Pantheon Report

Generated at 2018-06-18 15:48:12 (UTC).

Data path: AWS India 1 Ethernet (*local*) →India ppp0 ppp0 (*remote*).

Repeated the test of 16 congestion control schemes 3 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
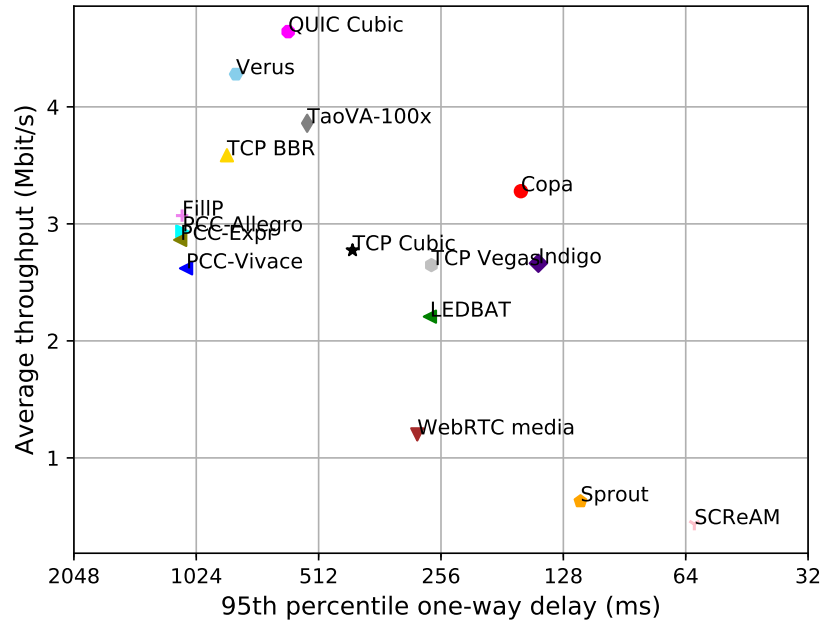
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

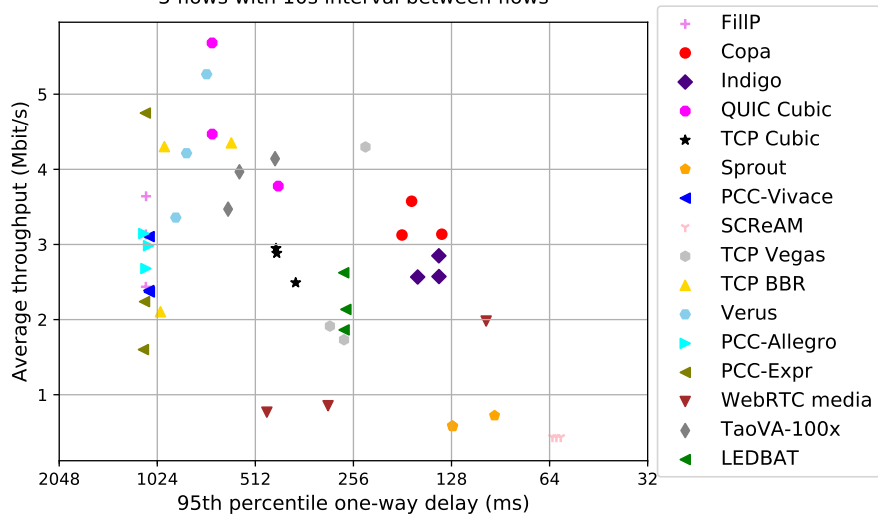NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ 9141c5f9450c85ea5ea2ea755a8e946998d3abf3
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/genericCC @ c7966e494a929986eaa5a9c169a7f381fe1bbbe5
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
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
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS India 1 to India ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from AWS India 1 to India ppp0, 3 runs of 30s each per scheme
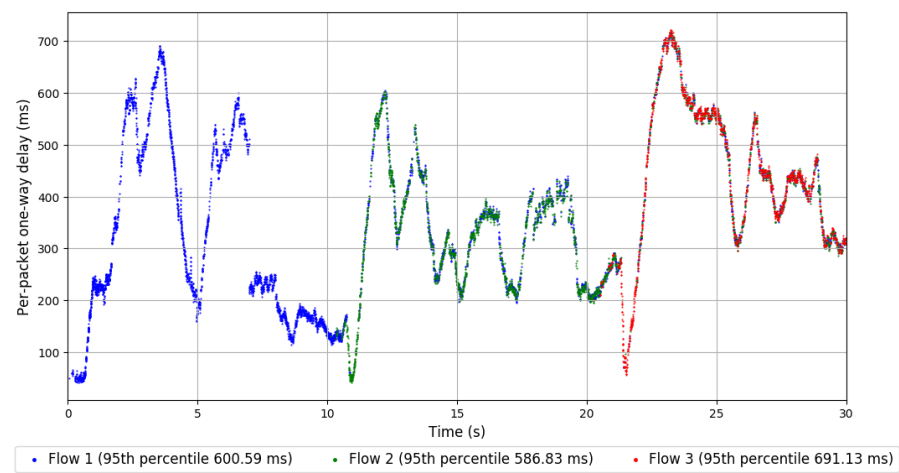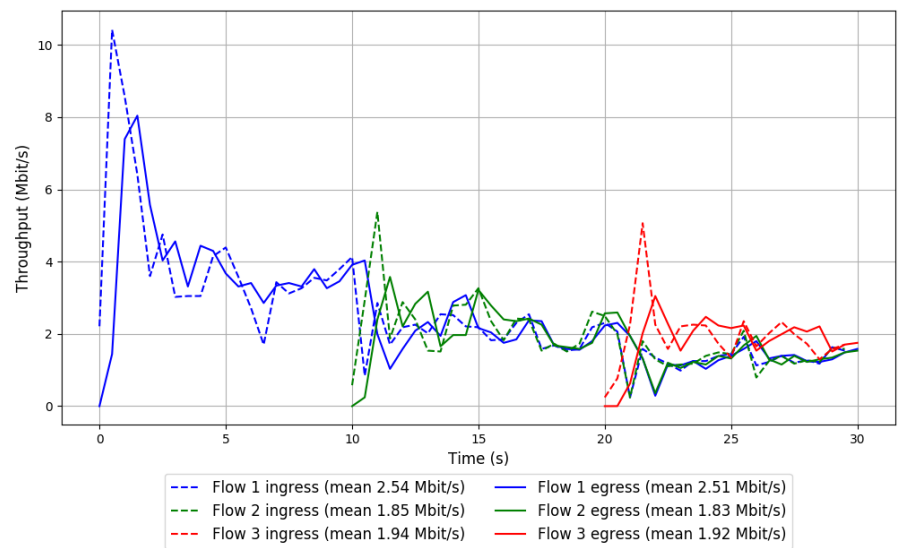3 flows with 10s interval between flows

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	2.09	1.76	1.03	750.67	883.69	752.72	2.05	4.62	6.24
Copa	3	1.95	1.45	1.10	147.15	171.69	203.60	0.19	0.17	0.23
TCP Cubic	3	1.75	1.20	0.73	374.46	489.43	530.97	0.85	1.30	2.95
FillP	3	2.20	1.08	0.66	1108.98	1107.18	1120.54	67.75	46.90	64.25
Indigo	3	1.52	1.23	1.03	127.71	149.68	224.41	0.06	0.19	0.38
LEDBAT	3	1.38	0.81	0.89	263.91	306.91	274.19	0.43	1.05	1.54
PCC-Allegro	3	1.79	1.27	1.05	1089.31	1112.98	1189.18	33.24	55.66	83.62
PCC-Expr	3	2.25	0.62	0.78	1113.83	1097.01	1144.72	61.76	78.74	91.00
QUIC Cubic	3	2.93	2.03	1.18	564.27	629.13	717.40	1.31	1.82	5.33
SCReAM	3	0.22	0.22	0.22	61.09	63.37	60.63	0.13	0.19	0.35
Sprout	3	0.32	0.32	0.31	110.07	124.08	134.10	0.38	0.38	0.12
TaoVA-100x	3	2.26	1.70	1.43	432.26	557.05	743.28	0.52	1.06	3.79
TCP Vegas	3	1.68	0.96	1.00	244.85	282.82	279.70	0.36	0.81	1.64
Verus	3	2.81	1.85	1.03	723.66	890.37	742.67	3.15	2.60	4.86
PCC-Vivace	3	1.38	1.45	0.96	1078.44	1088.98	1091.65	17.23	24.60	35.89
WebRTC media	3	0.56	0.45	0.20	220.87	276.75	452.27	0.25	0.82	2.43

```
Run 1: Statistics of TCP BBR

Start at: 2018-06-18 15:04:56
End at: 2018-06-18 15:05:26
Local clock offset: 1.377 ms
Remote clock offset: -5.803 ms


# Below is generated by plot.py at 2018-06-18 15:47:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.35 Mbit/s
95th percentile per-packet one-way delay: 606.777 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 600.594 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 586.832 ms
Loss rate: 1.95%
-- Flow 3:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 691.130 ms
Loss rate: 2.98%
```

Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-06-18 15:22:51
End at: 2018-06-18 15:23:21
Local clock offset: 0.315 ms
Remote clock offset: -3.027 ms


# Below is generated by plot.py at 2018-06-18 15:47:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 1001.319 ms
Loss rate: 5.10%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 886.004 ms
Loss rate: 3.60%
-- Flow 2:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 1021.120 ms
Loss rate: 6.33%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 1056.262 ms
Loss rate: 13.69%
```
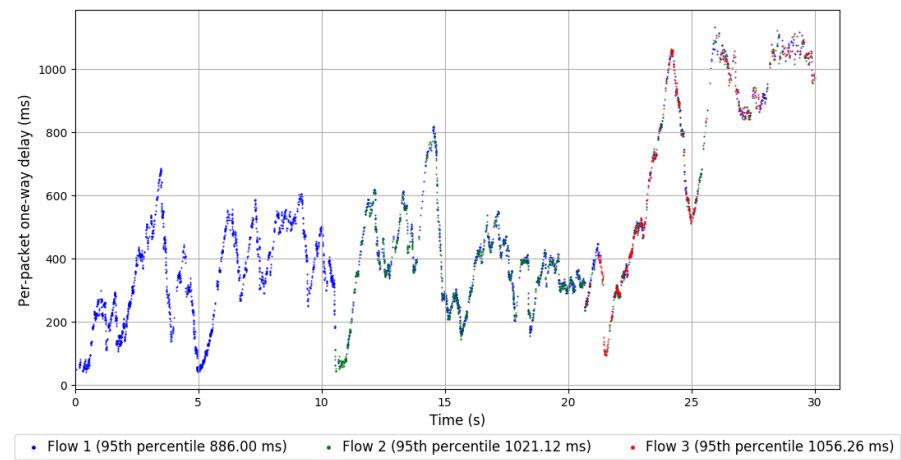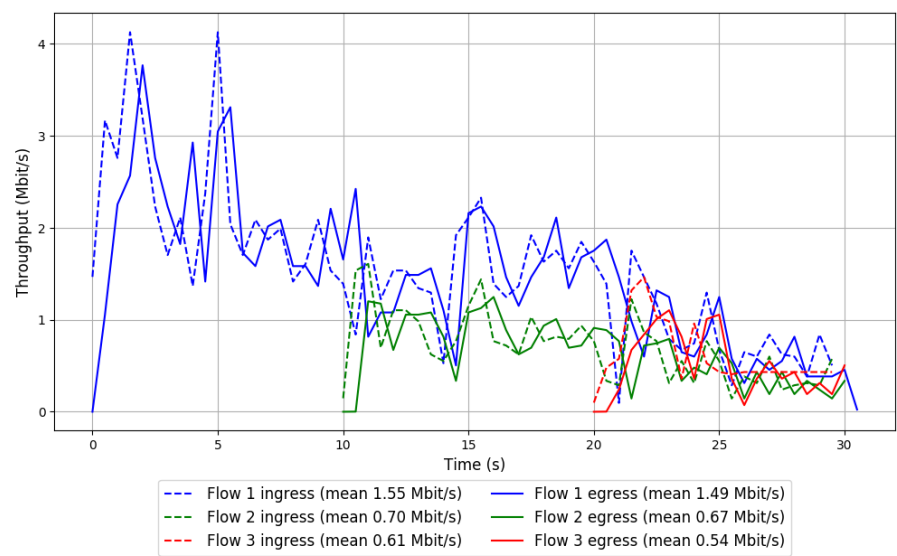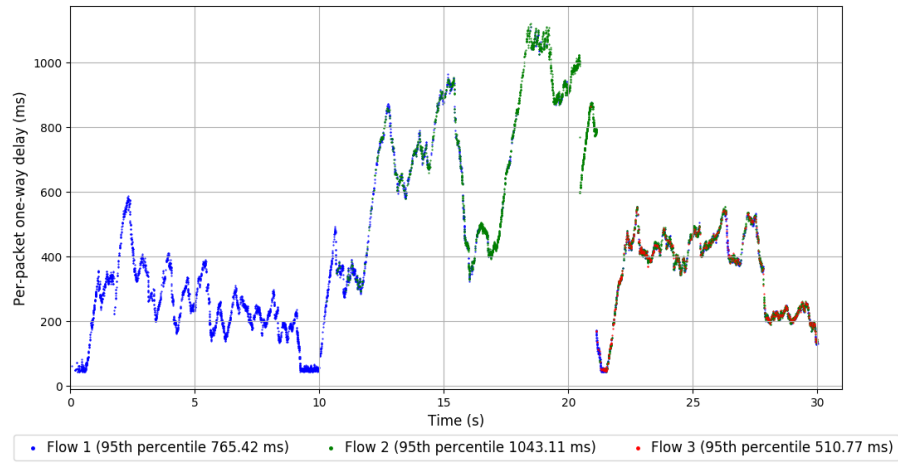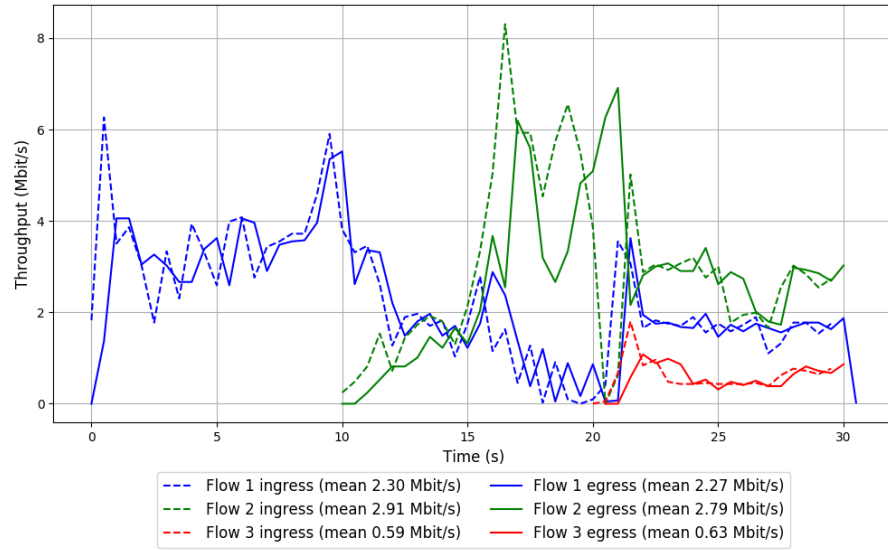
Run 2: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 1.55 Mbit/s) —— Flow 1 egress (mean 1.49 Mbit/s)
- - - Flow 2 ingress (mean 0.70 Mbit/s) —— Flow 2 egress (mean 0.67 Mbit/s)
- - - Flow 3 ingress (mean 0.61 Mbit/s) —— Flow 3 egress (mean 0.54 Mbit/s)

• Flow 1 (95th percentile 886.00 ms) • Flow 2 (95th percentile 1021.12 ms) • Flow 3 (95th percentile 1056.26 ms)

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```
Run 3: Statistics of TCP BBR

Start at: 2018-06-18 15:41:08
End at: 2018-06-18 15:41:38
Local clock offset: -2.428 ms
Remote clock offset: -4.865 ms


# Below is generated by plot.py at 2018-06-18 15:47:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.30 Mbit/s
95th percentile per-packet one-way delay: 973.764 ms
Loss rate: 3.27%
-- Flow 1:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 765.420 ms
Loss rate: 1.42%
-- Flow 2:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 1043.114 ms
Loss rate: 5.59%
-- Flow 3:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 510.771 ms
Loss rate: 2.04%
```
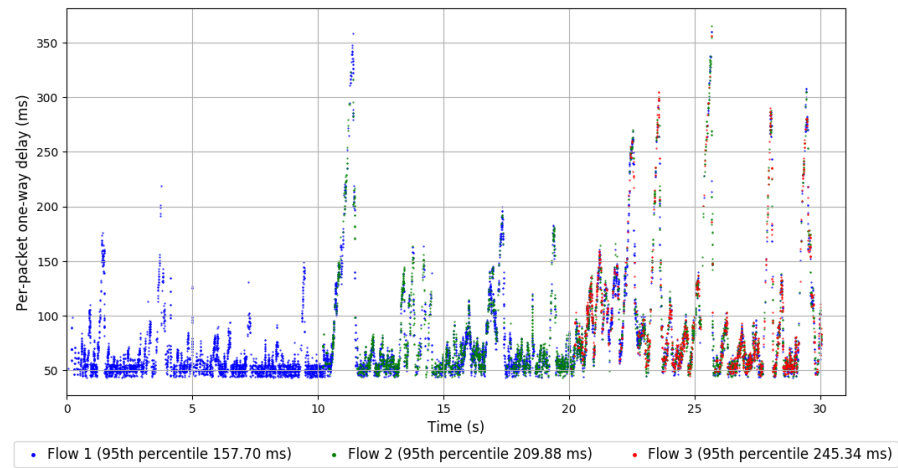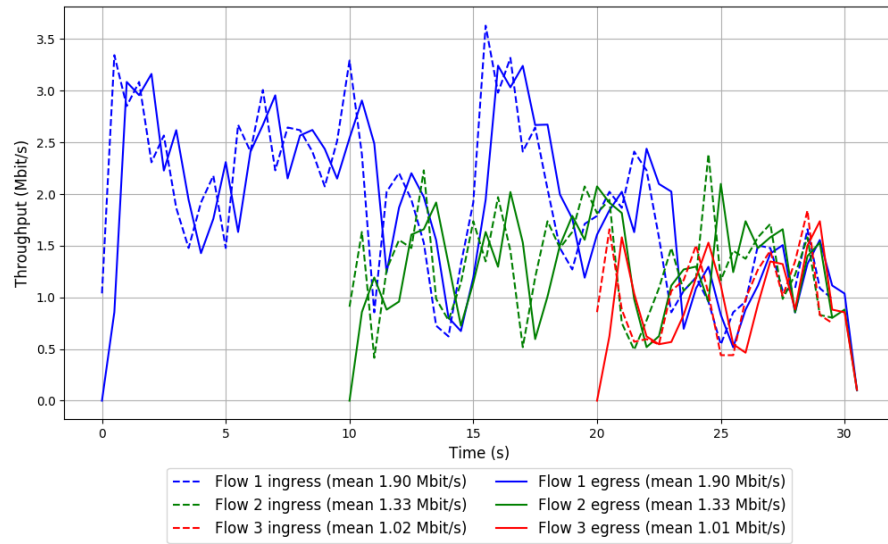
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 2.30 Mbit/s)   Flow 1 egress (mean 2.27 Mbit/s)
Flow 2 ingress (mean 2.91 Mbit/s)   Flow 2 egress (mean 2.79 Mbit/s)
Flow 3 ingress (mean 0.59 Mbit/s)   Flow 3 egress (mean 0.63 Mbit/s)

