

Pantheon Report

Generated at 2019-01-25 00:36:47 (UTC).

Data path: AWS India 1 on `ens5 (local)` → India 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 `nets.org.sg` and have been applied to correct the timestamps in logs.

System info:

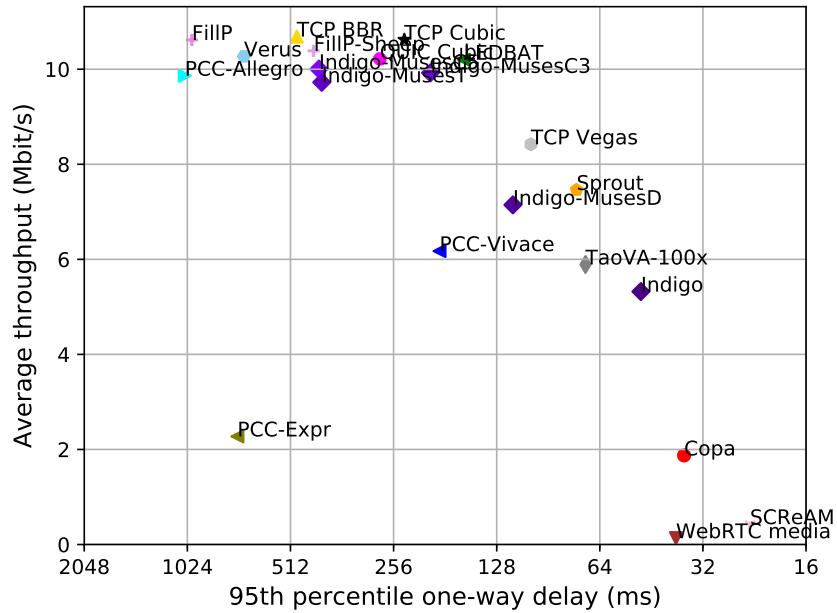
```
Linux 4.15.0-1031-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

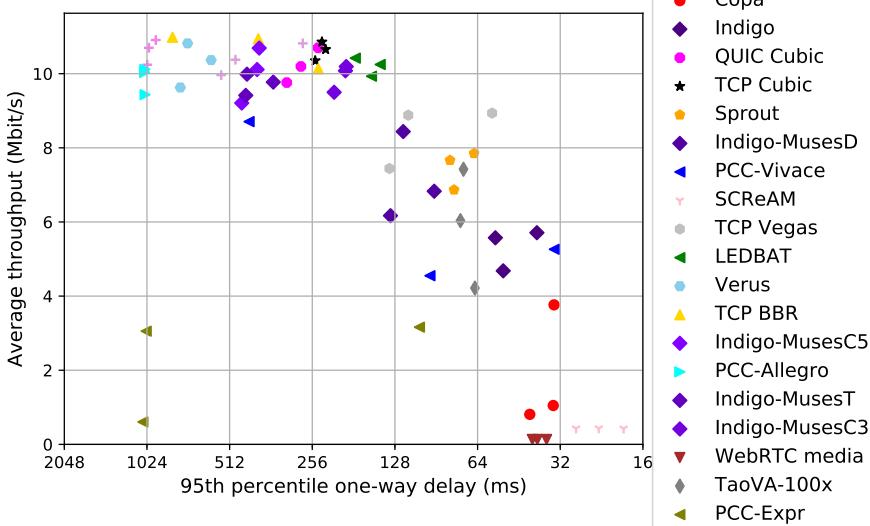
```
branch: muses @ 0b8e9a949603c3842368430acf469eec3b941f9f
third_party/fillp @ d6da1459332fceef56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ d9c5ea33091330aca25ecd105ab2db6d34d5c40d
third_party/pantheon-tunnel @ f866d3f58d27af942717625ee3a354cc2e802bd
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-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

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



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



4

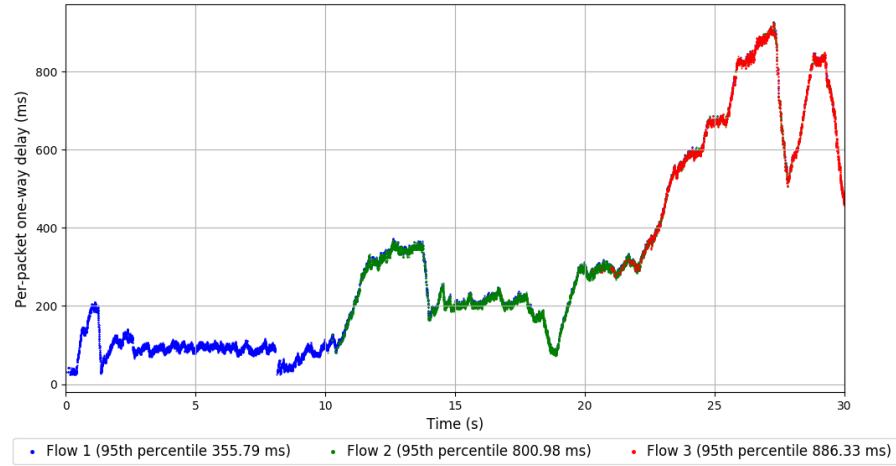
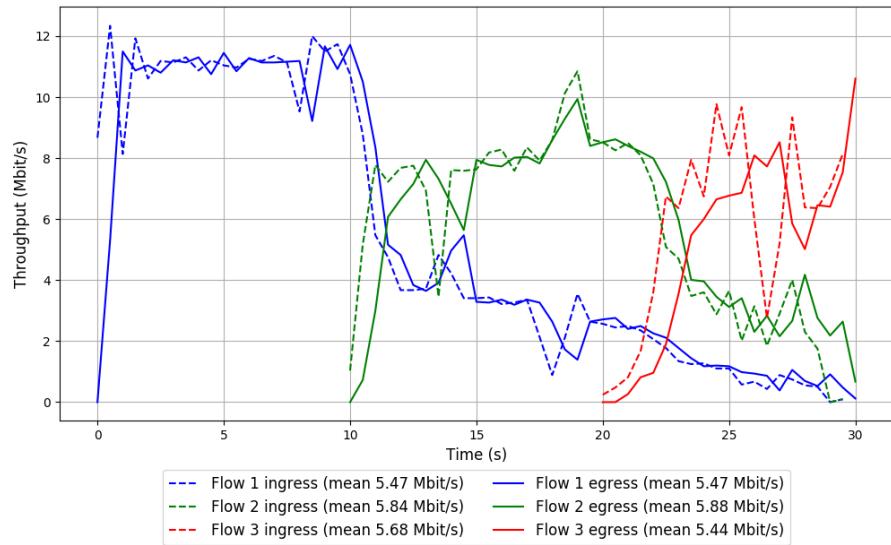
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	5.94	4.67	5.17	287.05	485.81	532.66	0.44	0.45	3.21
Copa	3	0.77	1.25	0.81	28.10	29.72	29.76	70.59	50.62	74.48
TCP Cubic	3	7.53	3.59	2.19	235.19	243.23	238.67	0.44	1.38	3.59
FillP	3	6.47	4.55	3.53	932.49	990.25	1030.75	3.17	4.73	17.30
FillP-Sheep	3	5.64	4.46	5.41	329.88	501.36	582.99	0.61	0.72	2.74
Indigo	3	2.83	2.53	2.50	39.78	44.77	65.00	0.15	0.14	0.42
Indigo-MusesC3	3	6.01	4.22	3.84	183.64	203.32	226.96	0.35	0.97	2.47
Indigo-MusesC5	3	6.69	3.87	2.69	396.10	431.94	509.53	0.79	1.17	5.55
Indigo-MusesD	3	3.67	2.56	5.87	98.38	90.38	145.25	0.11	0.28	0.55
Indigo-MusesT	3	5.79	3.33	5.96	295.65	385.40	563.76	0.50	1.81	7.46
LEDBAT	3	7.39	3.12	2.25	157.36	167.29	177.68	0.22	0.95	1.72
PCC-Allegro	3	6.83	2.95	3.40	1037.85	1040.95	1073.73	9.82	15.10	49.71
PCC-Expr	3	0.02	2.72	1.49	22.70	716.70	715.67	85.71	62.18	72.97
QUIC Cubic	3	7.80	2.60	2.20	277.65	295.61	289.94	0.57	1.46	3.19
SCReAM	3	0.21	0.21	0.22	26.25	21.29	23.66	0.00	0.00	0.24
Sprout	3	3.98	3.67	3.18	71.11	74.83	83.40	0.22	0.12	0.56
TaoVA-100x	3	2.86	2.91	3.30	63.96	73.52	98.68	28.86	30.01	19.54
TCP Vegas	3	3.11	4.34	7.31	62.31	71.40	101.91	0.05	0.10	0.20
Verus	3	6.49	4.35	2.82	618.20	706.85	828.22	1.52	3.35	29.62
PCC-Vivace	3	3.43	2.42	3.46	174.44	89.17	109.35	0.29	0.35	1.43
WebRTC media	3	0.05	0.04	0.05	35.14	41.06	35.07	0.00	0.02	0.00

Run 1: Statistics of TCP BBR

```
Start at: 2019-01-24 23:44:01
End at: 2019-01-24 23:44:31
Local clock offset: -1.36 ms
Remote clock offset: -4.361 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.98 Mbit/s
95th percentile per-packet one-way delay: 826.435 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 5.47 Mbit/s
95th percentile per-packet one-way delay: 355.794 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 5.88 Mbit/s
95th percentile per-packet one-way delay: 800.984 ms
Loss rate: 0.22%
-- Flow 3:
Average throughput: 5.44 Mbit/s
95th percentile per-packet one-way delay: 886.333 ms
Loss rate: 6.99%
```

Run 1: Report of TCP BBR — Data Link

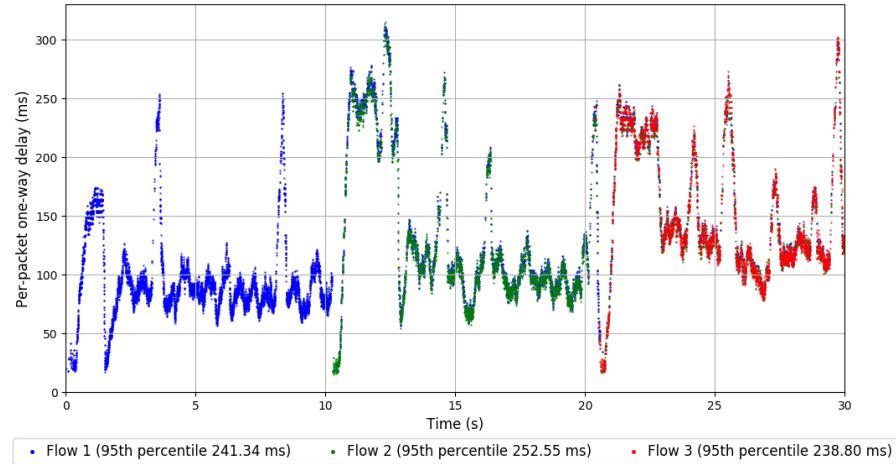
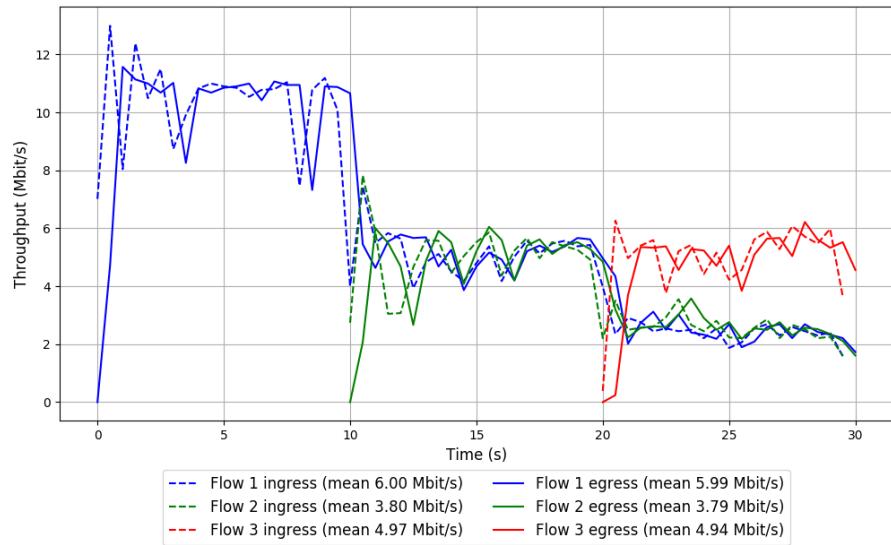


Run 2: Statistics of TCP BBR

```
Start at: 2019-01-25 00:08:38
End at: 2019-01-25 00:09:08
Local clock offset: 1.259 ms
Remote clock offset: -4.505 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.13 Mbit/s
95th percentile per-packet one-way delay: 243.295 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 5.99 Mbit/s
95th percentile per-packet one-way delay: 241.342 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 252.548 ms
Loss rate: 0.47%
-- Flow 3:
Average throughput: 4.94 Mbit/s
95th percentile per-packet one-way delay: 238.800 ms
Loss rate: 1.36%
```

Run 2: Report of TCP BBR — Data Link

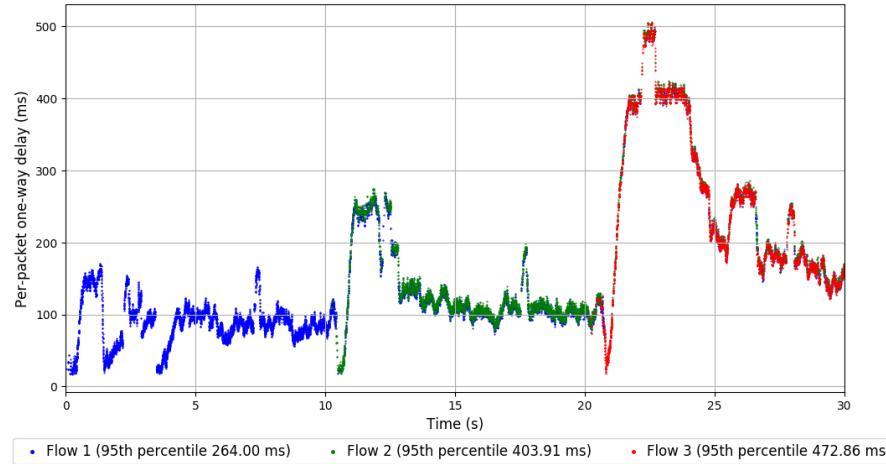
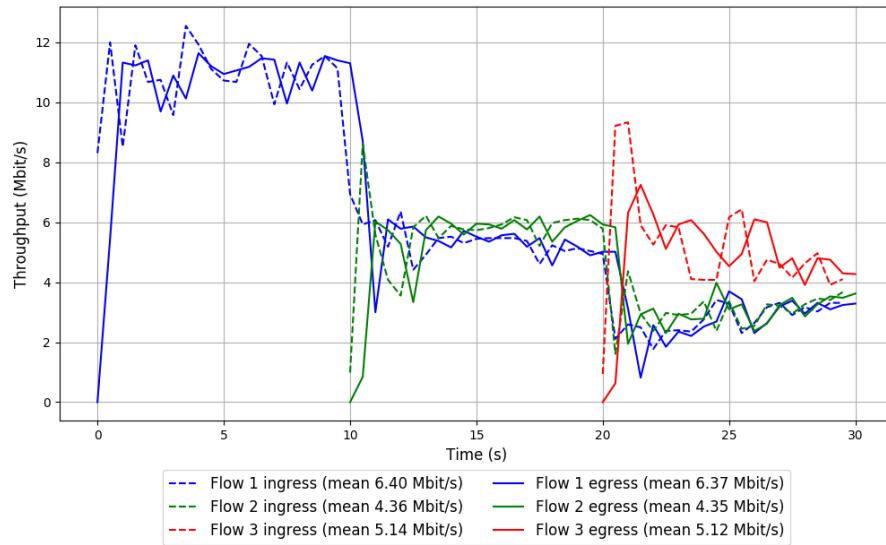


Run 3: Statistics of TCP BBR

```
Start at: 2019-01-25 00:33:26
End at: 2019-01-25 00:33:56
Local clock offset: 1.134 ms
Remote clock offset: -3.936 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.94 Mbit/s
95th percentile per-packet one-way delay: 402.440 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 6.37 Mbit/s
95th percentile per-packet one-way delay: 264.000 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 4.35 Mbit/s
95th percentile per-packet one-way delay: 403.912 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 5.12 Mbit/s
95th percentile per-packet one-way delay: 472.856 ms
Loss rate: 1.29%
```

Run 3: Report of TCP BBR — Data Link

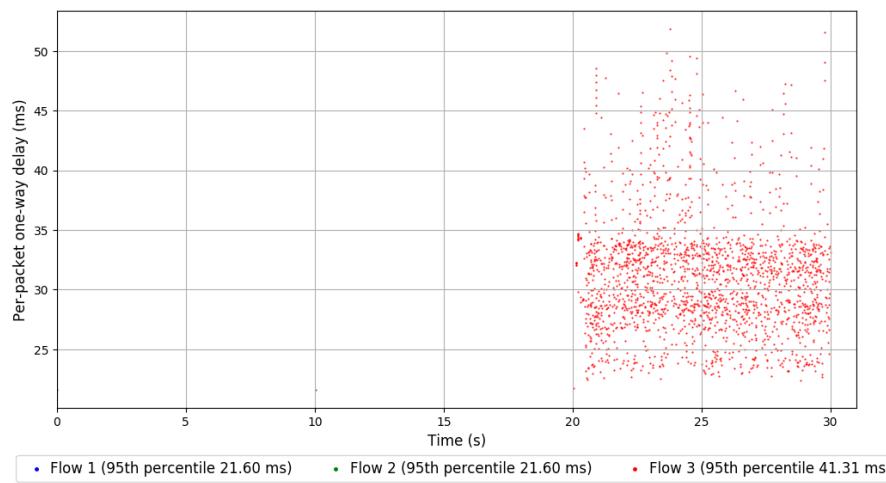
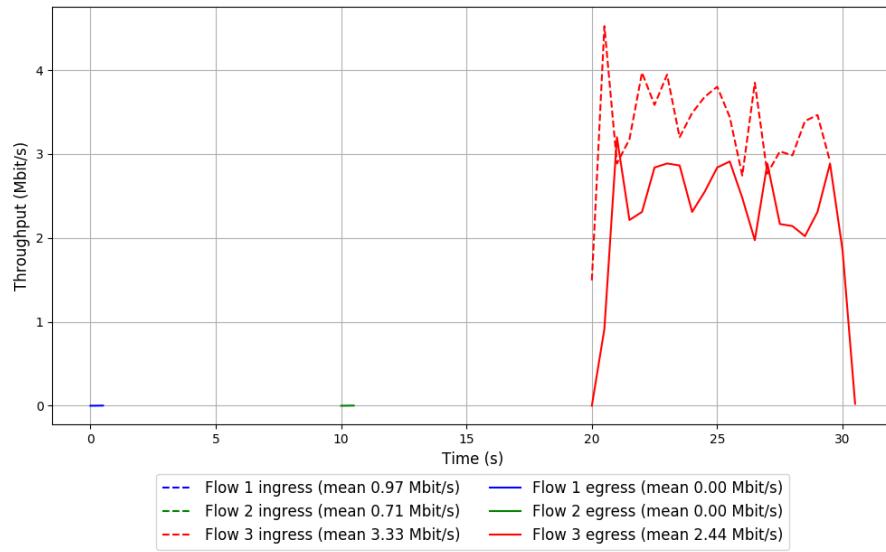


Run 1: Statistics of Copa

```
Start at: 2019-01-24 23:25:21
End at: 2019-01-24 23:25:51
Local clock offset: -1.167 ms
Remote clock offset: -3.824 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 41.312 ms
Loss rate: 27.06%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 21.597 ms
Loss rate: 98.60%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 21.604 ms
Loss rate: 98.33%
-- Flow 3:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 41.312 ms
Loss rate: 26.77%
```

Run 1: Report of Copa — Data Link

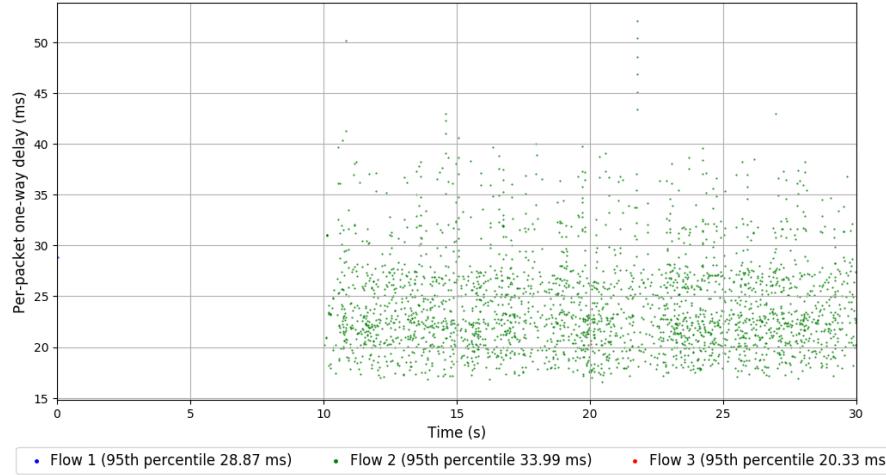
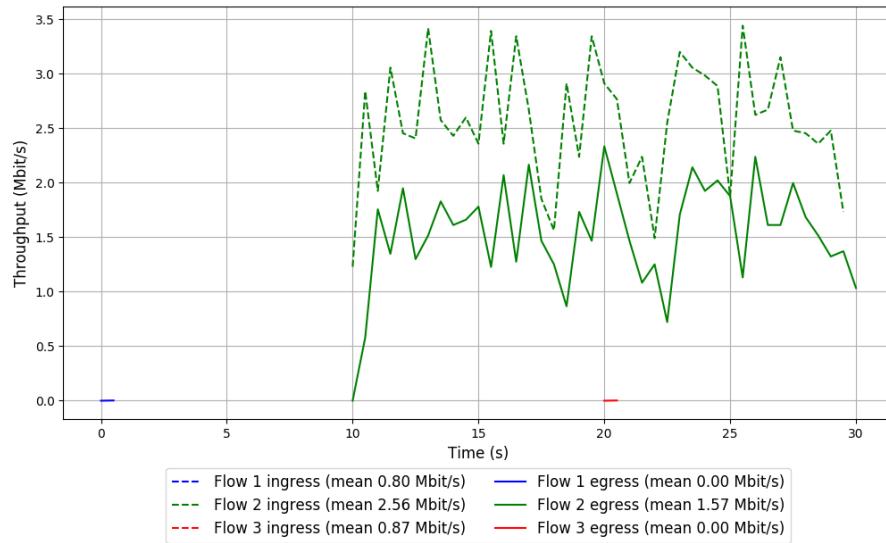


Run 2: Statistics of Copa

```
Start at: 2019-01-24 23:49:52
End at: 2019-01-24 23:50:22
Local clock offset: -0.966 ms
Remote clock offset: -5.798 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 33.936 ms
Loss rate: 38.77%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 28.871 ms
Loss rate: 98.60%
-- Flow 2:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 33.992 ms
Loss rate: 38.62%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 20.334 ms
Loss rate: 98.33%
```

Run 2: Report of Copa — Data Link

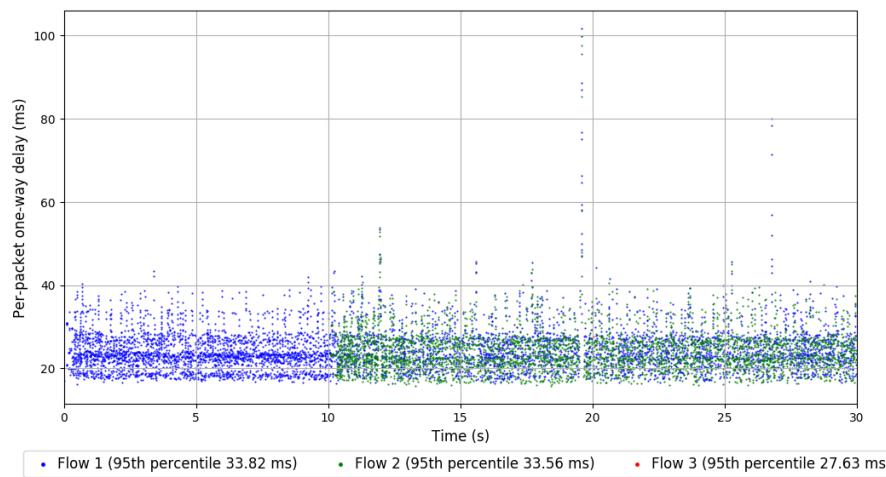
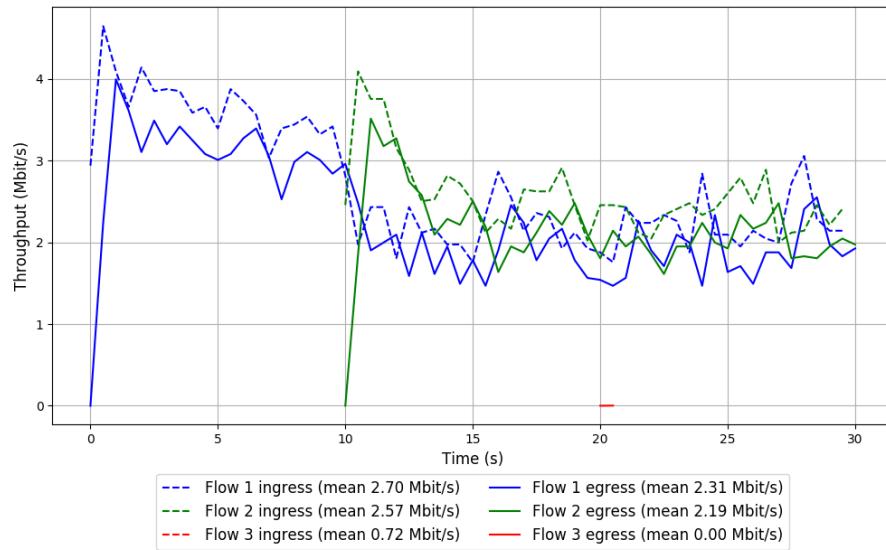


Run 3: Statistics of Copa

```
Start at: 2019-01-25 00:14:27
End at: 2019-01-25 00:14:57
Local clock offset: 1.828 ms
Remote clock offset: -4.751 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.76 Mbit/s
95th percentile per-packet one-way delay: 33.707 ms
Loss rate: 14.73%
-- Flow 1:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 33.821 ms
Loss rate: 14.57%
-- Flow 2:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 33.557 ms
Loss rate: 14.90%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 27.628 ms
Loss rate: 98.33%
```

