Pantheon Report

Generated at 2018-02-27 10:48:19 (UTC).

Data path: AWS Brazil 2 Ethernet (*local*) →Colombia ppp0 (*remote*).

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

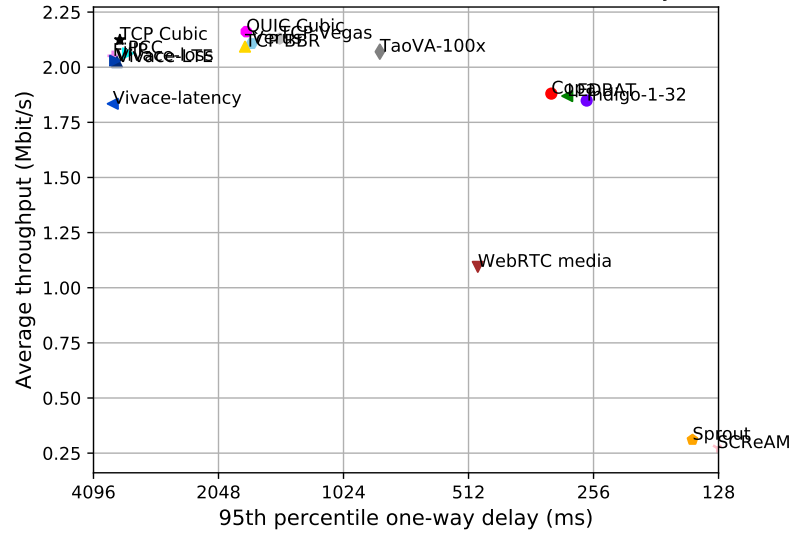Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ f12c42a2c63fdd9a862eefa0468859bf379b6623
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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 @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```
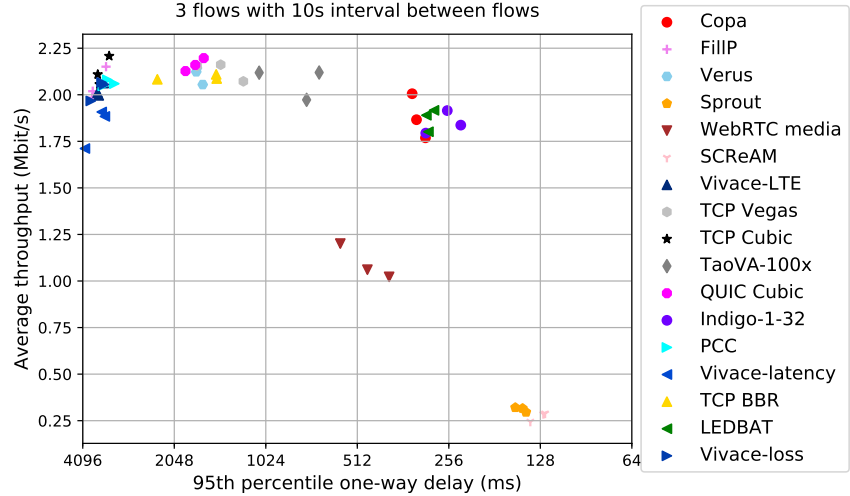
test from AWS Brazil 2 Ethernet to Colombia ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from AWS Brazil 2 Ethernet to Colombia ppp0, 3 runs of 30s each per scheme
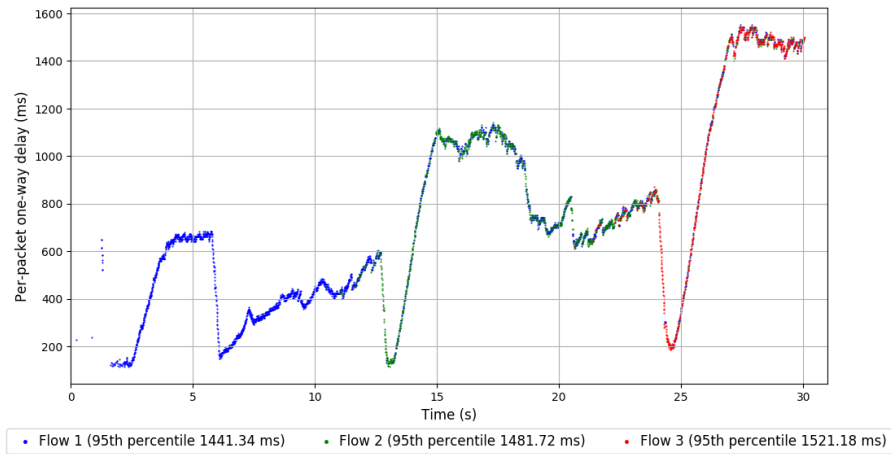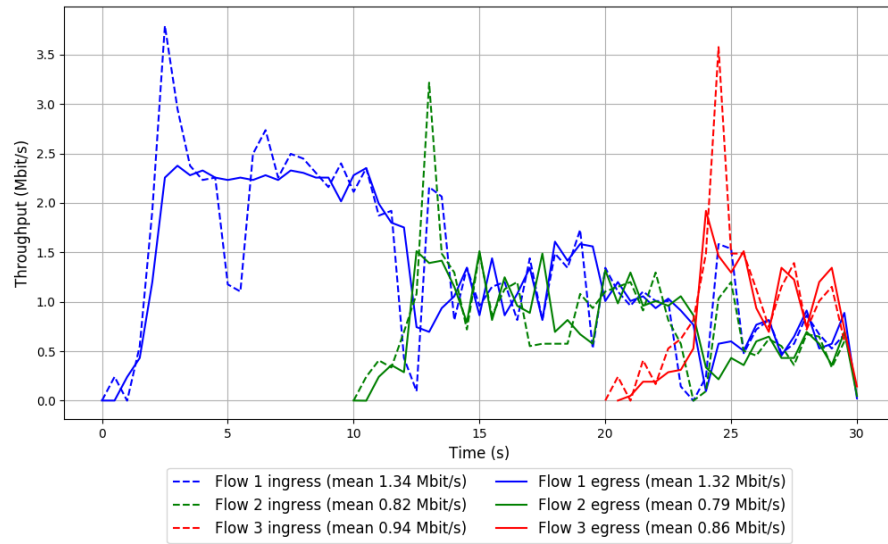3 flows with 10s interval between flows

