

Pantheon Report

Generated at 2018-03-26 21:53:46 (UTC).

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

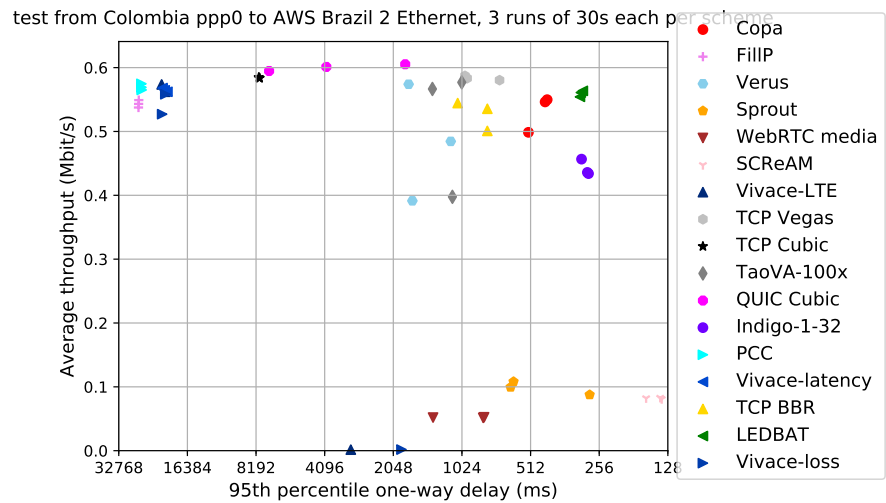
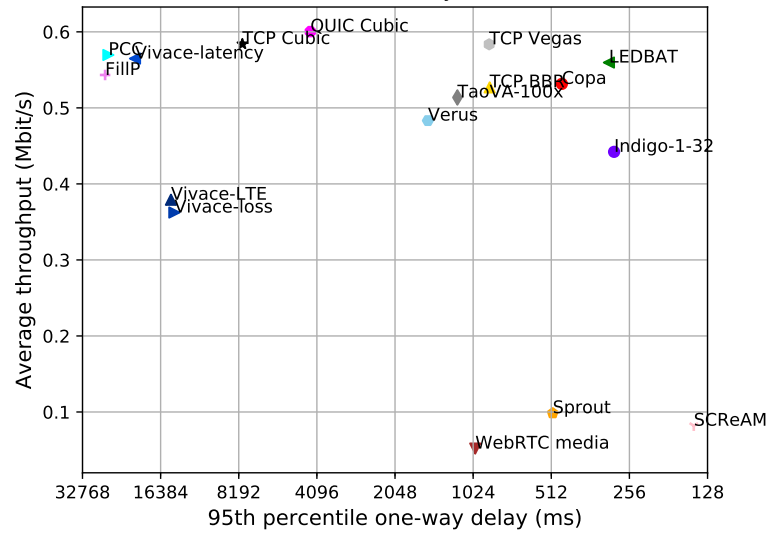
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

NTP offsets were measured against **gps.ntp.br** 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/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eae30b267cde681
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 Colombia ppp0 to AWS Brazil 2 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	0.53	884.56	2.10
TCP Cubic	3	0.58	7933.33	30.96
LEDBAT	3	0.56	307.12	1.26
PCC	3	0.57	26036.64	98.55
QUIC Cubic	3	0.60	4341.28	17.93
SCReAM	3	0.08	144.64	0.79
WebRTC media	3	0.05	1005.27	0.04
Sprout	3	0.10	505.56	1.05
TaoVA-100x	3	0.52	1177.70	15.55
TCP Vegas	3	0.58	888.38	1.57
Verus	3	0.48	1530.02	11.33
Copa	3	0.53	466.13	3.39
FillP	3	0.54	26811.27	99.05
Indigo-1-32	3	0.44	293.29	1.56
Vivace-latency	3	0.56	20569.63	69.34
Vivace-loss	3	0.36	14500.87	59.36
Vivace-LTE	3	0.38	14950.94	48.59

Run 1: Statistics of TCP BBR

Start at: 2018-03-26 19:49:27

End at: 2018-03-26 19:49:57

Local clock offset: -8.29 ms

Remote clock offset: 3.297 ms

Below is generated by plot.py at 2018-03-26 21:53:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 1069.223 ms

Loss rate: 2.04%

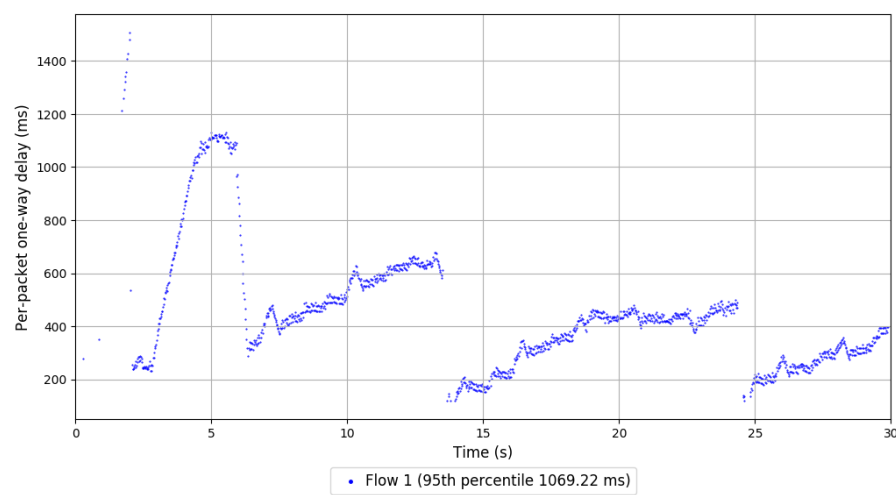
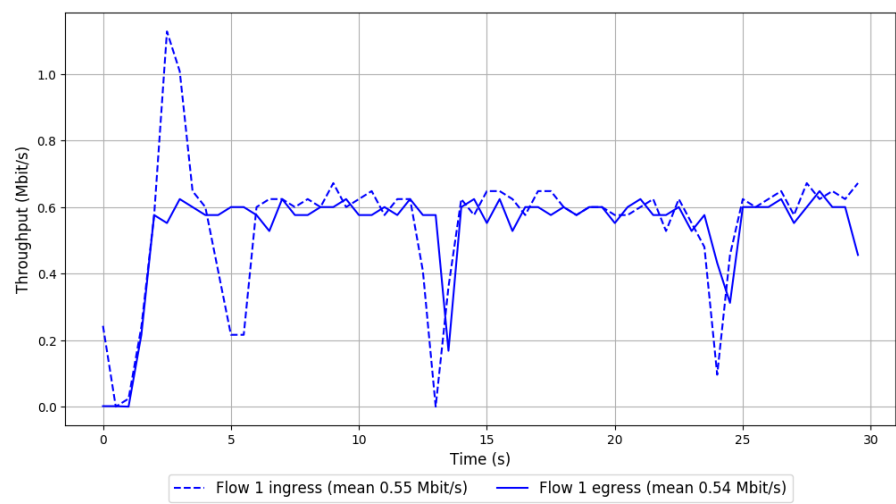
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 1069.223 ms

Loss rate: 2.04%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-03-26 20:10:48

End at: 2018-03-26 20:11:18

Local clock offset: -8.985 ms

Remote clock offset: 6.303 ms

Below is generated by plot.py at 2018-03-26 21:53:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 792.174 ms

Loss rate: 2.58%

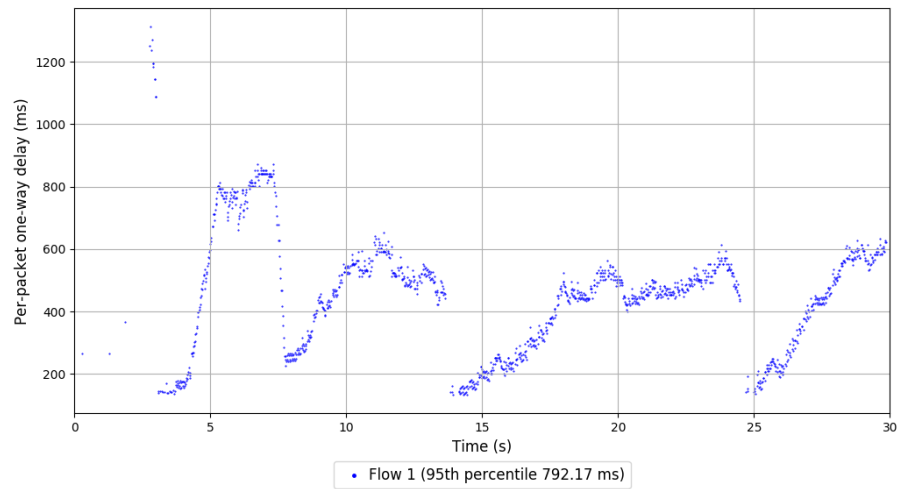
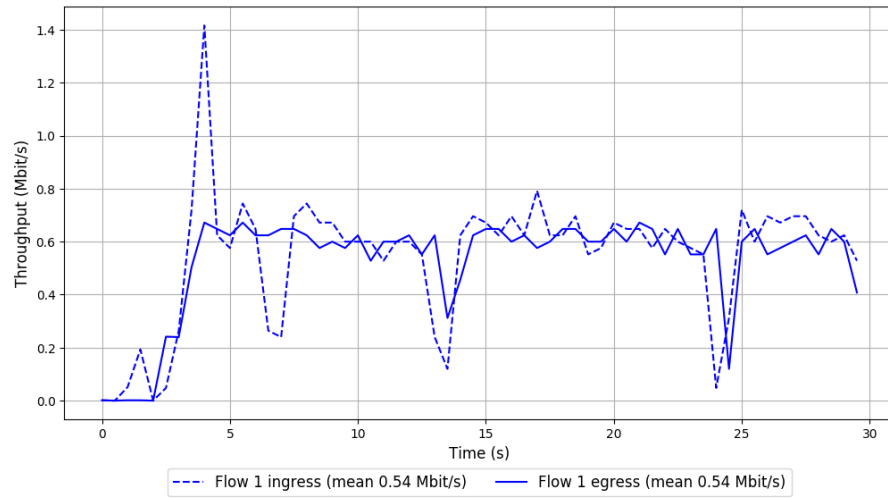
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 792.174 ms

Loss rate: 2.58%

Run 2: Report of TCP BBR — Data Link

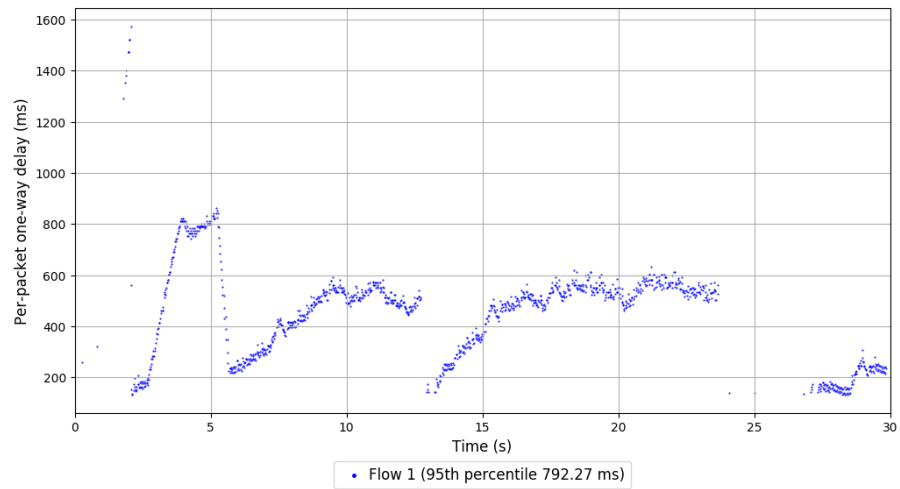
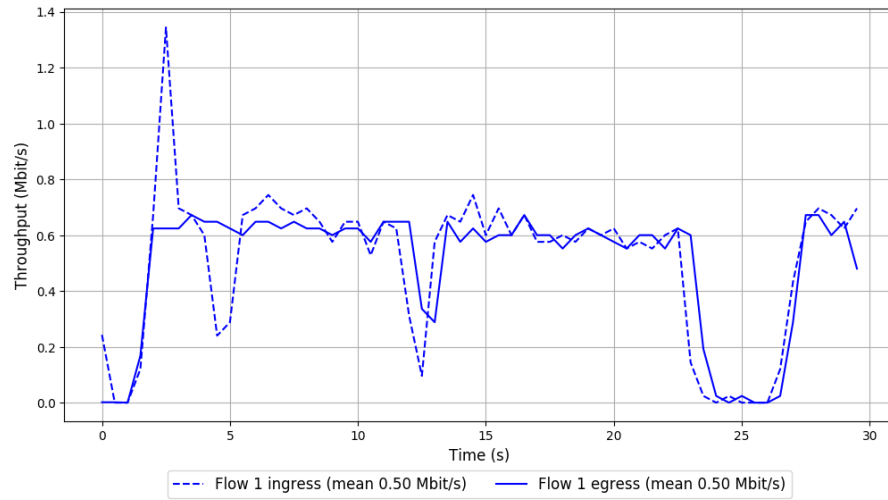


Run 3: Statistics of TCP BBR

Start at: 2018-03-26 20:32:05
End at: 2018-03-26 20:32:35
Local clock offset: -11.317 ms
Remote clock offset: 6.426 ms

Below is generated by plot.py at 2018-03-26 21:53:09
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 792.273 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 792.273 ms
Loss rate: 1.67%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-03-26 19:58:56

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

Local clock offset: -8.27 ms

Remote clock offset: 6.776 ms

Below is generated by plot.py at 2018-03-26 21:53:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7906.809 ms

Loss rate: 31.00%

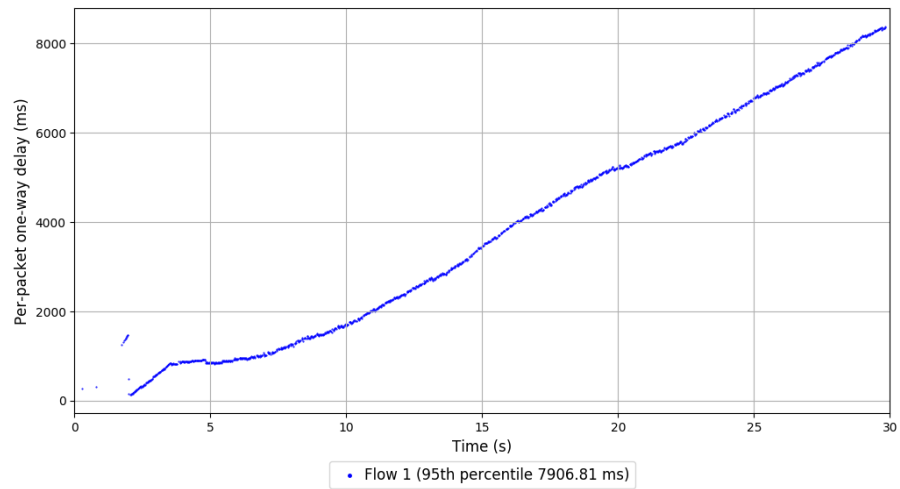
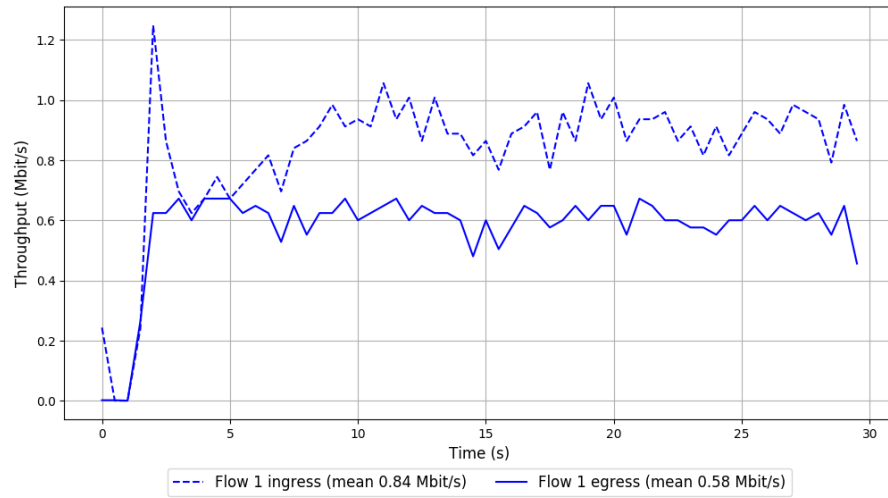
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7906.809 ms

Loss rate: 31.00%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

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

End at: 2018-03-26 20:20:43

Local clock offset: -9.172 ms

Remote clock offset: 2.767 ms

Below is generated by plot.py at 2018-03-26 21:53:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7926.197 ms

Loss rate: 30.99%

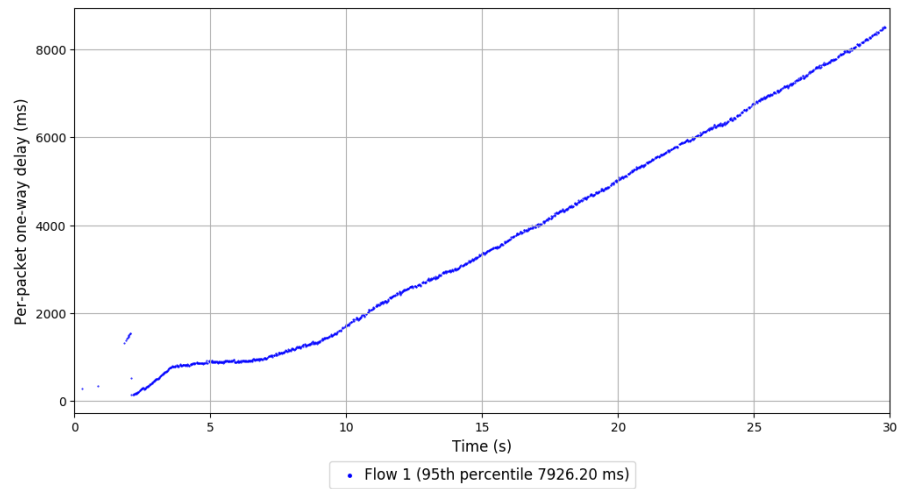
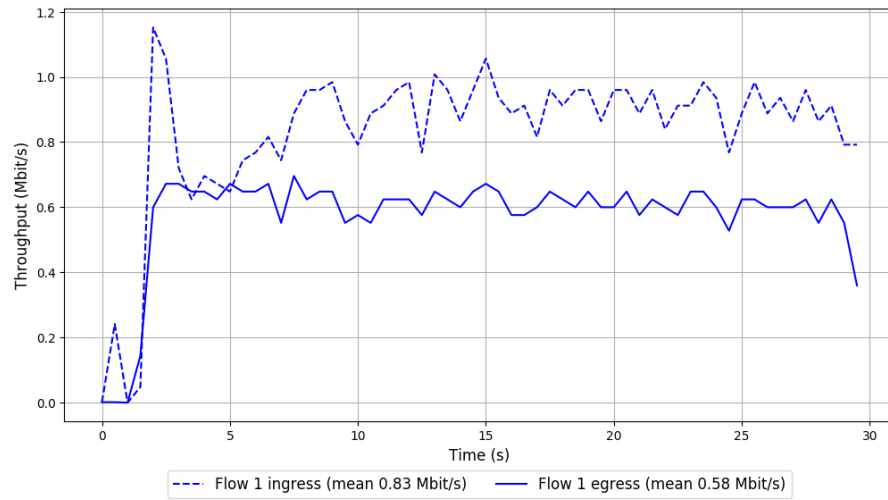
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 7926.197 ms