Flow 1 (95th percentile 765.42 ms)   Flow 2 (95th percentile 1043.11 ms)   Flow 3 (95th percentile 510.77 ms)
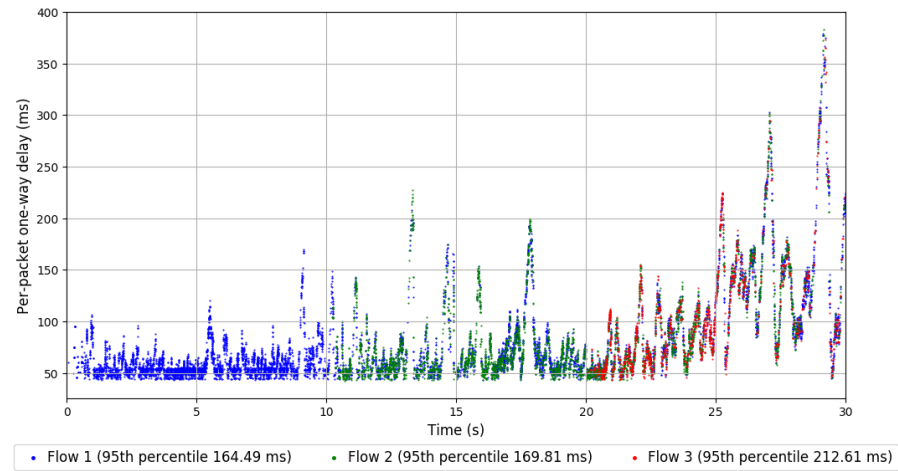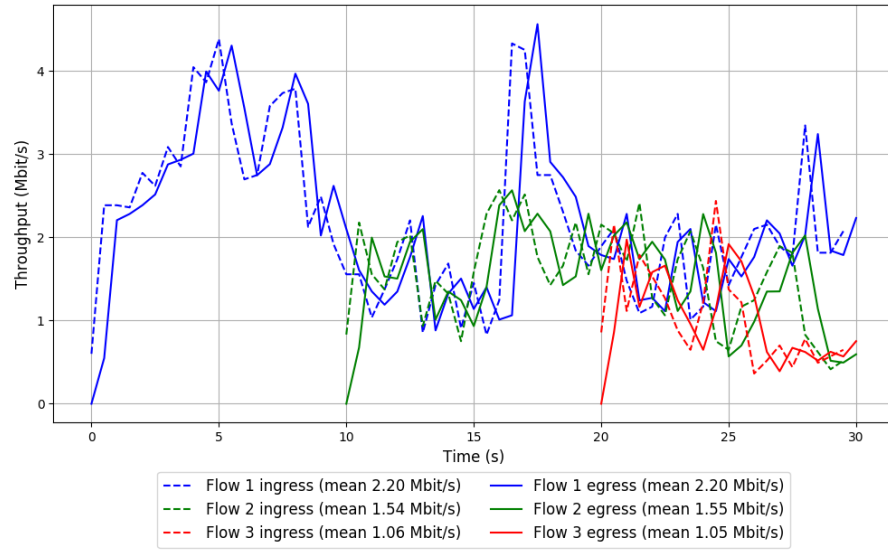
```
Run 1: Statistics of Copa

Start at: 2018-06-18 15:09:25
End at: 2018-06-18 15:09:55
Local clock offset: -1.447 ms
Remote clock offset: -3.682 ms


# Below is generated by plot.py at 2018-06-18 15:47:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 181.633 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 157.697 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 209.878 ms
Loss rate: 0.15%
-- Flow 3:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 245.343 ms
Loss rate: 0.12%
```
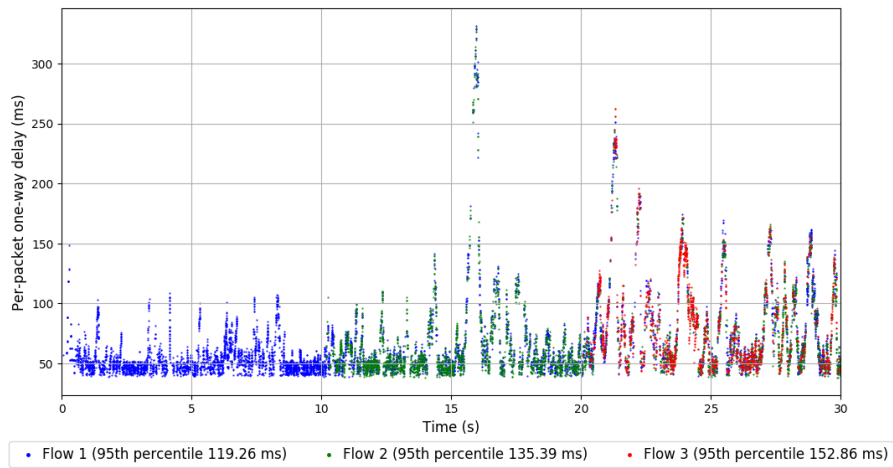
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-06-18 15:27:19
End at: 2018-06-18 15:27:49
Local clock offset: -1.879 ms
Remote clock offset: -1.878 ms


# Below is generated by plot.py at 2018-06-18 15:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 169.679 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 164.486 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 169.812 ms
Loss rate: 0.13%
-- Flow 3:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 212.613 ms
Loss rate: 0.37%
```
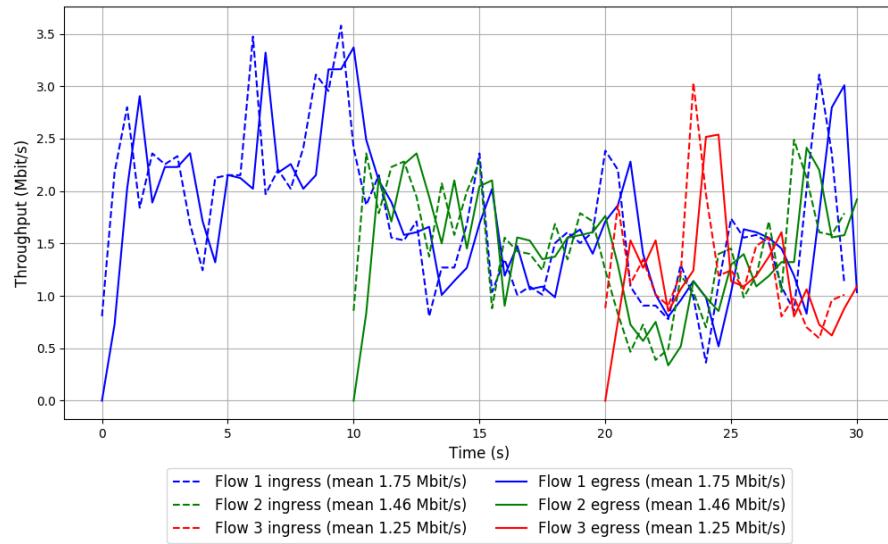
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-06-18 15:45:38
End at: 2018-06-18 15:46:08
Local clock offset: 1.791 ms
Remote clock offset: -5.296 ms

# Below is generated by plot.py at 2018-06-18 15:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.14 Mbit/s
95th percentile per-packet one-way delay: 137.074 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 1.75 Mbit/s
95th percentile per-packet one-way delay: 119.257 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 135.392 ms
Loss rate: 0.22%
-- Flow 3:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 152.858 ms
Loss rate: 0.20%
```
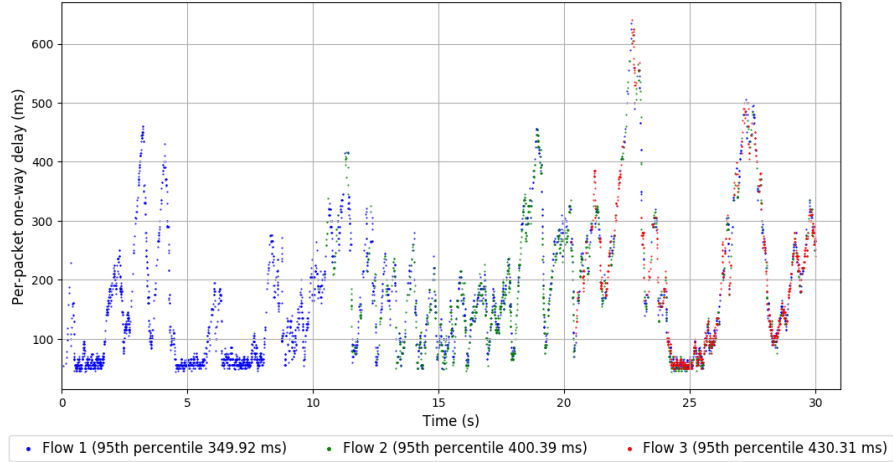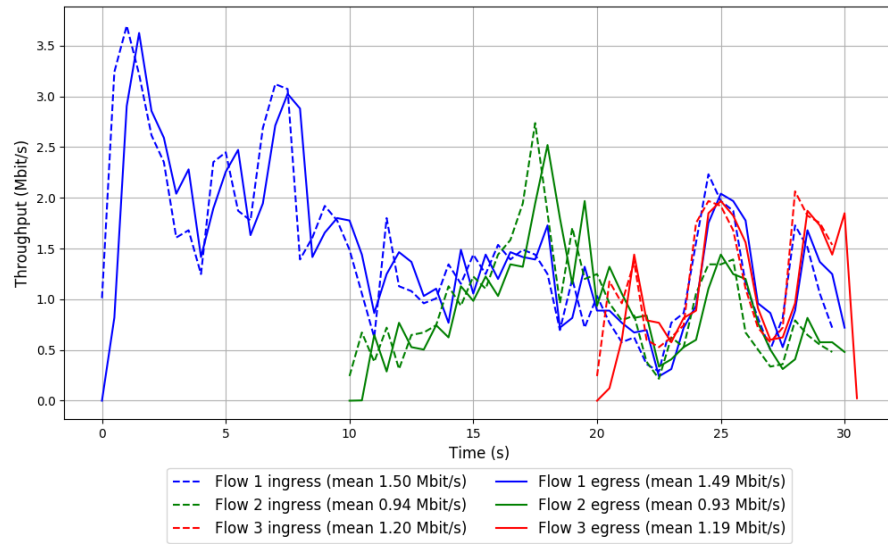
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 1.75 Mbit/s)   Flow 1 egress (mean 1.75 Mbit/s)
Flow 2 ingress (mean 1.46 Mbit/s)   Flow 2 egress (mean 1.46 Mbit/s)
Flow 3 ingress (mean 1.25 Mbit/s)   Flow 3 egress (mean 1.25 Mbit/s)

Flow 1 (95th percentile 119.26 ms)   Flow 2 (95th percentile 135.39 ms)   Flow 3 (95th percentile 152.86 ms)
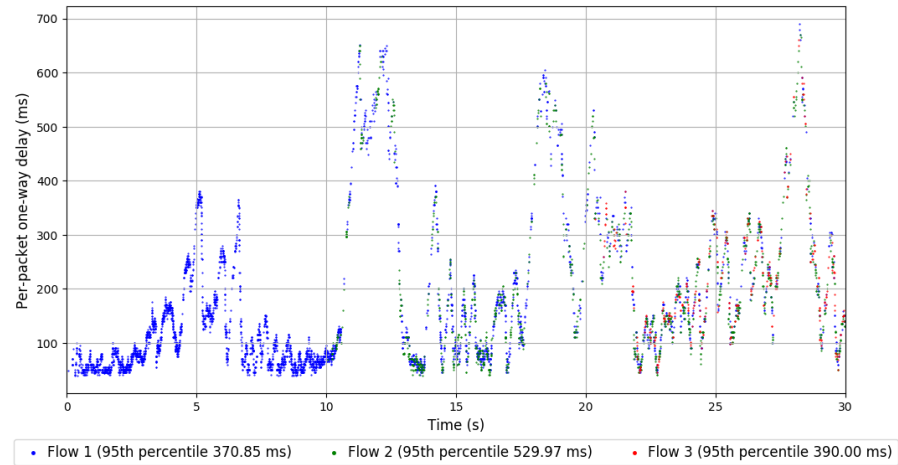
15

```
Run 1: Statistics of TCP Cubic

Start at: 2018-06-18 15:03:50
End at: 2018-06-18 15:04:20
Local clock offset: -2.134 ms
Remote clock offset: -5.557 ms


# Below is generated by plot.py at 2018-06-18 15:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.49 Mbit/s
95th percentile per-packet one-way delay: 385.020 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 349.923 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 400.394 ms
Loss rate: 1.29%
-- Flow 3:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 430.306 ms
Loss rate: 2.72%
```
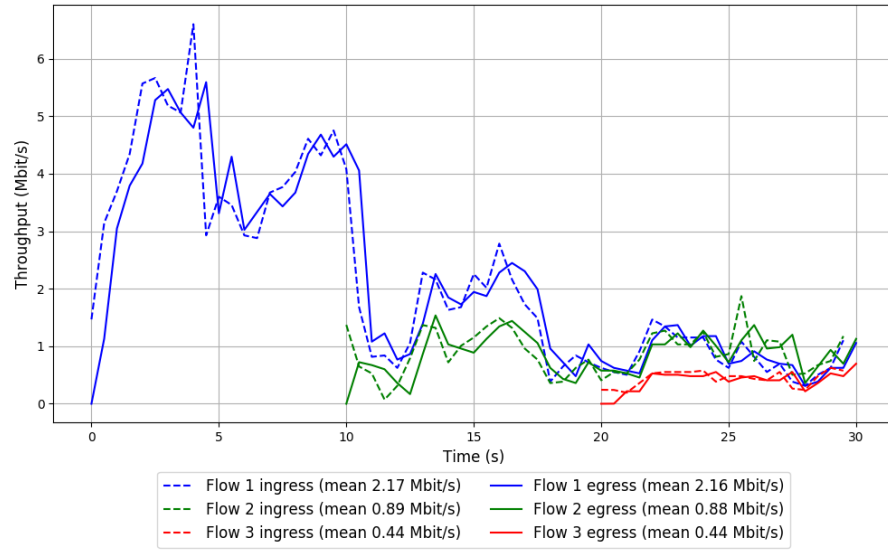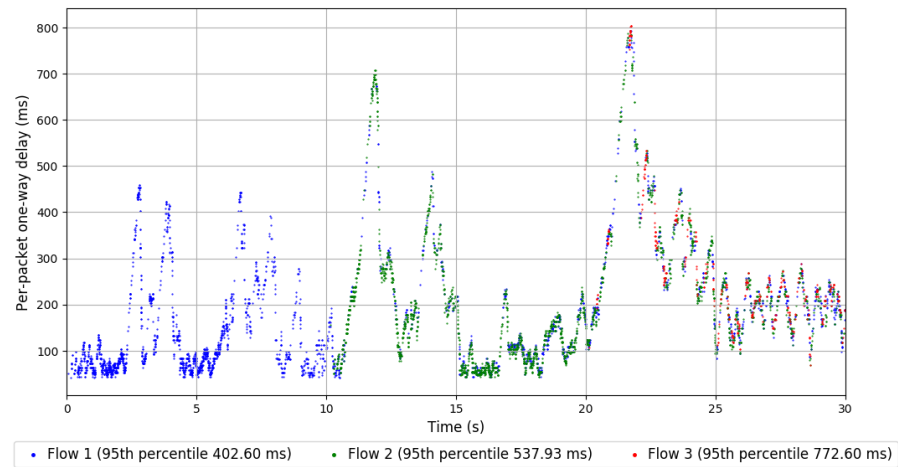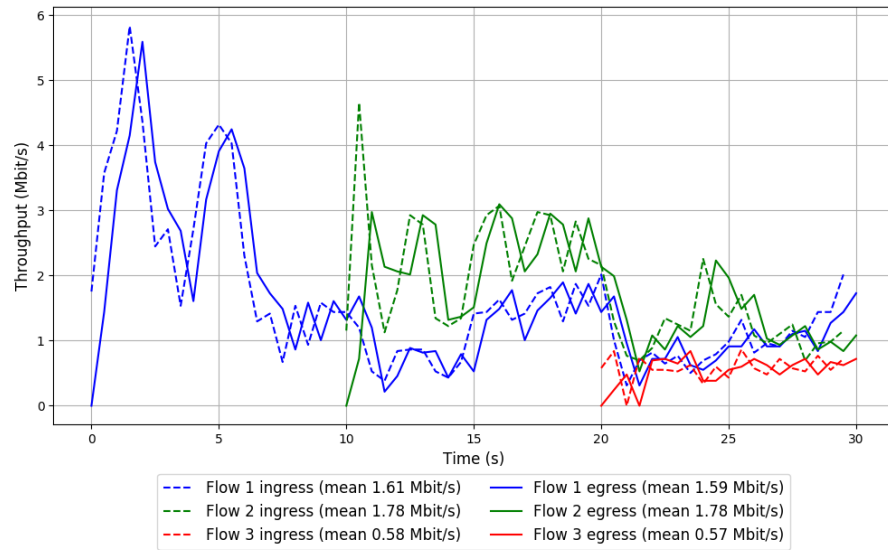
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 1.50 Mbit/s)   Flow 1 egress (mean 1.49 Mbit/s)
Flow 2 ingress (mean 0.94 Mbit/s)   Flow 2 egress (mean 0.93 Mbit/s)
Flow 3 ingress (mean 1.20 Mbit/s)   Flow 3 egress (mean 1.19 Mbit/s)

Flow 1 (95th percentile 349.92 ms)   Flow 2 (95th percentile 400.39 ms)   Flow 3 (95th percentile 430.31 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-06-18 15:21:45
End at: 2018-06-18 15:22:15
Local clock offset: 1.952 ms
Remote clock offset: -2.261 ms


# Below is generated by plot.py at 2018-06-18 15:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 440.121 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 370.848 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 529.966 ms
Loss rate: 1.49%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 390.002 ms
Loss rate: 3.03%
```
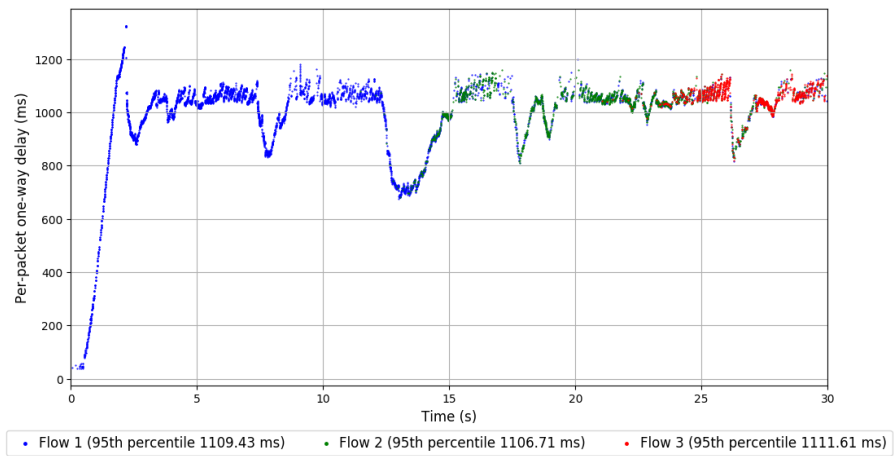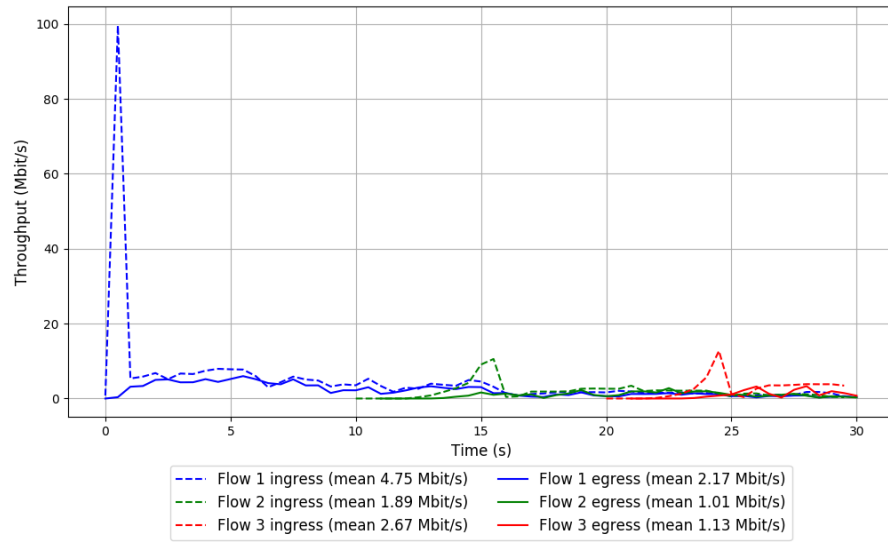
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-06-18 15:40:02
End at: 2018-06-18 15:40:32
Local clock offset: -0.073 ms
Remote clock offset: -4.467 ms


# Below is generated by plot.py at 2018-06-18 15:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 442.567 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 402.597 ms
Loss rate: 1.32%
-- Flow 2:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 537.930 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 772.601 ms
Loss rate: 3.11%
```

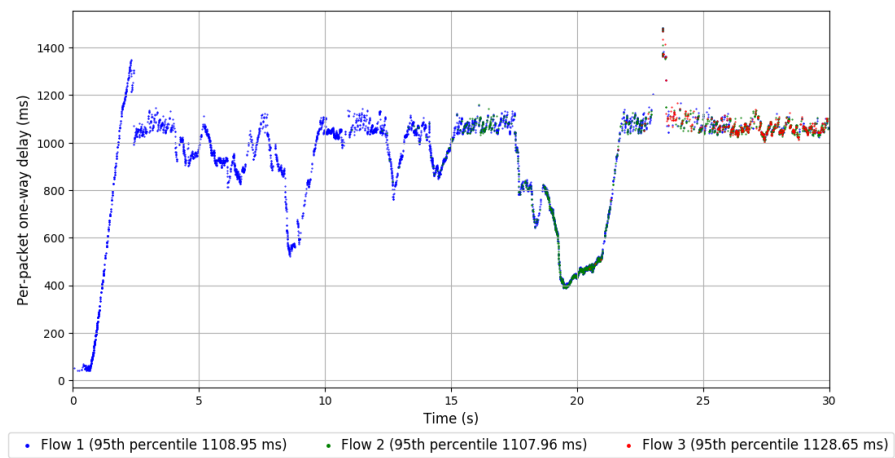Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-06-18 15:07:13
End at: 2018-06-18 15:07:43
Local clock offset: 2.016 ms
Remote clock offset: -5.235 ms


