Pantheon Report

Generated at 2018-09-25 10:27:26 (UTC).

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

Repeated the test of 19 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 4.15.0-1021-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
net.ipv4.tcp_mem = 184101 245469 368202

Git summary:
branch: muses @ 90192f6b64ce1a1191dcca0e9ff9ee24950674d7
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
```

```
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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

test from AWS Korea to China, 5 runs of 30s each per scheme
3 flows with 10s interval between flows
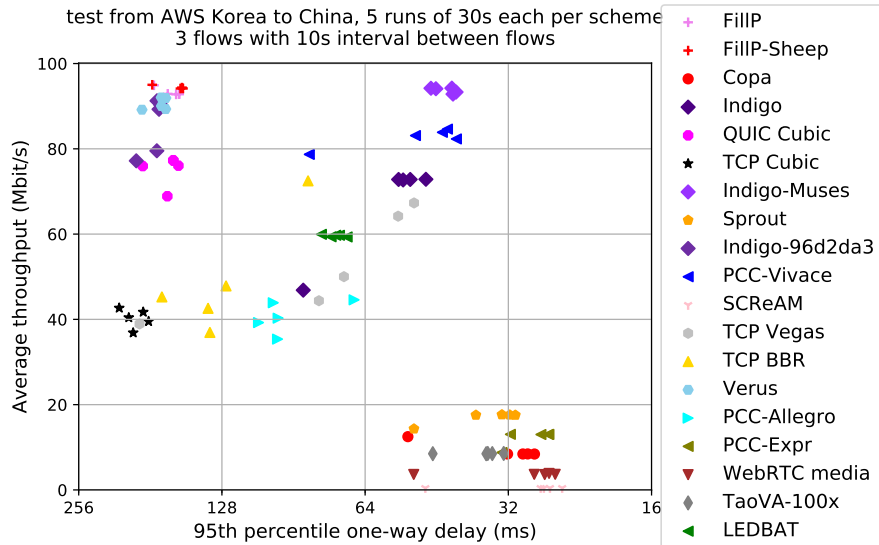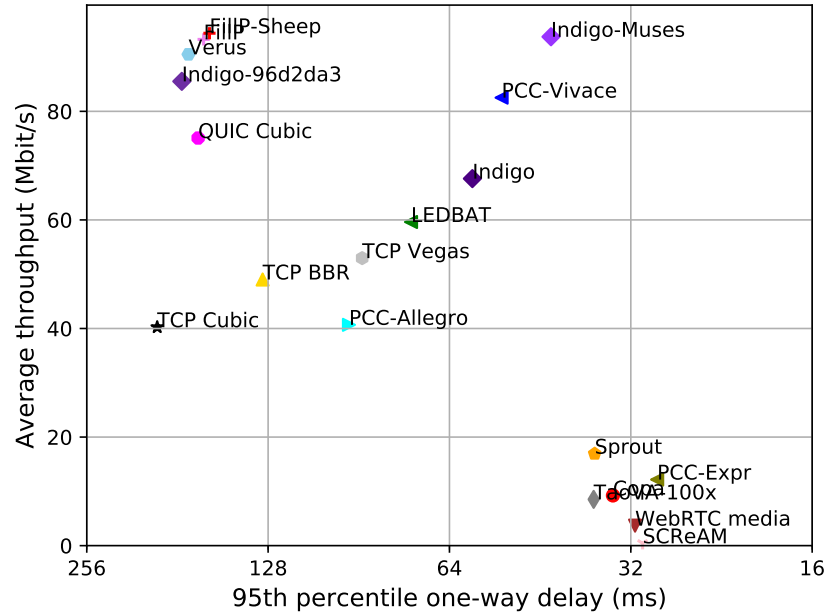
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	34.11	14.77	15.29	127.55	170.04	122.16	13.71	11.74	14.65
Copa	5	2.11	7.80	5.83	31.96	36.49	32.37	91.47	70.18	73.31
TCP Cubic	5	33.73	6.73	6.09	193.63	233.69	162.03	1.40	1.06	1.02
FillP	5	55.03	44.90	25.56	163.74	163.48	163.57	18.10	24.17	17.10
FillP-Sheep	5	55.81	36.73	43.07	159.74	160.15	160.71	9.03	16.80	32.90
Indigo	5	47.73	20.97	18.57	57.77	62.76	57.67	12.30	21.93	21.62
Indigo-96d2da3	5	59.98	26.90	24.71	176.86	179.95	181.24	34.81	47.48	51.57
LEDBAT	5	40.72	24.51	7.75	73.51	74.51	75.78	0.03	0.00	0.00
Indigo-Muses	5	55.36	40.52	34.97	44.14	42.91	42.07	0.00	0.00	0.00
PCC-Allegro	5	57.66	16.96	26.93	79.64	83.73	100.78	18.02	35.36	42.23
PCC-Expr	5	6.39	6.73	3.97	28.07	28.90	28.96	54.62	35.44	37.42
QUIC Cubic	5	47.76	33.68	15.58	165.64	167.14	168.82	0.47	0.64	1.46
SCReAM	5	0.22	0.22	0.22	30.50	30.01	30.32	0.00	0.00	0.00
Sprout	5	8.56	8.53	8.18	36.61	36.85	36.63	0.00	0.00	0.00
TaoVA-100x	5	0.00	8.83	7.93	28.32	36.44	37.01	95.92	8.31	15.30
TCP Vegas	5	37.65	13.08	19.85	88.08	100.03	96.84	0.92	0.35	0.84
Verus	5	69.21	22.81	19.22	172.91	173.90	173.91	10.97	18.05	17.67
PCC-Vivace	5	66.24	19.03	10.99	52.60	52.63	51.19	0.00	0.00	0.00
WebRTC media	5	1.98	1.27	0.44	31.05	31.71	31.71	0.00	0.00	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-09-25 08:14:00
End at: 2018-09-25 08:14:30
Local clock offset: 5.351 ms
Remote clock offset: 89.66 ms

# Below is generated by plot.py at 2018-09-25 10:19:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 45.27 Mbit/s
95th percentile per-packet one-way delay: 171.156 ms
Loss rate: 11.03%
-- Flow 1:
Average throughput: 32.59 Mbit/s
95th percentile per-packet one-way delay: 151.967 ms
Loss rate: 12.35%
-- Flow 2:
Average throughput: 13.81 Mbit/s
95th percentile per-packet one-way delay: 275.962 ms
Loss rate: 7.30%
-- Flow 3:
Average throughput: 10.45 Mbit/s
95th percentile per-packet one-way delay: 153.603 ms
Loss rate: 7.86%
```
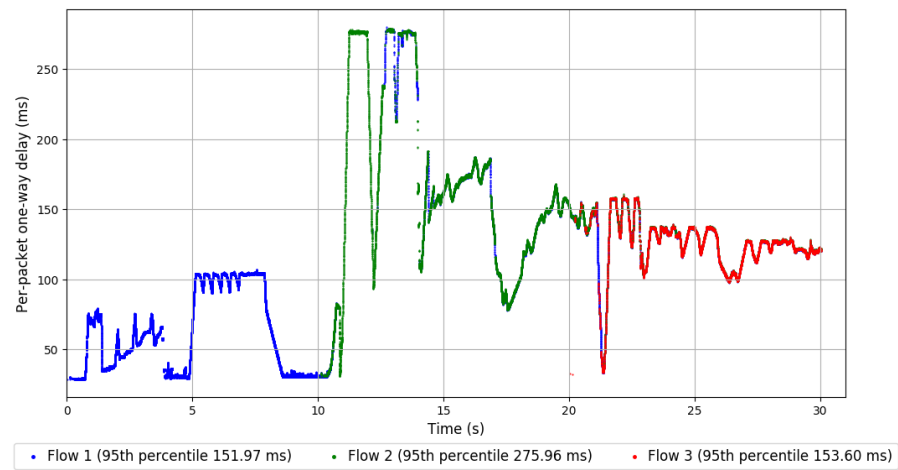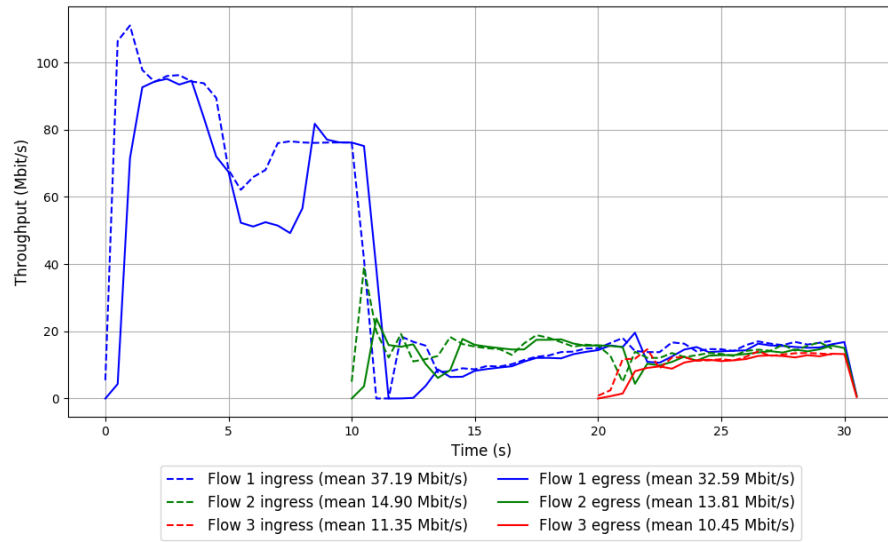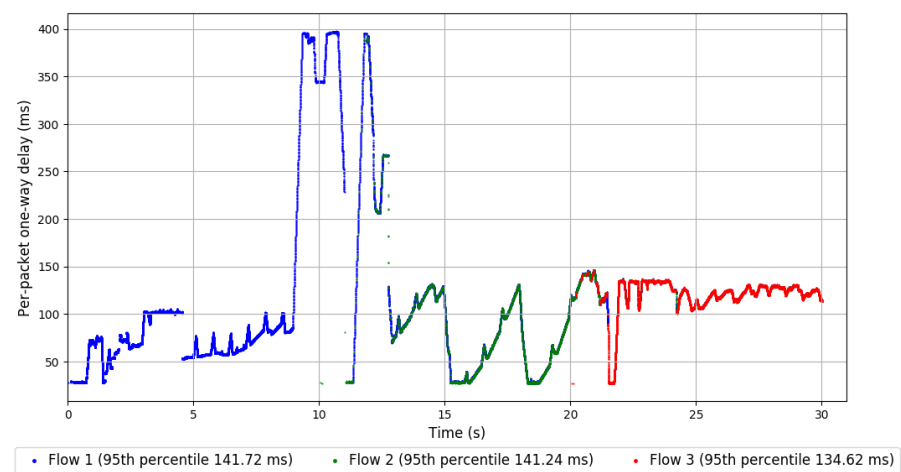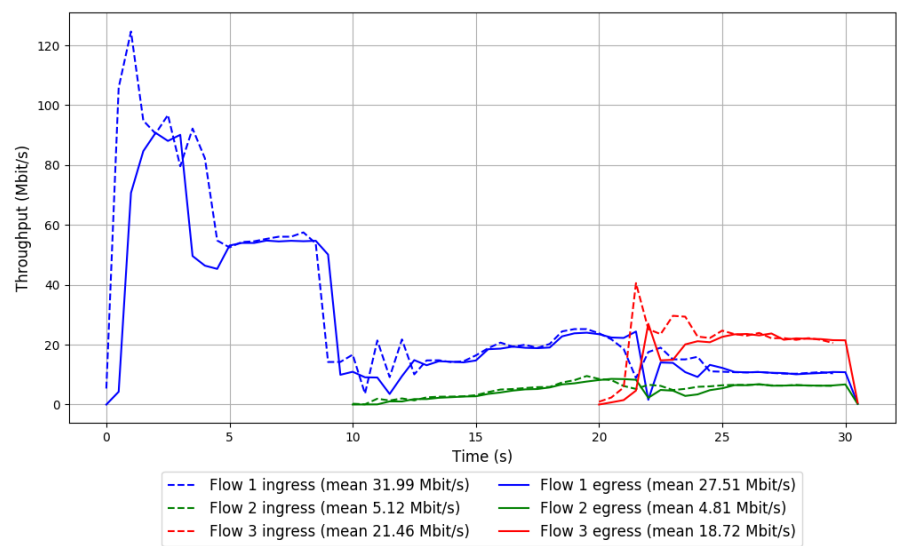
Run 1: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 37.19 Mbit/s) —— Flow 1 egress (mean 32.59 Mbit/s)
- - - Flow 2 ingress (mean 14.90 Mbit/s) —— Flow 2 egress (mean 13.81 Mbit/s)
- - - Flow 3 ingress (mean 11.35 Mbit/s) —— Flow 3 egress (mean 10.45 Mbit/s)

• Flow 1 (95th percentile 151.97 ms)   • Flow 2 (95th percentile 275.96 ms)   • Flow 3 (95th percentile 153.60 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2018-09-25 08:42:20
End at: 2018-09-25 08:42:50
Local clock offset: 1.186 ms
Remote clock offset: 5.216 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.49 Mbit/s
95th percentile per-packet one-way delay: 84.361 ms
Loss rate: 14.24%
-- Flow 1:
Average throughput: 51.09 Mbit/s
95th percentile per-packet one-way delay: 87.787 ms
Loss rate: 11.98%
-- Flow 2:
Average throughput: 21.37 Mbit/s
95th percentile per-packet one-way delay: 75.440 ms
Loss rate: 16.45%
-- Flow 3:
Average throughput: 21.54 Mbit/s
95th percentile per-packet one-way delay: 69.875 ms
Loss rate: 24.15%
```

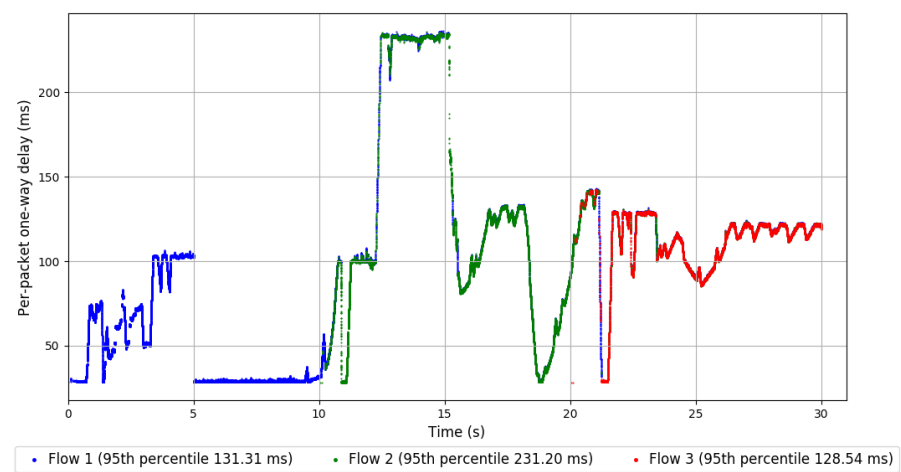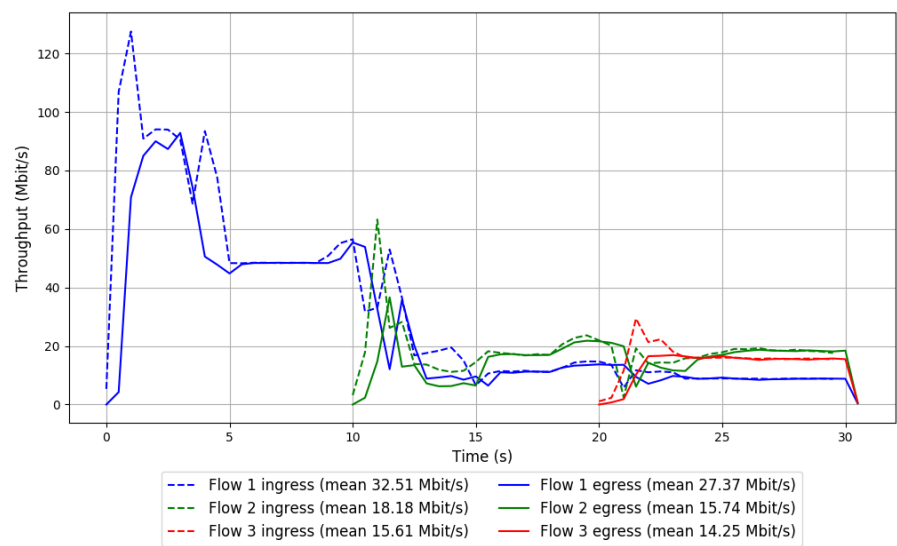Run 2: Report of TCP BBR — Data Link
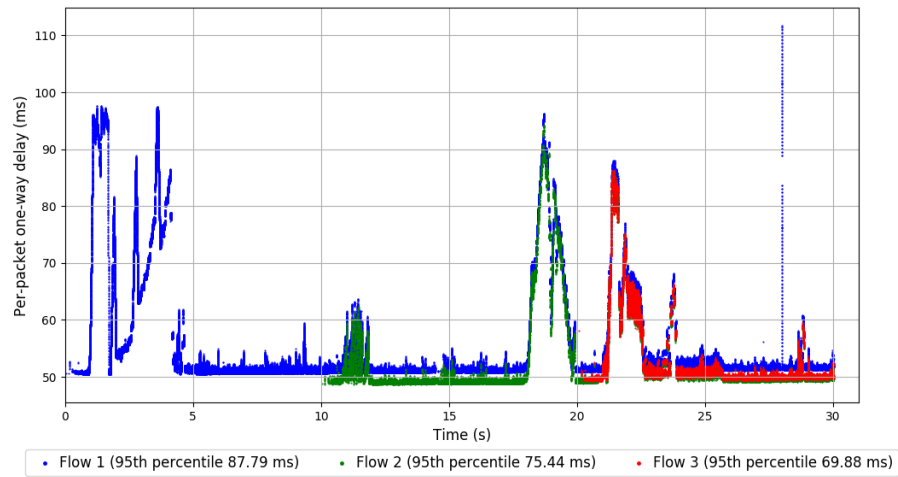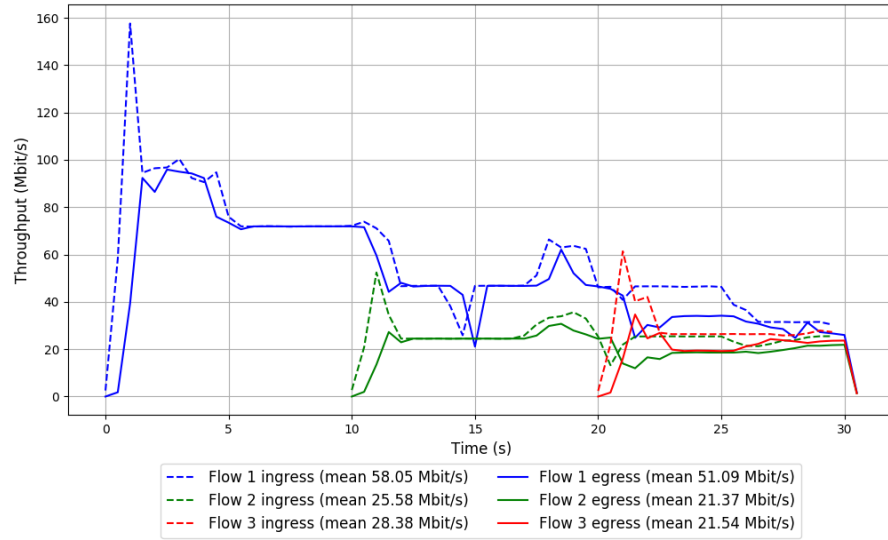
```
Run 3: Statistics of TCP BBR

Start at: 2018-09-25 09:06:38
End at: 2018-09-25 09:07:08
Local clock offset: 3.626 ms
Remote clock offset: -17.346 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 36.94 Mbit/s
95th percentile per-packet one-way delay: 135.667 ms
Loss rate: 13.15%
-- Flow 1:
Average throughput: 27.51 Mbit/s
95th percentile per-packet one-way delay: 141.717 ms
Loss rate: 14.00%
-- Flow 2:
Average throughput: 4.81 Mbit/s
95th percentile per-packet one-way delay: 141.240 ms
Loss rate: 6.08%
-- Flow 3:
Average throughput: 18.72 Mbit/s
95th percentile per-packet one-way delay: 134.622 ms
Loss rate: 12.73%
```

Run 3: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 31.99 Mbit/s) —— Flow 1 egress (mean 27.51 Mbit/s)
- - - Flow 2 ingress (mean 5.12 Mbit/s) —— Flow 2 egress (mean 4.81 Mbit/s)
- - - Flow 3 ingress (mean 21.46 Mbit/s) —— Flow 3 egress (mean 18.72 Mbit/s)

• Flow 1 (95th percentile 141.72 ms)　　• Flow 2 (95th percentile 141.24 ms)　　• Flow 3 (95th percentile 134.62 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-09-25 09:30:53
End at: 2018-09-25 09:31:23
Local clock offset: 1.695 ms
Remote clock offset: -19.929 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 42.59 Mbit/s
95th percentile per-packet one-way delay: 136.873 ms
Loss rate: 14.51%
-- Flow 1:
Average throughput: 27.37 Mbit/s
95th percentile per-packet one-way delay: 131.315 ms
Loss rate: 15.83%
-- Flow 2:
Average throughput: 15.74 Mbit/s
95th percentile per-packet one-way delay: 231.203 ms
Loss rate: 13.45%
-- Flow 3:
Average throughput: 14.25 Mbit/s
95th percentile per-packet one-way delay: 128.544 ms
Loss rate: 8.72%
```

# Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 32.51 Mbit/s) --- Flow 1 egress (mean 27.37 Mbit/s)
Flow 2 ingress (mean 18.18 Mbit/s) --- Flow 2 egress (mean 15.74 Mbit/s)
Flow 3 ingress (mean 15.61 Mbit/s) --- Flow 3 egress (mean 14.25 Mbit/s)

Flow 1 (95th percentile 131.31 ms)   Flow 2 (95th percentile 231.20 ms)   Flow 3 (95th percentile 128.54 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-09-25 09:55:08
End at: 2018-09-25 09:55:38
Local clock offset: 3.474 ms
Remote clock offset: -26.991 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 47.85 Mbit/s
95th percentile per-packet one-way delay: 125.475 ms
Loss rate: 15.12%
-- Flow 1:
Average throughput: 31.97 Mbit/s
95th percentile per-packet one-way delay: 124.942 ms
Loss rate: 14.41%
-- Flow 2:
Average throughput: 18.10 Mbit/s
95th percentile per-packet one-way delay: 126.359 ms
Loss rate: 15.43%
-- Flow 3:
Average throughput: 11.47 Mbit/s
95th percentile per-packet one-way delay: 124.149 ms
Loss rate: 19.77%
```

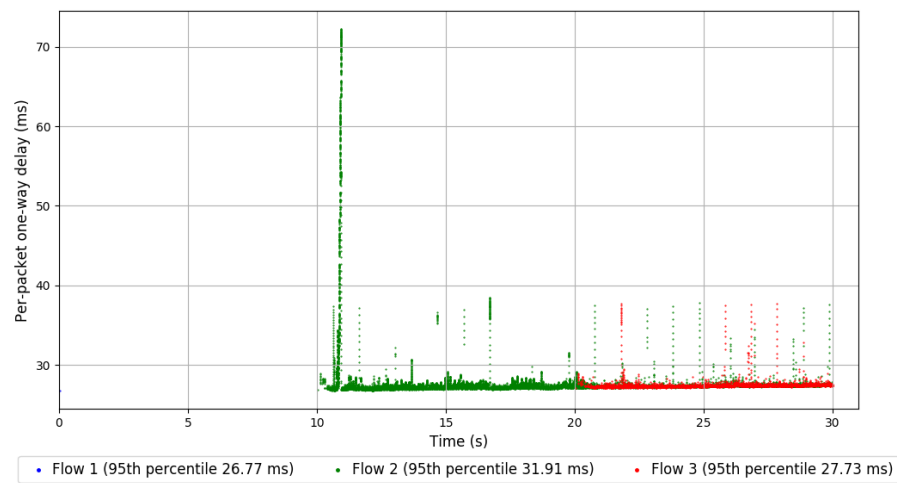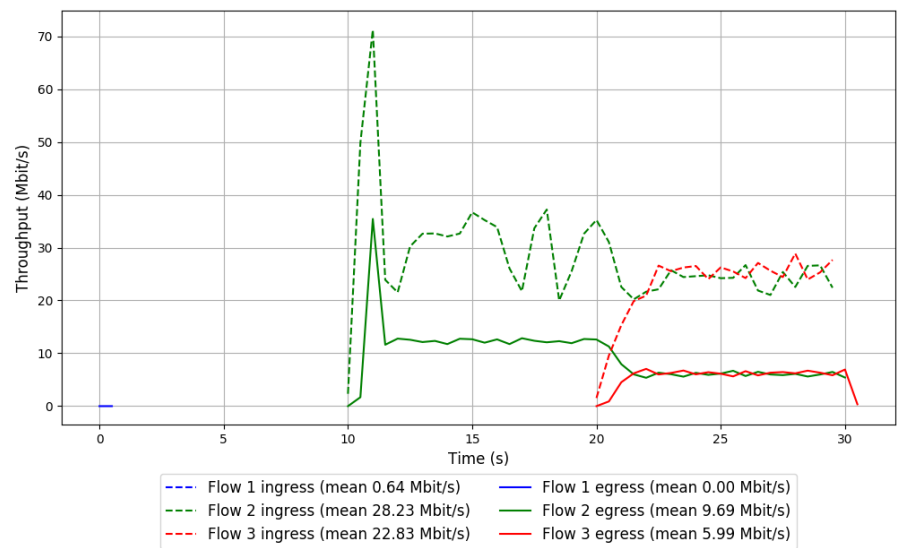Run 5: Report of TCP BBR — Data Link
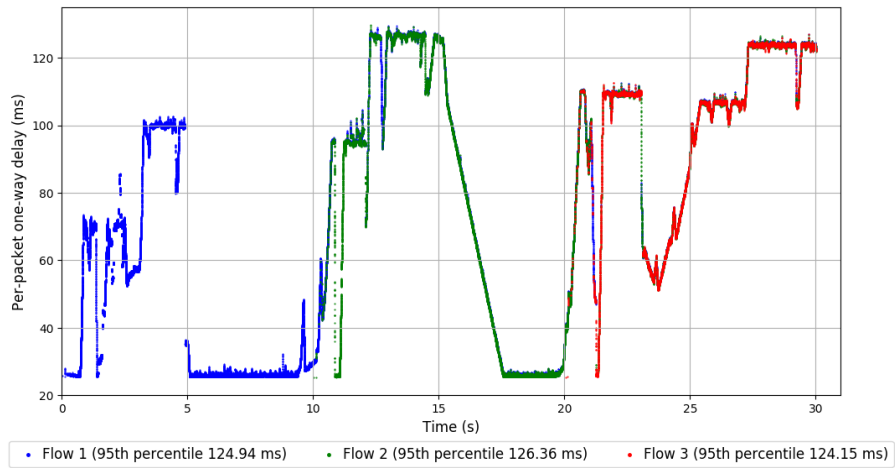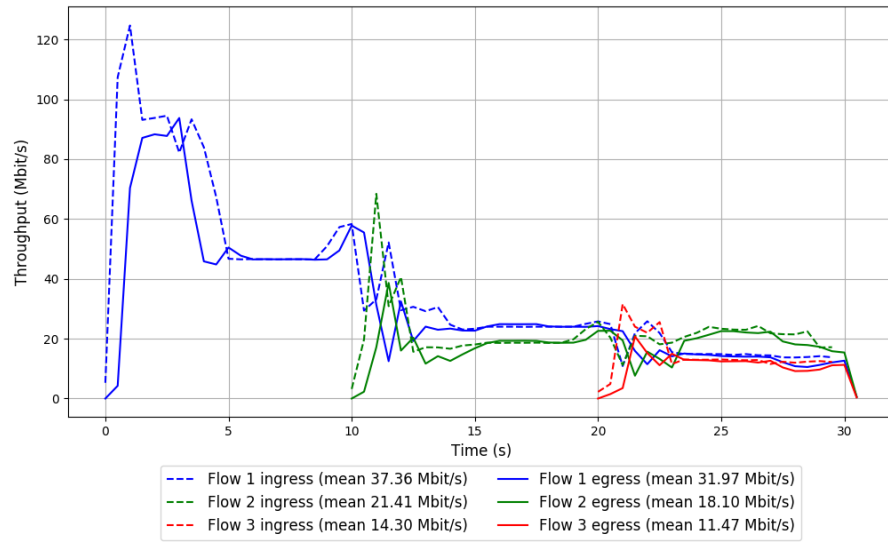
```
Run 1: Statistics of Copa

Start at: 2018-09-25 08:24:02
End at: 2018-09-25 08:24:32
Local clock offset: 2.014 ms
Remote clock offset: 34.114 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.49 Mbit/s
95th percentile per-packet one-way delay: 52.038 ms
Loss rate: 64.71%
-- Flow 1:
Average throughput: 10.57 Mbit/s
95th percentile per-packet one-way delay: 52.145 ms
Loss rate: 62.80%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 51.422 ms
Loss rate: 89.01%
-- Flow 3:
Average throughput: 5.81 Mbit/s
95th percentile per-packet one-way delay: 51.375 ms
Loss rate: 72.34%
```
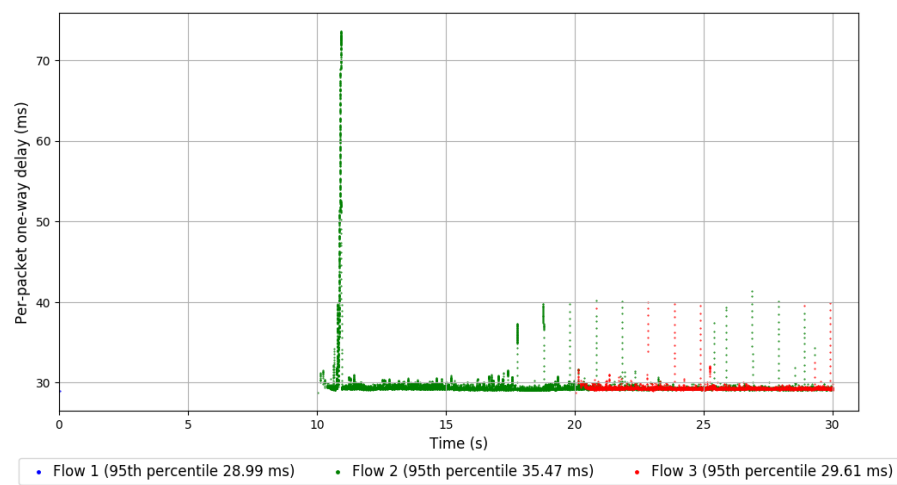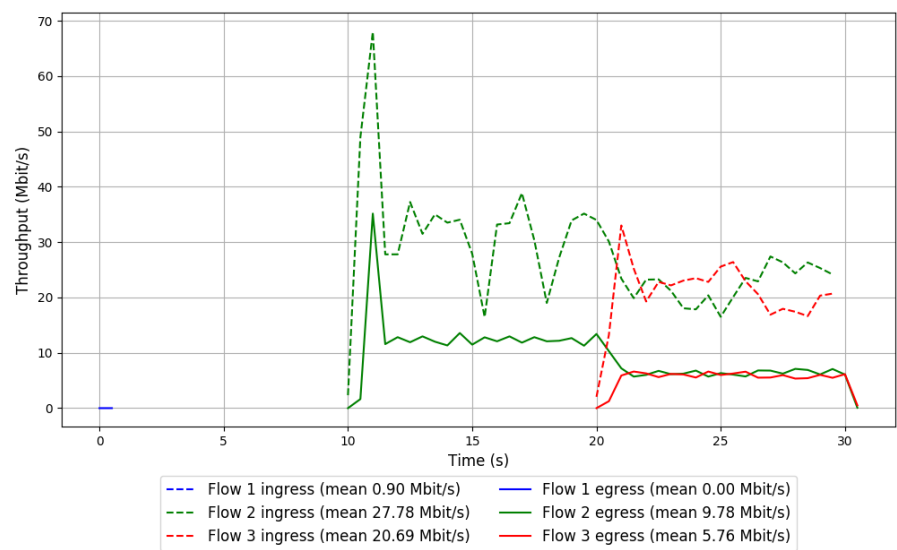
Run 1: Report of Copa — Data Link
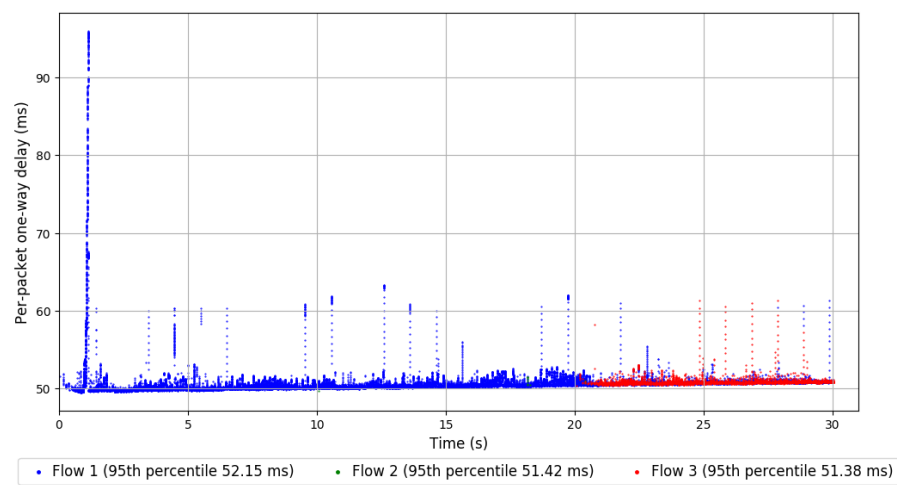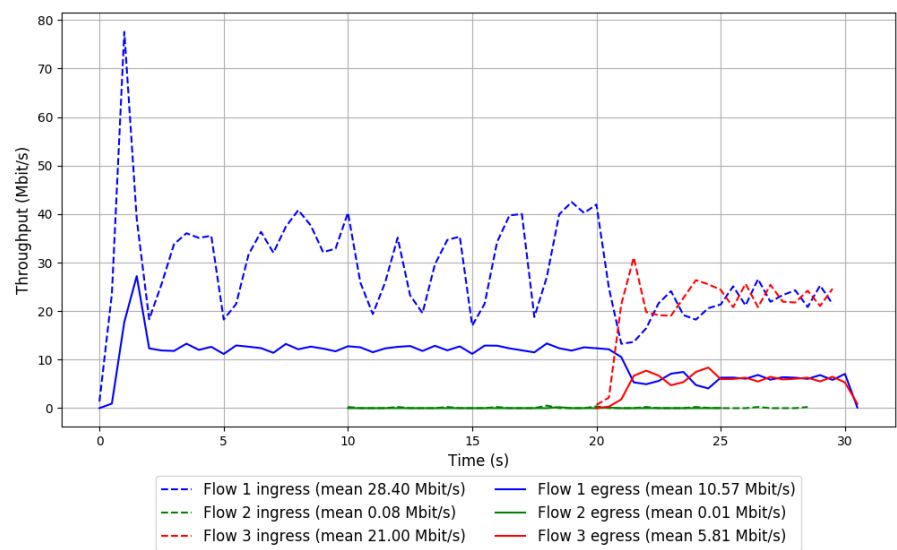
```
Run 2: Statistics of Copa

Start at: 2018-09-25 08:48:42
End at: 2018-09-25 08:49:12
Local clock offset: 2.54 ms
Remote clock offset: -6.884 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.43 Mbit/s
95th percentile per-packet one-way delay: 29.826 ms
Loss rate: 68.01%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 26.767 ms
Loss rate: 98.33%
-- Flow 2:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 31.912 ms
Loss rate: 65.69%
-- Flow 3:
Average throughput: 5.99 Mbit/s
95th percentile per-packet one-way delay: 27.725 ms
Loss rate: 73.74%
```
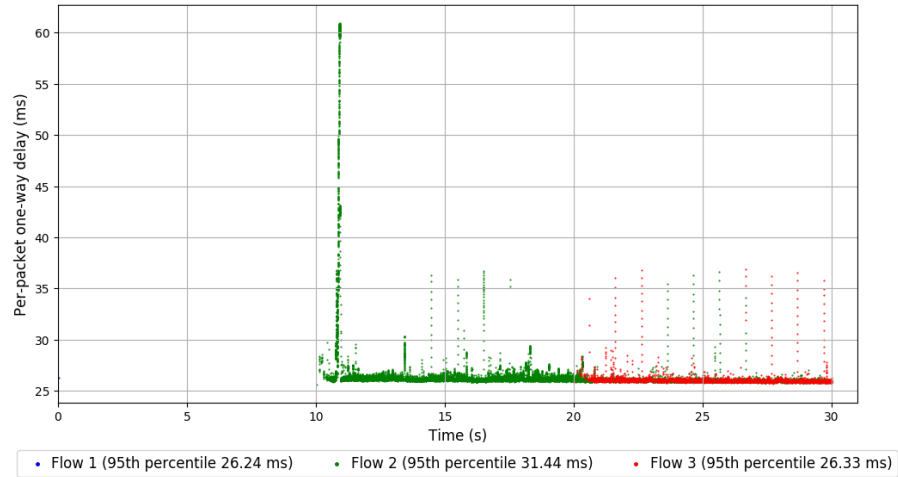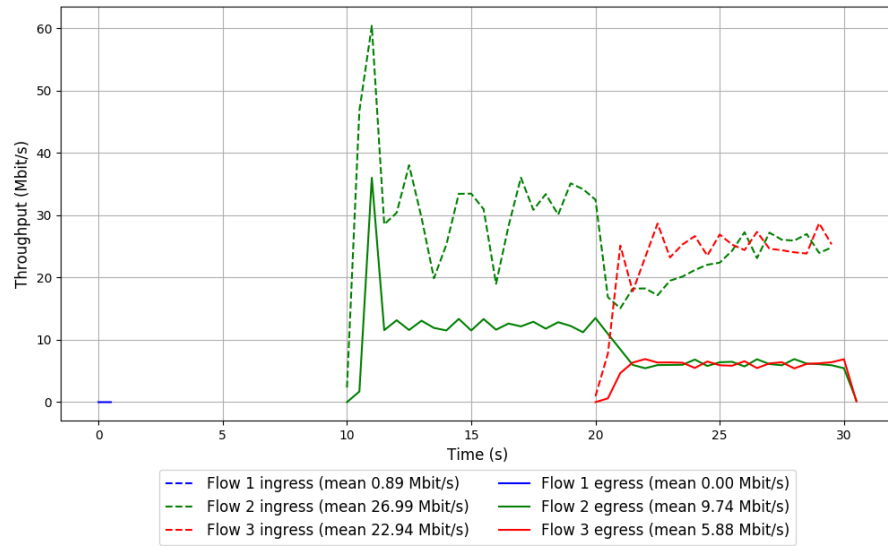
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 0.64 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 28.23 Mbit/s) --- Flow 2 egress (mean 9.69 Mbit/s)
Flow 3 ingress (mean 22.83 Mbit/s) --- Flow 3 egress (mean 5.99 Mbit/s)

Flow 1 (95th percentile 26.77 ms)   Flow 2 (95th percentile 31.91 ms)   Flow 3 (95th percentile 27.73 ms)

```
Run 3: Statistics of Copa

Start at: 2018-09-25 09:12:53
End at: 2018-09-25 09:13:23
Local clock offset: 2.958 ms
Remote clock offset: -11.904 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.43 Mbit/s
95th percentile per-packet one-way delay: 32.120 ms
Loss rate: 66.80%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 28.986 ms
Loss rate: 98.80%
-- Flow 2:
Average throughput: 9.78 Mbit/s
95th percentile per-packet one-way delay: 35.469 ms
Loss rate: 64.81%
-- Flow 3:
Average throughput: 5.76 Mbit/s
95th percentile per-packet one-way delay: 29.607 ms
Loss rate: 72.17%
```
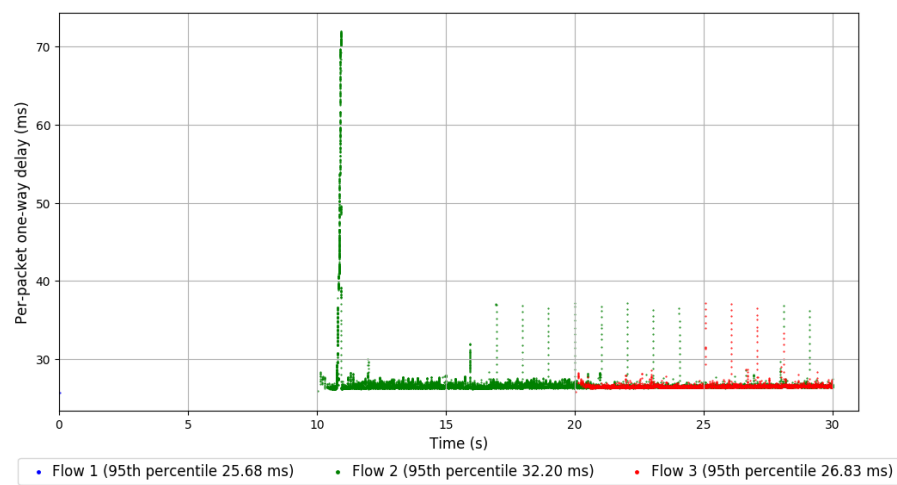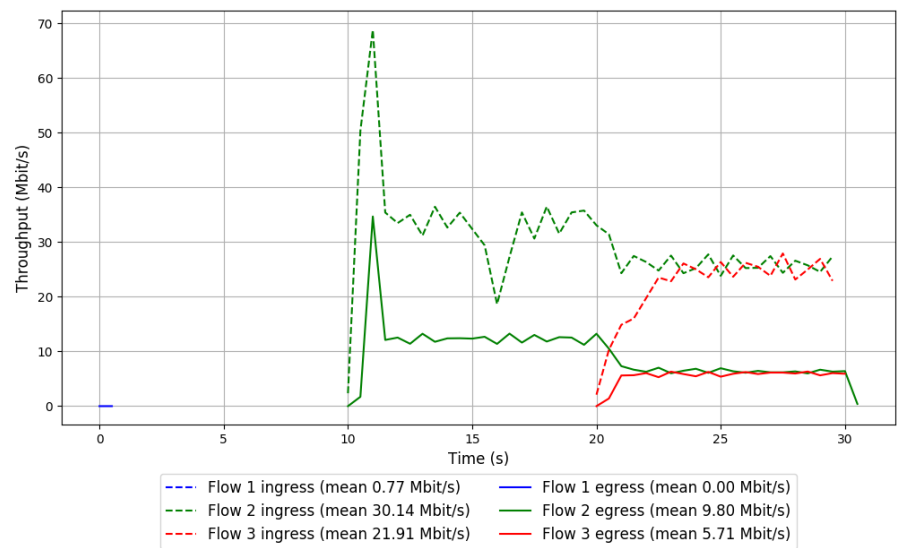
Run 3: Report of Copa — Data Link

- - - Flow 1 ingress (mean 0.90 Mbit/s) —— Flow 1 egress (mean 0.00 Mbit/s)
- - - Flow 2 ingress (mean 27.78 Mbit/s) —— Flow 2 egress (mean 9.78 Mbit/s)
- - - Flow 3 ingress (mean 20.69 Mbit/s) —— Flow 3 egress (mean 5.76 Mbit/s)

• Flow 1 (95th percentile 28.99 ms)   • Flow 2 (95th percentile 35.47 ms)   • Flow 3 (95th percentile 29.61 ms)

```
Run 4: Statistics of Copa

Start at: 2018-09-25 09:37:11
End at: 2018-09-25 09:37:41
Local clock offset: 1.693 ms
Remote clock offset: -25.675 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.44 Mbit/s
95th percentile per-packet one-way delay: 29.136 ms
Loss rate: 67.03%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 26.238 ms
Loss rate: 98.80%
-- Flow 2:
Average throughput: 9.74 Mbit/s
95th percentile per-packet one-way delay: 31.438 ms
Loss rate: 63.92%
-- Flow 3:
Average throughput: 5.88 Mbit/s
95th percentile per-packet one-way delay: 26.334 ms
Loss rate: 74.35%
```

Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 0.89 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 26.99 Mbit/s) --- Flow 2 egress (mean 9.74 Mbit/s)
Flow 3 ingress (mean 22.94 Mbit/s) --- Flow 3 egress (mean 5.88 Mbit/s)