Loss rate: 30.99%

Run 2: Report of TCP Cubic — Data Link

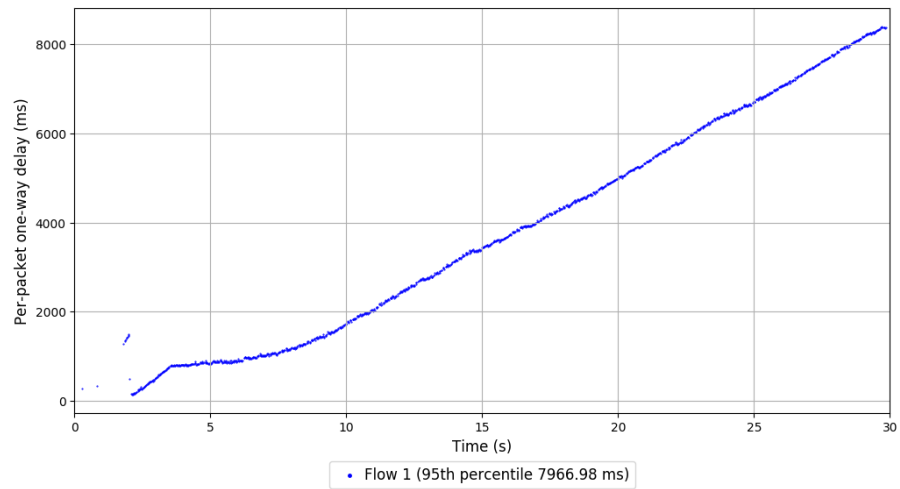
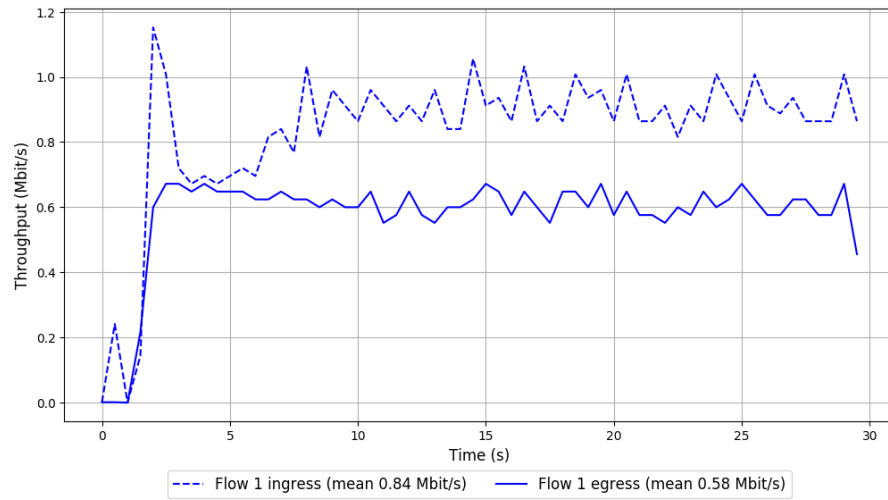


Run 3: Statistics of TCP Cubic

Start at: 2018-03-26 20:41:34
End at: 2018-03-26 20:42:04
Local clock offset: -14.001 ms
Remote clock offset: 7.208 ms

Below is generated by plot.py at 2018-03-26 21:53:09
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7966.980 ms
Loss rate: 30.89%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7966.980 ms
Loss rate: 30.89%

