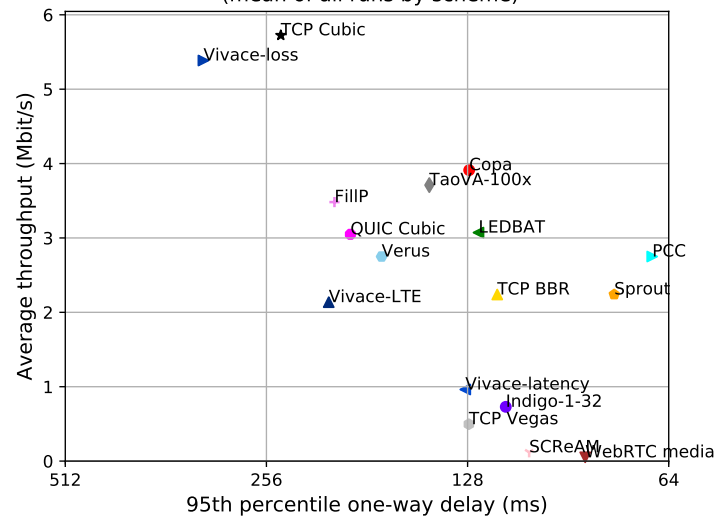
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

Git summary:

```
branch: master @ 503f51fe03f703a4c0a826a0792a4fead3e7d1b0
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fixp @ 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 @ f271183af822eee5d0031620f4bebf38aedc5581
```

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



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	2.24	115.56	12.94
TCP Cubic	3	5.73	243.64	11.93
LEDBAT	3	3.07	123.29	20.40
PCC	3	2.75	67.74	63.45
QUIC Cubic	3	3.05	191.69	44.48
SCReAM	3	0.12	103.54	1.41
WebRTC media	3	0.05	85.35	32.45
Sprout	3	2.24	77.23	31.52
TaoVA-100x	3	3.71	146.05	31.81
TCP Vegas	3	0.50	127.44	22.58
Verus	3	2.75	172.13	54.39
Copa	3	3.91	127.29	18.43
FillP	3	3.48	202.51	84.10
Indigo-1-32	3	0.73	112.22	48.51
Vivace-latency	3	0.96	129.03	58.81
Vivace-loss	3	5.38	318.07	46.82
Vivace-LTE	3	2.14	206.53	49.35

Run 1: Statistics of TCP BBR

Start at: 2018-03-26 19:53:50

End at: 2018-03-26 19:54:20

Local clock offset: -1.22 ms

Remote clock offset: -4.852 ms

Below is generated by plot.py at 2018-03-26 22:06:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 6.44 Mbit/s

95th percentile per-packet one-way delay: 140.573 ms

Loss rate: 0.22%

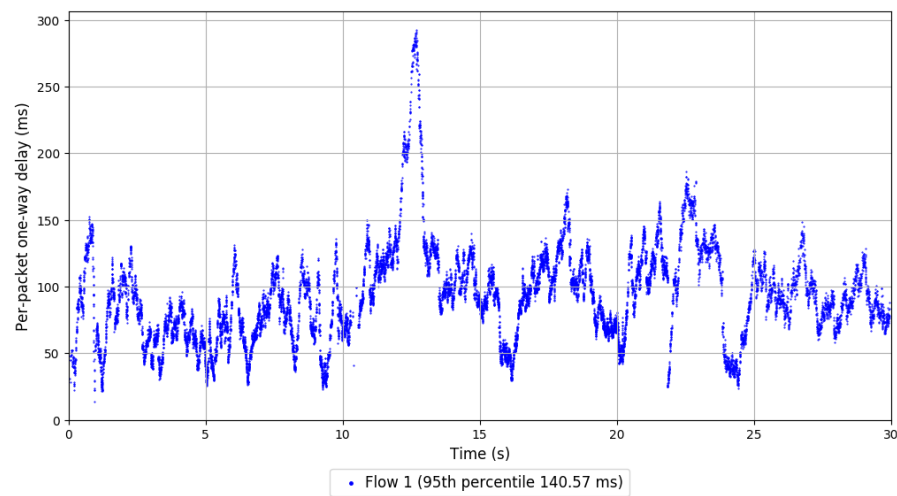
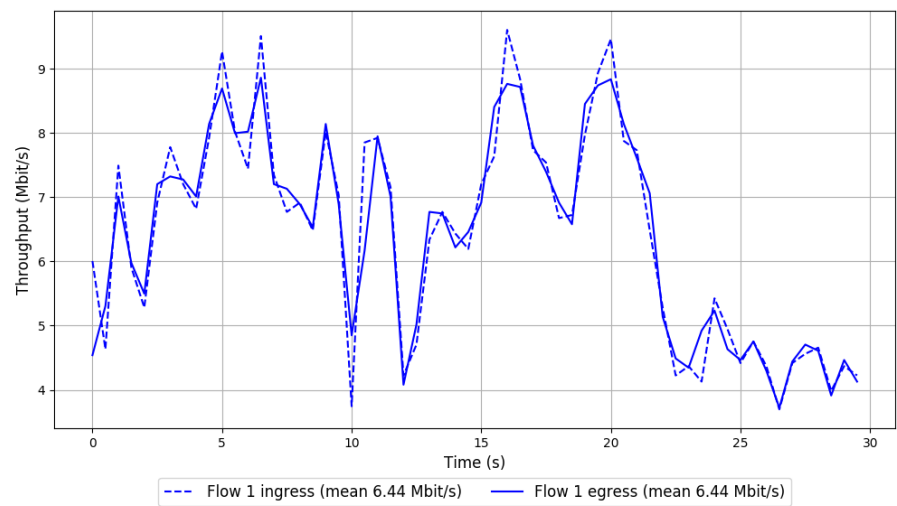
-- Flow 1:

Average throughput: 6.44 Mbit/s

95th percentile per-packet one-way delay: 140.573 ms

Loss rate: 0.22%

Run 1: Report of TCP BBR — Data Link

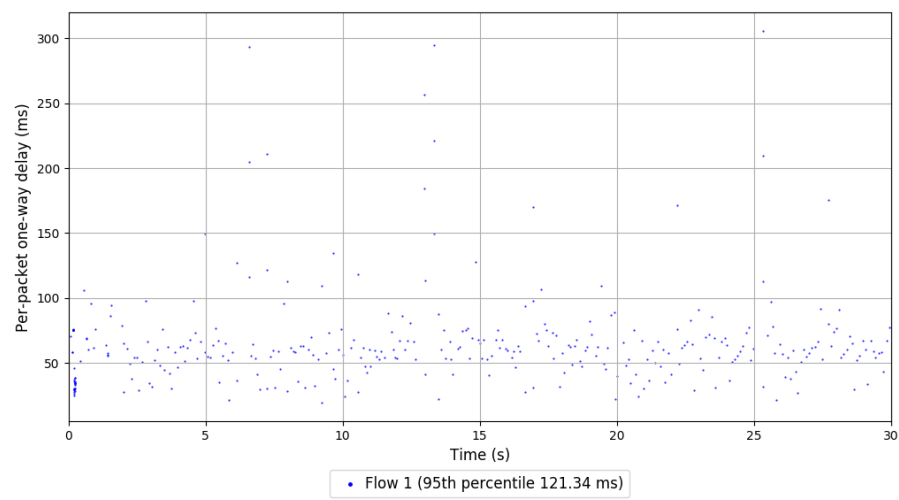
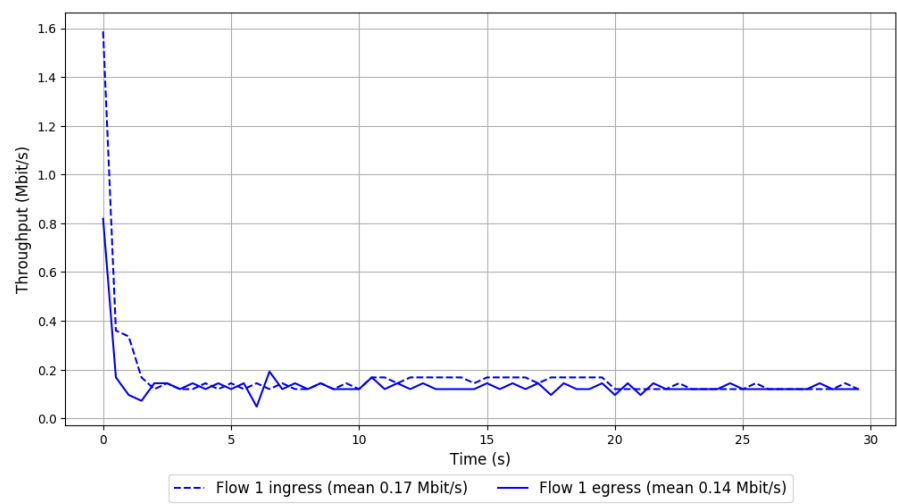


Run 2: Statistics of TCP BBR

Start at: 2018-03-26 20:17:24
End at: 2018-03-26 20:17:54
Local clock offset: -1.968 ms
Remote clock offset: -5.587 ms

Below is generated by plot.py at 2018-03-26 22:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 121.337 ms
Loss rate: 19.20%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 121.337 ms
Loss rate: 19.20%

Run 2: Report of TCP BBR — Data Link

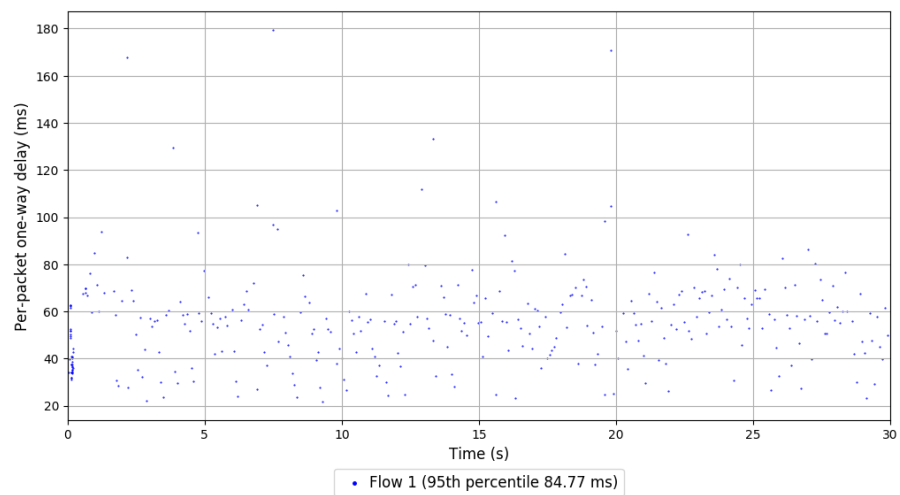
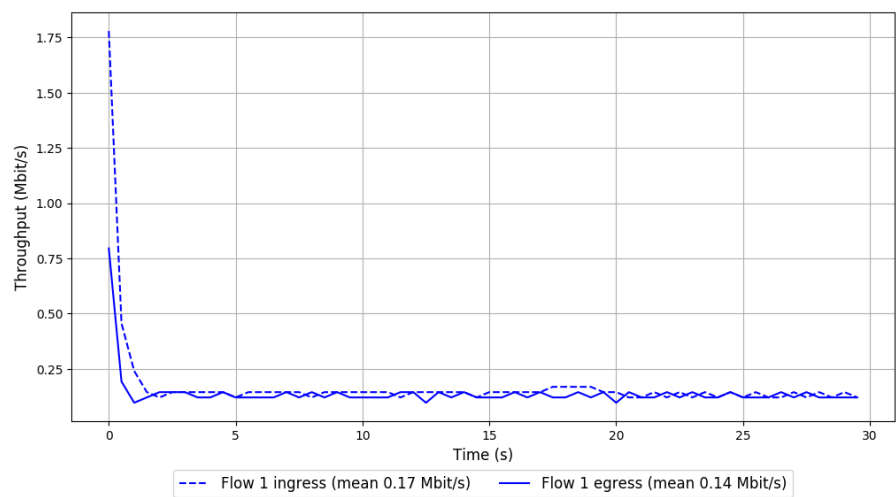


Run 3: Statistics of TCP BBR

Start at: 2018-03-26 20:40:53
End at: 2018-03-26 20:41:23
Local clock offset: -3.099 ms
Remote clock offset: -4.558 ms

Below is generated by plot.py at 2018-03-26 22:06:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 84.767 ms
Loss rate: 19.39%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 84.767 ms
Loss rate: 19.39%

Run 3: Report of TCP BBR — Data Link

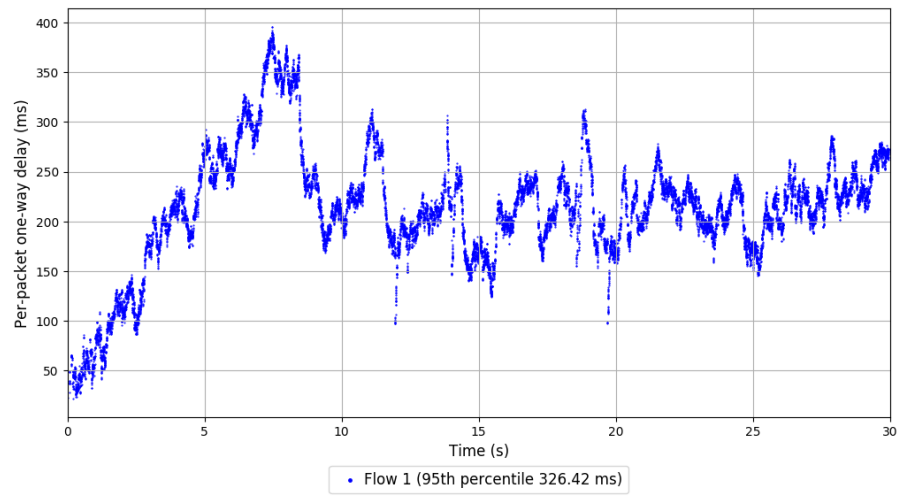
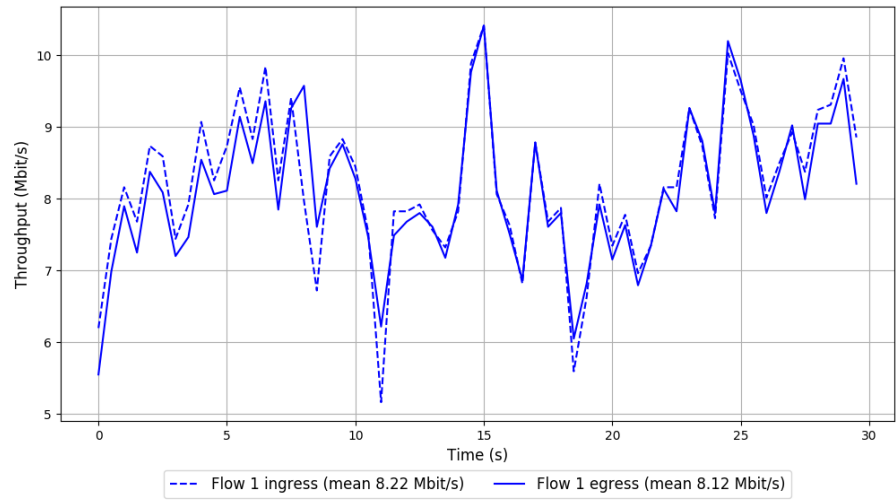


Run 1: Statistics of TCP Cubic

Start at: 2018-03-26 19:47:17
End at: 2018-03-26 19:47:47
Local clock offset: -0.591 ms
Remote clock offset: -4.824 ms

Below is generated by plot.py at 2018-03-26 22:06:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.12 Mbit/s
95th percentile per-packet one-way delay: 326.417 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 8.12 Mbit/s
95th percentile per-packet one-way delay: 326.417 ms
Loss rate: 1.32%

Run 1: Report of TCP Cubic — Data Link

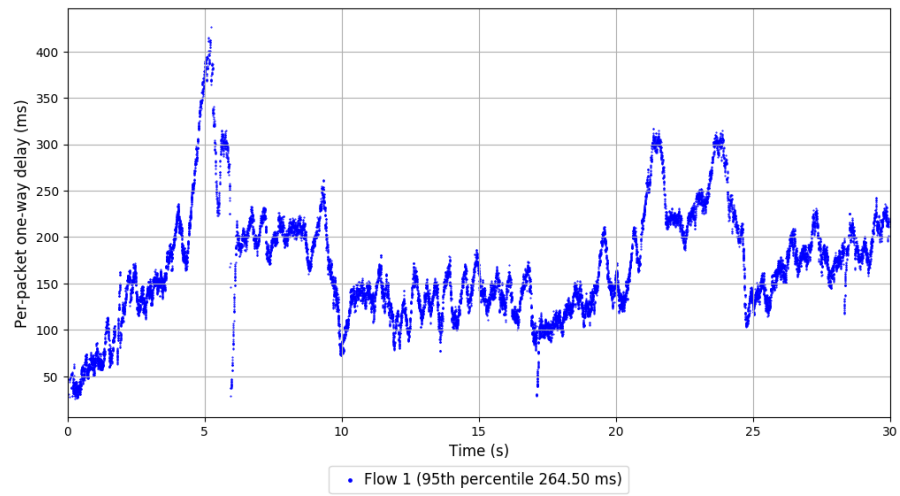
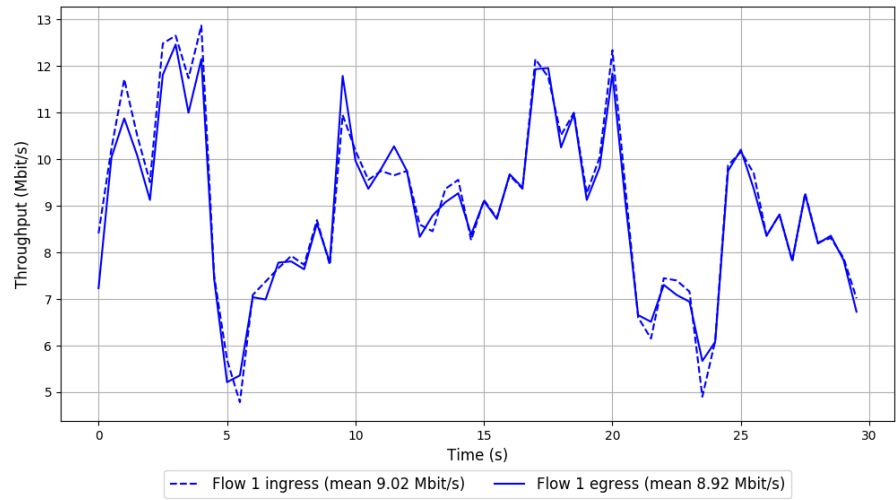


Run 2: Statistics of TCP Cubic

Start at: 2018-03-26 20:10:51
End at: 2018-03-26 20:11:21
Local clock offset: -2.424 ms
Remote clock offset: -5.492 ms

Below is generated by plot.py at 2018-03-26 22:06:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.92 Mbit/s
95th percentile per-packet one-way delay: 264.496 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 8.92 Mbit/s
95th percentile per-packet one-way delay: 264.496 ms
Loss rate: 1.27%

Run 2: Report of TCP Cubic — Data Link

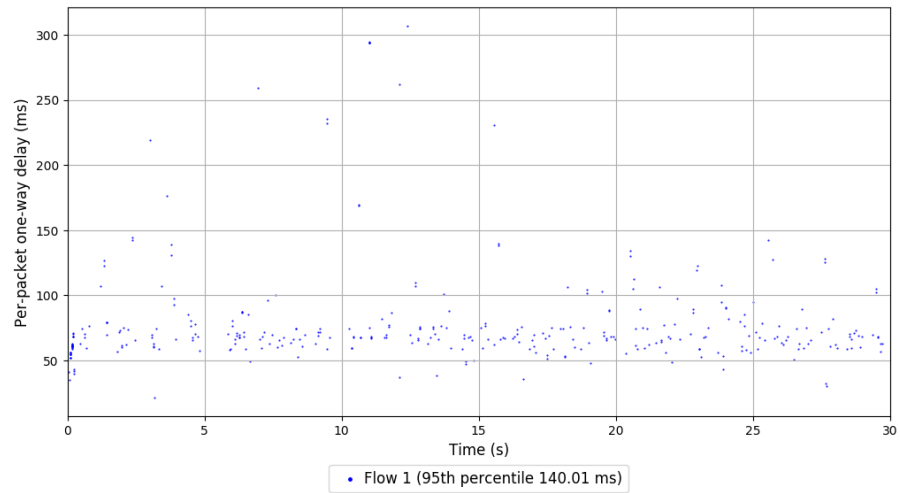
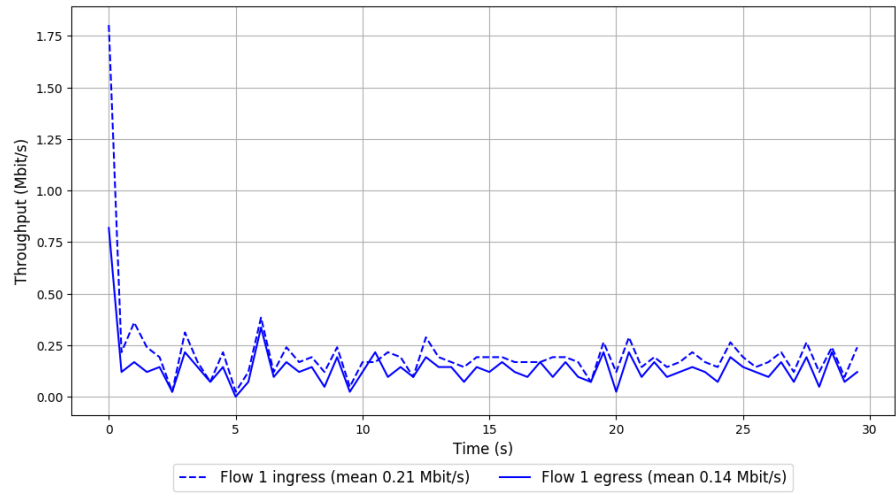


