

Pantheon Report

Generated at 2019-01-25 00:40:10 (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:

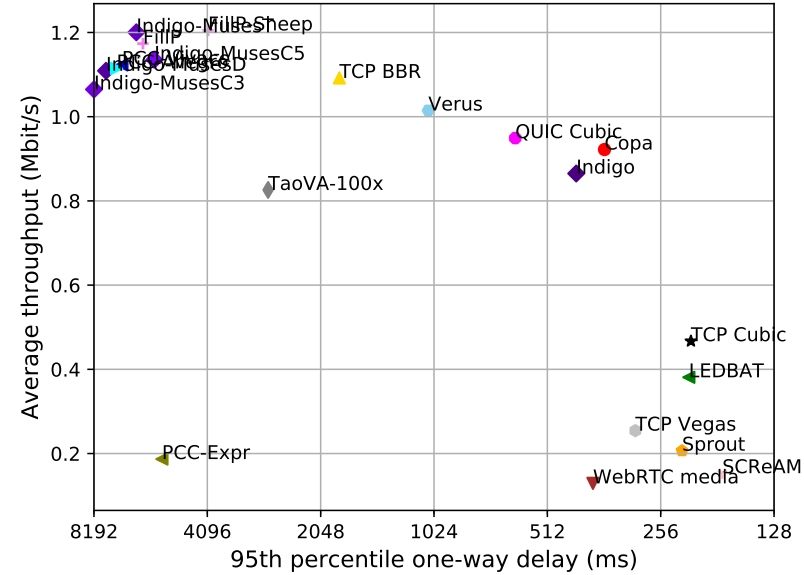
```
Linux 4.15.0-1031-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

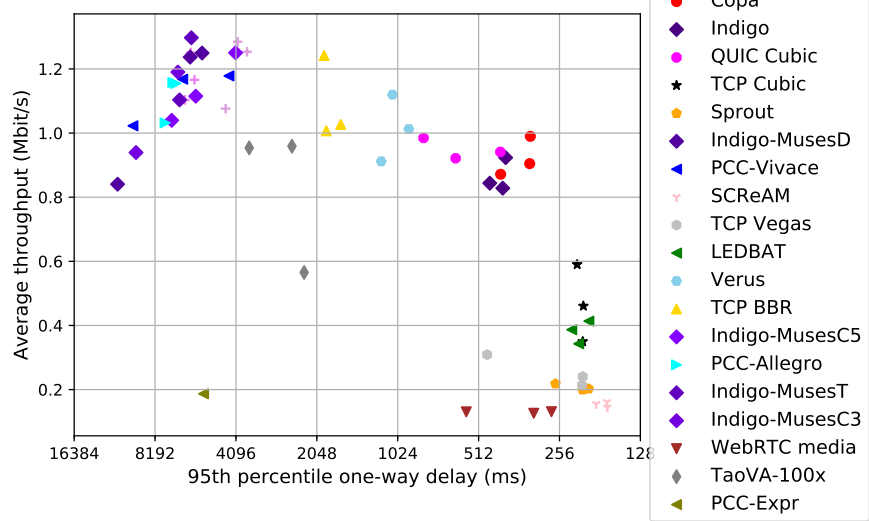
```
branch: muses @ 0b8e9a949603c3842368430acf469eec3b941f9f
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ d9c5ea33091330aca25ecd105ab2db6d34d5c40d
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	0.77	0.33	0.35	1402.35	1755.30	1878.18	9.03	11.94	21.67
Copa	3	0.53	0.40	0.40	366.31	317.35	325.39	12.27	13.28	13.21
TCP Cubic	3	0.21	0.25	0.27	209.82	220.99	191.86	6.96	6.46	6.98
FillP	3	0.77	0.65	0.00	5967.24	6142.51	4775.47	28.78	47.80	92.68
FillP-Sheep	3	0.73	0.58	0.33	3807.28	3646.31	4640.15	18.30	25.23	82.72
Indigo	3	0.51	0.34	0.39	414.88	405.79	569.82	6.99	7.13	6.11
Indigo-MusesC3	2	0.77	0.58	0.00	8202.04	6468.58	6499.77	82.16	97.29	99.91
Indigo-MusesC5	3	0.72	0.56	0.08	5365.85	5764.17	5965.74	27.13	38.75	91.98
Indigo-MusesD	3	0.79	0.54	0.05	7702.85	6316.10	5925.55	59.08	71.76	99.48
Indigo-MusesT	2	0.76	0.77	0.00	6261.50	6366.14	6043.03	84.31	95.72	99.93
LEDBAT	3	0.17	0.23	0.18	219.25	208.75	222.88	7.20	6.27	7.53
PCC-Allegro	3	1.11	0.00	0.00	7134.19	6697.62	6896.06	91.71	8.33	48.87
PCC-Expr	1	0.01	0.01	0.61	278.91	1366.86	5422.86	65.00	0.00	89.01
QUIC Cubic	3	0.46	0.48	0.49	638.23	596.05	629.73	7.40	7.14	8.25
SCReAM	3	0.06	0.09	0.09	171.86	175.76	179.08	7.61	5.64	7.44
Sprout	3	0.10	0.10	0.12	462.02	192.73	213.66	7.20	8.25	6.74
TaoVA-100x	3	0.38	0.53	0.45	2129.76	2723.83	2711.69	39.31	19.23	23.96
TCP Vegas	3	0.11	0.13	0.15	297.80	269.67	303.83	7.91	9.22	7.64
Verus	3	0.78	0.25	0.20	976.27	936.05	1128.19	9.16	6.20	14.87
PCC-Vivace	3	0.72	0.47	0.28	6199.75	5967.07	6493.70	42.51	46.93	48.46
WebRTC media	3	0.04	0.04	0.04	364.81	389.93	286.66	4.59	5.68	6.87

Run 1: Statistics of TCP BBR

Start at: 2019-01-24 23:30:39

End at: 2019-01-24 23:31:09

Local clock offset: -5.714 ms

Remote clock offset: 8.05 ms

Below is generated by plot.py at 2019-01-25 00:39:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.01 Mbit/s

95th percentile per-packet one-way delay: 1887.685 ms

Loss rate: 7.24%

-- Flow 1:

Average throughput: 0.69 Mbit/s

95th percentile per-packet one-way delay: 1879.276 ms

Loss rate: 5.55%

-- Flow 2:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 1897.662 ms

Loss rate: 9.36%

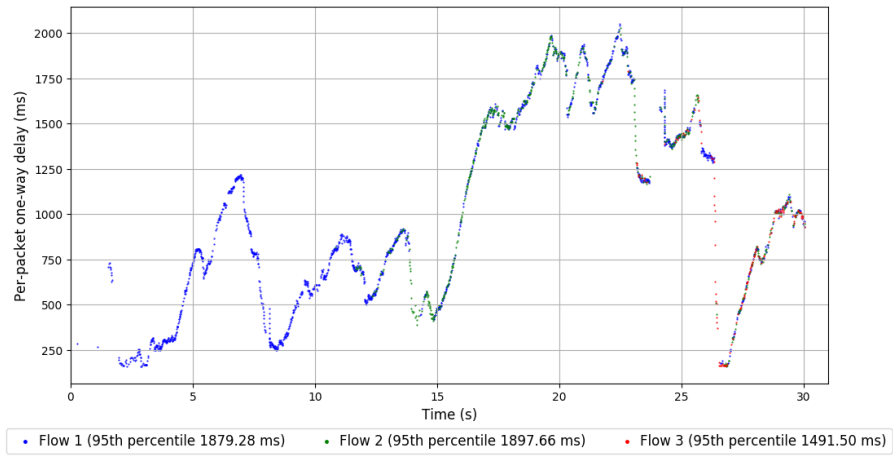
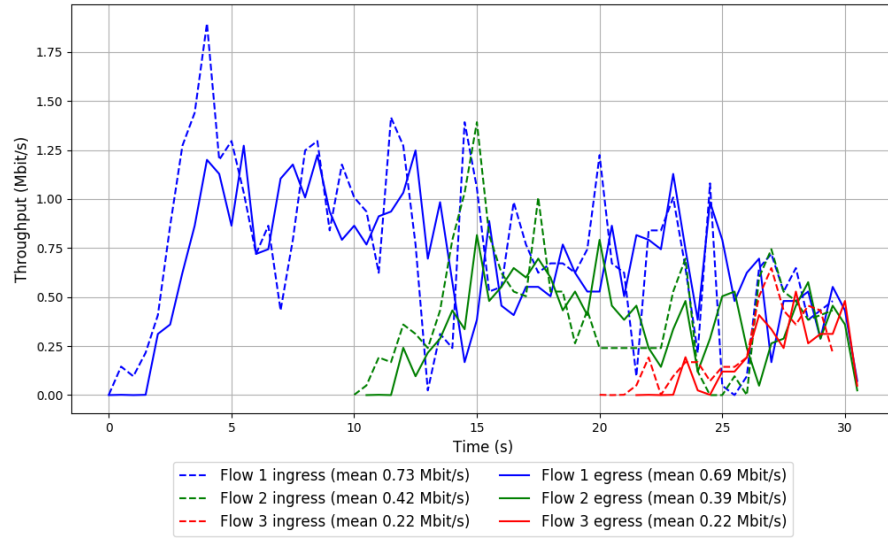
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1491.501 ms

Loss rate: 16.27%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2019-01-24 23:56:34

End at: 2019-01-24 23:57:04

Local clock offset: -1.04 ms

Remote clock offset: 8.111 ms

Below is generated by plot.py at 2019-01-25 00:39:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 1923.661 ms

Loss rate: 13.32%

-- Flow 1:

Average throughput: 0.89 Mbit/s

95th percentile per-packet one-way delay: 1183.299 ms

Loss rate: 9.71%

-- Flow 2:

Average throughput: 0.26 Mbit/s

95th percentile per-packet one-way delay: 1633.226 ms

Loss rate: 13.18%

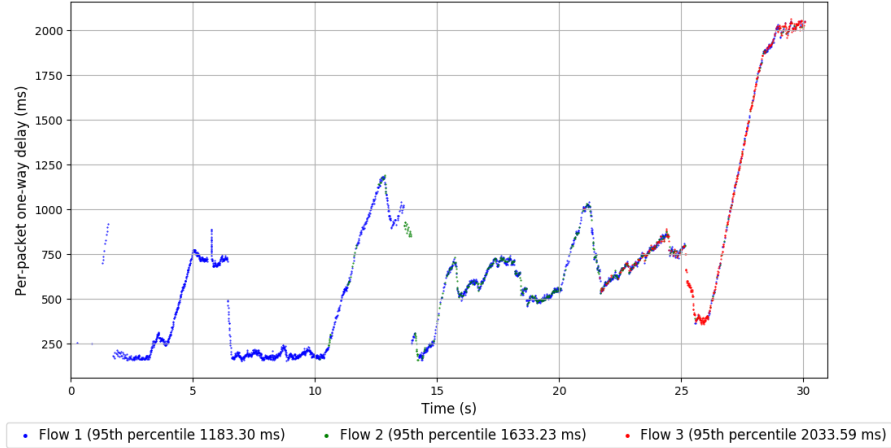
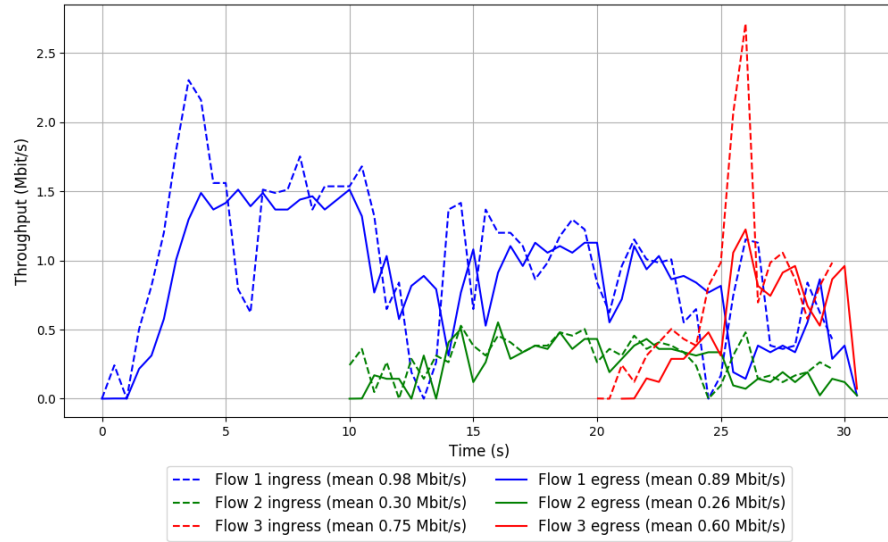
-- Flow 3:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 2033.586 ms

Loss rate: 27.60%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2019-01-25 00:22:30

End at: 2019-01-25 00:23:00

Local clock offset: -1.316 ms

Remote clock offset: 3.332 ms

Below is generated by plot.py at 2019-01-25 00:39:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 1668.006 ms

Loss rate: 12.92%

-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 1144.490 ms

Loss rate: 11.83%

-- Flow 2:

Average throughput: 0.33 Mbit/s

95th percentile per-packet one-way delay: 1735.016 ms

Loss rate: 13.29%

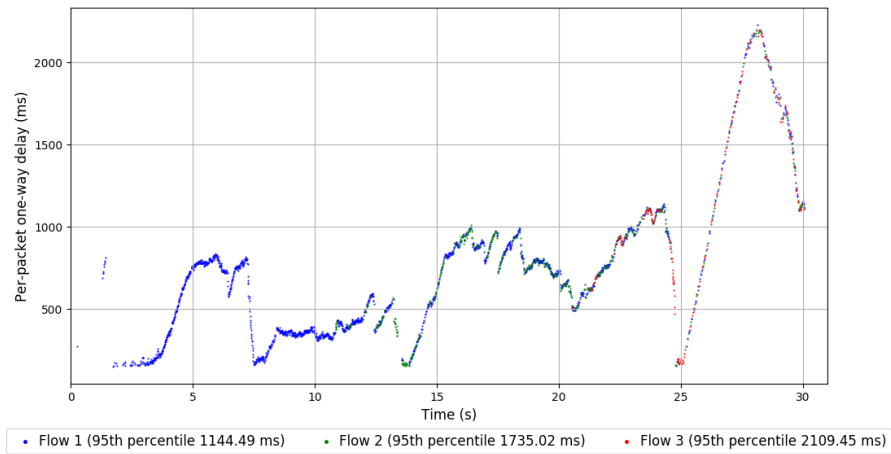
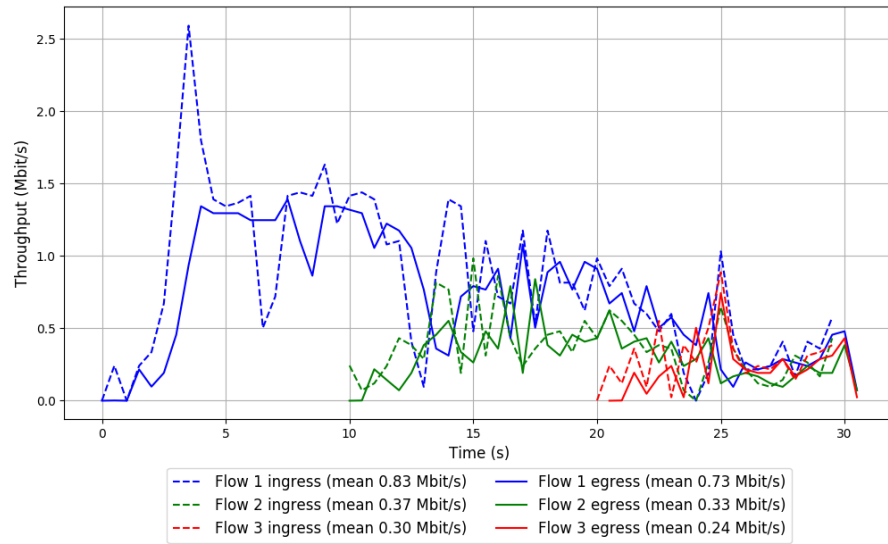
-- Flow 3:

Average throughput: 0.24 Mbit/s

95th percentile per-packet one-way delay: 2109.448 ms

Loss rate: 21.13%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2019-01-24 23:28:10

End at: 2019-01-24 23:28:40

Local clock offset: -5.188 ms

Remote clock offset: 6.308 ms

Below is generated by plot.py at 2019-01-25 00:39:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.99 Mbit/s

95th percentile per-packet one-way delay: 328.685 ms

Loss rate: 9.99%

-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 325.752 ms

Loss rate: 9.72%

-- Flow 2:

Average throughput: 0.41 Mbit/s

95th percentile per-packet one-way delay: 323.709 ms

Loss rate: 10.67%

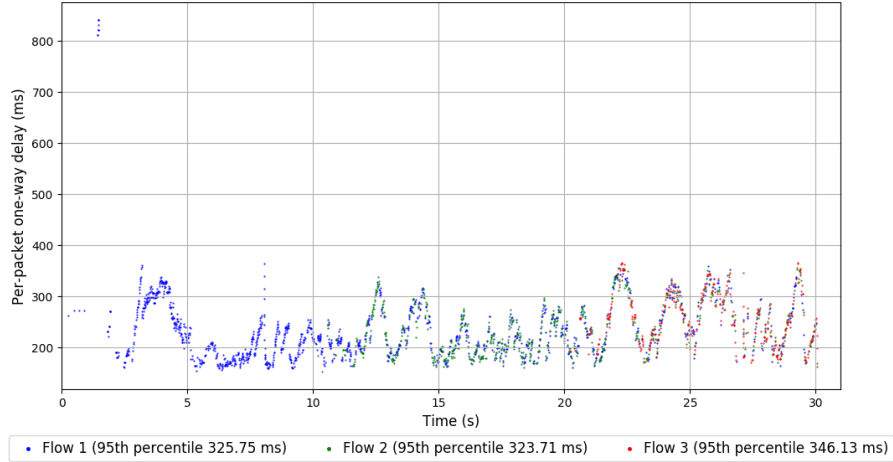
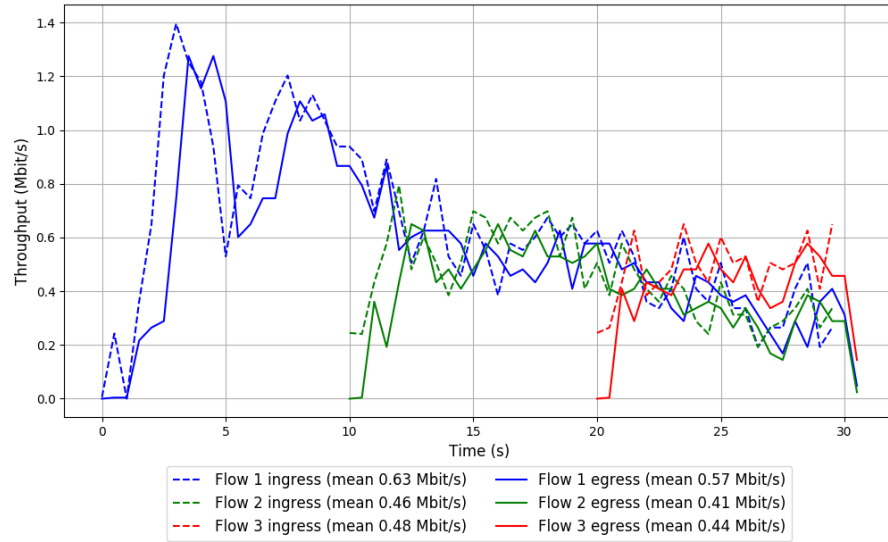
-- Flow 3:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 346.128 ms

Loss rate: 9.75%

Run 1: Report of Copa — Data Link

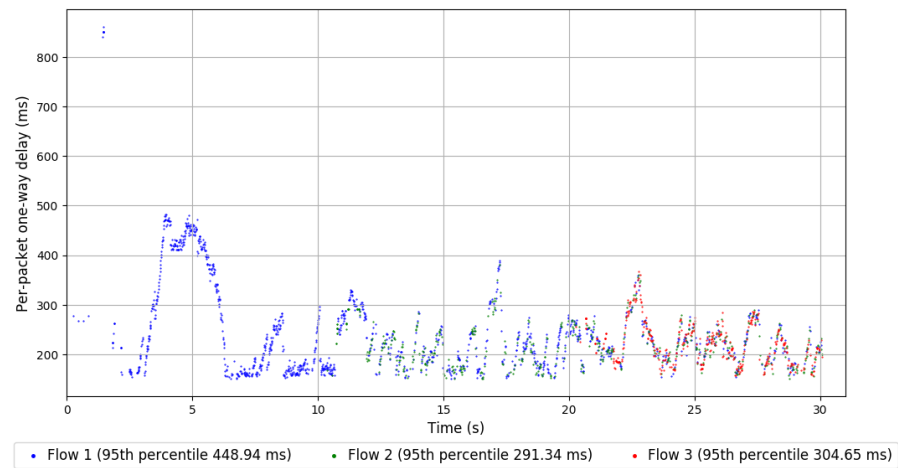
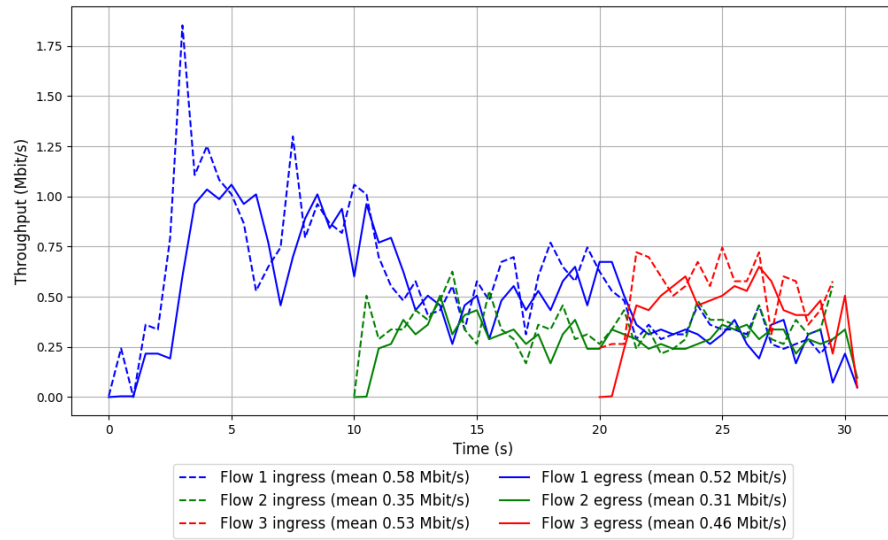


Run 2: Statistics of Copa

Start at: 2019-01-24 23:54:06
End at: 2019-01-24 23:54:36
Local clock offset: -1.181 ms
Remote clock offset: 2.837 ms

Below is generated by plot.py at 2019-01-25 00:39:28
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 423.851 ms
Loss rate: 12.46%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 448.945 ms
Loss rate: 11.55%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 291.343 ms
Loss rate: 13.31%
-- Flow 3:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 304.647 ms
Loss rate: 14.35%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2019-01-25 00:20:01

End at: 2019-01-25 00:20:31

Local clock offset: -1.376 ms

Remote clock offset: 3.297 ms

Below is generated by plot.py at 2019-01-25 00:39:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.90 Mbit/s

95th percentile per-packet one-way delay: 330.501 ms

Loss rate: 15.64%

-- Flow 1:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 324.229 ms

Loss rate: 15.53%

-- Flow 2:

Average throughput: 0.47 Mbit/s

95th percentile per-packet one-way delay: 336.991 ms

Loss rate: 15.85%

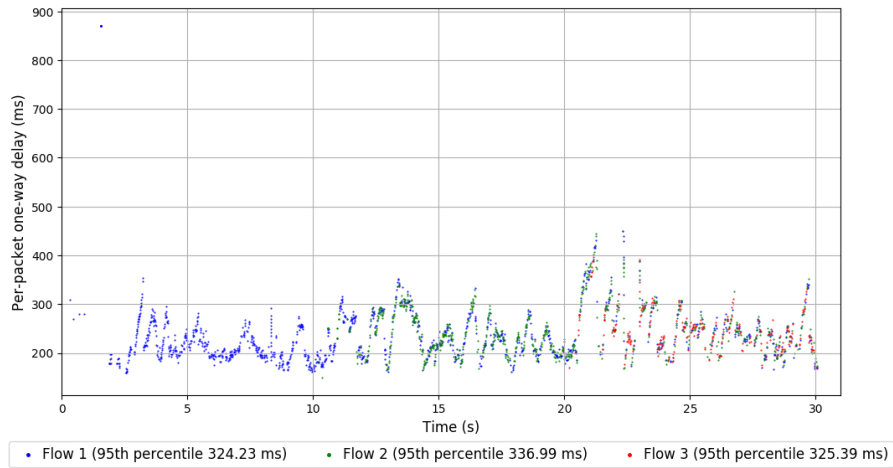
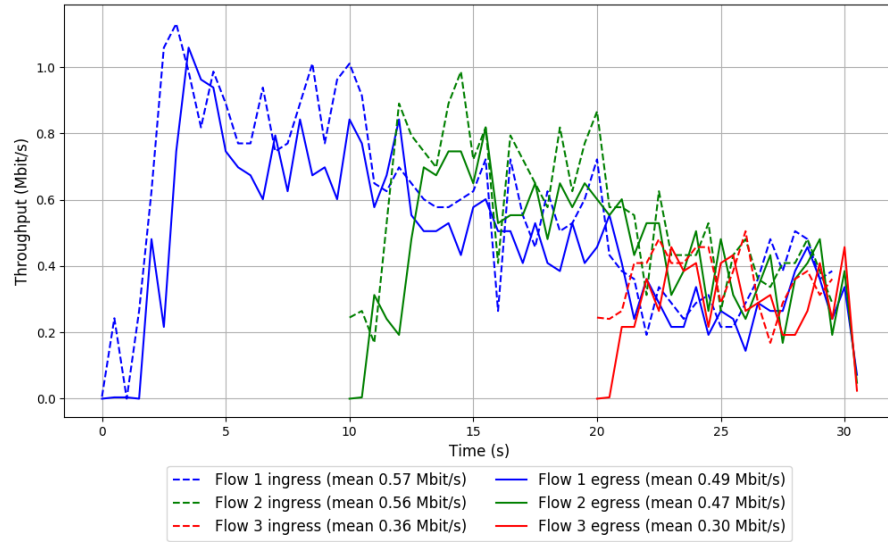
-- Flow 3:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 325.390 ms

Loss rate: 15.53%

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2019-01-24 23:21:59

End at: 2019-01-24 23:22:29

Local clock offset: -4.85 ms

Remote clock offset: 5.34 ms

Below is generated by plot.py at 2019-01-25 00:39:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 220.043 ms

Loss rate: 4.69%

-- Flow 1:

Average throughput: 0.26 Mbit/s

95th percentile per-packet one-way delay: 211.014 ms

Loss rate: 5.18%

-- Flow 2:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 246.936 ms

Loss rate: 4.31%

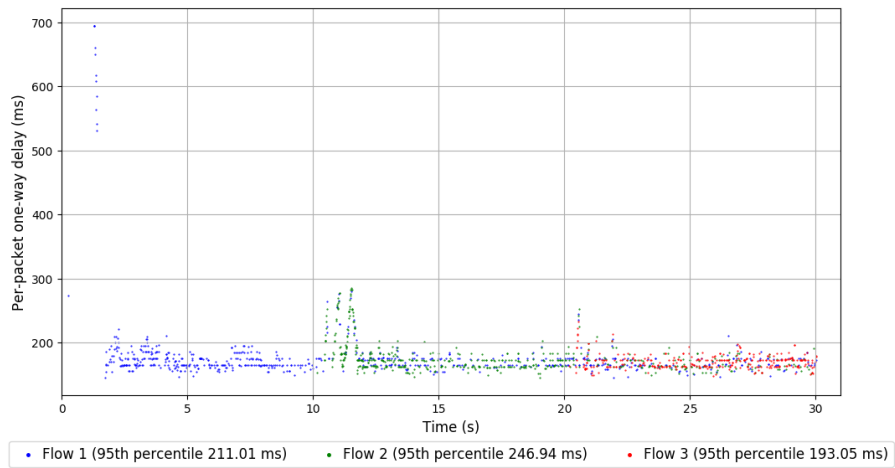
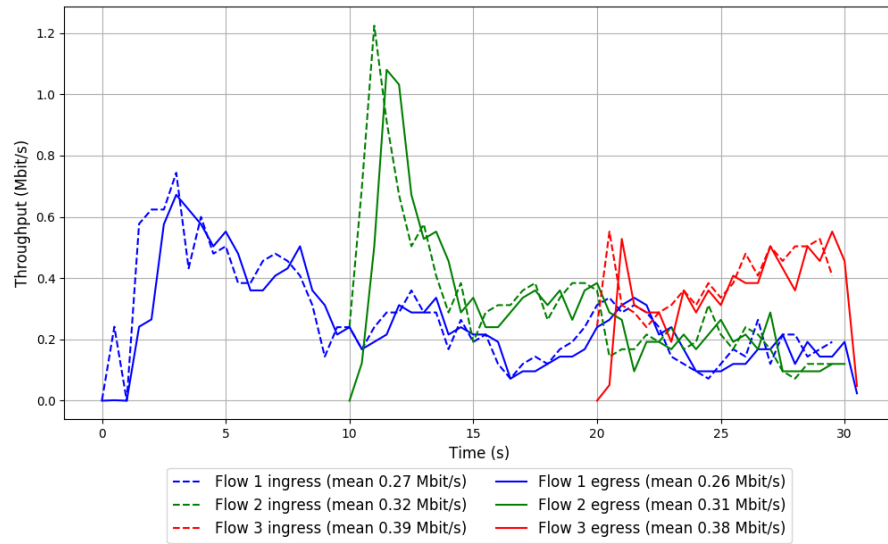
-- Flow 3:

Average throughput: 0.38 Mbit/s

95th percentile per-packet one-way delay: 193.053 ms

Loss rate: 4.31%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2019-01-24 23:47:57

End at: 2019-01-24 23:48:27

Local clock offset: -1.589 ms

Remote clock offset: 9.106 ms

Below is generated by plot.py at 2019-01-25 00:39:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.46 Mbit/s

95th percentile per-packet one-way delay: 208.597 ms

Loss rate: 5.73%

-- Flow 1:

Average throughput: 0.18 Mbit/s

95th percentile per-packet one-way delay: 204.626 ms

Loss rate: 6.65%

-- Flow 2:

Average throughput: 0.28 Mbit/s

95th percentile per-packet one-way delay: 225.428 ms

Loss rate: 5.37%

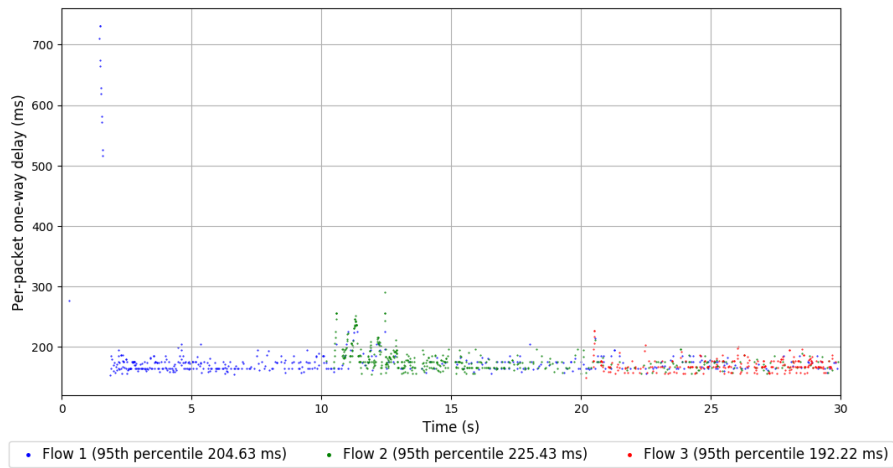
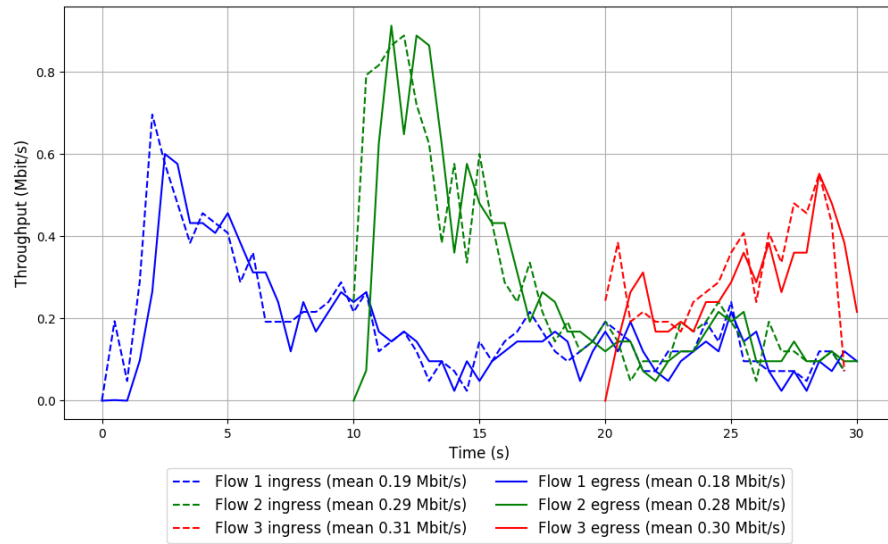
-- Flow 3:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 192.223 ms

Loss rate: 4.73%

Run 2: Report of TCP Cubic — Data Link

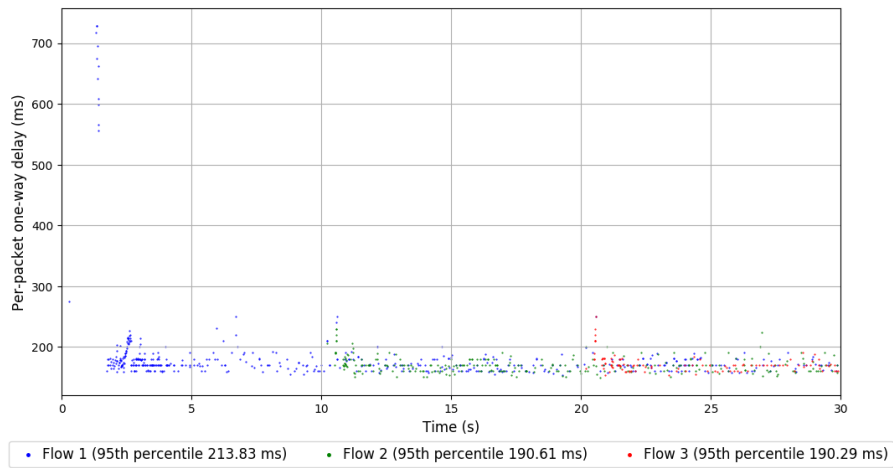
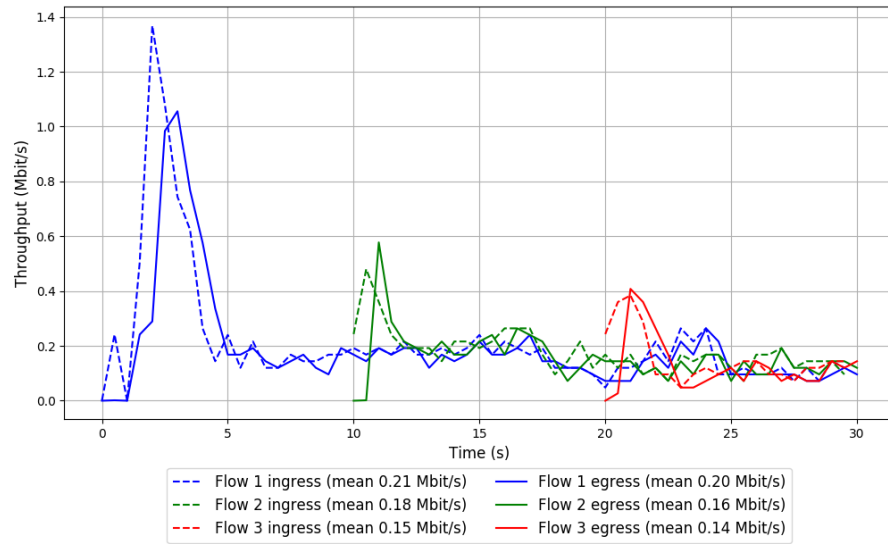


Run 3: Statistics of TCP Cubic

Start at: 2019-01-25 00:13:51
End at: 2019-01-25 00:14:21
Local clock offset: -0.766 ms
Remote clock offset: 7.339 ms

Below is generated by plot.py at 2019-01-25 00:39:28
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 209.850 ms
Loss rate: 9.63%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 213.830 ms
Loss rate: 9.05%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 190.608 ms
Loss rate: 9.70%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 190.290 ms
Loss rate: 11.89%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2019-01-24 23:43:01

End at: 2019-01-24 23:43:31

Local clock offset: -2.058 ms

Remote clock offset: 6.895 ms

Below is generated by plot.py at 2019-01-25 00:39:32

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 6036.848 ms

Loss rate: 47.11%

-- Flow 1:

Average throughput: 0.83 Mbit/s

95th percentile per-packet one-way delay: 5994.759 ms

Loss rate: 24.68%

-- Flow 2:

Average throughput: 0.67 Mbit/s

95th percentile per-packet one-way delay: 6123.520 ms

Loss rate: 45.01%

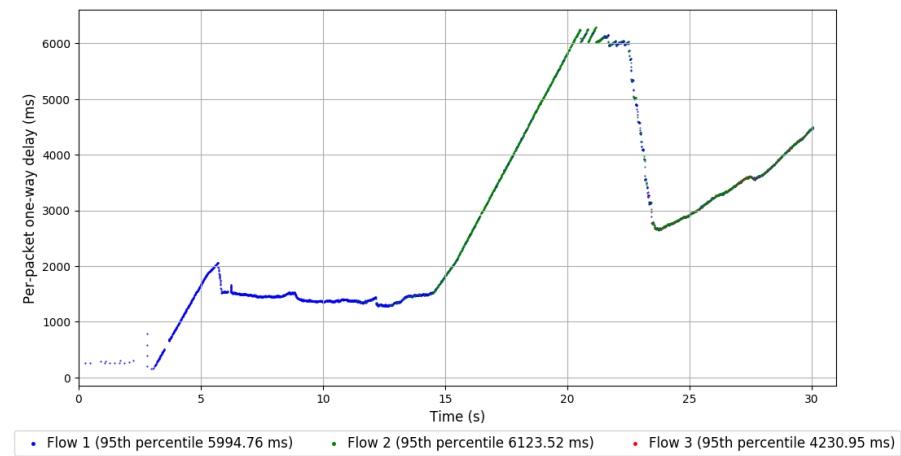
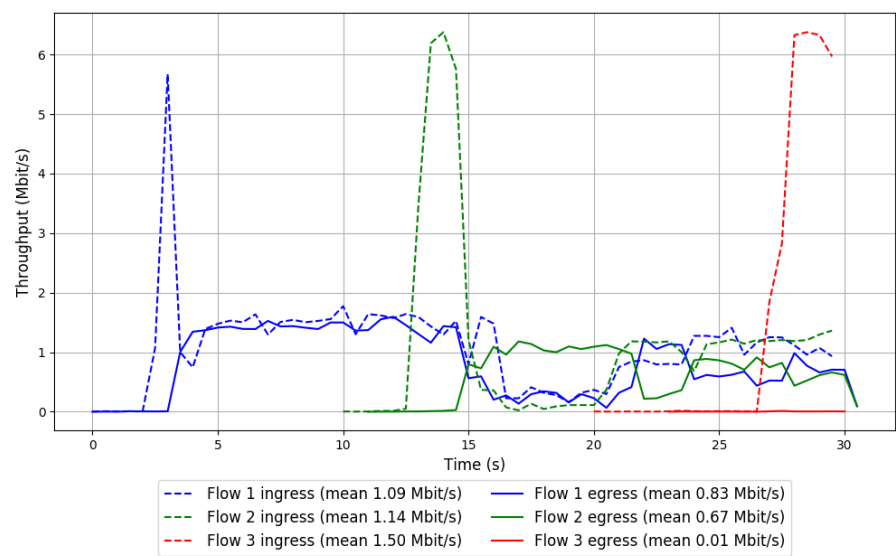
-- Flow 3:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 4230.946 ms

Loss rate: 99.77%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2019-01-25 00:08:54

End at: 2019-01-25 00:09:24

Local clock offset: -0.905 ms

Remote clock offset: 2.546 ms

Below is generated by plot.py at 2019-01-25 00:39:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 5844.623 ms

Loss rate: 49.33%

-- Flow 1:

Average throughput: 0.77 Mbit/s

95th percentile per-packet one-way delay: 5616.742 ms

Loss rate: 25.91%

-- Flow 2:

Average throughput: 0.64 Mbit/s

95th percentile per-packet one-way delay: 5929.816 ms

Loss rate: 43.31%

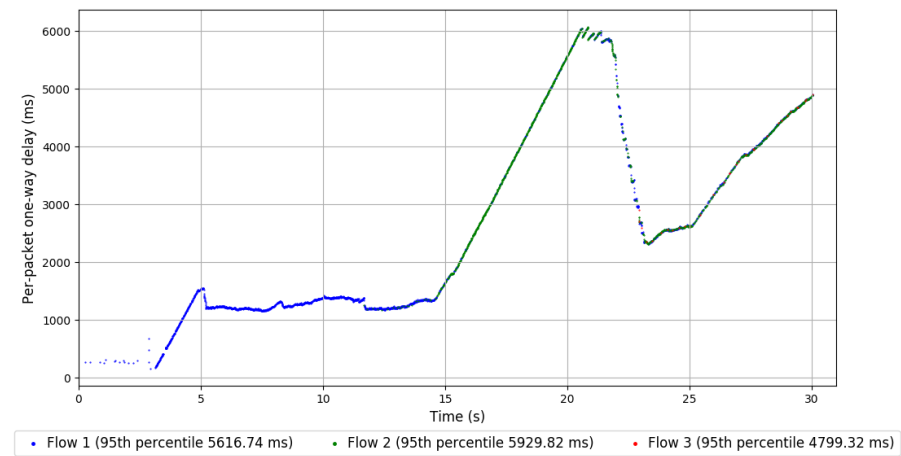
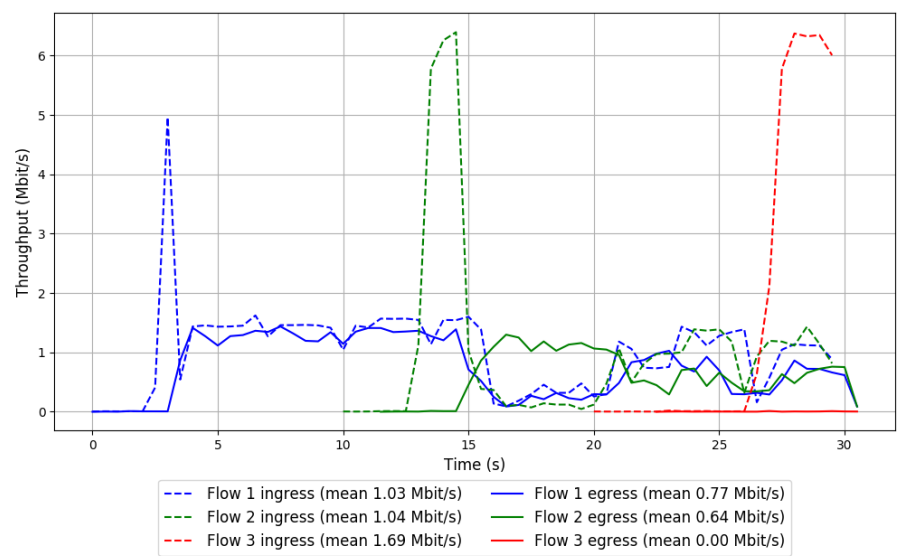
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 4799.325 ms

Loss rate: 99.79%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2019-01-25 00:34:57

End at: 2019-01-25 00:35:27

Local clock offset: -1.132 ms

Remote clock offset: 1.963 ms

Below is generated by plot.py at 2019-01-25 00:39:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 6336.237 ms

Loss rate: 44.45%

-- Flow 1:

Average throughput: 0.70 Mbit/s

95th percentile per-packet one-way delay: 6290.204 ms

Loss rate: 35.76%

-- Flow 2:

Average throughput: 0.65 Mbit/s

95th percentile per-packet one-way delay: 6374.201 ms

Loss rate: 55.07%

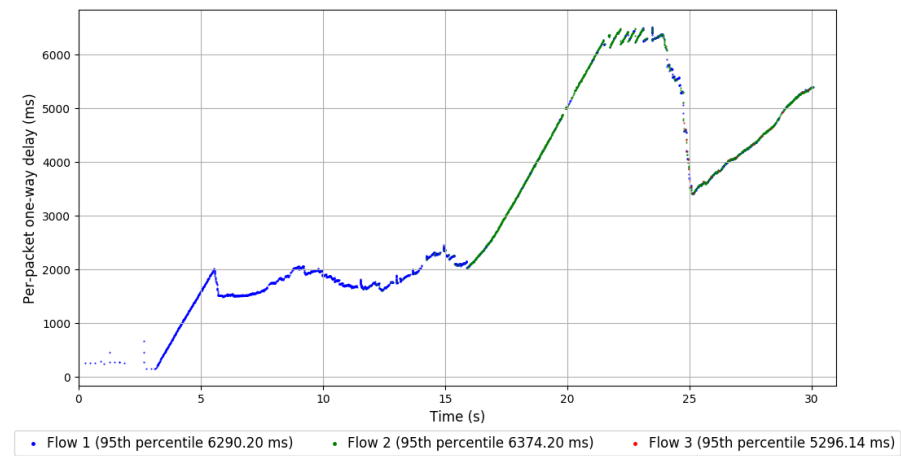
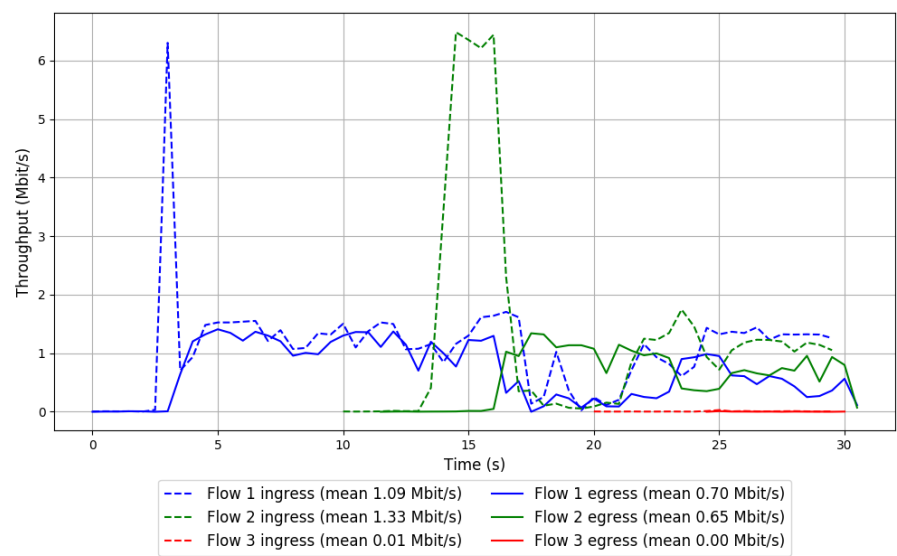
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5296.137 ms

Loss rate: 78.48%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2019-01-24 23:29:24

End at: 2019-01-24 23:29:54

Local clock offset: -5.254 ms

Remote clock offset: 2.907 ms

Below is generated by plot.py at 2019-01-25 00:39:34

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.28 Mbit/s

95th percentile per-packet one-way delay: 4034.704 ms

Loss rate: 43.91%

-- Flow 1:

Average throughput: 0.84 Mbit/s

95th percentile per-packet one-way delay: 4039.718 ms

Loss rate: 14.49%

-- Flow 2:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 3990.685 ms

Loss rate: 24.67%

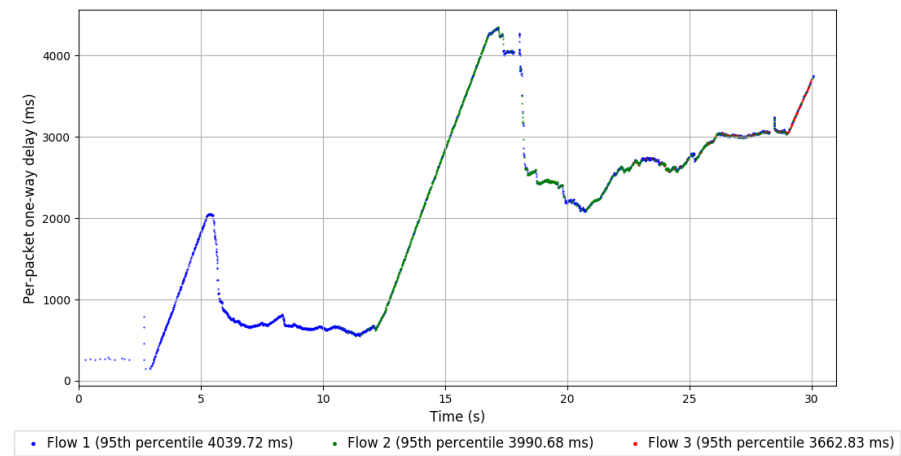
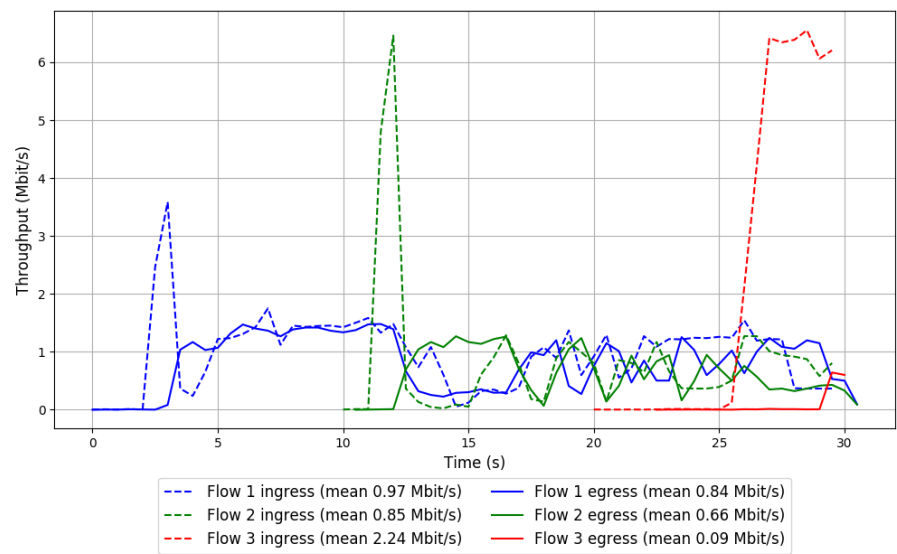
-- Flow 3:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 3662.831 ms

Loss rate: 97.01%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2019-01-24 23:55:20

End at: 2019-01-24 23:55:50

Local clock offset: -1.867 ms

Remote clock offset: 9.165 ms

Below is generated by plot.py at 2019-01-25 00:39:34

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.08 Mbit/s

95th percentile per-packet one-way delay: 4474.490 ms

Loss rate: 36.67%

-- Flow 1:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 3812.619 ms

Loss rate: 20.31%

-- Flow 2:

Average throughput: 0.47 Mbit/s

95th percentile per-packet one-way delay: 3379.996 ms

Loss rate: 26.50%

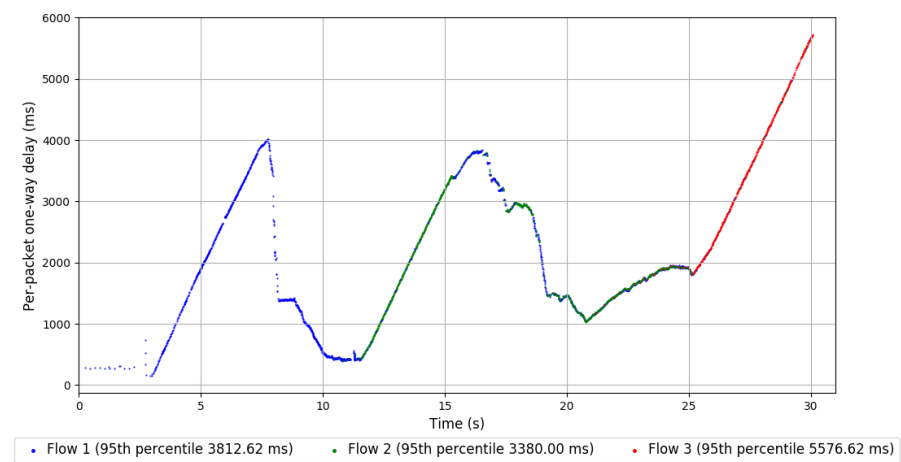
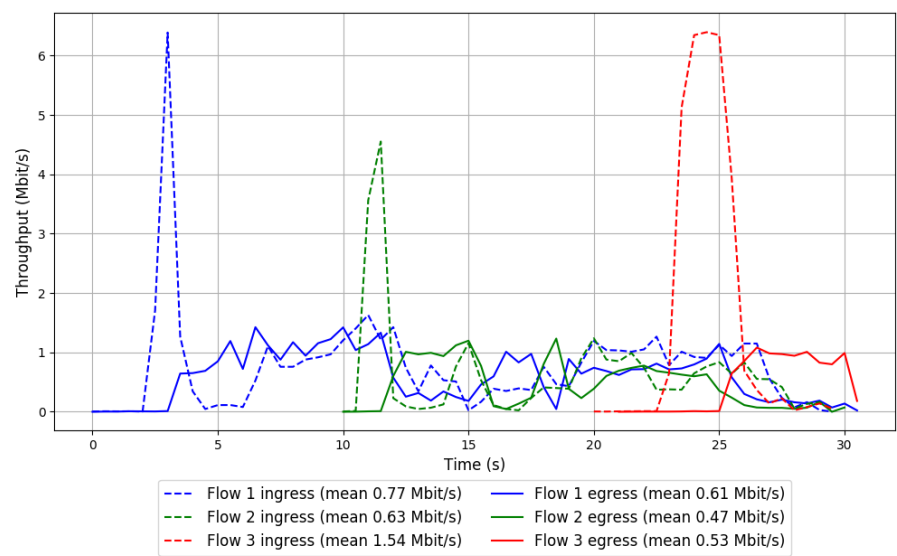
-- Flow 3:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 5576.623 ms

Loss rate: 69.46%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2019-01-25 00:21:15

End at: 2019-01-25 00:21:45

Local clock offset: -0.616 ms

Remote clock offset: 2.297 ms

Below is generated by plot.py at 2019-01-25 00:39:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 3723.503 ms

Loss rate: 38.45%

-- Flow 1:

Average throughput: 0.75 Mbit/s

95th percentile per-packet one-way delay: 3569.499 ms

Loss rate: 20.09%

-- Flow 2:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 3568.263 ms

Loss rate: 24.52%

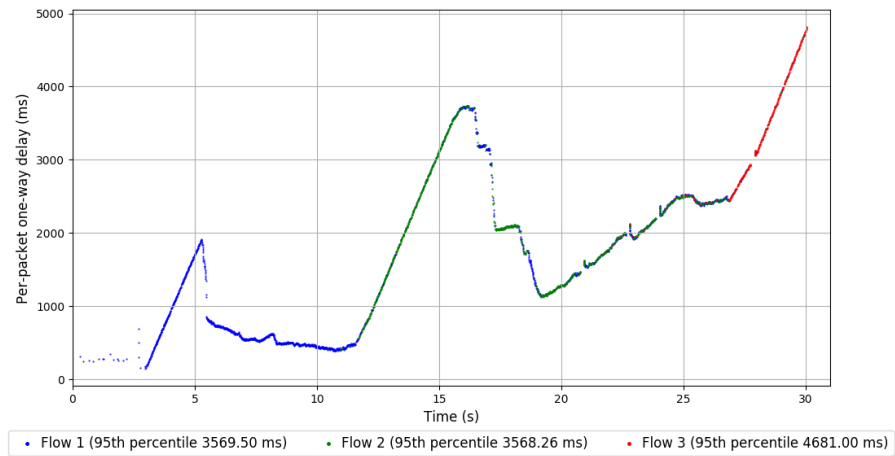
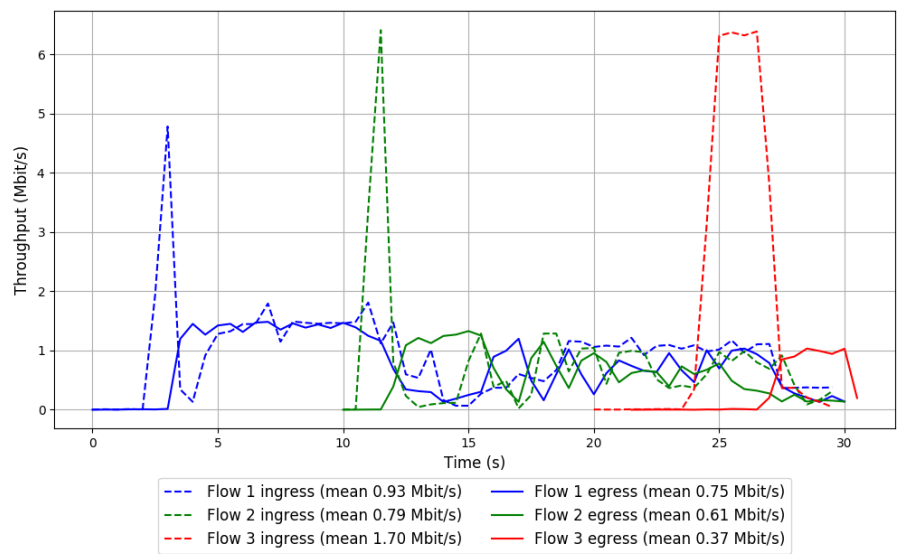
-- Flow 3:

Average throughput: 0.37 Mbit/s

95th percentile per-packet one-way delay: 4680.996 ms

Loss rate: 81.69%

Run 3: Report of FillP-Sheep — Data Link

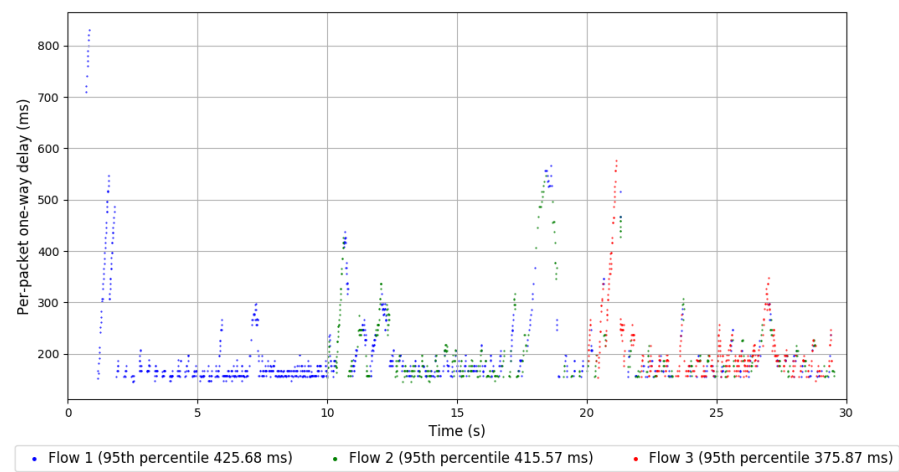
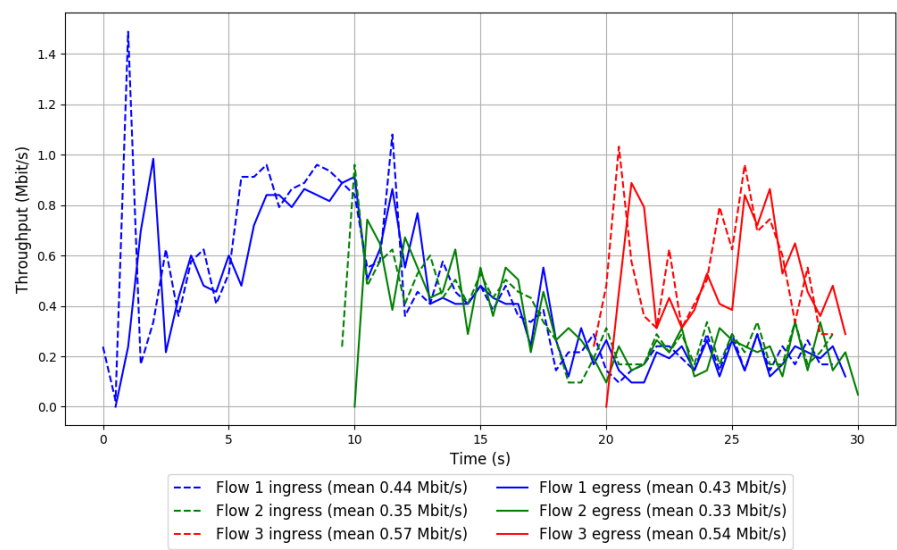


```
Run 1: Statistics of Indigo

Start at: 2019-01-24 23:26:55
End at: 2019-01-24 23:27:25
Local clock offset: -5.123 ms
Remote clock offset: 1.535 ms

# Below is generated by plot.py at 2019-01-25 00:39:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 416.246 ms
Loss rate: 5.47%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 425.681 ms
Loss rate: 5.14%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 415.574 ms
Loss rate: 5.66%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 375.870 ms
Loss rate: 6.04%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2019-01-24 23:52:52

End at: 2019-01-24 23:53:22

Local clock offset: -2.046 ms

Remote clock offset: 8.21 ms

Below is generated by plot.py at 2019-01-25 00:39:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.84 Mbit/s

95th percentile per-packet one-way delay: 465.261 ms

Loss rate: 6.96%

-- Flow 1:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 413.364 ms

Loss rate: 6.84%

-- Flow 2:

Average throughput: 0.38 Mbit/s

95th percentile per-packet one-way delay: 395.791 ms

Loss rate: 7.72%

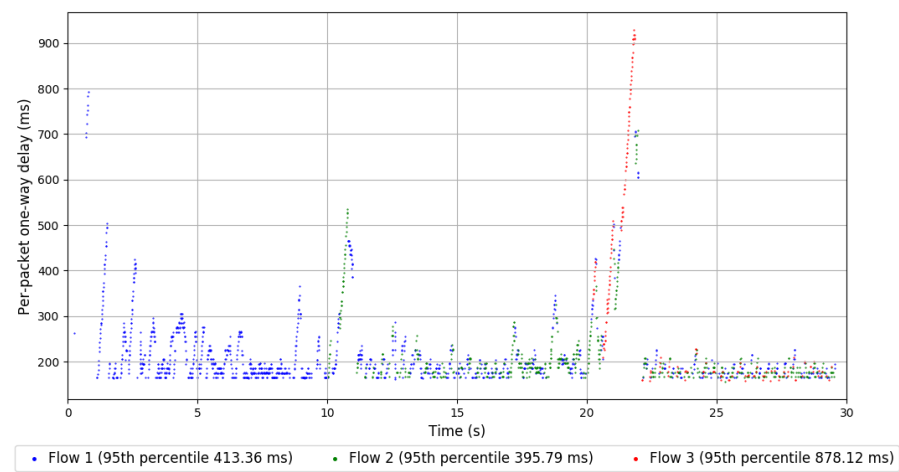
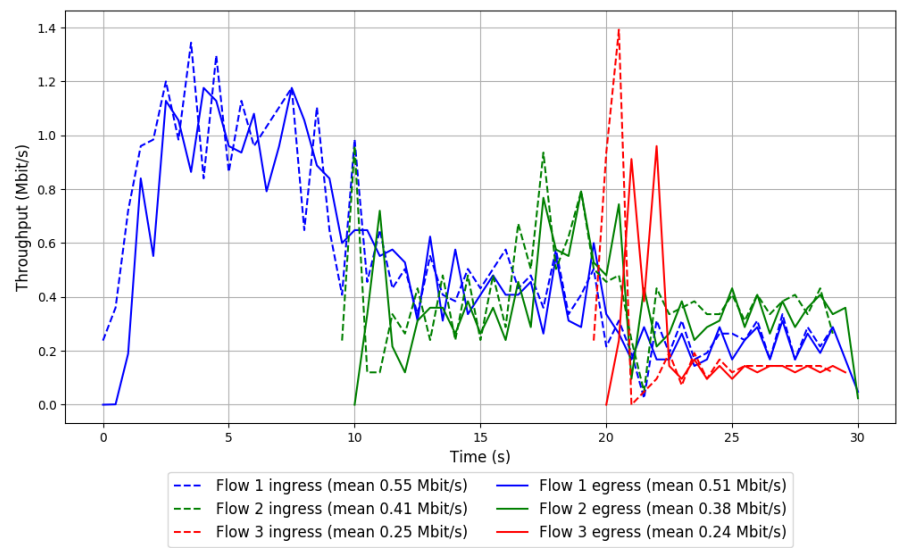
-- Flow 3:

Average throughput: 0.24 Mbit/s

95th percentile per-packet one-way delay: 878.120 ms

Loss rate: 5.13%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2019-01-25 00:18:47

End at: 2019-01-25 00:19:17

Local clock offset: -0.669 ms

Remote clock offset: 2.09 ms

Below is generated by plot.py at 2019-01-25 00:39:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.92 Mbit/s

95th percentile per-packet one-way delay: 406.053 ms

Loss rate: 8.54%

-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 405.595 ms

Loss rate: 9.00%

-- Flow 2:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 406.016 ms

Loss rate: 8.01%

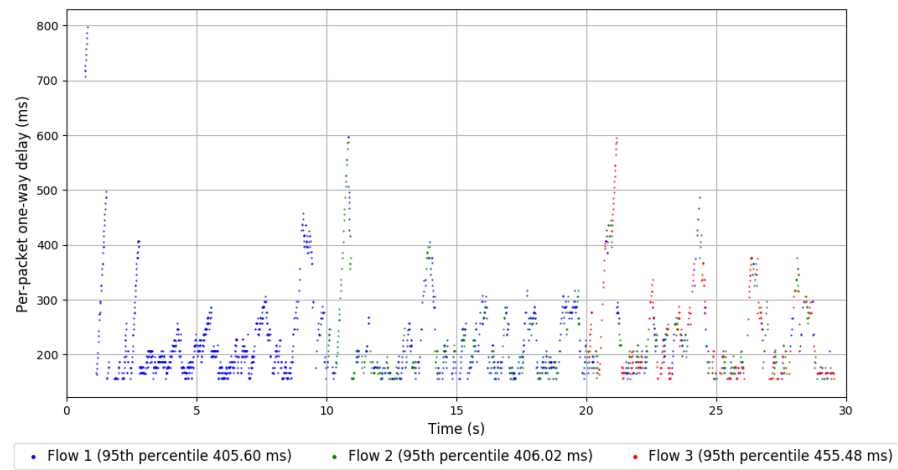
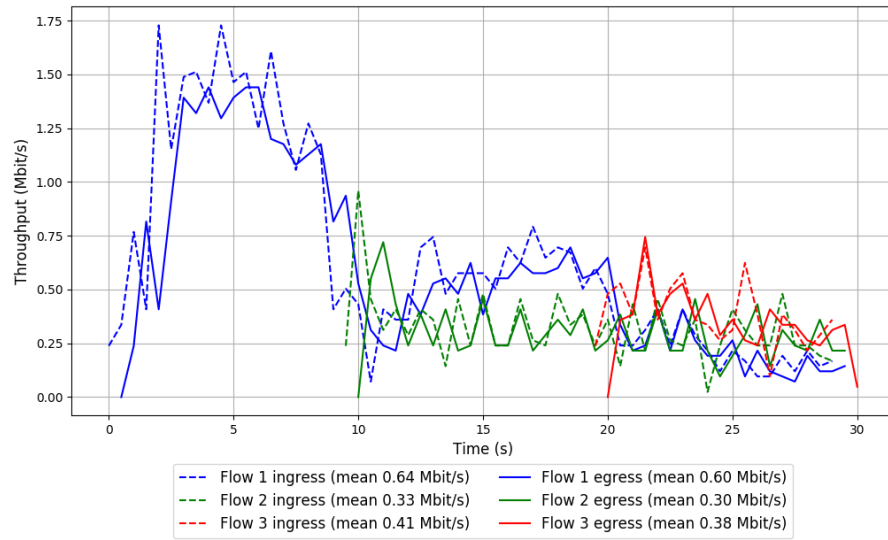
-- Flow 3:

Average throughput: 0.38 Mbit/s

95th percentile per-packet one-way delay: 455.475 ms

Loss rate: 7.17%

Run 3: Report of Indigo — Data Link

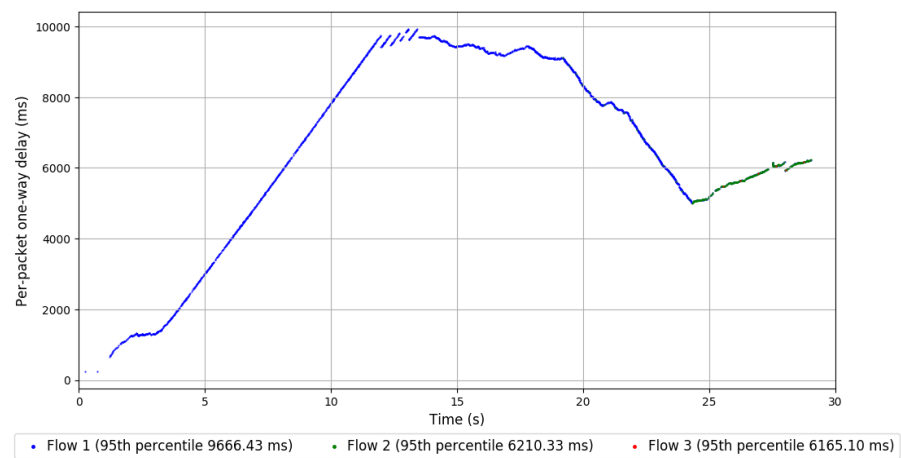
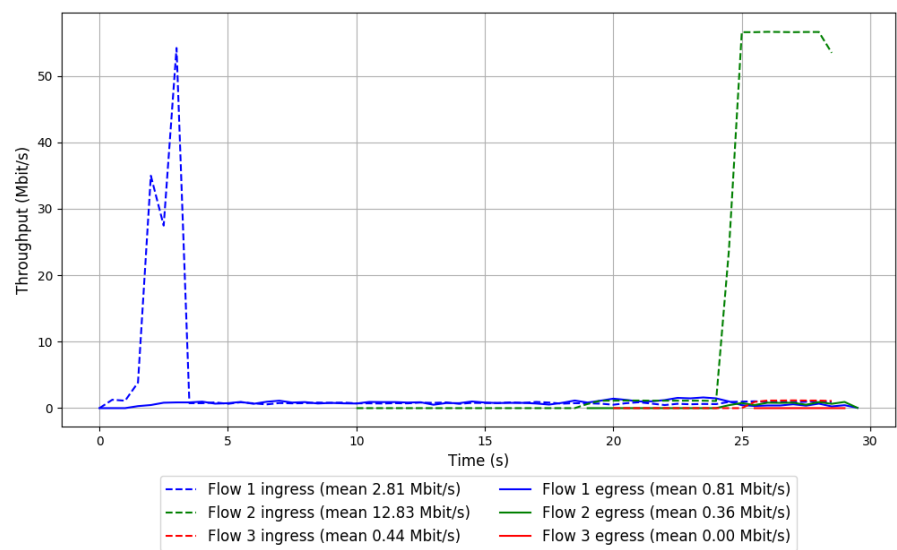



```
Run 1: Statistics of Indigo-MusesC3

Start at: 2019-01-24 23:33:08
End at: 2019-01-24 23:33:38
Local clock offset: -4.081 ms
Remote clock offset: 2.349 ms

