

Pantheon Report

Generated at 2019-02-05 06:55:04 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) → Colombia cellular on `ppp0` (*remote*).

Repeated the test of 21 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 `gps.ntp.br` and have been applied to correct the timestamps in logs.

System info:

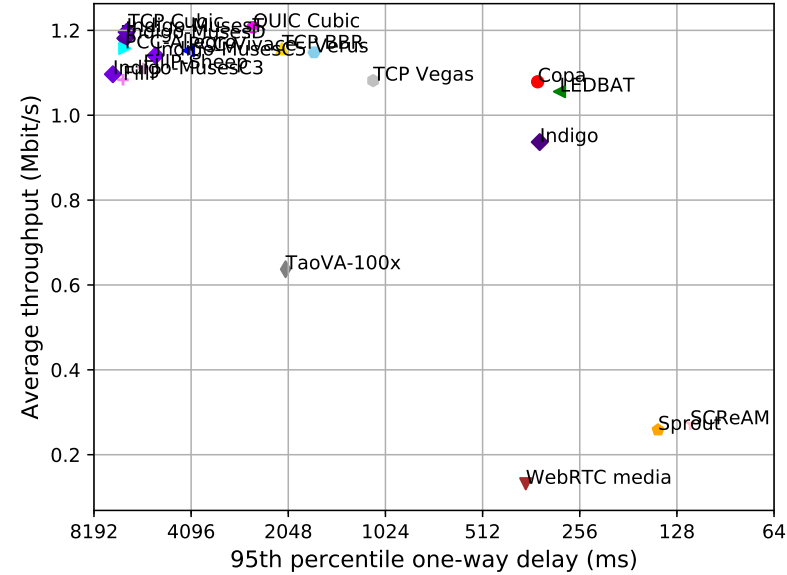
```
Linux 4.15.0-1031-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

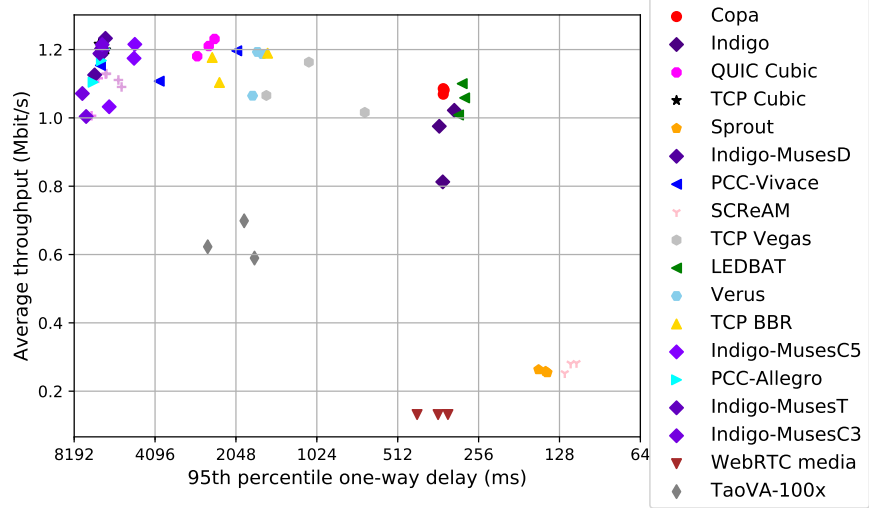
```
branch: muses @ 7a686f7c2ed0a333082c0bab1fa5c921ab47e6ee
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 5ce721187ad823da20955337730c746486ca4966
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 Brazil 2 to Colombia cellular, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from AWS Brazil 2 to Colombia cellular, 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 | 0.72 | 0.58 | 0.22 | 2098.78 | 2130.66 | 1812.25 | 2.41 | 5.24 | 16.98 |
| Copa | 3 | 0.63 | 0.47 | 0.41 | 325.38 | 347.11 | 320.66 | 0.18 | 0.13 | 0.49 |
| TCP Cubic | 3 | 1.18 | 0.05 | 0.00 | 6421.66 | 6385.11 | 6507.26 | 21.87 | 38.79 | 85.96 |
| FillP | 3 | 0.73 | 0.58 | 0.01 | 6406.32 | 6729.43 | 5509.86 | 29.72 | 60.02 | 83.56 |
| FillP-Sheep | 3 | 0.61 | 0.60 | 0.37 | 5199.07 | 5389.74 | 5602.22 | 16.73 | 21.70 | 85.00 |
| Indigo | 3 | 0.57 | 0.35 | 0.40 | 313.66 | 330.27 | 401.58 | 0.06 | 0.00 | 0.53 |
| Indigo-MusesC3 | 3 | 0.74 | 0.65 | 0.00 | 6896.84 | 7189.87 | 7030.24 | 85.56 | 96.97 | 98.08 |
| Indigo-MusesC5 | 3 | 0.78 | 0.57 | 0.00 | 5207.17 | 5367.68 | 5463.81 | 20.92 | 35.67 | 99.91 |
| Indigo-MusesD | 3 | 0.72 | 0.81 | 0.00 | 6494.61 | 6592.78 | 6559.68 | 65.53 | 97.64 | 99.91 |
| Indigo-MusesT | 3 | 0.74 | 0.77 | 0.00 | 6408.18 | 6557.59 | 6397.29 | 84.98 | 95.90 | 99.88 |
| LEDBAT | 3 | 0.77 | 0.32 | 0.24 | 291.90 | 299.35 | 375.15 | 0.13 | 0.83 | 0.22 |
| PCC-Allegro | 3 | 1.16 | 0.00 | 0.00 | 6575.22 | 6570.88 | 6511.04 | 86.26 | 1.53 | 50.96 |
| PCC-Expr | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| QUIC Cubic | 3 | 0.94 | 0.37 | 0.09 | 2589.22 | 2659.43 | 2781.09 | 6.55 | 16.99 | 42.63 |
| SCReAM | 3 | 0.08 | 0.19 | 0.19 | 108.79 | 118.69 | 125.48 | 0.00 | 0.06 | 0.20 |
| Sprout | 3 | 0.12 | 0.14 | 0.14 | 170.08 | 138.95 | 141.28 | 0.13 | 0.01 | 0.02 |
| TaoVA-100x | 3 | 0.01 | 0.68 | 0.62 | 237.01 | 1757.96 | 2079.06 | 85.53 | 2.59 | 4.62 |
| TCP Vegas | 3 | 0.67 | 0.44 | 0.38 | 1013.08 | 1176.71 | 1071.32 | 1.00 | 2.28 | 6.88 |
| Verus | 3 | 1.13 | 0.01 | 0.01 | 1702.97 | 1717.00 | 1874.12 | 2.65 | 7.95 | 12.12 |
| PCC-Vivace | 3 | 1.01 | 0.22 | 0.00 | 4167.72 | 4158.03 | 4110.75 | 21.03 | 27.17 | 25.29 |
| WebRTC media | 3 | 0.04 | 0.04 | 0.04 | 301.33 | 351.44 | 384.15 | 0.02 | 0.00 | 0.00 |

Run 1: Statistics of TCP BBR

Start at: 2019-02-05 05:38:38

End at: 2019-02-05 05:39:08

Local clock offset: -7.259 ms

Remote clock offset: 2.478 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 2358.634 ms

Loss rate: 2.03%

-- Flow 1:

Average throughput: 0.65 Mbit/s

95th percentile per-packet one-way delay: 2328.617 ms

Loss rate: 1.10%

-- Flow 2:

Average throughput: 0.62 Mbit/s

95th percentile per-packet one-way delay: 2365.599 ms

Loss rate: 2.22%

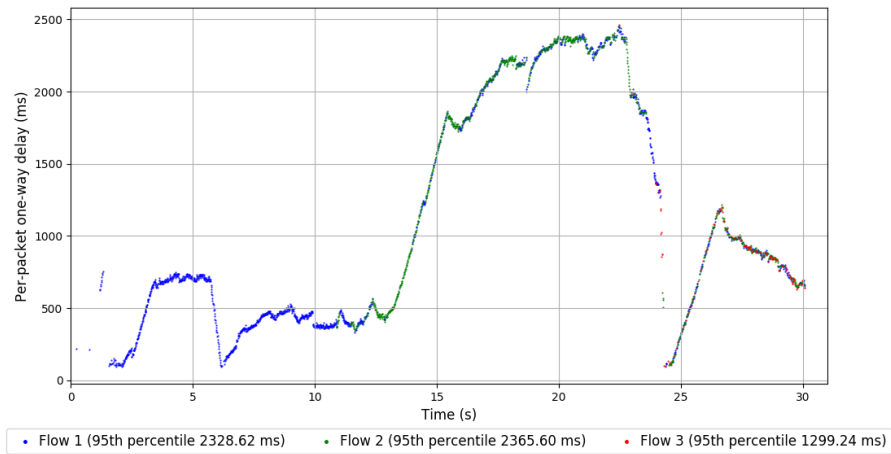
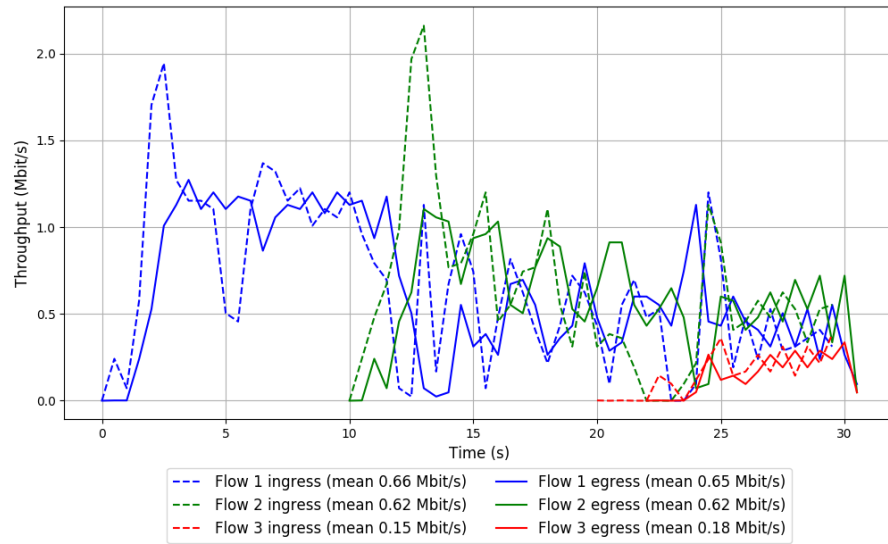
-- Flow 3:

Average throughput: 0.18 Mbit/s

95th percentile per-packet one-way delay: 1299.244 ms

Loss rate: 12.48%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2019-02-05 06:04:27

End at: 2019-02-05 06:04:58

Local clock offset: -7.023 ms

Remote clock offset: 6.966 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.18 Mbit/s

95th percentile per-packet one-way delay: 2509.812 ms

Loss rate: 8.09%

-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 2416.129 ms

Loss rate: 4.68%

-- Flow 2:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 2445.772 ms

Loss rate: 10.57%

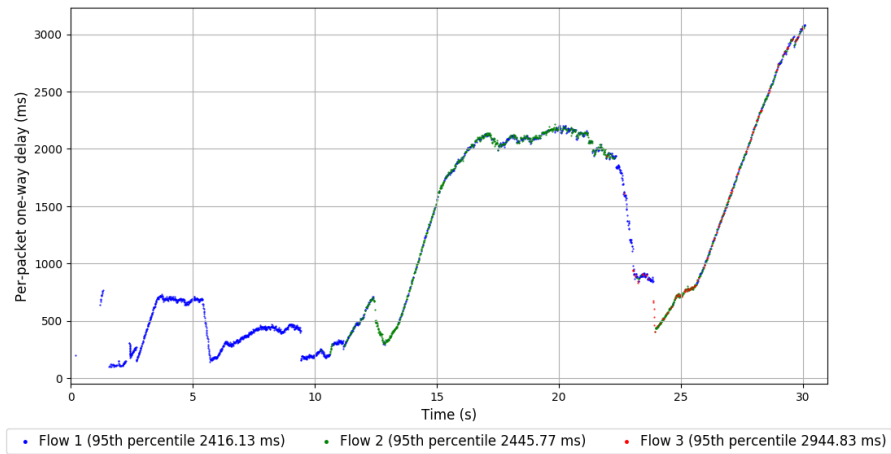
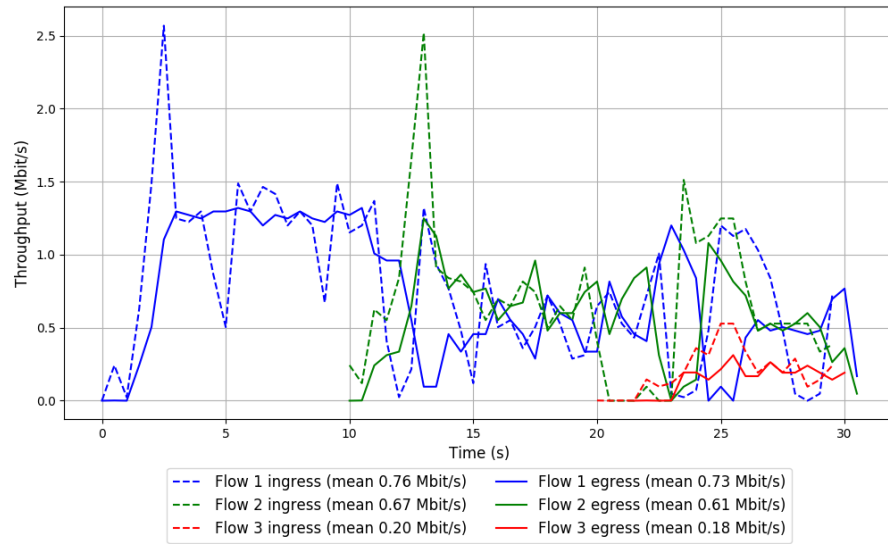
-- Flow 3:

Average throughput: 0.18 Mbit/s

95th percentile per-packet one-way delay: 2944.831 ms

Loss rate: 30.31%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2019-02-05 06:30:18

End at: 2019-02-05 06:30:48

Local clock offset: -6.839 ms

Remote clock offset: 9.553 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 1561.418 ms

Loss rate: 2.41%

-- Flow 1:

Average throughput: 0.77 Mbit/s

95th percentile per-packet one-way delay: 1551.603 ms

Loss rate: 1.45%

-- Flow 2:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 1580.616 ms

Loss rate: 2.94%

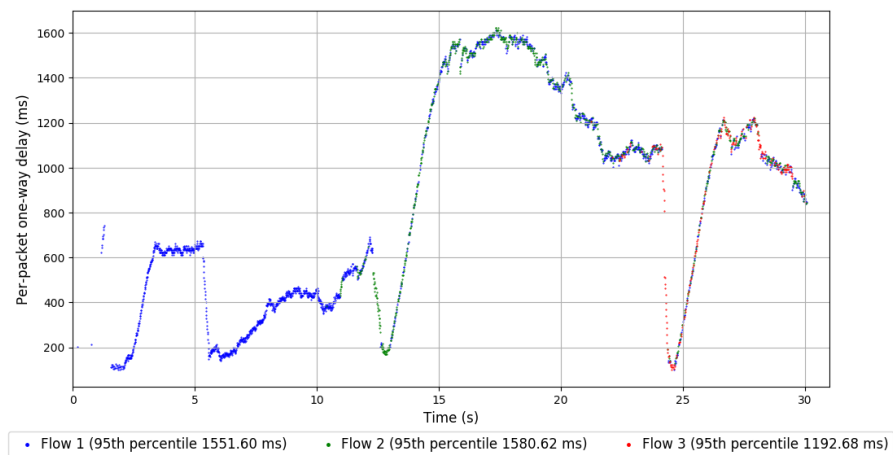
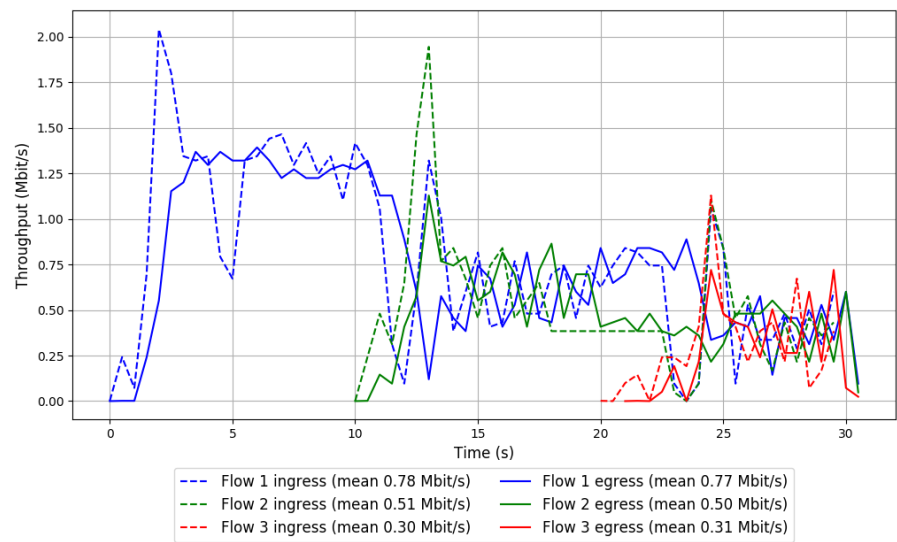
-- Flow 3:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 1192.678 ms

Loss rate: 8.16%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2019-02-05 05:55:53

End at: 2019-02-05 05:56:23

Local clock offset: -7.074 ms

Remote clock offset: 3.796 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.07 Mbit/s

95th percentile per-packet one-way delay: 346.571 ms

Loss rate: 0.19%

-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 326.031 ms

Loss rate: 0.14%

-- Flow 2:

Average throughput: 0.45 Mbit/s

95th percentile per-packet one-way delay: 323.031 ms

Loss rate: 0.13%

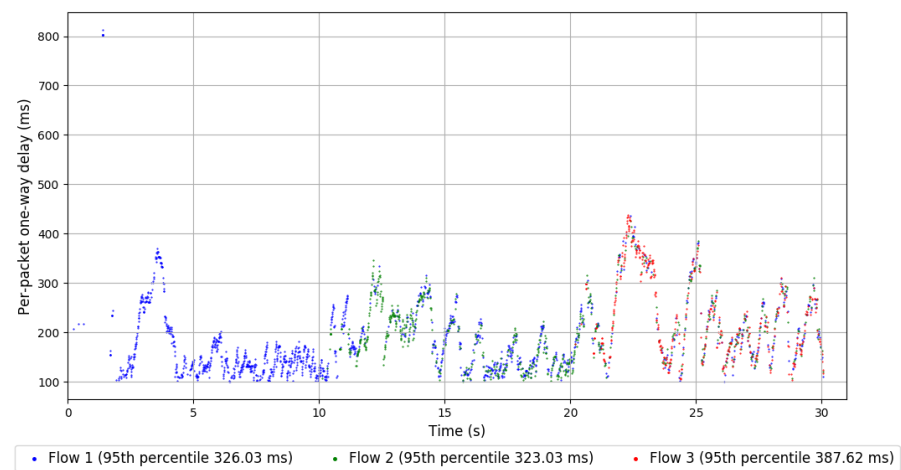
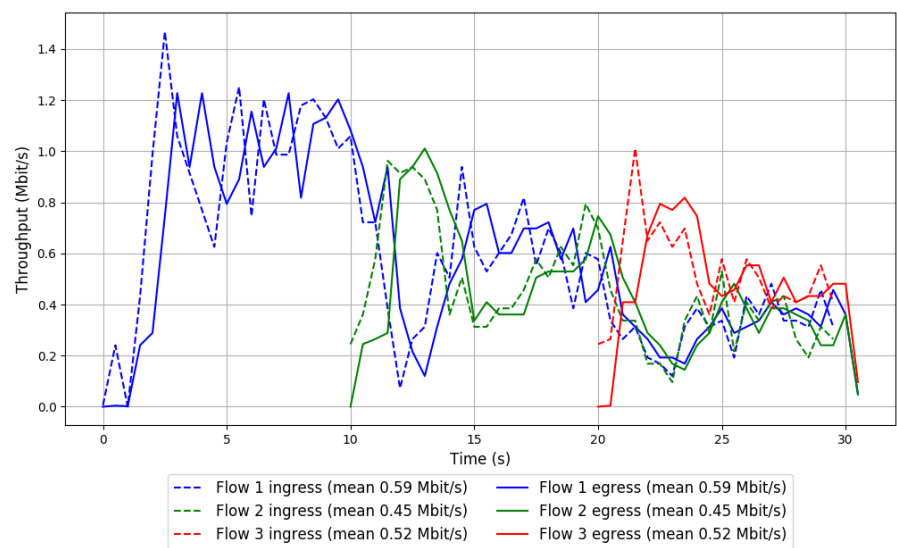
-- Flow 3:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 387.622 ms

Loss rate: 0.46%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2019-02-05 06:21:37

End at: 2019-02-05 06:22:07

Local clock offset: -7.683 ms

Remote clock offset: 9.357 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.08 Mbit/s

95th percentile per-packet one-way delay: 343.855 ms

Loss rate: 0.15%

-- Flow 1:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 349.528 ms

Loss rate: 0.11%

-- Flow 2:

Average throughput: 0.40 Mbit/s

95th percentile per-packet one-way delay: 339.589 ms

Loss rate: 0.15%

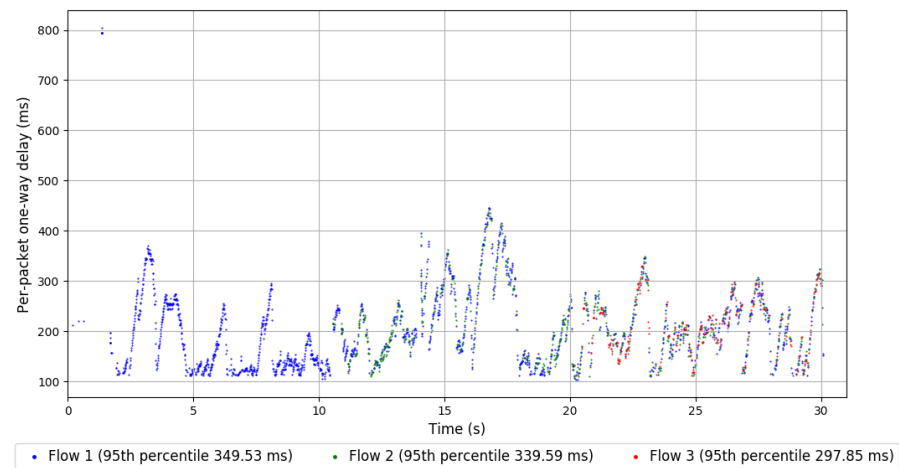
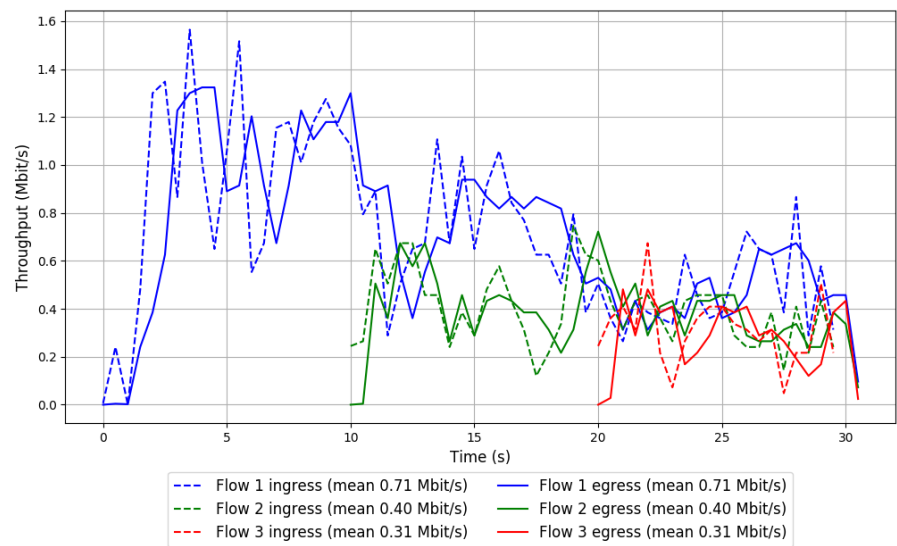
-- Flow 3:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 297.846 ms

Loss rate: 0.39%

Run 2: Report of Copa — Data Link

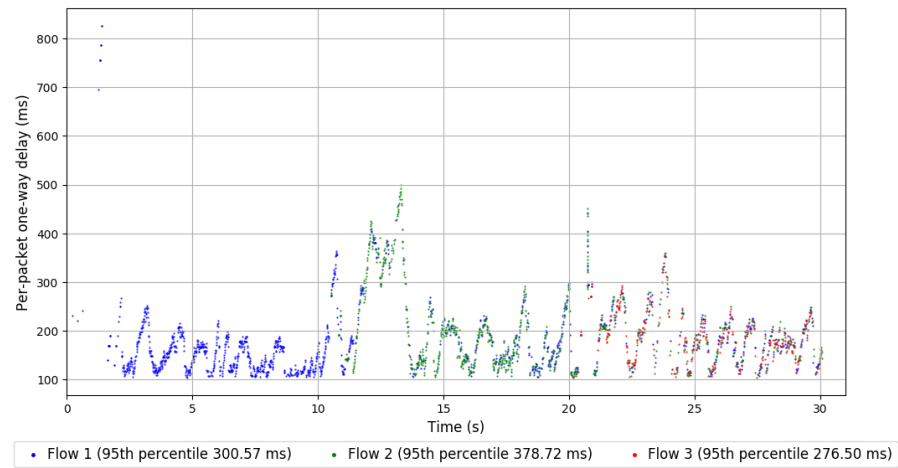
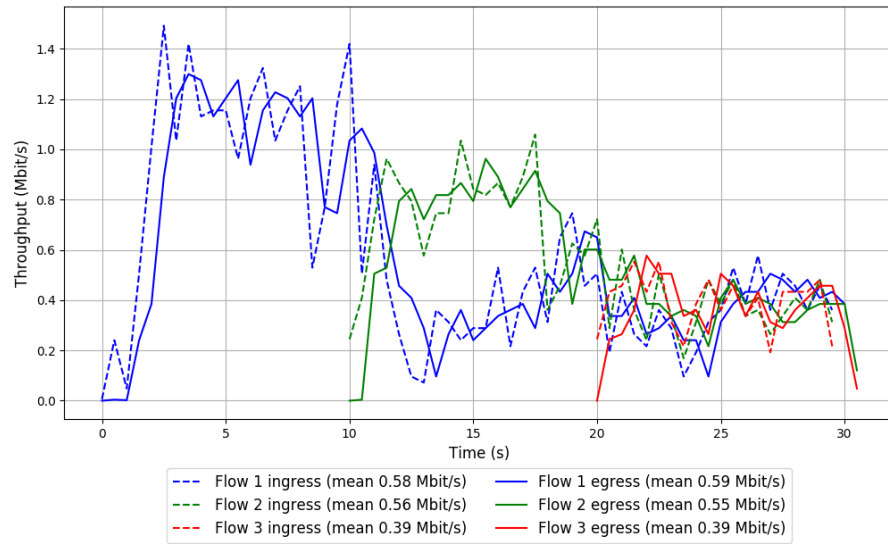


Run 3: Statistics of Copa

Start at: 2019-02-05 06:47:27
End at: 2019-02-05 06:47:57
Local clock offset: -7.616 ms
Remote clock offset: 10.289 ms

Below is generated by plot.py at 2019-02-05 06:54:21
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 346.610 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 300.567 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 378.722 ms
Loss rate: 0.11%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 276.501 ms
Loss rate: 0.62%

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2019-02-05 05:54:39

End at: 2019-02-05 05:55:09

Local clock offset: -7.111 ms

Remote clock offset: 2.764 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.22 Mbit/s

