

Pantheon Report

Generated at 2017-12-20 17:49:02 (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).

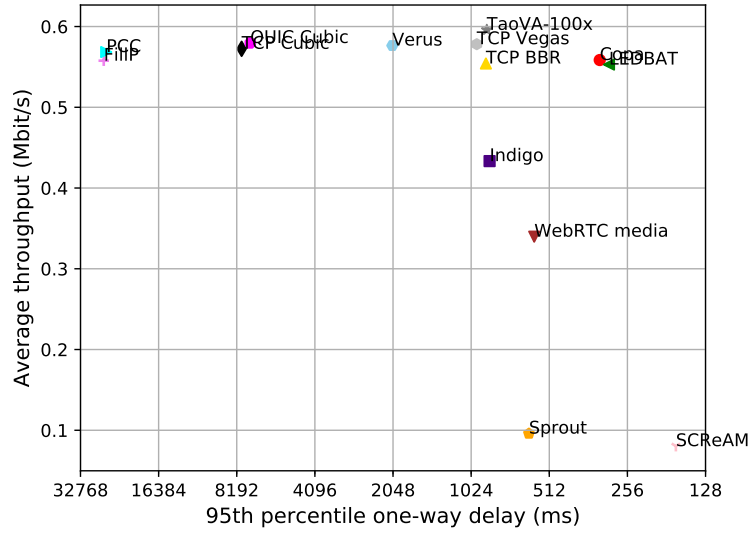
Tested BBR with qdisc of Fair Queuing (*fq*), and other schemes with the default Linux qdisc (*pfifo_fast*).

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

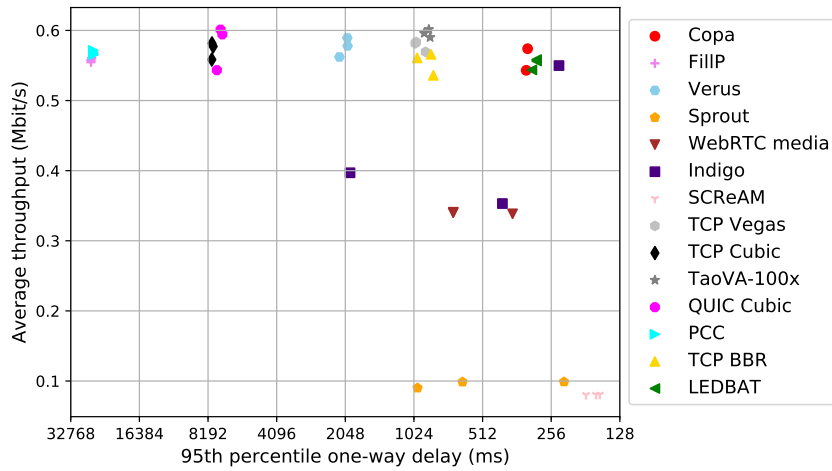
Git summary:

```
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 @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/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)	mean 95th-%ile delay (ms)	mean loss rate (%)
		flow 1	flow 1	flow 1
TCP BBR	3	0.56	898.43	2.20
TCP Cubic	3	0.57	7846.07	30.97
LEDBAT	3	0.55	301.55	1.30
PCC	3	0.57	26073.12	98.48
QUIC Cubic	3	0.58	7266.42	28.95
SCReAM	3	0.08	166.55	0.70
WebRTC media	3	0.34	585.21	1.90
Sprout	3	0.10	613.39	1.38
TaoVA-100x	3	0.60	891.32	2.64
TCP Vegas	3	0.58	974.37	1.68
Verus	3	0.58	2061.05	5.60
Copa	2	0.55	327.28	1.45
FillP	3	0.56	26657.67	98.99
Indigo	3	0.43	869.44	10.88

Run 1: Statistics of TCP BBR

Start at: 2017-12-20 16:18:09

End at: 2017-12-20 16:18:39

Local clock offset: 0.007 ms

Remote clock offset: 13.525 ms

Below is generated by plot.py at 2017-12-20 17:48:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 861.604 ms

Loss rate: 2.04%

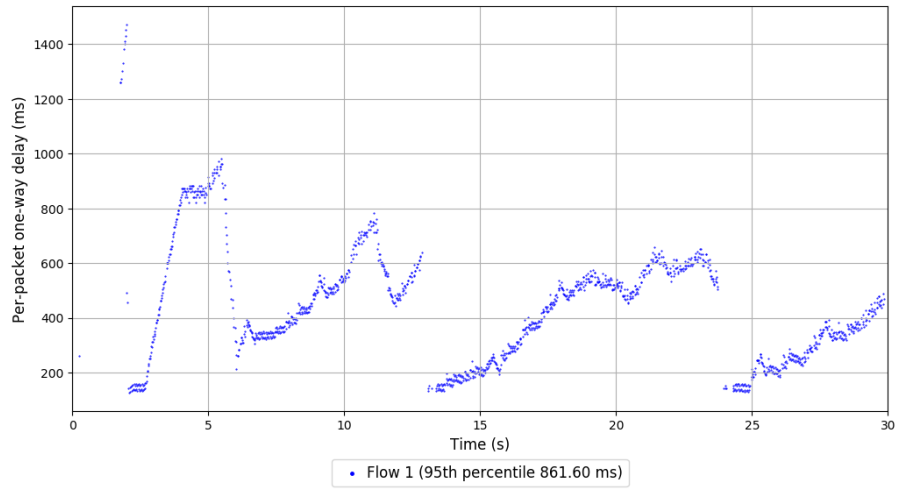
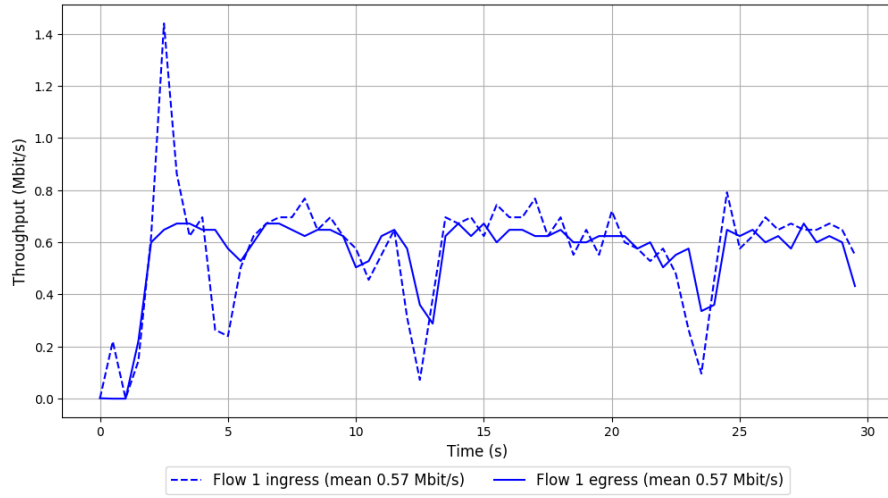
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 861.604 ms

Loss rate: 2.04%

Run 1: Report of TCP BBR — Data Link

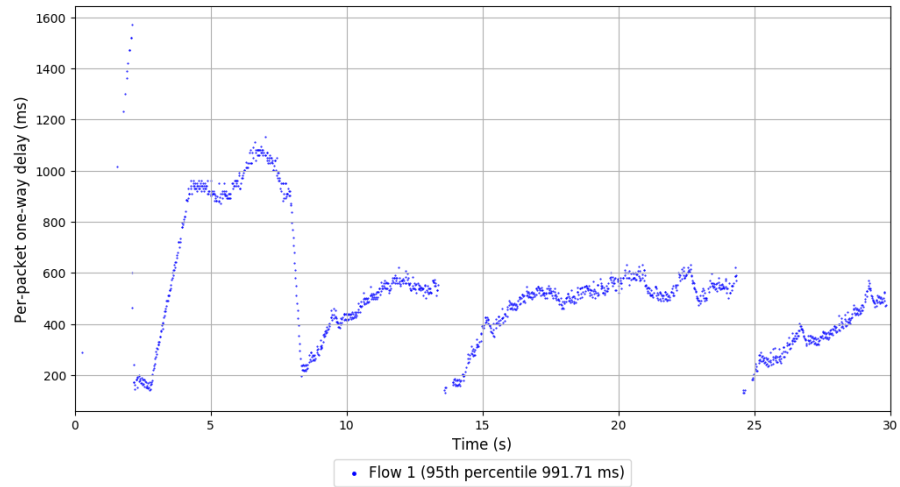
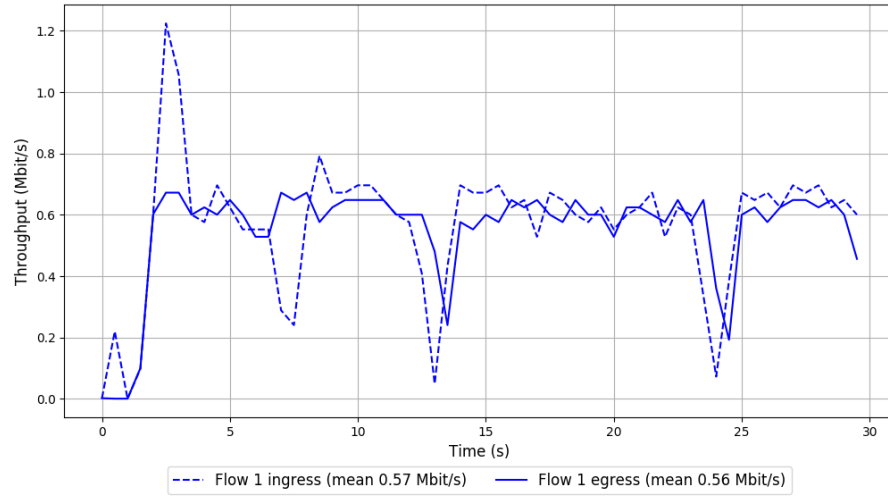


Run 2: Statistics of TCP BBR

Start at: 2017-12-20 16:36:00
End at: 2017-12-20 16:36:30
Local clock offset: -0.013 ms
Remote clock offset: 14.577 ms

Below is generated by plot.py at 2017-12-20 17:48:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 991.713 ms
Loss rate: 2.26%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 991.713 ms
Loss rate: 2.26%

Run 2: Report of TCP BBR — Data Link

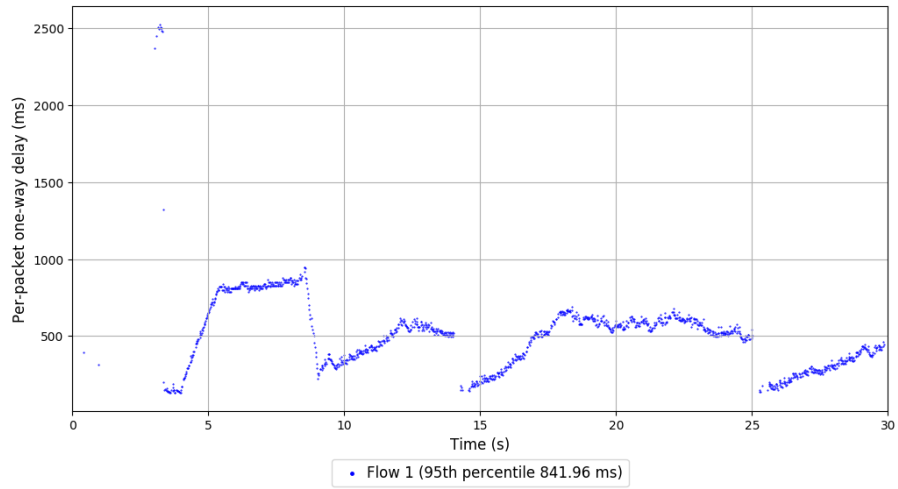
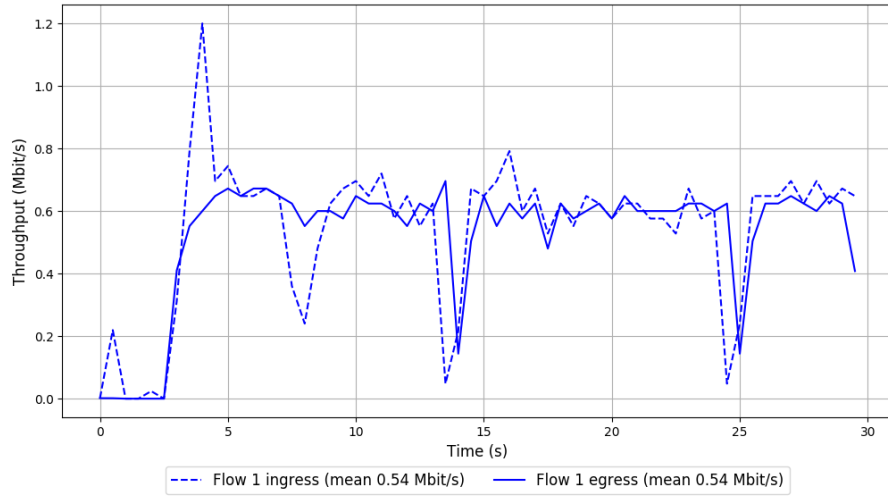


Run 3: Statistics of TCP BBR

Start at: 2017-12-20 16:53:42
End at: 2017-12-20 16:54:12
Local clock offset: -0.064 ms
Remote clock offset: 10.318 ms

Below is generated by plot.py at 2017-12-20 17:48:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 841.961 ms
Loss rate: 2.30%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 841.961 ms
Loss rate: 2.30%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2017-12-20 16:09:51

