

Pantheon Report

Generated at 2018-02-27 08:16:41 (UTC).

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

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).

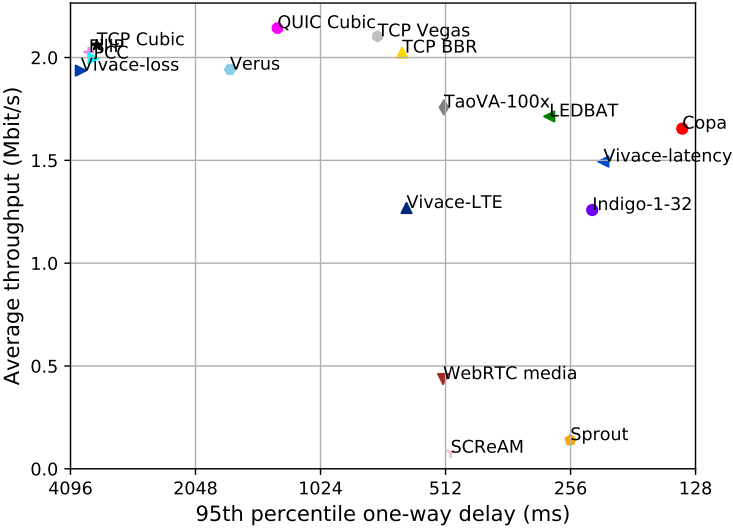
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

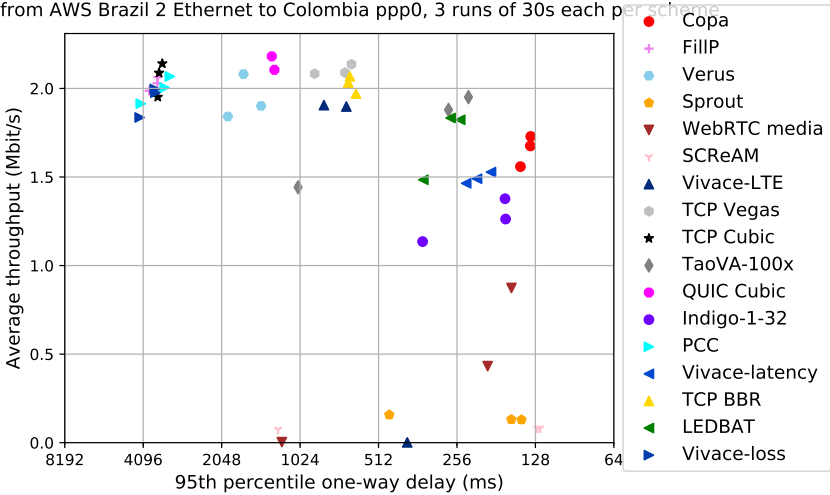
Git summary:

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

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



test from AWS Brazil 2 Ethernet to Colombia ppp0, 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	2.02	651.22	1.26
TCP Cubic	3	2.06	3540.53	14.20
LEDBAT	3	1.71	288.11	0.60
PCC	3	1.99	3603.53	65.44
QUIC Cubic	2	2.15	1300.17	4.51
SCReAM	3	0.08	497.72	0.09
WebRTC media	3	0.43	518.85	0.45
Sprout	3	0.14	256.27	0.11
TaoVA-100x	3	1.76	516.48	0.42
TCP Vegas	3	2.10	746.39	1.37
Verus	3	1.94	1691.44	4.21
Copa	3	1.66	137.76	0.13
FillP	3	2.03	3700.43	94.09
Indigo-1-32	3	1.26	226.96	0.07
Vivace-latency	3	1.49	213.35	1.37
Vivace-loss	3	1.94	3867.93	33.47
Vivace-LTE	3	1.27	635.71	1.49

Run 1: Statistics of TCP BBR

Start at: 2018-02-27 07:31:09

End at: 2018-02-27 07:31:39

Local clock offset: -4.965 ms

Remote clock offset: 0.113 ms

Below is generated by plot.py at 2018-02-27 08:16:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 624.977 ms

Loss rate: 1.27%

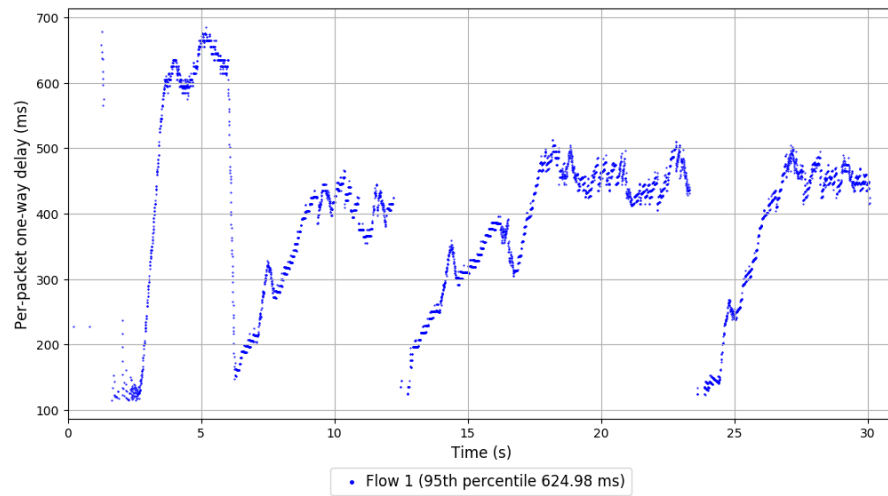
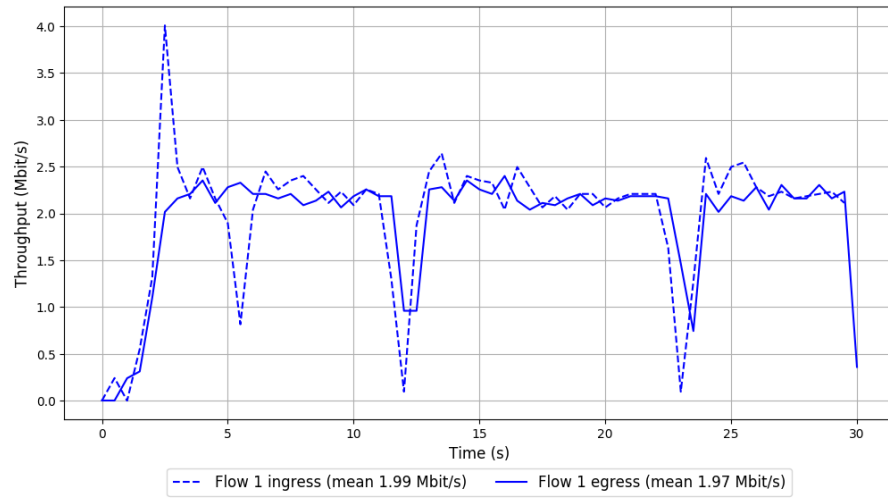
-- Flow 1:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 624.977 ms

Loss rate: 1.27%

Run 1: Report of TCP BBR — Data Link

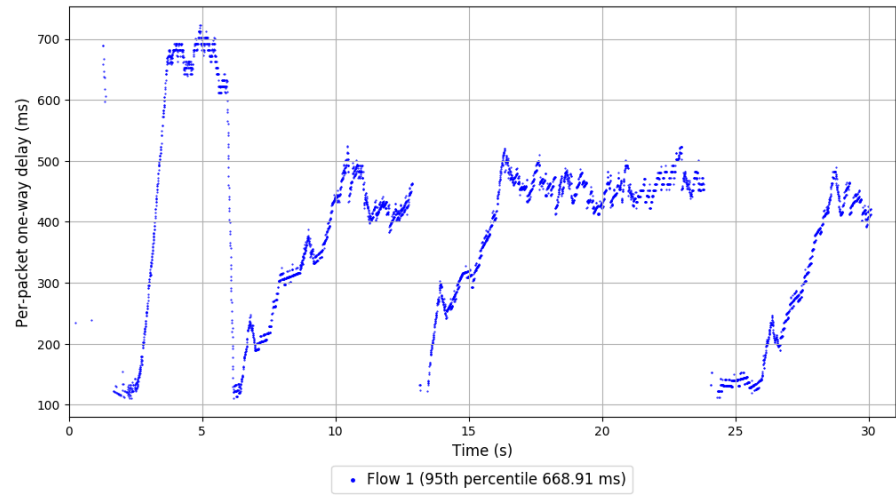
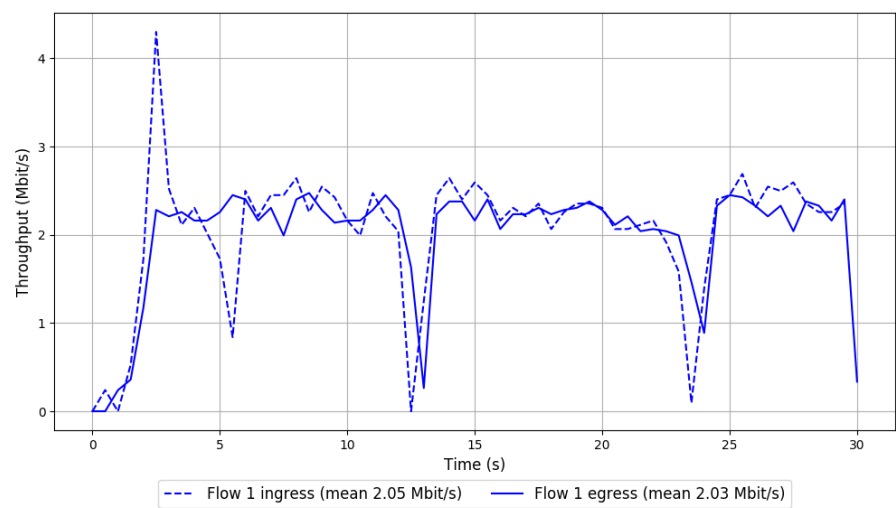


Run 2: Statistics of TCP BBR

Start at: 2018-02-27 07:52:15
End at: 2018-02-27 07:52:45
Local clock offset: -2.368 ms
Remote clock offset: -5.003 ms

Below is generated by plot.py at 2018-02-27 08:16:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 668.907 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 668.907 ms
Loss rate: 1.29%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-02-27 08:13:22

End at: 2018-02-27 08:13:52

Local clock offset: -3.124 ms

Remote clock offset: 0.213 ms

Below is generated by plot.py at 2018-02-27 08:16:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.07 Mbit/s

95th percentile per-packet one-way delay: 659.776 ms

Loss rate: 1.21%

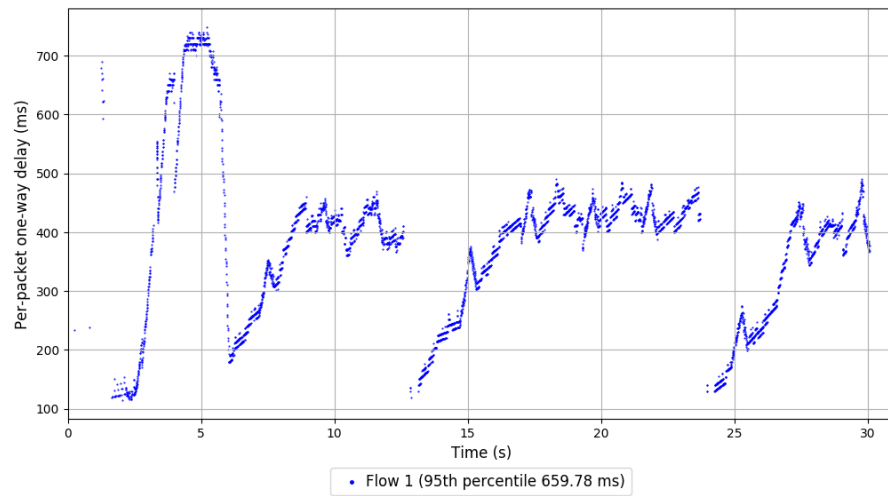
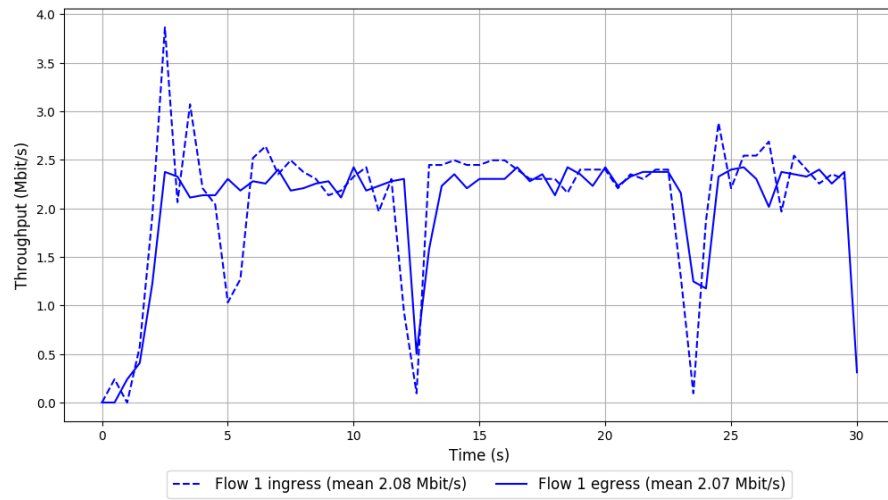
-- Flow 1:

Average throughput: 2.07 Mbit/s

95th percentile per-packet one-way delay: 659.776 ms

Loss rate: 1.21%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-02-27 07:24:06

End at: 2018-02-27 07:24:36

Local clock offset: -5.033 ms

Remote clock offset: 0.272 ms

Below is generated by plot.py at 2018-02-27 08:16:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.14 Mbit/s

95th percentile per-packet one-way delay: 3459.578 ms

Loss rate: 14.05%

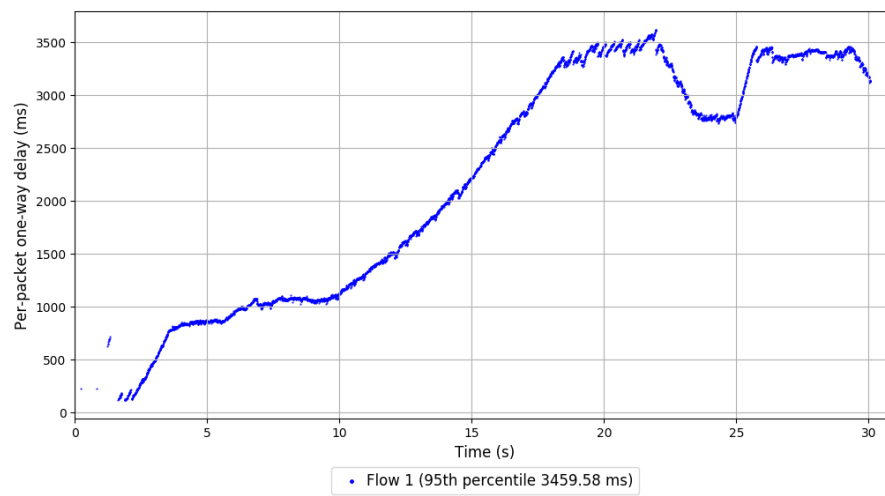
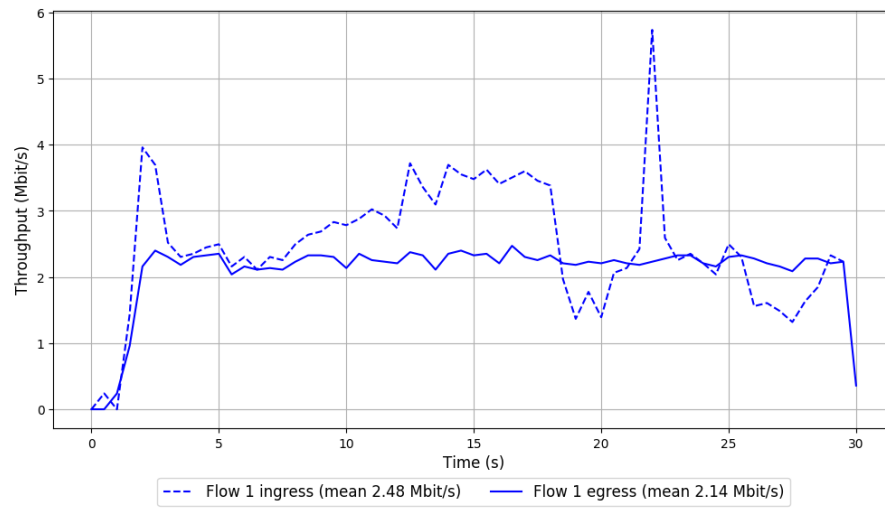
-- Flow 1:

Average throughput: 2.14 Mbit/s

95th percentile per-packet one-way delay: 3459.578 ms

Loss rate: 14.05%

Run 1: Report of TCP Cubic — Data Link

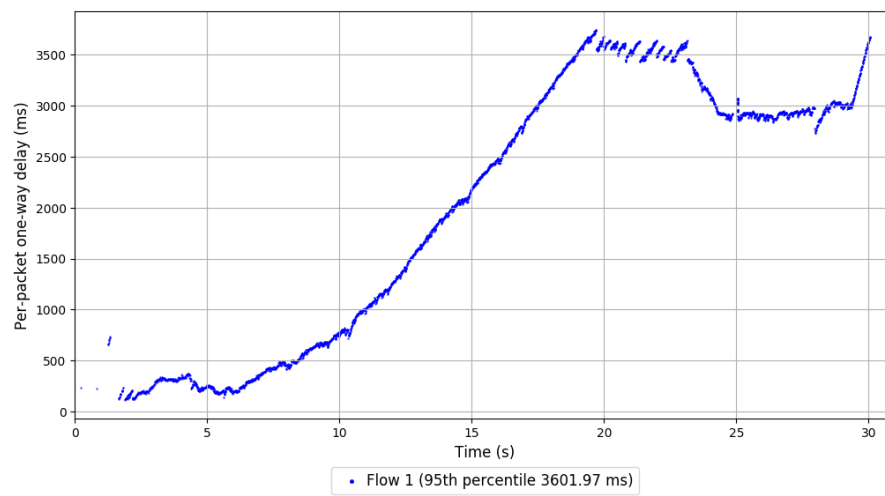
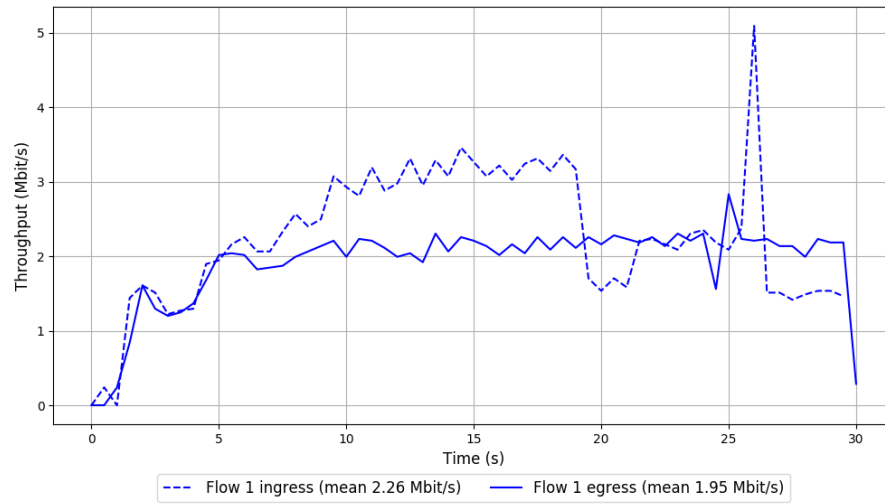


Run 2: Statistics of TCP Cubic

Start at: 2018-02-27 07:45:12
End at: 2018-02-27 07:45:42
Local clock offset: -2.974 ms
Remote clock offset: -5.164 ms

Below is generated by plot.py at 2018-02-27 08:16:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 3601.974 ms
Loss rate: 14.13%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 3601.974 ms
Loss rate: 14.13%

