Pantheon Report

Generated at 2019-08-27 01:57:56 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) →Colombia on `p4p1` (*remote*).

Repeated the test of 24 congestion control schemes 5 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.
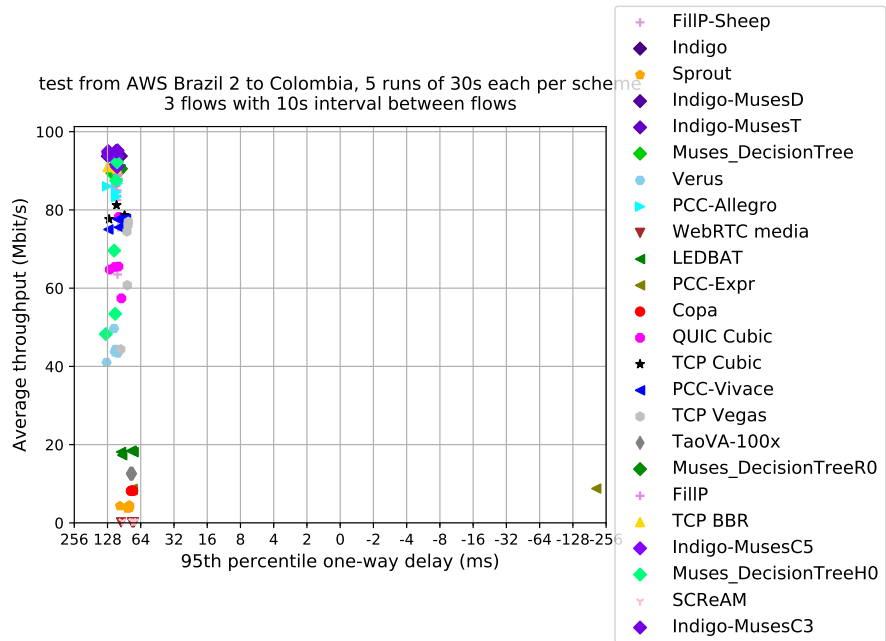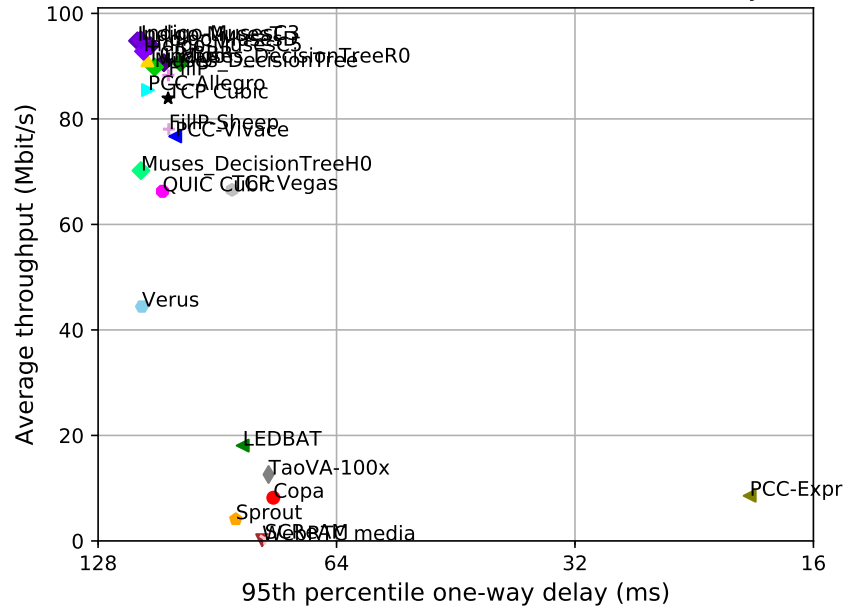
```
System info:
Linux 4.15.0-1043-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ de42328552b3776a75a932a94dfafd722537b0ec
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 5ce721187ad823da20955337730c746486ca4966
third_party/muses_dtree @ 387225f7b5f61ddbe92d708a8869ffbb84eb3200
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-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 Brazil 2 to Colombia, 5 runs of 30s each per scheme
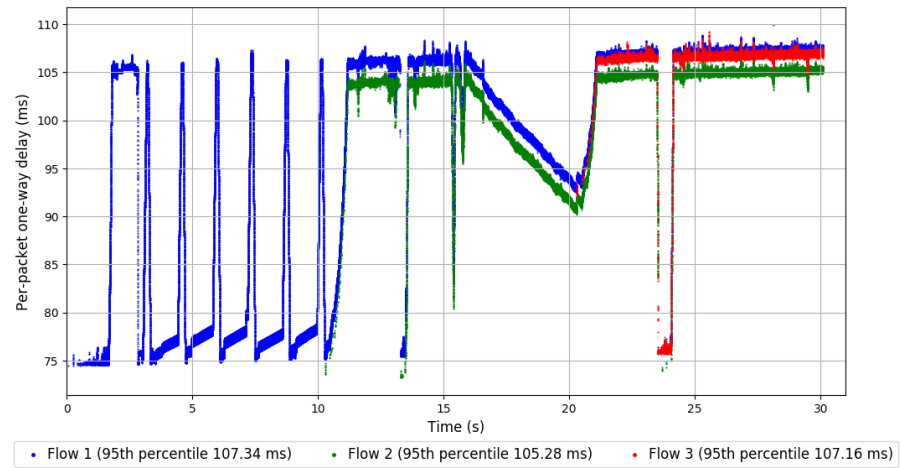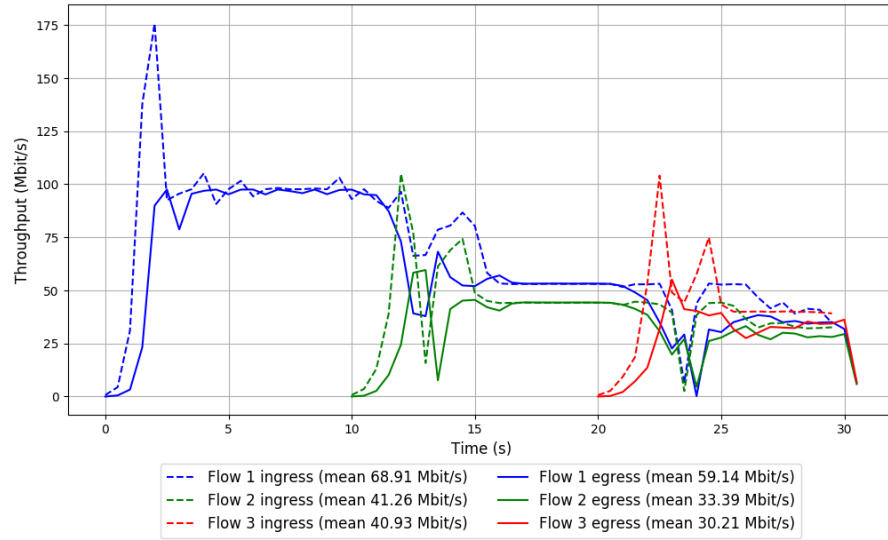3 flows with 10s interval between flows (mean of all runs by scheme)

test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme
3 flows with 10s interval between flows

3

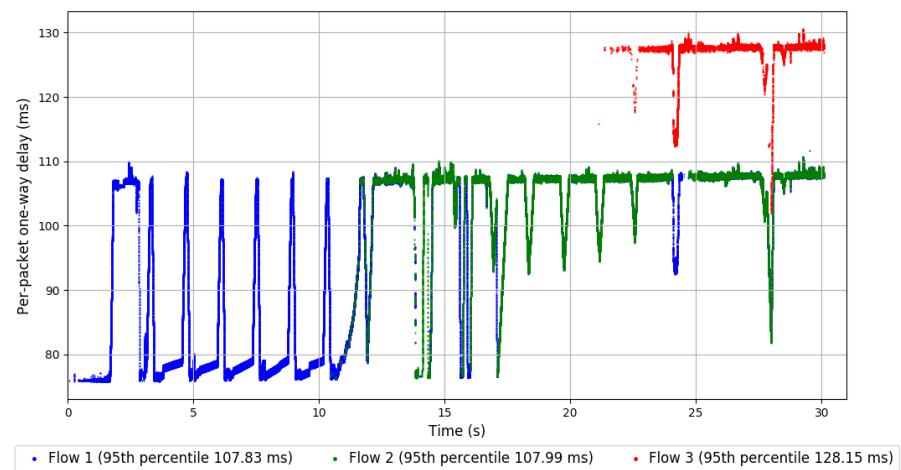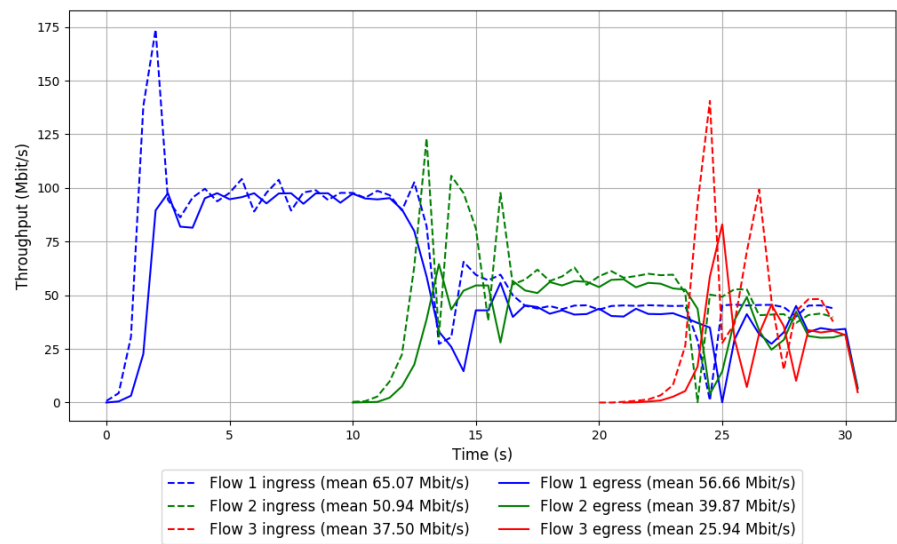| scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	56.79	35.82	31.97	106.53	106.89	111.06	13.22	19.59	28.27
Copa	5	0.03	9.70	5.24	74.37	76.70	76.86	92.26	72.24	75.19
TCP Cubic	5	57.94	26.11	25.73	104.97	96.59	99.56	1.30	0.53	0.49
FillP	5	33.84	69.39	24.85	105.91	103.68	103.42	9.53	13.08	27.56
FillP-Sheep	5	21.27	68.05	34.70	104.67	103.40	104.26	11.67	7.35	11.44
Indigo	5	60.88	28.32	34.63	104.84	105.39	107.18	13.73	32.75	71.28
Indigo-MusesC3	5	50.73	46.73	47.51	108.19	109.16	104.84	1.45	1.85	4.57
Indigo-MusesC5	5	64.34	35.64	18.44	112.81	105.84	106.84	2.15	4.41	5.45
Indigo-MusesD	5	71.04	23.35	26.19	104.38	107.44	103.32	1.36	1.83	4.35
Indigo-MusesT	5	50.10	63.98	11.09	109.75	110.23	114.54	5.95	5.96	6.29
LEDBAT	5	11.88	7.48	3.69	76.46	81.30	80.42	0.00	0.00	0.13
Muses_DecisionTree	5	52.93	42.40	27.27	103.89	108.74	103.86	0.99	0.95	0.96
Muses_DecisionTreeH0	5	56.97	19.94	0.13	113.17	108.61	106.41	52.19	50.75	30.35
Muses_DecisionTreeR0	5	63.54	27.92	26.74	99.35	100.84	102.90	0.72	0.55	0.89
PCC-Allegro	5	76.18	10.08	7.86	110.69	110.37	105.87	2.85	3.91	6.29
PCC-Expr	5	0.01	9.34	7.08	58.62	19.31	11.25	85.71	59.05	27.12
QUIC Cubic	5	43.52	24.22	20.40	104.50	103.90	99.54	0.89	0.61	0.68
SCReAM	5	0.22	0.21	0.22	78.07	74.72	74.64	0.03	0.04	0.00
Sprout	5	2.24	2.13	1.43	81.39	86.09	80.57	0.00	0.00	0.00
TaoVA-100x	5	7.99	4.65	4.53	81.80	75.64	76.01	32.34	37.21	52.53
TCP Vegas	5	38.73	26.81	29.94	85.58	87.62	91.33	1.36	0.88	1.50
Verus	5	24.47	21.21	19.16	105.68	112.11	113.07	31.13	49.50	53.43
PCC-Vivace	5	64.39	15.51	6.02	102.23	102.13	94.65	0.19	0.34	0.15
WebRTC media	5	0.05	0.04	0.04	79.21	74.36	75.14	0.00	0.17	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2019-08-26 23:19:30
End at: 2019-08-26 23:20:00
Local clock offset: 2.313 ms
Remote clock offset: -289.7 ms


# Below is generated by plot.py at 2019-08-27 01:46:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.41 Mbit/s
95th percentile per-packet one-way delay: 107.242 ms
Loss rate: 16.82%
-- Flow 1:
Average throughput: 59.14 Mbit/s
95th percentile per-packet one-way delay: 107.342 ms
Loss rate: 14.09%
-- Flow 2:
Average throughput: 33.39 Mbit/s
95th percentile per-packet one-way delay: 105.275 ms
Loss rate: 19.07%
-- Flow 3:
Average throughput: 30.21 Mbit/s
95th percentile per-packet one-way delay: 107.158 ms
Loss rate: 26.09%
```
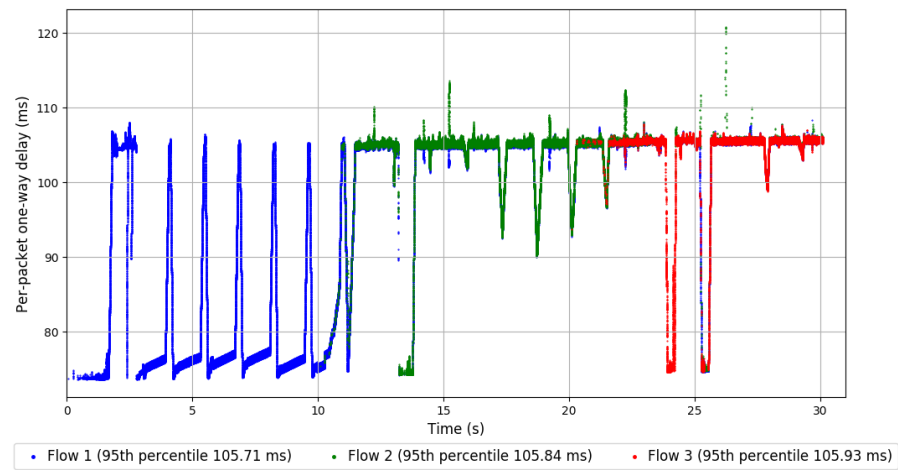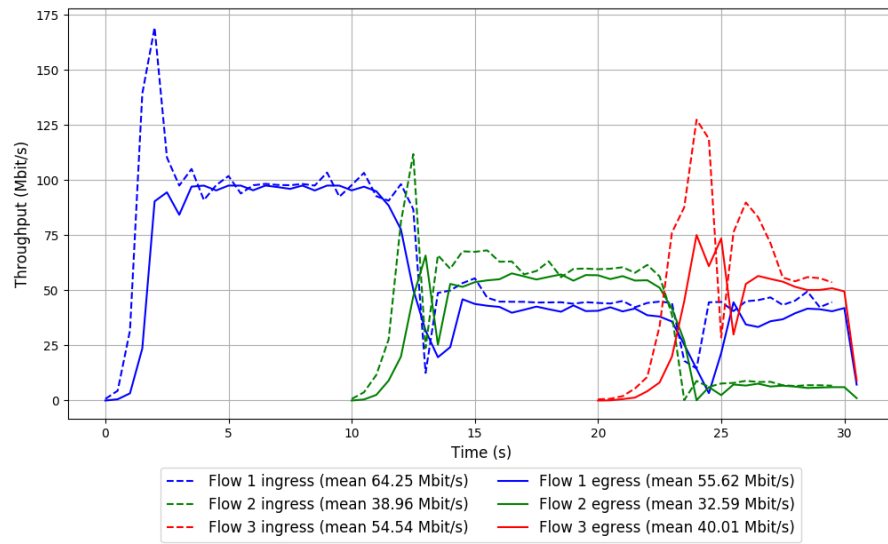
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 68.91 Mbit/s) --- Flow 1 egress (mean 59.14 Mbit/s)
Flow 2 ingress (mean 41.26 Mbit/s) --- Flow 2 egress (mean 33.39 Mbit/s)
Flow 3 ingress (mean 40.93 Mbit/s) --- Flow 3 egress (mean 30.21 Mbit/s)

Flow 1 (95th percentile 107.34 ms) • Flow 2 (95th percentile 105.28 ms) • Flow 3 (95th percentile 107.16 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2019-08-26 23:50:09
End at: 2019-08-26 23:50:39
Local clock offset: 2.089 ms
Remote clock offset: -52.342 ms


# Below is generated by plot.py at 2019-08-27 01:46:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.97 Mbit/s
95th percentile per-packet one-way delay: 127.682 ms
Loss rate: 18.30%
-- Flow 1:
Average throughput: 56.66 Mbit/s
95th percentile per-packet one-way delay: 107.830 ms
Loss rate: 12.83%
-- Flow 2:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 107.991 ms
Loss rate: 21.62%
-- Flow 3:
Average throughput: 25.94 Mbit/s
95th percentile per-packet one-way delay: 128.148 ms
Loss rate: 37.86%
```

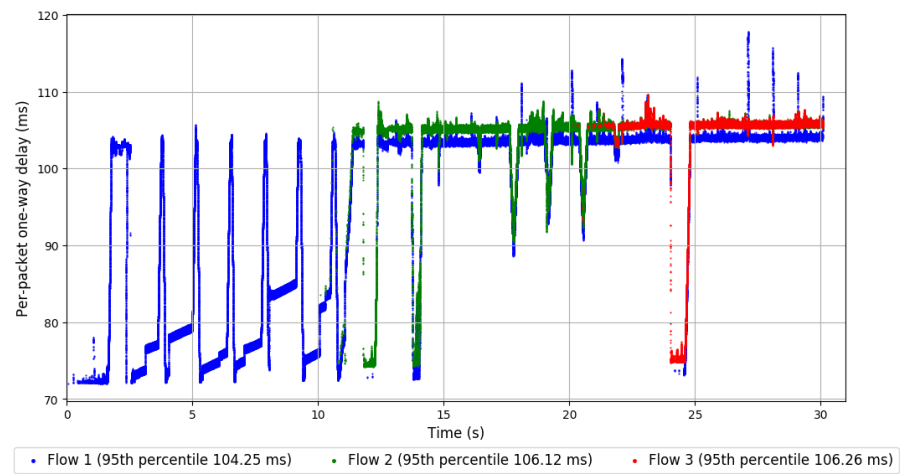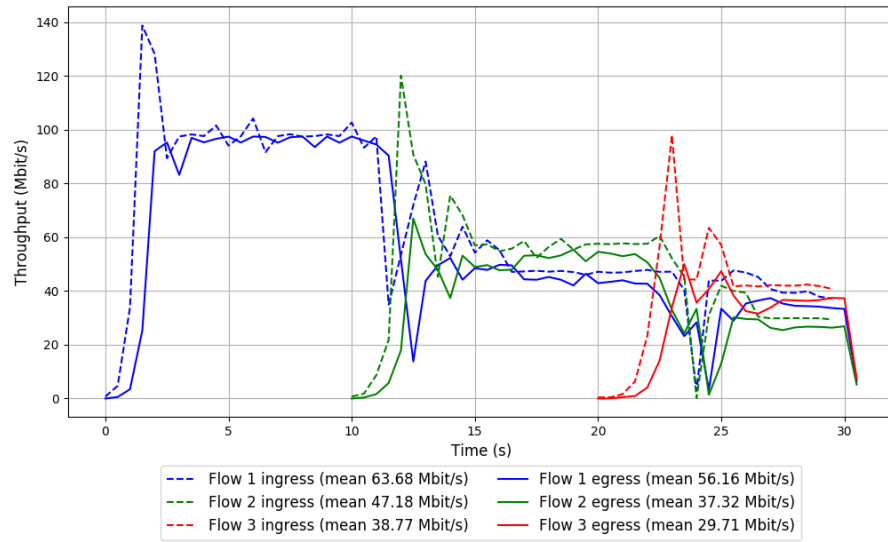Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2019-08-27 00:20:43
End at: 2019-08-27 00:21:13
Local clock offset: 2.016 ms
Remote clock offset: -135.262 ms


# Below is generated by plot.py at 2019-08-27 01:46:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.65 Mbit/s
95th percentile per-packet one-way delay: 105.815 ms
Loss rate: 16.24%
-- Flow 1:
Average throughput: 55.62 Mbit/s
95th percentile per-packet one-way delay: 105.710 ms
Loss rate: 13.34%
-- Flow 2:
Average throughput: 32.59 Mbit/s
95th percentile per-packet one-way delay: 105.843 ms
Loss rate: 16.22%
-- Flow 3:
Average throughput: 40.01 Mbit/s
95th percentile per-packet one-way delay: 105.926 ms
Loss rate: 26.55%
```

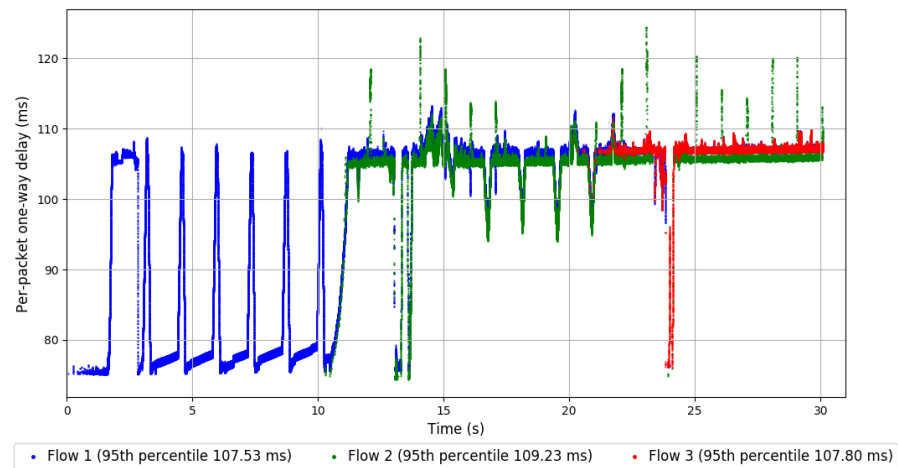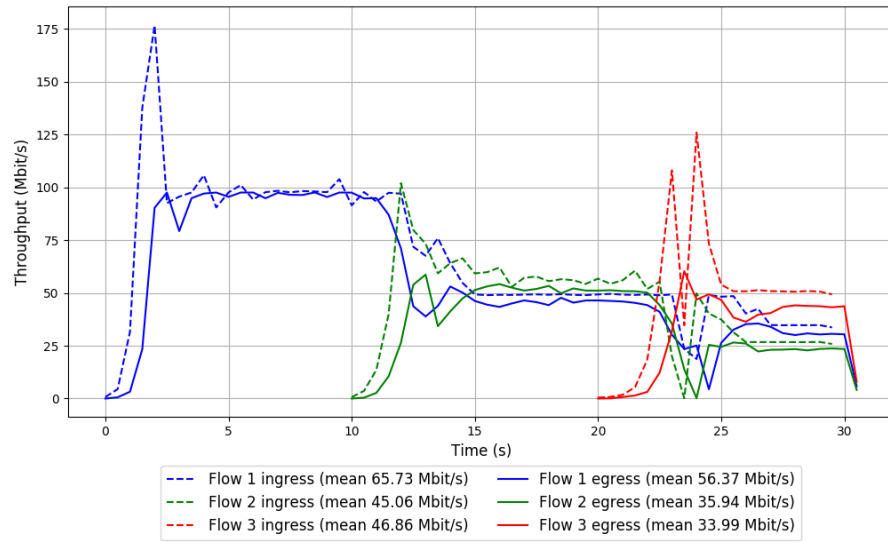Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 64.25 Mbit/s)   Flow 1 egress (mean 55.62 Mbit/s)
Flow 2 ingress (mean 38.96 Mbit/s)   Flow 2 egress (mean 32.59 Mbit/s)
Flow 3 ingress (mean 54.54 Mbit/s)   Flow 3 egress (mean 40.01 Mbit/s)

Flow 1 (95th percentile 105.71 ms)   Flow 2 (95th percentile 105.84 ms)   Flow 3 (95th percentile 105.93 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2019-08-27 00:51:20
End at: 2019-08-27 00:51:50
Local clock offset: 1.531 ms
Remote clock offset: -217.877 ms


# Below is generated by plot.py at 2019-08-27 01:46:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.89 Mbit/s
95th percentile per-packet one-way delay: 105.969 ms
Loss rate: 15.75%
-- Flow 1:
Average throughput: 56.16 Mbit/s
95th percentile per-packet one-way delay: 104.251 ms
Loss rate: 11.71%
-- Flow 2:
Average throughput: 37.32 Mbit/s
95th percentile per-packet one-way delay: 106.123 ms
Loss rate: 20.81%
-- Flow 3:
Average throughput: 29.71 Mbit/s
95th percentile per-packet one-way delay: 106.258 ms
Loss rate: 23.37%
```

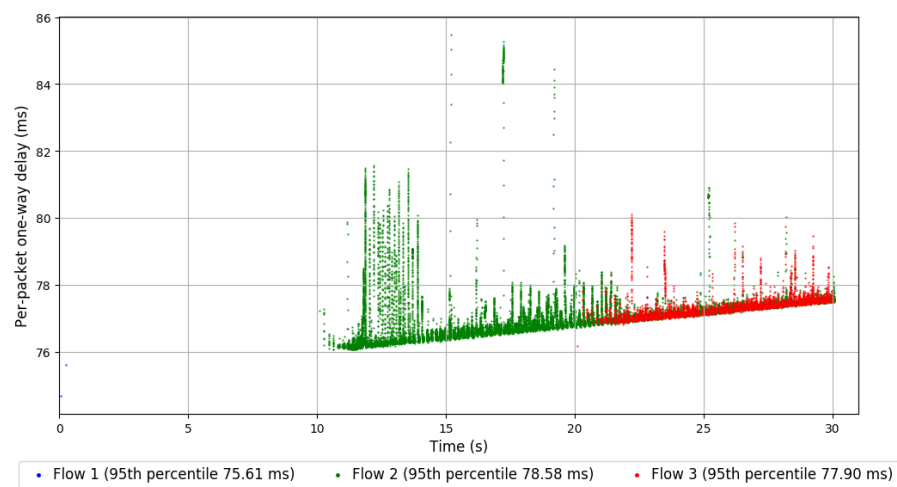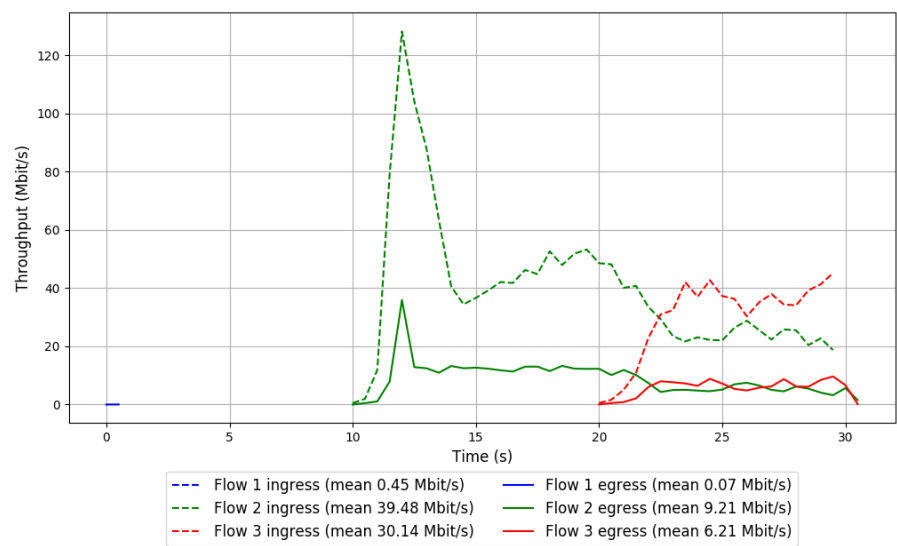Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 63.68 Mbit/s) --- Flow 1 egress (mean 56.16 Mbit/s)
Flow 2 ingress (mean 47.18 Mbit/s) --- Flow 2 egress (mean 37.32 Mbit/s)
Flow 3 ingress (mean 38.77 Mbit/s) --- Flow 3 egress (mean 29.71 Mbit/s)

Flow 1 (95th percentile 104.25 ms)   Flow 2 (95th percentile 106.12 ms)   Flow 3 (95th percentile 106.26 ms)

12

```
Run 5: Statistics of TCP BBR

Start at: 2019-08-27 01:22:10
End at: 2019-08-27 01:22:40
Local clock offset: 1.133 ms
Remote clock offset: -299.888 ms


# Below is generated by plot.py at 2019-08-27 01:46:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.56 Mbit/s
95th percentile per-packet one-way delay: 107.843 ms
Loss rate: 17.66%
-- Flow 1:
Average throughput: 56.37 Mbit/s
95th percentile per-packet one-way delay: 107.535 ms
Loss rate: 14.15%
-- Flow 2:
Average throughput: 35.94 Mbit/s
95th percentile per-packet one-way delay: 109.233 ms
Loss rate: 20.25%
-- Flow 3:
Average throughput: 33.99 Mbit/s
95th percentile per-packet one-way delay: 107.800 ms
Loss rate: 27.47%
```
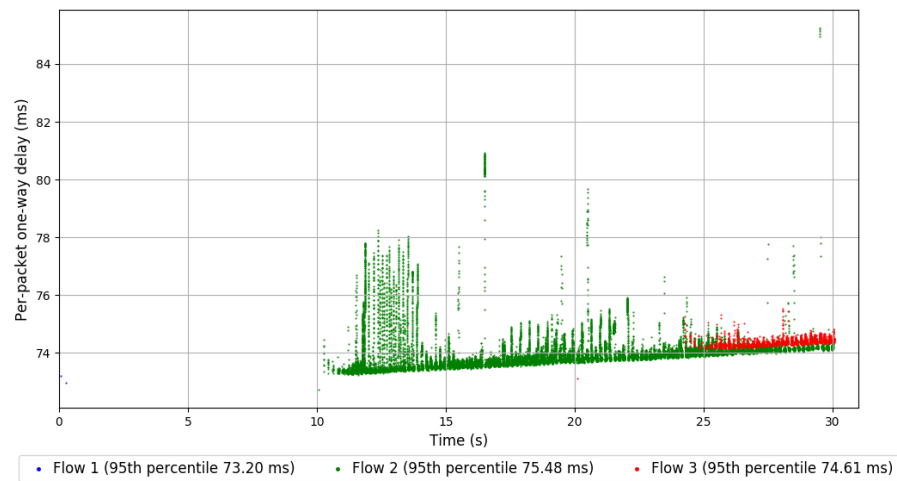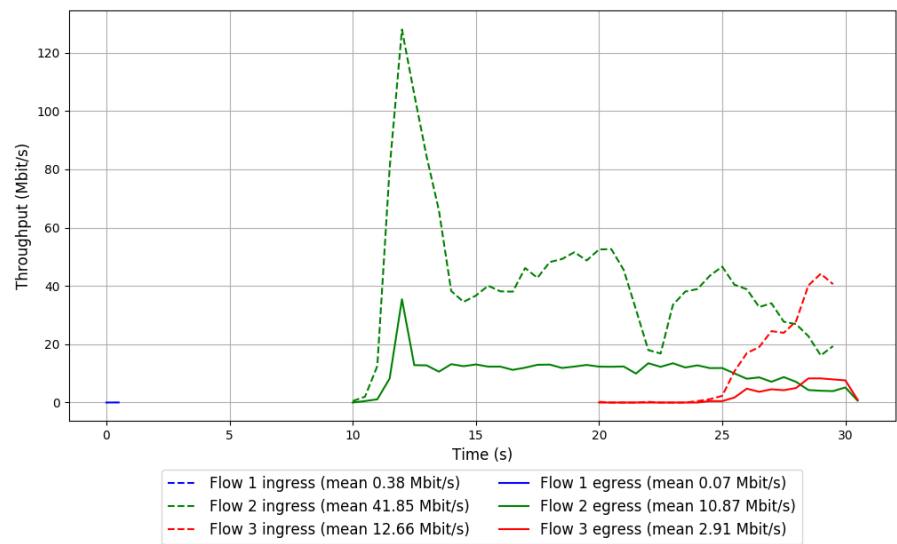
Run 5: Report of TCP BBR — Data Link

Legend (top plot):
- Flow 1 ingress (mean 65.73 Mbit/s)
- Flow 1 egress (mean 56.37 Mbit/s)
- Flow 2 ingress (mean 45.06 Mbit/s)
- Flow 2 egress (mean 35.94 Mbit/s)
- Flow 3 ingress (mean 46.86 Mbit/s)
- Flow 3 egress (mean 33.99 Mbit/s)

Legend (bottom plot):
- Flow 1 (95th percentile 107.53 ms)
- Flow 2 (95th percentile 109.23 ms)
- Flow 3 (95th percentile 107.80 ms)

14

```
Run 1: Statistics of Copa

Start at: 2019-08-26 23:10:34
End at: 2019-08-26 23:11:04
Local clock offset: 1.756 ms
Remote clock offset: -247.794 ms


# Below is generated by plot.py at 2019-08-27 01:46:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 78.353 ms
Loss rate: 77.41%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 75.612 ms
Loss rate: 84.68%
-- Flow 2:
Average throughput: 9.21 Mbit/s
95th percentile per-packet one-way delay: 78.584 ms
Loss rate: 76.66%
-- Flow 3:
Average throughput: 6.21 Mbit/s
95th percentile per-packet one-way delay: 77.902 ms
Loss rate: 79.40%
```
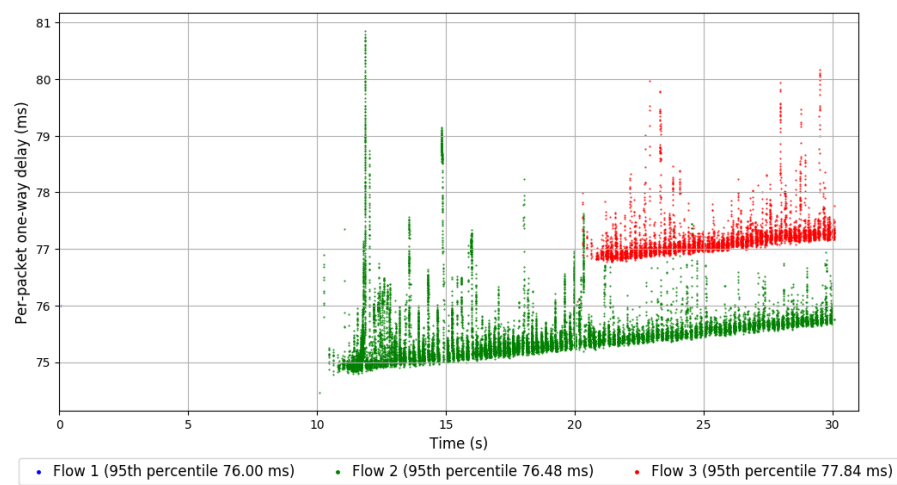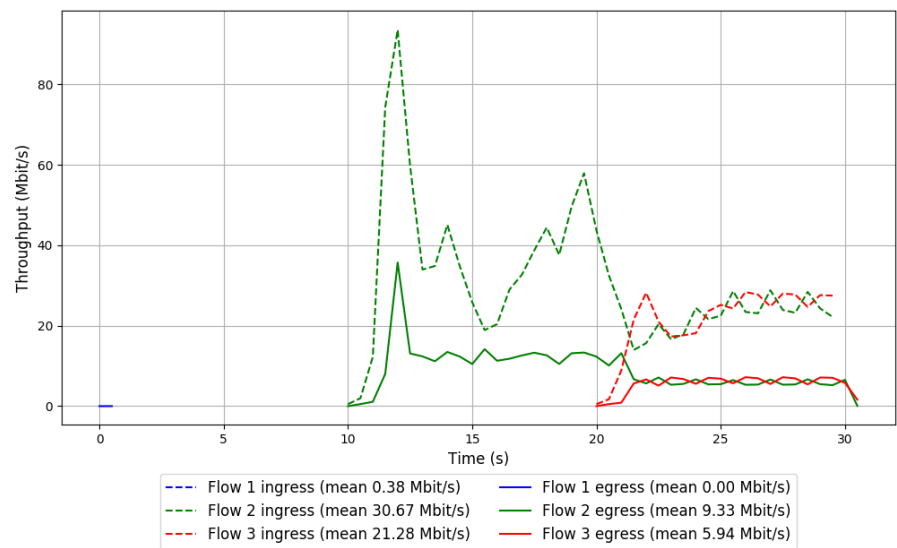
Run 1: Report of Copa — Data Link

16

```
Run 2: Statistics of Copa

Start at: 2019-08-26 23:41:15
End at: 2019-08-26 23:41:45
Local clock offset: 2.082 ms
Remote clock offset: -28.446 ms


# Below is generated by plot.py at 2019-08-27 01:46:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 75.300 ms
Loss rate: 74.43%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 73.205 ms
Loss rate: 82.17%
-- Flow 2:
Average throughput: 10.87 Mbit/s
95th percentile per-packet one-way delay: 75.483 ms
Loss rate: 74.03%
-- Flow 3:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 74.605 ms
Loss rate: 77.04%
```

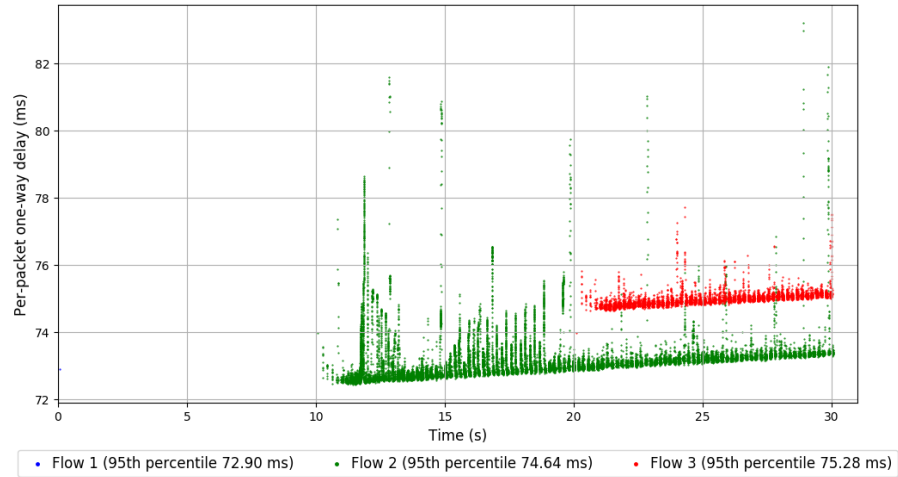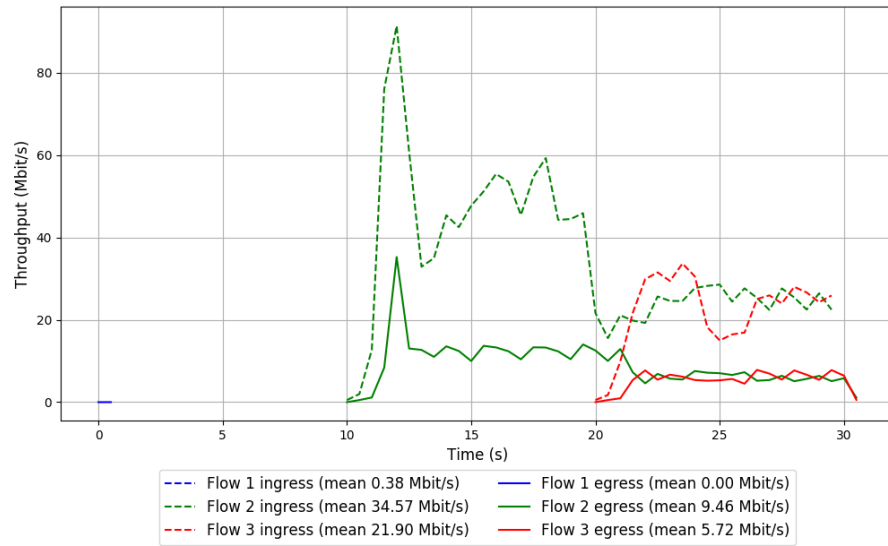Run 2: Report of Copa — Data Link

18

```
Run 3: Statistics of Copa

Start at: 2019-08-27 00:11:50
End at: 2019-08-27 00:12:20
Local clock offset: 1.986 ms
Remote clock offset: -109.664 ms


# Below is generated by plot.py at 2019-08-27 01:46:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 77.362 ms
Loss rate: 70.22%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 76.001 ms
Loss rate: 98.60%
-- Flow 2:
Average throughput: 9.33 Mbit/s
95th percentile per-packet one-way delay: 76.476 ms
Loss rate: 69.58%
-- Flow 3:
Average throughput: 5.94 Mbit/s
95th percentile per-packet one-way delay: 77.837 ms
Loss rate: 72.08%
```
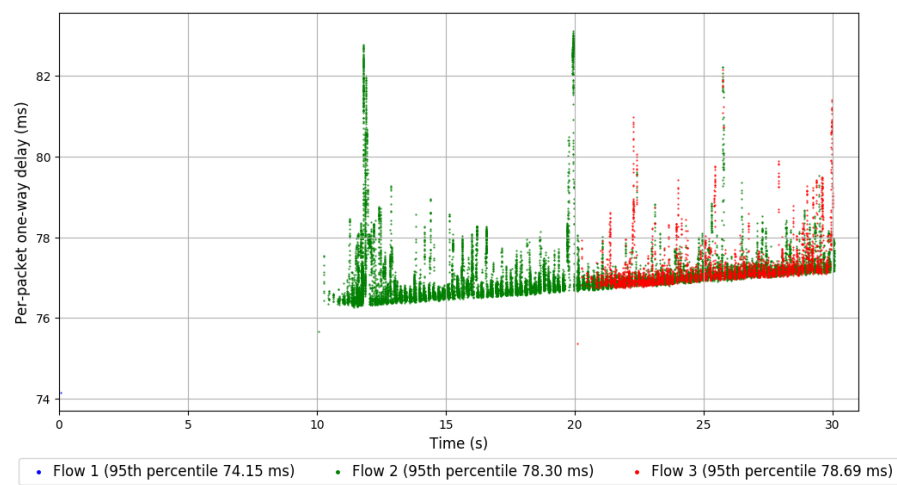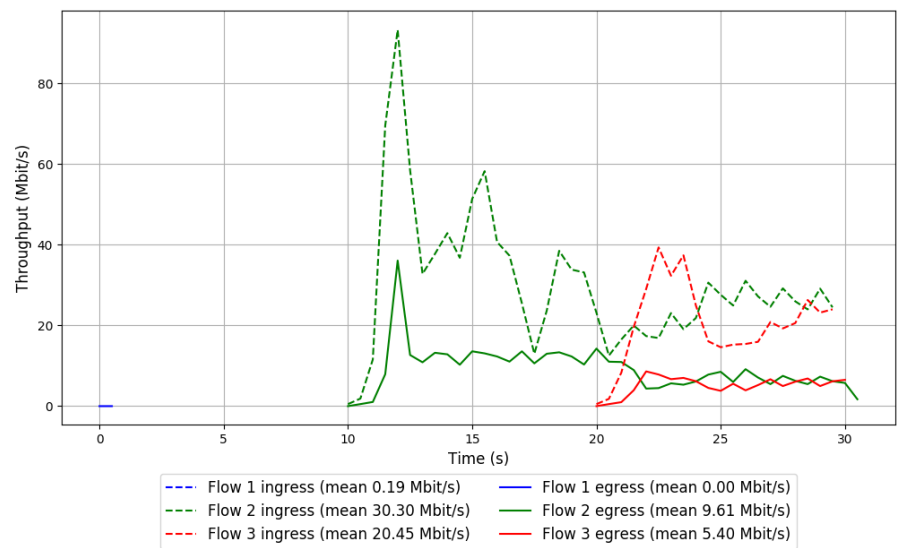
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 0.38 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 30.67 Mbit/s) --- Flow 2 egress (mean 9.33 Mbit/s)
Flow 3 ingress (mean 21.28 Mbit/s) --- Flow 3 egress (mean 5.94 Mbit/s)

Flow 1 (95th percentile 76.00 ms)   Flow 2 (95th percentile 76.48 ms)   Flow 3 (95th percentile 77.84 ms)

```
Run 4: Statistics of Copa

Start at: 2019-08-27 00:42:25
End at: 2019-08-27 00:42:55
Local clock offset: 1.653 ms
Remote clock offset: -194.466 ms


# Below is generated by plot.py at 2019-08-27 01:46:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 75.171 ms
Loss rate: 72.94%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 72.902 ms
Loss rate: 98.60%
-- Flow 2:
Average throughput: 9.46 Mbit/s
95th percentile per-packet one-way delay: 74.639 ms
Loss rate: 72.64%
-- Flow 3:
Average throughput: 5.72 Mbit/s
95th percentile per-packet one-way delay: 75.275 ms
Loss rate: 73.88%
```
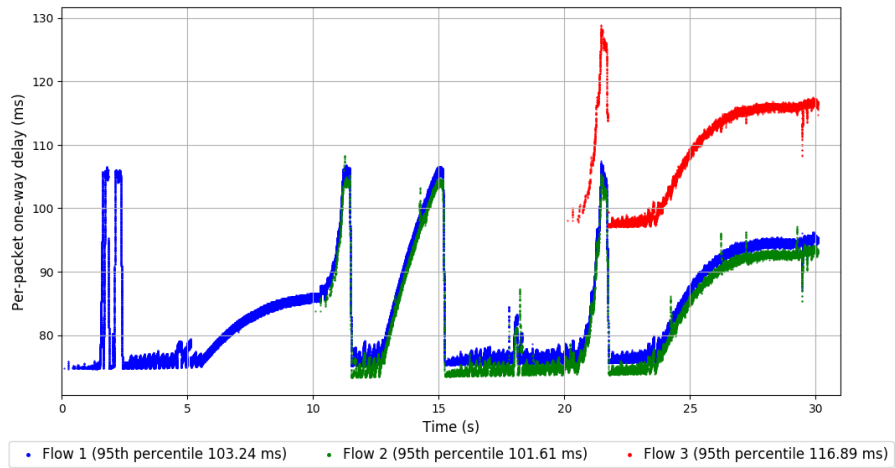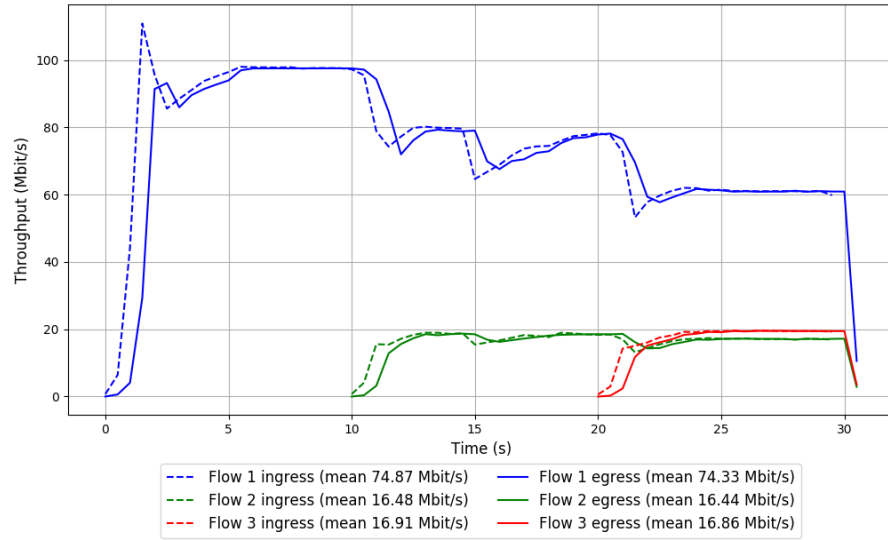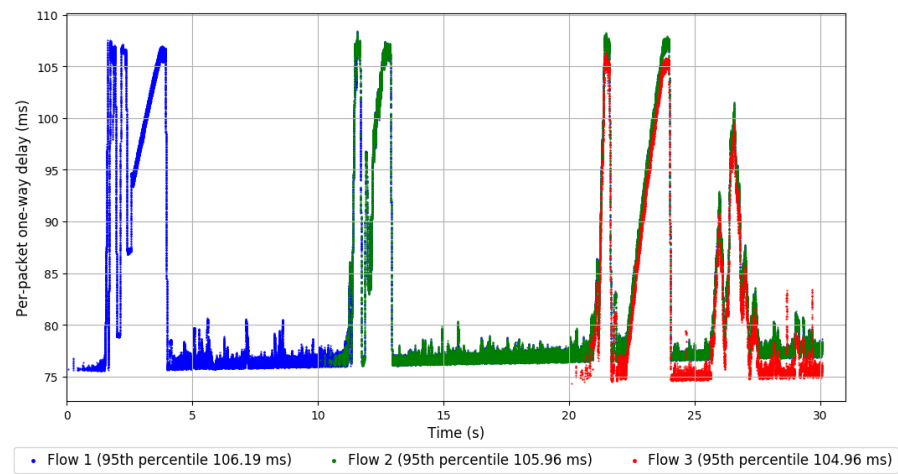
Run 4: Report of Copa — Data Link

- - - Flow 1 ingress (mean 0.38 Mbit/s) ——— Flow 1 egress (mean 0.00 Mbit/s)
- - - Flow 2 ingress (mean 34.57 Mbit/s) ——— Flow 2 egress (mean 9.46 Mbit/s)
- - - Flow 3 ingress (mean 21.90 Mbit/s) ——— Flow 3 egress (mean 5.72 Mbit/s)

• Flow 1 (95th percentile 72.90 ms)   • Flow 2 (95th percentile 74.64 ms)   • Flow 3 (95th percentile 75.28 ms)

22

```
Run 5: Statistics of Copa

Start at: 2019-08-27 01:13:02
End at: 2019-08-27 01:13:32
Local clock offset: 1.282 ms
Remote clock offset: -275.156 ms


# Below is generated by plot.py at 2019-08-27 01:46:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 78.380 ms
Loss rate: 69.60%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 74.151 ms
Loss rate: 97.24%
-- Flow 2:
Average throughput: 9.61 Mbit/s
95th percentile per-packet one-way delay: 78.304 ms
Loss rate: 68.27%
-- Flow 3:
Average throughput: 5.40 Mbit/s
95th percentile per-packet one-way delay: 78.689 ms
Loss rate: 73.57%
```
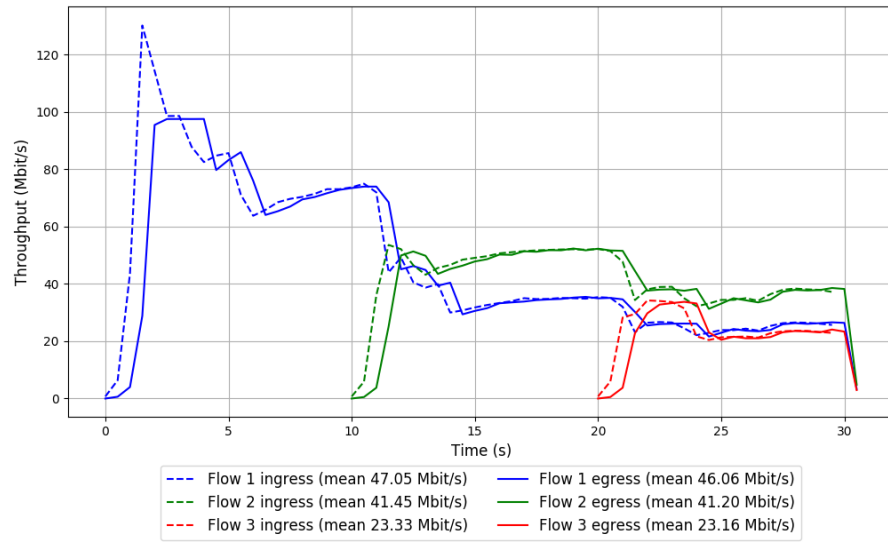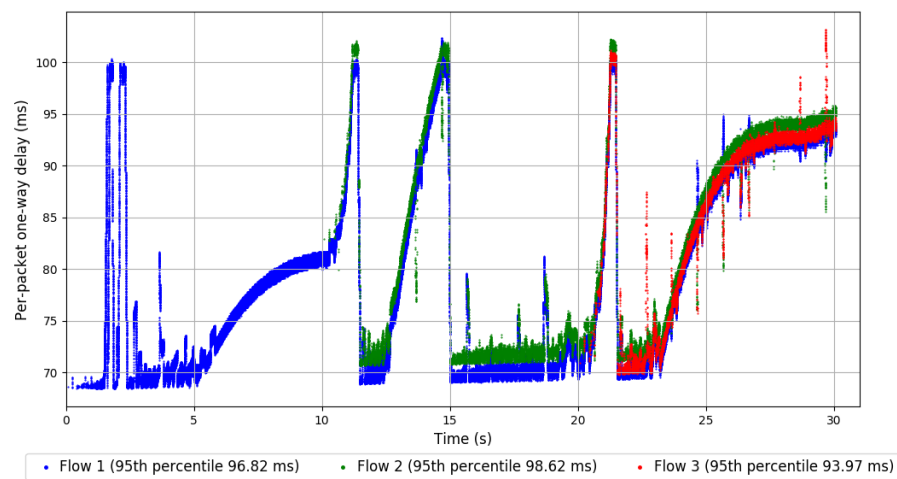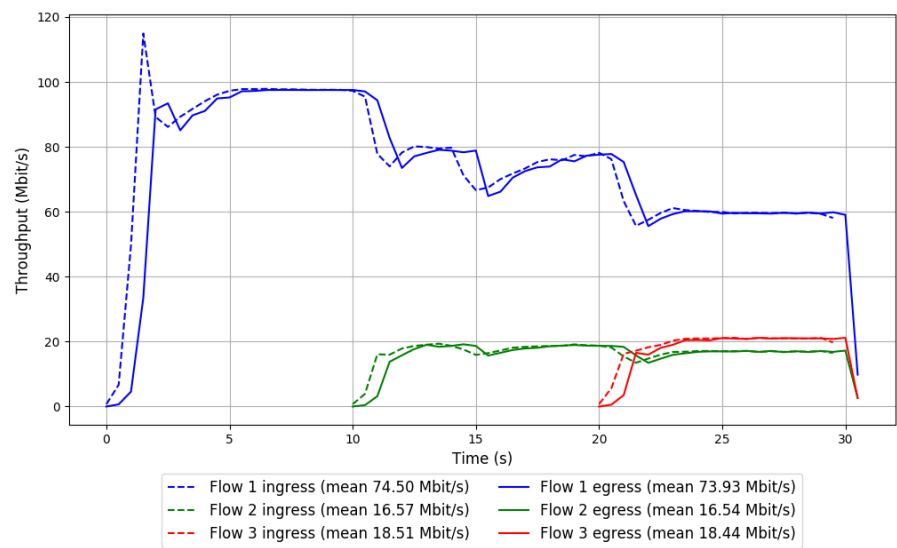
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 0.19 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 30.30 Mbit/s) --- Flow 2 egress (mean 9.61 Mbit/s)
Flow 3 ingress (mean 20.45 Mbit/s) --- Flow 3 egress (mean 5.40 Mbit/s)

Flow 1 (95th percentile 74.15 ms) • Flow 2 (95th percentile 78.30 ms) • Flow 3 (95th percentile 78.69 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2019-08-26 23:34:52
End at: 2019-08-26 23:35:22
Local clock offset: 2.168 ms
Remote clock offset: -10.695 ms


# Below is generated by plot.py at 2019-08-27 01:46:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.88 Mbit/s
95th percentile per-packet one-way delay: 105.865 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 74.33 Mbit/s
95th percentile per-packet one-way delay: 103.236 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 16.44 Mbit/s
95th percentile per-packet one-way delay: 101.607 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 16.86 Mbit/s
95th percentile per-packet one-way delay: 116.893 ms
Loss rate: 0.30%
```

Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 74.87 Mbit/s) --- Flow 1 egress (mean 74.33 Mbit/s)
Flow 2 ingress (mean 16.48 Mbit/s) --- Flow 2 egress (mean 16.44 Mbit/s)
Flow 3 ingress (mean 16.91 Mbit/s) --- Flow 3 egress (mean 16.86 Mbit/s)

Flow 1 (95th percentile 103.24 ms)   Flow 2 (95th percentile 101.61 ms)   Flow 3 (95th percentile 116.89 ms)
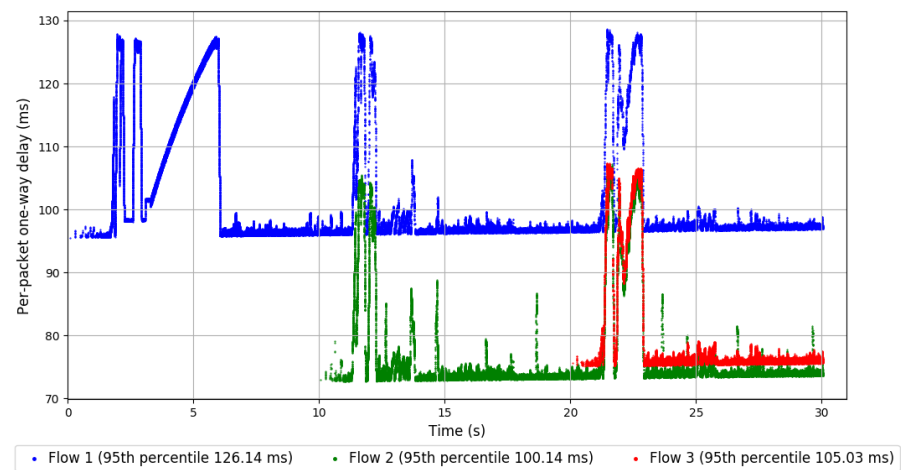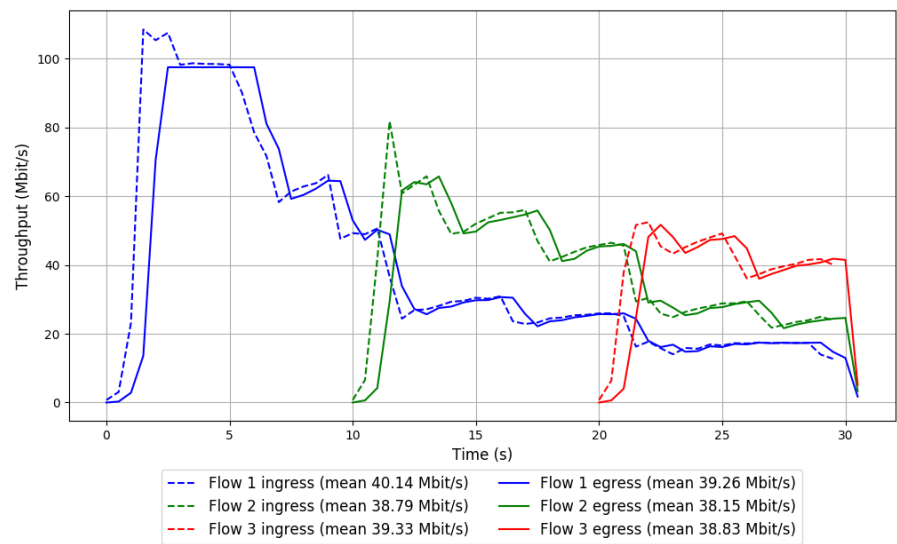
```
Run 2: Statistics of TCP Cubic

Start at: 2019-08-27 00:05:28
End at: 2019-08-27 00:05:58
Local clock offset: 1.168 ms
Remote clock offset: -93.374 ms


# Below is generated by plot.py at 2019-08-27 01:46:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.21 Mbit/s
95th percentile per-packet one-way delay: 105.980 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 46.06 Mbit/s
95th percentile per-packet one-way delay: 106.195 ms
Loss rate: 2.12%
-- Flow 2:
Average throughput: 41.20 Mbit/s
95th percentile per-packet one-way delay: 105.963 ms
Loss rate: 0.60%
-- Flow 3:
Average throughput: 23.16 Mbit/s
95th percentile per-packet one-way delay: 104.958 ms
Loss rate: 0.72%
```
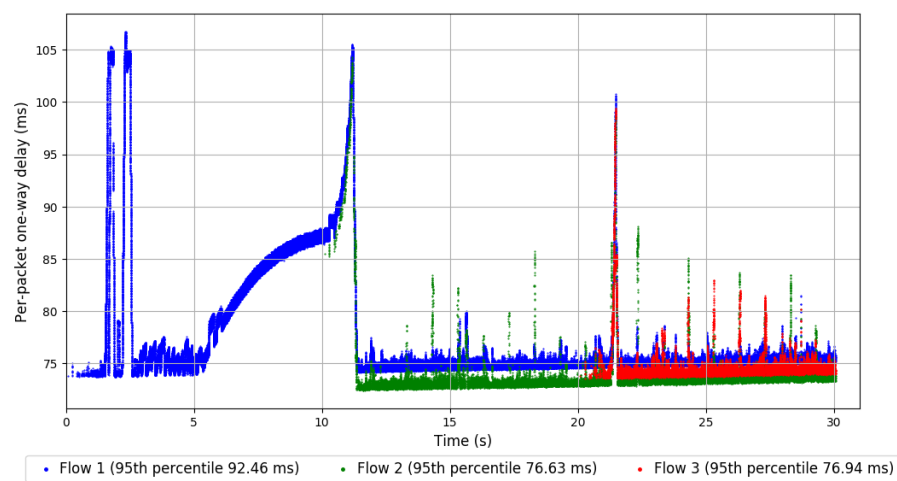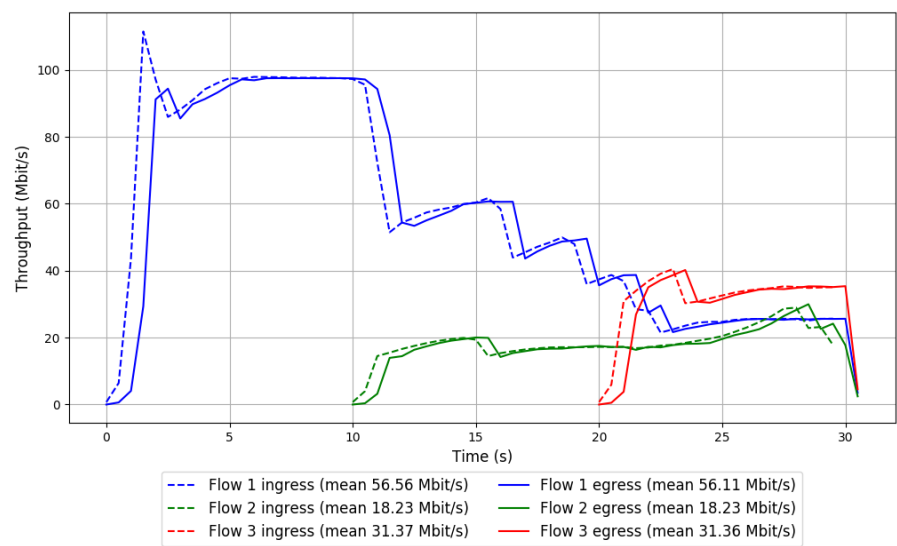
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 47.05 Mbit/s) --- Flow 1 egress (mean 46.06 Mbit/s)
Flow 2 ingress (mean 41.45 Mbit/s) --- Flow 2 egress (mean 41.20 Mbit/s)
Flow 3 ingress (mean 23.33 Mbit/s) --- Flow 3 egress (mean 23.16 Mbit/s)

Flow 1 (95th percentile 106.19 ms)   Flow 2 (95th percentile 105.96 ms)   Flow 3 (95th percentile 104.96 ms)

28

```
Run 3: Statistics of TCP Cubic

Start at: 2019-08-27 00:36:03
End at: 2019-08-27 00:36:33
Local clock offset: 1.736 ms
Remote clock offset: -180.116 ms


# Below is generated by plot.py at 2019-08-27 01:46:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.09 Mbit/s
95th percentile per-packet one-way delay: 96.837 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 73.93 Mbit/s
95th percentile per-packet one-way delay: 96.817 ms
Loss rate: 0.68%
-- Flow 2:
Average throughput: 16.54 Mbit/s
95th percentile per-packet one-way delay: 98.623 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 18.44 Mbit/s
95th percentile per-packet one-way delay: 93.975 ms
Loss rate: 0.14%
```
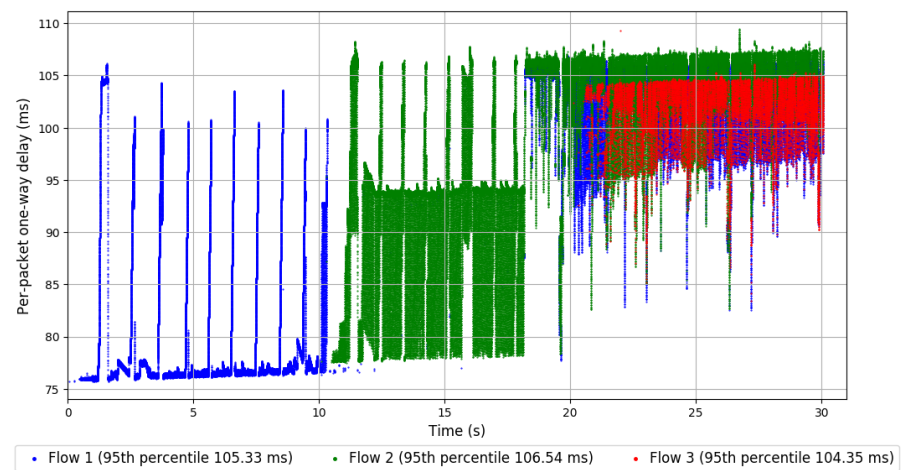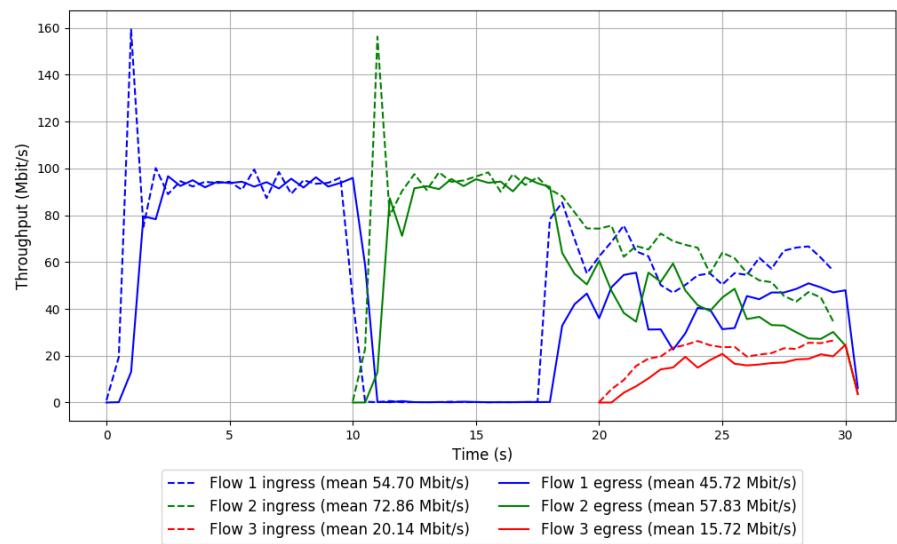
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 74.50 Mbit/s) --- Flow 1 egress (mean 73.93 Mbit/s)
Flow 2 ingress (mean 16.57 Mbit/s) --- Flow 2 egress (mean 16.54 Mbit/s)
Flow 3 ingress (mean 18.51 Mbit/s) --- Flow 3 egress (mean 18.44 Mbit/s)

Flow 1 (95th percentile 96.82 ms)   Flow 2 (95th percentile 98.62 ms)   Flow 3 (95th percentile 93.97 ms)

30

```
Run 4: Statistics of TCP Cubic

Start at: 2019-08-27 01:06:41
End at: 2019-08-27 01:07:11
Local clock offset: 1.364 ms
Remote clock offset: -259.382 ms


# Below is generated by plot.py at 2019-08-27 01:47:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.64 Mbit/s
95th percentile per-packet one-way delay: 123.790 ms
Loss rate: 1.90%
-- Flow 1:
Average throughput: 39.26 Mbit/s
95th percentile per-packet one-way delay: 126.137 ms
Loss rate: 2.28%
-- Flow 2:
Average throughput: 38.15 Mbit/s
95th percentile per-packet one-way delay: 100.143 ms
Loss rate: 1.65%
-- Flow 3:
Average throughput: 38.83 Mbit/s
95th percentile per-packet one-way delay: 105.027 ms
Loss rate: 1.26%
```
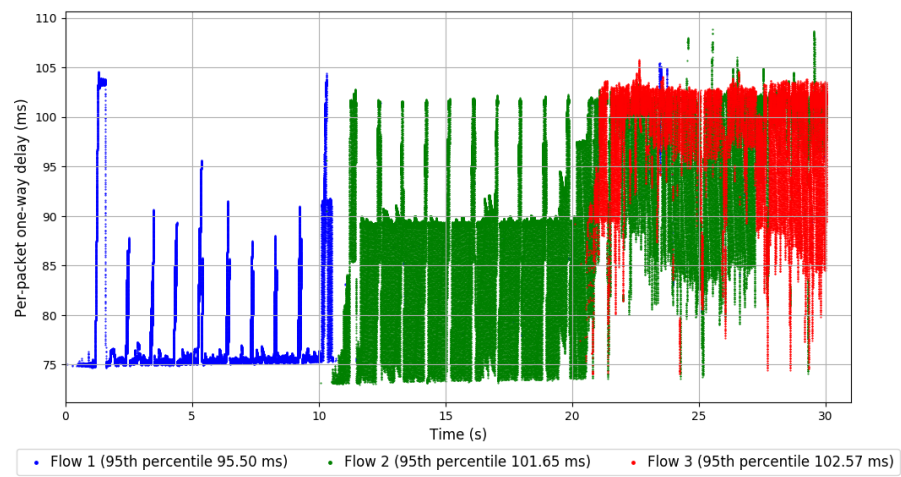
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 40.14 Mbit/s) --- Flow 1 egress (mean 39.26 Mbit/s)
Flow 2 ingress (mean 38.79 Mbit/s) --- Flow 2 egress (mean 38.15 Mbit/s)
Flow 3 ingress (mean 39.33 Mbit/s) --- Flow 3 egress (mean 38.83 Mbit/s)

Flow 1 (95th percentile 126.14 ms)   Flow 2 (95th percentile 100.14 ms)   Flow 3 (95th percentile 105.03 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2019-08-27 01:37:33
End at: 2019-08-27 01:38:03
Local clock offset: 0.132 ms
Remote clock offset: -343.599 ms


# Below is generated by plot.py at 2019-08-27 01:47:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.67 Mbit/s
95th percentile per-packet one-way delay: 89.637 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 56.11 Mbit/s
95th percentile per-packet one-way delay: 92.459 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 18.23 Mbit/s
95th percentile per-packet one-way delay: 76.631 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 31.36 Mbit/s
95th percentile per-packet one-way delay: 76.940 ms
Loss rate: 0.04%
```

Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2019-08-26 23:25:59
End at: 2019-08-26 23:26:29
Local clock offset: 2.278 ms
Remote clock offset: -316.888 ms


# Below is generated by plot.py at 2019-08-27 01:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.43 Mbit/s
95th percentile per-packet one-way delay: 106.135 ms
Loss rate: 18.53%
-- Flow 1:
Average throughput: 45.72 Mbit/s
95th percentile per-packet one-way delay: 105.327 ms
Loss rate: 16.34%
-- Flow 2:
Average throughput: 57.83 Mbit/s
95th percentile per-packet one-way delay: 106.544 ms
Loss rate: 20.51%
-- Flow 3:
Average throughput: 15.72 Mbit/s
95th percentile per-packet one-way delay: 104.348 ms
Loss rate: 22.01%
```
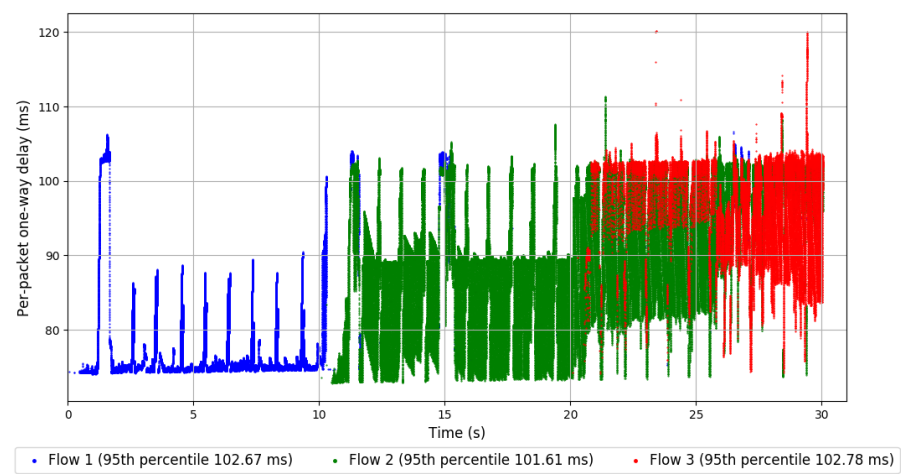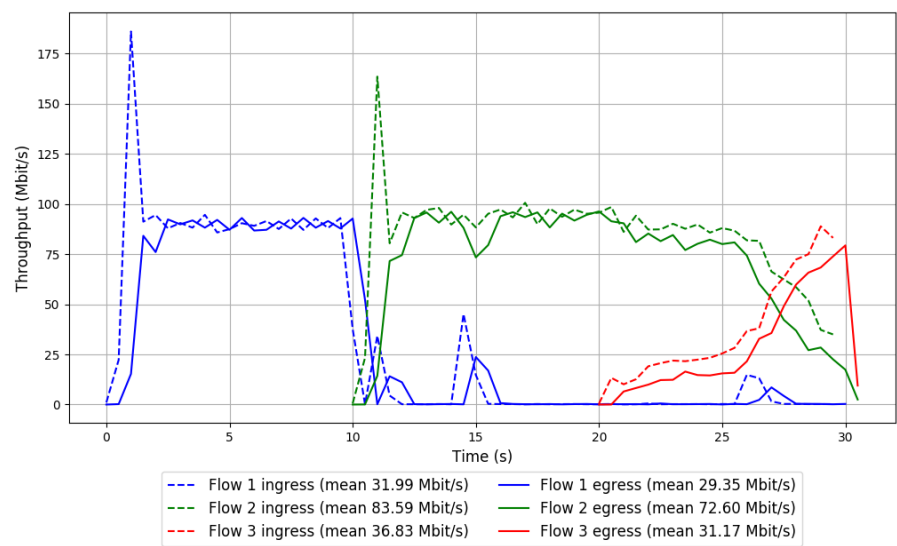
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2019-08-26 23:56:37
End at: 2019-08-26 23:57:07
Local clock offset: 1.268 ms
Remote clock offset: -68.92 ms


# Below is generated by plot.py at 2019-08-27 01:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.09 Mbit/s
95th percentile per-packet one-way delay: 107.393 ms
Loss rate: 7.01%
-- Flow 1:
Average throughput: 29.32 Mbit/s
95th percentile per-packet one-way delay: 121.045 ms
Loss rate: 5.53%
-- Flow 2:
Average throughput: 79.74 Mbit/s
95th percentile per-packet one-way delay: 104.695 ms
Loss rate: 4.52%
-- Flow 3:
Average throughput: 10.77 Mbit/s
95th percentile per-packet one-way delay: 103.759 ms
Loss rate: 38.62%
```
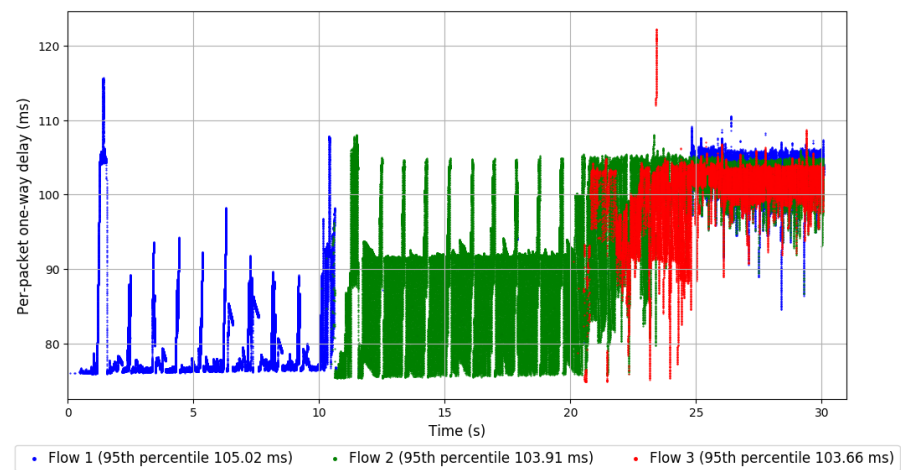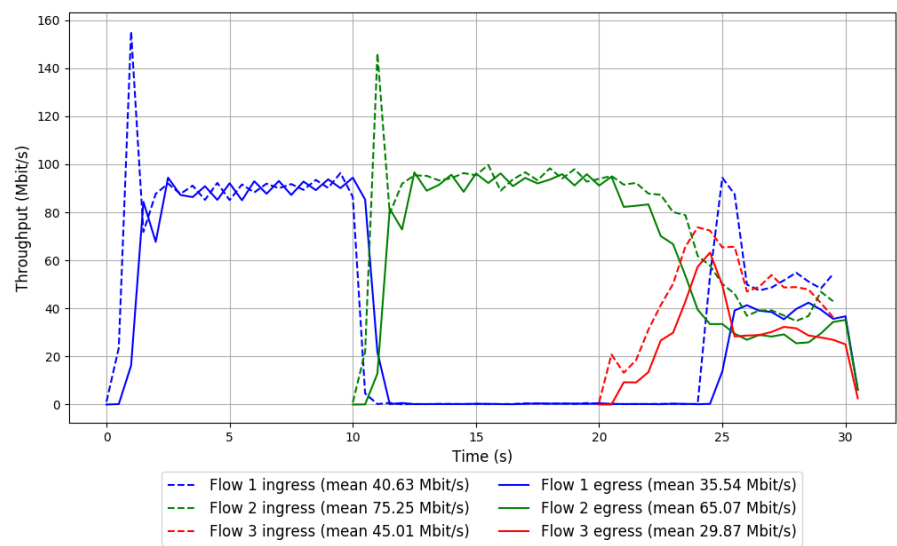
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 31.06 Mbit/s) Flow 1 egress (mean 29.32 Mbit/s)
Flow 2 ingress (mean 83.63 Mbit/s) Flow 2 egress (mean 79.74 Mbit/s)
Flow 3 ingress (mean 17.57 Mbit/s) Flow 3 egress (mean 10.77 Mbit/s)

Flow 1 (95th percentile 121.05 ms)   Flow 2 (95th percentile 104.69 ms)   Flow 3 (95th percentile 103.76 ms)

```
Run 3: Statistics of FillP

Start at: 2019-08-27 00:27:11
End at: 2019-08-27 00:27:41
Local clock offset: 1.118 ms
Remote clock offset: -152.921 ms


# Below is generated by plot.py at 2019-08-27 01:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.10 Mbit/s
95th percentile per-packet one-way delay: 101.871 ms
Loss rate: 13.63%
-- Flow 1:
Average throughput: 29.28 Mbit/s
95th percentile per-packet one-way delay: 95.499 ms
Loss rate: 5.12%
-- Flow 2:
Average throughput: 71.71 Mbit/s
95th percentile per-packet one-way delay: 101.652 ms
Loss rate: 13.82%
-- Flow 3:
Average throughput: 36.74 Mbit/s
95th percentile per-packet one-way delay: 102.574 ms
Loss rate: 28.44%
```
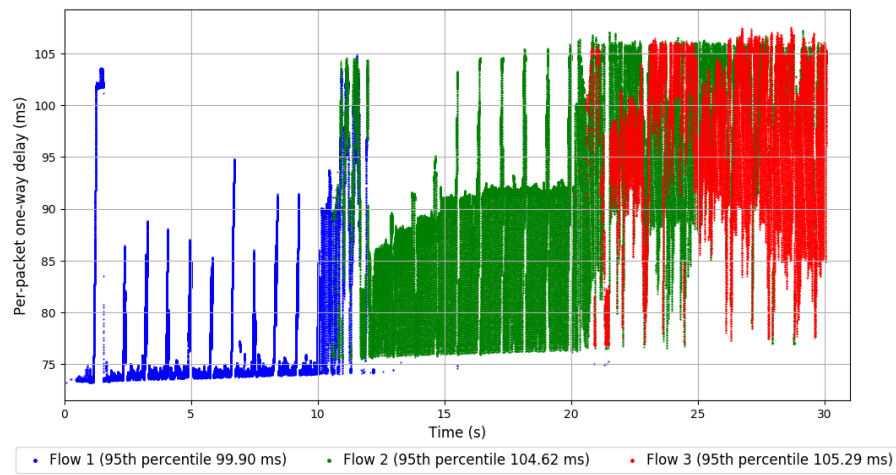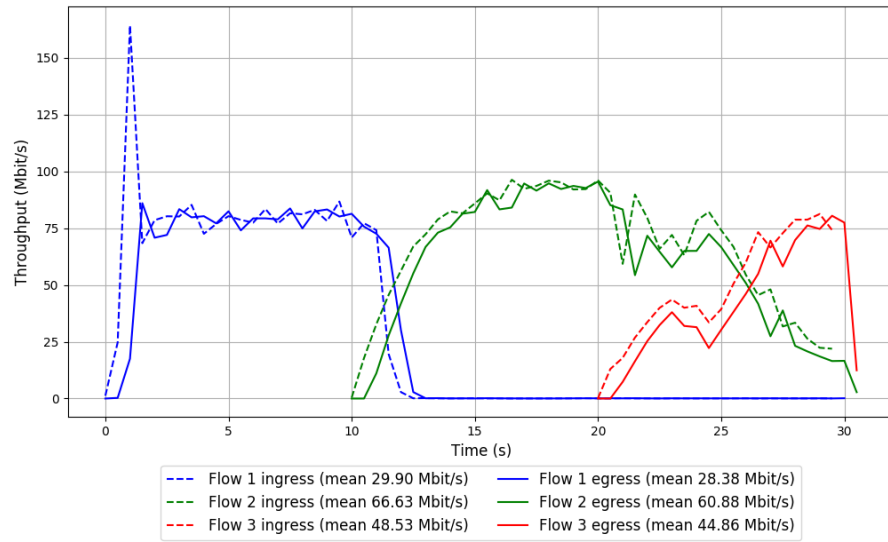
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2019-08-27 00:57:48
End at: 2019-08-27 00:58:18
Local clock offset: 1.4 ms
Remote clock offset: -234.934 ms


# Below is generated by plot.py at 2019-08-27 01:47:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.98 Mbit/s
95th percentile per-packet one-way delay: 102.068 ms
Loss rate: 11.76%
-- Flow 1:
Average throughput: 29.35 Mbit/s
95th percentile per-packet one-way delay: 102.668 ms
Loss rate: 8.21%
-- Flow 2:
Average throughput: 72.60 Mbit/s
95th percentile per-packet one-way delay: 101.614 ms
Loss rate: 13.05%
-- Flow 3:
Average throughput: 31.17 Mbit/s
95th percentile per-packet one-way delay: 102.782 ms
Loss rate: 15.15%
```
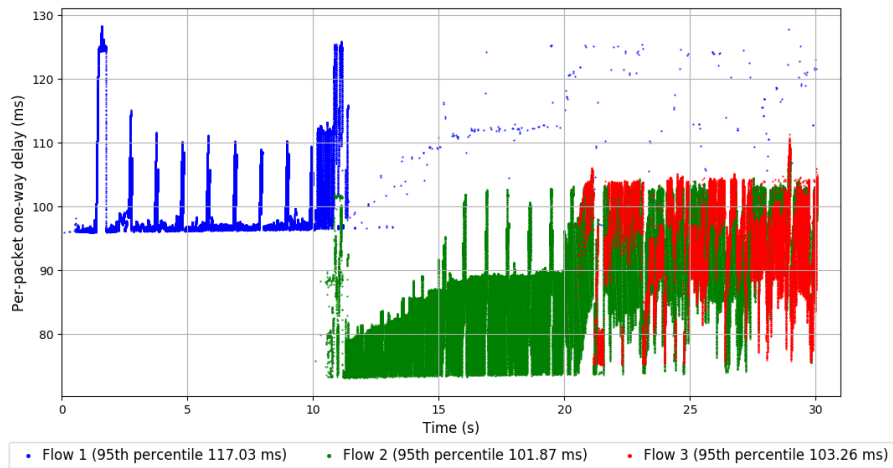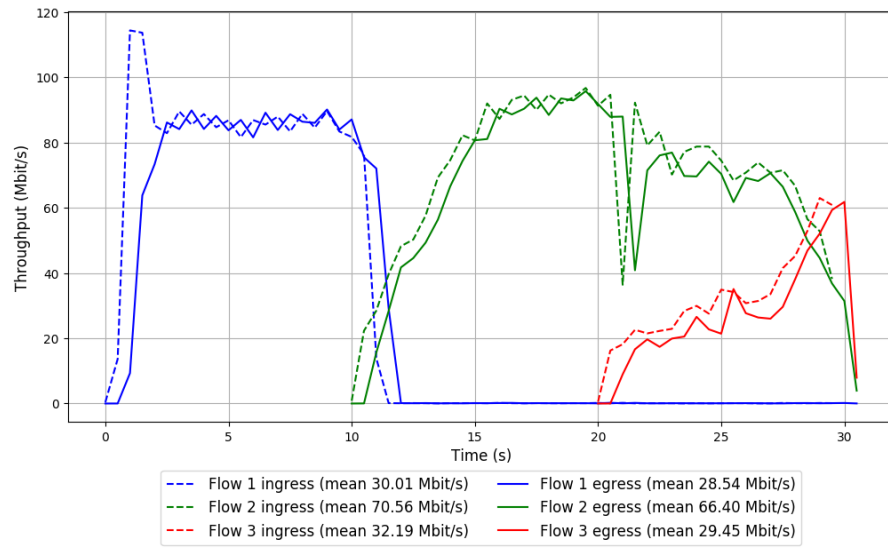
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 31.99 Mbit/s) — — — Flow 1 egress (mean 29.35 Mbit/s)
Flow 2 ingress (mean 83.59 Mbit/s) — — — Flow 2 egress (mean 72.60 Mbit/s)
Flow 3 ingress (mean 36.83 Mbit/s) — — — Flow 3 egress (mean 31.17 Mbit/s)

Flow 1 (95th percentile 102.67 ms) • Flow 2 (95th percentile 101.61 ms) • Flow 3 (95th percentile 102.78 ms)

```
Run 5: Statistics of FillP

Start at: 2019-08-27 01:28:39
End at: 2019-08-27 01:29:09
Local clock offset: 0.254 ms
Remote clock offset: -317.49 ms


# Below is generated by plot.py at 2019-08-27 01:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.72 Mbit/s
95th percentile per-packet one-way delay: 104.306 ms
Loss rate: 15.91%
-- Flow 1:
Average throughput: 35.54 Mbit/s
95th percentile per-packet one-way delay: 105.018 ms
Loss rate: 12.44%
-- Flow 2:
Average throughput: 65.07 Mbit/s
95th percentile per-packet one-way delay: 103.912 ms
Loss rate: 13.48%
-- Flow 3:
Average throughput: 29.87 Mbit/s
95th percentile per-packet one-way delay: 103.657 ms
Loss rate: 33.60%
```
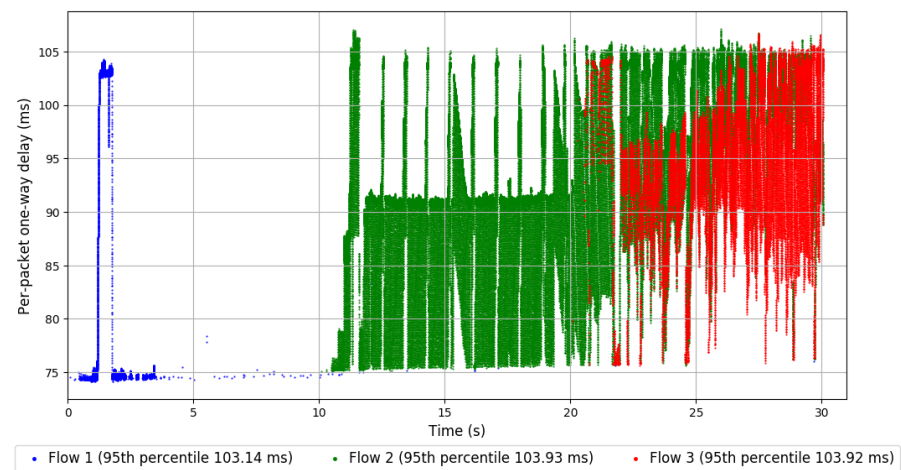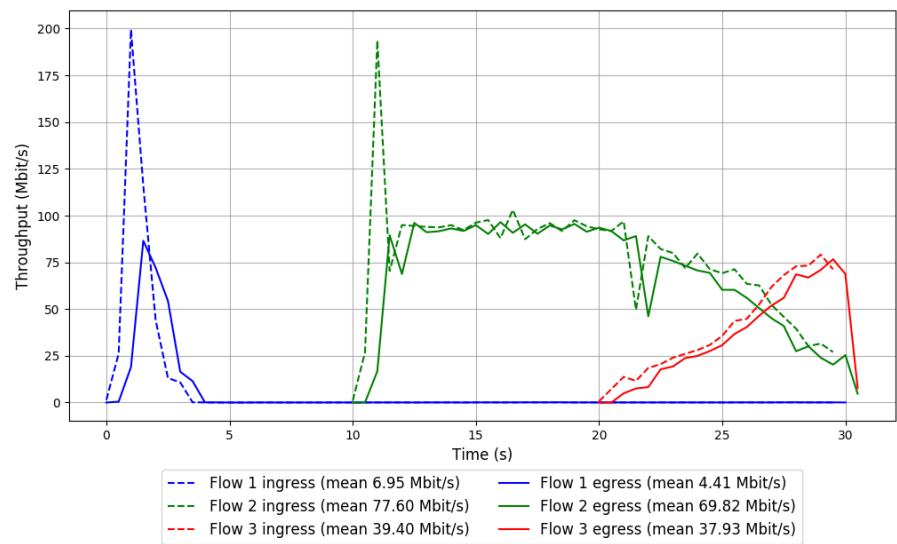
Run 5: Report of FillP — Data Link

44

```
Run 1: Statistics of FillP-Sheep

Start at: 2019-08-26 23:29:47
End at: 2019-08-26 23:30:17
Local clock offset: 1.431 ms
Remote clock offset: -335.836 ms


# Below is generated by plot.py at 2019-08-27 01:47:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.65 Mbit/s
95th percentile per-packet one-way delay: 104.502 ms
Loss rate: 7.18%
-- Flow 1:
Average throughput: 28.38 Mbit/s
95th percentile per-packet one-way delay: 99.902 ms
Loss rate: 5.02%
-- Flow 2:
Average throughput: 60.88 Mbit/s
95th percentile per-packet one-way delay: 104.619 ms
Loss rate: 8.54%
-- Flow 3:
Average throughput: 44.86 Mbit/s
95th percentile per-packet one-way delay: 105.293 ms
Loss rate: 7.44%
```

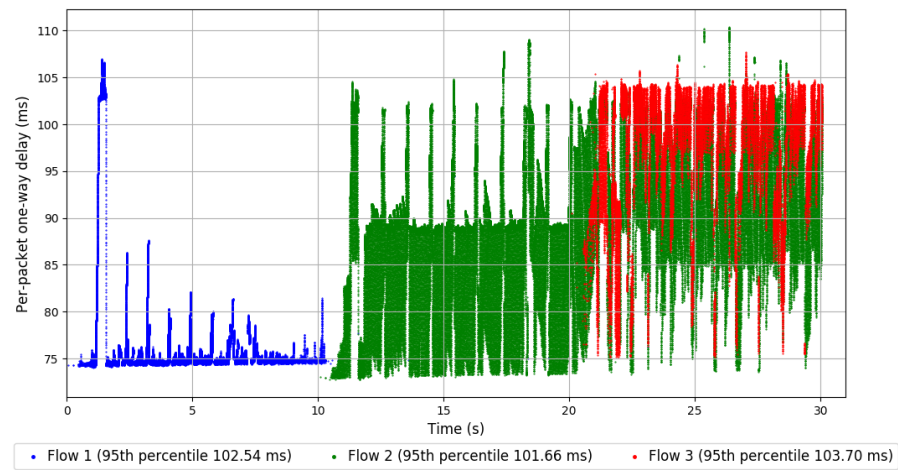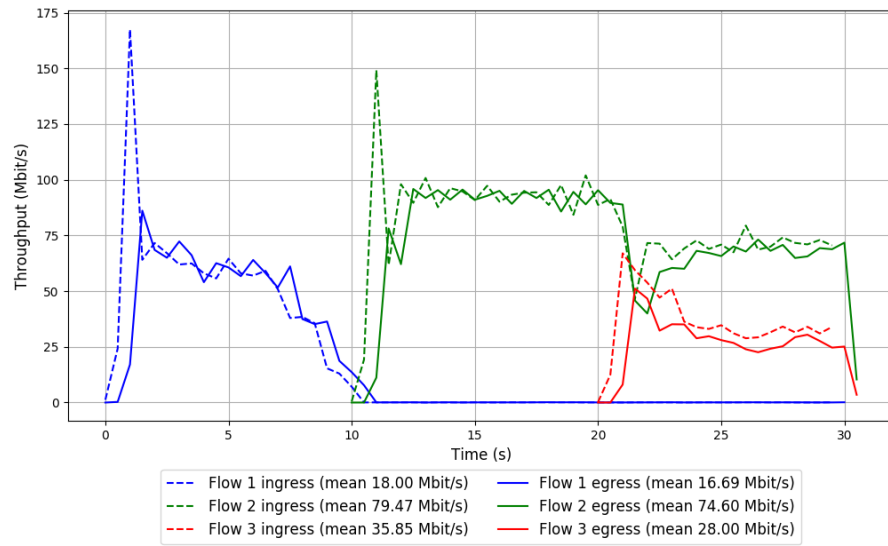Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-08-27 00:00:25
End at: 2019-08-27 00:00:55
Local clock offset: 2.023 ms
Remote clock offset: -79.676 ms


# Below is generated by plot.py at 2019-08-27 01:48:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.51 Mbit/s
95th percentile per-packet one-way delay: 105.518 ms
Loss rate: 5.77%
-- Flow 1:
Average throughput: 28.54 Mbit/s
95th percentile per-packet one-way delay: 117.029 ms
Loss rate: 4.80%
-- Flow 2:
Average throughput: 66.40 Mbit/s
95th percentile per-packet one-way delay: 101.872 ms
Loss rate: 5.80%
-- Flow 3:
Average throughput: 29.45 Mbit/s
95th percentile per-packet one-way delay: 103.264 ms
Loss rate: 8.40%
```

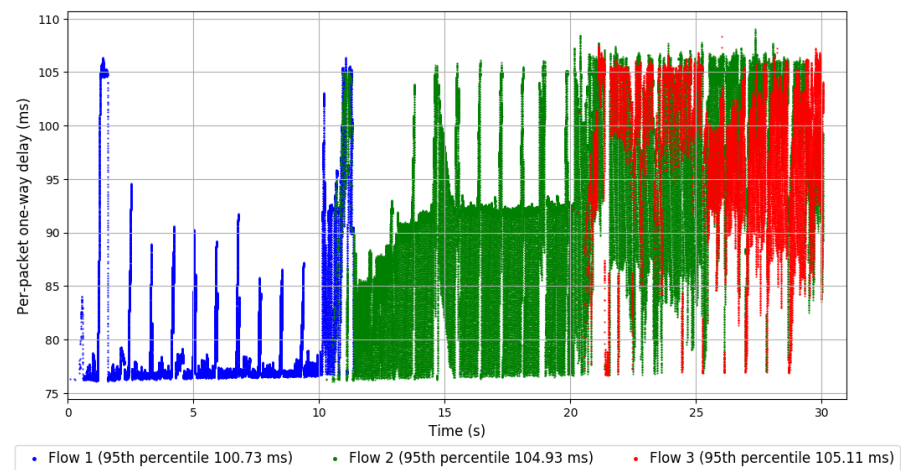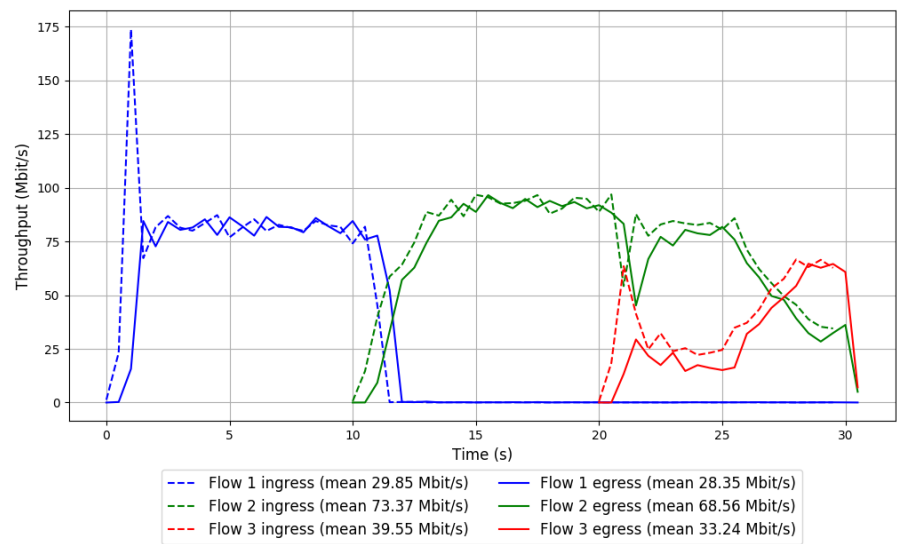Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2019-08-27 00:30:59
End at: 2019-08-27 00:31:29
Local clock offset: 1.817 ms
Remote clock offset: -162.271 ms


# Below is generated by plot.py at 2019-08-27 01:48:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 63.51 Mbit/s
95th percentile per-packet one-way delay: 103.891 ms
Loss rate: 11.36%
-- Flow 1:
Average throughput: 4.41 Mbit/s
95th percentile per-packet one-way delay: 103.142 ms
Loss rate: 36.38%
-- Flow 2:
Average throughput: 69.82 Mbit/s
95th percentile per-packet one-way delay: 103.928 ms
Loss rate: 9.96%
-- Flow 3:
Average throughput: 37.93 Mbit/s
95th percentile per-packet one-way delay: 103.917 ms
Loss rate: 3.66%
```

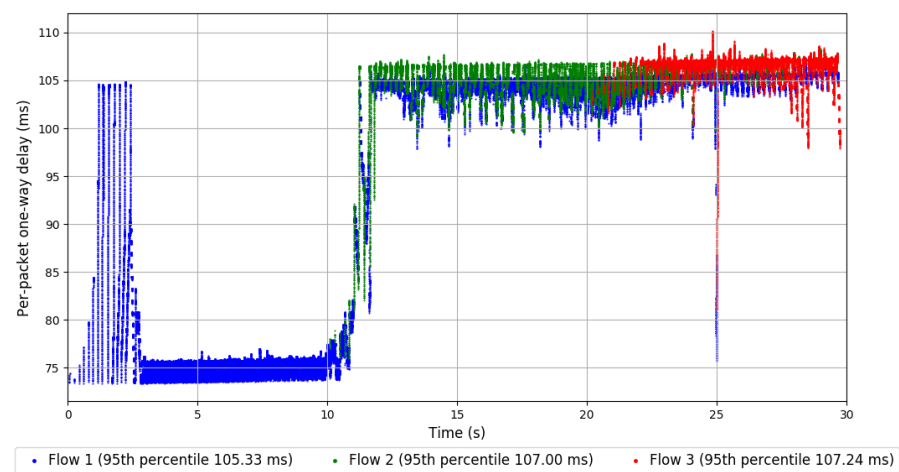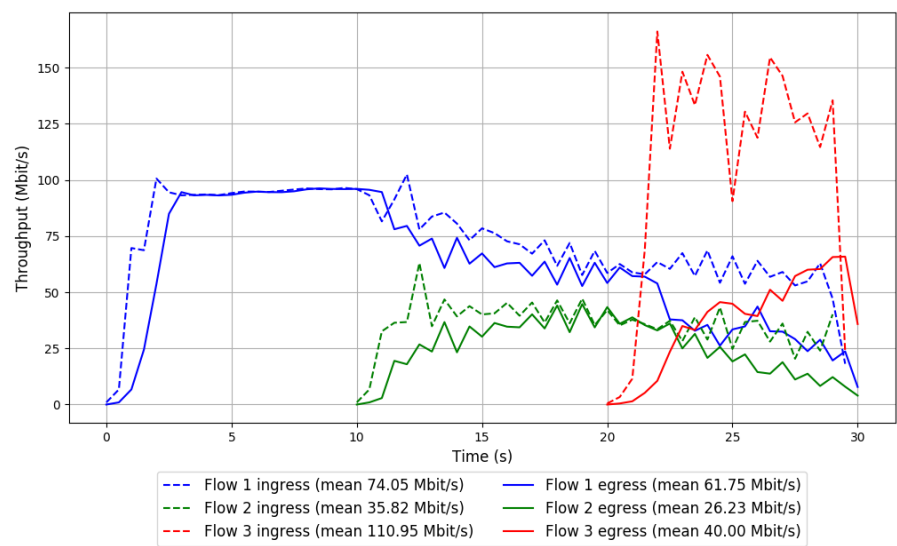# Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 6.95 Mbit/s) — Flow 1 egress (mean 4.41 Mbit/s)
Flow 2 ingress (mean 77.60 Mbit/s) — Flow 2 egress (mean 69.82 Mbit/s)
Flow 3 ingress (mean 39.40 Mbit/s) — Flow 3 egress (mean 37.93 Mbit/s)

Flow 1 (95th percentile 103.14 ms) • Flow 2 (95th percentile 103.93 ms) • Flow 3 (95th percentile 103.92 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2019-08-27 01:01:36
End at: 2019-08-27 01:02:06
Local clock offset: 0.561 ms
Remote clock offset: -246.97 ms


# Below is generated by plot.py at 2019-08-27 01:48:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 75.61 Mbit/s
95th percentile per-packet one-way delay: 102.301 ms
Loss rate: 8.54%
-- Flow 1:
Average throughput: 16.69 Mbit/s
95th percentile per-packet one-way delay: 102.536 ms
Loss rate: 7.20%
-- Flow 2:
Average throughput: 74.60 Mbit/s
95th percentile per-packet one-way delay: 101.658 ms
Loss rate: 6.00%
-- Flow 3:
Average throughput: 28.00 Mbit/s
95th percentile per-packet one-way delay: 103.702 ms
Loss rate: 21.83%
```

Run 4: Report of FillP-Sheep — Data Link
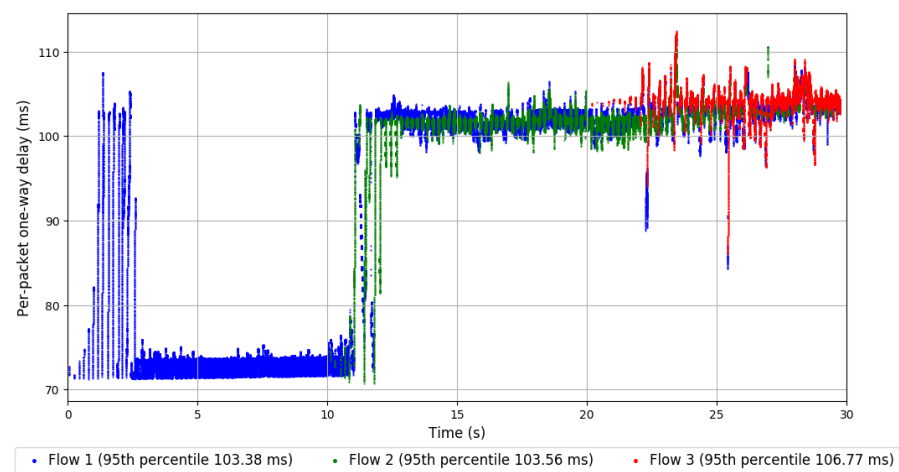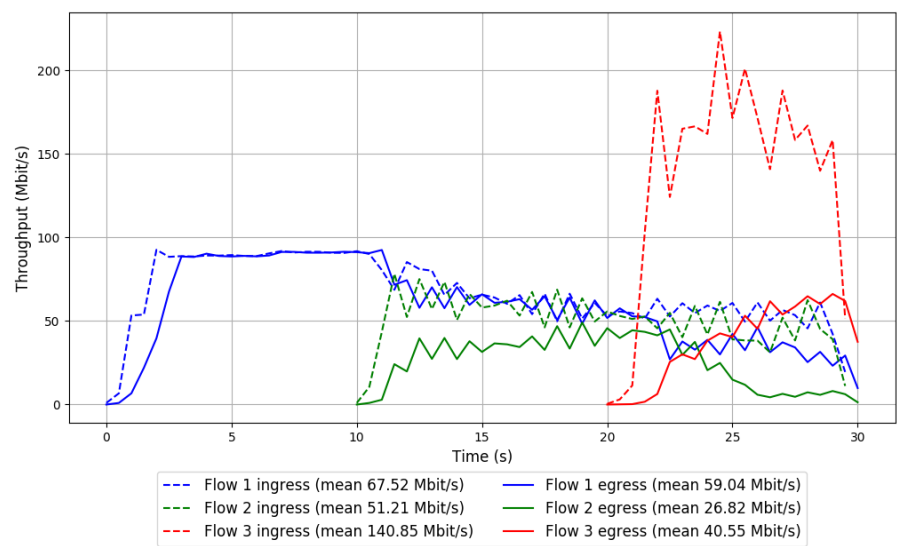

Flow 1 ingress (mean 18.00 Mbit/s) --- Flow 1 egress (mean 16.69 Mbit/s)
Flow 2 ingress (mean 79.47 Mbit/s) --- Flow 2 egress (mean 74.60 Mbit/s)
Flow 3 ingress (mean 35.85 Mbit/s) --- Flow 3 egress (mean 28.00 Mbit/s)

Flow 1 (95th percentile 102.54 ms)   Flow 2 (95th percentile 101.66 ms)   Flow 3 (95th percentile 103.70 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2019-08-27 01:32:28
End at: 2019-08-27 01:32:58
Local clock offset: 0.193 ms
Remote clock offset: -327.726 ms


# Below is generated by plot.py at 2019-08-27 01:48:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.01 Mbit/s
95th percentile per-packet one-way delay: 104.833 ms
Loss rate: 7.31%
-- Flow 1:
Average throughput: 28.35 Mbit/s
95th percentile per-packet one-way delay: 100.735 ms
Loss rate: 4.95%
-- Flow 2:
Average throughput: 68.56 Mbit/s
95th percentile per-packet one-way delay: 104.927 ms
Loss rate: 6.45%
-- Flow 3:
Average throughput: 33.24 Mbit/s
95th percentile per-packet one-way delay: 105.110 ms
Loss rate: 15.86%
```

Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 29.85 Mbit/s) --- Flow 1 egress (mean 28.35 Mbit/s) ---
Flow 2 ingress (mean 73.37 Mbit/s) --- Flow 2 egress (mean 68.56 Mbit/s) ---
Flow 3 ingress (mean 39.55 Mbit/s) --- Flow 3 egress (mean 33.24 Mbit/s) ---

Flow 1 (95th percentile 100.73 ms)   Flow 2 (95th percentile 104.93 ms)   Flow 3 (95th percentile 105.11 ms)

