

Pantheon Report

Generated at 2018-01-16 02:05:08 (UTC).

Data path: AWS India 1 Ethernet (*local*) → India ppp0 (*remote*).

Repeated the test of 14 congestion control schemes 3 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

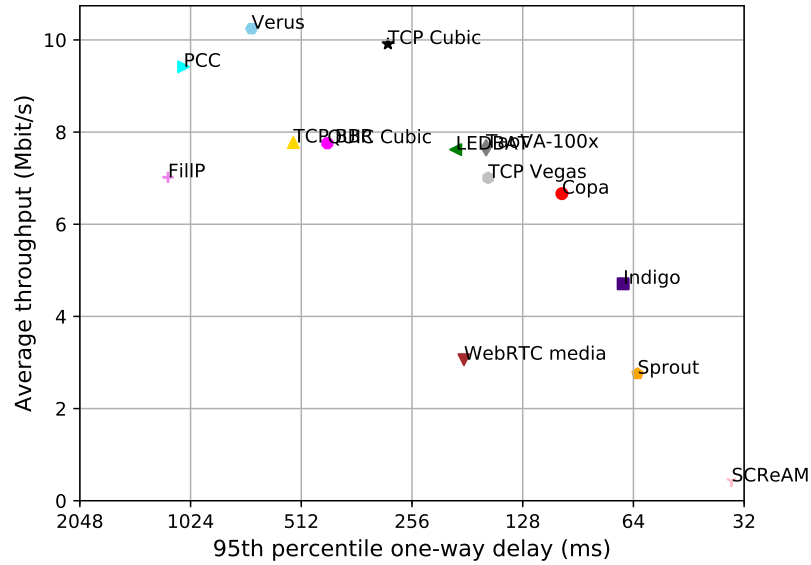
Tested BBR with qdisc of Fair Queuing (*fq*), and other schemes with the default Linux qdisc (*pfifo_fast*).

NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

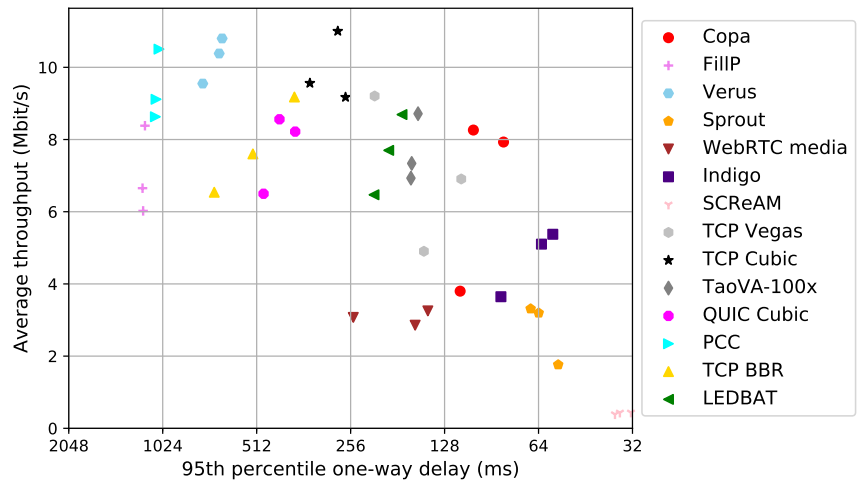
Git summary:

```
branch: master @ af8abdfba95588b0c5f2aeca9e856a1656b0c598
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
M datagrump/sender.cc
third_party/fillp @ ec9585325218d5048c4d4152fa42240af54c6e67
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
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 @ f1a14bffe749737437f61b1eaaeb30b267cde681
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 @ 423cbca3e8ea1d599e7b5cf725835e8a2b6bfac6
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from AWS India 1 Ethernet to India ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)



test from AWS India 1 Ethernet to India ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows



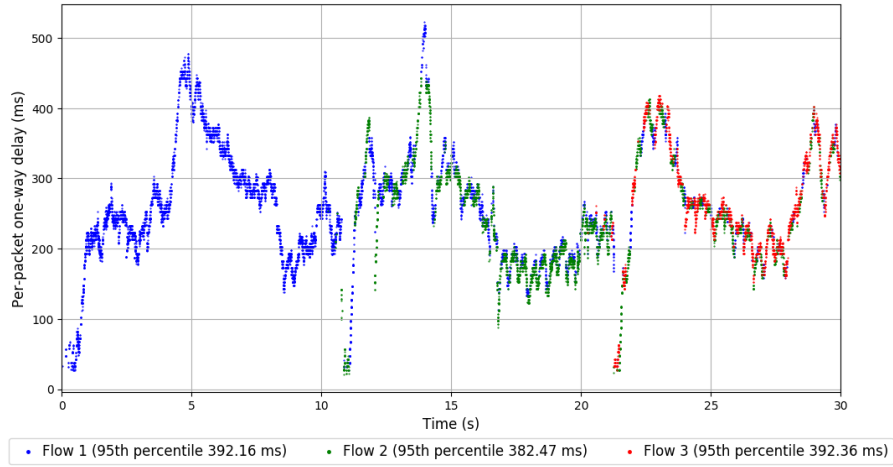
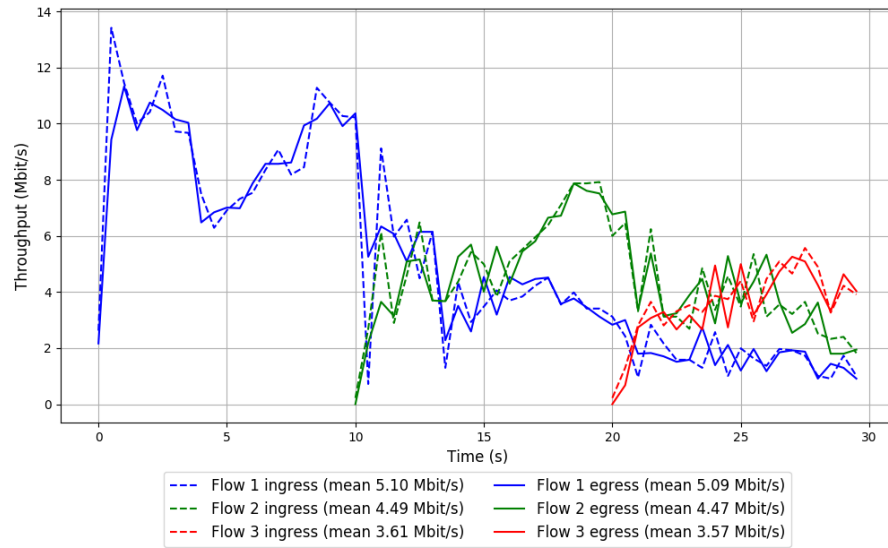
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	4.83	3.15	2.72	523.20	550.26	572.12	0.64	1.74	3.95
TCP Cubic	3	6.71	3.25	3.25	281.10	307.46	336.13	0.34	1.12	2.71
LEDBAT	3	4.98	3.16	1.63	191.16	201.49	226.62	0.18	0.46	2.08
PCC	3	6.91	2.78	2.26	1054.94	1100.56	1146.60	18.69	46.67	91.82
QUIC Cubic	3	5.03	3.45	1.45	415.94	484.47	476.89	0.79	1.72	4.16
SCReAM	3	0.20	0.22	0.22	37.68	37.03	33.35	0.12	0.07	0.12
WebRTC media	3	1.86	0.88	0.33	111.78	180.69	264.77	0.08	0.03	0.92
Sprout	3	1.41	1.37	1.33	60.02	63.01	69.36	0.24	0.16	0.47
TaoVA-100x	3	4.30	3.78	3.32	125.78	186.33	263.65	0.27	0.46	1.17
TCP Vegas	3	3.49	2.29	6.04	171.75	146.79	152.08	0.14	0.30	0.52
Verus	3	6.50	4.64	2.20	646.40	786.35	708.57	1.40	2.84	5.70
Copa	3	4.30	2.74	2.12	93.63	104.70	129.53	0.10	0.38	0.82
FillP	3	4.83	1.99	3.37	1145.02	1193.27	1204.27	89.65	97.44	97.94
Indigo	3	2.04	2.58	2.94	60.80	76.66	76.99	0.06	0.10	0.27

Run 1: Statistics of TCP BBR

Start at: 2018-01-16 01:24:26
End at: 2018-01-16 01:24:56
Local clock offset: -16.967 ms
Remote clock offset: -16.899 ms

Below is generated by plot.py at 2018-01-16 02:04:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.18 Mbit/s
95th percentile per-packet one-way delay: 387.558 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 5.09 Mbit/s
95th percentile per-packet one-way delay: 392.164 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 382.469 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 3.57 Mbit/s
95th percentile per-packet one-way delay: 392.358 ms
Loss rate: 3.60%

Run 1: Report of TCP BBR — Data Link

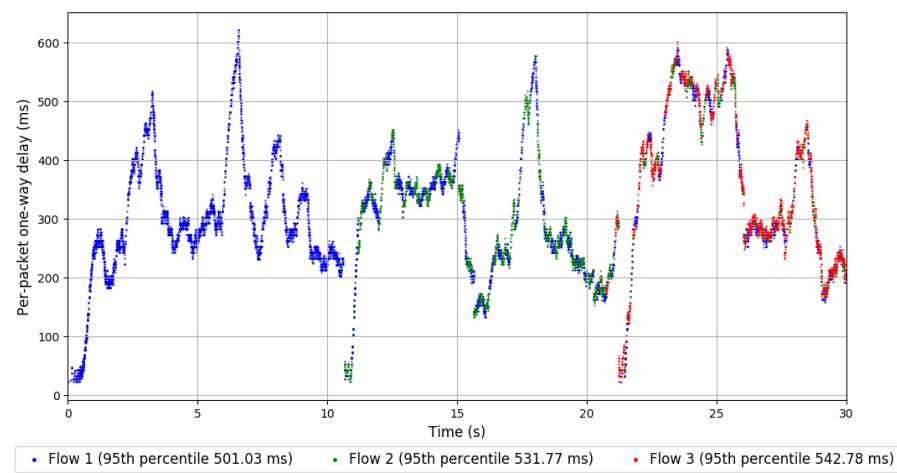
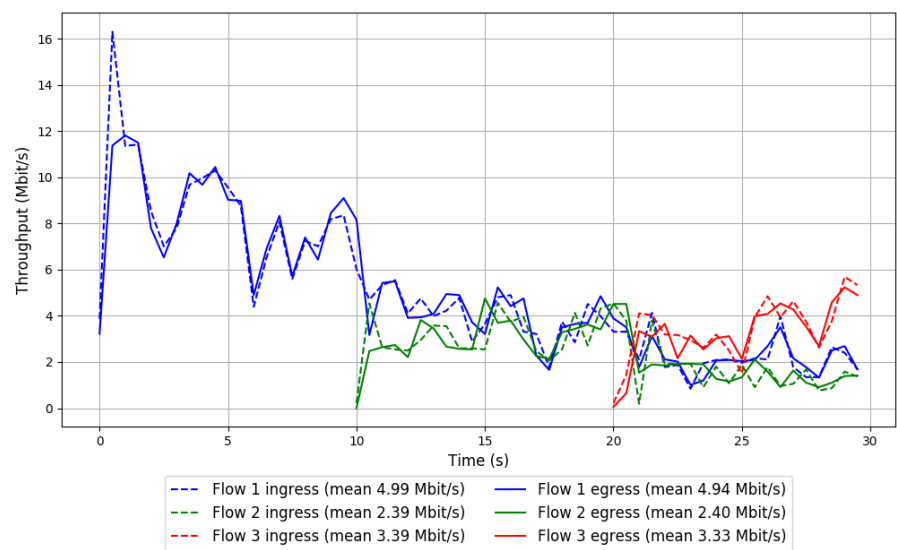


Run 2: Statistics of TCP BBR

Start at: 2018-01-16 01:41:04
End at: 2018-01-16 01:41:34
Local clock offset: -17.003 ms
Remote clock offset: -17.979 ms

Below is generated by plot.py at 2018-01-16 02:04:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 526.484 ms
Loss rate: 1.23%
-- Flow 1:
Average throughput: 4.94 Mbit/s
95th percentile per-packet one-way delay: 501.030 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 531.772 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 542.782 ms
Loss rate: 4.02%

Run 2: Report of TCP BBR — Data Link

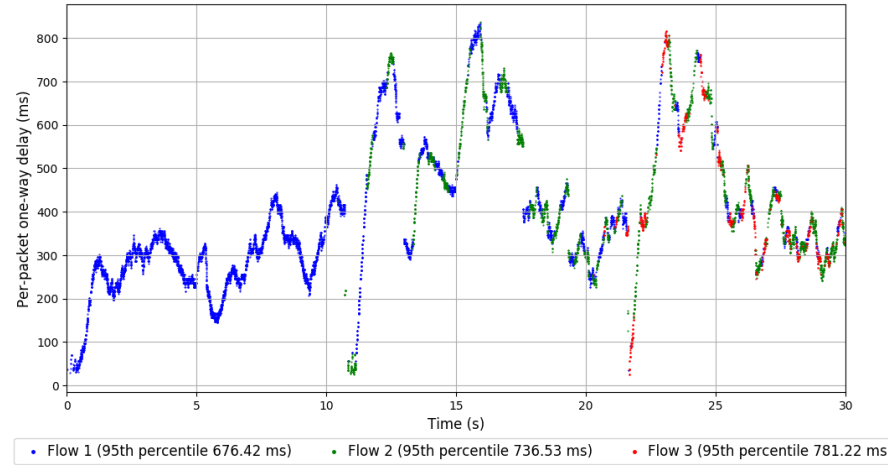
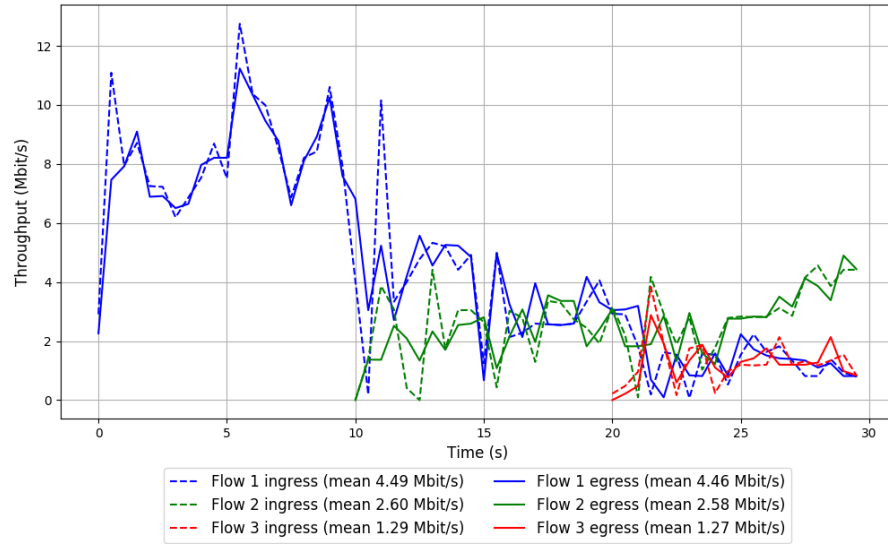


Run 3: Statistics of TCP BBR

Start at: 2018-01-16 01:57:41
End at: 2018-01-16 01:58:11
Local clock offset: -20.784 ms
Remote clock offset: -15.799 ms

Below is generated by plot.py at 2018-01-16 02:04:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.54 Mbit/s
95th percentile per-packet one-way delay: 700.112 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 4.46 Mbit/s
