

Pantheon Report

Generated at 2018-01-31 08:55:30 (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).

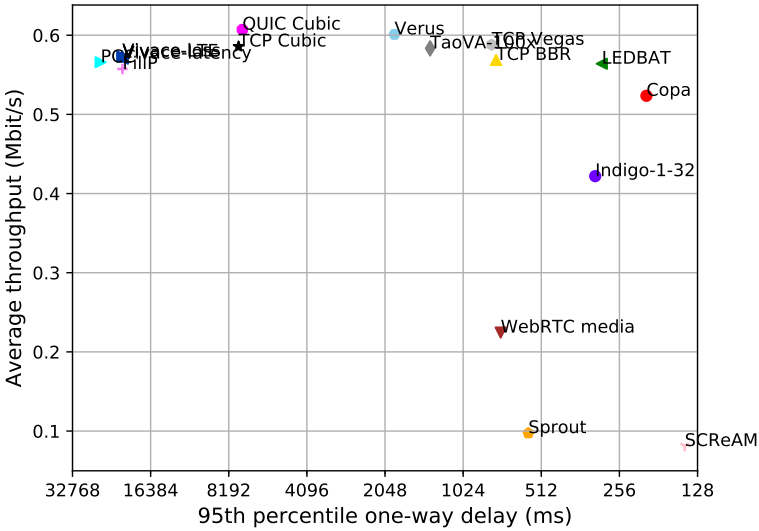
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).

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

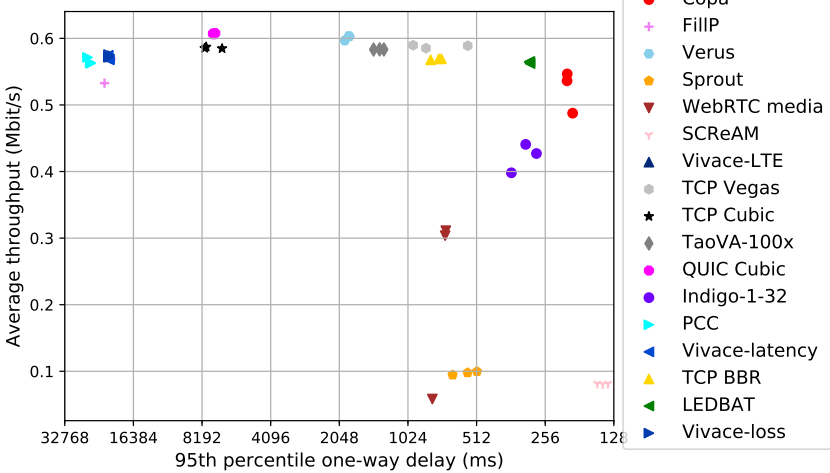
Git summary:

```
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-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 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



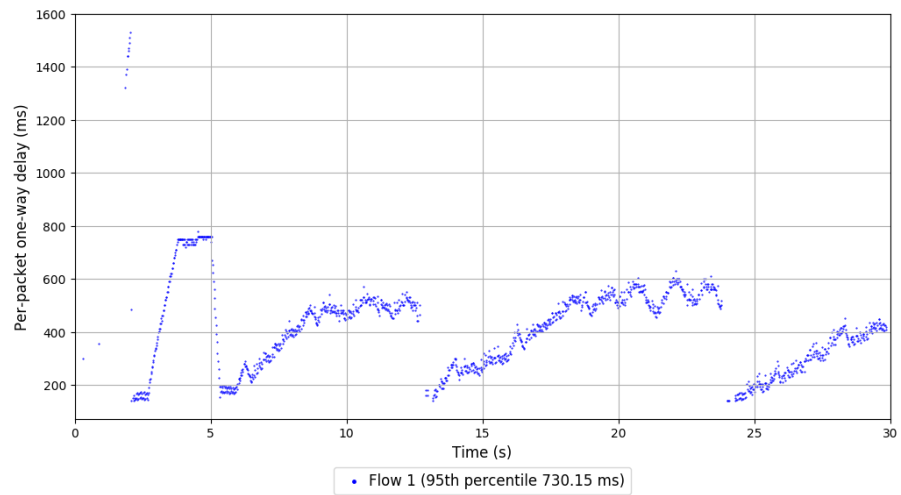
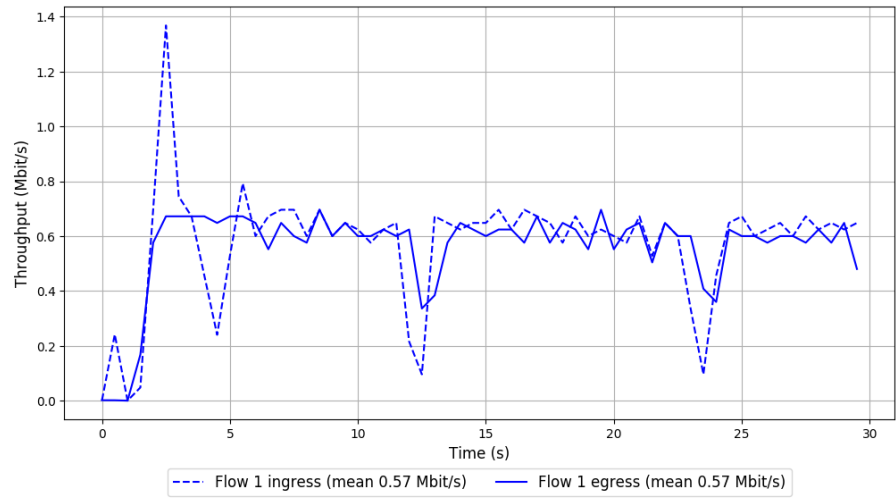
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.57	764.81	2.21
TCP Cubic	3	0.59	7510.24	29.97
LEDBAT	3	0.56	299.42	1.32
PCC	3	0.56	25529.36	98.46
QUIC Cubic	3	0.61	7260.40	29.21
SCReAM	3	0.08	143.39	0.74
WebRTC media	3	0.22	734.09	1.14
Sprout	3	0.10	574.24	1.81
TaoVA-100x	3	0.58	1372.80	2.57
TCP Vegas	3	0.59	795.03	1.41
Verus	3	0.60	1883.09	5.84
Copa	3	0.53	201.45	3.31
FillP	3	0.56	21033.77	47.00
Indigo-1-32	3	0.42	317.33	1.29
Vivace-latency	3	0.57	20968.20	70.80
Vivace-loss	3	0.57	21070.79	89.26
Vivace-LTE	3	0.57	21043.95	70.67

Run 1: Statistics of TCP BBR

Start at: 2018-01-31 06:52:37
End at: 2018-01-31 06:53:07
Local clock offset: -0.347 ms
Remote clock offset: -2.479 ms

Below is generated by plot.py at 2018-01-31 08:54:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 730.147 ms
Loss rate: 2.03%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 730.147 ms
Loss rate: 2.03%

Run 1: Report of TCP BBR — Data Link

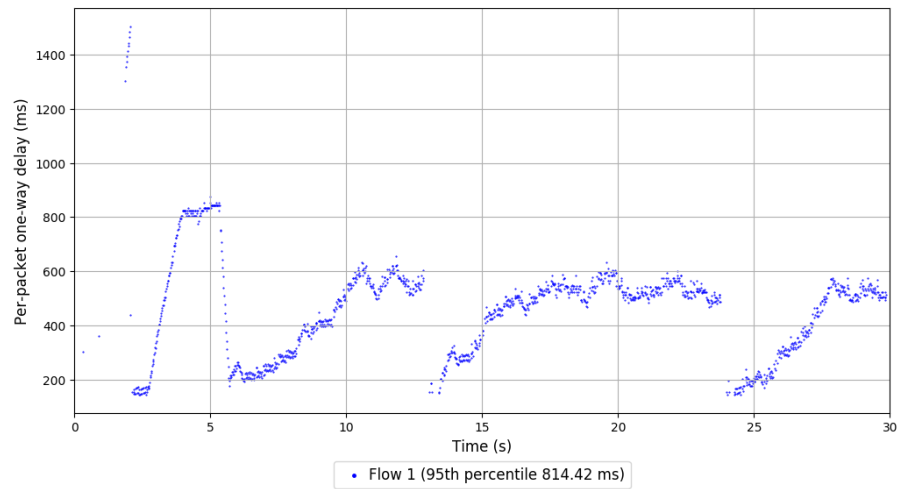
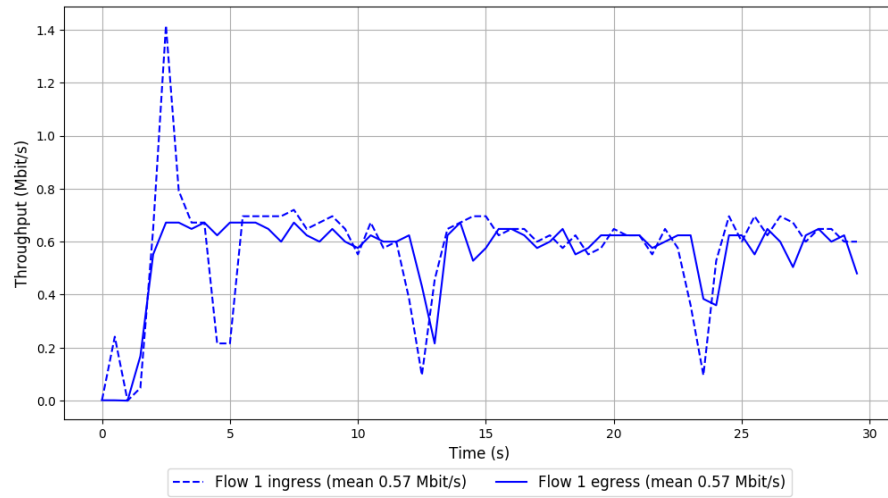


Run 2: Statistics of TCP BBR

Start at: 2018-01-31 07:13:49
End at: 2018-01-31 07:14:19
Local clock offset: -0.253 ms
Remote clock offset: -2.461 ms

Below is generated by plot.py at 2018-01-31 08:54:56
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 814.417 ms
Loss rate: 2.31%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 814.417 ms
Loss rate: 2.31%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-01-31 07:35:01

End at: 2018-01-31 07:35:31

Local clock offset: -0.736 ms

Remote clock offset: 2.16 ms

Below is generated by plot.py at 2018-01-31 08:54:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 749.853 ms

Loss rate: 2.30%

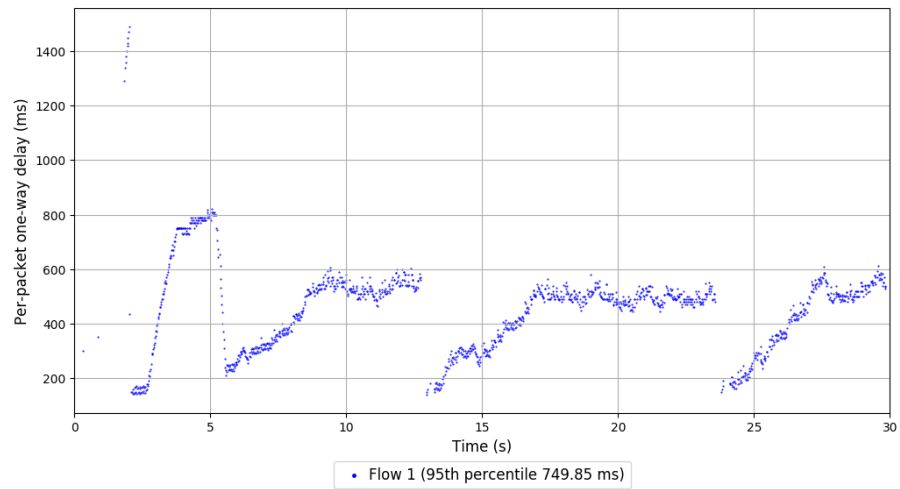
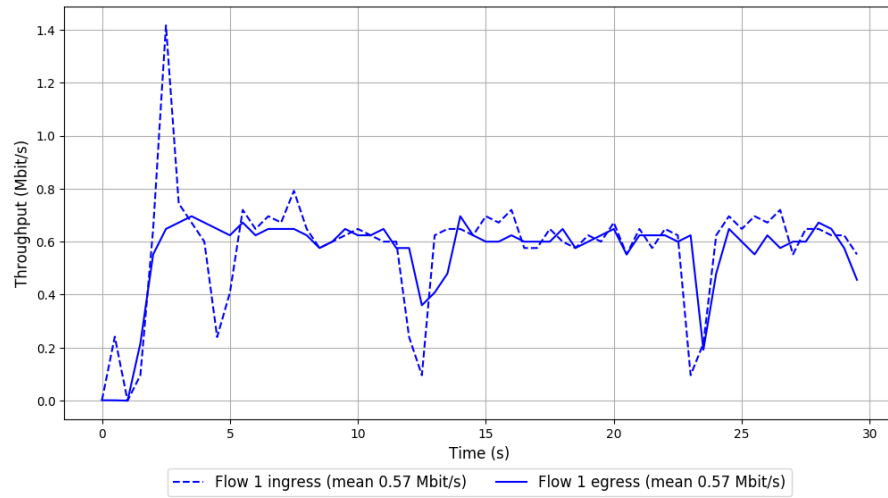
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 749.853 ms

Loss rate: 2.30%

Run 3: Report of TCP BBR — Data Link

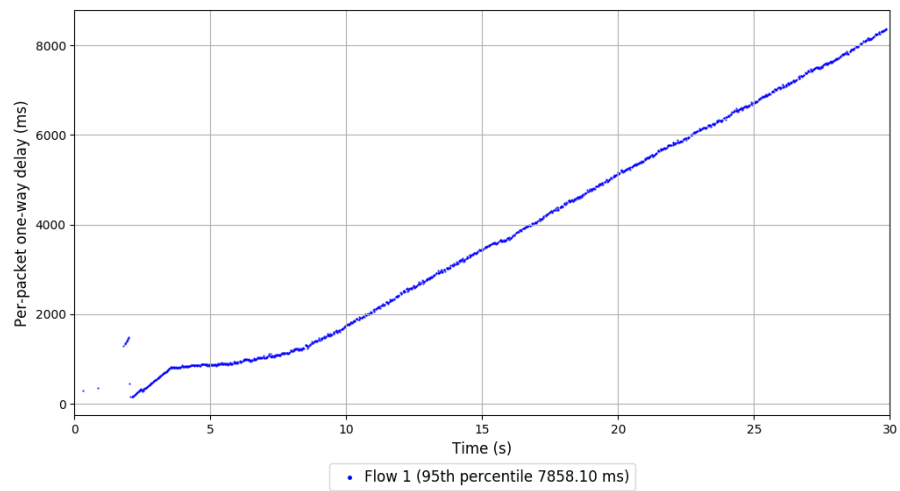
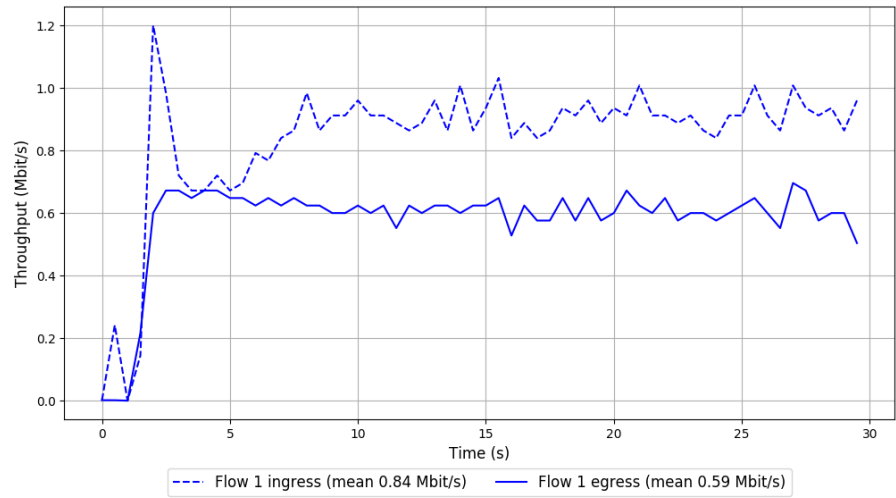


Run 1: Statistics of TCP Cubic

Start at: 2018-01-31 07:02:02
End at: 2018-01-31 07:02:32
Local clock offset: -0.231 ms
Remote clock offset: -3.396 ms

Below is generated by plot.py at 2018-01-31 08:54:56
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7858.105 ms
Loss rate: 30.93%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7858.105 ms
Loss rate: 30.93%

Run 1: Report of TCP Cubic — Data Link