54

```
Run 1: Statistics of Indigo

Start at: 2019-08-26 23:36:10
End at: 2019-08-26 23:36:40
Local clock offset: 1.401 ms
Remote clock offset: -14.51 ms


# Below is generated by plot.py at 2019-08-27 01:48:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.71 Mbit/s
95th percentile per-packet one-way delay: 106.988 ms
Loss rate: 31.04%
-- Flow 1:
Average throughput: 61.75 Mbit/s
95th percentile per-packet one-way delay: 105.334 ms
Loss rate: 16.52%
-- Flow 2:
Average throughput: 26.23 Mbit/s
95th percentile per-packet one-way delay: 106.995 ms
Loss rate: 26.66%
-- Flow 3:
Average throughput: 40.00 Mbit/s
95th percentile per-packet one-way delay: 107.243 ms
Loss rate: 63.96%
```
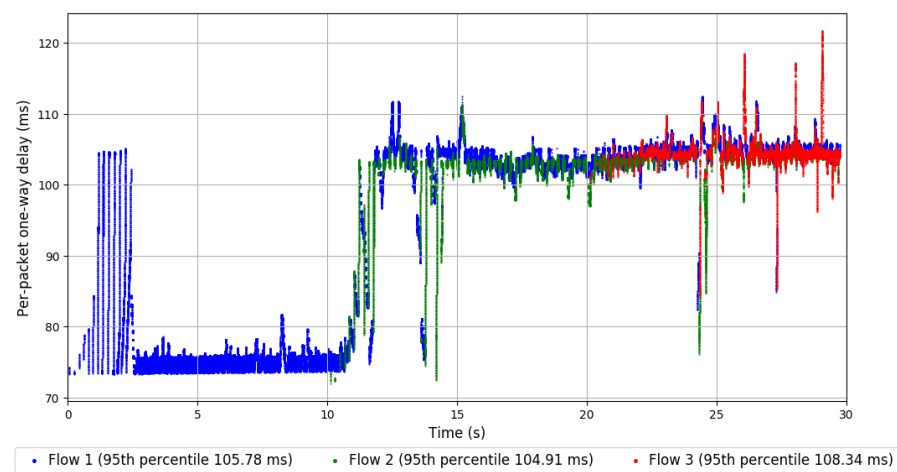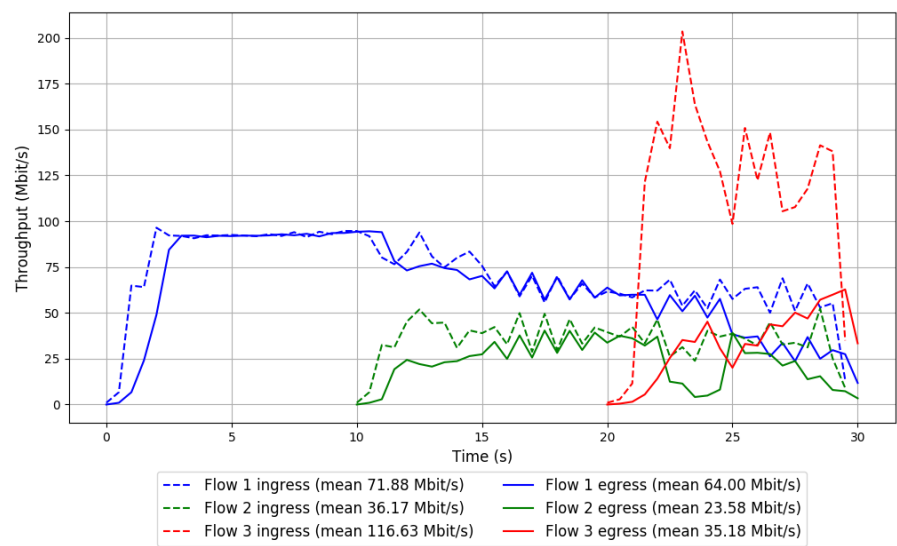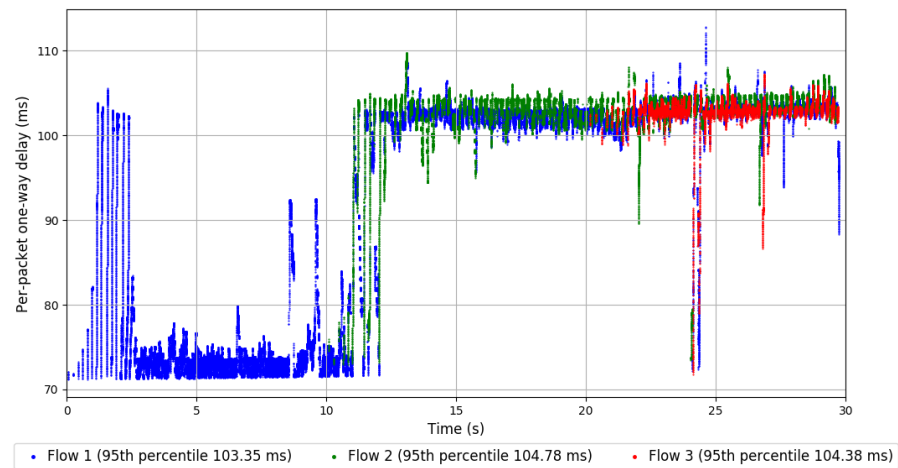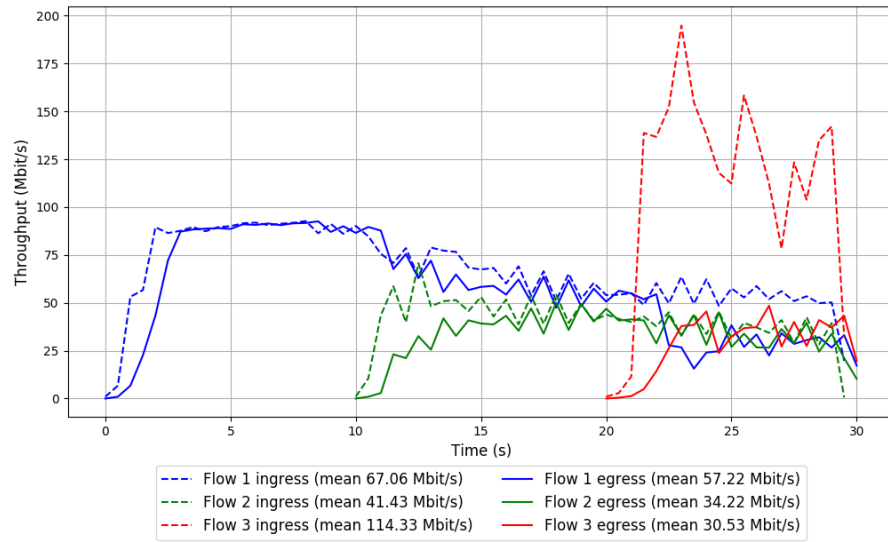
Run 1: Report of Indigo — Data Link

Flow 1 ingress (mean 74.05 Mbit/s) --- Flow 1 egress (mean 61.75 Mbit/s)
Flow 2 ingress (mean 35.82 Mbit/s) --- Flow 2 egress (mean 26.23 Mbit/s)
Flow 3 ingress (mean 110.95 Mbit/s) --- Flow 3 egress (mean 40.00 Mbit/s)

Flow 1 (95th percentile 105.33 ms)   Flow 2 (95th percentile 107.00 ms)   Flow 3 (95th percentile 107.24 ms)

56

```
Run 2: Statistics of Indigo

Start at: 2019-08-27 00:06:45
End at: 2019-08-27 00:07:15
Local clock offset: 1.259 ms
Remote clock offset: -100.633 ms


# Below is generated by plot.py at 2019-08-27 01:49:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.73 Mbit/s
95th percentile per-packet one-way delay: 104.554 ms
Loss rate: 38.73%
-- Flow 1:
Average throughput: 59.04 Mbit/s
95th percentile per-packet one-way delay: 103.382 ms
Loss rate: 12.47%
-- Flow 2:
Average throughput: 26.82 Mbit/s
95th percentile per-packet one-way delay: 103.558 ms
Loss rate: 47.55%
-- Flow 3:
Average throughput: 40.55 Mbit/s
95th percentile per-packet one-way delay: 106.774 ms
Loss rate: 71.21%
```
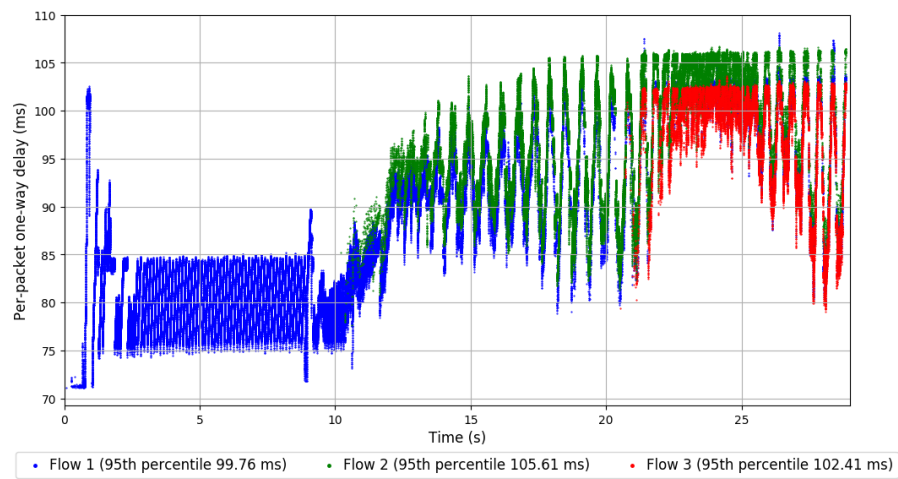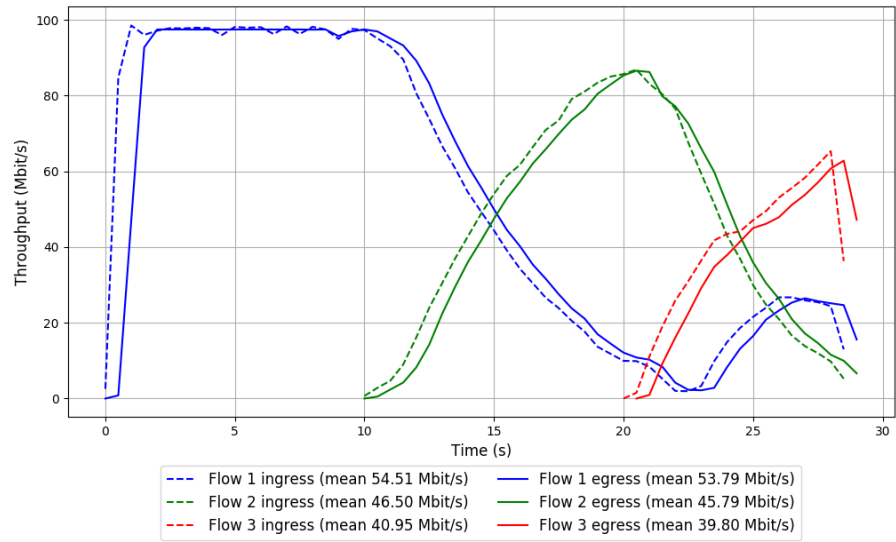
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-08-27 00:37:21
End at: 2019-08-27 00:37:51
Local clock offset: 0.944 ms
Remote clock offset: -178.879 ms


# Below is generated by plot.py at 2019-08-27 01:49:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.37 Mbit/s
95th percentile per-packet one-way delay: 106.674 ms
Loss rate: 36.91%
-- Flow 1:
Average throughput: 62.40 Mbit/s
95th percentile per-packet one-way delay: 106.349 ms
Loss rate: 14.19%
-- Flow 2:
Average throughput: 30.76 Mbit/s
95th percentile per-packet one-way delay: 106.717 ms
Loss rate: 37.56%
-- Flow 3:
Average throughput: 26.91 Mbit/s
95th percentile per-packet one-way delay: 109.135 ms
Loss rate: 78.13%
```
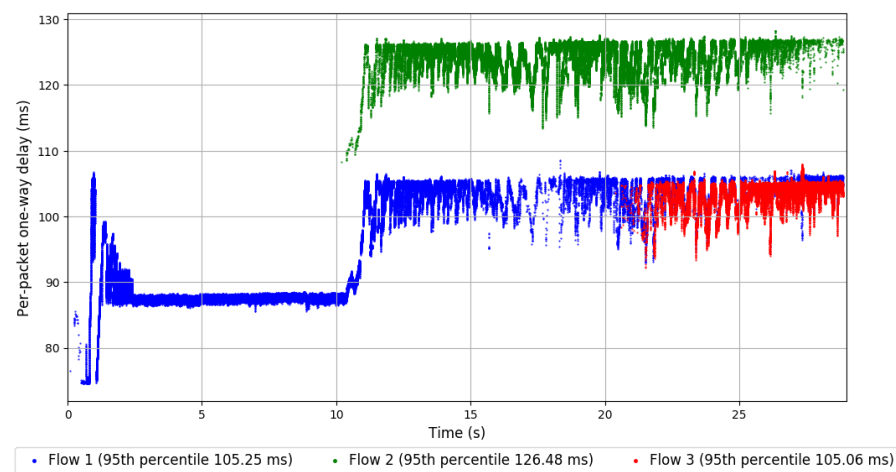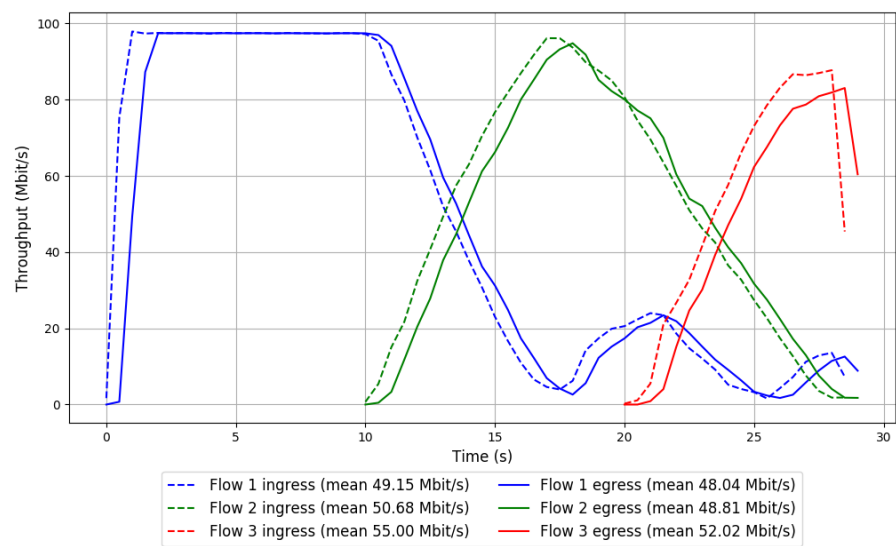
Run 3: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 72.80 Mbit/s)   —— Flow 1 egress (mean 62.40 Mbit/s)
- - - Flow 2 ingress (mean 49.33 Mbit/s)   —— Flow 2 egress (mean 30.76 Mbit/s)
- - - Flow 3 ingress (mean 123.09 Mbit/s)   —— Flow 3 egress (mean 26.91 Mbit/s)

• Flow 1 (95th percentile 106.35 ms)   • Flow 2 (95th percentile 106.72 ms)   • Flow 3 (95th percentile 109.14 ms)

```
Run 4: Statistics of Indigo

Start at: 2019-08-27 01:07:58
End at: 2019-08-27 01:08:28
Local clock offset: 1.29 ms
Remote clock offset: -263.36 ms


# Below is generated by plot.py at 2019-08-27 01:49:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.93 Mbit/s
95th percentile per-packet one-way delay: 105.966 ms
Loss rate: 31.78%
-- Flow 1:
Average throughput: 64.00 Mbit/s
95th percentile per-packet one-way delay: 105.776 ms
Loss rate: 10.87%
-- Flow 2:
Average throughput: 23.58 Mbit/s
95th percentile per-packet one-way delay: 104.907 ms
Loss rate: 34.71%
-- Flow 3:
Average throughput: 35.18 Mbit/s
95th percentile per-packet one-way delay: 108.343 ms
Loss rate: 69.82%
```
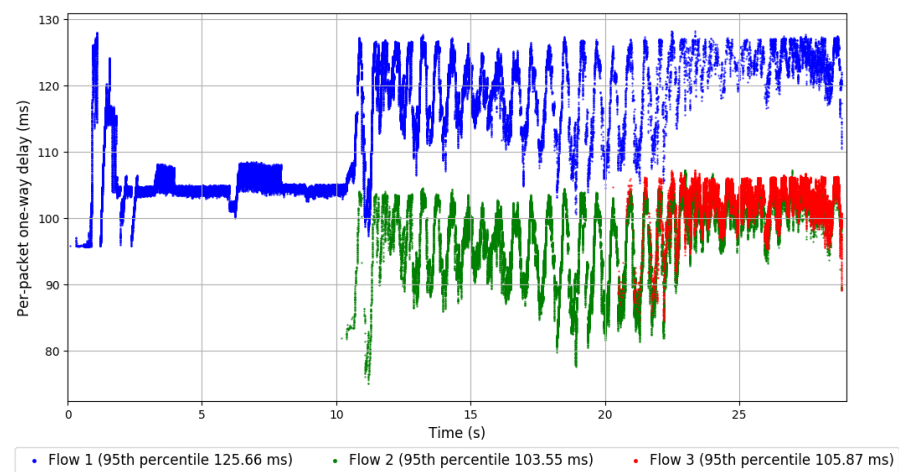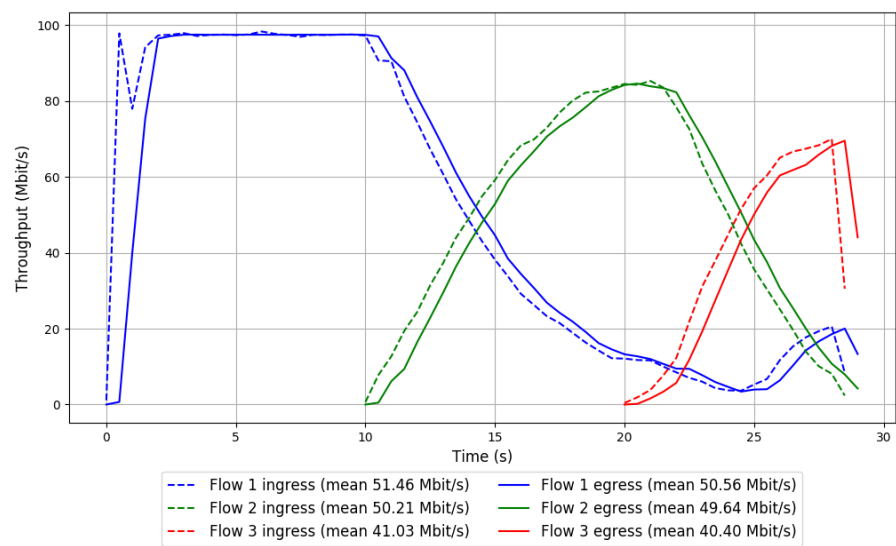
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2019-08-27 01:38:51
End at: 2019-08-27 01:39:21
Local clock offset: 0.895 ms
Remote clock offset: -347.61 ms


# Below is generated by plot.py at 2019-08-27 01:49:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.53 Mbit/s
95th percentile per-packet one-way delay: 104.390 ms
Loss rate: 31.64%
-- Flow 1:
Average throughput: 57.22 Mbit/s
95th percentile per-packet one-way delay: 103.348 ms
Loss rate: 14.60%
-- Flow 2:
Average throughput: 34.22 Mbit/s
95th percentile per-packet one-way delay: 104.775 ms
Loss rate: 17.29%
-- Flow 3:
Average throughput: 30.53 Mbit/s
95th percentile per-packet one-way delay: 104.382 ms
Loss rate: 73.29%
```

Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 67.06 Mbit/s) — — — Flow 1 egress (mean 57.22 Mbit/s)
Flow 2 ingress (mean 41.43 Mbit/s) — — — Flow 2 egress (mean 34.22 Mbit/s)
Flow 3 ingress (mean 114.33 Mbit/s) — — — Flow 3 egress (mean 30.53 Mbit/s)

Flow 1 (95th percentile 103.35 ms)   Flow 2 (95th percentile 104.78 ms)   Flow 3 (95th percentile 104.38 ms)
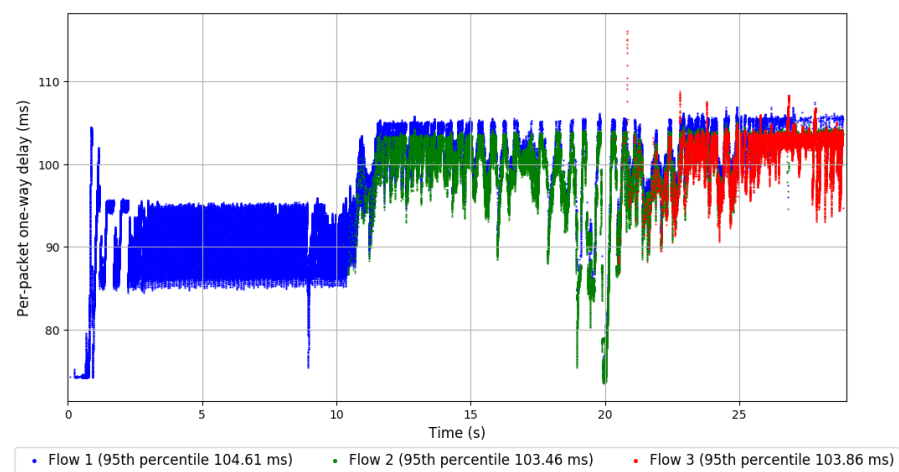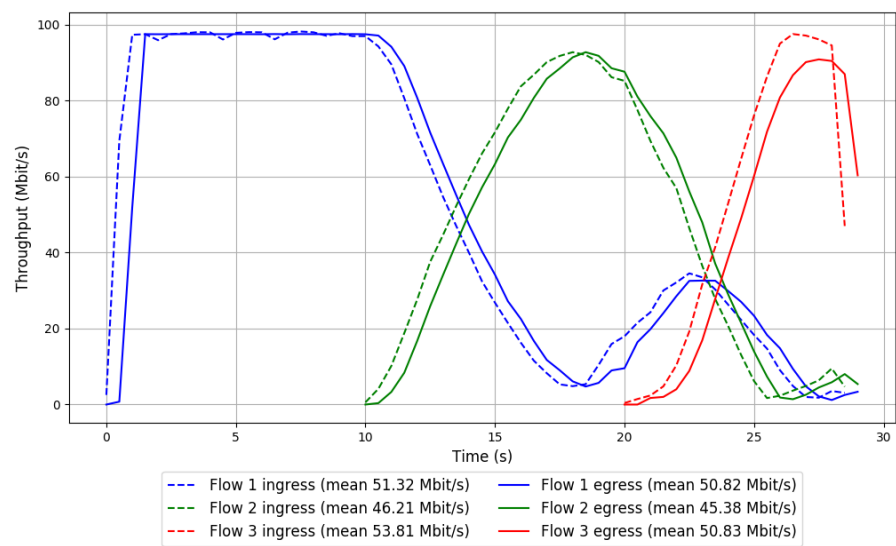
64

```
Run 1: Statistics of Indigo-MusesC3

Start at: 2019-08-26 23:20:49
End at: 2019-08-26 23:21:19
Local clock offset: 1.579 ms
Remote clock offset: -298.254 ms


# Below is generated by plot.py at 2019-08-27 01:49:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.01 Mbit/s
95th percentile per-packet one-way delay: 104.177 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 53.79 Mbit/s
95th percentile per-packet one-way delay: 99.758 ms
Loss rate: 1.21%
-- Flow 2:
Average throughput: 45.79 Mbit/s
95th percentile per-packet one-way delay: 105.615 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 39.80 Mbit/s
95th percentile per-packet one-way delay: 102.414 ms
Loss rate: 2.57%
```

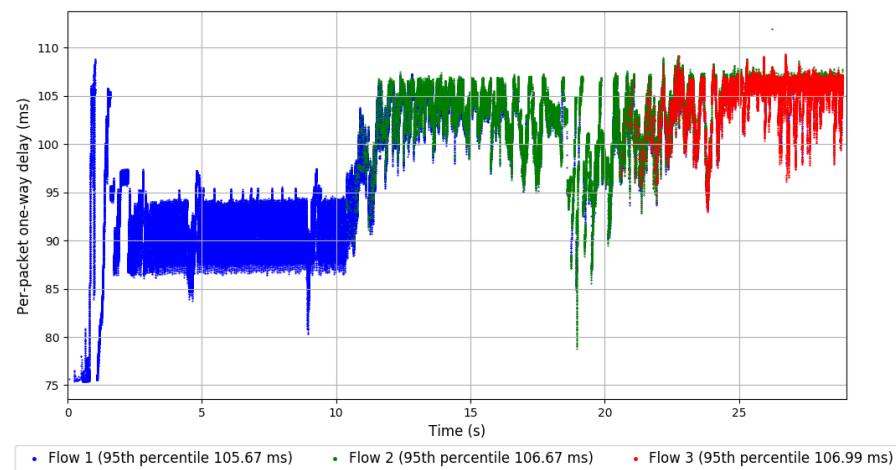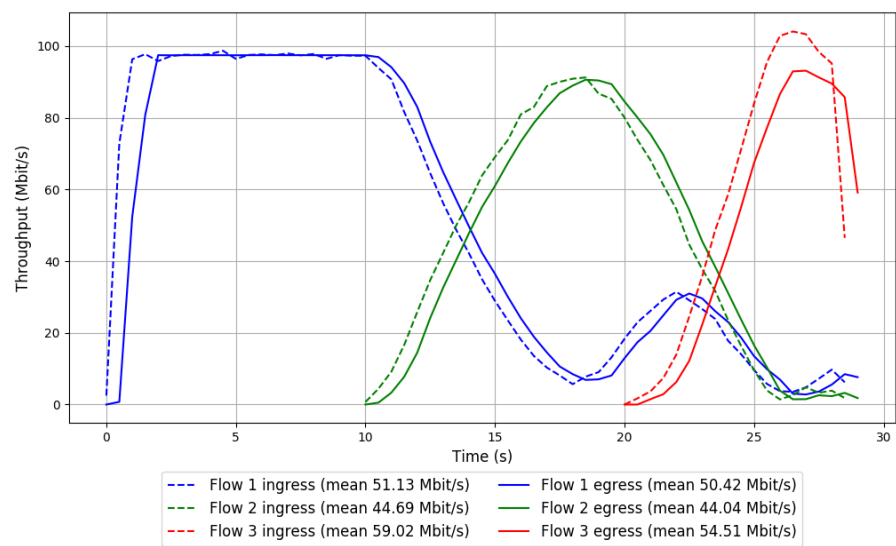Run 1: Report of Indigo-MusesC3 — Data Link

- - - Flow 1 ingress (mean 54.51 Mbit/s) —— Flow 1 egress (mean 53.79 Mbit/s)
- - - Flow 2 ingress (mean 46.50 Mbit/s) —— Flow 2 egress (mean 45.79 Mbit/s)
- - - Flow 3 ingress (mean 40.95 Mbit/s) —— Flow 3 egress (mean 39.80 Mbit/s)

• Flow 1 (95th percentile 99.76 ms)   • Flow 2 (95th percentile 105.61 ms)   • Flow 3 (95th percentile 102.41 ms)

```
Run 2: Statistics of Indigo-MusesC3

Start at: 2019-08-26 23:51:28
End at: 2019-08-26 23:51:58
Local clock offset: 2.07 ms
Remote clock offset: -54.513 ms


# Below is generated by plot.py at 2019-08-27 01:49:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.02 Mbit/s
95th percentile per-packet one-way delay: 126.201 ms
Loss rate: 3.19%
-- Flow 1:
Average throughput: 48.04 Mbit/s
95th percentile per-packet one-way delay: 105.252 ms
Loss rate: 2.16%
-- Flow 2:
Average throughput: 48.81 Mbit/s
95th percentile per-packet one-way delay: 126.483 ms
Loss rate: 3.63%
-- Flow 3:
Average throughput: 52.02 Mbit/s
95th percentile per-packet one-way delay: 105.065 ms
Loss rate: 5.40%
```

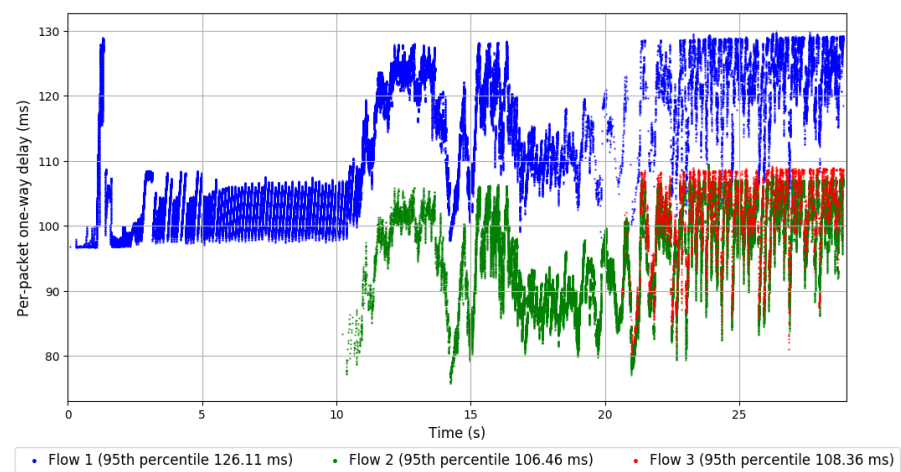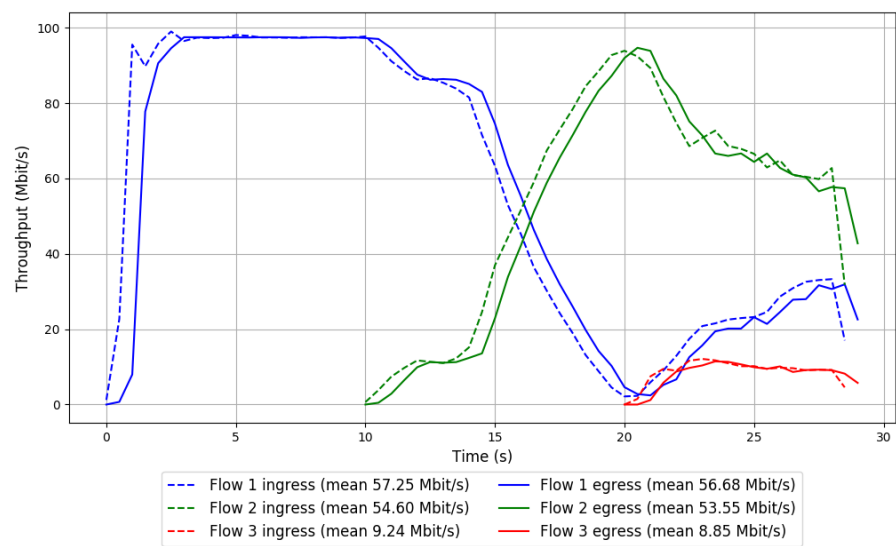Run 2: Report of Indigo-MusesC3 — Data Link

Flow 1 ingress (mean 49.15 Mbit/s)   Flow 1 egress (mean 48.04 Mbit/s)
Flow 2 ingress (mean 50.68 Mbit/s)   Flow 2 egress (mean 48.81 Mbit/s)
Flow 3 ingress (mean 55.00 Mbit/s)   Flow 3 egress (mean 52.02 Mbit/s)

Flow 1 (95th percentile 105.25 ms)   Flow 2 (95th percentile 126.48 ms)   Flow 3 (95th percentile 105.06 ms)

```
Run 3: Statistics of Indigo-MusesC3

Start at: 2019-08-27 00:22:02
End at: 2019-08-27 00:22:32
Local clock offset: 1.976 ms
Remote clock offset: -138.555 ms


# Below is generated by plot.py at 2019-08-27 01:50:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.68 Mbit/s
95th percentile per-packet one-way delay: 124.077 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 50.56 Mbit/s
95th percentile per-packet one-way delay: 125.655 ms
Loss rate: 1.73%
-- Flow 2:
Average throughput: 49.64 Mbit/s
95th percentile per-packet one-way delay: 103.547 ms
Loss rate: 1.10%
-- Flow 3:
Average throughput: 40.40 Mbit/s
95th percentile per-packet one-way delay: 105.867 ms
Loss rate: 1.63%
```

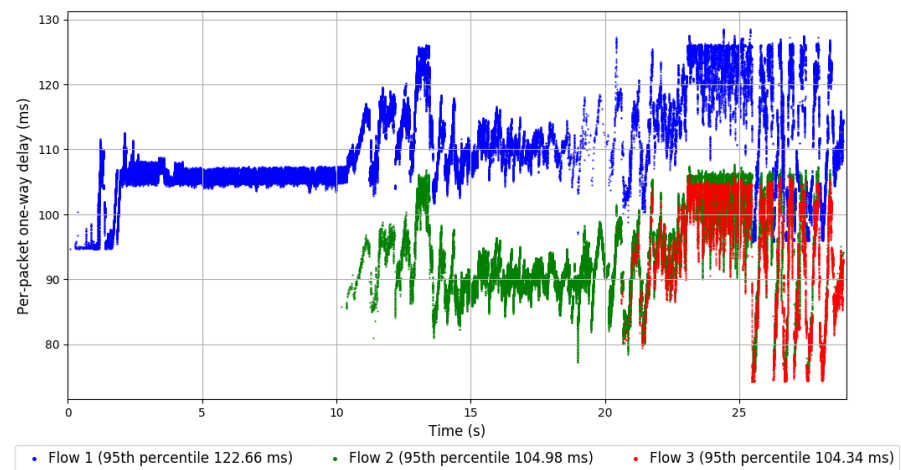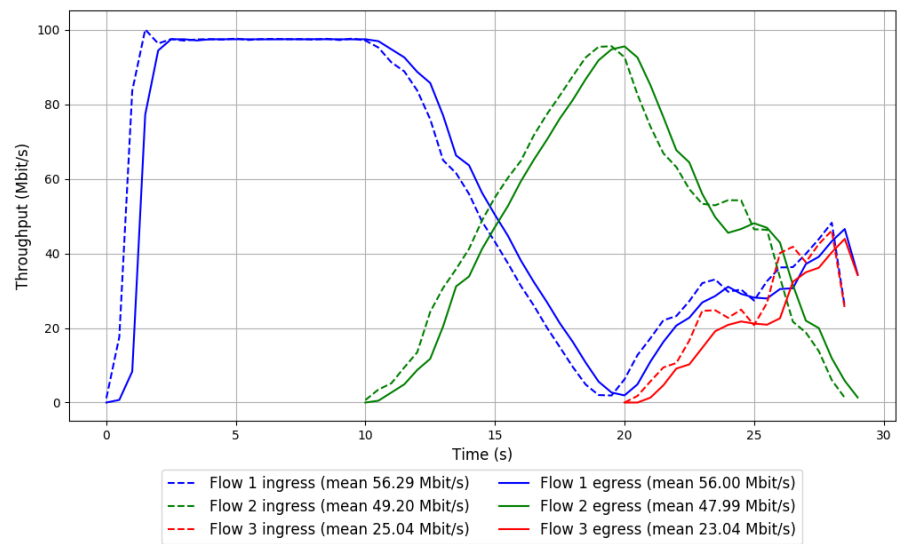Run 3: Report of Indigo-MusesC3 — Data Link

- - - Flow 1 ingress (mean 51.46 Mbit/s) —— Flow 1 egress (mean 50.56 Mbit/s)
- - - Flow 2 ingress (mean 50.21 Mbit/s) —— Flow 2 egress (mean 49.64 Mbit/s)
- - - Flow 3 ingress (mean 41.03 Mbit/s) —— Flow 3 egress (mean 40.40 Mbit/s)

• Flow 1 (95th percentile 125.66 ms)   • Flow 2 (95th percentile 103.55 ms)   • Flow 3 (95th percentile 105.87 ms)
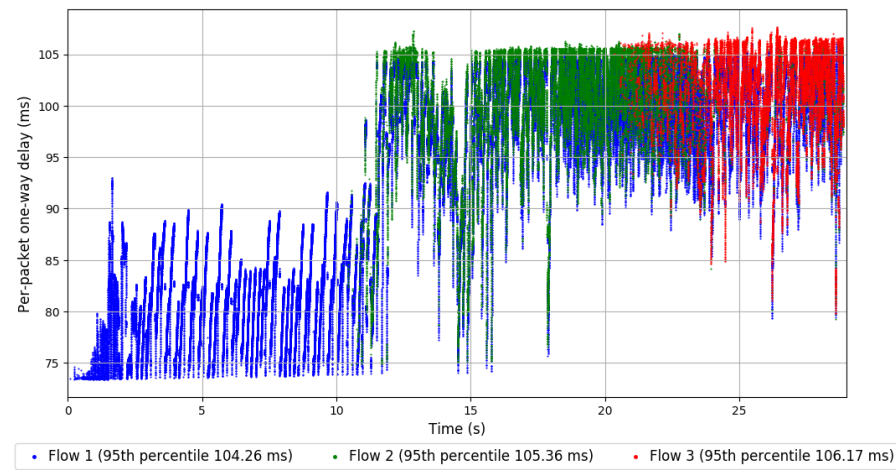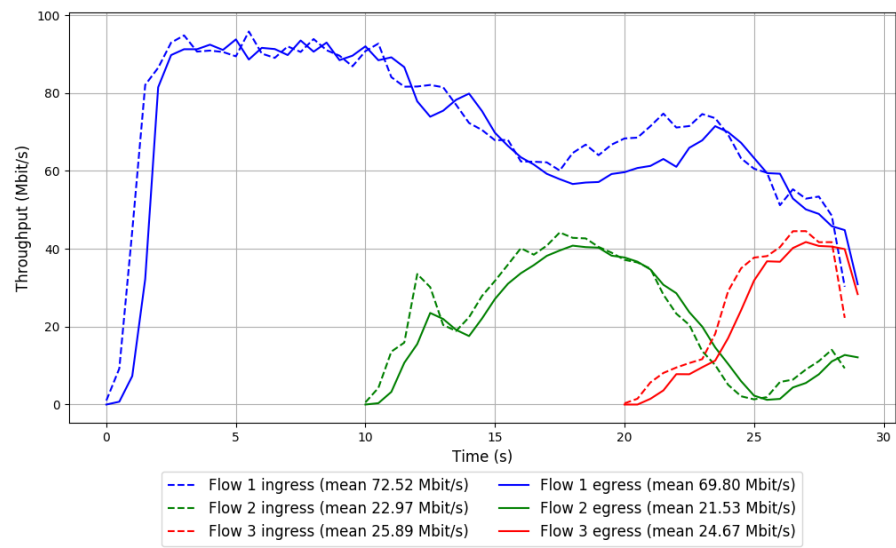
70

```
Run 4: Statistics of Indigo-MusesC3

Start at: 2019-08-27 00:52:39
End at: 2019-08-27 00:53:09
Local clock offset: 1.531 ms
Remote clock offset: -221.367 ms


# Below is generated by plot.py at 2019-08-27 01:50:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.23 Mbit/s
95th percentile per-packet one-way delay: 104.012 ms
Loss rate: 1.91%
-- Flow 1:
Average throughput: 50.82 Mbit/s
95th percentile per-packet one-way delay: 104.607 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 45.38 Mbit/s
95th percentile per-packet one-way delay: 103.464 ms
Loss rate: 1.72%
-- Flow 3:
Average throughput: 50.83 Mbit/s
95th percentile per-packet one-way delay: 103.861 ms
Loss rate: 5.64%
```

Run 4: Report of Indigo-MusesC3 — Data Link

Flow 1 ingress (mean 51.32 Mbit/s) --- Flow 1 egress (mean 50.82 Mbit/s)
Flow 2 ingress (mean 46.21 Mbit/s) --- Flow 2 egress (mean 45.38 Mbit/s)
Flow 3 ingress (mean 53.81 Mbit/s) --- Flow 3 egress (mean 50.83 Mbit/s)

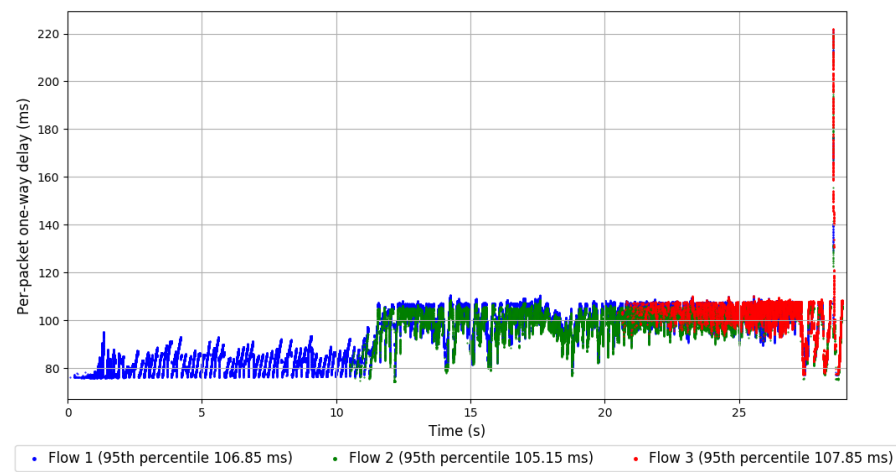Flow 1 (95th percentile 104.61 ms)   Flow 2 (95th percentile 103.46 ms)   Flow 3 (95th percentile 103.86 ms)

```
Run 5: Statistics of Indigo-MusesC3

Start at: 2019-08-27 01:23:30
End at: 2019-08-27 01:24:00
Local clock offset: 0.272 ms
Remote clock offset: -304.054 ms


# Below is generated by plot.py at 2019-08-27 01:50:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.96 Mbit/s
95th percentile per-packet one-way delay: 106.696 ms
Loss rate: 2.44%
-- Flow 1:
Average throughput: 50.42 Mbit/s
95th percentile per-packet one-way delay: 105.665 ms
Loss rate: 1.30%
-- Flow 2:
Average throughput: 44.04 Mbit/s
95th percentile per-packet one-way delay: 106.666 ms
Loss rate: 1.38%
-- Flow 3:
Average throughput: 54.51 Mbit/s
95th percentile per-packet one-way delay: 106.990 ms
Loss rate: 7.61%
```

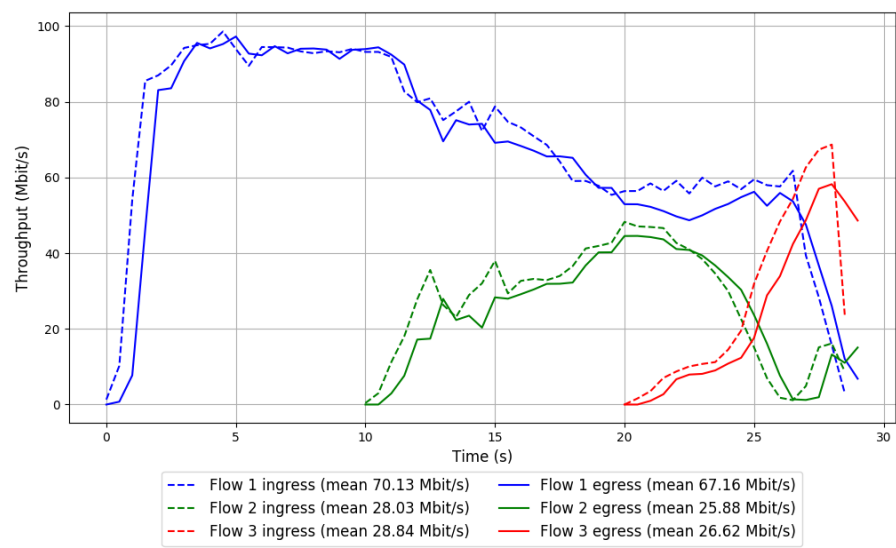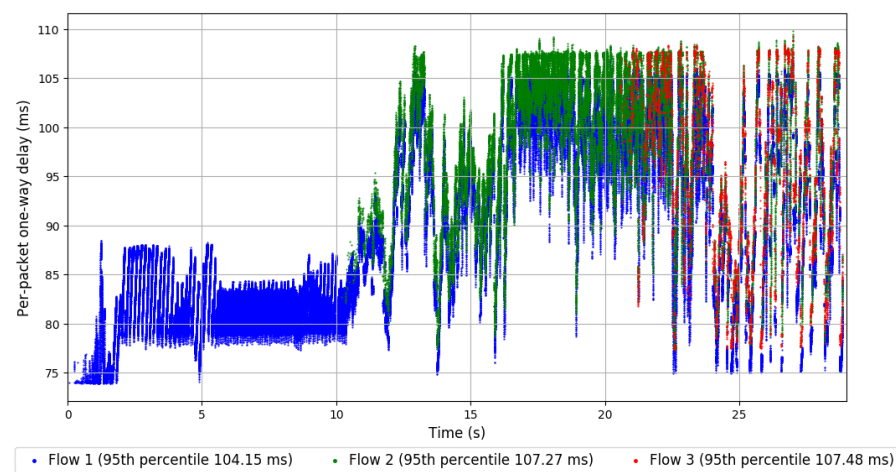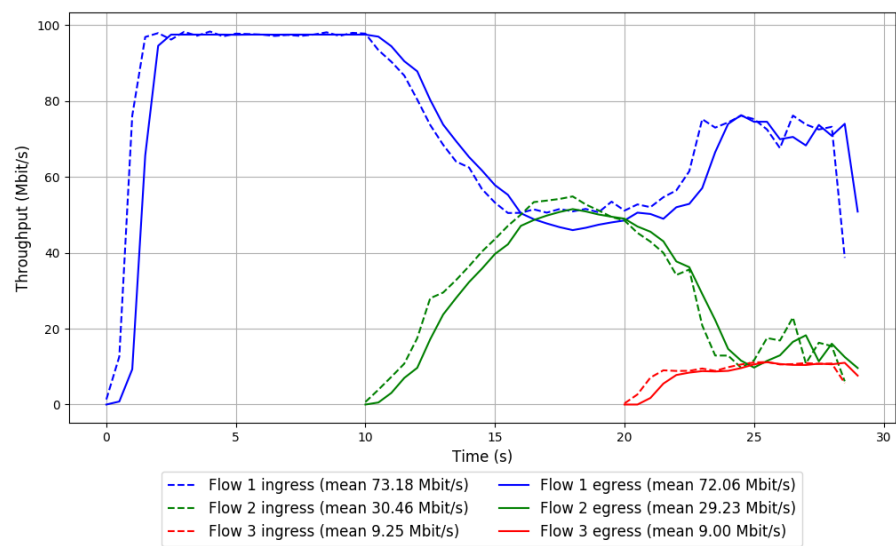Run 5: Report of Indigo-MusesC3 — Data Link

Flow 1 ingress (mean 51.13 Mbit/s) --- Flow 1 egress (mean 50.42 Mbit/s)
Flow 2 ingress (mean 44.69 Mbit/s) --- Flow 2 egress (mean 44.04 Mbit/s)
Flow 3 ingress (mean 59.02 Mbit/s) --- Flow 3 egress (mean 54.51 Mbit/s)

Flow 1 (95th percentile 105.67 ms)   Flow 2 (95th percentile 106.67 ms)   Flow 3 (95th percentile 106.99 ms)

74

```
Run 1: Statistics of Indigo-MusesC5

Start at: 2019-08-26 23:27:17
End at: 2019-08-26 23:27:47
Local clock offset: 1.482 ms
Remote clock offset: -323.071 ms


# Below is generated by plot.py at 2019-08-27 01:50:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.98 Mbit/s
95th percentile per-packet one-way delay: 124.641 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 56.68 Mbit/s
95th percentile per-packet one-way delay: 126.115 ms
Loss rate: 0.95%
-- Flow 2:
Average throughput: 53.55 Mbit/s
95th percentile per-packet one-way delay: 106.459 ms
Loss rate: 1.80%
-- Flow 3:
Average throughput: 8.85 Mbit/s
95th percentile per-packet one-way delay: 108.363 ms
Loss rate: 4.01%
```
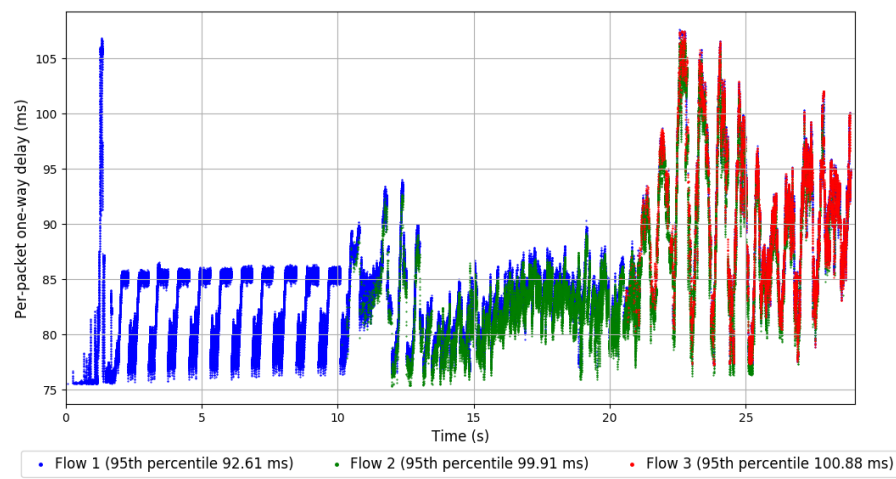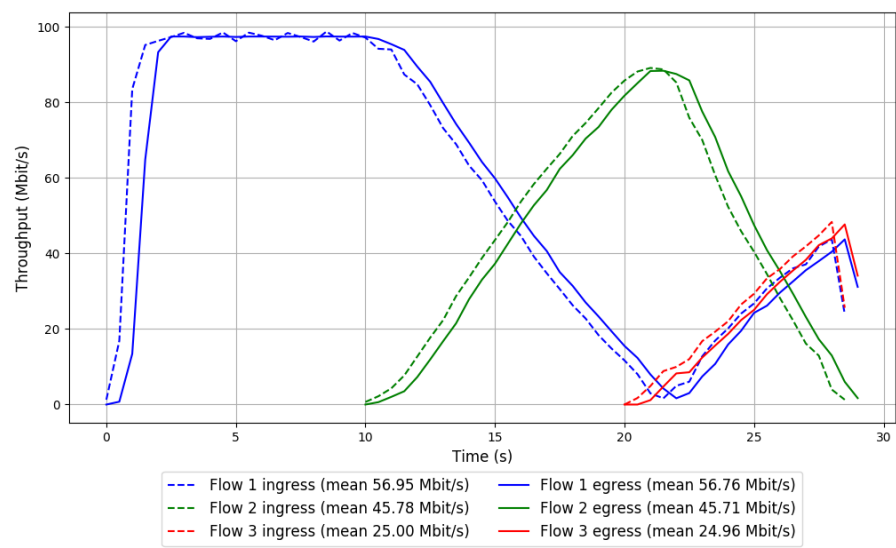
Run 1: Report of Indigo-MusesC5 — Data Link

```
Run 2: Statistics of Indigo-MusesC5

Start at: 2019-08-26 23:57:54
End at: 2019-08-26 23:58:24
Local clock offset: 1.206 ms
Remote clock offset: -73.428 ms

# Below is generated by plot.py at 2019-08-27 01:50:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.87 Mbit/s
95th percentile per-packet one-way delay: 119.222 ms
Loss rate: 1.74%
-- Flow 1:
Average throughput: 56.00 Mbit/s
95th percentile per-packet one-way delay: 122.655 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 47.99 Mbit/s
95th percentile per-packet one-way delay: 104.983 ms
Loss rate: 2.42%
-- Flow 3:
Average throughput: 23.04 Mbit/s
95th percentile per-packet one-way delay: 104.339 ms
Loss rate: 8.03%
```

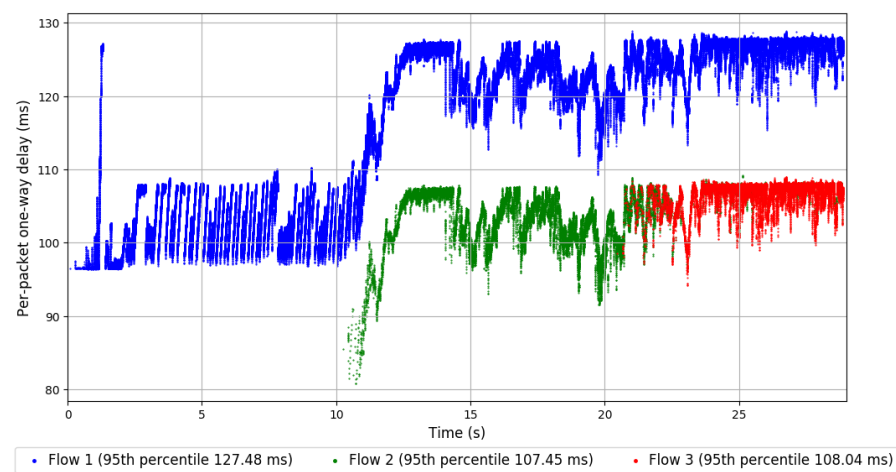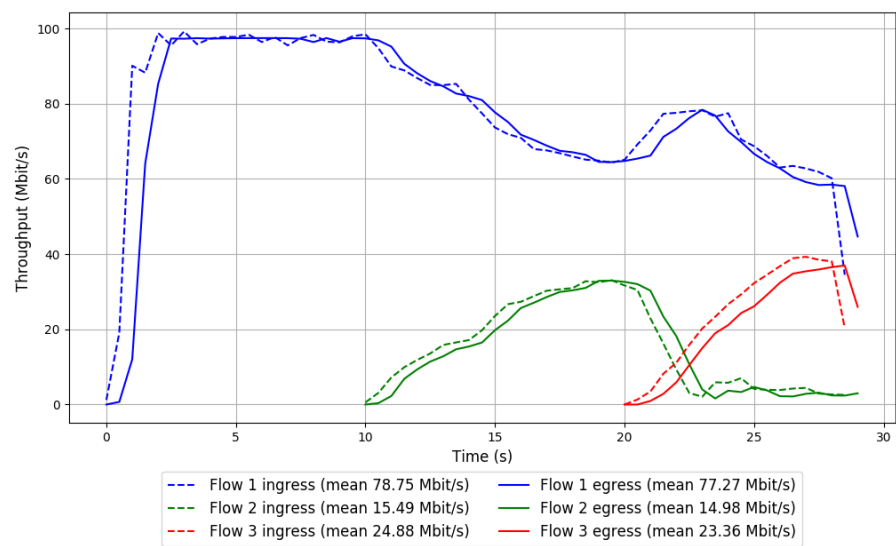Run 2: Report of Indigo-MusesC5 — Data Link

```
Run 3: Statistics of Indigo-MusesC5

Start at: 2019-08-27 00:28:28
End at: 2019-08-27 00:28:58
Local clock offset: 1.791 ms
Remote clock offset: -155.551 ms


# Below is generated by plot.py at 2019-08-27 01:50:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.97 Mbit/s
95th percentile per-packet one-way delay: 104.778 ms
Loss rate: 4.14%
-- Flow 1:
Average throughput: 69.80 Mbit/s
95th percentile per-packet one-way delay: 104.263 ms
Loss rate: 3.65%
-- Flow 2:
Average throughput: 21.53 Mbit/s
95th percentile per-packet one-way delay: 105.359 ms
Loss rate: 6.23%
-- Flow 3:
Average throughput: 24.67 Mbit/s
95th percentile per-packet one-way delay: 106.167 ms
Loss rate: 4.78%
```

Run 3: Report of Indigo-MusesC5 — Data Link

- - - - Flow 1 ingress (mean 72.52 Mbit/s)   —— Flow 1 egress (mean 69.80 Mbit/s)
- - - - Flow 2 ingress (mean 22.97 Mbit/s)   —— Flow 2 egress (mean 21.53 Mbit/s)
- - - - Flow 3 ingress (mean 25.89 Mbit/s)   —— Flow 3 egress (mean 24.67 Mbit/s)

