

Pantheon Report

Generated at 2018-01-02 20:24:05 (UTC).

Data path: Colombia ppp0 (*remote*) → AWS Brazil 2 Ethernet (*local*).

Repeated the test of 14 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).

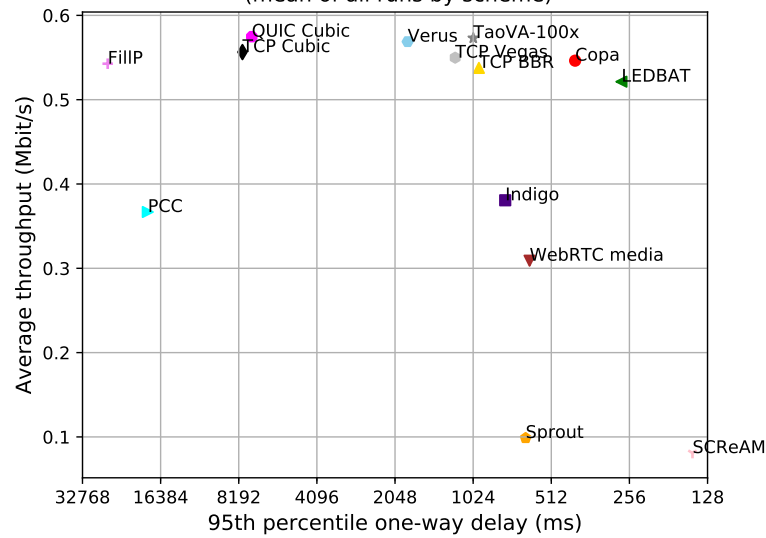
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against **gps.ntp.br** and have been applied to correct the timestamps in logs.

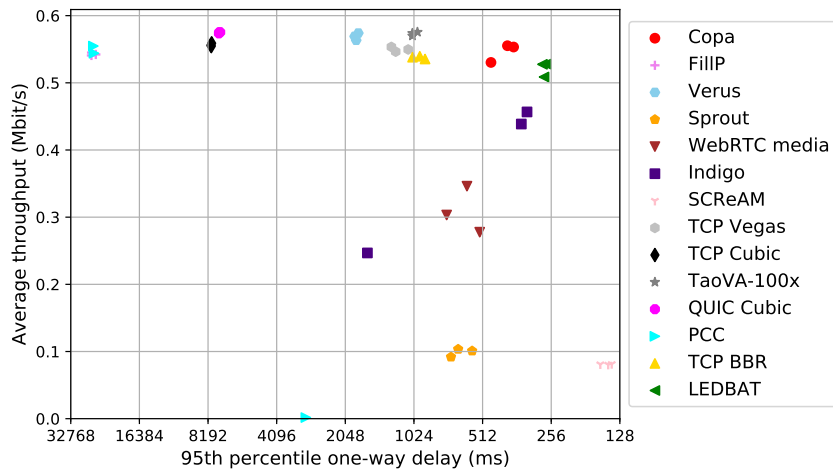
Git summary:

```
branch: master @ 904a5750834816b1e46a2c86405d707788d27c16
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ dcaef6b00654e660f73f7ed679d2eab61ce08639
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ 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/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme



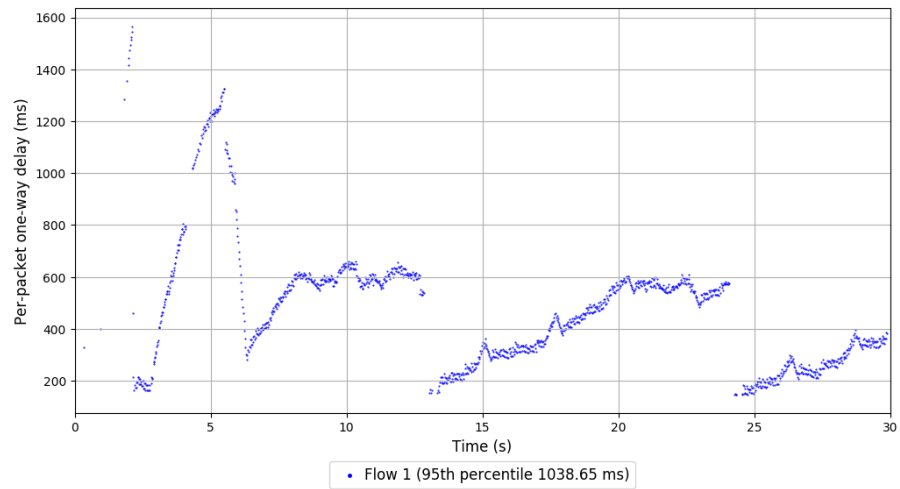
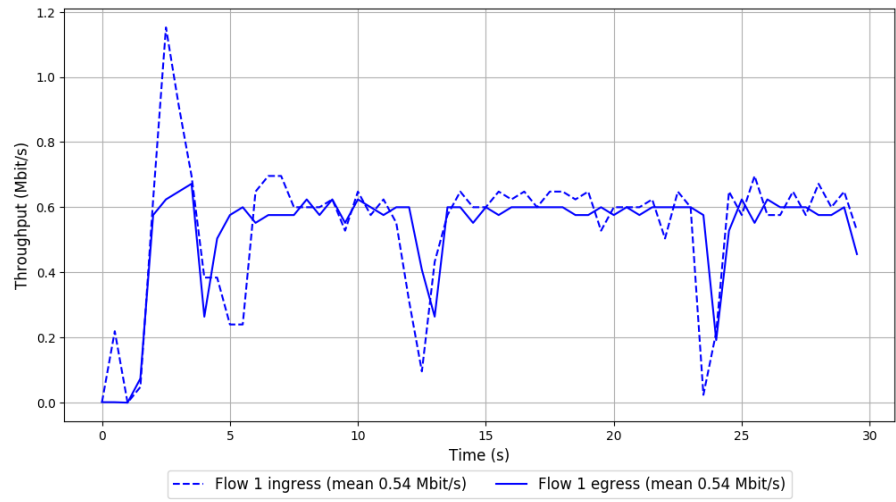
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.54	973.07	1.80
TCP Cubic	3	0.56	7928.38	31.26
LEDBAT	3	0.52	274.86	1.25
PCC	3	0.36	18354.98	65.76
QUIC Cubic	3	0.58	7300.23	29.74
SCReAM	3	0.08	146.30	0.66
WebRTC media	3	0.31	620.83	0.88
Sprout	3	0.10	642.86	1.62
TaoVA-100x	3	0.57	1022.75	2.77
TCP Vegas	3	0.55	1200.94	1.88
Verus	3	0.57	1831.52	4.86
Copa	3	0.55	414.36	1.27
FillP	3	0.54	26202.06	98.36
Indigo	3	0.38	770.52	2.00

Run 1: Statistics of TCP BBR

Start at: 2018-01-02 18:41:41
End at: 2018-01-02 18:42:11
Local clock offset: 0.678 ms
Remote clock offset: -17.109 ms

Below is generated by plot.py at 2018-01-02 20:23:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 1038.648 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 1038.648 ms
Loss rate: 1.63%

Run 1: Report of TCP BBR — Data Link

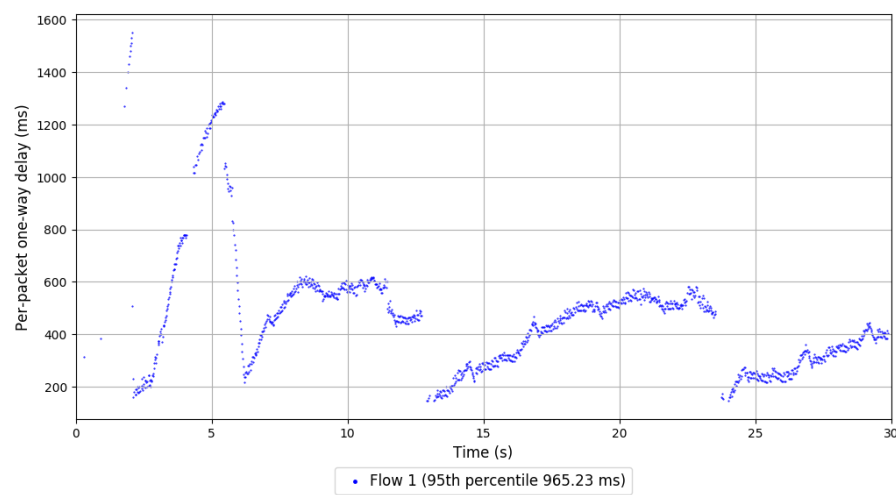
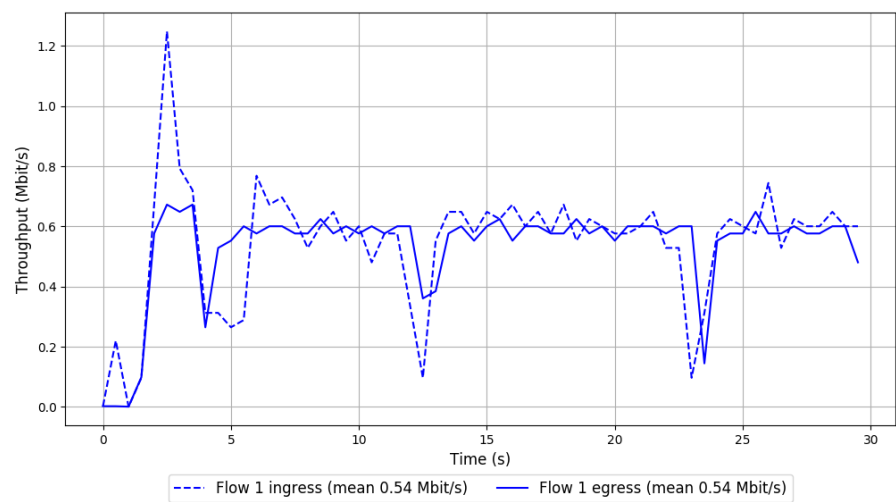


Run 2: Statistics of TCP BBR

Start at: 2018-01-02 18:59:20
End at: 2018-01-02 18:59:50
Local clock offset: 0.582 ms
Remote clock offset: -17.082 ms

Below is generated by plot.py at 2018-01-02 20:23:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 965.228 ms
Loss rate: 1.85%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 965.228 ms
Loss rate: 1.85%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-01-02 19:17:01

End at: 2018-01-02 19:17:31

Local clock offset: 0.466 ms

Remote clock offset: 1.536 ms

Below is generated by plot.py at 2018-01-02 20:23:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 915.337 ms

Loss rate: 1.93%

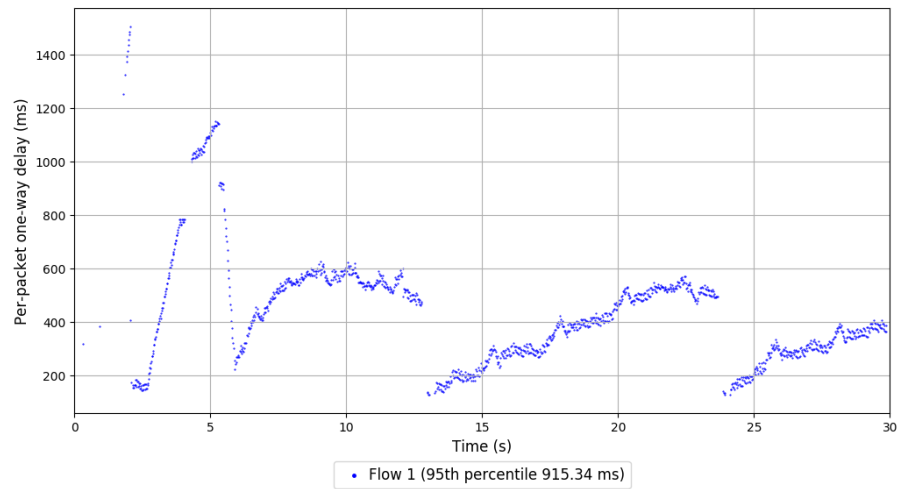
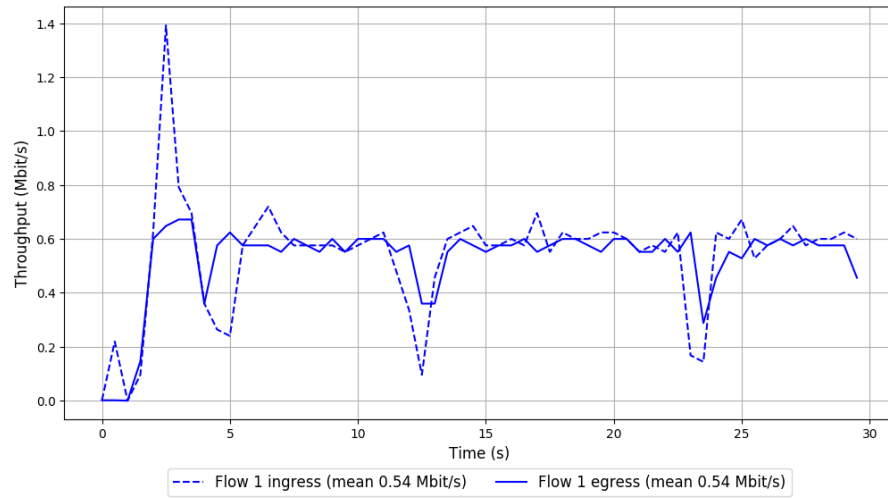
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 915.337 ms

Loss rate: 1.93%

Run 3: Report of TCP BBR — Data Link

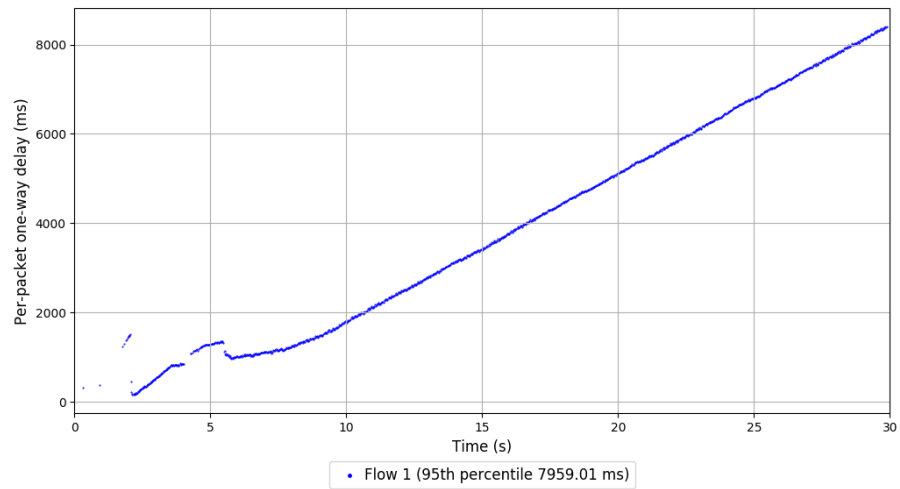
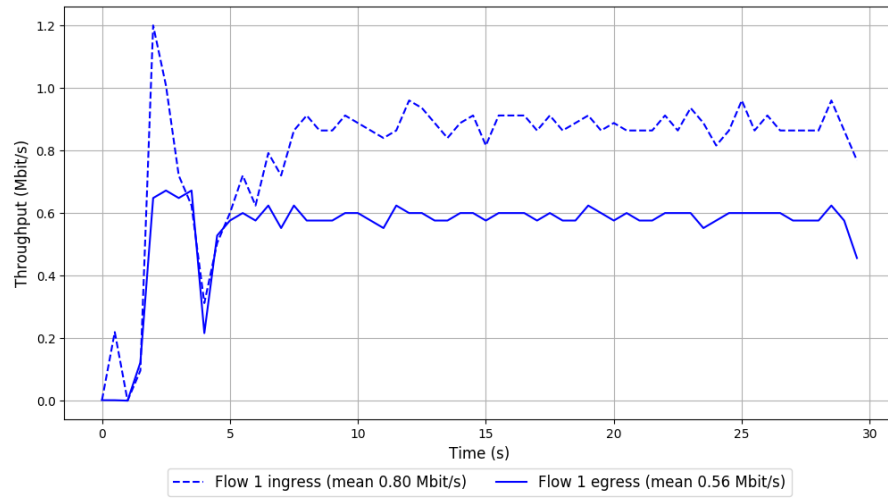


Run 1: Statistics of TCP Cubic

Start at: 2018-01-02 18:40:30
End at: 2018-01-02 18:41:01
Local clock offset: 0.697 ms
Remote clock offset: -11.324 ms

Below is generated by plot.py at 2018-01-02 20:23:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7959.007 ms
Loss rate: 31.31%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7959.007 ms
Loss rate: 31.31%

Run 1: Report of TCP Cubic — Data Link

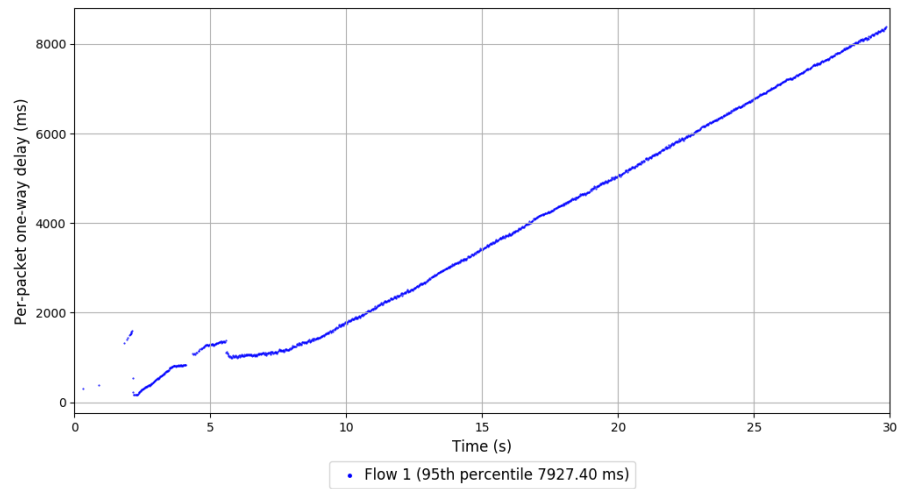
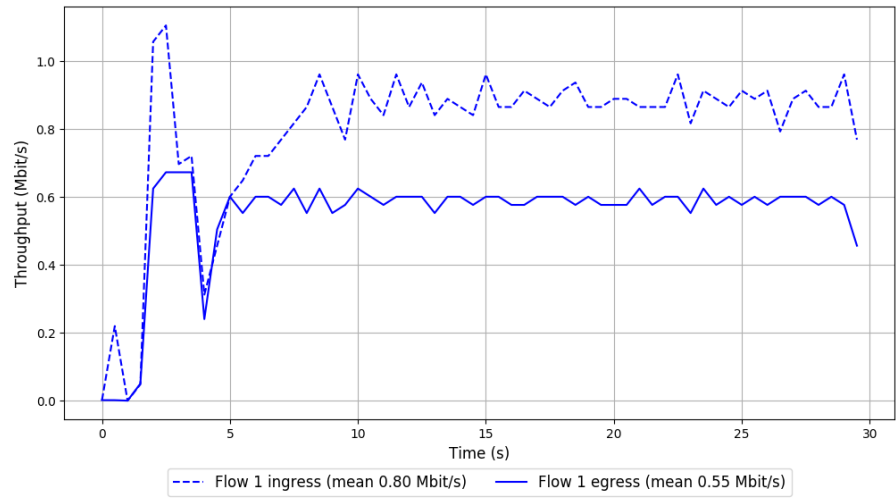


Run 2: Statistics of TCP Cubic

Start at: 2018-01-02 18:58:10
End at: 2018-01-02 18:58:40
Local clock offset: 0.526 ms
Remote clock offset: -13.387 ms

Below is generated by plot.py at 2018-01-02 20:23:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 7927.404 ms
Loss rate: 31.28%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 7927.404 ms
Loss rate: 31.28%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-01-02 19:15:50

End at: 2018-01-02 19:16:20

Local clock offset: 0.514 ms

Remote clock offset: 0.592 ms

Below is generated by plot.py at 2018-01-02 20:23:37

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 7898.727 ms

Loss rate: 31.20%

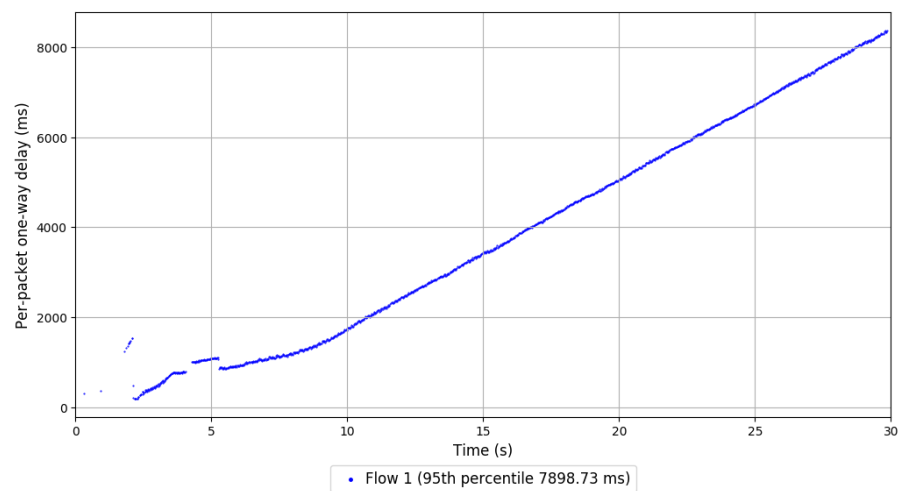
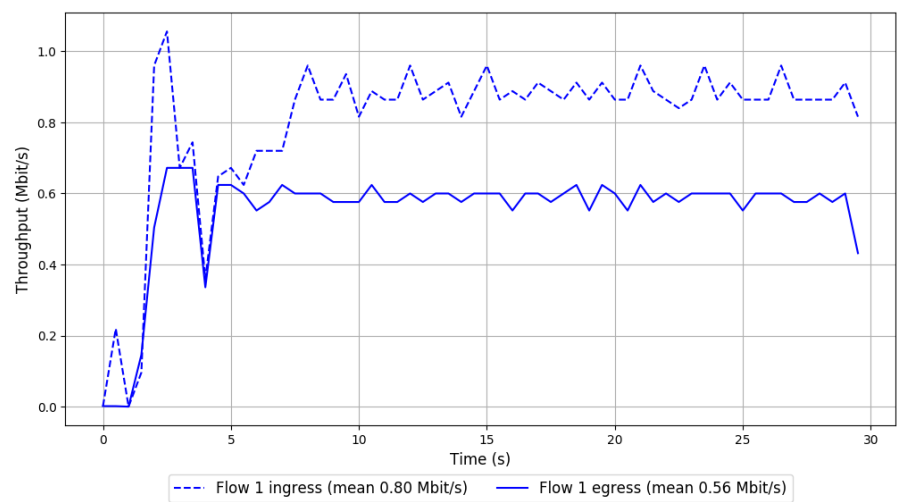
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 7898.727 ms

Loss rate: 31.20%

Run 3: Report of TCP Cubic — Data Link

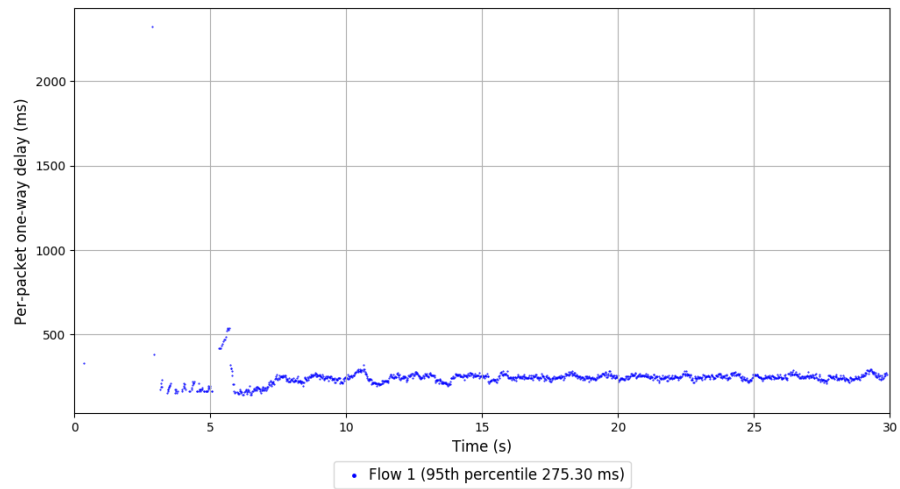
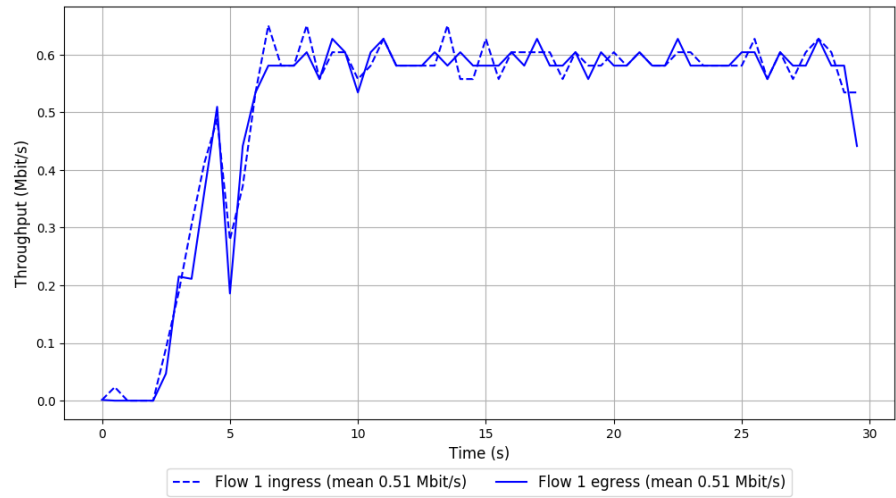