Run 3: Report of TCP Cubic — Data Link

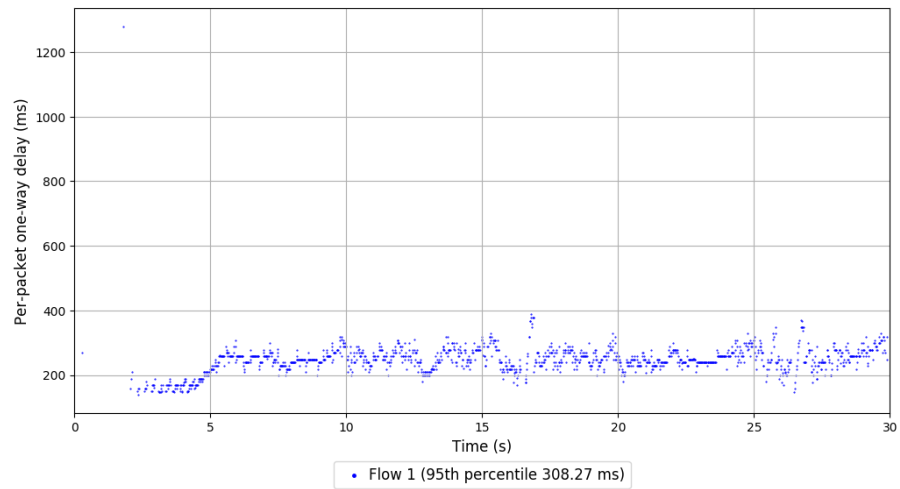
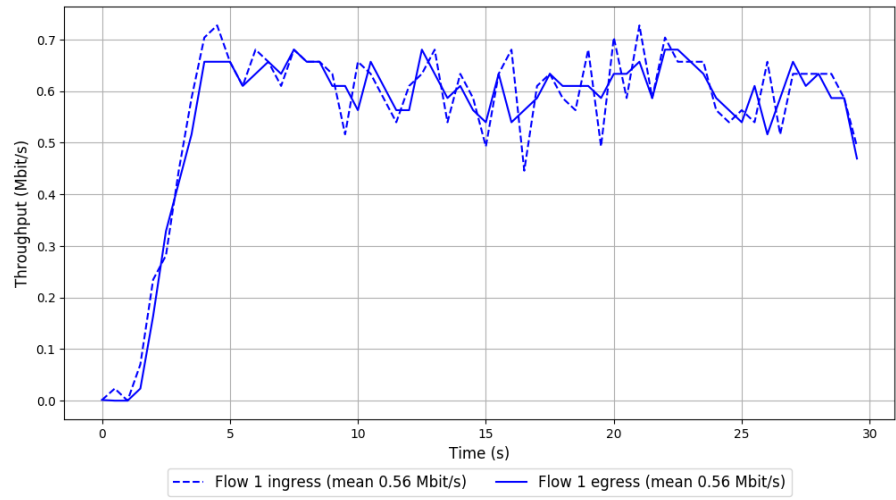


```
Run 1: Statistics of LEDBAT

Start at: 2018-03-26 19:57:46
End at: 2018-03-26 19:58:16
Local clock offset: -9.178 ms
Remote clock offset: 2.83 ms

# Below is generated by plot.py at 2018-03-26 21:53:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 308.266 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 308.266 ms
Loss rate: 1.19%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-03-26 20:19:02

End at: 2018-03-26 20:19:32

Local clock offset: -9.116 ms

Remote clock offset: 2.19 ms

Below is generated by plot.py at 2018-03-26 21:53:09

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 311.041 ms

Loss rate: 1.27%

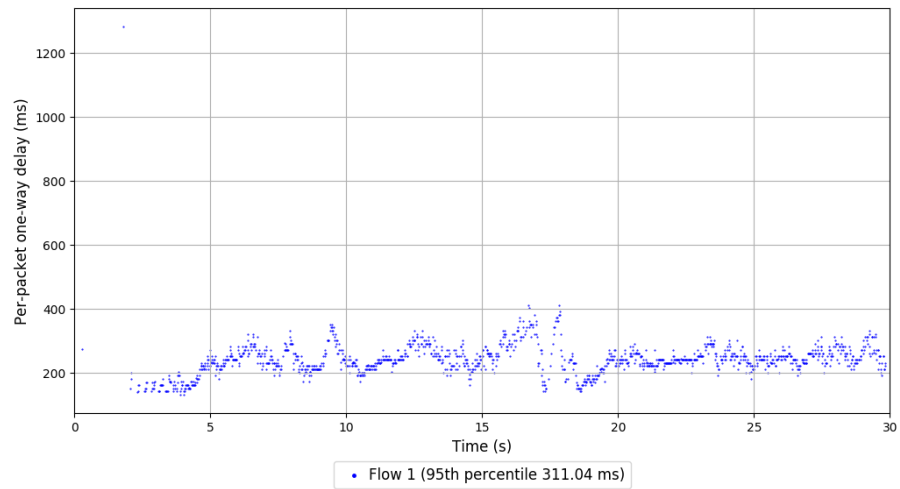
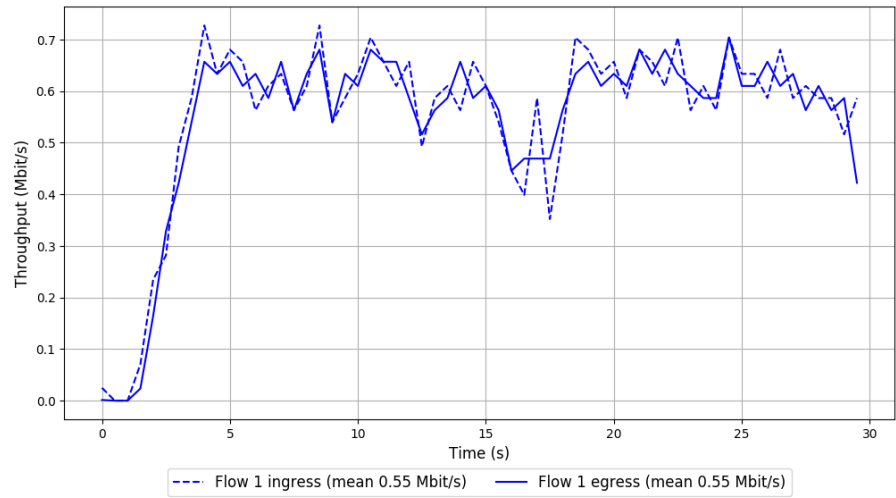
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 311.041 ms

Loss rate: 1.27%

Run 2: Report of LEDBAT — Data Link

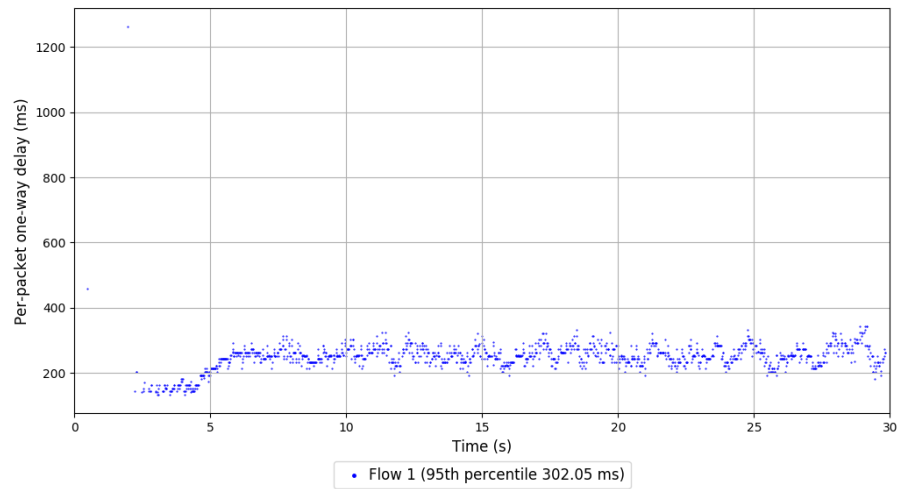
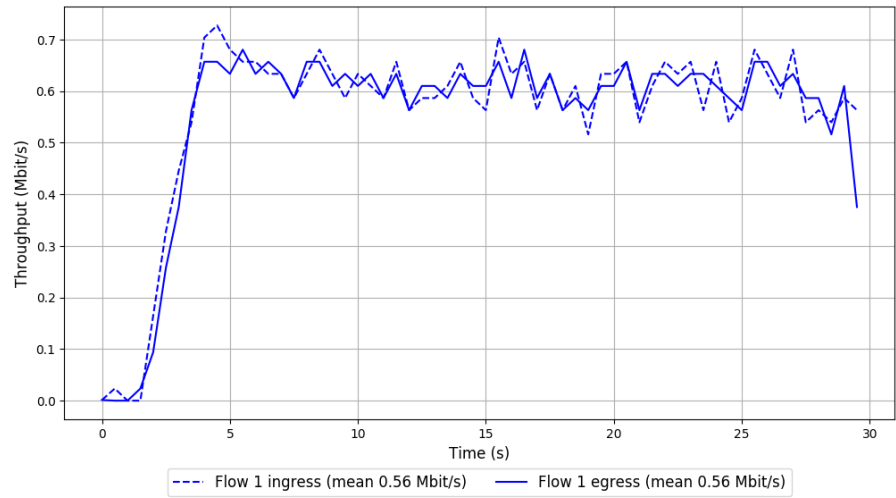


Run 3: Statistics of LEDBAT

Start at: 2018-03-26 20:40:23
End at: 2018-03-26 20:40:53
Local clock offset: -13.728 ms
Remote clock offset: 2.073 ms

Below is generated by plot.py at 2018-03-26 21:53:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 302.053 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 302.053 ms
Loss rate: 1.33%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: 2018-03-26 19:45:50

End at: 2018-03-26 19:46:20

Local clock offset: -7.971 ms

Remote clock offset: 7.152 ms

Below is generated by plot.py at 2018-03-26 21:53:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 25994.614 ms

Loss rate: 98.56%

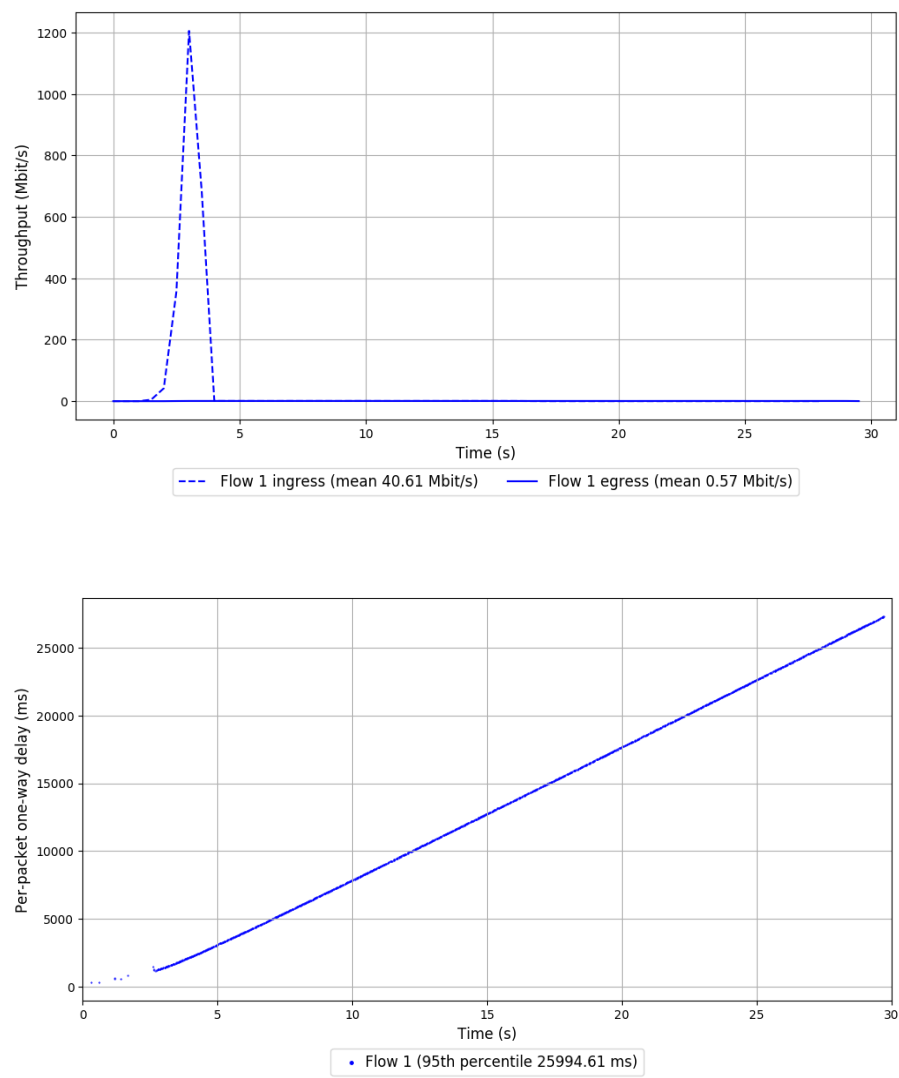
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 25994.614 ms

Loss rate: 98.56%

Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

Start at: 2018-03-26 20:07:12

End at: 2018-03-26 20:07:42

Local clock offset: -7.919 ms

Remote clock offset: 6.382 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26050.436 ms

Loss rate: 98.56%

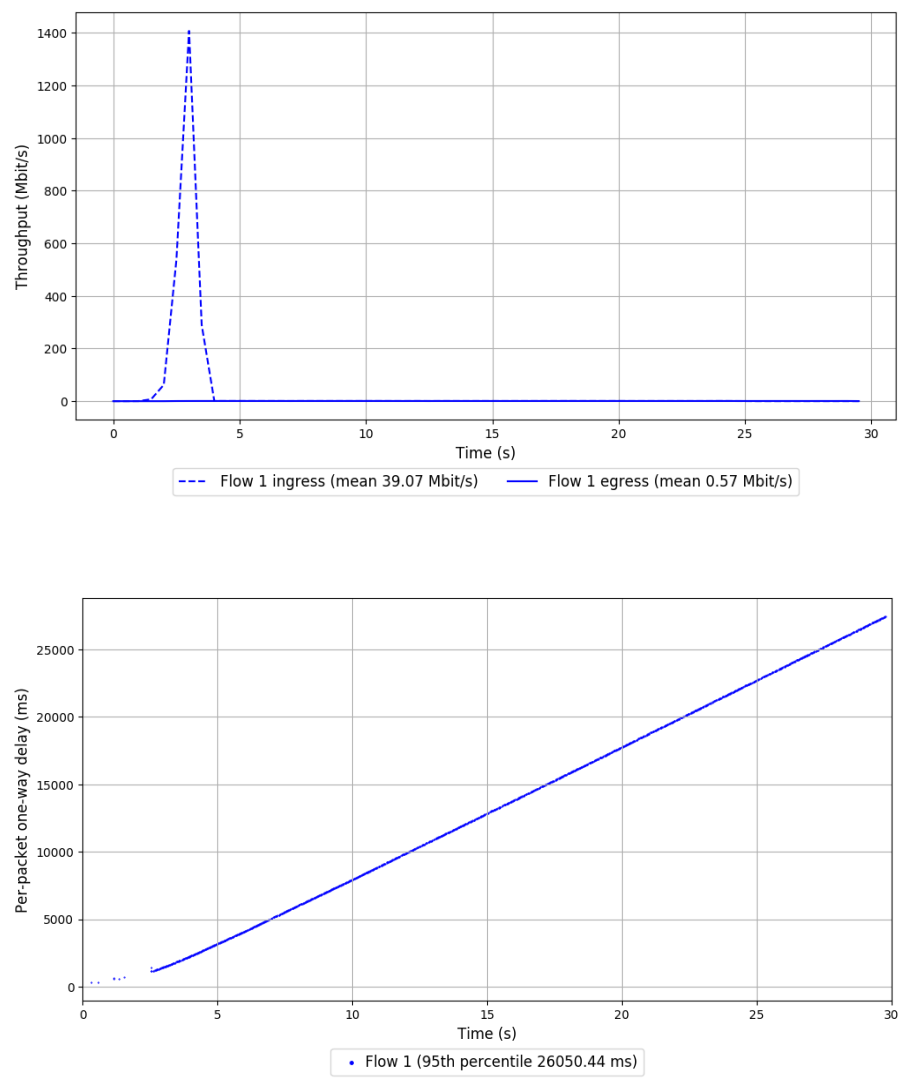
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 26050.436 ms

Loss rate: 98.56%

Run 2: Report of PCC — Data Link

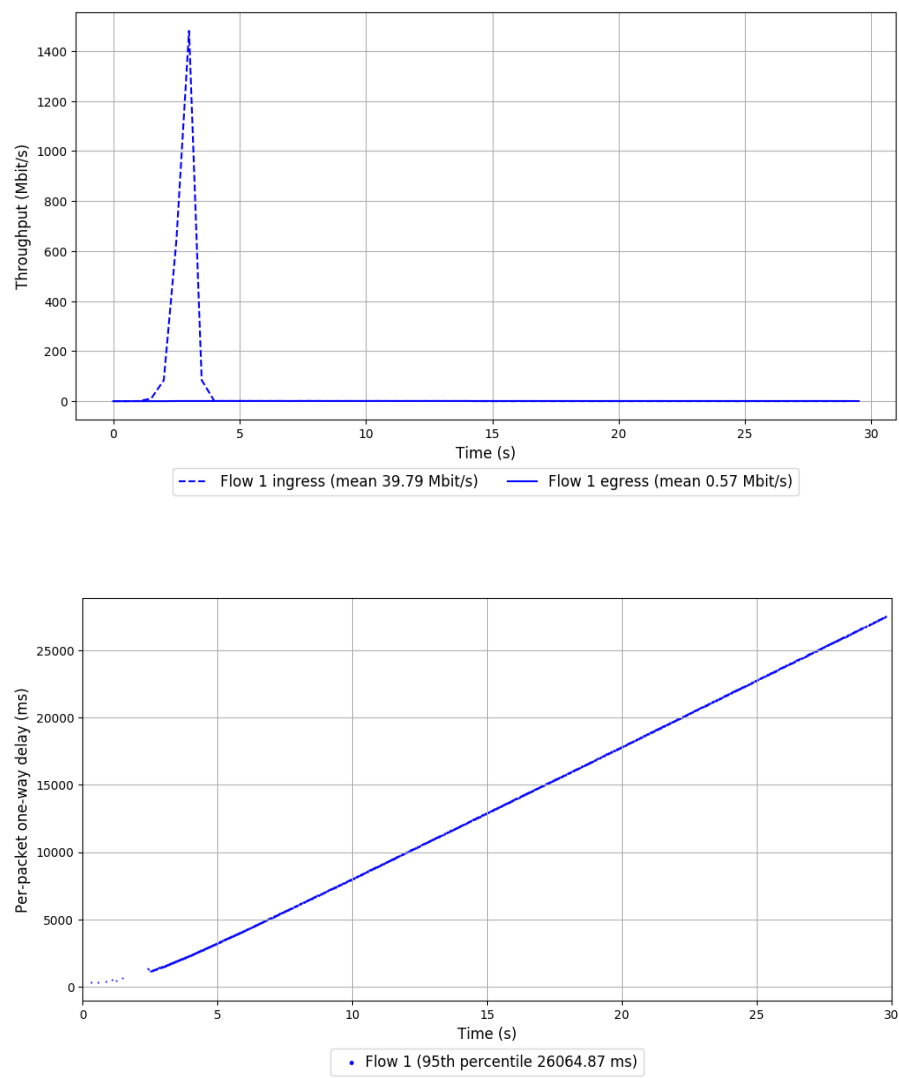


Run 3: Statistics of PCC

Start at: 2018-03-26 20:28:28
End at: 2018-03-26 20:28:58
Local clock offset: -10.497 ms
Remote clock offset: 6.494 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26064.873 ms
Loss rate: 98.54%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26064.873 ms
Loss rate: 98.54%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-03-26 20:06:00

End at: 2018-03-26 20:06:30

Local clock offset: -7.587 ms

Remote clock offset: 2.565 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 4028.164 ms

Loss rate: 19.60%

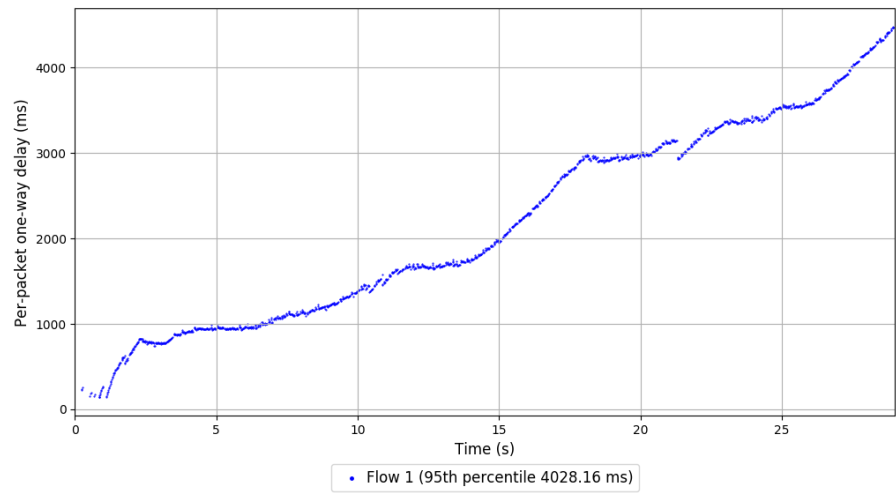
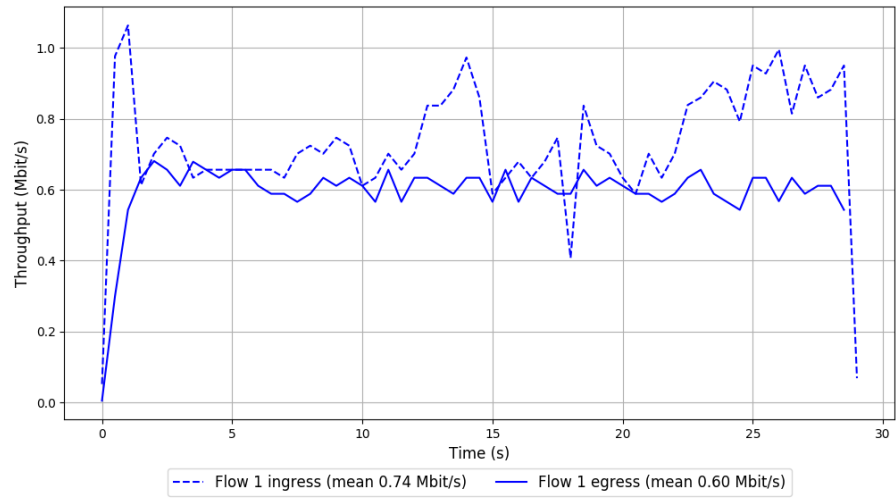
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 4028.164 ms

Loss rate: 19.60%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-03-26 20:27:17

End at: 2018-03-26 20:27:47

Local clock offset: -10.24 ms

Remote clock offset: 2.672 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 1816.139 ms

Loss rate: 7.34%