- Flow 1 (95th percentile 104.26 ms)   • Flow 2 (95th percentile 105.36 ms)   • Flow 3 (95th percentile 106.17 ms)
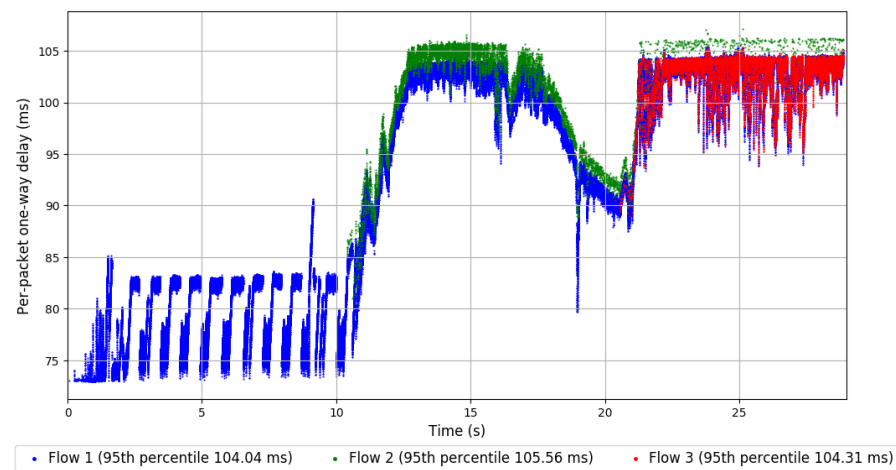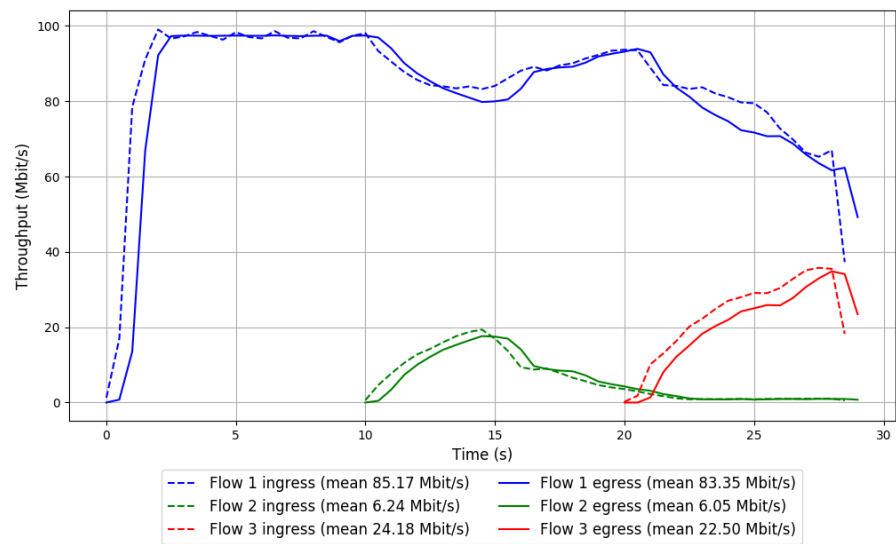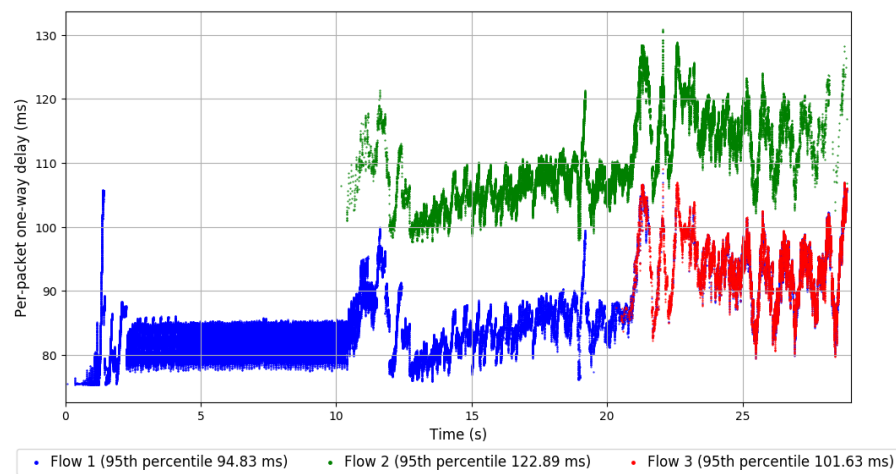
```
Run 4: Statistics of Indigo-MusesC5

Start at: 2019-08-27 00:59:06
End at: 2019-08-27 00:59:36
Local clock offset: 0.663 ms
Remote clock offset: -238.071 ms


# Below is generated by plot.py at 2019-08-27 01:50:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.59 Mbit/s
95th percentile per-packet one-way delay: 106.902 ms
Loss rate: 5.07%
-- Flow 1:
Average throughput: 67.16 Mbit/s
95th percentile per-packet one-way delay: 106.846 ms
Loss rate: 4.12%
-- Flow 2:
Average throughput: 25.88 Mbit/s
95th percentile per-packet one-way delay: 105.148 ms
Loss rate: 7.57%
-- Flow 3:
Average throughput: 26.62 Mbit/s
95th percentile per-packet one-way delay: 107.850 ms
Loss rate: 7.62%
```

Run 4: Report of Indigo-MusesC5 — Data Link

Flow 1 ingress (mean 70.13 Mbit/s) --- Flow 1 egress (mean 67.16 Mbit/s)
Flow 2 ingress (mean 28.03 Mbit/s) --- Flow 2 egress (mean 25.88 Mbit/s)
Flow 3 ingress (mean 28.84 Mbit/s) --- Flow 3 egress (mean 26.62 Mbit/s)

Flow 1 (95th percentile 106.85 ms)   Flow 2 (95th percentile 105.15 ms)   Flow 3 (95th percentile 107.85 ms)
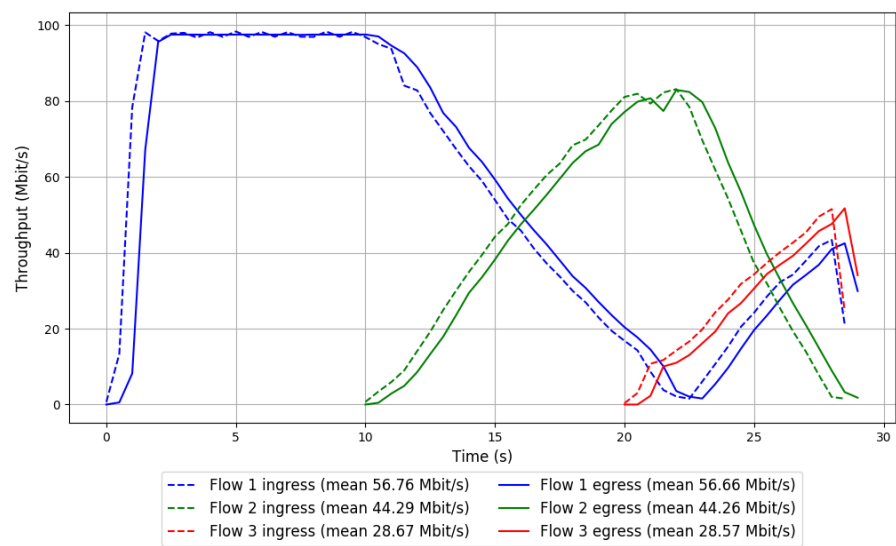
```
Run 5: Statistics of Indigo-MusesC5

Start at: 2019-08-27 01:29:57
End at: 2019-08-27 01:30:27
Local clock offset: 0.228 ms
Remote clock offset: -321.42 ms


# Below is generated by plot.py at 2019-08-27 01:51:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.67 Mbit/s
95th percentile per-packet one-way delay: 105.248 ms
Loss rate: 2.06%
-- Flow 1:
Average throughput: 72.06 Mbit/s
95th percentile per-packet one-way delay: 104.152 ms
Loss rate: 1.50%
-- Flow 2:
Average throughput: 29.23 Mbit/s
95th percentile per-packet one-way delay: 107.268 ms
Loss rate: 4.02%
-- Flow 3:
Average throughput: 9.00 Mbit/s
95th percentile per-packet one-way delay: 107.480 ms
Loss rate: 2.82%
```
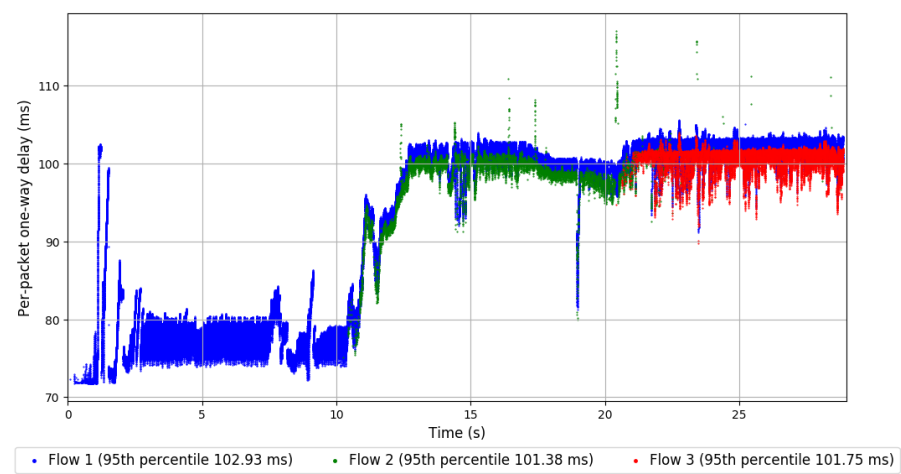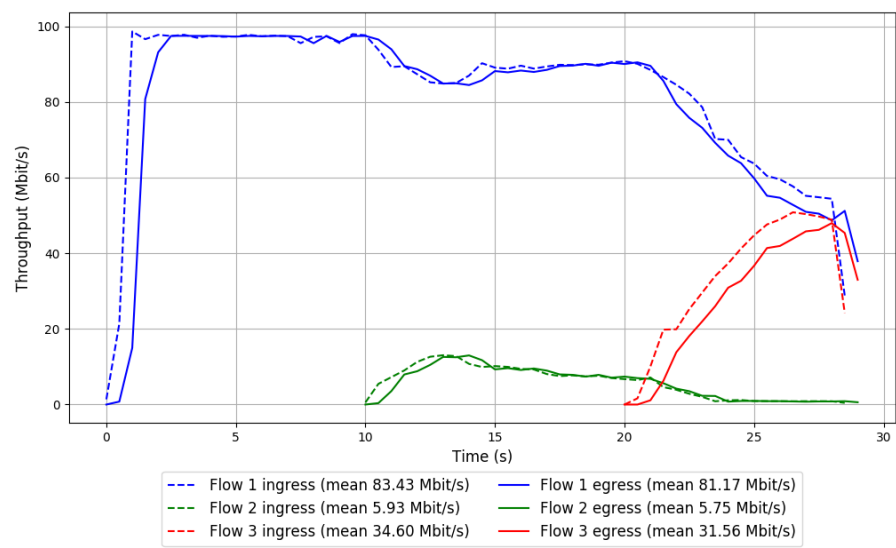
Run 5: Report of Indigo-MusesC5 — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-08-26 23:24:41
End at: 2019-08-26 23:25:11
Local clock offset: 1.516 ms
Remote clock offset: -312.26 ms


# Below is generated by plot.py at 2019-08-27 01:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 96.865 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 56.76 Mbit/s
95th percentile per-packet one-way delay: 92.607 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 45.71 Mbit/s
95th percentile per-packet one-way delay: 99.913 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 24.96 Mbit/s
95th percentile per-packet one-way delay: 100.882 ms
Loss rate: 0.04%
```

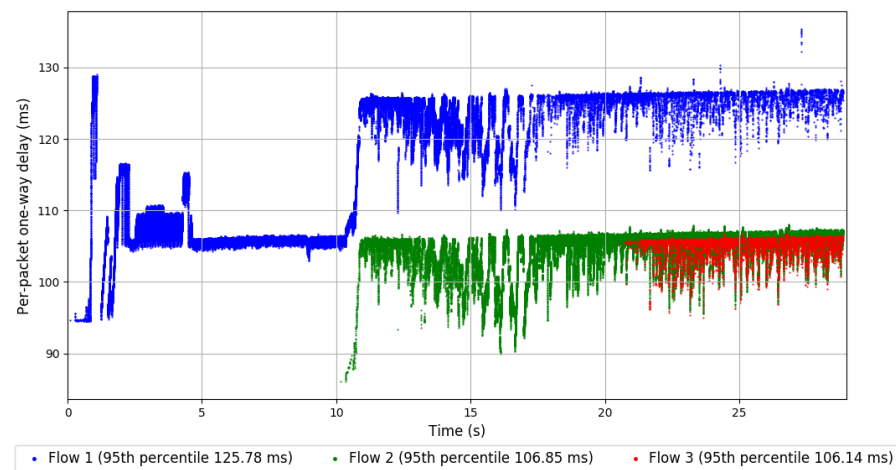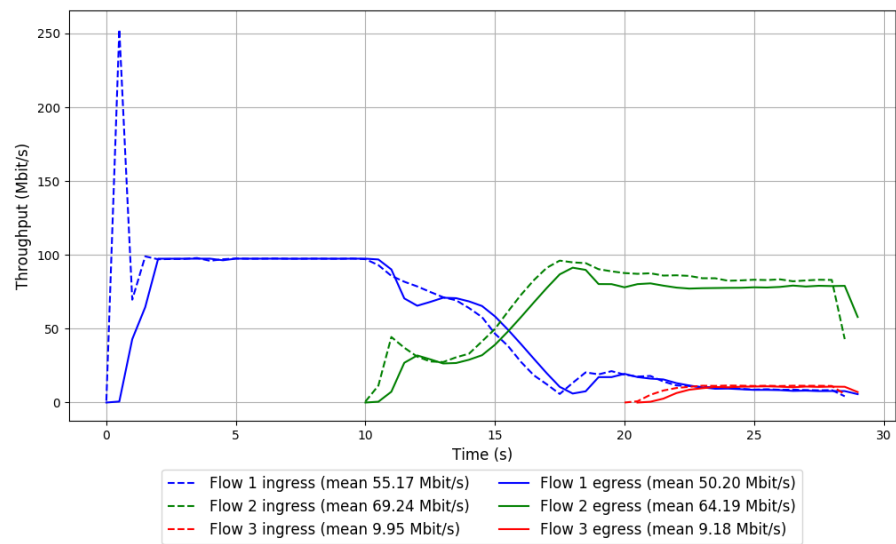Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-08-26 23:55:19
End at: 2019-08-26 23:55:49
Local clock offset: 1.263 ms
Remote clock offset: -64.927 ms


# Below is generated by plot.py at 2019-08-27 01:51:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 127.384 ms
Loss rate: 2.29%
-- Flow 1:
Average throughput: 77.27 Mbit/s
95th percentile per-packet one-way delay: 127.477 ms
Loss rate: 1.83%
-- Flow 2:
Average throughput: 14.98 Mbit/s
95th percentile per-packet one-way delay: 107.447 ms
Loss rate: 3.23%
-- Flow 3:
Average throughput: 23.36 Mbit/s
95th percentile per-packet one-way delay: 108.043 ms
Loss rate: 6.04%
```

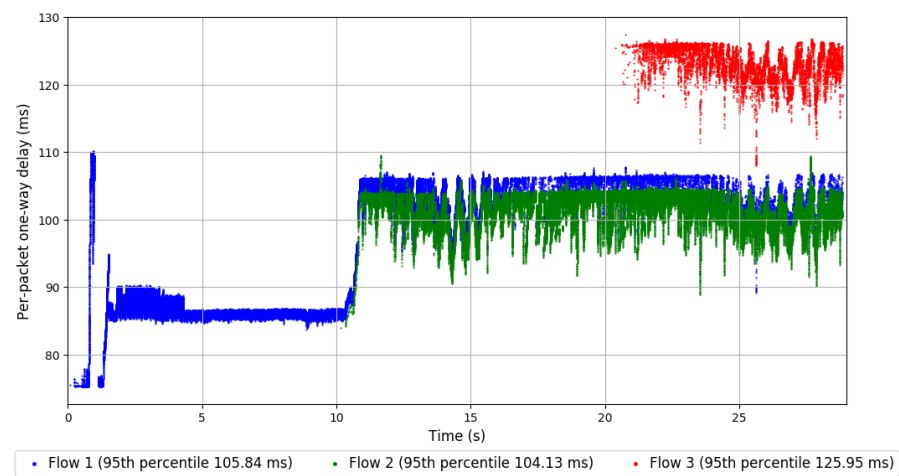Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-08-27 00:25:53
End at: 2019-08-27 00:26:23
Local clock offset: 1.079 ms
Remote clock offset: -150.794 ms


# Below is generated by plot.py at 2019-08-27 01:51:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.90 Mbit/s
95th percentile per-packet one-way delay: 104.182 ms
Loss rate: 2.42%
-- Flow 1:
Average throughput: 83.35 Mbit/s
95th percentile per-packet one-way delay: 104.039 ms
Loss rate: 2.03%
-- Flow 2:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 105.565 ms
Loss rate: 2.81%
-- Flow 3:
Average throughput: 22.50 Mbit/s
95th percentile per-packet one-way delay: 104.313 ms
Loss rate: 6.80%
```

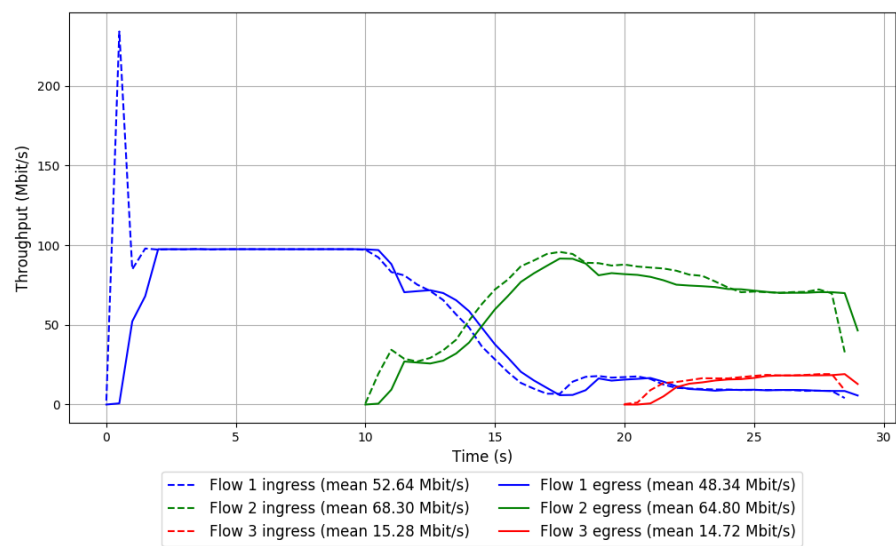## Run 3: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 85.17 Mbit/s) --- Flow 1 egress (mean 83.35 Mbit/s)
Flow 2 ingress (mean 6.24 Mbit/s) --- Flow 2 egress (mean 6.05 Mbit/s)
Flow 3 ingress (mean 24.18 Mbit/s) --- Flow 3 egress (mean 22.50 Mbit/s)

Flow 1 (95th percentile 104.04 ms) • Flow 2 (95th percentile 105.56 ms) • Flow 3 (95th percentile 104.31 ms)
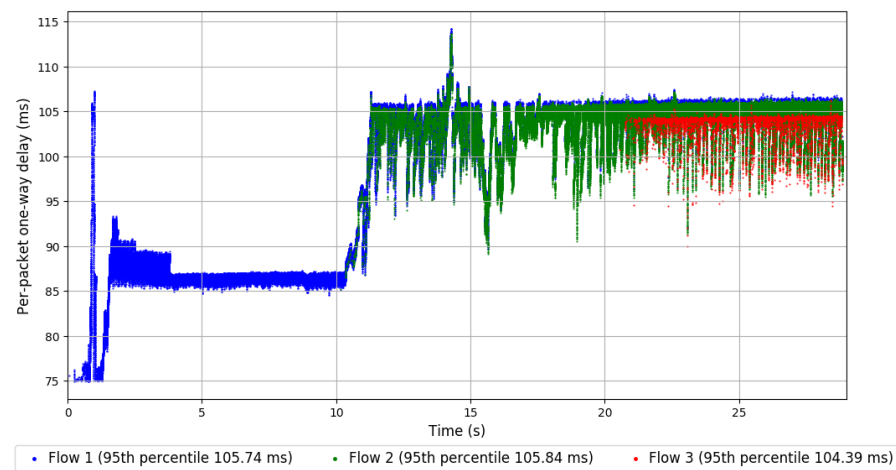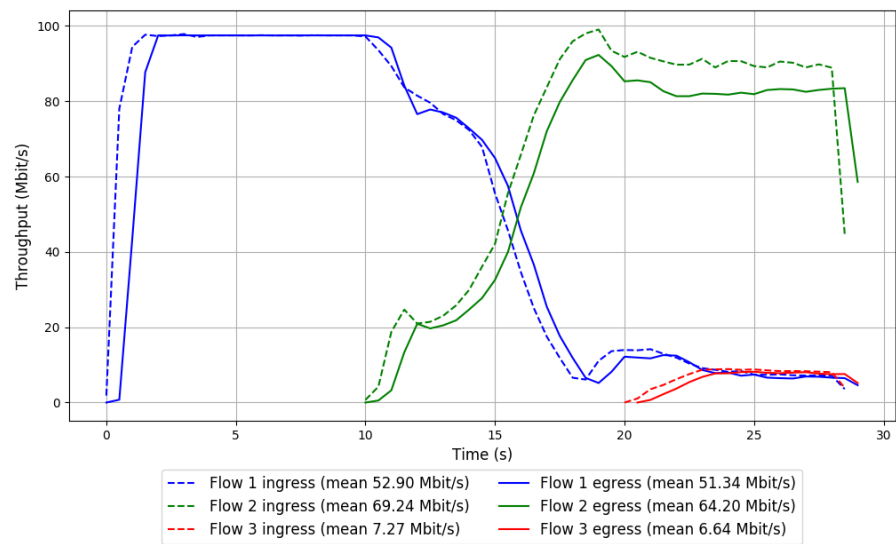
90

```
Run 4: Statistics of Indigo-MusesD

Start at: 2019-08-27 00:56:30
End at: 2019-08-27 00:57:00
Local clock offset: 0.695 ms
Remote clock offset: -231.103 ms


# Below is generated by plot.py at 2019-08-27 01:51:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.79 Mbit/s
95th percentile per-packet one-way delay: 118.332 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 56.66 Mbit/s
95th percentile per-packet one-way delay: 94.828 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 44.26 Mbit/s
95th percentile per-packet one-way delay: 122.893 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 28.57 Mbit/s
95th percentile per-packet one-way delay: 101.633 ms
Loss rate: 0.14%
```

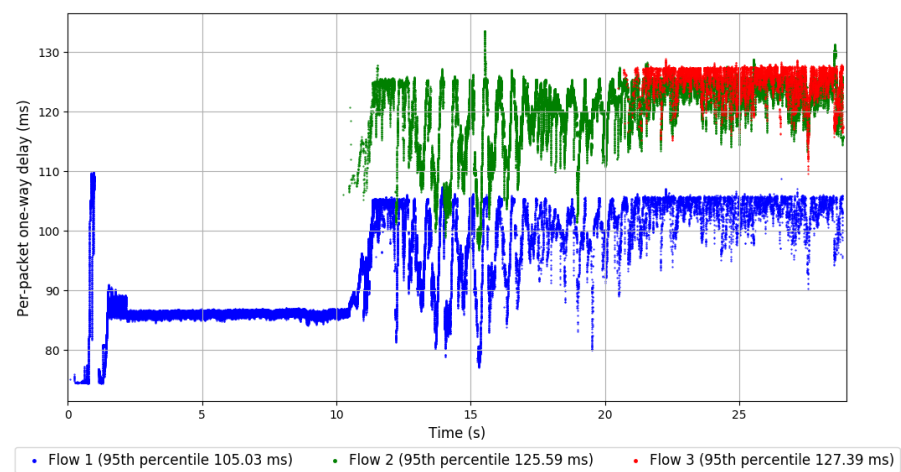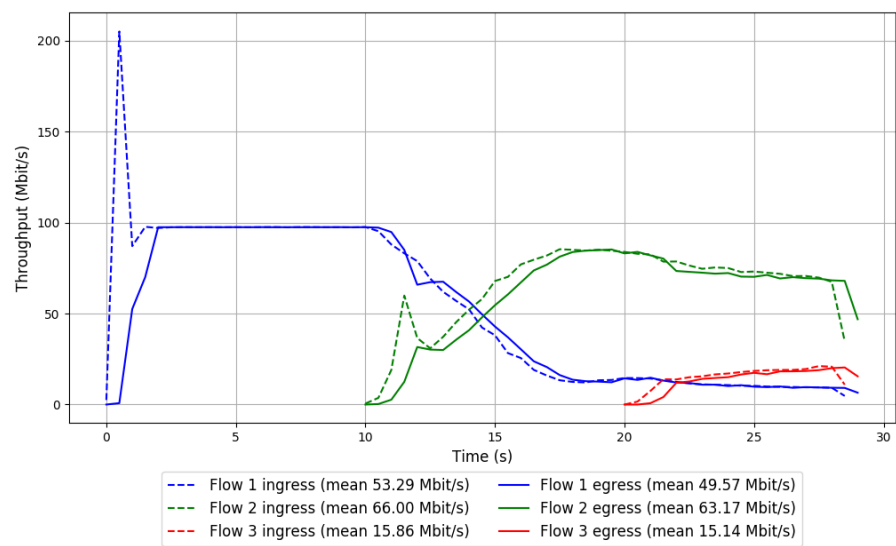Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2019-08-27 01:27:21
End at: 2019-08-27 01:27:51
Local clock offset: 0.263 ms
Remote clock offset: -318.033 ms


# Below is generated by plot.py at 2019-08-27 01:51:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.14 Mbit/s
95th percentile per-packet one-way delay: 102.891 ms
Loss rate: 3.26%
-- Flow 1:
Average throughput: 81.17 Mbit/s
95th percentile per-packet one-way delay: 102.927 ms
Loss rate: 2.61%
-- Flow 2:
Average throughput: 5.75 Mbit/s
95th percentile per-packet one-way delay: 101.376 ms
Loss rate: 2.97%
-- Flow 3:
Average throughput: 31.56 Mbit/s
95th percentile per-packet one-way delay: 101.748 ms
Loss rate: 8.73%
```

Run 5: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 83.43 Mbit/s) --- Flow 1 egress (mean 81.17 Mbit/s)
Flow 2 ingress (mean 5.93 Mbit/s) --- Flow 2 egress (mean 5.75 Mbit/s)
Flow 3 ingress (mean 34.60 Mbit/s) --- Flow 3 egress (mean 31.56 Mbit/s)

Flow 1 (95th percentile 102.93 ms) · Flow 2 (95th percentile 101.38 ms) · Flow 3 (95th percentile 101.75 ms)
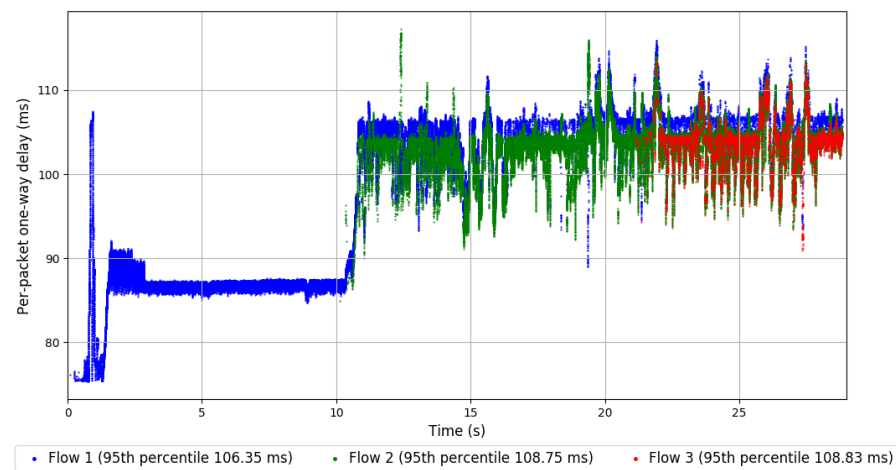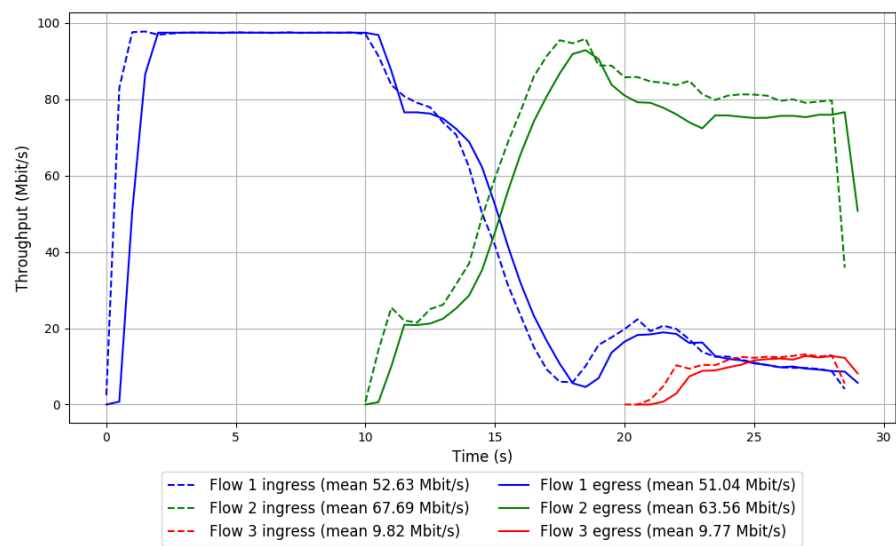
```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-08-26 23:14:26
End at: 2019-08-26 23:14:56
Local clock offset: 2.459 ms
Remote clock offset: -266.366 ms


# Below is generated by plot.py at 2019-08-27 01:51:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.55 Mbit/s
95th percentile per-packet one-way delay: 125.439 ms
Loss rate: 8.17%
-- Flow 1:
Average throughput: 50.20 Mbit/s
95th percentile per-packet one-way delay: 125.779 ms
Loss rate: 8.98%
-- Flow 2:
Average throughput: 64.19 Mbit/s
95th percentile per-packet one-way delay: 106.854 ms
Loss rate: 7.20%
-- Flow 3:
Average throughput: 9.18 Mbit/s
95th percentile per-packet one-way delay: 106.141 ms
Loss rate: 7.71%
```
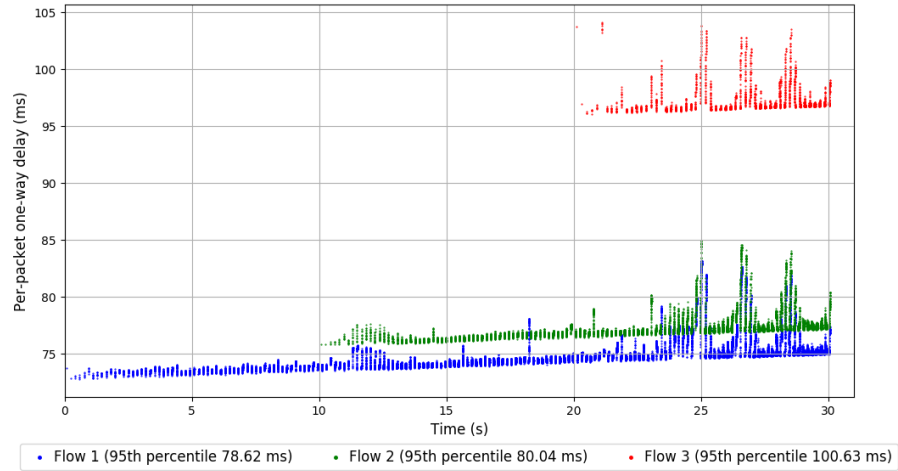
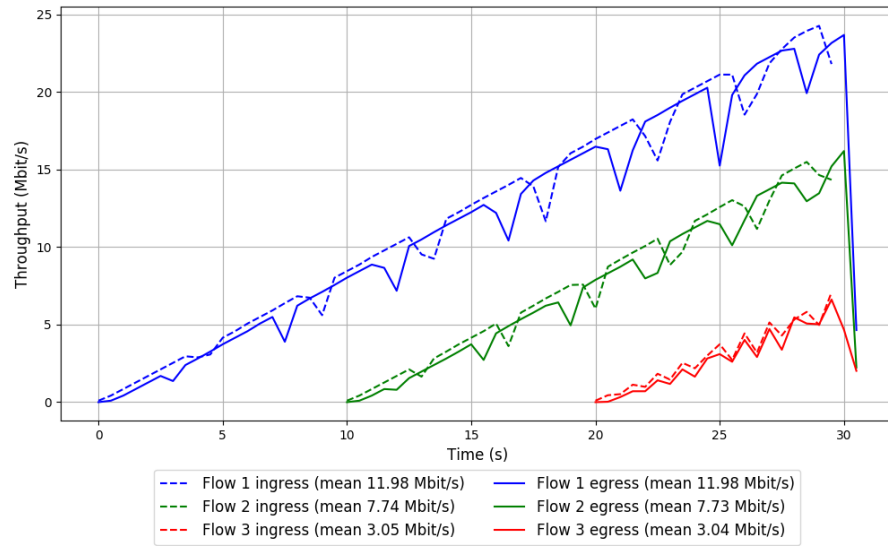Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-08-26 23:45:06
End at: 2019-08-26 23:45:36
Local clock offset: 2.114 ms
Remote clock offset: -38.182 ms


# Below is generated by plot.py at 2019-08-27 01:52:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 106.508 ms
Loss rate: 6.56%
-- Flow 1:
Average throughput: 48.34 Mbit/s
95th percentile per-packet one-way delay: 105.845 ms
Loss rate: 8.07%
-- Flow 2:
Average throughput: 64.80 Mbit/s
95th percentile per-packet one-way delay: 104.133 ms
Loss rate: 5.03%
-- Flow 3:
Average throughput: 14.72 Mbit/s
95th percentile per-packet one-way delay: 125.951 ms
Loss rate: 3.95%
```

Run 2: Report of Indigo-MusesT — Data Link
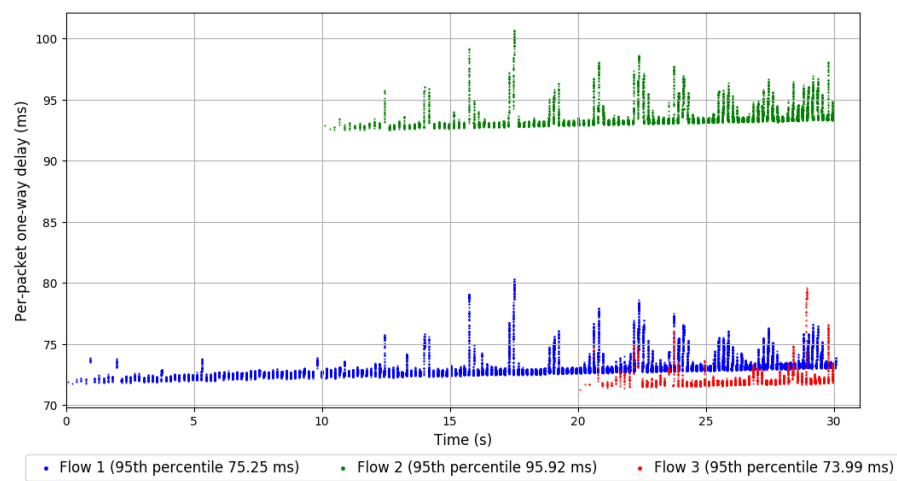
```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-08-27 00:15:40
End at: 2019-08-27 00:16:10
Local clock offset: 1.997 ms
Remote clock offset: -120.77 ms


# Below is generated by plot.py at 2019-08-27 01:52:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.92 Mbit/s
95th percentile per-packet one-way delay: 105.803 ms
Loss rate: 4.95%
-- Flow 1:
Average throughput: 51.34 Mbit/s
95th percentile per-packet one-way delay: 105.736 ms
Loss rate: 2.86%
-- Flow 2:
Average throughput: 64.20 Mbit/s
95th percentile per-packet one-way delay: 105.836 ms
Loss rate: 7.23%
-- Flow 3:
Average throughput: 6.64 Mbit/s
95th percentile per-packet one-way delay: 104.387 ms
Loss rate: 8.64%
```

Run 3: Report of Indigo-MusesT — Data Link
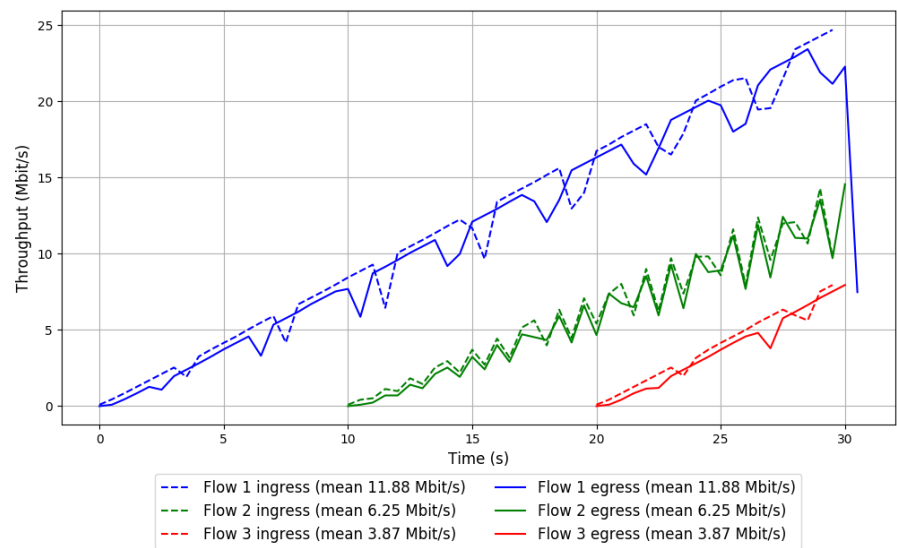
```
Run 4: Statistics of Indigo-MusesT

Start at: 2019-08-27 00:46:16
End at: 2019-08-27 00:46:46
Local clock offset: 1.53 ms
Remote clock offset: -203.72 ms


# Below is generated by plot.py at 2019-08-27 01:52:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.77 Mbit/s
95th percentile per-packet one-way delay: 125.547 ms
Loss rate: 5.73%
-- Flow 1:
Average throughput: 49.57 Mbit/s
95th percentile per-packet one-way delay: 105.025 ms
Loss rate: 6.91%
-- Flow 2:
Average throughput: 63.17 Mbit/s
95th percentile per-packet one-way delay: 125.587 ms
Loss rate: 4.34%
-- Flow 3:
Average throughput: 15.14 Mbit/s
95th percentile per-packet one-way delay: 127.386 ms
Loss rate: 4.85%
```

Run 4: Report of Indigo-MusesT — Data Link

```
Run 5: Statistics of Indigo-MusesT

Start at: 2019-08-27 01:17:02
End at: 2019-08-27 01:17:32
Local clock offset: 1.16 ms
Remote clock offset: -286.327 ms


# Below is generated by plot.py at 2019-08-27 01:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.03 Mbit/s
95th percentile per-packet one-way delay: 107.444 ms
Loss rate: 4.38%
-- Flow 1:
Average throughput: 51.04 Mbit/s
95th percentile per-packet one-way delay: 106.351 ms
Loss rate: 2.92%
-- Flow 2:
Average throughput: 63.56 Mbit/s
95th percentile per-packet one-way delay: 108.749 ms
Loss rate: 6.00%
-- Flow 3:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 108.832 ms
Loss rate: 6.28%
```

Run 5: Report of Indigo-MusesT — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2019-08-26 23:18:16
End at: 2019-08-26 23:18:46
Local clock offset: 2.329 ms
Remote clock offset: -283.55 ms


# Below is generated by plot.py at 2019-08-27 01:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.14 Mbit/s
95th percentile per-packet one-way delay: 96.494 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 11.98 Mbit/s
95th percentile per-packet one-way delay: 78.624 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.73 Mbit/s
95th percentile per-packet one-way delay: 80.042 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.04 Mbit/s
95th percentile per-packet one-way delay: 100.631 ms
Loss rate: 0.66%
```
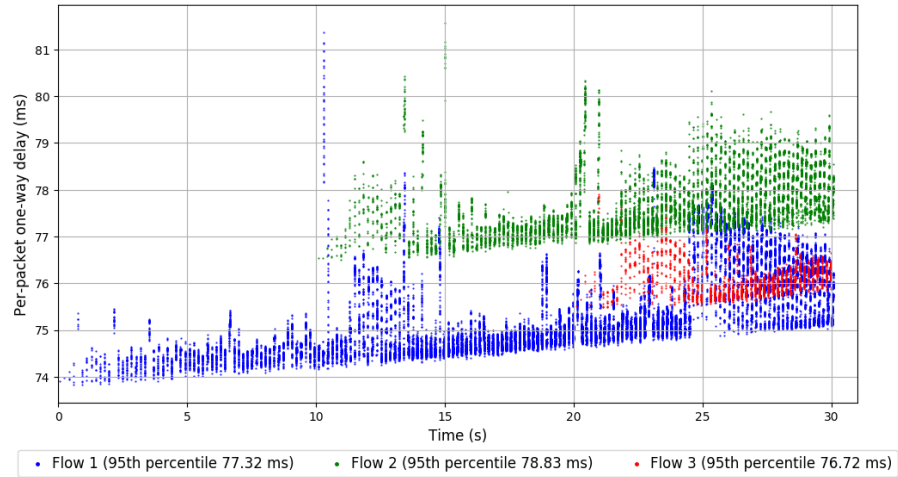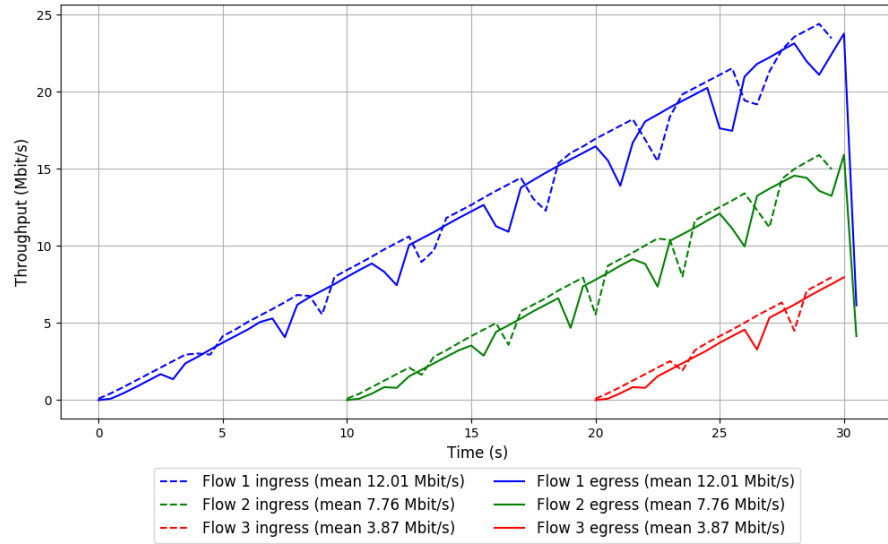
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2019-08-26 23:48:55
End at: 2019-08-26 23:49:25
Local clock offset: 2.097 ms
Remote clock offset: -51.133 ms


# Below is generated by plot.py at 2019-08-27 01:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.30 Mbit/s
95th percentile per-packet one-way delay: 94.188 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.88 Mbit/s
95th percentile per-packet one-way delay: 75.251 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 6.25 Mbit/s
95th percentile per-packet one-way delay: 95.921 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 73.989 ms
Loss rate: 0.00%
```
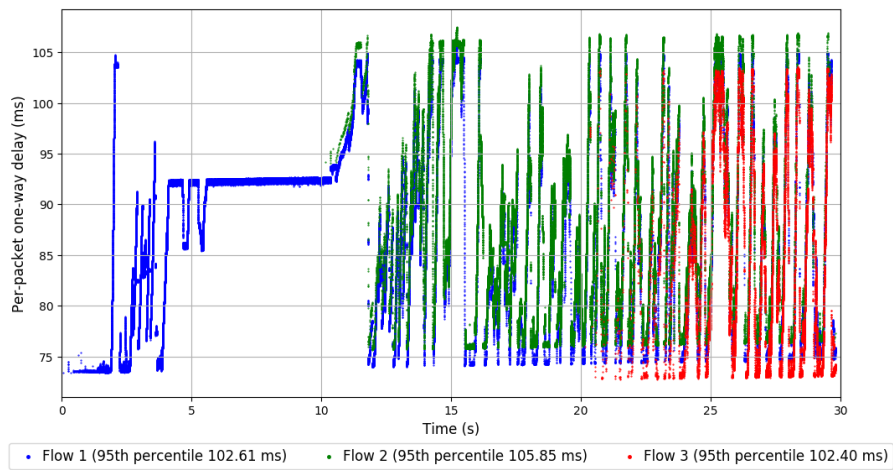
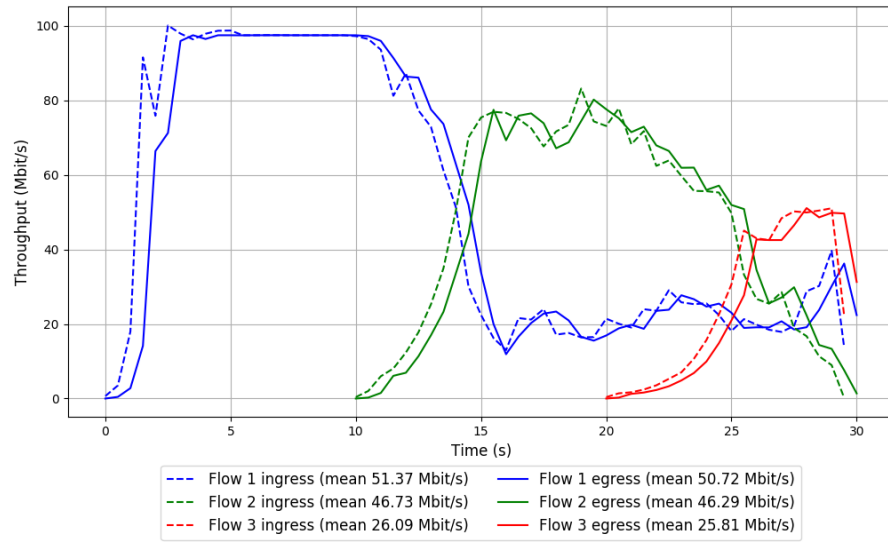## Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2019-08-27 00:19:29
End at: 2019-08-27 00:19:59
Local clock offset: 1.233 ms
Remote clock offset: -134.435 ms


# Below is generated by plot.py at 2019-08-27 01:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.08 Mbit/s
95th percentile per-packet one-way delay: 74.249 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.60 Mbit/s
95th percentile per-packet one-way delay: 74.147 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 7.82 Mbit/s
95th percentile per-packet one-way delay: 74.440 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 73.775 ms
Loss rate: 0.00%
```
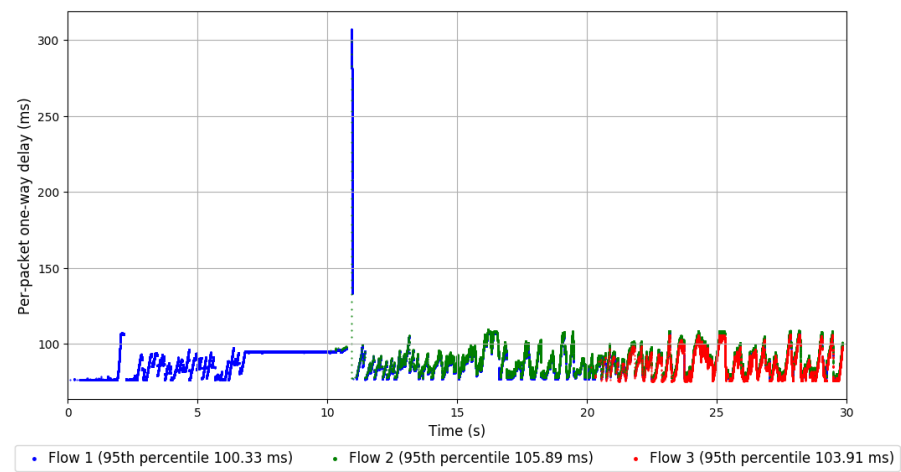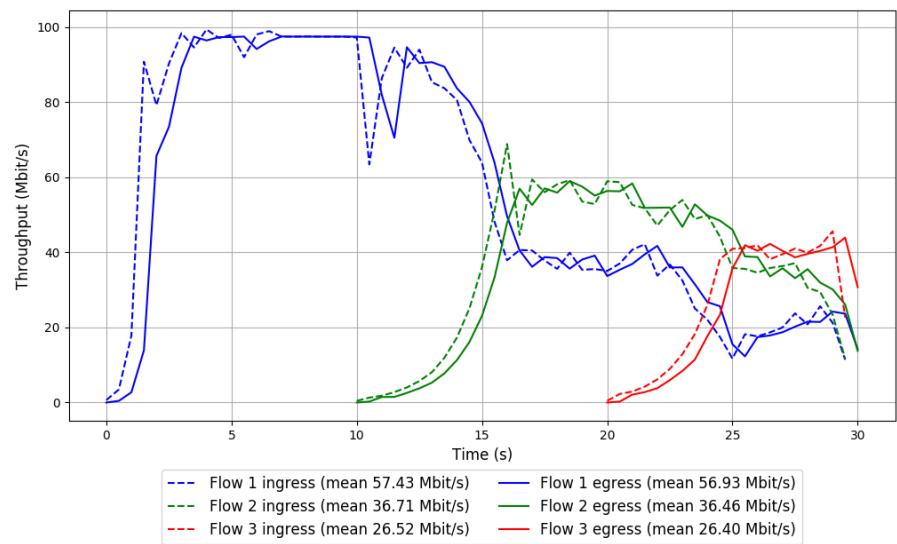
Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2019-08-27 00:50:05
End at: 2019-08-27 00:50:35
Local clock offset: 1.495 ms
Remote clock offset: -213.403 ms


# Below is generated by plot.py at 2019-08-27 01:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.40 Mbit/s
95th percentile per-packet one-way delay: 77.126 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.93 Mbit/s
95th percentile per-packet one-way delay: 76.946 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.86 Mbit/s
95th percentile per-packet one-way delay: 77.286 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.84 Mbit/s
95th percentile per-packet one-way delay: 76.984 ms
Loss rate: 0.00%
```

Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2019-08-27 01:20:55
End at: 2019-08-27 01:21:25
Local clock offset: 0.319 ms
Remote clock offset: -296.92 ms


# Below is generated by plot.py at 2019-08-27 01:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.45 Mbit/s
95th percentile per-packet one-way delay: 78.308 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.01 Mbit/s
95th percentile per-packet one-way delay: 77.317 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 78.828 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 76.716 ms
Loss rate: 0.00%
```
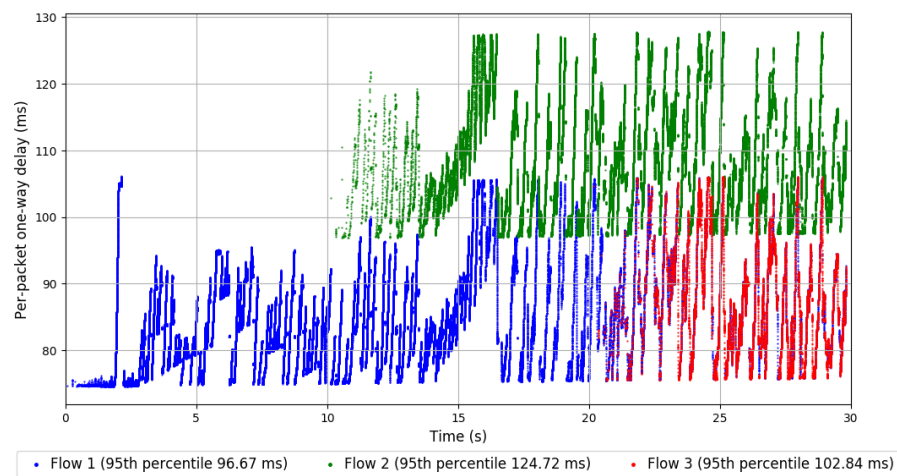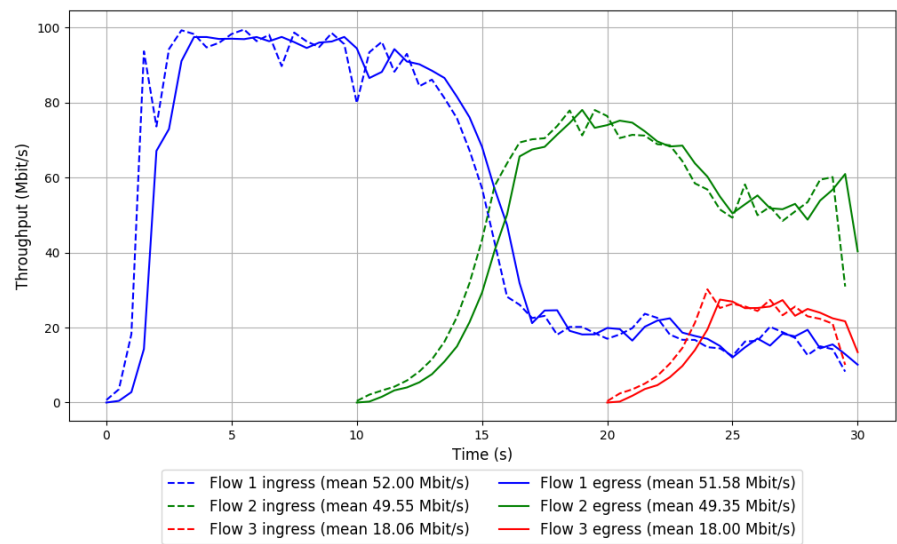
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Muses\_DecisionTree

Start at: 2019-08-26 23:39:57
End at: 2019-08-26 23:40:27
Local clock offset: 1.294 ms
Remote clock offset: -26.276 ms