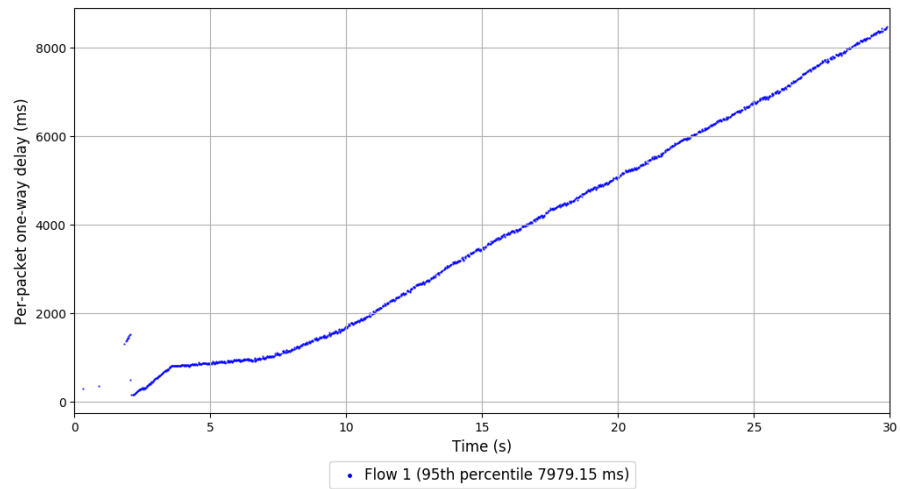
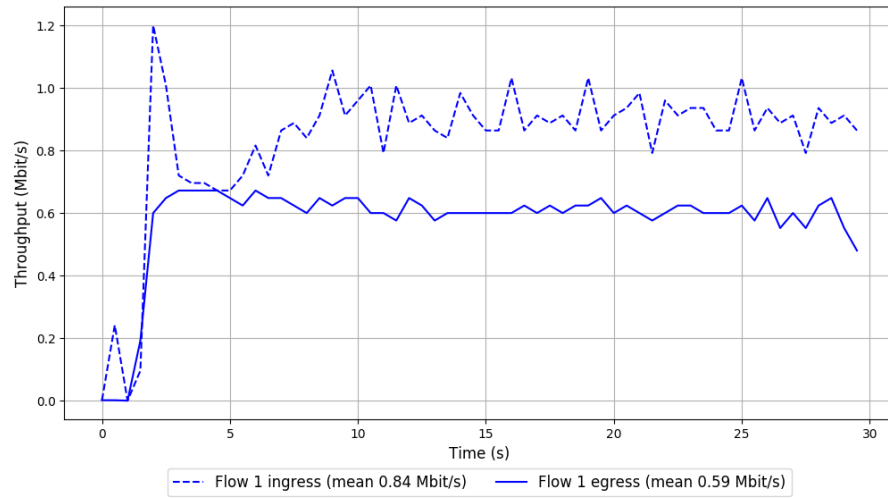


Run 2: Statistics of TCP Cubic

Start at: 2018-01-31 07:23:13
End at: 2018-01-31 07:23:43
Local clock offset: -0.516 ms
Remote clock offset: -6.361 ms

Below is generated by plot.py at 2018-01-31 08:54:56
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7979.145 ms
Loss rate: 30.89%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 7979.145 ms
Loss rate: 30.89%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-01-31 07:44:28

End at: 2018-01-31 07:44:58

Local clock offset: -0.965 ms

Remote clock offset: -0.11 ms

Below is generated by plot.py at 2018-01-31 08:54:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 6693.469 ms

Loss rate: 28.08%

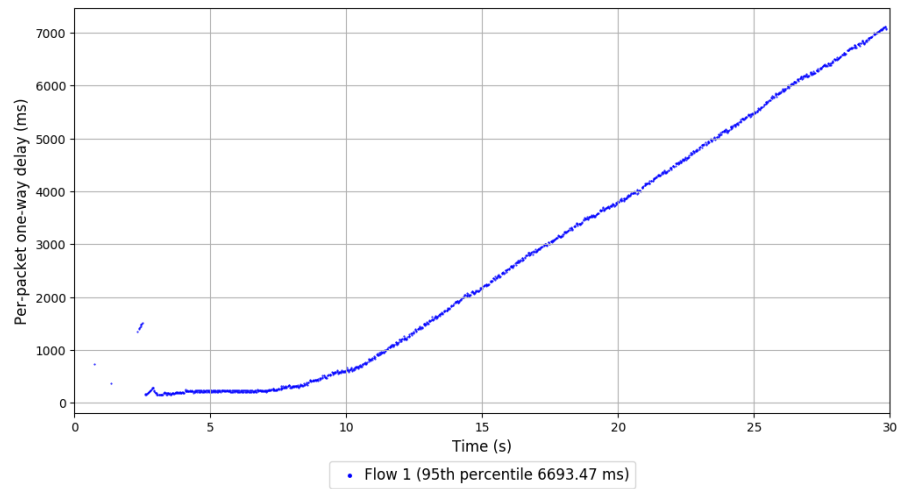
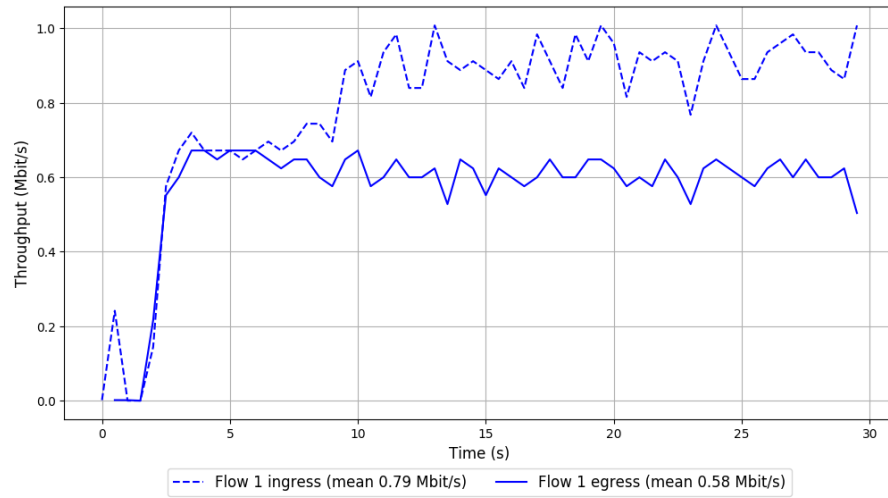
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 6693.469 ms

Loss rate: 28.08%

Run 3: Report of TCP Cubic — Data Link

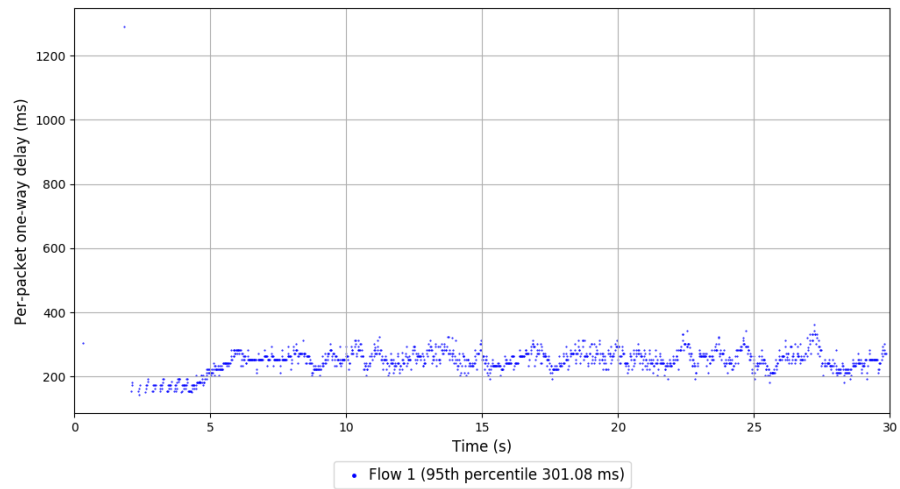
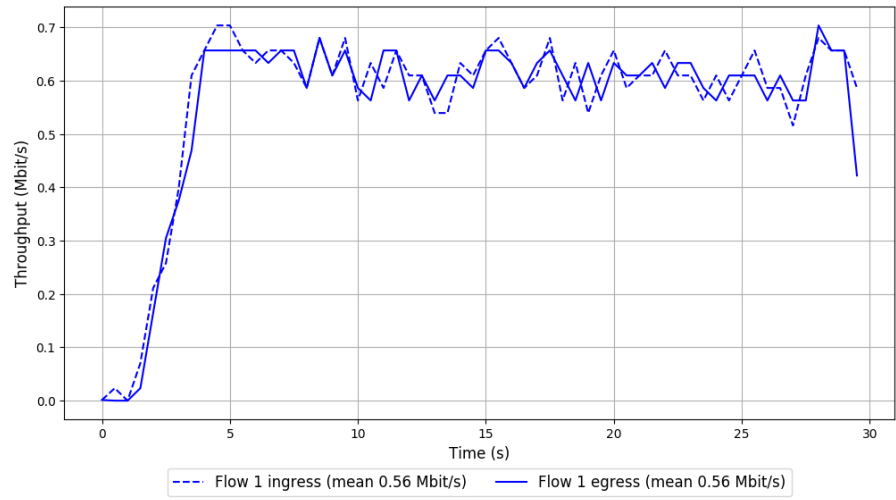


```
Run 1: Statistics of LEDBAT

Start at: 2018-01-31 06:53:48
End at: 2018-01-31 06:54:18
Local clock offset: -0.348 ms
Remote clock offset: -1.822 ms

# Below is generated by plot.py at 2018-01-31 08:54:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 301.076 ms
Loss rate: 1.39%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 301.076 ms
Loss rate: 1.39%
```

Run 1: Report of LEDBAT — Data Link

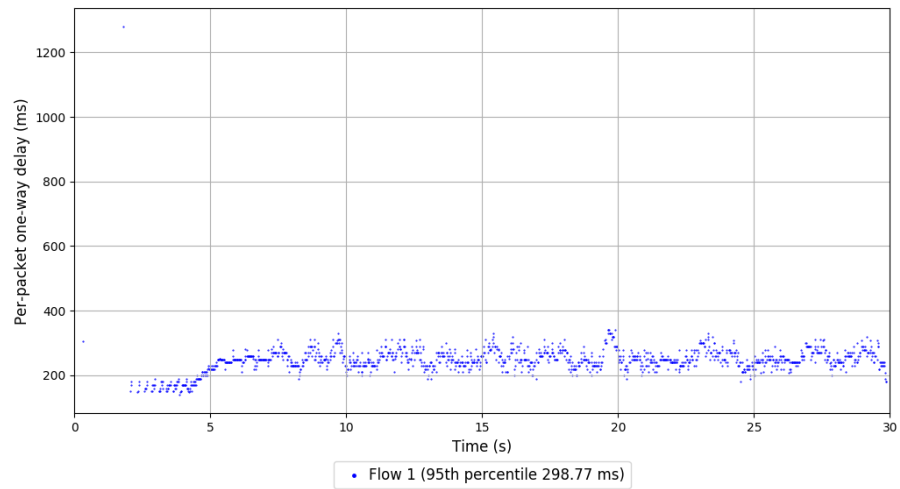
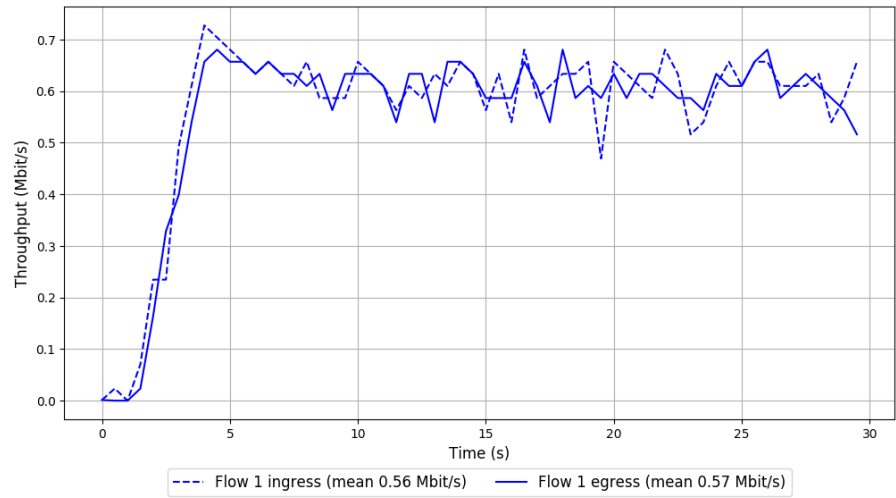


Run 2: Statistics of LEDBAT

Start at: 2018-01-31 07:14:59
End at: 2018-01-31 07:15:29
Local clock offset: -0.29 ms
Remote clock offset: -2.377 ms

Below is generated by plot.py at 2018-01-31 08:54:56
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 298.769 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 298.769 ms
Loss rate: 1.32%

Run 2: Report of LEDBAT — Data Link

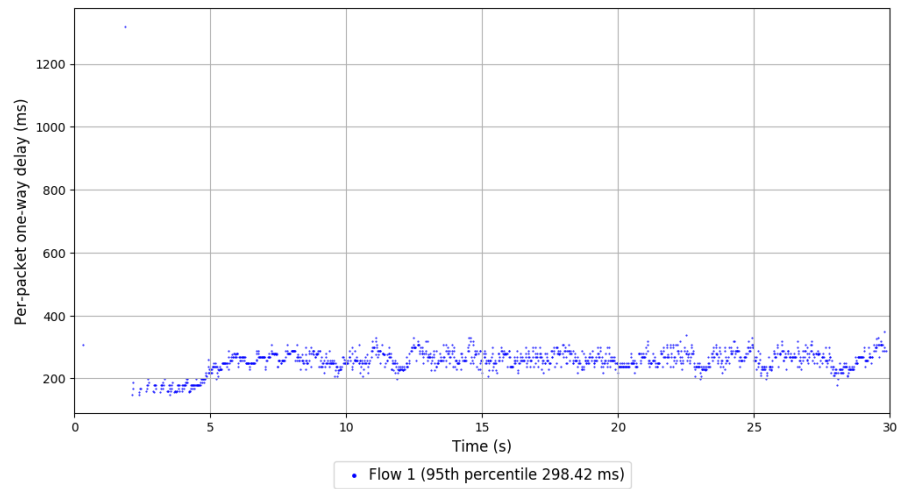
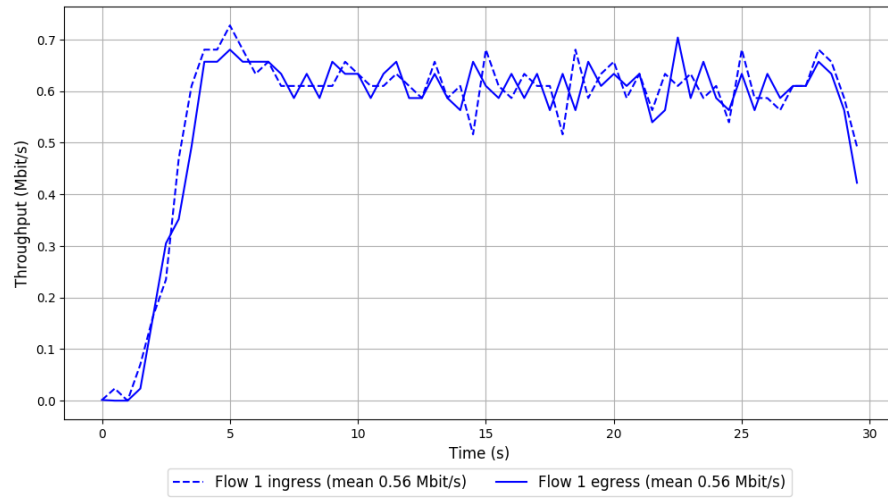


Run 3: Statistics of LEDBAT

Start at: 2018-01-31 07:36:12
End at: 2018-01-31 07:36:42
Local clock offset: -0.754 ms
Remote clock offset: -2.202 ms

Below is generated by plot.py at 2018-01-31 08:54:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 298.422 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 298.422 ms
Loss rate: 1.26%

Run 3: Report of LEDBAT — Data Link

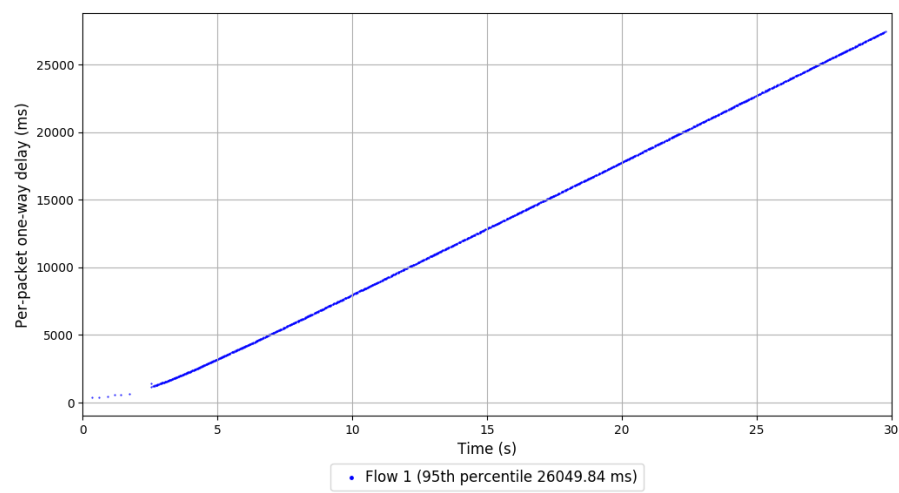
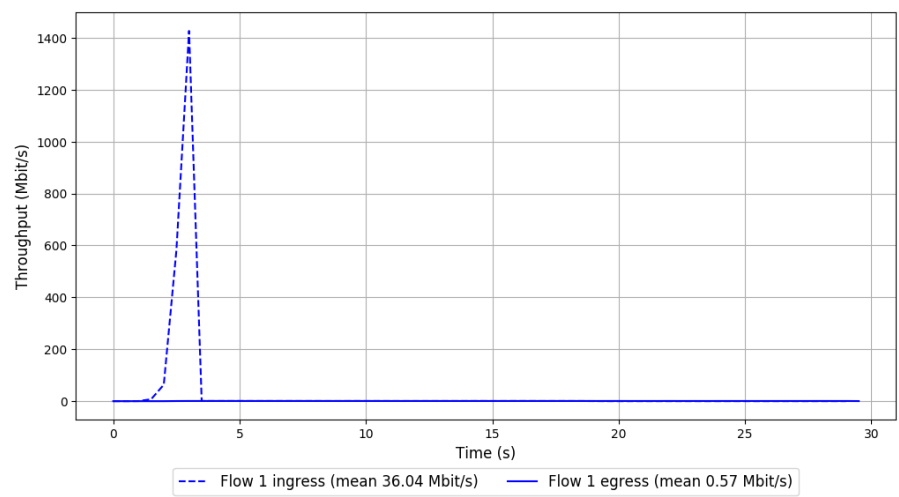


Run 1: Statistics of PCC

Start at: 2018-01-31 06:47:54
End at: 2018-01-31 06:48:24
Local clock offset: -0.22 ms
Remote clock offset: -6.961 ms

Below is generated by plot.py at 2018-01-31 08:55:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26049.844 ms
Loss rate: 98.40%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26049.844 ms
Loss rate: 98.40%

Run 1: Report of PCC — Data Link

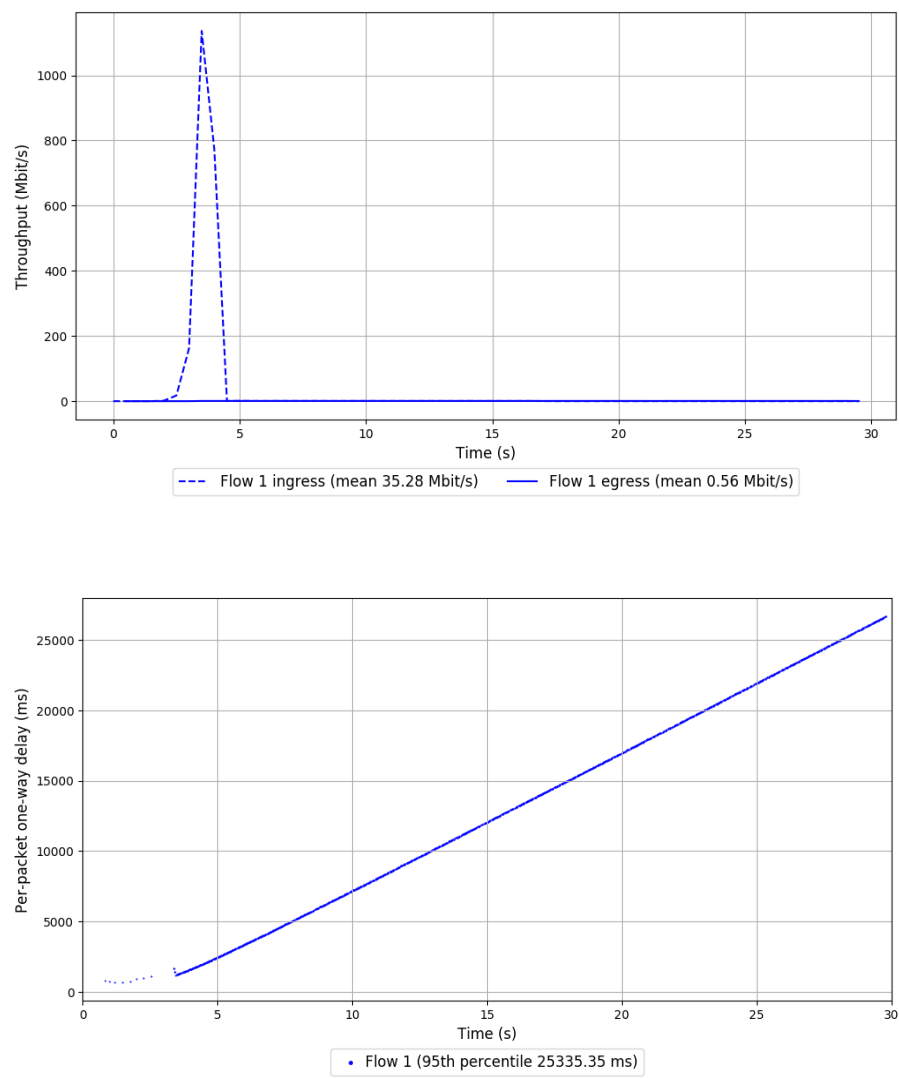


Run 2: Statistics of PCC

Start at: 2018-01-31 07:09:05
