Pantheon Report

Generated at 2019-03-27 15:08:42 (UTC).

Data path: China on `eno1` (*remote*) →AWS Korea on `ens5` (*local*).

Repeated the test of 21 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 `ntp.nict.jp` and have been applied to correct the timestamps in logs.
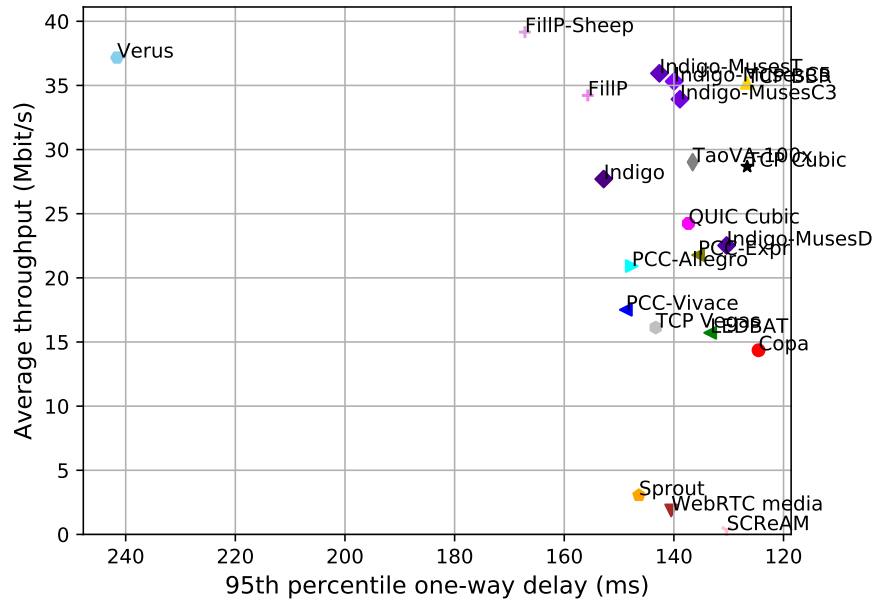
```
System info:
Linux 4.15.0-1034-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7a686f7c2ed0a333082c0bab1fa5c921ab47e6ee
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 5ce721187ad823da20955337730c746486ca4966
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-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
```
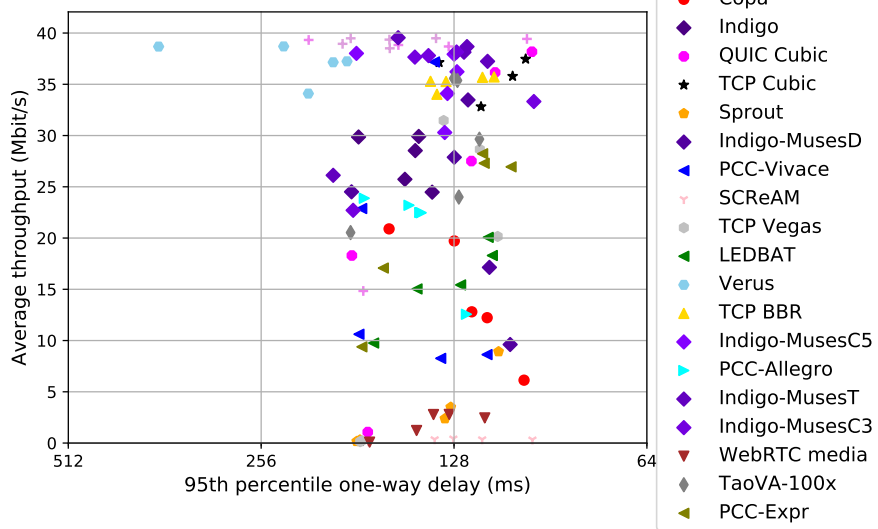
```
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from China to AWS Korea, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from China to AWS Korea, 5 runs of 30s each per scheme
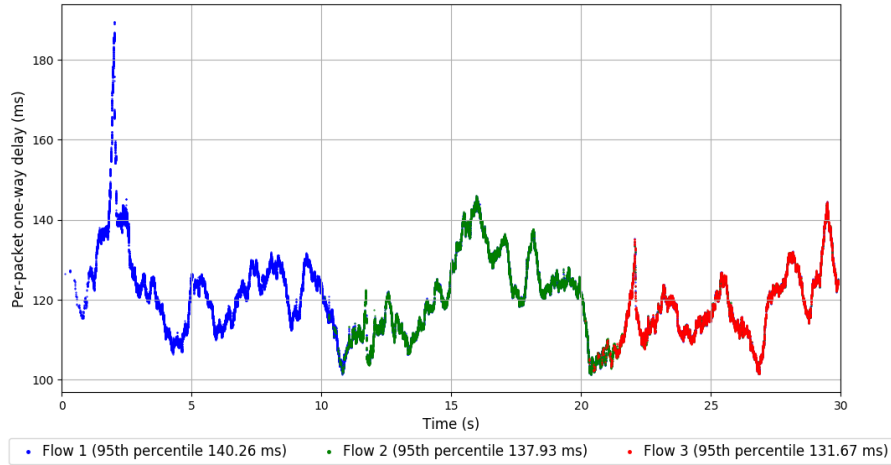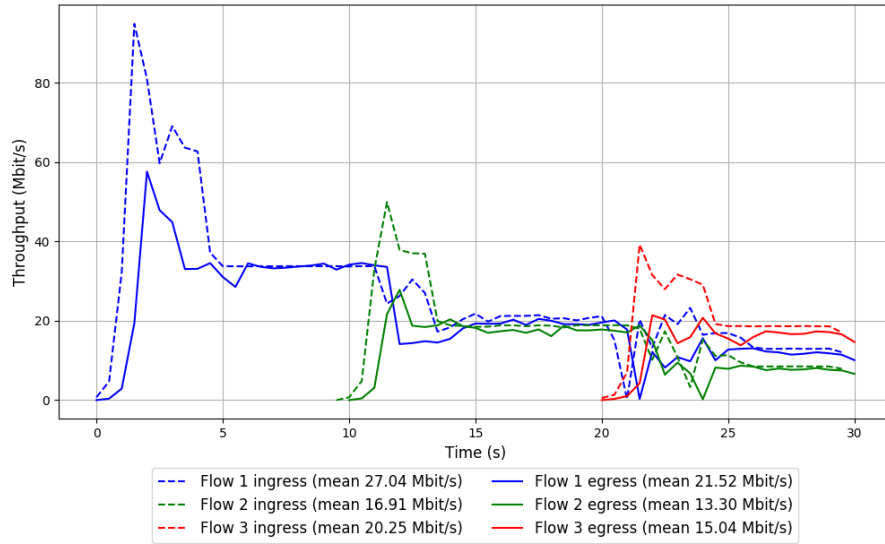3 flows with 10s interval between flows

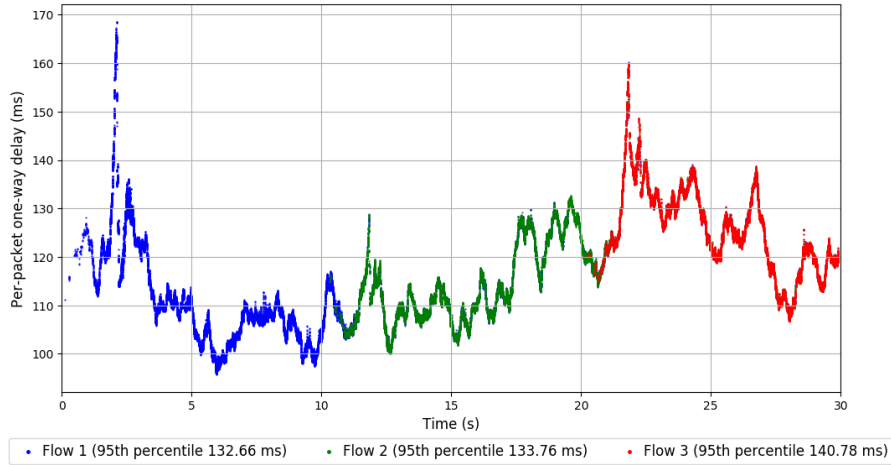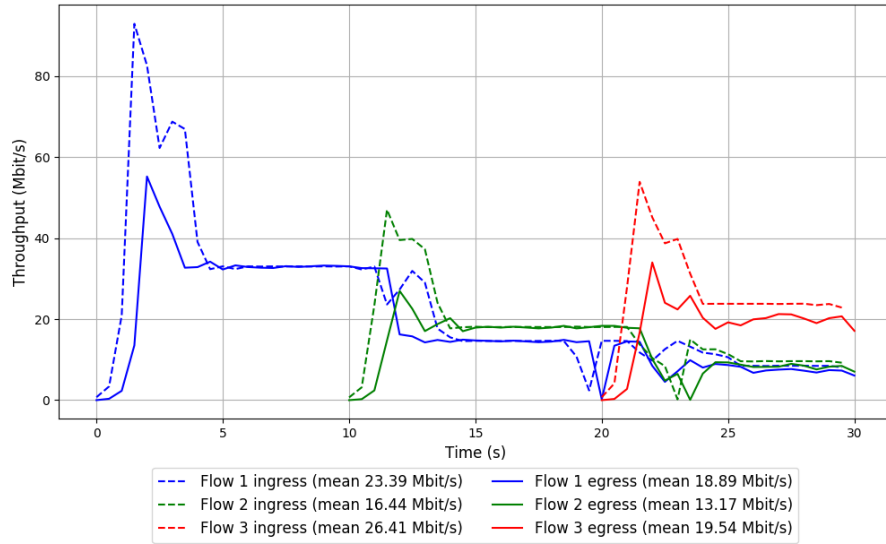| scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	21.34	16.00	9.92	126.77	125.30	125.21	19.18	20.08	25.06
Copa	5	7.10	6.91	8.15	127.77	124.62	122.35	19.45	1.15	1.76
TCP Cubic	5	15.00	14.54	12.22	125.21	125.11	128.15	22.96	5.40	8.07
FillP	5	27.16	7.39	6.62	173.67	132.75	131.38	25.30	25.11	25.82
FillP-Sheep	5	30.98	8.10	8.52	201.16	124.96	124.42	18.40	15.88	16.24
Indigo	5	15.75	14.75	6.74	149.54	151.24	146.85	40.01	50.65	49.42
Indigo-MusesC3	5	18.92	17.05	15.60	137.21	133.65	135.69	5.66	8.07	12.11
Indigo-MusesC5	5	22.30	13.00	15.80	141.16	134.88	133.31	12.53	11.06	20.04
Indigo-MusesD	5	12.93	12.59	5.69	128.16	130.22	129.84	0.88	2.43	3.98
Indigo-MusesT	5	26.00	10.98	11.38	143.18	137.51	135.26	12.14	11.04	14.09
LEDBAT	5	10.01	7.03	3.25	133.16	133.46	134.87	1.14	1.72	3.59
PCC-Allegro	5	0.01	22.57	18.31	120.33	141.43	174.31	85.42	14.47	27.57
PCC-Expr	5	7.94	15.10	11.74	130.76	128.80	137.70	28.45	16.84	34.34
QUIC Cubic	5	17.15	7.63	6.21	136.99	137.27	139.85	4.77	6.10	8.95
SCReAM	5	0.16	0.16	0.20	130.51	129.26	125.43	1.85	2.85	3.28
Sprout	5	1.40	2.28	2.05	138.36	146.44	145.87	6.59	3.81	6.13
TaoVA-100x	5	16.55	8.09	21.65	135.07	137.67	134.58	11.44	9.37	13.08
TCP Vegas	5	6.73	10.55	7.32	143.62	143.01	138.55	27.12	10.17	8.03
Verus	5	28.13	12.21	3.47	235.27	245.17	190.45	29.25	43.61	42.87
PCC-Vivace	5	9.36	9.70	5.25	149.10	149.81	147.69	5.28	5.43	7.41
WebRTC media	5	1.18	0.64	0.05	139.10	139.63	125.92	18.64	0.74	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2019-03-27 12:43:21
End at: 2019-03-27 12:43:51
Local clock offset: 9.892 ms
Remote clock offset: -10.664 ms


# Below is generated by plot.py at 2019-03-27 15:04:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.29 Mbit/s
95th percentile per-packet one-way delay: 139.292 ms
Loss rate: 22.12%
-- Flow 1:
Average throughput: 21.52 Mbit/s
95th percentile per-packet one-way delay: 140.257 ms
Loss rate: 20.91%
-- Flow 2:
Average throughput: 13.30 Mbit/s
95th percentile per-packet one-way delay: 137.931 ms
Loss rate: 22.07%
-- Flow 3:
Average throughput: 15.04 Mbit/s
95th percentile per-packet one-way delay: 131.668 ms
Loss rate: 27.06%
```

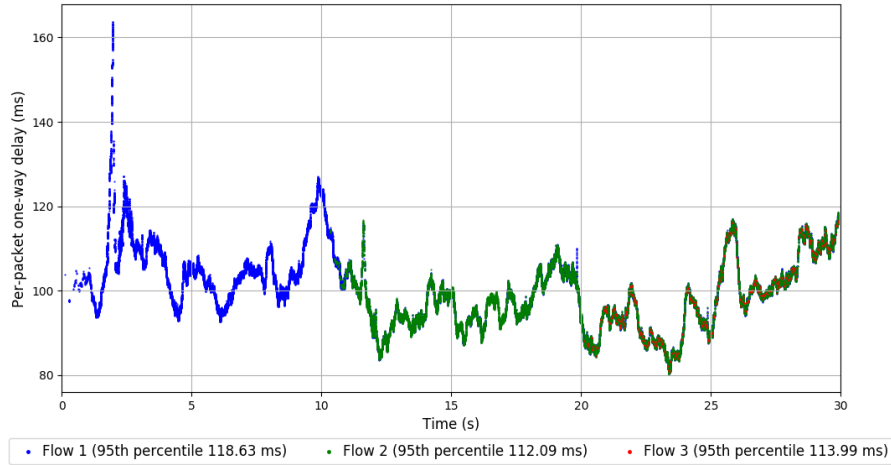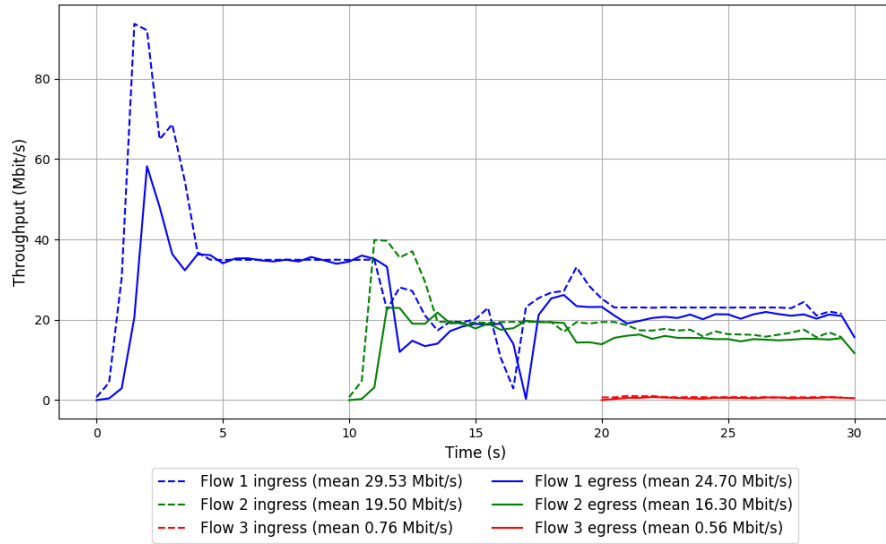Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2019-03-27 13:12:12
End at: 2019-03-27 13:12:42
Local clock offset: 6.84 ms
Remote clock offset: -9.776 ms


# Below is generated by plot.py at 2019-03-27 15:04:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 34.03 Mbit/s
95th percentile per-packet one-way delay: 136.122 ms
Loss rate: 21.50%
-- Flow 1:
Average throughput: 18.89 Mbit/s
95th percentile per-packet one-way delay: 132.661 ms
Loss rate: 19.71%
-- Flow 2:
Average throughput: 13.17 Mbit/s
95th percentile per-packet one-way delay: 133.761 ms
Loss rate: 20.57%
-- Flow 3:
Average throughput: 19.54 Mbit/s
95th percentile per-packet one-way delay: 140.775 ms
Loss rate: 27.43%
```
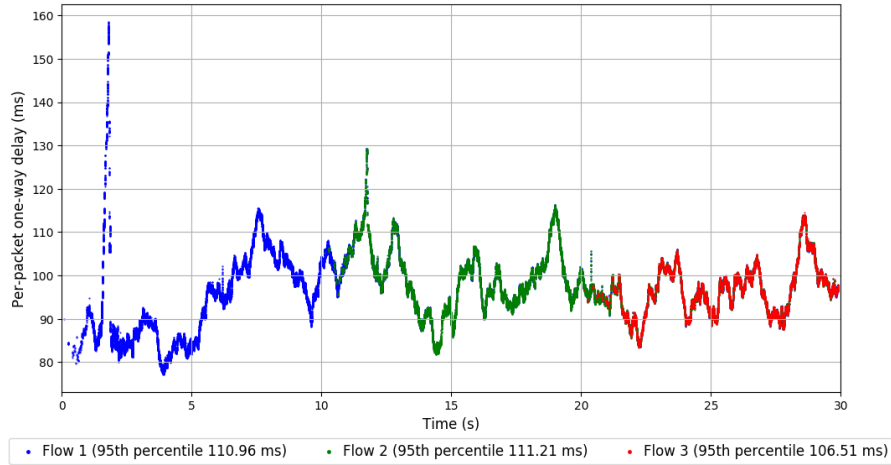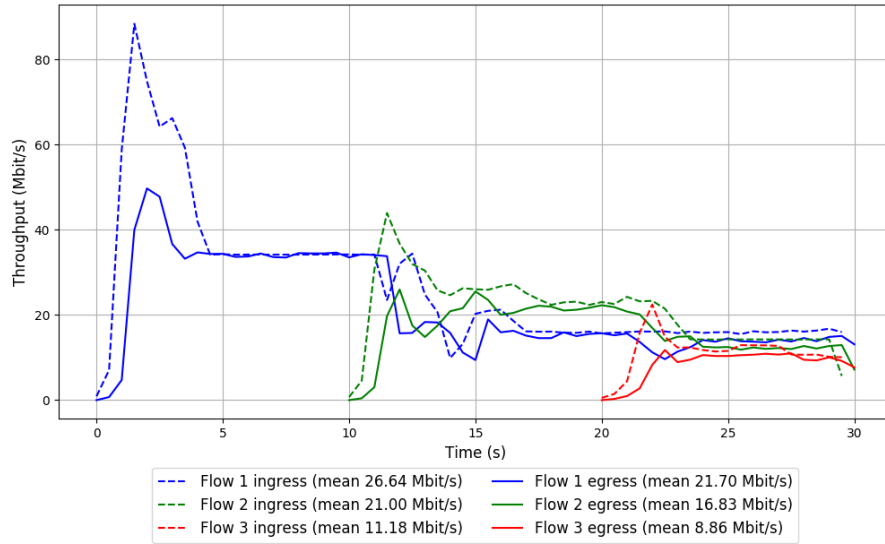
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2019-03-27 13:46:19
End at: 2019-03-27 13:46:49
Local clock offset: 2.821 ms
Remote clock offset: -16.771 ms


# Below is generated by plot.py at 2019-03-27 15:04:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.68 Mbit/s
95th percentile per-packet one-way delay: 115.567 ms
Loss rate: 17.02%
-- Flow 1:
Average throughput: 24.70 Mbit/s
95th percentile per-packet one-way delay: 118.634 ms
Loss rate: 16.85%
-- Flow 2:
Average throughput: 16.30 Mbit/s
95th percentile per-packet one-way delay: 112.095 ms
Loss rate: 17.23%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 113.988 ms
Loss rate: 26.98%
```

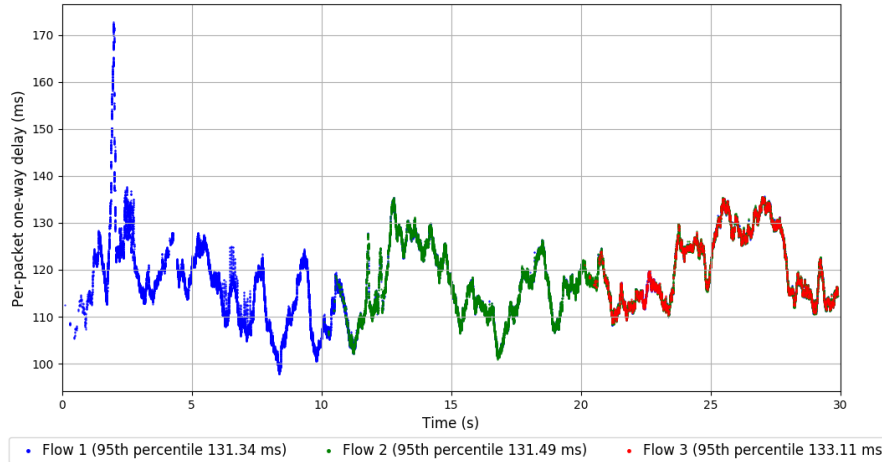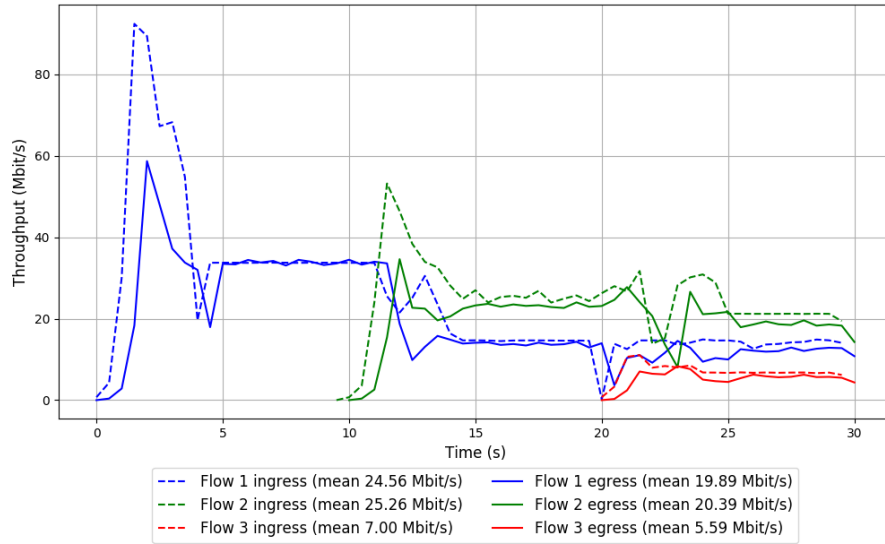Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2019-03-27 14:13:56
End at: 2019-03-27 14:14:26
Local clock offset: 5.728 ms
Remote clock offset: -11.711 ms


# Below is generated by plot.py at 2019-03-27 15:04:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.72 Mbit/s
95th percentile per-packet one-way delay: 110.847 ms
Loss rate: 19.76%
-- Flow 1:
Average throughput: 21.70 Mbit/s
95th percentile per-packet one-way delay: 110.960 ms
Loss rate: 19.00%
-- Flow 2:
Average throughput: 16.83 Mbit/s
95th percentile per-packet one-way delay: 111.211 ms
Loss rate: 20.58%
-- Flow 3:
Average throughput: 8.86 Mbit/s
95th percentile per-packet one-way delay: 106.513 ms
Loss rate: 22.15%
```

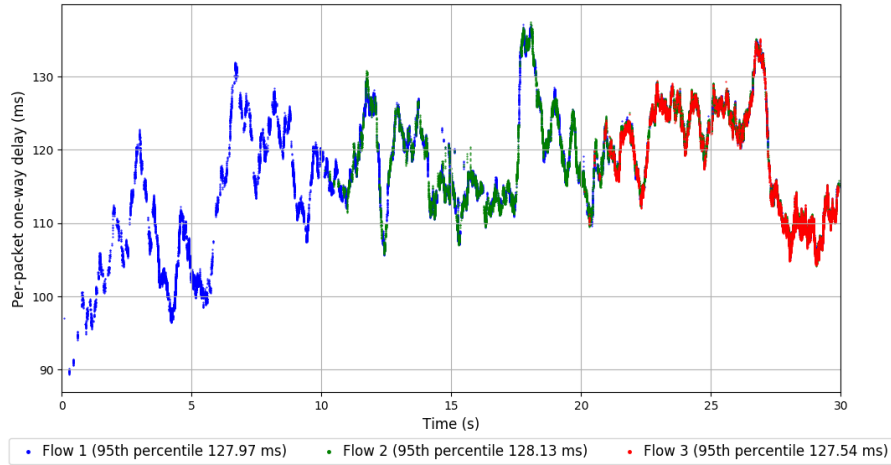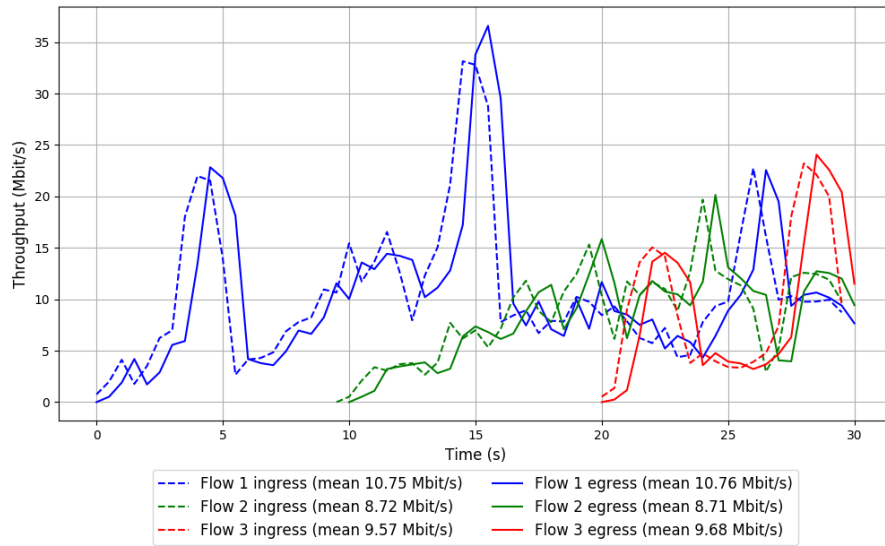Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2019-03-27 15:00:41
End at: 2019-03-27 15:01:11
Local clock offset: 9.154 ms
Remote clock offset: -18.776 ms


# Below is generated by plot.py at 2019-03-27 15:04:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.28 Mbit/s
95th percentile per-packet one-way delay: 131.724 ms
Loss rate: 19.75%
-- Flow 1:
Average throughput: 19.89 Mbit/s
95th percentile per-packet one-way delay: 131.345 ms
Loss rate: 19.45%
-- Flow 2:
Average throughput: 20.39 Mbit/s
95th percentile per-packet one-way delay: 131.487 ms
Loss rate: 19.93%
-- Flow 3:
Average throughput: 5.59 Mbit/s
95th percentile per-packet one-way delay: 133.113 ms
Loss rate: 21.66%
```
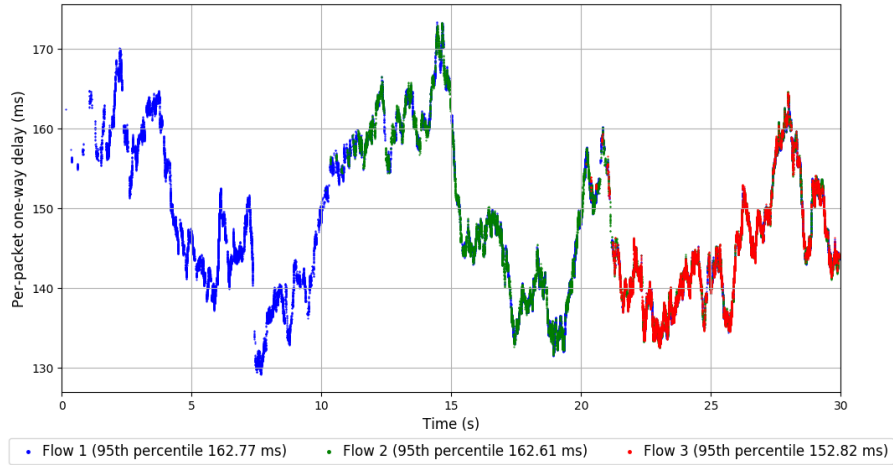
Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2019-03-27 12:42:02
End at: 2019-03-27 12:42:32
Local clock offset: 9.911 ms
Remote clock offset: -10.549 ms


# Below is generated by plot.py at 2019-03-27 15:04:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.72 Mbit/s
95th percentile per-packet one-way delay: 127.889 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 10.76 Mbit/s
95th percentile per-packet one-way delay: 127.970 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 8.71 Mbit/s
95th percentile per-packet one-way delay: 128.128 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 9.68 Mbit/s
95th percentile per-packet one-way delay: 127.537 ms
Loss rate: 0.59%
```
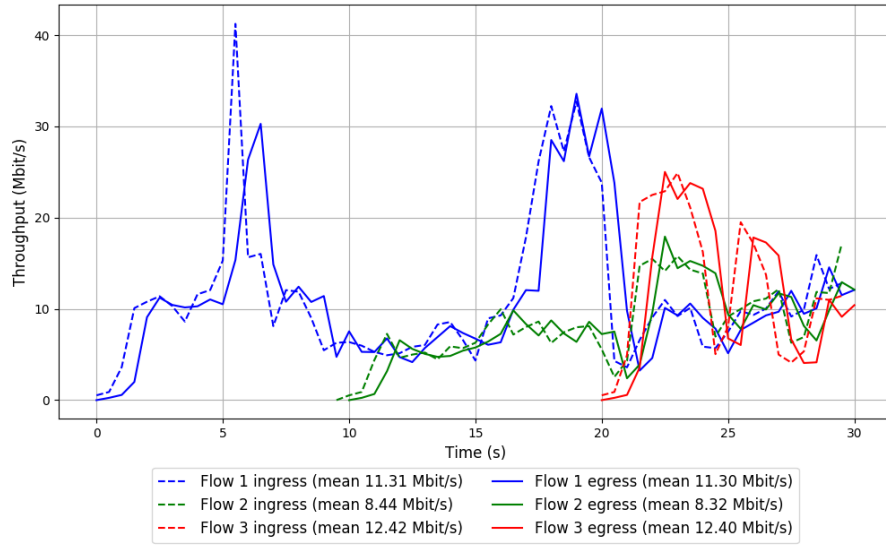
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2019-03-27 13:10:51
End at: 2019-03-27 13:11:21
Local clock offset: 6.744 ms
Remote clock offset: -6.122 ms


# Below is generated by plot.py at 2019-03-27 15:04:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 20.89 Mbit/s
95th percentile per-packet one-way delay: 161.654 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 11.30 Mbit/s
95th percentile per-packet one-way delay: 162.773 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 8.32 Mbit/s
95th percentile per-packet one-way delay: 162.610 ms
Loss rate: 2.36%
-- Flow 3:
Average throughput: 12.40 Mbit/s
95th percentile per-packet one-way delay: 152.822 ms
Loss rate: 2.21%
```
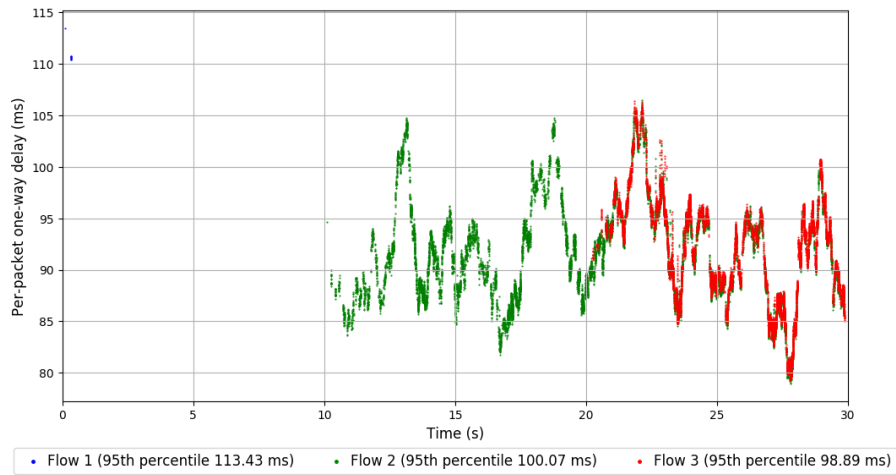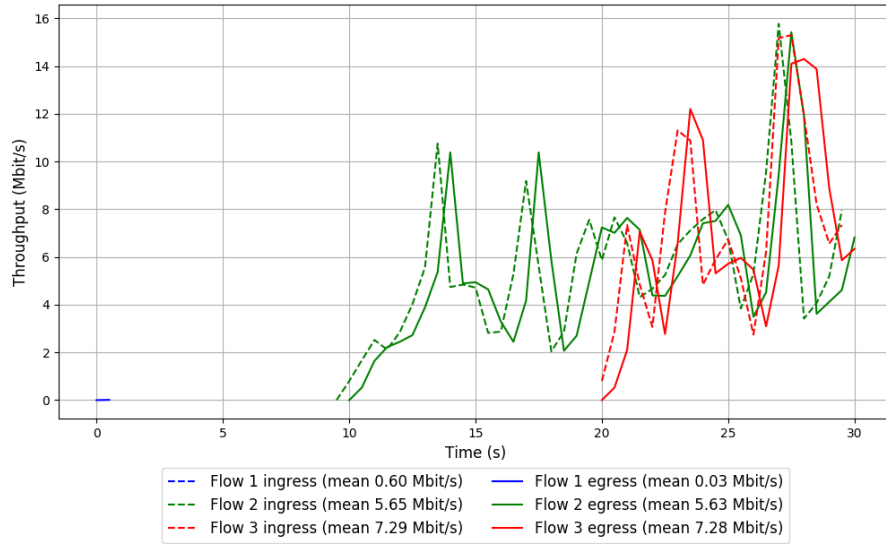
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2019-03-27 13:45:02
End at: 2019-03-27 13:45:32
Local clock offset: 2.635 ms
Remote clock offset: -12.879 ms


# Below is generated by plot.py at 2019-03-27 15:04:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.13 Mbit/s
95th percentile per-packet one-way delay: 99.528 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 113.430 ms
Loss rate: 95.12%
-- Flow 2:
Average throughput: 5.63 Mbit/s
95th percentile per-packet one-way delay: 100.073 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 7.28 Mbit/s
95th percentile per-packet one-way delay: 98.885 ms
Loss rate: 1.70%
```
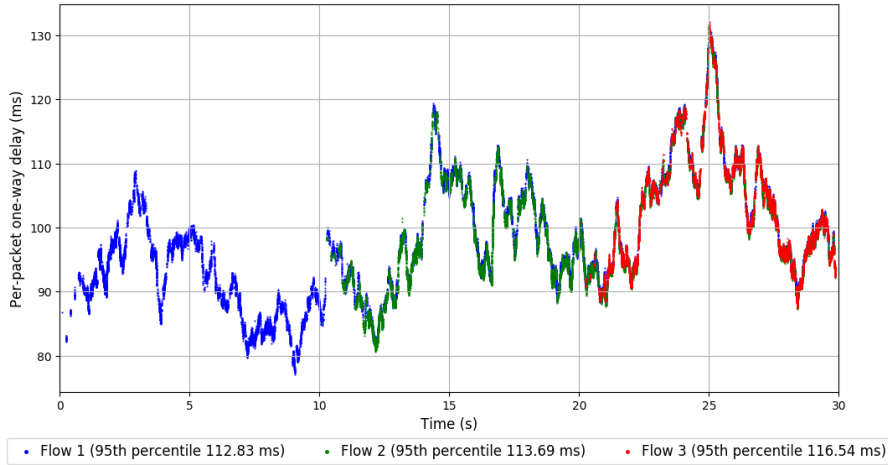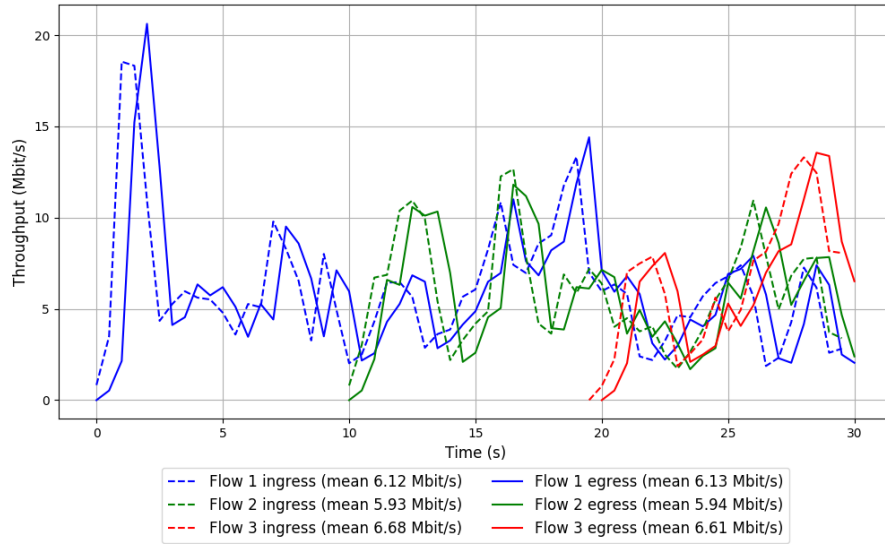
Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2019-03-27 14:12:39
End at: 2019-03-27 14:13:09
Local clock offset: 5.949 ms
Remote clock offset: -16.501 ms


# Below is generated by plot.py at 2019-03-27 15:04:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.23 Mbit/s
95th percentile per-packet one-way delay: 113.634 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 6.13 Mbit/s
95th percentile per-packet one-way delay: 112.826 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 5.94 Mbit/s
95th percentile per-packet one-way delay: 113.685 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 6.61 Mbit/s
95th percentile per-packet one-way delay: 116.538 ms
Loss rate: 2.81%
```
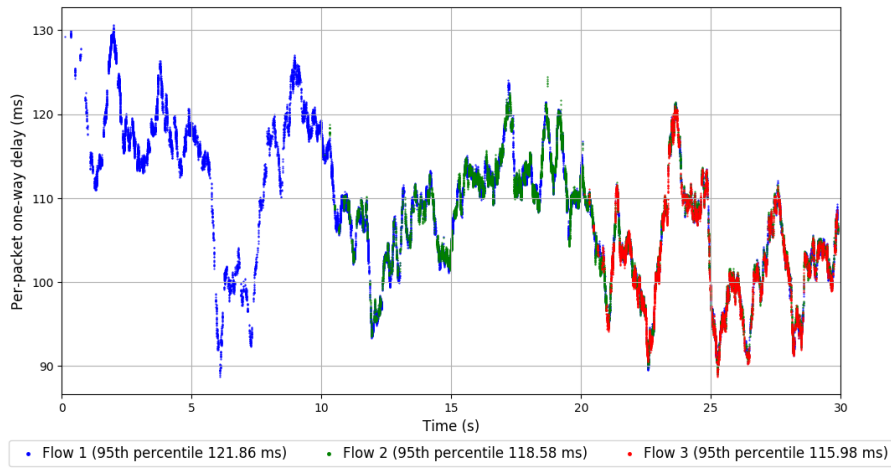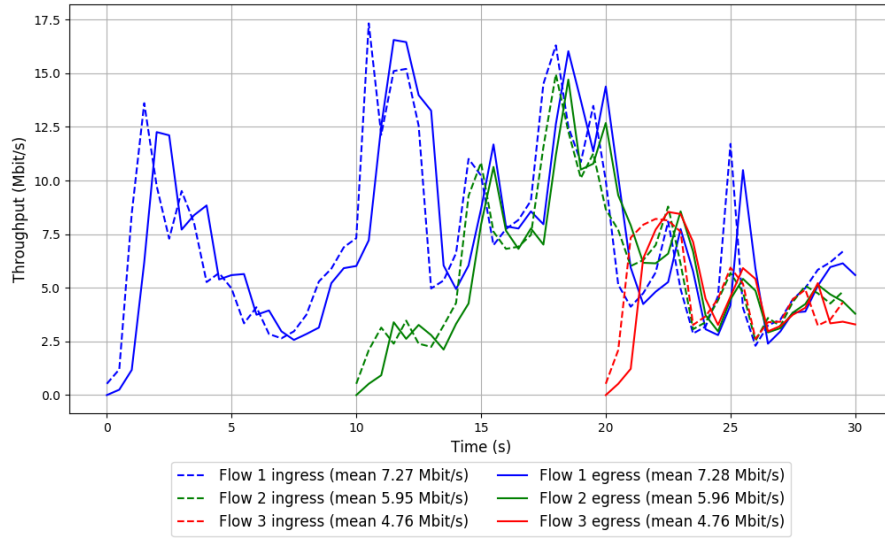
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 6.12 Mbit/s) --- Flow 1 egress (mean 6.13 Mbit/s) ---
Flow 2 ingress (mean 5.93 Mbit/s) --- Flow 2 egress (mean 5.94 Mbit/s) ---
Flow 3 ingress (mean 6.68 Mbit/s) --- Flow 3 egress (mean 6.61 Mbit/s) ---

Flow 1 (95th percentile 112.83 ms) • Flow 2 (95th percentile 113.69 ms) • Flow 3 (95th percentile 116.54 ms)

22

```
Run 5: Statistics of Copa

Start at: 2019-03-27 14:59:22
End at: 2019-03-27 14:59:52
Local clock offset: 9.048 ms
Remote clock offset: -18.884 ms


# Below is generated by plot.py at 2019-03-27 15:04:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.80 Mbit/s
95th percentile per-packet one-way delay: 120.088 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 7.28 Mbit/s
95th percentile per-packet one-way delay: 121.857 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 5.96 Mbit/s
95th percentile per-packet one-way delay: 118.581 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 4.76 Mbit/s
95th percentile per-packet one-way delay: 115.983 ms
Loss rate: 1.51%
```
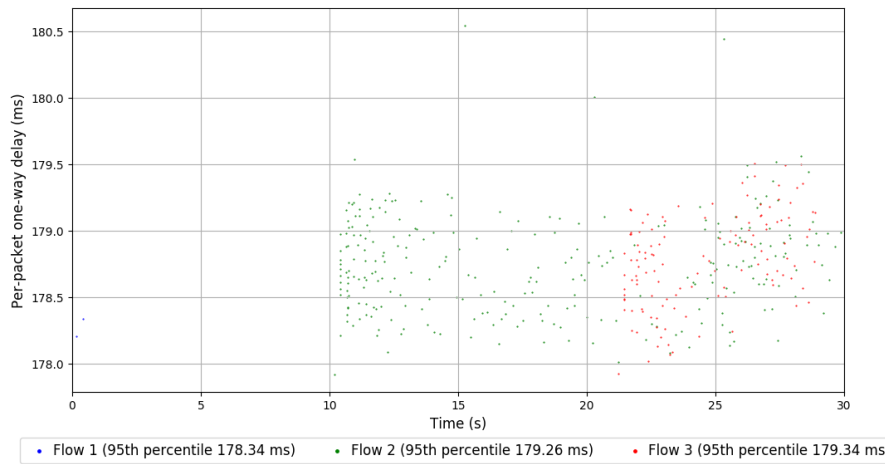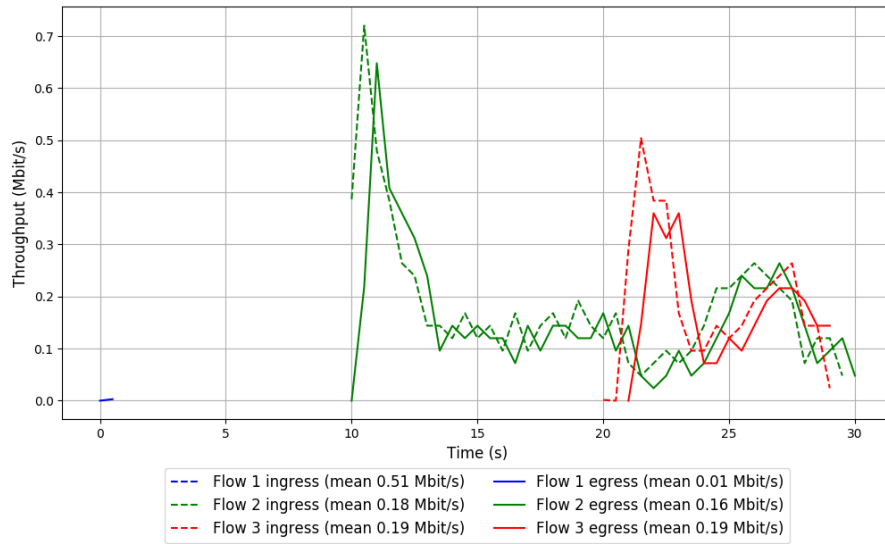
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2019-03-27 12:27:05
End at: 2019-03-27 12:27:35
Local clock offset: 7.911 ms
Remote clock offset: -11.615 ms


# Below is generated by plot.py at 2019-03-27 15:04:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 179.272 ms
Loss rate: 14.97%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 178.340 ms
Loss rate: 98.79%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 179.259 ms
Loss rate: 11.55%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 179.343 ms
Loss rate: 16.24%
```
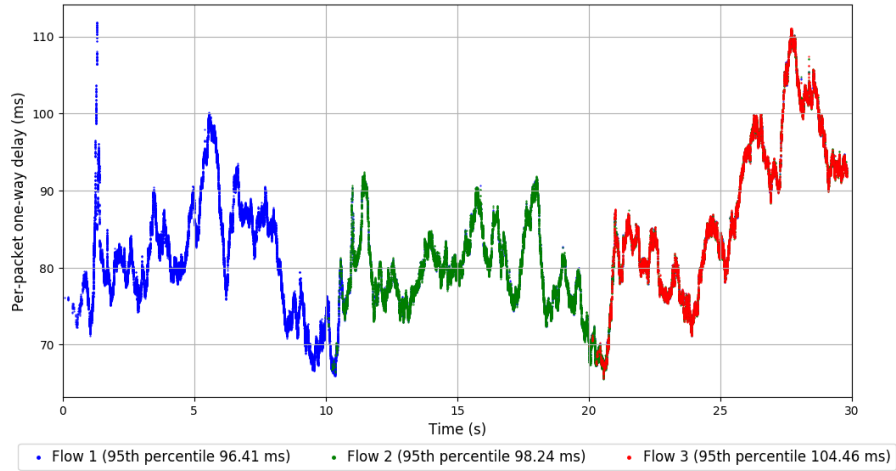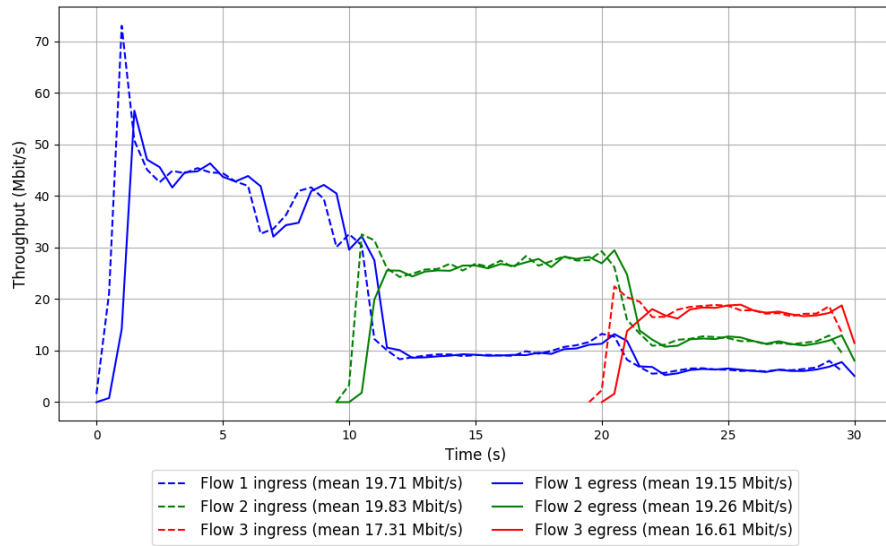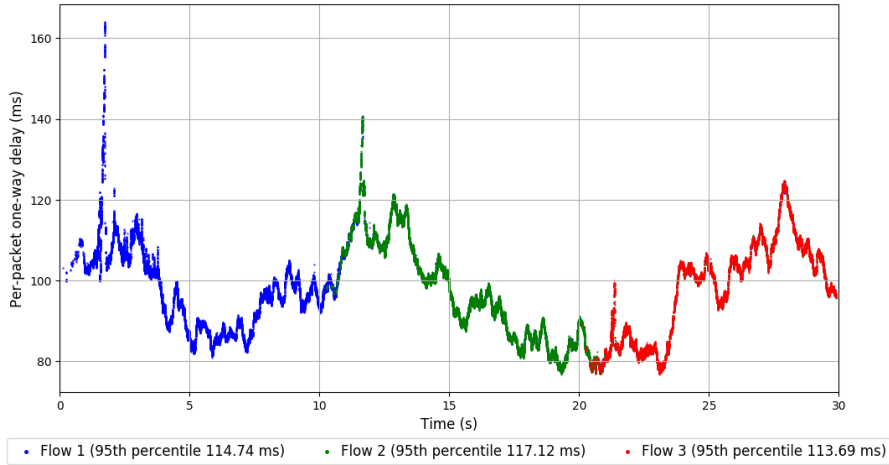
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2019-03-27 12:57:32
End at: 2019-03-27 12:58:02
Local clock offset: 7.401 ms
Remote clock offset: -8.81 ms


# Below is generated by plot.py at 2019-03-27 15:04:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.46 Mbit/s
95th percentile per-packet one-way delay: 98.960 ms
Loss rate: 3.63%
-- Flow 1:
Average throughput: 19.15 Mbit/s
95th percentile per-packet one-way delay: 96.407 ms
Loss rate: 3.28%
-- Flow 2:
Average throughput: 19.26 Mbit/s
95th percentile per-packet one-way delay: 98.242 ms
Loss rate: 3.46%
-- Flow 3:
Average throughput: 16.61 Mbit/s
95th percentile per-packet one-way delay: 104.462 ms
Loss rate: 5.21%
```