2

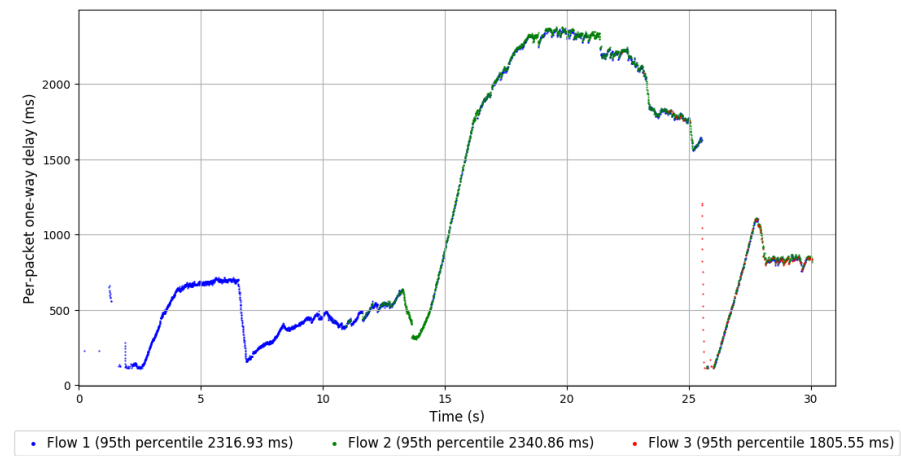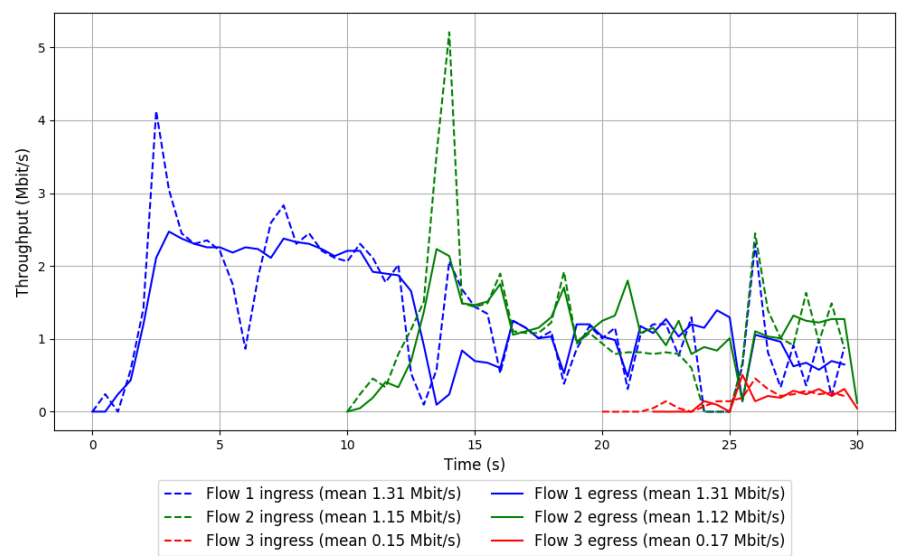| scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	1.33	0.94	0.49	1738.19	1782.71	1426.82	1.68	3.27	10.02
TCP Cubic	3	2.06	0.11	0.00	3539.64	3516.68	3340.34	14.90	26.64	51.89
LEDBAT	3	1.43	0.45	0.41	289.80	299.98	303.63	0.41	0.50	4.88
PCC	3	2.06	0.00	0.00	3383.76	2755.22	2080.47	59.34	2.81	7.49
QUIC Cubic	3	1.65	0.66	0.21	1726.02	1782.50	1840.91	4.63	10.08	26.14
SCReAM	3	0.08	0.20	0.17	127.79	132.70	135.93	0.13	0.19	0.22
WebRTC media	3	0.68	0.33	0.09	489.70	449.62	415.61	0.17	1.00	1.90
Sprout	3	0.15	0.17	0.15	153.37	144.60	150.11	0.01	0.12	0.04
TaoVA-100x	3	1.19	0.91	0.84	514.51	890.44	1145.05	0.89	1.70	3.41
TCP Vegas	3	1.59	0.49	0.75	1283.03	1470.27	1495.90	2.17	3.41	18.85
Verus	3	2.09	0.01	0.01	1703.19	1759.67	1609.19	3.87	4.77	9.70
Copa	3	1.11	0.87	0.57	310.40	317.91	353.58	0.39	0.86	2.59
FillP	3	1.77	0.50	0.01	3657.64	3729.19	3617.52	94.77	99.70	100.00
Indigo-1-32	3	1.12	0.75	0.73	219.81	295.53	404.82	0.12	0.28	0.95
Vivace-latency	3	1.05	1.17	0.00	3672.46	3690.76	3705.33	20.44	24.51	1.87
Vivace-loss	3	2.03	0.00	0.00	3631.33	3655.57	2298.81	28.53	18.14	7.05
Vivace-LTE	3	1.23	1.19	0.00	3578.71	3612.57	3425.70	19.00	28.04	1.87

```
Run 1: Statistics of TCP BBR

Start at: 2018-02-27 09:40:45
End at: 2018-02-27 09:41:15
Local clock offset: -6.425 ms
Remote clock offset: -0.492 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 1490.867 ms
Loss rate: 4.46%
-- Flow 1:
Average throughput: 1.32 Mbit/s
95th percentile per-packet one-way delay: 1441.335 ms
Loss rate: 2.21%
-- Flow 2:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 1481.716 ms
Loss rate: 4.57%
-- Flow 3:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 1521.184 ms
Loss rate: 13.97%
```