End at: 2017-12-20 16:10:21

Local clock offset: 0.012 ms

Remote clock offset: 8.584 ms

Below is generated by plot.py at 2017-12-20 17:48:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7873.589 ms

Loss rate: 30.84%

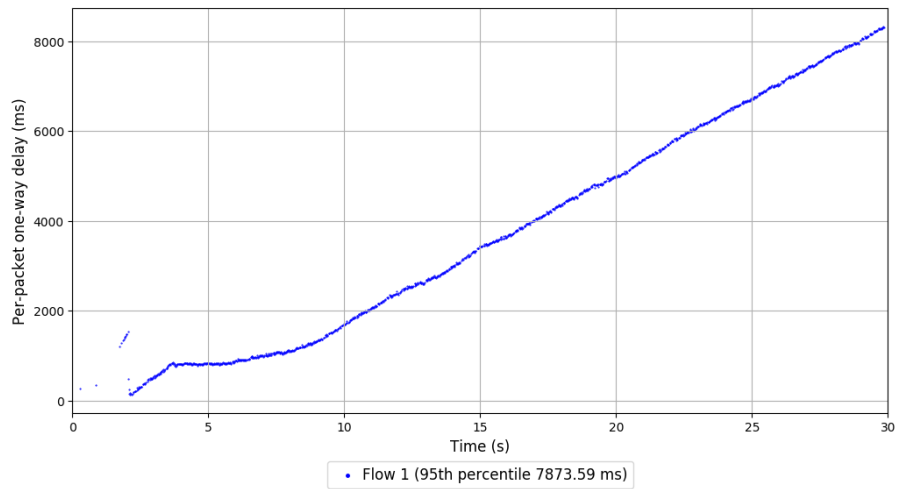
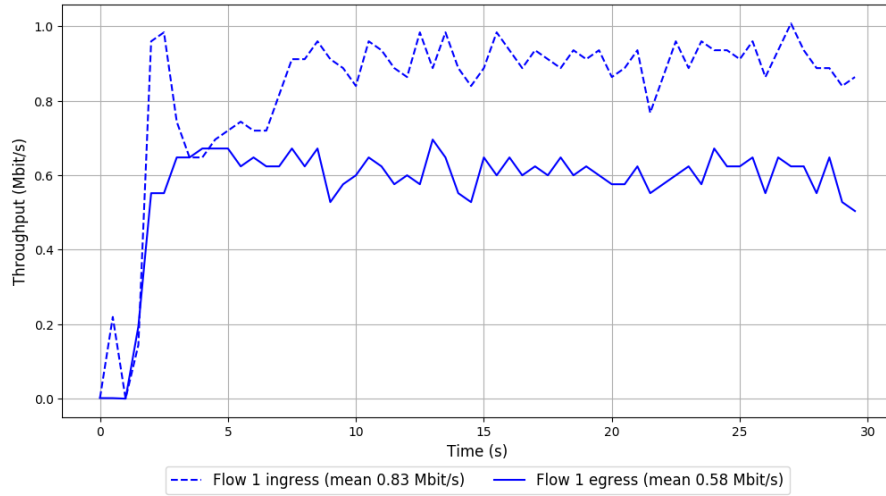
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7873.589 ms

Loss rate: 30.84%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2017-12-20 16:27:34

End at: 2017-12-20 16:28:04

Local clock offset: -0.0 ms

Remote clock offset: 9.746 ms

Below is generated by plot.py at 2017-12-20 17:48:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7779.598 ms

Loss rate: 30.82%

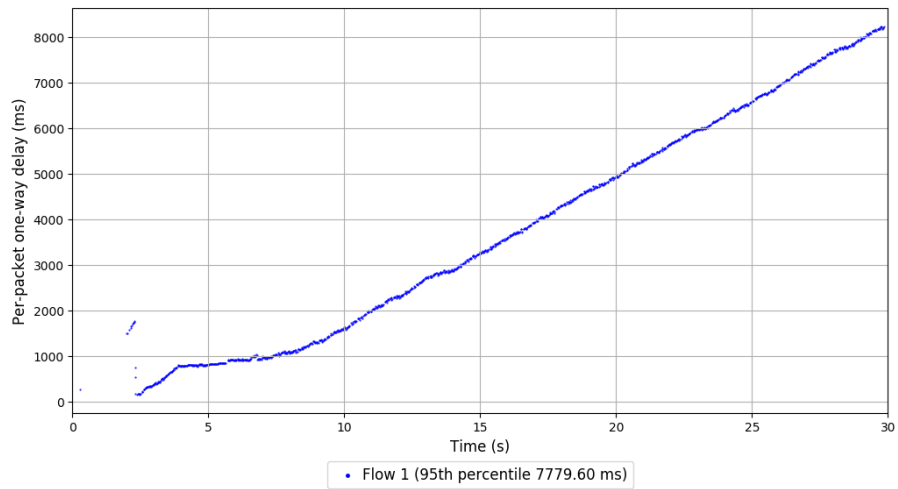
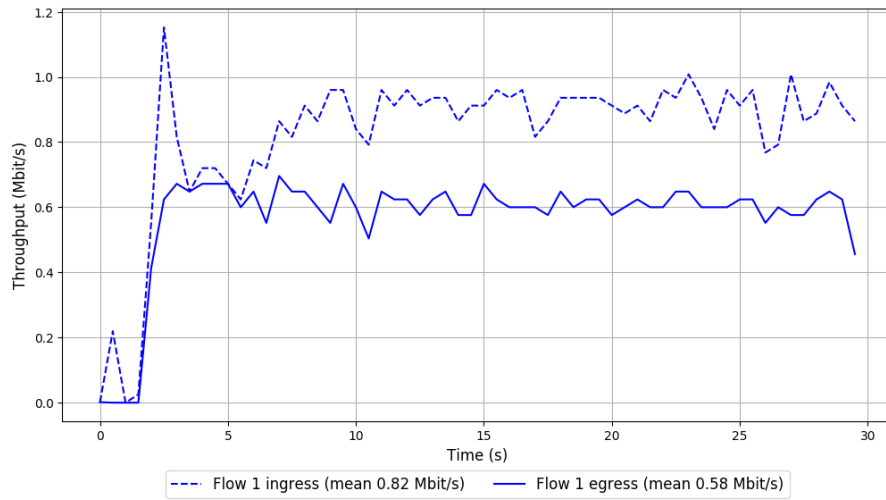
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7779.598 ms

Loss rate: 30.82%

Run 2: Report of TCP Cubic — Data Link

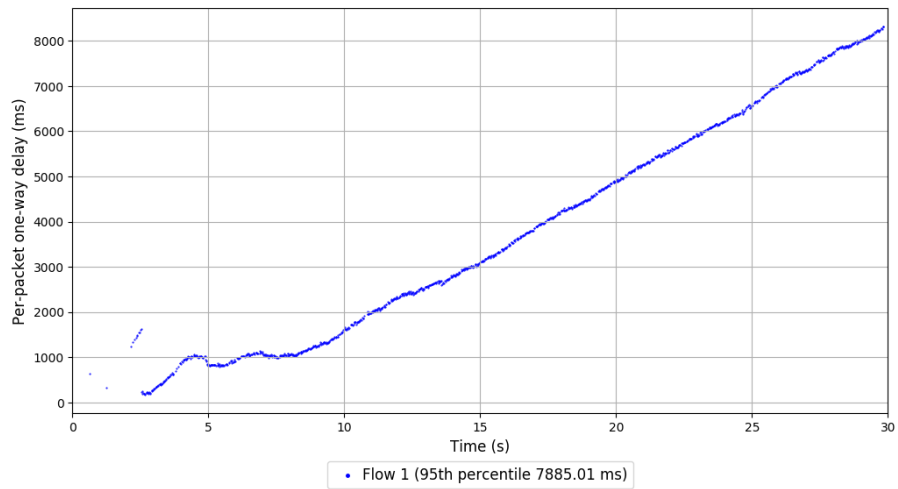
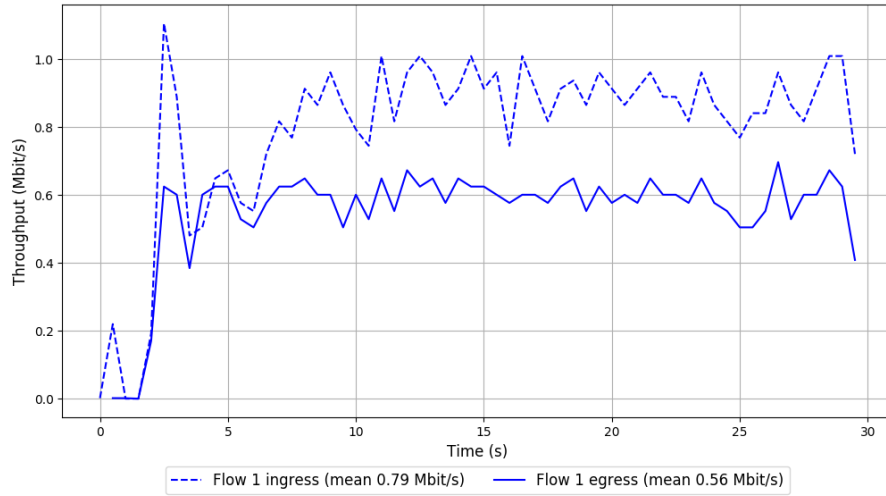


Run 3: Statistics of TCP Cubic

Start at: 2017-12-20 16:45:24
End at: 2017-12-20 16:45:54
Local clock offset: -0.102 ms
Remote clock offset: 14.842 ms

Below is generated by plot.py at 2017-12-20 17:48:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7885.009 ms
Loss rate: 31.26%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7885.009 ms
Loss rate: 31.26%

Run 3: Report of TCP Cubic — Data Link

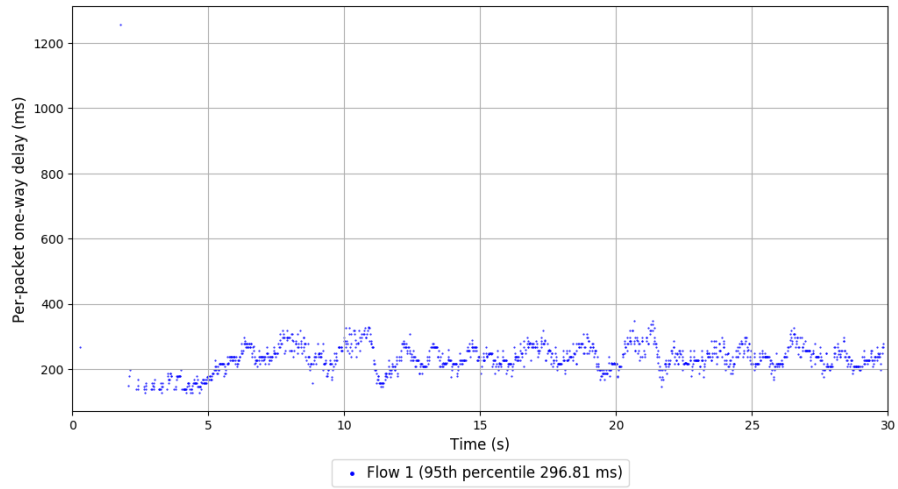
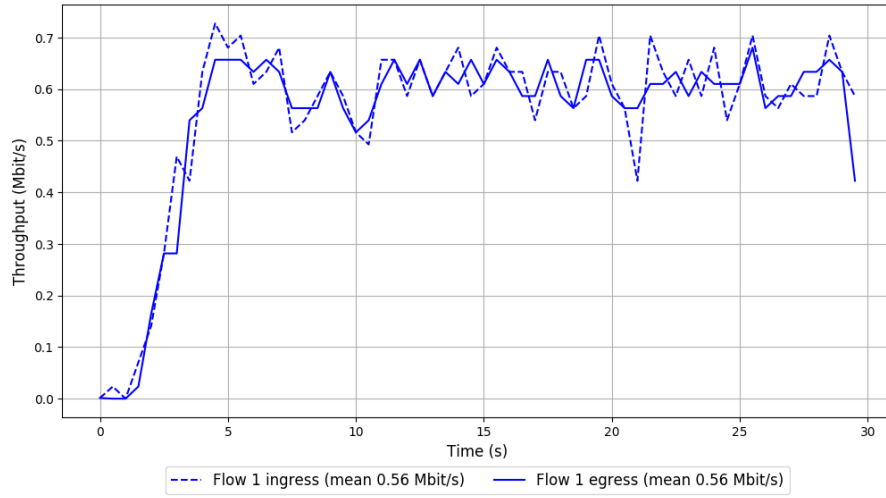


Run 1: Statistics of LEDBAT

Start at: 2017-12-20 16:08:41
End at: 2017-12-20 16:09:11
Local clock offset: -0.0 ms
Remote clock offset: 15.004 ms

Below is generated by plot.py at 2017-12-20 17:48:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 296.808 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 296.808 ms
Loss rate: 1.34%

Run 1: Report of LEDBAT — Data Link

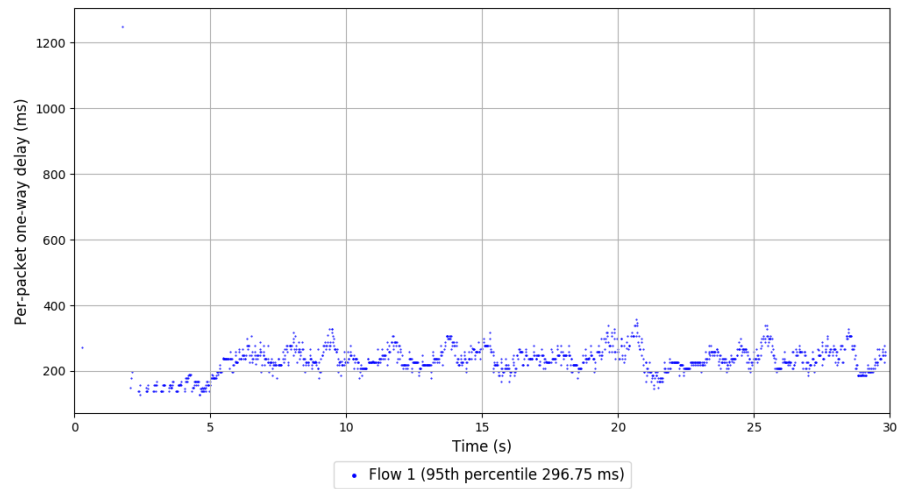
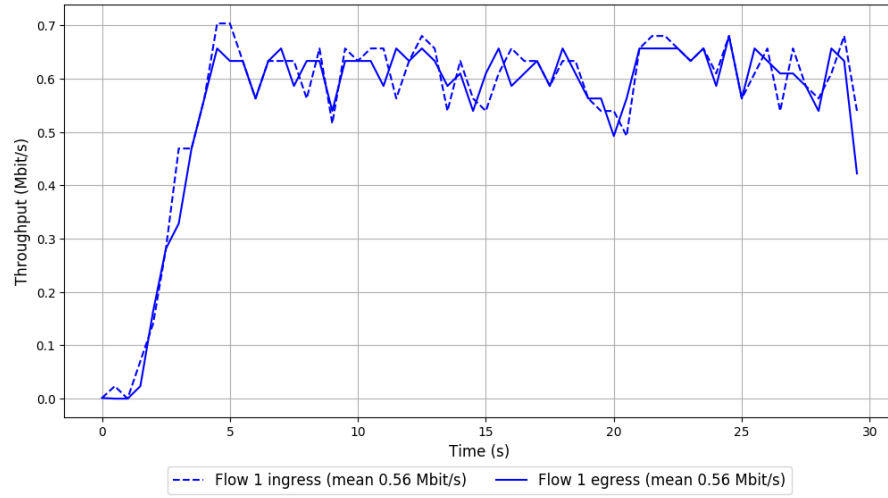


Run 2: Statistics of LEDBAT

Start at: 2017-12-20 16:26:24
End at: 2017-12-20 16:26:54
Local clock offset: -0.091 ms
Remote clock offset: 14.623 ms

Below is generated by plot.py at 2017-12-20 17:48:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 296.750 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 296.750 ms
Loss rate: 1.26%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2017-12-20 16:44:13

End at: 2017-12-20 16:44:43

Local clock offset: -0.021 ms