End at: 2018-01-31 07:09:35
Local clock offset: -0.17 ms
Remote clock offset: -2.575 ms

Below is generated by plot.py at 2018-01-31 08:55:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25335.348 ms
Loss rate: 98.45%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25335.348 ms
Loss rate: 98.45%

Run 2: Report of PCC — Data Link

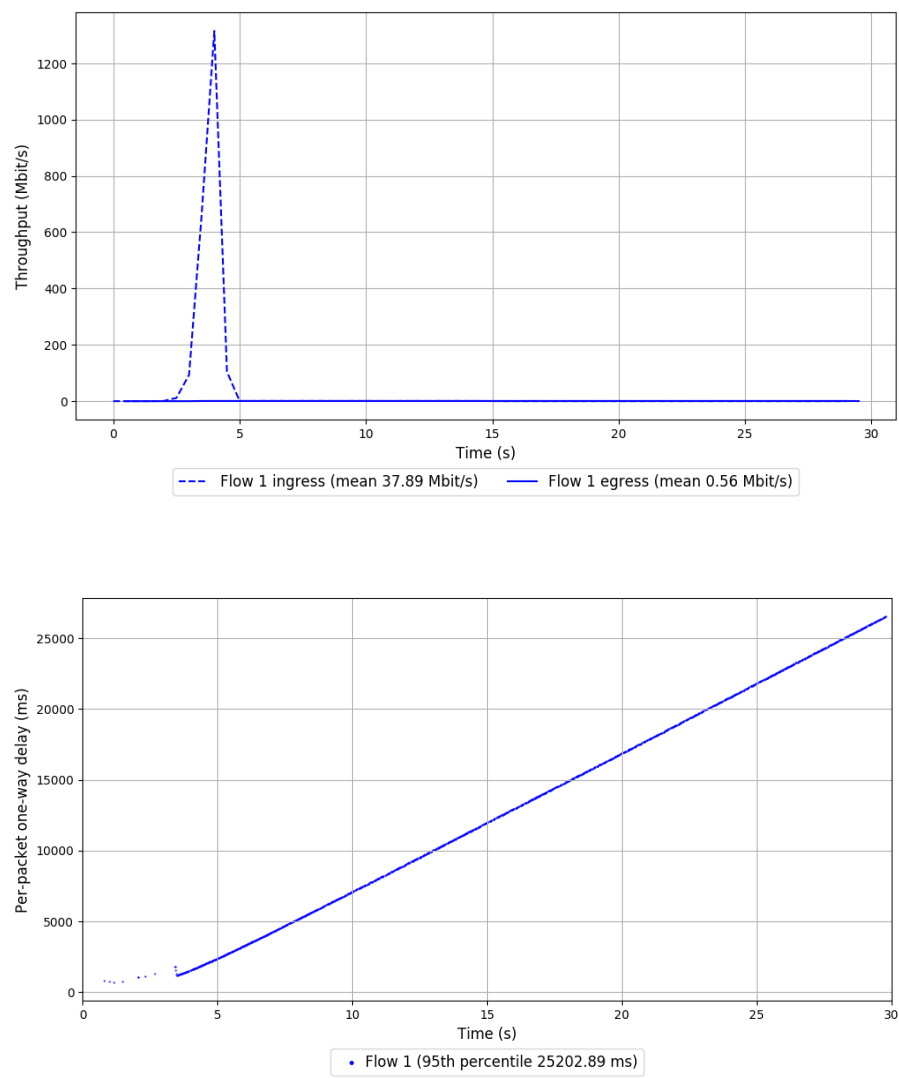


Run 3: Statistics of PCC

Start at: 2018-01-31 07:30:17
End at: 2018-01-31 07:30:47
Local clock offset: -0.625 ms
Remote clock offset: -4.403 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25202.888 ms
Loss rate: 98.52%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 25202.888 ms
Loss rate: 98.52%

Run 3: Report of PCC — Data Link

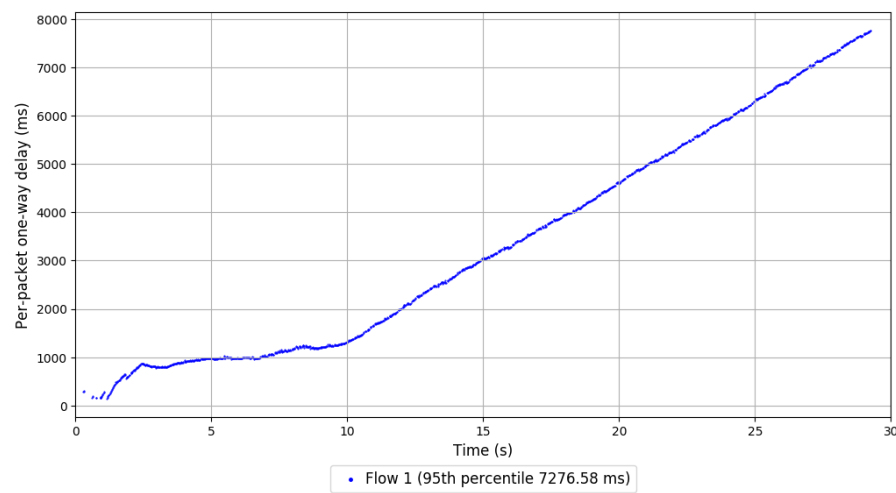
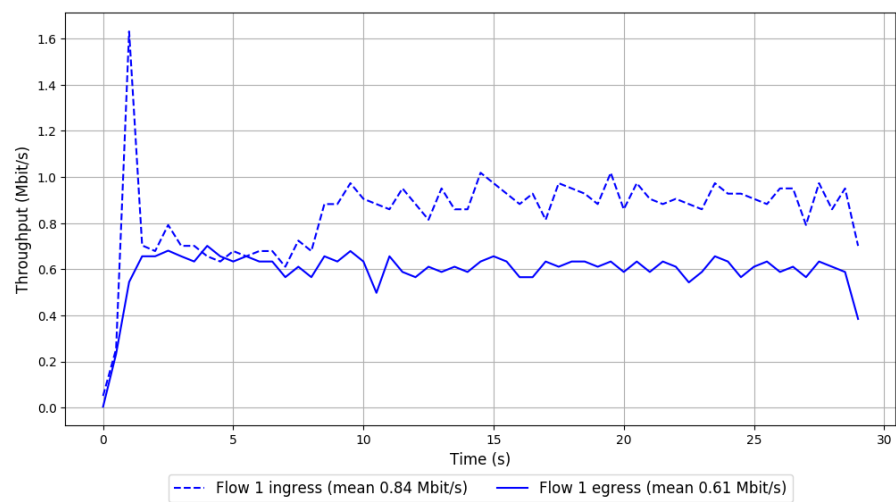


Run 1: Statistics of QUIC Cubic

Start at: 2018-01-31 06:59:41
End at: 2018-01-31 07:00:11
Local clock offset: -0.186 ms
Remote clock offset: -7.185 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 7276.582 ms
Loss rate: 29.17%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 7276.582 ms
Loss rate: 29.17%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-01-31 07:20:52

End at: 2018-01-31 07:21:22

Local clock offset: -0.455 ms

Remote clock offset: -1.337 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 7338.233 ms

Loss rate: 29.35%

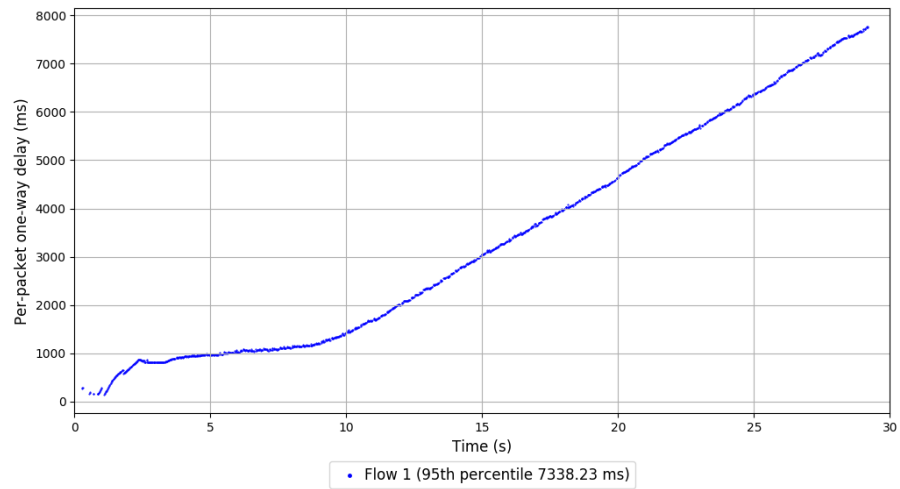
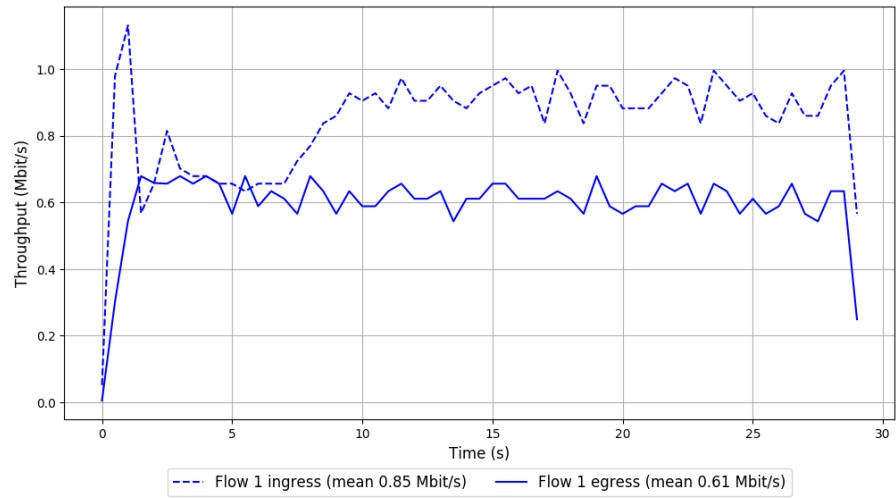
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 7338.233 ms

Loss rate: 29.35%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-01-31 07:42:07

End at: 2018-01-31 07:42:37

Local clock offset: -0.898 ms

Remote clock offset: 4.283 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 7166.386 ms

Loss rate: 29.12%

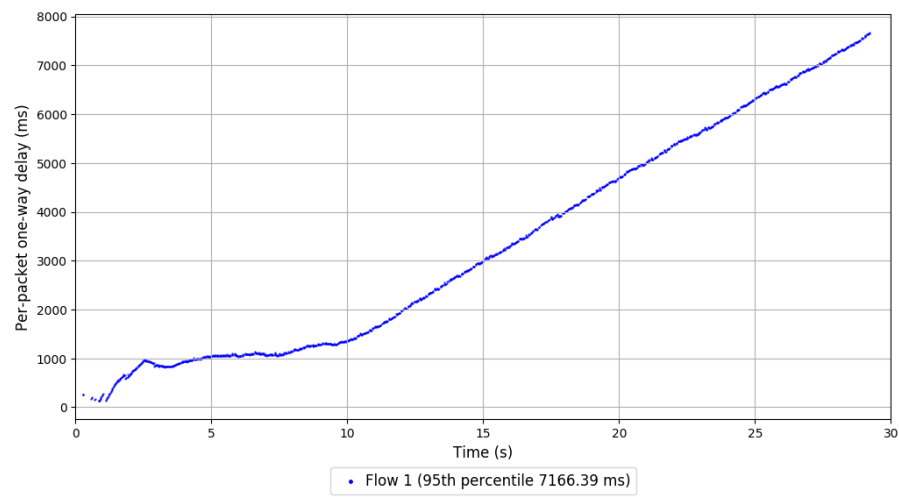
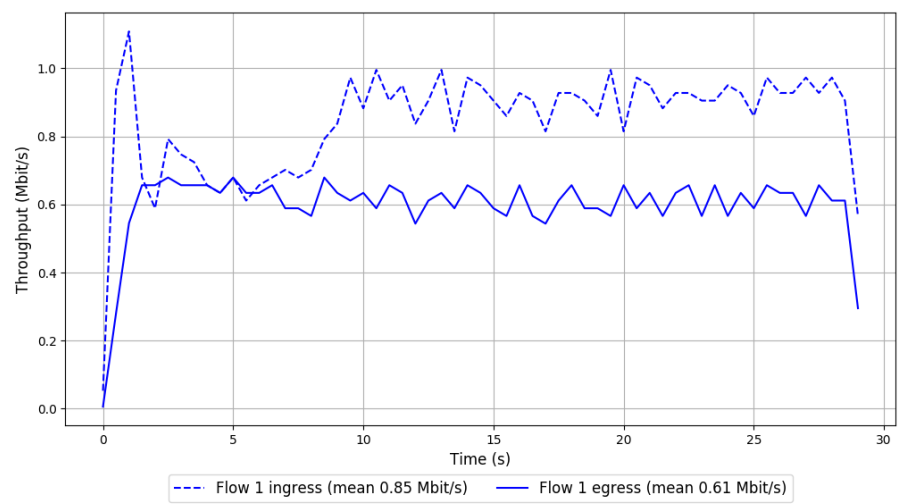
-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 7166.386 ms

Loss rate: 29.12%

Run 3: Report of QUIC Cubic — Data Link

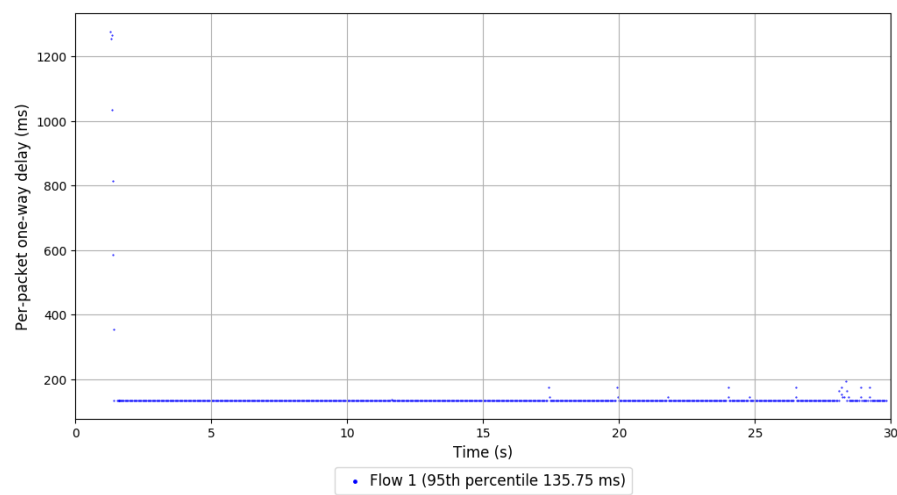
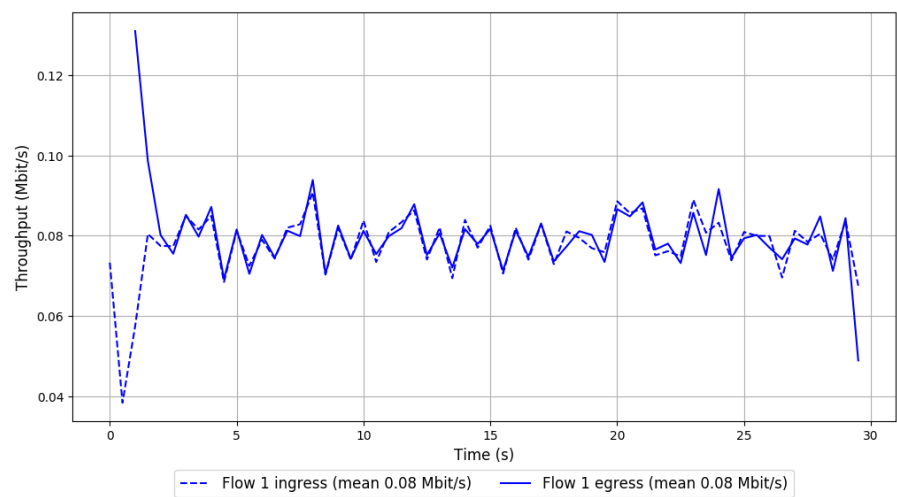


Run 1: Statistics of SCReAM

Start at: 2018-01-31 06:54:58
End at: 2018-01-31 06:55:28
Local clock offset: -0.312 ms
Remote clock offset: -2.016 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 135.750 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 135.750 ms
Loss rate: 0.79%

Run 1: Report of SReAM — Data Link

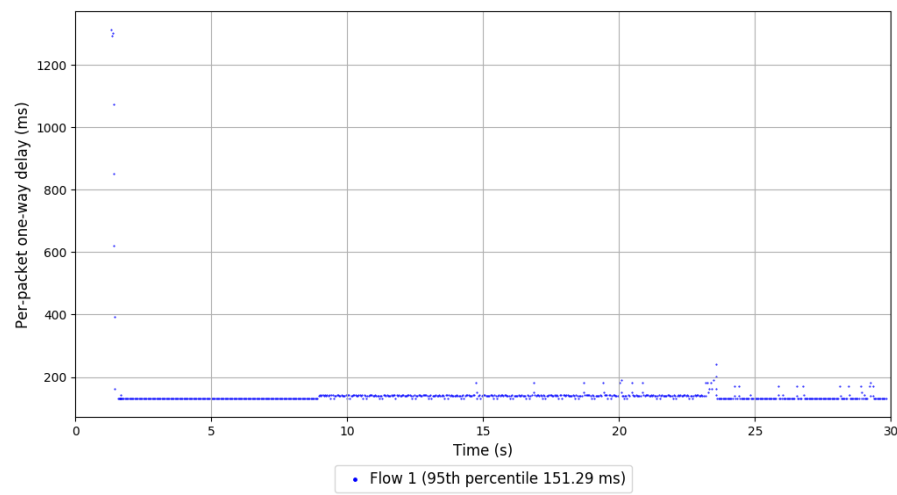
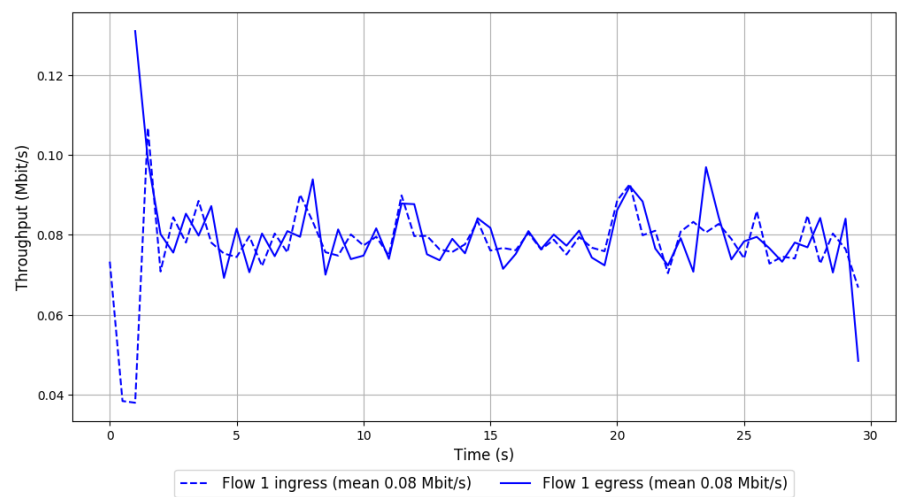


Run 2: Statistics of SCReAM

Start at: 2018-01-31 07:16:10
End at: 2018-01-31 07:16:40
Local clock offset: -0.315 ms
Remote clock offset: -3.298 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 151.288 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 151.288 ms
Loss rate: 0.78%

Run 2: Report of SReAM — Data Link

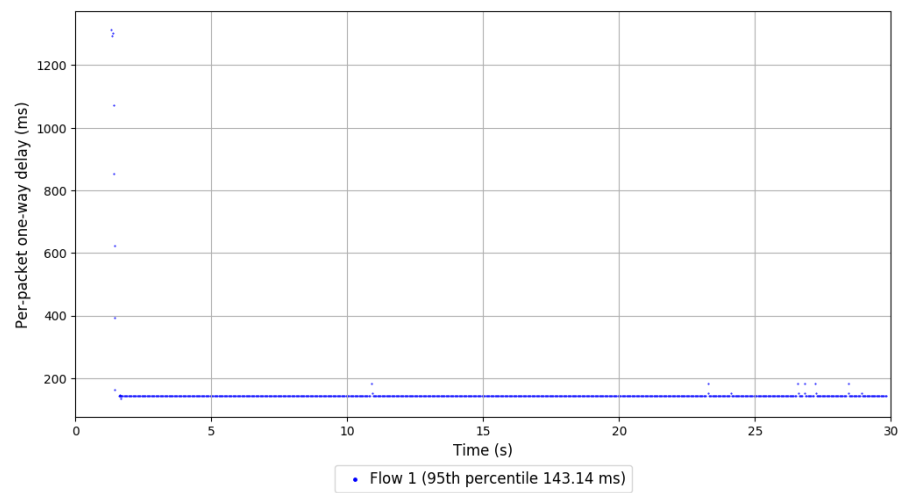
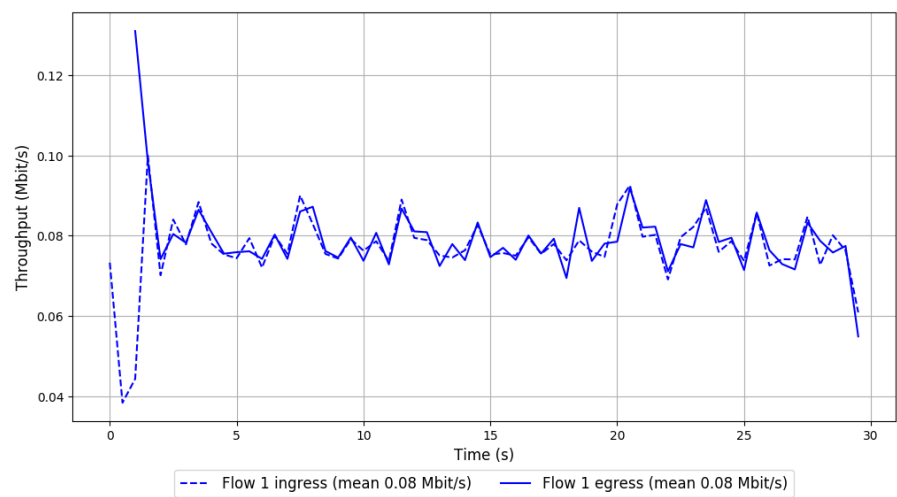


Run 3: Statistics of SCReAM

Start at: 2018-01-31 07:37:22
End at: 2018-01-31 07:37:52