Run 2: Report of TCP Cubic — Data Link

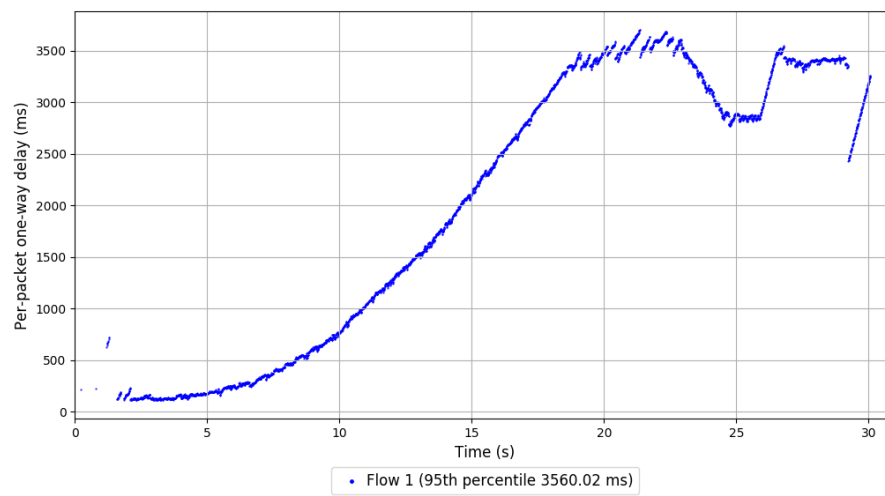
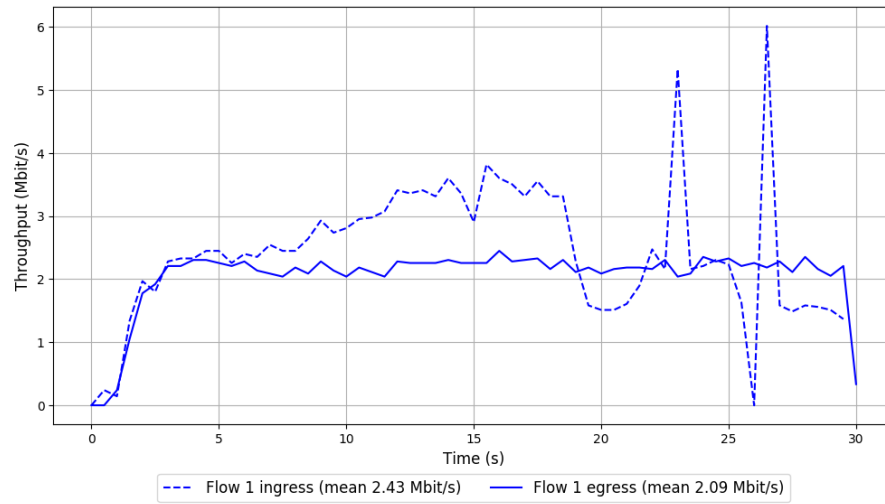


Run 3: Statistics of TCP Cubic

Start at: 2018-02-27 08:06:19
End at: 2018-02-27 08:06:49
Local clock offset: -1.539 ms
Remote clock offset: -4.993 ms

Below is generated by plot.py at 2018-02-27 08:16:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 3560.024 ms
Loss rate: 14.42%
-- Flow 1:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 3560.024 ms
Loss rate: 14.42%

Run 3: Report of TCP Cubic — Data Link

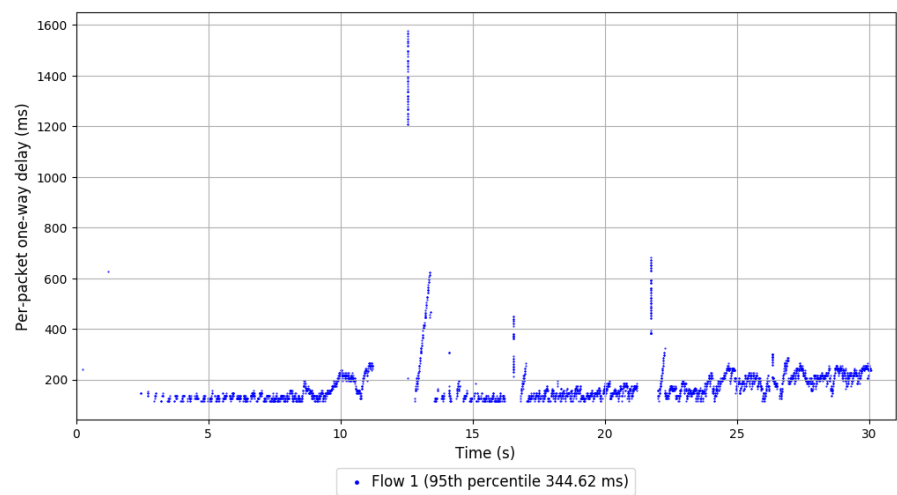
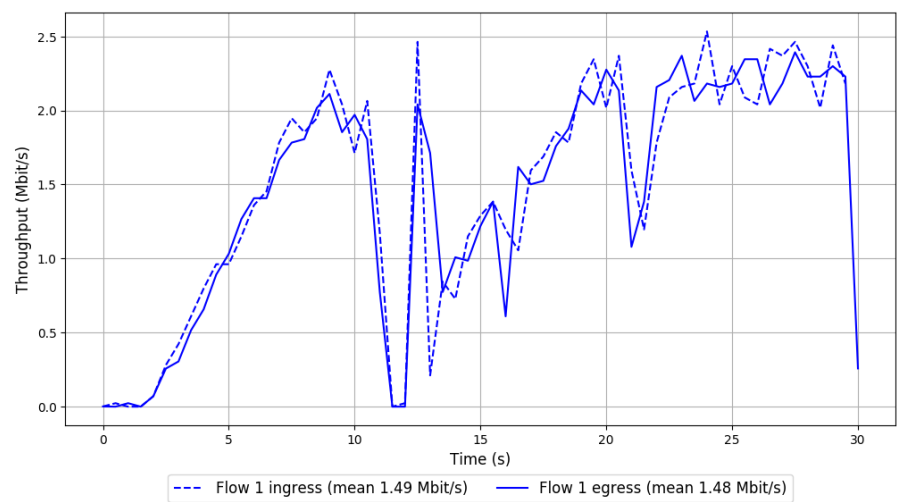


```
Run 1: Statistics of LEDBAT

Start at: 2018-02-27 07:19:25
End at: 2018-02-27 07:19:55
Local clock offset: -4.804 ms
Remote clock offset: -0.596 ms

# Below is generated by plot.py at 2018-02-27 08:16:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 344.625 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 344.625 ms
Loss rate: 0.79%
```


Run 1: Report of LEDBAT — Data Link

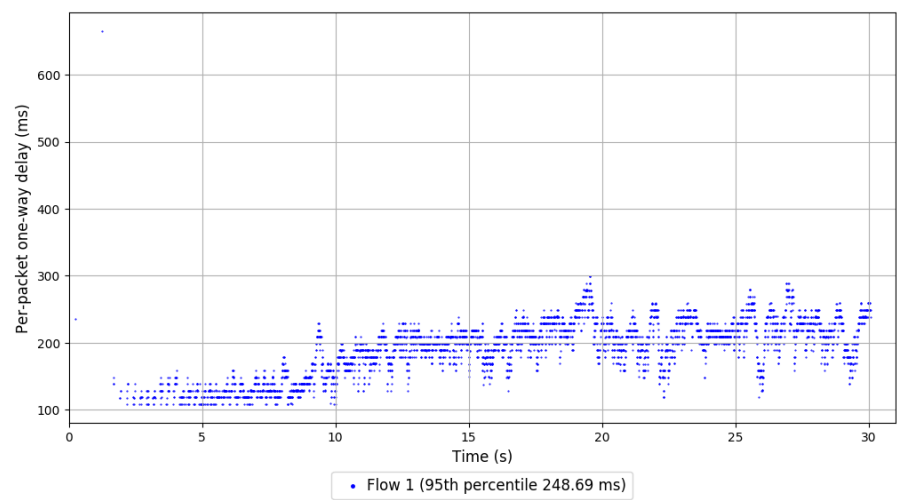
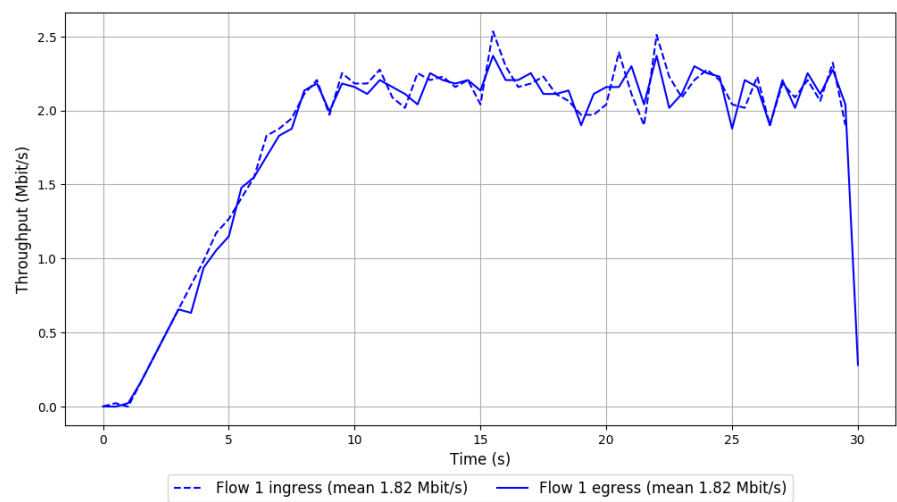


Run 2: Statistics of LEDBAT

Start at: 2018-02-27 07:40:31
End at: 2018-02-27 07:41:01
Local clock offset: -3.6 ms
Remote clock offset: -5.067 ms

Below is generated by plot.py at 2018-02-27 08:16:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 248.693 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 248.693 ms
Loss rate: 0.49%

Run 2: Report of LEDBAT — Data Link

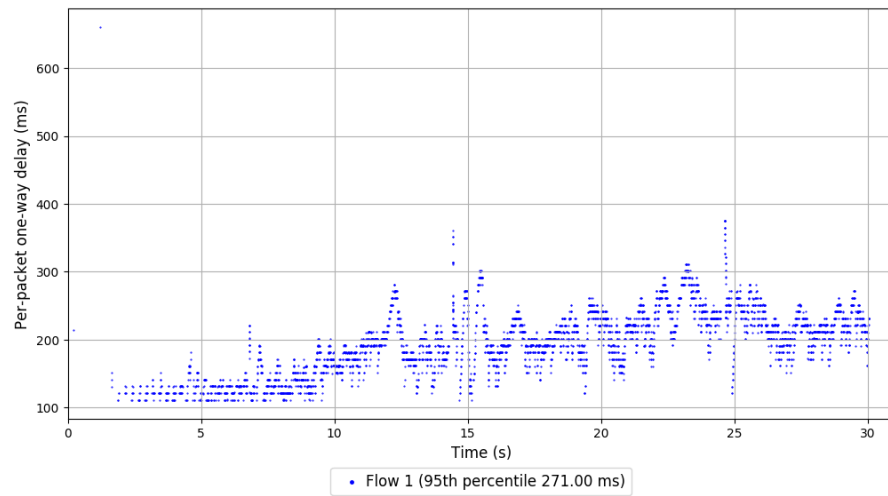
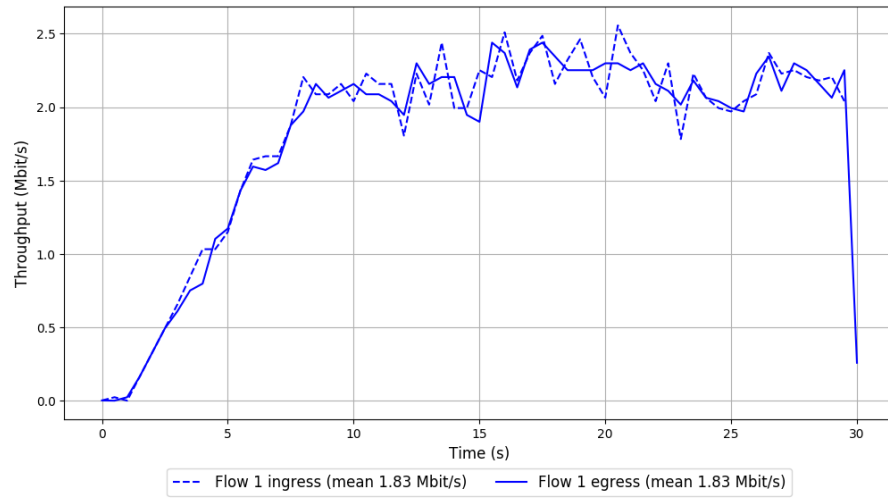


Run 3: Statistics of LEDBAT

Start at: 2018-02-27 08:01:38
End at: 2018-02-27 08:02:08
Local clock offset: -1.774 ms
Remote clock offset: -5.068 ms

Below is generated by plot.py at 2018-02-27 08:16:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 270.998 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 270.998 ms
Loss rate: 0.53%

Run 3: Report of LEDBAT — Data Link

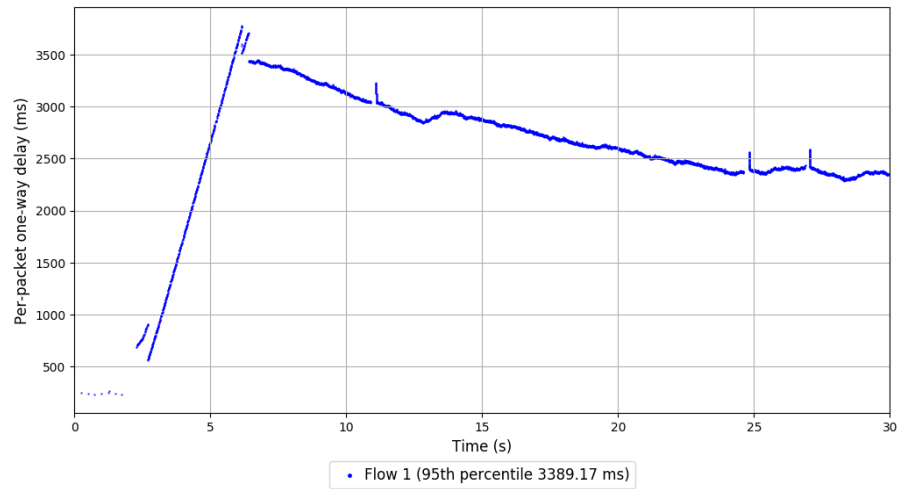
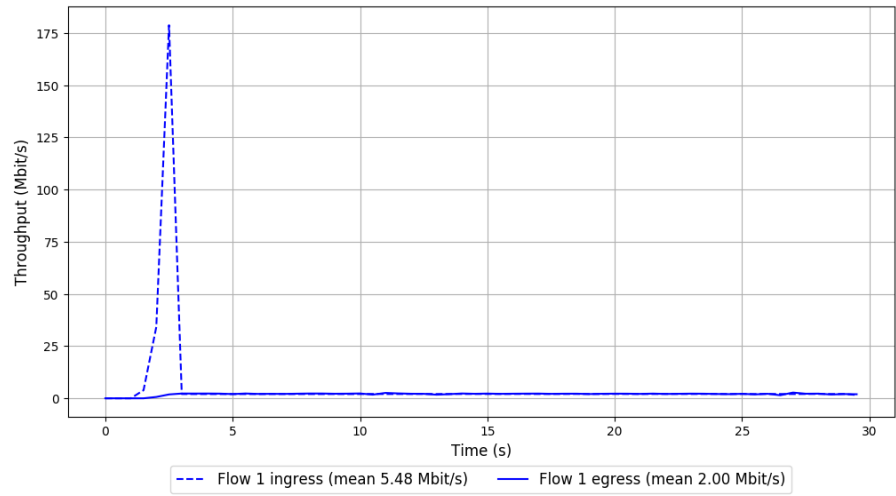


Run 1: Statistics of PCC

Start at: 2018-02-27 07:28:48
End at: 2018-02-27 07:29:18
Local clock offset: -4.944 ms
Remote clock offset: -0.642 ms

Below is generated by plot.py at 2018-02-27 08:16:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 3389.173 ms
Loss rate: 63.65%
-- Flow 1:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 3389.173 ms
Loss rate: 63.65%

Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

Start at: 2018-02-27 07:49:54

End at: 2018-02-27 07:50:24

Local clock offset: -2.622 ms

Remote clock offset: -0.69 ms

Below is generated by plot.py at 2018-02-27 08:16:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.91 Mbit/s

95th percentile per-packet one-way delay: 4184.406 ms

Loss rate: 67.77%

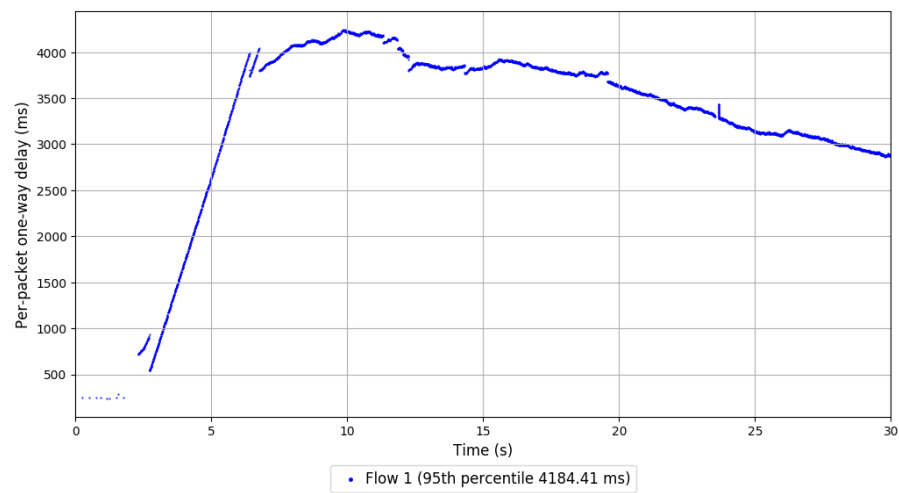
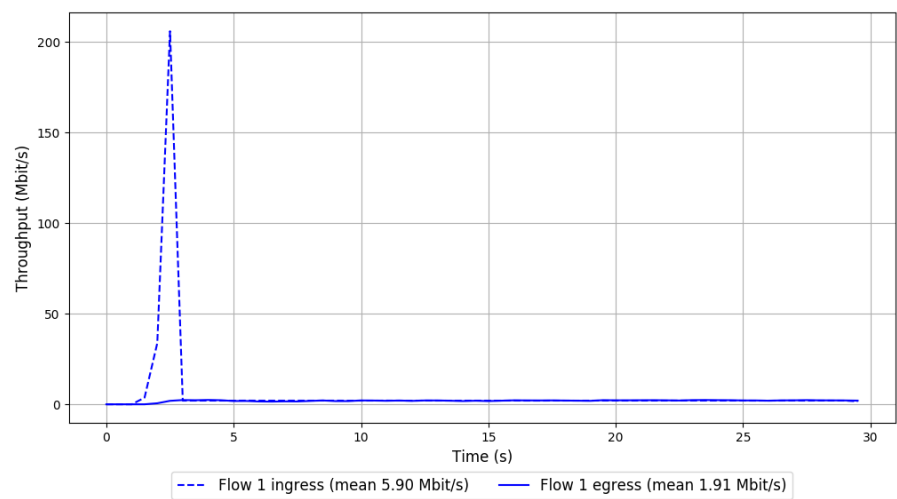
-- Flow 1:

Average throughput: 1.91 Mbit/s

95th percentile per-packet one-way delay: 4184.406 ms

Loss rate: 67.77%

Run 2: Report of PCC — Data Link

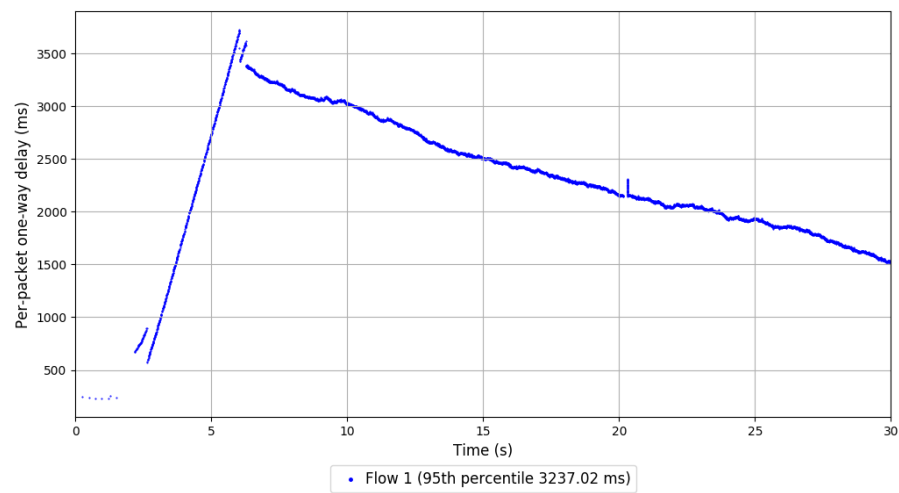
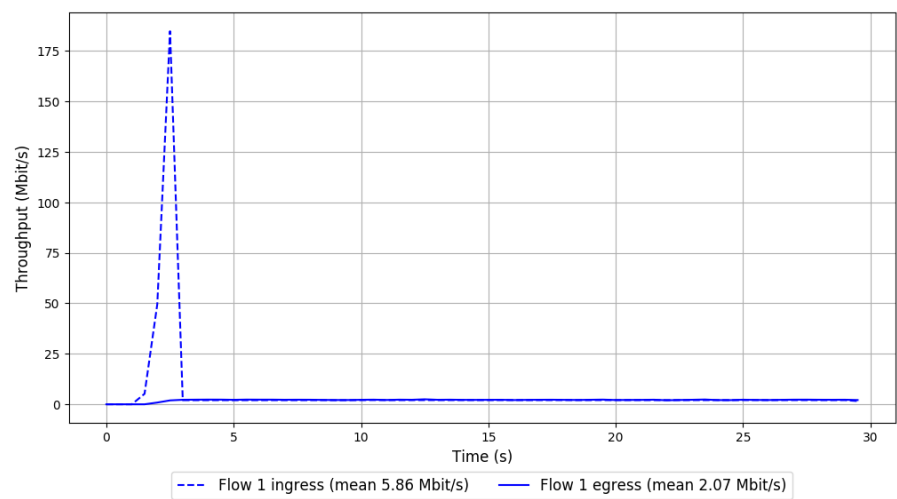