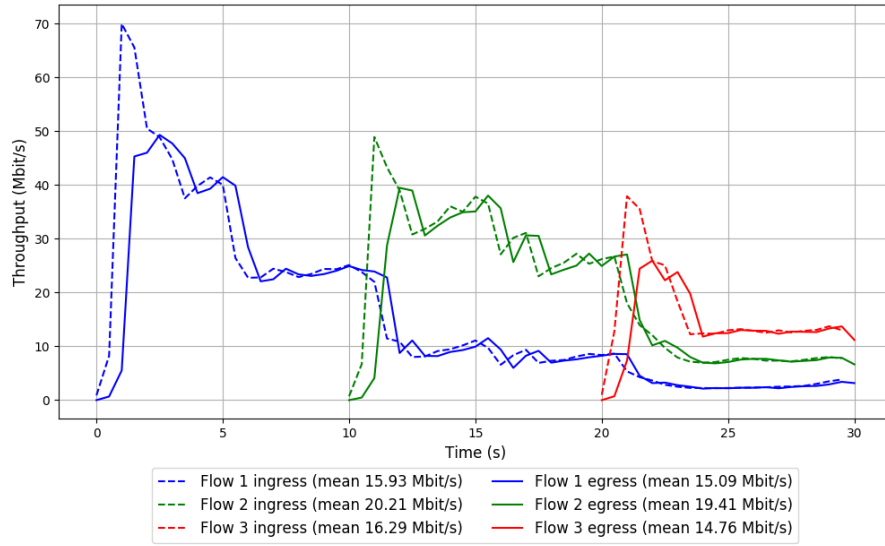Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2019-03-27 13:25:17
End at: 2019-03-27 13:25:47
Local clock offset: 4.242 ms
Remote clock offset: -6.755 ms


# Below is generated by plot.py at 2019-03-27 15:04:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 32.81 Mbit/s
95th percentile per-packet one-way delay: 116.169 ms
Loss rate: 6.17%
-- Flow 1:
Average throughput: 15.09 Mbit/s
95th percentile per-packet one-way delay: 114.737 ms
Loss rate: 5.78%
-- Flow 2:
Average throughput: 19.41 Mbit/s
95th percentile per-packet one-way delay: 117.116 ms
Loss rate: 4.78%
-- Flow 3:
Average throughput: 14.76 Mbit/s
95th percentile per-packet one-way delay: 113.690 ms
Loss rate: 10.78%
```
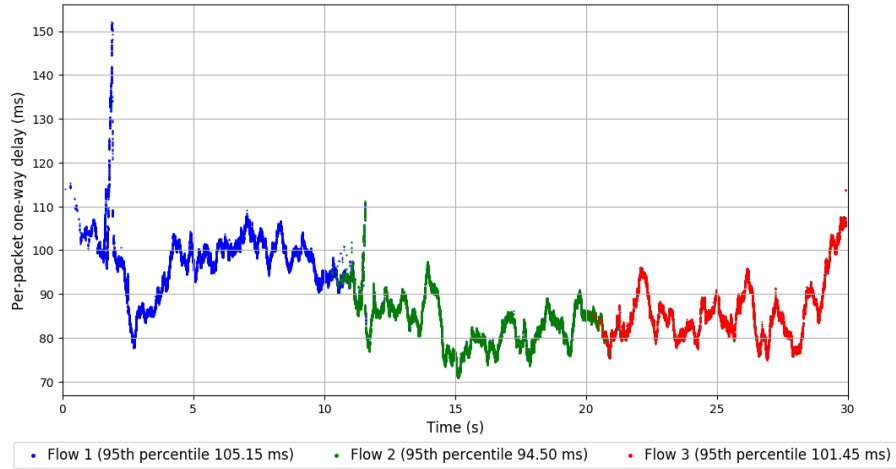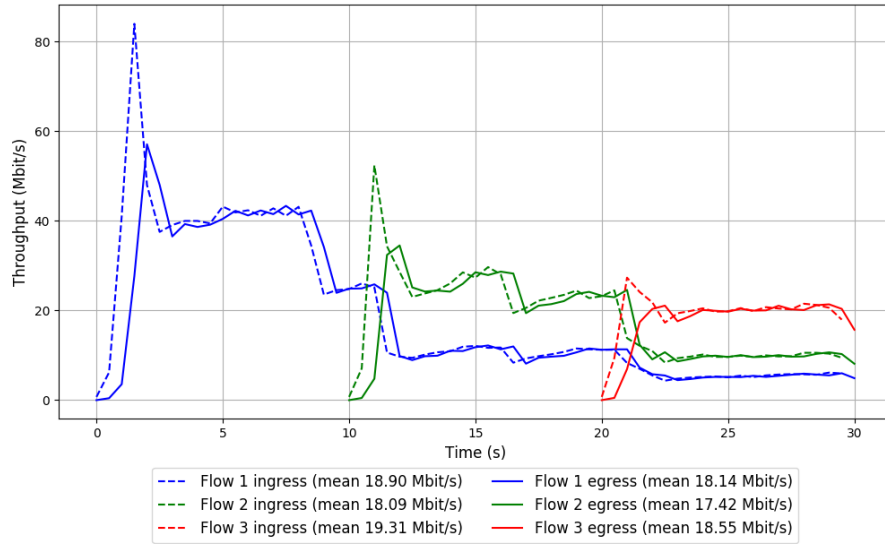
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 15.93 Mbit/s) --- Flow 1 egress (mean 15.09 Mbit/s)
Flow 2 ingress (mean 20.21 Mbit/s) --- Flow 2 egress (mean 19.41 Mbit/s)
Flow 3 ingress (mean 16.29 Mbit/s) --- Flow 3 egress (mean 14.76 Mbit/s)

Flow 1 (95th percentile 114.74 ms)   Flow 2 (95th percentile 117.12 ms)   Flow 3 (95th percentile 113.69 ms)
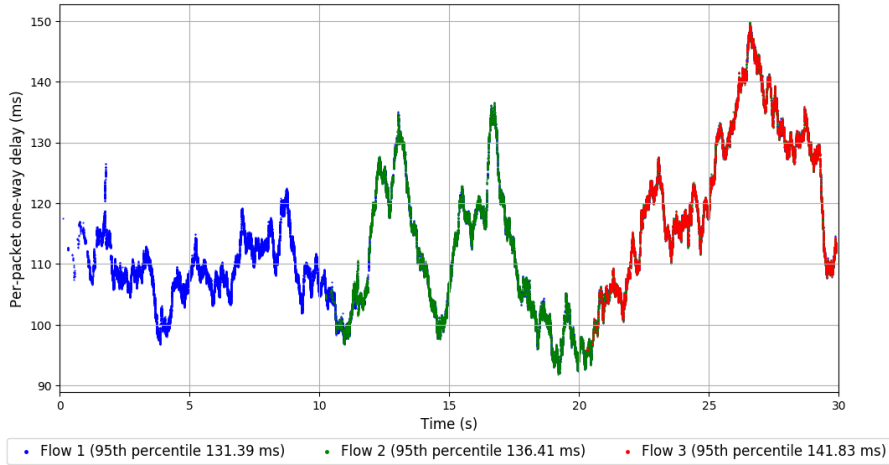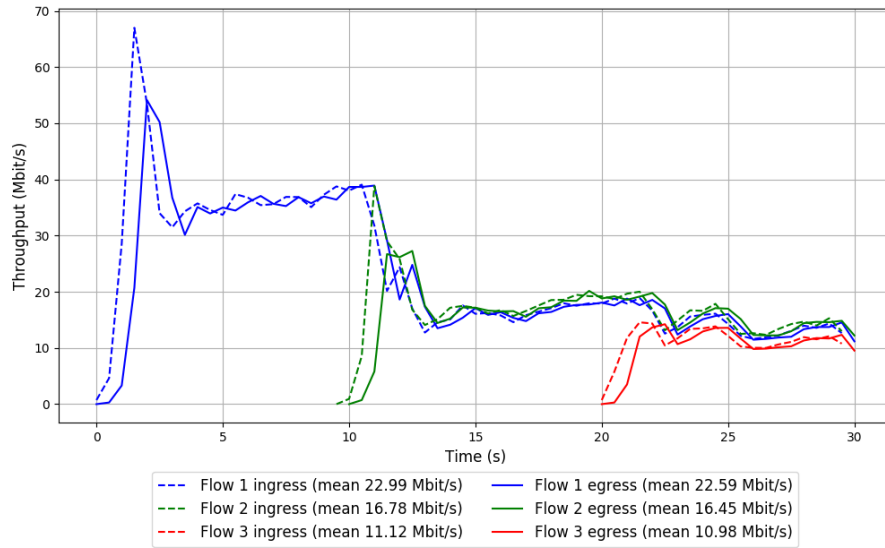
30

```
Run 4: Statistics of TCP Cubic

Start at: 2019-03-27 13:59:30
End at: 2019-03-27 14:00:00
Local clock offset: 5.177 ms
Remote clock offset: -15.203 ms


# Below is generated by plot.py at 2019-03-27 15:04:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.79 Mbit/s
95th percentile per-packet one-way delay: 103.702 ms
Loss rate: 4.68%
-- Flow 1:
Average throughput: 18.14 Mbit/s
95th percentile per-packet one-way delay: 105.148 ms
Loss rate: 4.63%
-- Flow 2:
Average throughput: 17.42 Mbit/s
95th percentile per-packet one-way delay: 94.502 ms
Loss rate: 4.40%
-- Flow 3:
Average throughput: 18.55 Mbit/s
95th percentile per-packet one-way delay: 101.450 ms
Loss rate: 5.32%
```

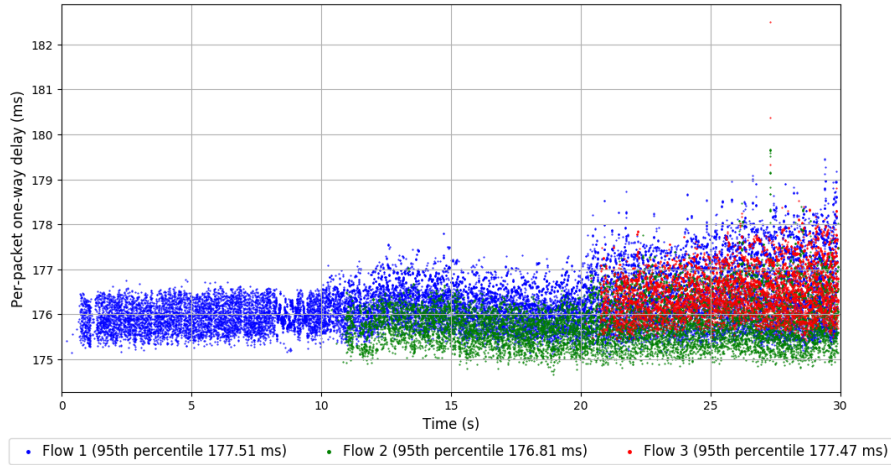Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2019-03-27 14:42:38
End at: 2019-03-27 14:43:08
Local clock offset: 6.837 ms
Remote clock offset: -17.151 ms


# Below is generated by plot.py at 2019-03-27 15:04:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.13 Mbit/s
95th percentile per-packet one-way delay: 135.062 ms
Loss rate: 2.51%
-- Flow 1:
Average throughput: 22.59 Mbit/s
95th percentile per-packet one-way delay: 131.393 ms
Loss rate: 2.32%
-- Flow 2:
Average throughput: 16.45 Mbit/s
95th percentile per-packet one-way delay: 136.415 ms
Loss rate: 2.80%
-- Flow 3:
Average throughput: 10.98 Mbit/s
95th percentile per-packet one-way delay: 141.826 ms
Loss rate: 2.80%
```

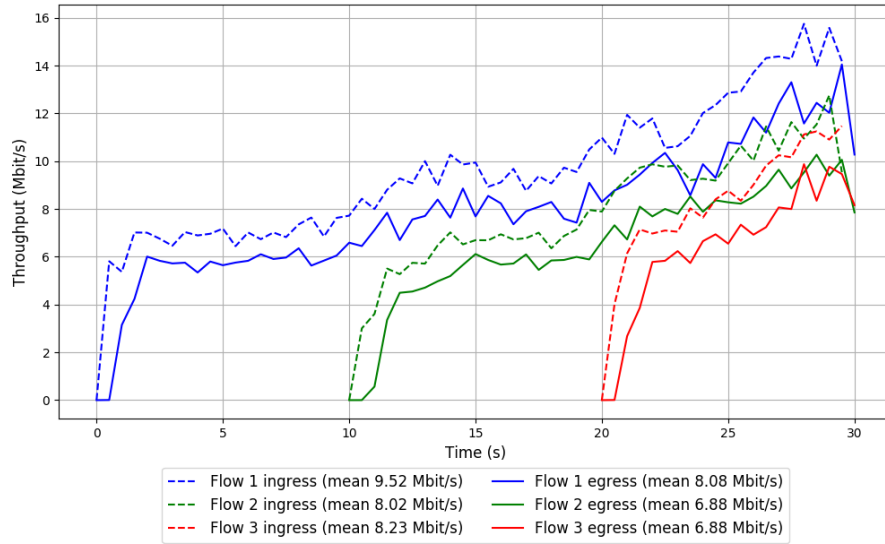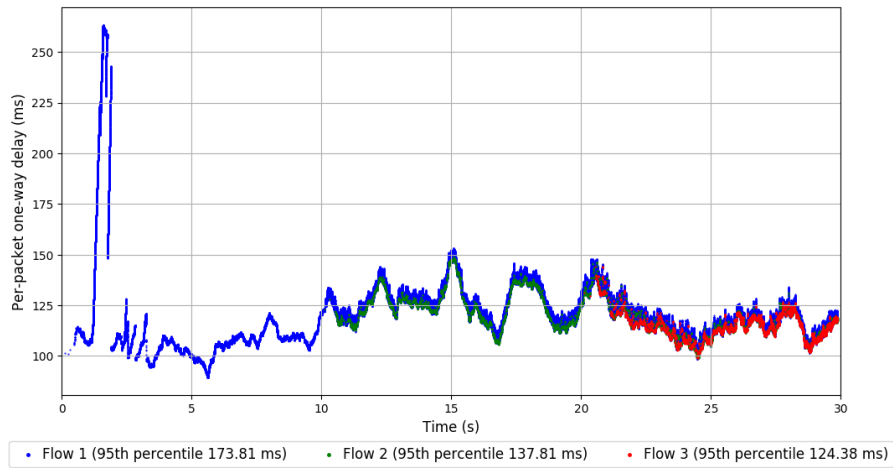Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2019-03-27 12:08:51
End at: 2019-03-27 12:09:21
Local clock offset: 3.937 ms
Remote clock offset: -9.539 ms


# Below is generated by plot.py at 2019-03-27 15:04:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.84 Mbit/s
95th percentile per-packet one-way delay: 177.359 ms
Loss rate: 16.28%
-- Flow 1:
Average throughput: 8.08 Mbit/s
95th percentile per-packet one-way delay: 177.514 ms
Loss rate: 15.83%
-- Flow 2:
Average throughput: 6.88 Mbit/s
95th percentile per-packet one-way delay: 176.815 ms
Loss rate: 15.98%
-- Flow 3:
Average throughput: 6.88 Mbit/s
95th percentile per-packet one-way delay: 177.467 ms
Loss rate: 18.43%
```
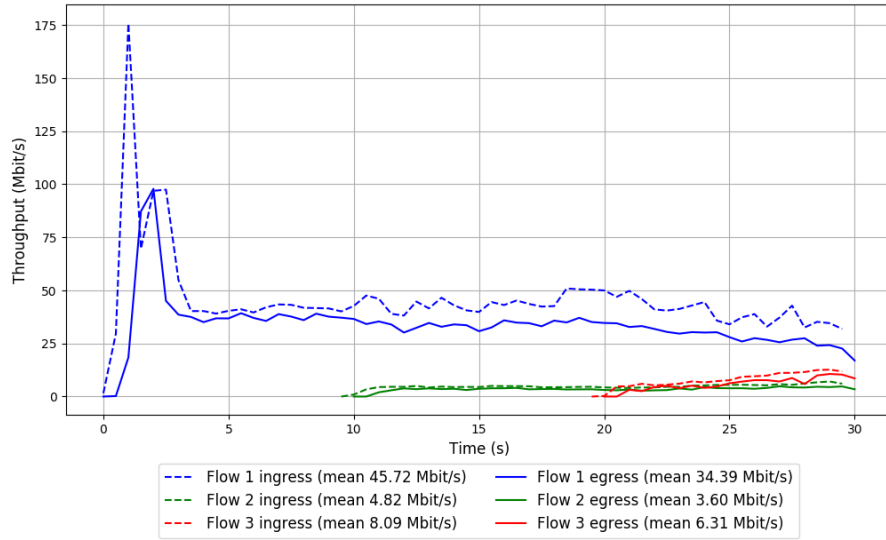
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2019-03-27 12:48:44
End at: 2019-03-27 12:49:14
Local clock offset: 9.183 ms
Remote clock offset: -9.651 ms


# Below is generated by plot.py at 2019-03-27 15:04:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.83 Mbit/s
95th percentile per-packet one-way delay: 156.347 ms
Loss rate: 25.22%
-- Flow 1:
Average throughput: 34.39 Mbit/s
95th percentile per-packet one-way delay: 173.805 ms
Loss rate: 25.25%
-- Flow 2:
Average throughput: 3.60 Mbit/s
95th percentile per-packet one-way delay: 137.809 ms
Loss rate: 26.08%
-- Flow 3:
Average throughput: 6.31 Mbit/s
95th percentile per-packet one-way delay: 124.383 ms
Loss rate: 23.66%
```
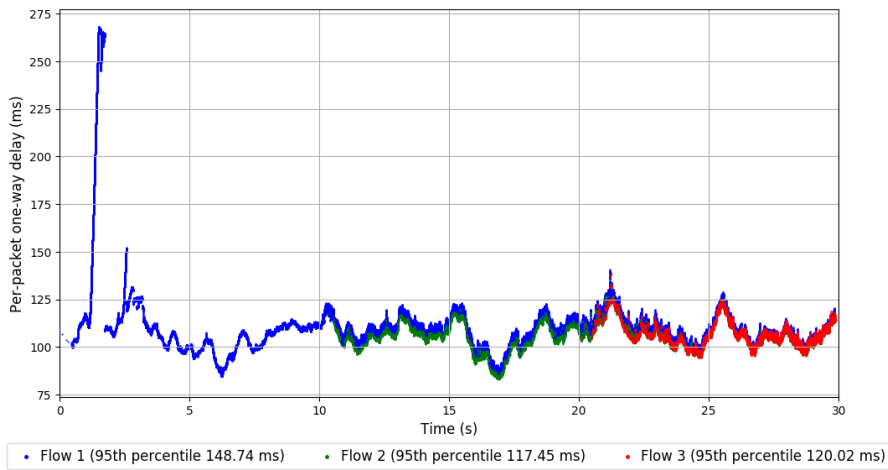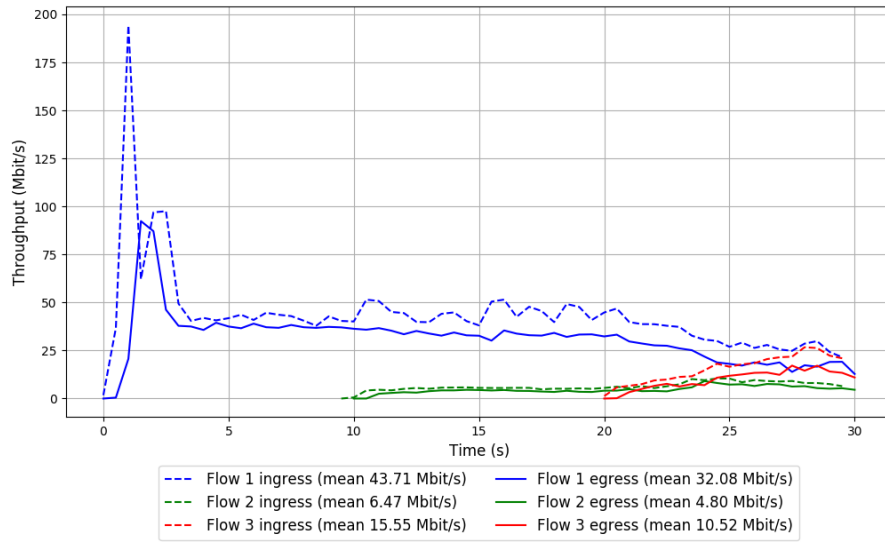
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 45.72 Mbit/s) — Flow 1 egress (mean 34.39 Mbit/s)
Flow 2 ingress (mean 4.82 Mbit/s) — Flow 2 egress (mean 3.60 Mbit/s)
Flow 3 ingress (mean 8.09 Mbit/s) — Flow 3 egress (mean 6.31 Mbit/s)

Flow 1 (95th percentile 173.81 ms) Flow 2 (95th percentile 137.81 ms) Flow 3 (95th percentile 124.38 ms)

```
Run 3: Statistics of FillP

Start at: 2019-03-27 13:17:28
End at: 2019-03-27 13:17:58
Local clock offset: 6.299 ms
Remote clock offset: -6.844 ms


# Below is generated by plot.py at 2019-03-27 15:04:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.69 Mbit/s
95th percentile per-packet one-way delay: 130.496 ms
Loss rate: 27.67%
-- Flow 1:
Average throughput: 32.08 Mbit/s
95th percentile per-packet one-way delay: 148.743 ms
Loss rate: 27.08%
-- Flow 2:
Average throughput: 4.80 Mbit/s
95th percentile per-packet one-way delay: 117.450 ms
Loss rate: 26.51%
-- Flow 3:
Average throughput: 10.52 Mbit/s
95th percentile per-packet one-way delay: 120.024 ms
Loss rate: 33.59%
```
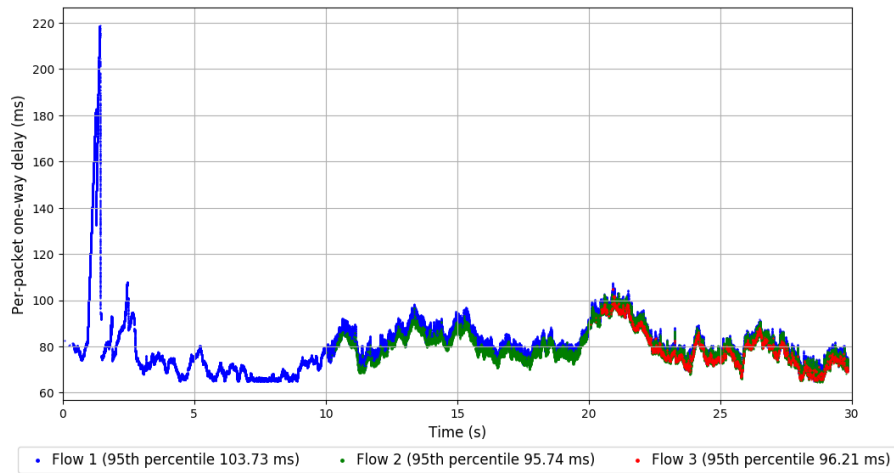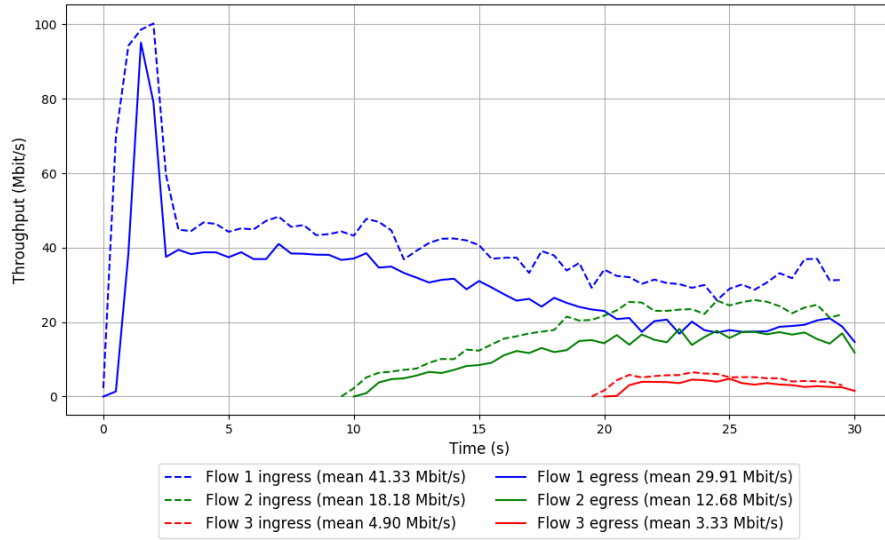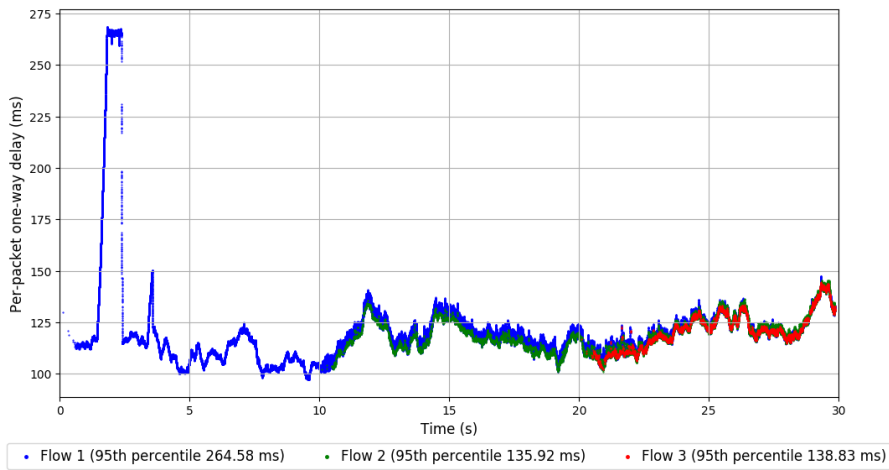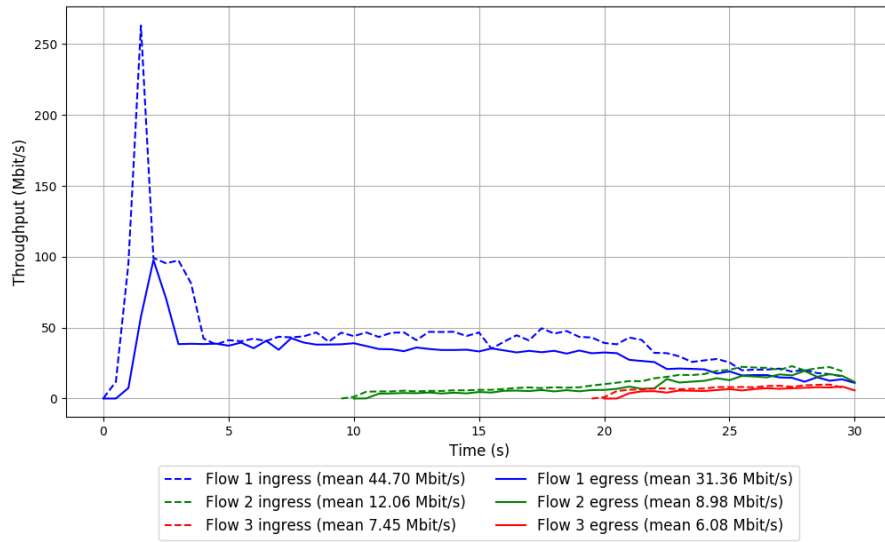
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2019-03-27 13:51:43
End at: 2019-03-27 13:52:13
Local clock offset: 4.008 ms
Remote clock offset: -13.502 ms

# Below is generated by plot.py at 2019-03-27 15:04:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.43 Mbit/s
95th percentile per-packet one-way delay: 98.489 ms
Loss rate: 28.79%
-- Flow 1:
Average throughput: 29.91 Mbit/s
95th percentile per-packet one-way delay: 103.729 ms
Loss rate: 28.01%
-- Flow 2:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 95.741 ms
Loss rate: 30.84%
-- Flow 3:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 96.214 ms
Loss rate: 33.29%
```

Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2019-03-27 14:19:12
End at: 2019-03-27 14:19:42
Local clock offset: 6.034 ms
Remote clock offset: -14.109 ms


# Below is generated by plot.py at 2019-03-27 15:04:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.32 Mbit/s
95th percentile per-packet one-way delay: 215.820 ms
Loss rate: 29.28%
-- Flow 1:
Average throughput: 31.36 Mbit/s
95th percentile per-packet one-way delay: 264.576 ms
Loss rate: 30.35%
-- Flow 2:
Average throughput: 8.98 Mbit/s
95th percentile per-packet one-way delay: 135.920 ms
Loss rate: 26.15%
-- Flow 3:
Average throughput: 6.08 Mbit/s
95th percentile per-packet one-way delay: 138.827 ms
Loss rate: 20.13%
```
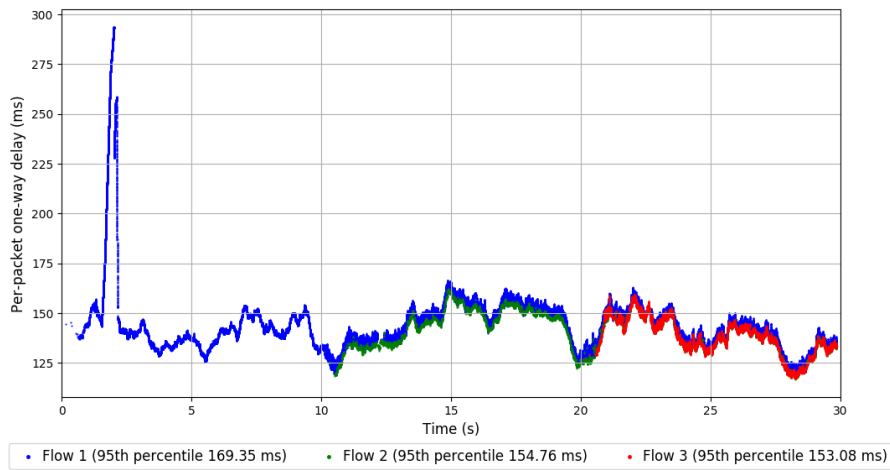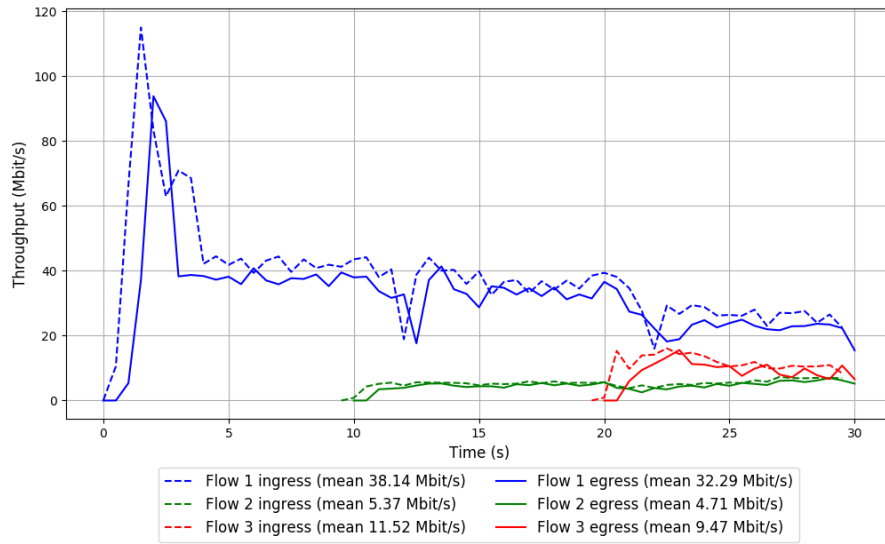
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 44.70 Mbit/s) — — — Flow 1 egress (mean 31.36 Mbit/s)
Flow 2 ingress (mean 12.06 Mbit/s) — — — Flow 2 egress (mean 8.98 Mbit/s)
Flow 3 ingress (mean 7.45 Mbit/s) — — — Flow 3 egress (mean 6.08 Mbit/s)

Flow 1 (95th percentile 264.58 ms)   Flow 2 (95th percentile 135.92 ms)   Flow 3 (95th percentile 138.83 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2019-03-27 12:35:21
End at: 2019-03-27 12:35:51
Local clock offset: 9.183 ms
Remote clock offset: -10.522 ms


# Below is generated by plot.py at 2019-03-27 15:04:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.51 Mbit/s
95th percentile per-packet one-way delay: 161.248 ms
Loss rate: 16.04%
-- Flow 1:
Average throughput: 32.29 Mbit/s
95th percentile per-packet one-way delay: 169.350 ms
Loss rate: 15.96%
-- Flow 2:
Average throughput: 4.71 Mbit/s
95th percentile per-packet one-way delay: 154.758 ms
Loss rate: 13.25%
-- Flow 3:
Average throughput: 9.47 Mbit/s
95th percentile per-packet one-way delay: 153.080 ms
Loss rate: 19.47%
```
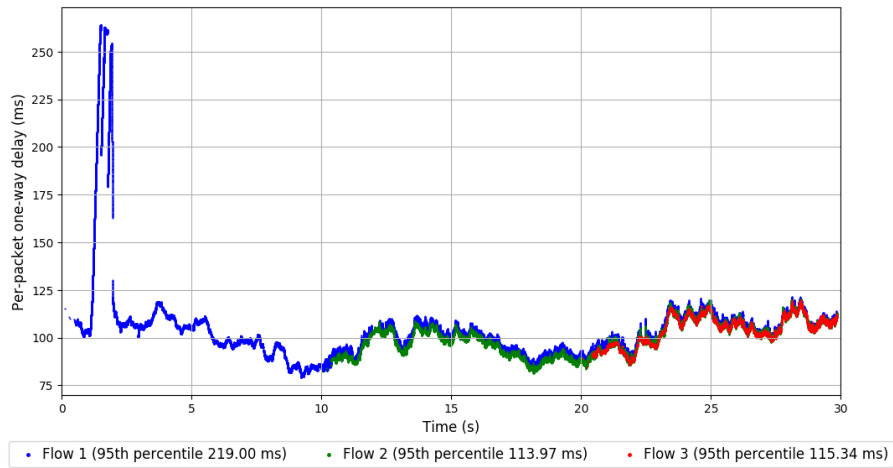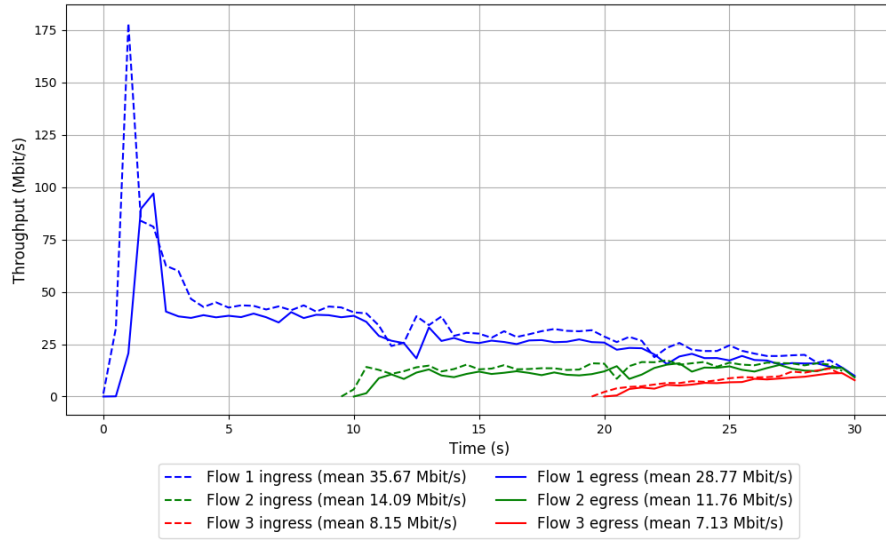
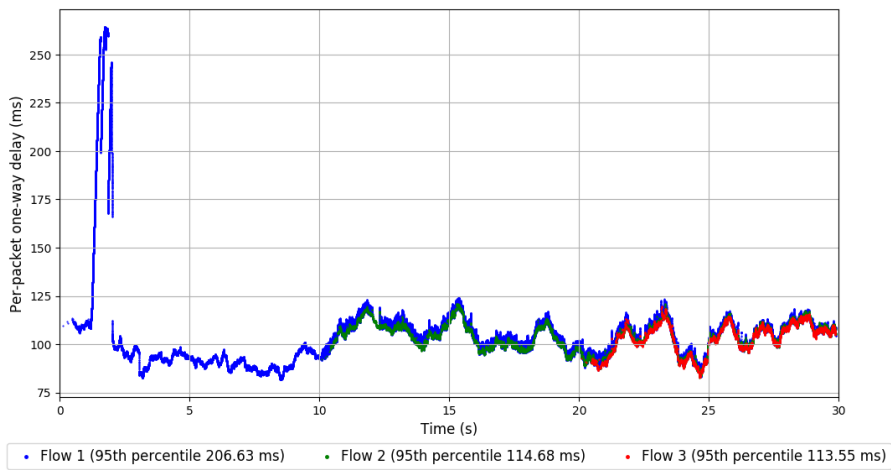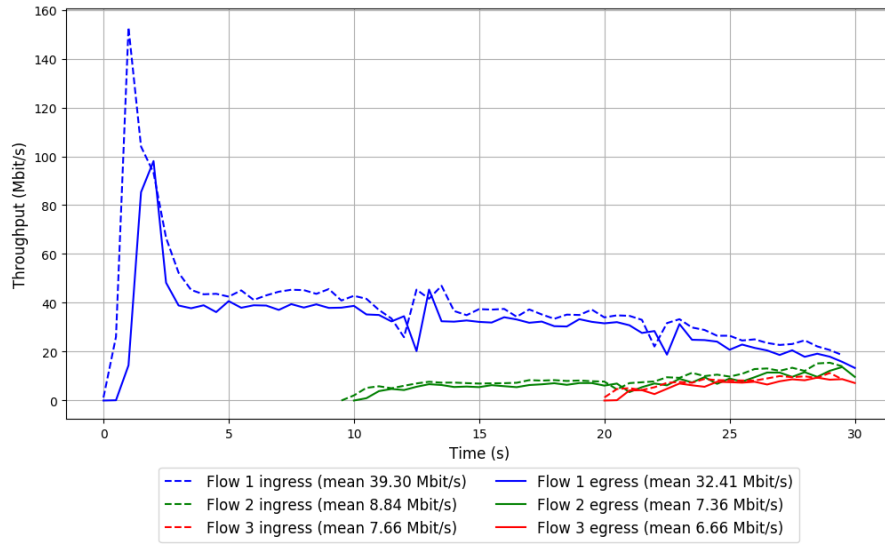Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 38.14 Mbit/s)   Flow 1 egress (mean 32.29 Mbit/s)
Flow 2 ingress (mean 5.37 Mbit/s)   Flow 2 egress (mean 4.71 Mbit/s)
Flow 3 ingress (mean 11.52 Mbit/s)   Flow 3 egress (mean 9.47 Mbit/s)

Flow 1 (95th percentile 169.35 ms)   Flow 2 (95th percentile 154.76 ms)   Flow 3 (95th percentile 153.08 ms)

46

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-03-27 13:04:10
End at: 2019-03-27 13:04:40
Local clock offset: 7.039 ms
Remote clock offset: -9.678 ms


# Below is generated by plot.py at 2019-03-27 15:05:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.95 Mbit/s
95th percentile per-packet one-way delay: 191.060 ms
Loss rate: 18.90%
-- Flow 1:
Average throughput: 28.77 Mbit/s
95th percentile per-packet one-way delay: 219.004 ms
Loss rate: 19.77%
-- Flow 2:
Average throughput: 11.76 Mbit/s
95th percentile per-packet one-way delay: 113.970 ms
Loss rate: 17.05%
-- Flow 3:
Average throughput: 7.13 Mbit/s
95th percentile per-packet one-way delay: 115.345 ms
Loss rate: 13.91%
```

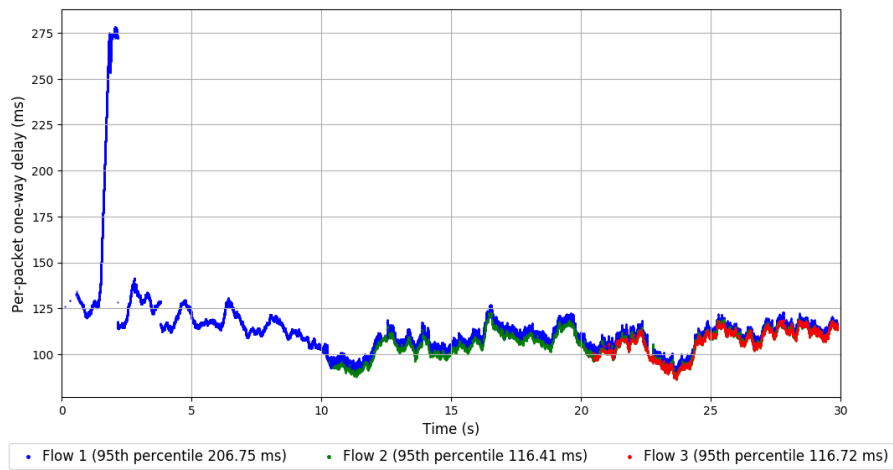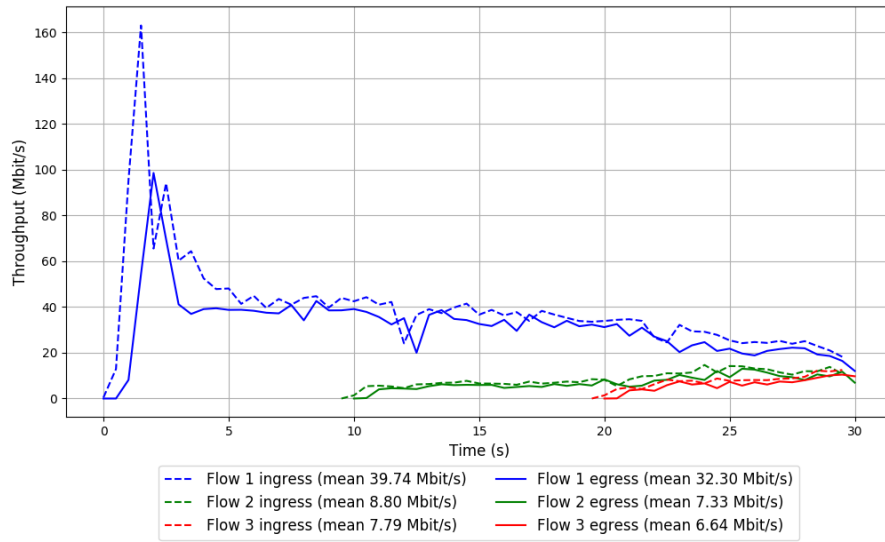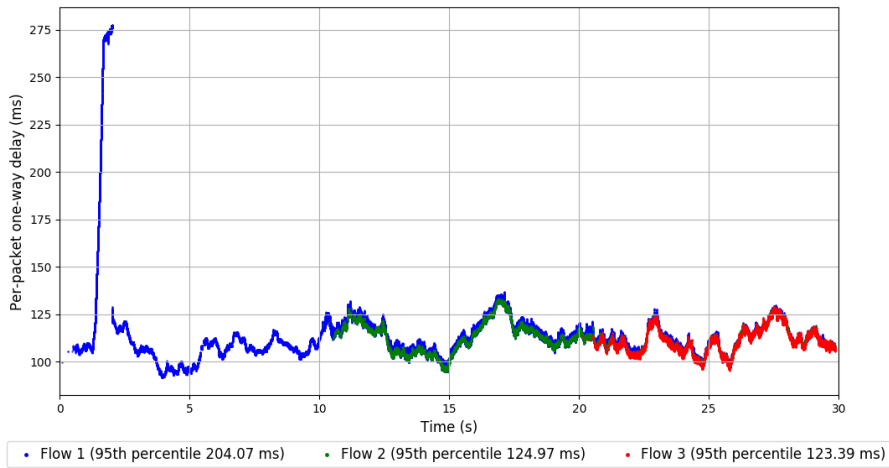Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 35.67 Mbit/s)   Flow 1 egress (mean 28.77 Mbit/s)
Flow 2 ingress (mean 14.09 Mbit/s)   Flow 2 egress (mean 11.76 Mbit/s)
Flow 3 ingress (mean 8.15 Mbit/s)   Flow 3 egress (mean 7.13 Mbit/s)

Flow 1 (95th percentile 219.00 ms)   Flow 2 (95th percentile 113.97 ms)   Flow 3 (95th percentile 115.34 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2019-03-27 13:31:46
End at: 2019-03-27 13:32:16
Local clock offset: 3.482 ms
Remote clock offset: -16.954 ms


