

Pantheon Report

Generated at 2018-02-12 21:26:20 (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).

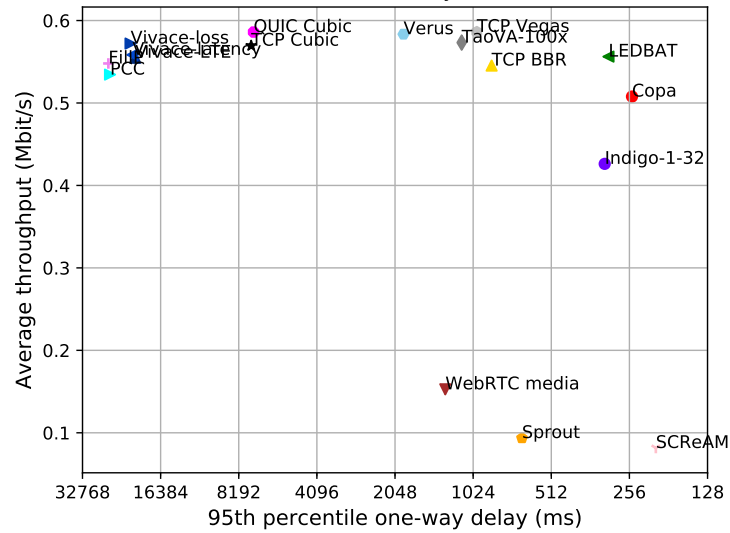
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

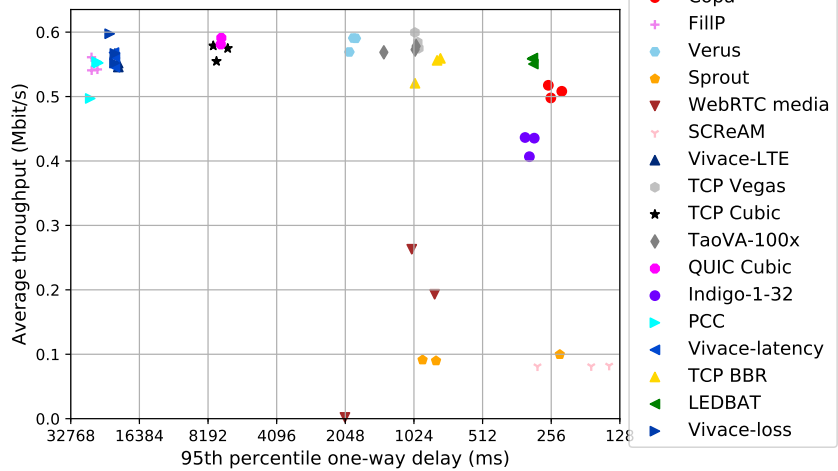
Git summary:

```
branch: master @ 2efdad57c2c56a9458b0d01ff33345e11732665
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
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 @ 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 @ a488197ddd041ace68a42849b2540ad834825f42
```

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



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



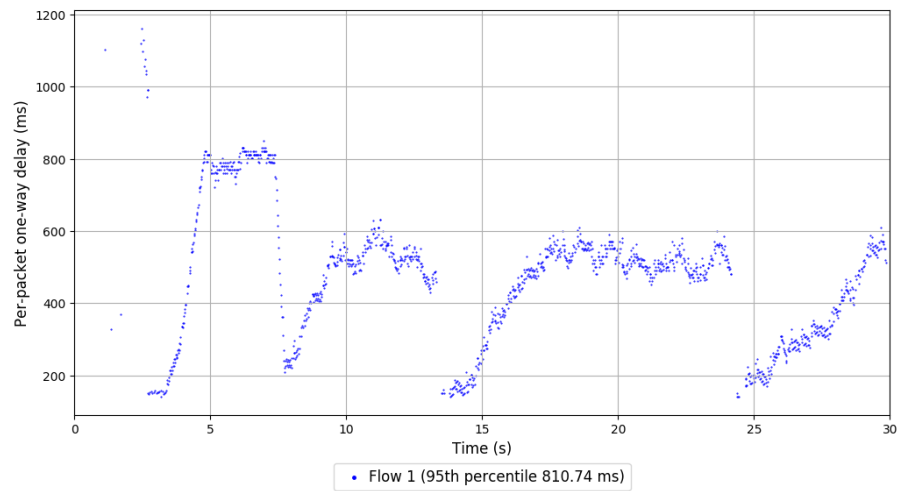
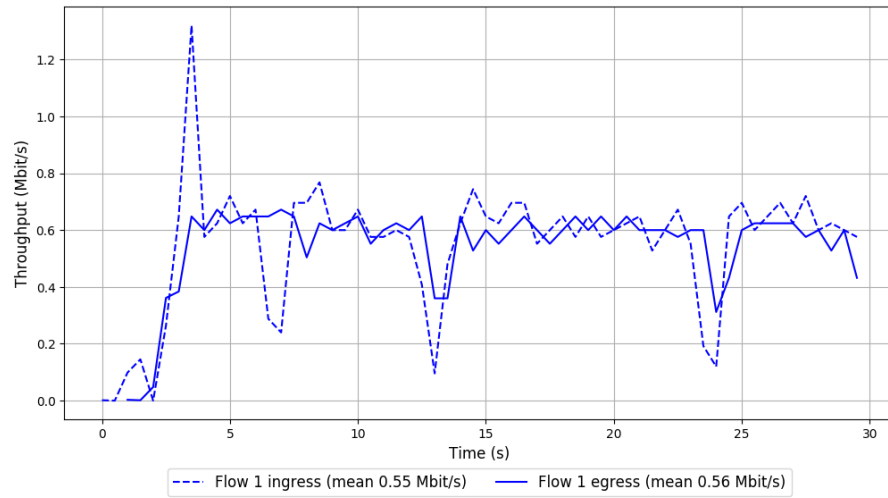
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.55	869.20	2.29
TCP Cubic	3	0.57	7336.13	30.00
LEDBAT	3	0.56	308.38	1.27
PCC	3	0.53	25658.91	98.59
QUIC Cubic	2	0.58	7184.48	28.89
SCReAM	3	0.08	202.53	0.75
WebRTC media	3	0.15	1311.11	1.15
Sprout	3	0.09	664.16	0.48
TaoVA-100x	3	0.57	1133.85	2.55
TCP Vegas	3	0.58	991.41	1.27
Verus	3	0.58	1899.44	4.45
Copa	3	0.51	250.22	3.63
FillP	3	0.55	26046.77	98.57
Indigo-1-32	3	0.43	318.75	1.24
Vivace-latency	3	0.56	21045.40	71.78
Vivace-loss	3	0.57	21387.88	89.32
Vivace-LTE	3	0.56	20521.27	71.82

Run 1: Statistics of TCP BBR

Start at: 2018-02-12 19:26:14
End at: 2018-02-12 19:26:44
Local clock offset: -14.099 ms
Remote clock offset: 0.569 ms

Below is generated by plot.py at 2018-02-12 21:25:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 810.740 ms
Loss rate: 2.42%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 810.740 ms
Loss rate: 2.42%

Run 1: Report of TCP BBR — Data Link

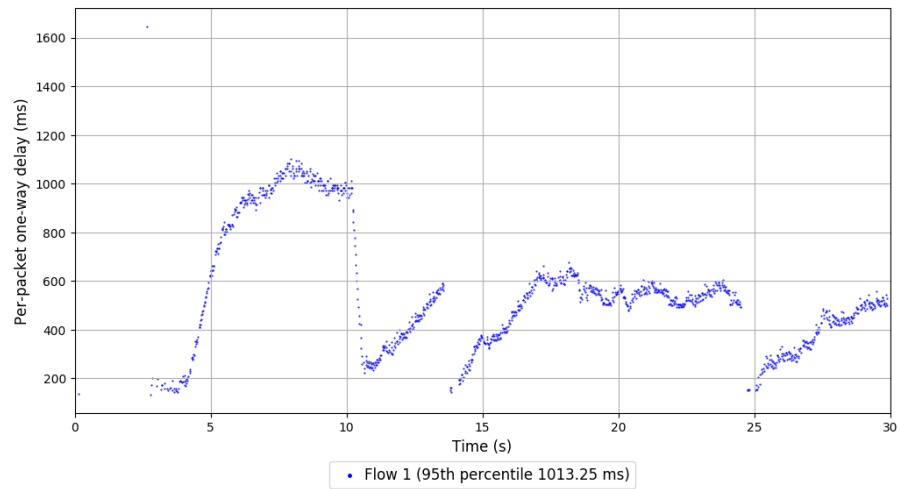
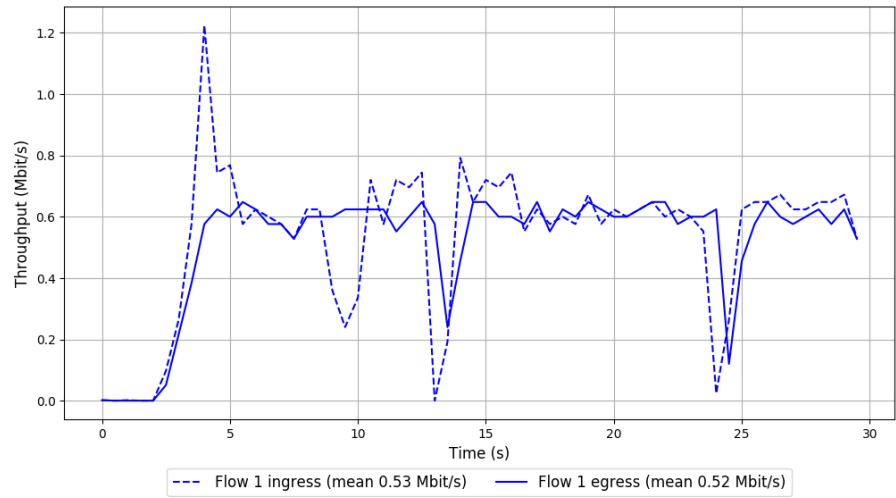


Run 2: Statistics of TCP BBR

Start at: 2018-02-12 19:47:21
End at: 2018-02-12 19:47:51
Local clock offset: -11.665 ms
Remote clock offset: -4.301 ms

Below is generated by plot.py at 2018-02-12 21:25:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 1013.246 ms
Loss rate: 2.20%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 1013.246 ms
Loss rate: 2.20%

Run 2: Report of TCP BBR — Data Link

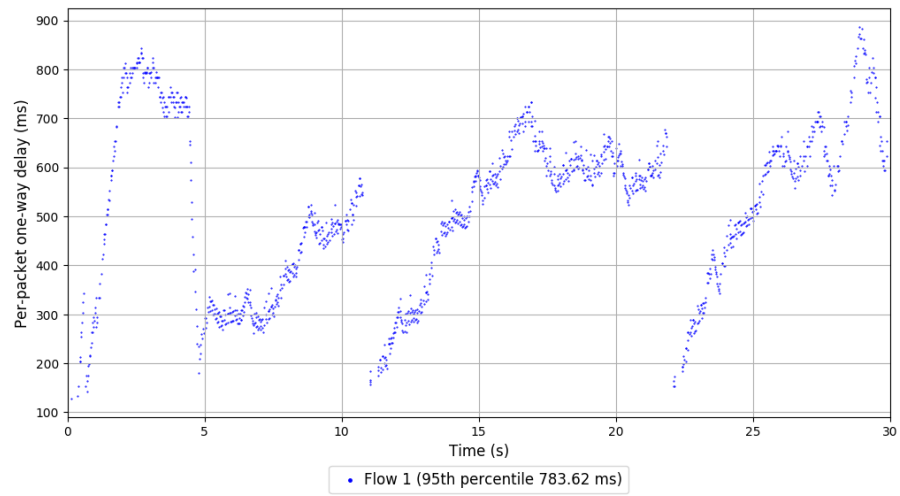
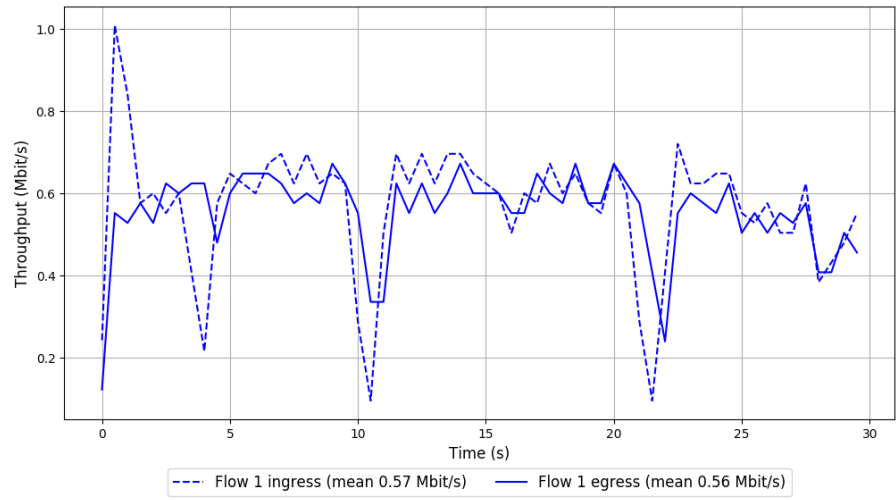


Run 3: Statistics of TCP BBR

Start at: 2018-02-12 20:08:31
End at: 2018-02-12 20:09:01
Local clock offset: -15.832 ms
Remote clock offset: 1.419 ms

Below is generated by plot.py at 2018-02-12 21:25:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 783.617 ms
Loss rate: 2.25%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 783.617 ms
Loss rate: 2.25%

Run 3: Report of TCP BBR — Data Link

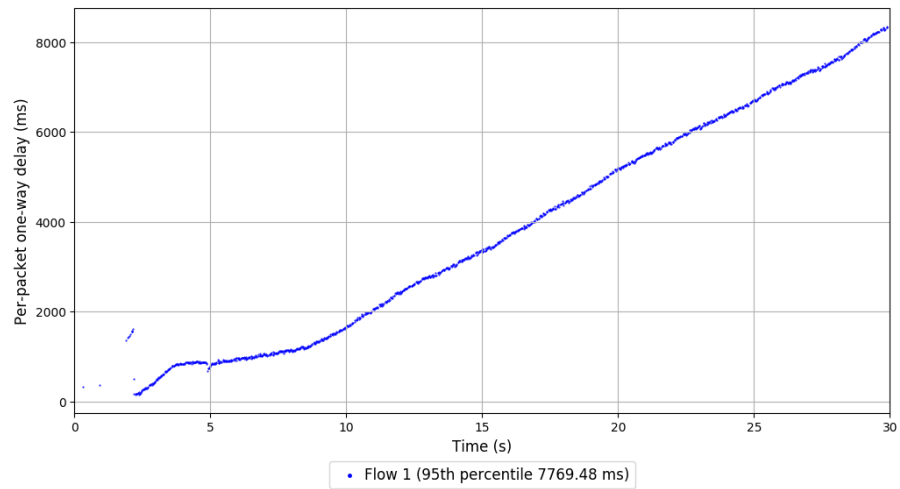
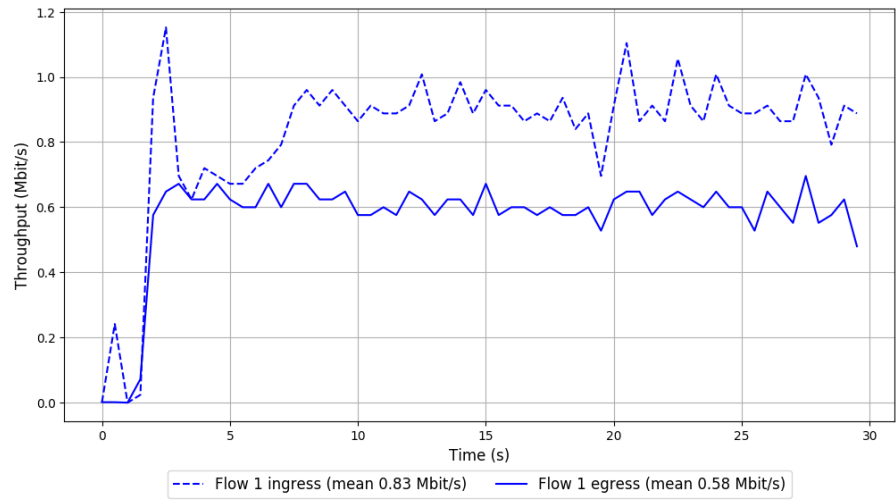


Run 1: Statistics of TCP Cubic

Start at: 2018-02-12 19:30:55
End at: 2018-02-12 19:31:25
Local clock offset: -12.822 ms
Remote clock offset: -4.279 ms

Below is generated by plot.py at 2018-02-12 21:25:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7769.475 ms
Loss rate: 30.94%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7769.475 ms
Loss rate: 30.94%

Run 1: Report of TCP Cubic — Data Link

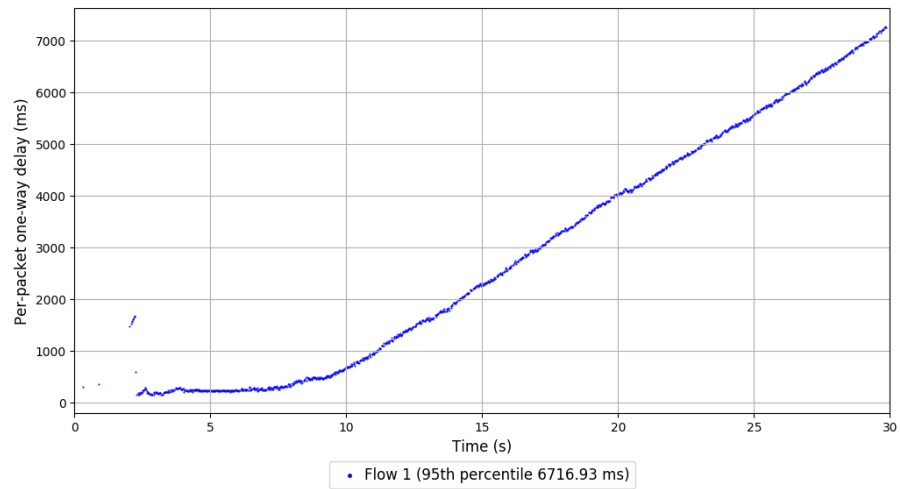
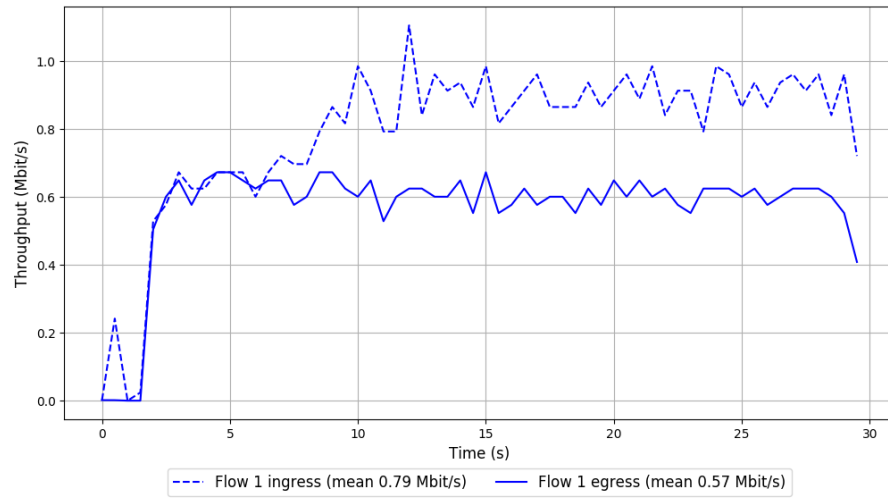


Run 2: Statistics of TCP Cubic

Start at: 2018-02-12 19:52:05
End at: 2018-02-12 19:52:35
Local clock offset: -11.703 ms
Remote clock offset: -5.227 ms

Below is generated by plot.py at 2018-02-12 21:25:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 6716.933 ms
Loss rate: 28.17%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 6716.933 ms
Loss rate: 28.17%