Run 3: Statistics of TCP Cubic

Start at: 2018-03-26 20:34:21
End at: 2018-03-26 20:34:51
Local clock offset: -2.451 ms
Remote clock offset: -4.859 ms

Below is generated by plot.py at 2018-03-26 22:06:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 140.015 ms
Loss rate: 33.20%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 140.015 ms
Loss rate: 33.20%

Run 3: Report of TCP Cubic — Data Link

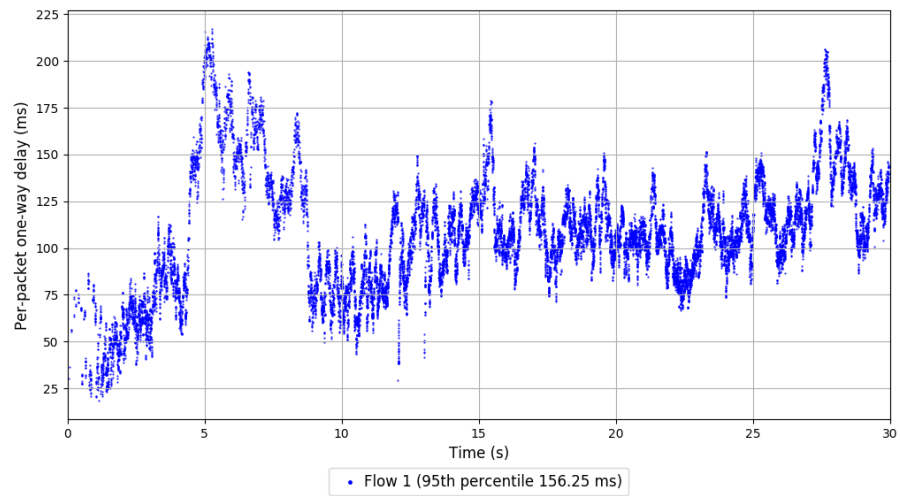
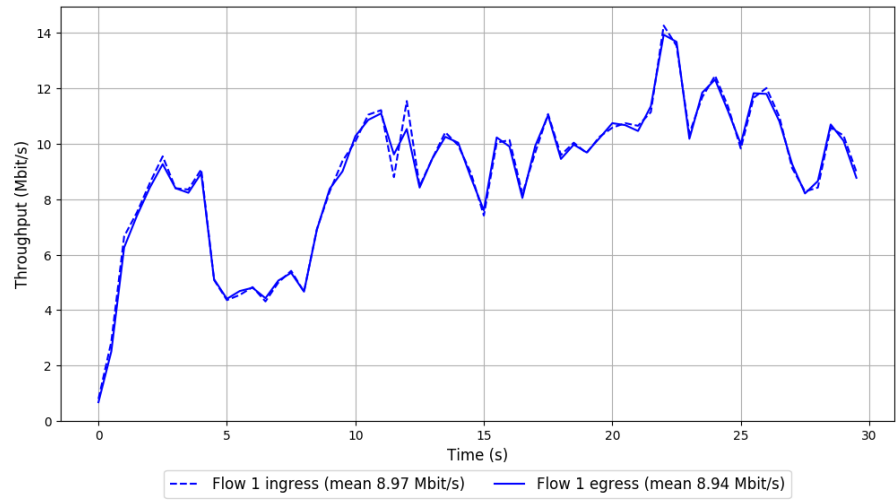


Run 1: Statistics of LEDBAT

Start at: 2018-03-26 20:05:36
End at: 2018-03-26 20:06:06
Local clock offset: -1.677 ms
Remote clock offset: -5.478 ms

Below is generated by plot.py at 2018-03-26 22:06:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.94 Mbit/s
95th percentile per-packet one-way delay: 156.251 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 8.94 Mbit/s
95th percentile per-packet one-way delay: 156.251 ms
Loss rate: 0.51%

Run 1: Report of LEDBAT — Data Link

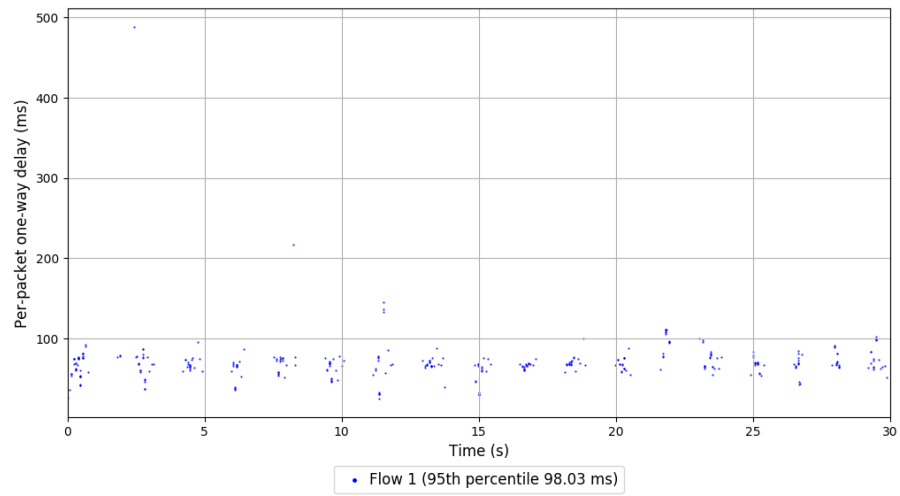
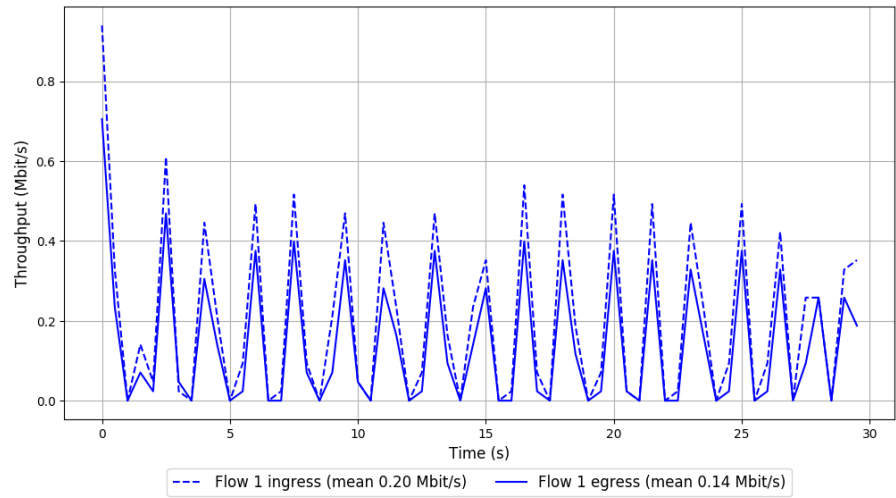


Run 2: Statistics of LEDBAT

Start at: 2018-03-26 20:29:07
End at: 2018-03-26 20:29:37
Local clock offset: -2.0 ms
Remote clock offset: -5.375 ms

Below is generated by plot.py at 2018-03-26 22:06:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 98.035 ms
Loss rate: 30.62%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 98.035 ms
Loss rate: 30.62%

Run 2: Report of LEDBAT — Data Link

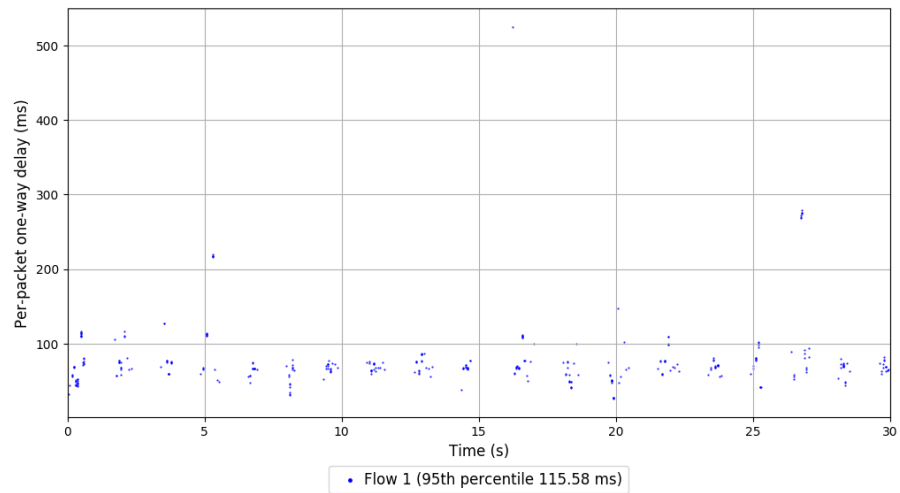
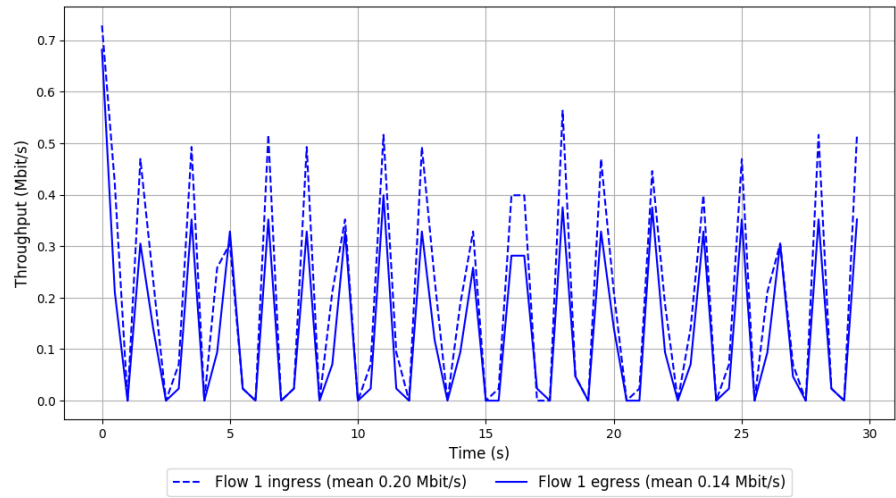


Run 3: Statistics of LEDBAT

Start at: 2018-03-26 20:52:37
End at: 2018-03-26 20:53:07
Local clock offset: -1.367 ms
Remote clock offset: -4.149 ms

Below is generated by plot.py at 2018-03-26 22:06:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 115.581 ms
Loss rate: 30.07%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 115.581 ms
Loss rate: 30.07%

Run 3: Report of LEDBAT — Data Link

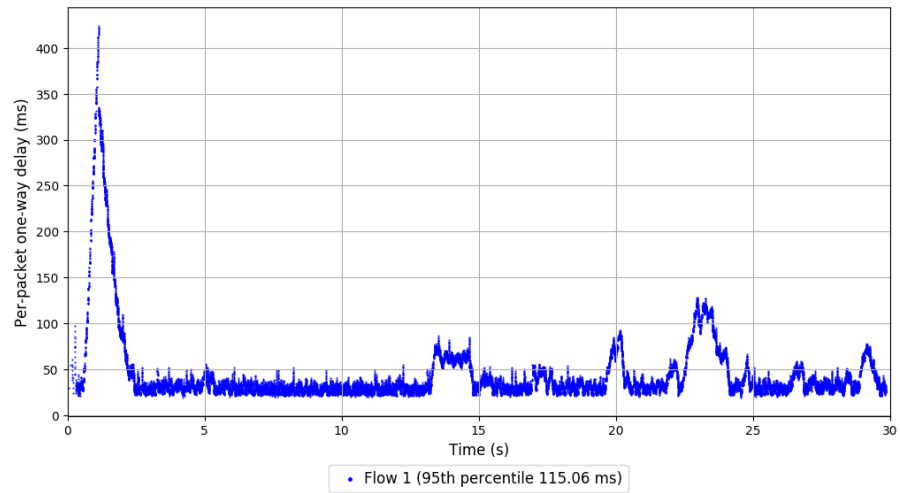
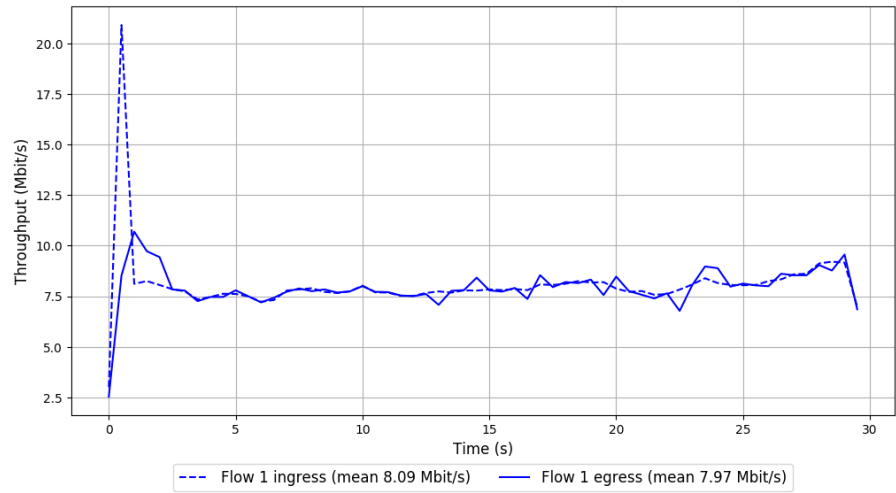


Run 1: Statistics of PCC

Start at: 2018-03-26 20:04:18
End at: 2018-03-26 20:04:48
Local clock offset: -1.427 ms
Remote clock offset: -5.458 ms

Below is generated by plot.py at 2018-03-26 22:06:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 115.063 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 115.063 ms
Loss rate: 1.62%

Run 1: Report of PCC — Data Link

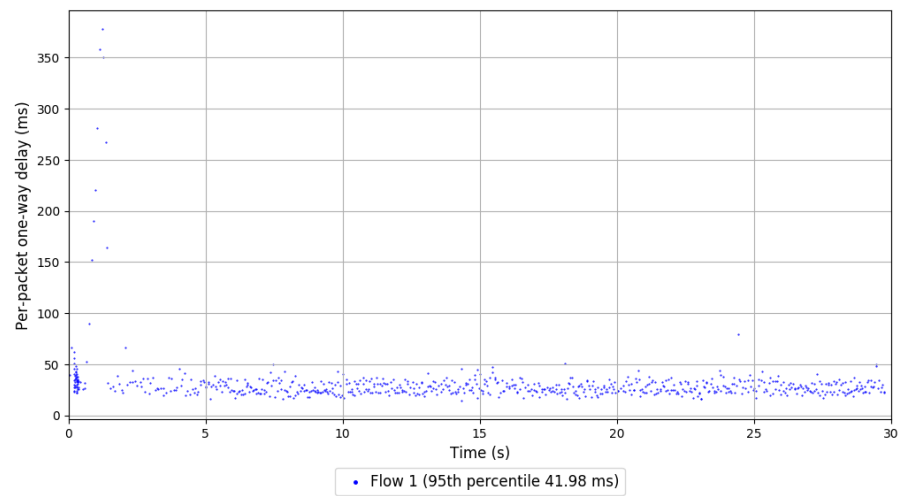
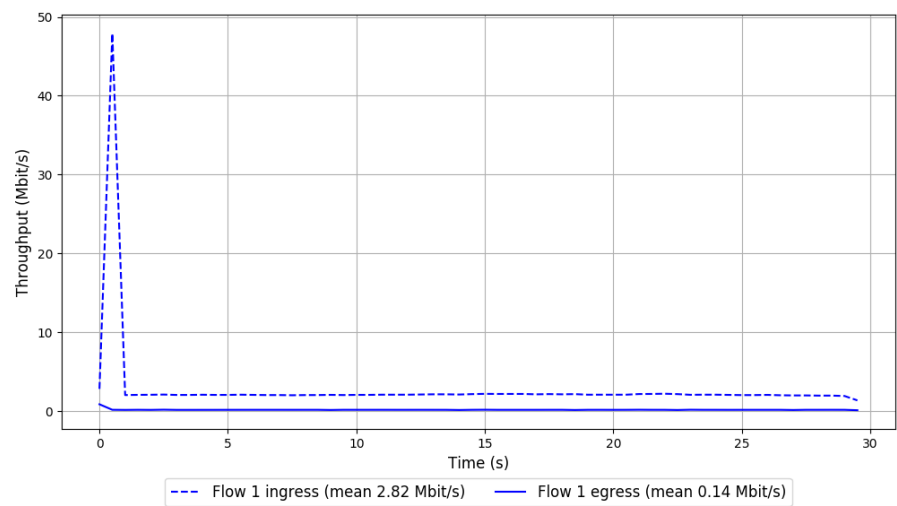


Run 2: Statistics of PCC

Start at: 2018-03-26 20:27:49
End at: 2018-03-26 20:28:19
Local clock offset: -1.927 ms
Remote clock offset: -5.535 ms

Below is generated by plot.py at 2018-03-26 22:06:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 41.985 ms
Loss rate: 95.05%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 41.985 ms
Loss rate: 95.05%

Run 2: Report of PCC — Data Link



Run 3: Statistics of PCC

Start at: 2018-03-26 20:51:19

End at: 2018-03-26 20:51:49

Local clock offset: -1.955 ms

Remote clock offset: -4.15 ms

Below is generated by plot.py at 2018-03-26 22:06:38

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 46.178 ms

Loss rate: 93.69%

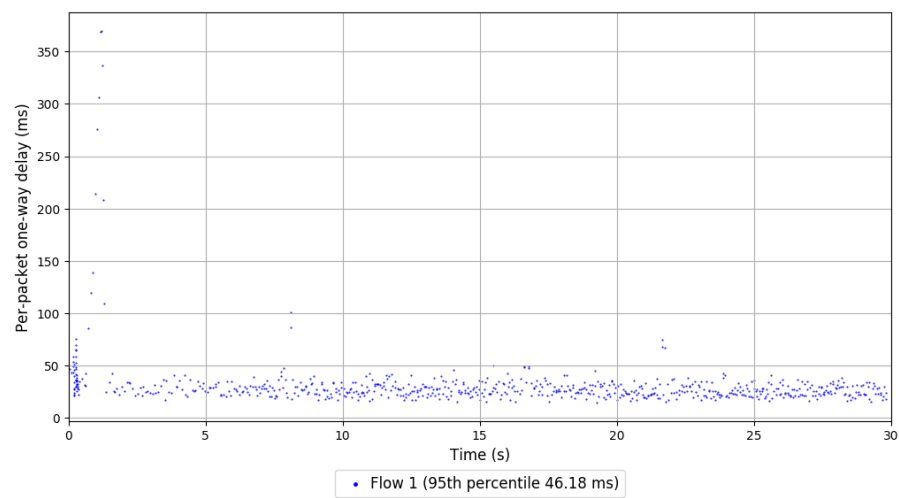
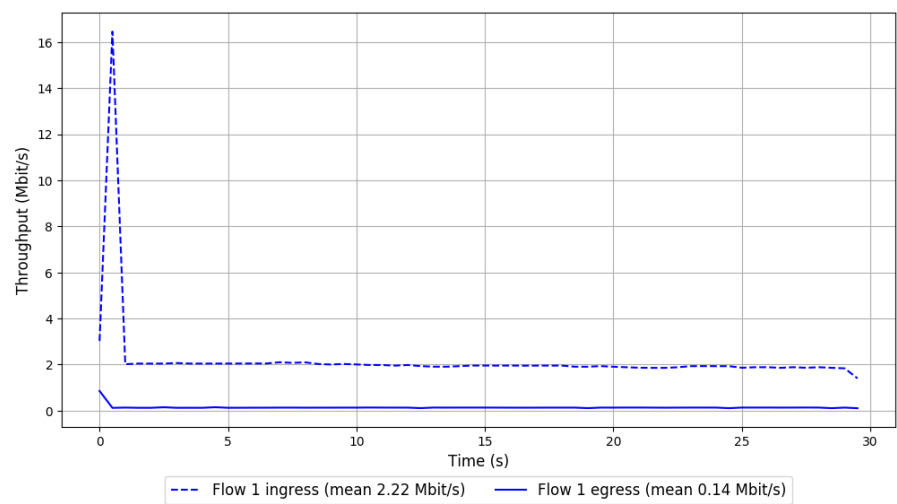
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 46.178 ms