# Below is generated by plot.py at 2019-01-25 00:39:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 9643.165 ms
Loss rate: 91.75%
-- Flow 1:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 9666.427 ms
Loss rate: 71.16%
-- Flow 2:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 6210.329 ms
Loss rate: 98.52%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6165.096 ms
Loss rate: 99.91%
```

Run 1: Report of Indigo-MusesC3 — Data Link



Run 2: Statistics of Indigo-MusesC3

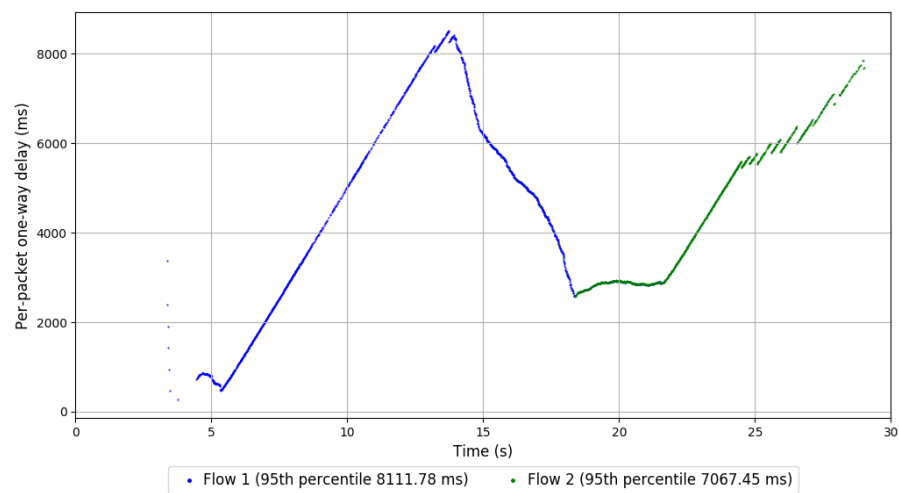
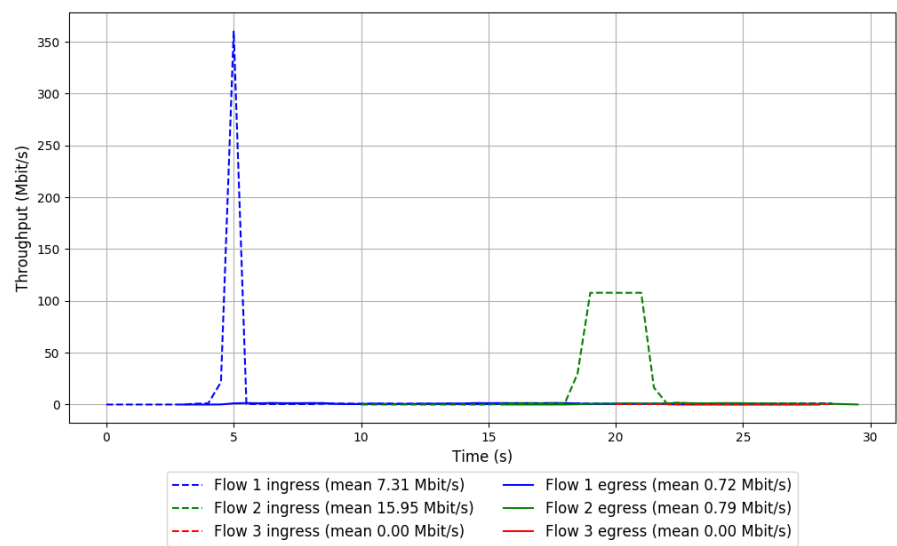
Start at: 2019-01-24 23:59:02

End at: 2019-01-24 23:59:32

Local clock offset: -0.951 ms

Remote clock offset: 8.017 ms

Run 2: Report of Indigo-MusesC3 — Data Link



Run 3: Statistics of Indigo-MusesC3

Start at: 2019-01-25 00:24:59

End at: 2019-01-25 00:25:29

Local clock offset: -0.525 ms

Remote clock offset: 3.243 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 6737.122 ms

Loss rate: 94.71%

-- Flow 1:

Average throughput: 0.73 Mbit/s

95th percentile per-packet one-way delay: 6737.654 ms

Loss rate: 93.16%

-- Flow 2:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 6726.830 ms

Loss rate: 96.07%

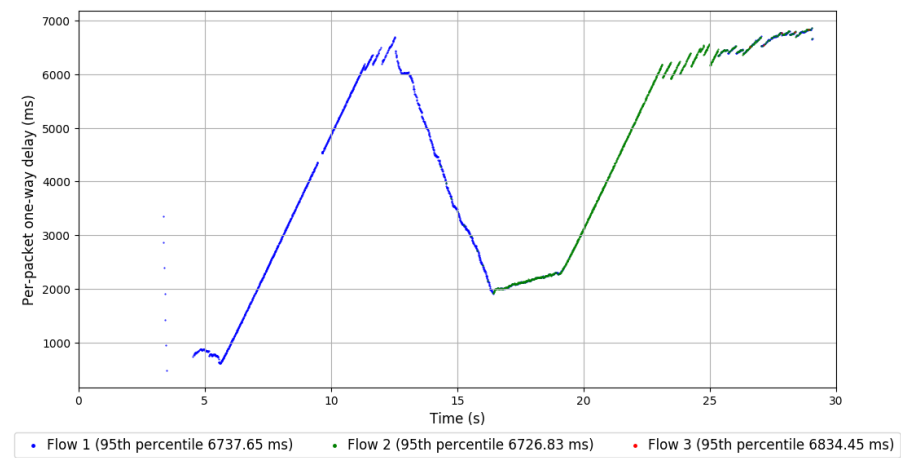
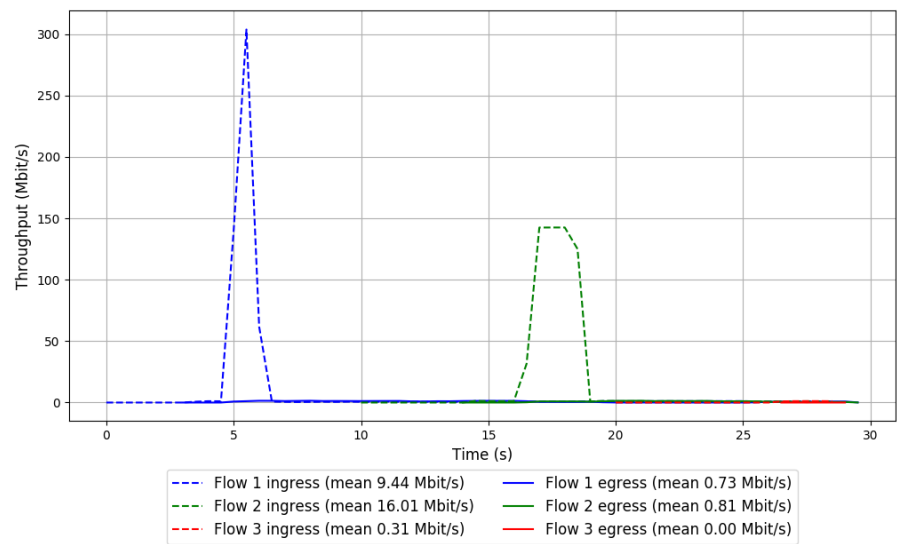
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6834.447 ms

Loss rate: 99.90%

Run 3: Report of Indigo-MusesC3 — Data Link



Run 1: Statistics of Indigo-MusesC5

Start at: 2019-01-24 23:25:41

End at: 2019-01-24 23:26:11

Local clock offset: -5.119 ms

Remote clock offset: 1.502 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.12 Mbit/s

95th percentile per-packet one-way delay: 5779.679 ms

Loss rate: 38.47%

-- Flow 1:

Average throughput: 0.70 Mbit/s

95th percentile per-packet one-way delay: 5715.457 ms

Loss rate: 26.96%

-- Flow 2:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 5839.623 ms

Loss rate: 37.87%

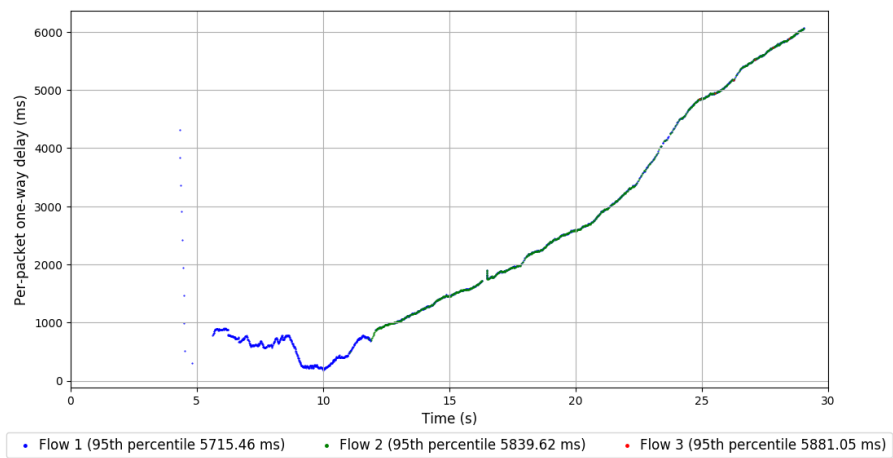
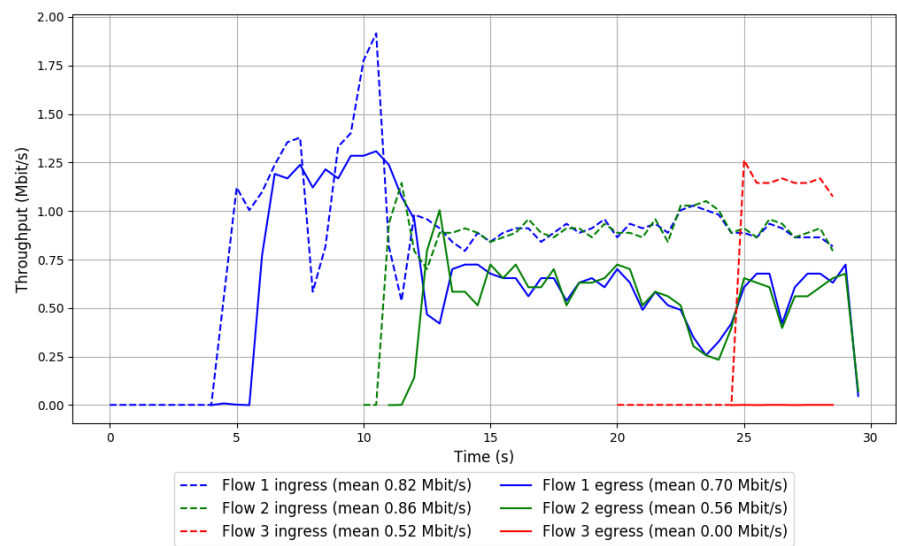
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5881.049 ms

Loss rate: 99.93%

Run 1: Report of Indigo-MusesC5 — Data Link



Run 2: Statistics of Indigo-MusesC5

Start at: 2019-01-24 23:51:39

End at: 2019-01-24 23:52:09

Local clock offset: -1.311 ms

Remote clock offset: 9.167 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 4109.663 ms

Loss rate: 32.18%

-- Flow 1:

Average throughput: 0.79 Mbit/s

95th percentile per-packet one-way delay: 3499.440 ms

Loss rate: 21.49%

-- Flow 2:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 4080.188 ms

Loss rate: 32.36%

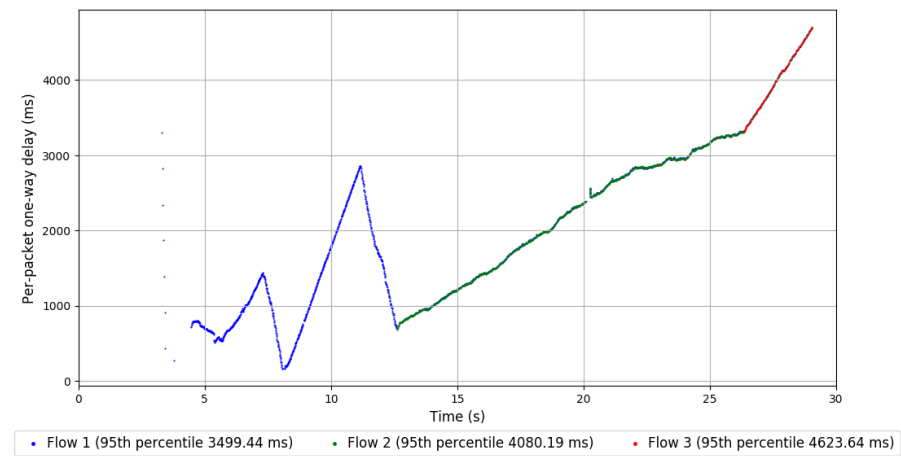
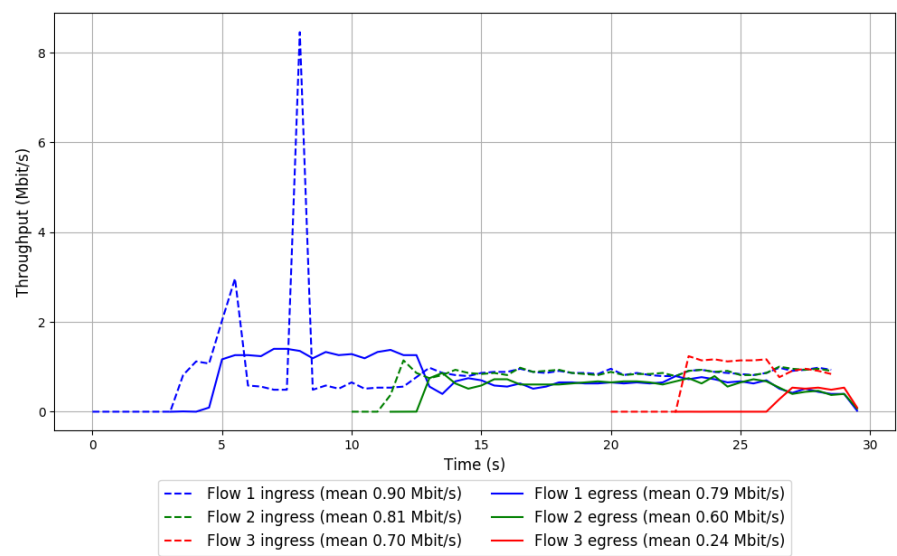
-- Flow 3:

Average throughput: 0.24 Mbit/s

95th percentile per-packet one-way delay: 4623.642 ms

Loss rate: 76.08%

Run 2: Report of Indigo-MusesC5 — Data Link



Run 3: Statistics of Indigo-MusesC5

Start at: 2019-01-25 00:17:32

End at: 2019-01-25 00:18:02

Local clock offset: -0.705 ms

Remote clock offset: 8.219 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.04 Mbit/s

95th percentile per-packet one-way delay: 7102.831 ms

Loss rate: 40.47%

-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 6882.659 ms

Loss rate: 32.94%

-- Flow 2:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 7372.691 ms

Loss rate: 46.02%

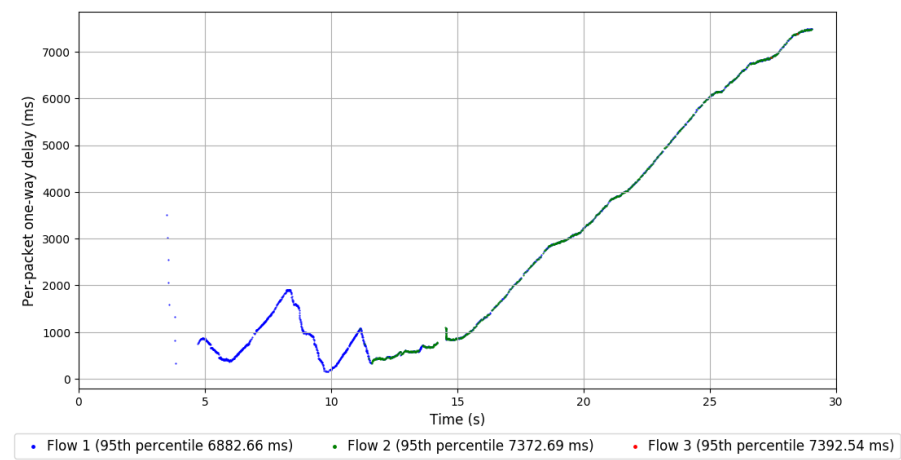
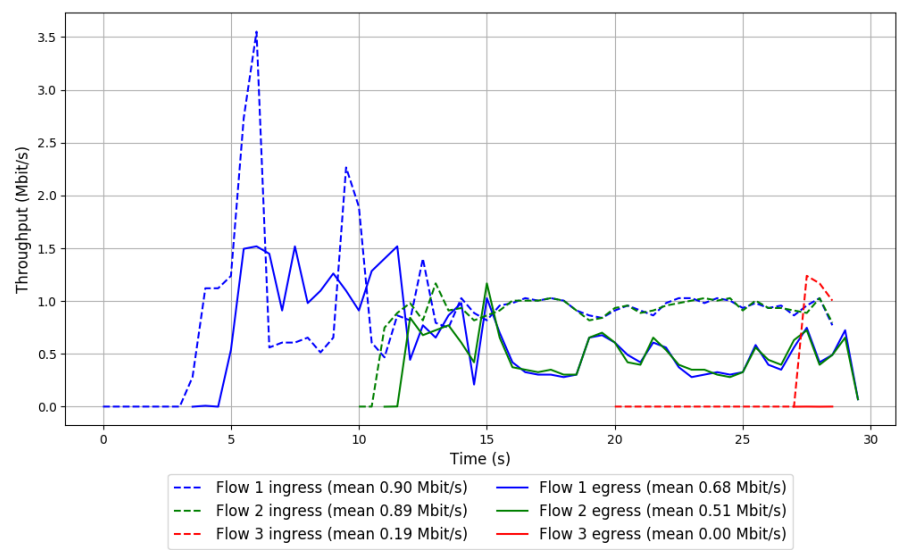
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 7392.540 ms

Loss rate: 99.94%

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-24 23:31:53

End at: 2019-01-24 23:32:23

Local clock offset: -5.223 ms

Remote clock offset: 3.219 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.84 Mbit/s

95th percentile per-packet one-way delay: 11292.570 ms

Loss rate: 84.50%

-- Flow 1:

Average throughput: 0.76 Mbit/s

95th percentile per-packet one-way delay: 11345.169 ms

Loss rate: 53.40%

-- Flow 2:

Average throughput: 0.23 Mbit/s

95th percentile per-packet one-way delay: 8599.270 ms

Loss rate: 97.77%

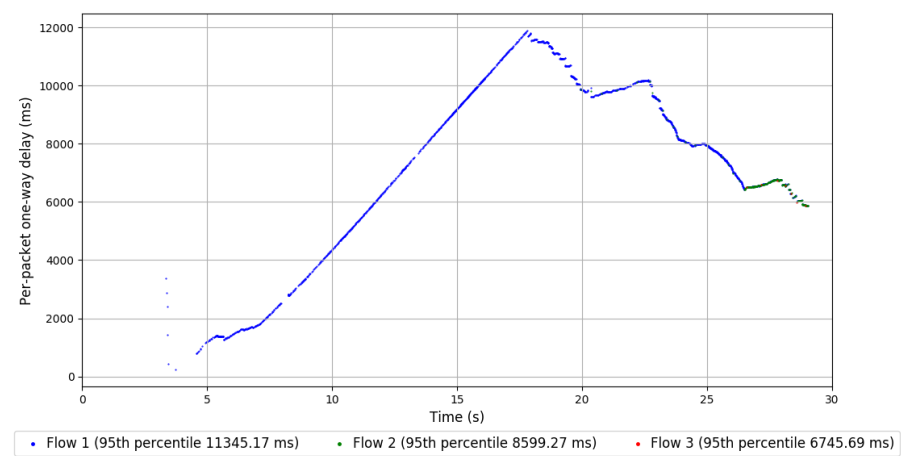
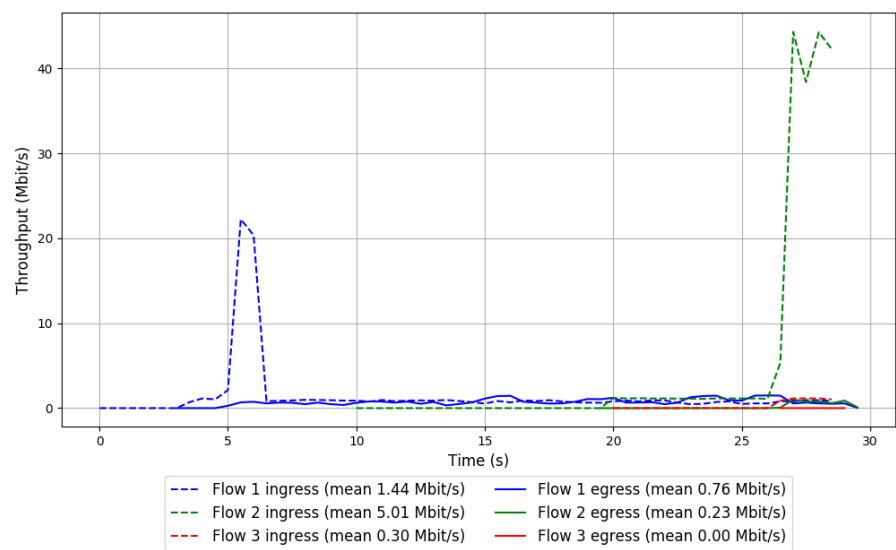
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6745.691 ms

Loss rate: 99.86%

Run 1: Report of Indigo-MusesD — Data Link



Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-24 23:57:48

End at: 2019-01-24 23:58:18

Local clock offset: -1.771 ms

Remote clock offset: 3.14 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.24 Mbit/s

95th percentile per-packet one-way delay: 6062.818 ms

Loss rate: 75.38%

-- Flow 1:

Average throughput: 0.77 Mbit/s

95th percentile per-packet one-way delay: 6025.531 ms

Loss rate: 66.67%

-- Flow 2:

Average throughput: 0.79 Mbit/s

95th percentile per-packet one-way delay: 6117.405 ms

Loss rate: 81.91%

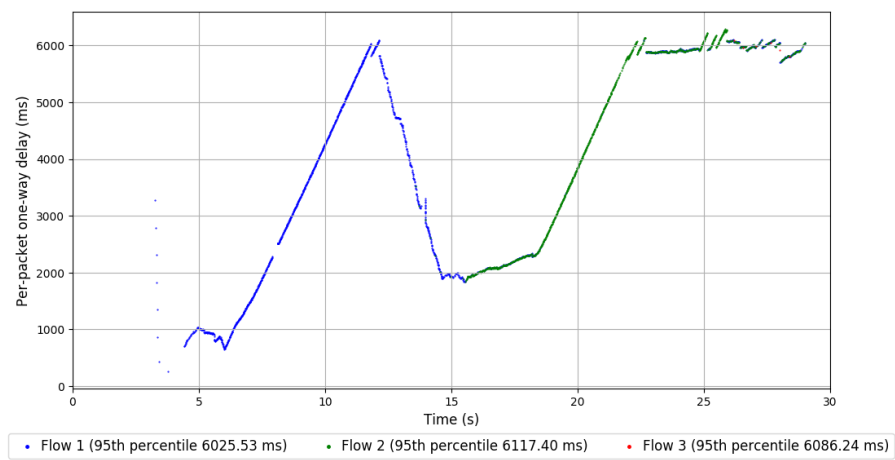
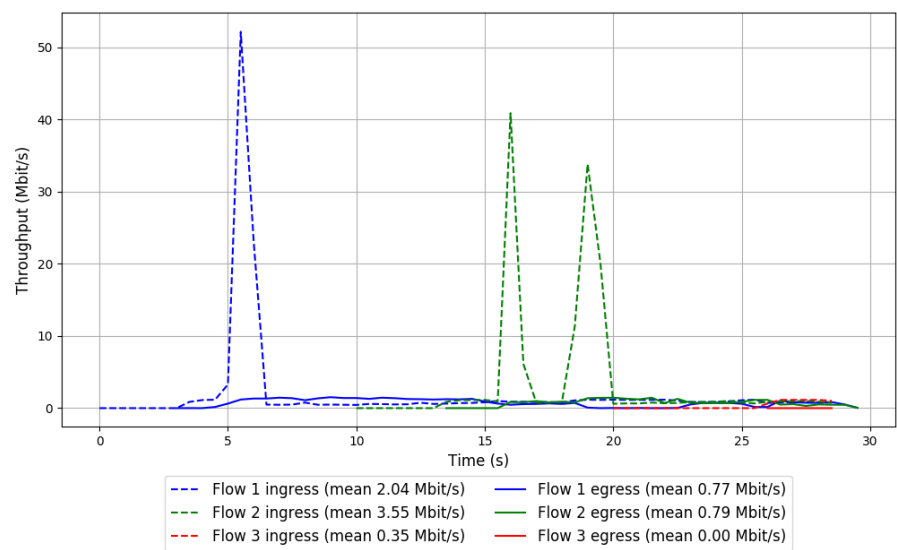
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6086.245 ms

Loss rate: 99.89%

Run 2: Report of Indigo-MusesD — Data Link



Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-25 00:23:44

End at: 2019-01-25 00:24:14

Local clock offset: -0.559 ms

Remote clock offset: 1.984 ms

Below is generated by plot.py at 2019-01-25 00:39:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 5474.563 ms

Loss rate: 76.03%

-- Flow 1:

Average throughput: 0.84 Mbit/s

95th percentile per-packet one-way delay: 5737.844 ms

Loss rate: 57.16%

-- Flow 2:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 4231.610 ms

Loss rate: 35.61%

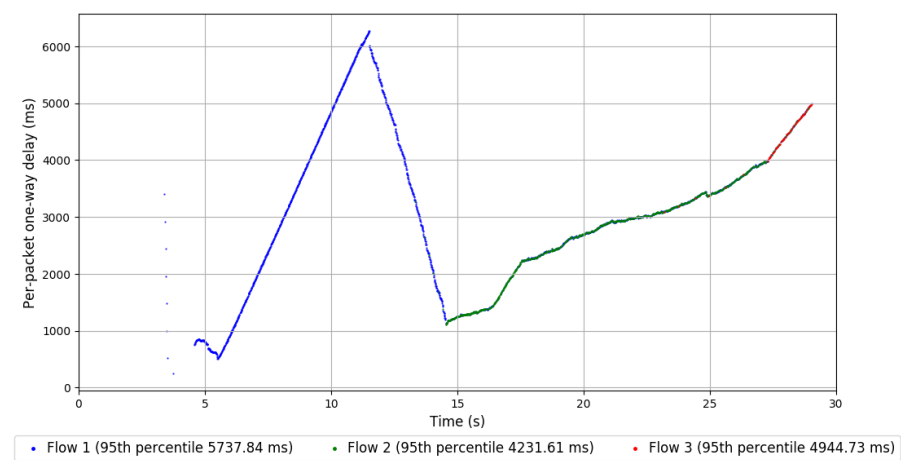
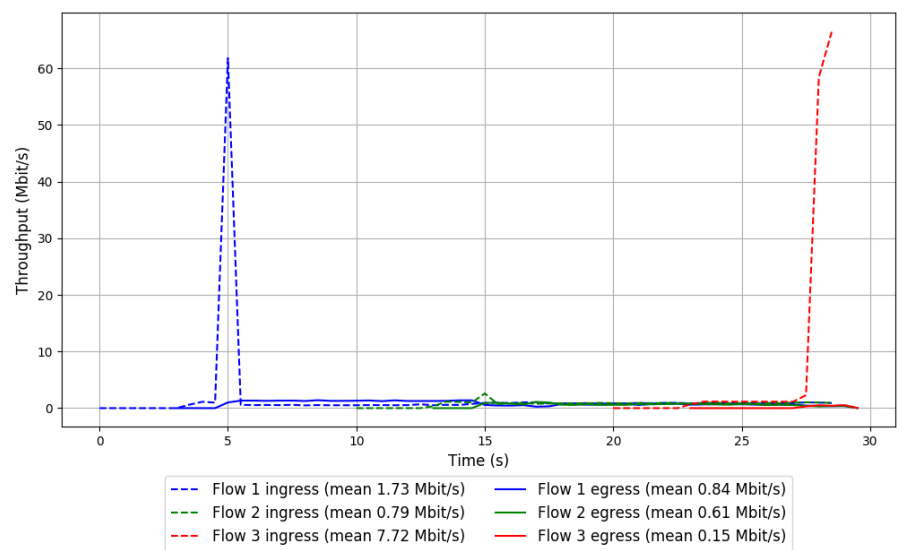
-- Flow 3:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 4944.726 ms

Loss rate: 98.68%

Run 3: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MusesT

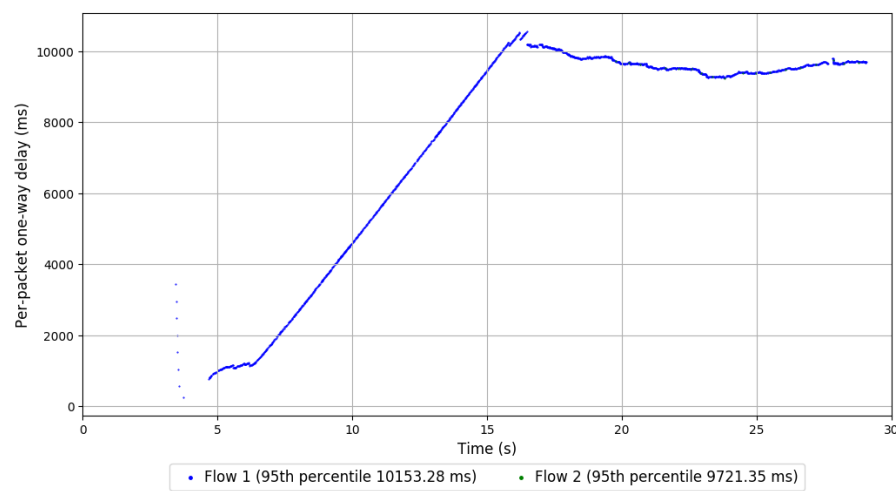
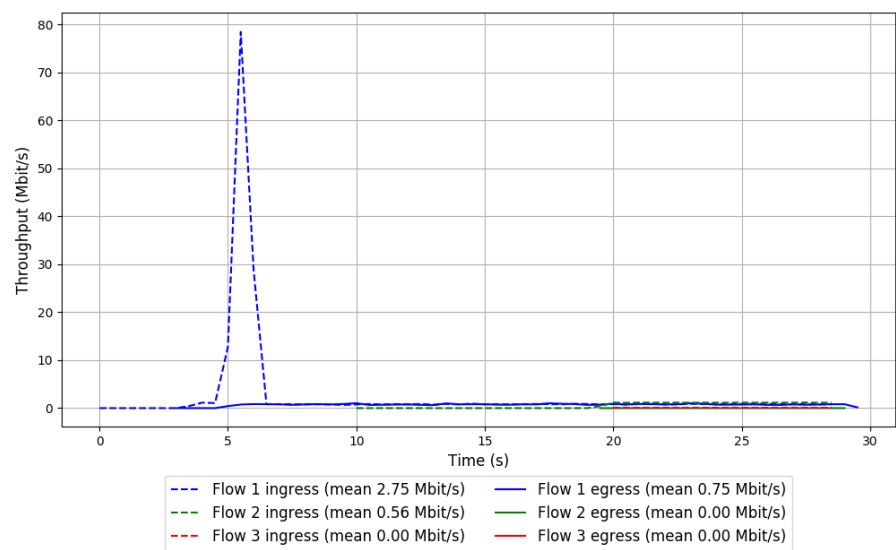
Start at: 2019-01-24 23:46:43

End at: 2019-01-24 23:47:13

Local clock offset: -1.671 ms

Remote clock offset: 8.129 ms

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MusesT

Start at: 2019-01-25 00:12:37

End at: 2019-01-25 00:13:07

Local clock offset: -1.556 ms

Remote clock offset: 6.173 ms

Below is generated by plot.py at 2019-01-25 00:39:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.30 Mbit/s

95th percentile per-packet one-way delay: 6002.629 ms

Loss rate: 92.11%

-- Flow 1:

Average throughput: 0.79 Mbit/s

95th percentile per-packet one-way delay: 5981.802 ms

Loss rate: 88.23%

-- Flow 2:

Average throughput: 0.84 Mbit/s

95th percentile per-packet one-way delay: 6016.017 ms

Loss rate: 94.69%

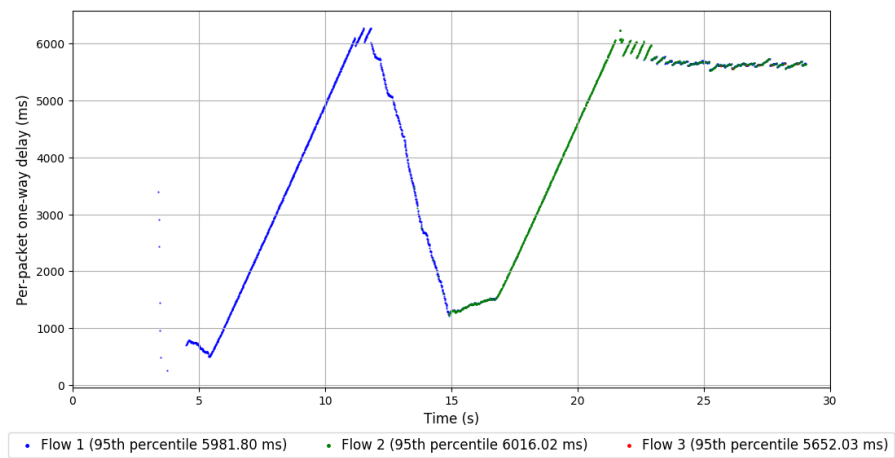
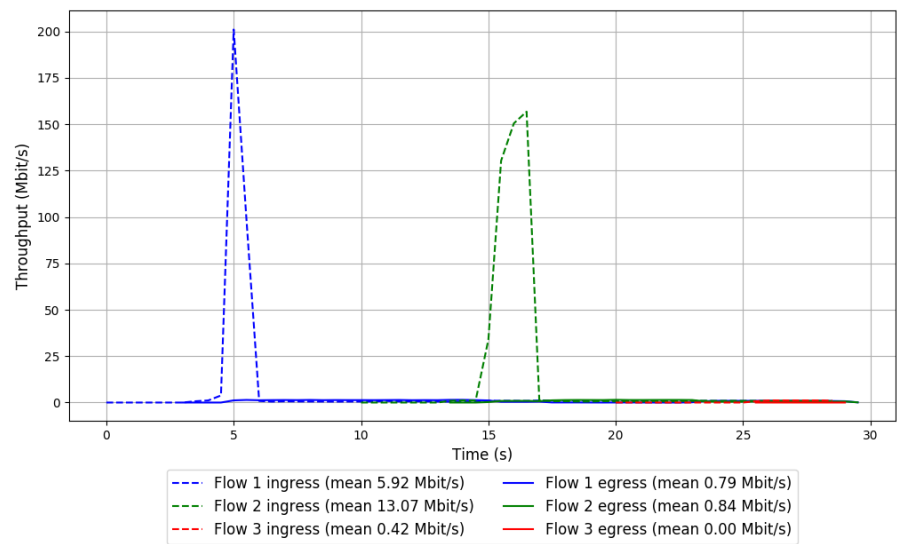
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5652.029 ms

Loss rate: 99.90%

Run 2: Report of Indigo-MusesT — Data Link



Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-25 00:38:41

End at: 2019-01-25 00:39:11

Local clock offset: -1.504 ms

Remote clock offset: 3.107 ms

Below is generated by plot.py at 2019-01-25 00:39:51

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 6640.017 ms

Loss rate: 92.88%

-- Flow 1:

Average throughput: 0.72 Mbit/s

95th percentile per-packet one-way delay: 6541.202 ms

Loss rate: 80.40%

-- Flow 2:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 6716.257 ms

Loss rate: 96.75%

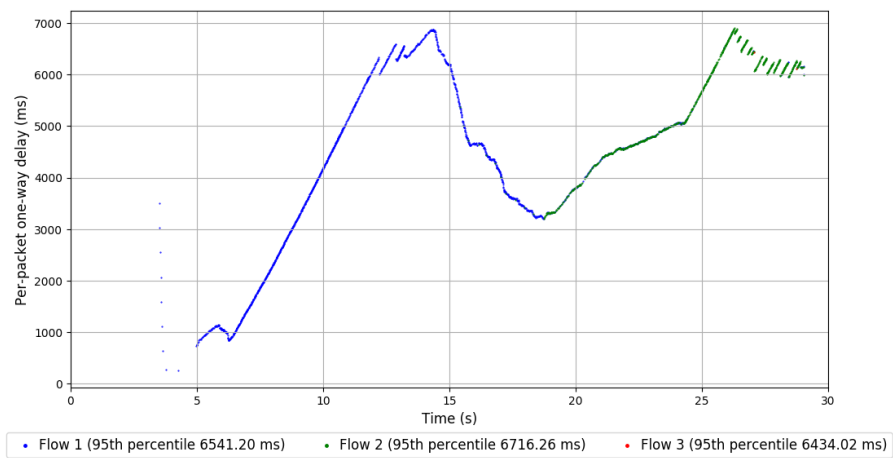
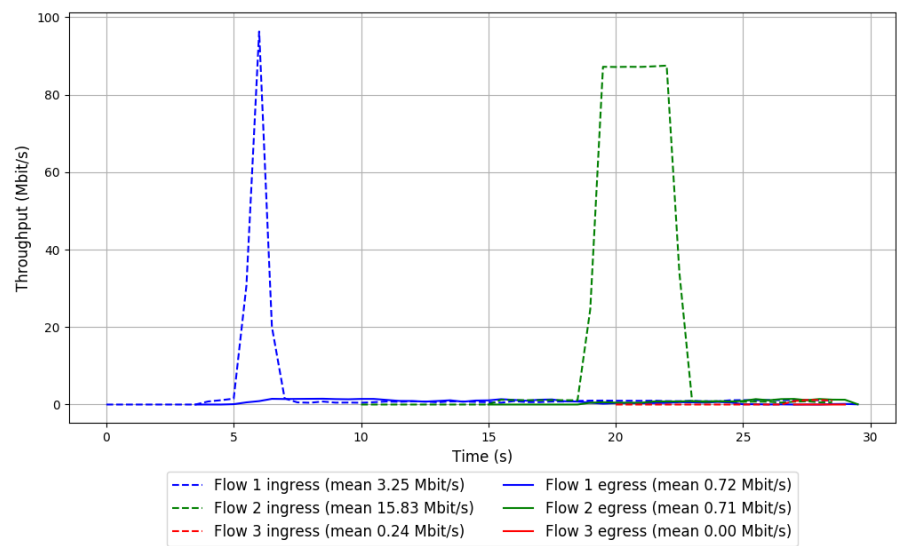
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6434.025 ms

Loss rate: 99.95%

Run 3: Report of Indigo-MusesT — Data Link

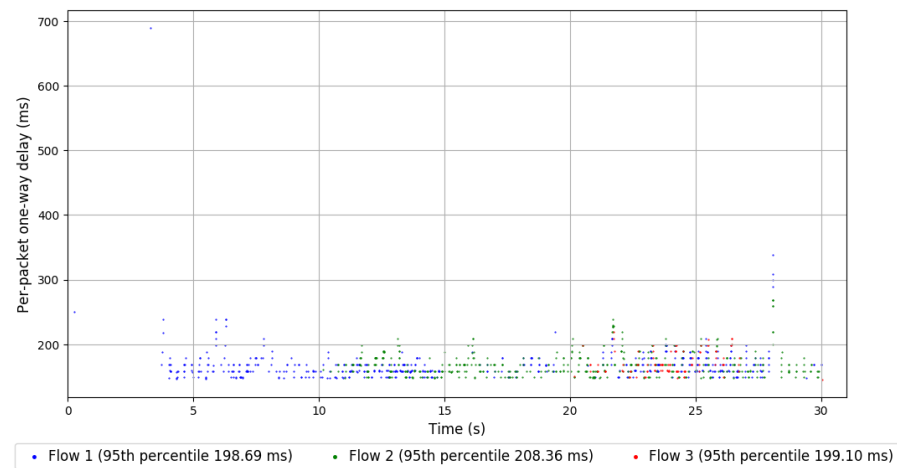
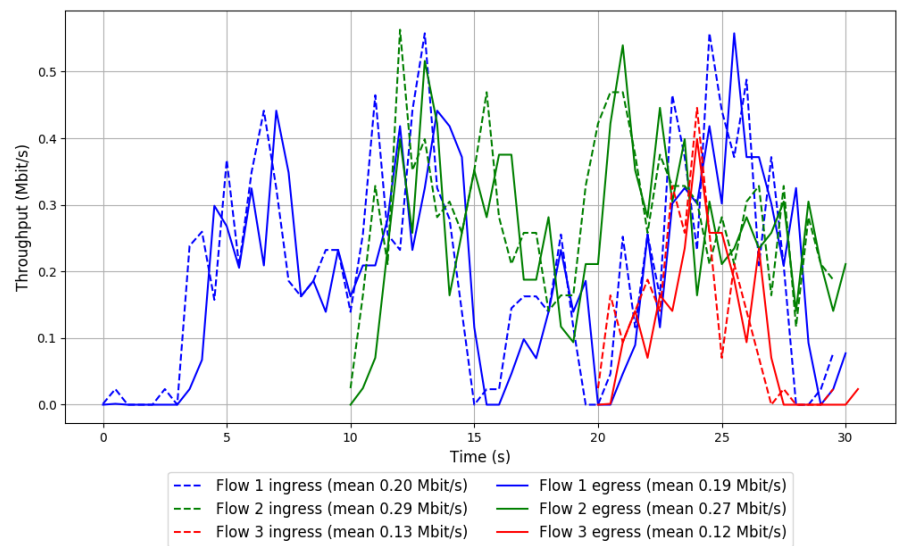



