

Pantheon Report

Generated at 2018-12-02 04:12:54 (UTC).

Data path: AWS India 1 on `ens5` (*local*) → India cellular on `ppp0` (*remote*).

Repeated the test of 19 congestion control schemes 3 times.

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

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

System info:

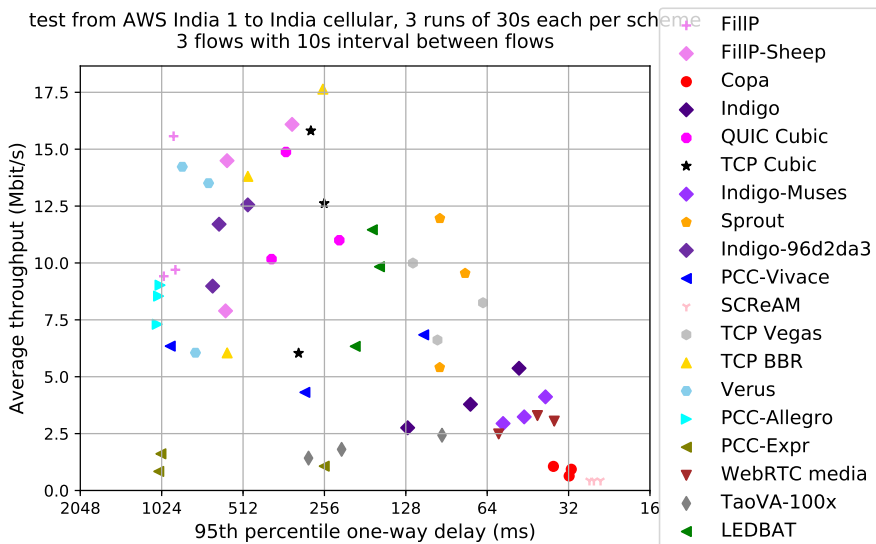
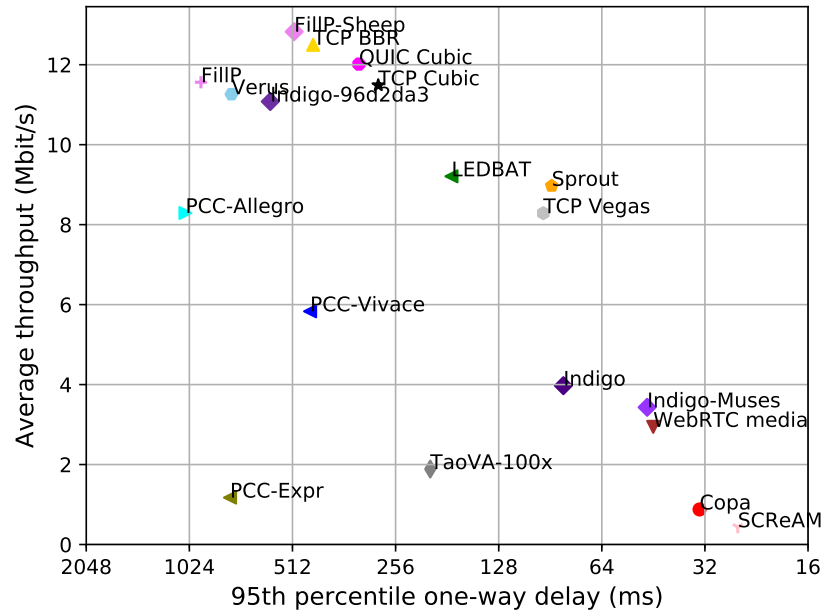
```
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

```
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
  M src/ScreamClient
  M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
  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 @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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



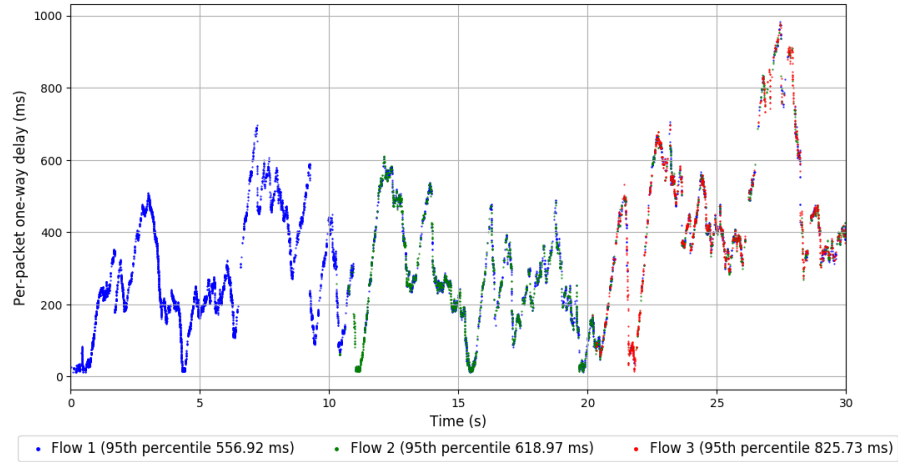
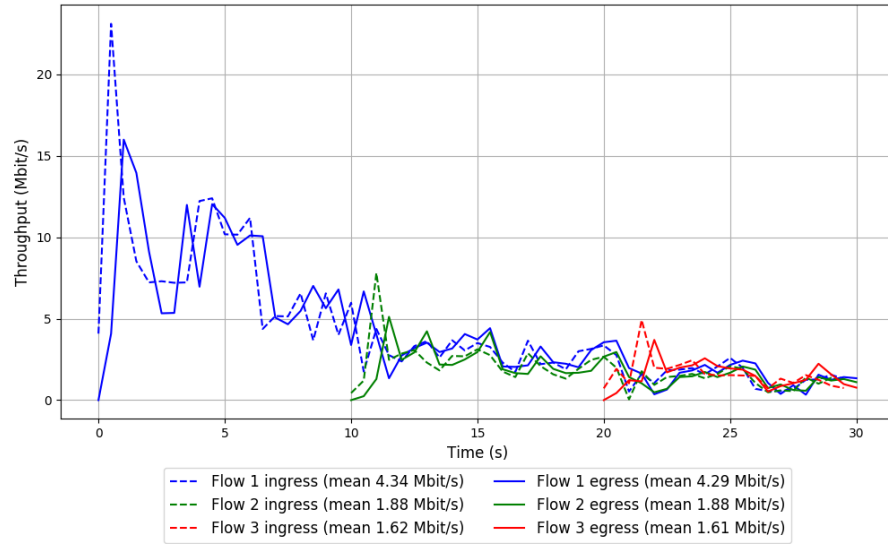
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	7.94	4.52	4.77	399.14	446.81	611.76	0.51	0.80	1.31
Copa	3	0.00	0.99	0.65	18.78	33.32	33.84	97.60	41.05	56.14
TCP Cubic	3	6.55	5.83	3.24	264.38	294.60	371.16	0.42	0.67	2.96
FillP	3	6.49	4.95	5.65	847.02	942.50	1010.52	2.63	4.24	13.79
FillP-Sheep	3	6.59	5.29	8.36	352.65	494.54	733.37	0.34	0.58	1.40
Indigo	3	1.86	1.82	2.78	64.35	98.57	100.83	0.02	0.20	0.11
Indigo-96d2da3	3	6.62	4.42	4.75	599.51	583.62	541.69	0.47	0.53	1.25
LEDBAT	3	5.74	4.08	2.29	163.82	184.84	205.11	0.67	0.49	0.90
Indigo-Muses	3	1.64	1.58	2.26	45.64	45.06	54.31	0.10	0.13	0.24
PCC-Allegro	3	3.57	5.74	3.00	1031.38	1039.73	1120.41	10.76	16.32	73.27
PCC-Expr	3	0.68	0.43	0.68	739.71	767.80	805.79	85.33	94.68	88.81
QUIC Cubic	3	9.26	3.14	2.13	304.67	382.33	510.36	1.87	2.88	4.81
SCReAM	3	0.22	0.22	0.22	22.53	25.62	26.11	0.00	0.06	0.12
Sprout	3	5.04	4.00	3.87	80.64	89.63	112.72	0.08	0.32	0.30
TaoVA-100x	3	0.24	1.79	1.45	218.54	77.24	207.52	89.79	45.65	49.06
TCP Vegas	3	3.89	3.18	6.87	71.34	107.12	115.91	0.04	0.06	0.12
Verus	3	8.30	3.13	2.77	750.85	788.35	838.34	3.41	5.87	7.90
PCC-Vivace	3	3.51	2.66	1.74	405.46	473.48	328.24	1.70	4.02	2.22
WebRTC media	3	1.66	1.05	0.24	40.77	44.92	104.30	0.02	0.02	0.38

Run 1: Statistics of TCP BBR

Start at: 2018-12-02 03:14:03
End at: 2018-12-02 03:14:33
Local clock offset: 4.631 ms
Remote clock offset: -3.877 ms

Below is generated by plot.py at 2018-12-02 04:11:41
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 586.114 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 4.29 Mbit/s
95th percentile per-packet one-way delay: 556.924 ms
Loss rate: 1.26%
-- Flow 2:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 618.971 ms
Loss rate: 1.69%
-- Flow 3:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 825.734 ms
Loss rate: 2.30%

Run 1: Report of TCP BBR — Data Link

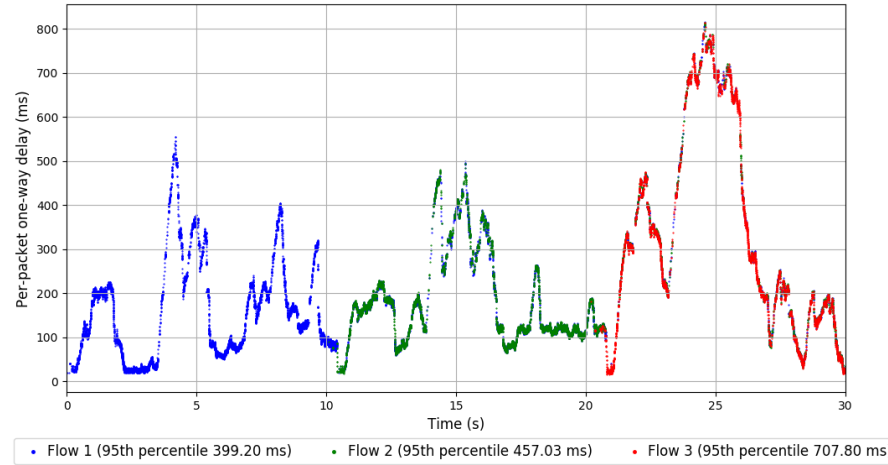
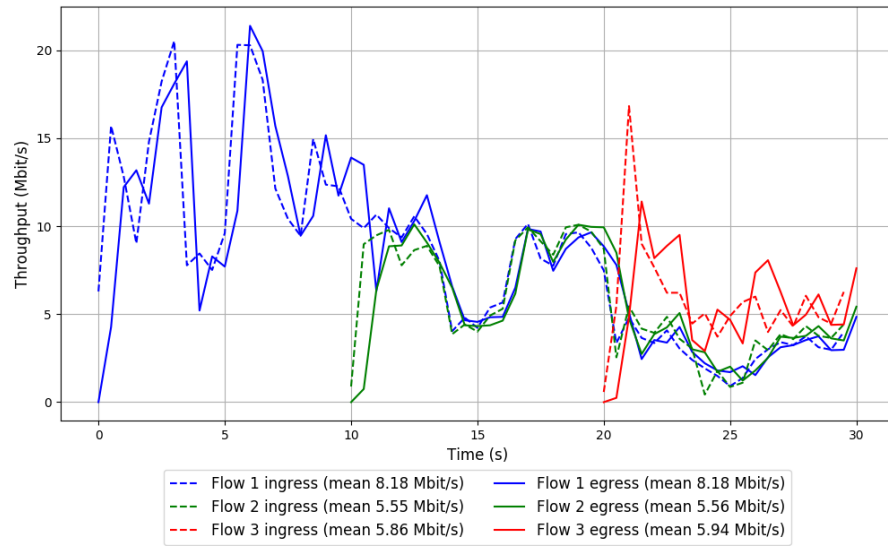


Run 2: Statistics of TCP BBR

Start at: 2018-12-02 03:35:30
End at: 2018-12-02 03:36:00
Local clock offset: 3.314 ms
Remote clock offset: -0.253 ms

Below is generated by plot.py at 2018-12-02 04:11:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 13.81 Mbit/s
95th percentile per-packet one-way delay: 491.536 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 8.18 Mbit/s
95th percentile per-packet one-way delay: 399.201 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 5.56 Mbit/s
95th percentile per-packet one-way delay: 457.032 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 5.94 Mbit/s
95th percentile per-packet one-way delay: 707.796 ms
Loss rate: 0.47%

Run 2: Report of TCP BBR — Data Link

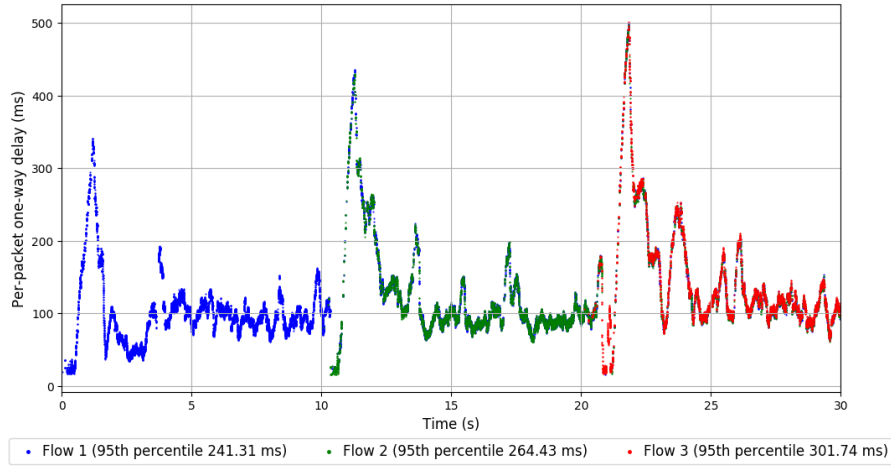
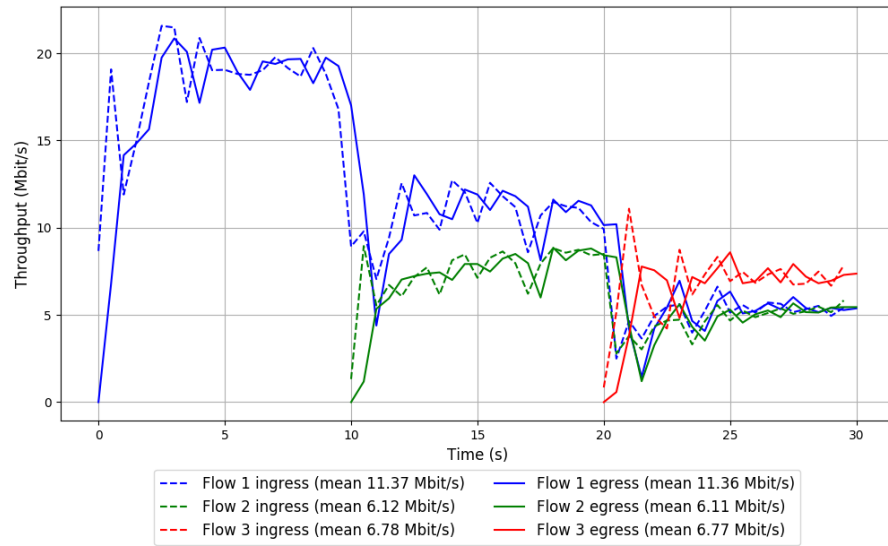


Run 3: Statistics of TCP BBR

Start at: 2018-12-02 03:57:06
End at: 2018-12-02 03:57:36
Local clock offset: 1.841 ms
Remote clock offset: -1.248 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 17.64 Mbit/s
95th percentile per-packet one-way delay: 259.431 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 11.36 Mbit/s
95th percentile per-packet one-way delay: 241.306 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 6.11 Mbit/s
95th percentile per-packet one-way delay: 264.430 ms
Loss rate: 0.55%
-- Flow 3:
Average throughput: 6.77 Mbit/s
95th percentile per-packet one-way delay: 301.743 ms
Loss rate: 1.17%

Run 3: Report of TCP BBR — Data Link

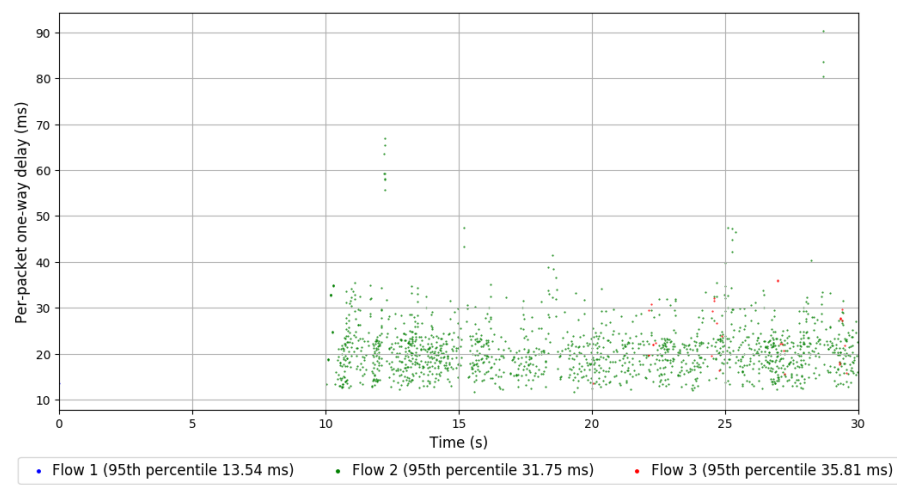
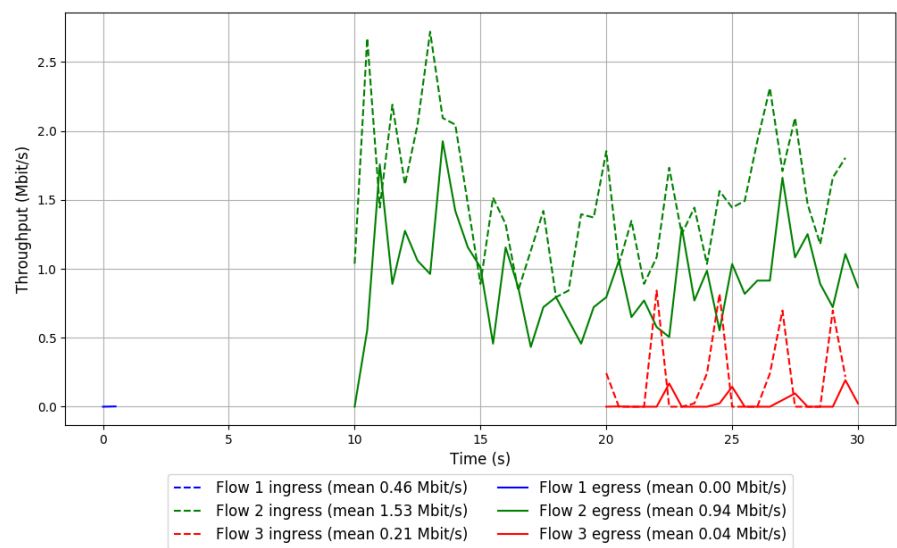


Run 1: Statistics of Copa

Start at: 2018-12-02 03:22:00
End at: 2018-12-02 03:22:30
Local clock offset: 3.51 ms
Remote clock offset: -4.463 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 31.846 ms
Loss rate: 41.52%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 13.538 ms
Loss rate: 97.24%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 31.749 ms
Loss rate: 38.75%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 35.813 ms
Loss rate: 82.59%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-12-02 03:43:26

End at: 2018-12-02 03:43:56

Local clock offset: 2.902 ms

Remote clock offset: -1.92 ms

Below is generated by plot.py at 2018-12-02 04:11:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.93 Mbit/s

95th percentile per-packet one-way delay: 31.277 ms

Loss rate: 43.44%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 15.400 ms

Loss rate: 98.33%

-- Flow 2:

Average throughput: 0.94 Mbit/s

95th percentile per-packet one-way delay: 31.474 ms

Loss rate: 43.03%

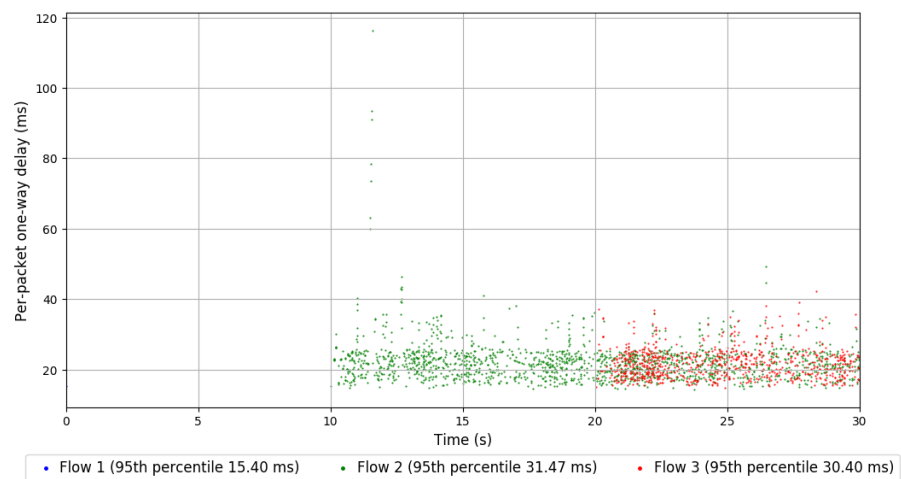
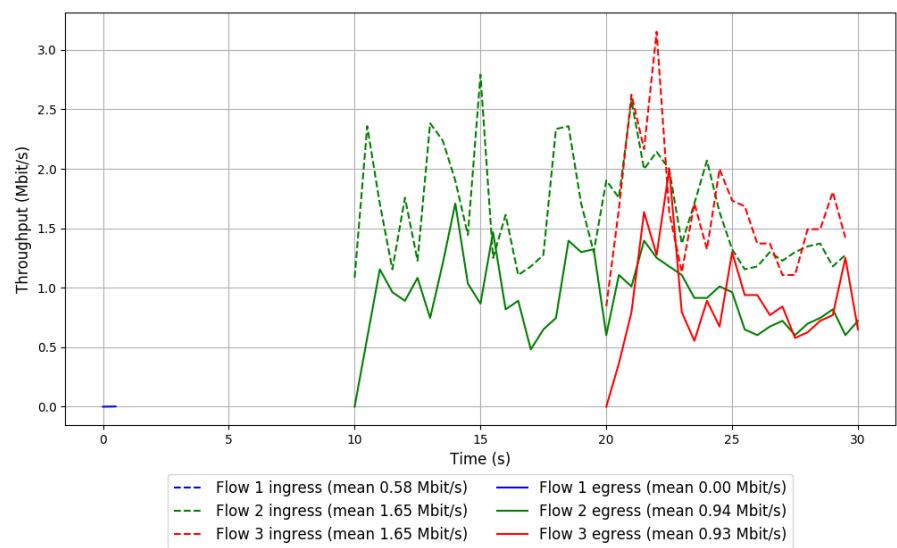
-- Flow 3:

Average throughput: 0.93 Mbit/s

95th percentile per-packet one-way delay: 30.399 ms

Loss rate: 44.06%

Run 2: Report of Copa — Data Link

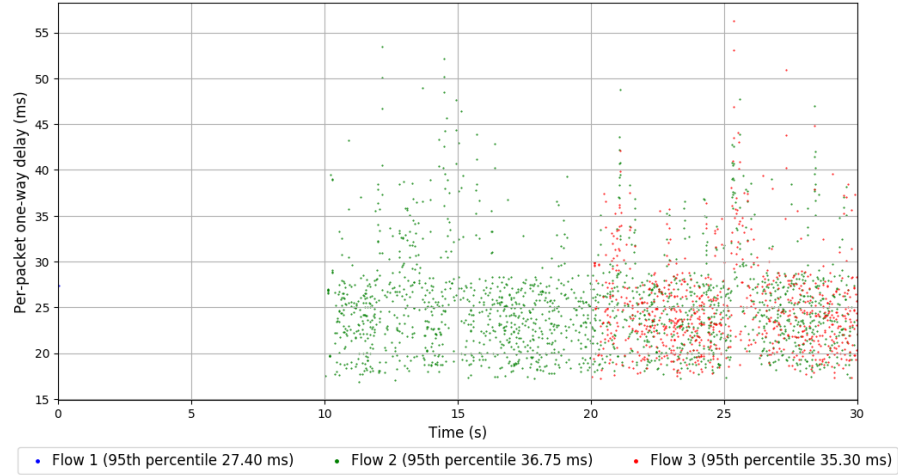
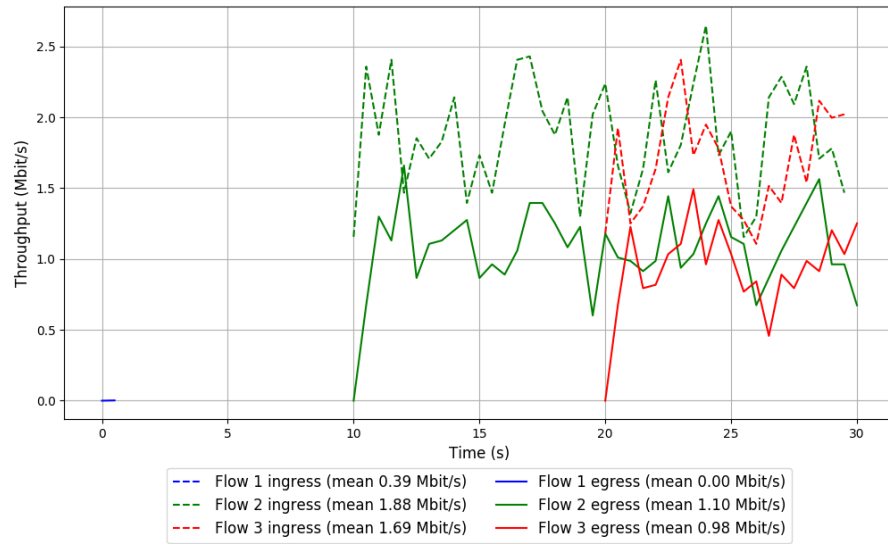