Remote clock offset: 9.154 ms

Below is generated by plot.py at 2017-12-20 17:48:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 311.103 ms

Loss rate: 1.30%

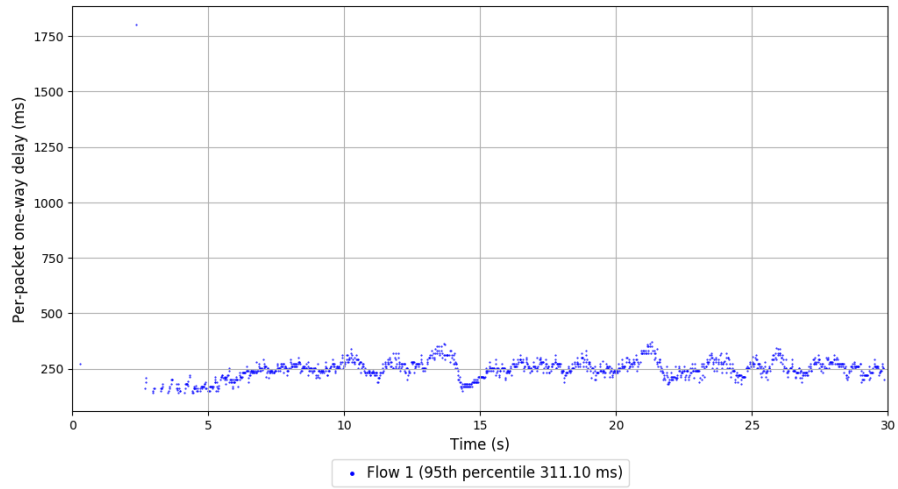
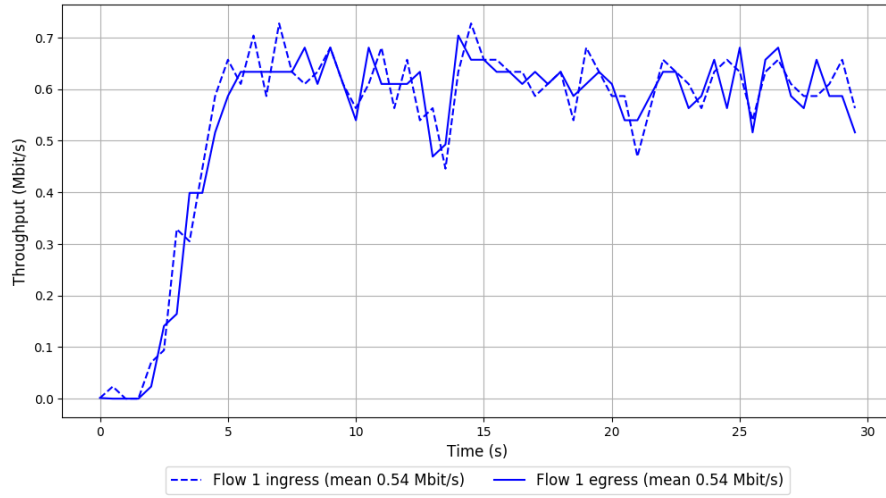
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 311.103 ms

Loss rate: 1.30%

Run 3: Report of LEDBAT — Data Link

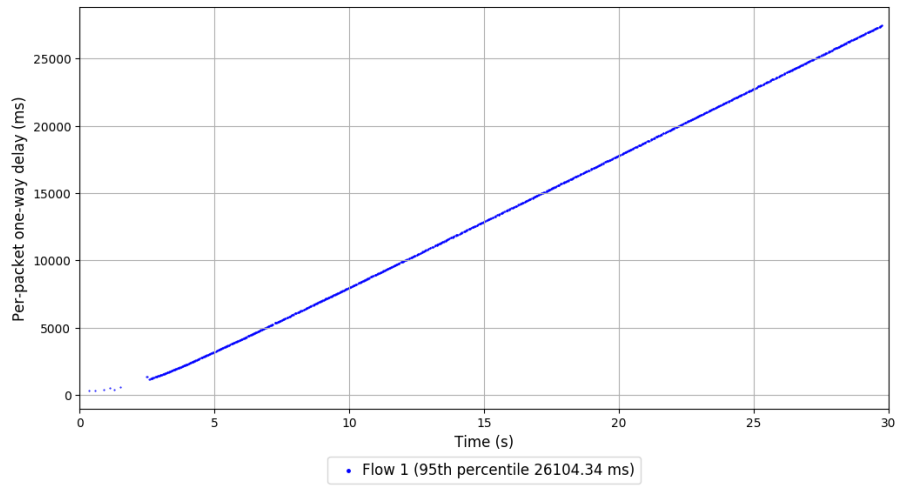
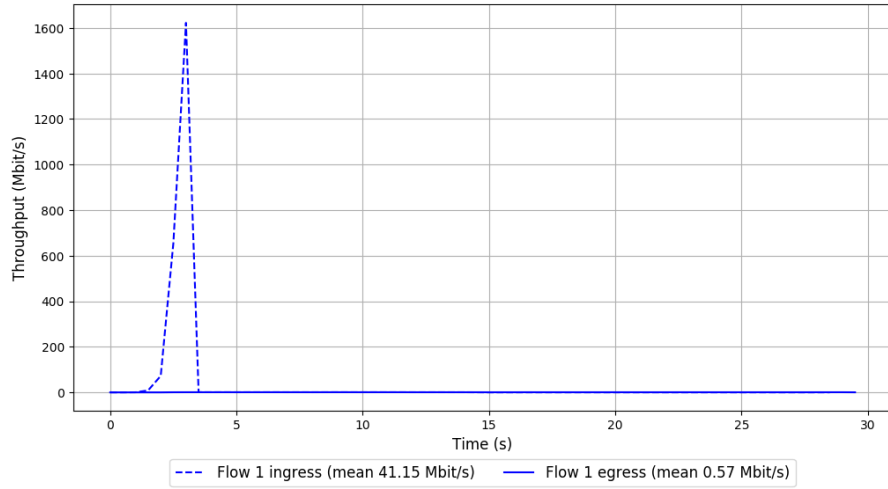


Run 1: Statistics of PCC

Start at: 2017-12-20 16:06:20
End at: 2017-12-20 16:06:50
Local clock offset: 0.016 ms
Remote clock offset: 14.022 ms

Below is generated by plot.py at 2017-12-20 17:48:56
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26104.343 ms
Loss rate: 98.58%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26104.343 ms
Loss rate: 98.58%

Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

Start at: 2017-12-20 16:24:02

End at: 2017-12-20 16:24:33

Local clock offset: -0.011 ms

Remote clock offset: 8.877 ms

Below is generated by plot.py at 2017-12-20 17:48:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26060.097 ms

Loss rate: 98.26%

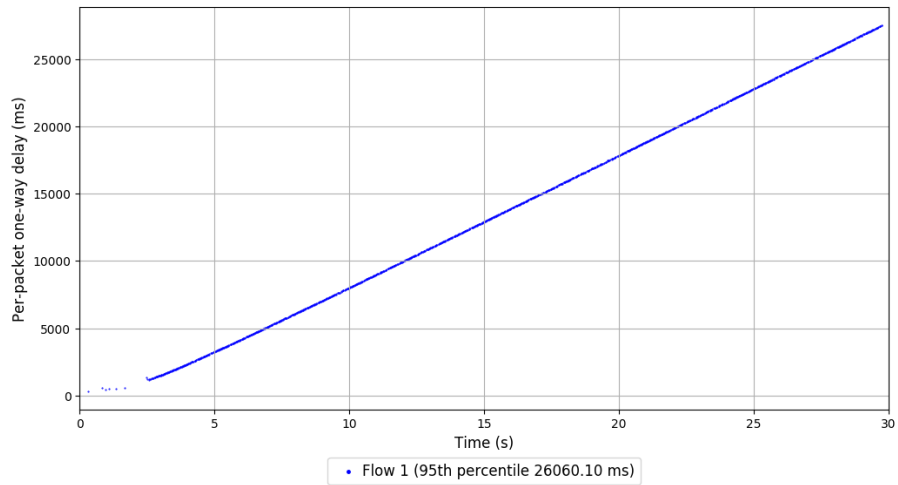
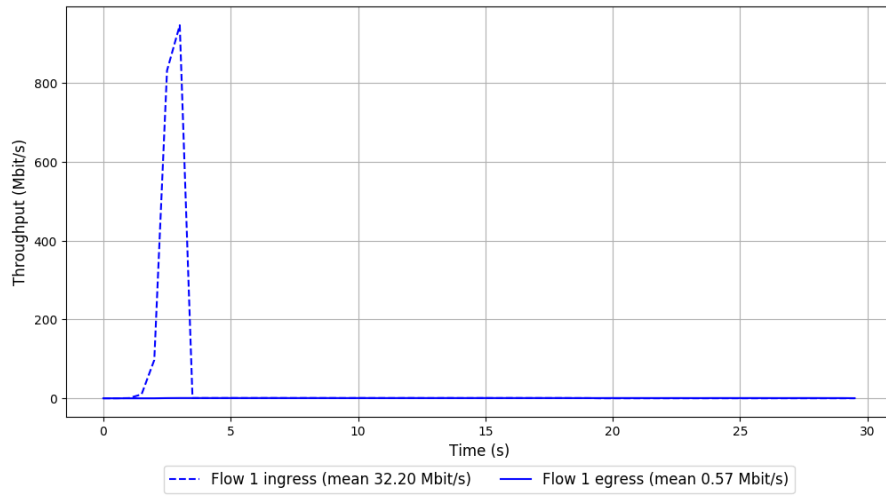
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26060.097 ms

Loss rate: 98.26%

Run 2: Report of PCC — Data Link



Run 3: Statistics of PCC

Start at: 2017-12-20 16:41:51

End at: 2017-12-20 16:42:21

Local clock offset: -0.023 ms

Remote clock offset: 9.871 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26054.913 ms

Loss rate: 98.59%

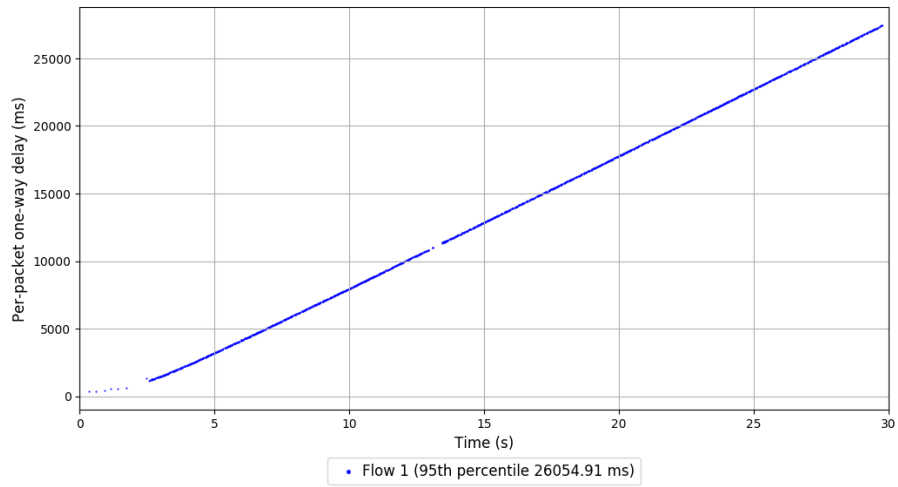
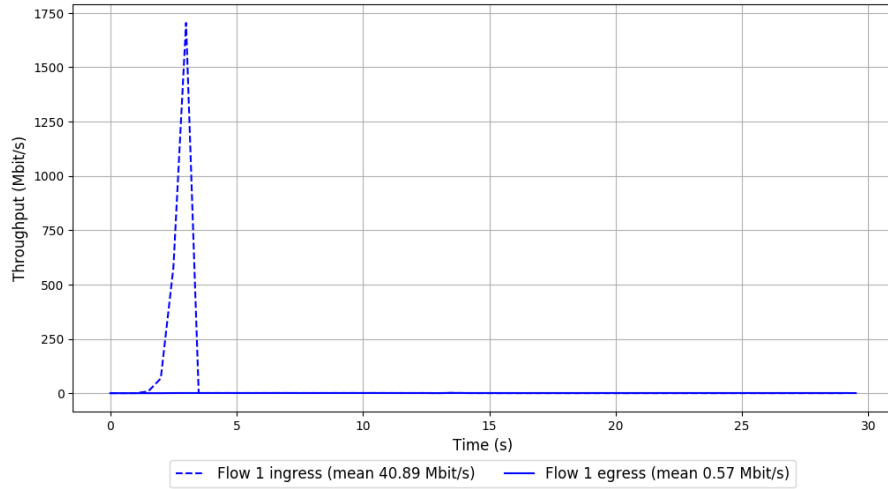
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26054.913 ms

Loss rate: 98.59%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2017-12-20 16:13:22

End at: 2017-12-20 16:13:52

Local clock offset: -0.081 ms

Remote clock offset: 14.252 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 7216.979 ms

Loss rate: 29.15%

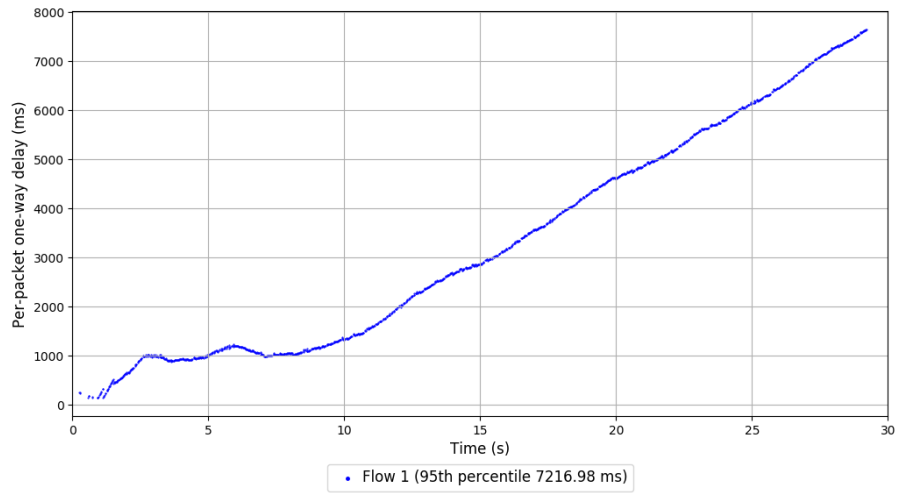
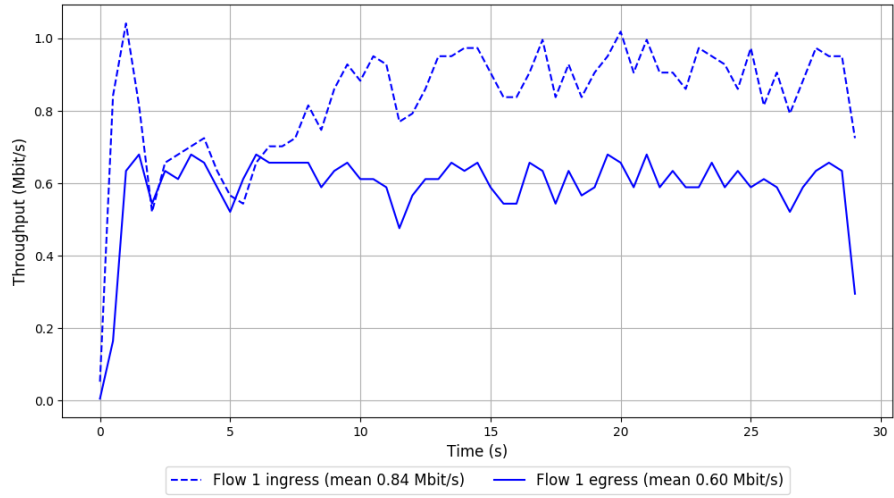
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 7216.979 ms

Loss rate: 29.15%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2017-12-20 16:31:10

End at: 2017-12-20 16:31:40

Local clock offset: -0.002 ms

Remote clock offset: 8.913 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 7494.086 ms

Loss rate: 28.79%

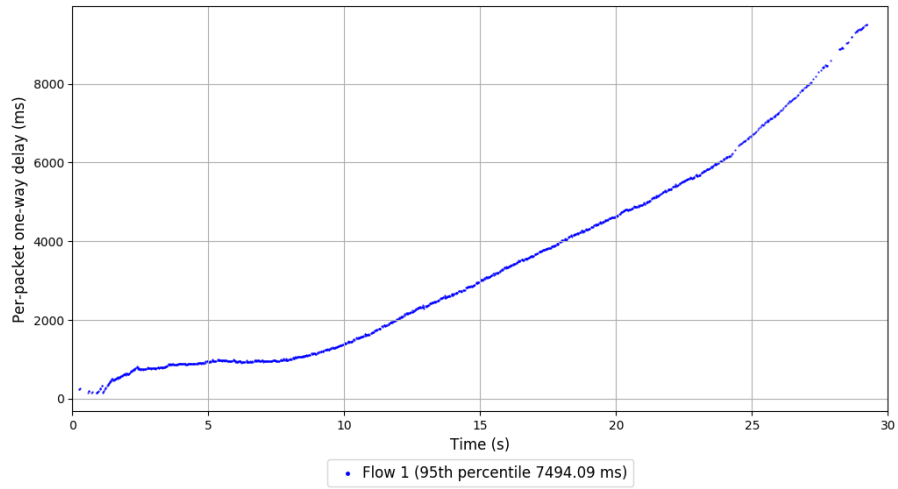
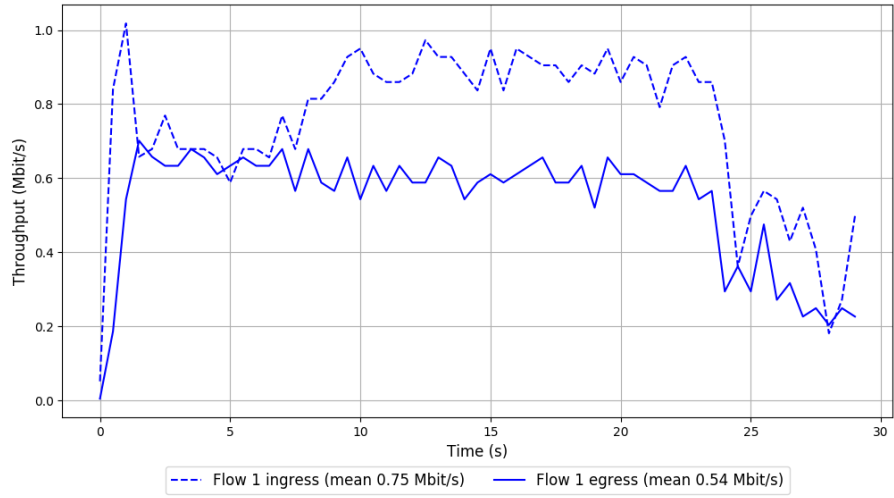