Run 2: Report of TCP Cubic — Data Link

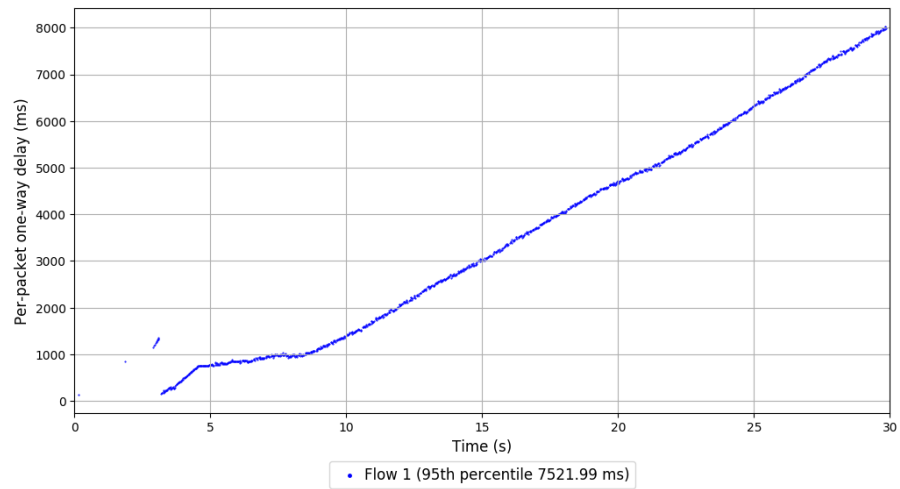
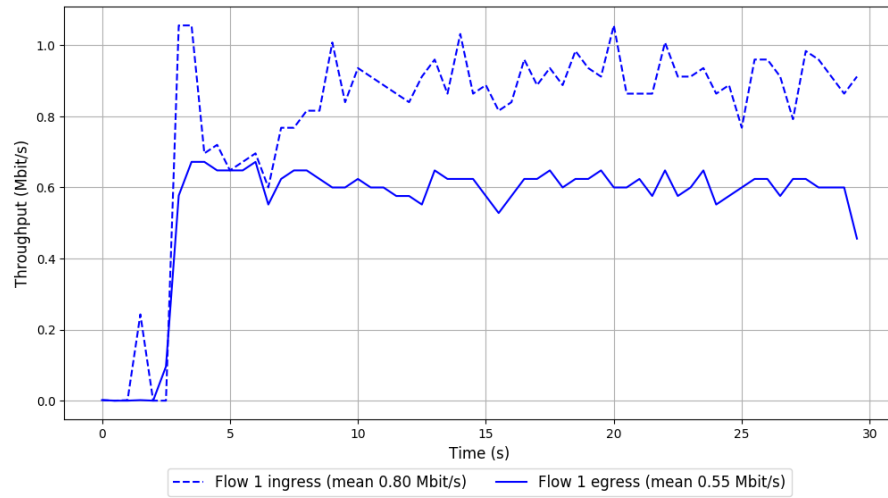


Run 3: Statistics of TCP Cubic

Start at: 2018-02-12 20:13:17
End at: 2018-02-12 20:13:47
Local clock offset: -16.746 ms
Remote clock offset: 1.582 ms

Below is generated by plot.py at 2018-02-12 21:25:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 7521.992 ms
Loss rate: 30.88%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 7521.992 ms
Loss rate: 30.88%

Run 3: Report of TCP Cubic — Data Link

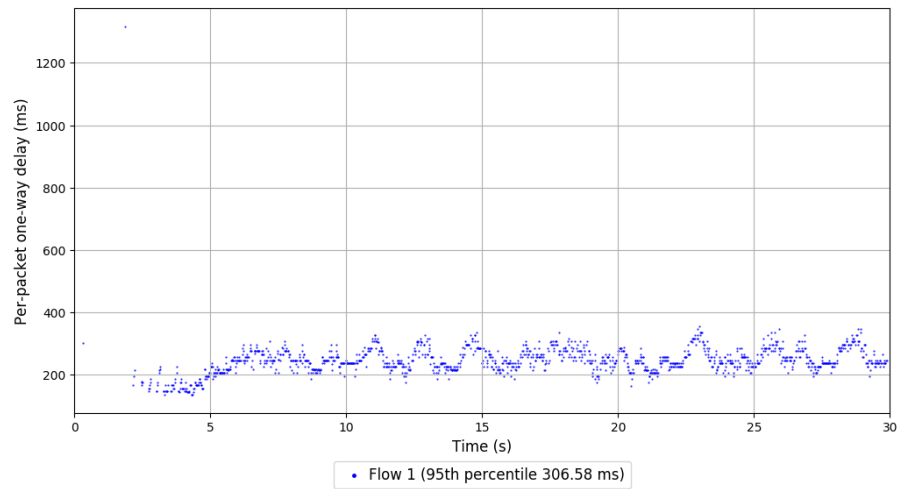
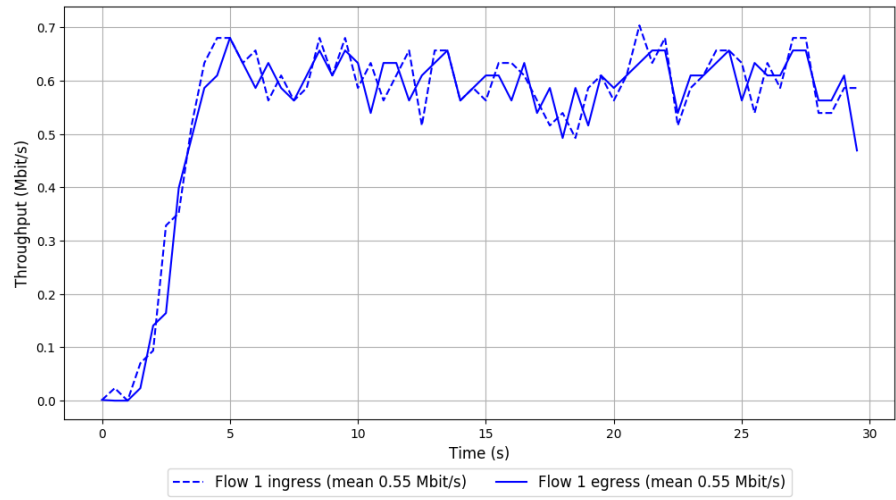


```
Run 1: Statistics of LEDBAT

Start at: 2018-02-12 19:32:06
End at: 2018-02-12 19:32:36
Local clock offset: -13.029 ms
Remote clock offset: 0.36 ms

# Below is generated by plot.py at 2018-02-12 21:25:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 306.582 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 306.582 ms
Loss rate: 1.21%
```

Run 1: Report of LEDBAT — Data Link

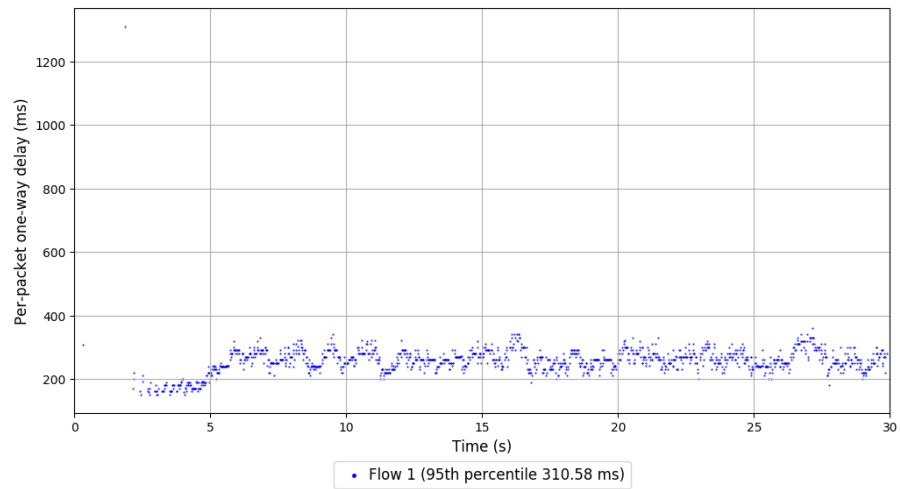
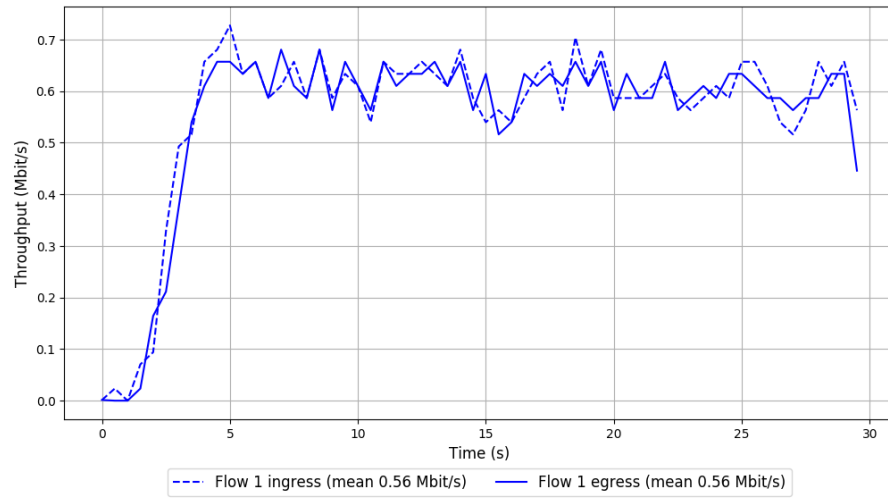


Run 2: Statistics of LEDBAT

Start at: 2018-02-12 19:53:16
End at: 2018-02-12 19:53:46
Local clock offset: -11.849 ms
Remote clock offset: -5.256 ms

Below is generated by plot.py at 2018-02-12 21:25:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 310.576 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 310.576 ms
Loss rate: 1.33%

Run 2: Report of LEDBAT — Data Link

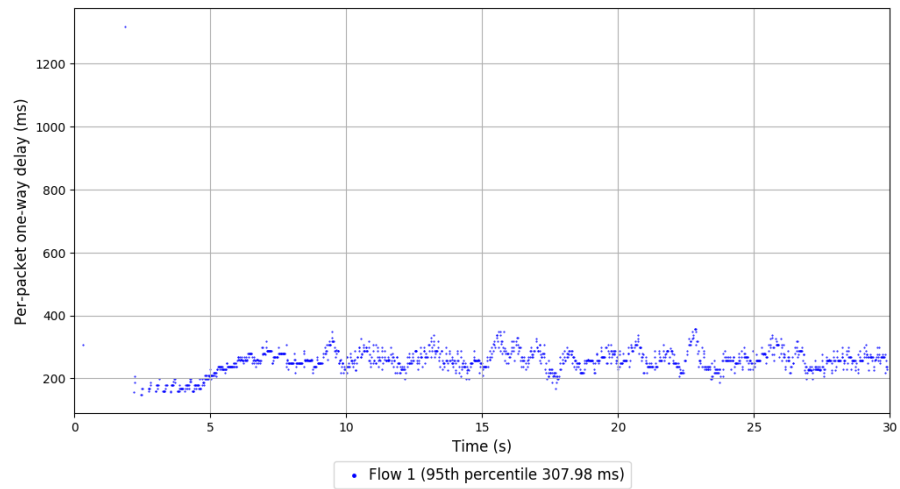
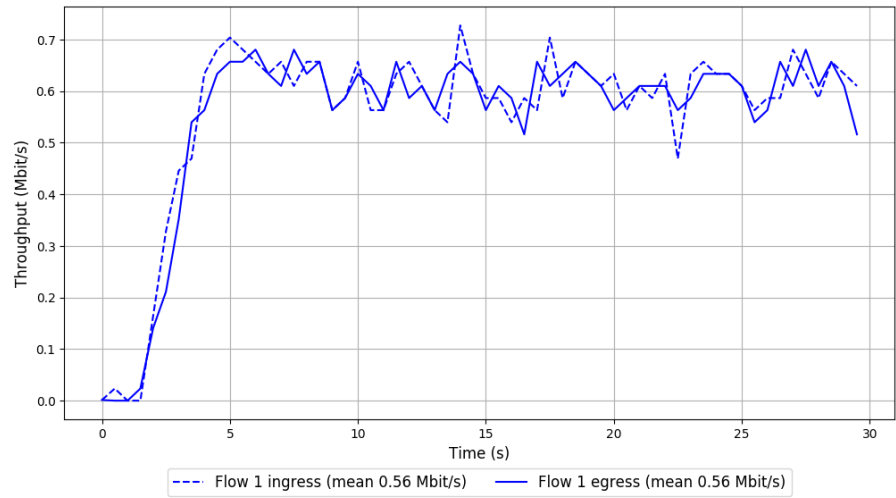


Run 3: Statistics of LEDBAT

Start at: 2018-02-12 20:14:28
End at: 2018-02-12 20:14:58
Local clock offset: -15.25 ms
Remote clock offset: -3.979 ms

Below is generated by plot.py at 2018-02-12 21:25:47
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 307.983 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 307.983 ms
Loss rate: 1.26%

Run 3: Report of LEDBAT — Data Link

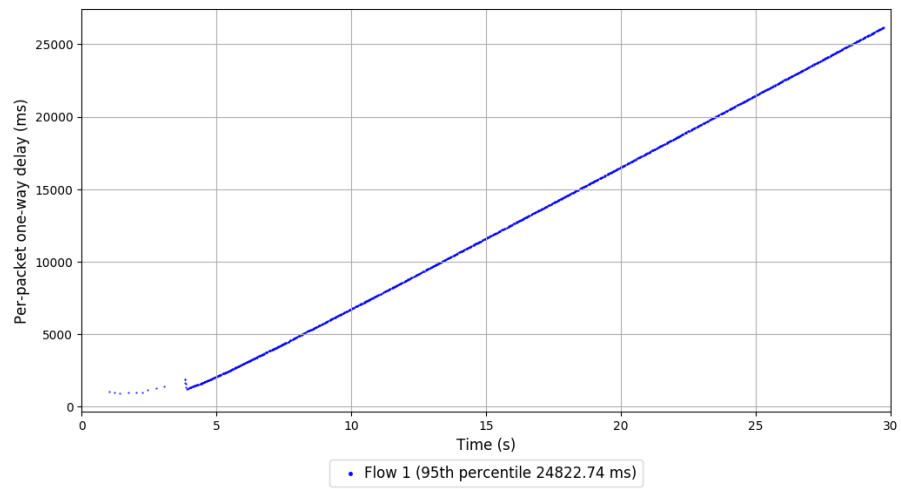
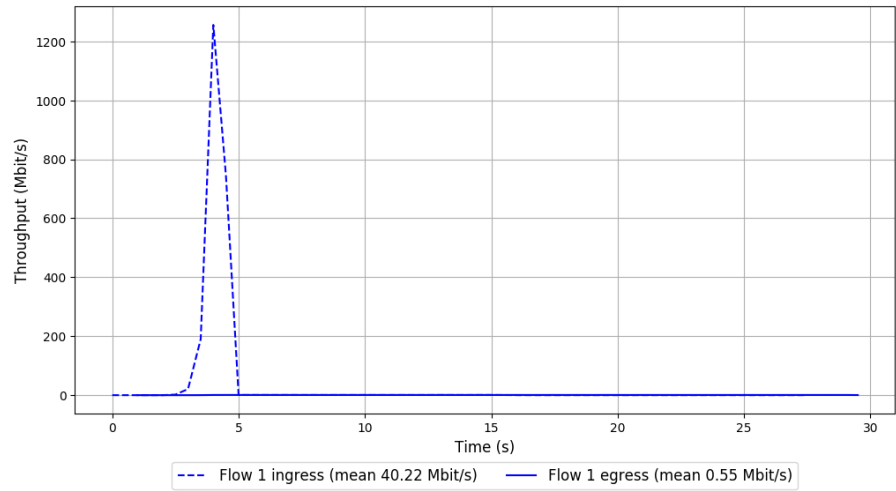


Run 1: Statistics of PCC

Start at: 2018-02-12 19:29:44
End at: 2018-02-12 19:30:14
Local clock offset: -12.857 ms
Remote clock offset: 1.474 ms

Below is generated by plot.py at 2018-02-12 21:26:09
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 24822.739 ms
Loss rate: 98.58%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 24822.739 ms
Loss rate: 98.58%

Run 1: Report of PCC — Data Link

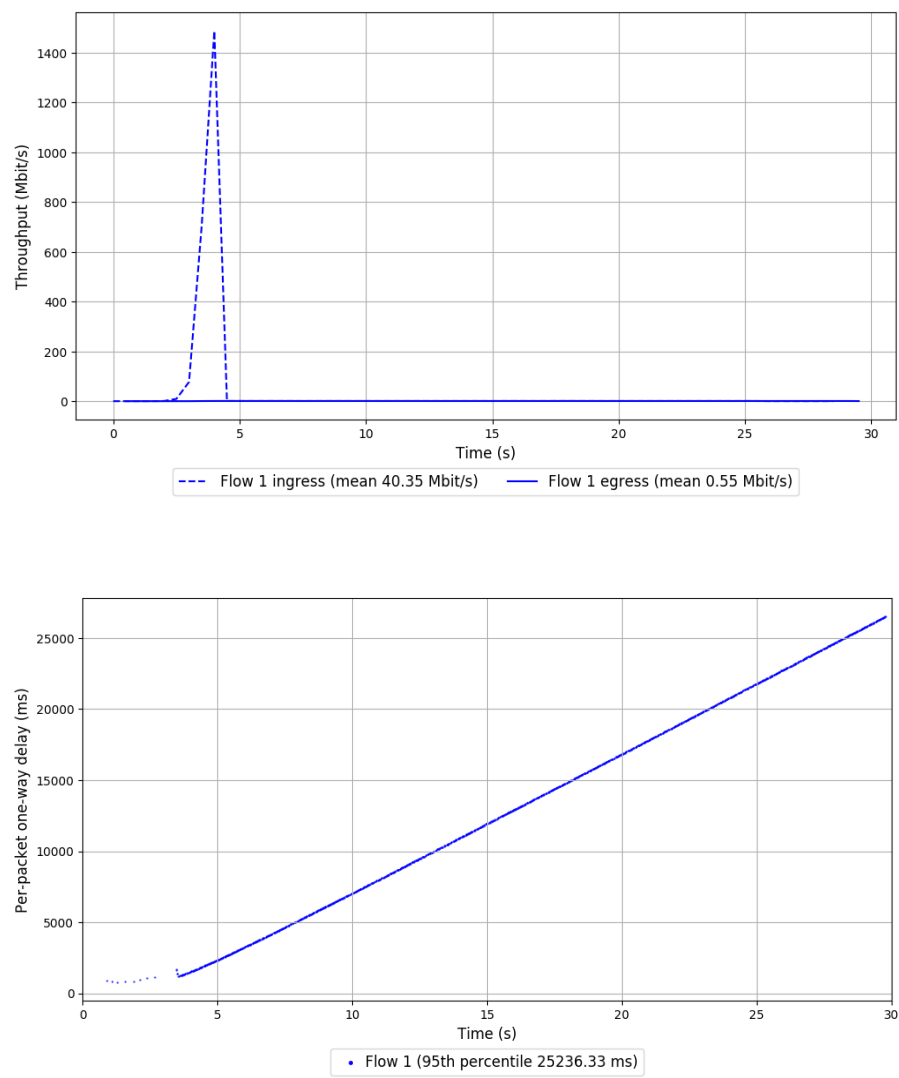


Run 2: Statistics of PCC

Start at: 2018-02-12 19:50:54
End at: 2018-02-12 19:51:24
Local clock offset: -11.659 ms
Remote clock offset: -4.345 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 25236.329 ms
Loss rate: 98.61%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 25236.329 ms
Loss rate: 98.61%

Run 2: Report of PCC — Data Link

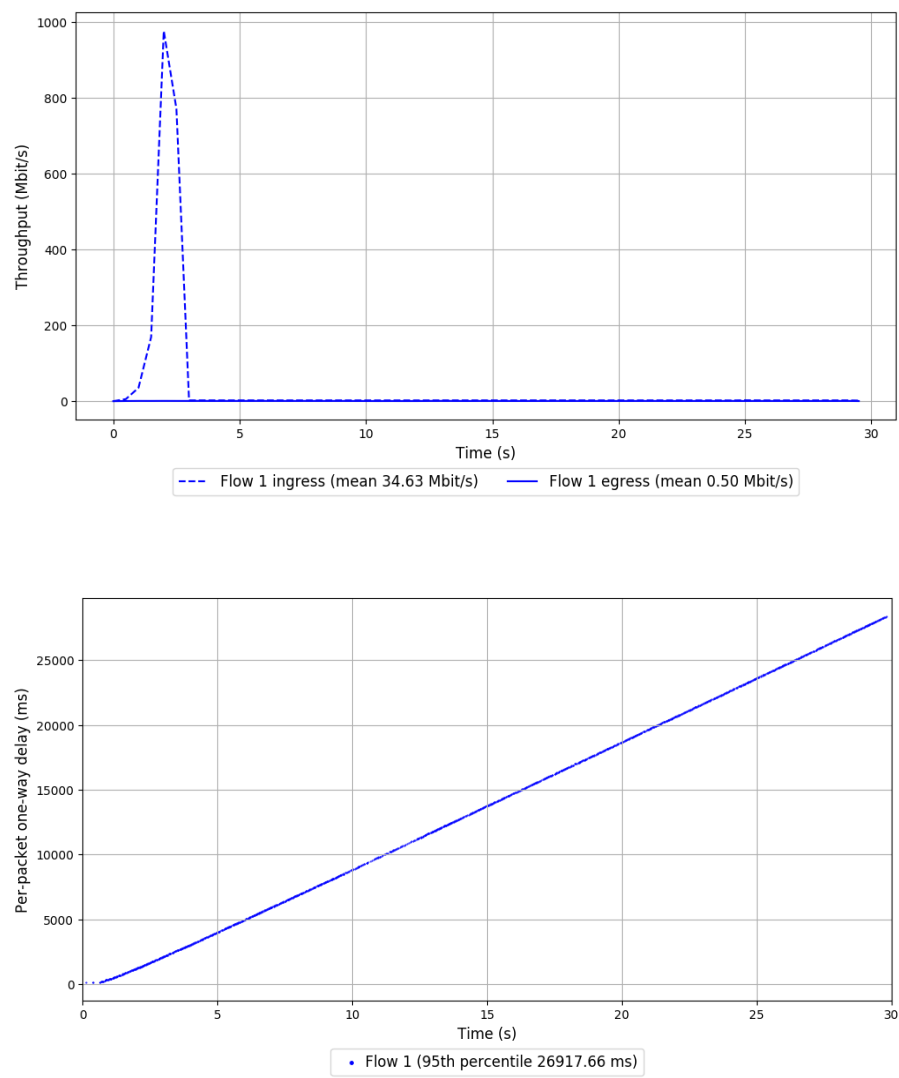


Run 3: Statistics of PCC

Start at: 2018-02-12 20:12:06
End at: 2018-02-12 20:12:37
Local clock offset: -17.146 ms
Remote clock offset: -4.088 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 26917.660 ms
Loss rate: 98.58%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 26917.660 ms
Loss rate: 98.58%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