Run 1: Report of TCP BBR — Data Link

- Flow 1 ingress (mean 1.34 Mbit/s)
- Flow 1 egress (mean 1.32 Mbit/s)
- Flow 2 ingress (mean 0.82 Mbit/s)
- Flow 2 egress (mean 0.79 Mbit/s)
- Flow 3 ingress (mean 0.94 Mbit/s)
- Flow 3 egress (mean 0.86 Mbit/s)

- Flow 1 (95th percentile 1441.34 ms)
- Flow 2 (95th percentile 1481.72 ms)
- Flow 3 (95th percentile 1521.18 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2018-02-27 10:03:16
End at: 2018-02-27 10:03:46
Local clock offset: -5.641 ms
Remote clock offset: -0.314 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 2328.116 ms
Loss rate: 2.39%
-- Flow 1:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 2316.930 ms
Loss rate: 1.40%
-- Flow 2:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 2340.858 ms
Loss rate: 3.57%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1805.548 ms
Loss rate: 10.29%
```
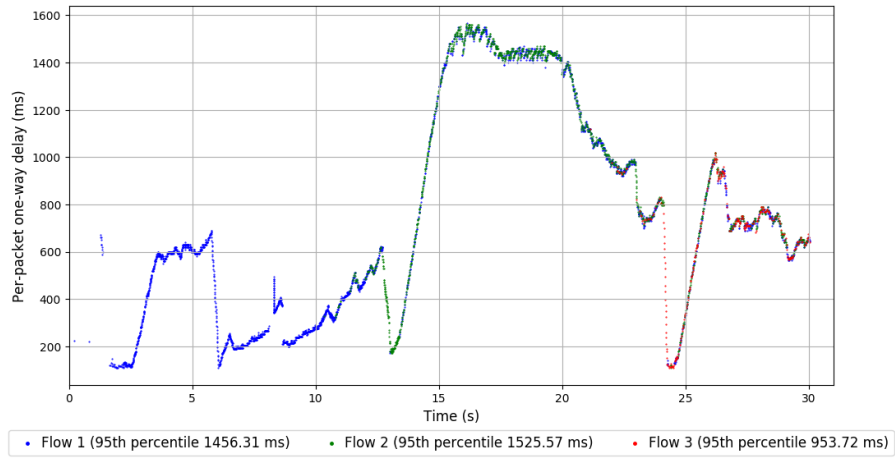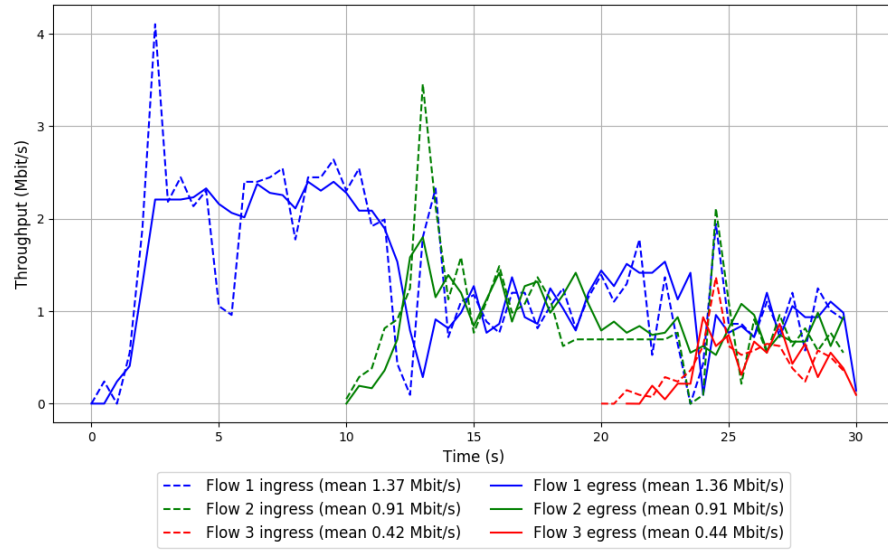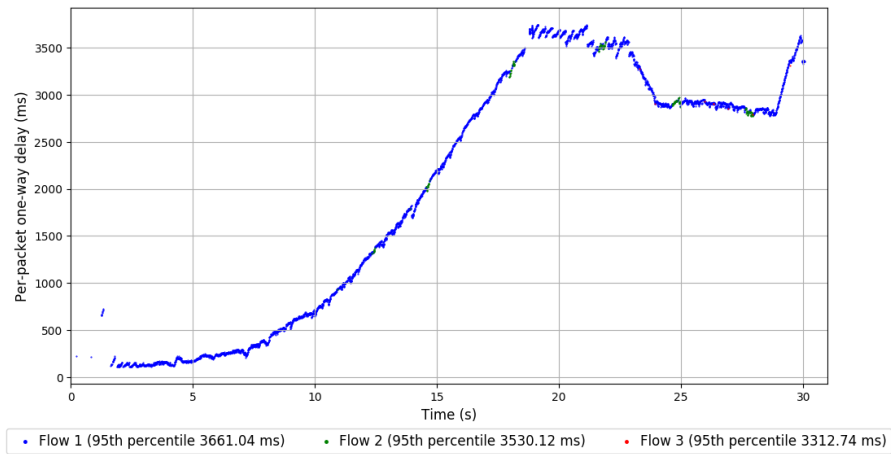
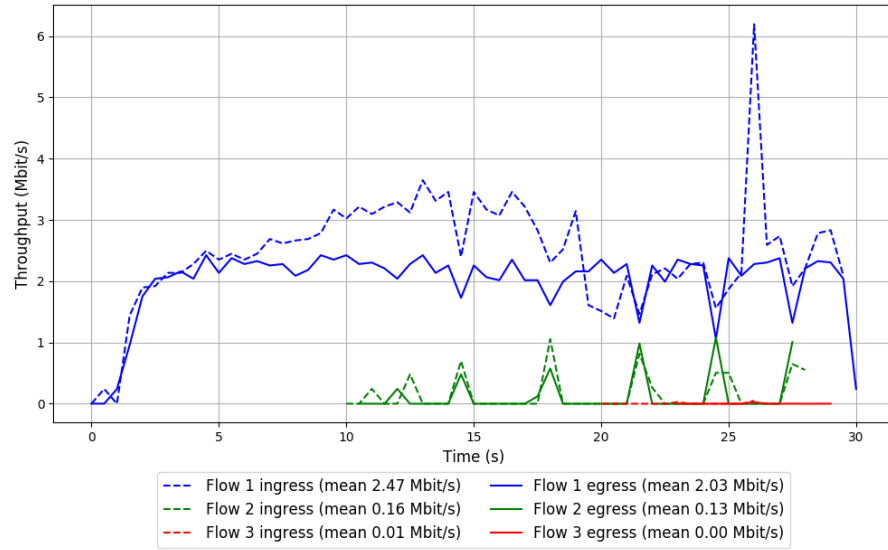## Run 2: Report of TCP BBR — Data Link

- Flow 1 ingress (mean 1.31 Mbit/s)