```
Run 1: Statistics of LEDBAT

Start at: 2018-01-02 18:48:42
End at: 2018-01-02 18:49:12
Local clock offset: 0.624 ms
Remote clock offset: -12.608 ms

# Below is generated by plot.py at 2018-01-02 20:23:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 275.300 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 275.300 ms
Loss rate: 1.22%
```


Run 1: Report of LEDBAT — Data Link

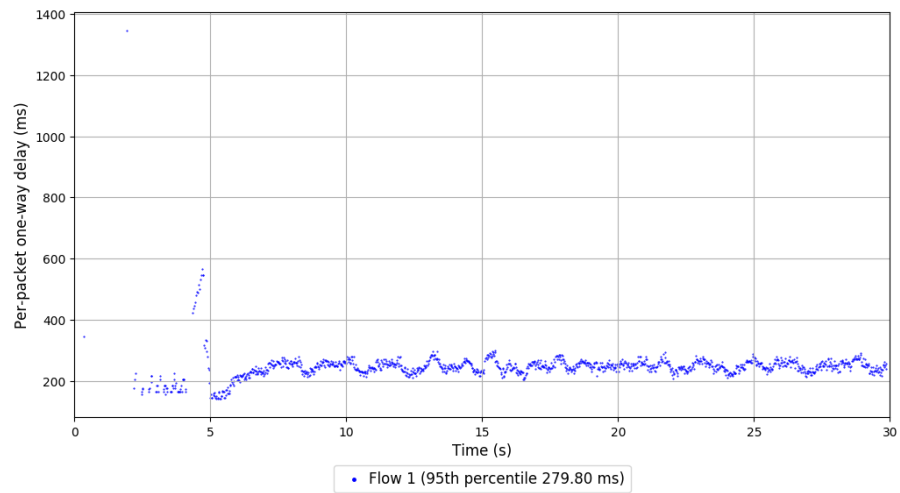
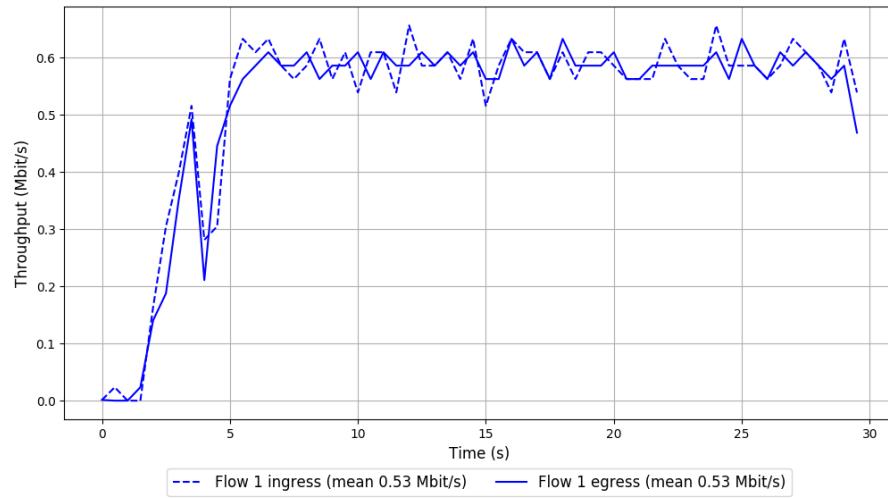


Run 2: Statistics of LEDBAT

Start at: 2018-01-02 19:06:24
End at: 2018-01-02 19:06:54
Local clock offset: 0.574 ms
Remote clock offset: -12.489 ms

Below is generated by plot.py at 2018-01-02 20:23:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 279.799 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 279.799 ms
Loss rate: 1.26%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-01-02 19:24:02

End at: 2018-01-02 19:24:32

Local clock offset: 0.498 ms

Remote clock offset: 0.559 ms

Below is generated by plot.py at 2018-01-02 20:23:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 269.476 ms

Loss rate: 1.26%

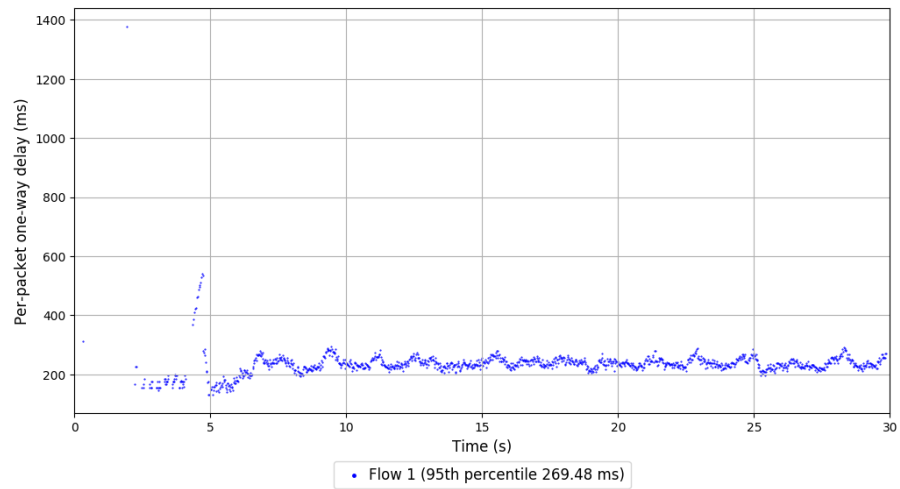
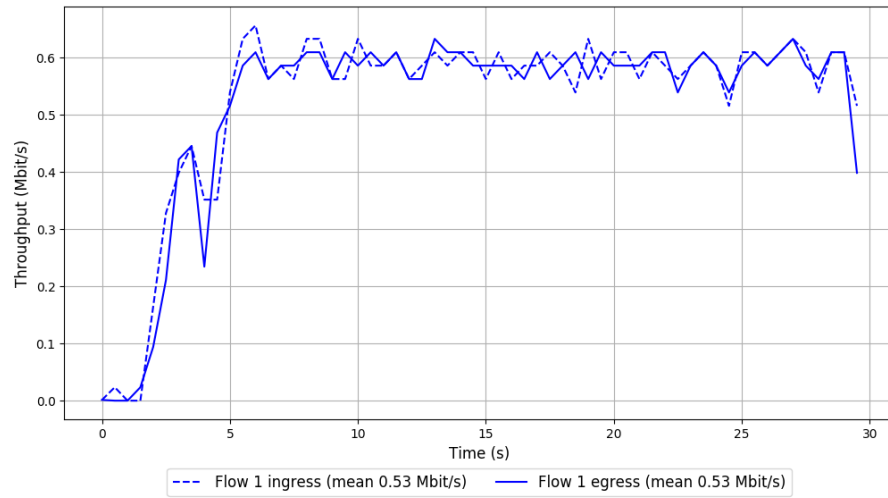
-- Flow 1:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 269.476 ms

Loss rate: 1.26%

Run 3: Report of LEDBAT — Data Link

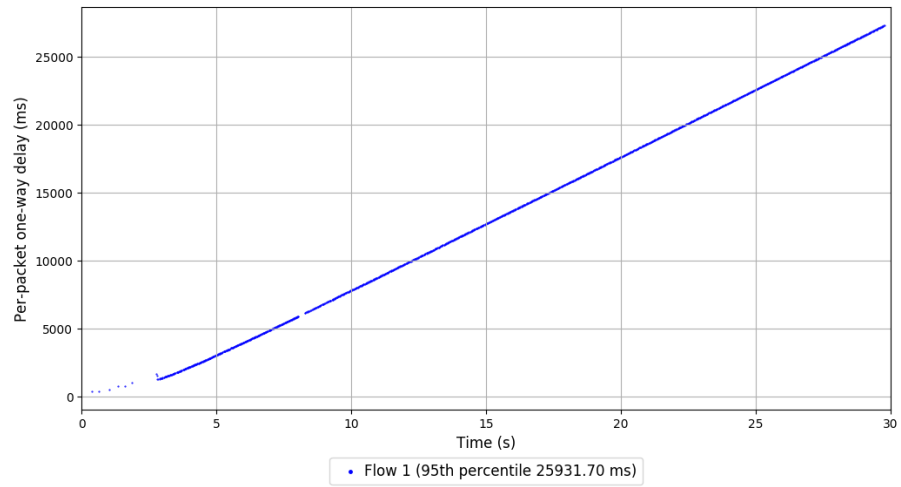
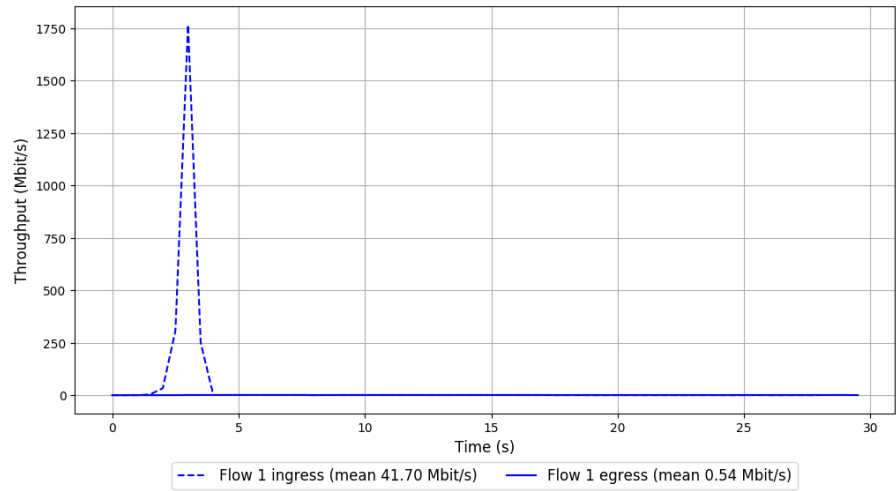


Run 1: Statistics of PCC

Start at: 2018-01-02 18:52:16
End at: 2018-01-02 18:52:46
Local clock offset: 0.597 ms
Remote clock offset: -12.32 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 25931.702 ms
Loss rate: 98.65%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 25931.702 ms
Loss rate: 98.65%

Run 1: Report of PCC — Data Link

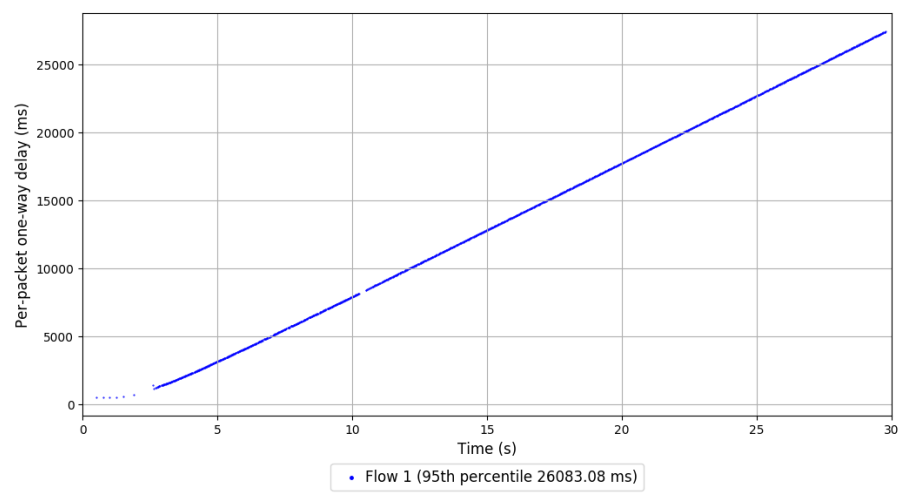
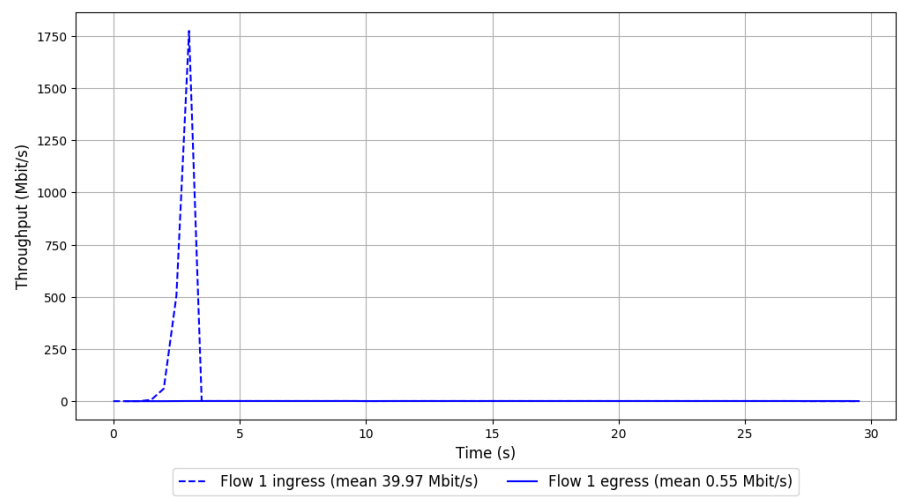


Run 2: Statistics of PCC

Start at: 2018-01-02 19:09:58
End at: 2018-01-02 19:10:28
Local clock offset: 0.479 ms
Remote clock offset: -12.37 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 26083.085 ms
Loss rate: 98.63%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 26083.085 ms
Loss rate: 98.63%

Run 2: Report of PCC — Data Link

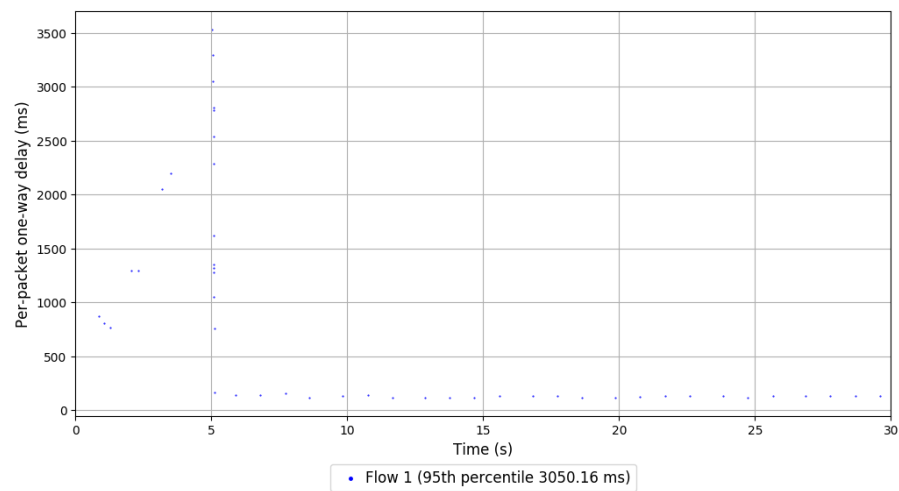
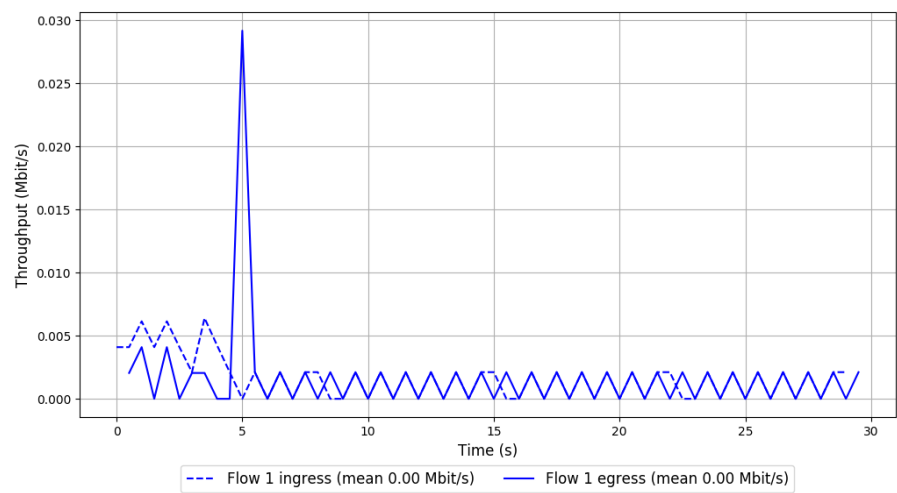


Run 3: Statistics of PCC

Start at: 2018-01-02 19:27:35
End at: 2018-01-02 19:28:05
Local clock offset: 0.414 ms
Remote clock offset: -4.078 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3050.156 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3050.156 ms
Loss rate: 0.00%

Run 3: Report of PCC — Data Link

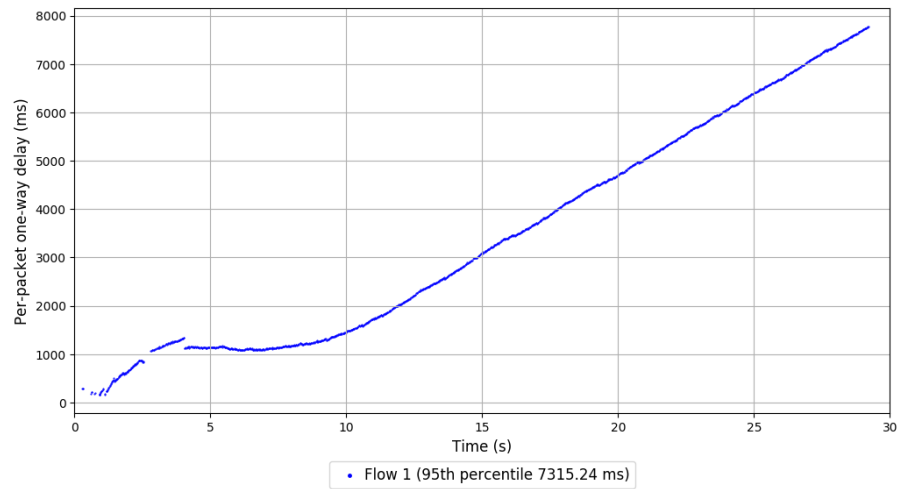
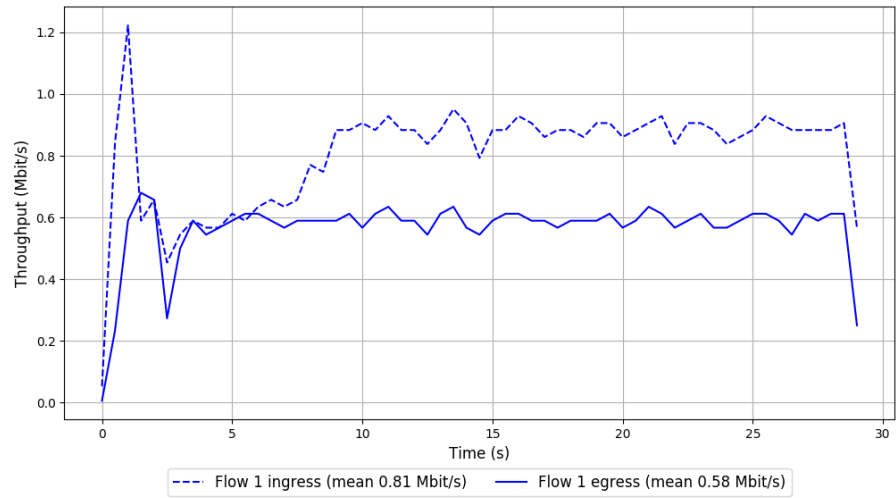


Run 1: Statistics of QUIC Cubic

Start at: 2018-01-02 18:54:38
End at: 2018-01-02 18:55:08
Local clock offset: 0.588 ms
Remote clock offset: -11.462 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7315.243 ms
Loss rate: 29.79%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7315.243 ms
Loss rate: 29.79%

Run 1: Report of QUIC Cubic — Data Link

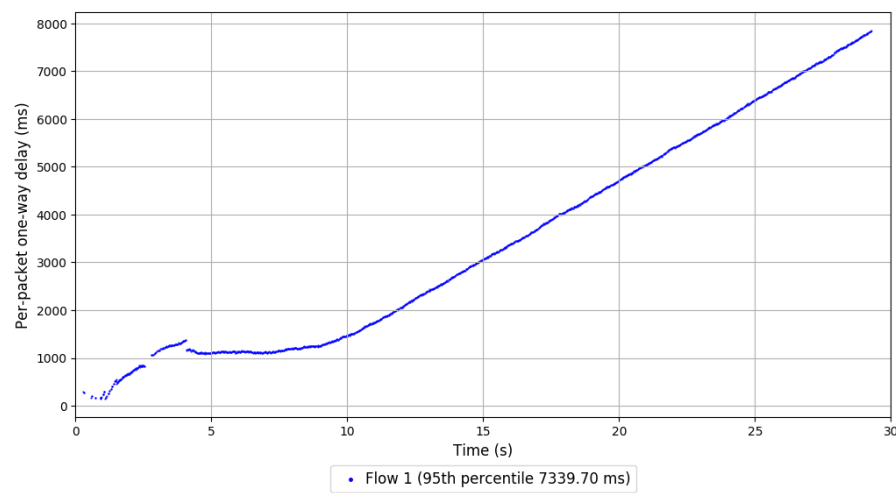
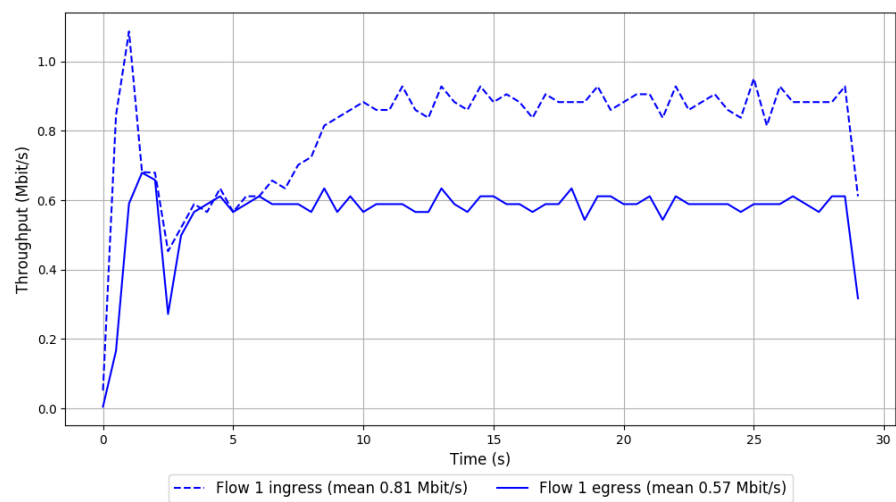


Run 2: Statistics of QUIC Cubic

Start at: 2018-01-02 19:12:19
End at: 2018-01-02 19:12:49
Local clock offset: 0.51 ms
Remote clock offset: -4.259 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7339.696 ms
Loss rate: 29.77%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7339.696 ms
Loss rate: 29.77%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-01-02 19:29:55

End at: 2018-01-02 19:30:25

Local clock offset: 0.373 ms

Remote clock offset: -4.184 ms

Below is generated by plot.py at 2018-01-02 20:24:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7245.750 ms

Loss rate: 29.66%

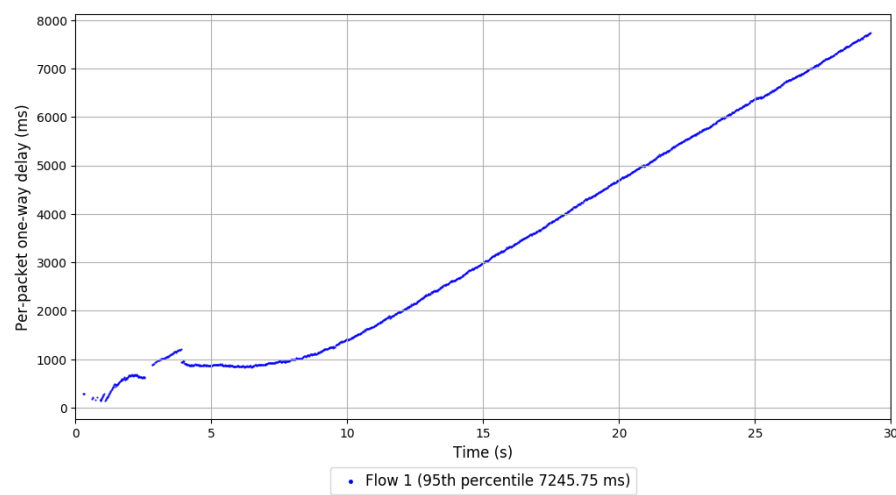
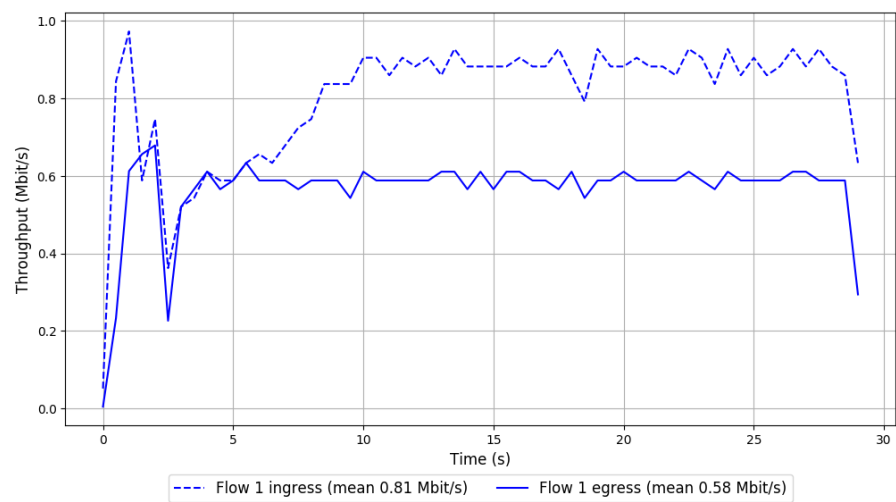
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7245.750 ms

Loss rate: 29.66%

Run 3: Report of QUIC Cubic — Data Link

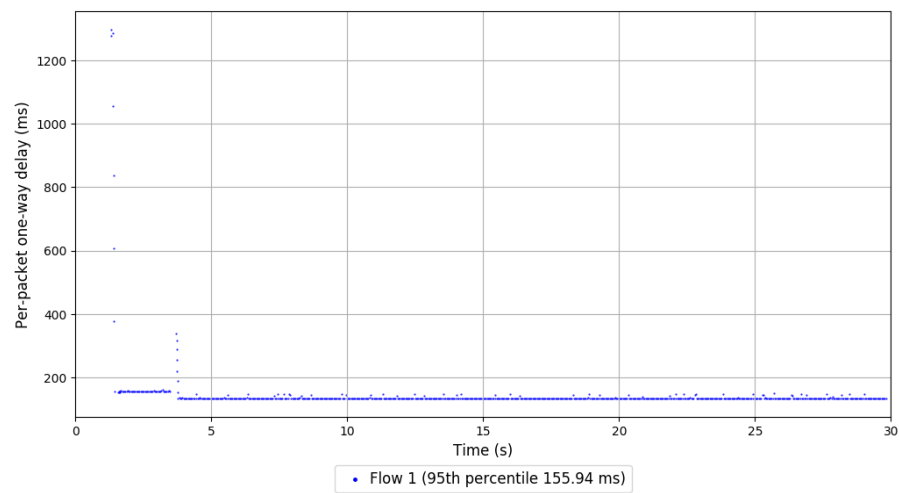
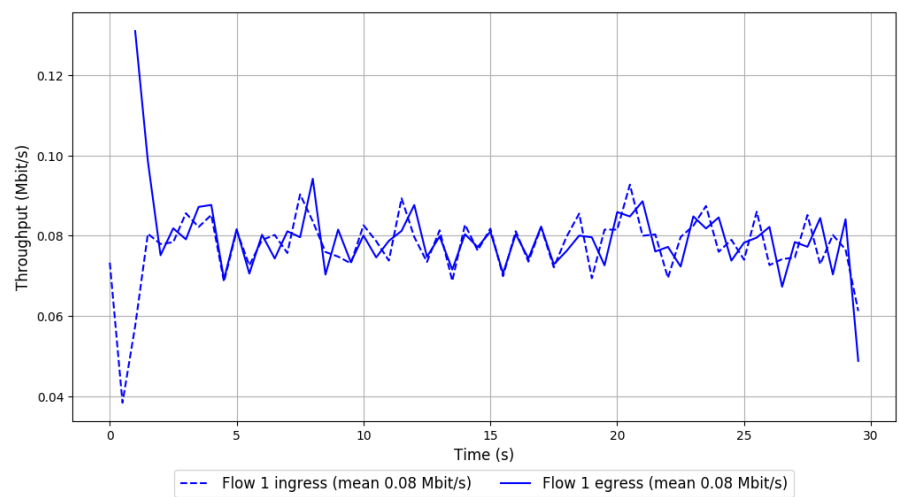