95th percentile per-packet one-way delay: 6625.305 ms

Loss rate: 21.99%

-- Flow 1:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 6625.765 ms

Loss rate: 21.51%

-- Flow 2:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 6530.351 ms

Loss rate: 39.27%

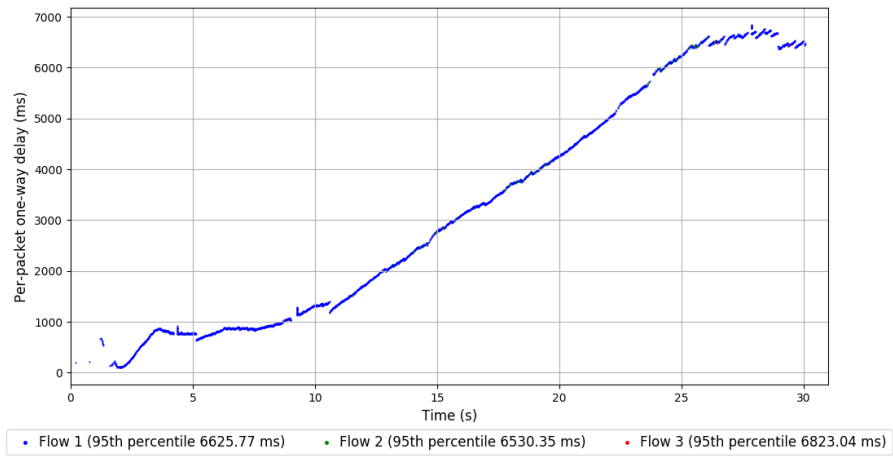
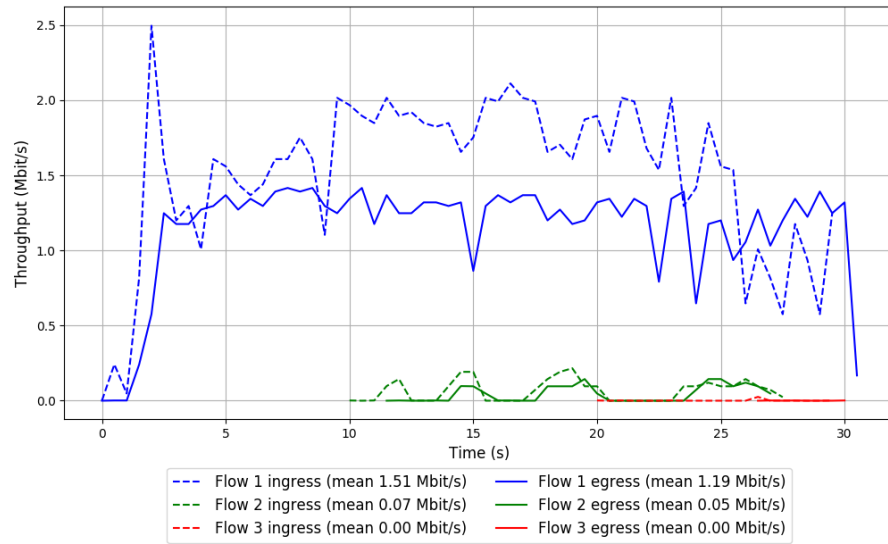
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6823.044 ms

Loss rate: 85.96%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2019-02-05 06:20:24

End at: 2019-02-05 06:20:54

Local clock offset: -7.063 ms

Remote clock offset: 3.325 ms

Below is generated by plot.py at 2019-02-05 06:54:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 6398.662 ms

Loss rate: 22.60%

-- Flow 1:

Average throughput: 1.18 Mbit/s

95th percentile per-packet one-way delay: 6398.662 ms

Loss rate: 22.22%

-- Flow 2:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 6365.356 ms

Loss rate: 36.83%

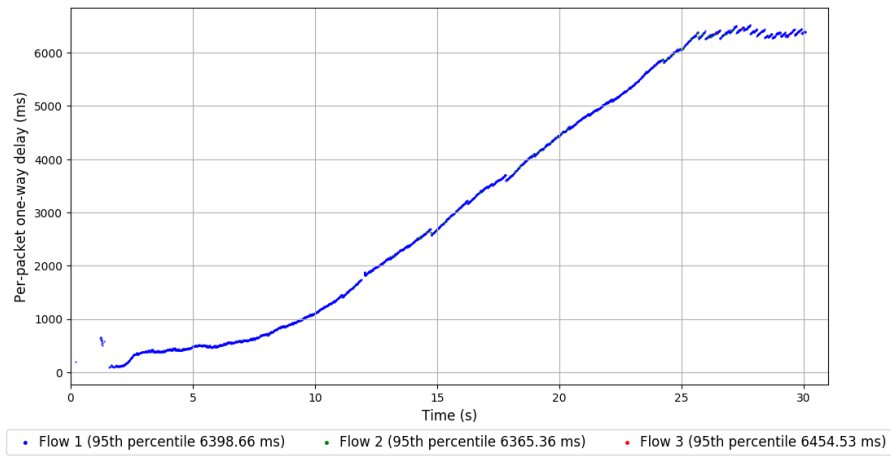
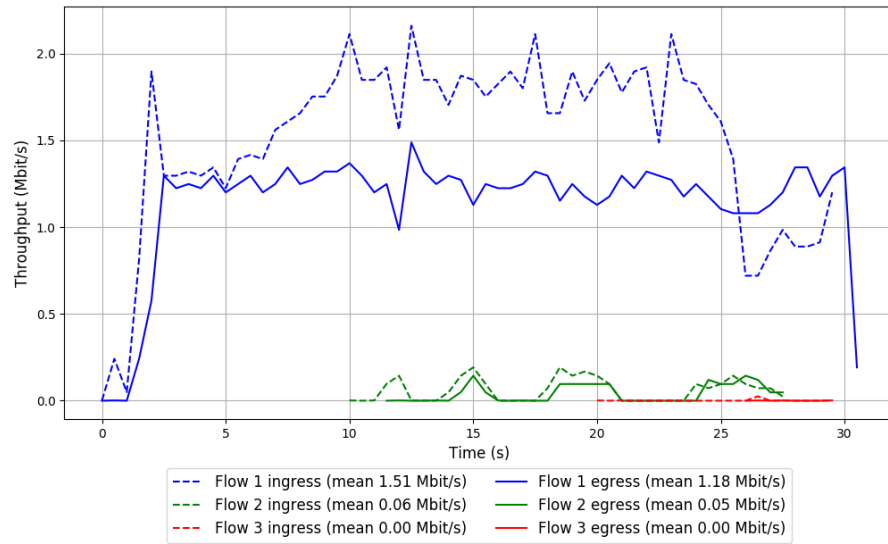
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6454.535 ms

Loss rate: 85.96%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2019-02-05 06:46:14

End at: 2019-02-05 06:46:44

Local clock offset: -7.775 ms

Remote clock offset: 9.363 ms

Below is generated by plot.py at 2019-02-05 06:54:24

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 6242.116 ms

Loss rate: 22.46%

-- Flow 1:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 6240.541 ms

Loss rate: 21.89%

-- Flow 2:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 6259.622 ms

Loss rate: 40.26%

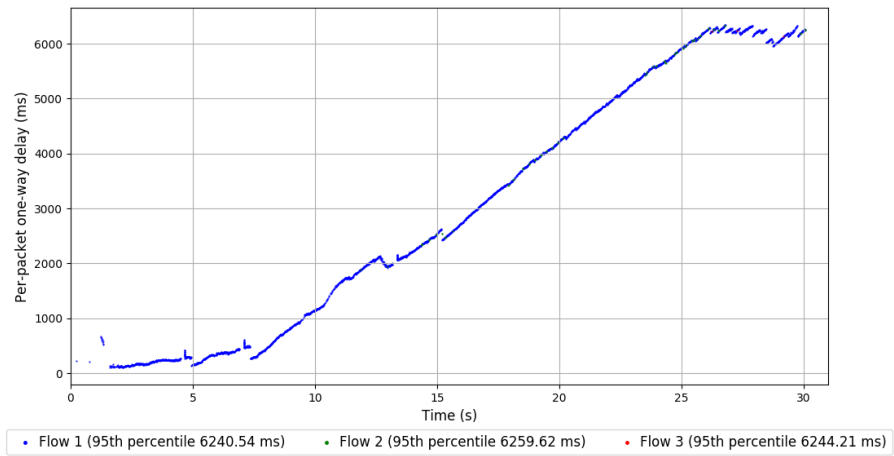
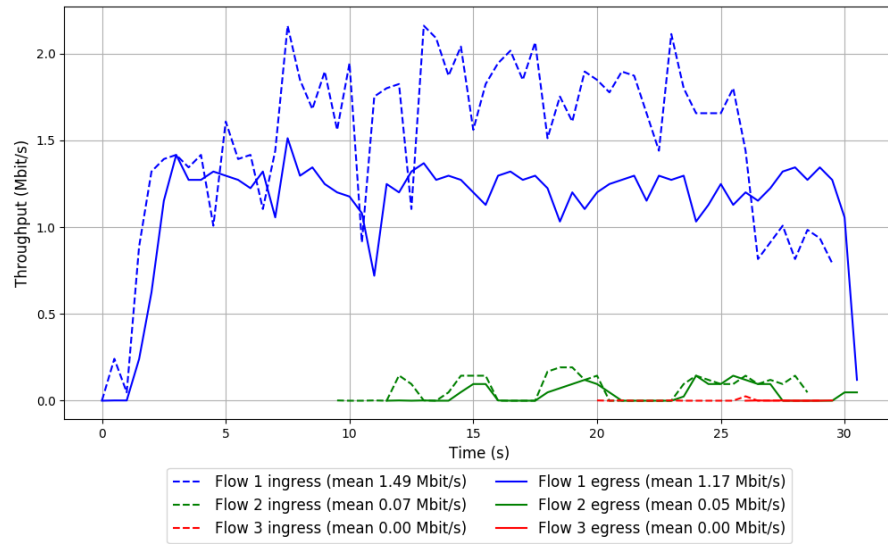
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6244.207 ms

Loss rate: 85.96%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2019-02-05 05:46:05

End at: 2019-02-05 05:46:35

Local clock offset: -7.856 ms

Remote clock offset: 2.567 ms

Below is generated by plot.py at 2019-02-05 06:54:26

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.12 Mbit/s

95th percentile per-packet one-way delay: 6664.388 ms

Loss rate: 41.74%

-- Flow 1:

Average throughput: 0.75 Mbit/s

95th percentile per-packet one-way delay: 6169.743 ms

Loss rate: 29.31%

-- Flow 2:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 6729.892 ms

Loss rate: 55.68%

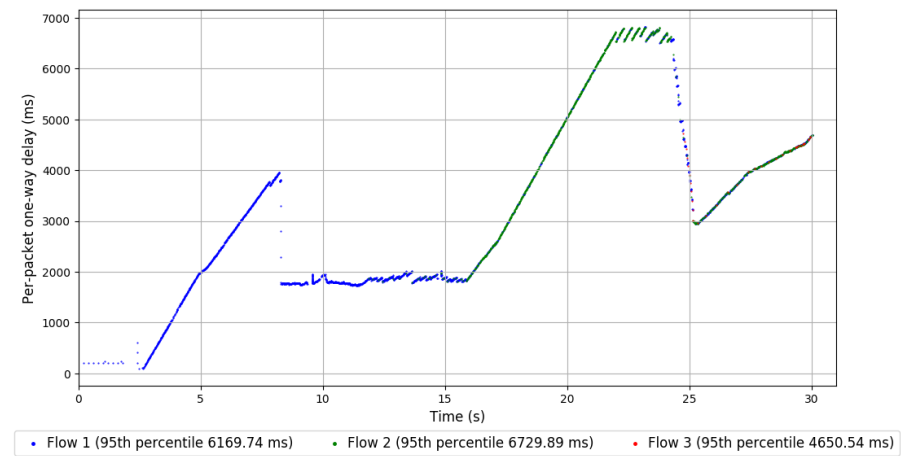
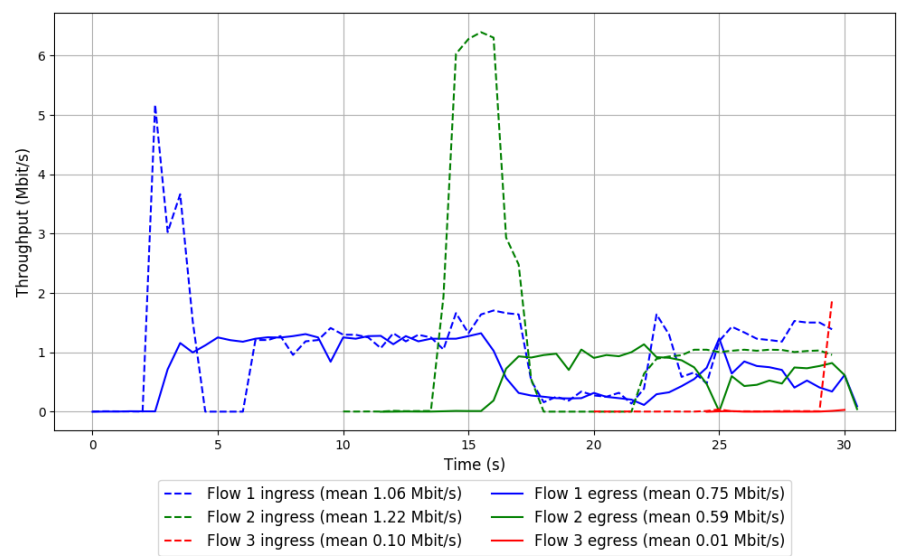
-- Flow 3:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 4650.537 ms

Loss rate: 96.11%

Run 1: Report of FillP — Data Link

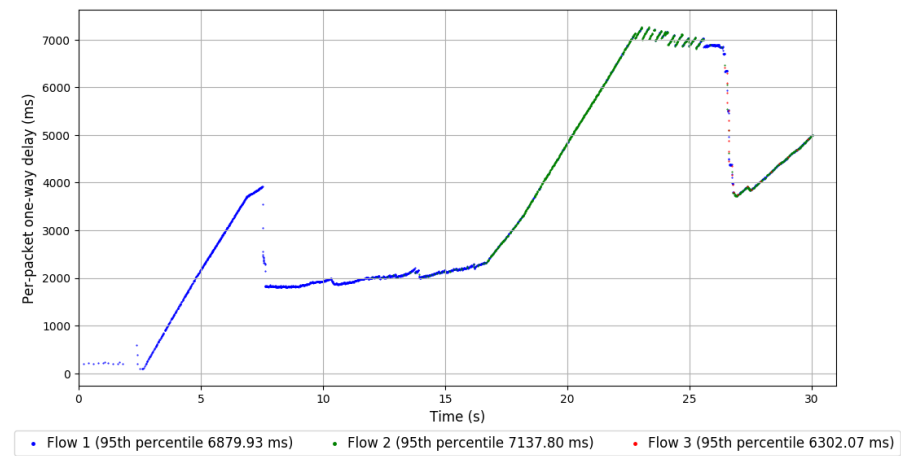
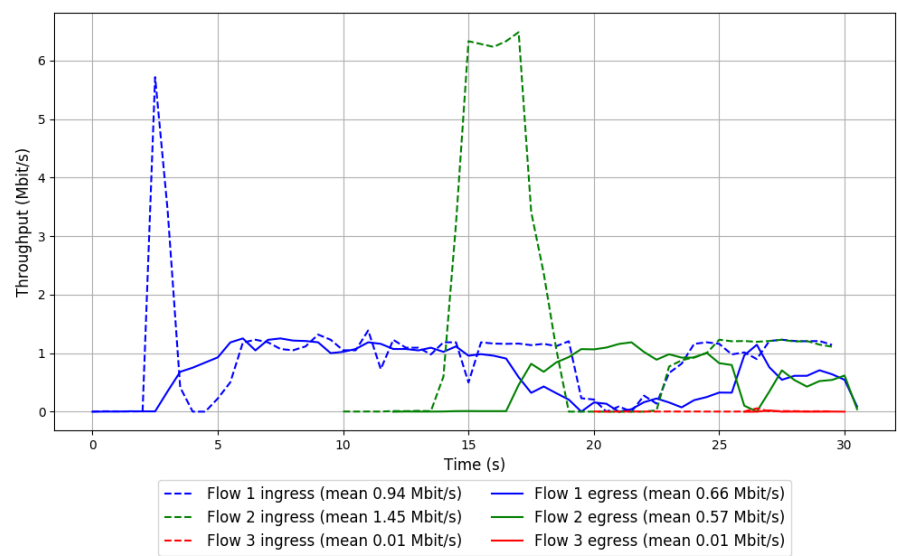


Run 2: Statistics of FillP

Start at: 2019-02-05 06:11:49
End at: 2019-02-05 06:12:19
Local clock offset: -7.163 ms
Remote clock offset: 9.26 ms

Below is generated by plot.py at 2019-02-05 06:54:26
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 7055.838 ms
Loss rate: 47.61%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 6879.929 ms
Loss rate: 30.31%
-- Flow 2:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7137.796 ms
Loss rate: 64.41%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 6302.066 ms
Loss rate: 76.60%

Run 2: Report of FillP — Data Link

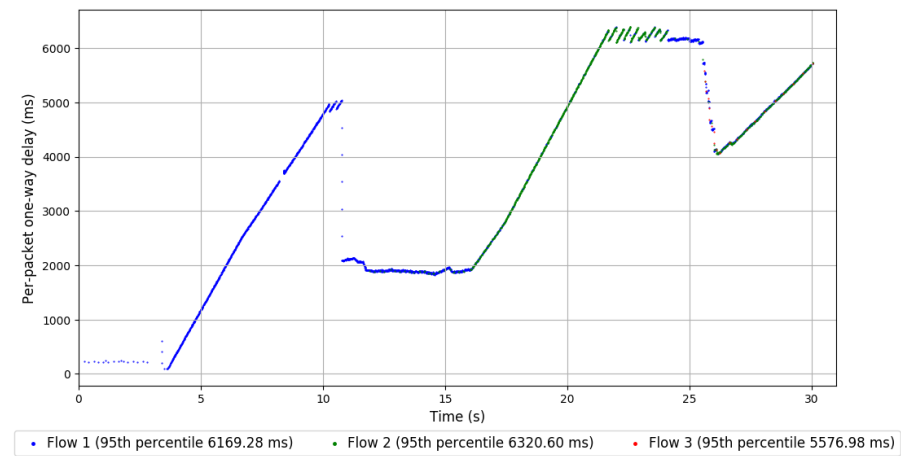
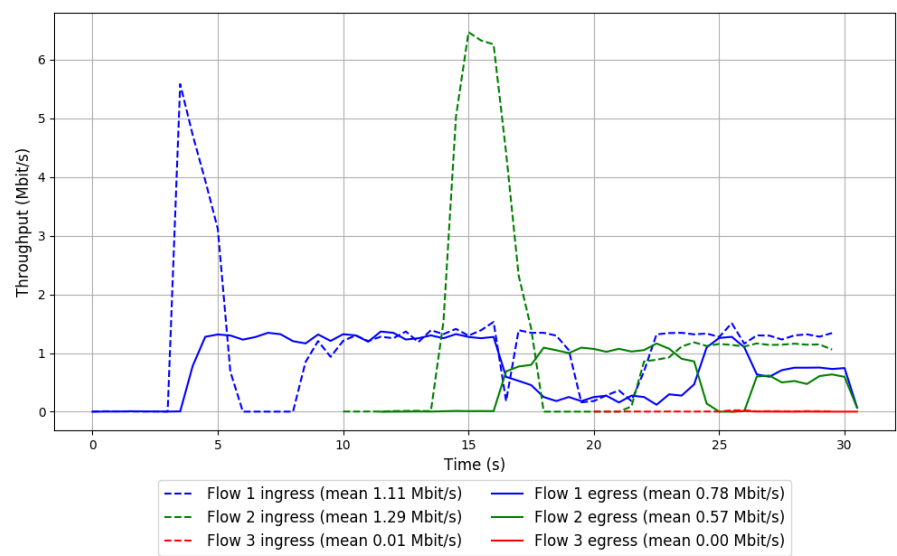


Run 3: Statistics of FillP

Start at: 2019-02-05 06:37:40
End at: 2019-02-05 06:38:10
Local clock offset: -7.717 ms
Remote clock offset: 8.912 ms

Below is generated by plot.py at 2019-02-05 06:54:27
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 6253.425 ms
Loss rate: 42.87%
-- Flow 1:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 6169.281 ms
Loss rate: 29.55%
-- Flow 2:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 6320.596 ms
Loss rate: 59.97%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 5576.984 ms
Loss rate: 77.97%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2019-02-05 05:48:32

End at: 2019-02-05 05:49:02

Local clock offset: -7.551 ms

Remote clock offset: 3.552 ms

Below is generated by plot.py at 2019-02-05 06:54:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.11 Mbit/s

95th percentile per-packet one-way delay: 5607.845 ms

Loss rate: 44.44%

-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 5643.712 ms

Loss rate: 16.76%

-- Flow 2:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 5533.633 ms

Loss rate: 20.18%

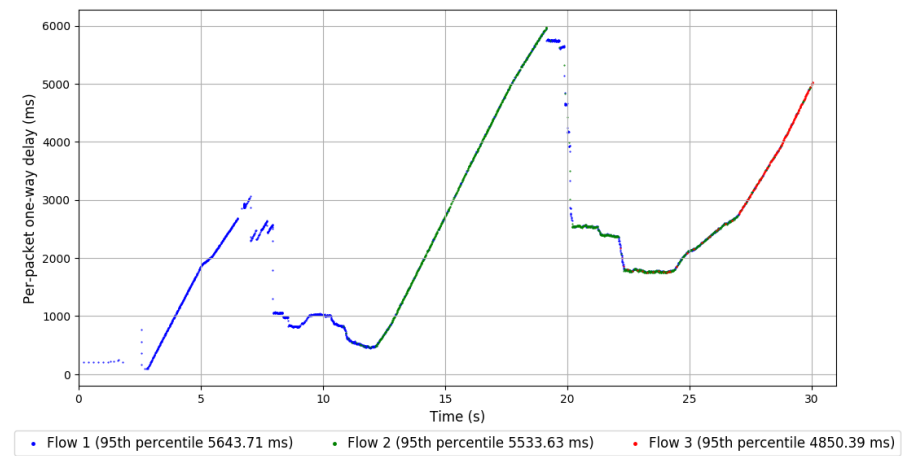
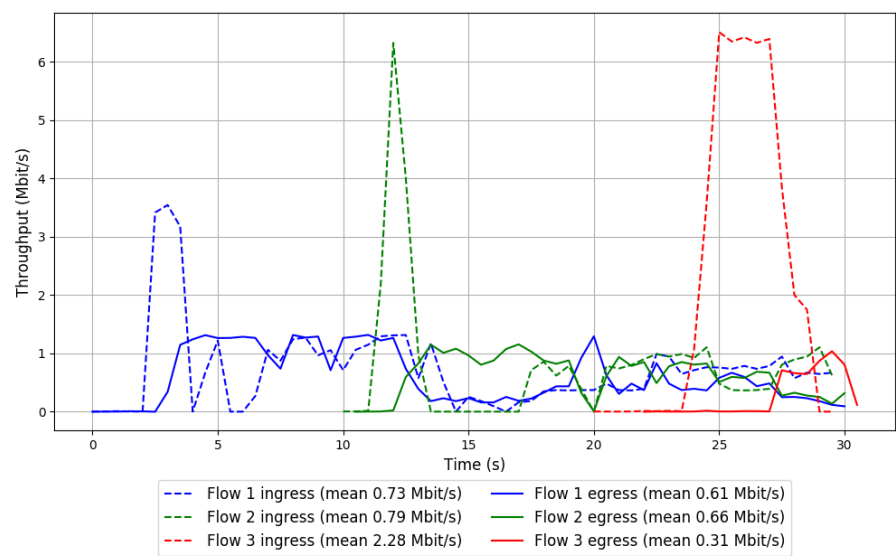
-- Flow 3:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 4850.392 ms

Loss rate: 88.89%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2019-02-05 06:14:16

End at: 2019-02-05 06:14:46

Local clock offset: -7.201 ms

Remote clock offset: 7.976 ms

Below is generated by plot.py at 2019-02-05 06:54:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.13 Mbit/s

95th percentile per-packet one-way delay: 6213.252 ms

Loss rate: 46.95%

-- Flow 1:

Average throughput: 0.62 Mbit/s

95th percentile per-packet one-way delay: 6078.608 ms

Loss rate: 20.37%

-- Flow 2:

Average throughput: 0.64 Mbit/s

95th percentile per-packet one-way delay: 6416.773 ms

Loss rate: 28.17%

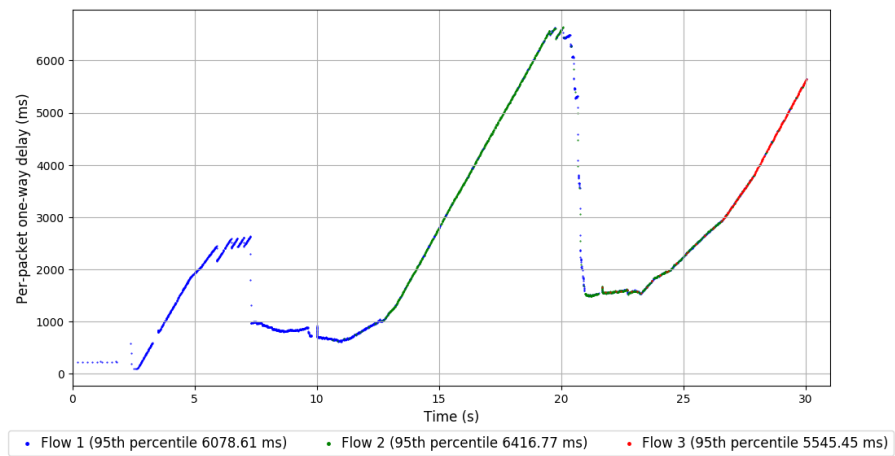
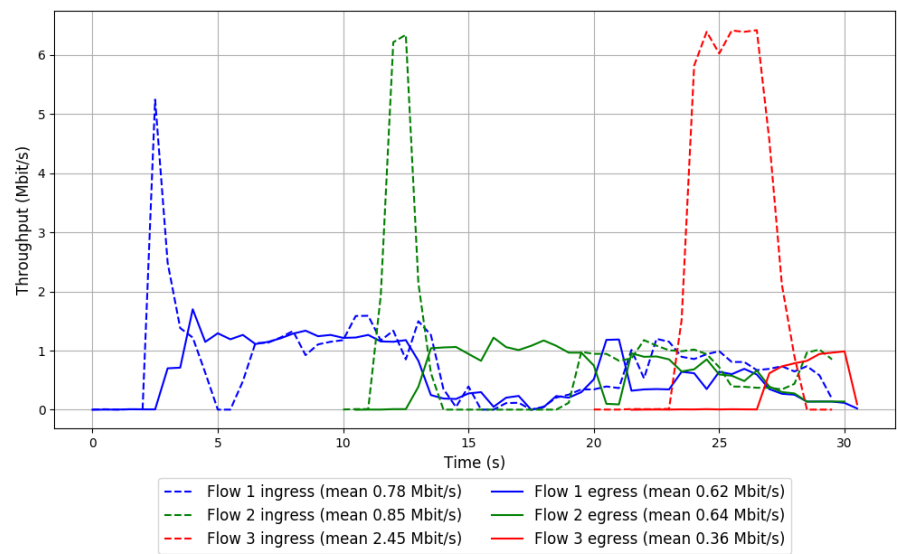
-- Flow 3:

Average throughput: 0.36 Mbit/s

95th percentile per-packet one-way delay: 5545.448 ms

Loss rate: 87.10%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2019-02-05 06:40:07

End at: 2019-02-05 06:40:37

Local clock offset: -7.746 ms

Remote clock offset: 7.815 ms

Below is generated by plot.py at 2019-02-05 06:54:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.09 Mbit/s