95th percentile per-packet one-way delay: 676.416 ms
Loss rate: 0.74%
-- Flow 2:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 736.527 ms
Loss rate: 3.03%
-- Flow 3:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 781.215 ms
Loss rate: 4.22%

Run 3: Report of TCP BBR — Data Link

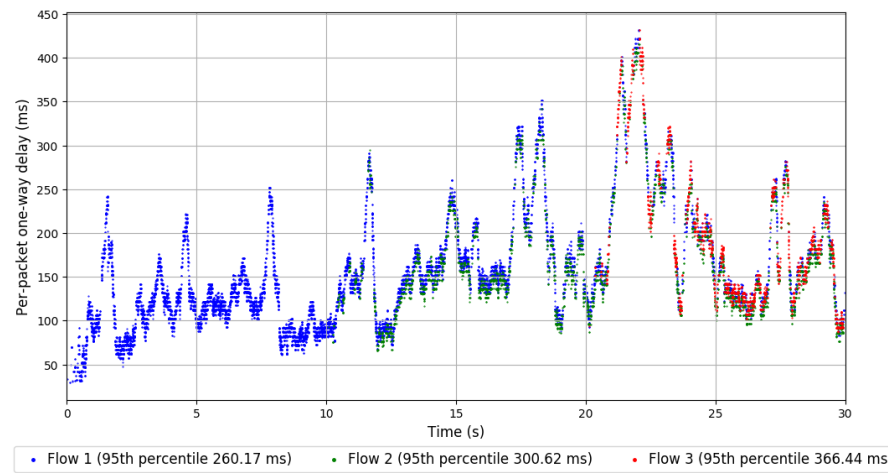
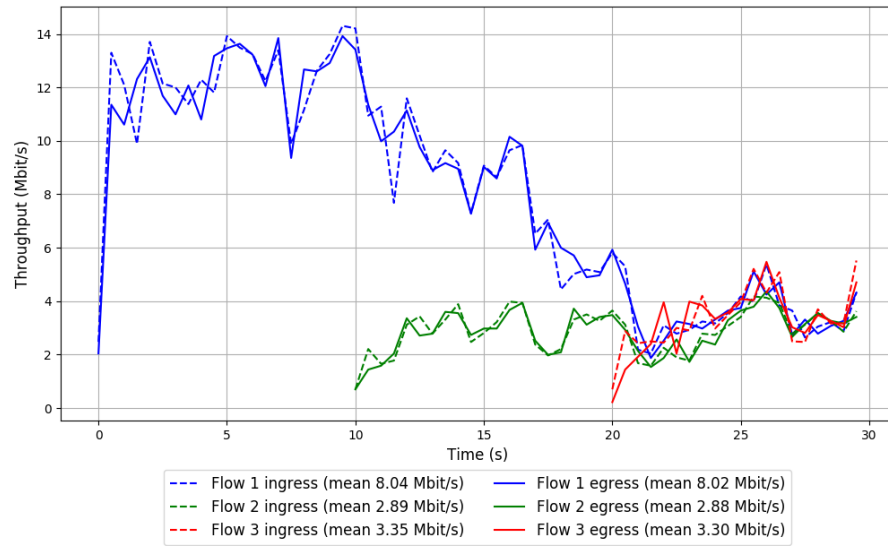


Run 1: Statistics of TCP Cubic

Start at: 2018-01-16 01:16:39
End at: 2018-01-16 01:17:09
Local clock offset: -17.523 ms
Remote clock offset: -16.864 ms

Below is generated by plot.py at 2018-01-16 02:04:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 11.00 Mbit/s
95th percentile per-packet one-way delay: 281.469 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 8.02 Mbit/s
95th percentile per-packet one-way delay: 260.167 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 300.617 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 3.30 Mbit/s
95th percentile per-packet one-way delay: 366.437 ms
Loss rate: 2.81%

Run 1: Report of TCP Cubic — Data Link

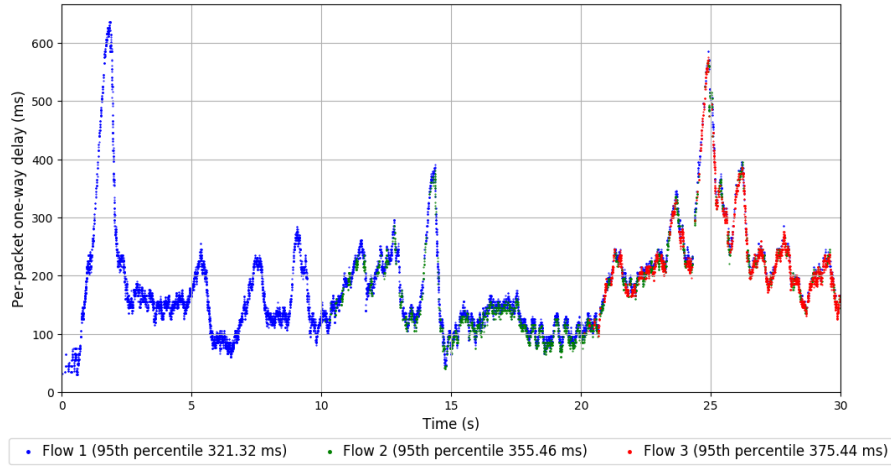
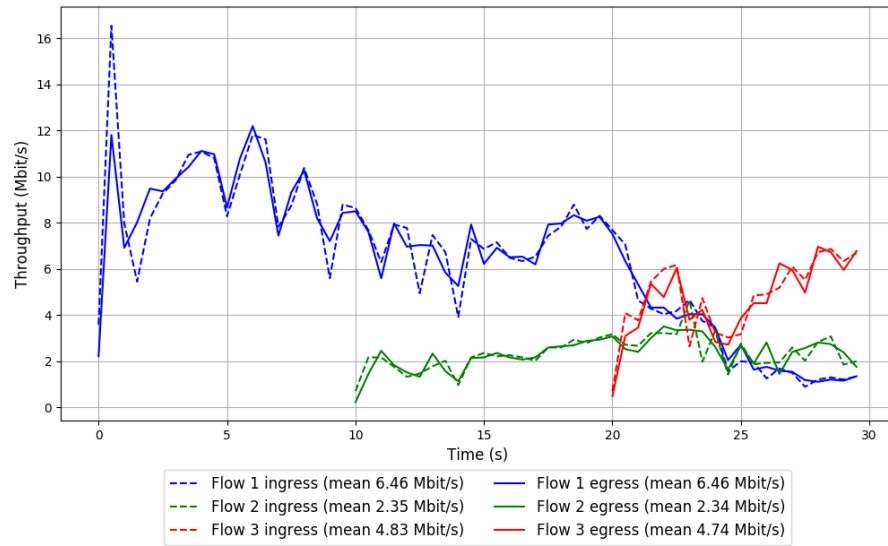


Run 2: Statistics of TCP Cubic

Start at: 2018-01-16 01:33:17
End at: 2018-01-16 01:33:47
Local clock offset: -15.064 ms
Remote clock offset: -15.815 ms

Below is generated by plot.py at 2018-01-16 02:04:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.56 Mbit/s
95th percentile per-packet one-way delay: 345.783 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 6.46 Mbit/s
95th percentile per-packet one-way delay: 321.323 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 355.464 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 4.74 Mbit/s
95th percentile per-packet one-way delay: 375.445 ms
Loss rate: 3.05%

Run 2: Report of TCP Cubic — Data Link

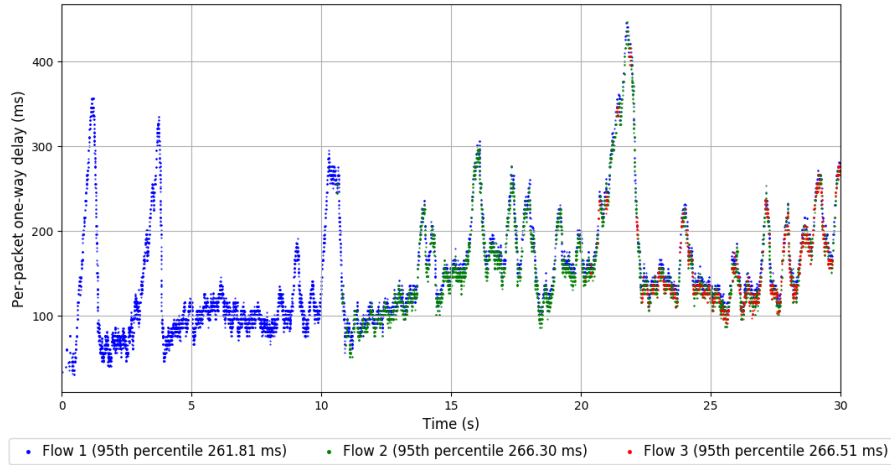
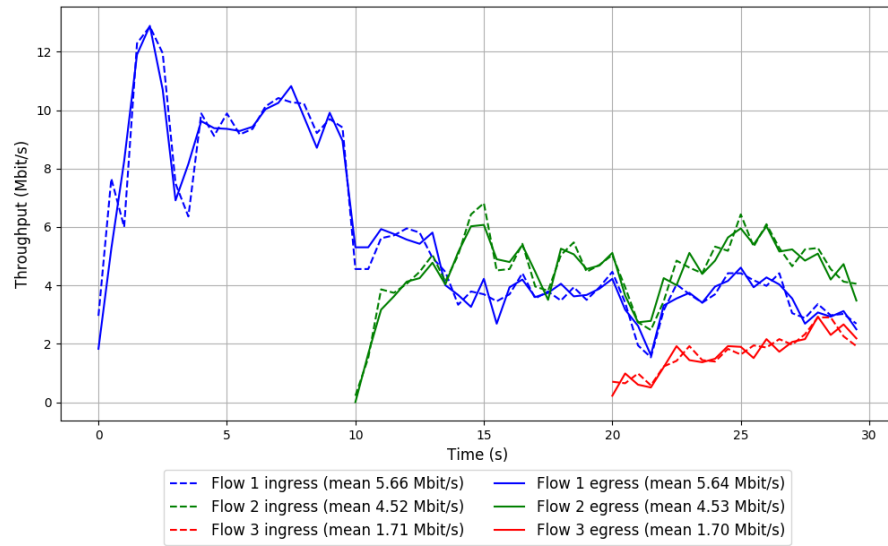


Run 3: Statistics of TCP Cubic

Start at: 2018-01-16 01:49:56
End at: 2018-01-16 01:50:26
Local clock offset: -16.713 ms
Remote clock offset: -15.904 ms

Below is generated by plot.py at 2018-01-16 02:04:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.17 Mbit/s
95th percentile per-packet one-way delay: 265.834 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 261.813 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 4.53 Mbit/s
95th percentile per-packet one-way delay: 266.298 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 266.506 ms
Loss rate: 2.26%

Run 3: Report of TCP Cubic — Data Link

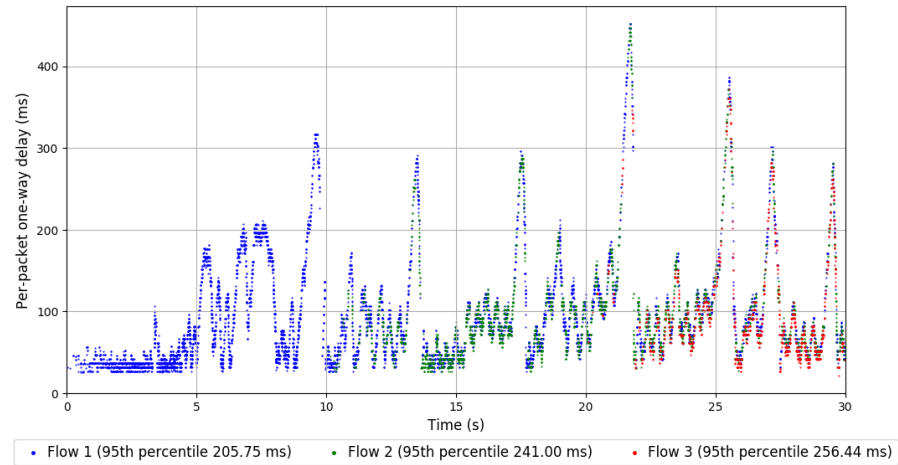
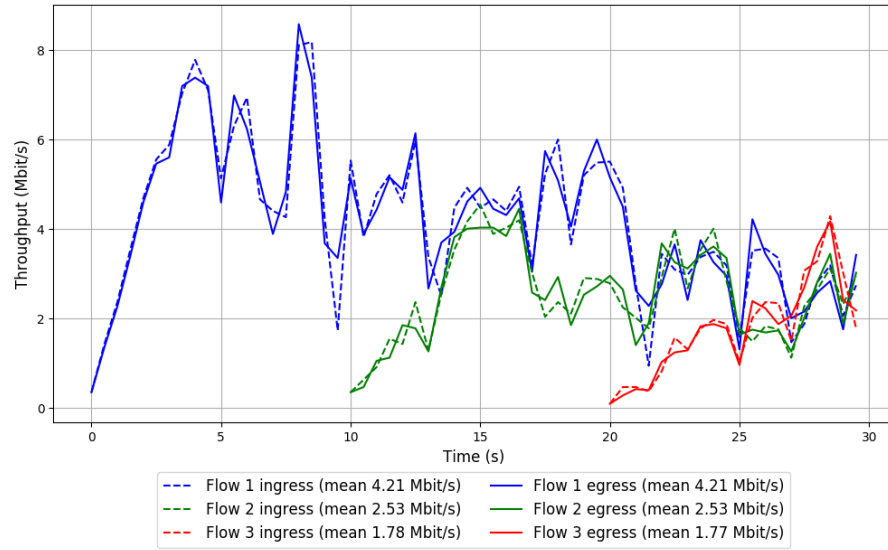


Run 1: Statistics of LEDBAT

Start at: 2018-01-16 01:23:19
End at: 2018-01-16 01:23:49
Local clock offset: -17.974 ms
Remote clock offset: -18.467 ms

Below is generated by plot.py at 2018-01-16 02:04:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.47 Mbit/s
95th percentile per-packet one-way delay: 215.464 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 4.21 Mbit/s
95th percentile per-packet one-way delay: 205.746 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 240.997 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 256.441 ms
Loss rate: 1.72%

Run 1: Report of LEDBAT — Data Link

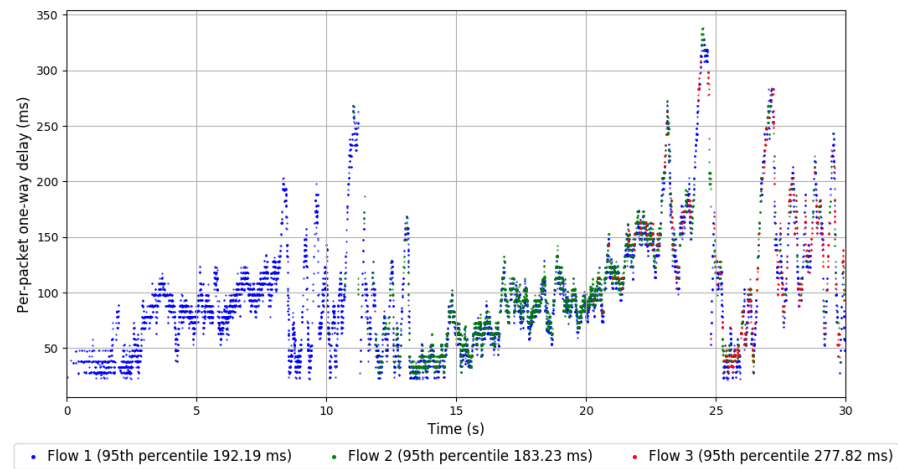
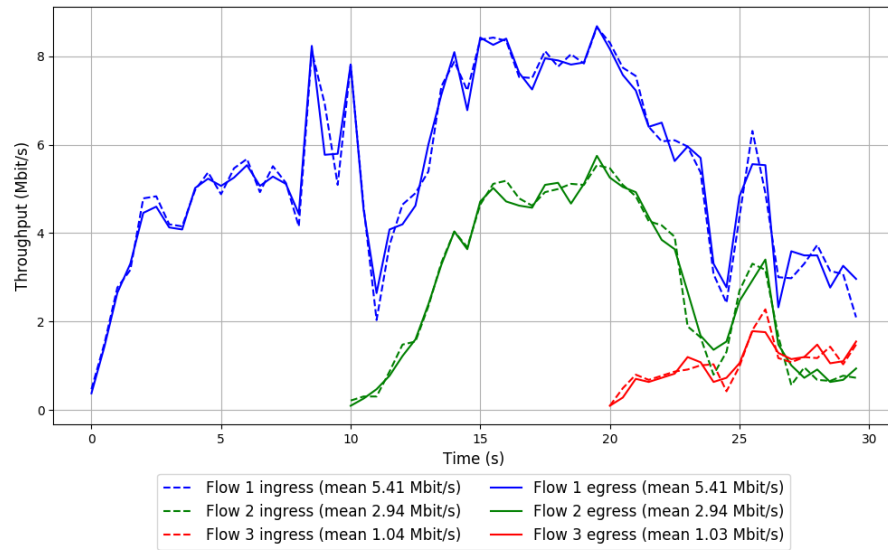


Run 2: Statistics of LEDBAT

Start at: 2018-01-16 01:39:58
End at: 2018-01-16 01:40:28
Local clock offset: -16.097 ms
Remote clock offset: -16.508 ms

Below is generated by plot.py at 2018-01-16 02:04:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 7.70 Mbit/s
95th percentile per-packet one-way delay: 193.318 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 5.41 Mbit/s
95th percentile per-packet one-way delay: 192.193 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 2.94 Mbit/s
95th percentile per-packet one-way delay: 183.228 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 277.823 ms