```
Run 1: Statistics of LEDBAT

Start at: 2019-01-24 23:38:06
End at: 2019-01-24 23:38:36
Local clock offset: -2.825 ms
Remote clock offset: 2.657 ms

# Below is generated by plot.py at 2019-01-25 00:39:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 199.098 ms
Loss rate: 6.05%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 198.691 ms
Loss rate: 5.53%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 208.361 ms
Loss rate: 6.13%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 199.098 ms
Loss rate: 8.18%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2019-01-25 00:03:58

End at: 2019-01-25 00:04:28

Local clock offset: -1.64 ms

Remote clock offset: 8.848 ms

Below is generated by plot.py at 2019-01-25 00:39:51

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.34 Mbit/s

95th percentile per-packet one-way delay: 217.157 ms

Loss rate: 7.05%

-- Flow 1:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 228.187 ms

Loss rate: 7.97%

-- Flow 2:

Average throughput: 0.20 Mbit/s

95th percentile per-packet one-way delay: 206.048 ms

Loss rate: 5.39%

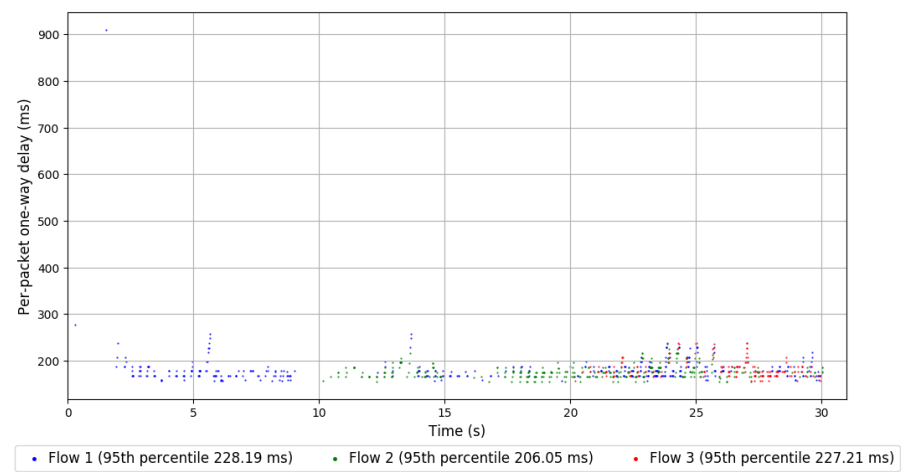
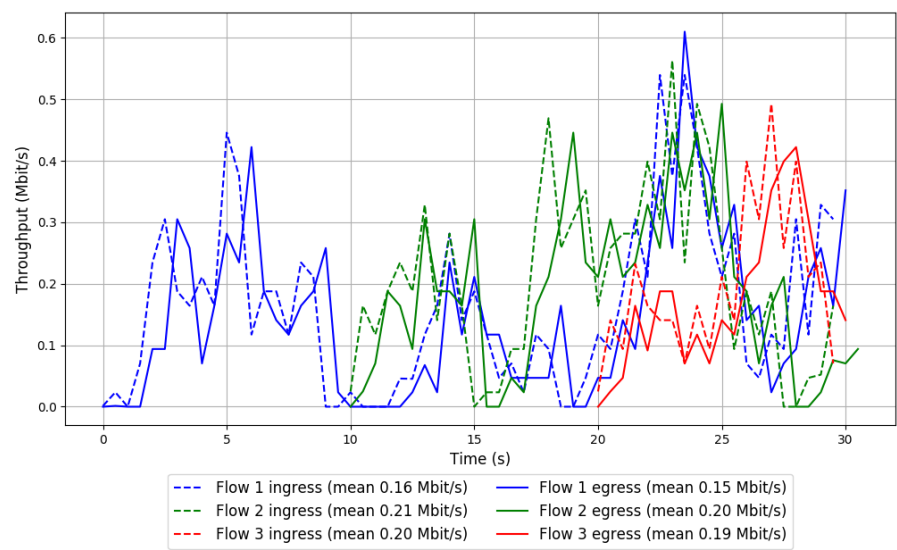
-- Flow 3:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 227.211 ms

Loss rate: 8.24%

Run 2: Report of LEDBAT — Data Link

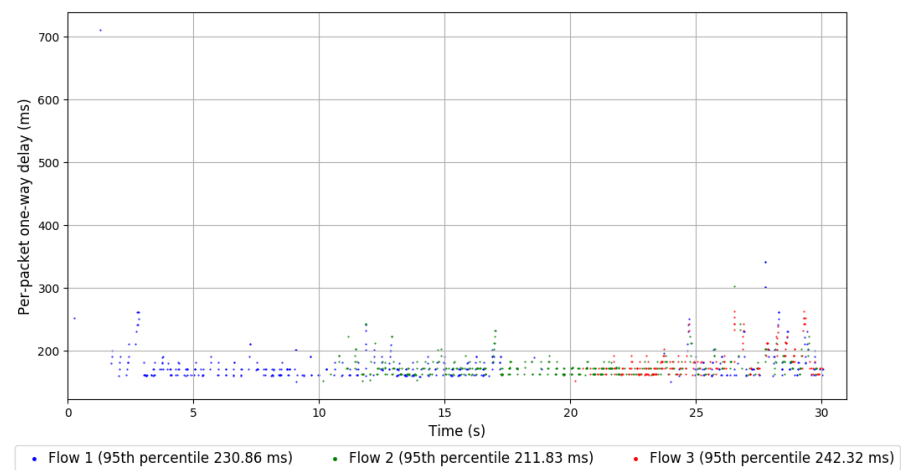
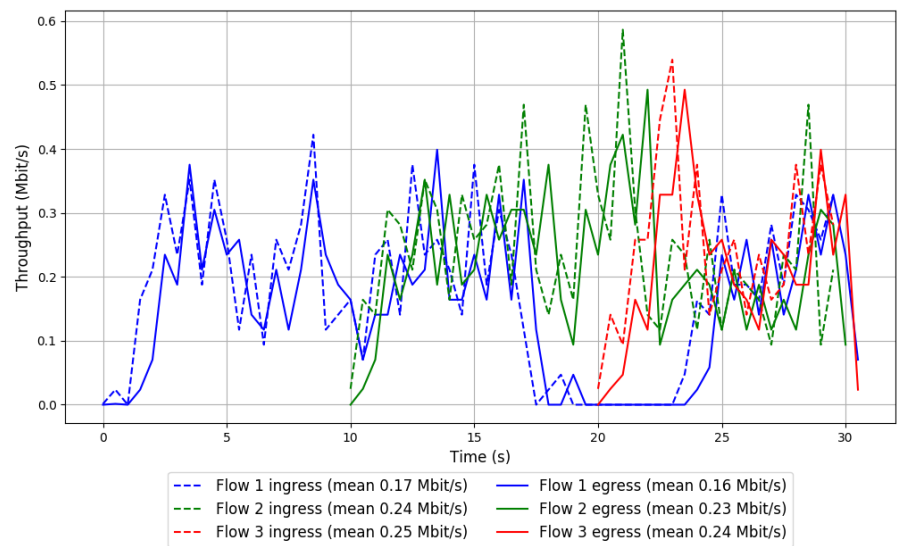


Run 3: Statistics of LEDBAT

Start at: 2019-01-25 00:29:59
End at: 2019-01-25 00:30:29
Local clock offset: -1.165 ms
Remote clock offset: 3.262 ms

```
# Below is generated by plot.py at 2019-01-25 00:39:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 230.519 ms
Loss rate: 7.40%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 230.857 ms
Loss rate: 8.11%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 211.829 ms
Loss rate: 7.28%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 242.320 ms
Loss rate: 6.16%
```

Run 3: Report of LEDBAT — Data Link

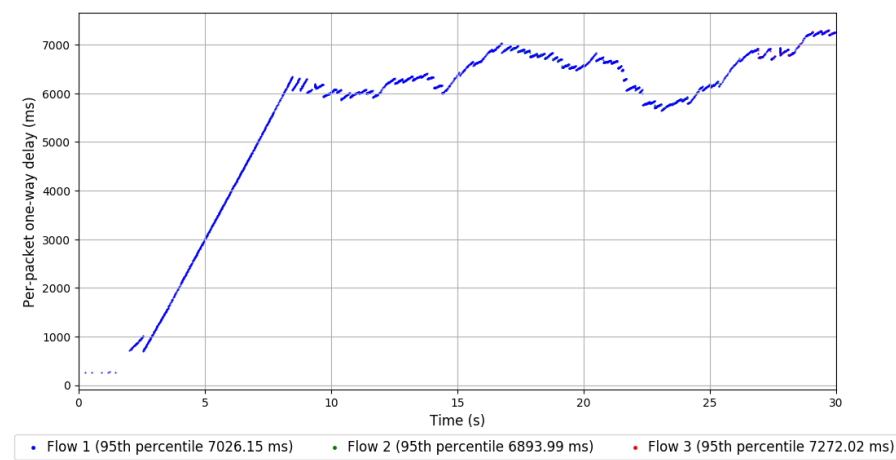
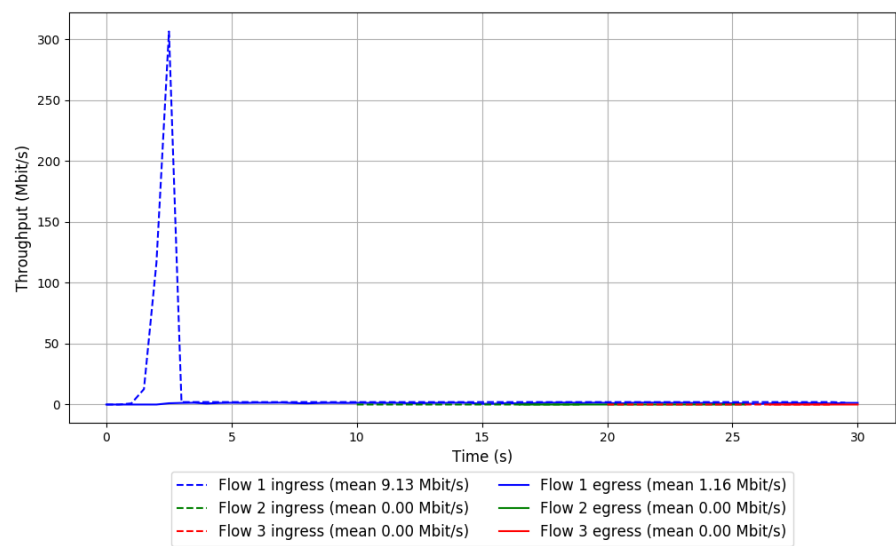


```
Run 1: Statistics of PCC-Allegro

Start at: 2019-01-24 23:35:38
End at: 2019-01-24 23:36:08
Local clock offset: -3.364 ms
Remote clock offset: 2.619 ms

# Below is generated by plot.py at 2019-01-25 00:39:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 7031.957 ms
Loss rate: 87.40%
-- Flow 1:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 7026.145 ms
Loss rate: 87.41%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6893.991 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7272.017 ms
Loss rate: 49.43%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2019-01-25 00:01:30

End at: 2019-01-25 00:02:00

Local clock offset: -0.983 ms

Remote clock offset: 8.268 ms

Below is generated by plot.py at 2019-01-25 00:39:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 7515.461 ms

Loss rate: 91.09%

-- Flow 1:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 7516.837 ms

Loss rate: 91.10%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 7252.088 ms

Loss rate: 15.80%

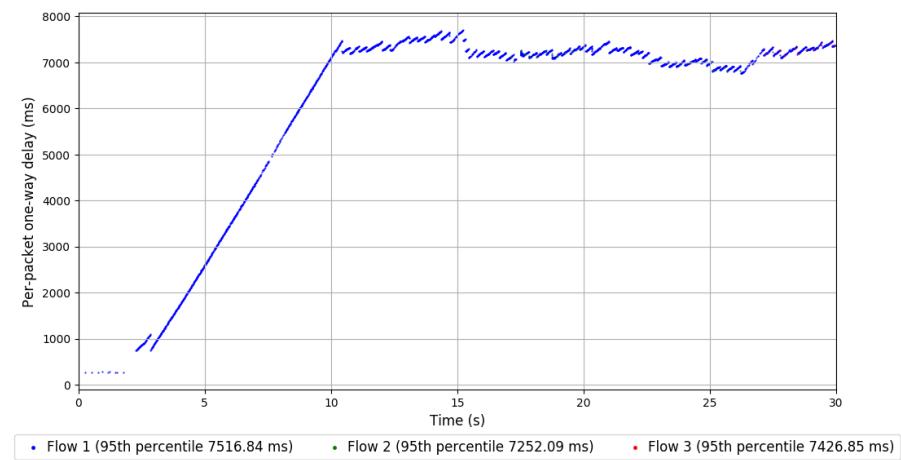
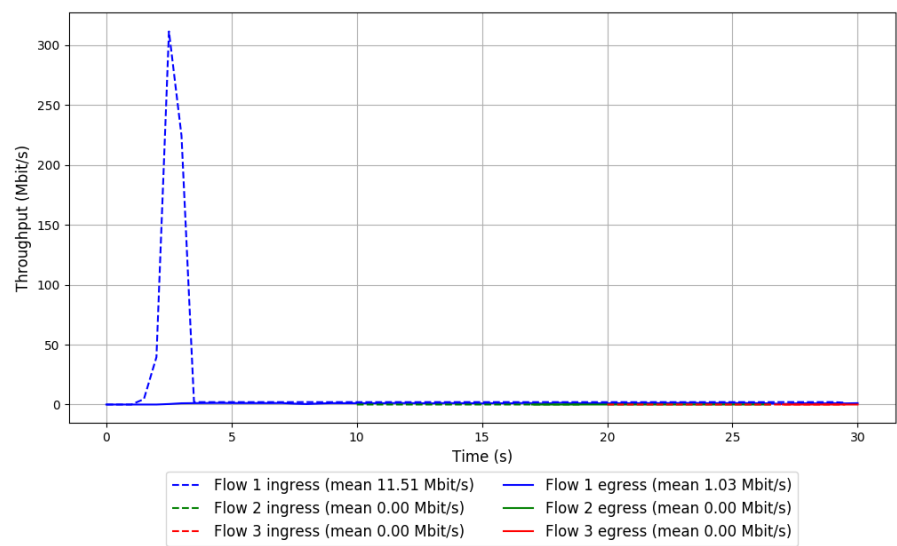
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 7426.846 ms

Loss rate: 49.43%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2019-01-25 00:27:28

End at: 2019-01-25 00:27:58

Local clock offset: -0.465 ms

Remote clock offset: 8.167 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 6858.606 ms

Loss rate: 96.62%

-- Flow 1:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 6859.594 ms

Loss rate: 96.63%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5946.788 ms

Loss rate: 9.20%

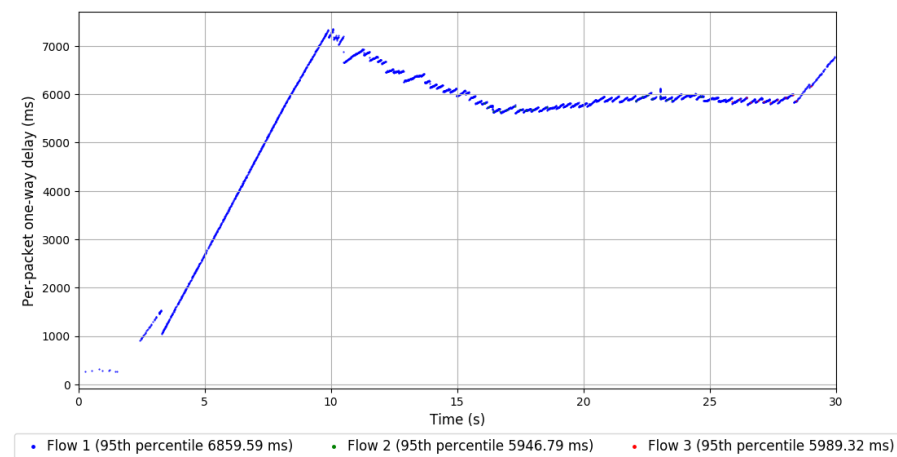
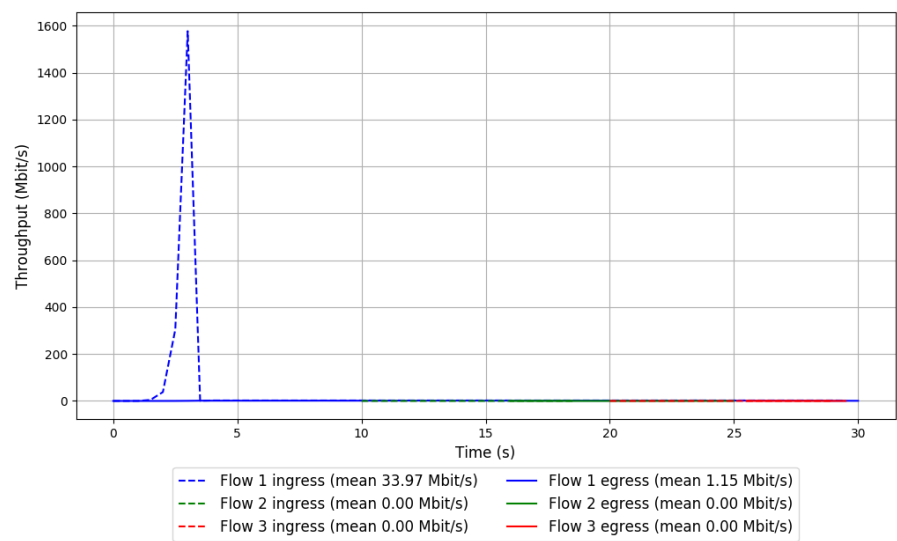
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 5989.322 ms

Loss rate: 47.76%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

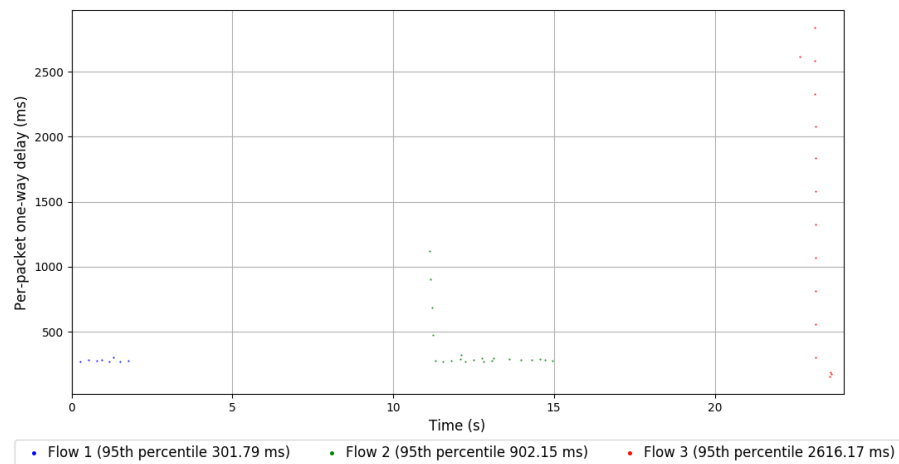
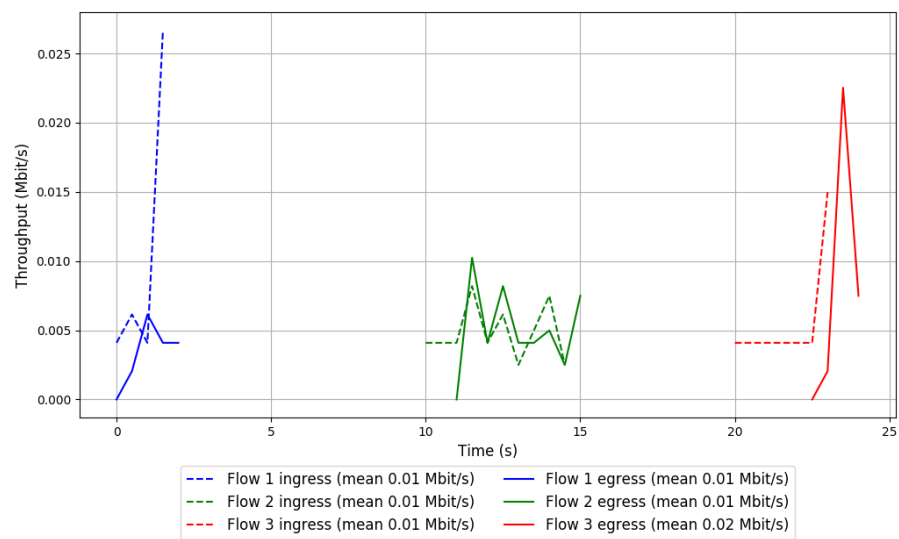
Start at: 2019-01-24 23:45:29

End at: 2019-01-24 23:45:59

Local clock offset: -1.8 ms

Remote clock offset: 7.919 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2019-01-25 00:11:22

End at: 2019-01-25 00:11:52

Local clock offset: -1.626 ms

Remote clock offset: 2.249 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 5407.153 ms

Loss rate: 88.97%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 278.910 ms

Loss rate: 65.00%

-- Flow 2:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 1366.857 ms

Loss rate: 0.00%

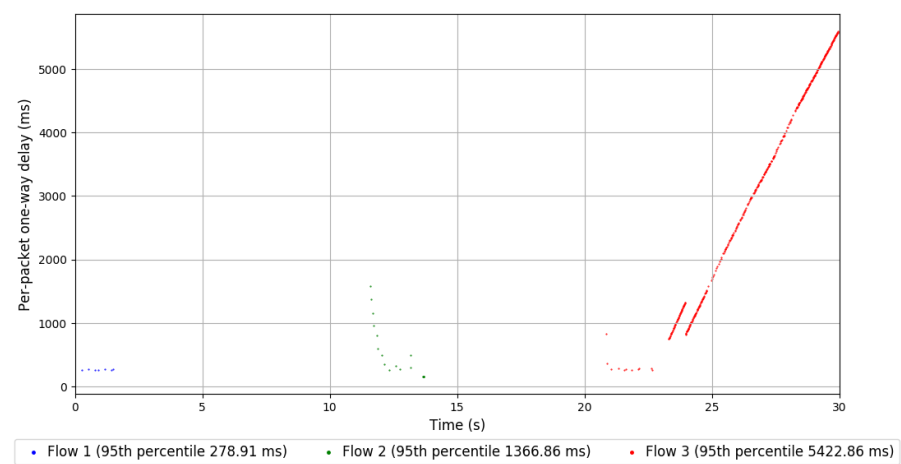
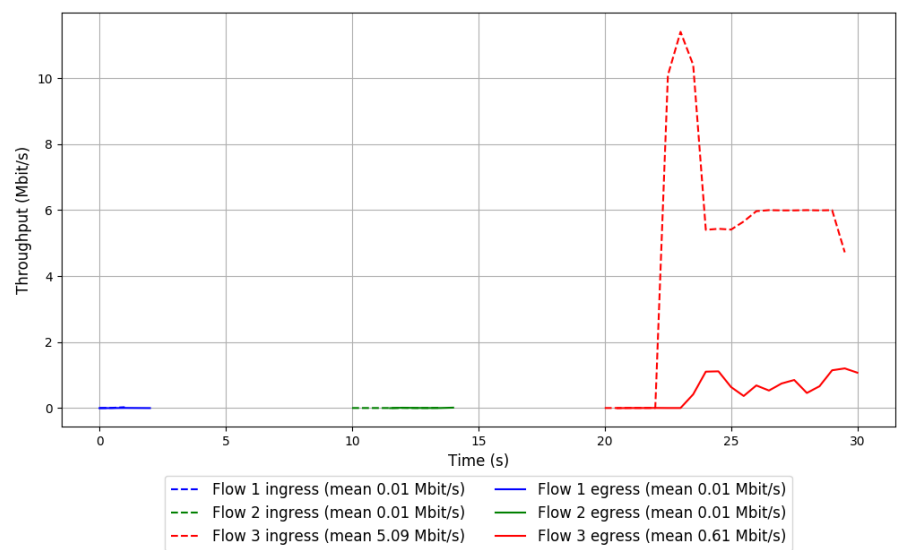
-- Flow 3:

Average throughput: 0.61 Mbit/s

95th percentile per-packet one-way delay: 5422.857 ms

Loss rate: 89.01%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

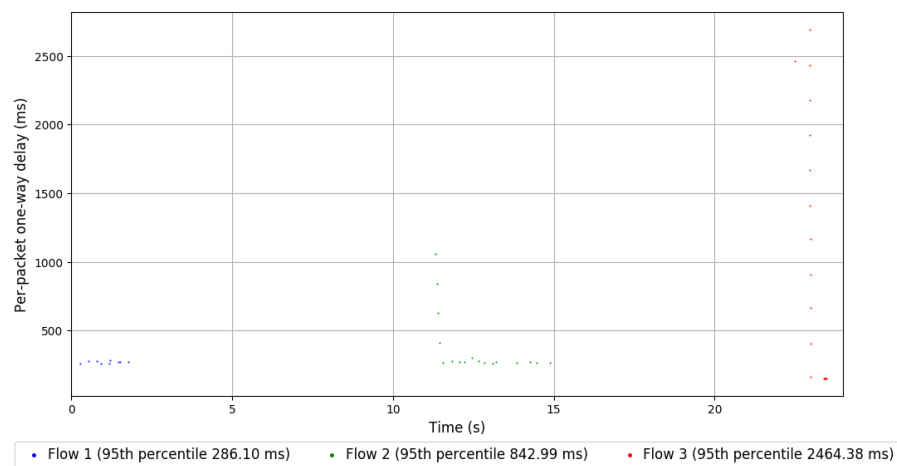
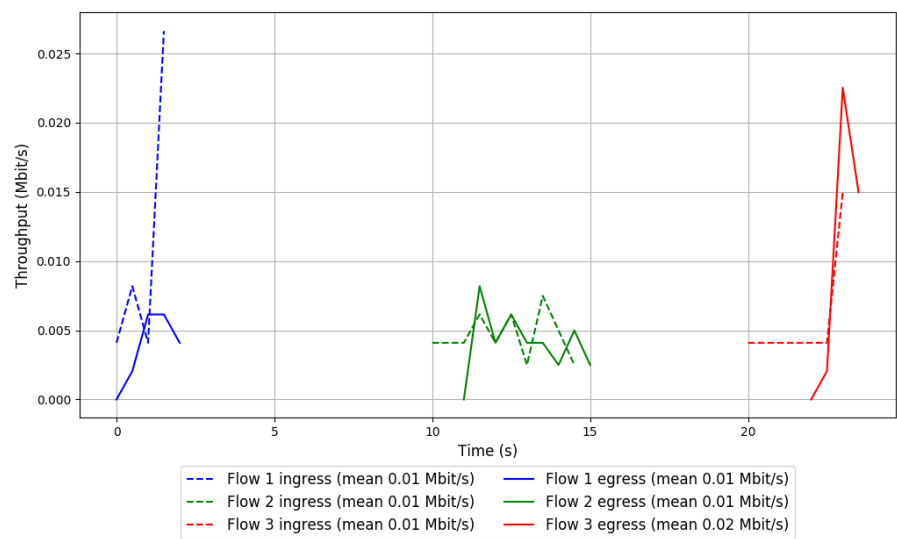
Start at: 2019-01-25 00:37:26

End at: 2019-01-25 00:37:56

Local clock offset: -2.085 ms

Remote clock offset: 3.163 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-01-24 23:34:22

End at: 2019-01-24 23:34:52

Local clock offset: -4.452 ms

Remote clock offset: 2.229 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.98 Mbit/s

95th percentile per-packet one-way delay: 820.663 ms

Loss rate: 6.24%

-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 838.721 ms

Loss rate: 6.09%

-- Flow 2:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 770.340 ms

Loss rate: 5.46%

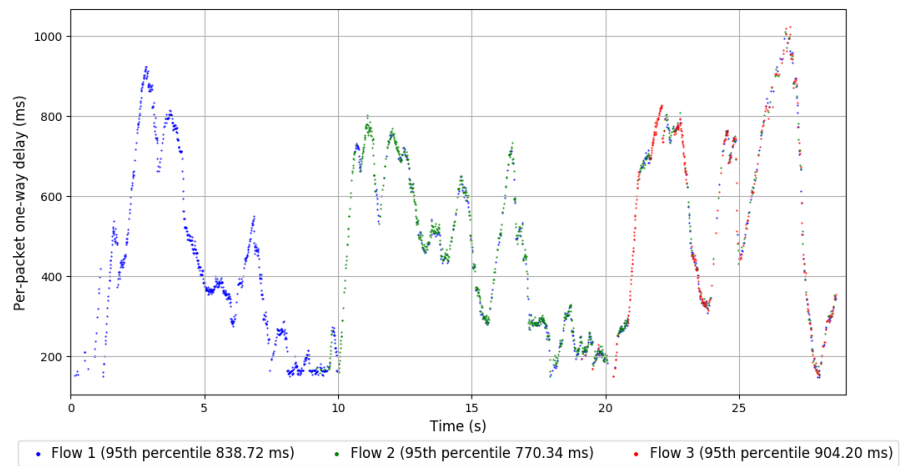
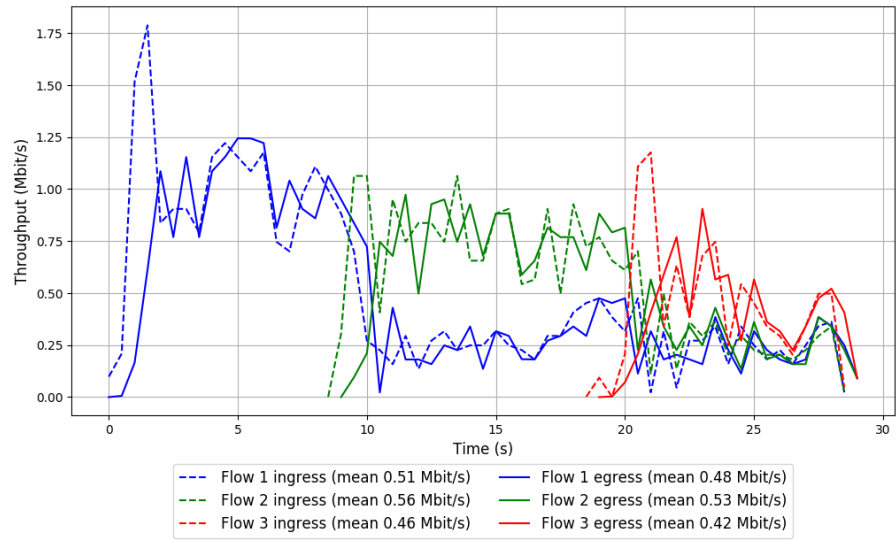
-- Flow 3:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 904.200 ms

Loss rate: 8.71%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2019-01-25 00:00:16

End at: 2019-01-25 00:00:46

Local clock offset: -0.905 ms

Remote clock offset: 4.185 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.94 Mbit/s

95th percentile per-packet one-way delay: 424.856 ms

Loss rate: 8.05%

-- Flow 1:

Average throughput: 0.41 Mbit/s

95th percentile per-packet one-way delay: 400.466 ms

Loss rate: 8.78%

-- Flow 2:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 394.806 ms

Loss rate: 7.45%

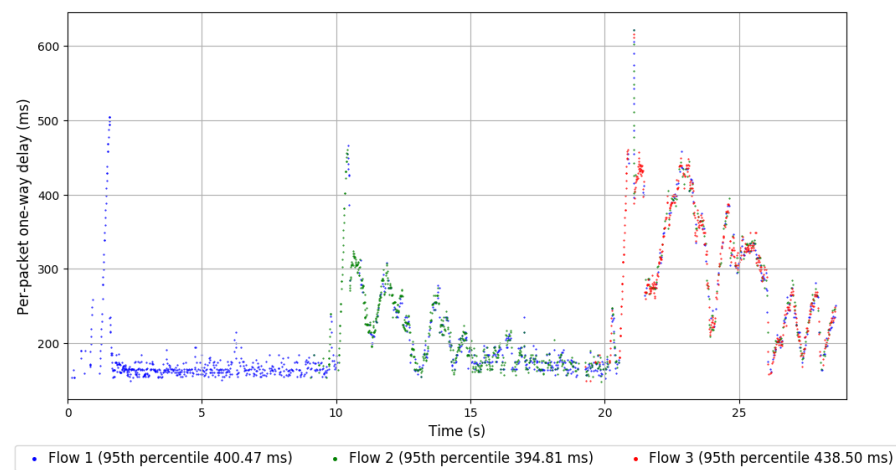
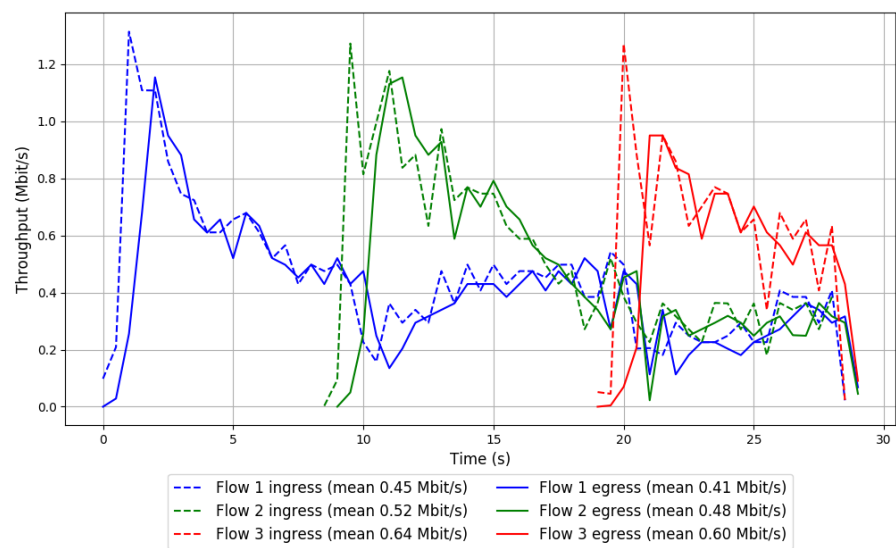
-- Flow 3:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 438.505 ms

Loss rate: 7.50%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2019-01-25 00:26:13

End at: 2019-01-25 00:26:43

Local clock offset: -0.5 ms

Remote clock offset: 3.162 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.92 Mbit/s

95th percentile per-packet one-way delay: 623.462 ms

Loss rate: 7.90%

-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 675.489 ms

Loss rate: 7.32%

-- Flow 2:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 623.012 ms

Loss rate: 8.52%

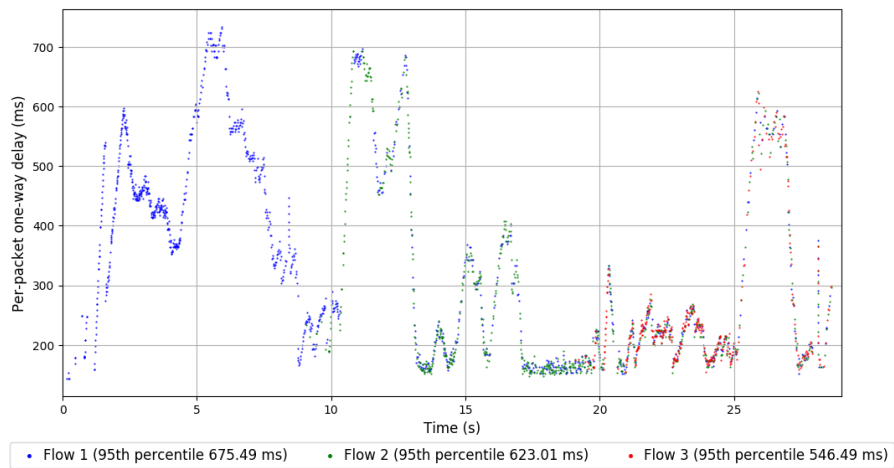
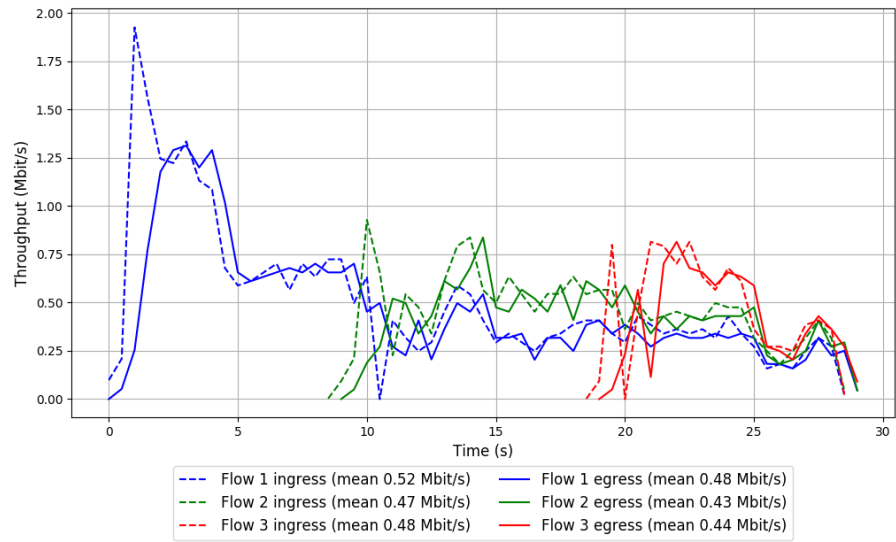
-- Flow 3:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 546.486 ms

Loss rate: 8.53%

Run 3: Report of QUIC Cubic — Data Link

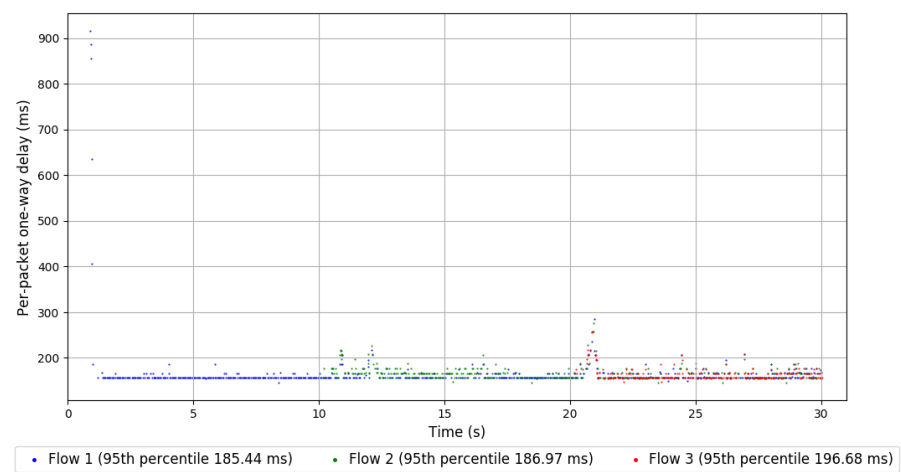
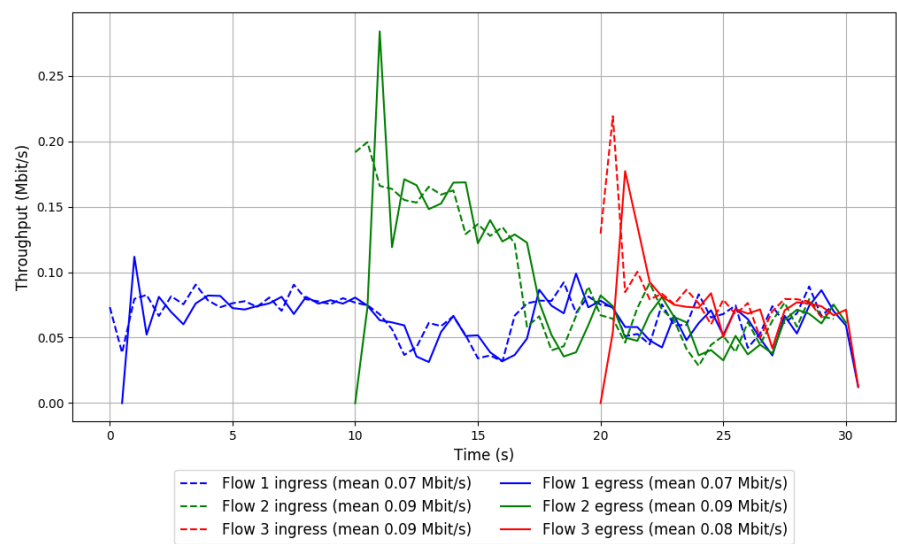