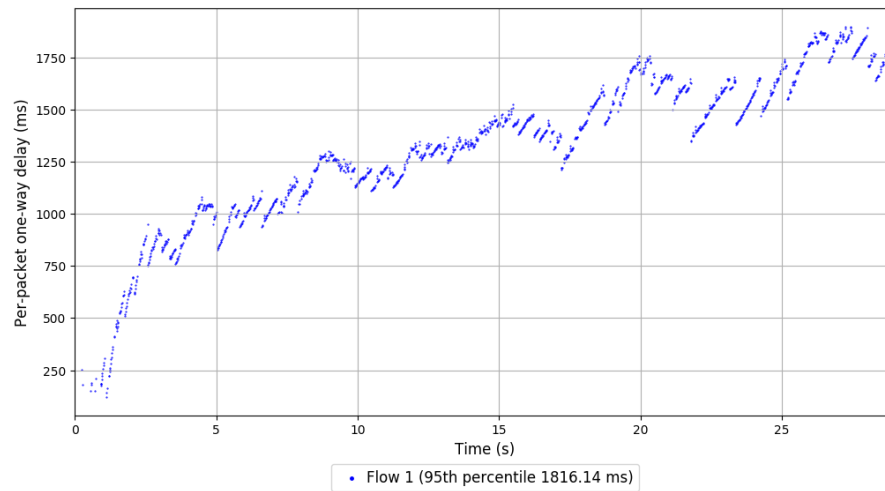
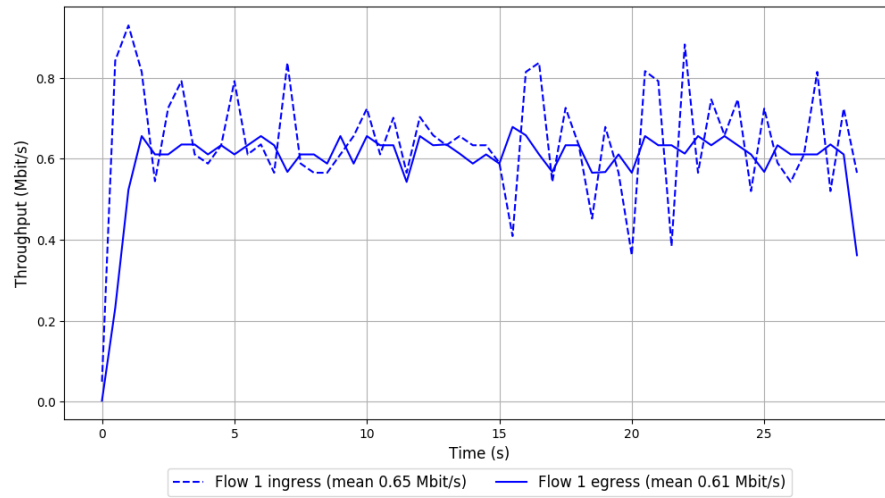
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 1816.139 ms

Loss rate: 7.34%

Run 2: Report of QUIC Cubic — Data Link

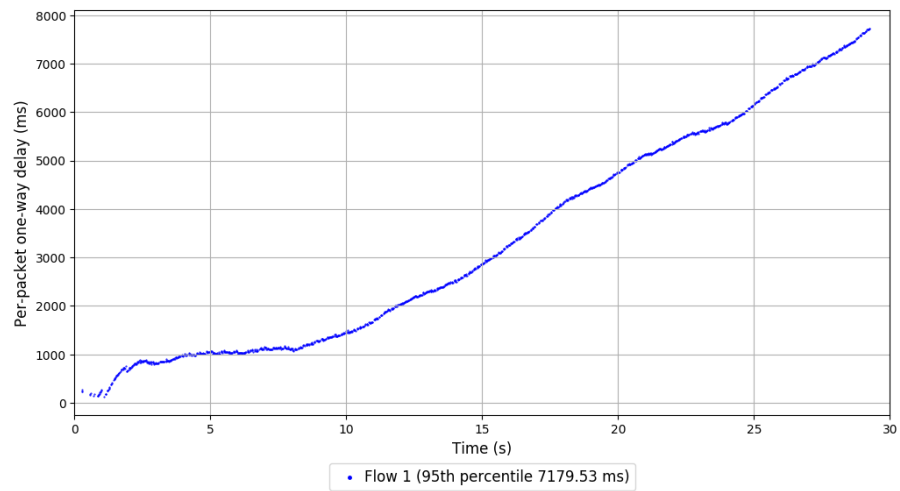
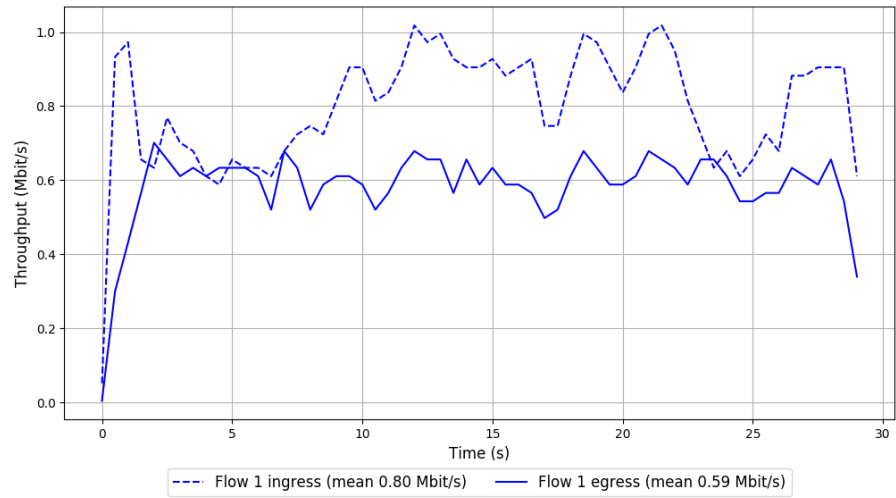


Run 3: Statistics of QUIC Cubic

Start at: 2018-03-26 20:48:38
End at: 2018-03-26 20:49:08
Local clock offset: -14.027 ms
Remote clock offset: 2.641 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7179.529 ms
Loss rate: 26.84%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7179.529 ms
Loss rate: 26.84%

Run 3: Report of QUIC Cubic — Data Link

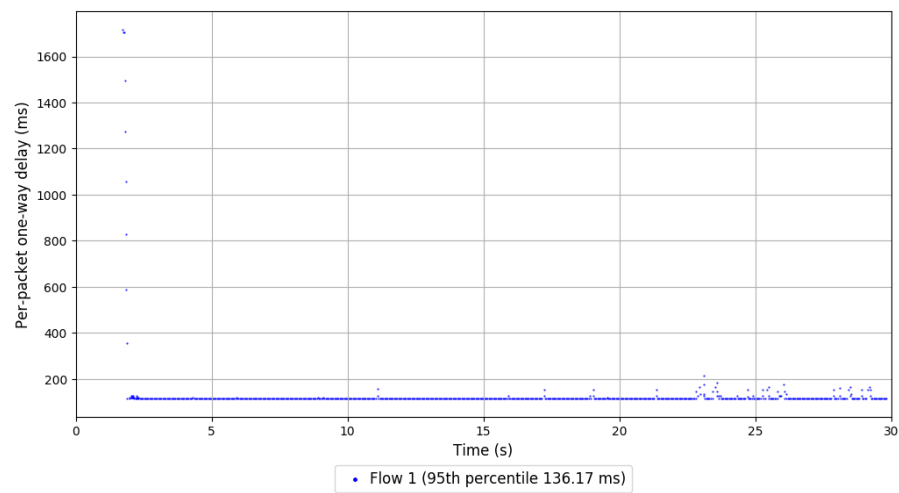
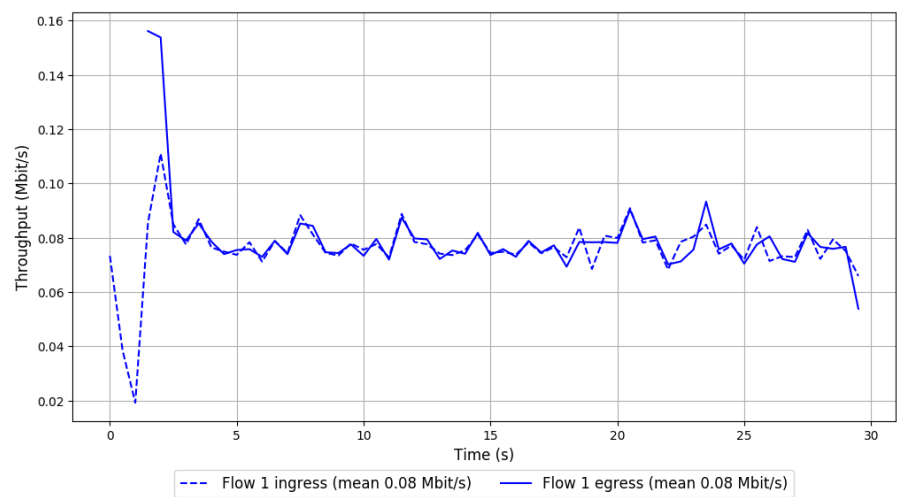


Run 1: Statistics of SCReAM

Start at: 2018-03-26 19:55:24
End at: 2018-03-26 19:55:54
Local clock offset: -10.775 ms
Remote clock offset: 7.802 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 136.174 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 136.174 ms
Loss rate: 0.65%

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-03-26 20:16:41

End at: 2018-03-26 20:17:11

Local clock offset: -9.168 ms

Remote clock offset: 2.828 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 138.302 ms

Loss rate: 0.93%

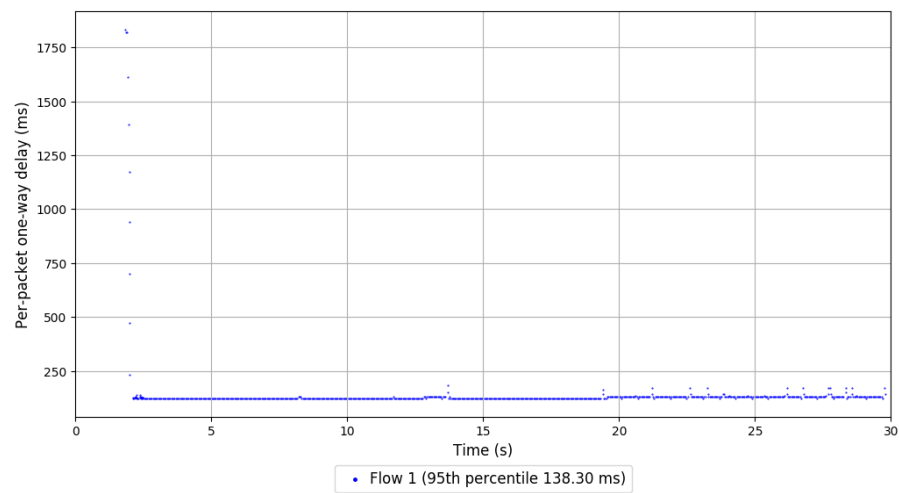
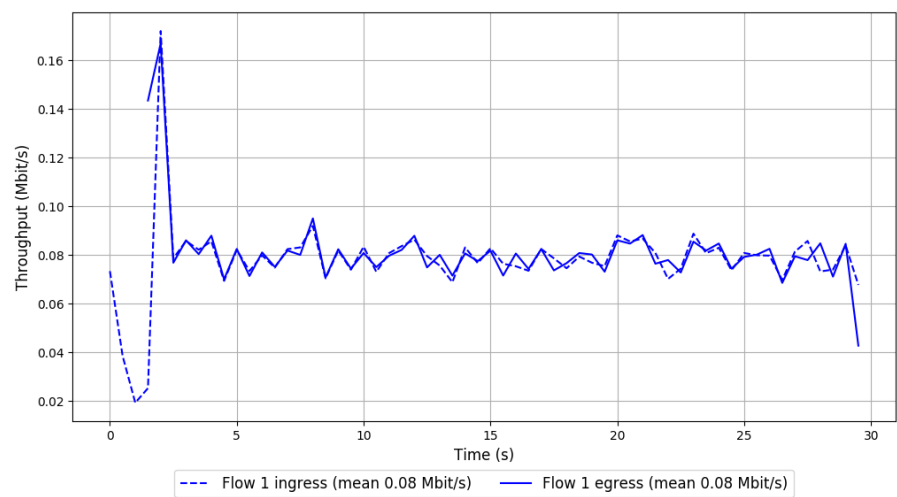
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 138.302 ms

Loss rate: 0.93%

Run 2: Report of SReAM — Data Link

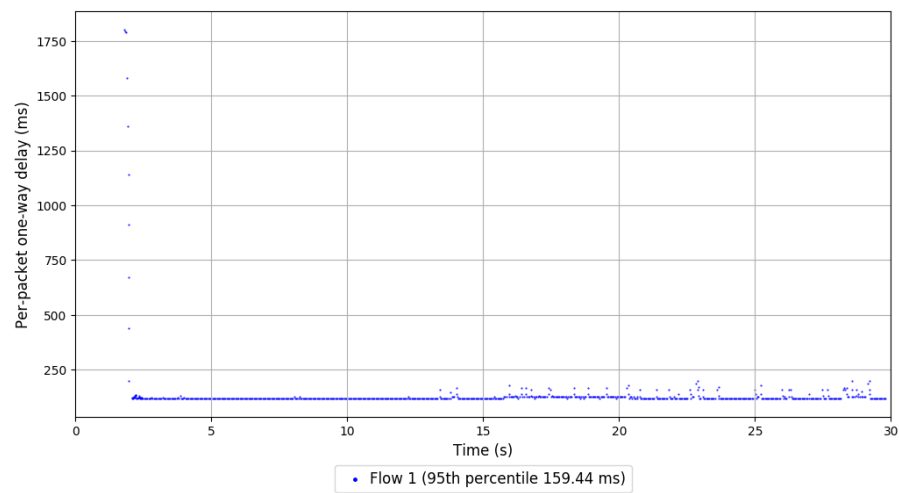
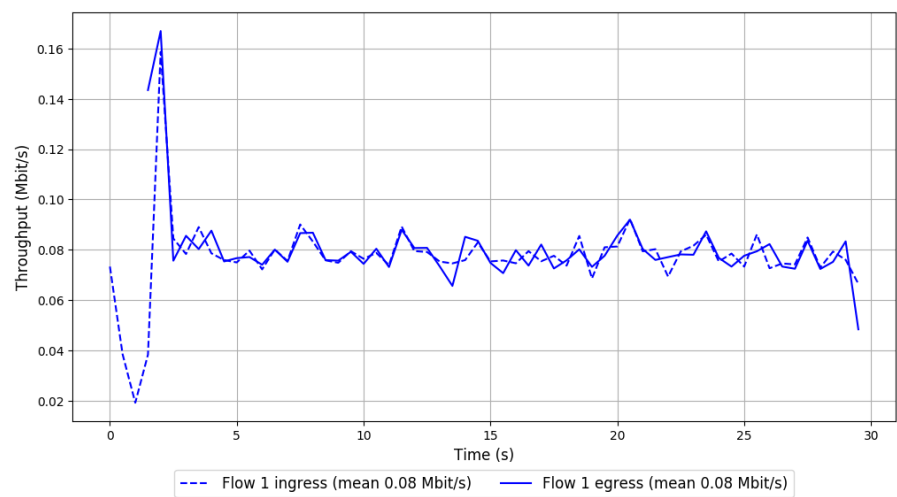


Run 3: Statistics of SCReAM

Start at: 2018-03-26 20:38:02
End at: 2018-03-26 20:38:32
Local clock offset: -13.038 ms
Remote clock offset: 6.51 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 159.438 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 159.438 ms
Loss rate: 0.78%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-03-26 20:03:39

End at: 2018-03-26 20:04:09

Local clock offset: -7.338 ms

Remote clock offset: 7.165 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 1371.011 ms

Loss rate: 0.00%

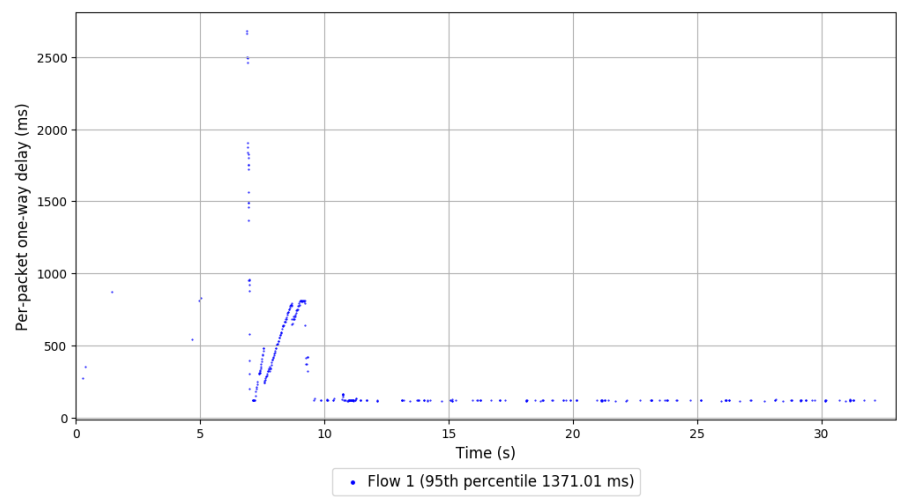
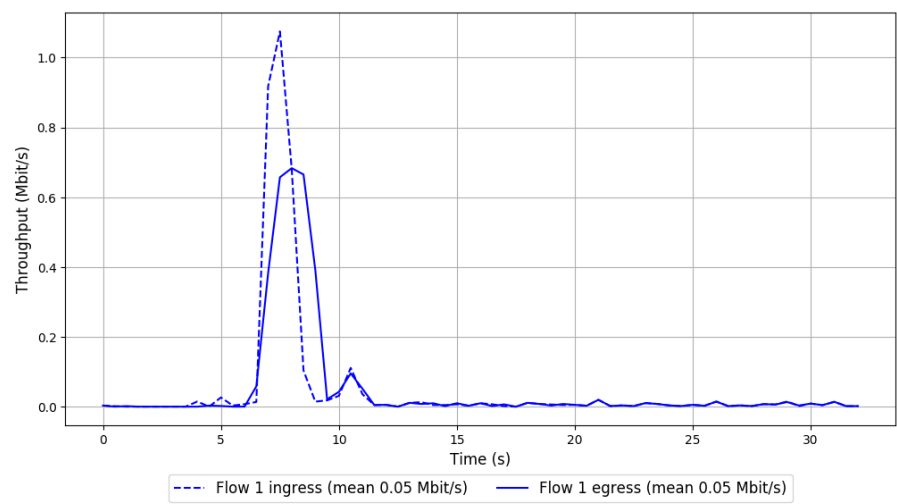
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 1371.011 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-03-26 20:24:56

End at: 2018-03-26 20:25:26

Local clock offset: -9.759 ms

Remote clock offset: 2.633 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 818.804 ms

Loss rate: 0.00%

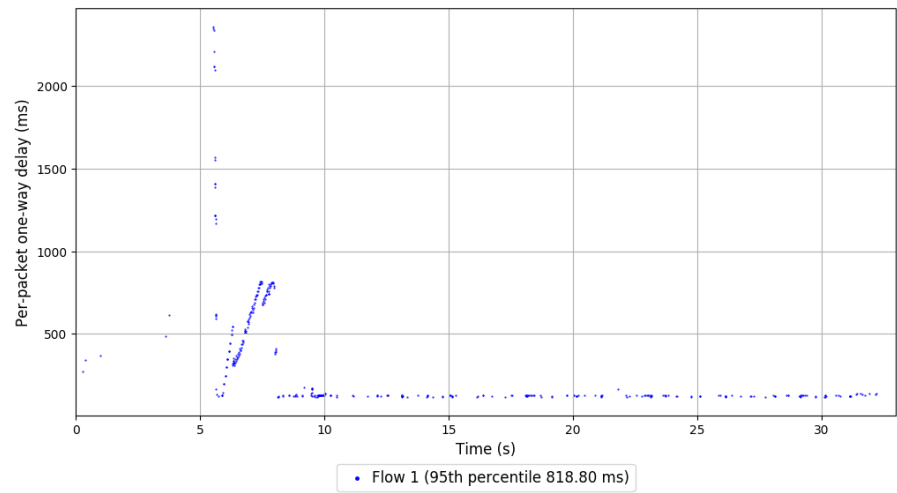
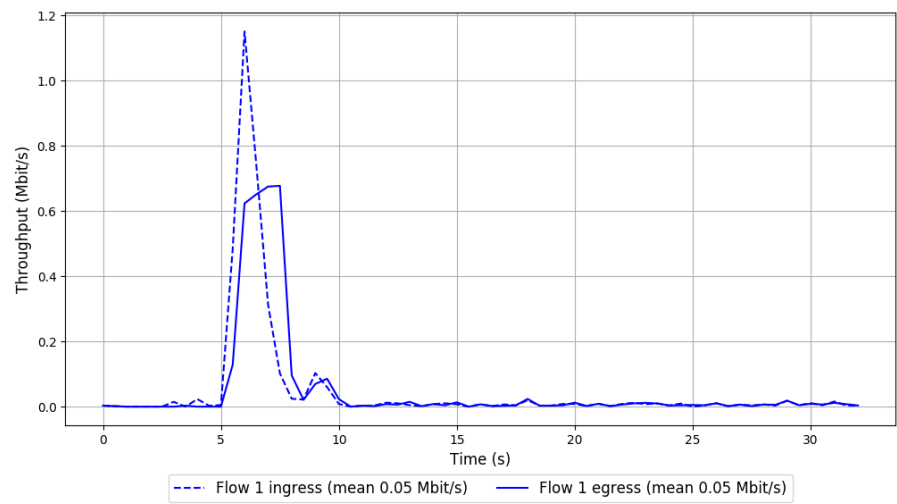
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 818.804 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

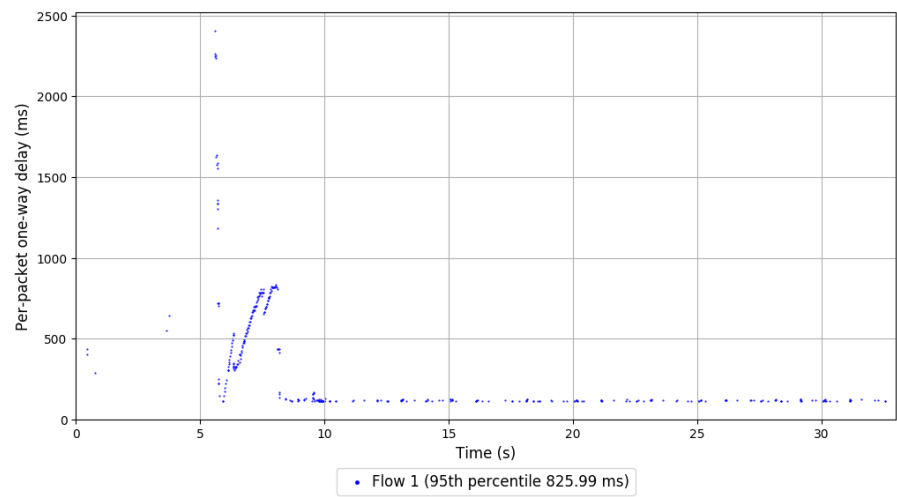
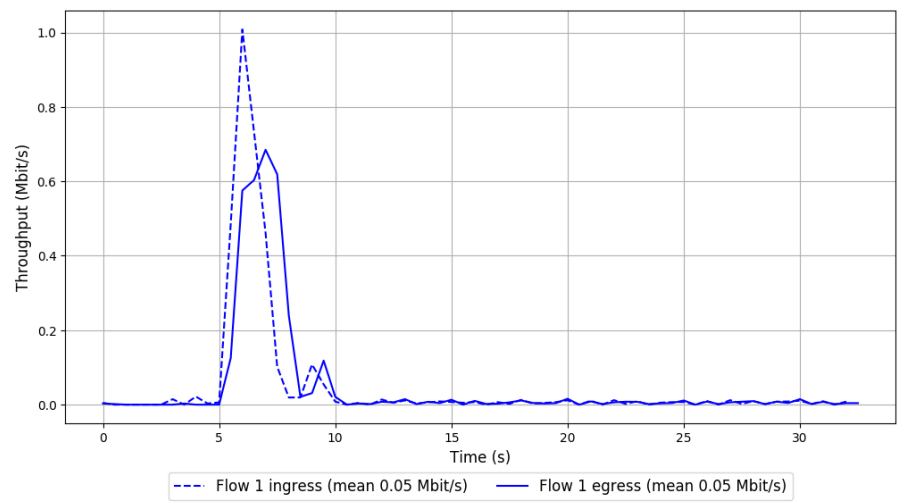


Run 3: Statistics of WebRTC media

Start at: 2018-03-26 20:46:16
End at: 2018-03-26 20:46:46
Local clock offset: -15.438 ms
Remote clock offset: 6.55 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 825.987 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 825.987 ms
Loss rate: 0.11%

Run 3: Report of WebRTC media — Data Link



Run 1: Statistics of Sprout

Start at: 2018-03-26 20:04:49

End at: 2018-03-26 20:05:19

Local clock offset: -7.388 ms

Remote clock offset: 6.533 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 608.138 ms