Loss rate: 93.69%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-03-26 19:59:03

End at: 2018-03-26 19:59:33

Local clock offset: -1.244 ms

Remote clock offset: -5.232 ms

Below is generated by plot.py at 2018-03-26 22:06:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.87 Mbit/s

95th percentile per-packet one-way delay: 369.515 ms

Loss rate: 2.25%

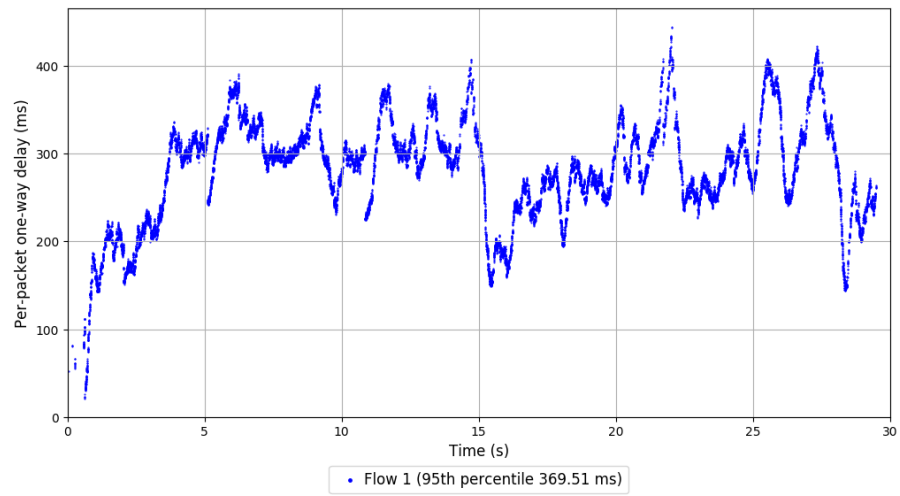
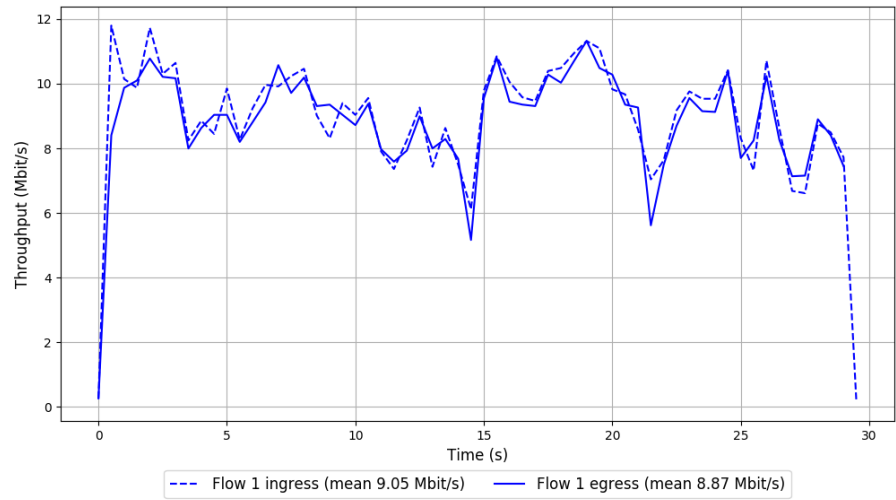
-- Flow 1:

Average throughput: 8.87 Mbit/s

95th percentile per-packet one-way delay: 369.515 ms

Loss rate: 2.25%

Run 1: Report of QUIC Cubic — Data Link

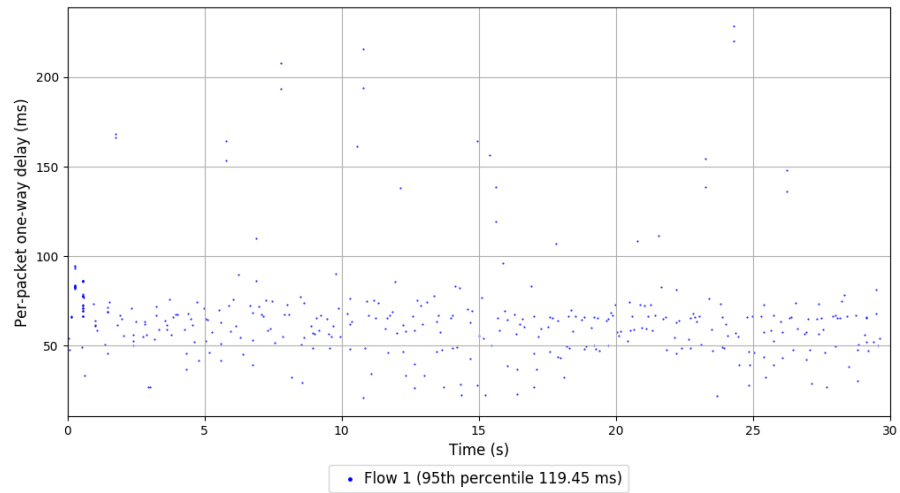
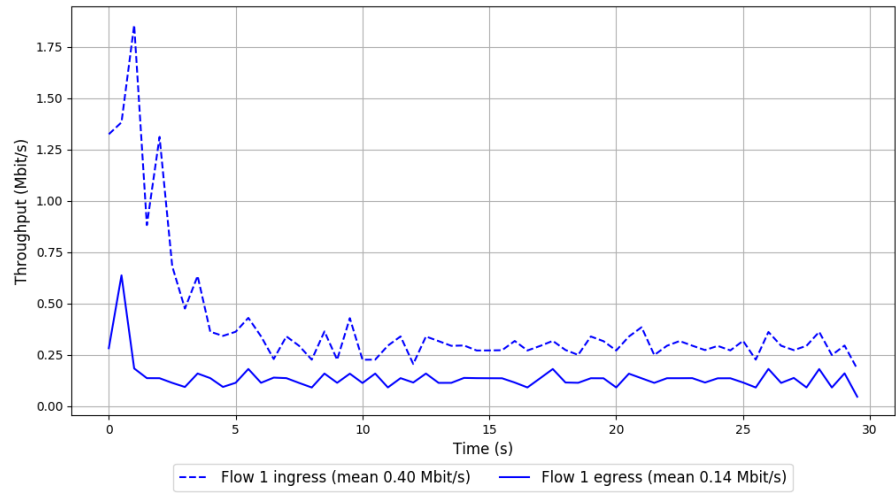


Run 2: Statistics of QUIC Cubic

Start at: 2018-03-26 20:22:37
End at: 2018-03-26 20:23:07
Local clock offset: -1.692 ms
Remote clock offset: -5.581 ms

Below is generated by plot.py at 2018-03-26 22:06:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 119.449 ms
Loss rate: 65.37%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 119.449 ms
Loss rate: 65.37%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-03-26 20:46:06

End at: 2018-03-26 20:46:36

Local clock offset: -3.72 ms

Remote clock offset: -4.352 ms

Below is generated by plot.py at 2018-03-26 22:06:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 86.093 ms

Loss rate: 65.81%

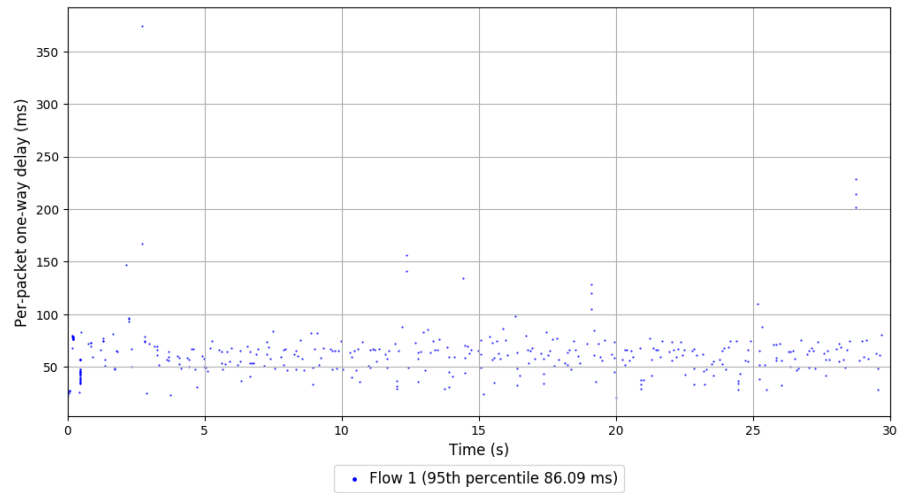
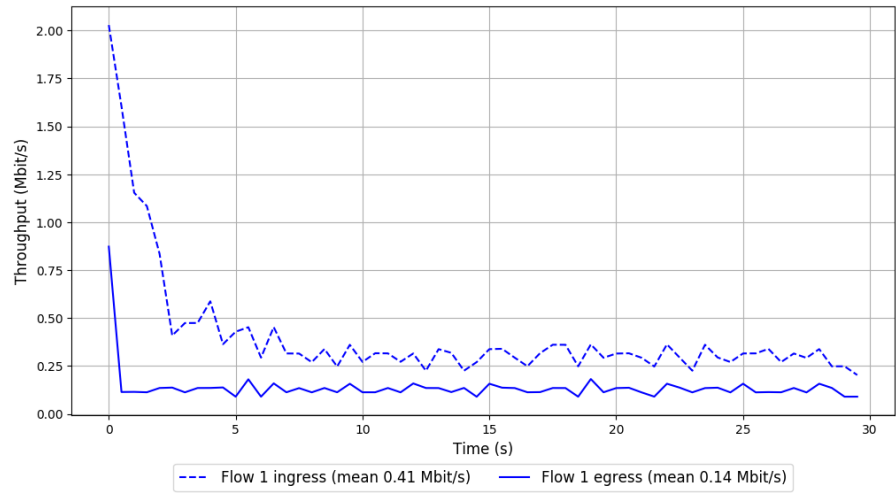
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 86.093 ms

Loss rate: 65.81%

Run 3: Report of QUIC Cubic — Data Link

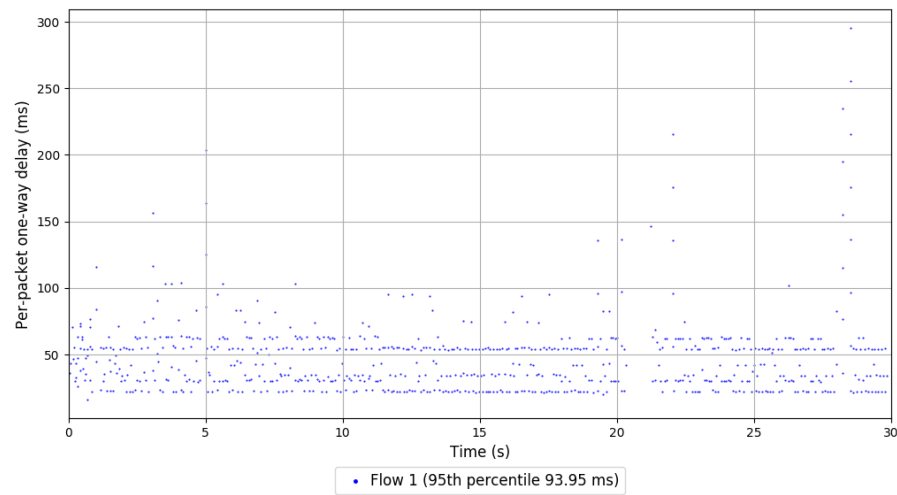
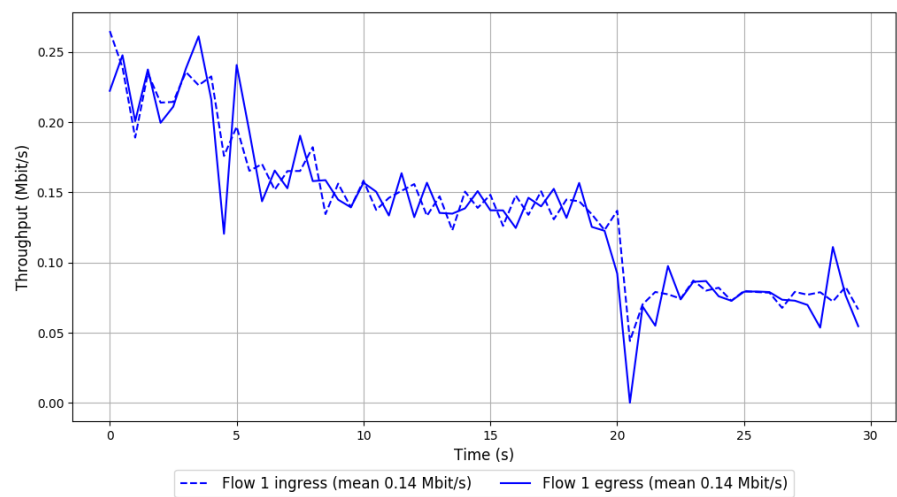


Run 1: Statistics of SCReAM

Start at: 2018-03-26 20:08:14
End at: 2018-03-26 20:08:44
Local clock offset: -1.93 ms
Remote clock offset: -5.457 ms

Below is generated by plot.py at 2018-03-26 22:06:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 93.955 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 93.955 ms
Loss rate: 1.41%

Run 1: Report of SReAM — Data Link

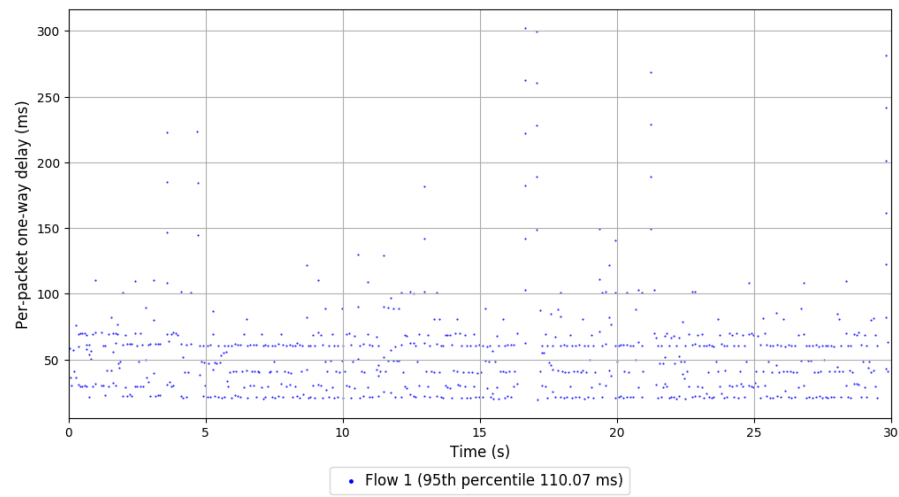
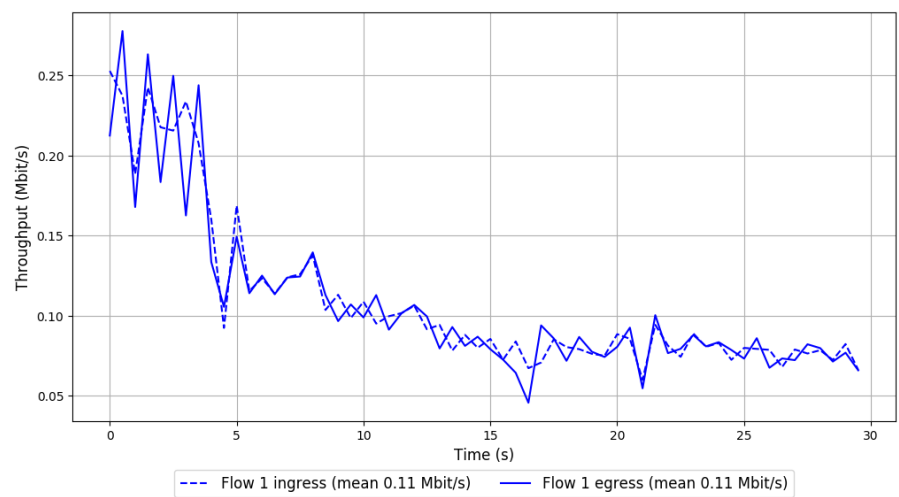


Run 2: Statistics of SCReAM

Start at: 2018-03-26 20:31:44
End at: 2018-03-26 20:32:14
Local clock offset: -2.125 ms
Remote clock offset: -5.021 ms

Below is generated by plot.py at 2018-03-26 22:06:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 110.066 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 110.066 ms
Loss rate: 1.35%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-03-26 20:55:14

End at: 2018-03-26 20:55:44

Local clock offset: -0.621 ms

Remote clock offset: -3.99 ms

Below is generated by plot.py at 2018-03-26 22:06:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 106.585 ms

Loss rate: 1.47%

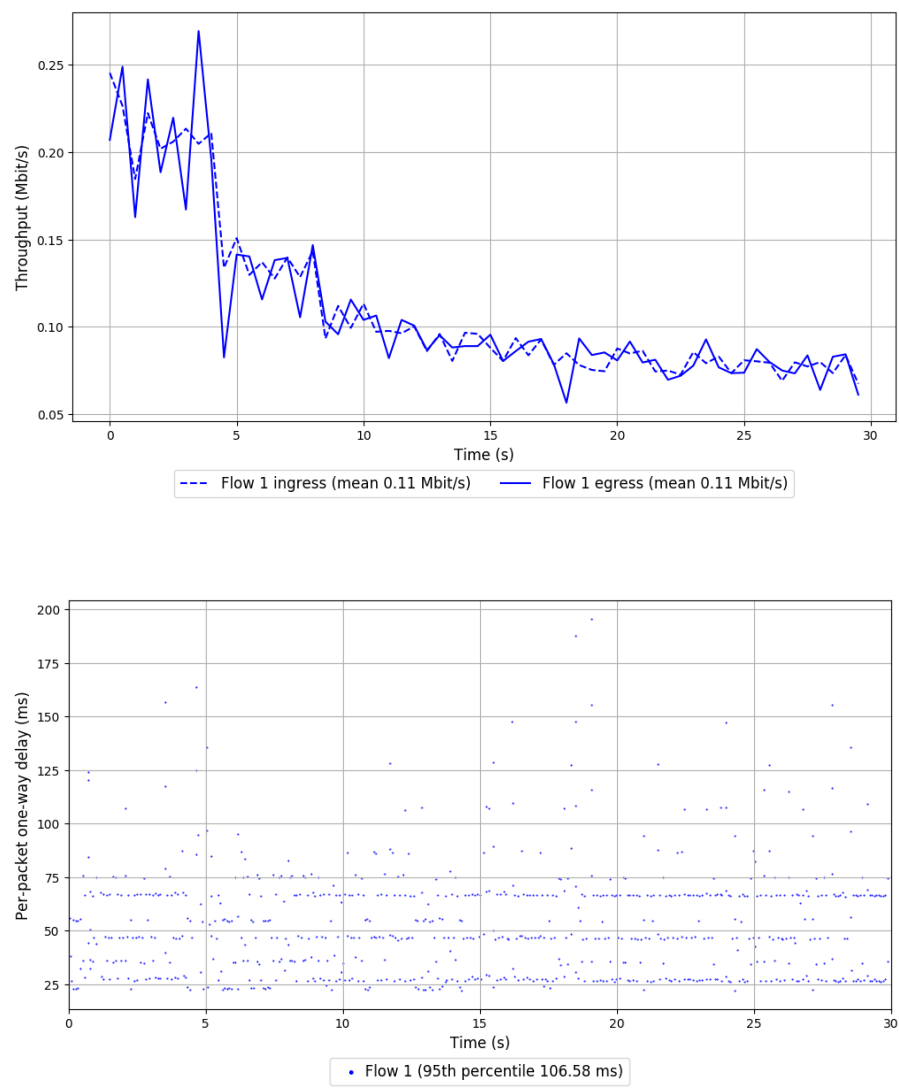
-- Flow 1:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 106.585 ms