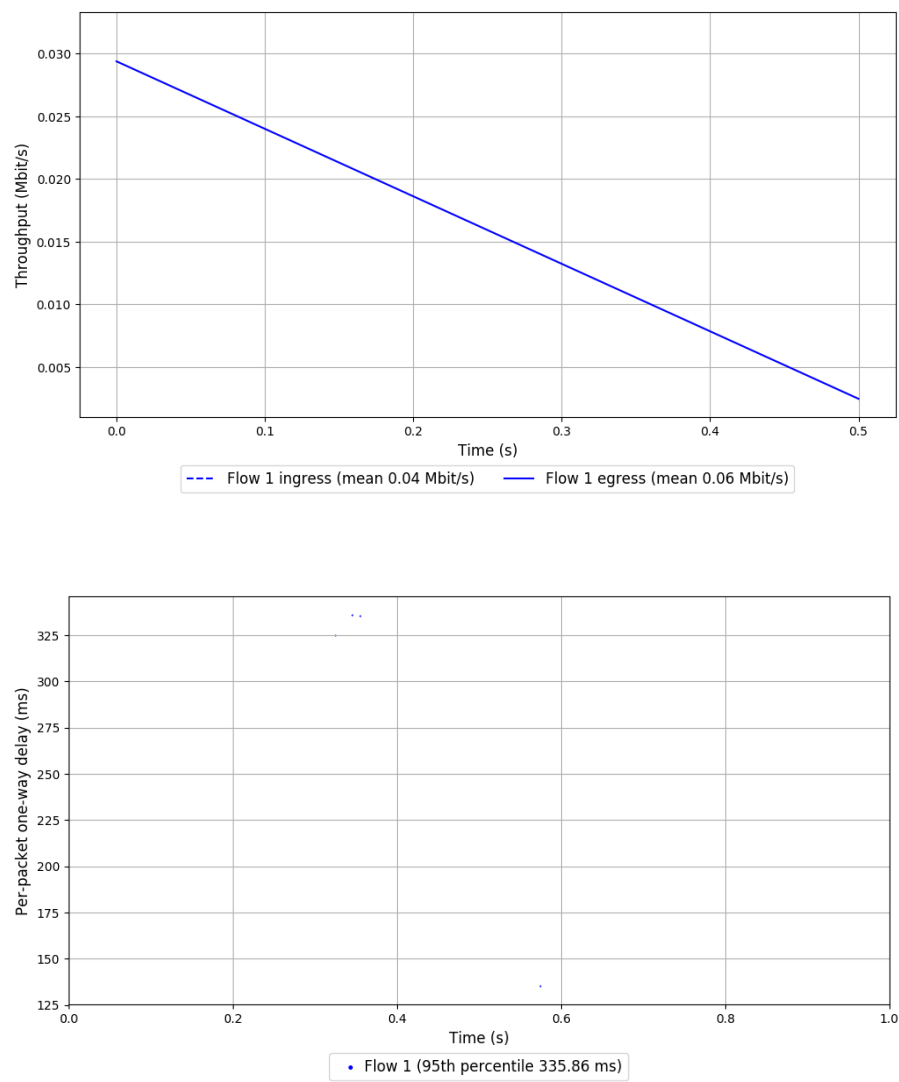
Start at: 2018-02-12 19:36:46

End at: 2018-02-12 19:37:16

Local clock offset: -14.563 ms

Remote clock offset: -4.749 ms

Run 1: Report of QUIC Cubic — Data Link

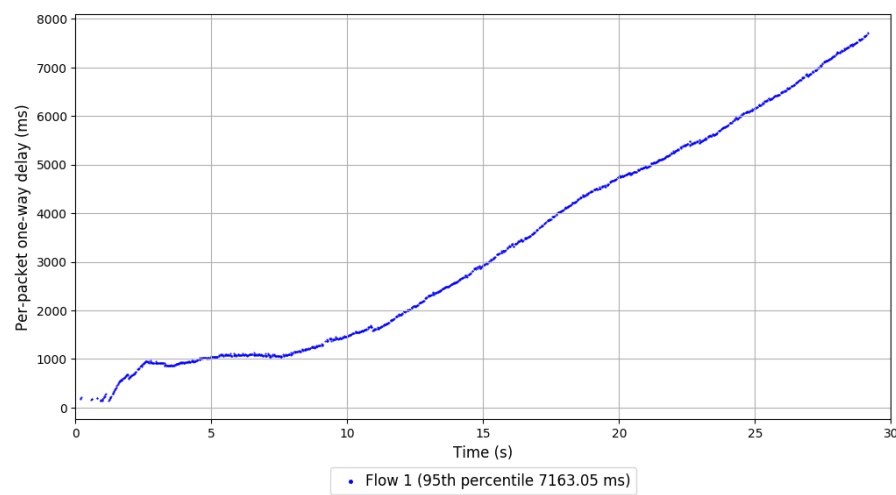
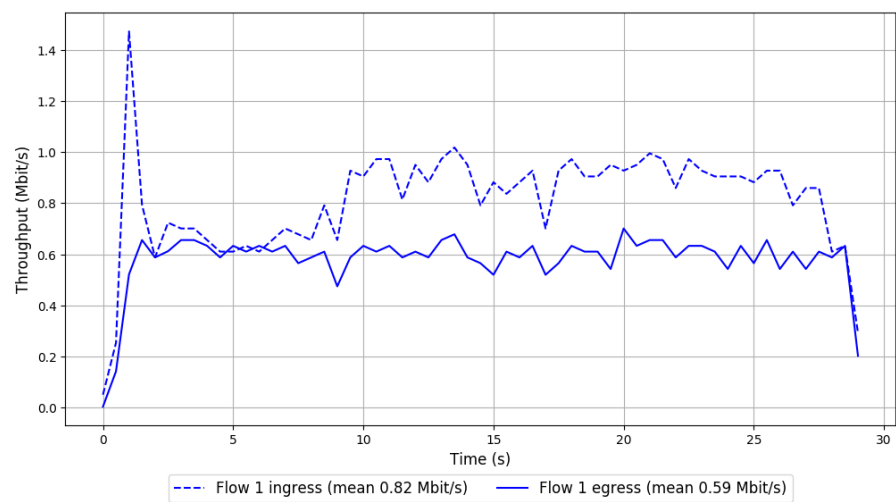


Run 2: Statistics of QUIC Cubic

Start at: 2018-02-12 19:57:56
End at: 2018-02-12 19:58:26
Local clock offset: -12.73 ms
Remote clock offset: -4.501 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7163.049 ms
Loss rate: 28.22%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7163.049 ms
Loss rate: 28.22%

Run 2: Report of QUIC Cubic — Data Link

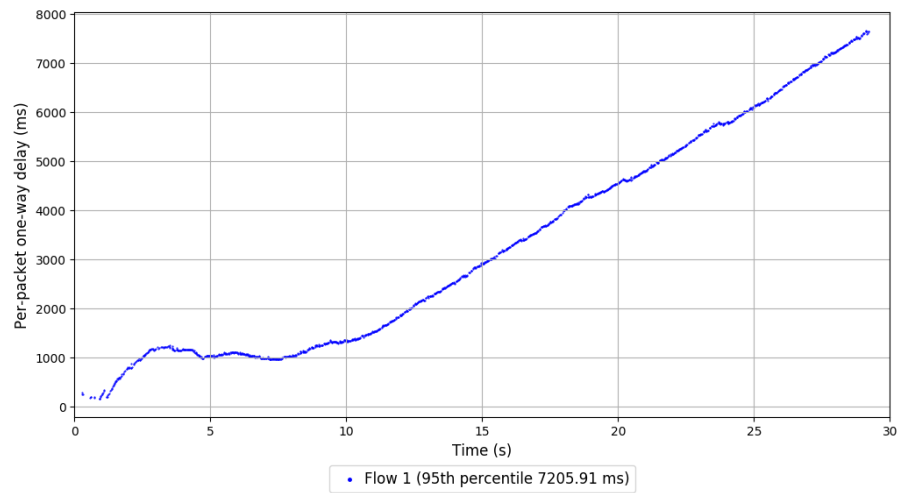
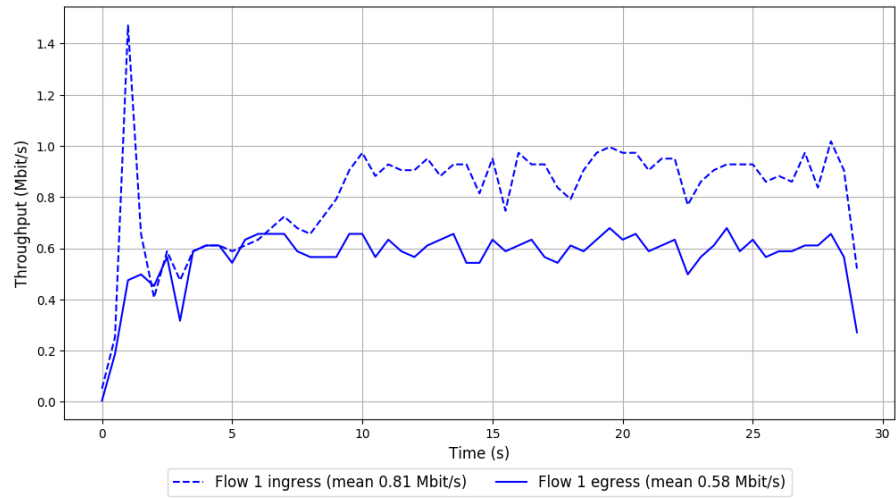


Run 3: Statistics of QUIC Cubic

Start at: 2018-02-12 20:19:09
End at: 2018-02-12 20:19:39
Local clock offset: -10.645 ms
Remote clock offset: -4.76 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7205.908 ms
Loss rate: 29.57%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7205.908 ms
Loss rate: 29.57%

Run 3: Report of QUIC Cubic — Data Link

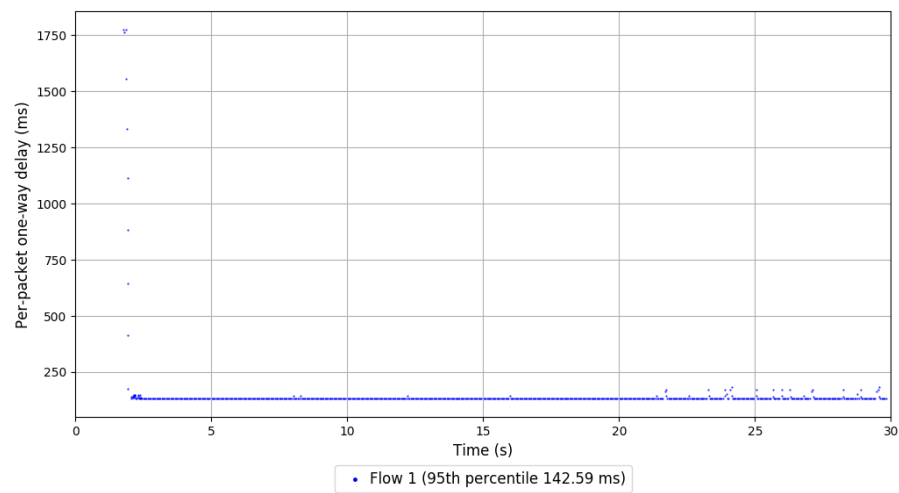
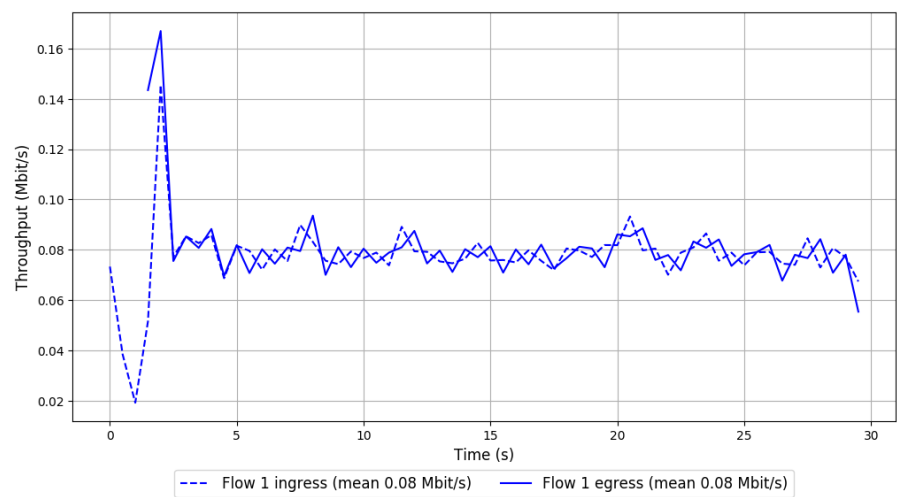


```
Run 1: Statistics of SCReAM

Start at: 2018-02-12 19:21:33
End at: 2018-02-12 19:22:03
Local clock offset: -22.351 ms
Remote clock offset: -4.334 ms

# Below is generated by plot.py at 2018-02-12 21:26:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 142.595 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 142.595 ms
Loss rate: 0.79%
```

Run 1: Report of SReAM — Data Link

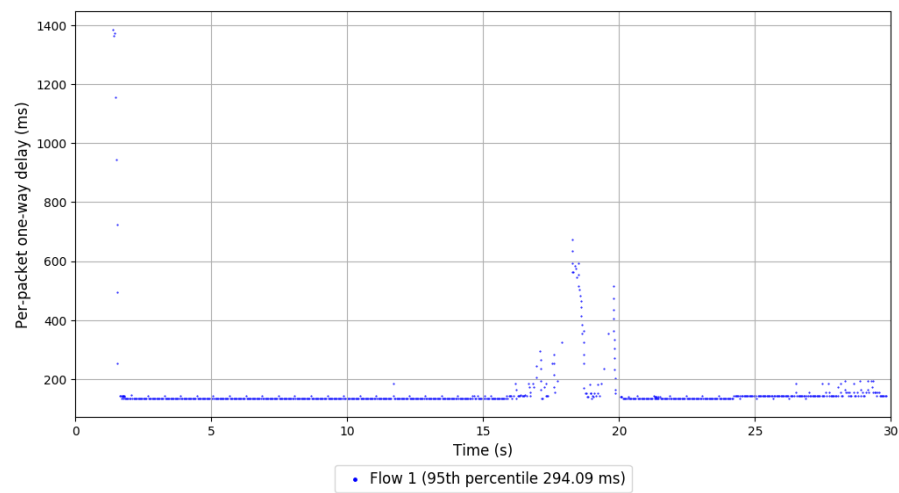
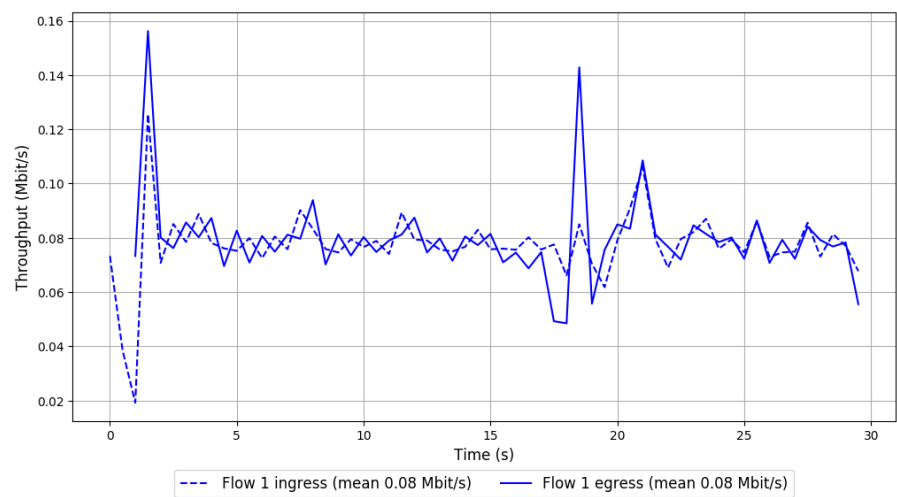


Run 2: Statistics of SCReAM

Start at: 2018-02-12 19:42:40
End at: 2018-02-12 19:43:10
Local clock offset: -12.888 ms
Remote clock offset: -4.15 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 294.088 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 294.088 ms
Loss rate: 0.79%

Run 2: Report of SReAM — Data Link

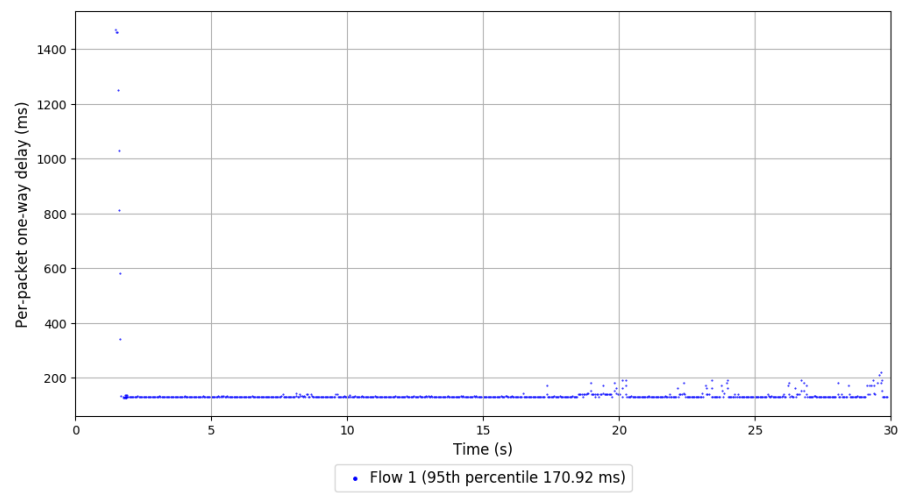
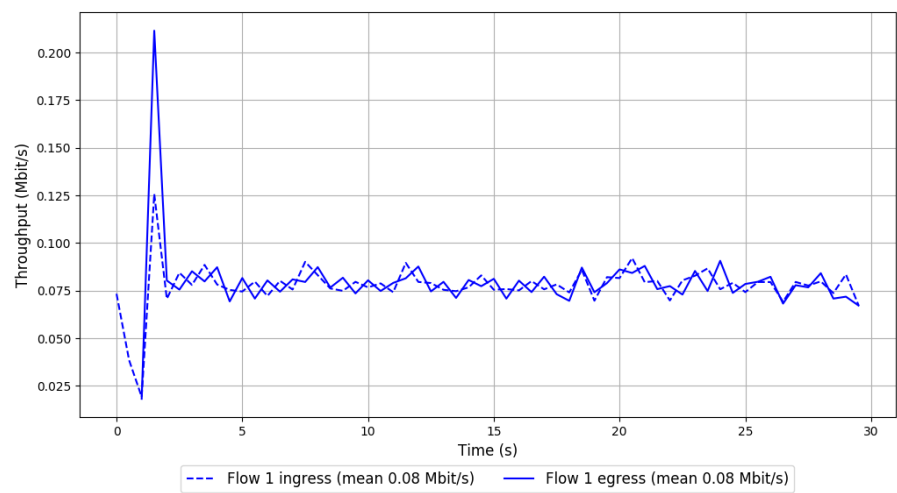


Run 3: Statistics of SCReAM

Start at: 2018-02-12 20:03:50
End at: 2018-02-12 20:04:20
Local clock offset: -14.349 ms
Remote clock offset: 1.119 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 170.919 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 170.919 ms
Loss rate: 0.66%