Local clock offset: -0.773 ms
Remote clock offset: -1.936 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.137 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.137 ms
Loss rate: 0.66%

Run 3: Report of SReAM — Data Link

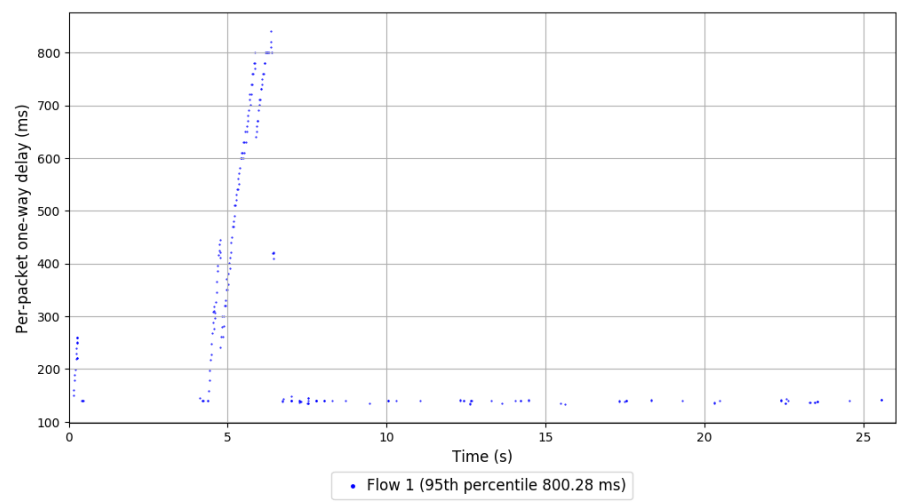
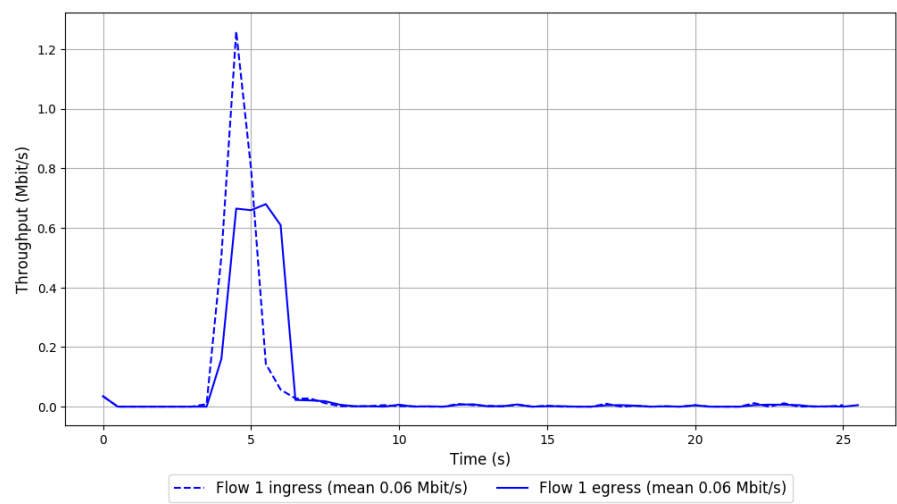


Run 1: Statistics of WebRTC media

Start at: 2018-01-31 06:51:26
End at: 2018-01-31 06:51:56
Local clock offset: -0.236 ms
Remote clock offset: -6.601 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 800.282 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 800.282 ms
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link

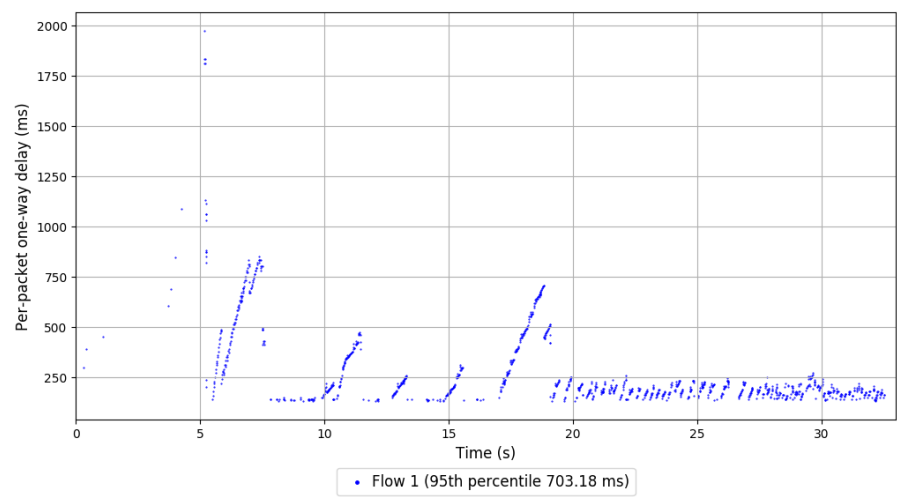
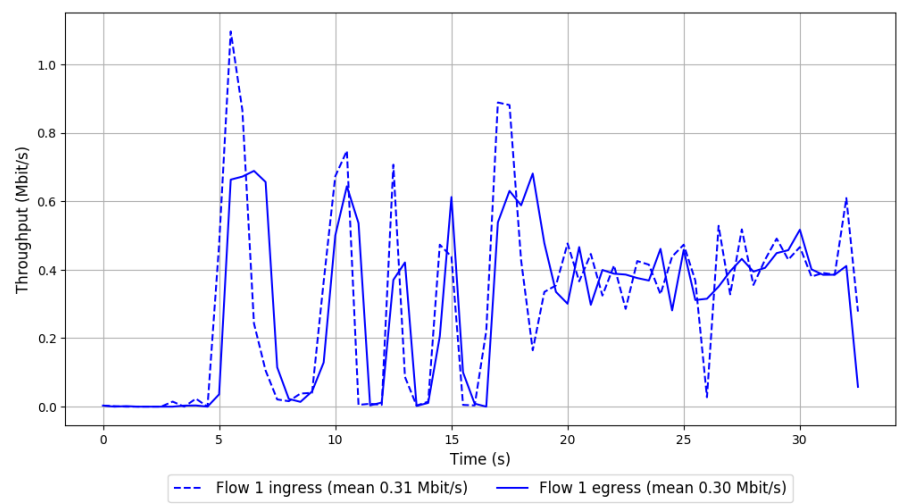


Run 2: Statistics of WebRTC media

Start at: 2018-01-31 07:12:38
End at: 2018-01-31 07:13:08
Local clock offset: -0.299 ms
Remote clock offset: -8.198 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 703.184 ms
Loss rate: 2.72%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 703.184 ms
Loss rate: 2.72%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-01-31 07:33:50

End at: 2018-01-31 07:34:20

Local clock offset: -0.709 ms

Remote clock offset: 2.656 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 698.816 ms

Loss rate: 0.69%

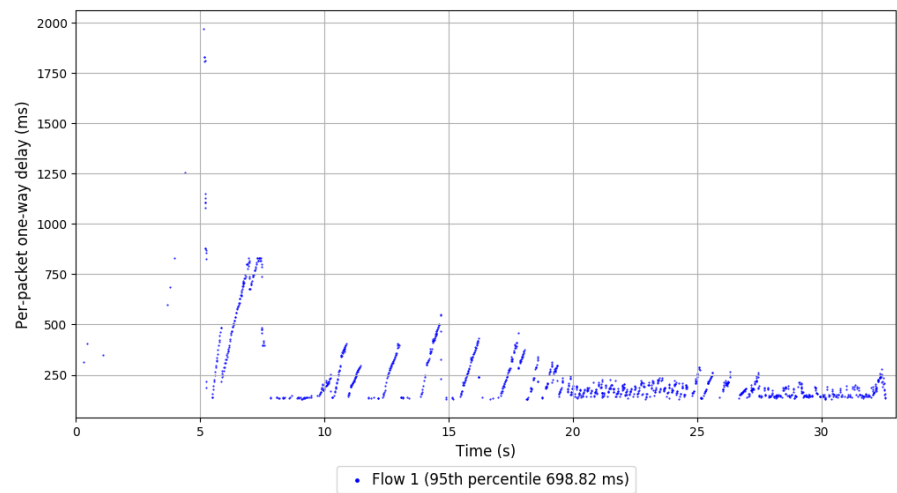
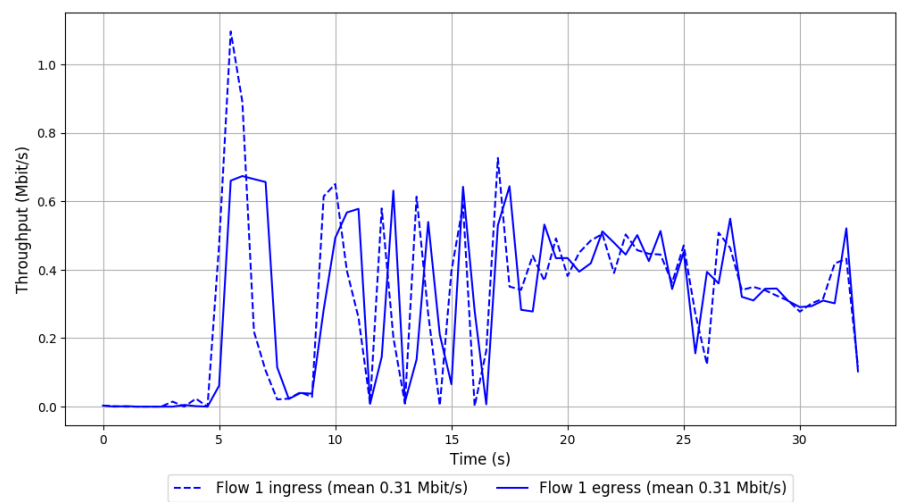
-- Flow 1:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 698.816 ms

Loss rate: 0.69%

Run 3: Report of WebRTC media — Data Link

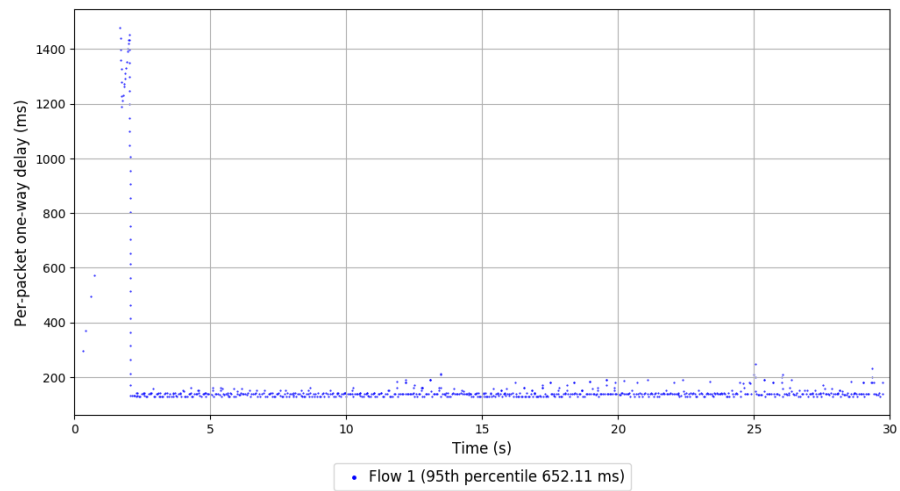
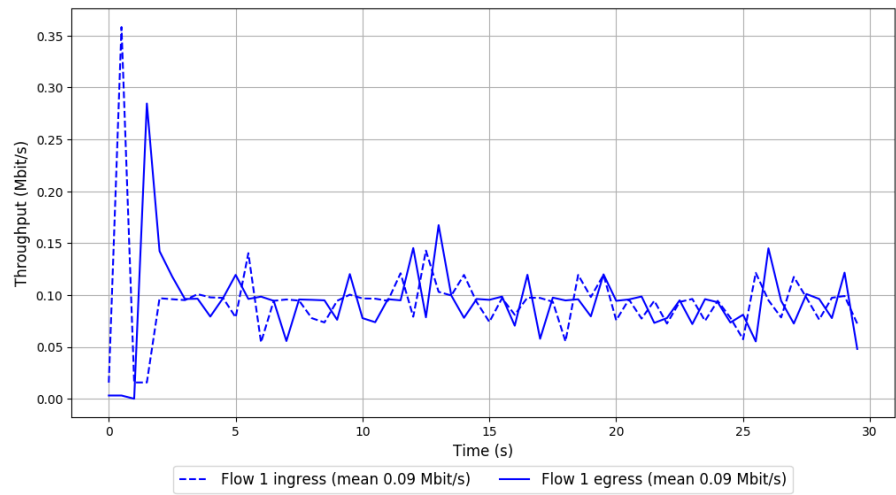


Run 1: Statistics of Sprout

Start at: 2018-01-31 06:56:09
End at: 2018-01-31 06:56:39
Local clock offset: -0.333 ms
Remote clock offset: -2.098 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 652.108 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 652.108 ms
Loss rate: 1.27%

Run 1: Report of Sprout — Data Link

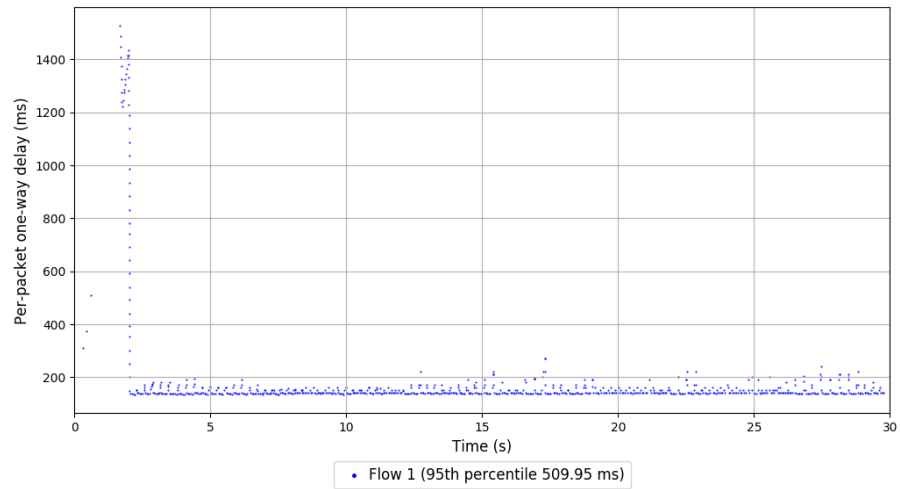
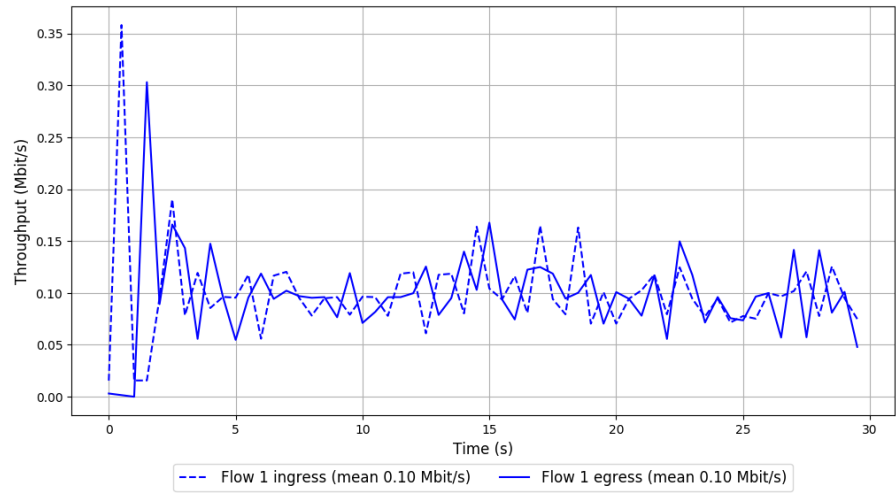


Run 2: Statistics of Sprout

Start at: 2018-01-31 07:17:20
End at: 2018-01-31 07:17:50
Local clock offset: -0.323 ms
Remote clock offset: -8.003 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 509.948 ms
Loss rate: 2.16%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 509.948 ms
Loss rate: 2.16%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-01-31 07:38:32

End at: 2018-01-31 07:39:03

Local clock offset: -0.807 ms

Remote clock offset: 4.177 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 560.657 ms

Loss rate: 2.00%

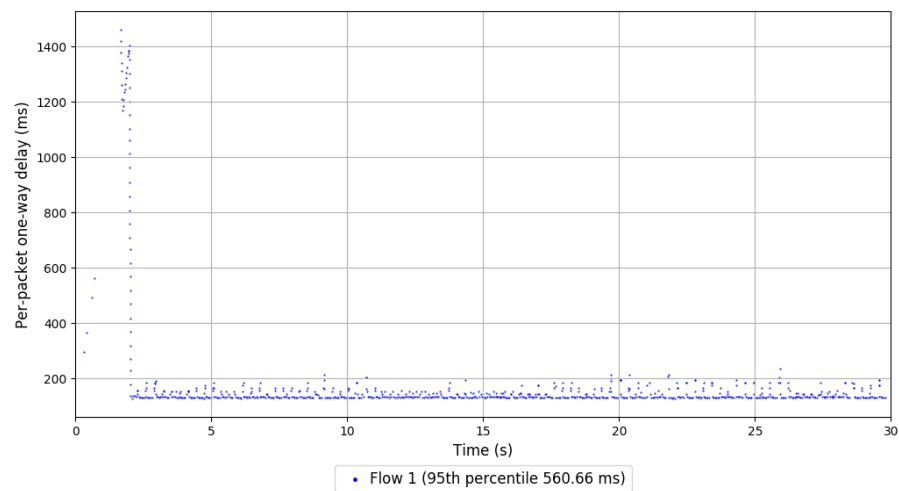
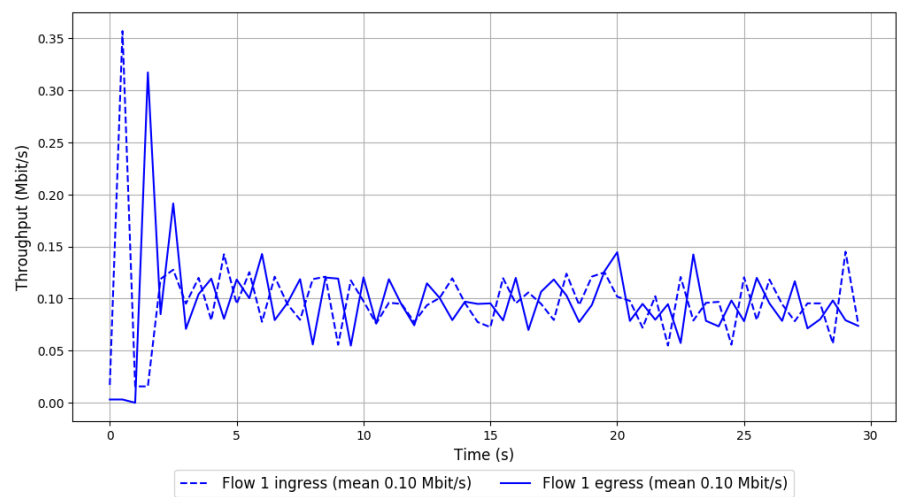
-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 560.657 ms

Loss rate: 2.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-01-31 07:04:23

End at: 2018-01-31 07:04:53

Local clock offset: -0.163 ms

Remote clock offset: -7.373 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1449.442 ms

Loss rate: 2.48%