95th percentile per-packet one-way delay: 5457.068 ms

Loss rate: 38.46%

-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 3874.896 ms

Loss rate: 13.06%

-- Flow 2:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 4218.800 ms

Loss rate: 16.74%

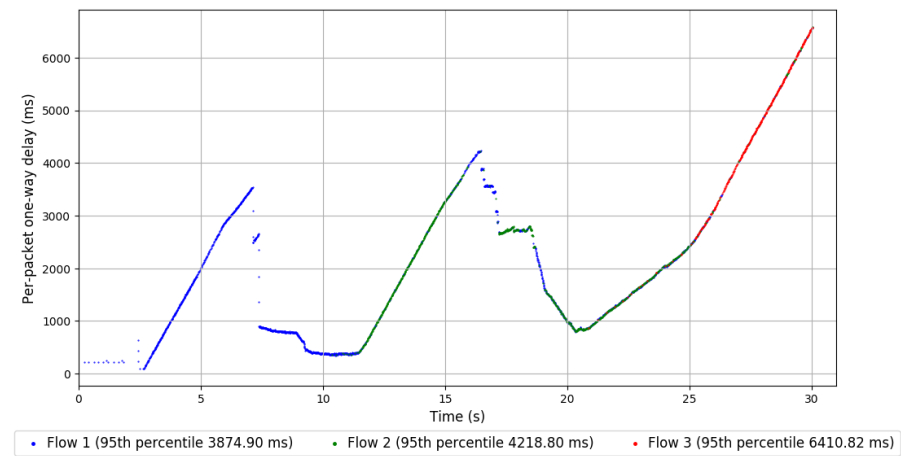
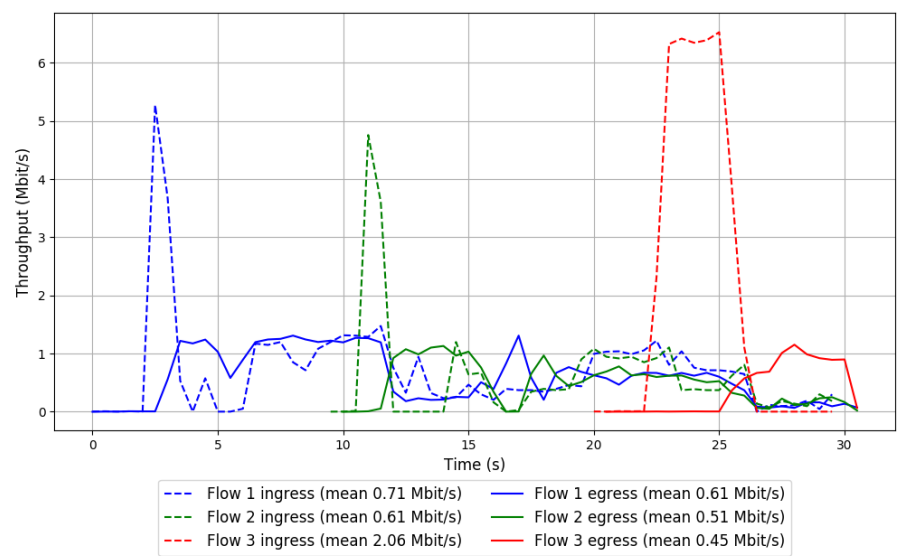
-- Flow 3:

Average throughput: 0.45 Mbit/s

95th percentile per-packet one-way delay: 6410.820 ms

Loss rate: 79.00%

Run 3: Report of FillP-Sheep — Data Link



Run 1: Statistics of Indigo

Start at: 2019-02-05 05:59:33

End at: 2019-02-05 06:00:03

Local clock offset: -7.065 ms

Remote clock offset: 3.678 ms

Below is generated by plot.py at 2019-02-05 06:54:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 348.053 ms

Loss rate: 0.21%

-- Flow 1:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 412.317 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 323.208 ms

Loss rate: 0.00%

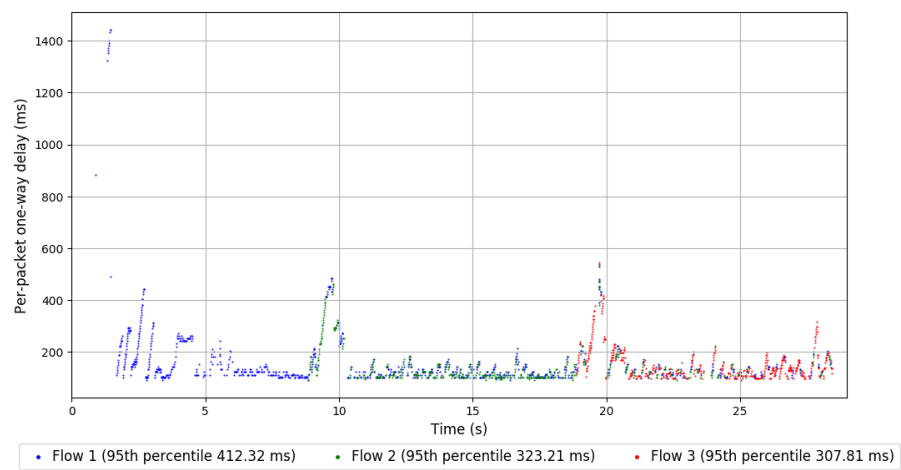
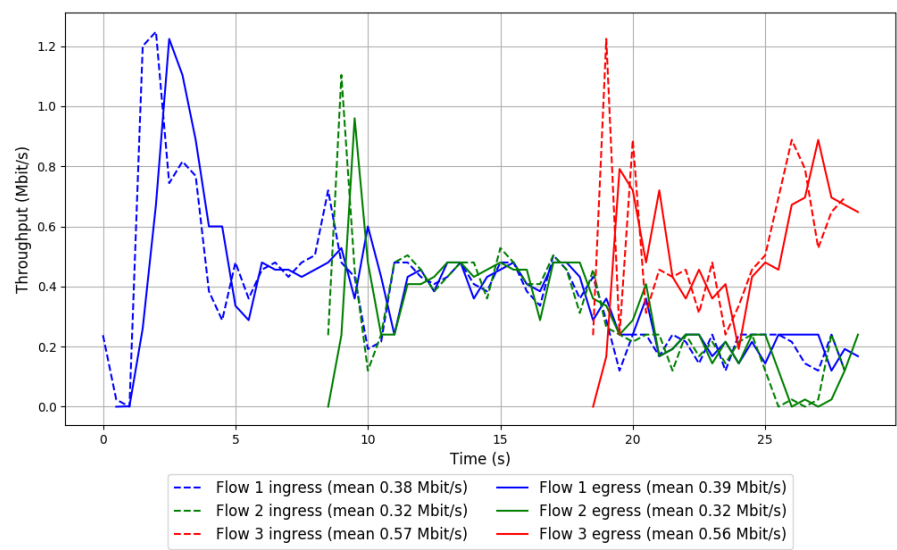
-- Flow 3:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 307.810 ms

Loss rate: 0.89%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2019-02-05 06:25:23

End at: 2019-02-05 06:25:53

Local clock offset: -7.608 ms

Remote clock offset: 6.915 ms

Below is generated by plot.py at 2019-02-05 06:54:29

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.98 Mbit/s

95th percentile per-packet one-way delay: 358.555 ms

Loss rate: 0.13%

-- Flow 1:

Average throughput: 0.65 Mbit/s

95th percentile per-packet one-way delay: 251.776 ms

Loss rate: 0.06%

-- Flow 2:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 352.537 ms

Loss rate: 0.00%

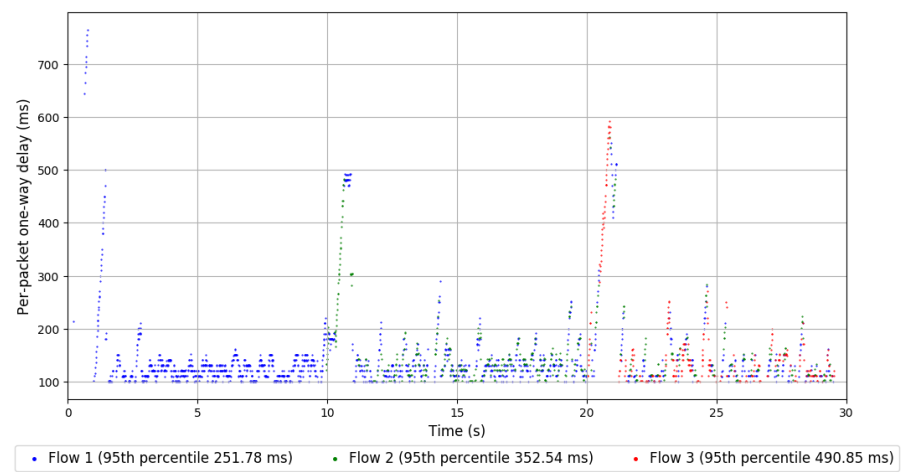
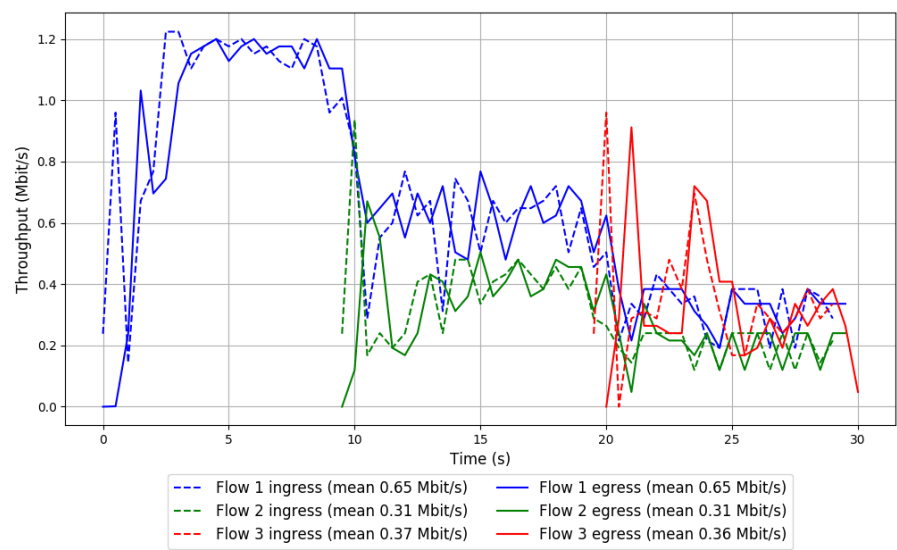
-- Flow 3:

Average throughput: 0.36 Mbit/s

95th percentile per-packet one-way delay: 490.854 ms

Loss rate: 0.69%

Run 2: Report of Indigo — Data Link

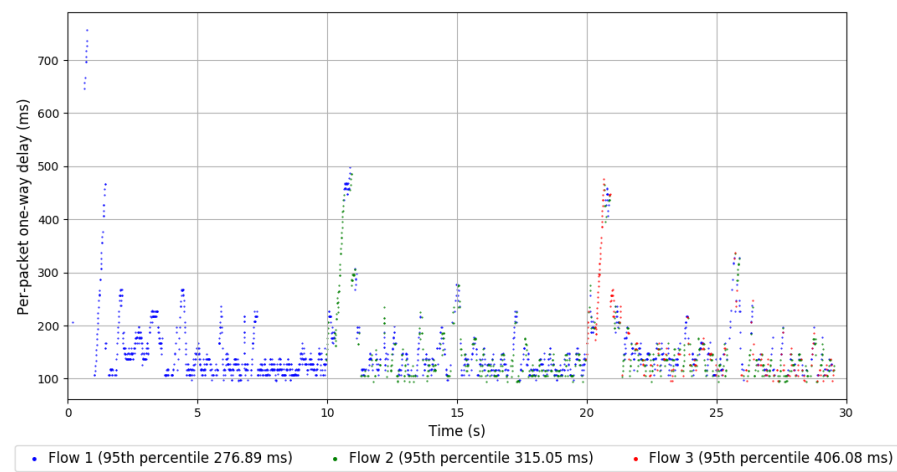
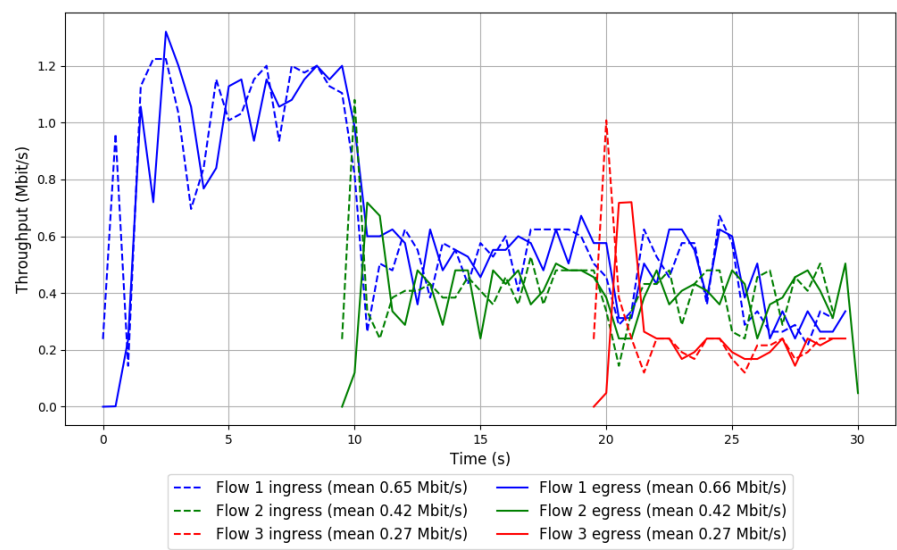


Run 3: Statistics of Indigo

Start at: 2019-02-05 06:51:08
End at: 2019-02-05 06:51:38
Local clock offset: -7.373 ms
Remote clock offset: 5.604 ms

Below is generated by plot.py at 2019-02-05 06:54:29
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 315.233 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 276.892 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 315.053 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 406.076 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link

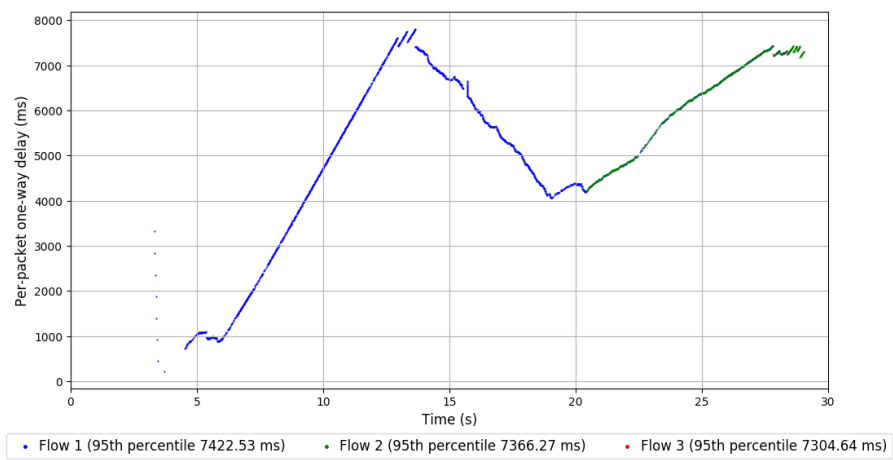
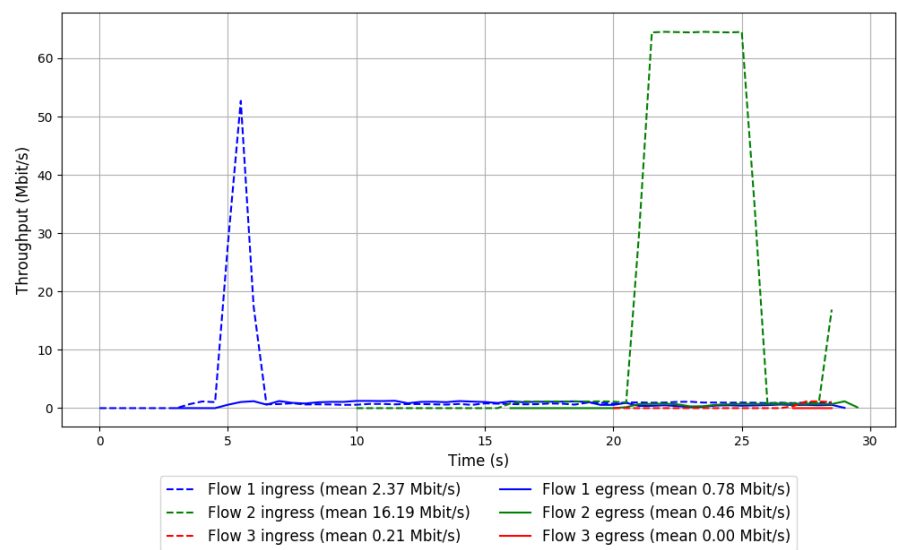


```
Run 1: Statistics of Indigo-MusesC3

Start at: 2019-02-05 05:44:51
End at: 2019-02-05 05:45:21
Local clock offset: -7.753 ms
Remote clock offset: 8.369 ms

# Below is generated by plot.py at 2019-02-05 06:54:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 7393.158 ms
Loss rate: 93.14%
-- Flow 1:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 7422.535 ms
Loss rate: 71.03%
-- Flow 2:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 7366.267 ms
Loss rate: 98.06%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7304.642 ms
Loss rate: 99.91%
```

Run 1: Report of Indigo-MusesC3 — Data Link



Run 2: Statistics of Indigo-MusesC3

Start at: 2019-02-05 06:10:35

End at: 2019-02-05 06:11:05

Local clock offset: -7.115 ms

Remote clock offset: 2.915 ms

Below is generated by plot.py at 2019-02-05 06:54:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.07 Mbit/s

95th percentile per-packet one-way delay: 7637.075 ms

Loss rate: 95.26%

-- Flow 1:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 6842.388 ms

Loss rate: 93.54%

-- Flow 2:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 7722.739 ms

Loss rate: 96.87%

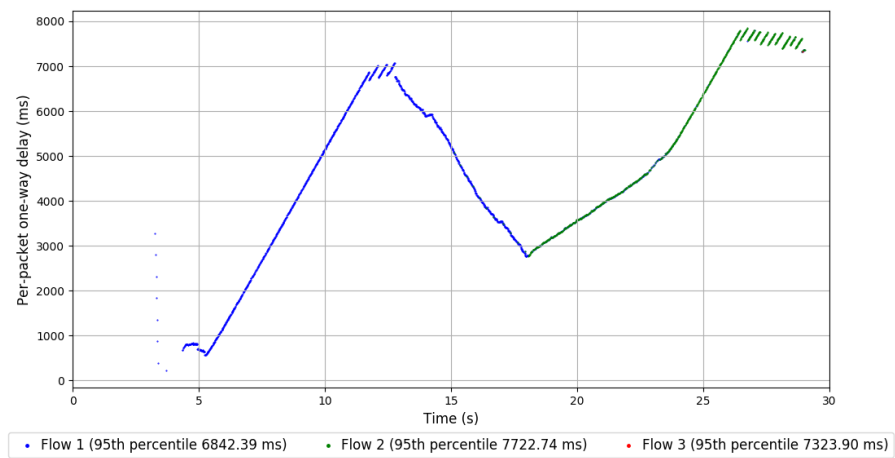
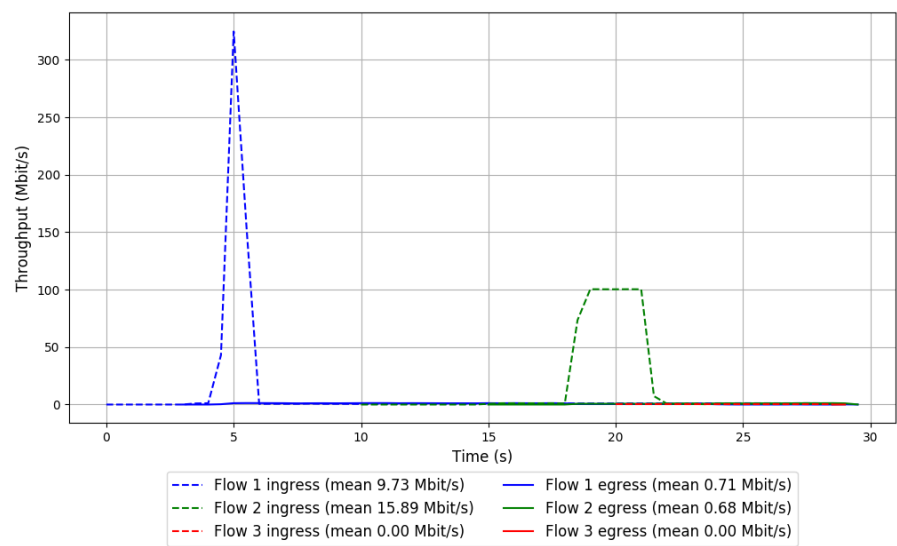
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 7323.903 ms

Loss rate: 94.44%

Run 2: Report of Indigo-MusesC3 — Data Link



Run 3: Statistics of Indigo-MusesC3

Start at: 2019-02-05 06:36:26

End at: 2019-02-05 06:36:56

Local clock offset: -6.912 ms

Remote clock offset: 5.049 ms

Below is generated by plot.py at 2019-02-05 06:54:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.21 Mbit/s

95th percentile per-packet one-way delay: 6445.100 ms

Loss rate: 94.29%

-- Flow 1:

Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 6425.604 ms

Loss rate: 92.10%

-- Flow 2:

Average throughput: 0.80 Mbit/s

95th percentile per-packet one-way delay: 6480.610 ms

Loss rate: 95.98%

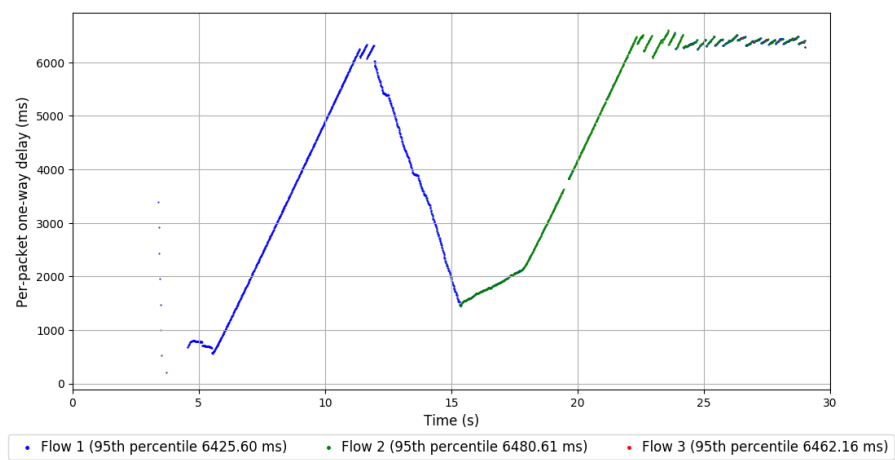
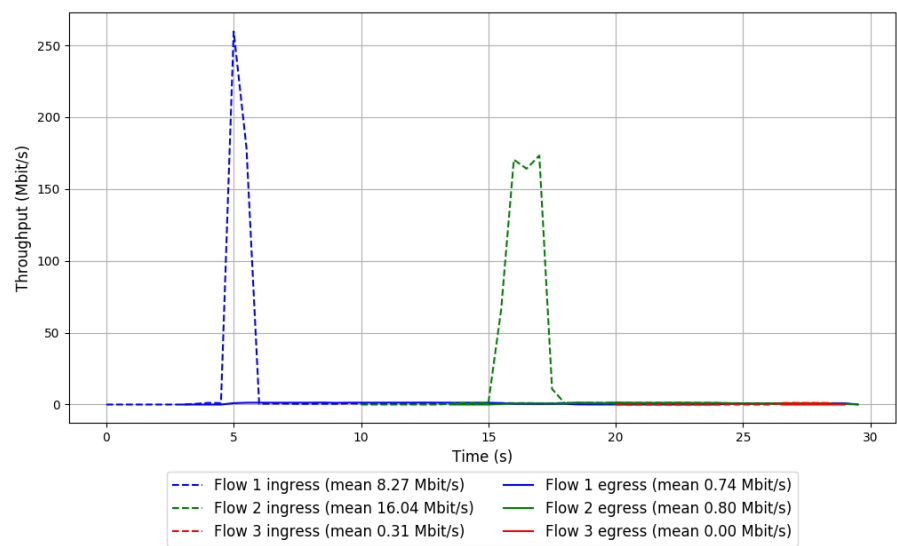
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6462.162 ms

Loss rate: 99.88%

Run 3: Report of Indigo-MusesC3 — Data Link



Run 1: Statistics of Indigo-MusesC5

Start at: 2019-02-05 05:53:26

End at: 2019-02-05 05:53:56

Local clock offset: -7.175 ms

Remote clock offset: 2.676 ms

Below is generated by plot.py at 2019-02-05 06:54:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 6067.559 ms

Loss rate: 38.21%

-- Flow 1:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 6057.170 ms

Loss rate: 26.47%

-- Flow 2:

Average throughput: 0.52 Mbit/s

95th percentile per-packet one-way delay: 6087.974 ms

Loss rate: 43.82%

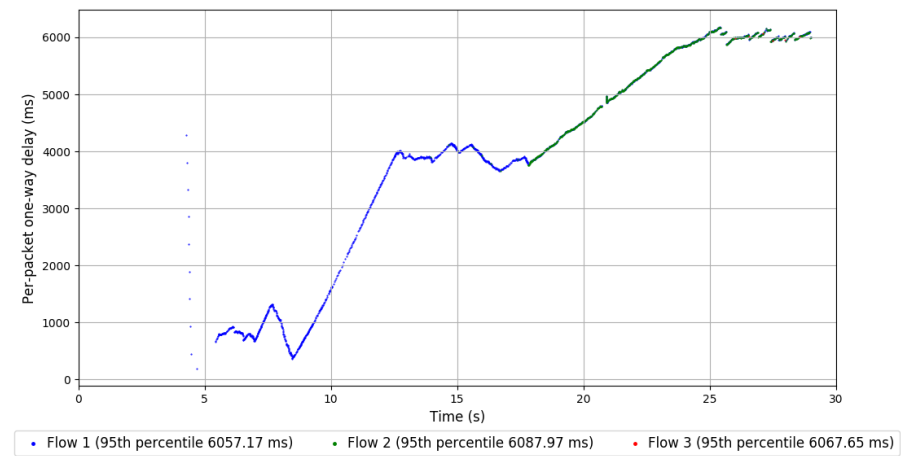
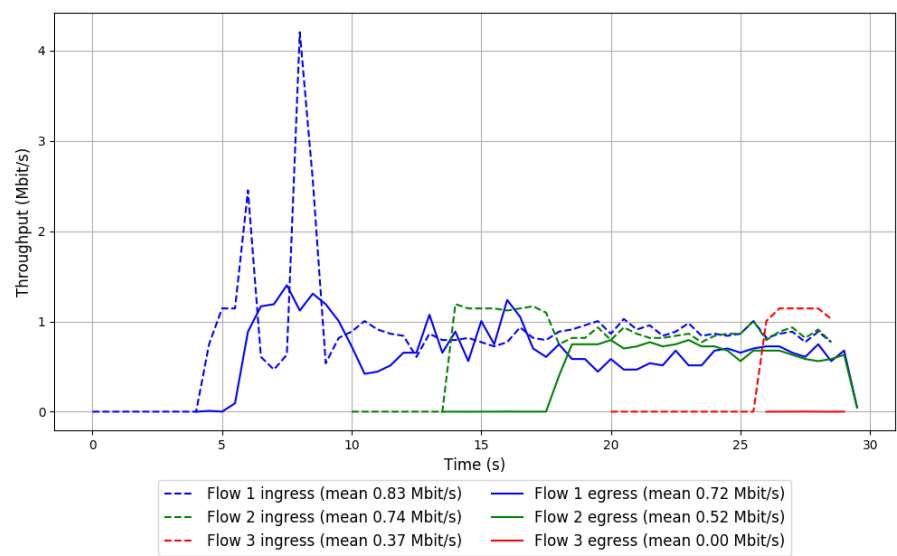
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6067.646 ms

