

Pantheon Report

Generated at 2018-02-02 14:19:04 (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).

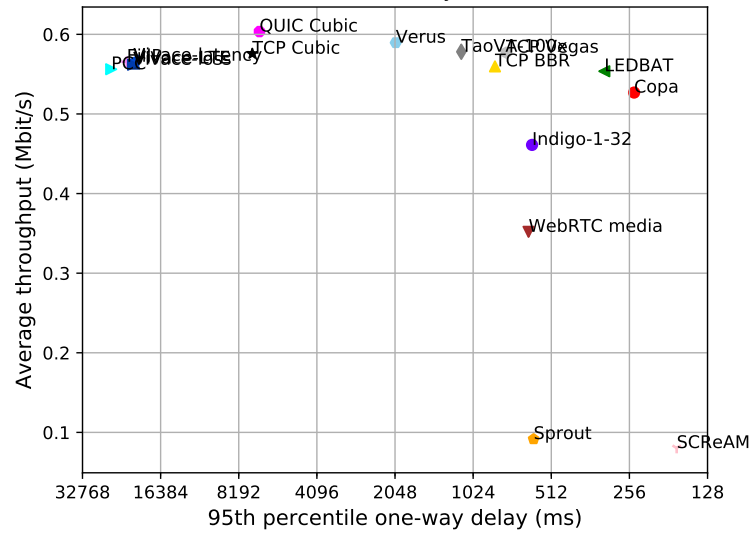
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

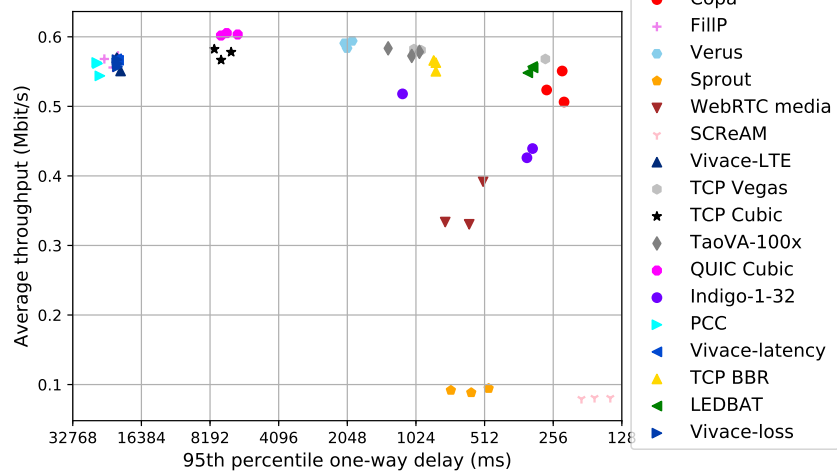
Git summary:

```
branch: master @ 70217998b3c9a7166a95460a70c0854d1326e100
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ fb9c9ab842e5614ad52911a76fb9bd1c1b0dca86
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-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeab30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/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	0.56	843.77	2.26
TCP Cubic	3	0.58	7263.86	29.87
LEDBAT	3	0.56	319.89	1.40
PCC	3	0.55	25390.01	98.34
QUIC Cubic	3	0.60	6817.57	28.18
SCReAM	3	0.08	168.32	0.79
WebRTC media	3	0.35	626.47	1.61
Sprout	3	0.09	599.01	0.91
TaoVA-100x	3	0.58	1137.66	2.57
TCP Vegas	3	0.58	764.93	1.89
Verus	3	0.59	2034.99	5.36
Copa	3	0.53	245.60	3.38
FillP	3	0.57	22128.63	47.62
Indigo-1-32	3	0.46	607.26	2.17
Vivace-latency	3	0.57	20879.42	71.23
Vivace-loss	3	0.56	20921.91	88.87
Vivace-LTE	3	0.56	20717.47	71.37

Run 1: Statistics of TCP BBR

Start at: 2018-02-02 12:33:28

End at: 2018-02-02 12:33:58

Local clock offset: 0.497 ms

Remote clock offset: -3.662 ms

Below is generated by plot.py at 2018-02-02 14:18:30

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 837.305 ms

Loss rate: 2.06%

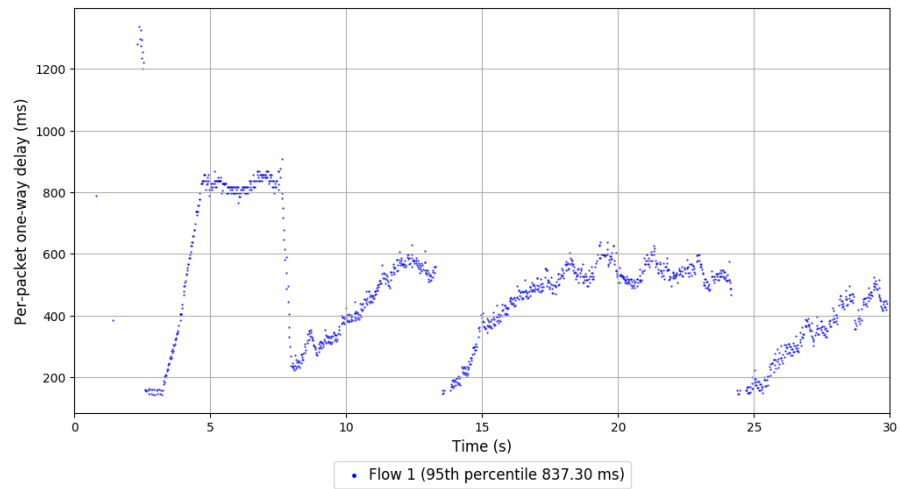
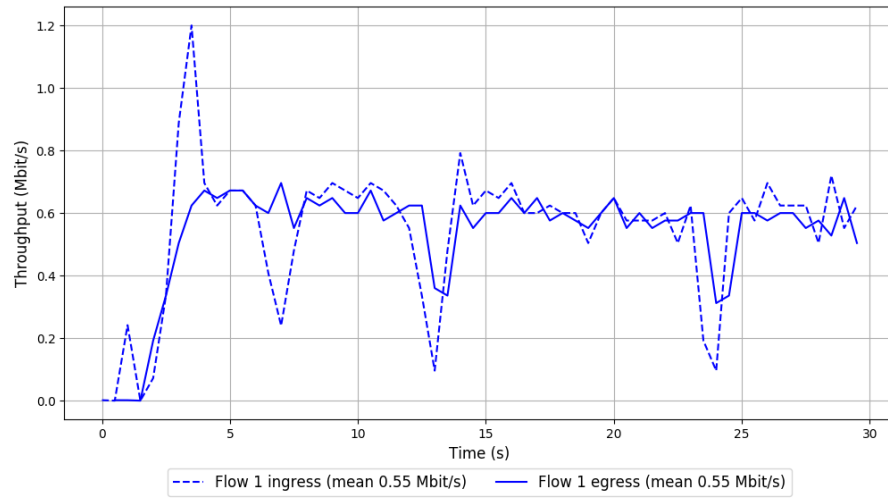
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 837.305 ms

Loss rate: 2.06%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-02-02 12:53:47

End at: 2018-02-02 12:54:17

Local clock offset: 0.377 ms

Remote clock offset: 1.141 ms

Below is generated by plot.py at 2018-02-02 14:18:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 856.061 ms

Loss rate: 2.38%

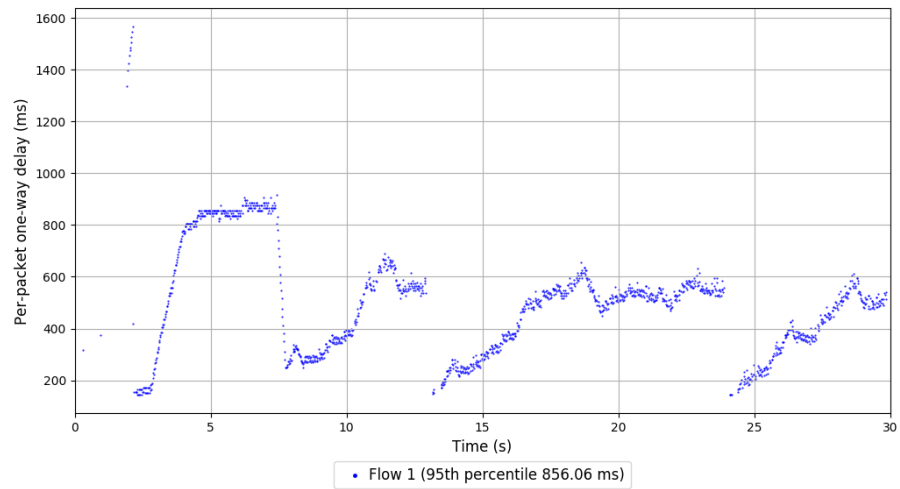
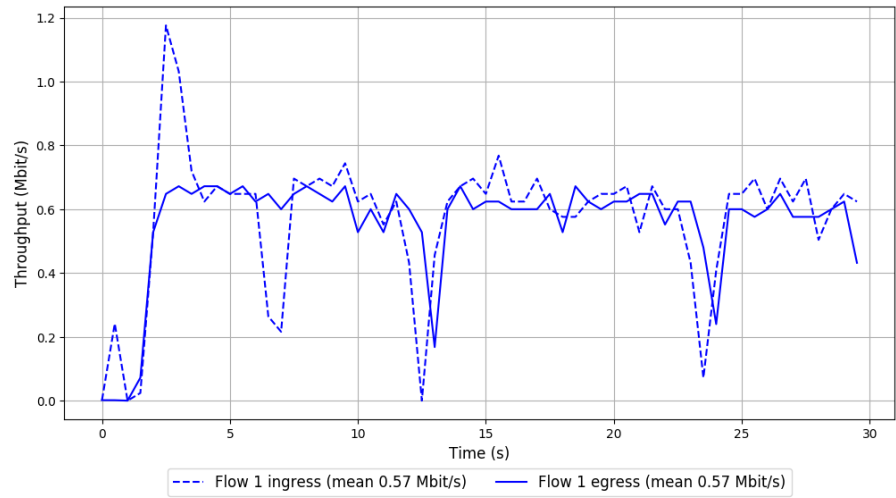
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 856.061 ms

Loss rate: 2.38%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-02-02 13:13:53

End at: 2018-02-02 13:14:23

Local clock offset: 0.464 ms

Remote clock offset: 1.549 ms

Below is generated by plot.py at 2018-02-02 14:18:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 837.934 ms

Loss rate: 2.33%

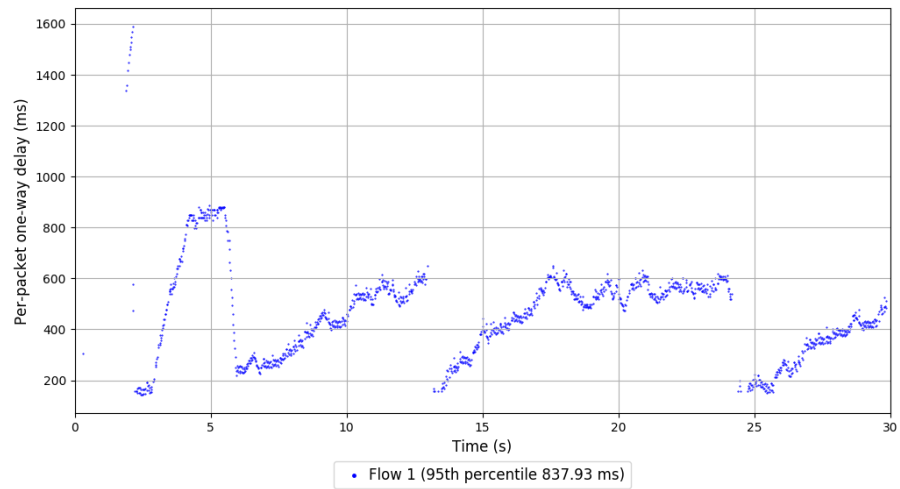
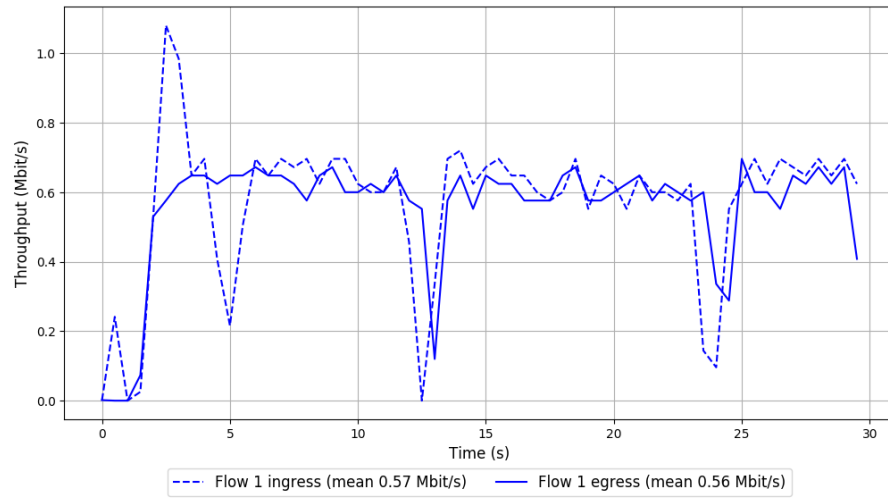
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 837.934 ms

Loss rate: 2.33%

Run 3: Report of TCP BBR — Data Link

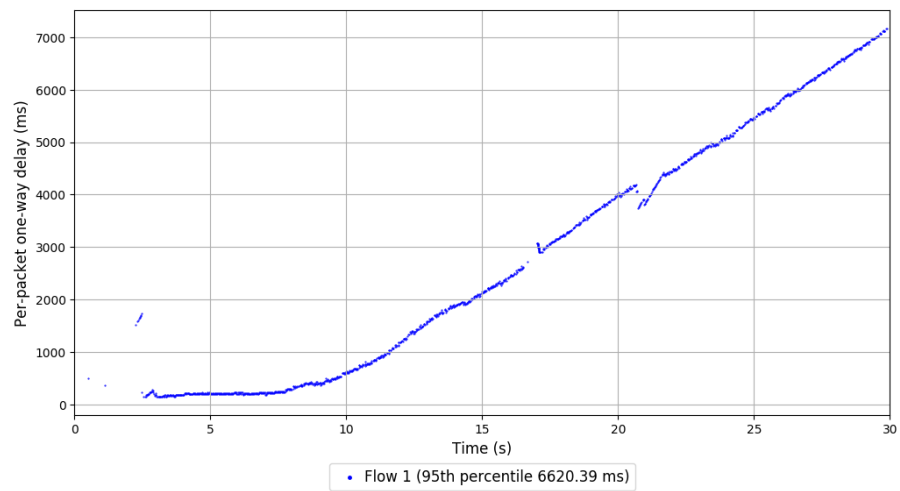
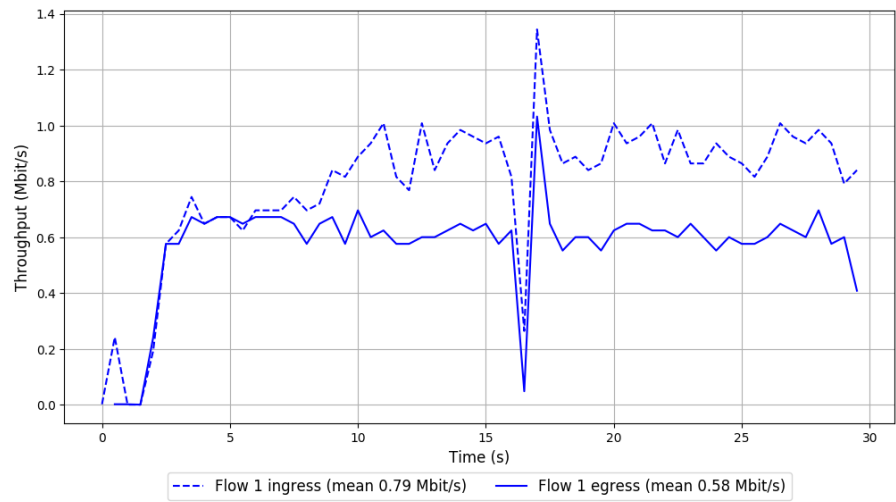


Run 1: Statistics of TCP Cubic

Start at: 2018-02-02 12:29:55
End at: 2018-02-02 12:30:25
Local clock offset: 0.464 ms
Remote clock offset: -3.647 ms

Below is generated by plot.py at 2018-02-02 14:18:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 6620.388 ms
Loss rate: 27.95%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 6620.388 ms
Loss rate: 27.95%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-02-02 12:50:15

End at: 2018-02-02 12:50:45

Local clock offset: 0.374 ms

Remote clock offset: 1.011 ms

Below is generated by plot.py at 2018-02-02 14:18:31

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 7325.575 ms

Loss rate: 30.78%

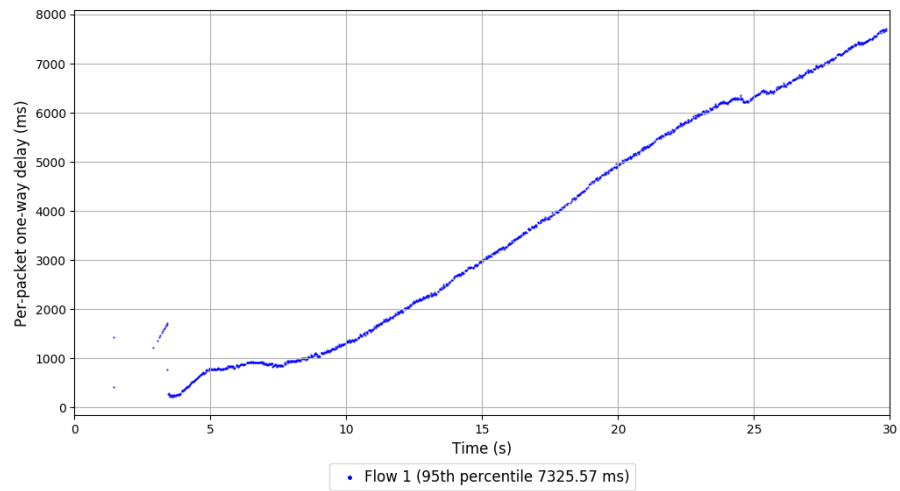
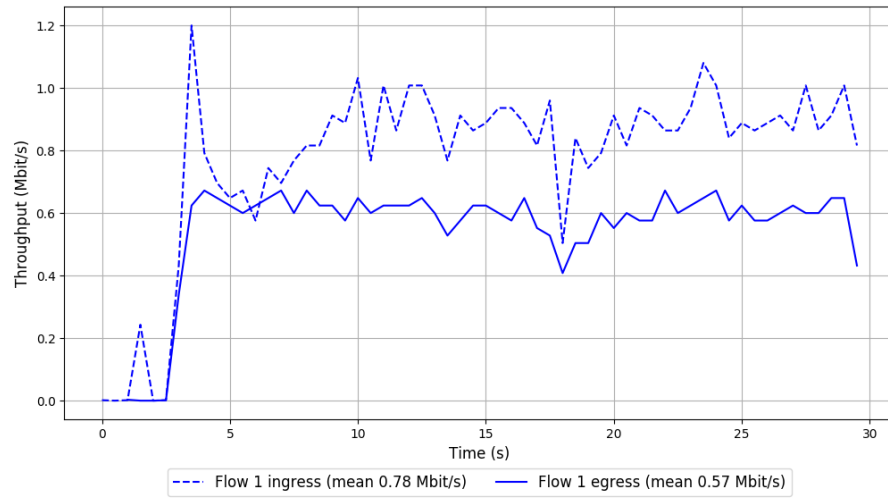
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 7325.575 ms

Loss rate: 30.78%

Run 2: Report of TCP Cubic — Data Link

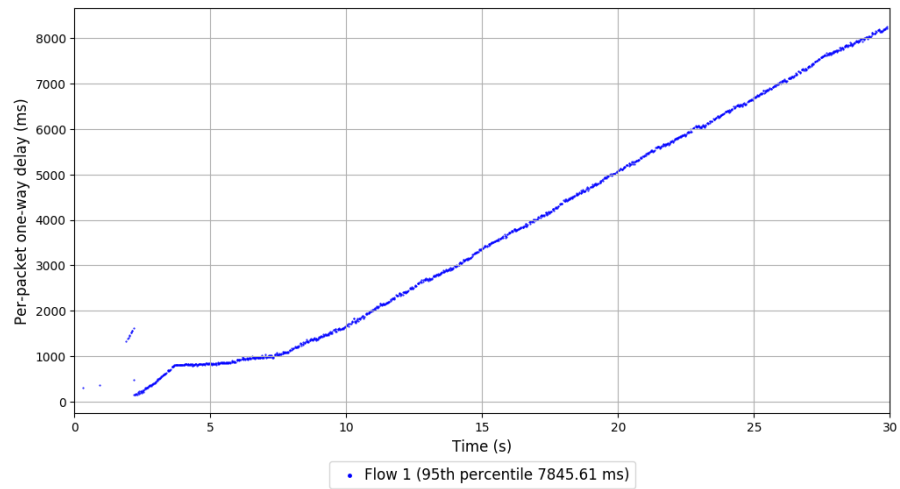
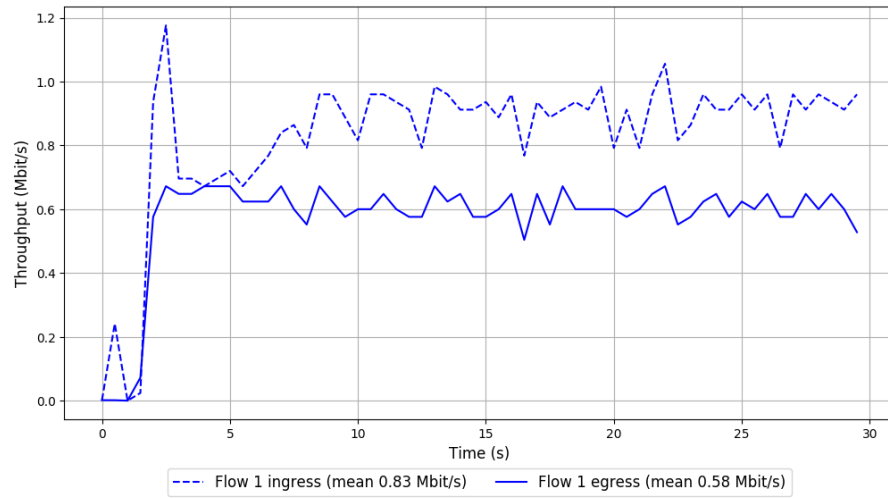


Run 3: Statistics of TCP Cubic

Start at: 2018-02-02 13:10:19
End at: 2018-02-02 13:10:49
Local clock offset: 0.532 ms
Remote clock offset: -3.194 ms

Below is generated by plot.py at 2018-02-02 14:18:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7845.614 ms
Loss rate: 30.87%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7845.614 ms
Loss rate: 30.87%

Run 3: Report of TCP Cubic — Data Link

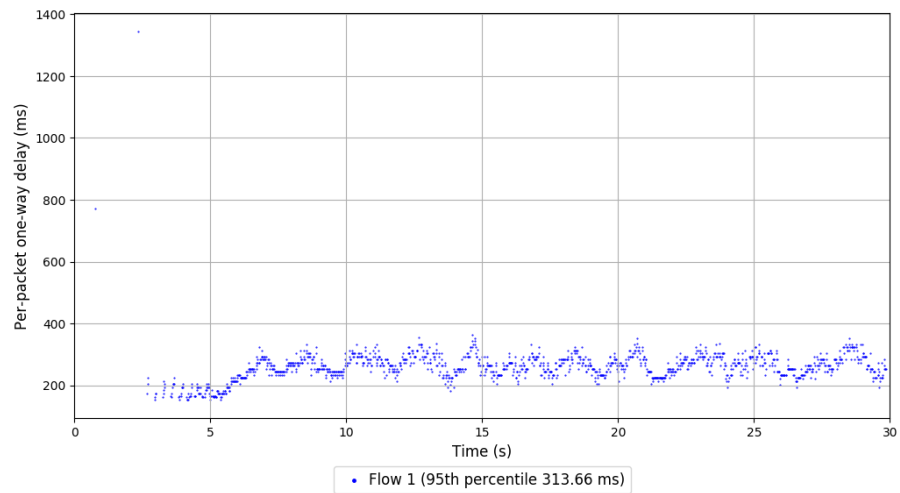
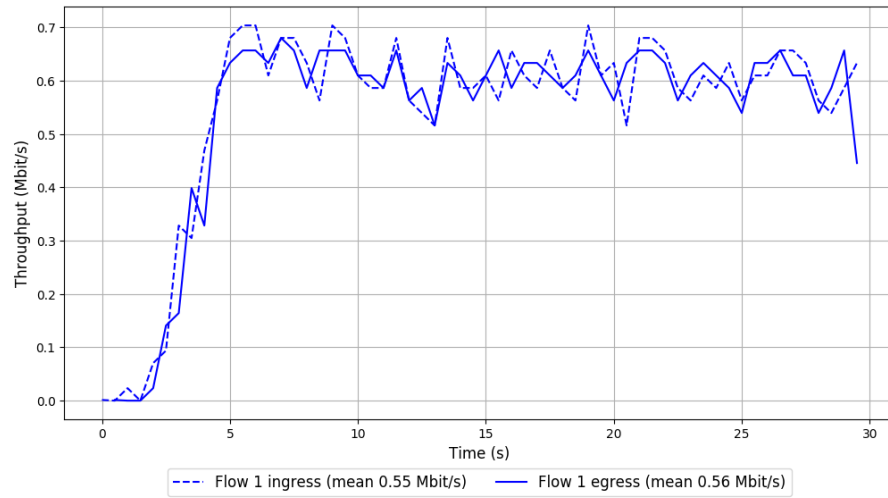