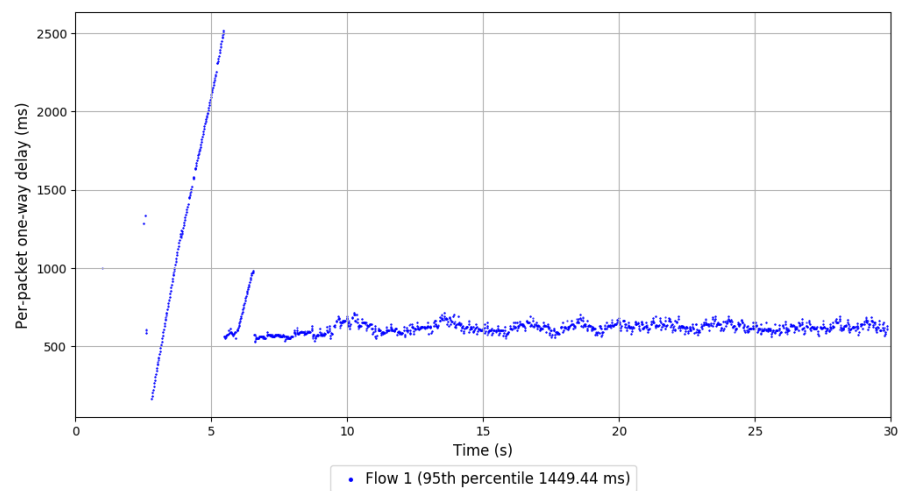
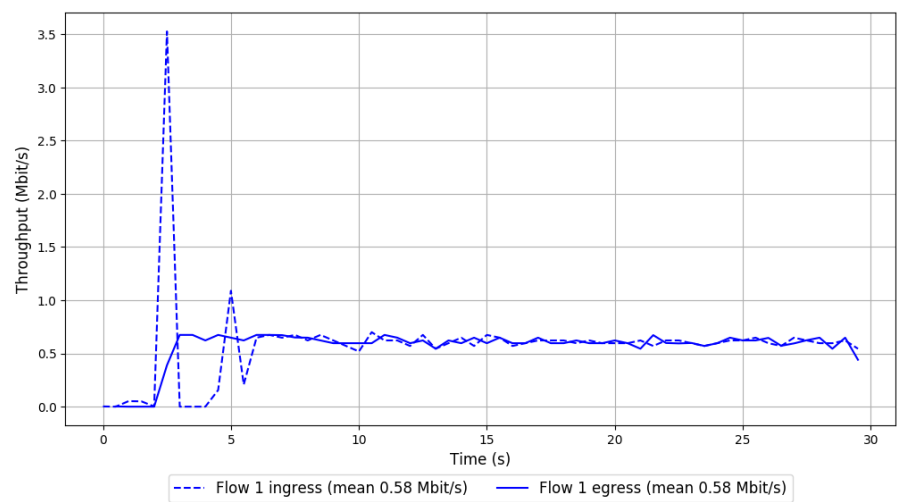
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1449.442 ms

Loss rate: 2.48%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-01-31 07:25:34

End at: 2018-01-31 07:26:04

Local clock offset: -0.518 ms

Remote clock offset: -0.44 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1305.733 ms

Loss rate: 2.62%

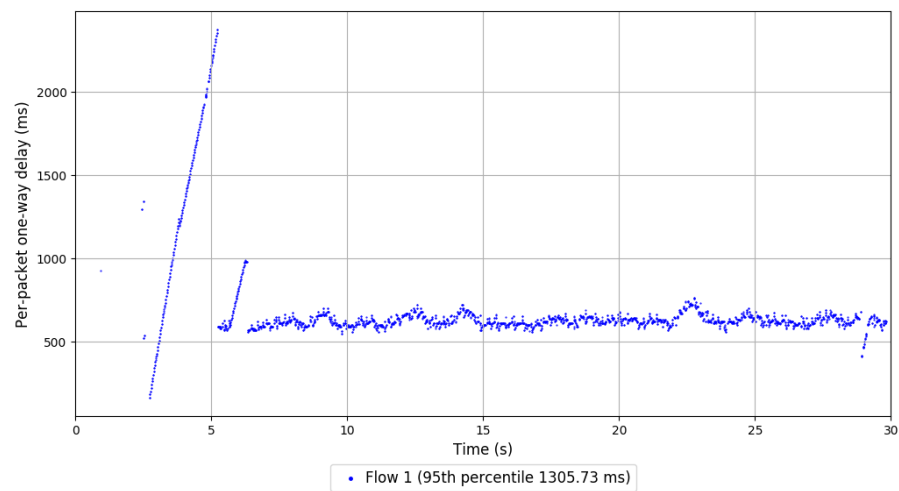
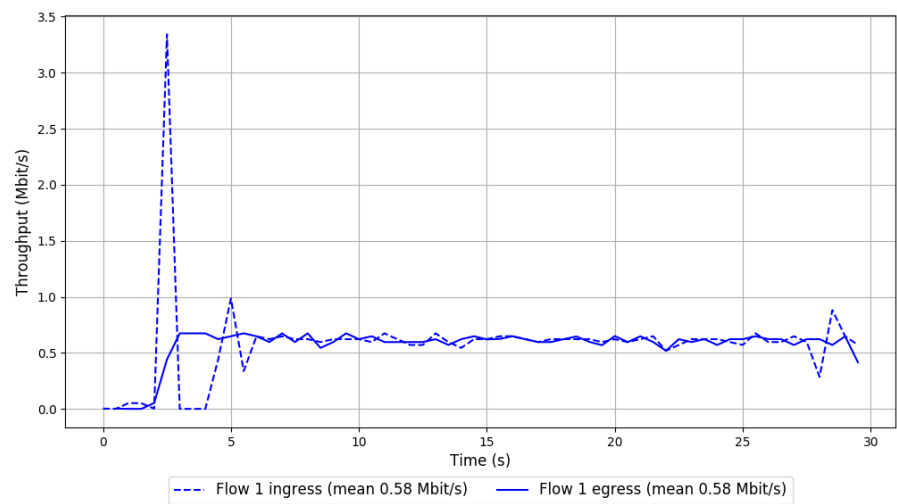
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1305.733 ms

Loss rate: 2.62%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-01-31 07:46:49

End at: 2018-01-31 07:47:19

Local clock offset: -0.947 ms

Remote clock offset: 5.293 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1363.238 ms

Loss rate: 2.62%

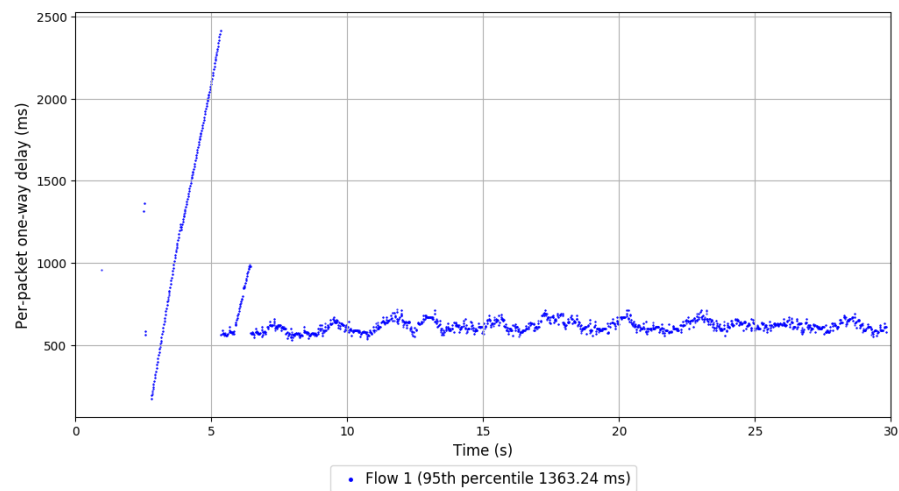
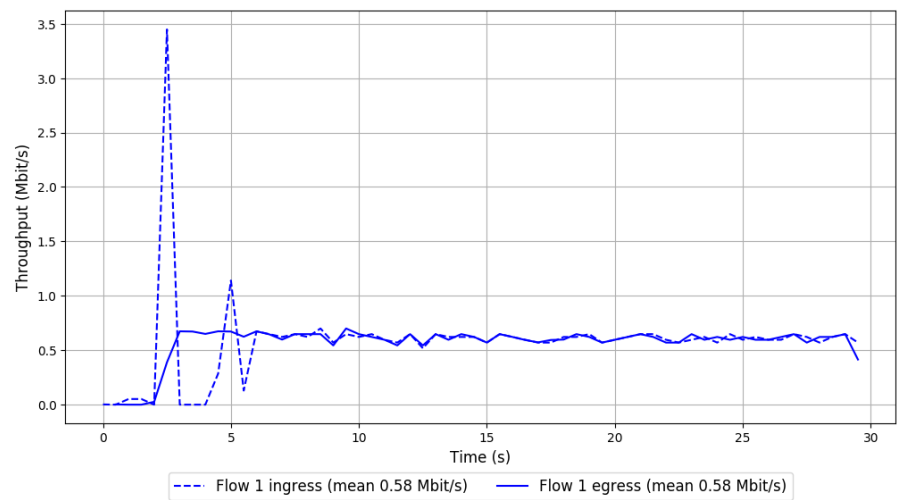
-- Flow 1:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1363.238 ms

Loss rate: 2.62%

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

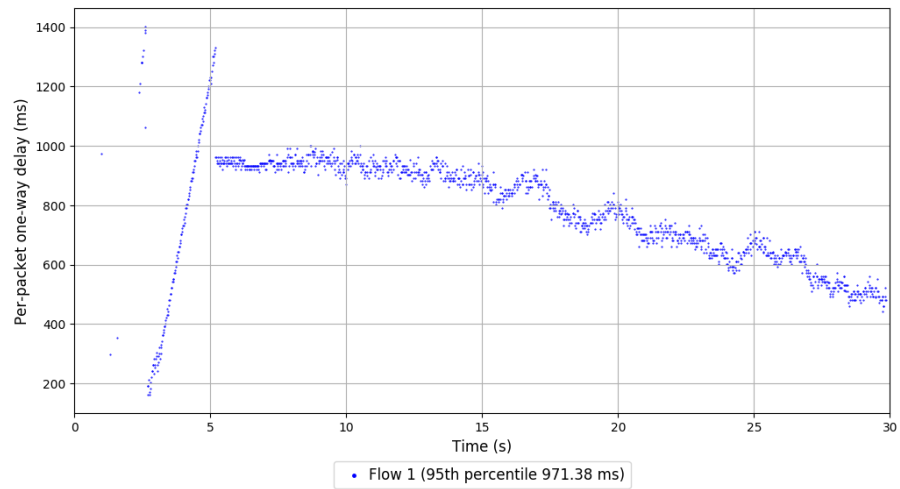
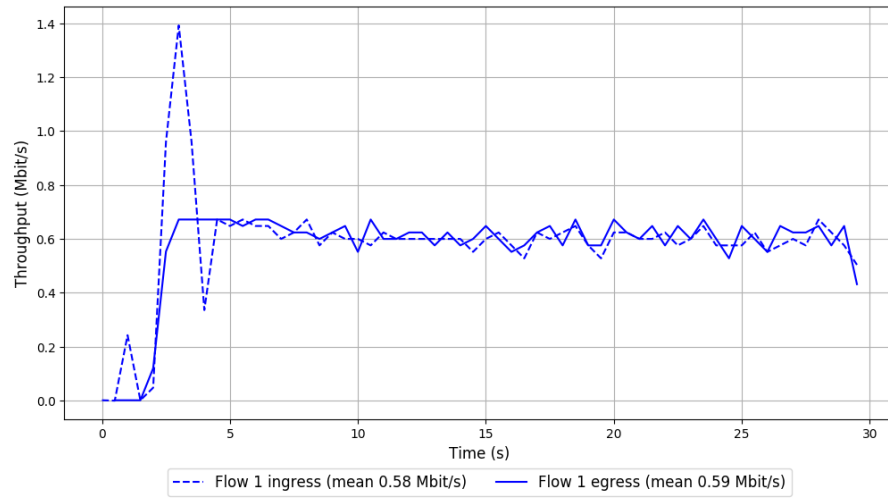


Run 1: Statistics of TCP Vegas

Start at: 2018-01-31 06:50:16
End at: 2018-01-31 06:50:46
Local clock offset: -0.208 ms
Remote clock offset: -1.036 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 971.380 ms
Loss rate: 1.93%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 971.380 ms
Loss rate: 1.93%

Run 1: Report of TCP Vegas — Data Link

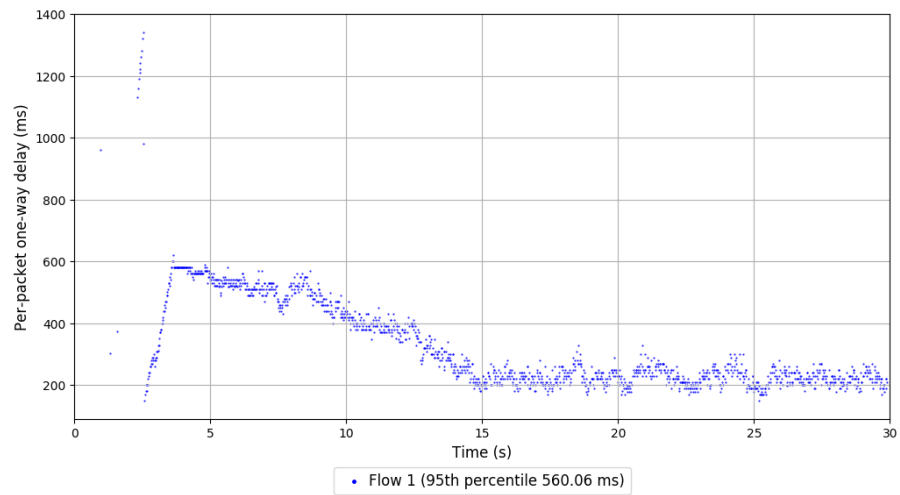
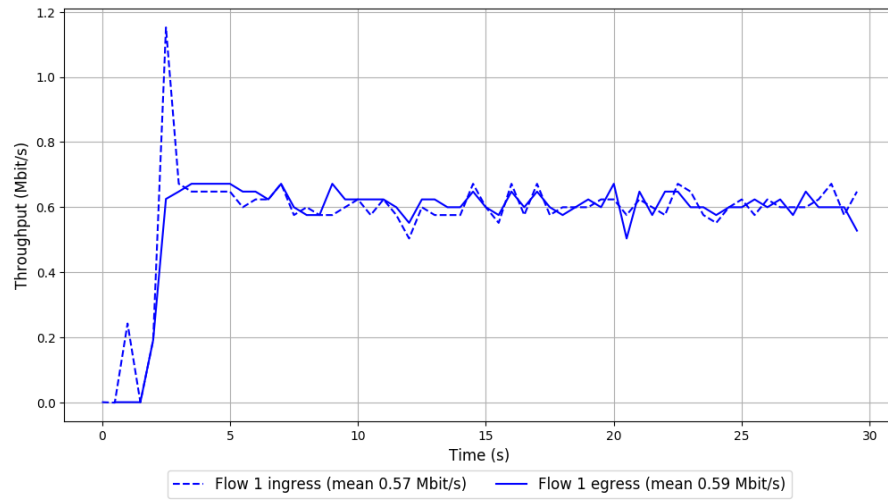


Run 2: Statistics of TCP Vegas

Start at: 2018-01-31 07:11:28
End at: 2018-01-31 07:11:58
Local clock offset: -0.275 ms
Remote clock offset: -7.358 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 560.057 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 560.057 ms
Loss rate: 1.18%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-01-31 07:32:40

End at: 2018-01-31 07:33:10

Local clock offset: -0.675 ms

Remote clock offset: 1.317 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 853.644 ms

Loss rate: 1.12%

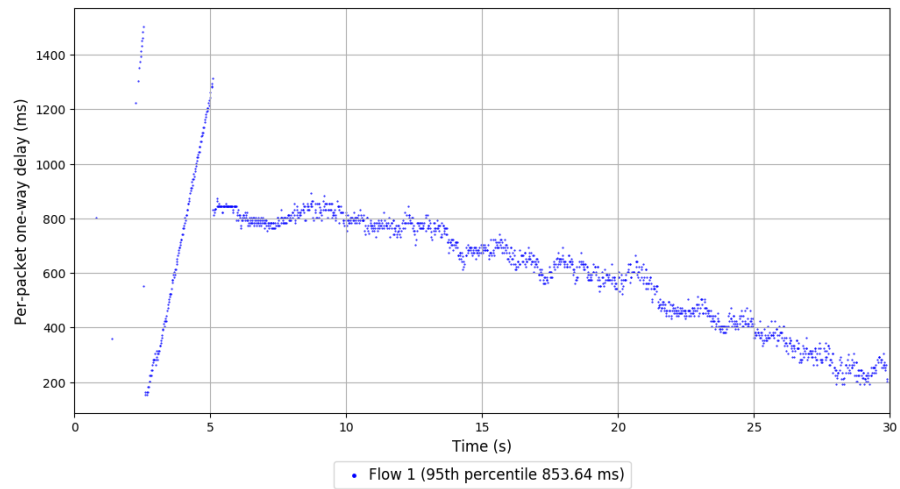
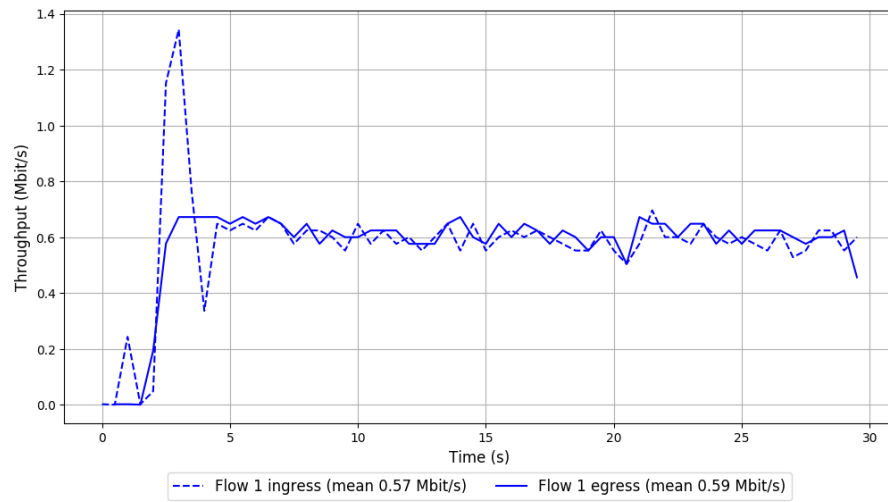
-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 853.644 ms

Loss rate: 1.12%

Run 3: Report of TCP Vegas — Data Link

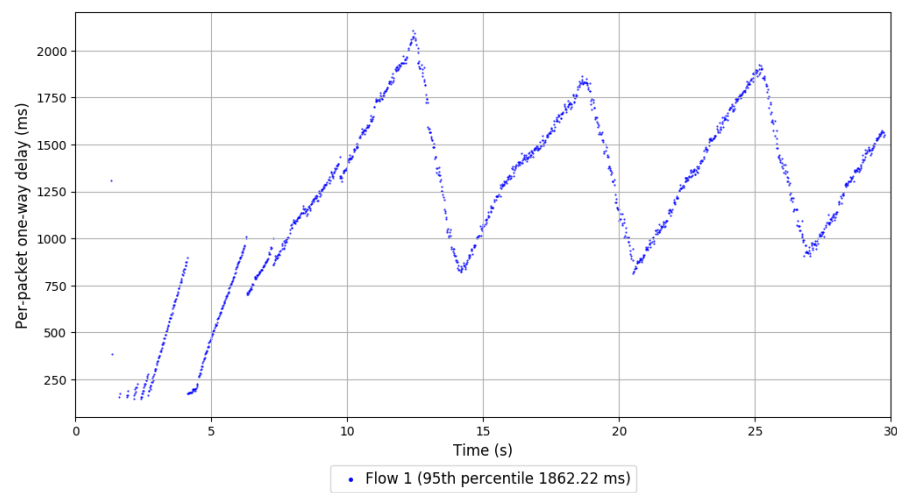
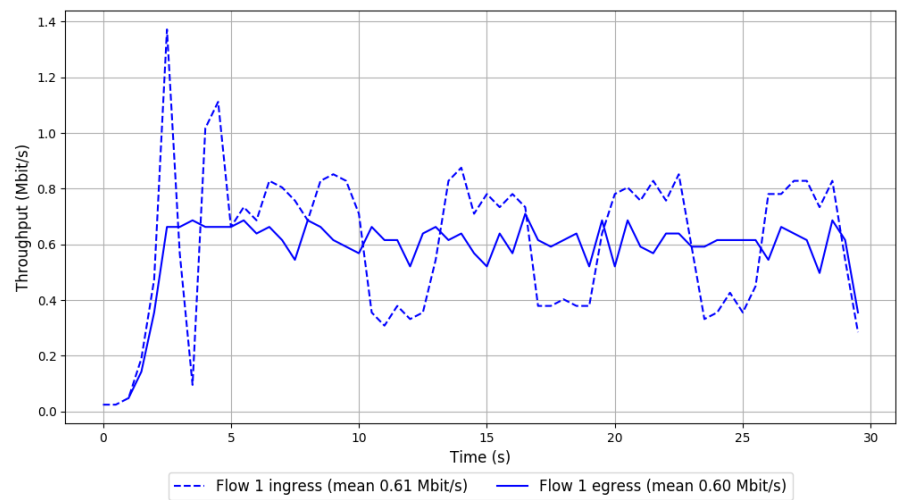


Run 1: Statistics of Verus

Start at: 2018-01-31 06:58:30
End at: 2018-01-31 06:59:00
Local clock offset: -0.309 ms
Remote clock offset: -3.218 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1862.222 ms
Loss rate: 5.78%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1862.222 ms
Loss rate: 5.78%

Run 1: Report of Verus — Data Link

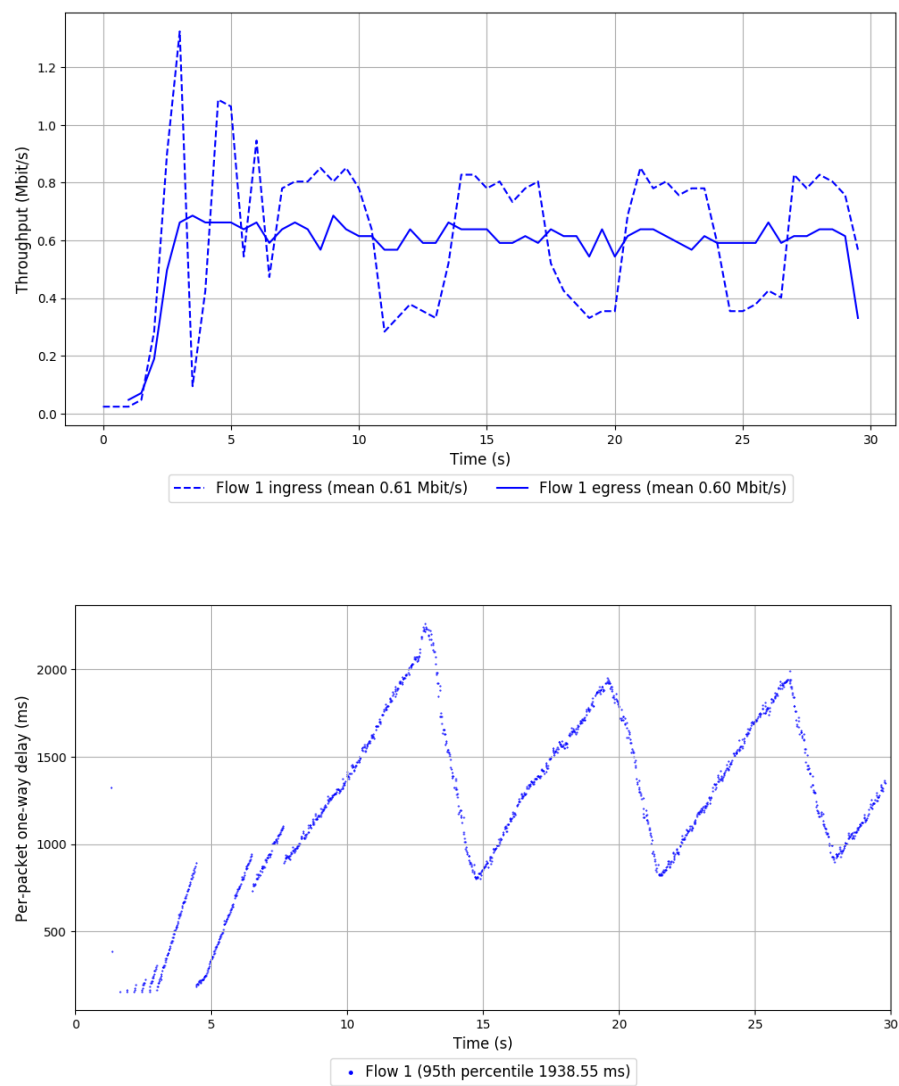


Run 2: Statistics of Verus

Start at: 2018-01-31 07:19:42
End at: 2018-01-31 07:20:12
Local clock offset: -0.375 ms
Remote clock offset: -3.195 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1938.546 ms