```
Run 1: Statistics of SCReAM

Start at: 2019-01-24 23:36:52
End at: 2019-01-24 23:37:22
Local clock offset: -3.067 ms
Remote clock offset: 8.428 ms

# Below is generated by plot.py at 2019-01-25 00:40:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 186.786 ms
Loss rate: 5.13%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 185.441 ms
Loss rate: 5.24%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 186.967 ms
Loss rate: 4.35%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 196.677 ms
Loss rate: 6.54%
```

Run 1: Report of SReAM — Data Link

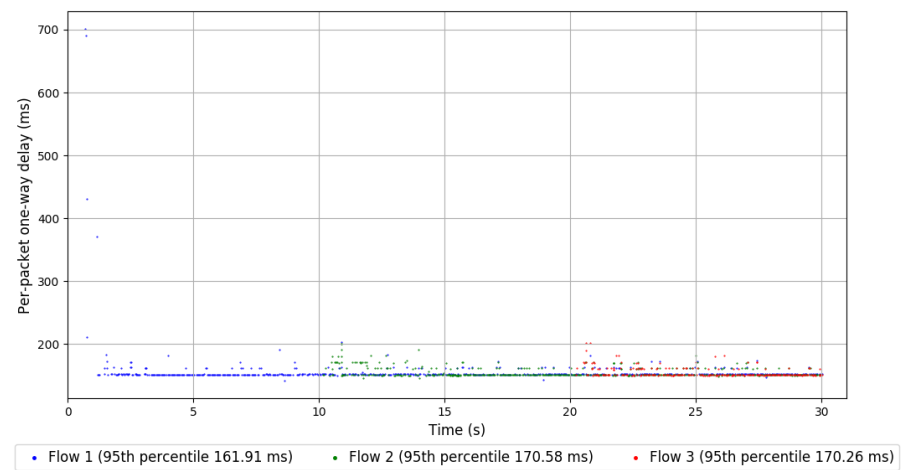
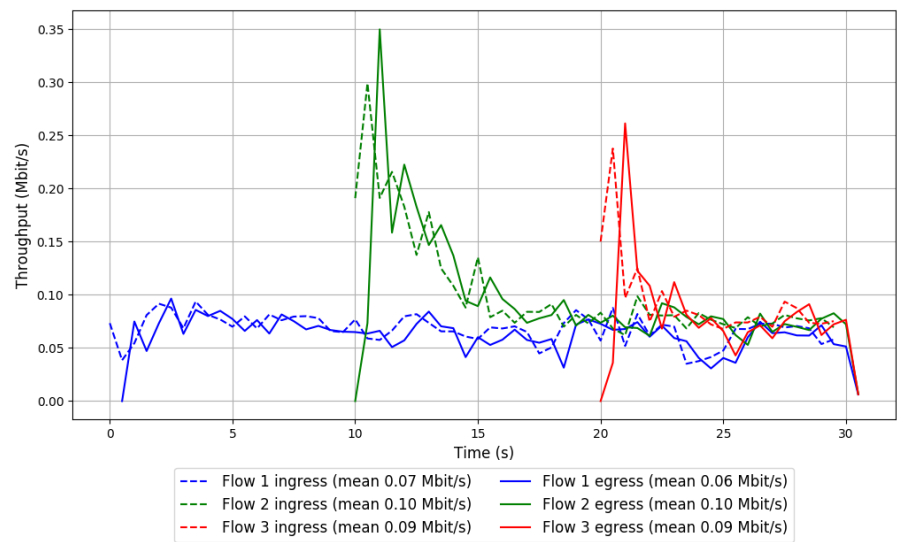


Run 2: Statistics of SCReAM

Start at: 2019-01-25 00:02:44
End at: 2019-01-25 00:03:14
Local clock offset: -1.653 ms
Remote clock offset: 3.049 ms

Below is generated by plot.py at 2019-01-25 00:40:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 170.349 ms
Loss rate: 6.05%
-- Flow 1:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 161.908 ms
Loss rate: 7.21%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 170.577 ms
Loss rate: 3.62%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 170.260 ms
Loss rate: 8.82%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2019-01-25 00:28:44

End at: 2019-01-25 00:29:14

Local clock offset: -0.512 ms

Remote clock offset: 2.096 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.14 Mbit/s

95th percentile per-packet one-way delay: 169.826 ms

Loss rate: 9.02%

-- Flow 1:

Average throughput: 0.06 Mbit/s

95th percentile per-packet one-way delay: 168.233 ms

Loss rate: 10.38%

-- Flow 2:

Average throughput: 0.08 Mbit/s

95th percentile per-packet one-way delay: 169.733 ms

Loss rate: 8.95%

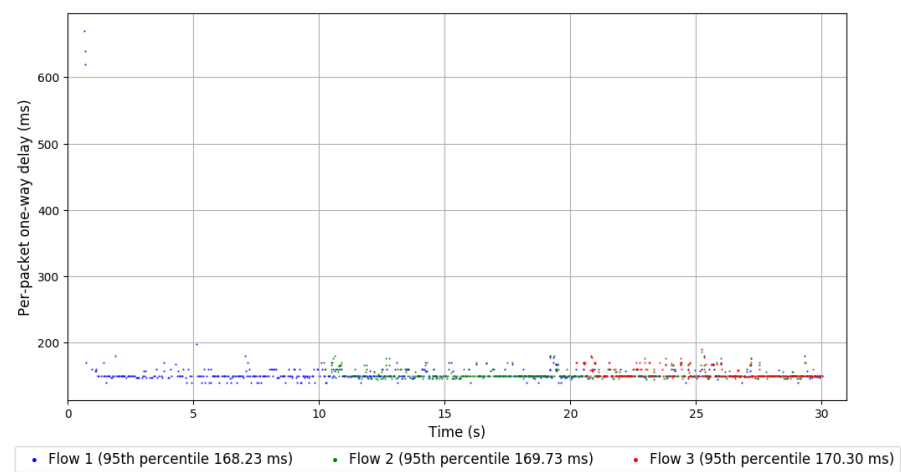
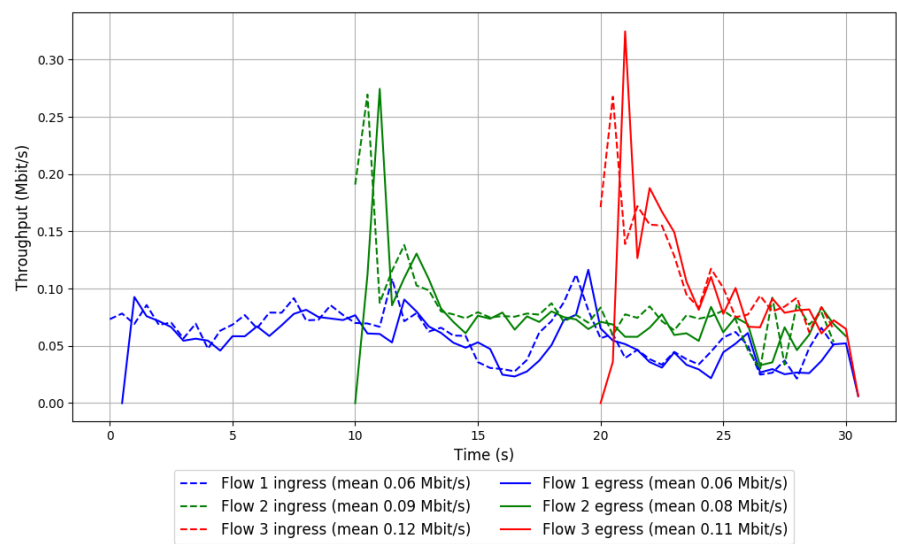
-- Flow 3:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 170.304 ms

Loss rate: 6.96%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2019-01-24 23:41:48

End at: 2019-01-24 23:42:18

Local clock offset: -2.215 ms

Remote clock offset: 2.87 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 264.964 ms

Loss rate: 6.53%

-- Flow 1:

Average throughput: 0.11 Mbit/s

95th percentile per-packet one-way delay: 944.486 ms

Loss rate: 4.99%

-- Flow 2:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 186.628 ms

Loss rate: 9.65%

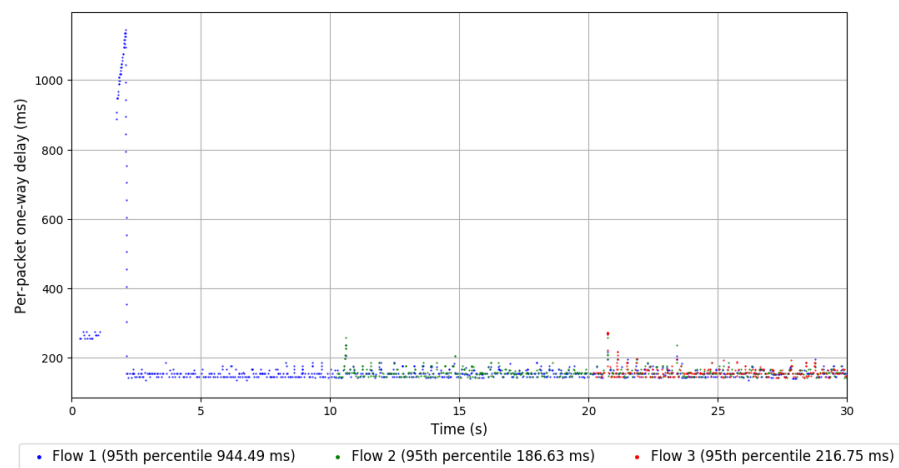
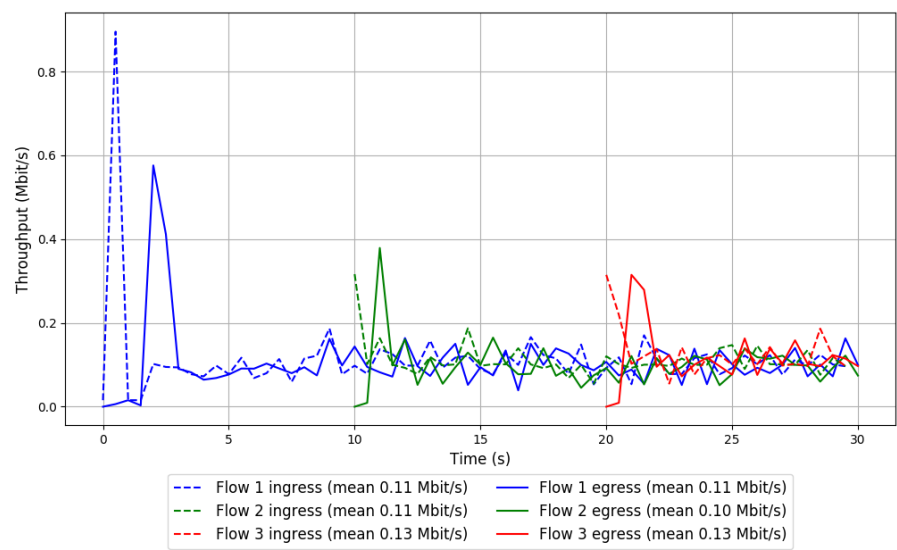
-- Flow 3:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 216.751 ms

Loss rate: 5.13%

Run 1: Report of Sprout — Data Link

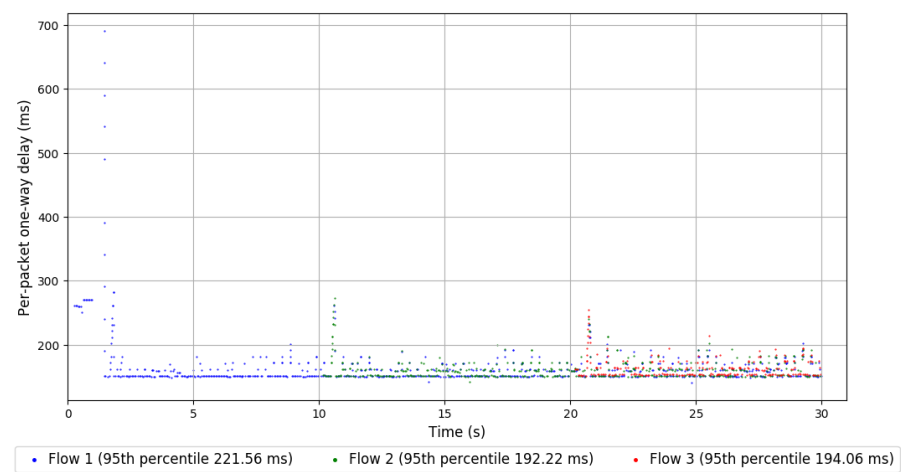
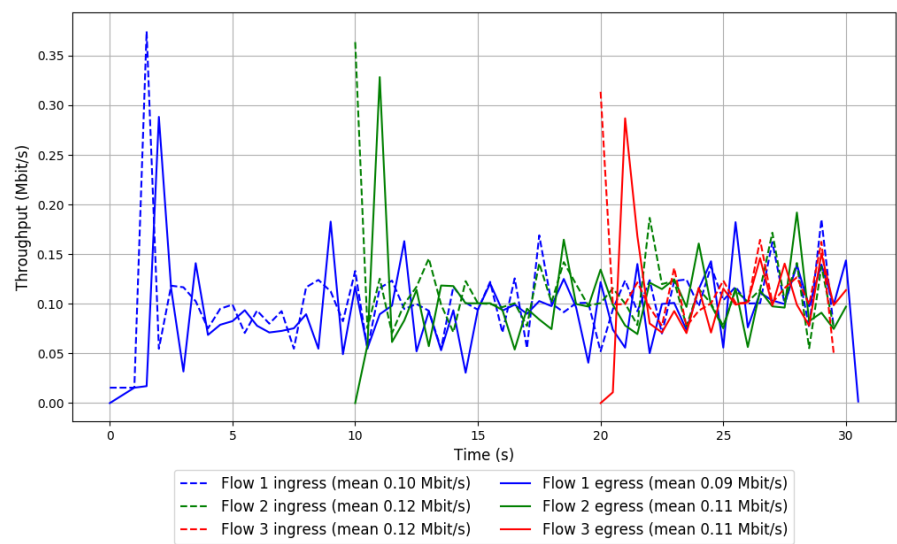


Run 2: Statistics of Sprout

Start at: 2019-01-25 00:07:39
End at: 2019-01-25 00:08:09
Local clock offset: -1.619 ms
Remote clock offset: 7.583 ms

Below is generated by plot.py at 2019-01-25 00:40:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 199.297 ms
Loss rate: 7.81%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 221.557 ms
Loss rate: 7.92%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 192.223 ms
Loss rate: 8.39%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 194.063 ms
Loss rate: 6.41%

Run 2: Report of Sprout — Data Link

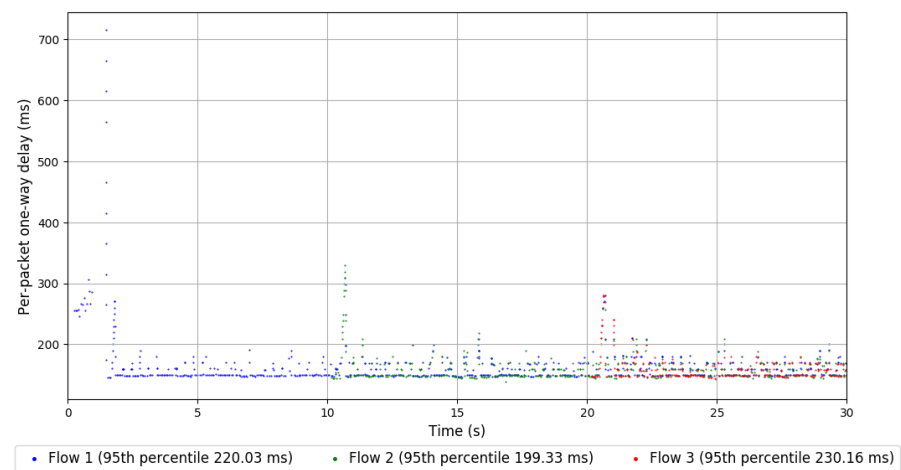
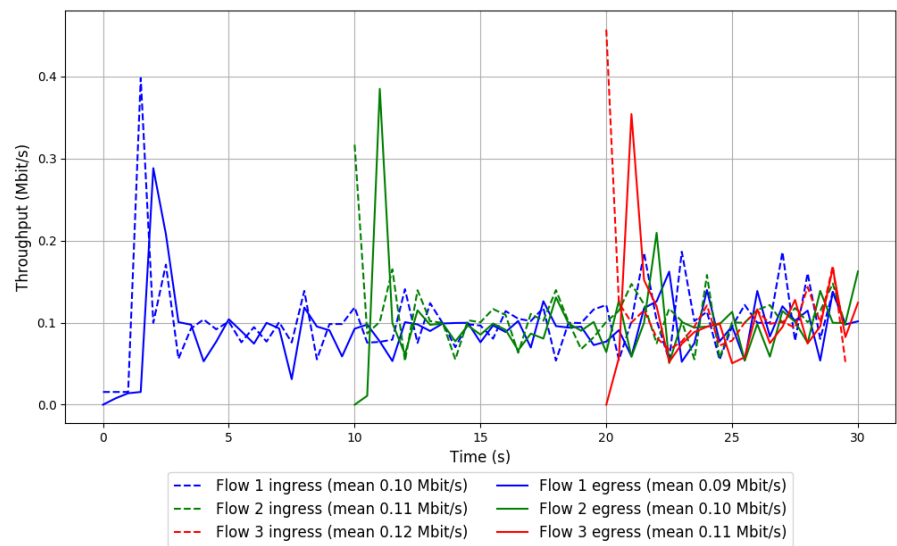


Run 3: Statistics of Sprout

Start at: 2019-01-25 00:33:43
End at: 2019-01-25 00:34:13
Local clock offset: -0.977 ms
Remote clock offset: 1.996 ms