Run 3: Statistics of Copa

Start at: 2018-12-02 04:05:13
End at: 2018-12-02 04:05:43
Local clock offset: 2.42 ms
Remote clock offset: -0.496 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 36.412 ms
Loss rate: 41.53%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 27.400 ms
Loss rate: 97.24%
-- Flow 2:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 36.747 ms
Loss rate: 41.37%
-- Flow 3:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 35.300 ms
Loss rate: 41.76%

Run 3: Report of Copa — Data Link

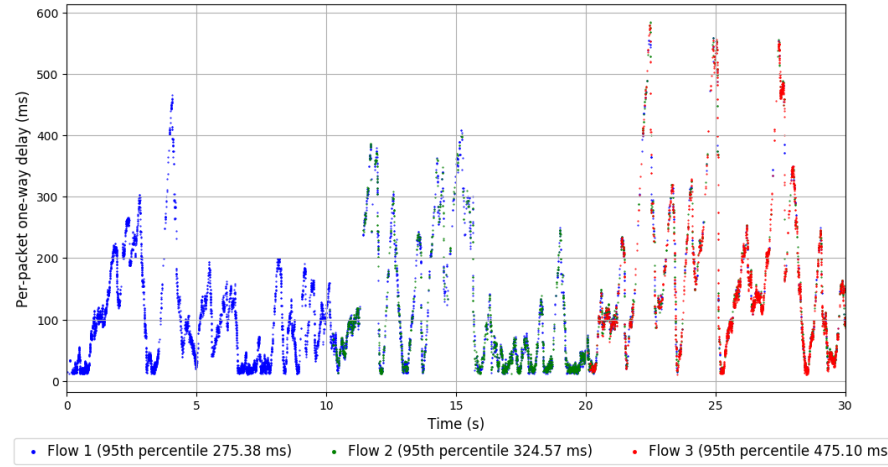
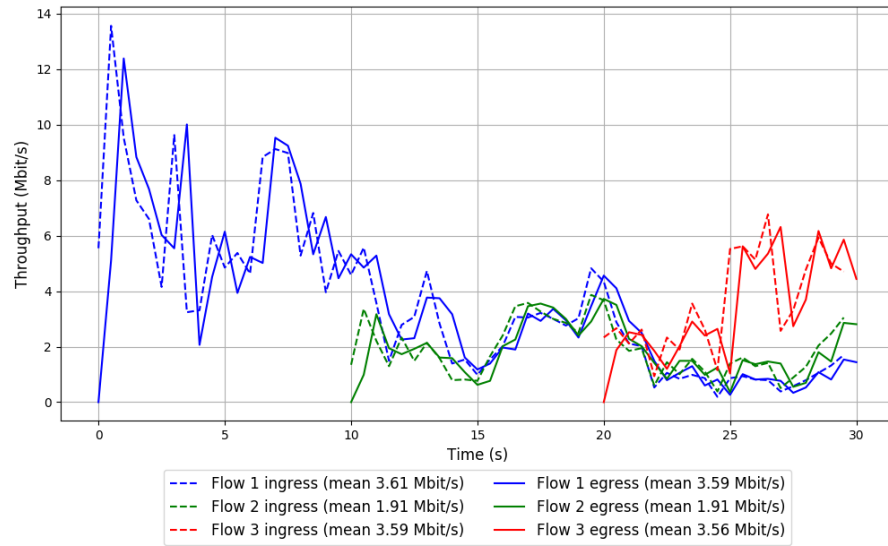


Run 1: Statistics of TCP Cubic

Start at: 2018-12-02 03:15:11
End at: 2018-12-02 03:15:41
Local clock offset: 5.643 ms
Remote clock offset: -3.957 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.03 Mbit/s
95th percentile per-packet one-way delay: 319.057 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 275.385 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 324.571 ms
Loss rate: 0.85%
-- Flow 3:
Average throughput: 3.56 Mbit/s
95th percentile per-packet one-way delay: 475.103 ms
Loss rate: 1.21%

Run 1: Report of TCP Cubic — Data Link

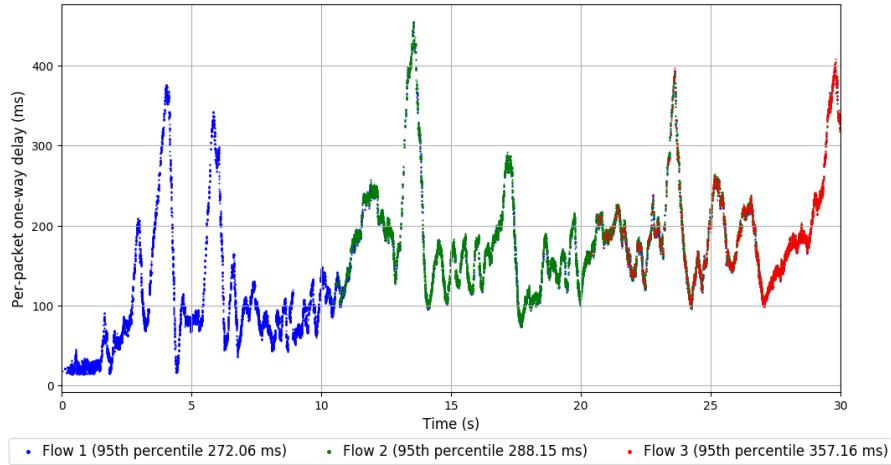
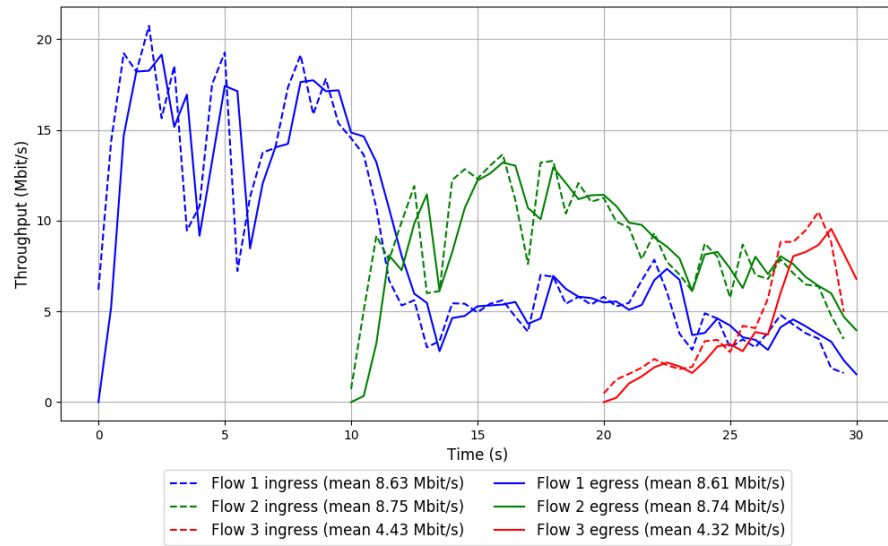


Run 2: Statistics of TCP Cubic

Start at: 2018-12-02 03:36:39
End at: 2018-12-02 03:37:09
Local clock offset: 4.263 ms
Remote clock offset: -0.586 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 15.81 Mbit/s
95th percentile per-packet one-way delay: 287.422 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 8.61 Mbit/s
95th percentile per-packet one-way delay: 272.056 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 8.74 Mbit/s
95th percentile per-packet one-way delay: 288.146 ms
Loss rate: 0.70%
-- Flow 3:
Average throughput: 4.32 Mbit/s
95th percentile per-packet one-way delay: 357.164 ms
Loss rate: 4.02%

Run 2: Report of TCP Cubic — Data Link

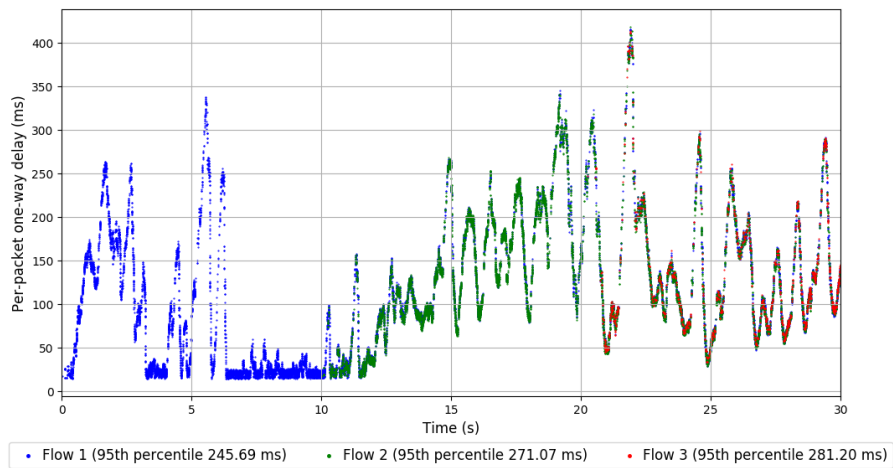
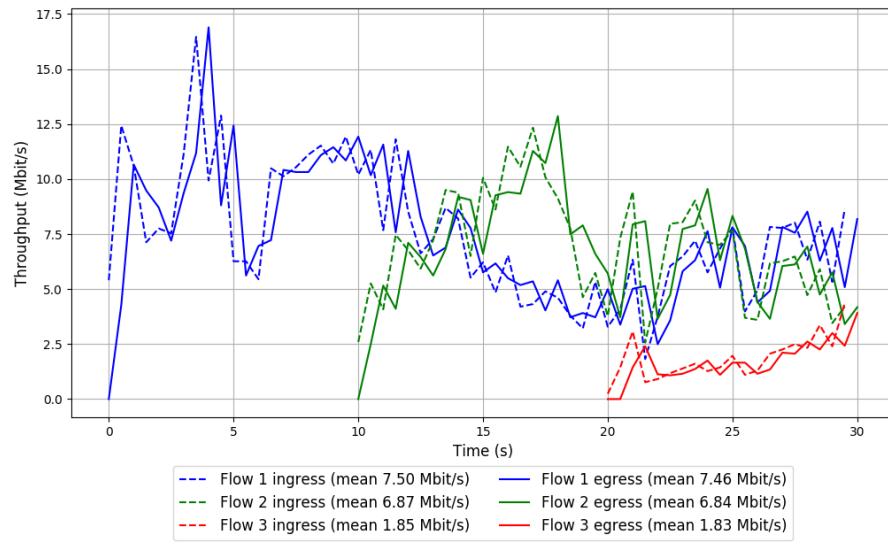


Run 3: Statistics of TCP Cubic

Start at: 2018-12-02 03:58:14
End at: 2018-12-02 03:58:44
Local clock offset: 3.306 ms
Remote clock offset: -1.744 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 256.447 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 7.46 Mbit/s
95th percentile per-packet one-way delay: 245.689 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 6.84 Mbit/s
95th percentile per-packet one-way delay: 271.072 ms
Loss rate: 0.47%
-- Flow 3:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 281.204 ms
Loss rate: 3.64%

Run 3: Report of TCP Cubic — Data Link

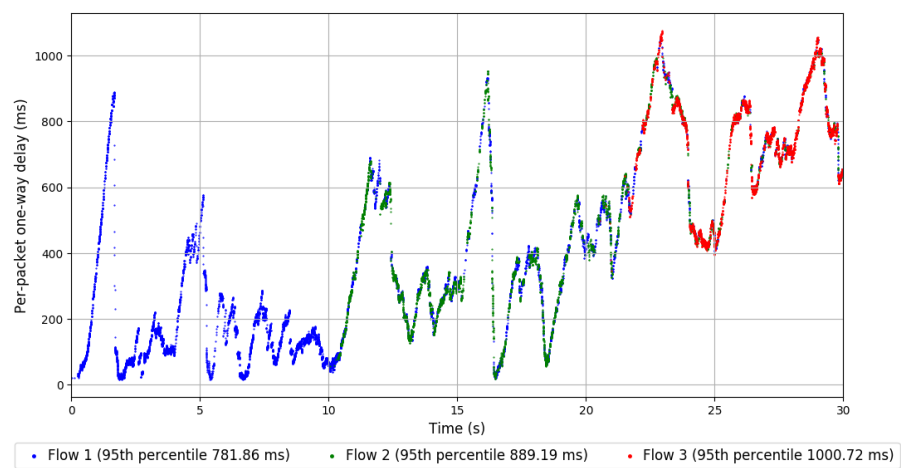
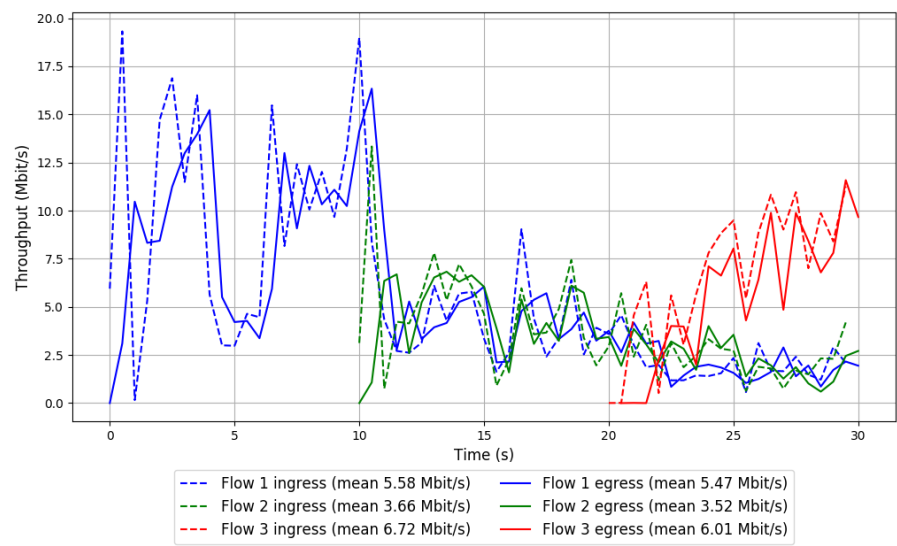


Run 1: Statistics of FillP

Start at: 2018-12-02 03:20:50
End at: 2018-12-02 03:21:20
Local clock offset: 1.642 ms
Remote clock offset: -4.357 ms

Below is generated by plot.py at 2018-12-02 04:11:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.70 Mbit/s
95th percentile per-packet one-way delay: 910.939 ms
Loss rate: 5.36%
-- Flow 1:
Average throughput: 5.47 Mbit/s
95th percentile per-packet one-way delay: 781.863 ms
Loss rate: 2.12%
-- Flow 2:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 889.187 ms
Loss rate: 4.10%
-- Flow 3:
Average throughput: 6.01 Mbit/s
95th percentile per-packet one-way delay: 1000.723 ms
Loss rate: 14.84%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-12-02 03:42:18

End at: 2018-12-02 03:42:48

Local clock offset: 3.992 ms

Remote clock offset: -1.44 ms

Below is generated by plot.py at 2018-12-02 04:11:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 15.57 Mbit/s

95th percentile per-packet one-way delay: 925.065 ms

Loss rate: 4.72%

-- Flow 1:

Average throughput: 8.81 Mbit/s

95th percentile per-packet one-way delay: 827.728 ms

Loss rate: 3.05%

-- Flow 2:

Average throughput: 7.09 Mbit/s

95th percentile per-packet one-way delay: 928.797 ms

Loss rate: 3.51%

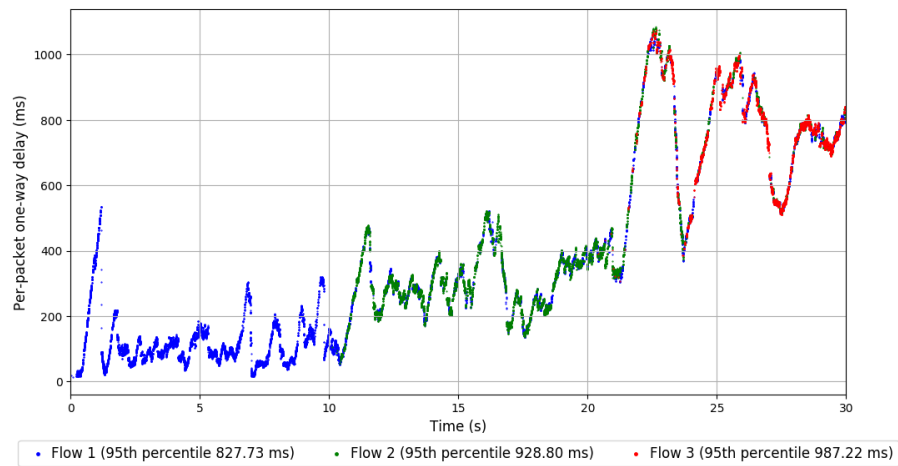
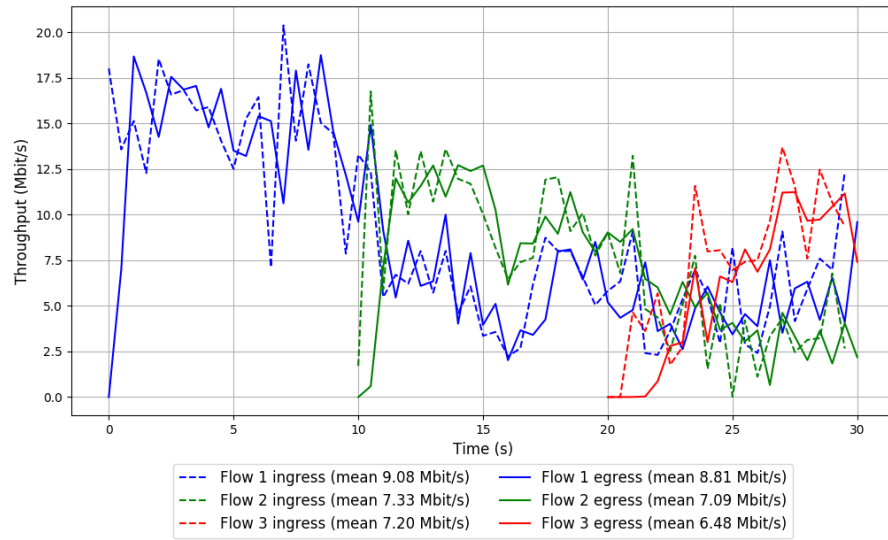
-- Flow 3:

Average throughput: 6.48 Mbit/s

95th percentile per-packet one-way delay: 987.215 ms

Loss rate: 13.53%

Run 2: Report of FillP — Data Link

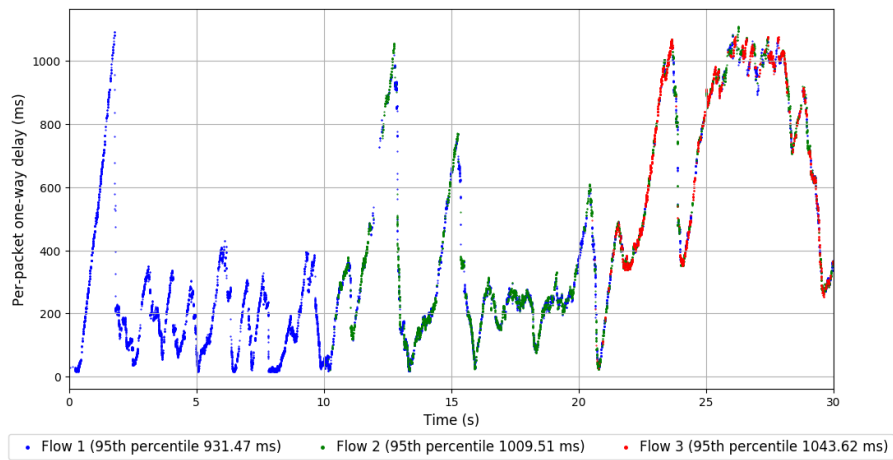
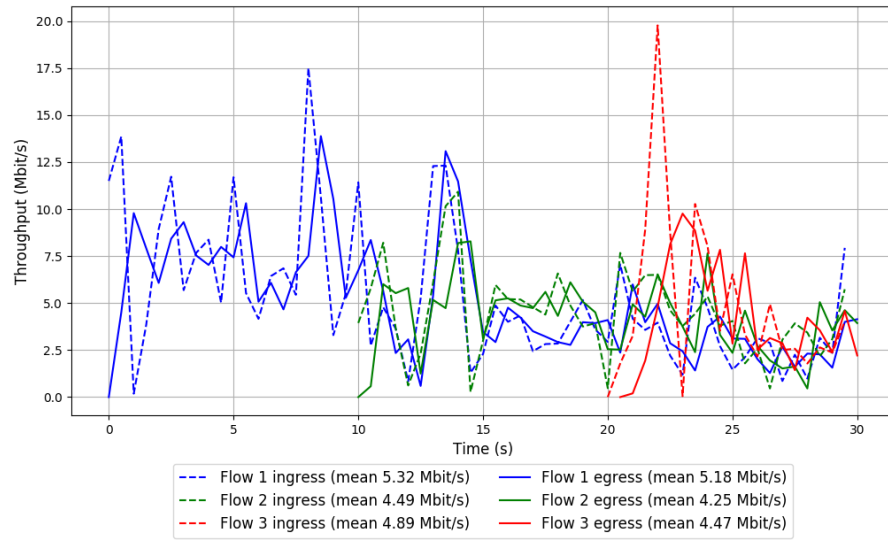


Run 3: Statistics of FillP

Start at: 2018-12-02 04:04:05
End at: 2018-12-02 04:04:35
Local clock offset: 1.103 ms
Remote clock offset: -0.956 ms

Below is generated by plot.py at 2018-12-02 04:11:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.42 Mbit/s
95th percentile per-packet one-way delay: 1005.749 ms
Loss rate: 5.12%
-- Flow 1:
Average throughput: 5.18 Mbit/s
95th percentile per-packet one-way delay: 931.465 ms
Loss rate: 2.73%
-- Flow 2:
Average throughput: 4.25 Mbit/s
95th percentile per-packet one-way delay: 1009.514 ms
Loss rate: 5.10%
-- Flow 3:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 1043.619 ms
Loss rate: 12.99%

Run 3: Report of FillP — Data Link

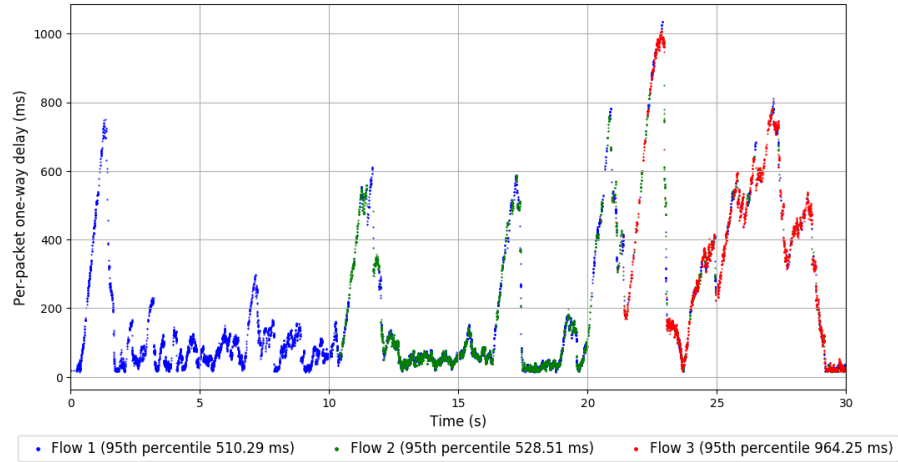
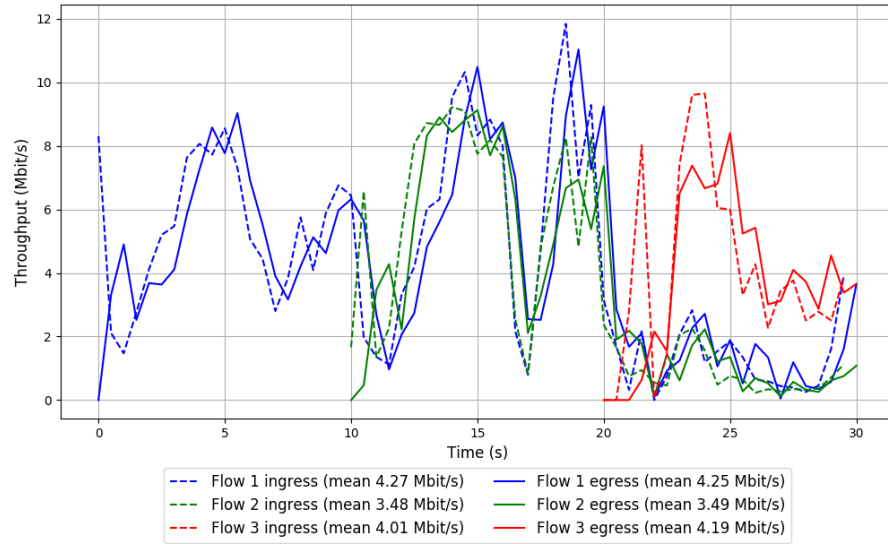


Run 1: Statistics of FillP-Sheep

Start at: 2018-12-02 03:17:26
End at: 2018-12-02 03:17:56
Local clock offset: 3.28 ms
Remote clock offset: -4.045 ms