Loss rate: 1.93%

Run 2: Report of LEDBAT — Data Link

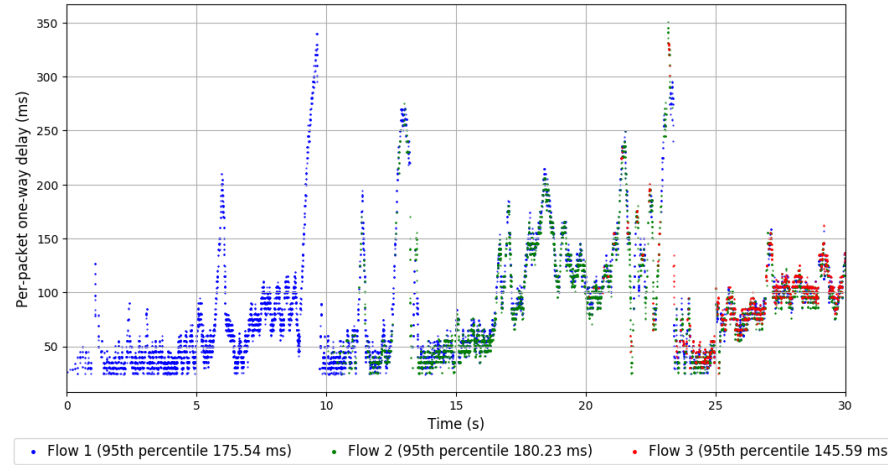
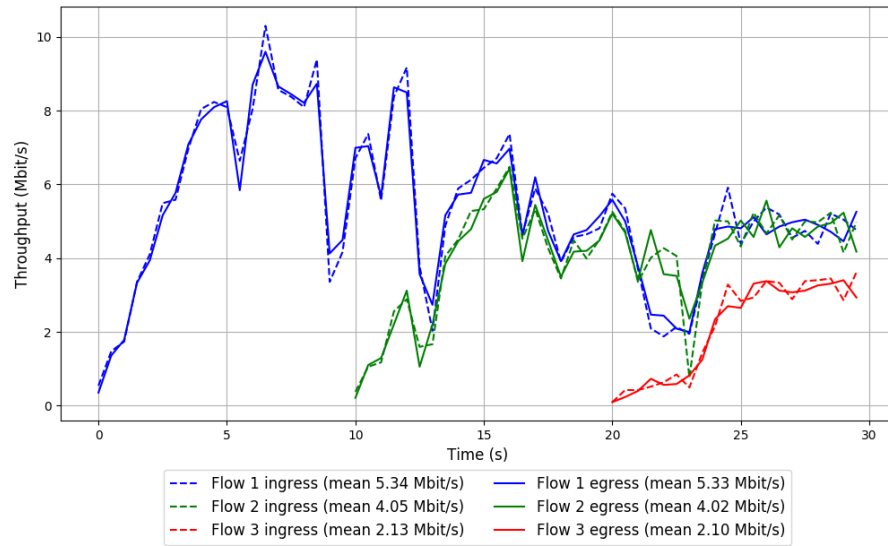


Run 3: Statistics of LEDBAT

Start at: 2018-01-16 01:56:35
End at: 2018-01-16 01:57:05
Local clock offset: -18.46 ms
Remote clock offset: -14.448 ms

Below is generated by plot.py at 2018-01-16 02:04:15
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.69 Mbit/s
95th percentile per-packet one-way delay: 175.267 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 5.33 Mbit/s
95th percentile per-packet one-way delay: 175.544 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 180.233 ms
Loss rate: 0.83%
-- Flow 3:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 145.587 ms
Loss rate: 2.60%

Run 3: Report of LEDBAT — Data Link

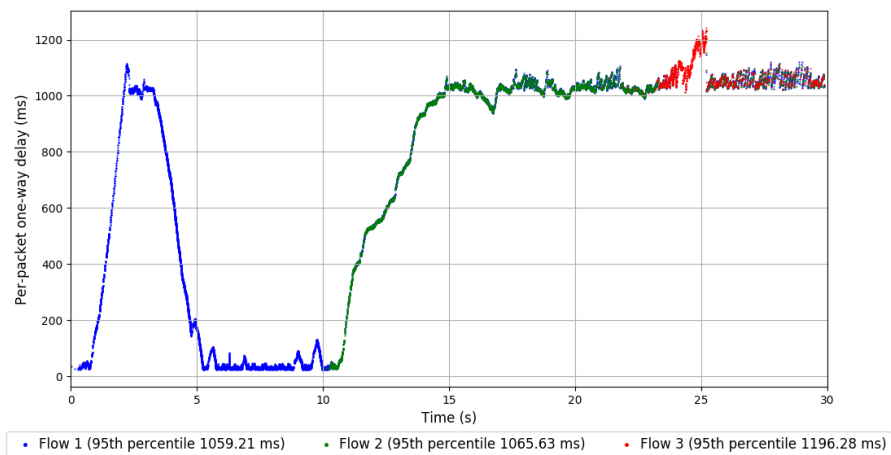
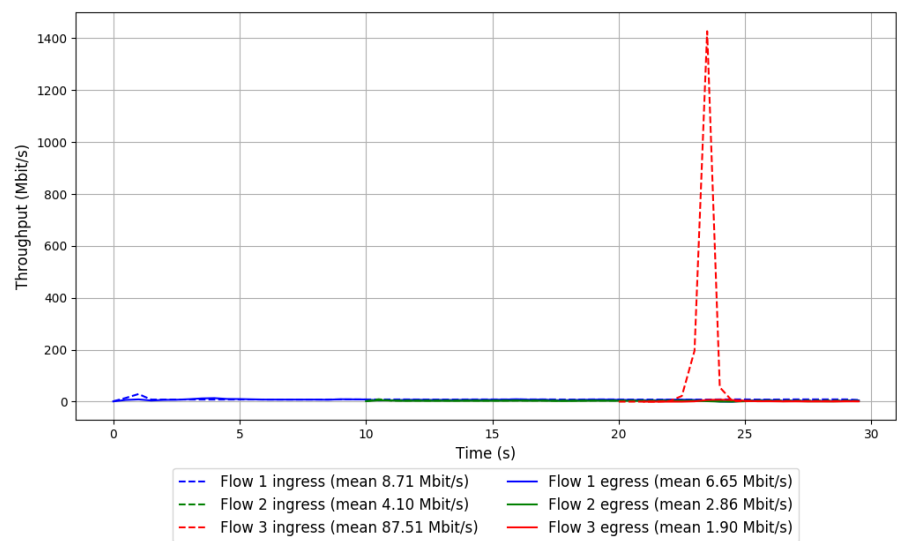


Run 1: Statistics of PCC

Start at: 2018-01-16 01:21:06
End at: 2018-01-16 01:21:36
Local clock offset: -18.326 ms
Remote clock offset: -16.063 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.11 Mbit/s
95th percentile per-packet one-way delay: 1075.656 ms
Loss rate: 77.42%
-- Flow 1:
Average throughput: 6.65 Mbit/s
95th percentile per-packet one-way delay: 1059.211 ms
Loss rate: 23.73%
-- Flow 2:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 1065.626 ms
Loss rate: 30.37%
-- Flow 3:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 1196.275 ms
Loss rate: 98.06%

Run 1: Report of PCC — Data Link

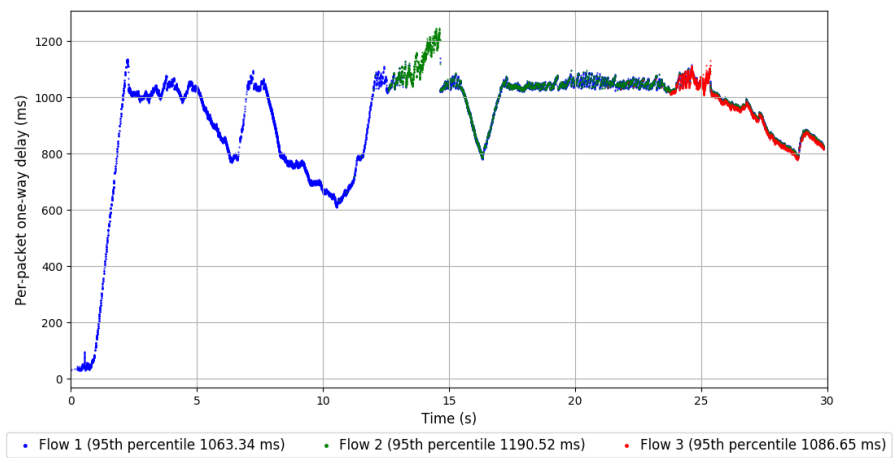
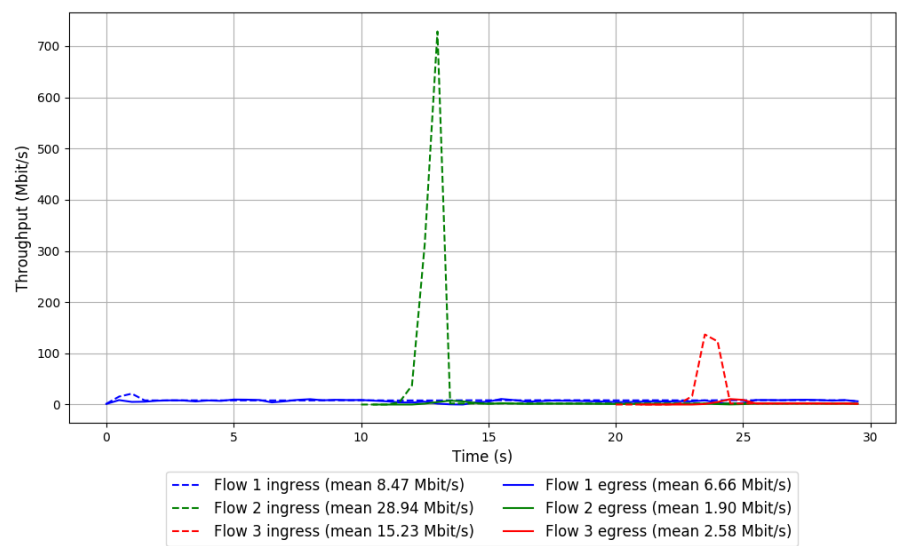


Run 2: Statistics of PCC

Start at: 2018-01-16 01:37:45
End at: 2018-01-16 01:38:15
Local clock offset: -18.047 ms
Remote clock offset: -17.746 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.63 Mbit/s
95th percentile per-packet one-way delay: 1080.858 ms
Loss rate: 73.67%
-- Flow 1:
Average throughput: 6.66 Mbit/s
95th percentile per-packet one-way delay: 1063.339 ms
Loss rate: 21.45%
-- Flow 2:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 1190.517 ms
Loss rate: 93.63%
-- Flow 3:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 1086.647 ms
Loss rate: 85.28%

Run 2: Report of PCC — Data Link

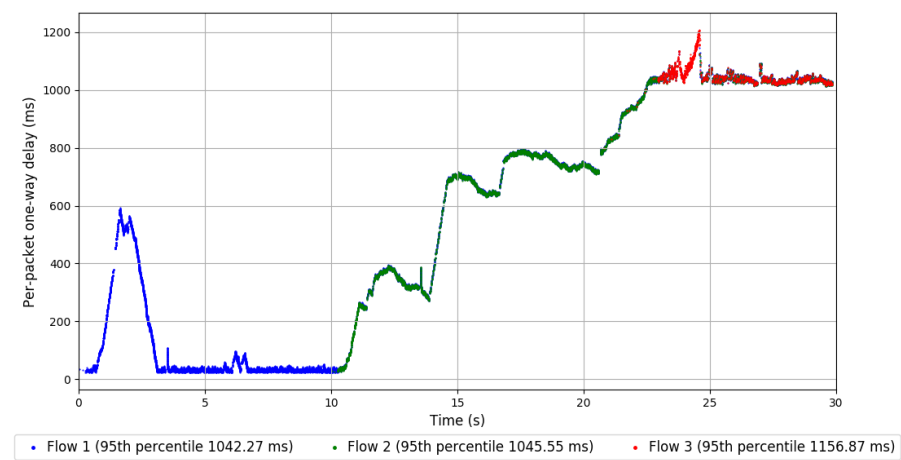
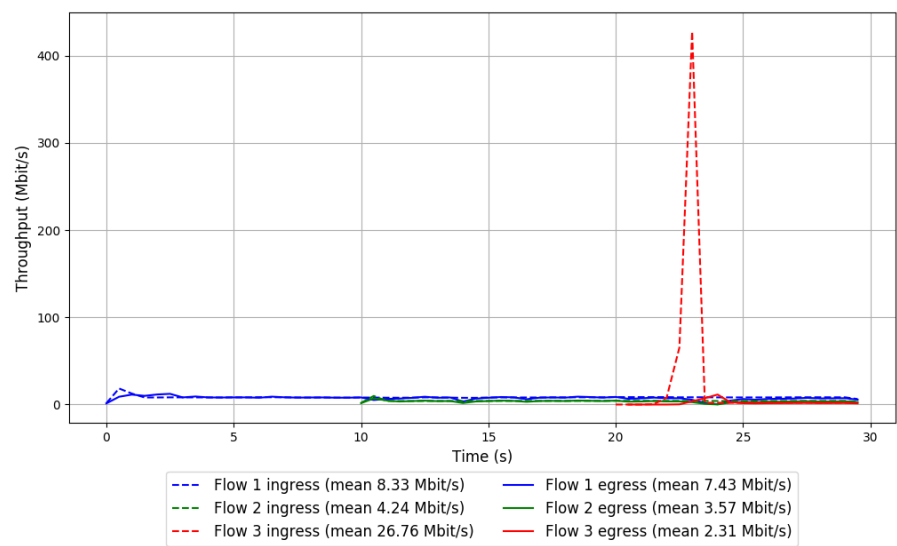


Run 3: Statistics of PCC

Start at: 2018-01-16 01:54:22
End at: 2018-01-16 01:54:52
Local clock offset: -18.624 ms
Remote clock offset: -16.113 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 10.50 Mbit/s
95th percentile per-packet one-way delay: 1052.483 ms
Loss rate: 47.50%
-- Flow 1:
Average throughput: 7.43 Mbit/s
95th percentile per-packet one-way delay: 1042.271 ms
Loss rate: 10.89%
-- Flow 2:
Average throughput: 3.57 Mbit/s
95th percentile per-packet one-way delay: 1045.547 ms
Loss rate: 16.01%
-- Flow 3:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 1156.872 ms
Loss rate: 92.11%

Run 3: Report of PCC — Data Link

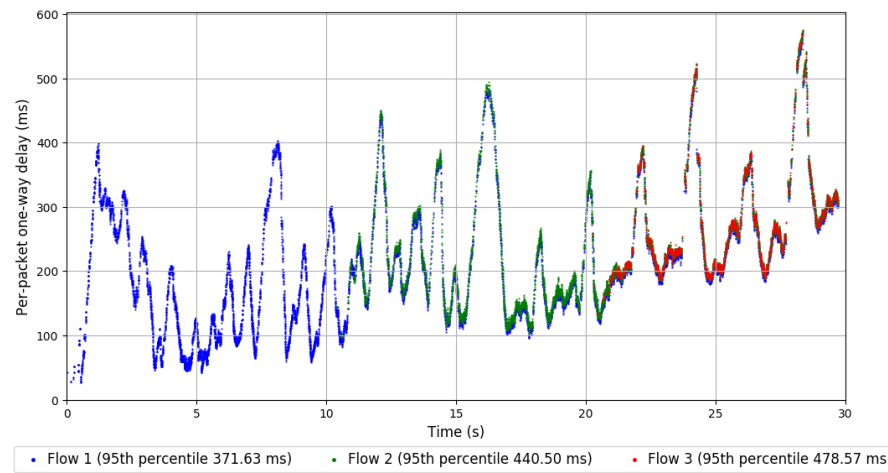
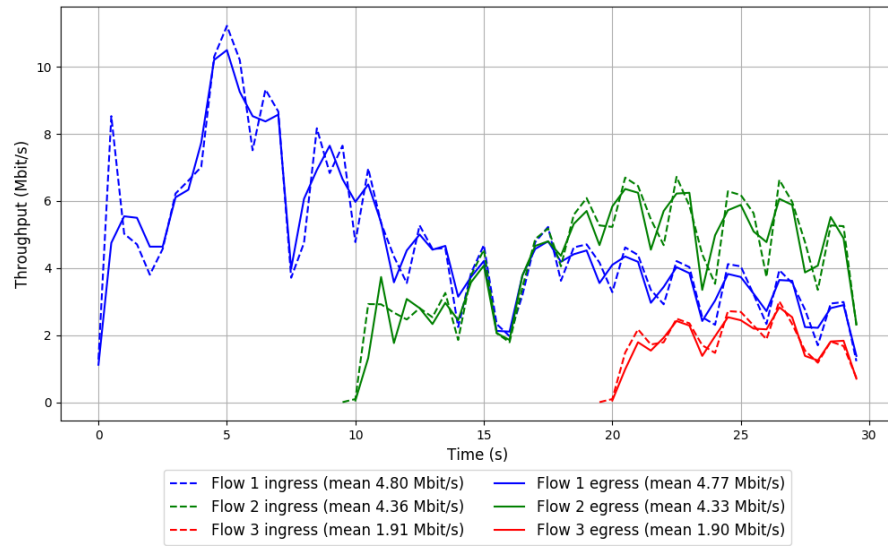


Run 1: Statistics of QUIC Cubic

Start at: 2018-01-16 01:22:13
End at: 2018-01-16 01:22:43
Local clock offset: -19.176 ms
Remote clock offset: -16.141 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.22 Mbit/s
95th percentile per-packet one-way delay: 385.346 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 4.77 Mbit/s
95th percentile per-packet one-way delay: 371.630 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 4.33 Mbit/s
95th percentile per-packet one-way delay: 440.502 ms
Loss rate: 2.10%
-- Flow 3:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 478.569 ms
Loss rate: 2.93%

Run 1: Report of QUIC Cubic — Data Link

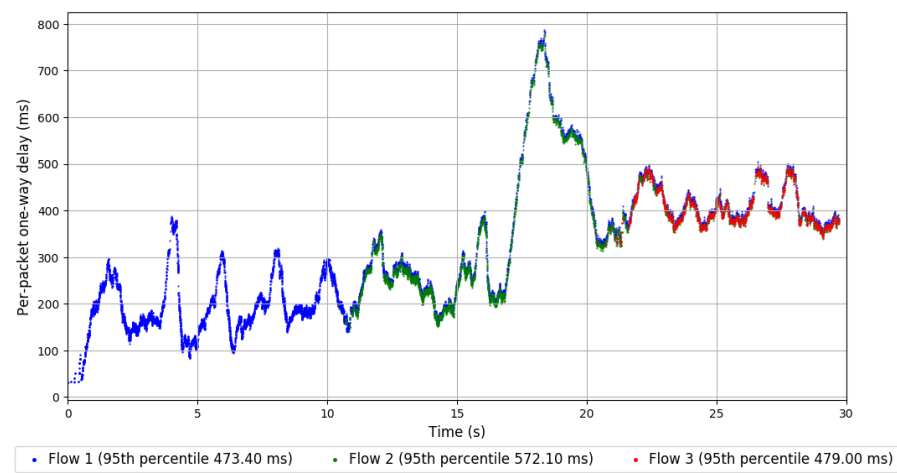
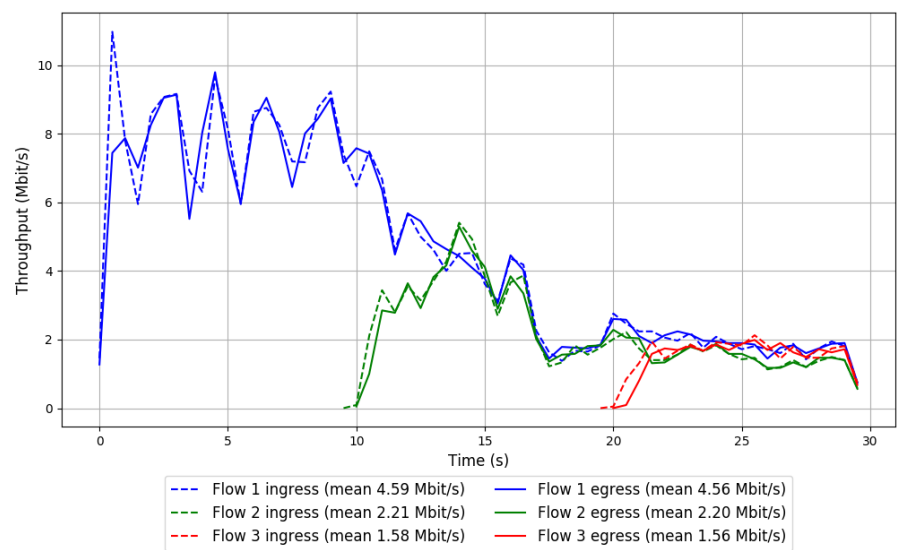


Run 2: Statistics of QUIC Cubic

Start at: 2018-01-16 01:38:52
End at: 2018-01-16 01:39:22
Local clock offset: -18.311 ms