# Below is generated by plot.py at 2019-03-27 15:05:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.49 Mbit/s
95th percentile per-packet one-way delay: 185.552 ms
Loss rate: 17.76%
-- Flow 1:
Average throughput: 32.41 Mbit/s
95th percentile per-packet one-way delay: 206.632 ms
Loss rate: 18.02%
-- Flow 2:
Average throughput: 7.36 Mbit/s
95th percentile per-packet one-way delay: 114.679 ms
Loss rate: 17.37%
-- Flow 3:
Average throughput: 6.66 Mbit/s
95th percentile per-packet one-way delay: 113.546 ms
Loss rate: 14.55%
```

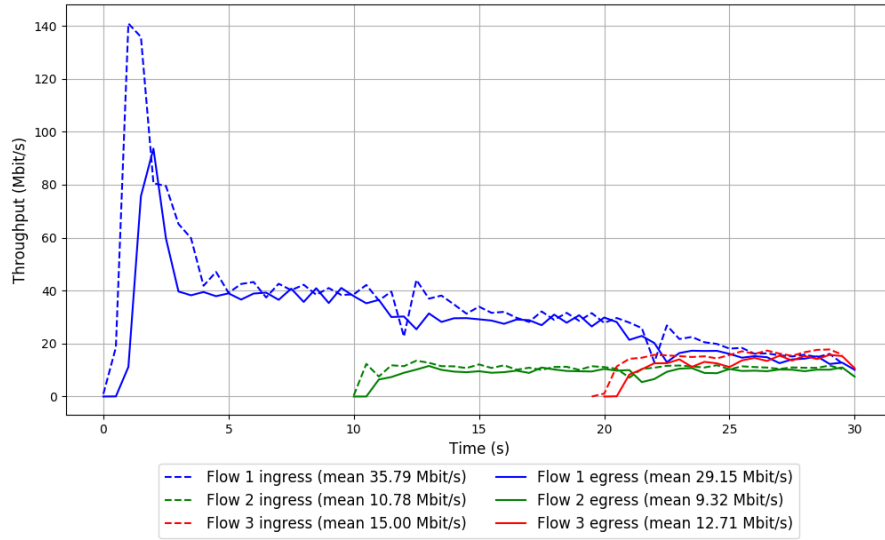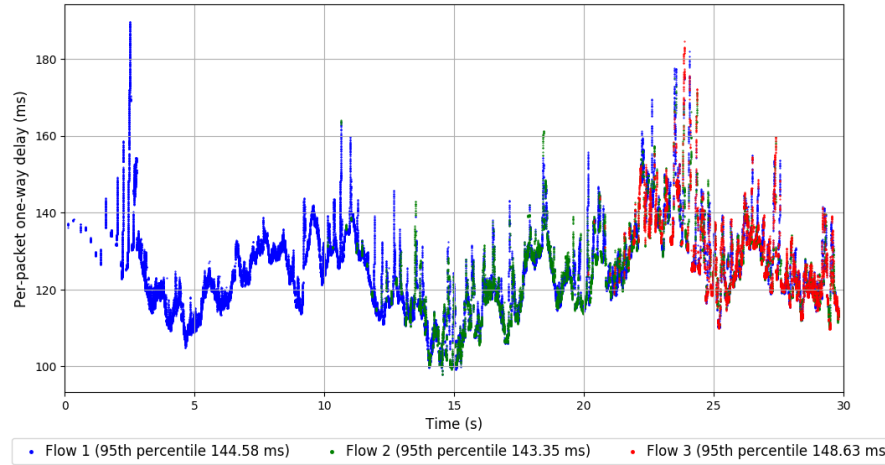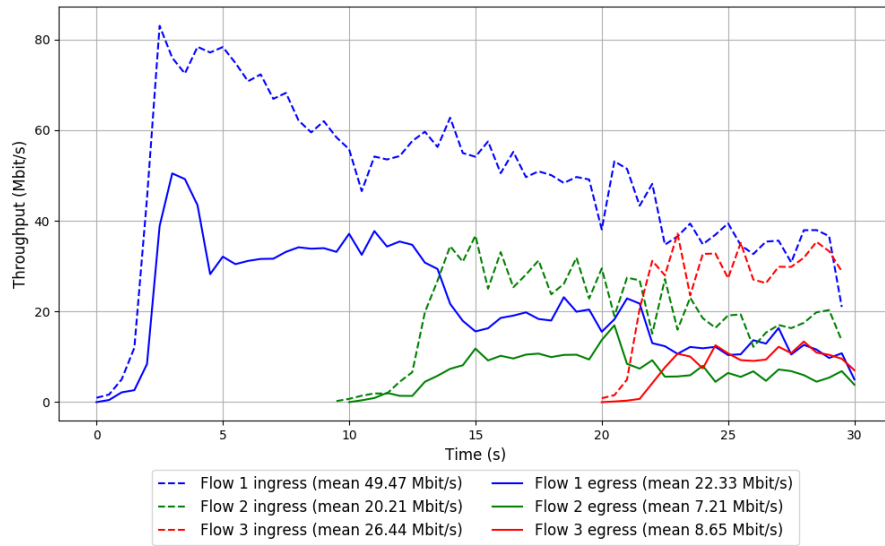Run 3: Report of FillP-Sheep — Data Link

```
Run 4: Statistics of FillP-Sheep

Start at: 2019-03-27 14:06:06
End at: 2019-03-27 14:06:36
Local clock offset: 5.468 ms
Remote clock offset: -17.606 ms


# Below is generated by plot.py at 2019-03-27 15:05:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.36 Mbit/s
95th percentile per-packet one-way delay: 161.478 ms
Loss rate: 18.85%
-- Flow 1:
Average throughput: 32.30 Mbit/s
95th percentile per-packet one-way delay: 206.751 ms
Loss rate: 19.23%
-- Flow 2:
Average throughput: 7.33 Mbit/s
95th percentile per-packet one-way delay: 116.409 ms
Loss rate: 17.42%
-- Flow 3:
Average throughput: 6.64 Mbit/s
95th percentile per-packet one-way delay: 116.723 ms
Loss rate: 16.35%
```

Run 4: Report of FillP-Sheep — Data Link

```
Run 5: Statistics of FillP-Sheep

Start at: 2019-03-27 14:52:45
End at: 2019-03-27 14:53:15
Local clock offset: 8.299 ms
Remote clock offset: -11.263 ms


# Below is generated by plot.py at 2019-03-27 15:05:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.49 Mbit/s
95th percentile per-packet one-way delay: 136.558 ms
Loss rate: 18.09%
-- Flow 1:
Average throughput: 29.15 Mbit/s
95th percentile per-packet one-way delay: 204.069 ms
Loss rate: 19.01%
-- Flow 2:
Average throughput: 9.32 Mbit/s
95th percentile per-packet one-way delay: 124.974 ms
Loss rate: 14.32%
-- Flow 3:
Average throughput: 12.71 Mbit/s
95th percentile per-packet one-way delay: 123.392 ms
Loss rate: 16.93%
```
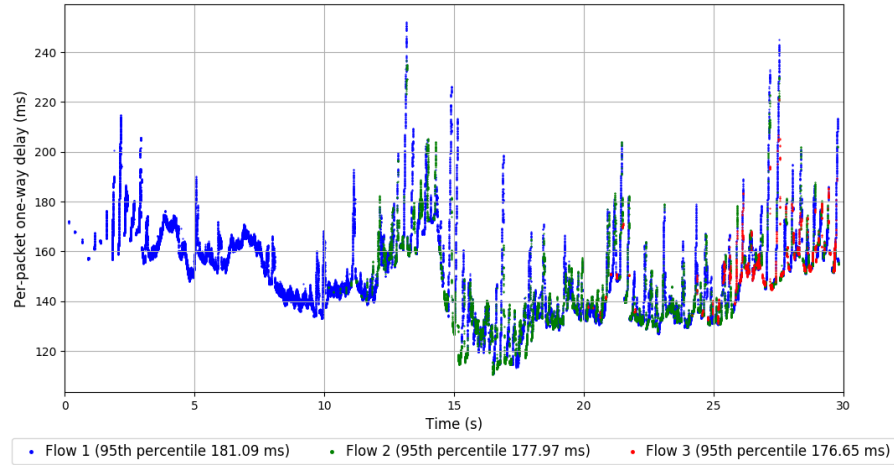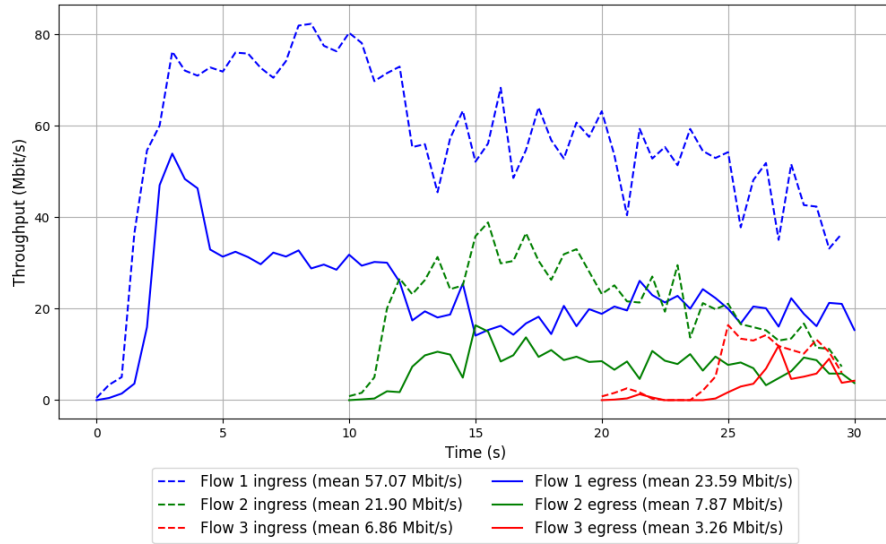
Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2019-03-27 12:40:40
End at: 2019-03-27 12:41:10
Local clock offset: 9.772 ms
Remote clock offset: -13.079 ms


# Below is generated by plot.py at 2019-03-27 15:05:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 29.91 Mbit/s
95th percentile per-packet one-way delay: 145.314 ms
Loss rate: 58.48%
-- Flow 1:
Average throughput: 22.33 Mbit/s
95th percentile per-packet one-way delay: 144.577 ms
Loss rate: 55.16%
-- Flow 2:
Average throughput: 7.21 Mbit/s
95th percentile per-packet one-way delay: 143.346 ms
Loss rate: 64.67%
-- Flow 3:
Average throughput: 8.65 Mbit/s
95th percentile per-packet one-way delay: 148.631 ms
Loss rate: 67.84%
```
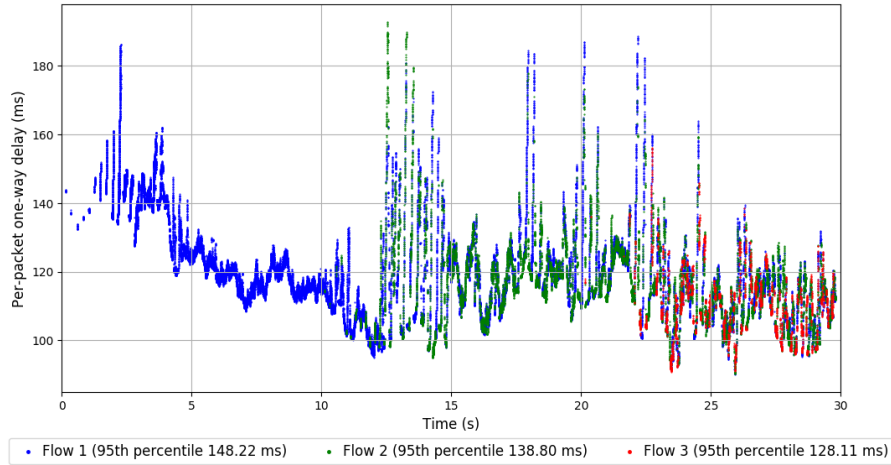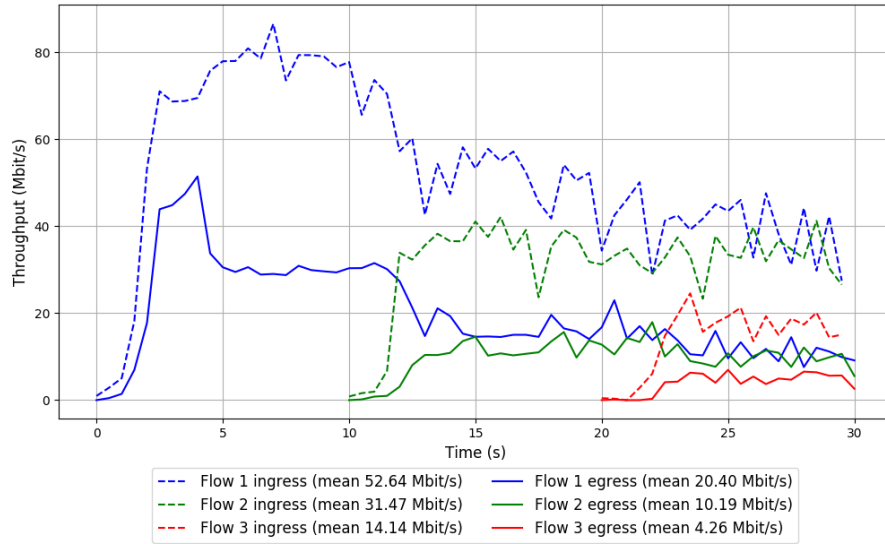
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2019-03-27 13:09:29
End at: 2019-03-27 13:09:59
Local clock offset: 6.747 ms
Remote clock offset: -5.729 ms


# Below is generated by plot.py at 2019-03-27 15:05:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 29.86 Mbit/s
95th percentile per-packet one-way delay: 180.398 ms
Loss rate: 59.88%
-- Flow 1:
Average throughput: 23.59 Mbit/s
95th percentile per-packet one-way delay: 181.095 ms
Loss rate: 58.98%
-- Flow 2:
Average throughput: 7.87 Mbit/s
95th percentile per-packet one-way delay: 177.967 ms
Loss rate: 64.41%
-- Flow 3:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 176.647 ms
Loss rate: 53.40%
```
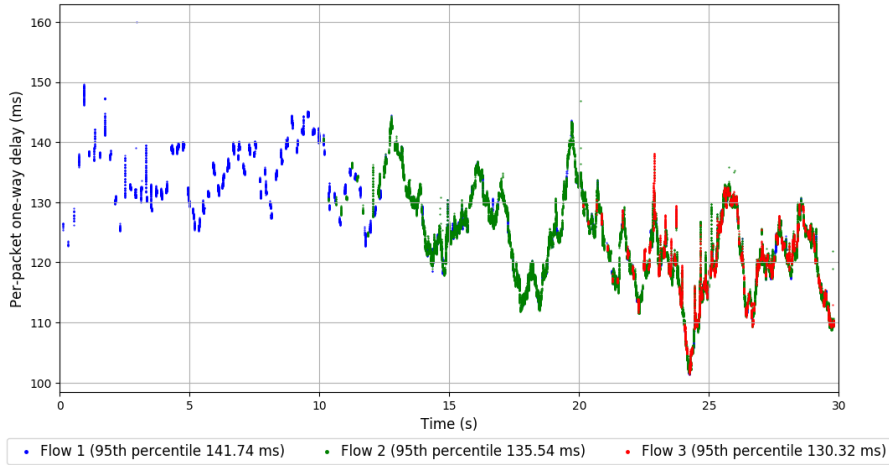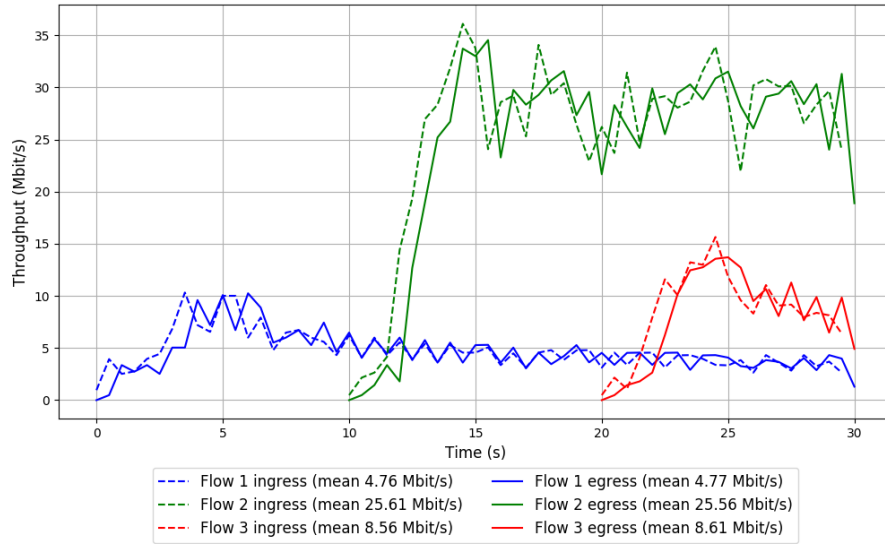
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-03-27 13:43:34
End at: 2019-03-27 13:44:04
Local clock offset: 2.719 ms
Remote clock offset: -9.911 ms


# Below is generated by plot.py at 2019-03-27 15:05:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 28.53 Mbit/s
95th percentile per-packet one-way delay: 147.141 ms
Loss rate: 63.77%
-- Flow 1:
Average throughput: 20.40 Mbit/s
95th percentile per-packet one-way delay: 148.222 ms
Loss rate: 61.53%
-- Flow 2:
Average throughput: 10.19 Mbit/s
95th percentile per-packet one-way delay: 138.801 ms
Loss rate: 67.92%
-- Flow 3:
Average throughput: 4.26 Mbit/s
95th percentile per-packet one-way delay: 128.111 ms
Loss rate: 70.47%
```
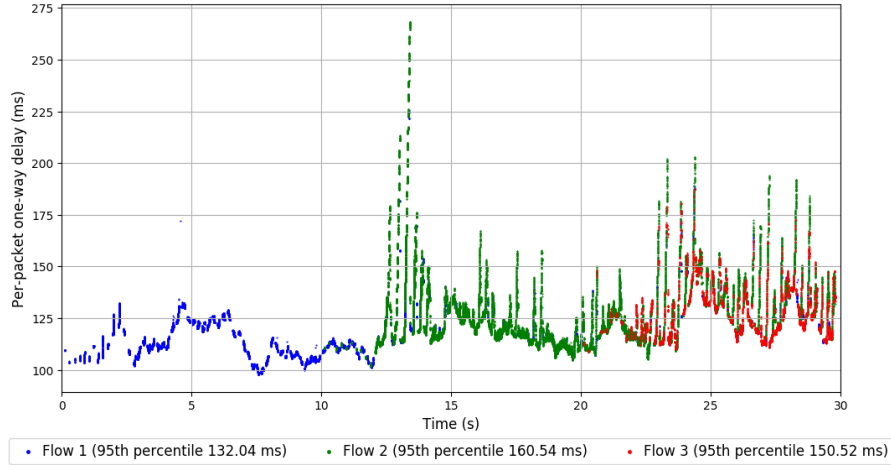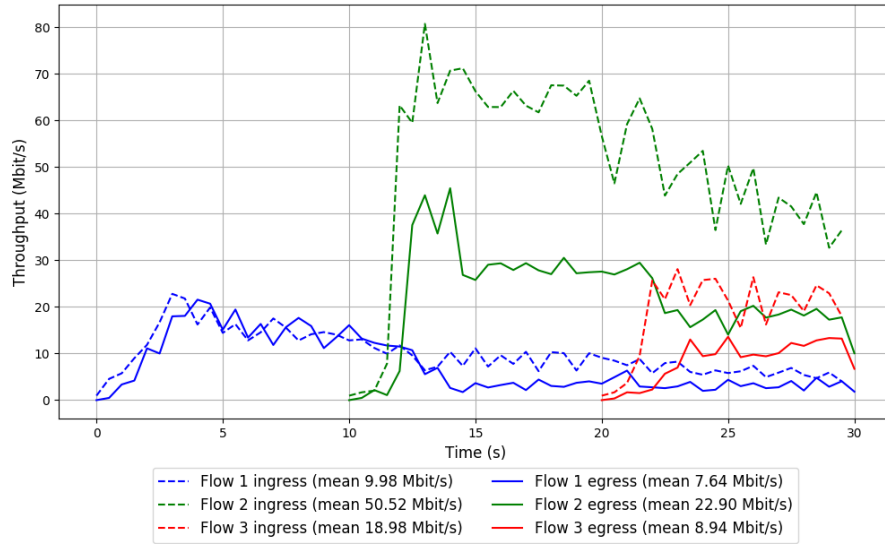
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2019-03-27 14:11:19
End at: 2019-03-27 14:11:49
Local clock offset: 5.906 ms
Remote clock offset: -14.97 ms


# Below is generated by plot.py at 2019-03-27 15:05:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 24.48 Mbit/s
95th percentile per-packet one-way delay: 138.460 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 4.77 Mbit/s
95th percentile per-packet one-way delay: 141.744 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 25.56 Mbit/s
95th percentile per-packet one-way delay: 135.538 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 8.61 Mbit/s
95th percentile per-packet one-way delay: 130.319 ms
Loss rate: 1.70%
```
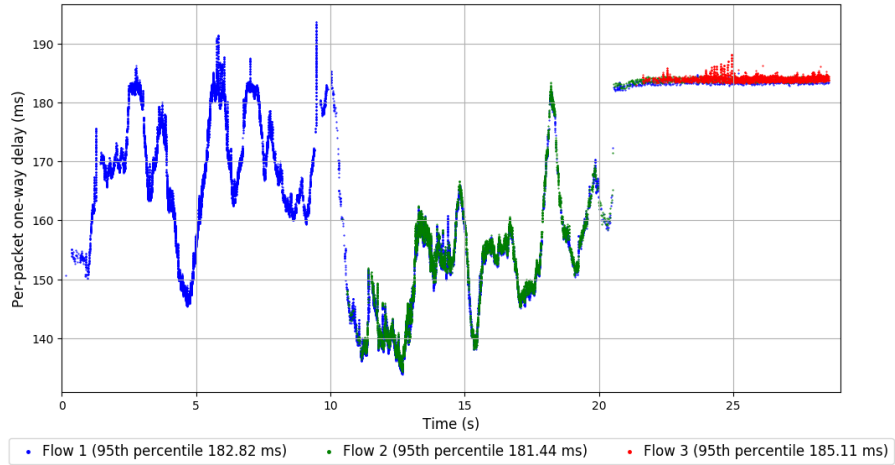
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2019-03-27 14:58:02
End at: 2019-03-27 14:58:32
Local clock offset: 8.927 ms
Remote clock offset: -19.046 ms


# Below is generated by plot.py at 2019-03-27 15:05:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 25.73 Mbit/s
95th percentile per-packet one-way delay: 152.722 ms
Loss rate: 48.62%
-- Flow 1:
Average throughput: 7.64 Mbit/s
95th percentile per-packet one-way delay: 132.041 ms
Loss rate: 23.89%
-- Flow 2:
Average throughput: 22.90 Mbit/s
95th percentile per-packet one-way delay: 160.539 ms
Loss rate: 55.03%
-- Flow 3:
Average throughput: 8.94 Mbit/s
95th percentile per-packet one-way delay: 150.523 ms
Loss rate: 53.69%
```
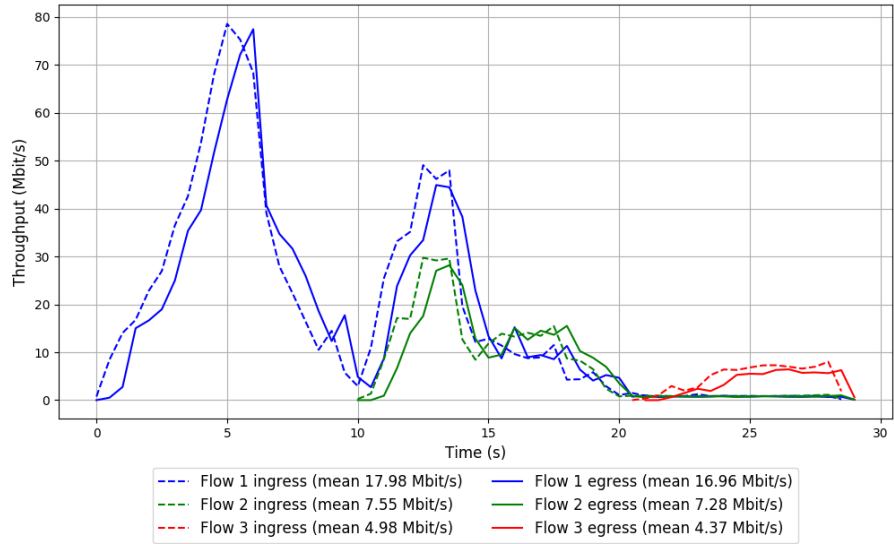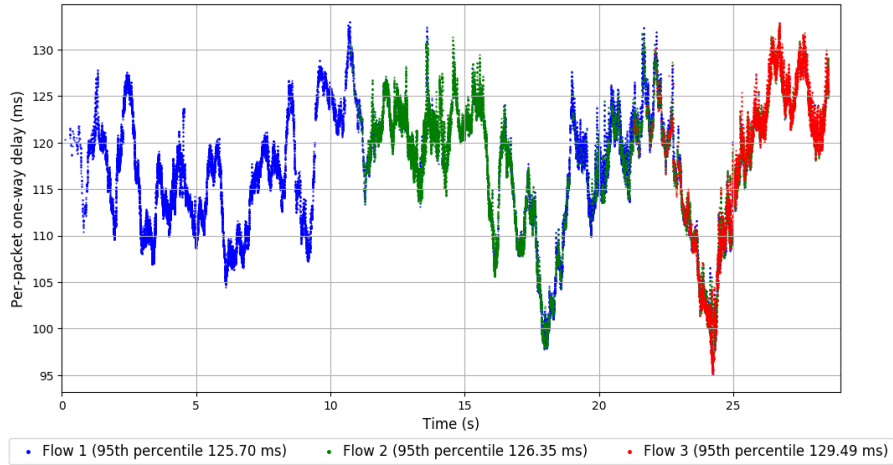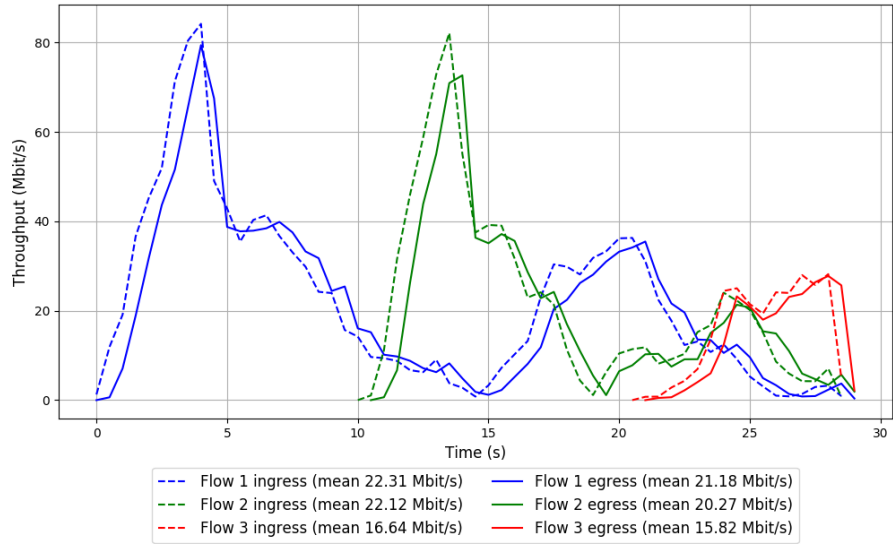
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesC3

Start at: 2019-03-27 12:00:00
End at: 2019-03-27 12:00:30
Local clock offset: 3.66 ms
Remote clock offset: -18.682 ms


# Below is generated by plot.py at 2019-03-27 15:05:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 22.71 Mbit/s
95th percentile per-packet one-way delay: 183.942 ms
Loss rate: 6.86%
-- Flow 1:
Average throughput: 16.96 Mbit/s
95th percentile per-packet one-way delay: 182.818 ms
Loss rate: 6.39%
-- Flow 2:
Average throughput: 7.28 Mbit/s
95th percentile per-packet one-way delay: 181.441 ms
Loss rate: 4.71%
-- Flow 3:
Average throughput: 4.37 Mbit/s
95th percentile per-packet one-way delay: 185.113 ms
Loss rate: 20.51%
```

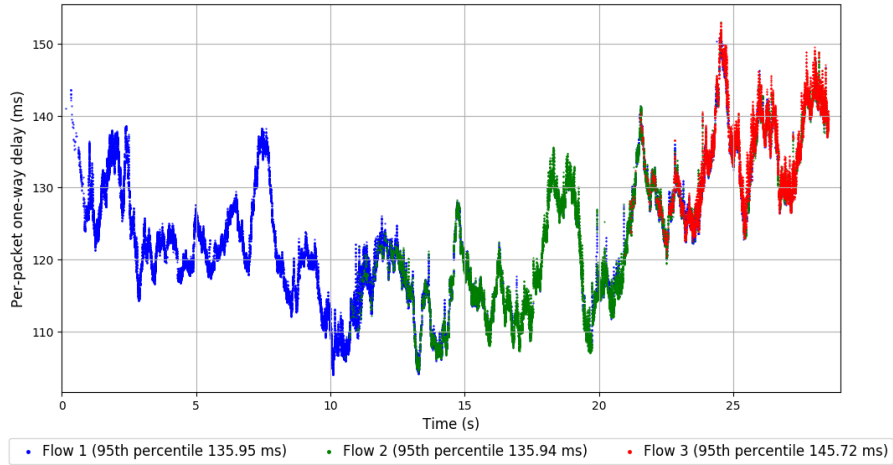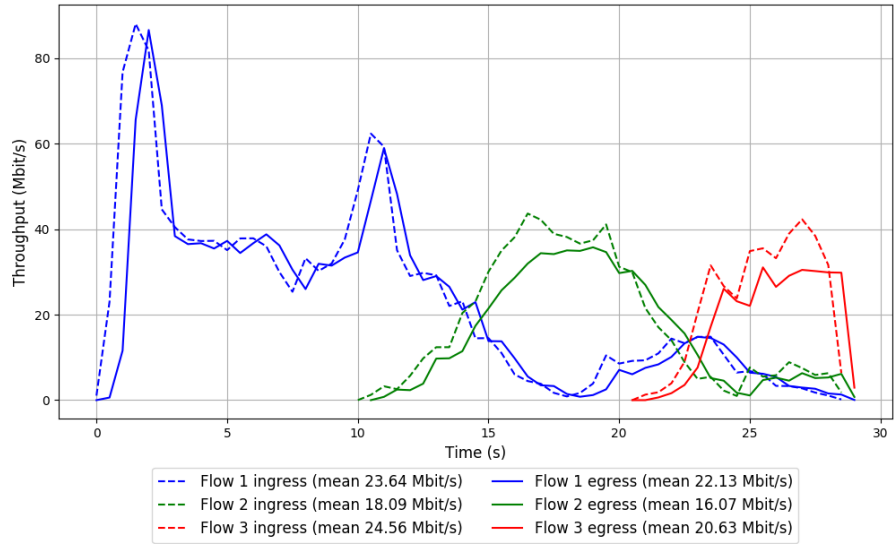Run 1: Report of Indigo-MusesC3 — Data Link

```
Run 2: Statistics of Indigo-MusesC3

Start at: 2019-03-27 12:47:20
End at: 2019-03-27 12:47:50
Local clock offset: 9.649 ms
Remote clock offset: -9.184 ms


# Below is generated by plot.py at 2019-03-27 15:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.15 Mbit/s
95th percentile per-packet one-way delay: 126.820 ms
Loss rate: 7.09%
-- Flow 1:
Average throughput: 21.18 Mbit/s
95th percentile per-packet one-way delay: 125.697 ms
Loss rate: 5.66%
-- Flow 2:
Average throughput: 20.27 Mbit/s
95th percentile per-packet one-way delay: 126.351 ms
Loss rate: 9.32%
-- Flow 3:
Average throughput: 15.82 Mbit/s
95th percentile per-packet one-way delay: 129.488 ms
Loss rate: 7.19%
```

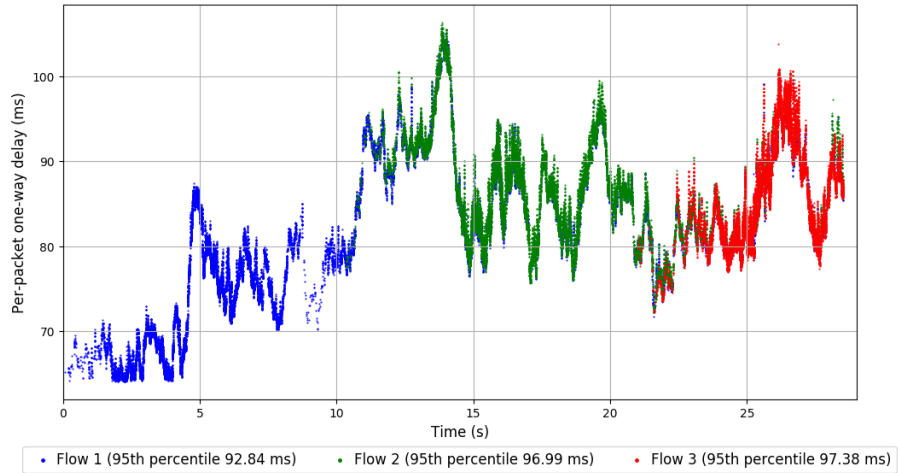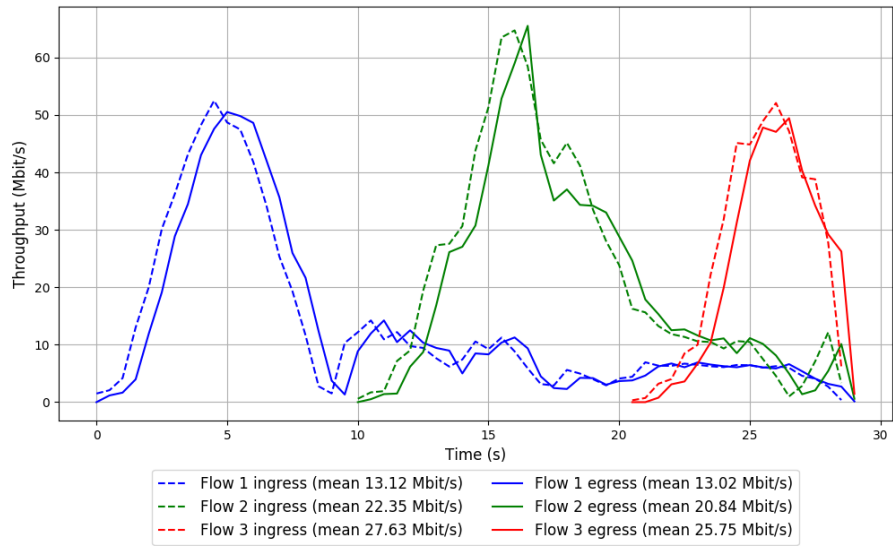# Run 2: Report of Indigo-MusesC3 — Data Link

```
Run 3: Statistics of Indigo-MusesC3

Start at: 2019-03-27 13:16:08
End at: 2019-03-27 13:16:38
Local clock offset: 6.63 ms
Remote clock offset: -9.982 ms


# Below is generated by plot.py at 2019-03-27 15:05:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.80 Mbit/s
95th percentile per-packet one-way delay: 140.322 ms
Loss rate: 10.13%
-- Flow 1:
Average throughput: 22.13 Mbit/s
95th percentile per-packet one-way delay: 135.950 ms
Loss rate: 7.03%
-- Flow 2:
Average throughput: 16.07 Mbit/s
95th percentile per-packet one-way delay: 135.944 ms
Loss rate: 11.99%
-- Flow 3:
Average throughput: 20.63 Mbit/s
95th percentile per-packet one-way delay: 145.725 ms
Loss rate: 17.91%
```

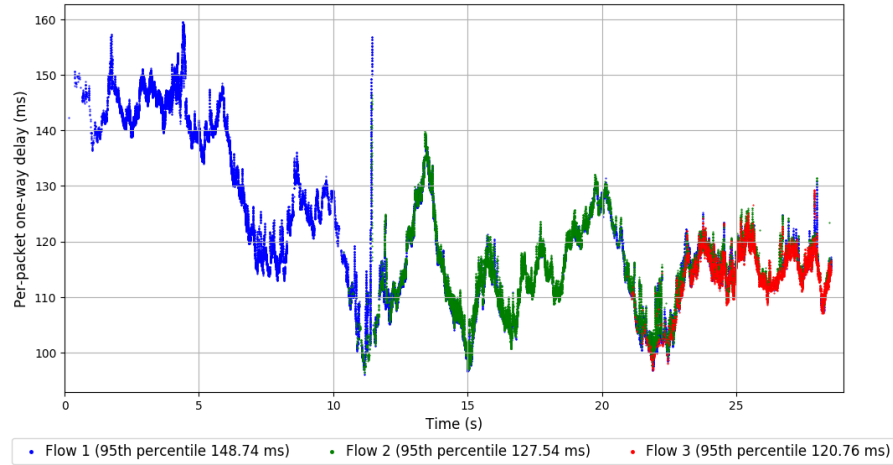Run 3: Report of Indigo-MusesC3 — Data Link

```
Run 4: Statistics of Indigo-MusesC3

Start at: 2019-03-27 13:50:25
End at: 2019-03-27 13:50:55
Local clock offset: 3.757 ms
Remote clock offset: -12.417 ms


# Below is generated by plot.py at 2019-03-27 15:05:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 33.32 Mbit/s
95th percentile per-packet one-way delay: 96.074 ms
Loss rate: 5.40%
-- Flow 1:
Average throughput: 13.02 Mbit/s
95th percentile per-packet one-way delay: 92.836 ms
Loss rate: 1.18%
-- Flow 2:
Average throughput: 20.84 Mbit/s
95th percentile per-packet one-way delay: 96.993 ms
Loss rate: 7.54%
-- Flow 3:
Average throughput: 25.75 Mbit/s
95th percentile per-packet one-way delay: 97.375 ms
Loss rate: 8.64%
```

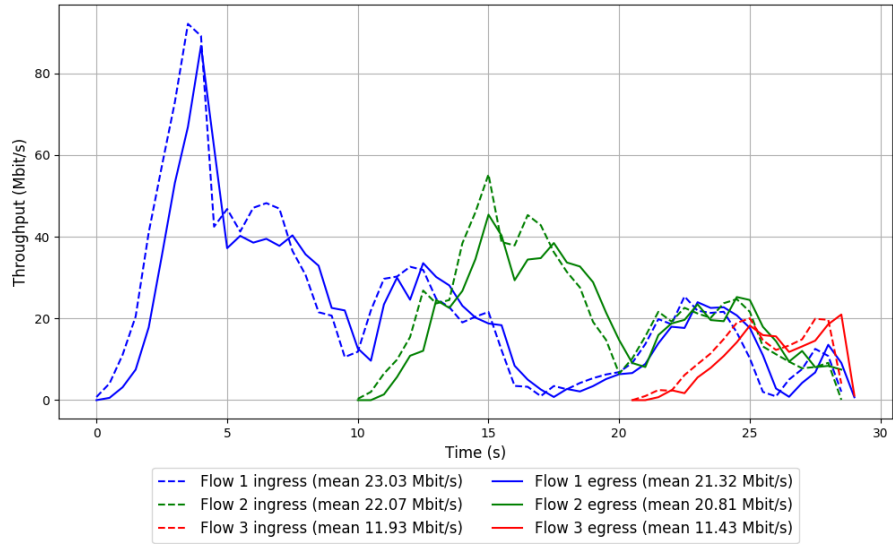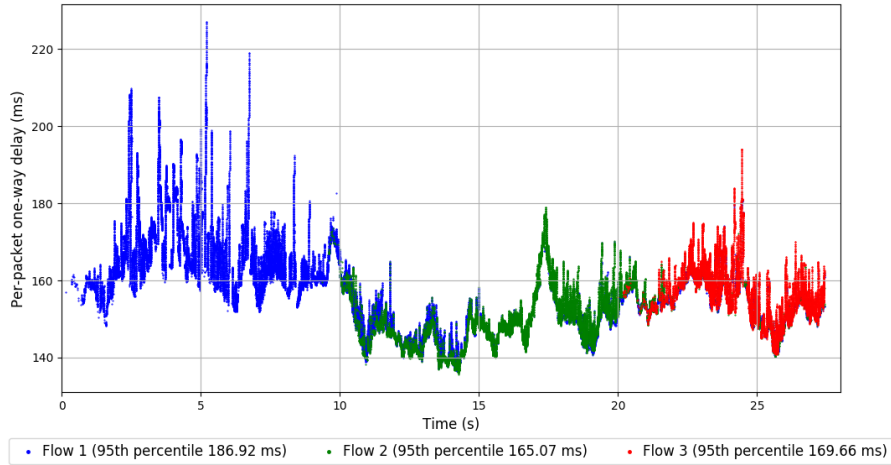Run 4: Report of Indigo-MusesC3 — Data Link

72

```
Run 5: Statistics of Indigo-MusesC3

Start at: 2019-03-27 14:17:52
End at: 2019-03-27 14:18:22
Local clock offset: 6.059 ms
Remote clock offset: -14.978 ms


# Below is generated by plot.py at 2019-03-27 15:05:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.65 Mbit/s
95th percentile per-packet one-way delay: 147.334 ms
Loss rate: 7.47%
-- Flow 1:
Average throughput: 21.32 Mbit/s
95th percentile per-packet one-way delay: 148.741 ms
Loss rate: 8.06%
-- Flow 2:
Average throughput: 20.81 Mbit/s
95th percentile per-packet one-way delay: 127.541 ms
Loss rate: 6.78%
-- Flow 3:
Average throughput: 11.43 Mbit/s
95th percentile per-packet one-way delay: 120.760 ms
Loss rate: 6.30%
```

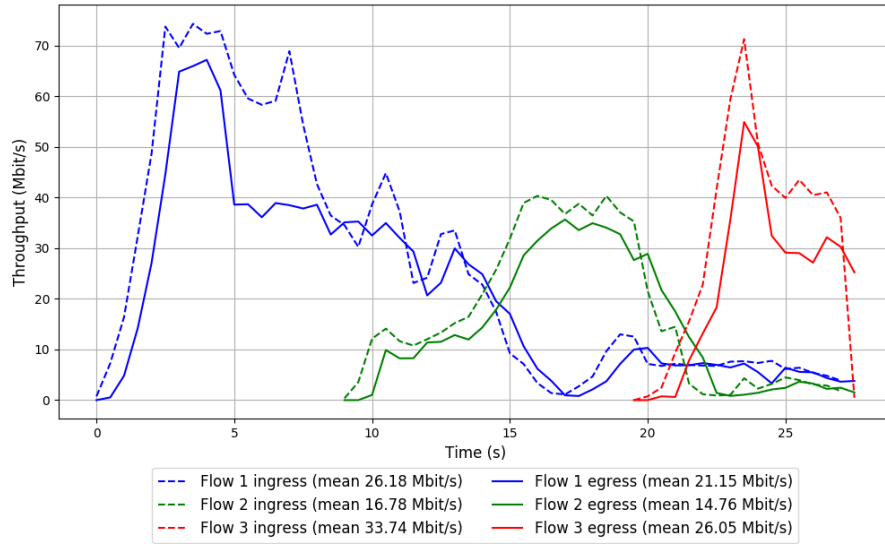Run 5: Report of Indigo-MusesC3 — Data Link

```
Run 1: Statistics of Indigo-MusesC5

Start at: 2019-03-27 12:33:56
End at: 2019-03-27 12:34:26
Local clock offset: 8.909 ms
Remote clock offset: -6.611 ms


# Below is generated by plot.py at 2019-03-27 15:05:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.02 Mbit/s
95th percentile per-packet one-way delay: 181.767 ms
Loss rate: 19.29%
-- Flow 1:
Average throughput: 21.15 Mbit/s
95th percentile per-packet one-way delay: 186.924 ms
Loss rate: 19.80%
-- Flow 2:
Average throughput: 14.76 Mbit/s
95th percentile per-packet one-way delay: 165.069 ms
Loss rate: 13.04%
-- Flow 3:
Average throughput: 26.05 Mbit/s
95th percentile per-packet one-way delay: 169.662 ms
Loss rate: 25.27%
```
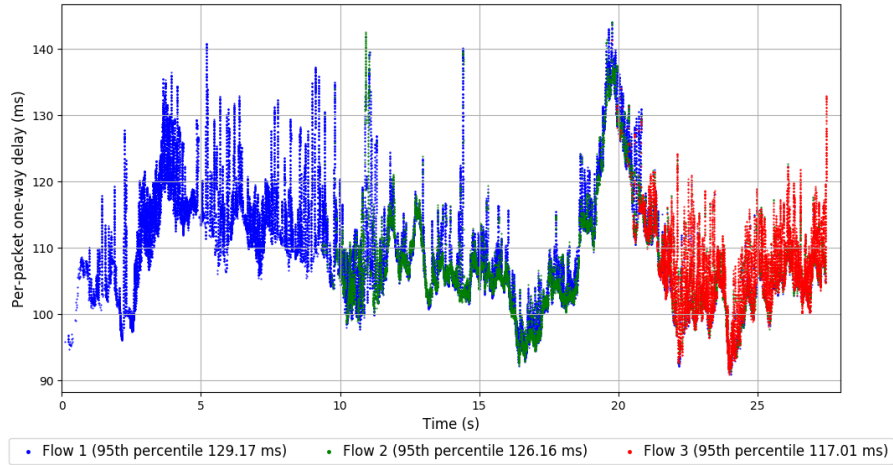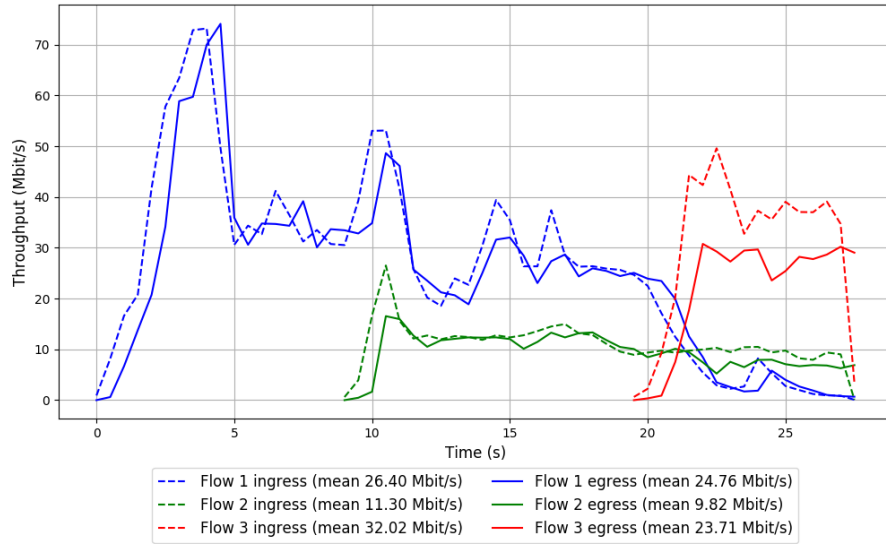
Run 1: Report of Indigo-MusesC5 — Data Link

```
Run 2: Statistics of Indigo-MusesC5

Start at: 2019-03-27 13:02:53
End at: 2019-03-27 13:03:23
Local clock offset: 6.978 ms
Remote clock offset: -14.088 ms