- Flow 1 egress (mean 1.31 Mbit/s)
- Flow 2 ingress (mean 1.15 Mbit/s)
- Flow 2 egress (mean 1.12 Mbit/s)
- Flow 3 ingress (mean 0.15 Mbit/s)
- Flow 3 egress (mean 0.17 Mbit/s)

- Flow 1 (95th percentile 2316.93 ms)
- Flow 2 (95th percentile 2340.86 ms)
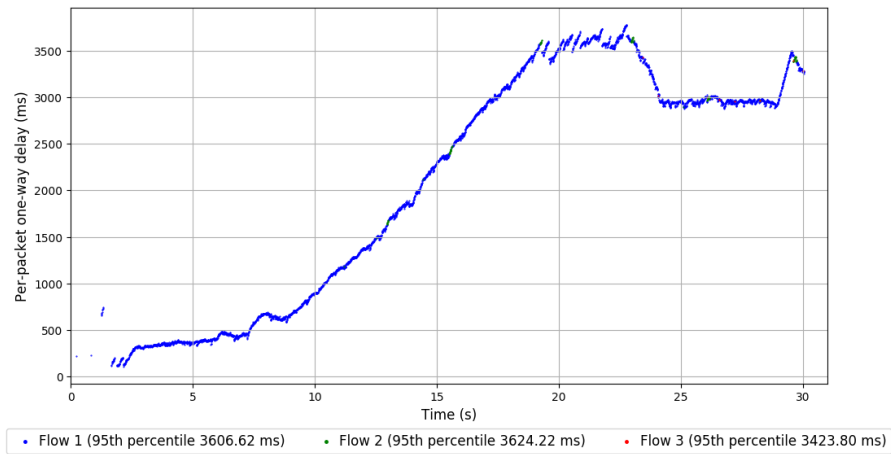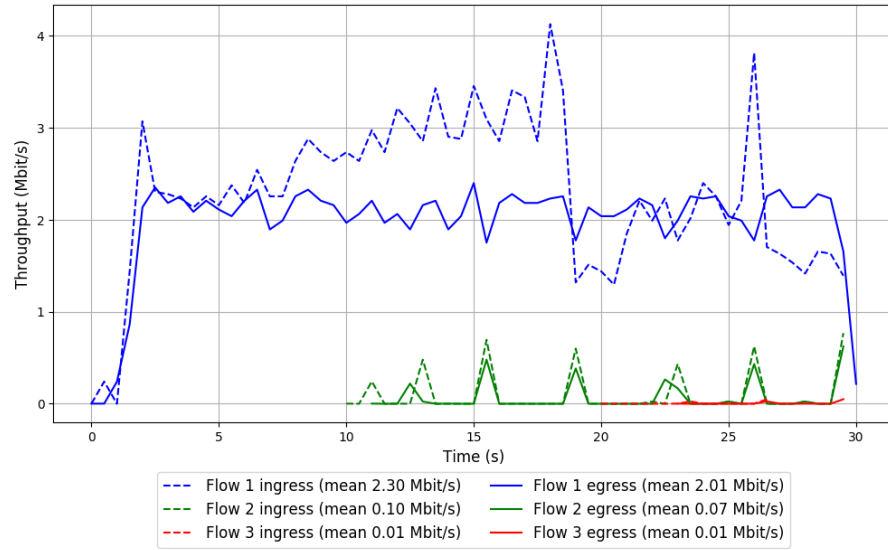- Flow 3 (95th percentile 1805.55 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-02-27 10:25:45
End at: 2018-02-27 10:26:15
Local clock offset: -5.226 ms
Remote clock offset: -5.23 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 1485.403 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 1456.305 ms
Loss rate: 1.43%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 1525.570 ms
Loss rate: 1.66%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 953.723 ms
Loss rate: 5.81%
```

Run 3: Report of TCP BBR — Data Link

- Flow 1 ingress (mean 1.37 Mbit/s)
- Flow 1 egress (mean 1.36 Mbit/s)
- Flow 2 ingress (mean 0.91 Mbit/s)
- Flow 2 egress (mean 0.91 Mbit/s)
- Flow 3 ingress (mean 0.42 Mbit/s)
- Flow 3 egress (mean 0.44 Mbit/s)