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 7494.086 ms

Loss rate: 28.79%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2017-12-20 16:48:54

End at: 2017-12-20 16:49:24

Local clock offset: 0.002 ms

Remote clock offset: 9.365 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 7088.190 ms

Loss rate: 28.90%

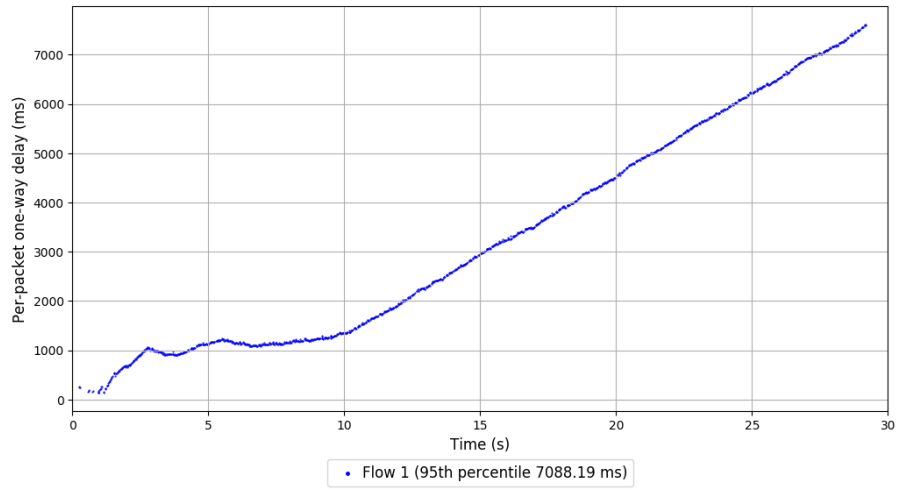
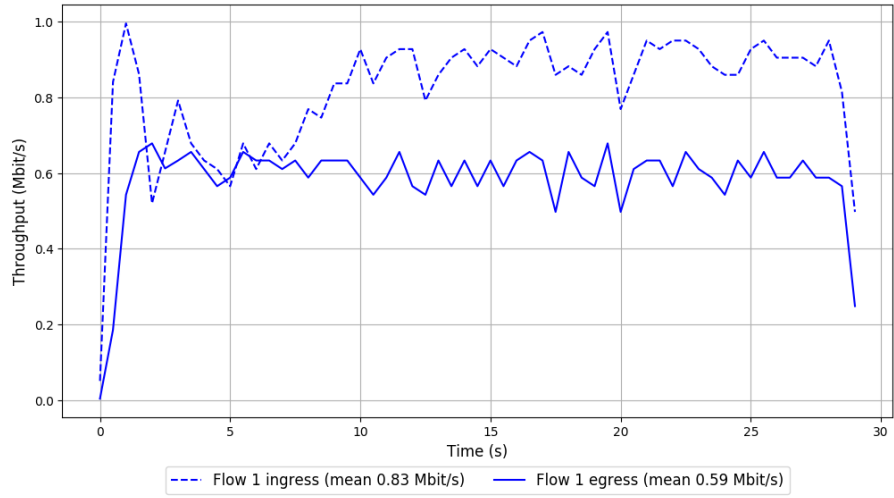
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 7088.190 ms

Loss rate: 28.90%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

Start at: 2017-12-20 16:02:49

End at: 2017-12-20 16:03:19

Local clock offset: -0.073 ms

Remote clock offset: 9.157 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 162.841 ms

Loss rate: 0.66%

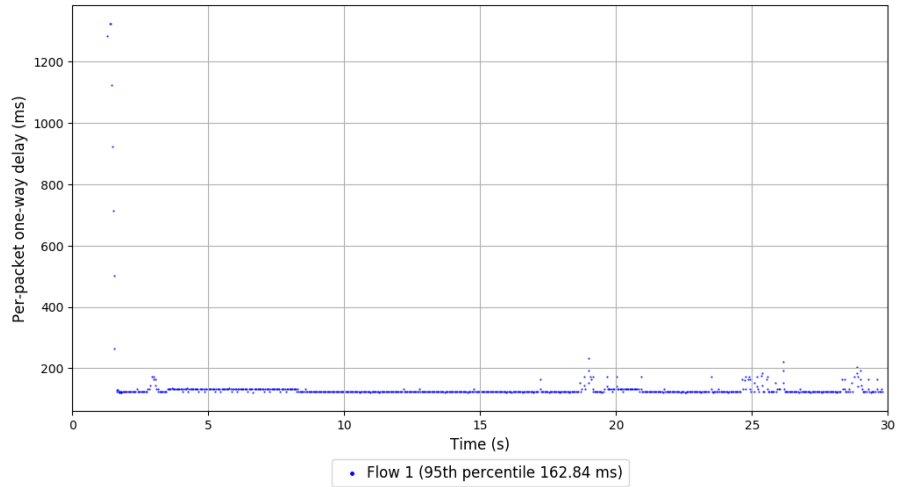
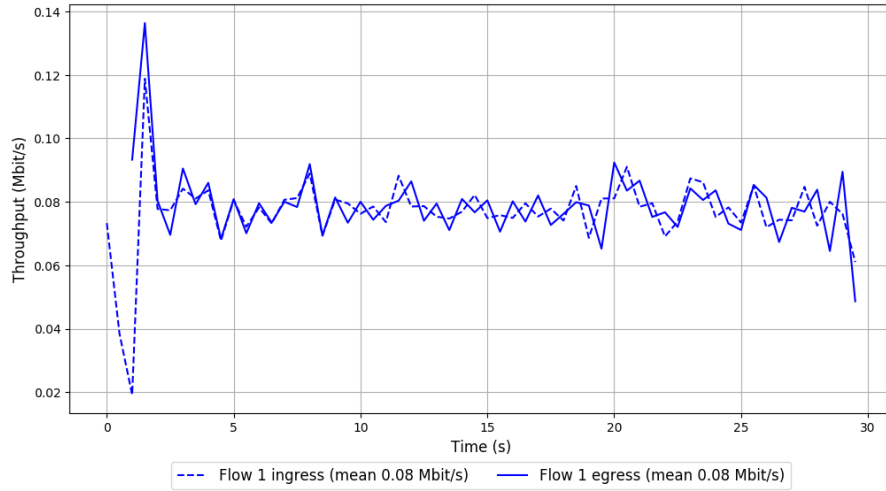
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 162.841 ms

Loss rate: 0.66%

Run 1: Report of SCReAM — Data Link

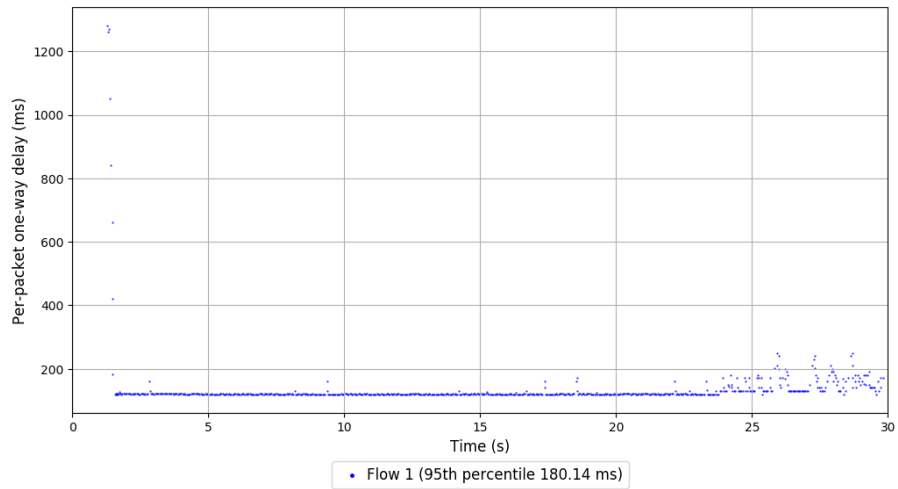
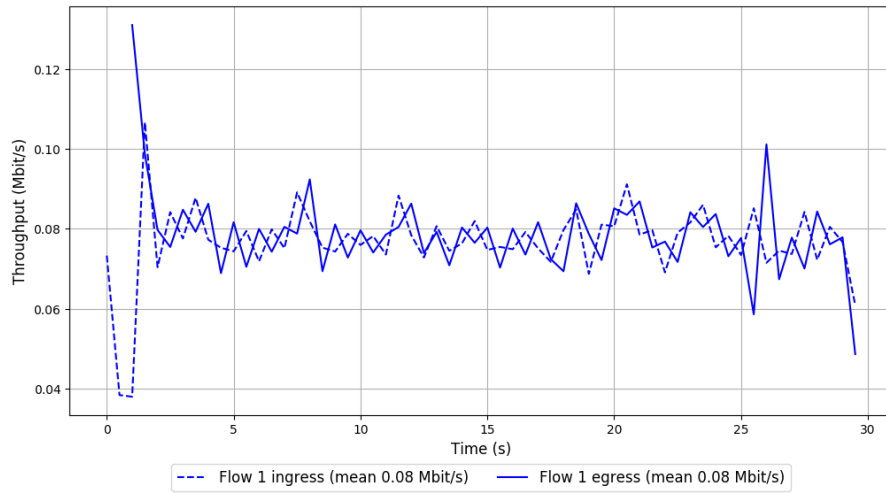


Run 2: Statistics of SCReAM

Start at: 2017-12-20 16:20:29
End at: 2017-12-20 16:20:59
Local clock offset: -0.038 ms
Remote clock offset: 13.572 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 180.138 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 180.138 ms
Loss rate: 0.80%

Run 2: Report of SCReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2017-12-20 16:38:21

End at: 2017-12-20 16:38:51

Local clock offset: -0.028 ms

Remote clock offset: 8.963 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 156.668 ms

Loss rate: 0.65%

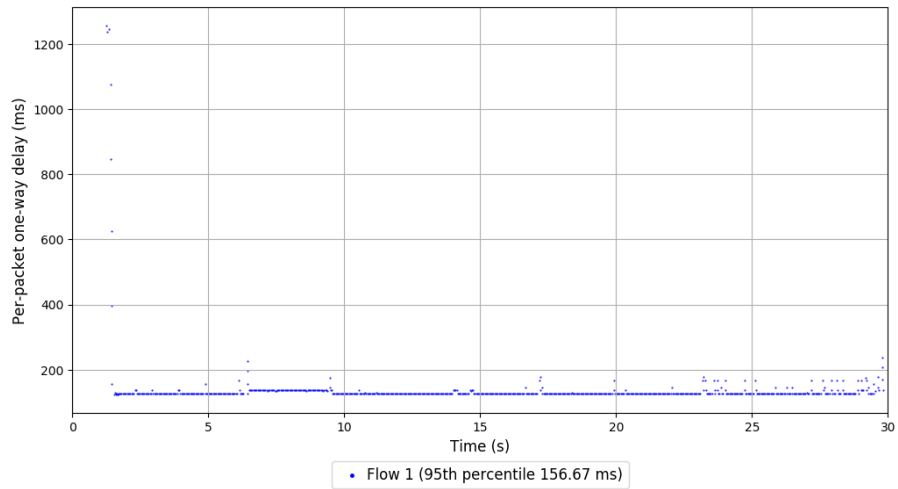
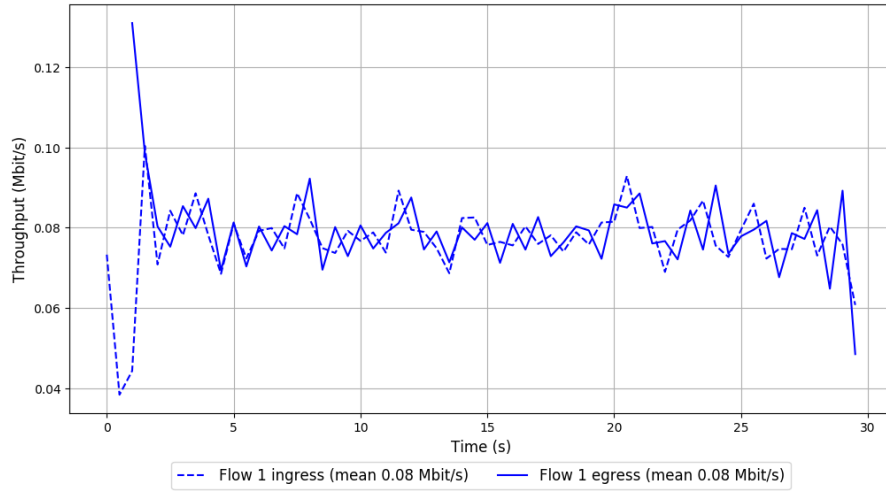
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 156.668 ms

Loss rate: 0.65%

Run 3: Report of SCReAM — Data Link

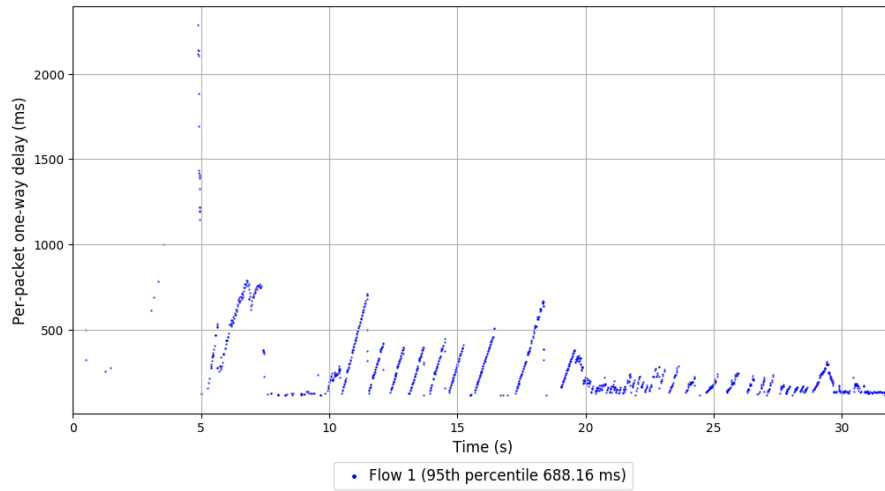
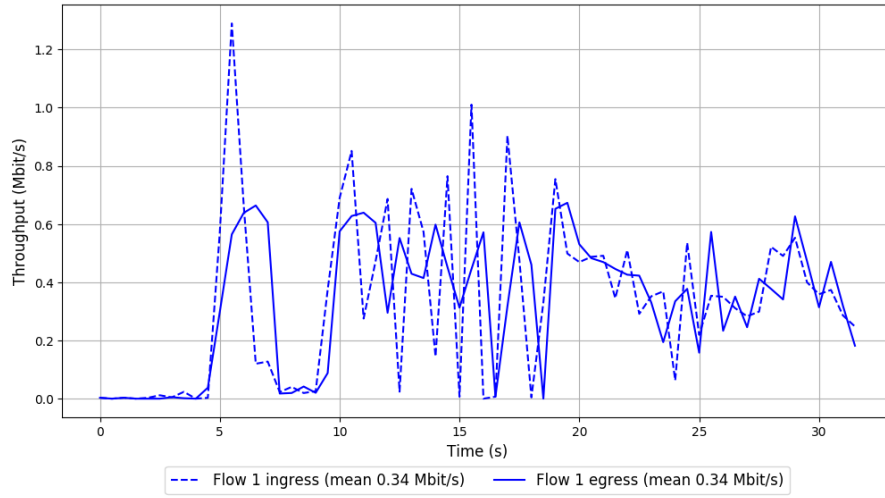


Run 1: Statistics of WebRTC media

Start at: 2017-12-20 16:03:59
End at: 2017-12-20 16:04:29
Local clock offset: -0.011 ms
Remote clock offset: 13.156 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 688.156 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 688.156 ms
Loss rate: 0.61%

Run 1: Report of WebRTC media — Data Link

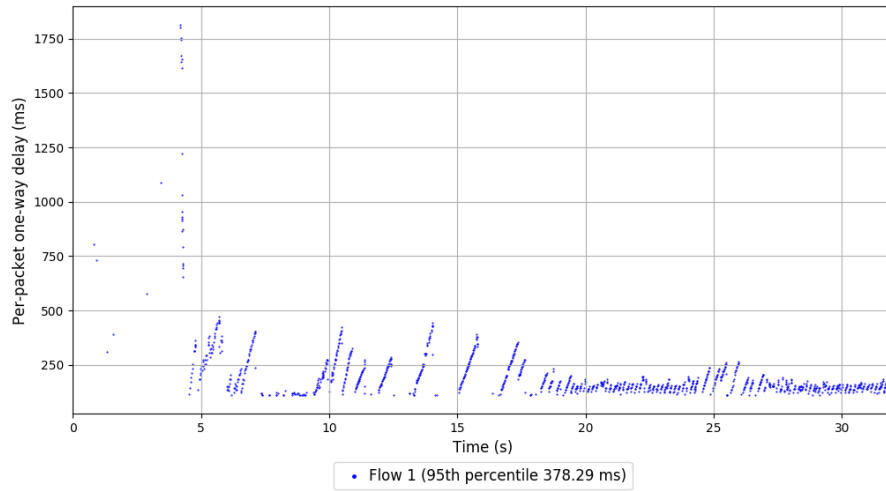
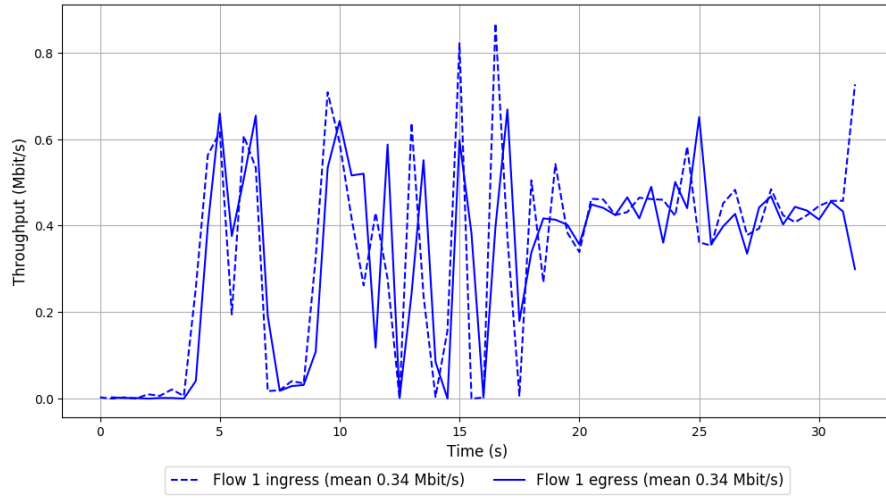


Run 2: Statistics of WebRTC media

Start at: 2017-12-20 16:21:42
End at: 2017-12-20 16:22:12
Local clock offset: -0.007 ms