```
Run 1: Statistics of LEDBAT

Start at: 2018-02-02 12:26:18
End at: 2018-02-02 12:26:48
Local clock offset: 0.511 ms
Remote clock offset: -3.569 ms

# Below is generated by plot.py at 2018-02-02 14:18:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 313.660 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 313.660 ms
Loss rate: 1.43%
```

Run 1: Report of LEDBAT — Data Link

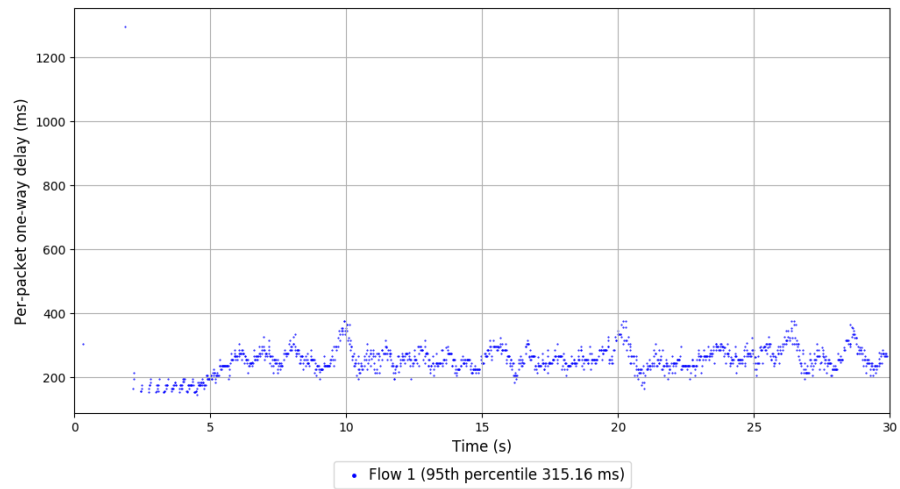
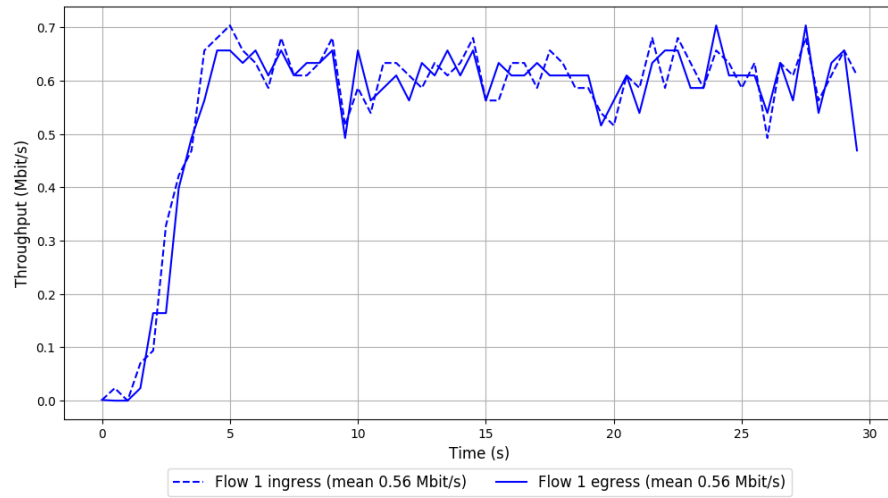


Run 2: Statistics of LEDBAT

Start at: 2018-02-02 12:46:43
End at: 2018-02-02 12:47:13
Local clock offset: 0.444 ms
Remote clock offset: -3.909 ms

Below is generated by plot.py at 2018-02-02 14:18:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 315.159 ms
Loss rate: 1.40%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 315.159 ms
Loss rate: 1.40%

Run 2: Report of LEDBAT — Data Link

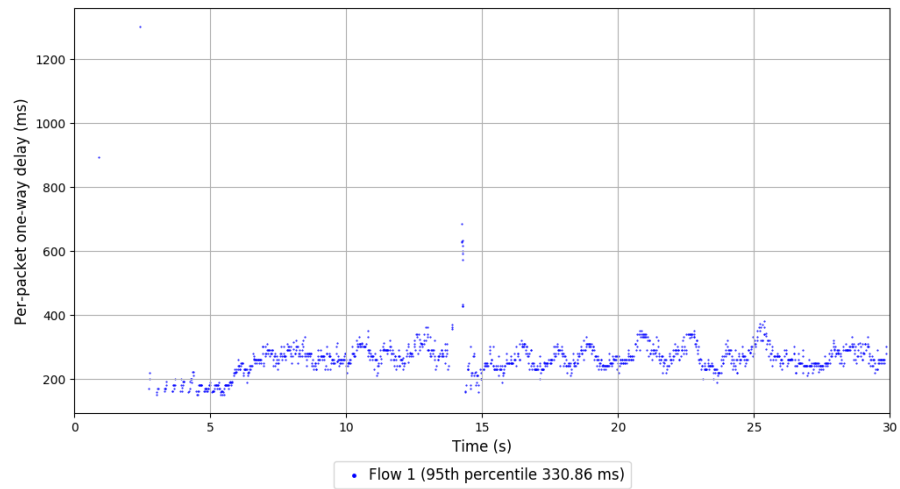
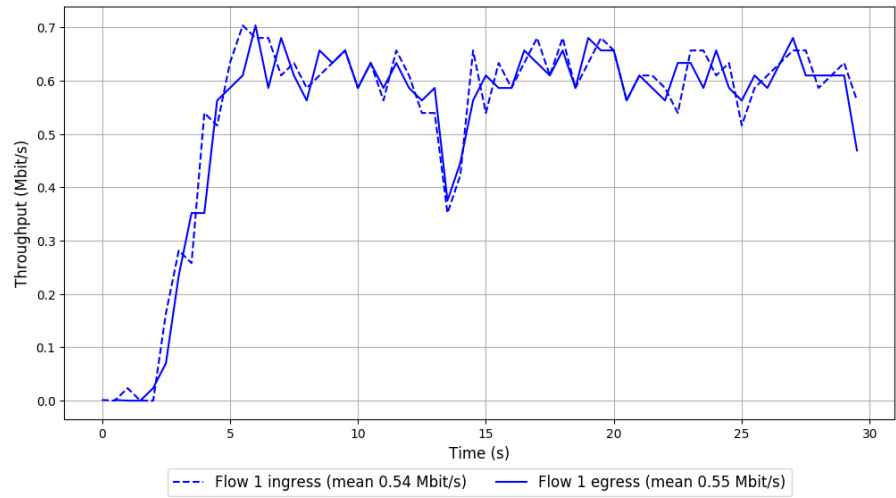


Run 3: Statistics of LEDBAT

Start at: 2018-02-02 13:06:46
End at: 2018-02-02 13:07:16
Local clock offset: 0.435 ms
Remote clock offset: -3.913 ms

Below is generated by plot.py at 2018-02-02 14:18:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 330.861 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 330.861 ms
Loss rate: 1.38%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: 2018-02-02 12:19:13

End at: 2018-02-02 12:19:43

Local clock offset: 0.476 ms

Remote clock offset: 1.262 ms

Below is generated by plot.py at 2018-02-02 14:18:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 25523.473 ms

Loss rate: 98.45%

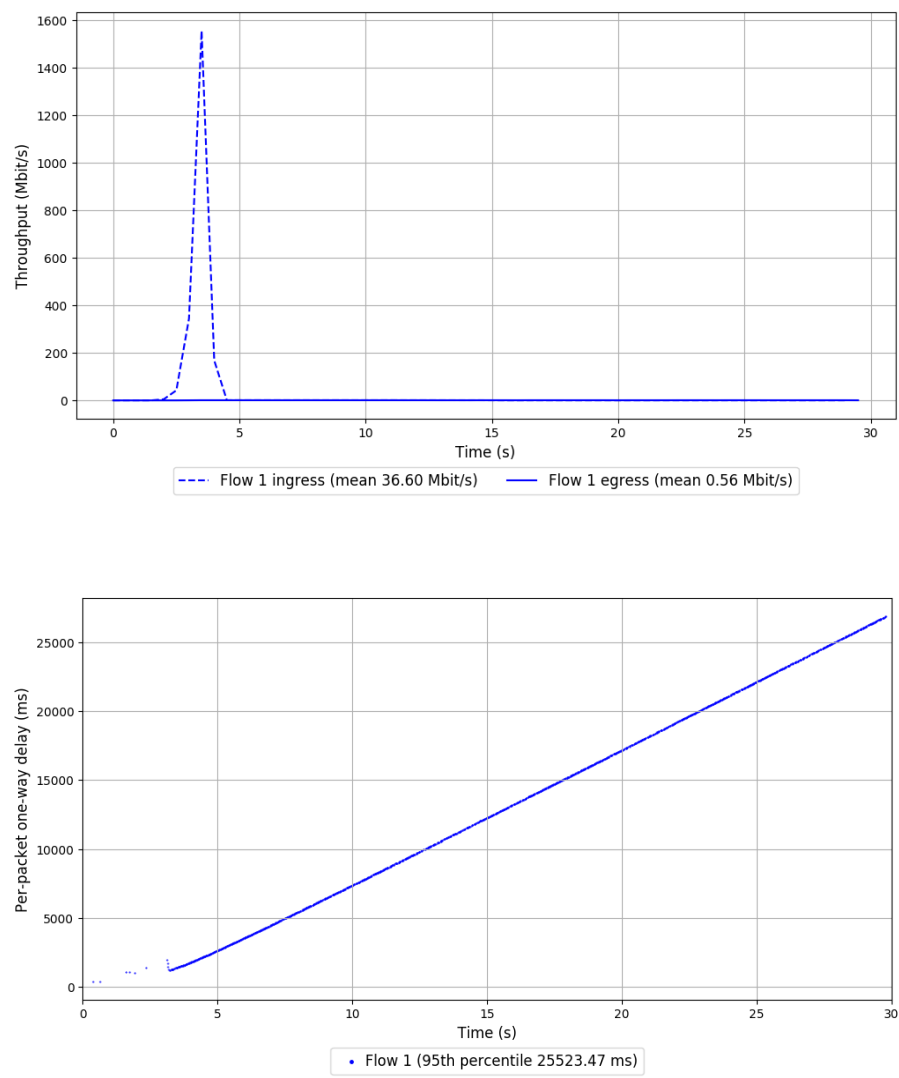
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 25523.473 ms

Loss rate: 98.45%

Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

Start at: 2018-02-02 12:39:22

End at: 2018-02-02 12:39:52

Local clock offset: 0.461 ms

Remote clock offset: 1.943 ms

Below is generated by plot.py at 2018-02-02 14:18:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 25723.335 ms

Loss rate: 98.07%

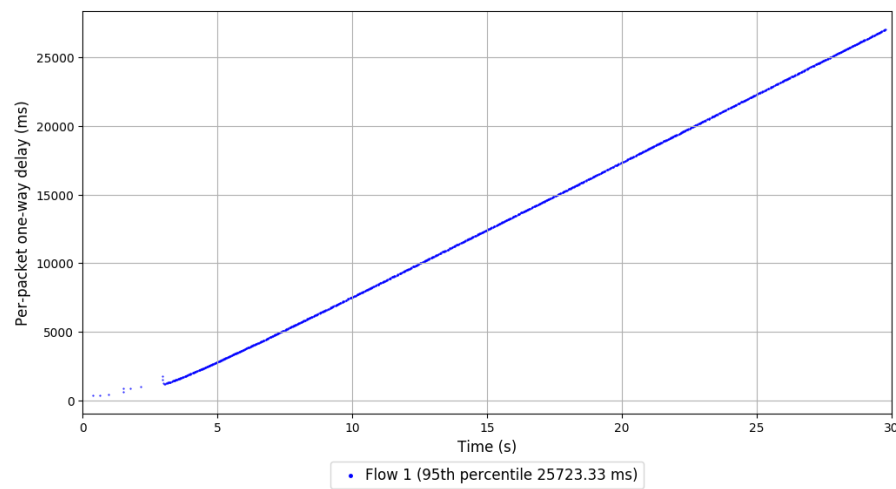
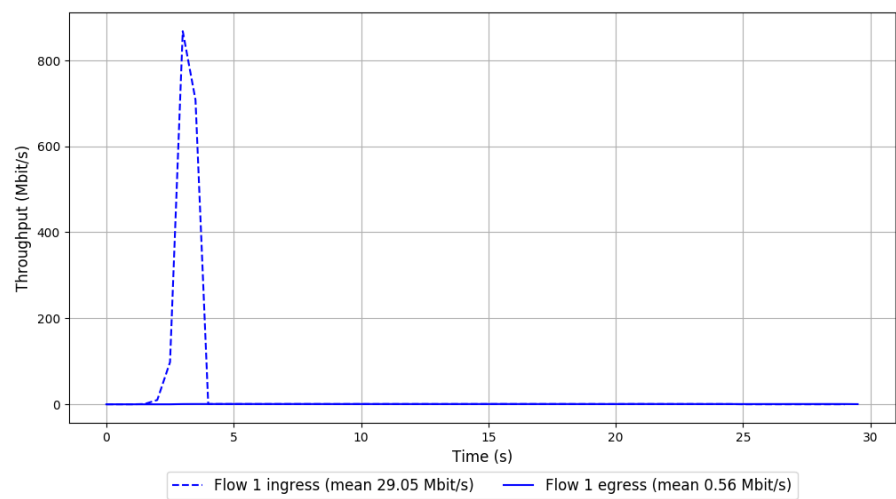
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 25723.335 ms

Loss rate: 98.07%

Run 2: Report of PCC — Data Link

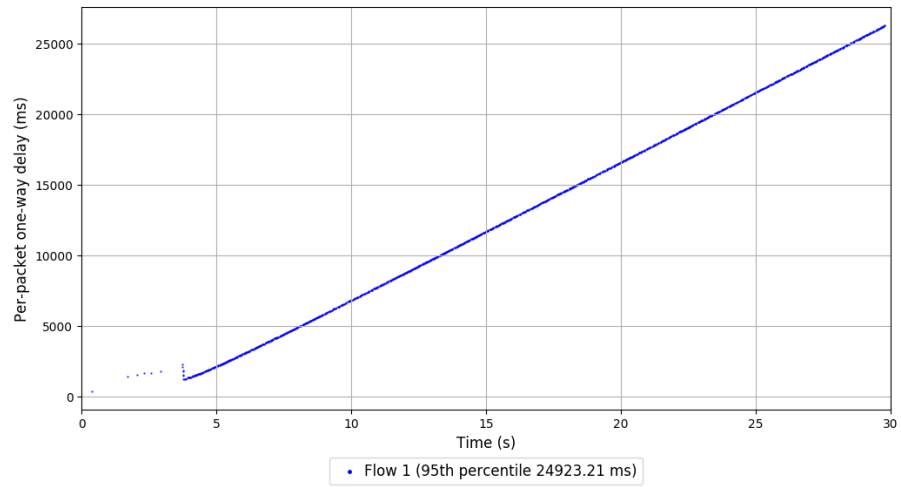
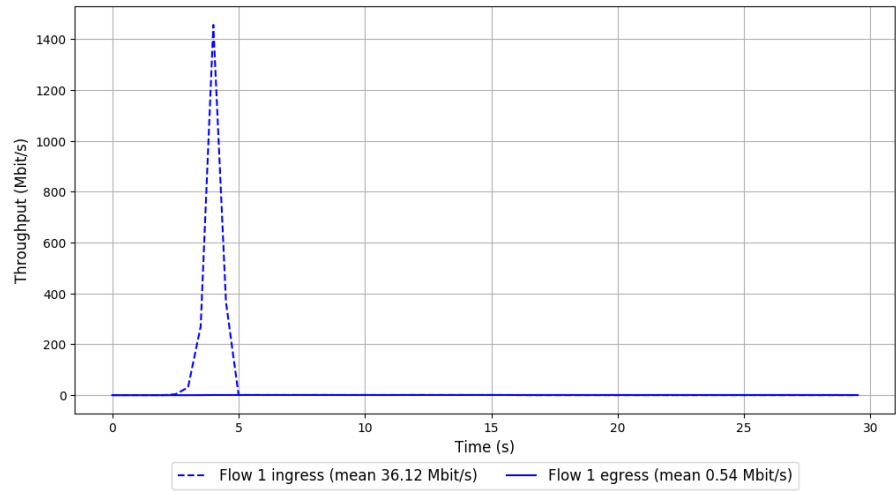


Run 3: Statistics of PCC

Start at: 2018-02-02 12:59:41
End at: 2018-02-02 13:00:11
Local clock offset: 0.504 ms
Remote clock offset: -3.398 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 24923.208 ms
Loss rate: 98.51%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 24923.208 ms
Loss rate: 98.51%

Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-02-02 12:21:35

End at: 2018-02-02 12:22:05

Local clock offset: 0.496 ms

Remote clock offset: -4.321 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 6196.965 ms

Loss rate: 26.55%

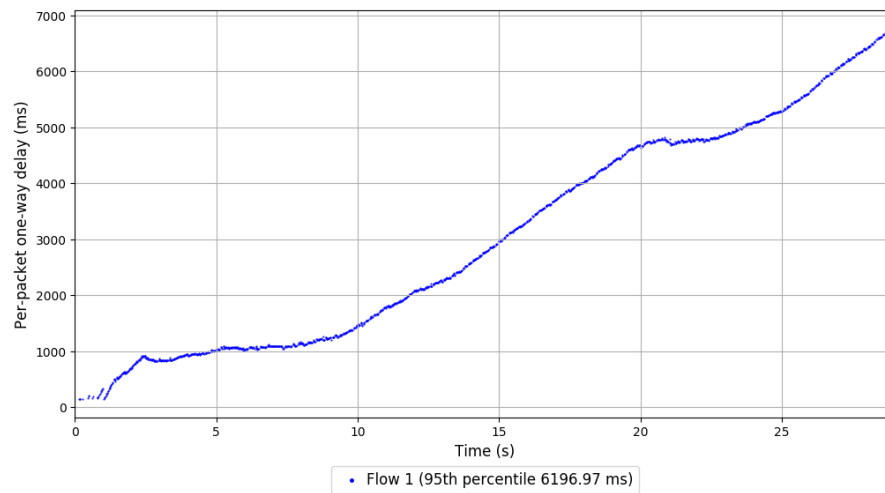
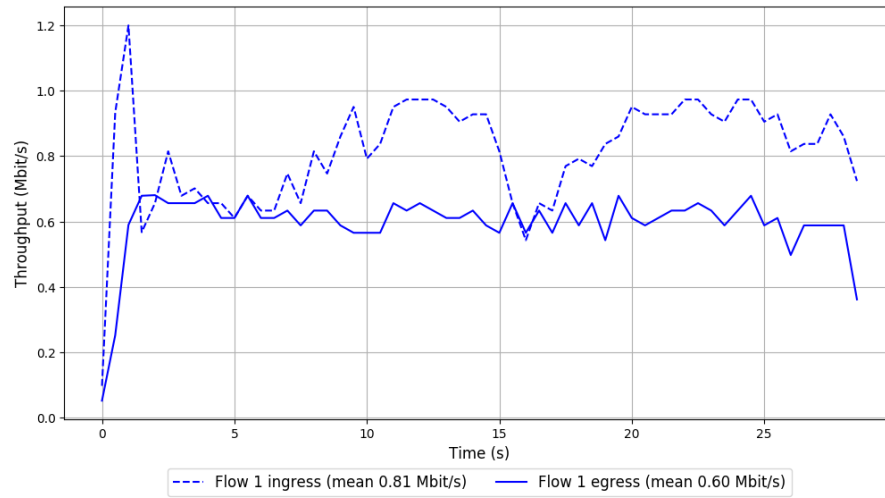
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 6196.965 ms

Loss rate: 26.55%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-02-02 12:41:45

End at: 2018-02-02 12:42:15

Local clock offset: 0.446 ms

Remote clock offset: 0.977 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 6921.346 ms

Loss rate: 29.00%

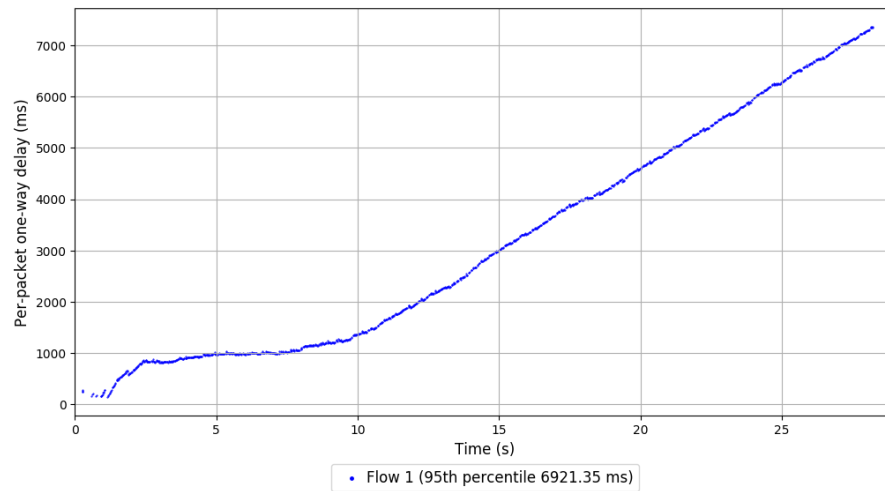
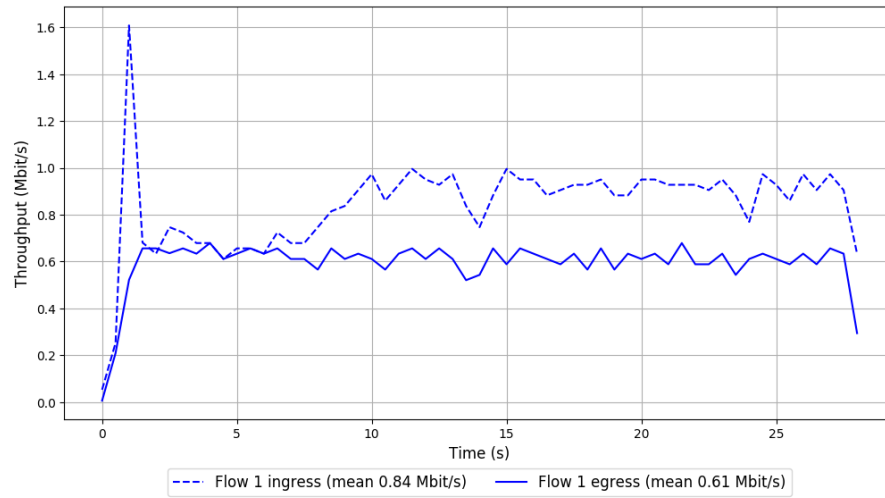
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 6921.346 ms

Loss rate: 29.00%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-02-02 13:02:04

End at: 2018-02-02 13:02:34

Local clock offset: 0.496 ms

Remote clock offset: -4.045 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 7334.402 ms

Loss rate: 29.00%

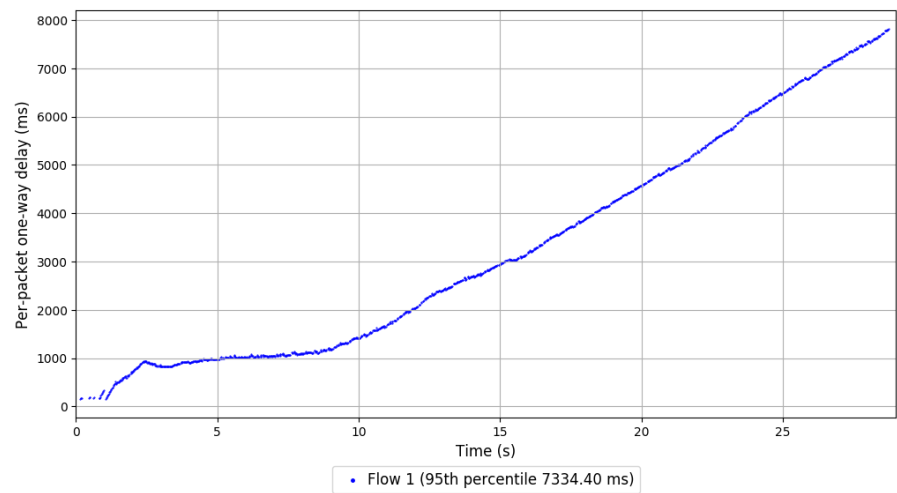
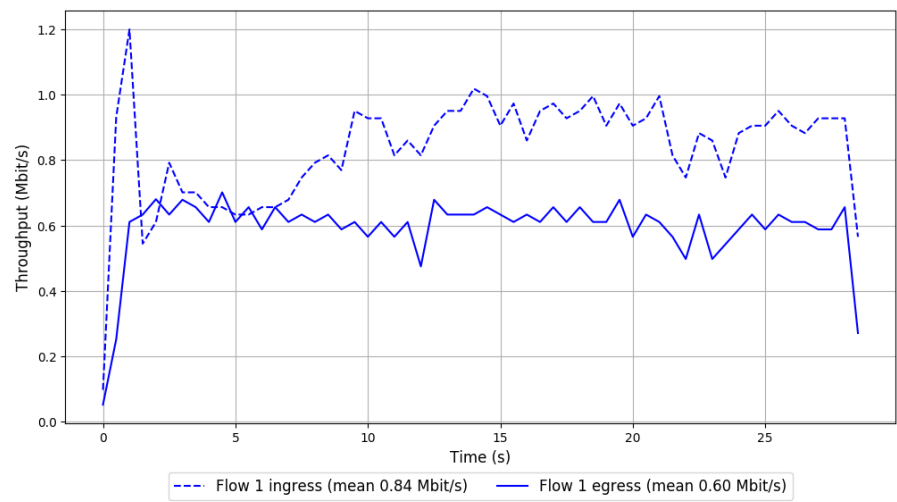
-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 7334.402 ms

Loss rate: 29.00%

Run 3: Report of QUIC Cubic — Data Link

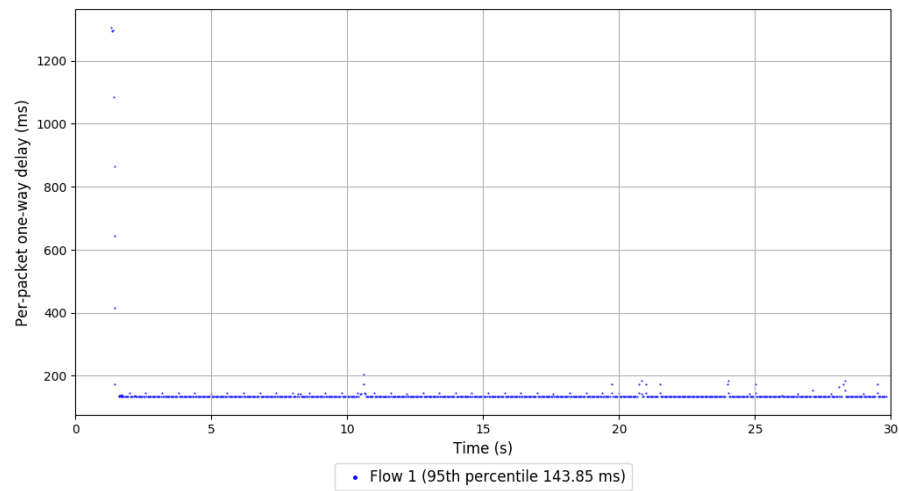
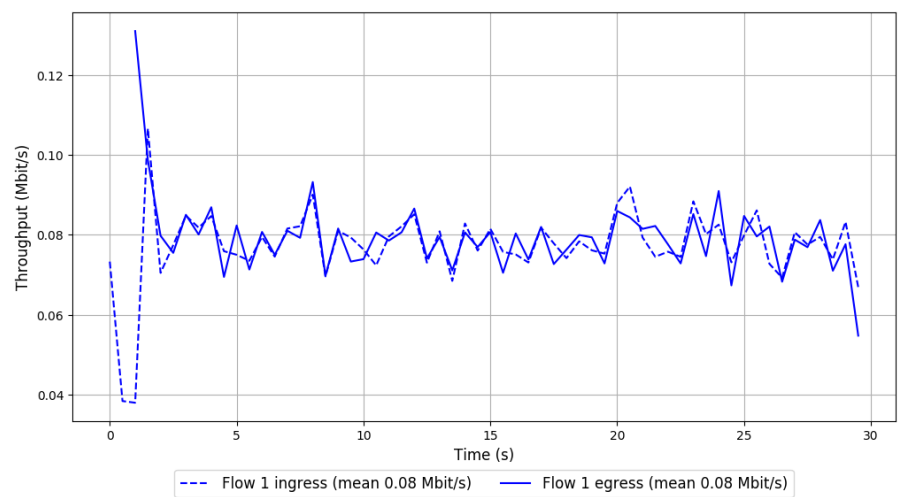