Run 3: Report of SReAM — Data Link

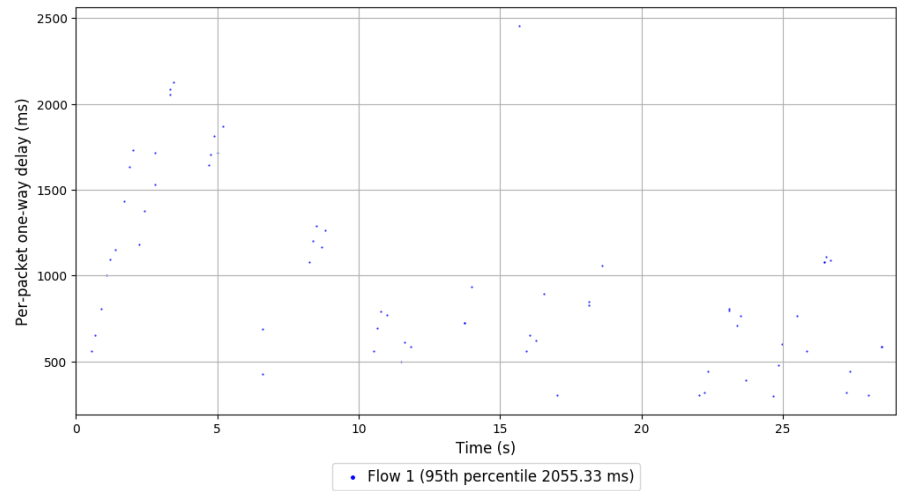
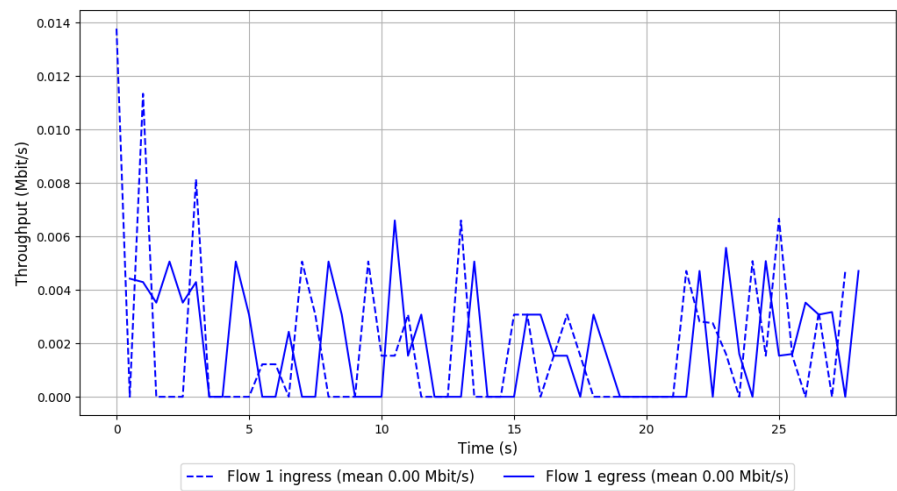


Run 1: Statistics of WebRTC media

Start at: 2018-02-12 19:35:36
End at: 2018-02-12 19:36:06
Local clock offset: -14.033 ms
Remote clock offset: 0.996 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2055.332 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2055.332 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link

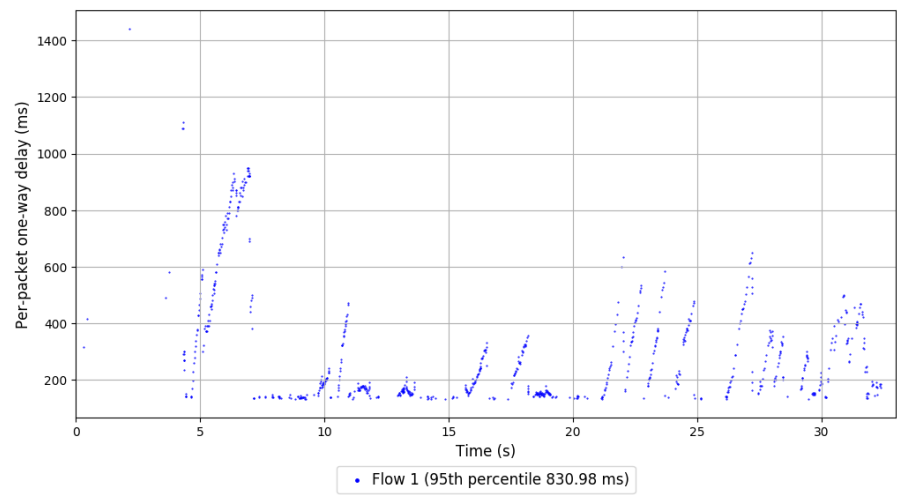
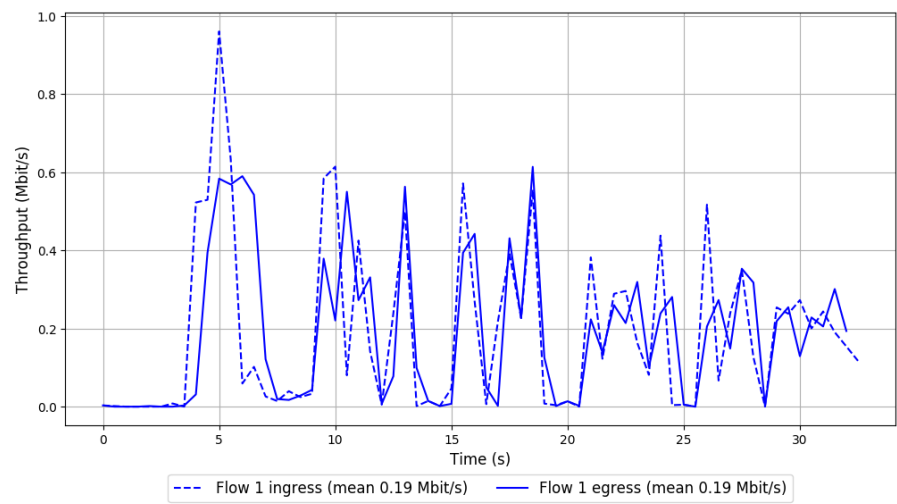


Run 2: Statistics of WebRTC media

Start at: 2018-02-12 19:56:46
End at: 2018-02-12 19:57:16
Local clock offset: -12.516 ms
Remote clock offset: -4.408 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 830.982 ms
Loss rate: 1.90%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 830.982 ms
Loss rate: 1.90%

Run 2: Report of WebRTC media — Data Link

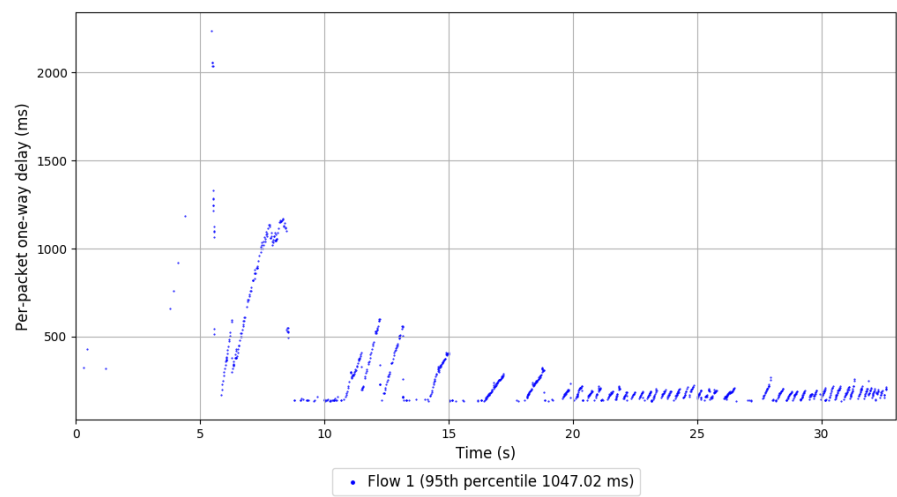
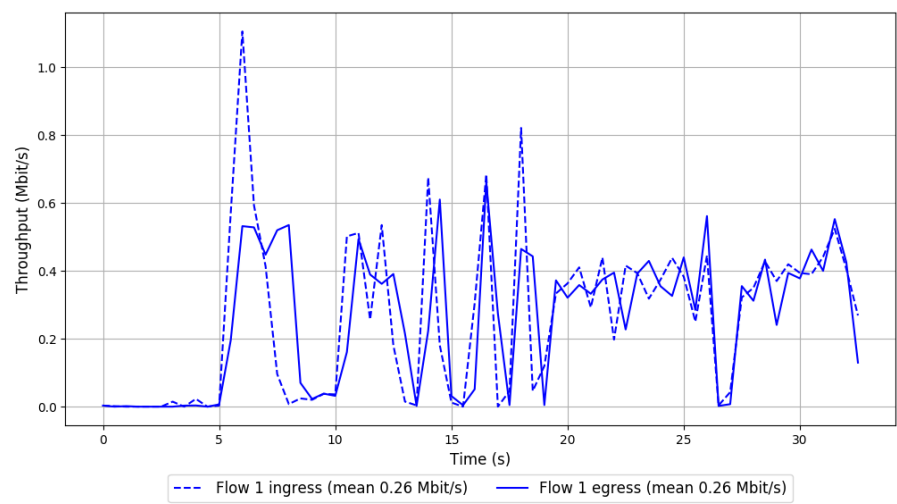


Run 3: Statistics of WebRTC media

Start at: 2018-02-12 20:17:59
End at: 2018-02-12 20:18:29
Local clock offset: -11.4 ms
Remote clock offset: -3.988 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 1047.020 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 1047.020 ms
Loss rate: 1.56%

Run 3: Report of WebRTC media — Data Link

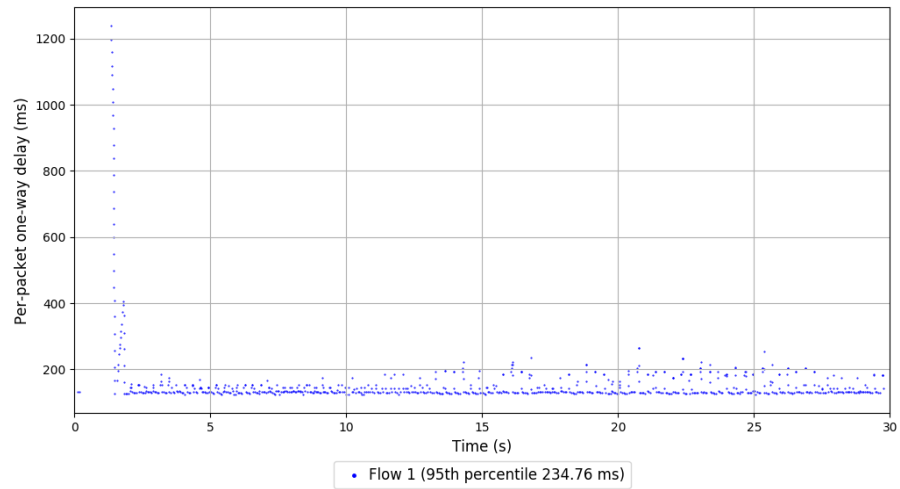
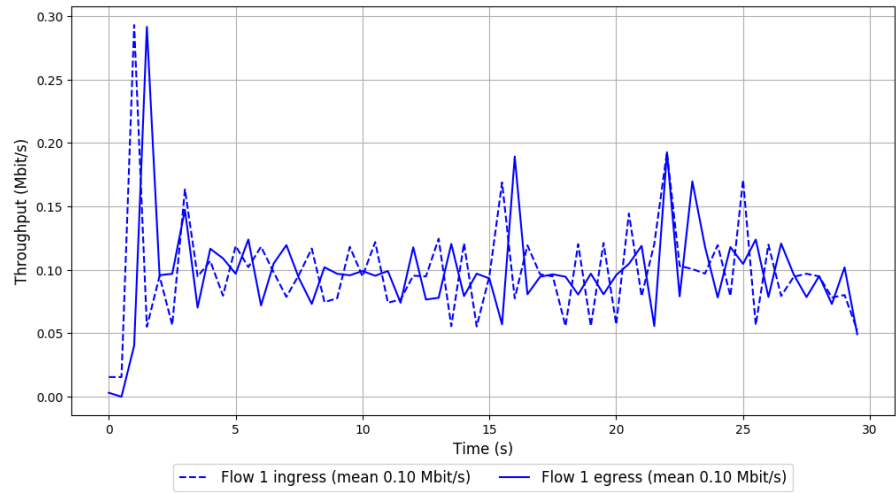


Run 1: Statistics of Sprout

Start at: 2018-02-12 19:23:53
End at: 2018-02-12 19:24:23
Local clock offset: -17.147 ms
Remote clock offset: 1.257 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 234.763 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 234.763 ms
Loss rate: 0.14%

Run 1: Report of Sprout — Data Link

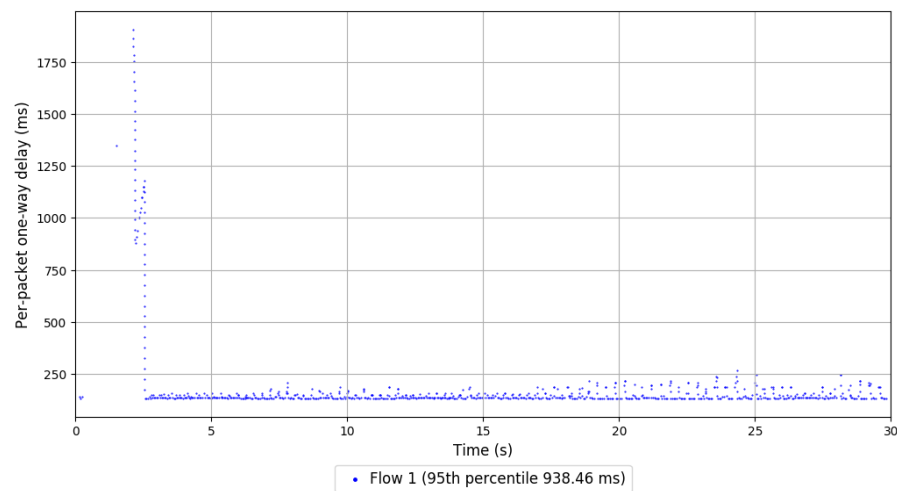
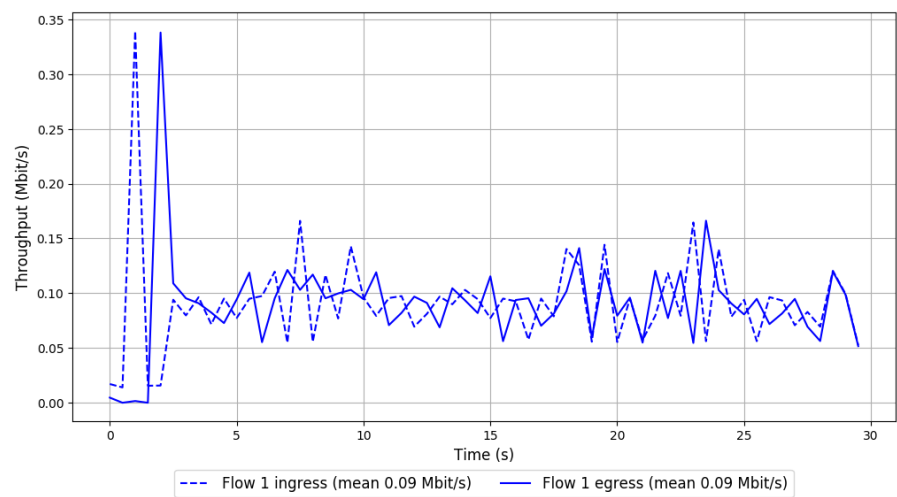


Run 2: Statistics of Sprout

Start at: 2018-02-12 19:45:00
End at: 2018-02-12 19:45:30
Local clock offset: -12.159 ms
Remote clock offset: -5.034 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 938.455 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 938.455 ms
Loss rate: 0.84%

Run 2: Report of Sprout — Data Link

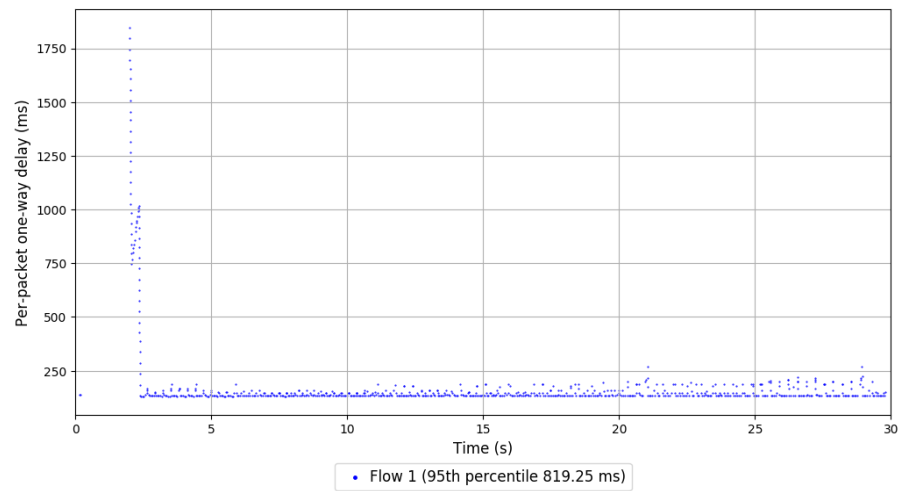
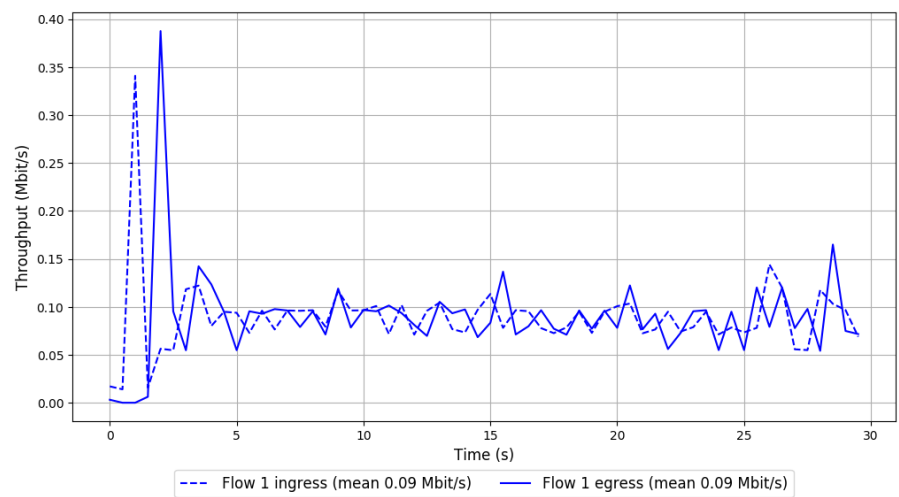


Run 3: Statistics of Sprout

Start at: 2018-02-12 20:06:10
End at: 2018-02-12 20:06:40
Local clock offset: -15.053 ms
Remote clock offset: 0.386 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 819.250 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 819.250 ms
Loss rate: 0.47%

Run 3: Report of Sprout — Data Link

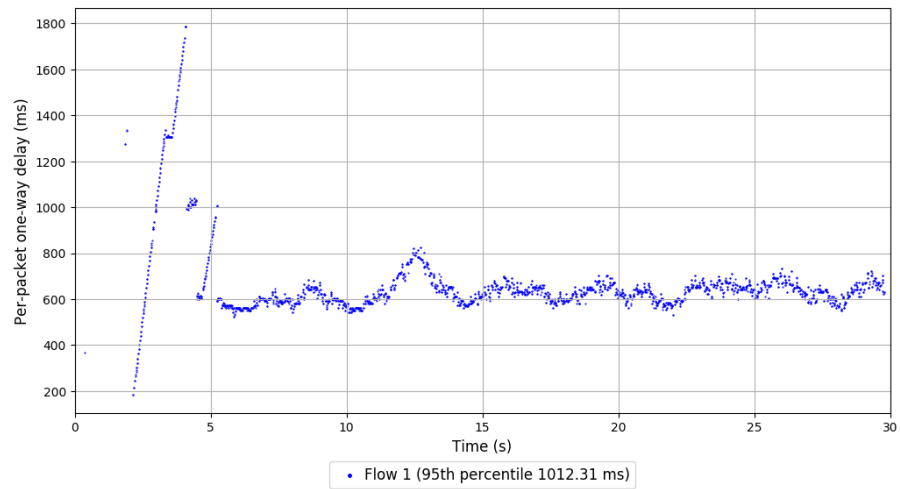
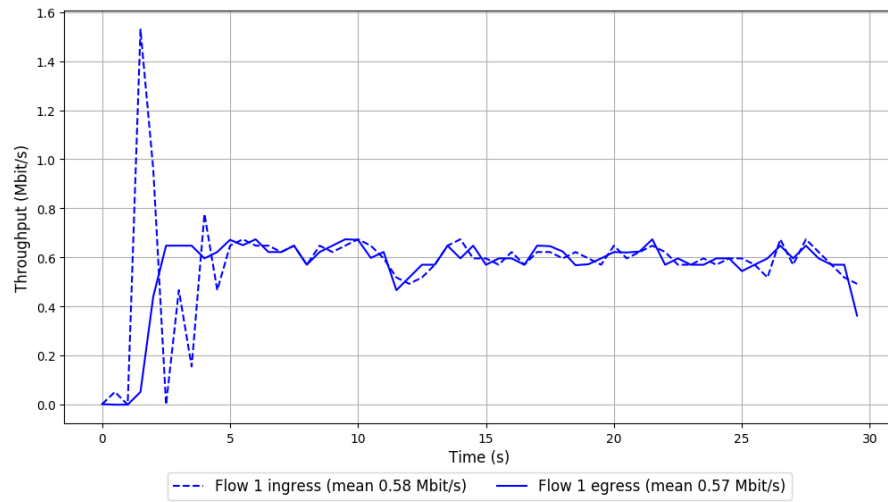