# Below is generated by plot.py at 2019-03-27 15:05:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.93 Mbit/s
95th percentile per-packet one-way delay: 127.959 ms
Loss rate: 12.55%
-- Flow 1:
Average throughput: 24.76 Mbit/s
95th percentile per-packet one-way delay: 129.173 ms
Loss rate: 6.81%
-- Flow 2:
Average throughput: 9.82 Mbit/s
95th percentile per-packet one-way delay: 126.164 ms
Loss rate: 14.16%
-- Flow 3:
Average throughput: 23.71 Mbit/s
95th percentile per-packet one-way delay: 117.013 ms
Loss rate: 27.71%
```
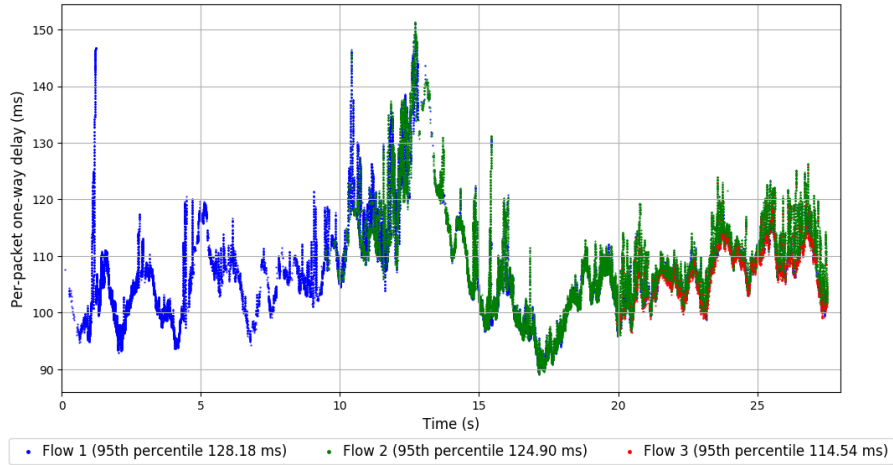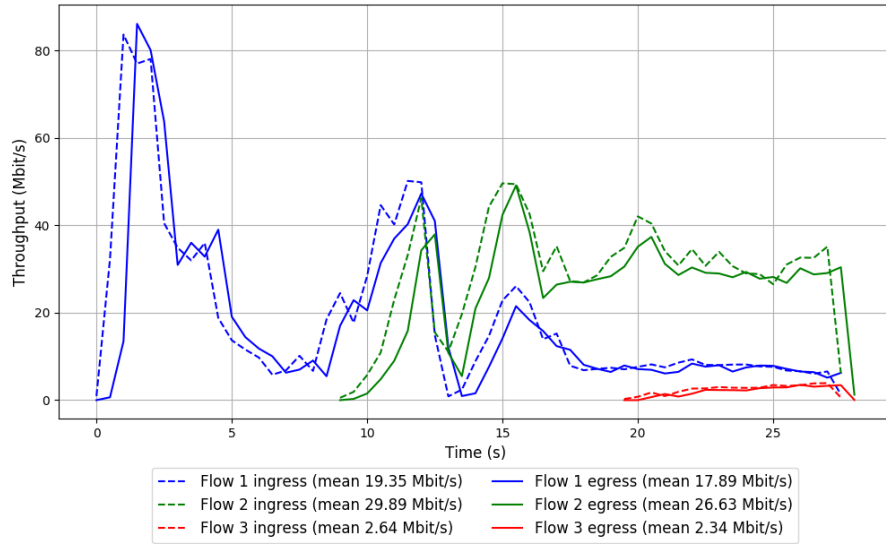
Run 2: Report of Indigo-MusesC5 — Data Link

```
Run 3: Statistics of Indigo-MusesC5

Start at: 2019-03-27 13:30:28
End at: 2019-03-27 13:30:58
Local clock offset: 3.619 ms
Remote clock offset: -13.686 ms


# Below is generated by plot.py at 2019-03-27 15:05:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 36.22 Mbit/s
95th percentile per-packet one-way delay: 126.650 ms
Loss rate: 9.98%
-- Flow 1:
Average throughput: 17.89 Mbit/s
95th percentile per-packet one-way delay: 128.179 ms
Loss rate: 8.10%
-- Flow 2:
Average throughput: 26.63 Mbit/s
95th percentile per-packet one-way delay: 124.904 ms
Loss rate: 11.69%
-- Flow 3:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 114.538 ms
Loss rate: 13.26%
```

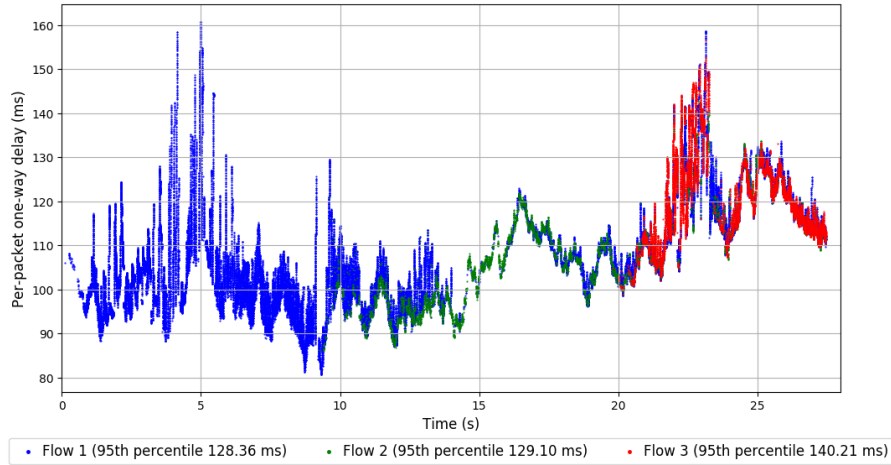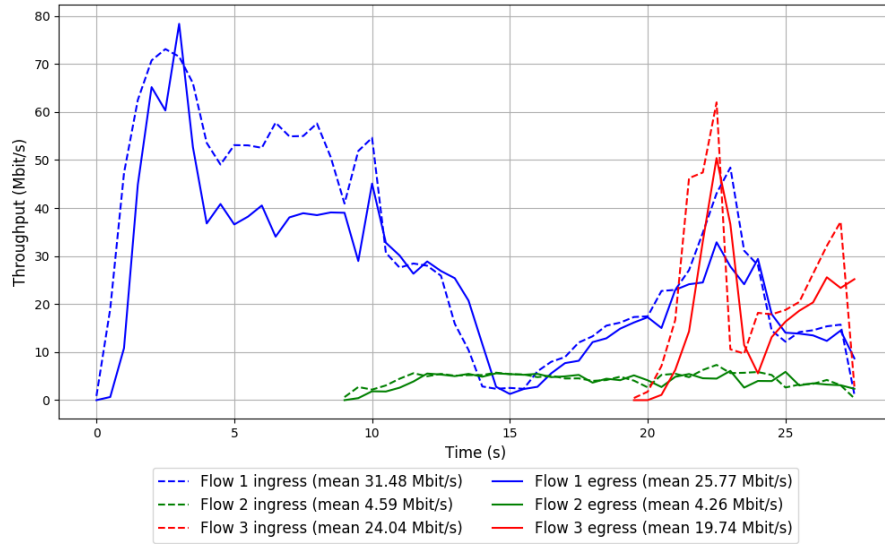# Run 3: Report of Indigo-MusesC5 — Data Link

Flow 1 ingress (mean 19.35 Mbit/s) — Flow 1 egress (mean 17.89 Mbit/s)
Flow 2 ingress (mean 29.89 Mbit/s) — Flow 2 egress (mean 26.63 Mbit/s)
Flow 3 ingress (mean 2.64 Mbit/s) — Flow 3 egress (mean 2.34 Mbit/s)

Flow 1 (95th percentile 128.18 ms)   Flow 2 (95th percentile 124.90 ms)   Flow 3 (95th percentile 114.54 ms)
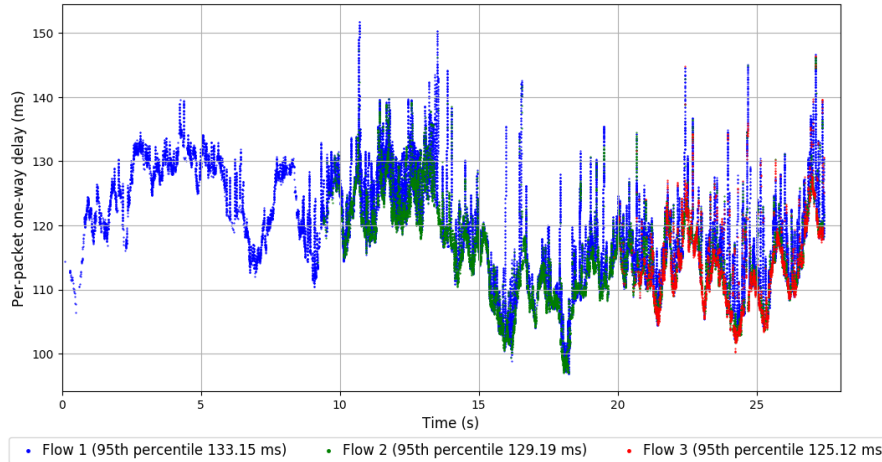
```
Run 4: Statistics of Indigo-MusesC5

Start at: 2019-03-27 14:04:46
End at: 2019-03-27 14:05:16
Local clock offset: 5.395 ms
Remote clock offset: -18.41 ms


# Below is generated by plot.py at 2019-03-27 15:05:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 34.10 Mbit/s
95th percentile per-packet one-way delay: 131.059 ms
Loss rate: 18.06%
-- Flow 1:
Average throughput: 25.77 Mbit/s
95th percentile per-packet one-way delay: 128.361 ms
Loss rate: 18.67%
-- Flow 2:
Average throughput: 4.26 Mbit/s
95th percentile per-packet one-way delay: 129.099 ms
Loss rate: 7.99%
-- Flow 3:
Average throughput: 19.74 Mbit/s
95th percentile per-packet one-way delay: 140.208 ms
Loss rate: 19.75%
```

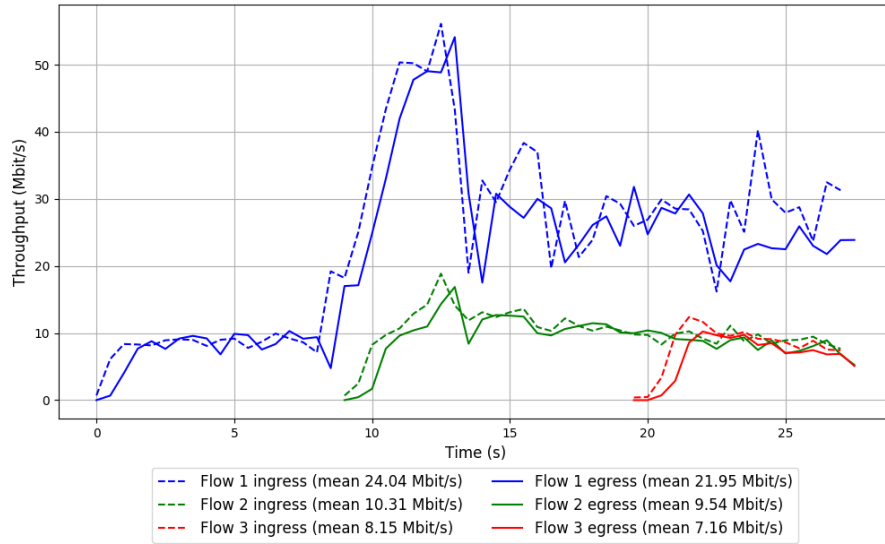Run 4: Report of Indigo-MusesC5 — Data Link

```
Run 5: Statistics of Indigo-MusesC5

Start at: 2019-03-27 14:51:26
End at: 2019-03-27 14:51:56
Local clock offset: 7.957 ms
Remote clock offset: -19.433 ms


# Below is generated by plot.py at 2019-03-27 15:05:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 30.30 Mbit/s
95th percentile per-packet one-way delay: 132.356 ms
Loss rate: 9.42%
-- Flow 1:
Average throughput: 21.95 Mbit/s
95th percentile per-packet one-way delay: 133.146 ms
Loss rate: 9.26%
-- Flow 2:
Average throughput: 9.54 Mbit/s
95th percentile per-packet one-way delay: 129.186 ms
Loss rate: 8.41%
-- Flow 3:
Average throughput: 7.16 Mbit/s
95th percentile per-packet one-way delay: 125.120 ms
Loss rate: 14.19%
```
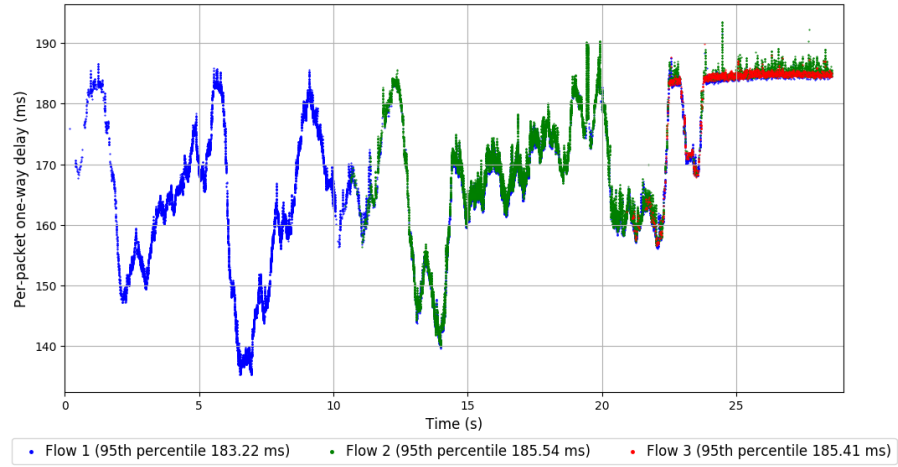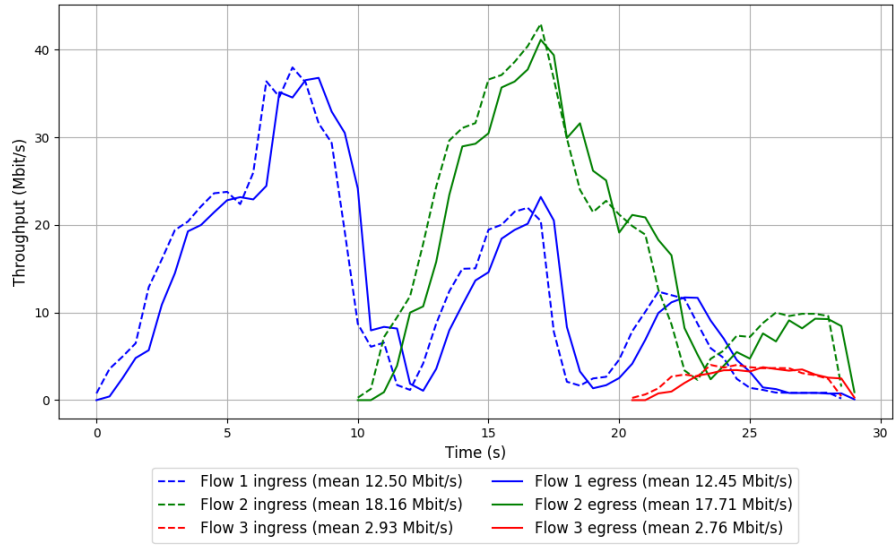
Run 5: Report of Indigo-MusesC5 — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-03-27 12:10:37
End at: 2019-03-27 12:11:07
Local clock offset: 3.842 ms
Remote clock offset: -18.287 ms


# Below is generated by plot.py at 2019-03-27 15:06:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 24.51 Mbit/s
95th percentile per-packet one-way delay: 185.015 ms
Loss rate: 2.54%
-- Flow 1:
Average throughput: 12.45 Mbit/s
95th percentile per-packet one-way delay: 183.225 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 17.71 Mbit/s
95th percentile per-packet one-way delay: 185.545 ms
Loss rate: 3.64%
-- Flow 3:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 185.411 ms
Loss rate: 8.10%
```

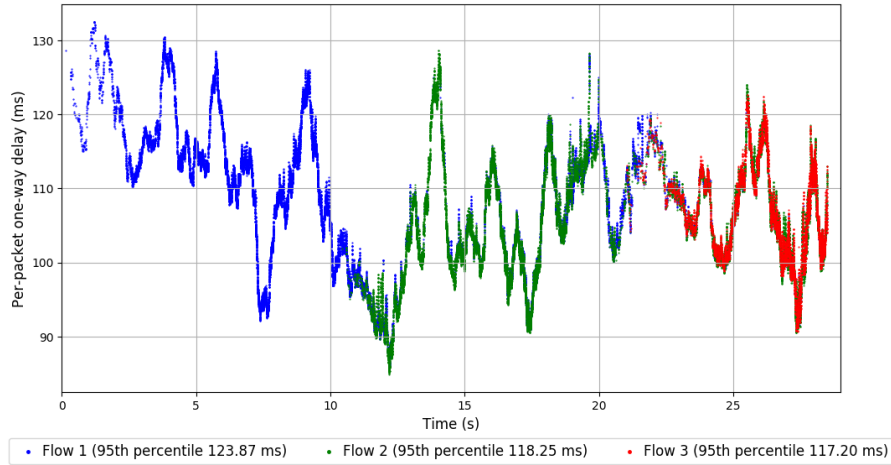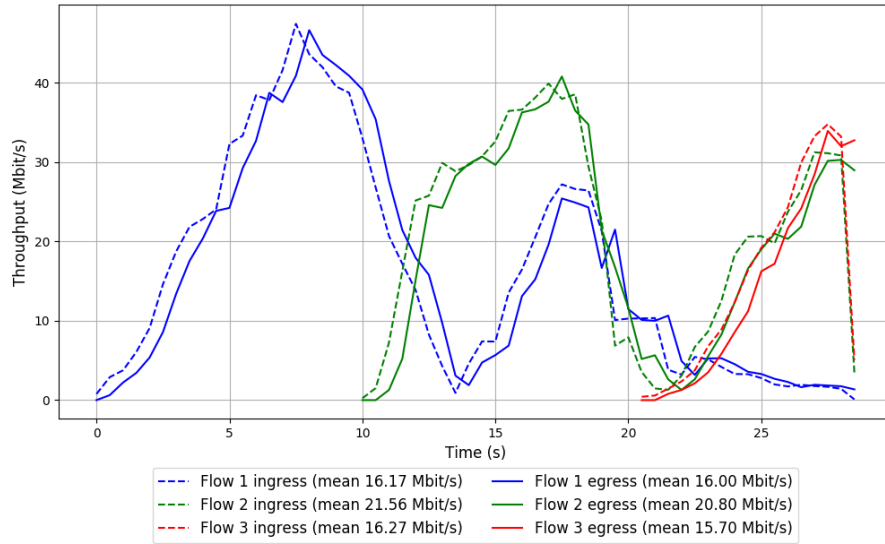Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-03-27 12:50:03
End at: 2019-03-27 12:50:33
Local clock offset: 8.733 ms
Remote clock offset: -10.429 ms


# Below is generated by plot.py at 2019-03-27 15:06:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 33.47 Mbit/s
95th percentile per-packet one-way delay: 121.725 ms
Loss rate: 3.26%
-- Flow 1:
Average throughput: 16.00 Mbit/s
95th percentile per-packet one-way delay: 123.873 ms
Loss rate: 1.69%
-- Flow 2:
Average throughput: 20.80 Mbit/s
95th percentile per-packet one-way delay: 118.245 ms
Loss rate: 4.35%
-- Flow 3:
Average throughput: 15.70 Mbit/s
95th percentile per-packet one-way delay: 117.203 ms
Loss rate: 5.61%
```

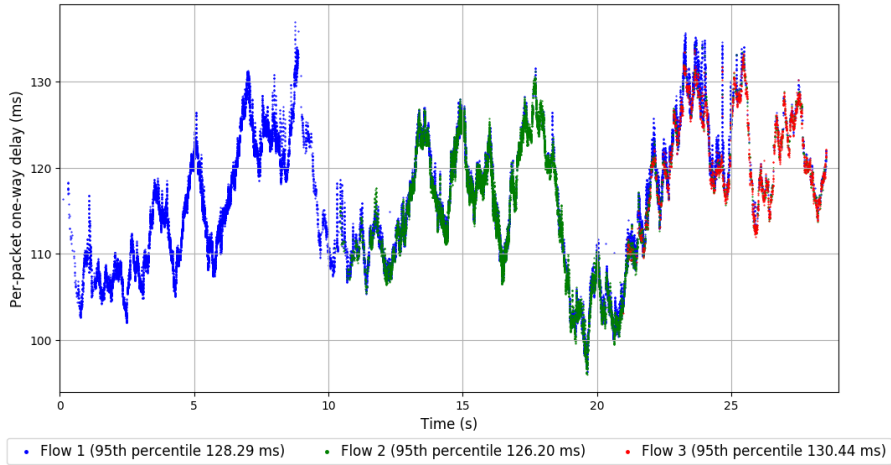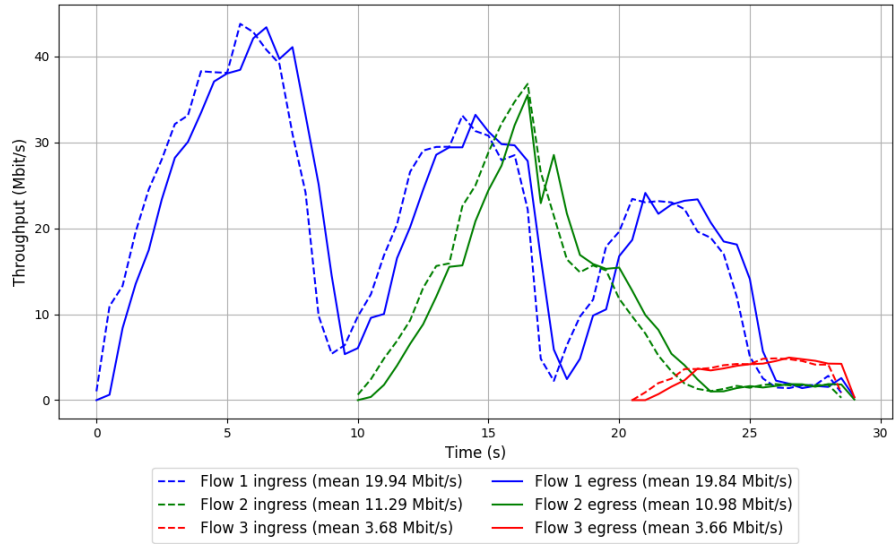Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-03-27 13:18:47
End at: 2019-03-27 13:19:17
Local clock offset: 5.898 ms
Remote clock offset: -13.114 ms


# Below is generated by plot.py at 2019-03-27 15:06:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 27.88 Mbit/s
95th percentile per-packet one-way delay: 127.887 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 19.84 Mbit/s
95th percentile per-packet one-way delay: 128.286 ms
Loss rate: 1.08%
-- Flow 2:
Average throughput: 10.98 Mbit/s
95th percentile per-packet one-way delay: 126.205 ms
Loss rate: 3.57%
-- Flow 3:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 130.442 ms
Loss rate: 2.58%
```

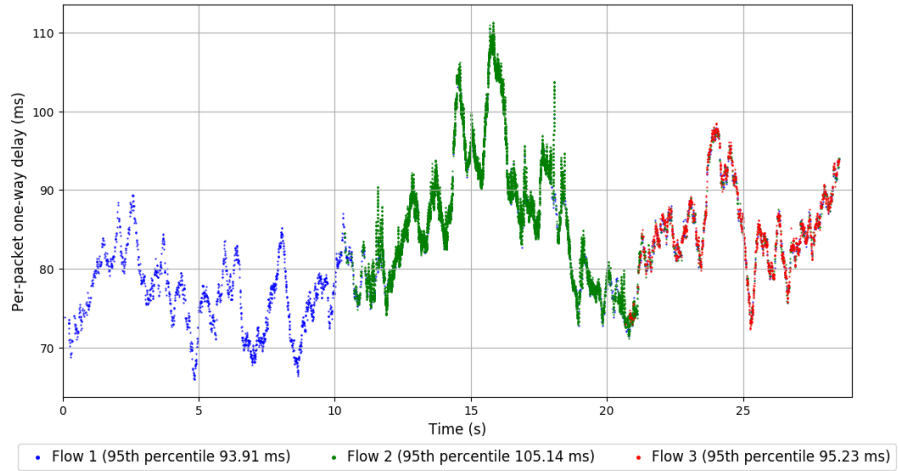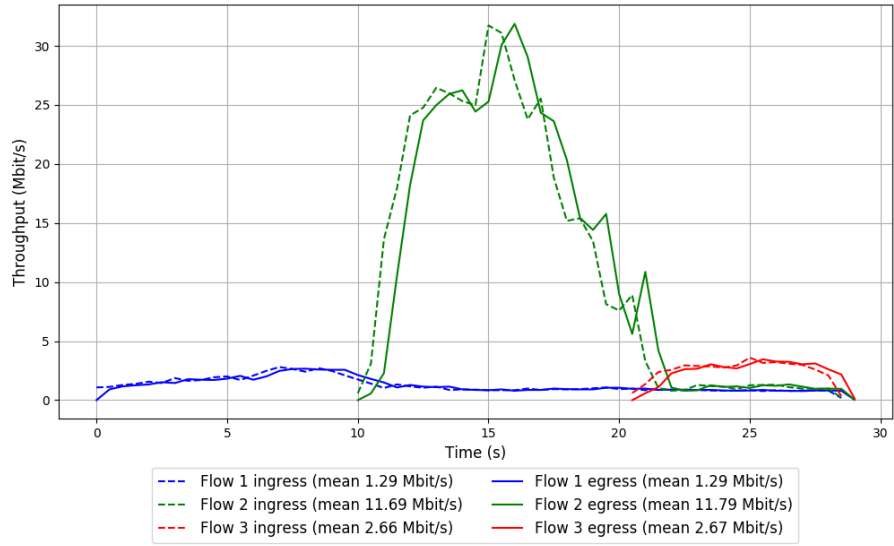Run 3: Report of Indigo-MusesD — Data Link

90

```
Run 4: Statistics of Indigo-MusesD

Start at: 2019-03-27 13:53:03
End at: 2019-03-27 13:53:33
Local clock offset: 4.381 ms
Remote clock offset: -11.279 ms

# Below is generated by plot.py at 2019-03-27 15:06:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.61 Mbit/s
95th percentile per-packet one-way delay: 104.618 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 93.905 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 105.143 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 2.67 Mbit/s
95th percentile per-packet one-way delay: 95.232 ms
Loss rate: 1.21%
```

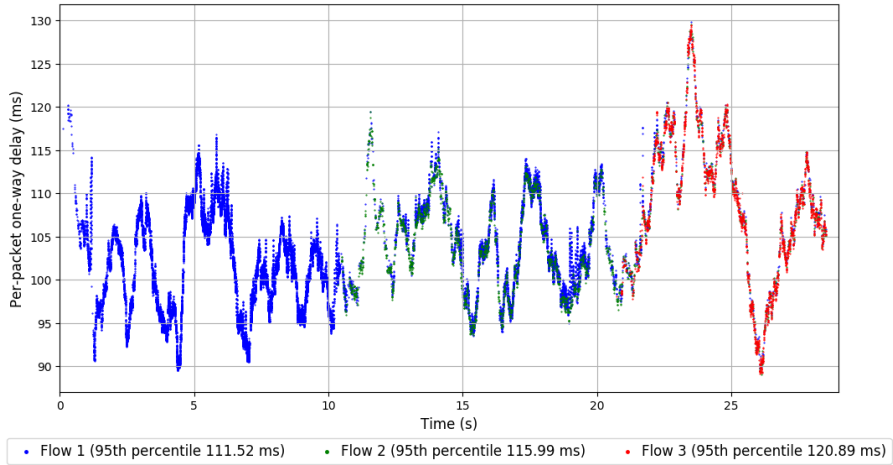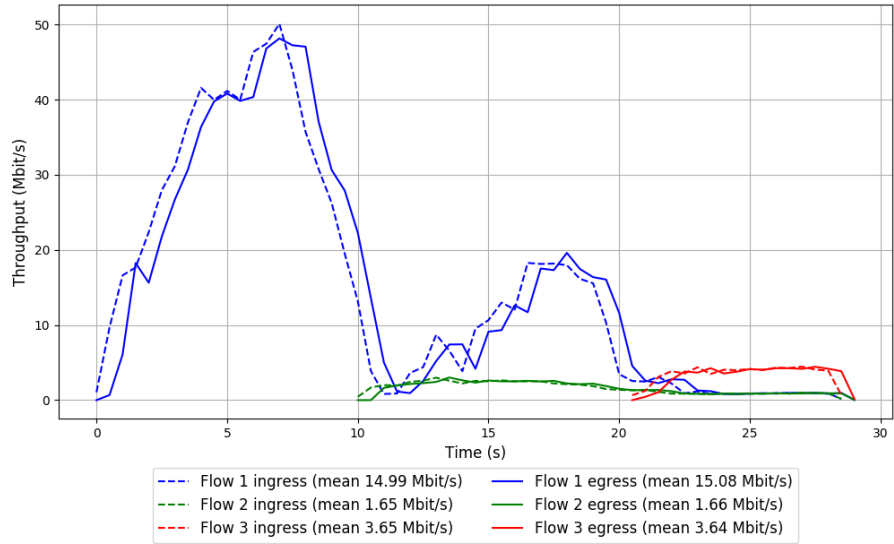# Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2019-03-27 14:20:38
End at: 2019-03-27 14:21:08
Local clock offset: 6.243 ms
Remote clock offset: -8.784 ms


# Below is generated by plot.py at 2019-03-27 15:06:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.14 Mbit/s
95th percentile per-packet one-way delay: 112.718 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 15.08 Mbit/s
95th percentile per-packet one-way delay: 111.518 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 115.986 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 120.892 ms
Loss rate: 2.41%
```

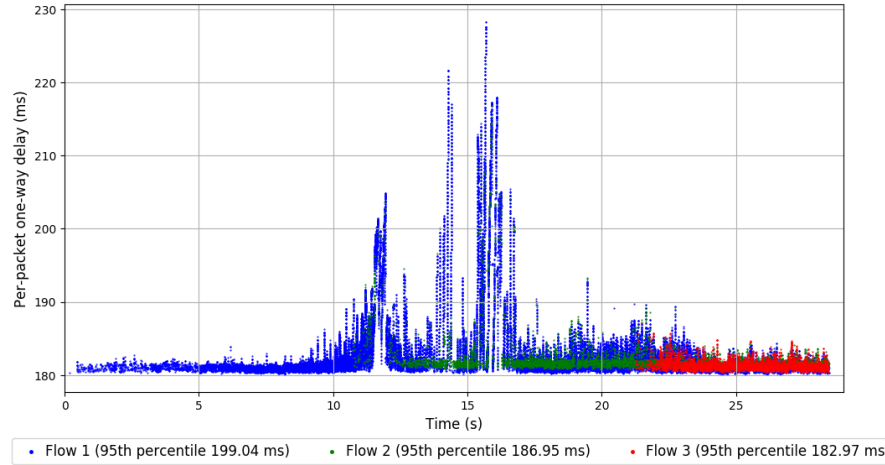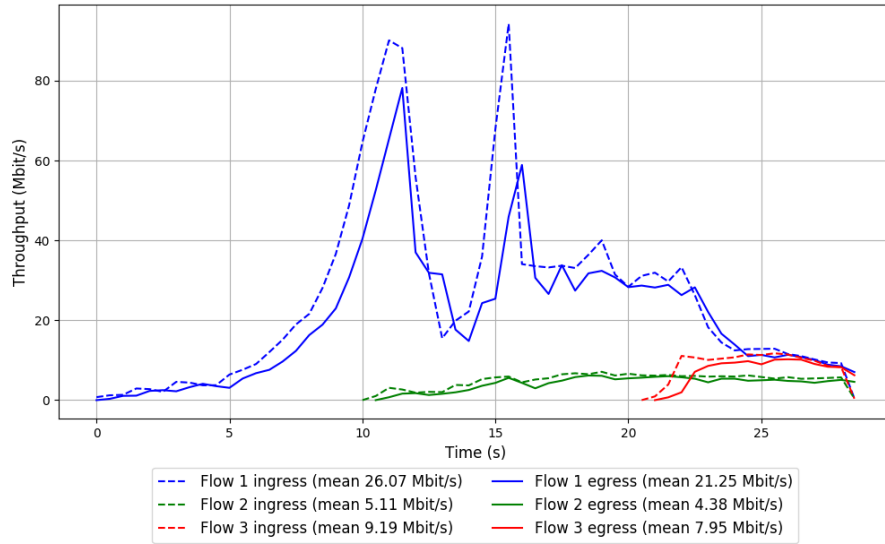Run 5: Report of Indigo-MusesD — Data Link

```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-03-27 12:16:18
End at: 2019-03-27 12:16:48
Local clock offset: 4.099 ms
Remote clock offset: -14.779 ms


# Below is generated by plot.py at 2019-03-27 15:06:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 26.12 Mbit/s
95th percentile per-packet one-way delay: 197.618 ms
Loss rate: 18.59%
-- Flow 1:
Average throughput: 21.25 Mbit/s
95th percentile per-packet one-way delay: 199.038 ms
Loss rate: 19.18%
-- Flow 2:
Average throughput: 4.38 Mbit/s
95th percentile per-packet one-way delay: 186.948 ms
Loss rate: 15.49%
-- Flow 3:
Average throughput: 7.95 Mbit/s
95th percentile per-packet one-way delay: 182.970 ms
Loss rate: 16.47%
```

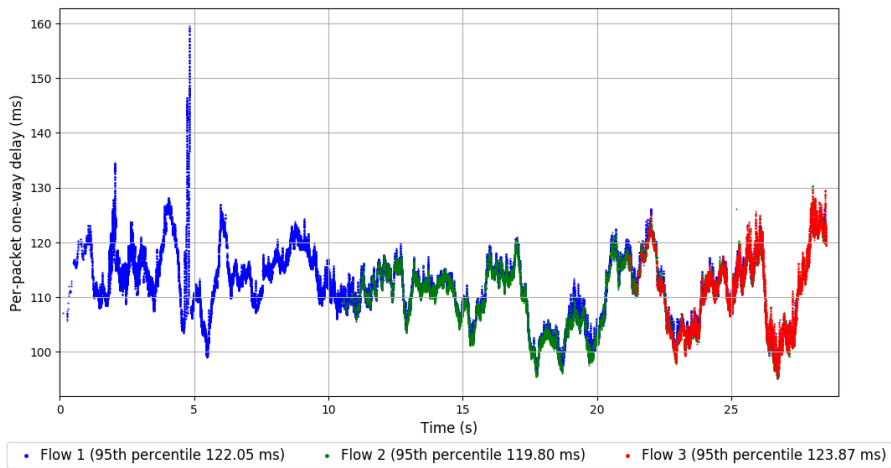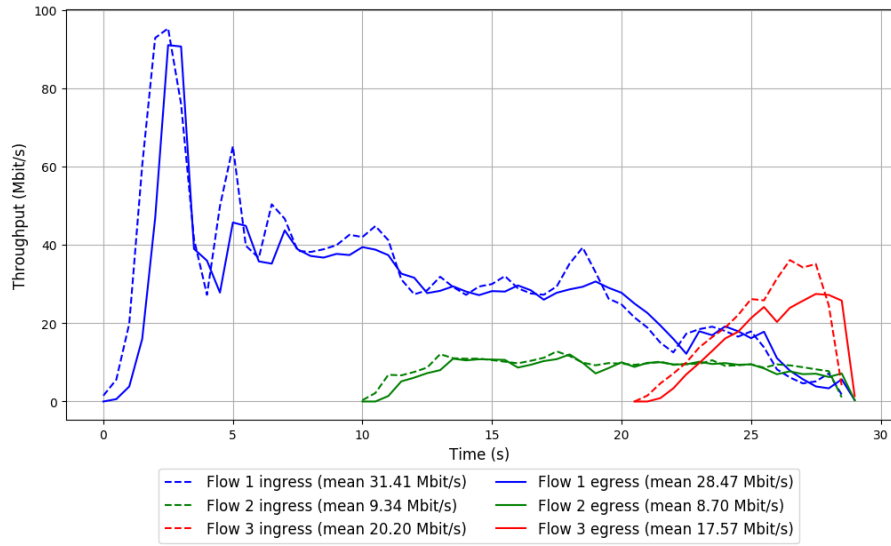## Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-03-27 12:54:48
End at: 2019-03-27 12:55:18
Local clock offset: 7.926 ms
Remote clock offset: -14.535 ms


# Below is generated by plot.py at 2019-03-27 15:06:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.68 Mbit/s
95th percentile per-packet one-way delay: 122.165 ms
Loss rate: 10.23%
-- Flow 1:
Average throughput: 28.47 Mbit/s
95th percentile per-packet one-way delay: 122.049 ms
Loss rate: 9.88%
-- Flow 2:
Average throughput: 8.70 Mbit/s
95th percentile per-packet one-way delay: 119.799 ms
Loss rate: 7.74%
-- Flow 3:
Average throughput: 17.57 Mbit/s
95th percentile per-packet one-way delay: 123.866 ms
Loss rate: 15.00%
```

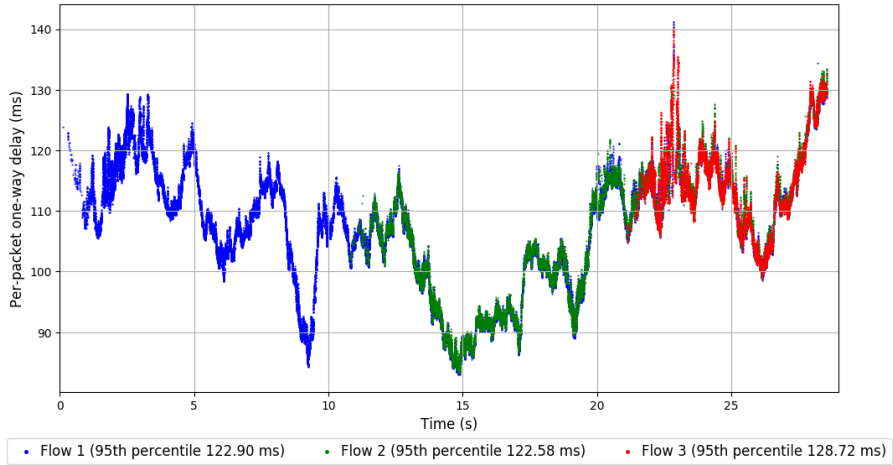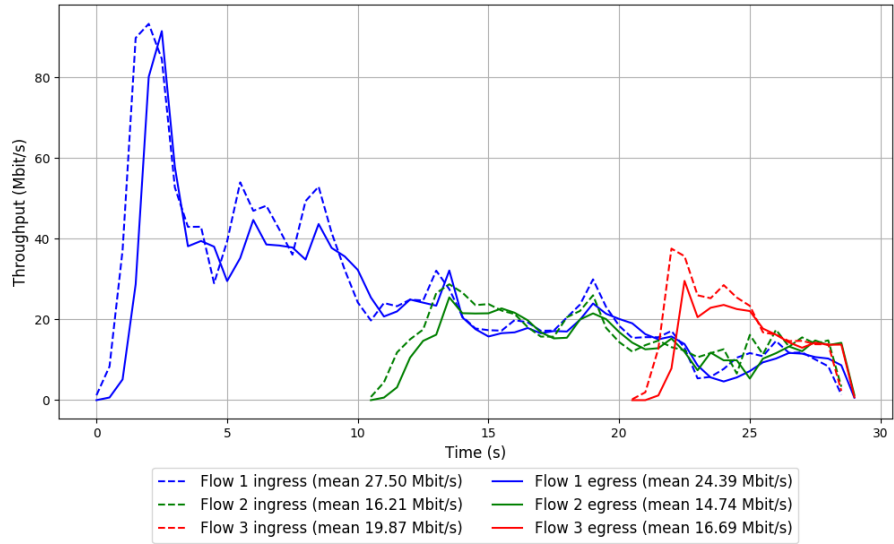Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-03-27 13:22:39
End at: 2019-03-27 13:23:09
Local clock offset: 4.755 ms
Remote clock offset: -15.12 ms


# Below is generated by plot.py at 2019-03-27 15:06:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.13 Mbit/s
95th percentile per-packet one-way delay: 123.506 ms
Loss rate: 12.18%
-- Flow 1:
Average throughput: 24.39 Mbit/s
95th percentile per-packet one-way delay: 122.897 ms
Loss rate: 11.91%
-- Flow 2:
Average throughput: 14.74 Mbit/s
95th percentile per-packet one-way delay: 122.581 ms
Loss rate: 9.94%
-- Flow 3:
Average throughput: 16.69 Mbit/s
95th percentile per-packet one-way delay: 128.722 ms
Loss rate: 17.82%
```

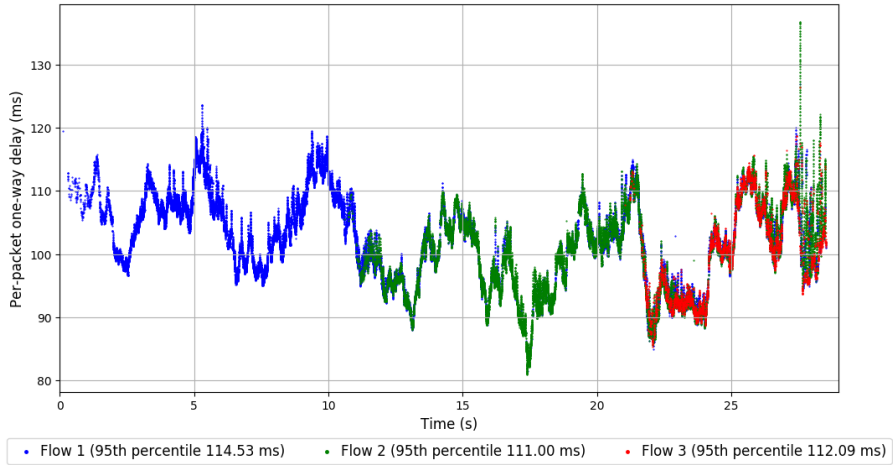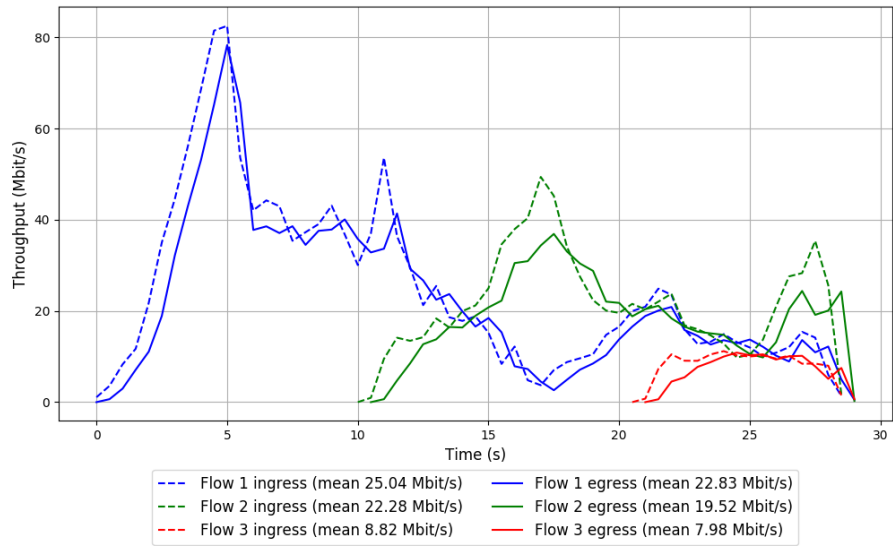# Run 3: Report of Indigo-MusesT — Data Link

```
Run 4: Statistics of Indigo-MusesT

Start at: 2019-03-27 13:56:52
End at: 2019-03-27 13:57:22
Local clock offset: 5.065 ms
Remote clock offset: -19.117 ms


# Below is generated by plot.py at 2019-03-27 15:06:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.24 Mbit/s
95th percentile per-packet one-way delay: 113.469 ms
Loss rate: 10.83%
-- Flow 1:
Average throughput: 22.83 Mbit/s
95th percentile per-packet one-way delay: 114.530 ms
Loss rate: 9.40%
-- Flow 2:
Average throughput: 19.52 Mbit/s
95th percentile per-packet one-way delay: 111.001 ms
Loss rate: 13.26%
-- Flow 3:
Average throughput: 7.98 Mbit/s
95th percentile per-packet one-way delay: 112.088 ms
Loss rate: 11.54%
```

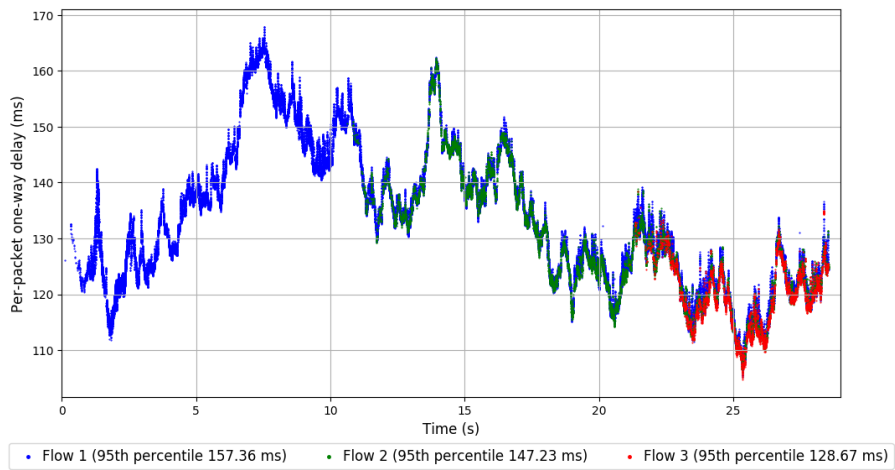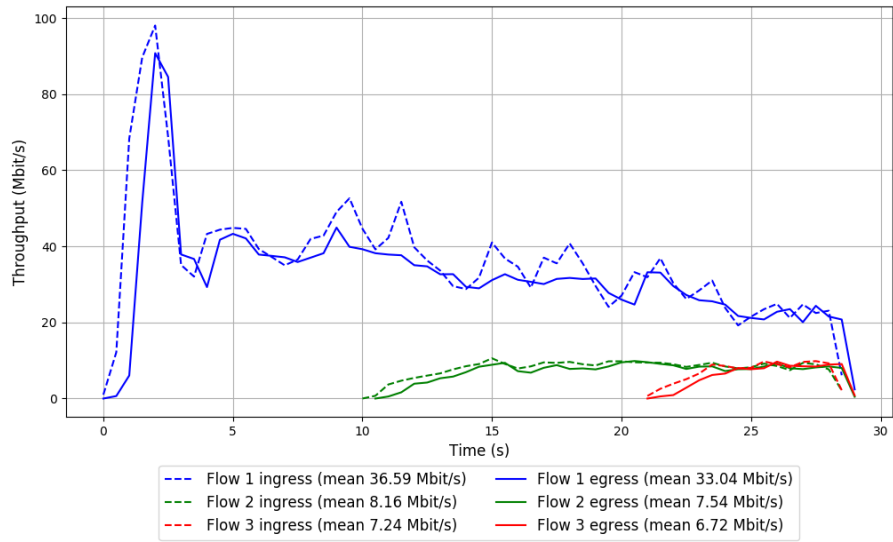Run 4: Report of Indigo-MusesT — Data Link

102

```
Run 5: Statistics of Indigo-MusesT

Start at: 2019-03-27 14:39:56
End at: 2019-03-27 14:40:26
Local clock offset: 6.894 ms
Remote clock offset: -17.838 ms