Remote clock offset: -17.476 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.50 Mbit/s
95th percentile per-packet one-way delay: 486.664 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 4.56 Mbit/s
95th percentile per-packet one-way delay: 473.403 ms
Loss rate: 0.76%
-- Flow 2:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 572.095 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 478.997 ms
Loss rate: 5.13%

Run 2: Report of QUIC Cubic — Data Link

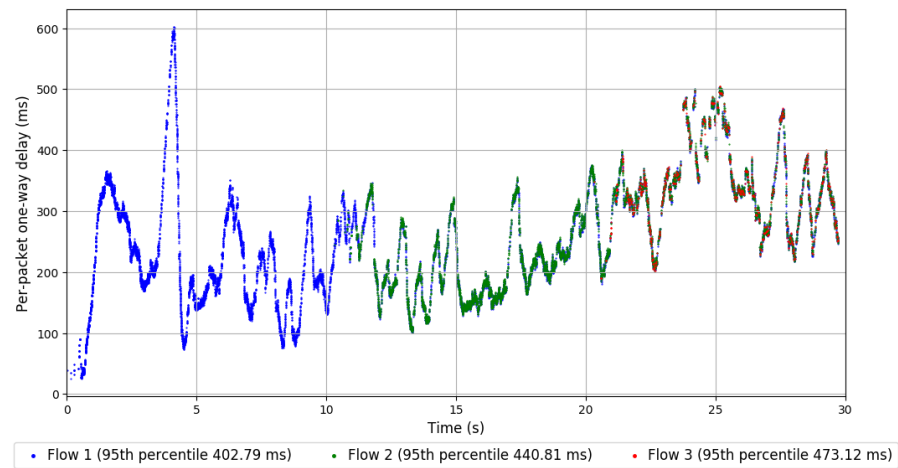
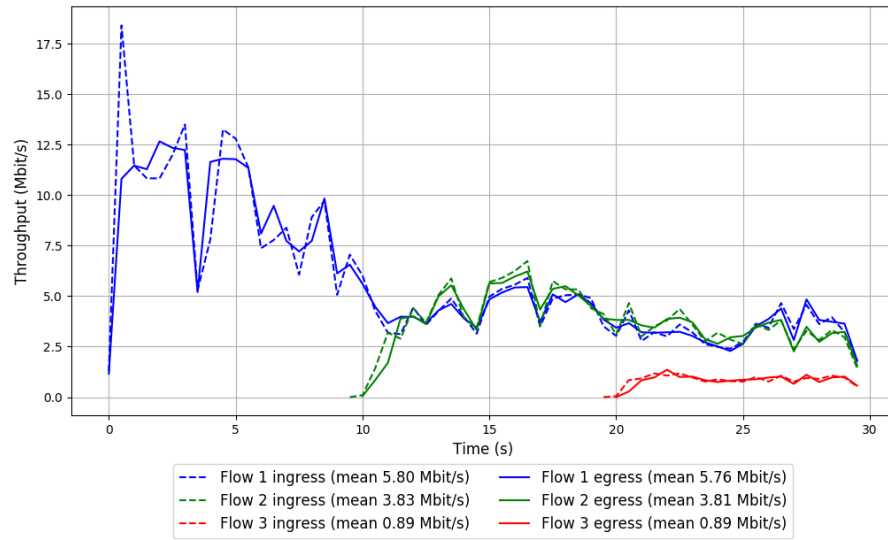


Run 3: Statistics of QUIC Cubic

Start at: 2018-01-16 01:55:29
End at: 2018-01-16 01:55:59
Local clock offset: -20.133 ms
Remote clock offset: -15.308 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.56 Mbit/s
95th percentile per-packet one-way delay: 432.750 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 5.76 Mbit/s
95th percentile per-packet one-way delay: 402.793 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 3.81 Mbit/s
95th percentile per-packet one-way delay: 440.813 ms
Loss rate: 1.31%
-- Flow 3:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 473.117 ms
Loss rate: 4.41%

Run 3: Report of QUIC Cubic — Data Link

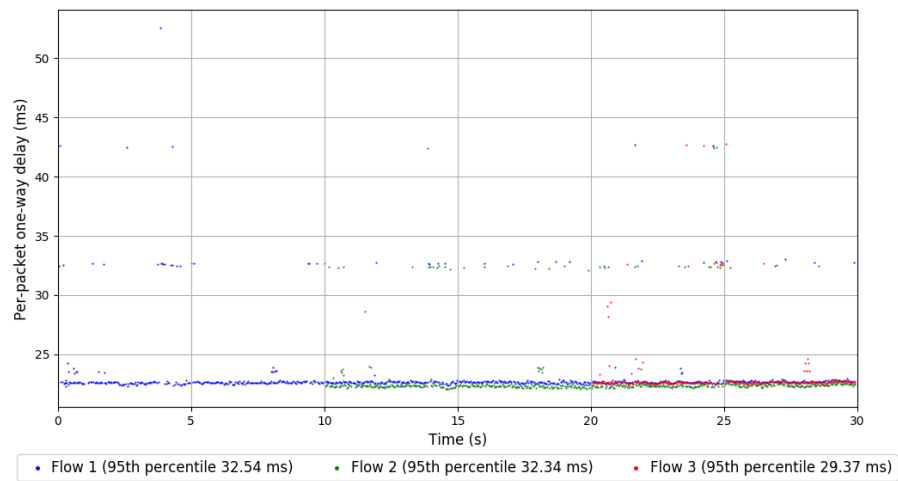
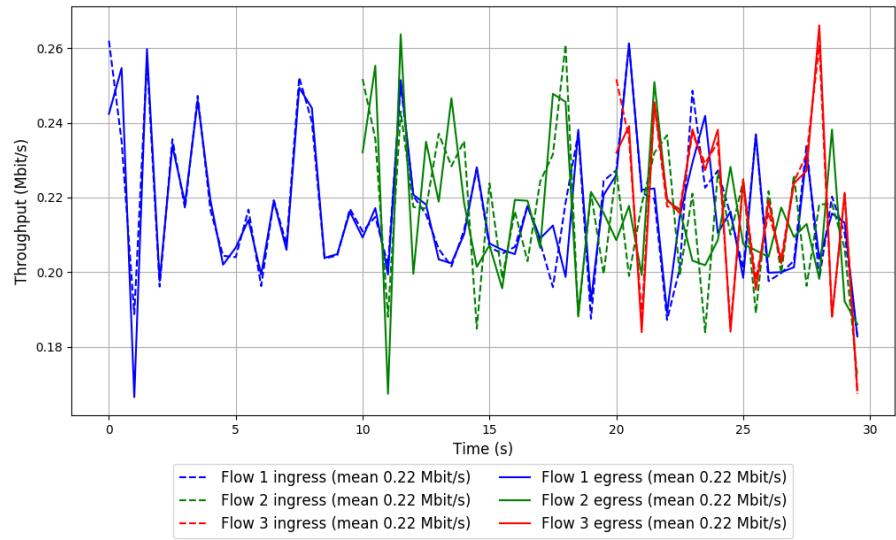


```
Run 1: Statistics of SReAM

Start at: 2018-01-16 01:28:51
End at: 2018-01-16 01:29:21
Local clock offset: -16.841 ms
Remote clock offset: -16.719 ms

# Below is generated by plot.py at 2018-01-16 02:04:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 32.360 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 32.543 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 32.337 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 29.370 ms
Loss rate: 0.35%
```

Run 1: Report of SReAM — Data Link

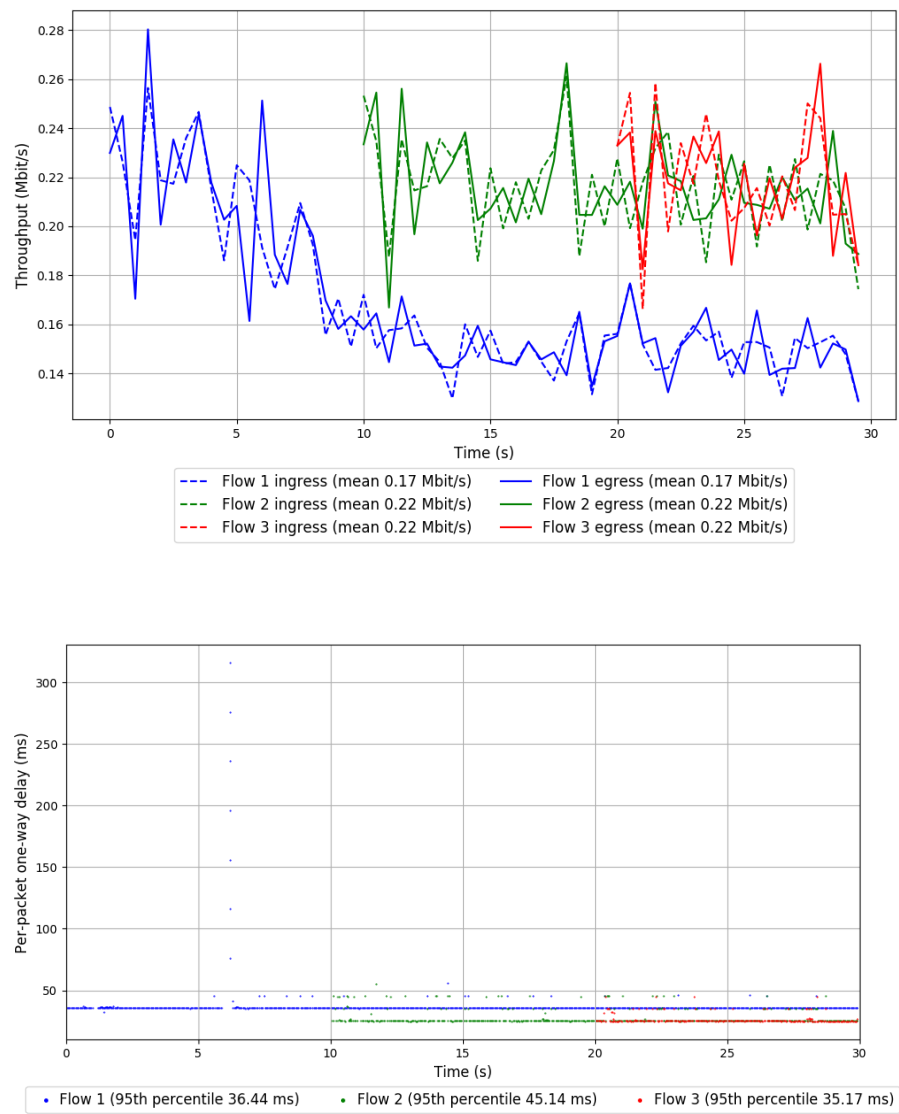


Run 2: Statistics of SReAM

Start at: 2018-01-16 01:45:30
End at: 2018-01-16 01:46:00
Local clock offset: -18.501 ms
Remote clock offset: -15.925 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 36.410 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 36.439 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 45.140 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.168 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

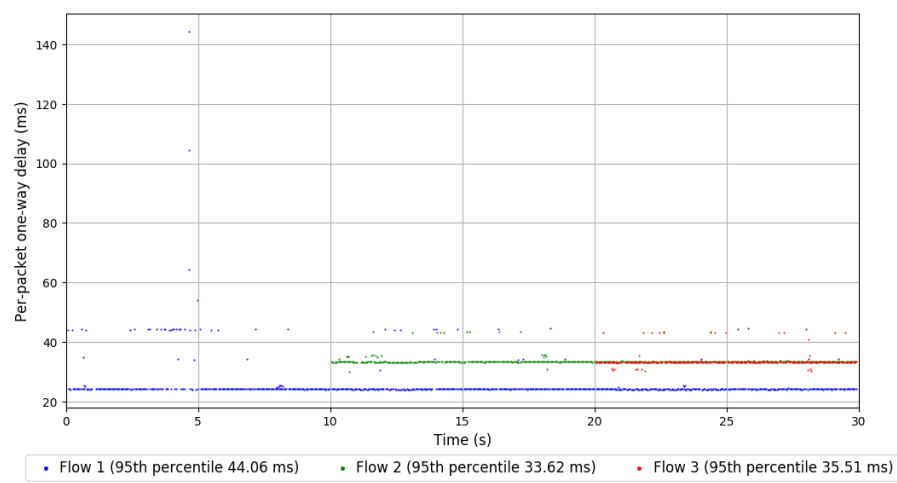
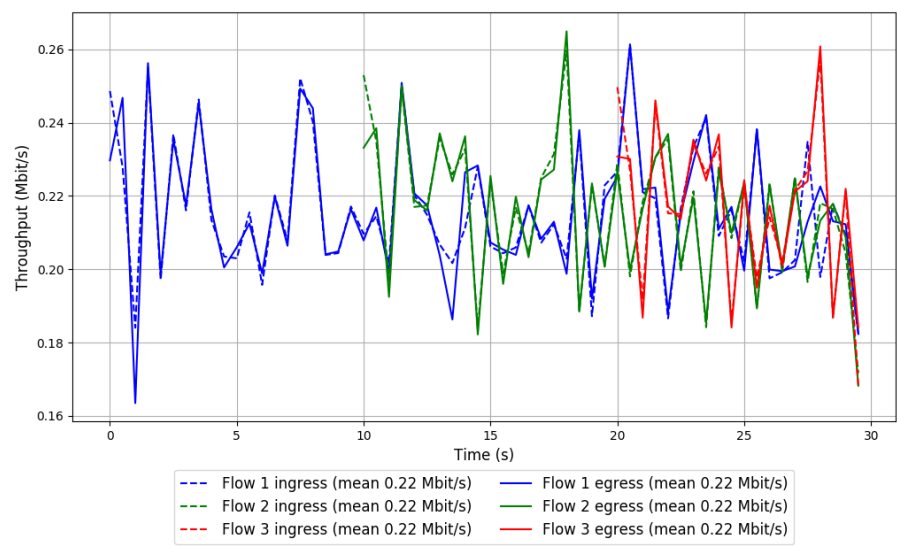


Run 3: Statistics of SReAM

Start at: 2018-01-16 02:02:07
End at: 2018-01-16 02:02:37
Local clock offset: -20.82 ms
Remote clock offset: -16.95 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 35.119 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 44.056 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 33.622 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.505 ms
Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

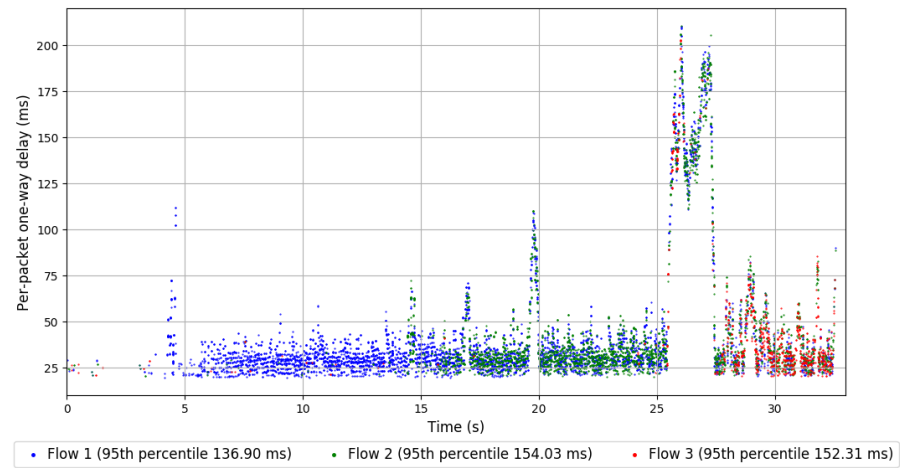
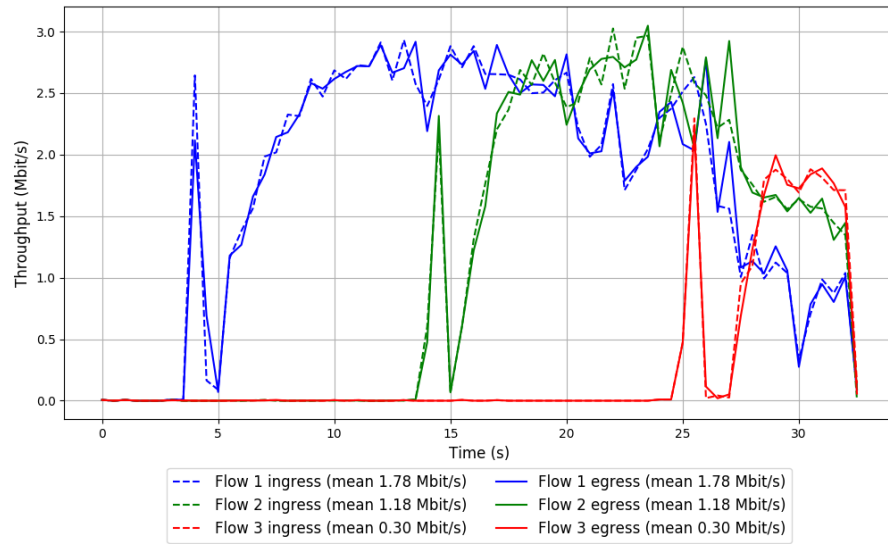


Run 1: Statistics of WebRTC media

Start at: 2018-01-16 01:27:45
End at: 2018-01-16 01:28:15
Local clock offset: -15.725 ms
Remote clock offset: -16.629 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.25 Mbit/s
95th percentile per-packet one-way delay: 144.815 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 136.897 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 154.034 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 152.305 ms
Loss rate: 1.44%

Run 1: Report of WebRTC media — Data Link

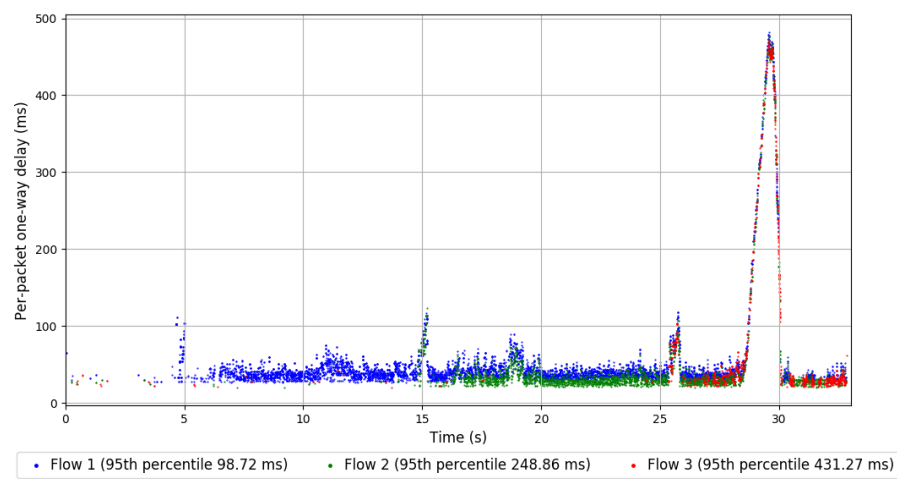
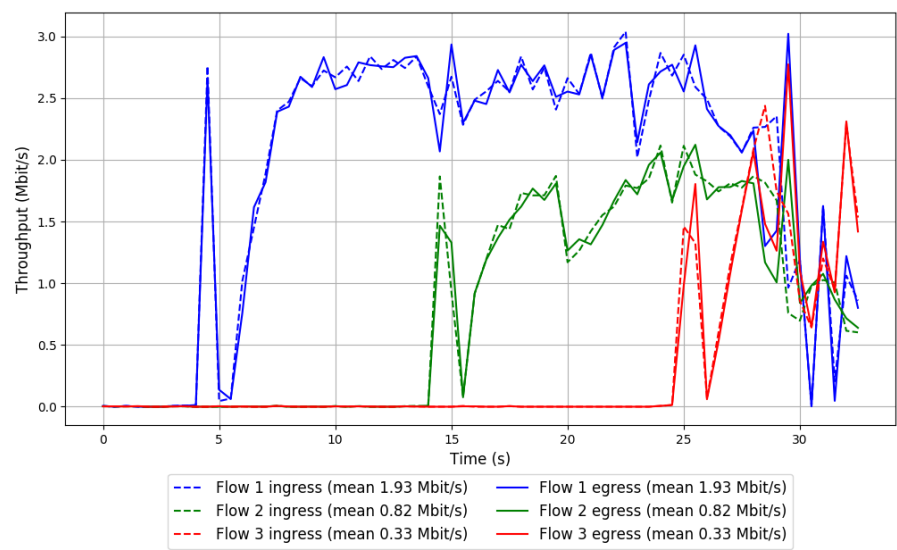


Run 2: Statistics of WebRTC media

Start at: 2018-01-16 01:44:24
End at: 2018-01-16 01:44:54
Local clock offset: -16.295 ms
Remote clock offset: -16.762 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.07 Mbit/s
95th percentile per-packet one-way delay: 250.996 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 98.720 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 248.862 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 431.268 ms