```
Run 1: Statistics of SCReAM

Start at: 2018-02-02 12:23:57
End at: 2018-02-02 12:24:27
Local clock offset: 0.412 ms
Remote clock offset: 1.257 ms

# Below is generated by plot.py at 2018-02-02 14:18:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.854 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.854 ms
Loss rate: 0.79%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2018-02-02 12:44:16

End at: 2018-02-02 12:44:46

Local clock offset: 0.453 ms

Remote clock offset: 0.034 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 168.638 ms

Loss rate: 0.79%

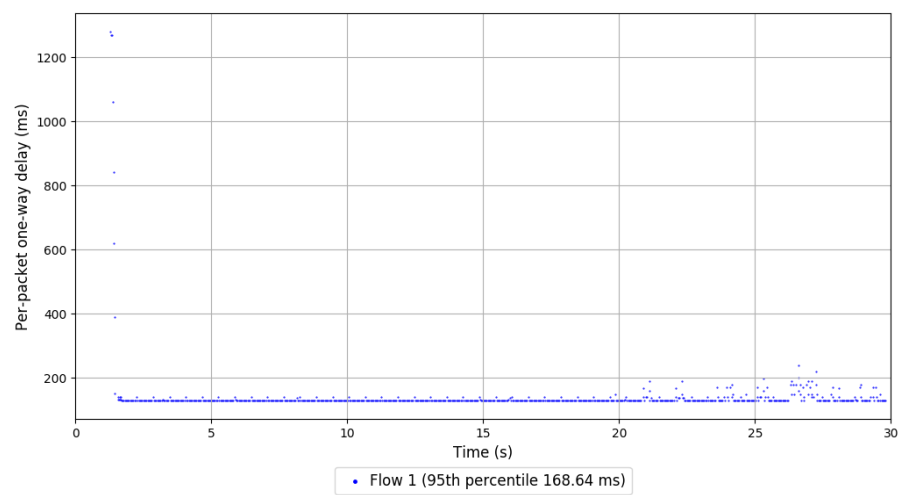
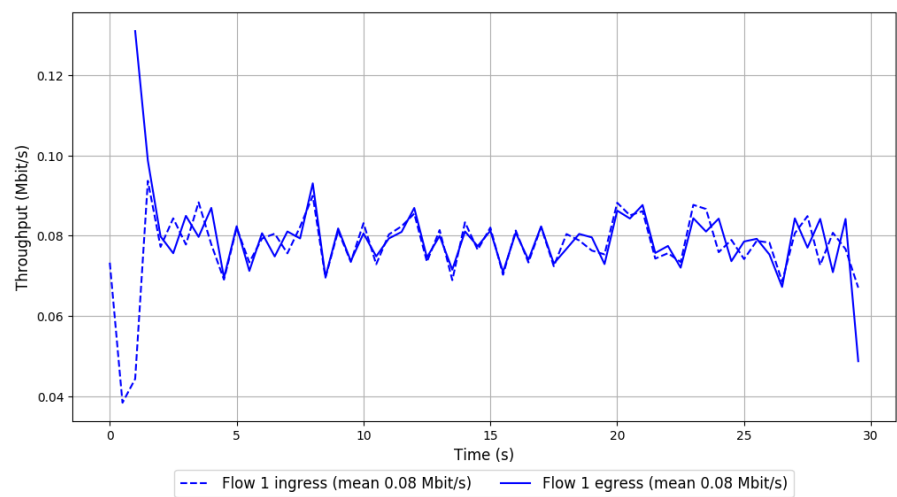
-- Flow 1:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 168.638 ms

Loss rate: 0.79%

Run 2: Report of SReAM — Data Link

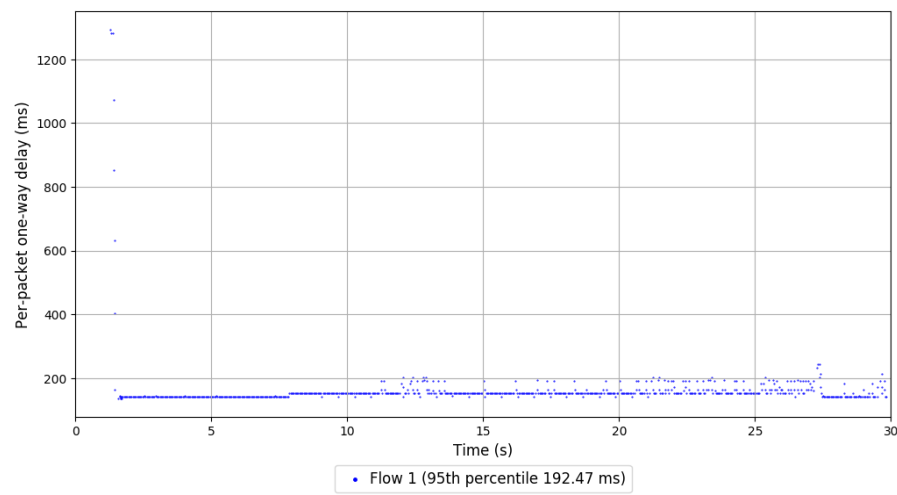
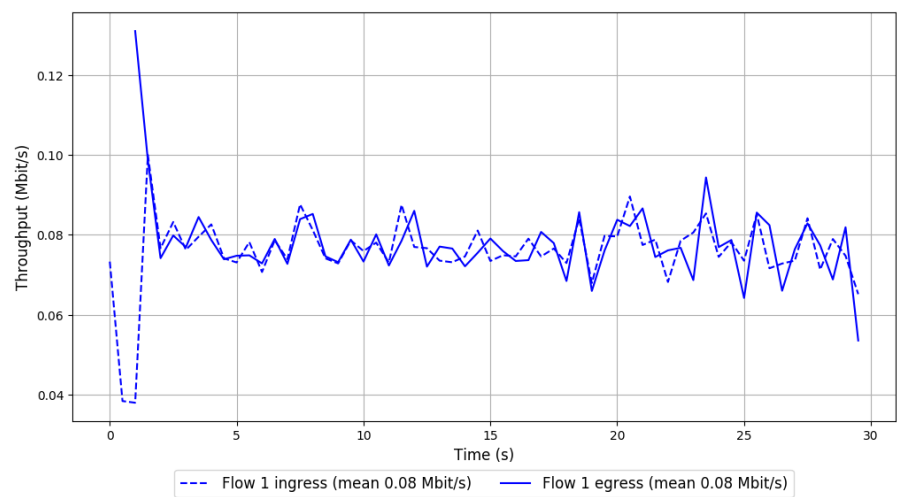


Run 3: Statistics of SCReAM

Start at: 2018-02-02 13:04:25
End at: 2018-02-02 13:04:55
Local clock offset: 0.497 ms
Remote clock offset: -3.884 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 192.472 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 192.472 ms
Loss rate: 0.78%