Below is generated by plot.py at 2018-12-02 04:11:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 7.89 Mbit/s
95th percentile per-packet one-way delay: 594.281 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 4.25 Mbit/s
95th percentile per-packet one-way delay: 510.293 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 3.49 Mbit/s
95th percentile per-packet one-way delay: 528.512 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 4.19 Mbit/s
95th percentile per-packet one-way delay: 964.251 ms
Loss rate: 0.74%

Run 1: Report of FillP-Sheep — Data Link

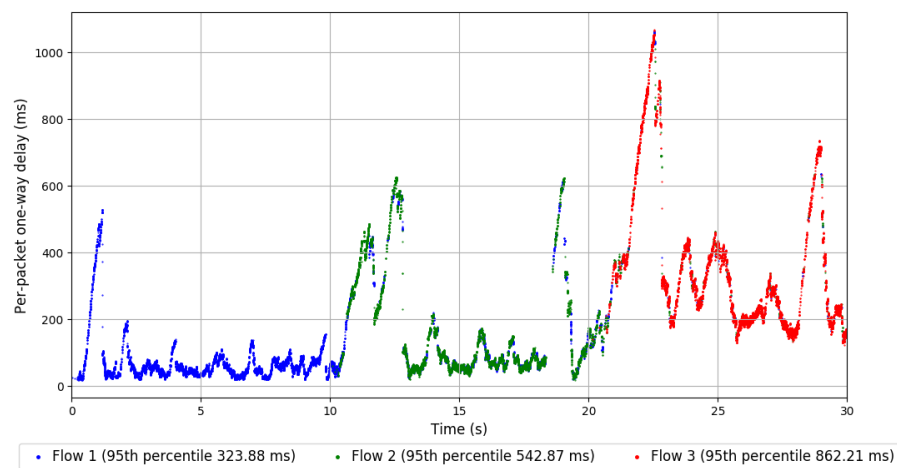
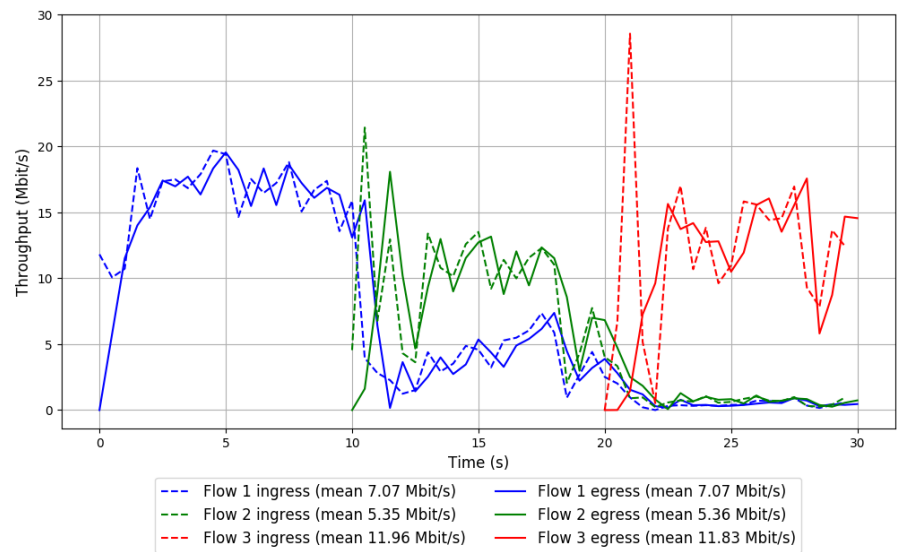


Run 2: Statistics of FillP-Sheep

Start at: 2018-12-02 03:38:55
End at: 2018-12-02 03:39:25
Local clock offset: 0.544 ms
Remote clock offset: -0.956 ms

Below is generated by plot.py at 2018-12-02 04:12:11
Datalink statistics
-- Total of 3 flows:
Average throughput: 14.50 Mbit/s
95th percentile per-packet one-way delay: 586.824 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 7.07 Mbit/s
95th percentile per-packet one-way delay: 323.879 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 5.36 Mbit/s
95th percentile per-packet one-way delay: 542.873 ms
Loss rate: 0.29%
-- Flow 3:
Average throughput: 11.83 Mbit/s
95th percentile per-packet one-way delay: 862.207 ms
Loss rate: 2.34%

Run 2: Report of FillP-Sheep — Data Link

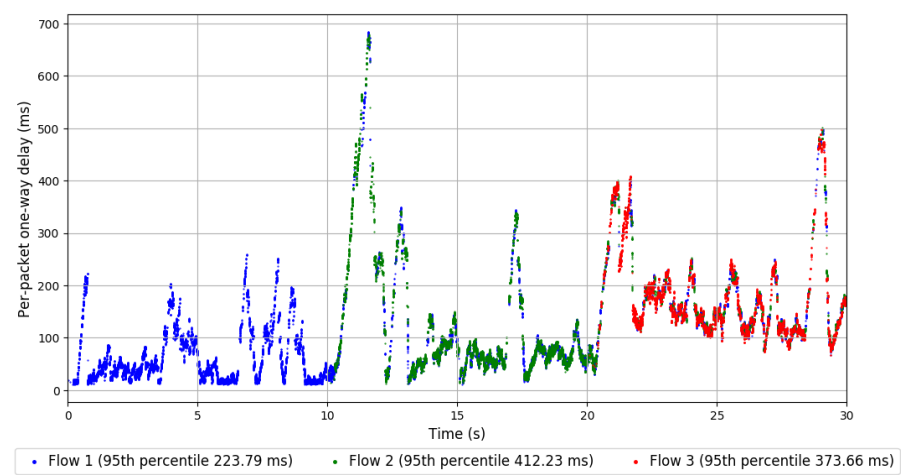
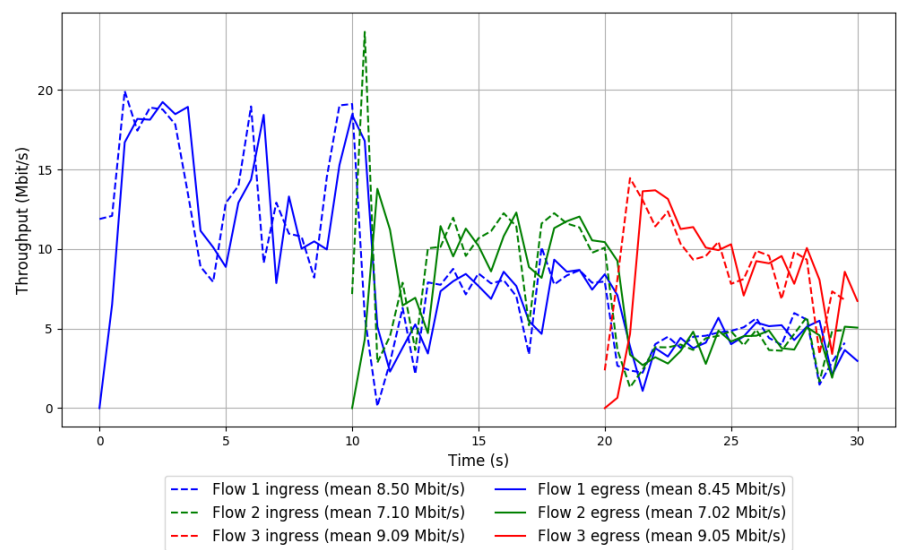


Run 3: Statistics of FillP-Sheep

Start at: 2018-12-02 04:00:36
End at: 2018-12-02 04:01:06
Local clock offset: 4.457 ms
Remote clock offset: -1.971 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 16.09 Mbit/s
95th percentile per-packet one-way delay: 337.206 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 8.45 Mbit/s
95th percentile per-packet one-way delay: 223.790 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 7.02 Mbit/s
95th percentile per-packet one-way delay: 412.226 ms
Loss rate: 1.34%
-- Flow 3:
Average throughput: 9.05 Mbit/s
95th percentile per-packet one-way delay: 373.664 ms
Loss rate: 1.12%

Run 3: Report of FillP-Sheep — Data Link

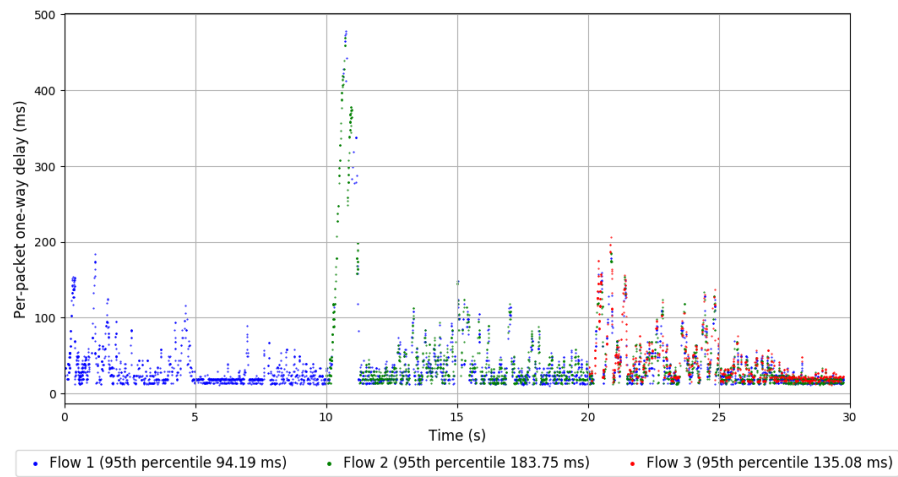
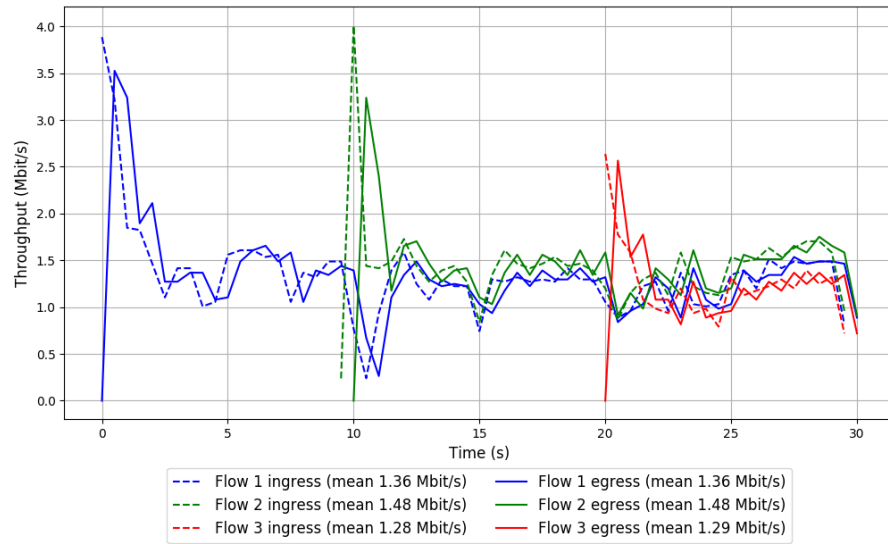


Run 1: Statistics of Indigo

Start at: 2018-12-02 03:19:41
End at: 2018-12-02 03:20:11
Local clock offset: 5.314 ms
Remote clock offset: -4.874 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 126.011 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 94.192 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 183.748 ms
Loss rate: 0.25%
-- Flow 3:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 135.084 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

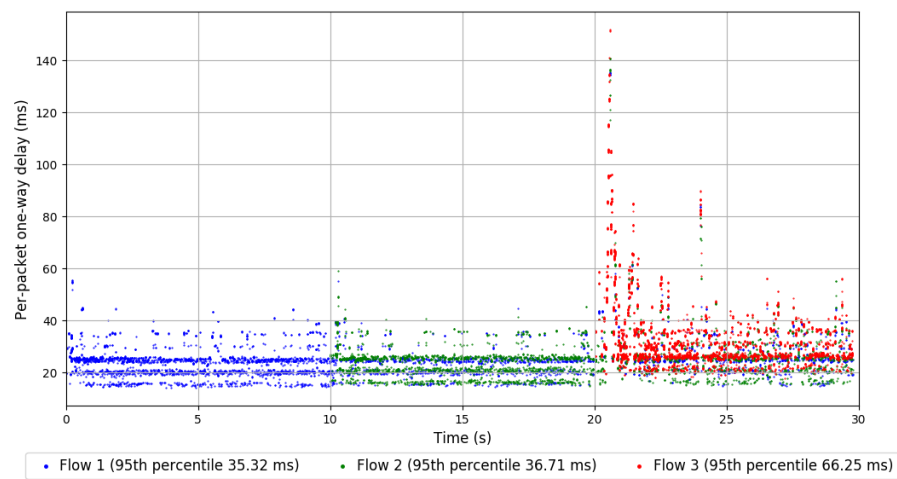
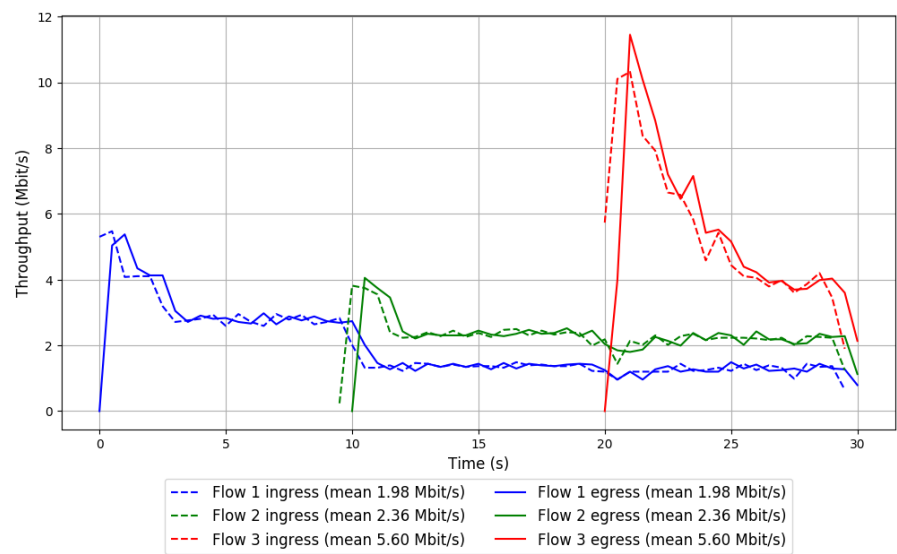


Run 2: Statistics of Indigo

Start at: 2018-12-02 03:41:11
End at: 2018-12-02 03:41:41
Local clock offset: 1.22 ms
Remote clock offset: -1.407 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 5.37 Mbit/s
95th percentile per-packet one-way delay: 48.801 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 35.321 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 36.710 ms
Loss rate: 0.21%
-- Flow 3:
Average throughput: 5.60 Mbit/s
95th percentile per-packet one-way delay: 66.255 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

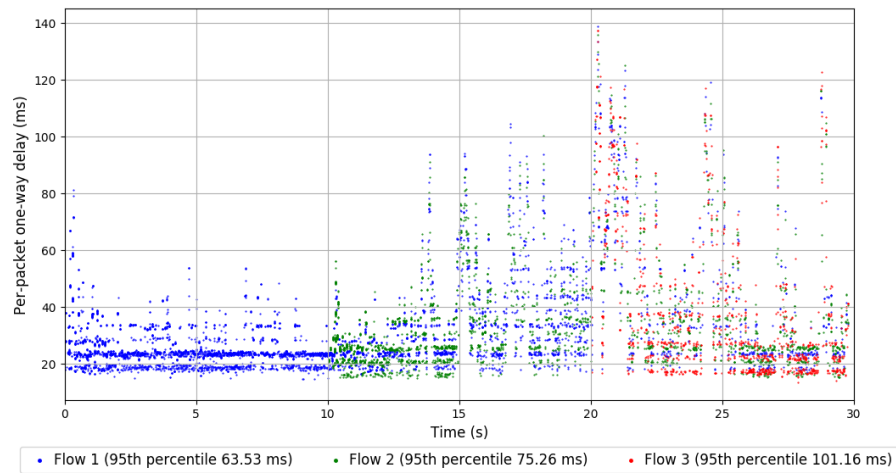
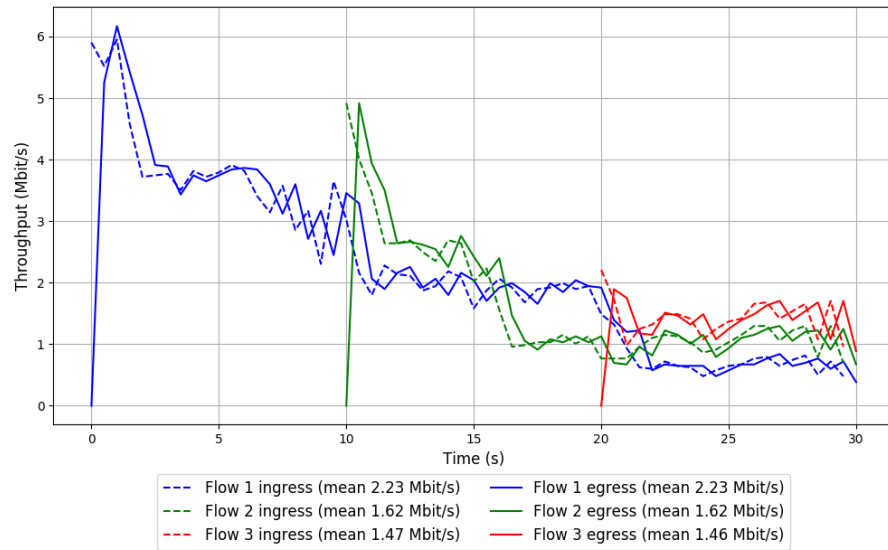


Run 3: Statistics of Indigo

Start at: 2018-12-02 04:02:55
End at: 2018-12-02 04:03:25
Local clock offset: 1.992 ms
Remote clock offset: -1.226 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 73.817 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 2.23 Mbit/s
95th percentile per-packet one-way delay: 63.535 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 75.260 ms
Loss rate: 0.15%
-- Flow 3:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 101.156 ms
Loss rate: 0.33%

Run 3: Report of Indigo — Data Link

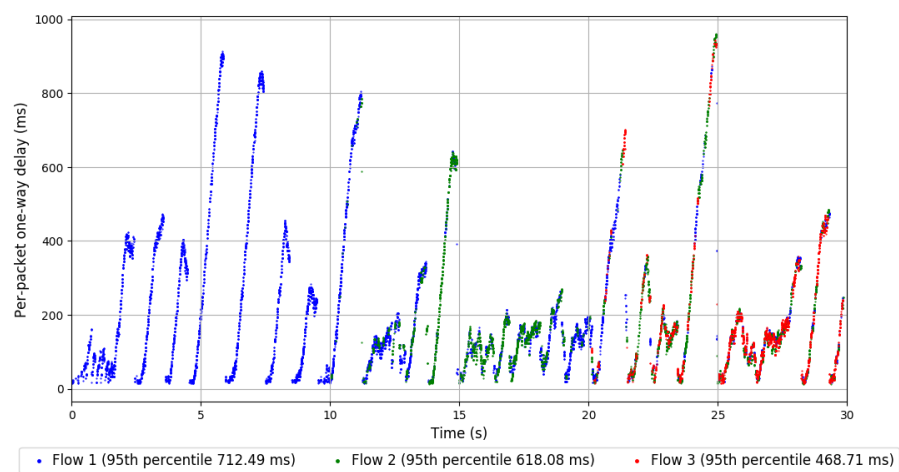
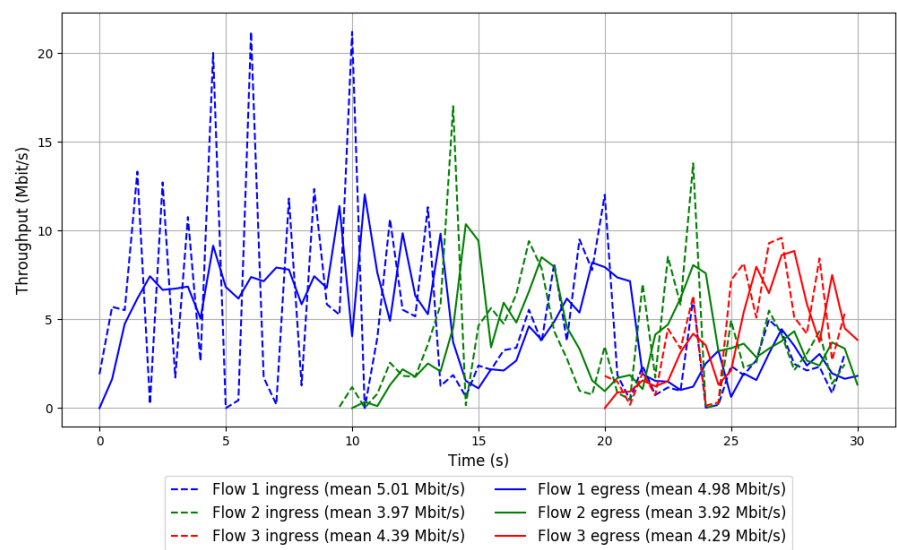


Run 1: Statistics of Indigo-96d2da3

Start at: 2018-12-02 03:25:22
End at: 2018-12-02 03:25:52
Local clock offset: 1.61 ms
Remote clock offset: -4.676 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.98 Mbit/s
95th percentile per-packet one-way delay: 663.504 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 4.98 Mbit/s
95th percentile per-packet one-way delay: 712.485 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 3.92 Mbit/s
95th percentile per-packet one-way delay: 618.080 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 4.29 Mbit/s
95th percentile per-packet one-way delay: 468.706 ms
Loss rate: 3.22%

Run 1: Report of Indigo-96d2da3 — Data Link

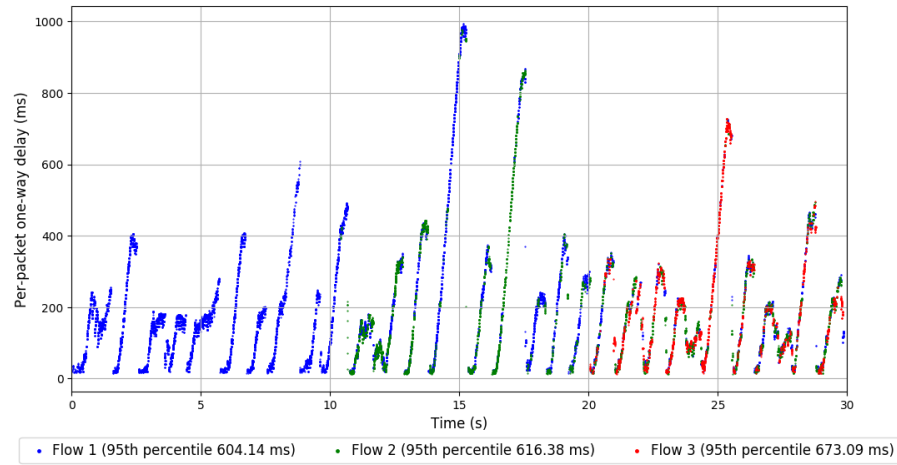
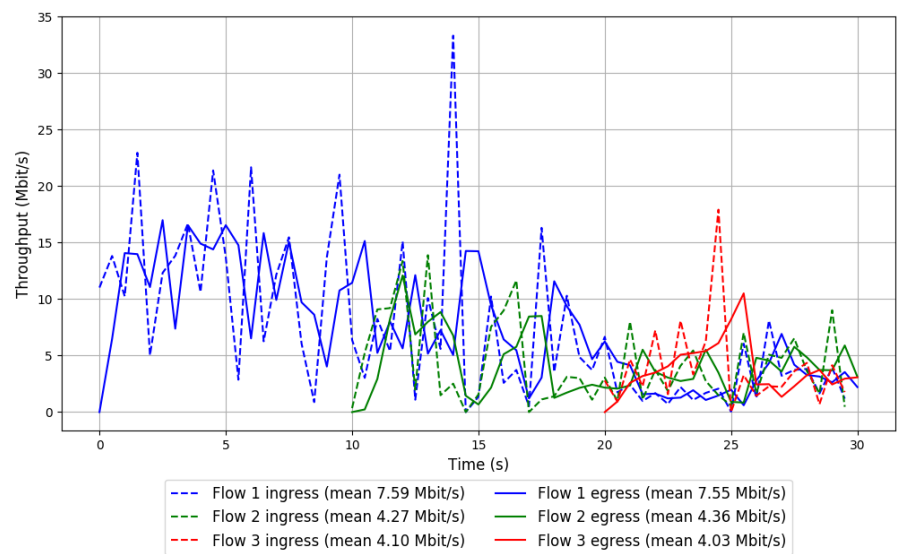


Run 2: Statistics of Indigo-96d2da3

Start at: 2018-12-02 03:46:50
End at: 2018-12-02 03:47:20
Local clock offset: 1.911 ms
Remote clock offset: -2.732 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 11.70 Mbit/s
95th percentile per-packet one-way delay: 628.022 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 7.55 Mbit/s
95th percentile per-packet one-way delay: 604.142 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 4.36 Mbit/s
95th percentile per-packet one-way delay: 616.380 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 673.092 ms
Loss rate: 0.12%

Run 2: Report of Indigo-96d2da3 — Data Link



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-12-02 04:08:35

End at: 2018-12-02 04:09:05

Local clock offset: 1.724 ms

Remote clock offset: -2.04 ms

Below is generated by plot.py at 2018-12-02 04:12:14

Datalink statistics

-- Total of 3 flows:

Average throughput: 12.55 Mbit/s

95th percentile per-packet one-way delay: 491.849 ms

Loss rate: 0.45%

-- Flow 1:

Average throughput: 7.33 Mbit/s

95th percentile per-packet one-way delay: 481.898 ms

Loss rate: 0.56%

-- Flow 2:

Average throughput: 4.99 Mbit/s

95th percentile per-packet one-way delay: 516.403 ms

Loss rate: 0.24%

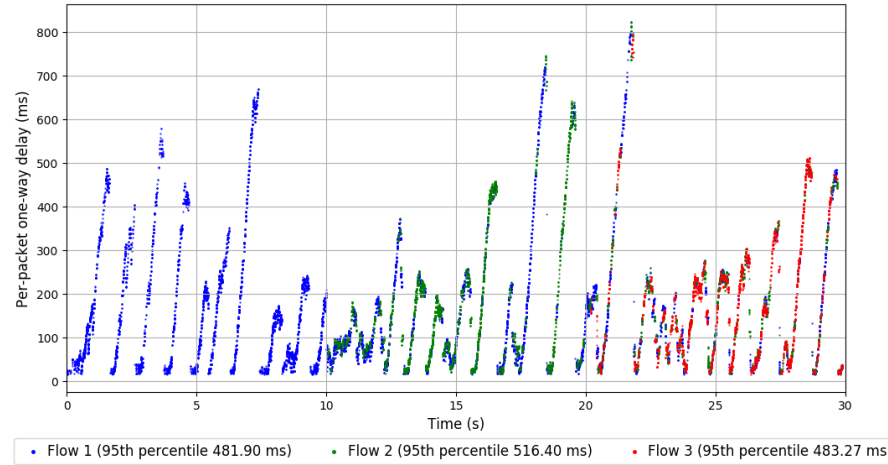
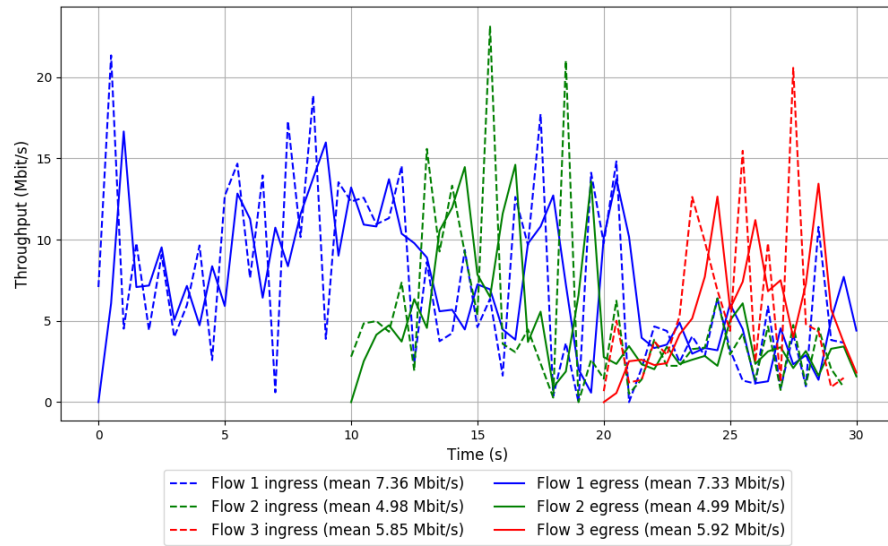
-- Flow 3:

Average throughput: 5.92 Mbit/s

95th percentile per-packet one-way delay: 483.272 ms

Loss rate: 0.40%

Run 3: Report of Indigo-96d2da3 — Data Link

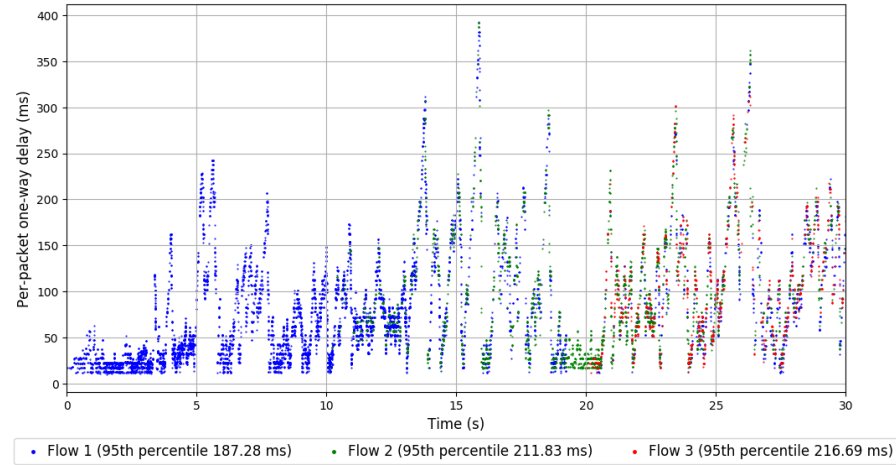
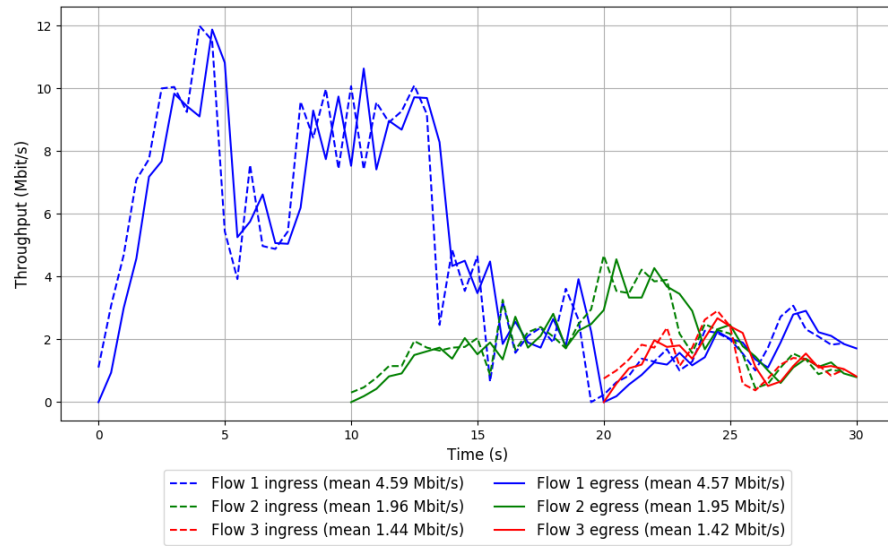


Run 1: Statistics of LEDBAT

Start at: 2018-12-02 03:08:26
End at: 2018-12-02 03:08:56
Local clock offset: 3.273 ms
Remote clock offset: -4.405 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.33 Mbit/s
95th percentile per-packet one-way delay: 197.007 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 4.57 Mbit/s
95th percentile per-packet one-way delay: 187.276 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 211.832 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 216.691 ms
Loss rate: 1.31%

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-12-02 03:29:52

End at: 2018-12-02 03:30:22

Local clock offset: 1.68 ms

Remote clock offset: -5.03 ms

Below is generated by plot.py at 2018-12-02 04:12:14

Datalink statistics

-- Total of 3 flows:

Average throughput: 9.83 Mbit/s

95th percentile per-packet one-way delay: 160.222 ms

Loss rate: 0.85%

-- Flow 1:

Average throughput: 4.34 Mbit/s

95th percentile per-packet one-way delay: 138.795 ms

Loss rate: 1.29%

-- Flow 2:

Average throughput: 6.84 Mbit/s

95th percentile per-packet one-way delay: 157.627 ms

Loss rate: 0.48%

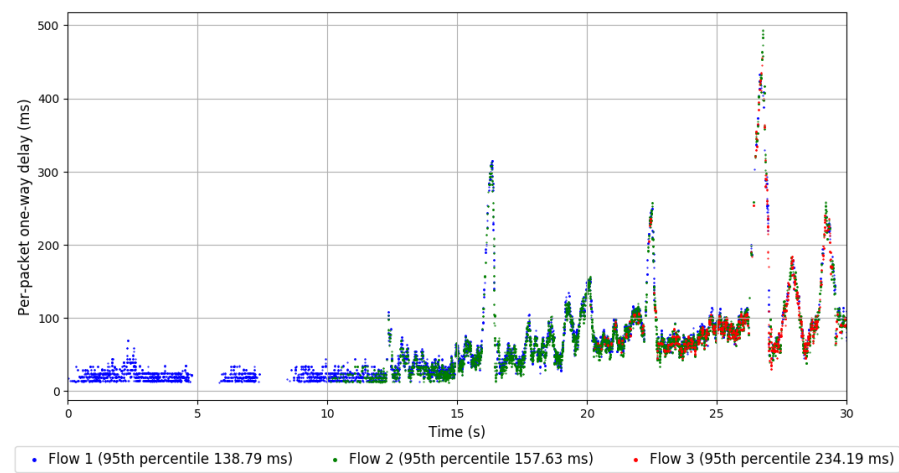
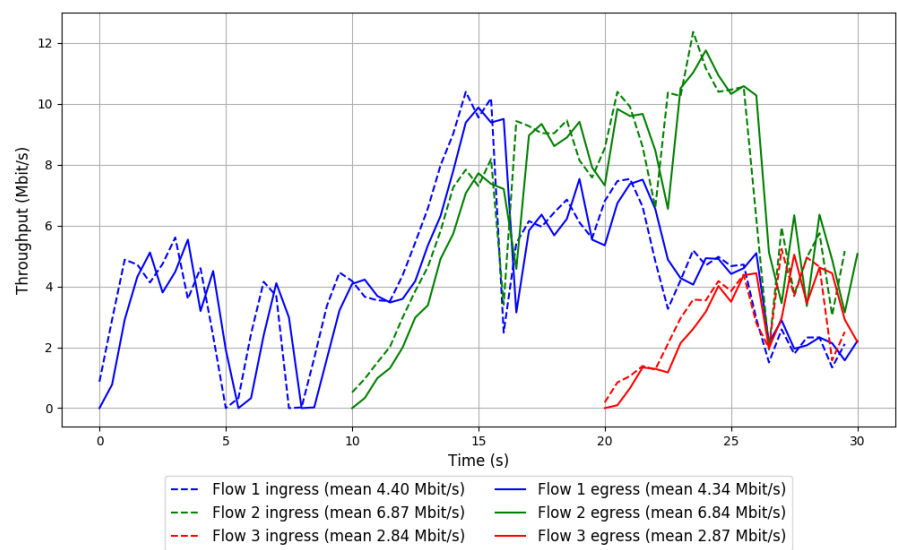
-- Flow 3:

Average throughput: 2.87 Mbit/s

95th percentile per-packet one-way delay: 234.193 ms

Loss rate: 0.62%

Run 2: Report of LEDBAT — Data Link

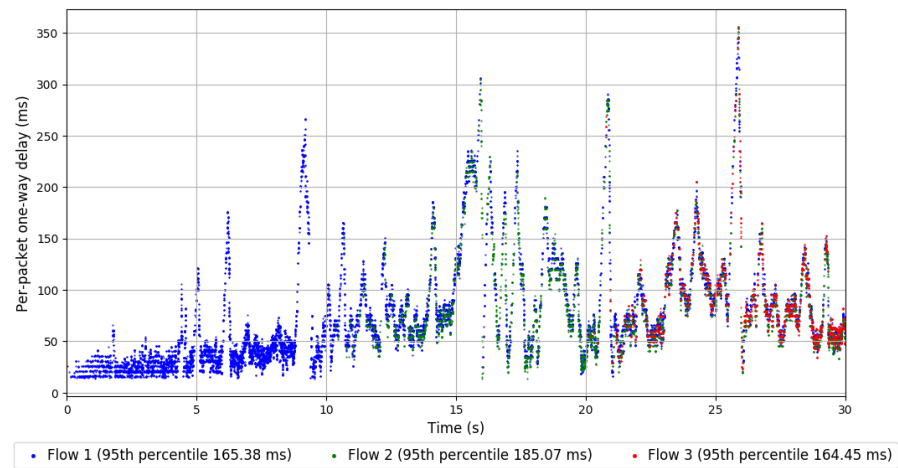
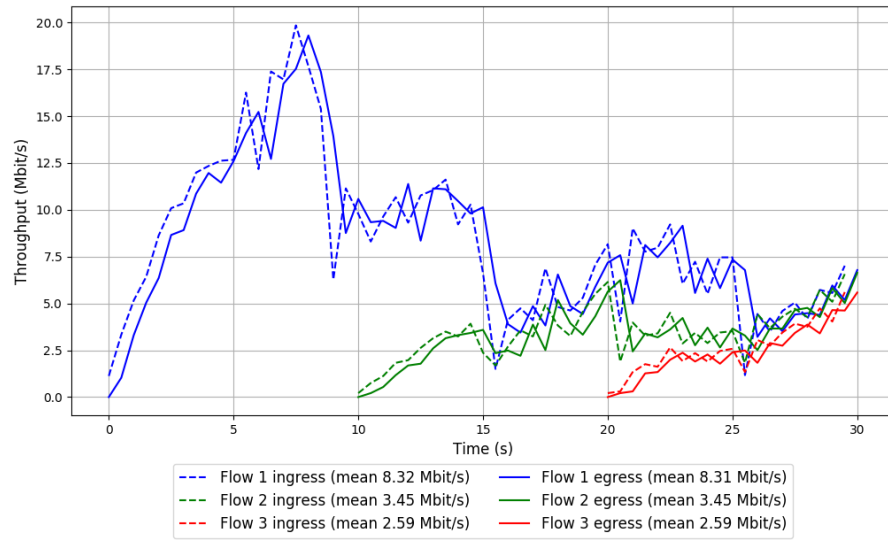


Run 3: Statistics of LEDBAT

Start at: 2018-12-02 03:51:22
End at: 2018-12-02 03:51:52
Local clock offset: 4.711 ms
Remote clock offset: -1.711 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 11.46 Mbit/s
95th percentile per-packet one-way delay: 170.287 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 8.31 Mbit/s
95th percentile per-packet one-way delay: 165.376 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 185.069 ms
Loss rate: 0.34%
-- Flow 3:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 164.450 ms
Loss rate: 0.77%

Run 3: Report of LEDBAT — Data Link

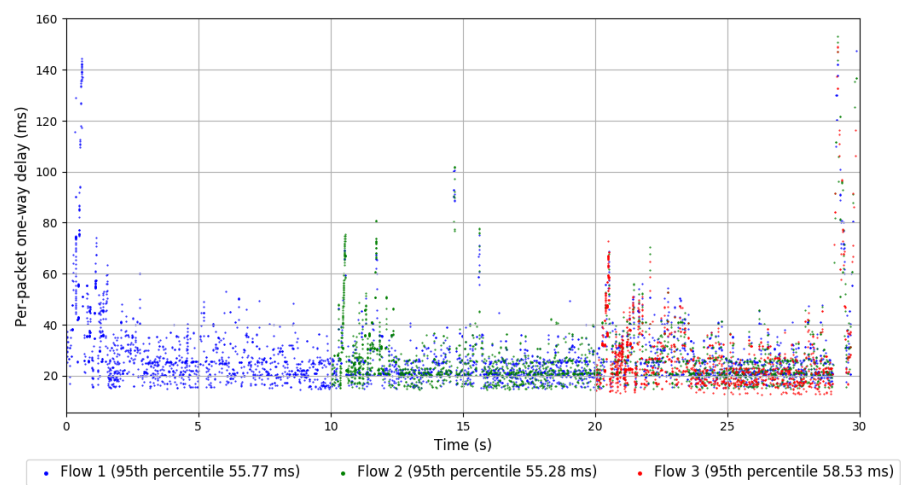
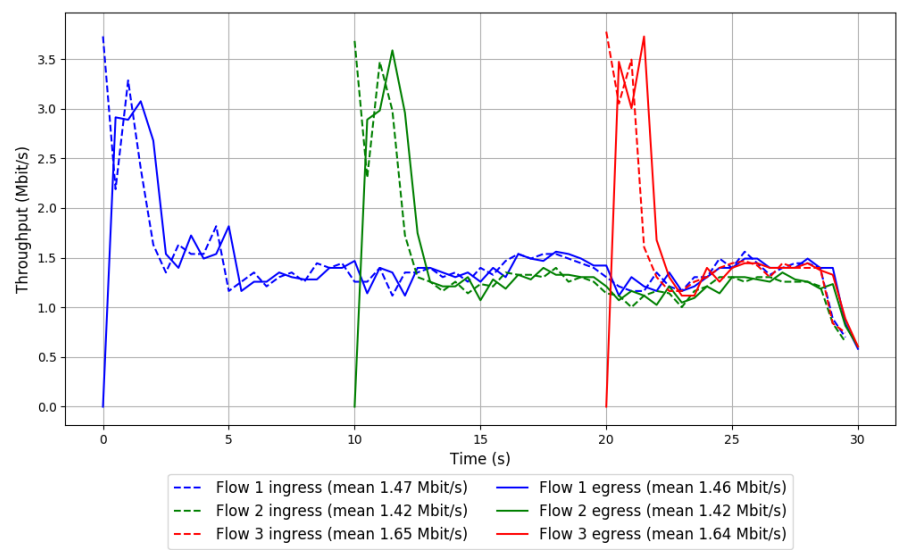


Run 1: Statistics of Indigo-Muses

Start at: 2018-12-02 03:24:15
End at: 2018-12-02 03:24:45
Local clock offset: 0.941 ms
Remote clock offset: -4.885 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 2.94 Mbit/s
95th percentile per-packet one-way delay: 55.909 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 55.769 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 55.276 ms
Loss rate: 0.25%
-- Flow 3:
Average throughput: 1.64 Mbit/s
95th percentile per-packet one-way delay: 58.527 ms
Loss rate: 0.58%

Run 1: Report of Indigo-Muses — Data Link

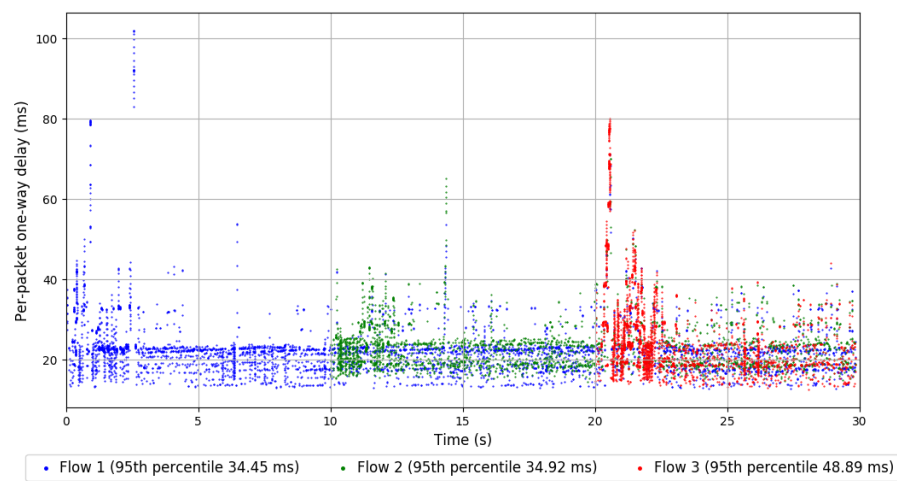
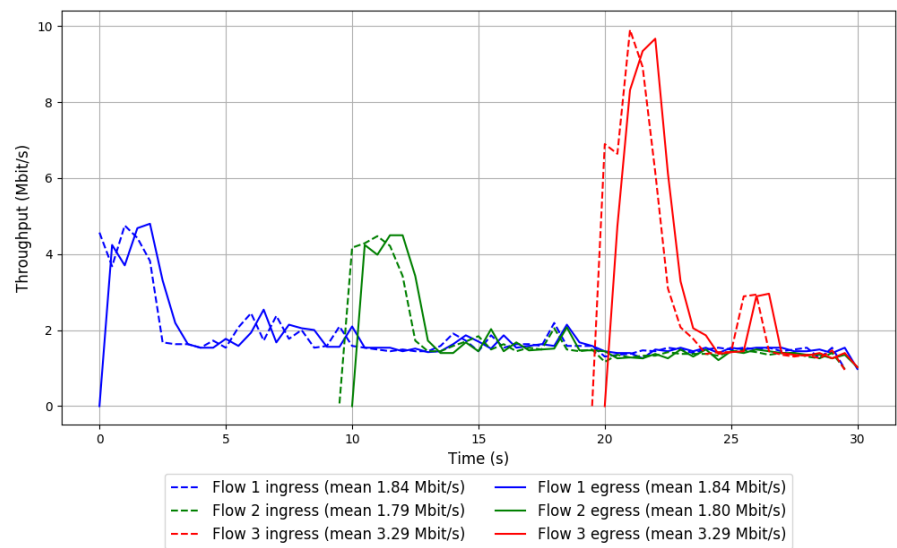


Run 2: Statistics of Indigo-Muses

Start at: 2018-12-02 03:45:42
End at: 2018-12-02 03:46:12
Local clock offset: 3.642 ms
Remote clock offset: -1.616 ms

Below is generated by plot.py at 2018-12-02 04:12:14
Datalink statistics
-- Total of 3 flows:
Average throughput: 4.12 Mbit/s
95th percentile per-packet one-way delay: 38.960 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 34.452 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 34.919 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 48.894 ms
Loss rate: 0.00%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-12-02 04:07:28

End at: 2018-12-02 04:07:58

Local clock offset: 1.694 ms

Remote clock offset: 0.174 ms

Below is generated by plot.py at 2018-12-02 04:12:14

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.24 Mbit/s

95th percentile per-packet one-way delay: 46.696 ms

Loss rate: 0.11%

-- Flow 1:

Average throughput: 1.61 Mbit/s

95th percentile per-packet one-way delay: 46.707 ms

Loss rate: 0.07%

-- Flow 2:

Average throughput: 1.53 Mbit/s

95th percentile per-packet one-way delay: 44.975 ms

Loss rate: 0.15%

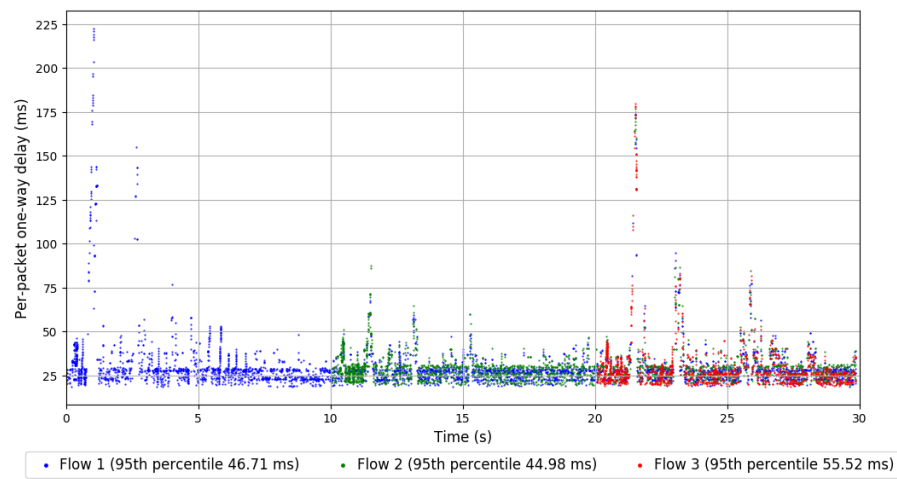
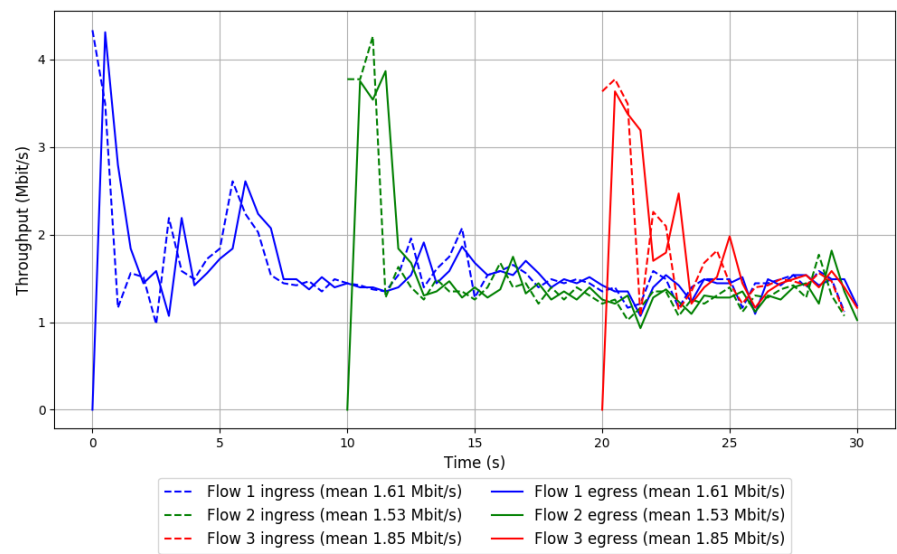
-- Flow 3:

Average throughput: 1.85 Mbit/s

95th percentile per-packet one-way delay: 55.524 ms

Loss rate: 0.13%

Run 3: Report of Indigo-Muses — Data Link

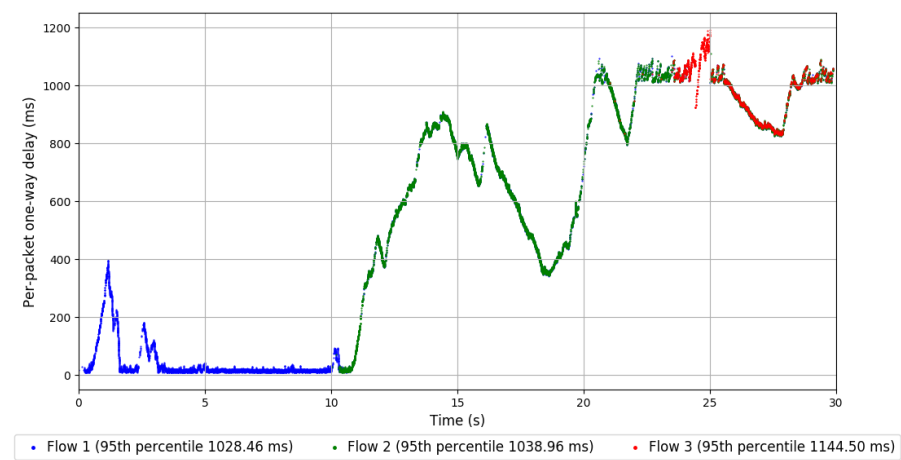
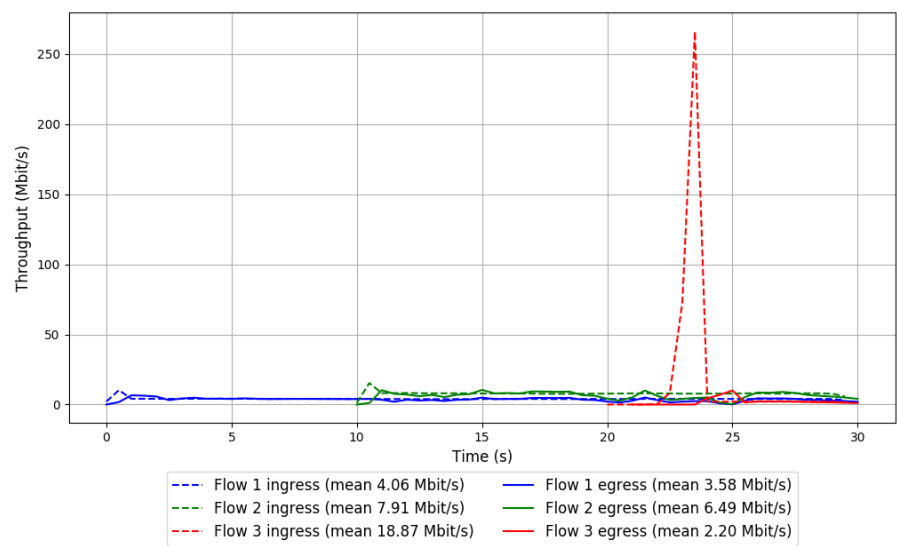


Run 1: Statistics of PCC-Allegro

Start at: 2018-12-02 03:12:55
End at: 2018-12-02 03:13:25
Local clock offset: 5.133 ms
Remote clock offset: -4.206 ms

Below is generated by plot.py at 2018-12-02 04:12:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.54 Mbit/s
95th percentile per-packet one-way delay: 1051.156 ms
Loss rate: 45.10%
-- Flow 1:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 1028.460 ms
Loss rate: 11.90%
-- Flow 2:
Average throughput: 6.49 Mbit/s
95th percentile per-packet one-way delay: 1038.961 ms
Loss rate: 18.16%
-- Flow 3:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 1144.502 ms
Loss rate: 89.53%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-12-02 03:34:22

End at: 2018-12-02 03:34:53

Local clock offset: 2.747 ms

Remote clock offset: 0.425 ms

Below is generated by plot.py at 2018-12-02 04:12:25

Datalink statistics

-- Total of 3 flows:

Average throughput: 7.31 Mbit/s

95th percentile per-packet one-way delay: 1063.537 ms

Loss rate: 46.15%

-- Flow 1:

Average throughput: 3.64 Mbit/s

95th percentile per-packet one-way delay: 1033.796 ms

Loss rate: 12.52%

-- Flow 2:

Average throughput: 3.37 Mbit/s

95th percentile per-packet one-way delay: 1043.107 ms

Loss rate: 18.76%

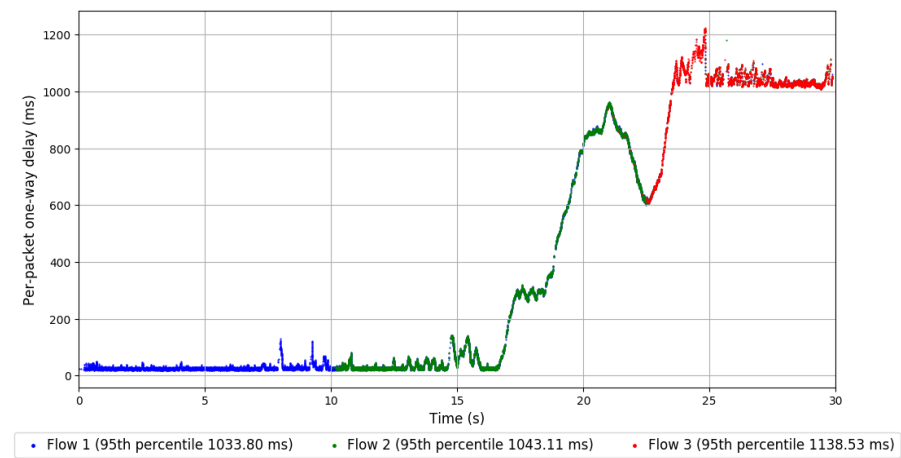
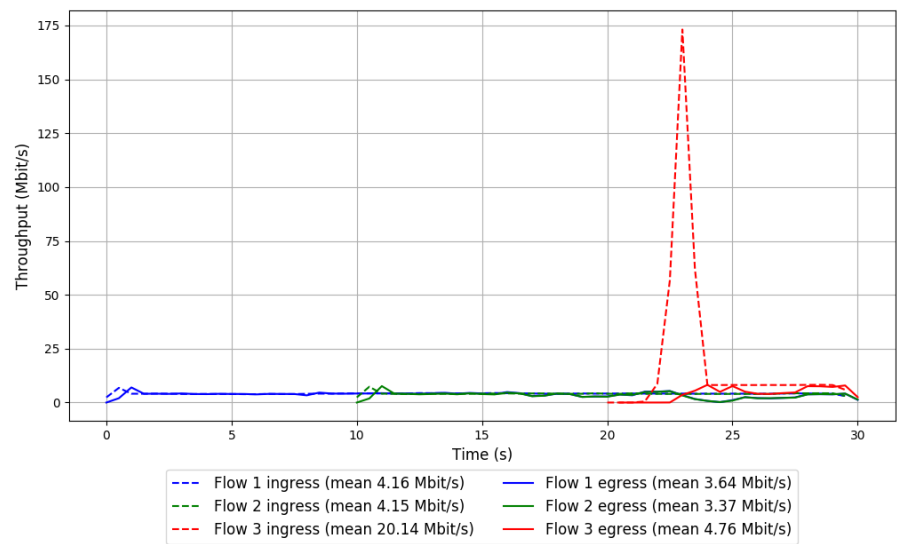
-- Flow 3:

Average throughput: 4.76 Mbit/s

95th percentile per-packet one-way delay: 1138.526 ms

Loss rate: 78.60%

Run 2: Report of PCC-Allegro — Data Link

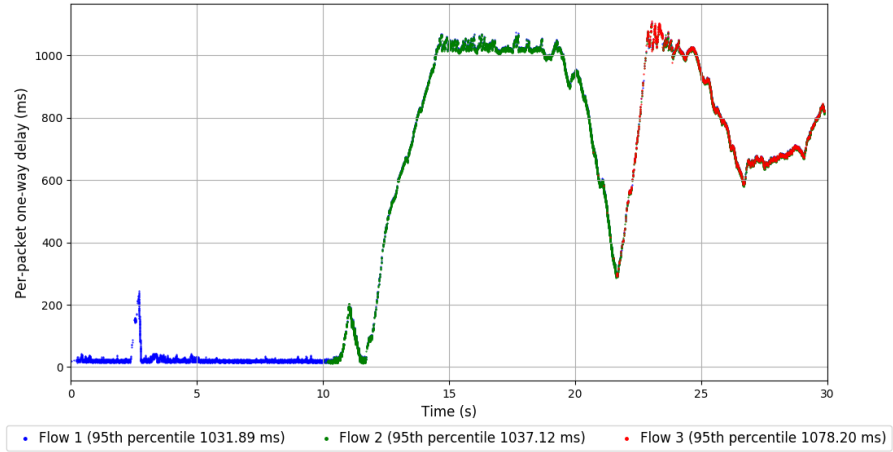
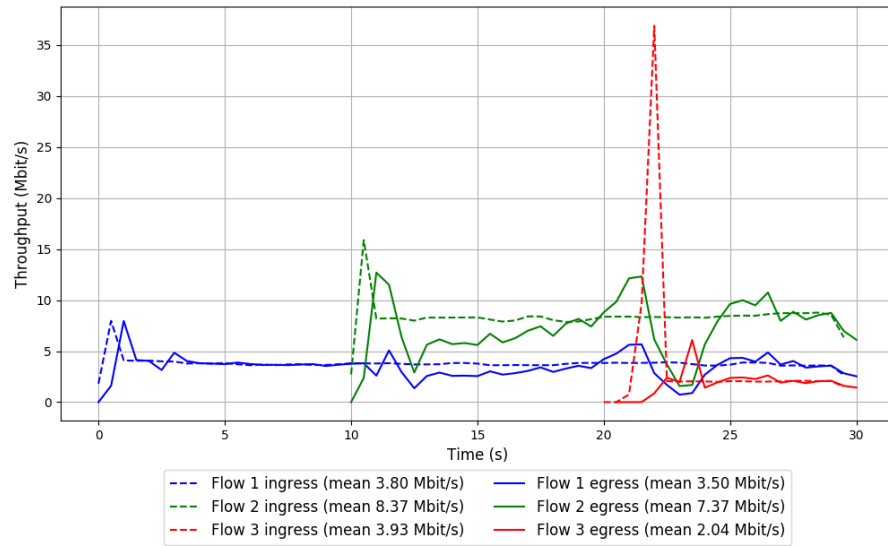


Run 3: Statistics of PCC-Allegro

Start at: 2018-12-02 03:55:59
End at: 2018-12-02 03:56:29
Local clock offset: 3.325 ms
Remote clock offset: -2.137 ms

Below is generated by plot.py at 2018-12-02 04:12:26
Datalink statistics
-- Total of 3 flows:
Average throughput: 9.02 Mbit/s
95th percentile per-packet one-way delay: 1038.257 ms
Loss rate: 15.37%
-- Flow 1:
Average throughput: 3.50 Mbit/s
95th percentile per-packet one-way delay: 1031.889 ms
Loss rate: 7.86%
-- Flow 2:
Average throughput: 7.37 Mbit/s
95th percentile per-packet one-way delay: 1037.123 ms
Loss rate: 12.03%
-- Flow 3:
Average throughput: 2.04 Mbit/s
95th percentile per-packet one-way delay: 1078.200 ms
Loss rate: 51.69%

Run 3: Report of PCC-Allegro — Data Link

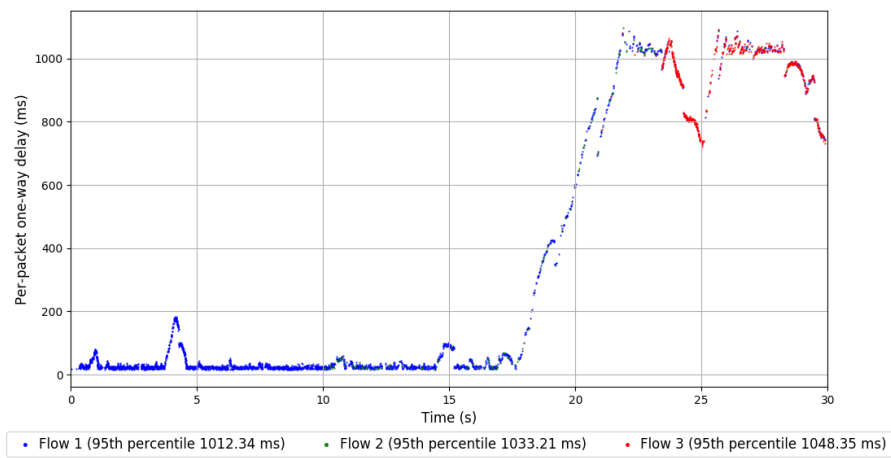
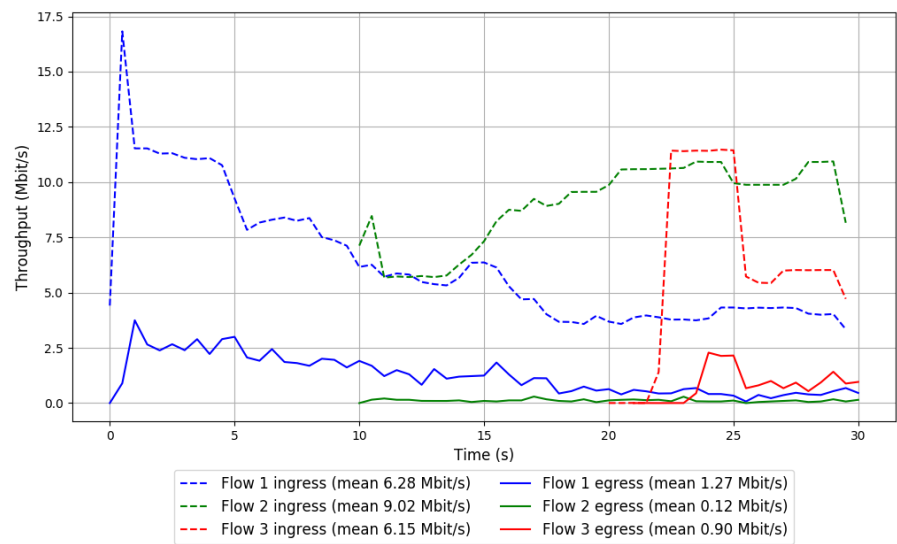


```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-02 03:27:38
End at: 2018-12-02 03:28:08
Local clock offset: 0.816 ms
Remote clock offset: -4.479 ms

# Below is generated by plot.py at 2018-12-02 04:12:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 1030.812 ms
Loss rate: 88.74%
-- Flow 1:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 1012.337 ms
Loss rate: 79.81%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1033.212 ms
Loss rate: 98.69%
-- Flow 3:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 1048.350 ms
Loss rate: 86.95%
```

Run 1: Report of PCC-Expr — Data Link

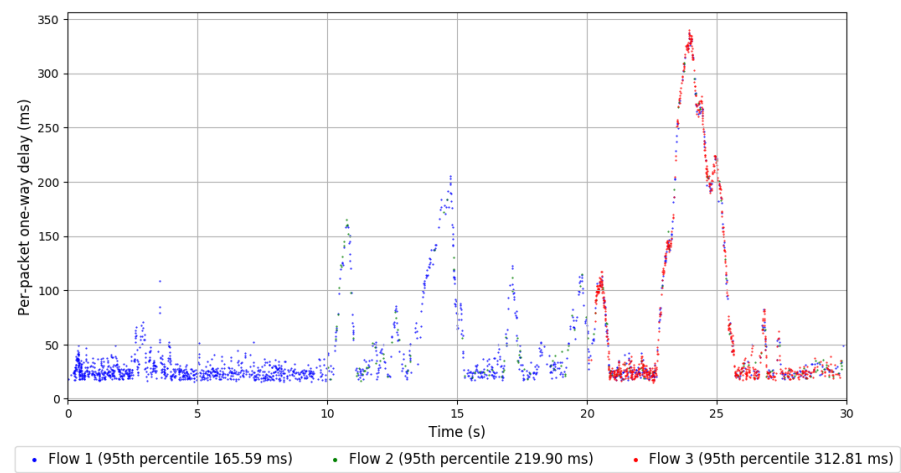
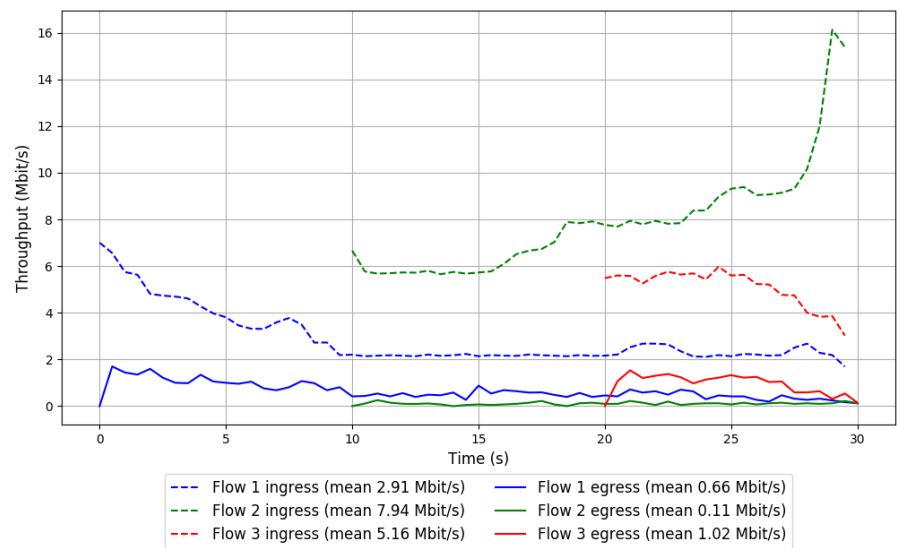


Run 2: Statistics of PCC-Expr

Start at: 2018-12-02 03:49:07
End at: 2018-12-02 03:49:37
Local clock offset: 3.423 ms
Remote clock offset: -1.165 ms

Below is generated by plot.py at 2018-12-02 04:12:26
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 256.521 ms
Loss rate: 89.22%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 165.594 ms
Loss rate: 77.31%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 219.897 ms
Loss rate: 98.57%
-- Flow 3:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 312.814 ms
Loss rate: 80.59%

Run 2: Report of PCC-Expr — Data Link

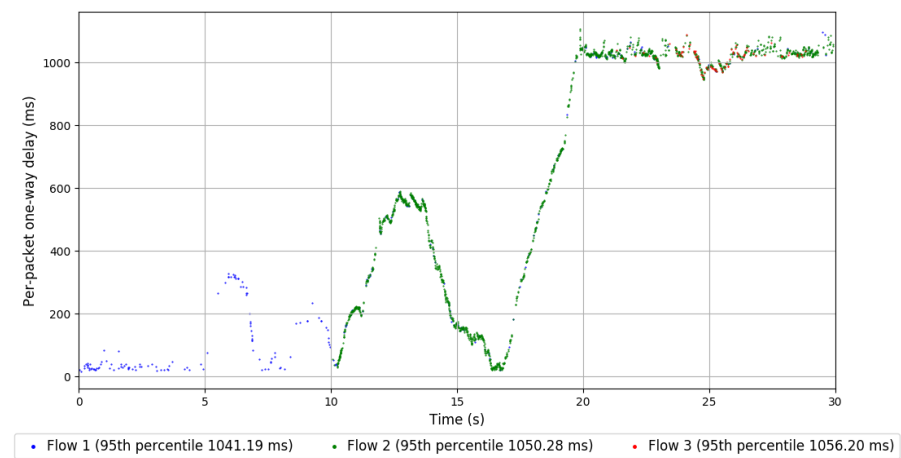
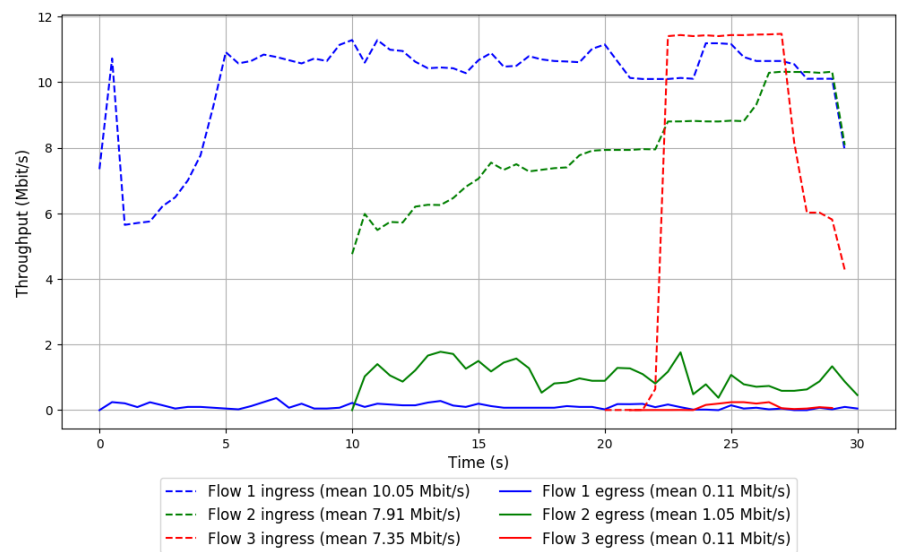


Run 3: Statistics of PCC-Expr

Start at: 2018-12-02 04:10:52
End at: 2018-12-02 04:11:22
Local clock offset: 0.812 ms
Remote clock offset: -1.302 ms

Below is generated by plot.py at 2018-12-02 04:12:26
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 1049.869 ms
Loss rate: 95.28%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 1041.187 ms
Loss rate: 98.87%
-- Flow 2:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 1050.276 ms
Loss rate: 86.77%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 1056.200 ms
Loss rate: 98.89%

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-12-02 03:26:30

End at: 2018-12-02 03:27:00

Local clock offset: 2.989 ms

Remote clock offset: -4.82 ms

Below is generated by plot.py at 2018-12-02 04:12:30

Datalink statistics

-- Total of 3 flows:

Average throughput: 11.00 Mbit/s

95th percentile per-packet one-way delay: 225.557 ms

Loss rate: 5.10%

-- Flow 1:

Average throughput: 7.89 Mbit/s

95th percentile per-packet one-way delay: 212.746 ms

Loss rate: 4.59%

-- Flow 2:

Average throughput: 3.32 Mbit/s

95th percentile per-packet one-way delay: 236.969 ms

Loss rate: 5.78%

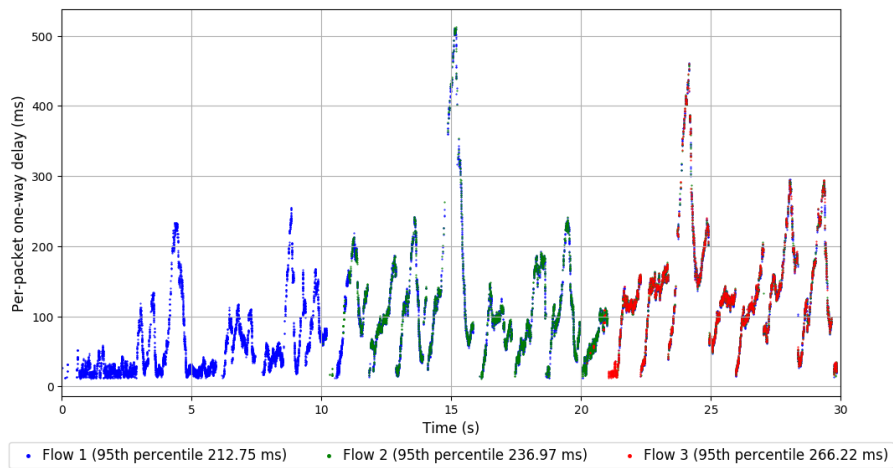
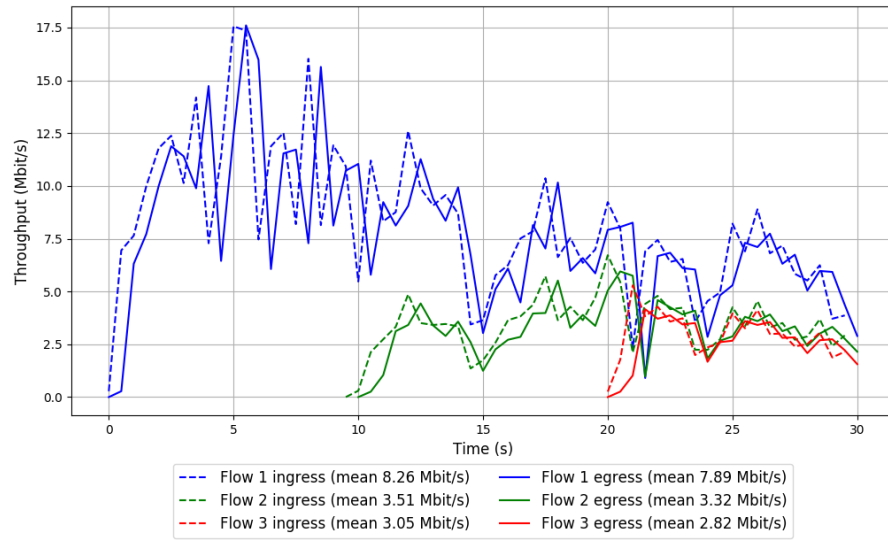
-- Flow 3:

Average throughput: 2.82 Mbit/s

95th percentile per-packet one-way delay: 266.220 ms

Loss rate: 7.75%

Run 1: Report of QUIC Cubic — Data Link

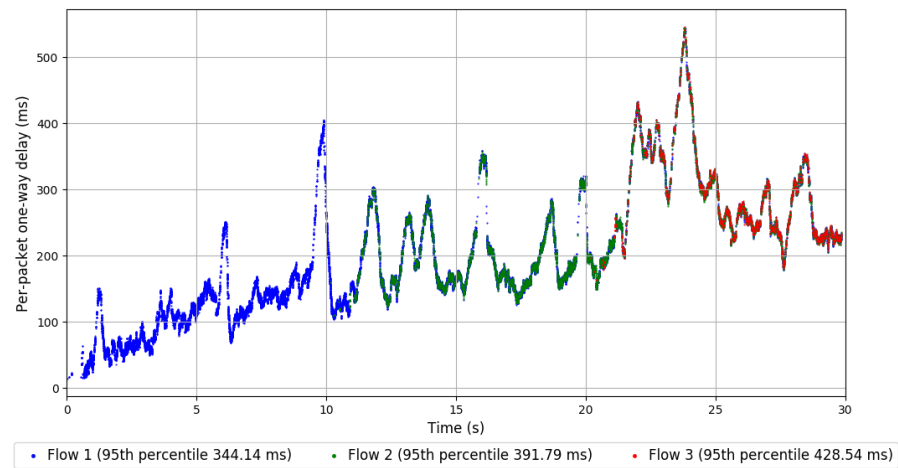
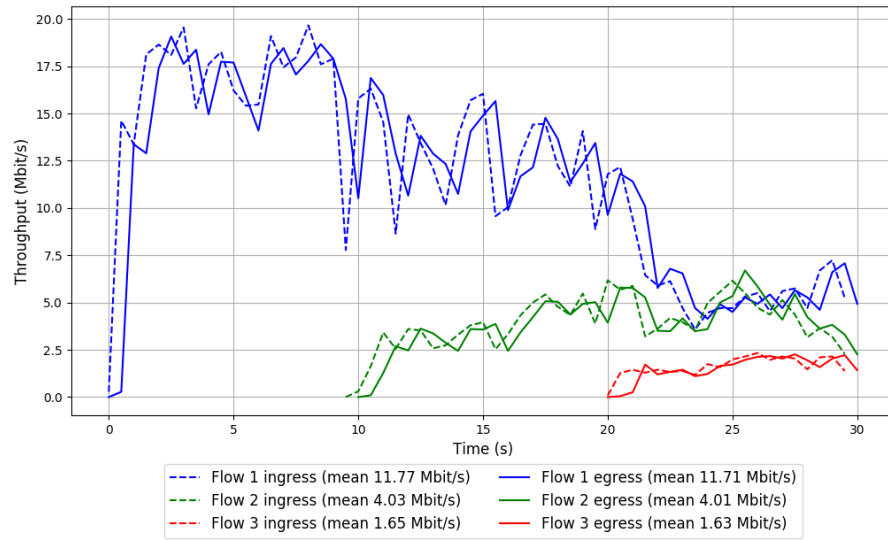


Run 2: Statistics of QUIC Cubic

Start at: 2018-12-02 03:47:59
End at: 2018-12-02 03:48:29
Local clock offset: 3.759 ms
Remote clock offset: -0.771 ms

Below is generated by plot.py at 2018-12-02 04:12:35
Datalink statistics
-- Total of 3 flows:
Average throughput: 14.88 Mbit/s
95th percentile per-packet one-way delay: 355.290 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 11.71 Mbit/s
95th percentile per-packet one-way delay: 344.141 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 4.01 Mbit/s
95th percentile per-packet one-way delay: 391.786 ms
Loss rate: 1.16%
-- Flow 3:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 428.539 ms
Loss rate: 3.13%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-12-02 04:09:44

End at: 2018-12-02 04:10:14

Local clock offset: 1.276 ms

Remote clock offset: -0.99 ms

Below is generated by plot.py at 2018-12-02 04:12:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 10.17 Mbit/s

95th percentile per-packet one-way delay: 401.666 ms

Loss rate: 0.80%

-- Flow 1:

Average throughput: 8.18 Mbit/s

95th percentile per-packet one-way delay: 357.136 ms

Loss rate: 0.43%

-- Flow 2:

Average throughput: 2.09 Mbit/s

95th percentile per-packet one-way delay: 518.224 ms

Loss rate: 1.70%

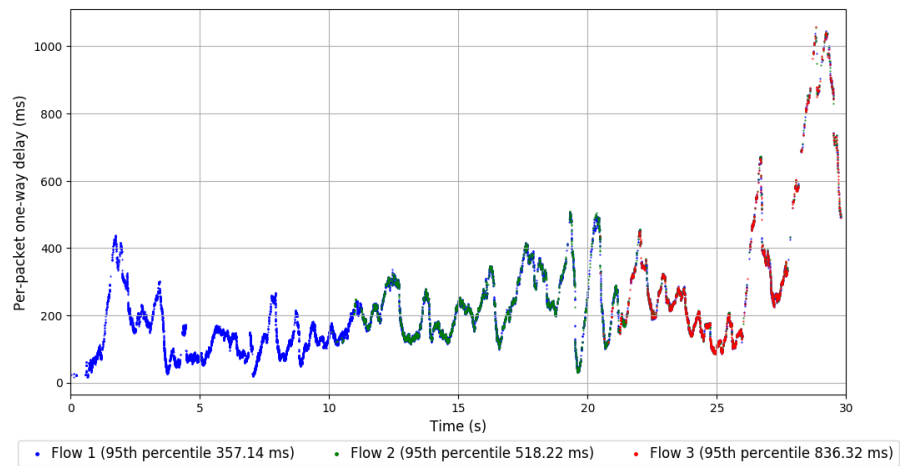
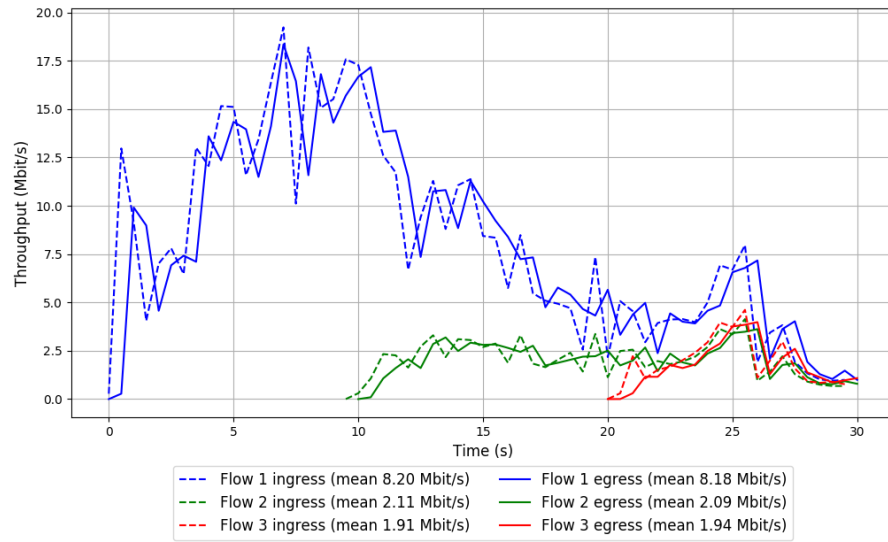
-- Flow 3:

Average throughput: 1.94 Mbit/s

95th percentile per-packet one-way delay: 836.322 ms

Loss rate: 3.56%

Run 3: Report of QUIC Cubic — Data Link

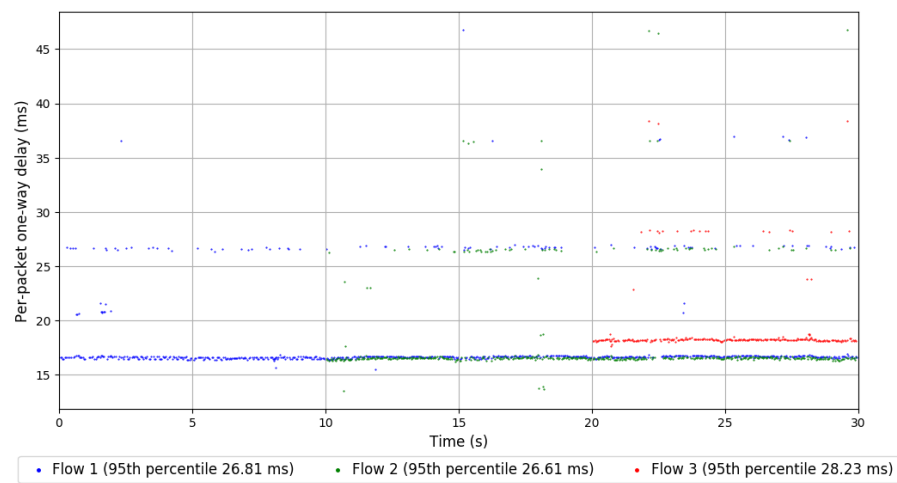
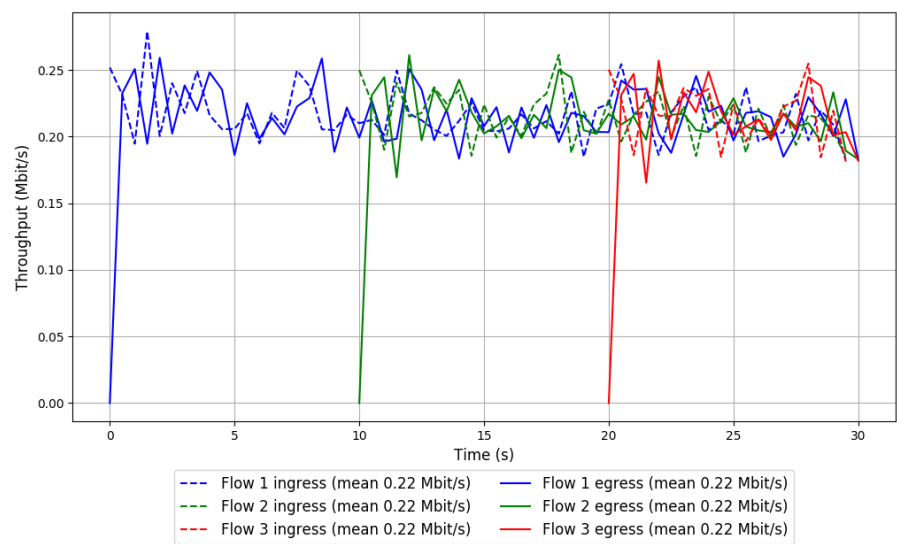



```
Run 1: Statistics of SReAM

Start at: 2018-12-02 03:09:33
End at: 2018-12-02 03:10:03
Local clock offset: 3.344 ms
Remote clock offset: -4.276 ms

# Below is generated by plot.py at 2018-12-02 04:12:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 26.787 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.808 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.611 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 28.230 ms
Loss rate: 0.35%
```

Run 1: Report of SCReAM — Data Link

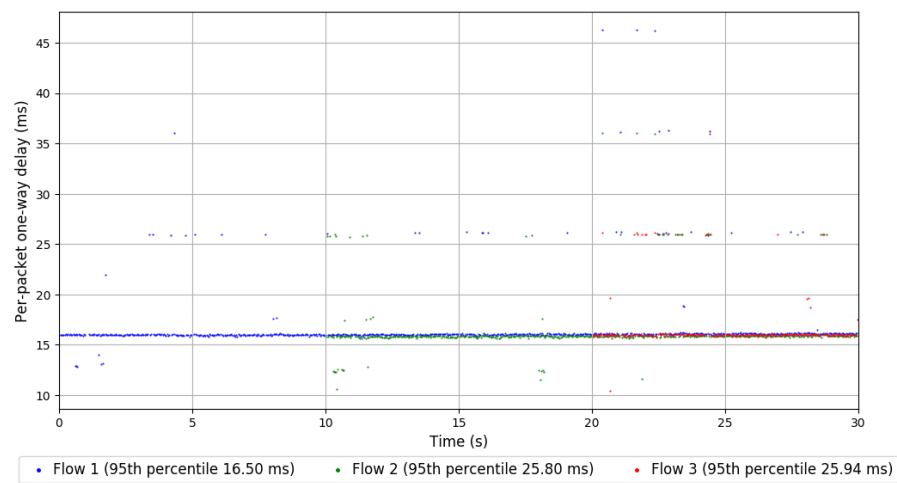
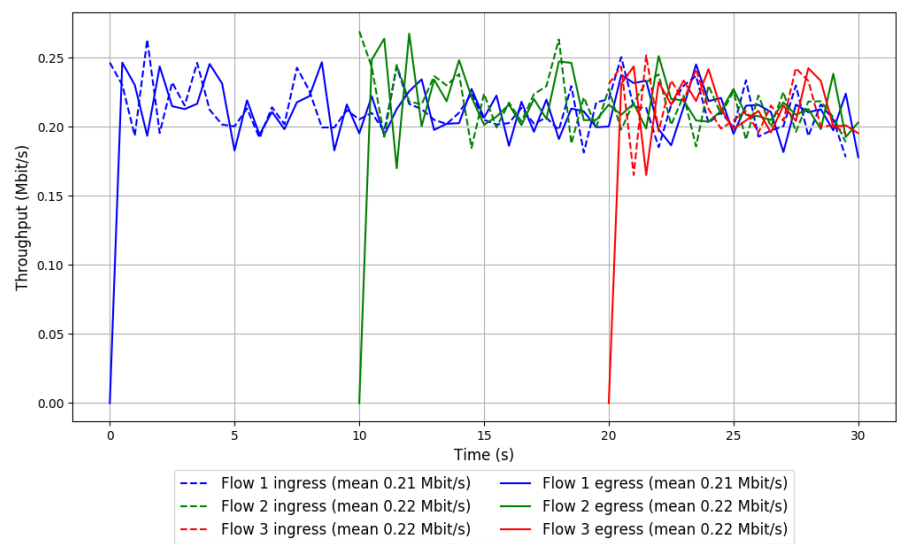


Run 2: Statistics of SReAM

Start at: 2018-12-02 03:31:00
End at: 2018-12-02 03:31:30
Local clock offset: 3.666 ms
Remote clock offset: -3.739 ms

Below is generated by plot.py at 2018-12-02 04:12:35
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 25.795 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 16.496 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 25.795 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 25.936 ms
Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

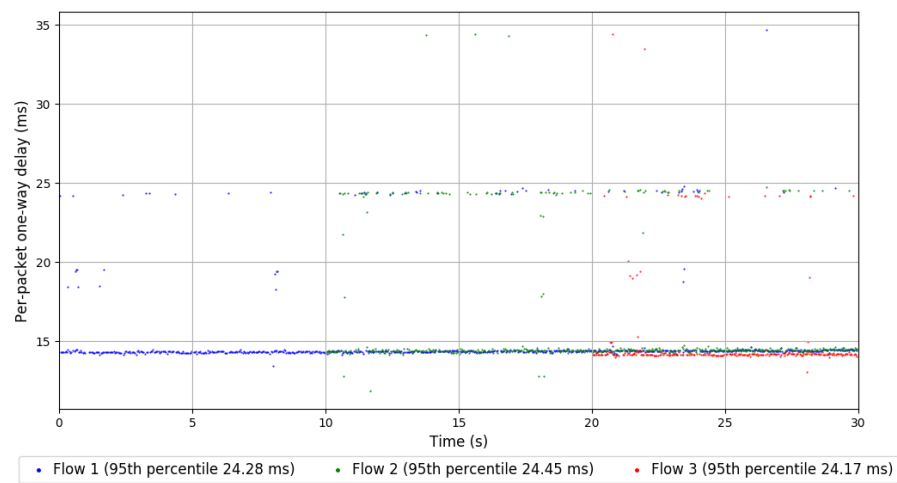
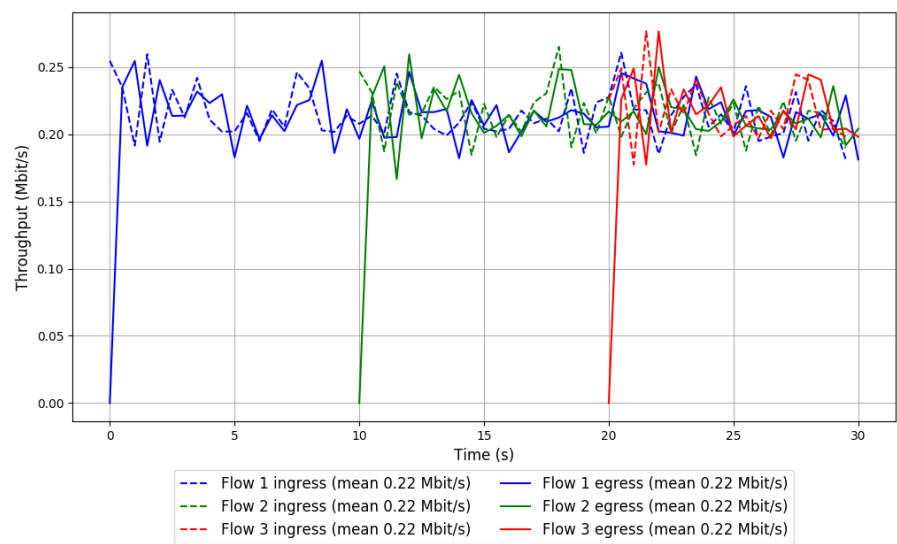


Run 3: Statistics of SReAM

Start at: 2018-12-02 03:52:30
End at: 2018-12-02 03:53:00
Local clock offset: 5.463 ms
Remote clock offset: -2.438 ms

Below is generated by plot.py at 2018-12-02 04:12:35
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 24.376 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24.281 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24.455 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24.166 ms
Loss rate: 0.00%

Run 3: Report of SCReAM — Data Link

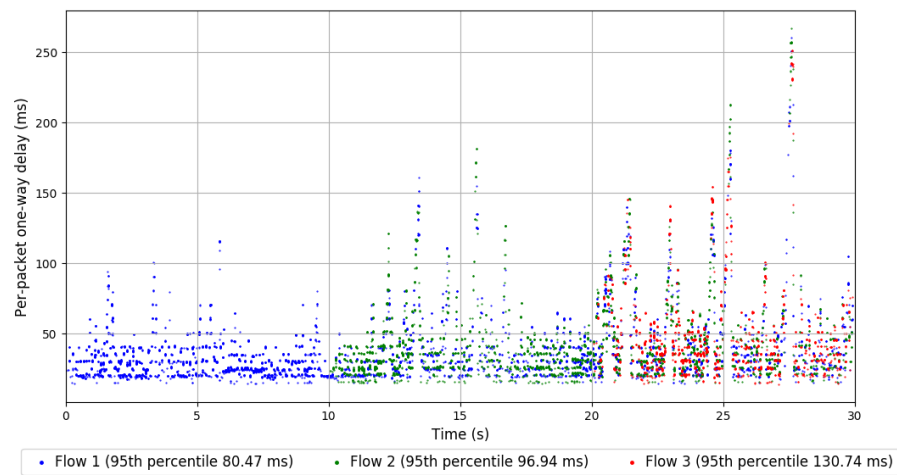
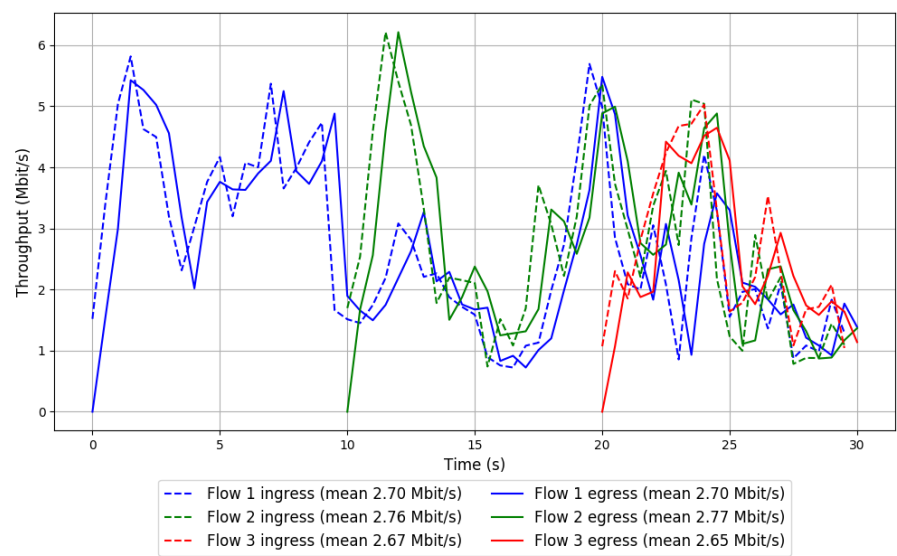


Run 1: Statistics of Sprout

Start at: 2018-12-02 03:18:34
End at: 2018-12-02 03:19:04
Local clock offset: 1.74 ms
Remote clock offset: -4.847 ms

Below is generated by plot.py at 2018-12-02 04:12:35
Datalink statistics
-- Total of 3 flows:
Average throughput: 5.41 Mbit/s
95th percentile per-packet one-way delay: 95.908 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 2.70 Mbit/s
95th percentile per-packet one-way delay: 80.465 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 2.77 Mbit/s
95th percentile per-packet one-way delay: 96.939 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 130.741 ms
Loss rate: 0.70%

Run 1: Report of Sprout — Data Link

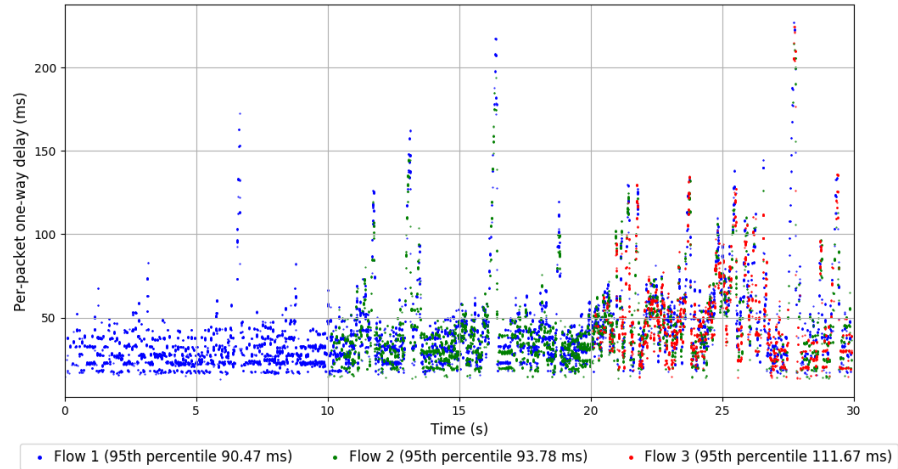
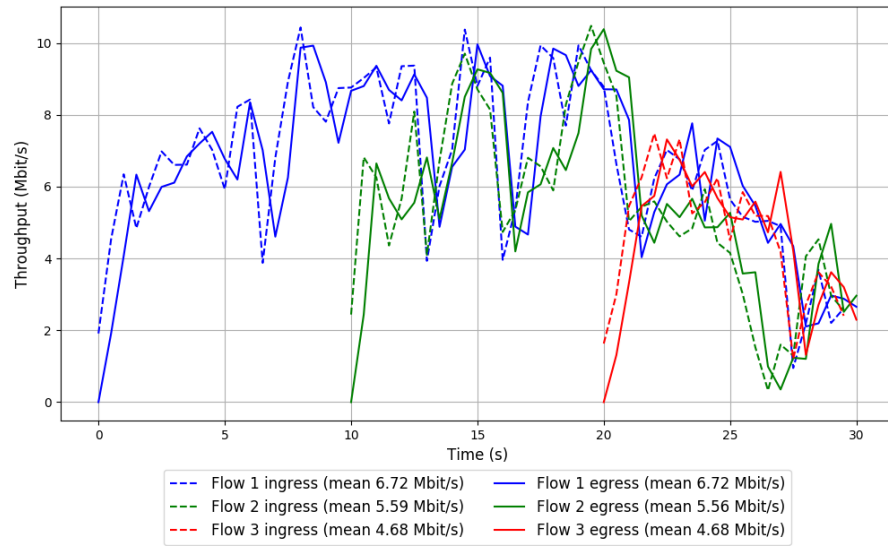


Run 2: Statistics of Sprout

Start at: 2018-12-02 03:40:03
End at: 2018-12-02 03:40:33
Local clock offset: 2.102 ms
Remote clock offset: -2.517 ms

Below is generated by plot.py at 2018-12-02 04:12:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 11.96 Mbit/s
95th percentile per-packet one-way delay: 95.777 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 90.471 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 5.56 Mbit/s
95th percentile per-packet one-way delay: 93.785 ms
Loss rate: 0.45%
-- Flow 3:
Average throughput: 4.68 Mbit/s
95th percentile per-packet one-way delay: 111.671 ms
Loss rate: 0.21%

Run 2: Report of Sprout — Data Link

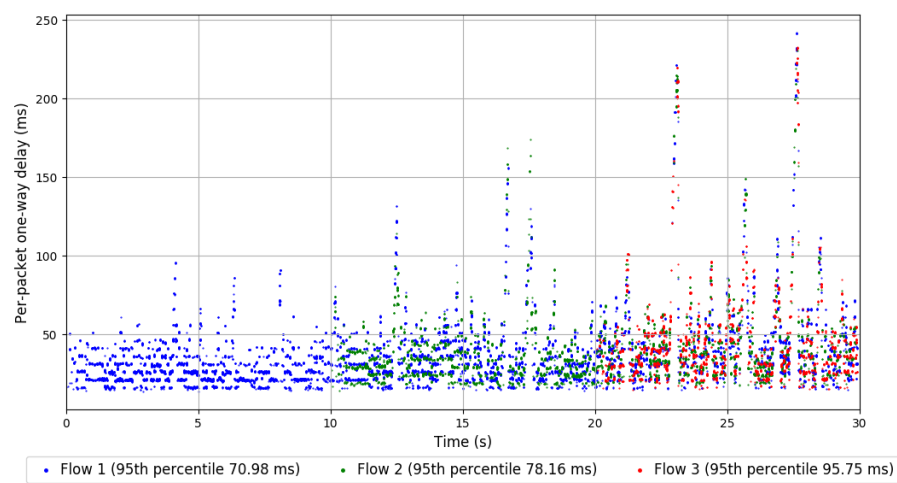
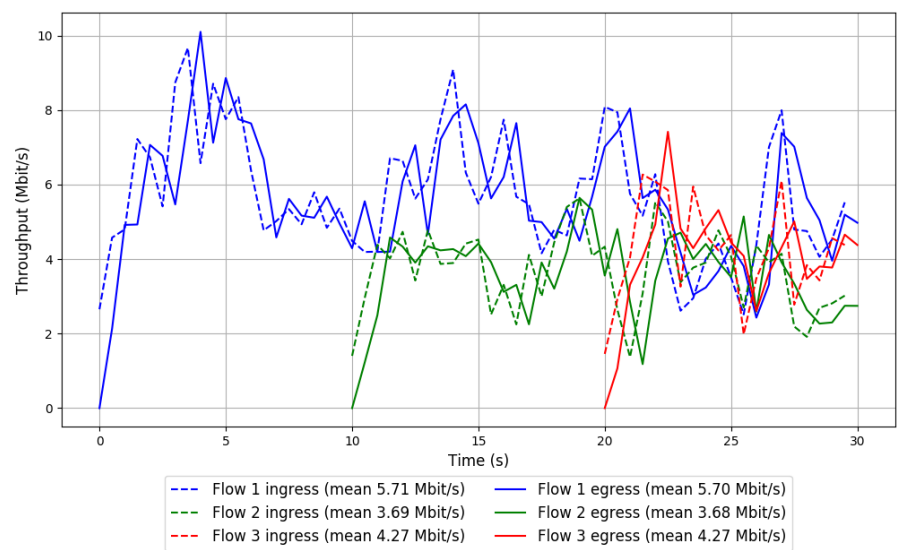