Loss rate: 0.61%

Run 2: Report of WebRTC media — Data Link

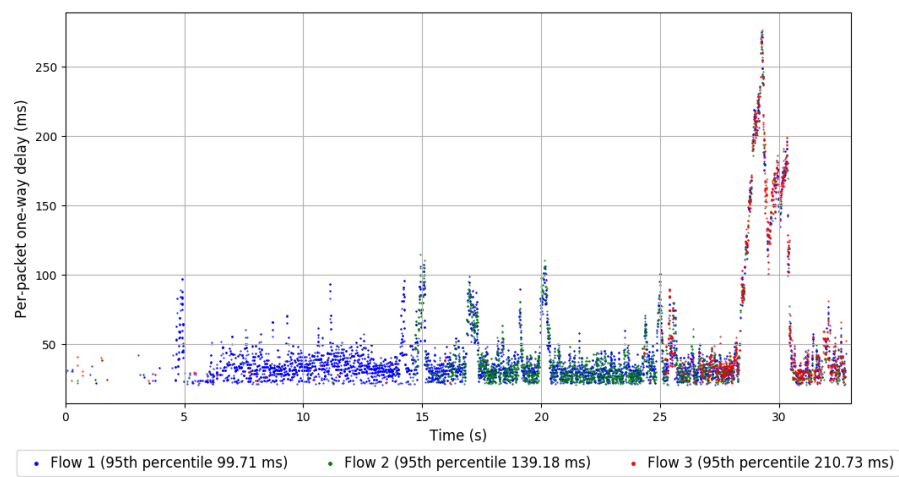
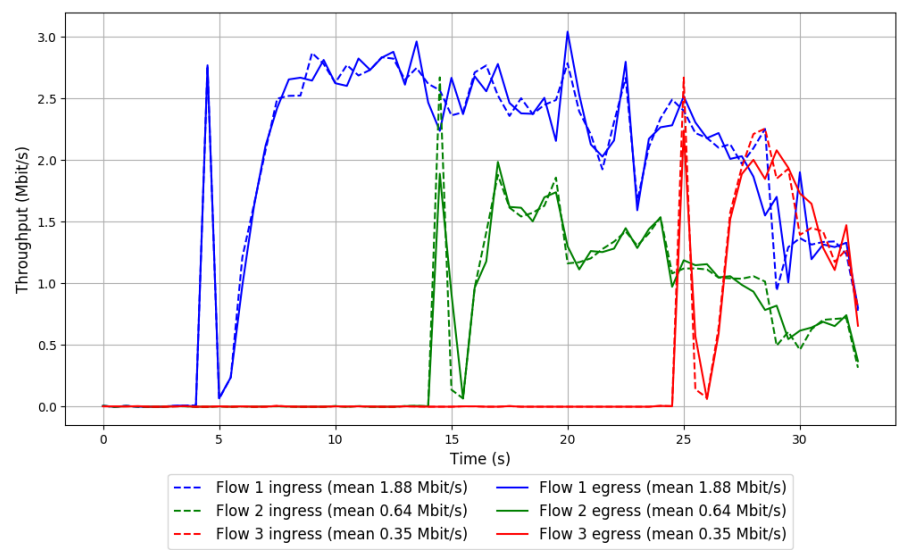


Run 3: Statistics of WebRTC media

Start at: 2018-01-16 02:01:01
End at: 2018-01-16 02:01:31
Local clock offset: -19.045 ms
Remote clock offset: -16.289 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 159.036 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 99.714 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 139.176 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 210.734 ms
Loss rate: 0.72%

Run 3: Report of WebRTC media — Data Link

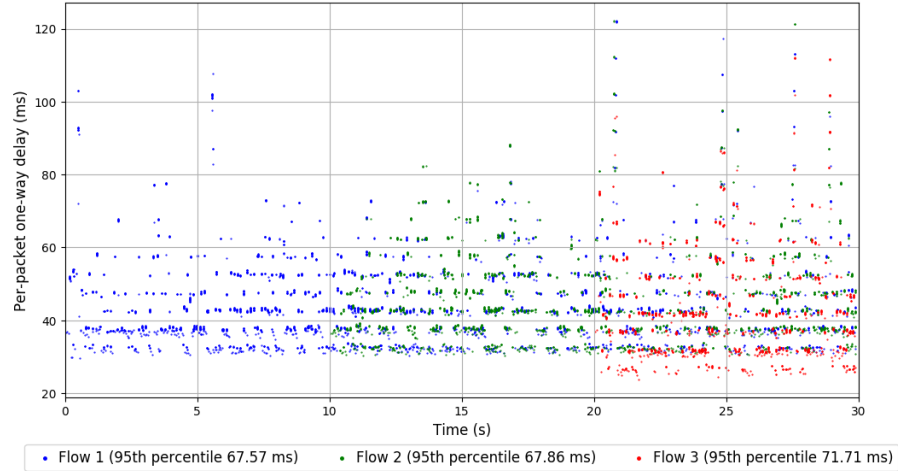
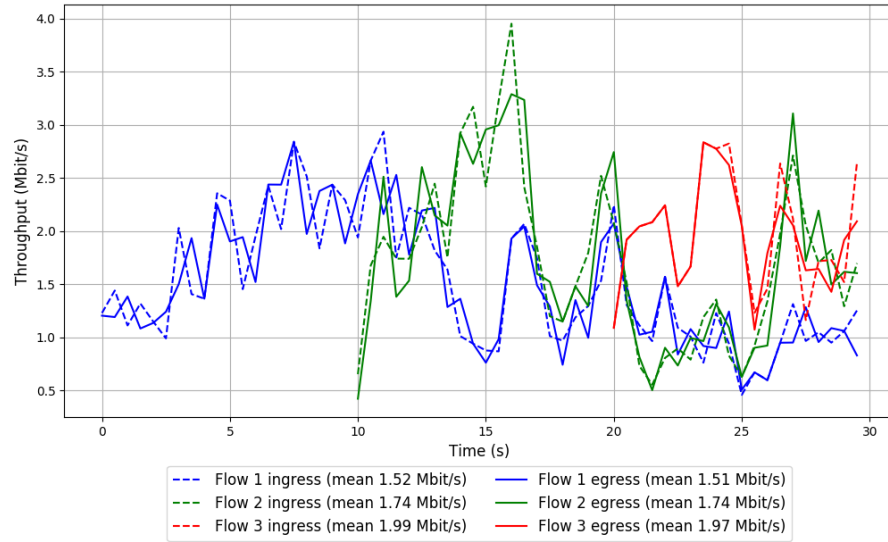


Run 1: Statistics of Sprout

Start at: 2018-01-16 01:14:28
End at: 2018-01-16 01:14:58
Local clock offset: -20.0 ms
Remote clock offset: -17.725 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 67.840 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 67.569 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 67.862 ms
Loss rate: 0.14%
-- Flow 3:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 71.709 ms
Loss rate: 1.40%

Run 1: Report of Sprout — Data Link

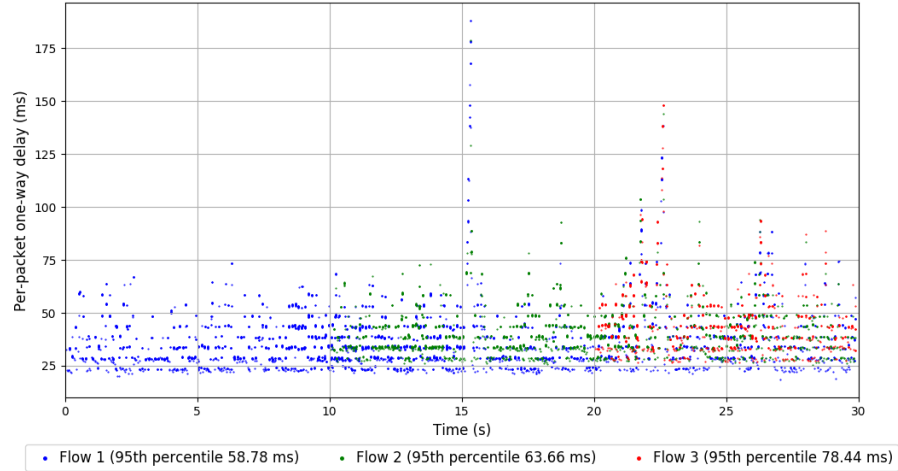
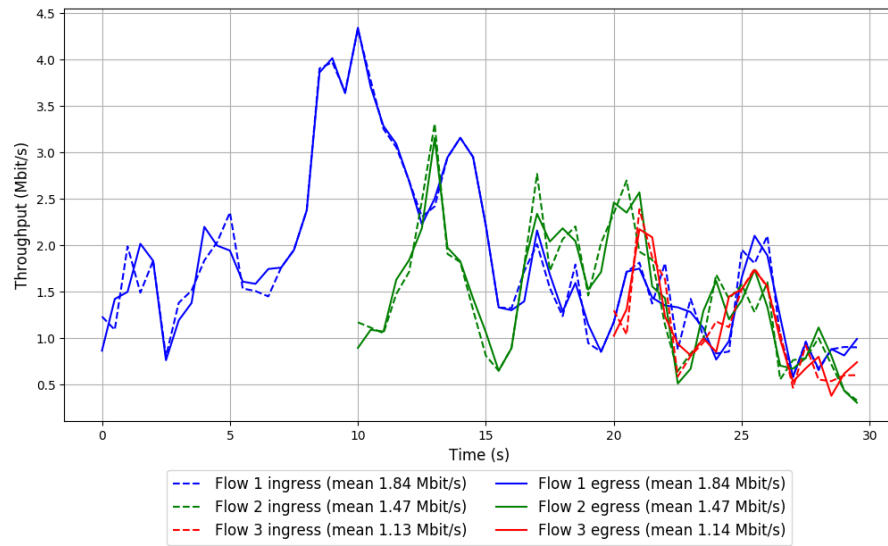


Run 2: Statistics of Sprout

Start at: 2018-01-16 01:31:05
End at: 2018-01-16 01:31:35
Local clock offset: -15.99 ms
Remote clock offset: -17.287 ms

```
# Below is generated by plot.py at 2018-01-16 02:04:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.20 Mbit/s
95th percentile per-packet one-way delay: 63.930 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 58.776 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 63.660 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 78.437 ms
Loss rate: 0.01%
```


Run 2: Report of Sprout — Data Link

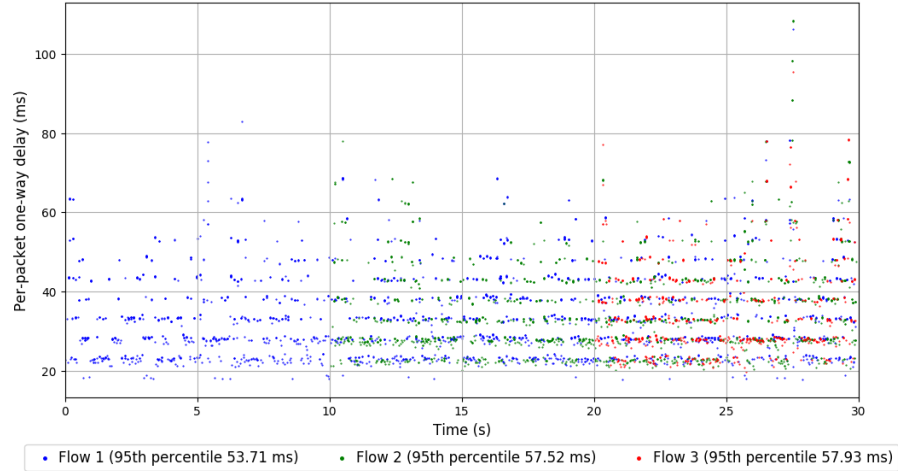
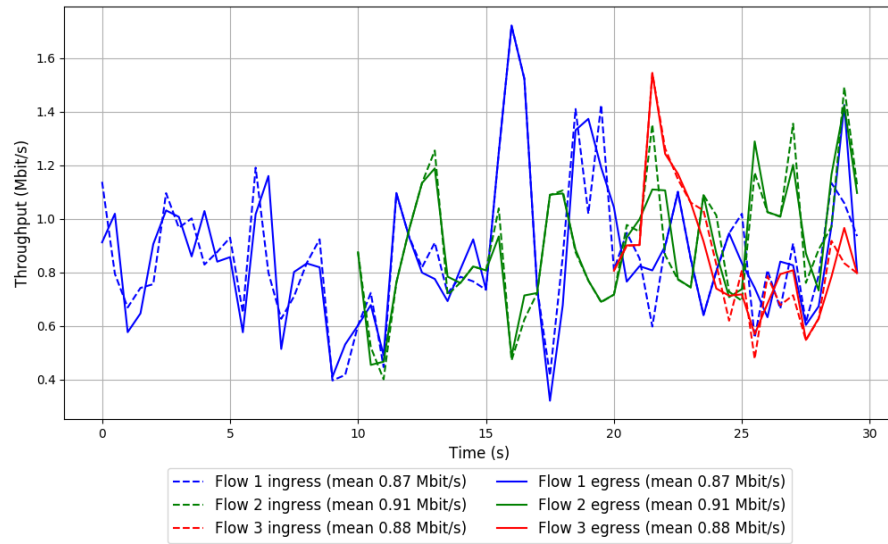


Run 3: Statistics of Sprout

Start at: 2018-01-16 01:47:44
End at: 2018-01-16 01:48:14
Local clock offset: -15.438 ms
Remote clock offset: -16.599 ms

Below is generated by plot.py at 2018-01-16 02:04:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 55.358 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 53.713 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 57.522 ms
Loss rate: 0.28%
-- Flow 3:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 57.928 ms
Loss rate: 0.01%

Run 3: Report of Sprout — Data Link

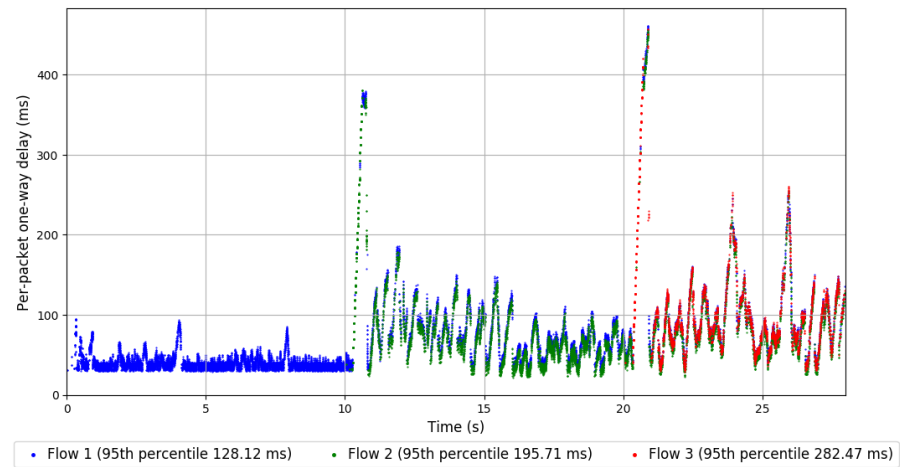
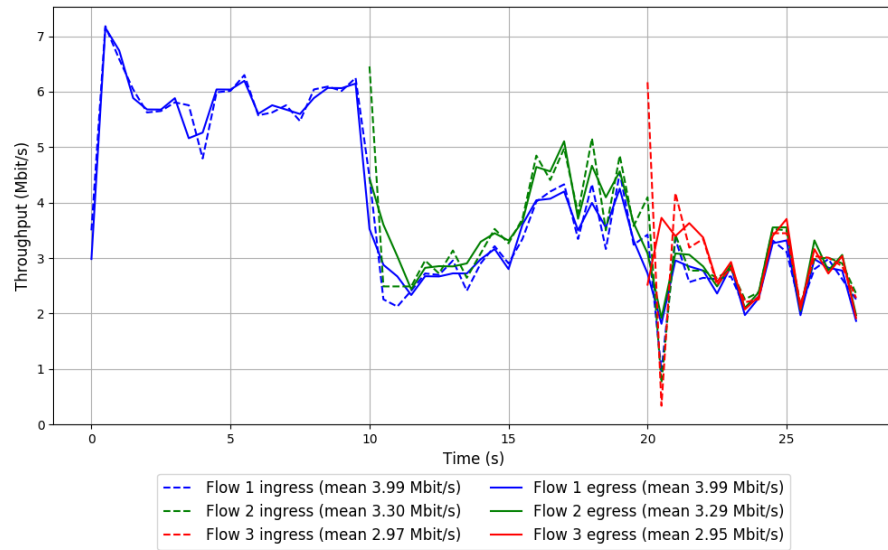


Run 1: Statistics of TaoVA-100x

Start at: 2018-01-16 01:18:52
End at: 2018-01-16 01:19:22
Local clock offset: -17.72 ms
Remote clock offset: -15.061 ms

Below is generated by plot.py at 2018-01-16 02:04:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.93 Mbit/s
95th percentile per-packet one-way delay: 164.068 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 3.99 Mbit/s
95th percentile per-packet one-way delay: 128.118 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 195.714 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 282.472 ms
Loss rate: 1.48%

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

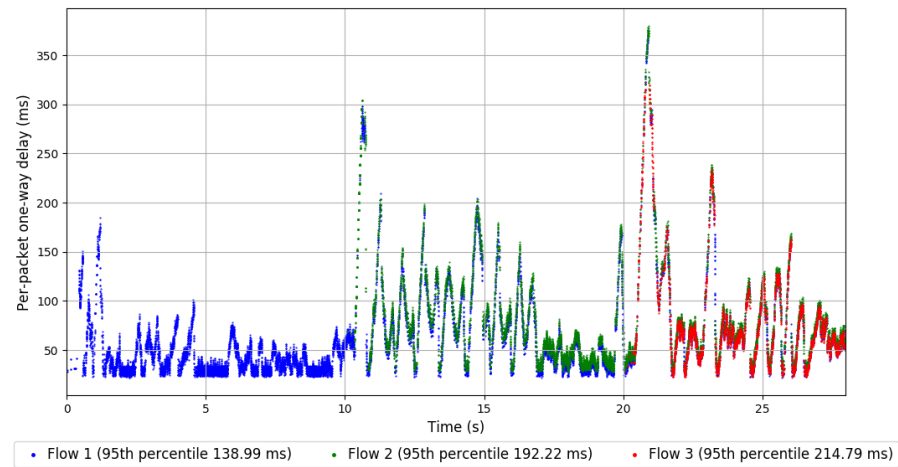
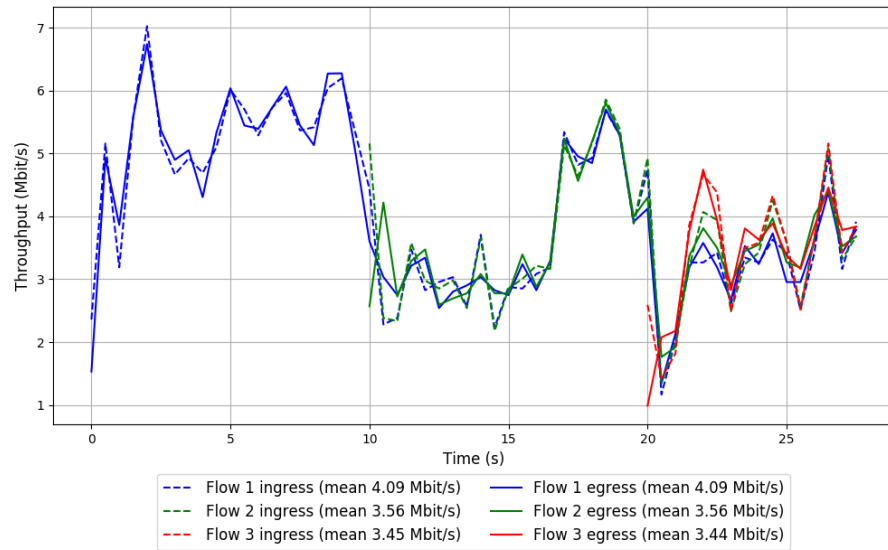


Run 2: Statistics of TaoVA-100x

Start at: 2018-01-16 01:35:31
End at: 2018-01-16 01:36:01
Local clock offset: -16.058 ms
Remote clock offset: -16.132 ms

Below is generated by plot.py at 2018-01-16 02:04:42
Datalink statistics
-- Total of 3 flows:
Average throughput: 7.34 Mbit/s
95th percentile per-packet one-way delay: 163.133 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 4.09 Mbit/s
95th percentile per-packet one-way delay: 138.986 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 3.56 Mbit/s
95th percentile per-packet one-way delay: 192.215 ms
Loss rate: 0.39%
-- Flow 3:
Average throughput: 3.44 Mbit/s
95th percentile per-packet one-way delay: 214.791 ms
Loss rate: 0.95%

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

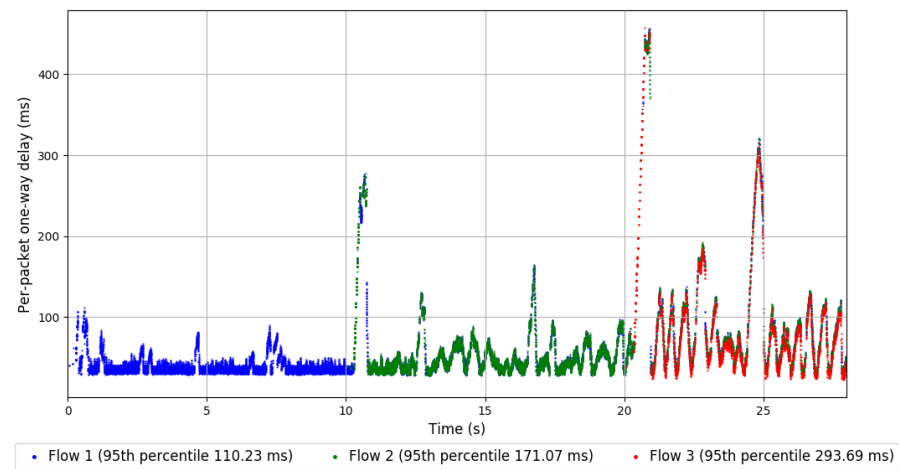
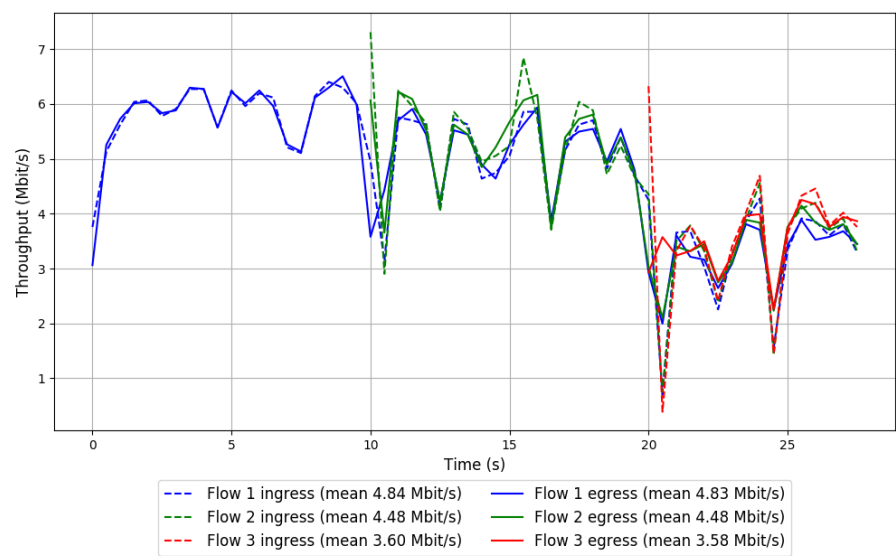


Run 3: Statistics of TaoVA-100x

Start at: 2018-01-16 01:52:09
End at: 2018-01-16 01:52:39
Local clock offset: -17.803 ms
Remote clock offset: -15.103 ms

Below is generated by plot.py at 2018-01-16 02:04:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.72 Mbit/s
95th percentile per-packet one-way delay: 155.673 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 4.83 Mbit/s
95th percentile per-packet one-way delay: 110.226 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 171.074 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 293.690 ms
Loss rate: 1.09%

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

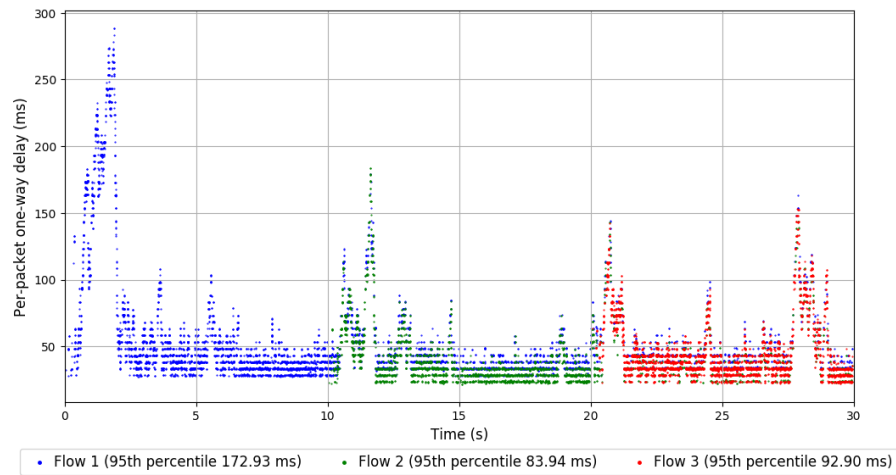
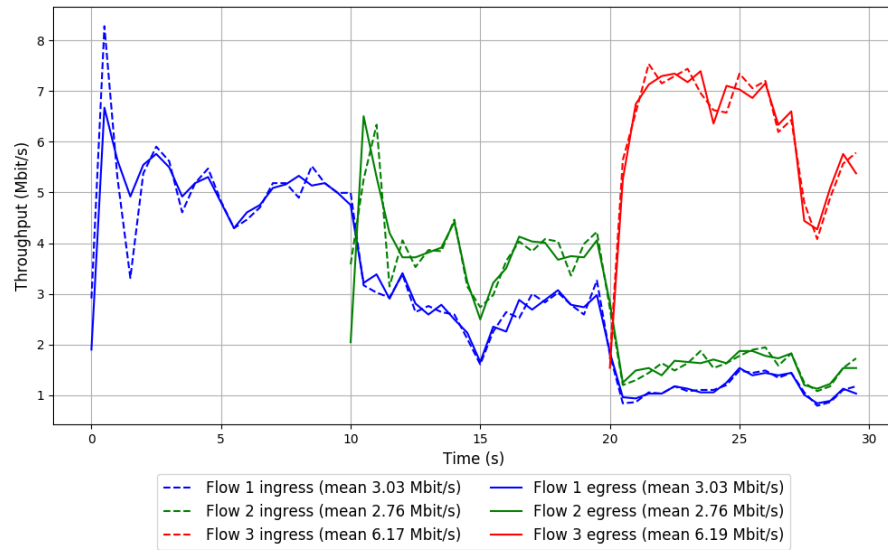


Run 1: Statistics of TCP Vegas

Start at: 2018-01-16 01:26:39
End at: 2018-01-16 01:27:09
Local clock offset: -15.855 ms
Remote clock offset: -15.781 ms

Below is generated by plot.py at 2018-01-16 02:04:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.91 Mbit/s
95th percentile per-packet one-way delay: 113.188 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 3.03 Mbit/s
95th percentile per-packet one-way delay: 172.934 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 83.937 ms
Loss rate: 0.37%
-- Flow 3:
Average throughput: 6.19 Mbit/s
95th percentile per-packet one-way delay: 92.898 ms
Loss rate: 0.49%

Run 1: Report of TCP Vegas — Data Link

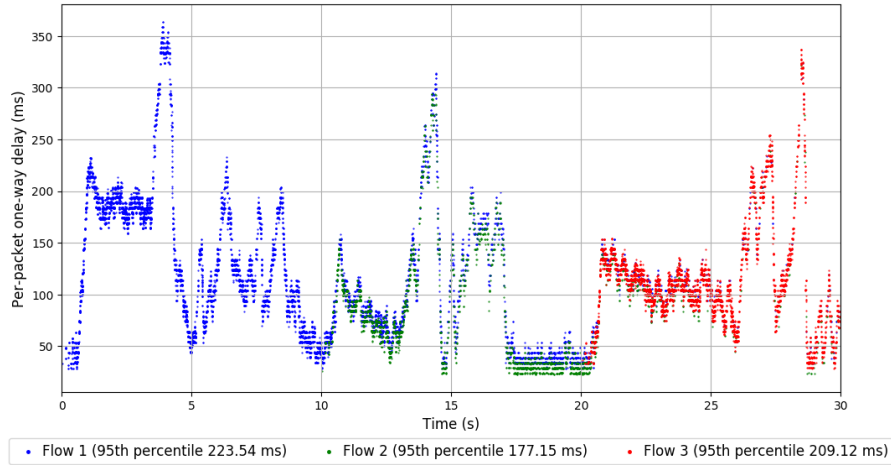
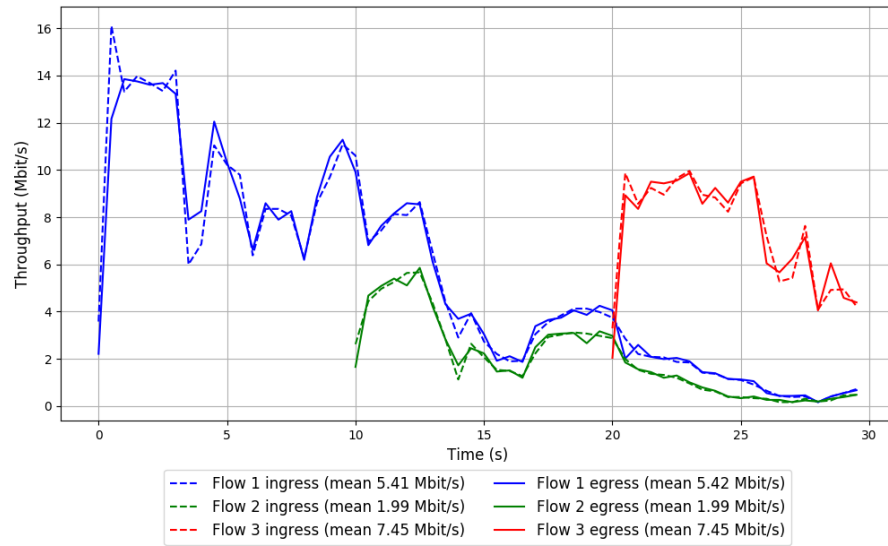


Run 2: Statistics of TCP Vegas

Start at: 2018-01-16 01:43:17
End at: 2018-01-16 01:43:47
Local clock offset: -16.312 ms
Remote clock offset: -16.395 ms

Below is generated by plot.py at 2018-01-16 02:04:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.21 Mbit/s
95th percentile per-packet one-way delay: 214.430 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 5.42 Mbit/s
95th percentile per-packet one-way delay: 223.543 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 177.149 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 7.45 Mbit/s
95th percentile per-packet one-way delay: 209.119 ms
Loss rate: 0.58%

Run 2: Report of TCP Vegas — Data Link

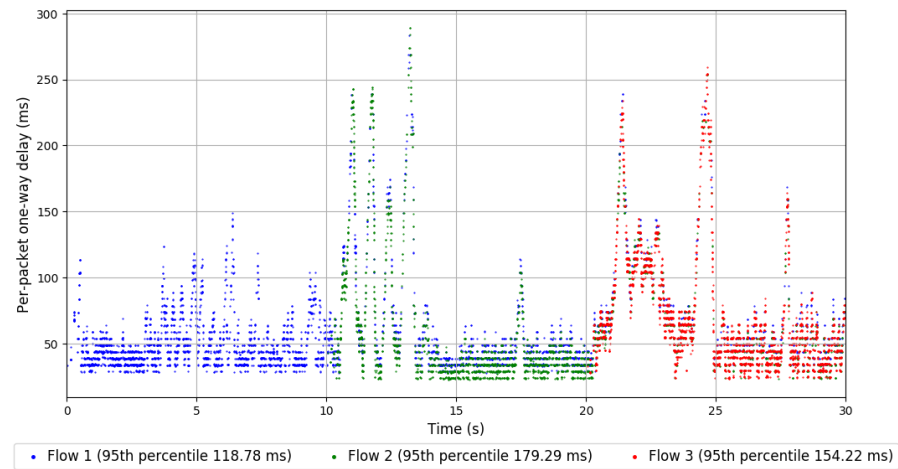
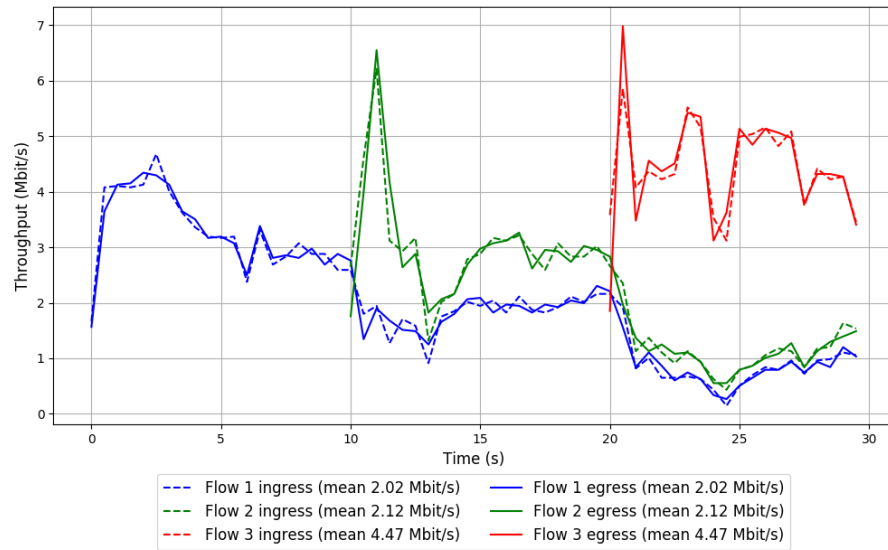


Run 3: Statistics of TCP Vegas

Start at: 2018-01-16 01:59:55
End at: 2018-01-16 02:00:25
Local clock offset: -18.154 ms
Remote clock offset: -15.645 ms

Below is generated by plot.py at 2018-01-16 02:04:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 4.90 Mbit/s
95th percentile per-packet one-way delay: 149.101 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 118.776 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 179.293 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 154.223 ms
Loss rate: 0.49%

Run 3: Report of TCP Vegas — Data Link

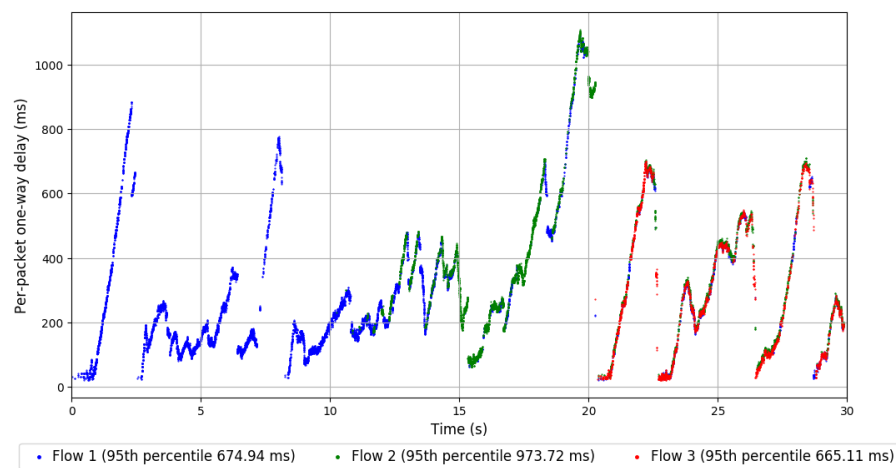
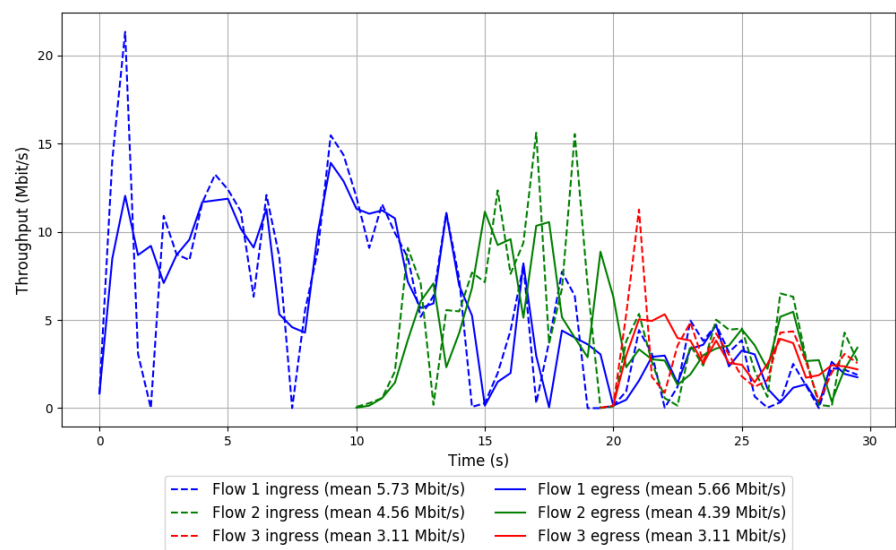


Run 1: Statistics of Verus

Start at: 2018-01-16 01:17:45
End at: 2018-01-16 01:18:15
Local clock offset: -18.721 ms
Remote clock offset: -17.256 ms

Below is generated by plot.py at 2018-01-16 02:04:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.55 Mbit/s
95th percentile per-packet one-way delay: 762.013 ms
Loss rate: 2.63%
-- Flow 1:
Average throughput: 5.66 Mbit/s
95th percentile per-packet one-way delay: 674.944 ms
Loss rate: 1.39%
-- Flow 2:
Average throughput: 4.39 Mbit/s
95th percentile per-packet one-way delay: 973.721 ms
Loss rate: 4.92%
-- Flow 3:
Average throughput: 3.11 Mbit/s
95th percentile per-packet one-way delay: 665.114 ms
Loss rate: 2.84%

Run 1: Report of Verus — Data Link

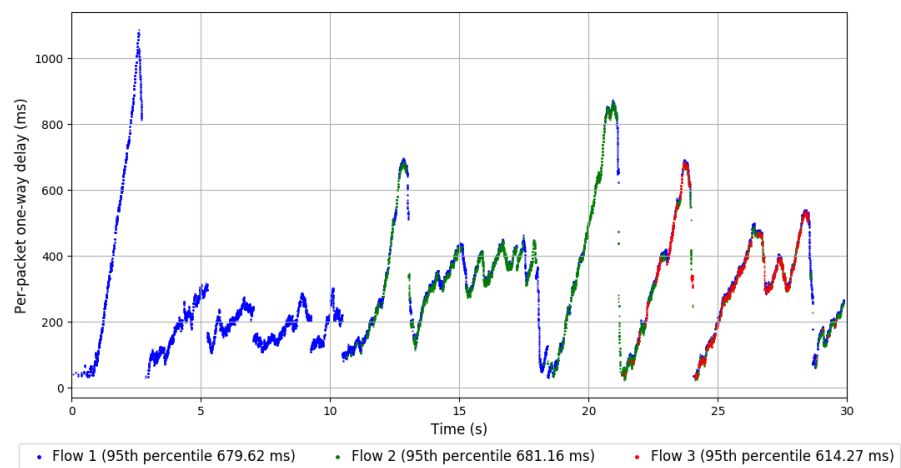
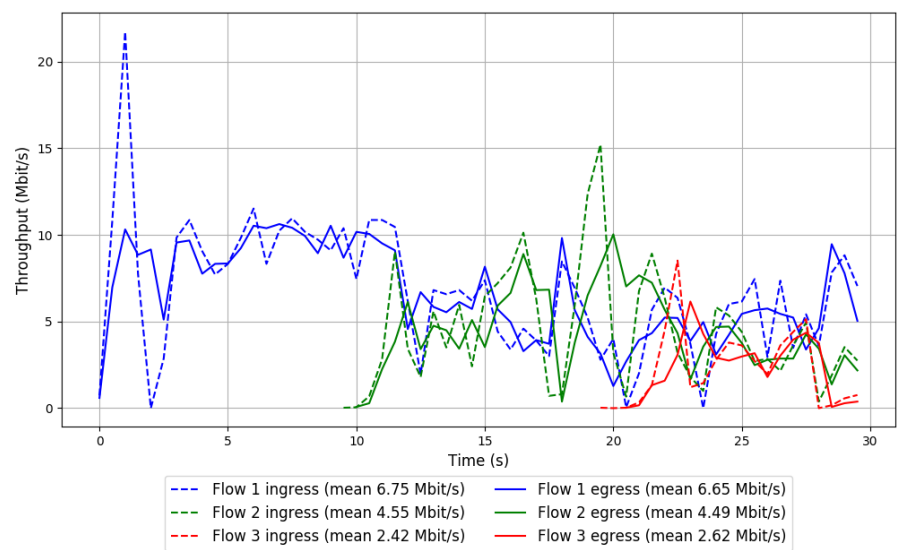