Run 3: Report of SReAM — Data Link

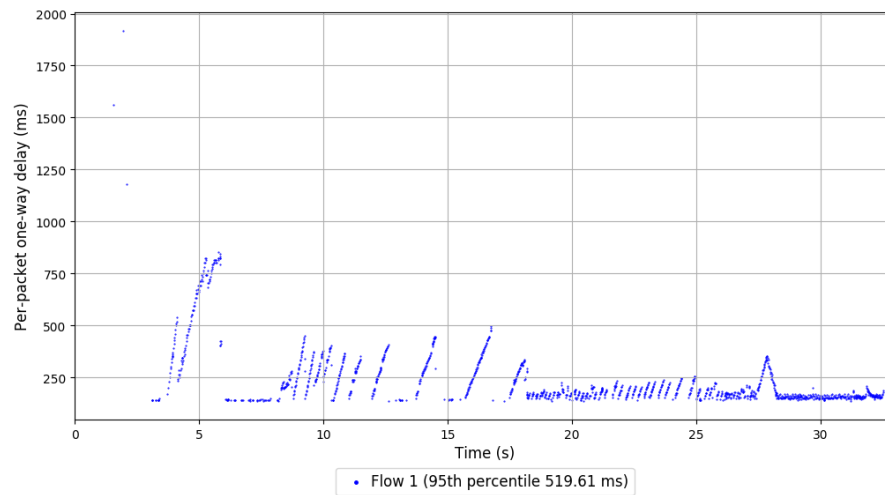
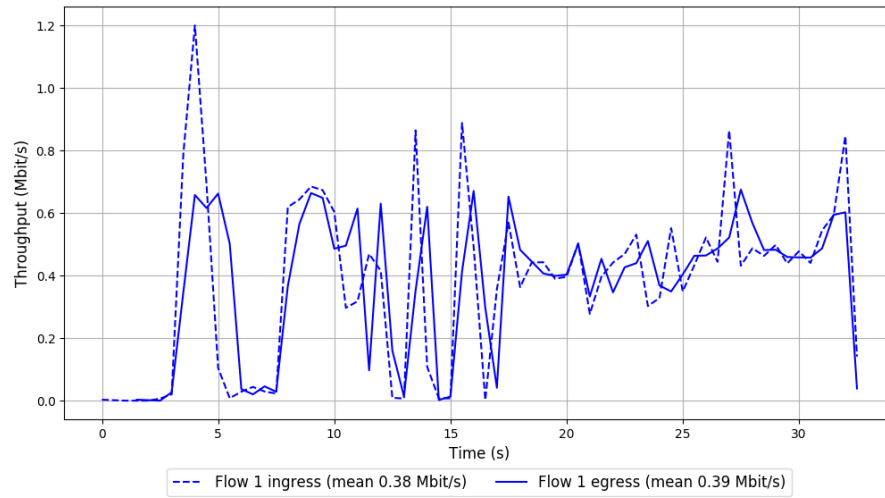


Run 1: Statistics of WebRTC media

Start at: 2018-02-02 12:35:49
End at: 2018-02-02 12:36:19
Local clock offset: 0.461 ms
Remote clock offset: -3.747 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 519.613 ms
Loss rate: 2.15%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 519.613 ms
Loss rate: 2.15%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-02-02 12:56:09

End at: 2018-02-02 12:56:39

Local clock offset: 0.396 ms

Remote clock offset: 1.338 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.33 Mbit/s

95th percentile per-packet one-way delay: 597.932 ms

Loss rate: 0.97%

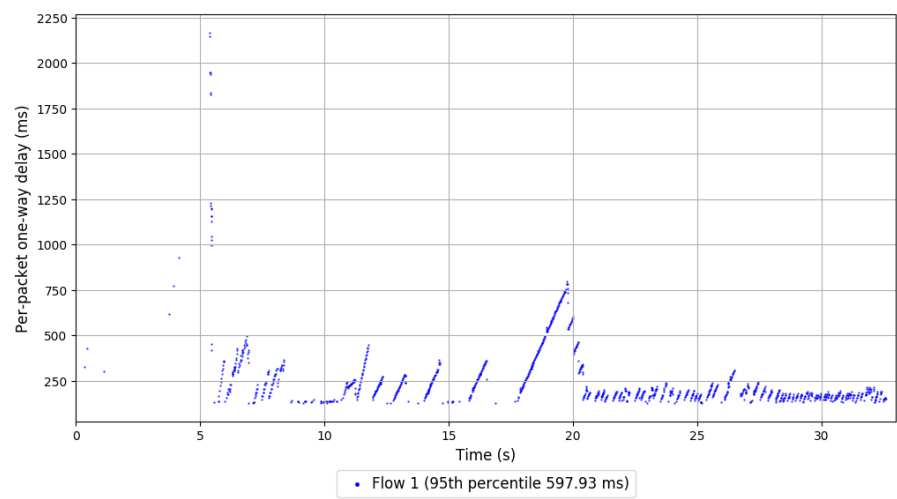
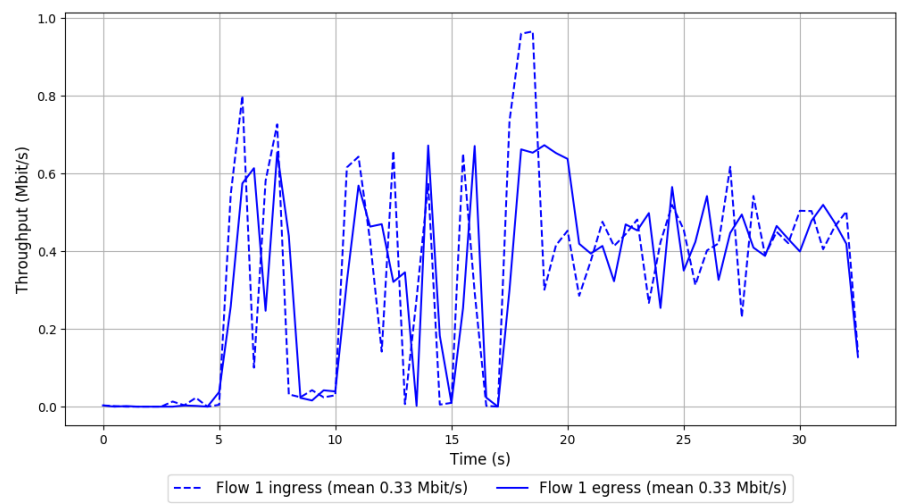
-- Flow 1:

Average throughput: 0.33 Mbit/s

95th percentile per-packet one-way delay: 597.932 ms

Loss rate: 0.97%

Run 2: Report of WebRTC media — Data Link

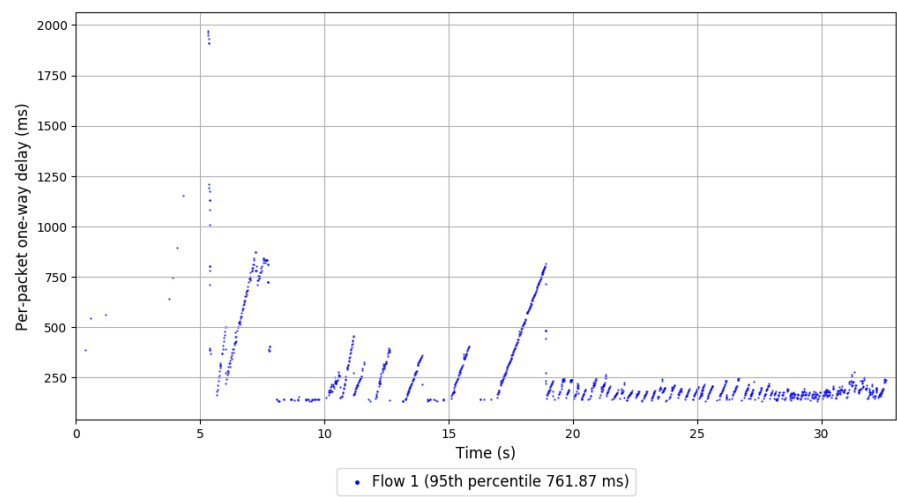
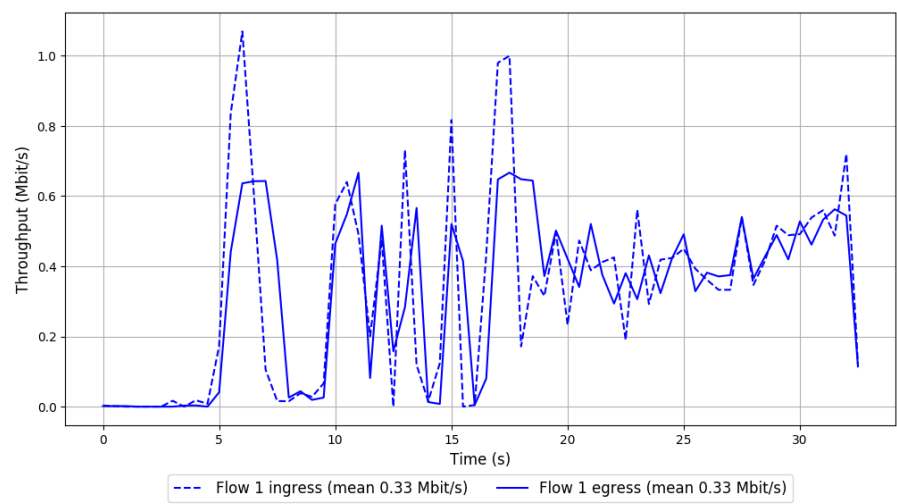


Run 3: Statistics of WebRTC media

Start at: 2018-02-02 13:16:16
End at: 2018-02-02 13:16:46
Local clock offset: 0.434 ms
Remote clock offset: -3.413 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 761.874 ms
Loss rate: 1.71%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 761.874 ms
Loss rate: 1.71%

Run 3: Report of WebRTC media — Data Link

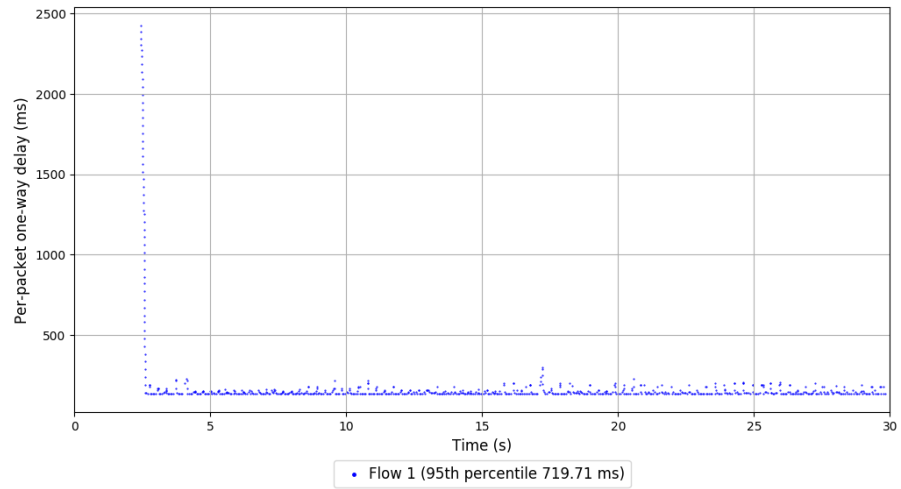
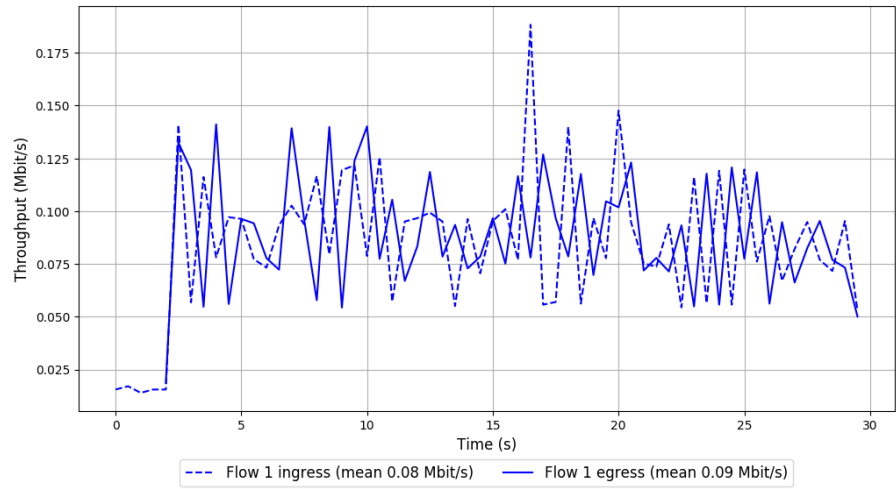


Run 1: Statistics of Sprout

Start at: 2018-02-02 12:32:16
End at: 2018-02-02 12:32:46
Local clock offset: 0.493 ms
Remote clock offset: -4.546 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 719.708 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 719.708 ms
Loss rate: 0.91%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-02-02 12:52:36

End at: 2018-02-02 12:53:06

Local clock offset: 0.467 ms

Remote clock offset: 1.034 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 491.465 ms

Loss rate: 0.86%

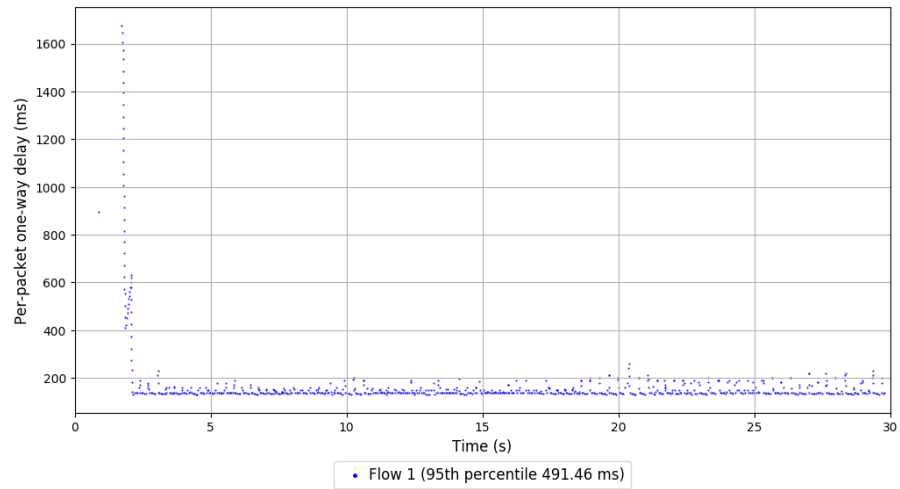
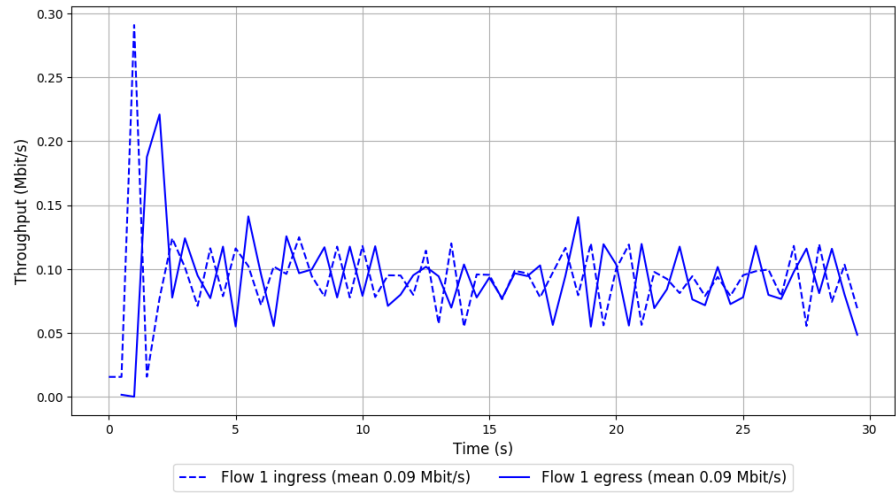
-- Flow 1:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 491.465 ms

Loss rate: 0.86%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-02-02 13:12:42

End at: 2018-02-02 13:13:12

Local clock offset: 0.521 ms

Remote clock offset: 1.607 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 585.845 ms

Loss rate: 0.96%

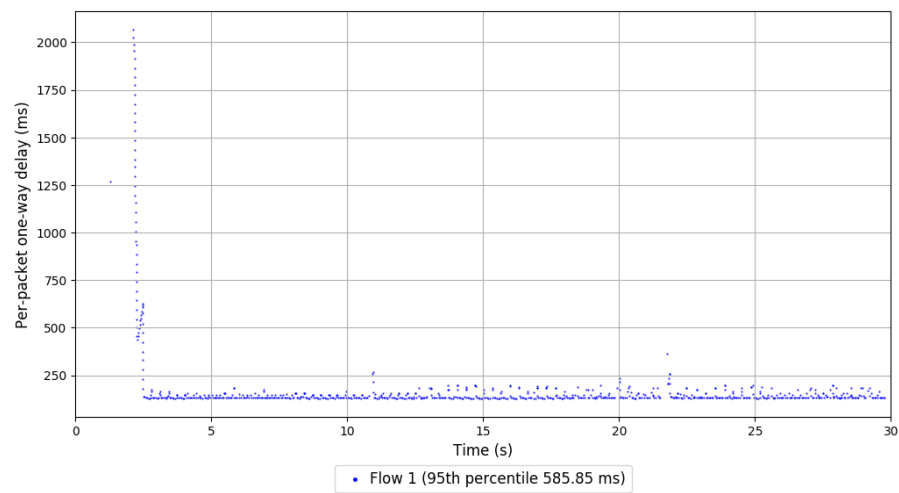
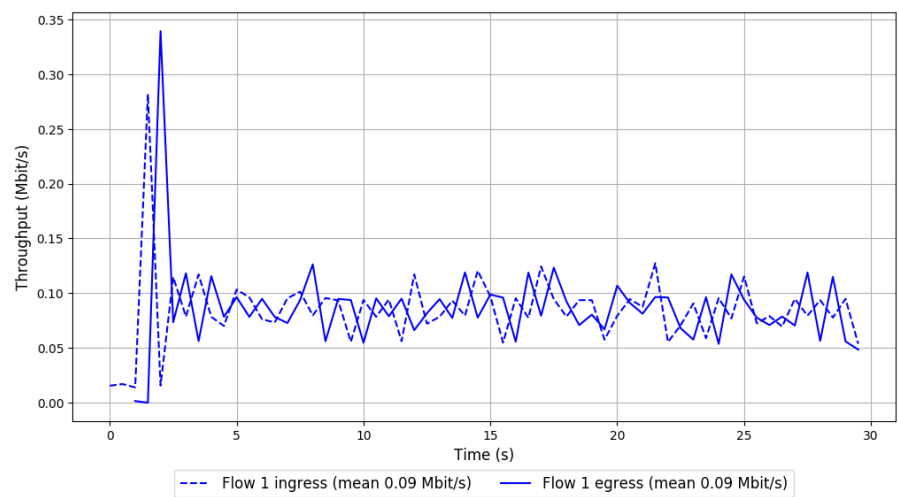
-- Flow 1:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 585.845 ms

Loss rate: 0.96%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-02-02 12:37:00

End at: 2018-02-02 12:37:30

Local clock offset: 0.476 ms

Remote clock offset: -4.598 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 988.926 ms

Loss rate: 2.59%

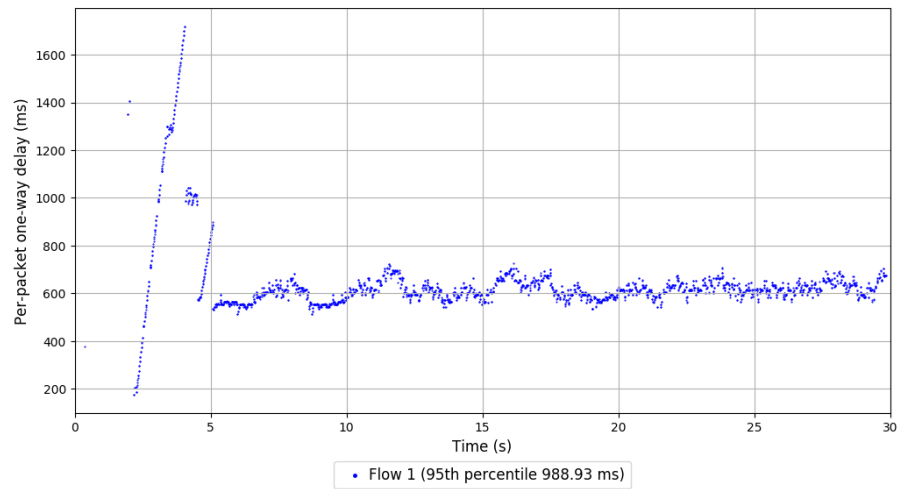
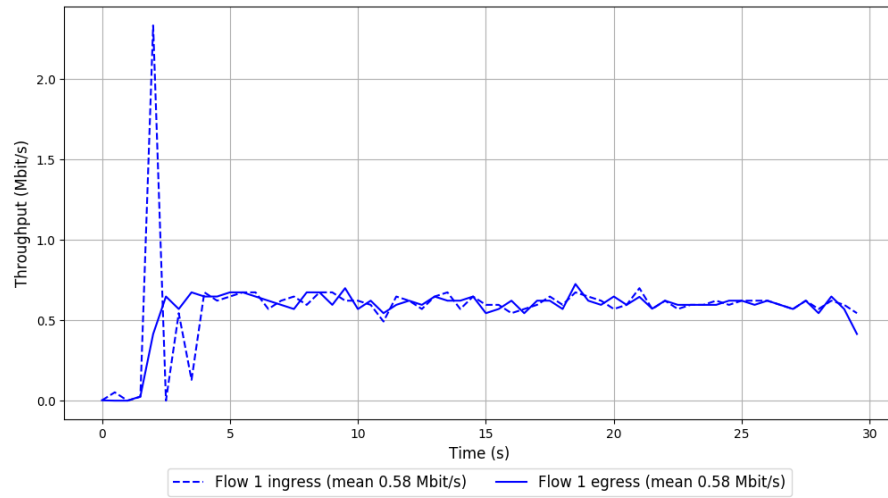
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 988.926 ms