Loss rate: 6.21%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1938.546 ms
Loss rate: 6.21%

Run 2: Report of Verus — Data Link

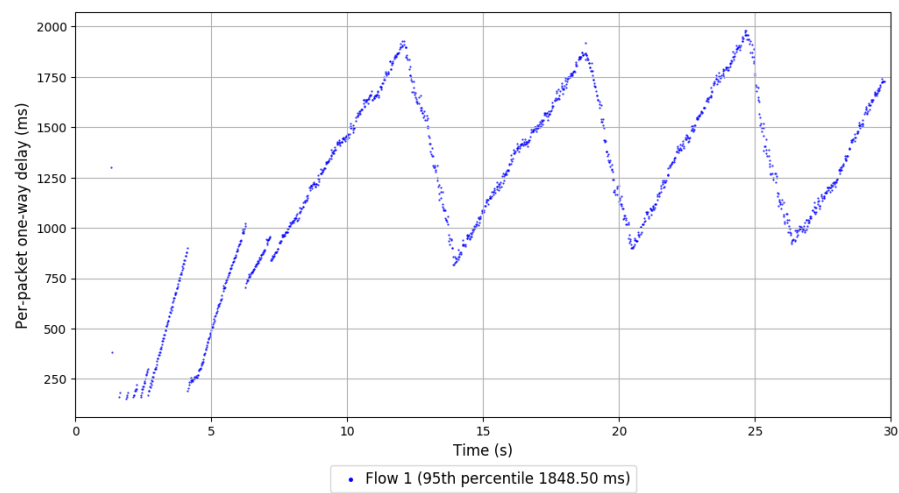
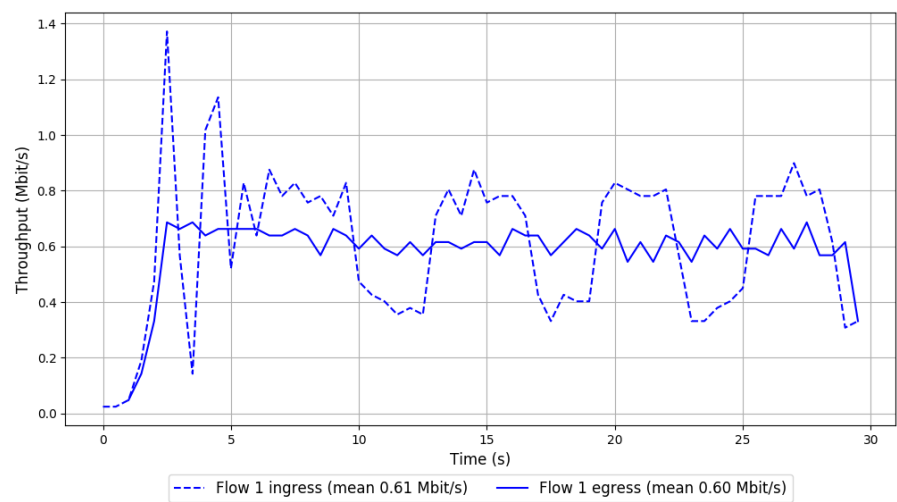


Run 3: Statistics of Verus

Start at: 2018-01-31 07:40:54
End at: 2018-01-31 07:41:24
Local clock offset: -0.937 ms
Remote clock offset: -0.934 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1848.501 ms
Loss rate: 5.53%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1848.501 ms
Loss rate: 5.53%

Run 3: Report of Verus — Data Link

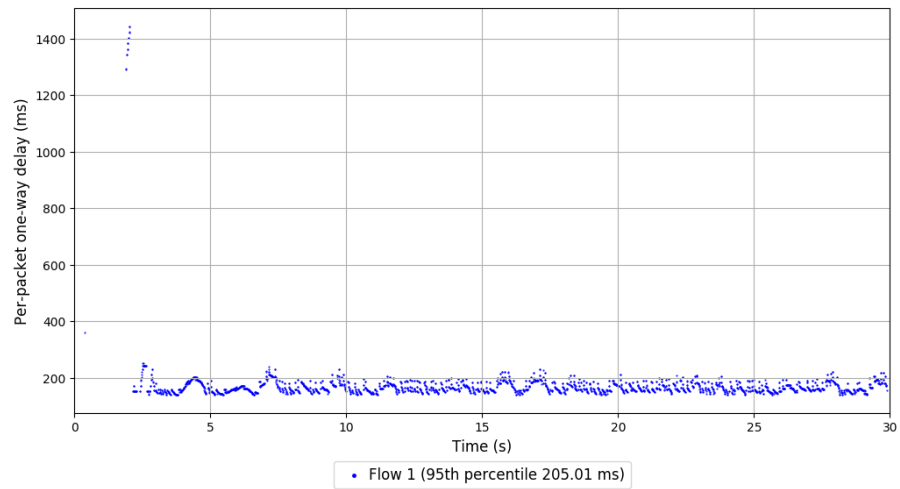
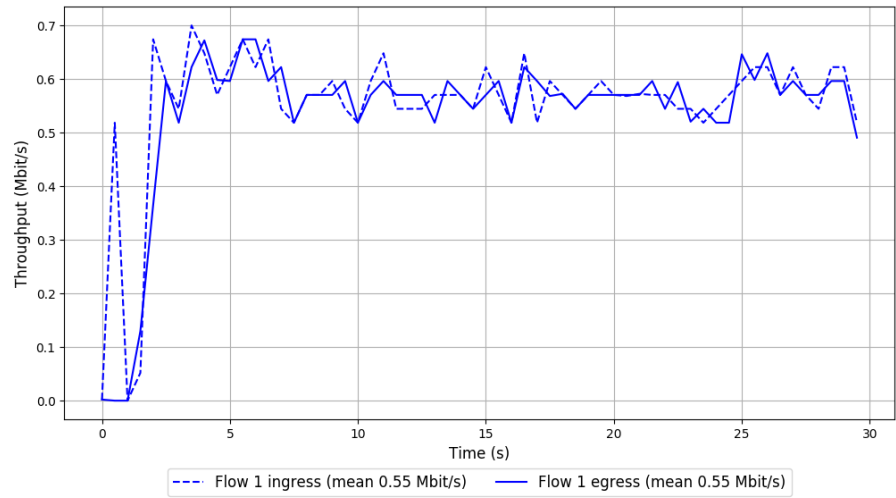


Run 1: Statistics of Copa

Start at: 2018-01-31 07:06:44
End at: 2018-01-31 07:07:14
Local clock offset: -0.165 ms
Remote clock offset: -7.415 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 205.007 ms
Loss rate: 2.58%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 205.007 ms
Loss rate: 2.58%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-01-31 07:27:56

End at: 2018-01-31 07:28:26

Local clock offset: -0.574 ms

Remote clock offset: 0.507 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 205.307 ms

Loss rate: 3.77%

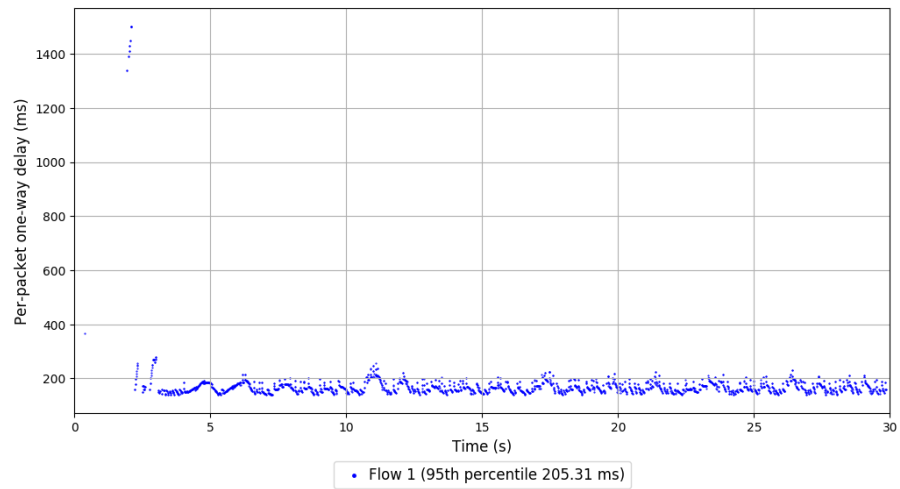
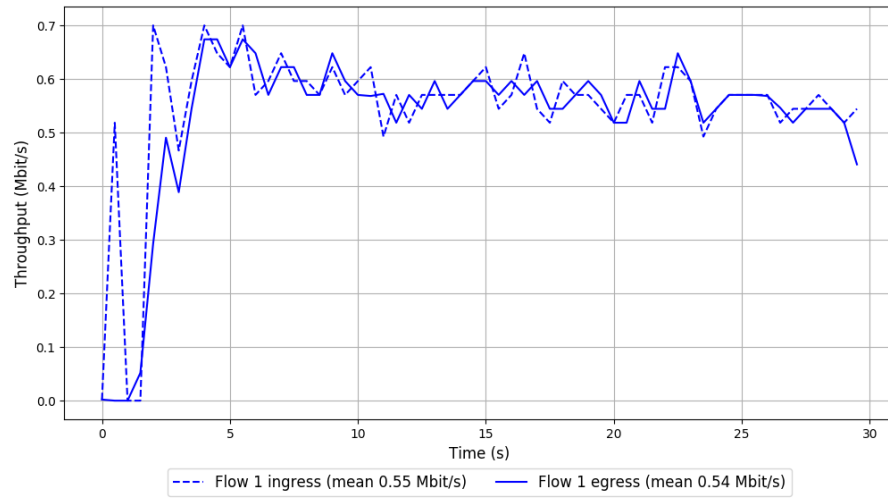
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 205.307 ms

Loss rate: 3.77%

Run 2: Report of Copa — Data Link

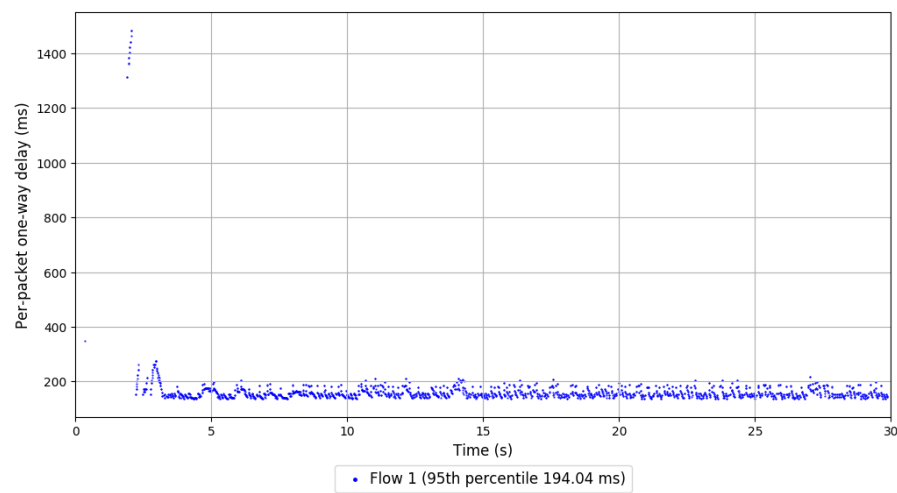
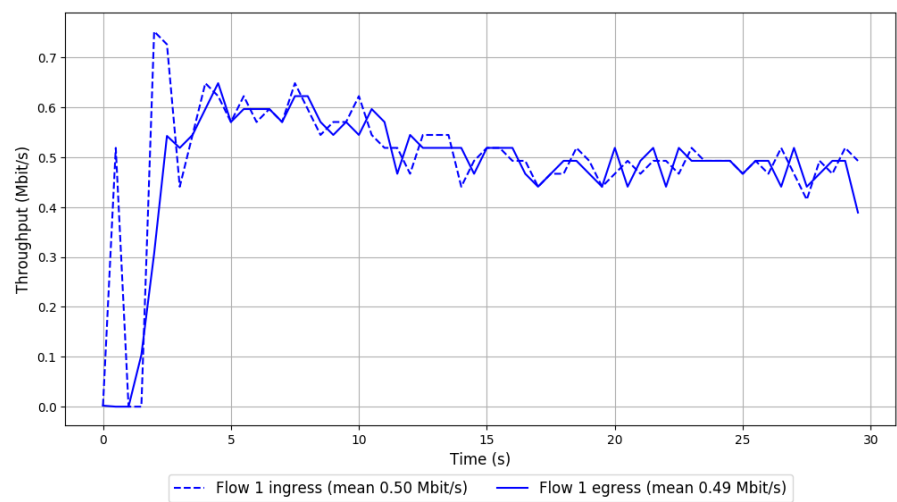


Run 3: Statistics of Copa

Start at: 2018-01-31 07:49:10
End at: 2018-01-31 07:49:40
Local clock offset: -0.886 ms
Remote clock offset: 7.562 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 194.044 ms
Loss rate: 3.58%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 194.044 ms
Loss rate: 3.58%

Run 3: Report of Copa — Data Link

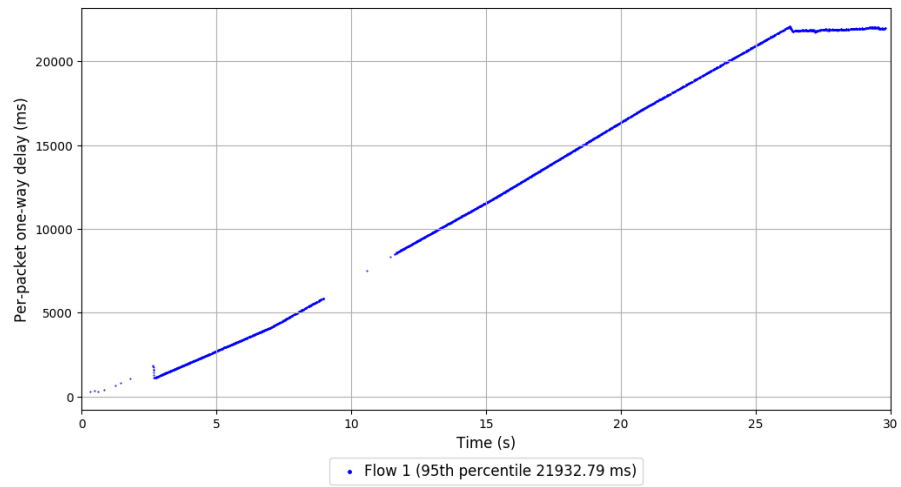
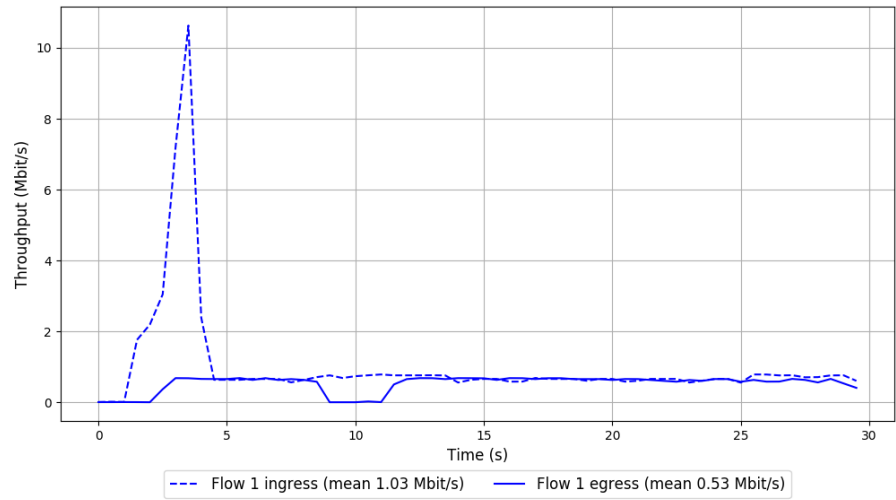


Run 1: Statistics of FillP

Start at: 2018-01-31 06:57:19
End at: 2018-01-31 06:57:49
Local clock offset: -0.293 ms
Remote clock offset: -2.224 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 21932.788 ms
Loss rate: 48.91%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 21932.788 ms
Loss rate: 48.91%

Run 1: Report of FillP — Data Link

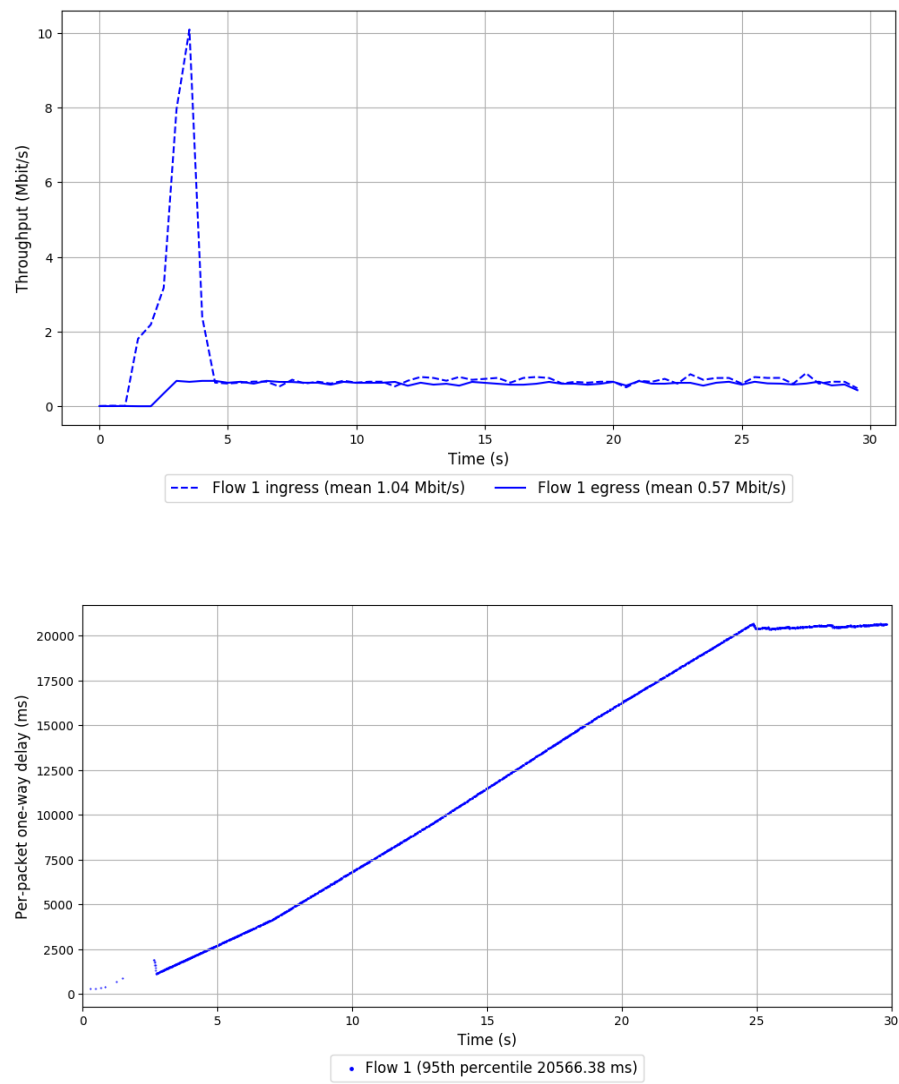


Run 2: Statistics of FillP

Start at: 2018-01-31 07:18:31
End at: 2018-01-31 07:19:01
Local clock offset: -0.349 ms
Remote clock offset: -7.144 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20566.375 ms
Loss rate: 45.99%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20566.375 ms
Loss rate: 45.99%

Run 2: Report of FillP — Data Link

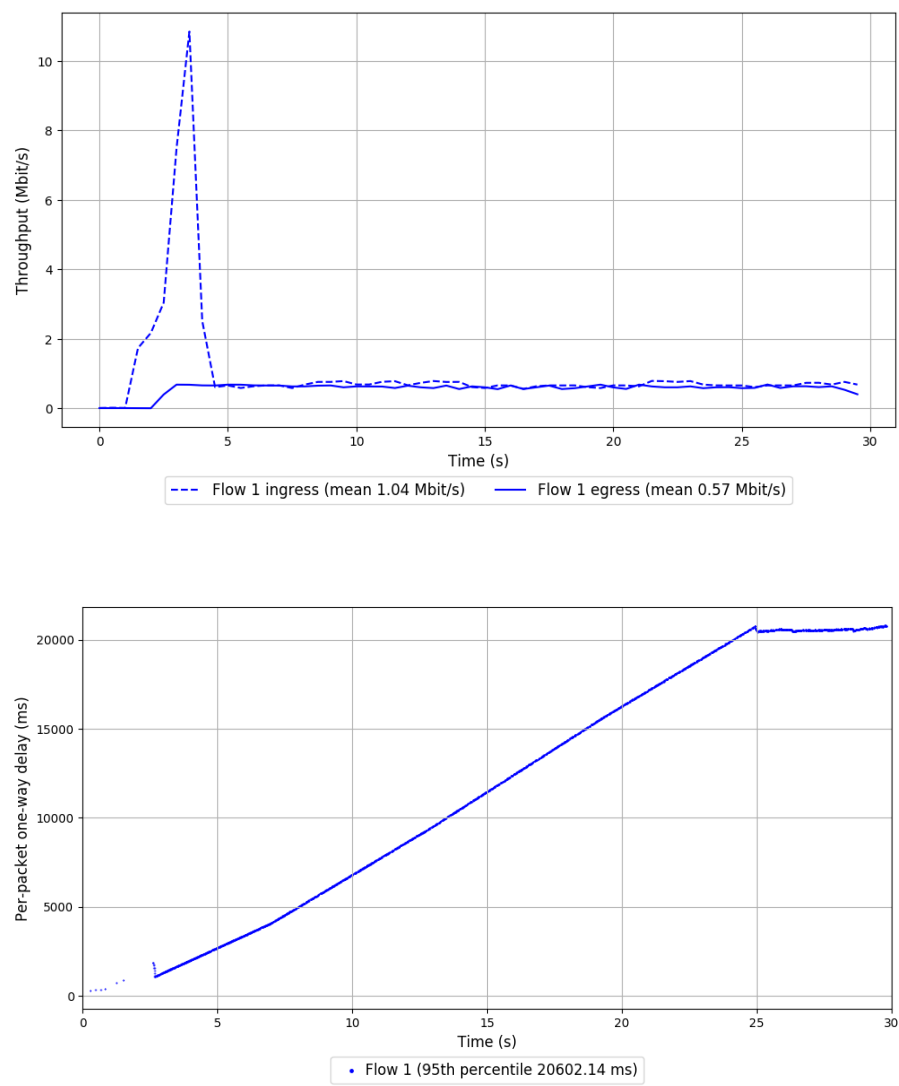


Run 3: Statistics of FillP

Start at: 2018-01-31 07:39:43
End at: 2018-01-31 07:40:13
Local clock offset: -0.846 ms
Remote clock offset: -0.383 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20602.144 ms
Loss rate: 46.09%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20602.144 ms