# Below is generated by plot.py at 2018-06-18 15:47:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.13 Mbit/s
95th percentile per-packet one-way delay: 1109.681 ms
Loss rate: 54.57%
-- Flow 1:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 1109.426 ms
Loss rate: 54.35%
-- Flow 2:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 1106.710 ms
Loss rate: 50.25%
-- Flow 3:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 1111.614 ms
Loss rate: 61.89%
```
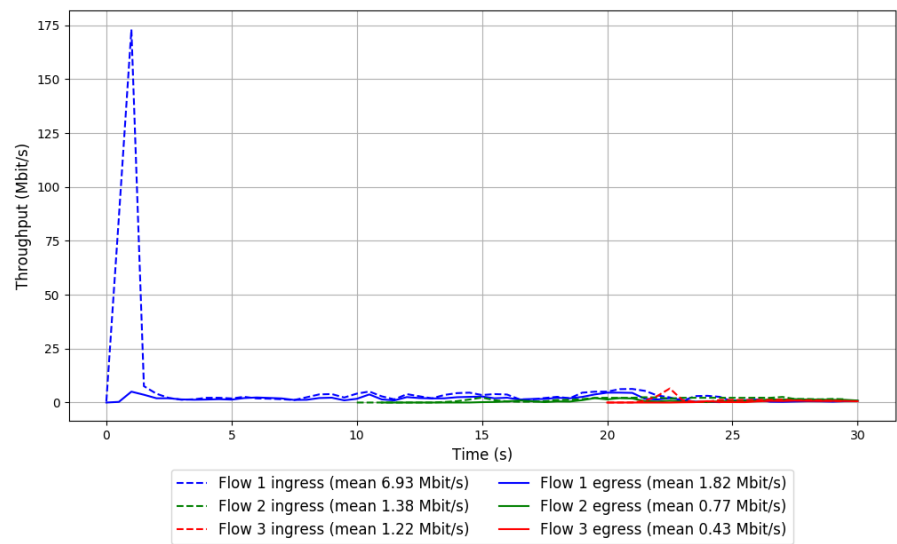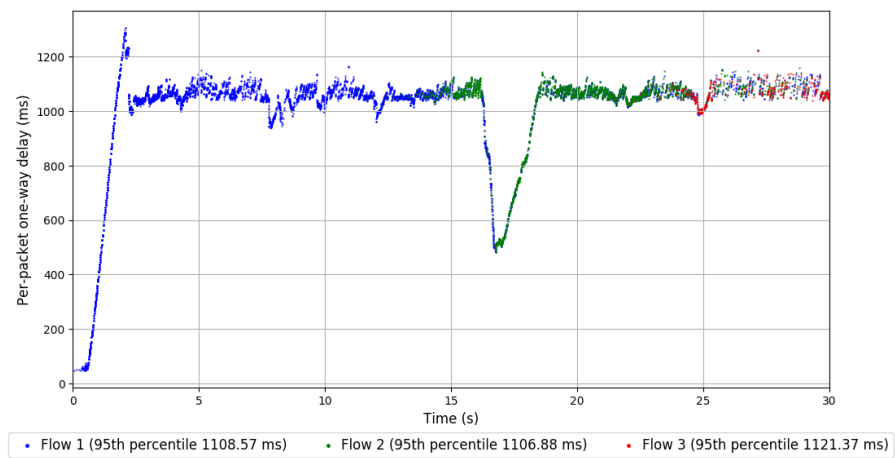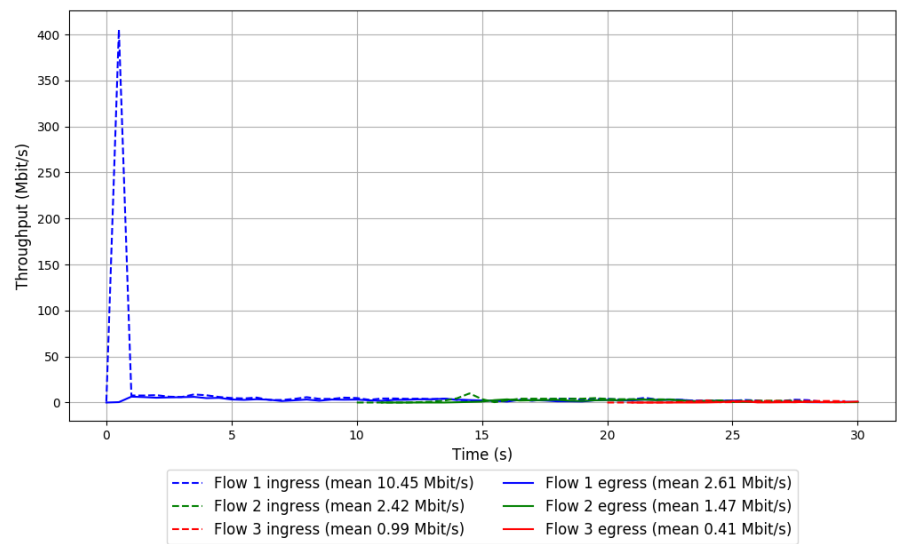
Run 1: Report of FillP — Data Link

- Flow 1 ingress (mean 4.75 Mbit/s)
- Flow 2 ingress (mean 1.89 Mbit/s)
- Flow 3 ingress (mean 2.67 Mbit/s)
- Flow 1 egress (mean 2.17 Mbit/s)
- Flow 2 egress (mean 1.01 Mbit/s)
- Flow 3 egress (mean 1.13 Mbit/s)

- Flow 1 (95th percentile 1109.43 ms)
- Flow 2 (95th percentile 1106.71 ms)
- Flow 3 (95th percentile 1111.61 ms)

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```
Run 2: Statistics of FillP

Start at: 2018-06-18 15:25:08
End at: 2018-06-18 15:25:38
Local clock offset: -0.284 ms
Remote clock offset: -2.619 ms


# Below is generated by plot.py at 2018-06-18 15:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 1110.246 ms
Loss rate: 70.54%
-- Flow 1:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 1108.950 ms
Loss rate: 73.86%
-- Flow 2:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 1107.960 ms
Loss rate: 47.26%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 1128.646 ms
Loss rate: 66.65%
```
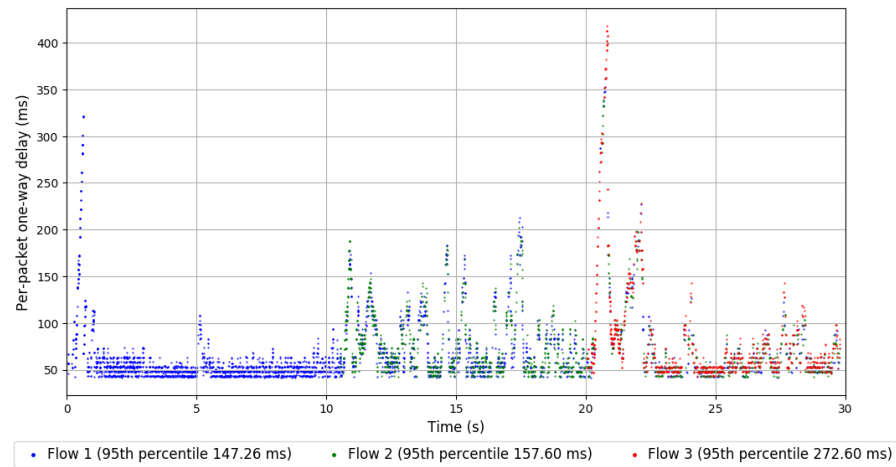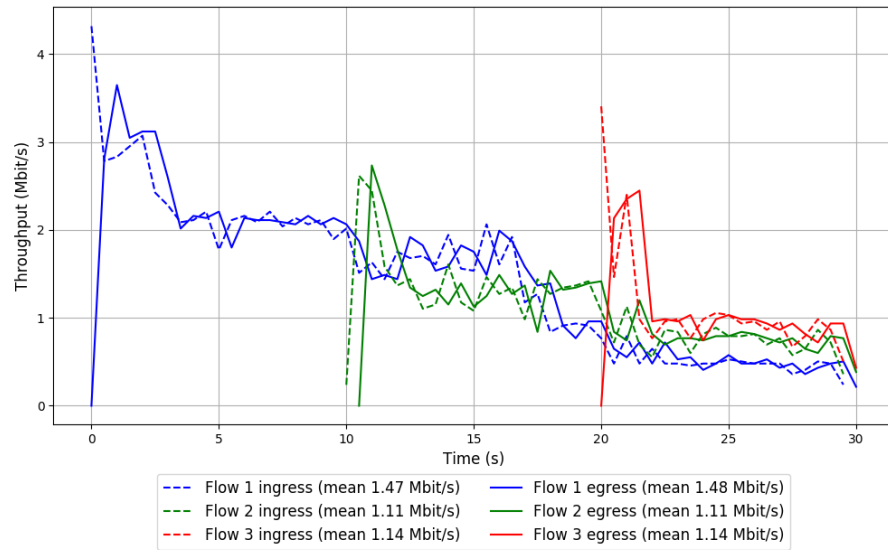
Run 2: Report of FillP — Data Link

- - - Flow 1 ingress (mean 6.93 Mbit/s)   —— Flow 1 egress (mean 1.82 Mbit/s)
- - - Flow 2 ingress (mean 1.38 Mbit/s)   —— Flow 2 egress (mean 0.77 Mbit/s)
- - - Flow 3 ingress (mean 1.22 Mbit/s)   —— Flow 3 egress (mean 0.43 Mbit/s)

- Flow 1 (95th percentile 1108.95 ms)   • Flow 2 (95th percentile 1107.96 ms)   • Flow 3 (95th percentile 1128.65 ms)
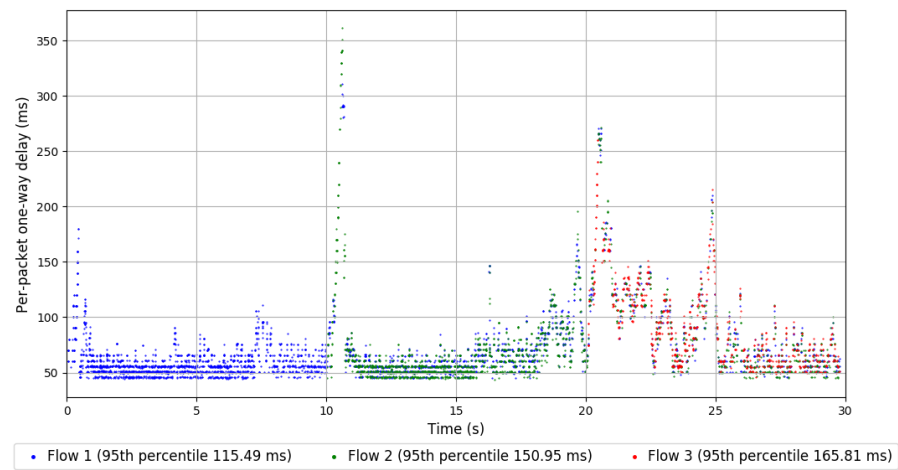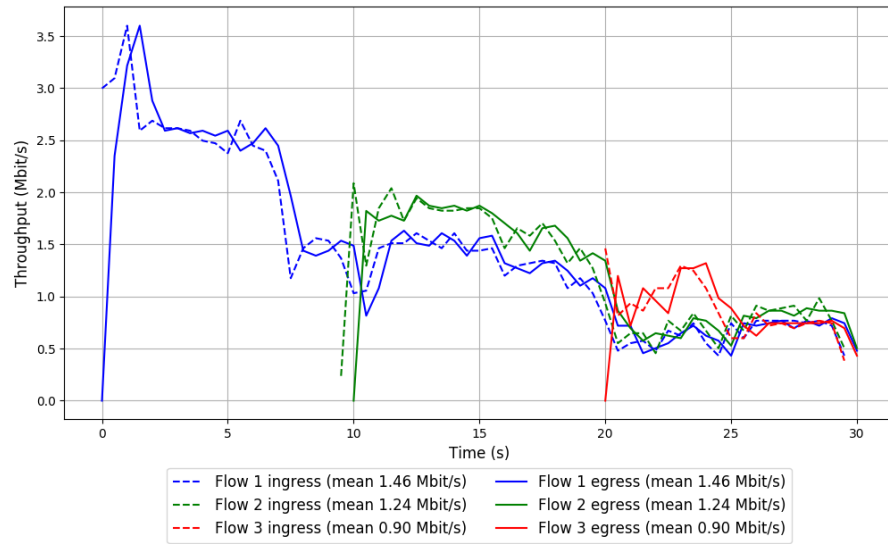
25

```
Run 3: Statistics of FillP

Start at: 2018-06-18 15:43:25
End at: 2018-06-18 15:43:55
Local clock offset: -4.126 ms
Remote clock offset: -4.673 ms


# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 1108.533 ms
Loss rate: 70.62%
-- Flow 1:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 1108.568 ms
Loss rate: 75.05%
-- Flow 2:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 1106.875 ms
Loss rate: 43.20%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 1121.371 ms
Loss rate: 64.20%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 10.45 Mbit/s)   Flow 1 egress (mean 2.61 Mbit/s)
Flow 2 ingress (mean 2.42 Mbit/s)   Flow 2 egress (mean 1.47 Mbit/s)
Flow 3 ingress (mean 0.99 Mbit/s)   Flow 3 egress (mean 0.41 Mbit/s)

Flow 1 (95th percentile 1108.57 ms)   Flow 2 (95th percentile 1106.88 ms)   Flow 3 (95th percentile 1121.37 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-06-18 15:10:31
End at: 2018-06-18 15:11:01
Local clock offset: 0.567 ms
Remote clock offset: -4.306 ms


# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 162.575 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 147.256 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 157.603 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 272.600 ms
Loss rate: 0.75%
```
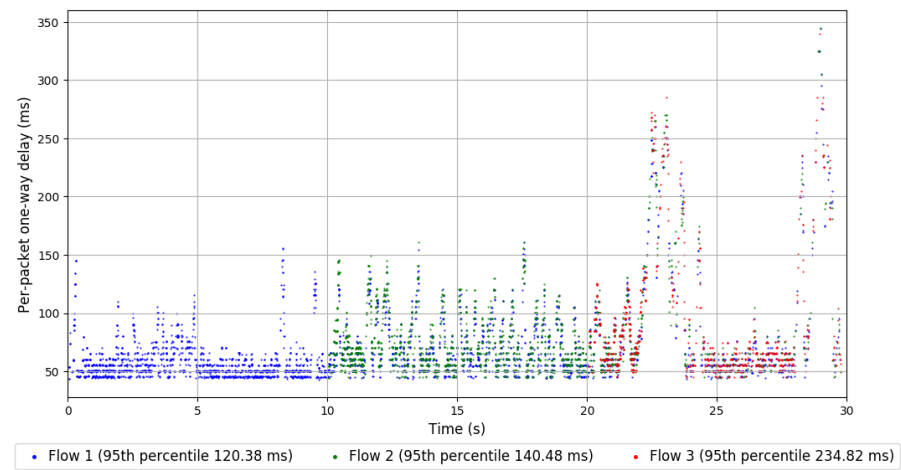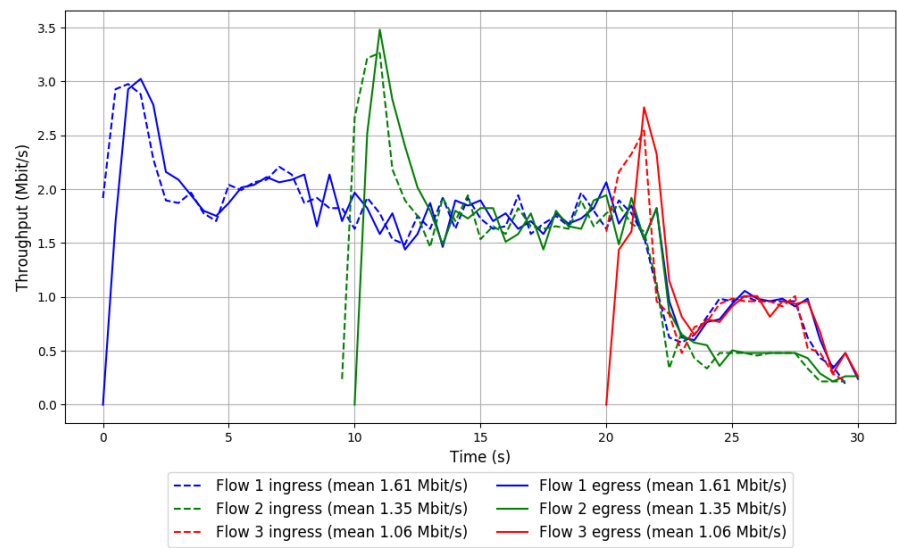
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-06-18 15:28:26
End at: 2018-06-18 15:28:56
Local clock offset: -2.214 ms
Remote clock offset: -1.727 ms


# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 139.846 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 115.494 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 150.951 ms
Loss rate: 0.34%
-- Flow 3:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 165.807 ms
Loss rate: 0.27%
```
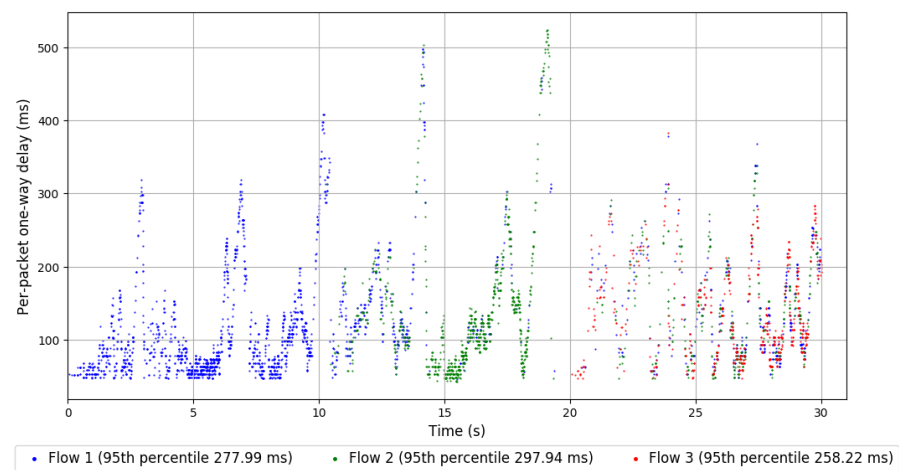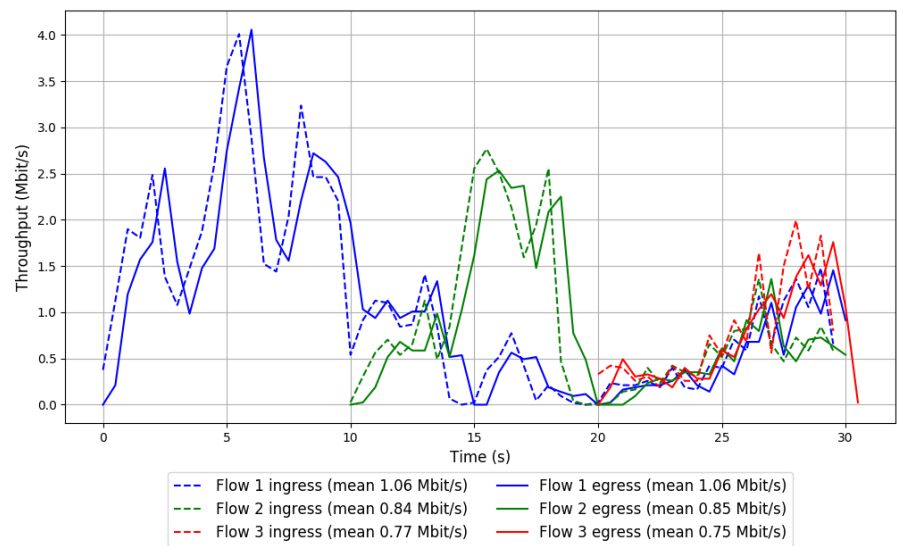
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-06-18 15:46:44
End at: 2018-06-18 15:47:14
Local clock offset: -0.371 ms
Remote clock offset: -5.048 ms


# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.85 Mbit/s
95th percentile per-packet one-way delay: 139.969 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 120.380 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 140.478 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 234.824 ms
Loss rate: 0.12%
```