# Below is generated by plot.py at 2019-03-27 15:06:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.54 Mbit/s
95th percentile per-packet one-way delay: 156.461 ms
Loss rate: 10.11%
-- Flow 1:
Average throughput: 33.04 Mbit/s
95th percentile per-packet one-way delay: 157.362 ms
Loss rate: 10.32%
-- Flow 2:
Average throughput: 7.54 Mbit/s
95th percentile per-packet one-way delay: 147.230 ms
Loss rate: 8.78%
-- Flow 3:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 128.666 ms
Loss rate: 9.62%
```

Run 5: Report of Indigo-MusesT — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2019-03-27 12:36:43
End at: 2019-03-27 12:37:13
Local clock offset: 9.334 ms
Remote clock offset: -11.289 ms


# Below is generated by plot.py at 2019-03-27 15:06:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 15.03 Mbit/s
95th percentile per-packet one-way delay: 146.223 ms
Loss rate: 1.45%
-- Flow 1:
Average throughput: 9.78 Mbit/s
95th percentile per-packet one-way delay: 146.559 ms
Loss rate: 1.14%
-- Flow 2:
Average throughput: 6.62 Mbit/s
95th percentile per-packet one-way delay: 145.679 ms
Loss rate: 1.69%
-- Flow 3:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 146.587 ms
Loss rate: 3.71%
```
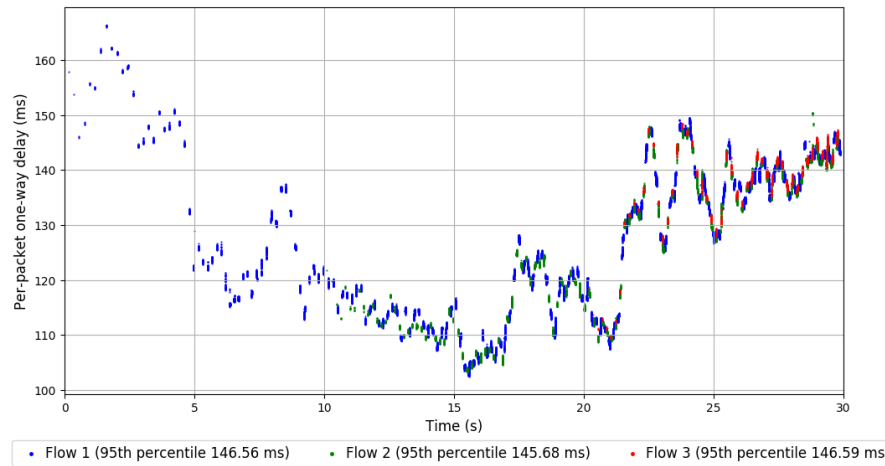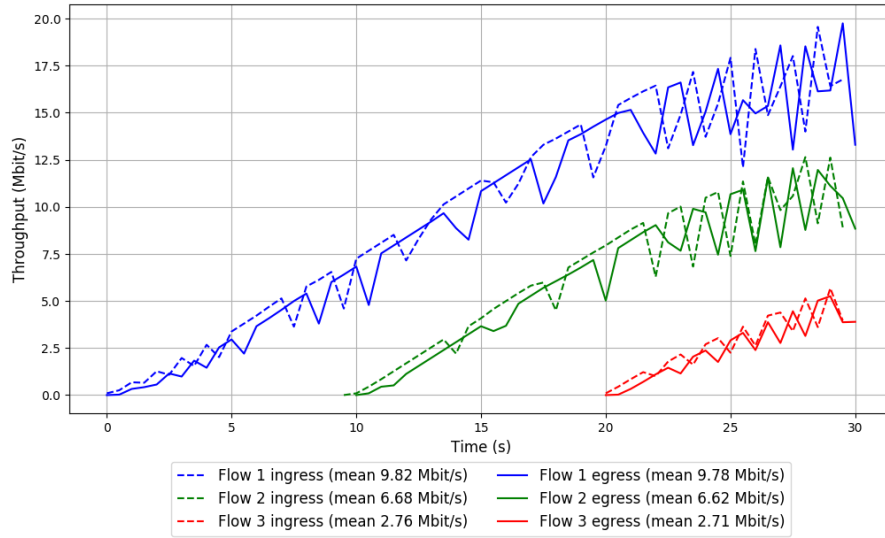
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 9.82 Mbit/s) — Flow 1 egress (mean 9.78 Mbit/s)
Flow 2 ingress (mean 6.68 Mbit/s) — Flow 2 egress (mean 6.62 Mbit/s)
Flow 3 ingress (mean 2.76 Mbit/s) — Flow 3 egress (mean 2.71 Mbit/s)

Flow 1 (95th percentile 146.56 ms)   Flow 2 (95th percentile 145.68 ms)   Flow 3 (95th percentile 146.59 ms)
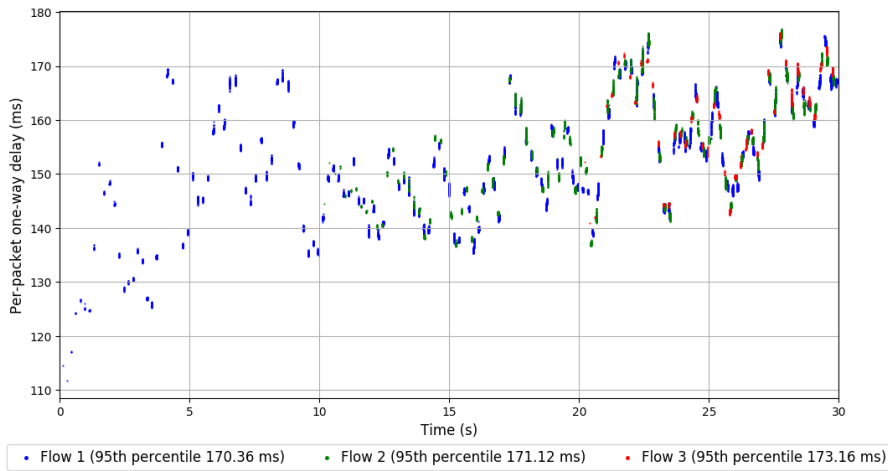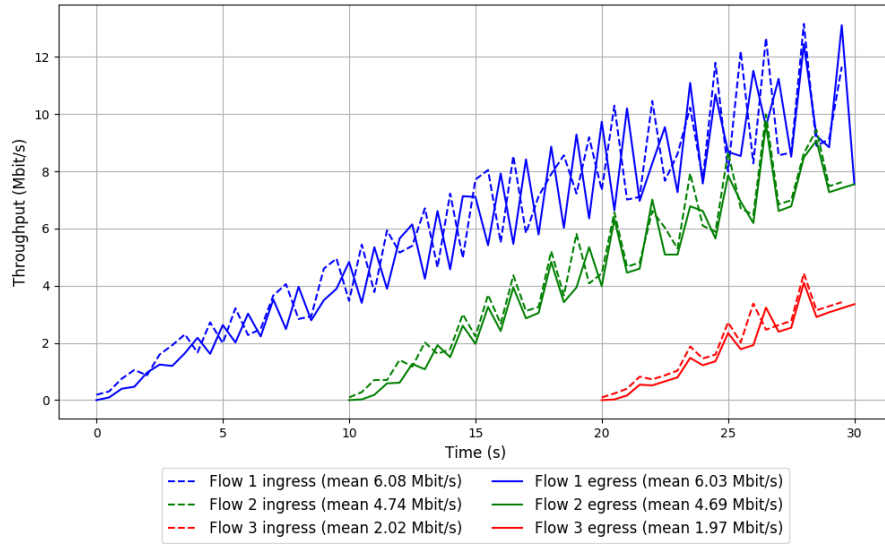
```
Run 2: Statistics of LEDBAT

Start at: 2019-03-27 13:05:30
End at: 2019-03-27 13:06:00
Local clock offset: 6.766 ms
Remote clock offset: -8.878 ms


# Below is generated by plot.py at 2019-03-27 15:06:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.76 Mbit/s
95th percentile per-packet one-way delay: 170.890 ms
Loss rate: 1.71%
-- Flow 1:
Average throughput: 6.03 Mbit/s
95th percentile per-packet one-way delay: 170.358 ms
Loss rate: 1.26%
-- Flow 2:
Average throughput: 4.69 Mbit/s
95th percentile per-packet one-way delay: 171.116 ms
Loss rate: 2.03%
-- Flow 3:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 173.157 ms
Loss rate: 4.41%
```
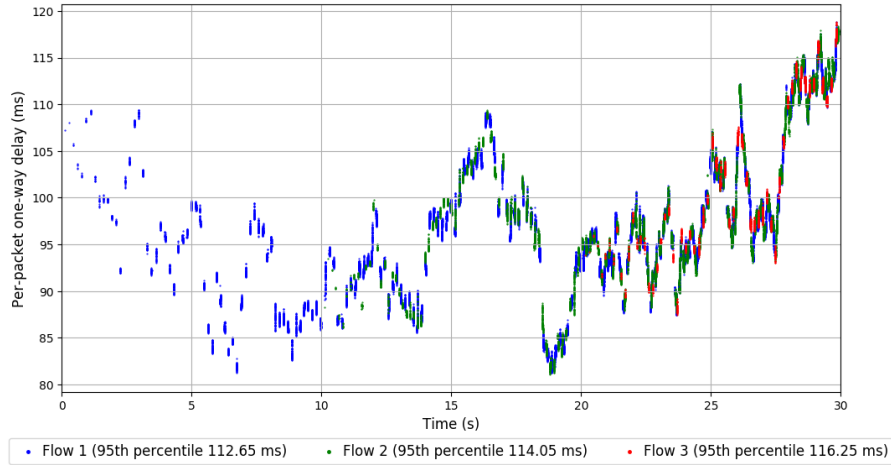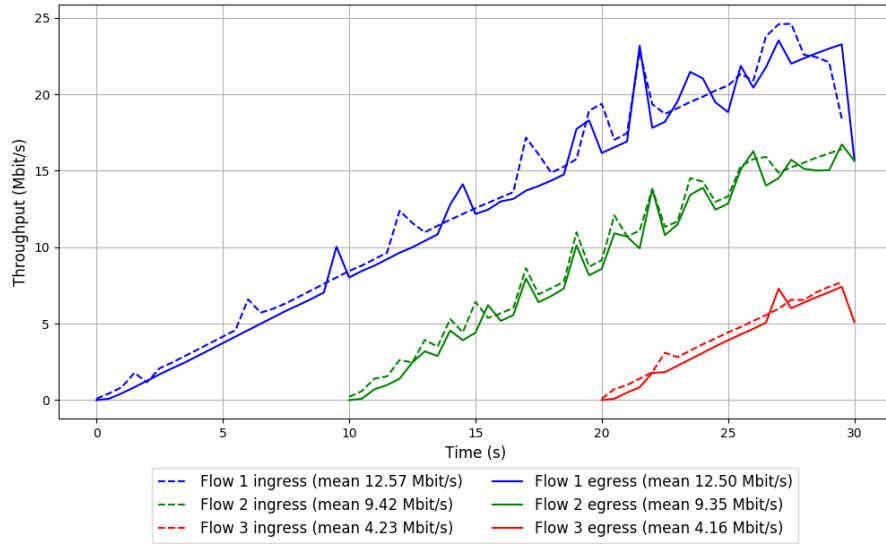
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 6.08 Mbit/s)   Flow 1 egress (mean 6.03 Mbit/s)
Flow 2 ingress (mean 4.74 Mbit/s)   Flow 2 egress (mean 4.69 Mbit/s)
Flow 3 ingress (mean 2.02 Mbit/s)   Flow 3 egress (mean 1.97 Mbit/s)

Flow 1 (95th percentile 170.36 ms)   Flow 2 (95th percentile 171.12 ms)   Flow 3 (95th percentile 173.16 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2019-03-27 13:33:04
End at: 2019-03-27 13:33:34
Local clock offset: 3.228 ms
Remote clock offset: -11.986 ms


# Below is generated by plot.py at 2019-03-27 15:06:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 20.06 Mbit/s
95th percentile per-packet one-way delay: 113.227 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 12.50 Mbit/s
95th percentile per-packet one-way delay: 112.653 ms
Loss rate: 1.05%
-- Flow 2:
Average throughput: 9.35 Mbit/s
95th percentile per-packet one-way delay: 114.052 ms
Loss rate: 1.47%
-- Flow 3:
Average throughput: 4.16 Mbit/s
95th percentile per-packet one-way delay: 116.254 ms
Loss rate: 3.13%
```
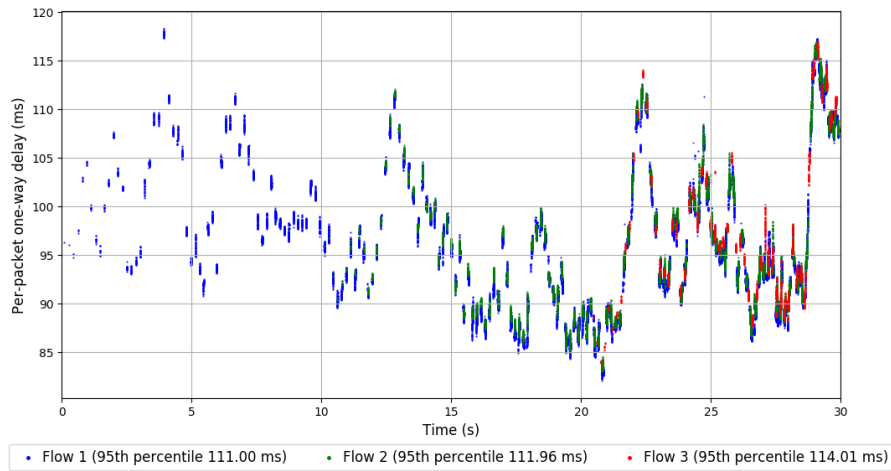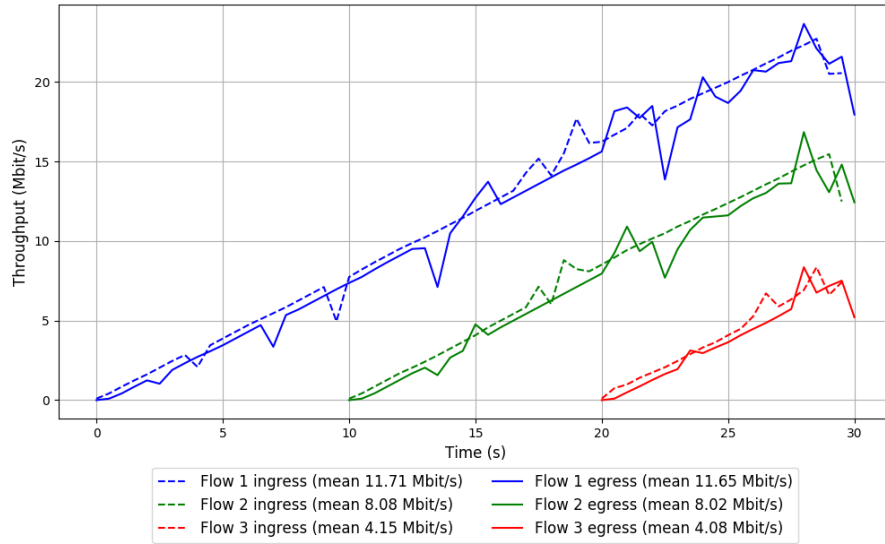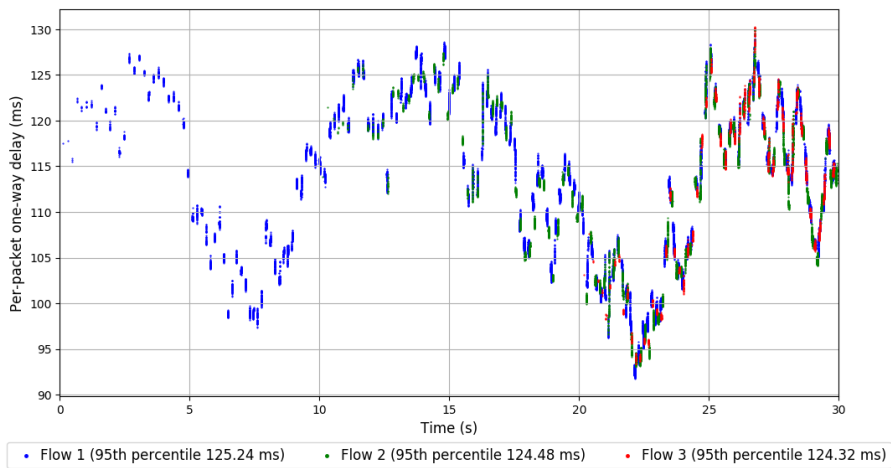
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.57 Mbit/s) --- Flow 1 egress (mean 12.50 Mbit/s)
Flow 2 ingress (mean 9.42 Mbit/s) --- Flow 2 egress (mean 9.35 Mbit/s)
Flow 3 ingress (mean 4.23 Mbit/s) --- Flow 3 egress (mean 4.16 Mbit/s)

Flow 1 (95th percentile 112.65 ms) • Flow 2 (95th percentile 114.05 ms) • Flow 3 (95th percentile 116.25 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2019-03-27 14:07:25
End at: 2019-03-27 14:07:55
Local clock offset: 5.639 ms
Remote clock offset: -17.142 ms

# Below is generated by plot.py at 2019-03-27 15:06:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.30 Mbit/s
95th percentile per-packet one-way delay: 111.553 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 11.65 Mbit/s
95th percentile per-packet one-way delay: 111.003 ms
Loss rate: 1.11%
-- Flow 2:
Average throughput: 8.02 Mbit/s
95th percentile per-packet one-way delay: 111.957 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 4.08 Mbit/s
95th percentile per-packet one-way delay: 114.013 ms
Loss rate: 3.26%
```
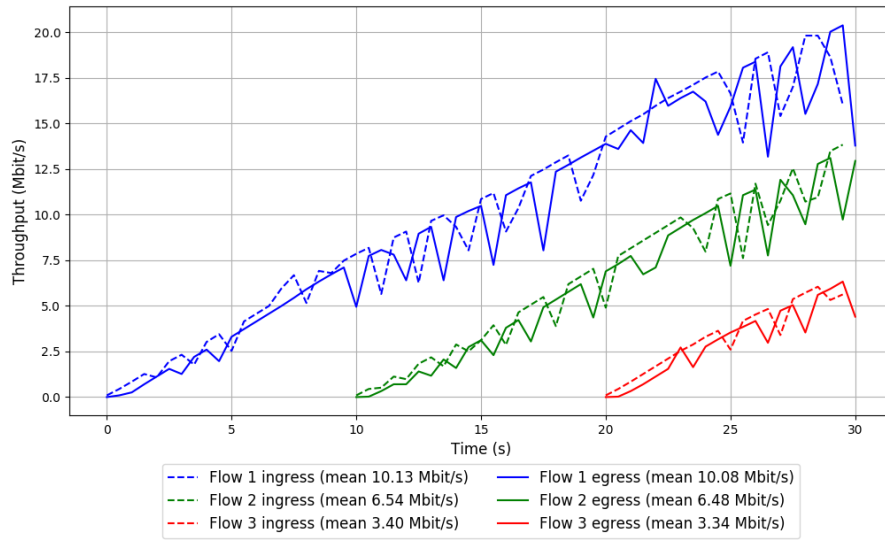
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2019-03-27 14:54:05
End at: 2019-03-27 14:54:35
Local clock offset: 8.48 ms
Remote clock offset: -17.559 ms


# Below is generated by plot.py at 2019-03-27 15:06:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 15.43 Mbit/s
95th percentile per-packet one-way delay: 125.016 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 10.08 Mbit/s
95th percentile per-packet one-way delay: 125.244 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 6.48 Mbit/s
95th percentile per-packet one-way delay: 124.479 ms
Loss rate: 1.78%
-- Flow 3:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 124.316 ms
Loss rate: 3.42%
```
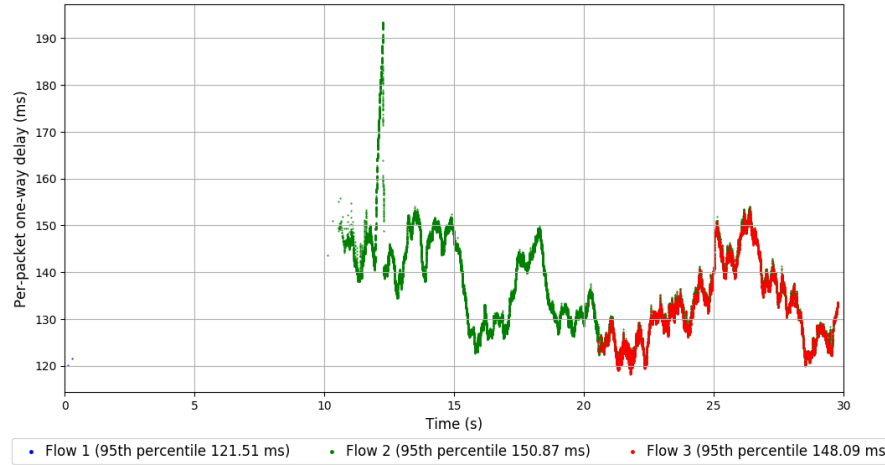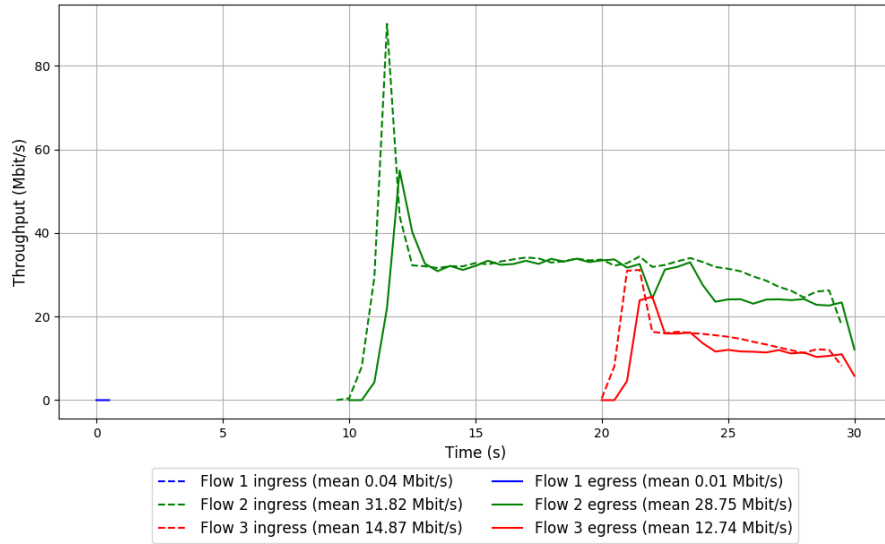
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-03-27 12:38:01
End at: 2019-03-27 12:38:31
Local clock offset: 9.364 ms
Remote clock offset: -11.683 ms


# Below is generated by plot.py at 2019-03-27 15:06:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.20 Mbit/s
95th percentile per-packet one-way delay: 150.483 ms
Loss rate: 11.57%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 121.510 ms
Loss rate: 85.42%
-- Flow 2:
Average throughput: 28.75 Mbit/s
95th percentile per-packet one-way delay: 150.874 ms
Loss rate: 10.55%
-- Flow 3:
Average throughput: 12.74 Mbit/s
95th percentile per-packet one-way delay: 148.085 ms
Loss rate: 15.96%
```
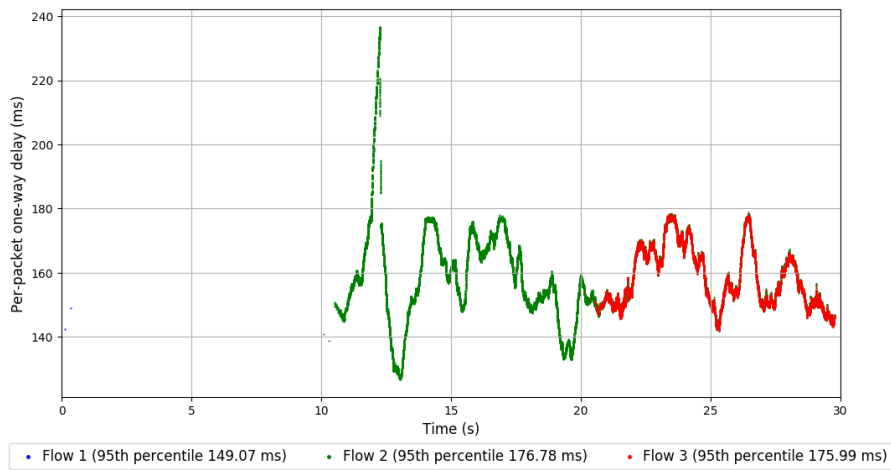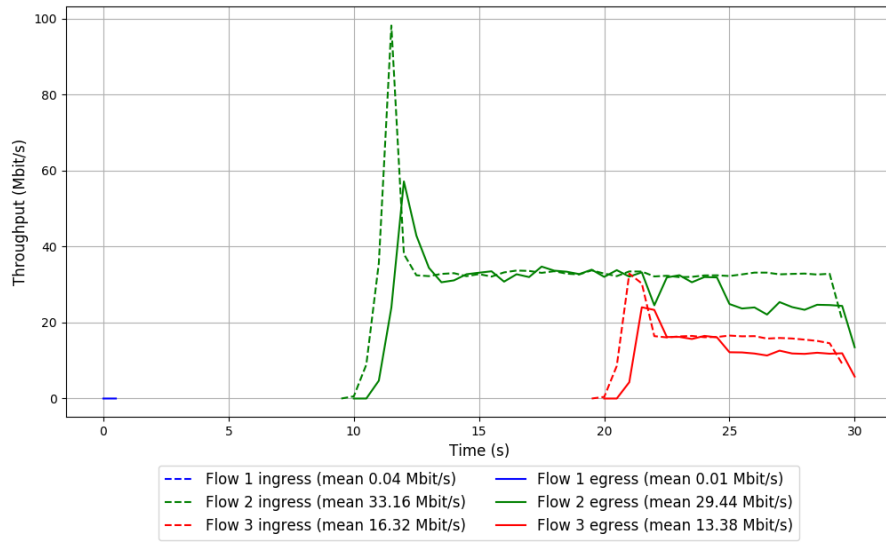
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-03-27 13:06:48
End at: 2019-03-27 13:07:18
Local clock offset: 6.827 ms
Remote clock offset: -9.771 ms


# Below is generated by plot.py at 2019-03-27 15:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.88 Mbit/s
95th percentile per-packet one-way delay: 176.698 ms
Loss rate: 13.61%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 149.067 ms
Loss rate: 85.42%
-- Flow 2:
Average throughput: 29.44 Mbit/s
95th percentile per-packet one-way delay: 176.776 ms
Loss rate: 12.10%
-- Flow 3:
Average throughput: 13.38 Mbit/s
95th percentile per-packet one-way delay: 175.985 ms
Loss rate: 19.80%
```
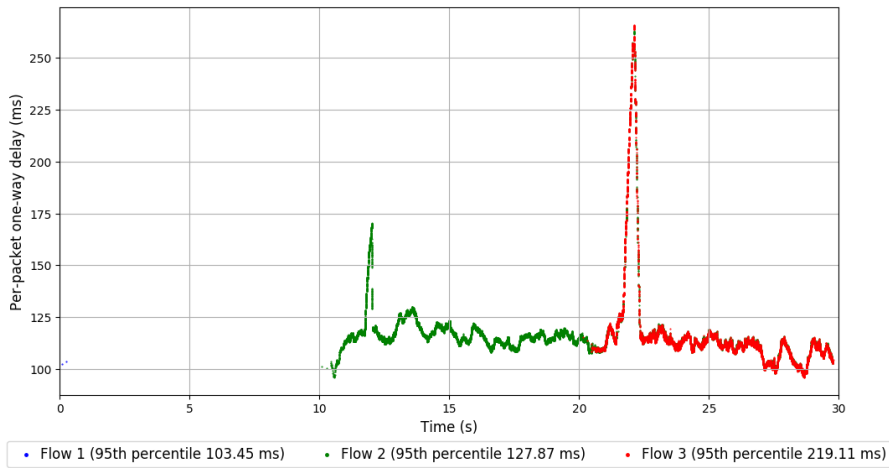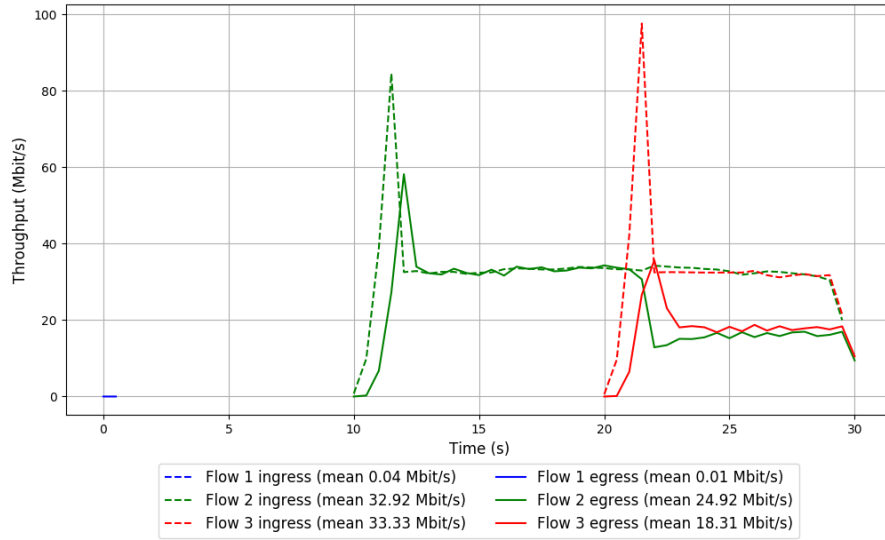
Run 2: Report of PCC-Allegro — Data Link

- Flow 1 ingress (mean 0.04 Mbit/s)
- Flow 1 egress (mean 0.01 Mbit/s)
- Flow 2 ingress (mean 33.16 Mbit/s)
- Flow 2 egress (mean 29.44 Mbit/s)
- Flow 3 ingress (mean 16.32 Mbit/s)
- Flow 3 egress (mean 13.38 Mbit/s)

- Flow 1 (95th percentile 149.07 ms)
- Flow 2 (95th percentile 176.78 ms)
- Flow 3 (95th percentile 175.99 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2019-03-27 13:34:21
End at: 2019-03-27 13:34:51
Local clock offset: 3.3 ms
Remote clock offset: -11.409 ms


# Below is generated by plot.py at 2019-03-27 15:06:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 22.47 Mbit/s
95th percentile per-packet one-way delay: 144.014 ms
Loss rate: 31.99%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 103.447 ms
Loss rate: 85.42%
-- Flow 2:
Average throughput: 24.92 Mbit/s
95th percentile per-packet one-way delay: 127.867 ms
Loss rate: 24.94%
-- Flow 3:
Average throughput: 18.31 Mbit/s
95th percentile per-packet one-way delay: 219.108 ms
Loss rate: 46.04%
```
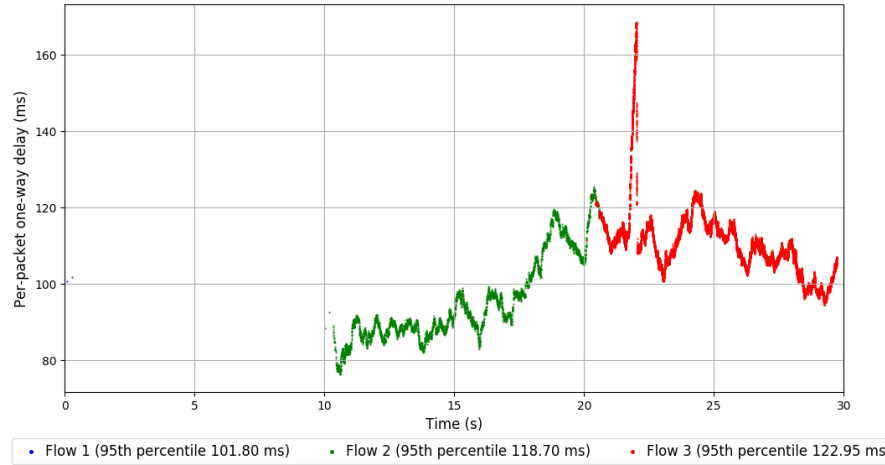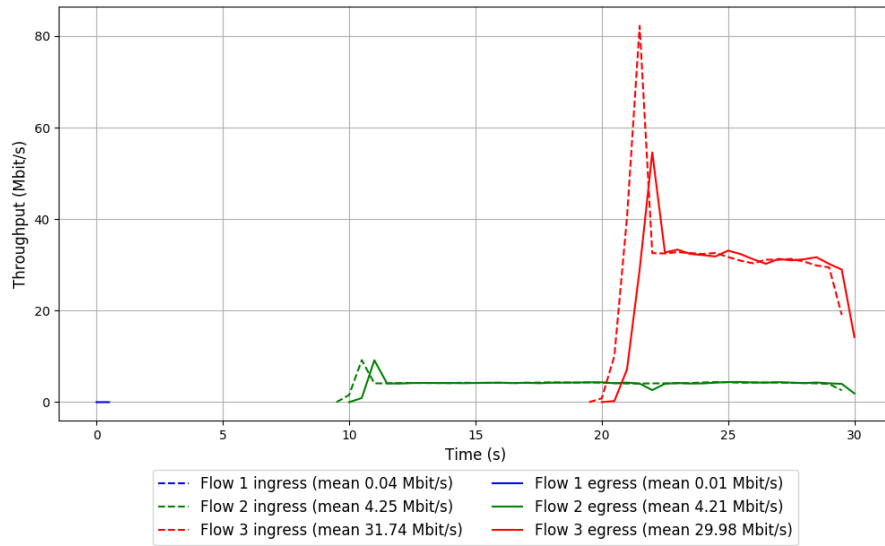
Run 3: Report of PCC-Allegro — Data Link

- - - Flow 1 ingress (mean 0.04 Mbit/s) —— Flow 1 egress (mean 0.01 Mbit/s)
- - - Flow 2 ingress (mean 32.92 Mbit/s) —— Flow 2 egress (mean 24.92 Mbit/s)
- - - Flow 3 ingress (mean 33.33 Mbit/s) —— Flow 3 egress (mean 18.31 Mbit/s)

· Flow 1 (95th percentile 103.45 ms)   · Flow 2 (95th percentile 127.87 ms)   · Flow 3 (95th percentile 219.11 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2019-03-27 14:08:44
End at: 2019-03-27 14:09:14
Local clock offset: 5.707 ms
Remote clock offset: -18.276 ms


# Below is generated by plot.py at 2019-03-27 15:06:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.56 Mbit/s
95th percentile per-packet one-way delay: 122.412 ms
Loss rate: 6.14%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 101.803 ms
Loss rate: 85.42%
-- Flow 2:
Average throughput: 4.21 Mbit/s
95th percentile per-packet one-way delay: 118.699 ms
Loss rate: 1.76%
-- Flow 3:
Average throughput: 29.98 Mbit/s
95th percentile per-packet one-way delay: 122.954 ms
Loss rate: 7.32%
```
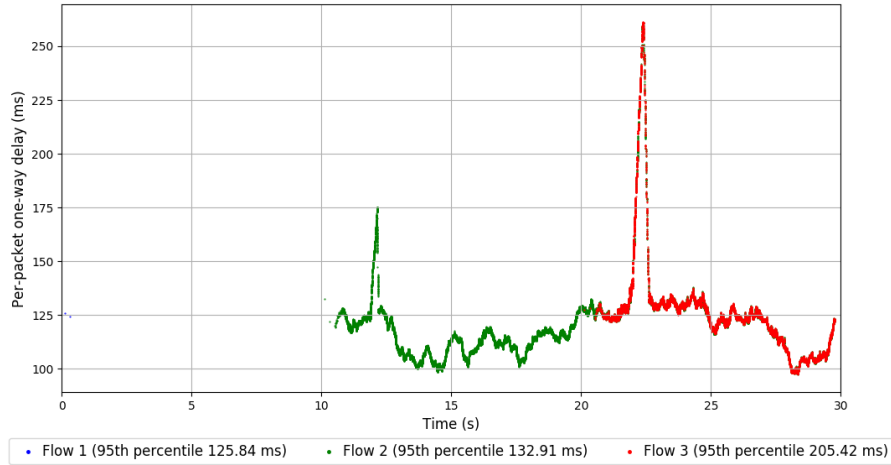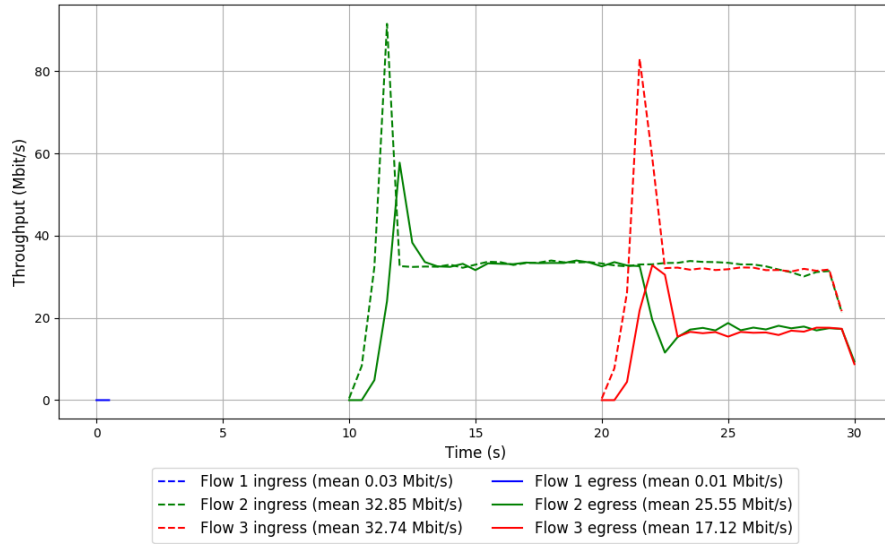
Run 4: Report of PCC-Allegro — Data Link

```
Run 5: Statistics of PCC-Allegro

Start at: 2019-03-27 14:55:24
End at: 2019-03-27 14:55:54
Local clock offset: 8.528 ms
Remote clock offset: -15.046 ms


# Below is generated by plot.py at 2019-03-27 15:06:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 22.49 Mbit/s
95th percentile per-packet one-way delay: 144.773 ms
Loss rate: 31.50%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 125.843 ms
Loss rate: 85.42%
-- Flow 2:
Average throughput: 25.55 Mbit/s
95th percentile per-packet one-way delay: 132.915 ms
Loss rate: 23.00%
-- Flow 3:
Average throughput: 17.12 Mbit/s
95th percentile per-packet one-way delay: 205.422 ms
Loss rate: 48.72%
```
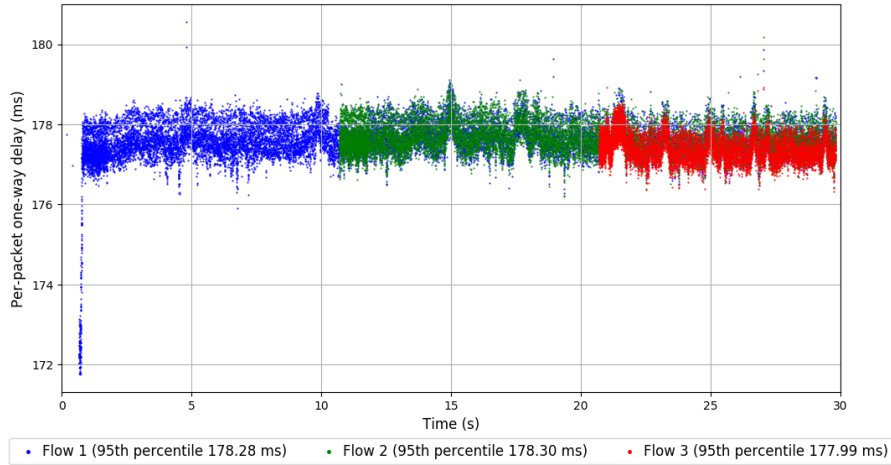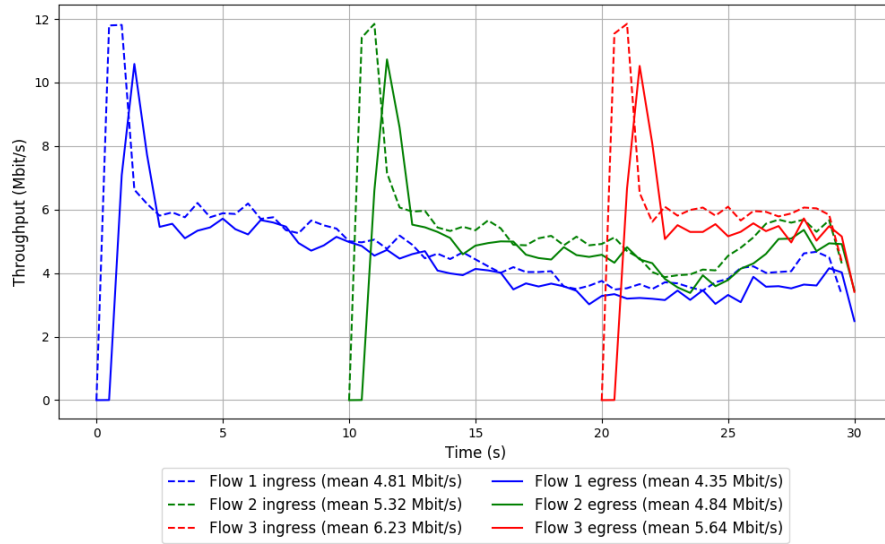
Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2019-03-27 12:22:11
End at: 2019-03-27 12:22:41
Local clock offset: 6.655 ms
Remote clock offset: -10.84 ms


# Below is generated by plot.py at 2019-03-27 15:06:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.39 Mbit/s
95th percentile per-packet one-way delay: 178.256 ms
Loss rate: 10.50%
-- Flow 1:
Average throughput: 4.35 Mbit/s
95th percentile per-packet one-way delay: 178.278 ms
Loss rate: 10.32%
-- Flow 2:
Average throughput: 4.84 Mbit/s
95th percentile per-packet one-way delay: 178.296 ms
Loss rate: 10.07%
-- Flow 3:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 177.989 ms
Loss rate: 11.66%
```
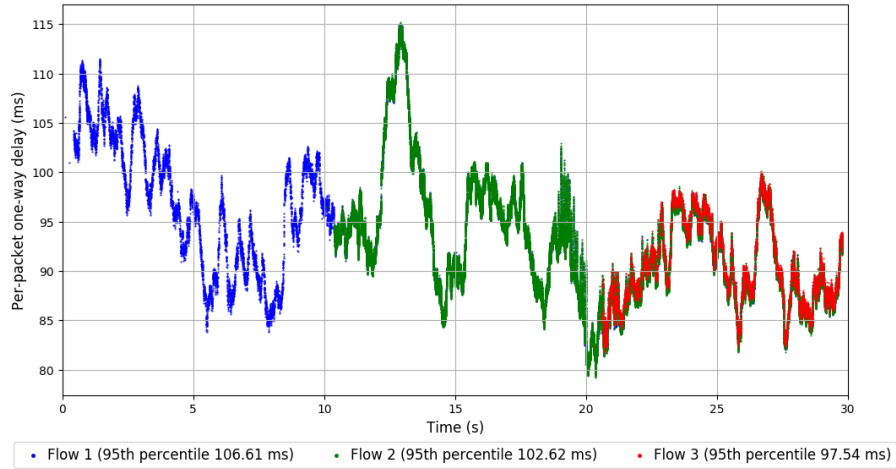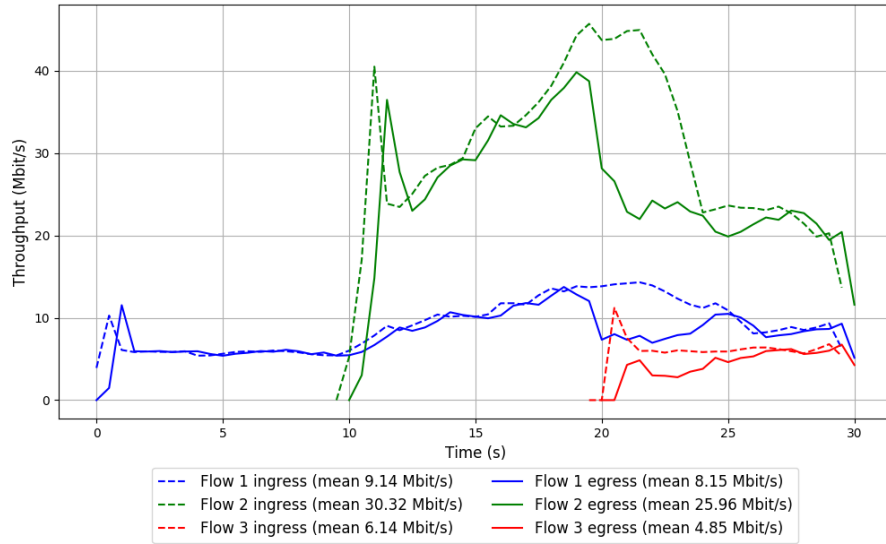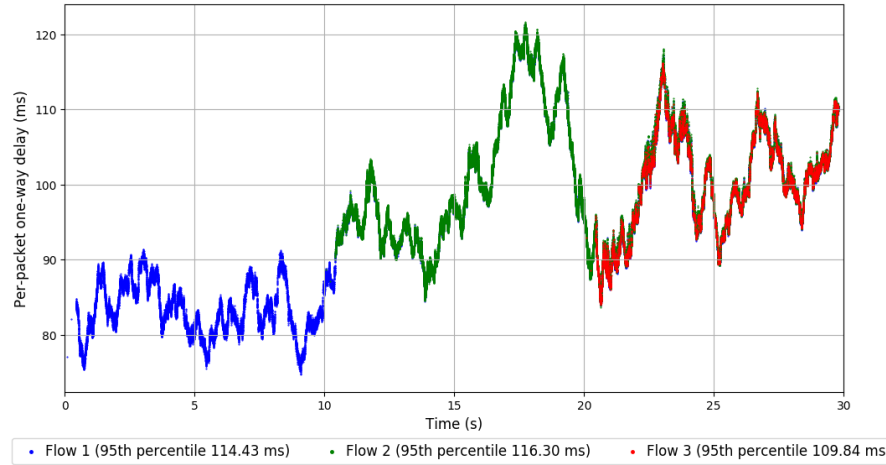
Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2019-03-27 12:56:13
End at: 2019-03-27 12:56:43
Local clock offset: 7.687 ms
Remote clock offset: -9.455 ms