Run 1: Statistics of TaoVA-100x

Start at: 2018-02-12 19:20:23
End at: 2018-02-12 19:20:53
Local clock offset: -21.071 ms
Remote clock offset: -3.57 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1012.307 ms
Loss rate: 2.48%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1012.307 ms
Loss rate: 2.48%

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

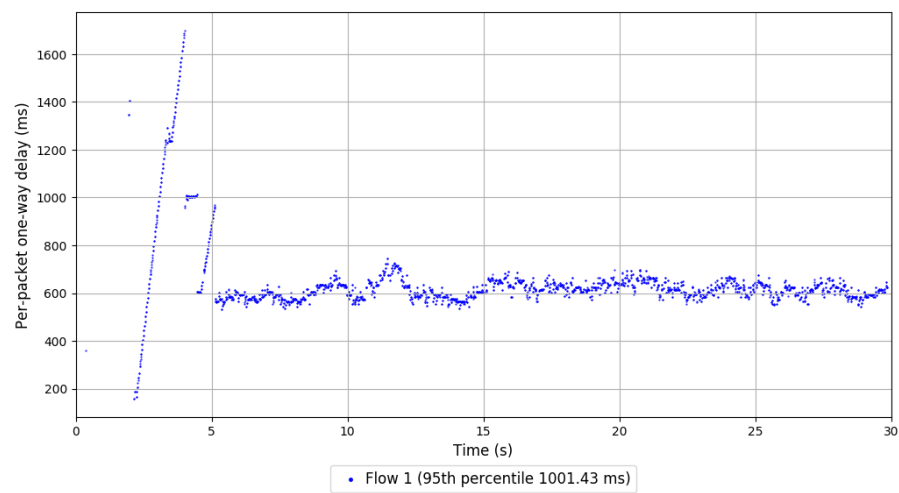
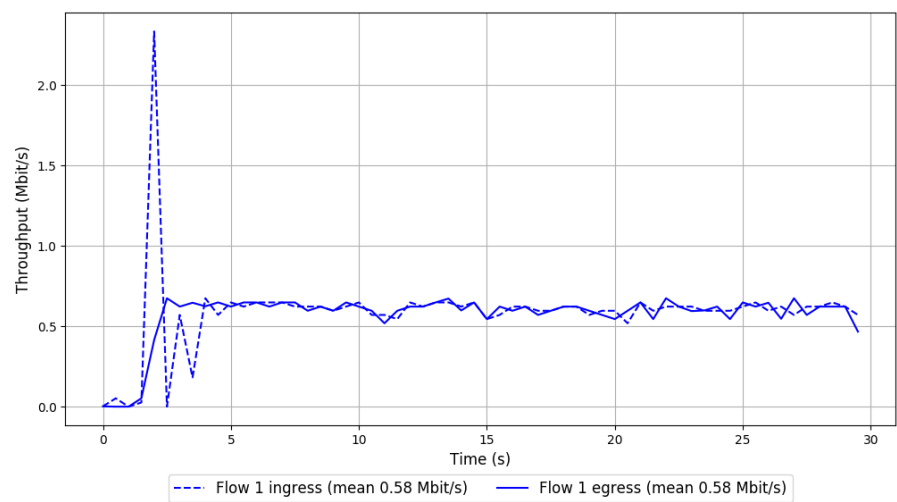


Run 2: Statistics of TaoVA-100x

Start at: 2018-02-12 19:41:30
End at: 2018-02-12 19:42:00
Local clock offset: -13.499 ms
Remote clock offset: 1.595 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1001.429 ms
Loss rate: 2.52%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1001.429 ms
Loss rate: 2.52%

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

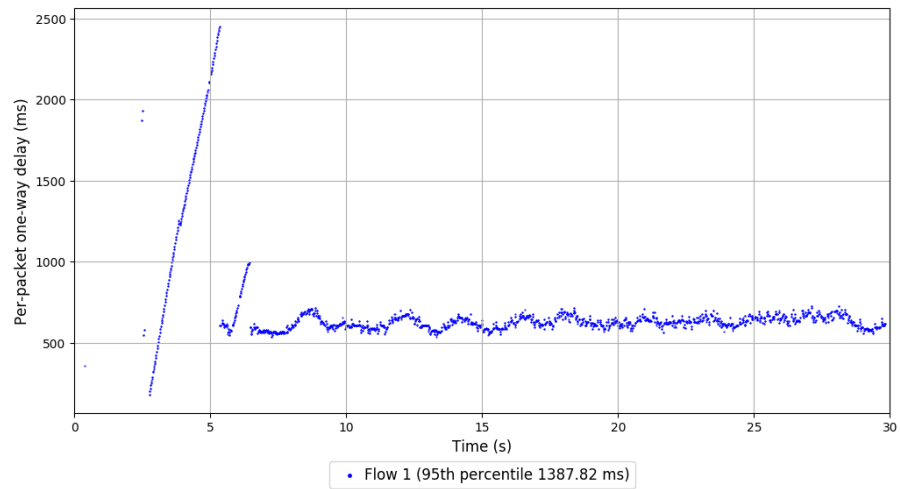
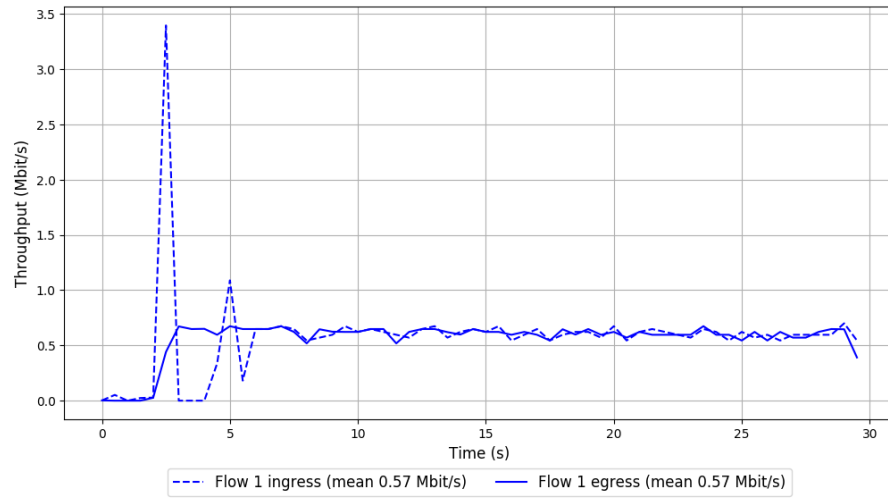


Run 3: Statistics of TaoVA-100x

Start at: 2018-02-12 20:02:39
End at: 2018-02-12 20:03:09
Local clock offset: -14.052 ms
Remote clock offset: -5.412 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1387.820 ms
Loss rate: 2.64%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1387.820 ms
Loss rate: 2.64%

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

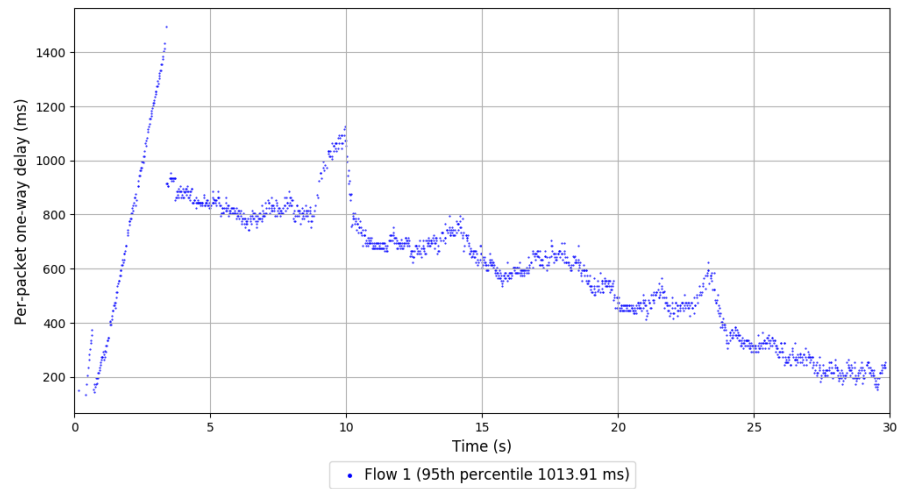
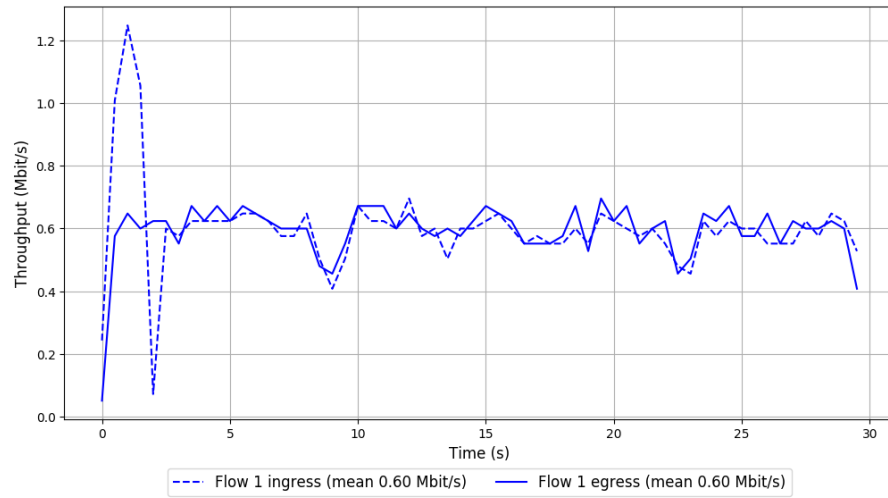


Run 1: Statistics of TCP Vegas

Start at: 2018-02-12 19:19:13
End at: 2018-02-12 19:19:43
Local clock offset: -19.814 ms
Remote clock offset: -4.471 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1013.908 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1013.908 ms
Loss rate: 1.13%

Run 1: Report of TCP Vegas — Data Link

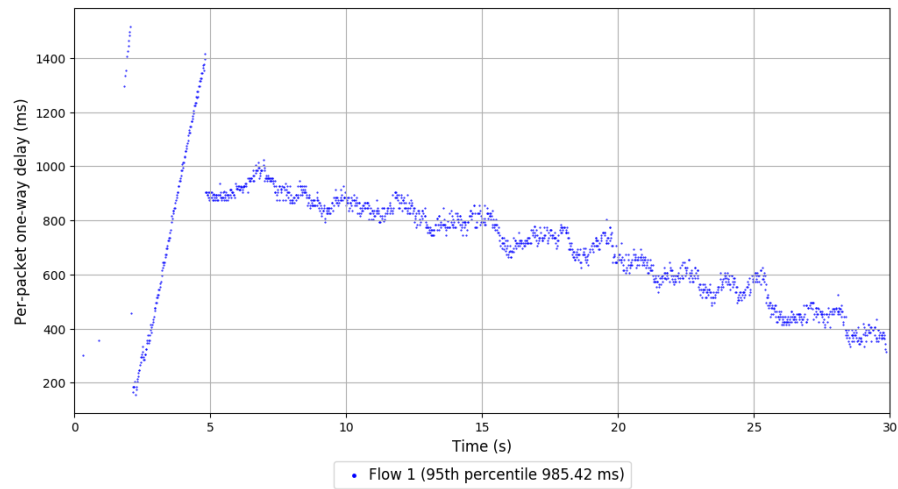
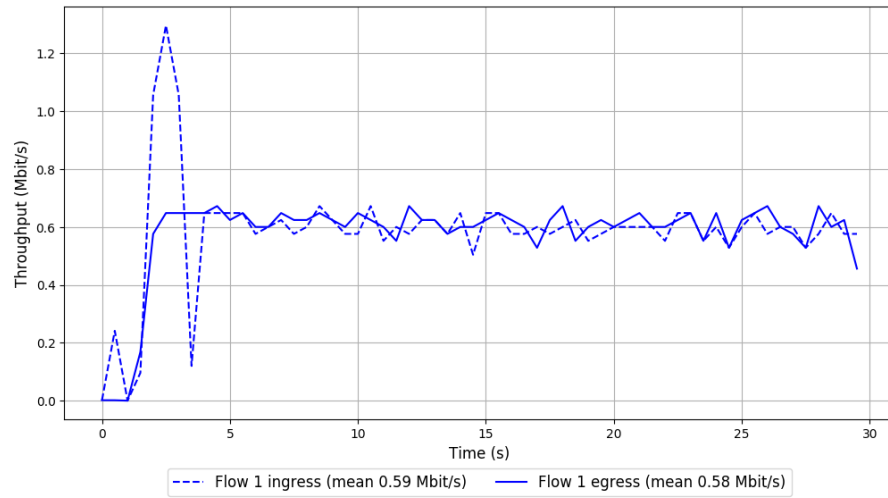


Run 2: Statistics of TCP Vegas

Start at: 2018-02-12 19:40:20
End at: 2018-02-12 19:40:50
Local clock offset: -14.261 ms
Remote clock offset: 1.618 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 985.417 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 985.417 ms
Loss rate: 1.57%

Run 2: Report of TCP Vegas — Data Link

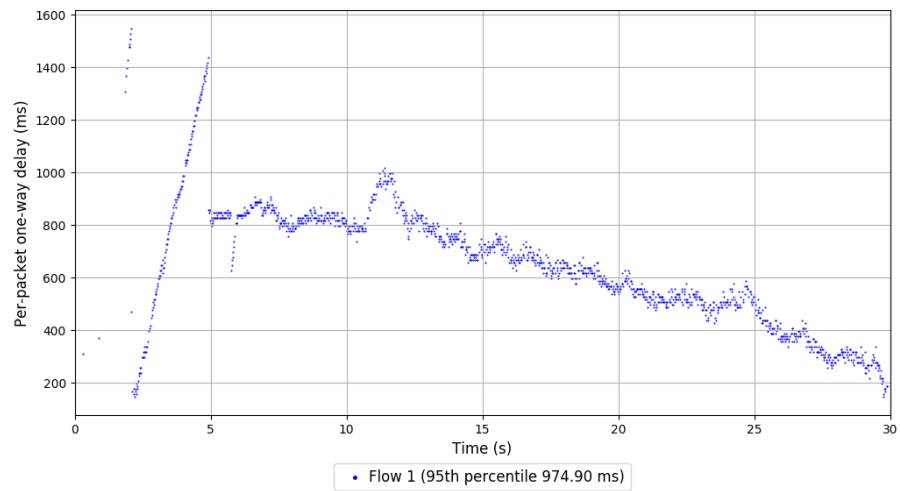
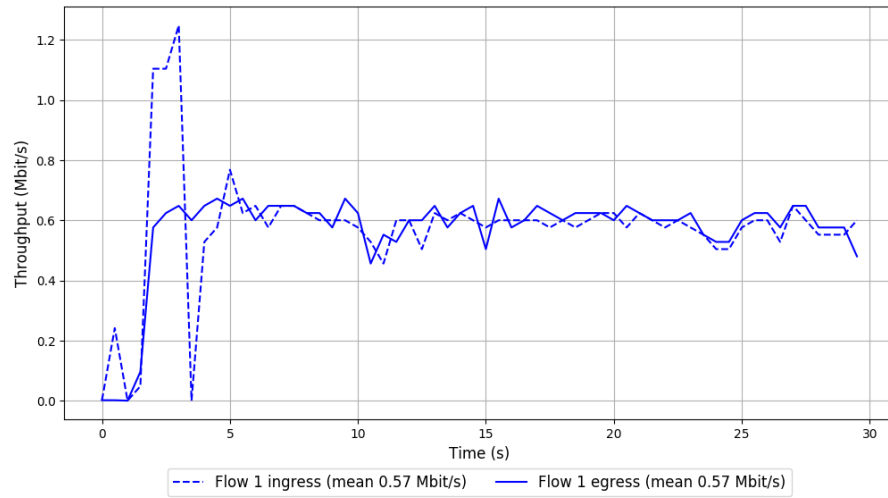


Run 3: Statistics of TCP Vegas

Start at: 2018-02-12 20:01:29
End at: 2018-02-12 20:01:59
Local clock offset: -13.699 ms
Remote clock offset: 1.184 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 974.896 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 974.896 ms
Loss rate: 1.12%

Run 3: Report of TCP Vegas — Data Link

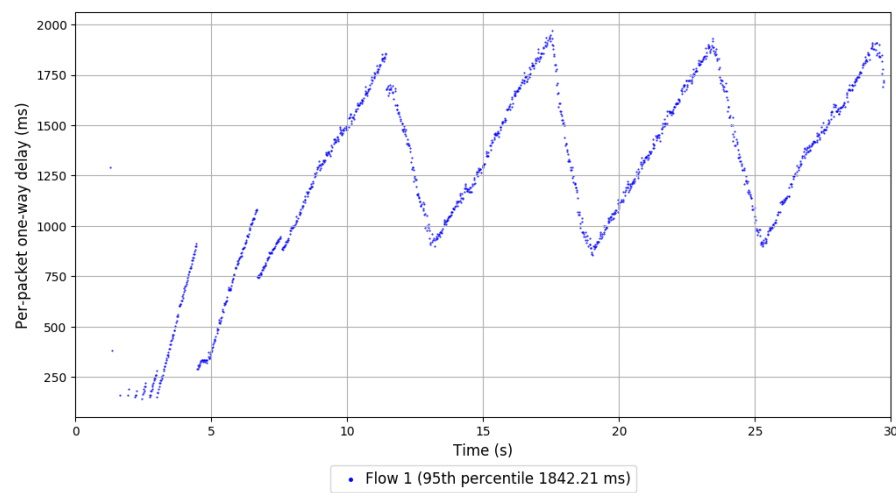
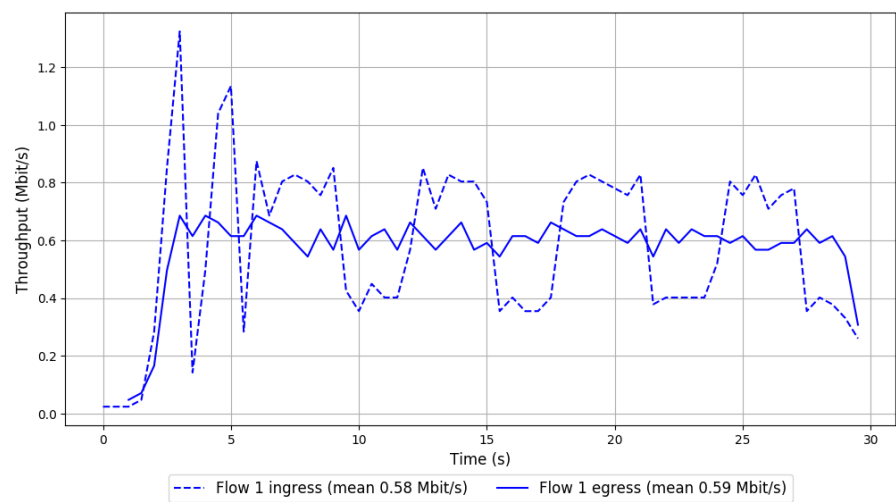


Run 1: Statistics of Verus

Start at: 2018-02-12 19:34:26
End at: 2018-02-12 19:34:56
Local clock offset: -13.677 ms
Remote clock offset: 1.956 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1842.213 ms
Loss rate: 3.73%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1842.213 ms
Loss rate: 3.73%