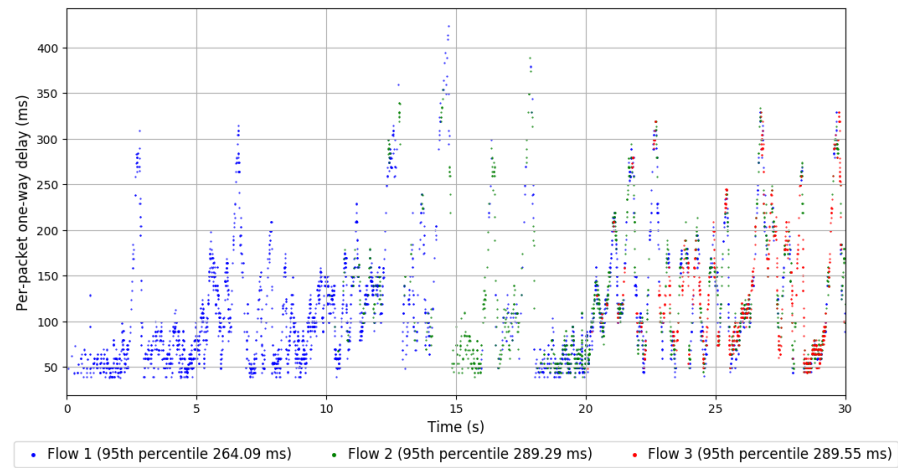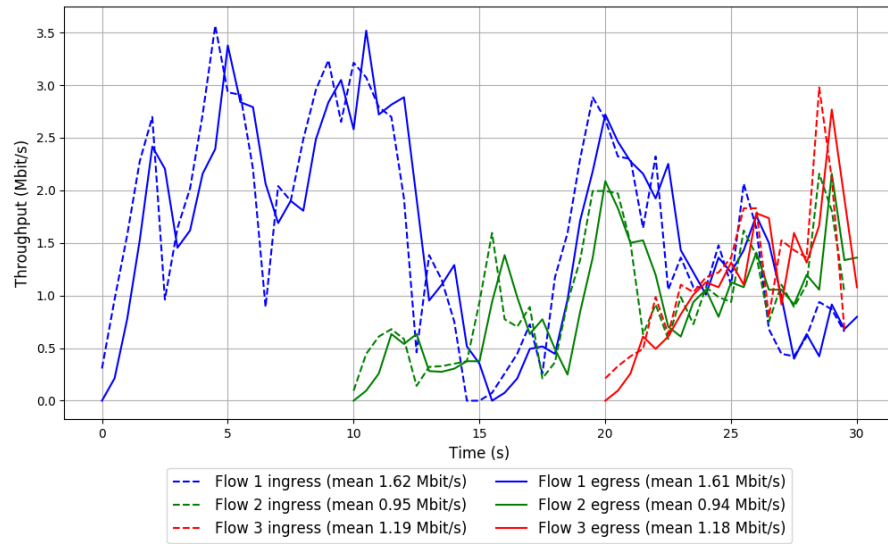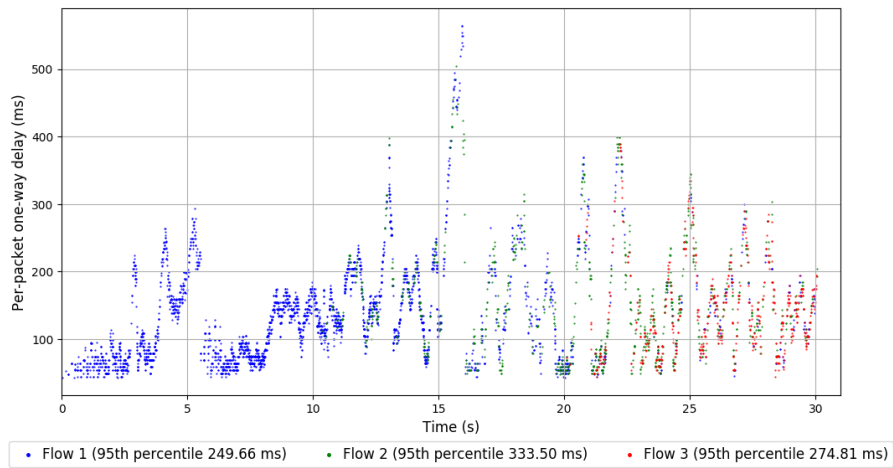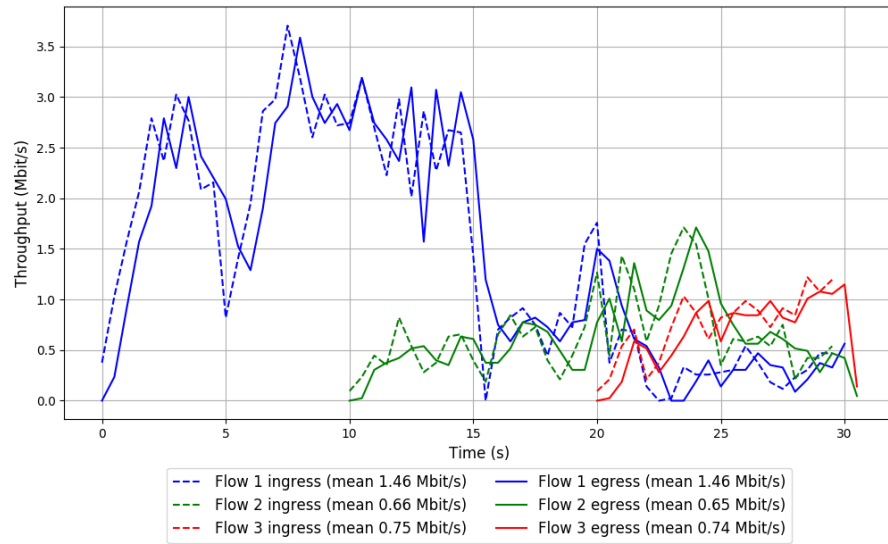## Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-06-18 15:02:39
End at: 2018-06-18 15:03:09
Local clock offset: 0.118 ms
Remote clock offset: -5.389 ms

# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 273.509 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 277.989 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 297.939 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 258.220 ms
Loss rate: 2.15%
```

Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 1.06 Mbit/s)   Flow 1 egress (mean 1.06 Mbit/s)
Flow 2 ingress (mean 0.84 Mbit/s)   Flow 2 egress (mean 0.85 Mbit/s)
Flow 3 ingress (mean 0.77 Mbit/s)   Flow 3 egress (mean 0.75 Mbit/s)

Flow 1 (95th percentile 277.99 ms)   Flow 2 (95th percentile 297.94 ms)   Flow 3 (95th percentile 258.22 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-06-18 15:20:40
End at: 2018-06-18 15:21:10
Local clock offset: 1.962 ms
Remote clock offset: -3.275 ms

# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 274.198 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 264.093 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 289.291 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 289.551 ms
Loss rate: 0.90%
```
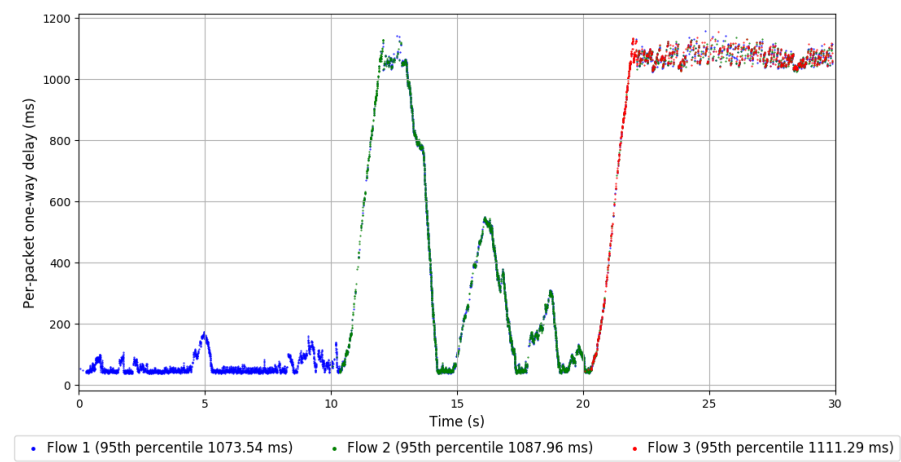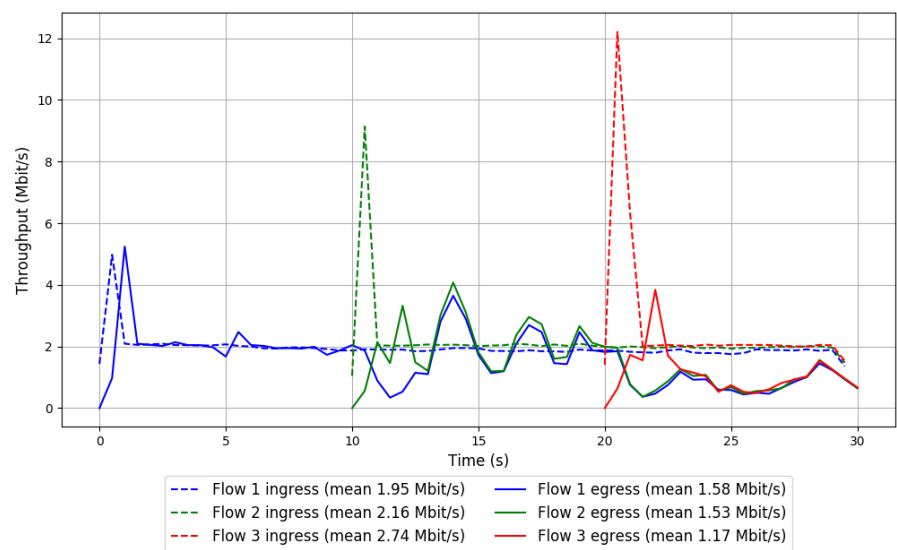
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 1.62 Mbit/s) — Flow 1 egress (mean 1.61 Mbit/s)
Flow 2 ingress (mean 0.95 Mbit/s) — Flow 2 egress (mean 0.94 Mbit/s)
Flow 3 ingress (mean 1.19 Mbit/s) — Flow 3 egress (mean 1.18 Mbit/s)

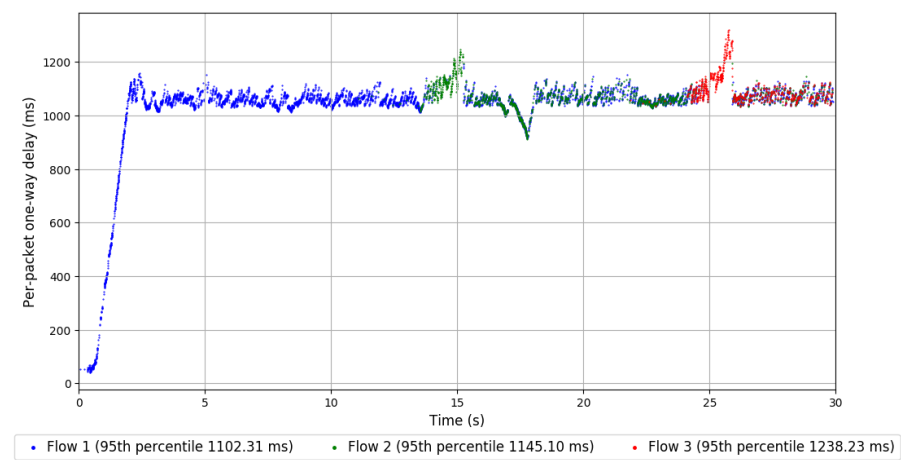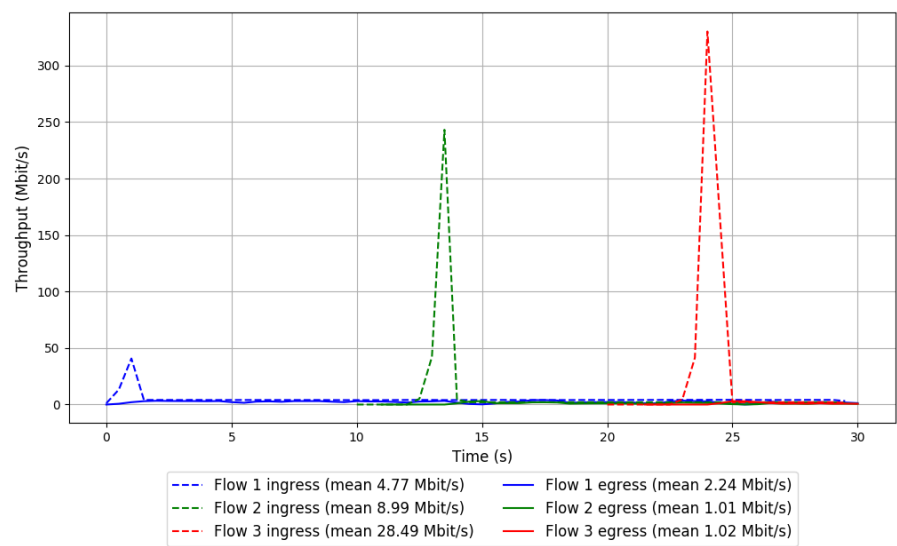Flow 1 (95th percentile 264.09 ms) Flow 2 (95th percentile 289.29 ms) Flow 3 (95th percentile 289.55 ms)

37

```
Run 3: Statistics of LEDBAT

Start at: 2018-06-18 15:38:55
End at: 2018-06-18 15:39:25
Local clock offset: -1.593 ms
Remote clock offset: -3.84 ms

# Below is generated by plot.py at 2018-06-18 15:47:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 270.089 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 249.660 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 333.503 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 274.808 ms
Loss rate: 1.57%
```

Run 3: Report of LEDBAT — Data Link

- Flow 1 ingress (mean 1.46 Mbit/s)
- Flow 1 egress (mean 1.46 Mbit/s)
- Flow 2 ingress (mean 0.66 Mbit/s)
- Flow 2 egress (mean 0.65 Mbit/s)
- Flow 3 ingress (mean 0.75 Mbit/s)
- Flow 3 egress (mean 0.74 Mbit/s)

- Flow 1 (95th percentile 249.66 ms)
- Flow 2 (95th percentile 333.50 ms)
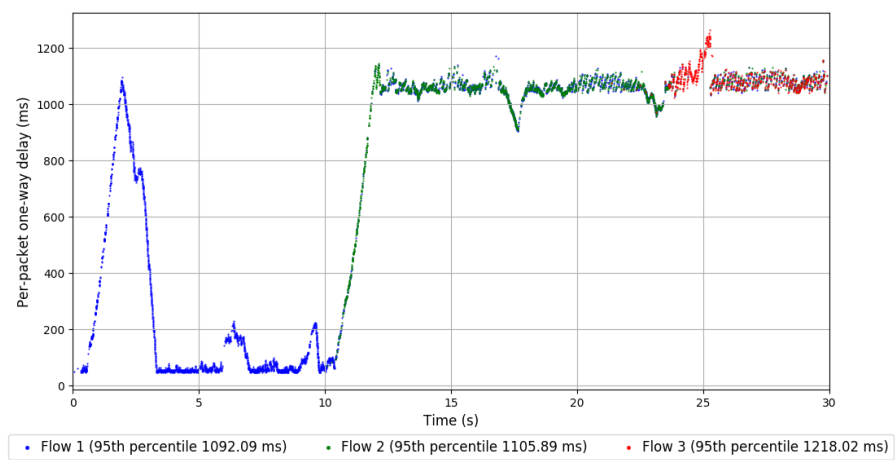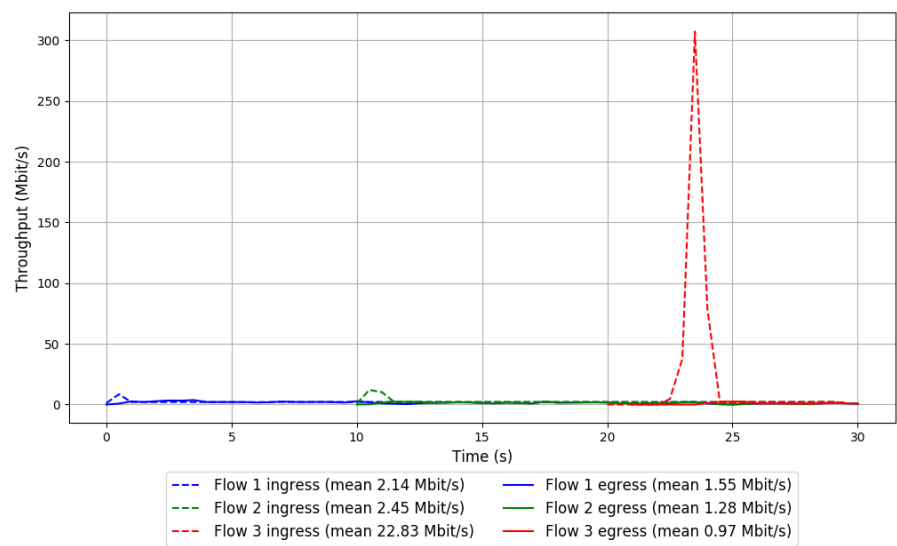- Flow 3 (95th percentile 274.81 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-06-18 14:59:22
End at: 2018-06-18 14:59:52
Local clock offset: 3.87 ms
Remote clock offset: -7.758 ms


# Below is generated by plot.py at 2018-06-18 15:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.98 Mbit/s
95th percentile per-packet one-way delay: 1088.728 ms
Loss rate: 30.66%
-- Flow 1:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 1073.536 ms
Loss rate: 18.96%
-- Flow 2:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 1087.958 ms
Loss rate: 29.68%
-- Flow 3:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 1111.293 ms
Loss rate: 57.45%
```

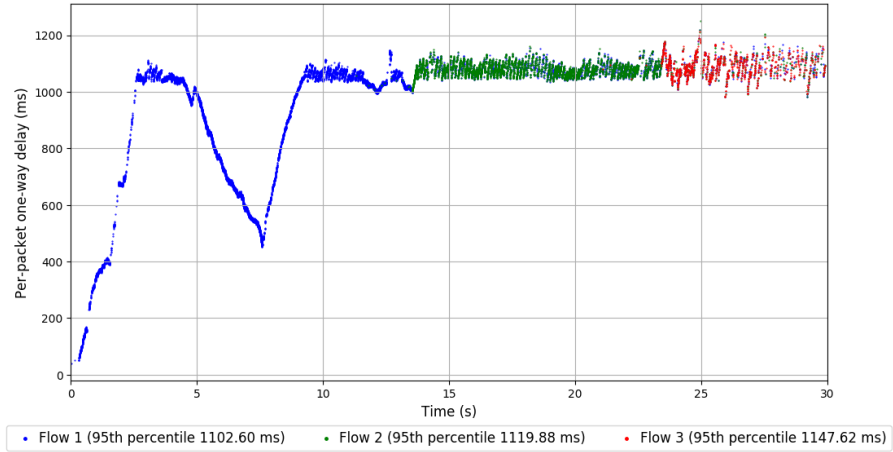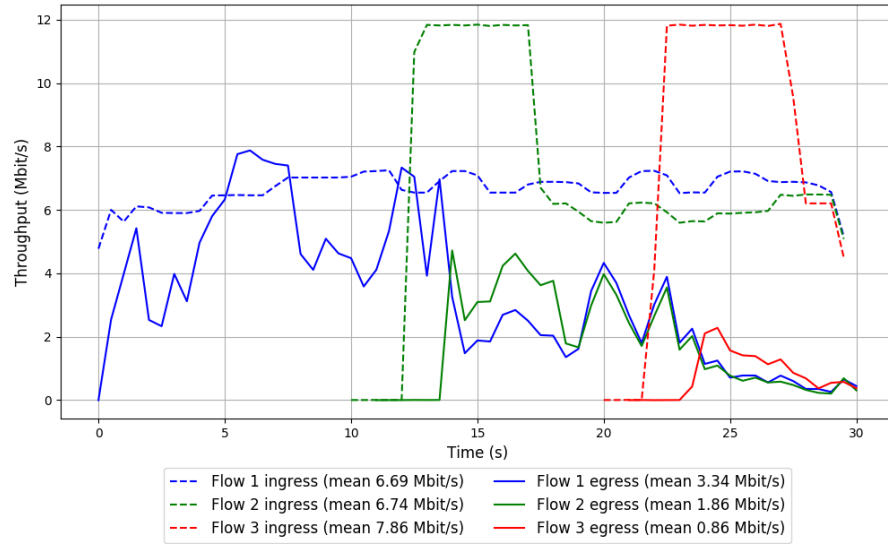Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-06-18 15:17:17
End at: 2018-06-18 15:17:47
Local clock offset: 1.134 ms
Remote clock offset: -2.498 ms


# Below is generated by plot.py at 2018-06-18 15:47:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.15 Mbit/s
95th percentile per-packet one-way delay: 1125.965 ms
Loss rate: 84.40%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 1102.308 ms
Loss rate: 53.15%
-- Flow 2:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 1145.101 ms
Loss rate: 89.41%
-- Flow 3:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 1238.228 ms
Loss rate: 97.08%
```
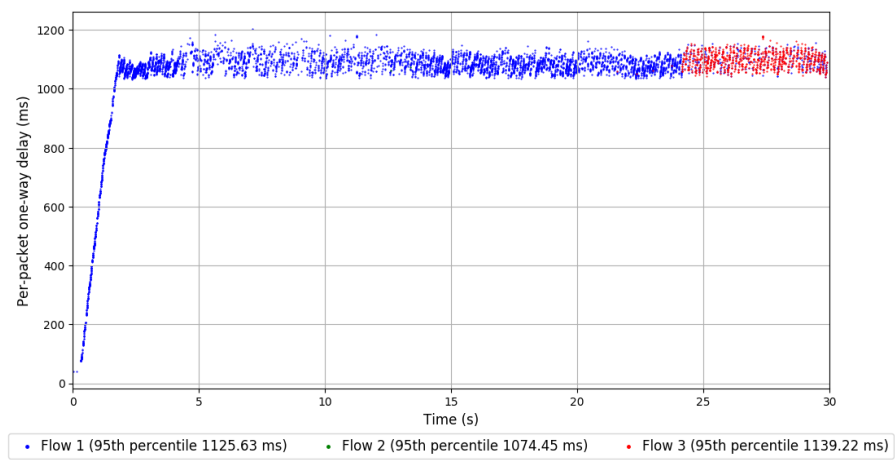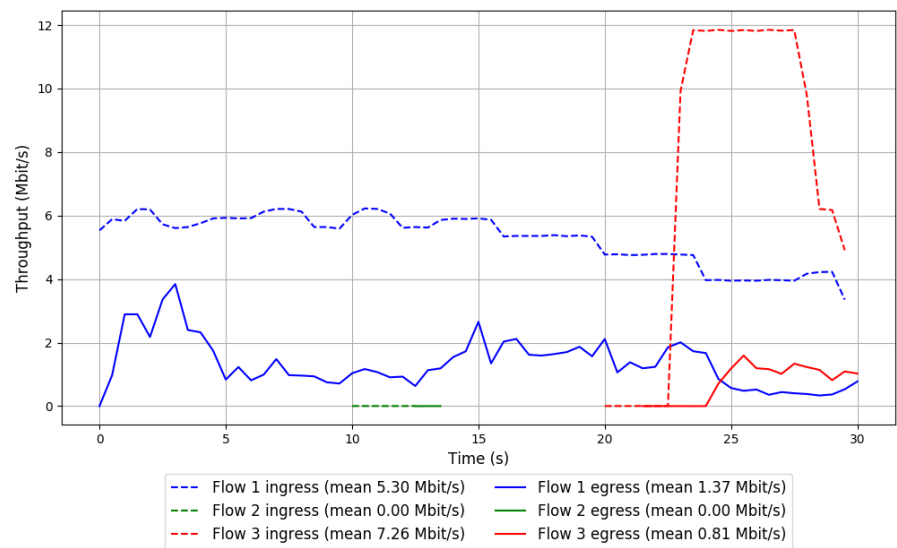
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 4.77 Mbit/s) --- Flow 1 egress (mean 2.24 Mbit/s)
Flow 2 ingress (mean 8.99 Mbit/s) --- Flow 2 egress (mean 1.01 Mbit/s)
Flow 3 ingress (mean 28.49 Mbit/s) --- Flow 3 egress (mean 1.02 Mbit/s)