```
Run 1: Statistics of SCReAM

Start at: 2018-01-02 18:38:10
End at: 2018-01-02 18:38:40
Local clock offset: 0.69 ms
Remote clock offset: -16.925 ms

# Below is generated by plot.py at 2018-01-02 20:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 155.939 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 155.939 ms
Loss rate: 0.66%
```

Run 1: Report of SReAM — Data Link

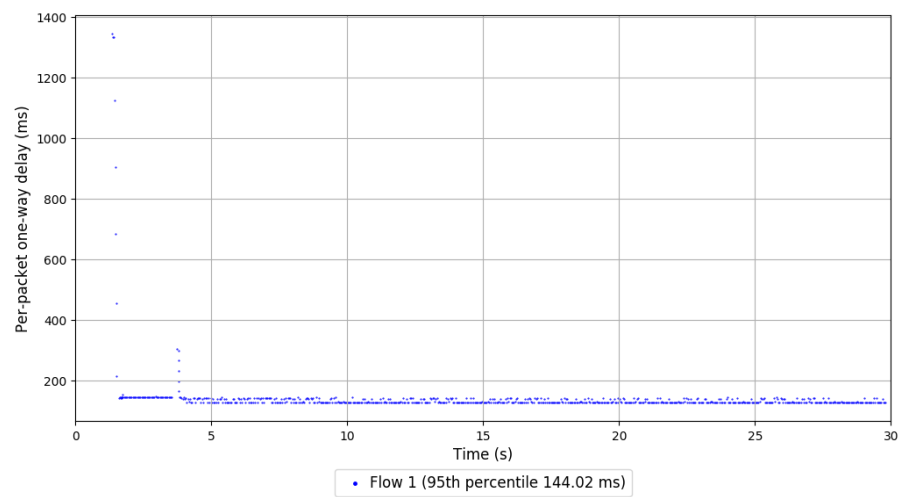
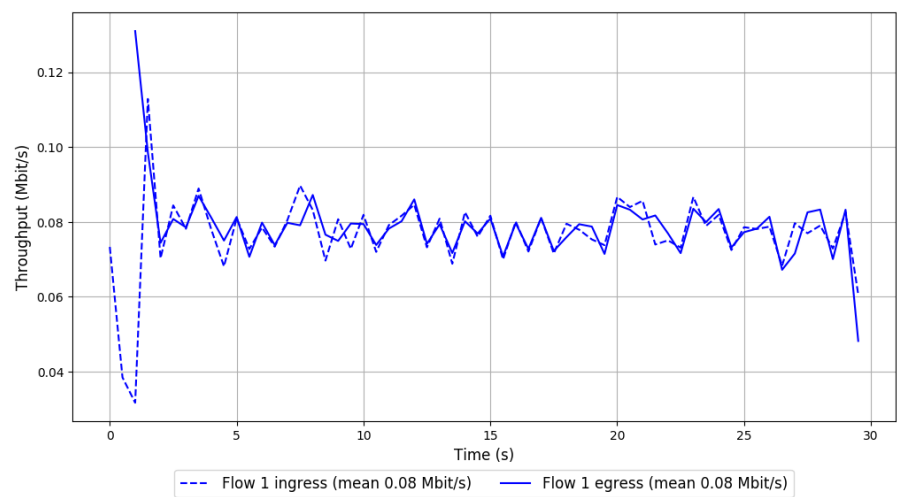


Run 2: Statistics of SCReAM

Start at: 2018-01-02 18:55:49
End at: 2018-01-02 18:56:19
Local clock offset: 0.587 ms
Remote clock offset: -13.064 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 144.018 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 144.018 ms
Loss rate: 0.66%

Run 2: Report of SReAM — Data Link

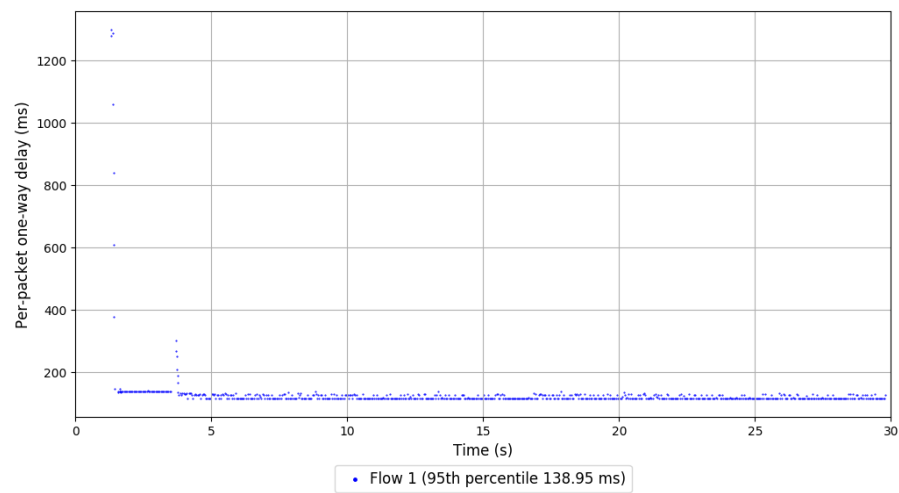
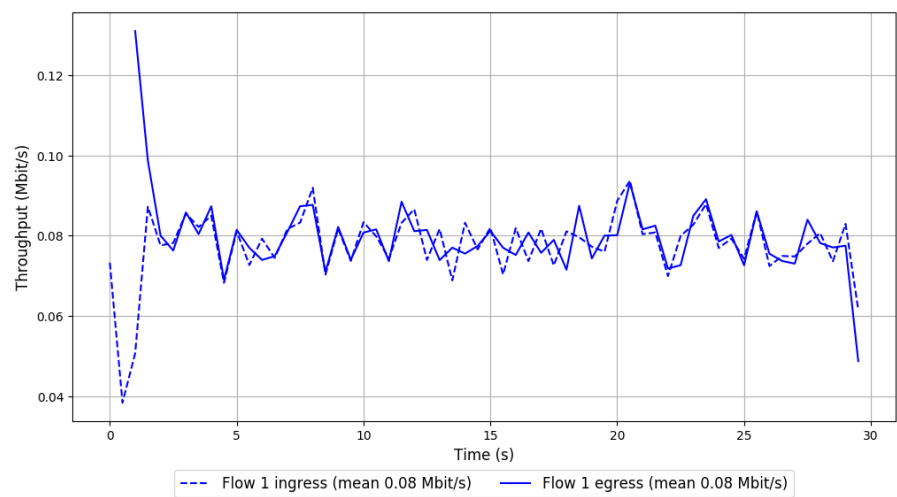


Run 3: Statistics of SCReAM

Start at: 2018-01-02 19:13:30
End at: 2018-01-02 19:14:00
Local clock offset: 0.501 ms
Remote clock offset: -3.366 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 138.950 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 138.950 ms
Loss rate: 0.66%

Run 3: Report of SReAM — Data Link

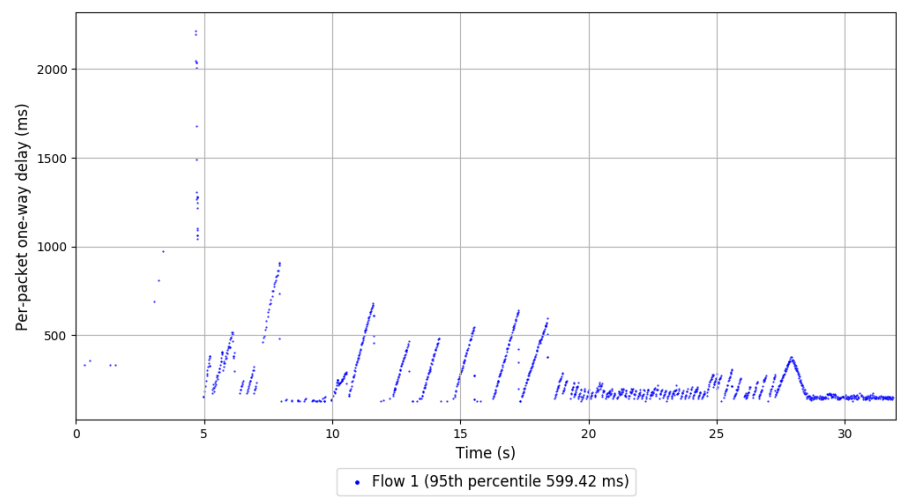
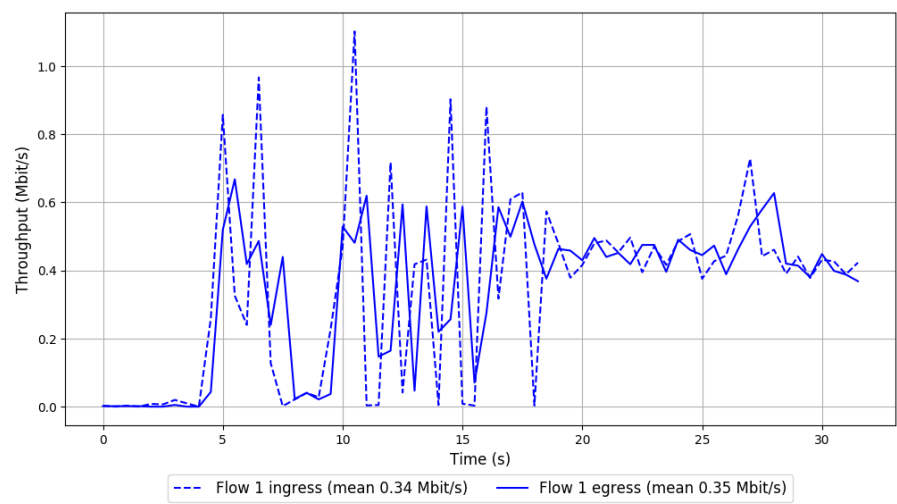


```
Run 1: Statistics of WebRTC media

Start at: 2018-01-02 18:47:32
End at: 2018-01-02 18:48:02
Local clock offset: 0.619 ms
Remote clock offset: -18.213 ms