Loss rate: 0.66%

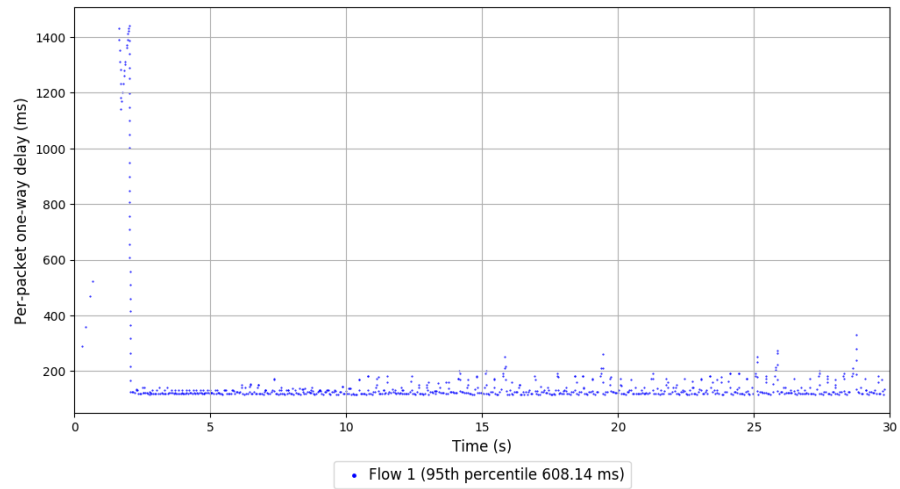
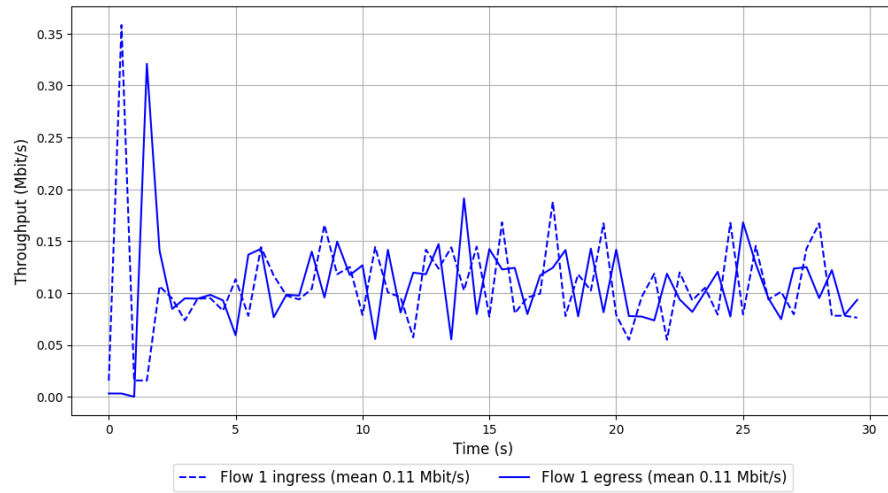
-- Flow 1:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 608.138 ms

Loss rate: 0.66%

Run 1: Report of Sprout — Data Link

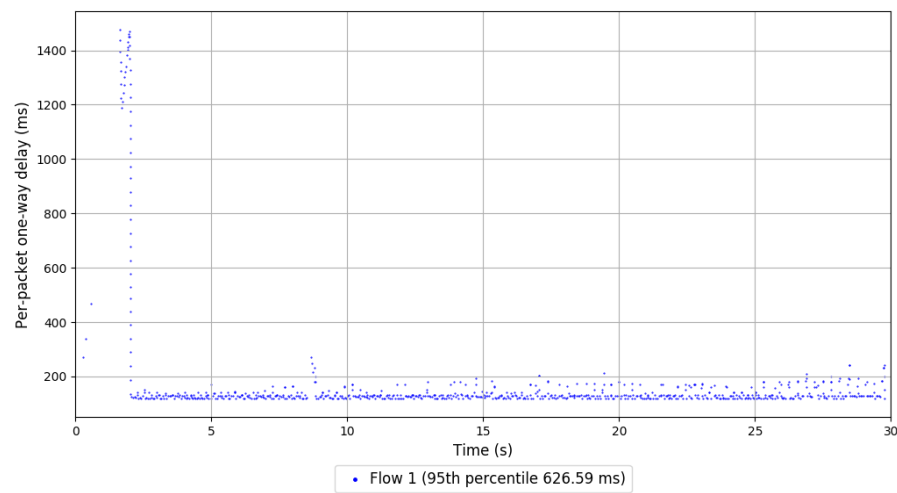
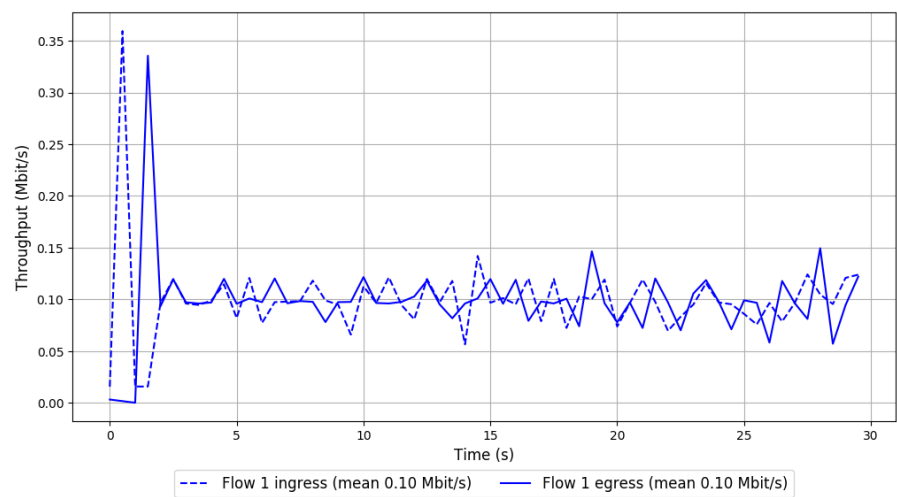


Run 2: Statistics of Sprout

Start at: 2018-03-26 20:26:06
End at: 2018-03-26 20:26:36
Local clock offset: -10.056 ms
Remote clock offset: 2.664 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 626.593 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 626.593 ms
Loss rate: 1.59%

Run 2: Report of Sprout — Data Link

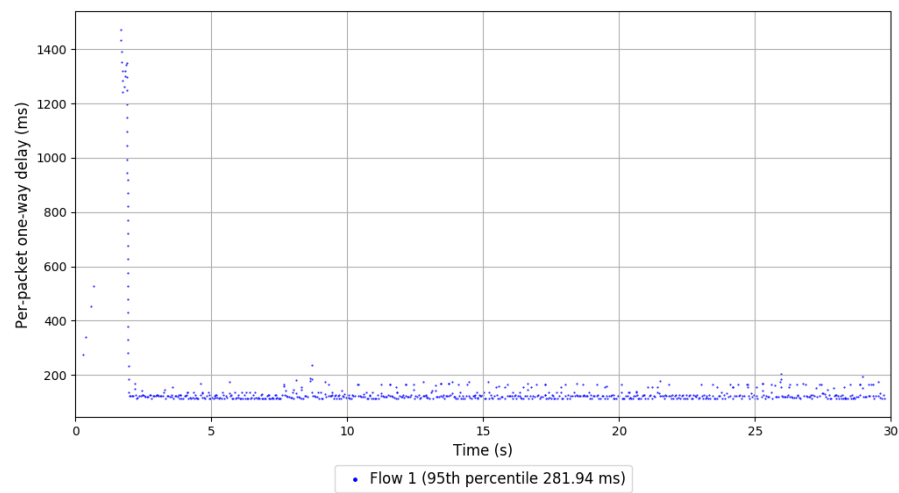
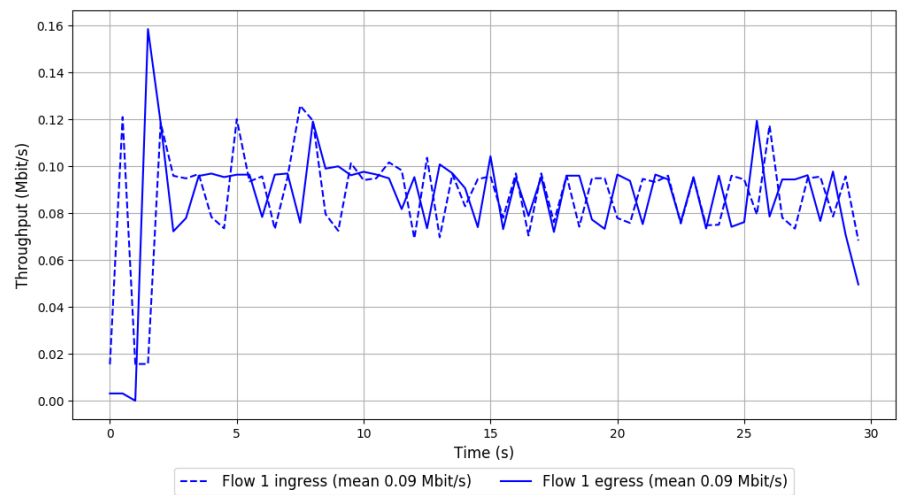


Run 3: Statistics of Sprout

Start at: 2018-03-26 20:47:27
End at: 2018-03-26 20:47:57
Local clock offset: -15.504 ms
Remote clock offset: 6.58 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 281.944 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 281.944 ms
Loss rate: 0.90%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-03-26 20:00:07

End at: 2018-03-26 20:00:37

Local clock offset: -7.681 ms

Remote clock offset: 2.925 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1025.953 ms

Loss rate: 2.53%

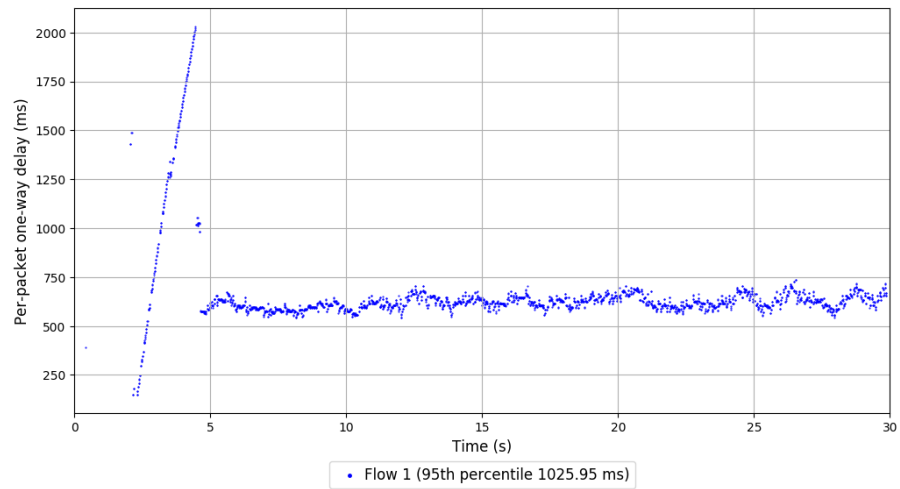
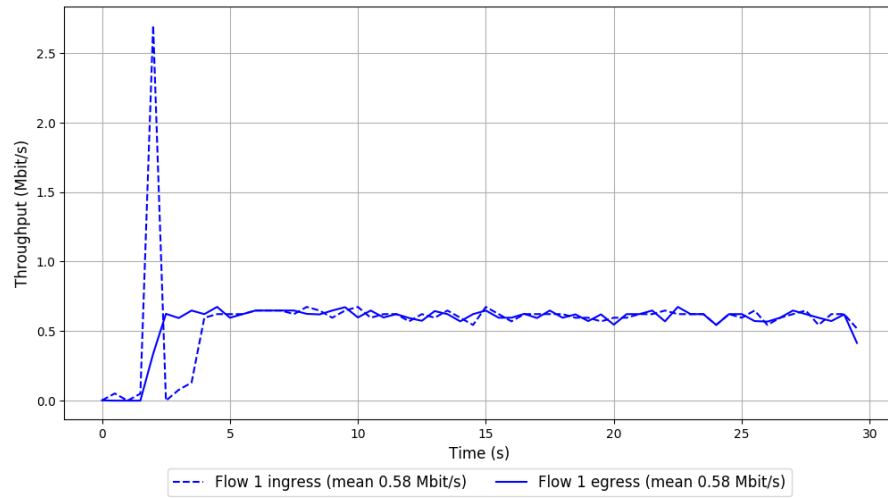
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1025.953 ms

Loss rate: 2.53%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-03-26 20:21:24

End at: 2018-03-26 20:21:54

Local clock offset: -9.271 ms

Remote clock offset: 6.055 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1379.682 ms

Loss rate: 2.64%

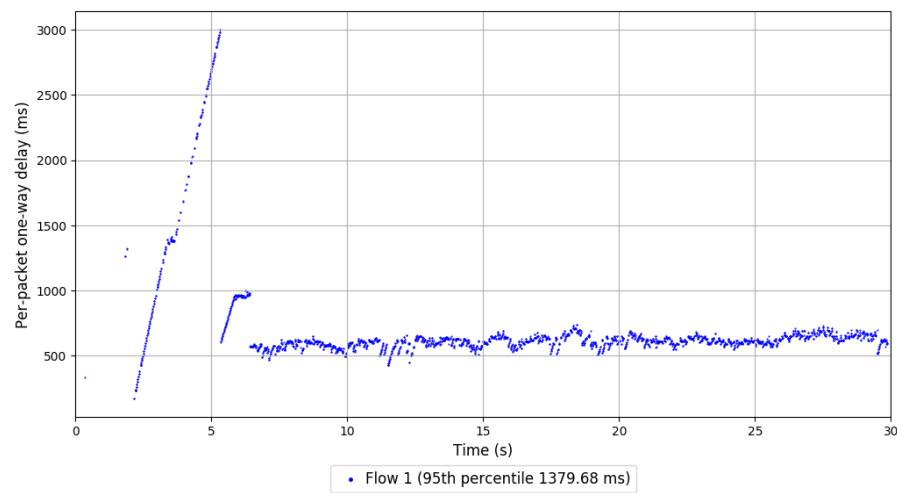
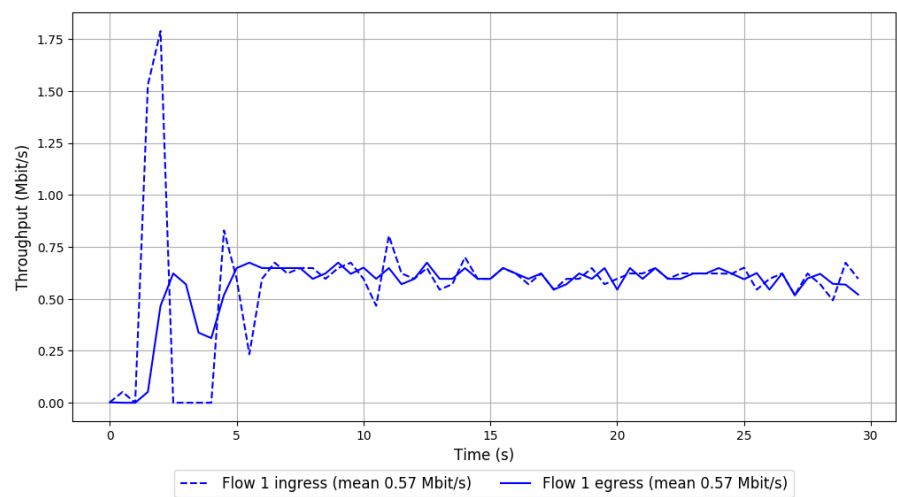
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1379.682 ms

Loss rate: 2.64%

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

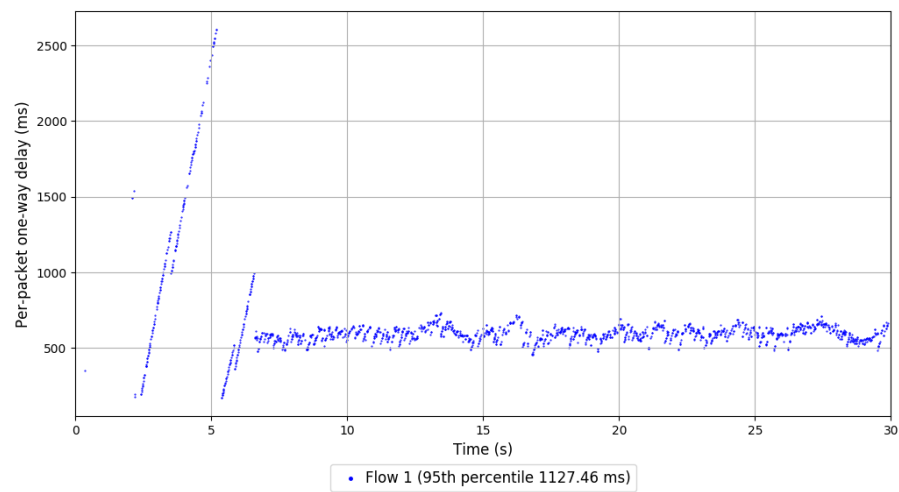
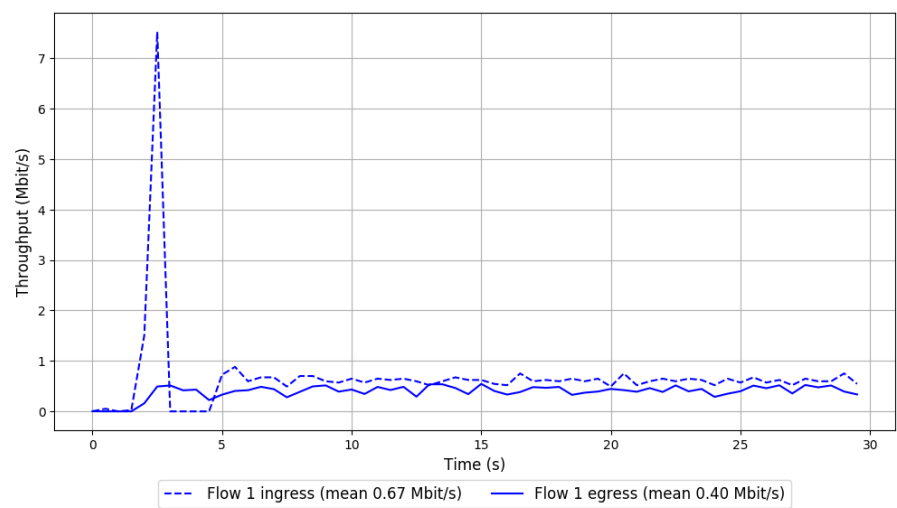


Run 3: Statistics of TaoVA-100x

Start at: 2018-03-26 20:42:44
End at: 2018-03-26 20:43:14
Local clock offset: -14.338 ms
Remote clock offset: 6.618 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1127.456 ms
Loss rate: 41.49%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1127.456 ms
Loss rate: 41.49%

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

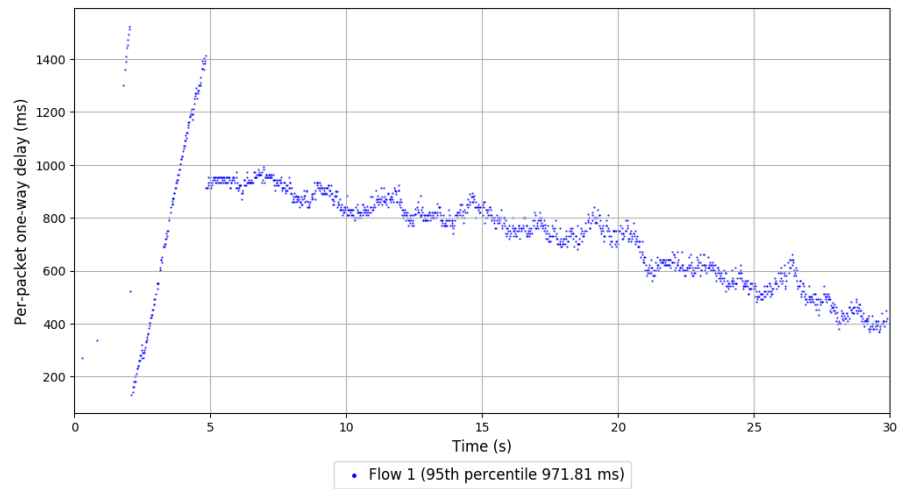
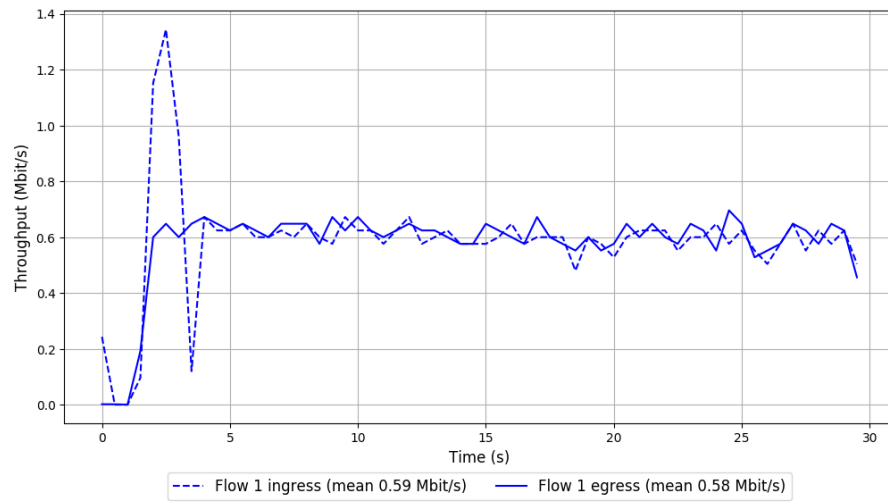


Run 1: Statistics of TCP Vegas

Start at: 2018-03-26 19:56:35
End at: 2018-03-26 19:57:05
Local clock offset: -10.595 ms
Remote clock offset: 7.884 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 971.811 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 971.811 ms
Loss rate: 1.57%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-03-26 20:17:51

End at: 2018-03-26 20:18:21

Local clock offset: -9.187 ms

Remote clock offset: 2.763 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 992.879 ms

Loss rate: 1.76%

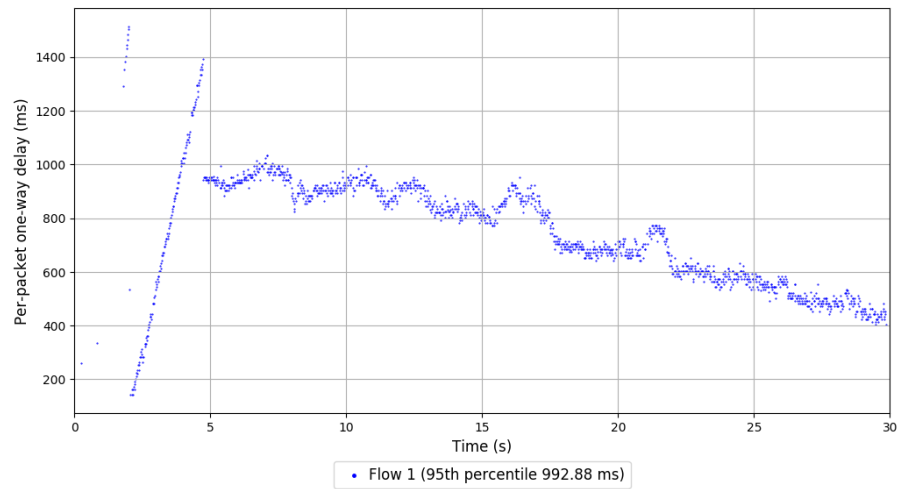
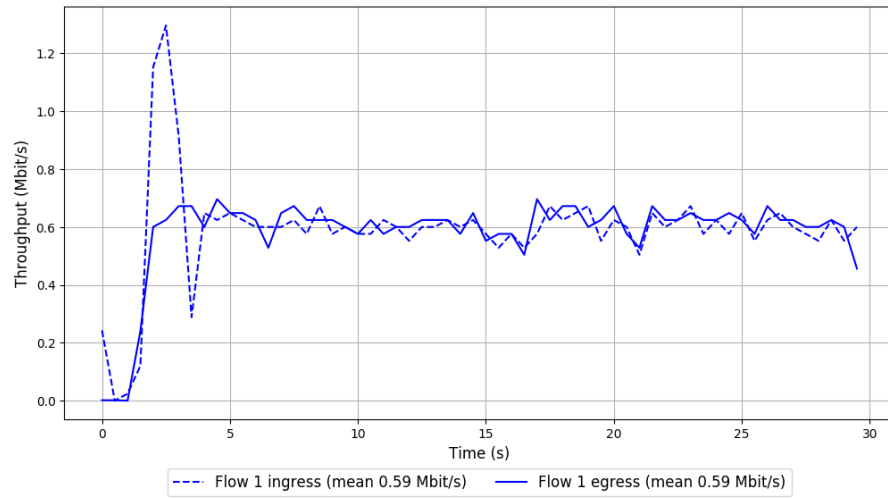
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 992.879 ms

Loss rate: 1.76%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-03-26 20:39:12

End at: 2018-03-26 20:39:42

Local clock offset: -13.33 ms