Run 3: Report of Copa — Data Link

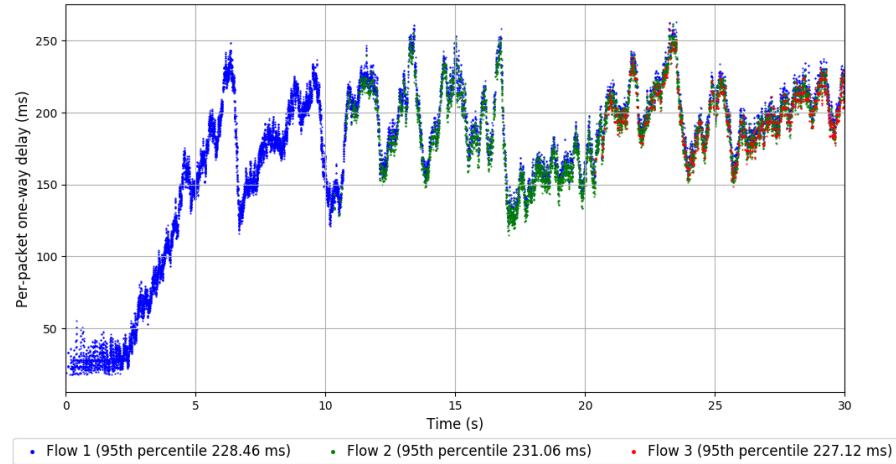
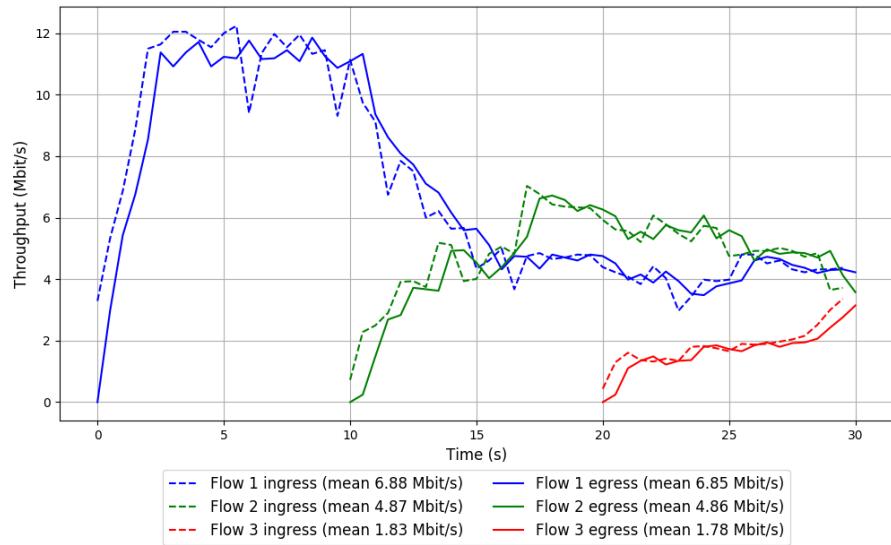


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2019-01-24 23:29:59
End at: 2019-01-24 23:30:29
Local clock offset: 1.557 ms
Remote clock offset: -5.945 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.66 Mbit/s
95th percentile per-packet one-way delay: 228.863 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 6.85 Mbit/s
95th percentile per-packet one-way delay: 228.464 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 4.86 Mbit/s
95th percentile per-packet one-way delay: 231.056 ms
Loss rate: 0.88%
-- Flow 3:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 227.118 ms
Loss rate: 4.20%
```

Run 1: Report of TCP Cubic — Data Link

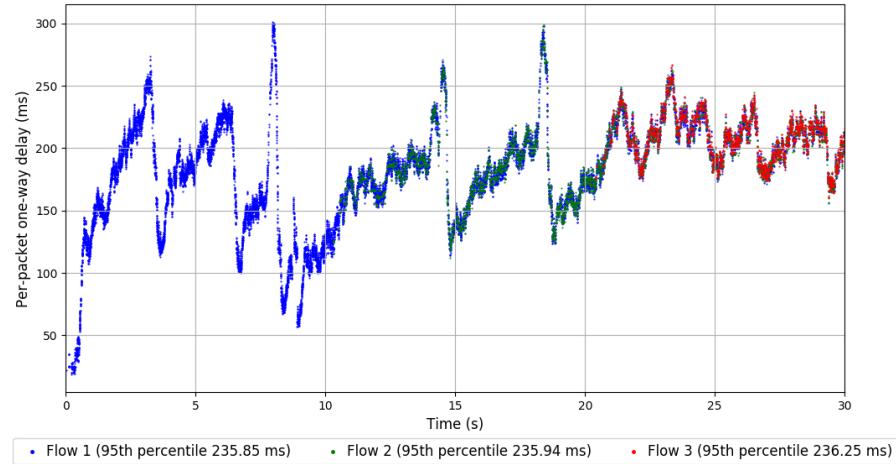
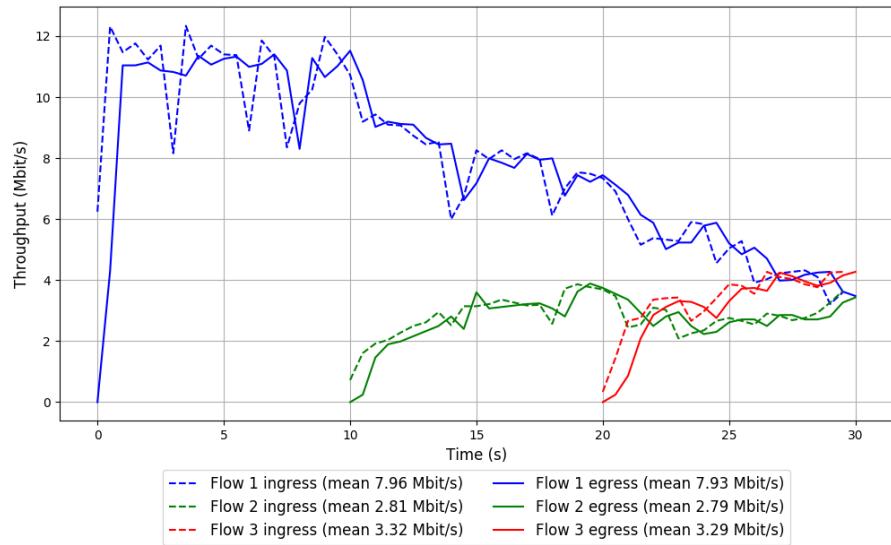


Run 2: Statistics of TCP Cubic

```
Start at: 2019-01-24 23:54:29
End at: 2019-01-24 23:54:59
Local clock offset: -0.863 ms
Remote clock offset: -4.516 ms

# Below is generated by plot.py at 2019-01-25 00:35:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.86 Mbit/s
95th percentile per-packet one-way delay: 236.057 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 7.93 Mbit/s
95th percentile per-packet one-way delay: 235.847 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 235.941 ms
Loss rate: 1.39%
-- Flow 3:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 236.253 ms
Loss rate: 2.54%
```

Run 2: Report of TCP Cubic — Data Link

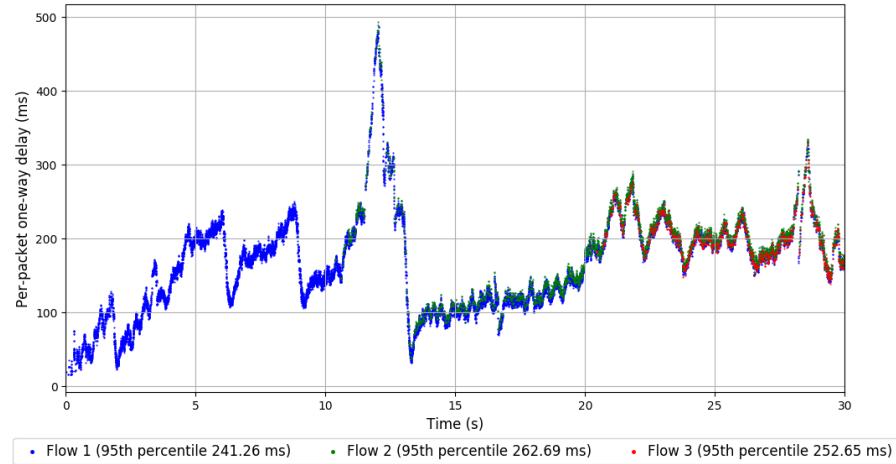
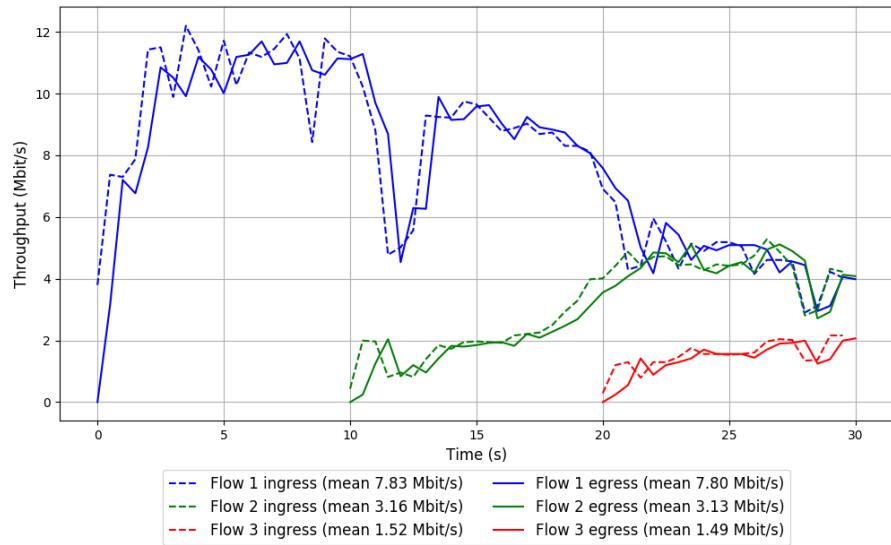


Run 3: Statistics of TCP Cubic

```
Start at: 2019-01-25 00:19:04
End at: 2019-01-25 00:19:34
Local clock offset: 0.684 ms
Remote clock offset: -5.132 ms

# Below is generated by plot.py at 2019-01-25 00:35:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.35 Mbit/s
95th percentile per-packet one-way delay: 249.801 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 7.80 Mbit/s
95th percentile per-packet one-way delay: 241.262 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 262.689 ms
Loss rate: 1.86%
-- Flow 3:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 252.653 ms
Loss rate: 4.04%
```

Run 3: Report of TCP Cubic — Data Link

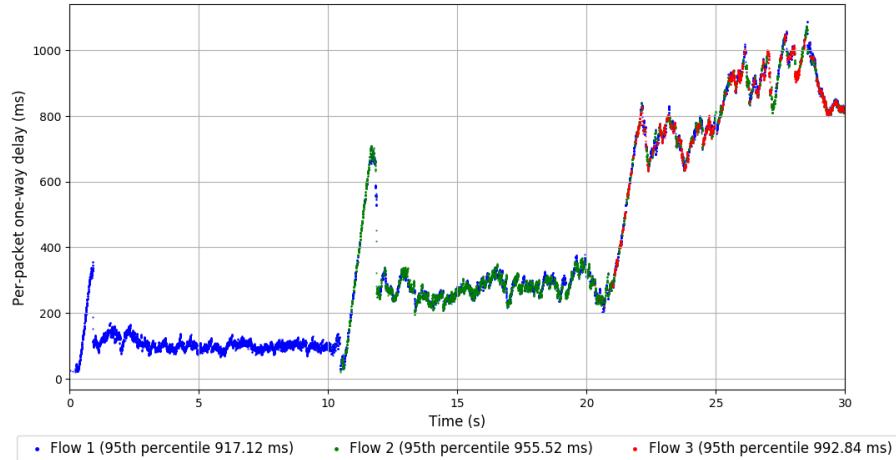
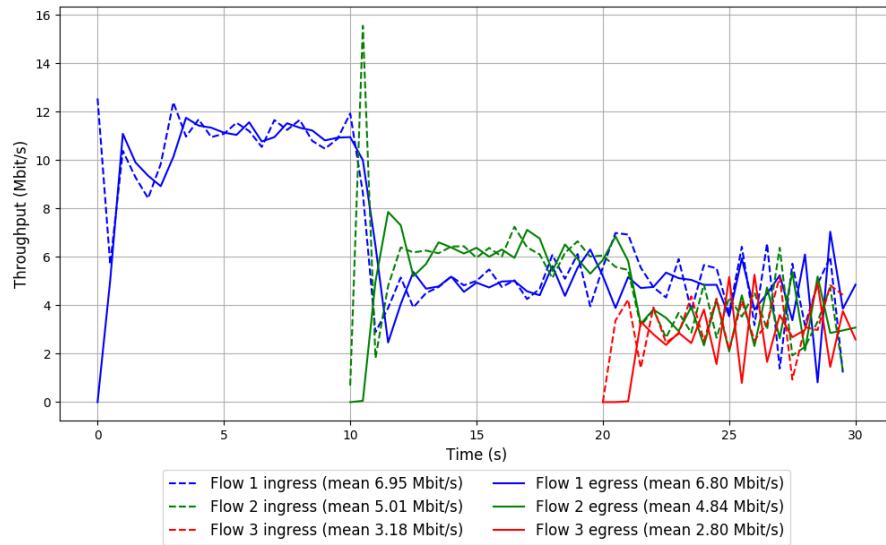


```
Run 1: Statistics of FillP

Start at: 2019-01-24 23:38:13
End at: 2019-01-24 23:38:43
Local clock offset: -1.0 ms
Remote clock offset: -4.925 ms

# Below is generated by plot.py at 2019-01-25 00:35:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.91 Mbit/s
95th percentile per-packet one-way delay: 950.934 ms
Loss rate: 3.66%
-- Flow 1:
Average throughput: 6.80 Mbit/s
95th percentile per-packet one-way delay: 917.122 ms
Loss rate: 2.24%
-- Flow 2:
Average throughput: 4.84 Mbit/s
95th percentile per-packet one-way delay: 955.522 ms
Loss rate: 3.34%
-- Flow 3:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 992.839 ms
Loss rate: 14.11%
```

Run 1: Report of FillP — Data Link

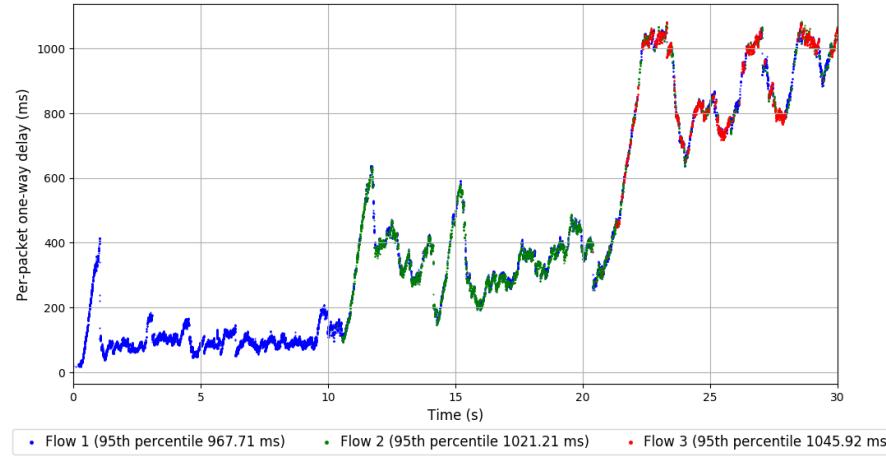
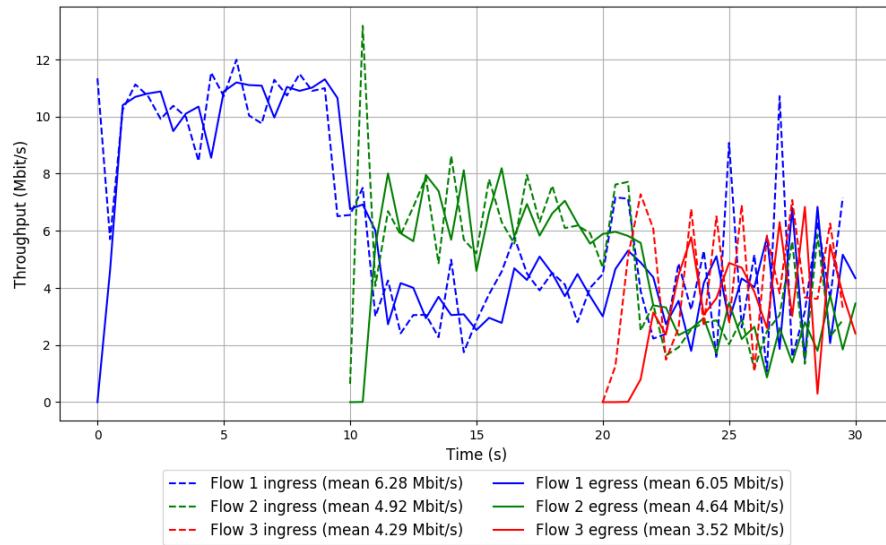


Run 2: Statistics of FillP

```
Start at: 2019-01-25 00:02:38
End at: 2019-01-25 00:03:08
Local clock offset: 2.01 ms
Remote clock offset: -5.454 ms

# Below is generated by plot.py at 2019-01-25 00:35:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.24 Mbit/s
95th percentile per-packet one-way delay: 1021.865 ms
Loss rate: 6.57%
-- Flow 1:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 967.706 ms
Loss rate: 3.72%
-- Flow 2:
Average throughput: 4.64 Mbit/s
95th percentile per-packet one-way delay: 1021.213 ms
Loss rate: 6.39%
-- Flow 3:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 1045.924 ms
Loss rate: 19.74%
```

Run 2: Report of FillP — Data Link

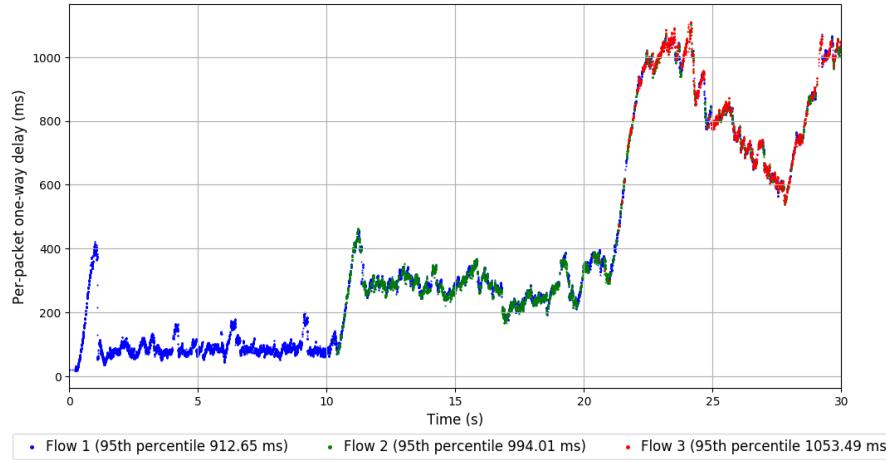
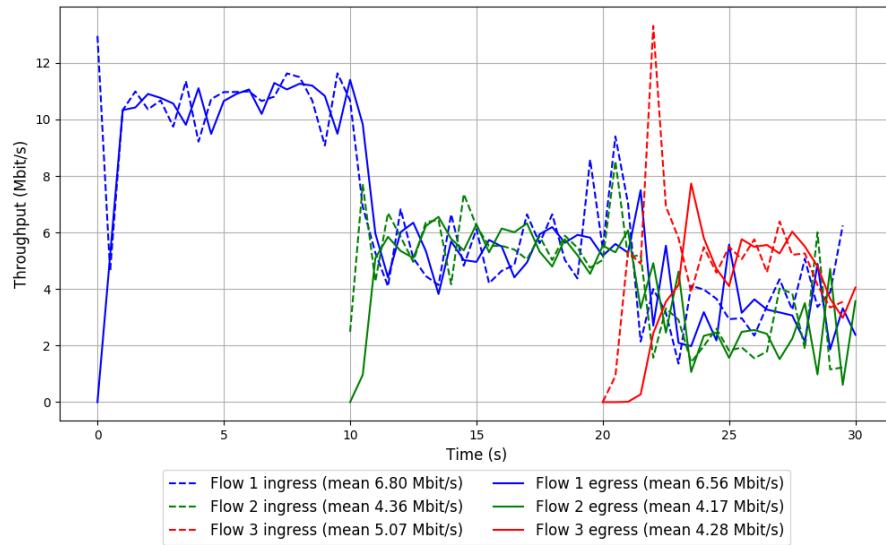


Run 3: Statistics of FillP

```
Start at: 2019-01-25 00:27:15
End at: 2019-01-25 00:27:45
Local clock offset: 2.66 ms
Remote clock offset: -5.474 ms

# Below is generated by plot.py at 2019-01-25 00:35:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.70 Mbit/s
95th percentile per-packet one-way delay: 1007.586 ms
Loss rate: 5.92%
-- Flow 1:
Average throughput: 6.56 Mbit/s
95th percentile per-packet one-way delay: 912.651 ms
Loss rate: 3.56%
-- Flow 2:
Average throughput: 4.17 Mbit/s
95th percentile per-packet one-way delay: 994.012 ms
Loss rate: 4.46%
-- Flow 3:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 1053.493 ms
Loss rate: 18.06%
```

Run 3: Report of FillP — Data Link

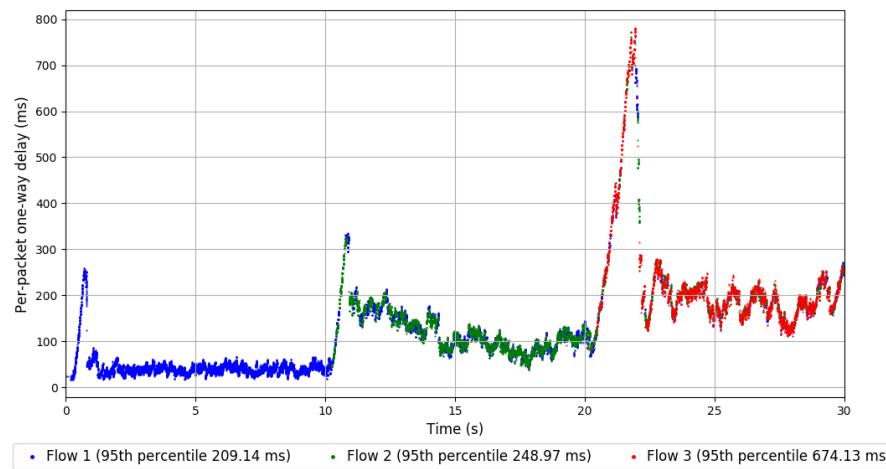
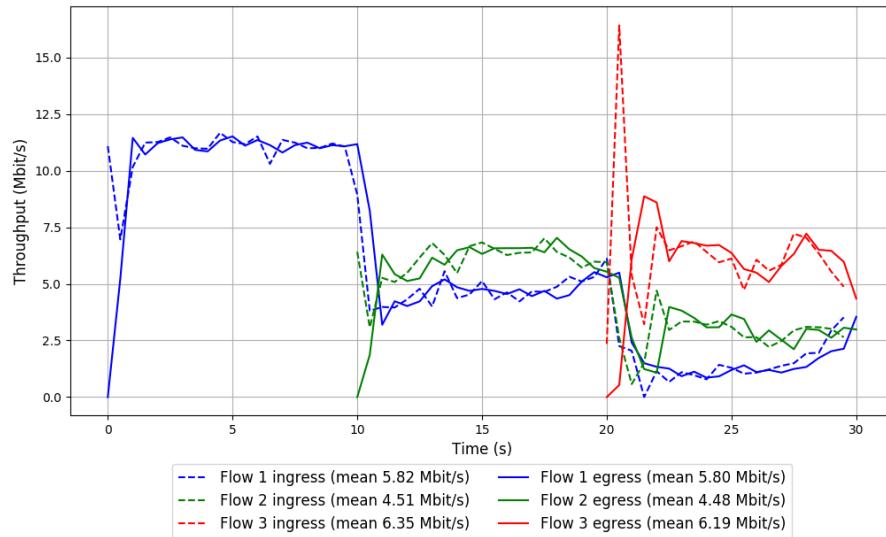


Run 1: Statistics of FillP-Sheep

```
Start at: 2019-01-24 23:40:33
End at: 2019-01-24 23:41:03
Local clock offset: -0.406 ms
Remote clock offset: -3.982 ms

# Below is generated by plot.py at 2019-01-25 00:35:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.82 Mbit/s
95th percentile per-packet one-way delay: 277.208 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 5.80 Mbit/s
95th percentile per-packet one-way delay: 209.140 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 248.975 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 6.19 Mbit/s
95th percentile per-packet one-way delay: 674.129 ms
Loss rate: 3.31%
```

Run 1: Report of FillP-Sheep — Data Link

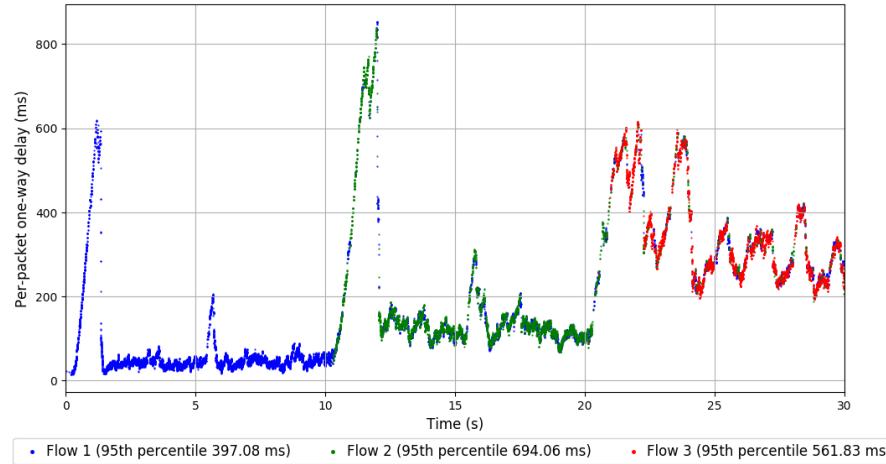
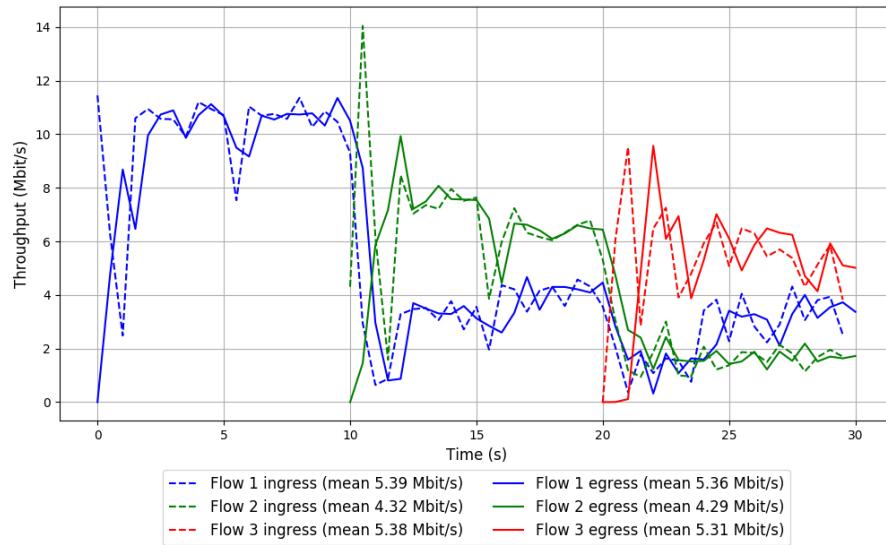


Run 2: Statistics of FillP-Sheep

```
Start at: 2019-01-25 00:04:59
End at: 2019-01-25 00:05:29
Local clock offset: 1.143 ms
Remote clock offset: -4.076 ms