Run 1: Report of Verus — Data Link

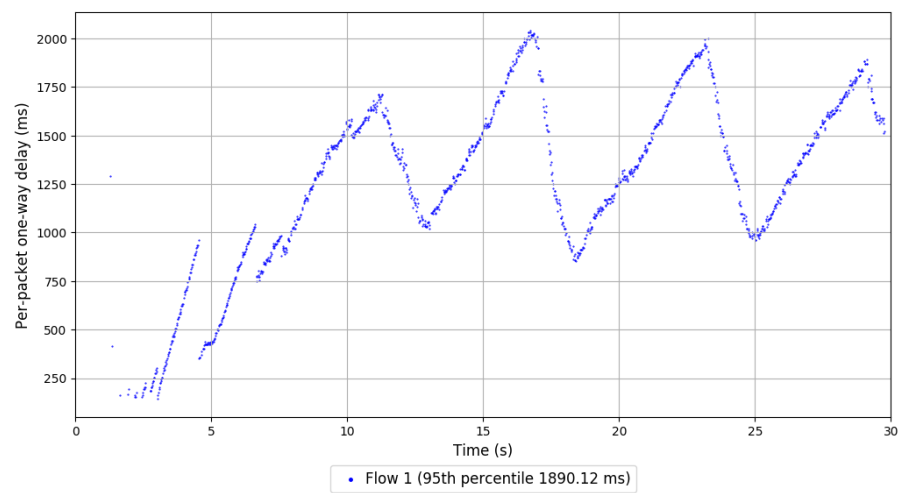
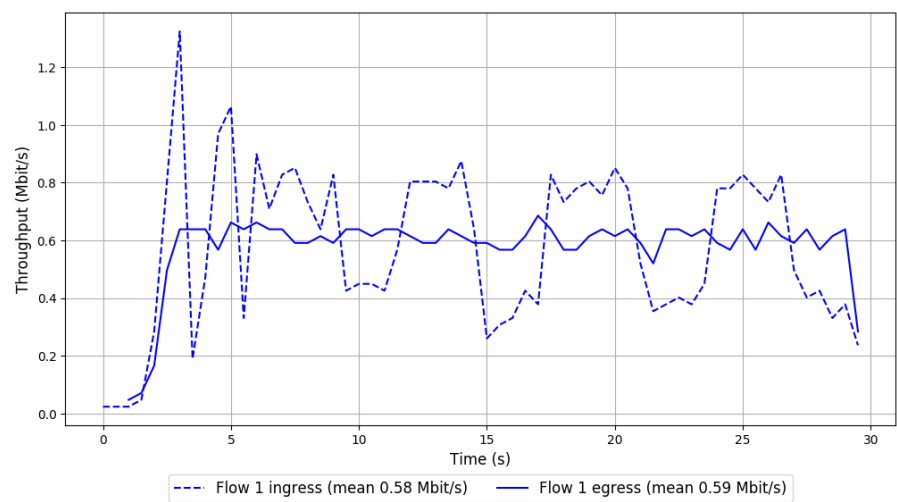


Run 2: Statistics of Verus

Start at: 2018-02-12 19:55:36
End at: 2018-02-12 19:56:06
Local clock offset: -12.213 ms
Remote clock offset: 0.463 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1890.117 ms
Loss rate: 3.33%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1890.117 ms
Loss rate: 3.33%

Run 2: Report of Verus — Data Link

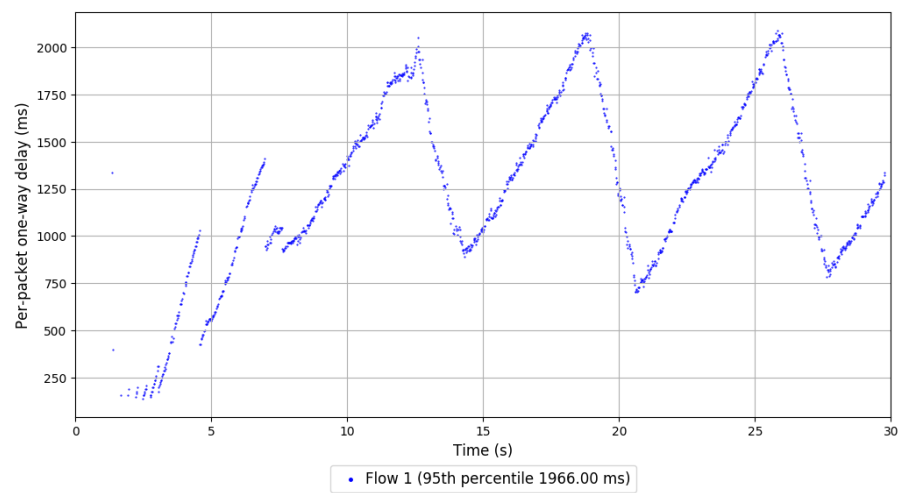
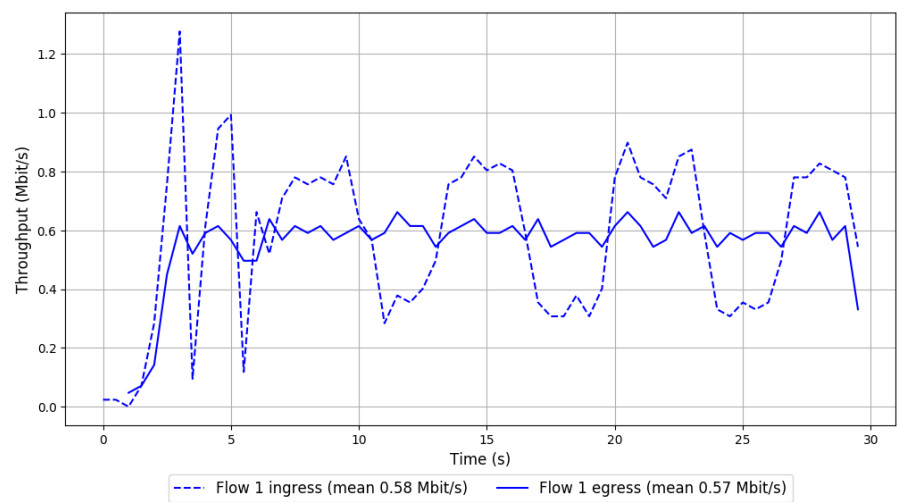


Run 3: Statistics of Verus

Start at: 2018-02-12 20:16:49
End at: 2018-02-12 20:17:19
Local clock offset: -12.487 ms
Remote clock offset: -0.006 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1966.004 ms
Loss rate: 6.30%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1966.004 ms
Loss rate: 6.30%

Run 3: Report of Verus — Data Link

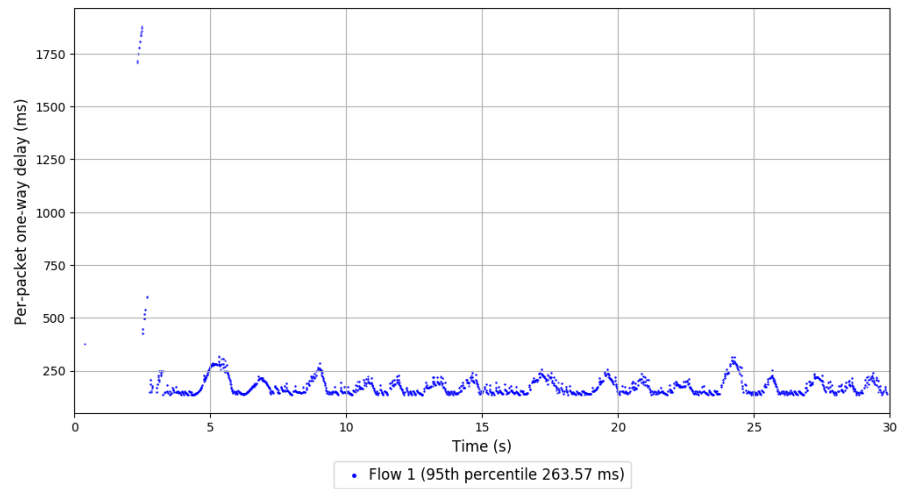
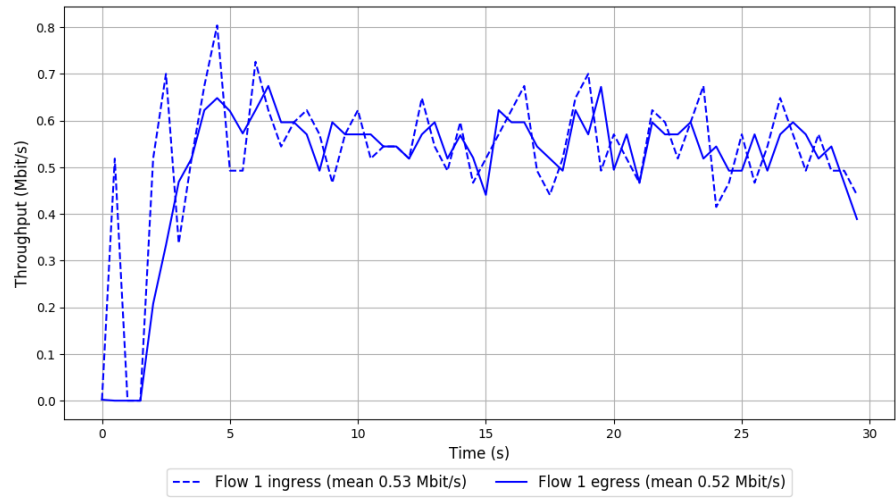


Run 1: Statistics of Copa

Start at: 2018-02-12 19:33:16
End at: 2018-02-12 19:33:46
Local clock offset: -13.262 ms
Remote clock offset: 1.214 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 263.571 ms
Loss rate: 3.61%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 263.571 ms
Loss rate: 3.61%

Run 1: Report of Copa — Data Link

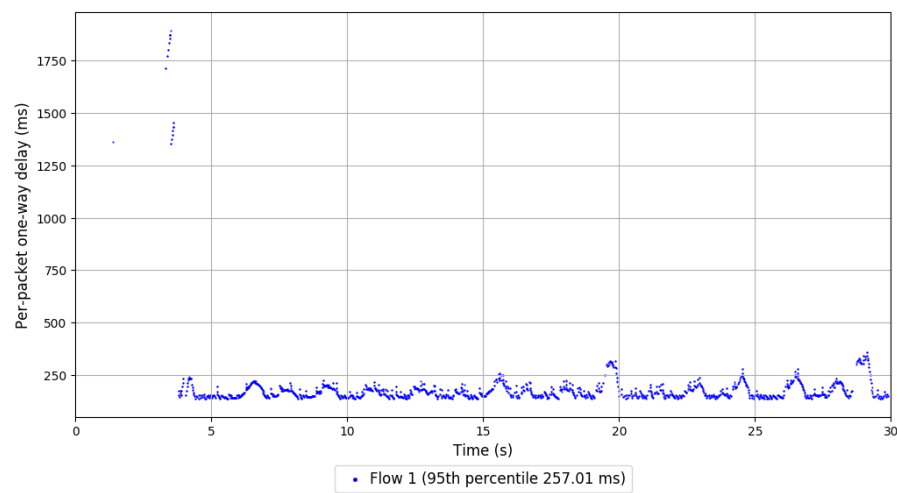
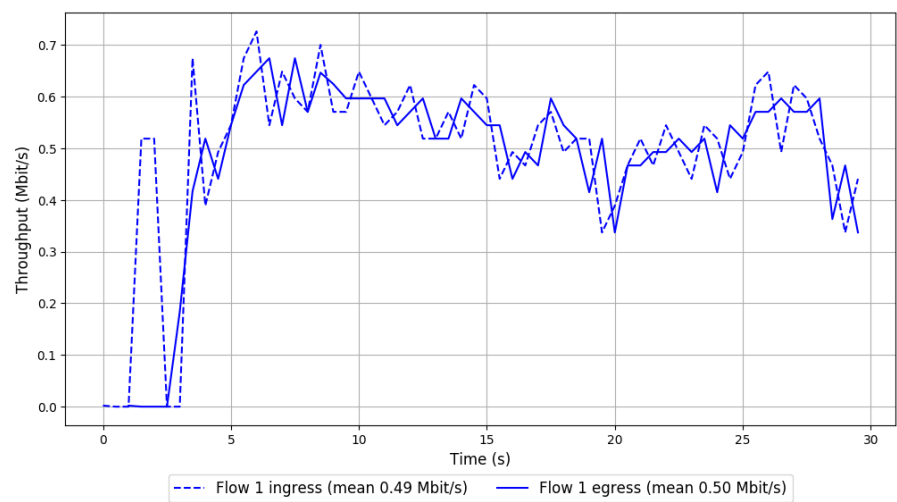


Run 2: Statistics of Copa

Start at: 2018-02-12 19:54:26
End at: 2018-02-12 19:54:56
Local clock offset: -12.029 ms
Remote clock offset: 1.24 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 257.011 ms
Loss rate: 3.76%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 257.011 ms
Loss rate: 3.76%

Run 2: Report of Copa — Data Link

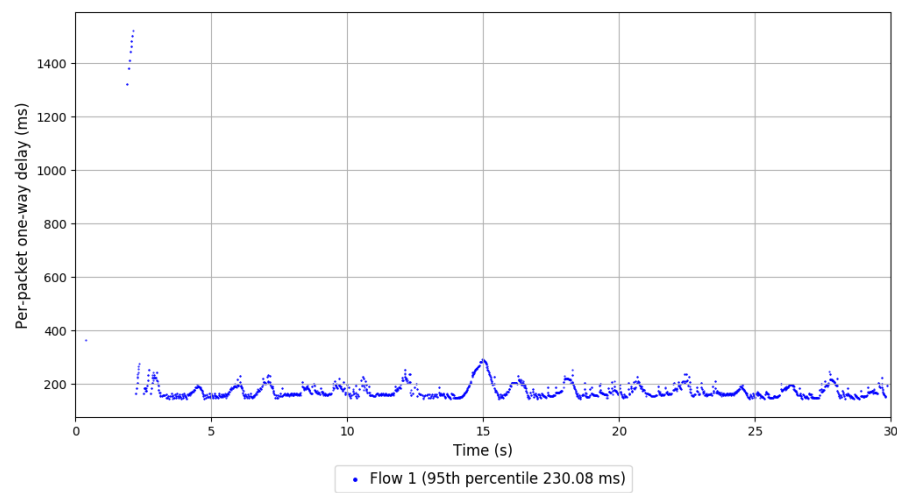
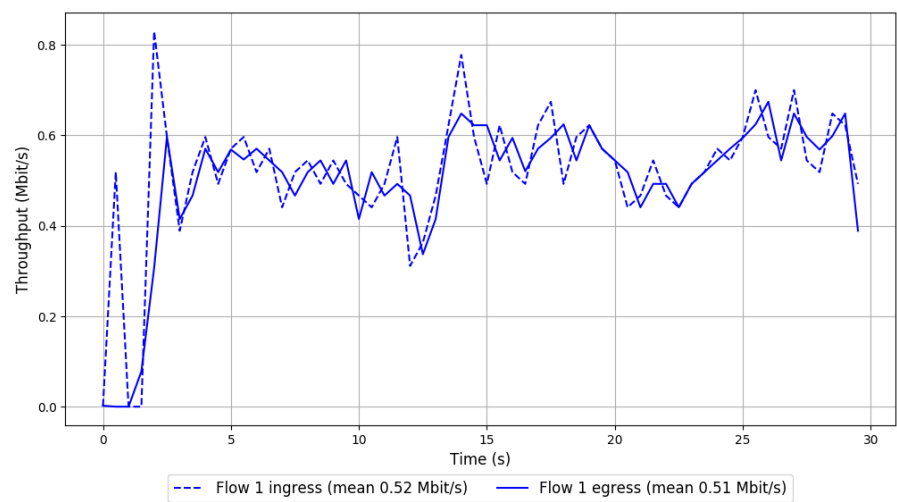


Run 3: Statistics of Copa

Start at: 2018-02-12 20:15:39
End at: 2018-02-12 20:16:09
Local clock offset: -13.919 ms
Remote clock offset: -4.016 ms

Below is generated by plot.py at 2018-02-12 21:26:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 230.083 ms
Loss rate: 3.52%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 230.083 ms
Loss rate: 3.52%

Run 3: Report of Copa — Data Link

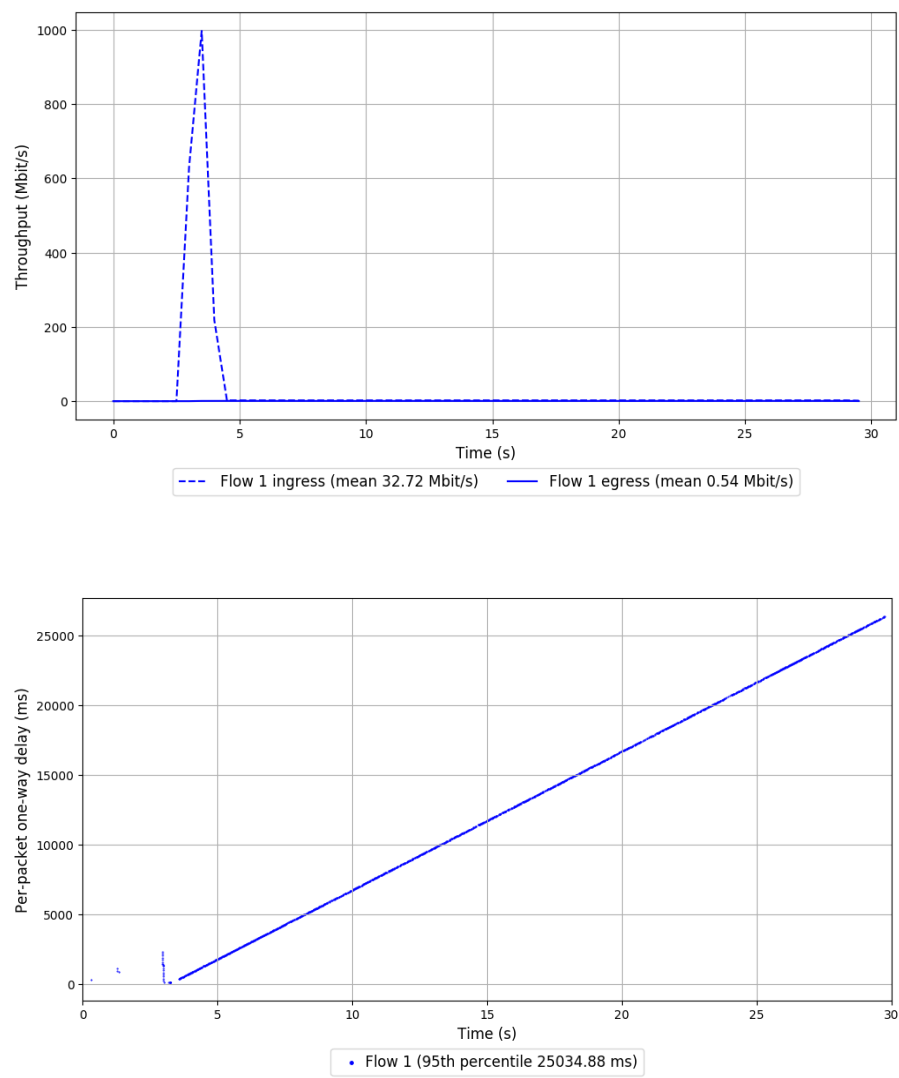


Run 1: Statistics of FillP

Start at: 2018-02-12 19:37:57
End at: 2018-02-12 19:38:27
Local clock offset: -15.082 ms
Remote clock offset: -4.744 ms

Below is generated by plot.py at 2018-02-12 21:26:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 25034.875 ms
Loss rate: 98.37%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 25034.875 ms
Loss rate: 98.37%

Run 1: Report of FillP — Data Link

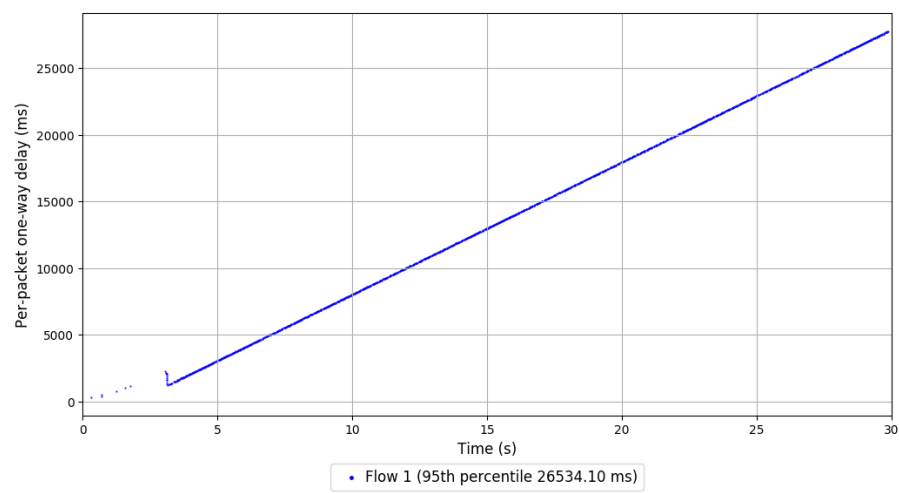
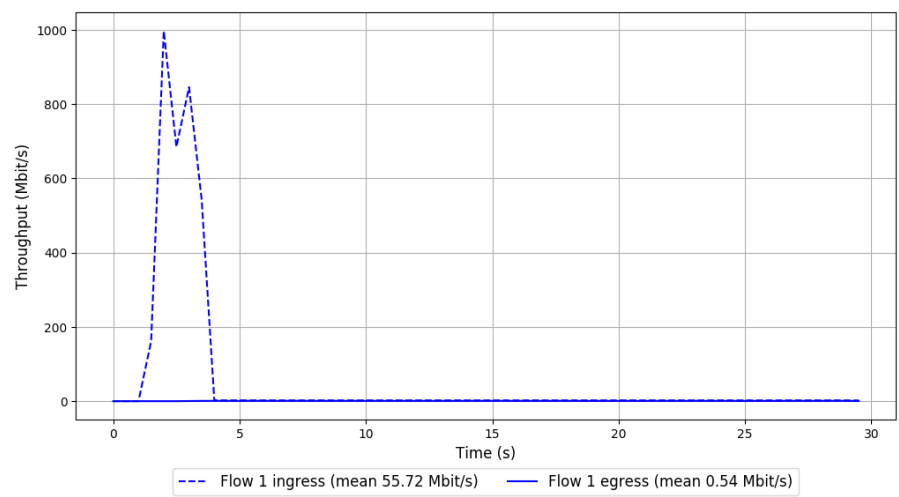