Loss rate: 46.09%

Run 3: Report of FillP — Data Link

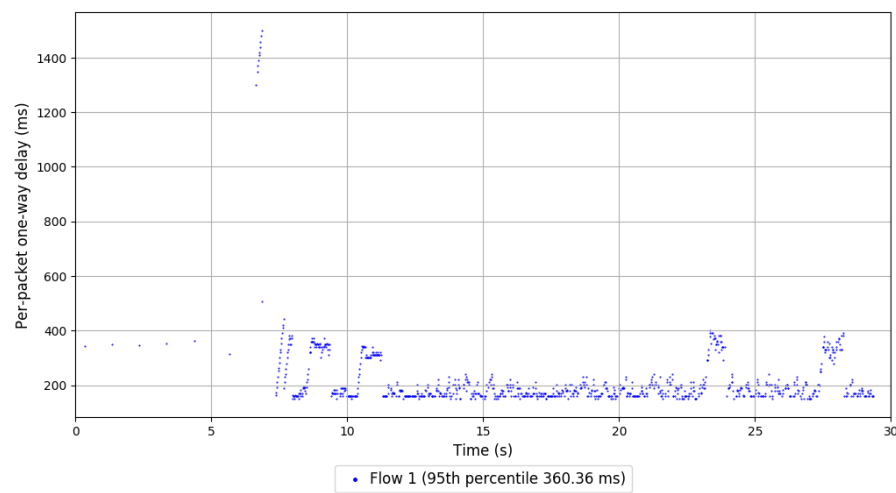
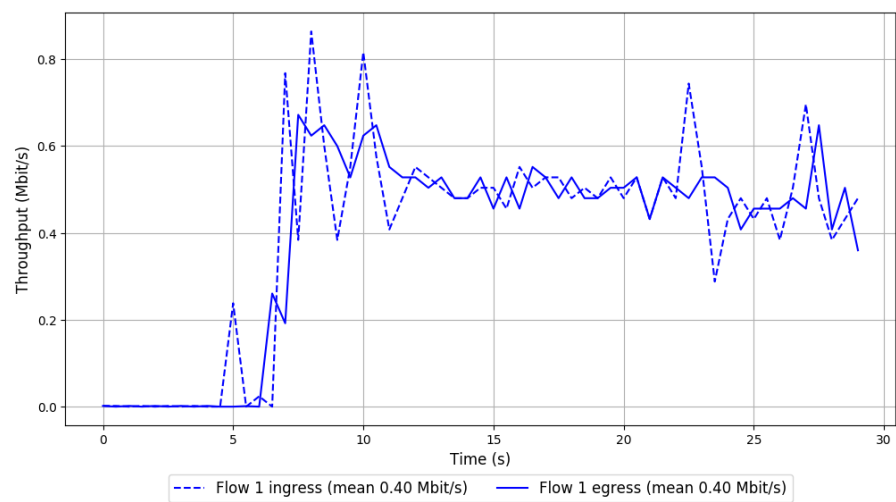


```
Run 1: Statistics of Indigo-1-32

Start at: 2018-01-31 07:00:51
End at: 2018-01-31 07:01:21
Local clock offset: -0.239 ms
Remote clock offset: -7.324 ms

# Below is generated by plot.py at 2018-01-31 08:55:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 360.363 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 360.363 ms
Loss rate: 1.43%
```

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



Run 2: Statistics of Indigo-1-32

Start at: 2018-01-31 07:22:03

End at: 2018-01-31 07:22:33

Local clock offset: -0.437 ms

Remote clock offset: -2.986 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 311.863 ms

Loss rate: 1.11%

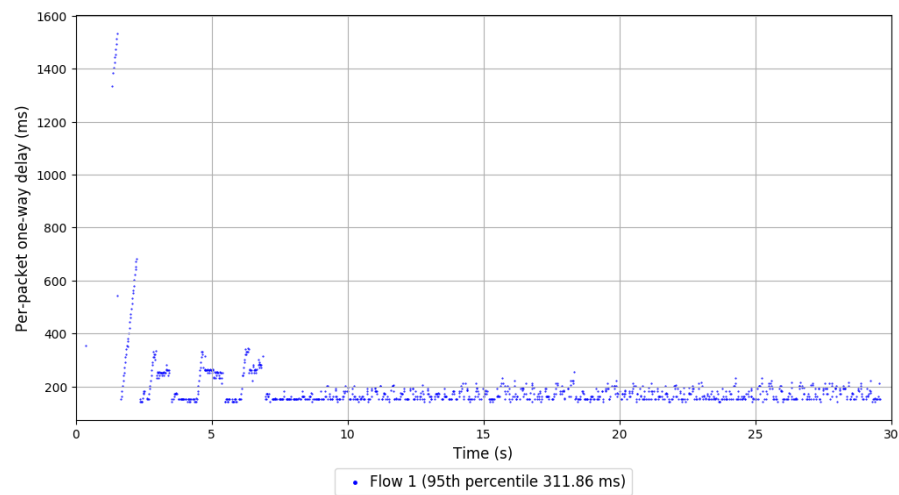
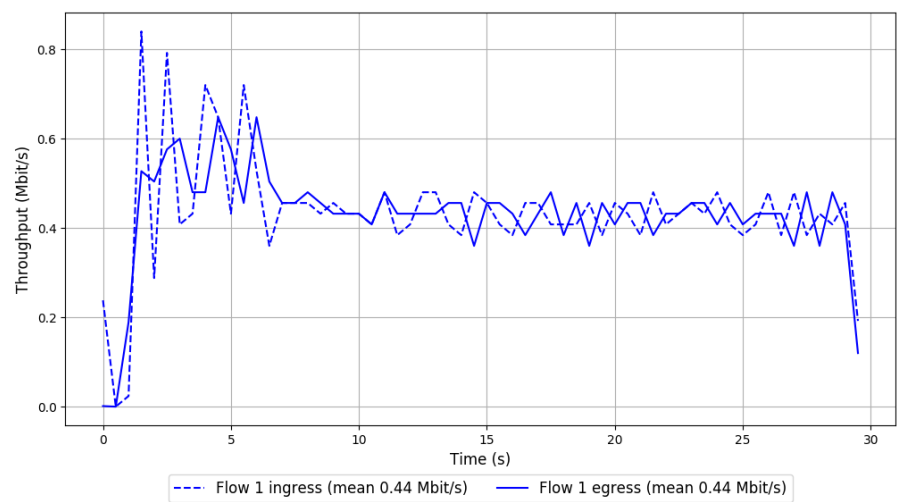
-- Flow 1:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 311.863 ms

Loss rate: 1.11%

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

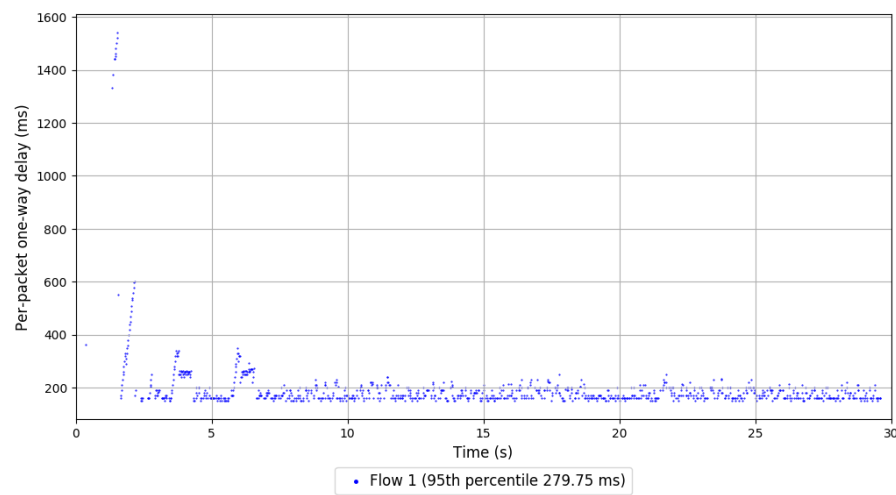
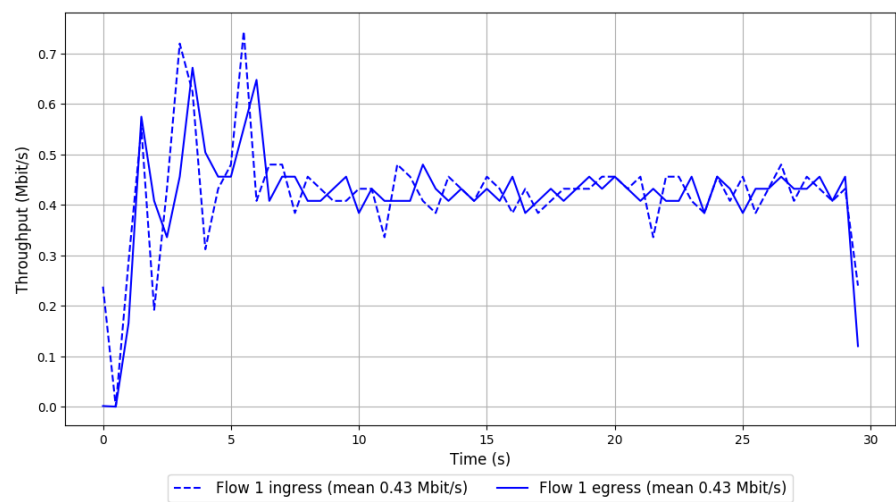


Run 3: Statistics of Indigo-1-32

Start at: 2018-01-31 07:43:17
End at: 2018-01-31 07:43:47
Local clock offset: -0.915 ms
Remote clock offset: -0.356 ms

Below is generated by plot.py at 2018-01-31 08:55:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 279.755 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 279.755 ms
Loss rate: 1.33%

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



Run 1: Statistics of Vivace-latency

Start at: 2018-01-31 06:49:06

End at: 2018-01-31 06:49:36

Local clock offset: -0.283 ms

Remote clock offset: -2.21 ms

Below is generated by plot.py at 2018-01-31 08:55:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21114.564 ms

Loss rate: 70.33%

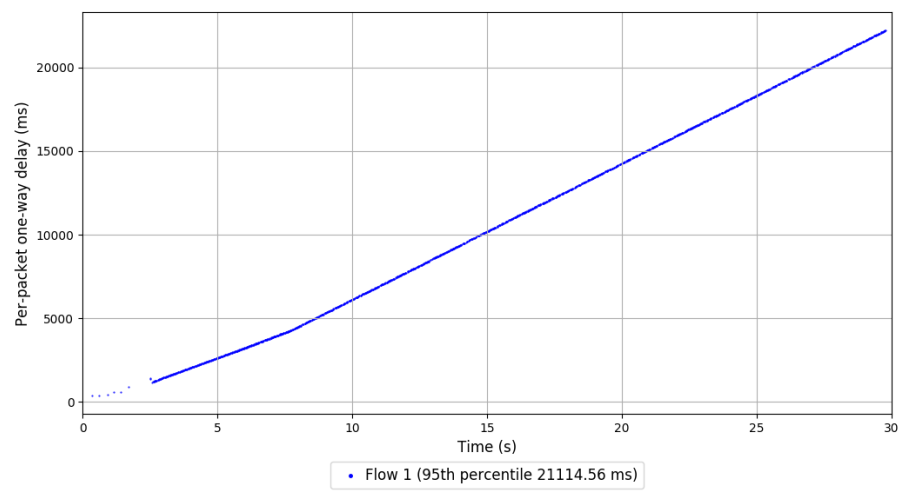
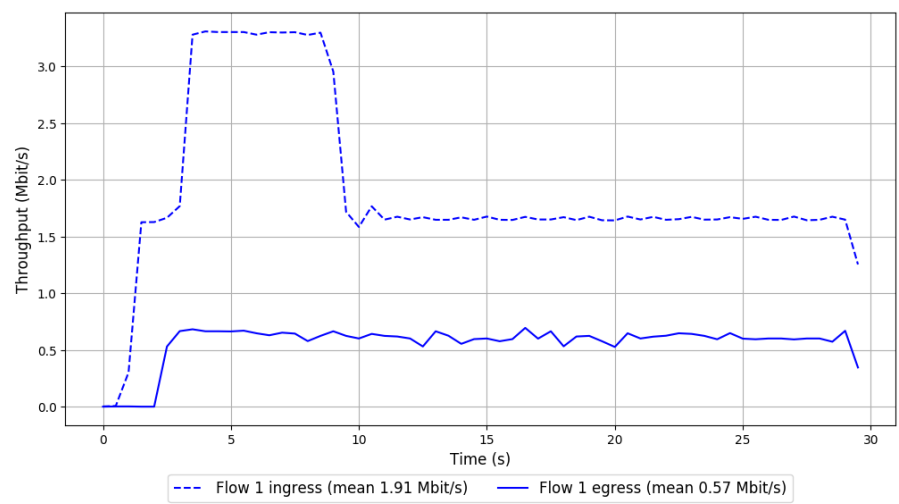
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21114.564 ms

Loss rate: 70.33%

Run 1: Report of Vivace-latency — Data Link

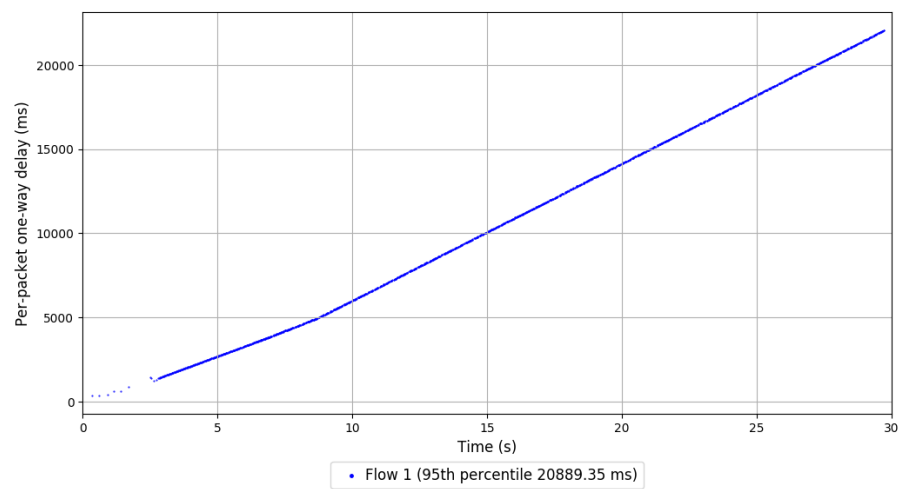
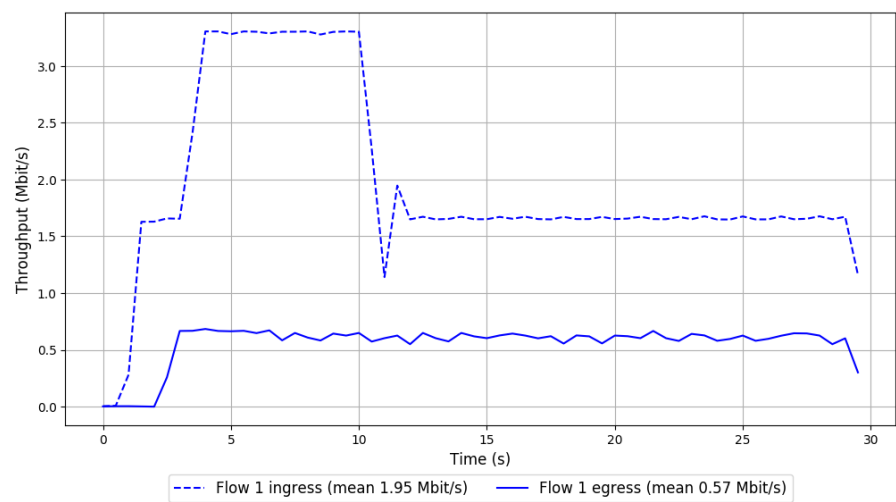


Run 2: Statistics of Vivace-latency

Start at: 2018-01-31 07:10:17
End at: 2018-01-31 07:10:47
Local clock offset: -0.192 ms
Remote clock offset: -3.504 ms

Below is generated by plot.py at 2018-01-31 08:55:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20889.353 ms
Loss rate: 71.37%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20889.353 ms
Loss rate: 71.37%

Run 2: Report of Vivace-latency — Data Link



Run 3: Statistics of Vivace-latency

Start at: 2018-01-31 07:31:29

End at: 2018-01-31 07:31:59

Local clock offset: -0.645 ms

Remote clock offset: 1.685 ms

Below is generated by plot.py at 2018-01-31 08:55:24

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20900.675 ms

Loss rate: 70.69%

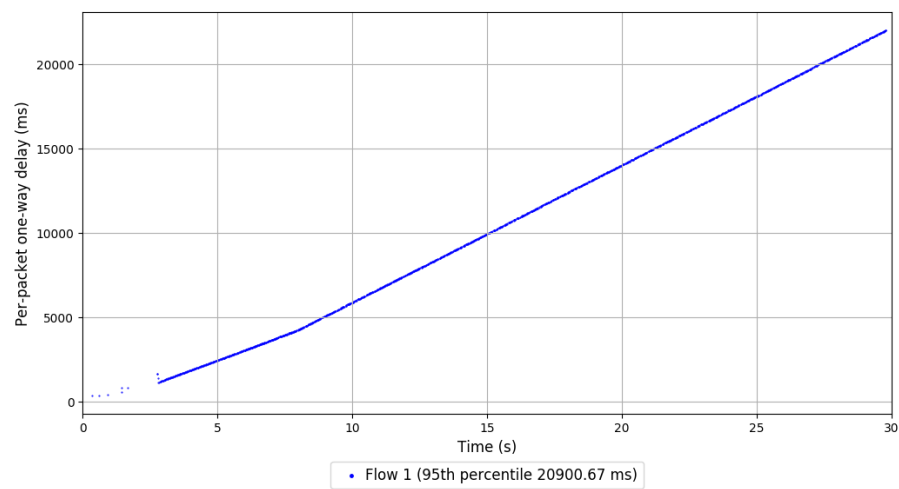
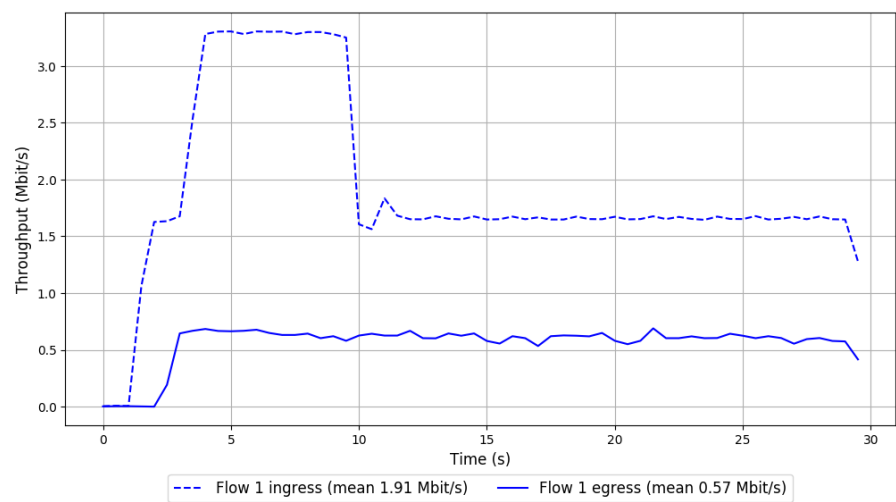