# Below is generated by plot.py at 2019-08-27 01:52:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.69 Mbit/s
95th percentile per-packet one-way delay: 103.749 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 50.72 Mbit/s
95th percentile per-packet one-way delay: 102.614 ms
Loss rate: 1.25%
-- Flow 2:
Average throughput: 46.29 Mbit/s
95th percentile per-packet one-way delay: 105.846 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 25.81 Mbit/s
95th percentile per-packet one-way delay: 102.399 ms
Loss rate: 1.08%
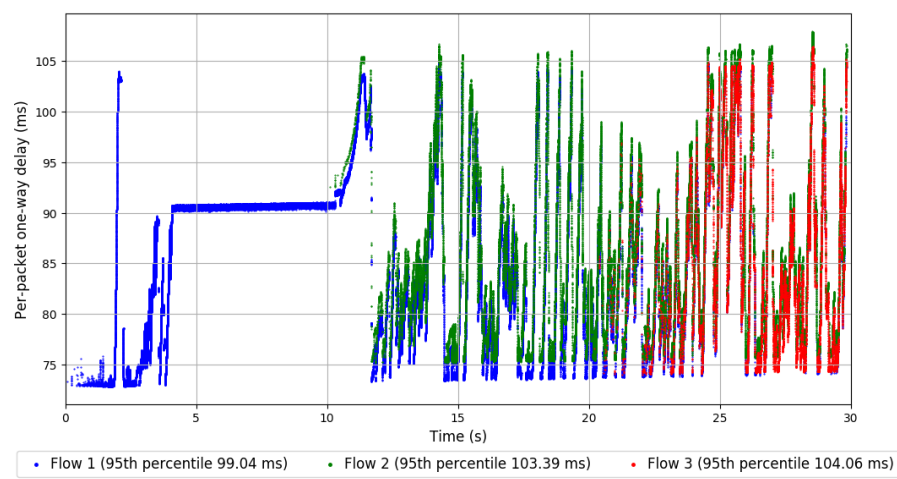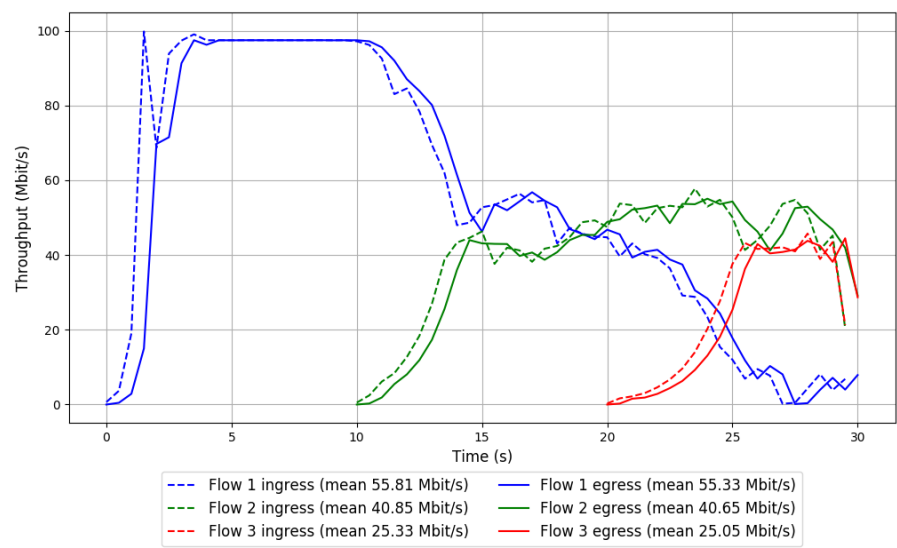```

Run 1: Report of Muses_DecisionTree — Data Link



Flow 1 ingress (mean 51.37 Mbit/s) --- Flow 1 egress (mean 50.72 Mbit/s)
Flow 2 ingress (mean 46.73 Mbit/s) --- Flow 2 egress (mean 46.29 Mbit/s)
Flow 3 ingress (mean 26.09 Mbit/s) --- Flow 3 egress (mean 25.81 Mbit/s)



Flow 1 (95th percentile 102.61 ms)   Flow 2 (95th percentile 105.85 ms)   Flow 3 (95th percentile 102.40 ms)

116

```
Run 2: Statistics of Muses_DecisionTree

Start at: 2019-08-27 00:10:32
End at: 2019-08-27 00:11:02
Local clock offset: 1.233 ms
Remote clock offset: -105.97 ms

Below is generated by plot.py at 2019-08-27 01:53:01
Datalink statistics
-- Total of 3 flows:
Average throughput: 89.66 Mbit/s
95th percentile per-packet one-way delay: 103.502 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 56.93 Mbit/s
95th percentile per-packet one-way delay: 100.330 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 36.46 Mbit/s
95th percentile per-packet one-way delay: 105.888 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 26.40 Mbit/s
95th percentile per-packet one-way delay: 103.910 ms
Loss rate: 0.34%
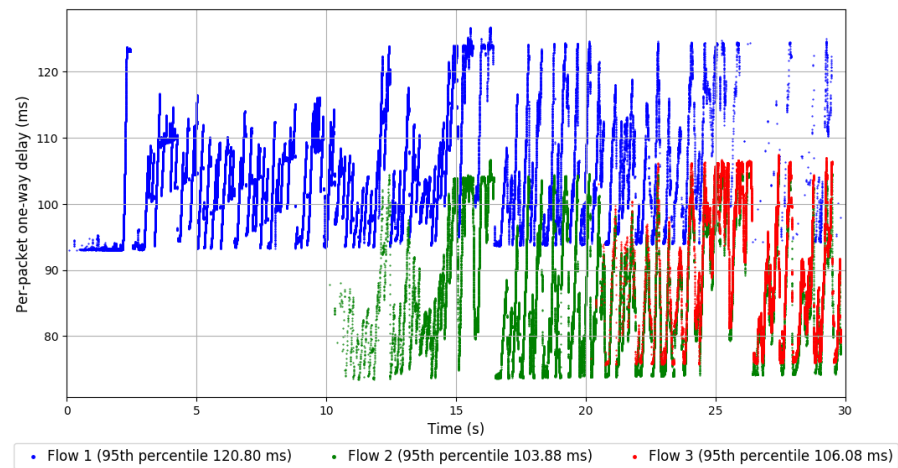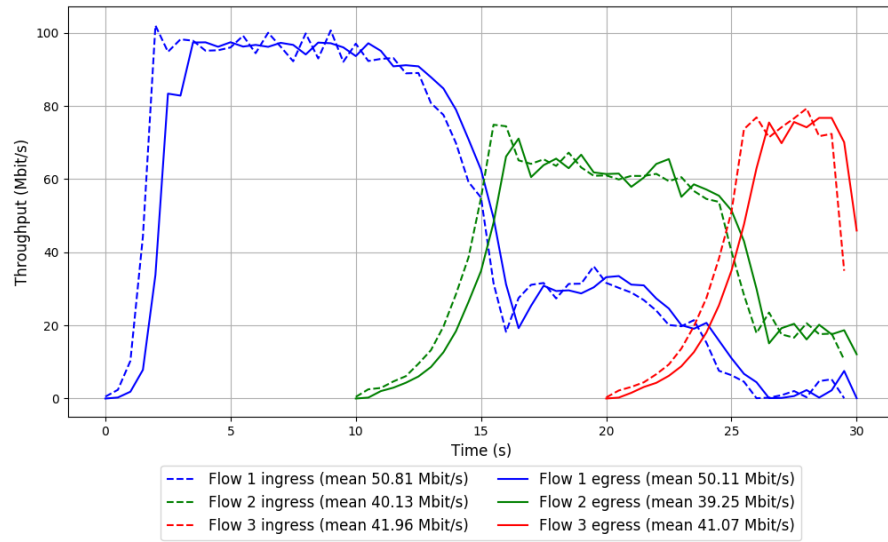```

Run 2: Report of Muses_DecisionTree — Data Link

```
Run 3: Statistics of Muses\_DecisionTree

Start at: 2019-08-27 00:41:07
End at: 2019-08-27 00:41:37
Local clock offset: 0.892 ms
Remote clock offset: -190.214 ms


# Below is generated by plot.py at 2019-08-27 01:53:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.08 Mbit/s
95th percentile per-packet one-way delay: 118.711 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 51.58 Mbit/s
95th percentile per-packet one-way delay: 96.669 ms
Loss rate: 0.76%
-- Flow 2:
Average throughput: 49.35 Mbit/s
95th percentile per-packet one-way delay: 124.718 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 18.00 Mbit/s
95th percentile per-packet one-way delay: 102.839 ms
Loss rate: 0.44%
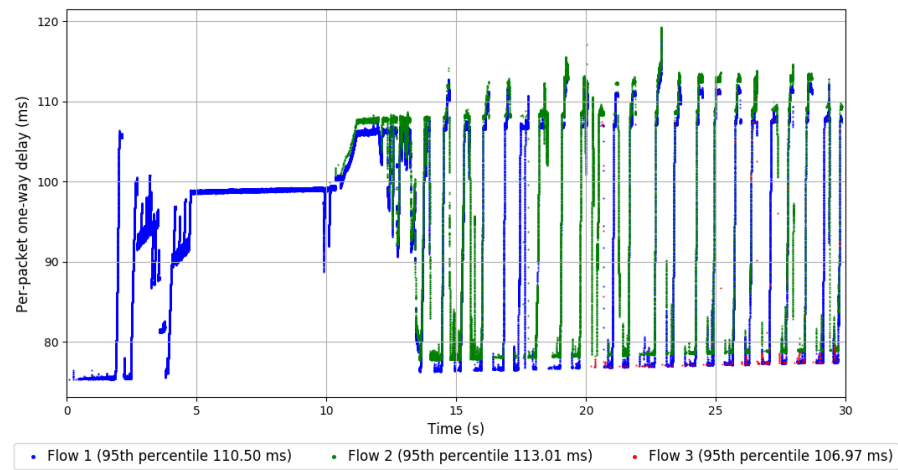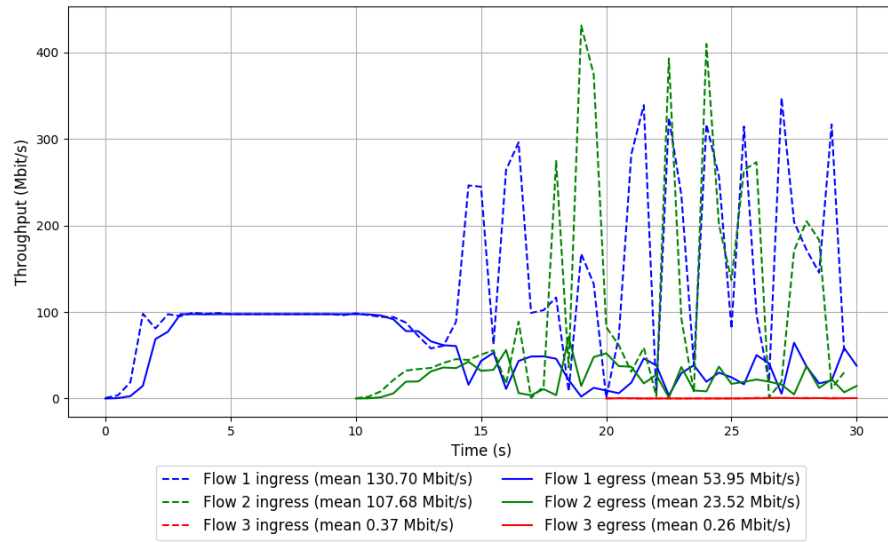```

Run 3: Report of Muses_DecisionTree — Data Link

```
Run 4: Statistics of Muses_DecisionTree

Start at: 2019-08-27 01:11:44
End at: 2019-08-27 01:12:14
Local clock offset: 1.288 ms
Remote clock offset: -272.222 ms

Below is generated by plot.py at 2019-08-27 01:53:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 90.38 Mbit/s
95th percentile per-packet one-way delay: 101.651 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 55.33 Mbit/s
95th percentile per-packet one-way delay: 99.039 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 40.65 Mbit/s
95th percentile per-packet one-way delay: 103.395 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 25.05 Mbit/s
95th percentile per-packet one-way delay: 104.065 ms
Loss rate: 0.85%
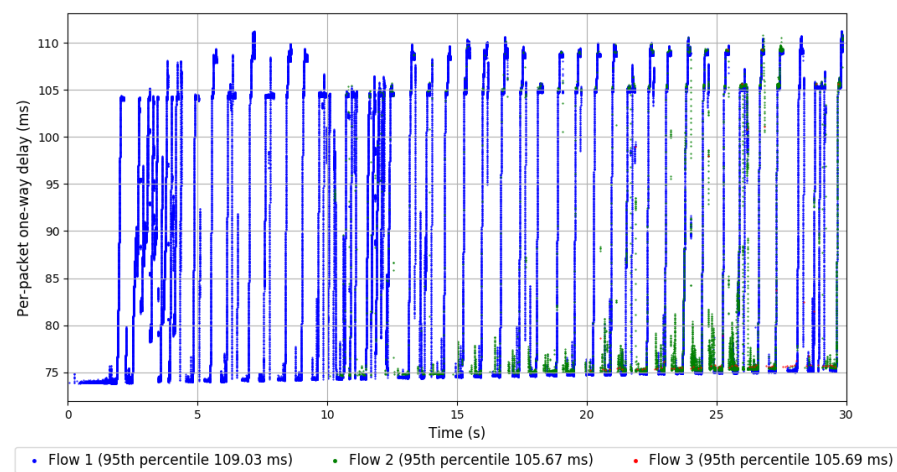```
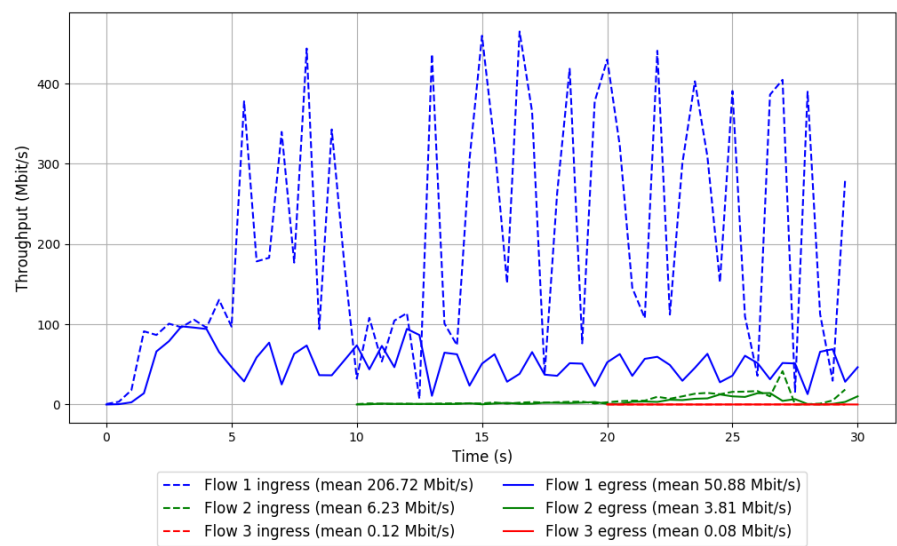
Run 4: Report of Muses_DecisionTree — Data Link

Flow 1 ingress (mean 55.81 Mbit/s)   Flow 1 egress (mean 55.33 Mbit/s)
Flow 2 ingress (mean 40.85 Mbit/s)   Flow 2 egress (mean 40.65 Mbit/s)
Flow 3 ingress (mean 25.33 Mbit/s)   Flow 3 egress (mean 25.05 Mbit/s)

Flow 1 (95th percentile 99.04 ms)   Flow 2 (95th percentile 103.39 ms)   Flow 3 (95th percentile 104.06 ms)

```
Run 5: Statistics of Muses\_DecisionTree

Start at: 2019-08-27 01:42:37
End at: 2019-08-27 01:43:07
Local clock offset: 0.882 ms
Remote clock offset: -357.218 ms


# Below is generated by plot.py at 2019-08-27 01:53:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.38 Mbit/s
95th percentile per-packet one-way delay: 115.496 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 50.11 Mbit/s
95th percentile per-packet one-way delay: 120.796 ms
Loss rate: 1.36%
-- Flow 2:
Average throughput: 39.25 Mbit/s
95th percentile per-packet one-way delay: 103.875 ms
Loss rate: 2.24%
-- Flow 3:
Average throughput: 41.07 Mbit/s
95th percentile per-packet one-way delay: 106.078 ms
Loss rate: 2.08%
```
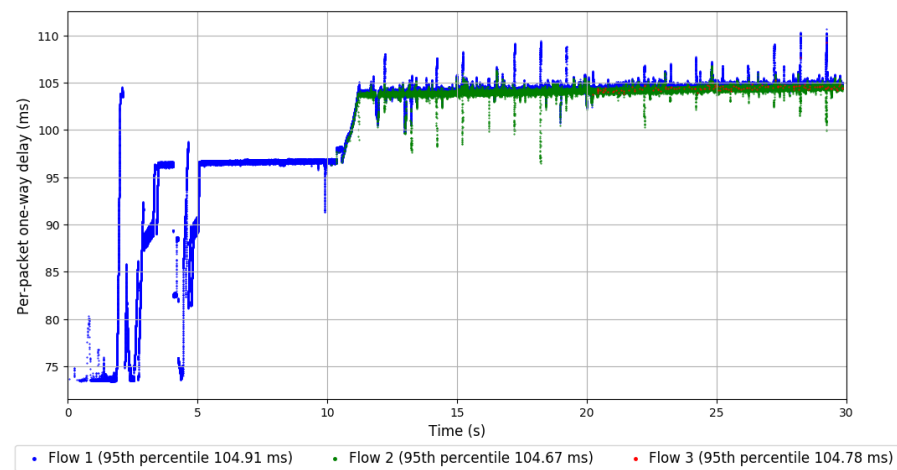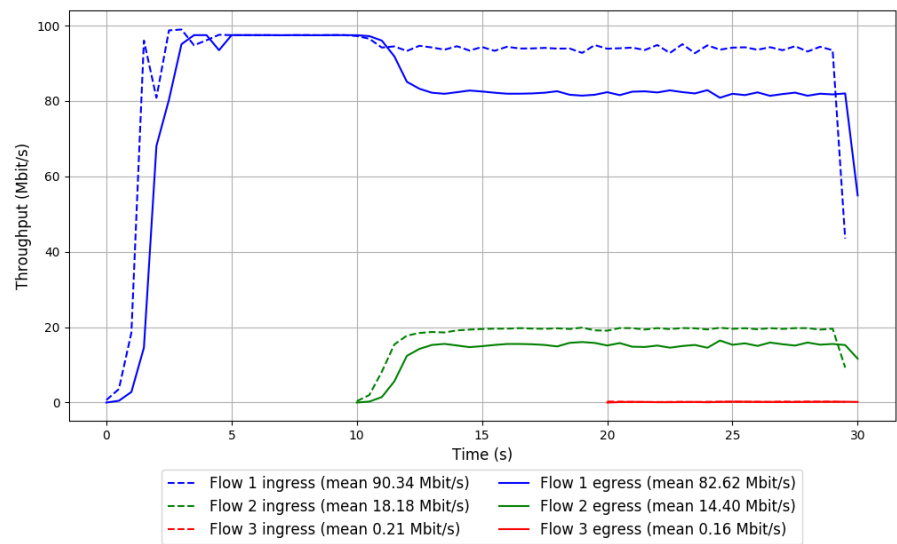
Run 5: Report of Muses_DecisionTree — Data Link

Flow 1 ingress (mean 50.81 Mbit/s)   Flow 1 egress (mean 50.11 Mbit/s)
Flow 2 ingress (mean 40.13 Mbit/s)   Flow 2 egress (mean 39.25 Mbit/s)
Flow 3 ingress (mean 41.96 Mbit/s)   Flow 3 egress (mean 41.07 Mbit/s)

Flow 1 (95th percentile 120.80 ms)   Flow 2 (95th percentile 103.88 ms)   Flow 3 (95th percentile 106.08 ms)

Run 1: Statistics of Muses_DecisionTreeH0

Start at: 2019-08-26 23:13:07
End at: 2019-08-26 23:13:37
Local clock offset: 1.7 ms
Remote clock offset: -259.369 ms

Below is generated by plot.py at 2019-08-27 01:53:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 69.61 Mbit/s
95th percentile per-packet one-way delay: 111.382 ms
Loss rate: 65.53%
-- Flow 1:
Average throughput: 53.95 Mbit/s
95th percentile per-packet one-way delay: 110.496 ms
Loss rate: 58.68%
-- Flow 2:
Average throughput: 23.52 Mbit/s
95th percentile per-packet one-way delay: 113.008 ms
Loss rate: 78.15%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 106.968 ms
Loss rate: 29.18%

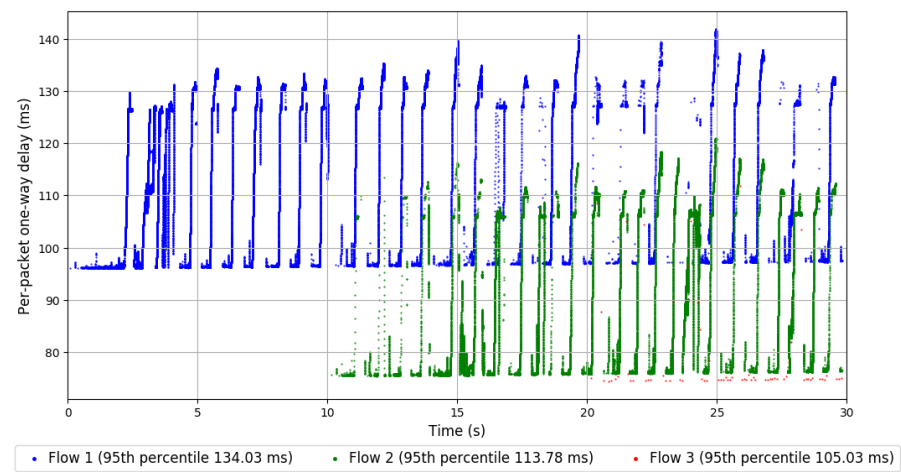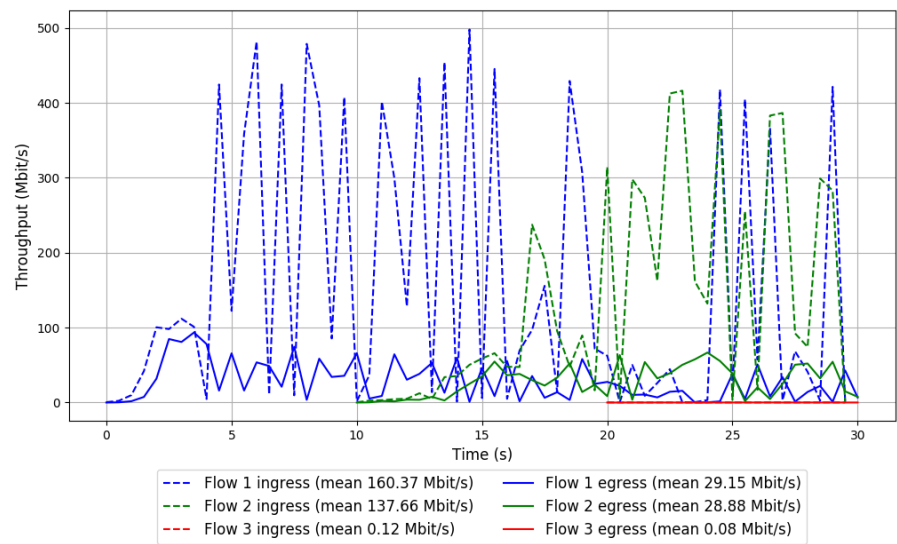## Run 1: Report of Muses_DecisionTreeH0 — Data Link

Flow 1 ingress (mean 130.70 Mbit/s) — Flow 1 egress (mean 53.95 Mbit/s)
Flow 2 ingress (mean 107.68 Mbit/s) — Flow 2 egress (mean 23.52 Mbit/s)
Flow 3 ingress (mean 0.37 Mbit/s) — Flow 3 egress (mean 0.26 Mbit/s)

Flow 1 (95th percentile 110.50 ms) • Flow 2 (95th percentile 113.01 ms) • Flow 3 (95th percentile 106.97 ms)

```
Run 2: Statistics of Muses\_DecisionTreeH0

Start at: 2019-08-26 23:43:48
End at: 2019-08-26 23:44:18
Local clock offset: 2.108 ms
Remote clock offset: -35.309 ms


# Below is generated by plot.py at 2019-08-27 01:53:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 53.43 Mbit/s
95th percentile per-packet one-way delay: 109.028 ms
Loss rate: 74.63%
-- Flow 1:
Average throughput: 50.88 Mbit/s
95th percentile per-packet one-way delay: 109.035 ms
Loss rate: 75.36%
-- Flow 2:
Average throughput: 3.81 Mbit/s
95th percentile per-packet one-way delay: 105.675 ms
Loss rate: 38.75%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 105.695 ms
Loss rate: 31.30%
```
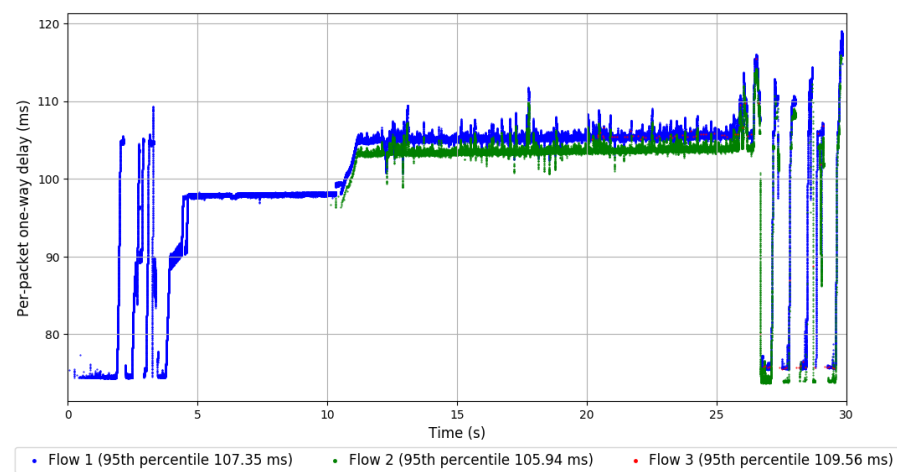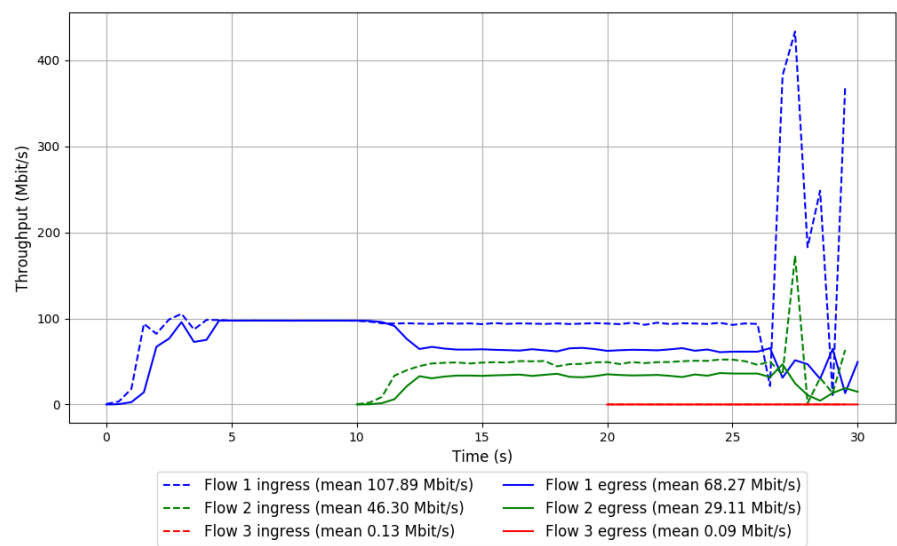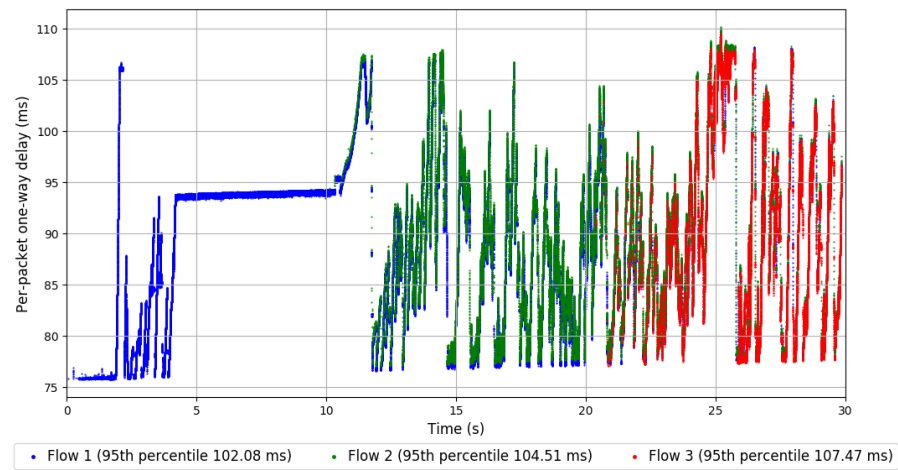
Run 2: Report of Muses_DecisionTreeH0 — Data Link

- - - Flow 1 ingress (mean 206.72 Mbit/s) ——— Flow 1 egress (mean 50.88 Mbit/s)
- - - Flow 2 ingress (mean 6.23 Mbit/s) ——— Flow 2 egress (mean 3.81 Mbit/s)
- - - Flow 3 ingress (mean 0.12 Mbit/s) ——— Flow 3 egress (mean 0.08 Mbit/s)

• Flow 1 (95th percentile 109.03 ms)   • Flow 2 (95th percentile 105.67 ms)   • Flow 3 (95th percentile 105.69 ms)

```
Run 3: Statistics of Muses\_DecisionTreeH0

Start at: 2019-08-27 00:14:22
End at: 2019-08-27 00:14:52
Local clock offset: 1.157 ms
Remote clock offset: -117.636 ms


# Below is generated by plot.py at 2019-08-27 01:53:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.20 Mbit/s
95th percentile per-packet one-way delay: 104.900 ms
Loss rate: 9.90%
-- Flow 1:
Average throughput: 82.62 Mbit/s
95th percentile per-packet one-way delay: 104.914 ms
Loss rate: 8.45%
-- Flow 2:
Average throughput: 14.40 Mbit/s
95th percentile per-packet one-way delay: 104.673 ms
Loss rate: 20.76%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 104.776 ms
Loss rate: 22.35%
```
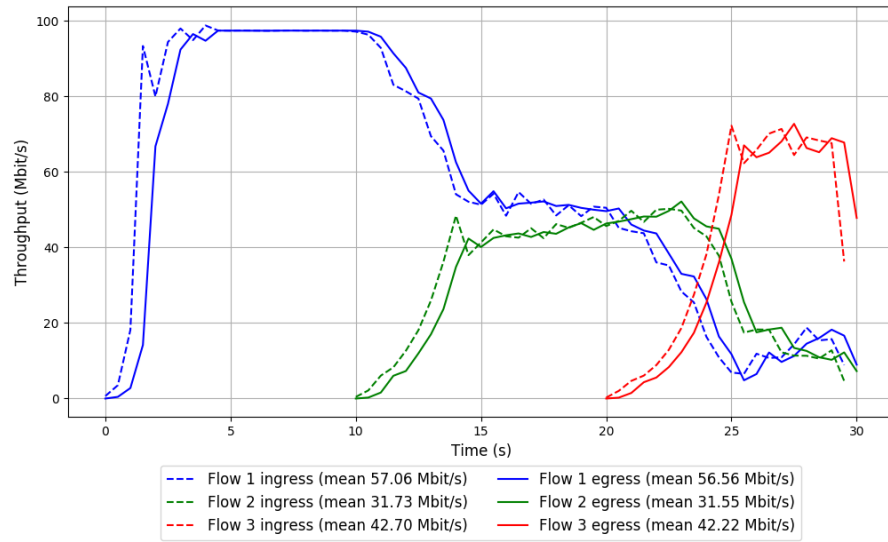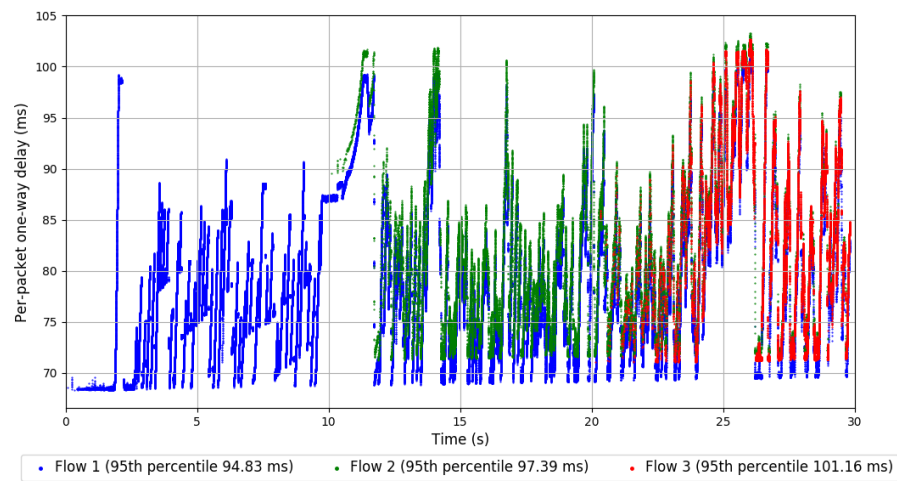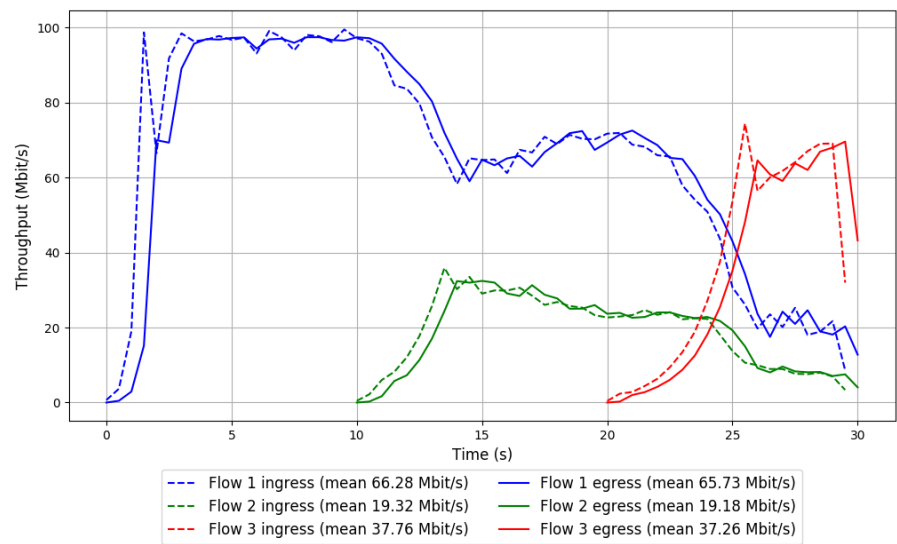
Run 3: Report of Muses_DecisionTreeH0 — Data Link

Flow 1 ingress (mean 90.34 Mbit/s) — Flow 1 egress (mean 82.62 Mbit/s)
Flow 2 ingress (mean 18.18 Mbit/s) — Flow 2 egress (mean 14.40 Mbit/s)
Flow 3 ingress (mean 0.21 Mbit/s) — Flow 3 egress (mean 0.16 Mbit/s)

Flow 1 (95th percentile 104.91 ms)   Flow 2 (95th percentile 104.67 ms)   Flow 3 (95th percentile 104.78 ms)
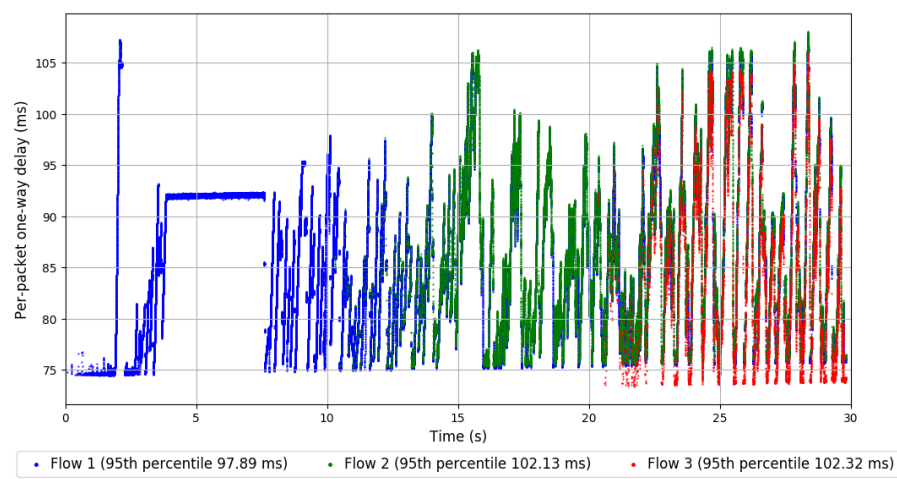
```
Run 4: Statistics of Muses\_DecisionTreeH0

Start at: 2019-08-27 00:44:57
End at: 2019-08-27 00:45:27
Local clock offset: 1.588 ms
Remote clock offset: -200.137 ms


# Below is generated by plot.py at 2019-08-27 01:54:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 48.27 Mbit/s
95th percentile per-packet one-way delay: 132.563 ms
Loss rate: 80.80%
-- Flow 1:
Average throughput: 29.15 Mbit/s
95th percentile per-packet one-way delay: 134.030 ms
Loss rate: 81.82%
-- Flow 2:
Average throughput: 28.88 Mbit/s
95th percentile per-packet one-way delay: 113.777 ms
Loss rate: 79.02%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 105.034 ms
Loss rate: 34.94%
```

Run 4: Report of Muses_DecisionTreeH0 — Data Link

- - - Flow 1 ingress (mean 160.37 Mbit/s) ——— Flow 1 egress (mean 29.15 Mbit/s)
- - - Flow 2 ingress (mean 137.66 Mbit/s) ——— Flow 2 egress (mean 28.88 Mbit/s)
- - - Flow 3 ingress (mean 0.12 Mbit/s) ——— Flow 3 egress (mean 0.08 Mbit/s)

• Flow 1 (95th percentile 134.03 ms)　　• Flow 2 (95th percentile 113.78 ms)　　• Flow 3 (95th percentile 105.03 ms)
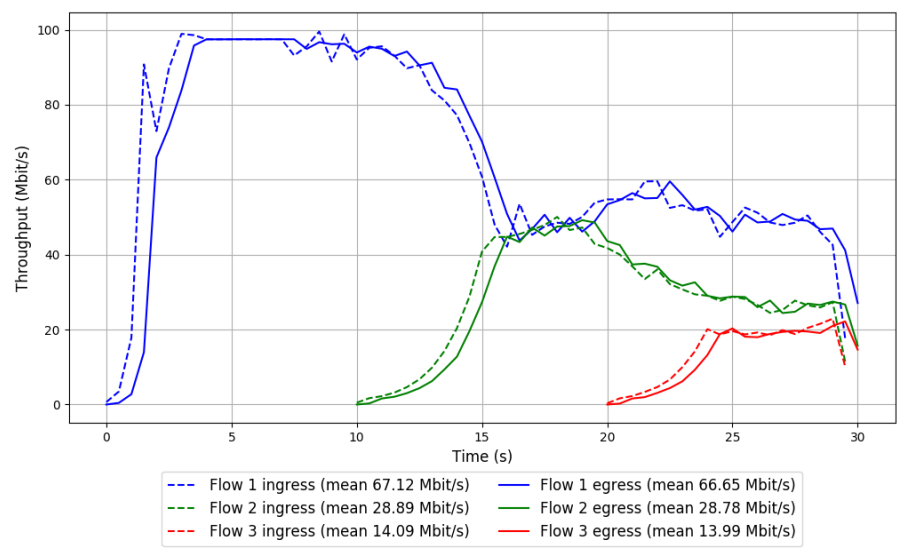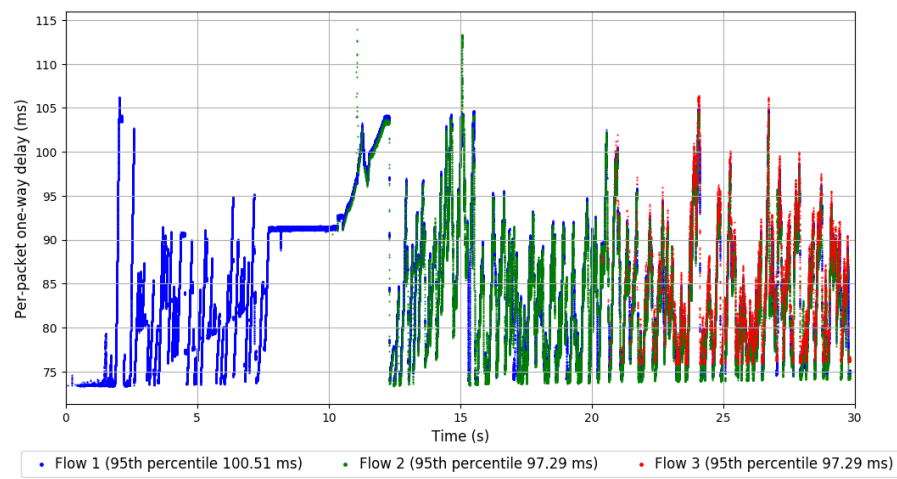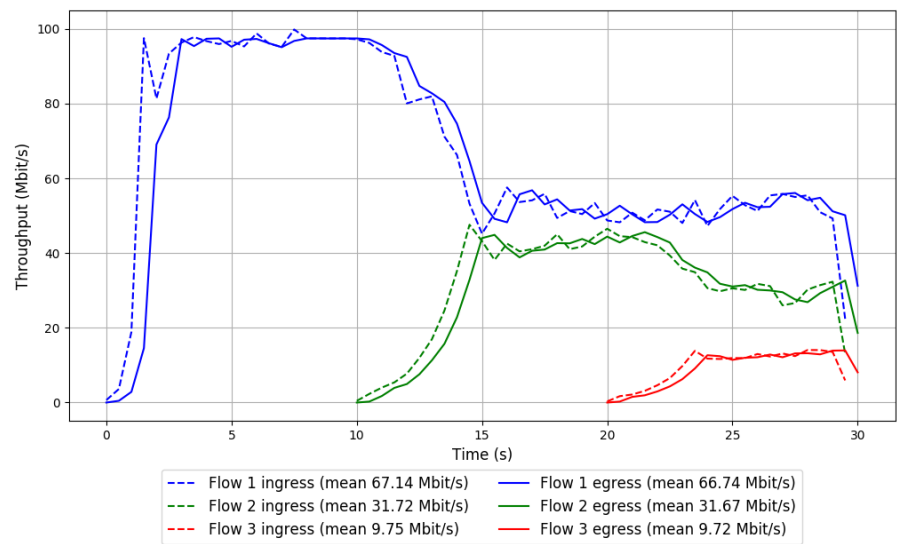
```
Run 5: Statistics of Muses\_DecisionTreeH0

Start at: 2019-08-27 01:15:40
End at: 2019-08-27 01:16:10
Local clock offset: 1.248 ms
Remote clock offset: -283.081 ms


# Below is generated by plot.py at 2019-08-27 01:54:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.52 Mbit/s
95th percentile per-packet one-way delay: 107.130 ms
Loss rate: 36.74%
-- Flow 1:
Average throughput: 68.27 Mbit/s
95th percentile per-packet one-way delay: 107.353 ms
Loss rate: 36.64%
-- Flow 2:
Average throughput: 29.11 Mbit/s
95th percentile per-packet one-way delay: 105.940 ms
Loss rate: 37.08%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 109.562 ms
Loss rate: 33.96%
```

Run 5: Report of Muses_DecisionTreeH0 — Data Link

- - - - Flow 1 ingress (mean 107.89 Mbit/s) ——— Flow 1 egress (mean 68.27 Mbit/s)
- - - - Flow 2 ingress (mean 46.30 Mbit/s) ——— Flow 2 egress (mean 29.11 Mbit/s)
- - - - Flow 3 ingress (mean 0.13 Mbit/s) ——— Flow 3 egress (mean 0.09 Mbit/s)

• Flow 1 (95th percentile 107.35 ms)   • Flow 2 (95th percentile 105.94 ms)   • Flow 3 (95th percentile 109.56 ms)

```
Run 1: Statistics of Muses\_DecisionTreeR0

Start at: 2019-08-26 23:16:58
End at: 2019-08-26 23:17:28
Local clock offset: 1.638 ms
Remote clock offset: -276.744 ms


# Below is generated by plot.py at 2019-08-27 01:54:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.10 Mbit/s
95th percentile per-packet one-way delay: 104.880 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 56.56 Mbit/s
95th percentile per-packet one-way delay: 102.083 ms
Loss rate: 0.81%
-- Flow 2:
Average throughput: 31.55 Mbit/s
95th percentile per-packet one-way delay: 104.506 ms
Loss rate: 0.54%
-- Flow 3:
Average throughput: 42.22 Mbit/s
95th percentile per-packet one-way delay: 107.469 ms
Loss rate: 1.01%
```
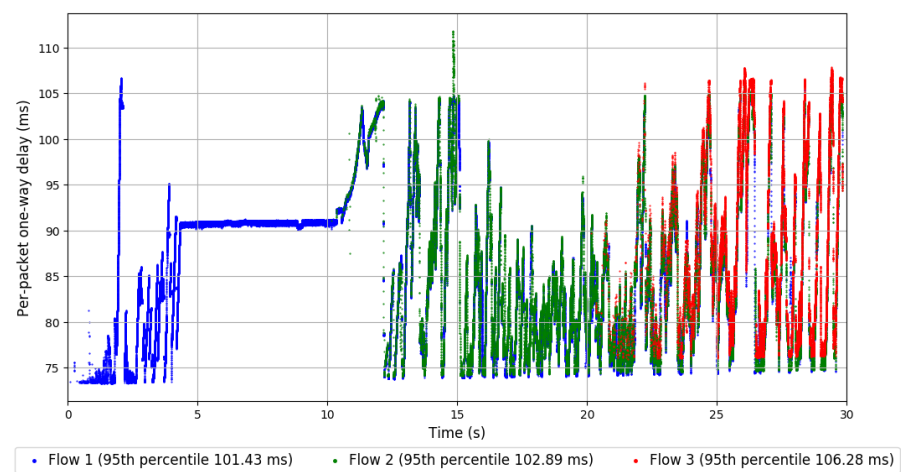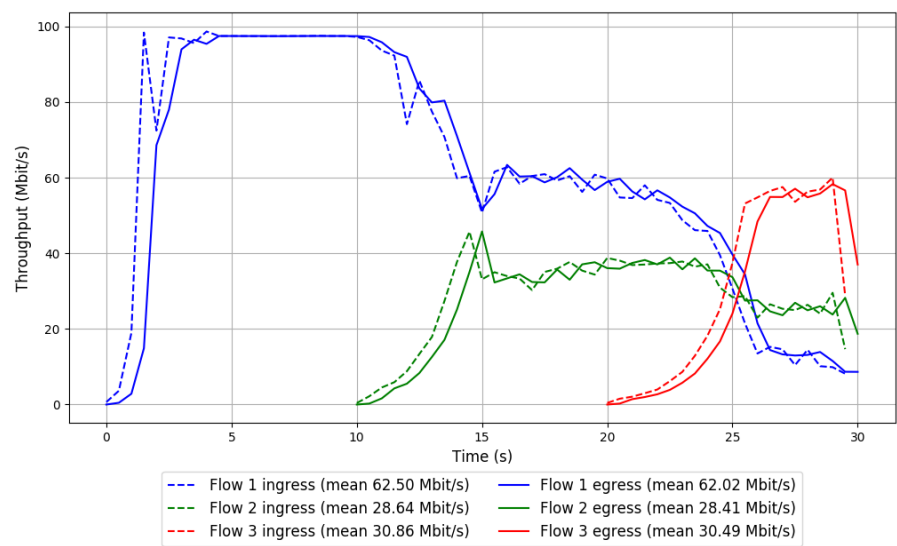
Run 1: Report of Muses_DecisionTreeR0 — Data Link

Flow 1 ingress (mean 57.06 Mbit/s) --- Flow 1 egress (mean 56.56 Mbit/s)
Flow 2 ingress (mean 31.73 Mbit/s) --- Flow 2 egress (mean 31.55 Mbit/s)
Flow 3 ingress (mean 42.70 Mbit/s) --- Flow 3 egress (mean 42.22 Mbit/s)

Flow 1 (95th percentile 102.08 ms)   Flow 2 (95th percentile 104.51 ms)   Flow 3 (95th percentile 107.47 ms)

```
Run 2: Statistics of Muses\_DecisionTreeR0

Start at: 2019-08-26 23:47:37
End at: 2019-08-26 23:48:07
Local clock offset: 2.103 ms
Remote clock offset: -49.371 ms


# Below is generated by plot.py at 2019-08-27 01:54:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.53 Mbit/s
95th percentile per-packet one-way delay: 96.690 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 65.73 Mbit/s
95th percentile per-packet one-way delay: 94.826 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 19.18 Mbit/s
95th percentile per-packet one-way delay: 97.388 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 37.26 Mbit/s
95th percentile per-packet one-way delay: 101.163 ms
Loss rate: 1.19%
```
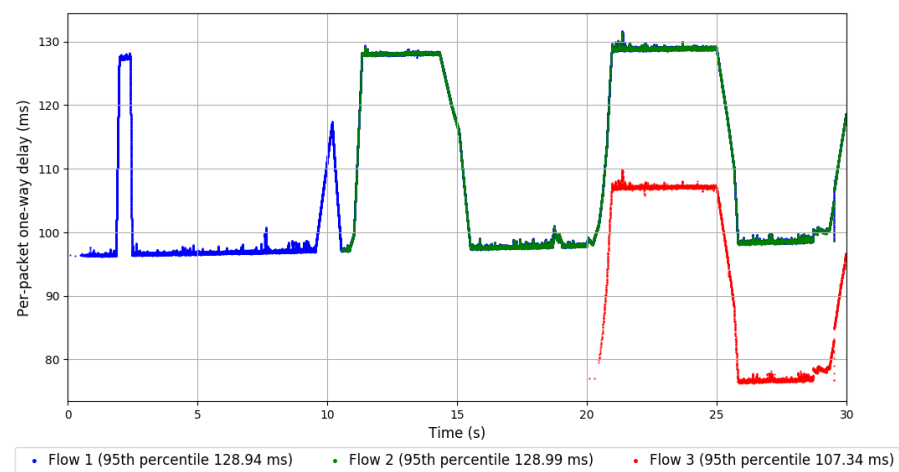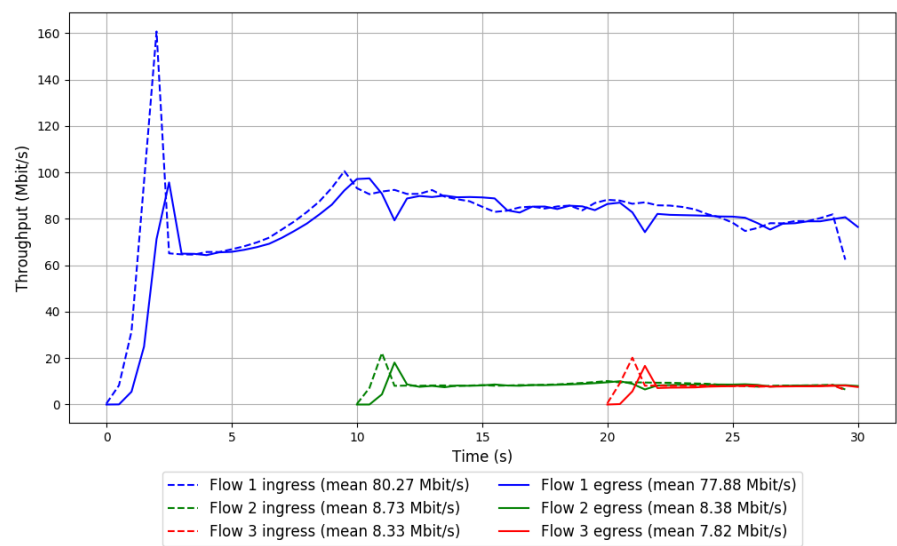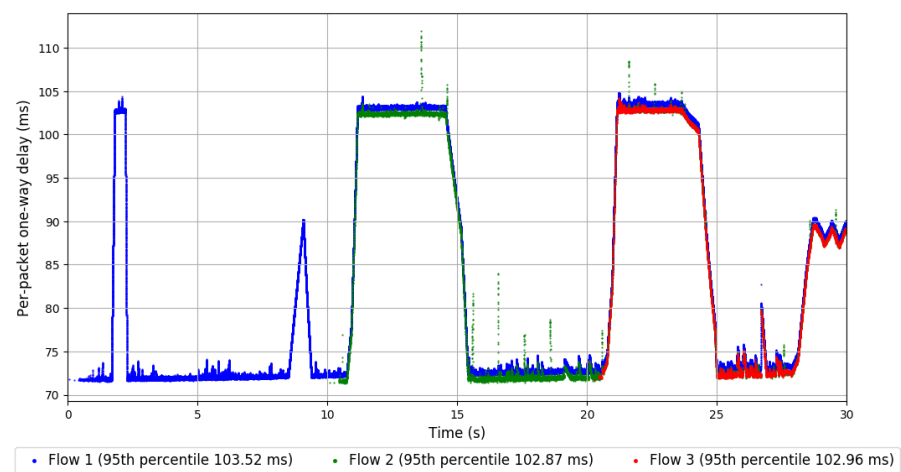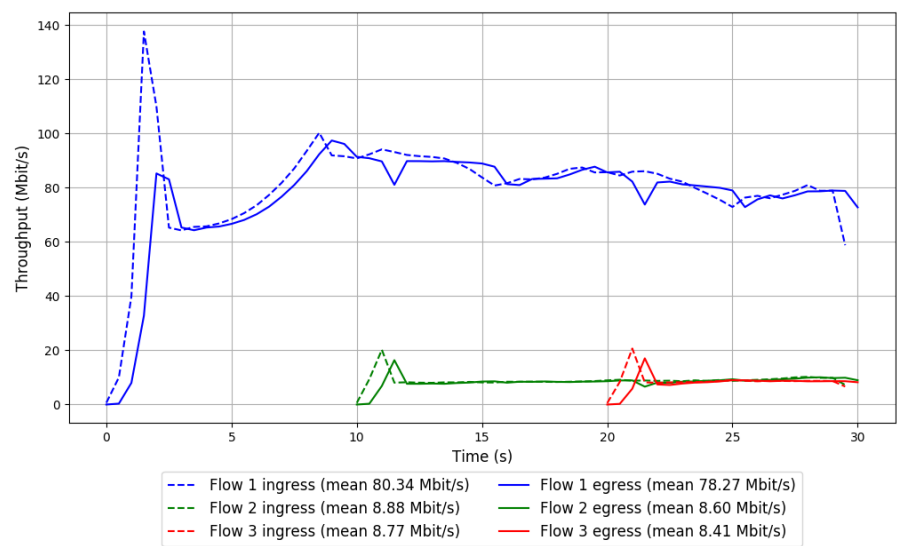
Run 2: Report of Muses_DecisionTreeR0 — Data Link

Flow 1 ingress (mean 66.28 Mbit/s) --- Flow 1 egress (mean 65.73 Mbit/s)
Flow 2 ingress (mean 19.32 Mbit/s) --- Flow 2 egress (mean 19.18 Mbit/s)
Flow 3 ingress (mean 37.76 Mbit/s) --- Flow 3 egress (mean 37.26 Mbit/s)

Flow 1 (95th percentile 94.83 ms)   Flow 2 (95th percentile 97.39 ms)   Flow 3 (95th percentile 101.16 ms)