Run 3: Statistics of Sprout

Start at: 2018-12-02 04:01:47
End at: 2018-12-02 04:02:17
Local clock offset: -0.124 ms
Remote clock offset: -4.928 ms

```
# Below is generated by plot.py at 2018-12-02 04:12:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.55 Mbit/s
95th percentile per-packet one-way delay: 77.239 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 5.70 Mbit/s
95th percentile per-packet one-way delay: 70.980 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 78.157 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 4.27 Mbit/s
95th percentile per-packet one-way delay: 95.748 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

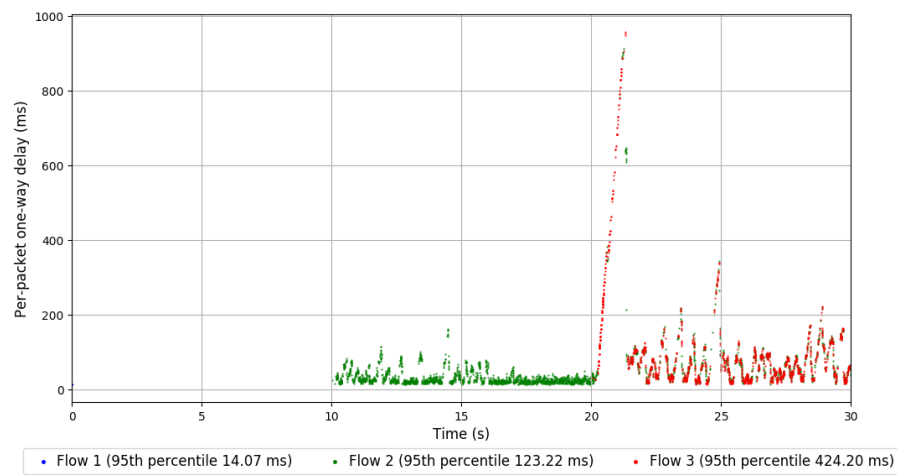
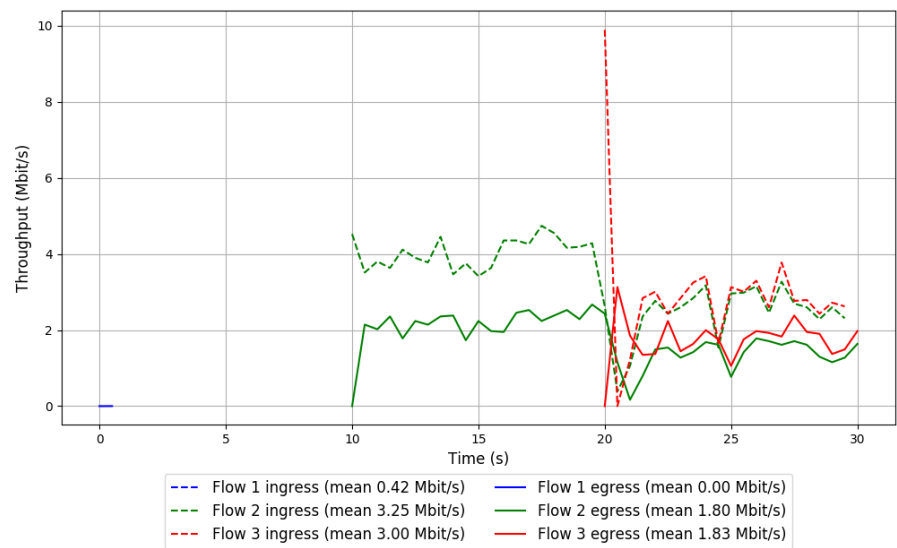


Run 1: Statistics of TaoVA-100x

Start at: 2018-12-02 03:07:19
End at: 2018-12-02 03:07:49
Local clock offset: 3.838 ms
Remote clock offset: -4.275 ms

Below is generated by plot.py at 2018-12-02 04:12:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 221.172 ms
Loss rate: 42.90%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 14.072 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 123.224 ms
Loss rate: 44.64%
-- Flow 3:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 424.204 ms
Loss rate: 39.06%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-12-02 03:28:45

End at: 2018-12-02 03:29:15

Local clock offset: 4.497 ms

Remote clock offset: -4.88 ms

Below is generated by plot.py at 2018-12-02 04:12:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.42 Mbit/s

95th percentile per-packet one-way delay: 293.147 ms

Loss rate: 71.67%

-- Flow 1:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 445.668 ms

Loss rate: 86.28%

-- Flow 2:

Average throughput: 1.45 Mbit/s

95th percentile per-packet one-way delay: 42.792 ms

Loss rate: 47.13%

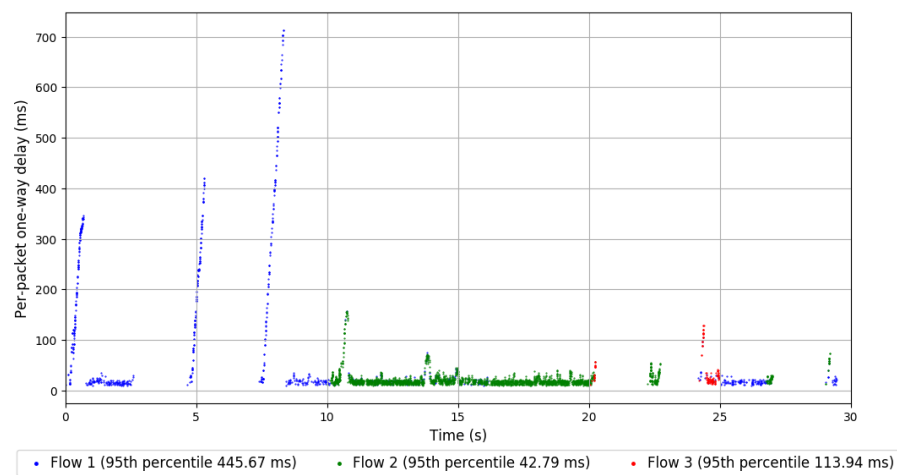
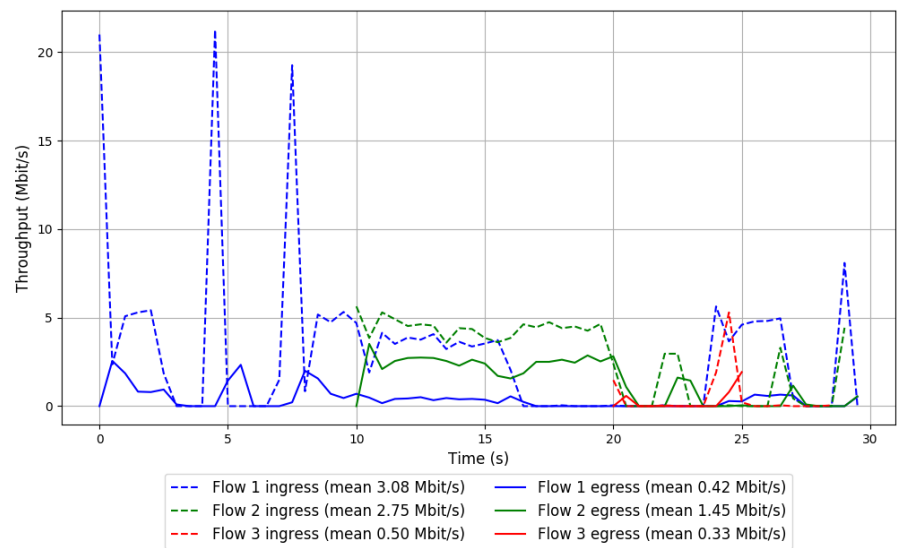
-- Flow 3:

Average throughput: 0.33 Mbit/s

95th percentile per-packet one-way delay: 113.941 ms

Loss rate: 63.45%

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

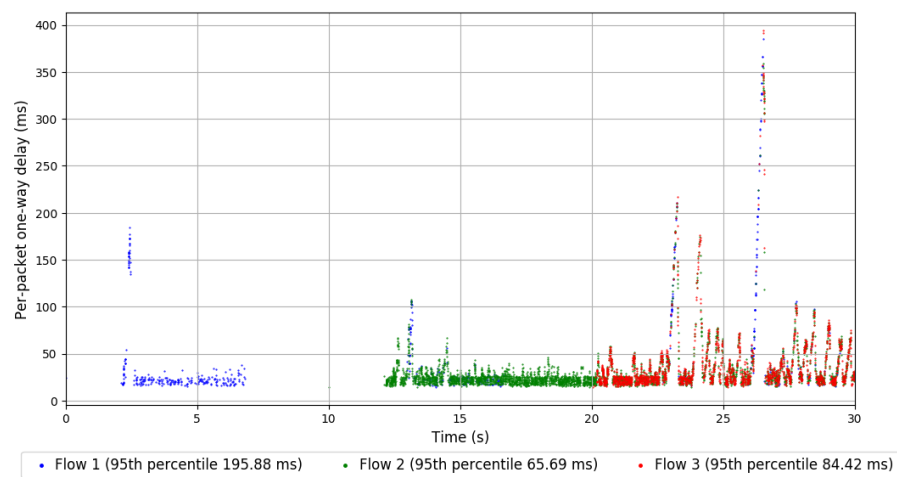
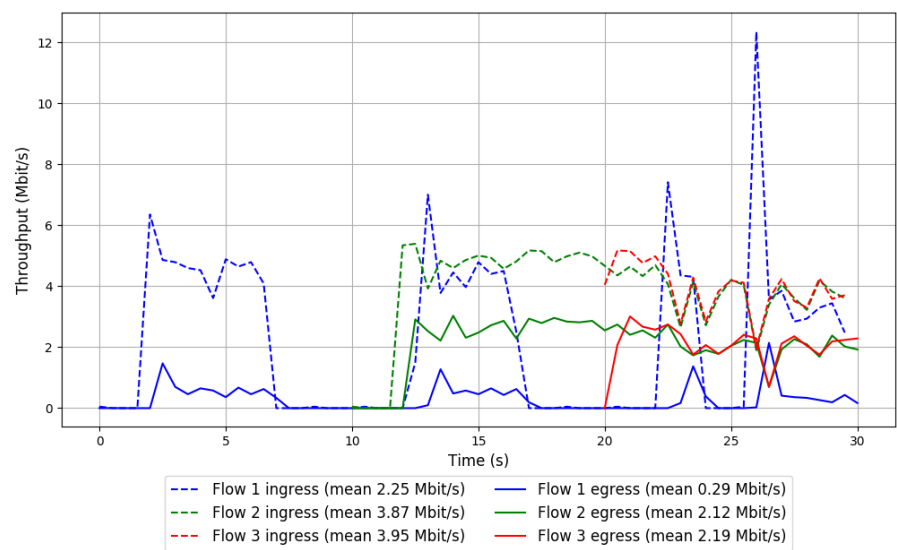


Run 3: Statistics of TaoVA-100x

Start at: 2018-12-02 03:50:14
End at: 2018-12-02 03:50:44
Local clock offset: 3.561 ms
Remote clock offset: -2.063 ms

Below is generated by plot.py at 2018-12-02 04:12:41
Datalink statistics
-- Total of 3 flows:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 94.047 ms
Loss rate: 60.47%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 195.883 ms
Loss rate: 87.16%
-- Flow 2:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 65.693 ms
Loss rate: 45.17%
-- Flow 3:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 84.417 ms
Loss rate: 44.66%

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

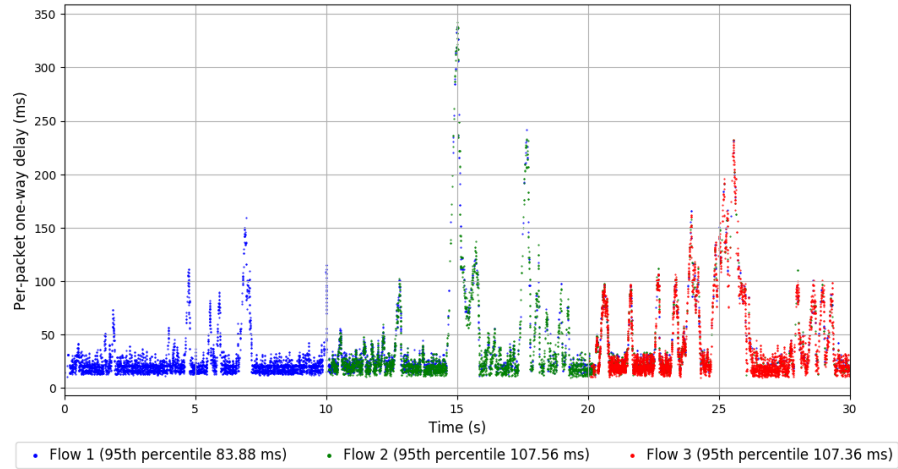
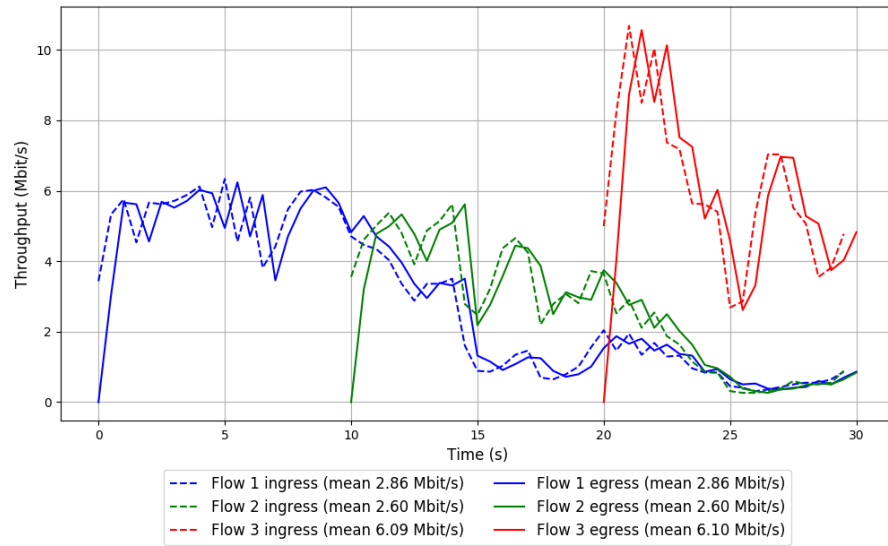


Run 1: Statistics of TCP Vegas

Start at: 2018-12-02 03:10:40
End at: 2018-12-02 03:11:10
Local clock offset: 5.752 ms
Remote clock offset: -3.875 ms

Below is generated by plot.py at 2018-12-02 04:12:41
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.61 Mbit/s
95th percentile per-packet one-way delay: 97.753 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 83.881 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 2.60 Mbit/s
95th percentile per-packet one-way delay: 107.563 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 6.10 Mbit/s
95th percentile per-packet one-way delay: 107.364 ms
Loss rate: 0.12%

Run 1: Report of TCP Vegas — Data Link

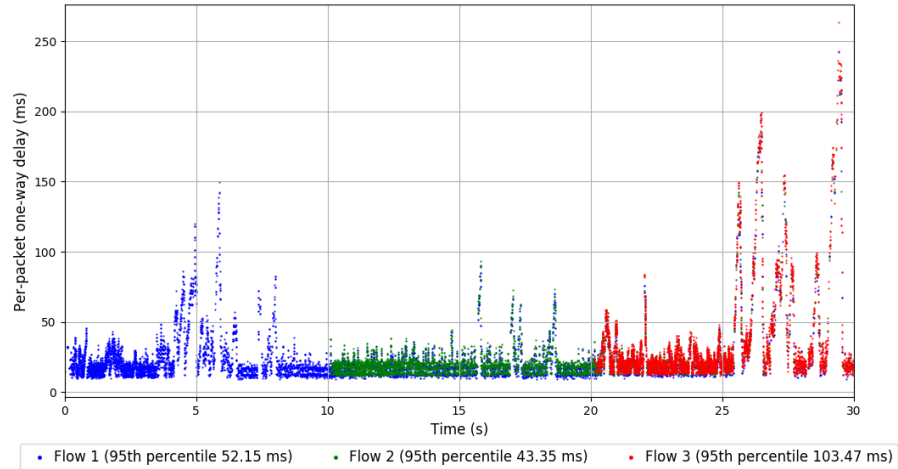
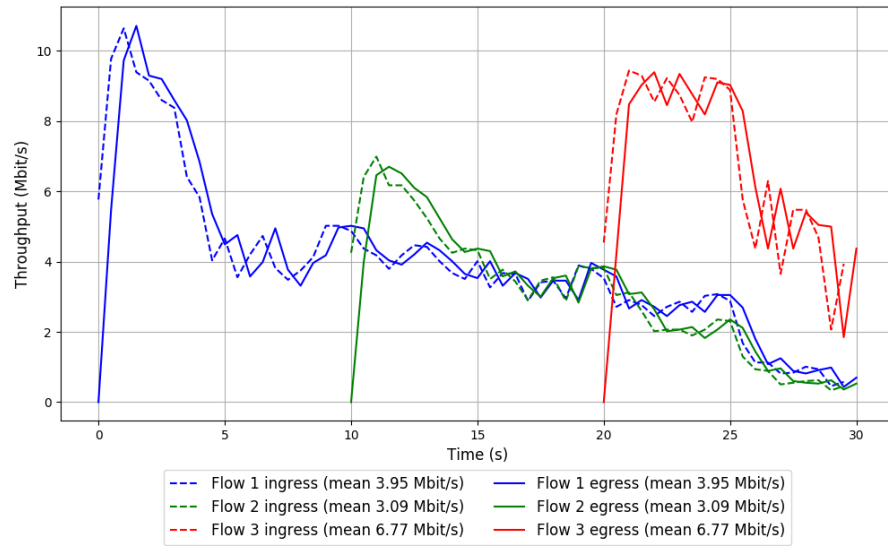


Run 2: Statistics of TCP Vegas

Start at: 2018-12-02 03:32:07
End at: 2018-12-02 03:32:37
Local clock offset: 4.171 ms
Remote clock offset: -4.227 ms

Below is generated by plot.py at 2018-12-02 04:12:41
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.25 Mbit/s
95th percentile per-packet one-way delay: 66.326 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 3.95 Mbit/s
95th percentile per-packet one-way delay: 52.149 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.09 Mbit/s
95th percentile per-packet one-way delay: 43.352 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 6.77 Mbit/s
95th percentile per-packet one-way delay: 103.467 ms
Loss rate: 0.09%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-12-02 03:53:37

End at: 2018-12-02 03:54:07

Local clock offset: 2.804 ms

Remote clock offset: -1.28 ms

Below is generated by plot.py at 2018-12-02 04:12:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 9.99 Mbit/s

95th percentile per-packet one-way delay: 120.488 ms

Loss rate: 0.09%

-- Flow 1:

Average throughput: 4.86 Mbit/s

95th percentile per-packet one-way delay: 77.993 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 3.86 Mbit/s

95th percentile per-packet one-way delay: 170.454 ms

Loss rate: 0.12%

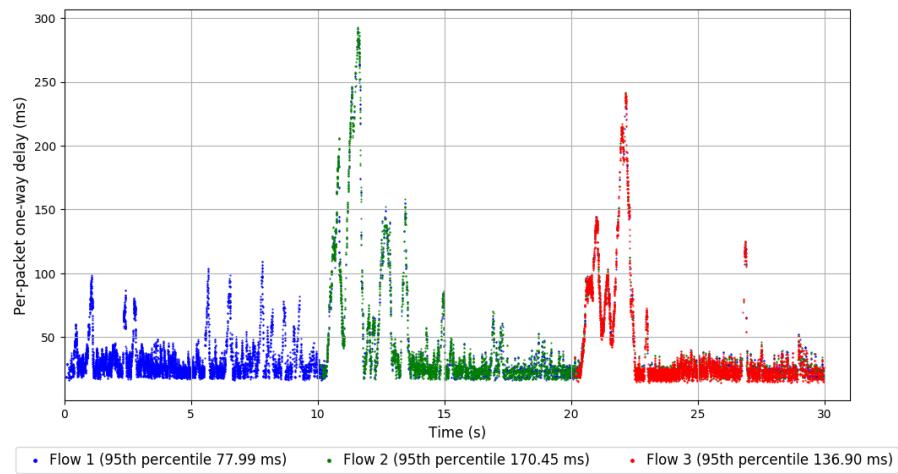
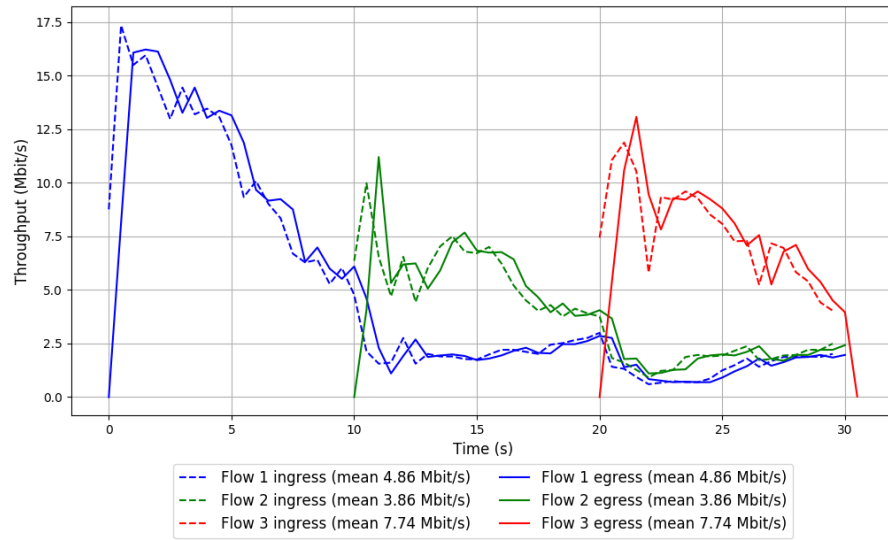
-- Flow 3:

Average throughput: 7.74 Mbit/s

95th percentile per-packet one-way delay: 136.897 ms

Loss rate: 0.14%

Run 3: Report of TCP Vegas — Data Link

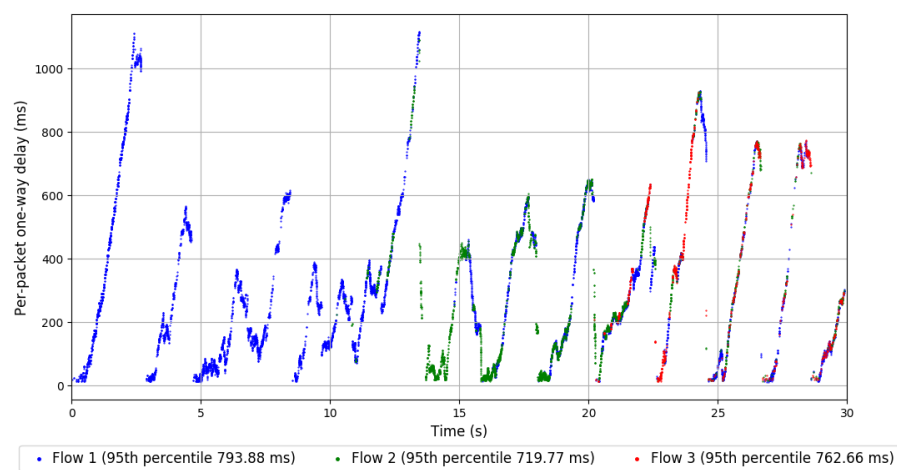
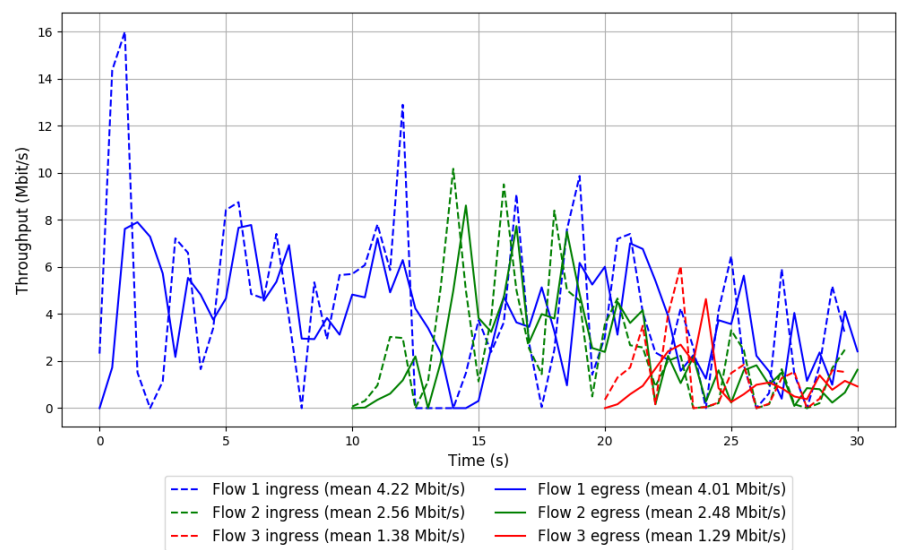


Run 1: Statistics of Verus

Start at: 2018-12-02 03:23:07
End at: 2018-12-02 03:23:37
Local clock offset: 3.487 ms
Remote clock offset: -4.552 ms

Below is generated by plot.py at 2018-12-02 04:12:43
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 767.886 ms
Loss rate: 5.12%
-- Flow 1:
Average throughput: 4.01 Mbit/s
95th percentile per-packet one-way delay: 793.875 ms
Loss rate: 5.16%
-- Flow 2:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 719.771 ms
Loss rate: 4.07%
-- Flow 3:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 762.660 ms
Loss rate: 8.69%

Run 1: Report of Verus — Data Link

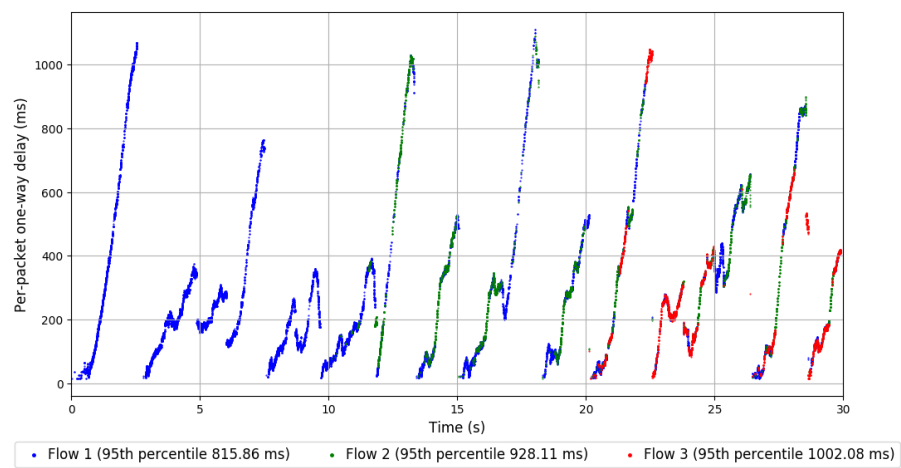
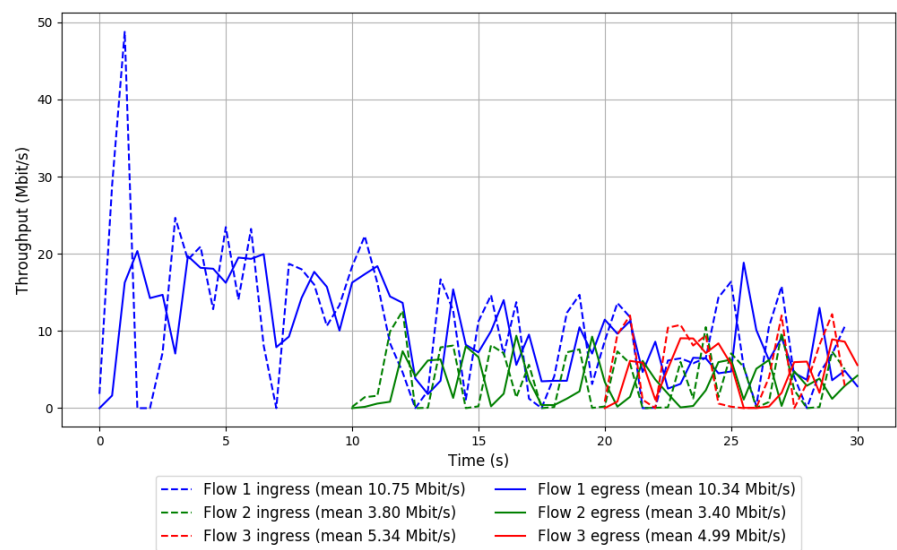


Run 2: Statistics of Verus

Start at: 2018-12-02 03:44:33
End at: 2018-12-02 03:45:03
Local clock offset: 1.47 ms
Remote clock offset: -2.489 ms

Below is generated by plot.py at 2018-12-02 04:12:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 14.23 Mbit/s
95th percentile per-packet one-way delay: 859.128 ms
Loss rate: 5.33%
-- Flow 1:
Average throughput: 10.34 Mbit/s
95th percentile per-packet one-way delay: 815.862 ms
Loss rate: 3.82%
-- Flow 2:
Average throughput: 3.40 Mbit/s
95th percentile per-packet one-way delay: 928.112 ms
Loss rate: 10.30%
-- Flow 3:
Average throughput: 4.99 Mbit/s
95th percentile per-packet one-way delay: 1002.078 ms
Loss rate: 7.44%

Run 2: Report of Verus — Data Link

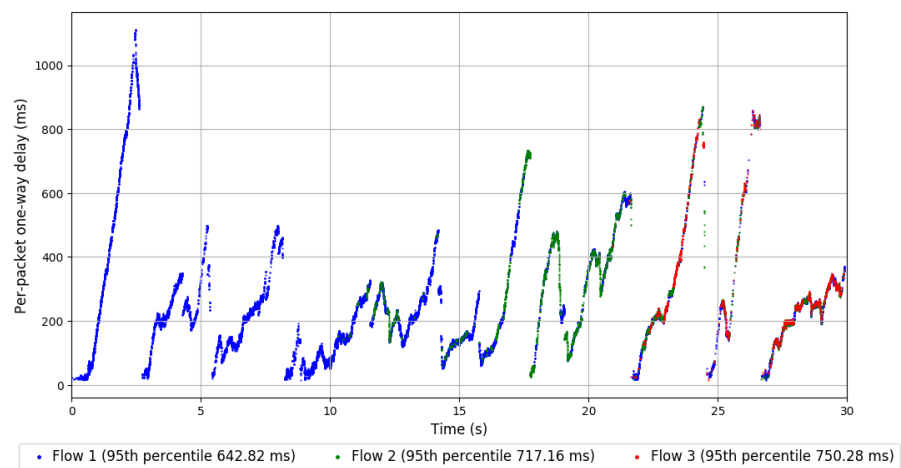
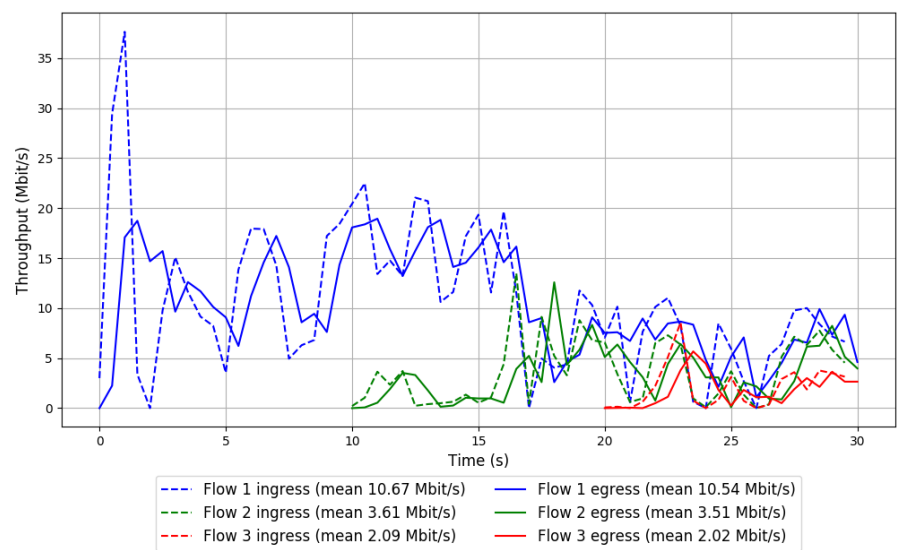


Run 3: Statistics of Verus

Start at: 2018-12-02 04:06:19
End at: 2018-12-02 04:06:49
Local clock offset: 2.773 ms
Remote clock offset: -1.225 ms

Below is generated by plot.py at 2018-12-02 04:12:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 13.51 Mbit/s
95th percentile per-packet one-way delay: 686.831 ms
Loss rate: 1.91%
-- Flow 1:
Average throughput: 10.54 Mbit/s
95th percentile per-packet one-way delay: 642.817 ms
Loss rate: 1.24%
-- Flow 2:
Average throughput: 3.51 Mbit/s
95th percentile per-packet one-way delay: 717.157 ms
Loss rate: 3.24%
-- Flow 3:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 750.280 ms
Loss rate: 7.56%

Run 3: Report of Verus — Data Link

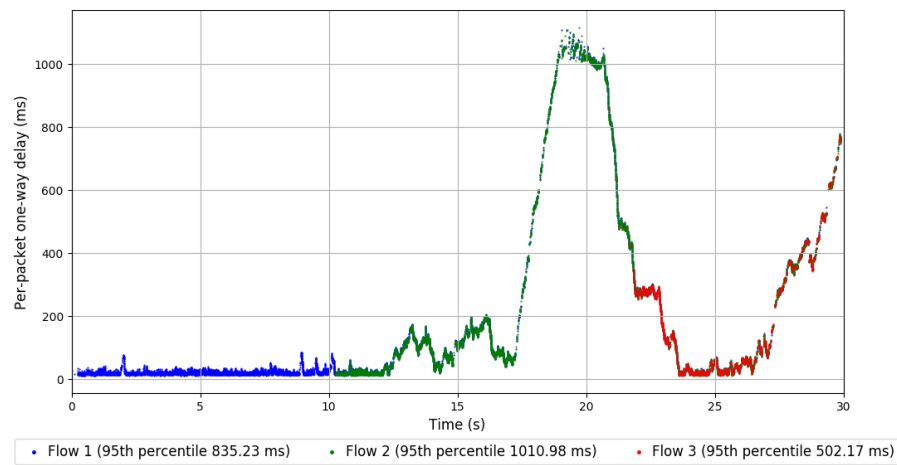
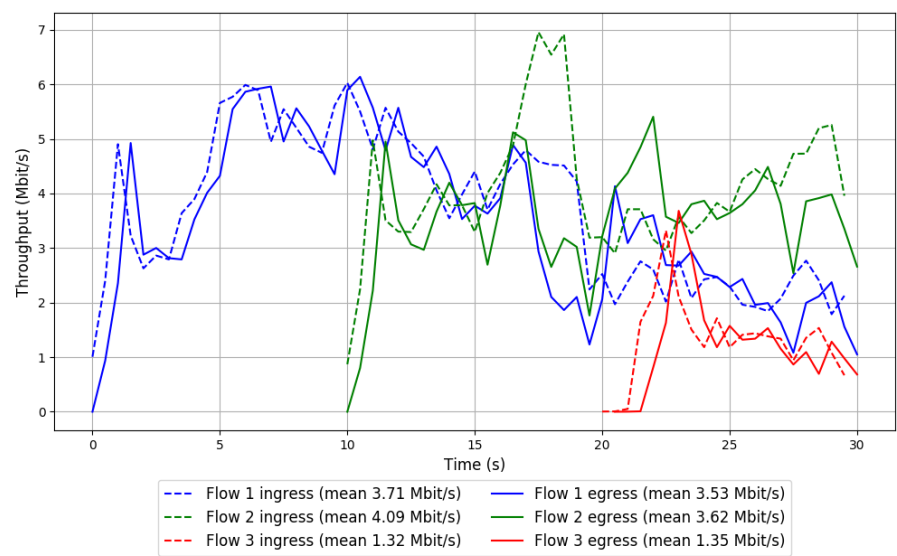


Run 1: Statistics of PCC-Vivace

Start at: 2018-12-02 03:11:47
End at: 2018-12-02 03:12:17
Local clock offset: 5.536 ms
Remote clock offset: -4.906 ms

Below is generated by plot.py at 2018-12-02 04:12:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.34 Mbit/s
95th percentile per-packet one-way delay: 952.172 ms
Loss rate: 7.59%
-- Flow 1:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 835.227 ms
Loss rate: 4.87%
-- Flow 2:
Average throughput: 3.62 Mbit/s
95th percentile per-packet one-way delay: 1010.984 ms
Loss rate: 11.53%
-- Flow 3:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 502.173 ms
Loss rate: 6.14%

Run 1: Report of PCC-Vivace — Data Link

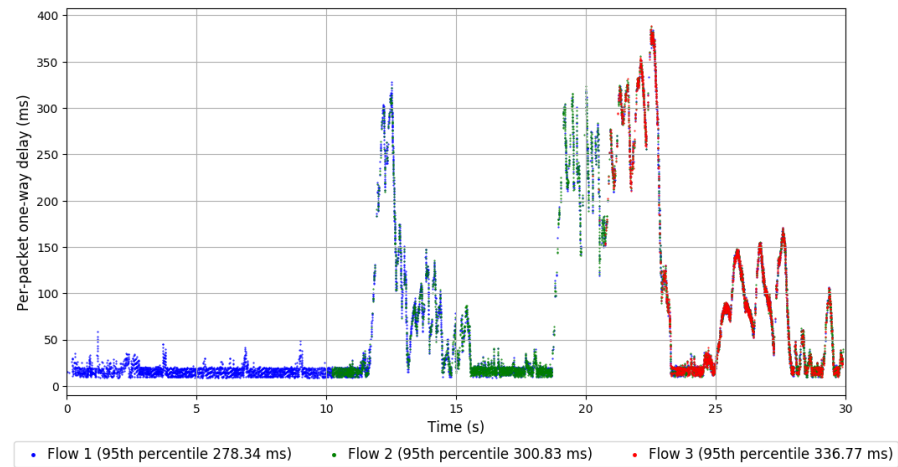
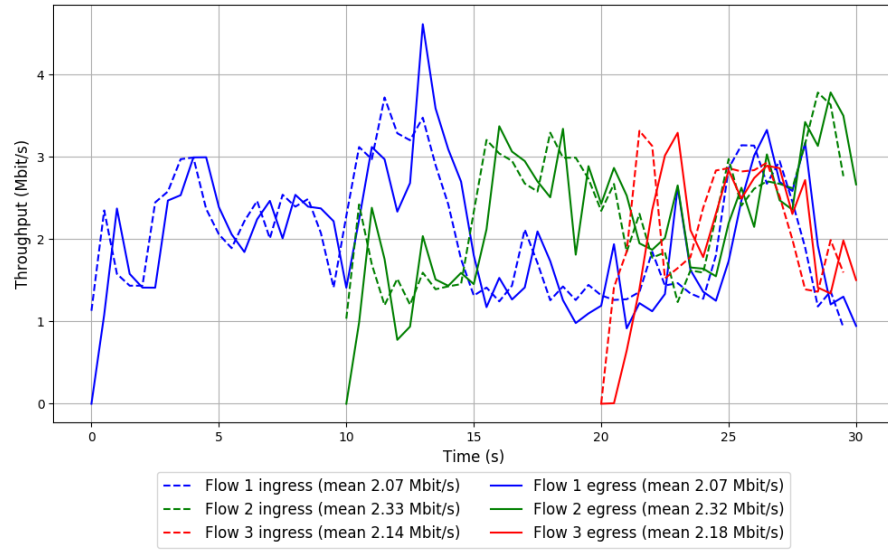


Run 2: Statistics of PCC-Vivace

Start at: 2018-12-02 03:33:15
End at: 2018-12-02 03:33:45
Local clock offset: 4.255 ms
Remote clock offset: -4.215 ms

Below is generated by plot.py at 2018-12-02 04:12:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 302.453 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 278.338 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 300.834 ms
Loss rate: 0.47%
-- Flow 3:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 336.767 ms
Loss rate: 0.44%

Run 2: Report of PCC-Vivace — Data Link

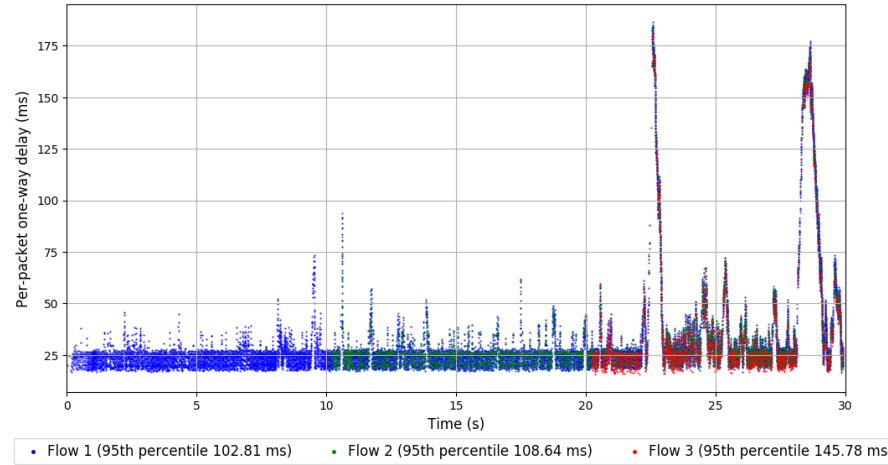
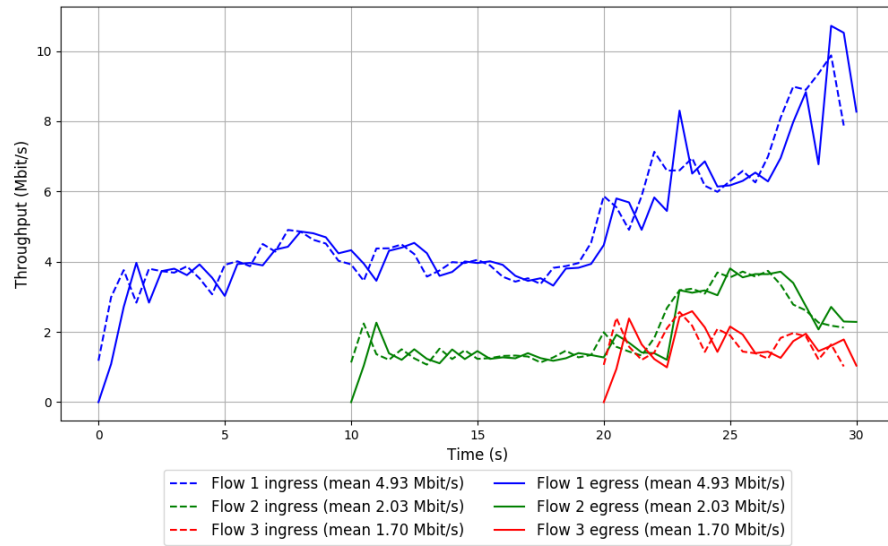


Run 3: Statistics of PCC-Vivace

Start at: 2018-12-02 03:54:46
End at: 2018-12-02 03:55:16
Local clock offset: 1.482 ms
Remote clock offset: -1.208 ms