Run 2: Statistics of Verus

Start at: 2018-01-16 01:34:24
End at: 2018-01-16 01:34:54
Local clock offset: -19.03 ms
Remote clock offset: -17.69 ms

Below is generated by plot.py at 2018-01-16 02:04:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 10.38 Mbit/s
95th percentile per-packet one-way delay: 675.023 ms
Loss rate: 1.87%
-- Flow 1:
Average throughput: 6.65 Mbit/s
95th percentile per-packet one-way delay: 679.616 ms
Loss rate: 1.74%
-- Flow 2:
Average throughput: 4.49 Mbit/s
95th percentile per-packet one-way delay: 681.156 ms
Loss rate: 2.19%
-- Flow 3:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 614.275 ms
Loss rate: 1.82%

Run 2: Report of Verus — Data Link

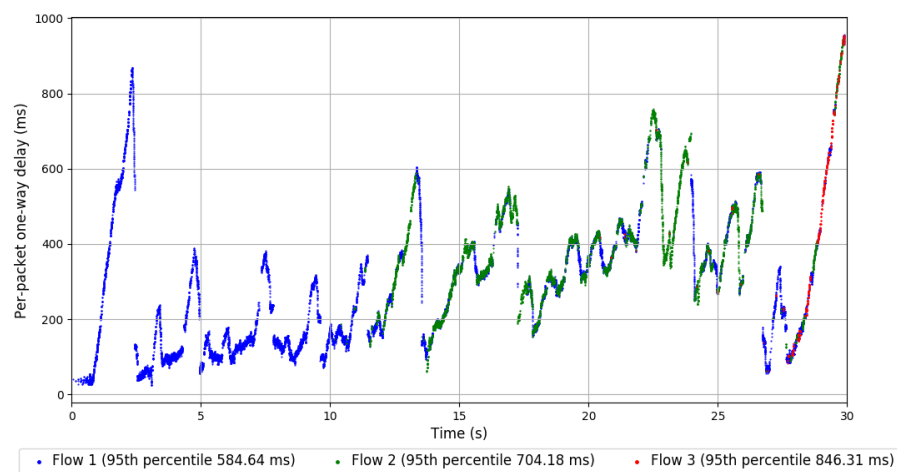
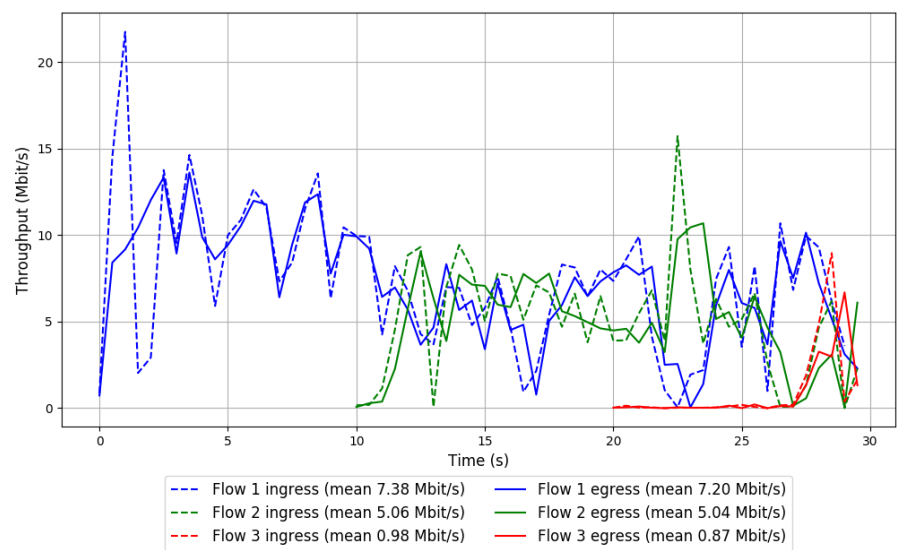


Run 3: Statistics of Verus

Start at: 2018-01-16 01:51:03
End at: 2018-01-16 01:51:33
Local clock offset: -19.588 ms
Remote clock offset: -16.981 ms

Below is generated by plot.py at 2018-01-16 02:04:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 10.80 Mbit/s
95th percentile per-packet one-way delay: 660.605 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 7.20 Mbit/s
95th percentile per-packet one-way delay: 584.642 ms
Loss rate: 1.06%
-- Flow 2:
Average throughput: 5.04 Mbit/s
95th percentile per-packet one-way delay: 704.180 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 846.310 ms
Loss rate: 12.45%

Run 3: Report of Verus — Data Link

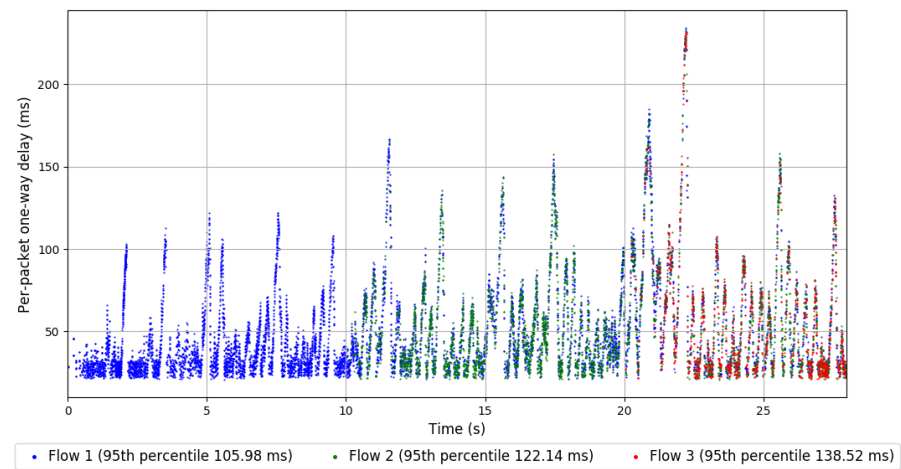
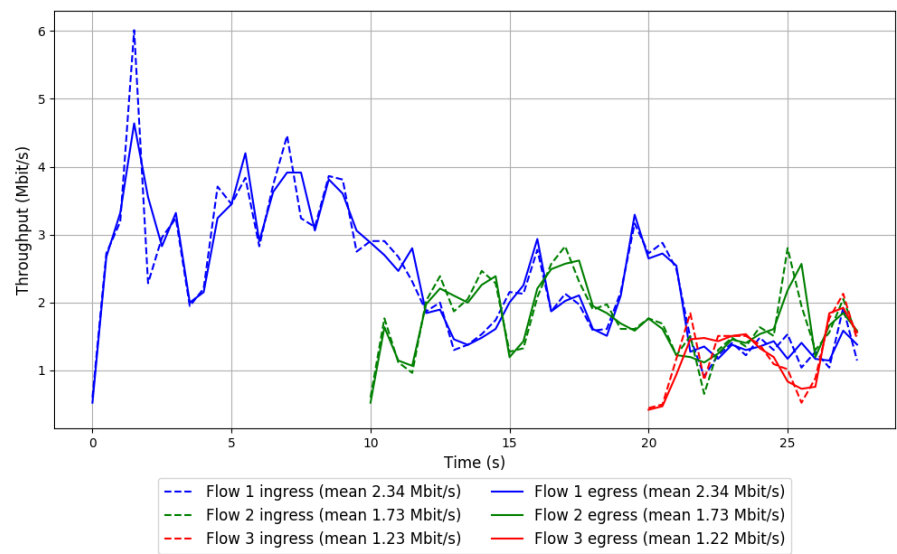


Run 1: Statistics of Copa

Start at: 2018-01-16 01:20:00
End at: 2018-01-16 01:20:30
Local clock offset: -17.167 ms
Remote clock offset: -16.167 ms

Below is generated by plot.py at 2018-01-16 02:04:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.80 Mbit/s
95th percentile per-packet one-way delay: 114.108 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 105.979 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 122.140 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 138.517 ms
Loss rate: 0.94%

Run 1: Report of Copa — Data Link

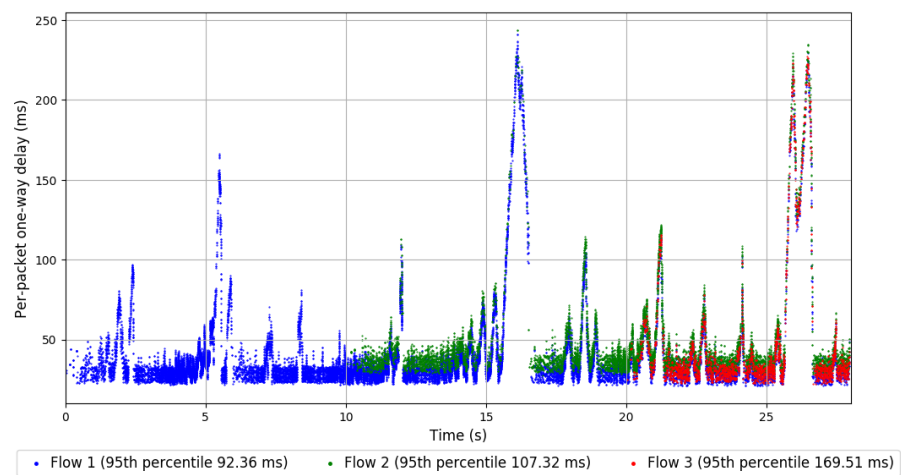
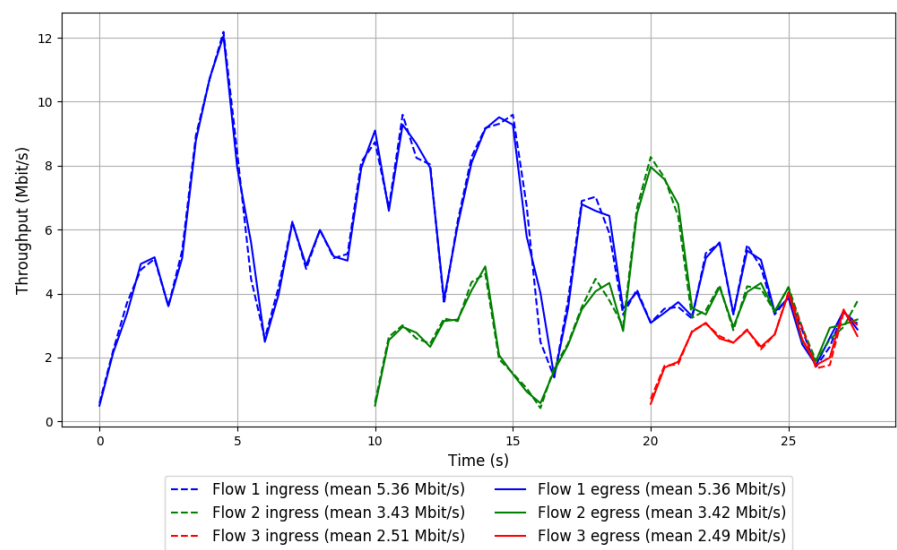


Run 2: Statistics of Copa

Start at: 2018-01-16 01:36:38
End at: 2018-01-16 01:37:08
Local clock offset: -18.935 ms
Remote clock offset: -18.165 ms

Below is generated by plot.py at 2018-01-16 02:04:57
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 103.490 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 5.36 Mbit/s
95th percentile per-packet one-way delay: 92.358 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 3.42 Mbit/s
95th percentile per-packet one-way delay: 107.316 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 2.49 Mbit/s
95th percentile per-packet one-way delay: 169.512 ms
Loss rate: 1.16%

Run 2: Report of Copa — Data Link

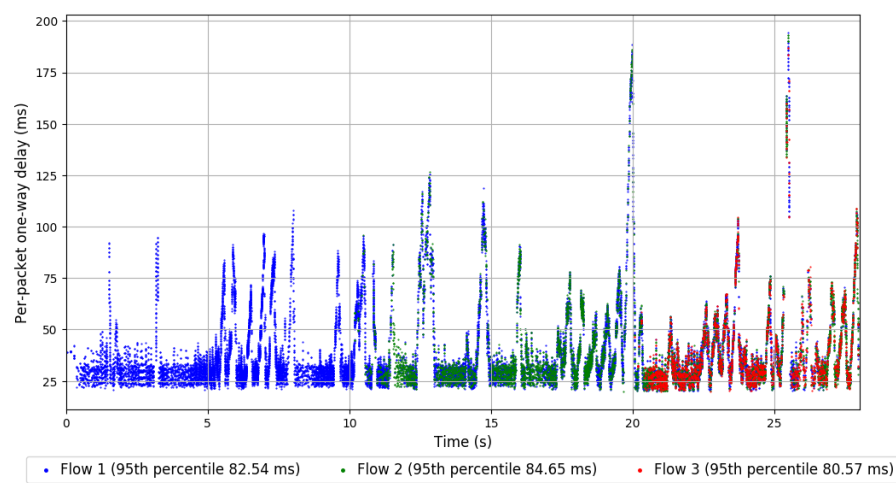
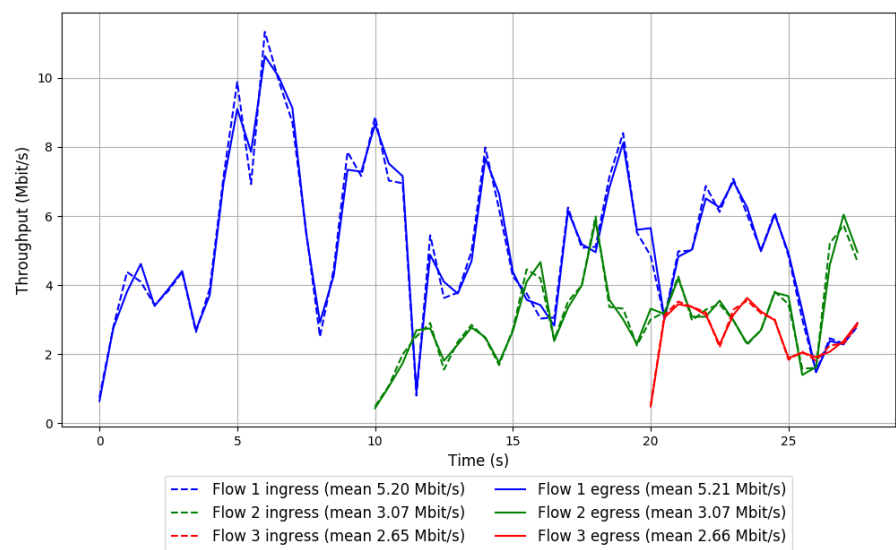


Run 3: Statistics of Copa

Start at: 2018-01-16 01:53:16
End at: 2018-01-16 01:53:46
Local clock offset: -17.371 ms
Remote clock offset: -16.101 ms

Below is generated by plot.py at 2018-01-16 02:04:57
Datalink statistics
-- Total of 3 flows:
Average throughput: 7.93 Mbit/s
95th percentile per-packet one-way delay: 82.854 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 5.21 Mbit/s
95th percentile per-packet one-way delay: 82.542 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 3.07 Mbit/s
95th percentile per-packet one-way delay: 84.653 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 80.573 ms
Loss rate: 0.37%

Run 3: Report of Copa — Data Link

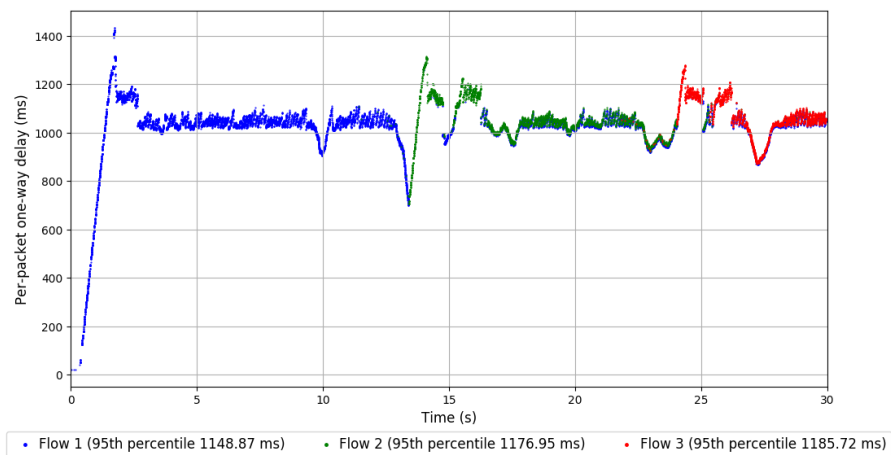
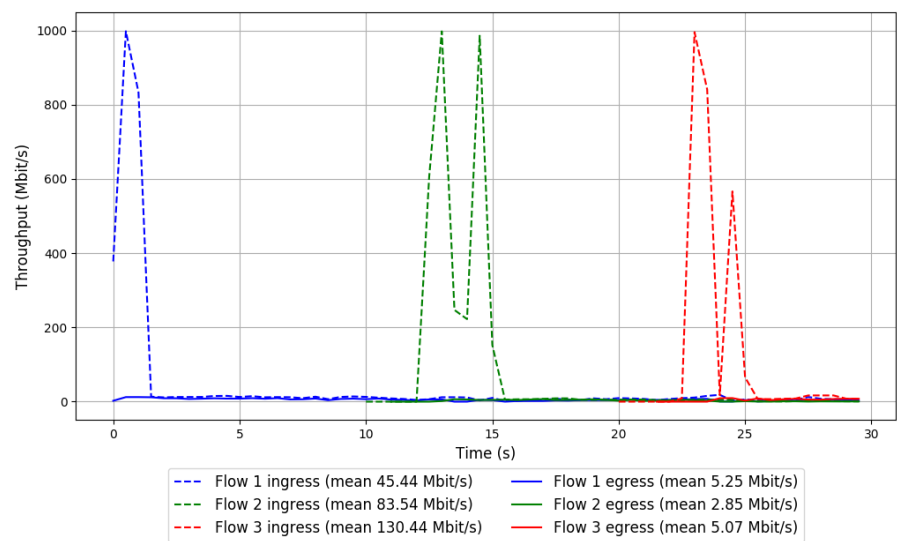


Run 1: Statistics of FillP

Start at: 2018-01-16 01:13:19
End at: 2018-01-16 01:13:49
Local clock offset: -15.16 ms
Remote clock offset: -17.964 ms

Below is generated by plot.py at 2018-01-16 02:05:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.38 Mbit/s