# Below is generated by plot.py at 2019-03-27 15:07:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 26.95 Mbit/s
95th percentile per-packet one-way delay: 104.287 ms
Loss rate: 14.58%
-- Flow 1:
Average throughput: 8.15 Mbit/s
95th percentile per-packet one-way delay: 106.613 ms
Loss rate: 11.36%
-- Flow 2:
Average throughput: 25.96 Mbit/s
95th percentile per-packet one-way delay: 102.623 ms
Loss rate: 15.06%
-- Flow 3:
Average throughput: 4.85 Mbit/s
95th percentile per-packet one-way delay: 97.542 ms
Loss rate: 24.18%
```
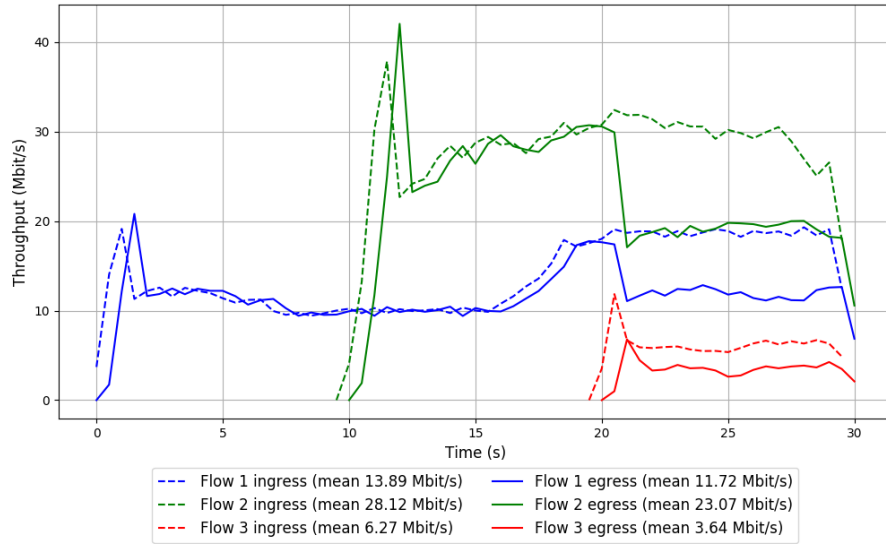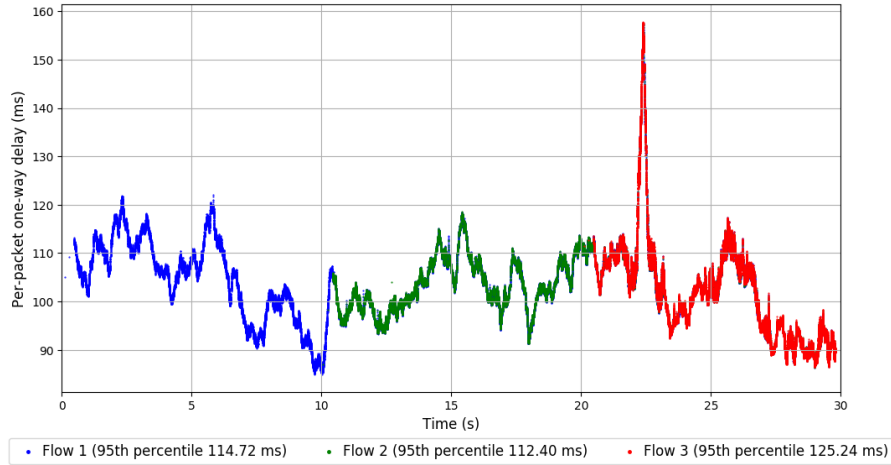
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2019-03-27 13:23:58
End at: 2019-03-27 13:24:28
Local clock offset: 4.396 ms
Remote clock offset: -11.11 ms


# Below is generated by plot.py at 2019-03-27 15:07:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 28.22 Mbit/s
95th percentile per-packet one-way delay: 115.503 ms
Loss rate: 19.01%
-- Flow 1:
Average throughput: 11.72 Mbit/s
95th percentile per-packet one-way delay: 114.426 ms
Loss rate: 16.01%
-- Flow 2:
Average throughput: 23.07 Mbit/s
95th percentile per-packet one-way delay: 116.298 ms
Loss rate: 18.60%
-- Flow 3:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 109.840 ms
Loss rate: 42.88%
```

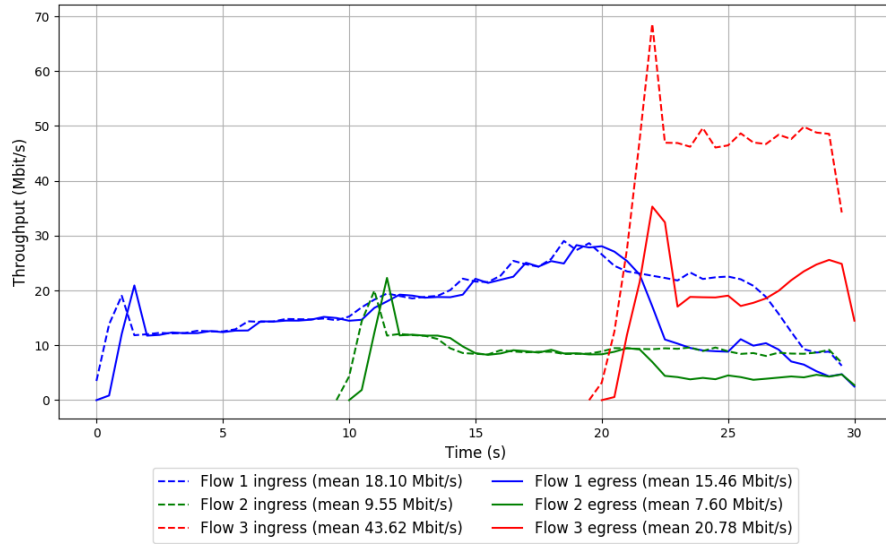Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2019-03-27 13:58:11
End at: 2019-03-27 13:58:41
Local clock offset: 5.049 ms
Remote clock offset: -19.491 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 27.29 Mbit/s
95th percentile per-packet one-way delay: 114.863 ms
Loss rate: 30.20%
-- Flow 1:
Average throughput: 15.46 Mbit/s
95th percentile per-packet one-way delay: 114.718 ms
Loss rate: 15.07%
-- Flow 2:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 112.402 ms
Loss rate: 20.96%
-- Flow 3:
Average throughput: 20.78 Mbit/s
95th percentile per-packet one-way delay: 125.237 ms
Loss rate: 53.26%
```

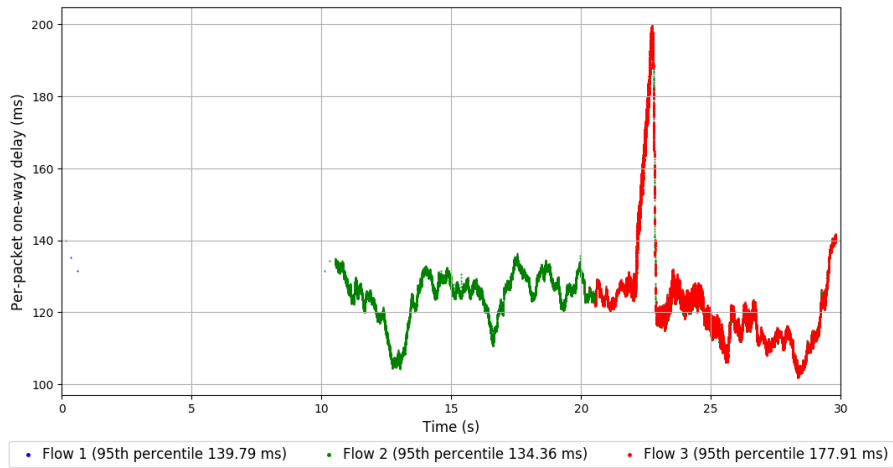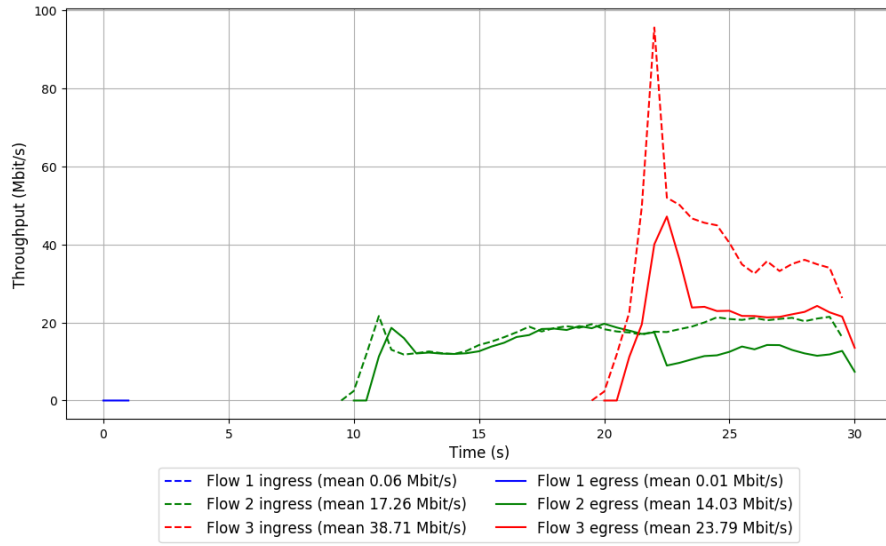Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2019-03-27 14:41:17
End at: 2019-03-27 14:41:47
Local clock offset: 6.944 ms
Remote clock offset: -18.319 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.07 Mbit/s
95th percentile per-packet one-way delay: 165.041 ms
Loss rate: 30.15%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 139.790 ms
Loss rate: 89.47%
-- Flow 2:
Average throughput: 14.03 Mbit/s
95th percentile per-packet one-way delay: 134.357 ms
Loss rate: 19.50%
-- Flow 3:
Average throughput: 23.79 Mbit/s
95th percentile per-packet one-way delay: 177.915 ms
Loss rate: 39.71%
```

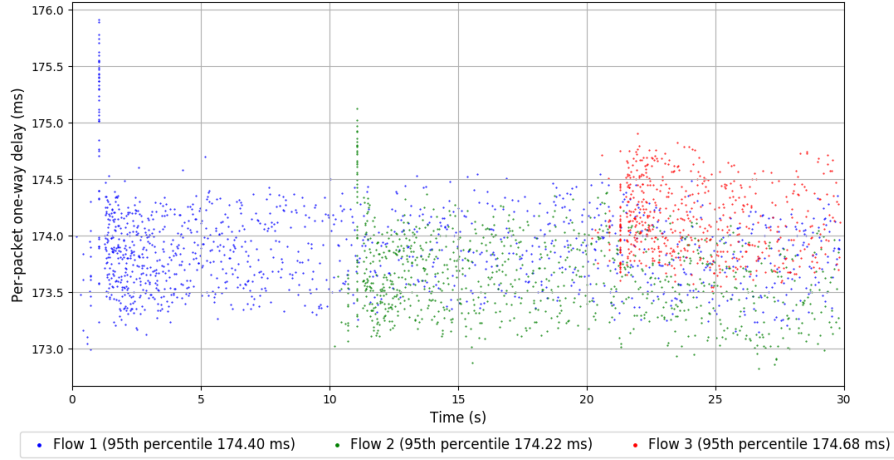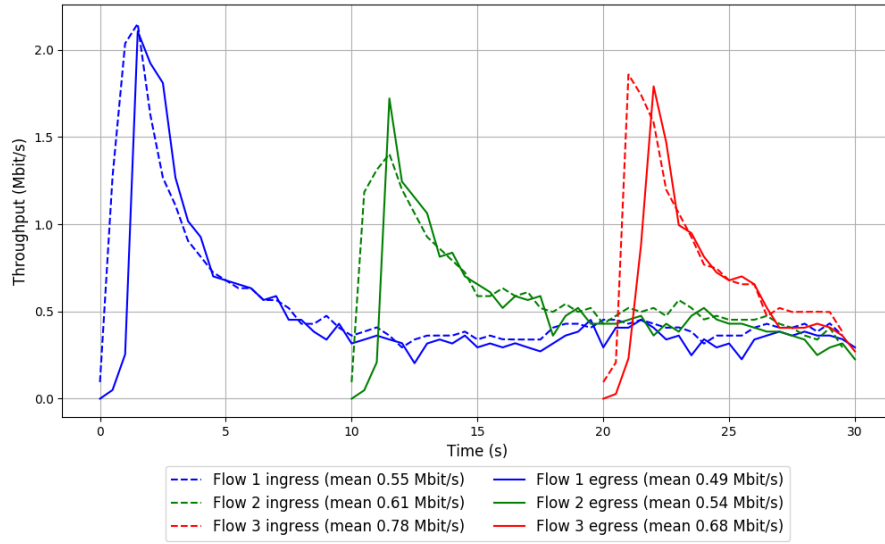## Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-03-27 12:28:33
End at: 2019-03-27 12:29:03
Local clock offset: 8.146 ms
Remote clock offset: -7.071 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 174.531 ms
Loss rate: 12.36%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 174.397 ms
Loss rate: 11.39%
-- Flow 2:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 174.220 ms
Loss rate: 11.62%
-- Flow 3:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 174.683 ms
Loss rate: 15.56%
```
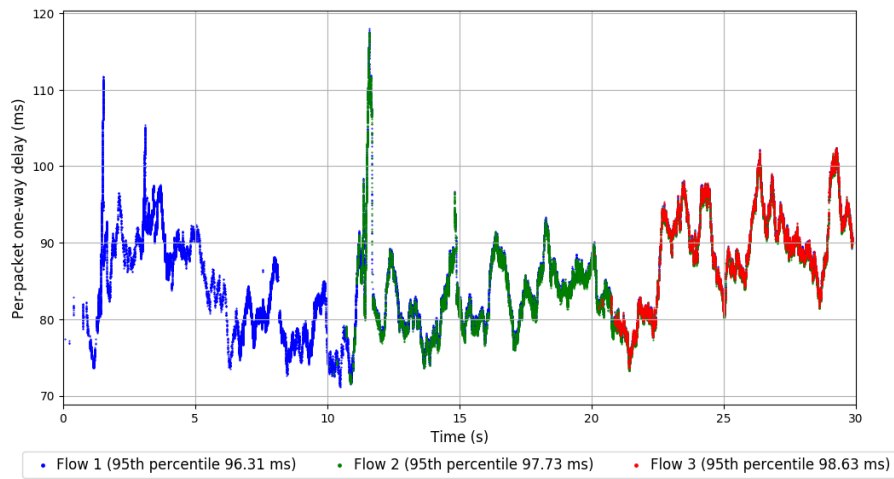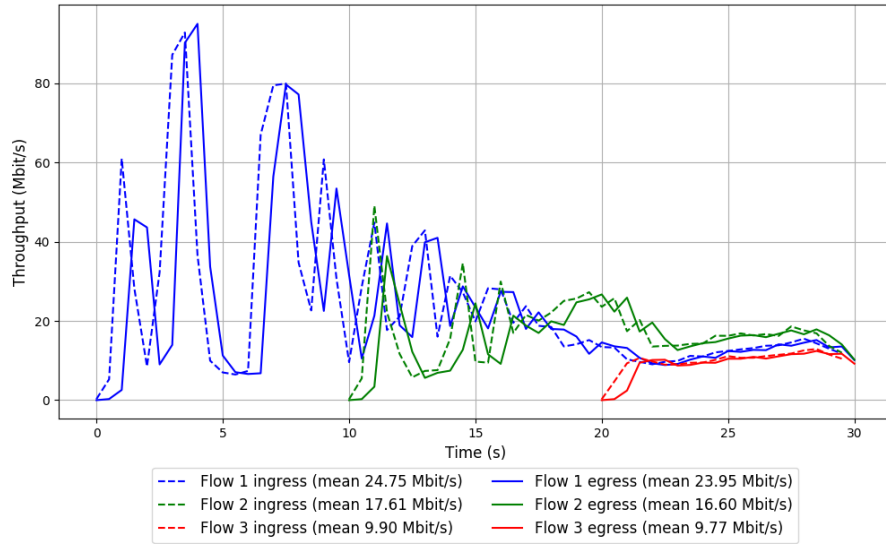
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-03-27 12:58:50
End at: 2019-03-27 12:59:20
Local clock offset: 7.387 ms
Remote clock offset: -11.059 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.18 Mbit/s
95th percentile per-packet one-way delay: 96.738 ms
Loss rate: 4.36%
-- Flow 1:
Average throughput: 23.95 Mbit/s
95th percentile per-packet one-way delay: 96.311 ms
Loss rate: 3.64%
-- Flow 2:
Average throughput: 16.60 Mbit/s
95th percentile per-packet one-way delay: 97.732 ms
Loss rate: 6.32%
-- Flow 3:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 98.631 ms
Loss rate: 2.76%
```
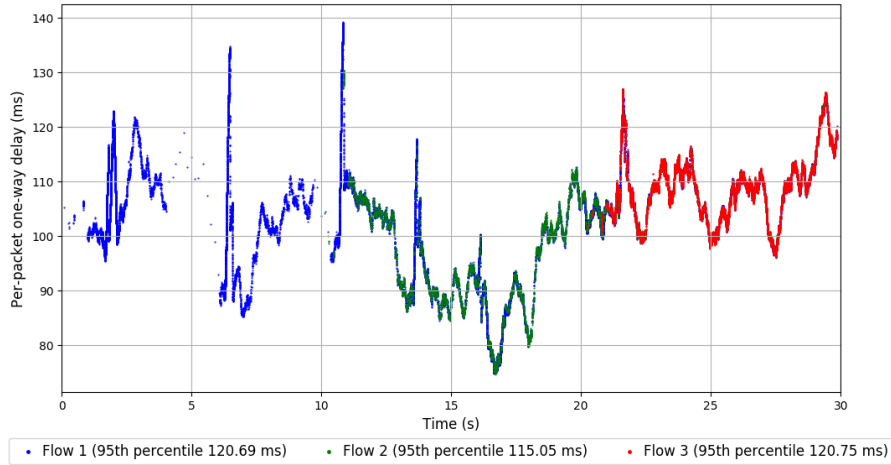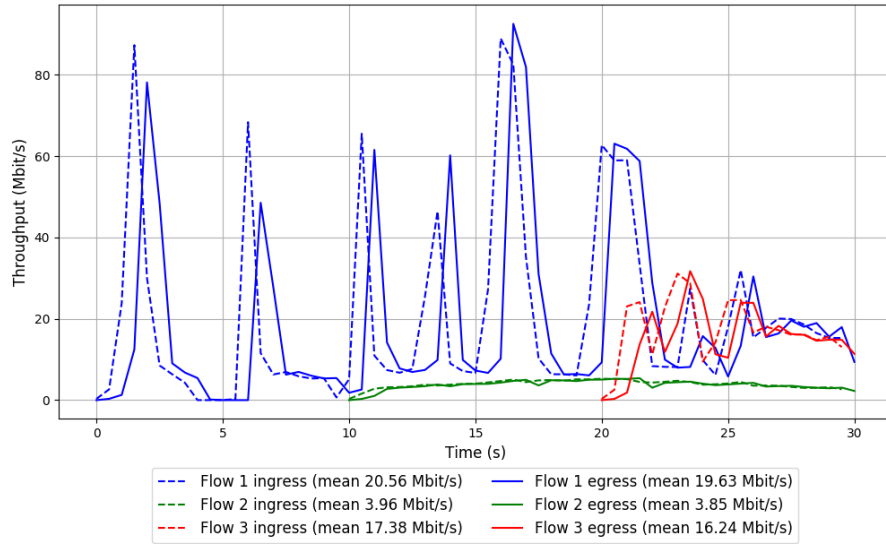
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 24.75 Mbit/s) — Flow 1 egress (mean 23.95 Mbit/s)
Flow 2 ingress (mean 17.61 Mbit/s) — Flow 2 egress (mean 16.60 Mbit/s)
Flow 3 ingress (mean 9.90 Mbit/s) — Flow 3 egress (mean 9.77 Mbit/s)

Flow 1 (95th percentile 96.31 ms) — Flow 2 (95th percentile 97.73 ms) — Flow 3 (95th percentile 98.63 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-03-27 13:26:35
End at: 2019-03-27 13:27:05
Local clock offset: 4.095 ms
Remote clock offset: -14.461 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 27.51 Mbit/s
95th percentile per-packet one-way delay: 120.242 ms
Loss rate: 5.50%
-- Flow 1:
Average throughput: 19.63 Mbit/s
95th percentile per-packet one-way delay: 120.695 ms
Loss rate: 5.03%
-- Flow 2:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 115.047 ms
Loss rate: 3.42%
-- Flow 3:
Average throughput: 16.24 Mbit/s
95th percentile per-packet one-way delay: 120.751 ms
Loss rate: 8.15%
```
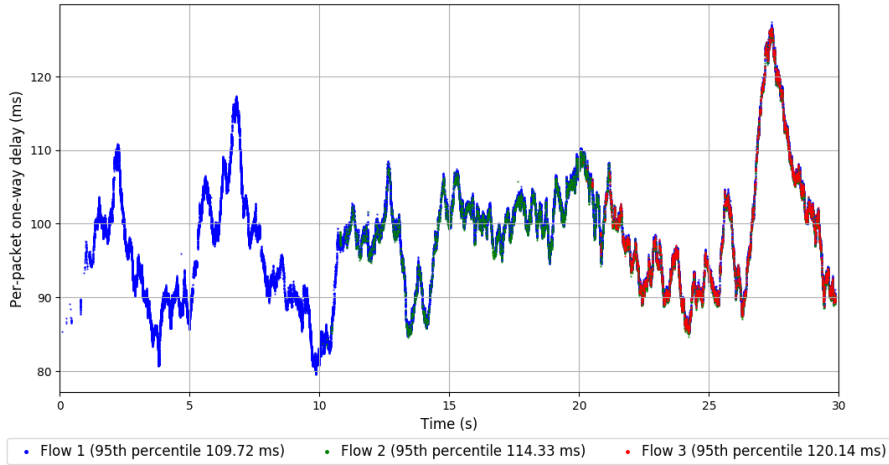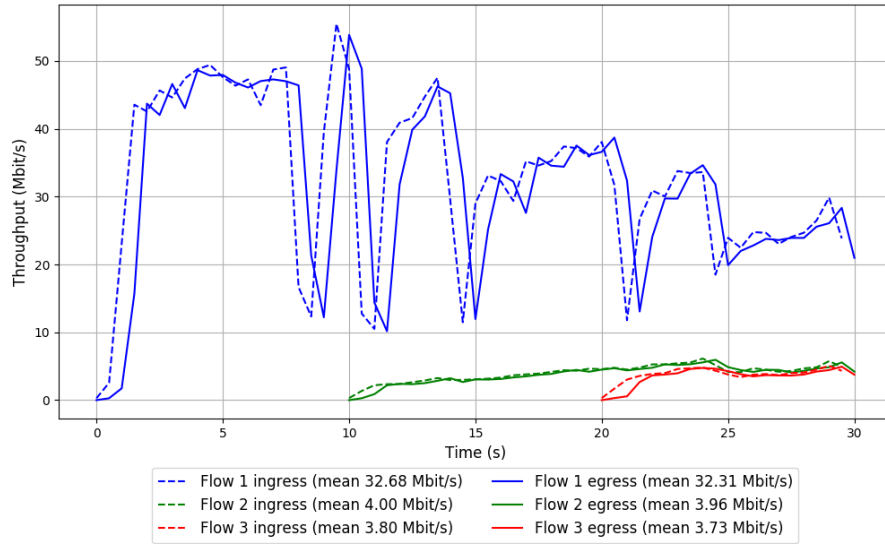
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2019-03-27 14:00:51
End at: 2019-03-27 14:01:21
Local clock offset: 5.273 ms
Remote clock offset: -15.2 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 36.15 Mbit/s
95th percentile per-packet one-way delay: 110.423 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 32.31 Mbit/s
95th percentile per-packet one-way delay: 109.718 ms
Loss rate: 1.62%
-- Flow 2:
Average throughput: 3.96 Mbit/s
95th percentile per-packet one-way delay: 114.325 ms
Loss rate: 2.00%
-- Flow 3:
Average throughput: 3.73 Mbit/s
95th percentile per-packet one-way delay: 120.138 ms
Loss rate: 3.64%
```
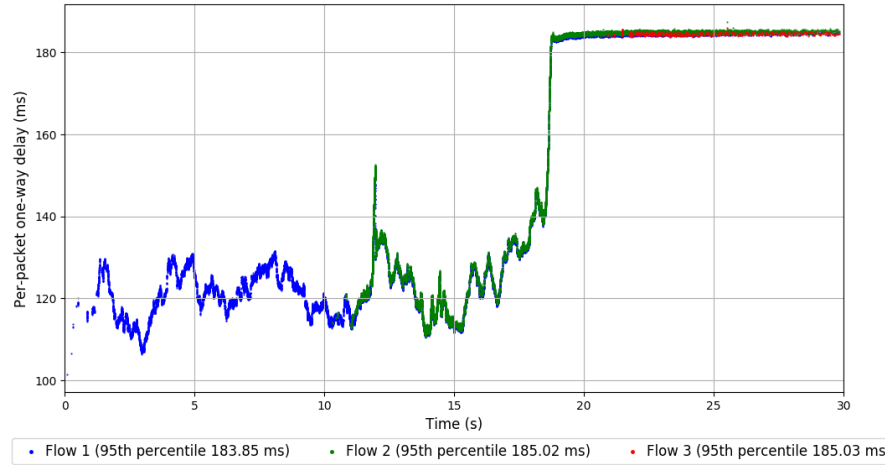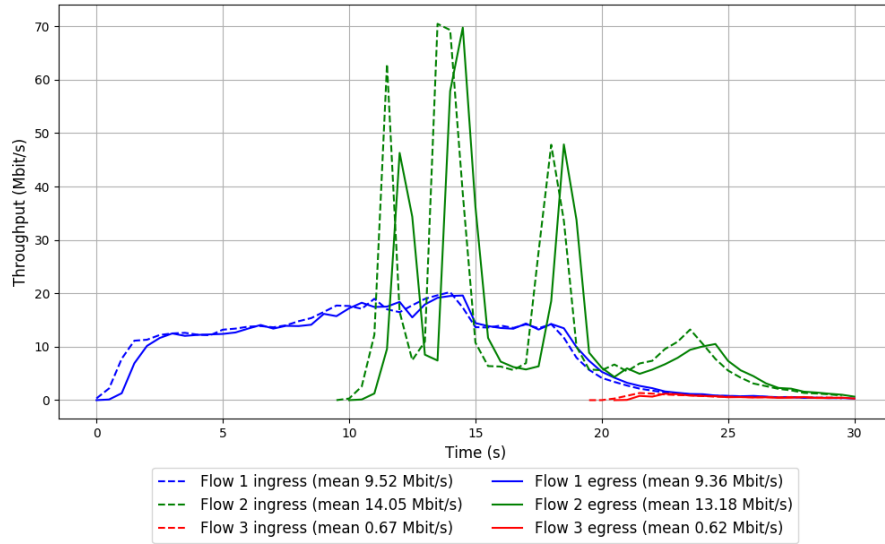
Run 4: Report of QUIC Cubic — Data Link

- Flow 1 ingress (mean 32.68 Mbit/s)
- Flow 1 egress (mean 32.31 Mbit/s)
- Flow 2 ingress (mean 4.00 Mbit/s)
- Flow 2 egress (mean 3.96 Mbit/s)
- Flow 3 ingress (mean 3.80 Mbit/s)
- Flow 3 egress (mean 3.73 Mbit/s)

- Flow 1 (95th percentile 109.72 ms)
- Flow 2 (95th percentile 114.33 ms)
- Flow 3 (95th percentile 120.14 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2019-03-27 14:43:59
End at: 2019-03-27 14:44:29
Local clock offset: 7.011 ms
Remote clock offset: -16.821 ms

# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.30 Mbit/s
95th percentile per-packet one-way delay: 184.786 ms
Loss rate: 4.76%
-- Flow 1:
Average throughput: 9.36 Mbit/s
95th percentile per-packet one-way delay: 183.852 ms
Loss rate: 2.16%
-- Flow 2:
Average throughput: 13.18 Mbit/s
95th percentile per-packet one-way delay: 185.023 ms
Loss rate: 7.16%
-- Flow 3:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 185.028 ms
Loss rate: 14.63%
```
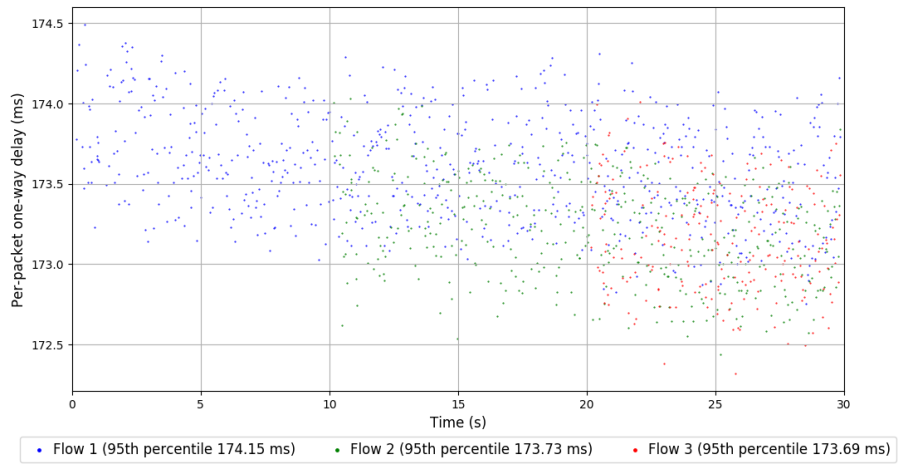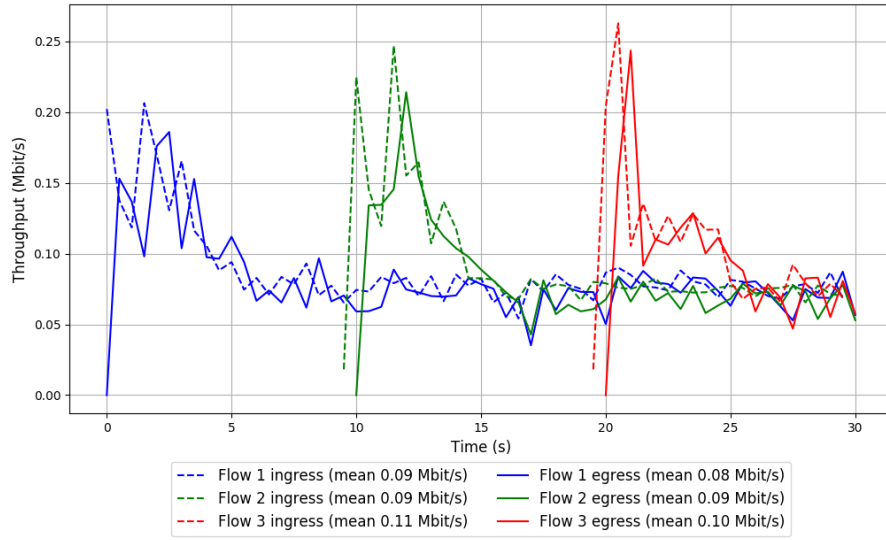
Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2019-03-27 12:30:23
End at: 2019-03-27 12:30:53
Local clock offset: 8.445 ms
Remote clock offset: -6.714 ms

# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 174.068 ms
Loss rate: 9.36%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 174.153 ms
Loss rate: 7.58%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 173.728 ms
Loss rate: 11.30%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 173.691 ms
Loss rate: 10.34%
```
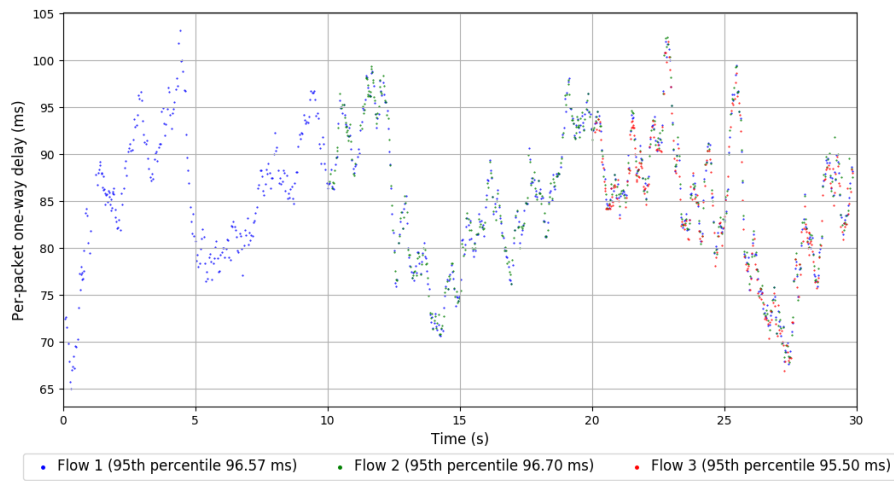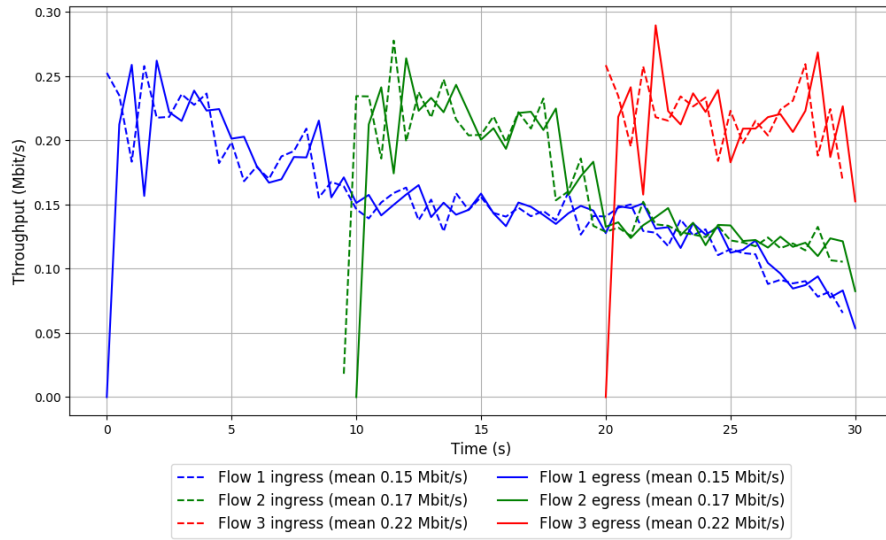
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2019-03-27 13:00:07
End at: 2019-03-27 13:00:37
Local clock offset: 7.175 ms
Remote clock offset: -9.88 ms

# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 96.573 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 96.573 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 96.699 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 95.499 ms
Loss rate: 1.10%
```
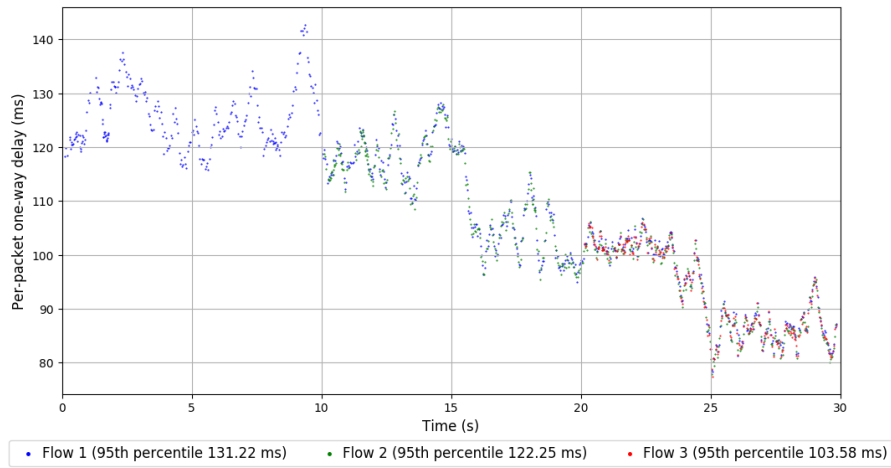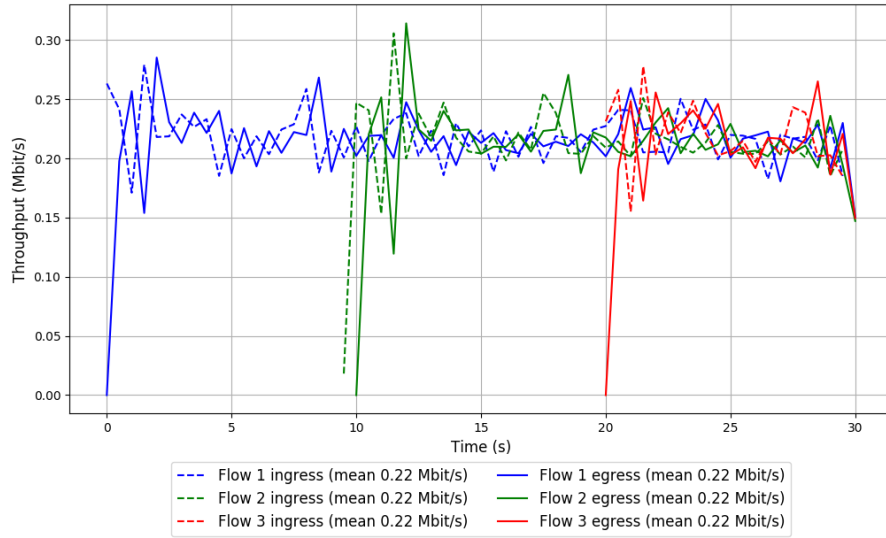
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2019-03-27 13:27:53
End at: 2019-03-27 13:28:23
Local clock offset: 3.903 ms
Remote clock offset: -14.198 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 128.314 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 131.224 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 122.250 ms
Loss rate: 1.02%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 103.582 ms
Loss rate: 1.52%
```

Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2019-03-27 14:02:11
End at: 2019-03-27 14:02:41
Local clock offset: 5.413 ms
Remote clock offset: -11.952 ms

# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 115.689 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 114.342 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 115.474 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 118.082 ms
Loss rate: 1.61%
```
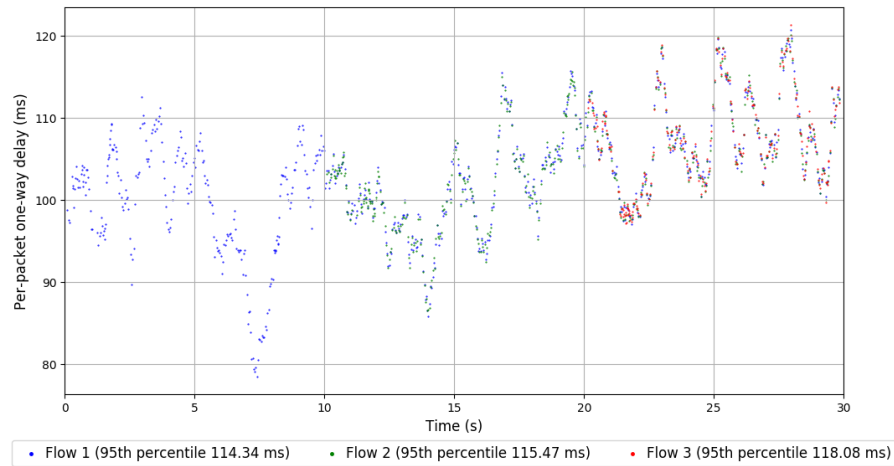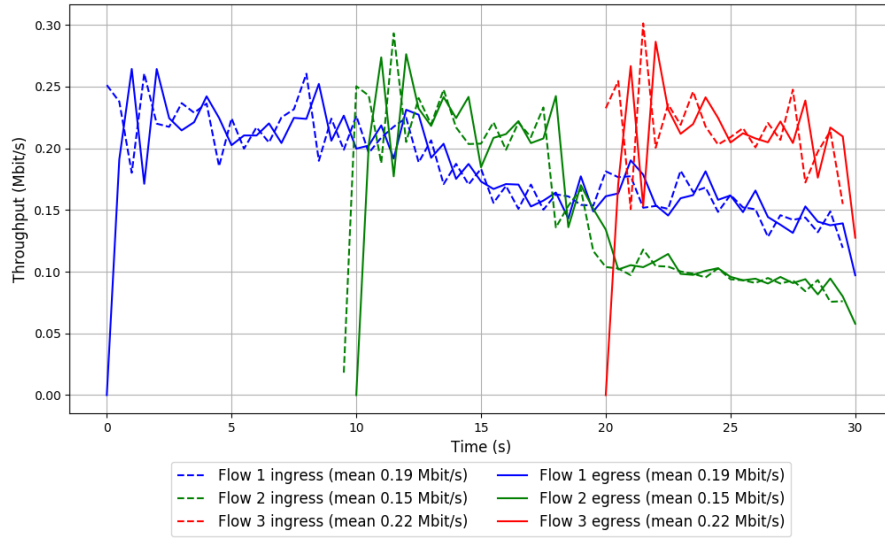
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2019-03-27 14:48:39
End at: 2019-03-27 14:49:09
Local clock offset: 7.641 ms
Remote clock offset: -19.069 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 137.230 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 136.248 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 138.170 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 136.293 ms
Loss rate: 1.84%
```
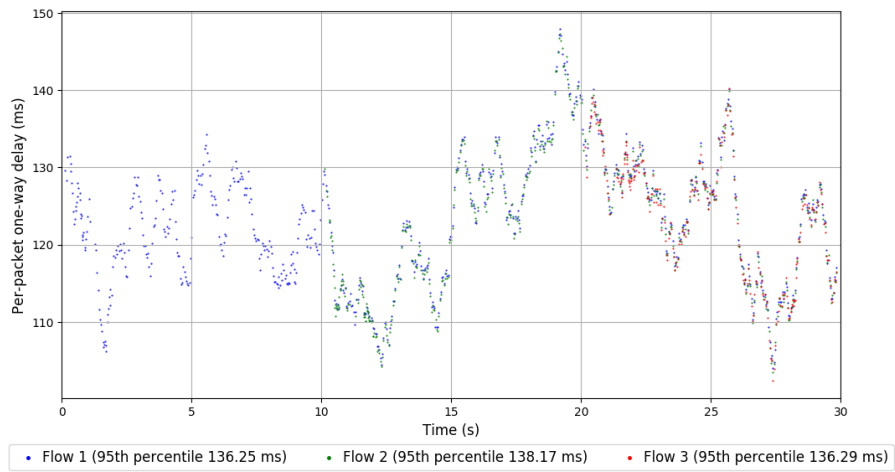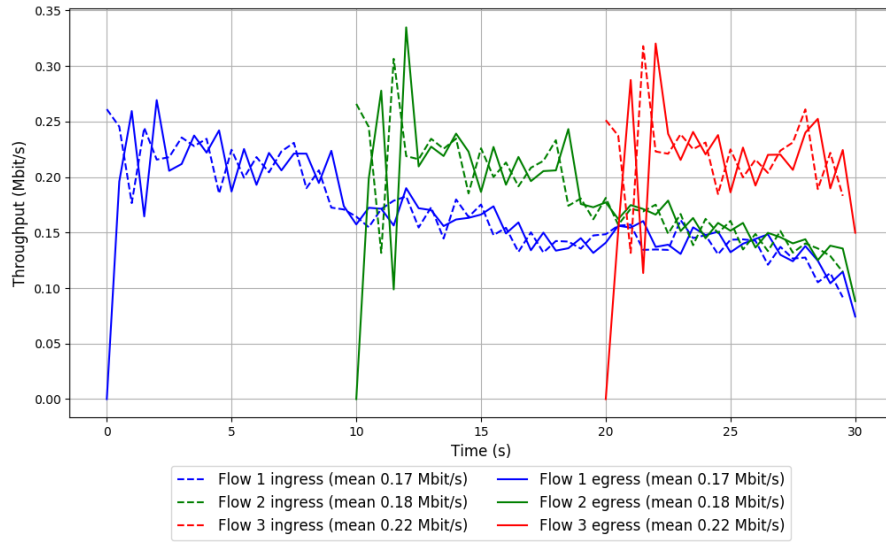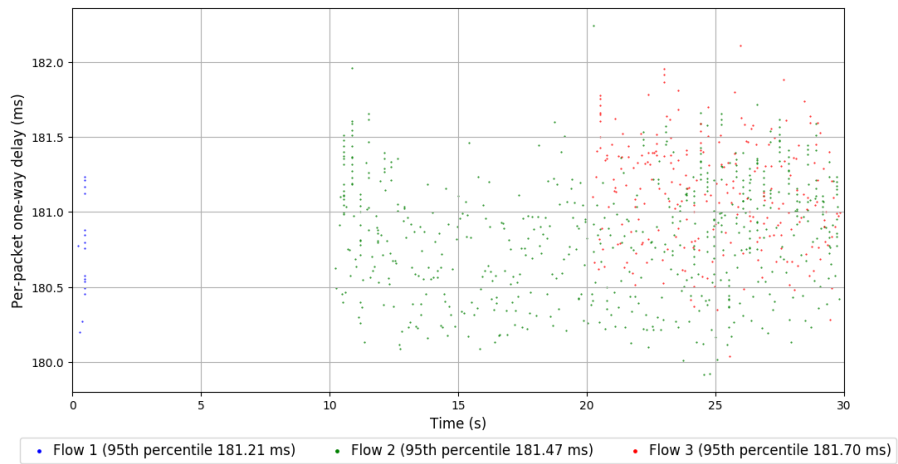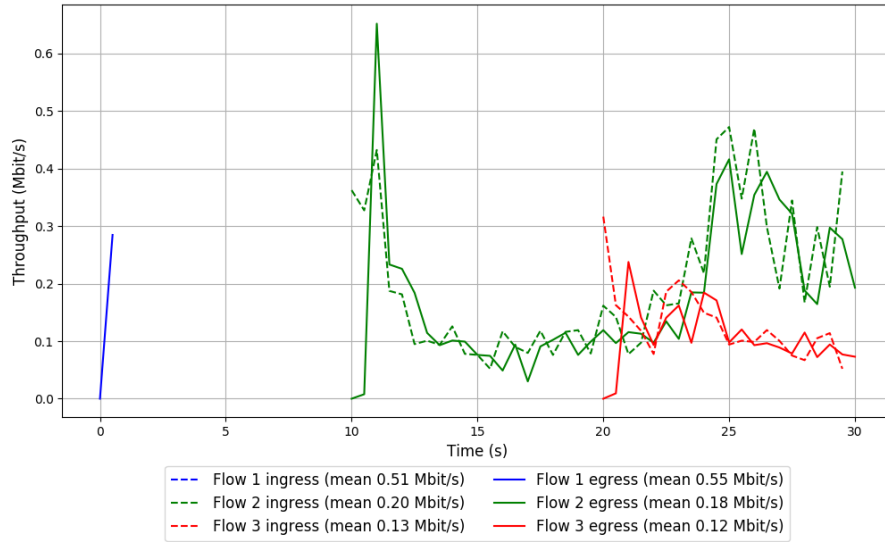
Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2019-03-27 12:13:16
End at: 2019-03-27 12:13:46
Local clock offset: 4.12 ms
Remote clock offset: -13.866 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 181.573 ms
Loss rate: 10.79%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 181.210 ms
Loss rate: 9.13%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 181.475 ms
Loss rate: 9.77%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 181.698 ms
Loss rate: 14.11%
```
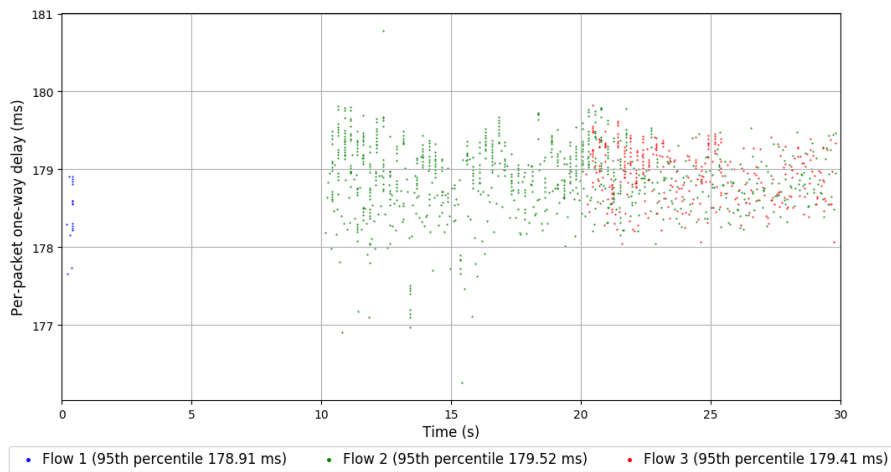
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-03-27 12:51:55
End at: 2019-03-27 12:52:25
Local clock offset: 8.413 ms
Remote clock offset: -10.337 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 179.488 ms
Loss rate: 6.30%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 178.907 ms
Loss rate: 7.70%
-- Flow 2:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 179.523 ms
Loss rate: 5.59%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 179.413 ms
Loss rate: 8.22%
```
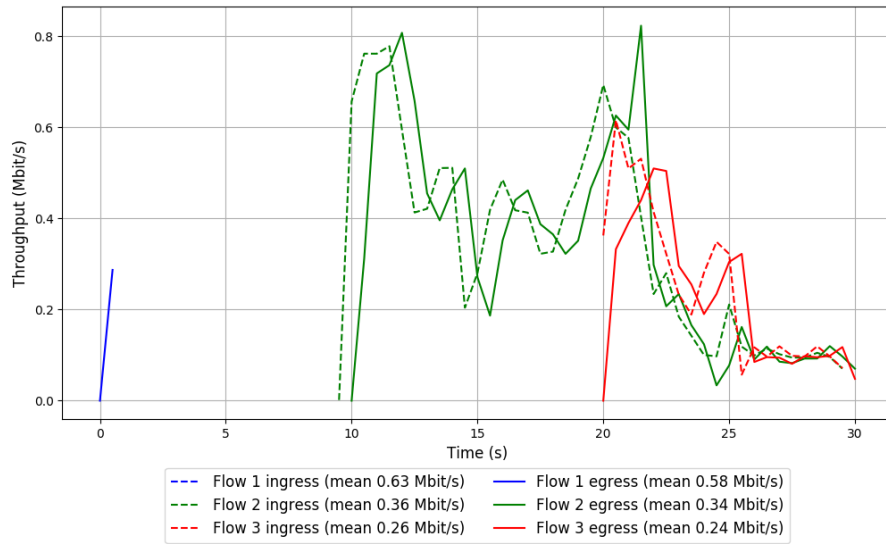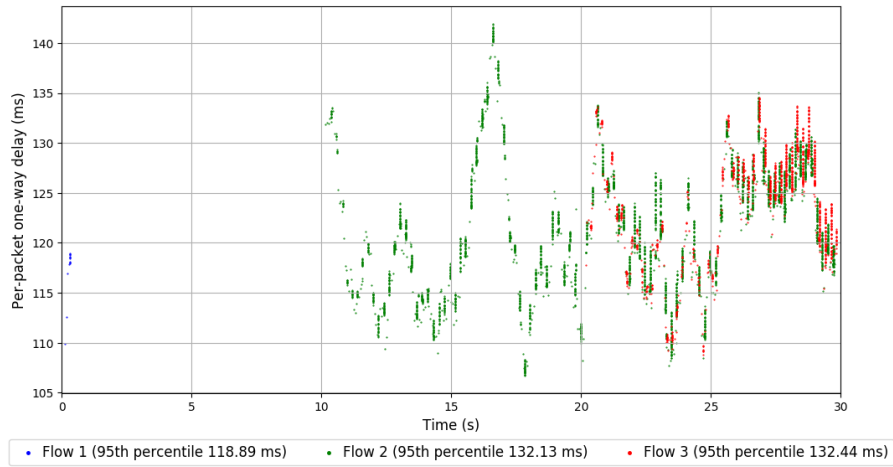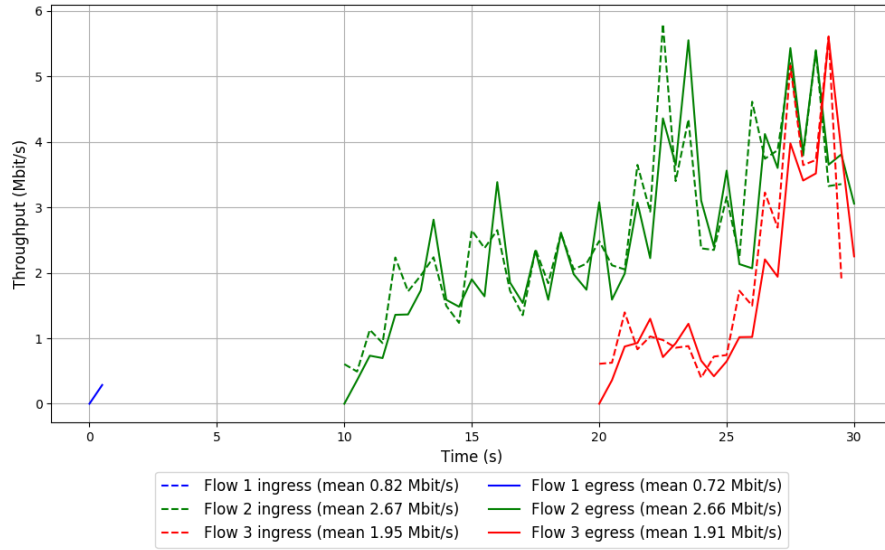
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2019-03-27 13:20:05
End at: 2019-03-27 13:20:35
Local clock offset: 5.464 ms
Remote clock offset: -9.759 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 132.258 ms
Loss rate: 2.10%
-- Flow 1:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 118.887 ms
Loss rate: 7.71%
-- Flow 2:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 132.134 ms
Loss rate: 1.49%
-- Flow 3:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 132.445 ms
Loss rate: 3.74%
```
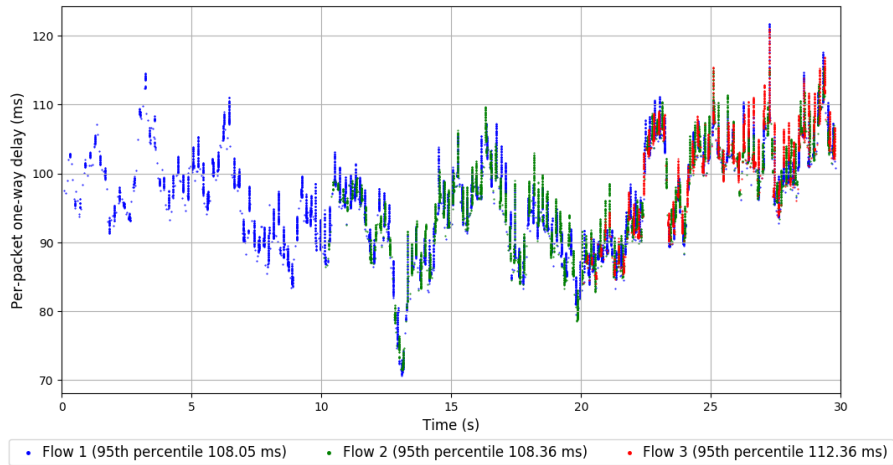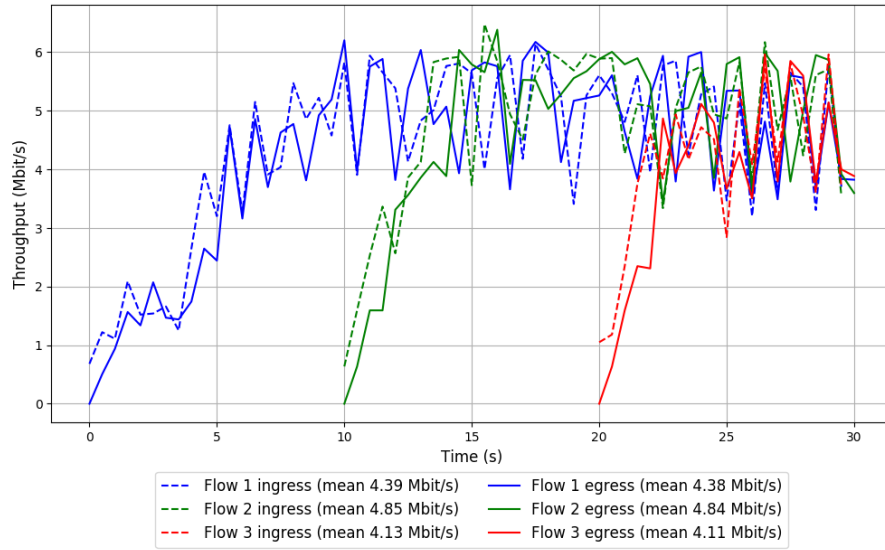
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2019-03-27 13:54:19
End at: 2019-03-27 13:54:49
Local clock offset: 4.577 ms
Remote clock offset: -15.337 ms

# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.92 Mbit/s
95th percentile per-packet one-way delay: 109.072 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 4.38 Mbit/s
95th percentile per-packet one-way delay: 108.047 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 4.84 Mbit/s
95th percentile per-packet one-way delay: 108.365 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 4.11 Mbit/s
95th percentile per-packet one-way delay: 112.365 ms
Loss rate: 2.20%
```
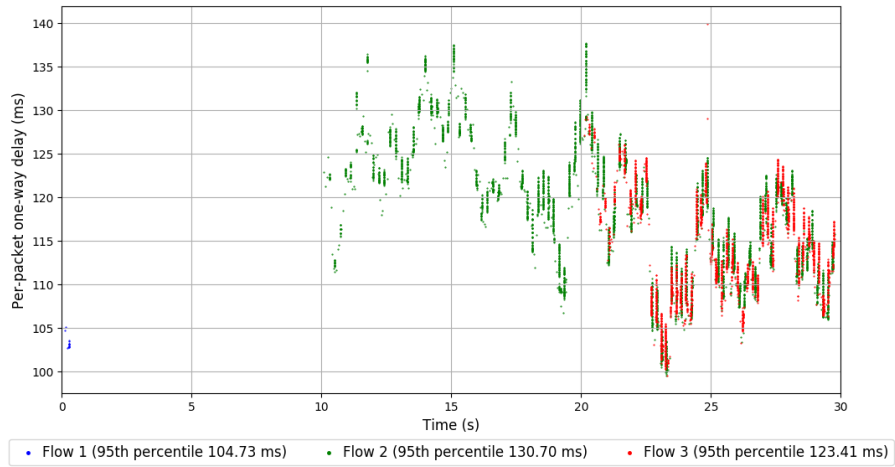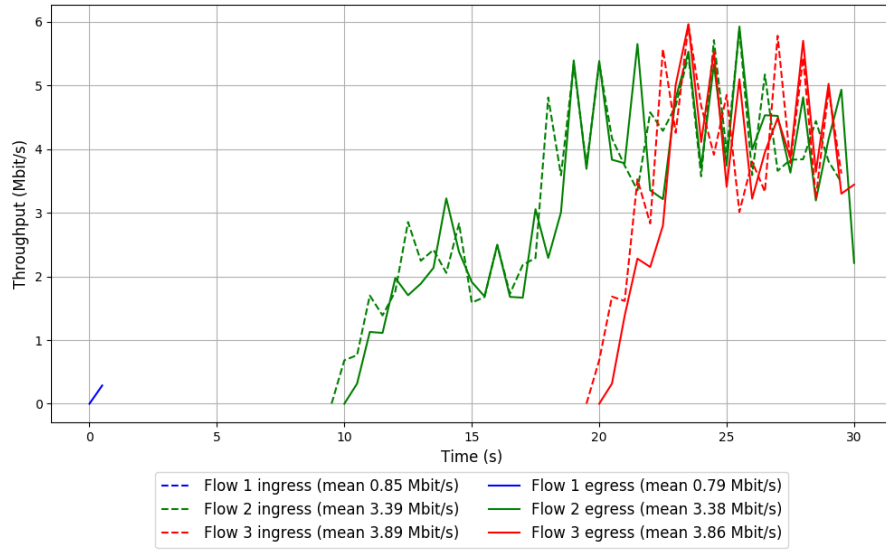
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2019-03-27 14:21:55
End at: 2019-03-27 14:22:25
Local clock offset: 6.203 ms
Remote clock offset: -18.89 ms