```
# Below is generated by plot.py at 2018-12-02 04:12:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.84 Mbit/s
95th percentile per-packet one-way delay: 109.942 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 4.93 Mbit/s
95th percentile per-packet one-way delay: 102.815 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 108.637 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 145.782 ms
Loss rate: 0.08%
```

Run 3: Report of PCC-Vivace — Data Link

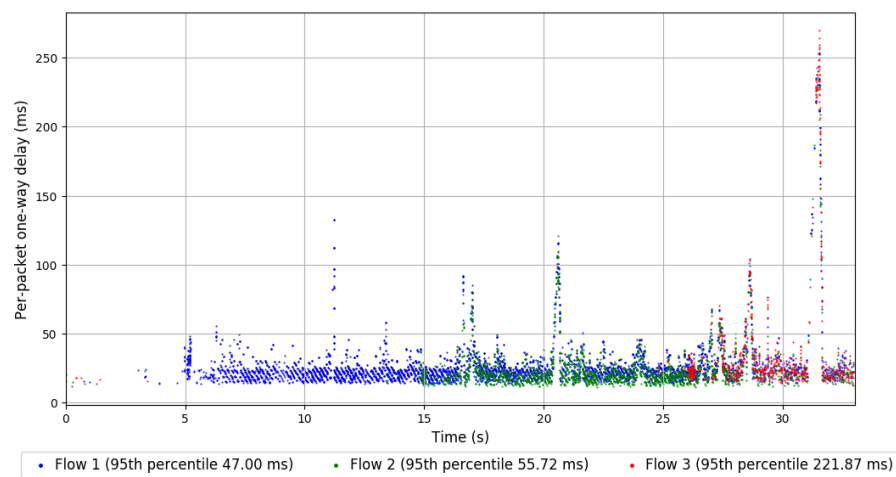
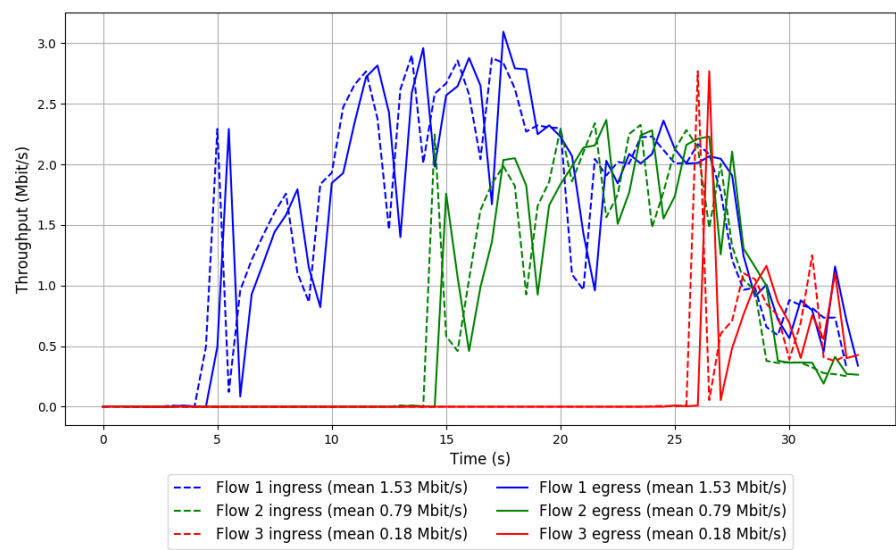


```
Run 1: Statistics of WebRTC media

Start at: 2018-12-02 03:16:18
End at: 2018-12-02 03:16:48
Local clock offset: 4.056 ms
Remote clock offset: -3.278 ms

# Below is generated by plot.py at 2018-12-02 04:12:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.49 Mbit/s
95th percentile per-packet one-way delay: 58.042 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 46.996 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 55.723 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 221.870 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

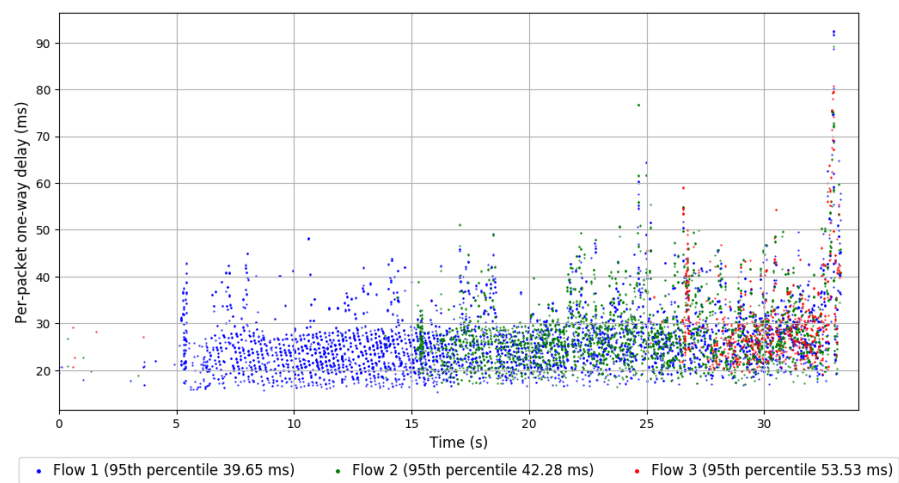
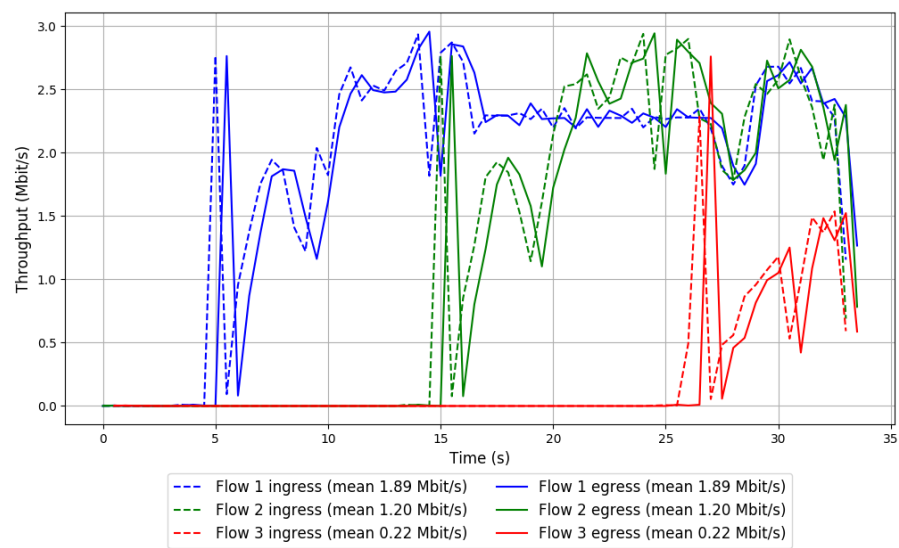


Run 2: Statistics of WebRTC media

Start at: 2018-12-02 03:37:47
End at: 2018-12-02 03:38:17
Local clock offset: 0.735 ms
Remote clock offset: -0.217 ms

Below is generated by plot.py at 2018-12-02 04:12:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 41.720 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 39.650 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 42.281 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 53.532 ms
Loss rate: 0.84%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-12-02 03:59:28
End at: 2018-12-02 03:59:58
Local clock offset: 1.782 ms
Remote clock offset: -1.193 ms

Below is generated by plot.py at 2018-12-02 04:12:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.05 Mbit/s
95th percentile per-packet one-way delay: 36.152 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 35.653 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 36.769 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 37.488 ms
Loss rate: 0.30%

Run 3: Report of WebRTC media — Data Link