Loss rate: 1.47%

Run 3: Report of SReAM — Data Link

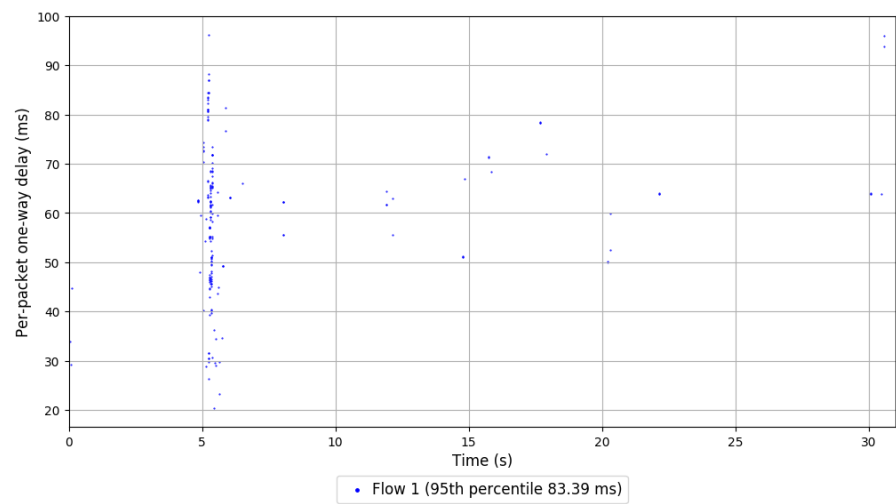
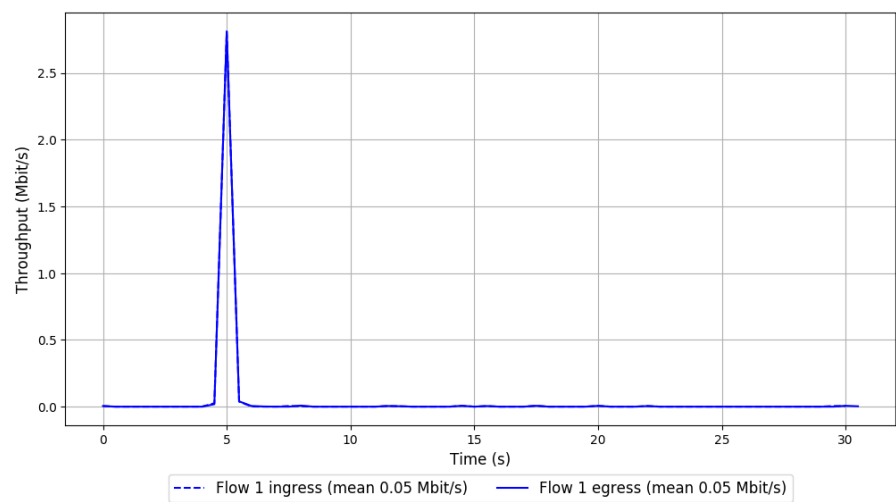


Run 1: Statistics of WebRTC media

Start at: 2018-03-26 20:01:41
End at: 2018-03-26 20:02:11
Local clock offset: -1.221 ms
Remote clock offset: -5.337 ms

Below is generated by plot.py at 2018-03-26 22:06:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 83.386 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 83.386 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link

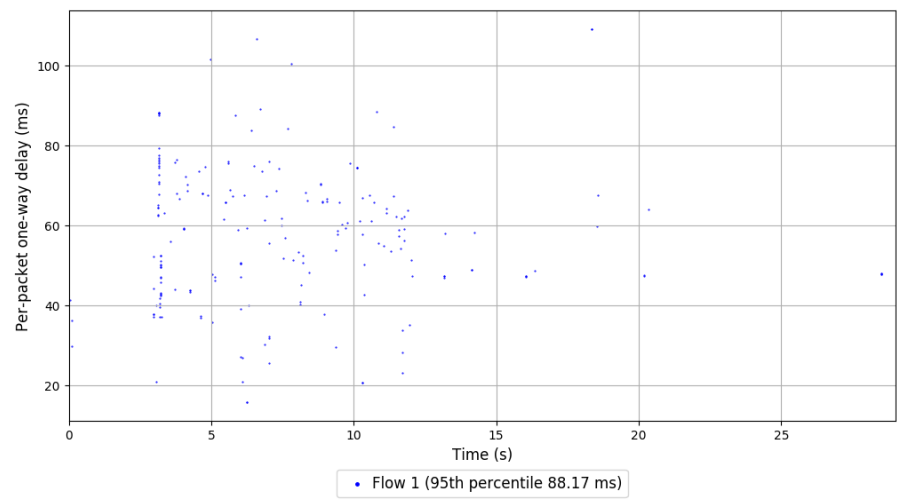
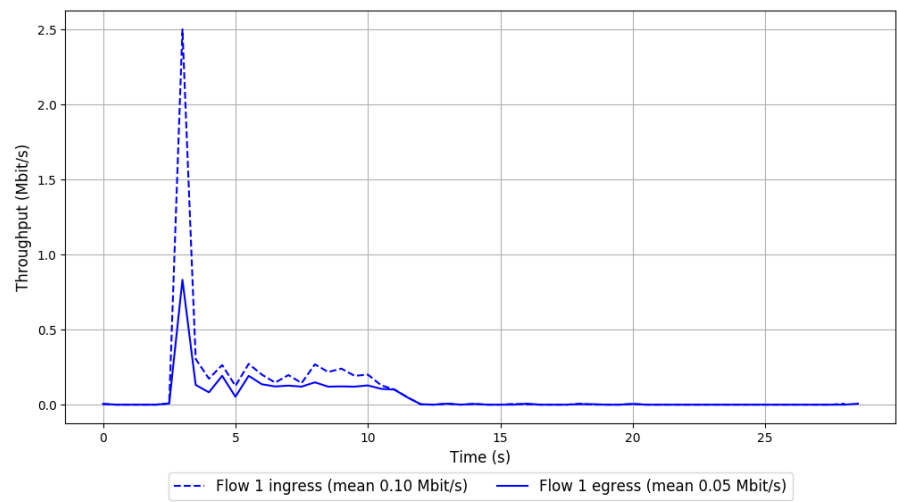


Run 2: Statistics of WebRTC media

Start at: 2018-03-26 20:25:13
End at: 2018-03-26 20:25:43
Local clock offset: -1.823 ms
Remote clock offset: -5.616 ms

Below is generated by plot.py at 2018-03-26 22:06:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 88.169 ms
Loss rate: 49.26%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 88.169 ms
Loss rate: 49.26%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-03-26 20:48:43

End at: 2018-03-26 20:49:13

Local clock offset: -3.004 ms

Remote clock offset: -4.27 ms

Below is generated by plot.py at 2018-03-26 22:06:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 84.497 ms

Loss rate: 48.10%

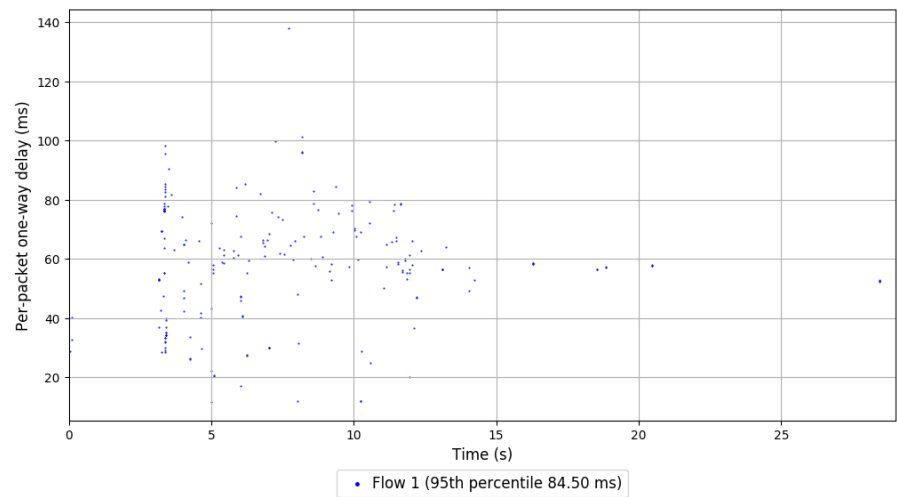
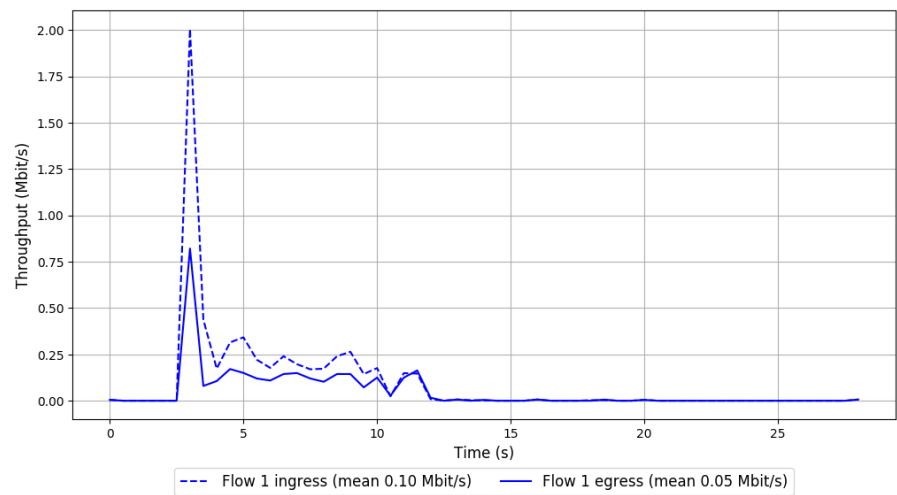
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 84.497 ms

Loss rate: 48.10%

Run 3: Report of WebRTC media — Data Link

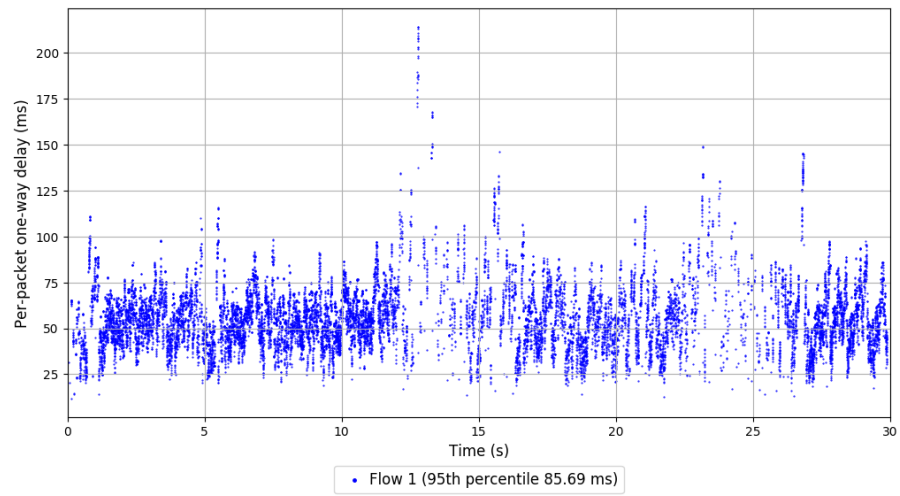
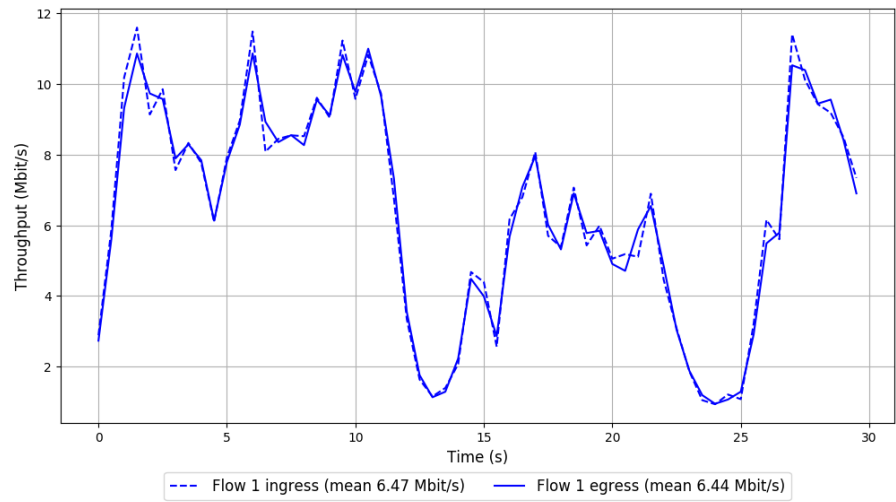


Run 1: Statistics of Sprout

Start at: 2018-03-26 20:02:59
End at: 2018-03-26 20:03:29
Local clock offset: -1.328 ms
Remote clock offset: -5.323 ms

Below is generated by plot.py at 2018-03-26 22:06:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.44 Mbit/s
95th percentile per-packet one-way delay: 85.694 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 6.44 Mbit/s
95th percentile per-packet one-way delay: 85.694 ms
Loss rate: 0.59%

Run 1: Report of Sprout — Data Link

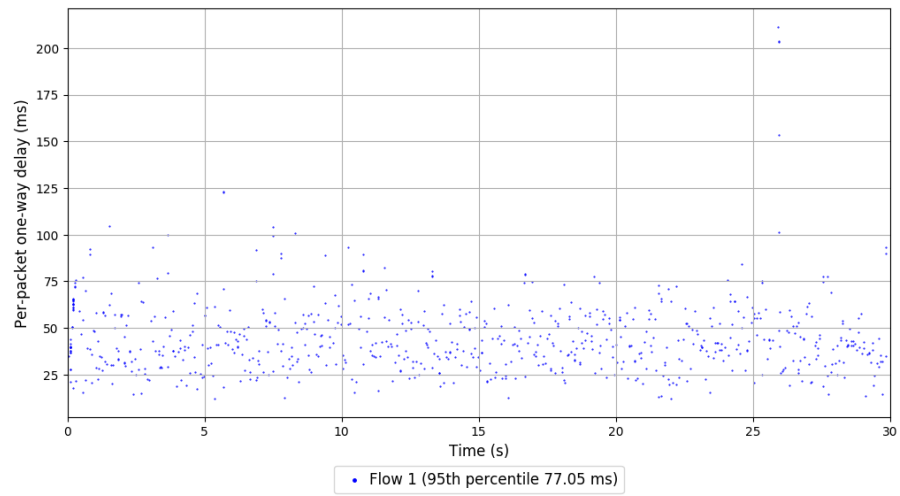
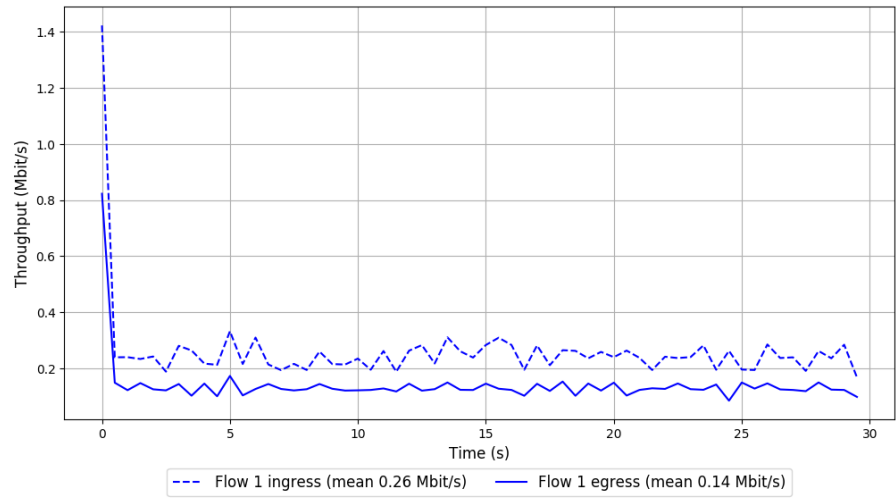


Run 2: Statistics of Sprout

Start at: 2018-03-26 20:26:31
End at: 2018-03-26 20:27:01
Local clock offset: -1.788 ms
Remote clock offset: -5.618 ms

Below is generated by plot.py at 2018-03-26 22:06:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 77.052 ms
Loss rate: 46.35%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 77.052 ms
Loss rate: 46.35%

Run 2: Report of Sprout — Data Link

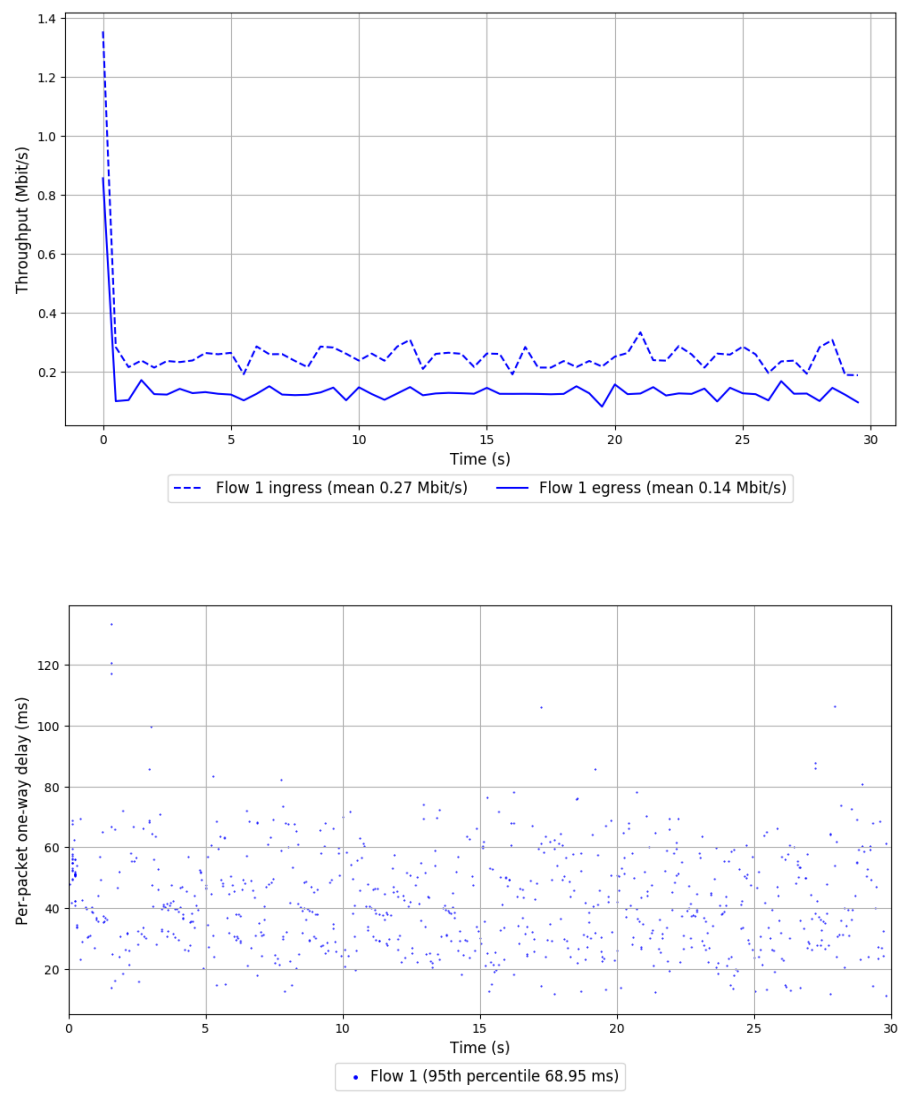


Run 3: Statistics of Sprout

Start at: 2018-03-26 20:50:01
End at: 2018-03-26 20:50:31
Local clock offset: -2.427 ms
Remote clock offset: -4.235 ms

Below is generated by plot.py at 2018-03-26 22:06:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 68.946 ms
Loss rate: 47.62%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 68.946 ms
Loss rate: 47.62%

Run 3: Report of Sprout — Data Link

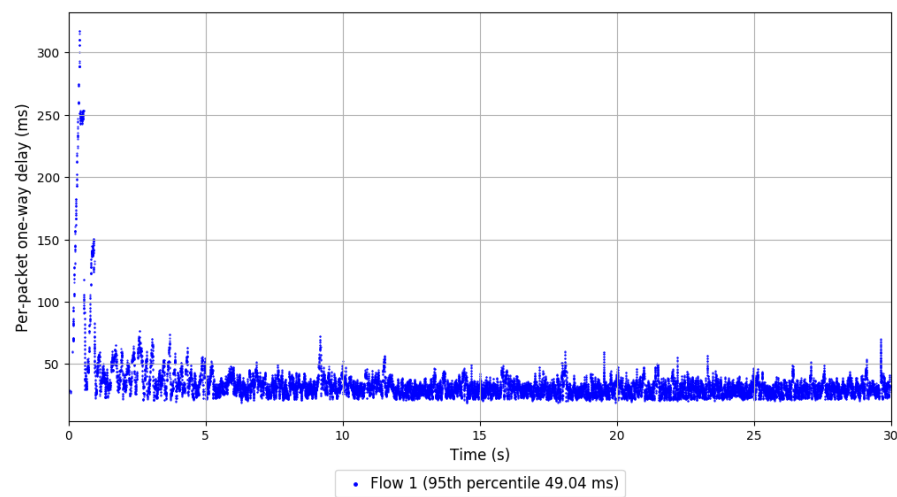
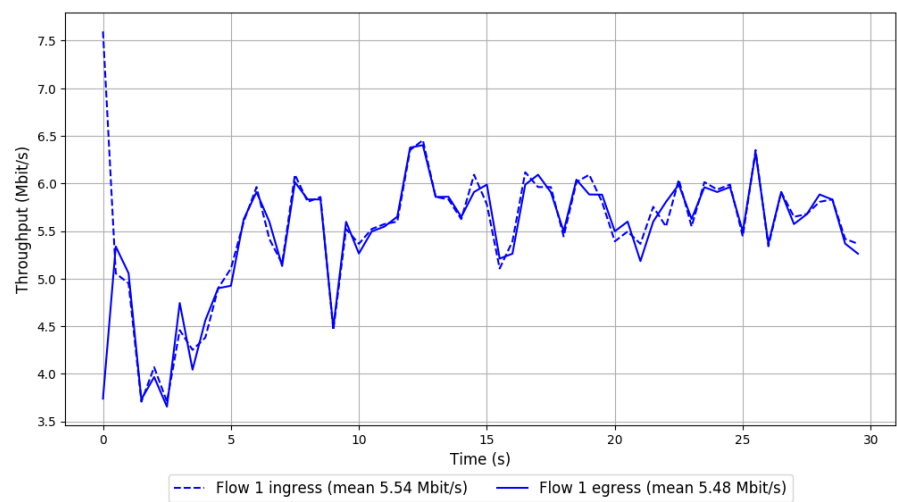