Flow 1 (95th percentile 1102.31 ms)   Flow 2 (95th percentile 1145.10 ms)   Flow 3 (95th percentile 1238.23 ms)
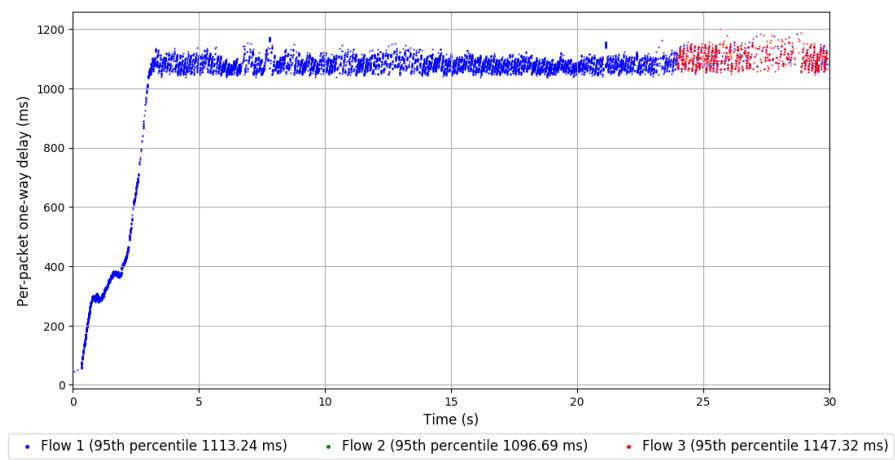
```
Run 3: Statistics of PCC-Allegro

Start at: 2018-06-18 15:35:28
End at: 2018-06-18 15:35:59
Local clock offset: -4.992 ms
Remote clock offset: -3.156 ms


# Below is generated by plot.py at 2018-06-18 15:47:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.68 Mbit/s
95th percentile per-packet one-way delay: 1109.419 ms
Loss rate: 76.31%
-- Flow 1:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 1092.094 ms
Loss rate: 27.62%
-- Flow 2:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 1105.891 ms
Loss rate: 47.90%
-- Flow 3:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 1218.021 ms
Loss rate: 96.32%
```

Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 2.14 Mbit/s)   Flow 1 egress (mean 1.55 Mbit/s)
Flow 2 ingress (mean 2.45 Mbit/s)   Flow 2 egress (mean 1.28 Mbit/s)
Flow 3 ingress (mean 22.83 Mbit/s)   Flow 3 egress (mean 0.97 Mbit/s)

Flow 1 (95th percentile 1092.09 ms)   Flow 2 (95th percentile 1105.89 ms)   Flow 3 (95th percentile 1218.02 ms)
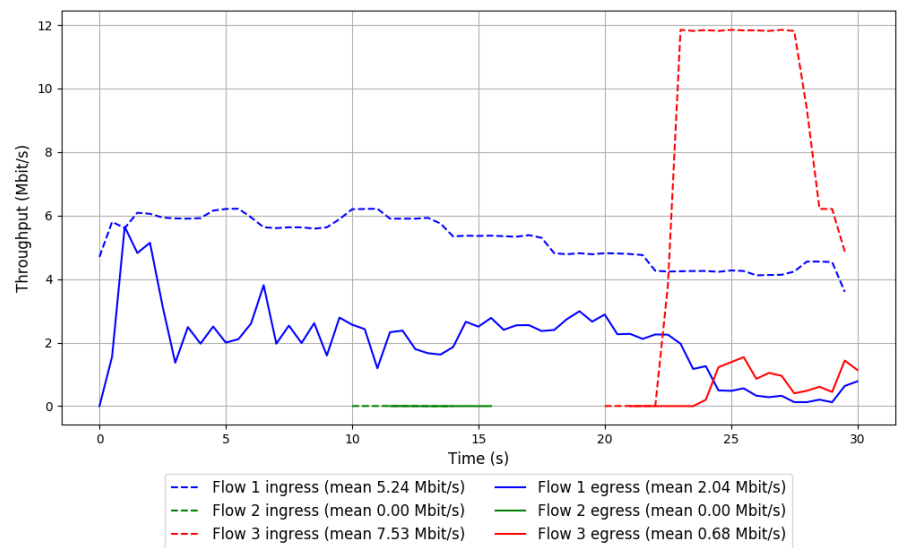
```
Run 1: Statistics of PCC-Expr

Start at: 2018-06-18 14:56:03
End at: 2018-06-18 14:56:33
Local clock offset: 3.8 ms
Remote clock offset: -8.157 ms

# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.75 Mbit/s
95th percentile per-packet one-way delay: 1114.286 ms
Loss rate: 65.54%
-- Flow 1:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 1102.603 ms
Loss rate: 50.11%
-- Flow 2:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 1119.885 ms
Loss rate: 74.23%
-- Flow 3:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 1147.624 ms
Loss rate: 90.31%
```
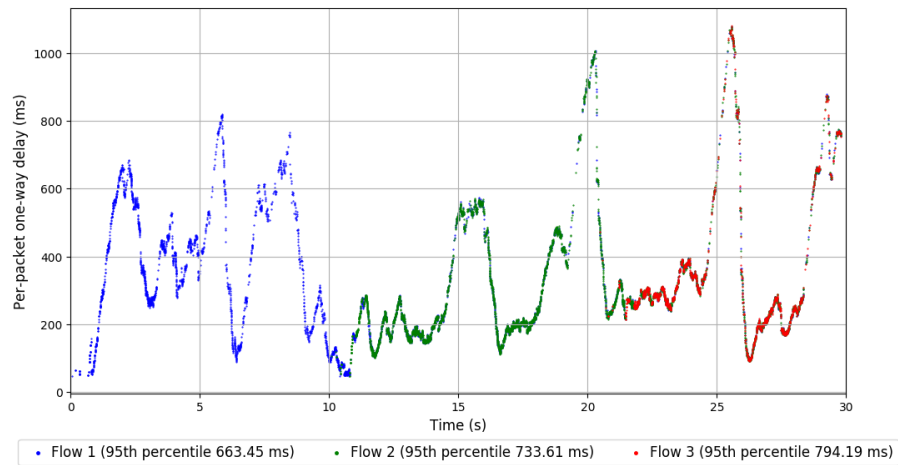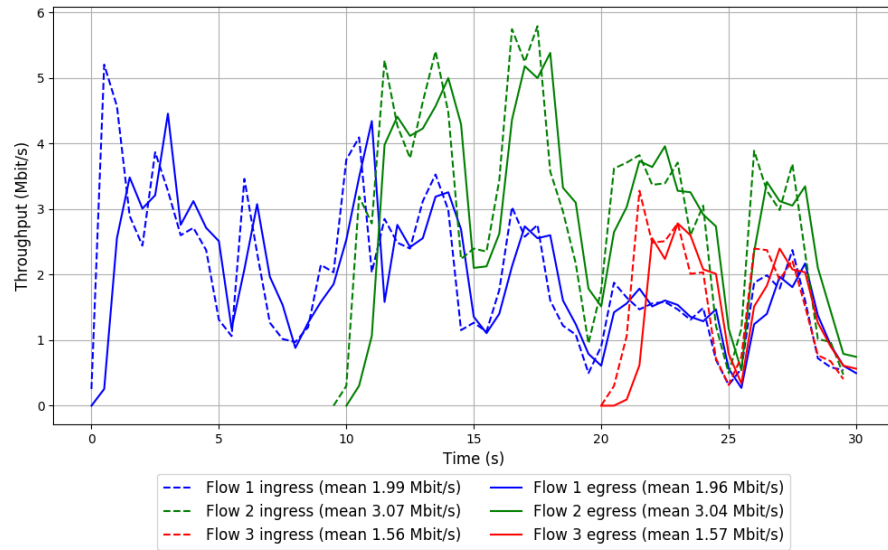
Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-06-18 15:13:53
End at: 2018-06-18 15:14:23
Local clock offset: 2.853 ms
Remote clock offset: -2.965 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.60 Mbit/s
95th percentile per-packet one-way delay: 1129.438 ms
Loss rate: 79.25%
-- Flow 1:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 1125.635 ms
Loss rate: 74.12%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1074.450 ms
Loss rate: 84.62%
-- Flow 3:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 1139.223 ms
Loss rate: 90.58%
```
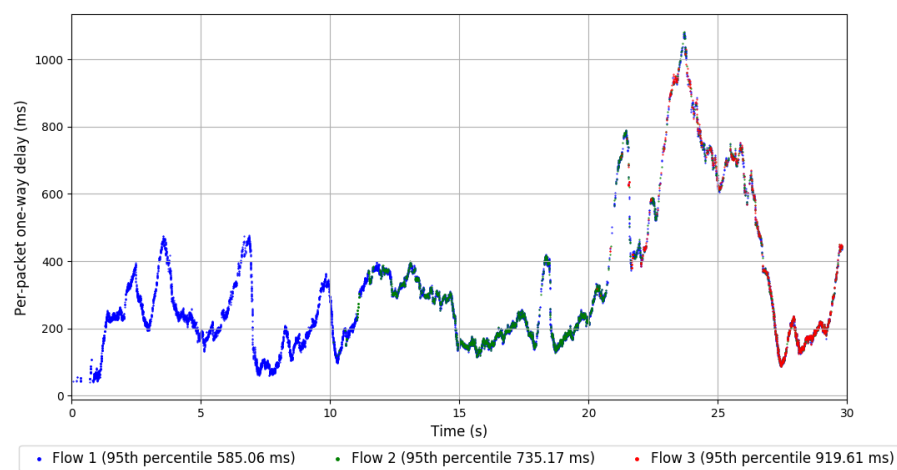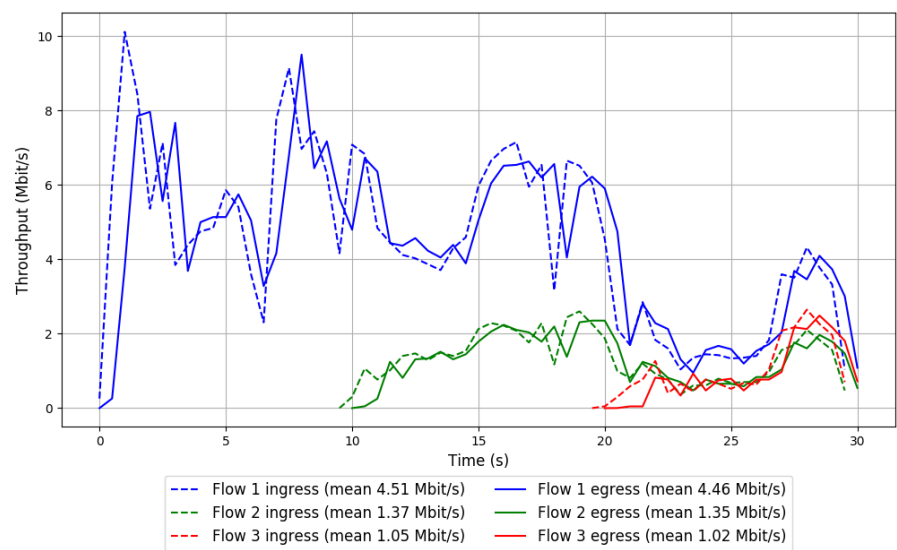
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-06-18 15:32:00
End at: 2018-06-18 15:32:30
Local clock offset: -4.251 ms
Remote clock offset: -1.921 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 1120.868 ms
Loss rate: 71.05%
-- Flow 1:
Average throughput: 2.04 Mbit/s
95th percentile per-packet one-way delay: 1113.240 ms
Loss rate: 61.04%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1096.692 ms
Loss rate: 77.36%
-- Flow 3:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 1147.318 ms
Loss rate: 92.11%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 5.24 Mbit/s)   Flow 1 egress (mean 2.04 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)   Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 7.53 Mbit/s)   Flow 3 egress (mean 0.68 Mbit/s)

Flow 1 (95th percentile 1113.24 ms)   Flow 2 (95th percentile 1096.69 ms)   Flow 3 (95th percentile 1147.32 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-06-18 14:58:16
End at: 2018-06-18 14:58:46
Local clock offset: -2.131 ms
Remote clock offset: -7.106 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 694.489 ms
Loss rate: 1.81%
-- Flow 1:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 663.448 ms
Loss rate: 1.60%
-- Flow 2:
Average throughput: 3.04 Mbit/s
95th percentile per-packet one-way delay: 733.612 ms
Loss rate: 1.47%
-- Flow 3:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 794.193 ms
Loss rate: 4.00%
```
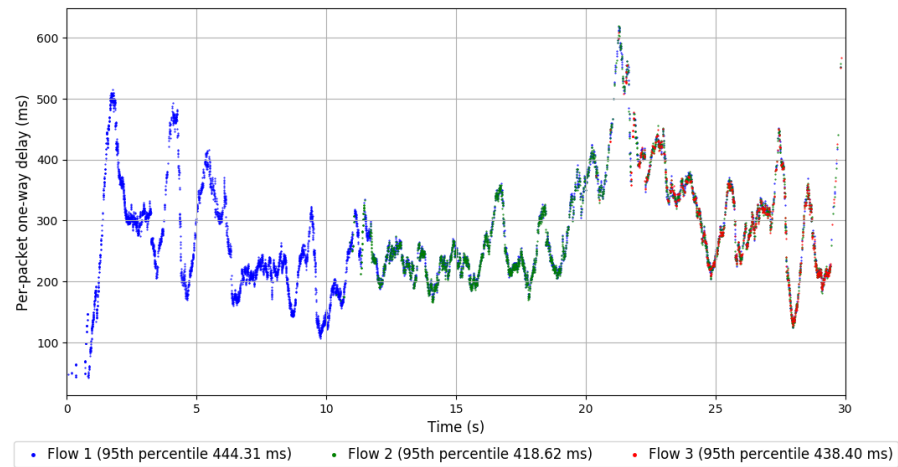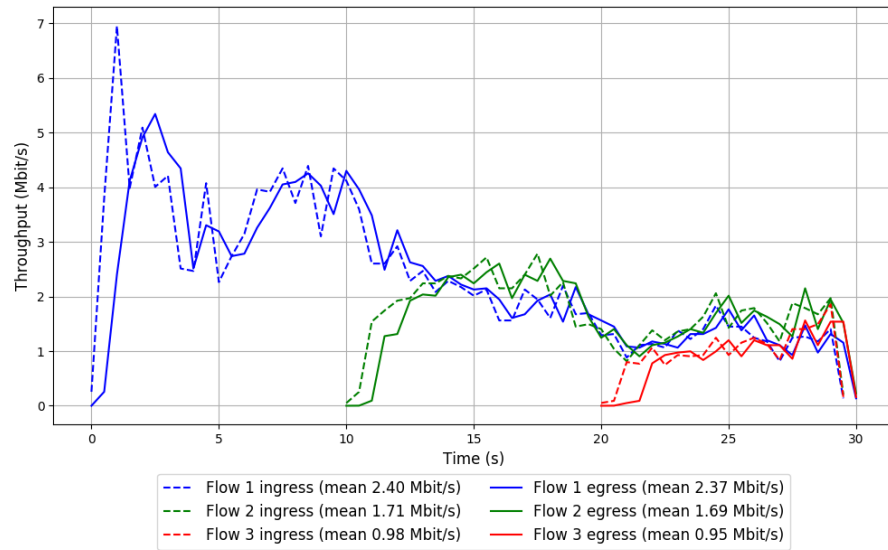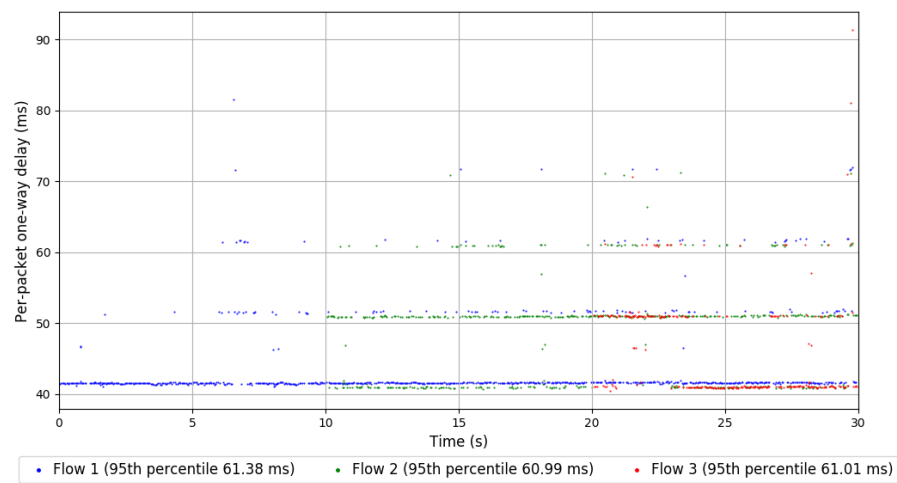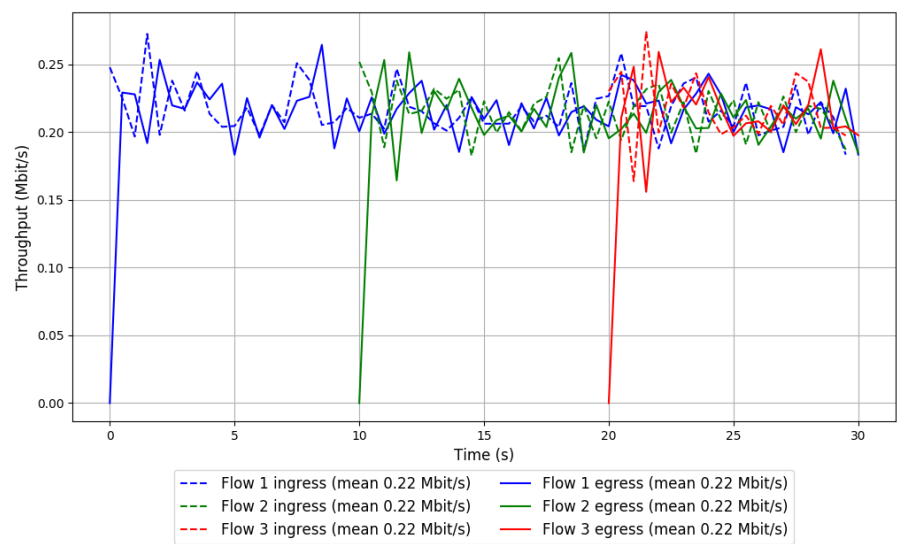
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-06-18 15:16:10
End at: 2018-06-18 15:16:40
Local clock offset: 0.444 ms
Remote clock offset: -3.258 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.68 Mbit/s
95th percentile per-packet one-way delay: 695.149 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 4.46 Mbit/s
95th percentile per-packet one-way delay: 585.059 ms
Loss rate: 1.27%
-- Flow 2:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 735.166 ms
Loss rate: 1.88%
-- Flow 3:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 919.607 ms
Loss rate: 5.71%
```
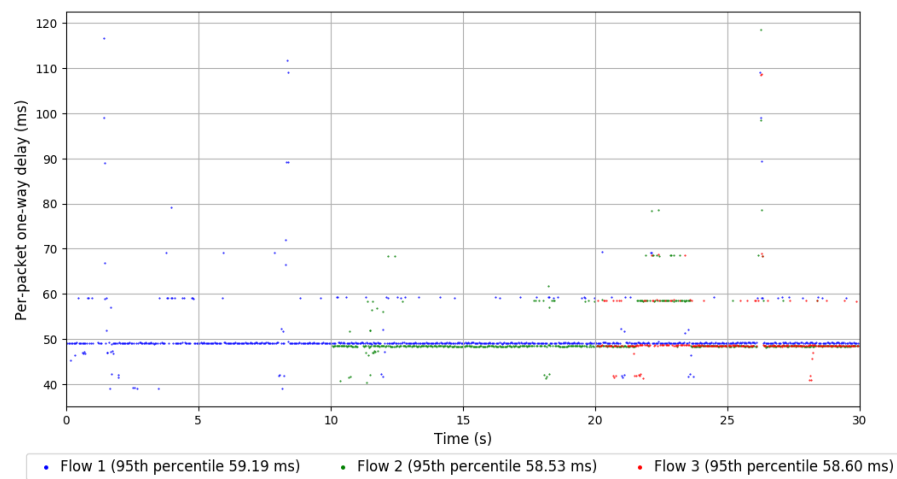
Run 2: Report of QUIC Cubic — Data Link
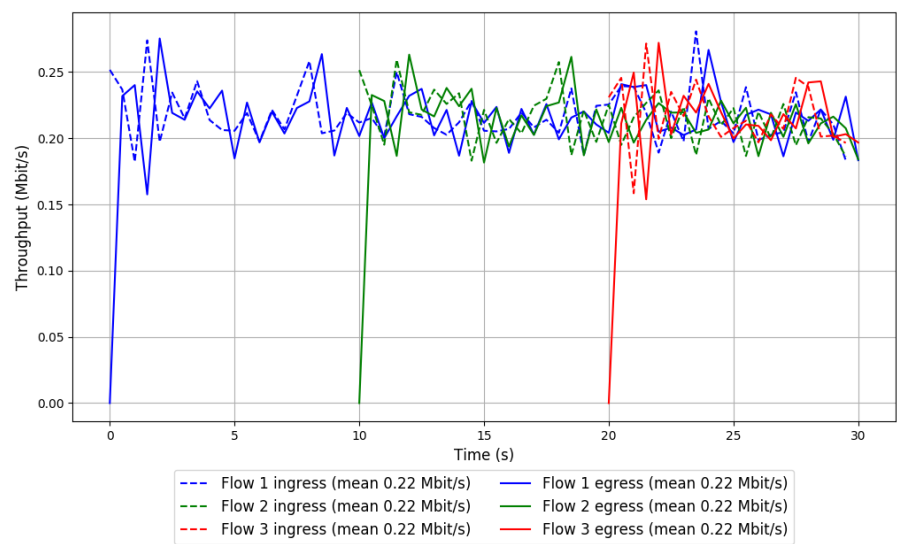
```
Run 3: Statistics of QUIC Cubic