# Below is generated by plot.py at 2019-03-27 15:07:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.50 Mbit/s
95th percentile per-packet one-way delay: 129.514 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 104.735 ms
Loss rate: 7.71%
-- Flow 2:
Average throughput: 3.38 Mbit/s
95th percentile per-packet one-way delay: 130.699 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 3.86 Mbit/s
95th percentile per-packet one-way delay: 123.414 ms
Loss rate: 2.36%
```

Run 5: Report of Sprout — Data Link

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

Start at: 2019-03-27 12:31:49
End at: 2019-03-27 12:32:19
Local clock offset: 8.692 ms
Remote clock offset: -13.053 ms


# Below is generated by plot.py at 2019-03-27 15:07:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 20.53 Mbit/s
95th percentile per-packet one-way delay: 185.644 ms
Loss rate: 7.17%
-- Flow 1:
Average throughput: 12.30 Mbit/s
95th percentile per-packet one-way delay: 185.598 ms
Loss rate: 7.62%
-- Flow 2:
Average throughput: 9.46 Mbit/s
95th percentile per-packet one-way delay: 186.224 ms
Loss rate: 7.68%
-- Flow 3:
Average throughput: 5.99 Mbit/s
95th percentile per-packet one-way delay: 181.430 ms
Loss rate: 2.44%
```
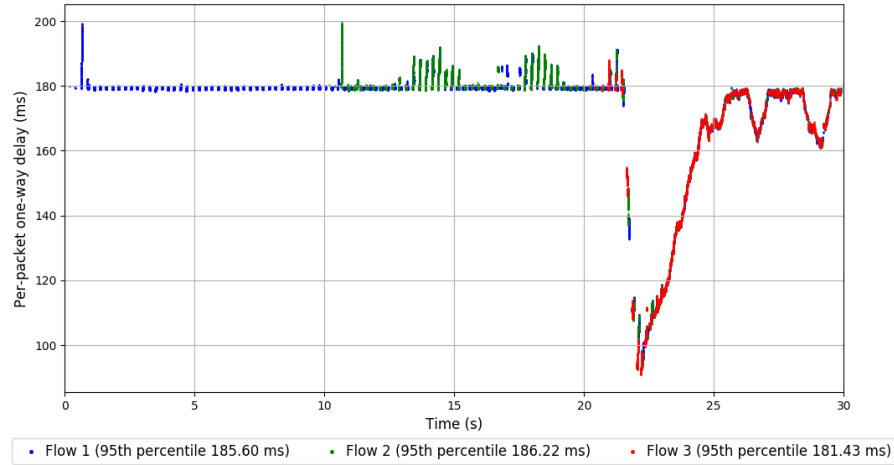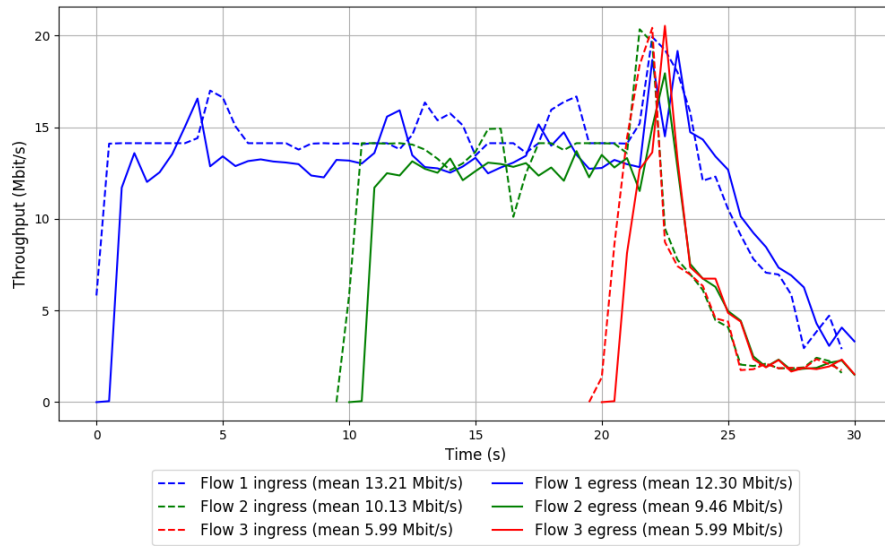
Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2019-03-27 13:01:21
End at: 2019-03-27 13:01:51
Local clock offset: 7.093 ms
Remote clock offset: -5.469 ms


# Below is generated by plot.py at 2019-03-27 15:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.57 Mbit/s
95th percentile per-packet one-way delay: 128.150 ms
Loss rate: 15.24%
-- Flow 1:
Average throughput: 24.19 Mbit/s
95th percentile per-packet one-way delay: 119.504 ms
Loss rate: 14.75%
-- Flow 2:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 126.451 ms
Loss rate: 9.81%
-- Flow 3:
Average throughput: 27.53 Mbit/s
95th percentile per-packet one-way delay: 133.916 ms
Loss rate: 17.78%
```
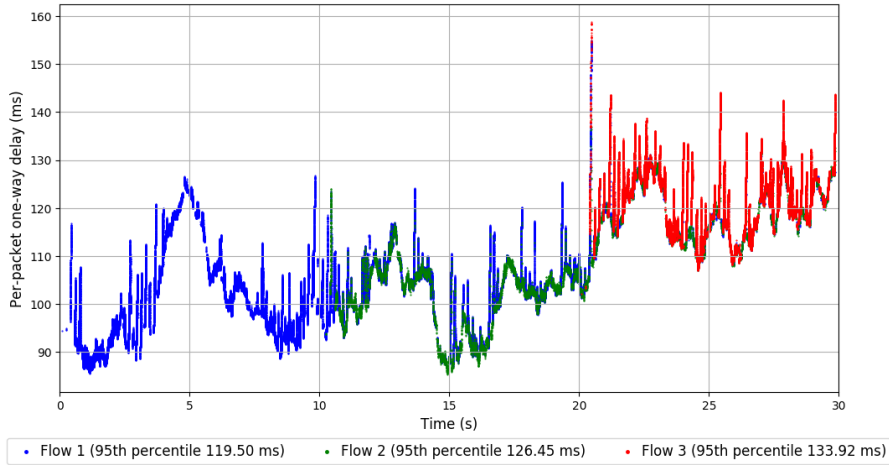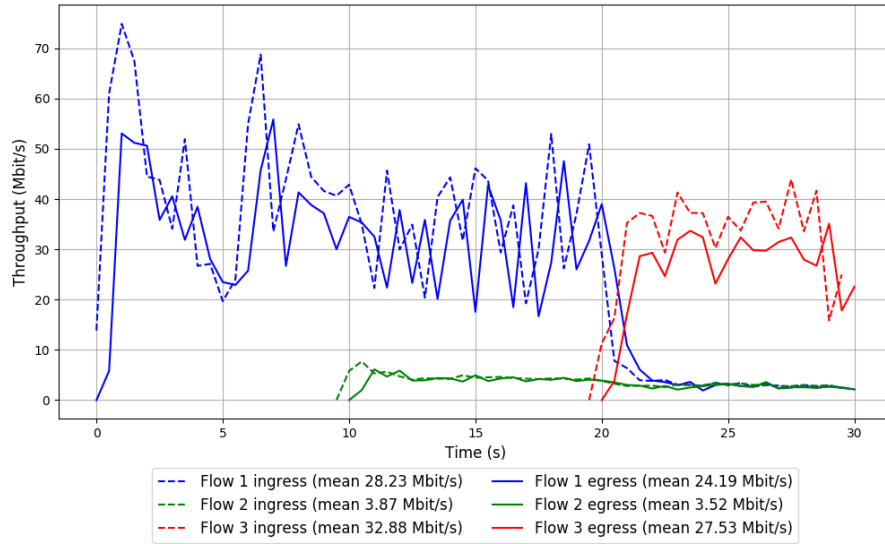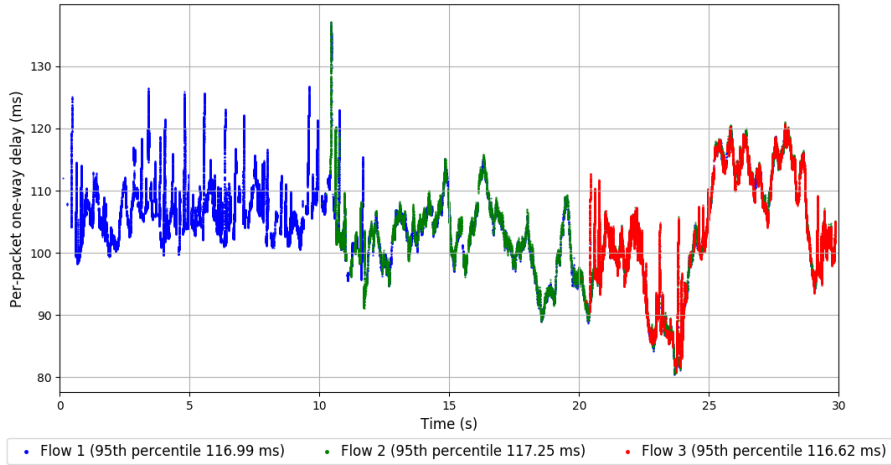
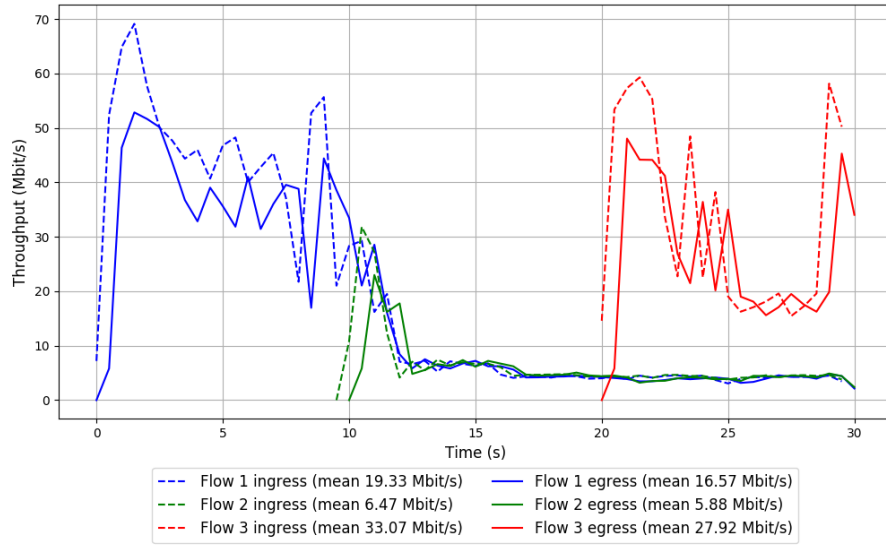# Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2019-03-27 13:29:08
End at: 2019-03-27 13:29:38
Local clock offset: 3.879 ms
Remote clock offset: -14.536 ms


# Below is generated by plot.py at 2019-03-27 15:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 29.64 Mbit/s
95th percentile per-packet one-way delay: 116.837 ms
Loss rate: 14.76%
-- Flow 1:
Average throughput: 16.57 Mbit/s
95th percentile per-packet one-way delay: 116.990 ms
Loss rate: 14.67%
-- Flow 2:
Average throughput: 5.88 Mbit/s
95th percentile per-packet one-way delay: 117.254 ms
Loss rate: 9.85%
-- Flow 3:
Average throughput: 27.92 Mbit/s
95th percentile per-packet one-way delay: 116.623 ms
Loss rate: 16.86%
```

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

Flow 1 ingress (mean 19.33 Mbit/s)   Flow 1 egress (mean 16.57 Mbit/s)
Flow 2 ingress (mean 6.47 Mbit/s)   Flow 2 egress (mean 5.88 Mbit/s)
Flow 3 ingress (mean 33.07 Mbit/s)   Flow 3 egress (mean 27.92 Mbit/s)

Flow 1 (95th percentile 116.99 ms)   Flow 2 (95th percentile 117.25 ms)   Flow 3 (95th percentile 116.62 ms)
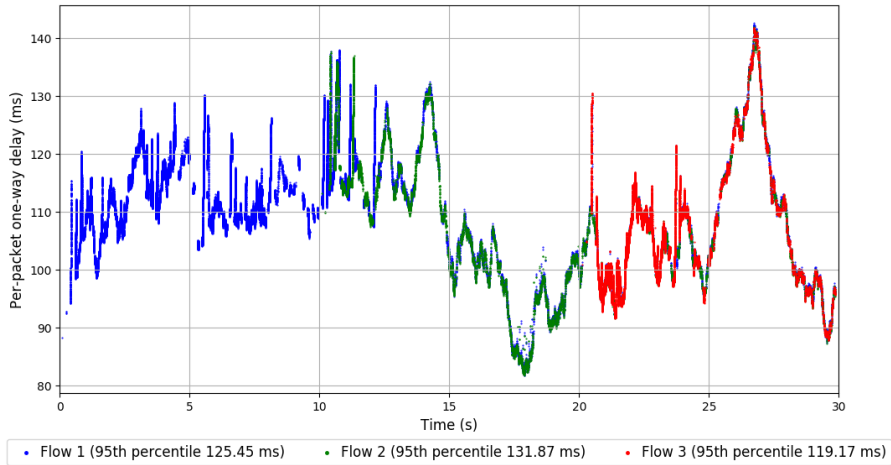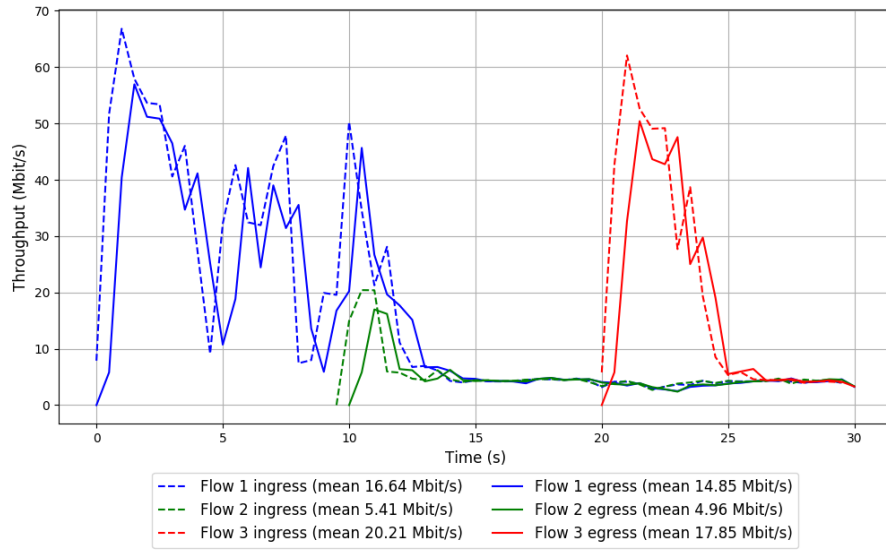
```
Run 4: Statistics of TaoVA-100x

Start at: 2019-03-27 14:03:27
End at: 2019-03-27 14:03:57
Local clock offset: 5.479 ms
Remote clock offset: -14.475 ms


# Below is generated by plot.py at 2019-03-27 15:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 24.00 Mbit/s
95th percentile per-packet one-way delay: 125.810 ms
Loss rate: 11.40%
-- Flow 1:
Average throughput: 14.85 Mbit/s
95th percentile per-packet one-way delay: 125.446 ms
Loss rate: 11.17%
-- Flow 2:
Average throughput: 4.96 Mbit/s
95th percentile per-packet one-way delay: 131.872 ms
Loss rate: 9.16%
-- Flow 3:
Average throughput: 17.85 Mbit/s
95th percentile per-packet one-way delay: 119.168 ms
Loss rate: 13.18%
```

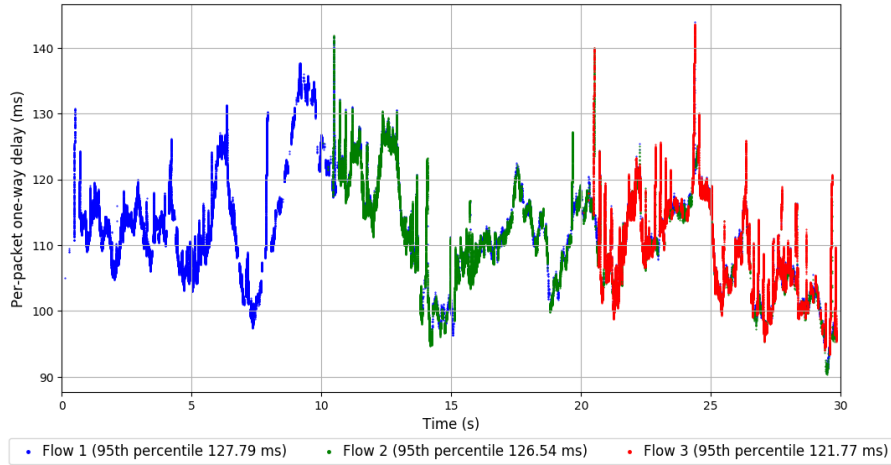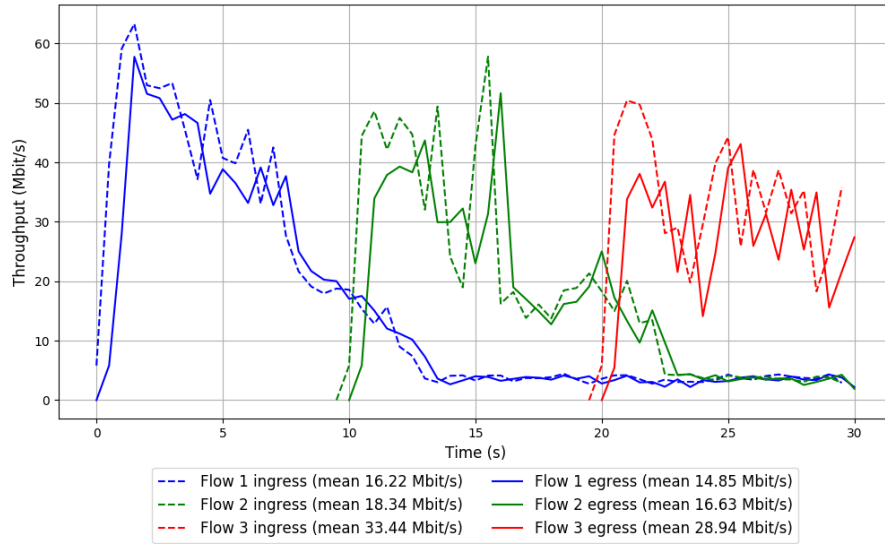## Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 16.64 Mbit/s) — — — Flow 1 egress (mean 14.85 Mbit/s)
Flow 2 ingress (mean 5.41 Mbit/s) — — — Flow 2 egress (mean 4.96 Mbit/s)
Flow 3 ingress (mean 20.21 Mbit/s) — — — Flow 3 egress (mean 17.85 Mbit/s)

Flow 1 (95th percentile 125.45 ms) • Flow 2 (95th percentile 131.87 ms) • Flow 3 (95th percentile 119.17 ms)

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

Start at: 2019-03-27 14:49:55
End at: 2019-03-27 14:50:25
Local clock offset: 7.89 ms
Remote clock offset: -7.784 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.37 Mbit/s
95th percentile per-packet one-way delay: 126.437 ms
Loss rate: 11.14%
-- Flow 1:
Average throughput: 14.85 Mbit/s
95th percentile per-packet one-way delay: 127.792 ms
Loss rate: 8.98%
-- Flow 2:
Average throughput: 16.63 Mbit/s
95th percentile per-packet one-way delay: 126.539 ms
Loss rate: 10.35%
-- Flow 3:
Average throughput: 28.94 Mbit/s
95th percentile per-packet one-way delay: 121.771 ms
Loss rate: 15.16%
```
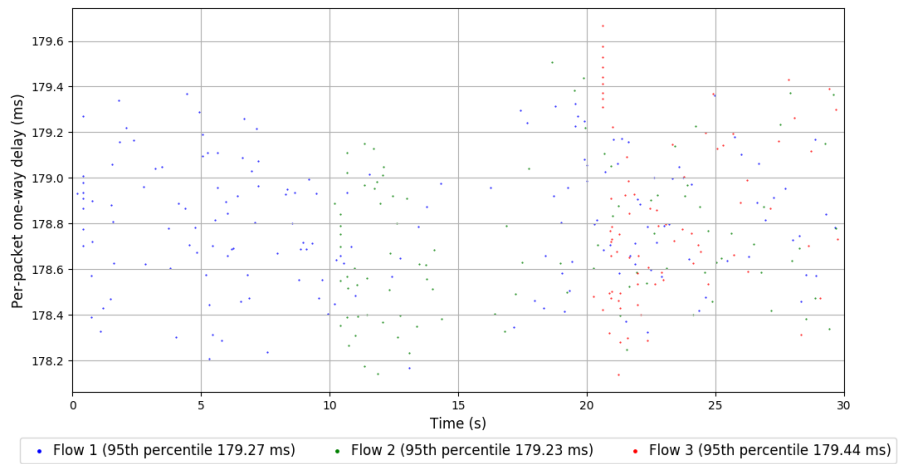
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2019-03-27 12:14:47
End at: 2019-03-27 12:15:17
Local clock offset: 4.159 ms
Remote clock offset: -11.627 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 179.347 ms
Loss rate: 21.70%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 179.270 ms
Loss rate: 19.04%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 179.234 ms
Loss rate: 27.25%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 179.441 ms
Loss rate: 19.77%
```
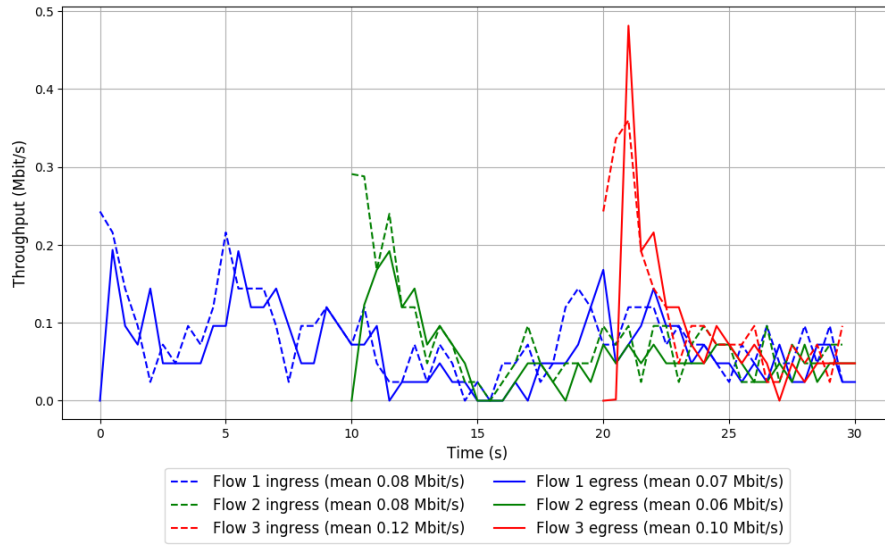
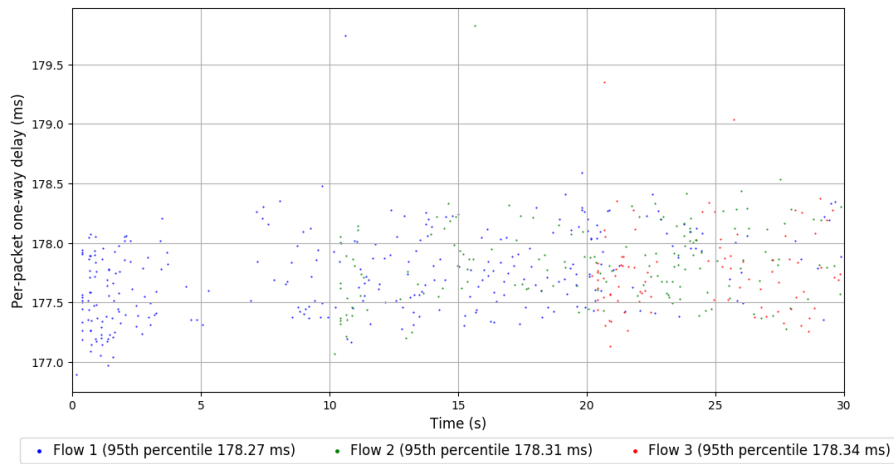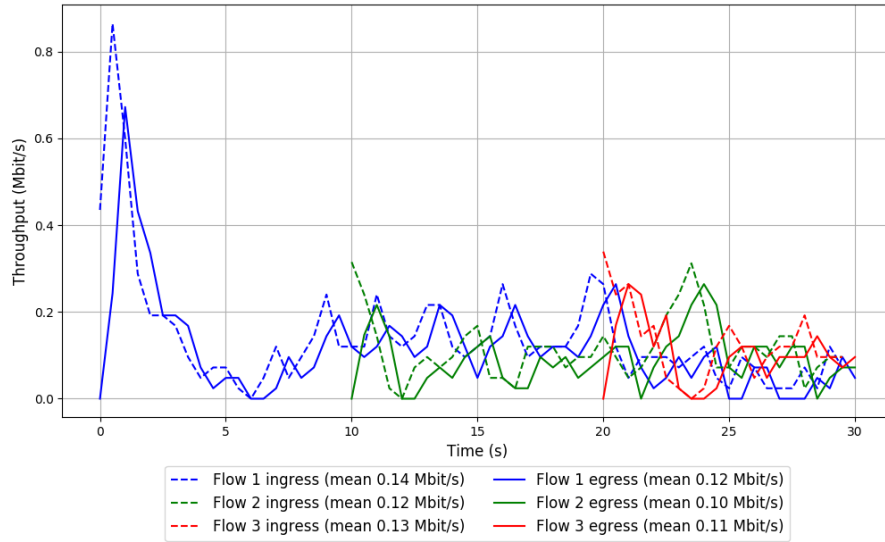Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2019-03-27 12:53:28
End at: 2019-03-27 12:53:58
Local clock offset: 8.005 ms
Remote clock offset: -9.362 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 178.283 ms
Loss rate: 17.53%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 178.268 ms
Loss rate: 17.26%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 178.308 ms
Loss rate: 18.74%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 178.343 ms
Loss rate: 16.23%
```

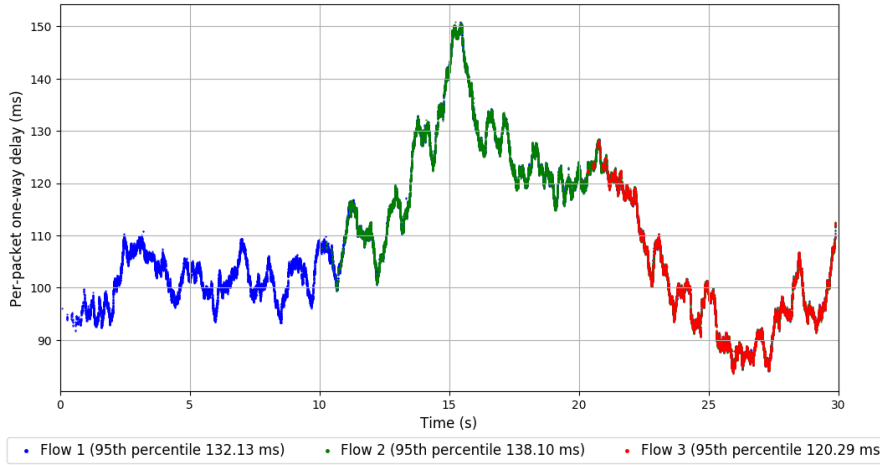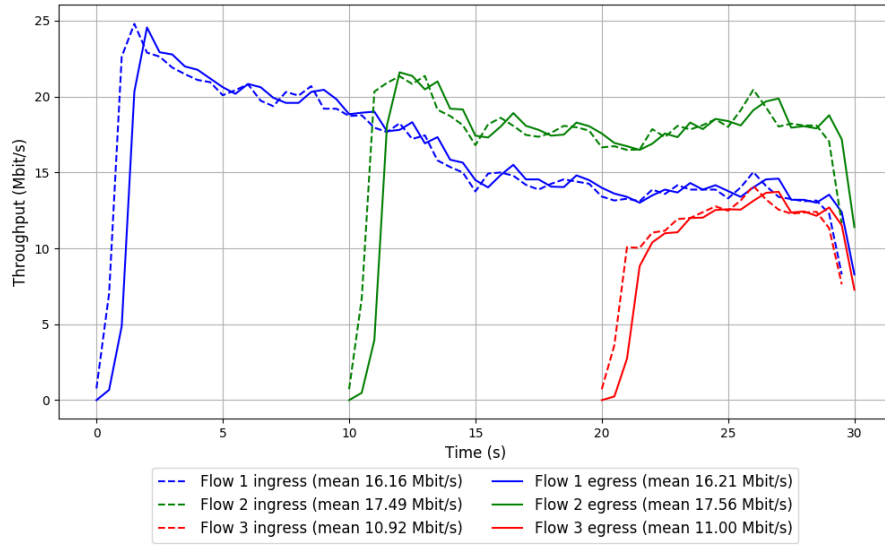Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2019-03-27 13:21:21
End at: 2019-03-27 13:21:51
Local clock offset: 5.136 ms
Remote clock offset: -12.203 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 31.46 Mbit/s
95th percentile per-packet one-way delay: 132.861 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 16.21 Mbit/s
95th percentile per-packet one-way delay: 132.132 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 17.56 Mbit/s
95th percentile per-packet one-way delay: 138.103 ms
Loss rate: 0.48%
-- Flow 3:
Average throughput: 11.00 Mbit/s
95th percentile per-packet one-way delay: 120.291 ms
Loss rate: 1.10%
```

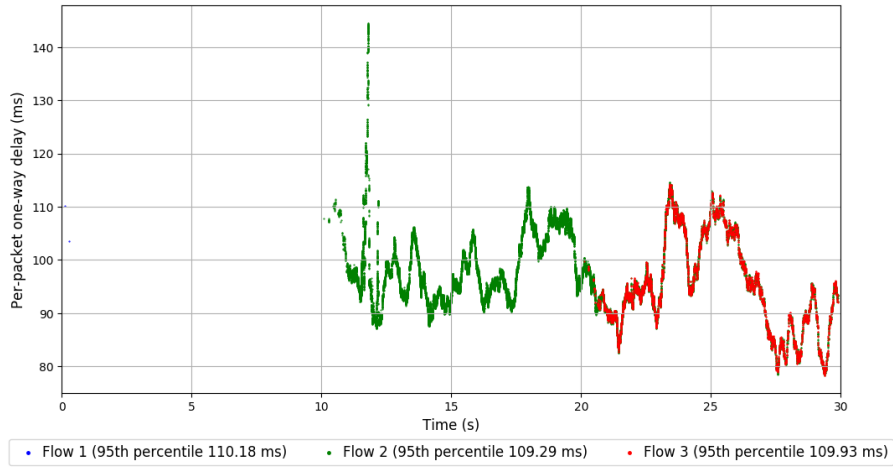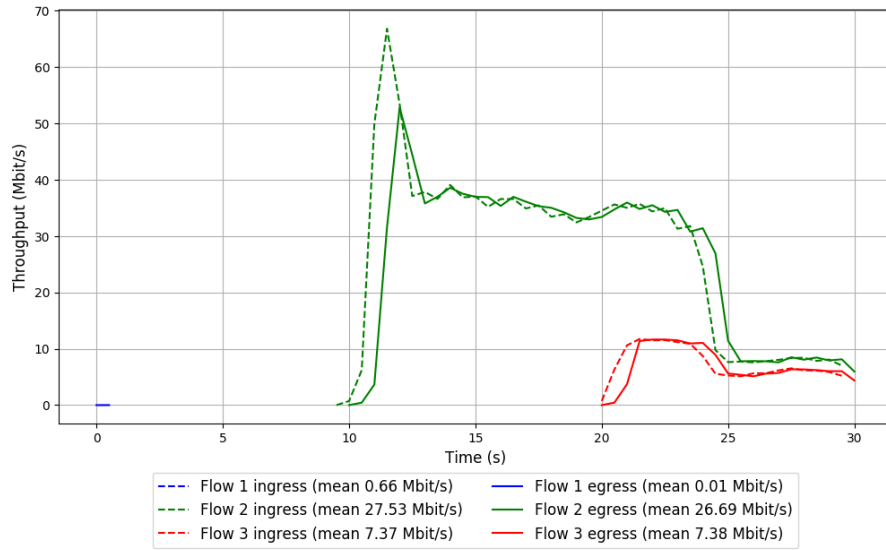# Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2019-03-27 13:55:35
End at: 2019-03-27 13:56:05
Local clock offset: 4.794 ms
Remote clock offset: -12.585 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 20.15 Mbit/s
95th percentile per-packet one-way delay: 109.425 ms
Loss rate: 3.67%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 110.182 ms
Loss rate: 98.79%
-- Flow 2:
Average throughput: 26.69 Mbit/s
95th percentile per-packet one-way delay: 109.292 ms
Loss rate: 3.91%
-- Flow 3:
Average throughput: 7.38 Mbit/s
95th percentile per-packet one-way delay: 109.930 ms
Loss rate: 1.75%
```

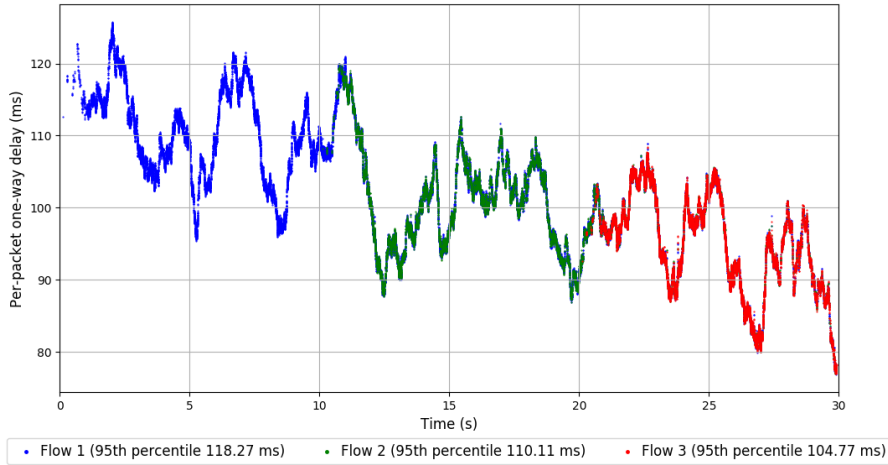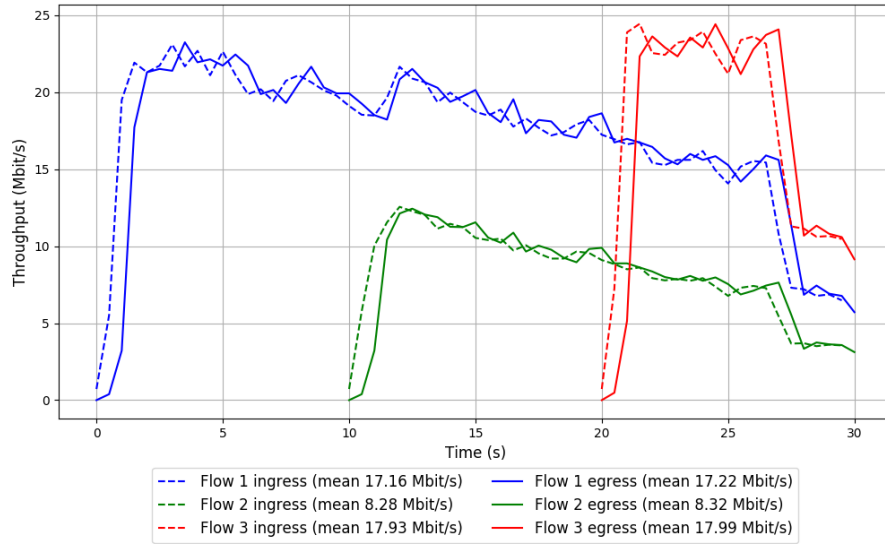## Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2019-03-27 14:27:05
End at: 2019-03-27 14:27:35
Local clock offset: 6.506 ms
Remote clock offset: -18.465 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 28.65 Mbit/s
95th percentile per-packet one-way delay: 116.665 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 17.22 Mbit/s
95th percentile per-packet one-way delay: 118.267 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 8.32 Mbit/s
95th percentile per-packet one-way delay: 110.112 ms
Loss rate: 0.46%
-- Flow 3:
Average throughput: 17.99 Mbit/s
95th percentile per-packet one-way delay: 104.768 ms
Loss rate: 1.29%
```

Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2019-03-27 12:44:42
End at: 2019-03-27 12:45:12
Local clock offset: 10.154 ms
Remote clock offset: -10.21 ms