# Below is generated by plot.py at 2019-01-25 00:35:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.96 Mbit/s
95th percentile per-packet one-way delay: 549.425 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 5.36 Mbit/s
95th percentile per-packet one-way delay: 397.080 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 4.29 Mbit/s
95th percentile per-packet one-way delay: 694.059 ms
Loss rate: 0.69%
-- Flow 3:
Average throughput: 5.31 Mbit/s
95th percentile per-packet one-way delay: 561.826 ms
Loss rate: 2.27%
```

Run 2: Report of FillP-Sheep — Data Link

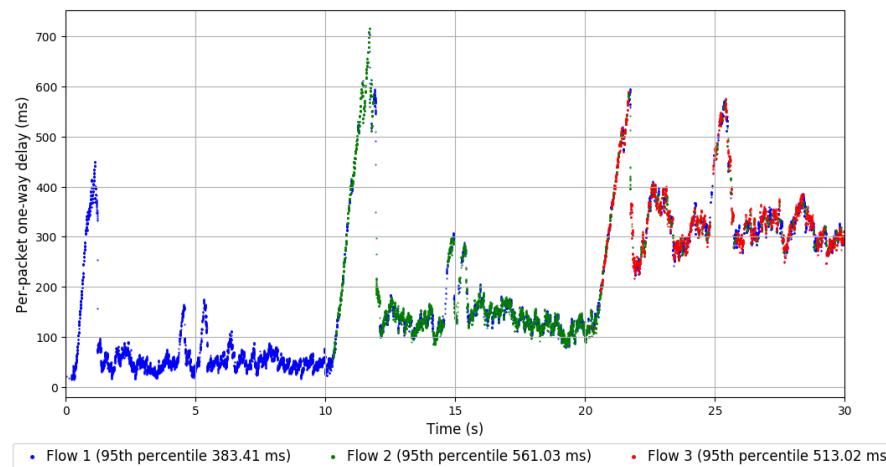
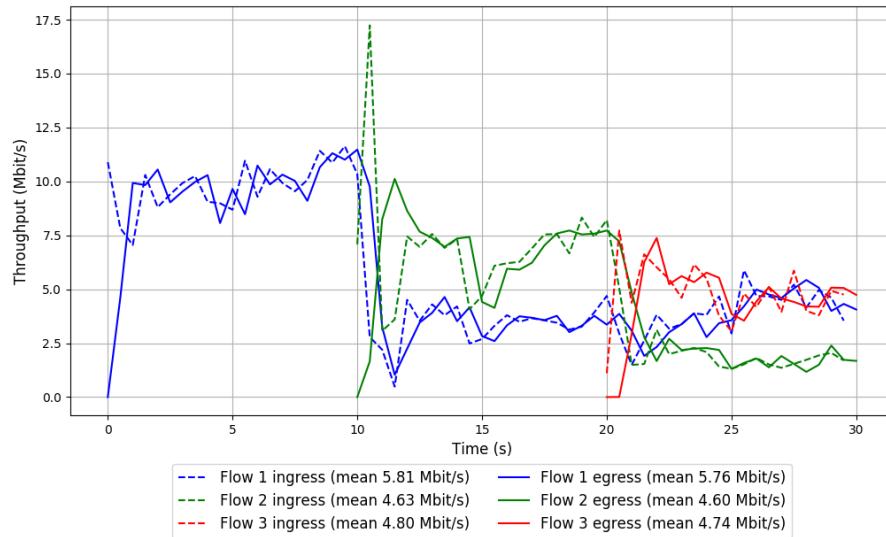


Run 3: Statistics of FillP-Sheep

```
Start at: 2019-01-25 00:29:34
End at: 2019-01-25 00:30:04
Local clock offset: 1.626 ms
Remote clock offset: -5.973 ms

# Below is generated by plot.py at 2019-01-25 00:35:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.38 Mbit/s
95th percentile per-packet one-way delay: 487.621 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 5.76 Mbit/s
95th percentile per-packet one-way delay: 383.408 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 561.031 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 4.74 Mbit/s
95th percentile per-packet one-way delay: 513.016 ms
Loss rate: 2.63%
```

Run 3: Report of FillP-Sheep — Data Link

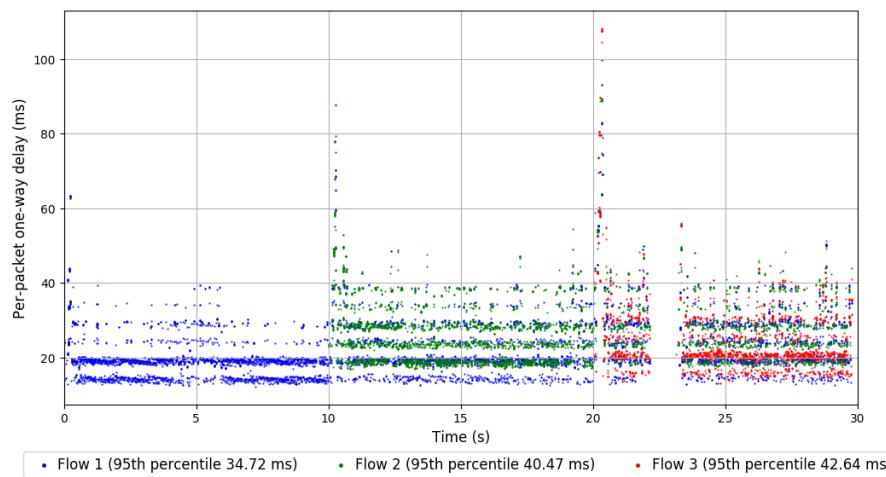
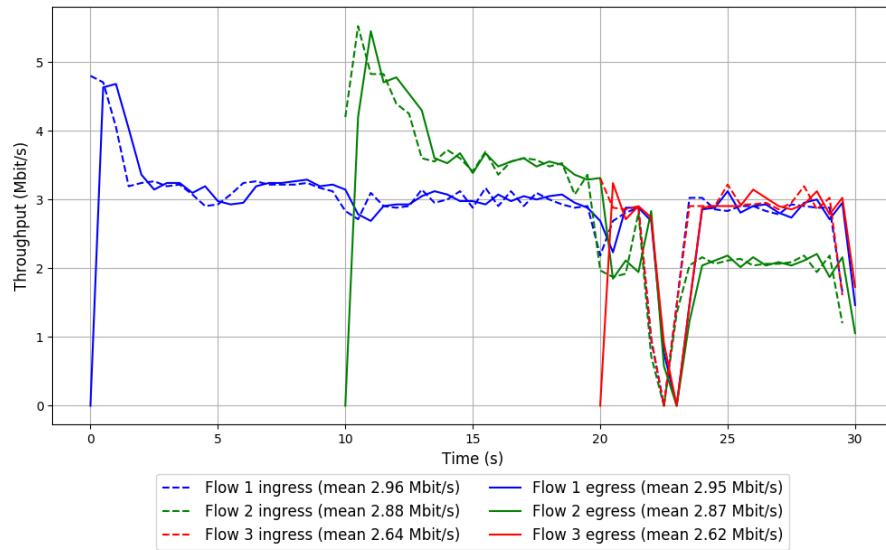


Run 1: Statistics of Indigo

```
Start at: 2019-01-24 23:34:39
End at: 2019-01-24 23:35:09
Local clock offset: 1.575 ms
Remote clock offset: -6.234 ms

# Below is generated by plot.py at 2019-01-25 00:35:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.71 Mbit/s
95th percentile per-packet one-way delay: 38.920 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 34.722 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 40.465 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 42.640 ms
Loss rate: 1.07%
```

Run 1: Report of Indigo — Data Link

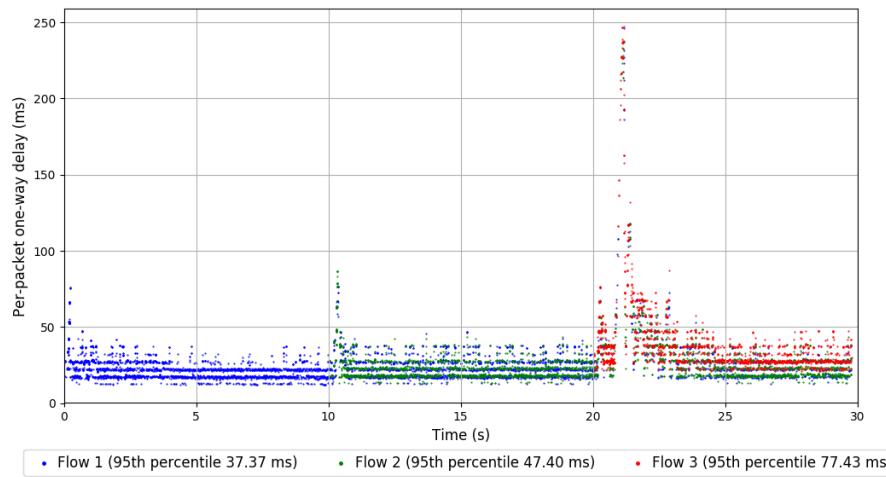
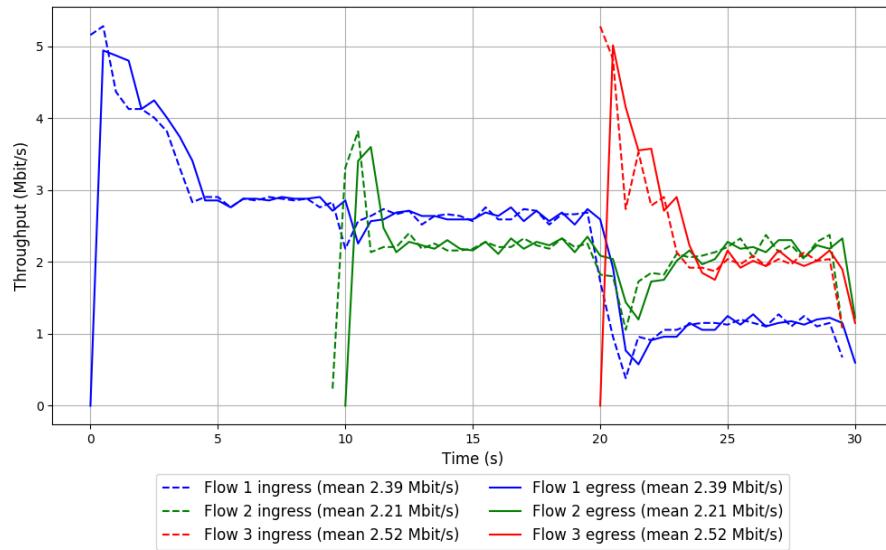


Run 2: Statistics of Indigo

```
Start at: 2019-01-24 23:59:08
End at: 2019-01-24 23:59:38
Local clock offset: -0.123 ms
Remote clock offset: -6.323 ms

# Below is generated by plot.py at 2019-01-25 00:35:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.68 Mbit/s
95th percentile per-packet one-way delay: 51.612 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 37.368 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 47.399 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 2.52 Mbit/s
95th percentile per-packet one-way delay: 77.426 ms
Loss rate: 0.20%
```

Run 2: Report of Indigo — Data Link

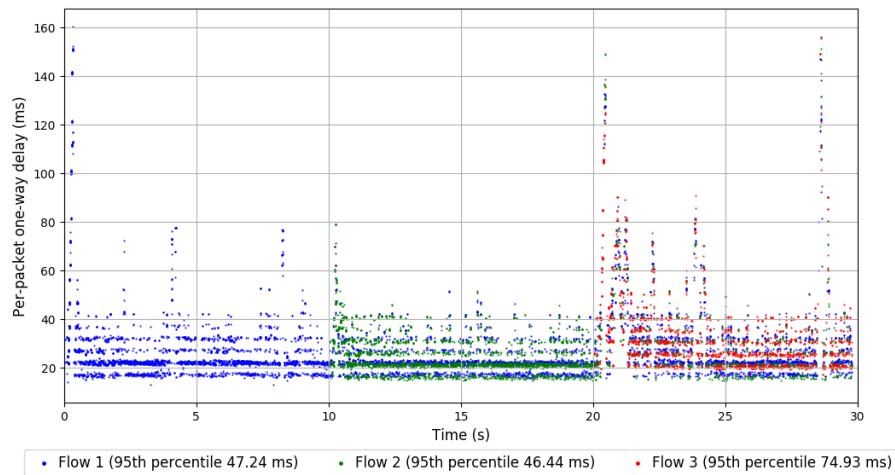
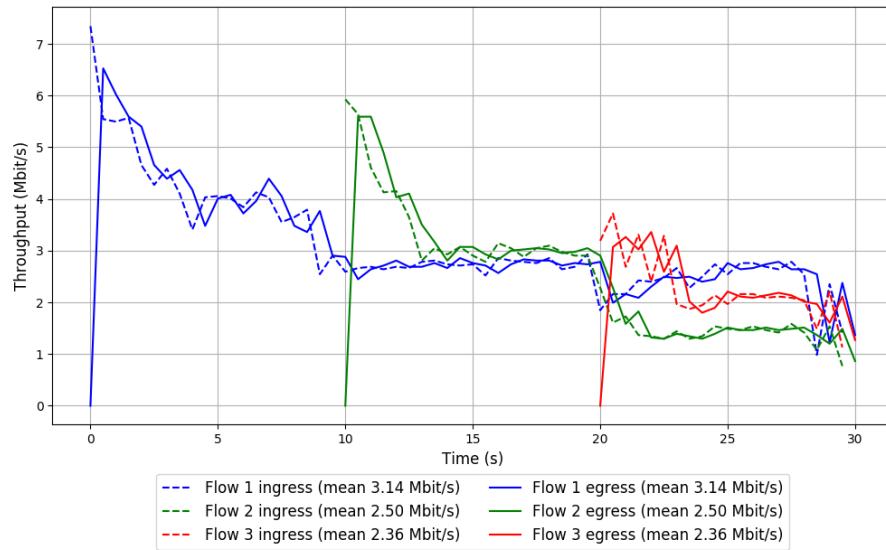


Run 3: Statistics of Indigo

```
Start at: 2019-01-25 00:23:45
End at: 2019-01-25 00:24:15
Local clock offset: 1.487 ms
Remote clock offset: -4.342 ms

# Below is generated by plot.py at 2019-01-25 00:35:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.57 Mbit/s
95th percentile per-packet one-way delay: 55.132 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 3.14 Mbit/s
95th percentile per-packet one-way delay: 47.237 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 46.437 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 74.932 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo — Data Link

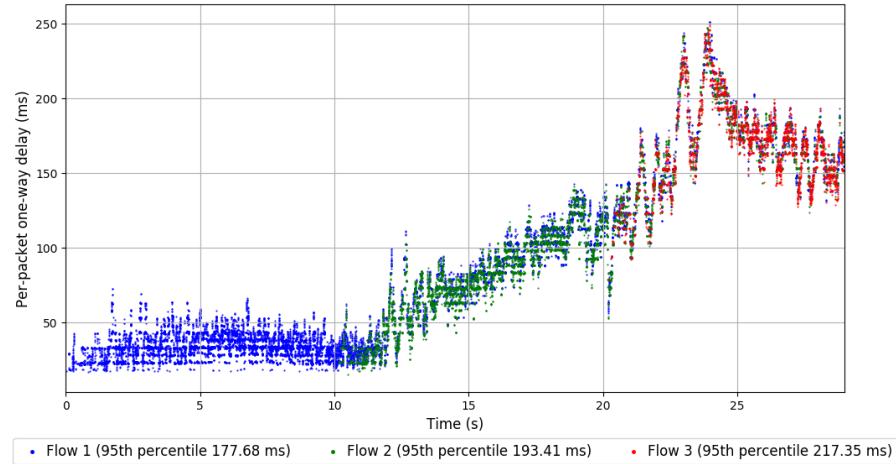
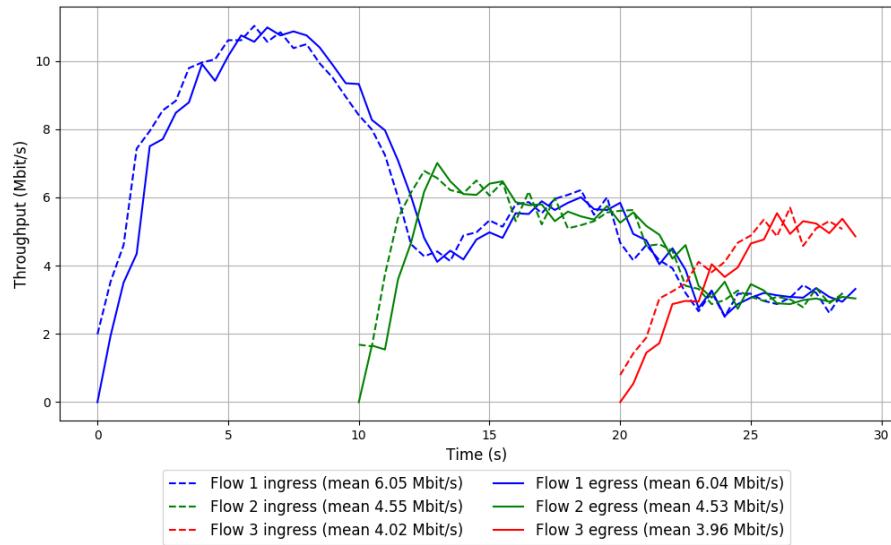


Run 1: Statistics of Indigo-MusesC3

```
Start at: 2019-01-24 23:35:50
End at: 2019-01-24 23:36:20
Local clock offset: -1.175 ms
Remote clock offset: -6.564 ms

# Below is generated by plot.py at 2019-01-25 00:35:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.19 Mbit/s
95th percentile per-packet one-way delay: 192.523 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 6.04 Mbit/s
95th percentile per-packet one-way delay: 177.680 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 4.53 Mbit/s
95th percentile per-packet one-way delay: 193.412 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 3.96 Mbit/s
95th percentile per-packet one-way delay: 217.351 ms
Loss rate: 2.32%
```

Run 1: Report of Indigo-MusesC3 — Data Link

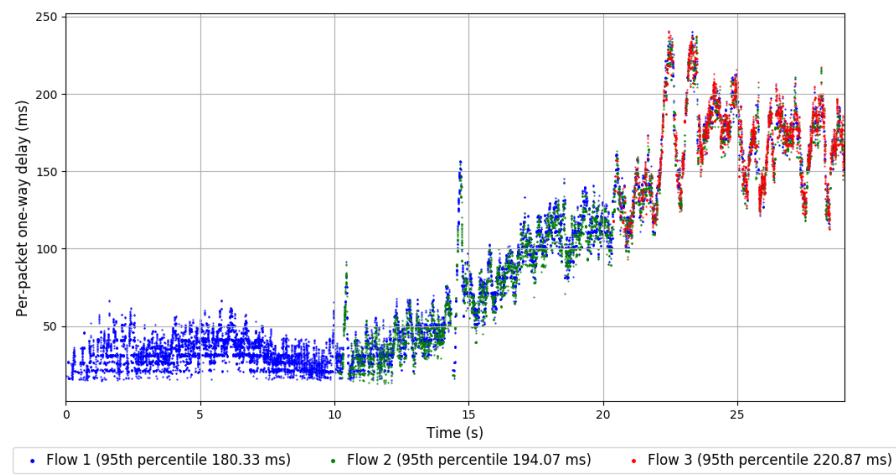
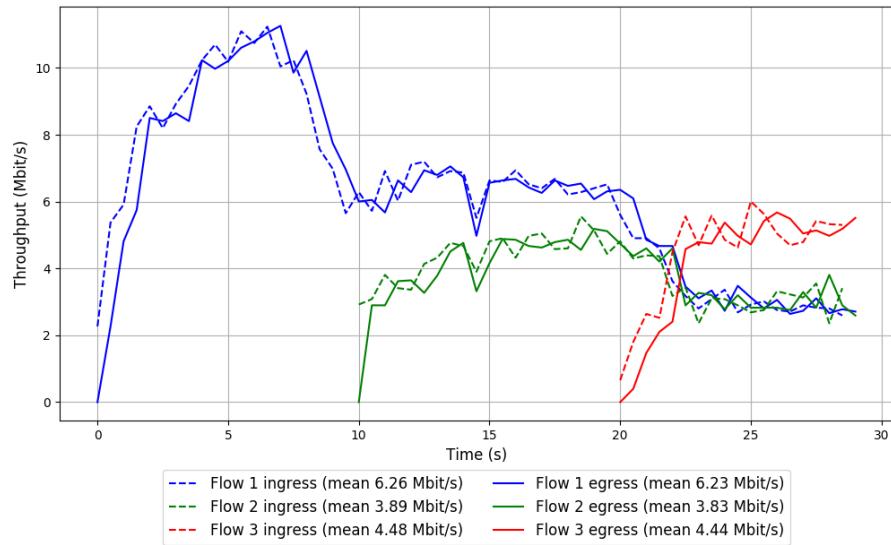


Run 2: Statistics of Indigo-MusesC3

```
Start at: 2019-01-25 00:00:18
End at: 2019-01-25 00:00:48
Local clock offset: 1.106 ms
Remote clock offset: -5.848 ms

# Below is generated by plot.py at 2019-01-25 00:35:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.08 Mbit/s
95th percentile per-packet one-way delay: 193.830 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 6.23 Mbit/s
95th percentile per-packet one-way delay: 180.333 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 3.83 Mbit/s
95th percentile per-packet one-way delay: 194.070 ms
Loss rate: 1.49%
-- Flow 3:
Average throughput: 4.44 Mbit/s
95th percentile per-packet one-way delay: 220.872 ms
Loss rate: 2.05%
```

Run 2: Report of Indigo-MusesC3 — Data Link

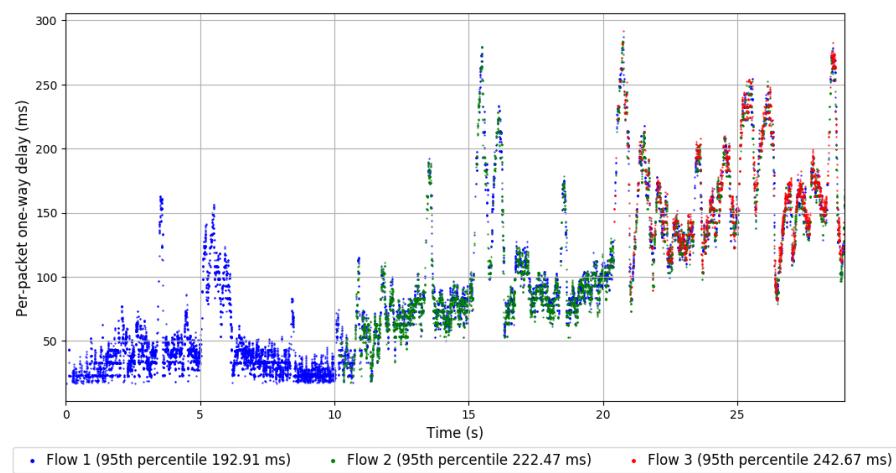
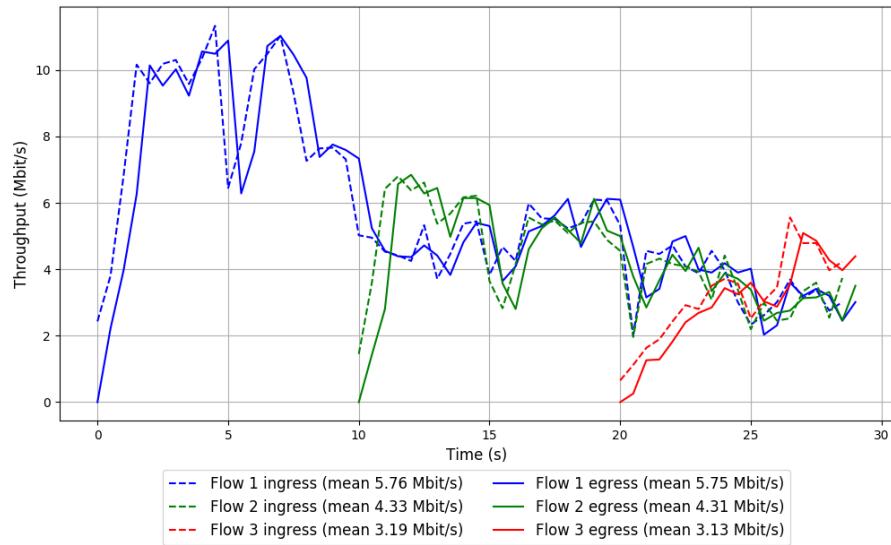


Run 3: Statistics of Indigo-MusesC3

```
Start at: 2019-01-25 00:24:55
End at: 2019-01-25 00:25:25
Local clock offset: 0.843 ms
Remote clock offset: -4.25 ms

# Below is generated by plot.py at 2019-01-25 00:35:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.50 Mbit/s
95th percentile per-packet one-way delay: 213.080 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 5.75 Mbit/s
95th percentile per-packet one-way delay: 192.907 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 222.468 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 242.667 ms
Loss rate: 3.05%
```

Run 3: Report of Indigo-MusesC3 — Data Link

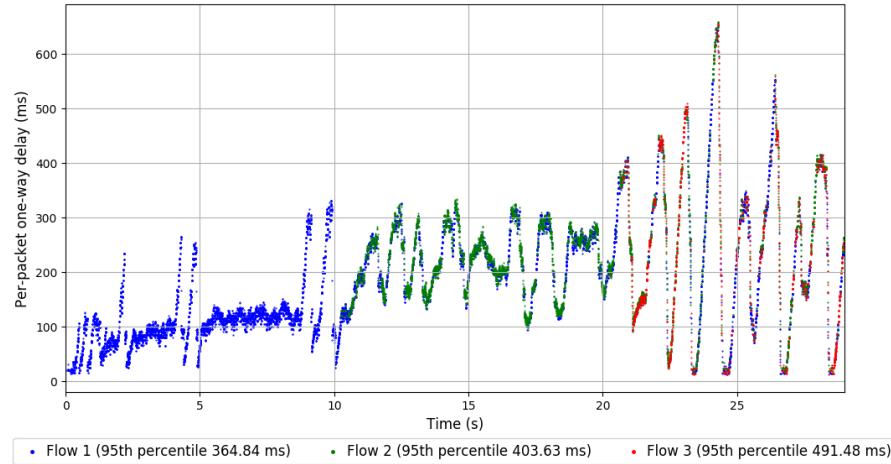
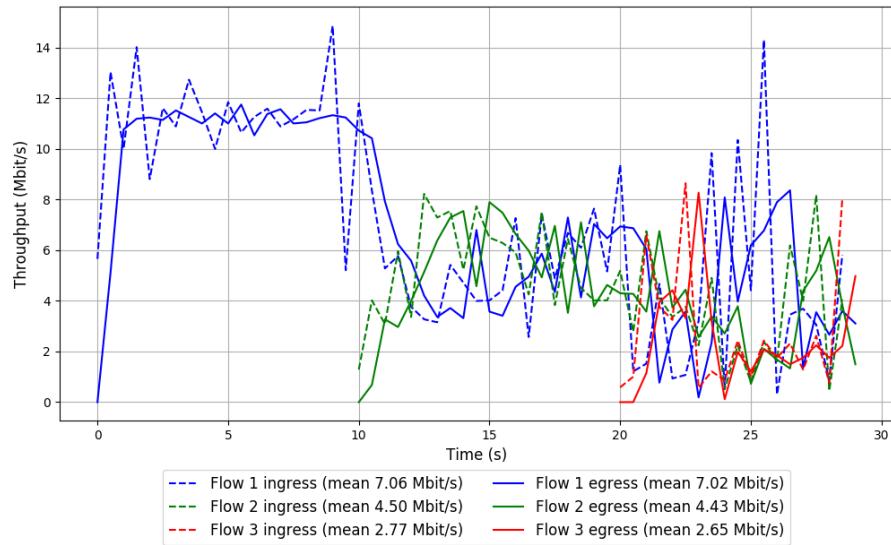


Run 1: Statistics of Indigo-MusesC5

```
Start at: 2019-01-24 23:37:02
End at: 2019-01-24 23:37:32
Local clock offset: 1.366 ms
Remote clock offset: -6.682 ms

# Below is generated by plot.py at 2019-01-25 00:36:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.69 Mbit/s
95th percentile per-packet one-way delay: 399.429 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 7.02 Mbit/s
95th percentile per-packet one-way delay: 364.836 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 4.43 Mbit/s
95th percentile per-packet one-way delay: 403.634 ms
Loss rate: 1.73%
-- Flow 3:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 491.480 ms
Loss rate: 6.42%
```