Start at: 2018-06-18 15:34:23
End at: 2018-06-18 15:34:53
Local clock offset: 0.141 ms
Remote clock offset: -3.252 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.78 Mbit/s
95th percentile per-packet one-way delay: 435.493 ms
Loss rate: 1.81%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 444.312 ms
Loss rate: 1.06%
-- Flow 2:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 418.619 ms
Loss rate: 2.12%
-- Flow 3:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 438.398 ms
Loss rate: 6.27%
```
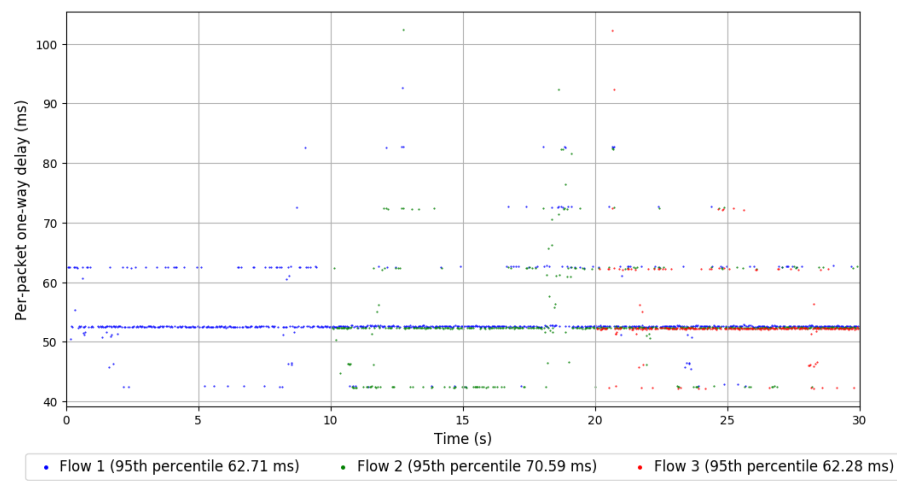
Run 3: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-06-18 14:53:52
End at: 2018-06-18 14:54:22
Local clock offset: 3.786 ms
Remote clock offset: -7.768 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 60.999 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 61.375 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 60.995 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 61.011 ms
Loss rate: 0.36%
```
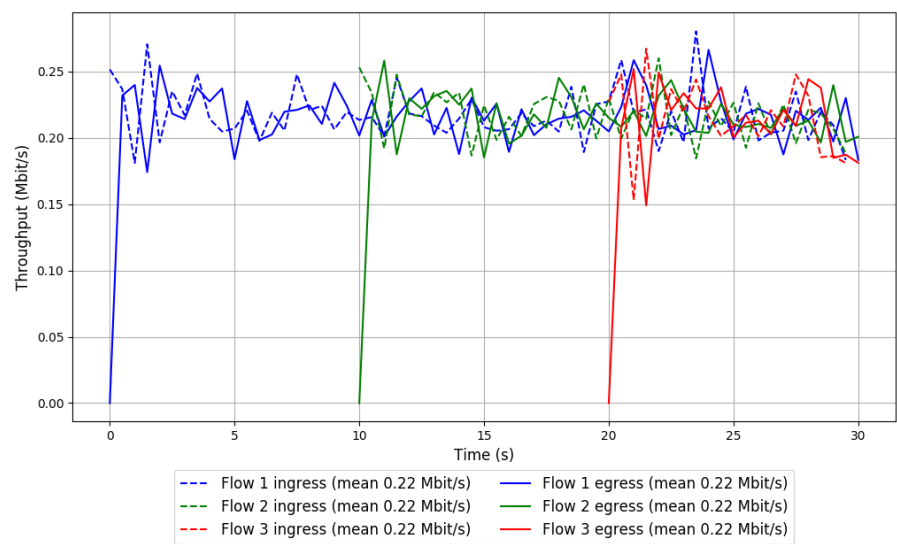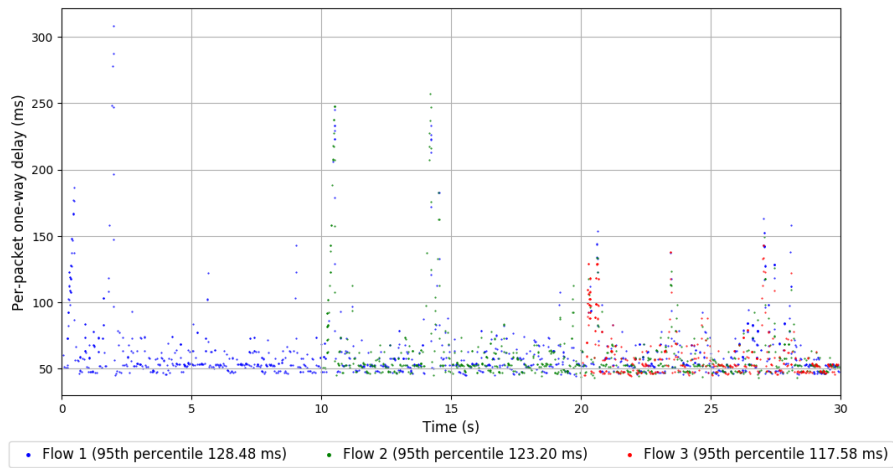
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-06-18 15:11:36
End at: 2018-06-18 15:12:06
Local clock offset: -3.054 ms
Remote clock offset: -9.391 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 59.145 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 59.187 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 58.531 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 58.602 ms
Loss rate: 0.35%
```
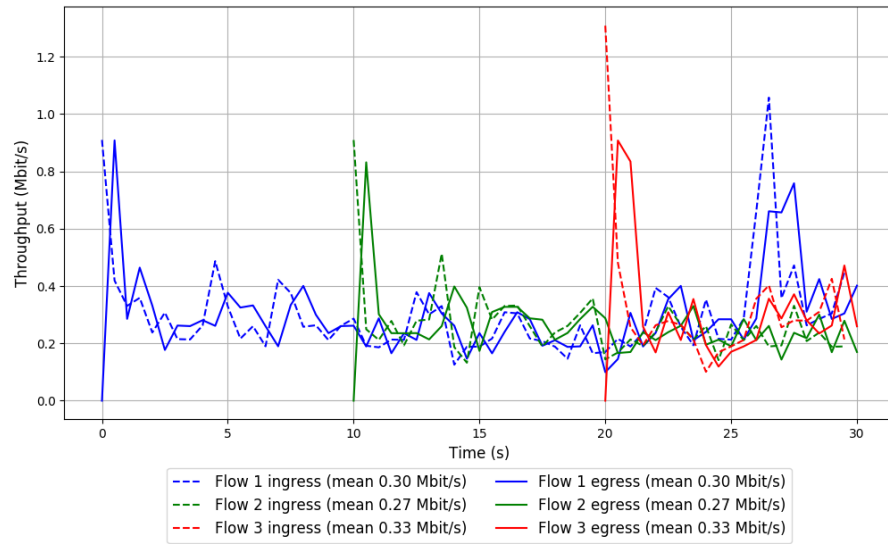
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-06-18 15:29:33
End at: 2018-06-18 15:30:03
Local clock offset: -2.266 ms
Remote clock offset: -1.437 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 62.710 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 62.711 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 70.592 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 62.276 ms
Loss rate: 0.33%
```
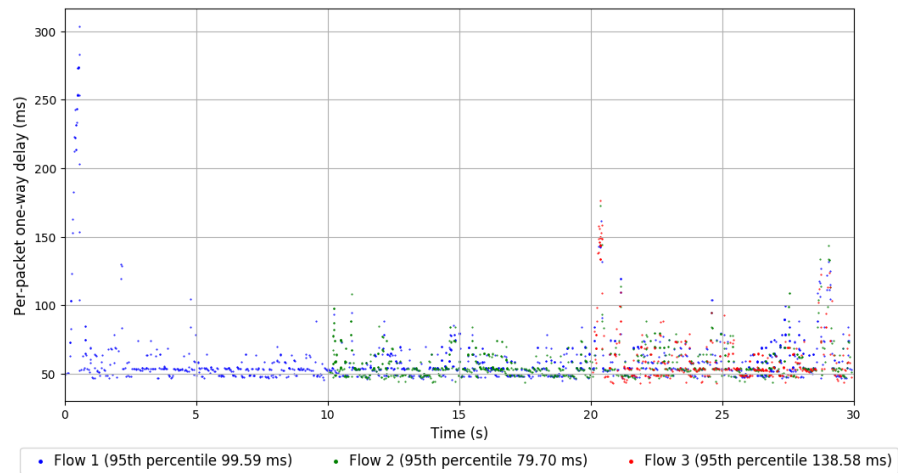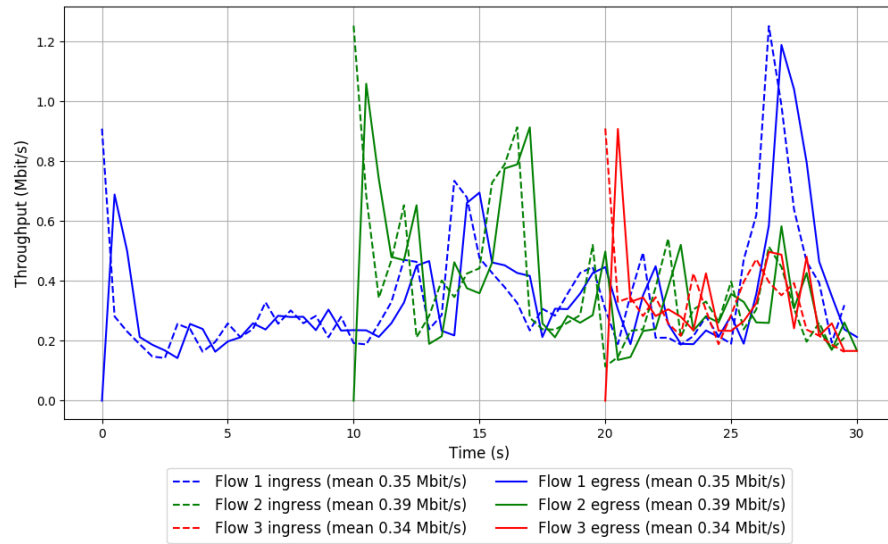
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-06-18 15:00:27
End at: 2018-06-18 15:00:57
Local clock offset: -1.699 ms
Remote clock offset: -6.529 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 127.270 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 128.478 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 123.201 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 117.579 ms
Loss rate: 0.02%
```
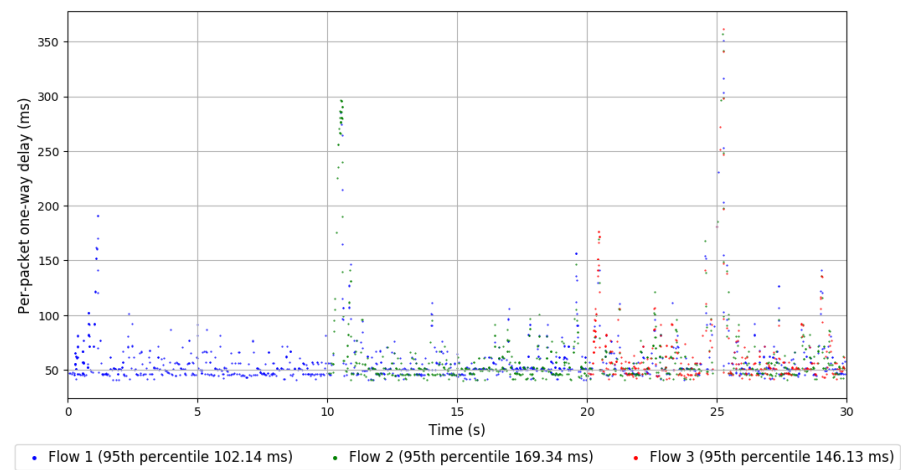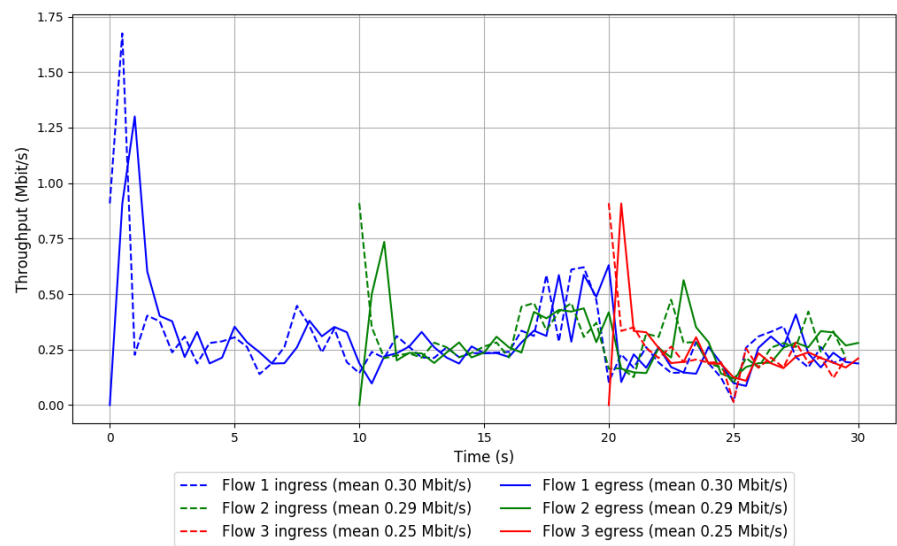
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-06-18 15:18:23
End at: 2018-06-18 15:18:53
Local clock offset: -3.886 ms
Remote clock offset: -3.122 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 94.411 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 99.593 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 79.703 ms
Loss rate: 0.29%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 138.582 ms
Loss rate: 0.31%
```
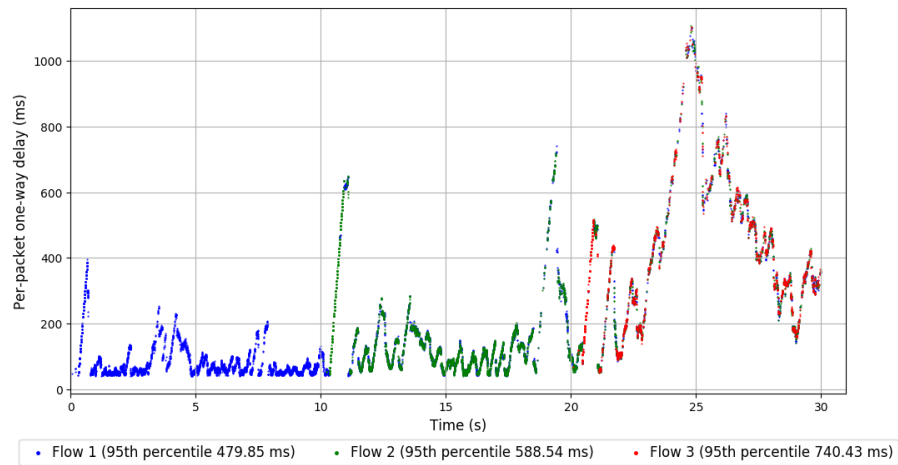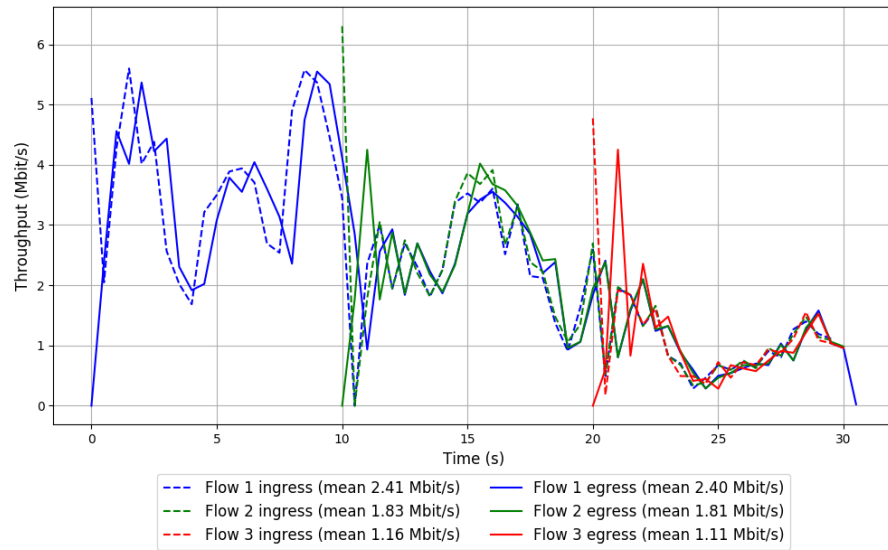
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-06-18 15:36:35
End at: 2018-06-18 15:37:05
Local clock offset: -0.525 ms
Remote clock offset: -3.217 ms


# Below is generated by plot.py at 2018-06-18 15:48:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 126.853 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 102.136 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 169.335 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 146.132 ms
Loss rate: 0.03%
```

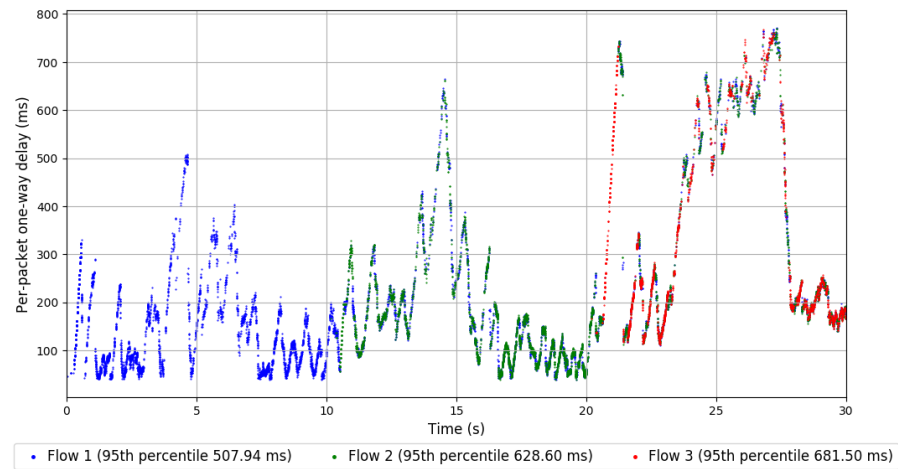Run 3: Report of Sprout — Data Link

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

Start at: 2018-06-18 14:57:09
End at: 2018-06-18 14:57:39
Local clock offset: 0.727 ms
Remote clock offset: -8.764 ms


# Below is generated by plot.py at 2018-06-18 15:48:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.97 Mbit/s
95th percentile per-packet one-way delay: 573.020 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 479.845 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 588.544 ms
Loss rate: 1.39%
-- Flow 3:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 740.428 ms
Loss rate: 4.61%
```

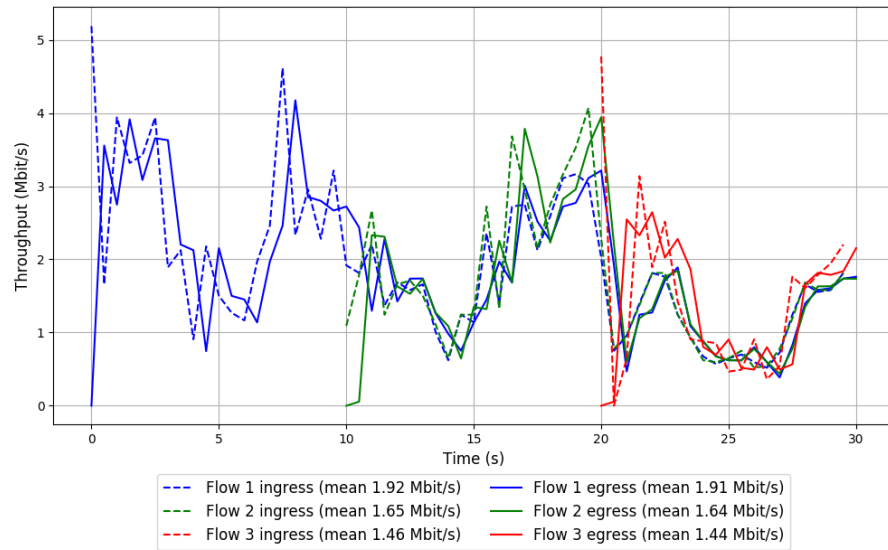Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-06-18 15:15:04
End at: 2018-06-18 15:15:34
Local clock offset: 1.972 ms
Remote clock offset: -3.717 ms