Flow 1 (95th percentile 26.24 ms) • Flow 2 (95th percentile 31.44 ms) • Flow 3 (95th percentile 26.33 ms)

```
Run 5: Statistics of Copa

Start at: 2018-09-25 10:01:26
End at: 2018-09-25 10:01:56
Local clock offset: 3.829 ms
Remote clock offset: -29.745 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.42 Mbit/s
95th percentile per-packet one-way delay: 28.200 ms
Loss rate: 69.20%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 25.675 ms
Loss rate: 98.60%
-- Flow 2:
Average throughput: 9.80 Mbit/s
95th percentile per-packet one-way delay: 32.204 ms
Loss rate: 67.48%
-- Flow 3:
Average throughput: 5.71 Mbit/s
95th percentile per-packet one-way delay: 26.826 ms
Loss rate: 73.94%
```
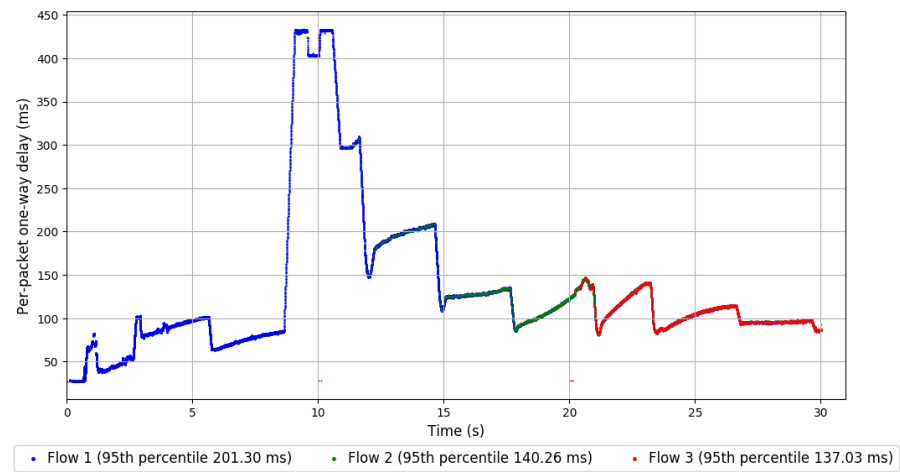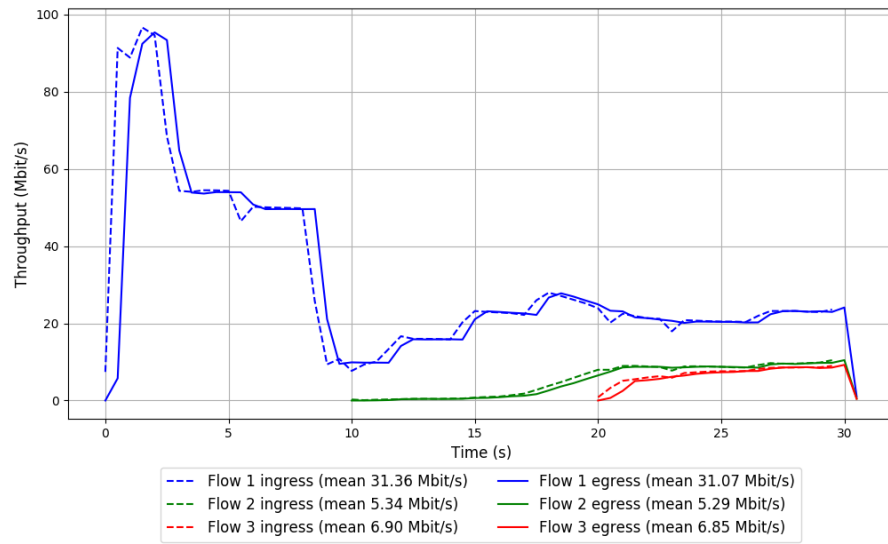
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 0.77 Mbit/s) — — — Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 30.14 Mbit/s) — — — Flow 2 egress (mean 9.80 Mbit/s)
Flow 3 ingress (mean 21.91 Mbit/s) — — — Flow 3 egress (mean 5.71 Mbit/s)

Flow 1 (95th percentile 25.68 ms)　　Flow 2 (95th percentile 32.20 ms)　　Flow 3 (95th percentile 26.83 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-25 08:26:38
End at: 2018-09-25 08:27:08
Local clock offset: 1.582 ms
Remote clock offset: 32.864 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 41.72 Mbit/s
95th percentile per-packet one-way delay: 187.328 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 35.14 Mbit/s
95th percentile per-packet one-way delay: 190.954 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 6.01 Mbit/s
95th percentile per-packet one-way delay: 157.424 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 7.77 Mbit/s
95th percentile per-packet one-way delay: 148.080 ms
Loss rate: 0.19%
```
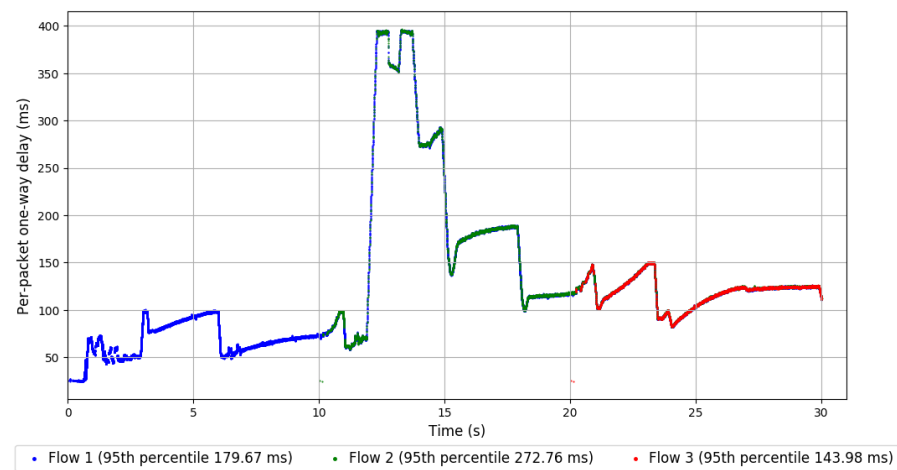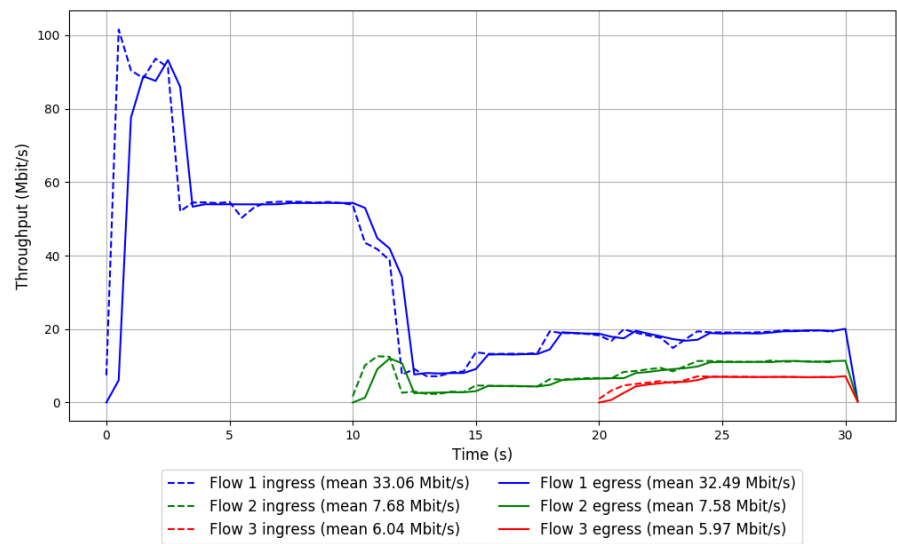
Run 1: Report of TCP Cubic — Data Link
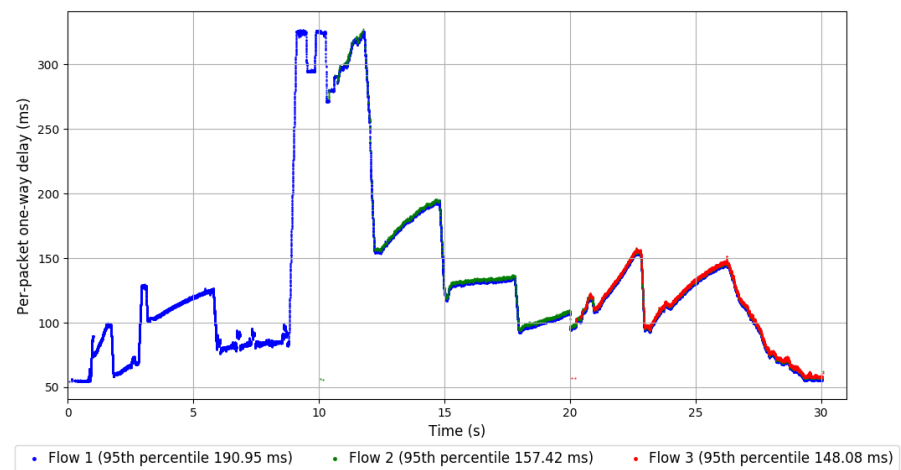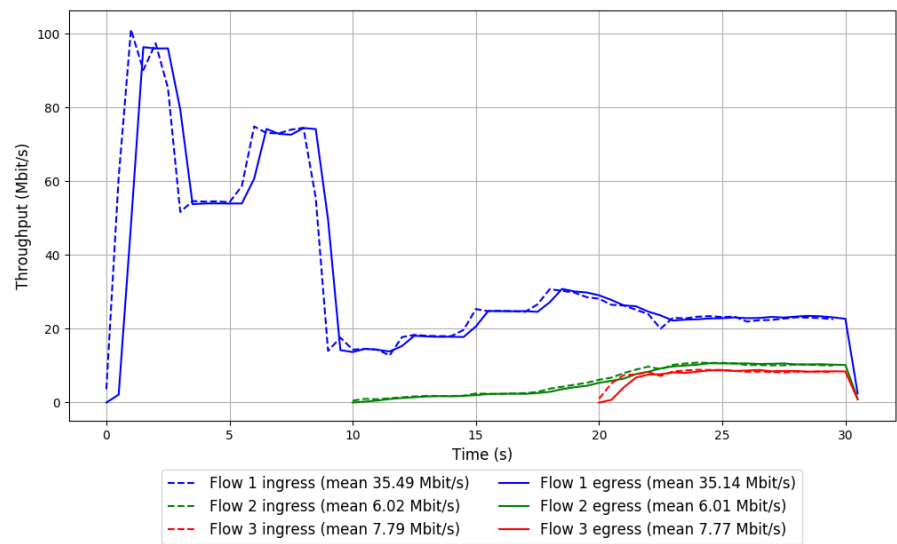
```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-25 08:51:11
End at: 2018-09-25 08:51:41
Local clock offset: 2.897 ms
Remote clock offset: -9.542 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 36.86 Mbit/s
95th percentile per-packet one-way delay: 196.664 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 31.07 Mbit/s
95th percentile per-packet one-way delay: 201.303 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 5.29 Mbit/s
95th percentile per-packet one-way delay: 140.256 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 6.85 Mbit/s
95th percentile per-packet one-way delay: 137.035 ms
Loss rate: 0.82%
```
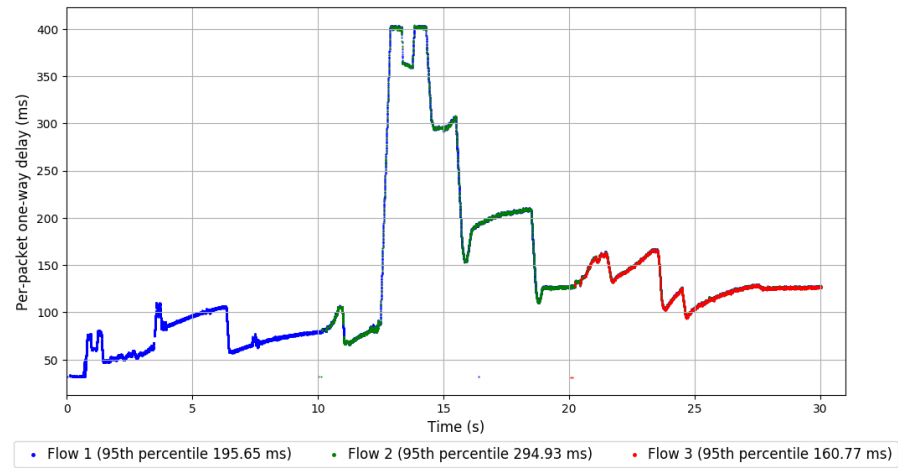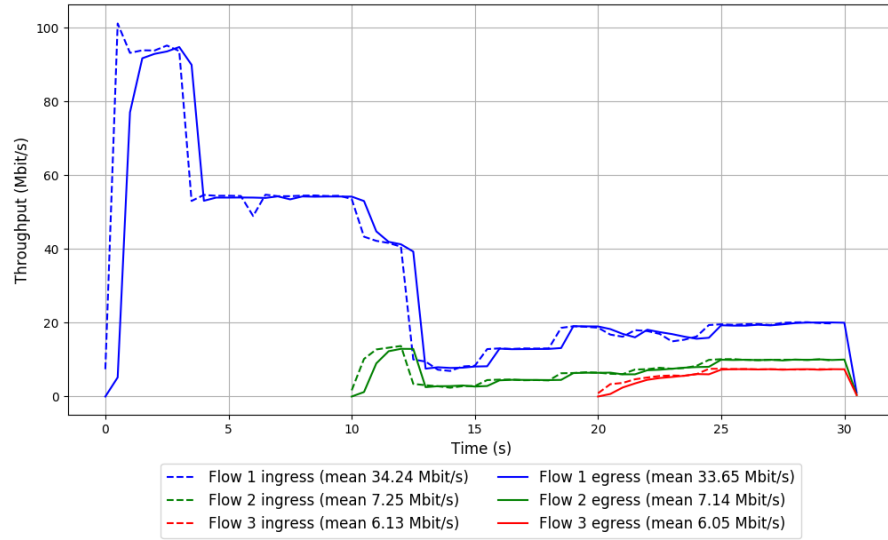
Run 2: Report of TCP Cubic — Data Link

- Flow 1 ingress (mean 31.36 Mbit/s)
- Flow 1 egress (mean 31.07 Mbit/s)
- Flow 2 ingress (mean 5.34 Mbit/s)
- Flow 2 egress (mean 5.29 Mbit/s)
- Flow 3 ingress (mean 6.90 Mbit/s)
- Flow 3 egress (mean 6.85 Mbit/s)

- Flow 1 (95th percentile 201.30 ms)
- Flow 2 (95th percentile 140.26 ms)
- Flow 3 (95th percentile 137.03 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-25 09:15:23
End at: 2018-09-25 09:15:53
Local clock offset: 2.586 ms
Remote clock offset: -15.793 ms


# Below is generated by plot.py at 2018-09-25 10:19:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.52 Mbit/s
95th percentile per-packet one-way delay: 182.548 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 32.49 Mbit/s
95th percentile per-packet one-way delay: 179.674 ms
Loss rate: 1.72%
-- Flow 2:
Average throughput: 7.58 Mbit/s
95th percentile per-packet one-way delay: 272.758 ms
Loss rate: 1.34%
-- Flow 3:
Average throughput: 5.97 Mbit/s
95th percentile per-packet one-way delay: 143.983 ms
Loss rate: 1.19%
```
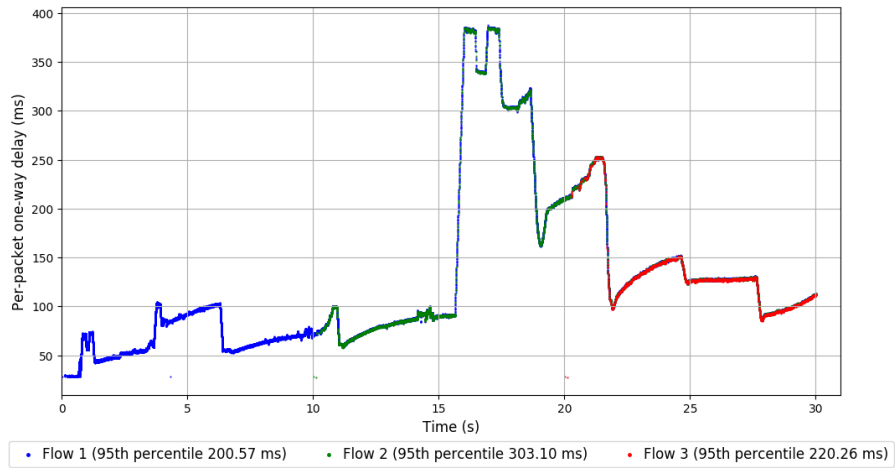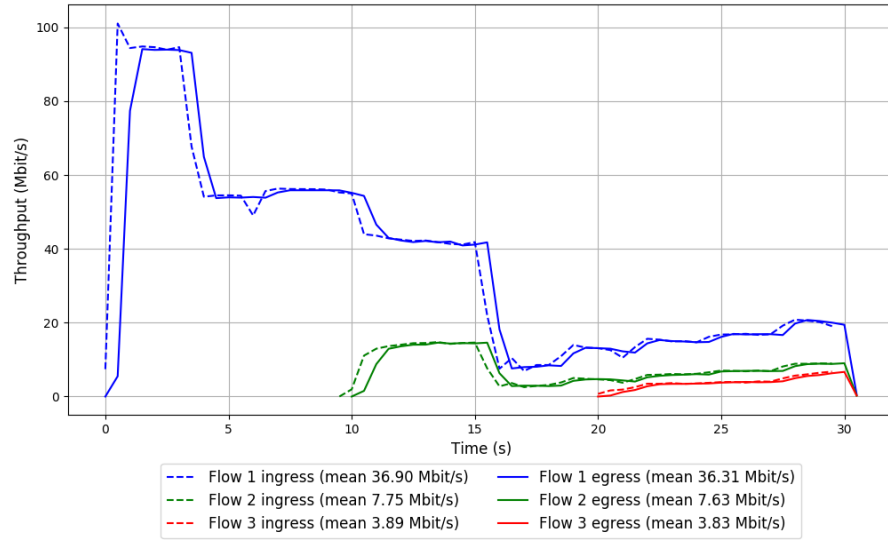
Run 3: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 33.06 Mbit/s) —— Flow 1 egress (mean 32.49 Mbit/s)
- - - Flow 2 ingress (mean 7.68 Mbit/s) —— Flow 2 egress (mean 7.58 Mbit/s)
- - - Flow 3 ingress (mean 6.04 Mbit/s) —— Flow 3 egress (mean 5.97 Mbit/s)

• Flow 1 (95th percentile 179.67 ms)　　• Flow 2 (95th percentile 272.76 ms)　　• Flow 3 (95th percentile 143.98 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-09-25 09:39:37
End at: 2018-09-25 09:40:07
Local clock offset: 1.447 ms
Remote clock offset: -18.666 ms


# Below is generated by plot.py at 2018-09-25 10:19:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 40.42 Mbit/s
95th percentile per-packet one-way delay: 200.902 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 33.65 Mbit/s
95th percentile per-packet one-way delay: 195.649 ms
Loss rate: 1.73%
-- Flow 2:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 294.932 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 160.770 ms
Loss rate: 1.26%
```
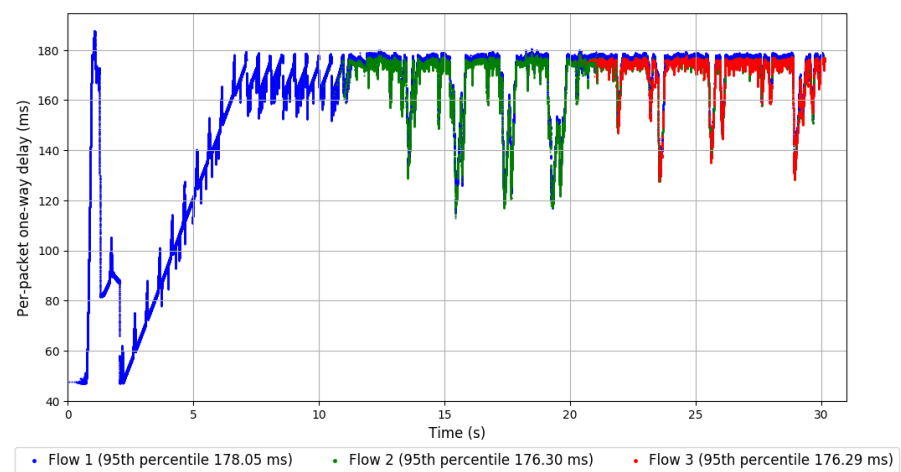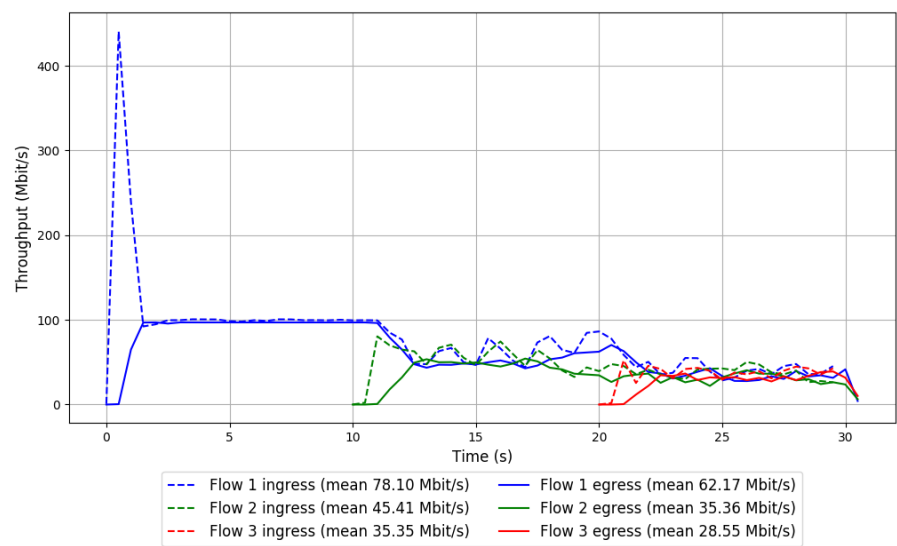
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 34.24 Mbit/s) — — — Flow 1 egress (mean 33.65 Mbit/s)
Flow 2 ingress (mean 7.25 Mbit/s) — — — Flow 2 egress (mean 7.14 Mbit/s)
Flow 3 ingress (mean 6.13 Mbit/s) — — — Flow 3 egress (mean 6.05 Mbit/s)

Flow 1 (95th percentile 195.65 ms)   Flow 2 (95th percentile 294.93 ms)   Flow 3 (95th percentile 160.77 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-09-25 10:03:55
End at: 2018-09-25 10:04:25
Local clock offset: 3.839 ms
Remote clock offset: -29.085 ms


# Below is generated by plot.py at 2018-09-25 10:19:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 42.67 Mbit/s
95th percentile per-packet one-way delay: 210.410 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 36.31 Mbit/s
95th percentile per-packet one-way delay: 200.566 ms
Loss rate: 1.60%
-- Flow 2:
Average throughput: 7.63 Mbit/s
95th percentile per-packet one-way delay: 303.101 ms
Loss rate: 1.56%
-- Flow 3:
Average throughput: 3.83 Mbit/s
95th percentile per-packet one-way delay: 220.263 ms
Loss rate: 1.64%
```
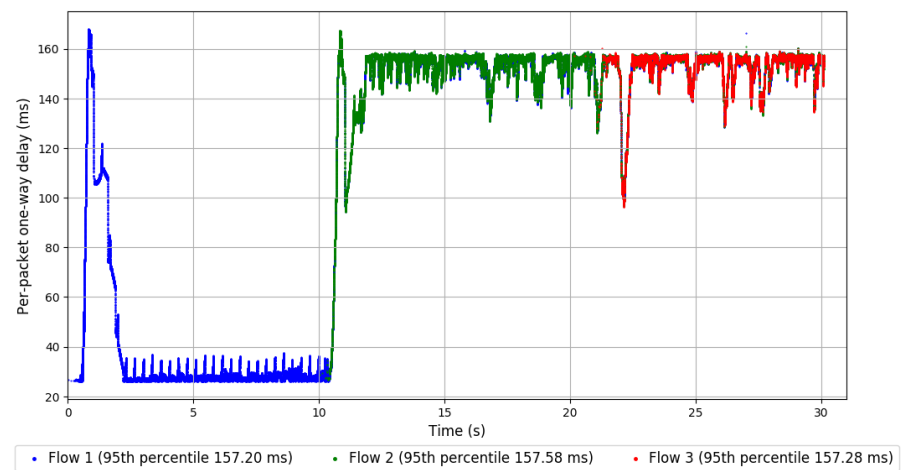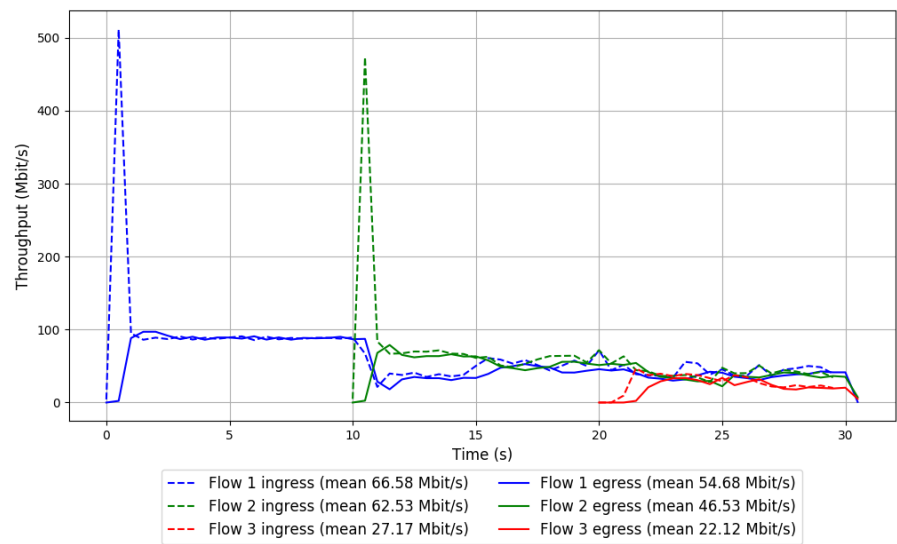
Run 5: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 36.90 Mbit/s) ——— Flow 1 egress (mean 36.31 Mbit/s)
- - - Flow 2 ingress (mean 7.75 Mbit/s) ——— Flow 2 egress (mean 7.63 Mbit/s)
- - - Flow 3 ingress (mean 3.89 Mbit/s) ——— Flow 3 egress (mean 3.83 Mbit/s)

• Flow 1 (95th percentile 200.57 ms)   • Flow 2 (95th percentile 303.10 ms)   • Flow 3 (95th percentile 220.26 ms)

34

```
Run 1: Statistics of FillP

Start at: 2018-09-25 08:37:01
End at: 2018-09-25 08:37:31
Local clock offset: 0.642 ms
Remote clock offset: 10.1 ms


# Below is generated by plot.py at 2018-09-25 10:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.90 Mbit/s
95th percentile per-packet one-way delay: 177.851 ms
Loss rate: 20.60%
-- Flow 1:
Average throughput: 62.17 Mbit/s
95th percentile per-packet one-way delay: 178.047 ms
Loss rate: 20.23%
-- Flow 2:
Average throughput: 35.36 Mbit/s
95th percentile per-packet one-way delay: 176.298 ms
Loss rate: 22.09%
-- Flow 3:
Average throughput: 28.55 Mbit/s
95th percentile per-packet one-way delay: 176.291 ms
Loss rate: 19.23%
```
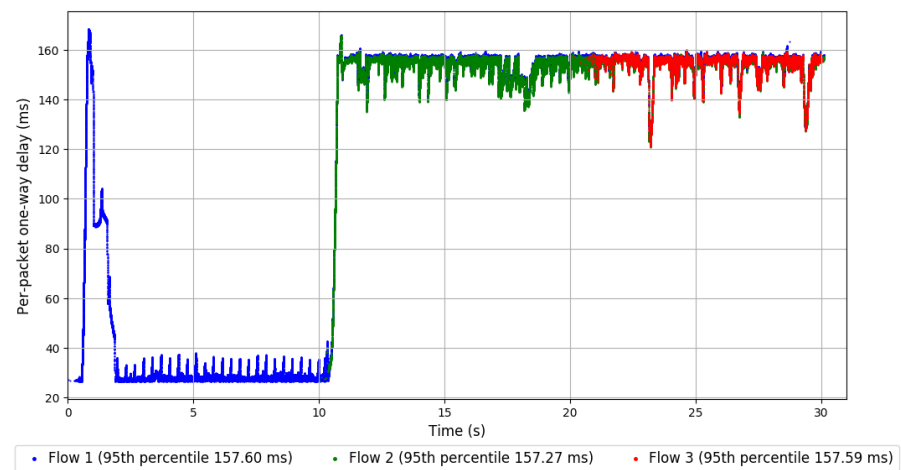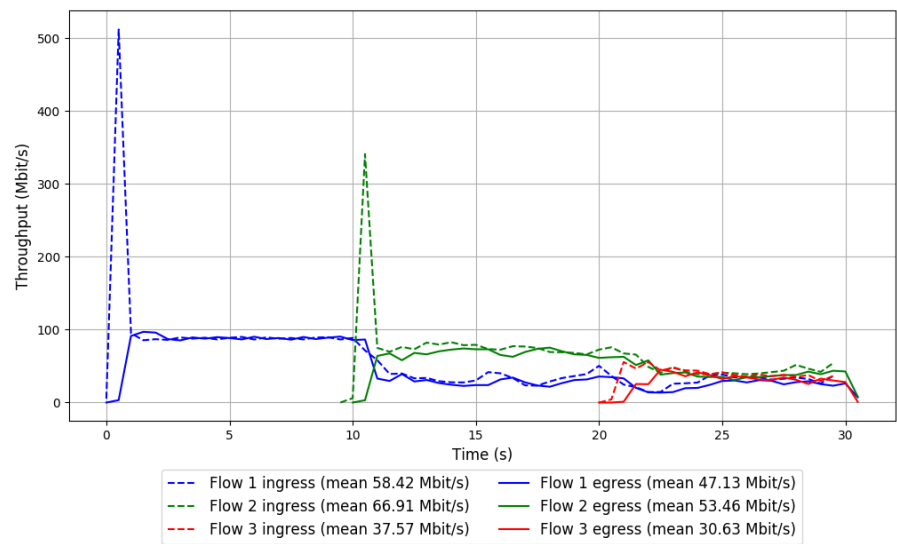
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 78.10 Mbit/s) --- Flow 1 egress (mean 62.17 Mbit/s)
Flow 2 ingress (mean 45.41 Mbit/s) --- Flow 2 egress (mean 35.36 Mbit/s)
Flow 3 ingress (mean 35.35 Mbit/s) --- Flow 3 egress (mean 28.55 Mbit/s)

Flow 1 (95th percentile 178.05 ms)   Flow 2 (95th percentile 176.30 ms)   Flow 3 (95th percentile 176.29 ms)

36

```
Run 2: Statistics of FillP

Start at: 2018-09-25 09:01:22
End at: 2018-09-25 09:01:52
Local clock offset: 3.382 ms
Remote clock offset: -23.231 ms


# Below is generated by plot.py at 2018-09-25 10:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.78 Mbit/s
95th percentile per-packet one-way delay: 159.769 ms
Loss rate: 18.82%
-- Flow 1:
Average throughput: 61.23 Mbit/s
95th percentile per-packet one-way delay: 159.632 ms
Loss rate: 14.74%
-- Flow 2:
Average throughput: 42.65 Mbit/s
95th percentile per-packet one-way delay: 159.895 ms
Loss rate: 27.17%
-- Flow 3:
Average throughput: 9.85 Mbit/s
95th percentile per-packet one-way delay: 160.097 ms
Loss rate: 9.13%
```

Run 2: Report of FillP — Data Link
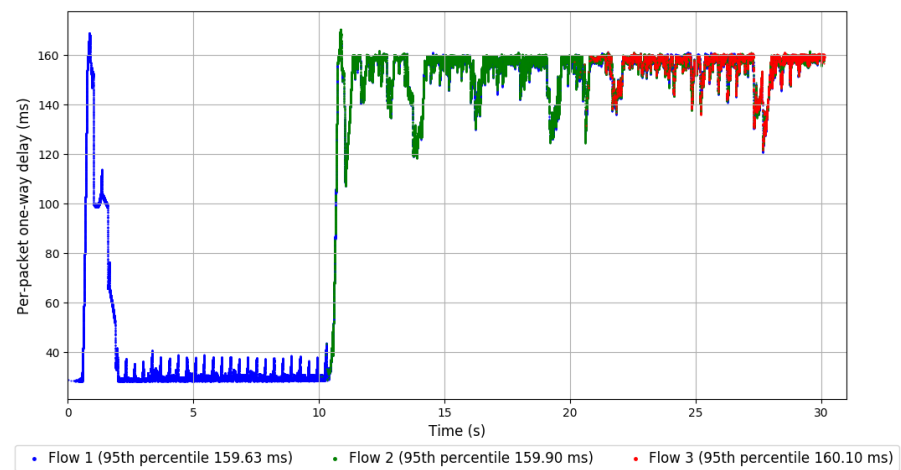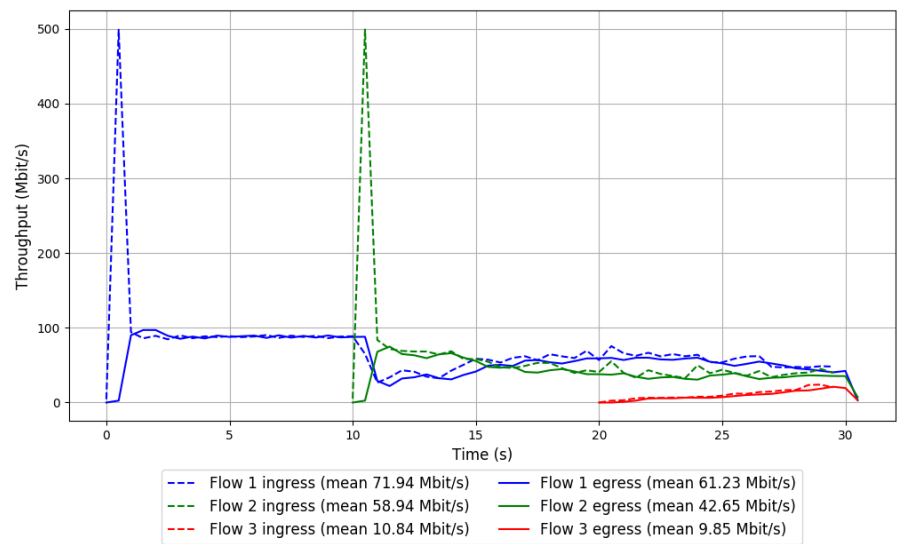
```
Run 3: Statistics of FillP

Start at: 2018-09-25 09:25:37
End at: 2018-09-25 09:26:07
Local clock offset: 1.93 ms
Remote clock offset: -18.118 ms


# Below is generated by plot.py at 2018-09-25 10:21:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.86 Mbit/s
95th percentile per-packet one-way delay: 157.388 ms
Loss rate: 20.44%
-- Flow 1:
Average throughput: 54.68 Mbit/s
95th percentile per-packet one-way delay: 157.197 ms
Loss rate: 17.76%
-- Flow 2:
Average throughput: 46.53 Mbit/s
95th percentile per-packet one-way delay: 157.582 ms
Loss rate: 25.12%
-- Flow 3:
Average throughput: 22.12 Mbit/s
95th percentile per-packet one-way delay: 157.285 ms
Loss rate: 18.59%
```
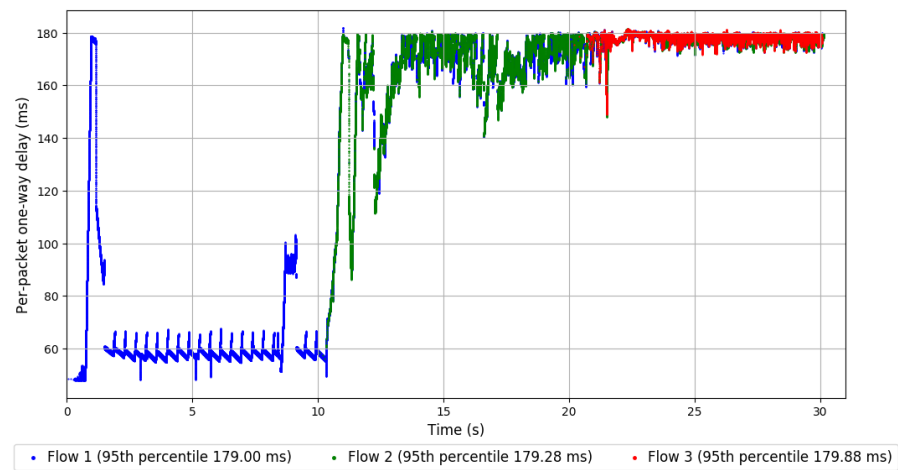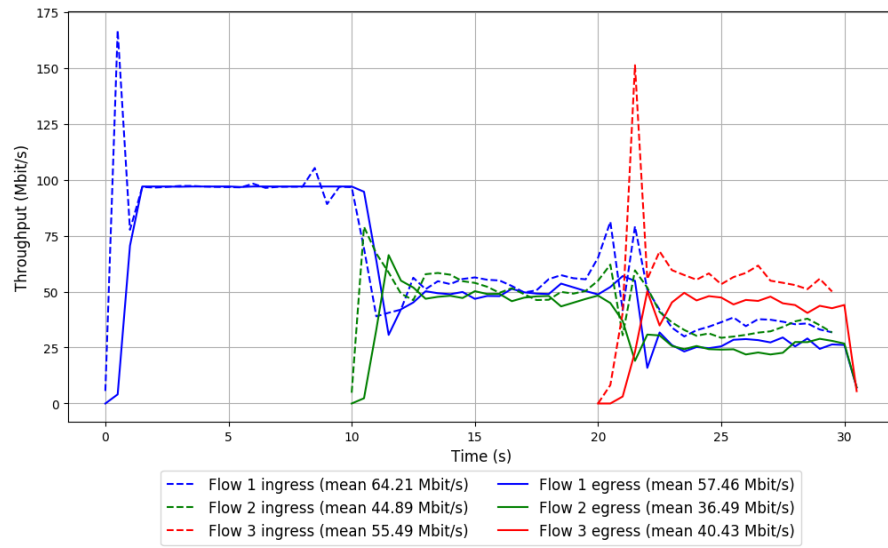
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 66.58 Mbit/s)   Flow 1 egress (mean 54.68 Mbit/s)
Flow 2 ingress (mean 62.53 Mbit/s)   Flow 2 egress (mean 46.53 Mbit/s)
Flow 3 ingress (mean 27.17 Mbit/s)   Flow 3 egress (mean 22.12 Mbit/s)

Flow 1 (95th percentile 157.20 ms)   Flow 2 (95th percentile 157.58 ms)   Flow 3 (95th percentile 157.28 ms)

40

```
Run 4: Statistics of FillP

Start at: 2018-09-25 09:49:53
End at: 2018-09-25 09:50:23
Local clock offset: 3.212 ms
Remote clock offset: -23.679 ms

# Below is generated by plot.py at 2018-09-25 10:21:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.84 Mbit/s
95th percentile per-packet one-way delay: 157.480 ms
Loss rate: 19.24%
-- Flow 1:
Average throughput: 47.13 Mbit/s
95th percentile per-packet one-way delay: 157.597 ms
Loss rate: 18.98%
-- Flow 2:
Average throughput: 53.46 Mbit/s
95th percentile per-packet one-way delay: 157.270 ms
Loss rate: 19.59%
-- Flow 3:
Average throughput: 30.63 Mbit/s
95th percentile per-packet one-way delay: 157.590 ms
Loss rate: 19.26%
```

Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 58.42 Mbit/s) — — — Flow 1 egress (mean 47.13 Mbit/s)
Flow 2 ingress (mean 66.91 Mbit/s) — — — Flow 2 egress (mean 53.46 Mbit/s)
Flow 3 ingress (mean 37.57 Mbit/s) — — — Flow 3 egress (mean 30.63 Mbit/s)

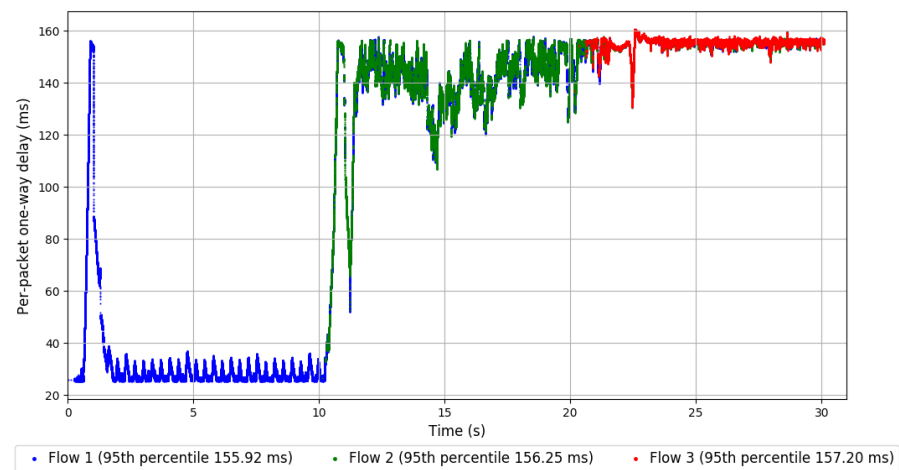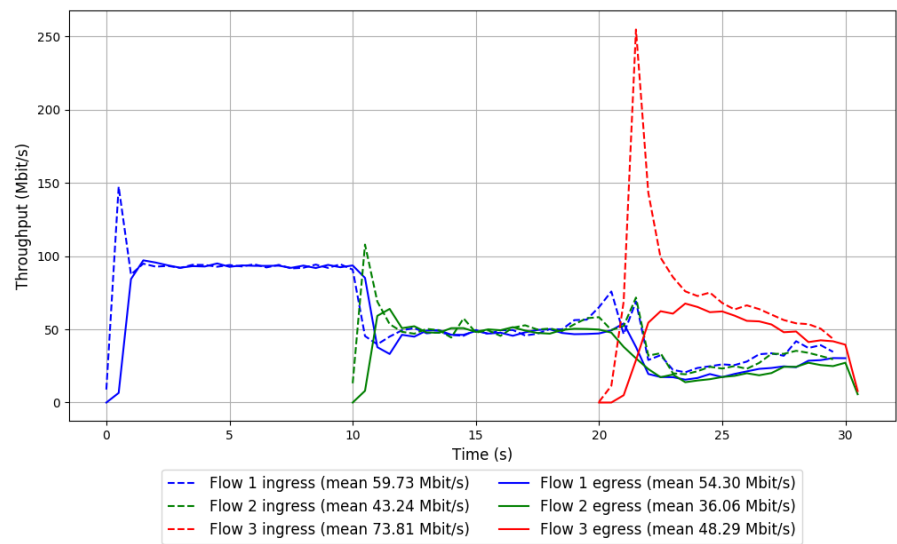Flow 1 (95th percentile 157.60 ms)   Flow 2 (95th percentile 157.27 ms)   Flow 3 (95th percentile 157.59 ms)

```
Run 5: Statistics of FillP

Start at: 2018-09-25 10:14:06
End at: 2018-09-25 10:14:36
Local clock offset: 5.576 ms
Remote clock offset: -18.228 ms


# Below is generated by plot.py at 2018-09-25 10:21:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.89 Mbit/s
95th percentile per-packet one-way delay: 166.367 ms
Loss rate: 21.75%
-- Flow 1:
Average throughput: 49.92 Mbit/s
95th percentile per-packet one-way delay: 166.252 ms
Loss rate: 18.78%
-- Flow 2:
Average throughput: 46.49 Mbit/s
95th percentile per-packet one-way delay: 166.360 ms
Loss rate: 26.90%
-- Flow 3:
Average throughput: 36.67 Mbit/s
95th percentile per-packet one-way delay: 166.572 ms
Loss rate: 19.30%
```
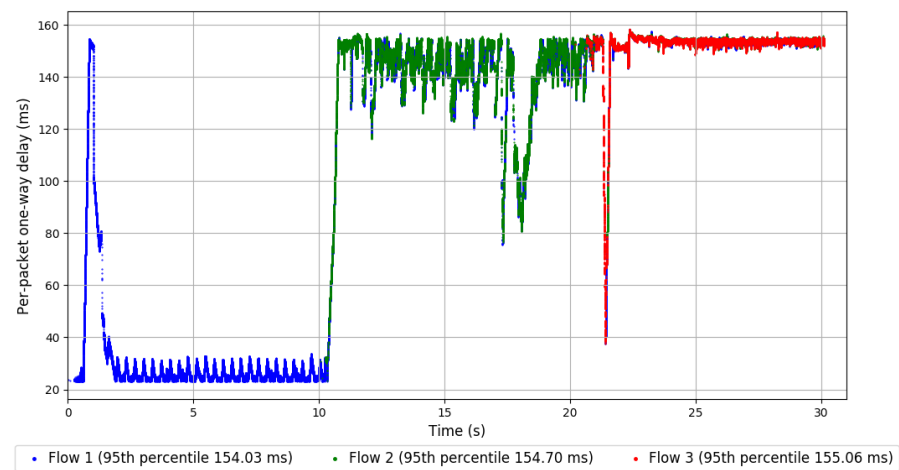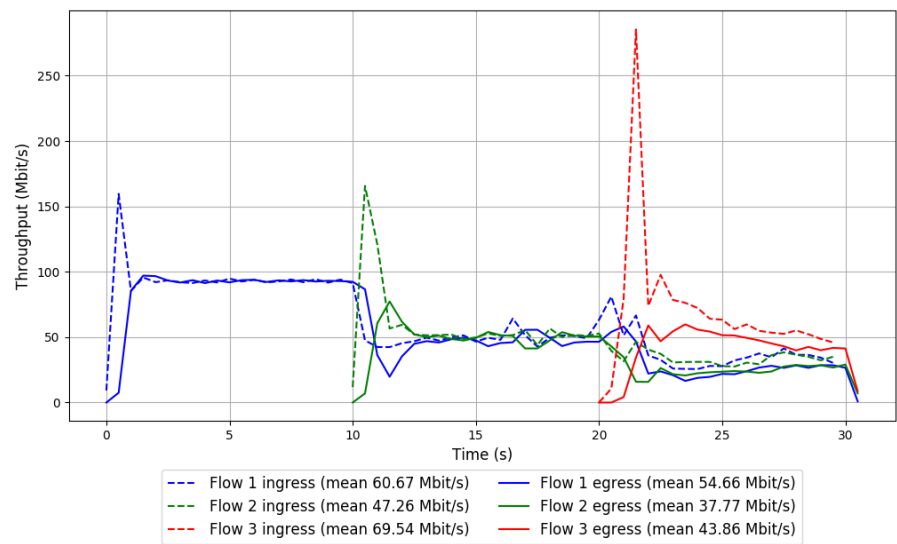
Run 5: Report of FillP — Data Link
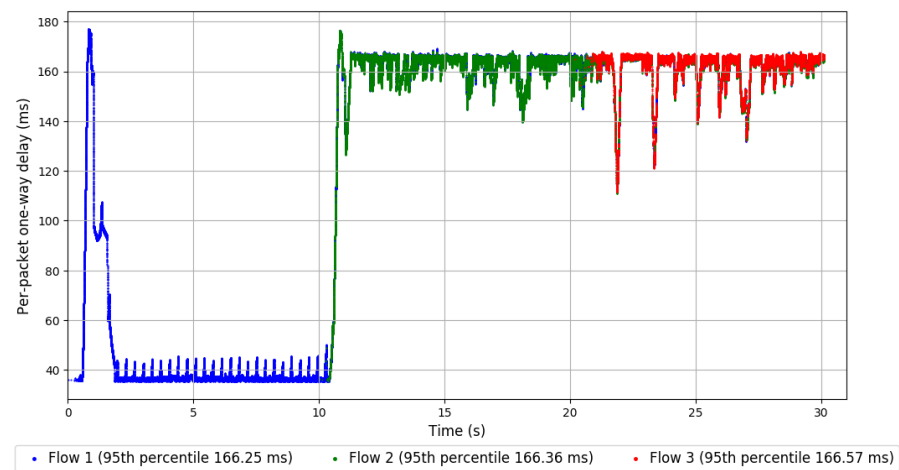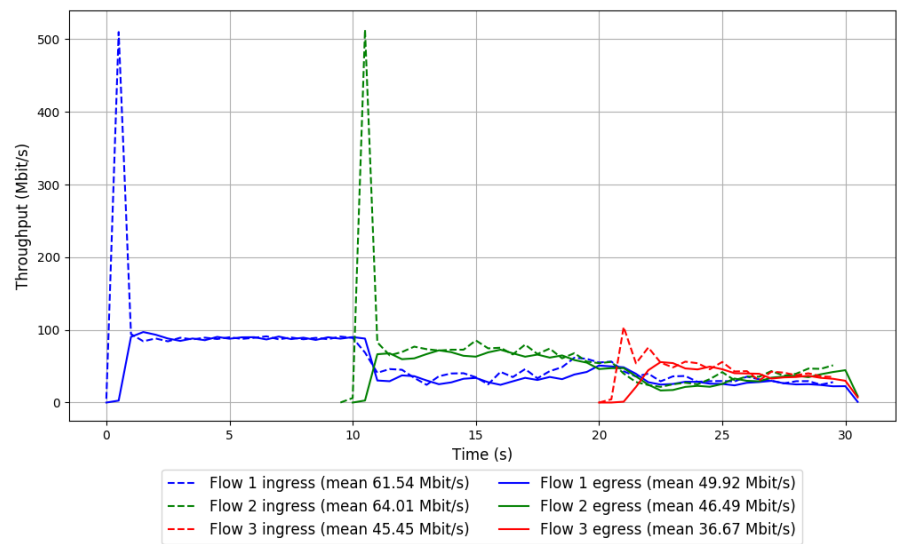
```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-25 08:27:59
End at: 2018-09-25 08:28:29
Local clock offset: 1.497 ms
Remote clock offset: 24.44 ms


# Below is generated by plot.py at 2018-09-25 10:21:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.02 Mbit/s
95th percentile per-packet one-way delay: 179.333 ms
Loss rate: 15.16%
-- Flow 1:
Average throughput: 57.46 Mbit/s
95th percentile per-packet one-way delay: 179.002 ms
Loss rate: 10.13%
-- Flow 2:
Average throughput: 36.49 Mbit/s
95th percentile per-packet one-way delay: 179.282 ms
Loss rate: 18.22%
-- Flow 3:
Average throughput: 40.43 Mbit/s
95th percentile per-packet one-way delay: 179.875 ms
Loss rate: 27.75%
```

Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 64.21 Mbit/s) — Flow 1 egress (mean 57.46 Mbit/s)
Flow 2 ingress (mean 44.89 Mbit/s) — Flow 2 egress (mean 36.49 Mbit/s)
Flow 3 ingress (mean 55.49 Mbit/s) — Flow 3 egress (mean 40.43 Mbit/s)

Flow 1 (95th percentile 179.00 ms) · Flow 2 (95th percentile 179.28 ms) · Flow 3 (95th percentile 179.88 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-25 08:52:27
End at: 2018-09-25 08:52:57
Local clock offset: 3.138 ms
Remote clock offset: -14.624 ms


# Below is generated by plot.py at 2018-09-25 10:21:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.36 Mbit/s
95th percentile per-packet one-way delay: 155.359 ms
Loss rate: 15.21%
-- Flow 1:
Average throughput: 56.97 Mbit/s
95th percentile per-packet one-way delay: 155.129 ms
Loss rate: 8.58%
-- Flow 2:
Average throughput: 36.16 Mbit/s
95th percentile per-packet one-way delay: 155.332 ms
Loss rate: 18.04%
-- Flow 3:
Average throughput: 40.55 Mbit/s
95th percentile per-packet one-way delay: 155.878 ms
Loss rate: 31.91%
```

Run 2: Report of FillP-Sheep — Data Link
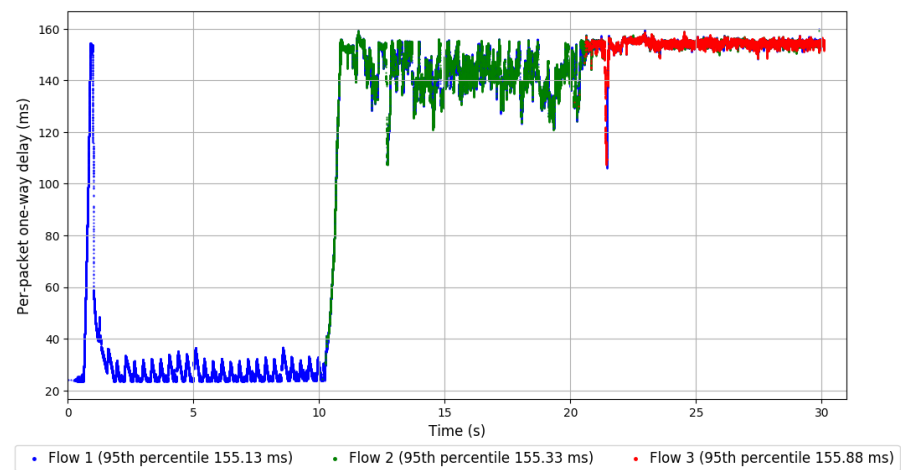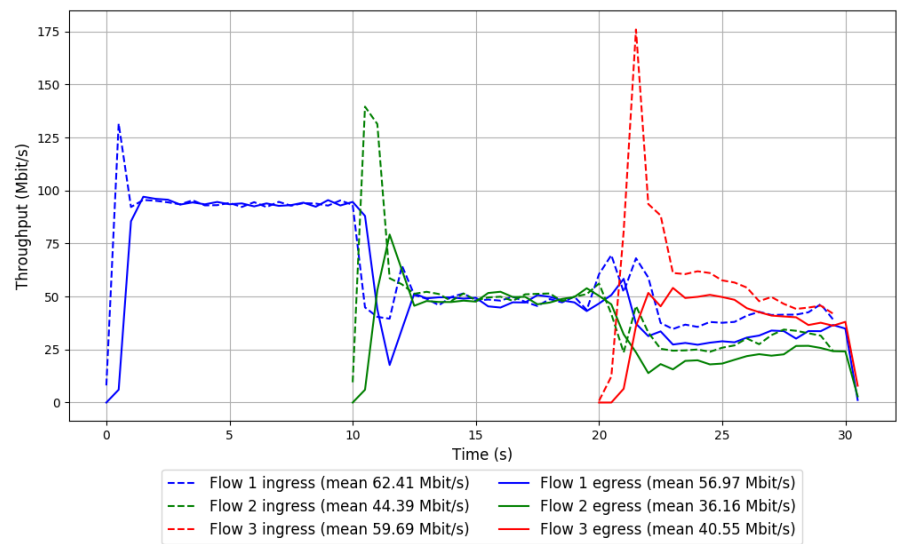
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-25 09:16:40
End at: 2018-09-25 09:17:10
Local clock offset: 2.736 ms
Remote clock offset: -15.089 ms


# Below is generated by plot.py at 2018-09-25 10:21:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.14 Mbit/s
95th percentile per-packet one-way delay: 156.447 ms
Loss rate: 16.32%
-- Flow 1:
Average throughput: 54.30 Mbit/s
95th percentile per-packet one-way delay: 155.919 ms
Loss rate: 9.01%
-- Flow 2:
Average throughput: 36.06 Mbit/s
95th percentile per-packet one-way delay: 156.252 ms
Loss rate: 16.08%
-- Flow 3:
Average throughput: 48.29 Mbit/s
95th percentile per-packet one-way delay: 157.197 ms
Loss rate: 34.44%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 59.73 Mbit/s) --- Flow 1 egress (mean 54.30 Mbit/s)
Flow 2 ingress (mean 43.24 Mbit/s) --- Flow 2 egress (mean 36.06 Mbit/s)
Flow 3 ingress (mean 73.81 Mbit/s) --- Flow 3 egress (mean 48.29 Mbit/s)

Flow 1 (95th percentile 155.92 ms) • Flow 2 (95th percentile 156.25 ms) • Flow 3 (95th percentile 157.20 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-25 09:40:52
End at: 2018-09-25 09:41:22
Local clock offset: 1.857 ms
Remote clock offset: -26.189 ms


# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.16 Mbit/s
95th percentile per-packet one-way delay: 154.524 ms
Loss rate: 17.88%
-- Flow 1:
Average throughput: 54.66 Mbit/s
95th percentile per-packet one-way delay: 154.030 ms
Loss rate: 9.76%
-- Flow 2:
Average throughput: 37.77 Mbit/s
95th percentile per-packet one-way delay: 154.702 ms
Loss rate: 19.59%
-- Flow 3:
Average throughput: 43.86 Mbit/s
95th percentile per-packet one-way delay: 155.064 ms
Loss rate: 36.91%
```
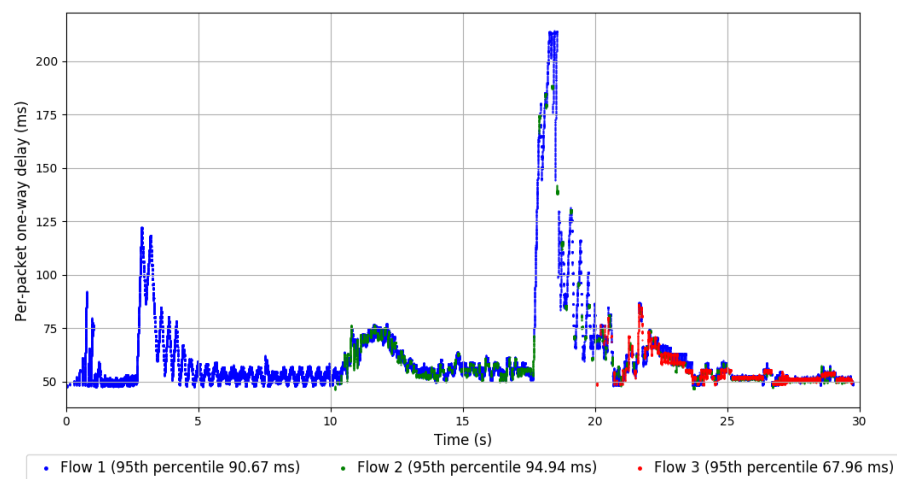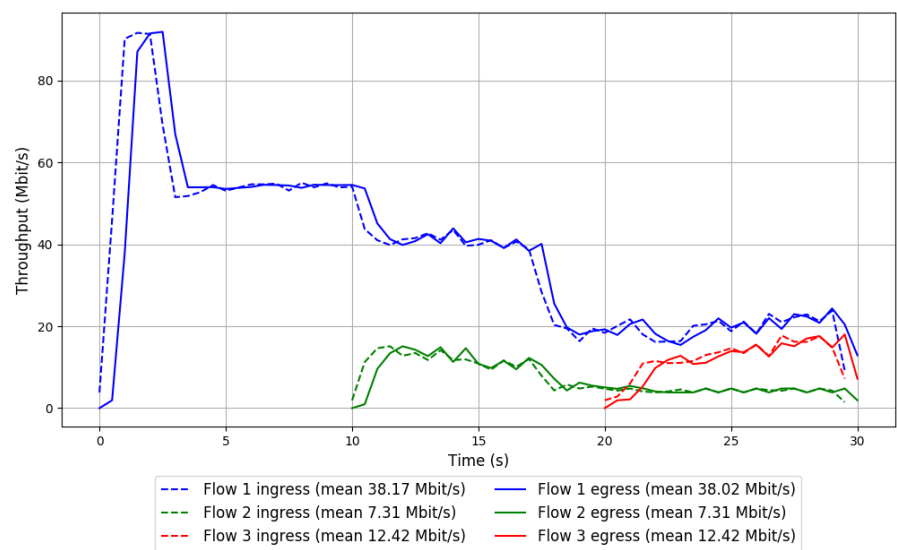
Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 60.67 Mbit/s) --- Flow 1 egress (mean 54.66 Mbit/s)
Flow 2 ingress (mean 47.26 Mbit/s) --- Flow 2 egress (mean 37.77 Mbit/s)
Flow 3 ingress (mean 69.54 Mbit/s) --- Flow 3 egress (mean 43.86 Mbit/s)

Flow 1 (95th percentile 154.03 ms)   Flow 2 (95th percentile 154.70 ms)   Flow 3 (95th percentile 155.06 ms)
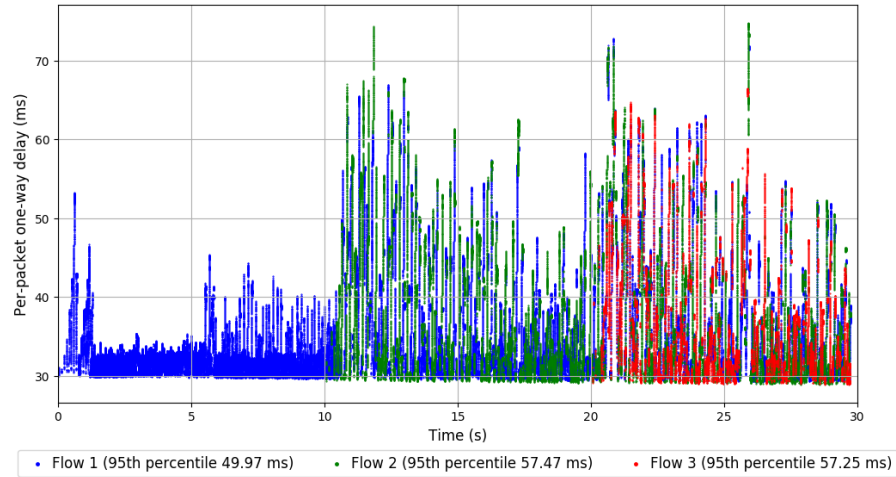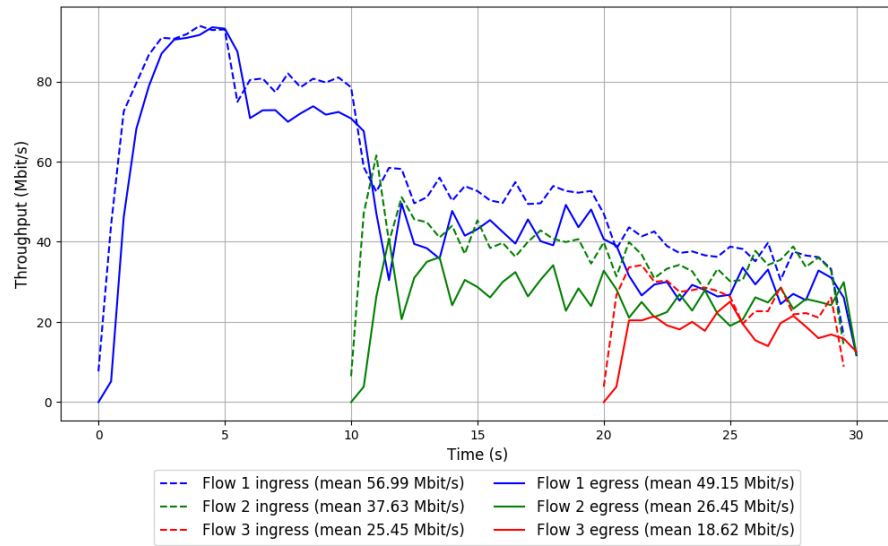
```
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-25 10:05:11
End at: 2018-09-25 10:05:42
Local clock offset: 3.867 ms
Remote clock offset: -33.749 ms


# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.26 Mbit/s
95th percentile per-packet one-way delay: 155.127 ms
Loss rate: 13.75%
-- Flow 1:
Average throughput: 55.68 Mbit/s
95th percentile per-packet one-way delay: 154.606 ms
Loss rate: 7.65%
-- Flow 2:
Average throughput: 37.17 Mbit/s
95th percentile per-packet one-way delay: 155.195 ms
Loss rate: 12.09%
-- Flow 3:
Average throughput: 42.22 Mbit/s
95th percentile per-packet one-way delay: 155.543 ms
Loss rate: 33.47%
```

Run 5: Report of FillP-Sheep — Data Link
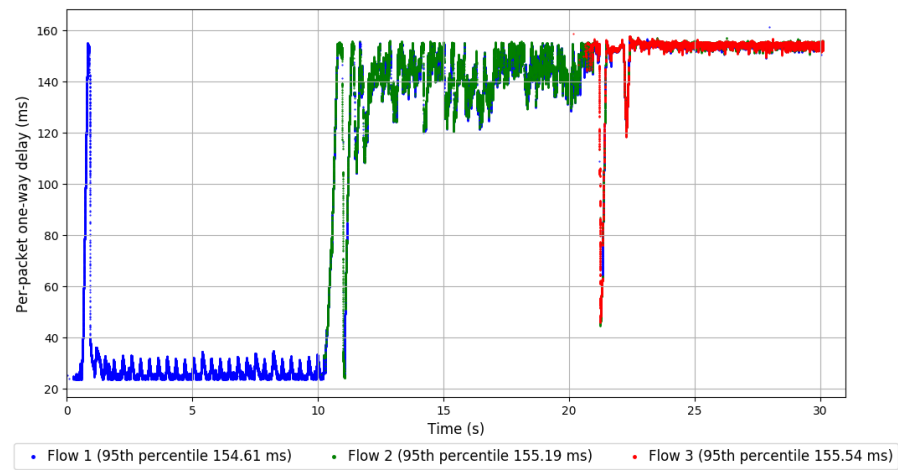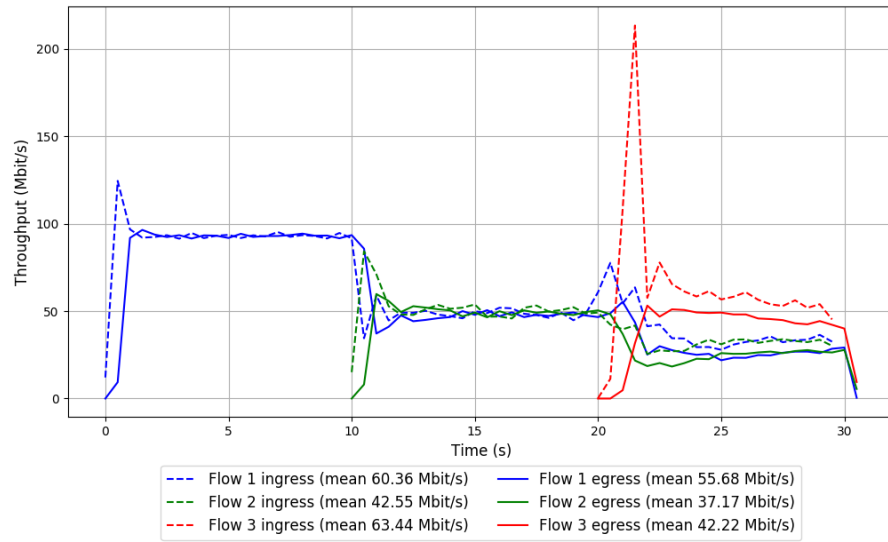
```
Run 1: Statistics of Indigo

Start at: 2018-09-25 08:12:37
End at: 2018-09-25 08:13:07
Local clock offset: 6.037 ms
Remote clock offset: 107.358 ms

# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.81 Mbit/s
95th percentile per-packet one-way delay: 54.435 ms
Loss rate: 17.60%
-- Flow 1:
Average throughput: 52.31 Mbit/s
95th percentile per-packet one-way delay: 53.284 ms
Loss rate: 14.73%
-- Flow 2:
Average throughput: 20.77 Mbit/s
95th percentile per-packet one-way delay: 57.710 ms
Loss rate: 25.23%
-- Flow 3:
Average throughput: 21.14 Mbit/s
95th percentile per-packet one-way delay: 56.623 ms
Loss rate: 21.78%
```

Run 1: Report of Indigo — Data Link
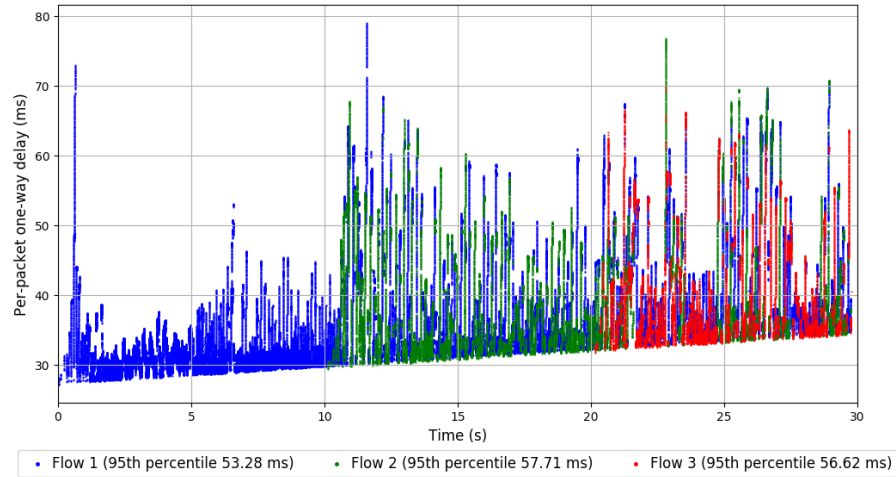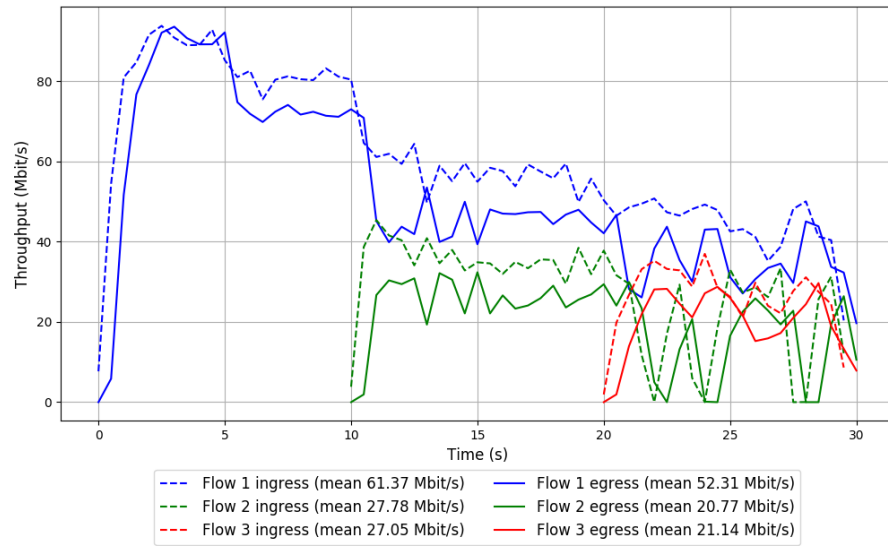
```
Run 2: Statistics of Indigo

Start at: 2018-09-25 08:41:02
End at: 2018-09-25 08:41:32
Local clock offset: 0.955 ms
Remote clock offset: 4.967 ms


# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 46.85 Mbit/s
95th percentile per-packet one-way delay: 86.346 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 38.02 Mbit/s
95th percentile per-packet one-way delay: 90.672 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 7.31 Mbit/s
95th percentile per-packet one-way delay: 94.945 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 12.42 Mbit/s
95th percentile per-packet one-way delay: 67.957 ms
Loss rate: 0.00%
```
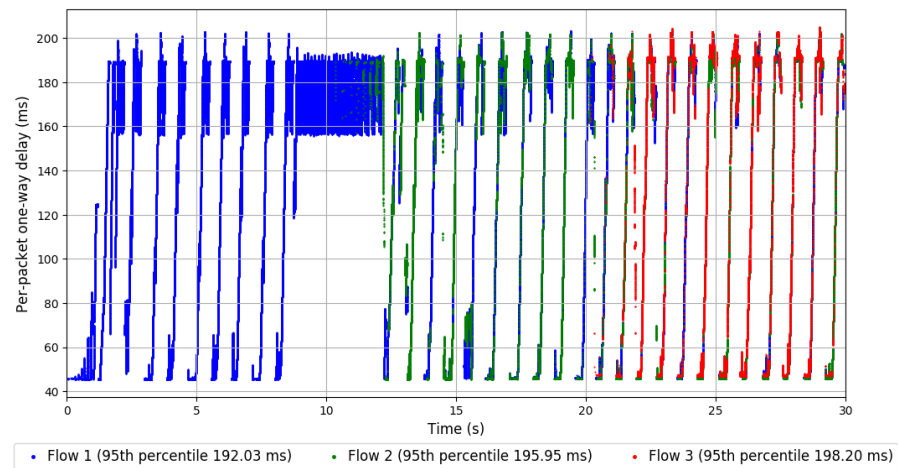
Run 2: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 38.17 Mbit/s) —— Flow 1 egress (mean 38.02 Mbit/s)
- - - Flow 2 ingress (mean 7.31 Mbit/s) —— Flow 2 egress (mean 7.31 Mbit/s)
- - - Flow 3 ingress (mean 12.42 Mbit/s) —— Flow 3 egress (mean 12.42 Mbit/s)

- Flow 1 (95th percentile 90.67 ms) · Flow 2 (95th percentile 94.94 ms) · Flow 3 (95th percentile 67.96 ms)

```
Run 3: Statistics of Indigo

Start at: 2018-09-25 09:05:18
End at: 2018-09-25 09:05:48
Local clock offset: 3.6 ms
Remote clock offset: -16.912 ms

# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.70 Mbit/s
95th percentile per-packet one-way delay: 53.247 ms
Loss rate: 19.35%
-- Flow 1:
Average throughput: 49.15 Mbit/s
95th percentile per-packet one-way delay: 49.966 ms
Loss rate: 13.74%
-- Flow 2:
Average throughput: 26.45 Mbit/s
95th percentile per-packet one-way delay: 57.468 ms
Loss rate: 29.68%
-- Flow 3:
Average throughput: 18.62 Mbit/s
95th percentile per-packet one-way delay: 57.246 ms
Loss rate: 26.82%
```
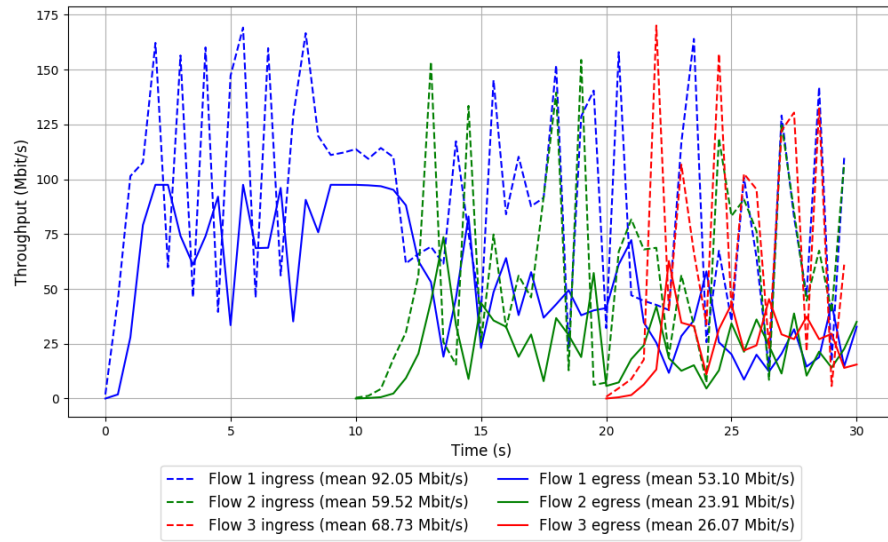
Run 3: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 56.99 Mbit/s) —— Flow 1 egress (mean 49.15 Mbit/s)
- - - Flow 2 ingress (mean 37.63 Mbit/s) —— Flow 2 egress (mean 26.45 Mbit/s)
- - - Flow 3 ingress (mean 25.45 Mbit/s) —— Flow 3 egress (mean 18.62 Mbit/s)

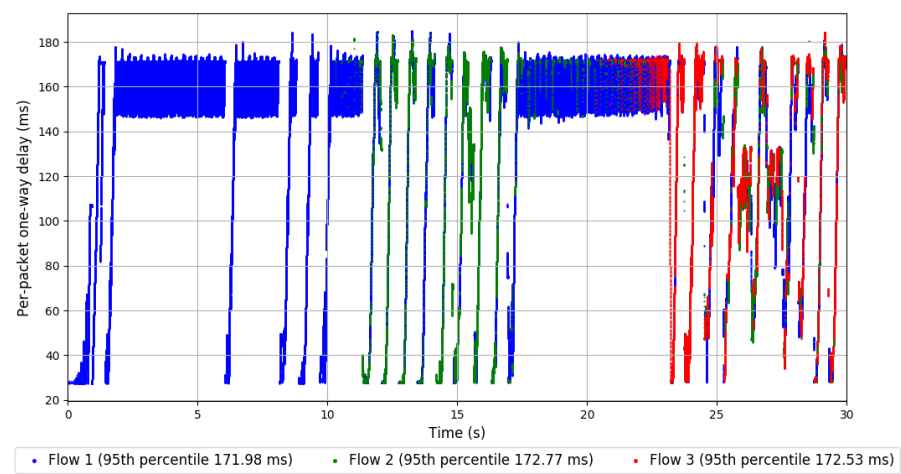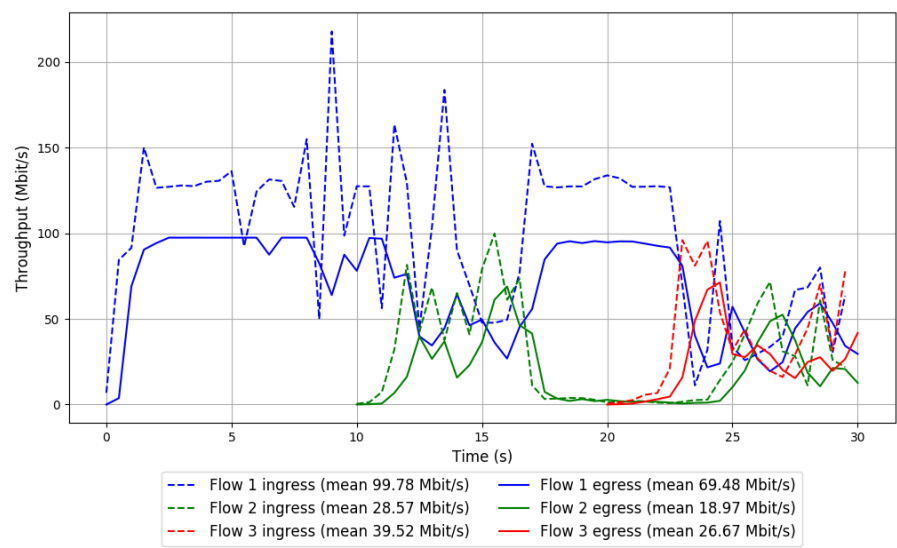- Flow 1 (95th percentile 49.97 ms)   - Flow 2 (95th percentile 57.47 ms)   - Flow 3 (95th percentile 57.25 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-09-25 09:29:33
End at: 2018-09-25 09:30:03
Local clock offset: 1.717 ms
Remote clock offset: -21.328 ms


# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.82 Mbit/s
95th percentile per-packet one-way delay: 51.448 ms
Loss rate: 19.66%
-- Flow 1:
Average throughput: 50.96 Mbit/s
95th percentile per-packet one-way delay: 48.921 ms
Loss rate: 15.80%
-- Flow 2:
Average throughput: 24.90 Mbit/s
95th percentile per-packet one-way delay: 54.895 ms
Loss rate: 26.77%
-- Flow 3:
Average throughput: 16.69 Mbit/s
95th percentile per-packet one-way delay: 54.435 ms
Loss rate: 29.34%
```

Run 4: Report of Indigo — Data Link
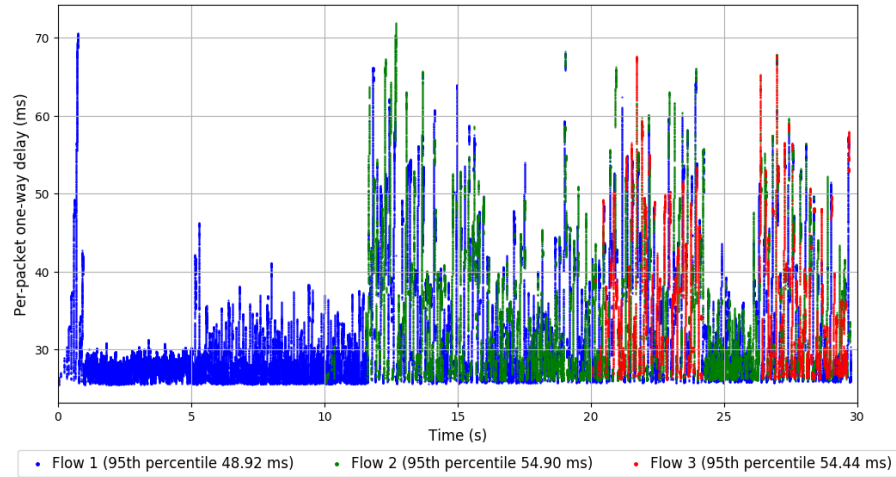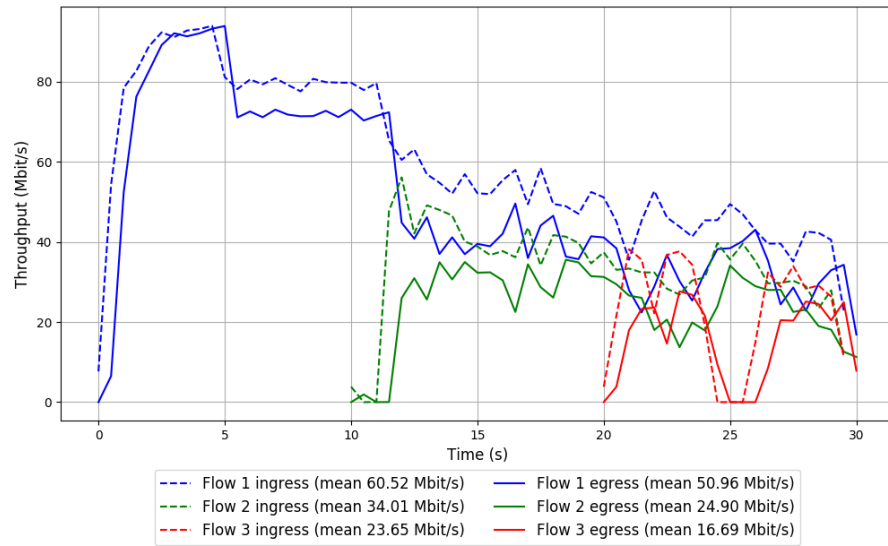
```
Run 5: Statistics of Indigo

Start at: 2018-09-25 09:53:49
End at: 2018-09-25 09:54:19
Local clock offset: 3.688 ms
Remote clock offset: -27.659 ms


# Below is generated by plot.py at 2018-09-25 10:22:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.86 Mbit/s
95th percentile per-packet one-way delay: 47.692 ms
Loss rate: 21.27%
-- Flow 1:
Average throughput: 48.19 Mbit/s
95th percentile per-packet one-way delay: 46.021 ms
Loss rate: 16.85%
-- Flow 2:
Average throughput: 25.44 Mbit/s
95th percentile per-packet one-way delay: 48.767 ms
Loss rate: 27.97%
-- Flow 3:
Average throughput: 23.99 Mbit/s
95th percentile per-packet one-way delay: 52.087 ms
Loss rate: 30.16%
```
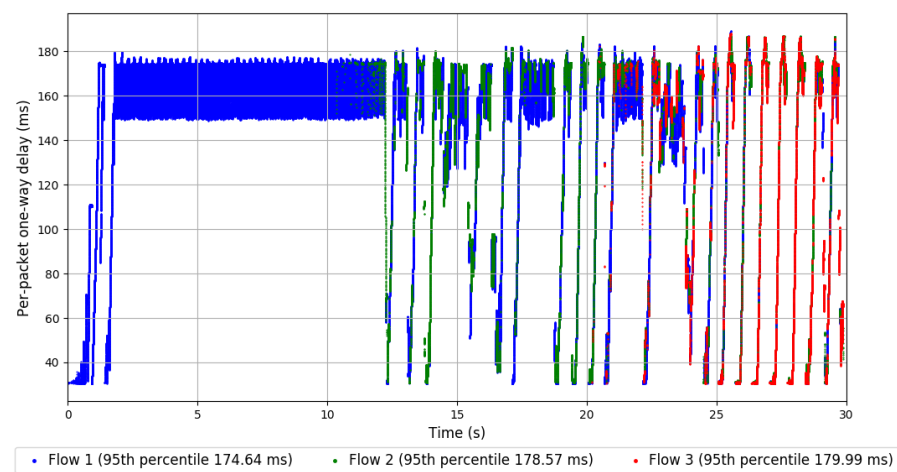
Run 5: Report of Indigo — Data Link
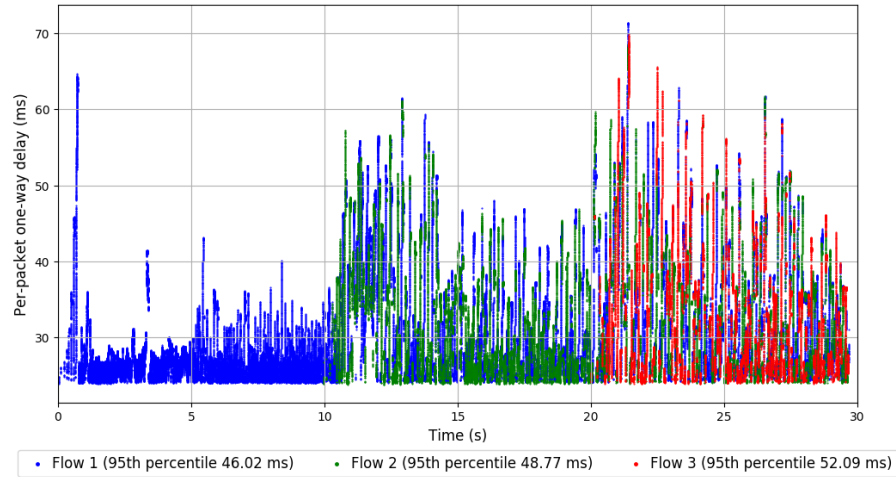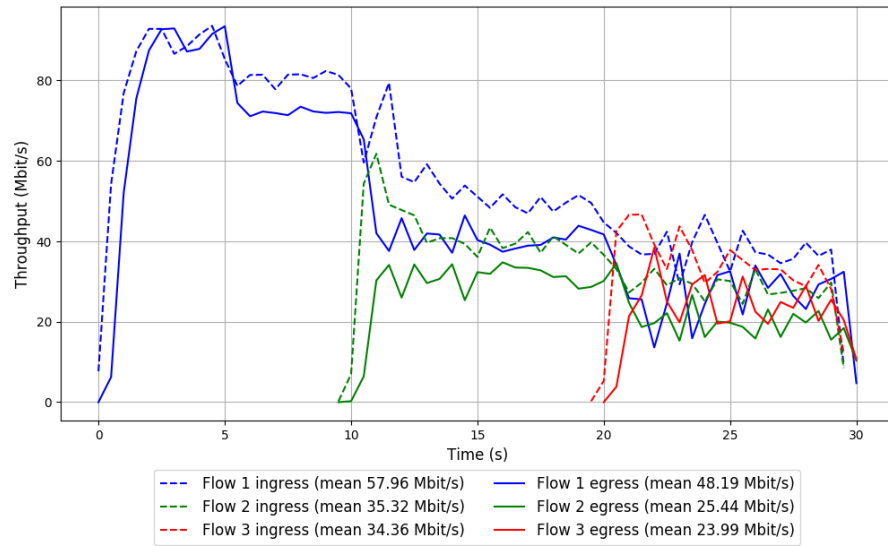
```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-09-25 08:35:40
End at: 2018-09-25 08:36:10
Local clock offset: 0.566 ms
Remote clock offset: 11.523 ms

# Below is generated by plot.py at 2018-09-25 10:22:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.19 Mbit/s
95th percentile per-packet one-way delay: 193.750 ms
Loss rate: 49.55%
-- Flow 1:
Average throughput: 53.10 Mbit/s
95th percentile per-packet one-way delay: 192.026 ms
Loss rate: 42.04%
-- Flow 2:
Average throughput: 23.91 Mbit/s
95th percentile per-packet one-way delay: 195.954 ms
Loss rate: 60.00%
-- Flow 3:
Average throughput: 26.07 Mbit/s
95th percentile per-packet one-way delay: 198.202 ms
Loss rate: 62.05%
```
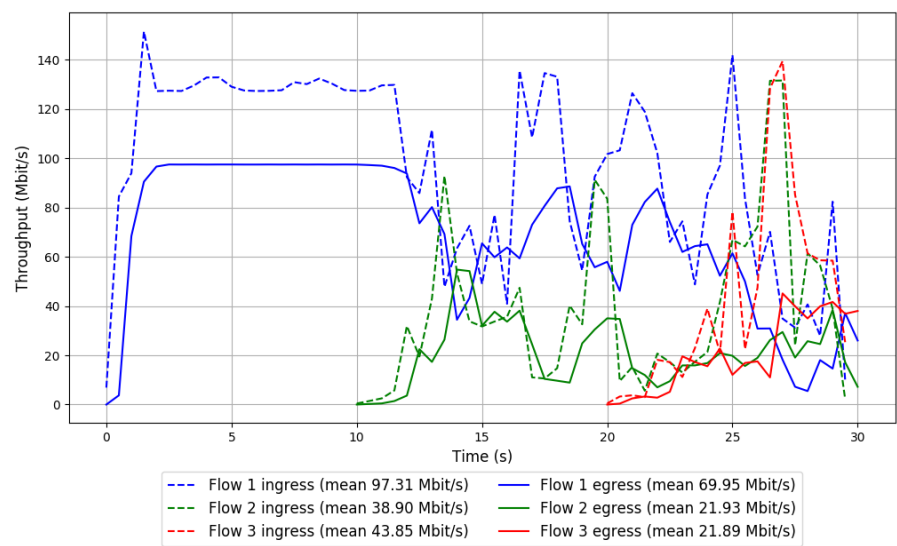
Run 1: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 92.05 Mbit/s) --- Flow 1 egress (mean 53.10 Mbit/s)
Flow 2 ingress (mean 59.52 Mbit/s) --- Flow 2 egress (mean 23.91 Mbit/s)
Flow 3 ingress (mean 68.73 Mbit/s) --- Flow 3 egress (mean 26.07 Mbit/s)

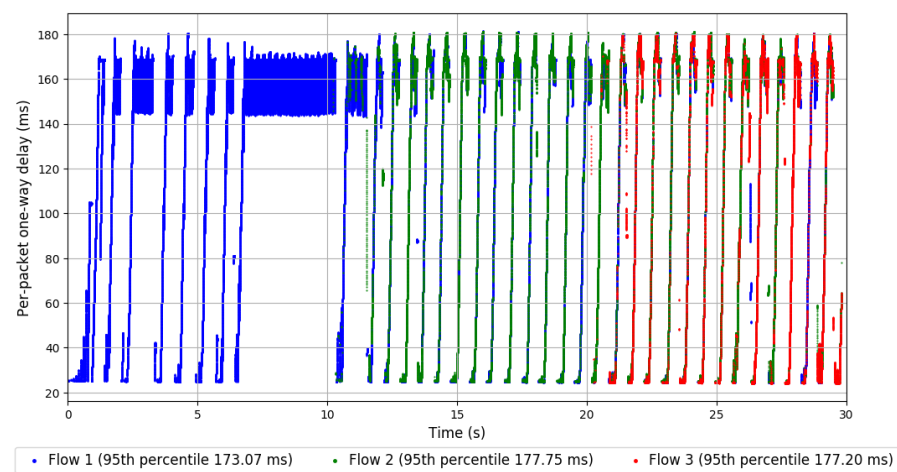Flow 1 (95th percentile 192.03 ms)   Flow 2 (95th percentile 195.95 ms)   Flow 3 (95th percentile 198.20 ms)

```
Run 2: Statistics of Indigo-96d2da3

Start at: 2018-09-25 09:00:04
End at: 2018-09-25 09:00:34
Local clock offset: 3.329 ms
Remote clock offset: -22.396 ms