Remote clock offset: 19.504 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 378.289 ms
Loss rate: 2.70%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 378.289 ms
Loss rate: 2.70%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2017-12-20 16:39:31

End at: 2017-12-20 16:40:01

Local clock offset: -0.006 ms

Remote clock offset: 9.731 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.34 Mbit/s

95th percentile per-packet one-way delay: 689.183 ms

Loss rate: 2.38%

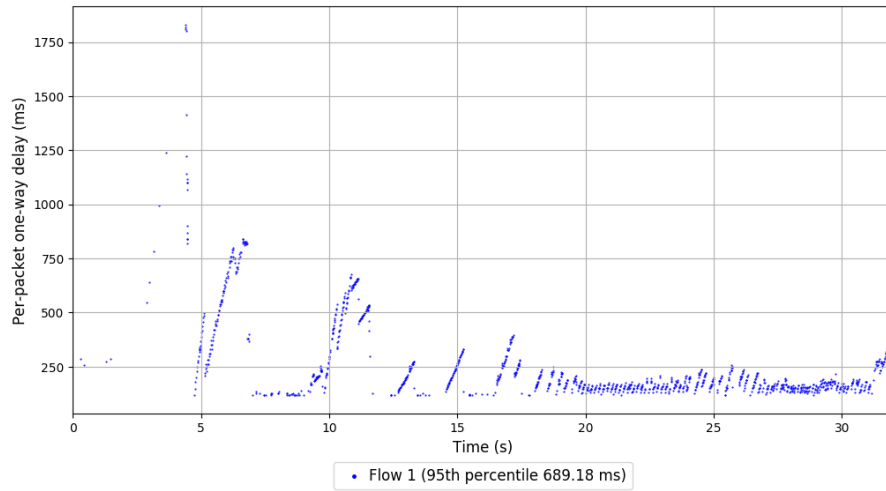
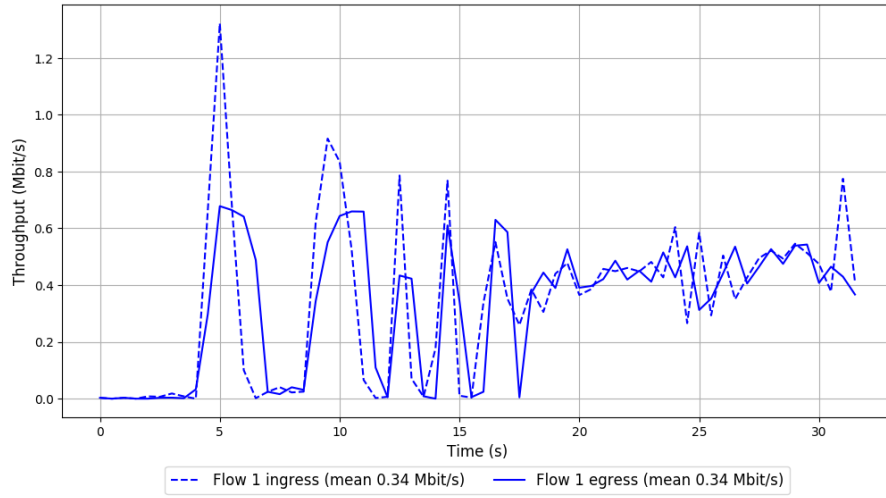
-- Flow 1:

Average throughput: 0.34 Mbit/s

95th percentile per-packet one-way delay: 689.183 ms

Loss rate: 2.38%

Run 3: Report of WebRTC media — Data Link

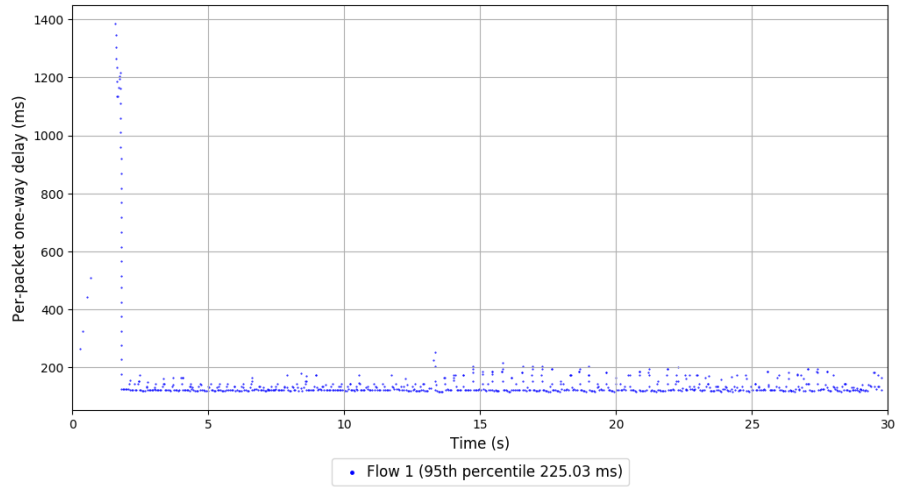
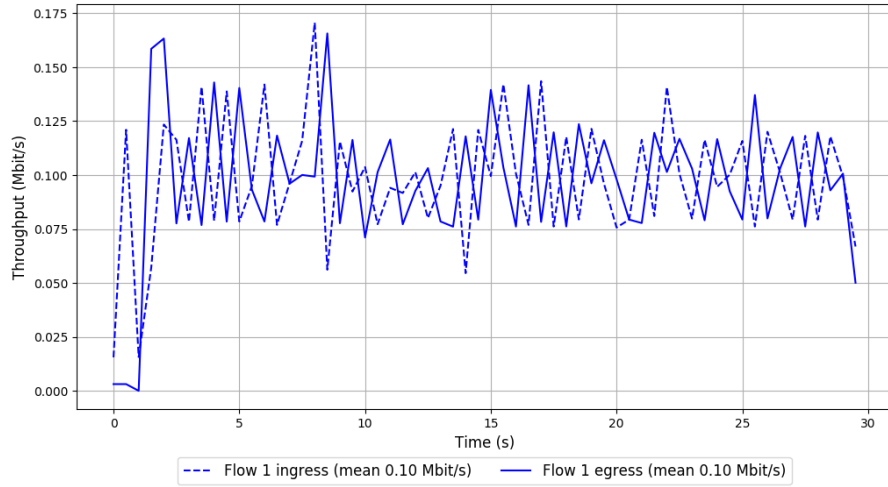


Run 1: Statistics of Sprout

Start at: 2017-12-20 16:05:09
End at: 2017-12-20 16:05:39
Local clock offset: 0.005 ms
Remote clock offset: 14.035 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 225.028 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 225.028 ms
Loss rate: 0.77%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2017-12-20 16:22:53

End at: 2017-12-20 16:23:23

Local clock offset: -0.004 ms

Remote clock offset: 9.736 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 988.049 ms

Loss rate: 2.15%

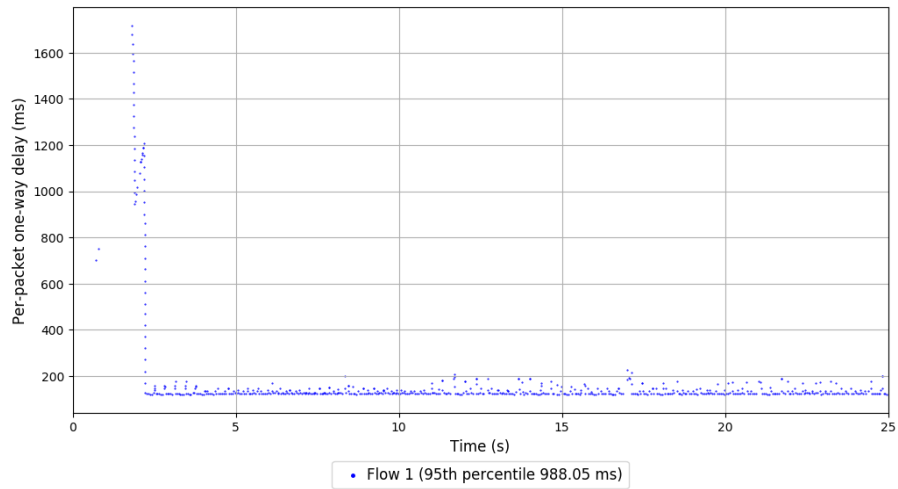
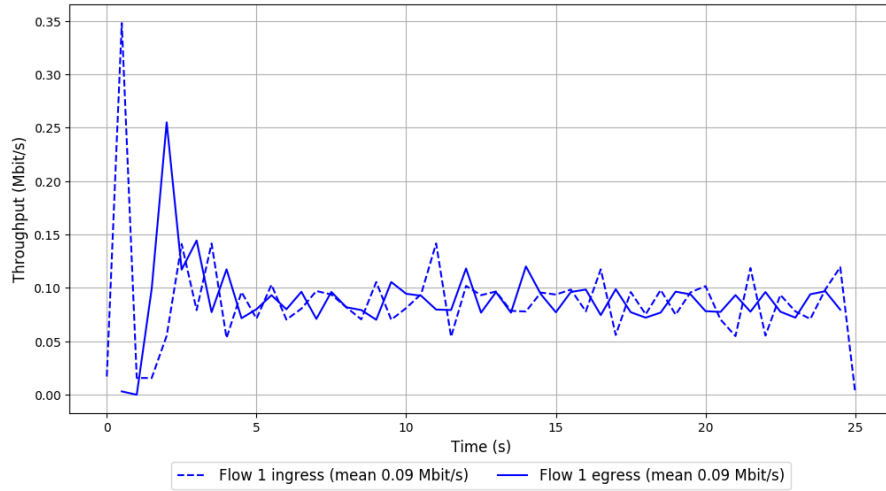
-- Flow 1:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 988.049 ms

Loss rate: 2.15%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2017-12-20 16:40:41

End at: 2017-12-20 16:41:11

Local clock offset: -0.083 ms

Remote clock offset: 9.756 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 627.081 ms

Loss rate: 1.23%

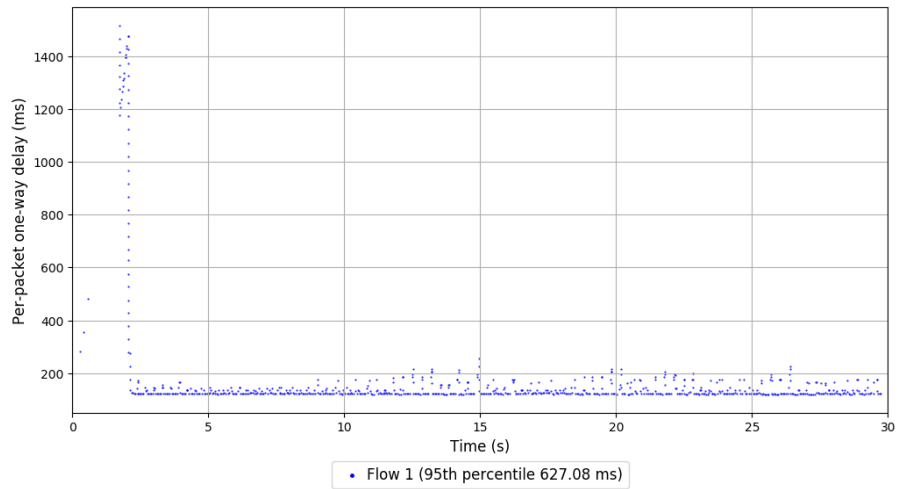
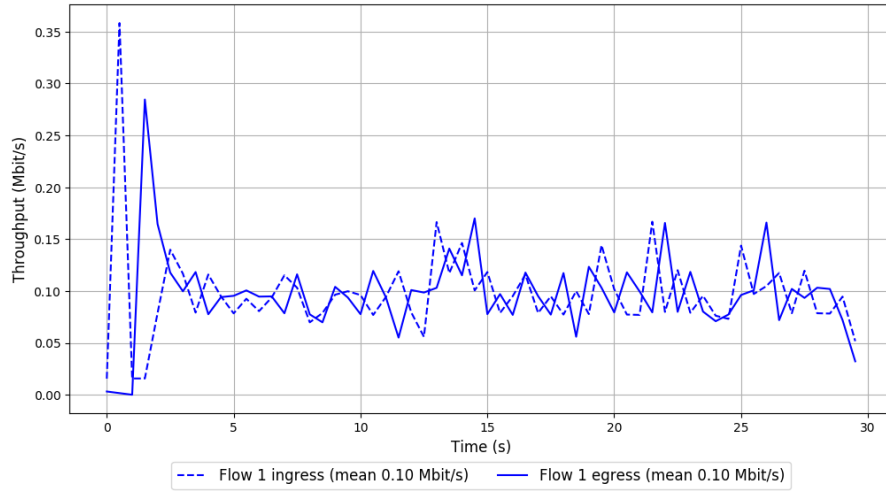
-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 627.081 ms

Loss rate: 1.23%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2017-12-20 16:14:32

End at: 2017-12-20 16:15:02

Local clock offset: 0.01 ms

Remote clock offset: 13.47 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 881.055 ms

Loss rate: 2.81%

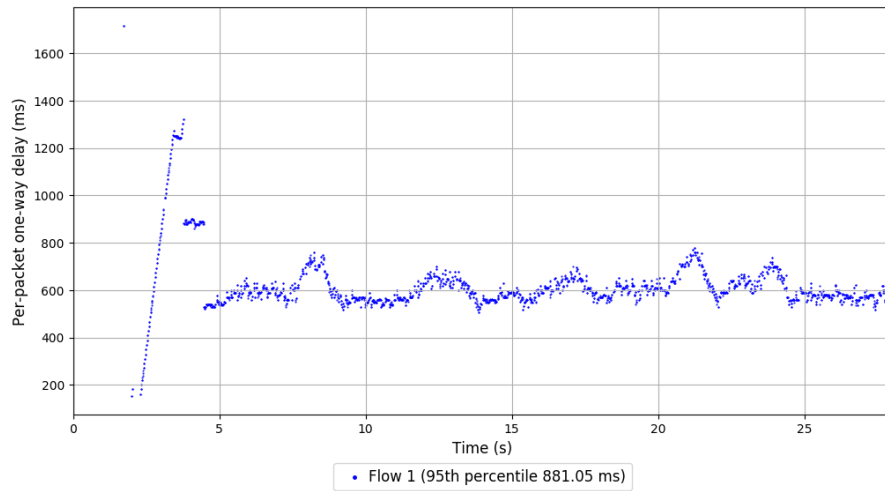
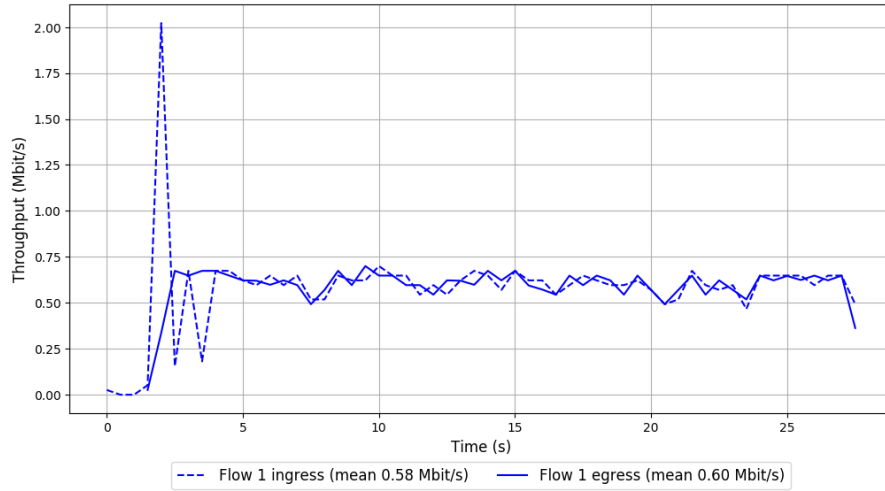
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 881.055 ms

Loss rate: 2.81%

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



Run 2: Statistics of TaoVA-100x

Start at: 2017-12-20 16:32:22