# Below is generated by plot.py at 2018-06-18 15:48:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.47 Mbit/s
95th percentile per-packet one-way delay: 620.748 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 507.935 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 1.64 Mbit/s
95th percentile per-packet one-way delay: 628.598 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 1.44 Mbit/s
95th percentile per-packet one-way delay: 681.504 ms
Loss rate: 2.87%
```
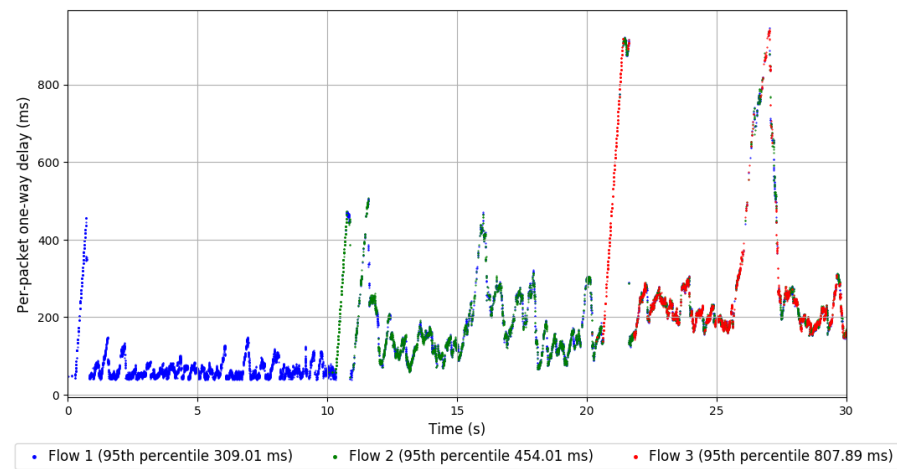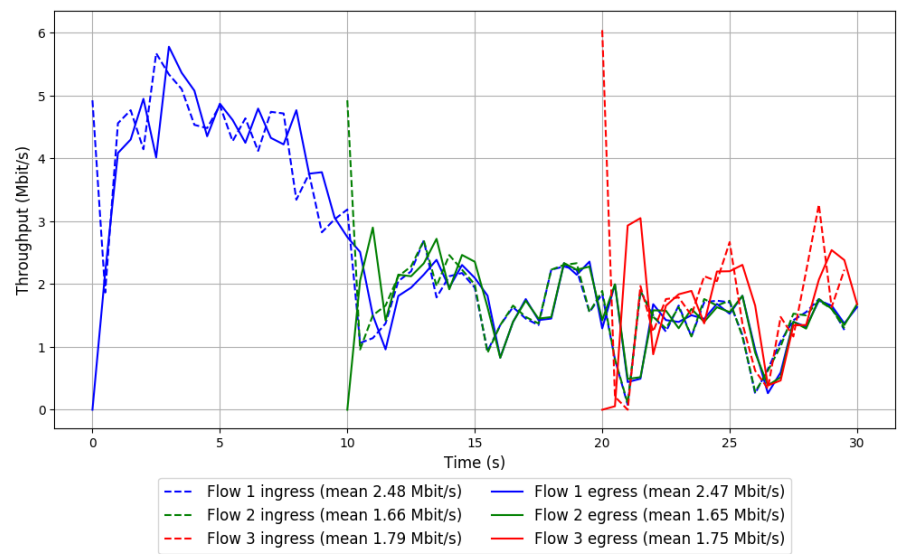
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-06-18 15:33:06
End at: 2018-06-18 15:33:36
Local clock offset: 1.239 ms
Remote clock offset: -1.85 ms

# Below is generated by plot.py at 2018-06-18 15:48:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.14 Mbit/s
95th percentile per-packet one-way delay: 445.362 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 2.47 Mbit/s
95th percentile per-packet one-way delay: 309.012 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 454.014 ms
Loss rate: 0.84%
-- Flow 3:
Average throughput: 1.75 Mbit/s
95th percentile per-packet one-way delay: 807.895 ms
Loss rate: 3.89%
```

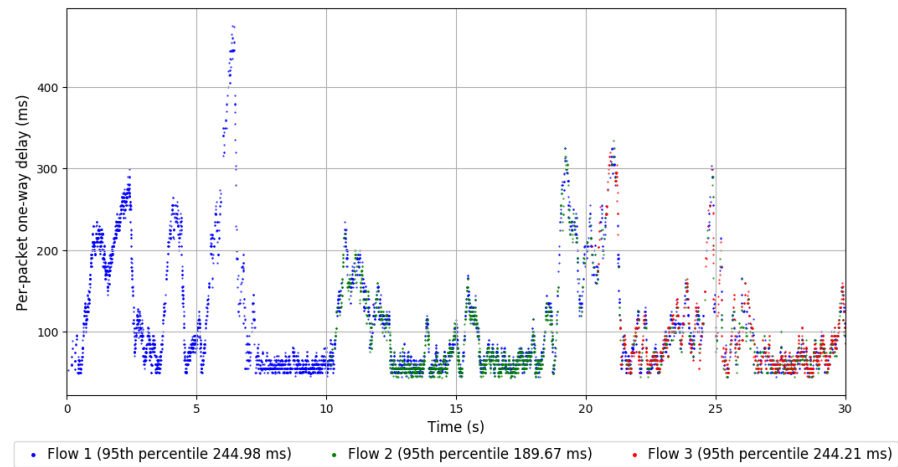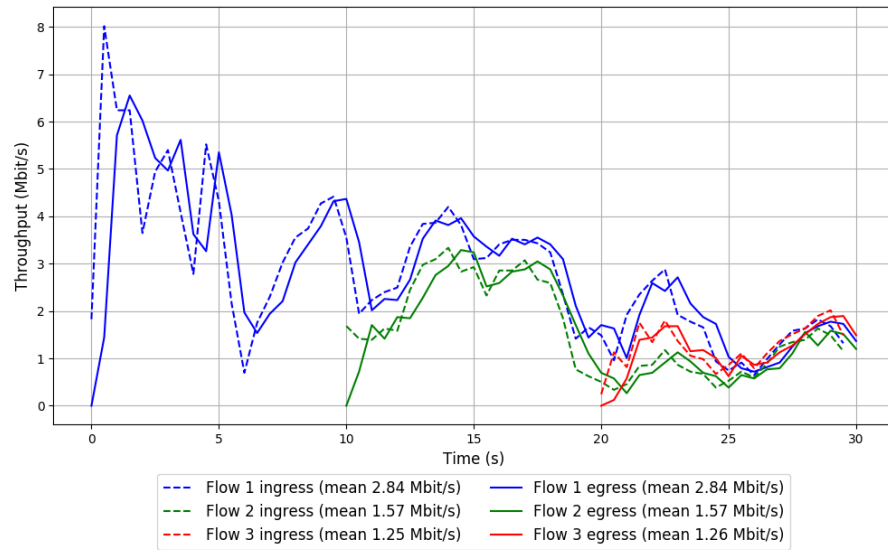Run 3: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-06-18 15:06:02
End at: 2018-06-18 15:06:32
Local clock offset: -2.197 ms
Remote clock offset: -5.885 ms


# Below is generated by plot.py at 2018-06-18 15:48:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.30 Mbit/s
95th percentile per-packet one-way delay: 235.113 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 2.84 Mbit/s
95th percentile per-packet one-way delay: 244.976 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 189.670 ms
Loss rate: 0.31%
-- Flow 3:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 244.214 ms
Loss rate: 1.44%
```

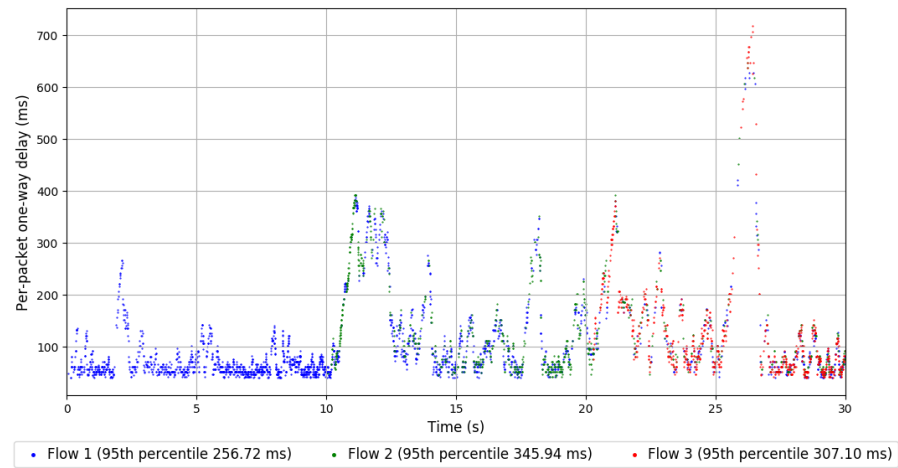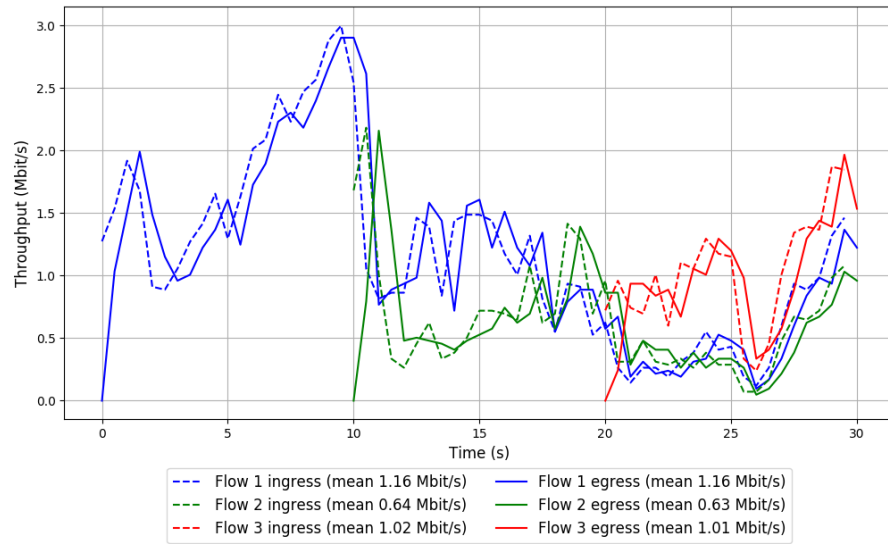Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-06-18 15:23:57
End at: 2018-06-18 15:24:27
Local clock offset: 0.034 ms
Remote clock offset: -2.839 ms


# Below is generated by plot.py at 2018-06-18 15:48:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 302.255 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 256.722 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 345.944 ms
Loss rate: 1.13%
-- Flow 3:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 307.099 ms
Loss rate: 2.36%
```

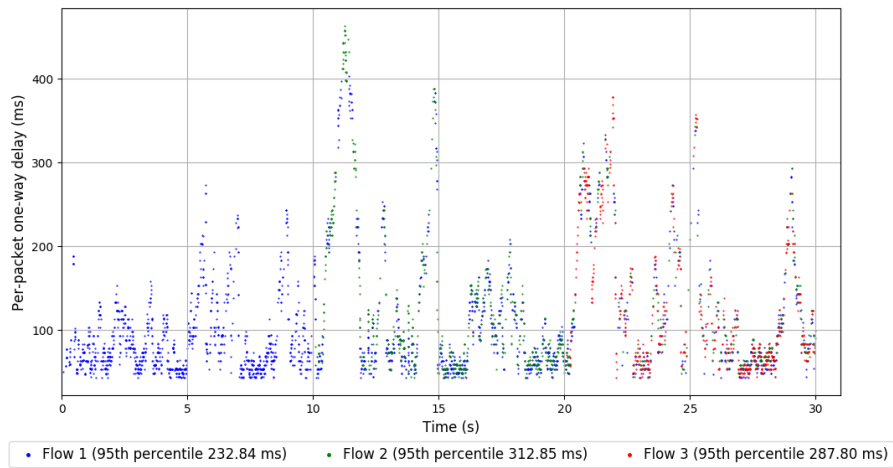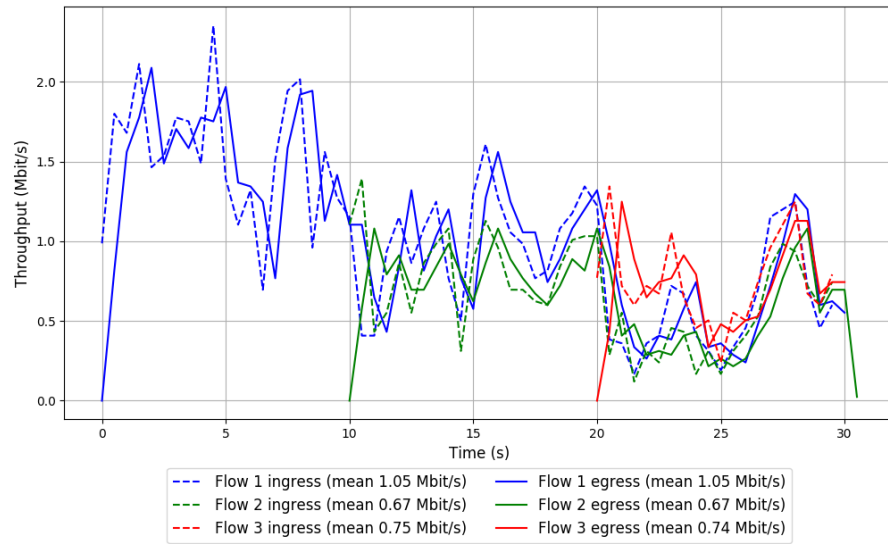Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-06-18 15:42:19
End at: 2018-06-18 15:42:49
Local clock offset: 0.468 ms
Remote clock offset: -5.139 ms


# Below is generated by plot.py at 2018-06-18 15:48:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 273.554 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 232.838 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 312.849 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 287.800 ms
Loss rate: 1.13%
```

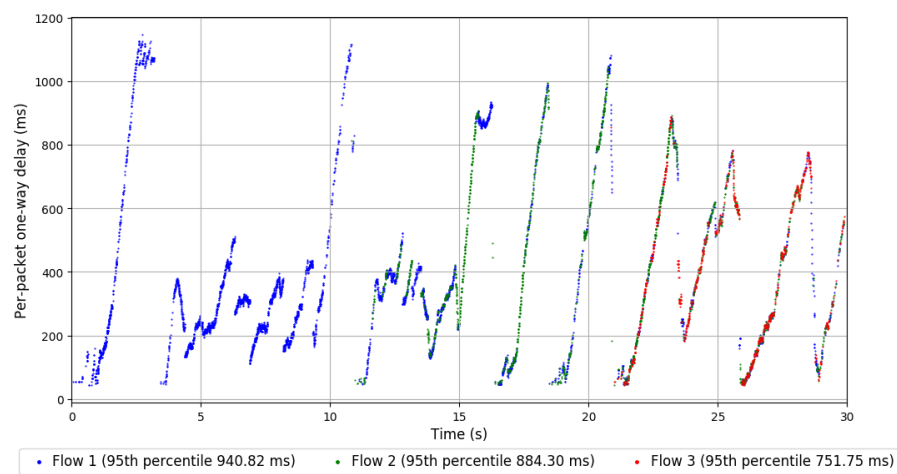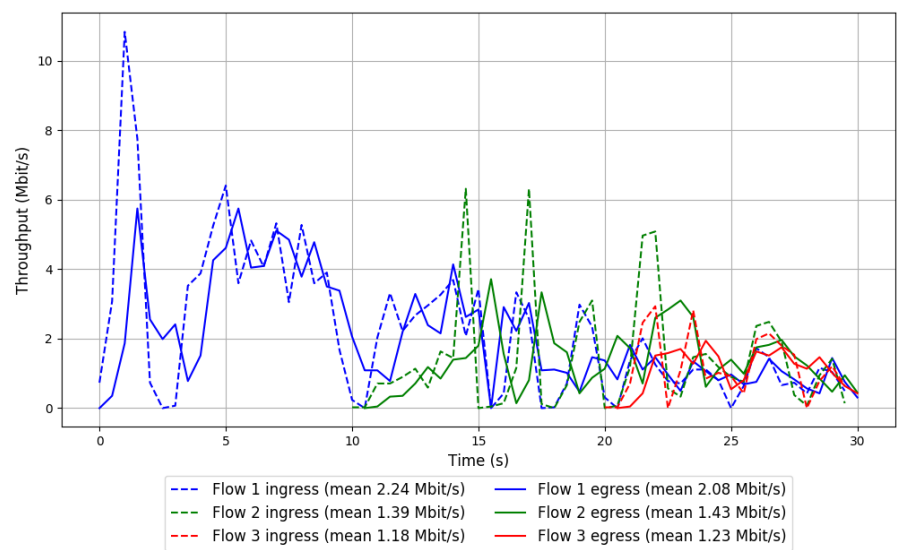Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-06-18 15:08:19
End at: 2018-06-18 15:08:49
Local clock offset: -2.737 ms
Remote clock offset: -5.232 ms


# Below is generated by plot.py at 2018-06-18 15:48:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 898.307 ms
Loss rate: 5.64%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 940.817 ms
Loss rate: 7.36%
-- Flow 2:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 884.304 ms
Loss rate: 1.71%
-- Flow 3:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 751.754 ms
Loss rate: 5.06%
```
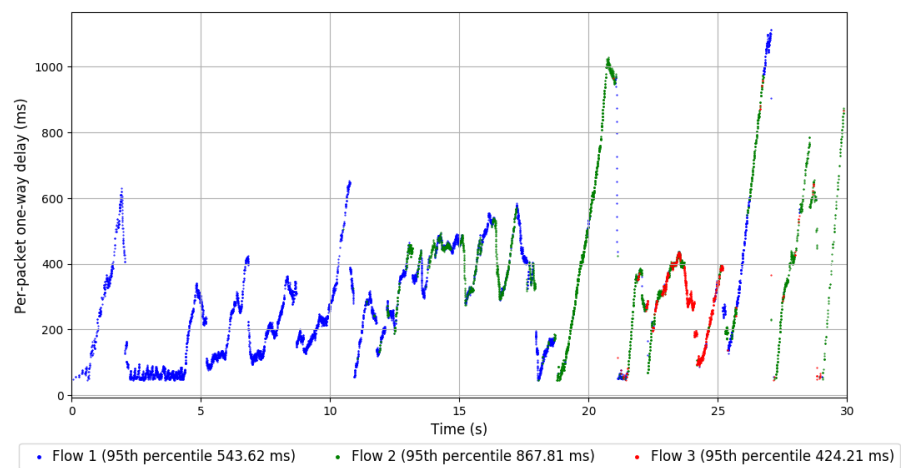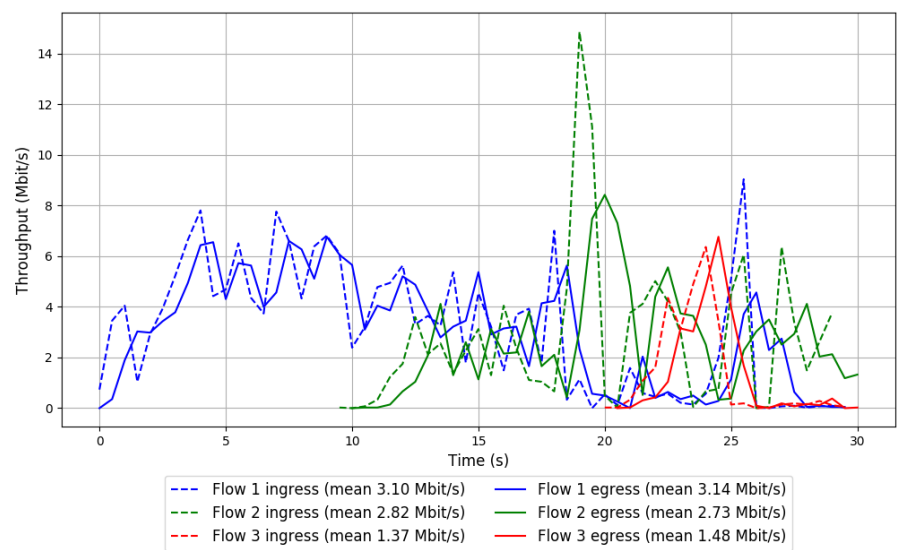
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-06-18 15:26:13
End at: 2018-06-18 15:26:43
Local clock offset: -3.907 ms
Remote clock offset: -1.828 ms