- Flow 1 (95th percentile 1456.31 ms)
- Flow 2 (95th percentile 1525.57 ms)
- Flow 3 (95th percentile 953.72 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-02-27 09:45:46
End at: 2018-02-27 09:46:16
Local clock offset: -6.339 ms
Remote clock offset: -5.649 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 3656.790 ms
Loss rate: 18.05%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 3661.044 ms
Loss rate: 17.87%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 3530.123 ms
Loss rate: 22.06%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3312.741 ms
Loss rate: 58.37%
```
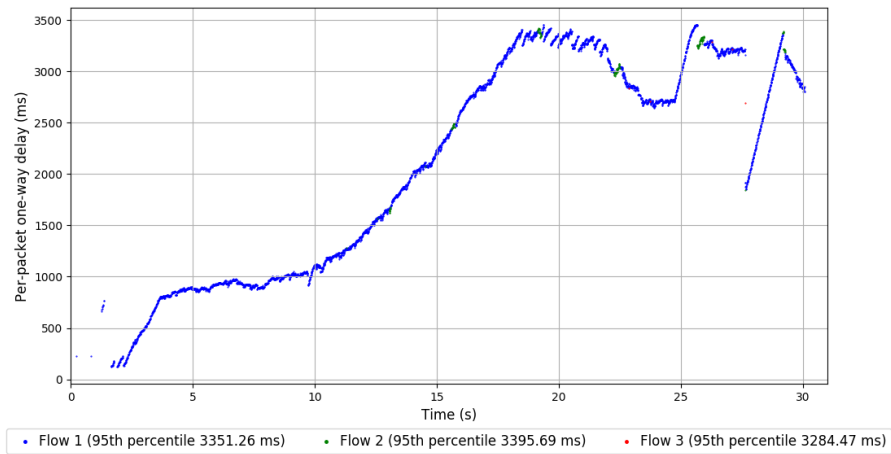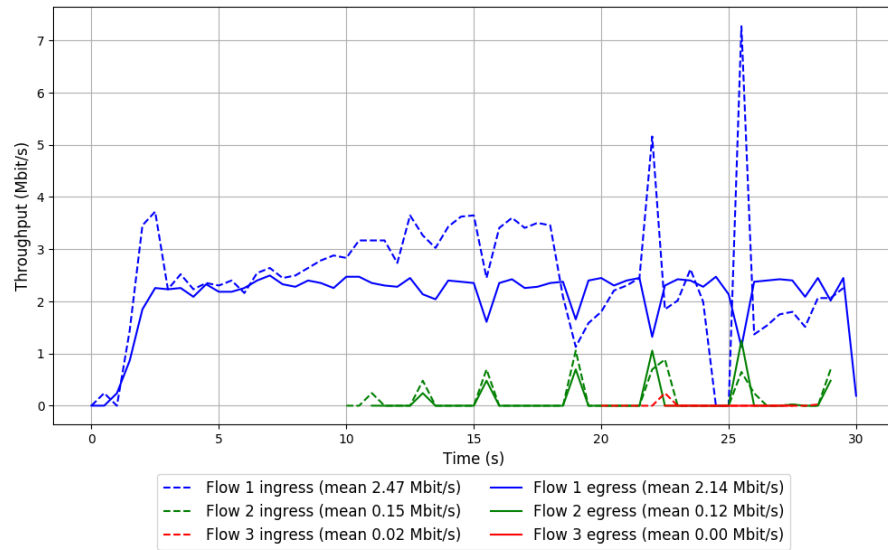
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-02-27 10:08:15
End at: 2018-02-27 10:08:45
Local clock offset: -5.525 ms
Remote clock offset: -5.239 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3606.634 ms
Loss rate: 13.55%
-- Flow 1:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 3606.621 ms
Loss rate: 13.02%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 3624.217 ms
Loss rate: 32.47%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 3423.796 ms
Loss rate: 0.00%
```

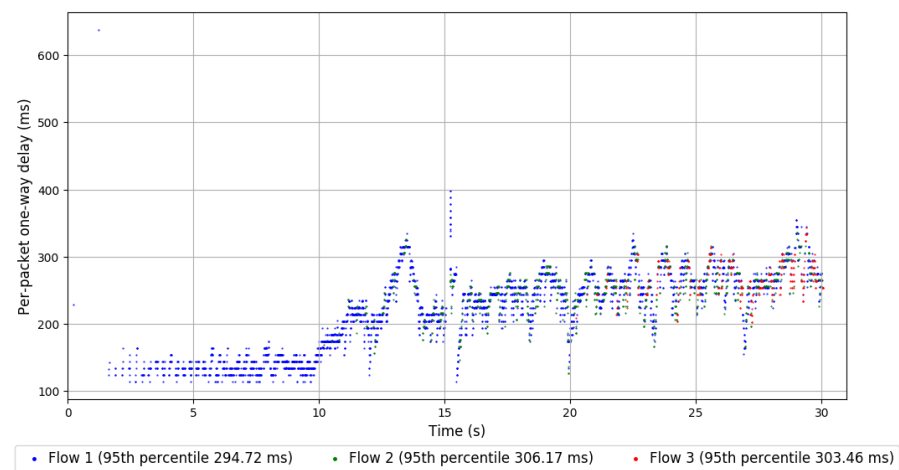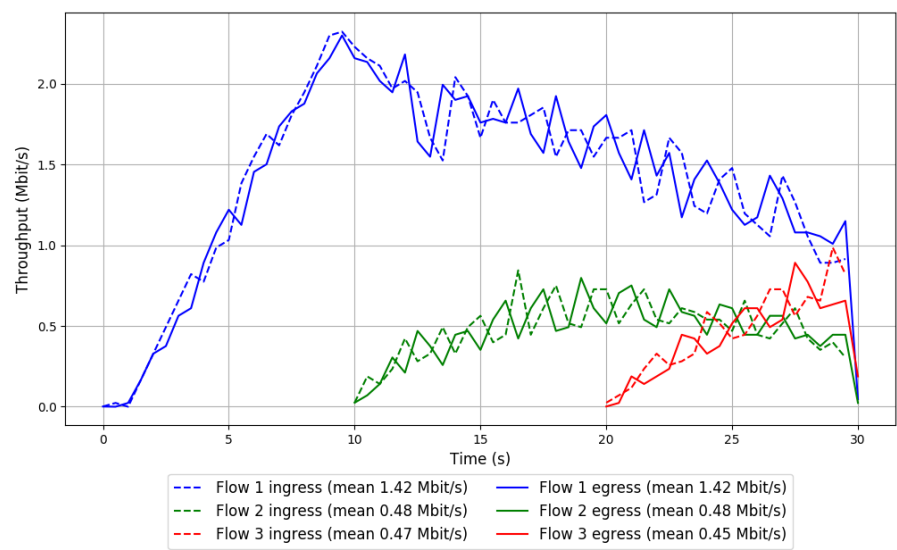# Run 2: Report of TCP Cubic — Data Link