Run 1: Report of Indigo-MusesC5 — Data Link

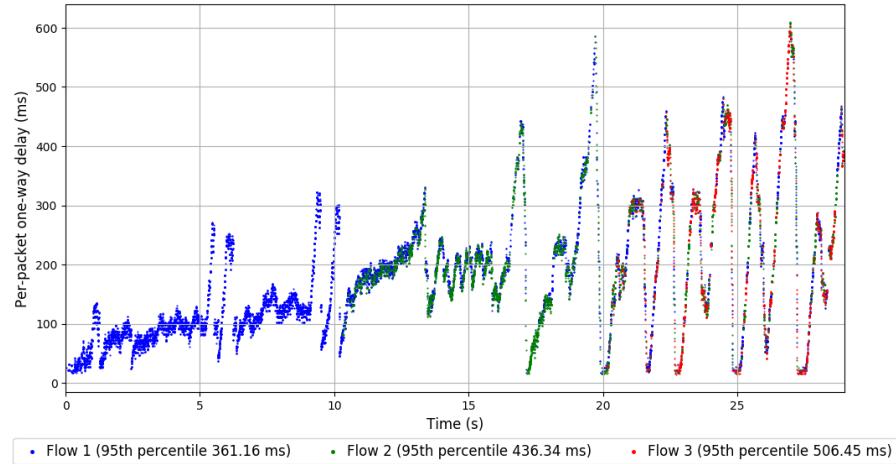
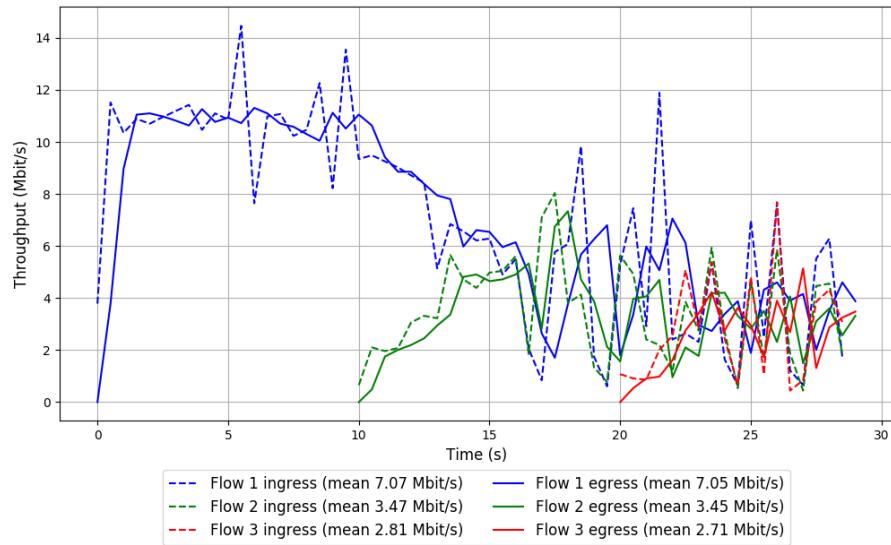


Run 2: Statistics of Indigo-MusesC5

```
Start at: 2019-01-25 00:01:28
End at: 2019-01-25 00:01:58
Local clock offset: -1.033 ms
Remote clock offset: -5.123 ms

# Below is generated by plot.py at 2019-01-25 00:36:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.11 Mbit/s
95th percentile per-packet one-way delay: 406.645 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 7.05 Mbit/s
95th percentile per-packet one-way delay: 361.157 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 436.337 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 506.449 ms
Loss rate: 3.65%
```

Run 2: Report of Indigo-MusesC5 — Data Link

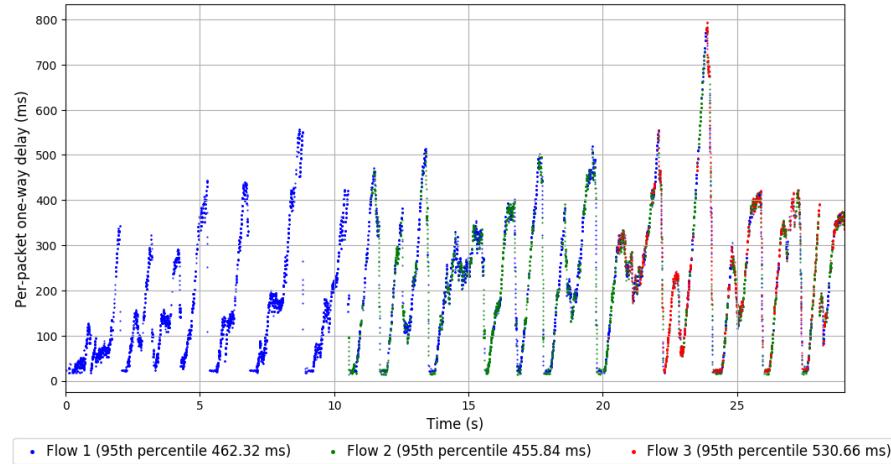
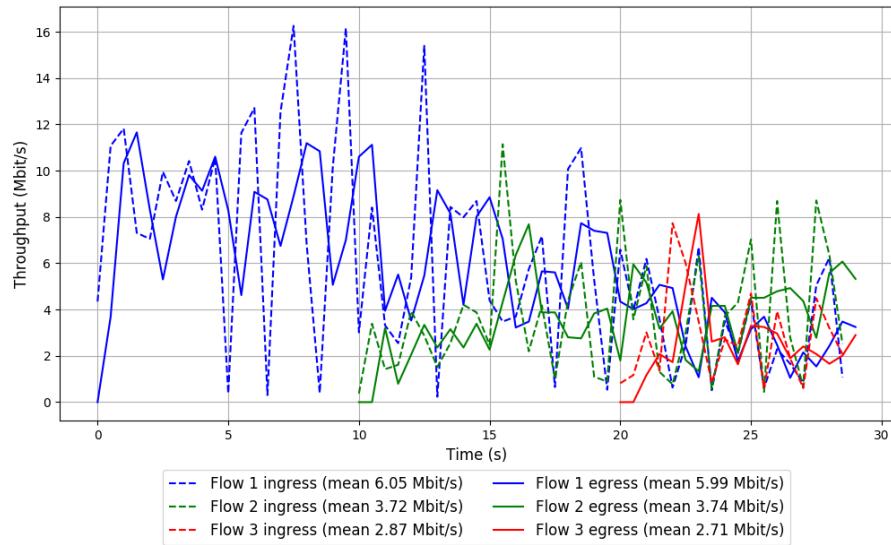


Run 3: Statistics of Indigo-MusesC5

```
Start at: 2019-01-25 00:26:05
End at: 2019-01-25 00:26:35
Local clock offset: -0.113 ms
Remote clock offset: -5.64 ms

# Below is generated by plot.py at 2019-01-25 00:36:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.21 Mbit/s
95th percentile per-packet one-way delay: 462.494 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 5.99 Mbit/s
95th percentile per-packet one-way delay: 462.316 ms
Loss rate: 1.09%
-- Flow 2:
Average throughput: 3.74 Mbit/s
95th percentile per-packet one-way delay: 455.843 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 530.663 ms
Loss rate: 6.59%
```

Run 3: Report of Indigo-MusesC5 — Data Link

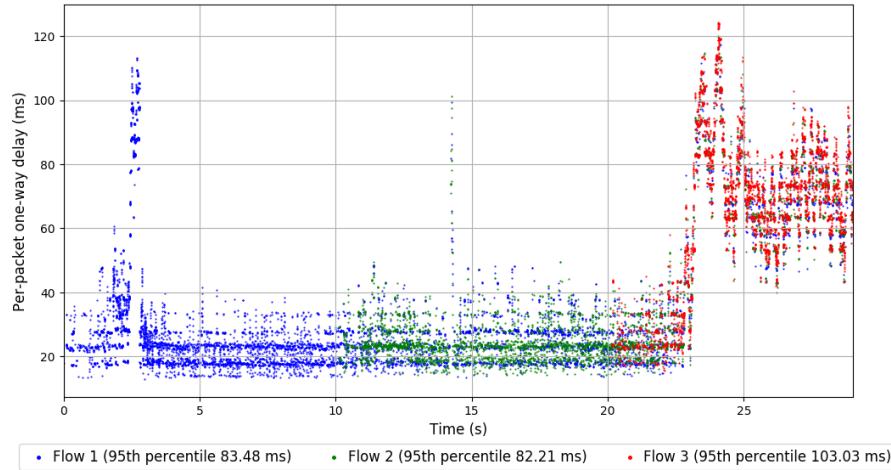
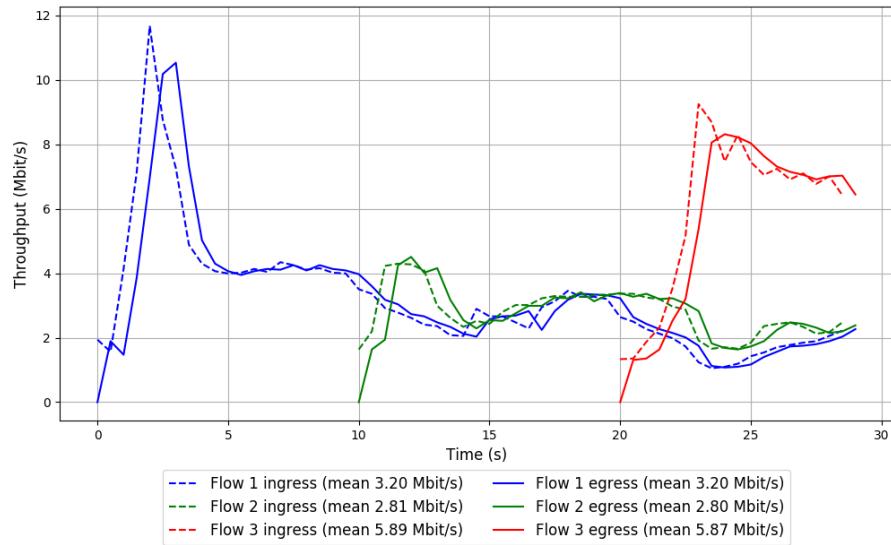


Run 1: Statistics of Indigo-MusesD

```
Start at: 2019-01-24 23:45:13
End at: 2019-01-24 23:45:43
Local clock offset: 0.387 ms
Remote clock offset: -6.097 ms

# Below is generated by plot.py at 2019-01-25 00:36:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.83 Mbit/s
95th percentile per-packet one-way delay: 92.072 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 3.20 Mbit/s
95th percentile per-packet one-way delay: 83.484 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 82.206 ms
Loss rate: 0.37%
-- Flow 3:
Average throughput: 5.87 Mbit/s
95th percentile per-packet one-way delay: 103.031 ms
Loss rate: 0.62%
```

Run 1: Report of Indigo-MusesD — Data Link

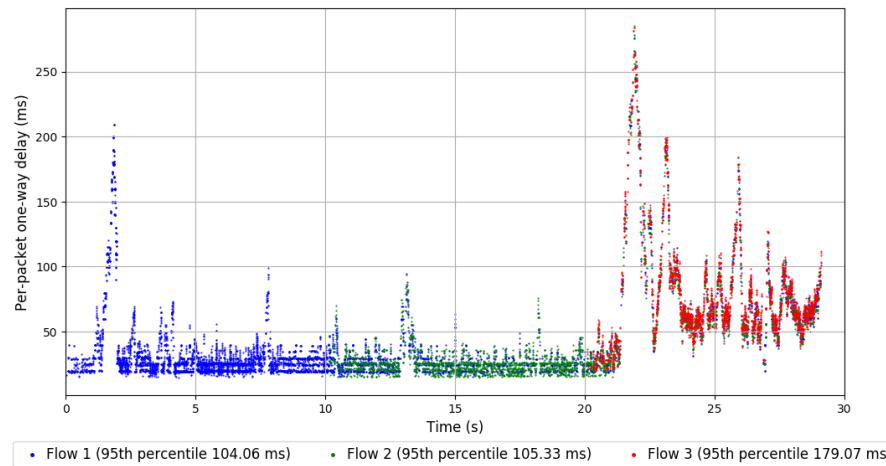
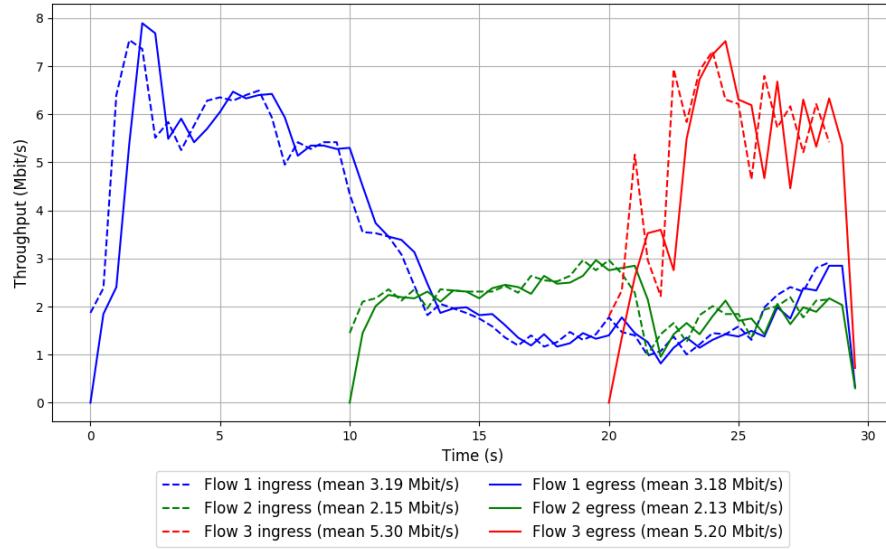


Run 2: Statistics of Indigo-MusesD

```
Start at: 2019-01-25 00:09:48
End at: 2019-01-25 00:10:18
Local clock offset: 1.438 ms
Remote clock offset: -4.053 ms

# Below is generated by plot.py at 2019-01-25 00:36:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.17 Mbit/s
95th percentile per-packet one-way delay: 132.870 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 104.057 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 105.333 ms
Loss rate: 0.46%
-- Flow 3:
Average throughput: 5.20 Mbit/s
95th percentile per-packet one-way delay: 179.067 ms
Loss rate: 1.04%
```

Run 2: Report of Indigo-MusesD — Data Link

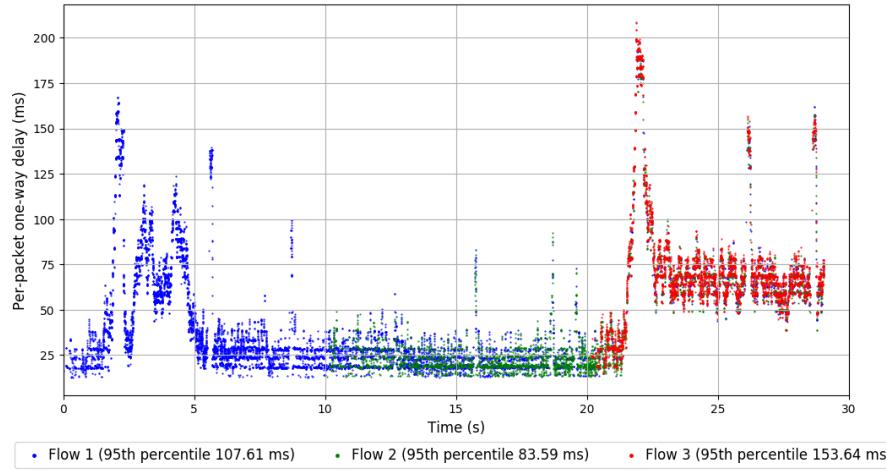
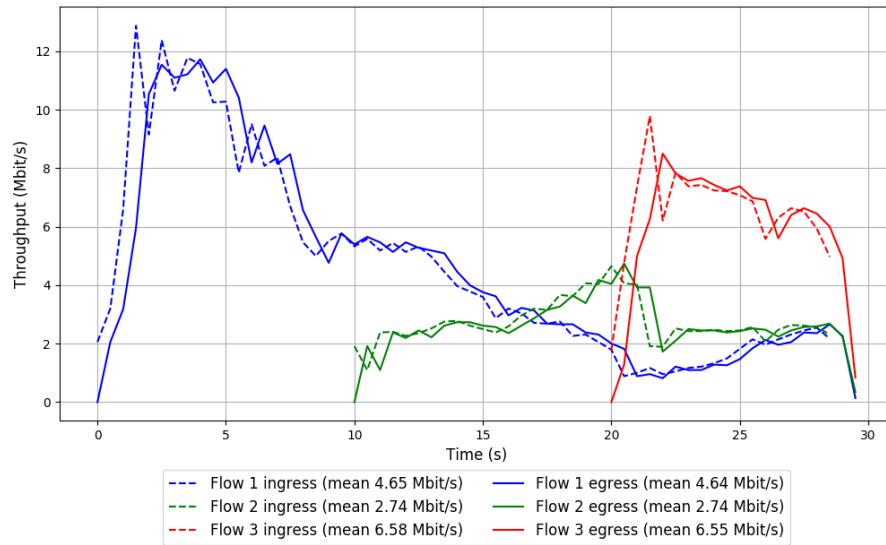


Run 3: Statistics of Indigo-MusesD

```
Start at: 2019-01-25 00:34:39
End at: 2019-01-25 00:35:09
Local clock offset: 1.719 ms
Remote clock offset: -4.706 ms

# Below is generated by plot.py at 2019-01-25 00:36:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.44 Mbit/s
95th percentile per-packet one-way delay: 119.397 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 4.64 Mbit/s
95th percentile per-packet one-way delay: 107.608 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.74 Mbit/s
95th percentile per-packet one-way delay: 83.589 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 6.55 Mbit/s
95th percentile per-packet one-way delay: 153.643 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo-MusesD — Data Link

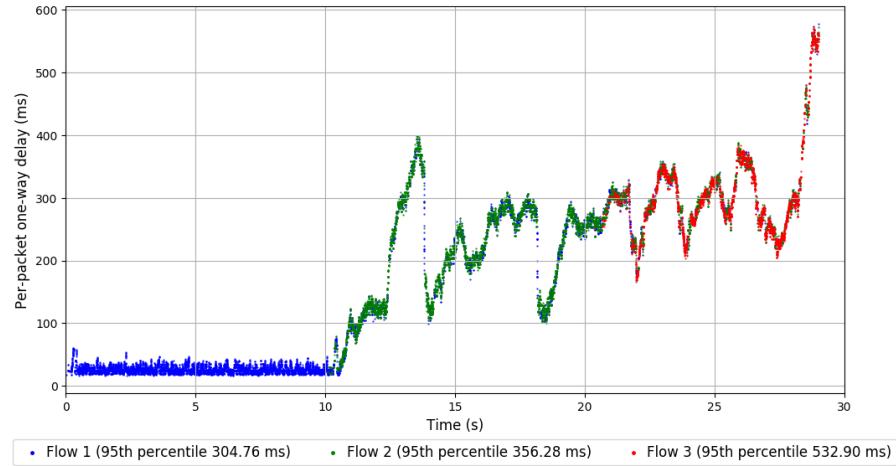
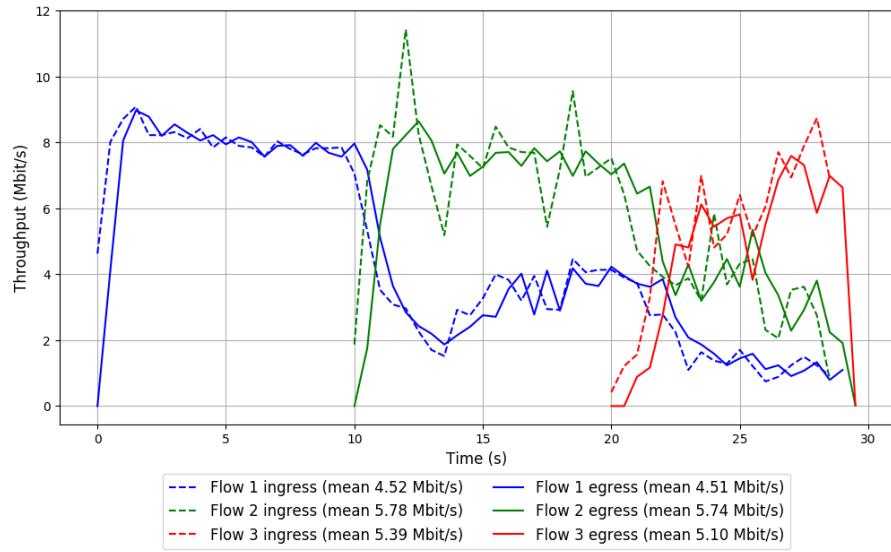


Run 1: Statistics of Indigo-MusesT

```
Start at: 2019-01-24 23:33:29
End at: 2019-01-24 23:33:59
Local clock offset: 1.18 ms
Remote clock offset: -6.254 ms

# Below is generated by plot.py at 2019-01-25 00:36:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 355.000 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 4.51 Mbit/s
95th percentile per-packet one-way delay: 304.760 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 5.74 Mbit/s
95th percentile per-packet one-way delay: 356.281 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 5.10 Mbit/s
95th percentile per-packet one-way delay: 532.897 ms
Loss rate: 7.95%
```

Run 1: Report of Indigo-MusesT — Data Link

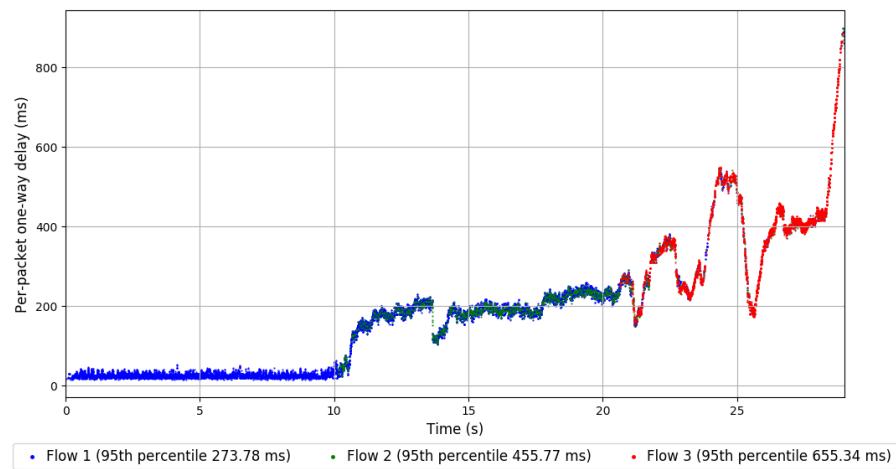
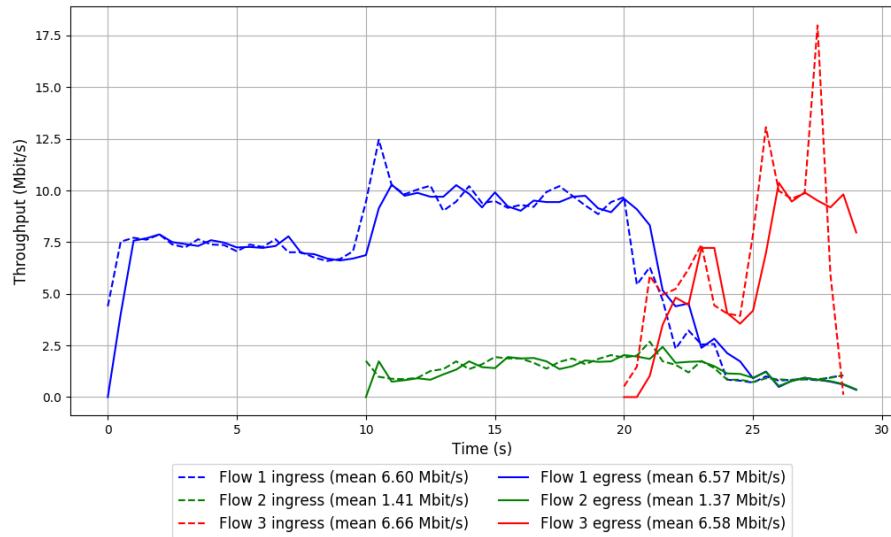


Run 2: Statistics of Indigo-MusesT

```
Start at: 2019-01-24 23:57:58
End at: 2019-01-24 23:58:28
Local clock offset: -0.951 ms
Remote clock offset: -5.291 ms

# Below is generated by plot.py at 2019-01-25 00:36:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.41 Mbit/s
95th percentile per-packet one-way delay: 447.210 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 6.57 Mbit/s
95th percentile per-packet one-way delay: 273.783 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 455.770 ms
Loss rate: 3.28%
-- Flow 3:
Average throughput: 6.58 Mbit/s
95th percentile per-packet one-way delay: 655.341 ms
Loss rate: 4.40%
```

Run 2: Report of Indigo-MusesT — Data Link

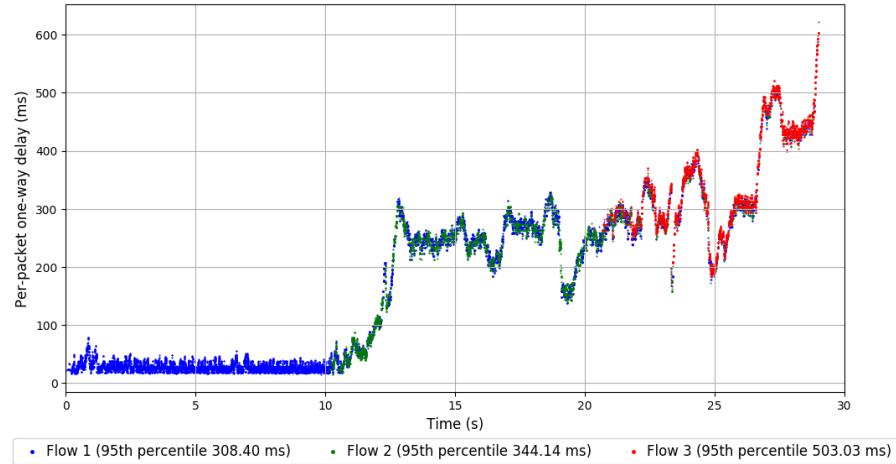
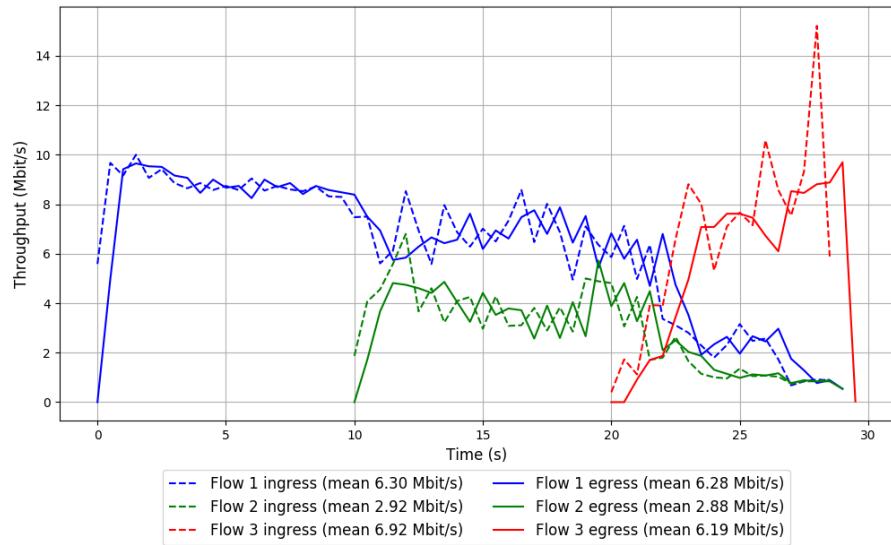


Run 3: Statistics of Indigo-MusesT

```
Start at: 2019-01-25 00:22:35
End at: 2019-01-25 00:23:05
Local clock offset: -0.048 ms
Remote clock offset: -4.291 ms