# Below is generated by plot.py at 2018-06-18 15:48:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.27 Mbit/s
95th percentile per-packet one-way delay: 722.358 ms
Loss rate: 2.08%
-- Flow 1:
Average throughput: 3.14 Mbit/s
95th percentile per-packet one-way delay: 543.621 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 867.810 ms
Loss rate: 3.85%
-- Flow 3:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 424.215 ms
Loss rate: 1.07%
```
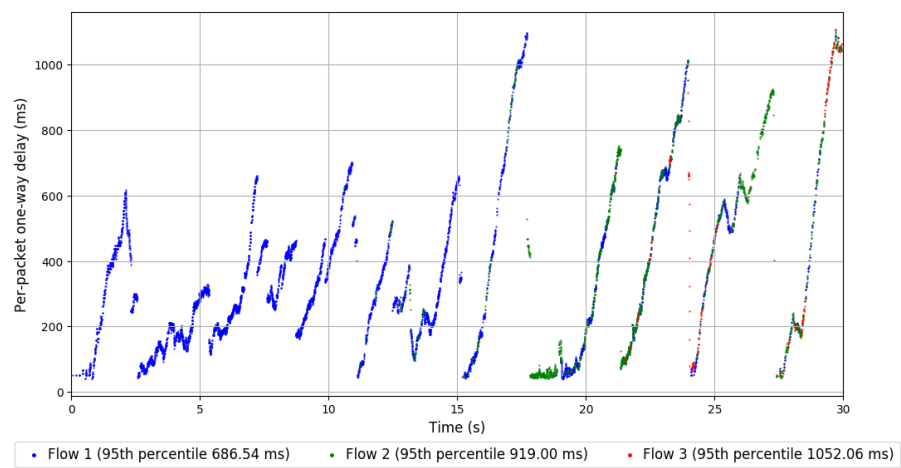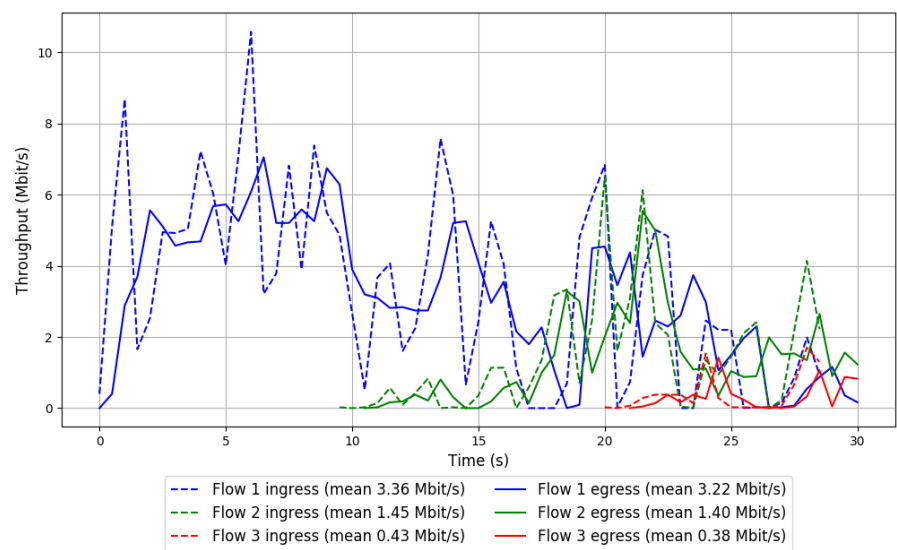
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-06-18 15:44:31
End at: 2018-06-18 15:45:01
Local clock offset: 2.026 ms
Remote clock offset: -4.901 ms


# Below is generated by plot.py at 2018-06-18 15:48:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.21 Mbit/s
95th percentile per-packet one-way delay: 832.576 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 3.22 Mbit/s
95th percentile per-packet one-way delay: 686.540 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 918.998 ms
Loss rate: 2.23%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 1052.055 ms
Loss rate: 8.44%
```
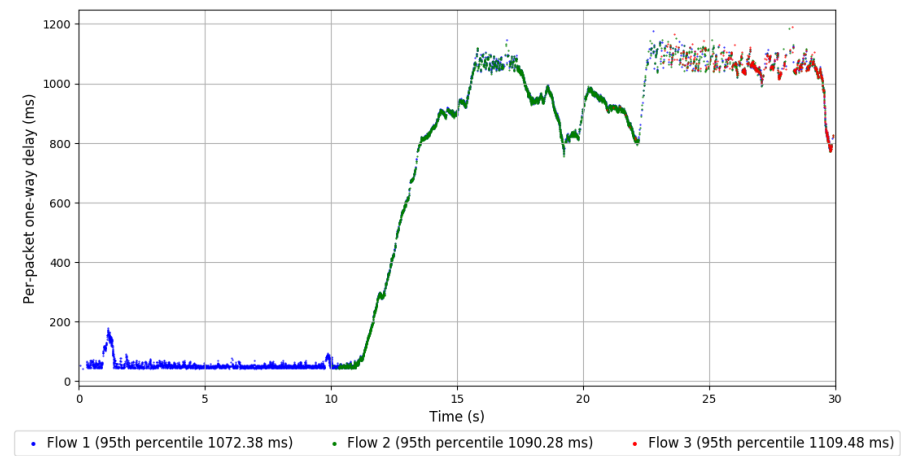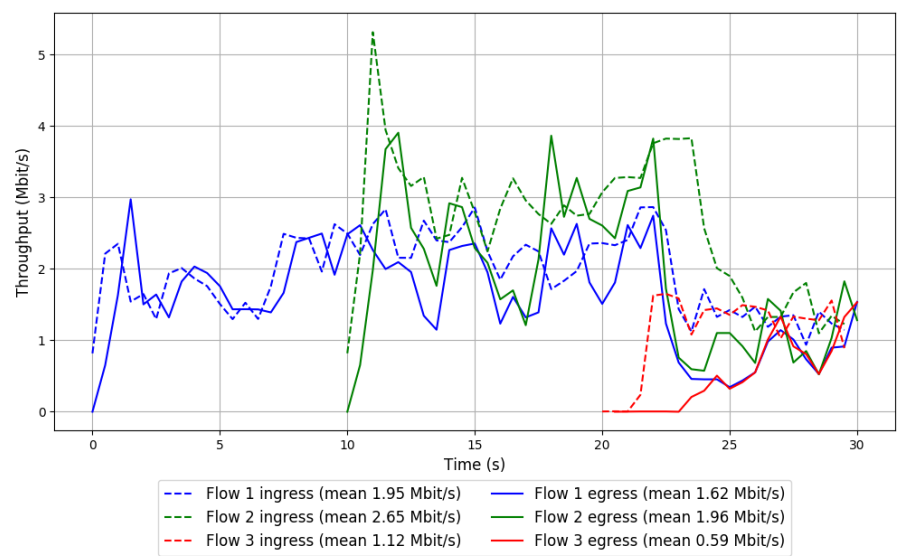
Run 3: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-06-18 14:54:57
End at: 2018-06-18 14:55:27
Local clock offset: 1.339 ms
Remote clock offset: -7.845 ms


# Below is generated by plot.py at 2018-06-18 15:48:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 1084.789 ms
Loss rate: 24.12%
-- Flow 1:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 1072.376 ms
Loss rate: 17.04%
-- Flow 2:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 1090.277 ms
Loss rate: 26.04%
-- Flow 3:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1109.485 ms
Loss rate: 52.20%
```

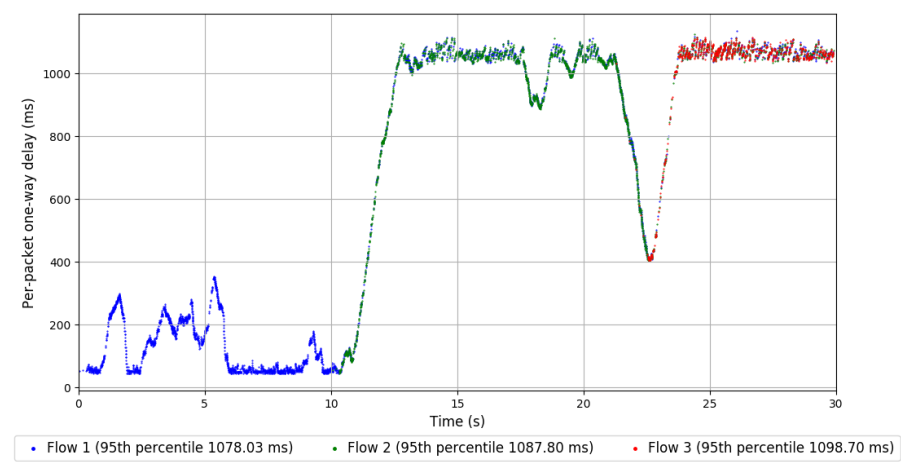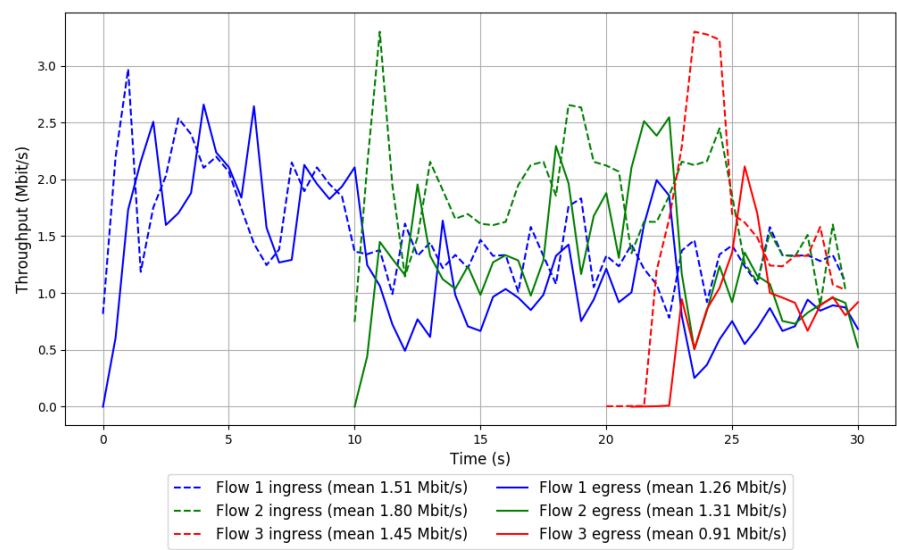Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-06-18 15:12:47
End at: 2018-06-18 15:13:17
Local clock offset: 0.242 ms
Remote clock offset: -3.907 ms


# Below is generated by plot.py at 2018-06-18 15:48:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 1087.003 ms
Loss rate: 25.11%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 1078.034 ms
Loss rate: 16.87%
-- Flow 2:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 1087.795 ms
Loss rate: 27.46%
-- Flow 3:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 1098.703 ms
Loss rate: 45.20%
```

Run 2: Report of PCC-Vivace — Data Link

- Flow 1 ingress (mean 1.51 Mbit/s)
- Flow 1 egress (mean 1.26 Mbit/s)
- Flow 2 ingress (mean 1.80 Mbit/s)
- Flow 2 egress (mean 1.31 Mbit/s)
- Flow 3 ingress (mean 1.45 Mbit/s)
- Flow 3 egress (mean 0.91 Mbit/s)

- Flow 1 (95th percentile 1078.03 ms)
- Flow 2 (95th percentile 1087.80 ms)
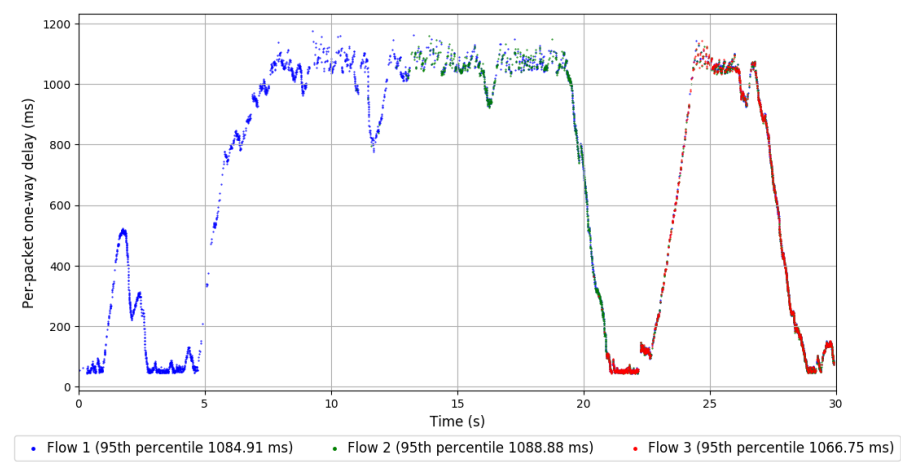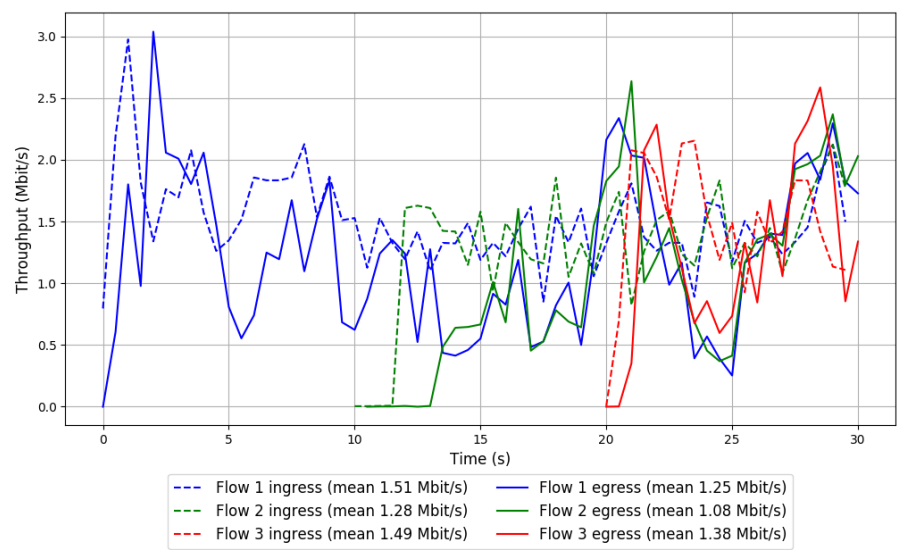- Flow 3 (95th percentile 1098.70 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-06-18 15:30:49
End at: 2018-06-18 15:31:19
Local clock offset: -2.382 ms
Remote clock offset: -1.444 ms


# Below is generated by plot.py at 2018-06-18 15:48:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 1083.188 ms
Loss rate: 17.25%
-- Flow 1:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 1084.909 ms
Loss rate: 17.79%
-- Flow 2:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 1088.879 ms
Loss rate: 20.31%
-- Flow 3:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 1066.753 ms
Loss rate: 10.26%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 1.51 Mbit/s)   Flow 1 egress (mean 1.25 Mbit/s)
Flow 2 ingress (mean 1.28 Mbit/s)   Flow 2 egress (mean 1.08 Mbit/s)
Flow 3 ingress (mean 1.49 Mbit/s)   Flow 3 egress (mean 1.38 Mbit/s)

Flow 1 (95th percentile 1084.91 ms)   Flow 2 (95th percentile 1088.88 ms)   Flow 3 (95th percentile 1066.75 ms)
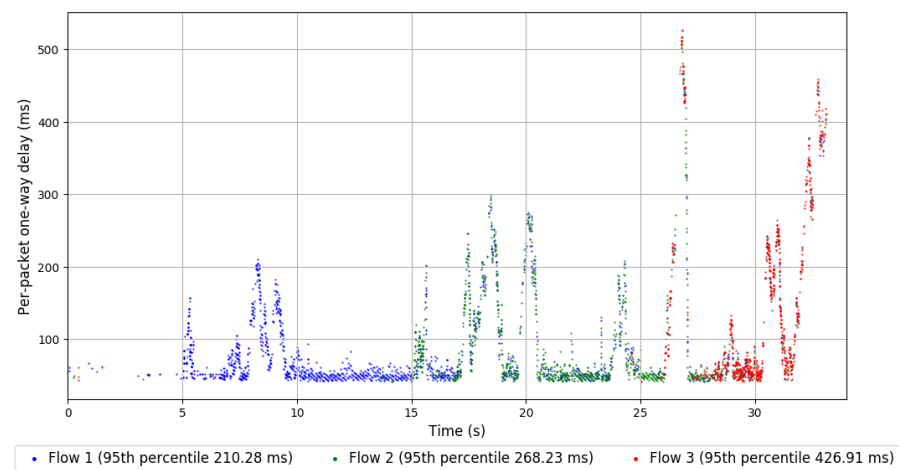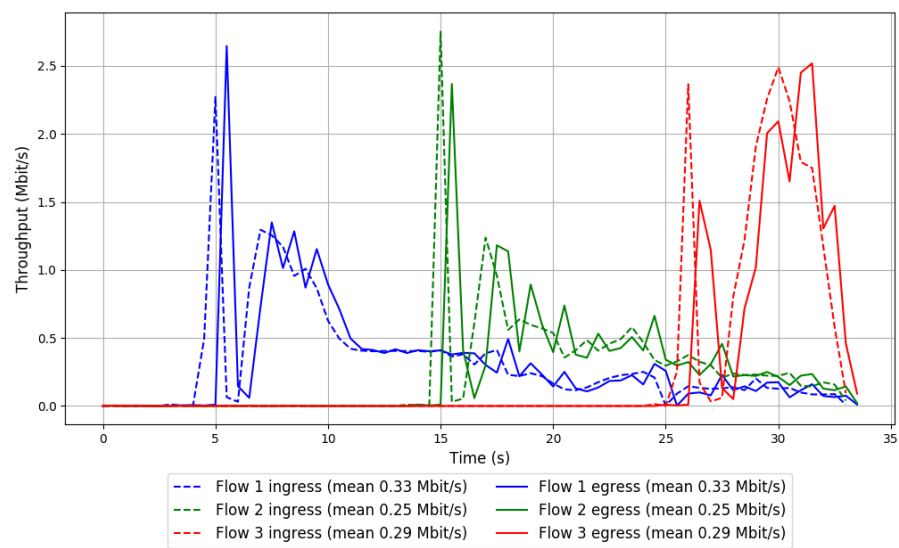
```
Run 1: Statistics of WebRTC media

Start at: 2018-06-18 15:01:33
End at: 2018-06-18 15:02:03
Local clock offset: -0.048 ms
Remote clock offset: -6.704 ms


# Below is generated by plot.py at 2018-06-18 15:48:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 306.252 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 210.285 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 268.230 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 426.914 ms
Loss rate: 2.95%
```

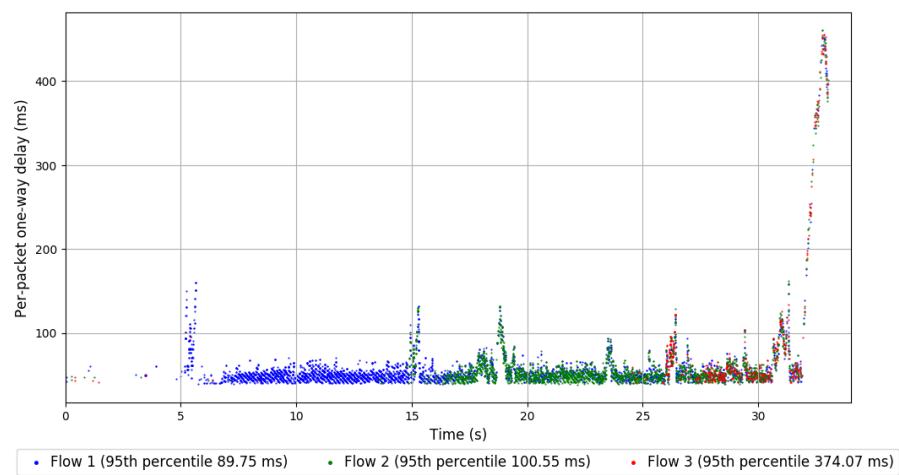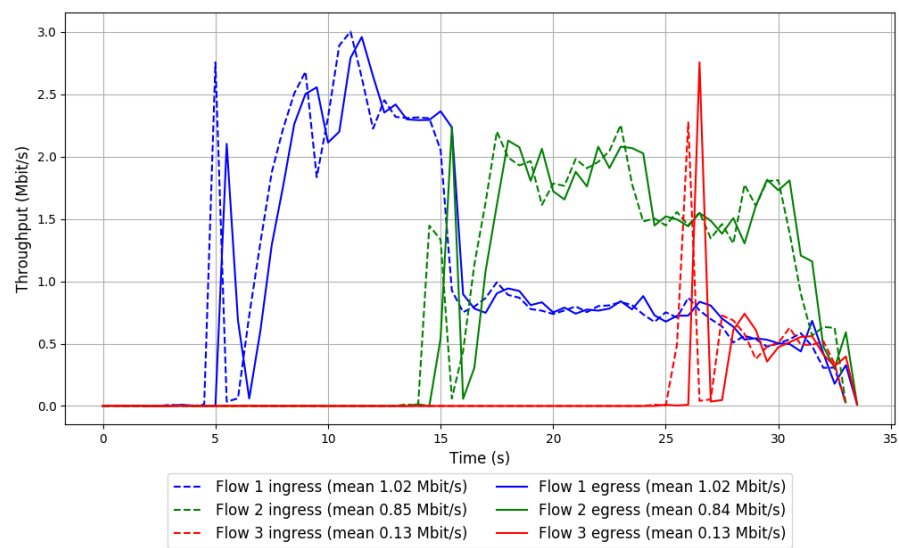Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-06-18 15:19:29
End at: 2018-06-18 15:19:59
Local clock offset: 0.605 ms
Remote clock offset: -2.715 ms


# Below is generated by plot.py at 2018-06-18 15:48:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 100.192 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 89.750 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 100.547 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 374.073 ms
Loss rate: 3.28%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-06-18 15:37:46
End at: 2018-06-18 15:38:16
Local clock offset: 0.362 ms
Remote clock offset: -3.582 ms


# Below is generated by plot.py at 2018-06-18 15:48:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 471.993 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 362.581 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 461.458 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 555.828 ms
Loss rate: 1.05%
```

Run 3: Report of WebRTC media — Data Link