Run 2: Statistics of FillP

Start at: 2018-02-12 19:59:06
End at: 2018-02-12 19:59:36
Local clock offset: -13.007 ms
Remote clock offset: -0.445 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 26534.099 ms
Loss rate: 99.04%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 26534.099 ms
Loss rate: 99.04%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-02-12 20:20:19

End at: 2018-02-12 20:20:49

Local clock offset: -9.944 ms

Remote clock offset: 1.76 ms

Below is generated by plot.py at 2018-02-12 21:26:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 26571.339 ms

Loss rate: 98.31%

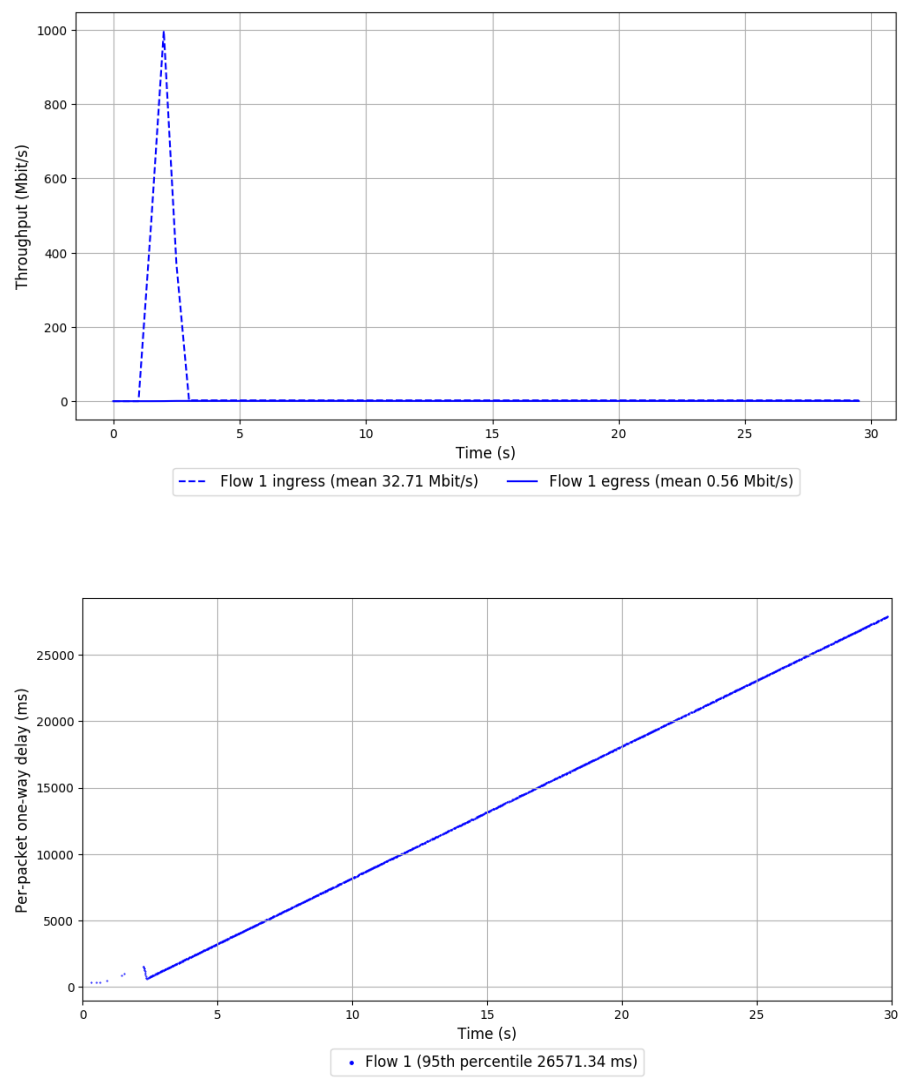
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 26571.339 ms

Loss rate: 98.31%

Run 3: Report of FillP — Data Link

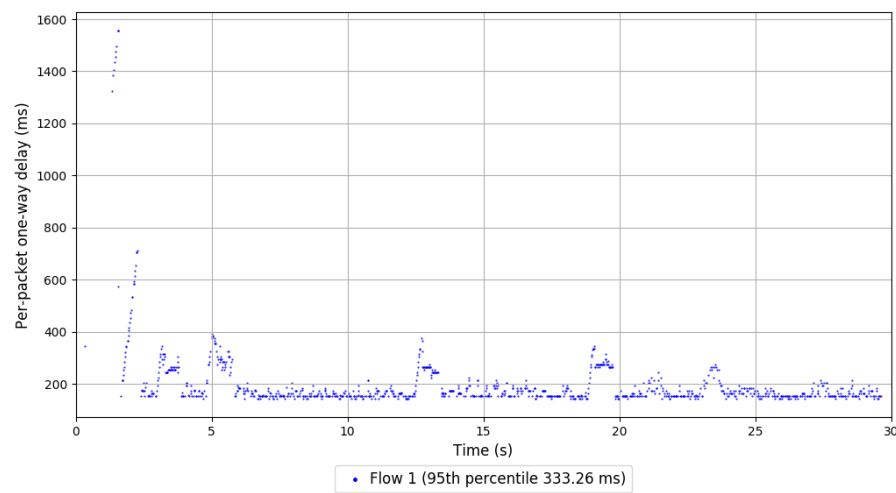
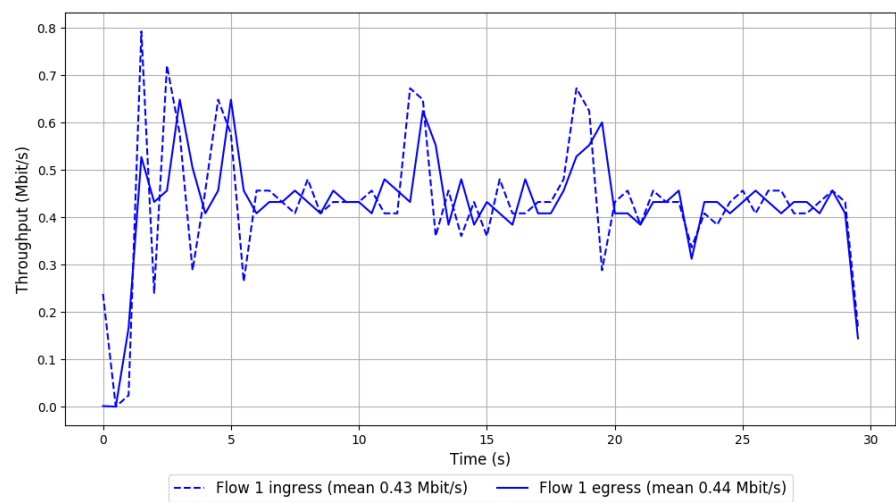


Run 1: Statistics of Indigo-1-32

Start at: 2018-02-12 19:39:10
End at: 2018-02-12 19:39:40
Local clock offset: -15.214 ms
Remote clock offset: -4.039 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 333.265 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 333.265 ms
Loss rate: 0.84%

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

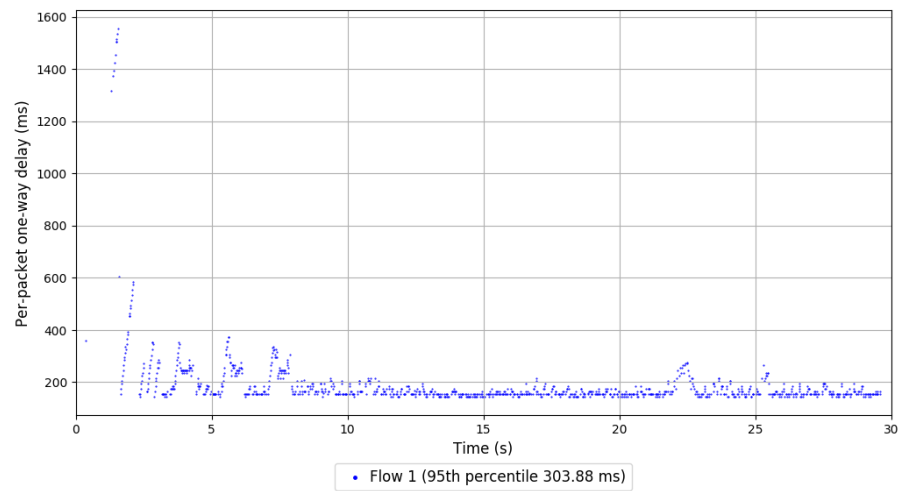
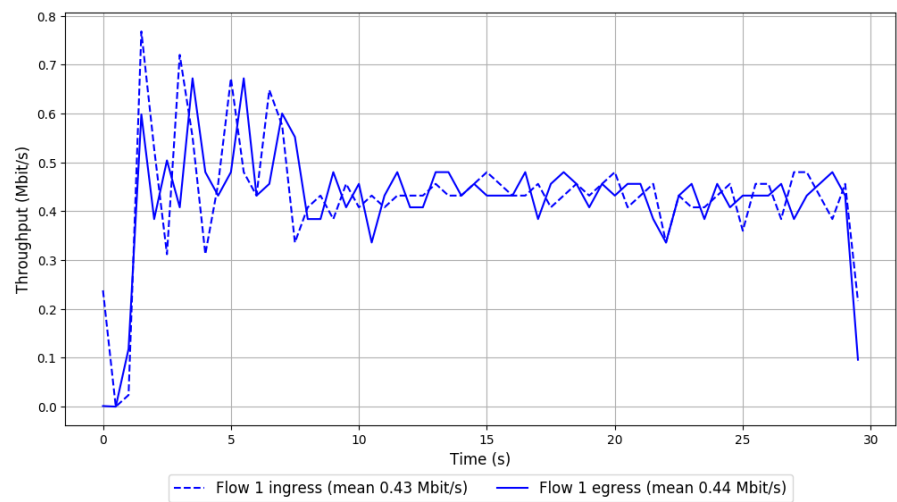


Run 2: Statistics of Indigo-1-32

Start at: 2018-02-12 20:00:19
End at: 2018-02-12 20:00:49
Local clock offset: -13.334 ms
Remote clock offset: -5.346 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 303.880 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 303.880 ms
Loss rate: 1.49%

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



Run 3: Statistics of Indigo-1-32

Start at: 2018-02-12 20:21:32

End at: 2018-02-12 20:22:02

Local clock offset: -9.267 ms

Remote clock offset: -4.78 ms

Below is generated by plot.py at 2018-02-12 21:26:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.41 Mbit/s

95th percentile per-packet one-way delay: 319.105 ms

Loss rate: 1.39%

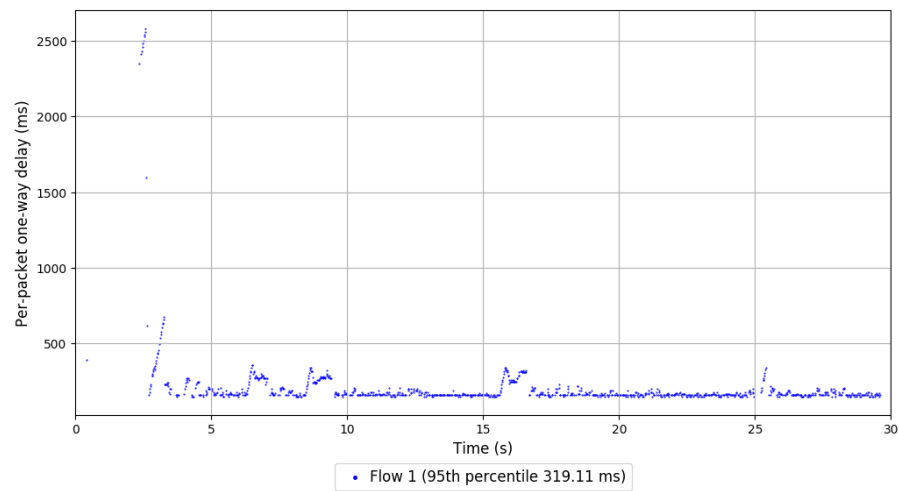
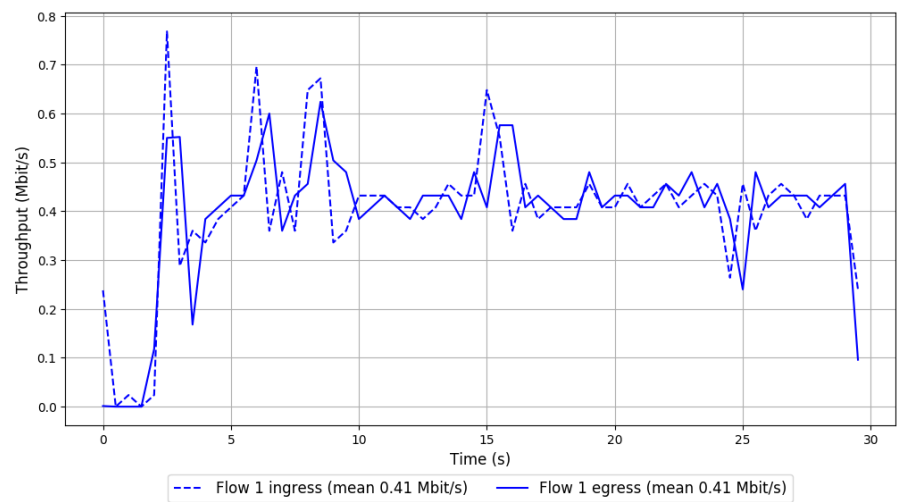
-- Flow 1:

Average throughput: 0.41 Mbit/s

95th percentile per-packet one-way delay: 319.105 ms

Loss rate: 1.39%

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

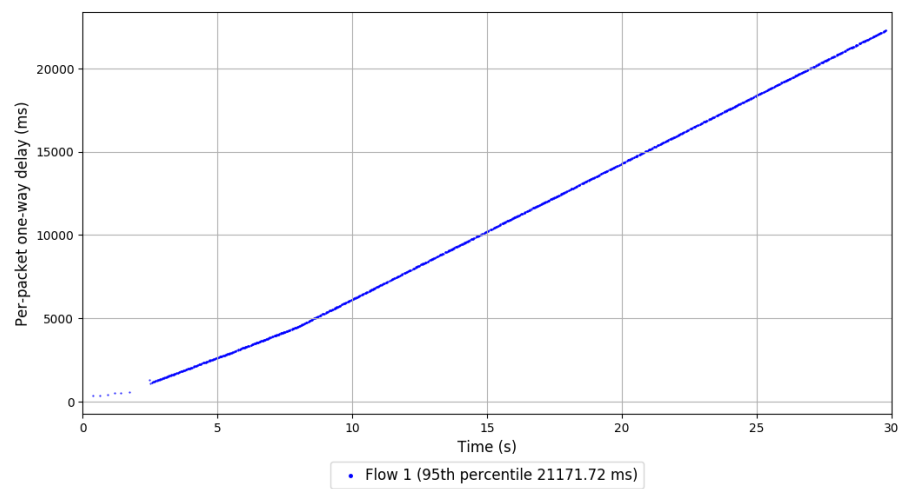
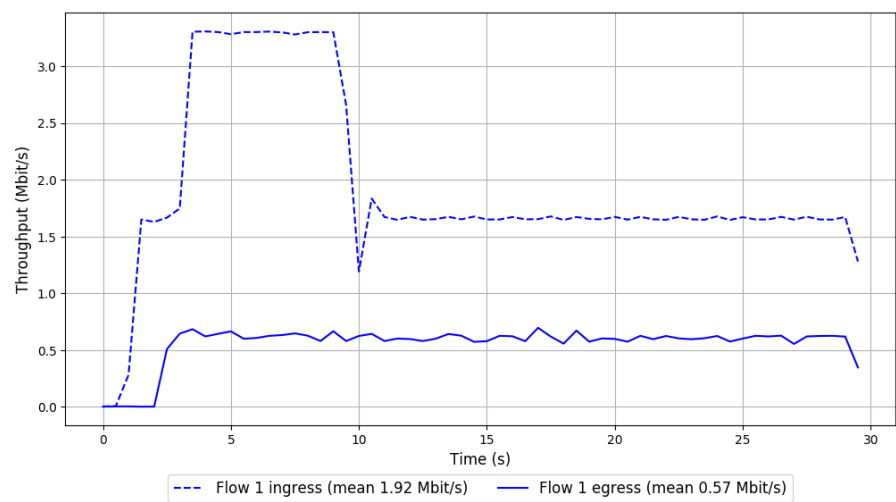


Run 1: Statistics of Vivace-latency

Start at: 2018-02-12 19:25:03
End at: 2018-02-12 19:25:34
Local clock offset: -15.169 ms
Remote clock offset: 2.143 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21171.716 ms
Loss rate: 70.91%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21171.716 ms
Loss rate: 70.91%

Run 1: Report of Vivace-latency — Data Link

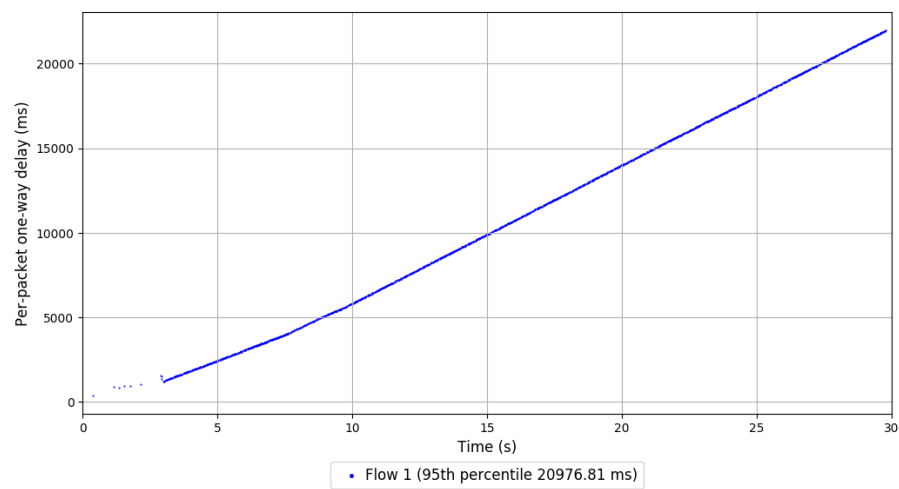
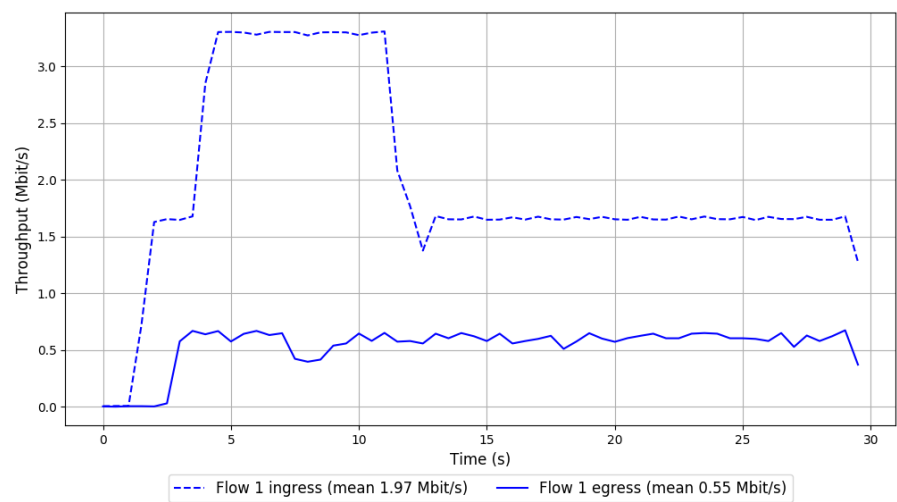