# Below is generated by plot.py at 2019-01-25 00:36:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.99 Mbit/s
95th percentile per-packet one-way delay: 442.640 ms
Loss rate: 2.60%
-- Flow 1:
Average throughput: 6.28 Mbit/s
95th percentile per-packet one-way delay: 308.397 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 344.138 ms
Loss rate: 1.48%
-- Flow 3:
Average throughput: 6.19 Mbit/s
95th percentile per-packet one-way delay: 503.032 ms
Loss rate: 10.03%
```

Run 3: Report of Indigo-MusesT — Data Link

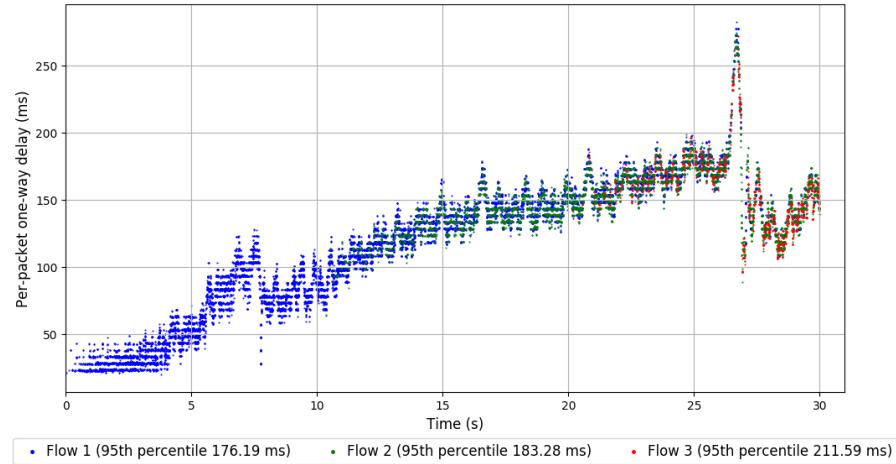
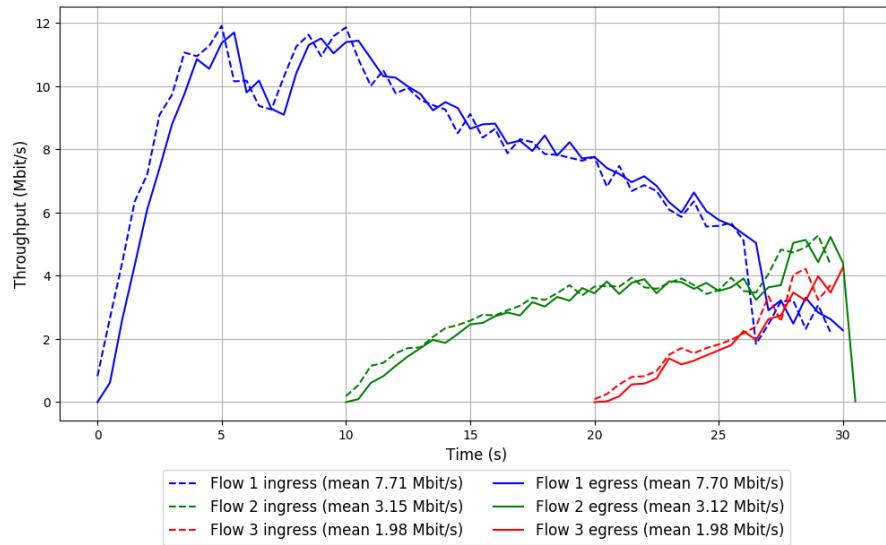


Run 1: Statistics of LEDBAT

```
Start at: 2019-01-24 23:39:23
End at: 2019-01-24 23:39:53
Local clock offset: 1.35 ms
Remote clock offset: -3.536 ms

# Below is generated by plot.py at 2019-01-25 00:36:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.42 Mbit/s
95th percentile per-packet one-way delay: 178.520 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 7.70 Mbit/s
95th percentile per-packet one-way delay: 176.188 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 183.280 ms
Loss rate: 1.21%
-- Flow 3:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 211.595 ms
Loss rate: 1.37%
```

Run 1: Report of LEDBAT — Data Link

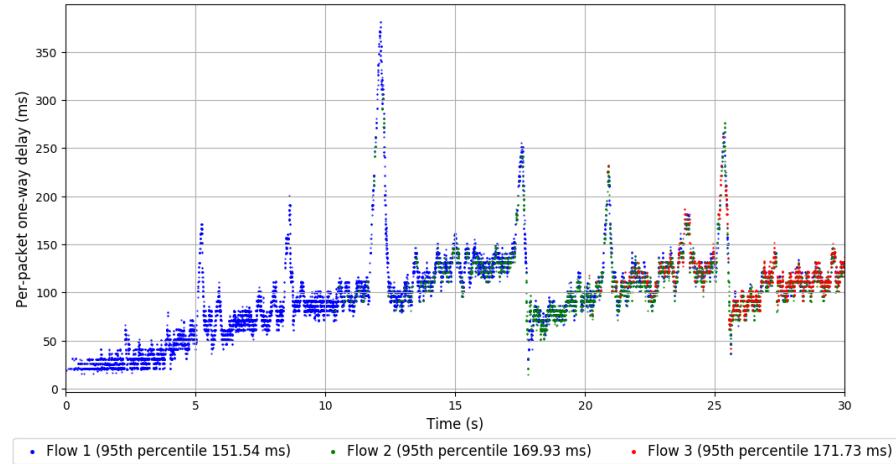
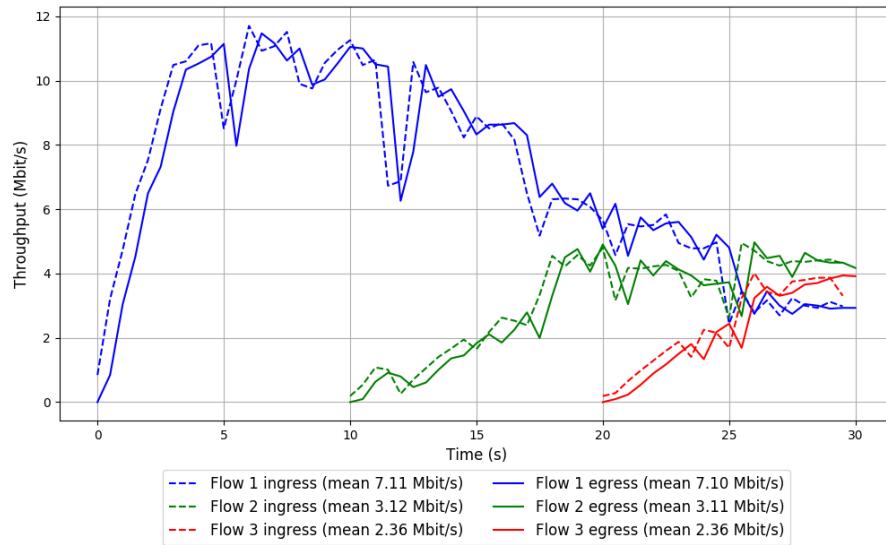


Run 2: Statistics of LEDBAT

```
Start at: 2019-01-25 00:03:48
End at: 2019-01-25 00:04:18
Local clock offset: 0.852 ms
Remote clock offset: -5.526 ms

# Below is generated by plot.py at 2019-01-25 00:36:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.93 Mbit/s
95th percentile per-packet one-way delay: 155.881 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 7.10 Mbit/s
95th percentile per-packet one-way delay: 151.536 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 3.11 Mbit/s
95th percentile per-packet one-way delay: 169.926 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 171.730 ms
Loss rate: 1.05%
```

Run 2: Report of LEDBAT — Data Link

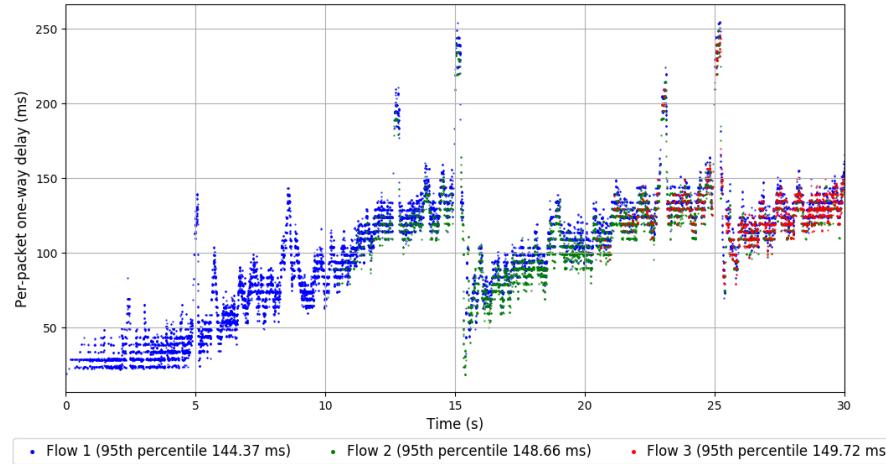
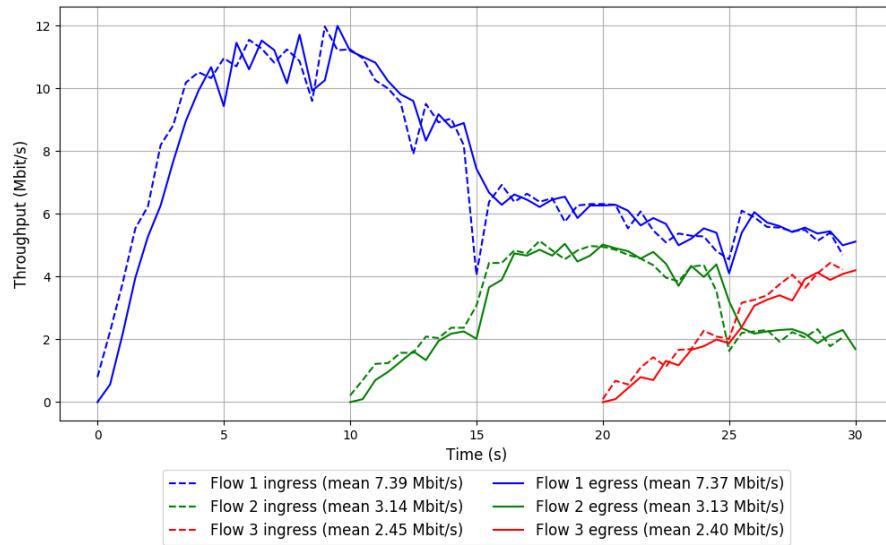


Run 3: Statistics of LEDBAT

```
Start at: 2019-01-25 00:28:24
End at: 2019-01-25 00:28:54
Local clock offset: 2.109 ms
Remote clock offset: -4.251 ms

# Below is generated by plot.py at 2019-01-25 00:36:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.25 Mbit/s
95th percentile per-packet one-way delay: 144.893 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 7.37 Mbit/s
95th percentile per-packet one-way delay: 144.365 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 148.663 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 149.725 ms
Loss rate: 2.74%
```

Run 3: Report of LEDBAT — Data Link

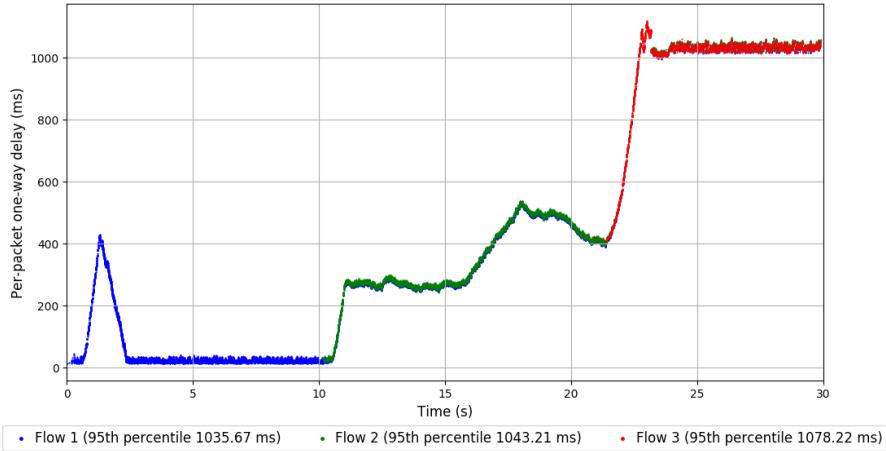
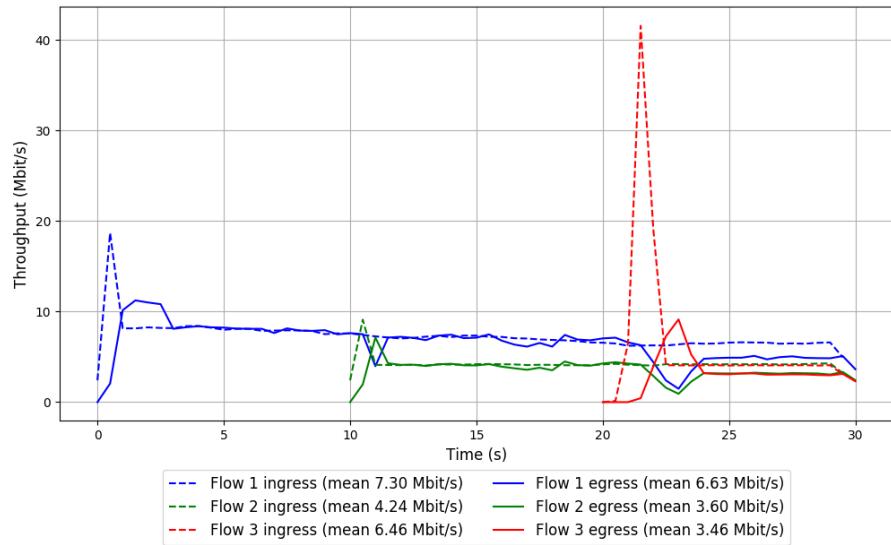


```
Run 1: Statistics of PCC-Allegro
```

```
Start at: 2019-01-24 23:41:43
End at: 2019-01-24 23:42:13
Local clock offset: 0.029 ms
Remote clock offset: -5.852 ms

# Below is generated by plot.py at 2019-01-25 00:36:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.12 Mbit/s
95th percentile per-packet one-way delay: 1041.595 ms
Loss rate: 17.39%
-- Flow 1:
Average throughput: 6.63 Mbit/s
95th percentile per-packet one-way delay: 1035.675 ms
Loss rate: 9.12%
-- Flow 2:
Average throughput: 3.60 Mbit/s
95th percentile per-packet one-way delay: 1043.207 ms
Loss rate: 15.15%
-- Flow 3:
Average throughput: 3.46 Mbit/s
95th percentile per-packet one-way delay: 1078.223 ms
Loss rate: 48.67%
```

Run 1: Report of PCC-Allegro — Data Link

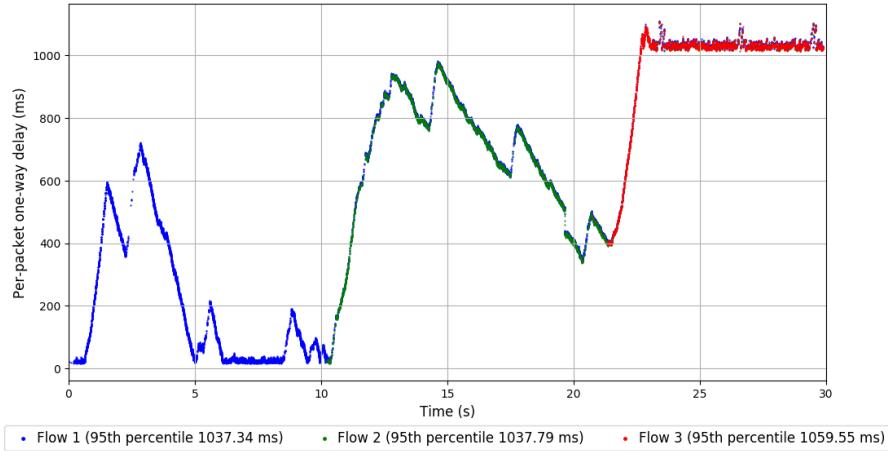
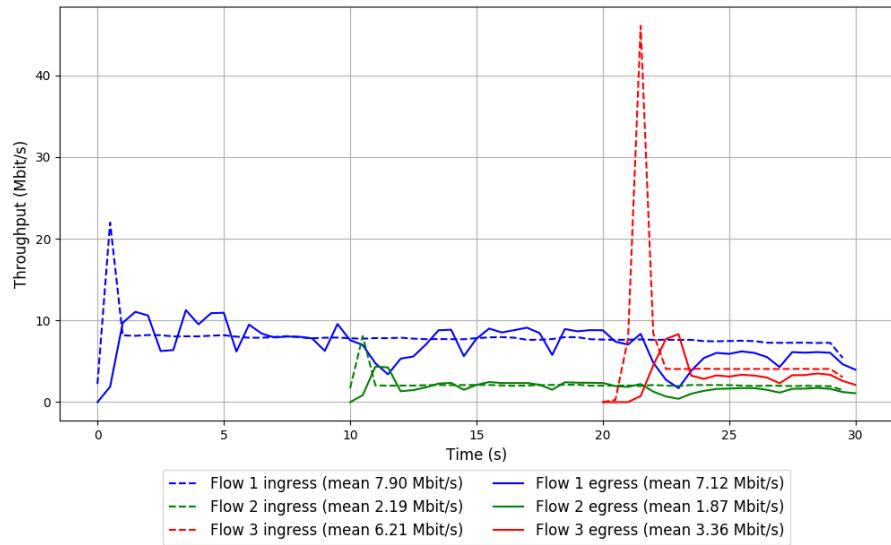


Run 2: Statistics of PCC-Allegro

```
Start at: 2019-01-25 00:06:10
End at: 2019-01-25 00:06:40
Local clock offset: 1.866 ms
Remote clock offset: -6.386 ms

# Below is generated by plot.py at 2019-01-25 00:36:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.43 Mbit/s
95th percentile per-packet one-way delay: 1039.869 ms
Loss rate: 17.37%
-- Flow 1:
Average throughput: 7.12 Mbit/s
95th percentile per-packet one-way delay: 1037.337 ms
Loss rate: 9.98%
-- Flow 2:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 1037.785 ms
Loss rate: 14.66%
-- Flow 3:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 1059.549 ms
Loss rate: 47.80%
```

Run 2: Report of PCC-Allegro — Data Link

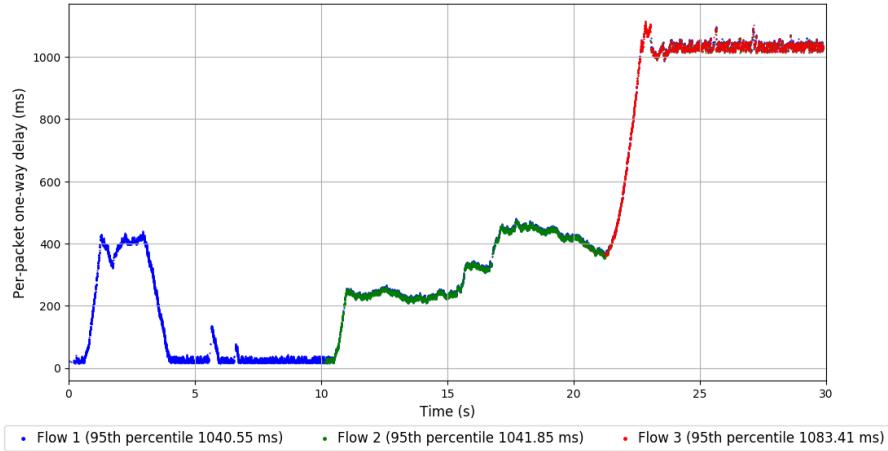
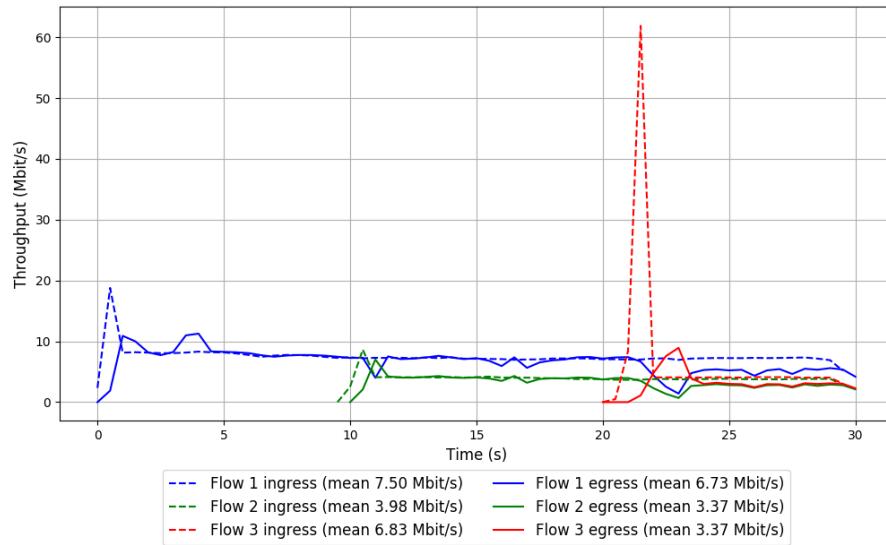


Run 3: Statistics of PCC-Allegro

```
Start at: 2019-01-25 00:30:43
End at: 2019-01-25 00:31:13
Local clock offset: 1.519 ms
Remote clock offset: -5.173 ms

# Below is generated by plot.py at 2019-01-25 00:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.04 Mbit/s
95th percentile per-packet one-way delay: 1043.867 ms
Loss rate: 19.14%
-- Flow 1:
Average throughput: 6.73 Mbit/s
95th percentile per-packet one-way delay: 1040.550 ms
Loss rate: 10.35%
-- Flow 2:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 1041.846 ms
Loss rate: 15.48%
-- Flow 3:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 1083.411 ms
Loss rate: 52.65%
```

Run 3: Report of PCC-Allegro — Data Link

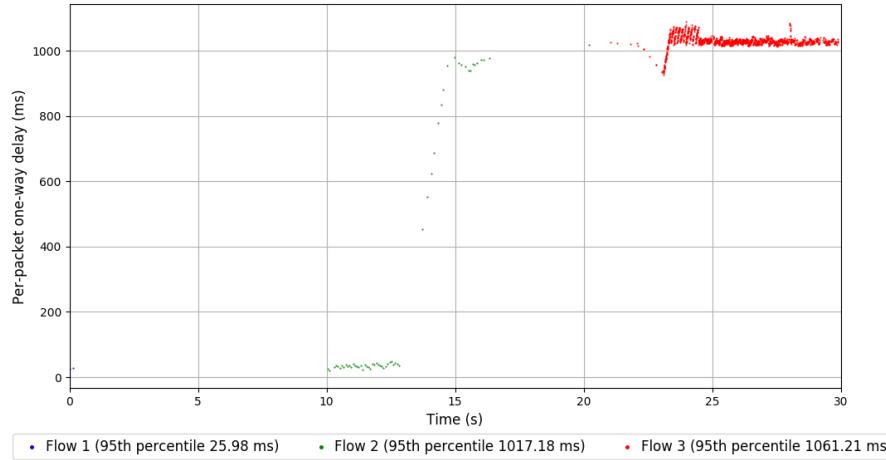
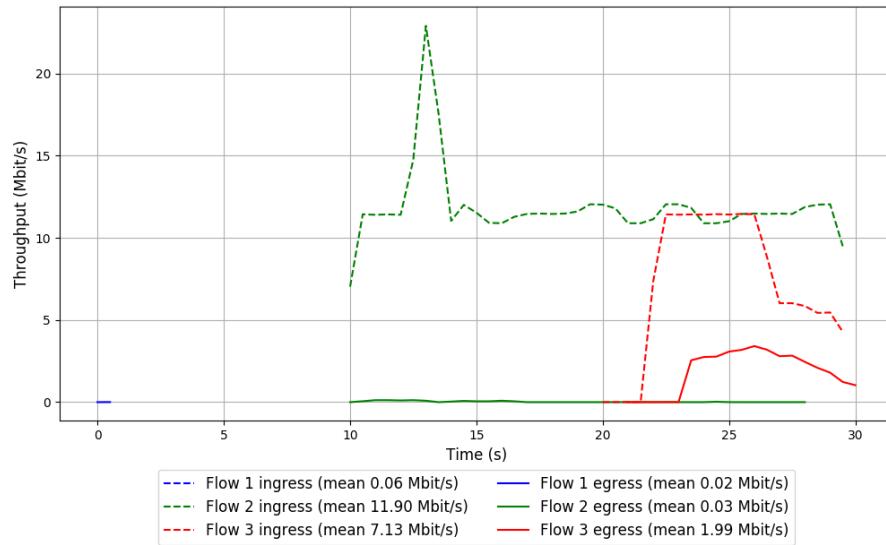


```
Run 1: Statistics of PCC-Expr
```

```
Start at: 2019-01-24 23:42:52
End at: 2019-01-24 23:43:22
Local clock offset: -0.489 ms
Remote clock offset: -4.165 ms

# Below is generated by plot.py at 2019-01-25 00:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 1059.904 ms
Loss rate: 94.11%
-- Flow 1:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 25.983 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 1017.182 ms
Loss rate: 99.79%
-- Flow 3:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 1061.207 ms
Loss rate: 75.01%
```

Run 1: Report of PCC-Expr — Data Link

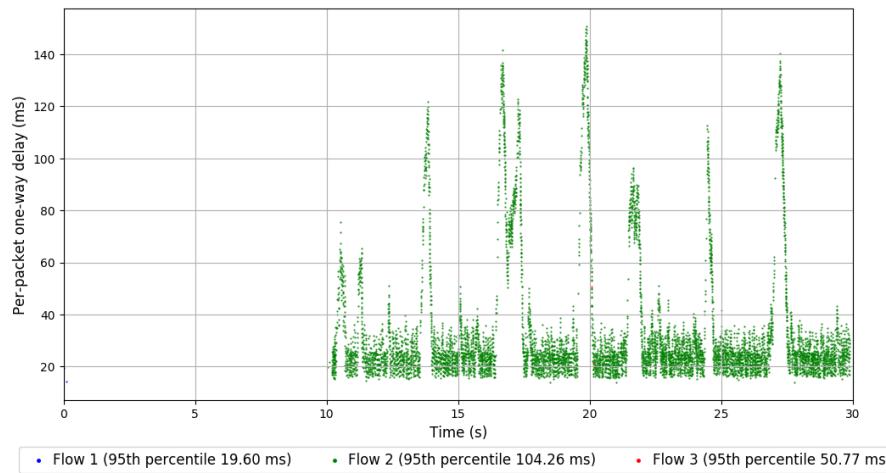
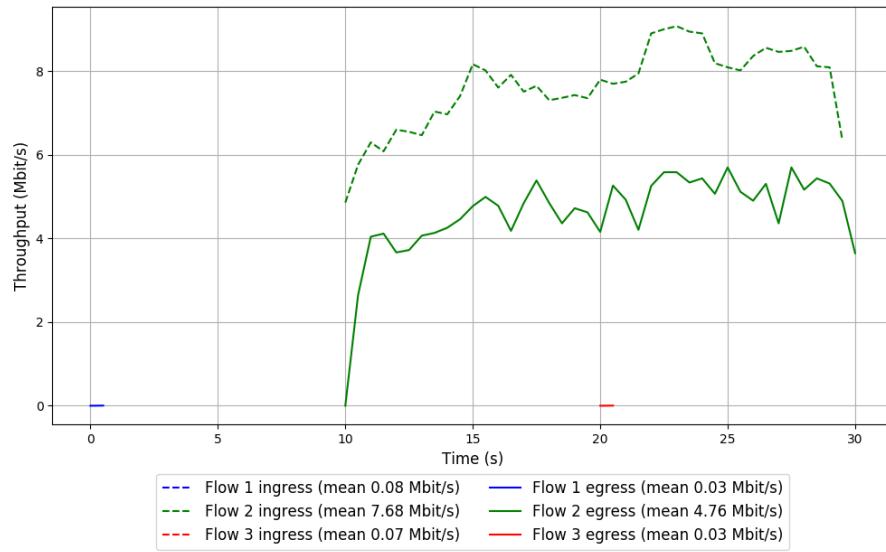


Run 2: Statistics of PCC-Expr

```
Start at: 2019-01-25 00:07:29
End at: 2019-01-25 00:07:59
Local clock offset: 0.094 ms
Remote clock offset: -6.801 ms