Loss rate: 2.59%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-02-02 12:57:19

End at: 2018-02-02 12:57:49

Local clock offset: 0.471 ms

Remote clock offset: 1.387 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1355.696 ms

Loss rate: 2.51%

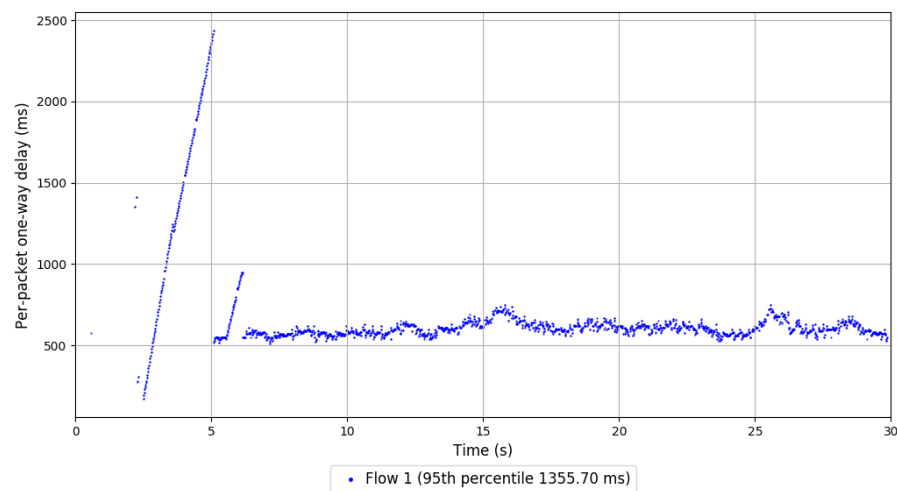
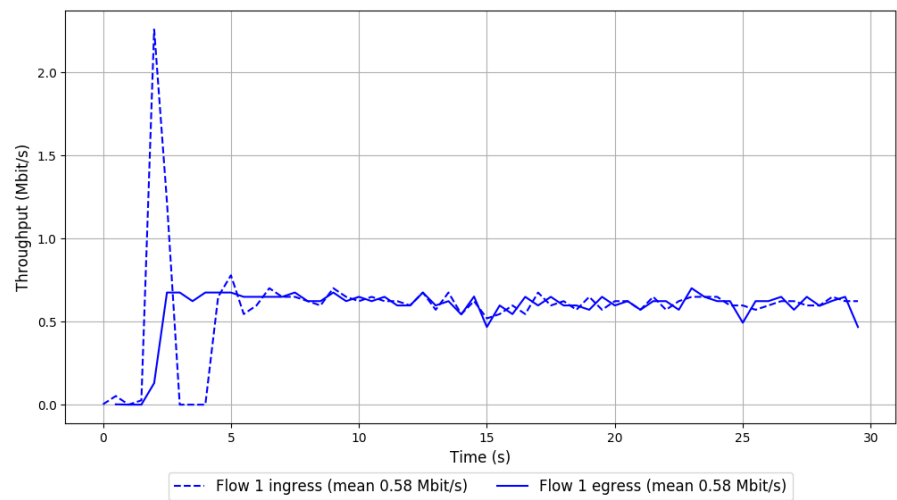
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1355.696 ms

Loss rate: 2.51%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-02-02 13:17:26

End at: 2018-02-02 13:17:56

Local clock offset: 0.493 ms

Remote clock offset: 1.426 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1068.348 ms

Loss rate: 2.62%

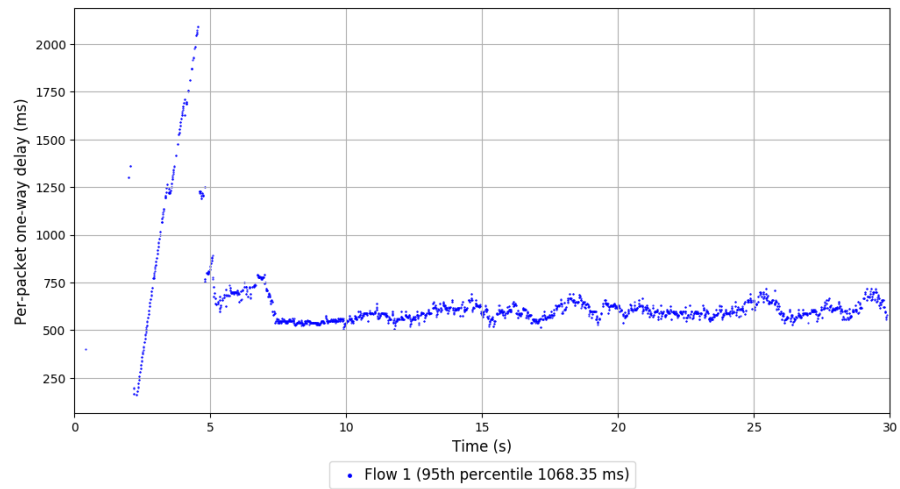
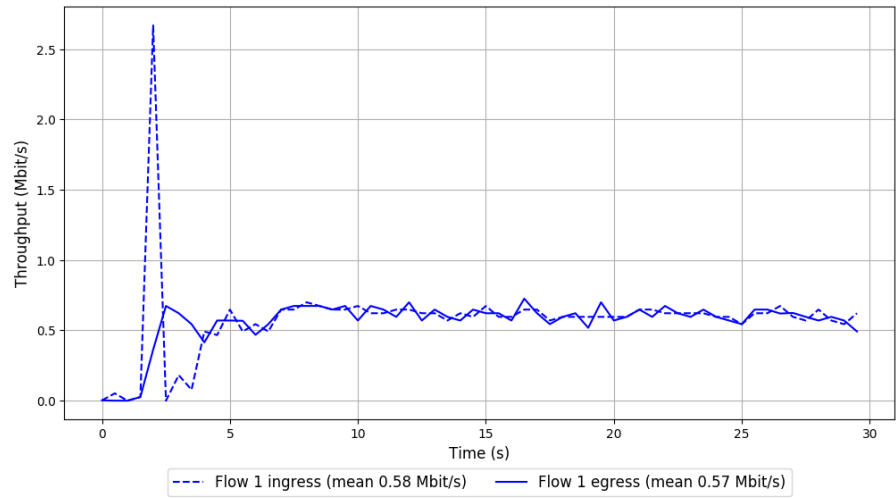
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1068.348 ms

Loss rate: 2.62%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-02-02 12:22:47

End at: 2018-02-02 12:23:17

Local clock offset: 0.491 ms

Remote clock offset: 1.34 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1045.335 ms

Loss rate: 2.25%

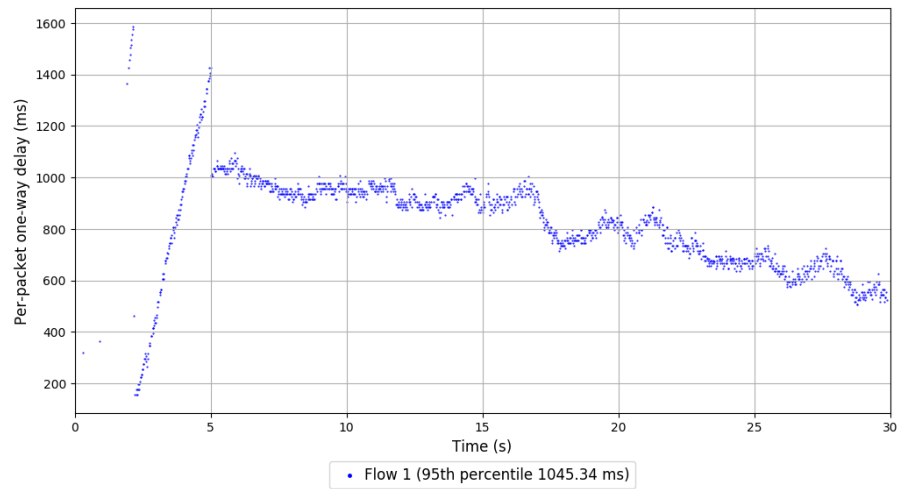
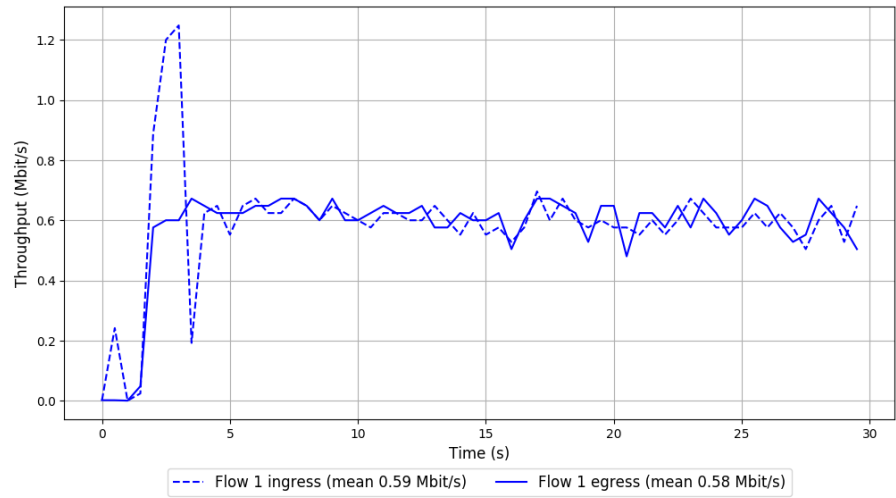
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1045.335 ms

Loss rate: 2.25%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-02-02 12:42:55

End at: 2018-02-02 12:43:26

Local clock offset: 0.383 ms

Remote clock offset: 0.959 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 277.127 ms

Loss rate: 1.43%

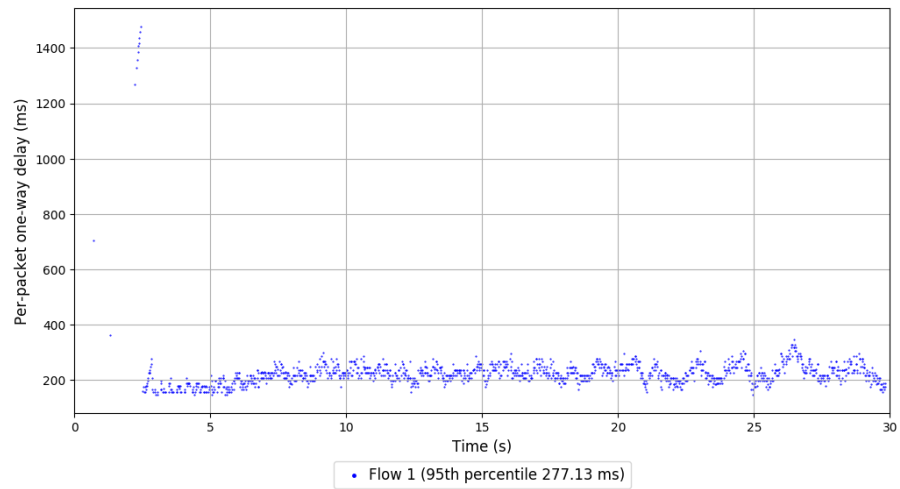
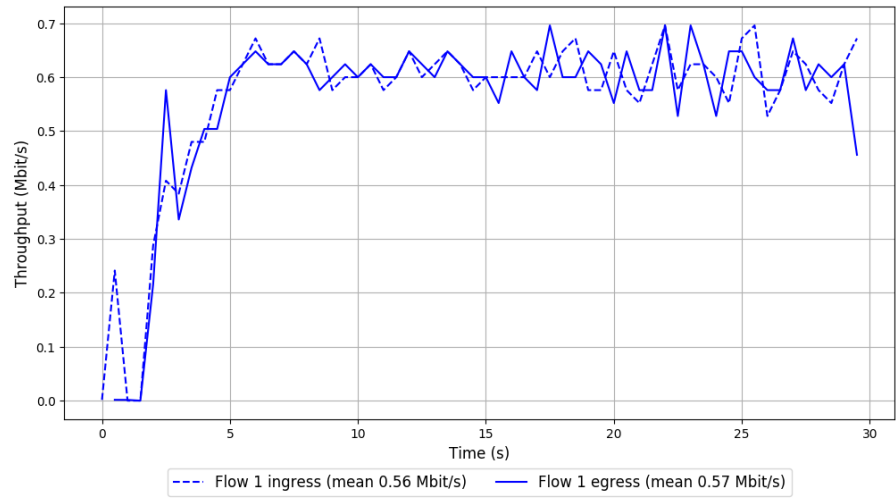
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 277.127 ms

Loss rate: 1.43%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-02-02 13:03:15

End at: 2018-02-02 13:03:45

Local clock offset: 0.486 ms

Remote clock offset: 1.737 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 972.328 ms

Loss rate: 1.99%

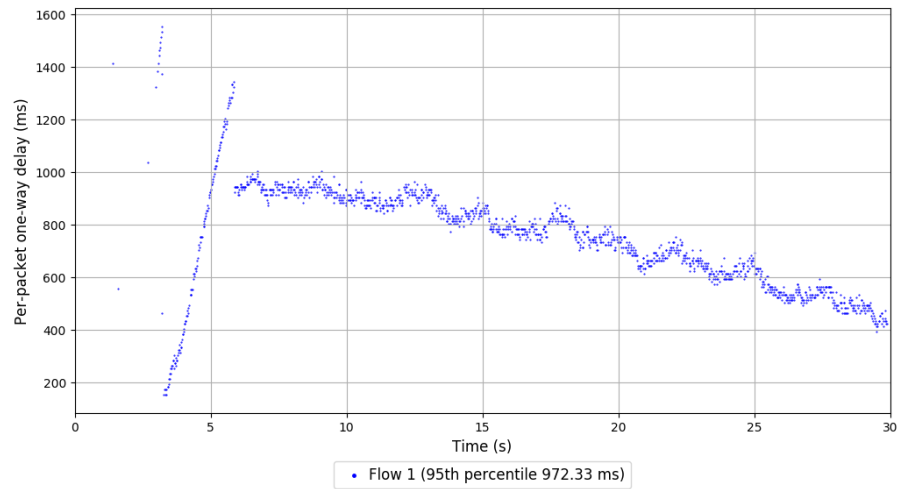
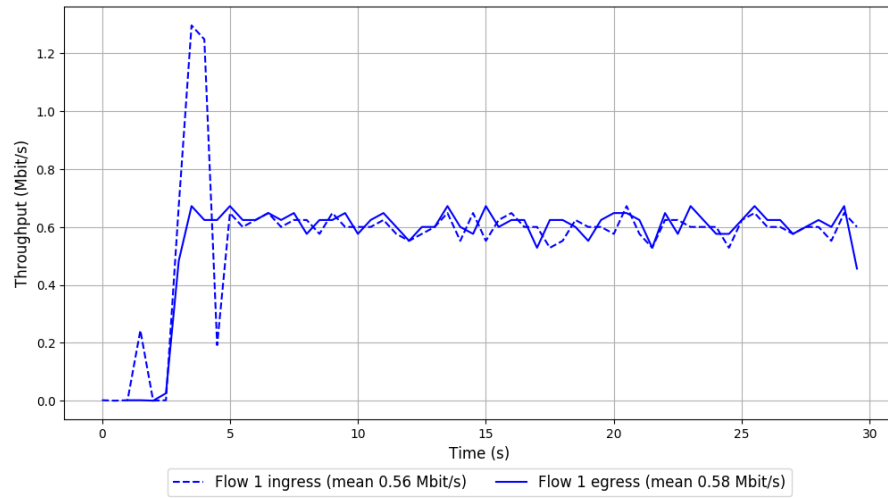
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 972.328 ms

Loss rate: 1.99%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-02-02 12:18:02

End at: 2018-02-02 12:18:32

Local clock offset: 0.501 ms

Remote clock offset: 0.444 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 1948.704 ms

Loss rate: 6.71%

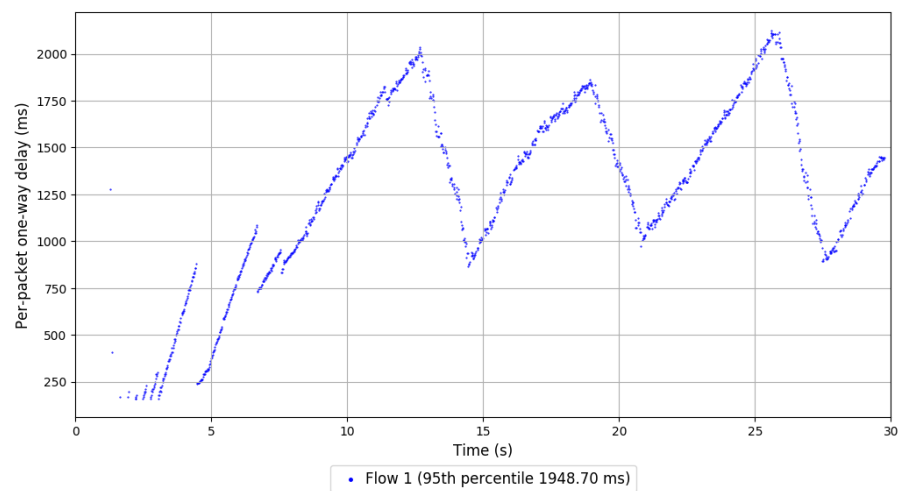
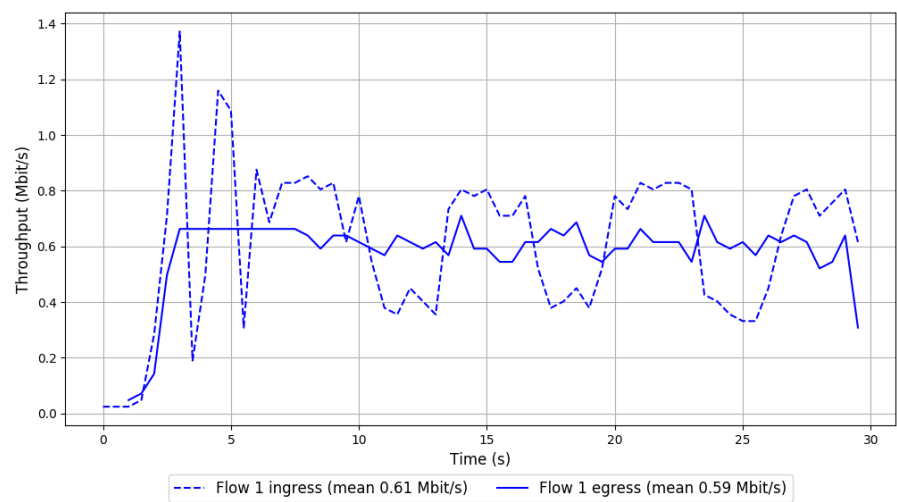
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 1948.704 ms

Loss rate: 6.71%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-02-02 12:38:11

End at: 2018-02-02 12:38:41

Local clock offset: 0.449 ms

Remote clock offset: 1.911 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 2103.045 ms