End at: 2017-12-20 16:32:52

Local clock offset: -0.001 ms

Remote clock offset: 9.636 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 869.684 ms

Loss rate: 2.37%

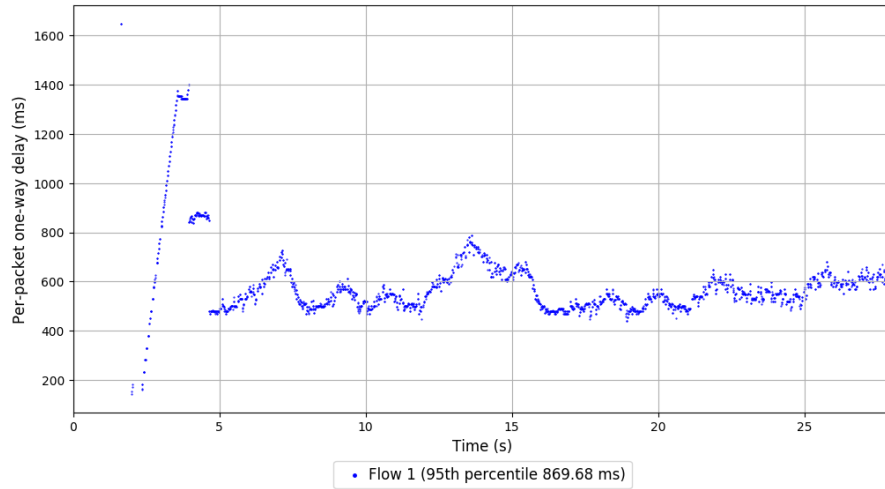
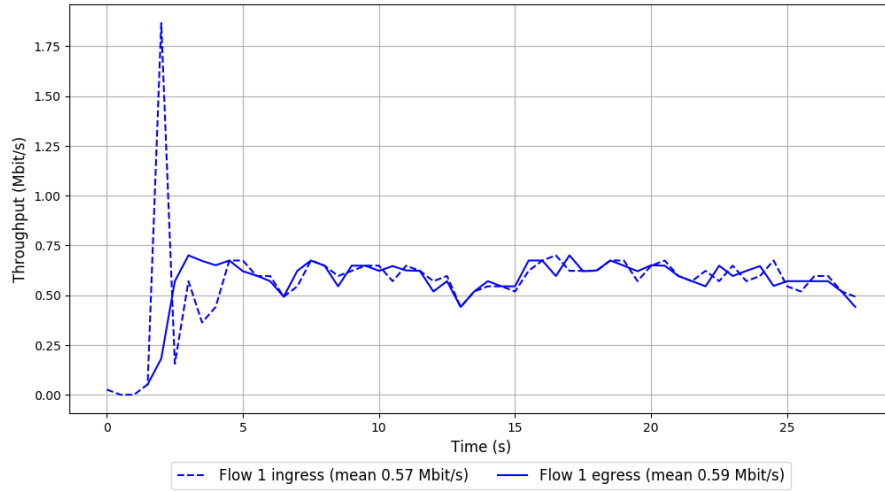
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 869.684 ms

Loss rate: 2.37%

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



Run 3: Statistics of TaoVA-100x

Start at: 2017-12-20 16:50:06

End at: 2017-12-20 16:50:36

Local clock offset: -0.006 ms

Remote clock offset: 10.23 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 923.210 ms

Loss rate: 2.75%

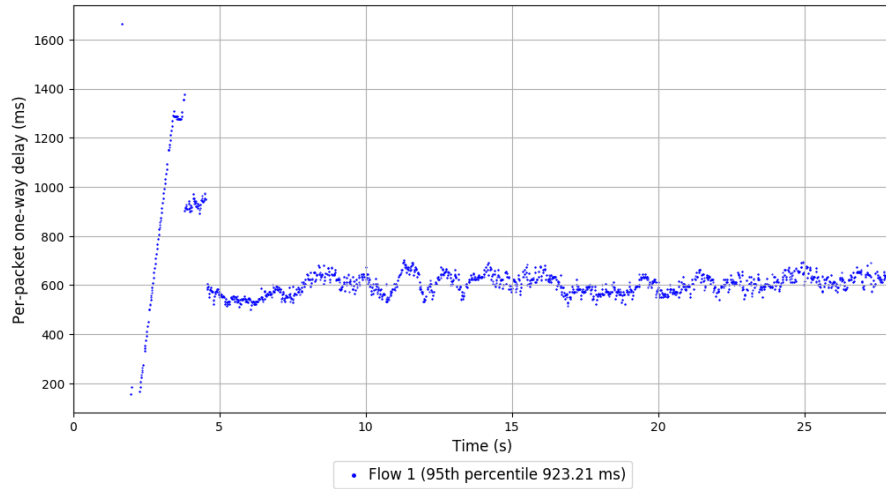
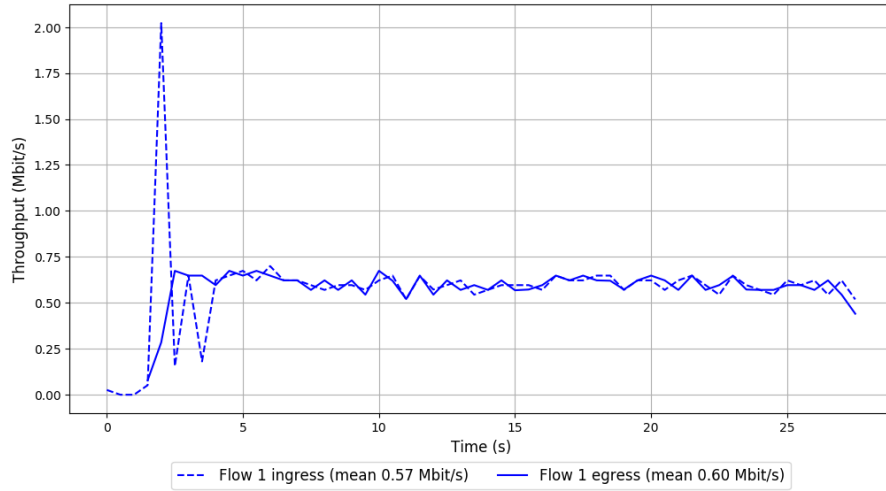
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 923.210 ms

Loss rate: 2.75%

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

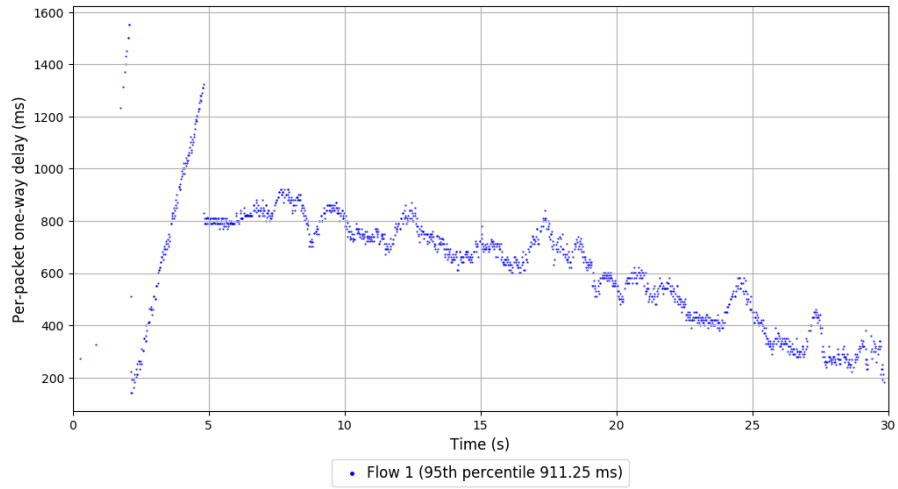
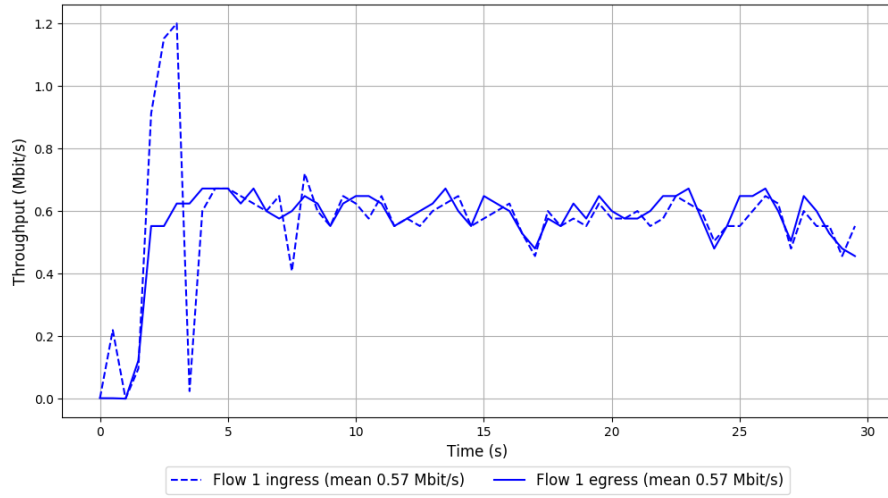


Run 1: Statistics of TCP Vegas

Start at: 2017-12-20 16:19:19
End at: 2017-12-20 16:19:49
Local clock offset: -0.001 ms
Remote clock offset: 15.247 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 911.246 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 911.246 ms
Loss rate: 1.13%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2017-12-20 16:37:10

End at: 2017-12-20 16:37:40

Local clock offset: -0.082 ms

Remote clock offset: 9.631 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1000.961 ms

Loss rate: 1.85%

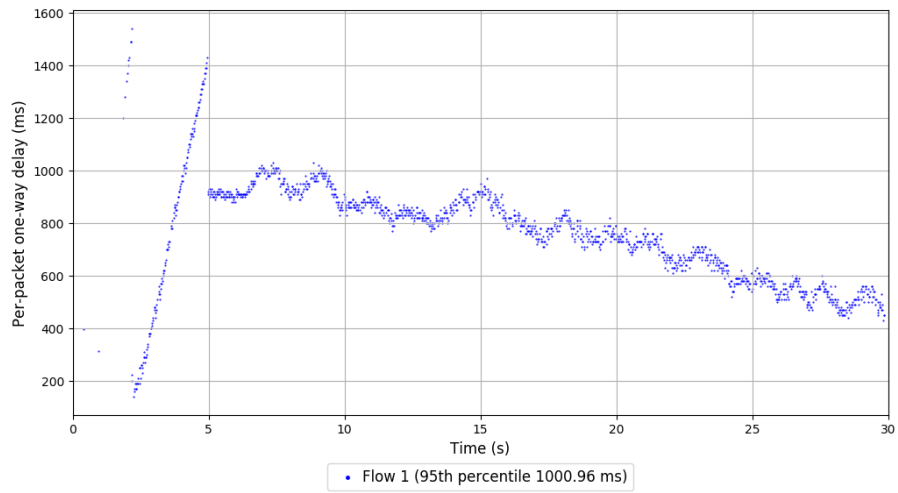
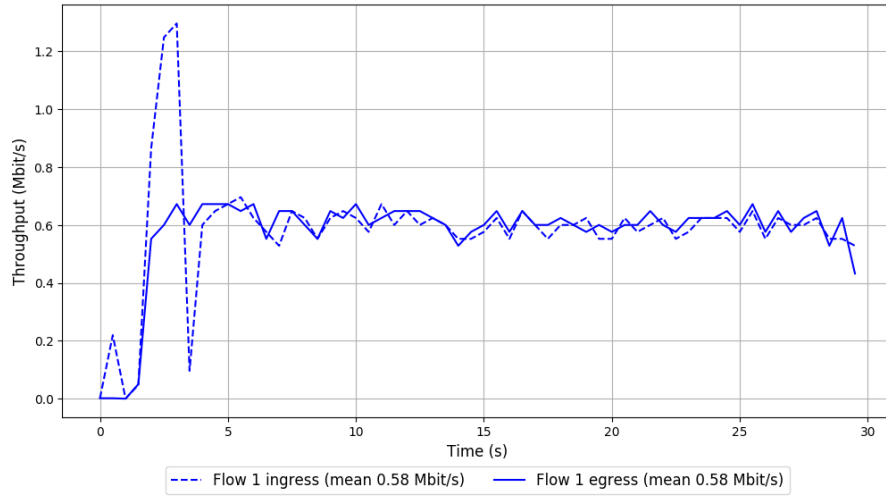
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1000.961 ms

Loss rate: 1.85%

Run 2: Report of TCP Vegas — Data Link

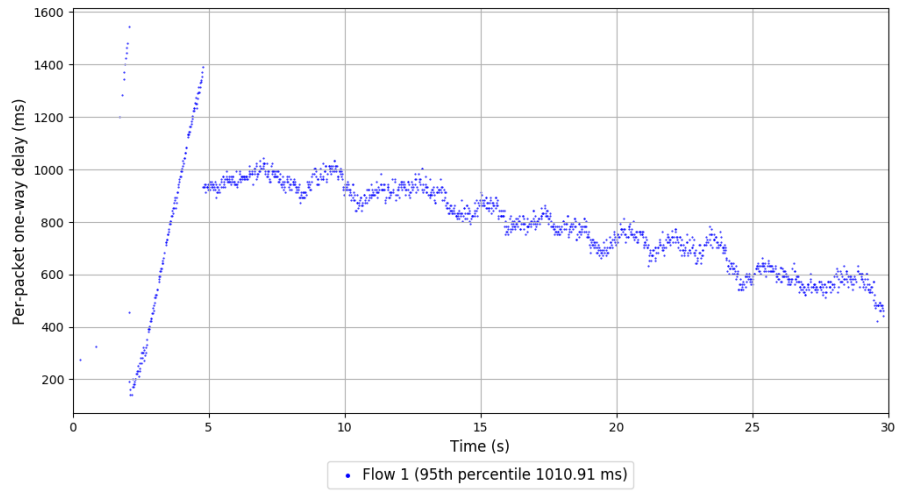
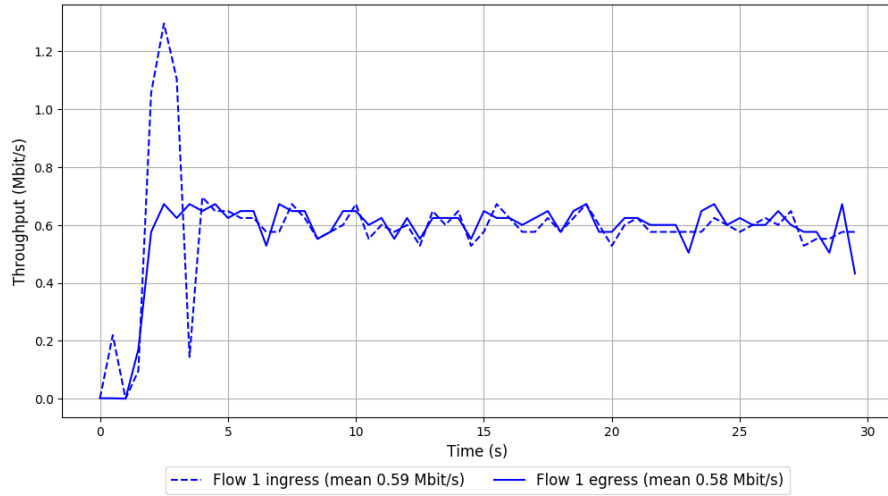


Run 3: Statistics of TCP Vegas

Start at: 2017-12-20 16:54:52
End at: 2017-12-20 16:55:22
Local clock offset: -0.083 ms
Remote clock offset: 14.317 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1010.906 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1010.906 ms
Loss rate: 2.05%

Run 3: Report of TCP Vegas — Data Link

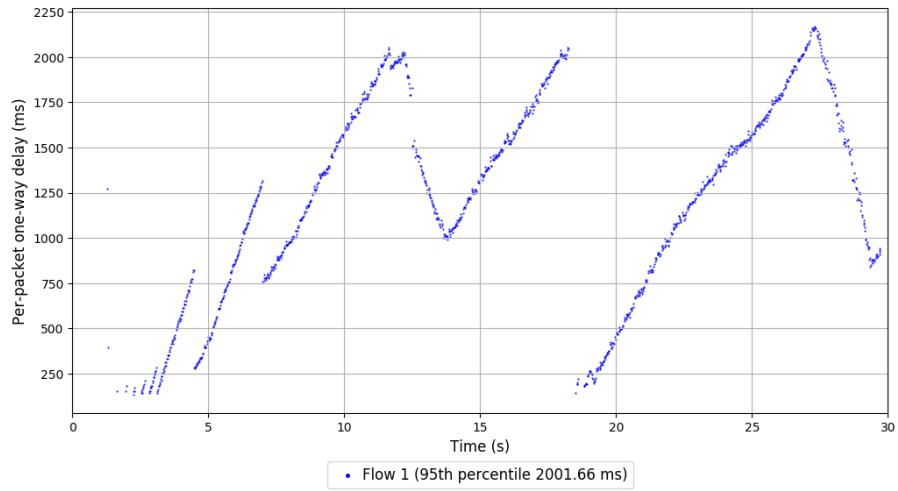
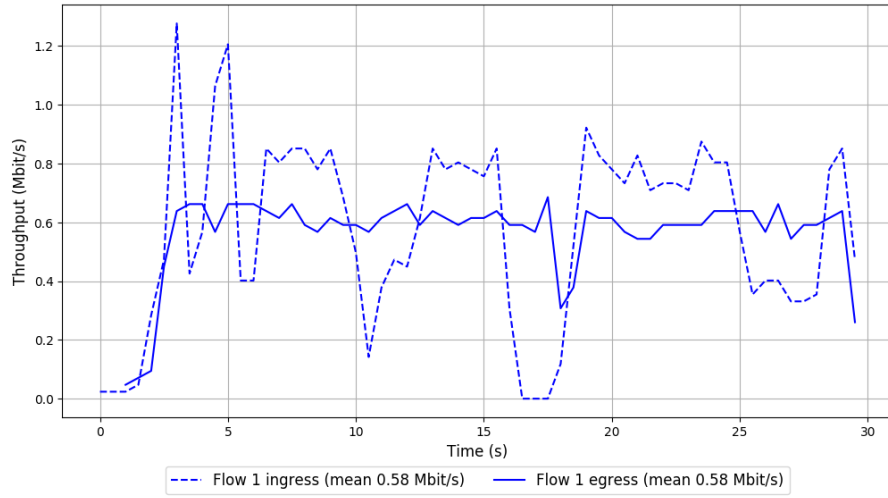


Run 1: Statistics of Verus

Start at: 2017-12-20 16:07:31
End at: 2017-12-20 16:08:01
Local clock offset: 0.005 ms
Remote clock offset: 15.005 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2001.662 ms
Loss rate: 4.79%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2001.662 ms