# Below is generated by plot.py at 2019-03-27 15:08:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 34.09 Mbit/s
95th percentile per-packet one-way delay: 216.072 ms
Loss rate: 17.20%
-- Flow 1:
Average throughput: 17.85 Mbit/s
95th percentile per-packet one-way delay: 202.043 ms
Loss rate: 12.33%
-- Flow 2:
Average throughput: 18.93 Mbit/s
95th percentile per-packet one-way delay: 221.477 ms
Loss rate: 21.27%
-- Flow 3:
Average throughput: 12.32 Mbit/s
95th percentile per-packet one-way delay: 223.418 ms
Loss rate: 24.07%
```
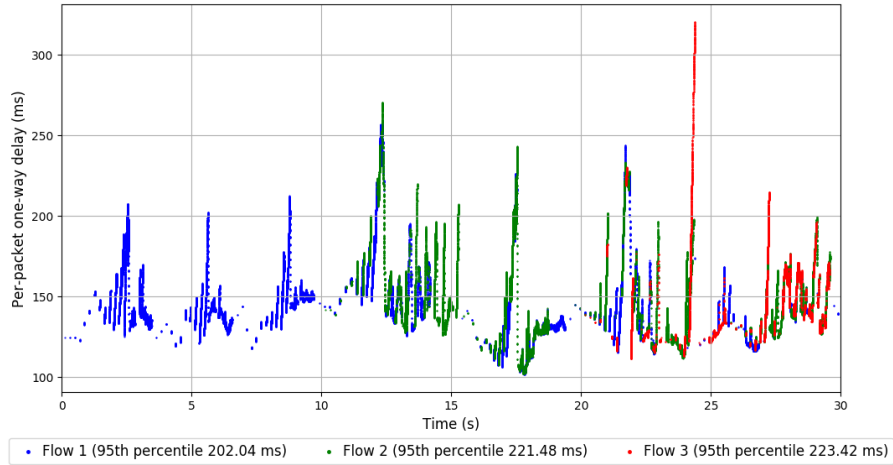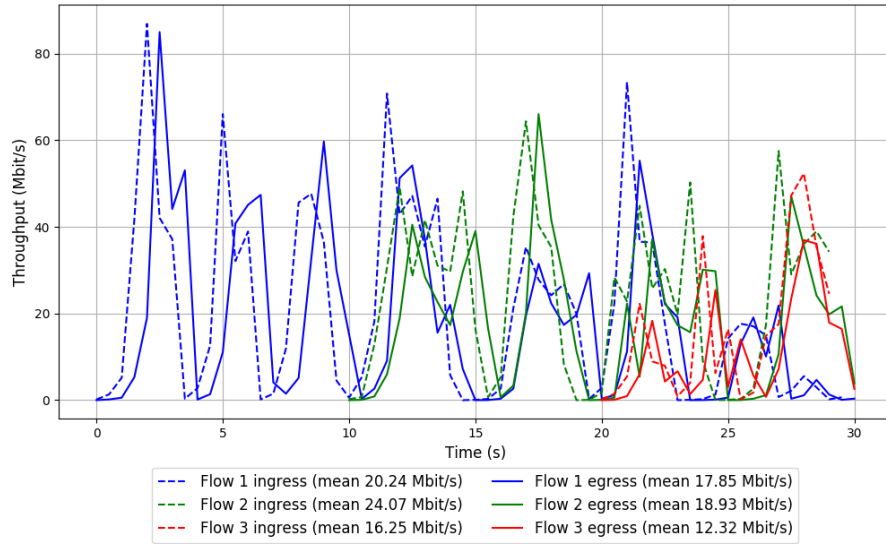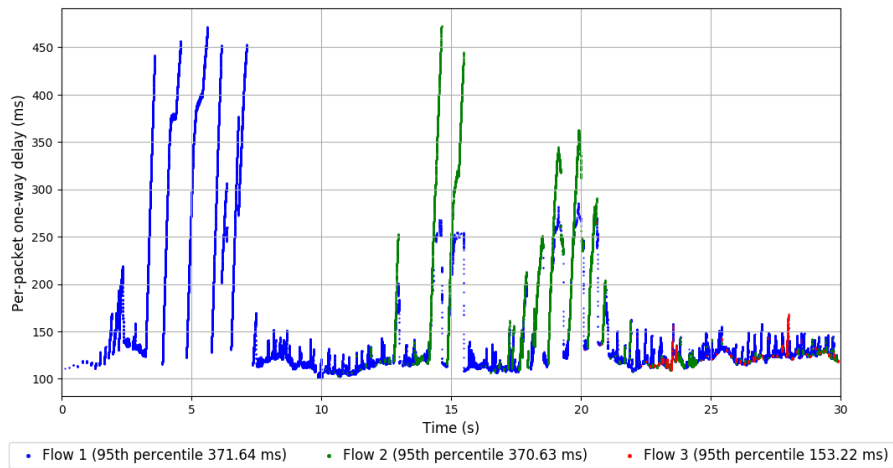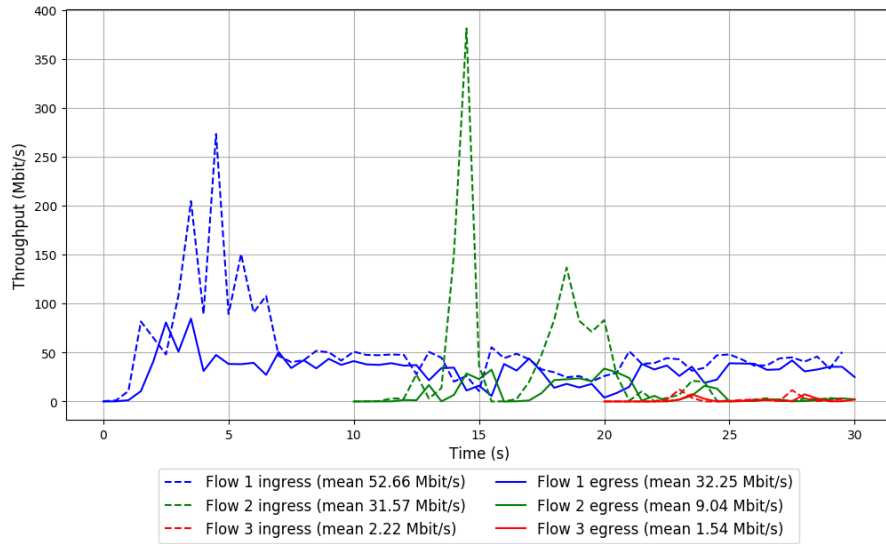
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2019-03-27 13:13:31
End at: 2019-03-27 13:14:01
Local clock offset: 6.703 ms
Remote clock offset: -9.109 ms


# Below is generated by plot.py at 2019-03-27 15:08:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.68 Mbit/s
95th percentile per-packet one-way delay: 370.068 ms
Loss rate: 48.27%
-- Flow 1:
Average throughput: 32.25 Mbit/s
95th percentile per-packet one-way delay: 371.642 ms
Loss rate: 39.17%
-- Flow 2:
Average throughput: 9.04 Mbit/s
95th percentile per-packet one-way delay: 370.626 ms
Loss rate: 71.65%
-- Flow 3:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 153.222 ms
Loss rate: 31.95%
```
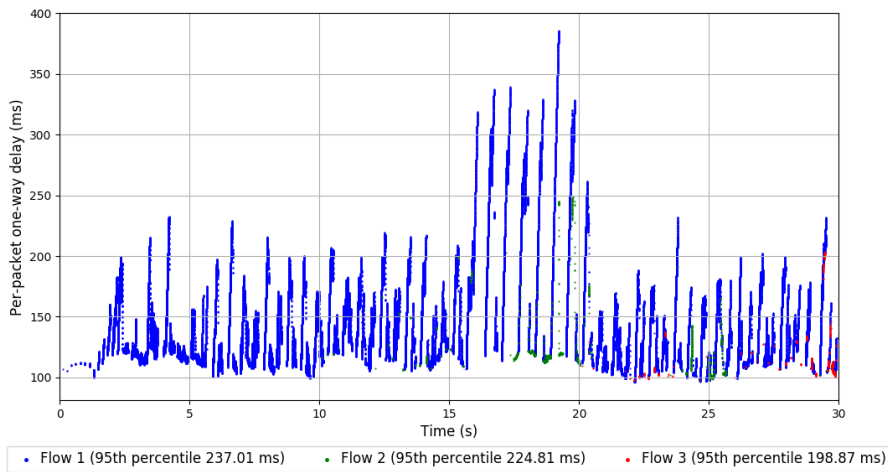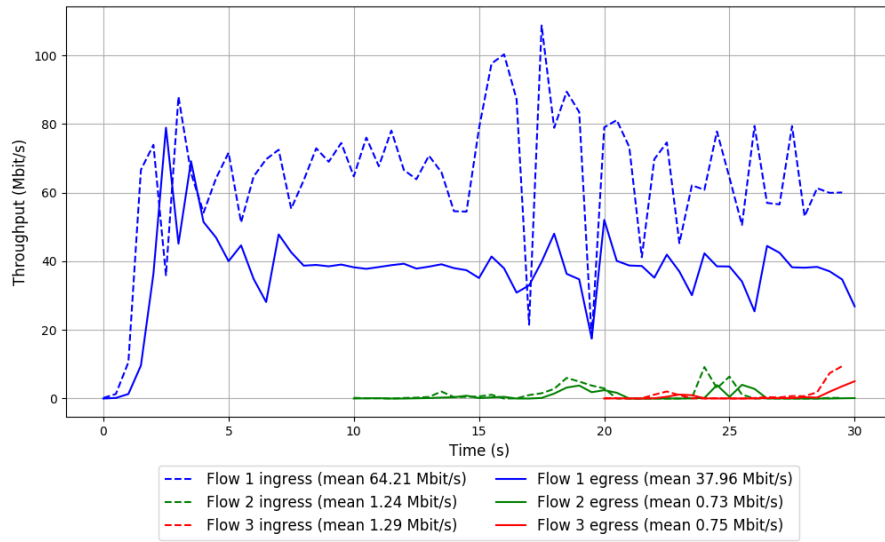
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2019-03-27 13:47:49
End at: 2019-03-27 13:48:19
Local clock offset: 3.215 ms
Remote clock offset: -17.013 ms


# Below is generated by plot.py at 2019-03-27 15:08:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.70 Mbit/s
95th percentile per-packet one-way delay: 236.095 ms
Loss rate: 41.06%
-- Flow 1:
Average throughput: 37.96 Mbit/s
95th percentile per-packet one-way delay: 237.010 ms
Loss rate: 41.04%
-- Flow 2:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 224.813 ms
Loss rate: 41.38%
-- Flow 3:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 198.873 ms
Loss rate: 43.00%
```
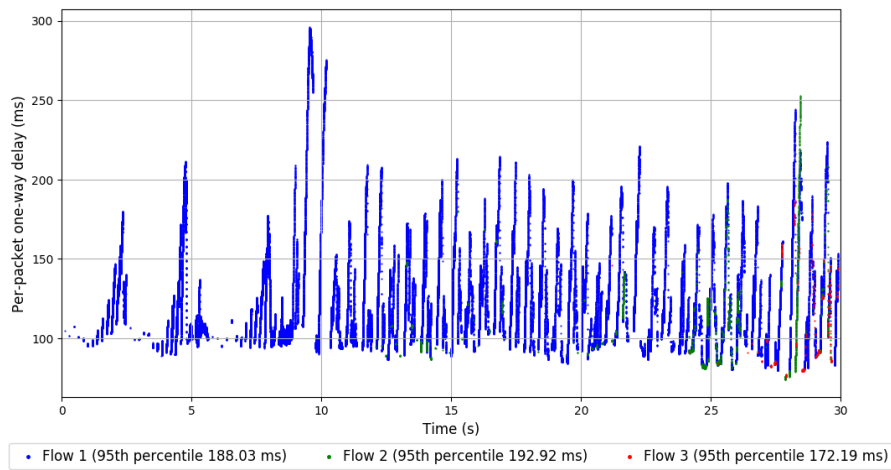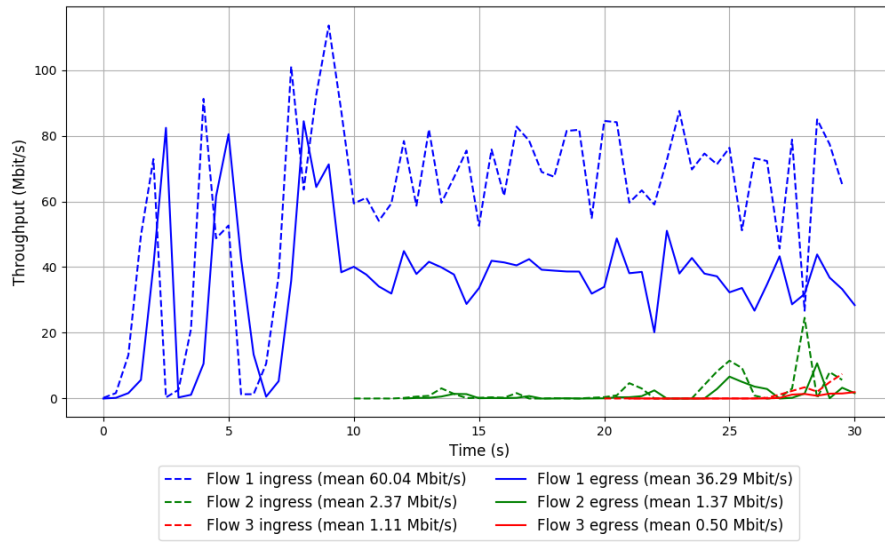
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2019-03-27 14:15:16
End at: 2019-03-27 14:15:46
Local clock offset: 6.018 ms
Remote clock offset: -8.736 ms


# Below is generated by plot.py at 2019-03-27 15:08:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.24 Mbit/s
95th percentile per-packet one-way delay: 188.027 ms
Loss rate: 40.31%
-- Flow 1:
Average throughput: 36.29 Mbit/s
95th percentile per-packet one-way delay: 188.029 ms
Loss rate: 39.96%
-- Flow 2:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 192.923 ms
Loss rate: 49.02%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 172.187 ms
Loss rate: 60.52%
```
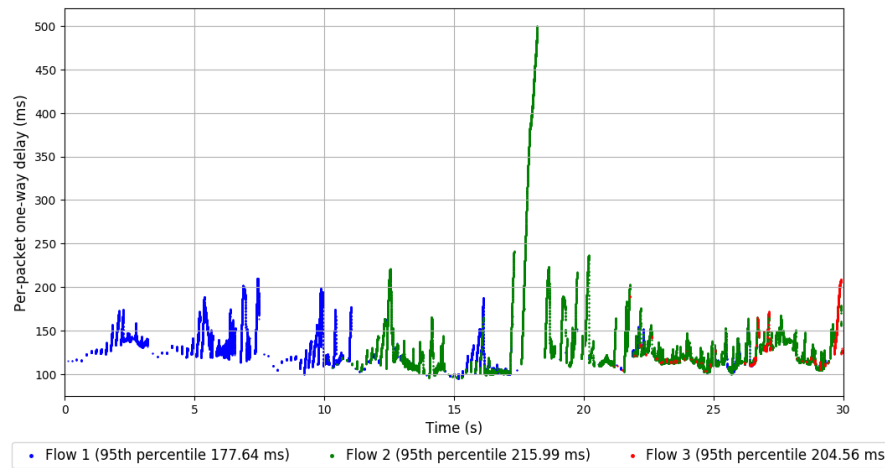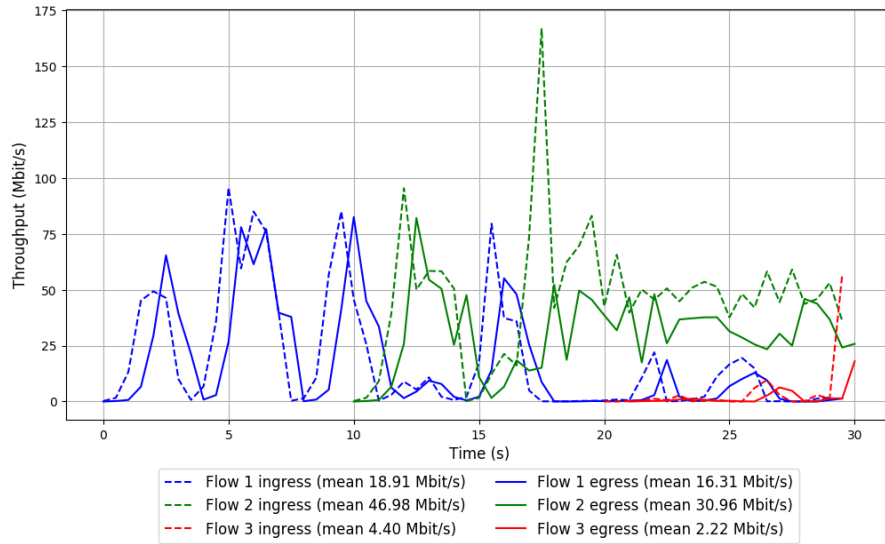
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2019-03-27 15:02:01
End at: 2019-03-27 15:02:31
Local clock offset: 9.131 ms
Remote clock offset: -18.148 ms


# Below is generated by plot.py at 2019-03-27 15:08:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.15 Mbit/s
95th percentile per-packet one-way delay: 197.632 ms
Loss rate: 27.73%
-- Flow 1:
Average throughput: 16.31 Mbit/s
95th percentile per-packet one-way delay: 177.639 ms
Loss rate: 13.74%
-- Flow 2:
Average throughput: 30.96 Mbit/s
95th percentile per-packet one-way delay: 215.990 ms
Loss rate: 34.71%
-- Flow 3:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 204.558 ms
Loss rate: 54.79%
```

Run 5: Report of Verus — Data Link

194

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-03-27 12:39:20
End at: 2019-03-27 12:39:50
Local clock offset: 9.649 ms
Remote clock offset: -15.653 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.18 Mbit/s
95th percentile per-packet one-way delay: 137.323 ms
Loss rate: 13.71%
-- Flow 1:
Average throughput: 33.62 Mbit/s
95th percentile per-packet one-way delay: 137.585 ms
Loss rate: 14.16%
-- Flow 2:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 136.857 ms
Loss rate: 10.02%
-- Flow 3:
Average throughput: 6.89 Mbit/s
95th percentile per-packet one-way delay: 134.383 ms
Loss rate: 8.65%
```
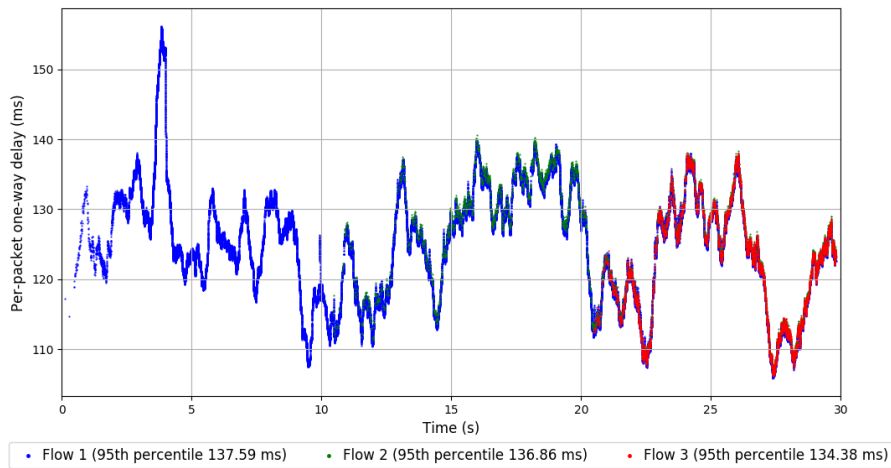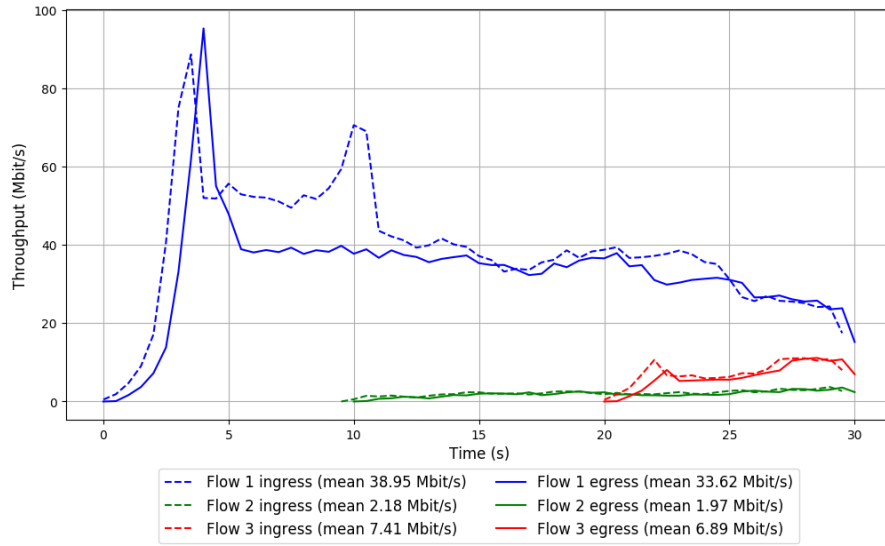
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 38.95 Mbit/s)   Flow 1 egress (mean 33.62 Mbit/s)
Flow 2 ingress (mean 2.18 Mbit/s)   Flow 2 egress (mean 1.97 Mbit/s)
Flow 3 ingress (mean 7.41 Mbit/s)   Flow 3 egress (mean 6.89 Mbit/s)

Flow 1 (95th percentile 137.59 ms)   Flow 2 (95th percentile 136.86 ms)   Flow 3 (95th percentile 134.38 ms)
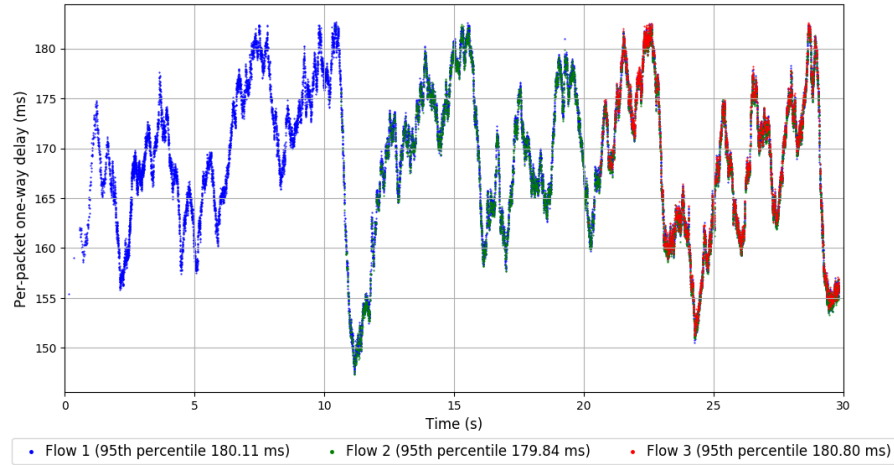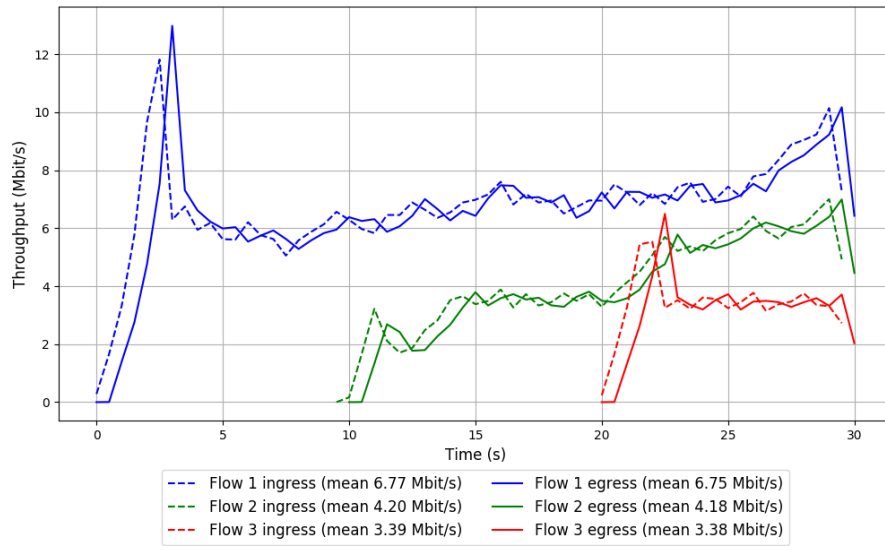
196

```
Run 2: Statistics of PCC-Vivace

Start at: 2019-03-27 13:08:09
End at: 2019-03-27 13:08:39
Local clock offset: 6.817 ms
Remote clock offset: -14.645 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.62 Mbit/s
95th percentile per-packet one-way delay: 180.158 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 6.75 Mbit/s
95th percentile per-packet one-way delay: 180.109 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 4.18 Mbit/s
95th percentile per-packet one-way delay: 179.840 ms
Loss rate: 1.68%
-- Flow 3:
Average throughput: 3.38 Mbit/s
95th percentile per-packet one-way delay: 180.799 ms
Loss rate: 2.53%
```

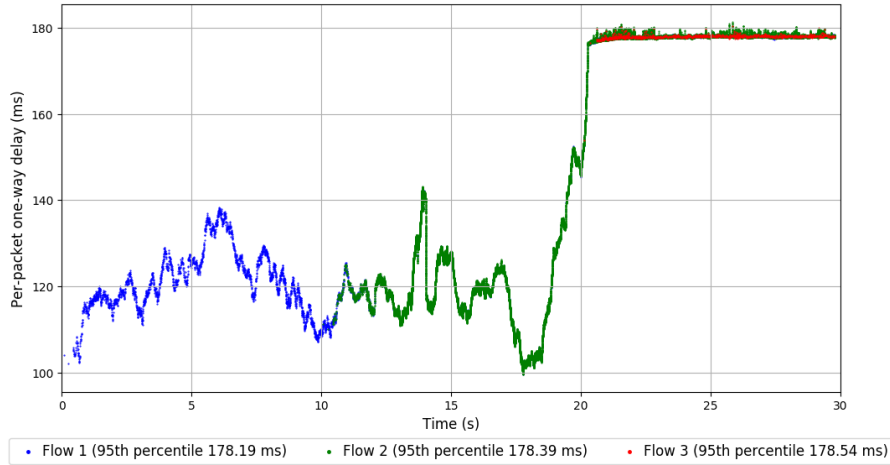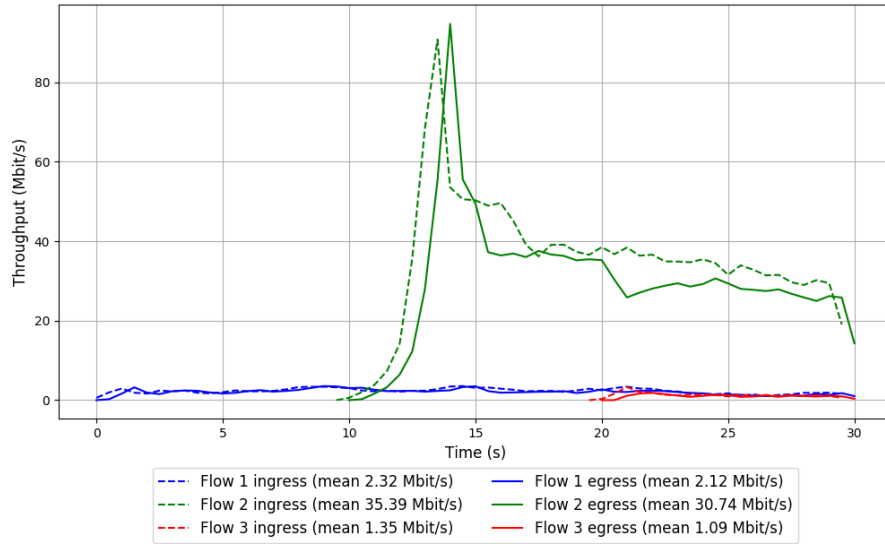Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2019-03-27 13:35:39
End at: 2019-03-27 13:36:09
Local clock offset: 3.169 ms
Remote clock offset: -9.739 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 22.88 Mbit/s
95th percentile per-packet one-way delay: 178.368 ms
Loss rate: 13.64%
-- Flow 1:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 178.195 ms
Loss rate: 9.44%
-- Flow 2:
Average throughput: 30.74 Mbit/s
95th percentile per-packet one-way delay: 178.393 ms
Loss rate: 13.91%
-- Flow 3:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 178.542 ms
Loss rate: 21.10%
```

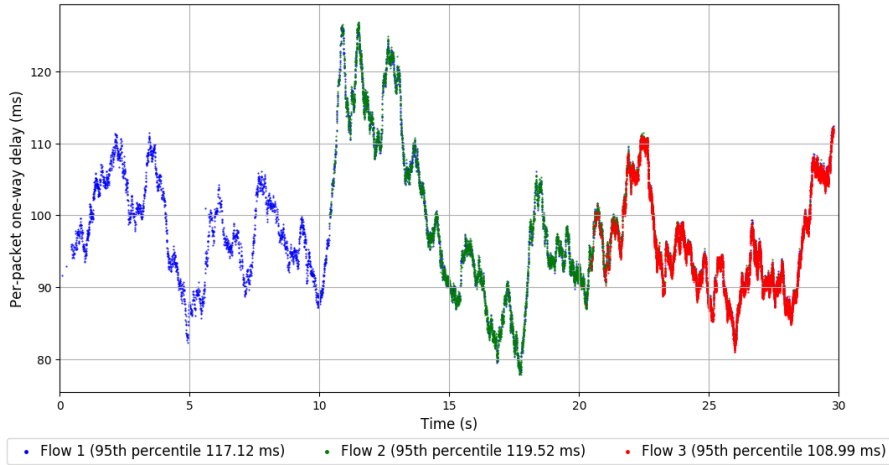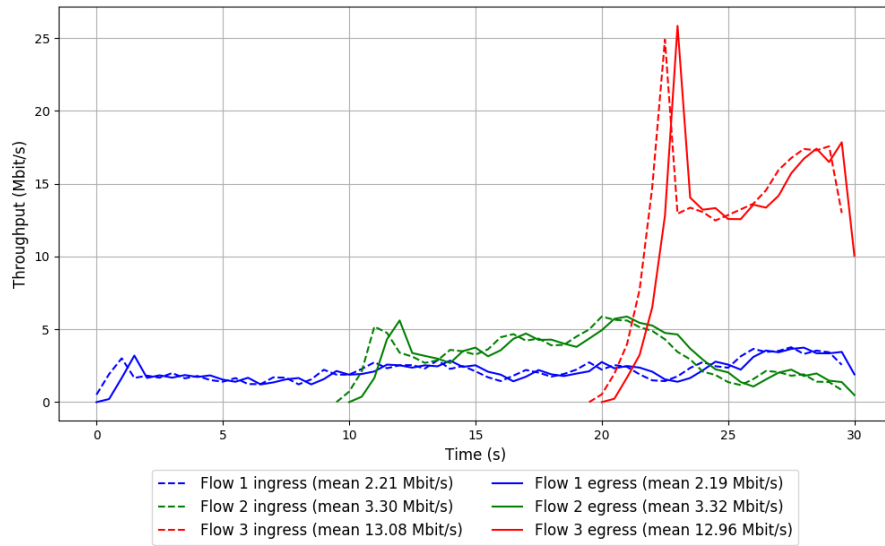## Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2019-03-27 14:10:01
End at: 2019-03-27 14:10:31
Local clock offset: 5.738 ms
Remote clock offset: -14.258 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.63 Mbit/s
95th percentile per-packet one-way delay: 113.694 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 117.124 ms
Loss rate: 1.05%
-- Flow 2:
Average throughput: 3.32 Mbit/s
95th percentile per-packet one-way delay: 119.516 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 12.96 Mbit/s
95th percentile per-packet one-way delay: 108.986 ms
Loss rate: 2.54%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 2.21 Mbit/s) --- Flow 1 egress (mean 2.19 Mbit/s)
Flow 2 ingress (mean 3.30 Mbit/s) --- Flow 2 egress (mean 3.32 Mbit/s)
Flow 3 ingress (mean 13.08 Mbit/s) --- Flow 3 egress (mean 12.96 Mbit/s)

Flow 1 (95th percentile 117.12 ms) • Flow 2 (95th percentile 119.52 ms) • Flow 3 (95th percentile 108.99 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2019-03-27 14:56:43
End at: 2019-03-27 14:57:13
Local clock offset: 8.766 ms
Remote clock offset: -10.781 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 134.288 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 132.503 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 8.29 Mbit/s
95th percentile per-packet one-way delay: 134.432 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 135.736 ms
Loss rate: 2.23%
```
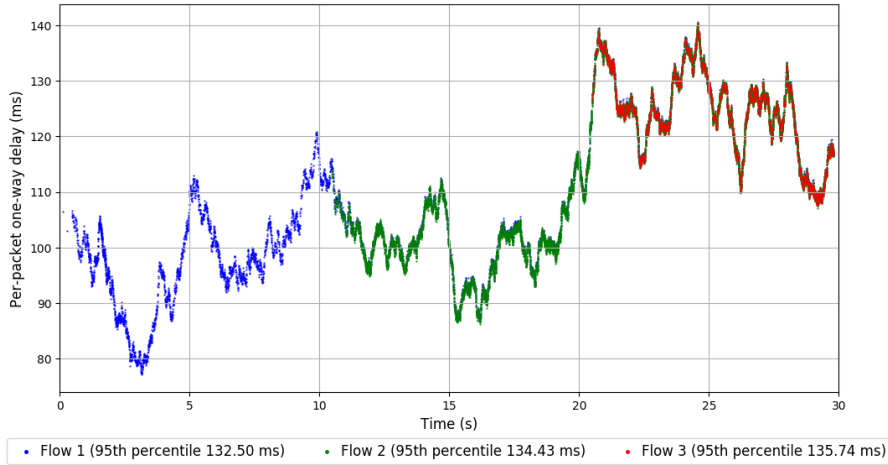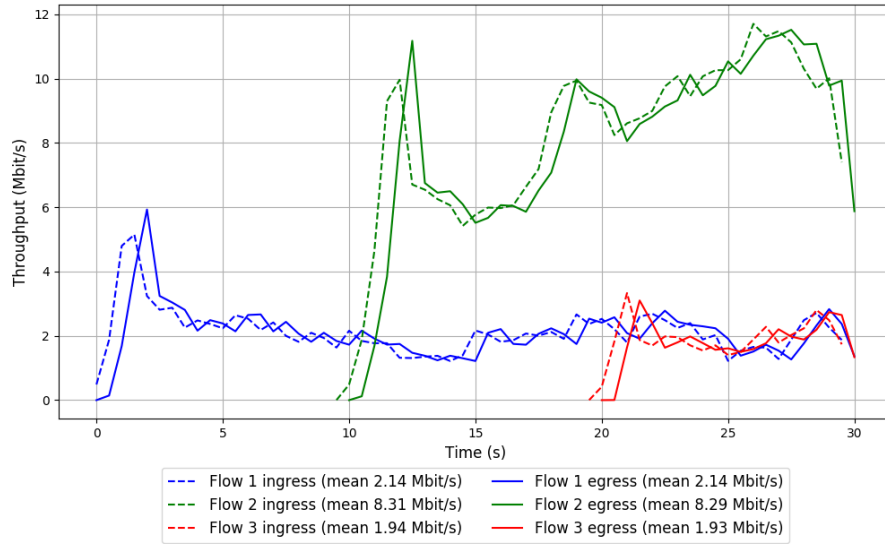
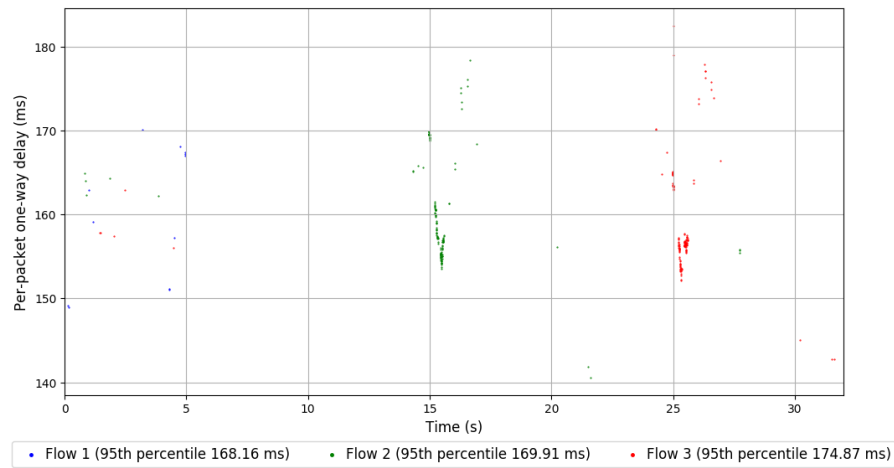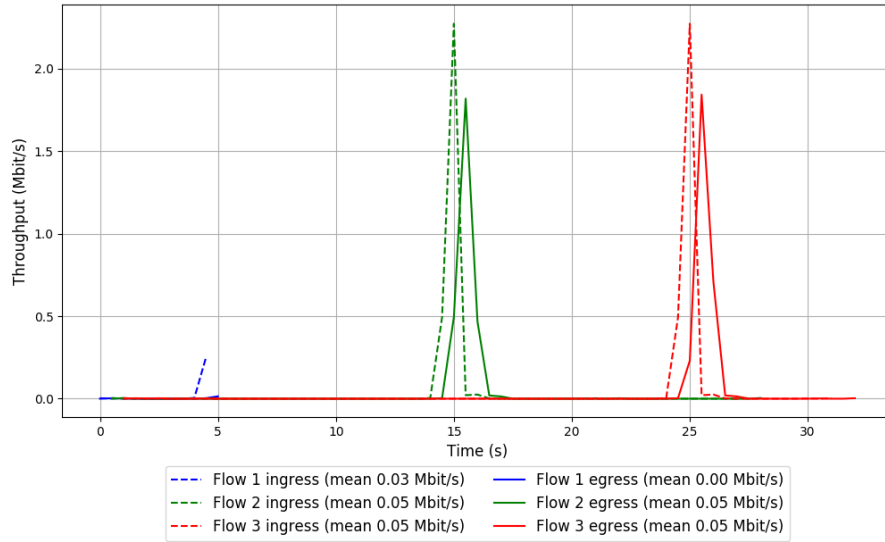## Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2019-03-27 11:58:42
End at: 2019-03-27 11:59:12
Local clock offset: 3.591 ms
Remote clock offset: -14.679 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 173.393 ms
Loss rate: 4.05%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 168.156 ms
Loss rate: 90.59%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 169.906 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 174.865 ms
Loss rate: 0.00%
```
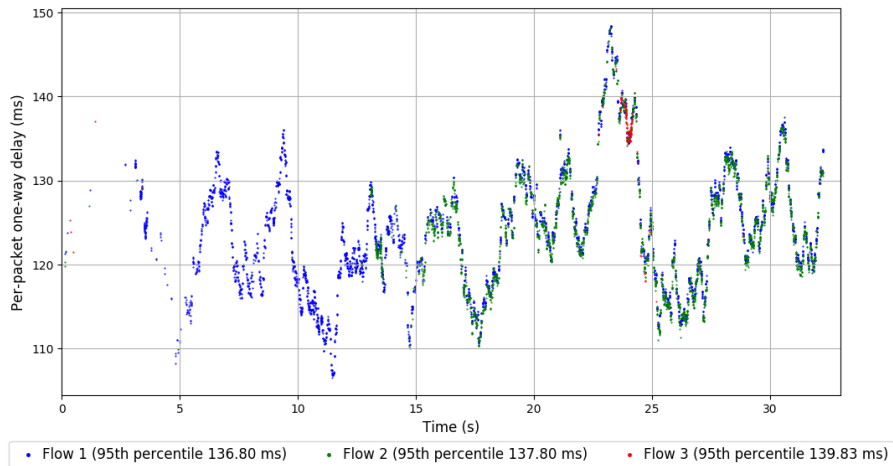
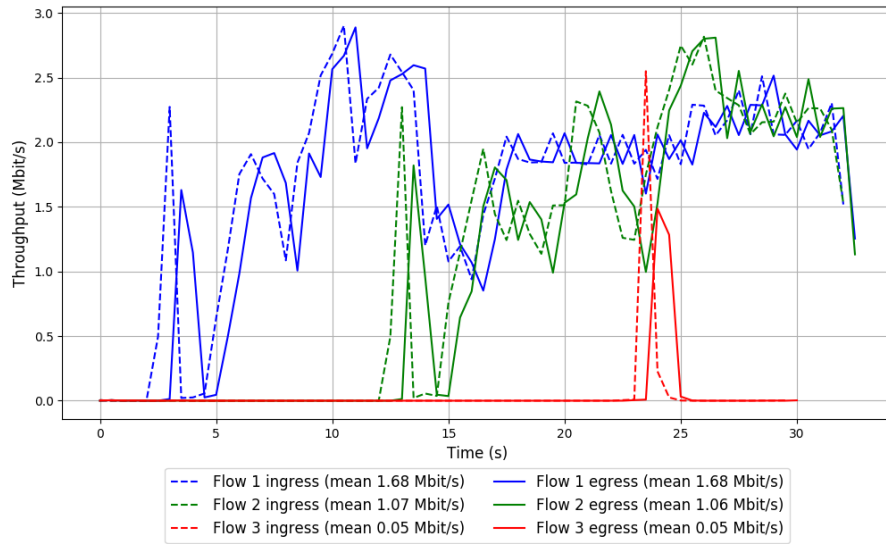## Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-03-27 12:46:03
End at: 2019-03-27 12:46:33
Local clock offset: 10.251 ms
Remote clock offset: -9.728 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.78 Mbit/s
95th percentile per-packet one-way delay: 137.803 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 136.803 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 137.803 ms
Loss rate: 1.31%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 139.830 ms
Loss rate: 0.00%
```

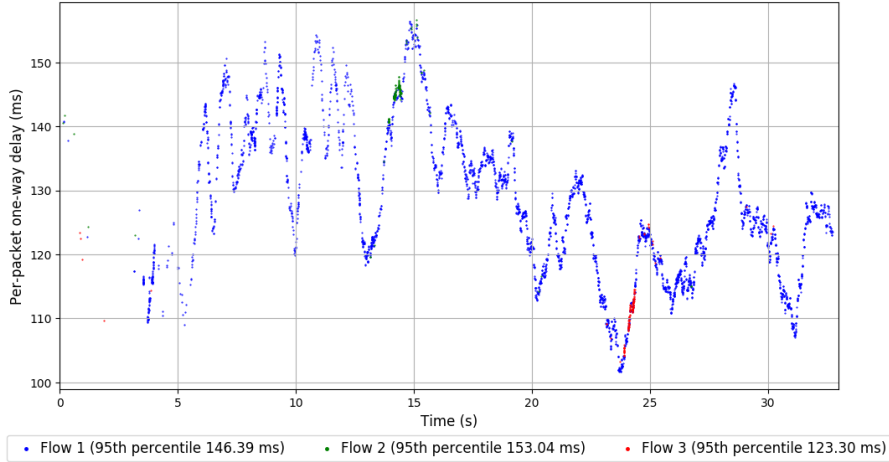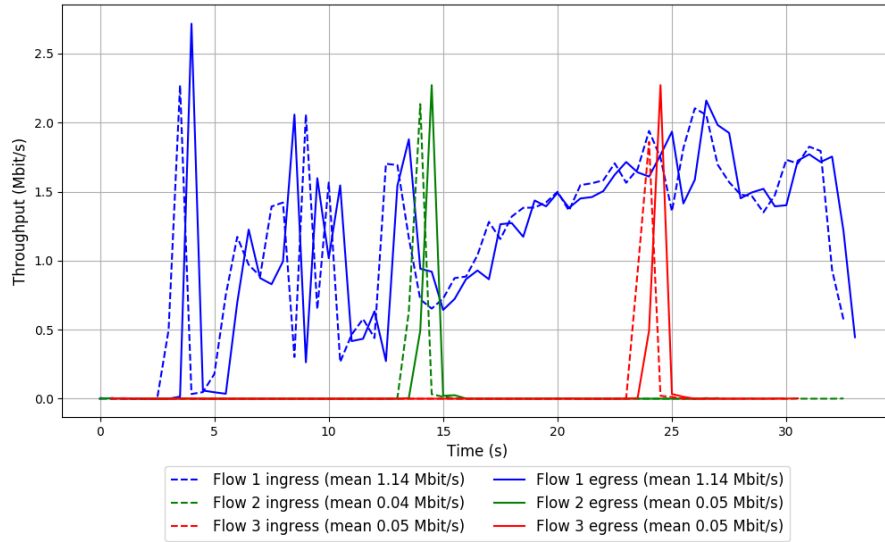Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-03-27 13:14:52
End at: 2019-03-27 13:15:22
Local clock offset: 6.866 ms
Remote clock offset: -6.318 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 146.448 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 146.392 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 153.037 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 123.303 ms
Loss rate: 0.00%
```

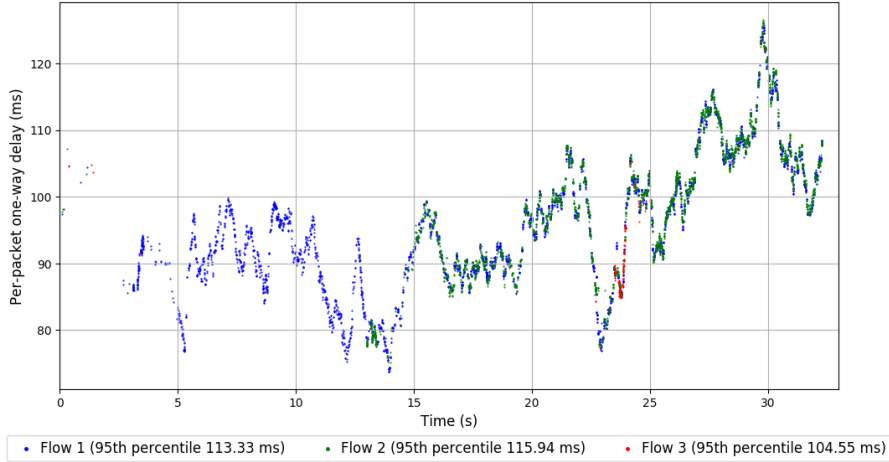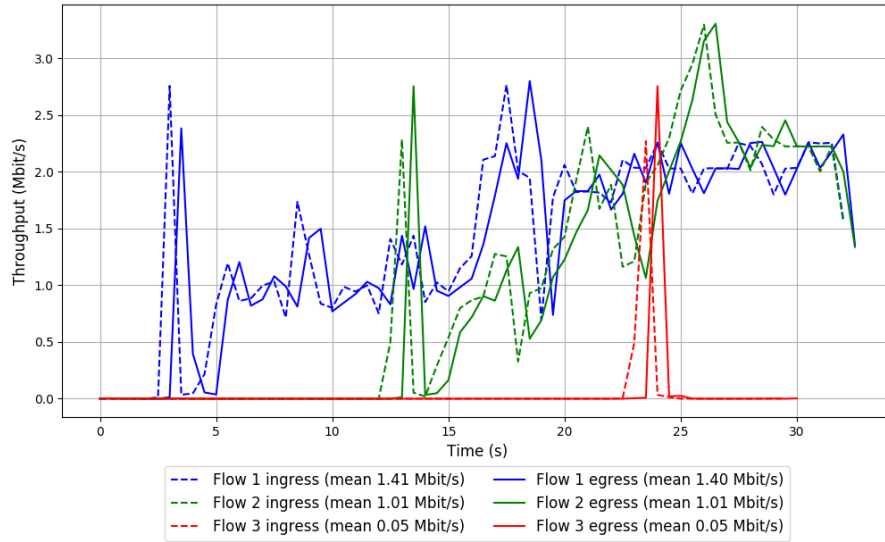Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2019-03-27 13:49:09
End at: 2019-03-27 13:49:39
Local clock offset: 3.589 ms
Remote clock offset: -13.365 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 114.613 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 113.330 ms
Loss rate: 0.74%
-- Flow 2:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 115.941 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 104.554 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2019-03-27 14:16:35
End at: 2019-03-27 14:17:05
Local clock offset: 6.078 ms
Remote clock offset: -13.342 ms


# Below is generated by plot.py at 2019-03-27 15:08:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 130.217 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 130.811 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 121.462 ms
Loss rate: 1.32%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 87.053 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link