# Below is generated by plot.py at 2018-01-02 20:24:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 599.424 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 599.424 ms
Loss rate: 0.93%
```


Run 1: Report of WebRTC media — Data Link

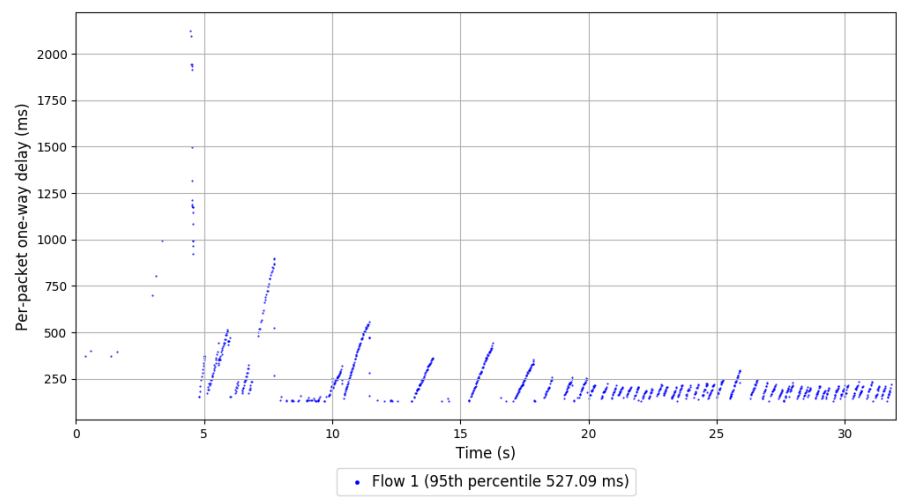
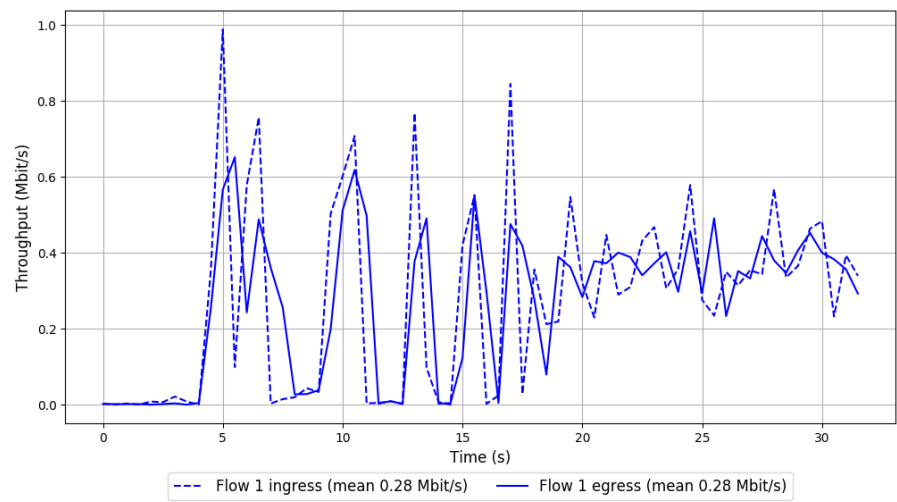


Run 2: Statistics of WebRTC media

Start at: 2018-01-02 19:05:13
End at: 2018-01-02 19:05:43
Local clock offset: 0.565 ms
Remote clock offset: -18.155 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 527.093 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 527.093 ms
Loss rate: 0.92%

Run 2: Report of WebRTC media — Data Link

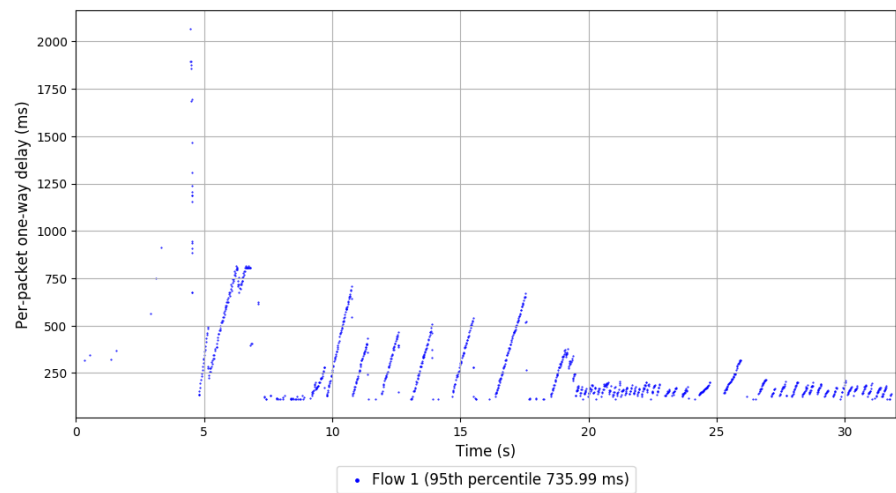
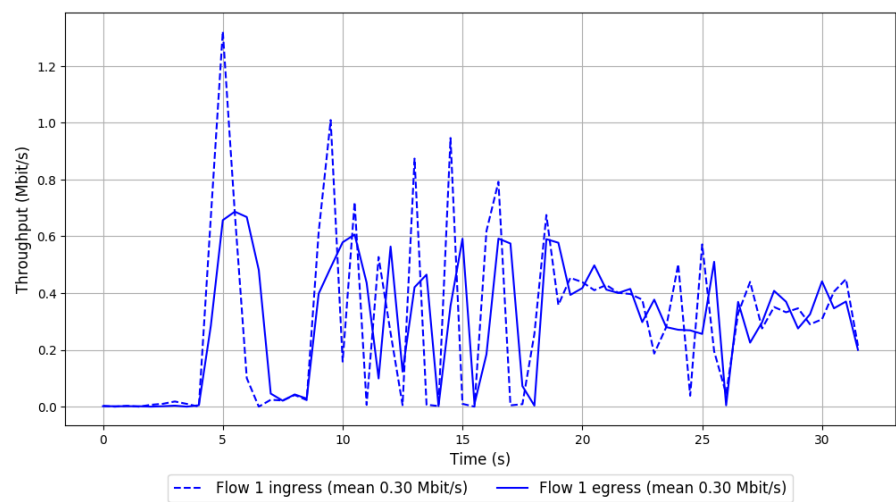


Run 3: Statistics of WebRTC media

Start at: 2018-01-02 19:22:52
End at: 2018-01-02 19:23:22
Local clock offset: 0.433 ms
Remote clock offset: -3.391 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 735.987 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 735.987 ms
Loss rate: 0.79%

Run 3: Report of WebRTC media — Data Link

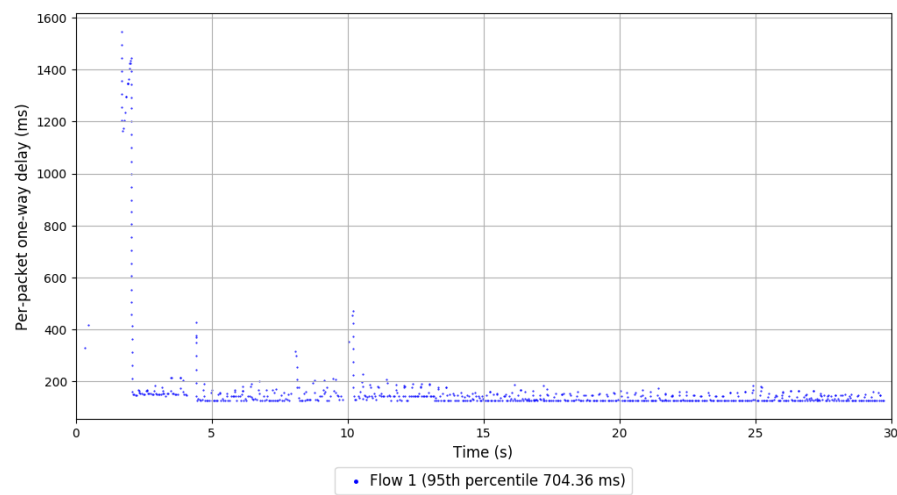
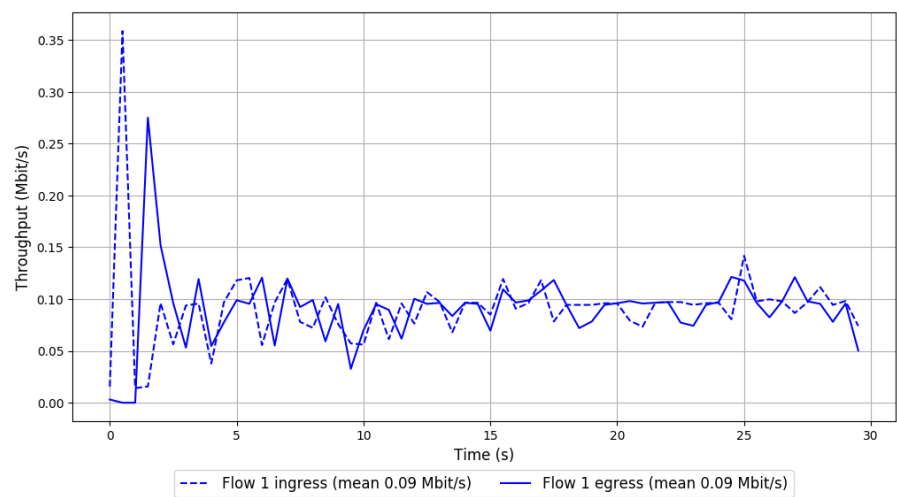


Run 1: Statistics of Sprout

Start at: 2018-01-02 18:39:20
End at: 2018-01-02 18:39:50
Local clock offset: 0.626 ms
Remote clock offset: -13.304 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 704.359 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 704.359 ms
Loss rate: 1.72%

Run 1: Report of Sprout — Data Link

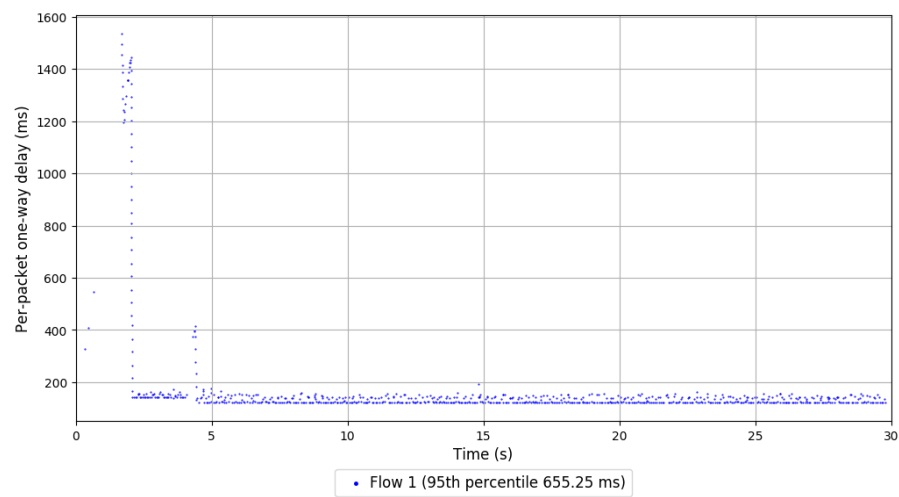
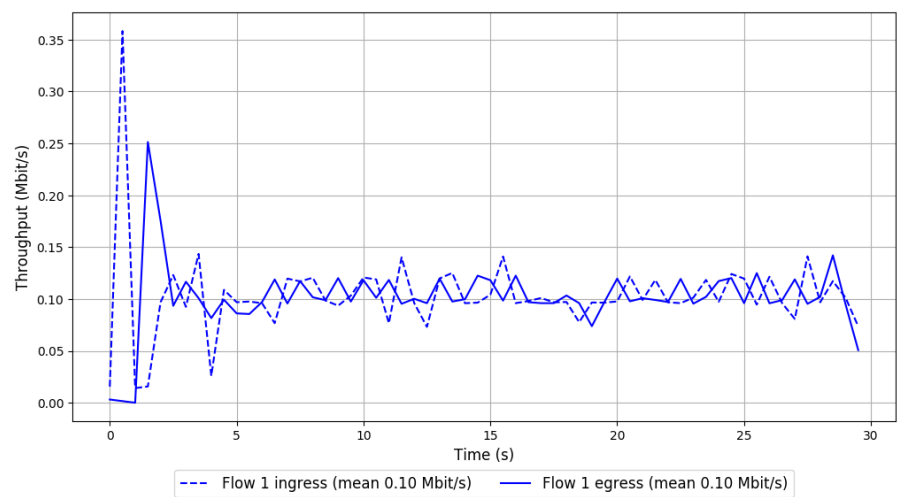


Run 2: Statistics of Sprout

Start at: 2018-01-02 18:56:59
End at: 2018-01-02 18:57:29
Local clock offset: 0.575 ms
Remote clock offset: -12.272 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 655.250 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 655.250 ms
Loss rate: 1.57%

Run 2: Report of Sprout — Data Link

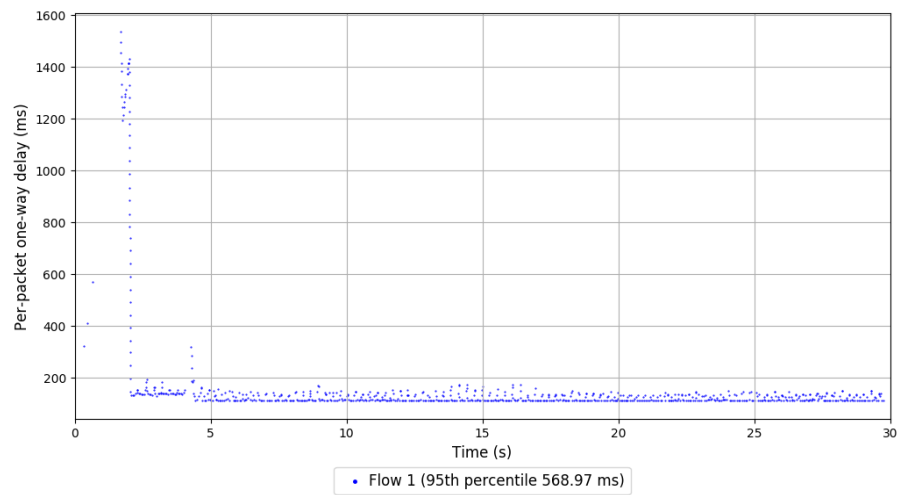
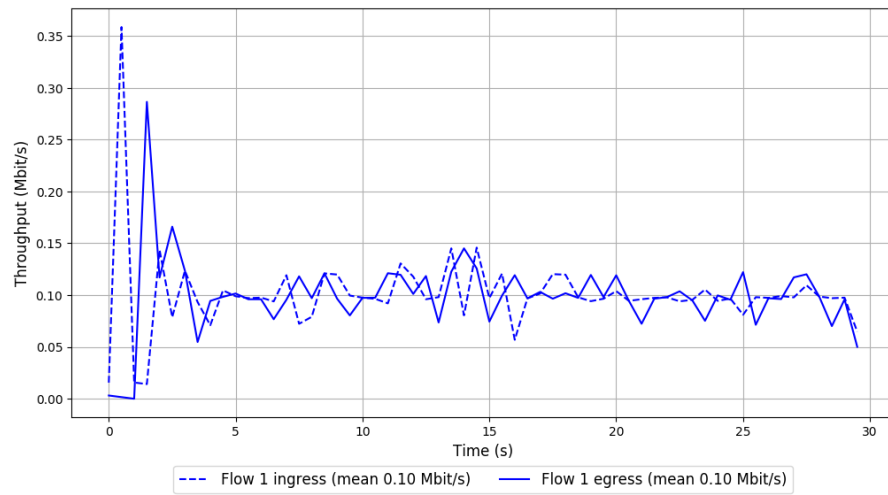


Run 3: Statistics of Sprout

Start at: 2018-01-02 19:14:40
End at: 2018-01-02 19:15:10
Local clock offset: 0.51 ms
Remote clock offset: -4.252 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 568.968 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 568.968 ms
Loss rate: 1.56%