# Below is generated by plot.py at 2018-09-25 10:22:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.35 Mbit/s
95th percentile per-packet one-way delay: 172.163 ms
Loss rate: 30.84%
-- Flow 1:
Average throughput: 69.48 Mbit/s
95th percentile per-packet one-way delay: 171.983 ms
Loss rate: 30.04%
-- Flow 2:
Average throughput: 18.97 Mbit/s
95th percentile per-packet one-way delay: 172.771 ms
Loss rate: 33.95%
-- Flow 3:
Average throughput: 26.67 Mbit/s
95th percentile per-packet one-way delay: 172.532 ms
Loss rate: 32.45%
```
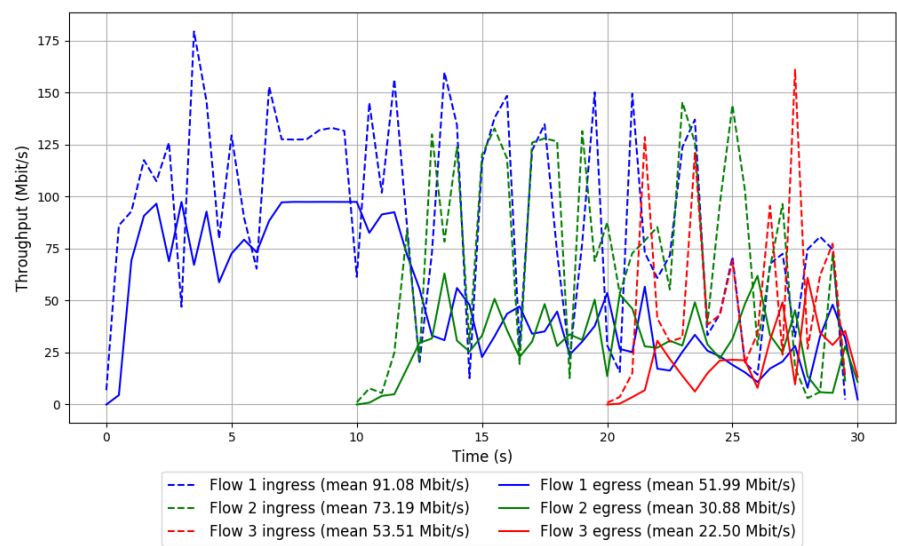
Run 2: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 99.78 Mbit/s)   Flow 1 egress (mean 69.48 Mbit/s)
Flow 2 ingress (mean 28.57 Mbit/s)   Flow 2 egress (mean 18.97 Mbit/s)
Flow 3 ingress (mean 39.52 Mbit/s)   Flow 3 egress (mean 26.67 Mbit/s)

Flow 1 (95th percentile 171.98 ms)   Flow 2 (95th percentile 172.77 ms)   Flow 3 (95th percentile 172.53 ms)

```
Run 3: Statistics of Indigo-96d2da3

Start at: 2018-09-25 09:24:19
End at: 2018-09-25 09:24:49
Local clock offset: 2.032 ms
Remote clock offset: -15.445 ms


# Below is generated by plot.py at 2018-09-25 10:23:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.27 Mbit/s
95th percentile per-packet one-way delay: 173.559 ms
Loss rate: 37.45%
-- Flow 1:
Average throughput: 55.36 Mbit/s
95th percentile per-packet one-way delay: 172.567 ms
Loss rate: 31.09%
-- Flow 2:
Average throughput: 38.79 Mbit/s
95th percentile per-packet one-way delay: 174.710 ms
Loss rate: 41.46%
-- Flow 3:
Average throughput: 26.41 Mbit/s
95th percentile per-packet one-way delay: 178.279 ms
Loss rate: 55.14%
```

Run 3: Report of Indigo-96d2da3 — Data Link
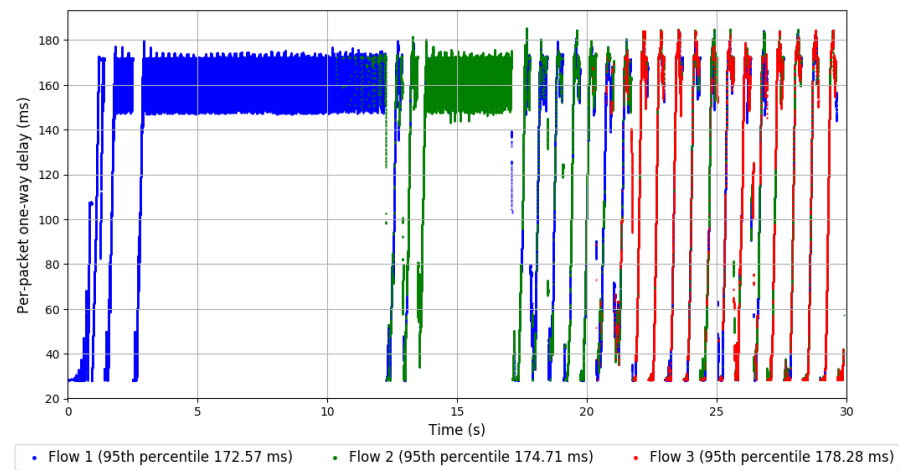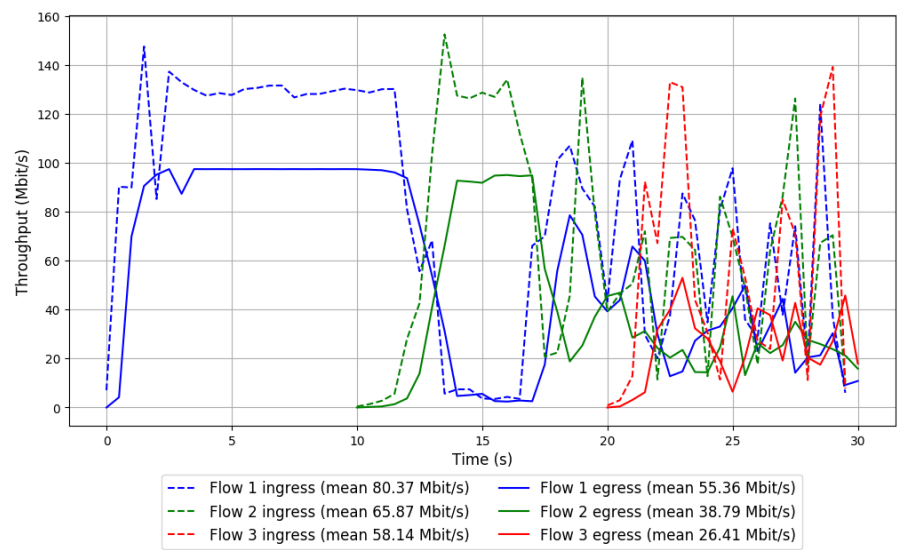
```
Run 4: Statistics of Indigo-96d2da3

Start at: 2018-09-25 09:48:33
End at: 2018-09-25 09:49:03
Local clock offset: 3.103 ms
Remote clock offset: -19.217 ms


# Below is generated by plot.py at 2018-09-25 10:23:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.27 Mbit/s
95th percentile per-packet one-way delay: 175.252 ms
Loss rate: 33.29%
-- Flow 1:
Average throughput: 69.95 Mbit/s
95th percentile per-packet one-way delay: 174.644 ms
Loss rate: 28.04%
-- Flow 2:
Average throughput: 21.93 Mbit/s
95th percentile per-packet one-way delay: 178.569 ms
Loss rate: 44.00%
-- Flow 3:
Average throughput: 21.89 Mbit/s
95th percentile per-packet one-way delay: 179.993 ms
Loss rate: 49.92%
```
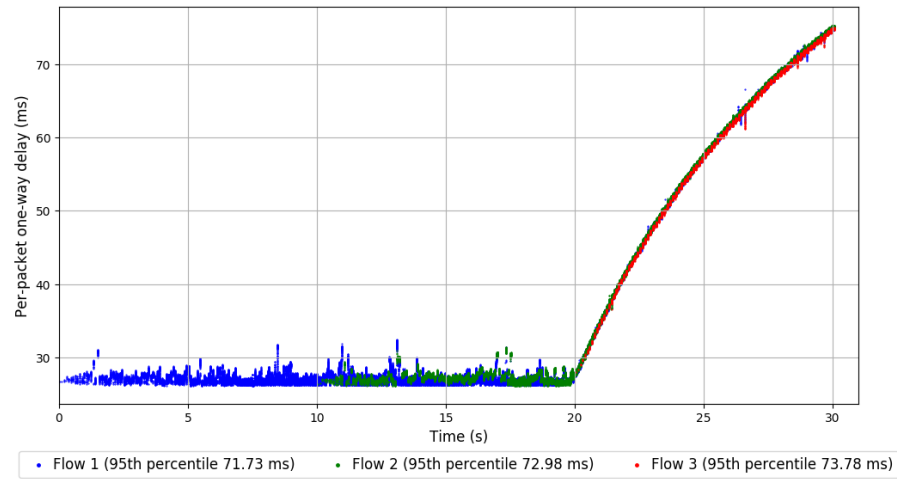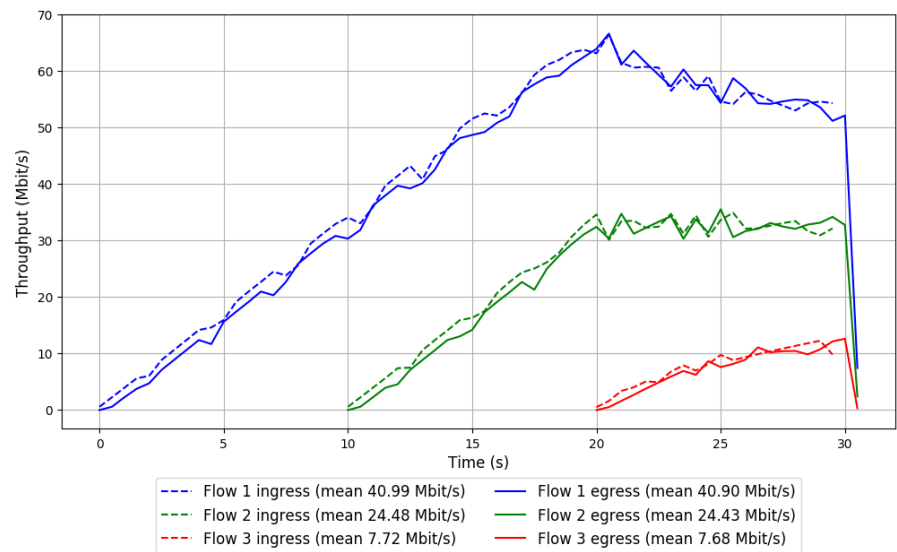
Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 97.31 Mbit/s) --- Flow 1 egress (mean 69.95 Mbit/s)
Flow 2 ingress (mean 38.90 Mbit/s) --- Flow 2 egress (mean 21.93 Mbit/s)
Flow 3 ingress (mean 43.85 Mbit/s) --- Flow 3 egress (mean 21.89 Mbit/s)

Flow 1 (95th percentile 174.64 ms) • Flow 2 (95th percentile 178.57 ms) • Flow 3 (95th percentile 179.99 ms)

```
Run 5: Statistics of Indigo-96d2da3

Start at: 2018-09-25 10:12:48
End at: 2018-09-25 10:13:18
Local clock offset: 5.072 ms
Remote clock offset: -31.251 ms


# Below is generated by plot.py at 2018-09-25 10:23:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.54 Mbit/s
95th percentile per-packet one-way delay: 175.391 ms
Loss rate: 49.23%
-- Flow 1:
Average throughput: 51.99 Mbit/s
95th percentile per-packet one-way delay: 173.067 ms
Loss rate: 42.84%
-- Flow 2:
Average throughput: 30.88 Mbit/s
95th percentile per-packet one-way delay: 177.752 ms
Loss rate: 57.98%
-- Flow 3:
Average throughput: 22.50 Mbit/s
95th percentile per-packet one-way delay: 177.198 ms
Loss rate: 58.27%
```

Run 5: Report of Indigo-96d2da3 — Data Link

- Flow 1 ingress (mean 91.08 Mbit/s) — Flow 1 egress (mean 51.99 Mbit/s)
- Flow 2 ingress (mean 73.19 Mbit/s) — Flow 2 egress (mean 30.88 Mbit/s)
- Flow 3 ingress (mean 53.51 Mbit/s) — Flow 3 egress (mean 22.50 Mbit/s)

- Flow 1 (95th percentile 173.07 ms) • Flow 2 (95th percentile 177.75 ms) • Flow 3 (95th percentile 177.20 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-09-25 08:31:51
End at: 2018-09-25 08:32:21
Local clock offset: 1.137 ms
Remote clock offset: 22.637 ms

# Below is generated by plot.py at 2018-09-25 10:23:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.94 Mbit/s
95th percentile per-packet one-way delay: 79.093 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 40.98 Mbit/s
95th percentile per-packet one-way delay: 78.355 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 24.60 Mbit/s
95th percentile per-packet one-way delay: 79.621 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 7.71 Mbit/s
95th percentile per-packet one-way delay: 80.710 ms
Loss rate: 0.00%
```
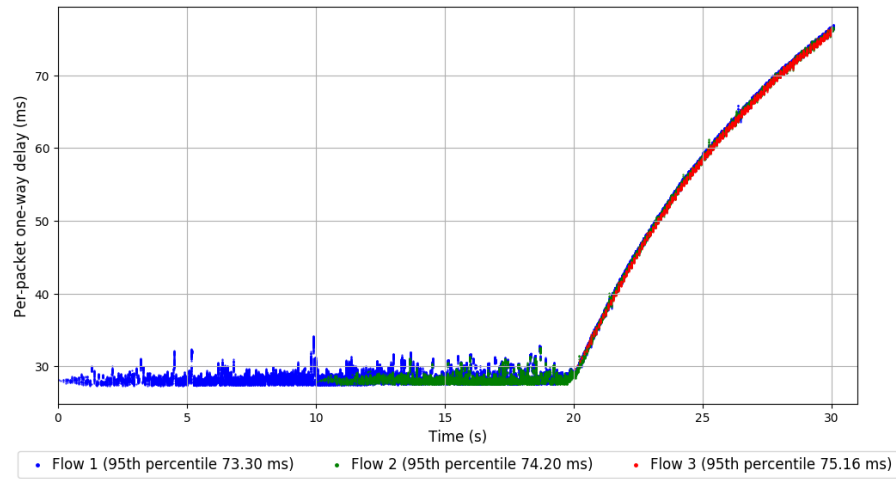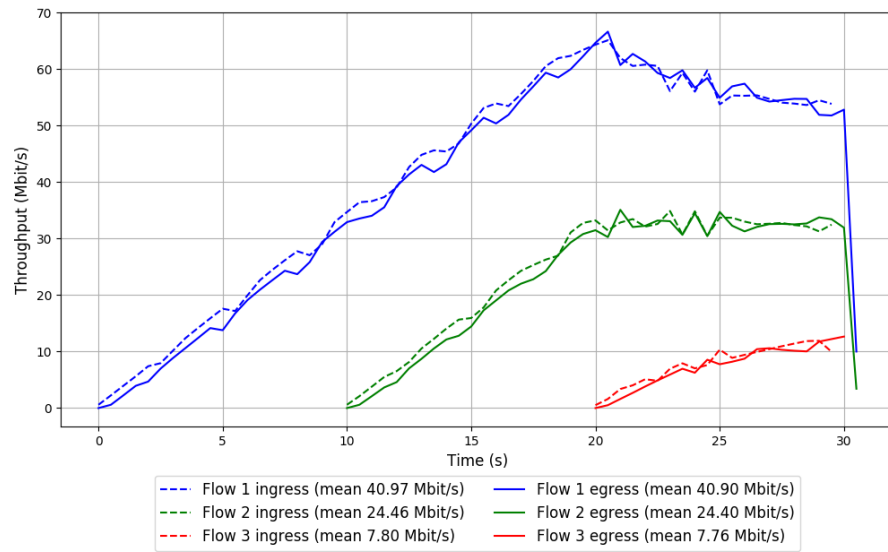
Run 1: Report of LEDBAT — Data Link
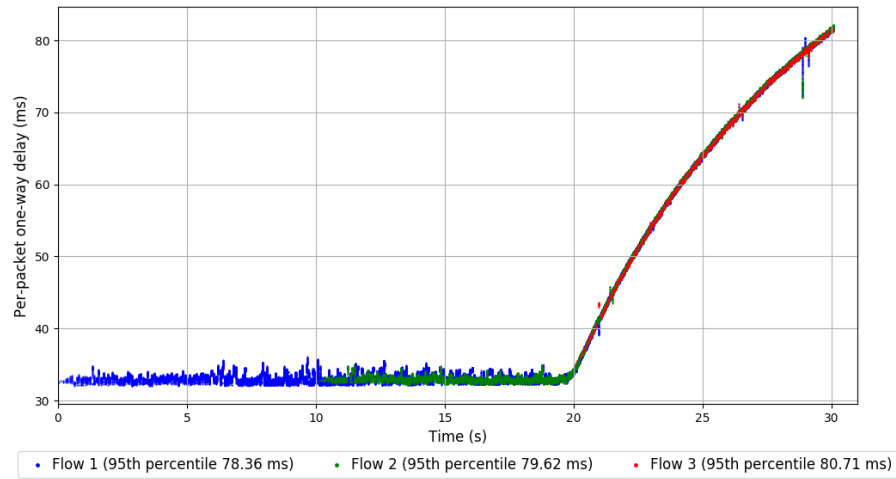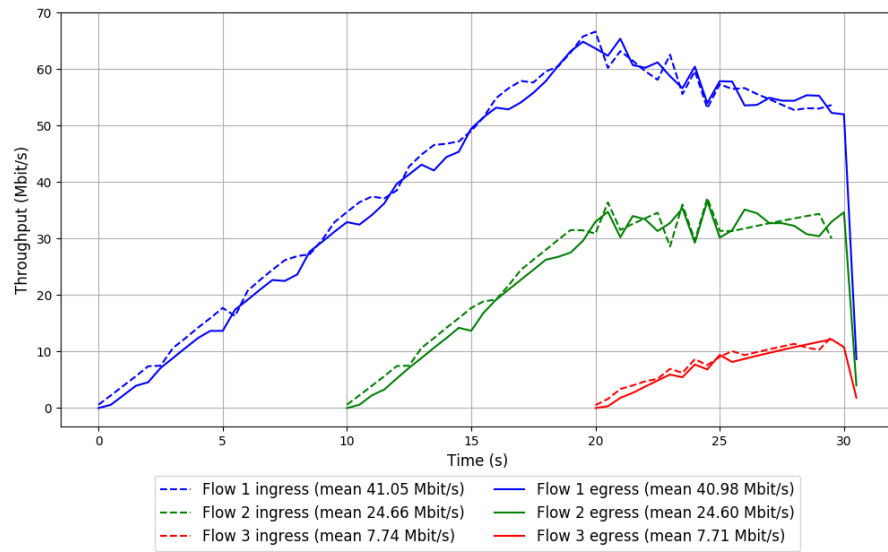
```
Run 2: Statistics of LEDBAT

Start at: 2018-09-25 08:56:16
End at: 2018-09-25 08:56:46
Local clock offset: 3.201 ms
Remote clock offset: -13.682 ms

# Below is generated by plot.py at 2018-09-25 10:23:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.37 Mbit/s
95th percentile per-packet one-way delay: 75.472 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 40.33 Mbit/s
95th percentile per-packet one-way delay: 74.994 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 24.75 Mbit/s
95th percentile per-packet one-way delay: 75.652 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 7.81 Mbit/s
95th percentile per-packet one-way delay: 77.501 ms
Loss rate: 0.00%
```
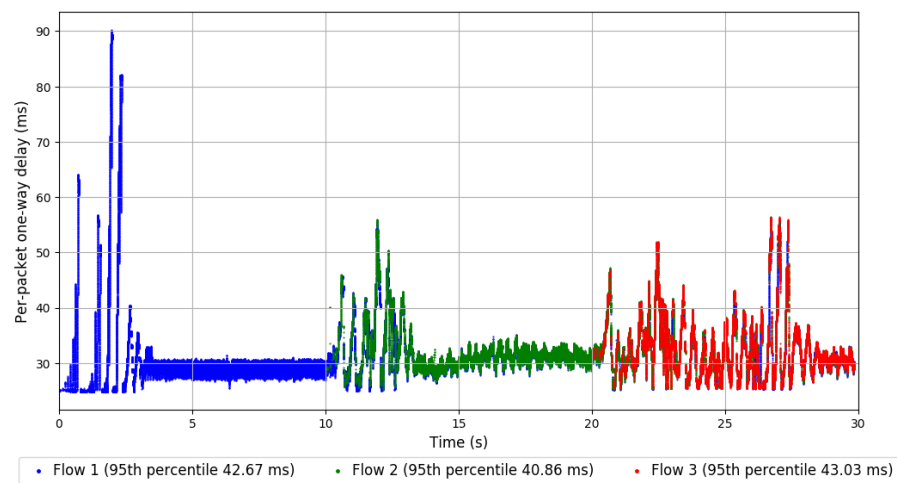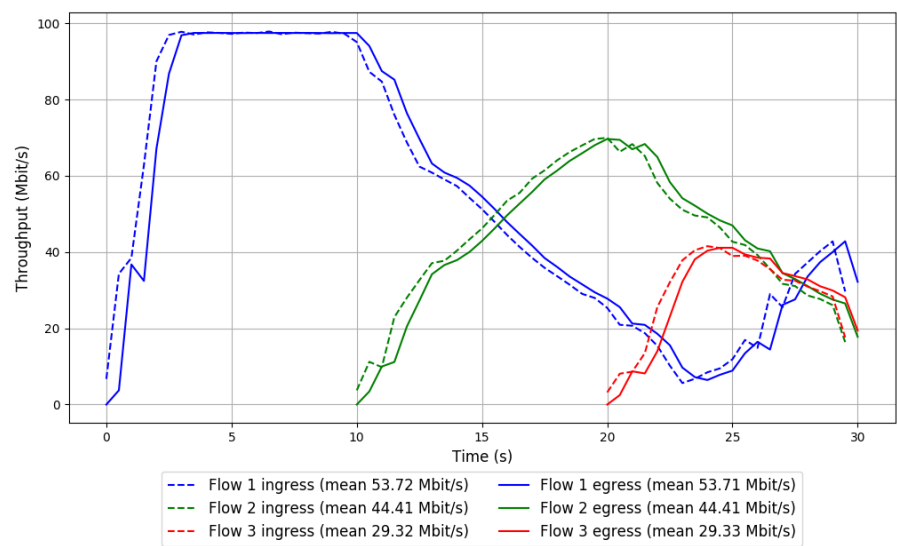
Run 2: Report of LEDBAT — Data Link
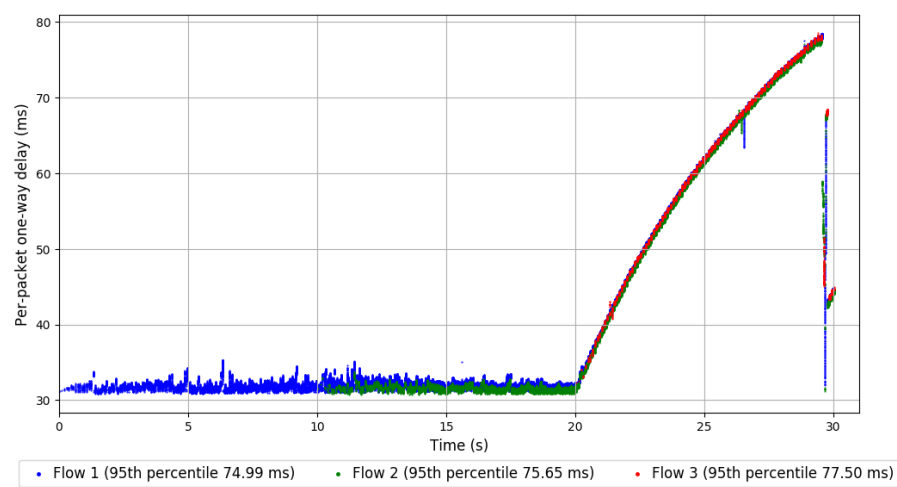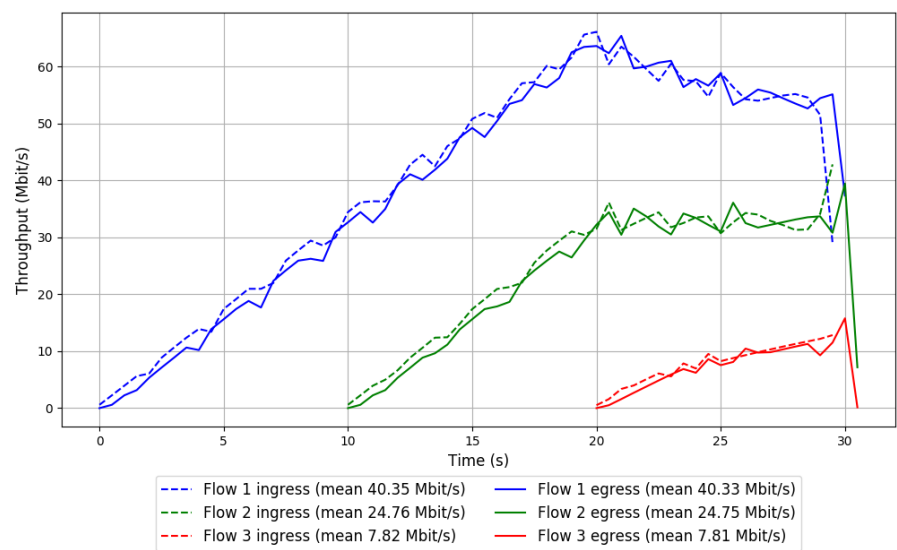
```
Run 3: Statistics of LEDBAT

Start at: 2018-09-25 09:20:30
End at: 2018-09-25 09:21:00
Local clock offset: 2.437 ms
Remote clock offset: -15.48 ms

# Below is generated by plot.py at 2018-09-25 10:23:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.72 Mbit/s
95th percentile per-packet one-way delay: 72.478 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 40.90 Mbit/s
95th percentile per-packet one-way delay: 71.729 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 24.43 Mbit/s
95th percentile per-packet one-way delay: 72.982 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 7.68 Mbit/s
95th percentile per-packet one-way delay: 73.781 ms
Loss rate: 0.00%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 40.99 Mbit/s) --- Flow 1 egress (mean 40.90 Mbit/s)
Flow 2 ingress (mean 24.48 Mbit/s) --- Flow 2 egress (mean 24.43 Mbit/s)
Flow 3 ingress (mean 7.72 Mbit/s) --- Flow 3 egress (mean 7.68 Mbit/s)

Flow 1 (95th percentile 71.73 ms)   Flow 2 (95th percentile 72.98 ms)   Flow 3 (95th percentile 73.78 ms)

80

```
Run 4: Statistics of LEDBAT

Start at: 2018-09-25 09:44:44
End at: 2018-09-25 09:45:14
Local clock offset: 2.71 ms
Remote clock offset: -24.704 ms


# Below is generated by plot.py at 2018-09-25 10:23:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.33 Mbit/s
95th percentile per-packet one-way delay: 69.836 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 40.49 Mbit/s
95th percentile per-packet one-way delay: 69.151 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 24.39 Mbit/s
95th percentile per-packet one-way delay: 70.095 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 7.79 Mbit/s
95th percentile per-packet one-way delay: 71.762 ms
Loss rate: 0.00%
```

Run 4: Report of LEDBAT — Data Link
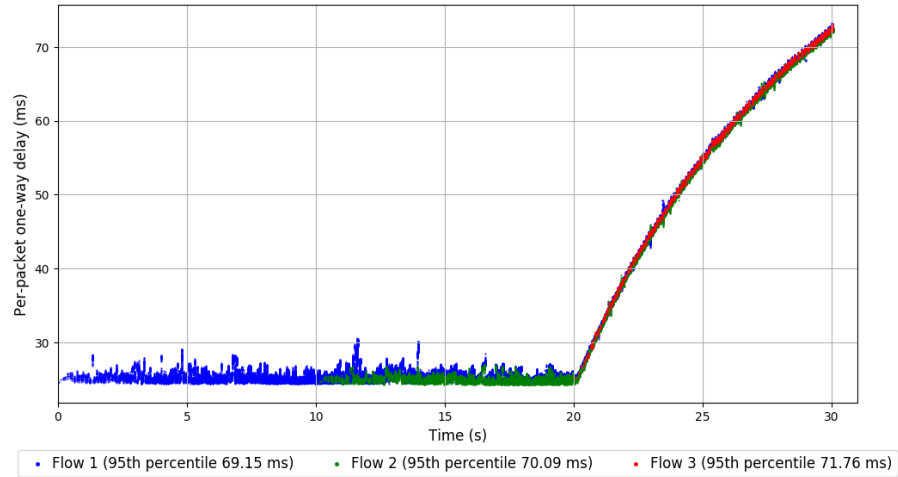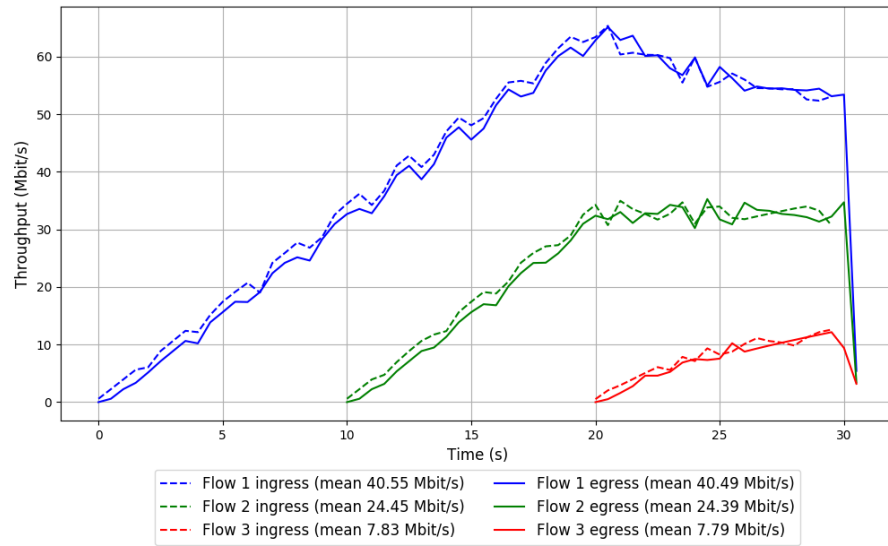
```
Run 5: Statistics of LEDBAT

Start at: 2018-09-25 10:09:00
End at: 2018-09-25 10:09:30
Local clock offset: 3.769 ms
Remote clock offset: -32.283 ms


# Below is generated by plot.py at 2018-09-25 10:23:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.73 Mbit/s
95th percentile per-packet one-way delay: 73.784 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 40.90 Mbit/s
95th percentile per-packet one-way delay: 73.298 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 24.40 Mbit/s
95th percentile per-packet one-way delay: 74.196 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 75.157 ms
Loss rate: 0.00%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 40.97 Mbit/s) --- Flow 1 egress (mean 40.90 Mbit/s)
Flow 2 ingress (mean 24.46 Mbit/s) --- Flow 2 egress (mean 24.40 Mbit/s)
Flow 3 ingress (mean 7.80 Mbit/s) --- Flow 3 egress (mean 7.76 Mbit/s)

Flow 1 (95th percentile 73.30 ms)   Flow 2 (95th percentile 74.20 ms)   Flow 3 (95th percentile 75.16 ms)
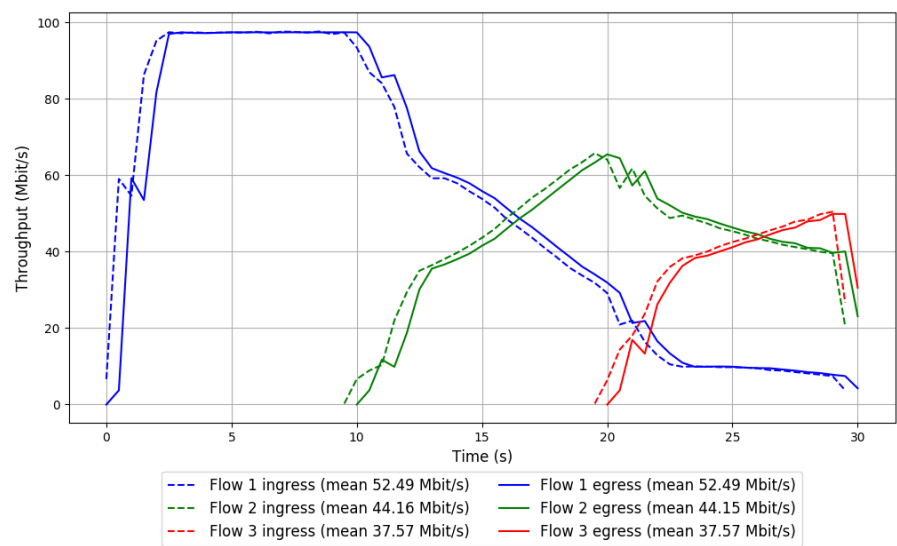
84

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-25 08:33:08
End at: 2018-09-25 08:33:38
Local clock offset: 1.037 ms
Remote clock offset: 14.037 ms


# Below is generated by plot.py at 2018-09-25 10:24:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.83 Mbit/s
95th percentile per-packet one-way delay: 41.832 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 53.71 Mbit/s
95th percentile per-packet one-way delay: 42.669 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 44.41 Mbit/s
95th percentile per-packet one-way delay: 40.864 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 29.33 Mbit/s
95th percentile per-packet one-way delay: 43.026 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 53.72 Mbit/s) — Flow 1 egress (mean 53.71 Mbit/s)
Flow 2 ingress (mean 44.41 Mbit/s) — Flow 2 egress (mean 44.41 Mbit/s)
Flow 3 ingress (mean 29.32 Mbit/s) — Flow 3 egress (mean 29.33 Mbit/s)

Flow 1 (95th percentile 42.67 ms) — Flow 2 (95th percentile 40.86 ms) — Flow 3 (95th percentile 43.03 ms)

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-25 08:57:33
End at: 2018-09-25 08:58:03
Local clock offset: 3.304 ms
Remote clock offset: -19.996 ms

# Below is generated by plot.py at 2018-09-25 10:24:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.31 Mbit/s
95th percentile per-packet one-way delay: 41.207 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 62.27 Mbit/s
95th percentile per-packet one-way delay: 41.542 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 30.49 Mbit/s
95th percentile per-packet one-way delay: 41.174 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 33.19 Mbit/s
95th percentile per-packet one-way delay: 39.521 ms
Loss rate: 0.00%
```

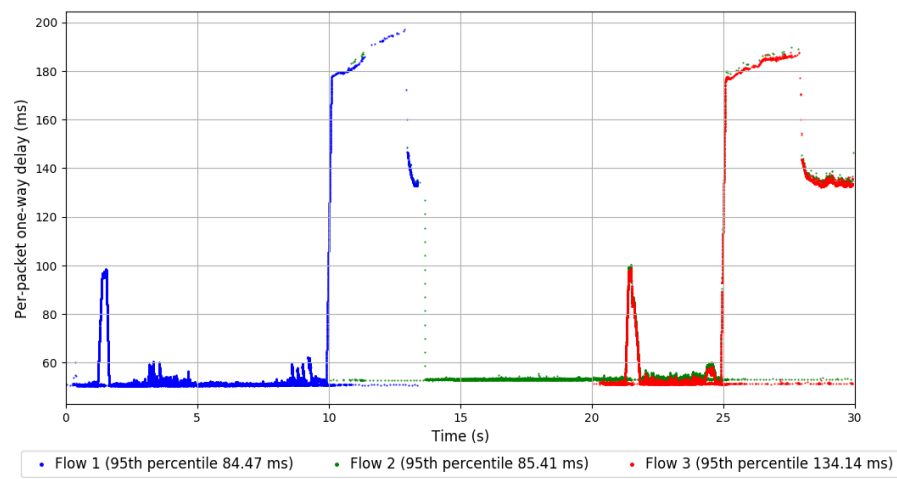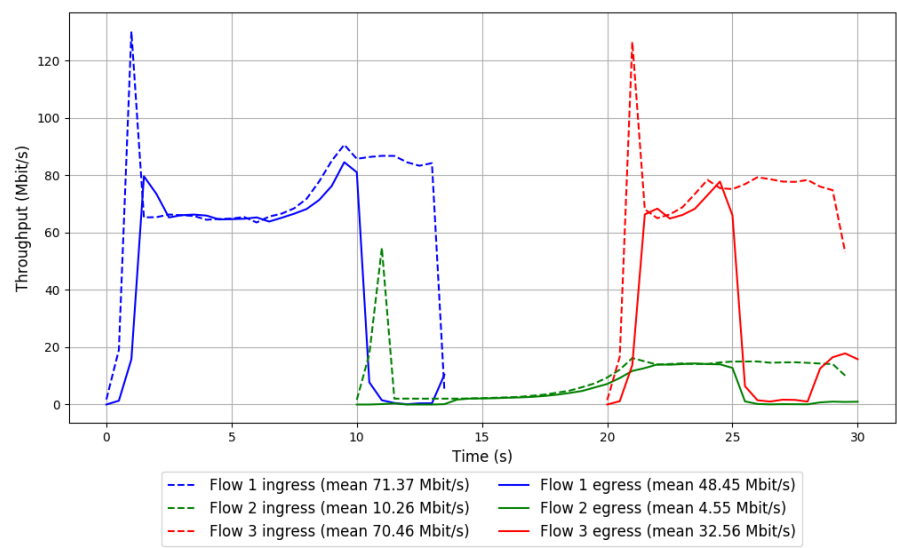Run 2: Report of Indigo-Muses — Data Link
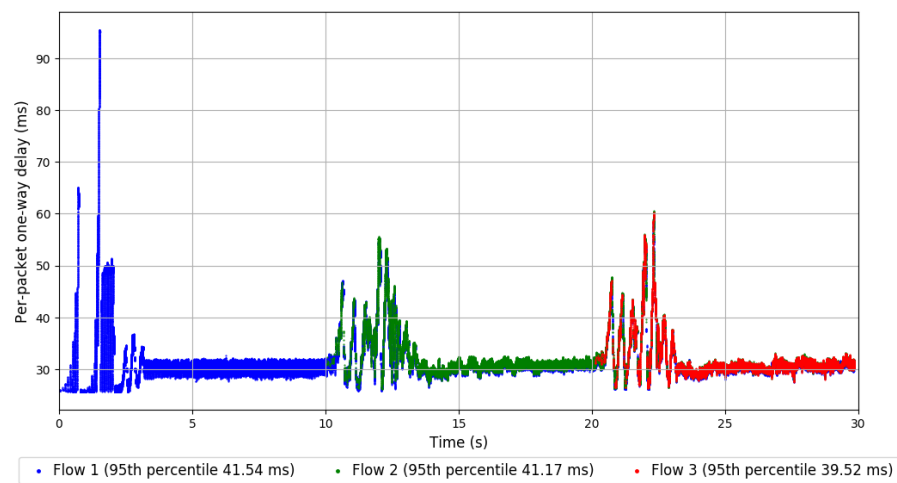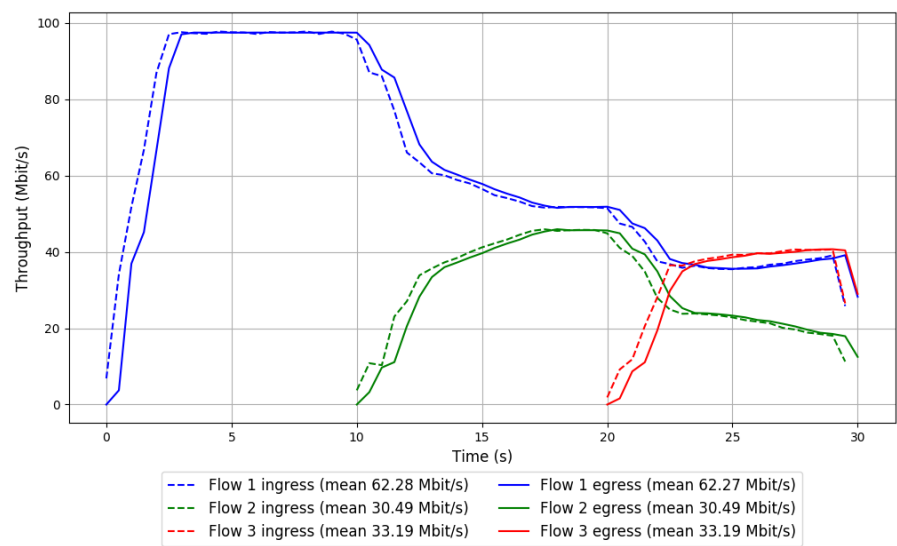
```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-25 09:21:47
End at: 2018-09-25 09:22:17
Local clock offset: 2.083 ms
Remote clock offset: -17.067 ms


# Below is generated by plot.py at 2018-09-25 10:24:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.24 Mbit/s
95th percentile per-packet one-way delay: 42.064 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 58.35 Mbit/s
95th percentile per-packet one-way delay: 43.218 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 32.82 Mbit/s
95th percentile per-packet one-way delay: 41.820 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 43.28 Mbit/s
95th percentile per-packet one-way delay: 37.945 ms
Loss rate: 0.00%
```

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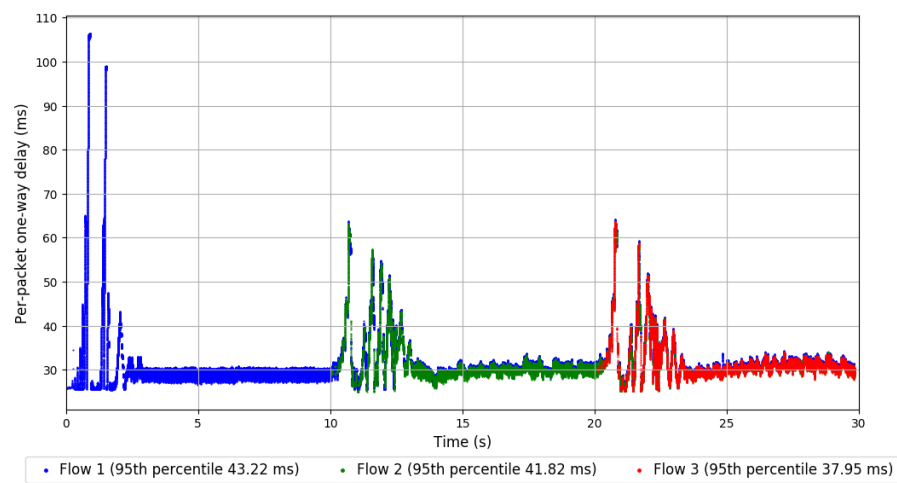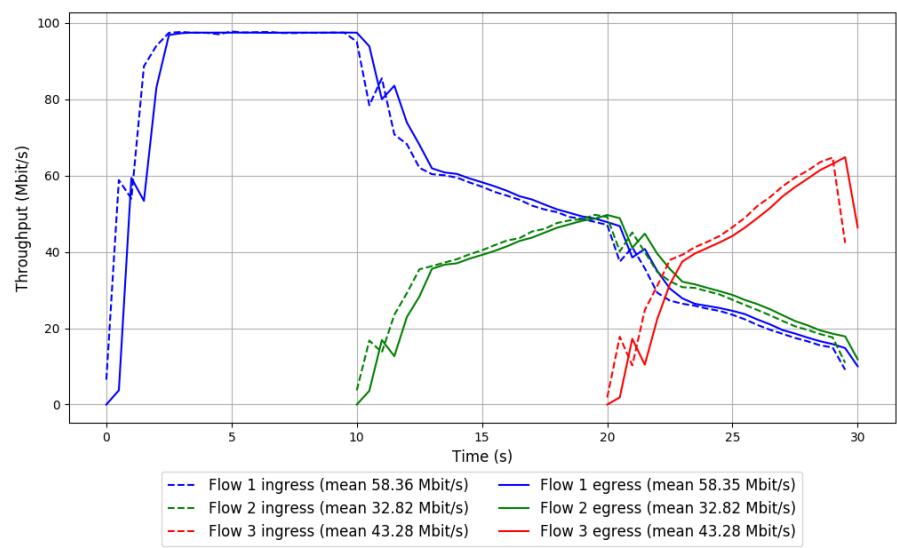
```
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-25 09:46:02
End at: 2018-09-25 09:46:32
Local clock offset: 2.701 ms
Remote clock offset: -18.616 ms


# Below is generated by plot.py at 2018-09-25 10:24:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.21 Mbit/s
95th percentile per-packet one-way delay: 46.542 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 52.49 Mbit/s
95th percentile per-packet one-way delay: 47.039 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 44.15 Mbit/s
95th percentile per-packet one-way delay: 46.000 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 37.57 Mbit/s
95th percentile per-packet one-way delay: 44.679 ms
Loss rate: 0.00%
```

Run 4: Report of Indigo-Muses — Data Link
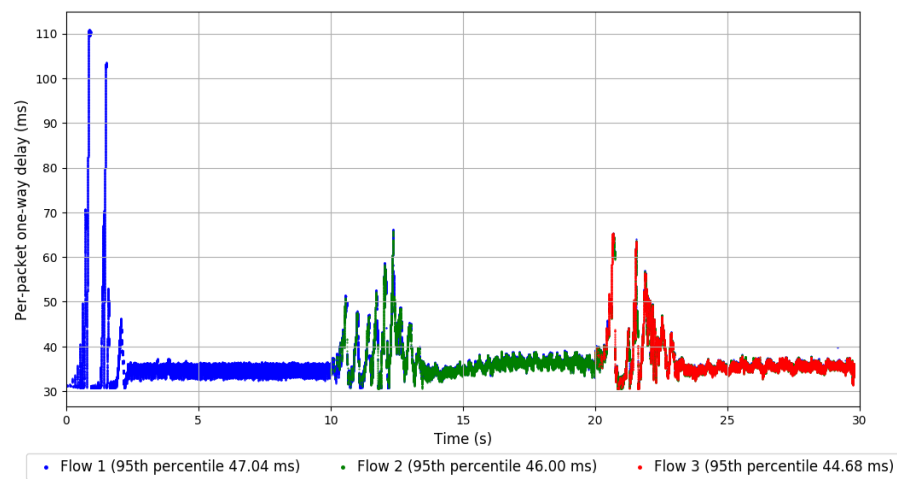
```
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-25 10:10:17
End at: 2018-09-25 10:10:47
Local clock offset: 4.153 ms
Remote clock offset: -30.681 ms