Legend:
- Flow 1 ingress (mean 2.30 Mbit/s)
- Flow 1 egress (mean 2.01 Mbit/s)
- Flow 2 ingress (mean 0.10 Mbit/s)
- Flow 2 egress (mean 0.07 Mbit/s)
- Flow 3 ingress (mean 0.01 Mbit/s)
- Flow 3 egress (mean 0.01 Mbit/s)

Legend:
- Flow 1 (95th percentile 3606.62 ms)
- Flow 2 (95th percentile 3624.22 ms)
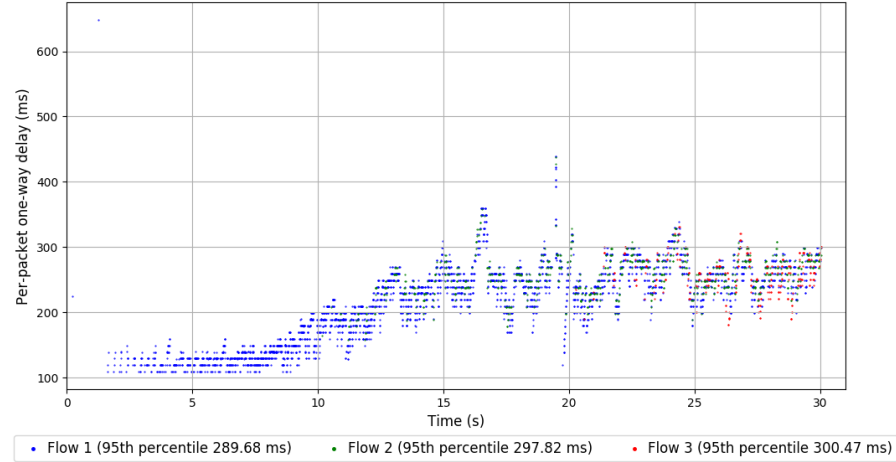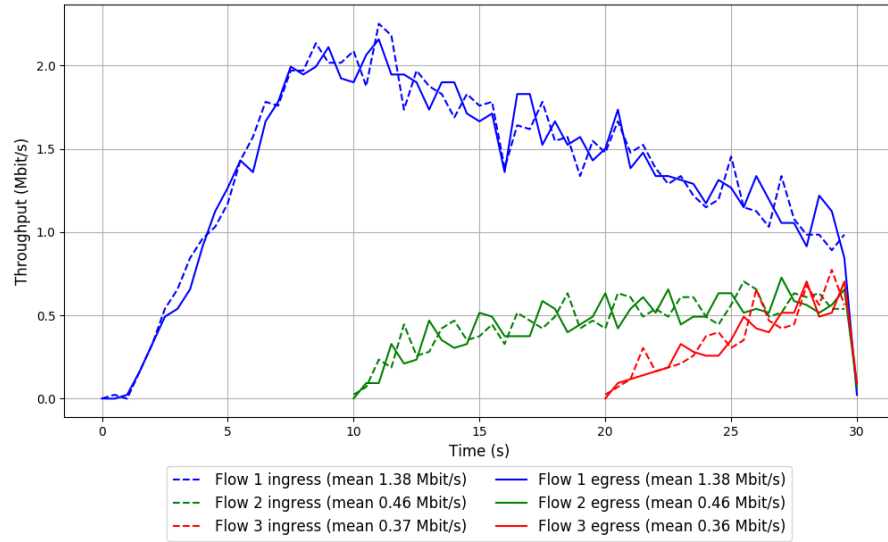- Flow 3 (95th percentile 3423.80 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-02-27 10:30:45
End at: 2018-02-27 10:31:15
Local clock offset: -4.513 ms
Remote clock offset: 0.528 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 3353.534 ms
Loss rate: 14.37%
-- Flow 1:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 3351.259 ms
Loss rate: 13.80%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 3395.691 ms
Loss rate: 25.40%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3284.470 ms
Loss rate: 97.31%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 2.47 Mbit/s) — Flow 1 egress (mean 2.14 Mbit/s)