Loss rate: 99.90%

Run 1: Report of Indigo-MusesC5 — Data Link



Run 2: Statistics of Indigo-MusesC5

Start at: 2019-02-05 06:19:10

End at: 2019-02-05 06:19:40

Local clock offset: -7.027 ms

Remote clock offset: 9.391 ms

Below is generated by plot.py at 2019-02-05 06:54:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.22 Mbit/s

95th percentile per-packet one-way delay: 4871.379 ms

Loss rate: 32.01%

-- Flow 1:

Average throughput: 0.82 Mbit/s

95th percentile per-packet one-way delay: 4781.355 ms

Loss rate: 17.97%

-- Flow 2:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 4982.472 ms

Loss rate: 30.28%

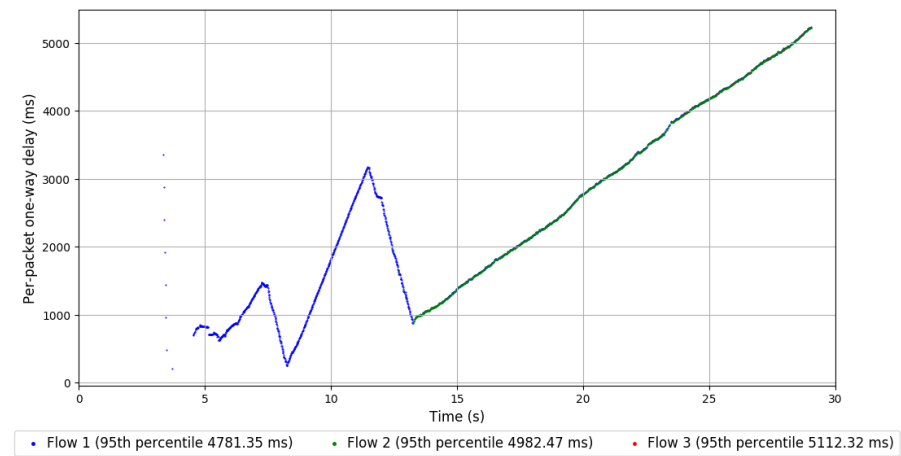
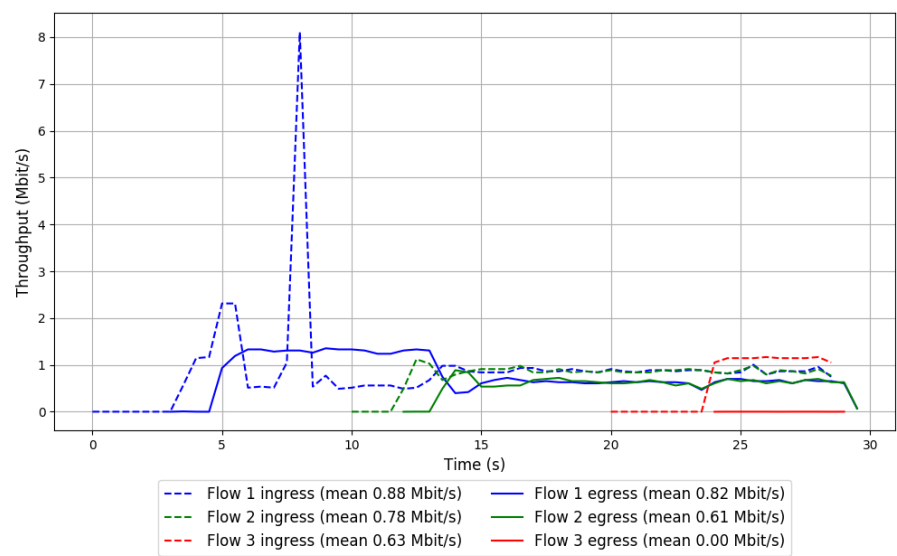
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5112.316 ms

Loss rate: 99.92%

Run 2: Report of Indigo-MusesC5 — Data Link



Run 3: Statistics of Indigo-MusesC5

Start at: 2019-02-05 06:45:00

End at: 2019-02-05 06:45:30

Local clock offset: -7.772 ms

Remote clock offset: 8.121 ms

Below is generated by plot.py at 2019-02-05 06:54:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 4903.456 ms

Loss rate: 33.21%

-- Flow 1:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 4782.978 ms

Loss rate: 18.31%

-- Flow 2:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 5032.602 ms

Loss rate: 32.91%

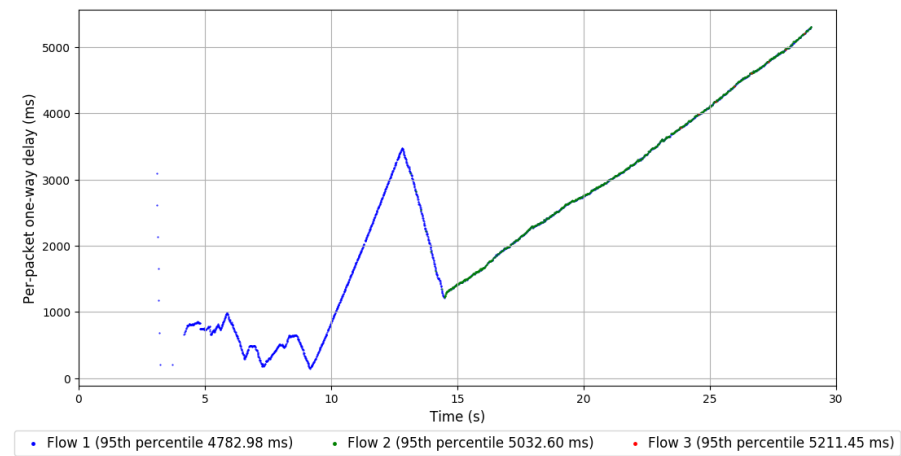
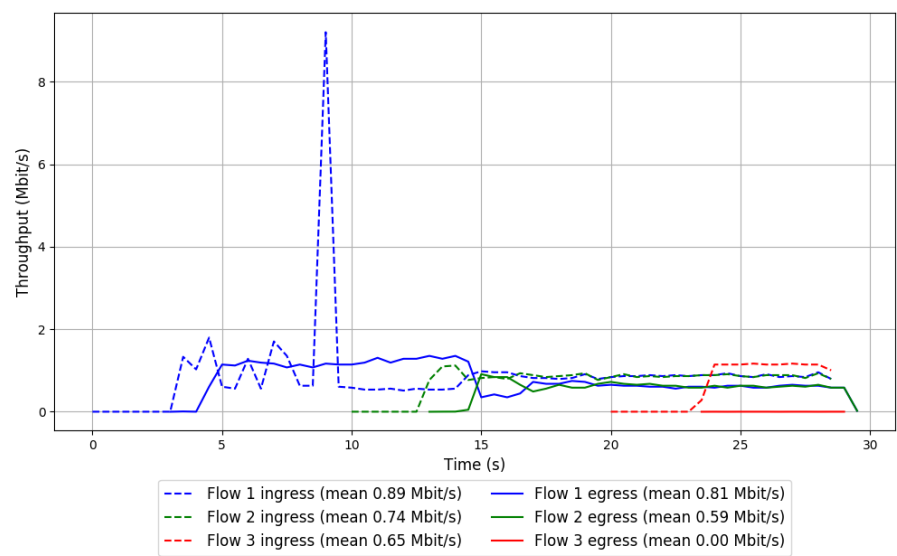
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5211.453 ms

Loss rate: 99.92%

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2019-02-05 06:02:00

End at: 2019-02-05 06:02:30

Local clock offset: -7.015 ms

Remote clock offset: 2.678 ms

Below is generated by plot.py at 2019-02-05 06:54:37

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 6513.816 ms

Loss rate: 94.40%

-- Flow 1:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 6438.026 ms

Loss rate: 70.31%

-- Flow 2:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 6592.577 ms

Loss rate: 97.49%

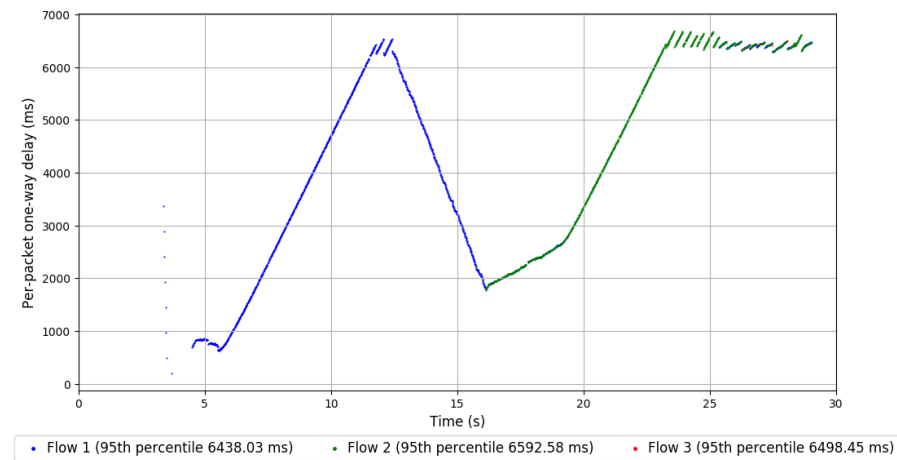
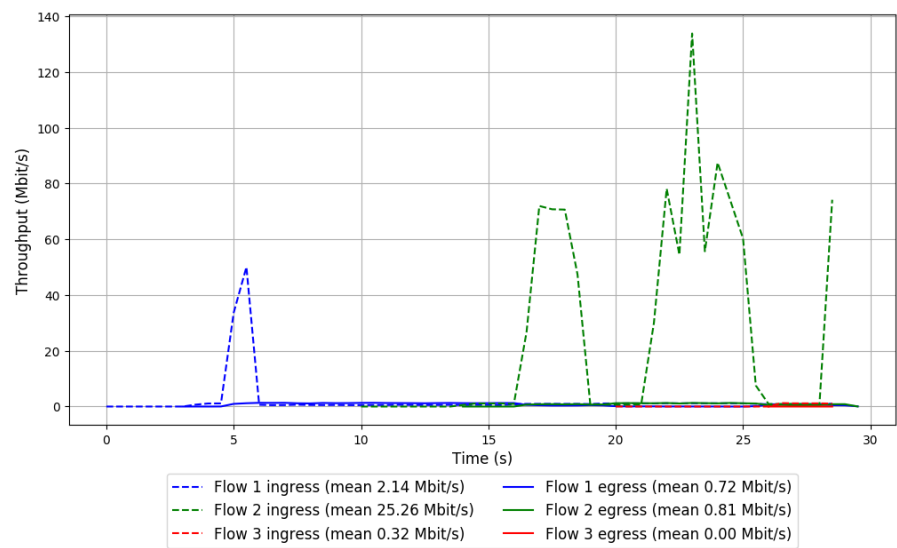
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6498.449 ms

Loss rate: 99.92%

Run 1: Report of Indigo-MusesD — Data Link



Run 2: Statistics of Indigo-MusesD

Start at: 2019-02-05 06:27:51

End at: 2019-02-05 06:28:21

Local clock offset: -6.86 ms

Remote clock offset: 3.039 ms

Below is generated by plot.py at 2019-02-05 06:54:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.23 Mbit/s

95th percentile per-packet one-way delay: 6265.067 ms

Loss rate: 94.92%

-- Flow 1:

Average throughput: 0.70 Mbit/s

95th percentile per-packet one-way delay: 6180.264 ms

Loss rate: 63.47%

-- Flow 2:

Average throughput: 0.90 Mbit/s

95th percentile per-packet one-way delay: 6300.648 ms

Loss rate: 97.59%

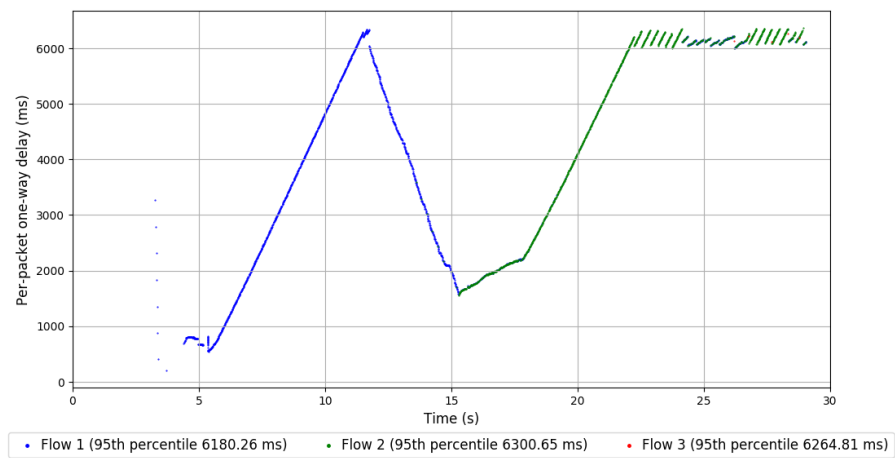
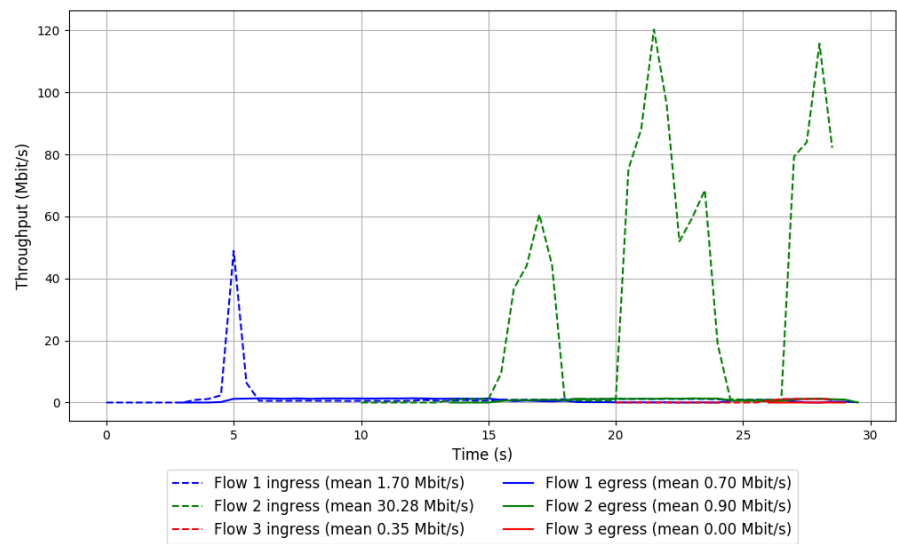
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6264.805 ms

Loss rate: 99.91%

Run 2: Report of Indigo-MusesD — Data Link



Run 3: Statistics of Indigo-MusesD

Start at: 2019-02-05 06:53:35

End at: 2019-02-05 06:54:05

Local clock offset: -6.501 ms

Remote clock offset: 9.465 ms

Below is generated by plot.py at 2019-02-05 06:54:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.13 Mbit/s

95th percentile per-packet one-way delay: 6875.093 ms

Loss rate: 94.47%

-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 6865.540 ms

Loss rate: 62.80%

-- Flow 2:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 6885.114 ms

Loss rate: 97.83%

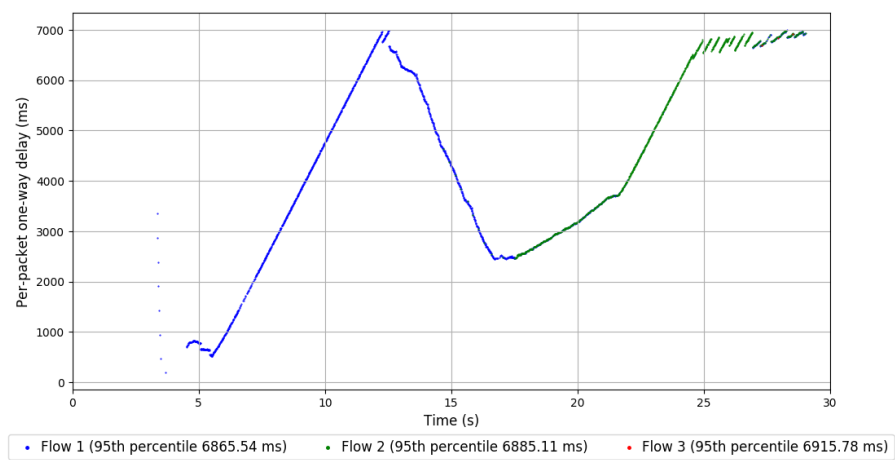
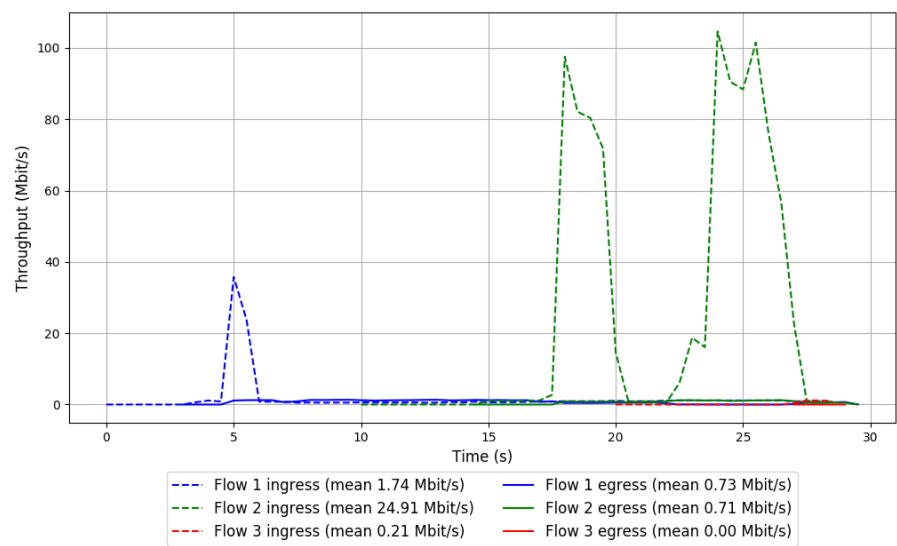
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6915.785 ms

Loss rate: 99.91%

Run 3: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MusesT

Start at: 2019-02-05 05:42:19

End at: 2019-02-05 05:42:49

Local clock offset: -7.568 ms

Remote clock offset: 3.583 ms

Below is generated by plot.py at 2019-02-05 06:54:42

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 6571.445 ms

Loss rate: 94.00%

-- Flow 1:

Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 6538.867 ms

Loss rate: 90.69%

-- Flow 2:

Average throughput: 0.76 Mbit/s

95th percentile per-packet one-way delay: 6611.266 ms

Loss rate: 96.19%

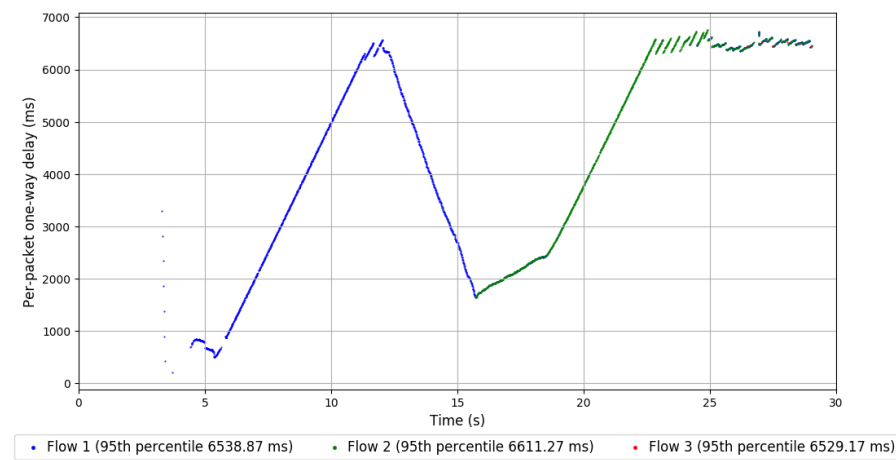
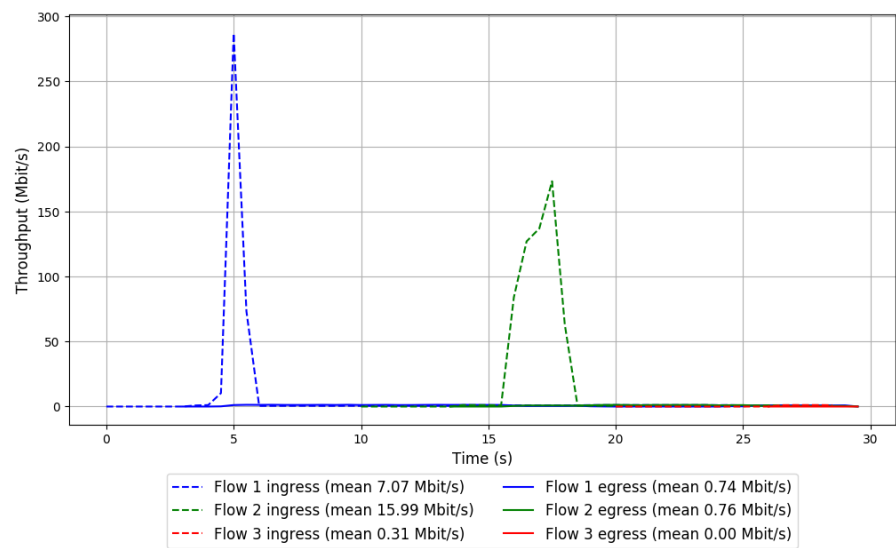
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6529.170 ms

Loss rate: 99.88%

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MusesT

Start at: 2019-02-05 06:08:08

End at: 2019-02-05 06:08:38

Local clock offset: -7.068 ms

Remote clock offset: 6.798 ms

Below is generated by plot.py at 2019-02-05 06:54:42

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 6482.632 ms

Loss rate: 91.99%

-- Flow 1:

Average throughput: 0.75 Mbit/s

95th percentile per-packet one-way delay: 6362.081 ms

Loss rate: 76.09%

-- Flow 2:

Average throughput: 0.78 Mbit/s

95th percentile per-packet one-way delay: 6542.668 ms

Loss rate: 96.13%

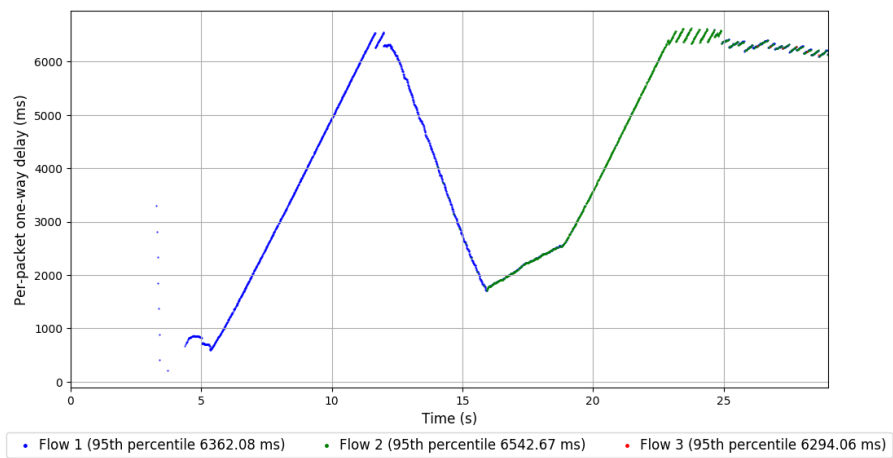
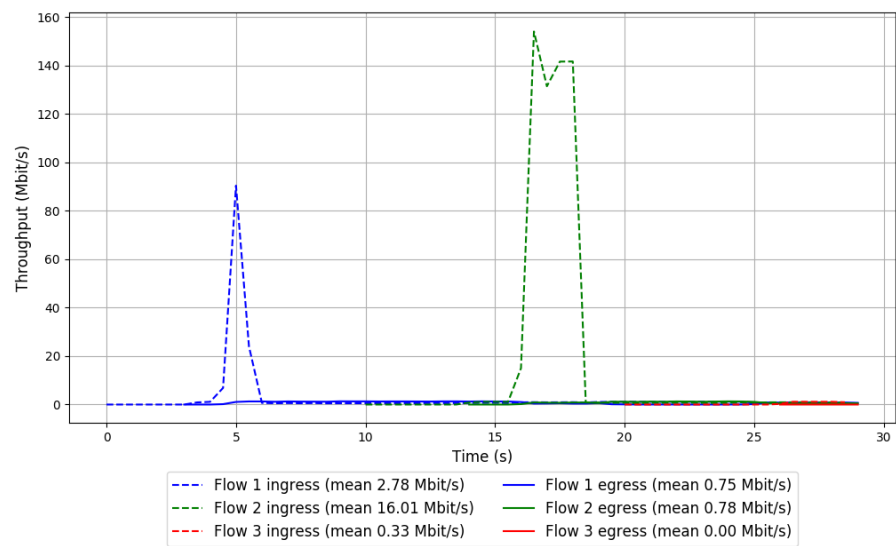
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6294.060 ms

Loss rate: 99.89%

Run 2: Report of Indigo-MusesT — Data Link



Run 3: Statistics of Indigo-MusesT

Start at: 2019-02-05 06:33:59

End at: 2019-02-05 06:34:29

Local clock offset: -7.685 ms

Remote clock offset: 9.802 ms

Below is generated by plot.py at 2019-02-05 06:54:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 6422.644 ms

Loss rate: 92.61%

-- Flow 1:

Average throughput: 0.74 Mbit/s

95th percentile per-packet one-way delay: 6323.580 ms

Loss rate: 88.17%

-- Flow 2:

Average throughput: 0.77 Mbit/s

95th percentile per-packet one-way delay: 6518.843 ms

Loss rate: 95.38%

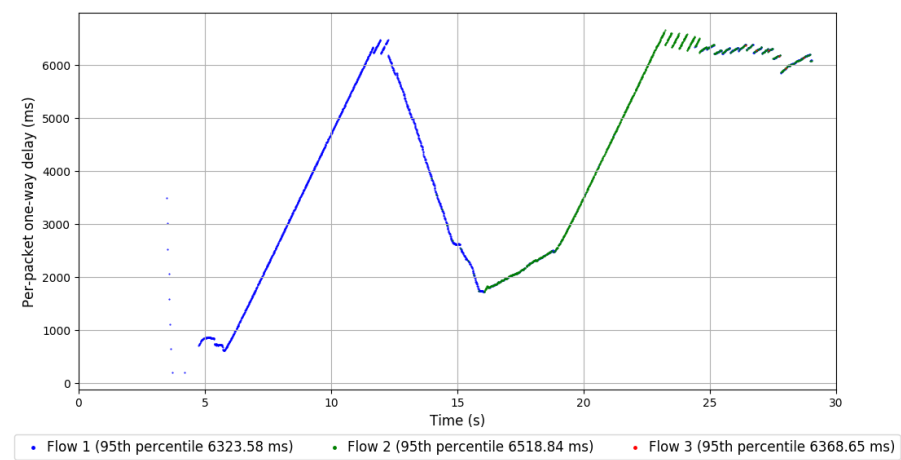
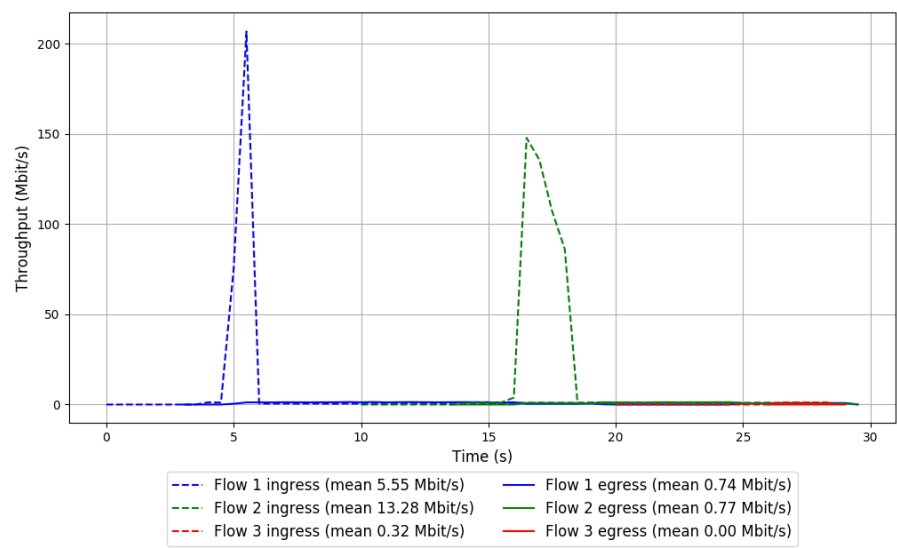
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6368.655 ms