# Below is generated by plot.py at 2018-09-25 10:24:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.09 Mbit/s
95th percentile per-packet one-way delay: 45.442 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 49.98 Mbit/s
95th percentile per-packet one-way delay: 46.252 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.71 Mbit/s
95th percentile per-packet one-way delay: 44.672 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 31.47 Mbit/s
95th percentile per-packet one-way delay: 45.184 ms
Loss rate: 0.00%
```

# Run 5: Report of Indigo-Muses — Data Link
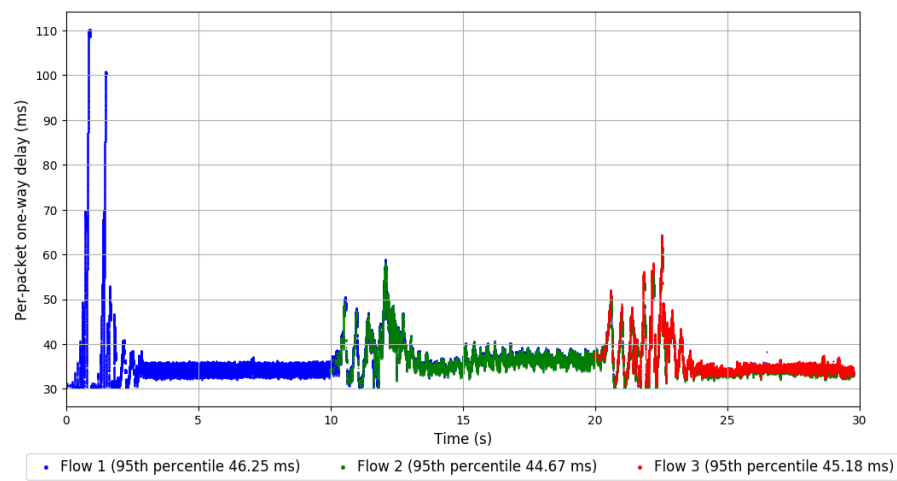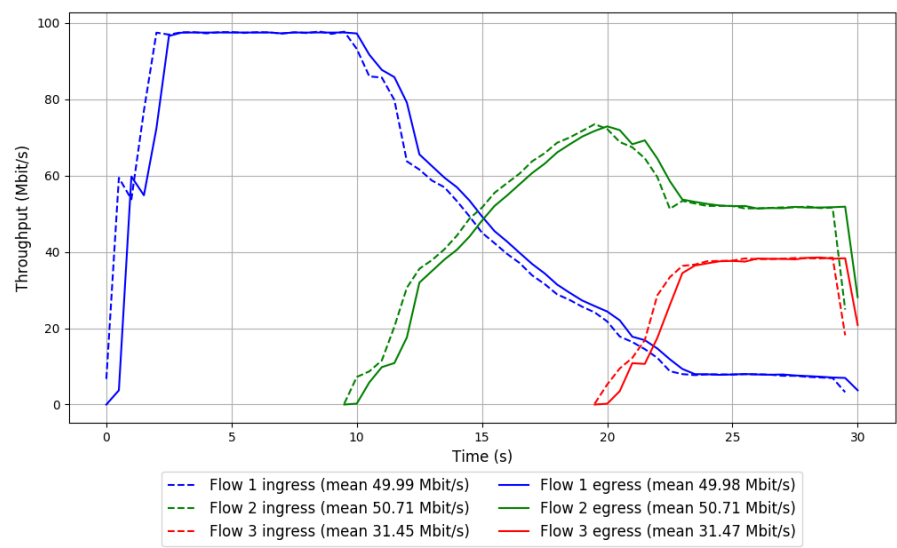
```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-25 08:25:16
End at: 2018-09-25 08:25:46
Local clock offset: 2.188 ms
Remote clock offset: 33.064 ms


# Below is generated by plot.py at 2018-09-25 10:24:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.37 Mbit/s
95th percentile per-packet one-way delay: 97.781 ms
Loss rate: 43.28%
-- Flow 1:
Average throughput: 48.45 Mbit/s
95th percentile per-packet one-way delay: 84.466 ms
Loss rate: 33.13%
-- Flow 2:
Average throughput: 4.55 Mbit/s
95th percentile per-packet one-way delay: 85.412 ms
Loss rate: 55.60%
-- Flow 3:
Average throughput: 32.56 Mbit/s
95th percentile per-packet one-way delay: 134.143 ms
Loss rate: 53.77%
```

Run 1: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 71.37 Mbit/s)   Flow 1 egress (mean 48.45 Mbit/s)
Flow 2 ingress (mean 10.26 Mbit/s)   Flow 2 egress (mean 4.55 Mbit/s)
Flow 3 ingress (mean 70.46 Mbit/s)   Flow 3 egress (mean 32.56 Mbit/s)

Flow 1 (95th percentile 84.47 ms)   Flow 2 (95th percentile 85.41 ms)   Flow 3 (95th percentile 134.14 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-25 08:49:55
End at: 2018-09-25 08:50:25
Local clock offset: 2.736 ms
Remote clock offset: -11.158 ms


# Below is generated by plot.py at 2018-09-25 10:24:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 40.28 Mbit/s
95th percentile per-packet one-way delay: 97.504 ms
Loss rate: 19.11%
-- Flow 1:
Average throughput: 59.57 Mbit/s
95th percentile per-packet one-way delay: 66.830 ms
Loss rate: 13.84%
-- Flow 2:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 97.085 ms
Loss rate: 37.92%
-- Flow 3:
Average throughput: 49.12 Mbit/s
95th percentile per-packet one-way delay: 97.779 ms
Loss rate: 23.91%
```
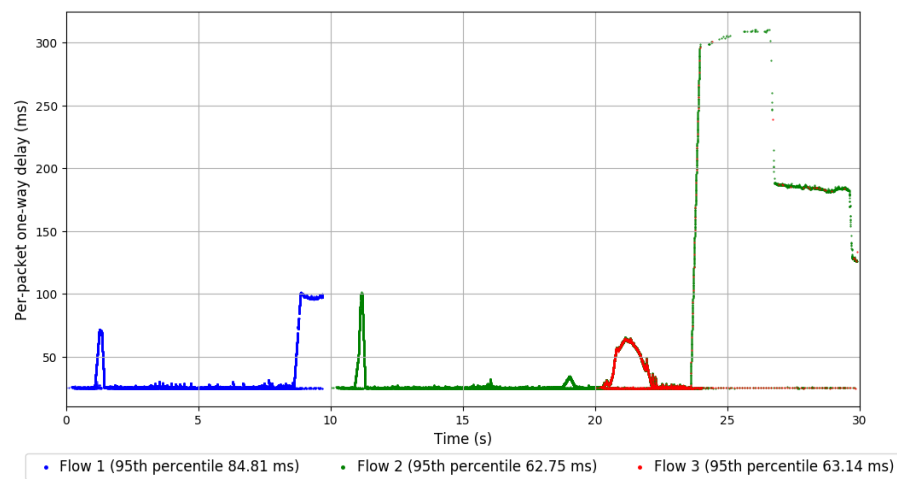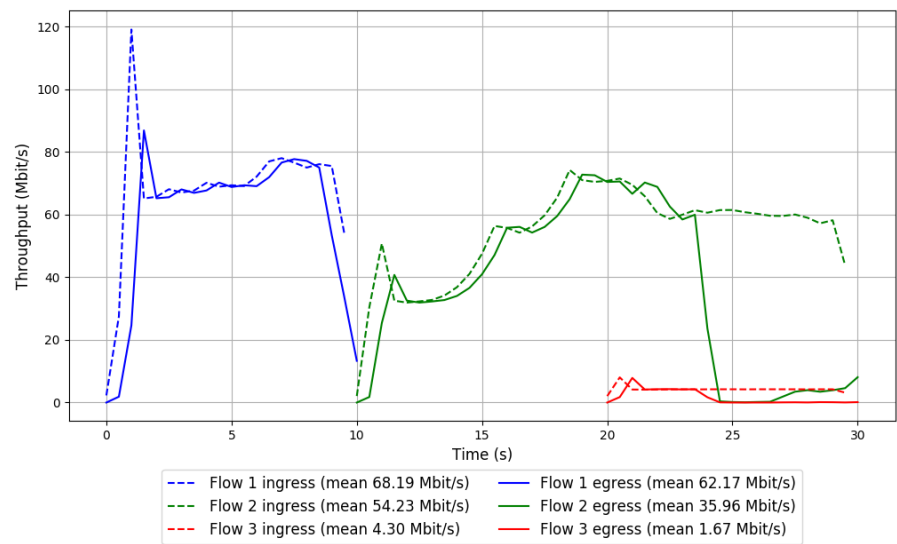
Run 2: Report of PCC-Allegro — Data Link
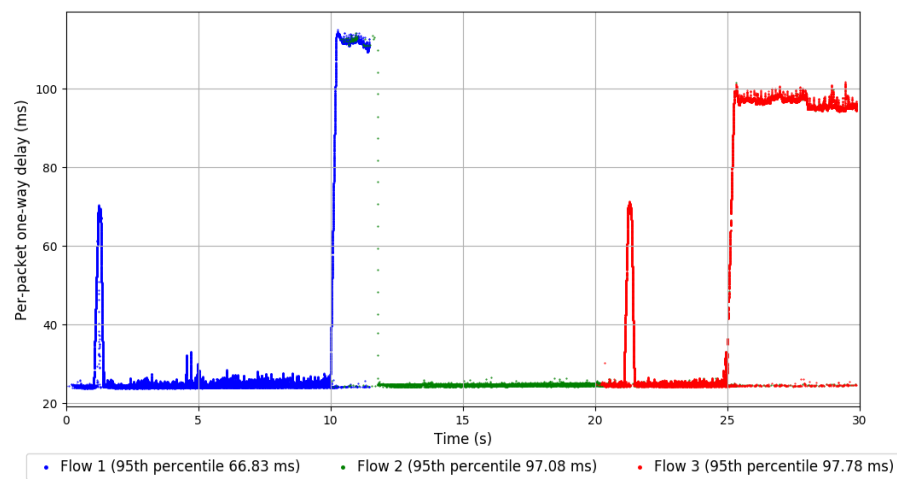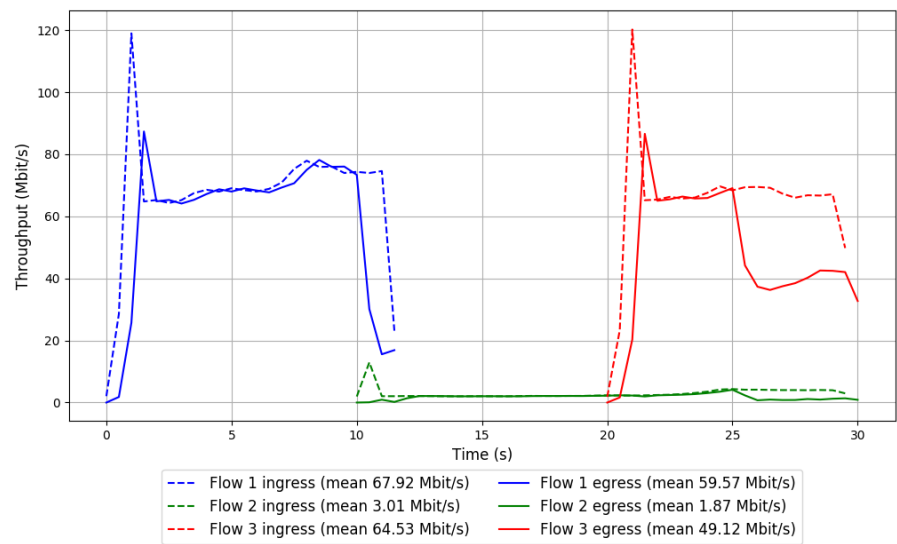
```
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-25 09:14:06
End at: 2018-09-25 09:14:36
Local clock offset: 2.89 ms
Remote clock offset: -16.494 ms


# Below is generated by plot.py at 2018-09-25 10:24:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.25 Mbit/s
95th percentile per-packet one-way delay: 107.210 ms
Loss rate: 26.58%
-- Flow 1:
Average throughput: 55.44 Mbit/s
95th percentile per-packet one-way delay: 96.648 ms
Loss rate: 19.21%
-- Flow 2:
Average throughput: 40.60 Mbit/s
95th percentile per-packet one-way delay: 108.539 ms
Loss rate: 28.62%
-- Flow 3:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 107.072 ms
Loss rate: 46.51%
```

Run 3: Report of PCC-Allegro — Data Link
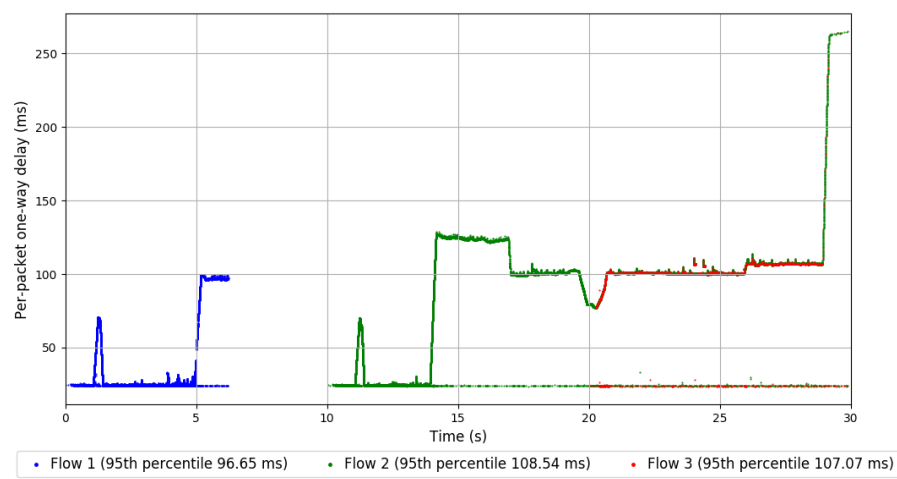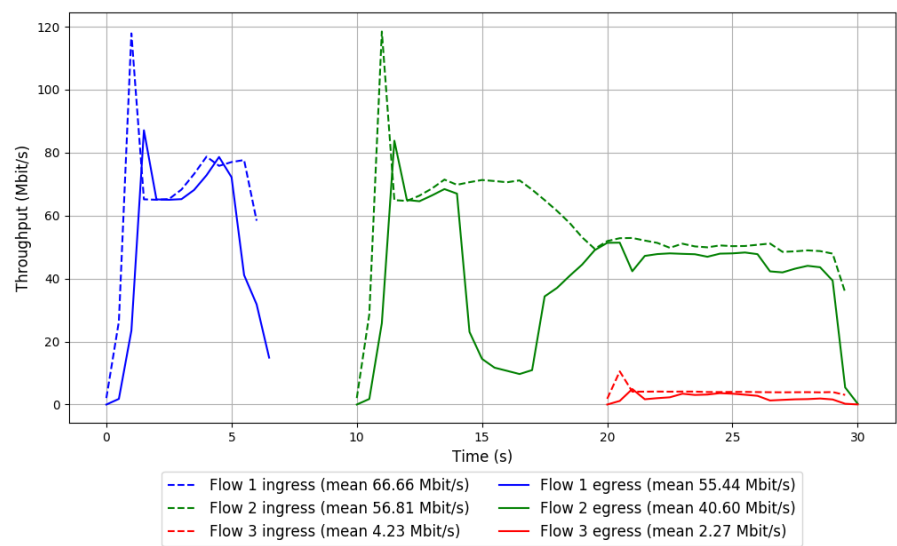
```
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-25 09:38:23
End at: 2018-09-25 09:38:53
Local clock offset: 1.571 ms
Remote clock offset: -31.338 ms


# Below is generated by plot.py at 2018-09-25 10:24:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 43.90 Mbit/s
95th percentile per-packet one-way delay: 99.833 ms
Loss rate: 18.70%
-- Flow 1:
Average throughput: 62.69 Mbit/s
95th percentile per-packet one-way delay: 65.433 ms
Loss rate: 13.43%
-- Flow 2:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 64.874 ms
Loss rate: 20.99%
-- Flow 3:
Average throughput: 49.05 Mbit/s
95th percentile per-packet one-way delay: 101.753 ms
Loss rate: 25.93%
```

Run 4: Report of PCC-Allegro — Data Link
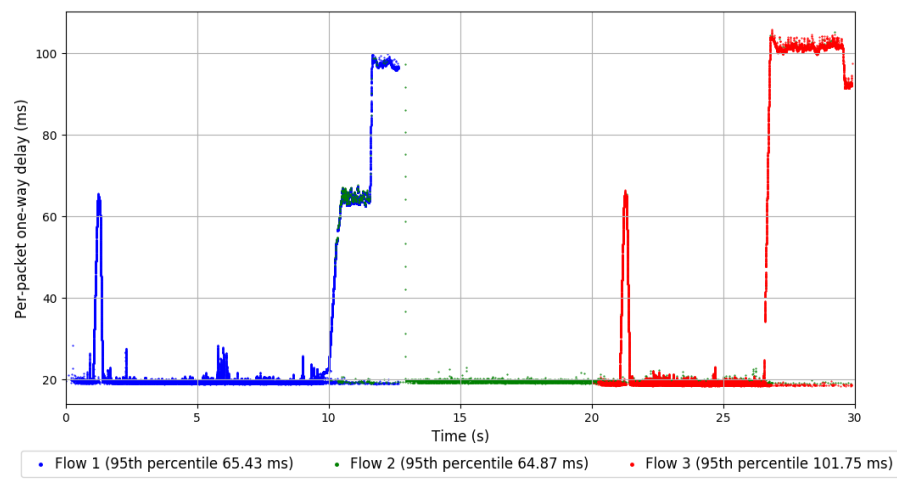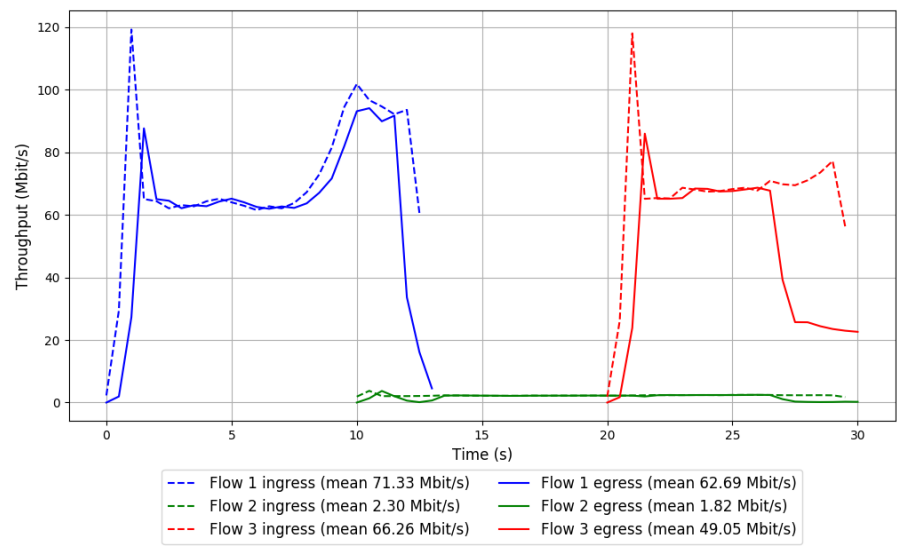
```
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-25 10:02:38
End at: 2018-09-25 10:03:08
Local clock offset: 3.934 ms
Remote clock offset: -30.906 ms


# Below is generated by plot.py at 2018-09-25 10:24:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 44.58 Mbit/s
95th percentile per-packet one-way delay: 67.506 ms
Loss rate: 25.63%
-- Flow 1:
Average throughput: 62.17 Mbit/s
95th percentile per-packet one-way delay: 84.806 ms
Loss rate: 10.51%
-- Flow 2:
Average throughput: 35.96 Mbit/s
95th percentile per-packet one-way delay: 62.747 ms
Loss rate: 33.68%
-- Flow 3:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 63.140 ms
Loss rate: 61.01%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 68.19 Mbit/s)   Flow 1 egress (mean 62.17 Mbit/s)
Flow 2 ingress (mean 54.23 Mbit/s)   Flow 2 egress (mean 35.96 Mbit/s)
Flow 3 ingress (mean 4.30 Mbit/s)   Flow 3 egress (mean 1.67 Mbit/s)

Flow 1 (95th percentile 84.81 ms)   Flow 2 (95th percentile 62.75 ms)   Flow 3 (95th percentile 63.14 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-25 08:15:16
End at: 2018-09-25 08:15:46
Local clock offset: 4.665 ms
Remote clock offset: 75.385 ms

# Below is generated by plot.py at 2018-09-25 10:24:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.78 Mbit/s
95th percentile per-packet one-way delay: 33.001 ms
Loss rate: 48.35%
-- Flow 1:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 28.547 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 11.82 Mbit/s
95th percentile per-packet one-way delay: 32.956 ms
Loss rate: 47.70%
-- Flow 3:
Average throughput: 2.78 Mbit/s
95th percentile per-packet one-way delay: 33.203 ms
Loss rate: 53.35%
```

Run 1: Report of PCC-Expr — Data Link
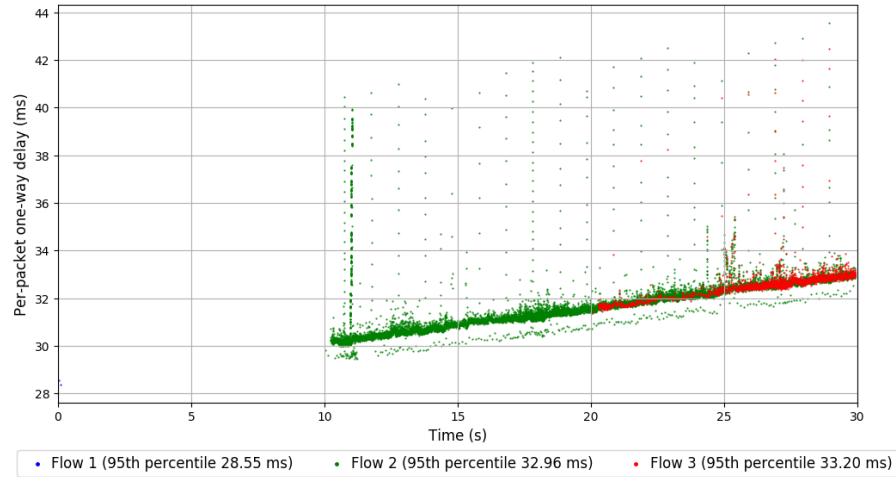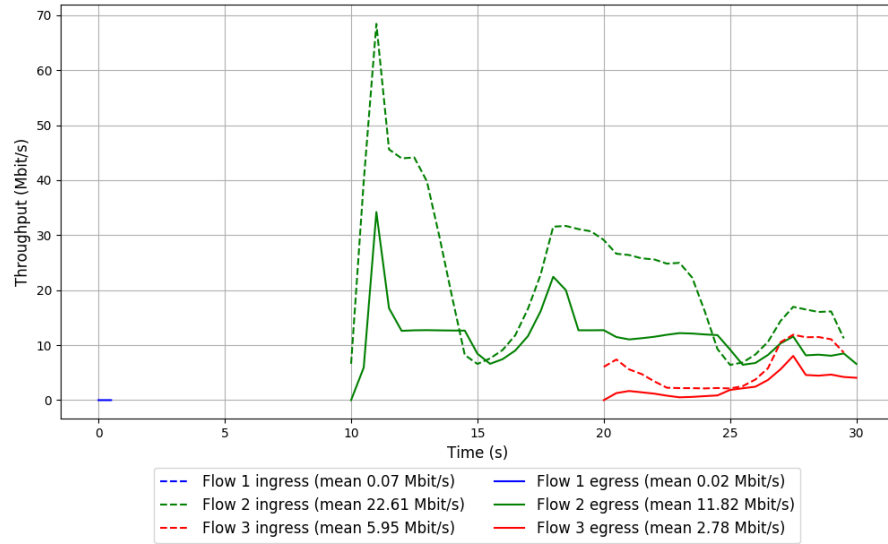
```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-25 08:43:41
End at: 2018-09-25 08:44:11
Local clock offset: 1.863 ms
Remote clock offset: -0.805 ms


# Below is generated by plot.py at 2018-09-25 10:24:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.03 Mbit/s
95th percentile per-packet one-way delay: 26.298 ms
Loss rate: 47.42%
-- Flow 1:
Average throughput: 8.58 Mbit/s
95th percentile per-packet one-way delay: 26.379 ms
Loss rate: 47.62%
-- Flow 2:
Average throughput: 3.81 Mbit/s
95th percentile per-packet one-way delay: 26.244 ms
Loss rate: 45.35%
-- Flow 3:
Average throughput: 5.79 Mbit/s
95th percentile per-packet one-way delay: 26.259 ms
Loss rate: 49.11%
```
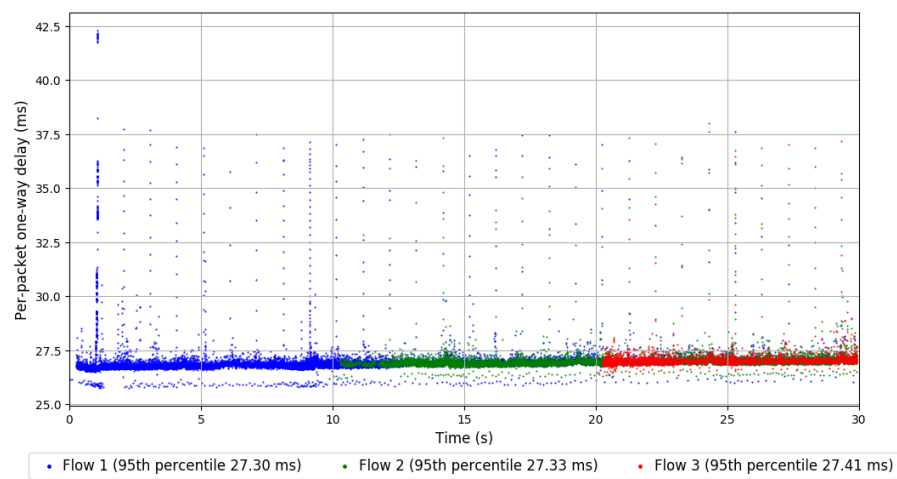
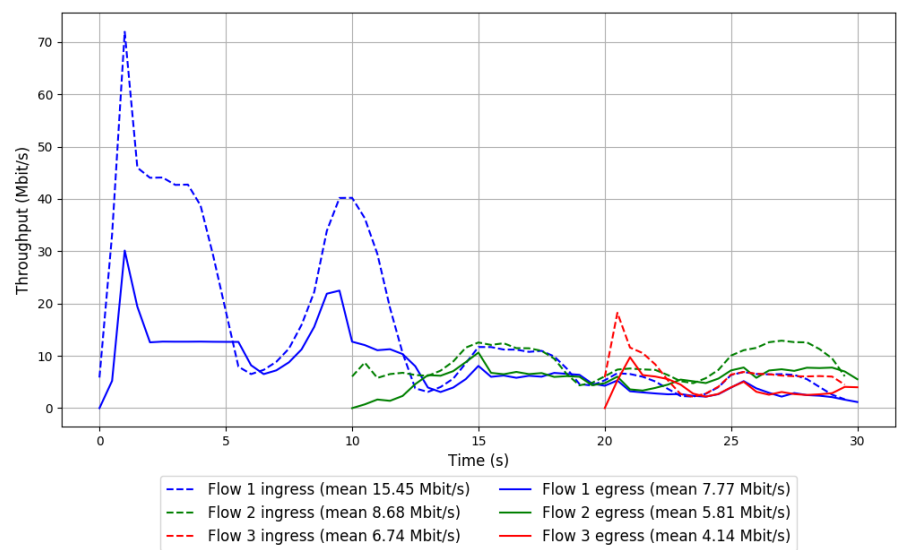## Run 2: Report of PCC-Expr — Data Link
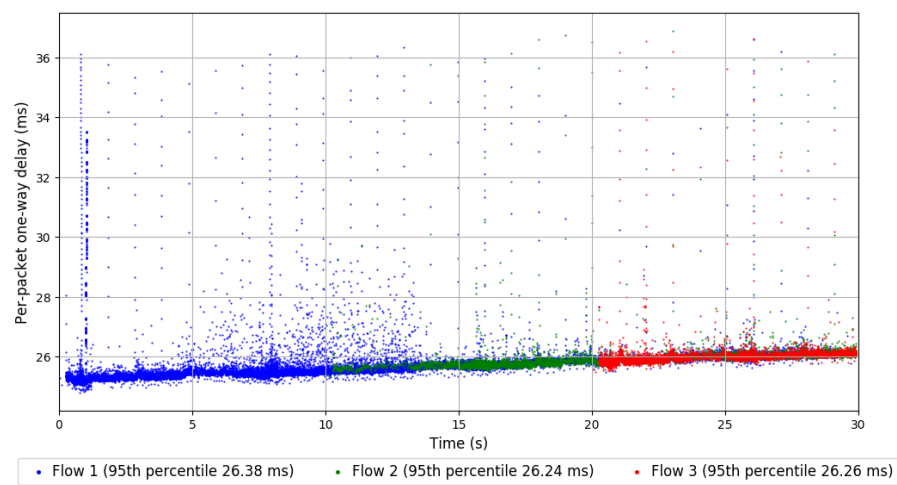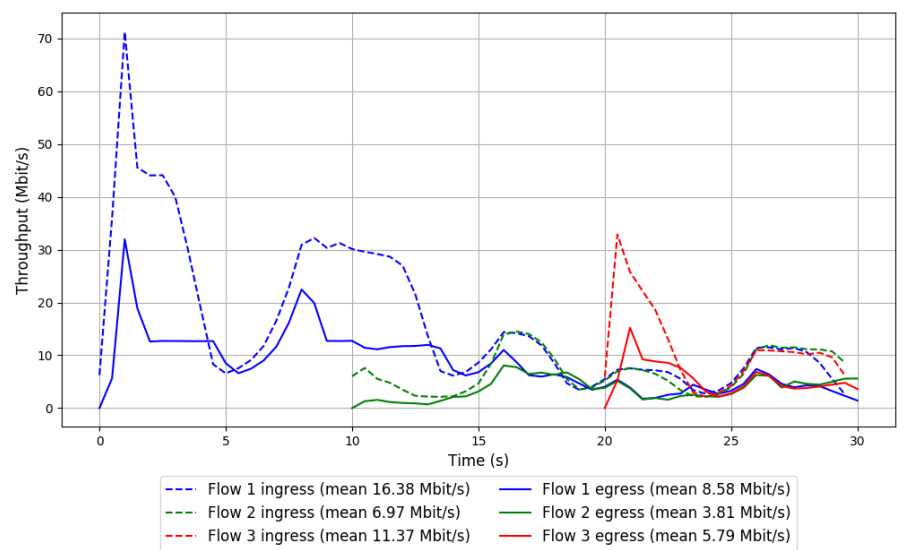
```
Run 3: Statistics of PCC-Expr

Start at: 2018-09-25 09:07:53
End at: 2018-09-25 09:08:23
Local clock offset: 3.516 ms
Remote clock offset: -12.632 ms


# Below is generated by plot.py at 2018-09-25 10:24:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.04 Mbit/s
95th percentile per-packet one-way delay: 31.688 ms
Loss rate: 43.03%
-- Flow 1:
Average throughput: 8.31 Mbit/s
95th percentile per-packet one-way delay: 31.726 ms
Loss rate: 47.75%
-- Flow 2:
Average throughput: 5.50 Mbit/s
95th percentile per-packet one-way delay: 31.670 ms
Loss rate: 32.61%
-- Flow 3:
Average throughput: 3.24 Mbit/s
95th percentile per-packet one-way delay: 31.462 ms
Loss rate: 30.97%
```
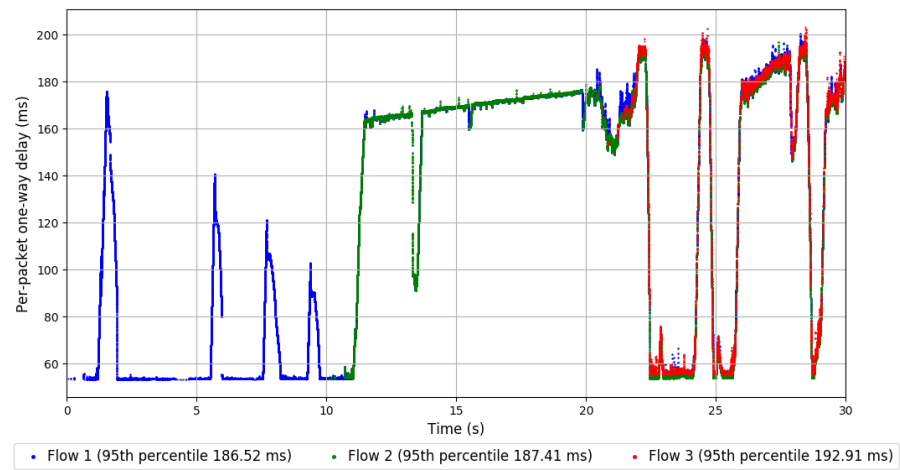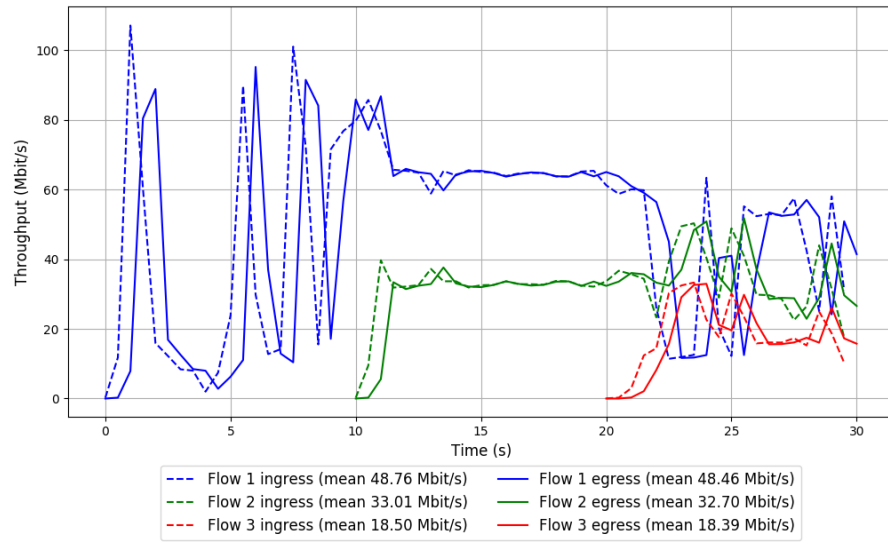
Run 3: Report of PCC-Expr — Data Link
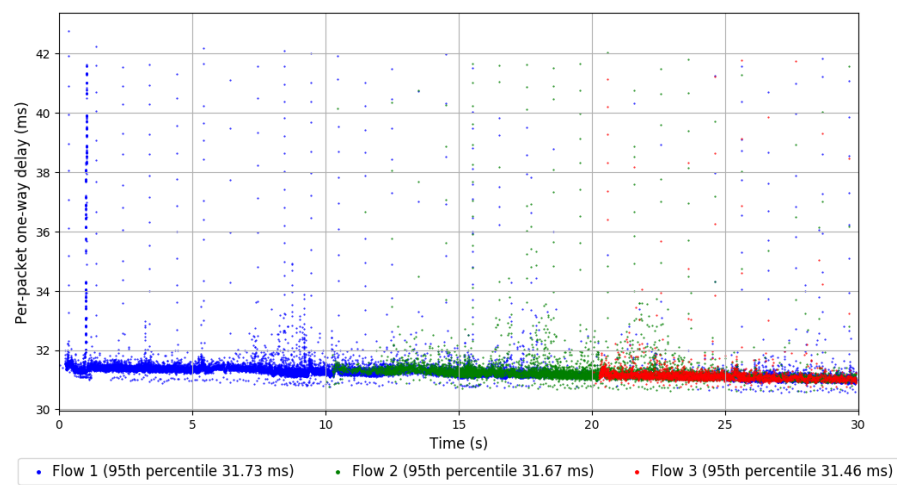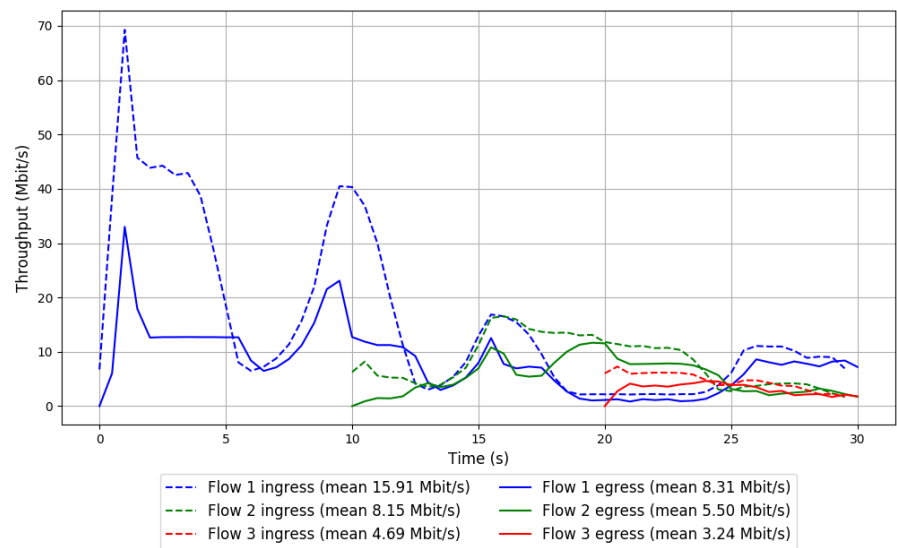
```
Run 4: Statistics of PCC-Expr

Start at: 2018-09-25 09:32:08
End at: 2018-09-25 09:32:38
Local clock offset: 1.746 ms
Remote clock offset: -23.594 ms


# Below is generated by plot.py at 2018-09-25 10:24:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.02 Mbit/s
95th percentile per-packet one-way delay: 26.367 ms
Loss rate: 33.53%
-- Flow 1:
Average throughput: 7.26 Mbit/s
95th percentile per-packet one-way delay: 26.404 ms
Loss rate: 42.34%
-- Flow 2:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 26.308 ms
Loss rate: 18.39%
-- Flow 3:
Average throughput: 3.90 Mbit/s
95th percentile per-packet one-way delay: 26.469 ms
Loss rate: 15.04%
```
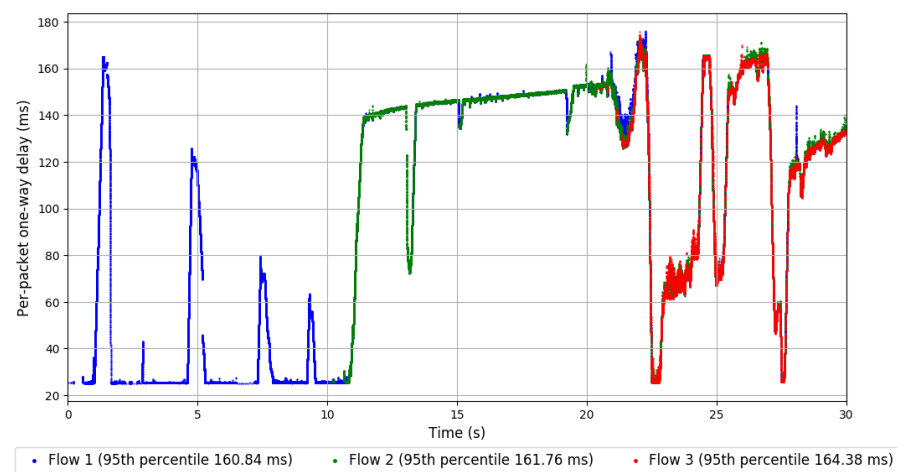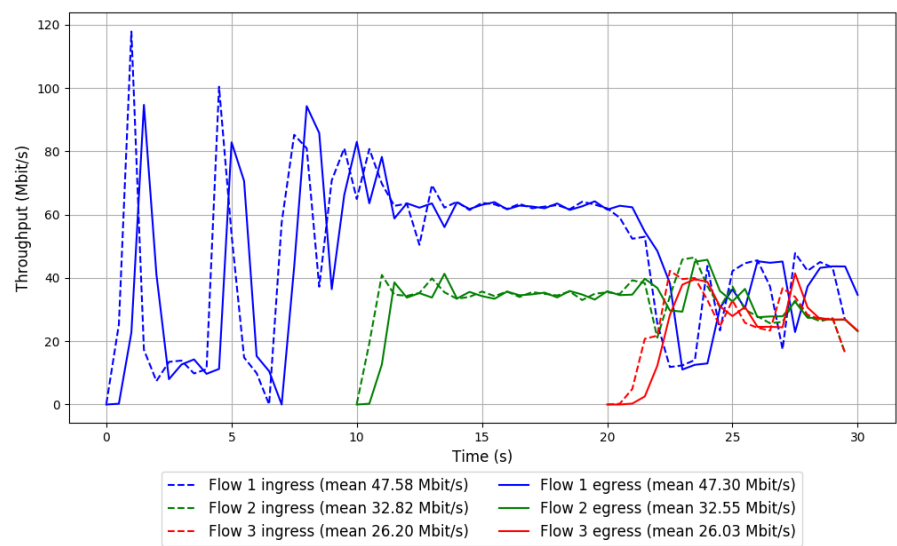
Run 4: Report of PCC-Expr — Data Link
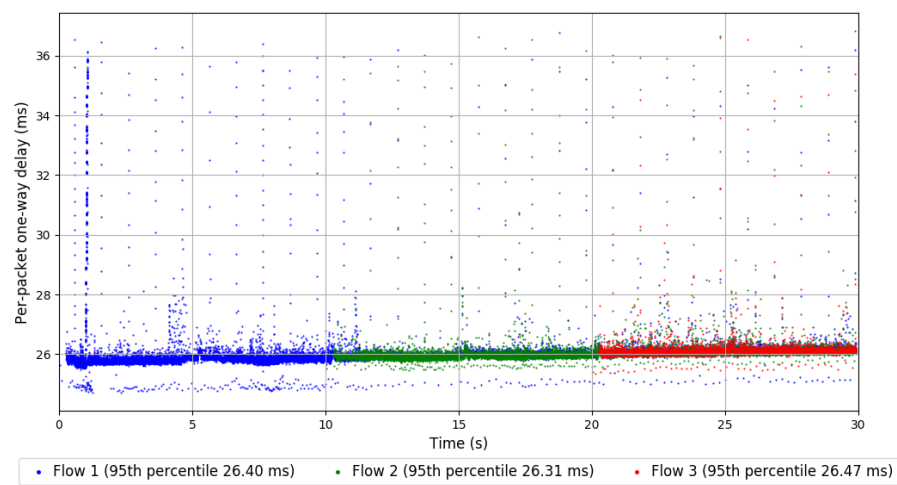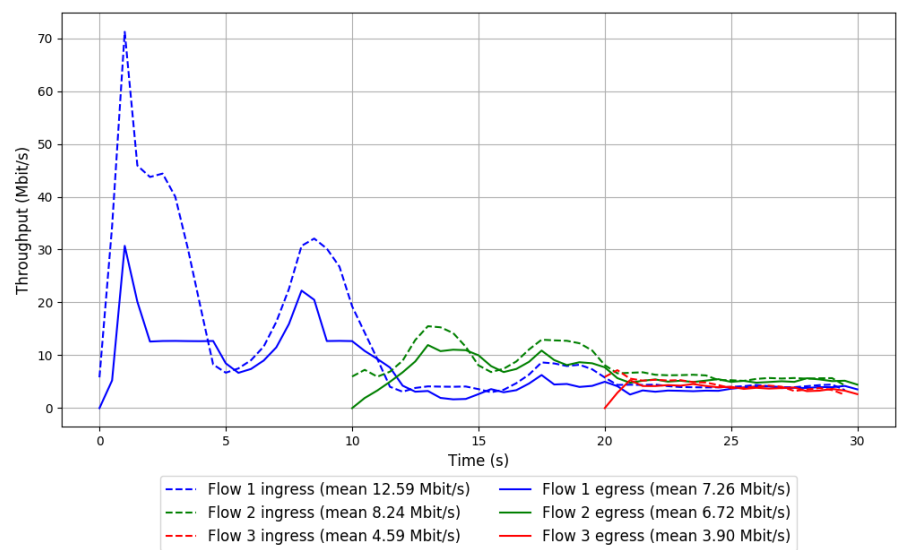
```
Run 5: Statistics of PCC-Expr

Start at: 2018-09-25 09:56:24
End at: 2018-09-25 09:56:54
Local clock offset: 3.504 ms
Remote clock offset: -26.742 ms

# Below is generated by plot.py at 2018-09-25 10:24:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.00 Mbit/s
95th percentile per-packet one-way delay: 27.335 ms
Loss rate: 44.57%
-- Flow 1:
Average throughput: 7.77 Mbit/s
95th percentile per-packet one-way delay: 27.301 ms
Loss rate: 49.70%
-- Flow 2:
Average throughput: 5.81 Mbit/s
95th percentile per-packet one-way delay: 27.326 ms
Loss rate: 33.13%
-- Flow 3:
Average throughput: 4.14 Mbit/s
95th percentile per-packet one-way delay: 27.405 ms
Loss rate: 38.62%
```

Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 15.45 Mbit/s)
Flow 1 egress (mean 7.77 Mbit/s)
Flow 2 ingress (mean 8.68 Mbit/s)
Flow 2 egress (mean 5.81 Mbit/s)
Flow 3 ingress (mean 6.74 Mbit/s)
Flow 3 egress (mean 4.14 Mbit/s)