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20900.675 ms

Loss rate: 70.69%

Run 3: Report of Vivace-latency — Data Link



Run 1: Statistics of Vivace-loss

Start at: 2018-01-31 07:07:54

End at: 2018-01-31 07:08:25

Local clock offset: -0.165 ms

Remote clock offset: -2.522 ms

Below is generated by plot.py at 2018-01-31 08:55:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21064.636 ms

Loss rate: 89.28%

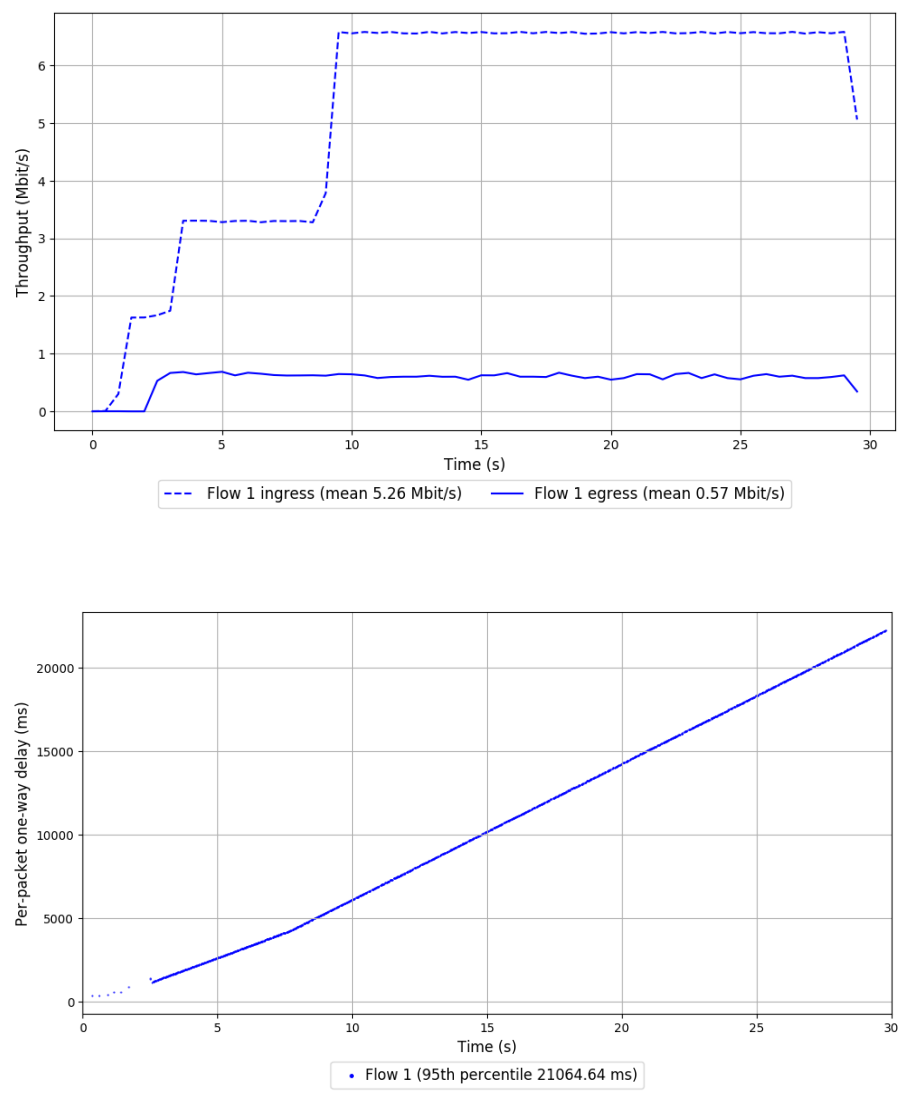
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21064.636 ms

Loss rate: 89.28%

Run 1: Report of Vivace-loss — Data Link

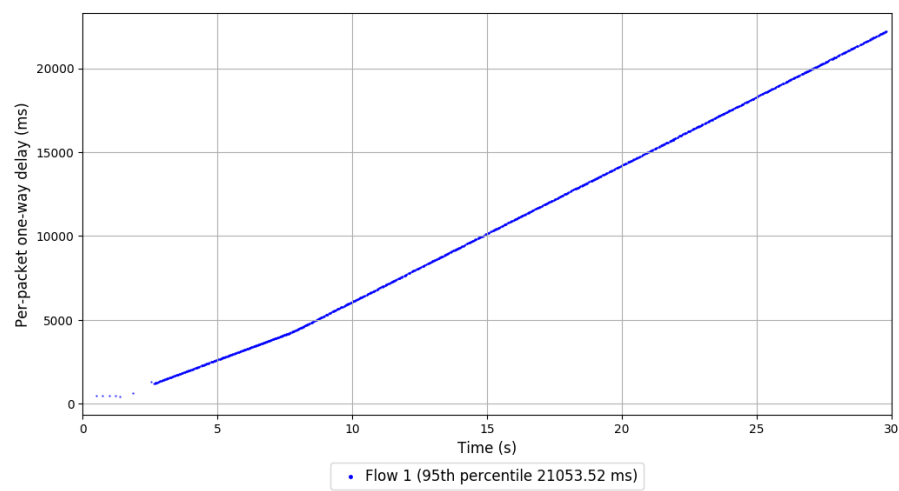
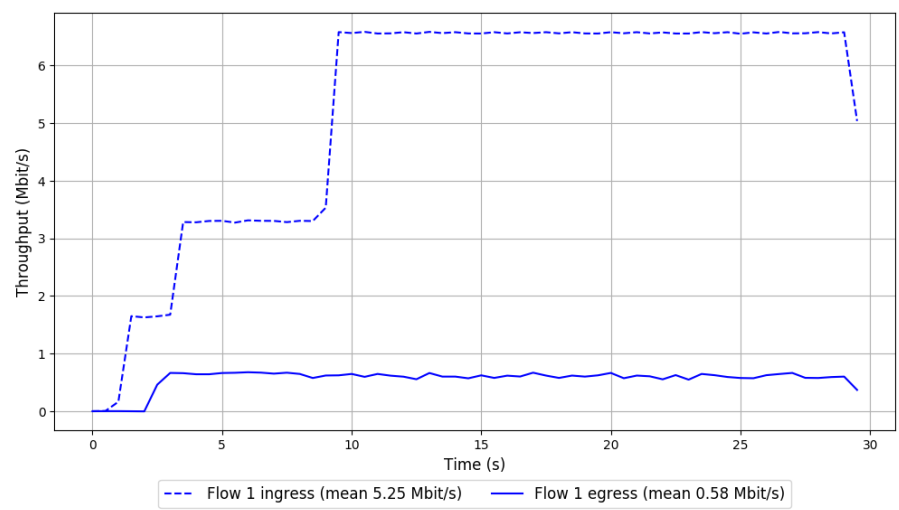


Run 2: Statistics of Vivace-loss

Start at: 2018-01-31 07:29:06
End at: 2018-01-31 07:29:36
Local clock offset: -0.587 ms
Remote clock offset: -4.766 ms

Below is generated by plot.py at 2018-01-31 08:55:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 21053.517 ms
Loss rate: 89.26%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 21053.517 ms
Loss rate: 89.26%

Run 2: Report of Vivace-loss — Data Link



Run 3: Statistics of Vivace-loss

Start at: 2018-01-31 07:50:20

End at: 2018-01-31 07:50:51

Local clock offset: -0.867 ms

Remote clock offset: 0.934 ms

Below is generated by plot.py at 2018-01-31 08:55:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21094.230 ms

Loss rate: 89.25%

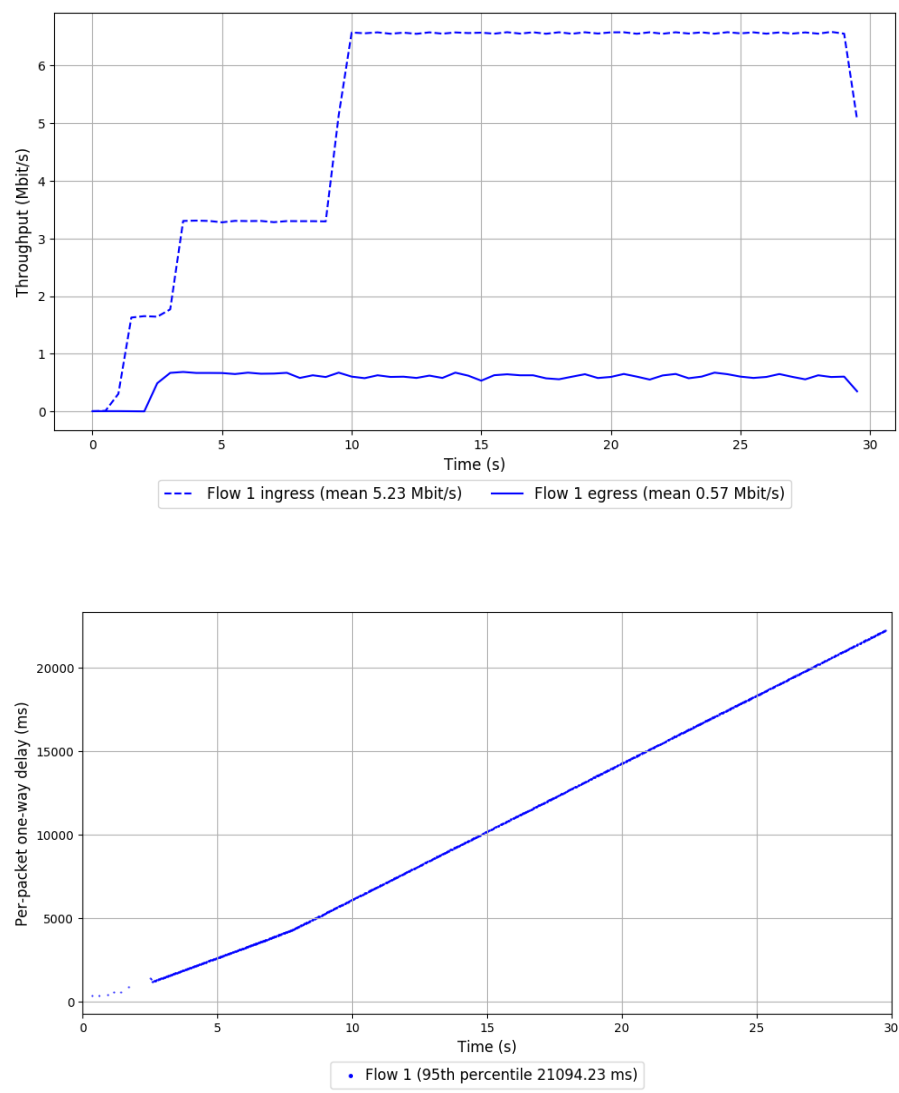
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21094.230 ms

Loss rate: 89.25%

Run 3: Report of Vivace-loss — Data Link



Run 1: Statistics of Vivace-LTE

Start at: 2018-01-31 07:03:12

End at: 2018-01-31 07:03:42

Local clock offset: -0.139 ms

Remote clock offset: -8.33 ms

Below is generated by plot.py at 2018-01-31 08:55:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21143.870 ms

Loss rate: 70.66%

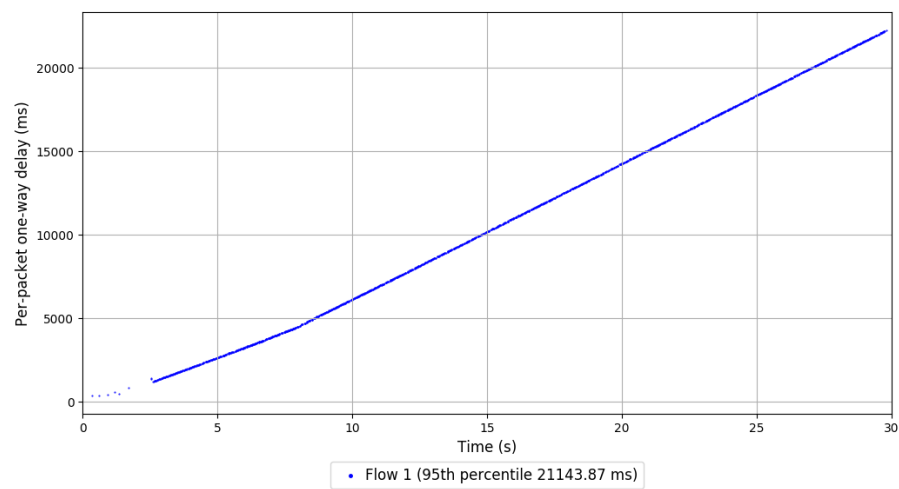
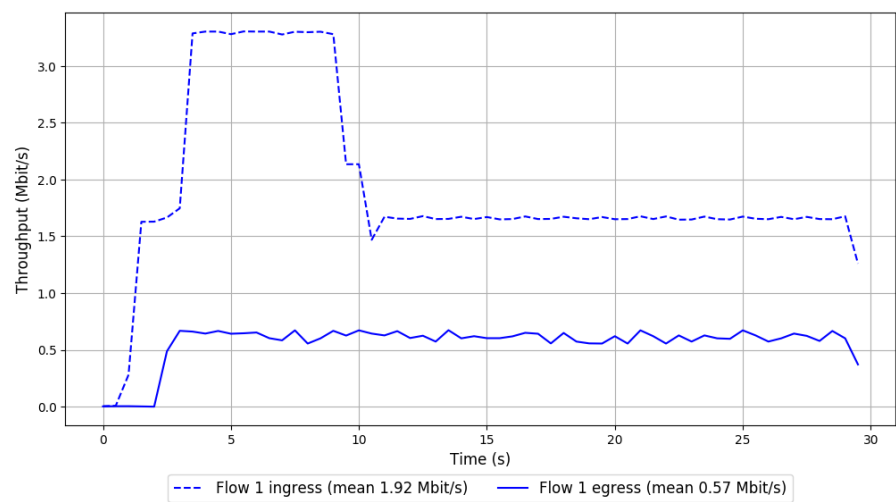
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21143.870 ms

Loss rate: 70.66%

Run 1: Report of Vivace-LTE — Data Link



Run 2: Statistics of Vivace-LTE

Start at: 2018-01-31 07:24:24

End at: 2018-01-31 07:24:54

Local clock offset: -0.481 ms

Remote clock offset: -5.873 ms

Below is generated by plot.py at 2018-01-31 08:55:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20862.995 ms

Loss rate: 70.97%

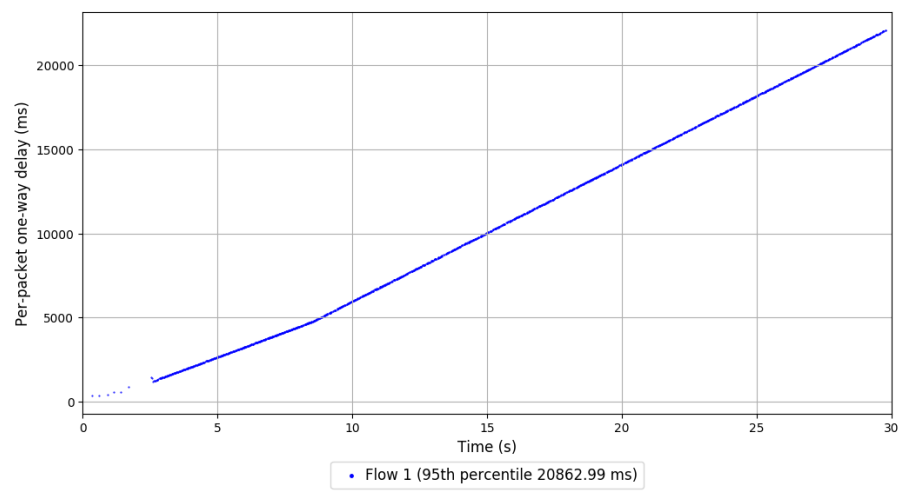
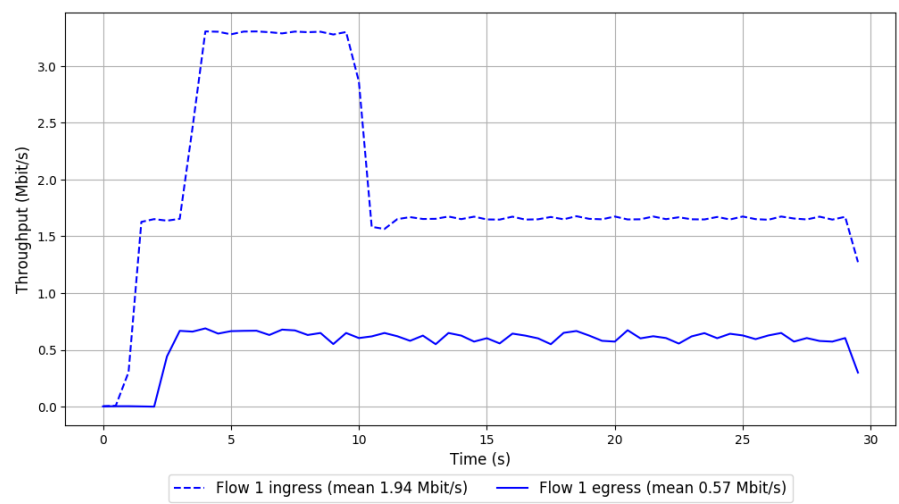
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 20862.995 ms

Loss rate: 70.97%

Run 2: Report of Vivace-LTE — Data Link



Run 3: Statistics of Vivace-LTE

Start at: 2018-01-31 07:45:38

End at: 2018-01-31 07:46:08

Local clock offset: -0.96 ms

Remote clock offset: 5.007 ms

Below is generated by plot.py at 2018-01-31 08:55:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21124.998 ms

Loss rate: 70.38%

-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 21124.998 ms

Loss rate: 70.38%

Run 3: Report of Vivace-LTE — Data Link