Run 1: Statistics of TaoVA-100x

Start at: 2018-03-26 19:48:36
End at: 2018-03-26 19:49:06
Local clock offset: -0.495 ms
Remote clock offset: -4.801 ms

Below is generated by plot.py at 2018-03-26 22:06:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.48 Mbit/s
95th percentile per-packet one-way delay: 49.037 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 5.48 Mbit/s
95th percentile per-packet one-way delay: 49.037 ms
Loss rate: 1.08%

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

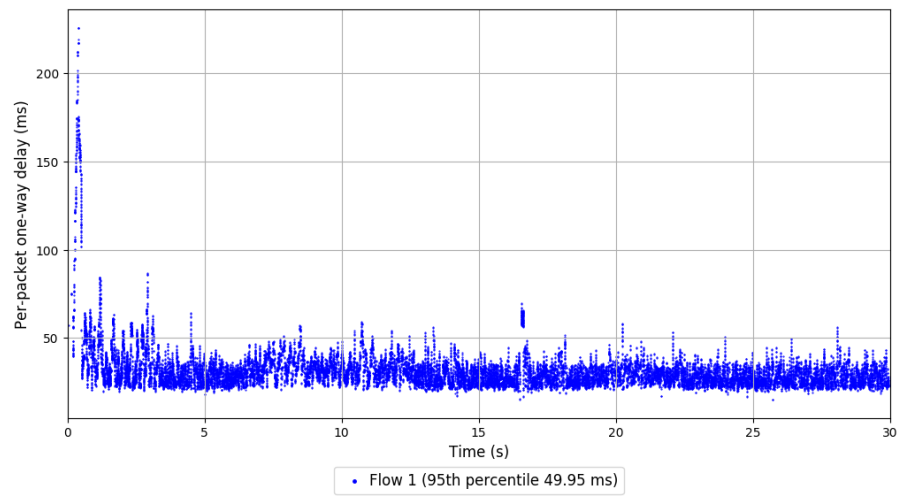
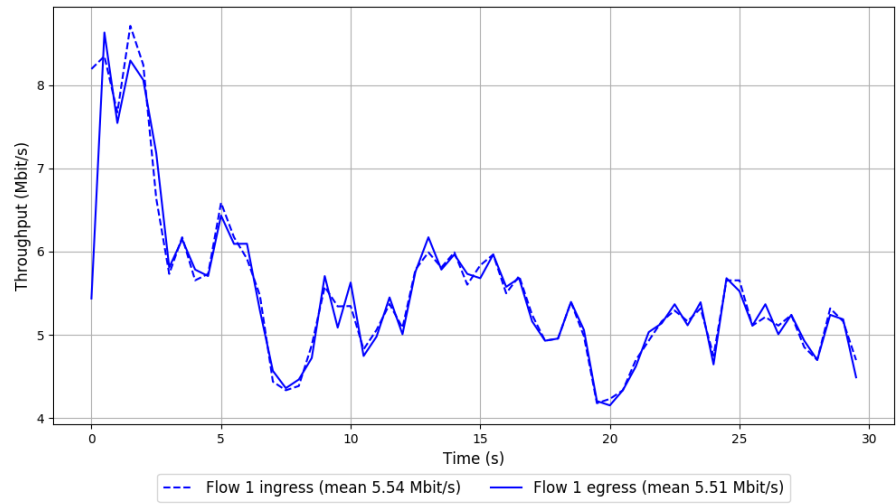


Run 2: Statistics of TaoVA-100x

Start at: 2018-03-26 20:12:10
End at: 2018-03-26 20:12:40
Local clock offset: -2.641 ms
Remote clock offset: -5.531 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.51 Mbit/s
95th percentile per-packet one-way delay: 49.946 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 5.51 Mbit/s
95th percentile per-packet one-way delay: 49.946 ms
Loss rate: 0.85%

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

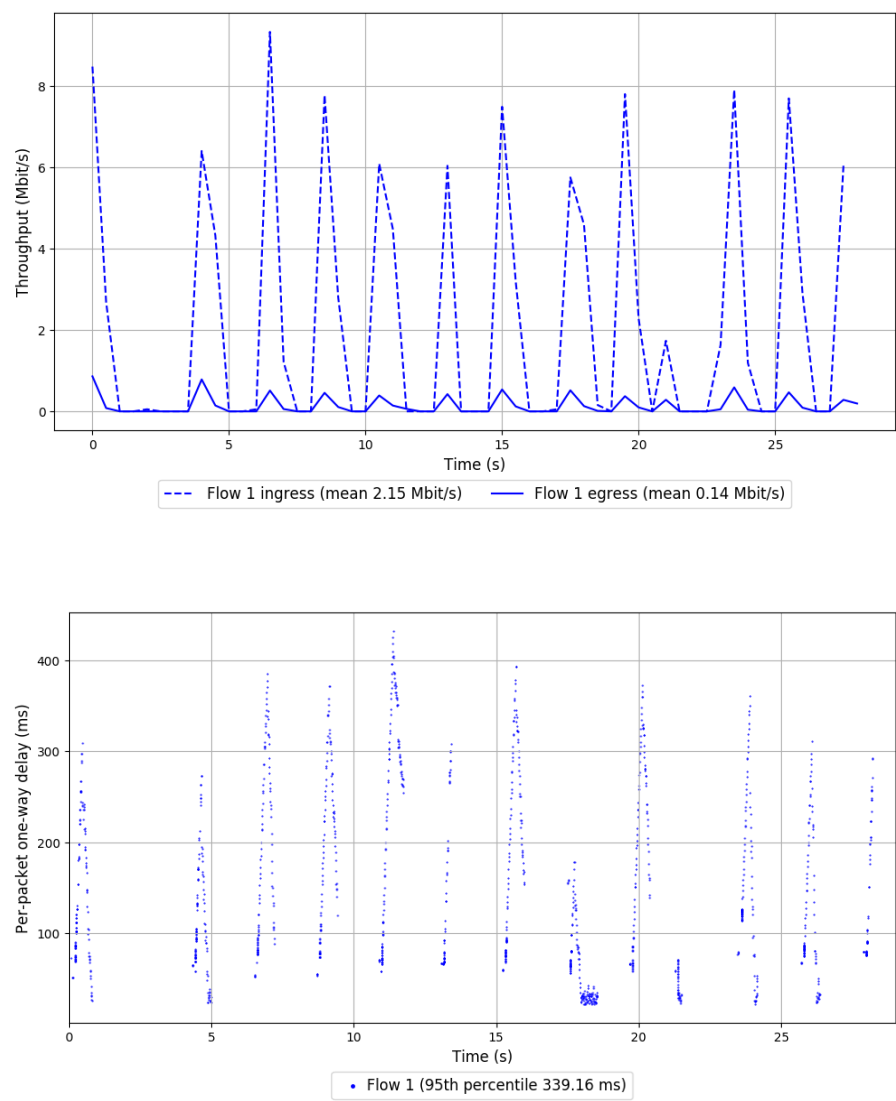


Run 3: Statistics of TaoVA-100x

Start at: 2018-03-26 20:35:39
End at: 2018-03-26 20:36:09
Local clock offset: -2.489 ms
Remote clock offset: -4.741 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 339.156 ms
Loss rate: 93.50%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 339.156 ms
Loss rate: 93.50%

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

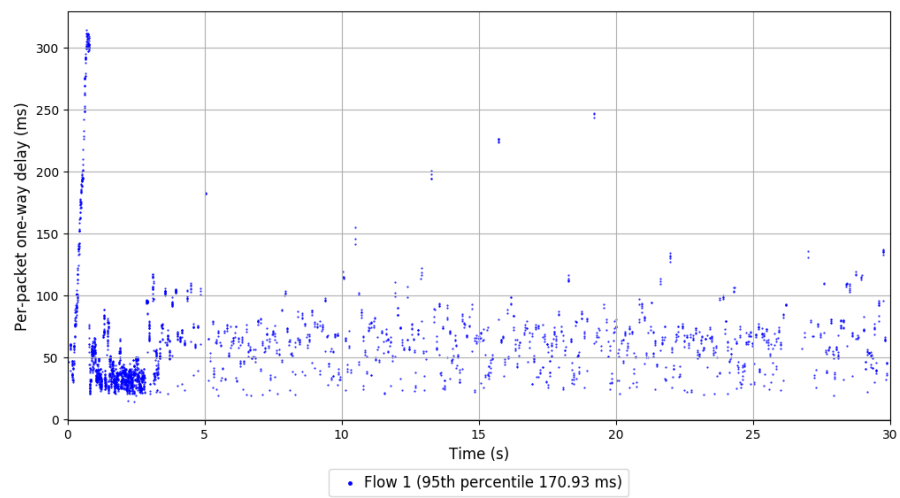
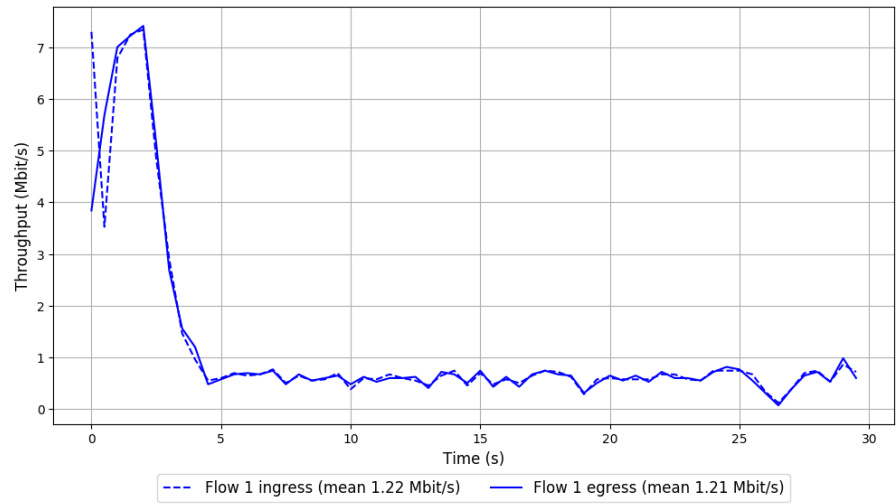


Run 1: Statistics of TCP Vegas

Start at: 2018-03-26 19:56:27
End at: 2018-03-26 19:56:57
Local clock offset: -1.674 ms
Remote clock offset: -5.001 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 170.929 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 170.929 ms
Loss rate: 1.22%

Run 1: Report of TCP Vegas — Data Link

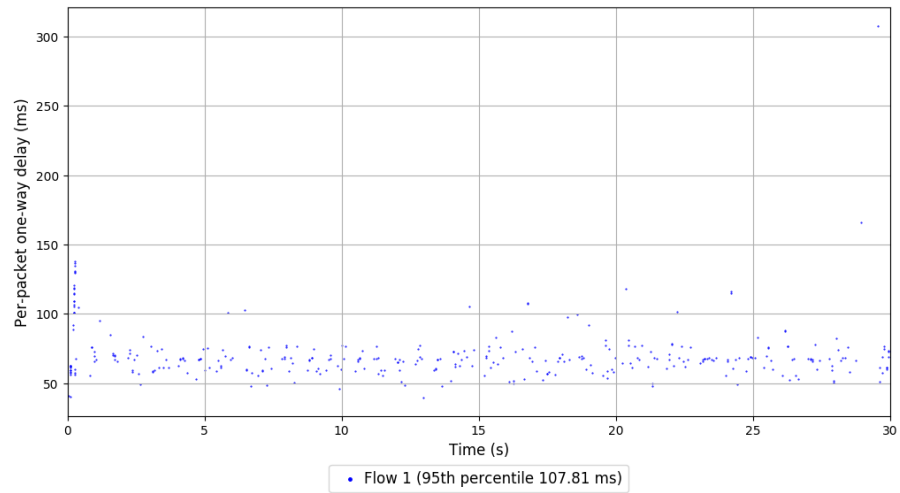
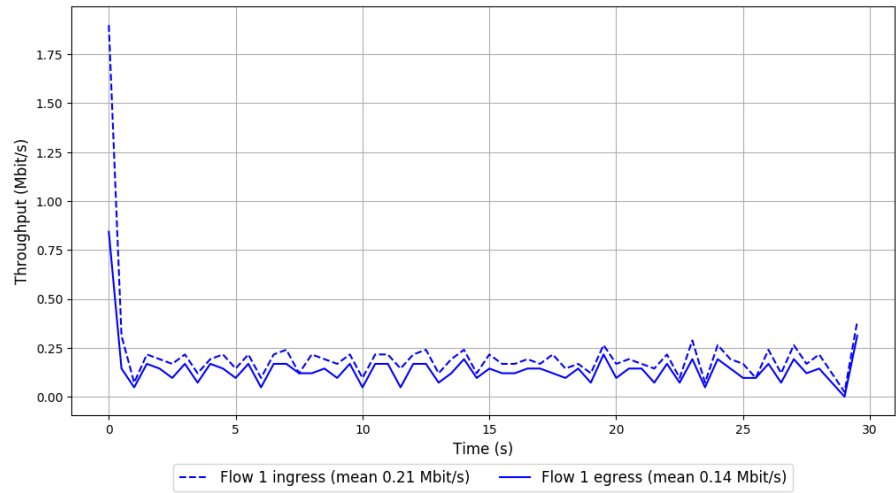


Run 2: Statistics of TCP Vegas

Start at: 2018-03-26 20:20:01
End at: 2018-03-26 20:20:31
Local clock offset: -1.776 ms
Remote clock offset: -5.558 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 107.810 ms
Loss rate: 33.58%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 107.810 ms
Loss rate: 33.58%

Run 2: Report of TCP Vegas — Data Link

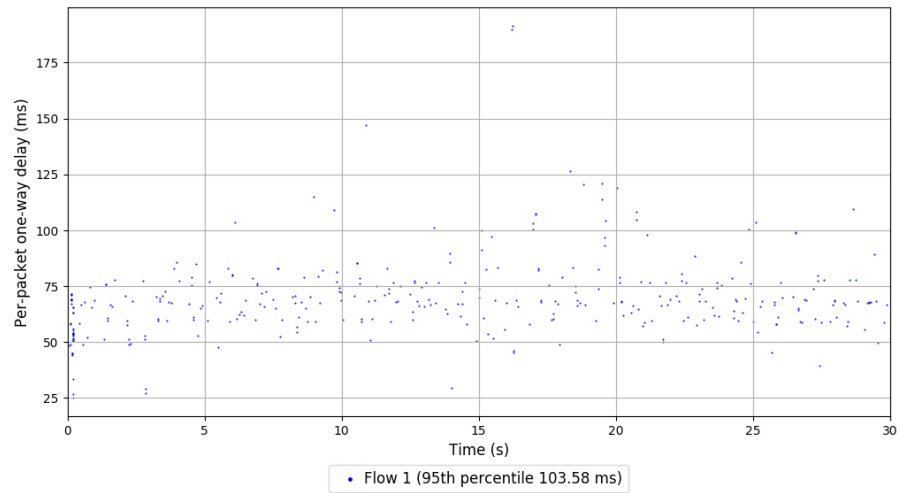
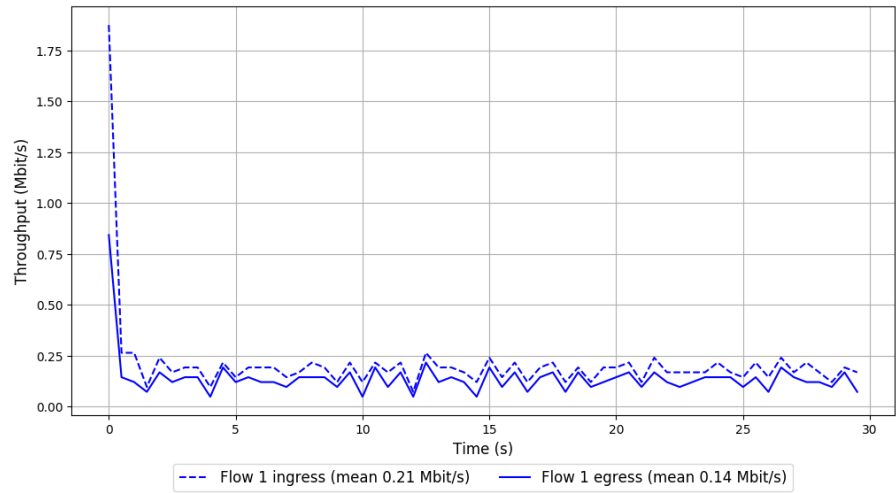


Run 3: Statistics of TCP Vegas

Start at: 2018-03-26 20:43:29
End at: 2018-03-26 20:43:59
Local clock offset: -3.284 ms
Remote clock offset: -4.355 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 103.585 ms
Loss rate: 32.94%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 103.585 ms
Loss rate: 32.94%

Run 3: Report of TCP Vegas — Data Link

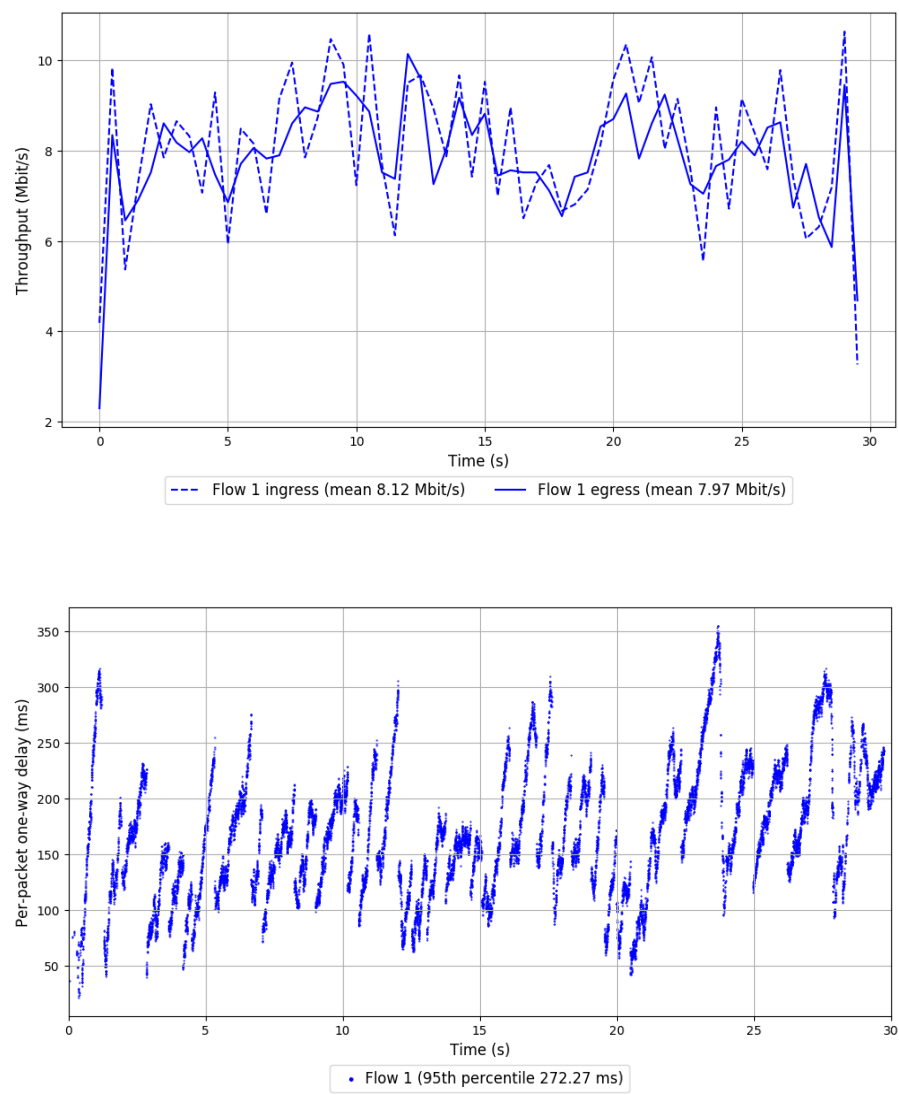


Run 1: Statistics of Verus

Start at: 2018-03-26 20:00:22
End at: 2018-03-26 20:00:52
Local clock offset: -1.306 ms
Remote clock offset: -5.302 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 272.268 ms
Loss rate: 2.10%
-- Flow 1:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 272.268 ms
Loss rate: 2.10%