Flow 1 (95th percentile 27.30 ms)
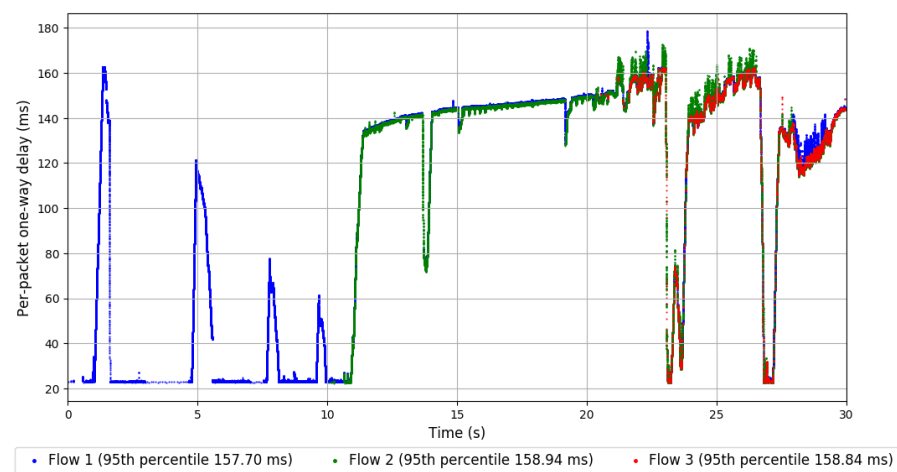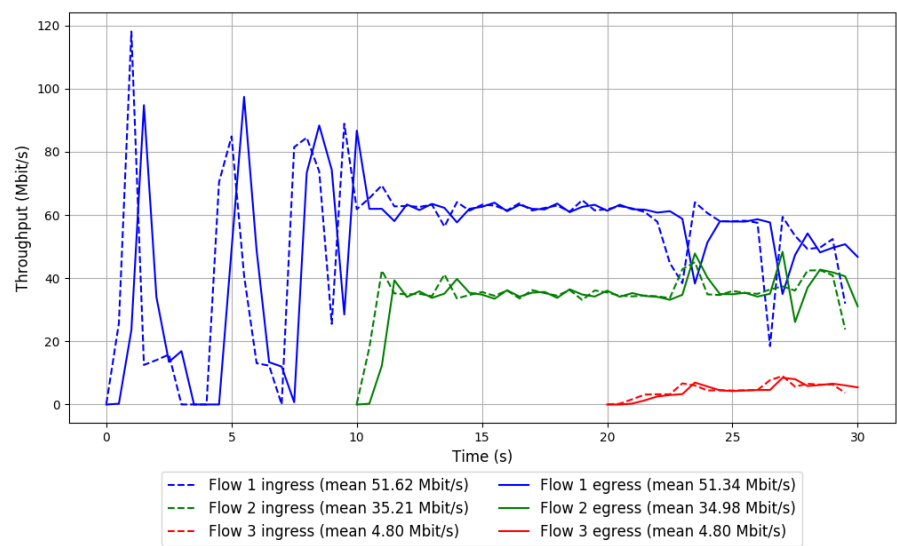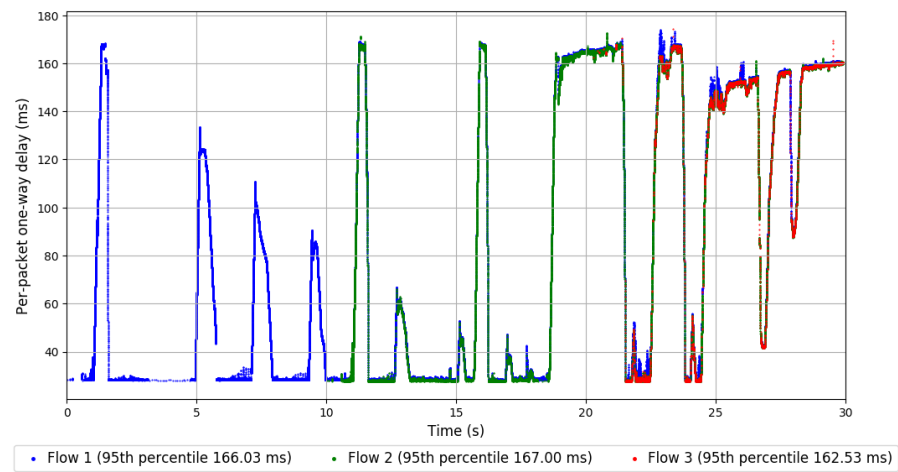Flow 2 (95th percentile 27.33 ms)
Flow 3 (95th percentile 27.41 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-25 08:30:32
End at: 2018-09-25 08:31:02
Local clock offset: 1.263 ms
Remote clock offset: 26.393 ms


# Below is generated by plot.py at 2018-09-25 10:25:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 75.95 Mbit/s
95th percentile per-packet one-way delay: 187.761 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 48.46 Mbit/s
95th percentile per-packet one-way delay: 186.522 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 32.70 Mbit/s
95th percentile per-packet one-way delay: 187.405 ms
Loss rate: 0.22%
-- Flow 3:
Average throughput: 18.39 Mbit/s
95th percentile per-packet one-way delay: 192.910 ms
Loss rate: 0.45%
```
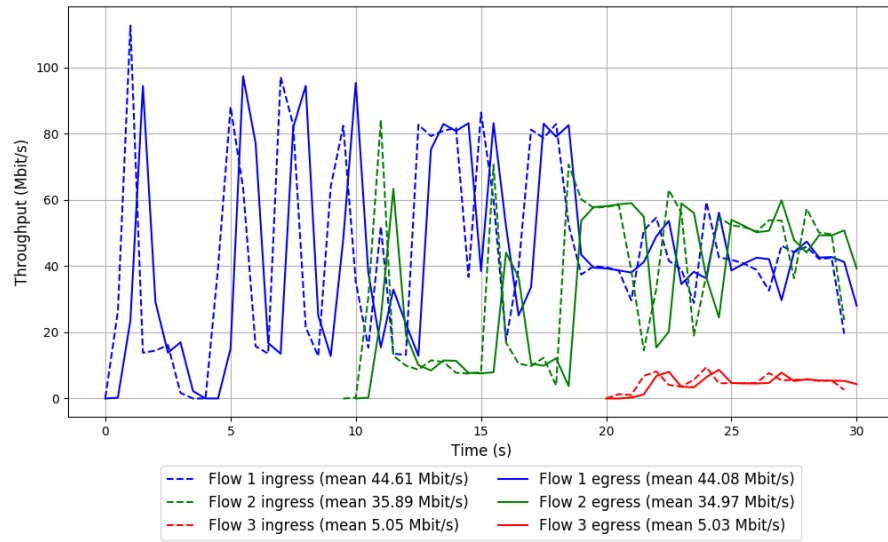
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 48.76 Mbit/s) --- Flow 1 egress (mean 48.46 Mbit/s)
Flow 2 ingress (mean 33.01 Mbit/s) --- Flow 2 egress (mean 32.70 Mbit/s)
Flow 3 ingress (mean 18.50 Mbit/s) --- Flow 3 egress (mean 18.39 Mbit/s)

Flow 1 (95th percentile 186.52 ms)   Flow 2 (95th percentile 187.41 ms)   Flow 3 (95th percentile 192.91 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-25 08:54:58
End at: 2018-09-25 08:55:28
Local clock offset: 3.186 ms
Remote clock offset: -17.144 ms


# Below is generated by plot.py at 2018-09-25 10:25:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.21 Mbit/s
95th percentile per-packet one-way delay: 161.844 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 47.30 Mbit/s
95th percentile per-packet one-way delay: 160.845 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 32.55 Mbit/s
95th percentile per-packet one-way delay: 161.757 ms
Loss rate: 0.23%
-- Flow 3:
Average throughput: 26.03 Mbit/s
95th percentile per-packet one-way delay: 164.375 ms
Loss rate: 0.80%
```

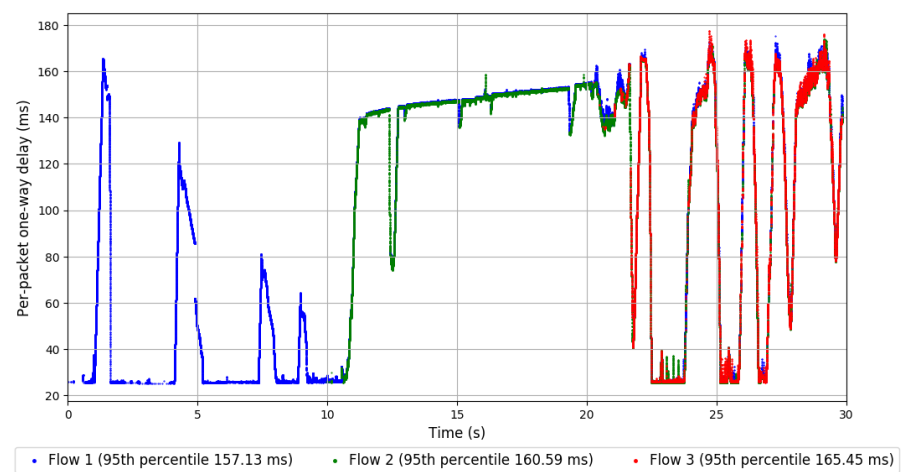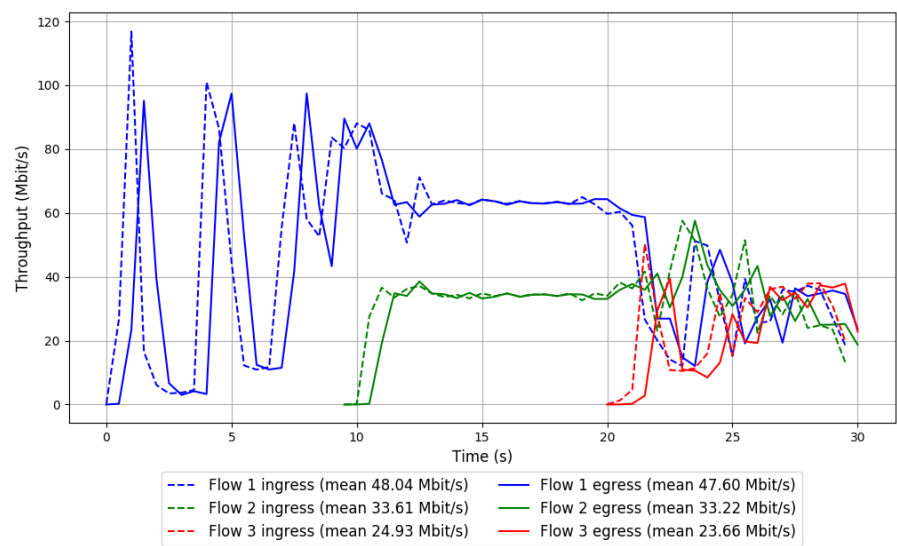# Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 47.58 Mbit/s) --- Flow 1 egress (mean 47.30 Mbit/s)
Flow 2 ingress (mean 32.82 Mbit/s) --- Flow 2 egress (mean 32.55 Mbit/s)
Flow 3 ingress (mean 26.20 Mbit/s) --- Flow 3 egress (mean 26.03 Mbit/s)

Flow 1 (95th percentile 160.84 ms) • Flow 2 (95th percentile 161.76 ms) • Flow 3 (95th percentile 164.38 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-25 09:19:12
End at: 2018-09-25 09:19:42
Local clock offset: 2.443 ms
Remote clock offset: -18.564 ms


# Below is generated by plot.py at 2018-09-25 10:25:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 76.05 Mbit/s
95th percentile per-packet one-way delay: 157.992 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 51.34 Mbit/s
95th percentile per-packet one-way delay: 157.699 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 34.98 Mbit/s
95th percentile per-packet one-way delay: 158.938 ms
Loss rate: 0.27%
-- Flow 3:
Average throughput: 4.80 Mbit/s
95th percentile per-packet one-way delay: 158.842 ms
Loss rate: 0.02%
```

Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 51.62 Mbit/s)   Flow 1 egress (mean 51.34 Mbit/s)
Flow 2 ingress (mean 35.21 Mbit/s)   Flow 2 egress (mean 34.98 Mbit/s)
Flow 3 ingress (mean 4.80 Mbit/s)   Flow 3 egress (mean 4.80 Mbit/s)

Flow 1 (95th percentile 157.70 ms)   Flow 2 (95th percentile 158.94 ms)   Flow 3 (95th percentile 158.84 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-25 09:43:26
End at: 2018-09-25 09:43:56
Local clock offset: 2.375 ms
Remote clock offset: -21.099 ms


# Below is generated by plot.py at 2018-09-25 10:25:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.88 Mbit/s
95th percentile per-packet one-way delay: 166.693 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 44.08 Mbit/s
95th percentile per-packet one-way delay: 166.027 ms
Loss rate: 0.96%
-- Flow 2:
Average throughput: 34.97 Mbit/s
95th percentile per-packet one-way delay: 167.000 ms
Loss rate: 1.90%
-- Flow 3:
Average throughput: 5.03 Mbit/s
95th percentile per-packet one-way delay: 162.533 ms
Loss rate: 0.47%
```

Run 4: Report of QUIC Cubic — Data Link

- Flow 1 ingress (mean 44.61 Mbit/s) — Flow 1 egress (mean 44.08 Mbit/s)
- Flow 2 ingress (mean 35.89 Mbit/s) — Flow 2 egress (mean 34.97 Mbit/s)
- Flow 3 ingress (mean 5.05 Mbit/s)   — Flow 3 egress (mean 5.03 Mbit/s)

- Flow 1 (95th percentile 166.03 ms)   • Flow 2 (95th percentile 167.00 ms)   • Flow 3 (95th percentile 162.53 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-25 10:07:43
End at: 2018-09-25 10:08:13
Local clock offset: 4.048 ms
Remote clock offset: -33.564 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.33 Mbit/s
95th percentile per-packet one-way delay: 162.013 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 47.60 Mbit/s
95th percentile per-packet one-way delay: 157.127 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 33.22 Mbit/s
95th percentile per-packet one-way delay: 160.595 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 23.66 Mbit/s
95th percentile per-packet one-way delay: 165.453 ms
Loss rate: 5.54%
```

Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 48.04 Mbit/s)   Flow 1 egress (mean 47.60 Mbit/s)
Flow 2 ingress (mean 33.61 Mbit/s)   Flow 2 egress (mean 33.22 Mbit/s)
Flow 3 ingress (mean 24.93 Mbit/s)   Flow 3 egress (mean 23.66 Mbit/s)

Flow 1 (95th percentile 157.13 ms)   Flow 2 (95th percentile 160.59 ms)   Flow 3 (95th percentile 165.45 ms)
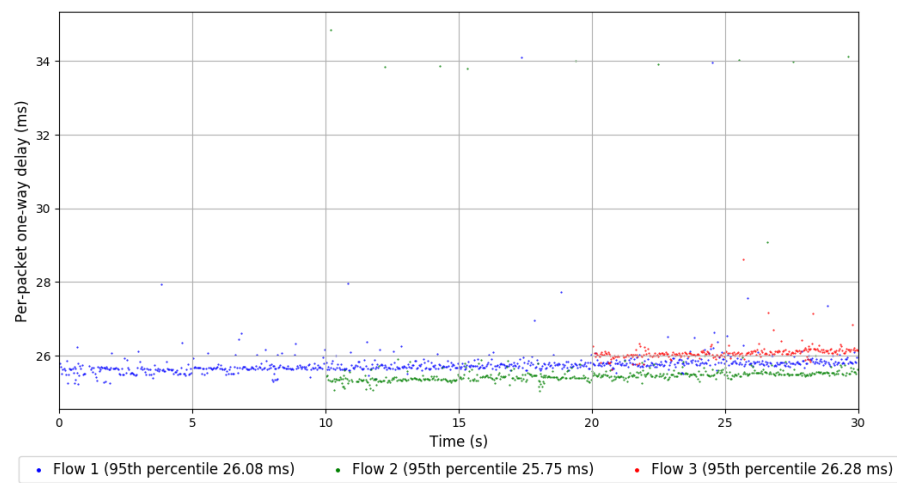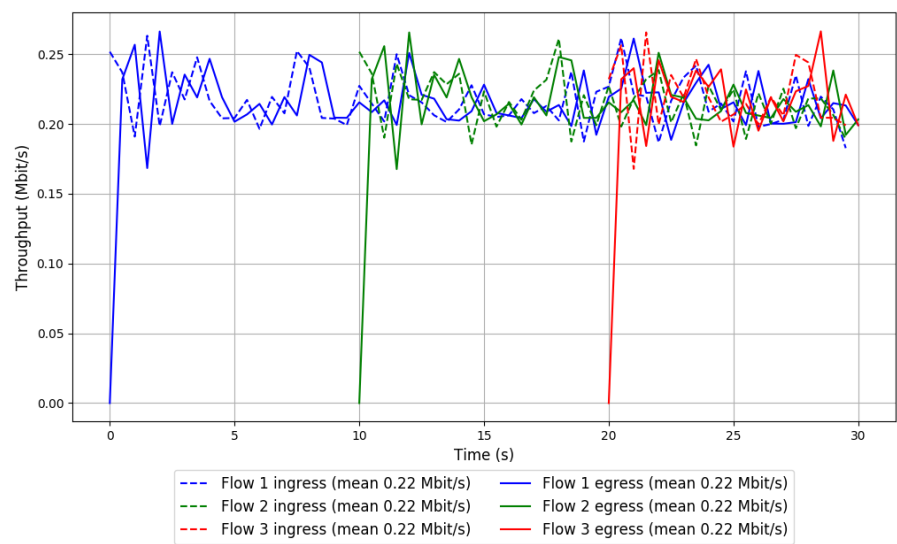
```
Run 1: Statistics of SCReAM

Start at: 2018-09-25 08:22:50
End at: 2018-09-25 08:23:20
Local clock offset: 2.415 ms
Remote clock offset: 32.891 ms

# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 47.823 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 47.909 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 46.190 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.098 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

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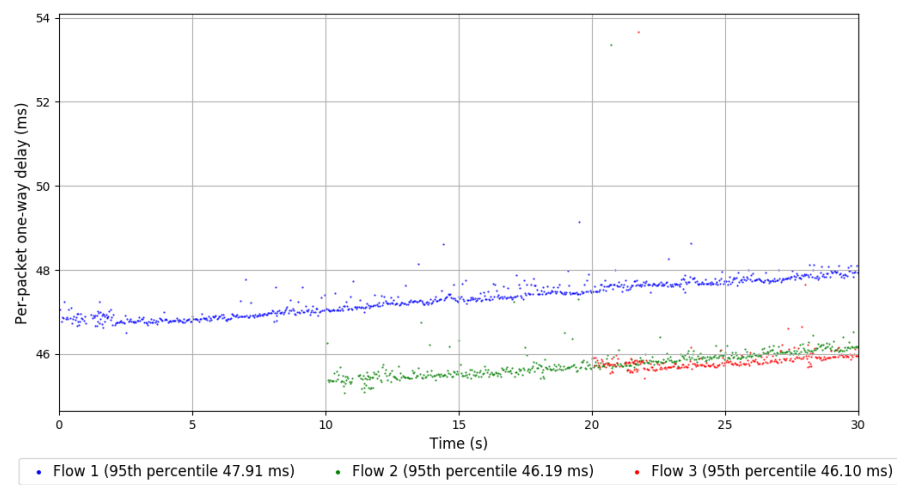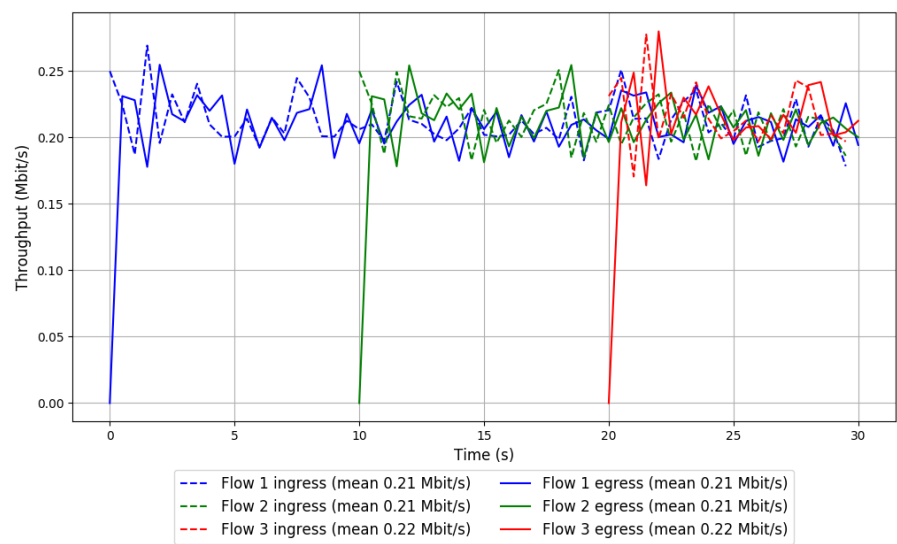
```
Run 2: Statistics of SCReAM

Start at: 2018-09-25 08:47:31
End at: 2018-09-25 08:48:01
Local clock offset: 2.207 ms
Remote clock offset: -5.309 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 27.363 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.927 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 27.391 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 27.390 ms
Loss rate: 0.00%
```

Run 2: Report of SCReAM — Data Link
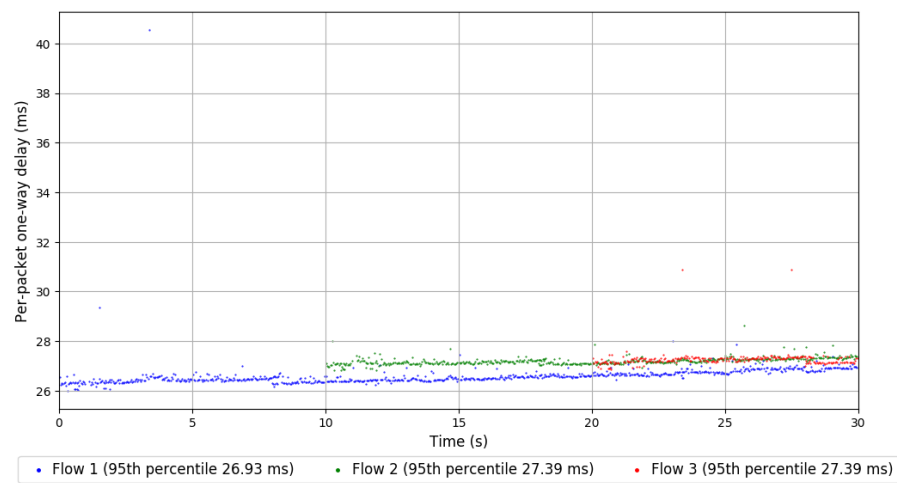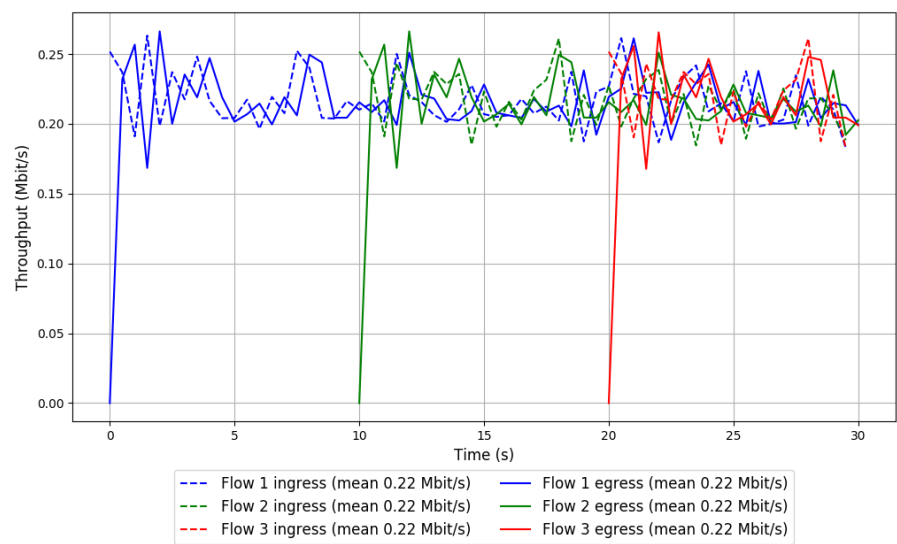
```
Run 3: Statistics of SCReAM

Start at: 2018-09-25 09:11:42
End at: 2018-09-25 09:12:12
Local clock offset: 3.021 ms
Remote clock offset: -14.539 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 26.940 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.787 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.405 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 27.139 ms
Loss rate: 0.00%
```

# Run 3: Report of SCReAM — Data Link
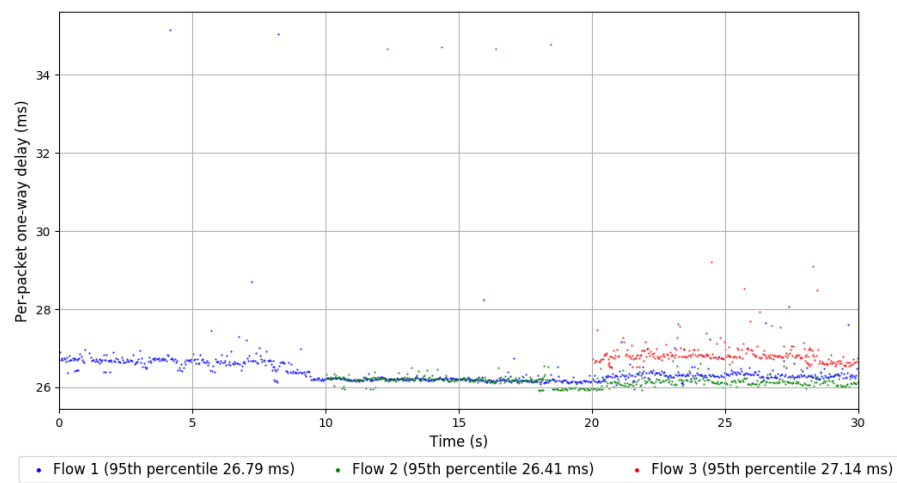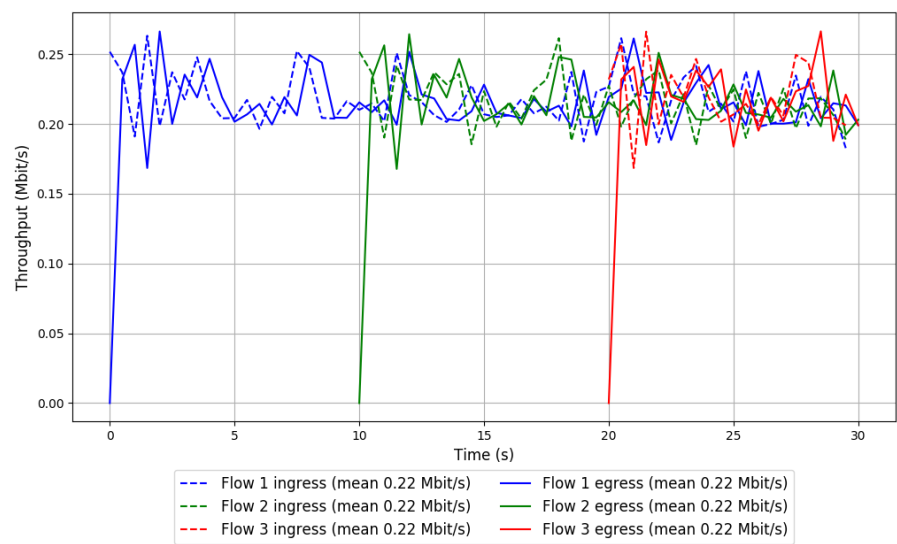
```
Run 4: Statistics of SCReAM

Start at: 2018-09-25 09:36:00
End at: 2018-09-25 09:36:30
Local clock offset: 1.602 ms
Remote clock offset: -26.39 ms

# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 26.163 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.077 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 25.749 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 26.277 ms
Loss rate: 0.00%
```

Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-09-25 10:00:14
End at: 2018-09-25 10:00:44
Local clock offset: 3.612 ms
Remote clock offset: -31.213 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 24.660 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24.811 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24.336 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24.713 ms
Loss rate: 0.00%
```

Run 5: Report of SCReAM — Data Link
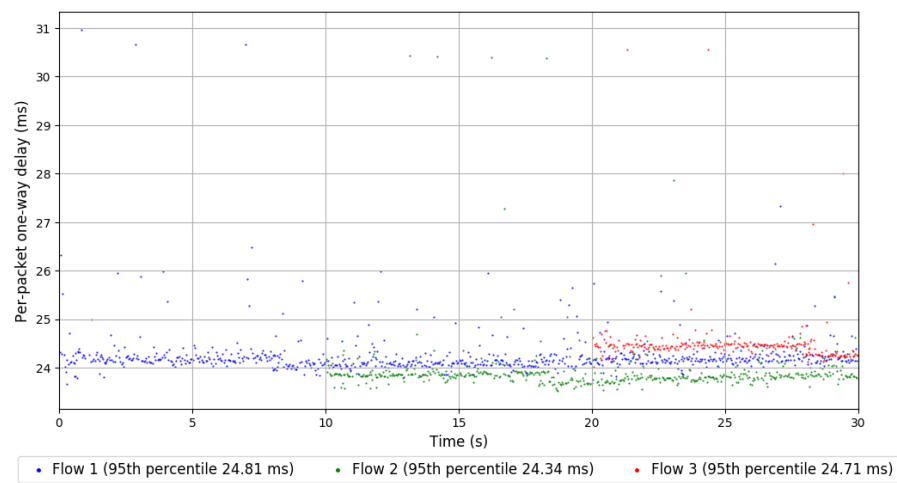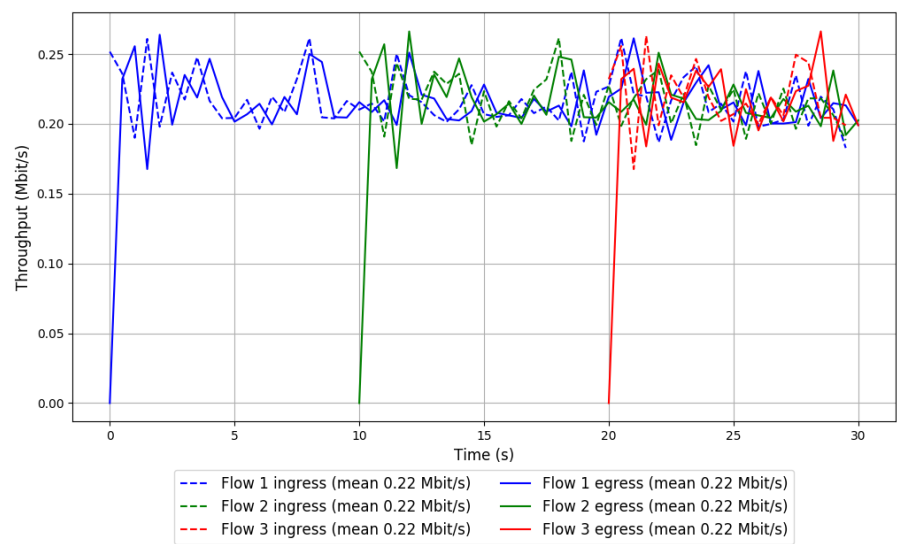
```
Run 1: Statistics of Sprout

Start at: 2018-09-25 08:39:49
End at: 2018-09-25 08:40:19
Local clock offset: 0.475 ms
Remote clock offset: 3.674 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.32 Mbit/s
95th percentile per-packet one-way delay: 50.531 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.24 Mbit/s
95th percentile per-packet one-way delay: 51.010 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.26 Mbit/s
95th percentile per-packet one-way delay: 49.463 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 6.85 Mbit/s
95th percentile per-packet one-way delay: 49.920 ms
Loss rate: 0.00%
```

Run 1: Report of Sprout — Data Link
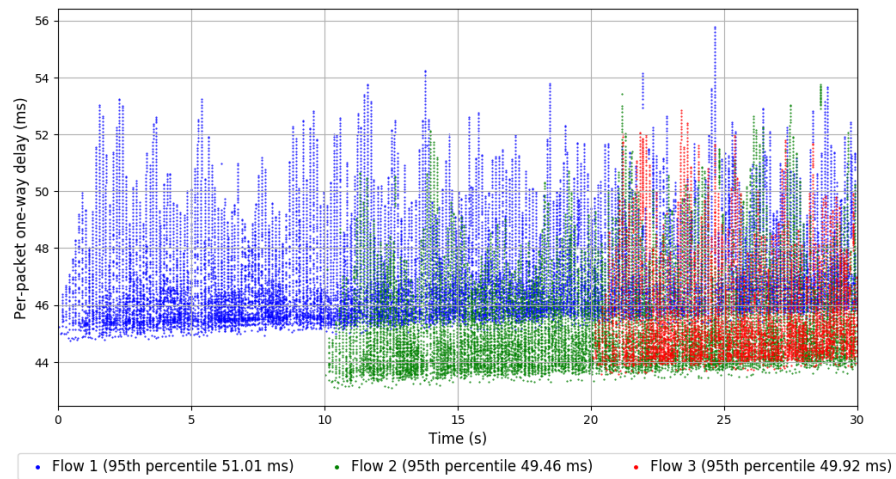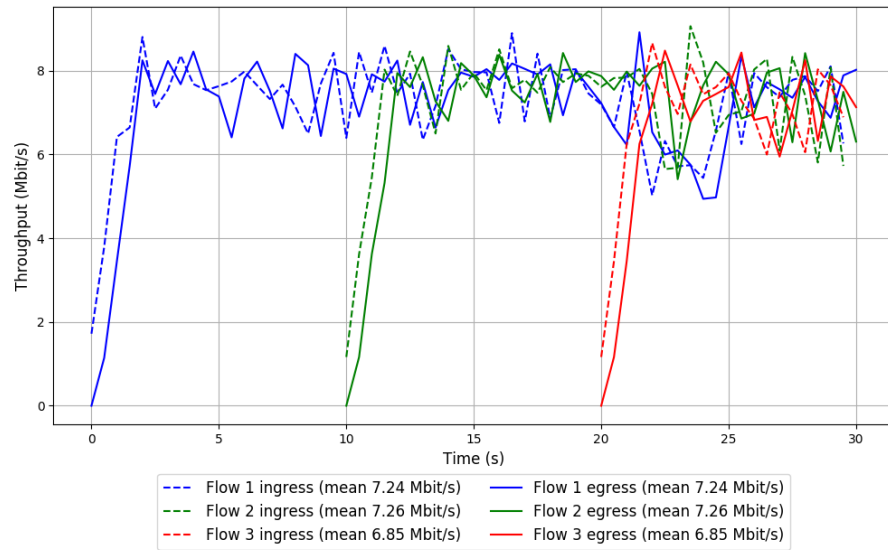
```
Run 2: Statistics of Sprout

Start at: 2018-09-25 09:04:05
End at: 2018-09-25 09:04:35
Local clock offset: 3.39 ms
Remote clock offset: -24.058 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.55 Mbit/s
95th percentile per-packet one-way delay: 30.930 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 8.84 Mbit/s
95th percentile per-packet one-way delay: 30.595 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 8.82 Mbit/s
95th percentile per-packet one-way delay: 31.066 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.60 Mbit/s
95th percentile per-packet one-way delay: 31.794 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link
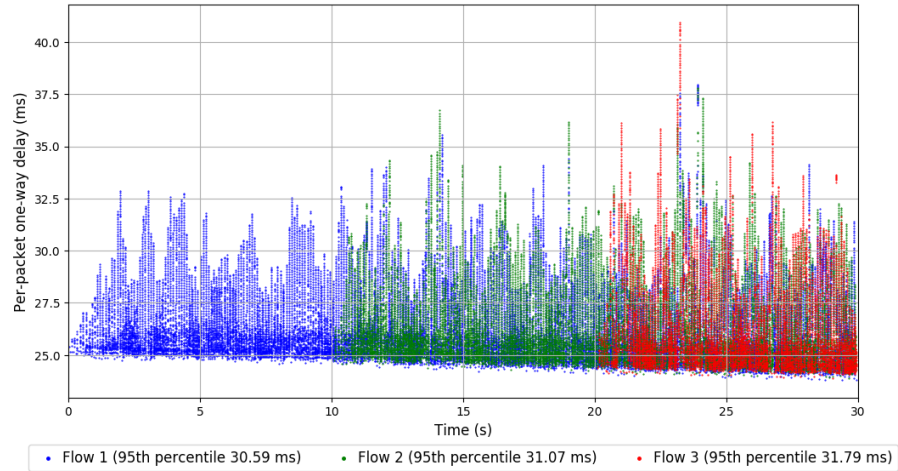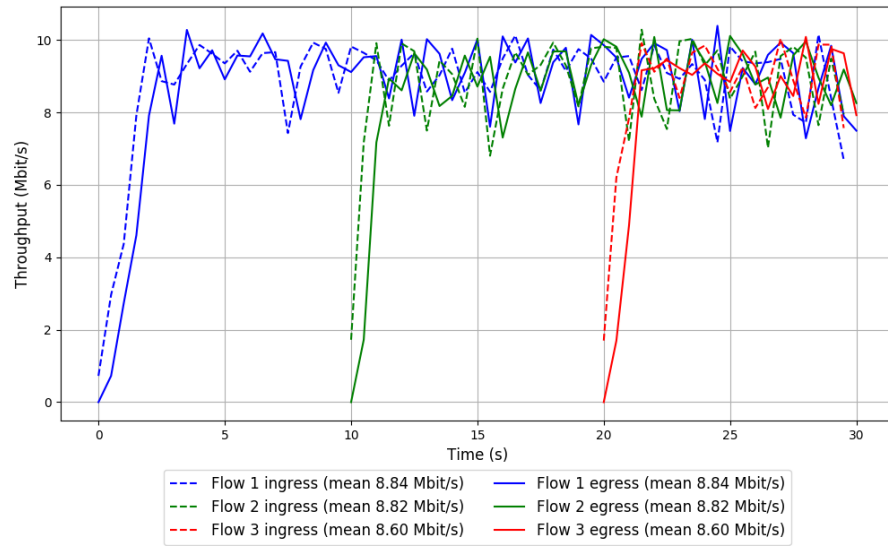
```
Run 3: Statistics of Sprout

Start at: 2018-09-25 09:28:20
End at: 2018-09-25 09:28:50
Local clock offset: 1.89 ms
Remote clock offset: -19.517 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.65 Mbit/s
95th percentile per-packet one-way delay: 33.011 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 8.91 Mbit/s
95th percentile per-packet one-way delay: 32.783 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 8.94 Mbit/s
95th percentile per-packet one-way delay: 33.303 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.47 Mbit/s
95th percentile per-packet one-way delay: 33.232 ms
Loss rate: 0.00%
```
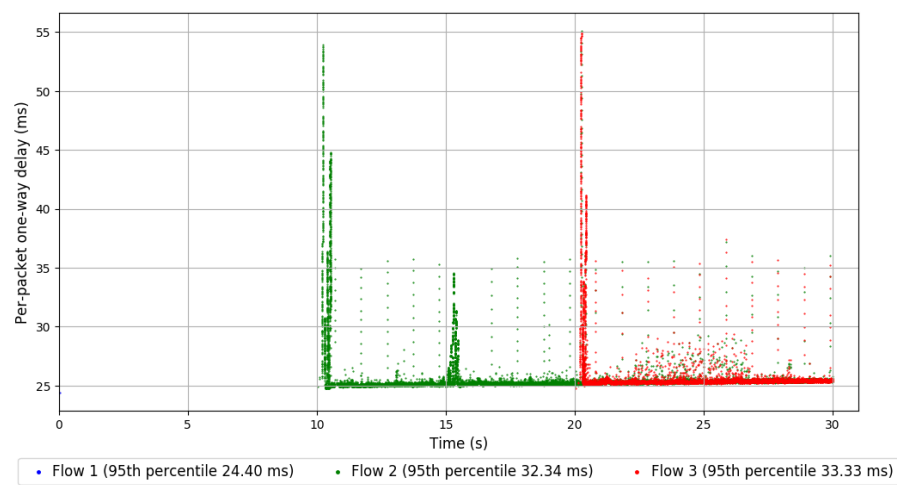
Run 3: Report of Sprout — Data Link
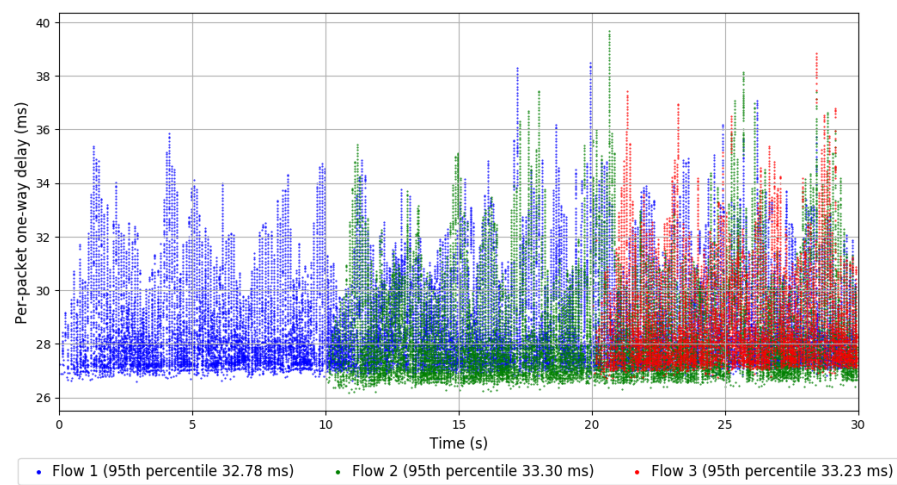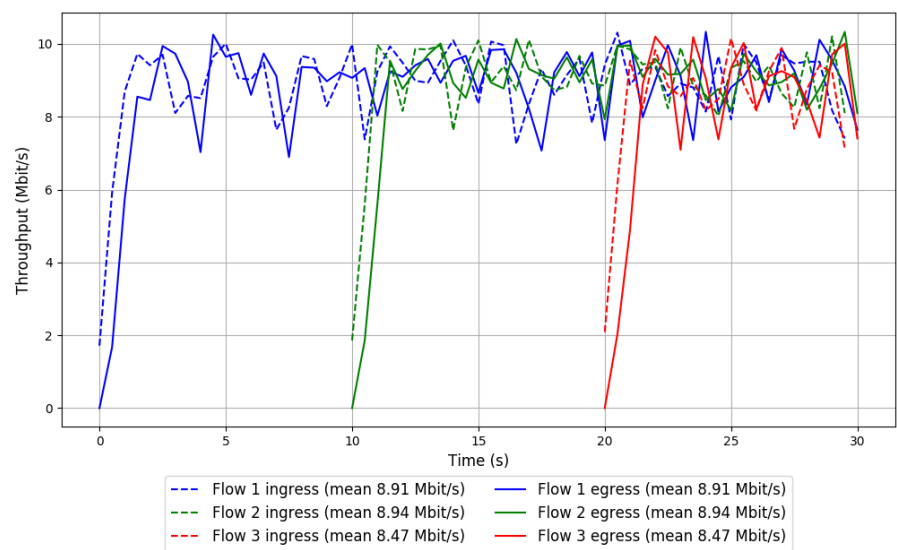
```
Run 4: Statistics of Sprout

Start at: 2018-09-25 09:52:36
End at: 2018-09-25 09:53:06
Local clock offset: 3.305 ms
Remote clock offset: -25.571 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.59 Mbit/s
95th percentile per-packet one-way delay: 31.779 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 8.86 Mbit/s
95th percentile per-packet one-way delay: 31.307 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 8.96 Mbit/s
95th percentile per-packet one-way delay: 32.628 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.37 Mbit/s
95th percentile per-packet one-way delay: 31.247 ms
Loss rate: 0.00%
```
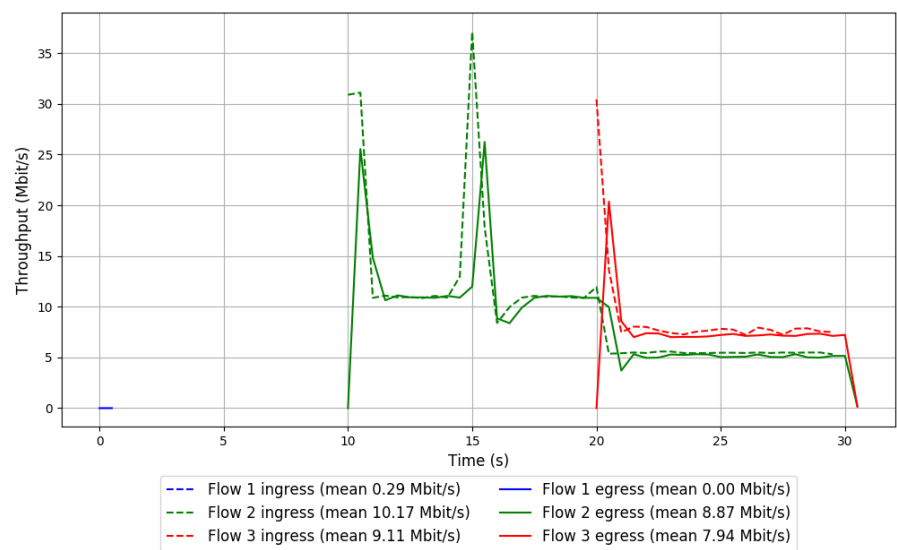
Run 4: Report of Sprout — Data Link
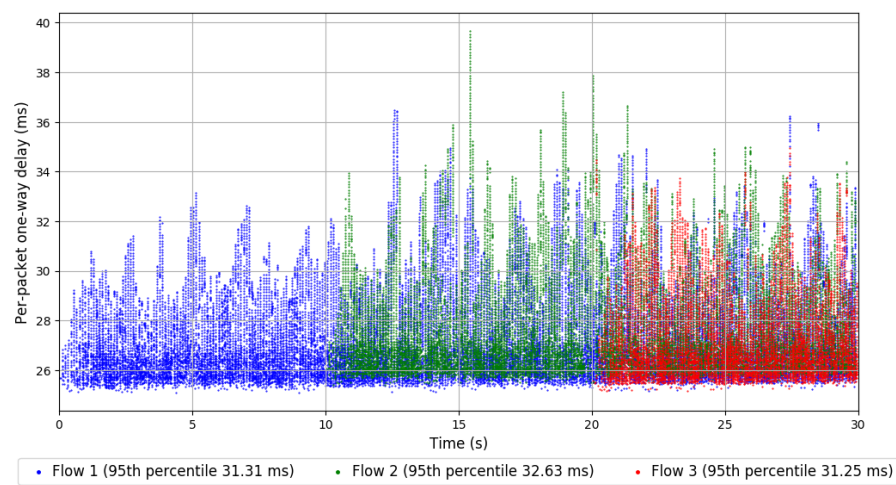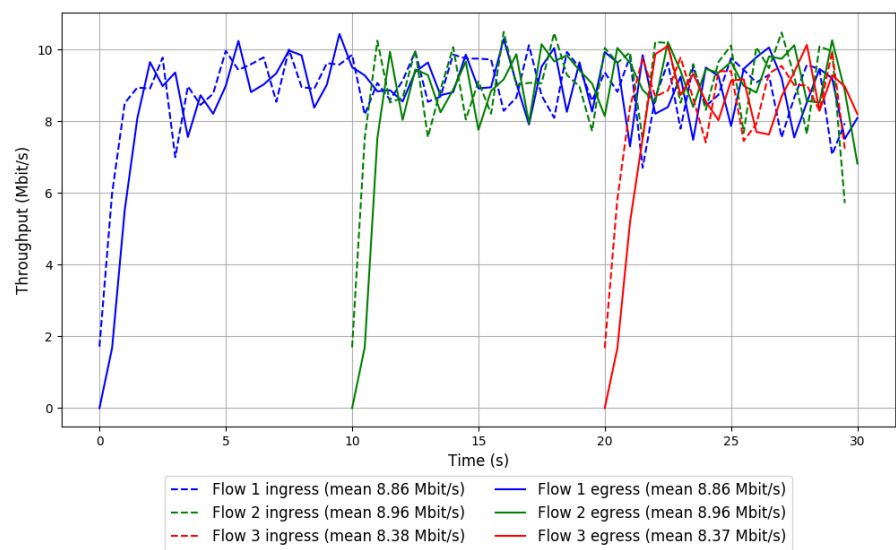
```
Run 5: Statistics of Sprout

Start at: 2018-09-25 10:16:49
End at: 2018-09-25 10:17:19
Local clock offset: 6.09 ms
Remote clock offset: -19.021 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.55 Mbit/s
95th percentile per-packet one-way delay: 37.439 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 8.95 Mbit/s
95th percentile per-packet one-way delay: 37.362 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 8.67 Mbit/s
95th percentile per-packet one-way delay: 37.766 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.59 Mbit/s
95th percentile per-packet one-way delay: 36.945 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link
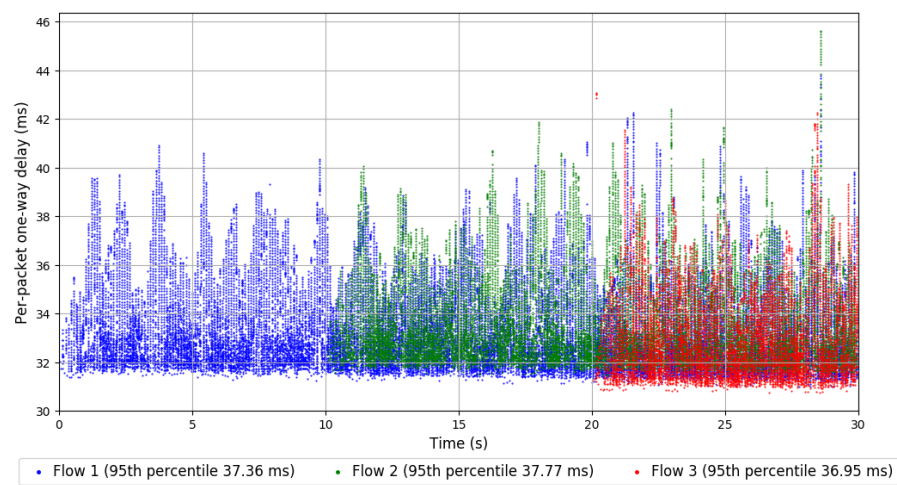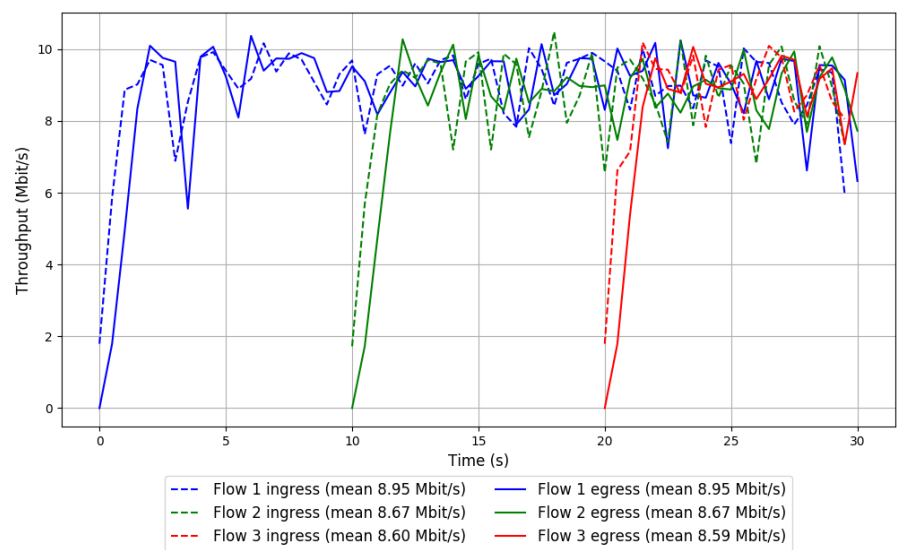
```
Run 1: Statistics of TaoVA-100x