Run 3: Statistics of PCC

Start at: 2018-02-27 08:11:01
End at: 2018-02-27 08:11:31
Local clock offset: -2.428 ms
Remote clock offset: -5.077 ms

Below is generated by plot.py at 2018-02-27 08:16:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 3237.018 ms
Loss rate: 64.90%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 3237.018 ms
Loss rate: 64.90%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

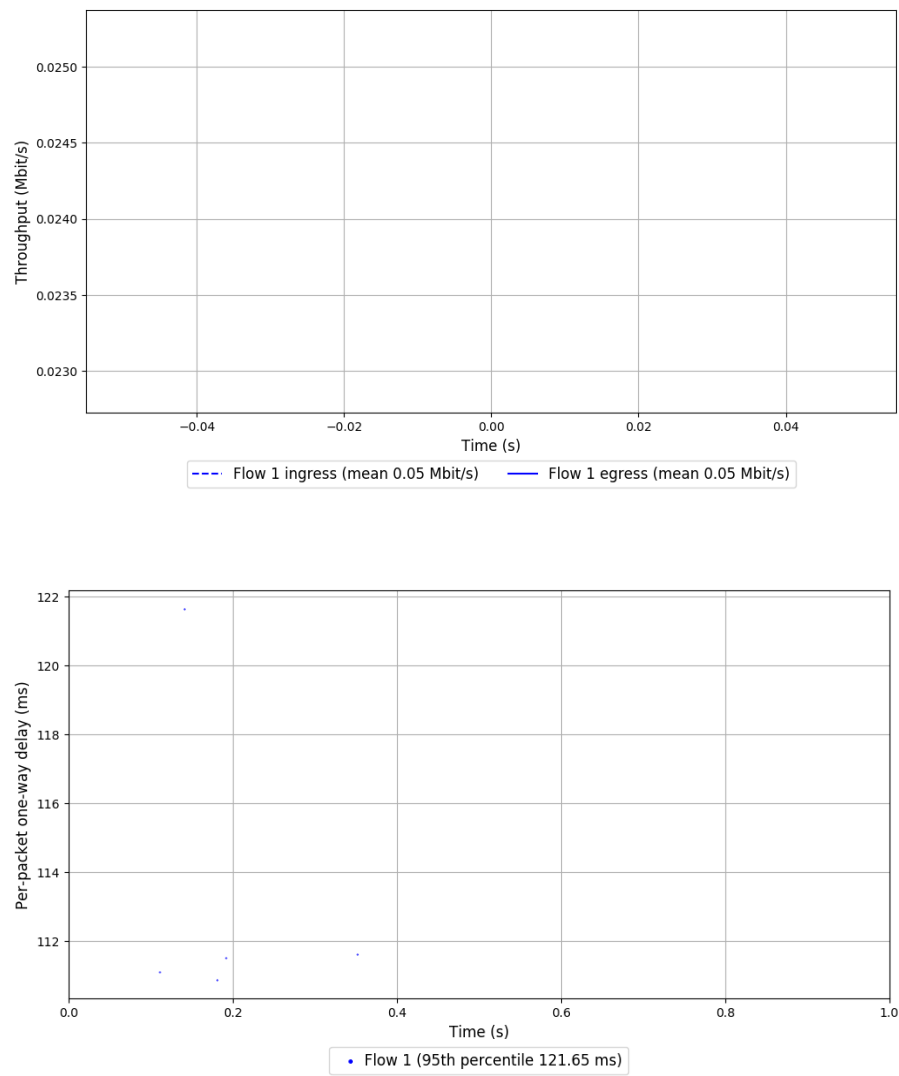
Start at: 2018-02-27 07:12:24

End at: 2018-02-27 07:12:54

Local clock offset: -5.454 ms

Remote clock offset: -0.535 ms

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-02-27 07:33:30

End at: 2018-02-27 07:34:00

Local clock offset: -4.458 ms

Remote clock offset: -5.119 ms

Below is generated by plot.py at 2018-02-27 08:16:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.11 Mbit/s

95th percentile per-packet one-way delay: 1285.262 ms

Loss rate: 4.62%

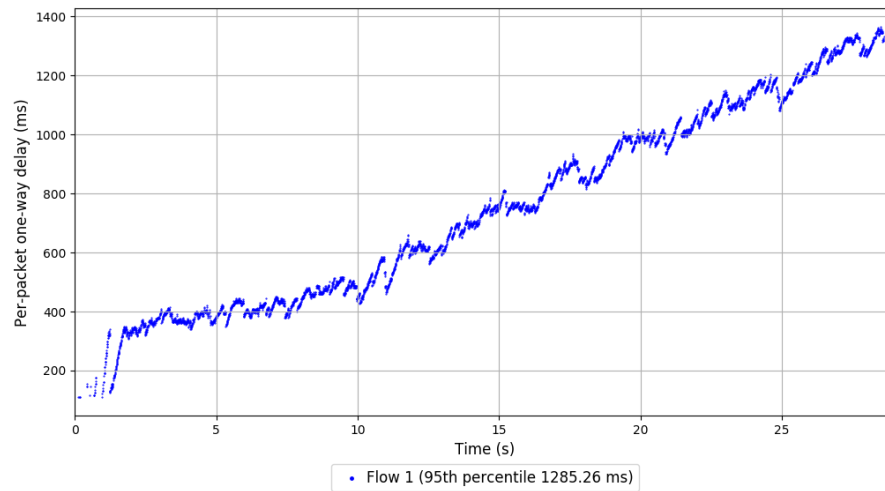
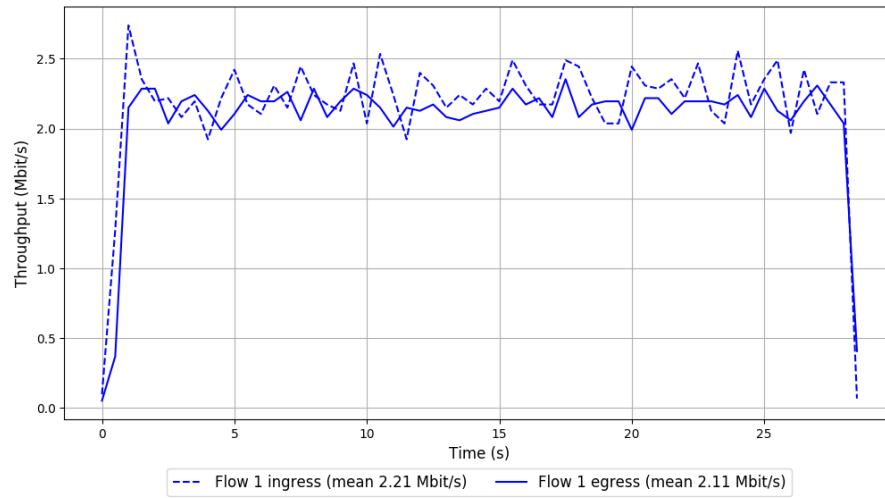
-- Flow 1:

Average throughput: 2.11 Mbit/s

95th percentile per-packet one-way delay: 1285.262 ms

Loss rate: 4.62%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-02-27 07:54:36

End at: 2018-02-27 07:55:06

Local clock offset: -2.204 ms

Remote clock offset: -5.94 ms

Below is generated by plot.py at 2018-02-27 08:16:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.18 Mbit/s

95th percentile per-packet one-way delay: 1315.088 ms

Loss rate: 4.40%

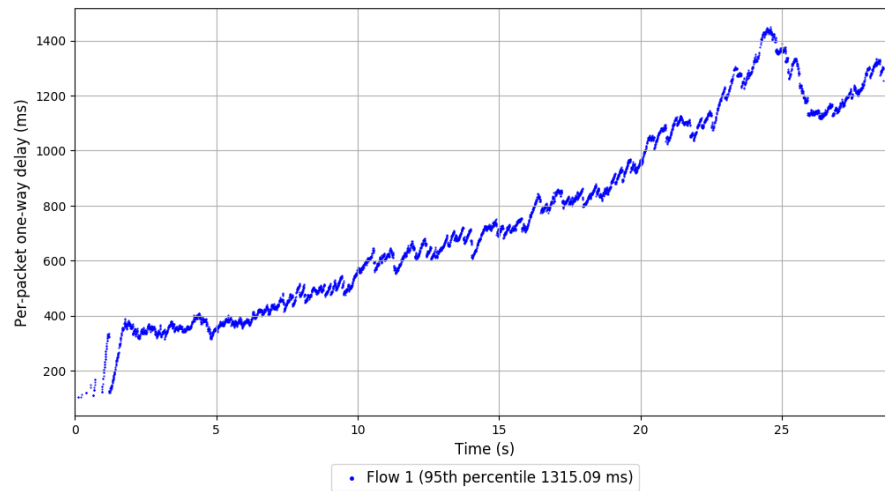
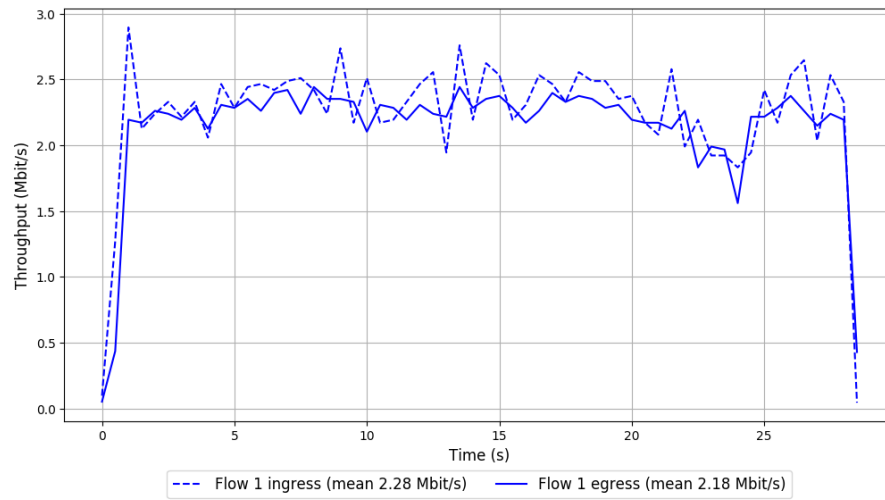
-- Flow 1:

Average throughput: 2.18 Mbit/s

95th percentile per-packet one-way delay: 1315.088 ms

Loss rate: 4.40%

Run 3: Report of QUIC Cubic — Data Link

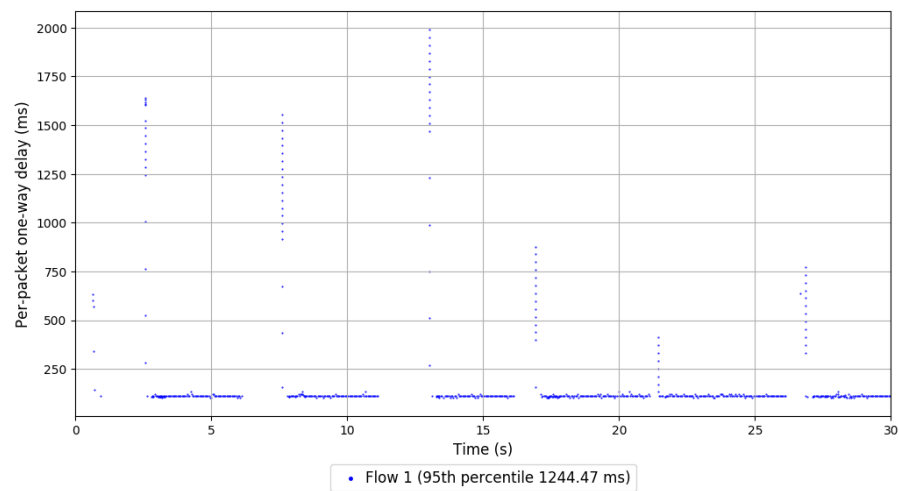
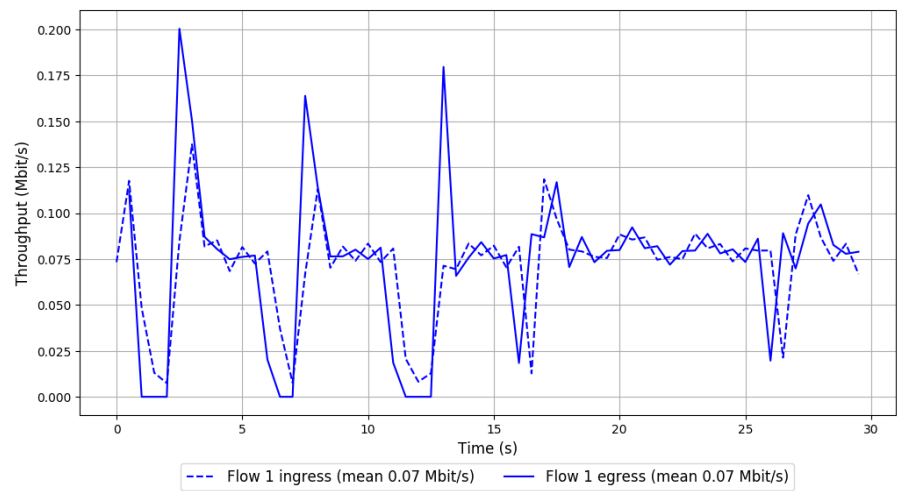


Run 1: Statistics of SCReAM

Start at: 2018-02-27 07:20:35
End at: 2018-02-27 07:21:05
Local clock offset: -5.119 ms
Remote clock offset: -5.912 ms

Below is generated by plot.py at 2018-02-27 08:16:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 1244.469 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 1244.469 ms
Loss rate: 0.14%

Run 1: Report of SReAM — Data Link

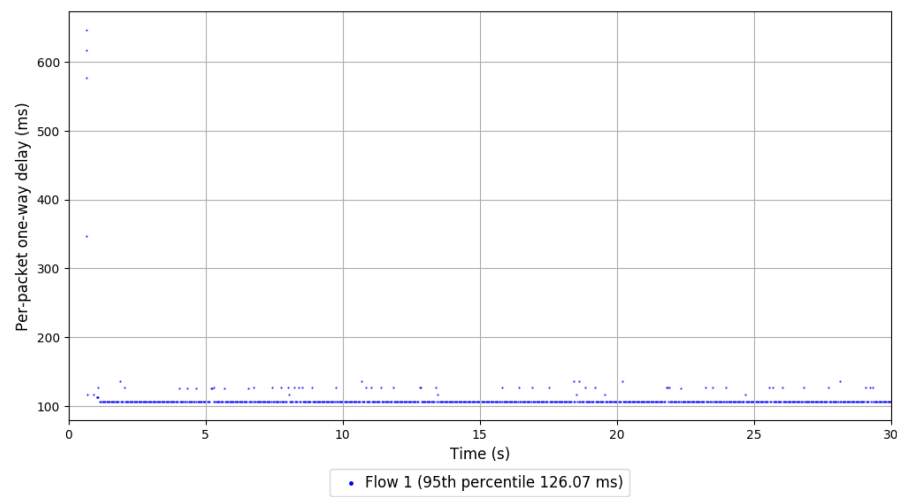
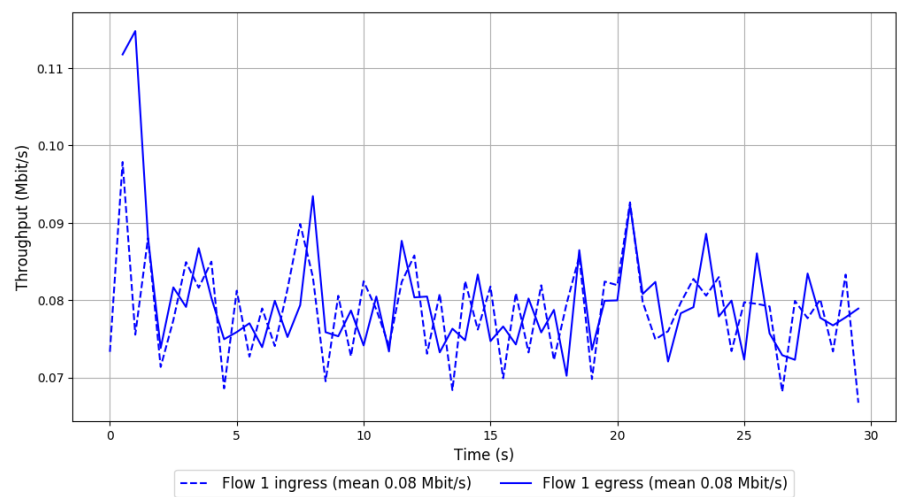


Run 2: Statistics of SCReAM

Start at: 2018-02-27 07:41:42
End at: 2018-02-27 07:42:12
Local clock offset: -3.41 ms
Remote clock offset: -5.906 ms

Below is generated by plot.py at 2018-02-27 08:16:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 126.069 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 126.069 ms
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link

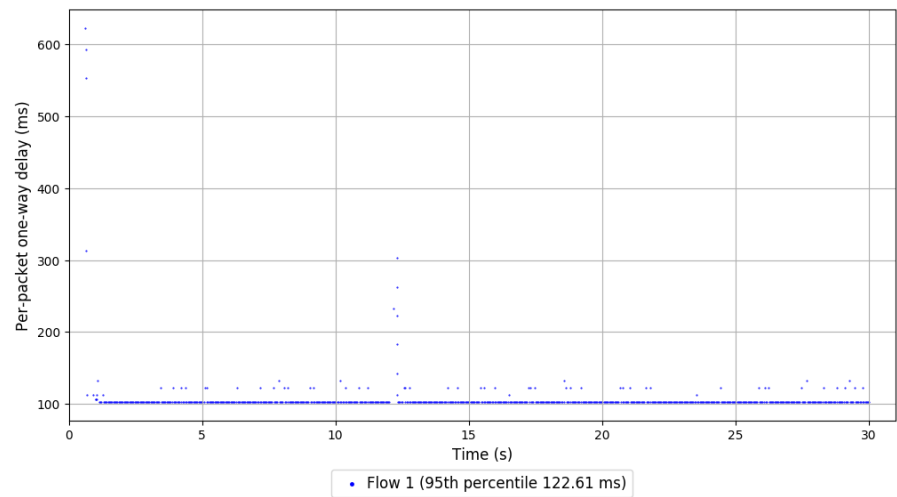
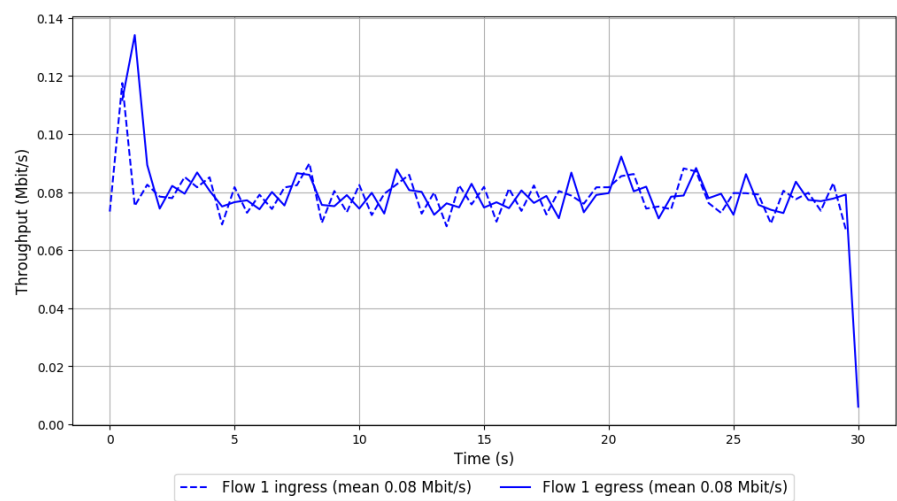


Run 3: Statistics of SCReAM

Start at: 2018-02-27 08:02:48
End at: 2018-02-27 08:03:18
Local clock offset: -1.746 ms
Remote clock offset: -5.838 ms

Below is generated by plot.py at 2018-02-27 08:16:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 122.613 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 122.613 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