# Below is generated by plot.py at 2019-01-25 00:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.16 Mbit/s
95th percentile per-packet one-way delay: 104.264 ms
Loss rate: 38.18%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 19.598 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 4.76 Mbit/s
95th percentile per-packet one-way delay: 104.264 ms
Loss rate: 38.17%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 50.771 ms
Loss rate: 85.71%
```

Run 2: Report of PCC-Expr — Data Link

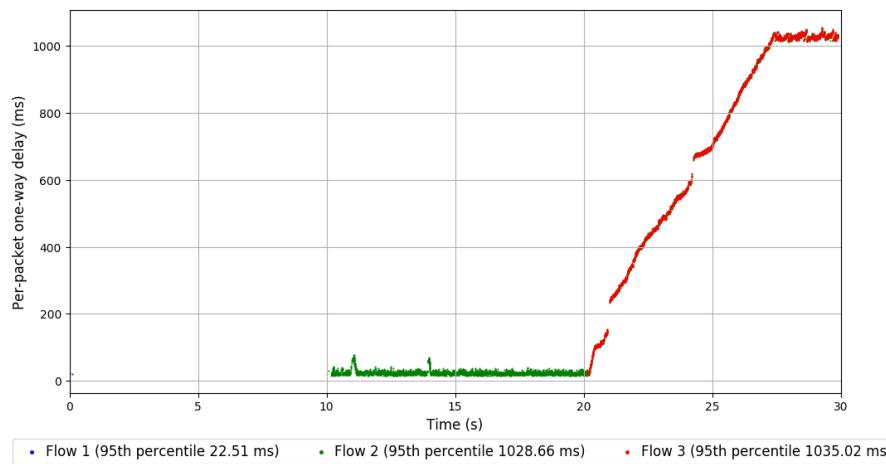
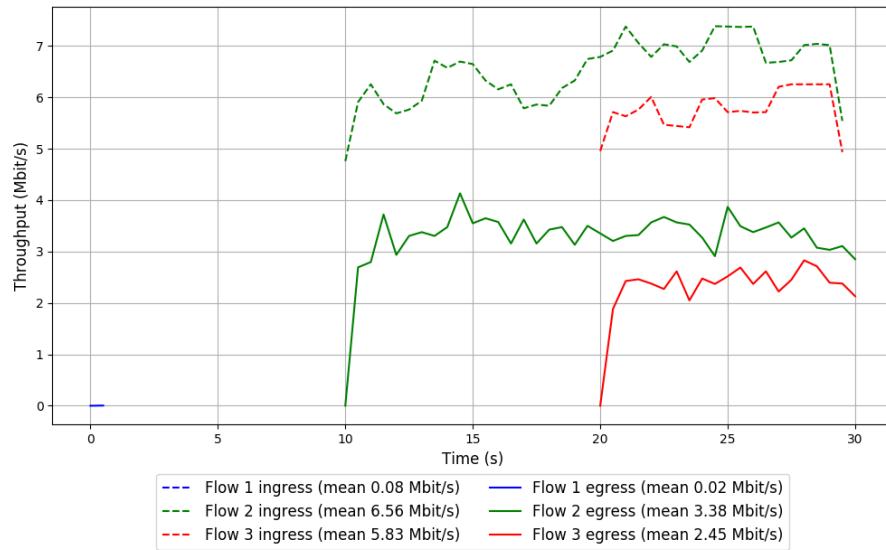


Run 3: Statistics of PCC-Expr

```
Start at: 2019-01-25 00:31:58
End at: 2019-01-25 00:32:28
Local clock offset: -0.952 ms
Remote clock offset: -4.362 ms

# Below is generated by plot.py at 2019-01-25 00:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.05 Mbit/s
95th percentile per-packet one-way delay: 1030.814 ms
Loss rate: 51.52%
-- Flow 1:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 22.506 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 3.38 Mbit/s
95th percentile per-packet one-way delay: 1028.665 ms
Loss rate: 48.57%
-- Flow 3:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 1035.020 ms
Loss rate: 58.18%
```

Run 3: Report of PCC-Expr — Data Link

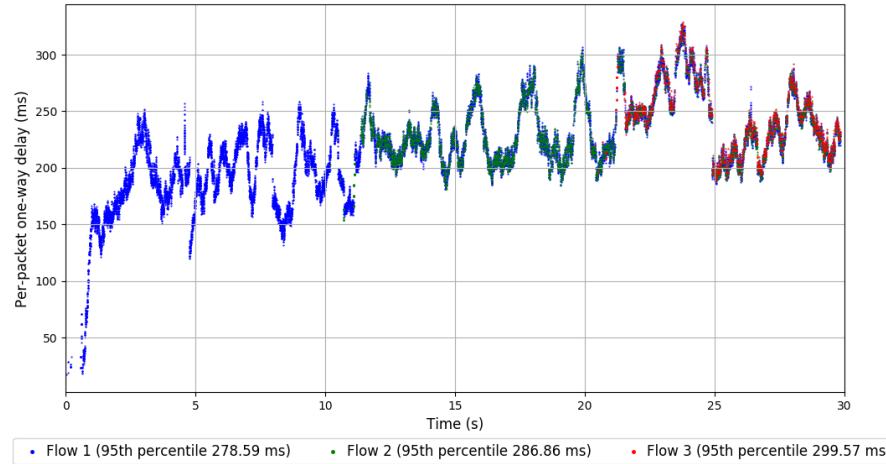
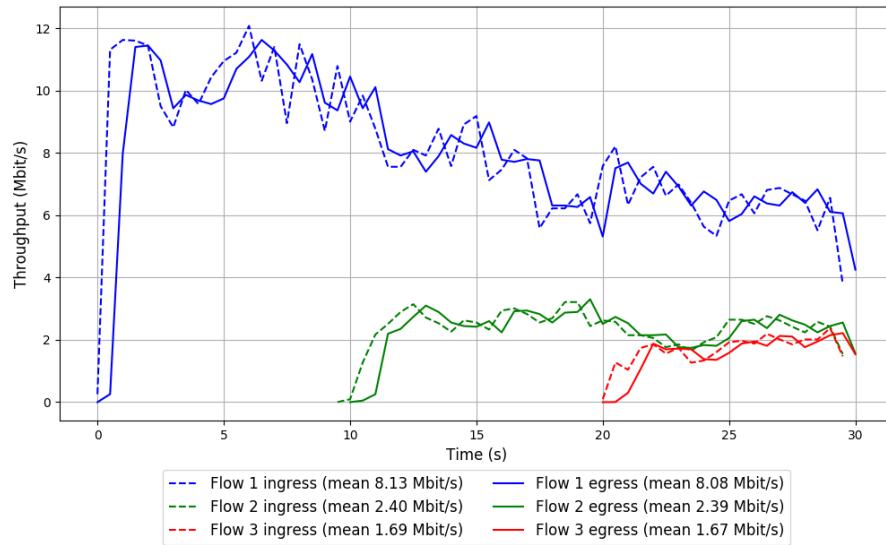


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2019-01-24 23:24:11
End at: 2019-01-24 23:24:41
Local clock offset: 0.889 ms
Remote clock offset: -3.786 ms

# Below is generated by plot.py at 2019-01-25 00:36:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.20 Mbit/s
95th percentile per-packet one-way delay: 281.558 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 8.08 Mbit/s
95th percentile per-packet one-way delay: 278.590 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 286.855 ms
Loss rate: 1.33%
-- Flow 3:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 299.569 ms
Loss rate: 3.20%
```

Run 1: Report of QUIC Cubic — Data Link

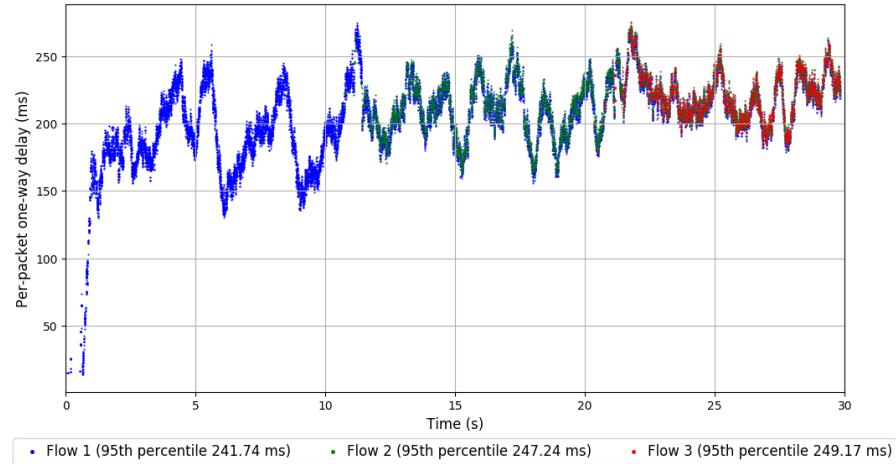
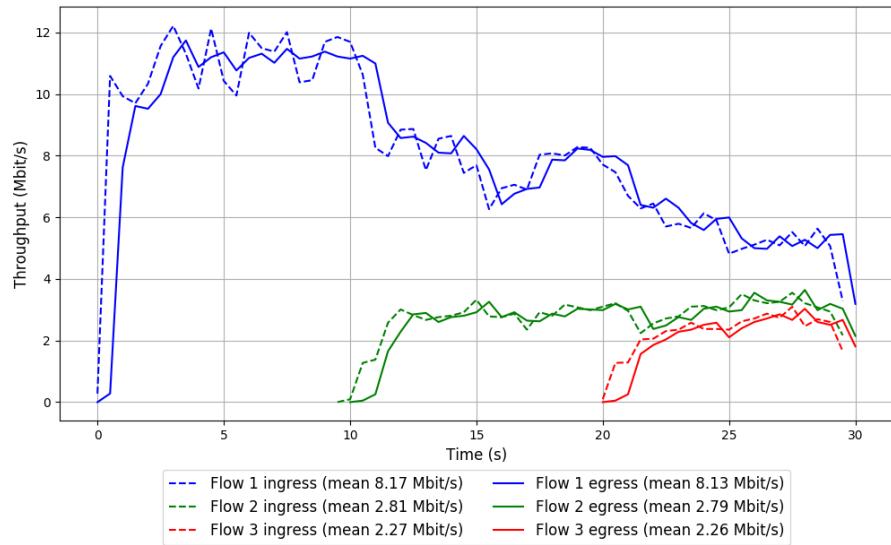


Run 2: Statistics of QUIC Cubic

```
Start at: 2019-01-24 23:48:43
End at: 2019-01-24 23:49:13
Local clock offset: 2.398 ms
Remote clock offset: -4.862 ms

# Below is generated by plot.py at 2019-01-25 00:36:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.70 Mbit/s
95th percentile per-packet one-way delay: 243.646 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 8.13 Mbit/s
95th percentile per-packet one-way delay: 241.743 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 247.236 ms
Loss rate: 1.40%
-- Flow 3:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 249.166 ms
Loss rate: 2.49%
```

Run 2: Report of QUIC Cubic — Data Link

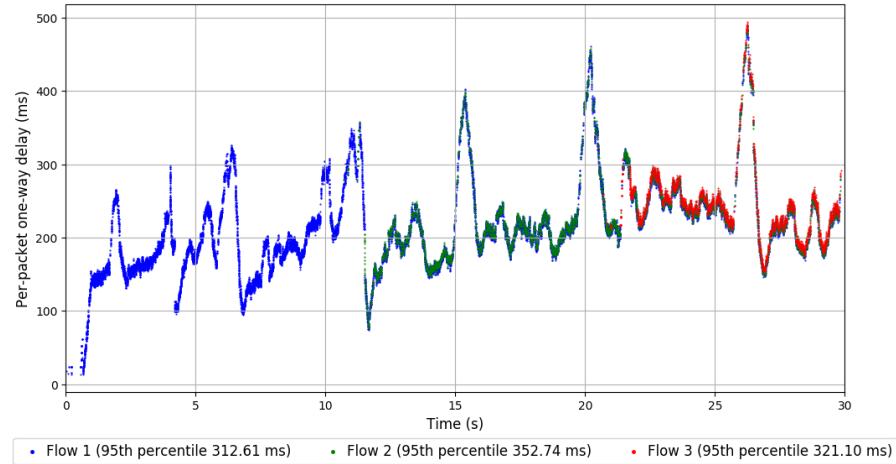
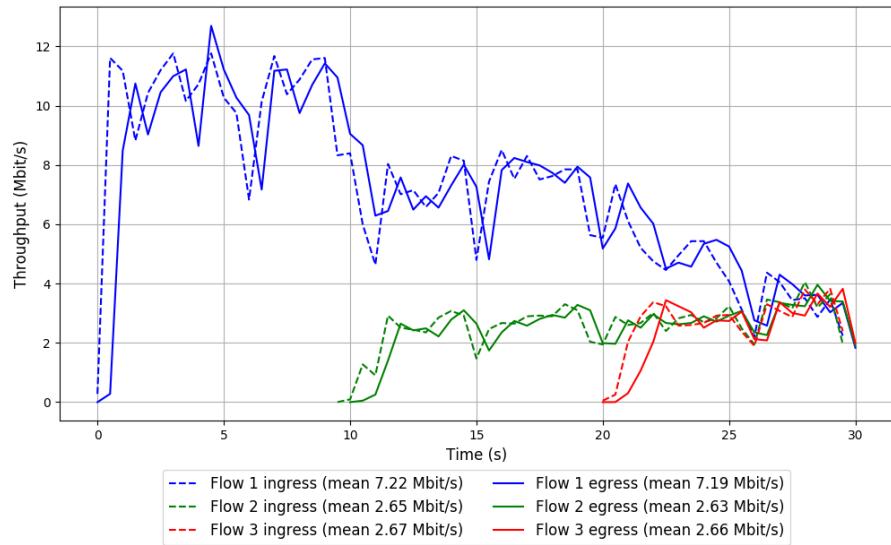


Run 3: Statistics of QUIC Cubic

```
Start at: 2019-01-25 00:13:16
End at: 2019-01-25 00:13:46
Local clock offset: 1.338 ms
Remote clock offset: -5.326 ms

# Below is generated by plot.py at 2019-01-25 00:36:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.76 Mbit/s
95th percentile per-packet one-way delay: 317.074 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 7.19 Mbit/s
95th percentile per-packet one-way delay: 312.605 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 2.63 Mbit/s
95th percentile per-packet one-way delay: 352.740 ms
Loss rate: 1.66%
-- Flow 3:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 321.098 ms
Loss rate: 3.89%
```

Run 3: Report of QUIC Cubic — Data Link

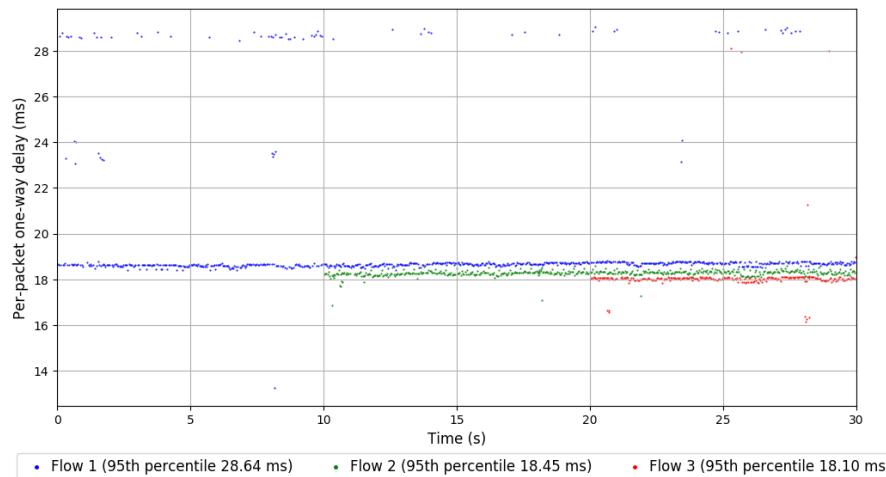
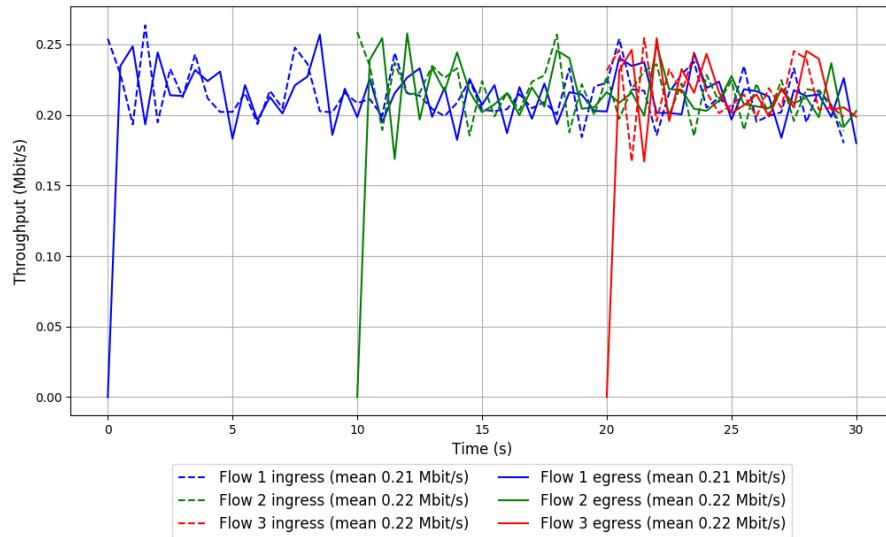


```
Run 1: Statistics of SCReAM
```

```
Start at: 2019-01-24 23:28:51
End at: 2019-01-24 23:29:21
Local clock offset: 1.733 ms
Remote clock offset: -6.173 ms

# Below is generated by plot.py at 2019-01-25 00:36:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 23.156 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 28.640 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 18.452 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 18.098 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

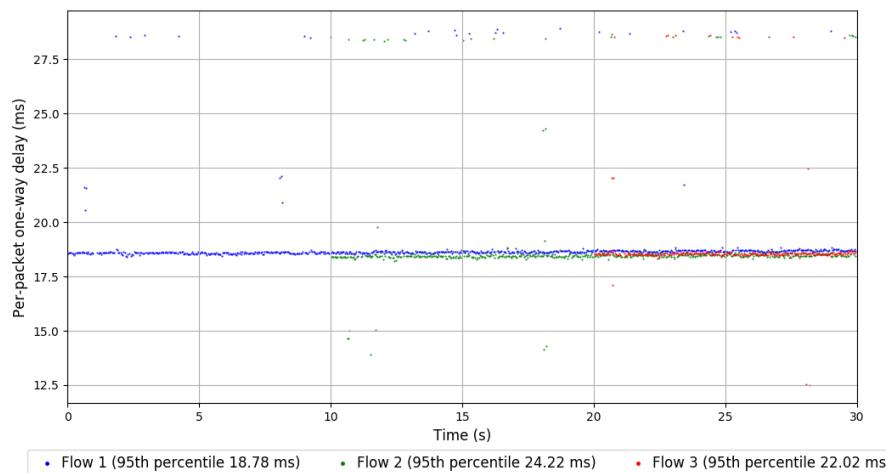
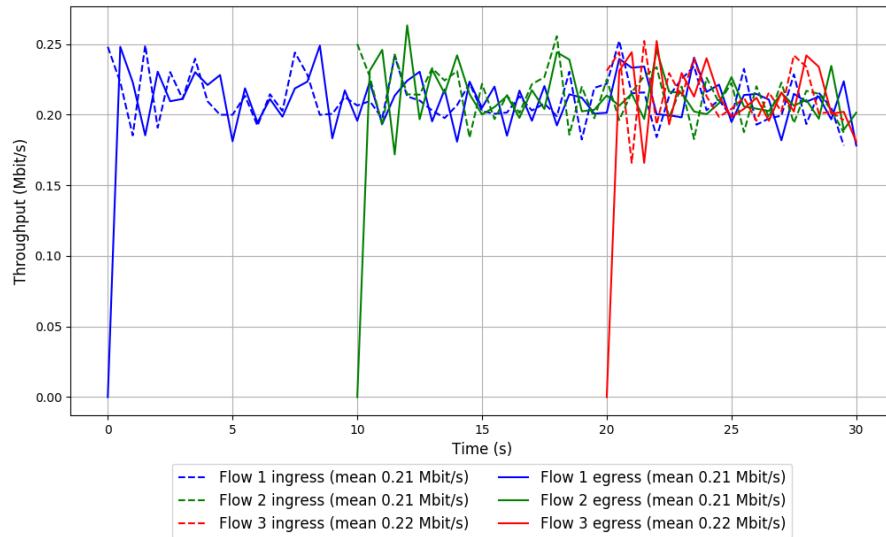


Run 2: Statistics of SCReAM

```
Start at: 2019-01-24 23:53:20
End at: 2019-01-24 23:53:50
Local clock offset: 0.935 ms
Remote clock offset: -5.753 ms

# Below is generated by plot.py at 2019-01-25 00:36:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 18.806 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 18.783 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 24.220 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 22.020 ms
Loss rate: 0.36%
```

Run 2: Report of SCReAM — Data Link

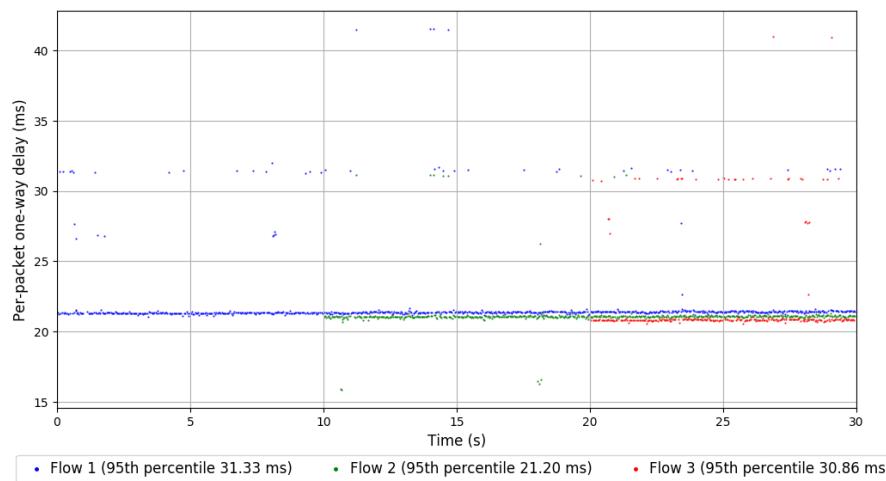
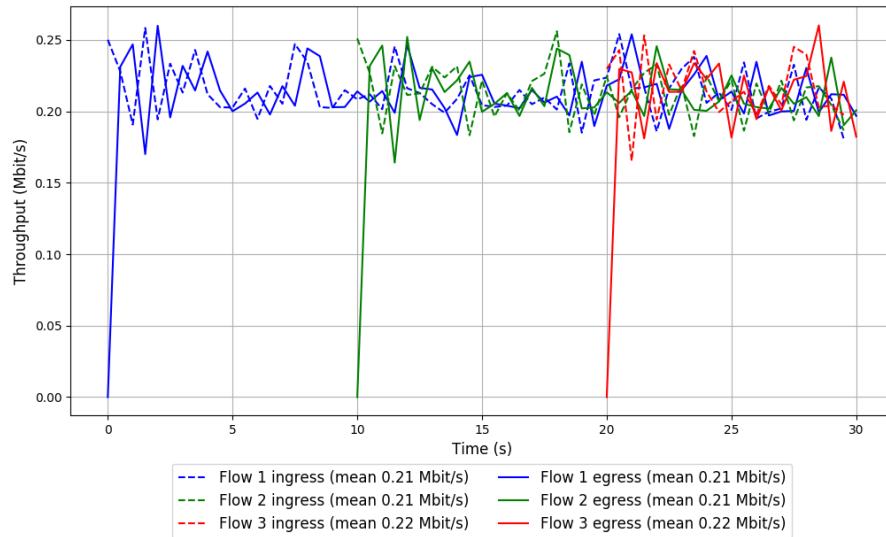


Run 3: Statistics of SCReAM

```
Start at: 2019-01-25 00:17:55
End at: 2019-01-25 00:18:25
Local clock offset: 0.694 ms
Remote clock offset: -3.63 ms

# Below is generated by plot.py at 2019-01-25 00:36:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 28.030 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.329 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 21.201 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.865 ms
Loss rate: 0.36%
```

Run 3: Report of SCReAM — Data Link

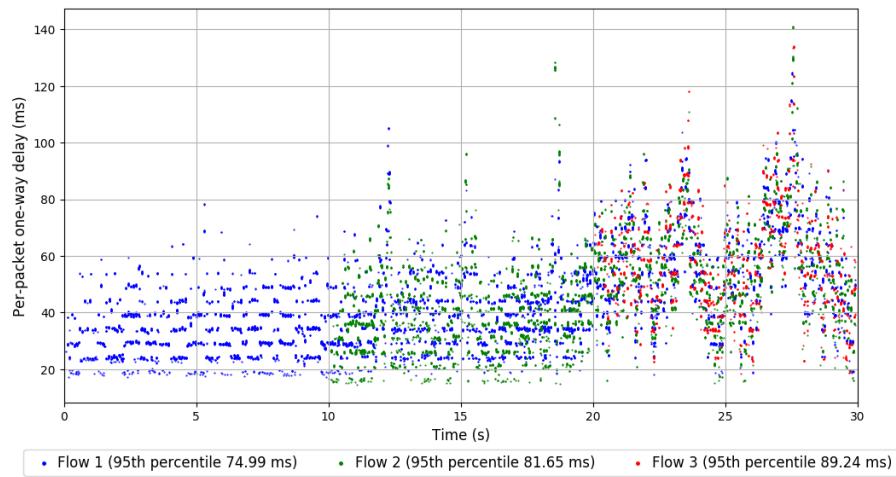
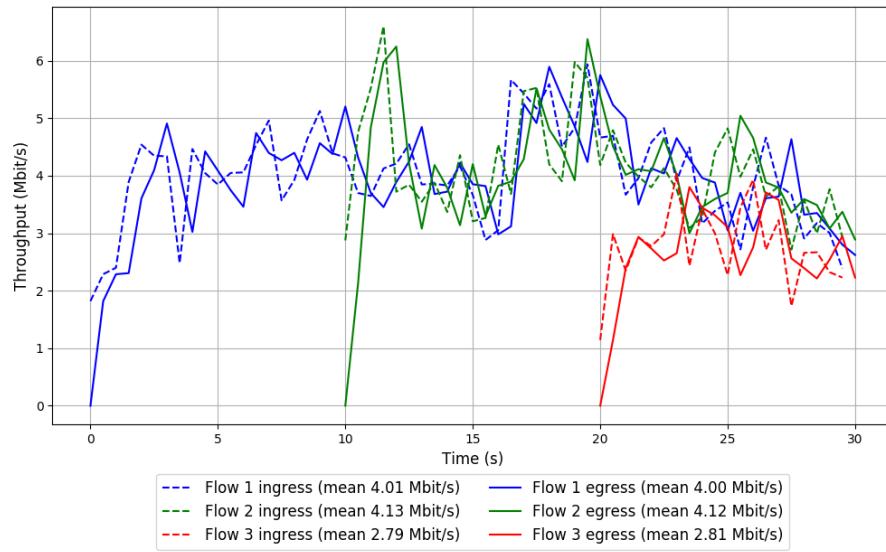


Run 1: Statistics of Sprout

```
Start at: 2019-01-24 23:23:02
End at: 2019-01-24 23:23:32
Local clock offset: 1.901 ms
Remote clock offset: -4.494 ms