Flow 2 ingress (mean 0.15 Mbit/s) — Flow 2 egress (mean 0.12 Mbit/s)
Flow 3 ingress (mean 0.02 Mbit/s) — Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 3351.26 ms) • Flow 2 (95th percentile 3395.69 ms) • Flow 3 (95th percentile 3284.47 ms)
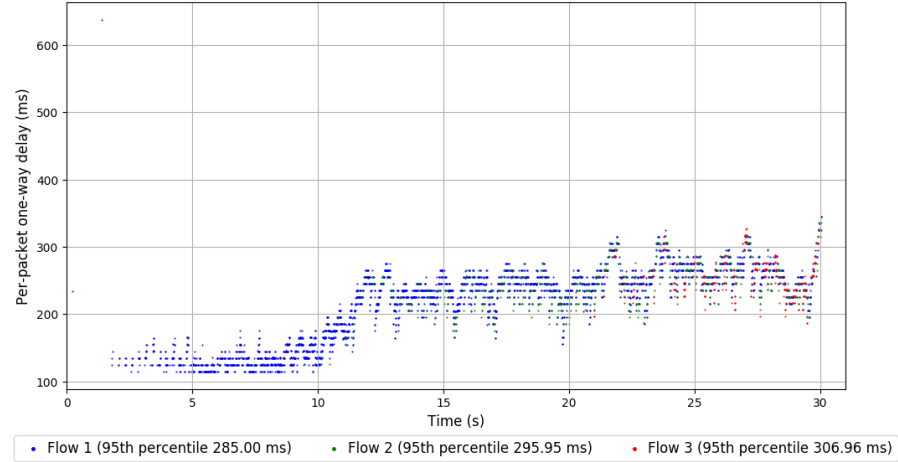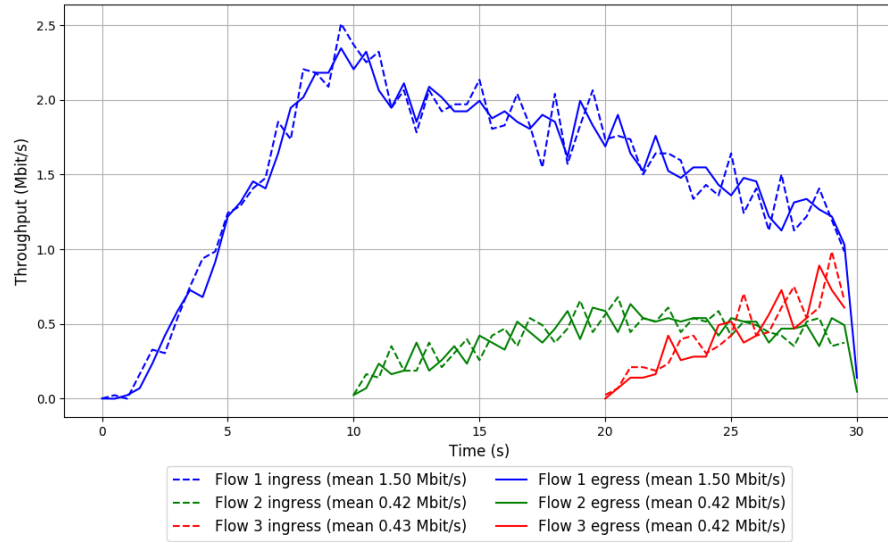
15

```
Run 1: Statistics of LEDBAT

Start at: 2018-02-27 09:58:16
End at: 2018-02-27 09:58:46
Local clock offset: -5.829 ms
Remote clock offset: -0.348 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 303.452 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 294.718 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 306.172 ms
Loss rate: 0.37%
-- Flow 3:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 303.461 ms
Loss rate: 5.02%
```
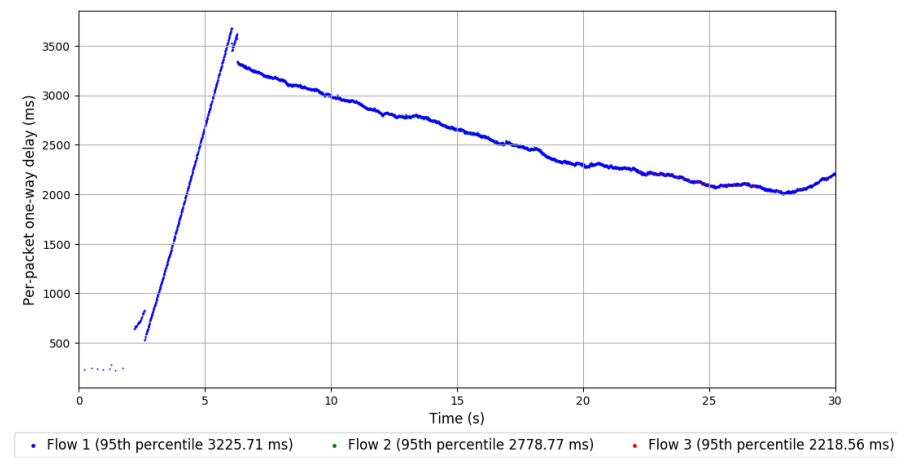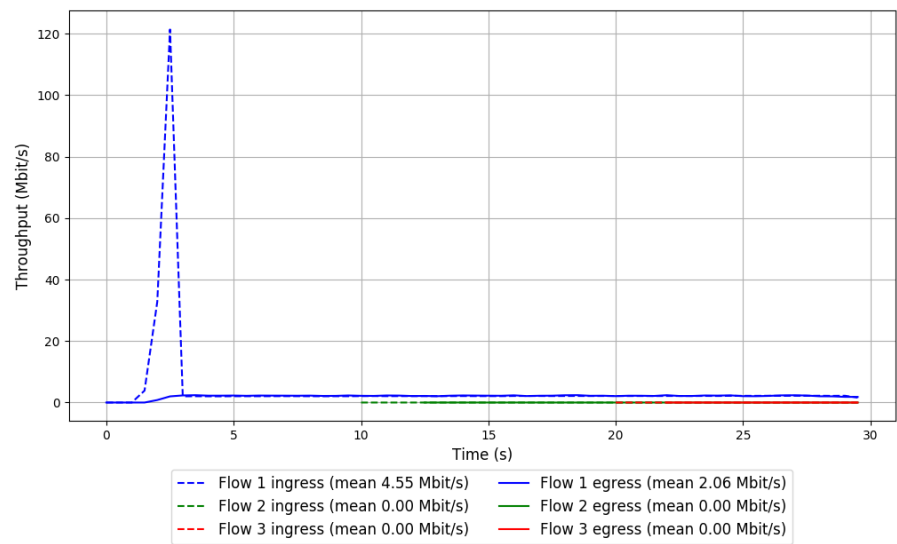
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-02-27 10:20:45
End at: 2018-02-27 10:21:15
Local clock offset: -5.402 ms
Remote clock offset: -5.218 ms