```
Run 3: Statistics of Muses\_DecisionTreeR0

Start at: 2019-08-27 00:18:11
End at: 2019-08-27 00:18:41
Local clock offset: 2.015 ms
Remote clock offset: -128.045 ms


# Below is generated by plot.py at 2019-08-27 01:54:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.24 Mbit/s
95th percentile per-packet one-way delay: 99.575 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 66.65 Mbit/s
95th percentile per-packet one-way delay: 97.894 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 28.78 Mbit/s
95th percentile per-packet one-way delay: 102.126 ms
Loss rate: 0.45%
-- Flow 3:
Average throughput: 13.99 Mbit/s
95th percentile per-packet one-way delay: 102.317 ms
Loss rate: 0.77%
```

Run 3: Report of Muses_DecisionTreeR0 — Data Link

Flow 1 ingress (mean 67.12 Mbit/s) --- Flow 1 egress (mean 66.65 Mbit/s)
Flow 2 ingress (mean 28.89 Mbit/s) --- Flow 2 egress (mean 28.78 Mbit/s)
Flow 3 ingress (mean 14.09 Mbit/s) --- Flow 3 egress (mean 13.99 Mbit/s)

Flow 1 (95th percentile 97.89 ms) • Flow 2 (95th percentile 102.13 ms) • Flow 3 (95th percentile 102.32 ms)

```
Run 4: Statistics of Muses\_DecisionTreeR0

Start at: 2019-08-27 00:48:47
End at: 2019-08-27 00:49:17
Local clock offset: 1.565 ms
Remote clock offset: -210.419 ms


# Below is generated by plot.py at 2019-08-27 01:54:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.84 Mbit/s
95th percentile per-packet one-way delay: 99.981 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 66.74 Mbit/s
95th percentile per-packet one-way delay: 100.513 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 31.67 Mbit/s
95th percentile per-packet one-way delay: 97.288 ms
Loss rate: 0.25%
-- Flow 3:
Average throughput: 9.72 Mbit/s
95th percentile per-packet one-way delay: 97.290 ms
Loss rate: 0.31%
```

Run 4: Report of Muses_DecisionTreeR0 — Data Link

- - - Flow 1 ingress (mean 67.14 Mbit/s) ⸻ Flow 1 egress (mean 66.74 Mbit/s)
- - - Flow 2 ingress (mean 31.72 Mbit/s) ⸻ Flow 2 egress (mean 31.67 Mbit/s)
- - - Flow 3 ingress (mean 9.75 Mbit/s) ⸻ Flow 3 egress (mean 9.72 Mbit/s)

- Flow 1 (95th percentile 100.51 ms)   - Flow 2 (95th percentile 97.29 ms)   - Flow 3 (95th percentile 97.29 ms)

```
Run 5: Statistics of Muses\_DecisionTreeR0

Start at: 2019-08-27 01:19:36
End at: 2019-08-27 01:20:06
Local clock offset: 1.186 ms
Remote clock offset: -293.0 ms


# Below is generated by plot.py at 2019-08-27 01:54:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.73 Mbit/s
95th percentile per-packet one-way delay: 102.656 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 62.02 Mbit/s
95th percentile per-packet one-way delay: 101.432 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 28.41 Mbit/s
95th percentile per-packet one-way delay: 102.885 ms
Loss rate: 0.79%
-- Flow 3:
Average throughput: 30.49 Mbit/s
95th percentile per-packet one-way delay: 106.281 ms
Loss rate: 1.18%
```
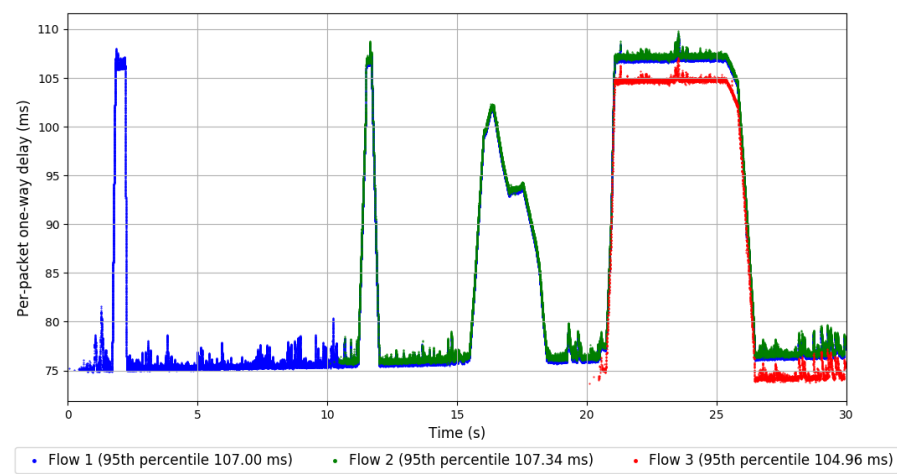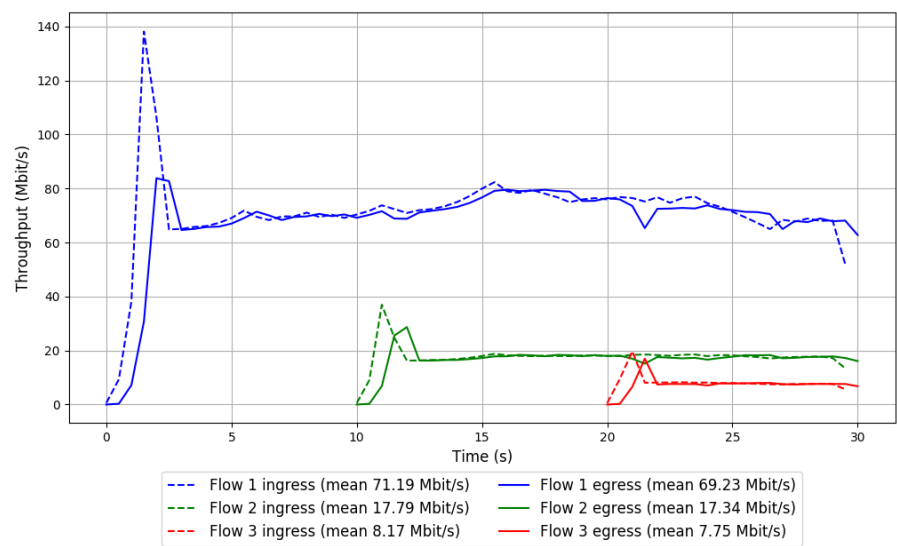
Run 5: Report of Muses_DecisionTreeR0 — Data Link

144

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-08-26 23:23:24
End at: 2019-08-26 23:23:54
Local clock offset: 2.318 ms
Remote clock offset: -306.704 ms


# Below is generated by plot.py at 2019-08-27 01:54:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.03 Mbit/s
95th percentile per-packet one-way delay: 128.945 ms
Loss rate: 3.13%
-- Flow 1:
Average throughput: 77.88 Mbit/s
95th percentile per-packet one-way delay: 128.945 ms
Loss rate: 2.96%
-- Flow 2:
Average throughput: 8.38 Mbit/s
95th percentile per-packet one-way delay: 128.990 ms
Loss rate: 4.12%
-- Flow 3:
Average throughput: 7.82 Mbit/s
95th percentile per-packet one-way delay: 107.341 ms
Loss rate: 5.94%
```

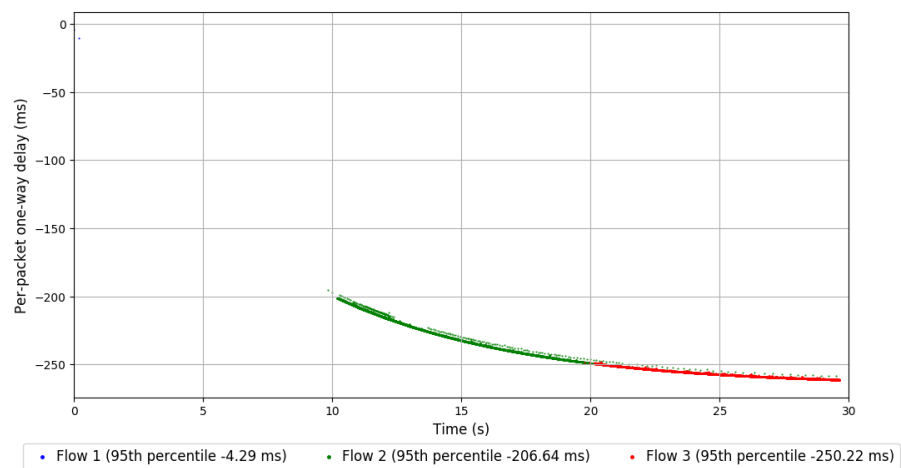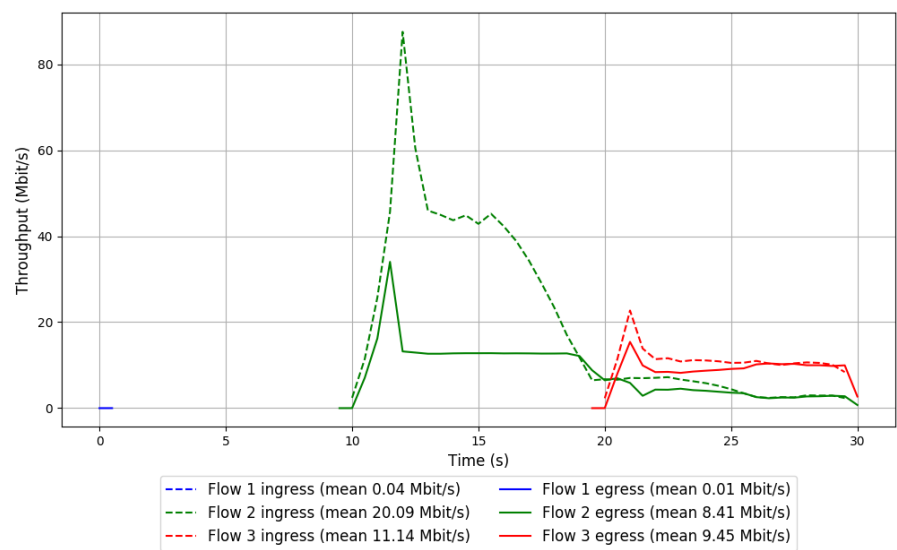Run 1: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 80.27 Mbit/s) — Flow 1 egress (mean 77.88 Mbit/s)
Flow 2 ingress (mean 8.73 Mbit/s) — Flow 2 egress (mean 8.38 Mbit/s)
Flow 3 ingress (mean 8.33 Mbit/s) — Flow 3 egress (mean 7.82 Mbit/s)

Flow 1 (95th percentile 128.94 ms) • Flow 2 (95th percentile 128.99 ms) • Flow 3 (95th percentile 107.34 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-08-26 23:54:03
End at: 2019-08-26 23:54:33
Local clock offset: 1.991 ms
Remote clock offset: -64.219 ms


# Below is generated by plot.py at 2019-08-27 01:55:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.76 Mbit/s
95th percentile per-packet one-way delay: 103.503 ms
Loss rate: 2.61%
-- Flow 1:
Average throughput: 78.27 Mbit/s
95th percentile per-packet one-way delay: 103.520 ms
Loss rate: 2.52%
-- Flow 2:
Average throughput: 8.60 Mbit/s
95th percentile per-packet one-way delay: 102.866 ms
Loss rate: 3.09%
-- Flow 3:
Average throughput: 8.41 Mbit/s
95th percentile per-packet one-way delay: 102.958 ms
Loss rate: 4.00%
```
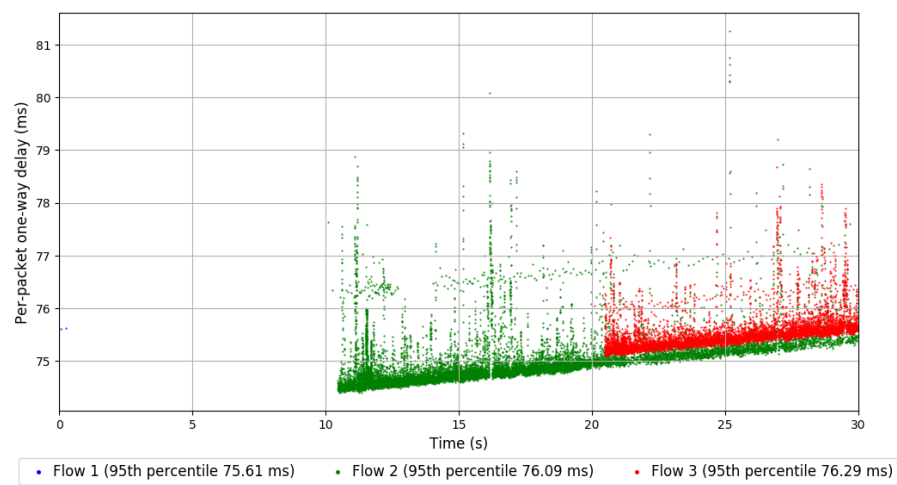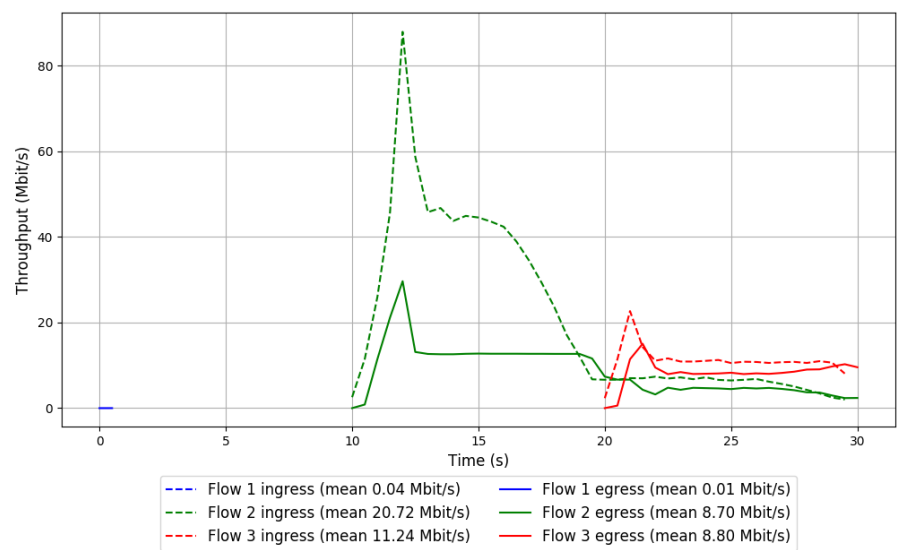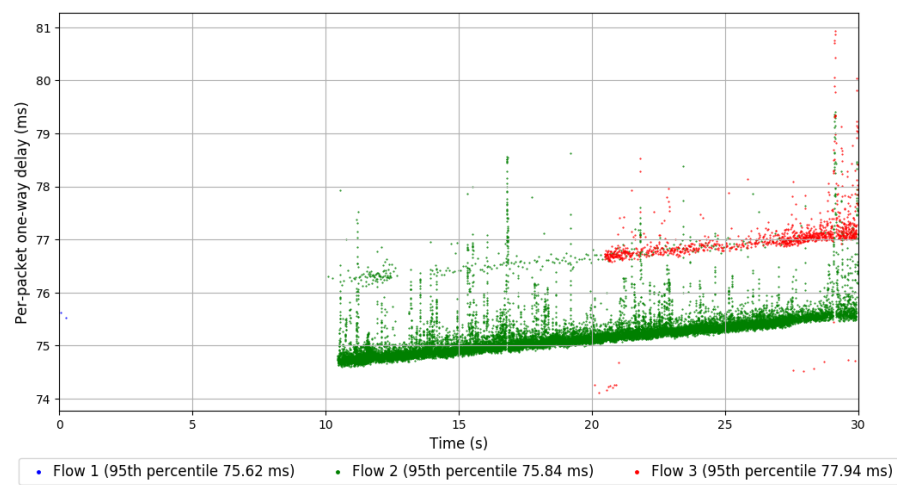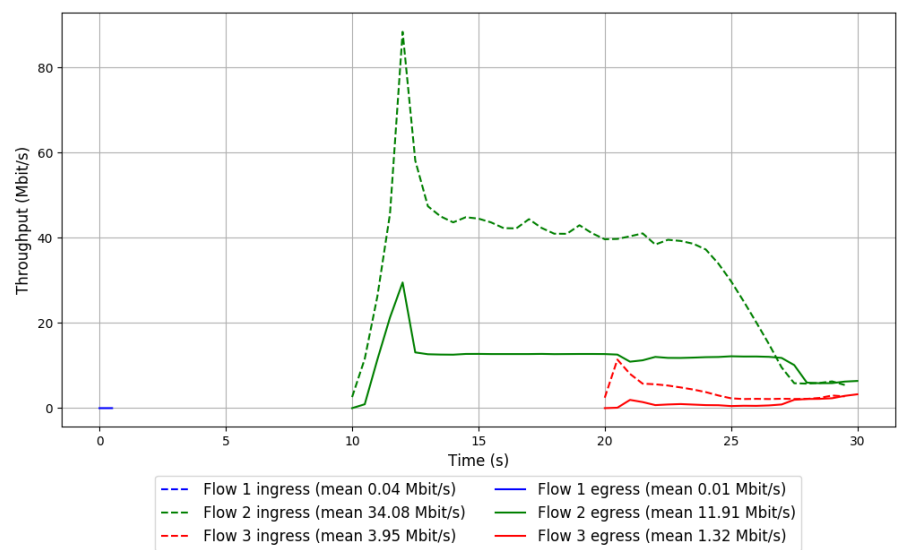
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2019-08-27 00:24:37
End at: 2019-08-27 00:25:07
Local clock offset: 1.162 ms
Remote clock offset: -144.583 ms


# Below is generated by plot.py at 2019-08-27 01:55:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.73 Mbit/s
95th percentile per-packet one-way delay: 107.027 ms
Loss rate: 3.55%
-- Flow 1:
Average throughput: 79.06 Mbit/s
95th percentile per-packet one-way delay: 106.986 ms
Loss rate: 3.20%
-- Flow 2:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 106.260 ms
Loss rate: 5.67%
-- Flow 3:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 108.198 ms
Loss rate: 9.66%
```
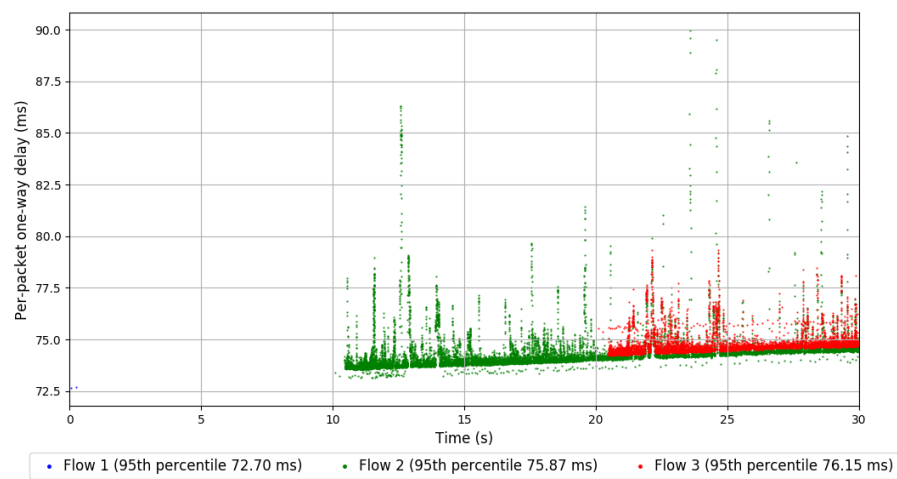
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2019-08-27 00:55:14
End at: 2019-08-27 00:55:44
Local clock offset: 0.659 ms
Remote clock offset: -228.118 ms


# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.53 Mbit/s
95th percentile per-packet one-way delay: 106.997 ms
Loss rate: 3.01%
-- Flow 1:
Average throughput: 76.44 Mbit/s
95th percentile per-packet one-way delay: 107.008 ms
Loss rate: 2.80%
-- Flow 2:
Average throughput: 8.34 Mbit/s
95th percentile per-packet one-way delay: 106.371 ms
Loss rate: 4.17%
-- Flow 3:
Average throughput: 7.70 Mbit/s
95th percentile per-packet one-way delay: 105.907 ms
Loss rate: 6.69%
```

Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 78.66 Mbit/s)   Flow 1 egress (mean 76.44 Mbit/s)
Flow 2 ingress (mean 8.71 Mbit/s)   Flow 2 egress (mean 8.34 Mbit/s)
Flow 3 ingress (mean 8.26 Mbit/s)   Flow 3 egress (mean 7.70 Mbit/s)

Flow 1 (95th percentile 107.01 ms)   Flow 2 (95th percentile 106.37 ms)   Flow 3 (95th percentile 105.91 ms)
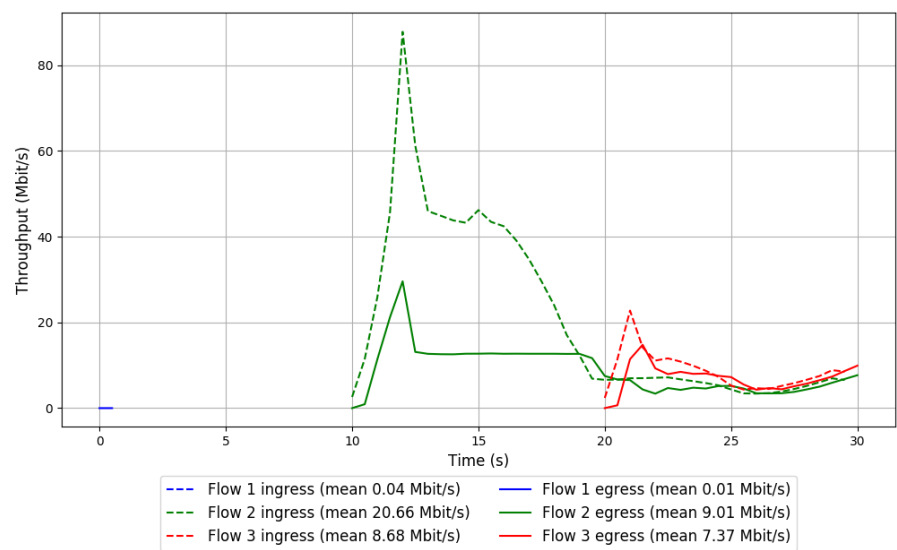
152

```
Run 5: Statistics of PCC-Allegro

Start at: 2019-08-27 01:26:04
End at: 2019-08-27 01:26:34
Local clock offset: 0.284 ms
Remote clock offset: -312.048 ms


# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.32 Mbit/s
95th percentile per-packet one-way delay: 107.073 ms
Loss rate: 2.79%
-- Flow 1:
Average throughput: 69.23 Mbit/s
95th percentile per-packet one-way delay: 107.000 ms
Loss rate: 2.75%
-- Flow 2:
Average throughput: 17.34 Mbit/s
95th percentile per-packet one-way delay: 107.343 ms
Loss rate: 2.52%
-- Flow 3:
Average throughput: 7.75 Mbit/s
95th percentile per-packet one-way delay: 104.962 ms
Loss rate: 5.16%
```

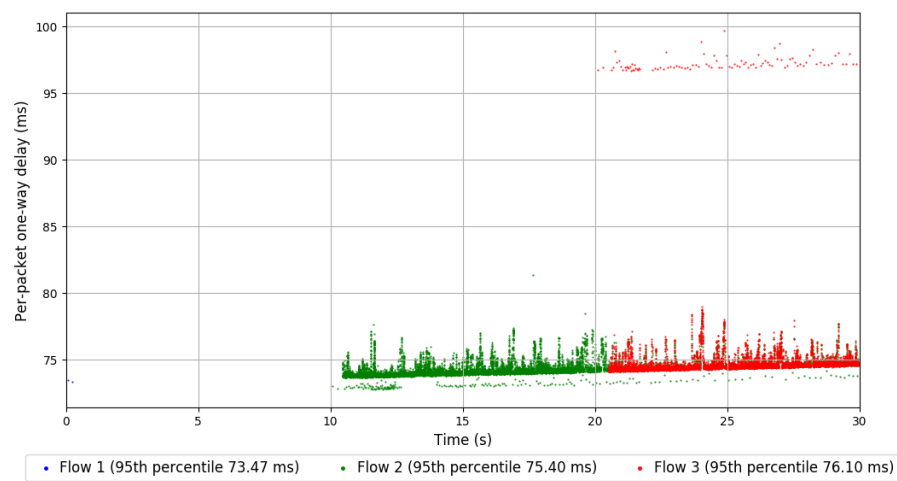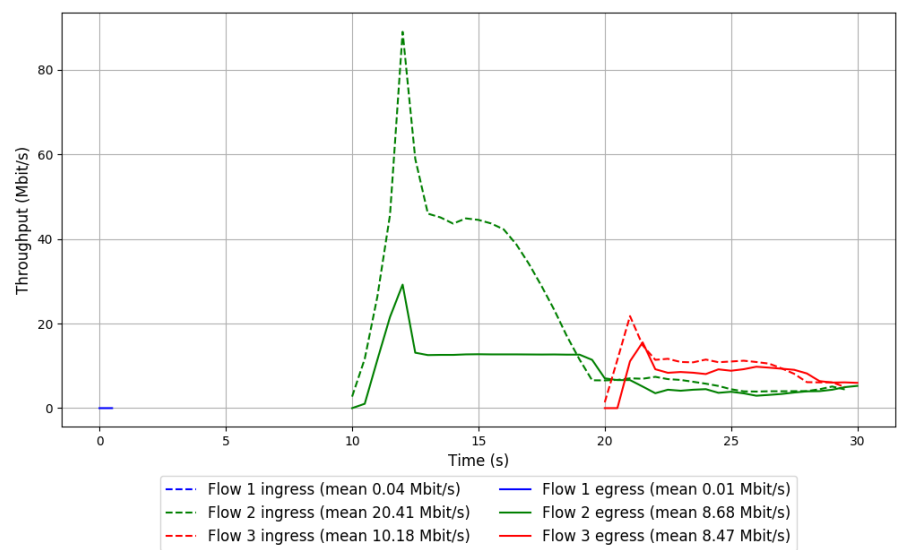## Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2019-08-26 23:31:04
End at: 2019-08-26 23:31:34
Local clock offset: 1.444 ms
Remote clock offset: -342.065 ms


# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.77 Mbit/s
95th percentile per-packet one-way delay: -208.369 ms
Loss rate: 48.99%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: -4.292 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 8.41 Mbit/s
95th percentile per-packet one-way delay: -206.636 ms
Loss rate: 58.28%
-- Flow 3:
Average throughput: 9.45 Mbit/s
95th percentile per-packet one-way delay: -250.218 ms
Loss rate: 15.23%
```
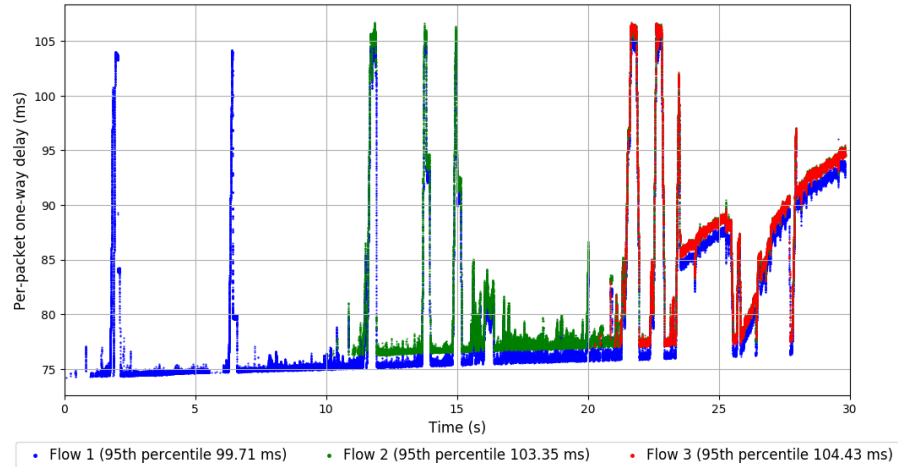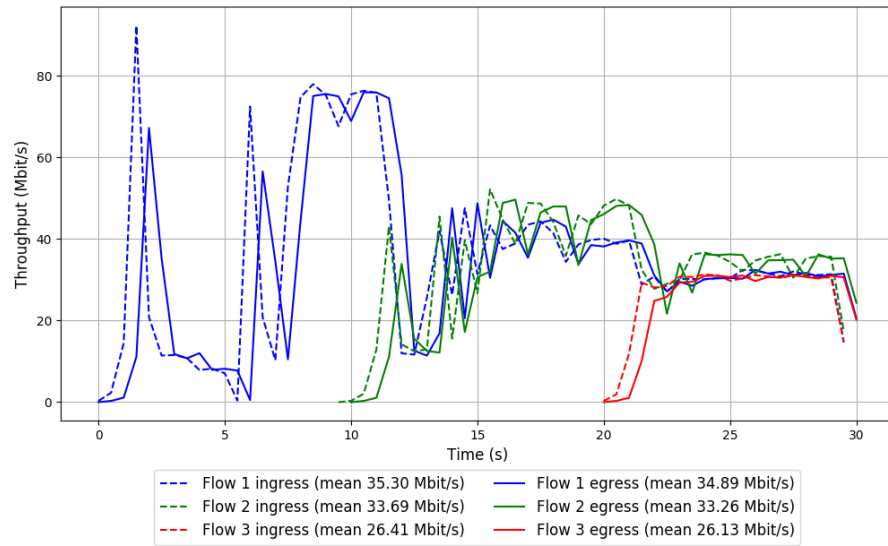
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.04 Mbit/s)   Flow 1 egress (mean 0.01 Mbit/s)
Flow 2 ingress (mean 20.09 Mbit/s)   Flow 2 egress (mean 8.41 Mbit/s)
Flow 3 ingress (mean 11.14 Mbit/s)   Flow 3 egress (mean 9.45 Mbit/s)

Flow 1 (95th percentile -4.29 ms)   Flow 2 (95th percentile -206.64 ms)   Flow 3 (95th percentile -250.22 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2019-08-27 00:01:41
End at: 2019-08-27 00:02:11
Local clock offset: 1.239 ms
Remote clock offset: -83.185 ms

# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.69 Mbit/s
95th percentile per-packet one-way delay: 76.207 ms
Loss rate: 50.32%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 75.613 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 8.70 Mbit/s
95th percentile per-packet one-way delay: 76.092 ms
Loss rate: 58.02%
-- Flow 3:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 76.286 ms
Loss rate: 21.71%
```

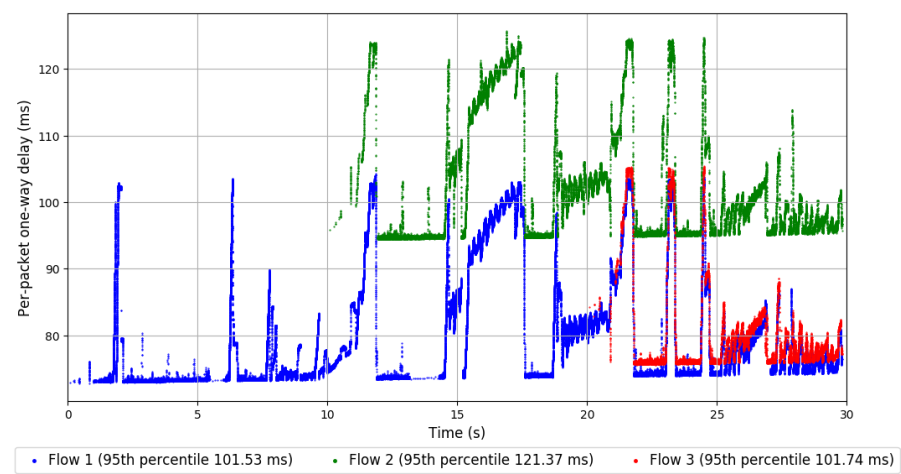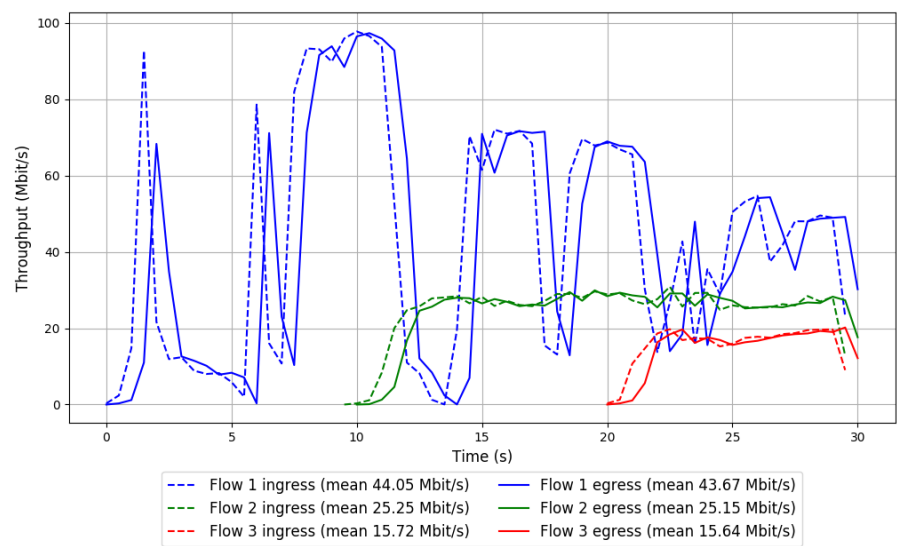Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2019-08-27 00:32:16
End at: 2019-08-27 00:32:46
Local clock offset: 1.012 ms
Remote clock offset: -165.858 ms


# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.36 Mbit/s
95th percentile per-packet one-way delay: 76.848 ms
Loss rate: 65.15%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 75.623 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 11.91 Mbit/s
95th percentile per-packet one-way delay: 75.837 ms
Loss rate: 65.07%
-- Flow 3:
Average throughput: 1.32 Mbit/s
95th percentile per-packet one-way delay: 77.943 ms
Loss rate: 66.54%
```

Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2019-08-27 01:02:53
End at: 2019-08-27 01:03:23
Local clock offset: 0.626 ms
Remote clock offset: -249.487 ms


# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.43 Mbit/s
95th percentile per-packet one-way delay: 75.988 ms
Loss rate: 49.26%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 72.703 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 9.01 Mbit/s
95th percentile per-packet one-way delay: 75.868 ms
Loss rate: 56.39%
-- Flow 3:
Average throughput: 7.37 Mbit/s
95th percentile per-packet one-way delay: 76.147 ms
Loss rate: 15.08%
```
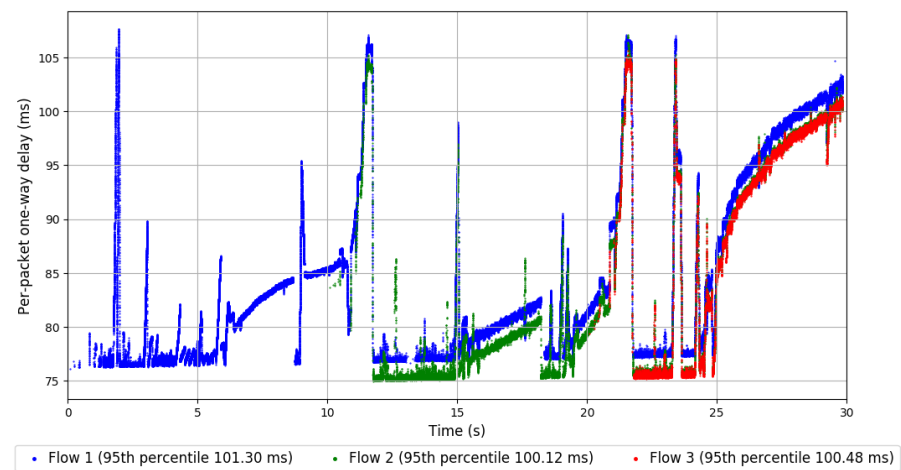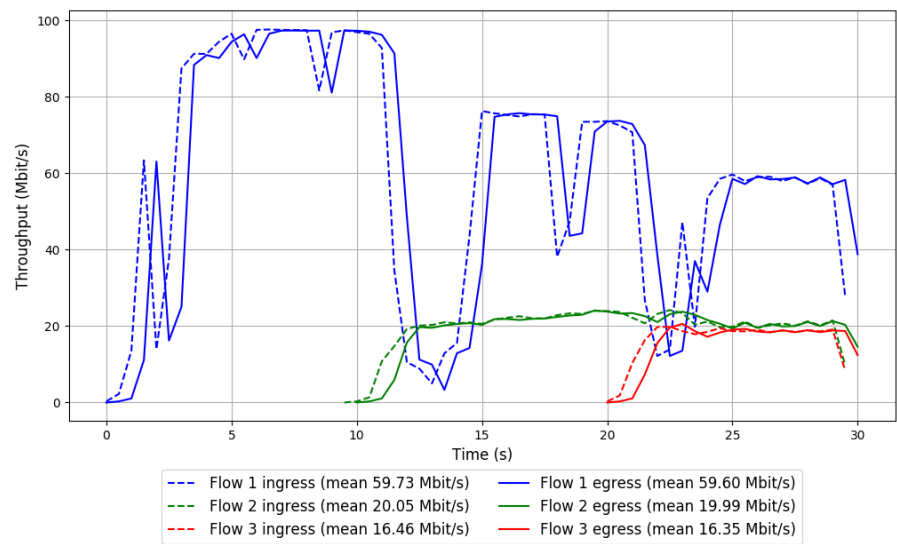
Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2019-08-27 01:33:45
End at: 2019-08-27 01:34:15
Local clock offset: 0.88 ms
Remote clock offset: -332.3 ms


# Below is generated by plot.py at 2019-08-27 01:55:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.56 Mbit/s
95th percentile per-packet one-way delay: 75.625 ms
Loss rate: 49.45%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 73.471 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 8.68 Mbit/s
95th percentile per-packet one-way delay: 75.399 ms
Loss rate: 57.48%
-- Flow 3:
Average throughput: 8.47 Mbit/s
95th percentile per-packet one-way delay: 76.100 ms
Loss rate: 17.04%
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-08-26 23:22:07
End at: 2019-08-26 23:22:37
Local clock offset: 2.322 ms
Remote clock offset: -300.405 ms


# Below is generated by plot.py at 2019-08-27 01:55:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.53 Mbit/s
95th percentile per-packet one-way delay: 101.750 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 34.89 Mbit/s
95th percentile per-packet one-way delay: 99.712 ms
Loss rate: 1.08%
-- Flow 2:
Average throughput: 33.26 Mbit/s
95th percentile per-packet one-way delay: 103.352 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 26.13 Mbit/s
95th percentile per-packet one-way delay: 104.430 ms
Loss rate: 0.90%
```

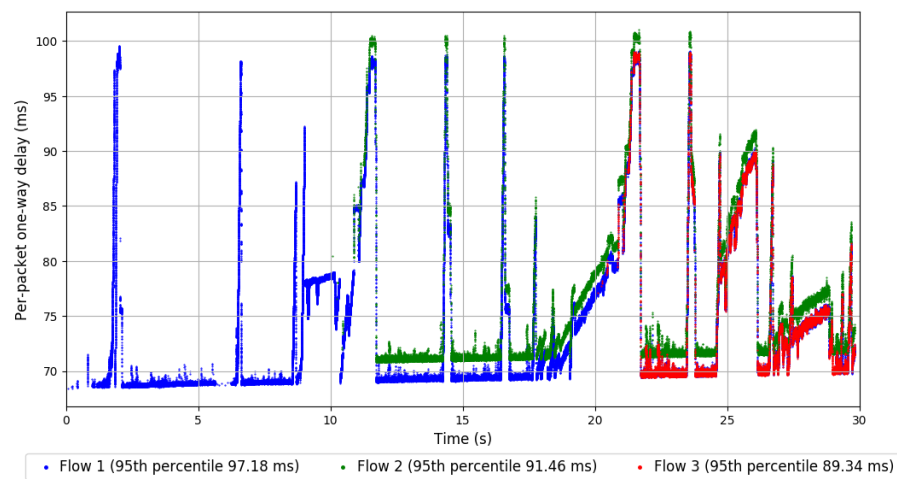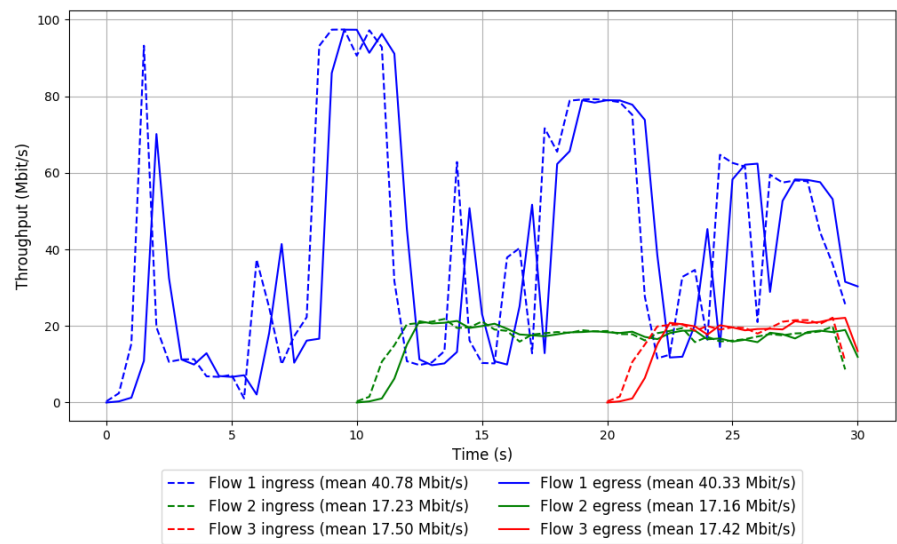Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-08-26 23:52:46
End at: 2019-08-26 23:53:16
Local clock offset: 1.286 ms
Remote clock offset: -60.529 ms


# Below is generated by plot.py at 2019-08-27 01:55:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 64.75 Mbit/s
95th percentile per-packet one-way delay: 122.178 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 39.10 Mbit/s
95th percentile per-packet one-way delay: 122.785 ms
Loss rate: 1.31%
-- Flow 2:
Average throughput: 25.53 Mbit/s
95th percentile per-packet one-way delay: 103.212 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 26.48 Mbit/s
95th percentile per-packet one-way delay: 101.718 ms
Loss rate: 0.97%
```
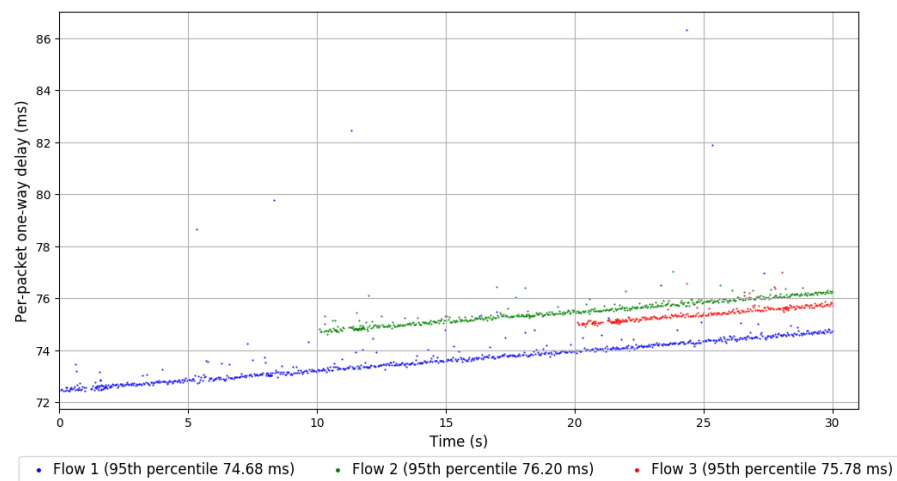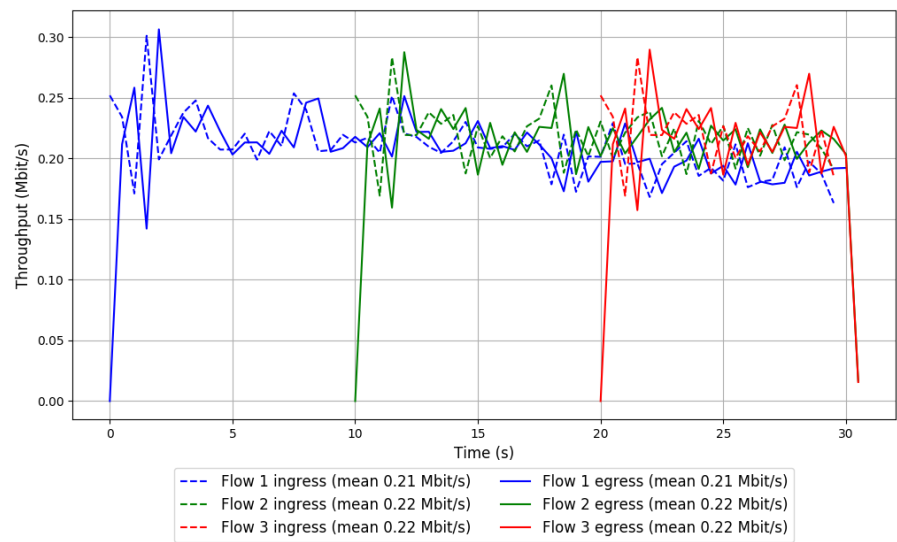
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-08-27 00:23:21
End at: 2019-08-27 00:23:51
Local clock offset: 1.183 ms
Remote clock offset: -143.058 ms


# Below is generated by plot.py at 2019-08-27 01:56:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.45 Mbit/s
95th percentile per-packet one-way delay: 109.849 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 43.67 Mbit/s
95th percentile per-packet one-way delay: 101.525 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 25.15 Mbit/s
95th percentile per-packet one-way delay: 121.374 ms
Loss rate: 0.48%
-- Flow 3:
Average throughput: 15.64 Mbit/s
95th percentile per-packet one-way delay: 101.742 ms
Loss rate: 0.61%
```

Run 3: Report of QUIC Cubic — Data Link
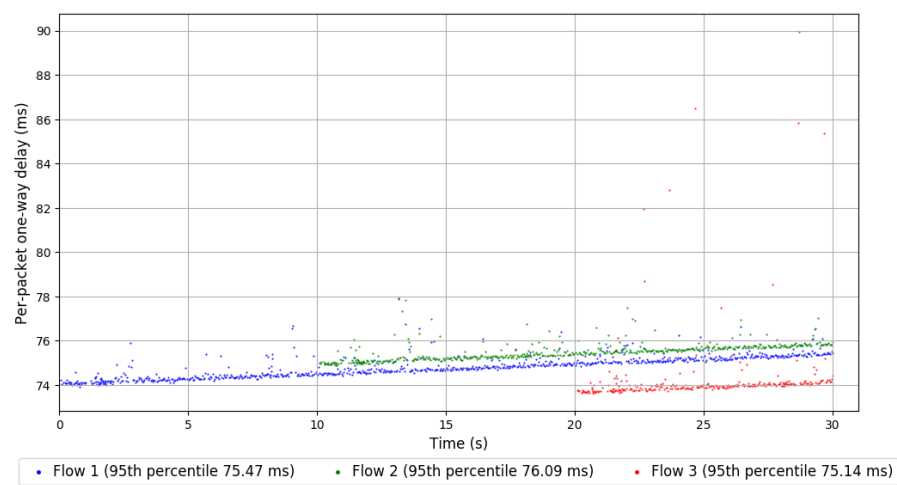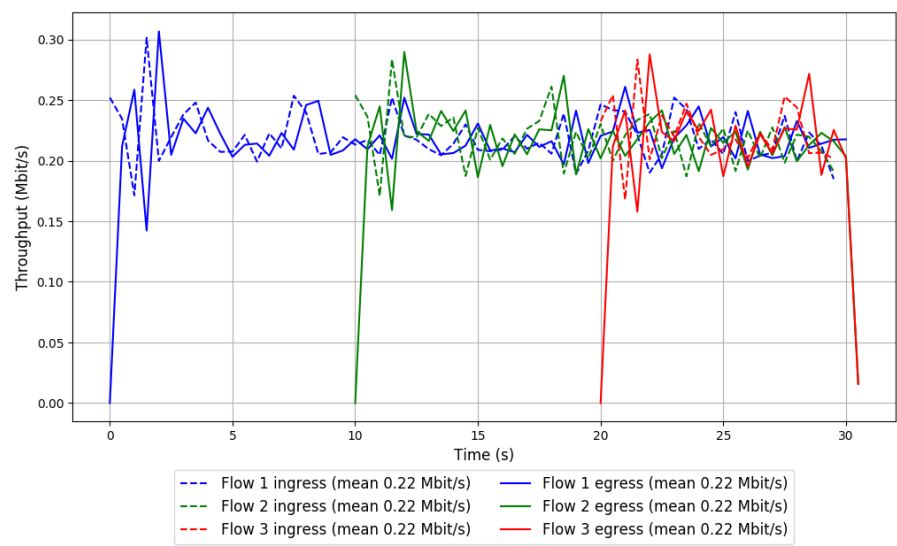

Legend:
- Flow 1 ingress (mean 44.05 Mbit/s)
- Flow 1 egress (mean 43.67 Mbit/s)
- Flow 2 ingress (mean 25.25 Mbit/s)
- Flow 2 egress (mean 25.15 Mbit/s)
- Flow 3 ingress (mean 15.72 Mbit/s)
- Flow 3 egress (mean 15.64 Mbit/s)

Legend:
- Flow 1 (95th percentile 101.53 ms)
- Flow 2 (95th percentile 121.37 ms)
- Flow 3 (95th percentile 101.74 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2019-08-27 00:53:57
End at: 2019-08-27 00:54:27
Local clock offset: 0.718 ms
Remote clock offset: -223.722 ms


# Below is generated by plot.py at 2019-08-27 01:56:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.22 Mbit/s
95th percentile per-packet one-way delay: 101.051 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 59.60 Mbit/s
95th percentile per-packet one-way delay: 101.296 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 19.99 Mbit/s
95th percentile per-packet one-way delay: 100.117 ms
Loss rate: 0.22%
-- Flow 3:
Average throughput: 16.35 Mbit/s
95th percentile per-packet one-way delay: 100.478 ms
Loss rate: 0.43%
```

Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2019-08-27 01:24:48
End at: 2019-08-27 01:25:18
Local clock offset: 1.093 ms
Remote clock offset: -311.838 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.40 Mbit/s
95th percentile per-packet one-way delay: 95.857 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 40.33 Mbit/s
95th percentile per-packet one-way delay: 97.181 ms
Loss rate: 1.09%
-- Flow 2:
Average throughput: 17.16 Mbit/s
95th percentile per-packet one-way delay: 91.463 ms
Loss rate: 0.45%
-- Flow 3:
Average throughput: 17.42 Mbit/s
95th percentile per-packet one-way delay: 89.337 ms
Loss rate: 0.50%
```
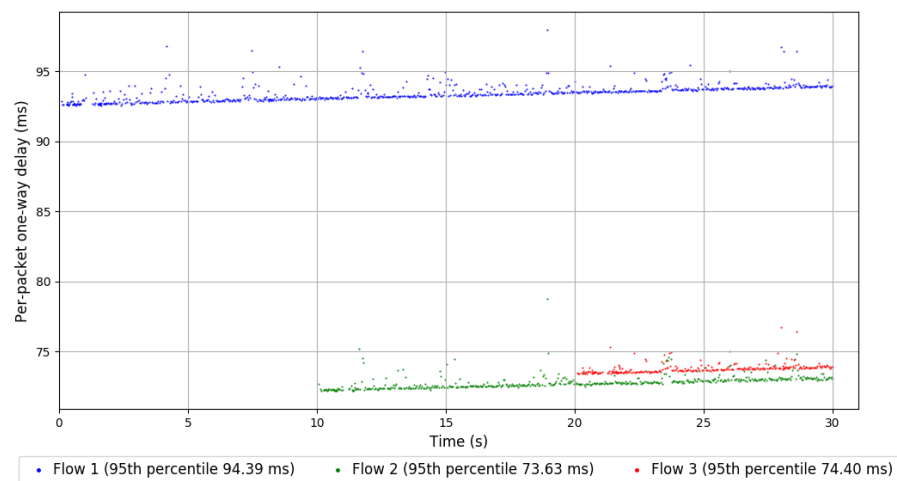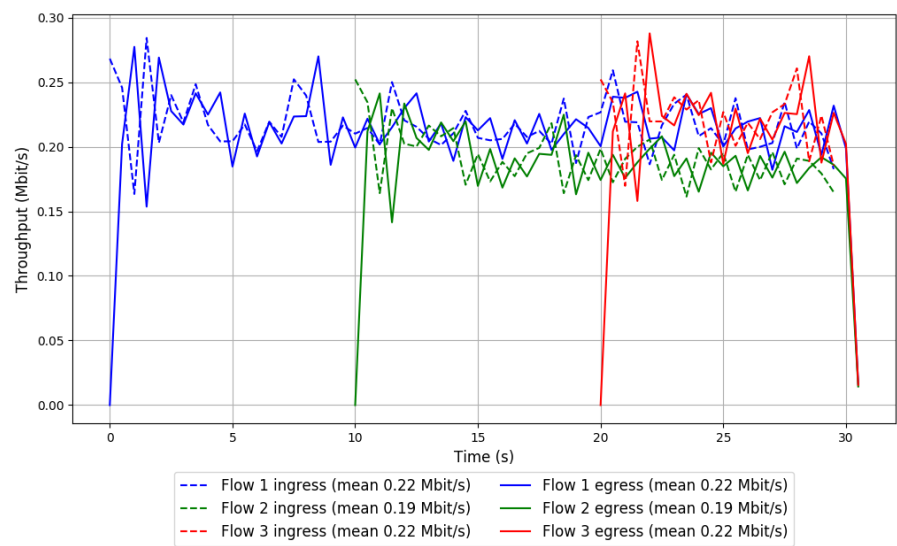
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 40.78 Mbit/s) --- Flow 1 egress (mean 40.33 Mbit/s)
Flow 2 ingress (mean 17.23 Mbit/s) --- Flow 2 egress (mean 17.16 Mbit/s)
Flow 3 ingress (mean 17.50 Mbit/s) --- Flow 3 egress (mean 17.42 Mbit/s)

Flow 1 (95th percentile 97.18 ms)   Flow 2 (95th percentile 91.46 ms)   Flow 3 (95th percentile 89.34 ms)