Run 2: Statistics of Vivace-latency

Start at: 2018-02-12 19:46:10
End at: 2018-02-12 19:46:40
Local clock offset: -11.825 ms
Remote clock offset: -0.254 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20976.806 ms
Loss rate: 72.70%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20976.806 ms
Loss rate: 72.70%

Run 2: Report of Vivace-latency — Data Link

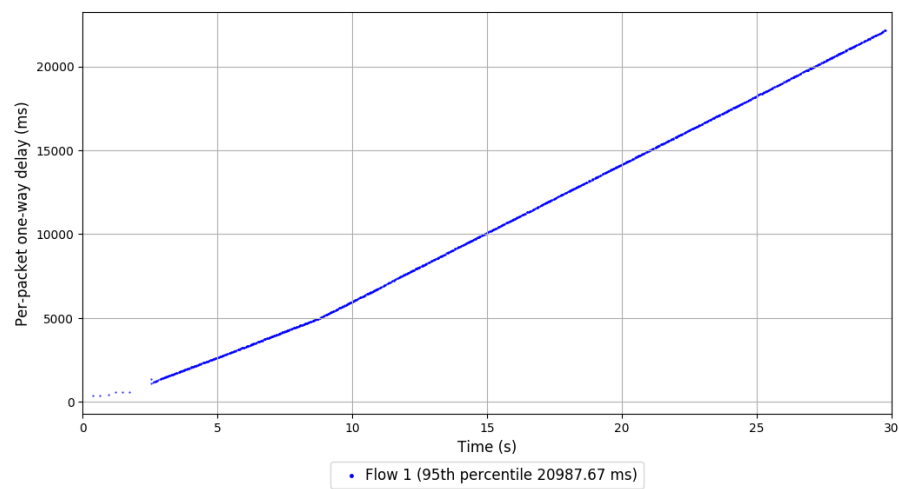
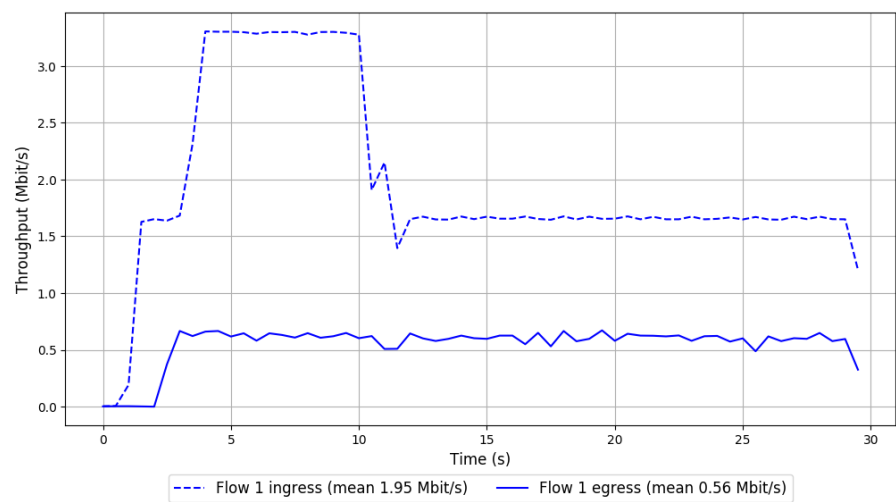


Run 3: Statistics of Vivace-latency

Start at: 2018-02-12 20:07:20
End at: 2018-02-12 20:07:50
Local clock offset: -15.482 ms
Remote clock offset: -4.375 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20987.666 ms
Loss rate: 71.73%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 20987.666 ms
Loss rate: 71.73%

Run 3: Report of Vivace-latency — Data Link

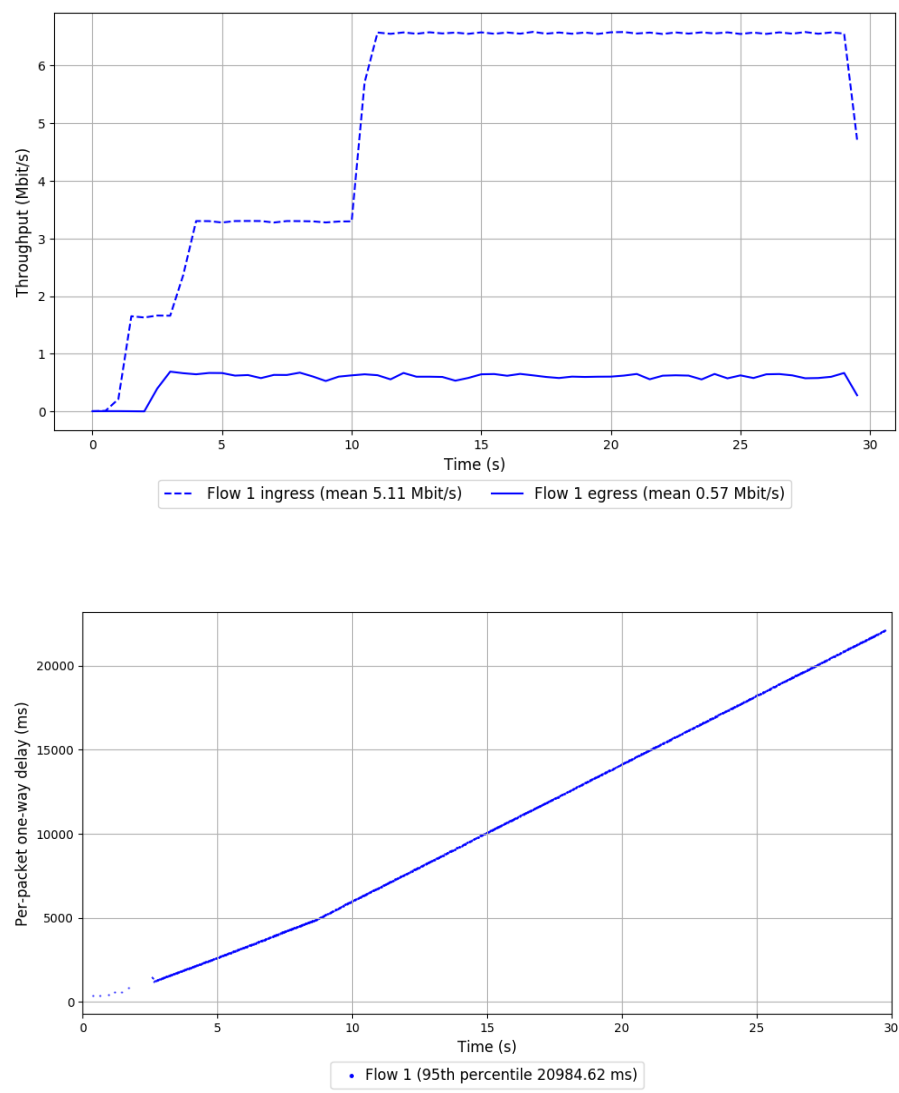


Run 1: Statistics of Vivace-loss

Start at: 2018-02-12 19:28:34
End at: 2018-02-12 19:29:04
Local clock offset: -12.987 ms
Remote clock offset: 2.172 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20984.624 ms
Loss rate: 89.09%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20984.624 ms
Loss rate: 89.09%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-02-12 19:49:43

End at: 2018-02-12 19:50:14

Local clock offset: -11.58 ms

Remote clock offset: 0.527 ms

Below is generated by plot.py at 2018-02-12 21:26:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 22119.023 ms

Loss rate: 89.57%

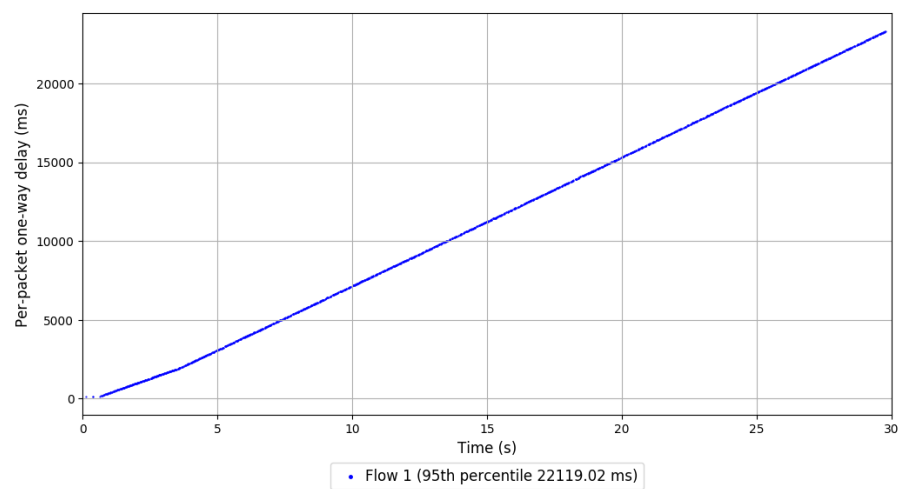
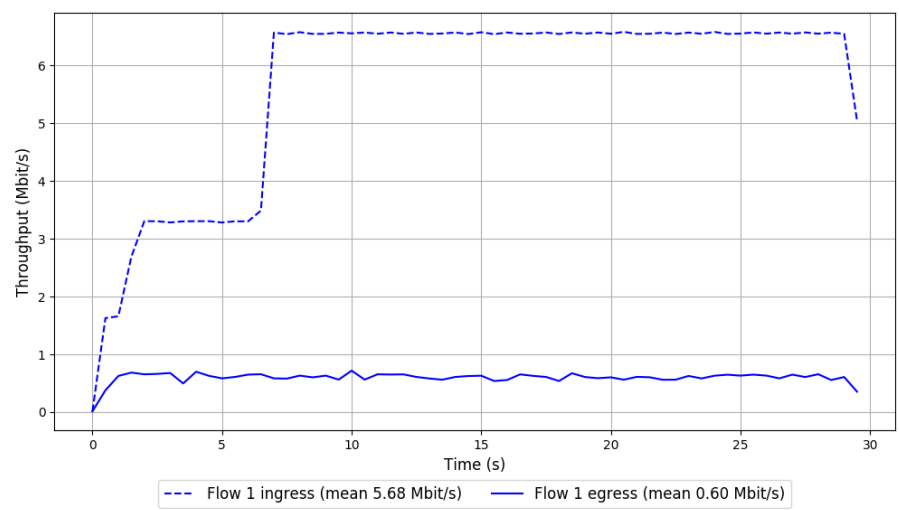
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 22119.023 ms

Loss rate: 89.57%

Run 2: Report of Vivace-loss — Data Link

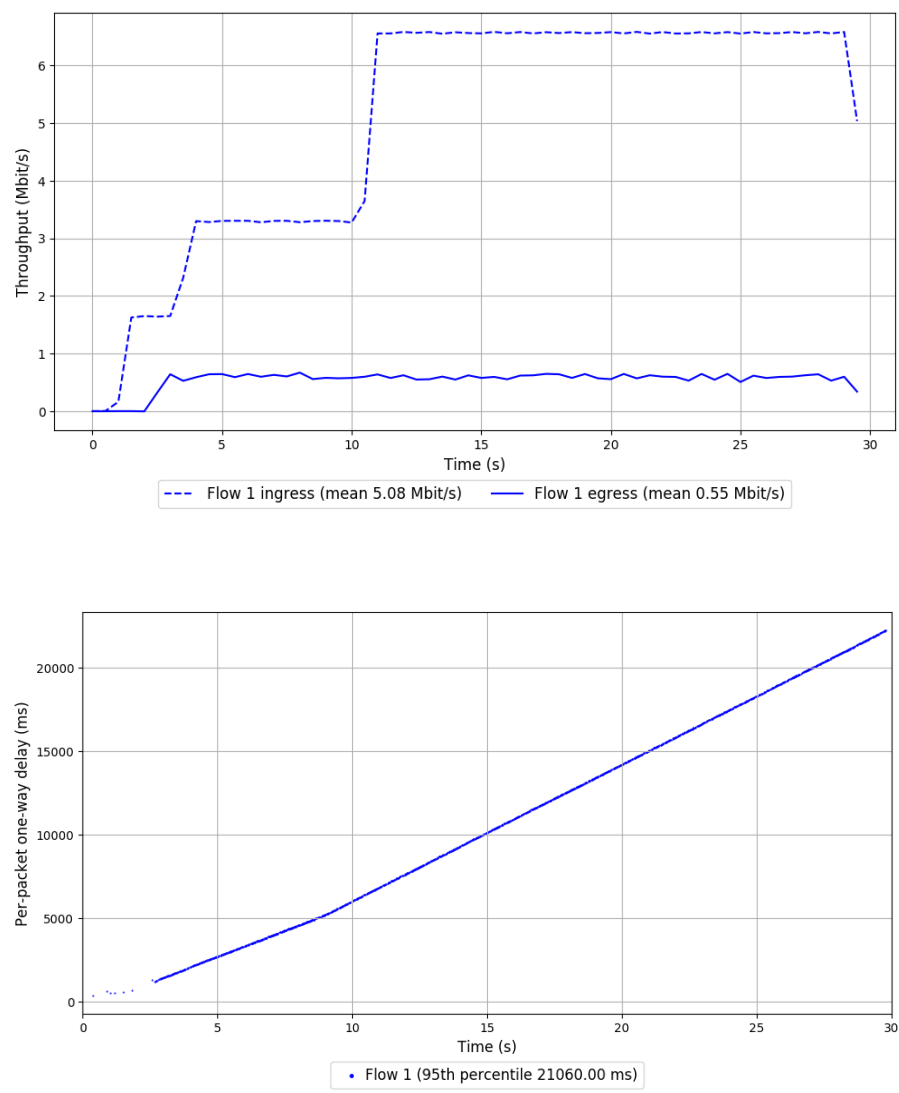


Run 3: Statistics of Vivace-loss

Start at: 2018-02-12 20:10:53
End at: 2018-02-12 20:11:23
Local clock offset: -16.636 ms
Remote clock offset: -0.186 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 21060.002 ms
Loss rate: 89.30%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 21060.002 ms
Loss rate: 89.30%

Run 3: Report of Vivace-loss — Data Link

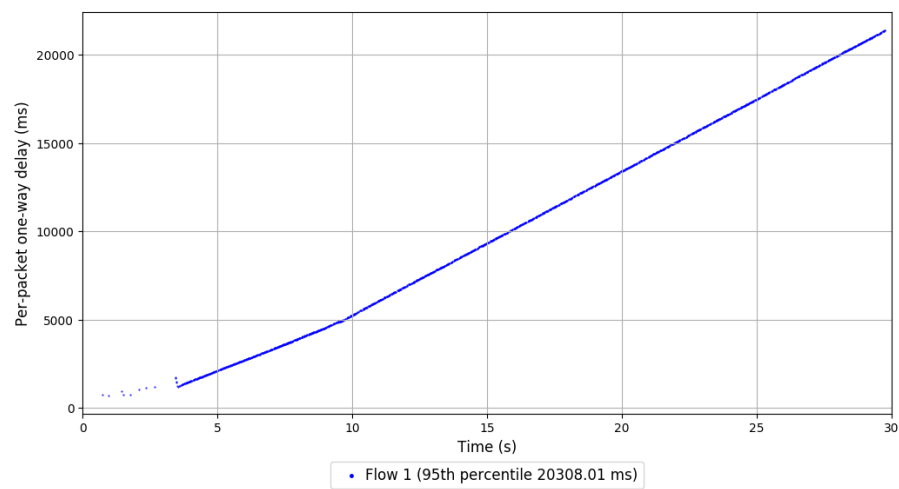
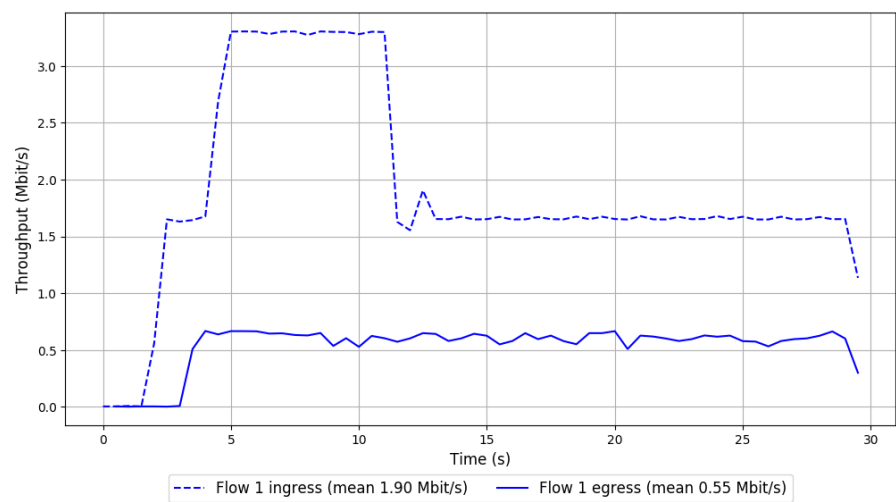


Run 1: Statistics of Vivace-LTE

Start at: 2018-02-12 19:22:43
End at: 2018-02-12 19:23:13
Local clock offset: -19.686 ms
Remote clock offset: 1.294 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20308.014 ms
Loss rate: 71.83%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20308.014 ms
Loss rate: 71.83%

Run 1: Report of Vivace-LTE — Data Link

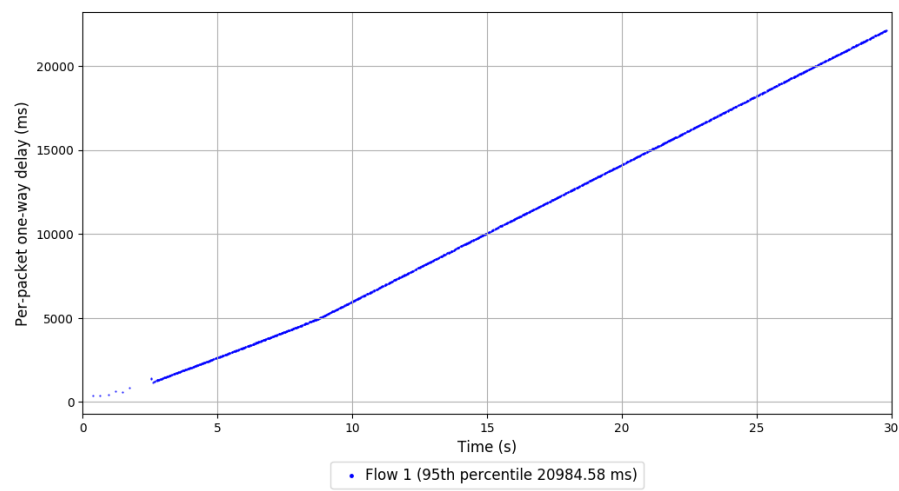
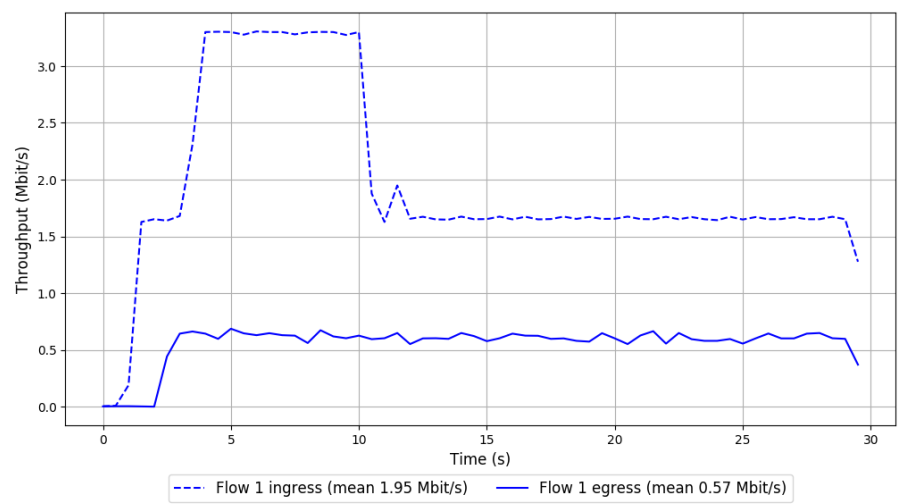


Run 2: Statistics of Vivace-LTE

Start at: 2018-02-12 19:43:50
End at: 2018-02-12 19:44:20
Local clock offset: -12.427 ms
Remote clock offset: -4.218 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20984.575 ms
Loss rate: 71.43%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20984.575 ms
Loss rate: 71.43%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-02-12 20:05:00
End at: 2018-02-12 20:05:30
Local clock offset: -14.699 ms
Remote clock offset: 0.401 ms

Below is generated by plot.py at 2018-02-12 21:26:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20271.222 ms
Loss rate: 72.21%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20271.222 ms
Loss rate: 72.21%

Run 3: Report of Vivace-LTE — Data Link