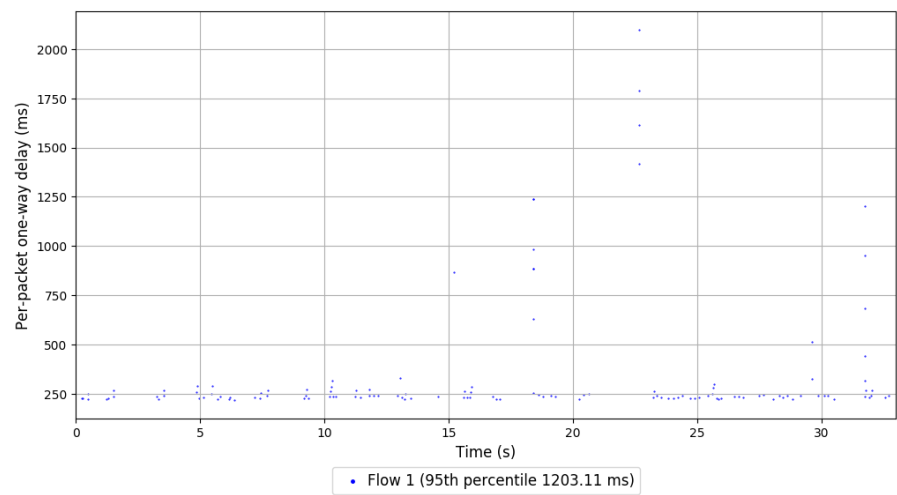
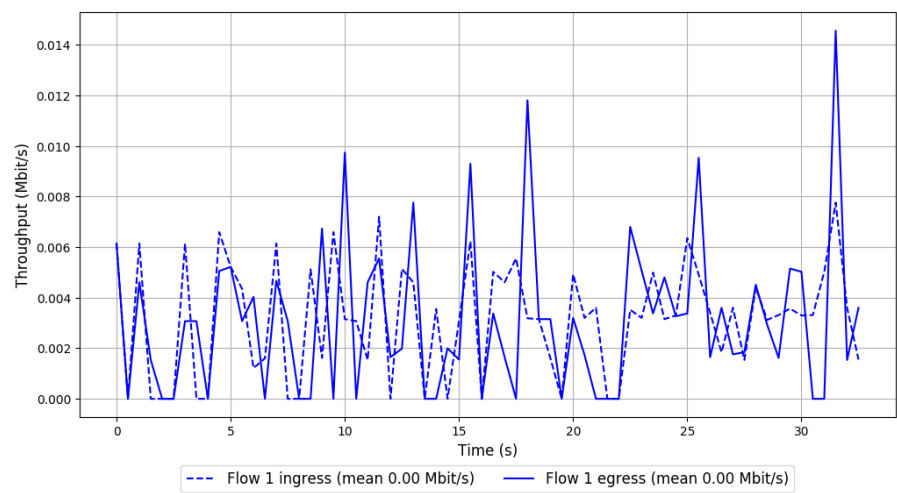


Run 1: Statistics of WebRTC media

Start at: 2018-02-27 07:17:05
End at: 2018-02-27 07:17:35
Local clock offset: -5.274 ms
Remote clock offset: -4.945 ms

Below is generated by plot.py at 2018-02-27 08:16:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1203.114 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1203.114 ms
Loss rate: 0.75%

Run 1: Report of WebRTC media — Data Link

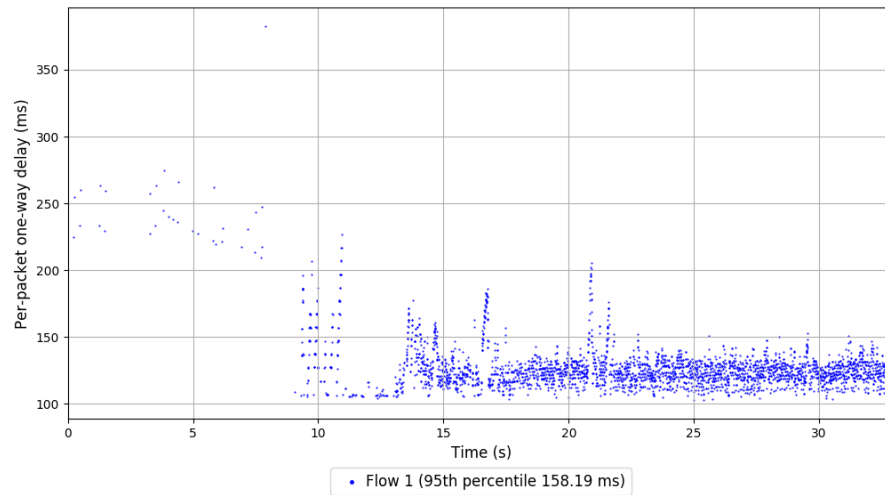
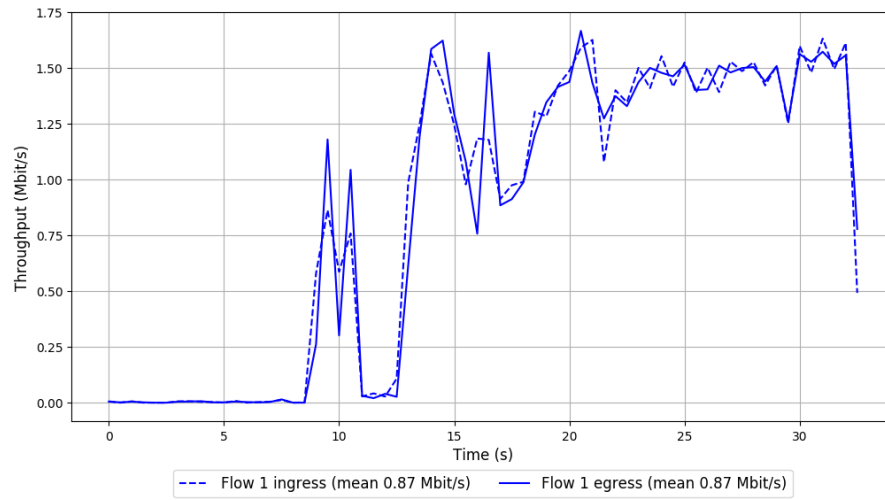


Run 2: Statistics of WebRTC media

Start at: 2018-02-27 07:38:11
End at: 2018-02-27 07:38:41
Local clock offset: -4.037 ms
Remote clock offset: -5.894 ms

Below is generated by plot.py at 2018-02-27 08:16:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 158.189 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 158.189 ms
Loss rate: 0.25%

Run 2: Report of WebRTC media — Data Link

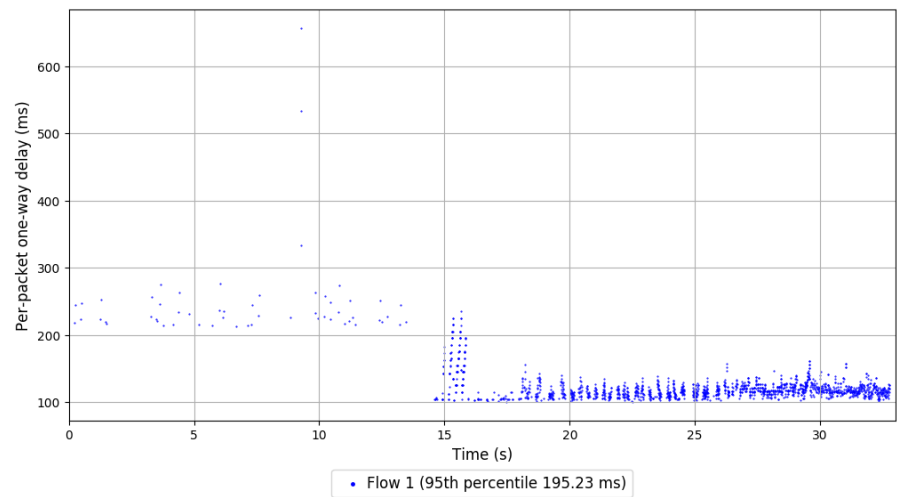
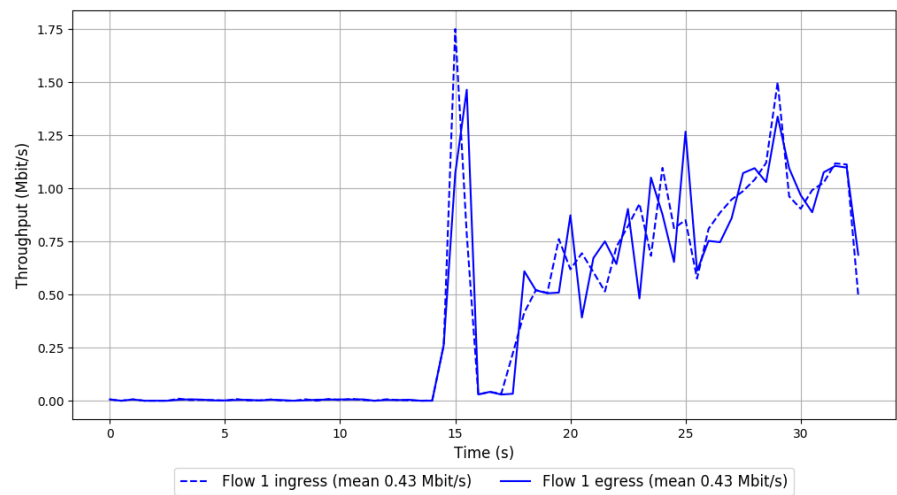


Run 3: Statistics of WebRTC media

Start at: 2018-02-27 07:59:18
End at: 2018-02-27 07:59:48
Local clock offset: -1.555 ms
Remote clock offset: -5.877 ms

Below is generated by plot.py at 2018-02-27 08:16:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 195.234 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 195.234 ms
Loss rate: 0.34%

Run 3: Report of WebRTC media — Data Link

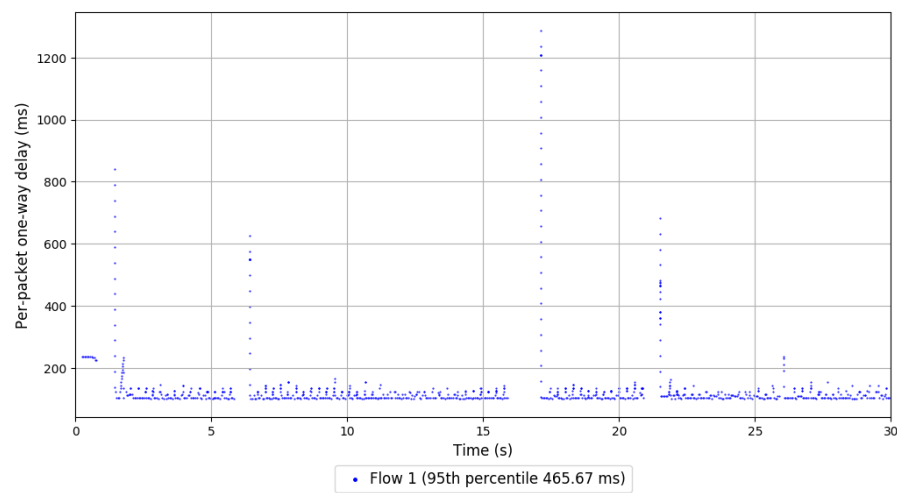
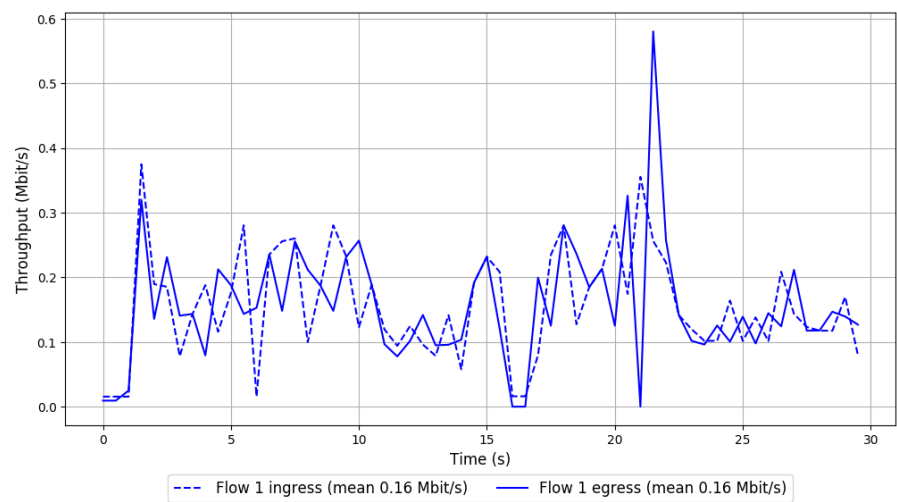


Run 1: Statistics of Sprout

Start at: 2018-02-27 07:13:34
End at: 2018-02-27 07:14:04
Local clock offset: -5.412 ms
Remote clock offset: -5.028 ms

Below is generated by plot.py at 2018-02-27 08:16:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 465.673 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 465.673 ms
Loss rate: 0.02%

Run 1: Report of Sprout — Data Link

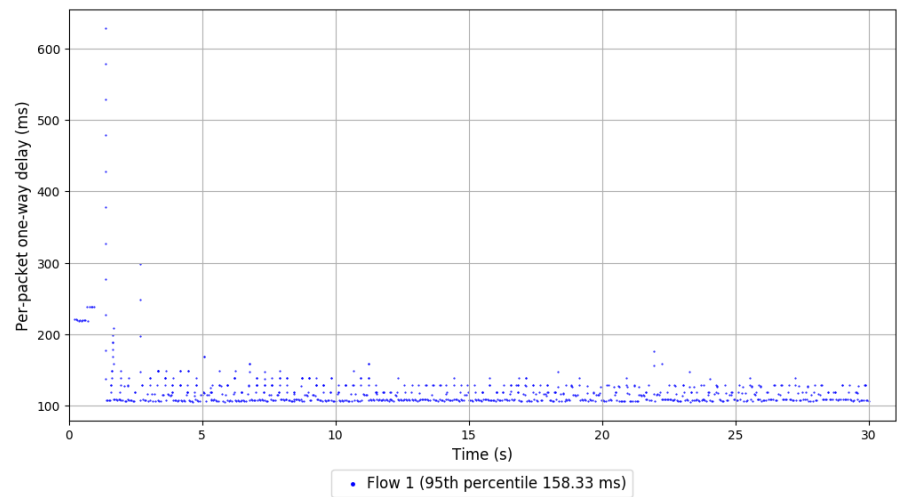
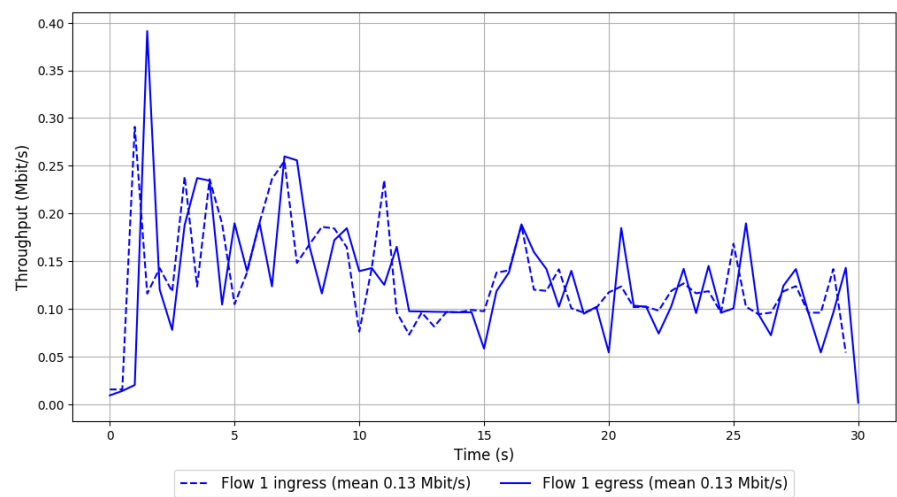


Run 2: Statistics of Sprout

Start at: 2018-02-27 07:34:40
End at: 2018-02-27 07:35:10
Local clock offset: -4.885 ms
Remote clock offset: -0.738 ms

Below is generated by plot.py at 2018-02-27 08:16:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 158.330 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 158.330 ms
Loss rate: 0.00%

Run 2: Report of Sprout — Data Link

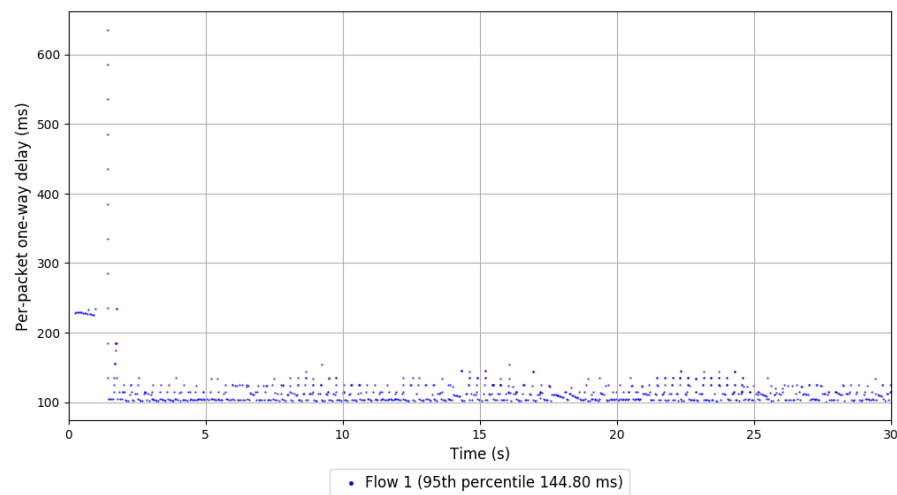
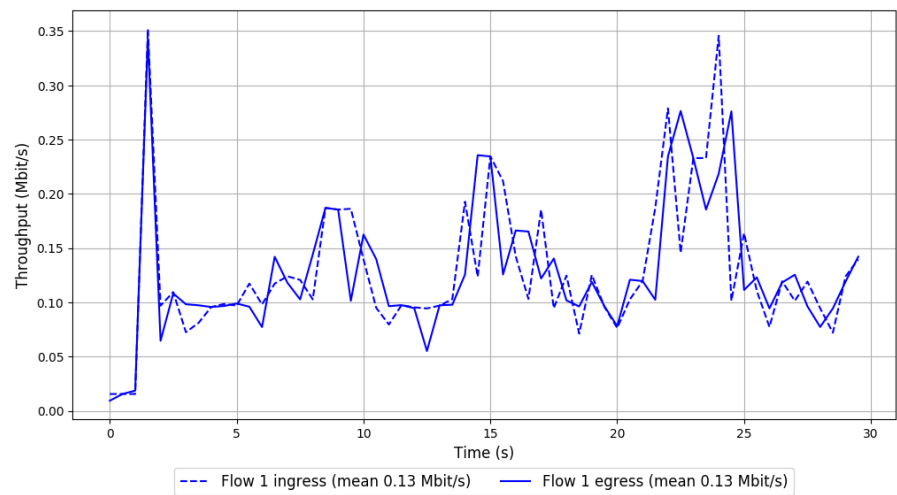


Run 3: Statistics of Sprout

Start at: 2018-02-27 07:55:47
End at: 2018-02-27 07:56:17
Local clock offset: -2.127 ms
Remote clock offset: -5.099 ms

Below is generated by plot.py at 2018-02-27 08:16:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 144.796 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 144.796 ms
Loss rate: 0.30%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-02-27 07:14:44

End at: 2018-02-27 07:15:14

Local clock offset: -5.353 ms

Remote clock offset: -1.379 ms

Below is generated by plot.py at 2018-02-27 08:16:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 1042.291 ms

Loss rate: 0.57%

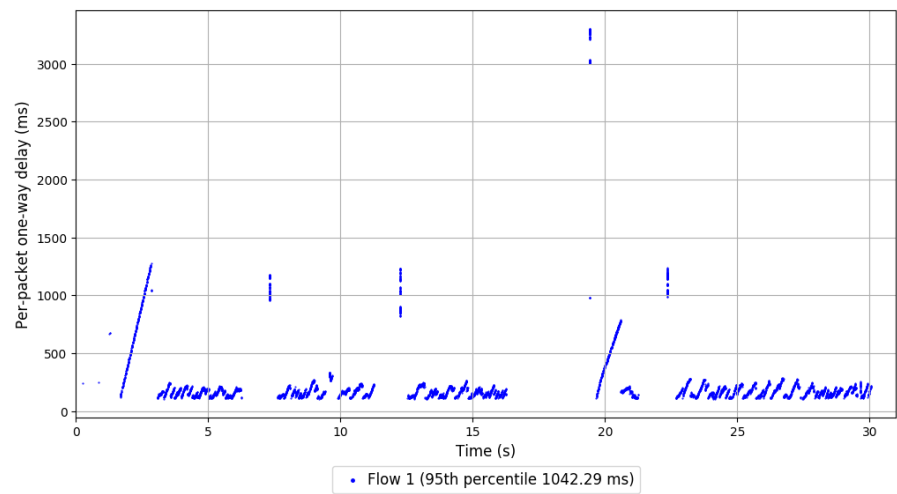
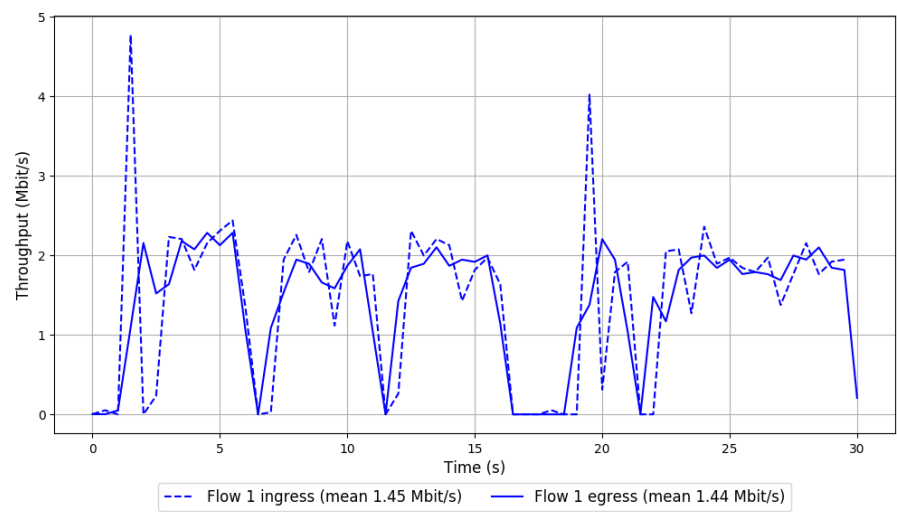
-- Flow 1:

Average throughput: 1.44 Mbit/s

95th percentile per-packet one-way delay: 1042.291 ms

Loss rate: 0.57%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-02-27 07:35:50

End at: 2018-02-27 07:36:20

Local clock offset: -4.581 ms

Remote clock offset: -0.69 ms

Below is generated by plot.py at 2018-02-27 08:16:20

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.88 Mbit/s

95th percentile per-packet one-way delay: 275.836 ms

Loss rate: 0.37%

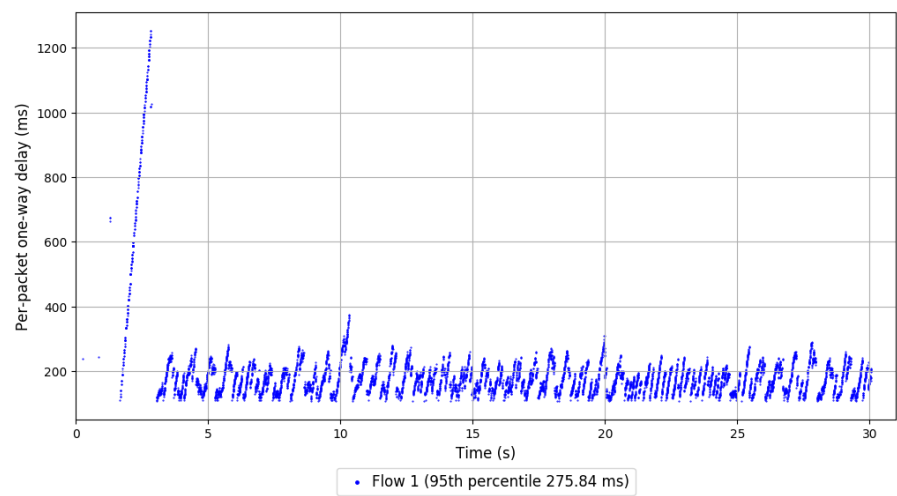
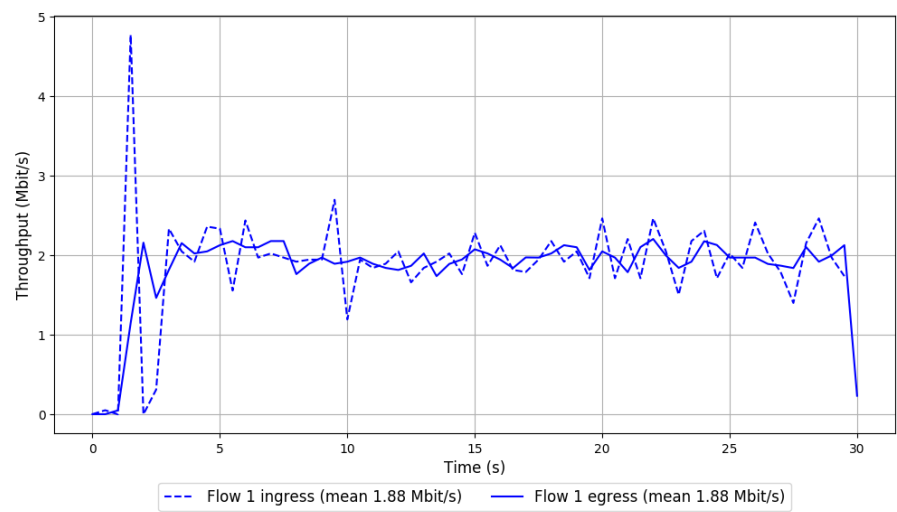
-- Flow 1:

Average throughput: 1.88 Mbit/s

95th percentile per-packet one-way delay: 275.836 ms

Loss rate: 0.37%

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

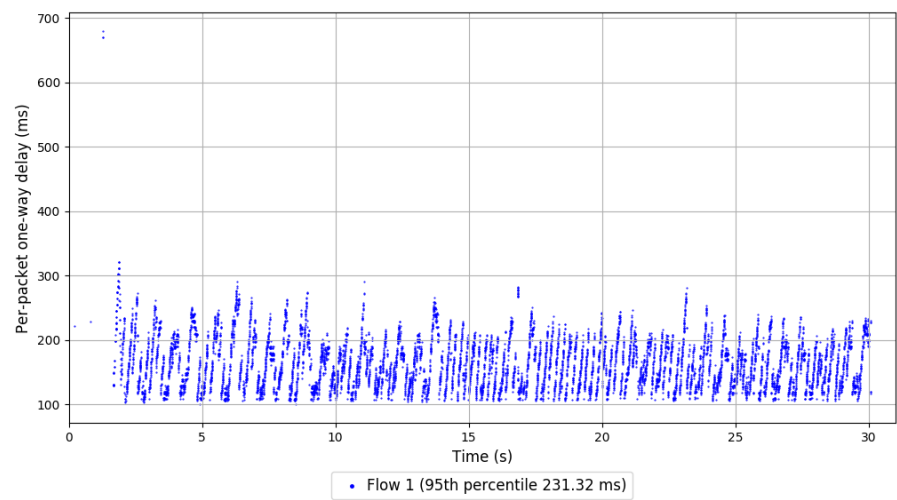
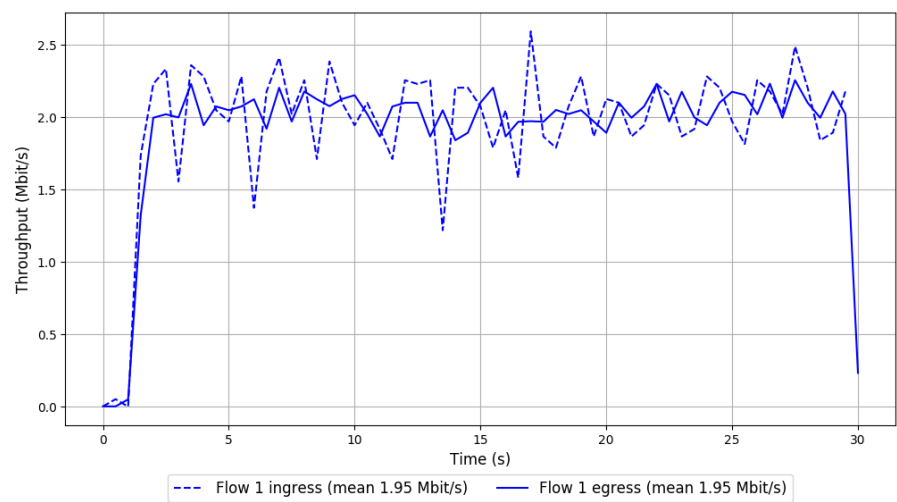


Run 3: Statistics of TaoVA-100x

Start at: 2018-02-27 07:56:57
End at: 2018-02-27 07:57:27
Local clock offset: -2.037 ms
Remote clock offset: -5.114 ms

Below is generated by plot.py at 2018-02-27 08:16:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 231.324 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 231.324 ms
Loss rate: 0.31%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-02-27 07:22:55

End at: 2018-02-27 07:23:25

Local clock offset: -5.07 ms

Remote clock offset: -5.781 ms

Below is generated by plot.py at 2018-02-27 08:16:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.14 Mbit/s

95th percentile per-packet one-way delay: 650.431 ms

Loss rate: 1.21%

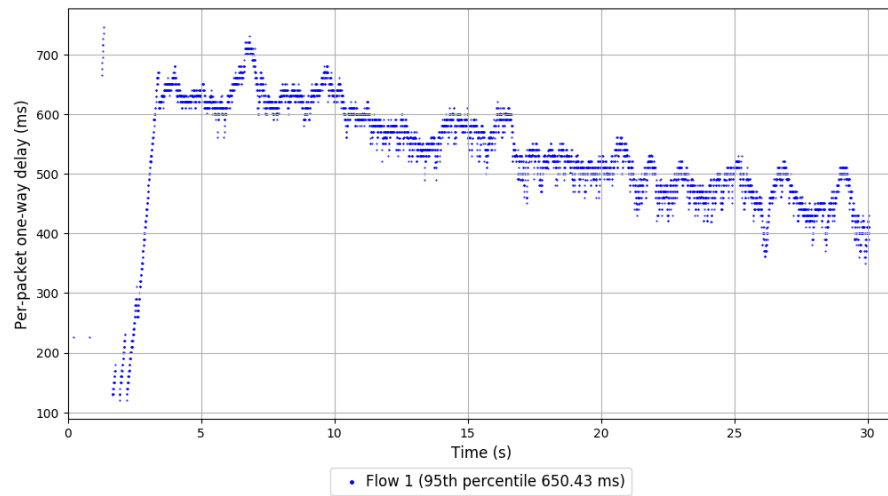
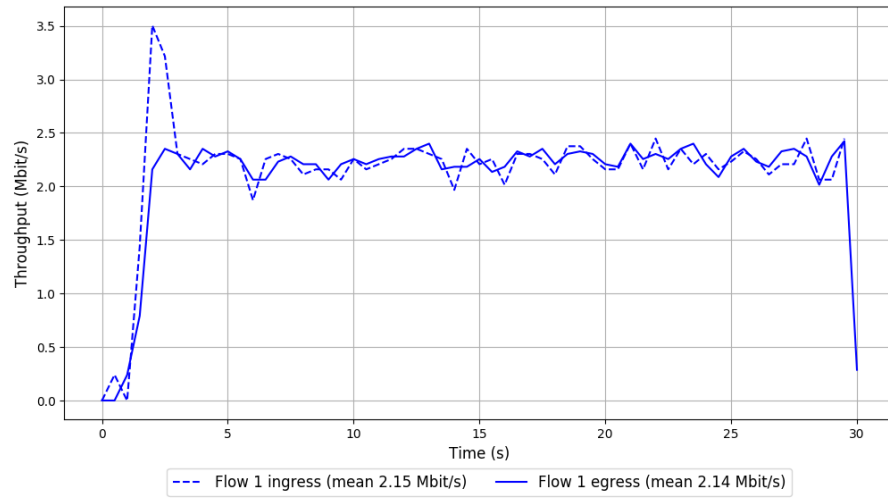
-- Flow 1:

Average throughput: 2.14 Mbit/s

95th percentile per-packet one-way delay: 650.431 ms

Loss rate: 1.21%

Run 1: Report of TCP Vegas — Data Link

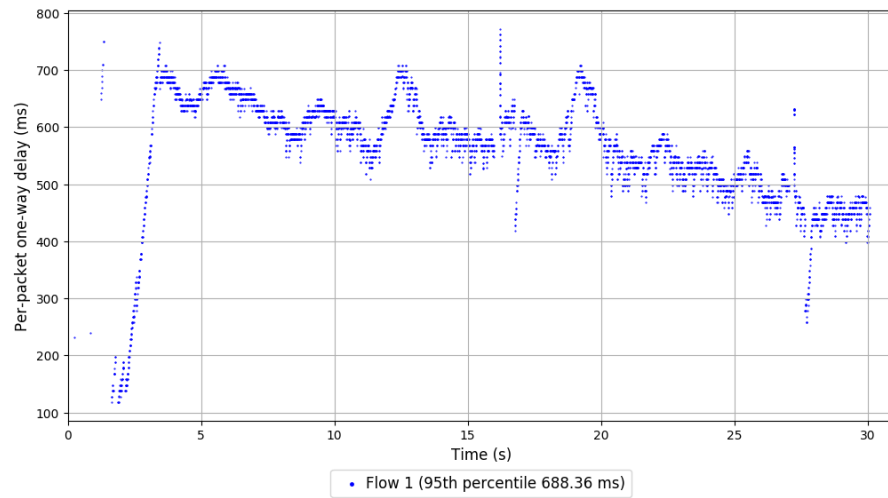
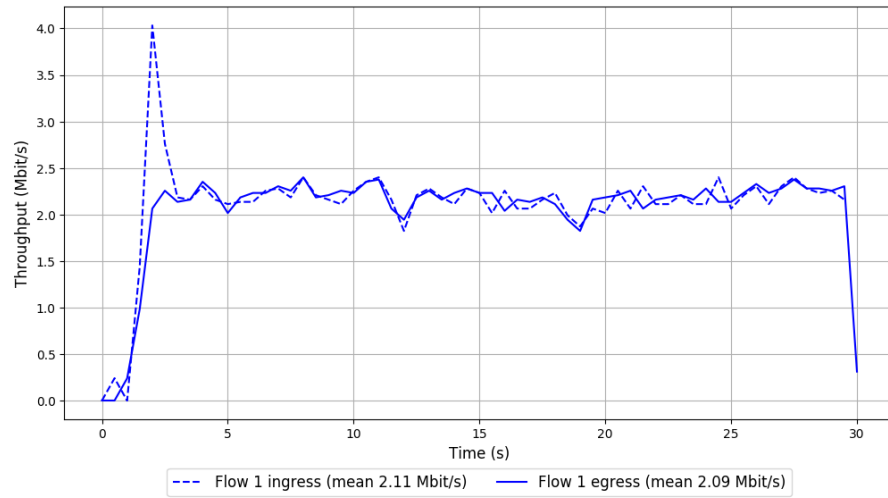


Run 2: Statistics of TCP Vegas

Start at: 2018-02-27 07:44:02
End at: 2018-02-27 07:44:32
Local clock offset: -3.172 ms
Remote clock offset: -0.754 ms

Below is generated by plot.py at 2018-02-27 08:16:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 688.361 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 688.361 ms
Loss rate: 1.29%

Run 2: Report of TCP Vegas — Data Link

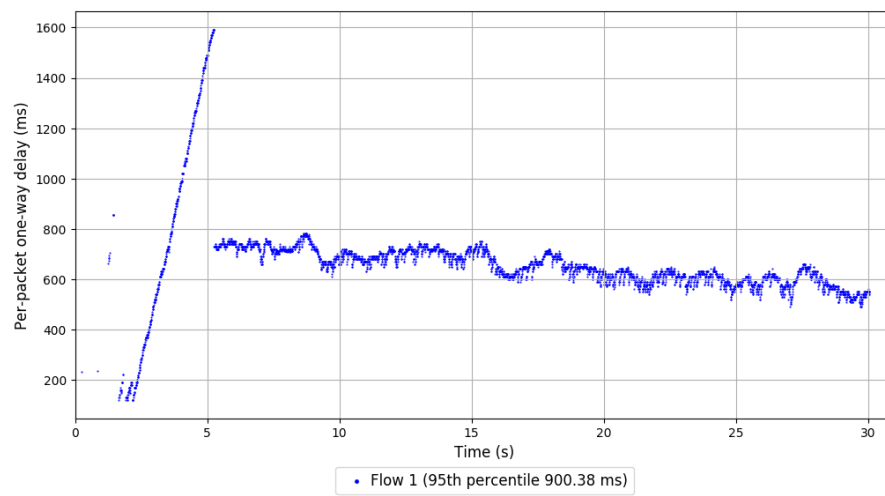
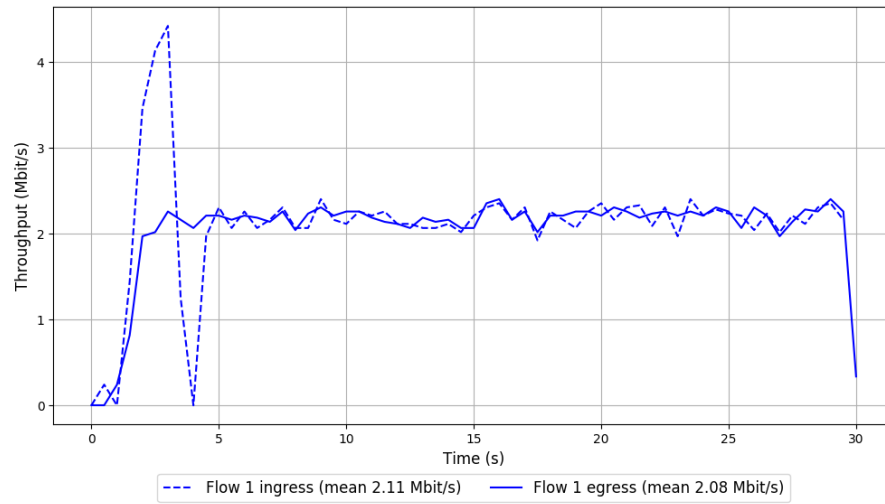


Run 3: Statistics of TCP Vegas

Start at: 2018-02-27 08:05:08
End at: 2018-02-27 08:05:38
Local clock offset: -1.687 ms
Remote clock offset: -5.821 ms

Below is generated by plot.py at 2018-02-27 08:16:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 900.385 ms
Loss rate: 1.60%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 900.385 ms
Loss rate: 1.60%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-02-27 07:18:15

End at: 2018-02-27 07:18:45

Local clock offset: -5.179 ms

Remote clock offset: 0.217 ms

Below is generated by plot.py at 2018-02-27 08:16:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.90 Mbit/s

95th percentile per-packet one-way delay: 1445.500 ms

Loss rate: 3.21%

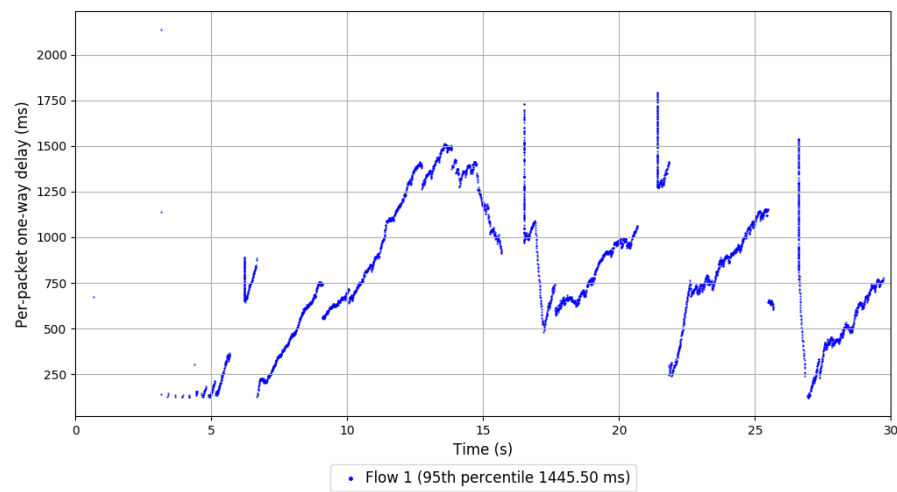
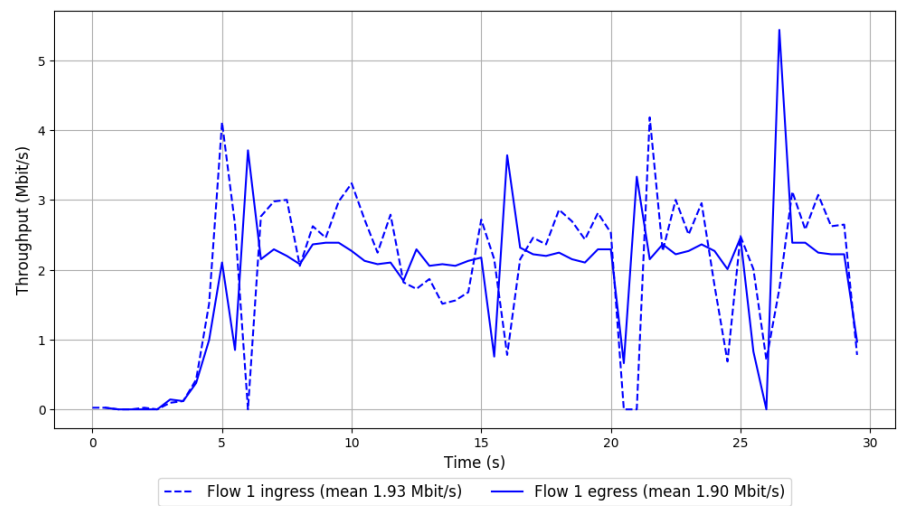
-- Flow 1:

Average throughput: 1.90 Mbit/s

95th percentile per-packet one-way delay: 1445.500 ms

Loss rate: 3.21%

Run 1: Report of Verus — Data Link

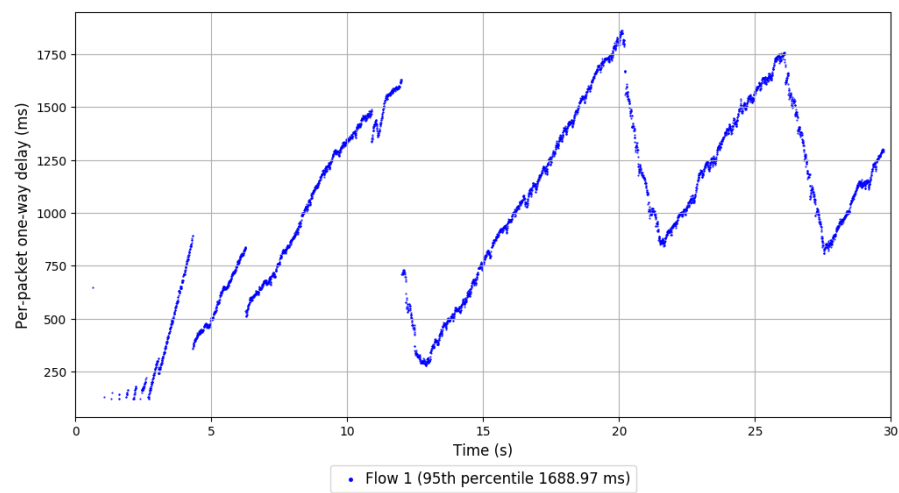
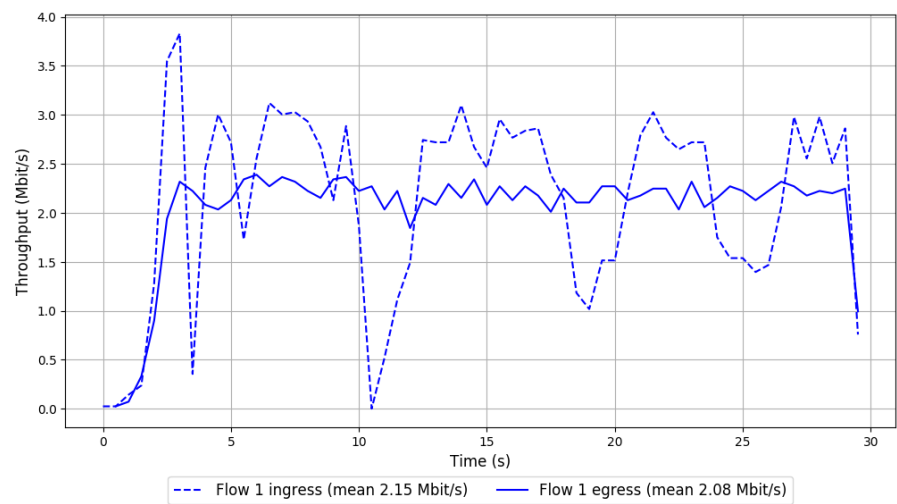


Run 2: Statistics of Verus

Start at: 2018-02-27 07:39:21
End at: 2018-02-27 07:39:51
Local clock offset: -3.826 ms
Remote clock offset: -5.071 ms

Below is generated by plot.py at 2018-02-27 08:16:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 1688.967 ms
Loss rate: 5.12%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 1688.967 ms
Loss rate: 5.12%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-02-27 08:00:28

End at: 2018-02-27 08:00:58

Local clock offset: -1.939 ms

Remote clock offset: 0.197 ms

Below is generated by plot.py at 2018-02-27 08:16:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.84 Mbit/s

95th percentile per-packet one-way delay: 1939.839 ms

Loss rate: 4.31%

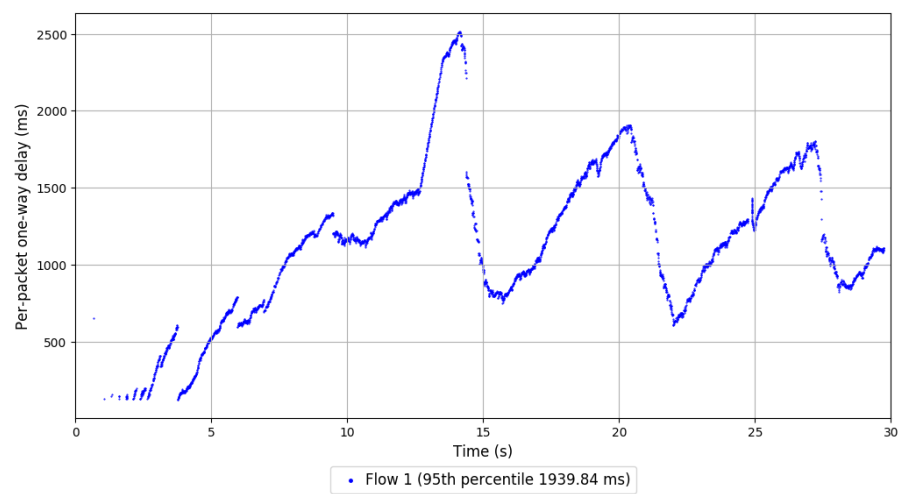
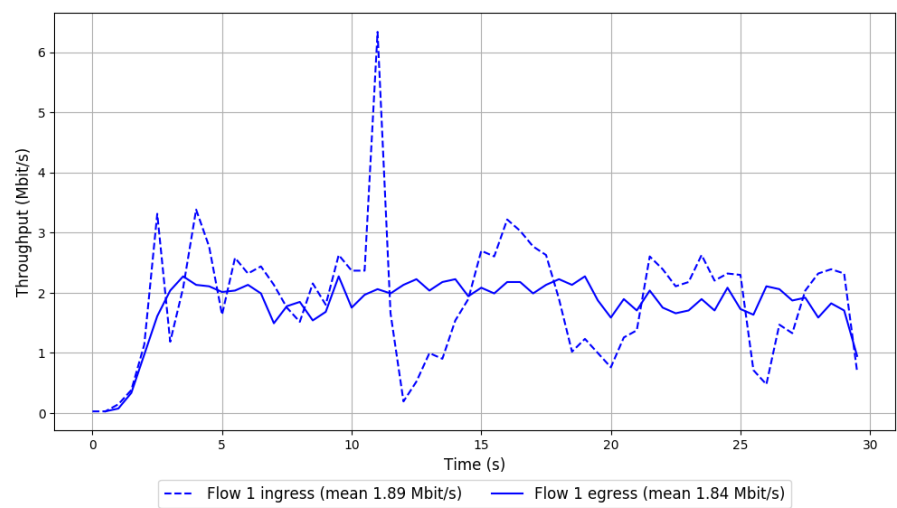
-- Flow 1:

Average throughput: 1.84 Mbit/s

95th percentile per-packet one-way delay: 1939.839 ms

Loss rate: 4.31%

Run 3: Report of Verus — Data Link

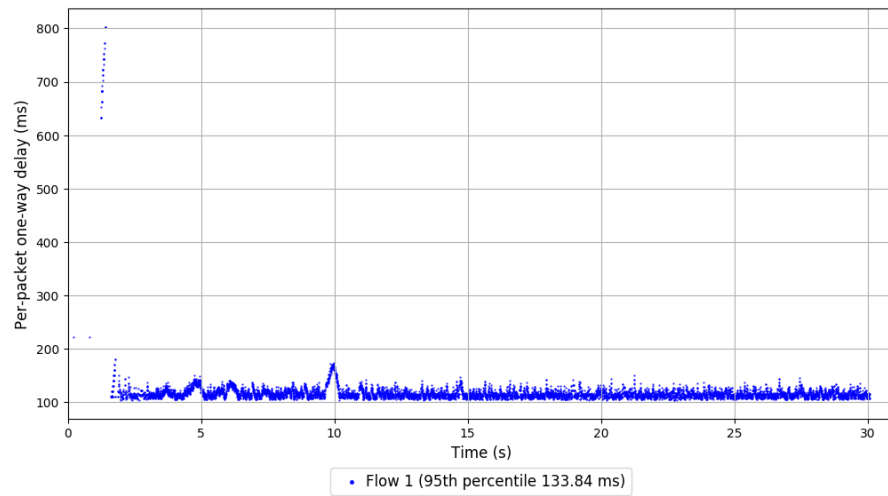
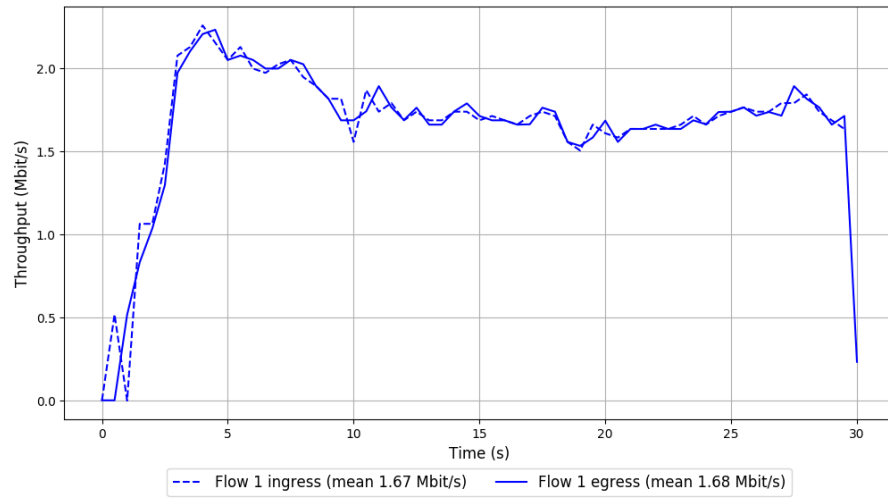


Run 1: Statistics of Copa

Start at: 2018-02-27 07:25:16
End at: 2018-02-27 07:25:46
Local clock offset: -4.996 ms
Remote clock offset: -5.026 ms

Below is generated by plot.py at 2018-02-27 08:16:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 133.836 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 133.836 ms
Loss rate: 0.10%

Run 1: Report of Copa — Data Link

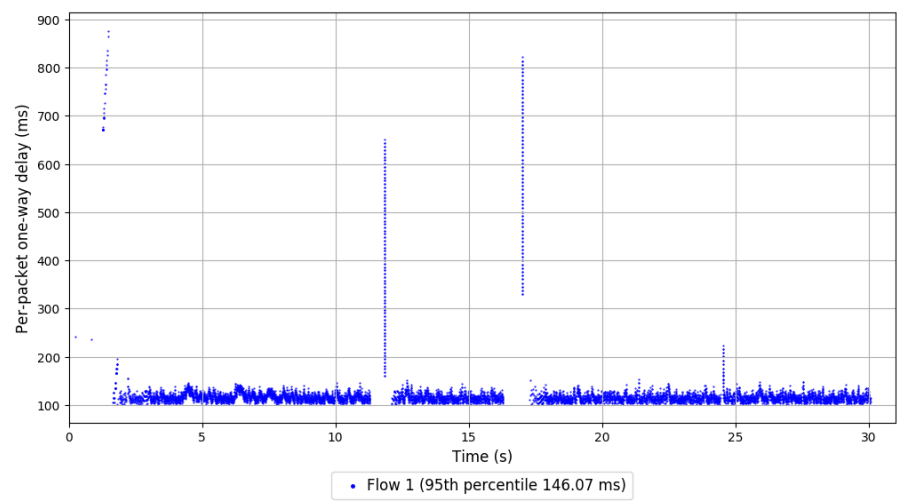
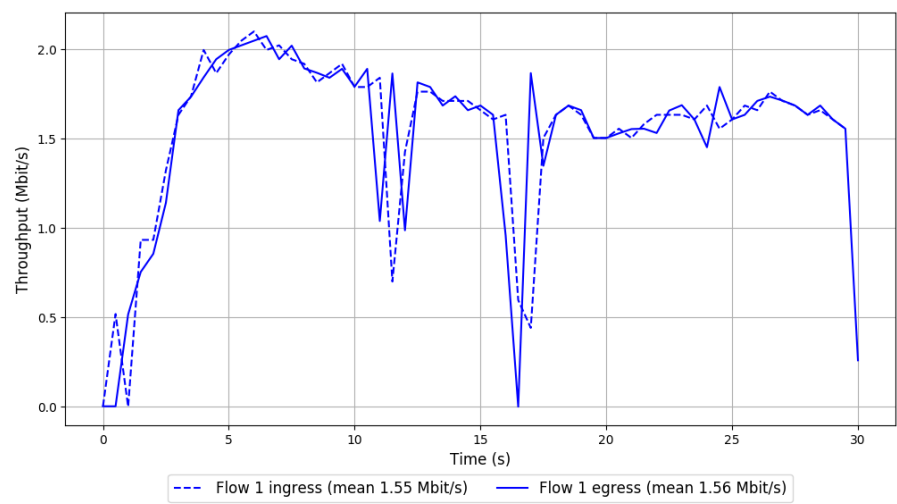


Run 2: Statistics of Copa

Start at: 2018-02-27 07:46:23
End at: 2018-02-27 07:46:53
Local clock offset: -2.876 ms
Remote clock offset: -5.135 ms

Below is generated by plot.py at 2018-02-27 08:16:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 146.074 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 146.074 ms
Loss rate: 0.14%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-02-27 08:07:29

End at: 2018-02-27 08:07:59

Local clock offset: -1.108 ms

Remote clock offset: -5.79 ms

Below is generated by plot.py at 2018-02-27 08:16:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.73 Mbit/s

95th percentile per-packet one-way delay: 133.366 ms

Loss rate: 0.15%

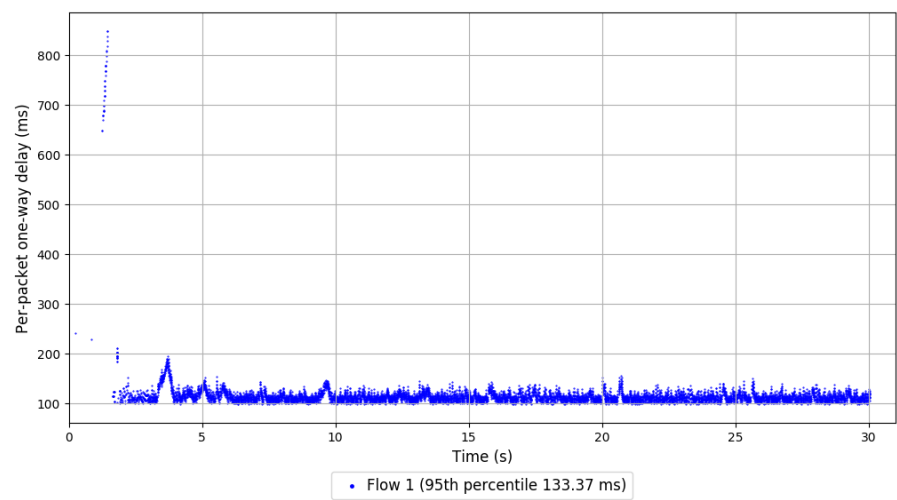
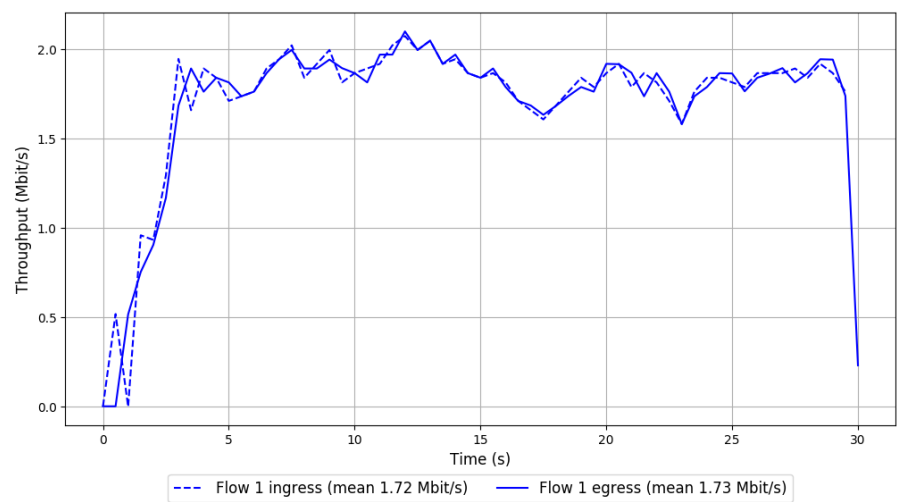
-- Flow 1:

Average throughput: 1.73 Mbit/s

95th percentile per-packet one-way delay: 133.366 ms

Loss rate: 0.15%

Run 3: Report of Copa — Data Link

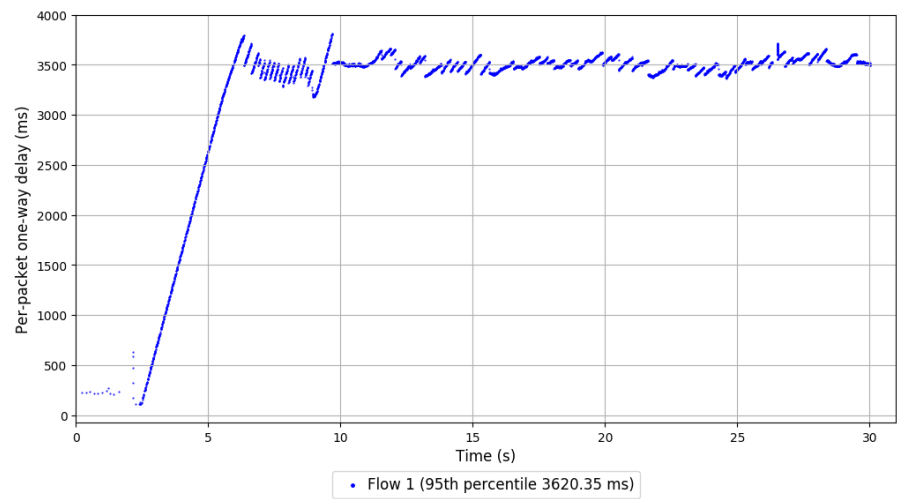
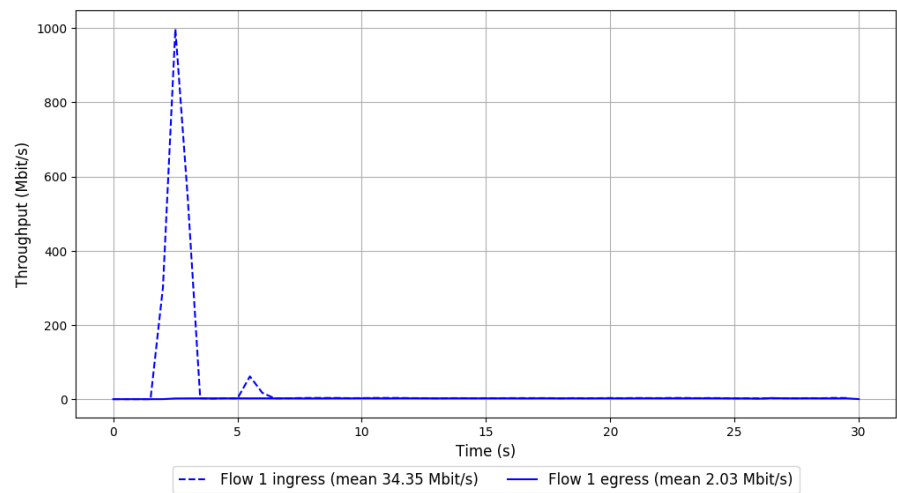


Run 1: Statistics of FillP

Start at: 2018-02-27 07:26:27
End at: 2018-02-27 07:26:57
Local clock offset: -5.029 ms
Remote clock offset: -5.021 ms

Below is generated by plot.py at 2018-02-27 08:16:38
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 3620.348 ms
Loss rate: 94.12%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 3620.348 ms
Loss rate: 94.12%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-02-27 07:47:33

End at: 2018-02-27 07:48:03

Local clock offset: -2.738 ms

Remote clock offset: 0.105 ms

Below is generated by plot.py at 2018-02-27 08:16:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.99 Mbit/s