174

```
Run 1: Statistics of SCReAM

Start at: 2019-08-26 23:28:34
End at: 2019-08-26 23:29:04
Local clock offset: 2.243 ms
Remote clock offset: -331.017 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 76.054 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 74.678 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 76.203 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 75.778 ms
Loss rate: 0.00%
```
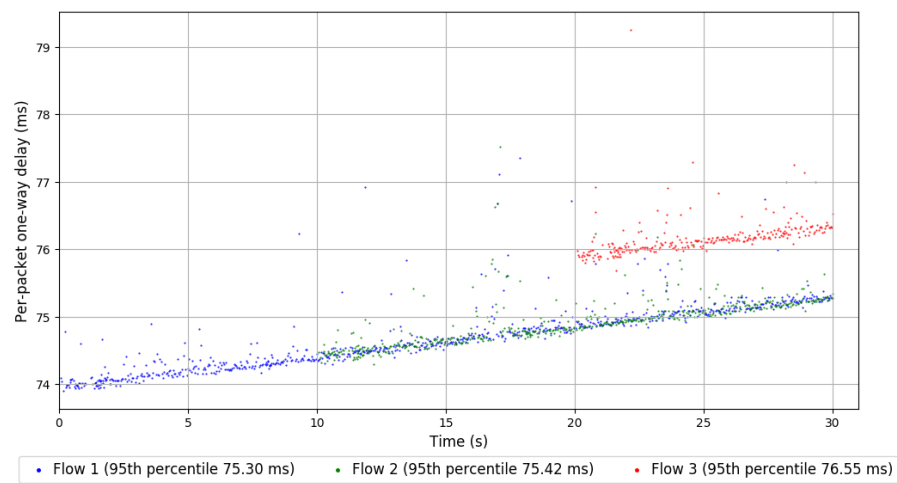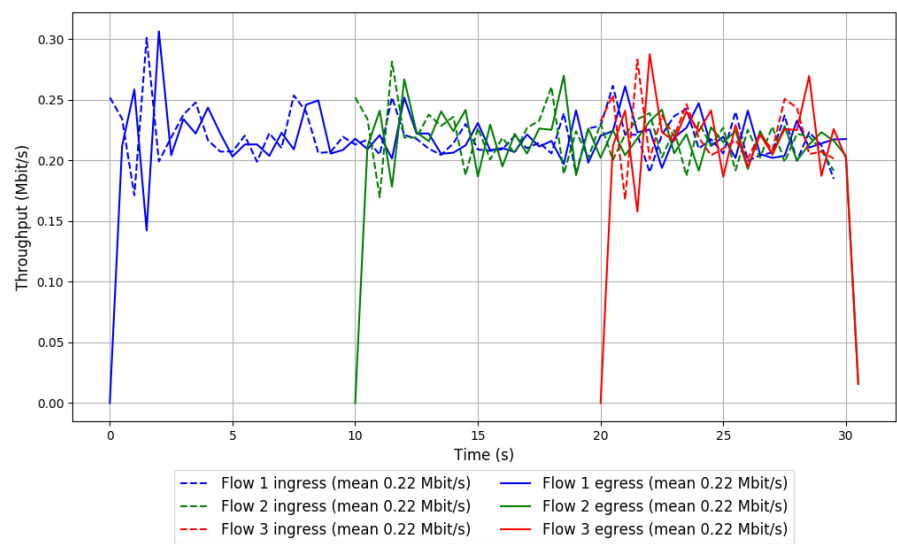
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2019-08-26 23:59:12
End at: 2019-08-26 23:59:42
Local clock offset: 2.047 ms
Remote clock offset: -76.689 ms

# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 75.856 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 75.468 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 76.086 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 75.141 ms
Loss rate: 0.00%
```
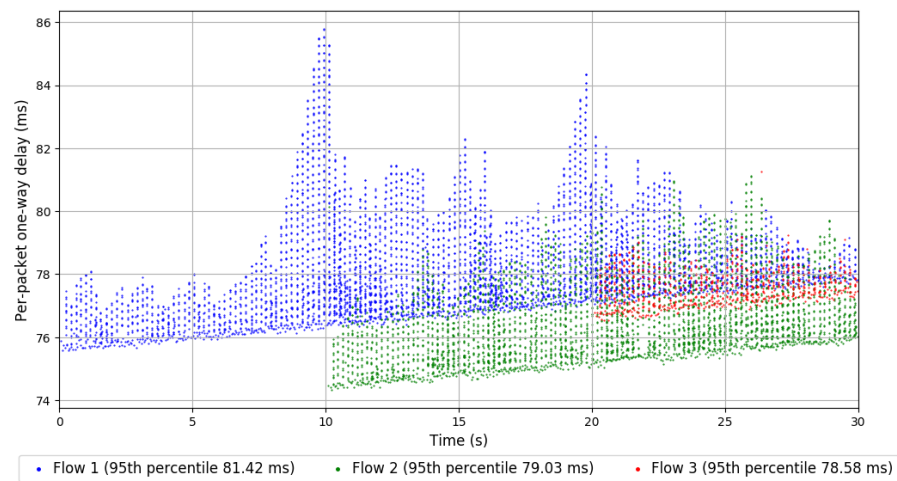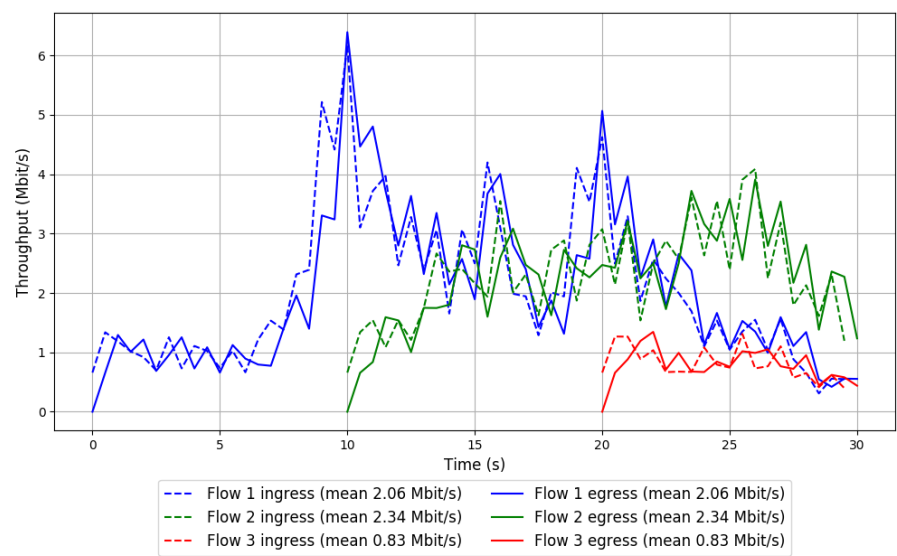
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2019-08-27 00:29:46
End at: 2019-08-27 00:30:16
Local clock offset: 1.016 ms
Remote clock offset: -163.345 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 72.155 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 70.496 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 72.279 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 71.313 ms
Loss rate: 0.00%
```
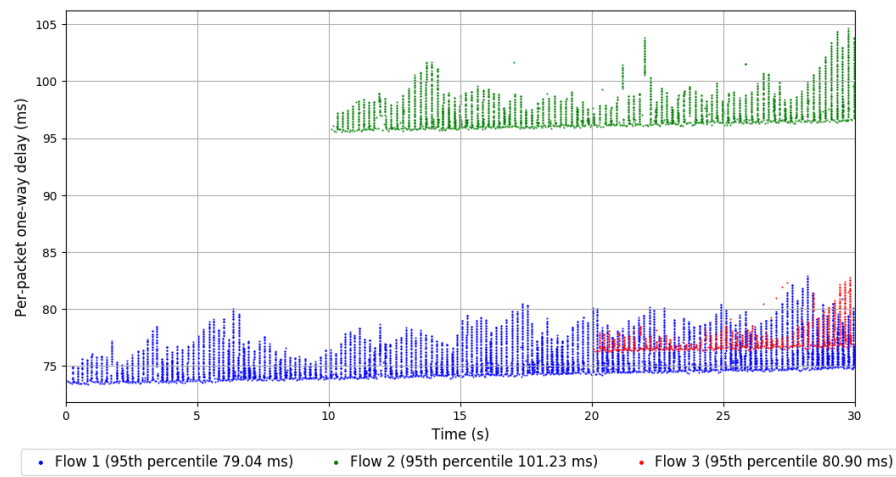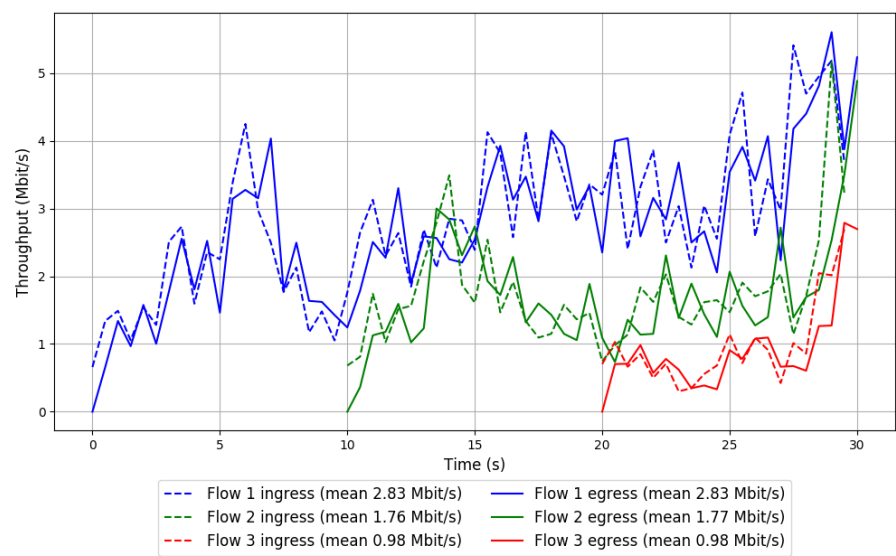
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2019-08-27 01:00:24
End at: 2019-08-27 01:00:54
Local clock offset: 1.361 ms
Remote clock offset: -243.713 ms

# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 93.992 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 94.391 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 73.626 ms
Loss rate: 0.21%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 74.402 ms
Loss rate: 0.00%
```
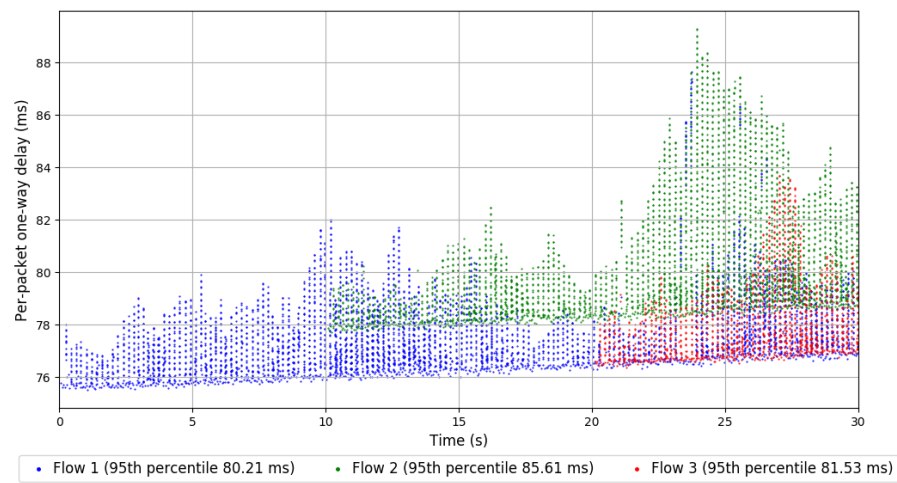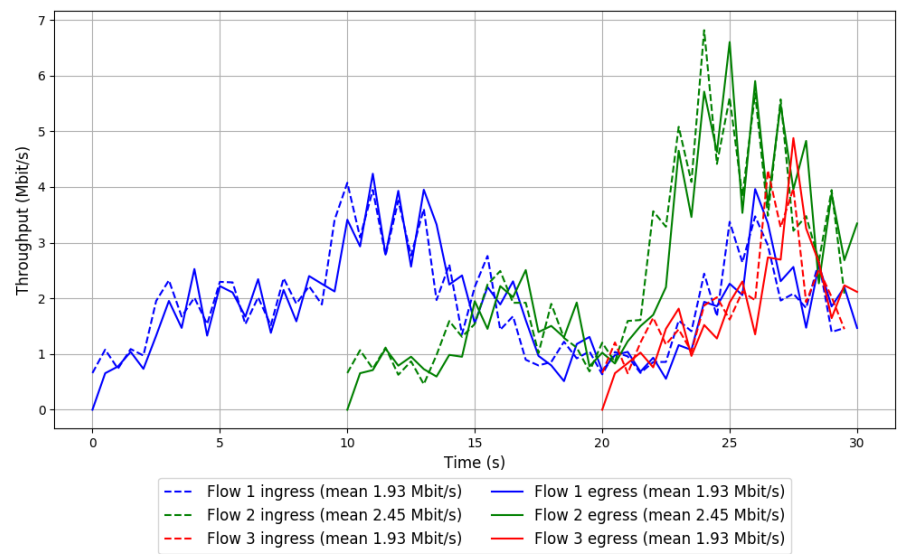
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2019-08-27 01:31:15
End at: 2019-08-27 01:31:45
Local clock offset: 0.994 ms
Remote clock offset: -324.577 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 76.250 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 75.295 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 75.420 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 76.550 ms
Loss rate: 0.00%
```

Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2019-08-26 23:15:44
End at: 2019-08-26 23:16:14
Local clock offset: 1.649 ms
Remote clock offset: -272.193 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.89 Mbit/s
95th percentile per-packet one-way delay: 80.642 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 81.424 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 79.032 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 78.576 ms
Loss rate: 0.00%
```
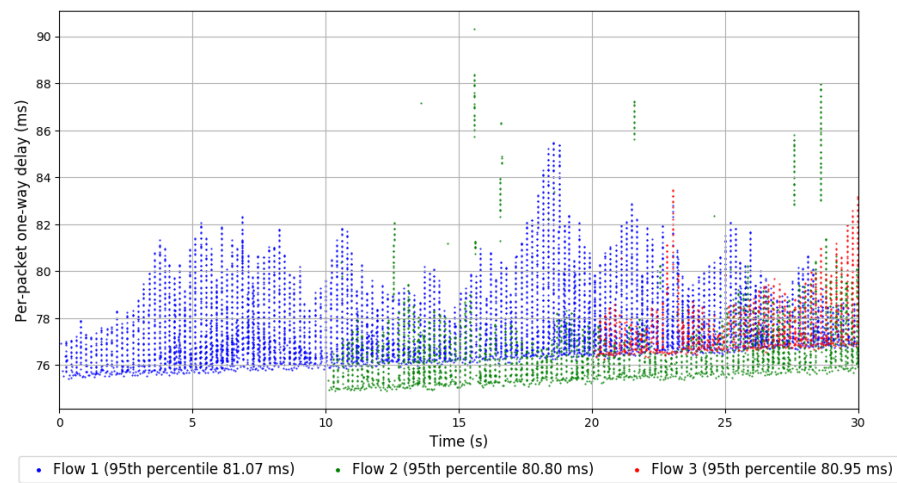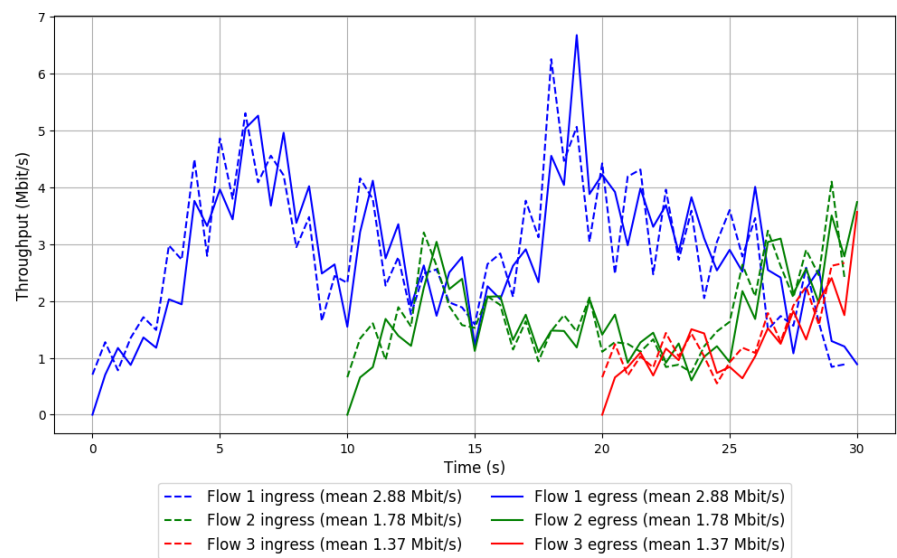
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-08-26 23:46:24
End at: 2019-08-26 23:46:54
Local clock offset: 1.271 ms
Remote clock offset: -41.939 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.33 Mbit/s
95th percentile per-packet one-way delay: 98.876 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.83 Mbit/s
95th percentile per-packet one-way delay: 79.038 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 101.235 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 80.897 ms
Loss rate: 0.00%
```
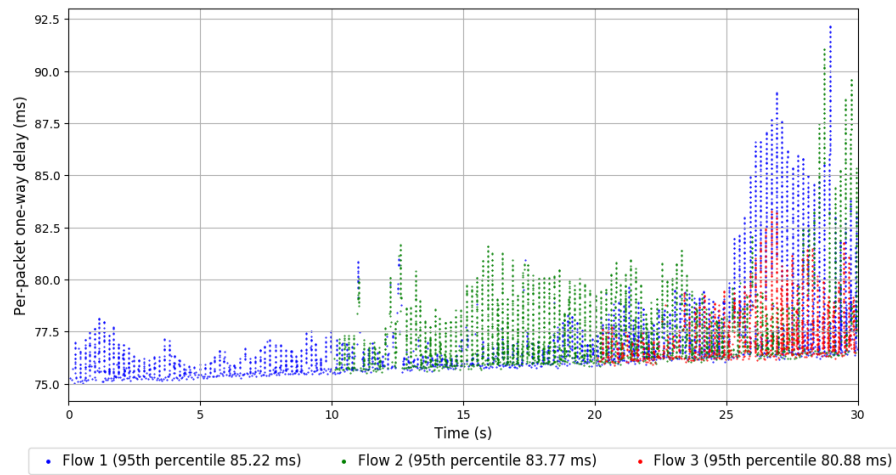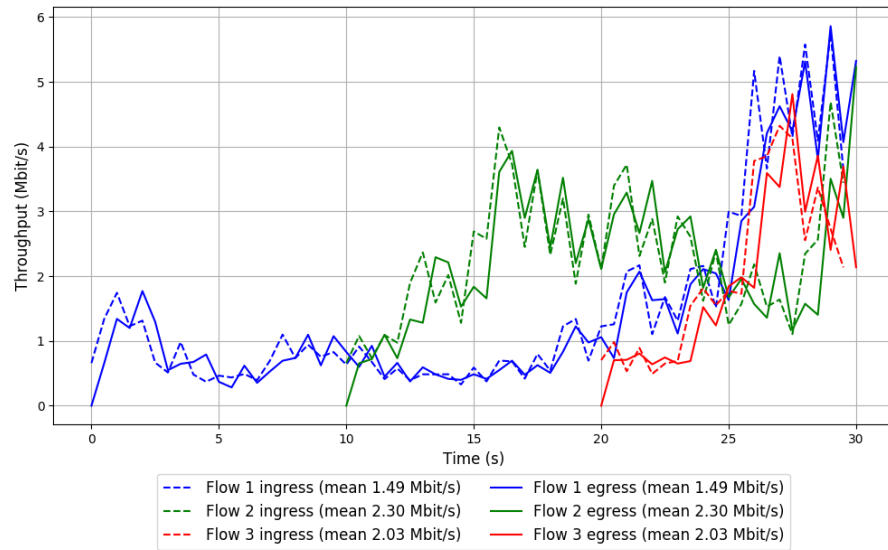
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2019-08-27 00:16:58
End at: 2019-08-27 00:17:28
Local clock offset: 2.002 ms
Remote clock offset: -123.111 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.20 Mbit/s
95th percentile per-packet one-way delay: 84.072 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 80.206 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 85.611 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 81.530 ms
Loss rate: 0.00%
```
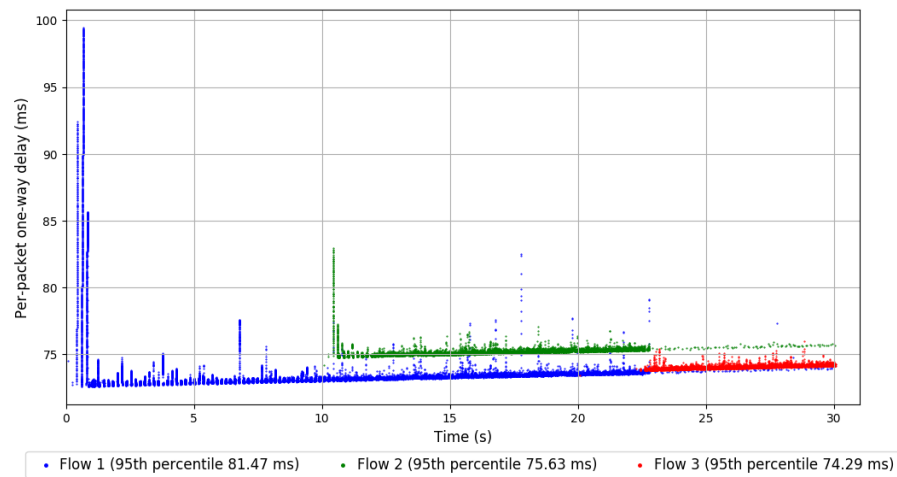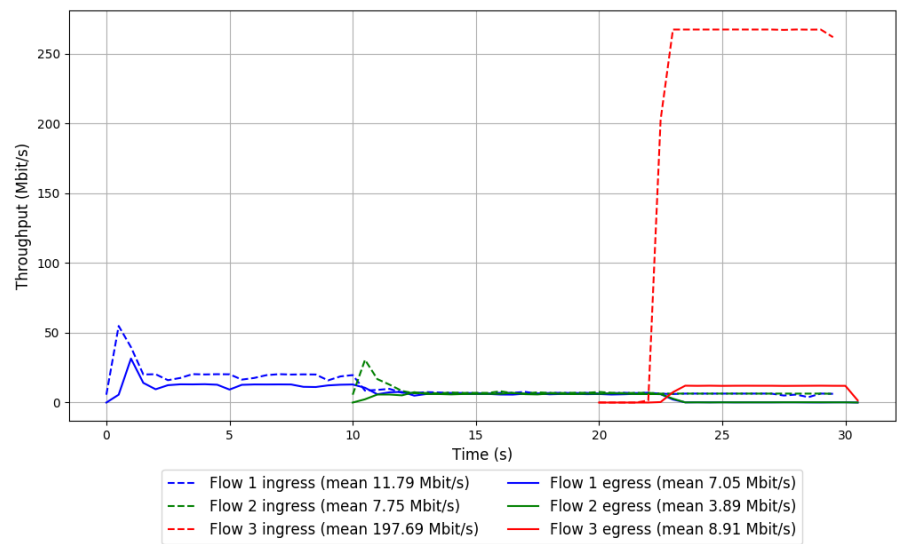
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2019-08-27 00:47:34
End at: 2019-08-27 00:48:04
Local clock offset: 0.794 ms
Remote clock offset: -206.661 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.51 Mbit/s
95th percentile per-packet one-way delay: 81.043 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 81.070 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 80.802 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 80.952 ms
Loss rate: 0.00%
```
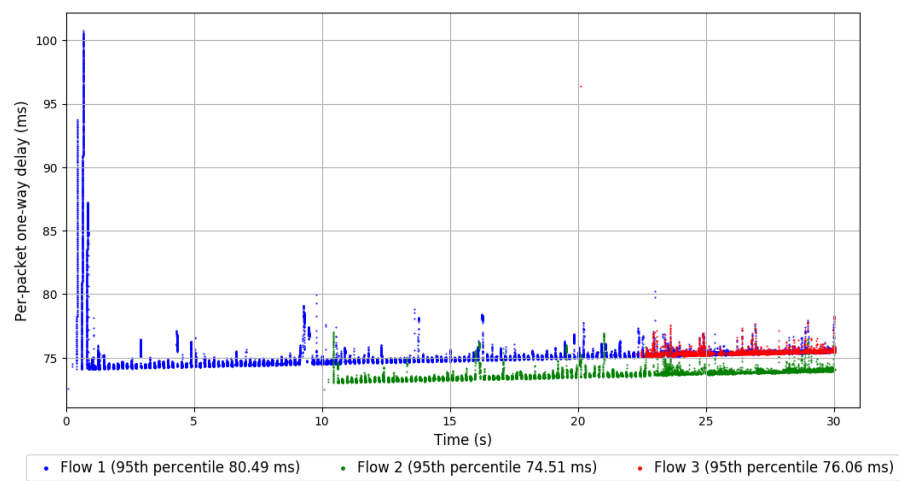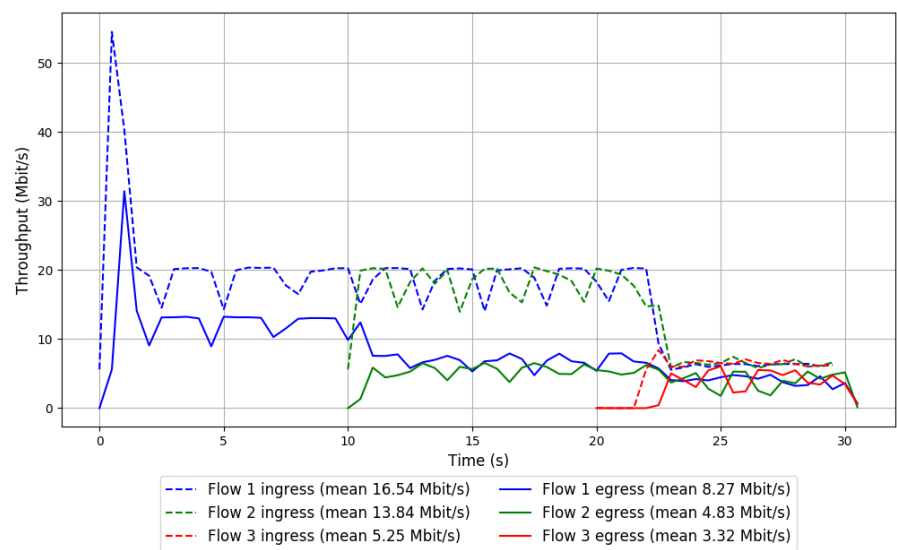
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2019-08-27 01:18:22
End at: 2019-08-27 01:18:52
Local clock offset: 1.188 ms
Remote clock offset: -289.552 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.69 Mbit/s
95th percentile per-packet one-way delay: 84.259 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 85.218 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: 83.769 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 80.881 ms
Loss rate: 0.00%
```
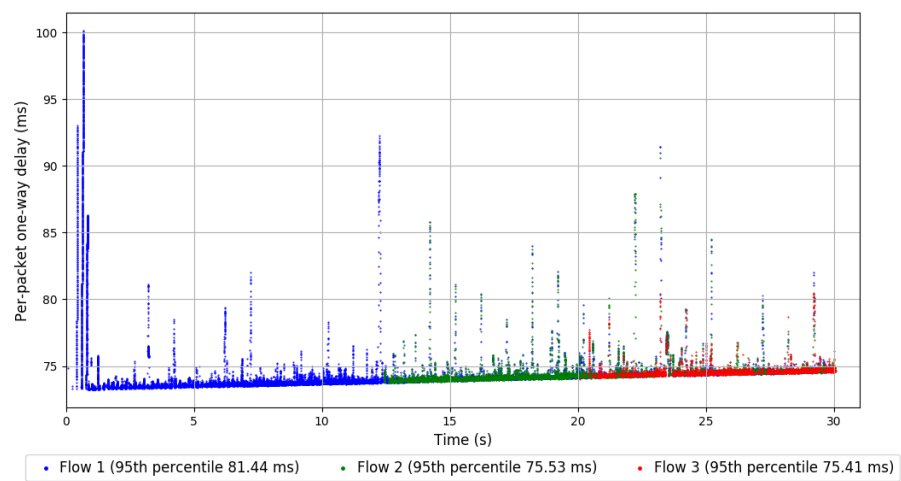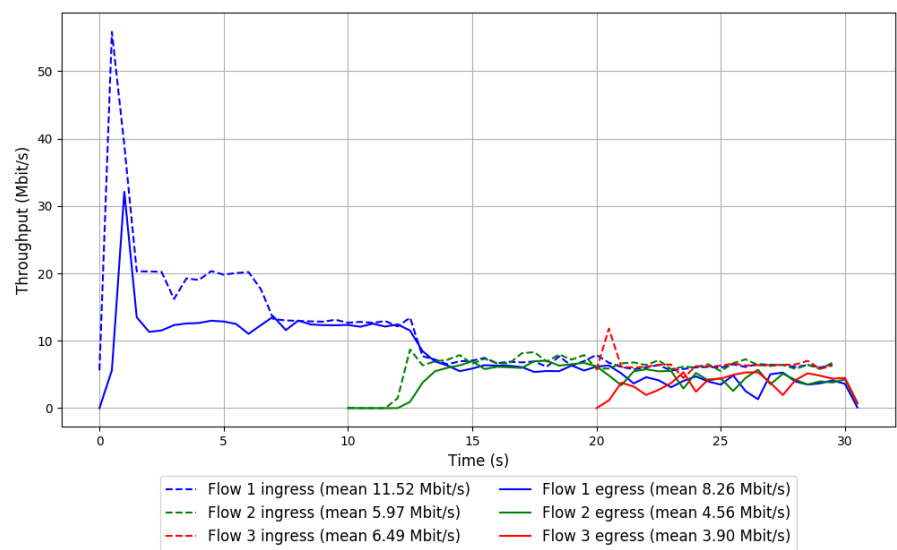
Run 5: Report of Sprout — Data Link

194

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

Start at: 2019-08-26 23:37:30
End at: 2019-08-26 23:38:00
Local clock offset: 2.184 ms
Remote clock offset: -18.458 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 75.822 ms
Loss rate: 84.77%
-- Flow 1:
Average throughput: 7.05 Mbit/s
95th percentile per-packet one-way delay: 81.466 ms
Loss rate: 40.27%
-- Flow 2:
Average throughput: 3.89 Mbit/s
95th percentile per-packet one-way delay: 75.629 ms
Loss rate: 49.89%
-- Flow 3:
Average throughput: 8.91 Mbit/s
95th percentile per-packet one-way delay: 74.286 ms
Loss rate: 95.50%
```

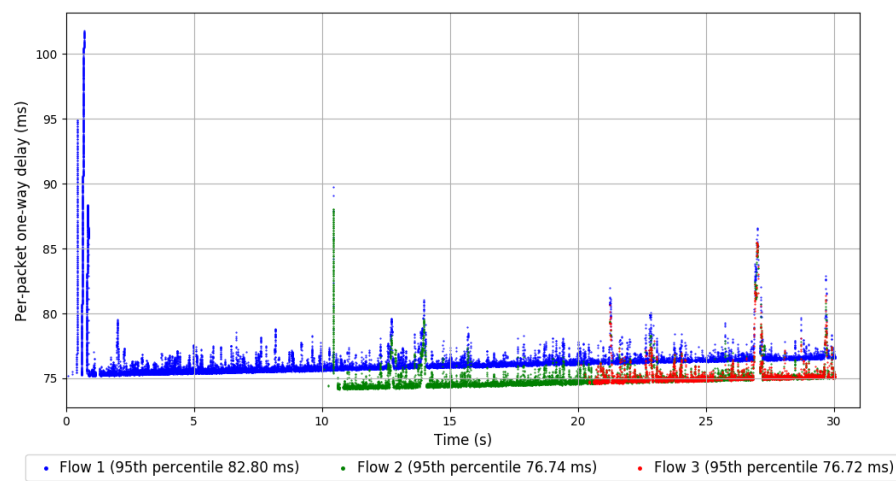Run 1: Report of TaoVA-100x — Data Link

```
Run 2: Statistics of TaoVA-100x

Start at: 2019-08-27 00:08:05
End at: 2019-08-27 00:08:35
Local clock offset: 1.995 ms
Remote clock offset: -101.331 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 77.288 ms
Loss rate: 54.23%
-- Flow 1:
Average throughput: 8.27 Mbit/s
95th percentile per-packet one-way delay: 80.490 ms
Loss rate: 50.00%
-- Flow 2:
Average throughput: 4.83 Mbit/s
95th percentile per-packet one-way delay: 74.510 ms
Loss rate: 65.11%
-- Flow 3:
Average throughput: 3.32 Mbit/s
95th percentile per-packet one-way delay: 76.061 ms
Loss rate: 36.97%
```
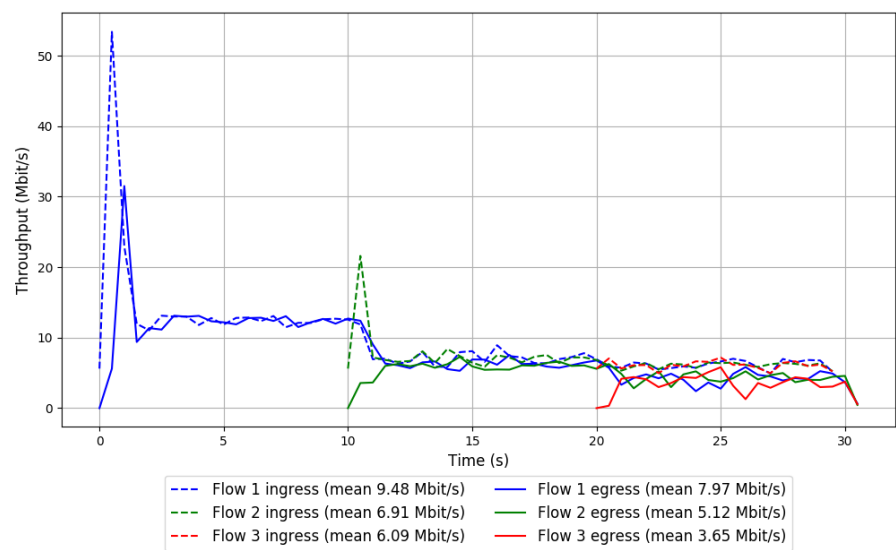
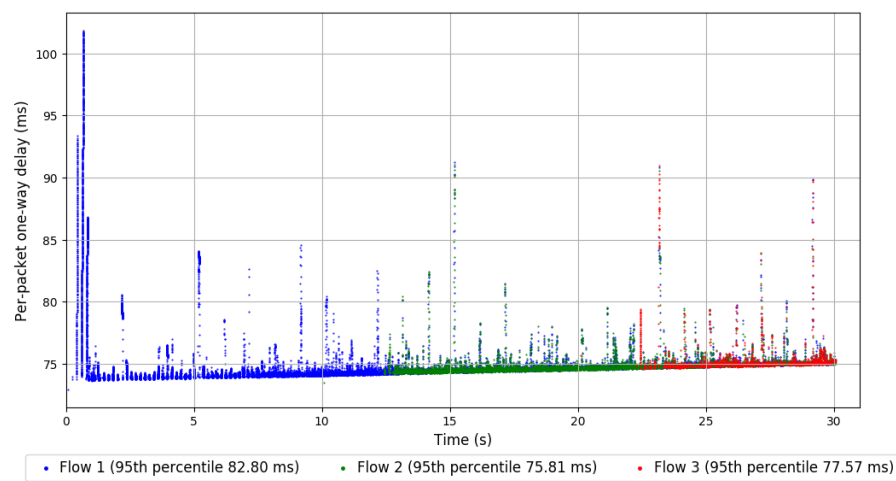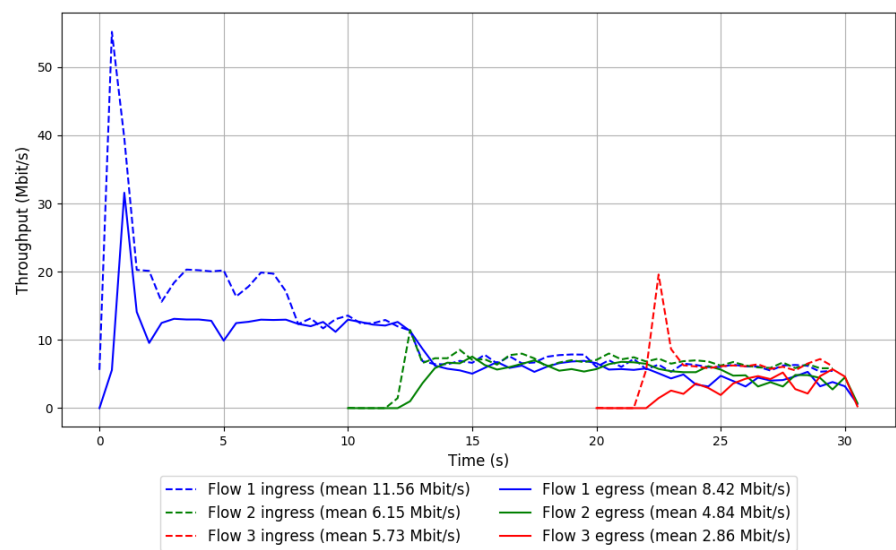Run 2: Report of TaoVA-100x — Data Link

```
Run 3: Statistics of TaoVA-100x

Start at: 2019-08-27 00:38:40
End at: 2019-08-27 00:39:10
Local clock offset: 0.926 ms
Remote clock offset: -183.875 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 77.935 ms
Loss rate: 28.71%
-- Flow 1:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 81.436 ms
Loss rate: 28.35%
-- Flow 2:
Average throughput: 4.56 Mbit/s
95th percentile per-packet one-way delay: 75.527 ms
Loss rate: 23.69%
-- Flow 3:
Average throughput: 3.90 Mbit/s
95th percentile per-packet one-way delay: 75.412 ms
Loss rate: 39.86%
```

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

Flow 1 ingress (mean 11.52 Mbit/s)   Flow 1 egress (mean 8.26 Mbit/s)
Flow 2 ingress (mean 5.97 Mbit/s)   Flow 2 egress (mean 4.56 Mbit/s)
Flow 3 ingress (mean 6.49 Mbit/s)   Flow 3 egress (mean 3.90 Mbit/s)

Flow 1 (95th percentile 81.44 ms)   Flow 2 (95th percentile 75.53 ms)   Flow 3 (95th percentile 75.41 ms)

```
Run 4: Statistics of TaoVA-100x

Start at: 2019-08-27 01:09:18
End at: 2019-08-27 01:09:48
Local clock offset: 0.571 ms
Remote clock offset: -266.471 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 79.334 ms
Loss rate: 21.81%
-- Flow 1:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 82.802 ms
Loss rate: 15.89%
-- Flow 2:
Average throughput: 5.12 Mbit/s
95th percentile per-packet one-way delay: 76.736 ms
Loss rate: 25.94%
-- Flow 3:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 76.717 ms
Loss rate: 40.14%
```
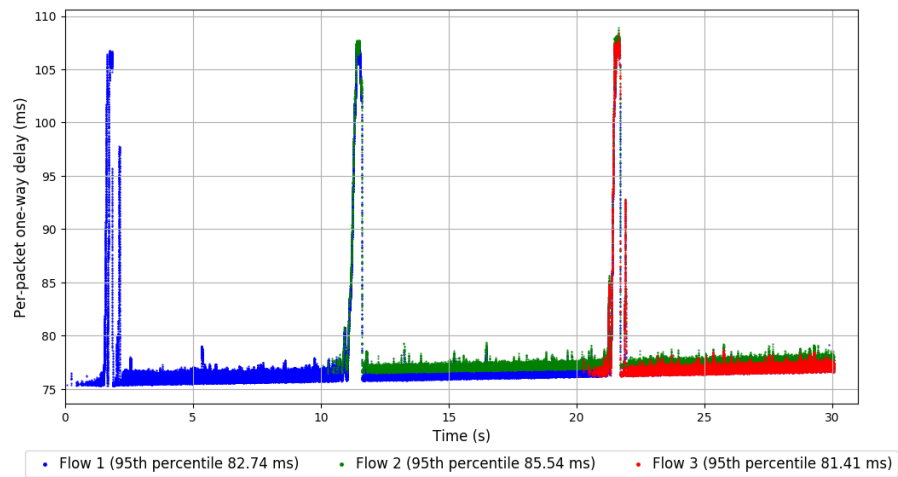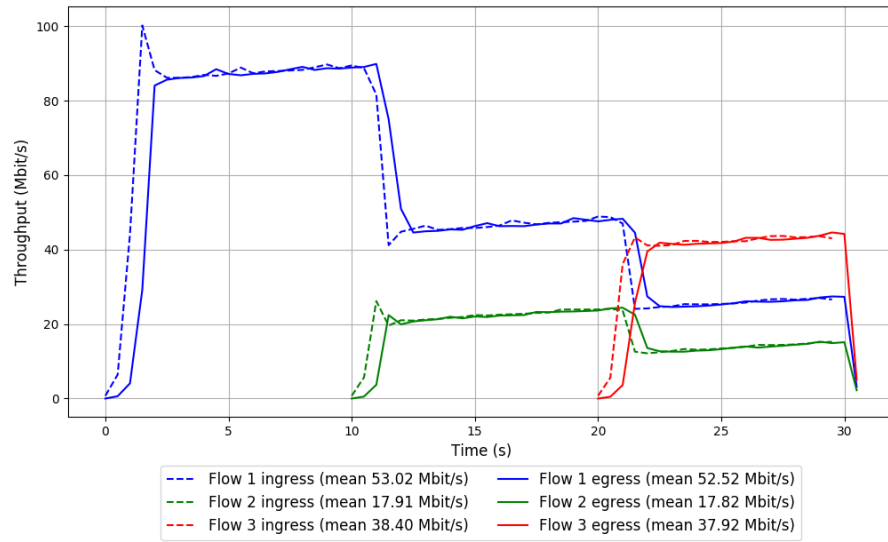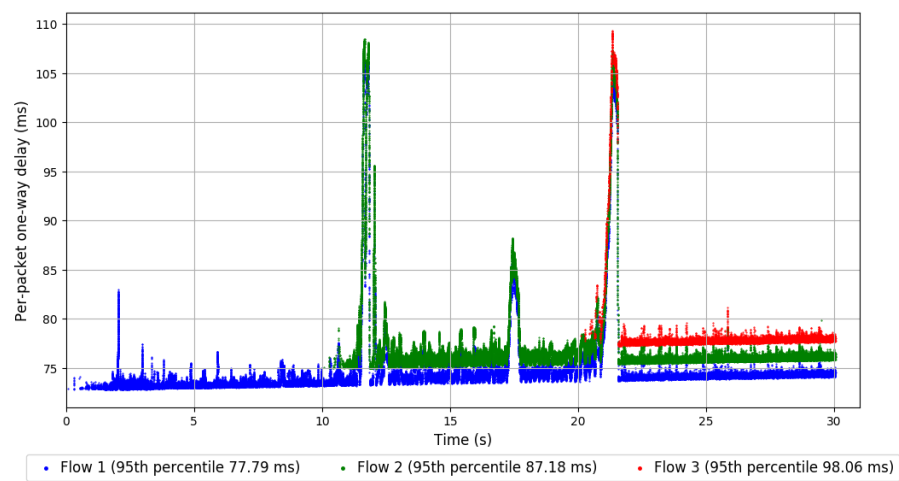
Run 4: Report of TaoVA-100x — Data Link

```
Run 5: Statistics of TaoVA-100x

Start at: 2019-08-27 01:40:10
End at: 2019-08-27 01:40:40
Local clock offset: 0.892 ms
Remote clock offset: -348.879 ms


# Below is generated by plot.py at 2019-08-27 01:56:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 79.542 ms
Loss rate: 28.34%
-- Flow 1:
Average throughput: 8.42 Mbit/s
95th percentile per-packet one-way delay: 82.803 ms
Loss rate: 27.19%
-- Flow 2:
Average throughput: 4.84 Mbit/s
95th percentile per-packet one-way delay: 75.815 ms
Loss rate: 21.40%
-- Flow 3:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 77.573 ms
Loss rate: 50.20%
```
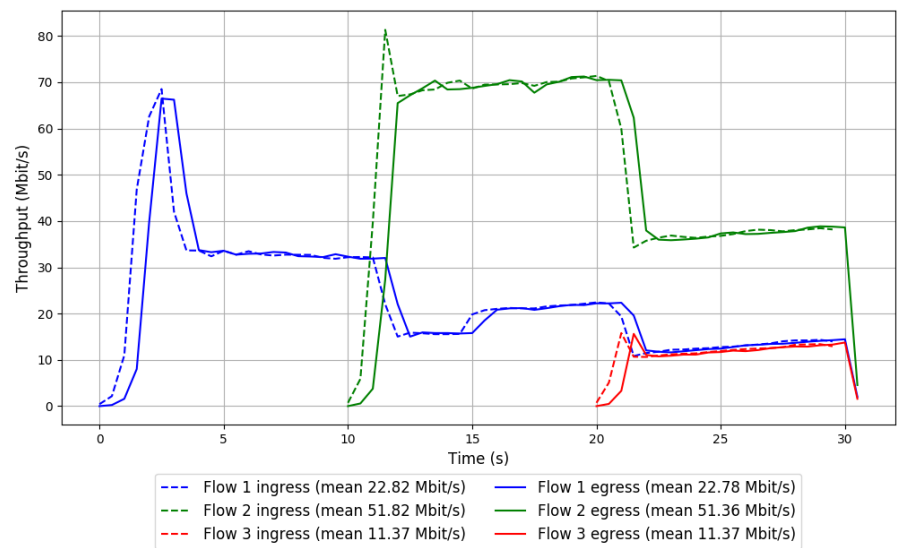
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2019-08-26 23:33:35
End at: 2019-08-26 23:34:05
Local clock offset: 2.182 ms
Remote clock offset: -6.274 ms


# Below is generated by plot.py at 2019-08-27 01:56:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 76.99 Mbit/s
95th percentile per-packet one-way delay: 82.921 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 52.52 Mbit/s
95th percentile per-packet one-way delay: 82.736 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 17.82 Mbit/s
95th percentile per-packet one-way delay: 85.544 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 37.92 Mbit/s
95th percentile per-packet one-way delay: 81.407 ms
Loss rate: 1.25%
```
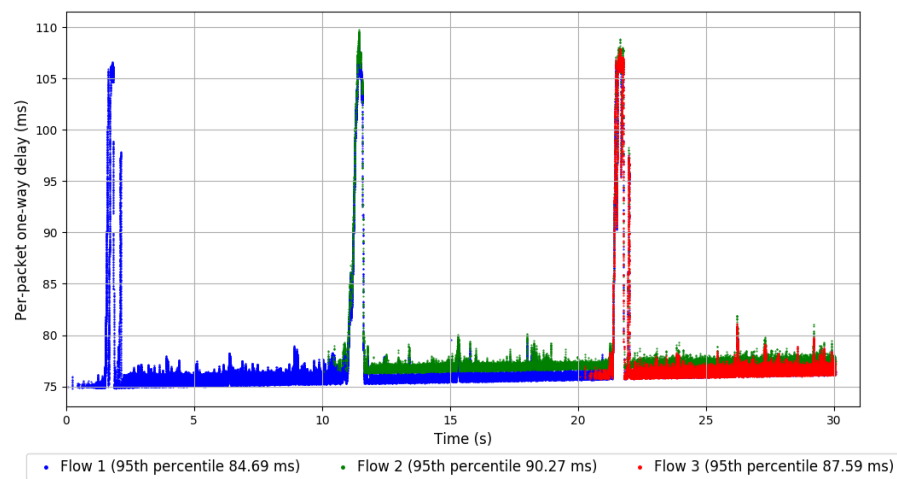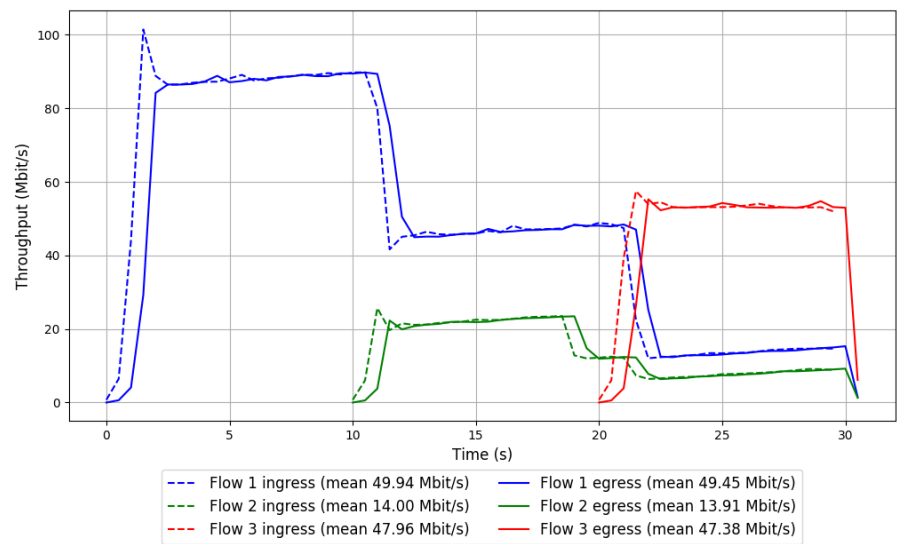
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2019-08-27 00:04:12
End at: 2019-08-27 00:04:42
Local clock offset: 1.242 ms
Remote clock offset: -90.436 ms


# Below is generated by plot.py at 2019-08-27 01:56:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 60.76 Mbit/s
95th percentile per-packet one-way delay: 84.662 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 22.78 Mbit/s
95th percentile per-packet one-way delay: 77.793 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 51.36 Mbit/s
95th percentile per-packet one-way delay: 87.183 ms
Loss rate: 0.88%
-- Flow 3:
Average throughput: 11.37 Mbit/s
95th percentile per-packet one-way delay: 98.056 ms
Loss rate: 0.01%
```
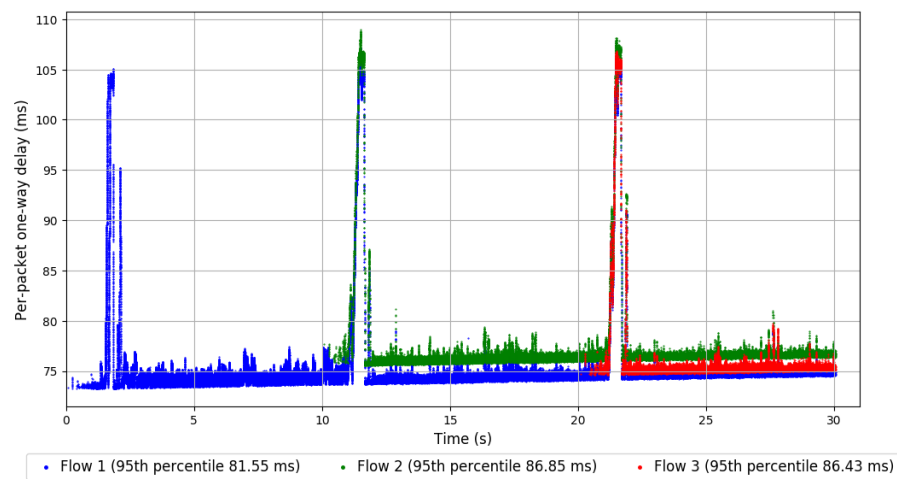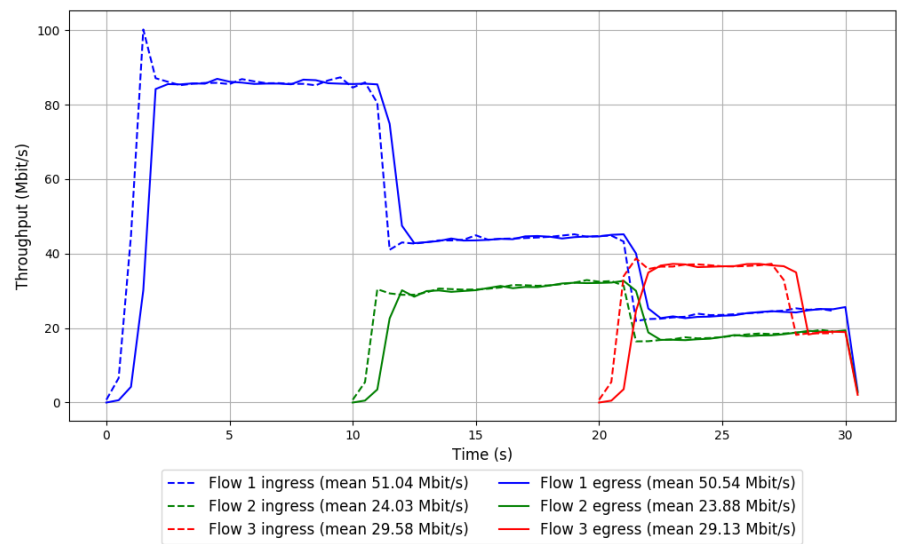
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2019-08-27 00:34:46
End at: 2019-08-27 00:35:16
Local clock offset: 0.99 ms
Remote clock offset: -172.764 ms


# Below is generated by plot.py at 2019-08-27 01:57:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 74.47 Mbit/s
95th percentile per-packet one-way delay: 85.316 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 49.45 Mbit/s
95th percentile per-packet one-way delay: 84.687 ms
Loss rate: 0.98%
-- Flow 2:
Average throughput: 13.91 Mbit/s
95th percentile per-packet one-way delay: 90.271 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 47.38 Mbit/s
95th percentile per-packet one-way delay: 87.588 ms
Loss rate: 1.21%
```
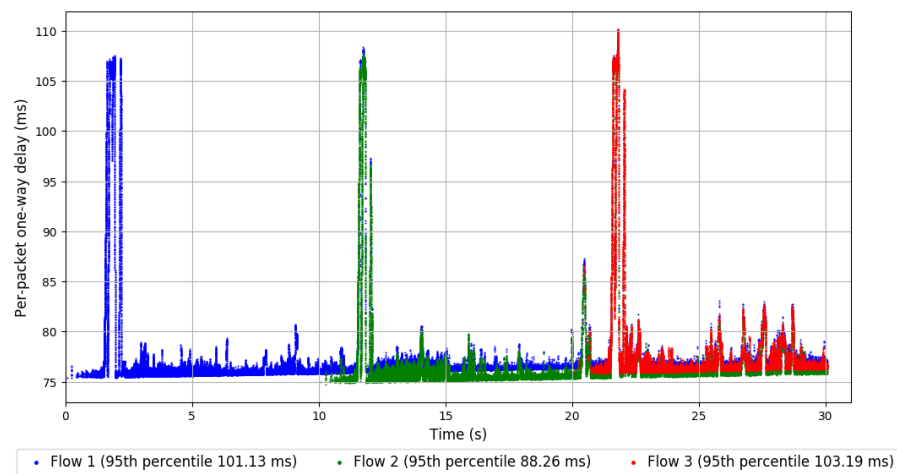
Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2019-08-27 01:05:24
End at: 2019-08-27 01:05:54
Local clock offset: 0.607 ms
Remote clock offset: -257.158 ms


# Below is generated by plot.py at 2019-08-27 01:57:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 76.12 Mbit/s
95th percentile per-packet one-way delay: 83.515 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 50.54 Mbit/s
95th percentile per-packet one-way delay: 81.554 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 23.88 Mbit/s
95th percentile per-packet one-way delay: 86.850 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 29.13 Mbit/s
95th percentile per-packet one-way delay: 86.428 ms
Loss rate: 1.50%
```