Loss rate: 4.79%

Run 1: Report of Verus — Data Link

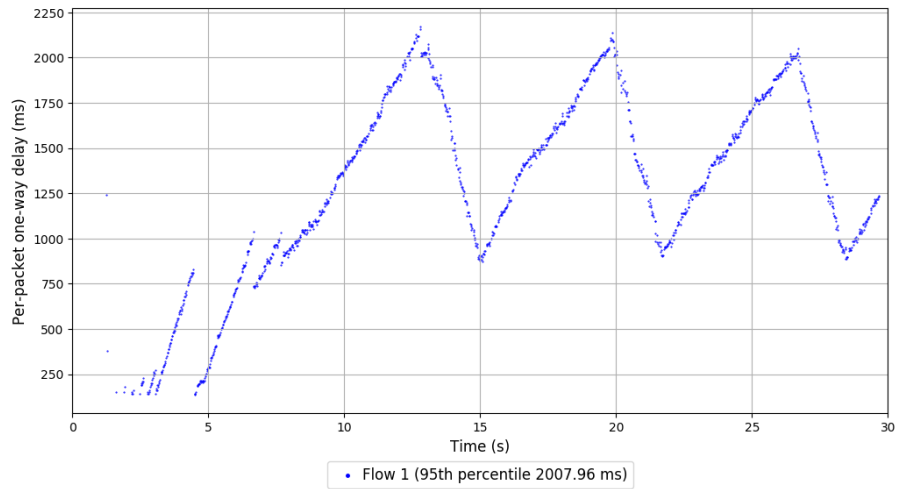
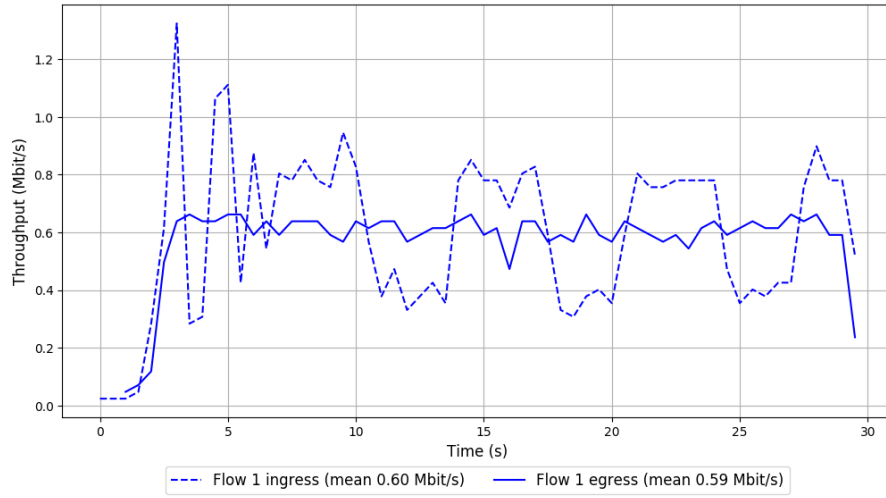


Run 2: Statistics of Verus

Start at: 2017-12-20 16:25:14
End at: 2017-12-20 16:25:44
Local clock offset: -0.023 ms
Remote clock offset: 13.653 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 2007.959 ms
Loss rate: 6.16%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 2007.959 ms
Loss rate: 6.16%

Run 2: Report of Verus — Data Link

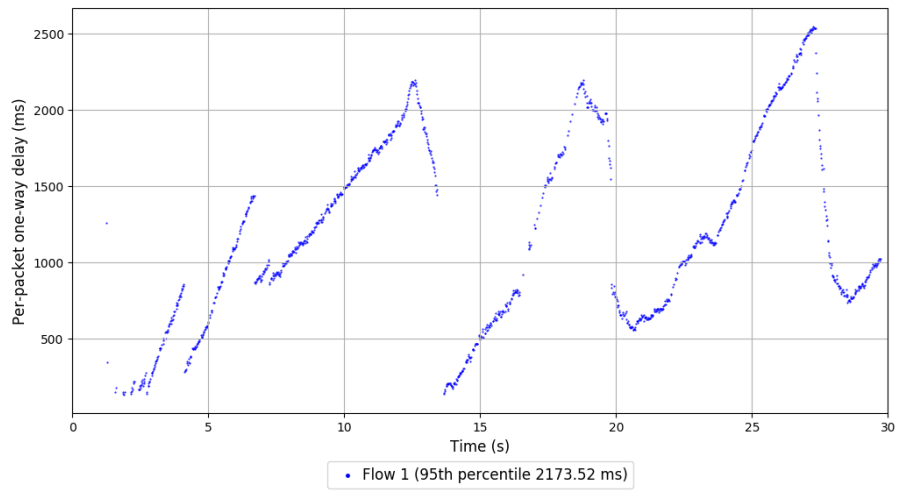
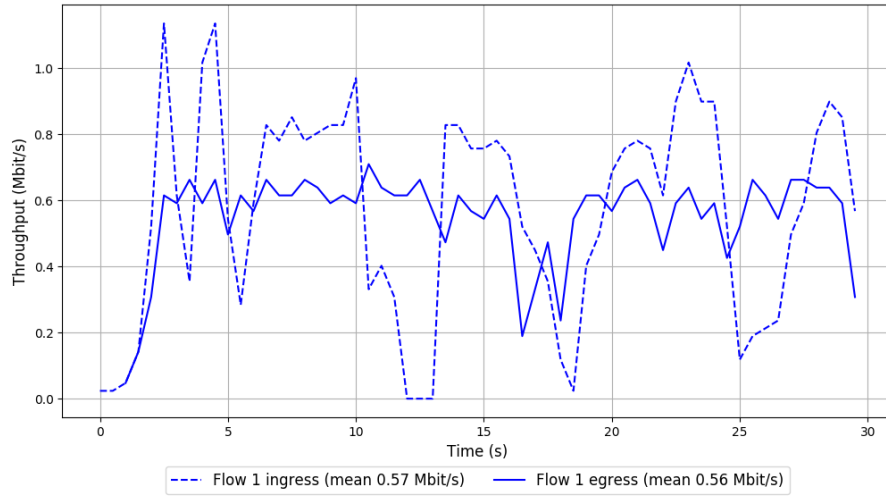


Run 3: Statistics of Verus

Start at: 2017-12-20 16:43:03
End at: 2017-12-20 16:43:33
Local clock offset: -0.004 ms
Remote clock offset: 13.946 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 2173.518 ms
Loss rate: 5.85%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 2173.518 ms
Loss rate: 5.85%

Run 3: Report of Verus — Data Link

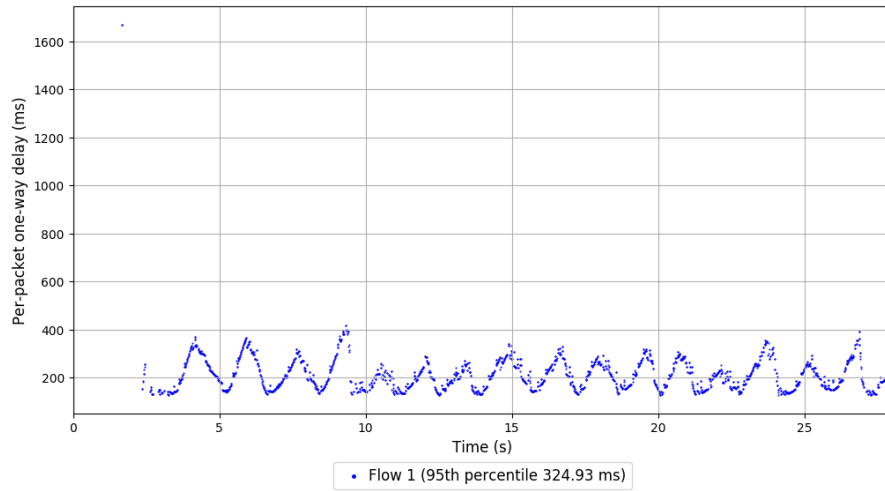
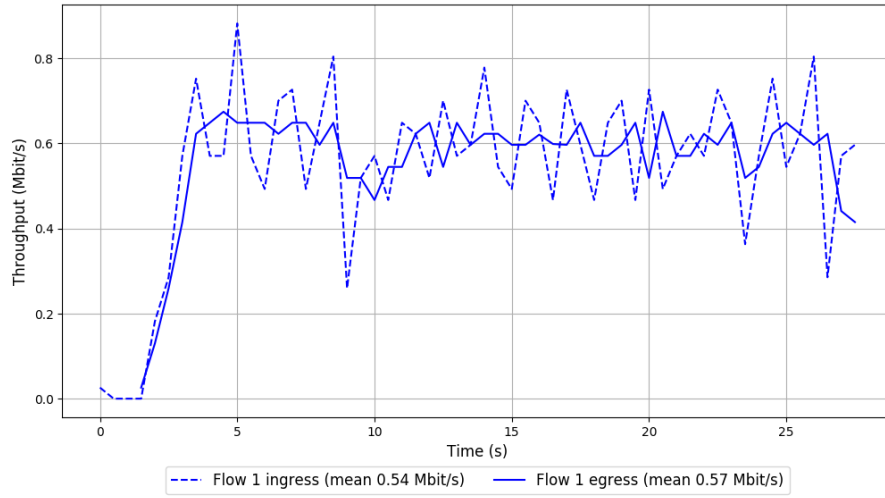


Run 1: Statistics of Copa

Start at: 2017-12-20 16:12:12
End at: 2017-12-20 16:12:42
Local clock offset: 0.006 ms
Remote clock offset: 14.319 ms

Below is generated by plot.py at 2017-12-20 17:48:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 324.928 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 324.928 ms
Loss rate: 1.28%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2017-12-20 16:29:55

End at: 2017-12-20 16:30:25

Local clock offset: -0.067 ms

Remote clock offset: 13.73 ms

Below is generated by plot.py at 2017-12-20 17:48:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 329.638 ms

Loss rate: 1.62%

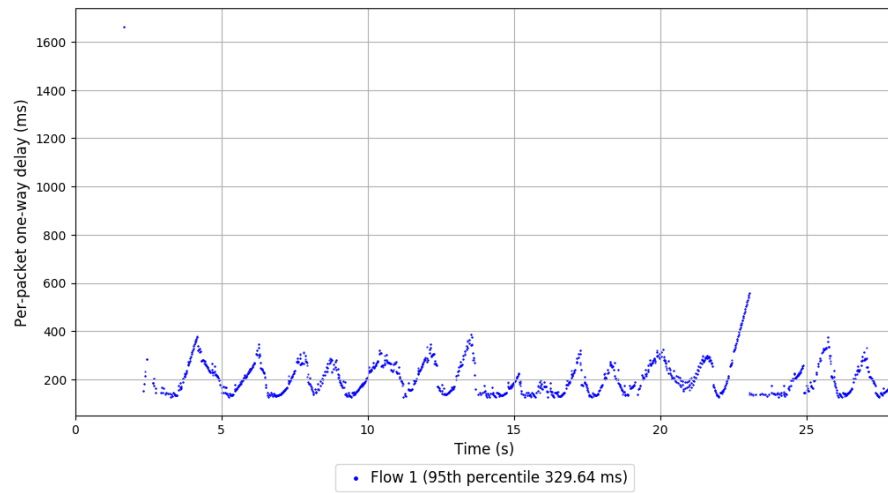
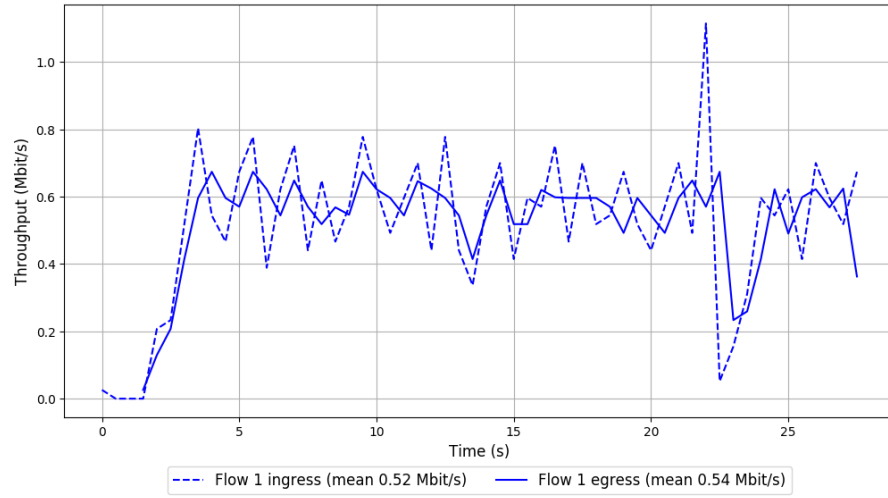
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 329.638 ms

Loss rate: 1.62%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

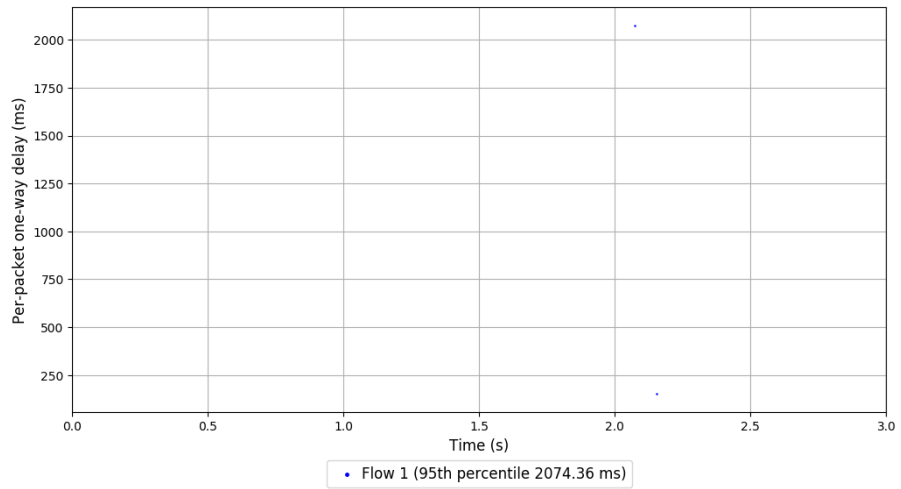
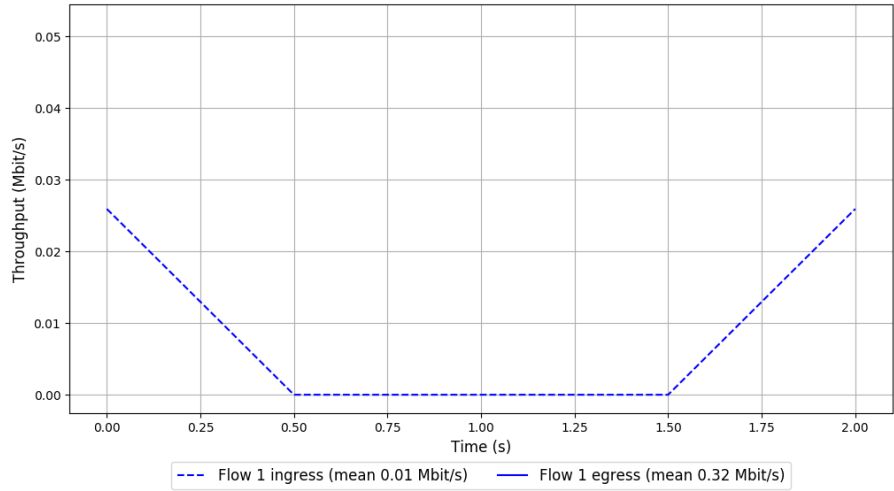
Start at: 2017-12-20 16:47:44

End at: 2017-12-20 16:48:14

Local clock offset: -0.026 ms

Remote clock offset: 10.041 ms

Run 3: Report of Copa — Data Link



Run 1: Statistics of FillP

Start at: 2017-12-20 16:15:45

End at: 2017-12-20 16:16:15

Local clock offset: -0.059 ms

Remote clock offset: 9.441 ms

Below is generated by plot.py at 2017-12-20 17:49:00

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 26730.234 ms

Loss rate: 99.00%

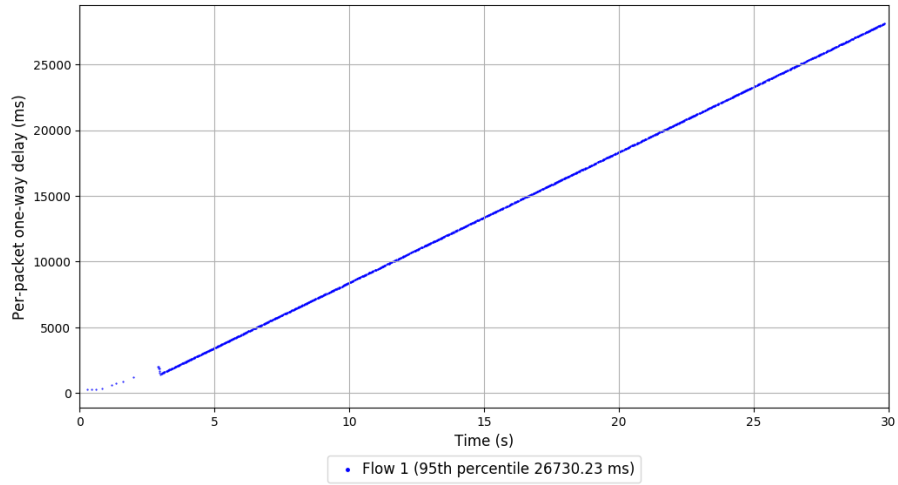