```
# Below is generated by plot.py at 2019-01-25 00:40:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 209.856 ms
Loss rate: 8.02%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 220.026 ms
Loss rate: 8.69%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 199.332 ms
Loss rate: 6.71%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 230.164 ms
Loss rate: 8.69%
```

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2019-01-24 23:24:27

End at: 2019-01-24 23:24:57

Local clock offset: -5.736 ms

Remote clock offset: 6.395 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 2283.466 ms

Loss rate: 10.60%

-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 282.953 ms

Loss rate: 85.45%

-- Flow 2:

Average throughput: 0.64 Mbit/s

95th percentile per-packet one-way delay: 2038.368 ms

Loss rate: 10.31%

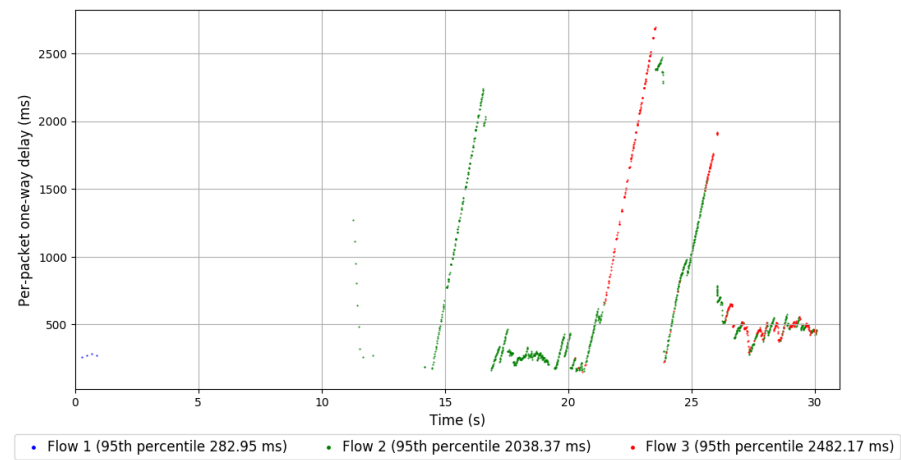
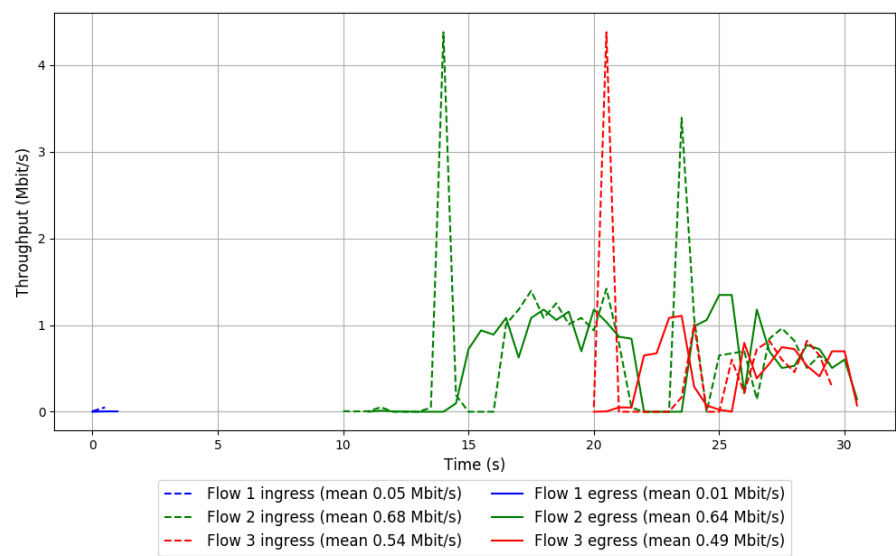
-- Flow 3:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 2482.170 ms

Loss rate: 10.93%

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



Run 2: Statistics of TaoVA-100x

Start at: 2019-01-24 23:50:24

End at: 2019-01-24 23:50:54

Local clock offset: -1.464 ms

Remote clock offset: 8.044 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.95 Mbit/s

95th percentile per-packet one-way delay: 3655.449 ms

Loss rate: 21.95%

-- Flow 1:

Average throughput: 0.53 Mbit/s

95th percentile per-packet one-way delay: 4356.771 ms

Loss rate: 15.06%

-- Flow 2:

Average throughput: 0.55 Mbit/s

95th percentile per-packet one-way delay: 3558.015 ms

Loss rate: 27.35%

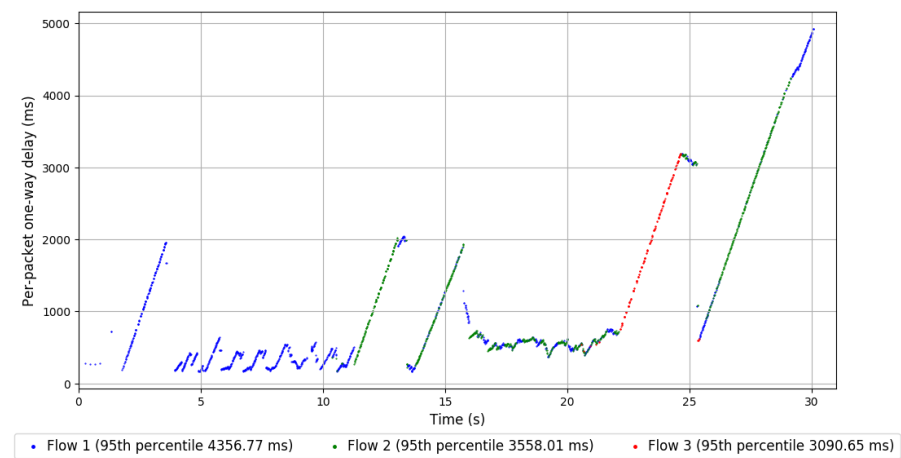
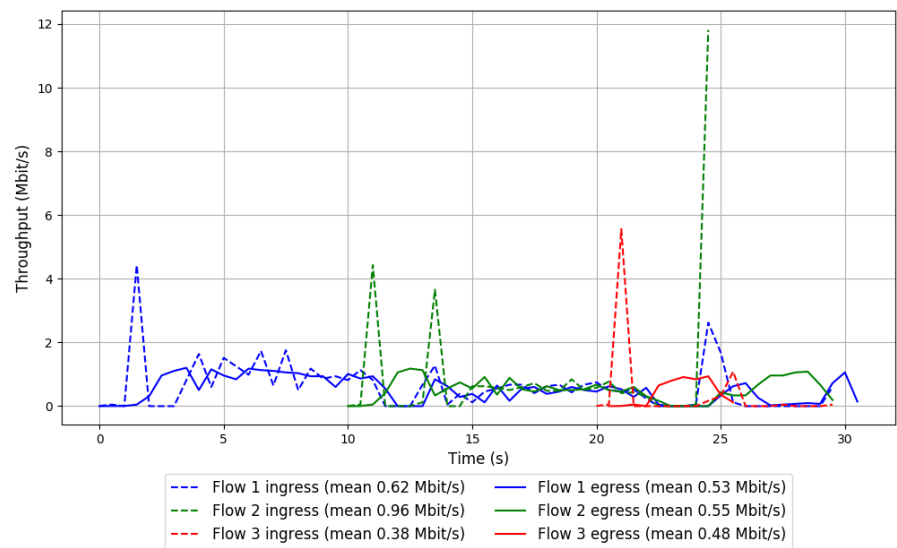
-- Flow 3:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 3090.653 ms

Loss rate: 35.72%

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



Run 3: Statistics of TaoVA-100x

Start at: 2019-01-25 00:16:18

End at: 2019-01-25 00:16:48

Local clock offset: -1.535 ms

Remote clock offset: 2.277 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.96 Mbit/s

95th percentile per-packet one-way delay: 2534.768 ms

Loss rate: 19.13%

-- Flow 1:

Average throughput: 0.59 Mbit/s

95th percentile per-packet one-way delay: 1749.550 ms

Loss rate: 17.43%

-- Flow 2:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 2575.095 ms

Loss rate: 20.04%

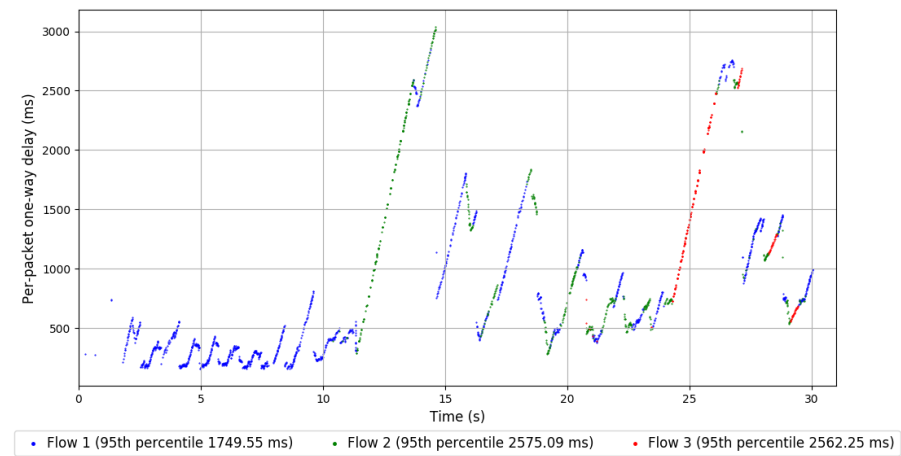
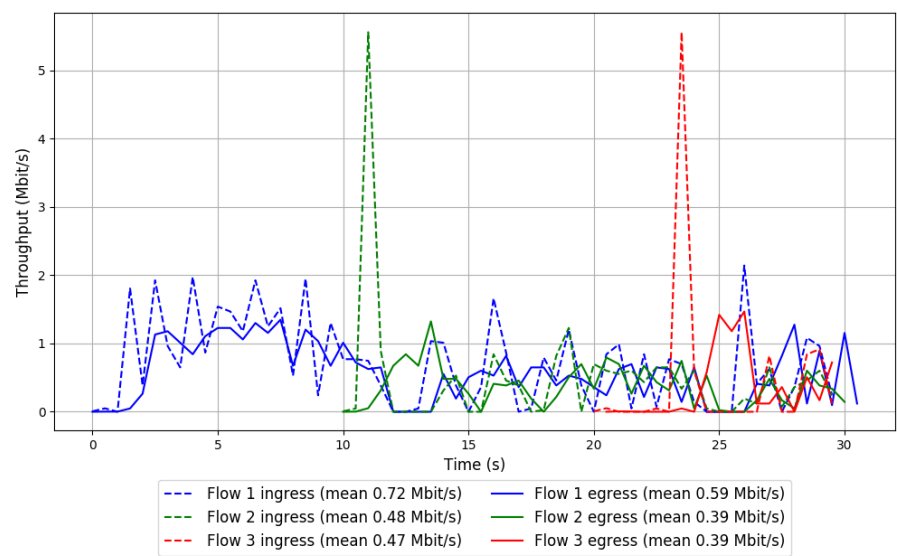
-- Flow 3:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 2562.253 ms

Loss rate: 25.24%

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



Run 1: Statistics of TCP Vegas

Start at: 2019-01-24 23:39:19

End at: 2019-01-24 23:39:49

Local clock offset: -2.608 ms

Remote clock offset: 6.286 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 475.913 ms

Loss rate: 5.89%

-- Flow 1:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 346.190 ms

Loss rate: 5.34%

-- Flow 2:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 374.963 ms

Loss rate: 7.95%

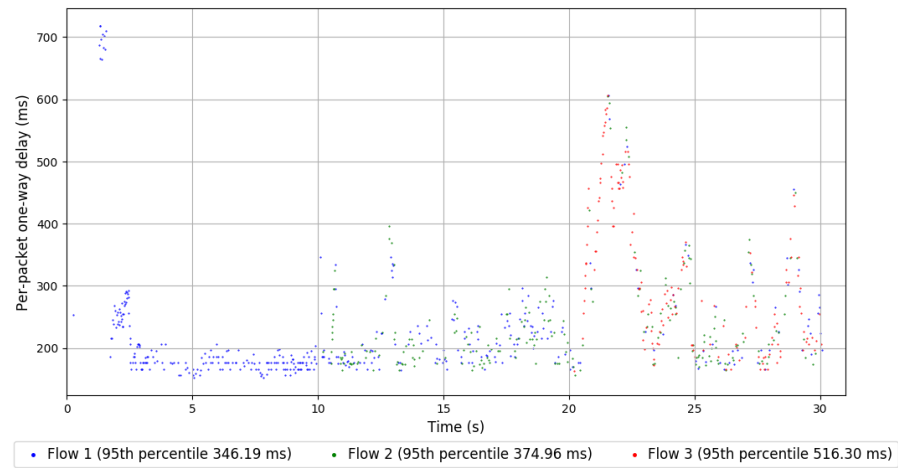
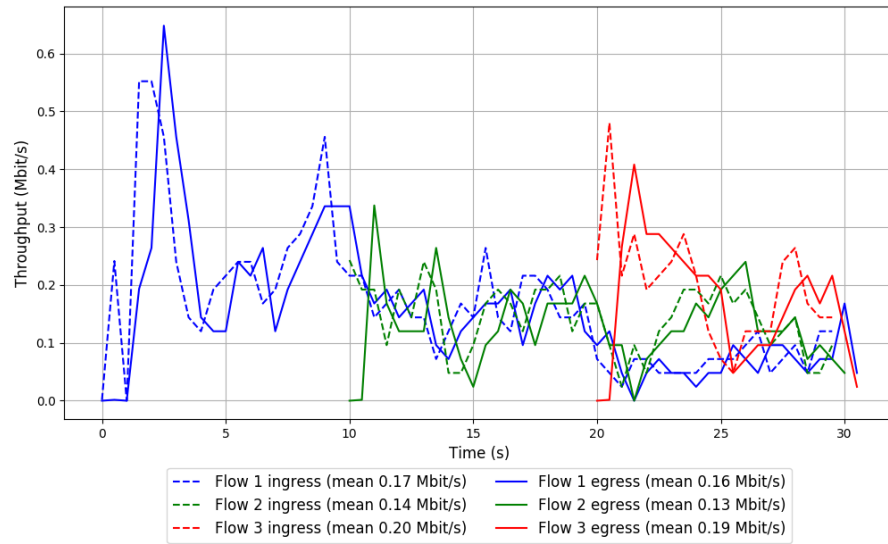
-- Flow 3:

Average throughput: 0.19 Mbit/s

95th percentile per-packet one-way delay: 516.297 ms

Loss rate: 4.27%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2019-01-25 00:05:12

End at: 2019-01-25 00:05:42

Local clock offset: -0.913 ms

Remote clock offset: 3.808 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 211.038 ms

Loss rate: 8.93%

-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 353.697 ms

Loss rate: 9.51%

-- Flow 2:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 210.972 ms

Loss rate: 7.69%

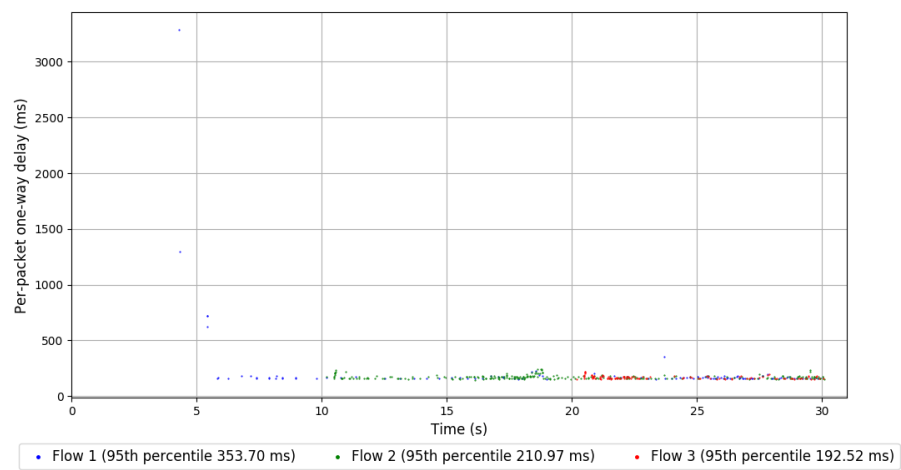
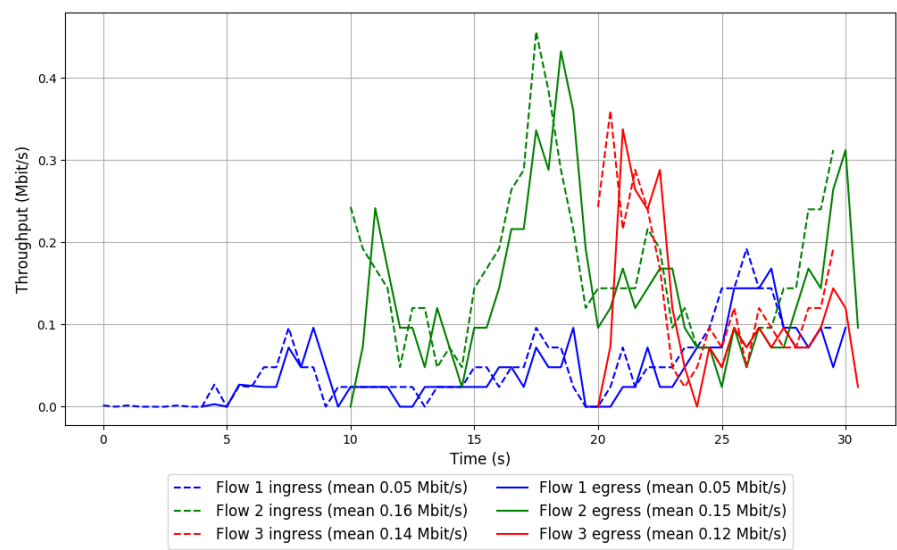
-- Flow 3:

Average throughput: 0.12 Mbit/s

95th percentile per-packet one-way delay: 192.522 ms

Loss rate: 11.29%

Run 2: Report of TCP Vegas — Data Link

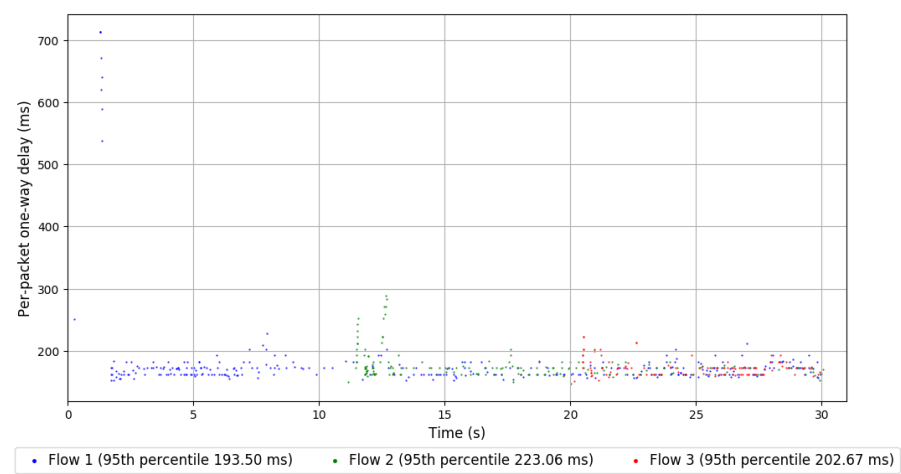
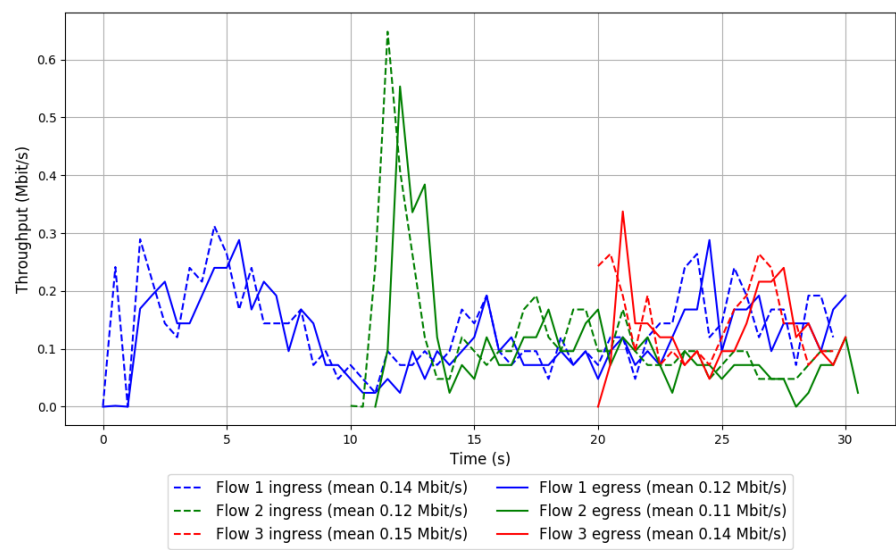


Run 3: Statistics of TCP Vegas

Start at: 2019-01-25 00:31:14
End at: 2019-01-25 00:31:44
Local clock offset: -1.374 ms
Remote clock offset: 3.136 ms

Below is generated by plot.py at 2019-01-25 00:40:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 209.806 ms
Loss rate: 9.55%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 193.502 ms
Loss rate: 8.87%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 223.061 ms
Loss rate: 12.02%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 202.671 ms
Loss rate: 7.37%

Run 3: Report of TCP Vegas — Data Link

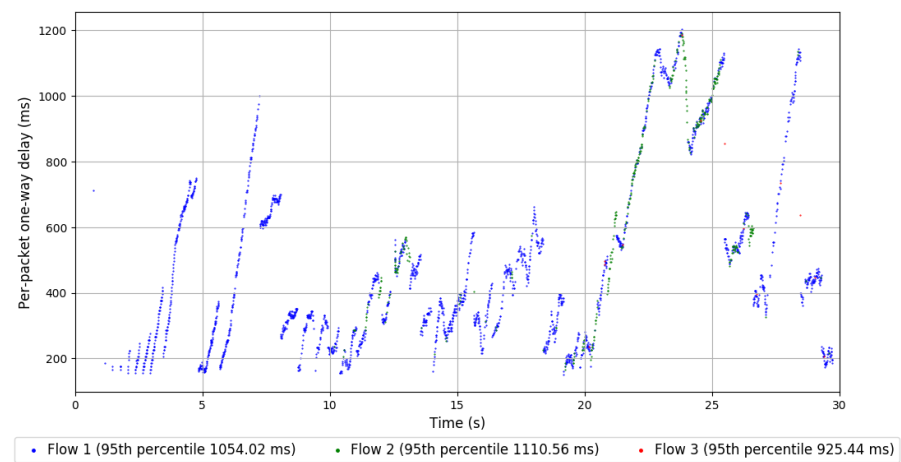
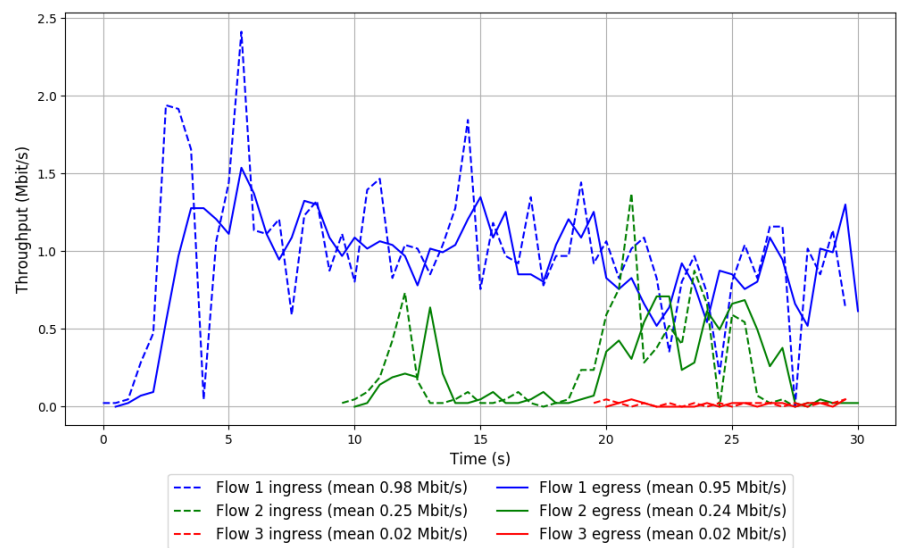


Run 1: Statistics of Verus

Start at: 2019-01-24 23:23:13
End at: 2019-01-24 23:23:43
Local clock offset: -4.936 ms
Remote clock offset: 1.555 ms

Below is generated by plot.py at 2019-01-25 00:40:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 1071.088 ms
Loss rate: 5.08%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 1054.021 ms
Loss rate: 5.24%
-- Flow 2:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 1110.563 ms
Loss rate: 3.61%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 925.443 ms
Loss rate: 18.75%

Run 1: Report of Verus — Data Link