Remote clock offset: 2.058 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 700.452 ms

Loss rate: 1.38%

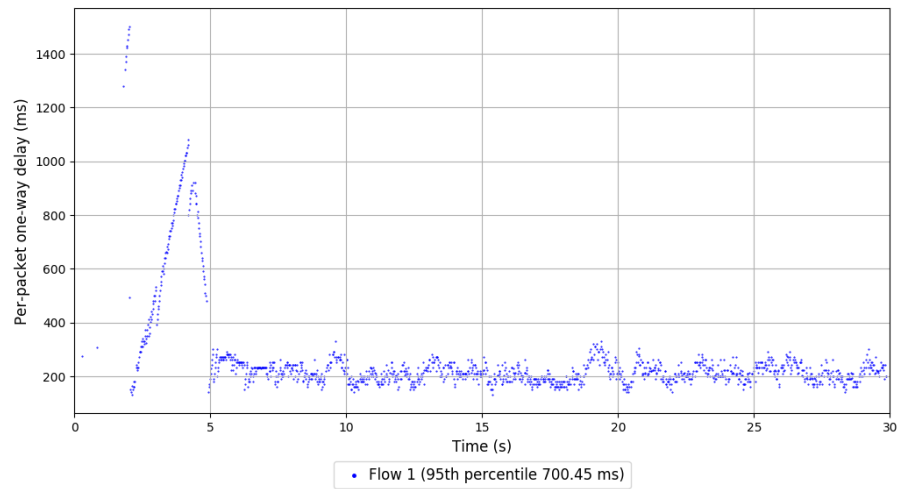
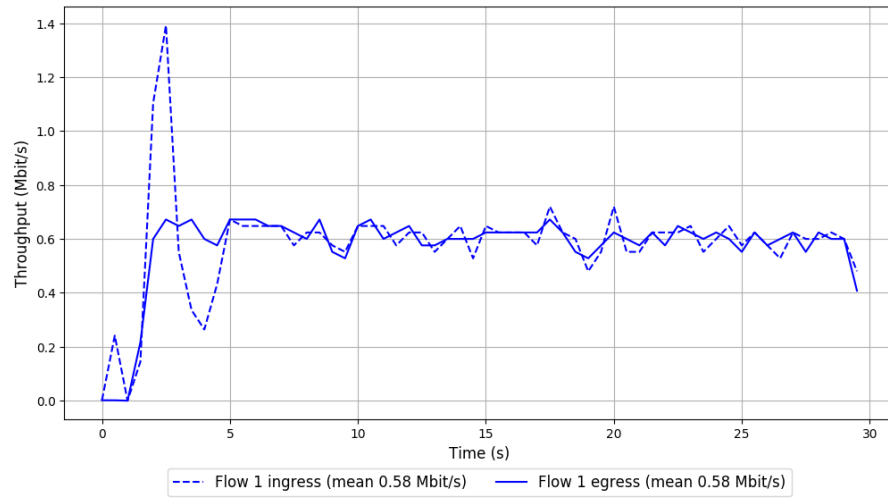
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 700.452 ms

Loss rate: 1.38%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-03-26 19:50:38

End at: 2018-03-26 19:51:08

Local clock offset: -8.408 ms

Remote clock offset: 2.722 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1754.212 ms

Loss rate: 4.04%

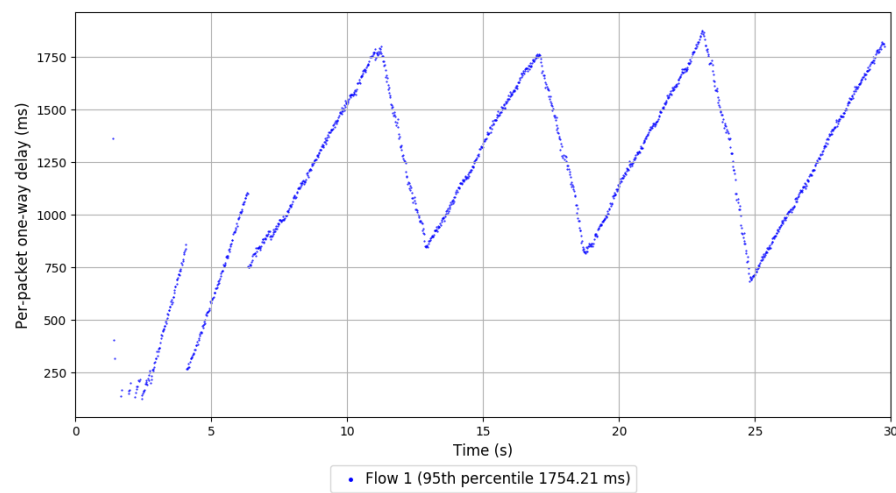
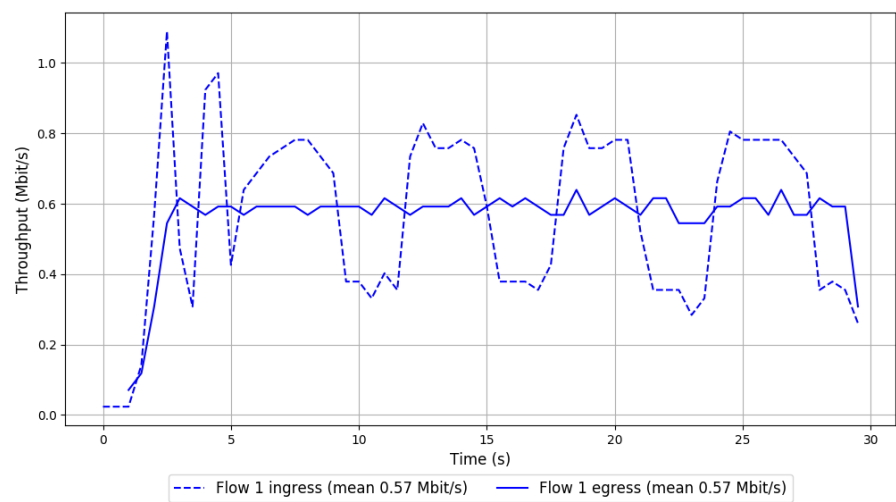
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1754.212 ms

Loss rate: 4.04%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-03-26 20:11:59

End at: 2018-03-26 20:12:29

Local clock offset: -9.365 ms

Remote clock offset: 6.781 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 1146.486 ms

Loss rate: 0.93%

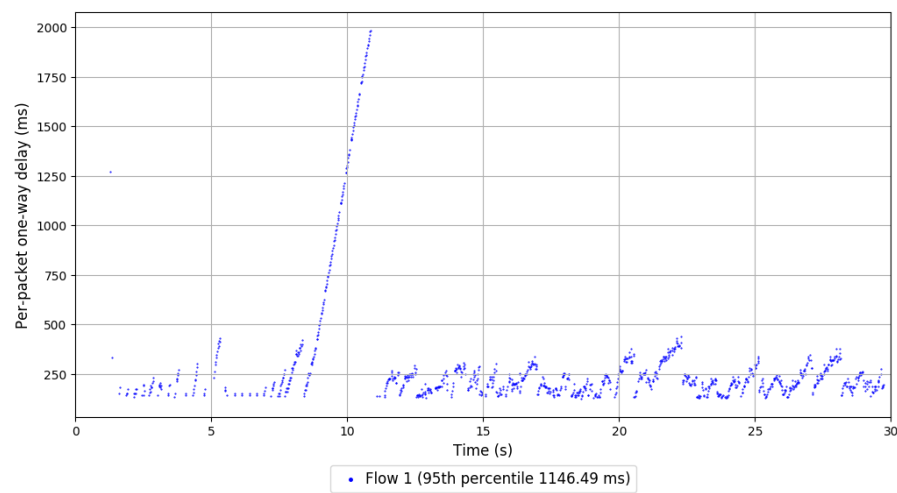
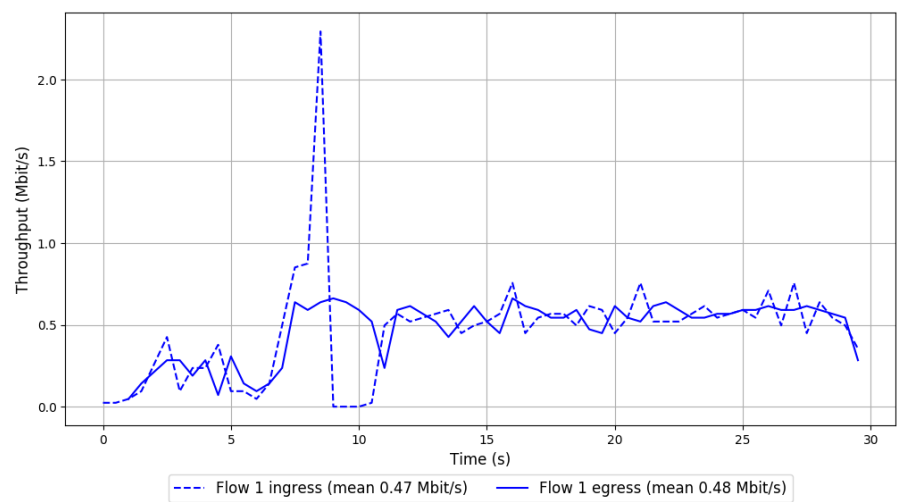
-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 1146.486 ms

Loss rate: 0.93%

Run 2: Report of Verus — Data Link

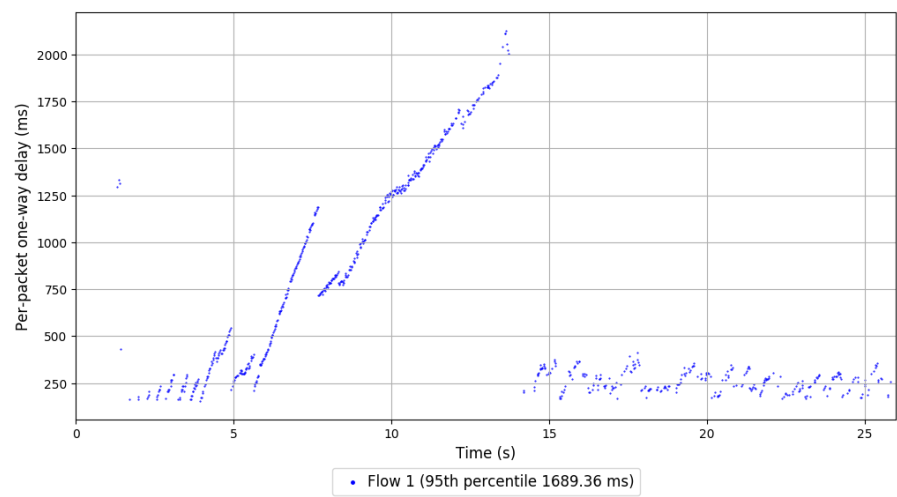
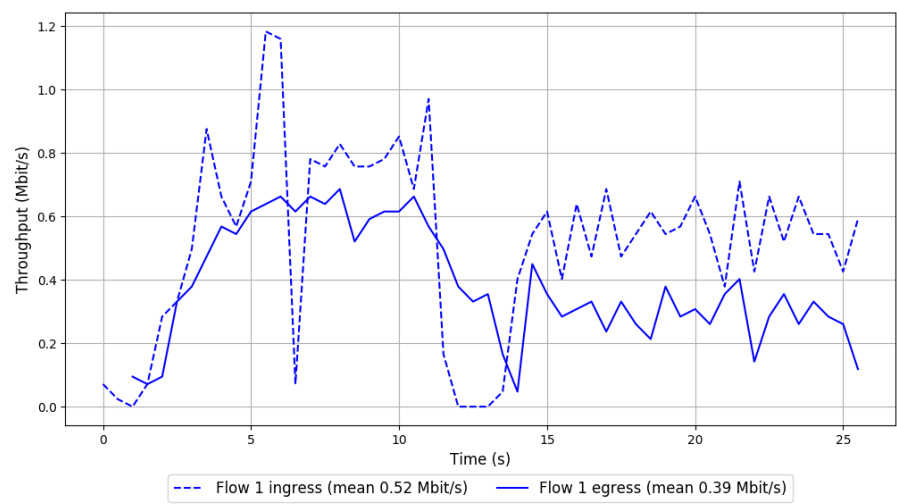


Run 3: Statistics of Verus

Start at: 2018-03-26 20:33:20
End at: 2018-03-26 20:33:50
Local clock offset: -11.587 ms
Remote clock offset: 5.93 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1689.362 ms
Loss rate: 29.02%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1689.362 ms
Loss rate: 29.02%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

Start at: 2018-03-26 19:47:02

End at: 2018-03-26 19:47:32

Local clock offset: -8.838 ms

Remote clock offset: 7.767 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 523.236 ms

Loss rate: 4.05%

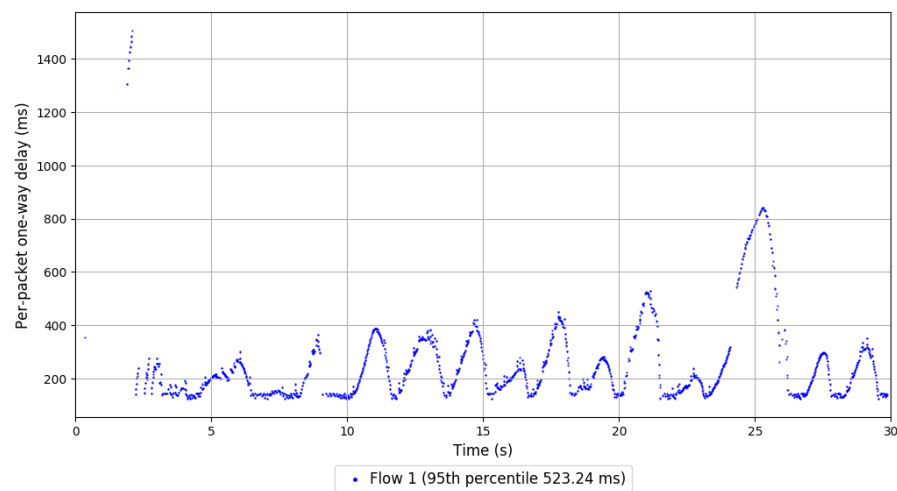
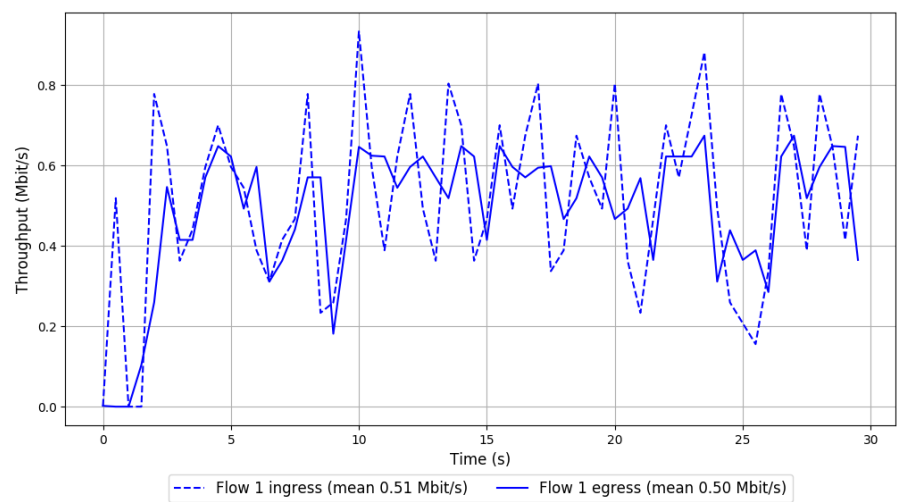
-- Flow 1:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 523.236 ms

Loss rate: 4.05%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-03-26 20:08:24

End at: 2018-03-26 20:08:54

Local clock offset: -8.171 ms

Remote clock offset: 6.947 ms

Below is generated by plot.py at 2018-03-26 21:53:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 442.094 ms

Loss rate: 3.33%

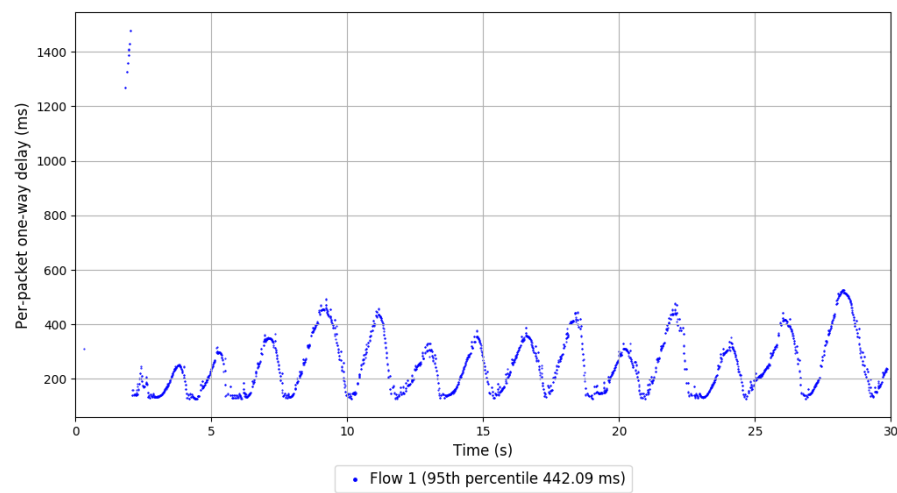
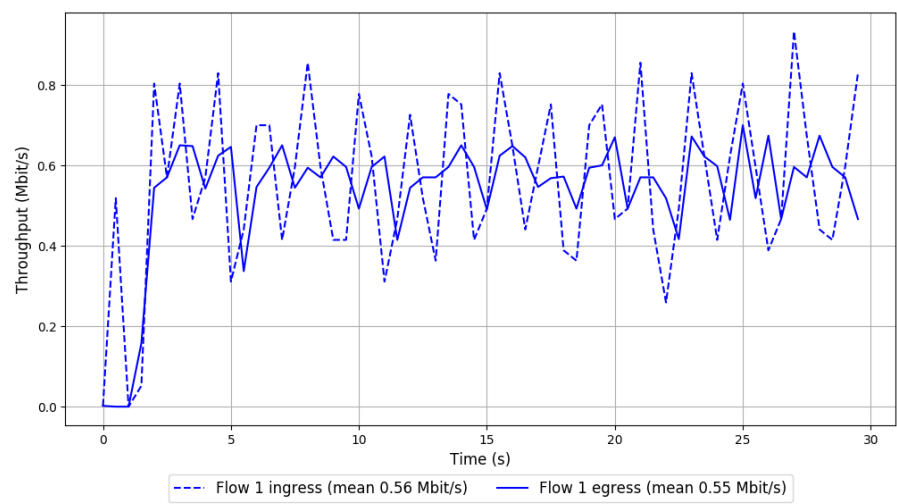
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 442.094 ms

Loss rate: 3.33%

Run 2: Report of Copa — Data Link

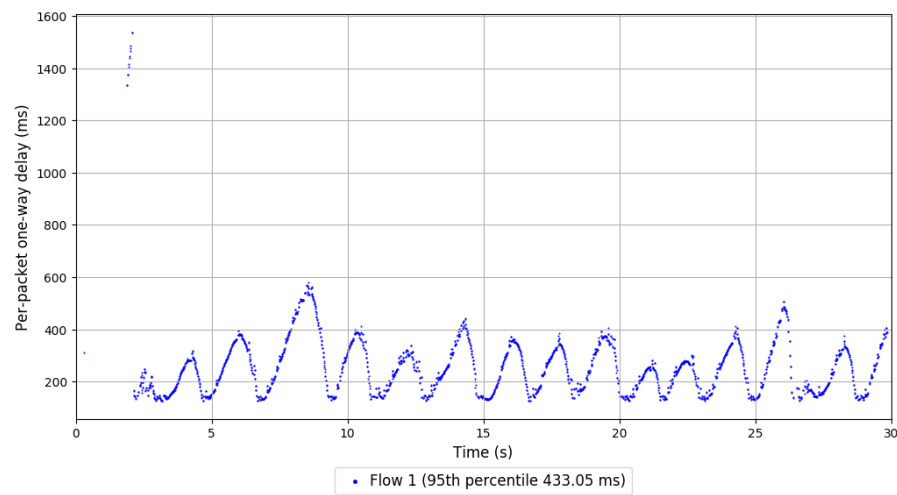
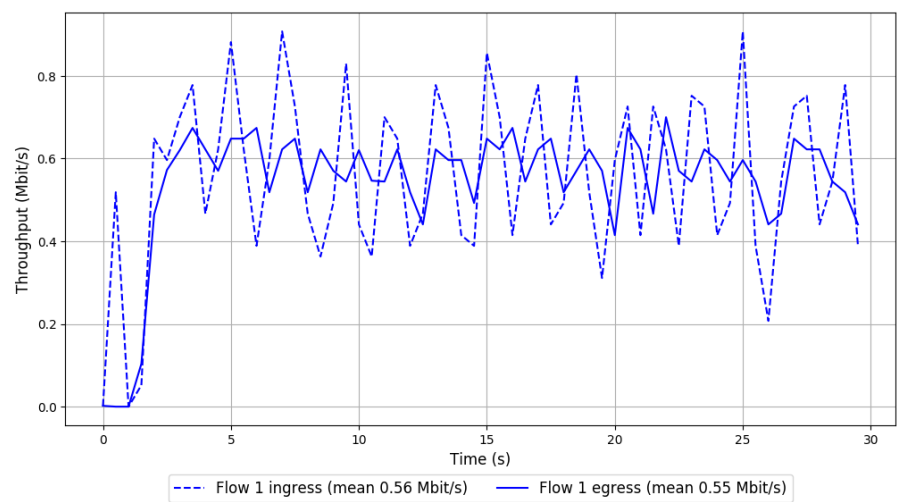


Run 3: Statistics of Copa

Start at: 2018-03-26 20:29:41
End at: 2018-03-26 20:30:11
Local clock offset: -10.711 ms
Remote clock offset: 6.49 ms

Below is generated by plot.py at 2018-03-26 21:53:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 433.049 ms
Loss rate: 2.80%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 433.049 ms
Loss rate: 2.80%

Run 3: Report of Copa — Data Link



Run 1: Statistics of FillP

Start at: 2018-03-26 19:48:14

End at: 2018-03-26 19:48:44

Local clock offset: -8.537 ms

Remote clock offset: 3.305 ms

Below is generated by plot.py at 2018-03-26 21:53:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 26815.007 ms

Loss rate: 98.97%

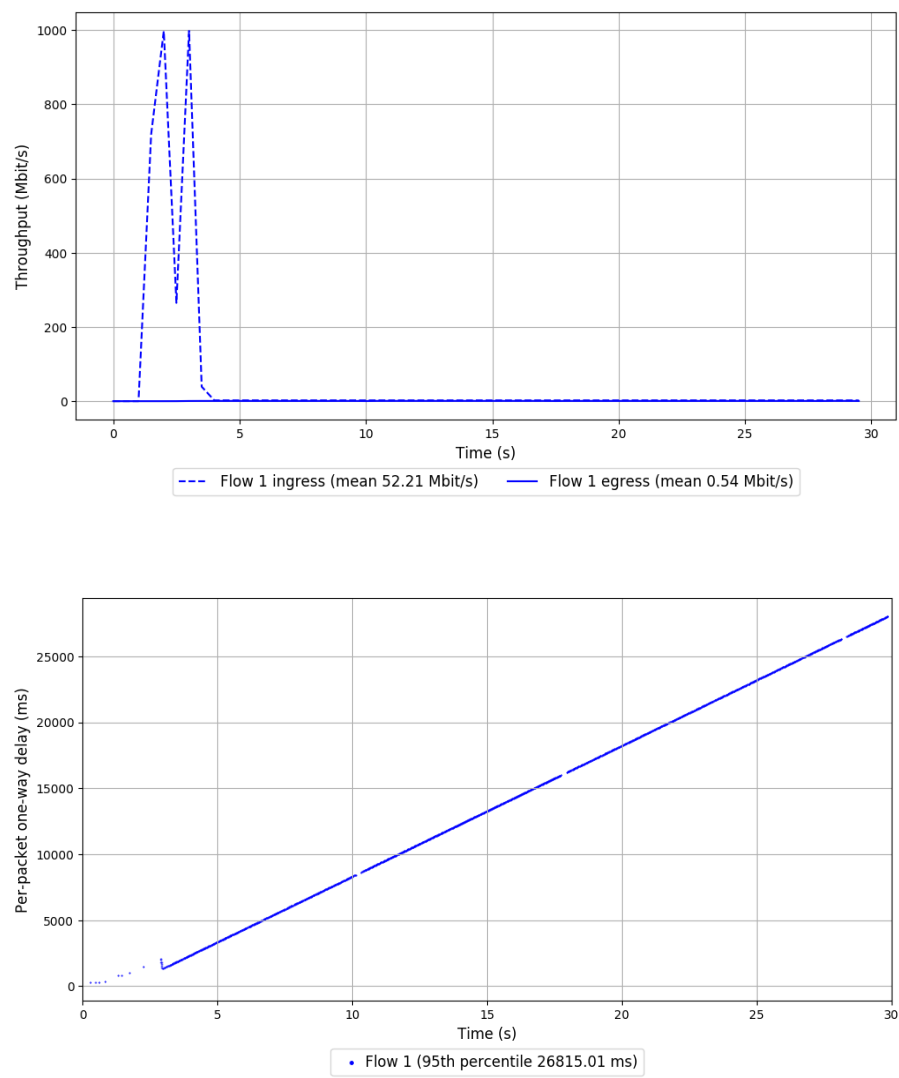