95th percentile per-packet one-way delay: 3882.775 ms

Loss rate: 94.08%

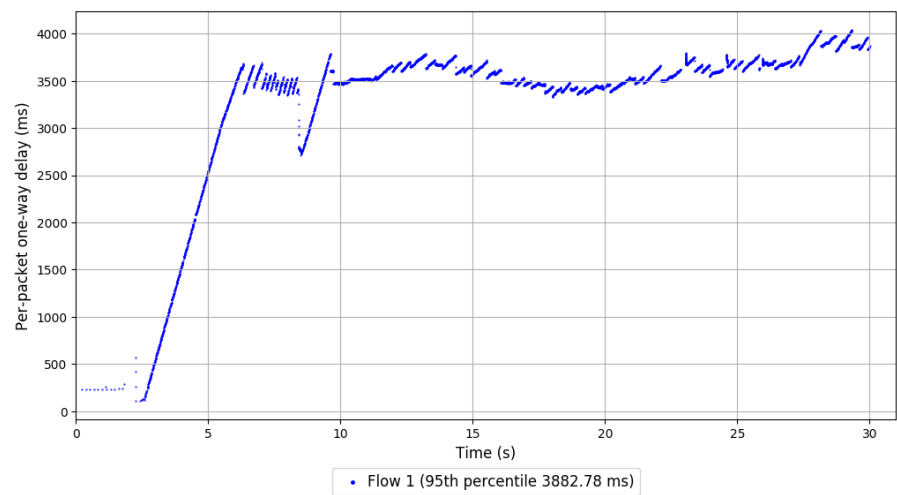
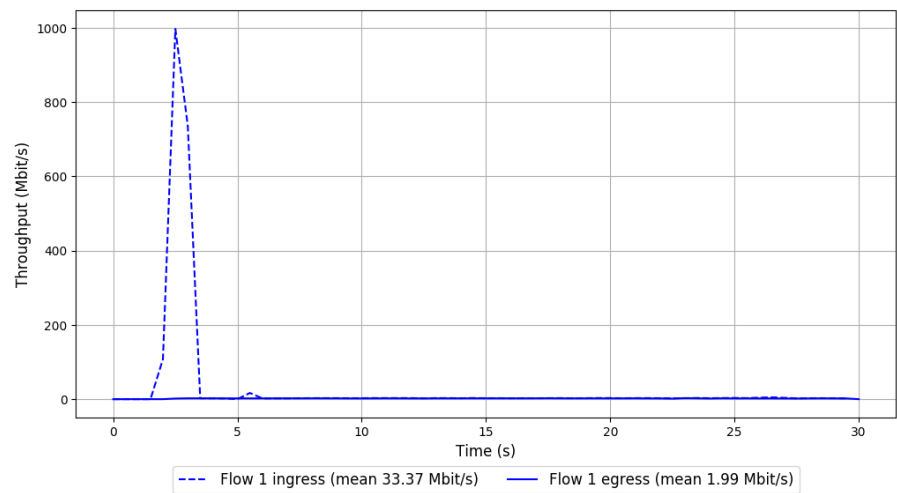
-- Flow 1:

Average throughput: 1.99 Mbit/s

95th percentile per-packet one-way delay: 3882.775 ms

Loss rate: 94.08%

Run 2: Report of FillP — Data Link

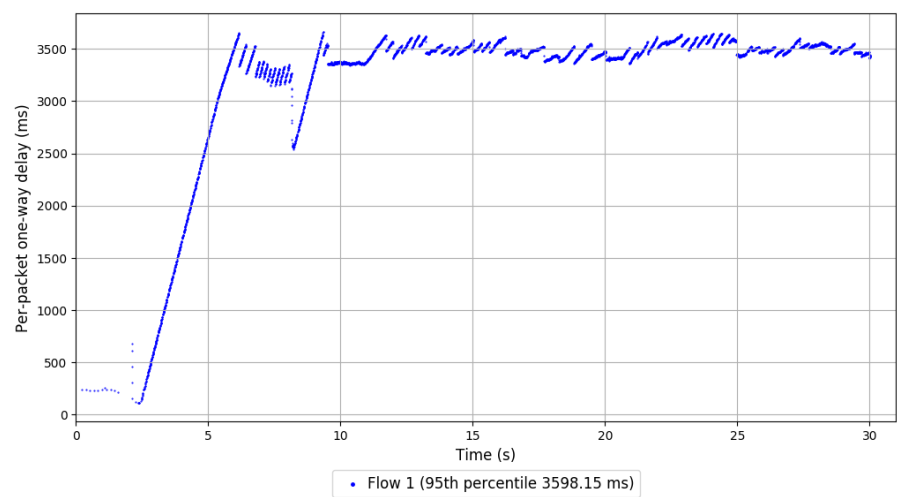
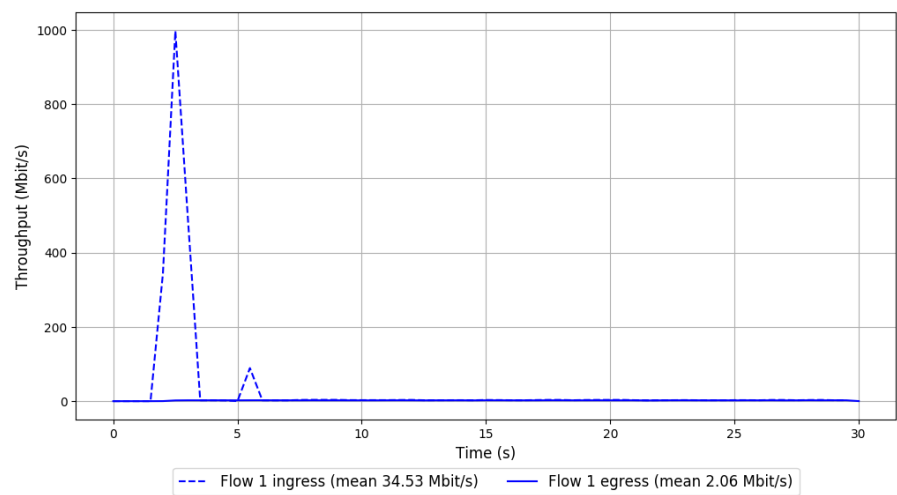


Run 3: Statistics of FillP

Start at: 2018-02-27 08:08:39
End at: 2018-02-27 08:09:09
Local clock offset: -1.518 ms
Remote clock offset: -0.575 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3598.153 ms
Loss rate: 94.06%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3598.153 ms
Loss rate: 94.06%

Run 3: Report of FillP — Data Link



Run 1: Statistics of Indigo-1-32

Start at: 2018-02-27 07:21:45

End at: 2018-02-27 07:22:15

Local clock offset: -5.171 ms

Remote clock offset: -5.046 ms

Below is generated by plot.py at 2018-02-27 08:16:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.14 Mbit/s

95th percentile per-packet one-way delay: 346.872 ms

Loss rate: 0.04%

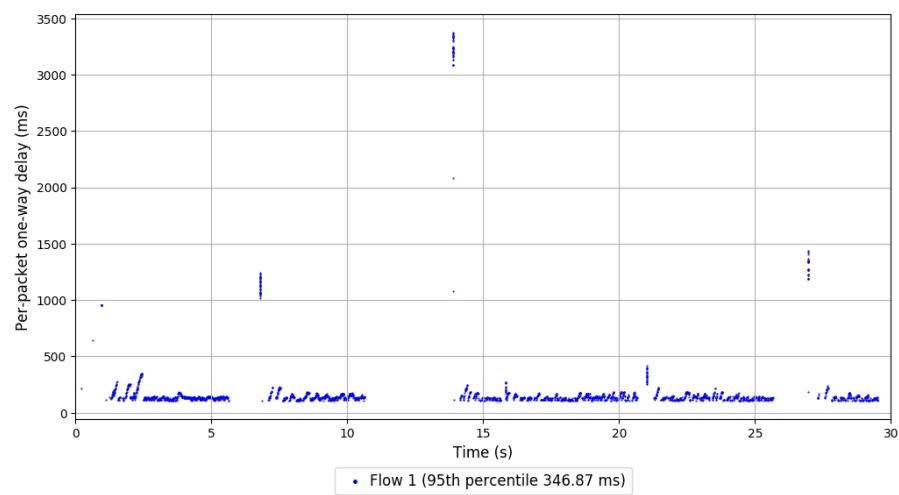
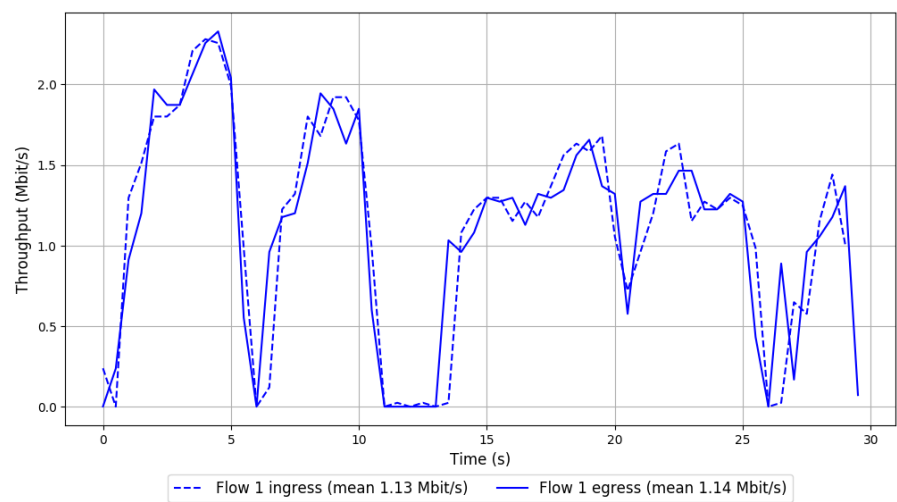
-- Flow 1:

Average throughput: 1.14 Mbit/s

95th percentile per-packet one-way delay: 346.872 ms

Loss rate: 0.04%

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



Run 2: Statistics of Indigo-1-32

Start at: 2018-02-27 07:42:52

End at: 2018-02-27 07:43:22

Local clock offset: -3.264 ms

Remote clock offset: -5.061 ms

Below is generated by plot.py at 2018-02-27 08:16:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.38 Mbit/s

95th percentile per-packet one-way delay: 167.424 ms

Loss rate: 0.00%

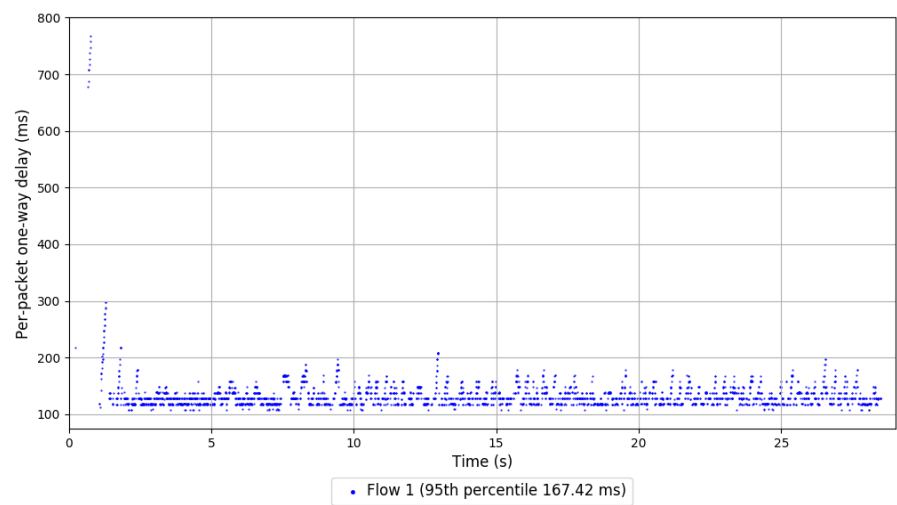
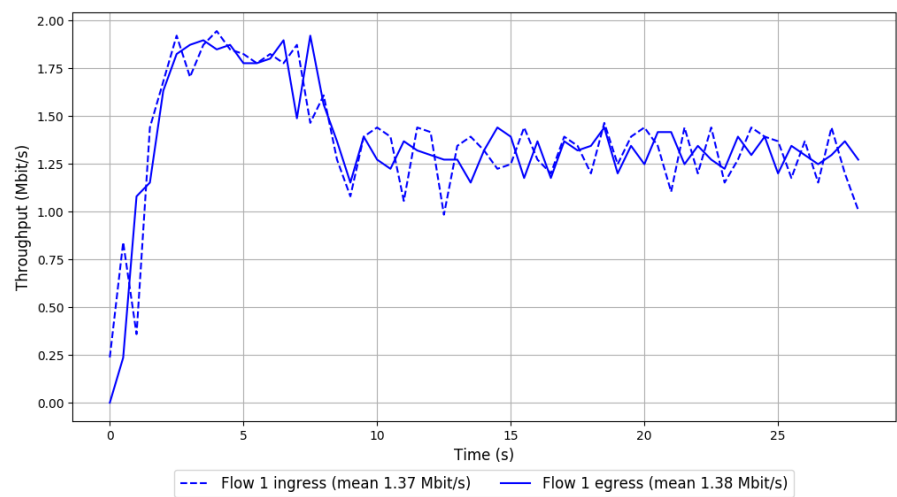
-- Flow 1:

Average throughput: 1.38 Mbit/s

95th percentile per-packet one-way delay: 167.424 ms

Loss rate: 0.00%

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

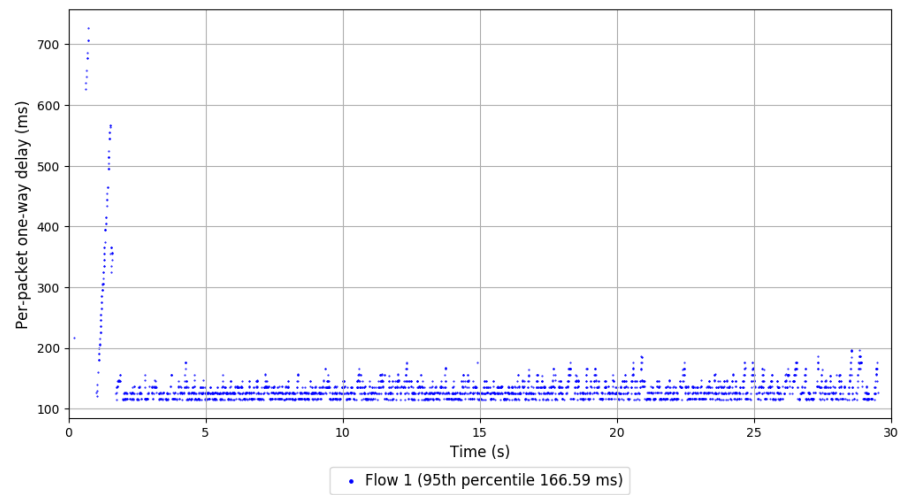
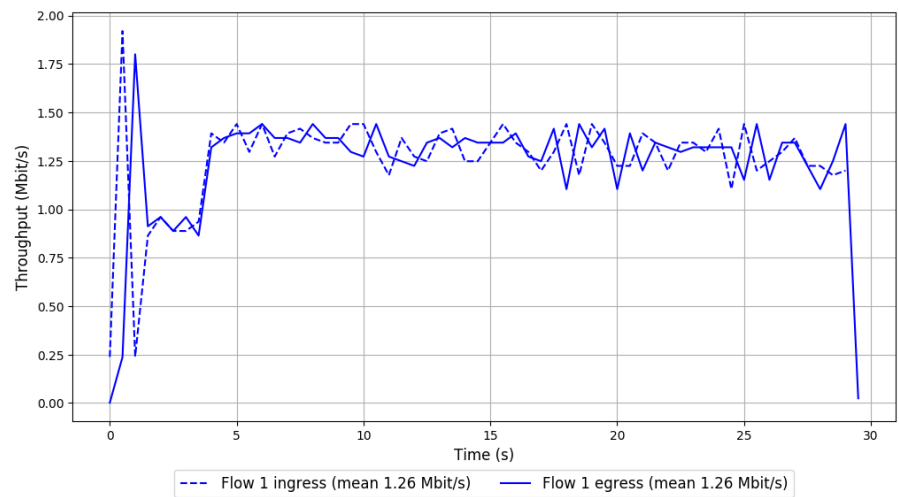


Run 3: Statistics of Indigo-1-32

Start at: 2018-02-27 08:03:58
End at: 2018-02-27 08:04:28
Local clock offset: -1.729 ms
Remote clock offset: -1.458 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 166.592 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 166.592 ms
Loss rate: 0.16%

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

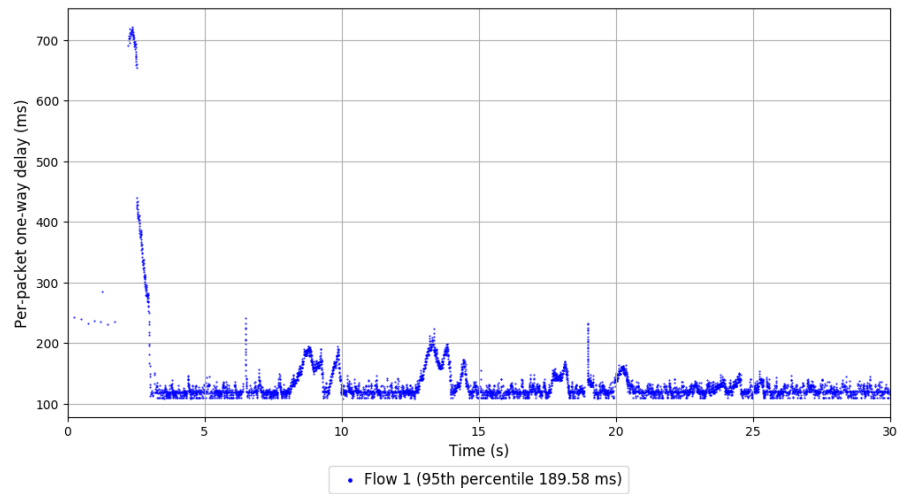
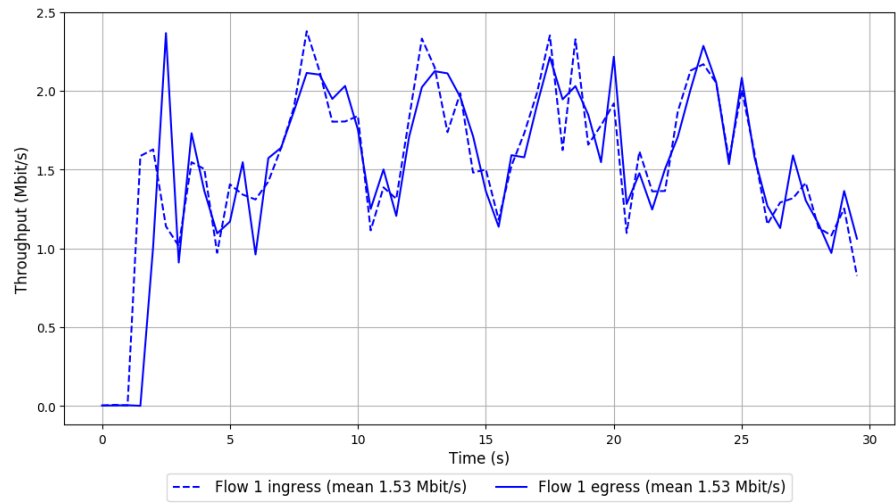


Run 1: Statistics of Vivace-latency

Start at: 2018-02-27 07:32:19
End at: 2018-02-27 07:32:49
Local clock offset: -4.862 ms
Remote clock offset: -0.682 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 189.582 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 189.582 ms
Loss rate: 0.87%

Run 1: Report of Vivace-latency — Data Link

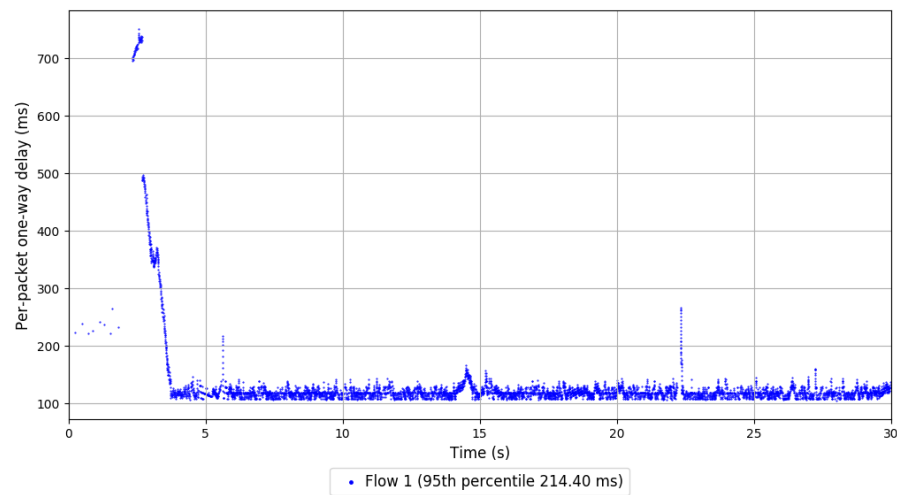
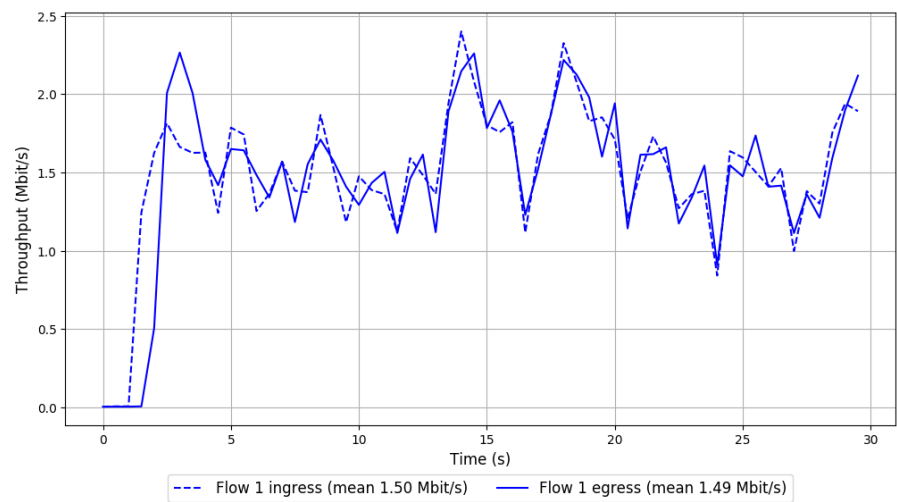