95th percentile per-packet one-way delay: 1167.282 ms
Loss rate: 94.19%
-- Flow 1:
Average throughput: 5.25 Mbit/s
95th percentile per-packet one-way delay: 1148.872 ms
Loss rate: 88.47%
-- Flow 2:
Average throughput: 2.85 Mbit/s
95th percentile per-packet one-way delay: 1176.947 ms
Loss rate: 96.83%
-- Flow 3:
Average throughput: 5.07 Mbit/s
95th percentile per-packet one-way delay: 1185.721 ms
Loss rate: 96.83%

Run 1: Report of FillP — Data Link

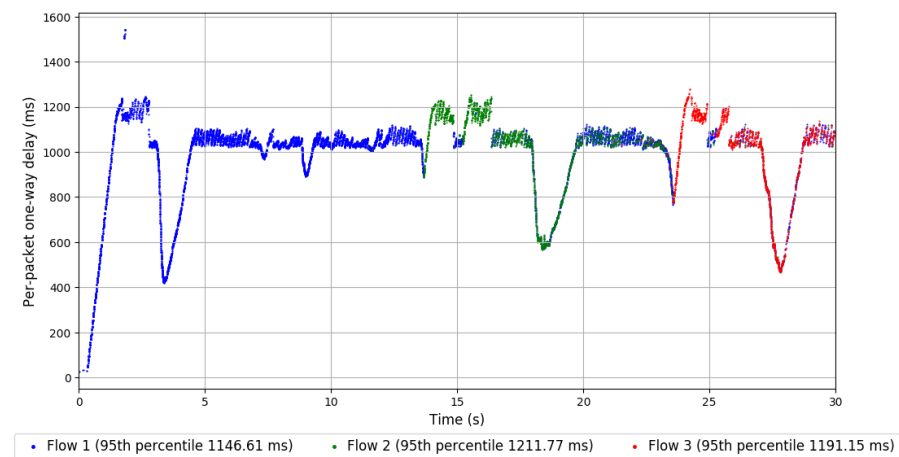
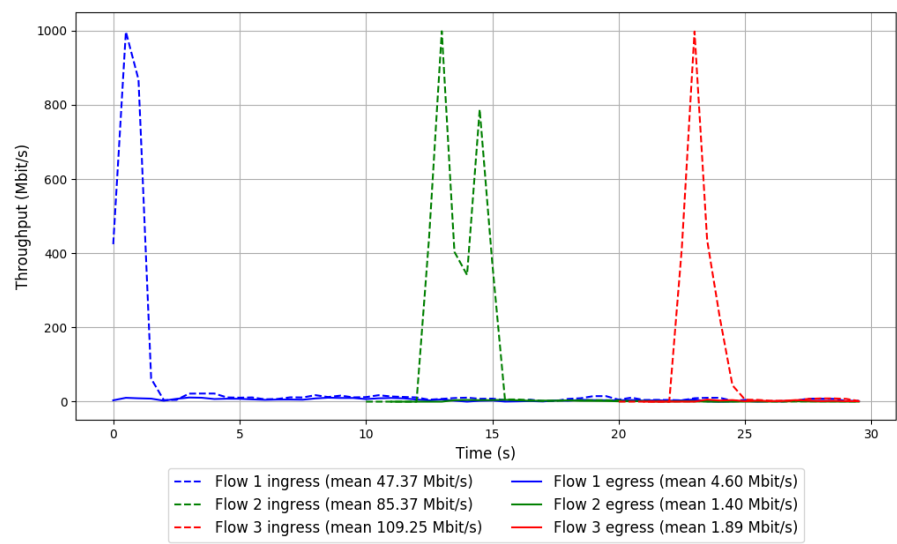


Run 2: Statistics of FillP

Start at: 2018-01-16 01:29:57
End at: 2018-01-16 01:30:27
Local clock offset: -17.468 ms
Remote clock offset: -16.651 ms

Below is generated by plot.py at 2018-01-16 02:05:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.02 Mbit/s
95th percentile per-packet one-way delay: 1183.239 ms
Loss rate: 95.71%
-- Flow 1:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 1146.609 ms
Loss rate: 90.30%
-- Flow 2:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 1211.774 ms
Loss rate: 98.47%
-- Flow 3:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 1191.147 ms
Loss rate: 98.48%

Run 2: Report of FillP — Data Link

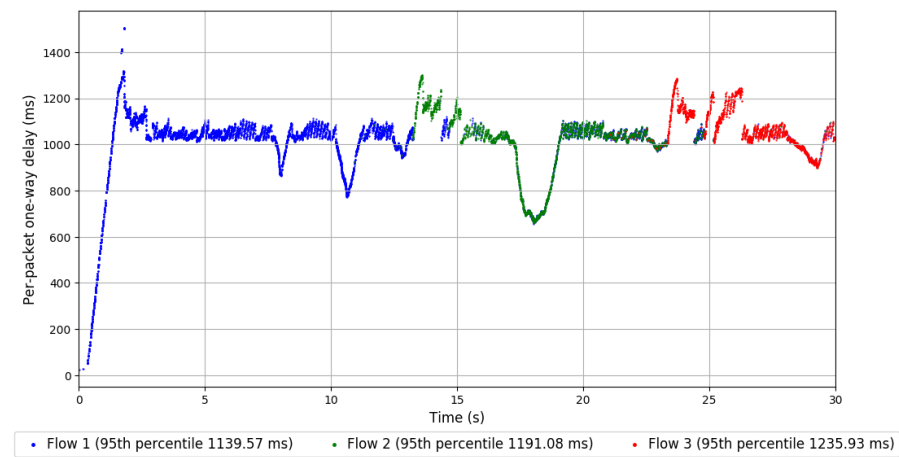
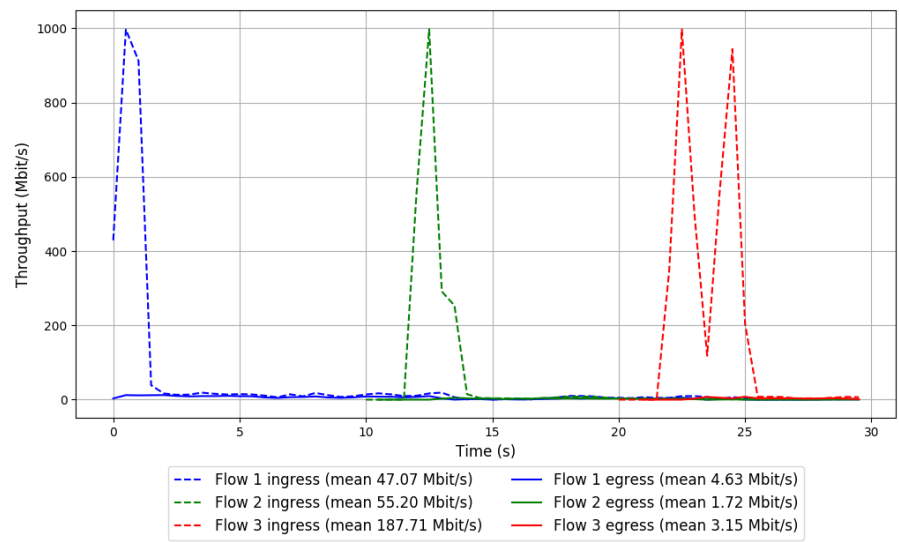


Run 3: Statistics of FillP

Start at: 2018-01-16 01:46:36
End at: 2018-01-16 01:47:06
Local clock offset: -16.26 ms
Remote clock offset: -16.932 ms

Below is generated by plot.py at 2018-01-16 02:05:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.65 Mbit/s
95th percentile per-packet one-way delay: 1188.365 ms
Loss rate: 95.45%
-- Flow 1:
Average throughput: 4.63 Mbit/s
95th percentile per-packet one-way delay: 1139.572 ms
Loss rate: 90.18%
-- Flow 2:
Average throughput: 1.72 Mbit/s
95th percentile per-packet one-way delay: 1191.081 ms
Loss rate: 97.03%
-- Flow 3:
Average throughput: 3.15 Mbit/s
95th percentile per-packet one-way delay: 1235.927 ms
Loss rate: 98.50%

Run 3: Report of FillP — Data Link

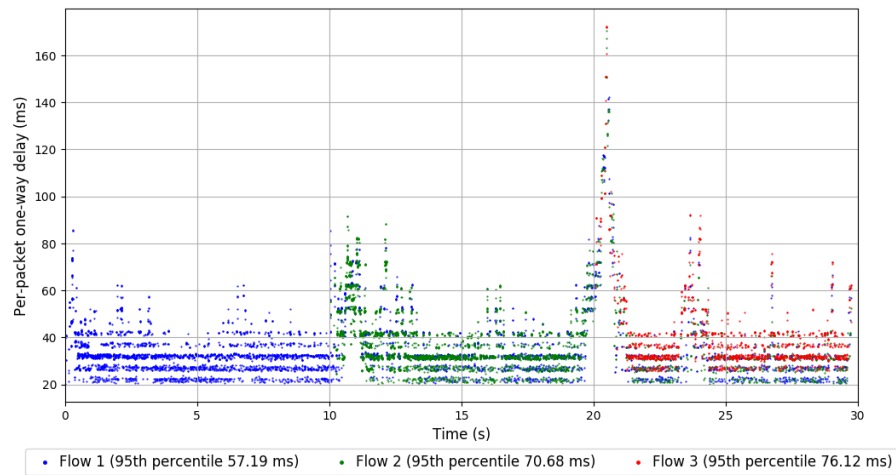
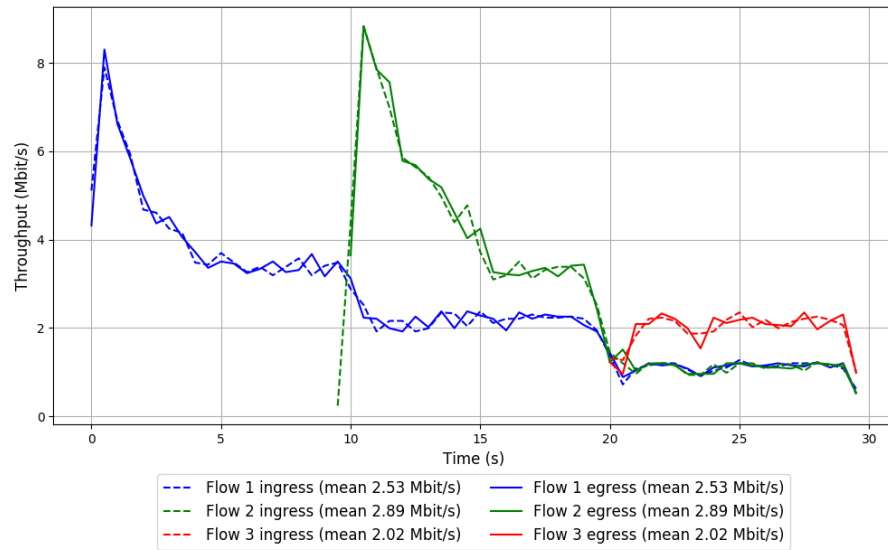


```
Run 1: Statistics of Indigo

Start at: 2018-01-16 01:25:32
End at: 2018-01-16 01:26:02
Local clock offset: -17.195 ms
Remote clock offset: -17.562 ms

# Below is generated by plot.py at 2018-01-16 02:05:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.10 Mbit/s
95th percentile per-packet one-way delay: 62.633 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 57.188 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 2.89 Mbit/s
95th percentile per-packet one-way delay: 70.677 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 76.120 ms
Loss rate: 0.31%
```

Run 1: Report of Indigo — Data Link

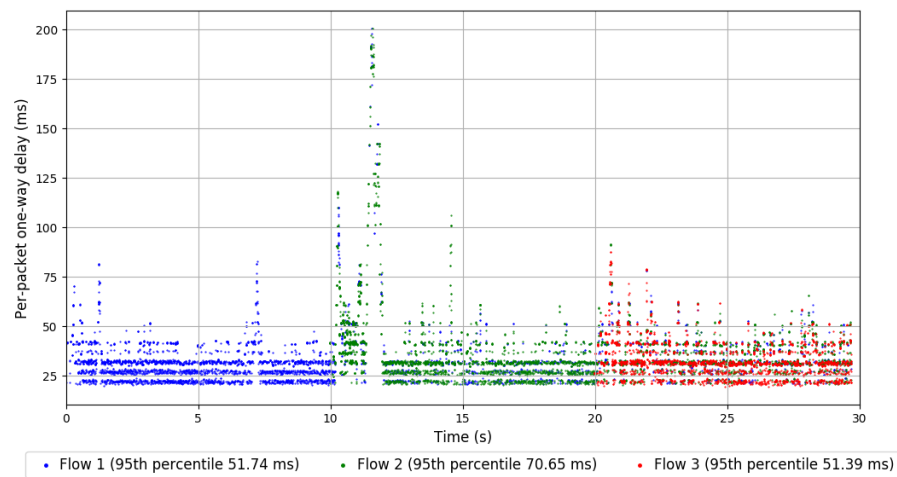
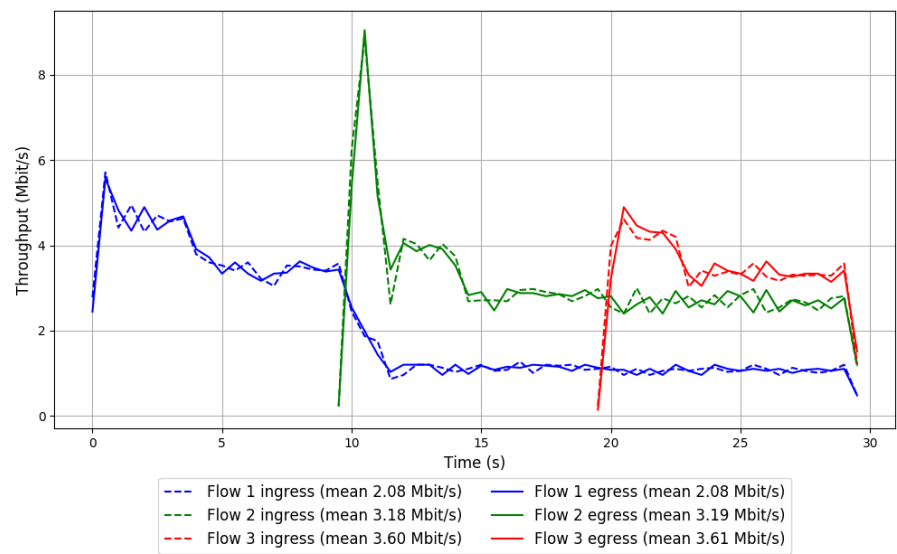


Run 2: Statistics of Indigo

Start at: 2018-01-16 01:42:10
End at: 2018-01-16 01:42:40
Local clock offset: -17.021 ms
Remote clock offset: -18.301 ms

Below is generated by plot.py at 2018-01-16 02:05:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 5.38 Mbit/s
95th percentile per-packet one-way delay: 57.612 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 51.745 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 70.650 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 51.387 ms
Loss rate: 0.10%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-01-16 01:58:48
End at: 2018-01-16 01:59:18
Local clock offset: -20.312 ms
Remote clock offset: -17.049 ms

Below is generated by plot.py at 2018-01-16 02:05:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 84.476 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 1.50 Mbit/s
95th percentile per-packet one-way delay: 73.455 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 88.657 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 103.454 ms
Loss rate: 0.39%

Run 3: Report of Indigo — Data Link