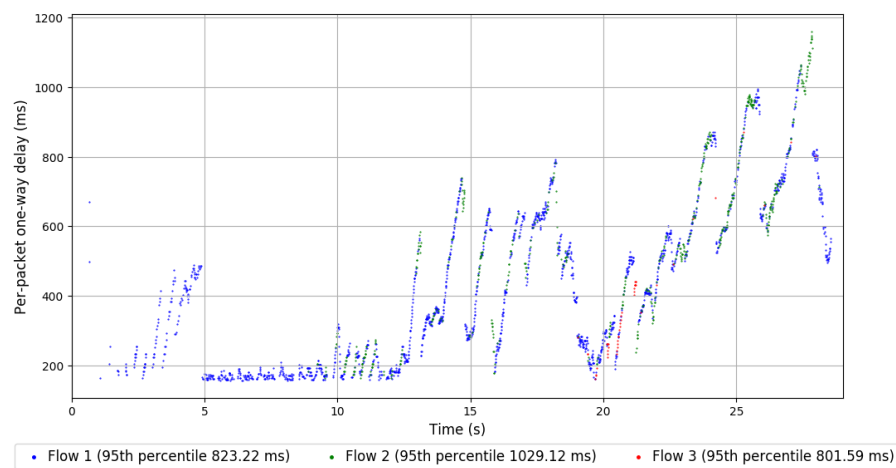
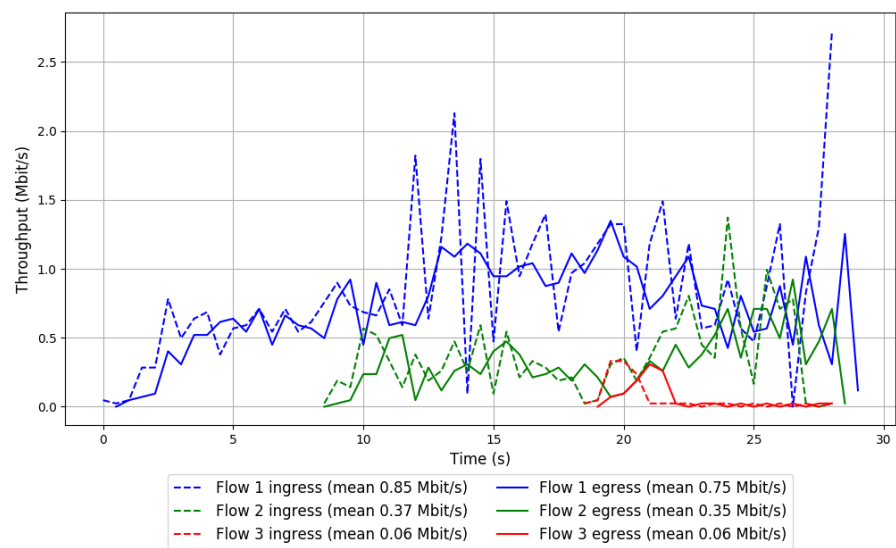


Run 2: Statistics of Verus

Start at: 2019-01-24 23:49:10
End at: 2019-01-24 23:49:40
Local clock offset: -2.241 ms
Remote clock offset: 7.925 ms

Below is generated by plot.py at 2019-01-25 00:40:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 931.250 ms
Loss rate: 11.16%
-- Flow 1:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 823.215 ms
Loss rate: 12.43%
-- Flow 2:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 1029.123 ms
Loss rate: 7.31%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 801.585 ms
Loss rate: 7.84%

Run 2: Report of Verus — Data Link

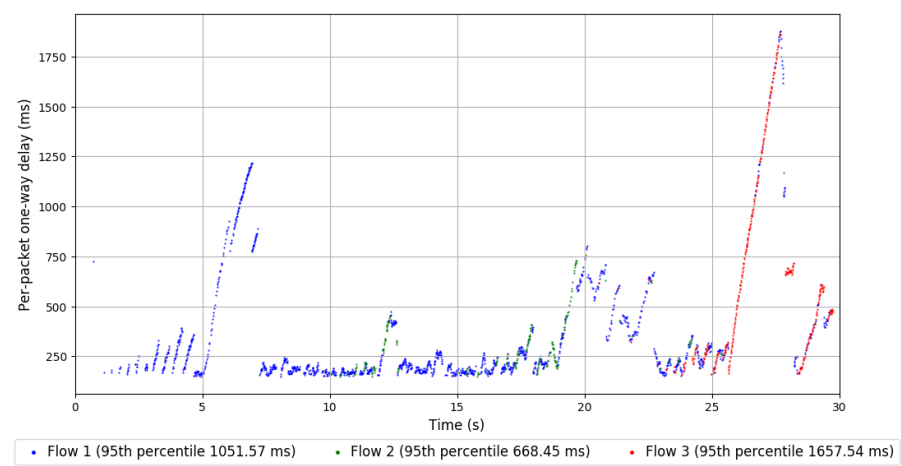
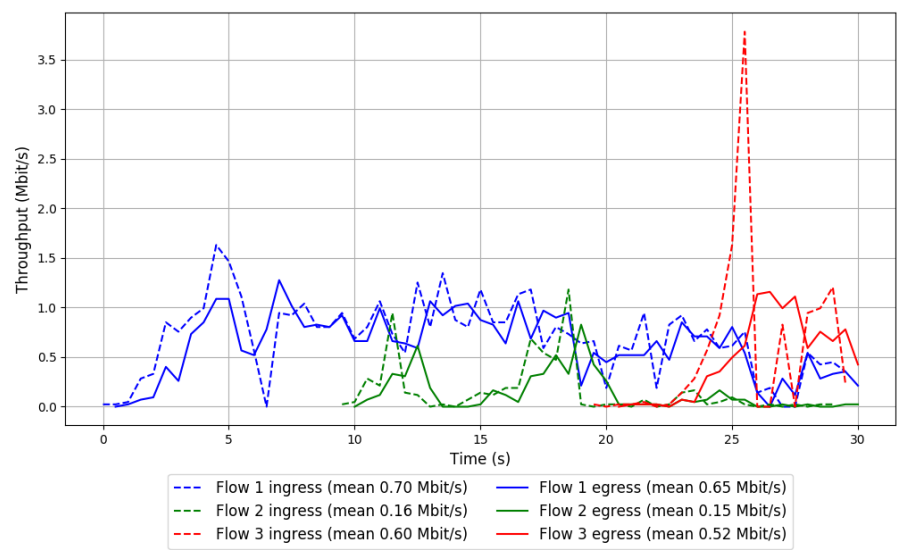


Run 3: Statistics of Verus

Start at: 2019-01-25 00:15:05
End at: 2019-01-25 00:15:35
Local clock offset: -1.522 ms
Remote clock offset: 3.522 ms

Below is generated by plot.py at 2019-01-25 00:40:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 1179.686 ms
Loss rate: 11.19%
-- Flow 1:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 1051.573 ms
Loss rate: 9.80%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 668.453 ms
Loss rate: 7.69%
-- Flow 3:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 1657.542 ms
Loss rate: 18.02%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-01-24 23:44:15

End at: 2019-01-24 23:44:45

Local clock offset: -1.932 ms

Remote clock offset: 9.008 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 9905.010 ms

Loss rate: 58.72%

-- Flow 1:

Average throughput: 0.60 Mbit/s

95th percentile per-packet one-way delay: 9461.339 ms

Loss rate: 52.10%

-- Flow 2:

Average throughput: 0.63 Mbit/s

95th percentile per-packet one-way delay: 9981.633 ms

Loss rate: 65.50%

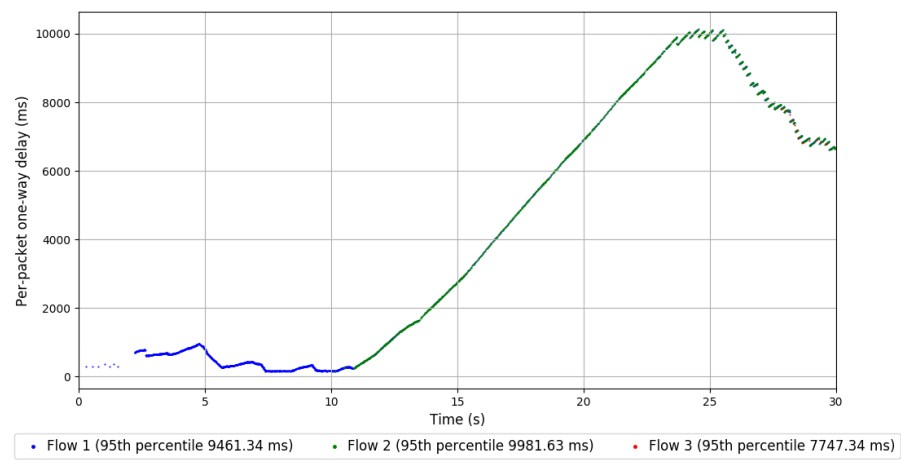
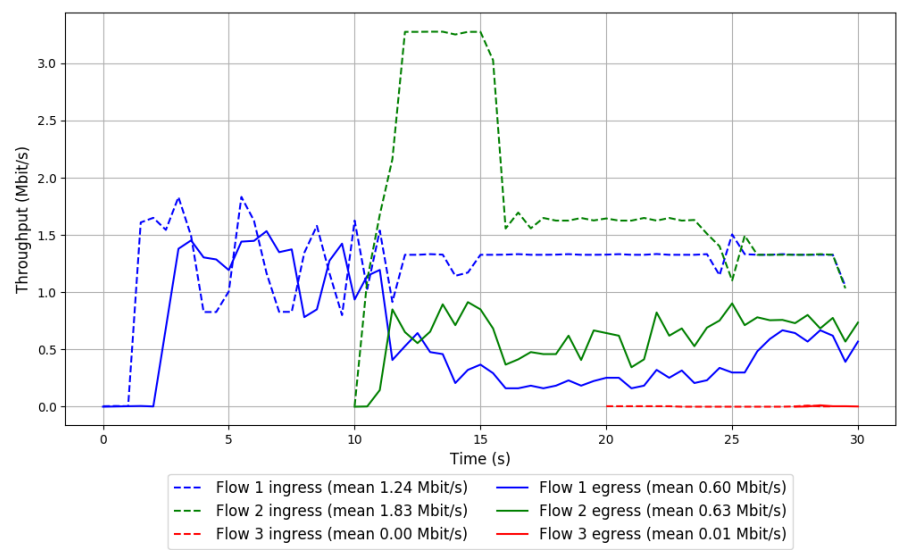
-- Flow 3:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 7747.337 ms

Loss rate: 41.55%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2019-01-25 00:10:08

End at: 2019-01-25 00:10:38

Local clock offset: -0.834 ms

Remote clock offset: 3.65 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 6465.242 ms

Loss rate: 50.04%

-- Flow 1:

Average throughput: 0.65 Mbit/s

95th percentile per-packet one-way delay: 6453.500 ms

Loss rate: 47.22%

-- Flow 2:

Average throughput: 0.78 Mbit/s

95th percentile per-packet one-way delay: 6478.458 ms

Loss rate: 53.14%

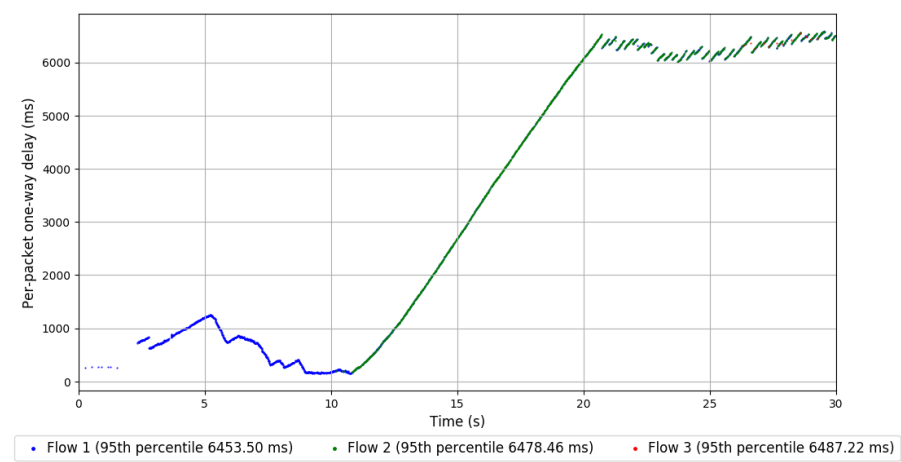
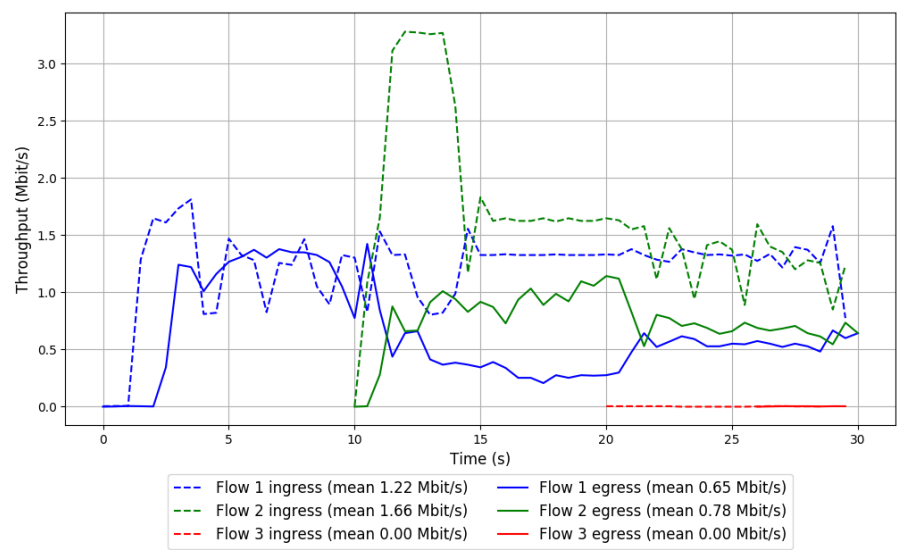
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 6487.220 ms

Loss rate: 44.83%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2019-01-25 00:36:11

End at: 2019-01-25 00:36:41

Local clock offset: -2.026 ms

Remote clock offset: 2.056 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.18 Mbit/s

95th percentile per-packet one-way delay: 4349.397 ms

Loss rate: 38.96%

-- Flow 1:

Average throughput: 0.90 Mbit/s

95th percentile per-packet one-way delay: 2684.423 ms

Loss rate: 28.21%

-- Flow 2:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1441.112 ms

Loss rate: 22.14%

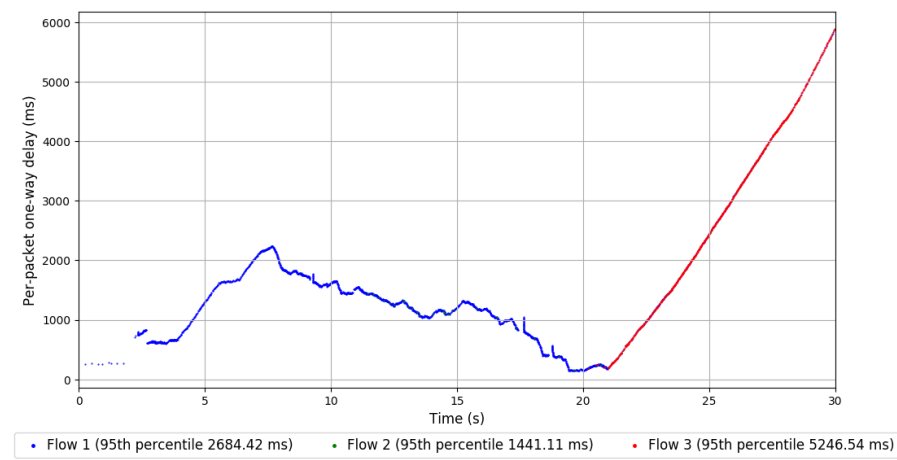
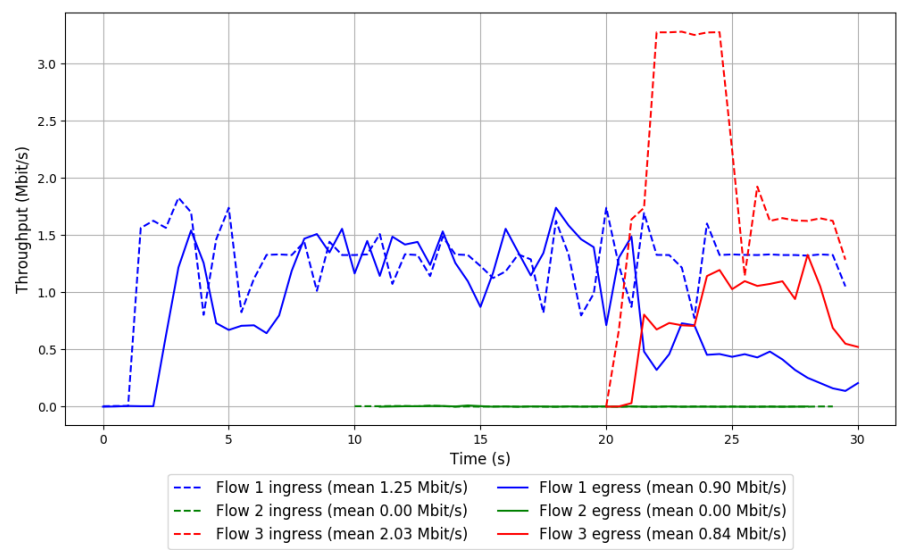
-- Flow 3:

Average throughput: 0.84 Mbit/s

95th percentile per-packet one-way delay: 5246.544 ms

Loss rate: 58.99%

Run 3: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2019-01-24 23:40:34

End at: 2019-01-24 23:41:04

Local clock offset: -3.182 ms

Remote clock offset: 6.591 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 568.967 ms

Loss rate: 6.98%

-- Flow 1:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 427.787 ms

Loss rate: 6.30%

-- Flow 2:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 629.217 ms

Loss rate: 5.63%

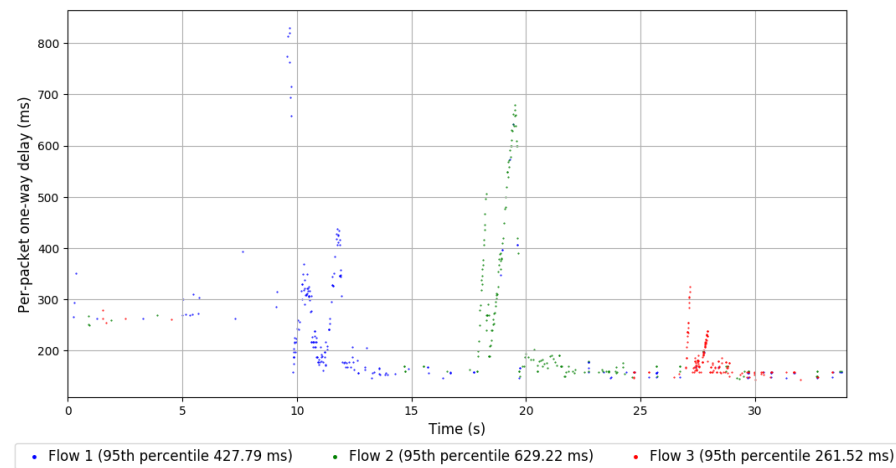
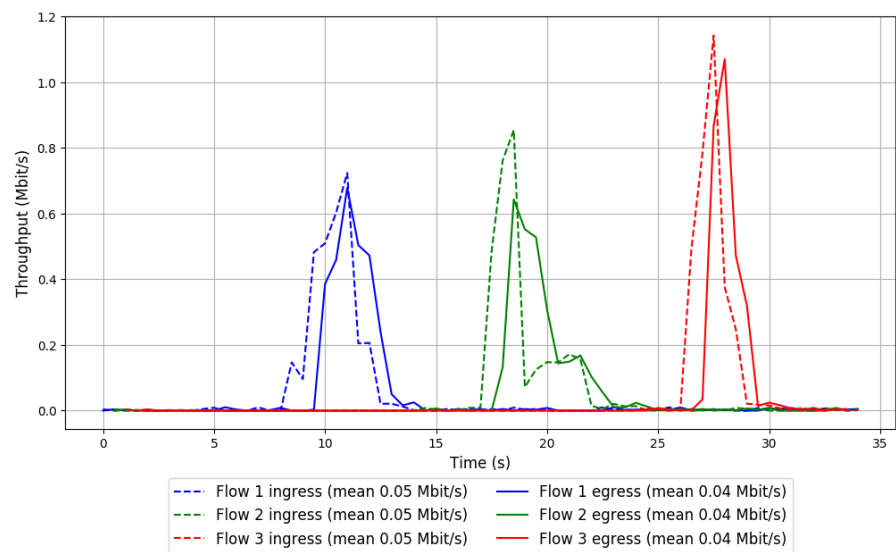
-- Flow 3:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 261.522 ms

Loss rate: 9.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2019-01-25 00:06:25

End at: 2019-01-25 00:06:55

Local clock offset: -1.628 ms

Remote clock offset: 2.803 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 274.255 ms

Loss rate: 5.97%

-- Flow 1:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 304.291 ms

Loss rate: 4.48%

-- Flow 2:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 257.155 ms

Loss rate: 7.12%

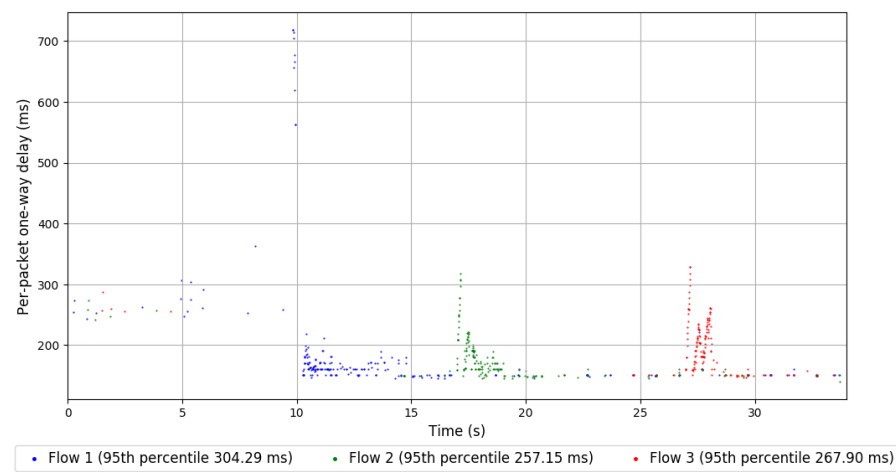
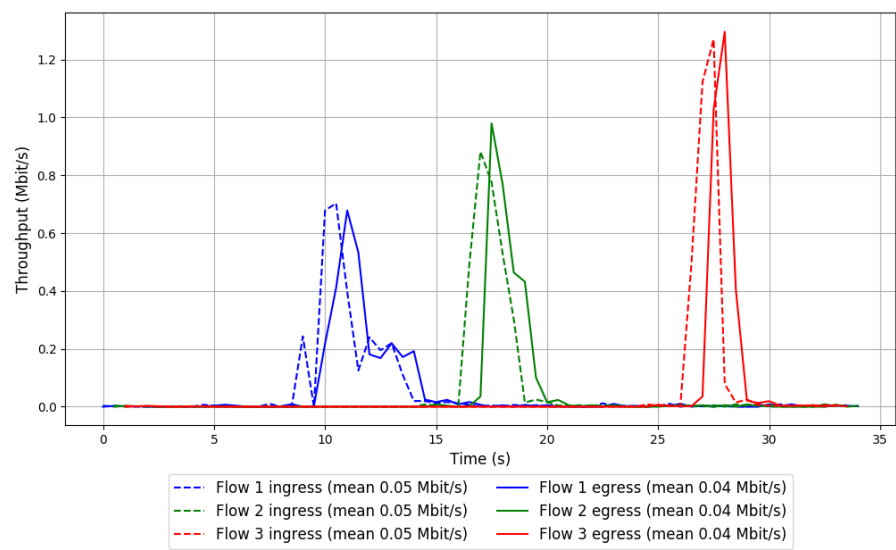
-- Flow 3:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 267.902 ms

Loss rate: 6.33%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-01-25 00:32:29

End at: 2019-01-25 00:32:59

Local clock offset: -0.845 ms

Remote clock offset: 2.102 ms

Below is generated by plot.py at 2019-01-25 00:40:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 319.218 ms

Loss rate: 4.18%

-- Flow 1:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 362.337 ms

Loss rate: 3.00%

-- Flow 2:

Average throughput: 0.04 Mbit/s

95th percentile per-packet one-way delay: 283.404 ms

Loss rate: 4.28%

-- Flow 3:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 330.548 ms

Loss rate: 5.29%

Run 3: Report of WebRTC media — Data Link