Run 2: Statistics of Vivace-latency

Start at: 2018-02-27 07:53:25
End at: 2018-02-27 07:53:55
Local clock offset: -2.357 ms
Remote clock offset: -5.959 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 214.403 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 214.403 ms
Loss rate: 1.20%

Run 2: Report of Vivace-latency — Data Link

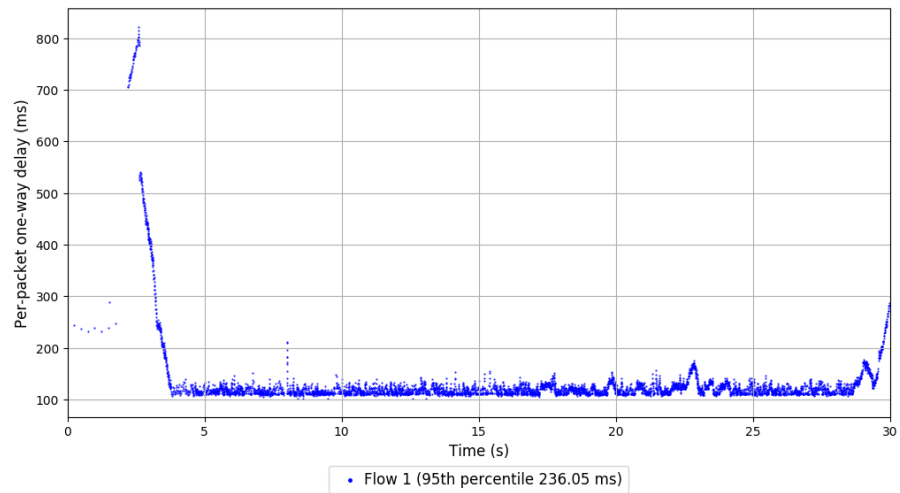
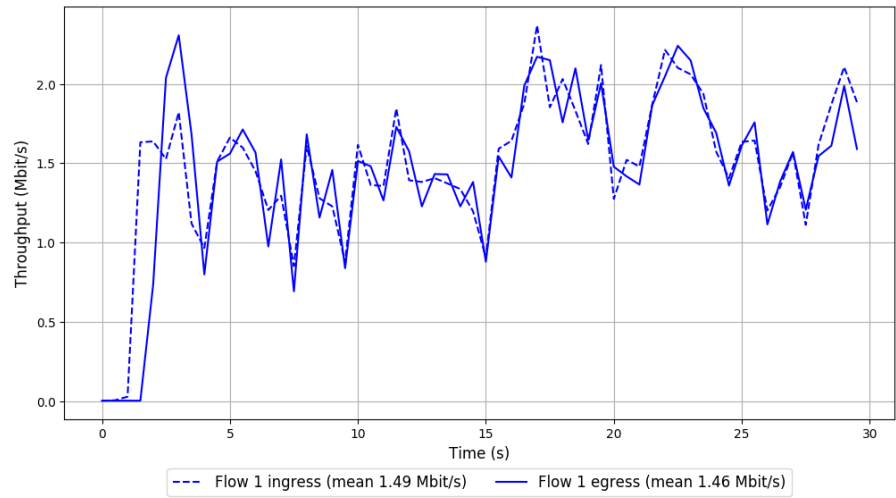


Run 3: Statistics of Vivace-latency

Start at: 2018-02-27 08:14:32
End at: 2018-02-27 08:15:02
Local clock offset: -3.468 ms
Remote clock offset: -5.699 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 236.051 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 236.051 ms
Loss rate: 2.05%

Run 3: Report of Vivace-latency — Data Link

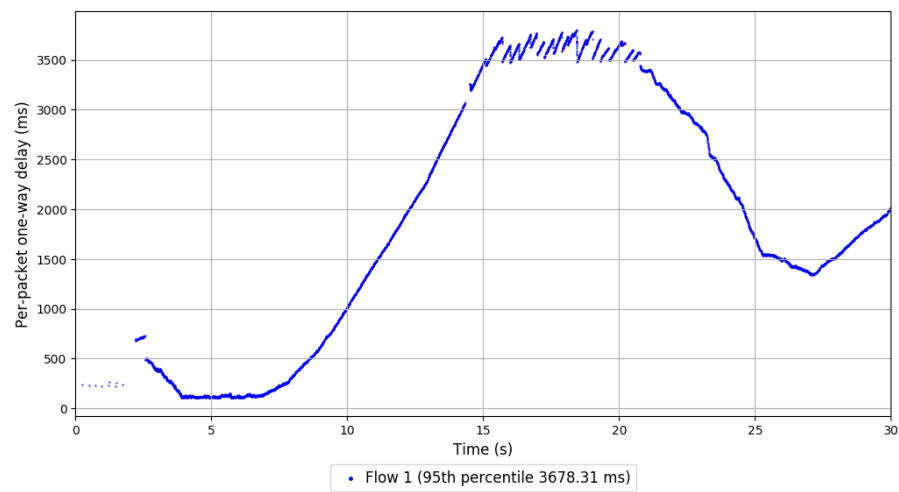
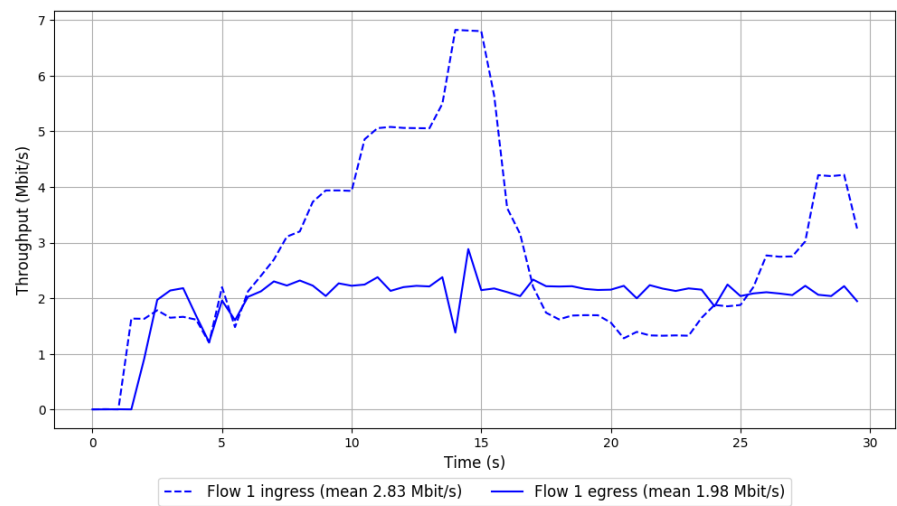


Run 1: Statistics of Vivace-loss

Start at: 2018-02-27 07:27:37
End at: 2018-02-27 07:28:07
Local clock offset: -4.962 ms
Remote clock offset: -5.986 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 3678.310 ms
Loss rate: 30.60%
-- Flow 1:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 3678.310 ms
Loss rate: 30.60%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-02-27 07:48:44

End at: 2018-02-27 07:49:14

Local clock offset: -2.633 ms

Remote clock offset: -0.748 ms

Below is generated by plot.py at 2018-02-27 08:16:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.00 Mbit/s

95th percentile per-packet one-way delay: 3699.005 ms

Loss rate: 37.32%

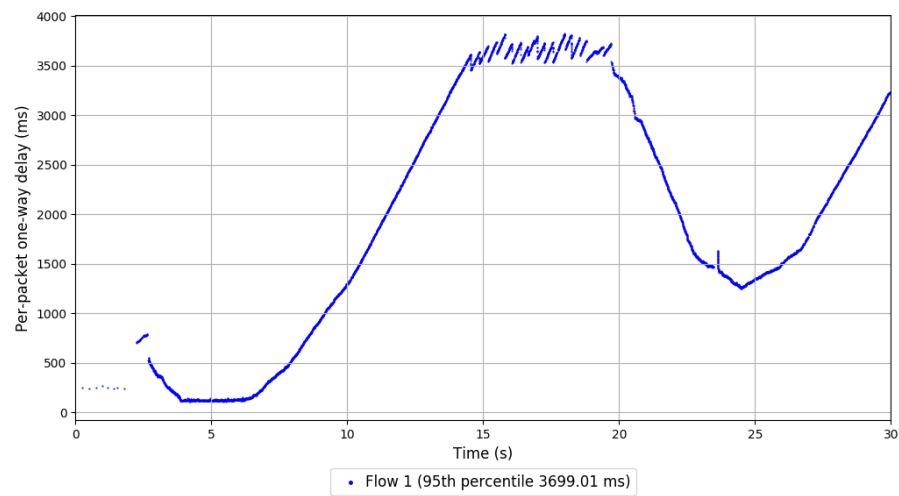
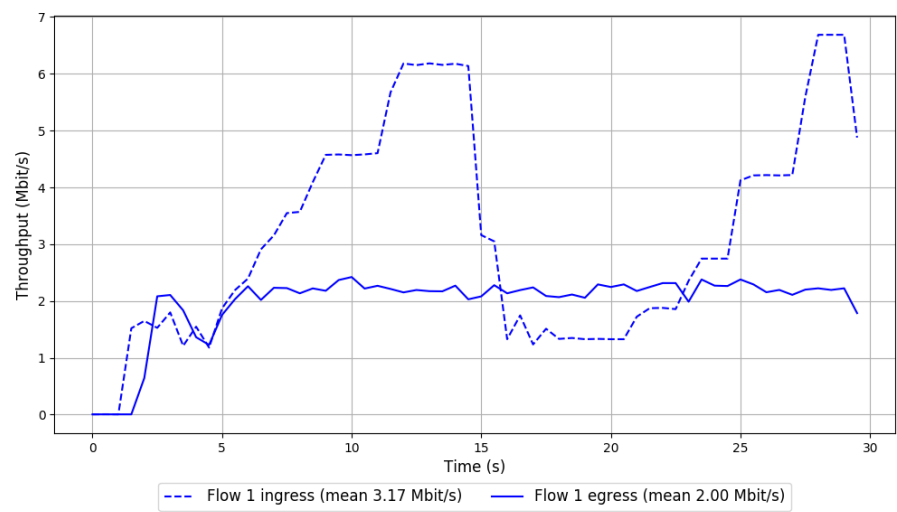
-- Flow 1:

Average throughput: 2.00 Mbit/s

95th percentile per-packet one-way delay: 3699.005 ms

Loss rate: 37.32%

Run 2: Report of Vivace-loss — Data Link

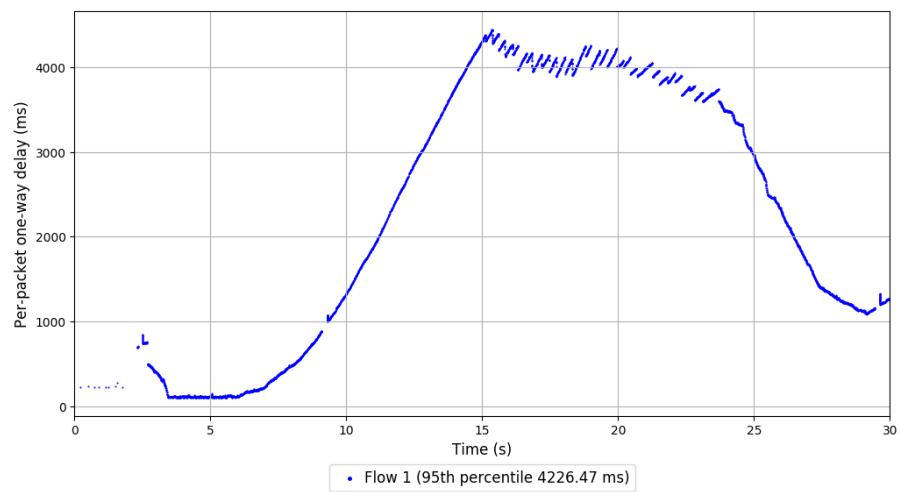
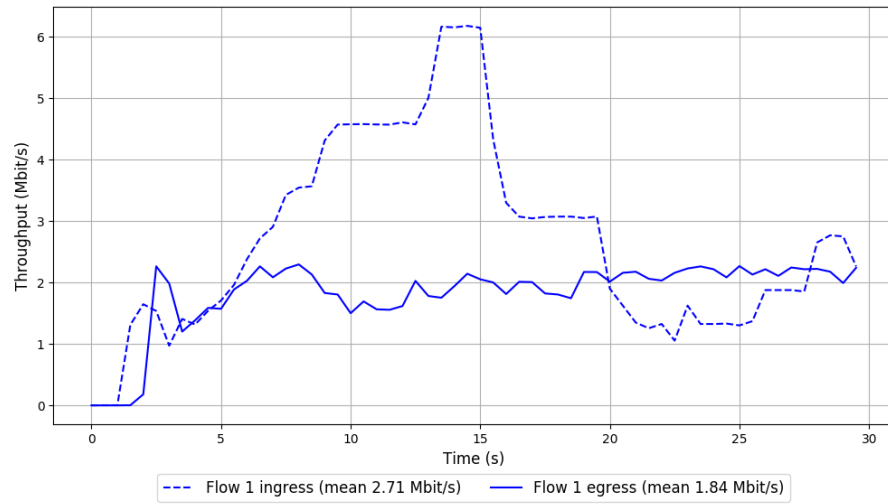


Run 3: Statistics of Vivace-loss

Start at: 2018-02-27 08:09:50
End at: 2018-02-27 08:10:20
Local clock offset: -1.844 ms
Remote clock offset: -5.021 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 4226.474 ms
Loss rate: 32.50%
-- Flow 1:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 4226.474 ms
Loss rate: 32.50%

Run 3: Report of Vivace-loss — Data Link



Run 1: Statistics of Vivace-LTE

Start at: 2018-02-27 07:15:55

End at: 2018-02-27 07:16:25

Local clock offset: -5.315 ms

Remote clock offset: -5.76 ms

Below is generated by plot.py at 2018-02-27 08:16:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 397.248 ms

Loss rate: 0.00%

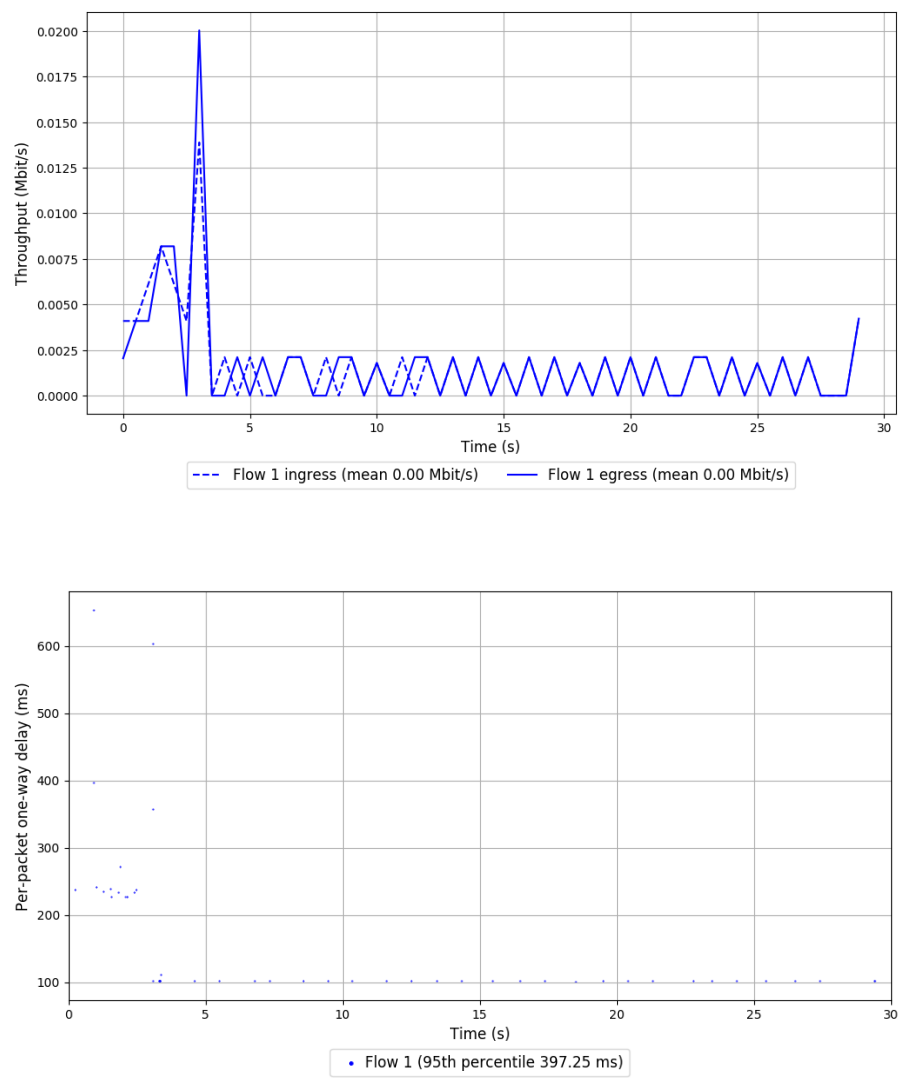
-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 397.248 ms

Loss rate: 0.00%

Run 1: Report of Vivace-LTE — Data Link

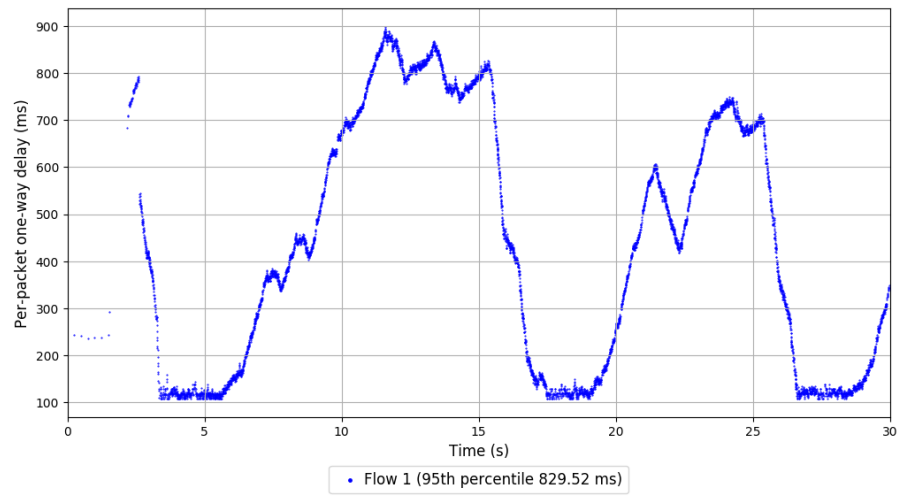
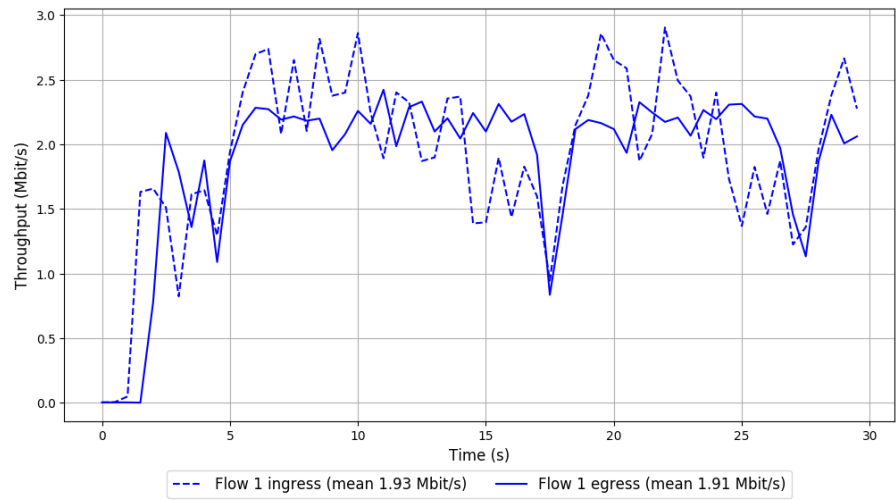


Run 2: Statistics of Vivace-LTE

Start at: 2018-02-27 07:37:00
End at: 2018-02-27 07:37:30
Local clock offset: -4.364 ms
Remote clock offset: -5.917 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 829.516 ms
Loss rate: 2.06%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 829.516 ms
Loss rate: 2.06%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-02-27 07:58:07
End at: 2018-02-27 07:58:37
Local clock offset: -1.953 ms
Remote clock offset: -0.641 ms

Below is generated by plot.py at 2018-02-27 08:16:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 680.356 ms
Loss rate: 2.41%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 680.356 ms
Loss rate: 2.41%

Run 3: Report of Vivace-LTE — Data Link