Run 1: Report of Verus — Data Link

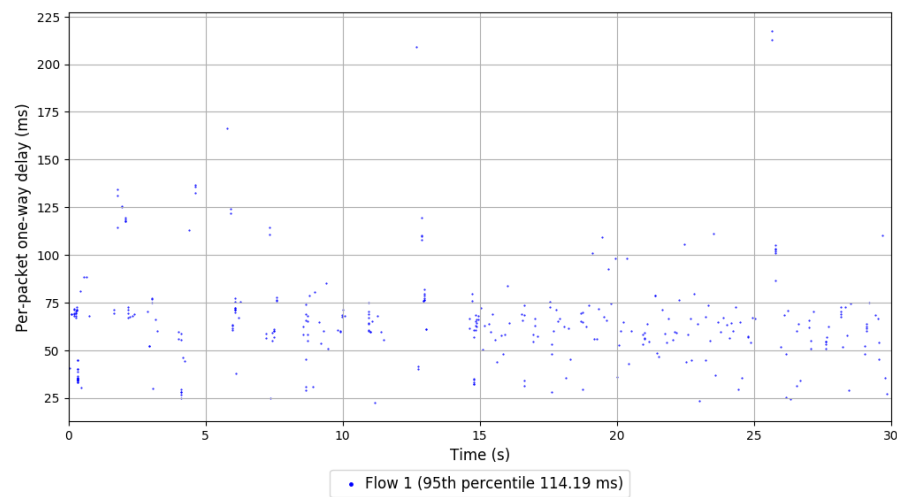
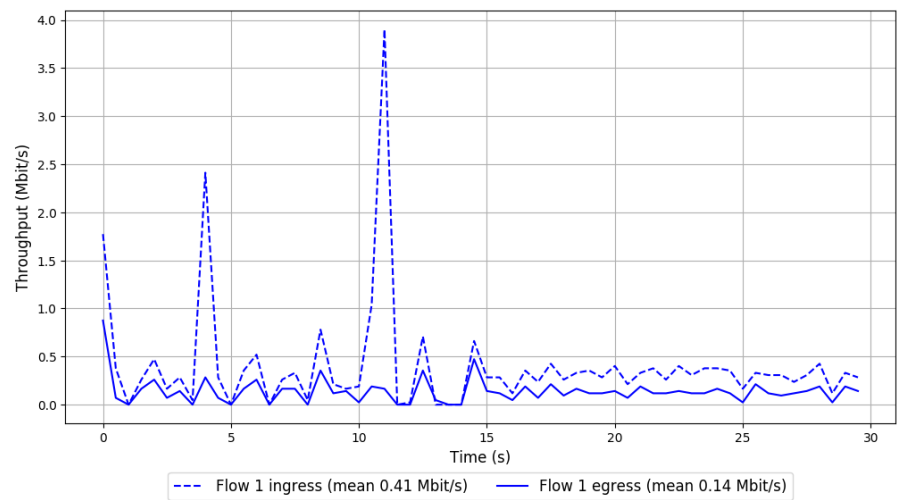


Run 2: Statistics of Verus

Start at: 2018-03-26 20:23:55
End at: 2018-03-26 20:24:25
Local clock offset: -1.784 ms
Remote clock offset: -5.531 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 114.190 ms
Loss rate: 65.63%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 114.190 ms
Loss rate: 65.63%

Run 2: Report of Verus — Data Link

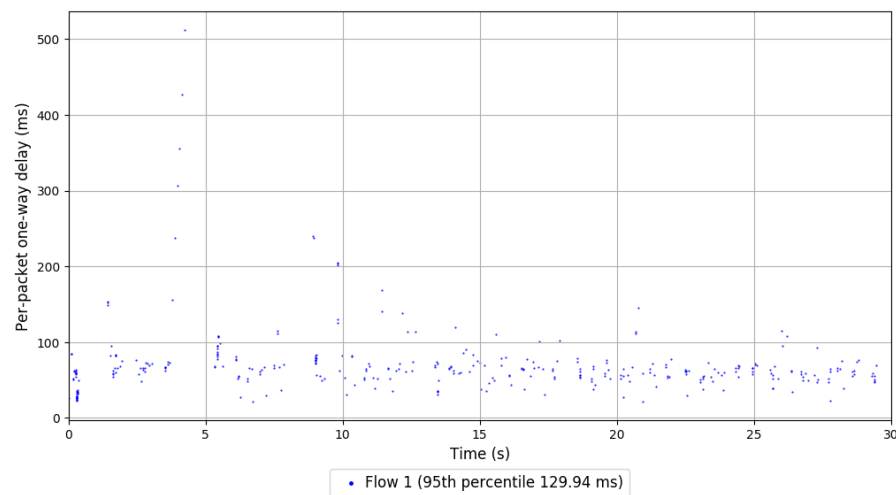
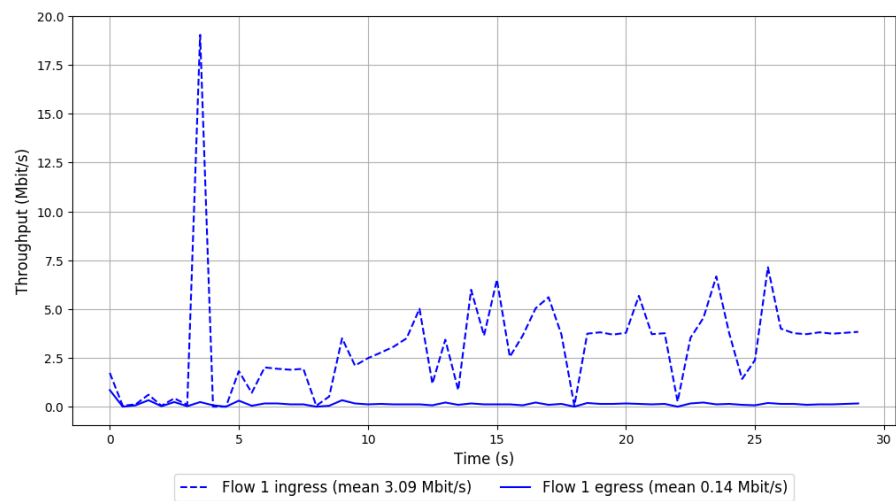


Run 3: Statistics of Verus

Start at: 2018-03-26 20:47:24
End at: 2018-03-26 20:47:55
Local clock offset: -3.748 ms
Remote clock offset: -4.219 ms

Below is generated by plot.py at 2018-03-26 22:06:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 129.938 ms
Loss rate: 95.44%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 129.938 ms
Loss rate: 95.44%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

Start at: 2018-03-26 19:45:58

End at: 2018-03-26 19:46:28

Local clock offset: -0.216 ms

Remote clock offset: -4.83 ms

Below is generated by plot.py at 2018-03-26 22:06:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 4.95 Mbit/s

95th percentile per-packet one-way delay: 153.044 ms

Loss rate: 0.34%

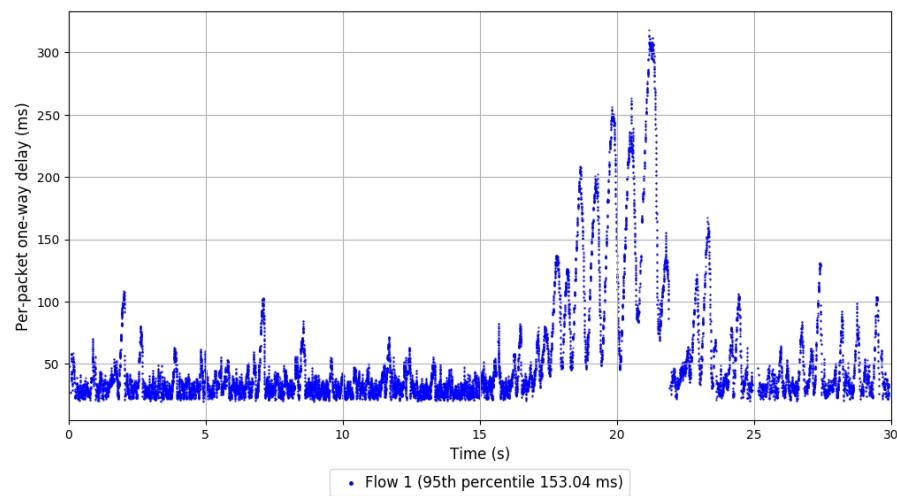
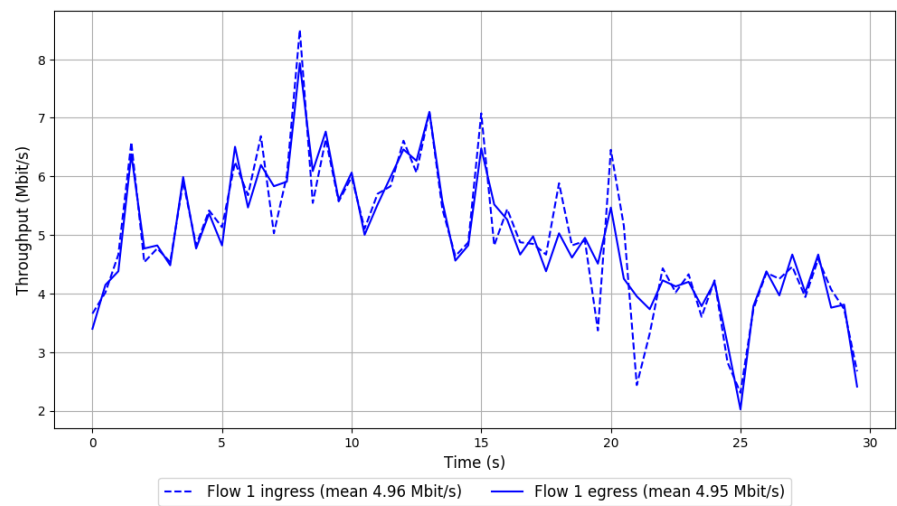
-- Flow 1:

Average throughput: 4.95 Mbit/s

95th percentile per-packet one-way delay: 153.044 ms

Loss rate: 0.34%

Run 1: Report of Copa — Data Link

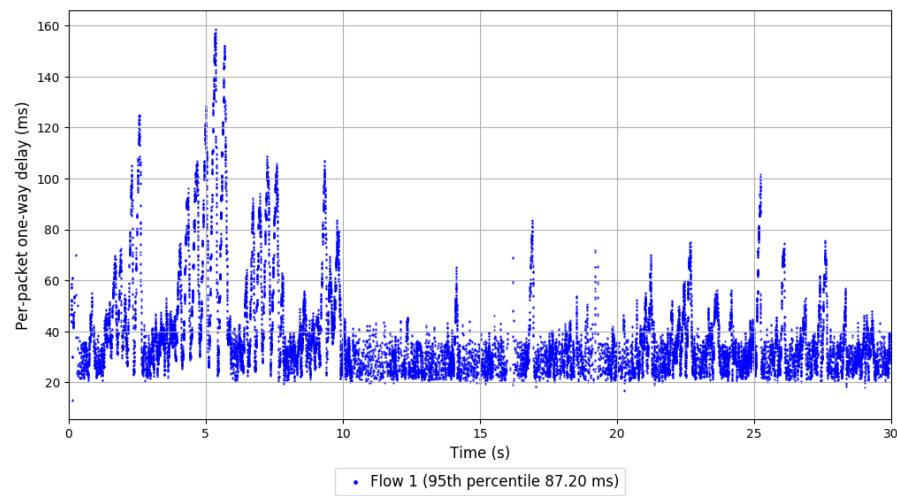
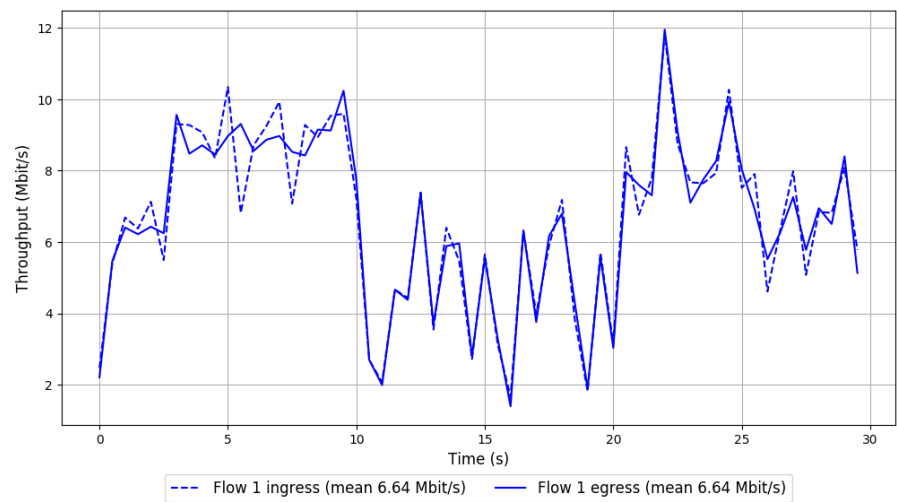


Run 2: Statistics of Copa

Start at: 2018-03-26 20:09:32
End at: 2018-03-26 20:10:02
Local clock offset: -2.126 ms
Remote clock offset: -5.561 ms

Below is generated by plot.py at 2018-03-26 22:07:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.64 Mbit/s
95th percentile per-packet one-way delay: 87.202 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 6.64 Mbit/s
95th percentile per-packet one-way delay: 87.202 ms
Loss rate: 0.24%

Run 2: Report of Copa — Data Link

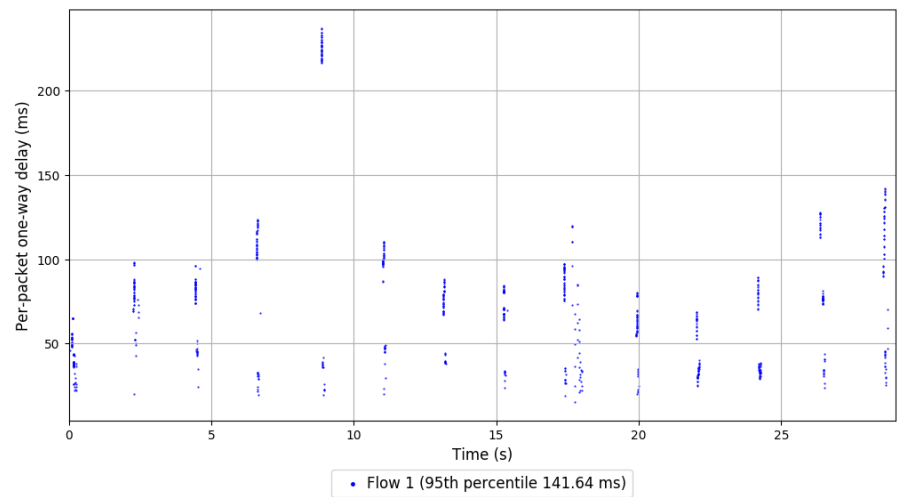
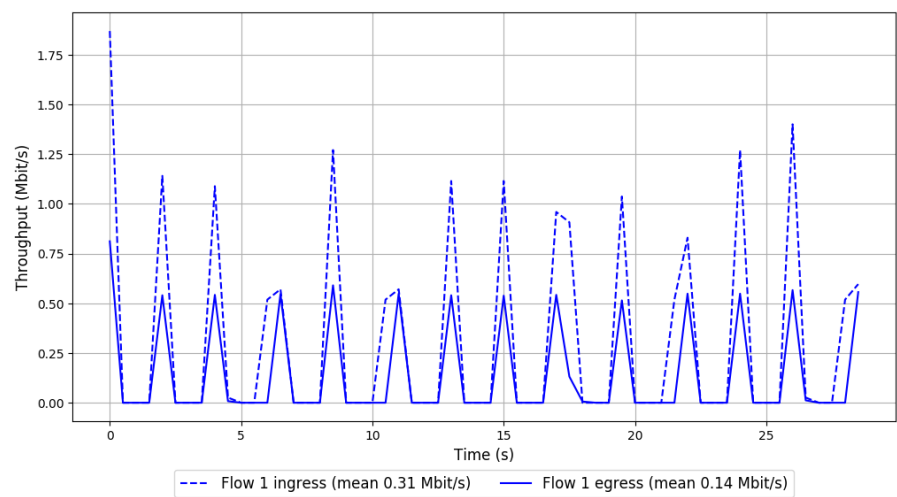


Run 3: Statistics of Copa

Start at: 2018-03-26 20:33:03
End at: 2018-03-26 20:33:33
Local clock offset: -2.328 ms
Remote clock offset: -4.989 ms

Below is generated by plot.py at 2018-03-26 22:07:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 141.637 ms
Loss rate: 54.71%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 141.637 ms
Loss rate: 54.71%

Run 3: Report of Copa — Data Link

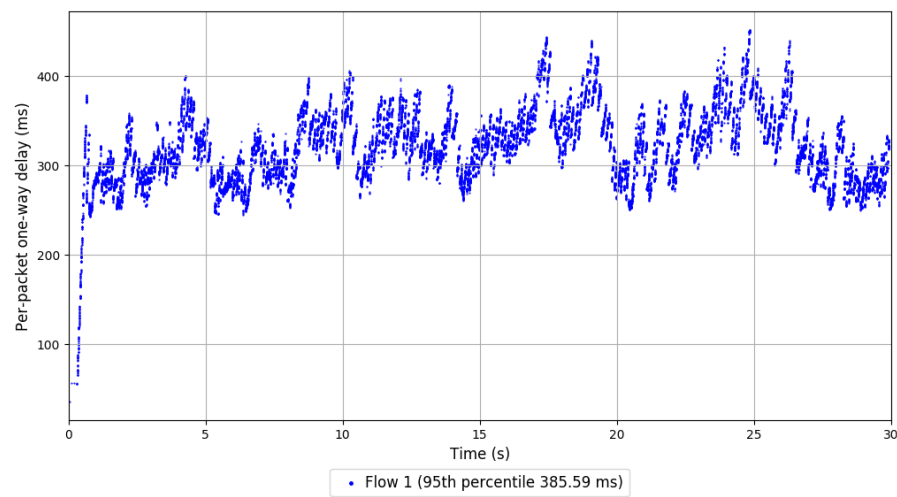
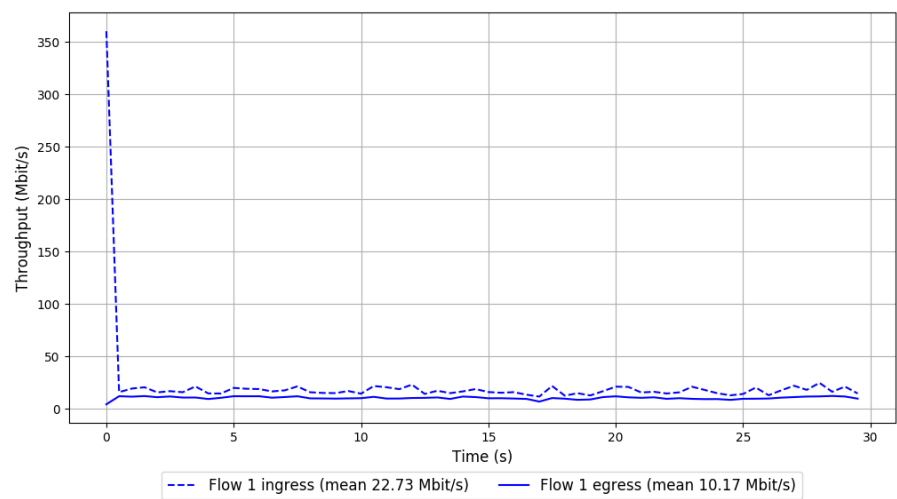


Run 1: Statistics of FillP

Start at: 2018-03-26 20:06:55
End at: 2018-03-26 20:07:25
Local clock offset: -1.741 ms
Remote clock offset: -5.427 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 10.17 Mbit/s
95th percentile per-packet one-way delay: 385.590 ms
Loss rate: 55.37%
-- Flow 1:
Average throughput: 10.17 Mbit/s
95th percentile per-packet one-way delay: 385.590 ms
Loss rate: 55.37%