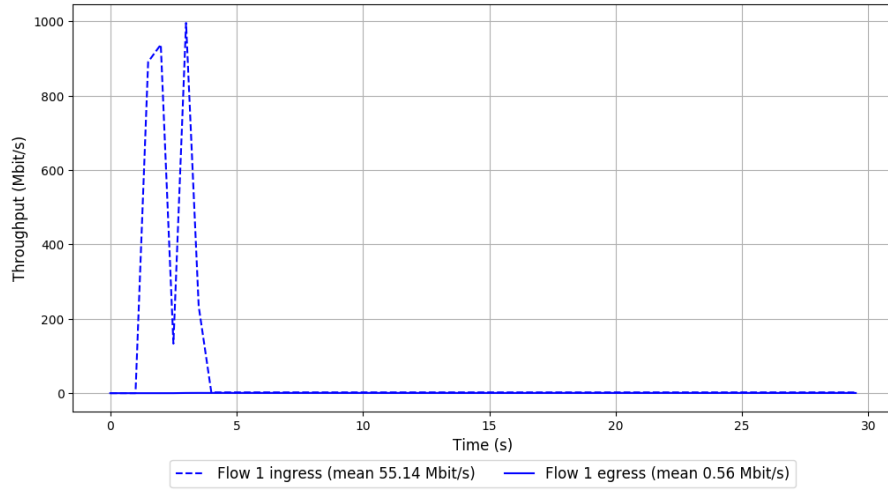
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 26730.234 ms

Loss rate: 99.00%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2017-12-20 16:33:33

End at: 2017-12-20 16:34:03

Local clock offset: -0.0 ms

Remote clock offset: 9.695 ms

Below is generated by plot.py at 2017-12-20 17:49:00

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 26713.249 ms

Loss rate: 99.02%

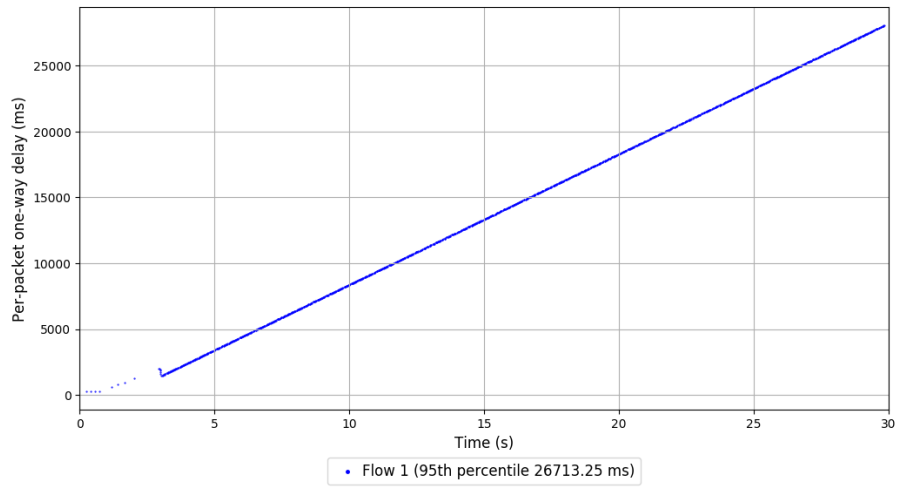
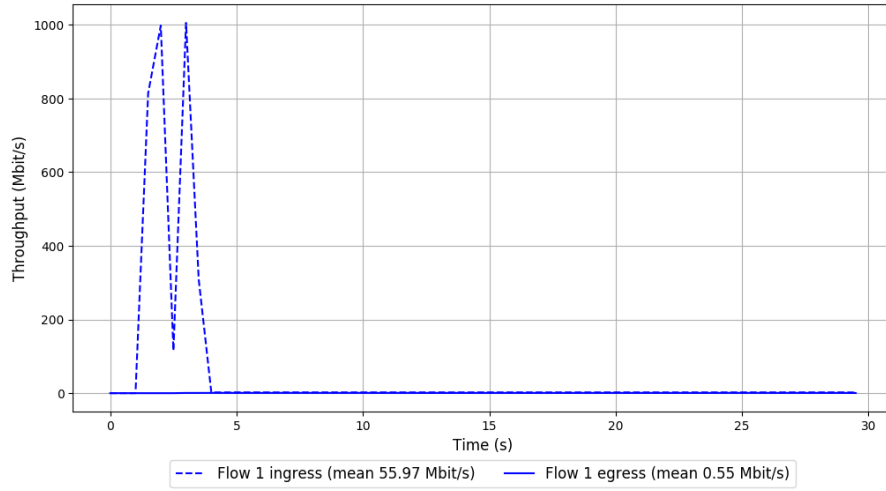
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 26713.249 ms

Loss rate: 99.02%

Run 2: Report of FillP — Data Link

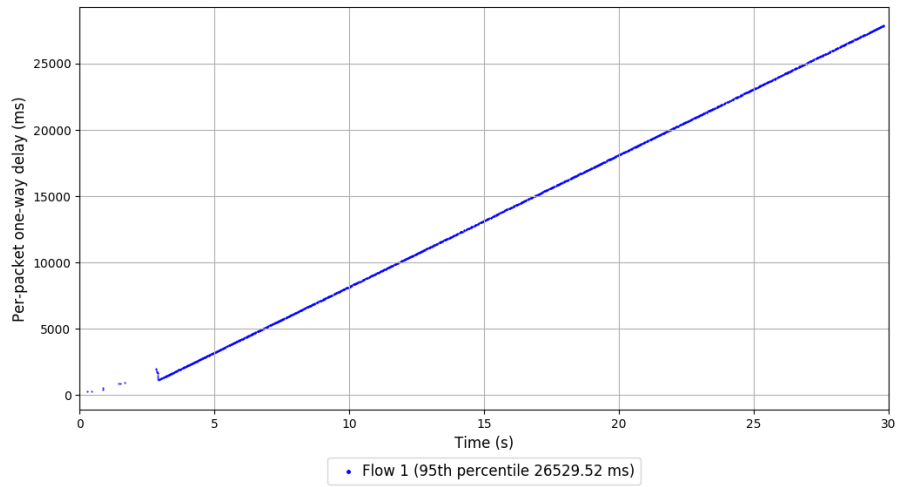
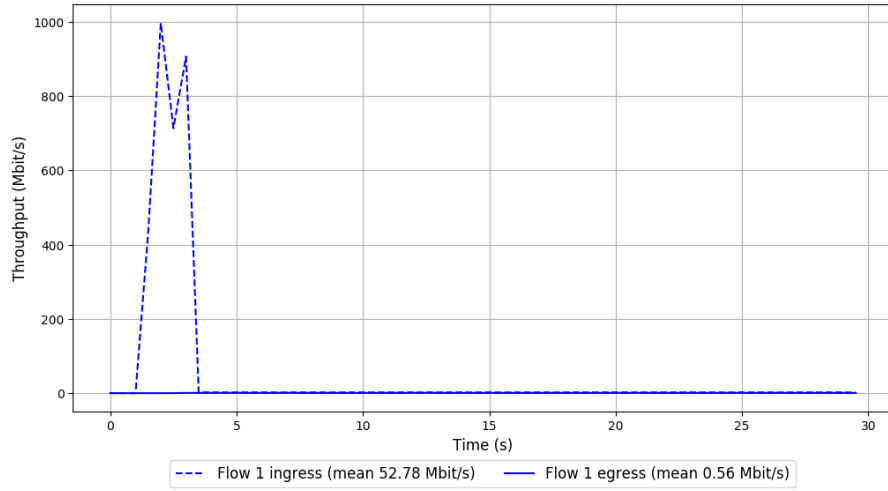


Run 3: Statistics of FillP

Start at: 2017-12-20 16:51:17
End at: 2017-12-20 16:51:47
Local clock offset: -0.091 ms
Remote clock offset: 15.113 ms

Below is generated by plot.py at 2017-12-20 17:49:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 26529.519 ms
Loss rate: 98.95%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 26529.519 ms
Loss rate: 98.95%

Run 3: Report of FillP — Data Link



Run 1: Statistics of Indigo

Start at: 2017-12-20 16:11:02

End at: 2017-12-20 16:11:32

Local clock offset: 0.025 ms

Remote clock offset: 8.569 ms

Below is generated by plot.py at 2017-12-20 17:49:00

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 236.684 ms

Loss rate: 1.18%

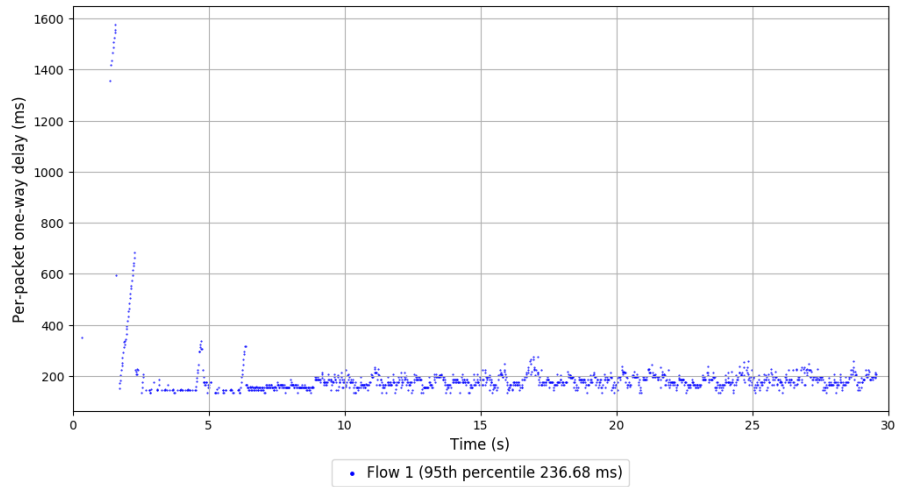
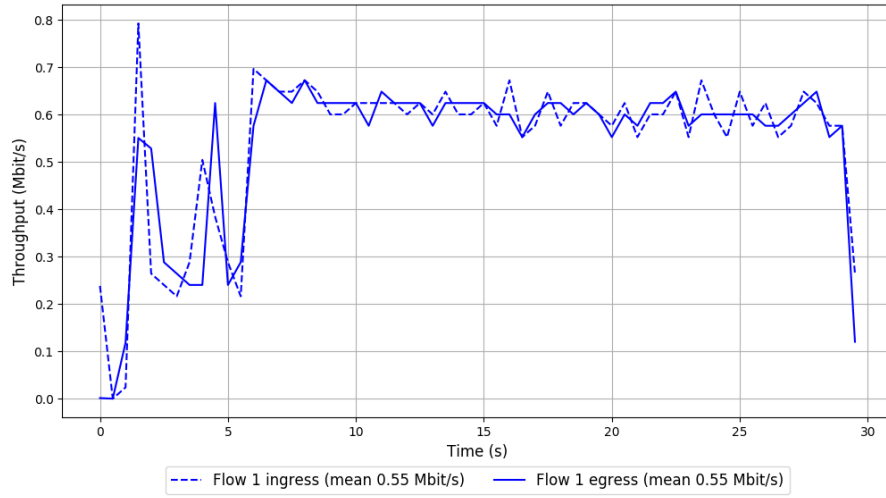
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 236.684 ms

Loss rate: 1.18%

Run 1: Report of Indigo — Data Link

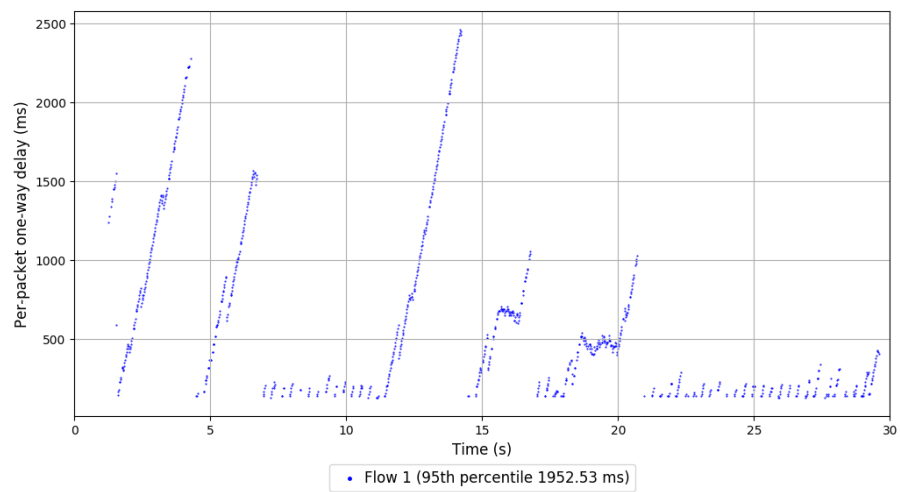
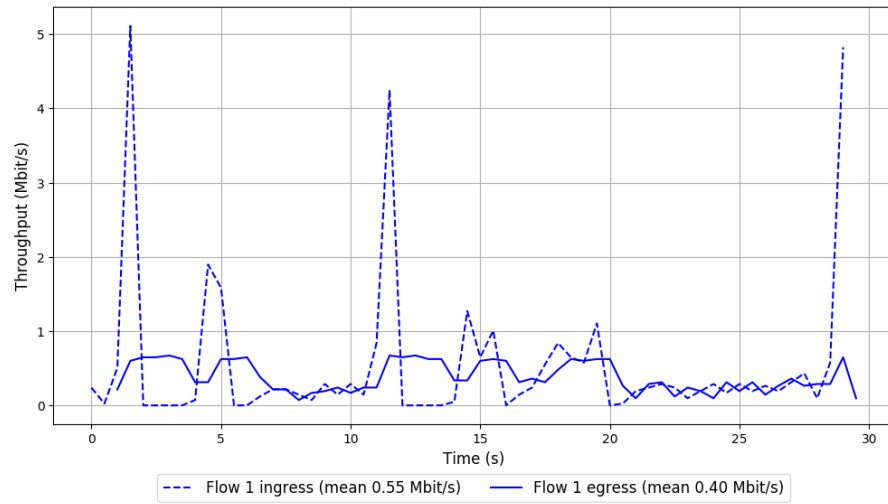


Run 2: Statistics of Indigo

Start at: 2017-12-20 16:28:44
End at: 2017-12-20 16:29:15
Local clock offset: -0.087 ms
Remote clock offset: 15.342 ms

Below is generated by plot.py at 2017-12-20 17:49:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1952.534 ms
Loss rate: 29.95%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1952.534 ms
Loss rate: 29.95%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2017-12-20 16:46:34
End at: 2017-12-20 16:47:04
Local clock offset: -0.088 ms
Remote clock offset: 15.695 ms

Below is generated by plot.py at 2017-12-20 17:49:00
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 419.109 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 419.109 ms
Loss rate: 1.50%

Run 3: Report of Indigo — Data Link