# Below is generated by plot.py at 2019-01-25 00:36:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.66 Mbit/s
95th percentile per-packet one-way delay: 80.640 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 4.00 Mbit/s
95th percentile per-packet one-way delay: 74.993 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 4.12 Mbit/s
95th percentile per-packet one-way delay: 81.647 ms
Loss rate: 0.27%
-- Flow 3:
Average throughput: 2.81 Mbit/s
95th percentile per-packet one-way delay: 89.236 ms
Loss rate: 0.00%
```

Run 1: Report of Sprout — Data Link

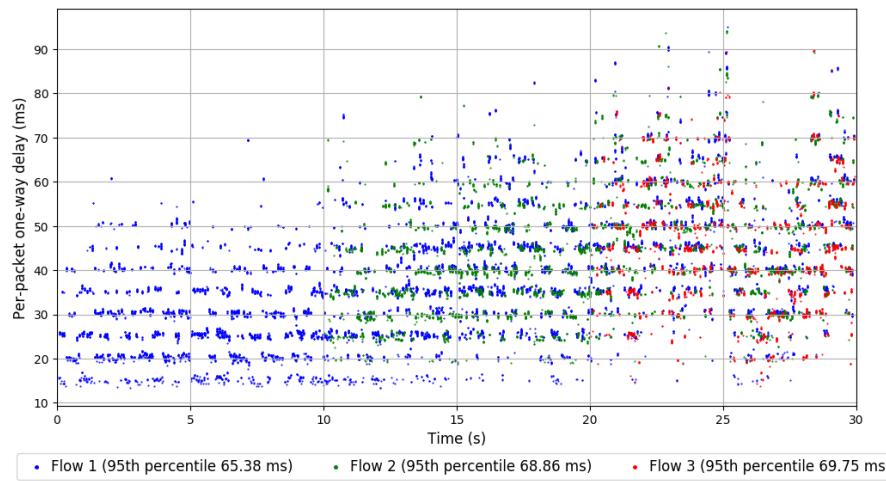
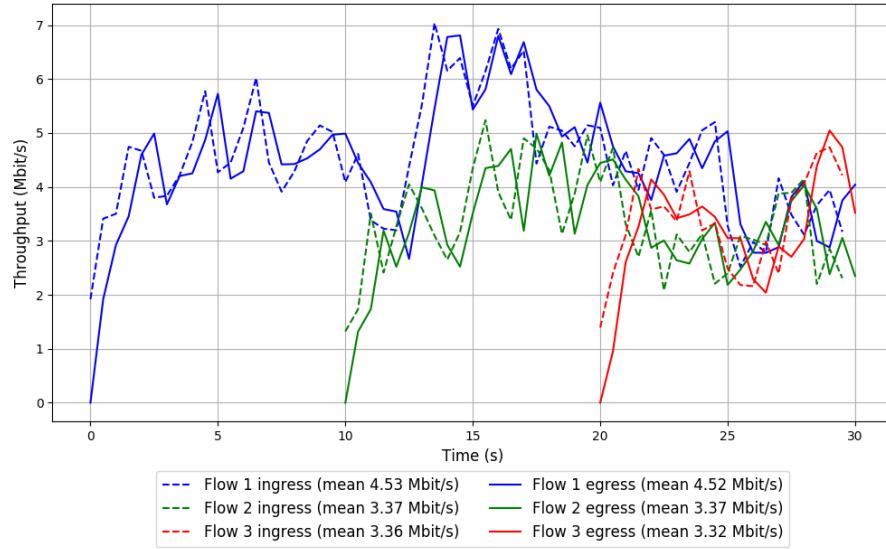


Run 2: Statistics of Sprout

```
Start at: 2019-01-24 23:47:34
End at: 2019-01-24 23:48:04
Local clock offset: 1.495 ms
Remote clock offset: -4.269 ms

# Below is generated by plot.py at 2019-01-25 00:36:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.85 Mbit/s
95th percentile per-packet one-way delay: 65.933 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 4.52 Mbit/s
95th percentile per-packet one-way delay: 65.379 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 68.859 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 3.32 Mbit/s
95th percentile per-packet one-way delay: 69.745 ms
Loss rate: 1.05%
```

Run 2: Report of Sprout — Data Link

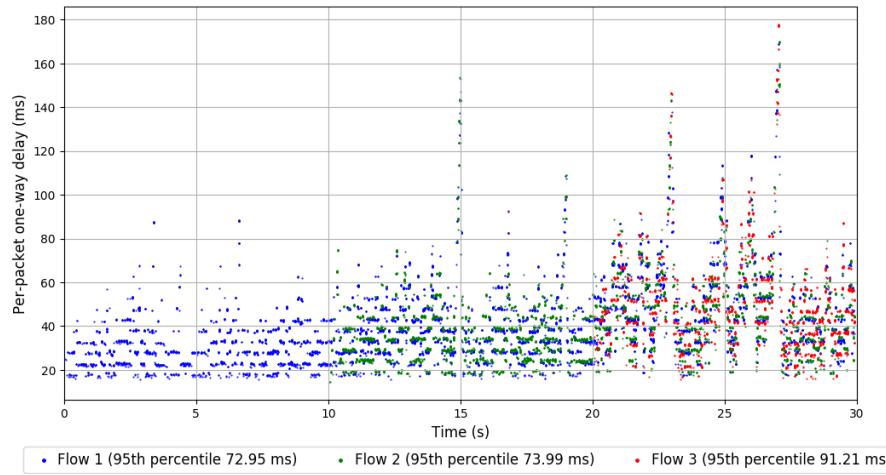
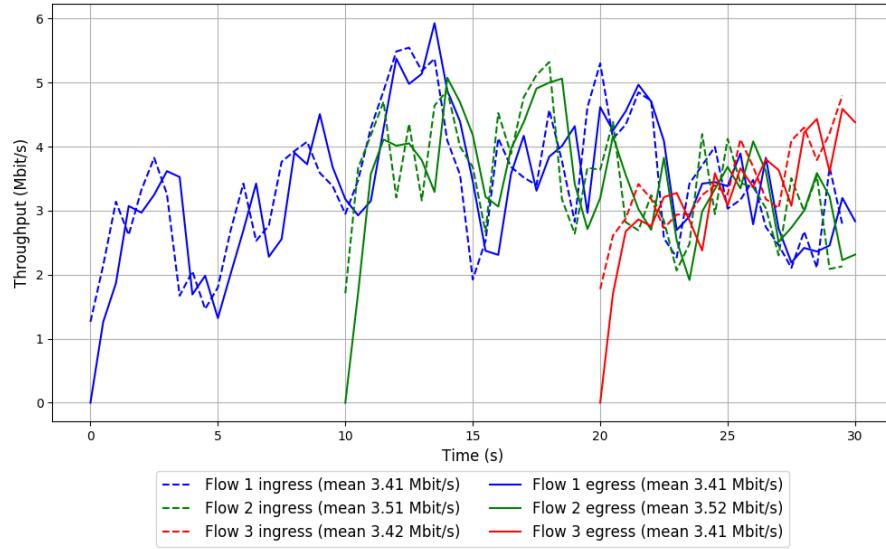


Run 3: Statistics of Sprout

```
Start at: 2019-01-25 00:12:07
End at: 2019-01-25 00:12:37
Local clock offset: 1.586 ms
Remote clock offset: -5.42 ms

# Below is generated by plot.py at 2019-01-25 00:36:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.87 Mbit/s
95th percentile per-packet one-way delay: 77.961 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 3.41 Mbit/s
95th percentile per-packet one-way delay: 72.947 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 73.990 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.41 Mbit/s
95th percentile per-packet one-way delay: 91.208 ms
Loss rate: 0.62%
```

Run 3: Report of Sprout — Data Link

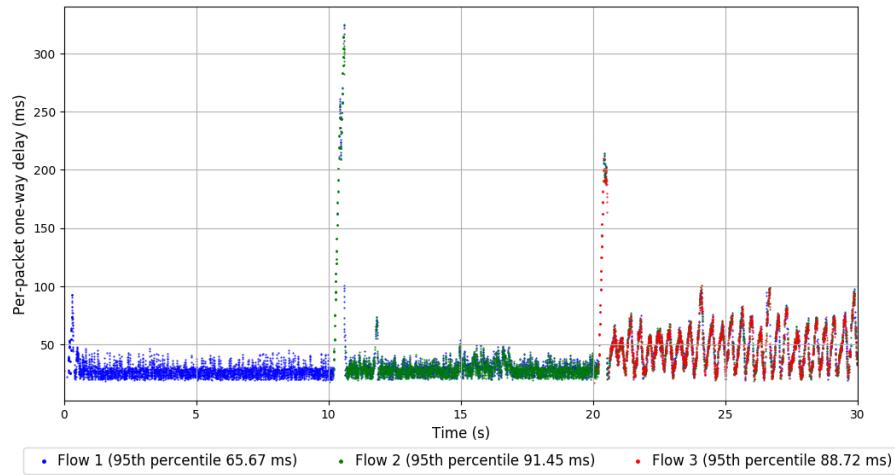
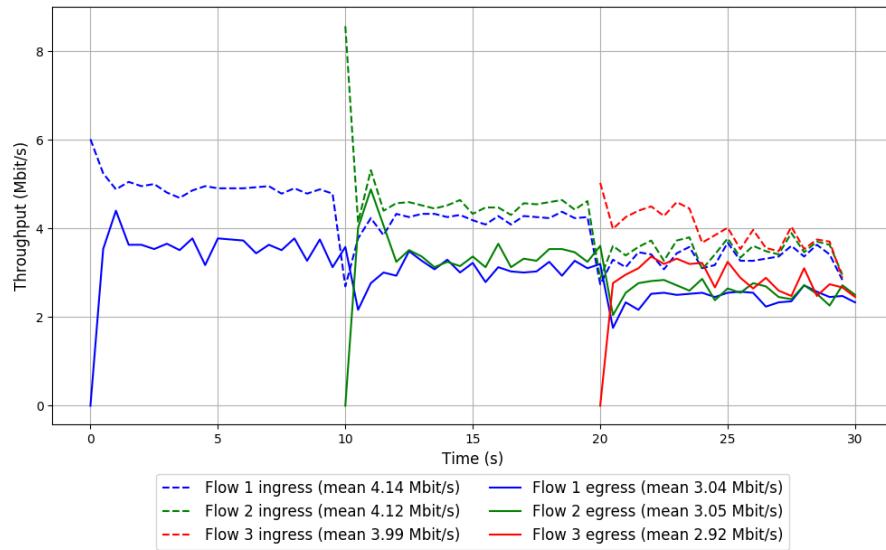


Run 1: Statistics of TaoVA-100x

```
Start at: 2019-01-24 23:26:29
End at: 2019-01-24 23:26:59
Local clock offset: 0.779 ms
Remote clock offset: -6.26 ms

# Below is generated by plot.py at 2019-01-25 00:36:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.04 Mbit/s
95th percentile per-packet one-way delay: 73.902 ms
Loss rate: 26.55%
-- Flow 1:
Average throughput: 3.04 Mbit/s
95th percentile per-packet one-way delay: 65.668 ms
Loss rate: 26.75%
-- Flow 2:
Average throughput: 3.05 Mbit/s
95th percentile per-packet one-way delay: 91.447 ms
Loss rate: 26.01%
-- Flow 3:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 88.722 ms
Loss rate: 27.07%
```

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

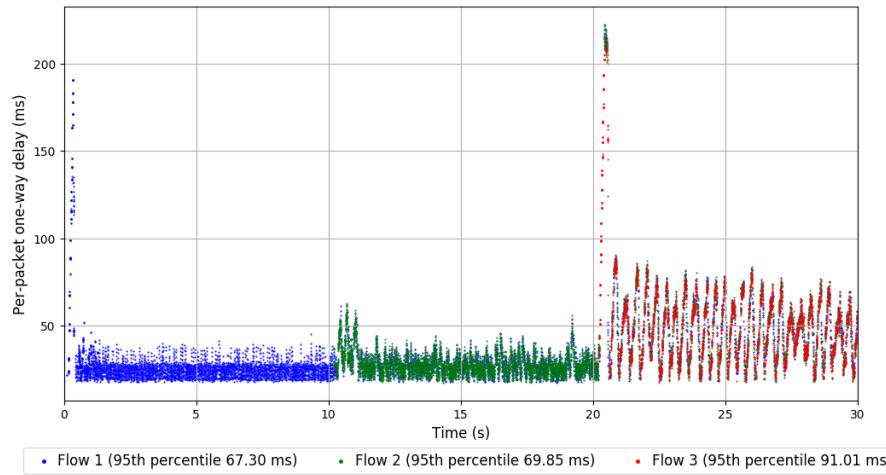
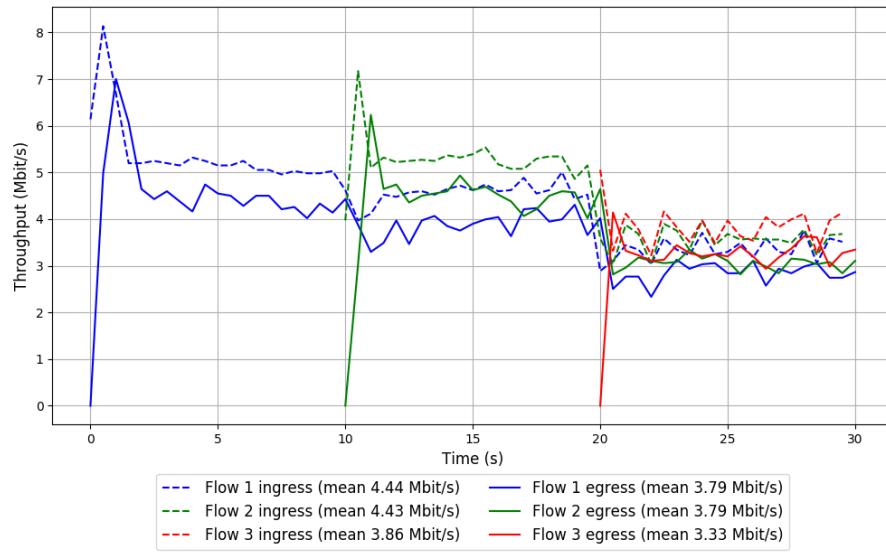


Run 2: Statistics of TaoVA-100x

```
Start at: 2019-01-24 23:51:01
End at: 2019-01-24 23:51:31
Local clock offset: -1.938 ms
Remote clock offset: -6.887 ms

# Below is generated by plot.py at 2019-01-25 00:36:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.42 Mbit/s
95th percentile per-packet one-way delay: 72.032 ms
Loss rate: 14.46%
-- Flow 1:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 67.299 ms
Loss rate: 14.70%
-- Flow 2:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 69.848 ms
Loss rate: 14.33%
-- Flow 3:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 91.013 ms
Loss rate: 13.95%
```

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

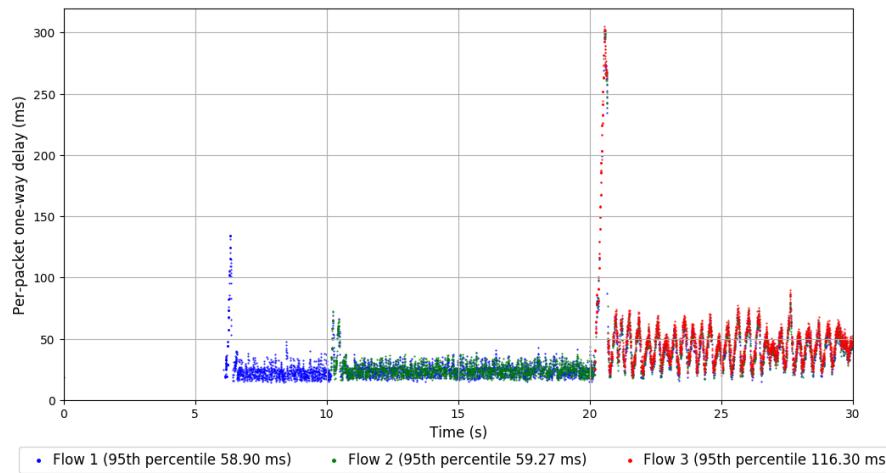
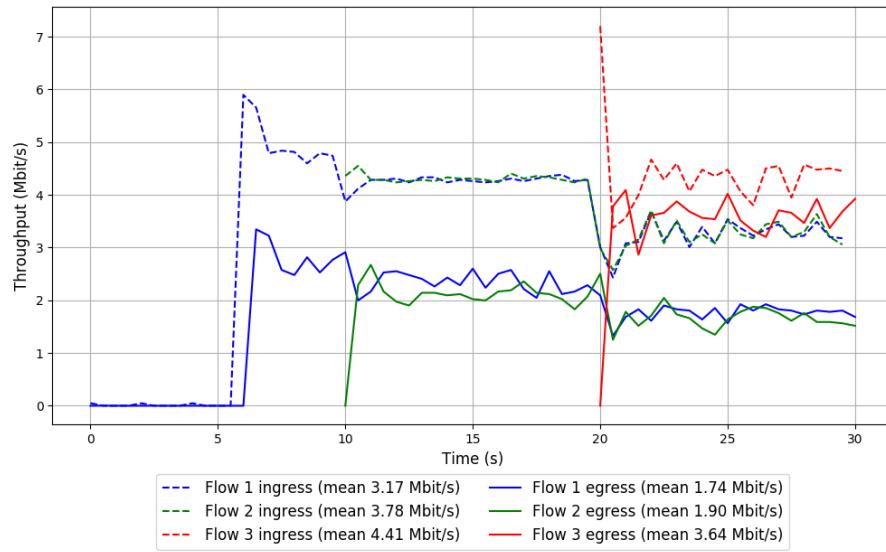


Run 3: Statistics of TaoVA-100x

```
Start at: 2019-01-25 00:15:36
End at: 2019-01-25 00:16:06
Local clock offset: 1.1 ms
Remote clock offset: -4.068 ms

# Below is generated by plot.py at 2019-01-25 00:36:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.22 Mbit/s
95th percentile per-packet one-way delay: 65.447 ms
Loss rate: 41.09%
-- Flow 1:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 58.900 ms
Loss rate: 45.14%
-- Flow 2:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 59.268 ms
Loss rate: 49.68%
-- Flow 3:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 116.296 ms
Loss rate: 17.60%
```

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

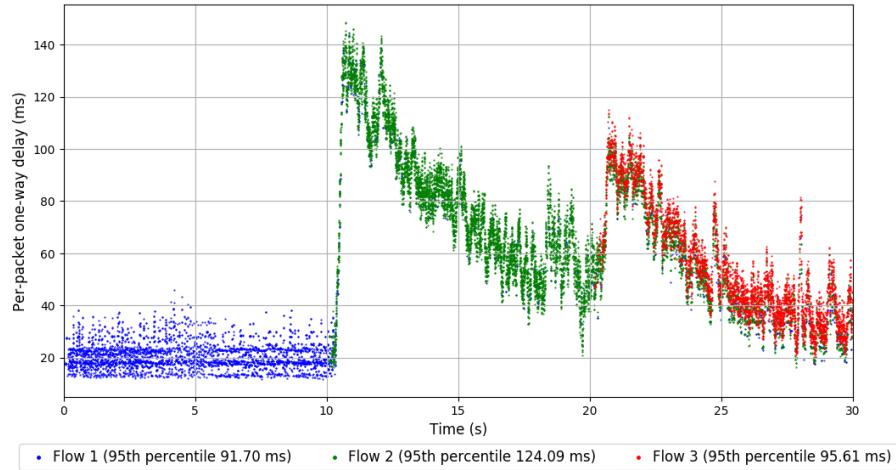
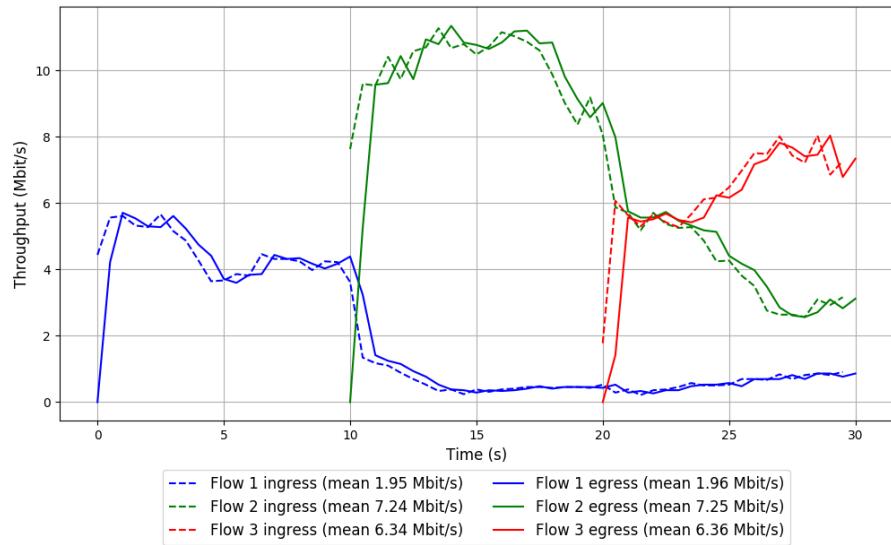


Run 1: Statistics of TCP Vegas

```
Start at: 2019-01-24 23:27:40
End at: 2019-01-24 23:28:10
Local clock offset: 3.598 ms
Remote clock offset: -4.035 ms

# Below is generated by plot.py at 2019-01-25 00:36:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.88 Mbit/s
95th percentile per-packet one-way delay: 114.472 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 91.703 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 7.25 Mbit/s
95th percentile per-packet one-way delay: 124.091 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 6.36 Mbit/s
95th percentile per-packet one-way delay: 95.615 ms
Loss rate: 0.34%
```

Run 1: Report of TCP Vegas — Data Link

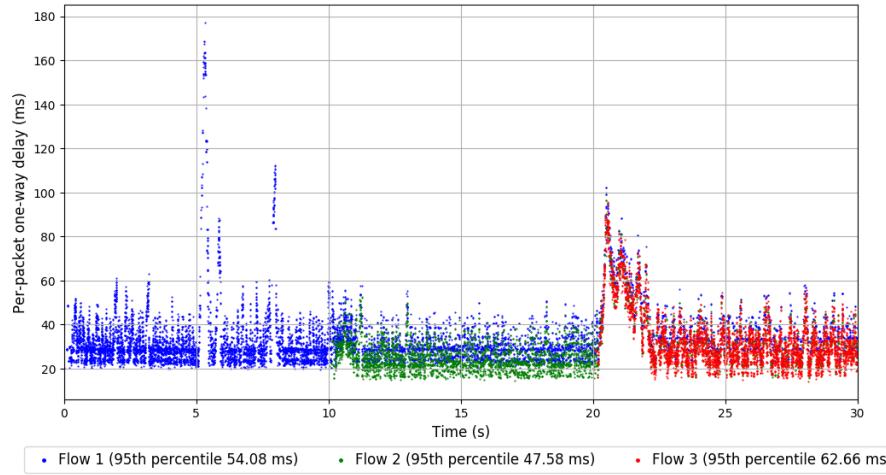
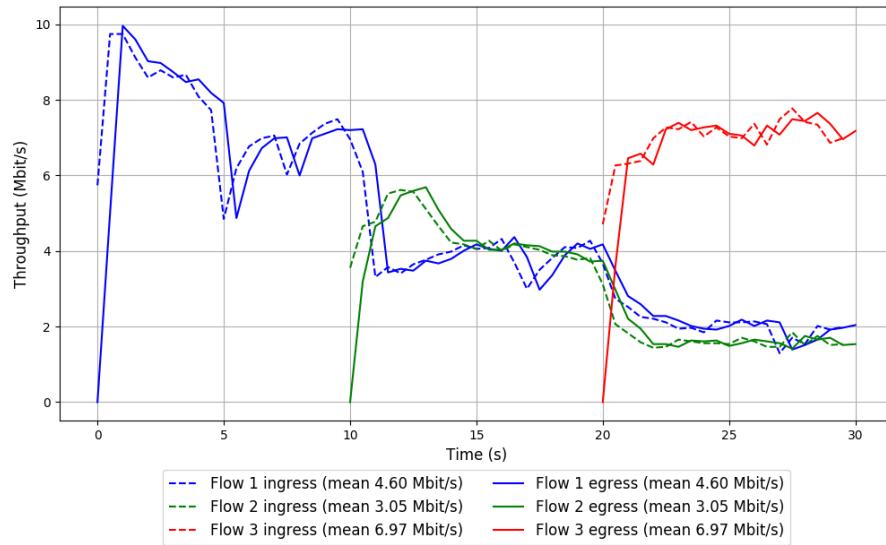


Run 2: Statistics of TCP Vegas

```
Start at: 2019-01-24 23:52:11
End at: 2019-01-24 23:52:41
Local clock offset: 0.701 ms
Remote clock offset: -4.424 ms

# Below is generated by plot.py at 2019-01-25 00:36:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.94 Mbit/s
95th percentile per-packet one-way delay: 56.659 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 54.079 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 3.05 Mbit/s
95th percentile per-packet one-way delay: 47.576 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 6.97 Mbit/s
95th percentile per-packet one-way delay: 62.662 ms
Loss rate: 0.12%
```

Run 2: Report of TCP Vegas — Data Link

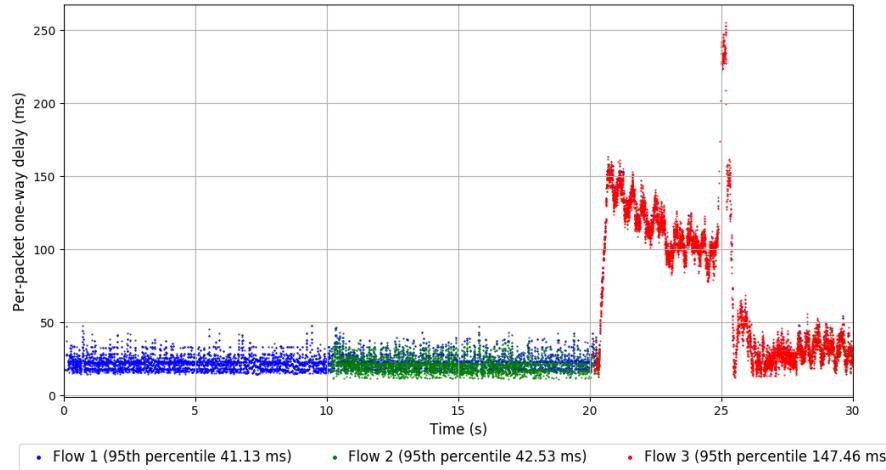
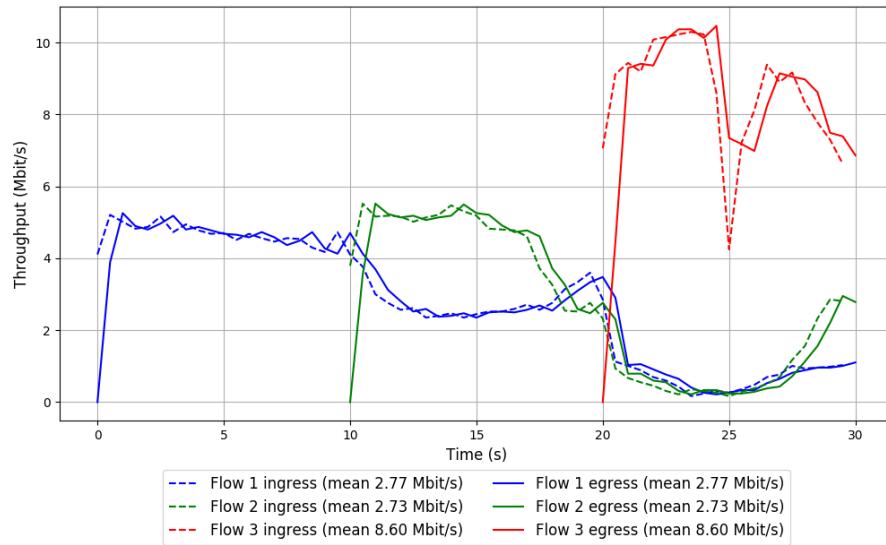


Run 3: Statistics of TCP Vegas

```
Start at: 2019-01-25 00:16:46
End at: 2019-01-25 00:17:16
Local clock offset: 1.82 ms
Remote clock offset: -5.811 ms