Run 3: Report of Sprout — Data Link

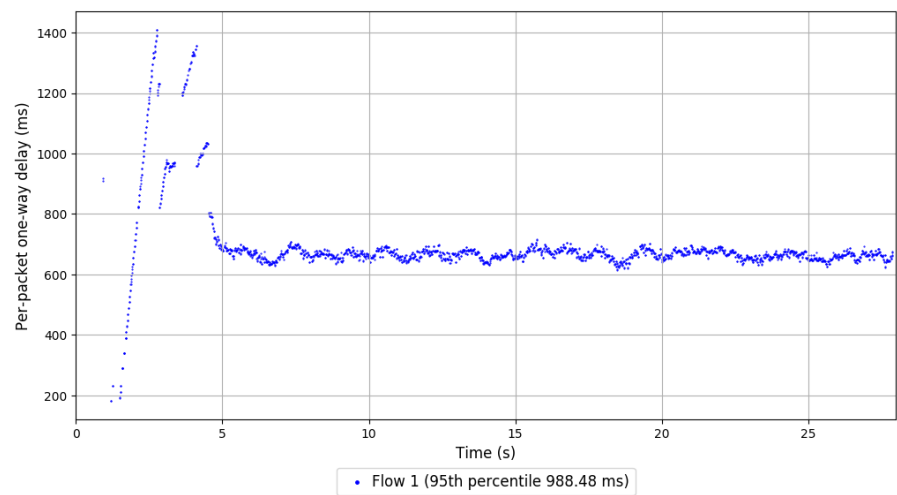
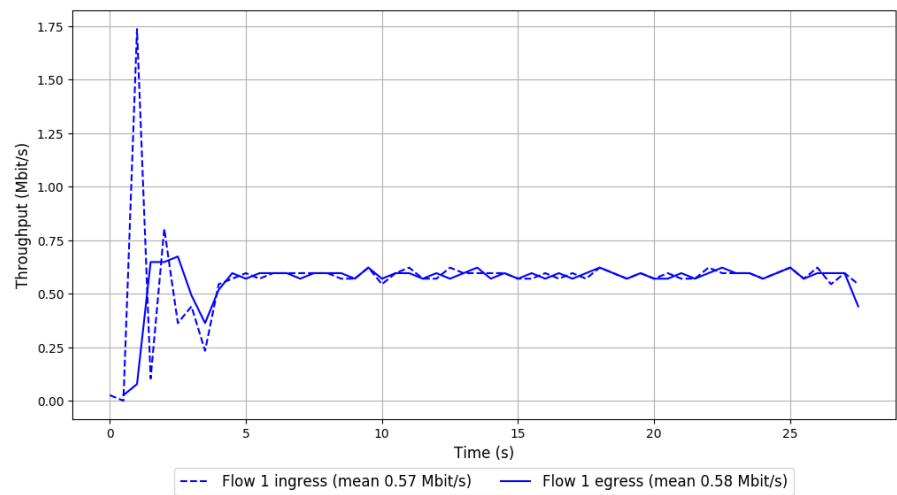


Run 1: Statistics of TaoVA-100x

Start at: 2018-01-02 18:49:52
End at: 2018-01-02 18:50:22
Local clock offset: 0.548 ms
Remote clock offset: -17.997 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 988.481 ms
Loss rate: 2.68%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 988.481 ms
Loss rate: 2.68%

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

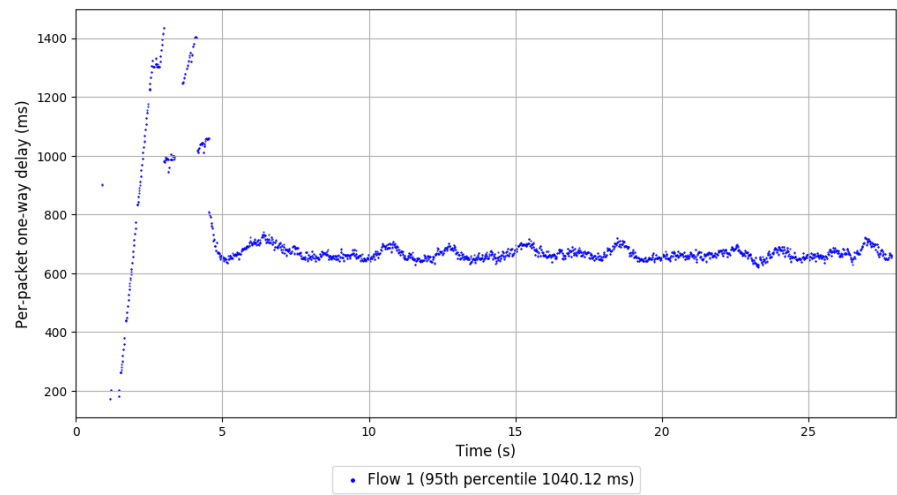
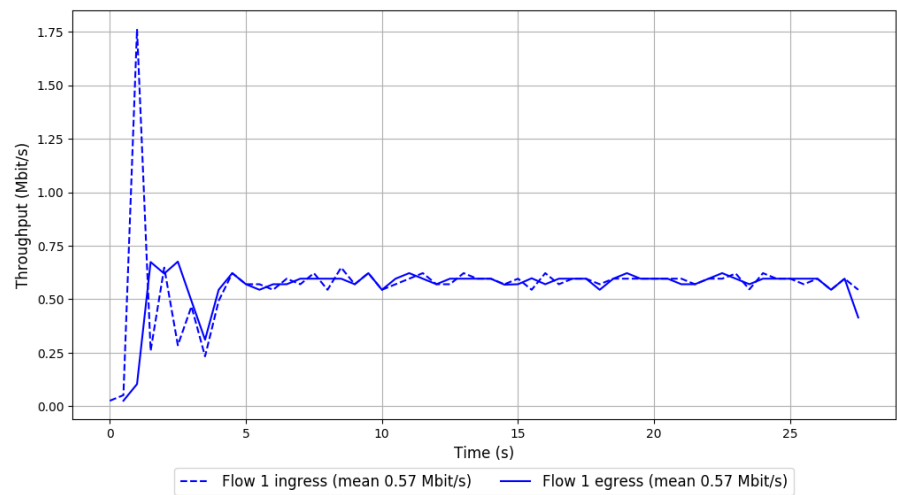


Run 2: Statistics of TaoVA-100x

Start at: 2018-01-02 19:07:34
End at: 2018-01-02 19:08:04
Local clock offset: 0.505 ms
Remote clock offset: -11.594 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1040.122 ms
Loss rate: 2.85%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1040.122 ms
Loss rate: 2.85%

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

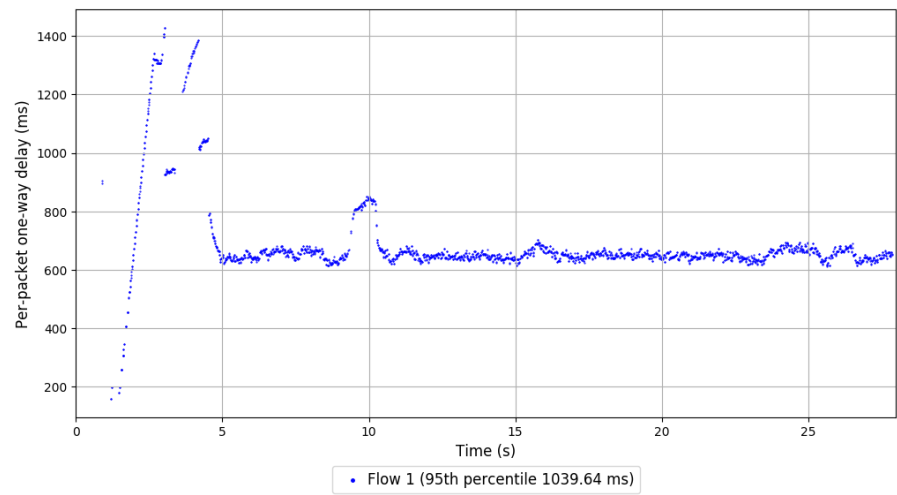
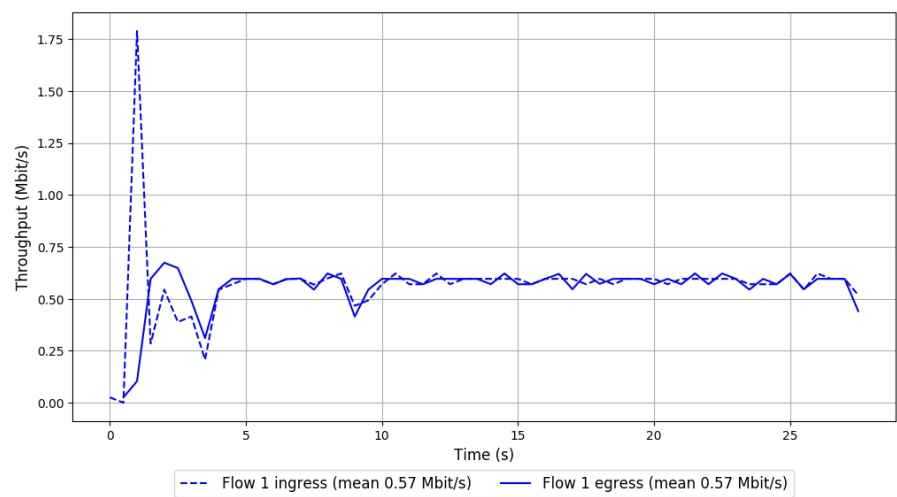


Run 3: Statistics of TaoVA-100x

Start at: 2018-01-02 19:25:12
End at: 2018-01-02 19:25:42
Local clock offset: 0.401 ms
Remote clock offset: -3.967 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1039.640 ms
Loss rate: 2.79%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1039.640 ms
Loss rate: 2.79%

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

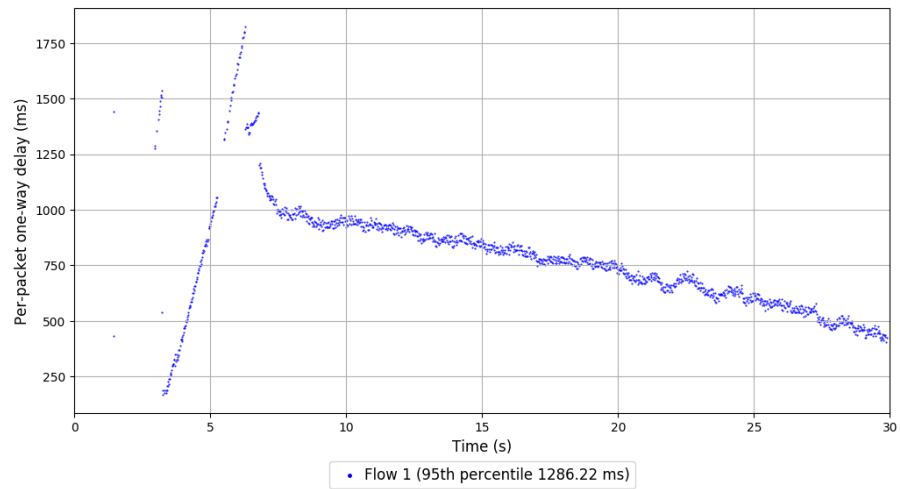
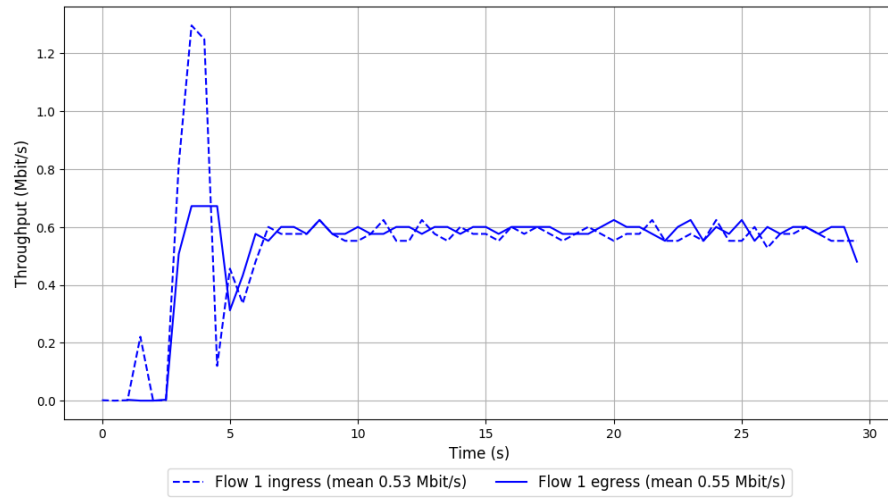


Run 1: Statistics of TCP Vegas

Start at: 2018-01-02 18:44:01
End at: 2018-01-02 18:44:31
Local clock offset: 0.67 ms
Remote clock offset: -17.51 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 1286.217 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 1286.217 ms
Loss rate: 1.72%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-01-02 19:01:43

End at: 2018-01-02 19:02:13

Local clock offset: 0.516 ms

Remote clock offset: -12.6 ms

Below is generated by plot.py at 2018-01-02 20:24:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 1231.178 ms

Loss rate: 1.90%

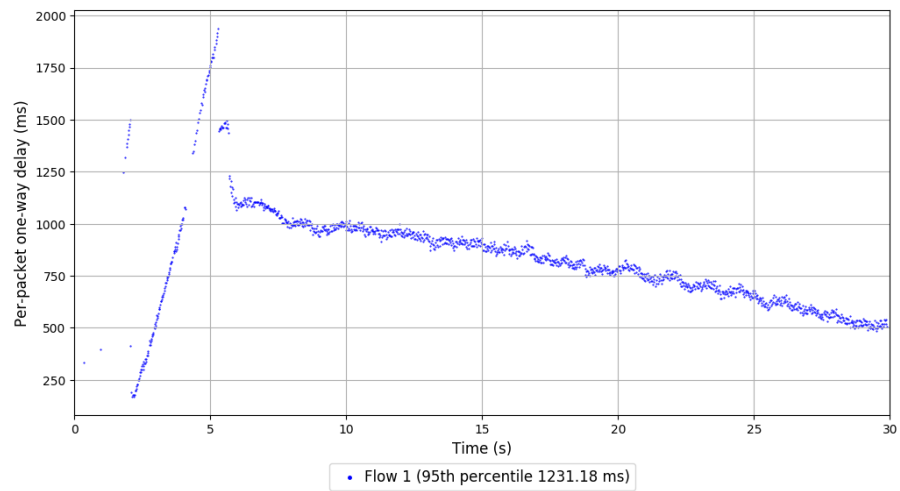
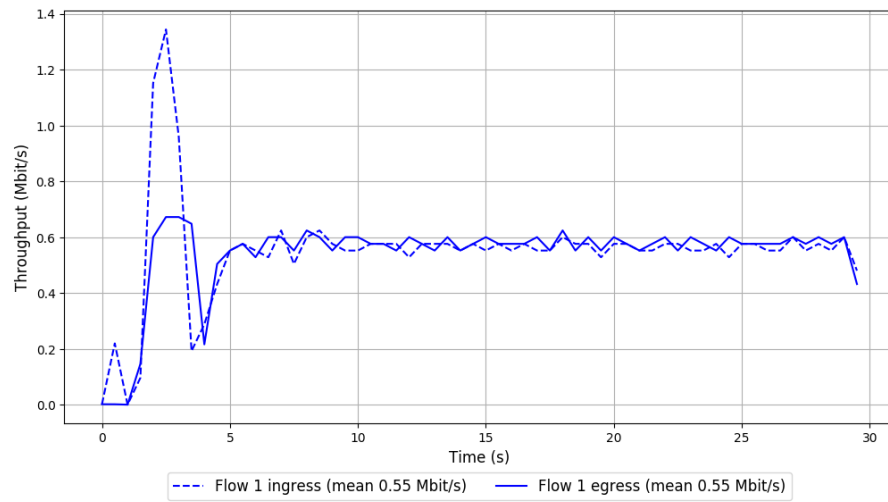
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 1231.178 ms

Loss rate: 1.90%

Run 2: Report of TCP Vegas — Data Link