Loss rate: 3.91%

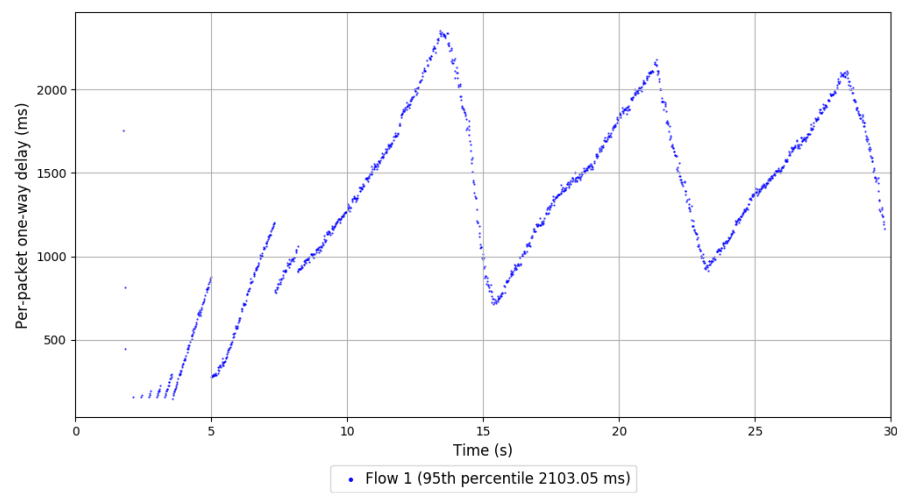
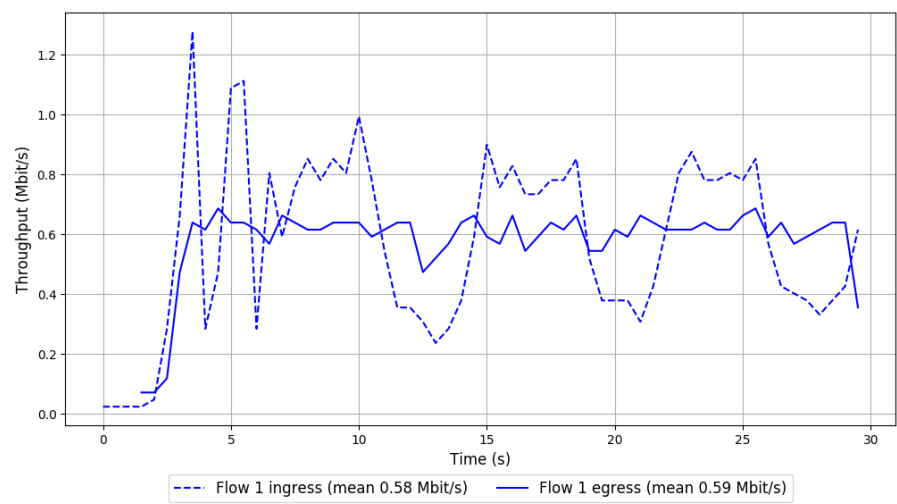
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 2103.045 ms

Loss rate: 3.91%

Run 2: Report of Verus — Data Link

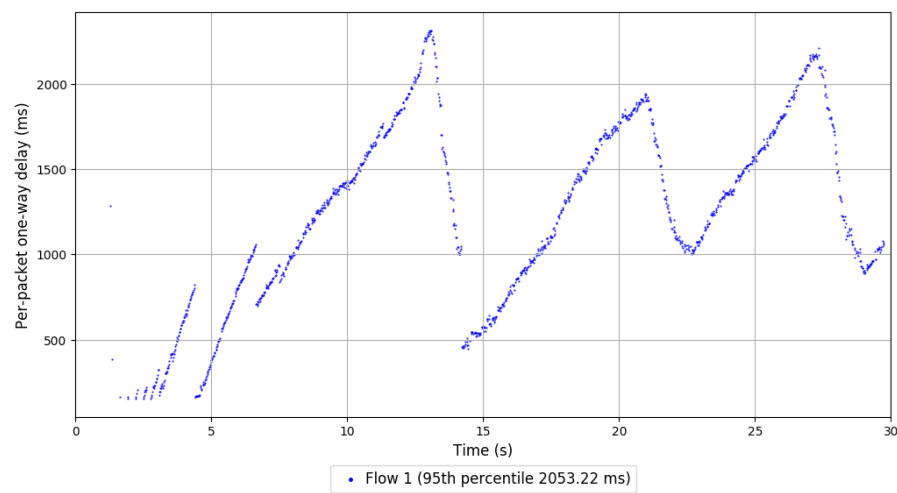
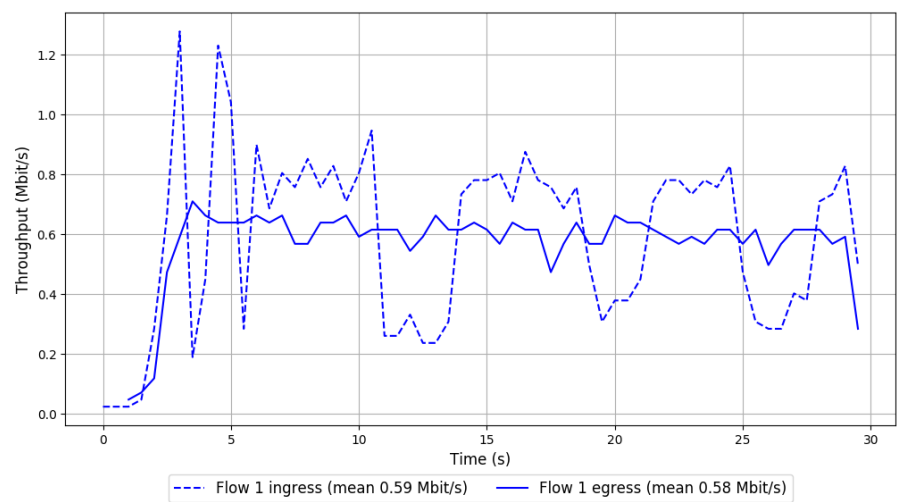


Run 3: Statistics of Verus

Start at: 2018-02-02 12:58:31
End at: 2018-02-02 12:59:01
Local clock offset: 0.462 ms
Remote clock offset: -3.378 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2053.218 ms
Loss rate: 5.45%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2053.218 ms
Loss rate: 5.45%

Run 3: Report of Verus — Data Link



Run 1: Statistics of Copa

Start at: 2018-02-02 12:34:38

End at: 2018-02-02 12:35:08

Local clock offset: 0.474 ms

Remote clock offset: 0.331 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 273.548 ms

Loss rate: 3.60%

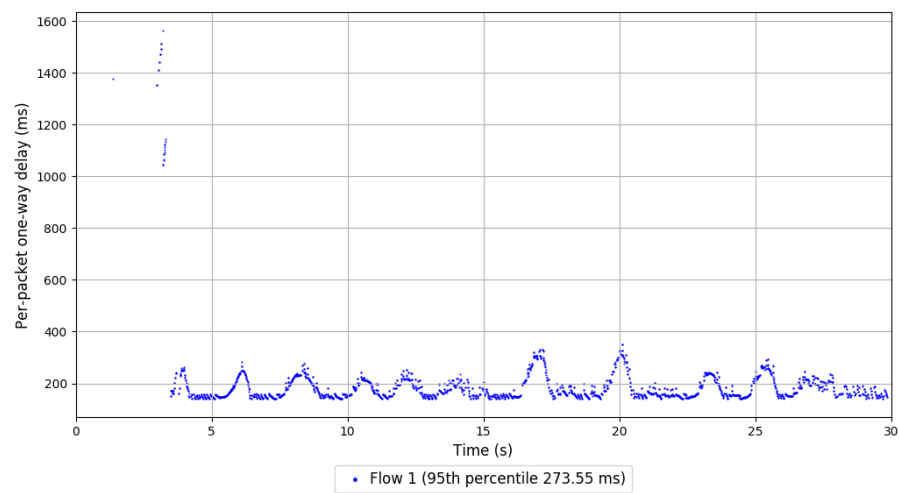
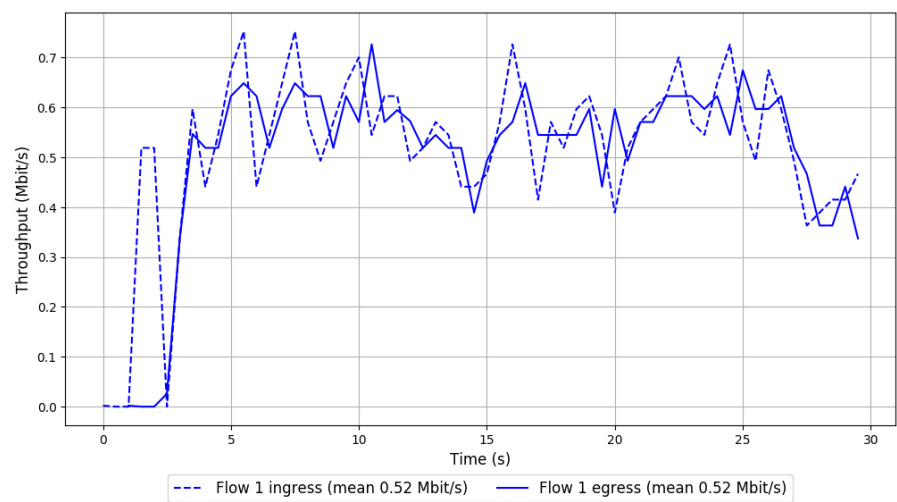
-- Flow 1:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 273.548 ms

Loss rate: 3.60%

Run 1: Report of Copa — Data Link

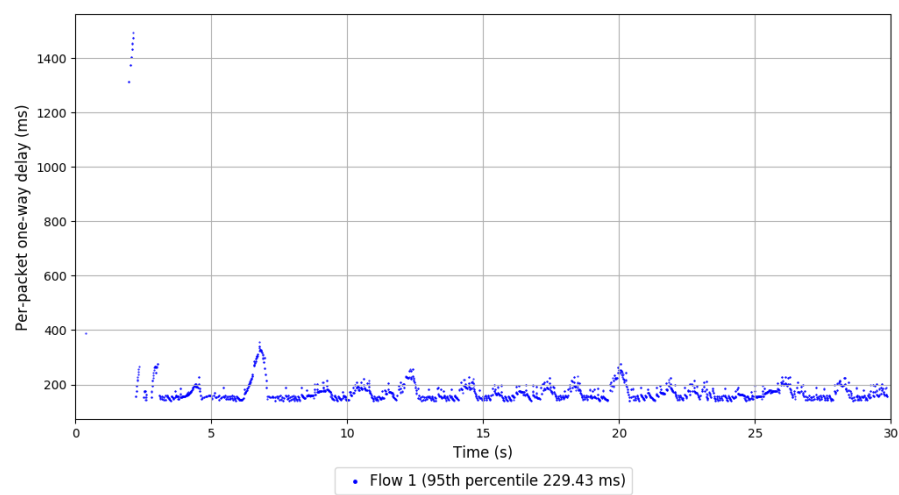
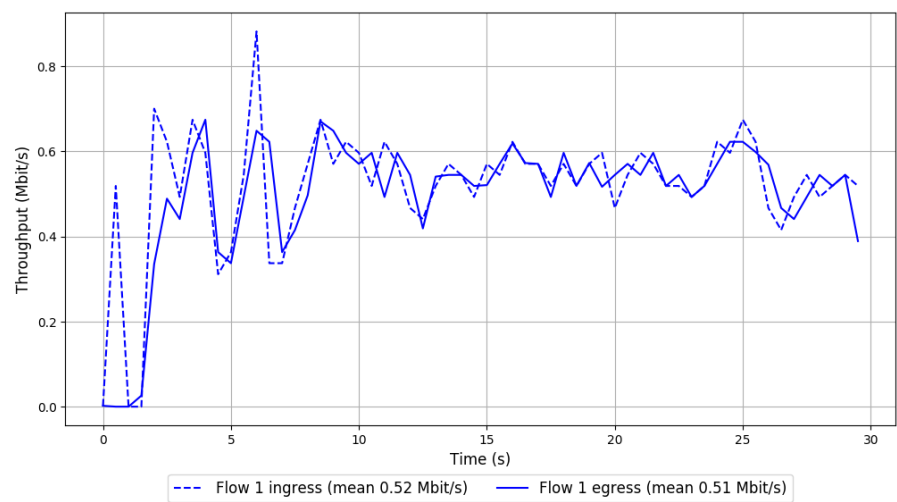


Run 2: Statistics of Copa

Start at: 2018-02-02 12:54:58
End at: 2018-02-02 12:55:28
Local clock offset: 0.468 ms
Remote clock offset: 0.352 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 229.434 ms
Loss rate: 3.78%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 229.434 ms
Loss rate: 3.78%

Run 2: Report of Copa — Data Link

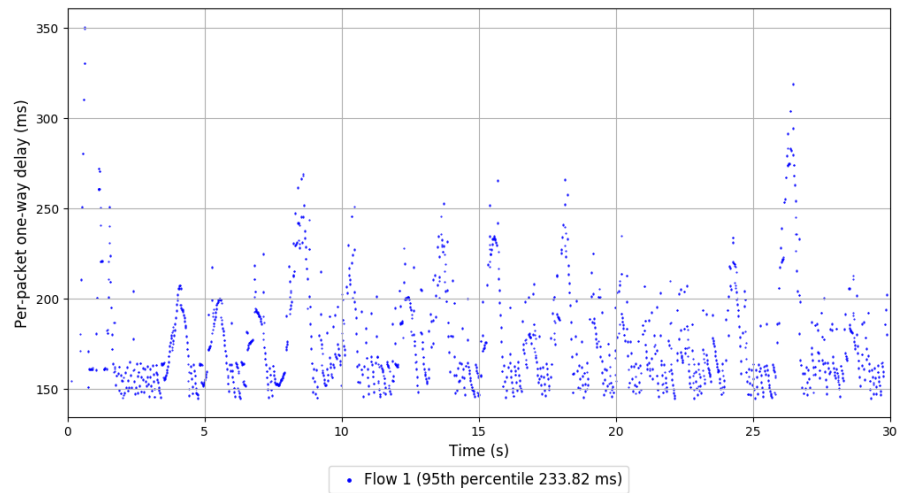
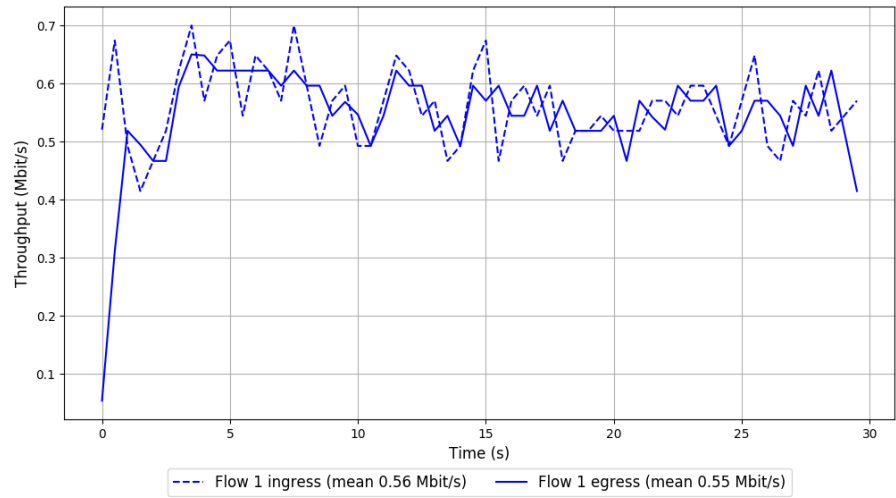


Run 3: Statistics of Copa

Start at: 2018-02-02 13:15:05
End at: 2018-02-02 13:15:35
Local clock offset: 0.549 ms
Remote clock offset: -4.163 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 233.817 ms
Loss rate: 2.77%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 233.817 ms
Loss rate: 2.77%

Run 3: Report of Copa — Data Link



Run 1: Statistics of FillP

Start at: 2018-02-02 12:27:34

End at: 2018-02-02 12:28:04

Local clock offset: 0.464 ms

Remote clock offset: -3.547 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 21817.071 ms

Loss rate: 45.58%

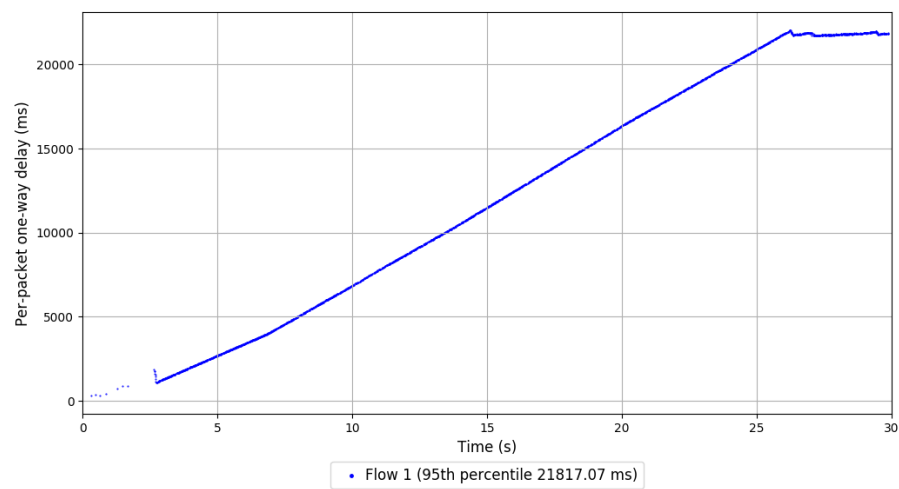
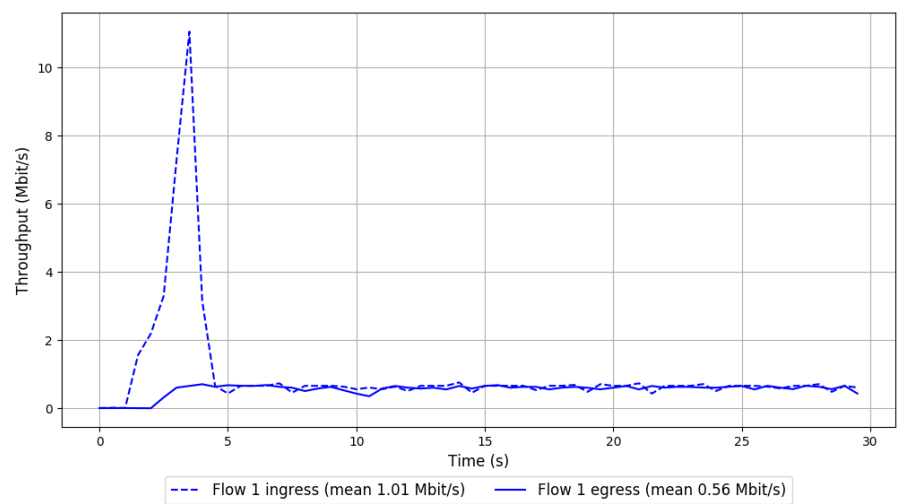
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 21817.071 ms

Loss rate: 45.58%

Run 1: Report of FillP — Data Link

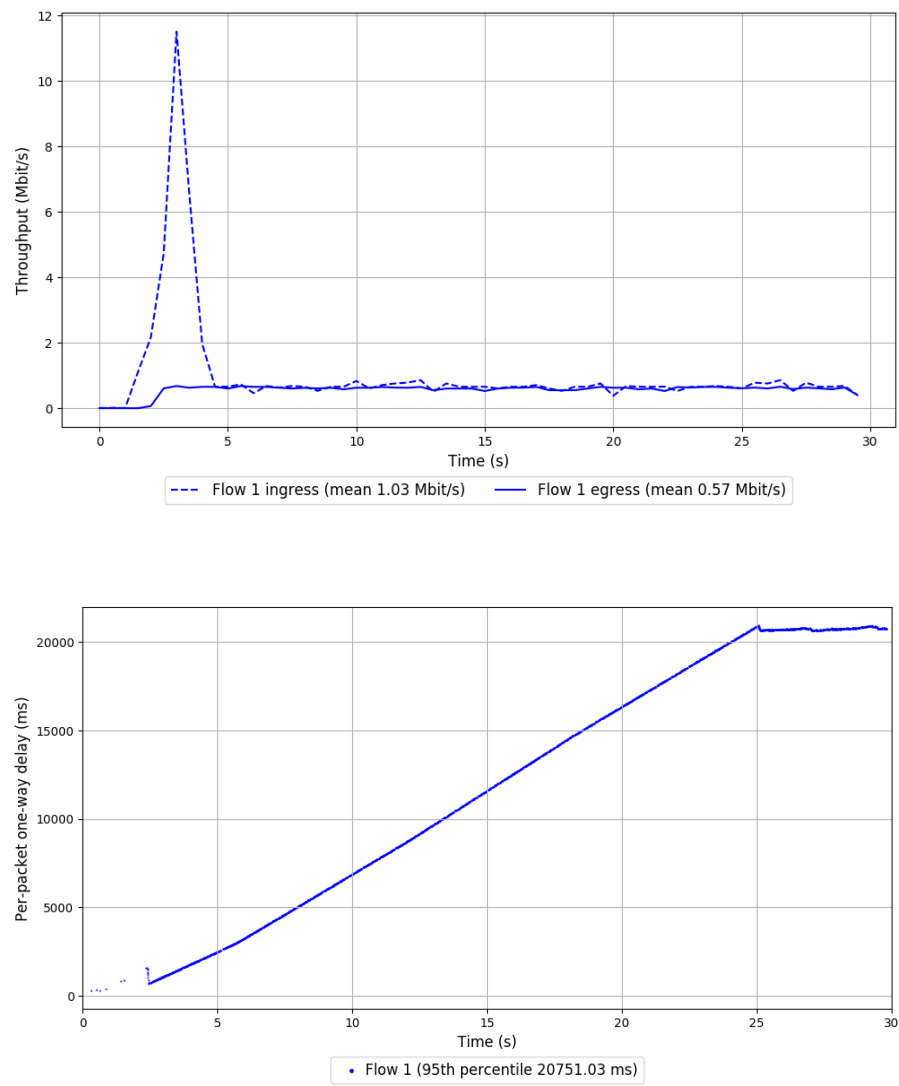


Run 2: Statistics of FillP

Start at: 2018-02-02 12:47:53
End at: 2018-02-02 12:48:23
Local clock offset: 0.365 ms
Remote clock offset: -3.908 ms