# Below is generated by plot.py at 2019-01-25 00:36:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.44 Mbit/s
95th percentile per-packet one-way delay: 134.022 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 2.77 Mbit/s
95th percentile per-packet one-way delay: 41.133 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 42.533 ms
Loss rate: 0.13%
-- Flow 3:
Average throughput: 8.60 Mbit/s
95th percentile per-packet one-way delay: 147.460 ms
Loss rate: 0.15%
```

Run 3: Report of TCP Vegas — Data Link

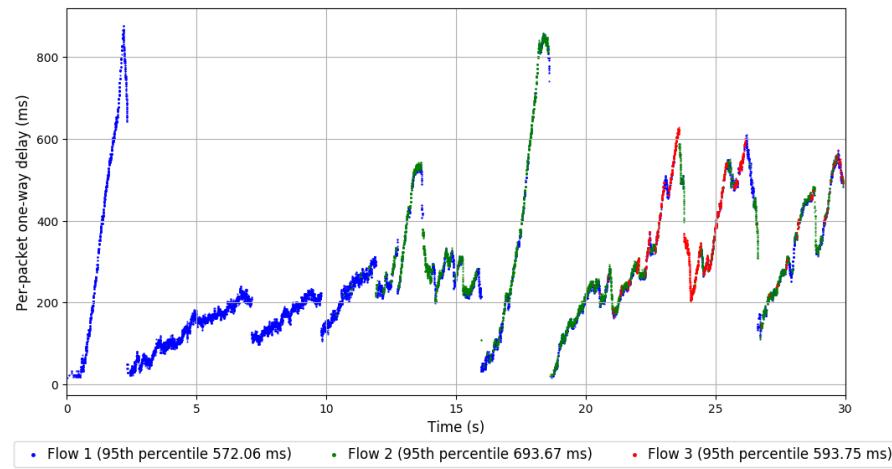
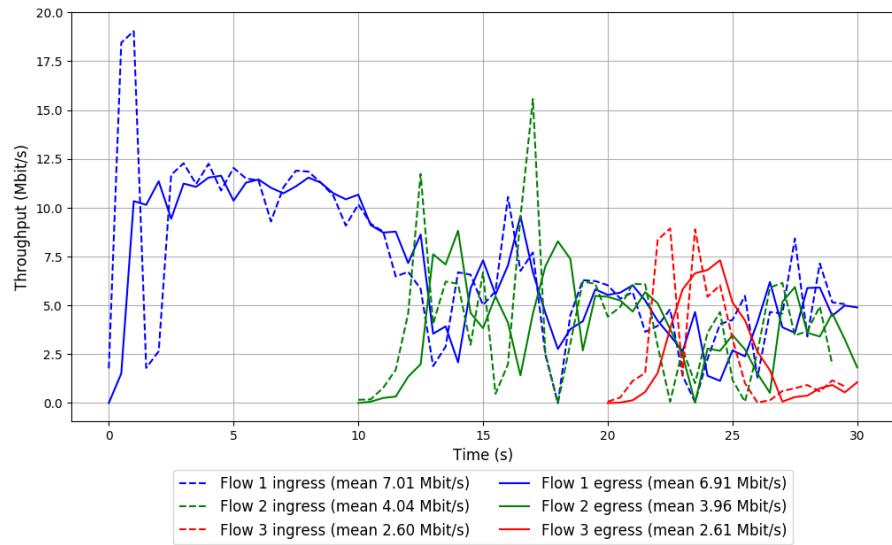


Run 1: Statistics of Verus

```
Start at: 2019-01-24 23:32:18
End at: 2019-01-24 23:32:48
Local clock offset: 0.441 ms
Remote clock offset: -4.022 ms

# Below is generated by plot.py at 2019-01-25 00:36:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.37 Mbit/s
95th percentile per-packet one-way delay: 597.868 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 6.91 Mbit/s
95th percentile per-packet one-way delay: 572.063 ms
Loss rate: 1.45%
-- Flow 2:
Average throughput: 3.96 Mbit/s
95th percentile per-packet one-way delay: 693.667 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 593.747 ms
Loss rate: 2.16%
```

Run 1: Report of Verus — Data Link

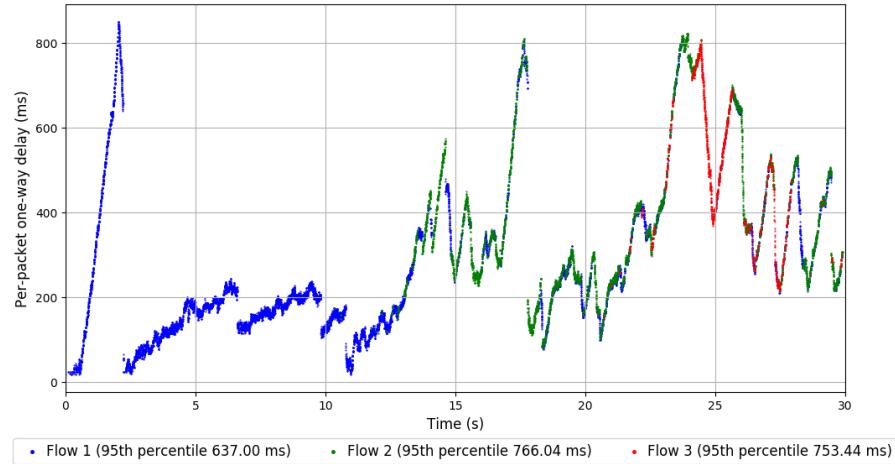
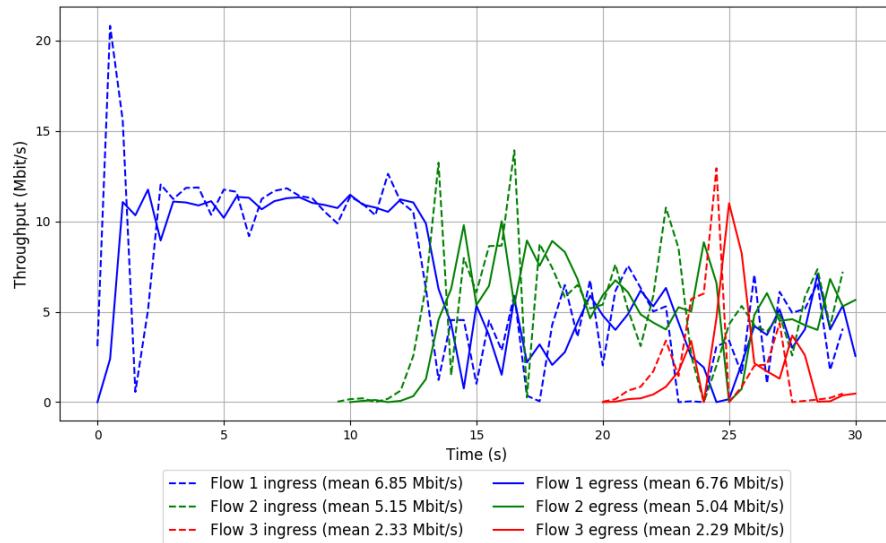


Run 2: Statistics of Verus

```
Start at: 2019-01-24 23:56:47
End at: 2019-01-24 23:57:17
Local clock offset: 1.183 ms
Remote clock offset: -5.485 ms

# Below is generated by plot.py at 2019-01-25 00:36:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.82 Mbit/s
95th percentile per-packet one-way delay: 728.328 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 6.76 Mbit/s
95th percentile per-packet one-way delay: 636.999 ms
Loss rate: 1.30%
-- Flow 2:
Average throughput: 5.04 Mbit/s
95th percentile per-packet one-way delay: 766.045 ms
Loss rate: 2.75%
-- Flow 3:
Average throughput: 2.29 Mbit/s
95th percentile per-packet one-way delay: 753.440 ms
Loss rate: 0.22%
```

Run 2: Report of Verus — Data Link

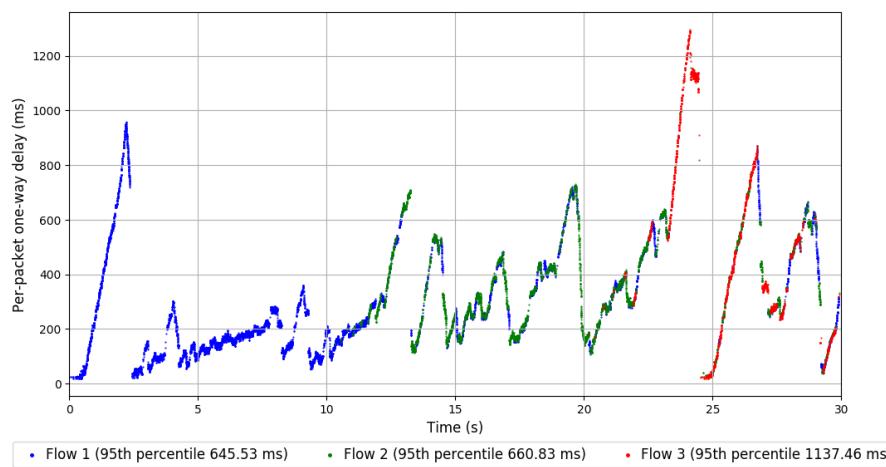
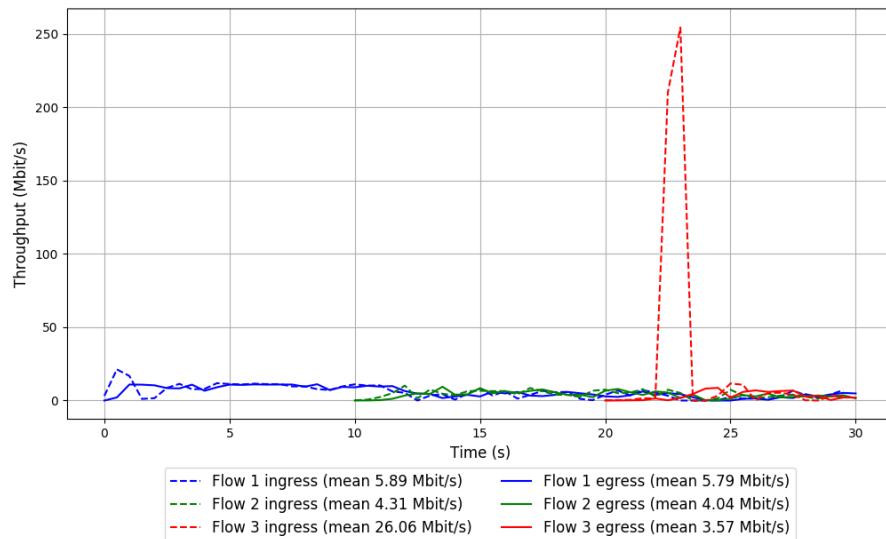


Run 3: Statistics of Verus

```
Start at: 2019-01-25 00:21:24
End at: 2019-01-25 00:21:54
Local clock offset: -0.167 ms
Remote clock offset: -4.065 ms

# Below is generated by plot.py at 2019-01-25 00:36:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.63 Mbit/s
95th percentile per-packet one-way delay: 774.266 ms
Loss rate: 44.59%
-- Flow 1:
Average throughput: 5.79 Mbit/s
95th percentile per-packet one-way delay: 645.527 ms
Loss rate: 1.81%
-- Flow 2:
Average throughput: 4.04 Mbit/s
95th percentile per-packet one-way delay: 660.829 ms
Loss rate: 6.78%
-- Flow 3:
Average throughput: 3.57 Mbit/s
95th percentile per-packet one-way delay: 1137.465 ms
Loss rate: 86.48%
```

Run 3: Report of Verus — Data Link

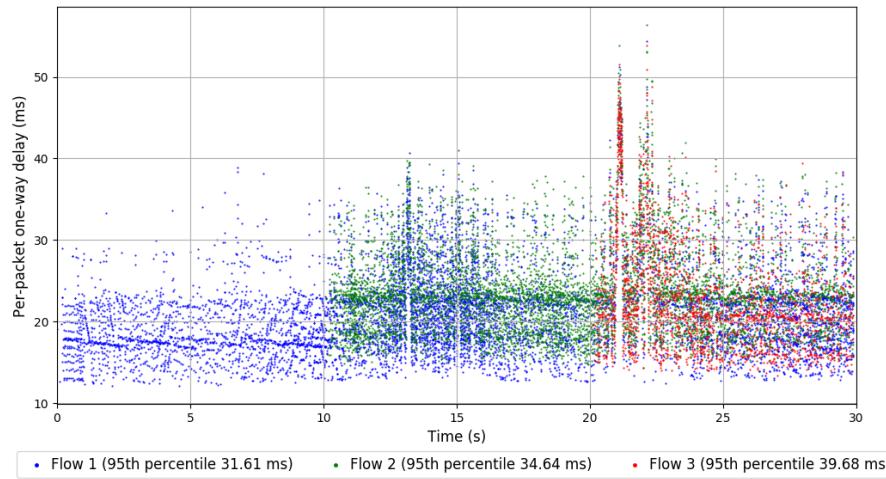
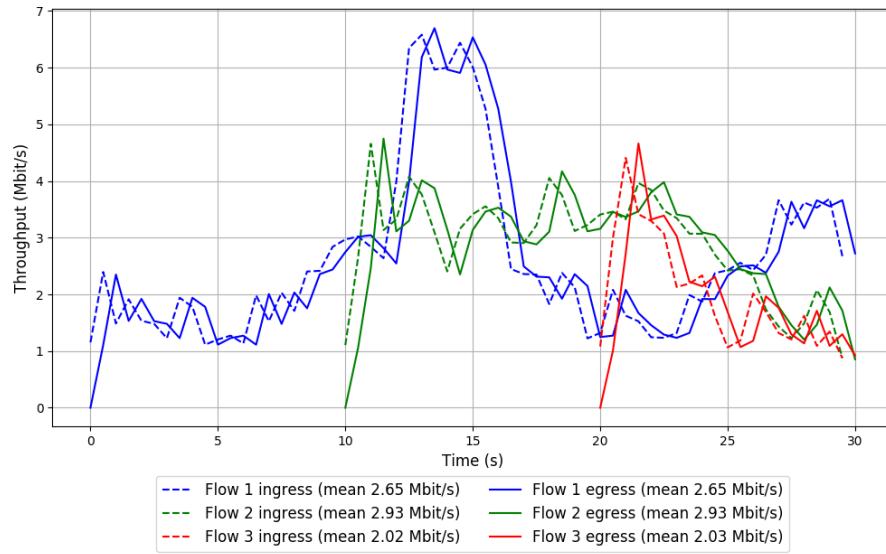


```
Run 1: Statistics of PCC-Vivace
```

```
Start at: 2019-01-24 23:21:53
End at: 2019-01-24 23:22:23
Local clock offset: 1.806 ms
Remote clock offset: -5.485 ms

# Below is generated by plot.py at 2019-01-25 00:36:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.26 Mbit/s
95th percentile per-packet one-way delay: 33.638 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 31.611 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 34.644 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 39.677 ms
Loss rate: 0.06%
```

Run 1: Report of PCC-Vivace — Data Link

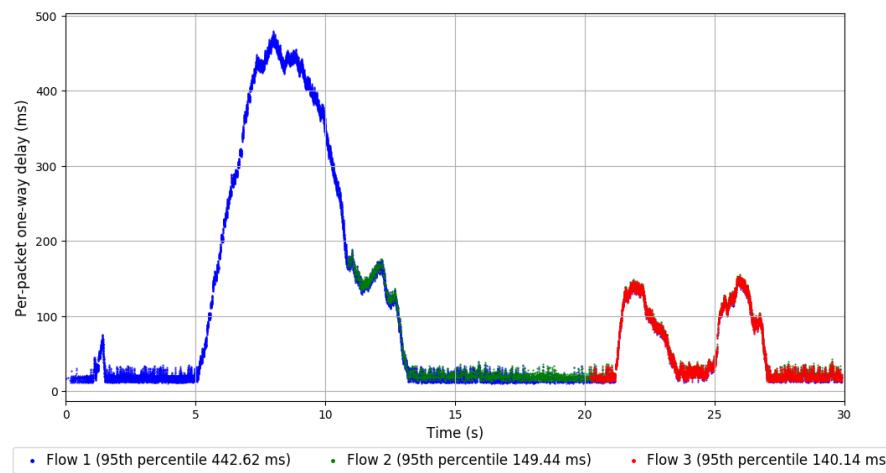
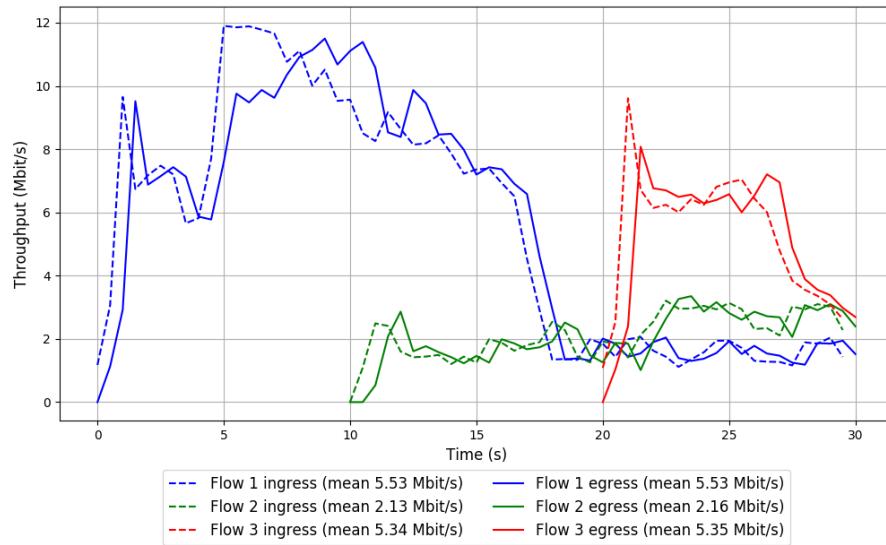


Run 2: Statistics of PCC-Vivace

```
Start at: 2019-01-24 23:46:24
End at: 2019-01-24 23:46:54
Local clock offset: 2.319 ms
Remote clock offset: -5.757 ms

# Below is generated by plot.py at 2019-01-25 00:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.71 Mbit/s
95th percentile per-packet one-way delay: 435.012 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 5.53 Mbit/s
95th percentile per-packet one-way delay: 442.619 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 149.440 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 5.35 Mbit/s
95th percentile per-packet one-way delay: 140.143 ms
Loss rate: 0.13%
```

Run 2: Report of PCC-Vivace — Data Link

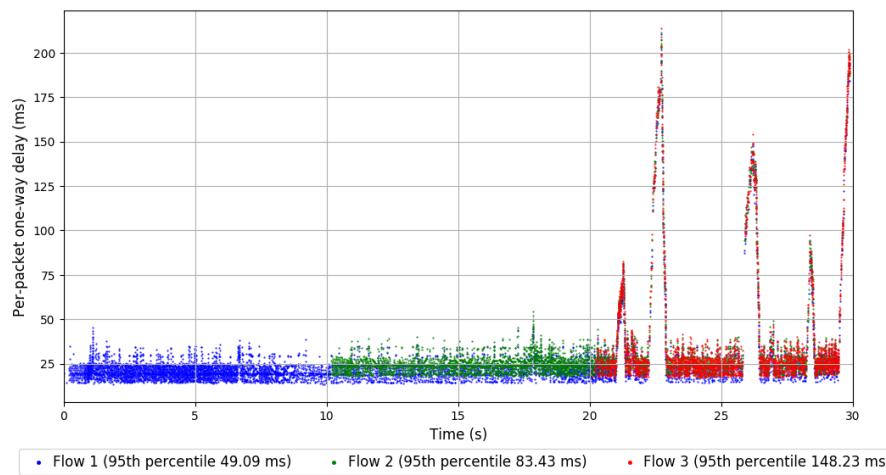
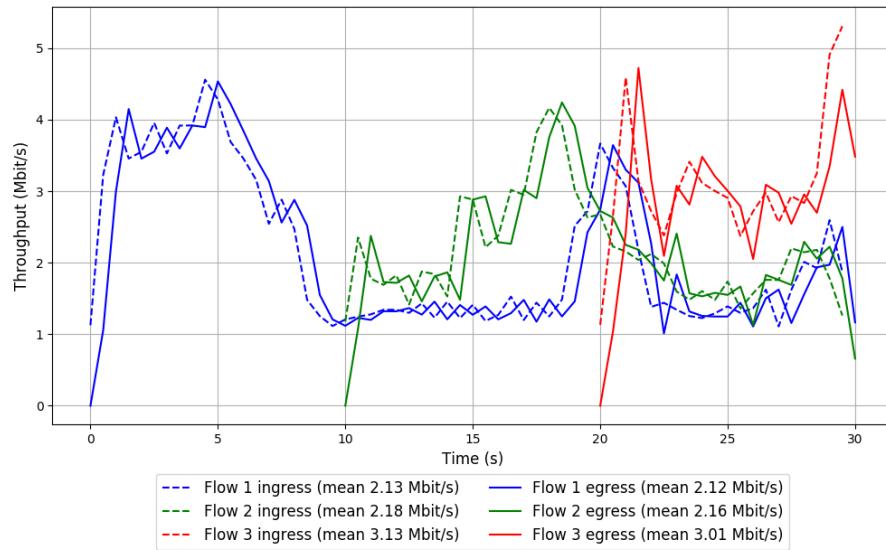


Run 3: Statistics of PCC-Vivace

```
Start at: 2019-01-25 00:10:58
End at: 2019-01-25 00:11:28
Local clock offset: 1.013 ms
Remote clock offset: -5.018 ms

# Below is generated by plot.py at 2019-01-25 00:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.55 Mbit/s
95th percentile per-packet one-way delay: 95.444 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 49.086 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 83.431 ms
Loss rate: 0.83%
-- Flow 3:
Average throughput: 3.01 Mbit/s
95th percentile per-packet one-way delay: 148.228 ms
Loss rate: 4.11%
```

Run 3: Report of PCC-Vivace — Data Link

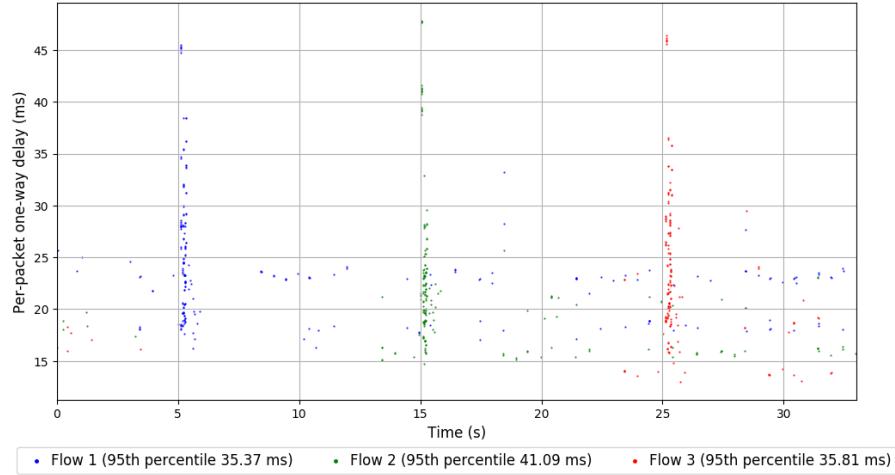
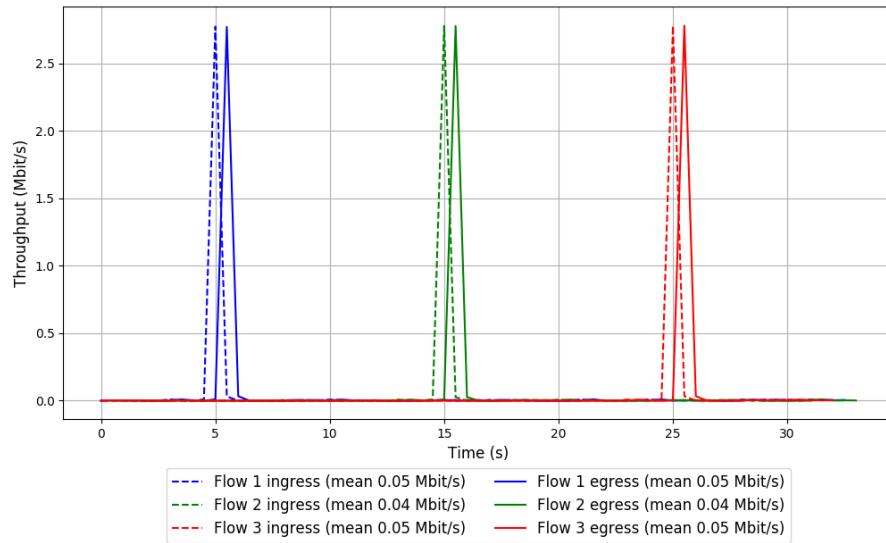


Run 1: Statistics of WebRTC media

```
Start at: 2019-01-24 23:31:10
End at: 2019-01-24 23:31:40
Local clock offset: 1.943 ms
Remote clock offset: -5.08 ms

# Below is generated by plot.py at 2019-01-25 00:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 38.772 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 35.370 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 41.095 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 35.807 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

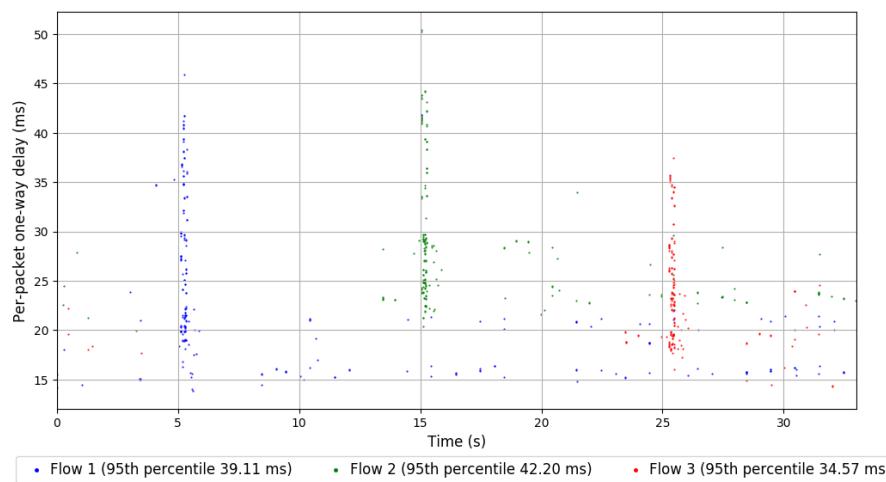
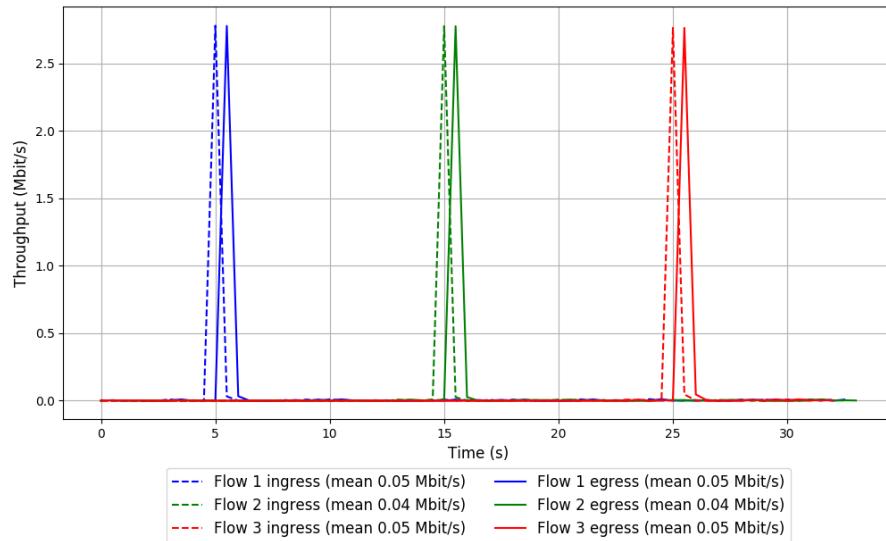


Run 2: Statistics of WebRTC media

```
Start at: 2019-01-24 23:55:38
End at: 2019-01-24 23:56:08
Local clock offset: 1.346 ms
Remote clock offset: -4.895 ms

# Below is generated by plot.py at 2019-01-25 00:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 40.416 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 39.109 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 42.198 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 34.572 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

```
Start at: 2019-01-25 00:20:16
End at: 2019-01-25 00:20:46
Local clock offset: 2.413 ms
Remote clock offset: -4.862 ms

# Below is generated by plot.py at 2019-01-25 00:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 35.893 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 30.944 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 39.880 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 34.827 ms
Loss rate: 0.00%
```

Run 3: Report of WebRTC media — Data Link