Start at: 2018-09-25 08:34:27
End at: 2018-09-25 08:34:57
Local clock offset: 0.824 ms
Remote clock offset: 11.569 ms

# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.55 Mbit/s
95th percentile per-packet one-way delay: 32.725 ms
Loss rate: 12.80%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 24.397 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 8.87 Mbit/s
95th percentile per-packet one-way delay: 32.337 ms
Loss rate: 12.79%
-- Flow 3:
Average throughput: 7.94 Mbit/s
95th percentile per-packet one-way delay: 33.334 ms
Loss rate: 12.81%
```

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

Flow 1 ingress (mean 0.29 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 10.17 Mbit/s) --- Flow 2 egress (mean 8.87 Mbit/s)
Flow 3 ingress (mean 9.11 Mbit/s) --- Flow 3 egress (mean 7.94 Mbit/s)

Flow 1 (95th percentile 24.40 ms)   Flow 2 (95th percentile 32.34 ms)   Flow 3 (95th percentile 33.33 ms)

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

Start at: 2018-09-25 08:58:52
End at: 2018-09-25 08:59:22
Local clock offset: 3.353 ms
Remote clock offset: -22.114 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.49 Mbit/s
95th percentile per-packet one-way delay: 35.624 ms
Loss rate: 9.02%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 26.001 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 8.77 Mbit/s
95th percentile per-packet one-way delay: 35.436 ms
Loss rate: 5.70%
-- Flow 3:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 35.866 ms
Loss rate: 15.55%
```
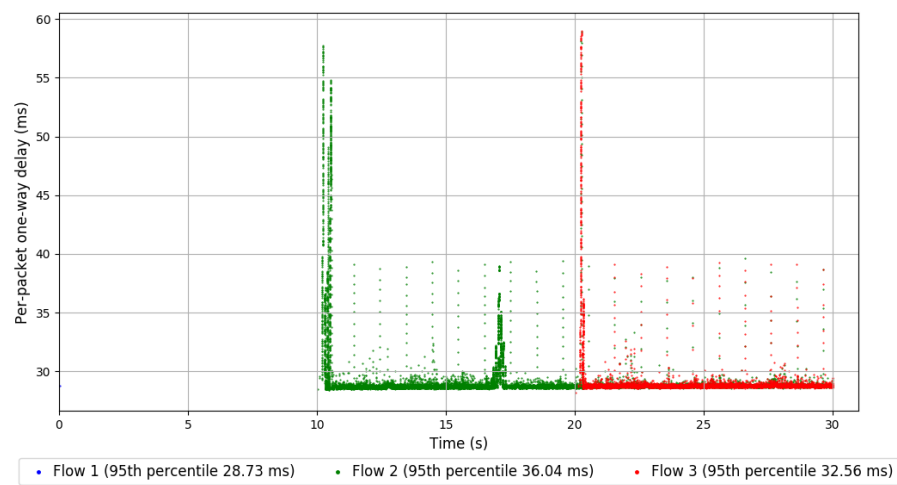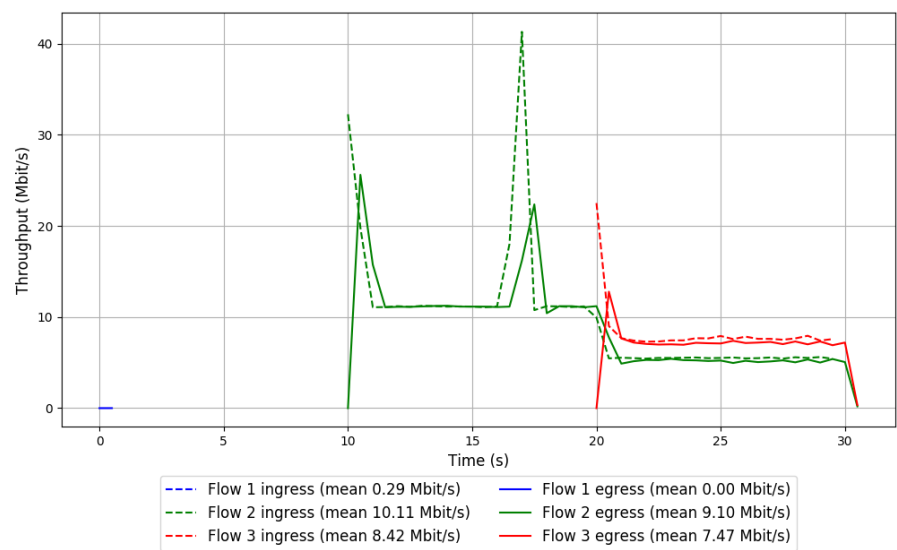
Run 2: Report of TaoVA-100x — Data Link
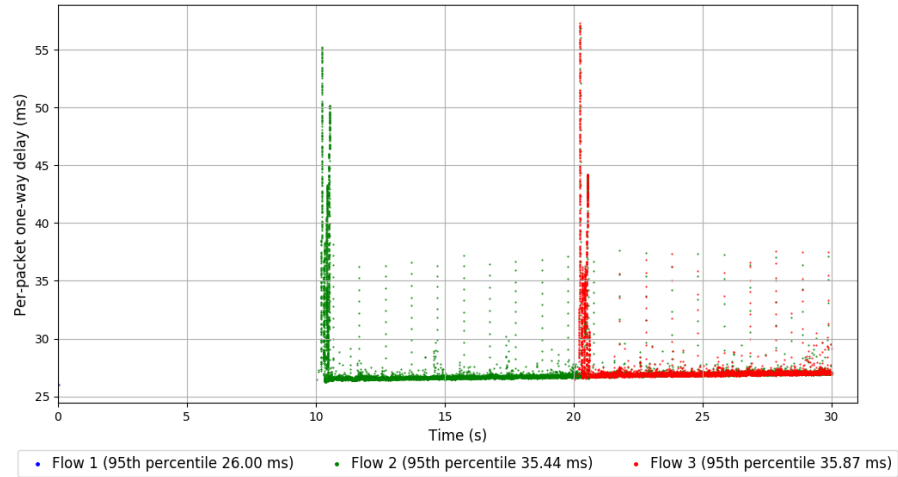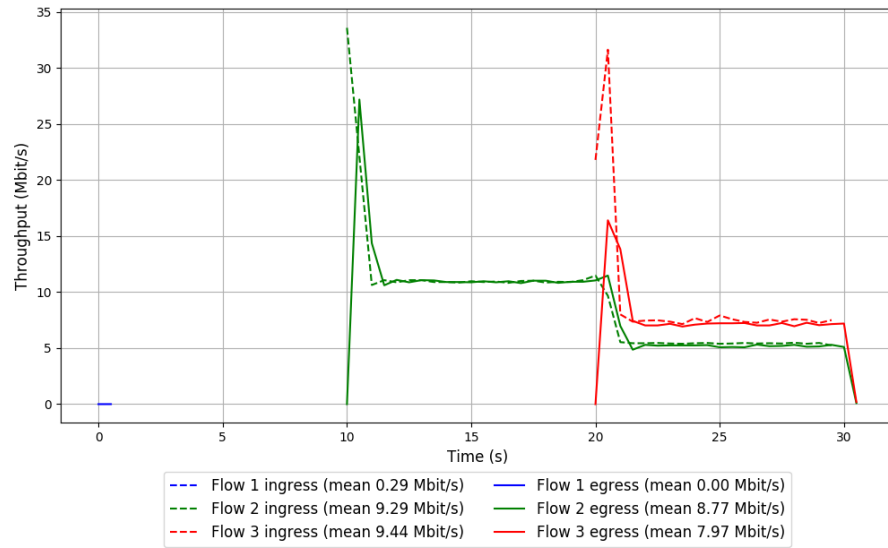
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-09-25 09:23:07
End at: 2018-09-25 09:23:37
Local clock offset: 1.941 ms
Remote clock offset: -7.758 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.50 Mbit/s
95th percentile per-packet one-way delay: 46.125 ms
Loss rate: 9.14%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 35.756 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 8.72 Mbit/s
95th percentile per-packet one-way delay: 45.015 ms
Loss rate: 6.51%
-- Flow 3:
Average throughput: 8.10 Mbit/s
95th percentile per-packet one-way delay: 47.353 ms
Loss rate: 14.33%
```
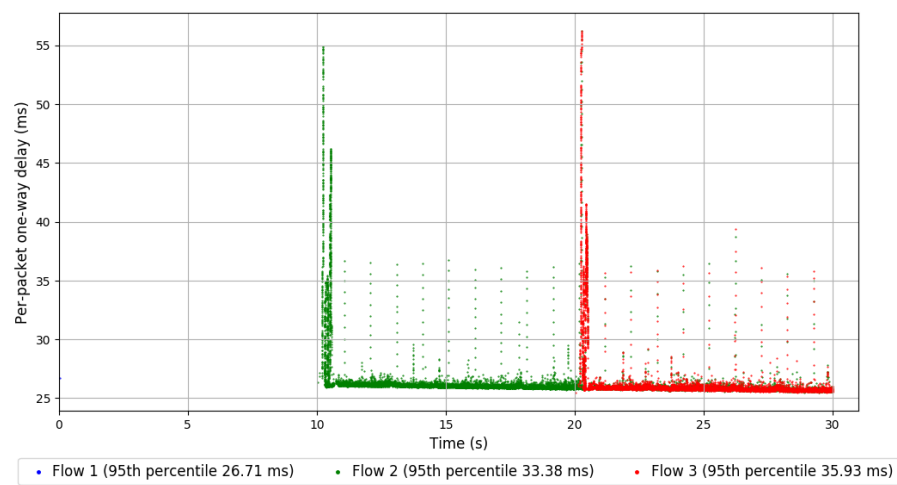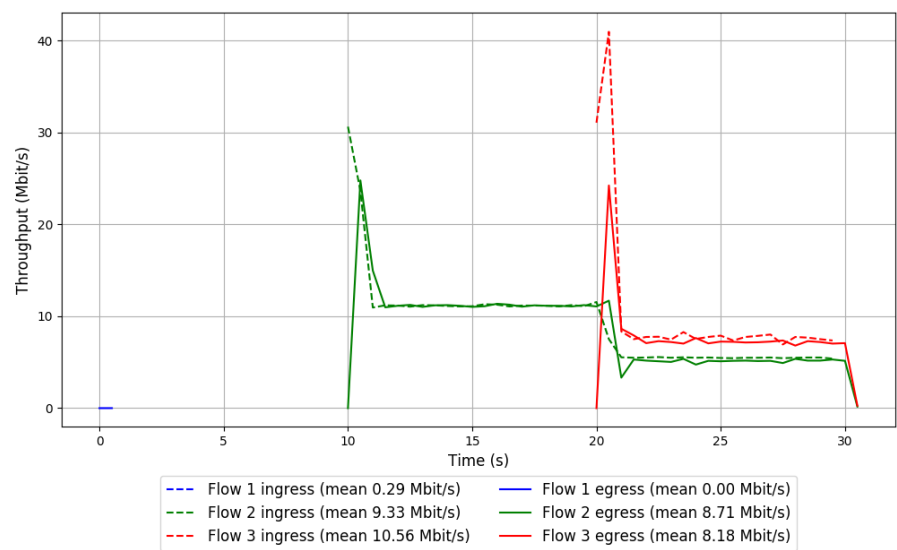
Run 3: Report of TaoVA-100x — Data Link
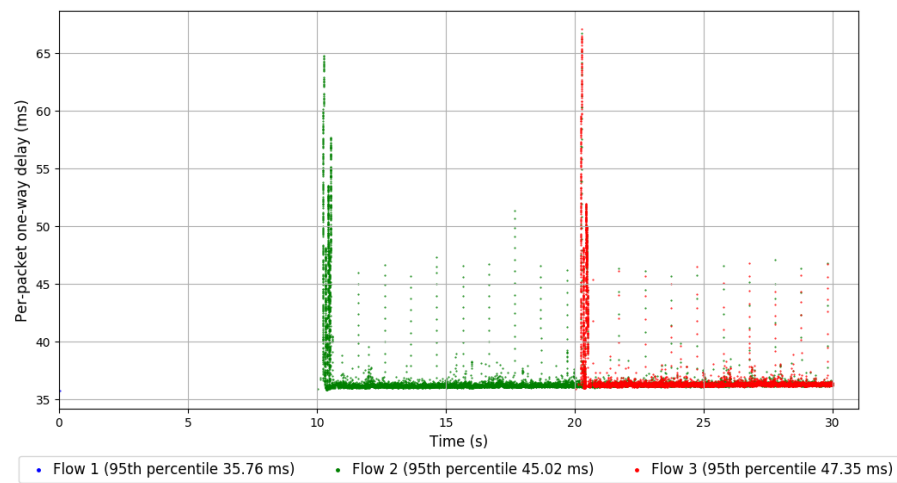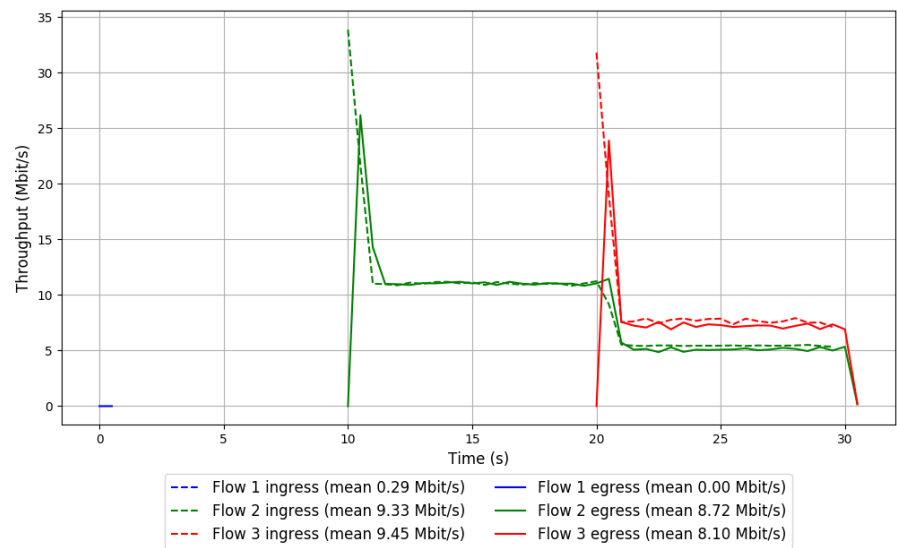
```
Run 4: Statistics of TaoVA-100x

Start at: 2018-09-25 09:47:21
End at: 2018-09-25 09:47:51
Local clock offset: 2.863 ms
Remote clock offset: -21.629 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.55 Mbit/s
95th percentile per-packet one-way delay: 35.349 ms
Loss rate: 10.33%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 28.725 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 9.10 Mbit/s
95th percentile per-packet one-way delay: 36.038 ms
Loss rate: 9.93%
-- Flow 3:
Average throughput: 7.47 Mbit/s
95th percentile per-packet one-way delay: 32.563 ms
Loss rate: 11.27%
```

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

Flow 1 ingress (mean 0.29 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 10.11 Mbit/s) --- Flow 2 egress (mean 9.10 Mbit/s)
Flow 3 ingress (mean 8.42 Mbit/s) --- Flow 3 egress (mean 7.47 Mbit/s)

Flow 1 (95th percentile 28.73 ms)   Flow 2 (95th percentile 36.04 ms)   Flow 3 (95th percentile 32.56 ms)

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

Start at: 2018-09-25 10:11:36
End at: 2018-09-25 10:12:06
Local clock offset: 4.599 ms
Remote clock offset: -32.851 ms


# Below is generated by plot.py at 2018-09-25 10:25:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.52 Mbit/s
95th percentile per-packet one-way delay: 34.584 ms
Loss rate: 12.36%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 26.711 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 8.71 Mbit/s
95th percentile per-packet one-way delay: 33.381 ms
Loss rate: 6.61%
-- Flow 3:
Average throughput: 8.18 Mbit/s
95th percentile per-packet one-way delay: 35.928 ms
Loss rate: 22.53%
```
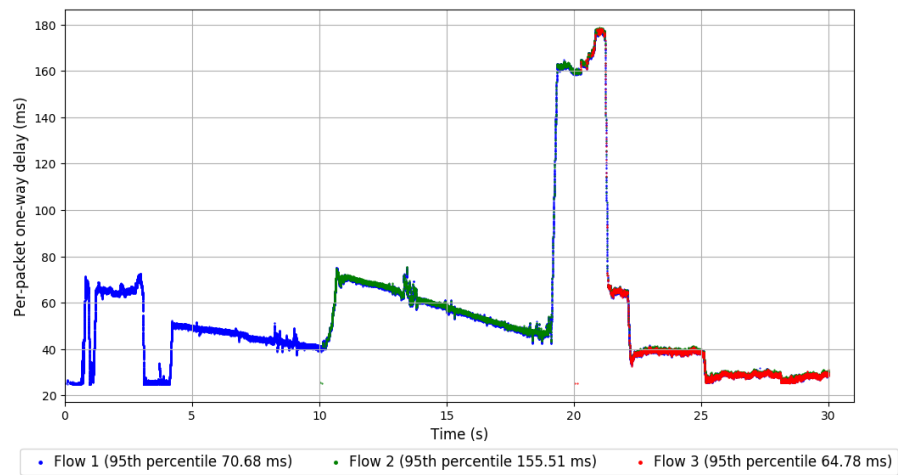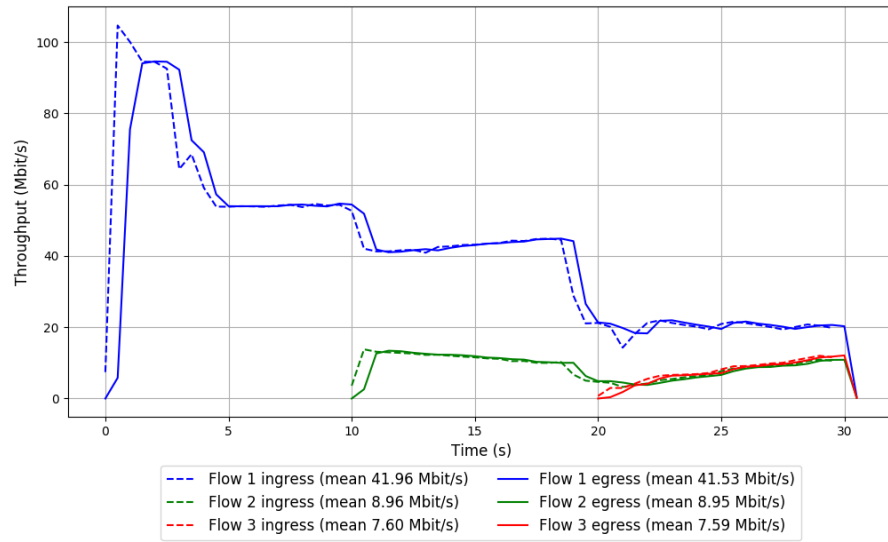
Run 5: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.29 Mbit/s) --- Flow 1 egress (mean 0.00 Mbit/s)
Flow 2 ingress (mean 9.33 Mbit/s) --- Flow 2 egress (mean 8.71 Mbit/s)
Flow 3 ingress (mean 10.56 Mbit/s) --- Flow 3 egress (mean 8.18 Mbit/s)

Flow 1 (95th percentile 26.71 ms)   Flow 2 (95th percentile 33.38 ms)   Flow 3 (95th percentile 35.93 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-25 08:17:50
End at: 2018-09-25 08:18:20
Local clock offset: 3.738 ms
Remote clock offset: 62.122 ms


# Below is generated by plot.py at 2018-09-25 10:26:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.30 Mbit/s
95th percentile per-packet one-way delay: 50.509 ms
Loss rate: 1.25%
-- Flow 1:
Average throughput: 39.62 Mbit/s
95th percentile per-packet one-way delay: 49.911 ms
Loss rate: 1.34%
-- Flow 2:
Average throughput: 20.39 Mbit/s
95th percentile per-packet one-way delay: 48.809 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 42.39 Mbit/s
95th percentile per-packet one-way delay: 52.394 ms
Loss rate: 1.49%
```

Run 1: Report of TCP Vegas — Data Link
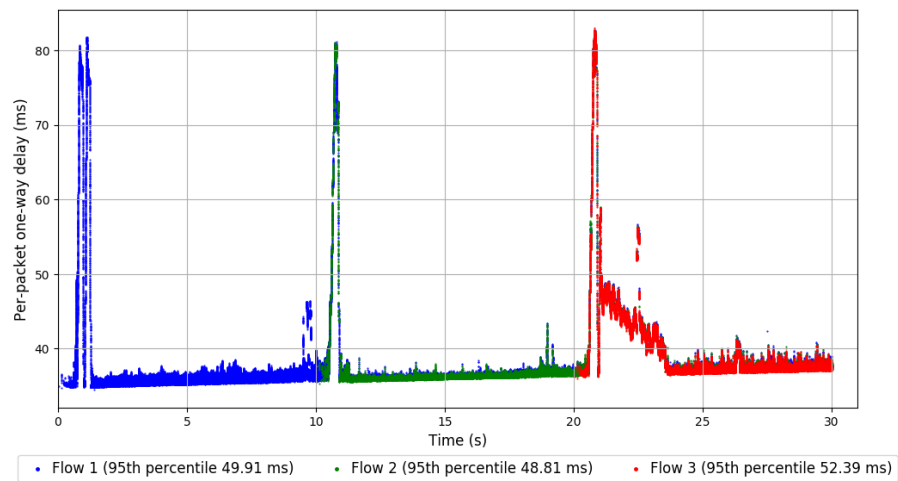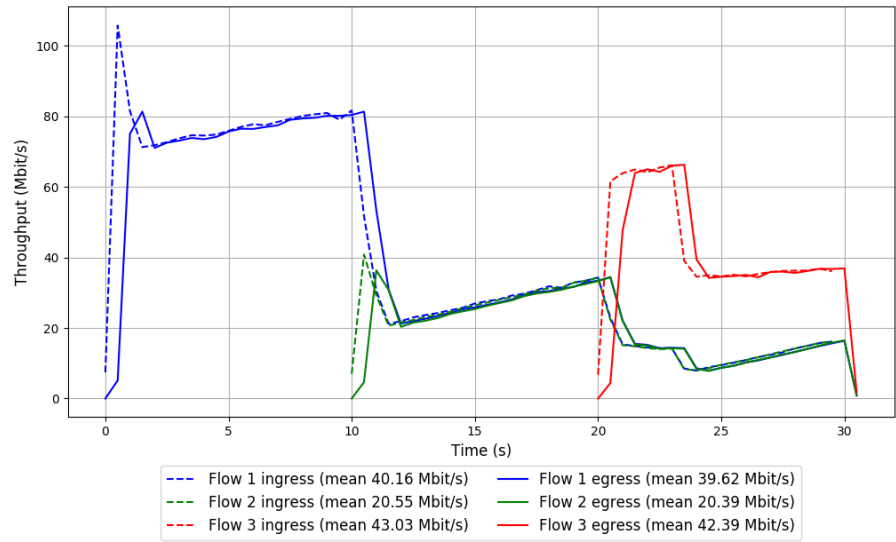
```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-25 08:46:16
End at: 2018-09-25 08:46:46
Local clock offset: 2.245 ms
Remote clock offset: -4.618 ms


# Below is generated by plot.py at 2018-09-25 10:26:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 50.02 Mbit/s
95th percentile per-packet one-way delay: 70.911 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 41.53 Mbit/s
95th percentile per-packet one-way delay: 70.680 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 8.95 Mbit/s
95th percentile per-packet one-way delay: 155.506 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 7.59 Mbit/s
95th percentile per-packet one-way delay: 64.784 ms
Loss rate: 0.21%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 41.96 Mbit/s) --- Flow 1 egress (mean 41.53 Mbit/s)
Flow 2 ingress (mean 8.96 Mbit/s) --- Flow 2 egress (mean 8.95 Mbit/s)
Flow 3 ingress (mean 7.60 Mbit/s) --- Flow 3 egress (mean 7.59 Mbit/s)

Flow 1 (95th percentile 70.68 ms)　Flow 2 (95th percentile 155.51 ms)　Flow 3 (95th percentile 64.78 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-25 09:10:28
End at: 2018-09-25 09:10:58
Local clock offset: 3.237 ms
Remote clock offset: -12.622 ms


# Below is generated by plot.py at 2018-09-25 10:26:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.93 Mbit/s
95th percentile per-packet one-way delay: 190.686 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 30.90 Mbit/s
95th percentile per-packet one-way delay: 192.655 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 7.94 Mbit/s
95th percentile per-packet one-way delay: 166.333 ms
Loss rate: 0.16%
-- Flow 3:
Average throughput: 8.23 Mbit/s
95th percentile per-packet one-way delay: 77.855 ms
Loss rate: 0.25%
```

# Run 3: Report of TCP Vegas — Data Link
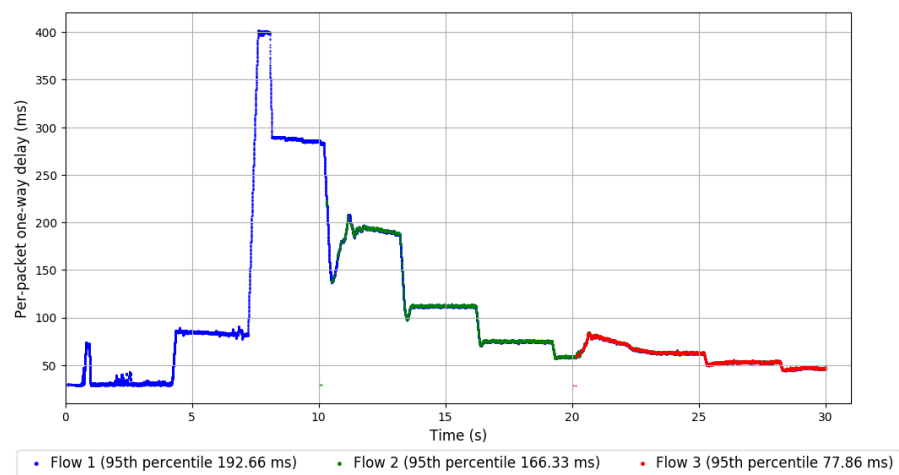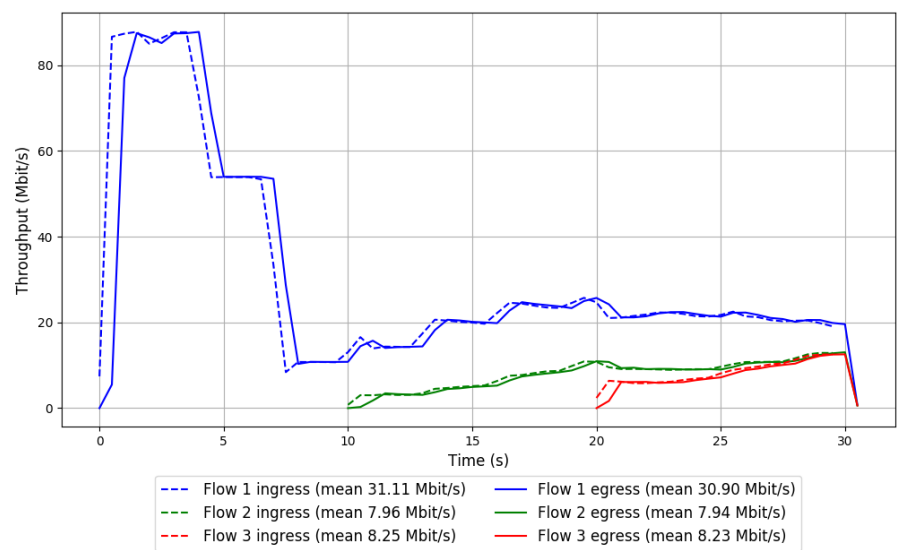
```
Run 4: Statistics of TCP Vegas

Start at: 2018-09-25 09:34:42
End at: 2018-09-25 09:35:12
Local clock offset: 1.647 ms
Remote clock offset: -19.748 ms


# Below is generated by plot.py at 2018-09-25 10:26:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 64.20 Mbit/s
95th percentile per-packet one-way delay: 54.549 ms
Loss rate: 1.23%
-- Flow 1:
Average throughput: 38.98 Mbit/s
95th percentile per-packet one-way delay: 50.825 ms
Loss rate: 1.27%
-- Flow 2:
Average throughput: 18.71 Mbit/s
95th percentile per-packet one-way delay: 49.376 ms
Loss rate: 0.60%
-- Flow 3:
Average throughput: 38.34 Mbit/s
95th percentile per-packet one-way delay: 72.380 ms
Loss rate: 1.73%
```

Run 4: Report of TCP Vegas — Data Link
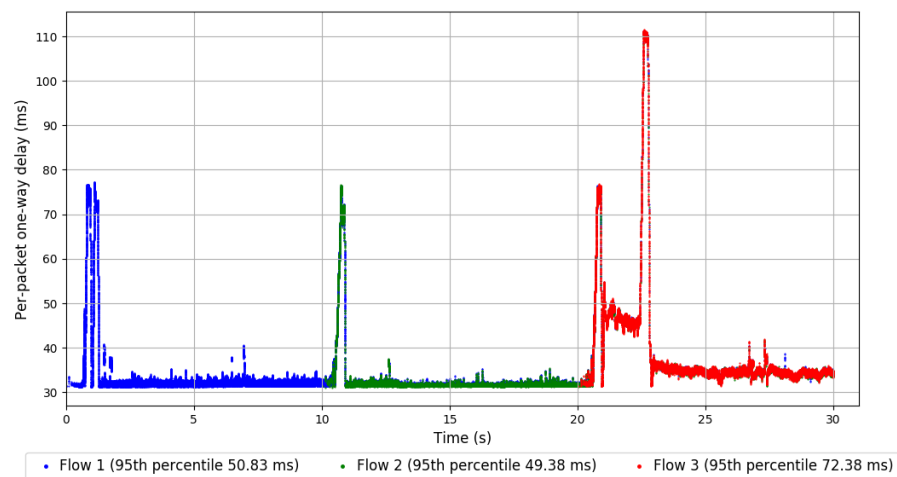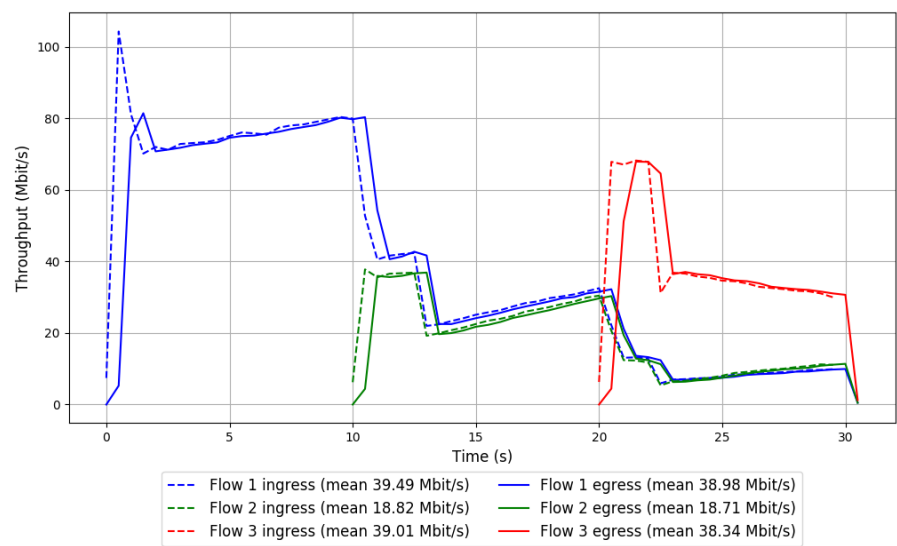
```
Run 5: Statistics of TCP Vegas

Start at: 2018-09-25 09:58:59
End at: 2018-09-25 09:59:29
Local clock offset: 3.84 ms
Remote clock offset: -25.676 ms


# Below is generated by plot.py at 2018-09-25 10:26:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 44.37 Mbit/s
95th percentile per-packet one-way delay: 80.042 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 37.21 Mbit/s
95th percentile per-packet one-way delay: 76.321 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 9.40 Mbit/s
95th percentile per-packet one-way delay: 80.148 ms
Loss rate: 0.13%
-- Flow 3:
Average throughput: 2.68 Mbit/s
95th percentile per-packet one-way delay: 216.765 ms
Loss rate: 0.54%
```

Run 5: Report of TCP Vegas — Data Link
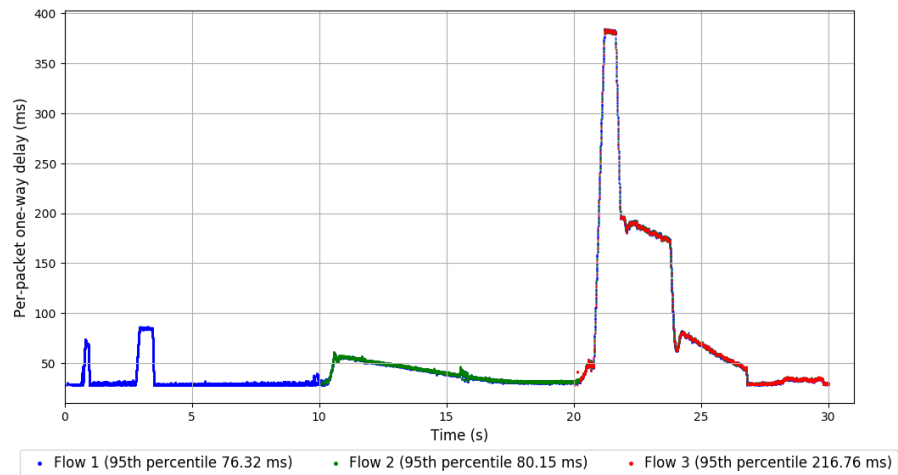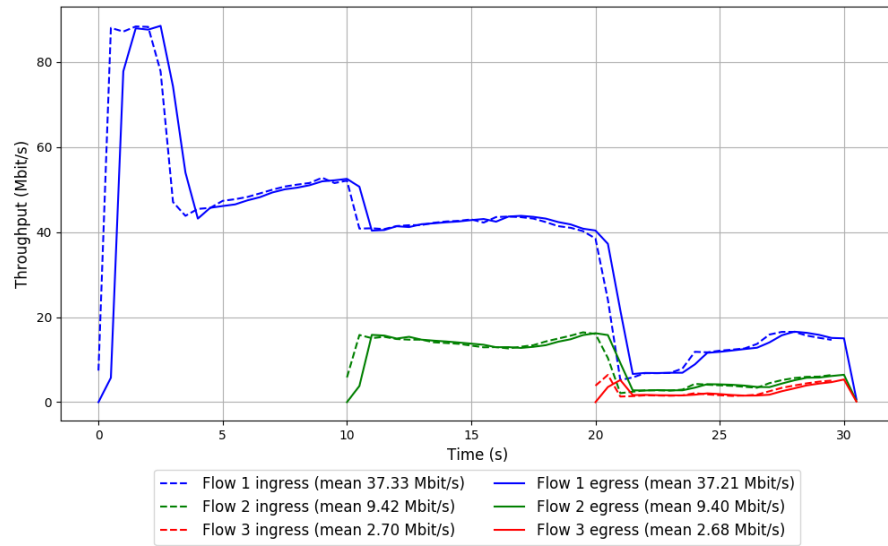
```
Run 1: Statistics of Verus

Start at: 2018-09-25 08:16:28
End at: 2018-09-25 08:16:58
Local clock offset: 4.193 ms
Remote clock offset: 77.569 ms

# Below is generated by plot.py at 2018-09-25 10:26:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.17 Mbit/s
95th percentile per-packet one-way delay: 188.466 ms
Loss rate: 14.36%
-- Flow 1:
Average throughput: 62.30 Mbit/s
95th percentile per-packet one-way delay: 187.697 ms
Loss rate: 13.03%
-- Flow 2:
Average throughput: 22.88 Mbit/s
95th percentile per-packet one-way delay: 188.971 ms
Loss rate: 18.80%
-- Flow 3:
Average throughput: 36.22 Mbit/s
95th percentile per-packet one-way delay: 189.006 ms
Loss rate: 15.25%
```
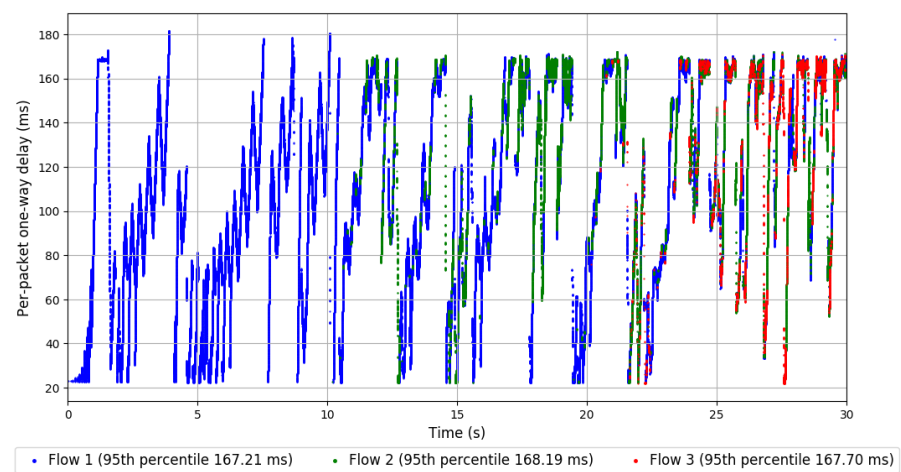
Run 1: Report of Verus — Data Link
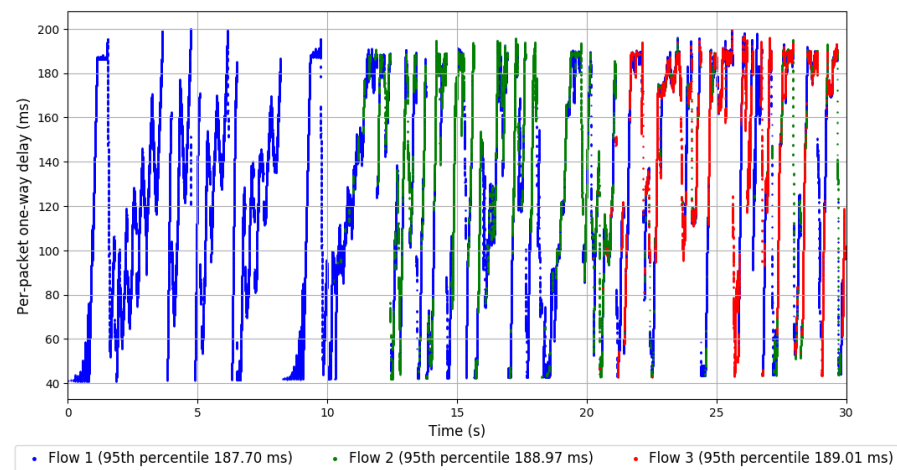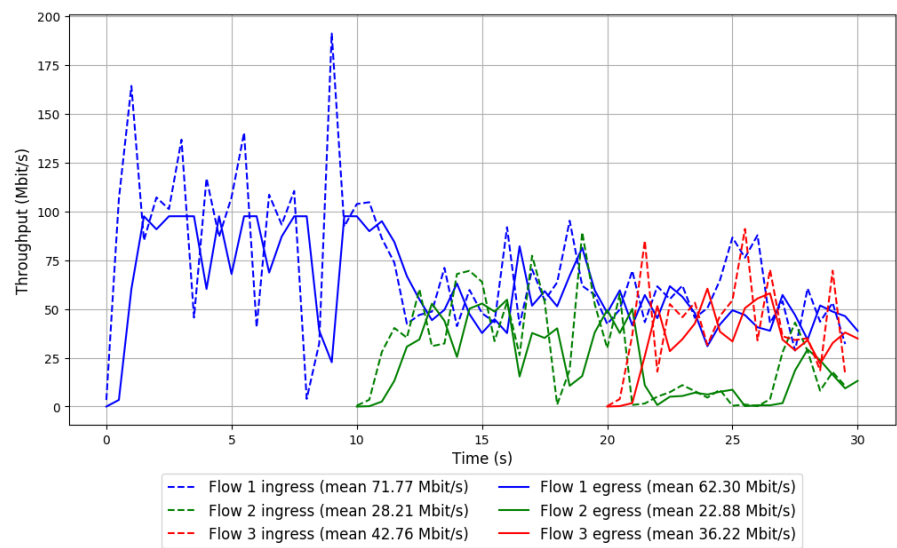
```
Run 2: Statistics of Verus

Start at: 2018-09-25 08:44:54
End at: 2018-09-25 08:45:24
Local clock offset: 1.75 ms
Remote clock offset: -1.831 ms