Below is generated by plot.py at 2018-02-02 14:18:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20751.025 ms
Loss rate: 45.09%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20751.025 ms
Loss rate: 45.09%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-02-02 13:07:57

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

Local clock offset: 0.508 ms

Remote clock offset: 1.661 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 23817.798 ms

Loss rate: 52.19%

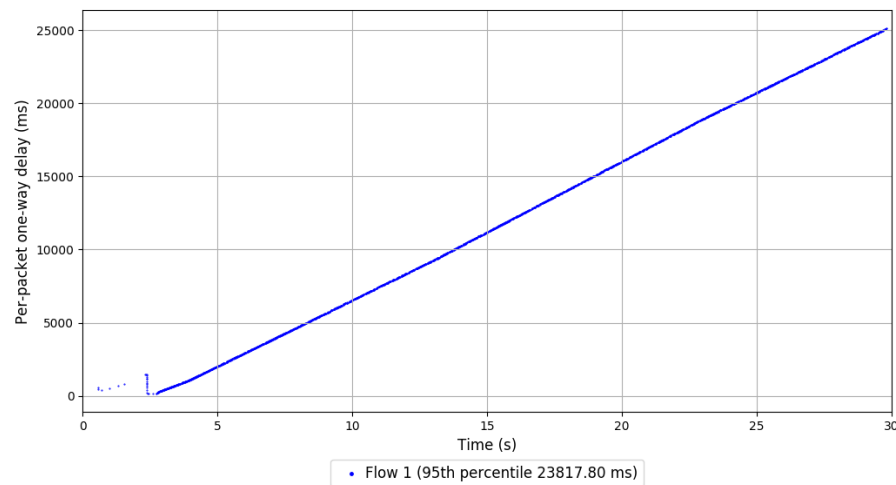
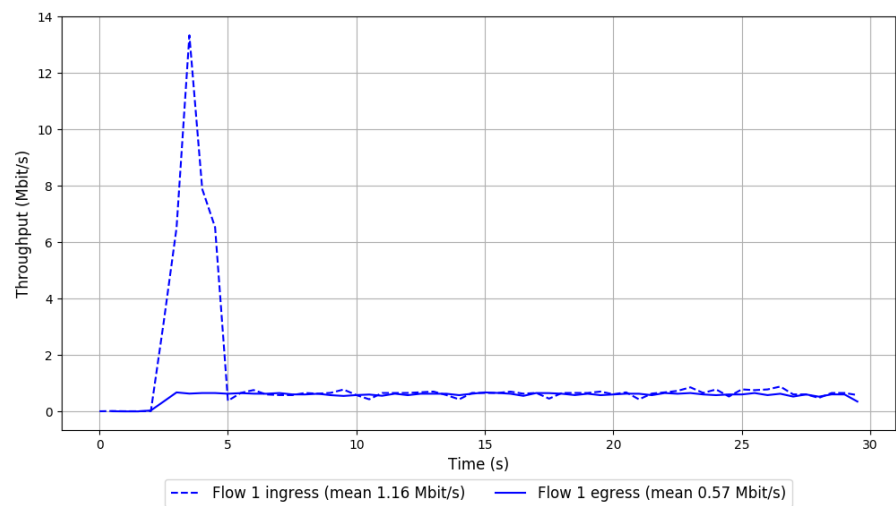
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 23817.798 ms

Loss rate: 52.19%

Run 3: Report of FillP — Data Link

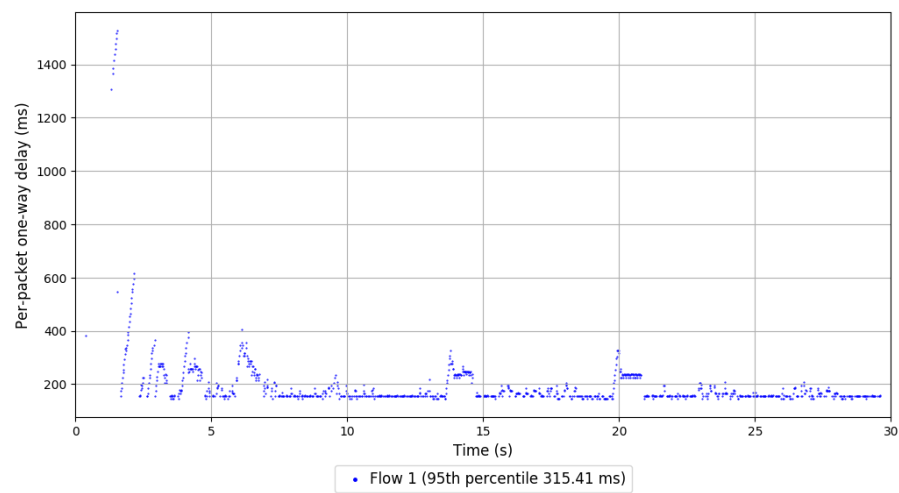
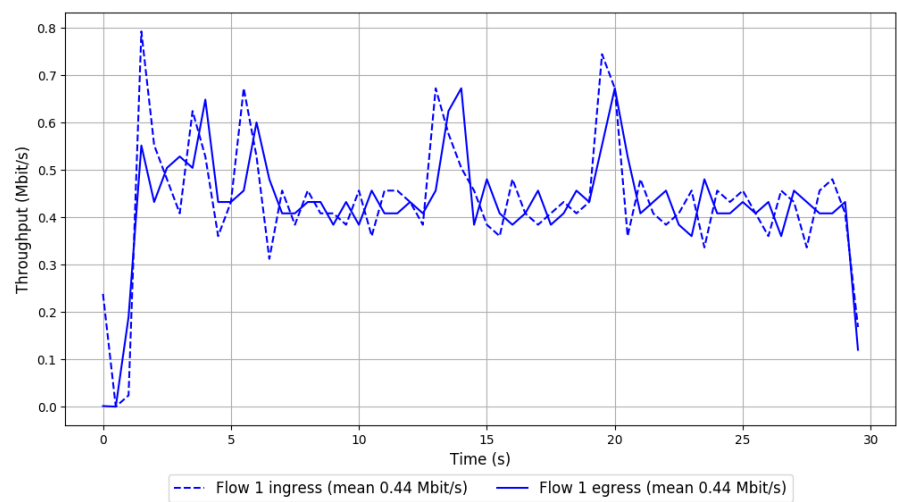


```
Run 1: Statistics of Indigo-1-32

Start at: 2018-02-02 12:28:45
End at: 2018-02-02 12:29:15
Local clock offset: 0.476 ms
Remote clock offset: 1.212 ms

# Below is generated by plot.py at 2018-02-02 14:18:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 315.410 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 315.410 ms
Loss rate: 1.20%
```

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



Run 2: Statistics of Indigo-1-32

Start at: 2018-02-02 12:49:05

End at: 2018-02-02 12:49:35

Local clock offset: 0.43 ms

Remote clock offset: 0.945 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 1172.562 ms

Loss rate: 4.06%

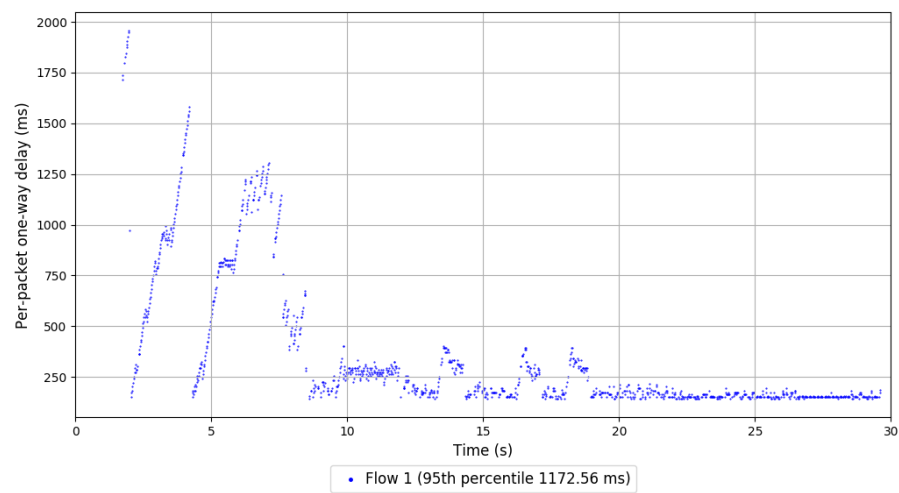
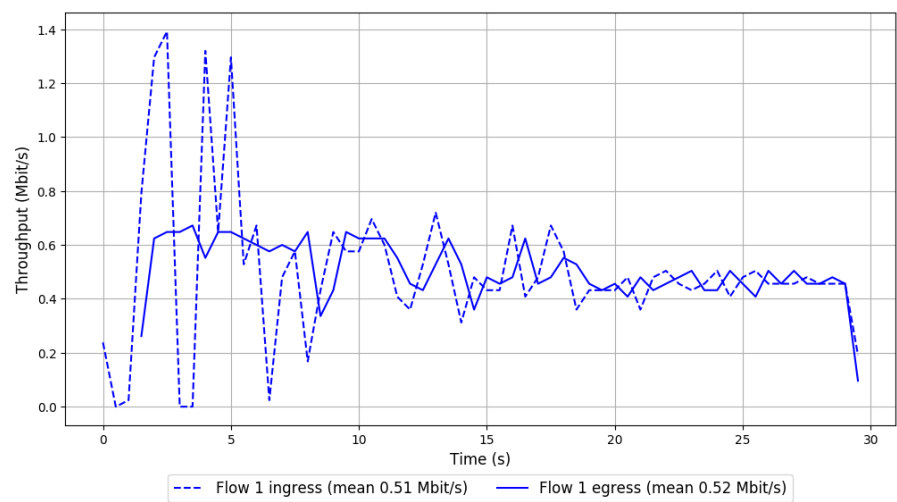
-- Flow 1:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 1172.562 ms

Loss rate: 4.06%

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



Run 3: Statistics of Indigo-1-32

Start at: 2018-02-02 13:09:08

End at: 2018-02-02 13:09:38

Local clock offset: 0.511 ms

Remote clock offset: -4.035 ms

Below is generated by plot.py at 2018-02-02 14:18:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 333.818 ms

Loss rate: 1.24%

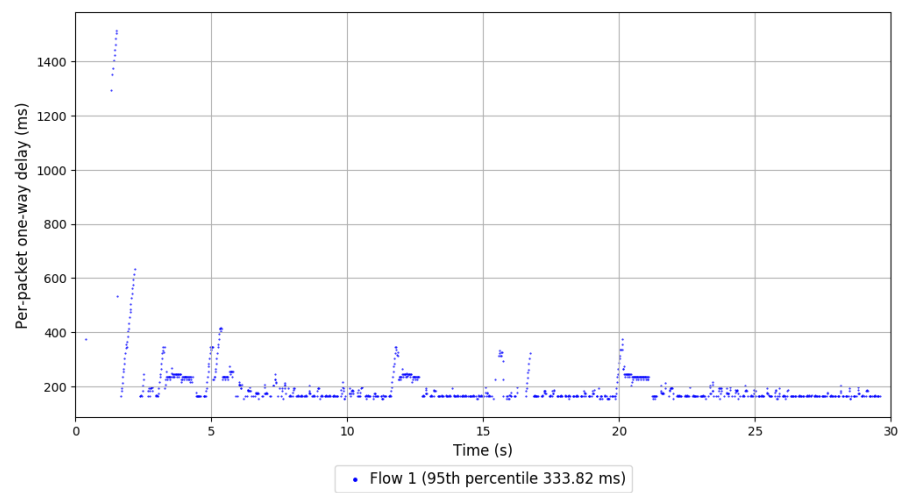
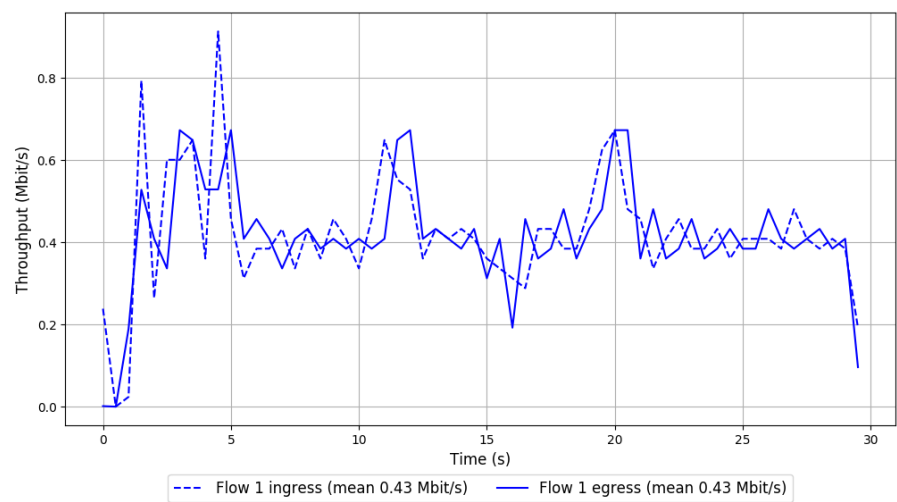
-- Flow 1:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 333.818 ms

Loss rate: 1.24%

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

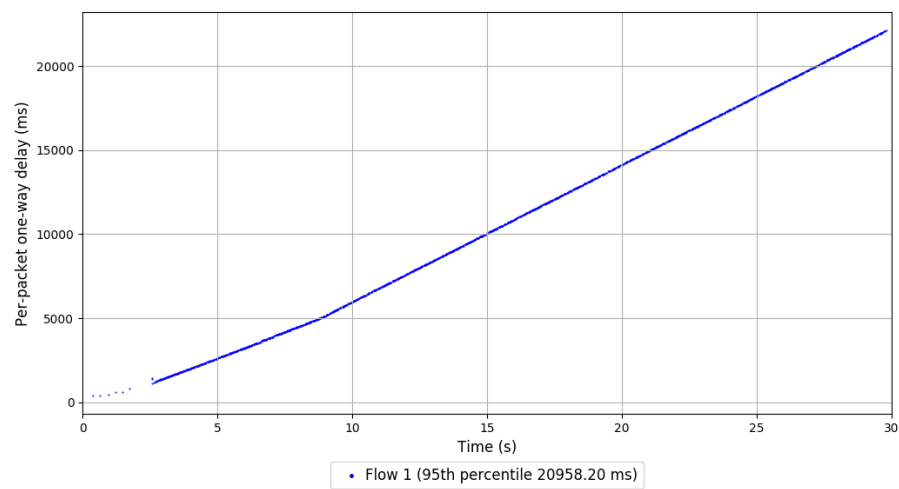
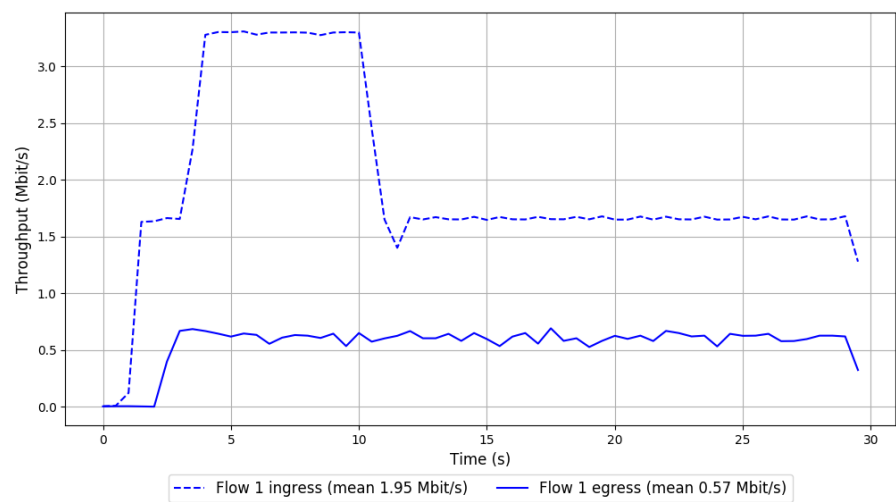


Run 1: Statistics of Vivace-latency

Start at: 2018-02-02 12:31:06
End at: 2018-02-02 12:31:36
Local clock offset: 0.505 ms
Remote clock offset: -3.603 ms

Below is generated by plot.py at 2018-02-02 14:18:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20958.201 ms
Loss rate: 71.47%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20958.201 ms
Loss rate: 71.47%

Run 1: Report of Vivace-latency — Data Link



Run 2: Statistics of Vivace-latency

Start at: 2018-02-02 12:51:26

End at: 2018-02-02 12:51:56

Local clock offset: 0.458 ms

Remote clock offset: 1.121 ms

Below is generated by plot.py at 2018-02-02 14:18:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20638.068 ms

Loss rate: 71.42%

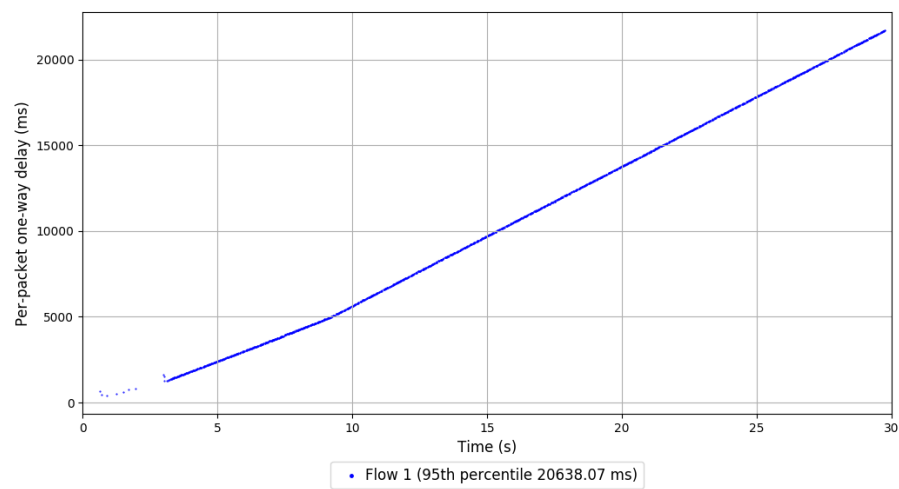
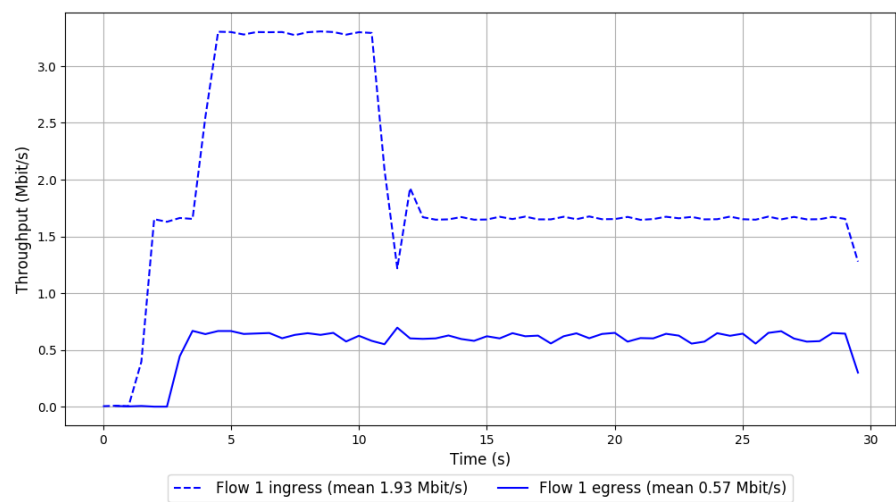
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20638.068 ms