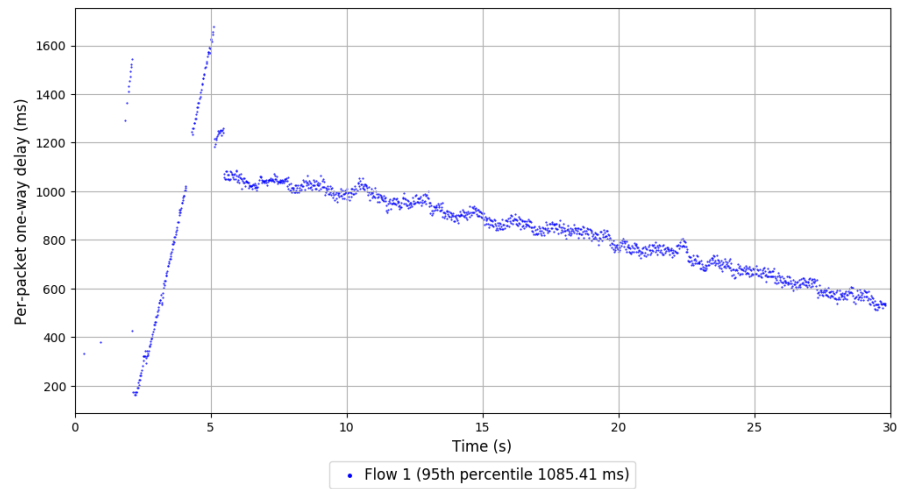
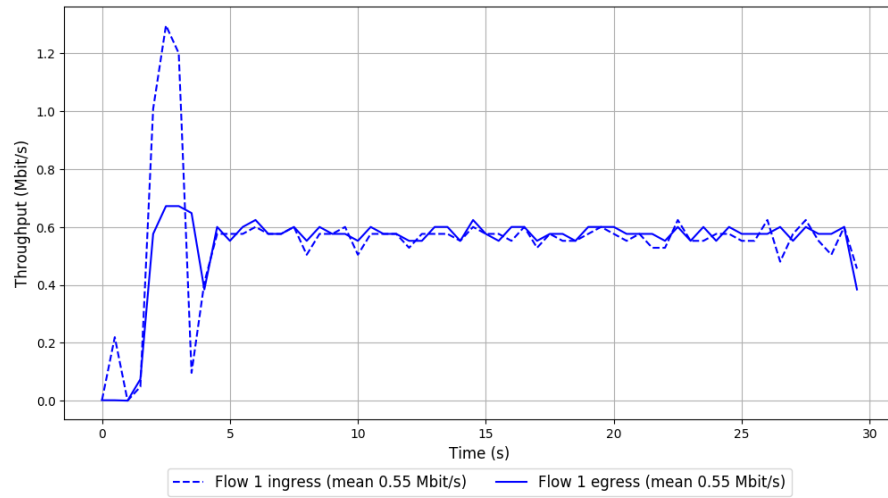


Run 3: Statistics of TCP Vegas

Start at: 2018-01-02 19:19:21
End at: 2018-01-02 19:19:51
Local clock offset: 0.431 ms
Remote clock offset: -4.169 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 1085.415 ms
Loss rate: 2.03%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 1085.415 ms
Loss rate: 2.03%

Run 3: Report of TCP Vegas — Data Link

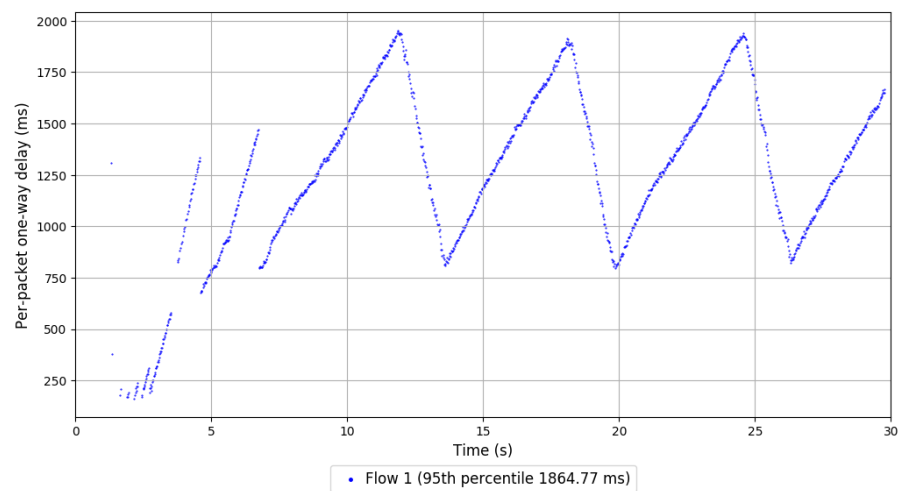
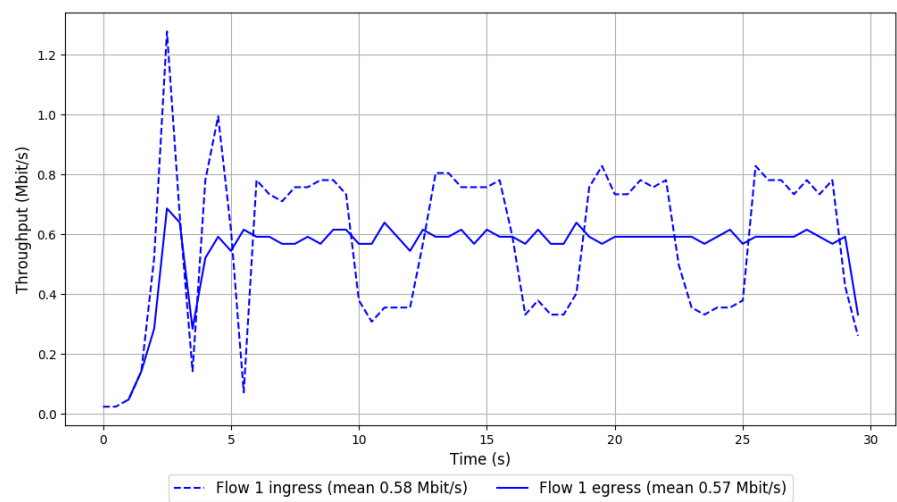


Run 1: Statistics of Verus

Start at: 2018-01-02 18:45:12
End at: 2018-01-02 18:45:42
Local clock offset: 0.655 ms
Remote clock offset: -12.541 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1864.771 ms
Loss rate: 5.84%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1864.771 ms
Loss rate: 5.84%

Run 1: Report of Verus — Data Link

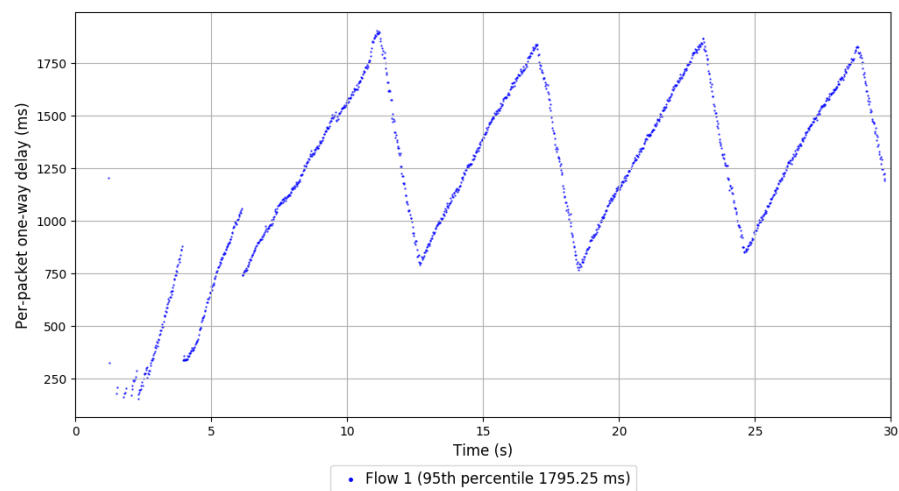
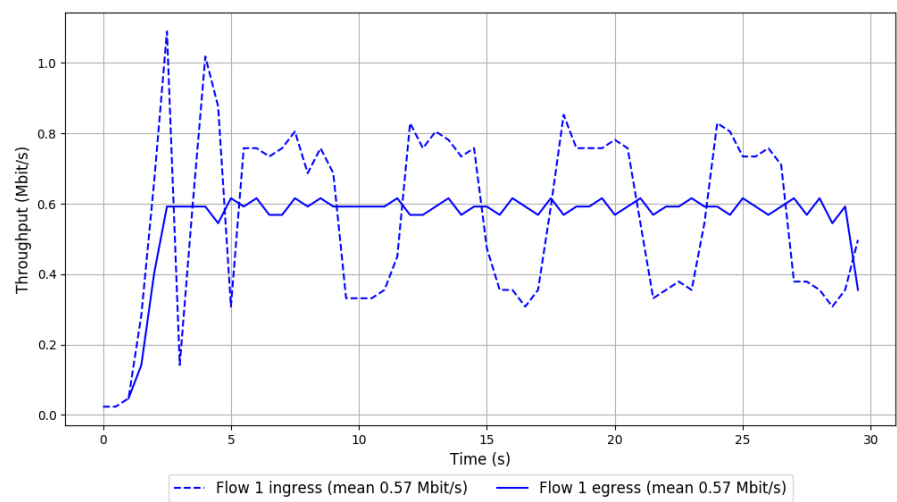


Run 2: Statistics of Verus

Start at: 2018-01-02 19:02:53
End at: 2018-01-02 19:03:23
Local clock offset: 0.588 ms
Remote clock offset: -17.396 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1795.247 ms
Loss rate: 3.21%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1795.247 ms
Loss rate: 3.21%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-01-02 19:20:31

End at: 2018-01-02 19:21:01

Local clock offset: 0.501 ms

Remote clock offset: 1.489 ms

Below is generated by plot.py at 2018-01-02 20:24:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 1834.545 ms

Loss rate: 5.53%

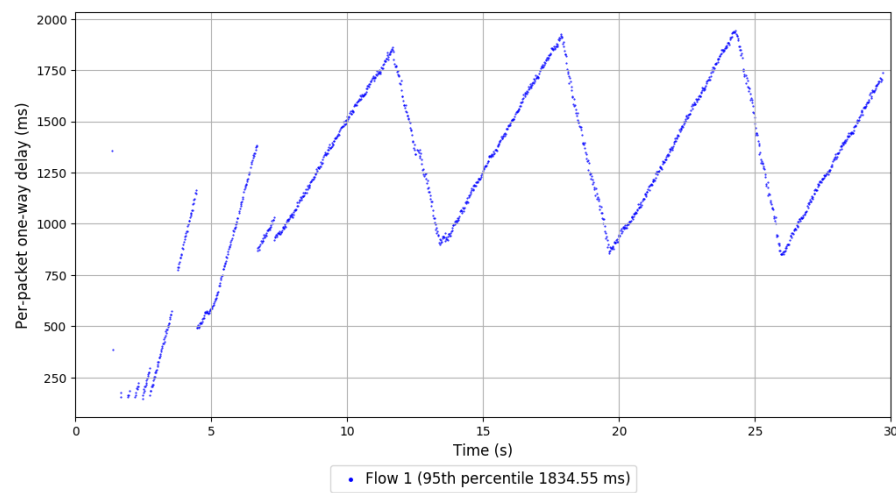
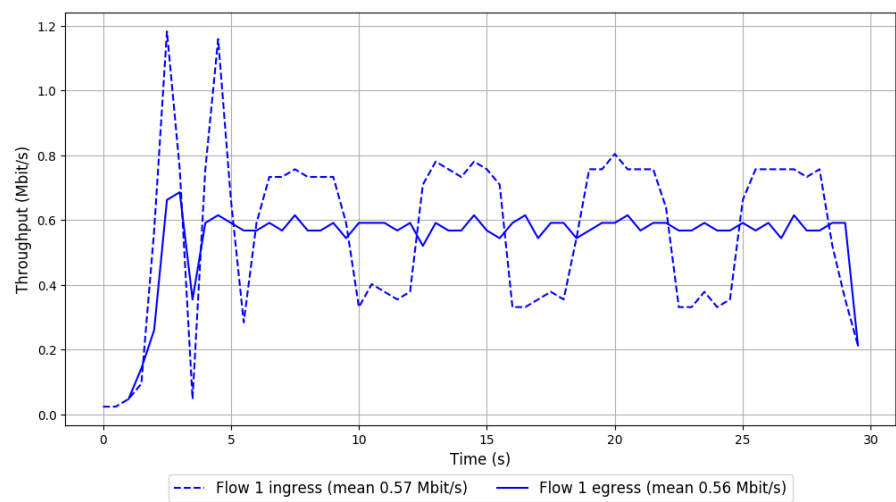
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 1834.545 ms

Loss rate: 5.53%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

Start at: 2018-01-02 18:46:22

End at: 2018-01-02 18:46:52

Local clock offset: 0.631 ms

Remote clock offset: -12.3 ms

Below is generated by plot.py at 2018-01-02 20:24:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 398.316 ms

Loss rate: 1.11%

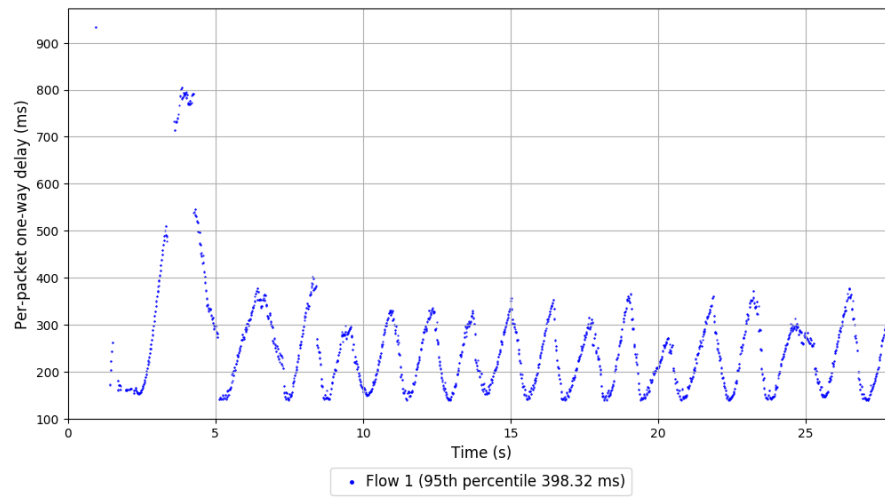
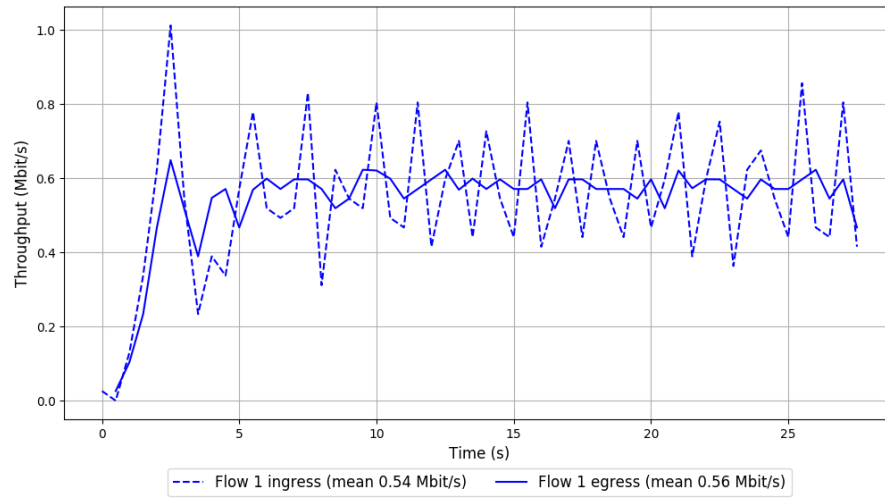
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 398.316 ms

Loss rate: 1.11%

Run 1: Report of Copa — Data Link

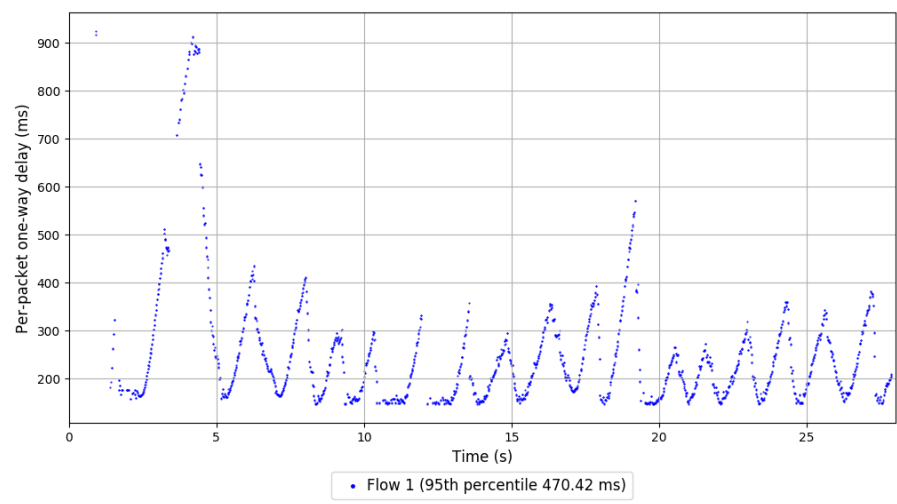
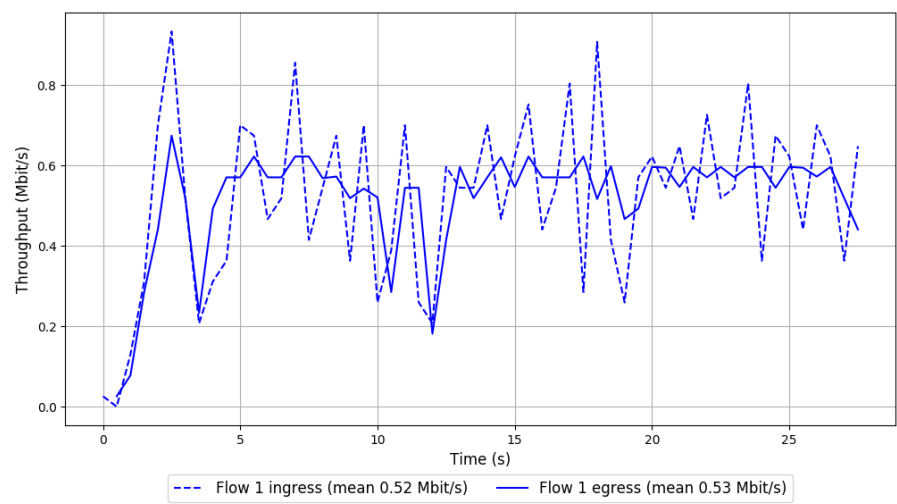