Loss rate: 99.88%

Run 3: Report of Indigo-MusesT — Data Link

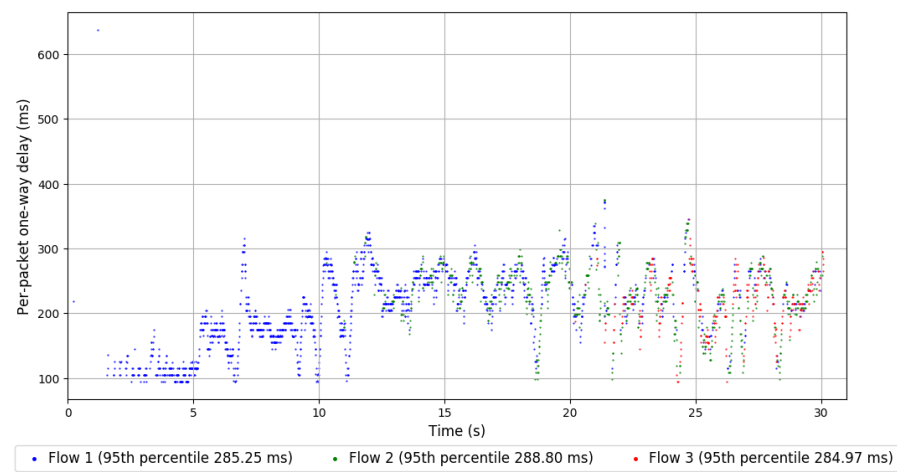
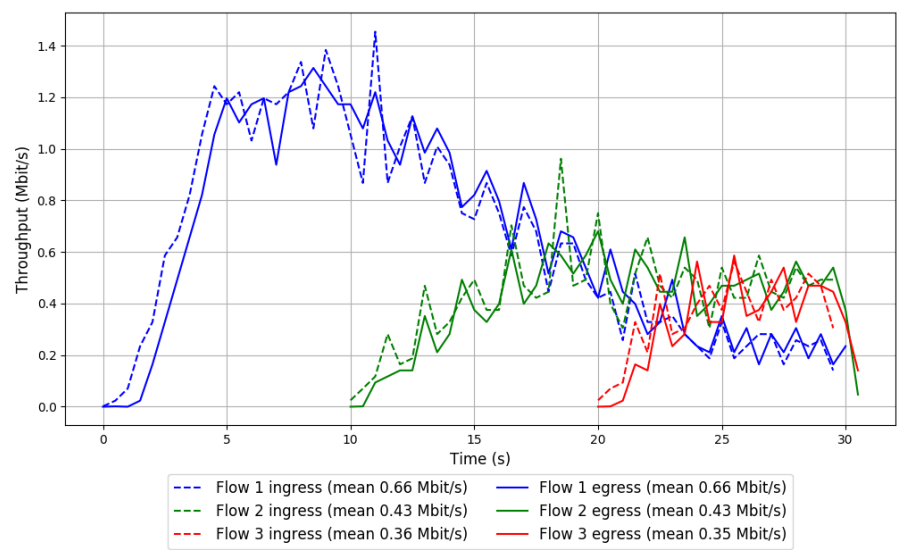


```
Run 1: Statistics of LEDBAT

Start at: 2019-02-05 05:41:05
End at: 2019-02-05 05:41:35
Local clock offset: -7.48 ms
Remote clock offset: 2.475 ms

# Below is generated by plot.py at 2019-02-05 06:54:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 288.584 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 285.246 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 288.799 ms
Loss rate: 1.50%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 284.966 ms
Loss rate: 0.67%
```

Run 1: Report of LEDBAT — Data Link

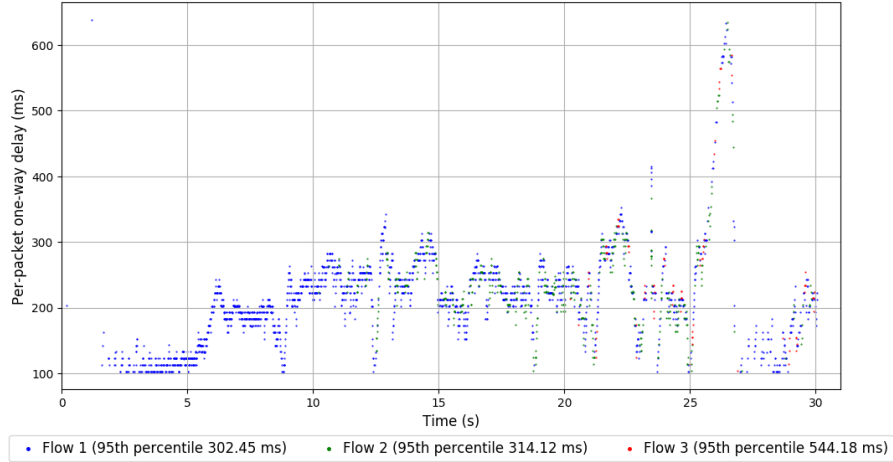
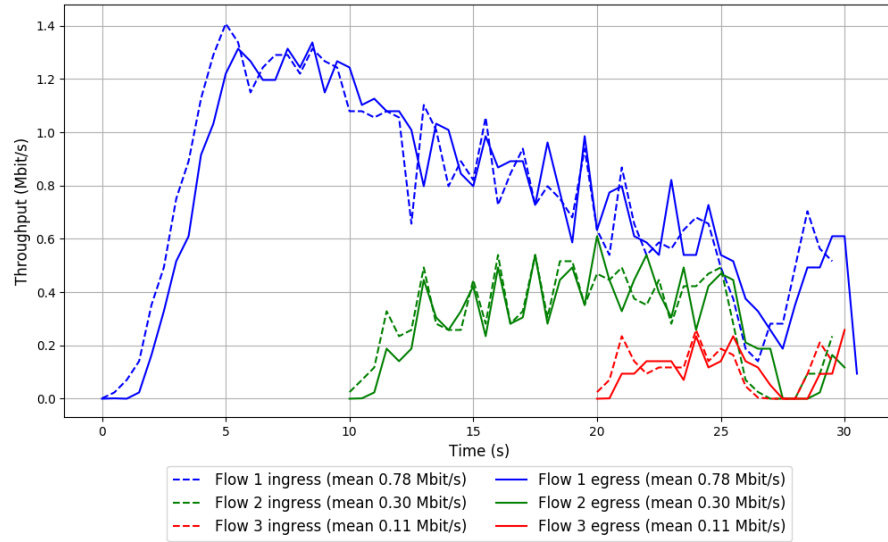


Run 2: Statistics of LEDBAT

Start at: 2019-02-05 06:06:55
End at: 2019-02-05 06:07:25
Local clock offset: -7.072 ms
Remote clock offset: 8.103 ms

Below is generated by plot.py at 2019-02-05 06:54:44
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 304.042 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 302.450 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 314.122 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 544.184 ms
Loss rate: 0.00%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2019-02-05 06:32:45

End at: 2019-02-05 06:33:15

Local clock offset: -7.603 ms

Remote clock offset: 4.739 ms

Below is generated by plot.py at 2019-02-05 06:54:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 294.689 ms

Loss rate: 0.04%

-- Flow 1:

Average throughput: 0.86 Mbit/s

95th percentile per-packet one-way delay: 288.003 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 0.24 Mbit/s

95th percentile per-packet one-way delay: 295.129 ms

Loss rate: 0.00%

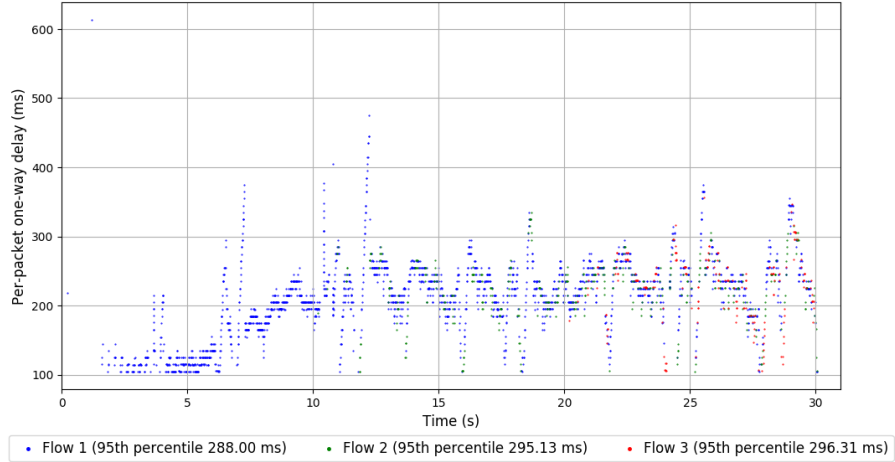
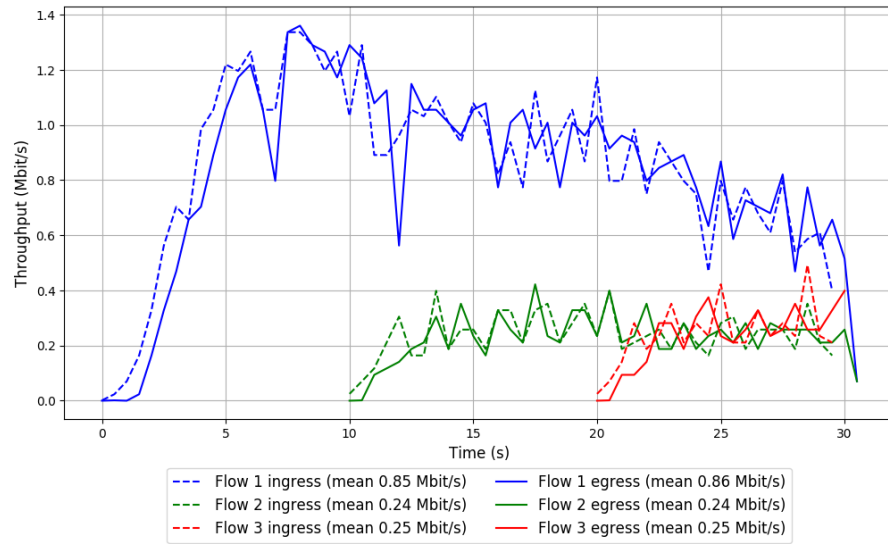
-- Flow 3:

Average throughput: 0.25 Mbit/s

95th percentile per-packet one-way delay: 296.308 ms

Loss rate: 0.00%

Run 3: Report of LEDBAT — Data Link

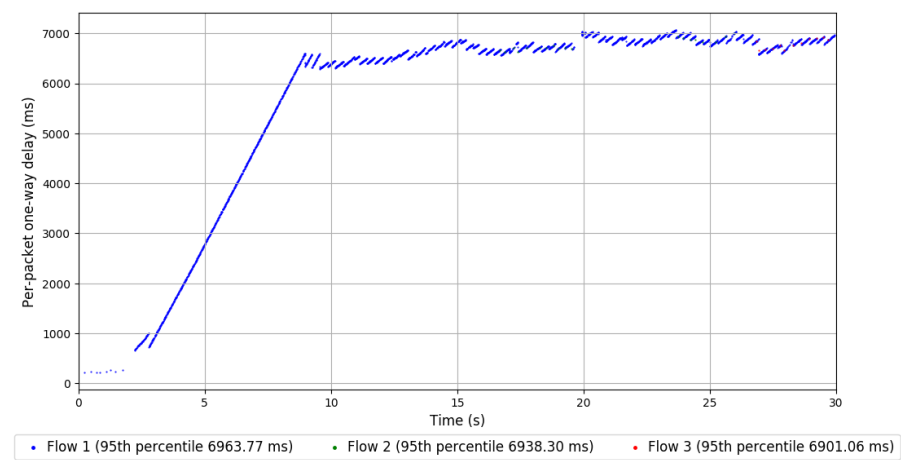
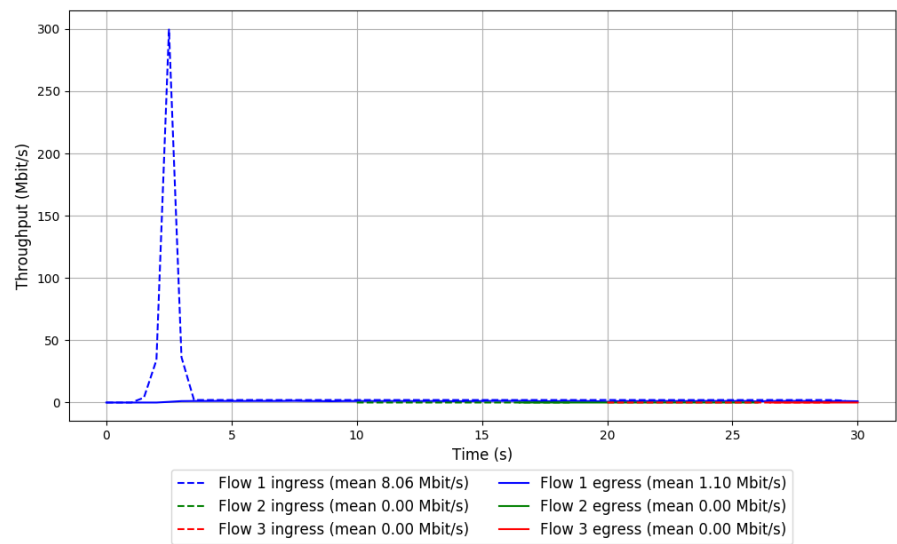


```
Run 1: Statistics of PCC-Allegro

Start at: 2019-02-05 05:39:51
End at: 2019-02-05 05:40:21
Local clock offset: -7.419 ms
Remote clock offset: 7.508 ms

# Below is generated by plot.py at 2019-02-05 06:54:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 6963.194 ms
Loss rate: 86.36%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 6963.767 ms
Loss rate: 86.37%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6938.296 ms
Loss rate: 4.60%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6901.060 ms
Loss rate: 44.83%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2019-02-05 06:05:41

End at: 2019-02-05 06:06:11

Local clock offset: -7.036 ms

Remote clock offset: 9.127 ms

Below is generated by plot.py at 2019-02-05 06:54:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 6484.778 ms

Loss rate: 85.54%

-- Flow 1:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 6484.218 ms

Loss rate: 85.55%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6519.437 ms

Loss rate: 0.00%

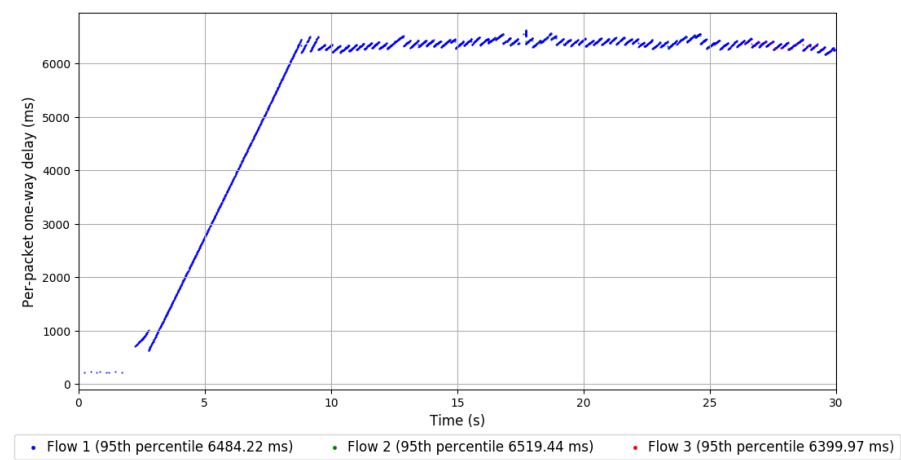
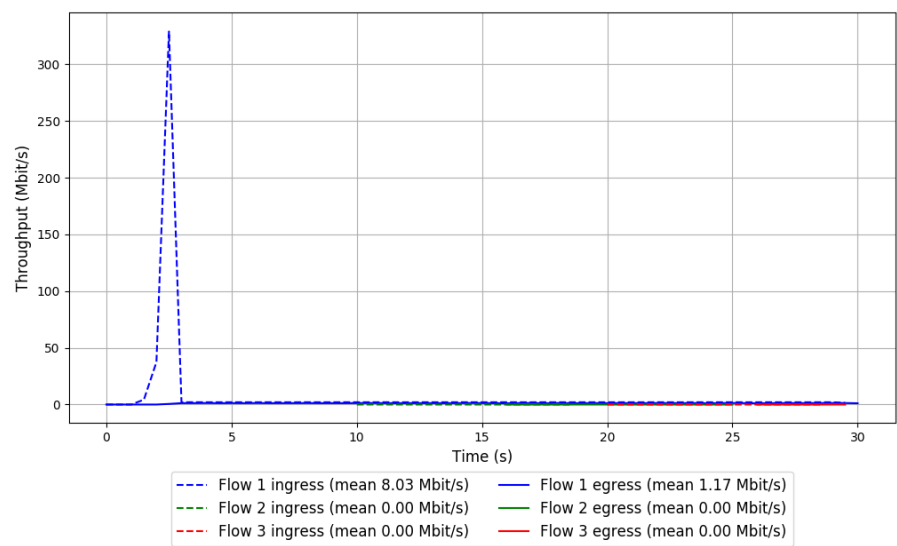
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6399.969 ms

Loss rate: 44.83%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2019-02-05 06:31:31

End at: 2019-02-05 06:32:01

Local clock offset: -7.597 ms

Remote clock offset: 7.288 ms

Below is generated by plot.py at 2019-02-05 06:54:52

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 6277.599 ms

Loss rate: 86.86%

-- Flow 1:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 6277.661 ms

Loss rate: 86.87%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6254.900 ms

Loss rate: 0.00%

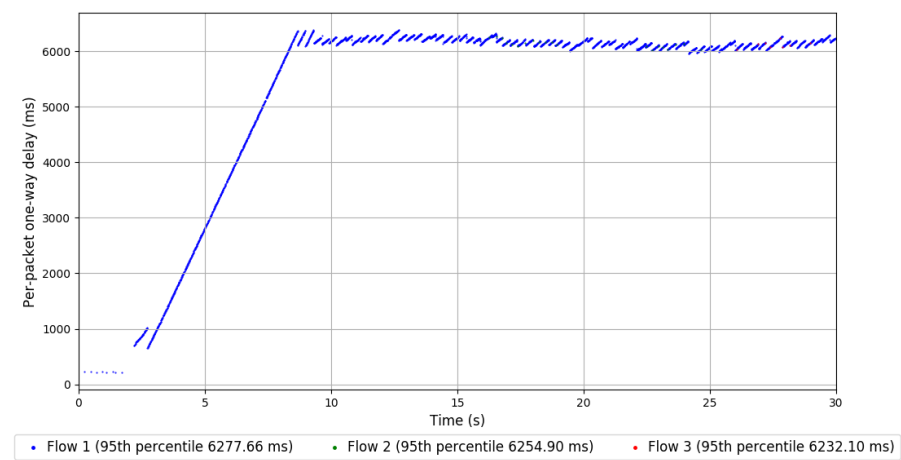
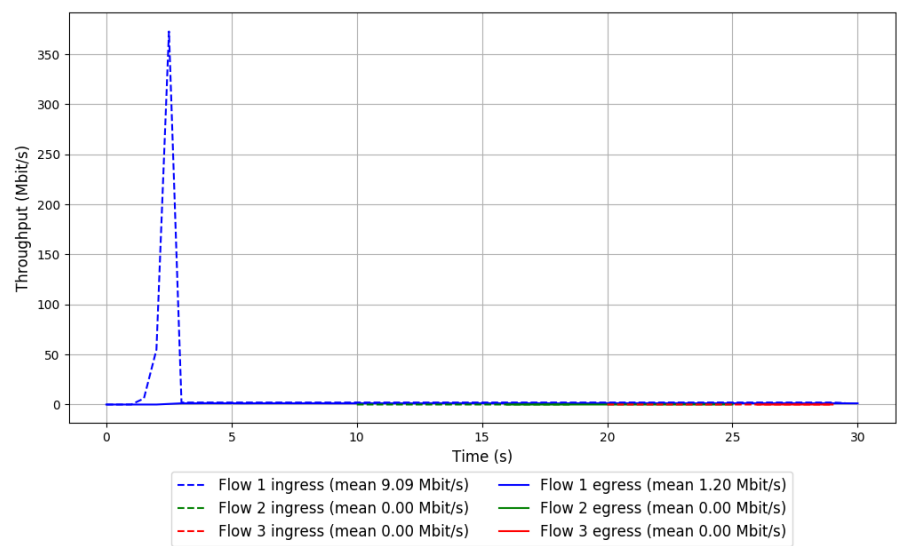
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6232.096 ms

Loss rate: 63.22%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

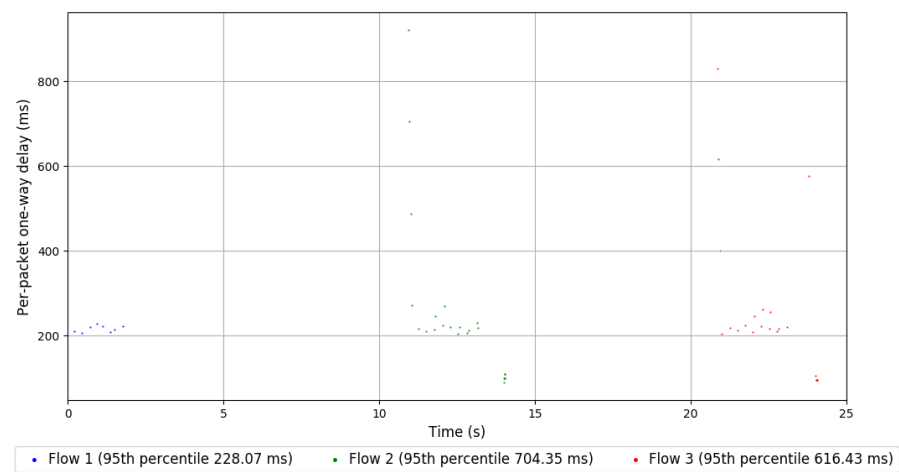
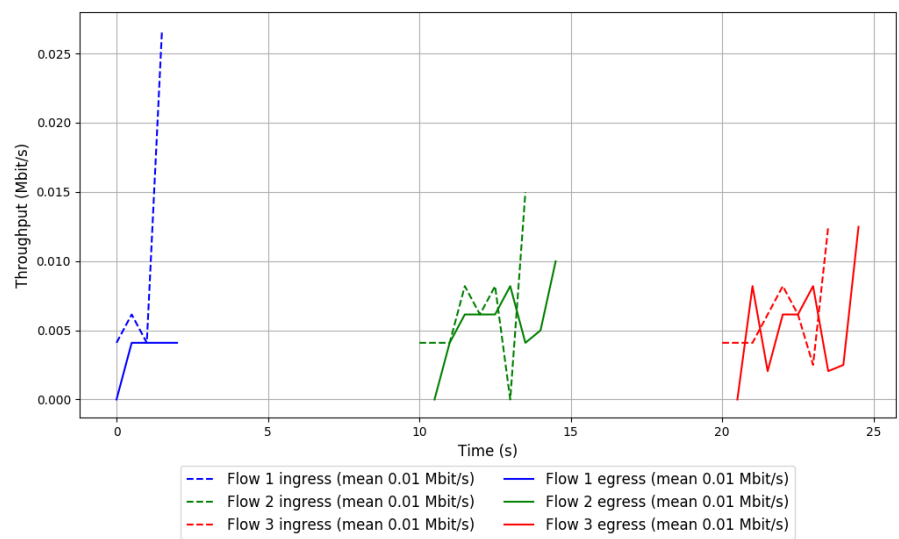
Start at: 2019-02-05 05:50:59

End at: 2019-02-05 05:51:29

Local clock offset: -7.323 ms

Remote clock offset: 3.859 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

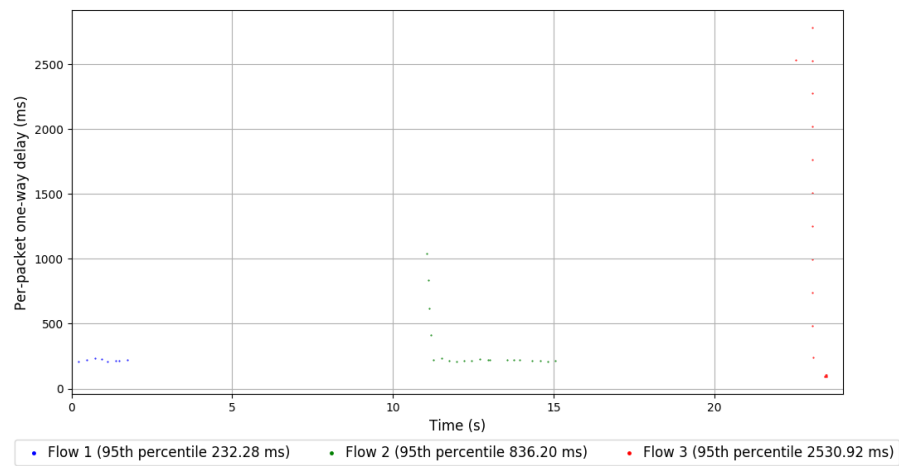
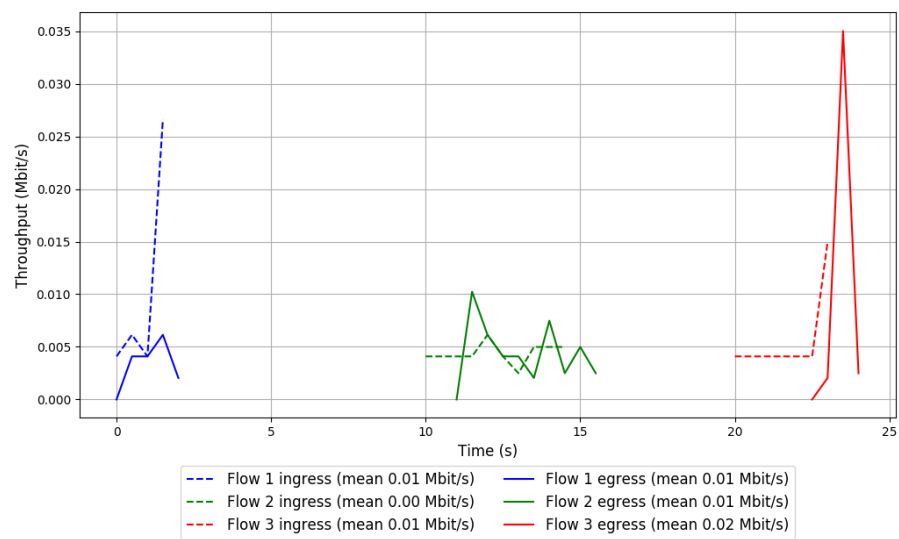
Start at: 2019-02-05 06:16:43

End at: 2019-02-05 06:17:13

Local clock offset: -6.501 ms

Remote clock offset: 6.918 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

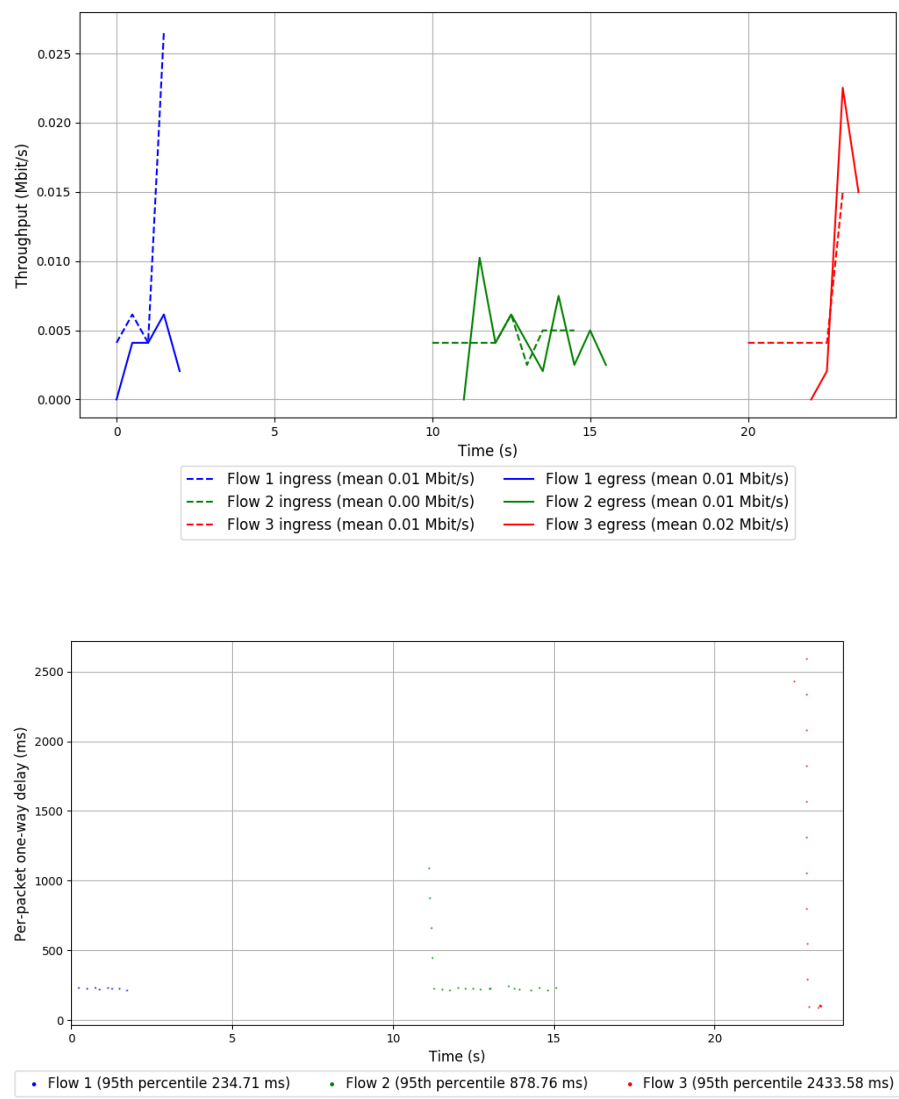
Start at: 2019-02-05 06:42:34

End at: 2019-02-05 06:43:04

Local clock offset: -7.72 ms

Remote clock offset: 9.117 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-02-05 05:58:20

End at: 2019-02-05 05:58:50

Local clock offset: -7.024 ms

Remote clock offset: 7.761 ms

Below is generated by plot.py at 2019-02-05 06:54:52

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.23 Mbit/s

95th percentile per-packet one-way delay: 2460.028 ms

Loss rate: 9.08%

-- Flow 1:

Average throughput: 0.96 Mbit/s

95th percentile per-packet one-way delay: 2408.097 ms

Loss rate: 6.37%

-- Flow 2:

Average throughput: 0.37 Mbit/s

95th percentile per-packet one-way delay: 2510.617 ms

Loss rate: 15.10%

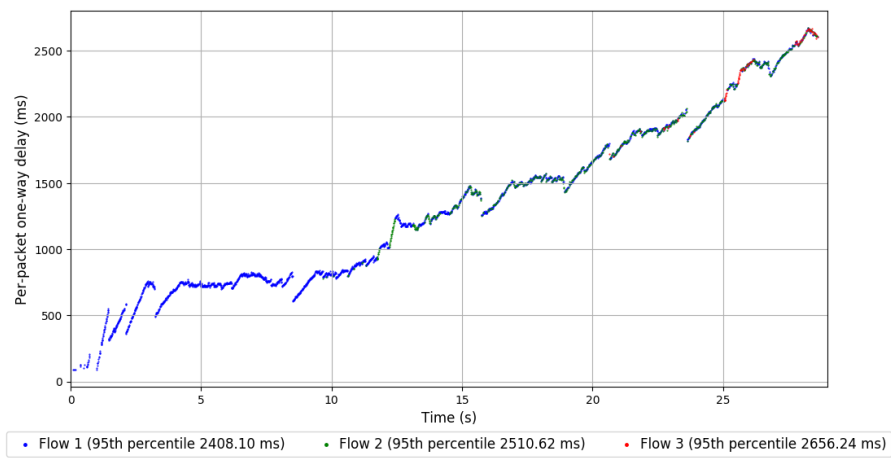
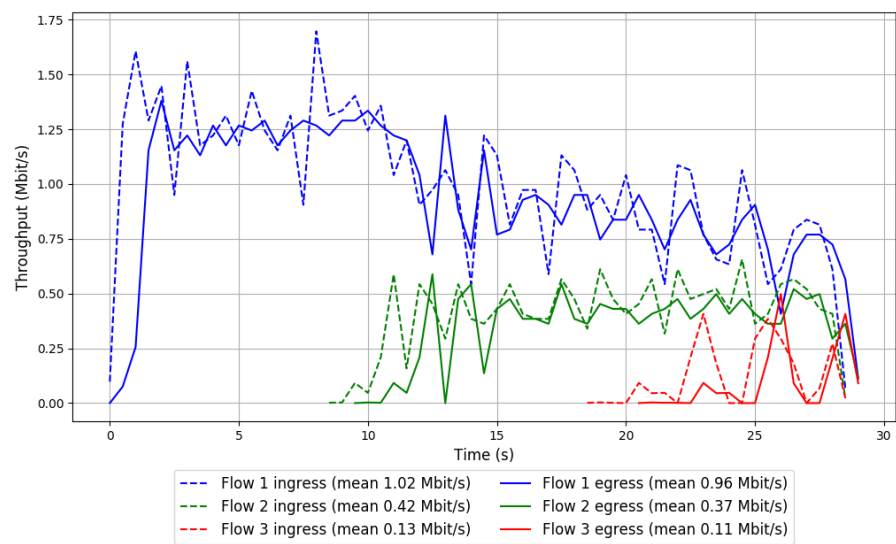
-- Flow 3:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 2656.245 ms

Loss rate: 32.54%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2019-02-05 06:24:09

End at: 2019-02-05 06:24:39

Local clock offset: -7.634 ms

Remote clock offset: 3.239 ms

Below is generated by plot.py at 2019-02-05 06:54:52

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.21 Mbit/s

95th percentile per-packet one-way delay: 2585.512 ms

Loss rate: 10.17%

-- Flow 1:

Average throughput: 0.95 Mbit/s

95th percentile per-packet one-way delay: 2571.596 ms

Loss rate: 6.57%

-- Flow 2:

Average throughput: 0.37 Mbit/s

95th percentile per-packet one-way delay: 2601.587 ms

Loss rate: 18.19%

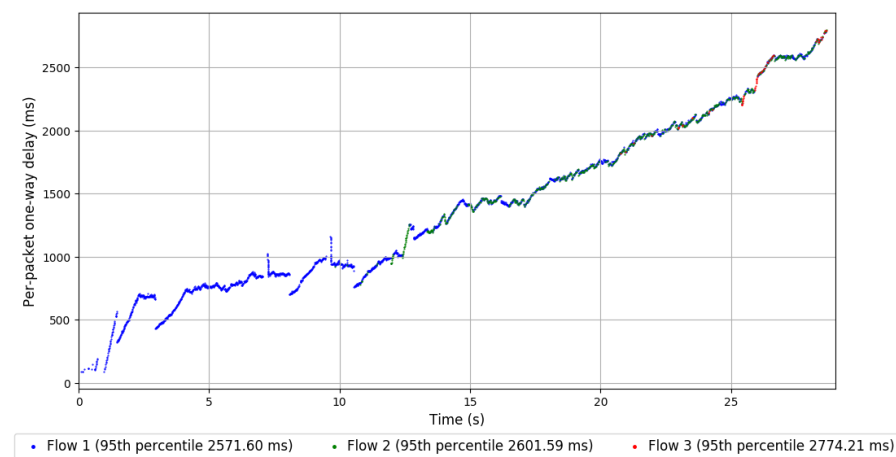
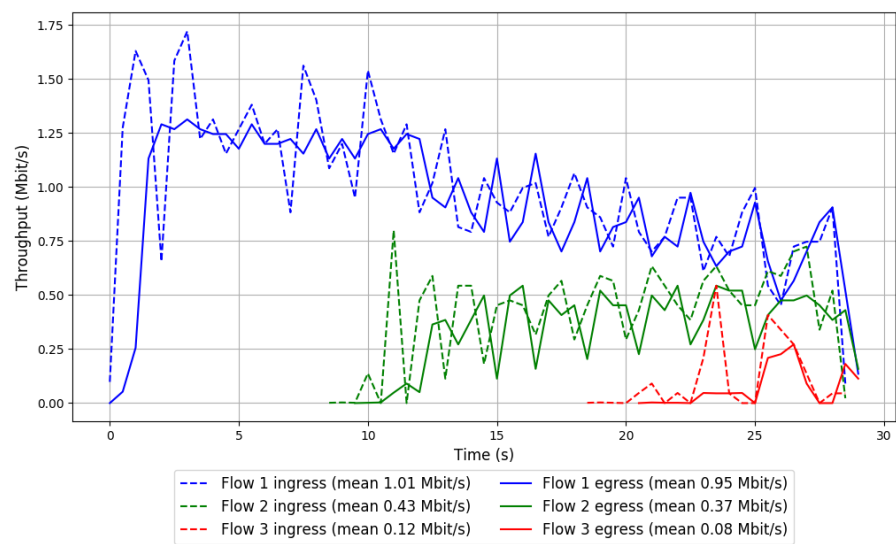
-- Flow 3:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 2774.210 ms

Loss rate: 42.58%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2019-02-05 06:49:54

End at: 2019-02-05 06:50:24

Local clock offset: -7.404 ms

Remote clock offset: 9.39 ms

Below is generated by plot.py at 2019-02-05 06:54:52

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.18 Mbit/s

95th percentile per-packet one-way delay: 2854.342 ms

Loss rate: 10.52%

-- Flow 1:

Average throughput: 0.92 Mbit/s

95th percentile per-packet one-way delay: 2787.981 ms

Loss rate: 6.70%

-- Flow 2:

Average throughput: 0.37 Mbit/s

95th percentile per-packet one-way delay: 2866.100 ms

Loss rate: 17.69%

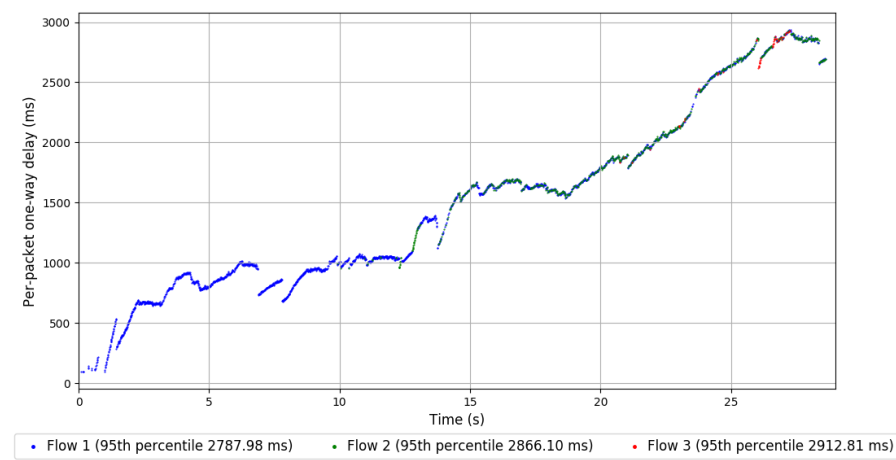
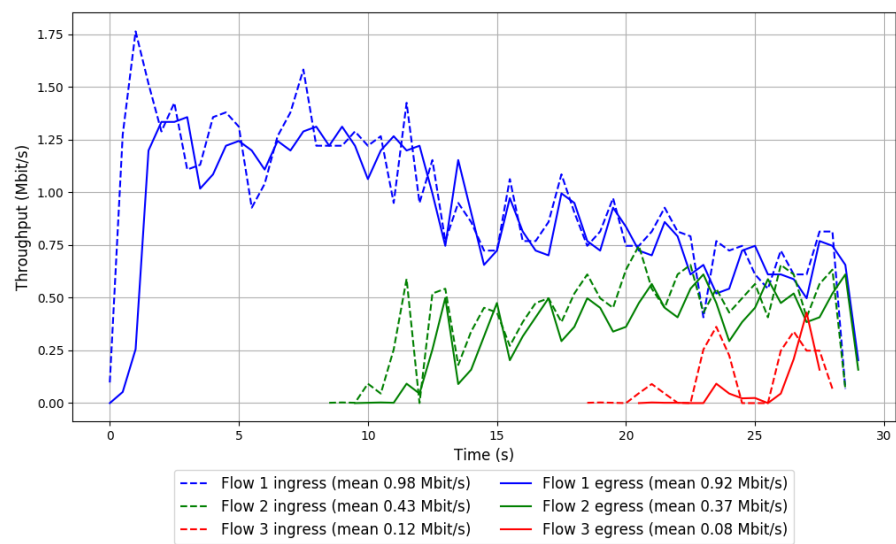
-- Flow 3:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 2912.807 ms

Loss rate: 52.77%

Run 3: Report of QUIC Cubic — Data Link

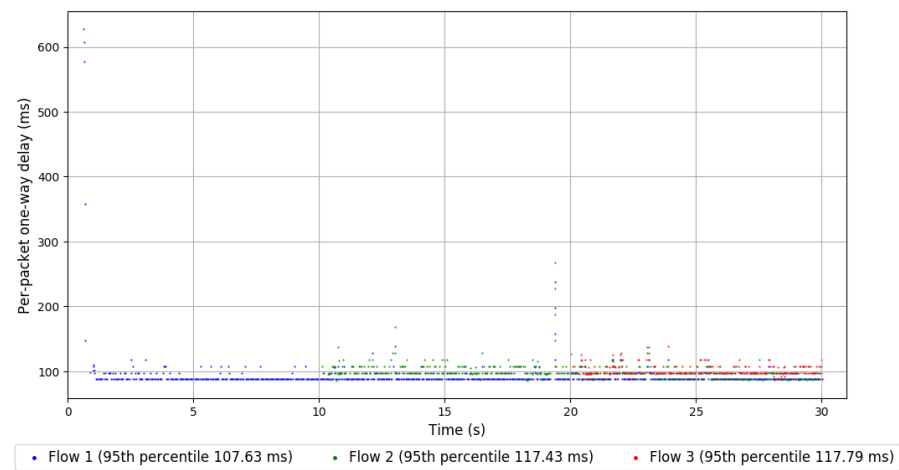
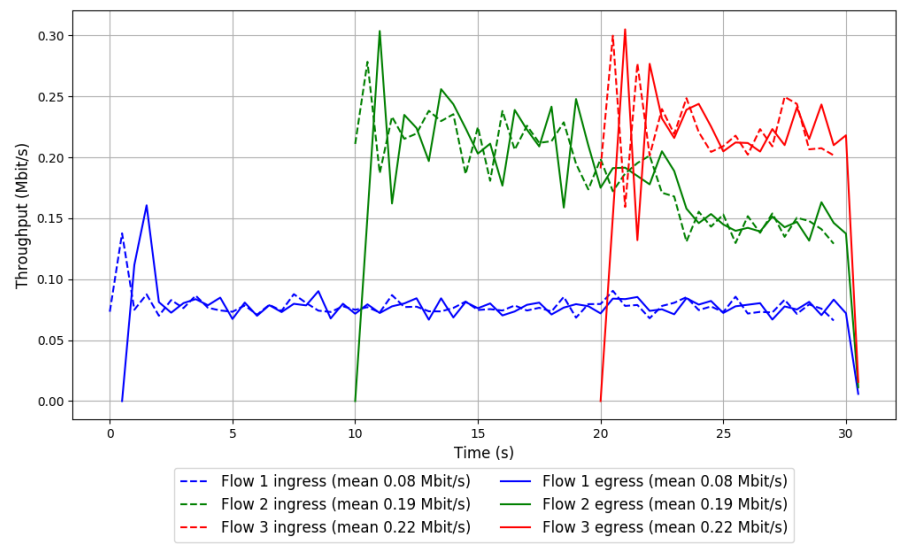


```
Run 1: Statistics of SCReAM

Start at: 2019-02-05 05:57:06
End at: 2019-02-05 05:57:36
Local clock offset: -7.041 ms
Remote clock offset: 2.762 ms

# Below is generated by plot.py at 2019-02-05 06:54:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 110.636 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 107.633 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 117.432 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.788 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link

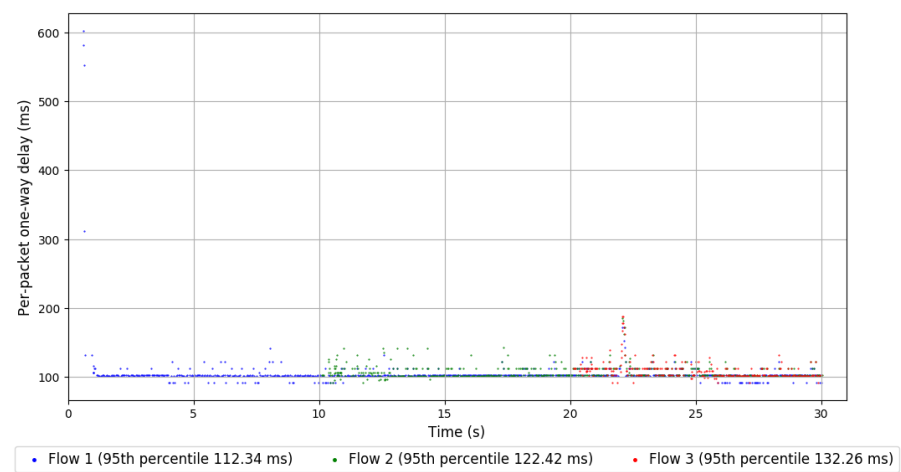
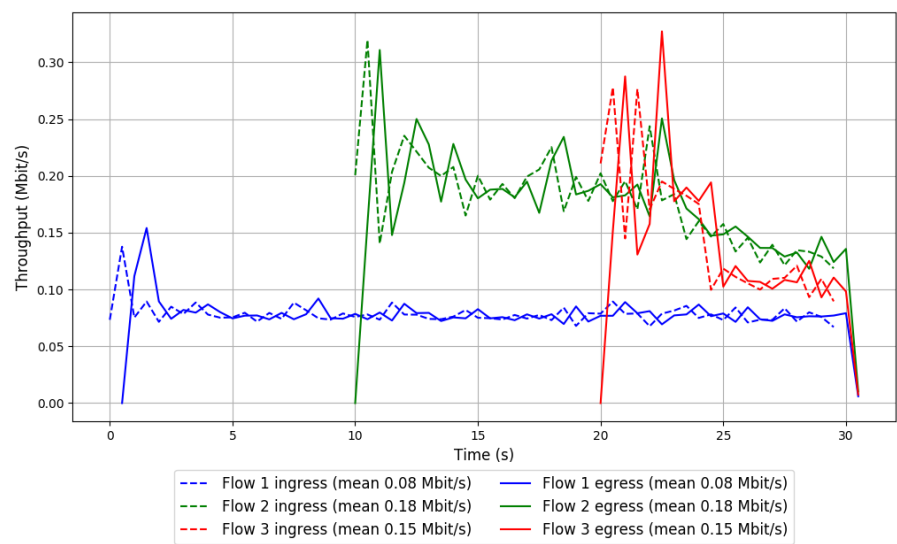


Run 2: Statistics of SCReAM

Start at: 2019-02-05 06:22:51
End at: 2019-02-05 06:23:21
Local clock offset: -7.658 ms
Remote clock offset: 8.443 ms

Below is generated by plot.py at 2019-02-05 06:54:52
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 122.313 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 112.345 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 122.422 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 132.259 ms
Loss rate: 0.25%

Run 2: Report of SReAM — Data Link

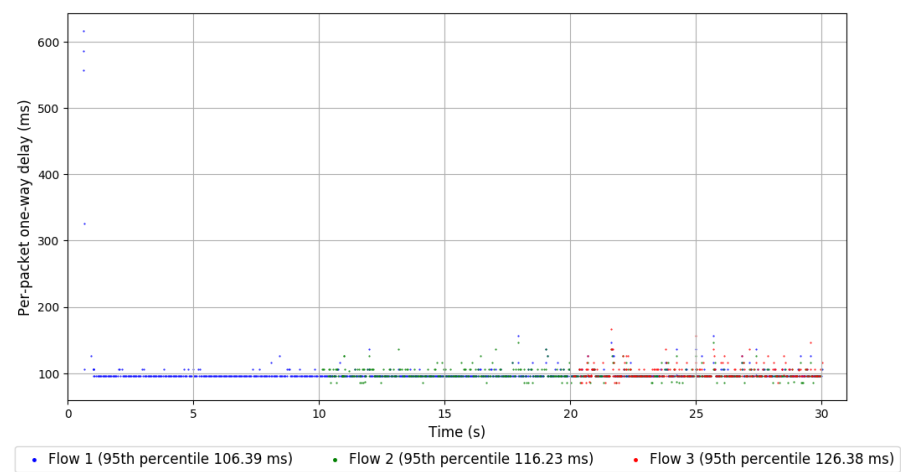
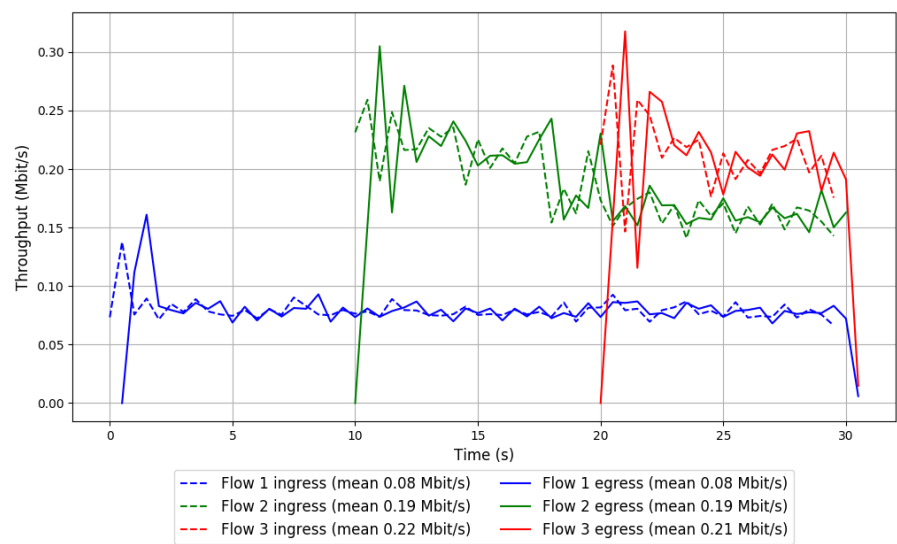


Run 3: Statistics of SCReAM

Start at: 2019-02-05 06:48:41
End at: 2019-02-05 06:49:11
Local clock offset: -6.775 ms
Remote clock offset: 4.28 ms

Below is generated by plot.py at 2019-02-05 06:54:53
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 116.325 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 106.388 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 116.228 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 126.383 ms
Loss rate: 0.35%

Run 3: Report of SReAM — Data Link

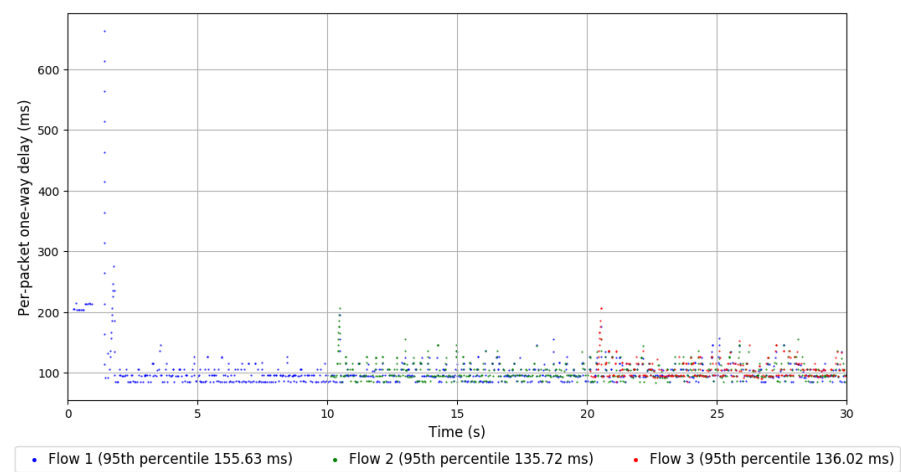
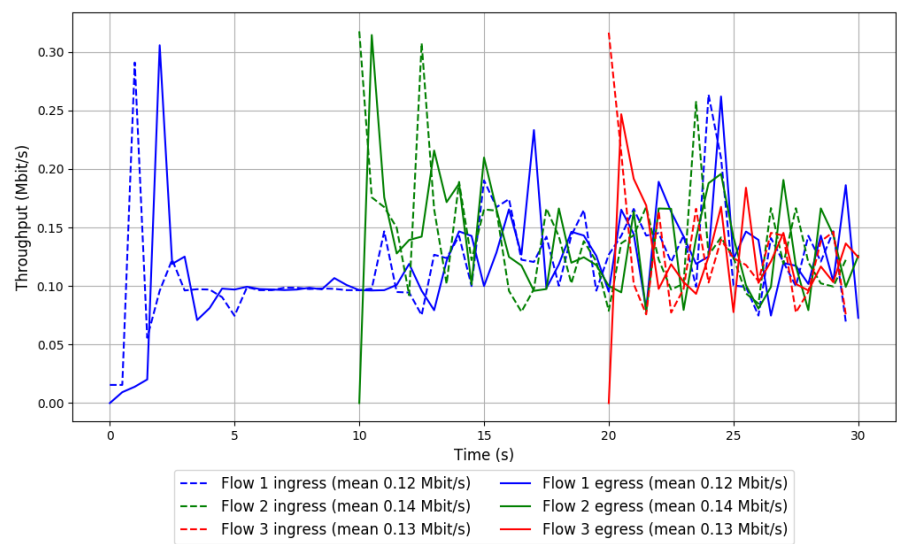


Run 1: Statistics of Sprout

Start at: 2019-02-05 06:00:47
End at: 2019-02-05 06:01:17
Local clock offset: -7.003 ms
Remote clock offset: 3.955 ms

Below is generated by plot.py at 2019-02-05 06:54:53
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 144.169 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 155.631 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 135.722 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 136.023 ms
Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