Loss rate: 71.42%

Run 2: Report of Vivace-latency — Data Link



Run 3: Statistics of Vivace-latency

Start at: 2018-02-02 13:11:31

End at: 2018-02-02 13:12:01

Local clock offset: 0.523 ms

Remote clock offset: 0.663 ms

Below is generated by plot.py at 2018-02-02 14:18:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21042.001 ms

Loss rate: 70.81%

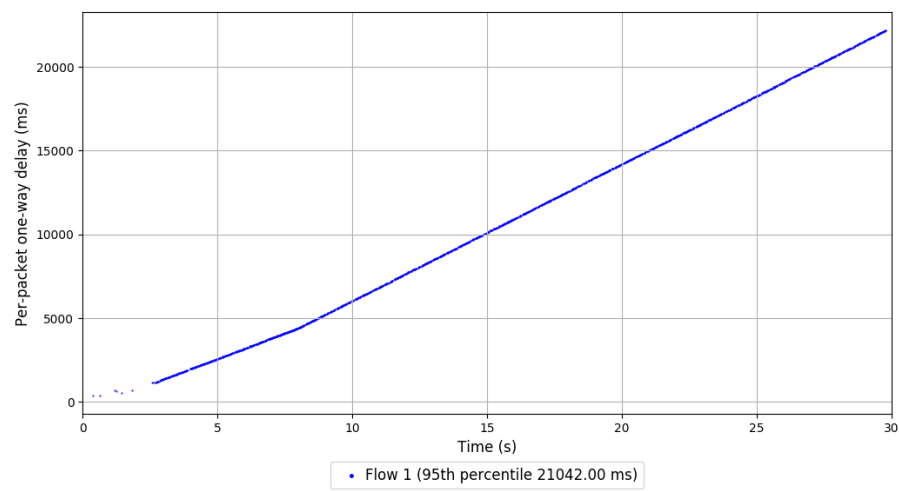
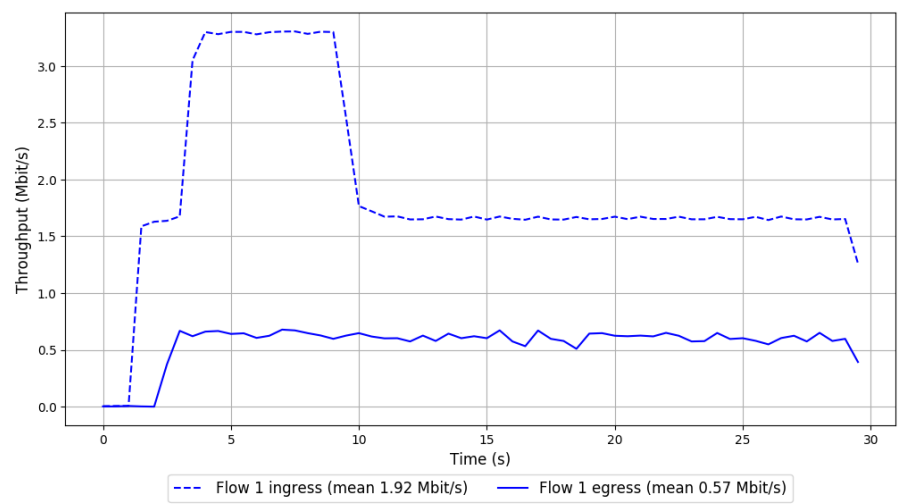
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21042.001 ms

Loss rate: 70.81%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-02-02 12:20:25

End at: 2018-02-02 12:20:55

Local clock offset: 0.519 ms

Remote clock offset: 1.278 ms

Below is generated by plot.py at 2018-02-02 14:19:01

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20853.743 ms

Loss rate: 88.69%

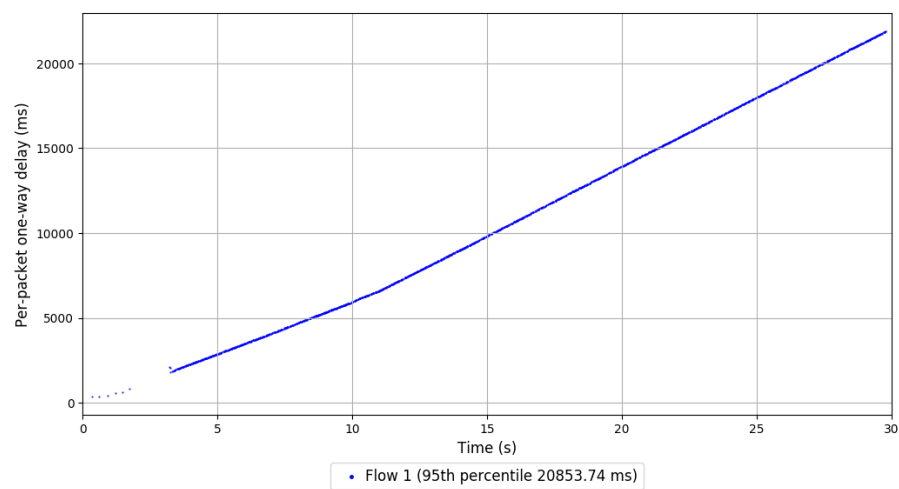
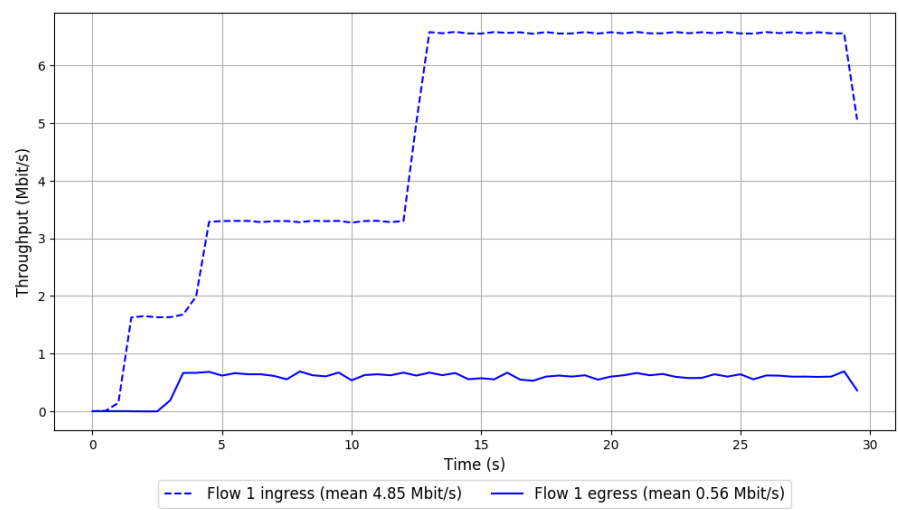
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20853.743 ms

Loss rate: 88.69%

Run 1: Report of Vivace-loss — Data Link



Run 2: Statistics of Vivace-loss

Start at: 2018-02-02 12:40:34

End at: 2018-02-02 12:41:04

Local clock offset: 0.395 ms

Remote clock offset: 1.811 ms

Below is generated by plot.py at 2018-02-02 14:19:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20946.027 ms

Loss rate: 88.86%

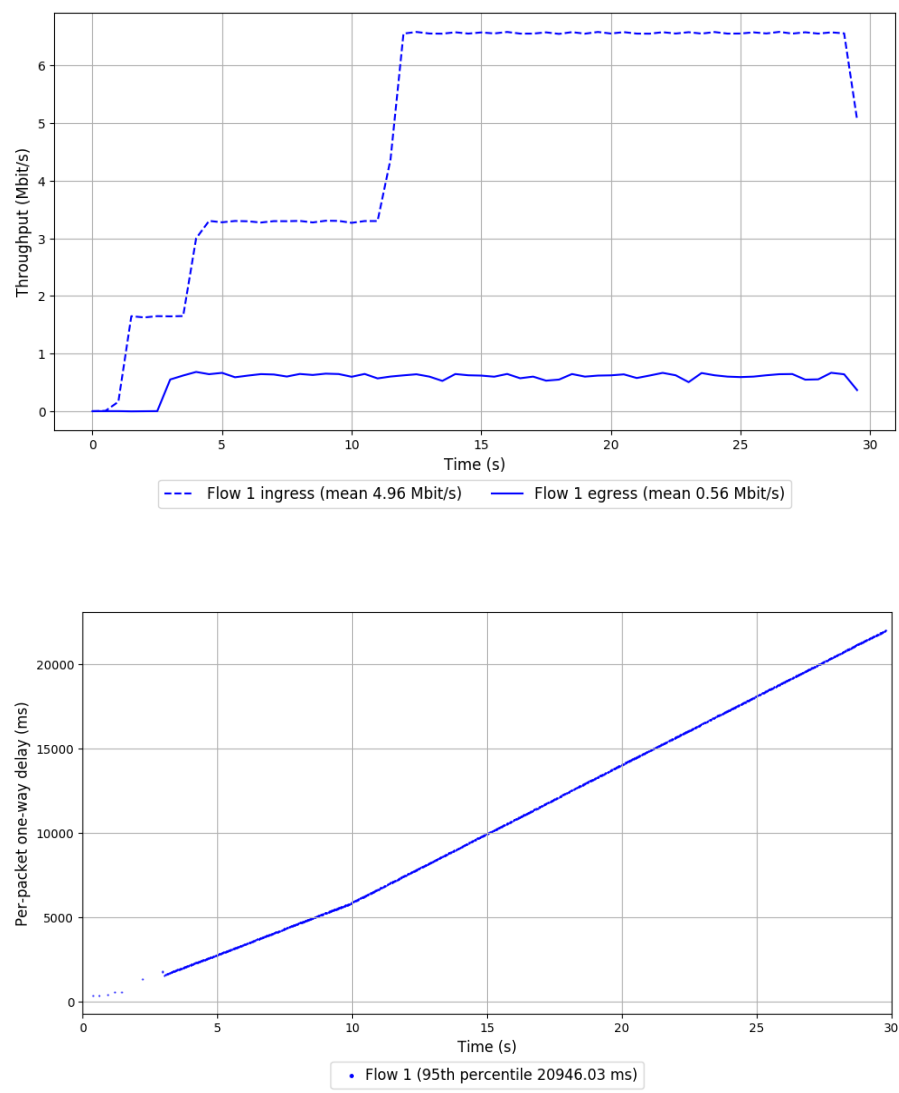
-- Flow 1:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 20946.027 ms

Loss rate: 88.86%

Run 2: Report of Vivace-loss — Data Link



Run 3: Statistics of Vivace-loss

Start at: 2018-02-02 13:00:53

End at: 2018-02-02 13:01:23

Local clock offset: 0.482 ms

Remote clock offset: 1.617 ms

Below is generated by plot.py at 2018-02-02 14:19:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20965.946 ms

Loss rate: 89.07%

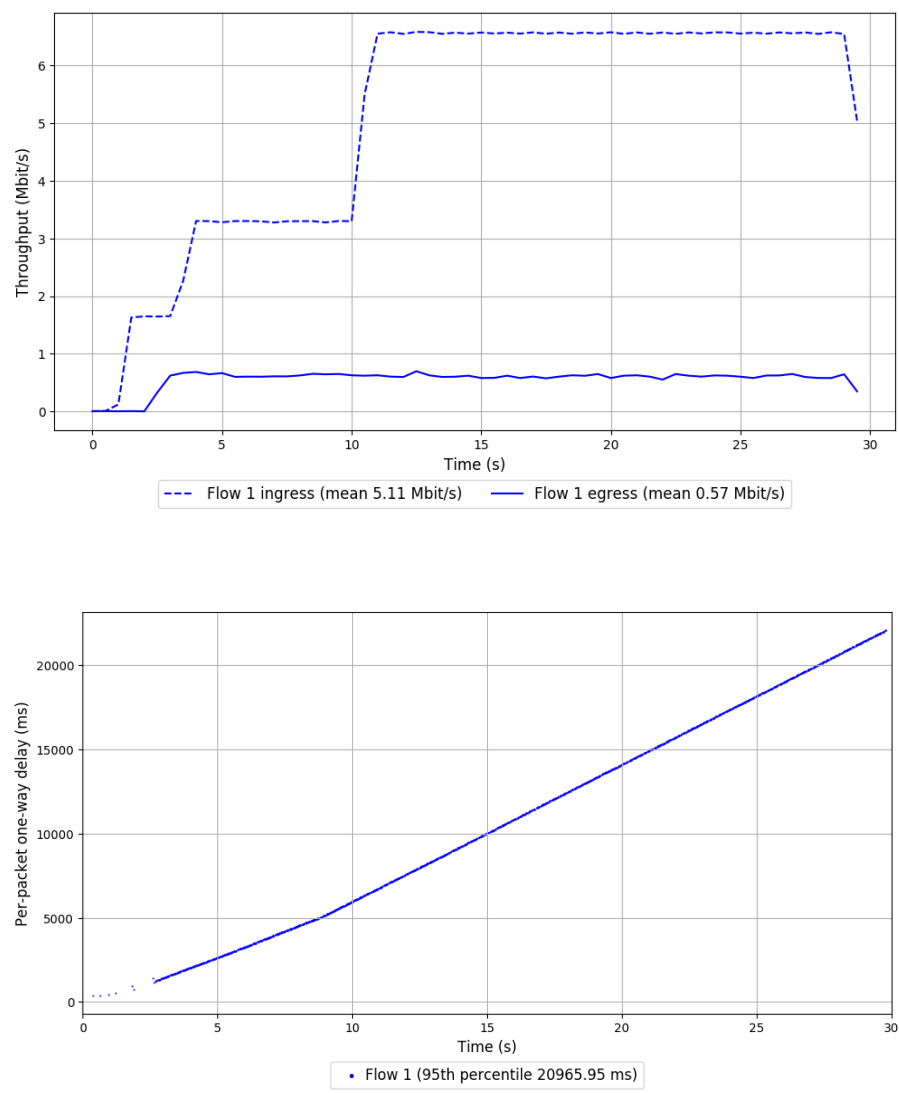
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20965.946 ms

Loss rate: 89.07%

Run 3: Report of Vivace-loss — Data Link

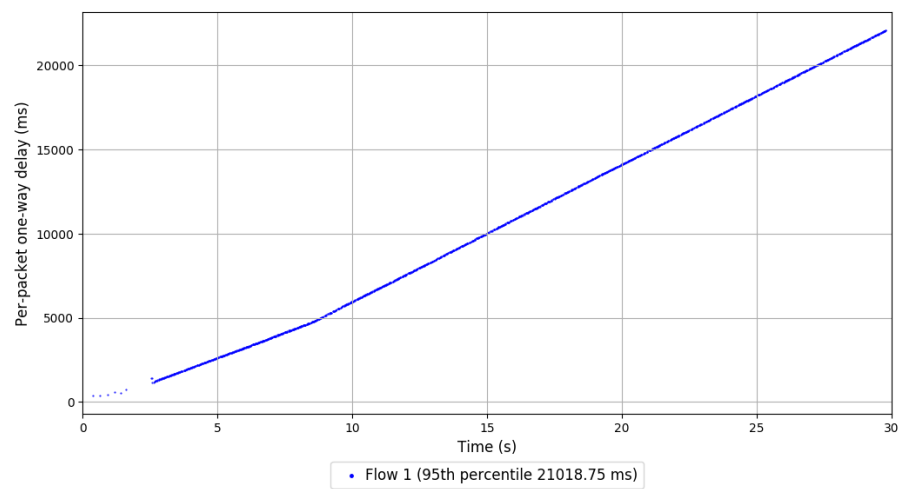
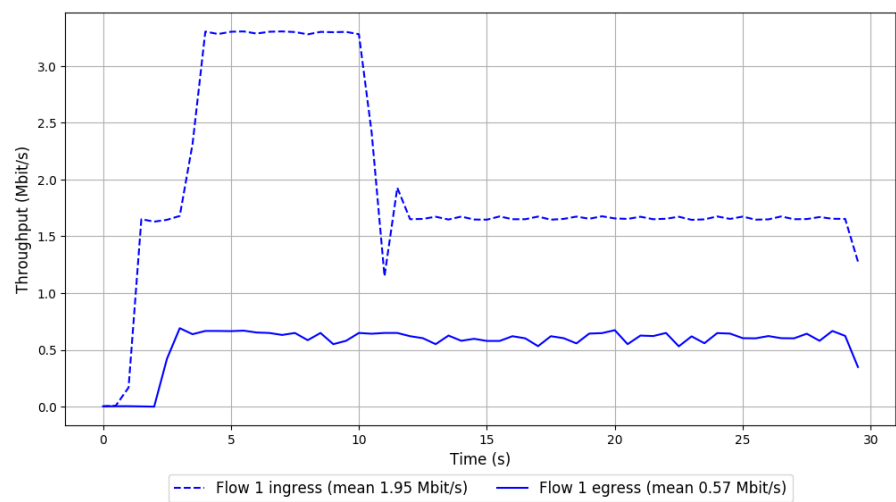


Run 1: Statistics of Vivace-LTE

Start at: 2018-02-02 12:25:08
End at: 2018-02-02 12:25:38
Local clock offset: 0.506 ms
Remote clock offset: -4.322 ms

Below is generated by plot.py at 2018-02-02 14:19:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21018.752 ms
Loss rate: 71.27%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21018.752 ms
Loss rate: 71.27%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-02-02 12:45:27

End at: 2018-02-02 12:45:57

Local clock offset: 0.452 ms

Remote clock offset: -3.805 ms

Below is generated by plot.py at 2018-02-02 14:19:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 20218.963 ms

Loss rate: 71.52%

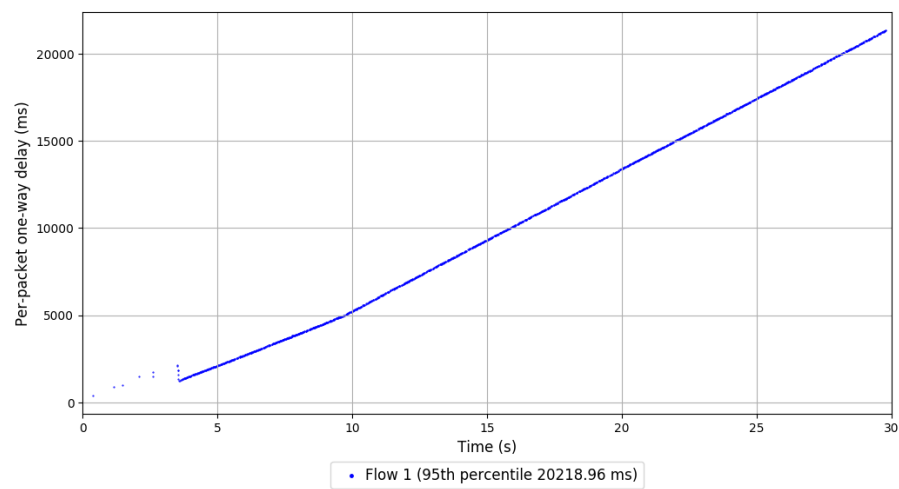
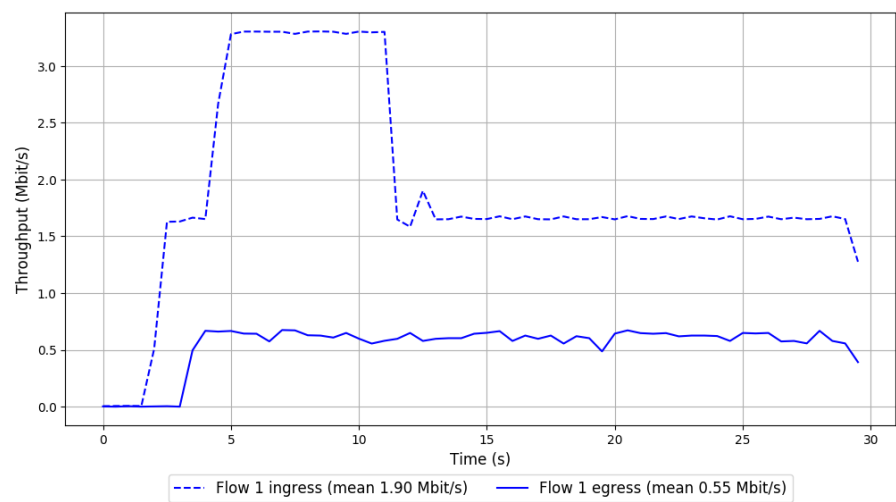
-- Flow 1:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 20218.963 ms

Loss rate: 71.52%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-02-02 13:05:36

End at: 2018-02-02 13:06:06

Local clock offset: 0.524 ms

Remote clock offset: -3.095 ms

Below is generated by plot.py at 2018-02-02 14:19:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20914.695 ms

Loss rate: 71.33%

-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20914.695 ms

Loss rate: 71.33%

Run 3: Report of Vivace-LTE — Data Link