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 26815.007 ms

Loss rate: 98.97%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-03-26 20:09:34

End at: 2018-03-26 20:10:05

Local clock offset: -8.569 ms

Remote clock offset: 2.965 ms

Below is generated by plot.py at 2018-03-26 21:53:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 26770.327 ms

Loss rate: 99.08%

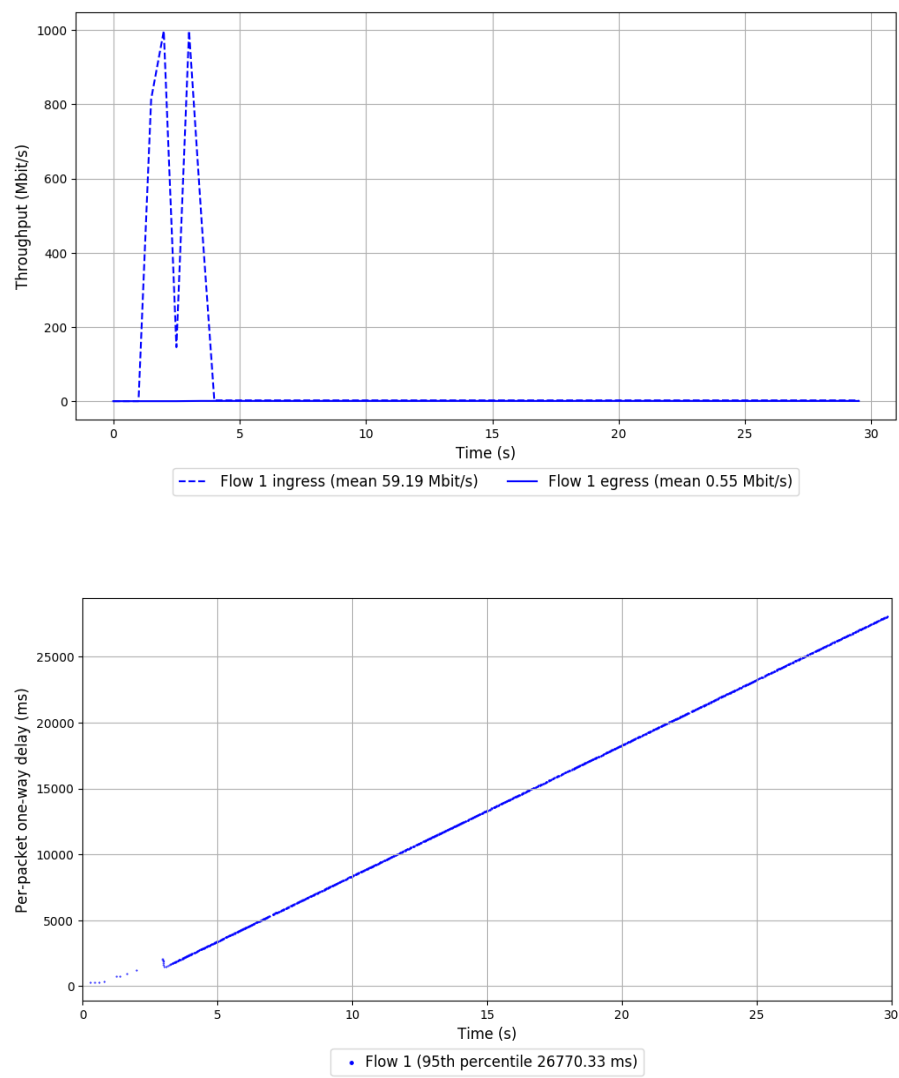
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 26770.327 ms

Loss rate: 99.08%

Run 2: Report of FillP — Data Link

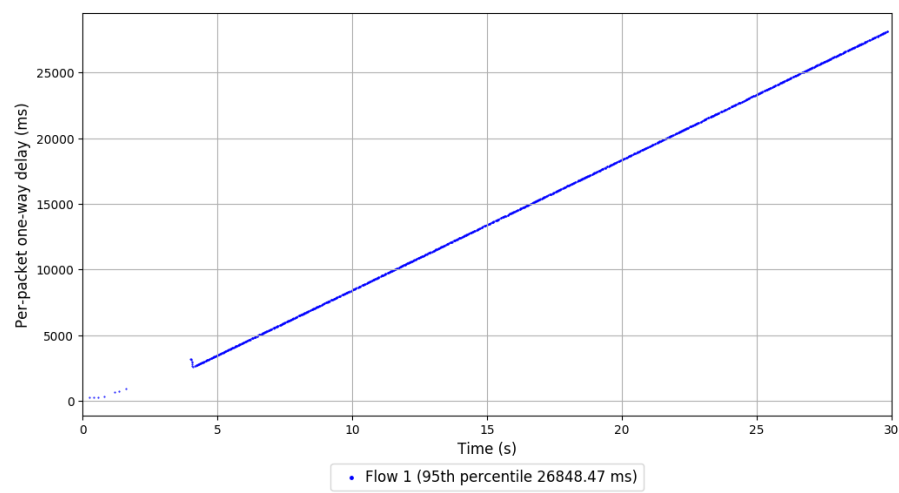
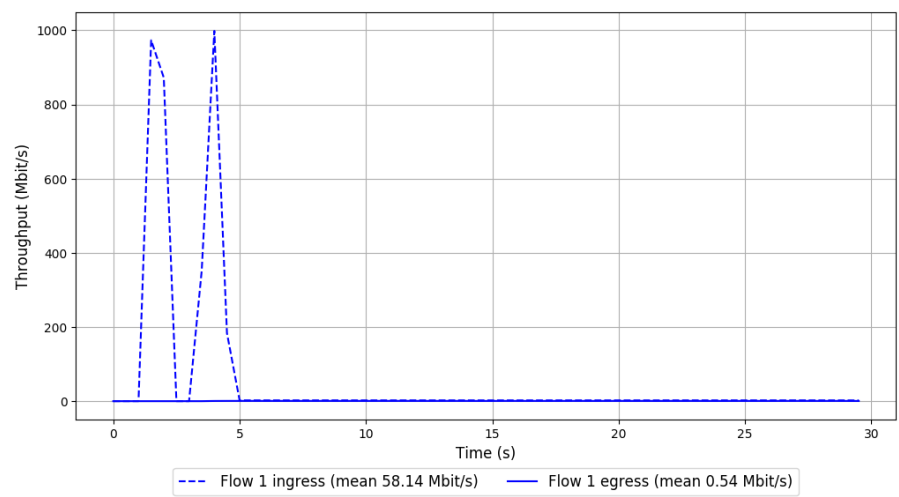


Run 3: Statistics of FillP

Start at: 2018-03-26 20:30:52
End at: 2018-03-26 20:31:22
Local clock offset: -10.992 ms
Remote clock offset: 5.982 ms

Below is generated by plot.py at 2018-03-26 21:53:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 26848.466 ms
Loss rate: 99.09%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 26848.466 ms
Loss rate: 99.09%

Run 3: Report of FillP — Data Link



Run 1: Statistics of Indigo-1-32

Start at: 2018-03-26 20:01:18

End at: 2018-03-26 20:01:48

Local clock offset: -7.378 ms

Remote clock offset: 7.839 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 306.058 ms

Loss rate: 1.34%

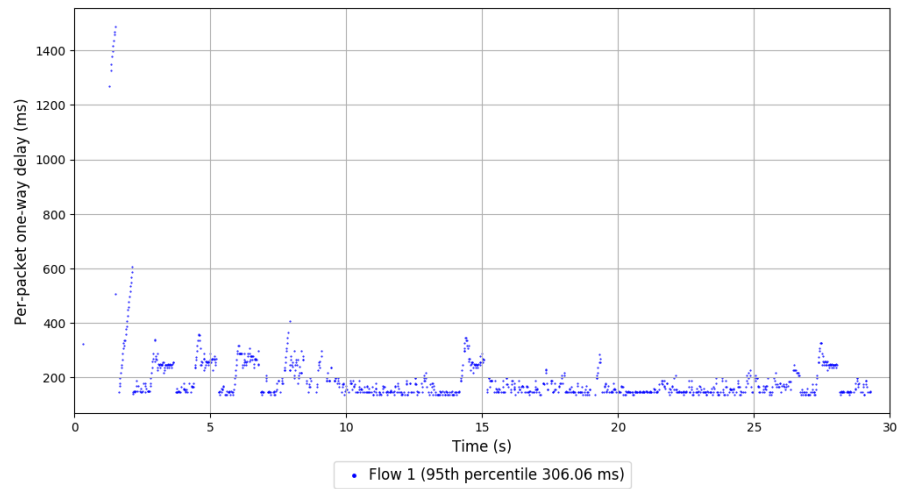
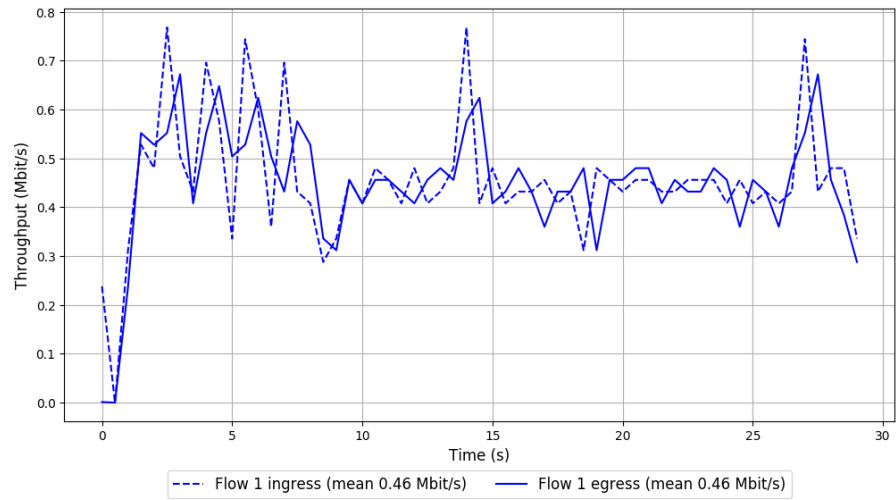
-- Flow 1:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 306.058 ms

Loss rate: 1.34%

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



Run 2: Statistics of Indigo-1-32

Start at: 2018-03-26 20:22:35

End at: 2018-03-26 20:23:05

Local clock offset: -9.389 ms

Remote clock offset: 6.549 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 285.262 ms

Loss rate: 1.67%

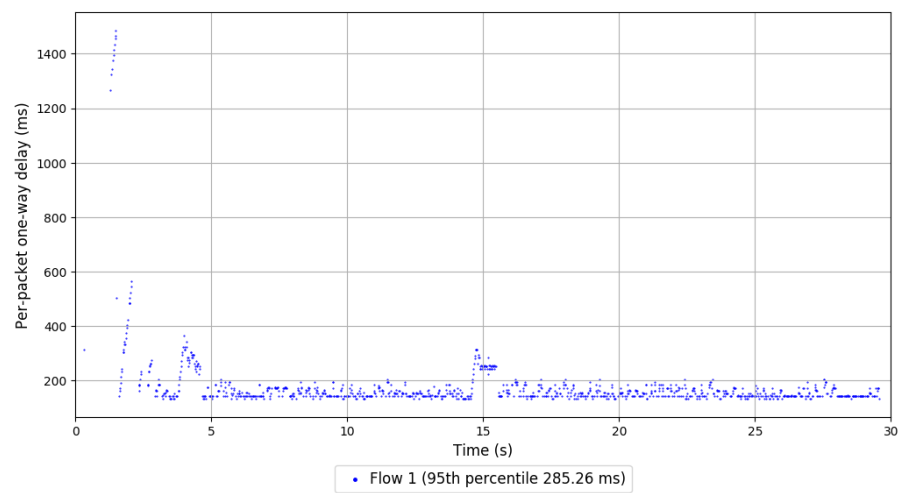
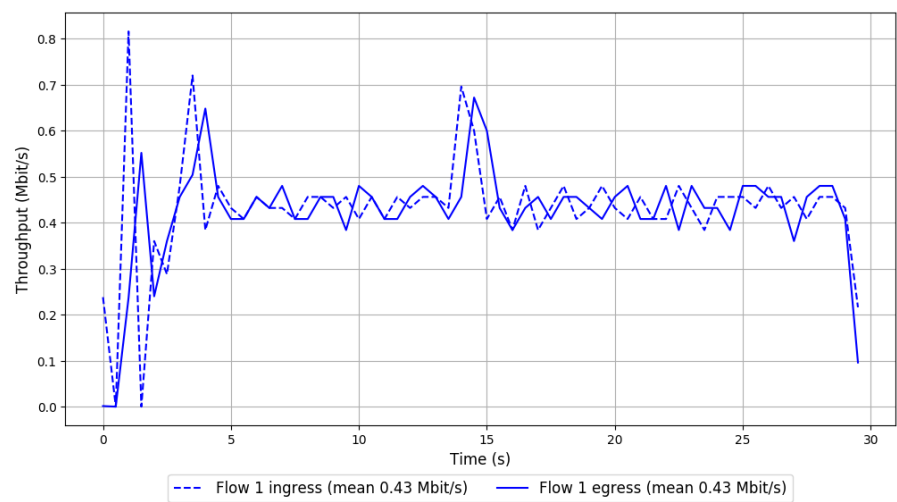
-- Flow 1:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 285.262 ms

Loss rate: 1.67%

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

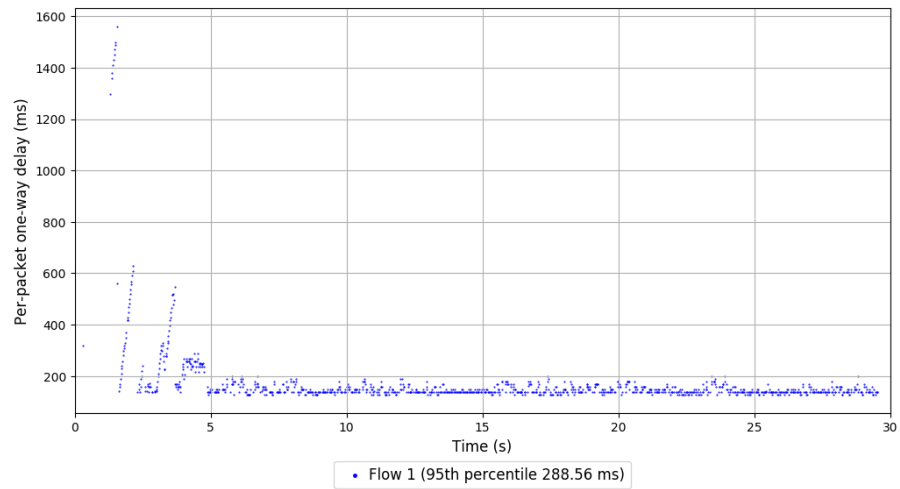
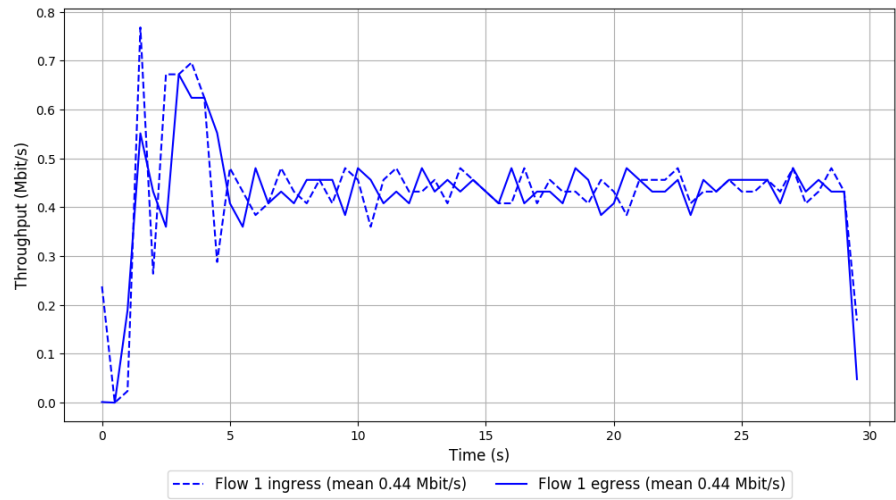


Run 3: Statistics of Indigo-1-32

Start at: 2018-03-26 20:43:55
End at: 2018-03-26 20:44:25
Local clock offset: -14.677 ms
Remote clock offset: 6.57 ms

Below is generated by plot.py at 2018-03-26 21:53:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 288.559 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 288.559 ms
Loss rate: 1.67%

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



Run 1: Statistics of Vivace-latency

Start at: 2018-03-26 19:54:14

End at: 2018-03-26 19:54:44

Local clock offset: -10.09 ms

Remote clock offset: 2.888 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20049.574 ms

Loss rate: 70.89%

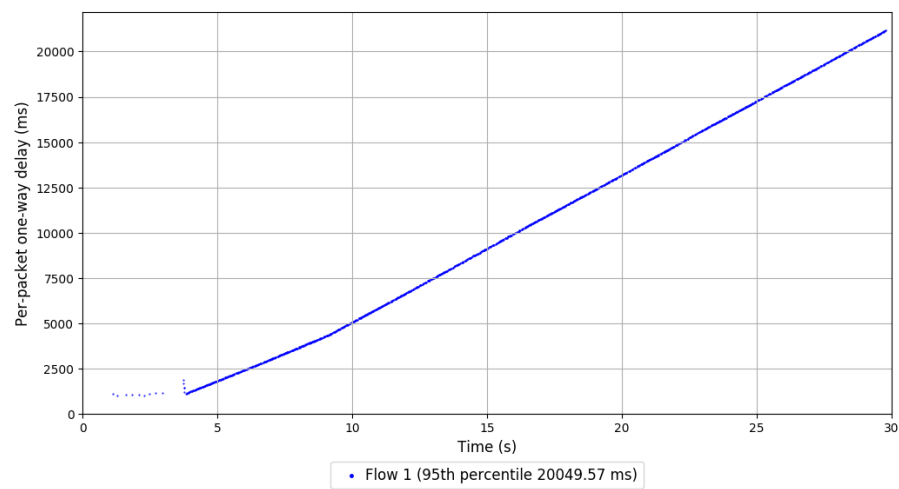
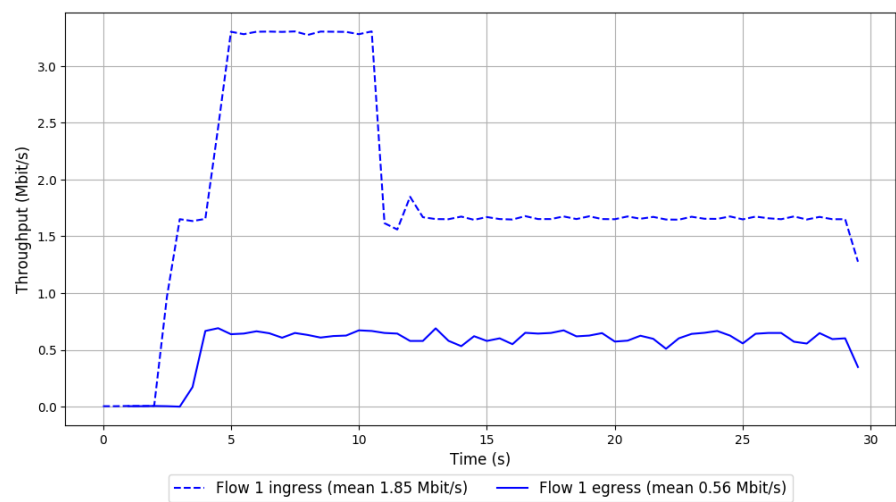
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20049.574 ms

Loss rate: 70.89%

Run 1: Report of Vivace-latency — Data Link



Run 2: Statistics of Vivace-latency

Start at: 2018-03-26 20:15:30

End at: 2018-03-26 20:16:00

Local clock offset: -9.318 ms

Remote clock offset: 7.255 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21062.785 ms

Loss rate: 65.52%

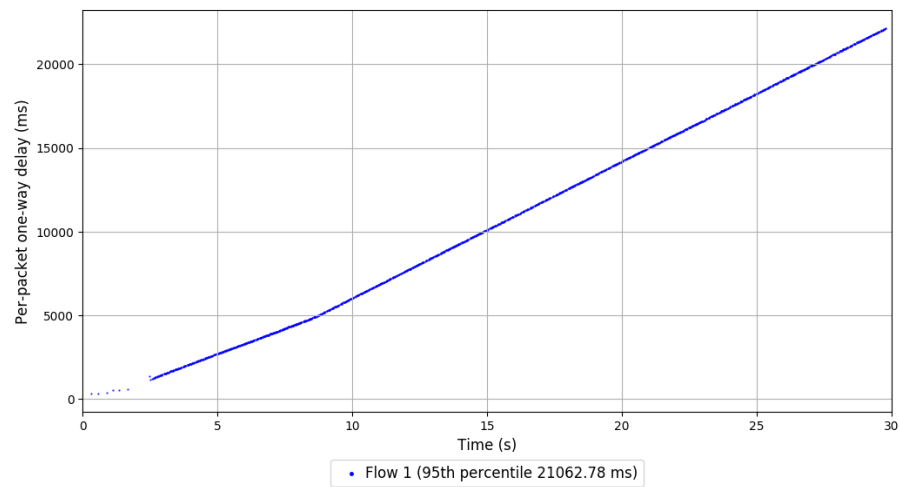
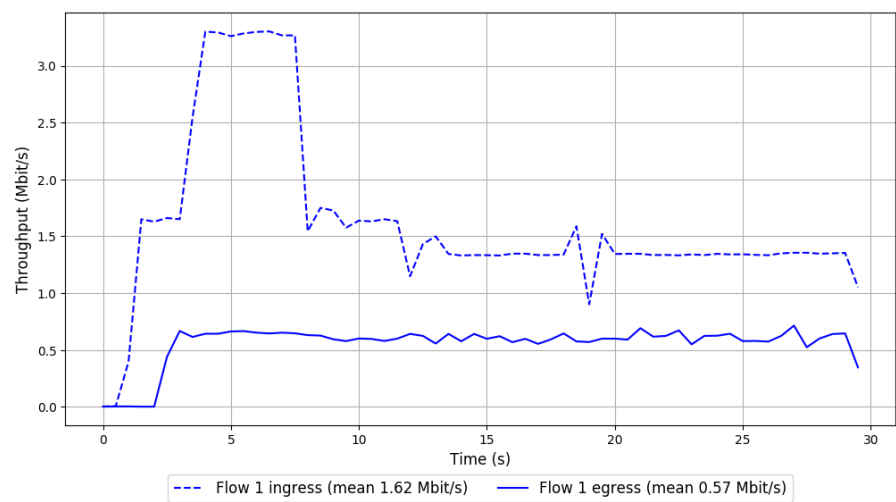