Run 2: Statistics of Copa

Start at: 2018-01-02 19:04:03
End at: 2018-01-02 19:04:33
Local clock offset: 0.484 ms
Remote clock offset: -17.815 ms

Below is generated by plot.py at 2018-01-02 20:24:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 470.423 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 470.423 ms
Loss rate: 1.34%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-01-02 19:21:41

End at: 2018-01-02 19:22:11

Local clock offset: 0.501 ms

Remote clock offset: 0.944 ms

Below is generated by plot.py at 2018-01-02 20:24:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 374.347 ms

Loss rate: 1.37%

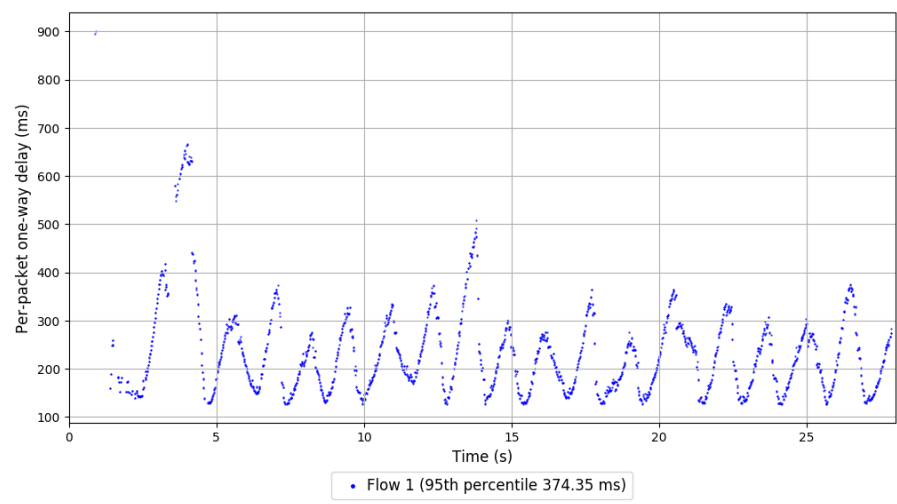
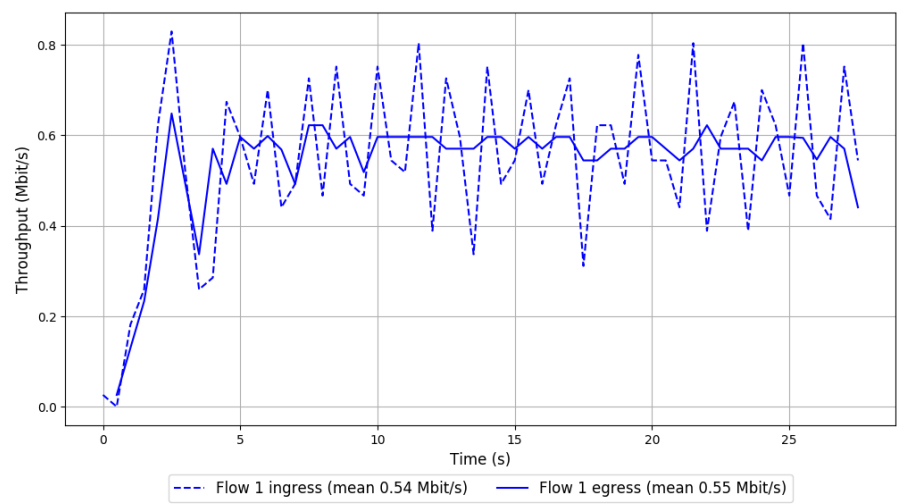
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 374.347 ms

Loss rate: 1.37%

Run 3: Report of Copa — Data Link

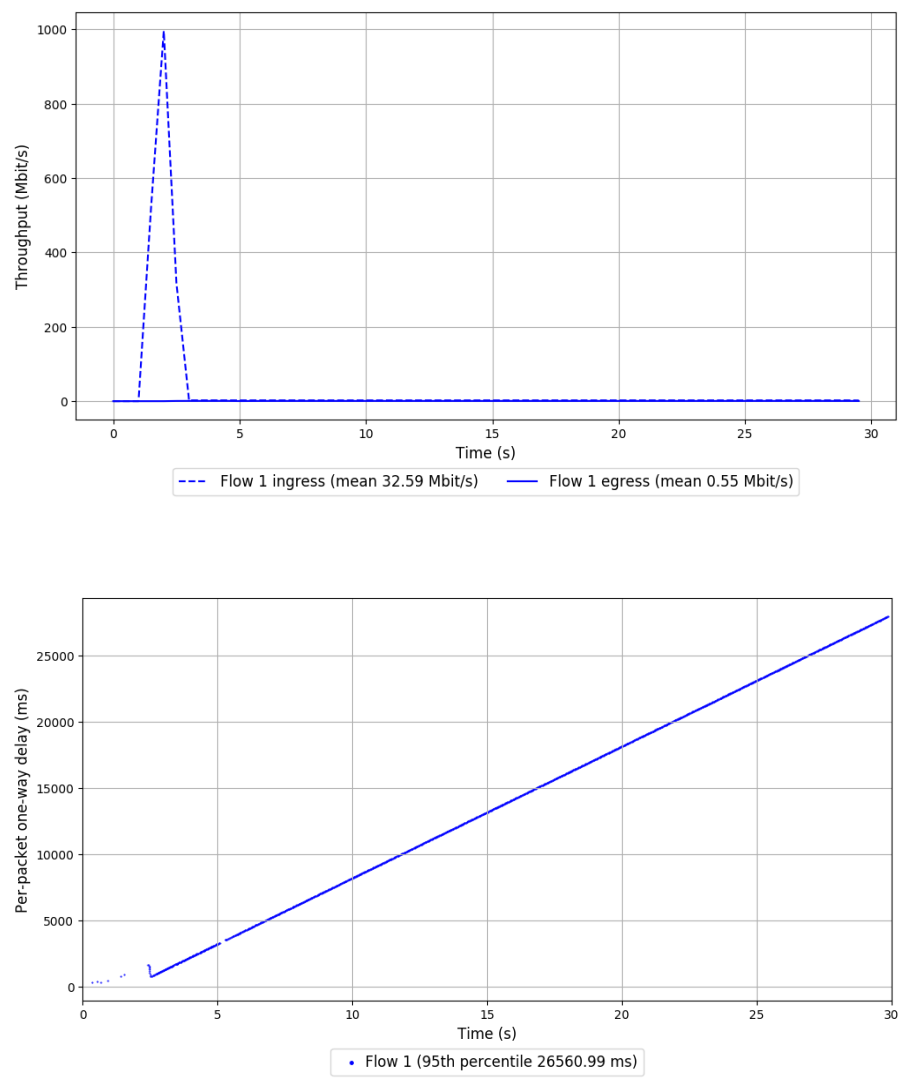


Run 1: Statistics of FillP

Start at: 2018-01-02 18:51:03
End at: 2018-01-02 18:51:34
Local clock offset: 0.549 ms
Remote clock offset: -17.93 ms

Below is generated by plot.py at 2018-01-02 20:24:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 26560.985 ms
Loss rate: 98.35%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 26560.985 ms
Loss rate: 98.35%

Run 1: Report of FillP — Data Link

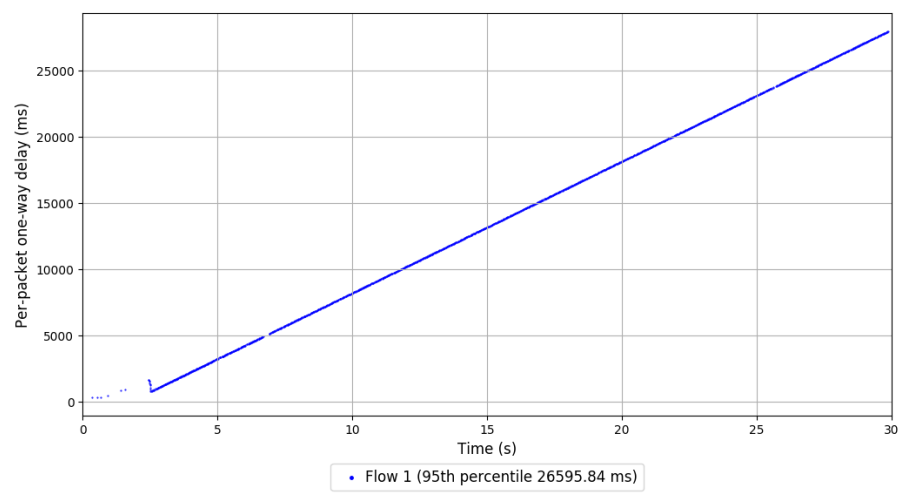
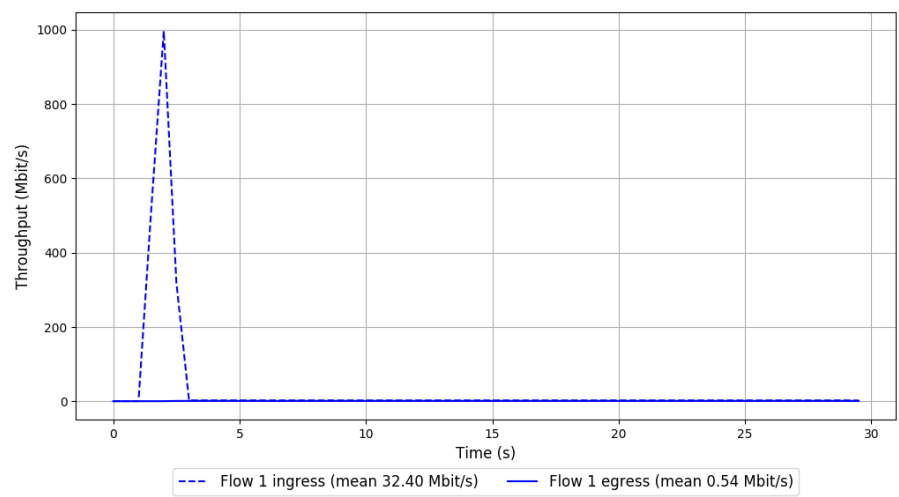


Run 2: Statistics of FillP

Start at: 2018-01-02 19:08:45
End at: 2018-01-02 19:09:15
Local clock offset: 0.558 ms
Remote clock offset: -17.87 ms

Below is generated by plot.py at 2018-01-02 20:24:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 26595.844 ms
Loss rate: 98.35%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 26595.844 ms
Loss rate: 98.35%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-01-02 19:26:23

End at: 2018-01-02 19:26:53

Local clock offset: 0.501 ms

Remote clock offset: 2.492 ms

Below is generated by plot.py at 2018-01-02 20:24:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 25449.365 ms

Loss rate: 98.39%

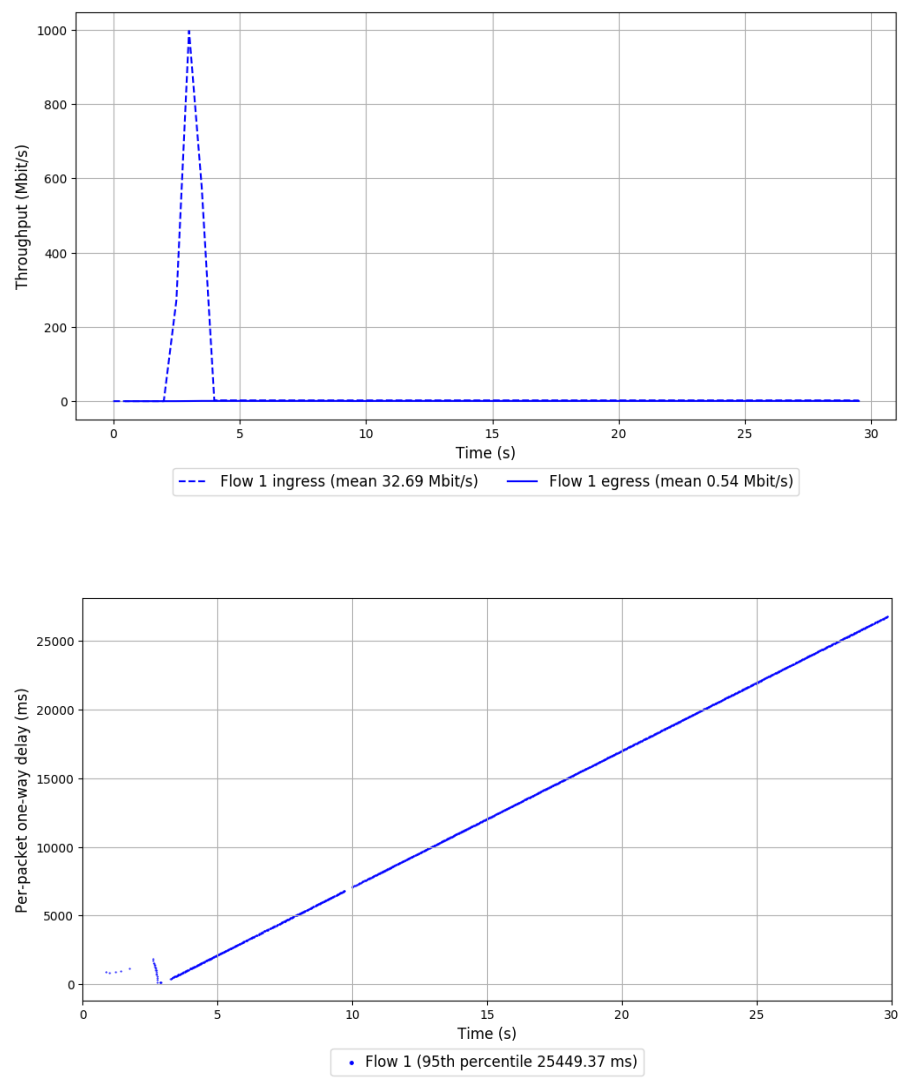
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 25449.365 ms

Loss rate: 98.39%

Run 3: Report of FillP — Data Link

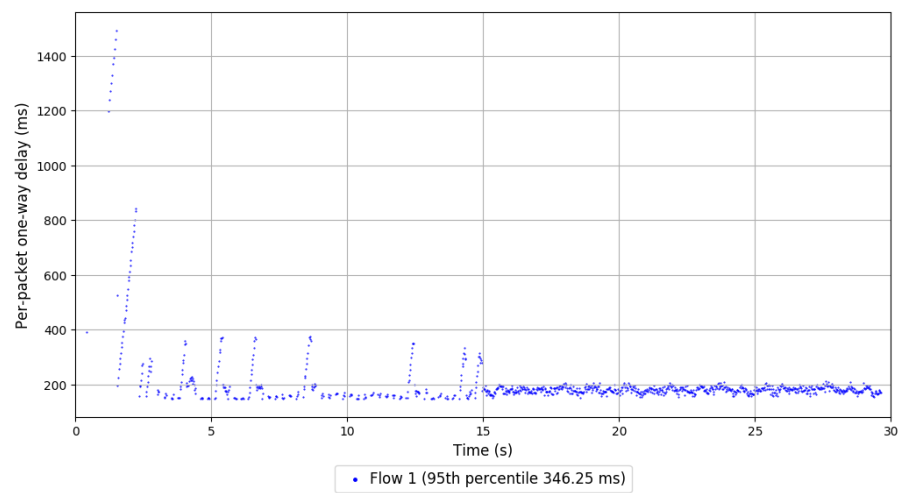
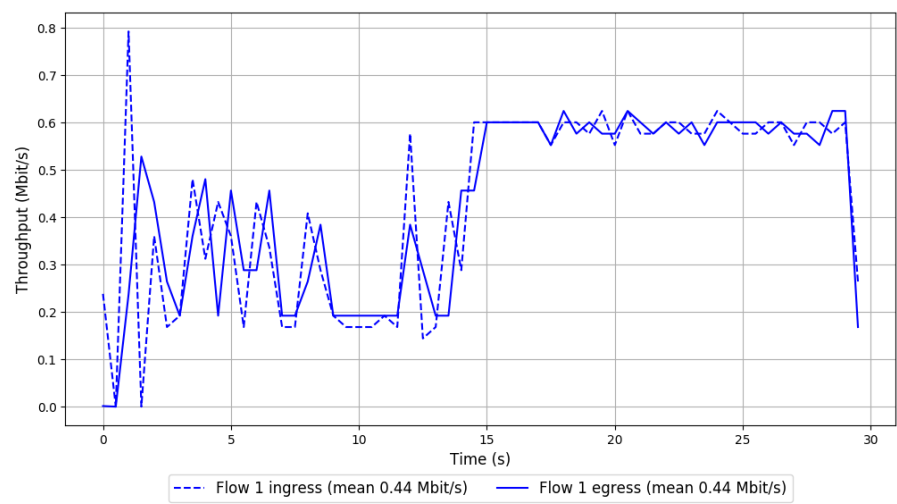