# Below is generated by plot.py at 2018-09-25 10:26:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.04 Mbit/s
95th percentile per-packet one-way delay: 171.693 ms
Loss rate: 10.45%
-- Flow 1:
Average throughput: 73.22 Mbit/s
95th percentile per-packet one-way delay: 170.984 ms
Loss rate: 8.25%
-- Flow 2:
Average throughput: 16.69 Mbit/s
95th percentile per-packet one-way delay: 172.152 ms
Loss rate: 11.12%
-- Flow 3:
Average throughput: 23.87 Mbit/s
95th percentile per-packet one-way delay: 172.615 ms
Loss rate: 26.33%
```

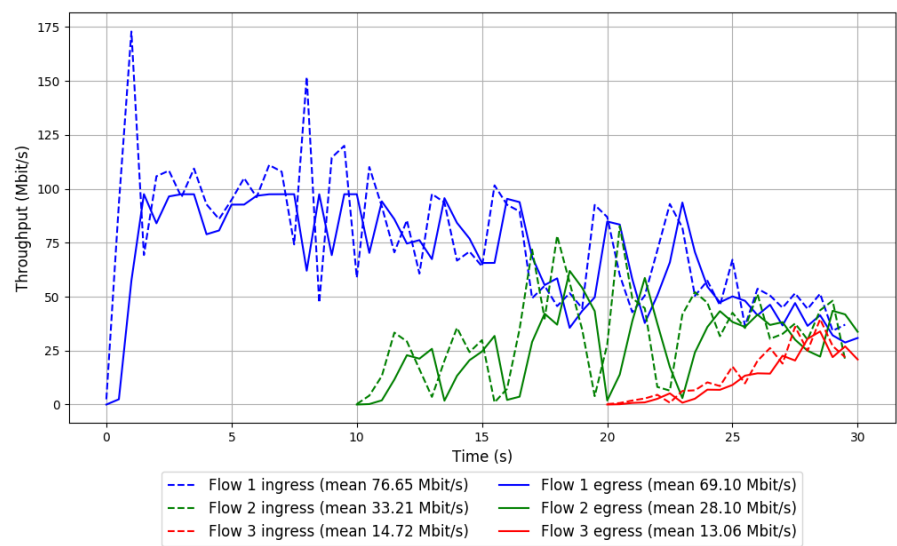Run 2: Report of Verus — Data Link
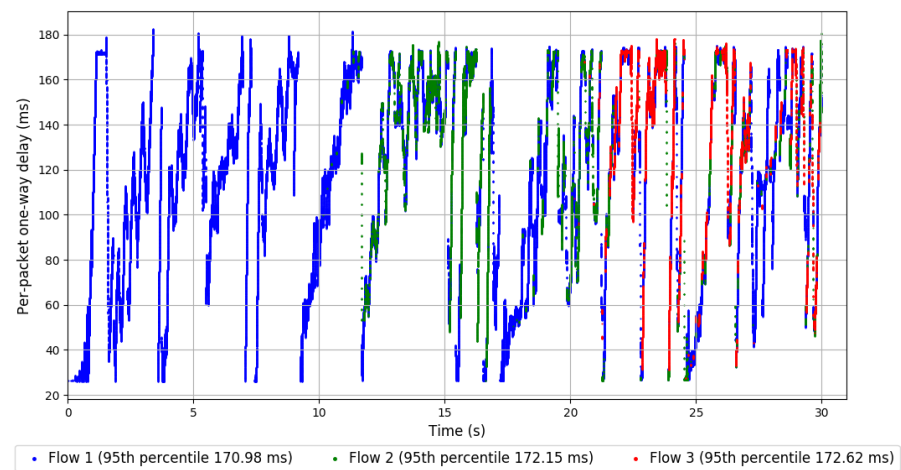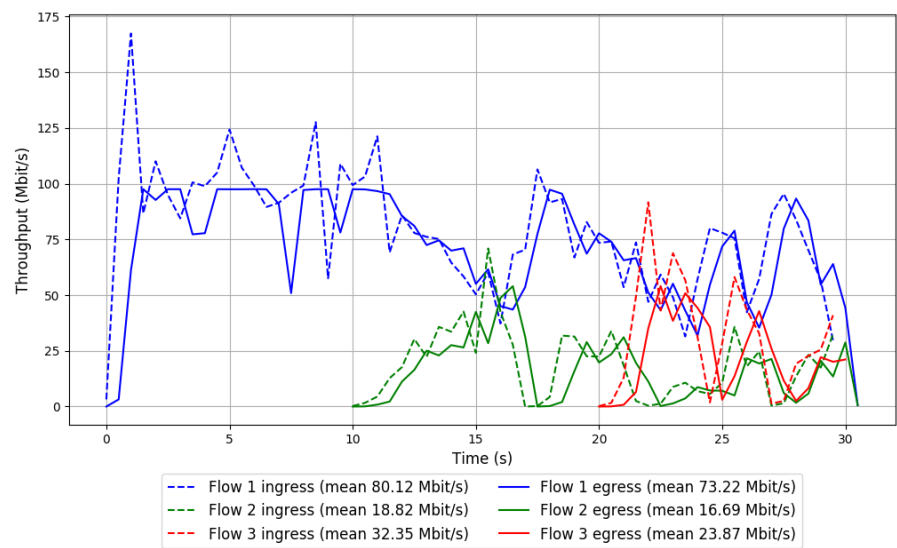
```
Run 3: Statistics of Verus

Start at: 2018-09-25 09:09:06
End at: 2018-09-25 09:09:36
Local clock offset: 3.383 ms
Remote clock offset: -19.877 ms


# Below is generated by plot.py at 2018-09-25 10:26:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.92 Mbit/s
95th percentile per-packet one-way delay: 167.939 ms
Loss rate: 10.59%
-- Flow 1:
Average throughput: 69.10 Mbit/s
95th percentile per-packet one-way delay: 167.211 ms
Loss rate: 9.41%
-- Flow 2:
Average throughput: 28.10 Mbit/s
95th percentile per-packet one-way delay: 168.189 ms
Loss rate: 14.76%
-- Flow 3:
Average throughput: 13.06 Mbit/s
95th percentile per-packet one-way delay: 167.697 ms
Loss rate: 10.45%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 76.65 Mbit/s) --- Flow 1 egress (mean 69.10 Mbit/s)
Flow 2 ingress (mean 33.21 Mbit/s) --- Flow 2 egress (mean 28.10 Mbit/s)
Flow 3 ingress (mean 14.72 Mbit/s) --- Flow 3 egress (mean 13.06 Mbit/s)

Flow 1 (95th percentile 167.21 ms)   Flow 2 (95th percentile 168.19 ms)   Flow 3 (95th percentile 167.70 ms)
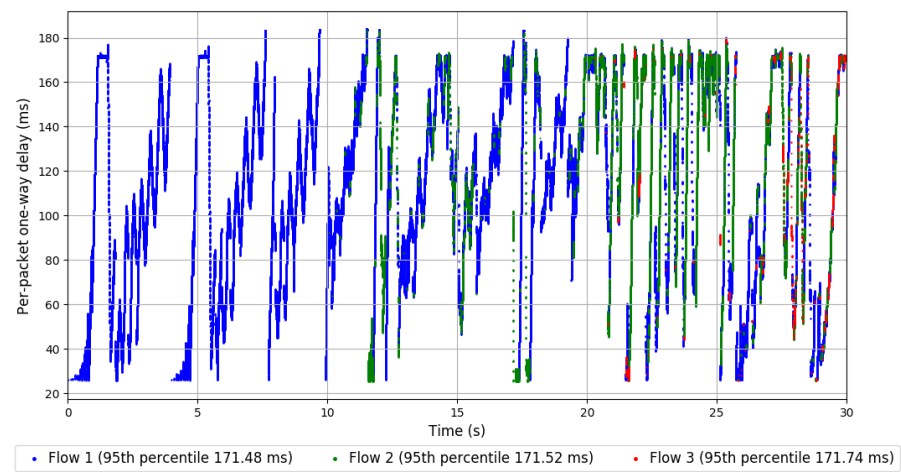
170

```
Run 4: Statistics of Verus

Start at: 2018-09-25 09:33:21
End at: 2018-09-25 09:33:51
Local clock offset: 1.486 ms
Remote clock offset: -27.417 ms


# Below is generated by plot.py at 2018-09-25 10:27:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.33 Mbit/s
95th percentile per-packet one-way delay: 168.036 ms
Loss rate: 12.55%
-- Flow 1:
Average throughput: 70.92 Mbit/s
95th percentile per-packet one-way delay: 167.185 ms
Loss rate: 10.38%
-- Flow 2:
Average throughput: 18.71 Mbit/s
95th percentile per-packet one-way delay: 168.646 ms
Loss rate: 22.30%
-- Flow 3:
Average throughput: 18.75 Mbit/s
95th percentile per-packet one-way delay: 168.516 ms
Loss rate: 14.69%
```

Run 4: Report of Verus — Data Link
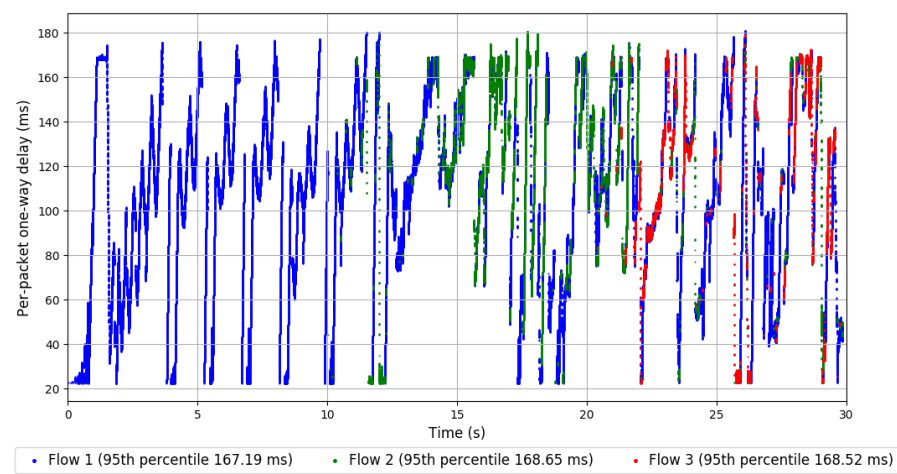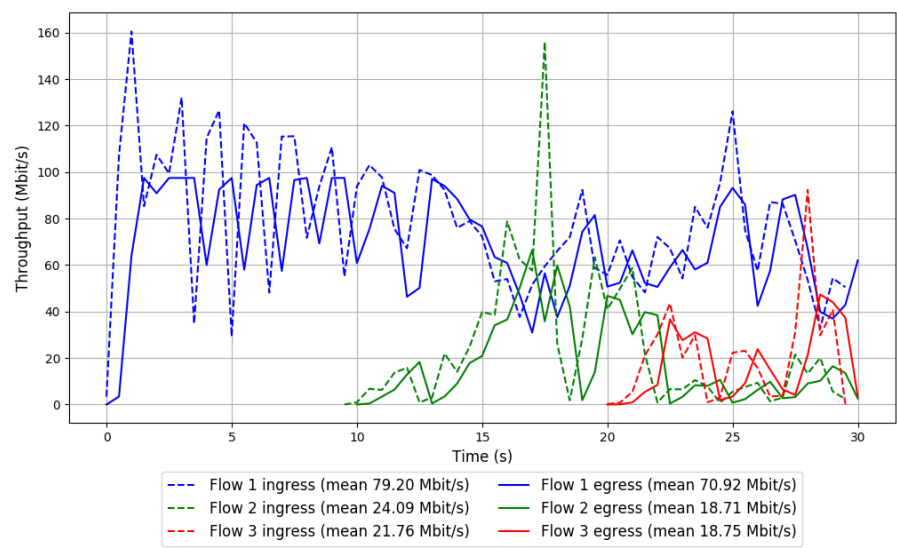
```
Run 5: Statistics of Verus

Start at: 2018-09-25 09:57:37
End at: 2018-09-25 09:58:07
Local clock offset: 3.668 ms
Remote clock offset: -27.744 ms


# Below is generated by plot.py at 2018-09-25 10:27:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.04 Mbit/s
95th percentile per-packet one-way delay: 171.507 ms
Loss rate: 16.02%
-- Flow 1:
Average throughput: 70.53 Mbit/s
95th percentile per-packet one-way delay: 171.480 ms
Loss rate: 13.78%
-- Flow 2:
Average throughput: 27.69 Mbit/s
95th percentile per-packet one-way delay: 171.523 ms
Loss rate: 23.25%
-- Flow 3:
Average throughput: 4.19 Mbit/s
95th percentile per-packet one-way delay: 171.739 ms
Loss rate: 21.63%
```

Run 5: Report of Verus — Data Link
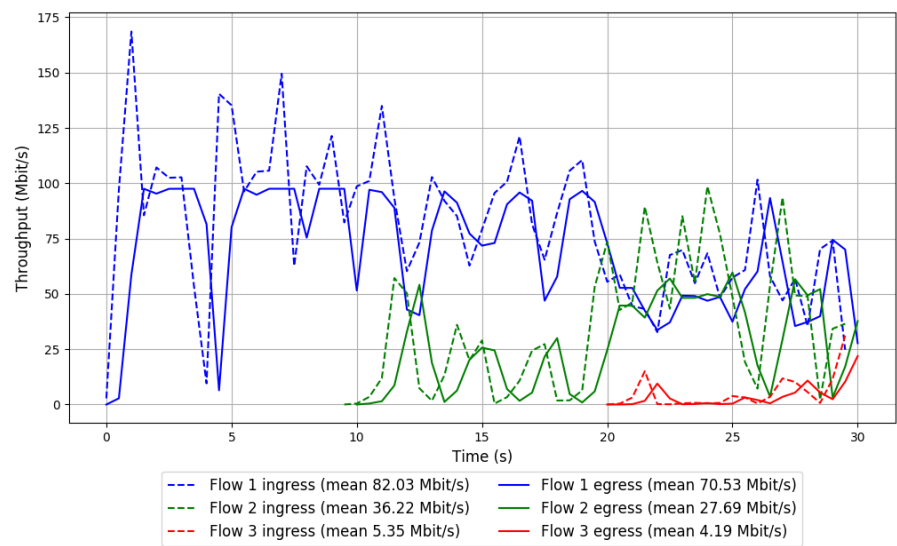
```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-25 08:38:24
End at: 2018-09-25 08:38:54
Local clock offset: 0.315 ms
Remote clock offset: 9.509 ms


# Below is generated by plot.py at 2018-09-25 10:27:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.69 Mbit/s
95th percentile per-packet one-way delay: 83.875 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 66.18 Mbit/s
95th percentile per-packet one-way delay: 82.252 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 15.17 Mbit/s
95th percentile per-packet one-way delay: 88.097 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 7.34 Mbit/s
95th percentile per-packet one-way delay: 83.961 ms
Loss rate: 0.00%
```
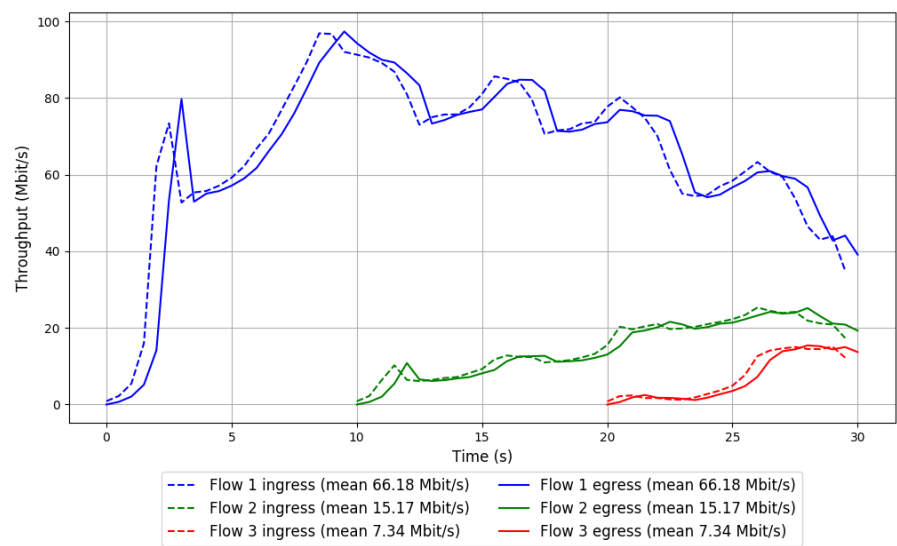
## Run 1: Report of PCC-Vivace — Data Link
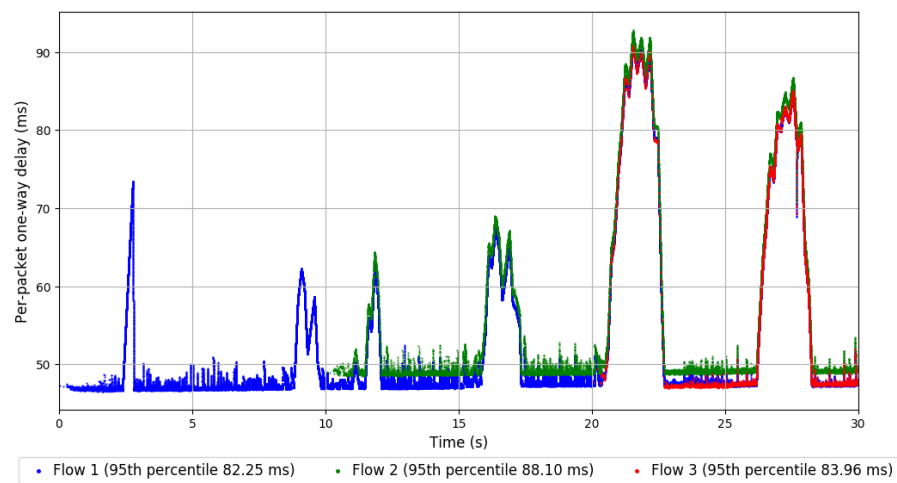
```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-25 09:02:44
End at: 2018-09-25 09:03:14
Local clock offset: 3.371 ms
Remote clock offset: -27.484 ms


# Below is generated by plot.py at 2018-09-25 10:27:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.62 Mbit/s
95th percentile per-packet one-way delay: 42.976 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 61.10 Mbit/s
95th percentile per-packet one-way delay: 44.622 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 30.22 Mbit/s
95th percentile per-packet one-way delay: 37.705 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 10.34 Mbit/s
95th percentile per-packet one-way delay: 27.509 ms
Loss rate: 0.00%
```

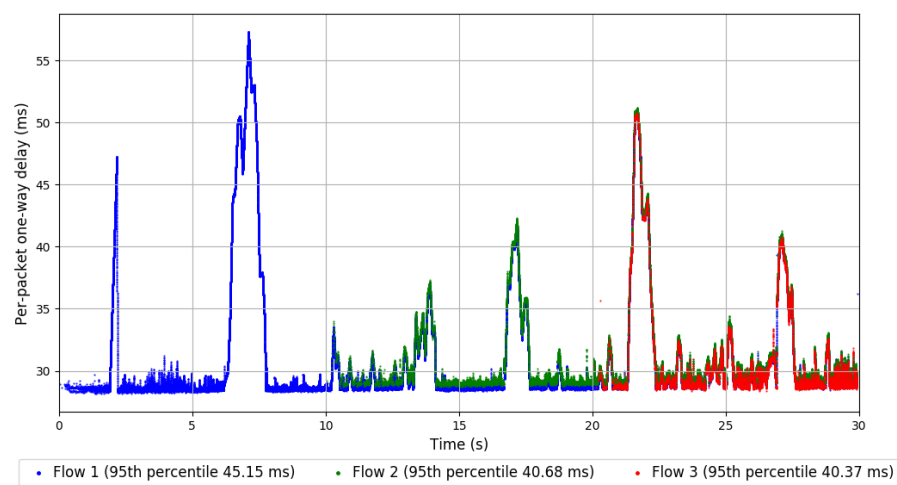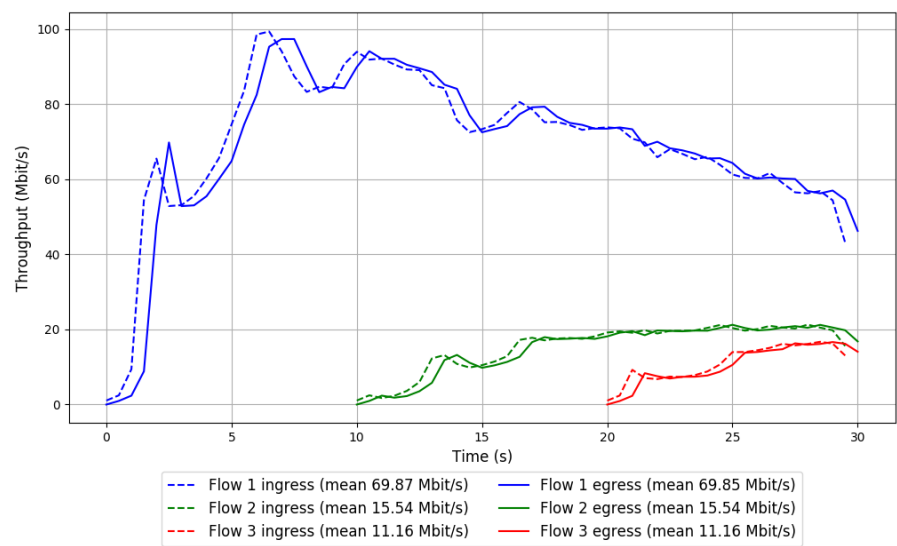Run 2: Report of PCC-Vivace — Data Link
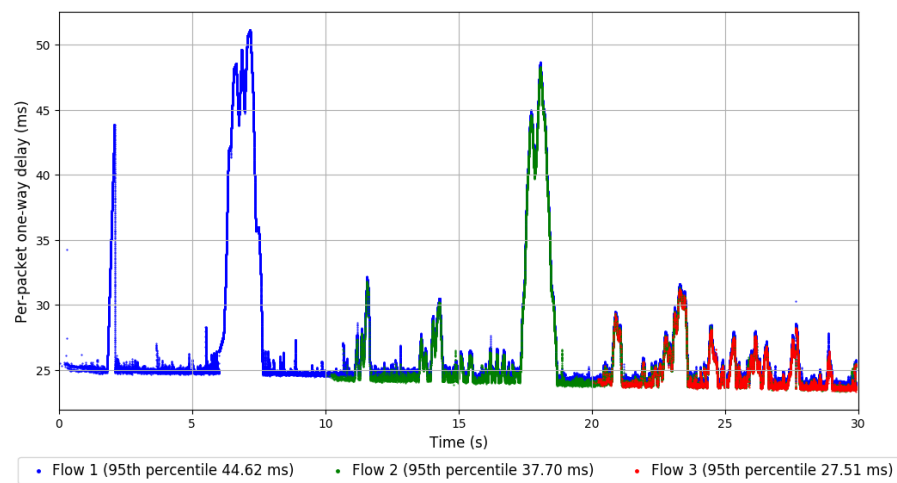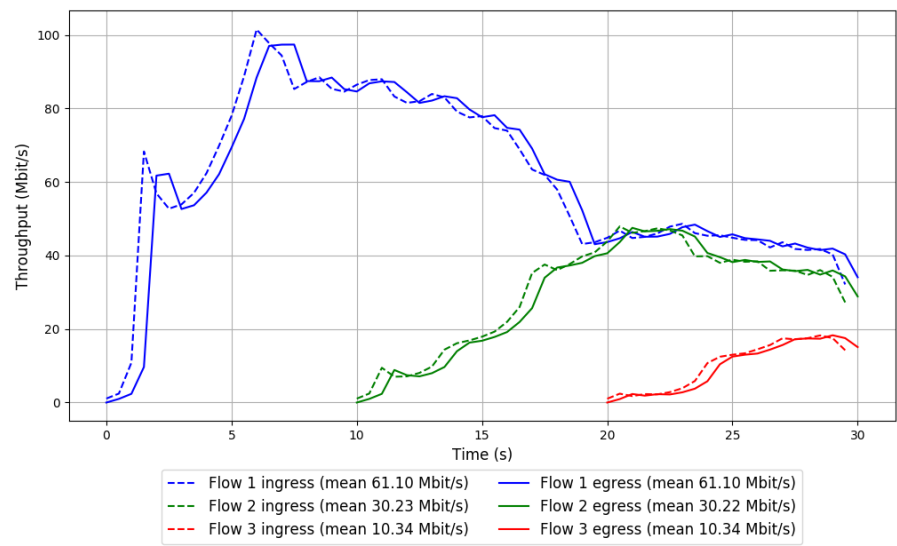
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-25 09:26:59
End at: 2018-09-25 09:27:29
Local clock offset: 1.882 ms
Remote clock offset: -16.713 ms


# Below is generated by plot.py at 2018-09-25 10:27:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.87 Mbit/s
95th percentile per-packet one-way delay: 44.041 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 69.85 Mbit/s
95th percentile per-packet one-way delay: 45.149 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 15.54 Mbit/s
95th percentile per-packet one-way delay: 40.678 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.16 Mbit/s
95th percentile per-packet one-way delay: 40.365 ms
Loss rate: 0.00%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 69.87 Mbit/s) --- Flow 1 egress (mean 69.85 Mbit/s)
Flow 2 ingress (mean 15.54 Mbit/s) --- Flow 2 egress (mean 15.54 Mbit/s)
Flow 3 ingress (mean 11.16 Mbit/s) --- Flow 3 egress (mean 11.16 Mbit/s)

Flow 1 (95th percentile 45.15 ms)   Flow 2 (95th percentile 40.68 ms)   Flow 3 (95th percentile 40.37 ms)
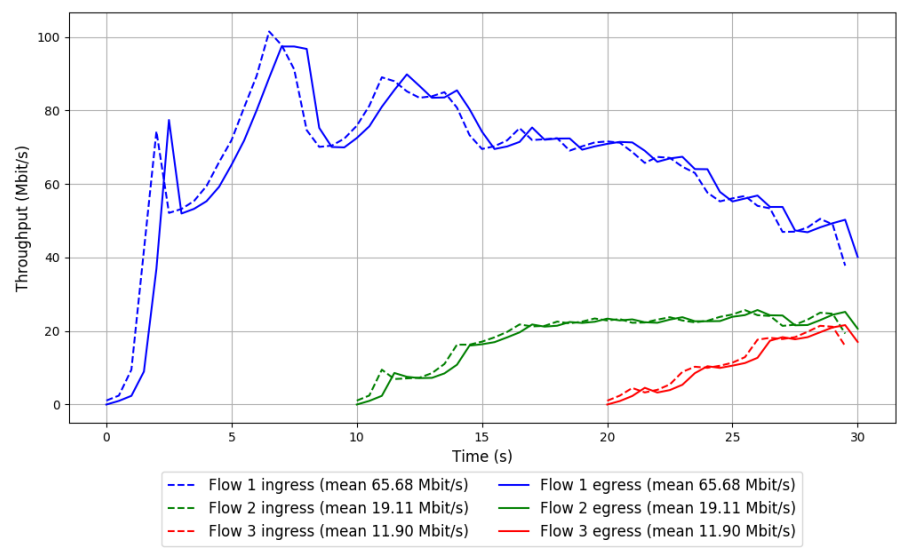
```
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-25 09:51:15
End at: 2018-09-25 09:51:45
Local clock offset: 3.458 ms
Remote clock offset: -24.977 ms


# Below is generated by plot.py at 2018-09-25 10:27:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.32 Mbit/s
95th percentile per-packet one-way delay: 41.153 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 65.68 Mbit/s
95th percentile per-packet one-way delay: 43.807 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 19.11 Mbit/s
95th percentile per-packet one-way delay: 32.670 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.90 Mbit/s
95th percentile per-packet one-way delay: 34.375 ms
Loss rate: 0.00%
```

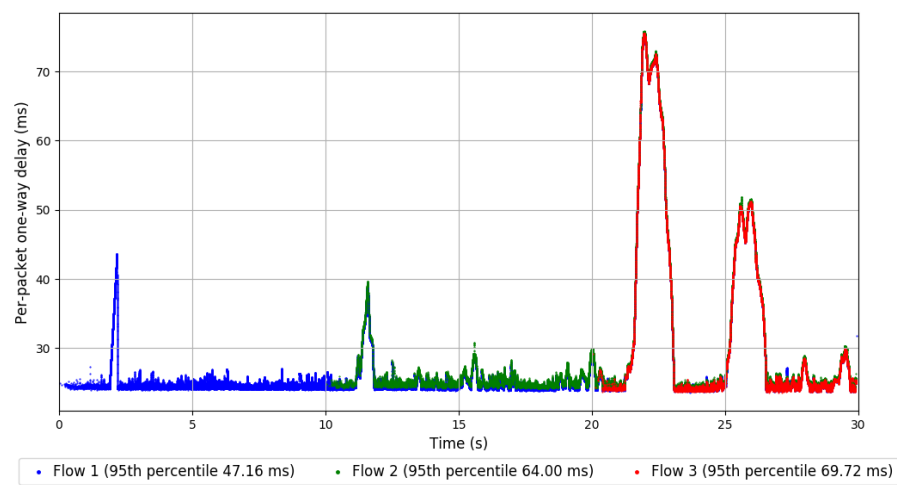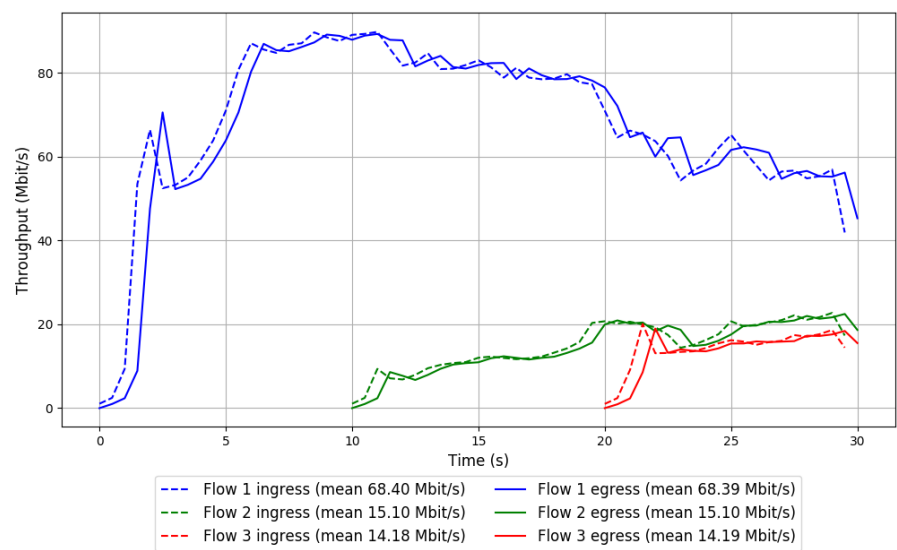## Run 4: Report of PCC-Vivace — Data Link
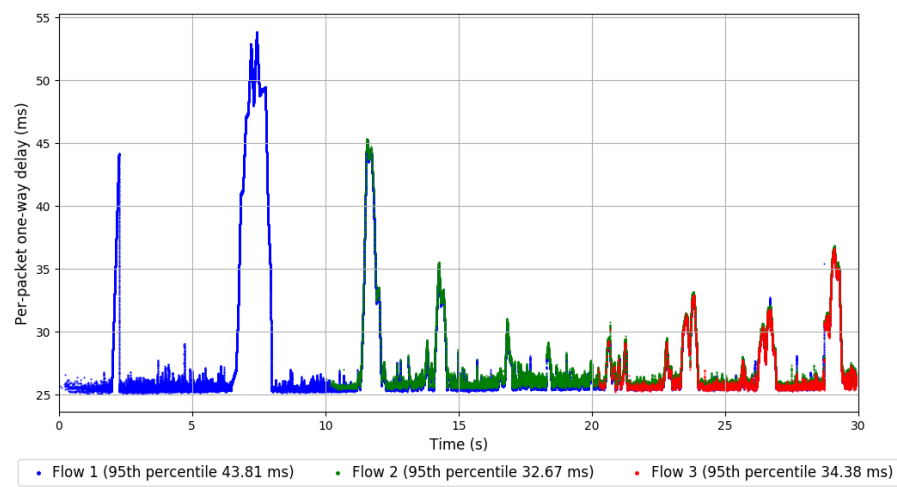
```
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-25 10:15:28
End at: 2018-09-25 10:15:58
Local clock offset: 5.742 ms
Remote clock offset: -28.038 ms


# Below is generated by plot.py at 2018-09-25 10:27:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.11 Mbit/s
95th percentile per-packet one-way delay: 50.173 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 68.39 Mbit/s
95th percentile per-packet one-way delay: 47.163 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 15.10 Mbit/s
95th percentile per-packet one-way delay: 64.003 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 14.19 Mbit/s
95th percentile per-packet one-way delay: 69.723 ms
Loss rate: 0.00%
```

Run 5: Report of PCC-Vivace — Data Link

- Flow 1 ingress (mean 68.40 Mbit/s) — Flow 1 egress (mean 68.39 Mbit/s)
- Flow 2 ingress (mean 15.10 Mbit/s) — Flow 2 egress (mean 15.10 Mbit/s)
- Flow 3 ingress (mean 14.18 Mbit/s) — Flow 3 egress (mean 14.19 Mbit/s)

- Flow 1 (95th percentile 47.16 ms)
- Flow 2 (95th percentile 64.00 ms)
- Flow 3 (95th percentile 69.72 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-09-25 08:29:20
End at: 2018-09-25 08:29:50
Local clock offset: 1.294 ms
Remote clock offset: 21.08 ms


# Below is generated by plot.py at 2018-09-25 10:27:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.63 Mbit/s
95th percentile per-packet one-way delay: 50.585 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 49.306 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 51.452 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 50.774 ms
Loss rate: 0.00%
```
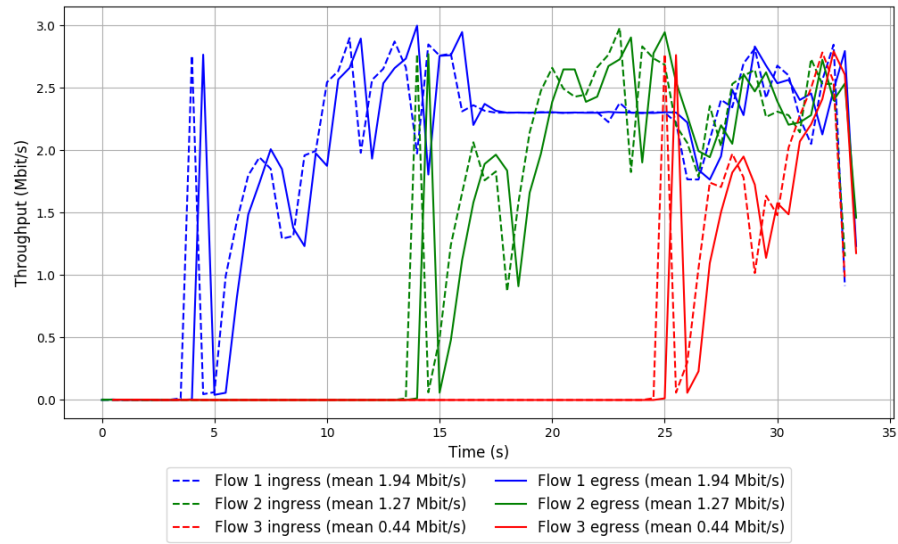
Run 1: Report of WebRTC media — Data Link

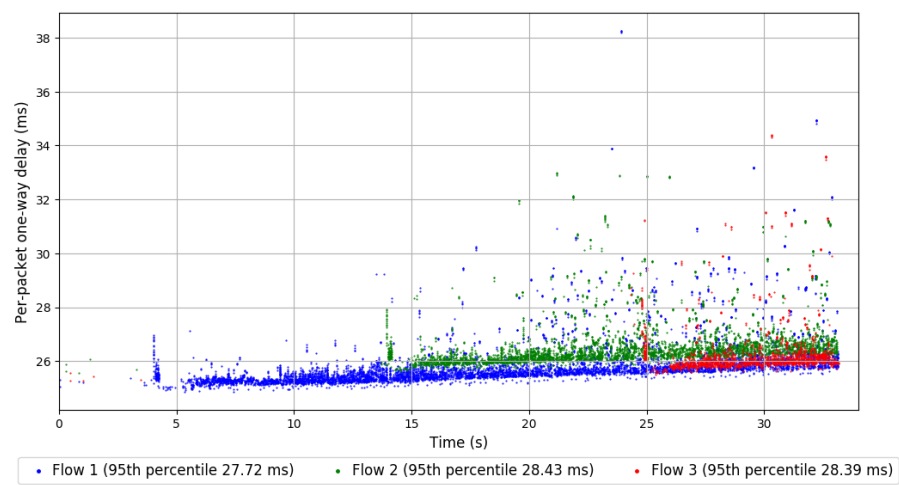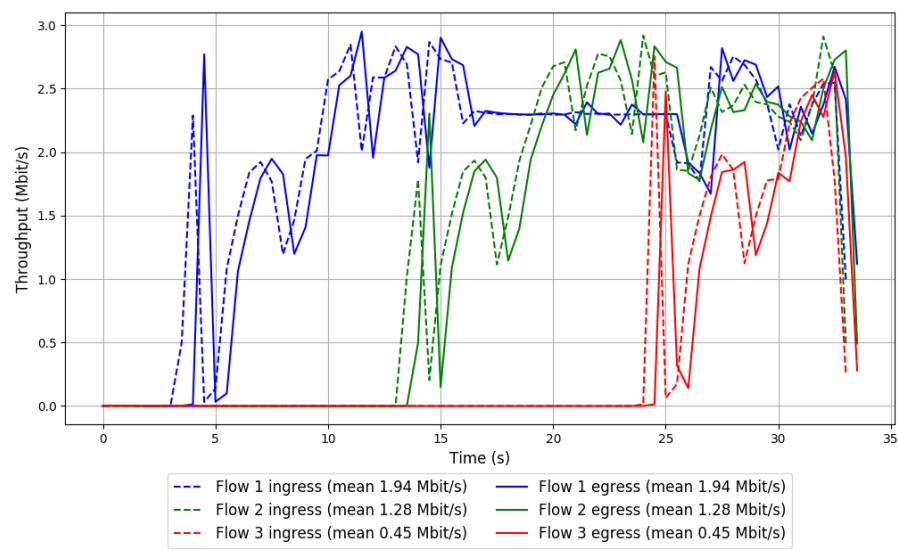Run 1: Report of WebRTC media — Data Link
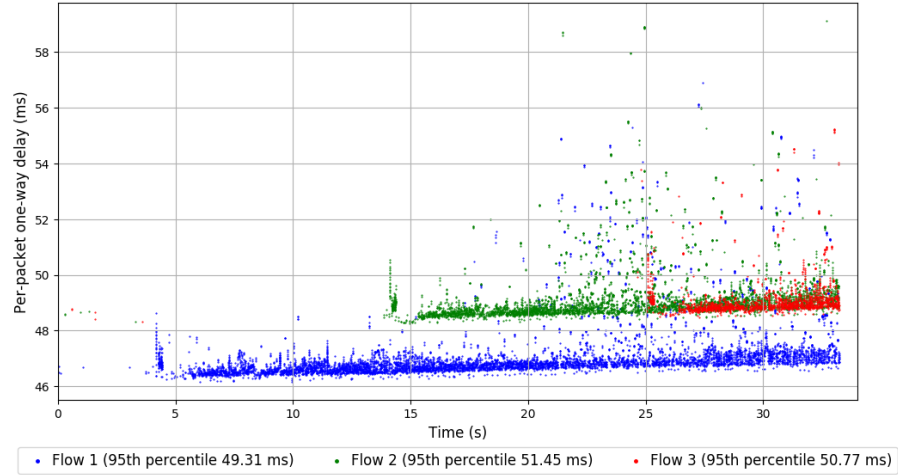
```
Run 2: Statistics of WebRTC media

Start at: 2018-09-25 08:53:47
End at: 2018-09-25 08:54:17
Local clock offset: 3.25 ms
Remote clock offset: -15.03 ms


# Below is generated by plot.py at 2018-09-25 10:27:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 28.225 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 27.719 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 28.430 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 28.393 ms
Loss rate: 0.00%
```

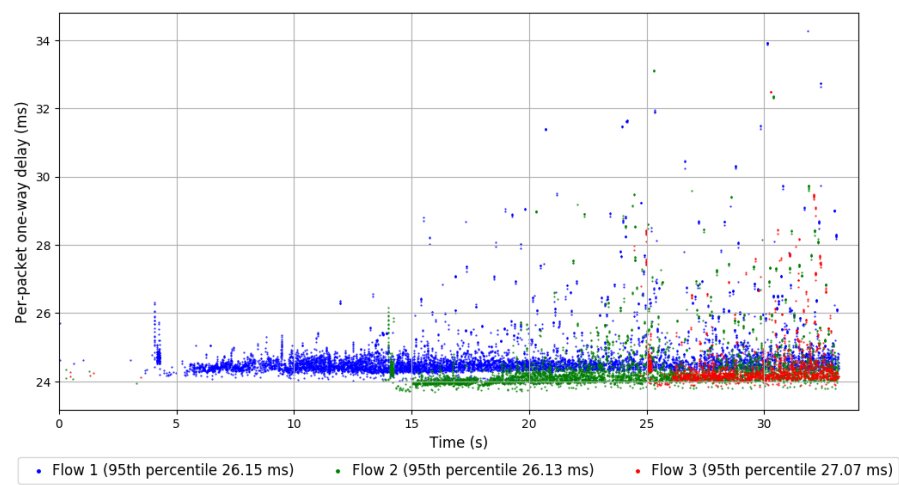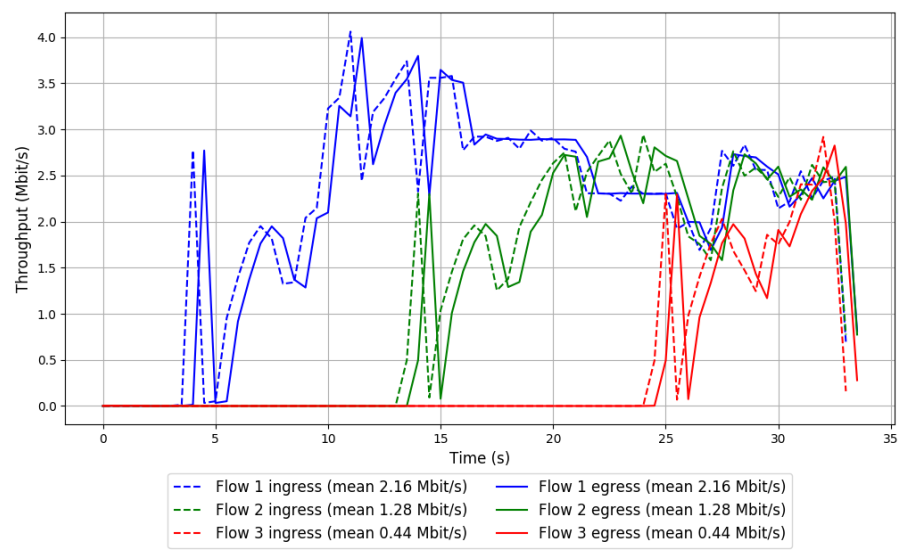Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-09-25 09:18:00
End at: 2018-09-25 09:18:30
Local clock offset: 2.524 ms
Remote clock offset: -16.797 ms


# Below is generated by plot.py at 2018-09-25 10:27:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 26.275 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 26.148 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 26.130 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 27.065 ms
Loss rate: 0.00%
```

Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-09-25 09:42:14
End at: 2018-09-25 09:42:44
Local clock offset: 2.042 ms
Remote clock offset: -24.753 ms


# Below is generated by plot.py at 2018-09-25 10:27:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 26.835 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 26.962 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 26.749 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 26.668 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link
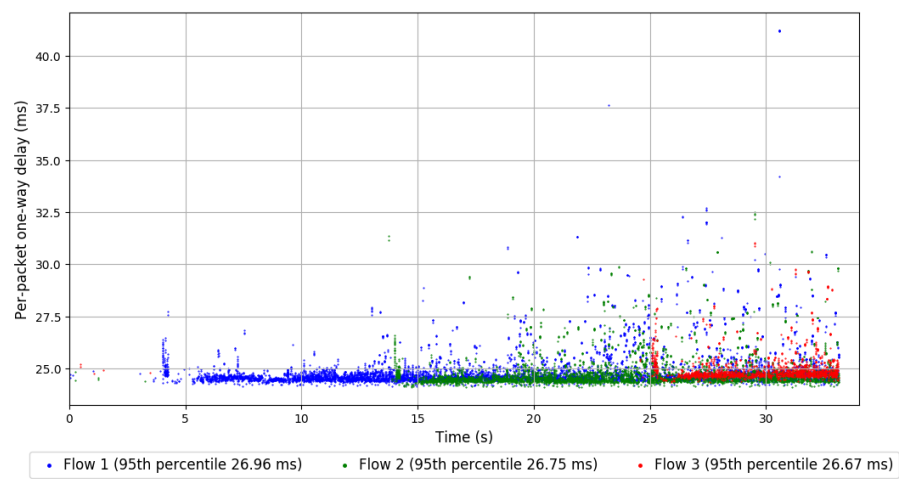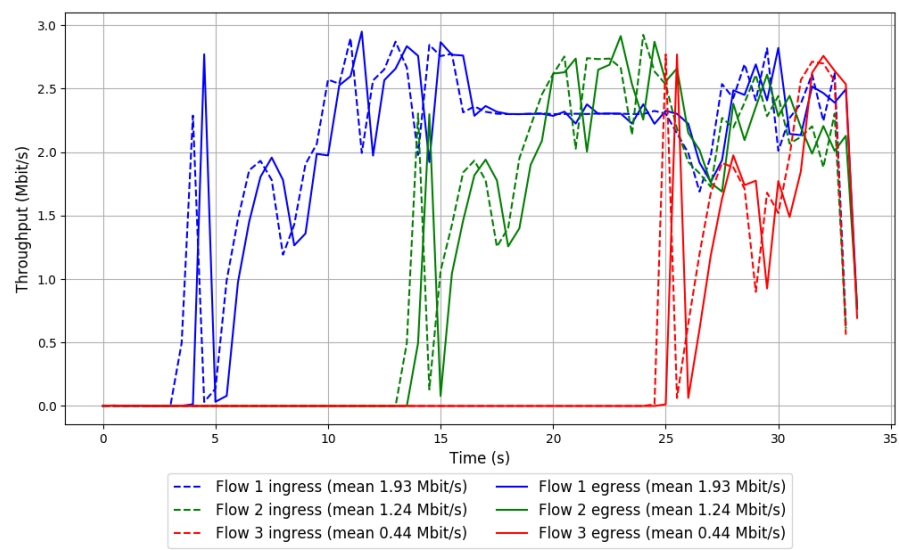
```
Run 5: Statistics of WebRTC media

Start at: 2018-09-25 10:06:31
End at: 2018-09-25 10:07:01
Local clock offset: 3.874 ms
Remote clock offset: -34.888 ms


# Below is generated by plot.py at 2018-09-25 10:27:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 25.506 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 25.136 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 25.808 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 25.628 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link