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21062.785 ms

Loss rate: 65.52%

Run 2: Report of Vivace-latency — Data Link

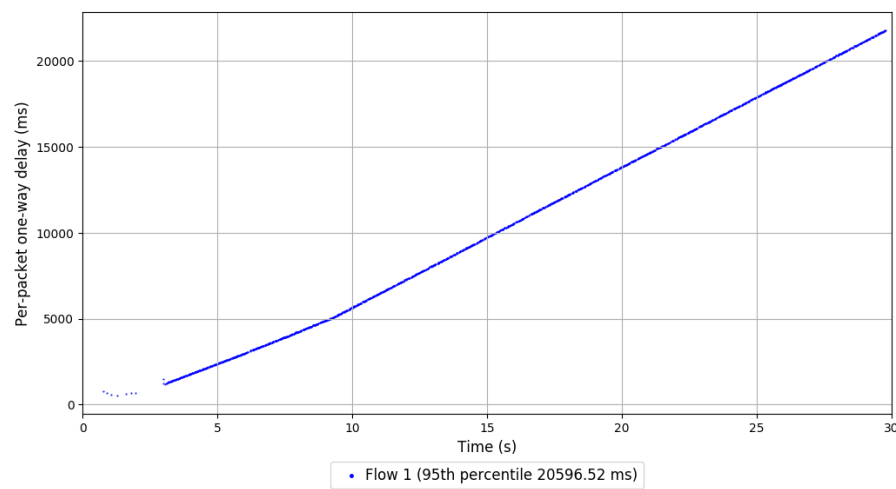
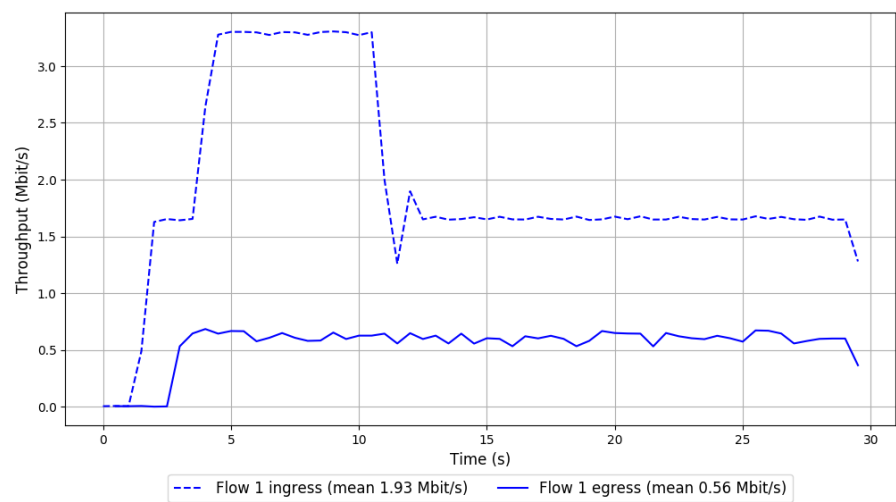


Run 3: Statistics of Vivace-latency

Start at: 2018-03-26 20:36:51
End at: 2018-03-26 20:37:21
Local clock offset: -12.663 ms
Remote clock offset: 7.112 ms

Below is generated by plot.py at 2018-03-26 21:53:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20596.519 ms
Loss rate: 71.61%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20596.519 ms
Loss rate: 71.61%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

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

End at: 2018-03-26 19:53:33

Local clock offset: -9.374 ms

Remote clock offset: 3.319 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 21143.769 ms

Loss rate: 89.05%

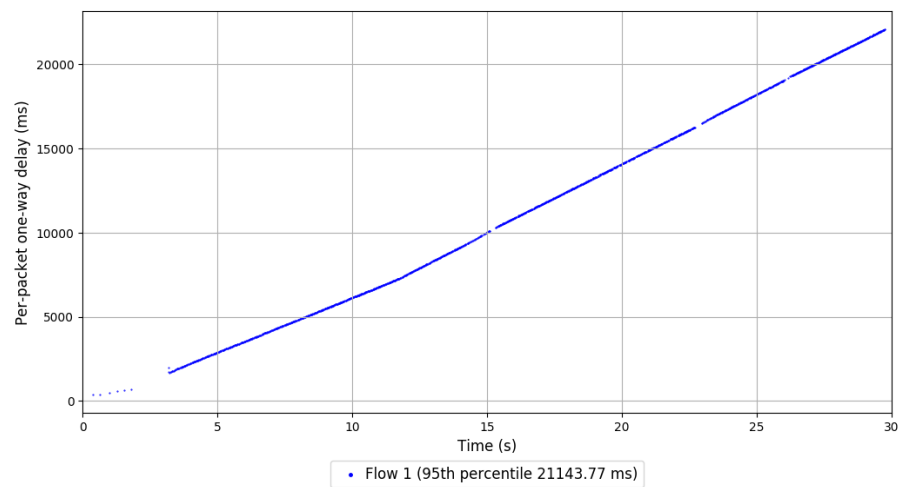
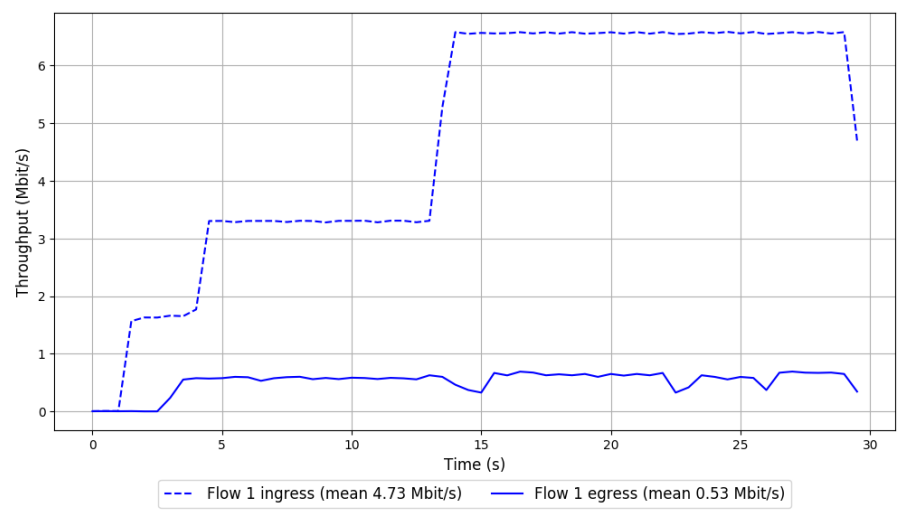
-- Flow 1:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 21143.769 ms

Loss rate: 89.05%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

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

End at: 2018-03-26 20:14:50

Local clock offset: -9.491 ms

Remote clock offset: 2.83 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1885.446 ms

Loss rate: 0.00%

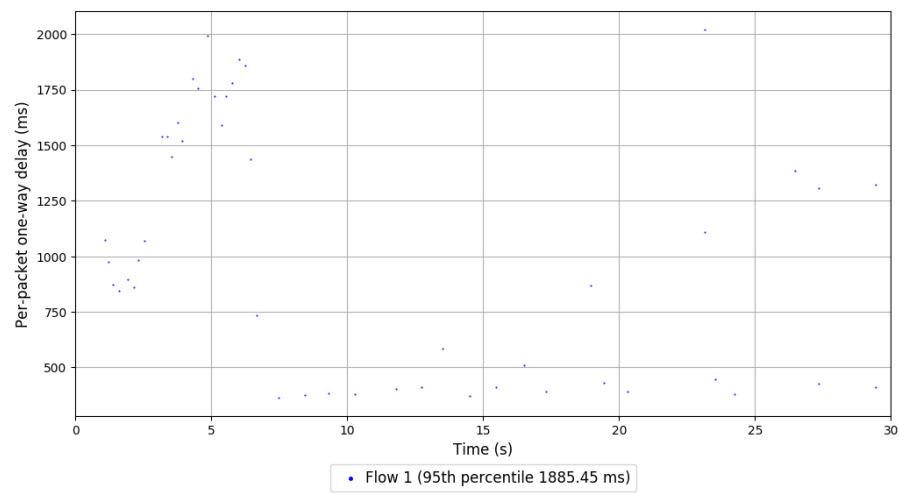
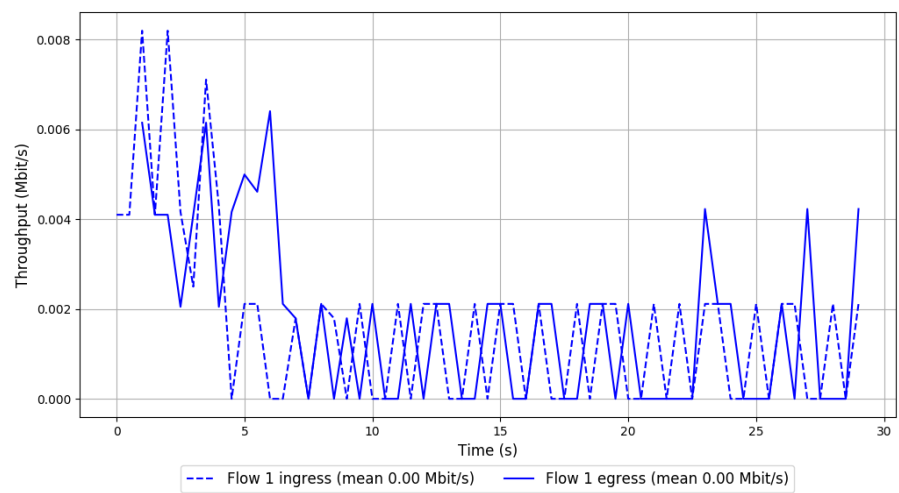
-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1885.446 ms

Loss rate: 0.00%

Run 2: Report of Vivace-loss — Data Link

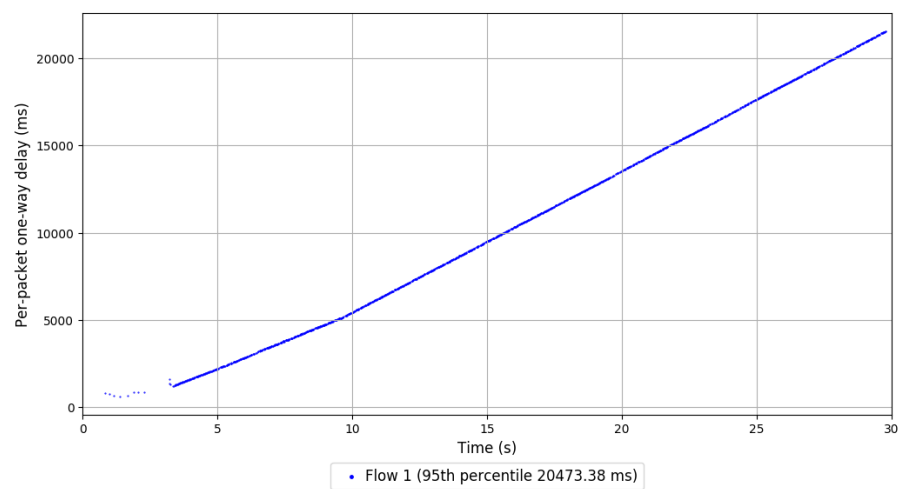
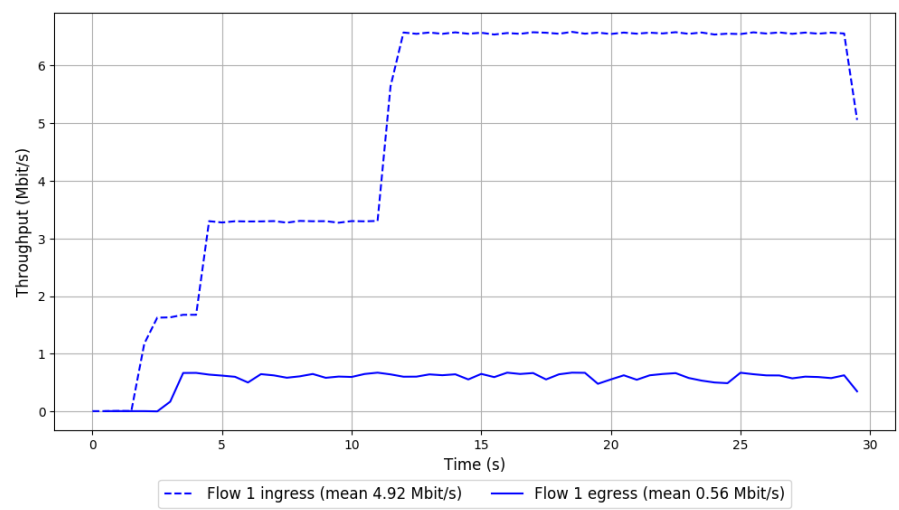


Run 3: Statistics of Vivace-loss

Start at: 2018-03-26 20:35:41
End at: 2018-03-26 20:36:11
Local clock offset: -12.337 ms
Remote clock offset: 2.674 ms

Below is generated by plot.py at 2018-03-26 21:53:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20473.381 ms
Loss rate: 89.02%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20473.381 ms
Loss rate: 89.02%

Run 3: Report of Vivace-loss — Data Link



Run 1: Statistics of Vivace-LTE

Start at: 2018-03-26 19:51:53

End at: 2018-03-26 19:52:23

Local clock offset: -8.794 ms

Remote clock offset: 7.721 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 3146.021 ms

Loss rate: 4.44%

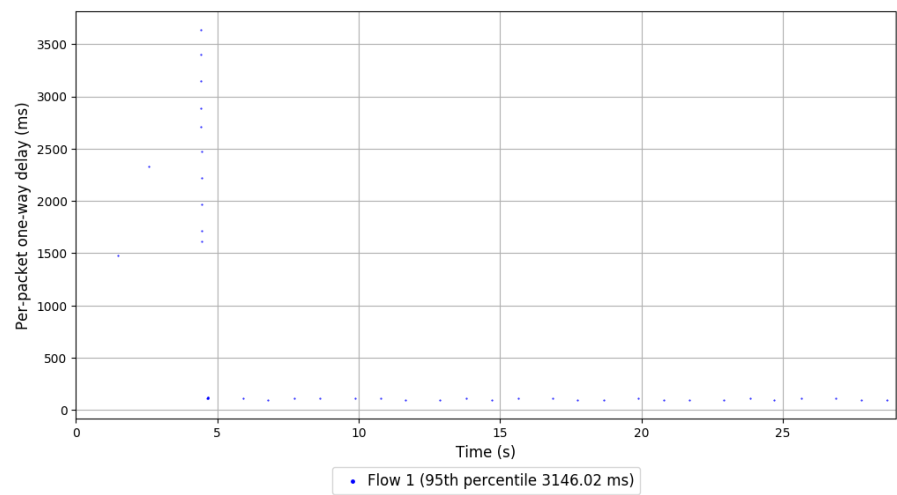
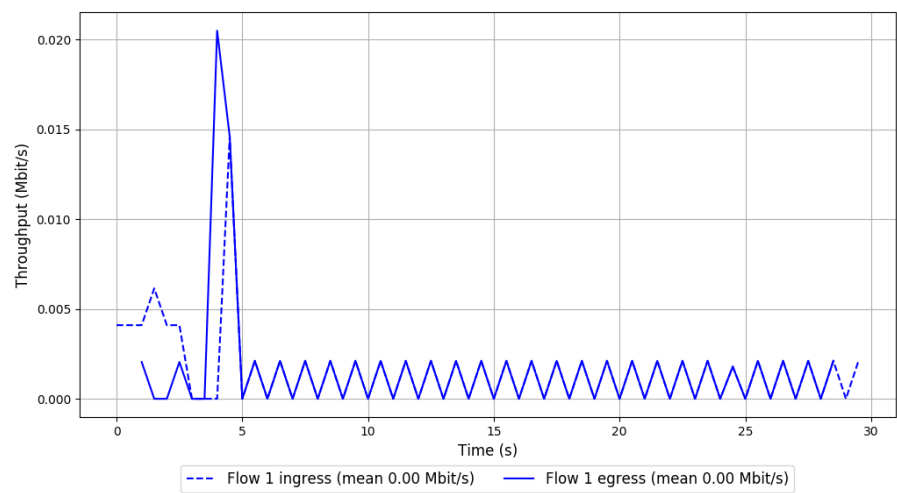
-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 3146.021 ms

Loss rate: 4.44%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-03-26 20:13:10

End at: 2018-03-26 20:13:40

Local clock offset: -9.738 ms

Remote clock offset: 2.851 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21255.207 ms

Loss rate: 70.62%

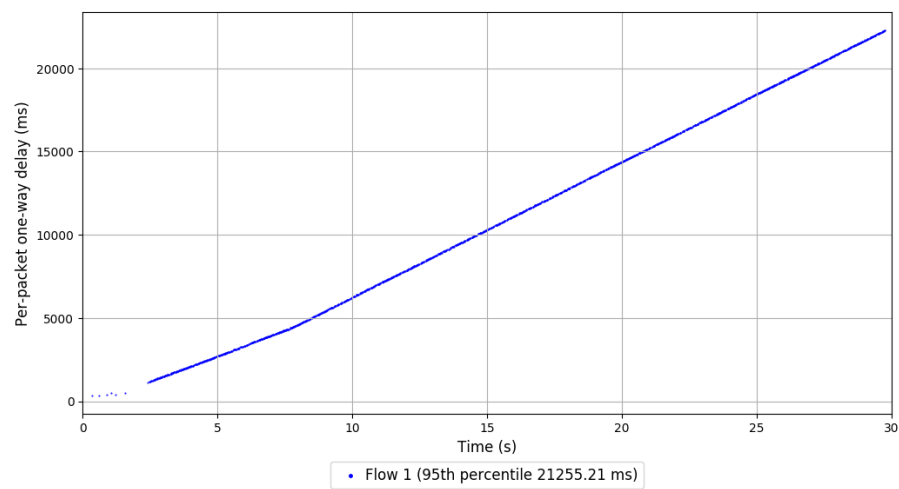
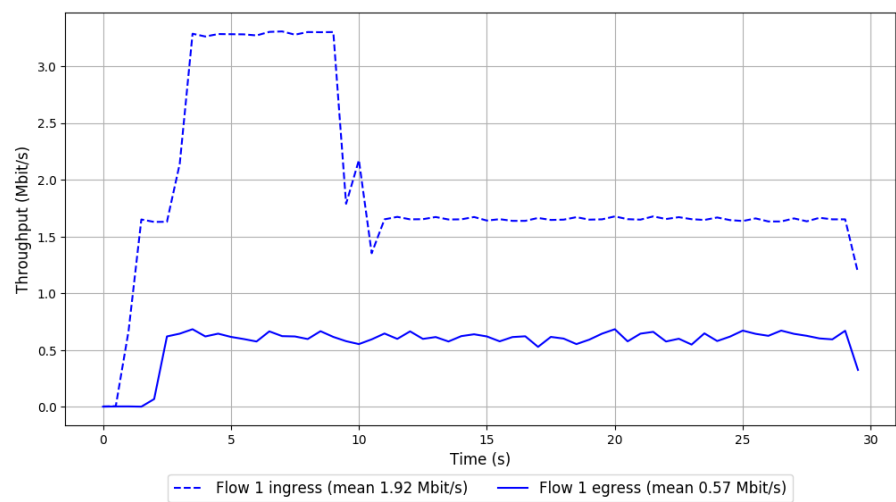
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21255.207 ms

Loss rate: 70.62%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-03-26 20:34:30

End at: 2018-03-26 20:35:00

Local clock offset: -11.94 ms

Remote clock offset: 2.538 ms

Below is generated by plot.py at 2018-03-26 21:53:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20451.582 ms

Loss rate: 70.72%

-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20451.582 ms

Loss rate: 70.72%

Run 3: Report of Vivace-LTE — Data Link