Run 1: Report of FillP — Data Link

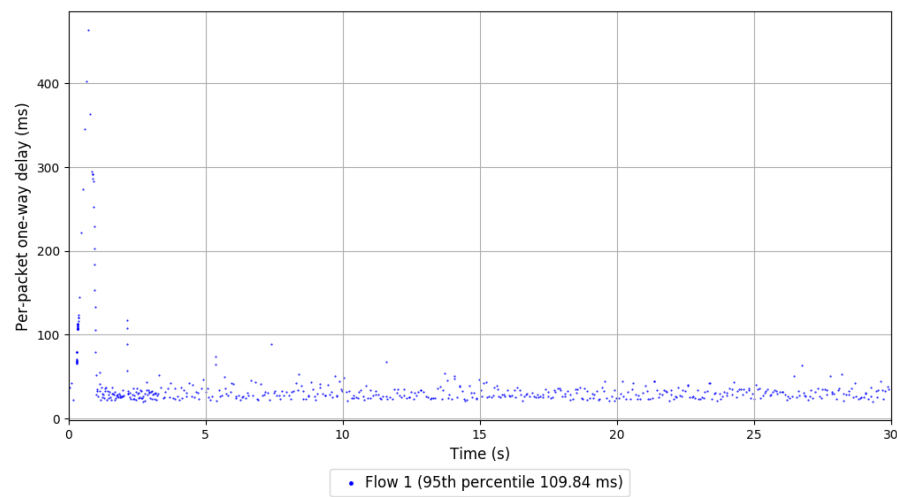
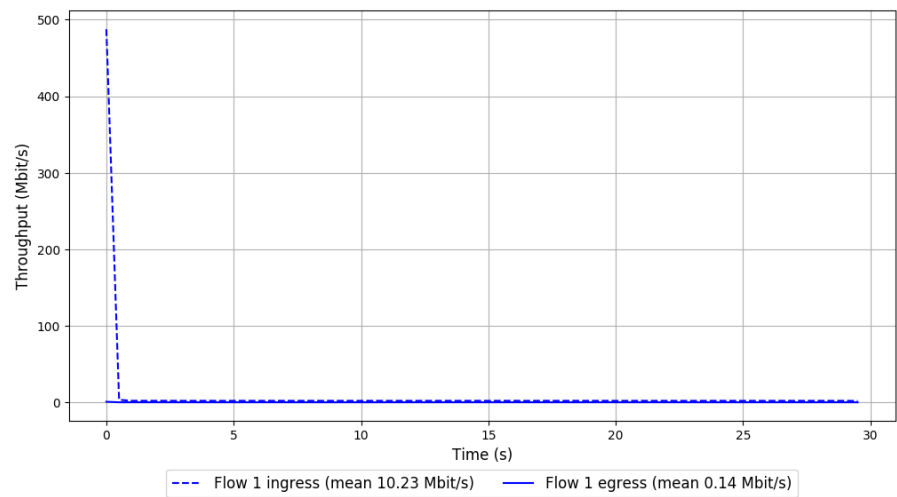


Run 2: Statistics of FillP

Start at: 2018-03-26 20:30:26
End at: 2018-03-26 20:30:56
Local clock offset: -2.09 ms
Remote clock offset: -5.238 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 109.845 ms
Loss rate: 98.64%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 109.845 ms
Loss rate: 98.64%

Run 2: Report of FillP — Data Link

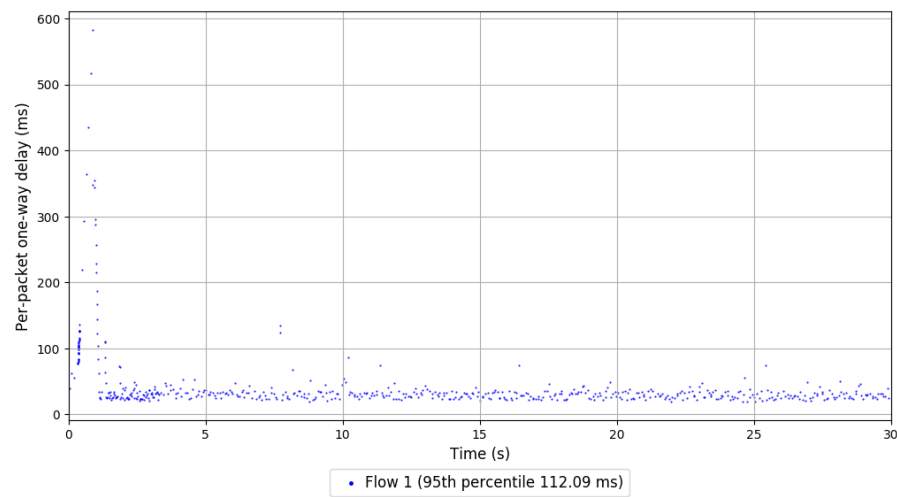
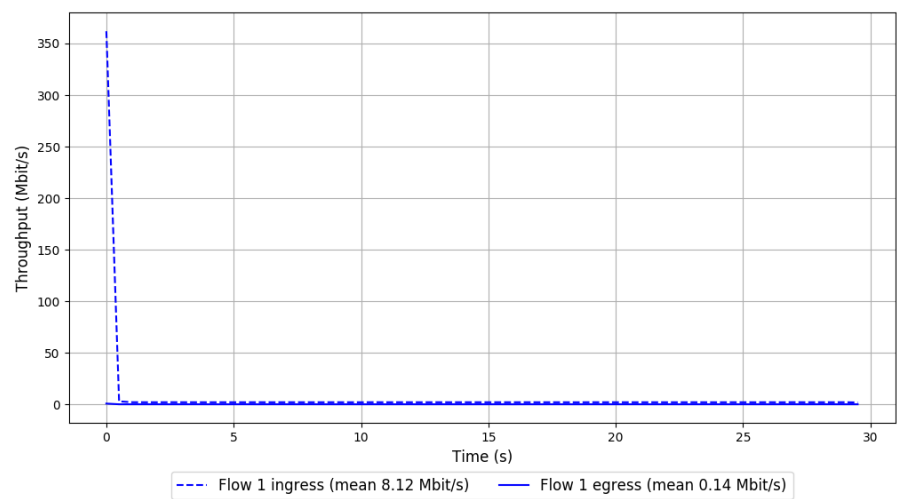


Run 3: Statistics of FillP

Start at: 2018-03-26 20:53:56
End at: 2018-03-26 20:54:26
Local clock offset: -0.963 ms
Remote clock offset: -4.131 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 112.094 ms
Loss rate: 98.29%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 112.094 ms
Loss rate: 98.29%

Run 3: Report of FillP — Data Link

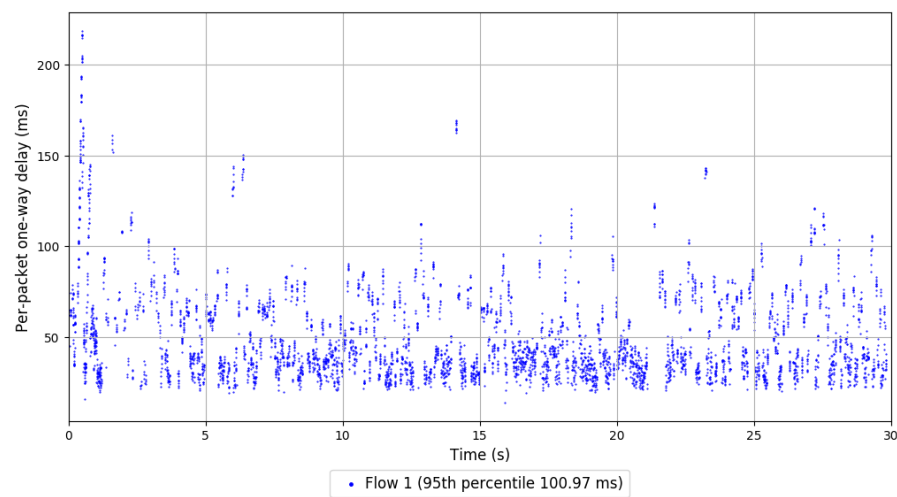
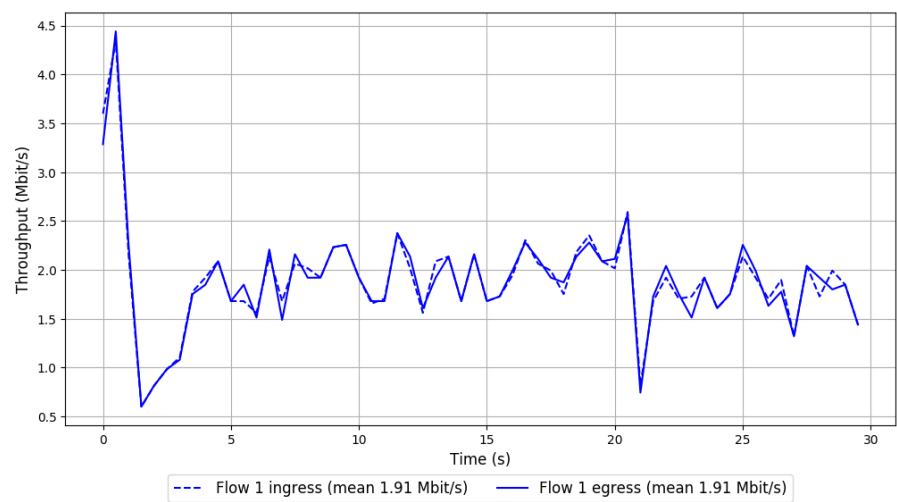


Run 1: Statistics of Indigo-1-32

Start at: 2018-03-26 19:57:45
End at: 2018-03-26 19:58:15
Local clock offset: -1.402 ms
Remote clock offset: -5.048 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 100.971 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 100.971 ms
Loss rate: 0.21%

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

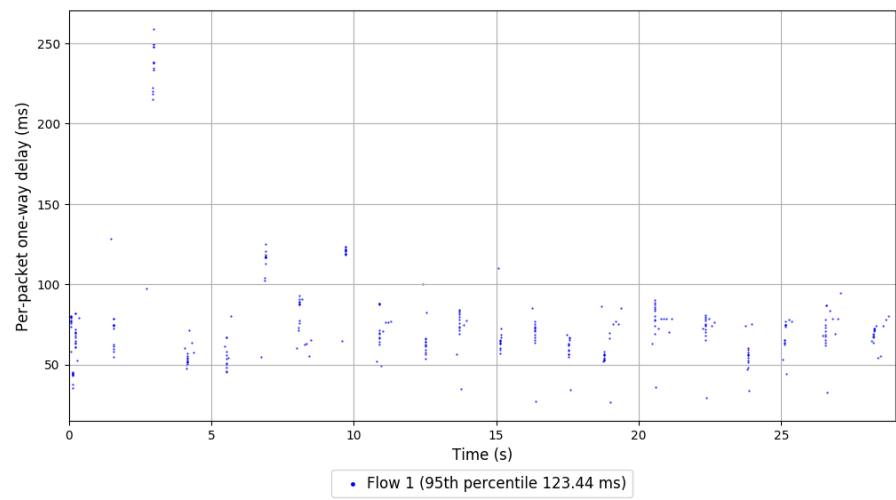
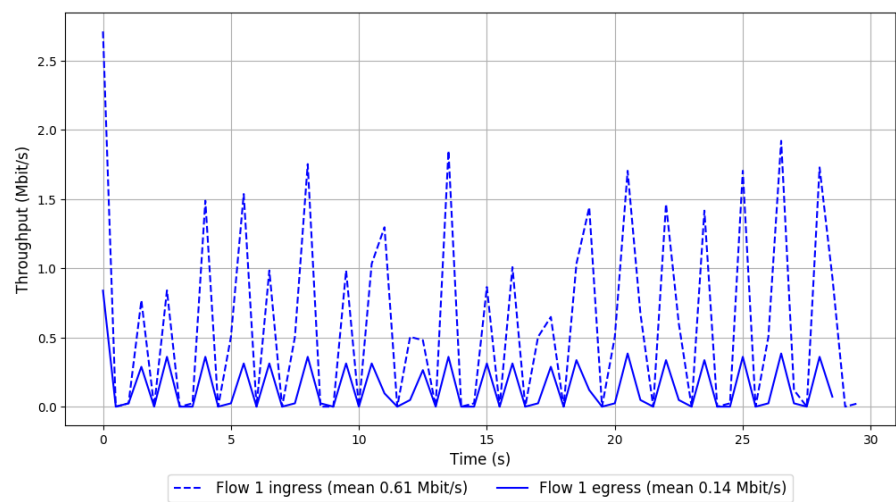


Run 2: Statistics of Indigo-1-32

Start at: 2018-03-26 20:21:19
End at: 2018-03-26 20:21:49
Local clock offset: -1.741 ms
Remote clock offset: -5.602 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 123.442 ms
Loss rate: 77.55%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 123.442 ms
Loss rate: 77.55%

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

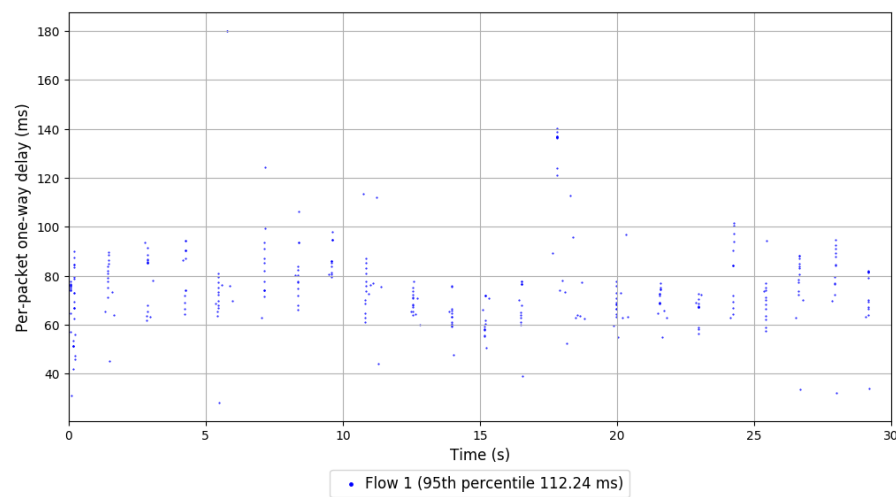
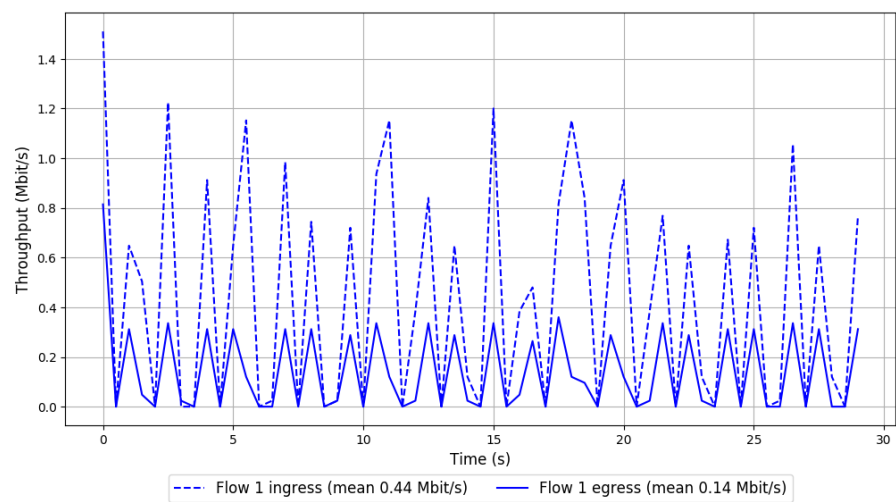


Run 3: Statistics of Indigo-1-32

Start at: 2018-03-26 20:44:48
End at: 2018-03-26 20:45:18
Local clock offset: -3.452 ms
Remote clock offset: -4.397 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 112.244 ms
Loss rate: 67.77%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 112.244 ms
Loss rate: 67.77%

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

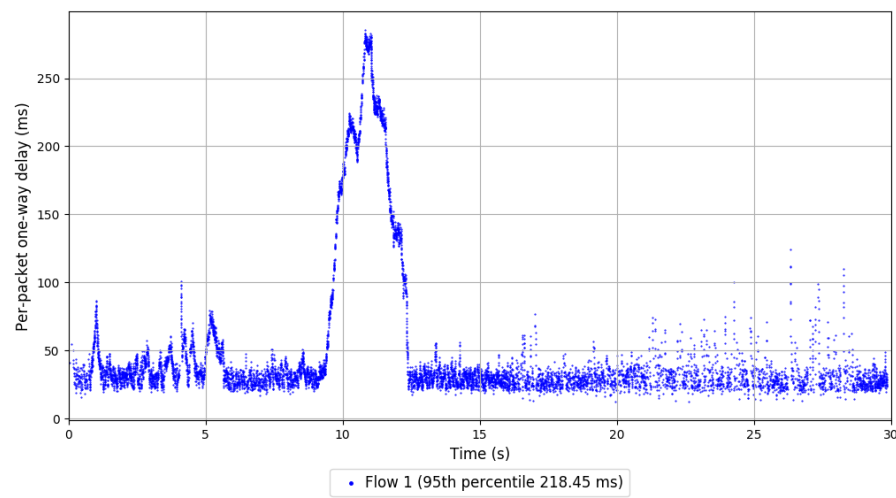
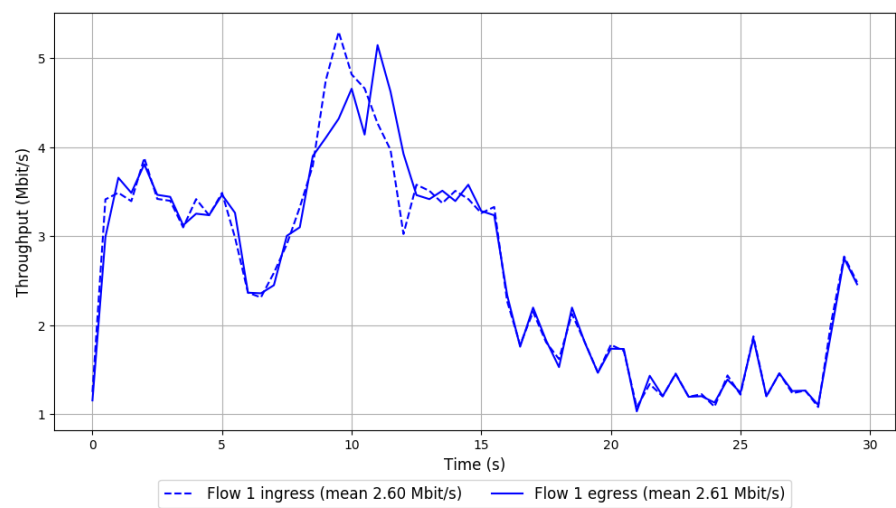


Run 1: Statistics of Vivace-latency

Start at: 2018-03-26 19:55:09
End at: 2018-03-26 19:55:39
Local clock offset: -1.469 ms
Remote clock offset: -4.959 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 218.452 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 218.452 ms
Loss rate: 0.13%

Run 1: Report of Vivace-latency — Data Link

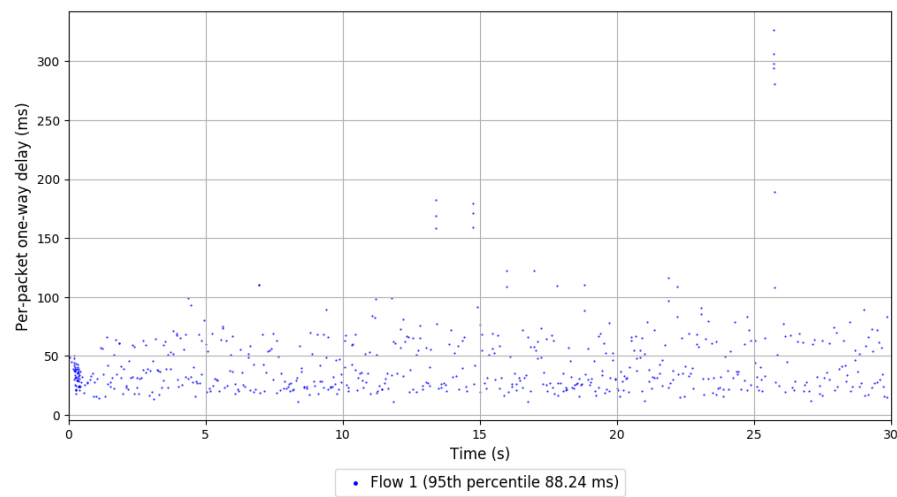
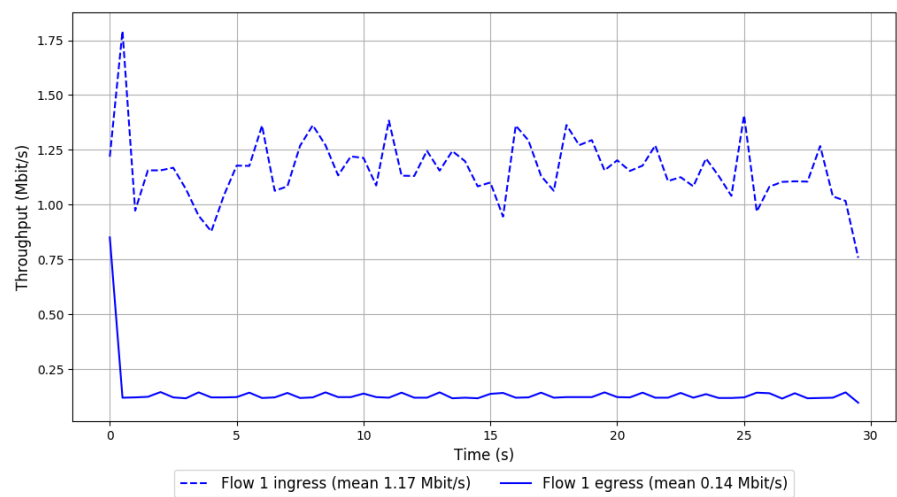