```
Run 1: Statistics of Indigo

Start at: 2018-01-02 18:53:28
End at: 2018-01-02 18:53:58
Local clock offset: 0.603 ms
Remote clock offset: -18.319 ms

# Below is generated by plot.py at 2018-01-02 20:24:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 346.250 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 346.250 ms
Loss rate: 1.20%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-01-02 19:11:09

End at: 2018-01-02 19:11:39

Local clock offset: 0.532 ms

Remote clock offset: 1.382 ms

Below is generated by plot.py at 2018-01-02 20:24:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.25 Mbit/s

95th percentile per-packet one-way delay: 1638.463 ms

Loss rate: 3.25%

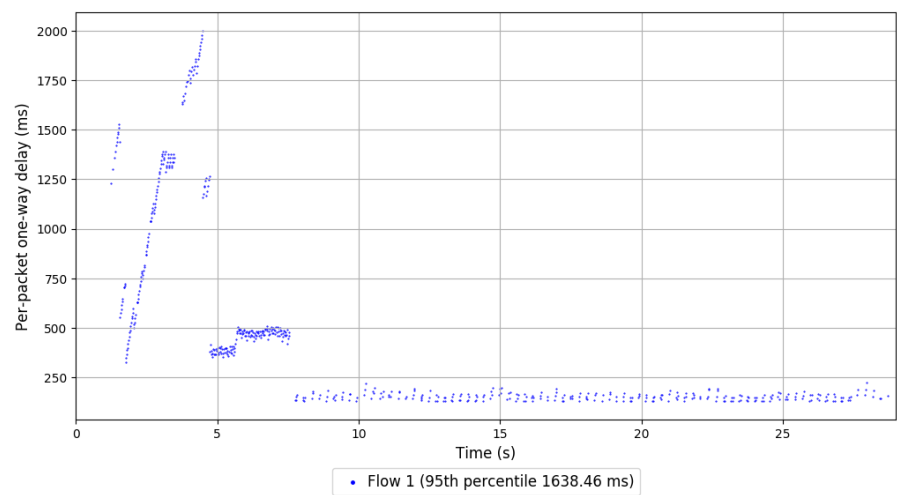
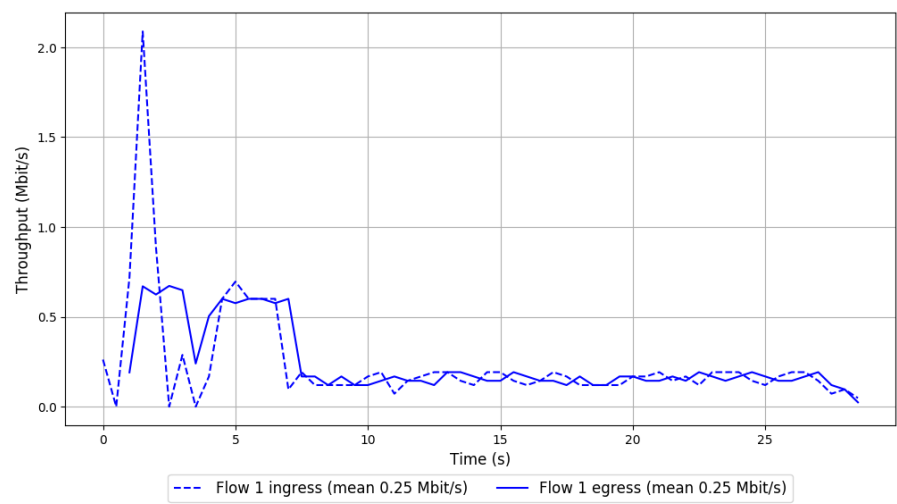
-- Flow 1:

Average throughput: 0.25 Mbit/s

95th percentile per-packet one-way delay: 1638.463 ms

Loss rate: 3.25%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-01-02 19:28:45
End at: 2018-01-02 19:29:15
Local clock offset: 0.465 ms
Remote clock offset: -4.472 ms

Below is generated by plot.py at 2018-01-02 20:24:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 326.852 ms
Loss rate: 1.55%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 326.852 ms
Loss rate: 1.55%

Run 3: Report of Indigo — Data Link