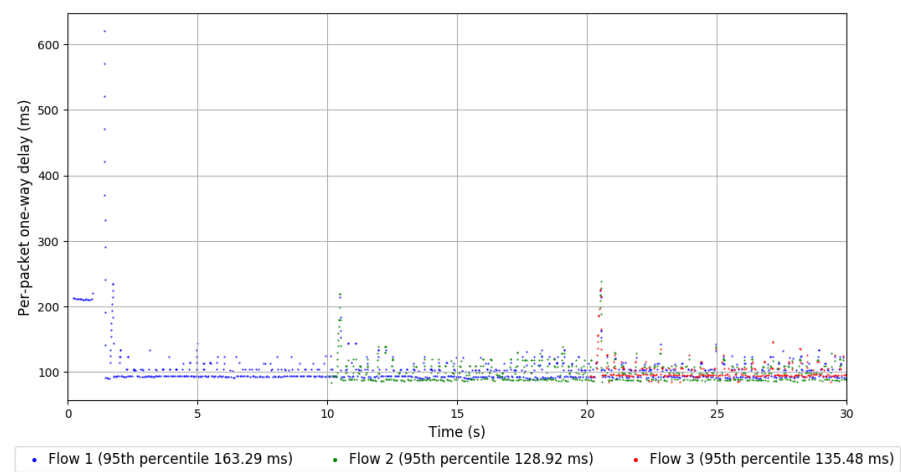
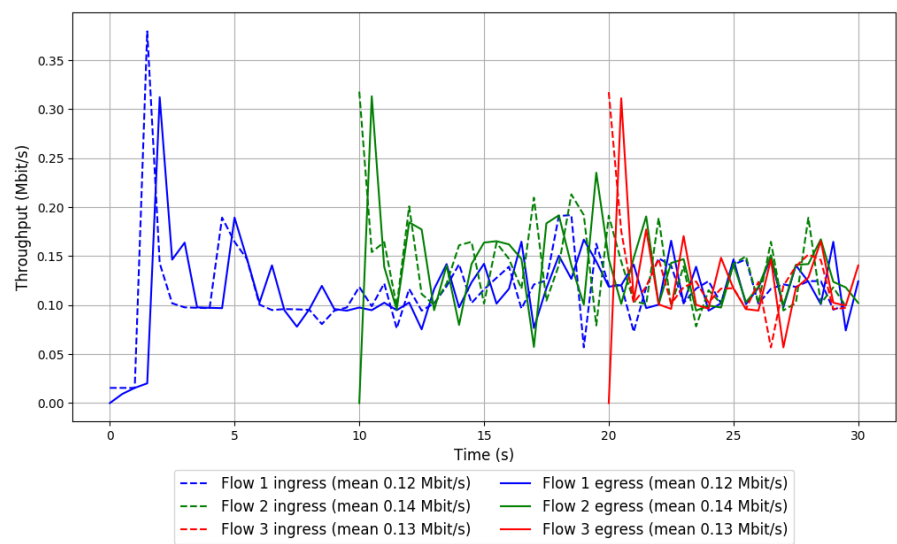


Run 2: Statistics of Sprout

Start at: 2019-02-05 06:26:37
End at: 2019-02-05 06:27:07
Local clock offset: -6.881 ms
Remote clock offset: 4.375 ms

```
# Below is generated by plot.py at 2019-02-05 06:54:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 142.110 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 163.295 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 128.919 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 135.480 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

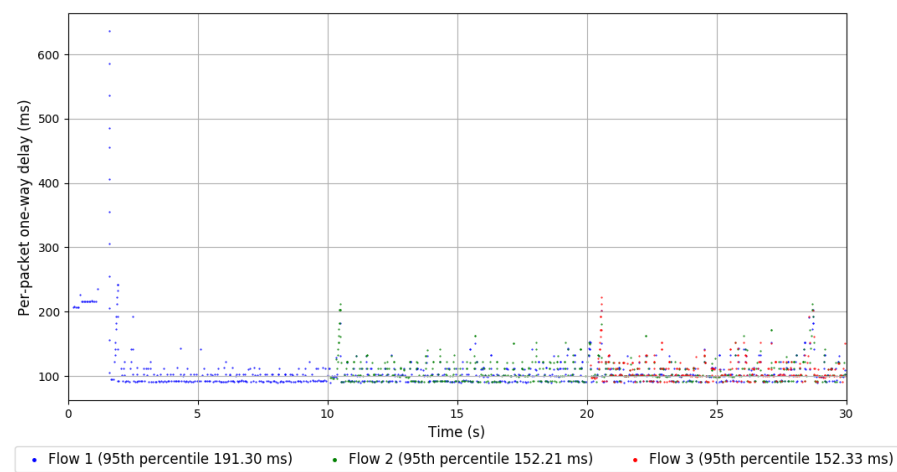
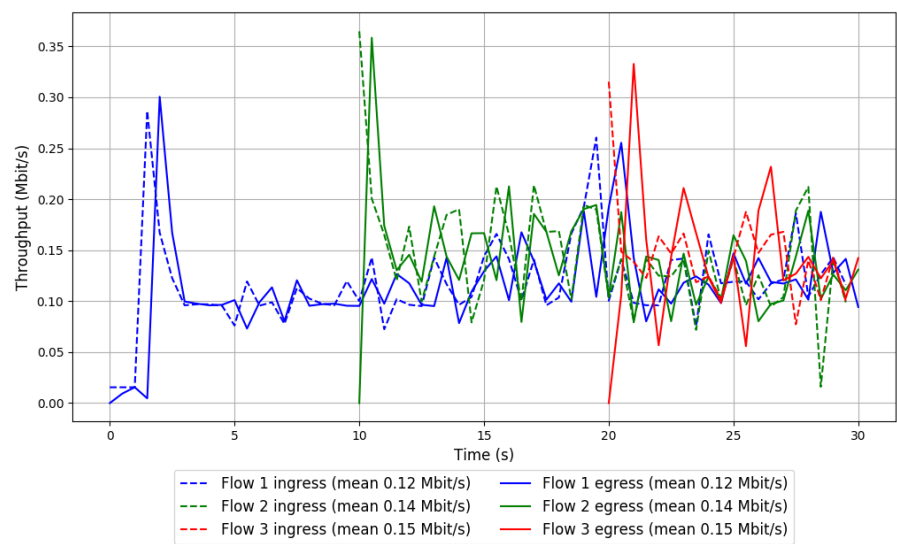


Run 3: Statistics of Sprout

Start at: 2019-02-05 06:52:21
End at: 2019-02-05 06:52:51
Local clock offset: -6.555 ms
Remote clock offset: 9.654 ms

```
# Below is generated by plot.py at 2019-02-05 06:54:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 153.127 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 191.304 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 152.214 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 152.328 ms
Loss rate: 0.05%
```

Run 3: Report of Sprout — Data Link

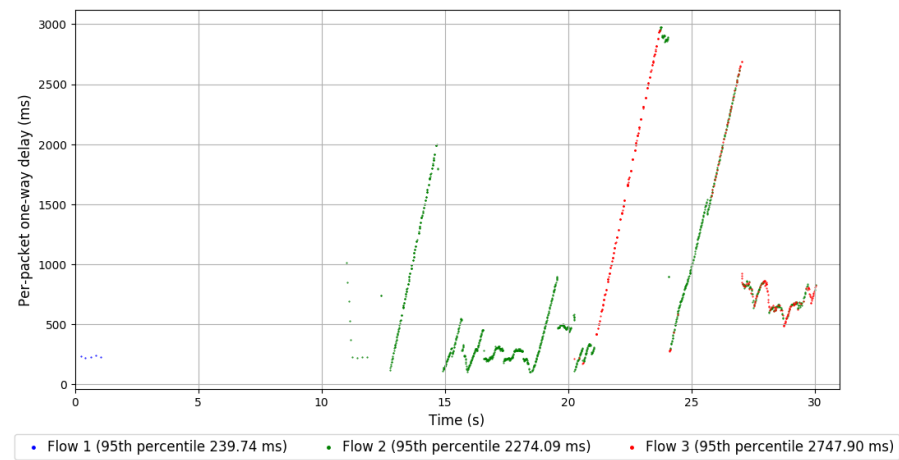
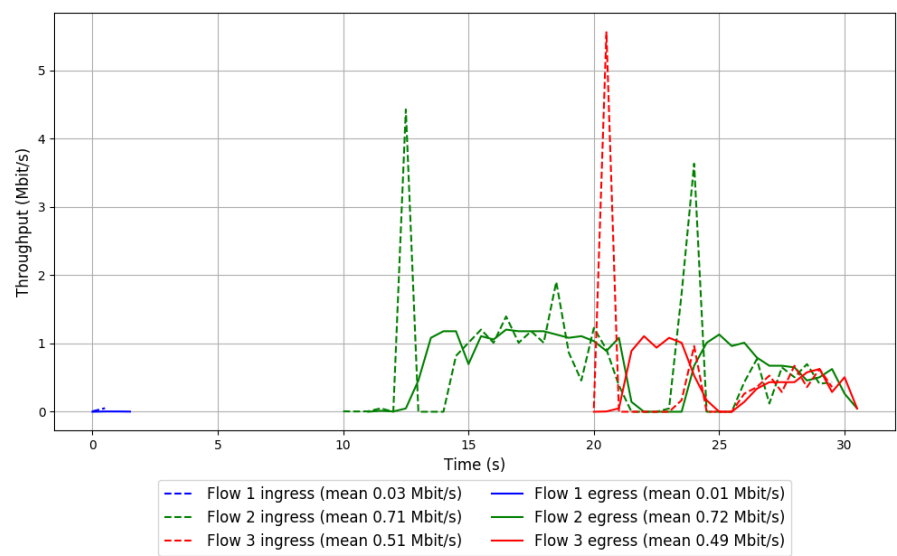


```
Run 1: Statistics of TaoVA-100x

Start at: 2019-02-05 05:37:25
End at: 2019-02-05 05:37:55
Local clock offset: -7.12 ms
Remote clock offset: 7.43 ms

# Below is generated by plot.py at 2019-02-05 06:54:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 2608.592 ms
Loss rate: 3.74%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 239.744 ms
Loss rate: 82.46%
-- Flow 2:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 2274.092 ms
Loss rate: 2.80%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 2747.899 ms
Loss rate: 5.89%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2019-02-05 06:03:14

End at: 2019-02-05 06:03:44

Local clock offset: -7.01 ms

Remote clock offset: 3.861 ms

Below is generated by plot.py at 2019-02-05 06:54:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 1746.904 ms

Loss rate: 3.50%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 235.660 ms

Loss rate: 85.45%

-- Flow 2:

Average throughput: 0.58 Mbit/s

95th percentile per-packet one-way delay: 1071.391 ms

Loss rate: 3.28%

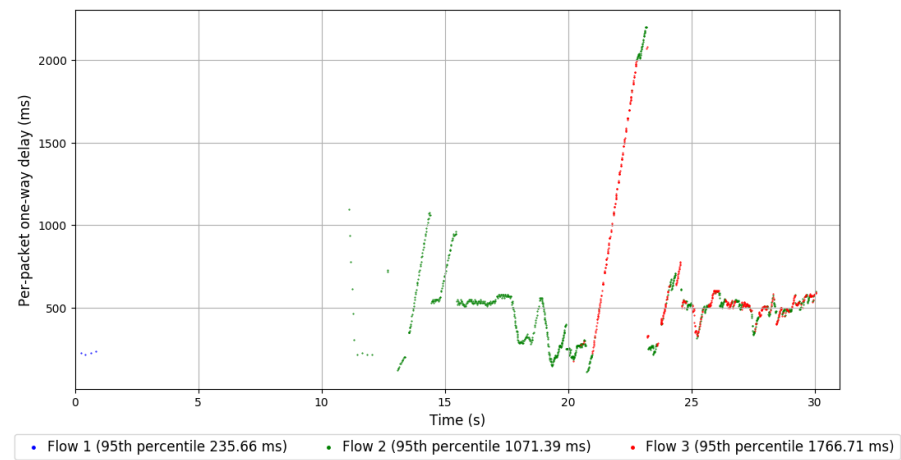
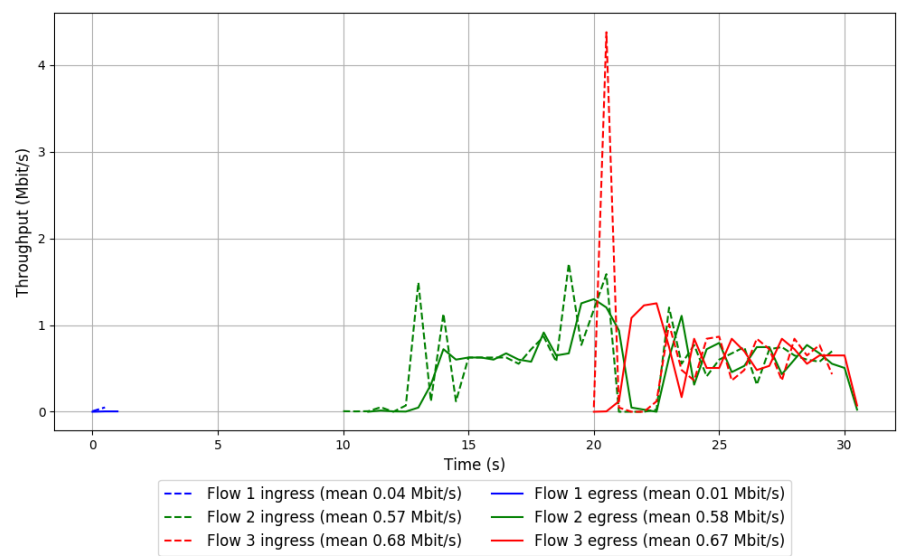
-- Flow 3:

Average throughput: 0.67 Mbit/s

95th percentile per-packet one-way delay: 1766.706 ms

Loss rate: 3.53%

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



Run 3: Statistics of TaoVA-100x

Start at: 2019-02-05 06:29:04

End at: 2019-02-05 06:29:34

Local clock offset: -7.655 ms

Remote clock offset: 4.544 ms

Below is generated by plot.py at 2019-02-05 06:54:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.70 Mbit/s

95th percentile per-packet one-way delay: 1908.362 ms

Loss rate: 2.70%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 235.618 ms

Loss rate: 88.68%

-- Flow 2:

Average throughput: 0.75 Mbit/s

95th percentile per-packet one-way delay: 1928.395 ms

Loss rate: 1.68%

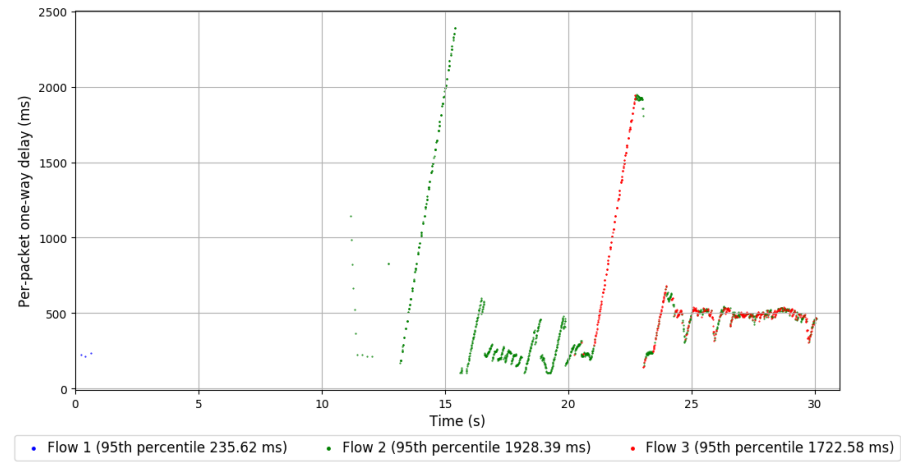
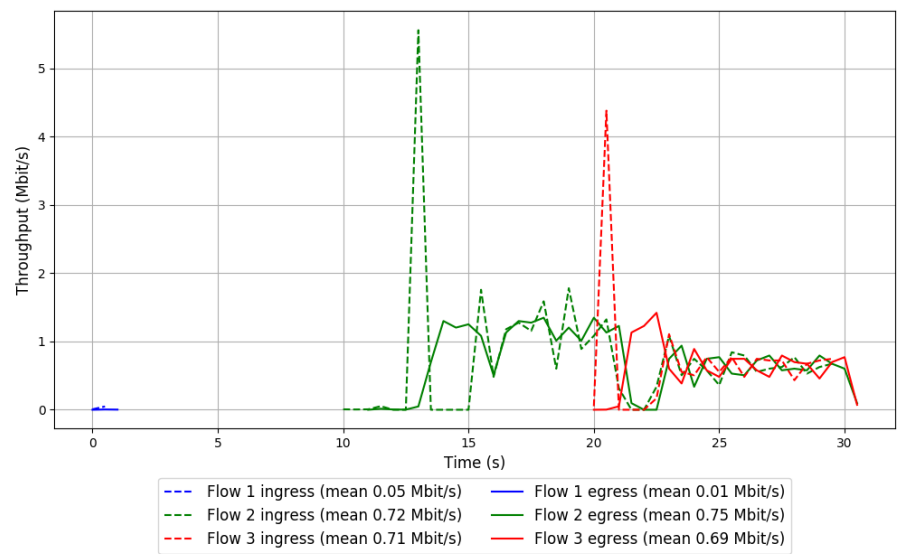
-- Flow 3:

Average throughput: 0.69 Mbit/s

95th percentile per-packet one-way delay: 1722.580 ms

Loss rate: 4.44%

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



Run 1: Statistics of TCP Vegas

Start at: 2019-02-05 05:47:19

End at: 2019-02-05 05:47:49

Local clock offset: -7.753 ms

Remote clock offset: 2.322 ms

Below is generated by plot.py at 2019-02-05 06:54:57

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.07 Mbit/s

95th percentile per-packet one-way delay: 1578.026 ms

Loss rate: 3.56%

-- Flow 1:

Average throughput: 0.64 Mbit/s

95th percentile per-packet one-way delay: 1508.297 ms

Loss rate: 1.84%

-- Flow 2:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 1747.776 ms

Loss rate: 4.78%

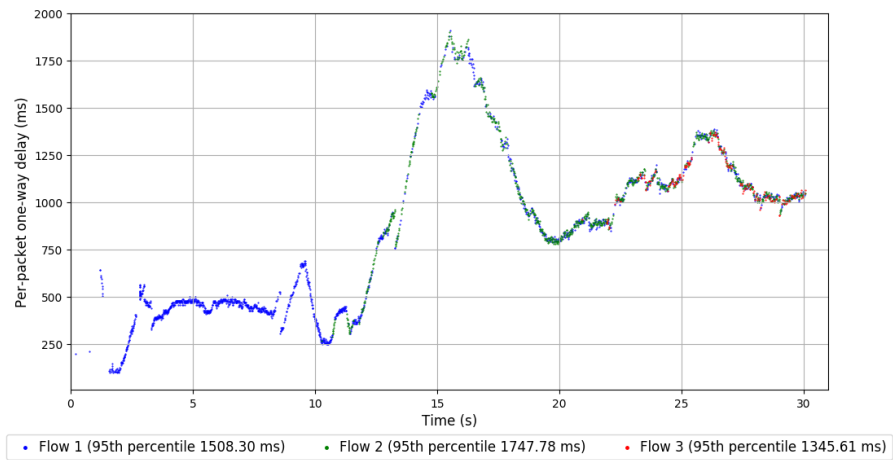
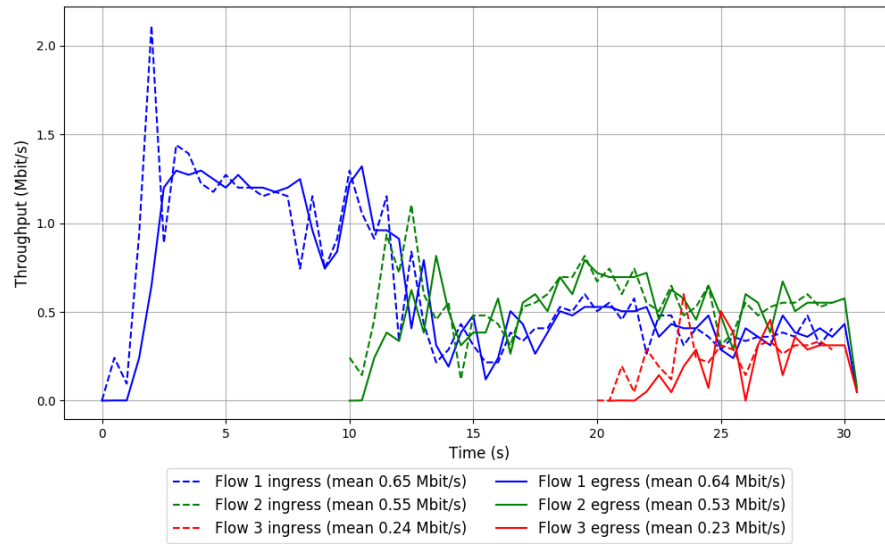
-- Flow 3:

Average throughput: 0.23 Mbit/s

95th percentile per-packet one-way delay: 1345.614 ms

Loss rate: 11.99%

Run 1: Report of TCP Vegas — Data Link

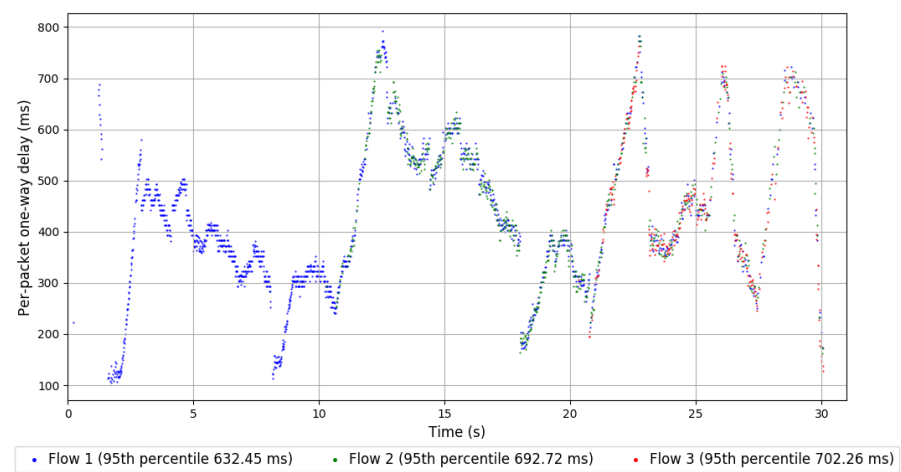
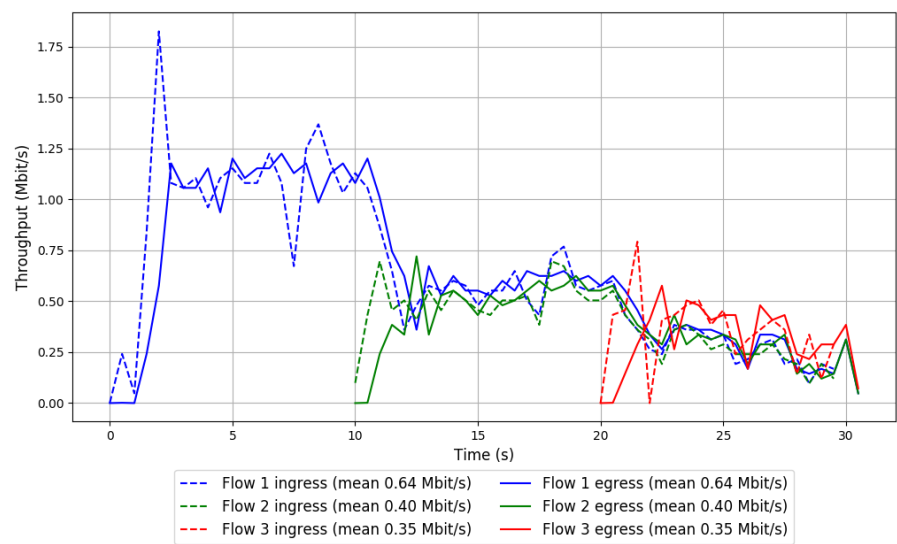


Run 2: Statistics of TCP Vegas

Start at: 2019-02-05 06:13:03
End at: 2019-02-05 06:13:33
Local clock offset: -7.187 ms
Remote clock offset: 8.198 ms

Below is generated by plot.py at 2019-02-05 06:54:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 679.034 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 632.446 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 692.720 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 702.257 ms
Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2019-02-05 06:38:53

End at: 2019-02-05 06:39:23

Local clock offset: -6.918 ms

Remote clock offset: 4.046 ms

Below is generated by plot.py at 2019-02-05 06:54:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.16 Mbit/s

95th percentile per-packet one-way delay: 1096.449 ms

Loss rate: 2.53%

-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 898.495 ms

Loss rate: 1.03%

-- Flow 2:

Average throughput: 0.38 Mbit/s

95th percentile per-packet one-way delay: 1089.648 ms

Loss rate: 2.07%

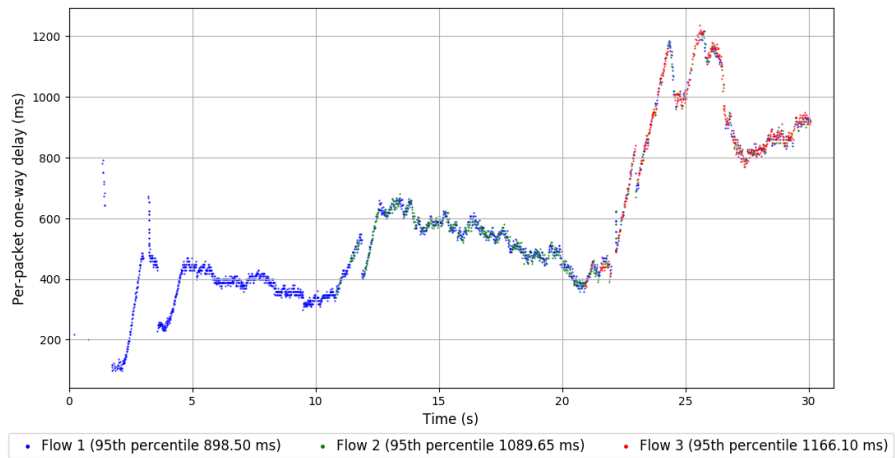
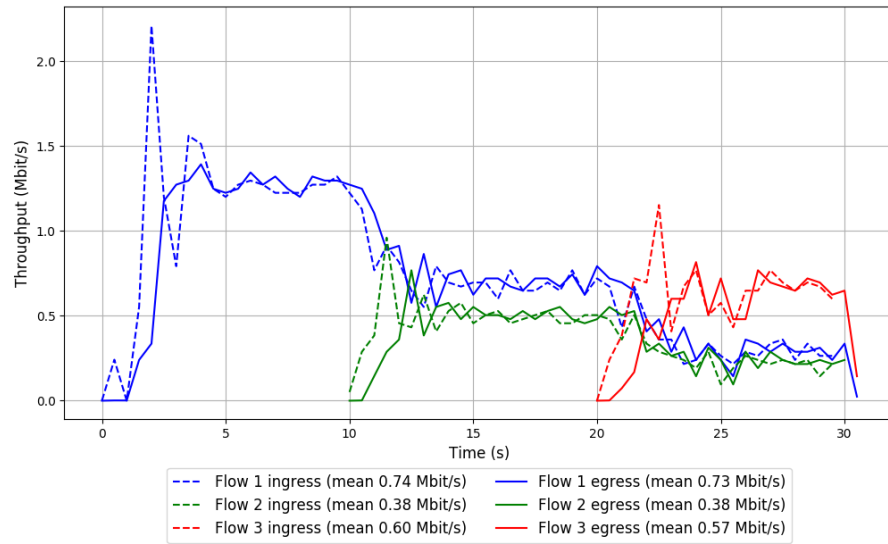
-- Flow 3:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 1166.103 ms

Loss rate: 8.65%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2019-02-05 05:49:46

End at: 2019-02-05 05:50:16

Local clock offset: -7.424 ms

Remote clock offset: 8.612 ms

Below is generated by plot.py at 2019-02-05 06:54:59

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.06 Mbit/s

95th percentile per-packet one-way delay: 1775.801 ms

Loss rate: 1.39%

-- Flow 1:

Average throughput: 1.05 Mbit/s

95th percentile per-packet one-way delay: 1771.308 ms

Loss rate: 1.22%

-- Flow 2:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 1820.935 ms

Loss rate: 14.29%

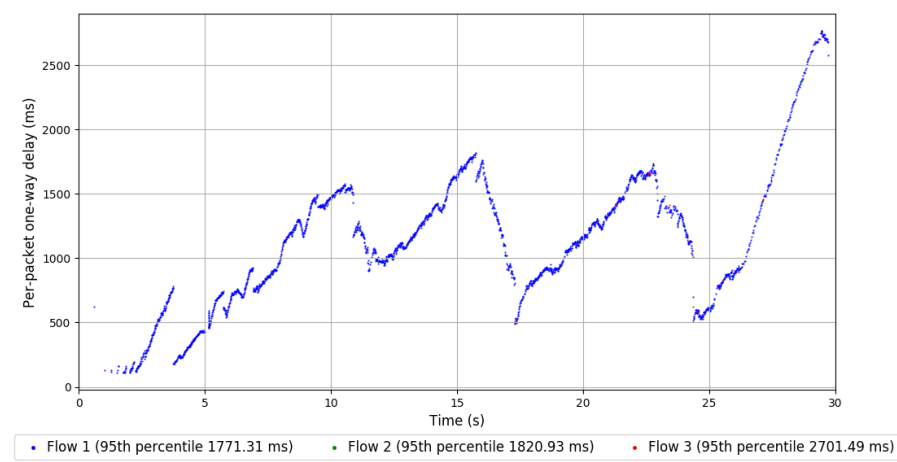
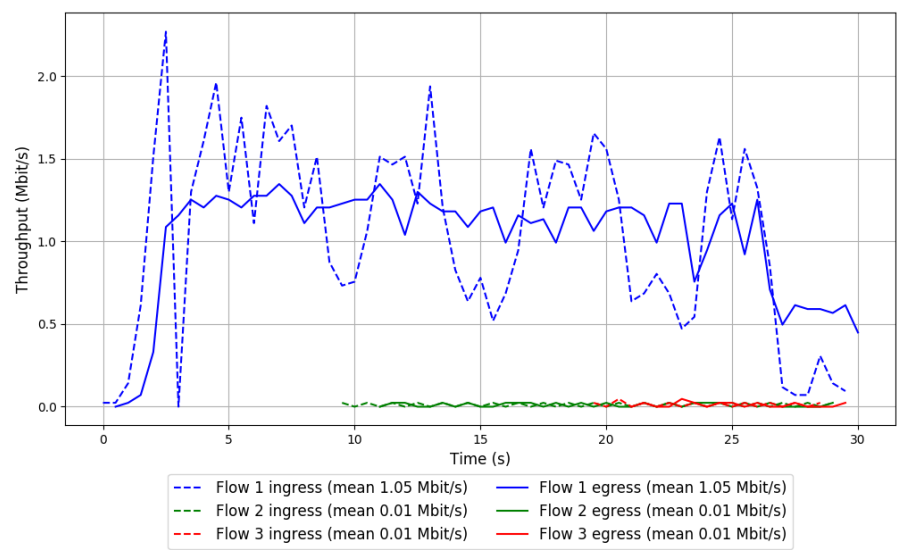
-- Flow 3:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 2701.487 ms

Loss rate: 18.18%

Run 1: Report of Verus — Data Link

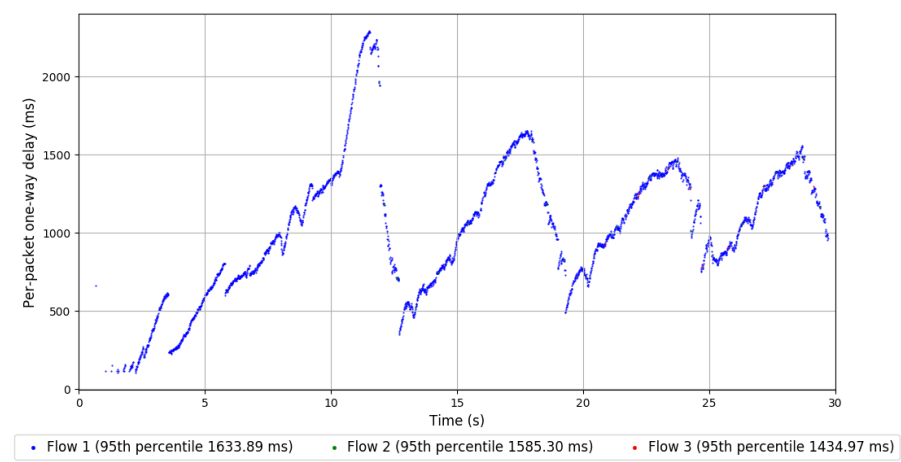
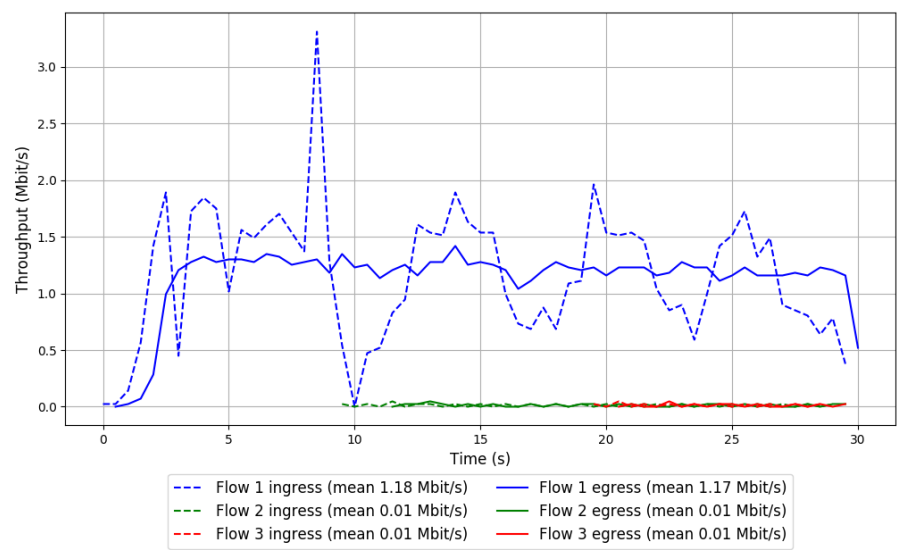


Run 2: Statistics of Verus

Start at: 2019-02-05 06:15:30
End at: 2019-02-05 06:16:00
Local clock offset: -7.304 ms
Remote clock offset: 6.821 ms

Below is generated by plot.py at 2019-02-05 06:55:00
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 1632.437 ms
Loss rate: 2.11%
-- Flow 1:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 1633.888 ms
Loss rate: 2.07%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1585.297 ms
Loss rate: 4.55%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1434.974 ms
Loss rate: 9.09%

Run 2: Report of Verus — Data Link

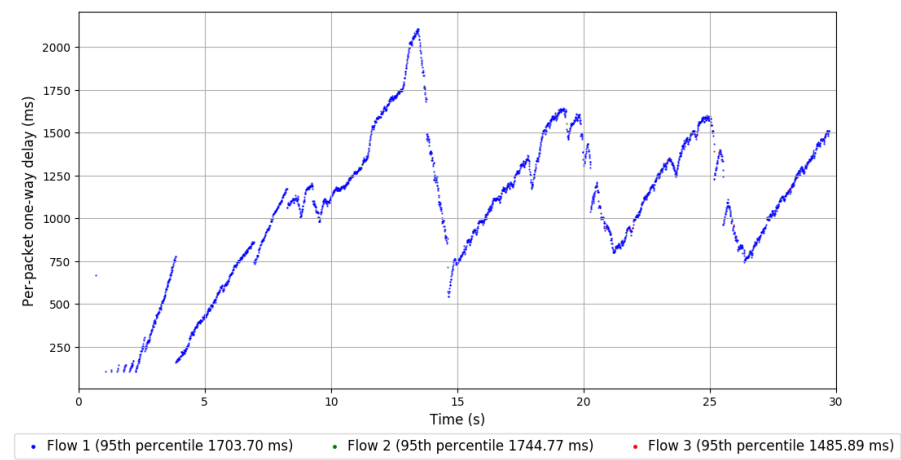
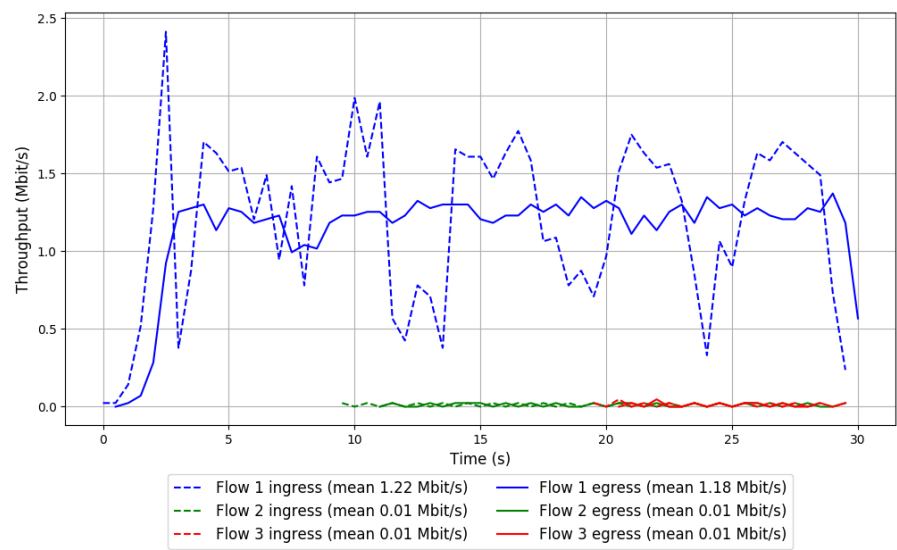


Run 3: Statistics of Verus

Start at: 2019-02-05 06:41:20
End at: 2019-02-05 06:41:50
Local clock offset: -7.686 ms
Remote clock offset: 3.832 ms

Below is generated by plot.py at 2019-02-05 06:55:00
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 1703.728 ms
Loss rate: 4.68%
-- Flow 1:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 1703.704 ms
Loss rate: 4.66%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1744.770 ms
Loss rate: 5.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1485.891 ms
Loss rate: 9.09%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-02-05 05:43:37

End at: 2019-02-05 05:44:07

Local clock offset: -7.655 ms

Remote clock offset: 6.233 ms

Below is generated by plot.py at 2019-02-05 06:55:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 2033.899 ms

Loss rate: 6.09%

-- Flow 1:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 2033.857 ms

Loss rate: 6.09%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 2037.377 ms

Loss rate: 5.50%

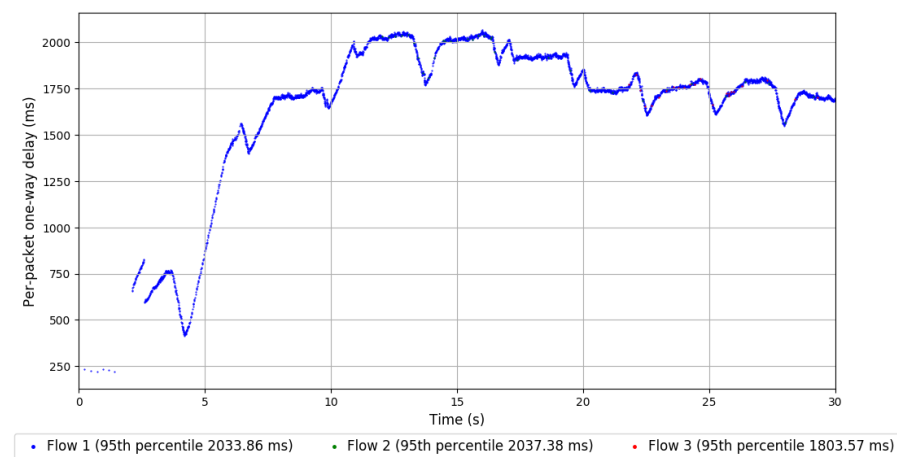
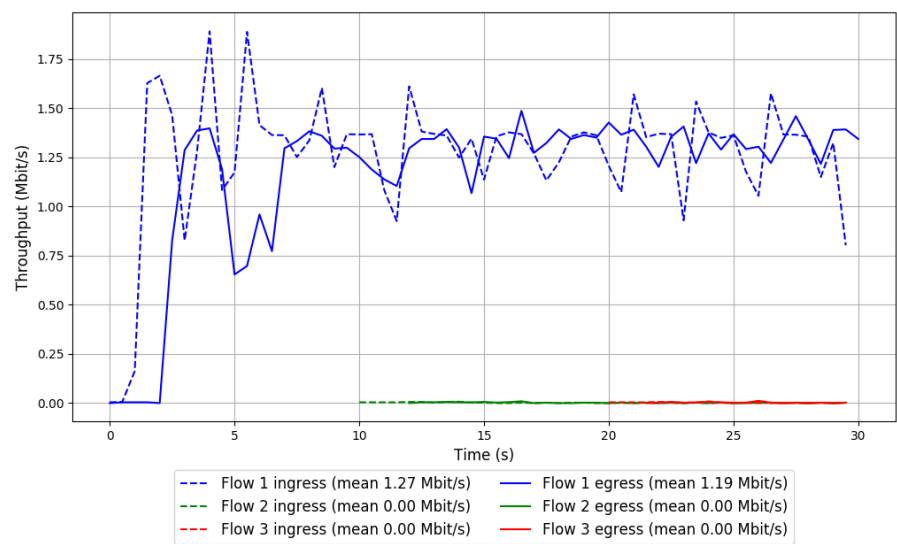
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1803.568 ms

Loss rate: 7.33%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2019-02-05 06:09:22

End at: 2019-02-05 06:09:52

Local clock offset: -7.106 ms

Remote clock offset: 6.822 ms

Below is generated by plot.py at 2019-02-05 06:55:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.11 Mbit/s

95th percentile per-packet one-way delay: 3953.154 ms

Loss rate: 14.54%

-- Flow 1:

Average throughput: 1.11 Mbit/s

95th percentile per-packet one-way delay: 3953.106 ms

Loss rate: 14.55%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 3871.464 ms

Loss rate: 10.77%

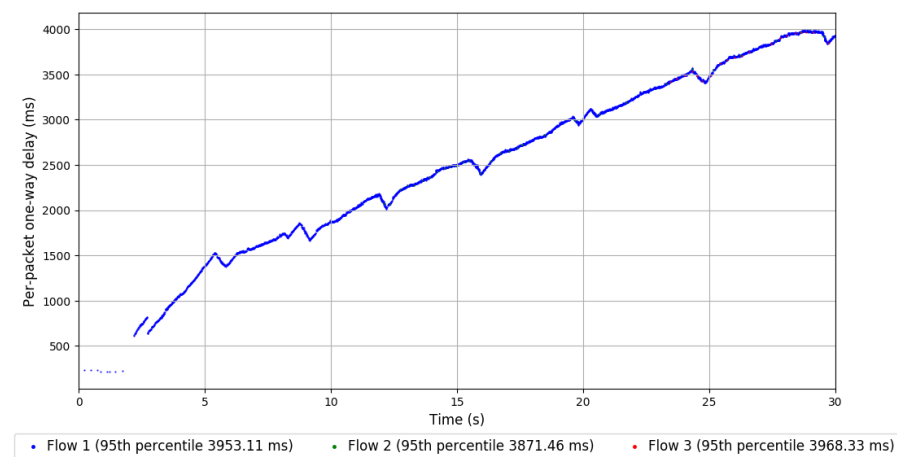
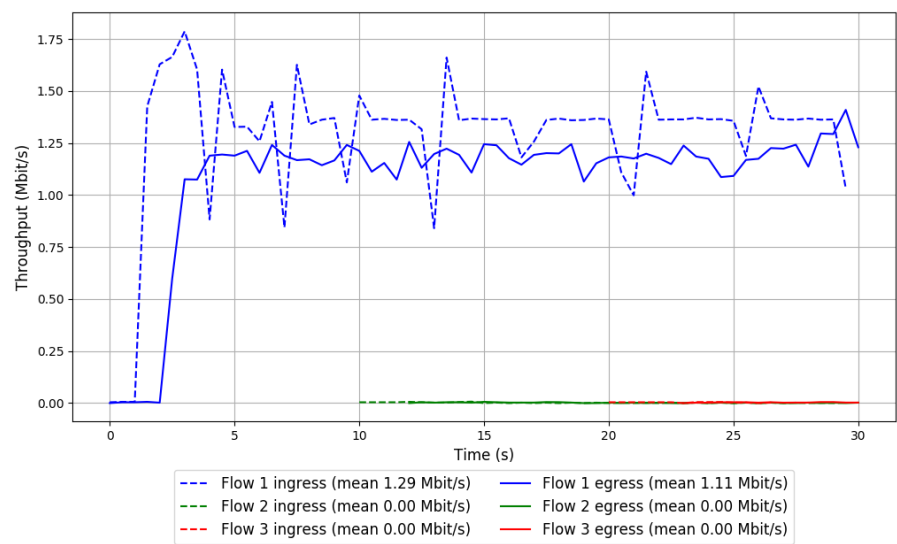
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 3968.330 ms

Loss rate: 5.31%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2019-02-05 06:35:12

End at: 2019-02-05 06:35:42

Local clock offset: -7.613 ms

Remote clock offset: 8.578 ms

Below is generated by plot.py at 2019-02-05 06:55:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 6542.497 ms

Loss rate: 53.62%

-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 6516.183 ms

Loss rate: 42.46%

-- Flow 2:

Average throughput: 0.67 Mbit/s

95th percentile per-packet one-way delay: 6565.234 ms

Loss rate: 65.25%

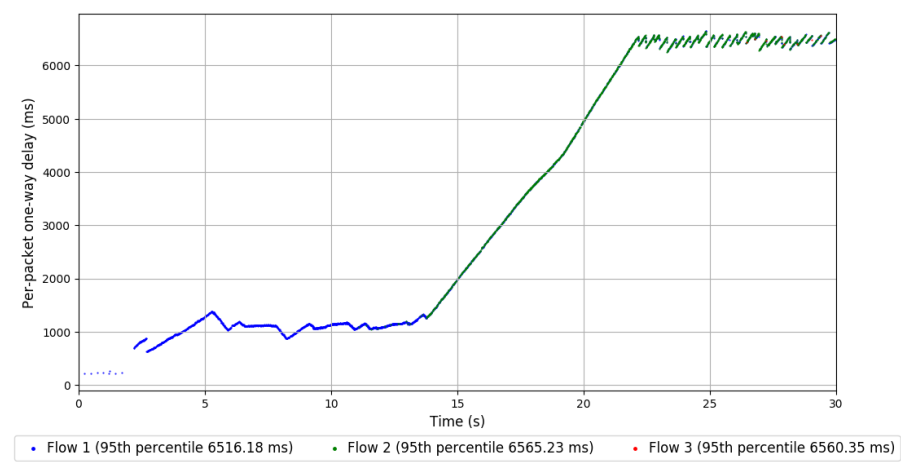
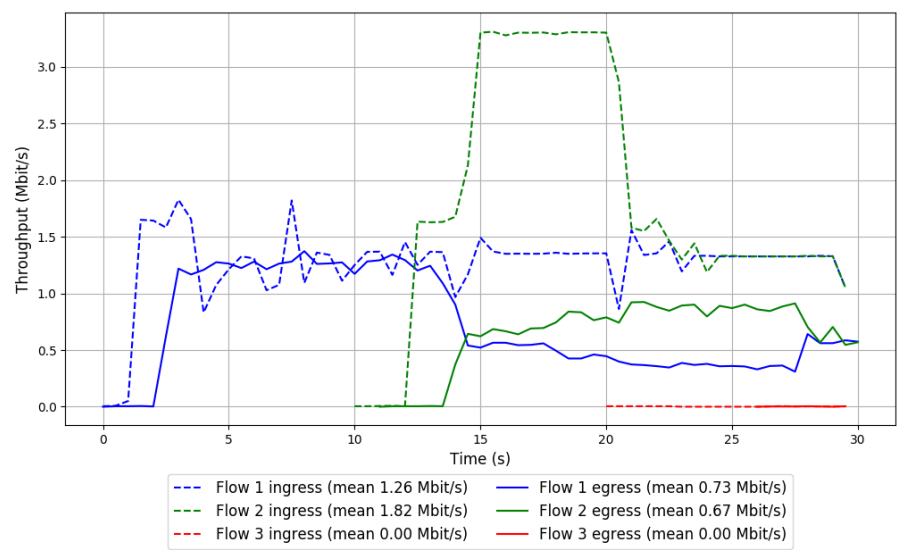
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6560.352 ms

Loss rate: 63.22%

Run 3: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2019-02-05 05:52:12

End at: 2019-02-05 05:52:42

Local clock offset: -7.232 ms

Remote clock offset: 6.607 ms

Below is generated by plot.py at 2019-02-05 06:55:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 433.643 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 323.045 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 346.061 ms

Loss rate: 0.00%

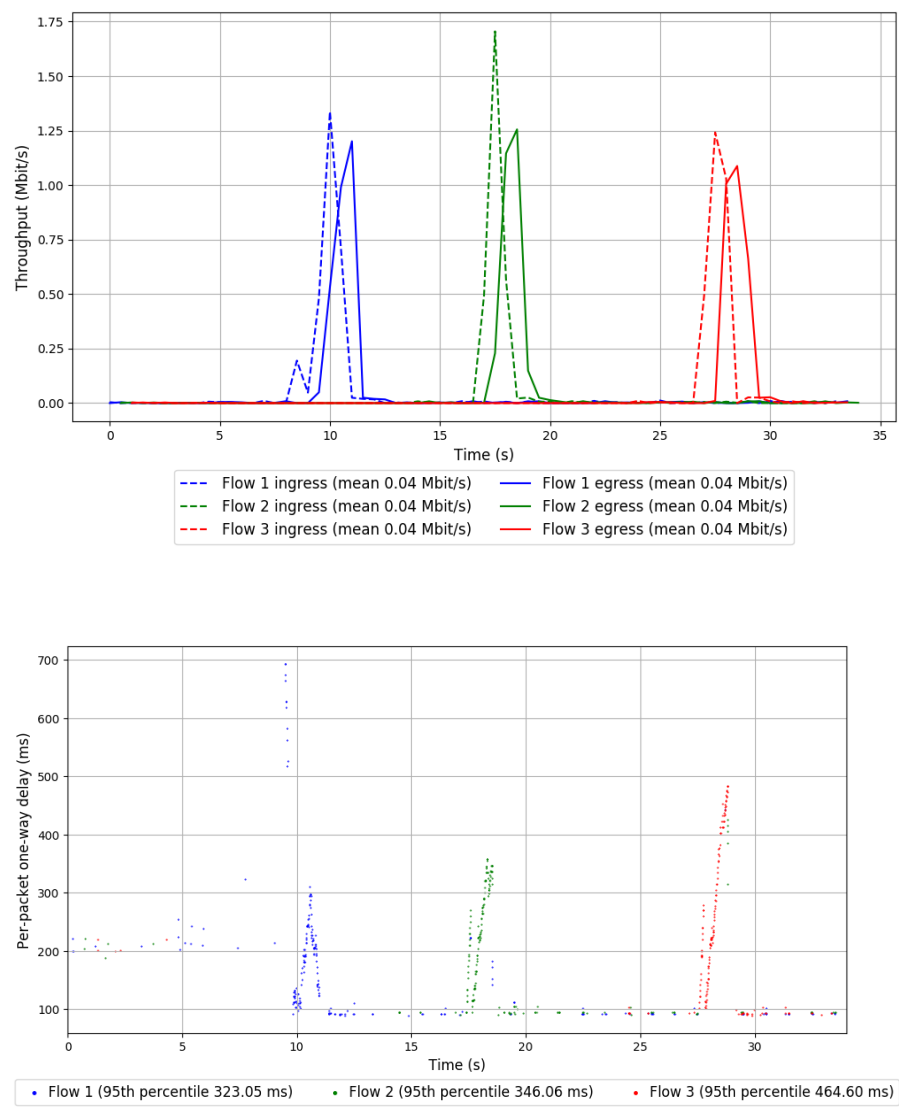
-- Flow 3:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 464.603 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2019-02-05 06:17:57

End at: 2019-02-05 06:18:27

Local clock offset: -7.098 ms

Remote clock offset: 7.979 ms

Below is generated by plot.py at 2019-02-05 06:55:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 362.278 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 303.461 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 370.994 ms

Loss rate: 0.00%

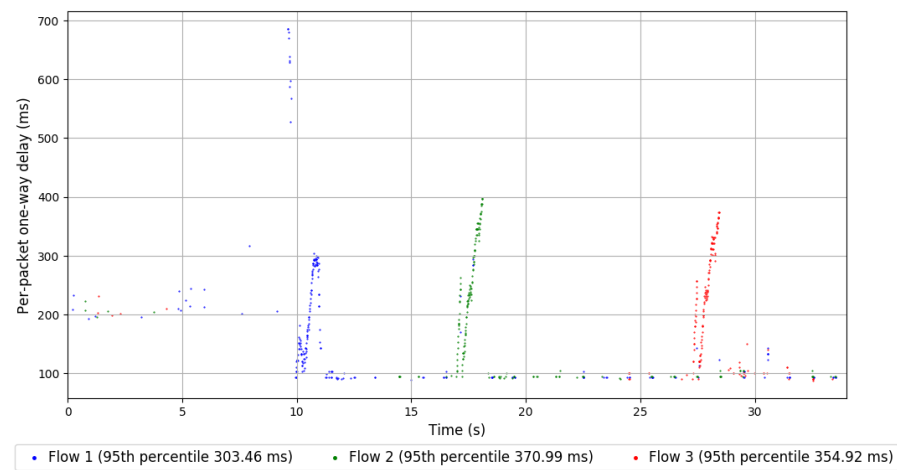
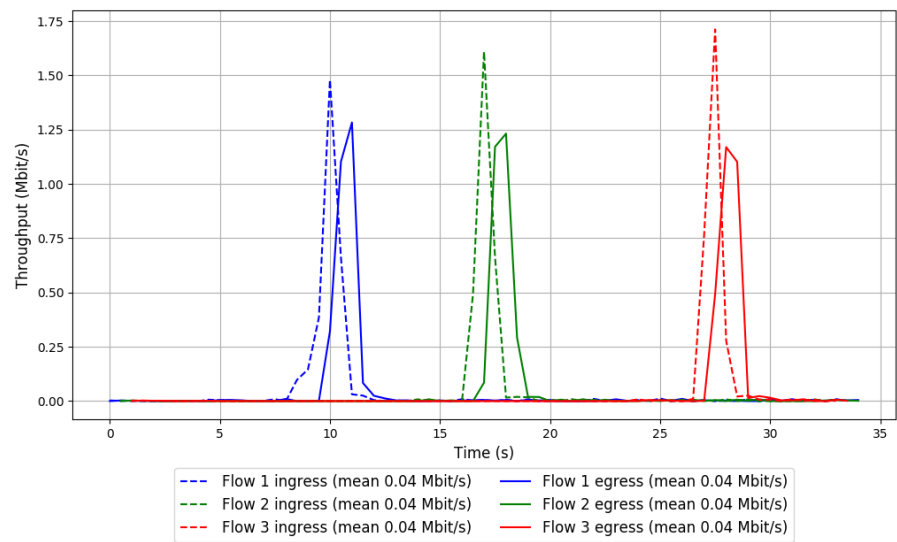
-- Flow 3:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 354.916 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-02-05 06:43:47

End at: 2019-02-05 06:44:17

Local clock offset: -7.014 ms

Remote clock offset: 9.072 ms

Below is generated by plot.py at 2019-02-05 06:55:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 332.924 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 277.470 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 337.256 ms

Loss rate: 0.00%

-- Flow 3:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 332.924 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