Run 2: Statistics of Vivace-latency

Start at: 2018-03-26 20:18:42
End at: 2018-03-26 20:19:12
Local clock offset: -1.95 ms
Remote clock offset: -5.595 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 88.236 ms
Loss rate: 88.02%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 88.236 ms
Loss rate: 88.02%

Run 2: Report of Vivace-latency — Data Link

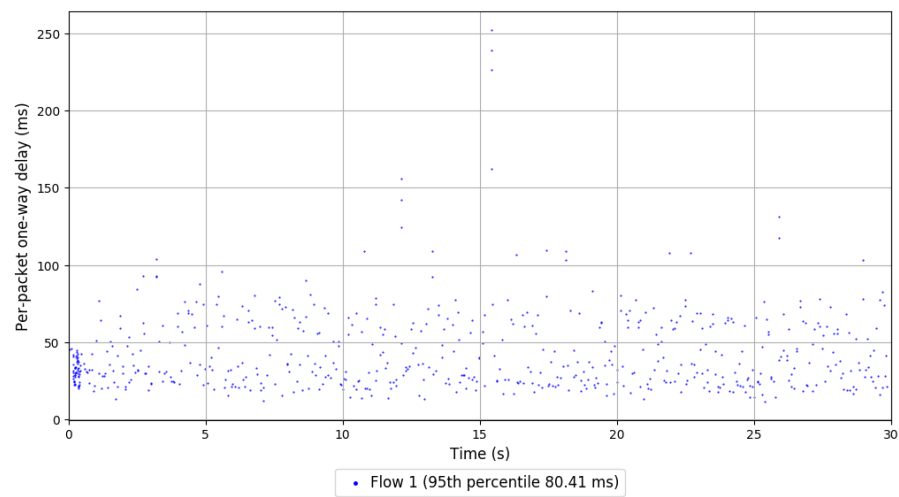
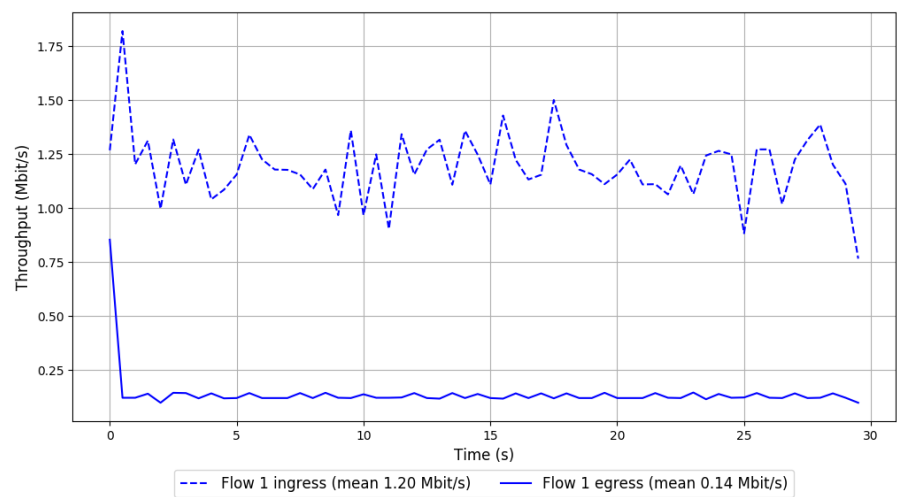


Run 3: Statistics of Vivace-latency

Start at: 2018-03-26 20:42:11
End at: 2018-03-26 20:42:41
Local clock offset: -3.174 ms
Remote clock offset: -4.473 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 80.408 ms
Loss rate: 88.29%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 80.408 ms
Loss rate: 88.29%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-03-26 19:49:54

End at: 2018-03-26 19:50:24

Local clock offset: -0.574 ms

Remote clock offset: -4.815 ms

Below is generated by plot.py at 2018-03-26 22:07:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.14 Mbit/s

95th percentile per-packet one-way delay: 444.481 ms

Loss rate: 29.88%

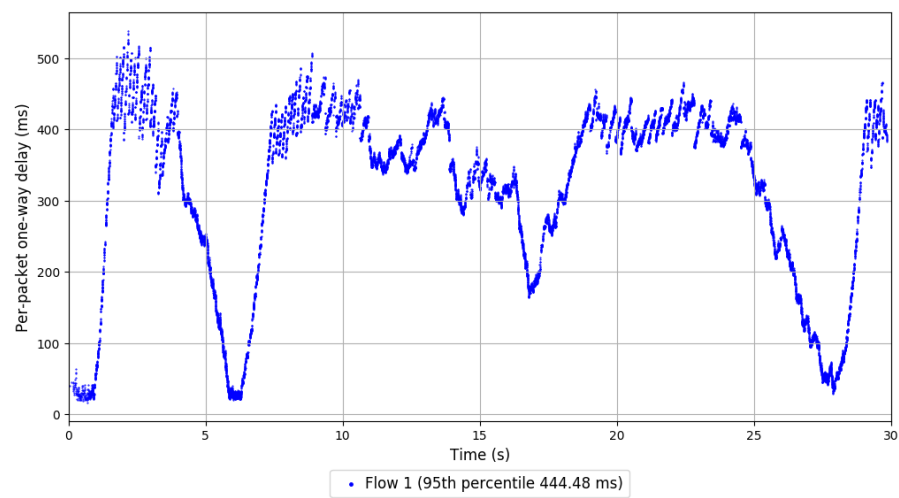
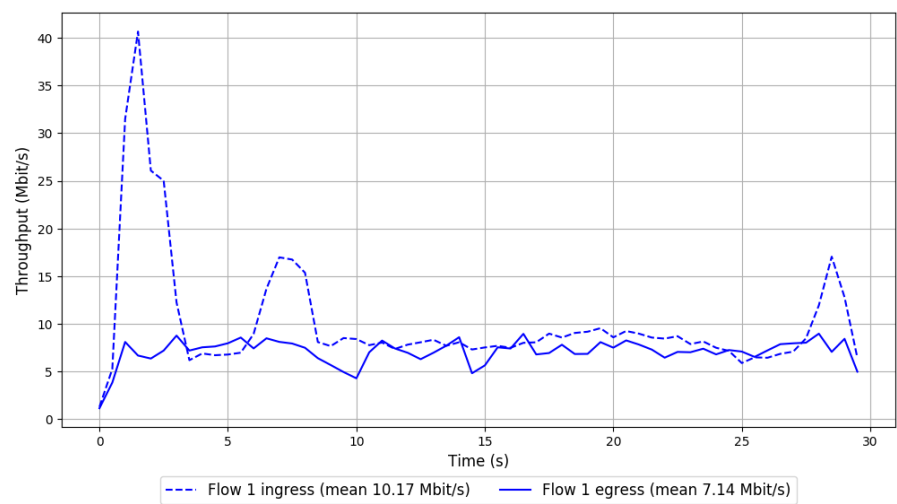
-- Flow 1:

Average throughput: 7.14 Mbit/s

95th percentile per-packet one-way delay: 444.481 ms

Loss rate: 29.88%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-03-26 20:13:29

End at: 2018-03-26 20:13:59

Local clock offset: -2.728 ms

Remote clock offset: -5.51 ms

Below is generated by plot.py at 2018-03-26 22:07:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.87 Mbit/s

95th percentile per-packet one-way delay: 423.445 ms

Loss rate: 22.23%

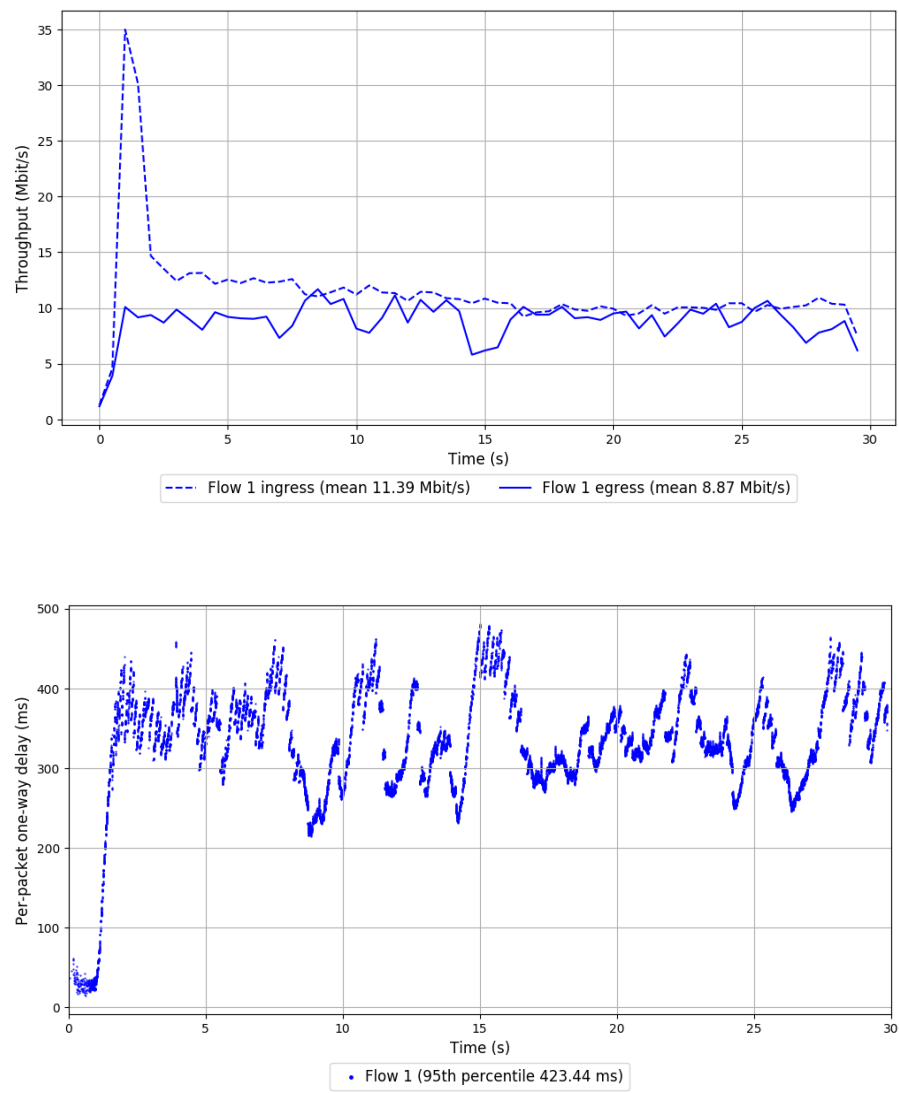
-- Flow 1:

Average throughput: 8.87 Mbit/s

95th percentile per-packet one-way delay: 423.445 ms

Loss rate: 22.23%

Run 2: Report of Vivace-loss — Data Link



Run 3: Statistics of Vivace-loss

Start at: 2018-03-26 20:36:58

End at: 2018-03-26 20:37:28

Local clock offset: -2.606 ms

Remote clock offset: -4.762 ms

Below is generated by plot.py at 2018-03-26 22:07:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 86.278 ms

Loss rate: 88.35%

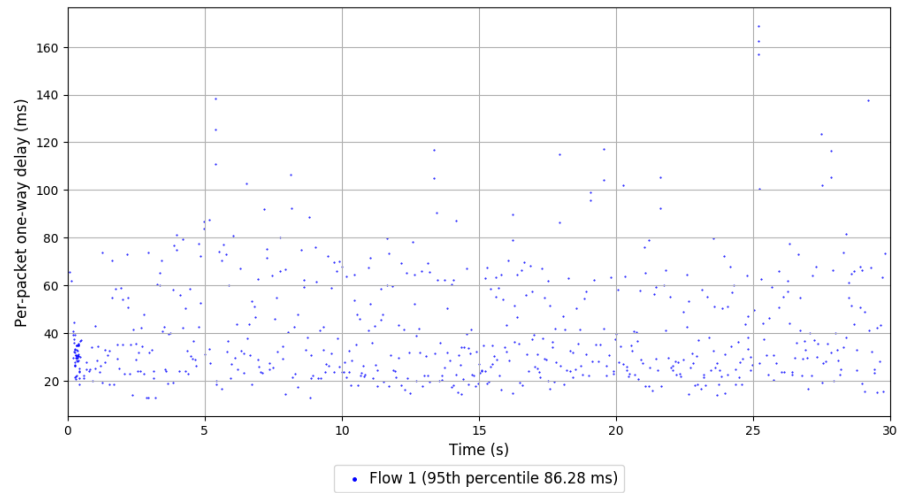
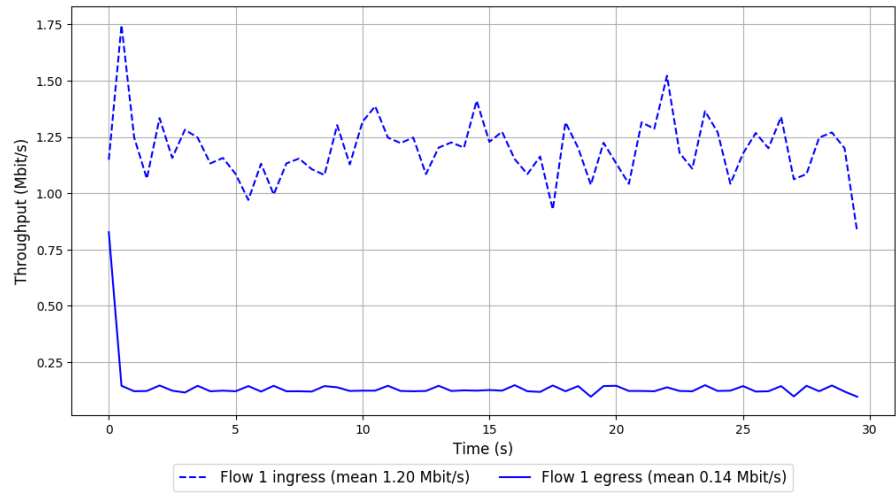
-- Flow 1:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 86.278 ms

Loss rate: 88.35%

Run 3: Report of Vivace-loss — Data Link

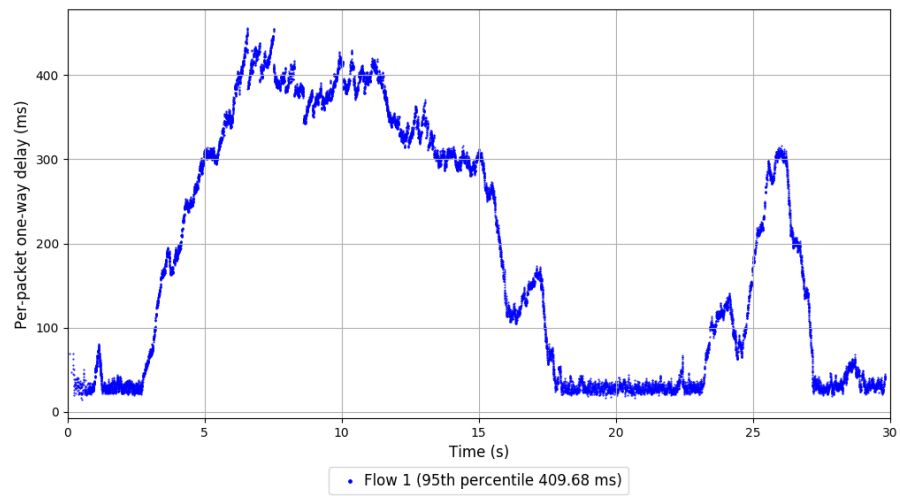
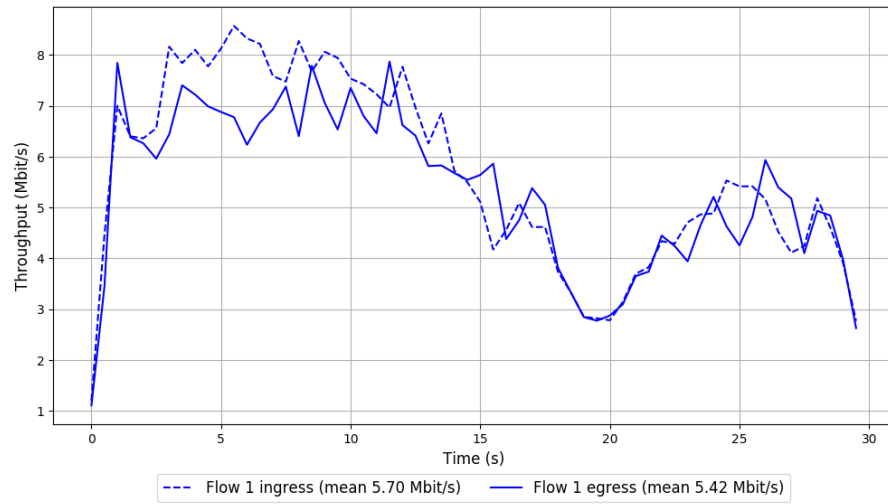


Run 1: Statistics of Vivace-LTE

Start at: 2018-03-26 19:52:31
End at: 2018-03-26 19:53:01
Local clock offset: -1.044 ms
Remote clock offset: -4.773 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 5.42 Mbit/s
95th percentile per-packet one-way delay: 409.678 ms
Loss rate: 5.34%
-- Flow 1:
Average throughput: 5.42 Mbit/s
95th percentile per-packet one-way delay: 409.678 ms
Loss rate: 5.34%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-03-26 20:16:06

End at: 2018-03-26 20:16:36

Local clock offset: -2.141 ms

Remote clock offset: -5.62 ms

Below is generated by plot.py at 2018-03-26 22:07:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.85 Mbit/s

95th percentile per-packet one-way delay: 128.824 ms

Loss rate: 54.61%

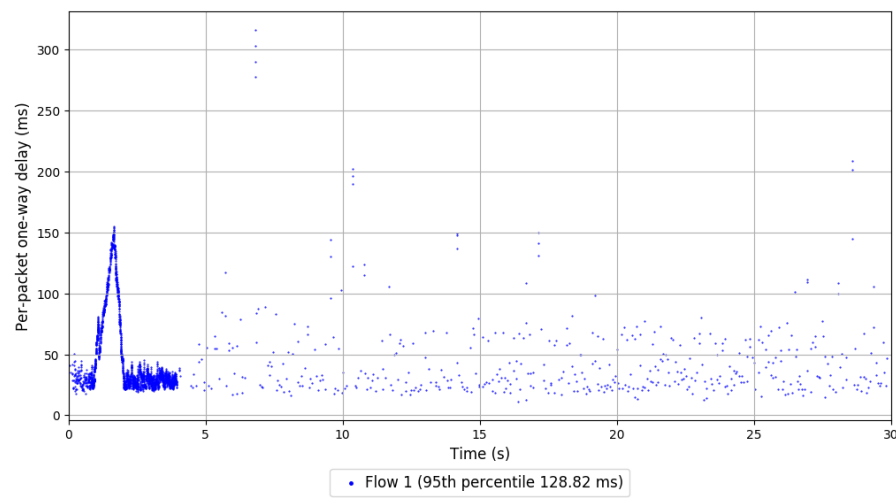
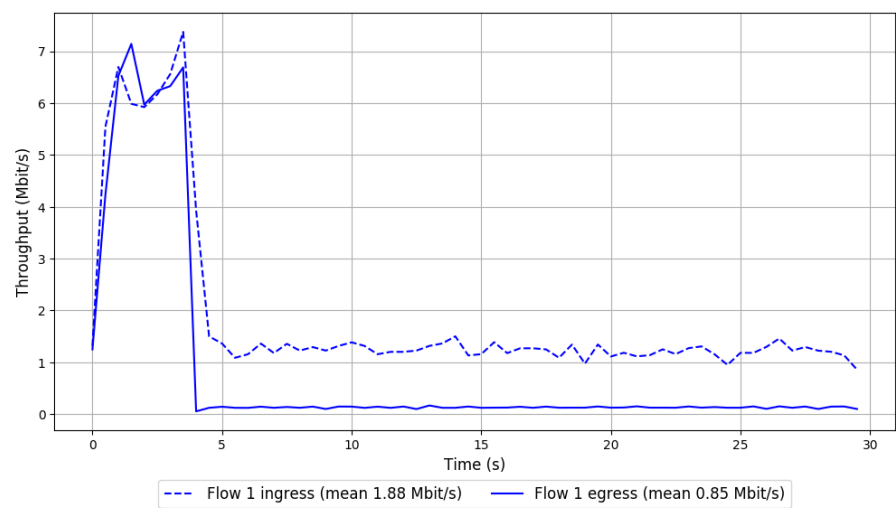
-- Flow 1:

Average throughput: 0.85 Mbit/s

95th percentile per-packet one-way delay: 128.824 ms

Loss rate: 54.61%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-03-26 20:39:34
End at: 2018-03-26 20:40:04
Local clock offset: -2.88 ms
Remote clock offset: -4.531 ms

Below is generated by plot.py at 2018-03-26 22:07:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 81.093 ms
Loss rate: 88.11%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 81.093 ms
Loss rate: 88.11%

Run 3: Report of Vivace-LTE — Data Link