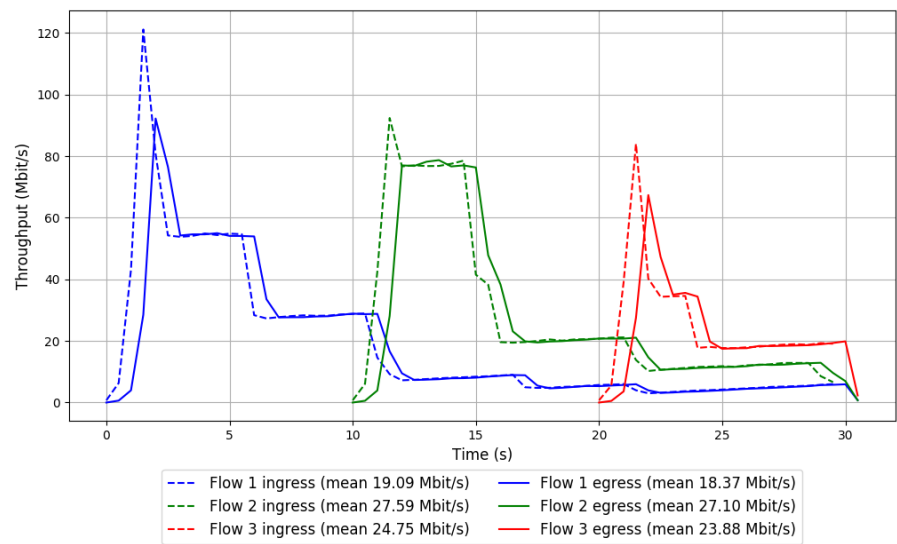## Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2019-08-27 01:36:18
End at: 2019-08-27 01:36:48
Local clock offset: 0.132 ms
Remote clock offset: -338.951 ms


# Below is generated by plot.py at 2019-08-27 01:57:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 44.37 Mbit/s
95th percentile per-packet one-way delay: 97.193 ms
Loss rate: 2.90%
-- Flow 1:
Average throughput: 18.37 Mbit/s
95th percentile per-packet one-way delay: 101.131 ms
Loss rate: 3.72%
-- Flow 2:
Average throughput: 27.10 Mbit/s
95th percentile per-packet one-way delay: 88.256 ms
Loss rate: 1.77%
-- Flow 3:
Average throughput: 23.88 Mbit/s
95th percentile per-packet one-way delay: 103.192 ms
Loss rate: 3.51%
```
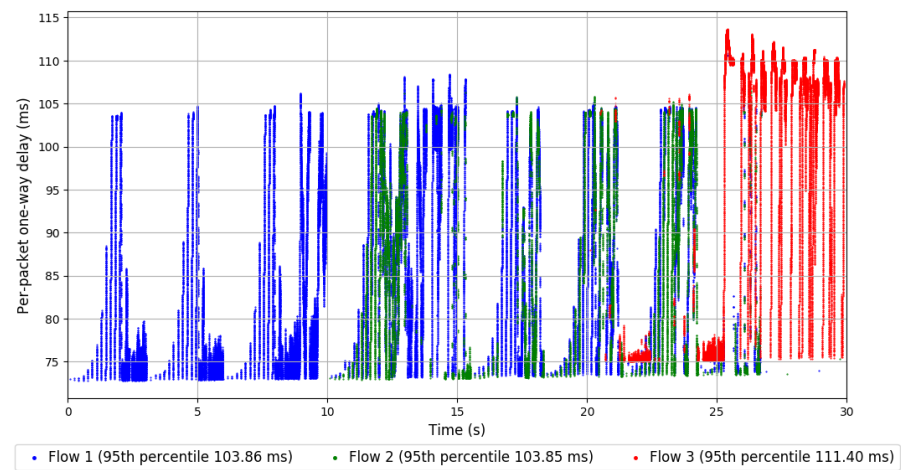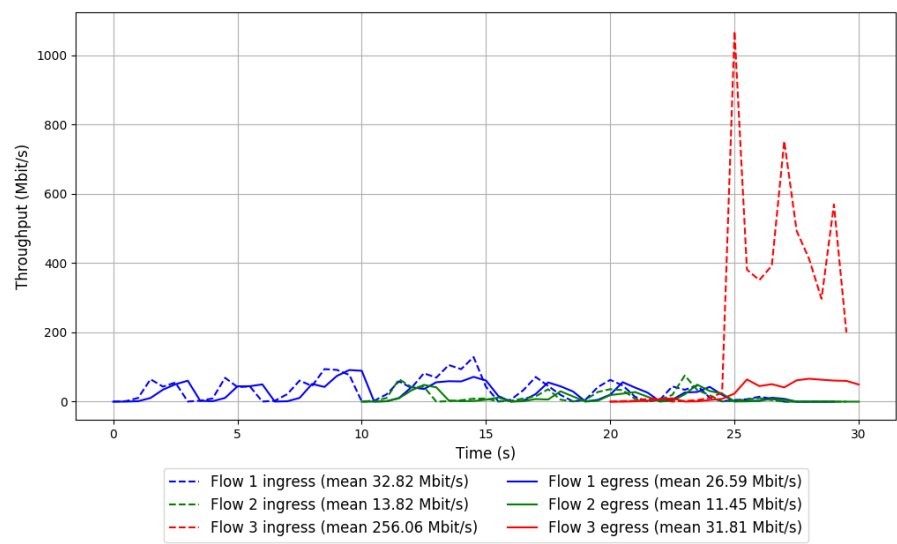
Run 5: Report of TCP Vegas — Data Link

- - - - Flow 1 ingress (mean 19.09 Mbit/s) ——— Flow 1 egress (mean 18.37 Mbit/s)
- - - - Flow 2 ingress (mean 27.59 Mbit/s) ——— Flow 2 egress (mean 27.10 Mbit/s)
- - - - Flow 3 ingress (mean 24.75 Mbit/s) ——— Flow 3 egress (mean 23.88 Mbit/s)

- Flow 1 (95th percentile 101.13 ms)   • Flow 2 (95th percentile 88.26 ms)   • Flow 3 (95th percentile 103.19 ms)
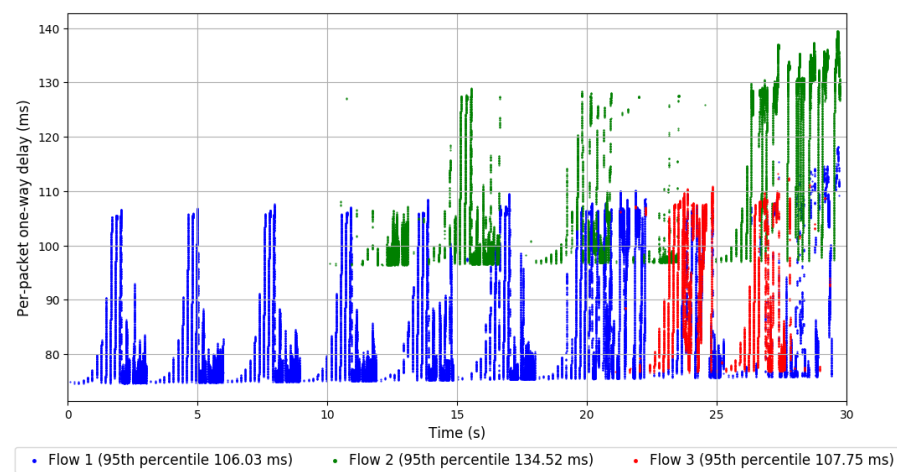
214

```
Run 1: Statistics of Verus

Start at: 2019-08-26 23:32:18
End at: 2019-08-26 23:32:48
Local clock offset: 1.419 ms
Remote clock offset: -4.815 ms


# Below is generated by plot.py at 2019-08-27 01:57:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 43.70 Mbit/s
95th percentile per-packet one-way delay: 109.838 ms
Loss rate: 64.95%
-- Flow 1:
Average throughput: 26.59 Mbit/s
95th percentile per-packet one-way delay: 103.859 ms
Loss rate: 19.46%
-- Flow 2:
Average throughput: 11.45 Mbit/s
95th percentile per-packet one-way delay: 103.854 ms
Loss rate: 17.11%
-- Flow 3:
Average throughput: 31.81 Mbit/s
95th percentile per-packet one-way delay: 111.396 ms
Loss rate: 87.55%
```
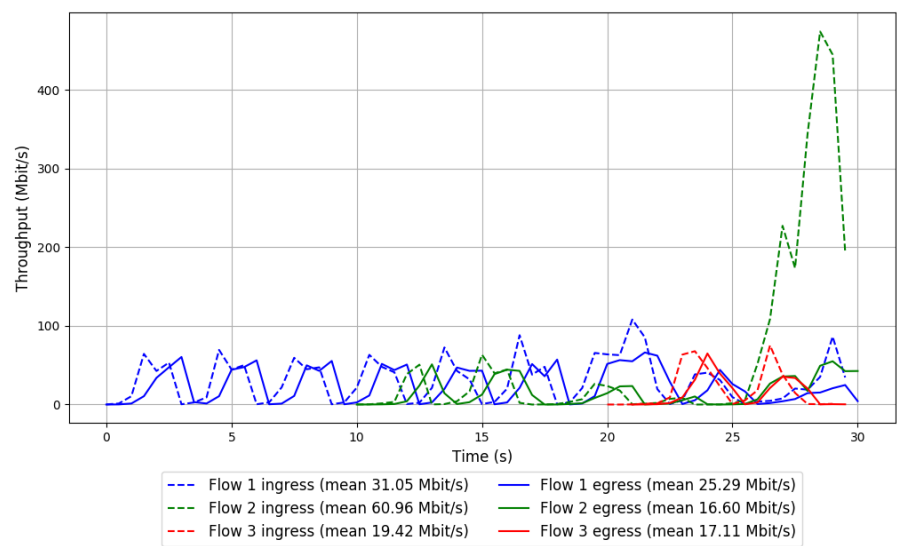
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 32.82 Mbit/s)   Flow 1 egress (mean 26.59 Mbit/s)
Flow 2 ingress (mean 13.82 Mbit/s)   Flow 2 egress (mean 11.45 Mbit/s)
Flow 3 ingress (mean 256.06 Mbit/s)   Flow 3 egress (mean 31.81 Mbit/s)

Flow 1 (95th percentile 103.86 ms)   Flow 2 (95th percentile 103.85 ms)   Flow 3 (95th percentile 111.40 ms)
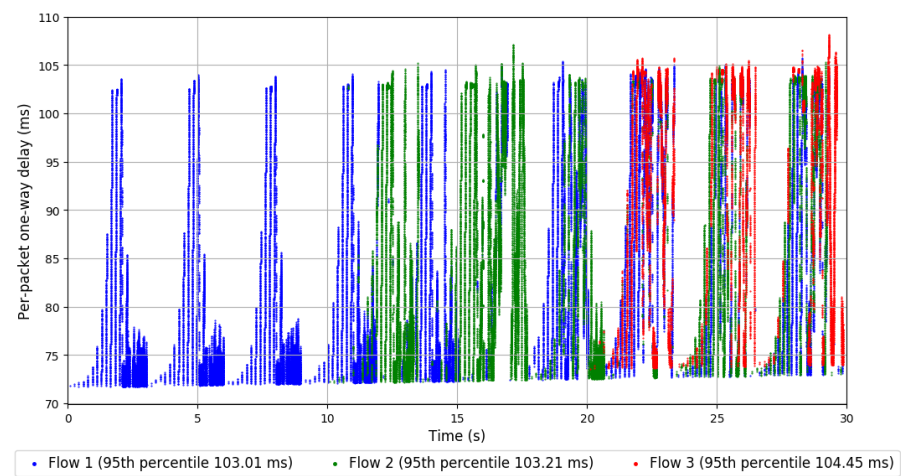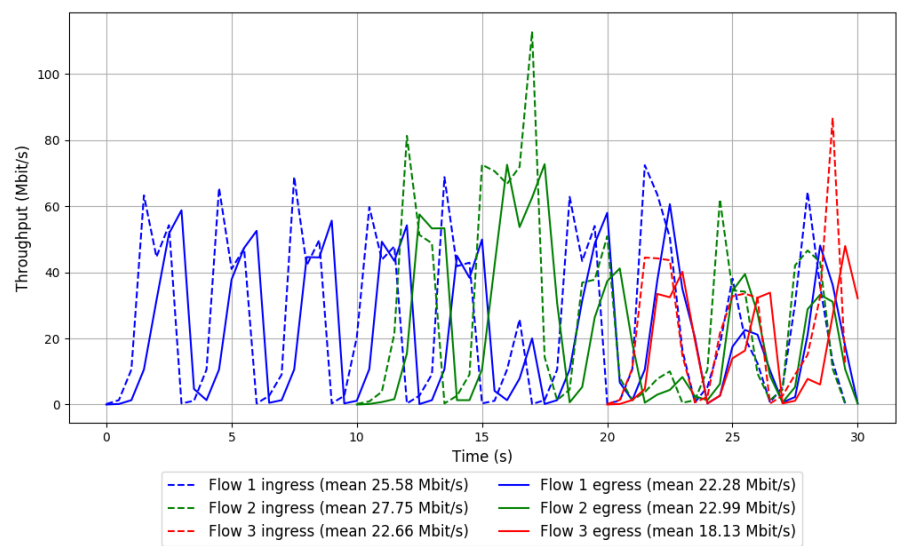
```
Run 2: Statistics of Verus

Start at: 2019-08-27 00:02:55
End at: 2019-08-27 00:03:25
Local clock offset: 1.197 ms
Remote clock offset: -85.914 ms


# Below is generated by plot.py at 2019-08-27 01:57:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 41.02 Mbit/s
95th percentile per-packet one-way delay: 130.573 ms
Loss rate: 47.03%
-- Flow 1:
Average throughput: 25.29 Mbit/s
95th percentile per-packet one-way delay: 106.027 ms
Loss rate: 18.44%
-- Flow 2:
Average throughput: 16.60 Mbit/s
95th percentile per-packet one-way delay: 134.521 ms
Loss rate: 72.73%
-- Flow 3:
Average throughput: 17.11 Mbit/s
95th percentile per-packet one-way delay: 107.753 ms
Loss rate: 22.85%
```
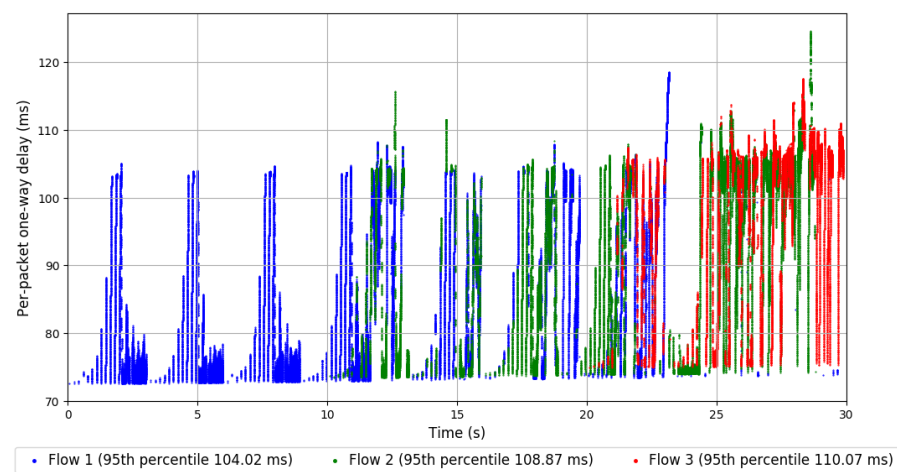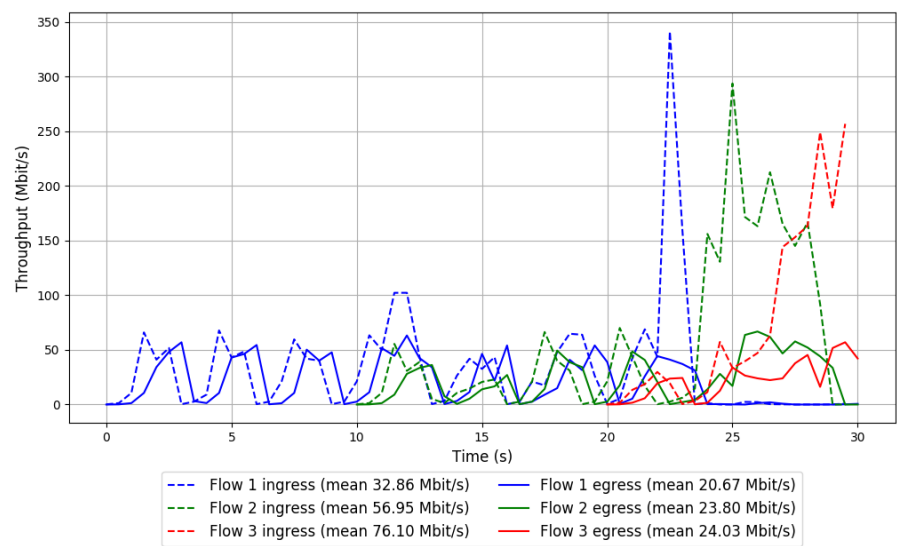
Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 31.05 Mbit/s) --- Flow 1 egress (mean 25.29 Mbit/s)
Flow 2 ingress (mean 60.96 Mbit/s) --- Flow 2 egress (mean 16.60 Mbit/s)
Flow 3 ingress (mean 19.42 Mbit/s) --- Flow 3 egress (mean 17.11 Mbit/s)

Flow 1 (95th percentile 106.03 ms) Flow 2 (95th percentile 134.52 ms) Flow 3 (95th percentile 107.75 ms)

218

```
Run 3: Statistics of Verus

Start at: 2019-08-27 00:33:29
End at: 2019-08-27 00:33:59
Local clock offset: 1.72 ms
Remote clock offset: -171.743 ms


# Below is generated by plot.py at 2019-08-27 01:57:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 43.41 Mbit/s
95th percentile per-packet one-way delay: 103.331 ms
Loss rate: 15.43%
-- Flow 1:
Average throughput: 22.28 Mbit/s
95th percentile per-packet one-way delay: 103.012 ms
Loss rate: 12.90%
-- Flow 2:
Average throughput: 22.99 Mbit/s
95th percentile per-packet one-way delay: 103.207 ms
Loss rate: 17.12%
-- Flow 3:
Average throughput: 18.13 Mbit/s
95th percentile per-packet one-way delay: 104.450 ms
Loss rate: 19.95%
```
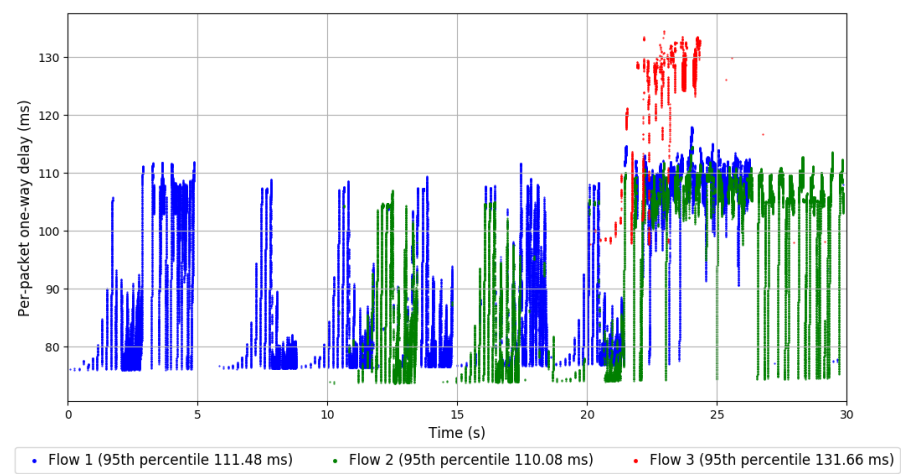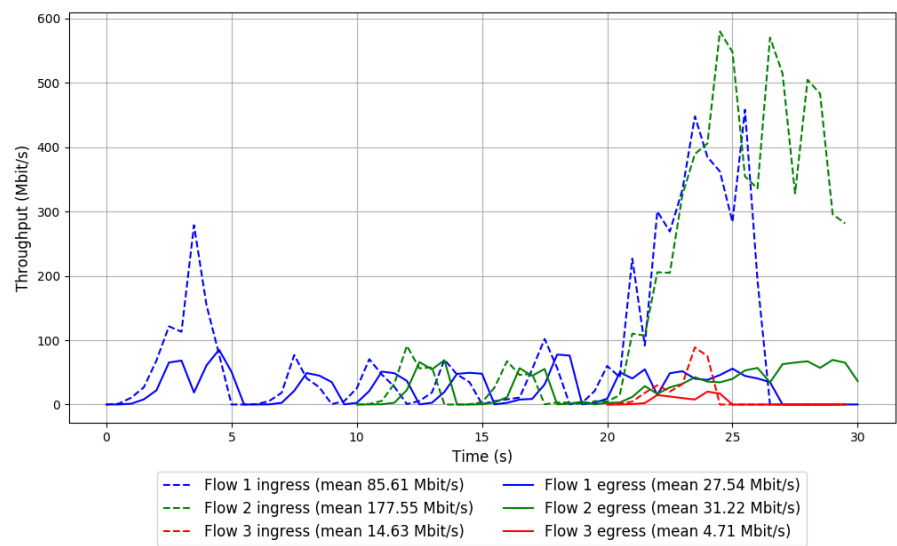
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2019-08-27 01:04:07
End at: 2019-08-27 01:04:37
Local clock offset: 1.374 ms
Remote clock offset: -252.202 ms


# Below is generated by plot.py at 2019-08-27 01:57:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 44.34 Mbit/s
95th percentile per-packet one-way delay: 108.078 ms
Loss rate: 53.54%
-- Flow 1:
Average throughput: 20.67 Mbit/s
95th percentile per-packet one-way delay: 104.020 ms
Loss rate: 37.04%
-- Flow 2:
Average throughput: 23.80 Mbit/s
95th percentile per-packet one-way delay: 108.870 ms
Loss rate: 58.14%
-- Flow 3:
Average throughput: 24.03 Mbit/s
95th percentile per-packet one-way delay: 110.067 ms
Loss rate: 68.32%
```
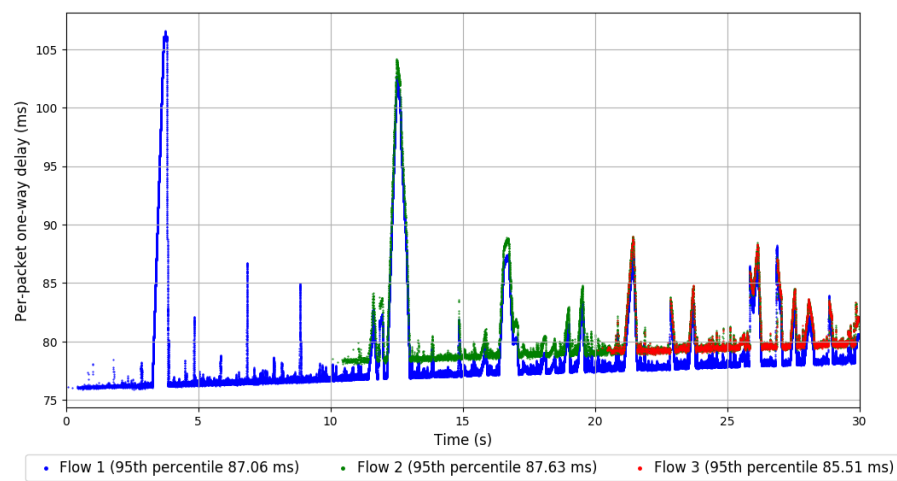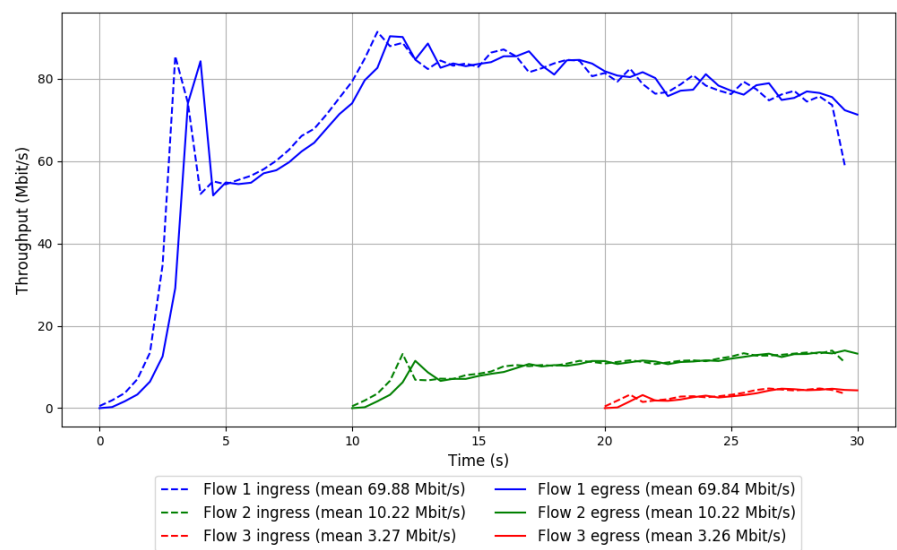
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2019-08-27 01:34:59
End at: 2019-08-27 01:35:29
Local clock offset: 0.871 ms
Remote clock offset: -334.651 ms


# Below is generated by plot.py at 2019-08-27 01:57:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 49.67 Mbit/s
95th percentile per-packet one-way delay: 111.620 ms
Loss rate: 76.08%
-- Flow 1:
Average throughput: 27.54 Mbit/s
95th percentile per-packet one-way delay: 111.479 ms
Loss rate: 67.80%
-- Flow 2:
Average throughput: 31.22 Mbit/s
95th percentile per-packet one-way delay: 110.084 ms
Loss rate: 82.39%
-- Flow 3:
Average throughput: 4.71 Mbit/s
95th percentile per-packet one-way delay: 131.660 ms
Loss rate: 68.46%
```

Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 85.61 Mbit/s)   Flow 1 egress (mean 27.54 Mbit/s)
Flow 2 ingress (mean 177.55 Mbit/s)   Flow 2 egress (mean 31.22 Mbit/s)
Flow 3 ingress (mean 14.63 Mbit/s)   Flow 3 egress (mean 4.71 Mbit/s)

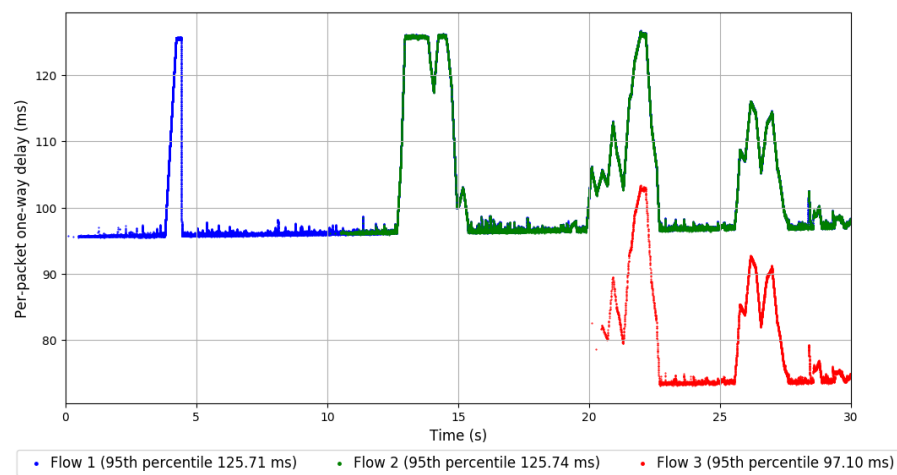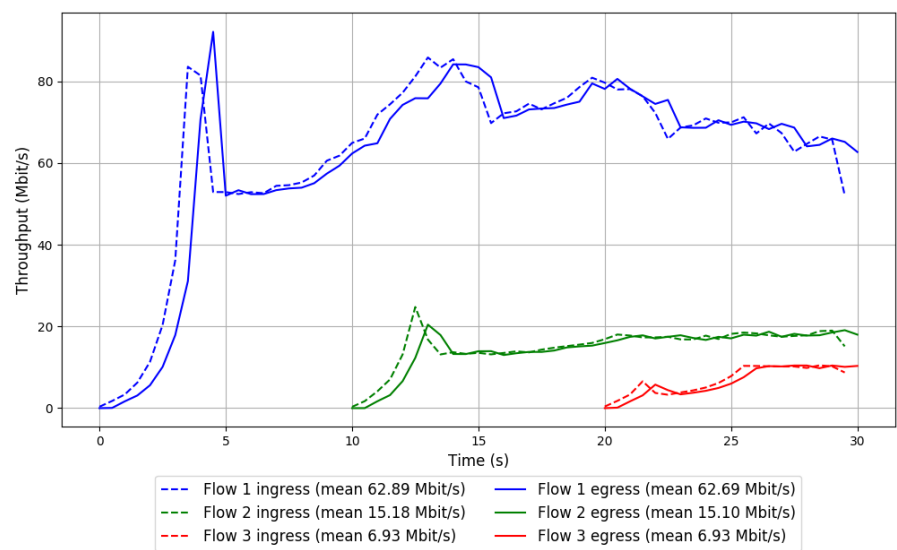Flow 1 (95th percentile 111.48 ms)   Flow 2 (95th percentile 110.08 ms)   Flow 3 (95th percentile 131.66 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-08-26 23:11:49
End at: 2019-08-26 23:12:19
Local clock offset: 1.733 ms
Remote clock offset: -253.003 ms


# Below is generated by plot.py at 2019-08-27 01:57:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.72 Mbit/s
95th percentile per-packet one-way delay: 87.071 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 69.84 Mbit/s
95th percentile per-packet one-way delay: 87.061 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 10.22 Mbit/s
95th percentile per-packet one-way delay: 87.634 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 85.514 ms
Loss rate: 0.00%
```
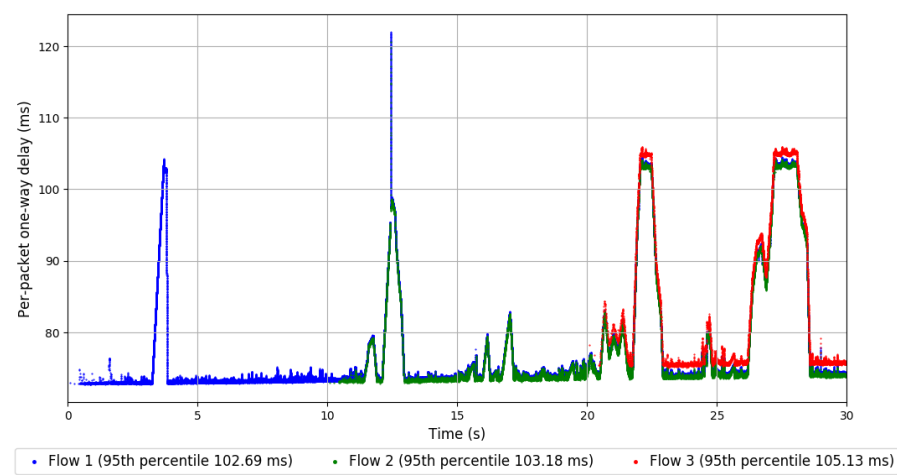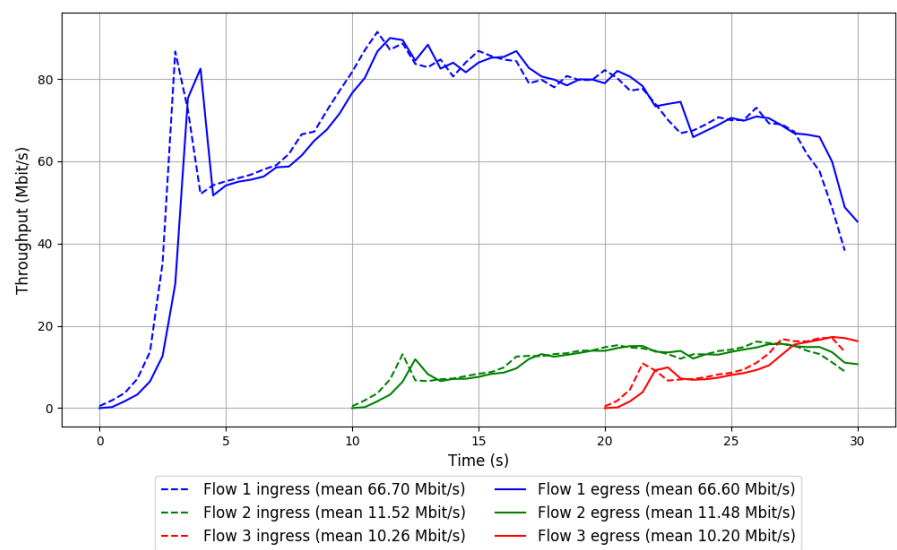
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2019-08-26 23:42:29
End at: 2019-08-26 23:42:59
Local clock offset: 2.126 ms
Remote clock offset: -31.745 ms


# Below is generated by plot.py at 2019-08-27 01:57:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 75.01 Mbit/s
95th percentile per-packet one-way delay: 125.699 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 62.69 Mbit/s
95th percentile per-packet one-way delay: 125.707 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 15.10 Mbit/s
95th percentile per-packet one-way delay: 125.739 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 6.93 Mbit/s
95th percentile per-packet one-way delay: 97.098 ms
Loss rate: 0.10%
```

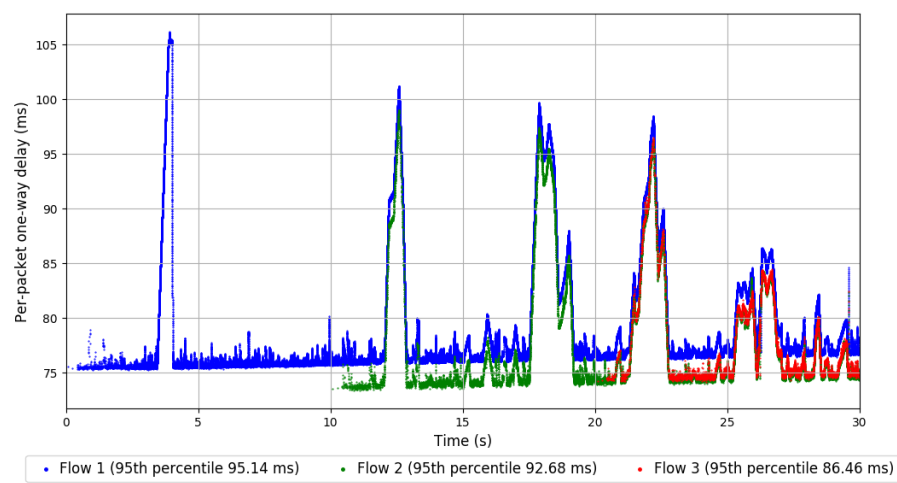Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2019-08-27 00:13:03
End at: 2019-08-27 00:13:33
Local clock offset: 1.209 ms
Remote clock offset: -114.659 ms


# Below is generated by plot.py at 2019-08-27 01:57:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.60 Mbit/s
95th percentile per-packet one-way delay: 103.248 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 66.60 Mbit/s
95th percentile per-packet one-way delay: 102.693 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 11.48 Mbit/s
95th percentile per-packet one-way delay: 103.179 ms
Loss rate: 0.36%
-- Flow 3:
Average throughput: 10.20 Mbit/s
95th percentile per-packet one-way delay: 105.130 ms
Loss rate: 0.64%
```

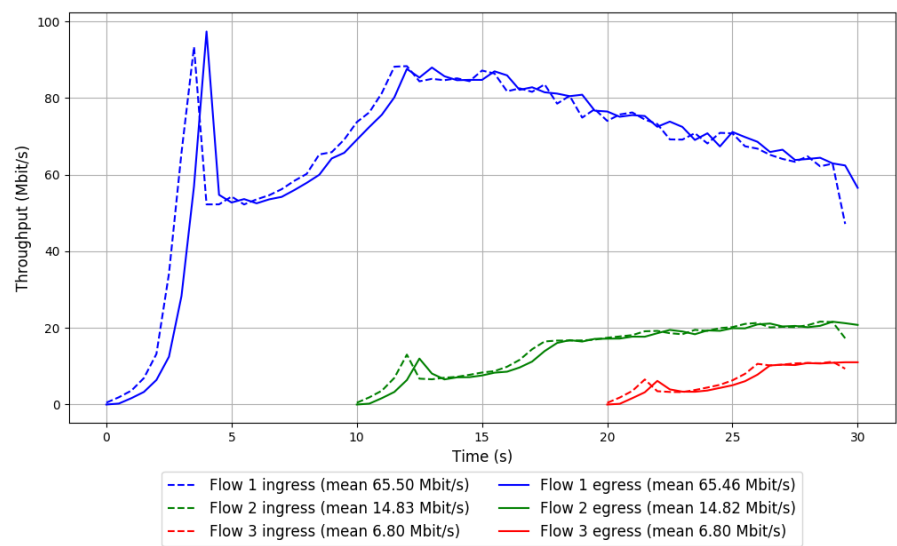# Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2019-08-27 00:43:39
End at: 2019-08-27 00:44:09
Local clock offset: 1.635 ms
Remote clock offset: -196.226 ms


# Below is generated by plot.py at 2019-08-27 01:57:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.56 Mbit/s
95th percentile per-packet one-way delay: 94.696 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 65.46 Mbit/s
95th percentile per-packet one-way delay: 95.138 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 14.82 Mbit/s
95th percentile per-packet one-way delay: 92.681 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 6.80 Mbit/s
95th percentile per-packet one-way delay: 86.457 ms
Loss rate: 0.00%
```

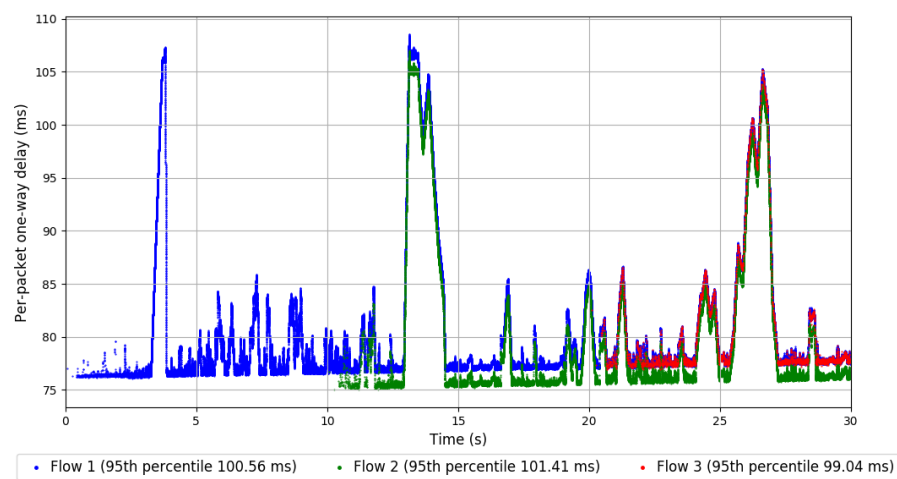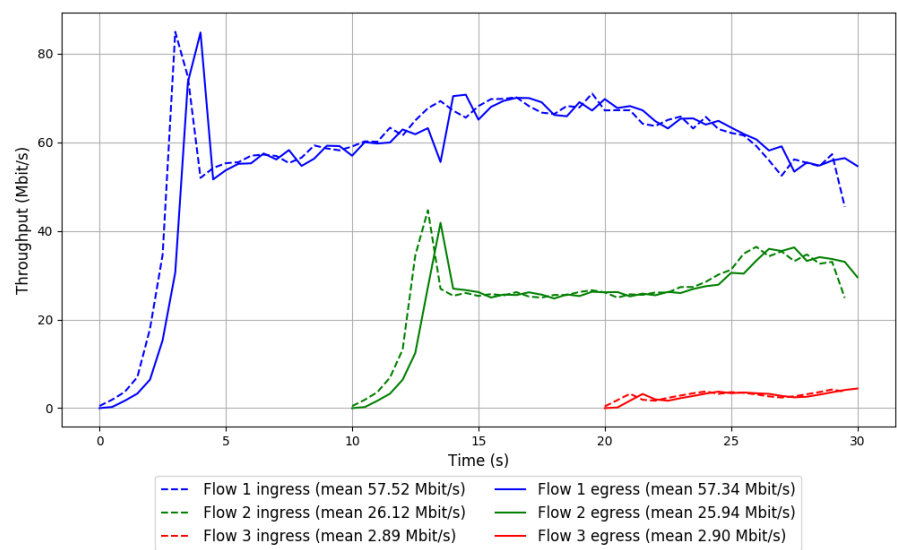# Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2019-08-27 01:14:16
End at: 2019-08-27 01:14:46
Local clock offset: 0.487 ms
Remote clock offset: -278.195 ms


# Below is generated by plot.py at 2019-08-27 01:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 75.55 Mbit/s
95th percentile per-packet one-way delay: 100.802 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 57.34 Mbit/s
95th percentile per-packet one-way delay: 100.565 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 25.94 Mbit/s
95th percentile per-packet one-way delay: 101.411 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 99.041 ms
Loss rate: 0.00%
```

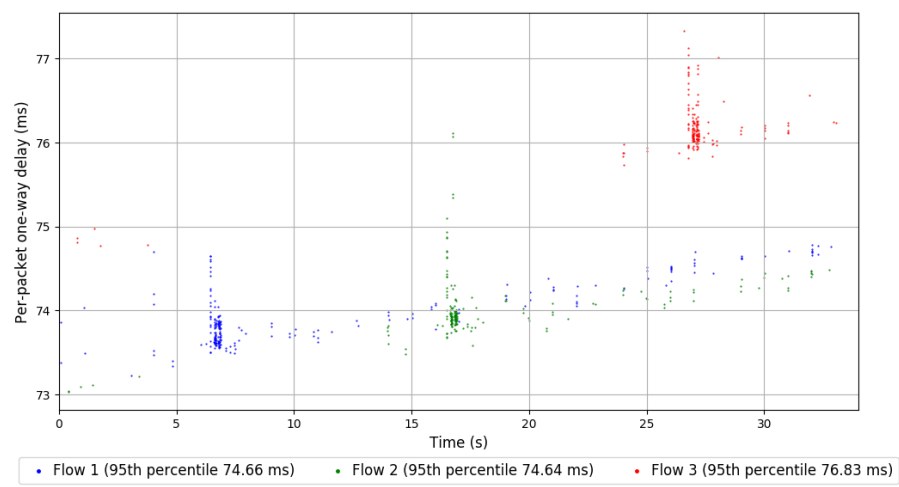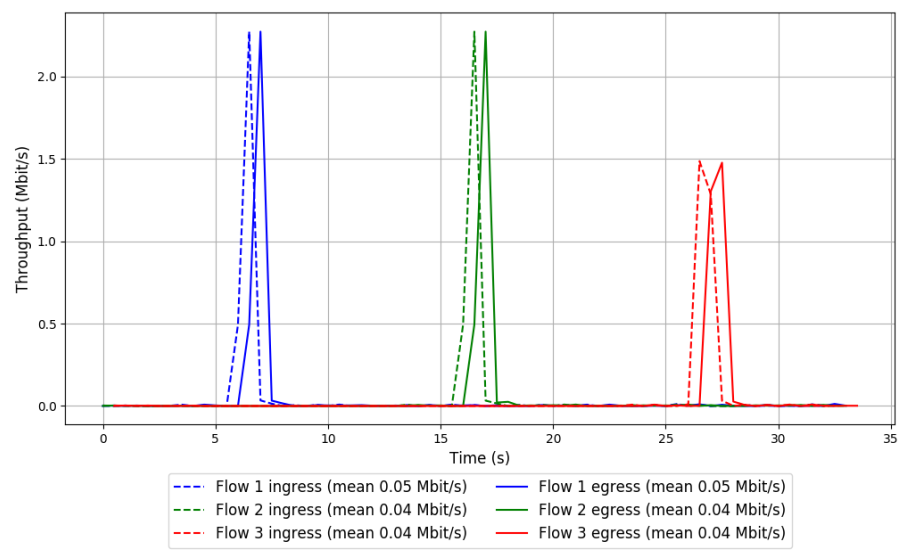Run 5: Report of PCC-Vivace — Data Link

234

```
Run 1: Statistics of WebRTC media

Start at: 2019-08-26 23:38:45
End at: 2019-08-26 23:39:15
Local clock offset: 2.161 ms
Remote clock offset: -21.059 ms


# Below is generated by plot.py at 2019-08-27 01:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 76.298 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 74.658 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 74.637 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 76.831 ms
Loss rate: 0.00%
```

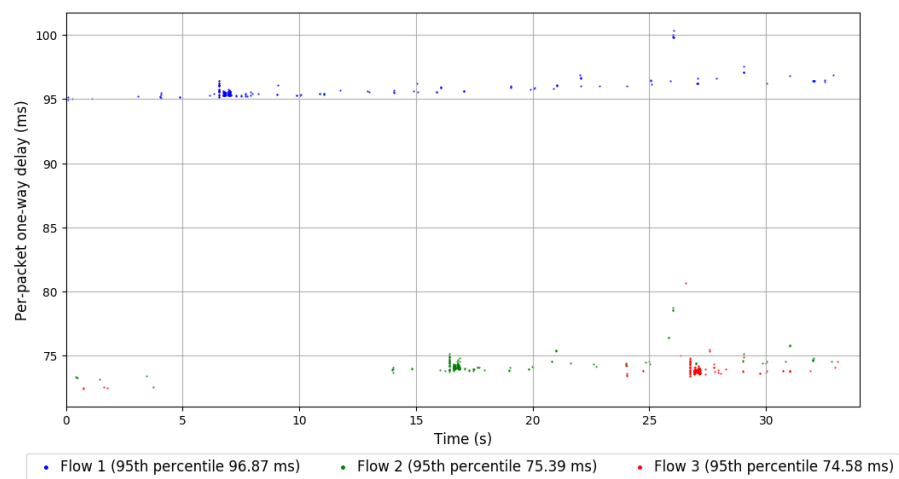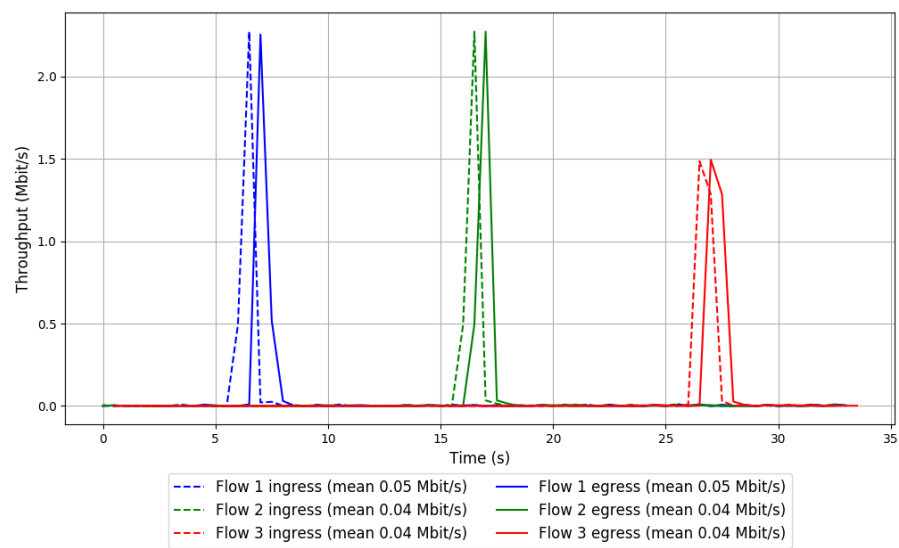Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-08-27 00:09:19
End at: 2019-08-27 00:09:49
Local clock offset: 2.015 ms
Remote clock offset: -104.696 ms


# Below is generated by plot.py at 2019-08-27 01:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 96.418 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 96.870 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 75.394 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 74.580 ms
Loss rate: 0.00%
```

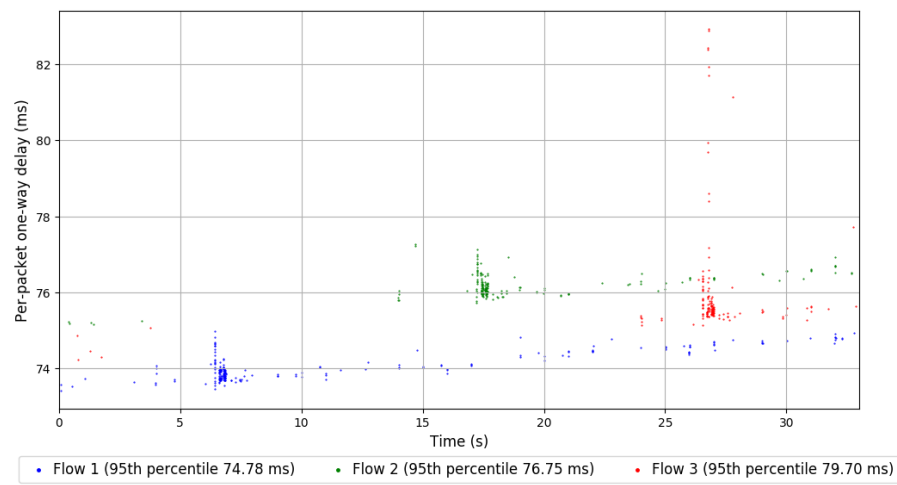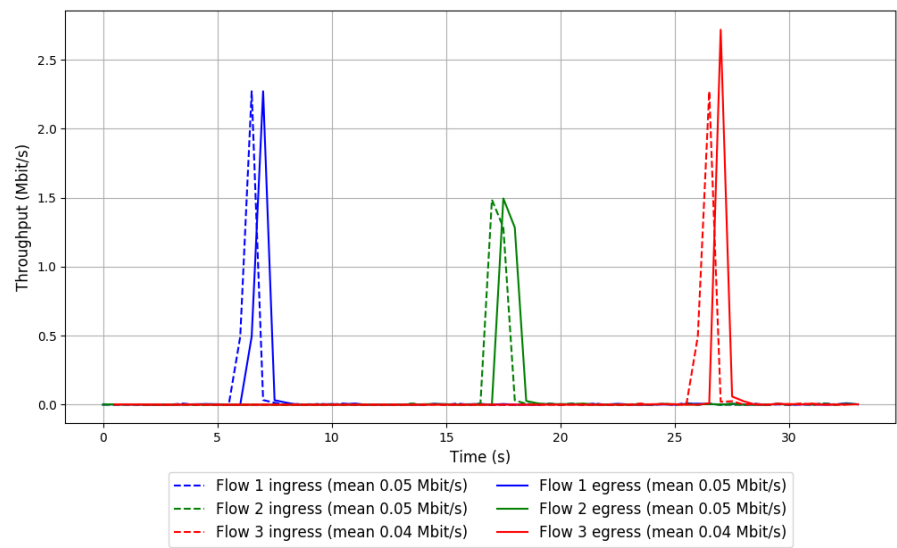Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-08-27 00:39:54
End at: 2019-08-27 00:40:24
Local clock offset: 0.912 ms
Remote clock offset: -186.707 ms


# Below is generated by plot.py at 2019-08-27 01:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 76.662 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 74.783 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 76.751 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 79.699 ms
Loss rate: 0.00%
```
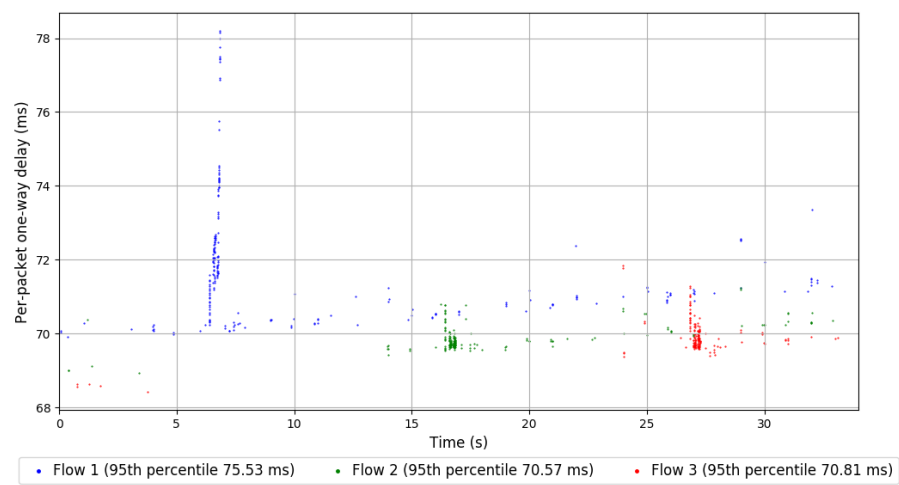
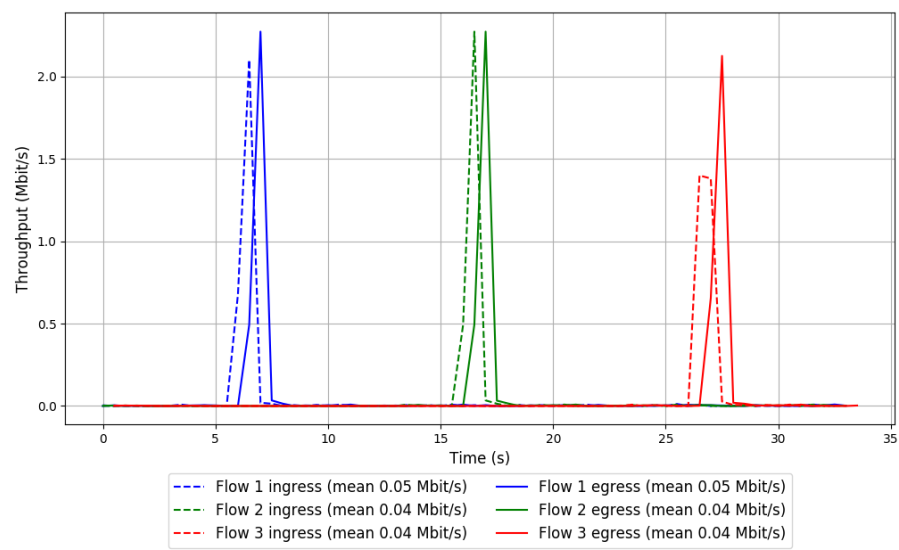Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2019-08-27 01:10:32
End at: 2019-08-27 01:11:02
Local clock offset: 1.325 ms
Remote clock offset: -273.486 ms


# Below is generated by plot.py at 2019-08-27 01:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 73.720 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 75.526 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 70.570 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 70.813 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2019-08-27 01:41:24
End at: 2019-08-27 01:41:54
Local clock offset: 0.871 ms
Remote clock offset: -354.456 ms


# Below is generated by plot.py at 2019-08-27 01:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 74.159 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 74.215 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 74.462 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 73.773 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link