# Below is generated by plot.py at 2018-02-27 10:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 298.790 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 289.684 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 297.819 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 300.469 ms
Loss rate: 4.15%
```

Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 1.38 Mbit/s) --- Flow 1 egress (mean 1.38 Mbit/s)
Flow 2 ingress (mean 0.46 Mbit/s) --- Flow 2 egress (mean 0.46 Mbit/s)
Flow 3 ingress (mean 0.37 Mbit/s) --- Flow 3 egress (mean 0.36 Mbit/s)

Flow 1 (95th percentile 289.68 ms)   Flow 2 (95th percentile 297.82 ms)   Flow 3 (95th percentile 300.47 ms)
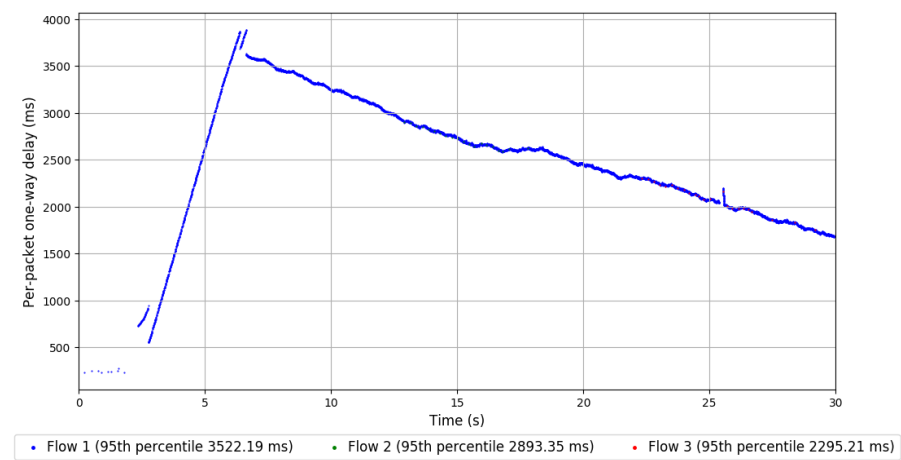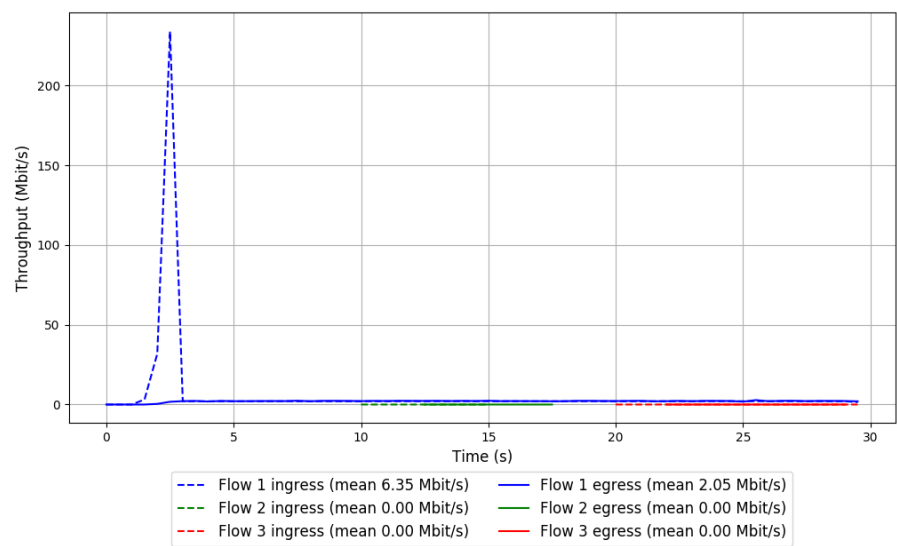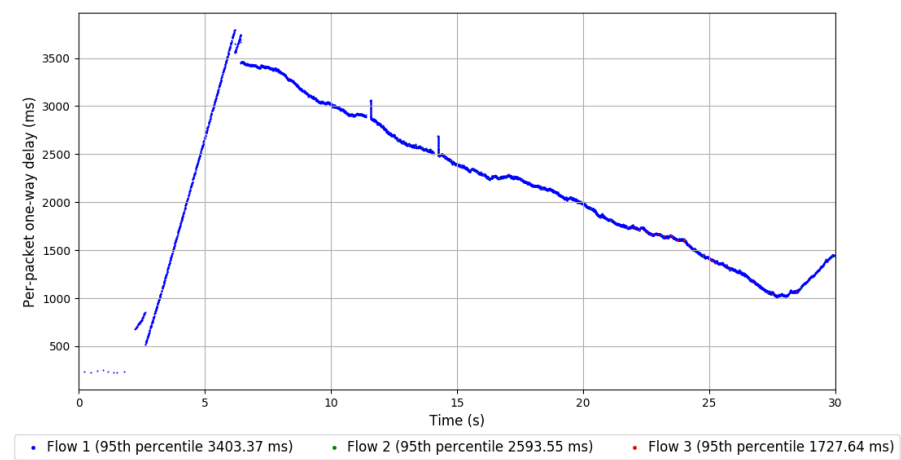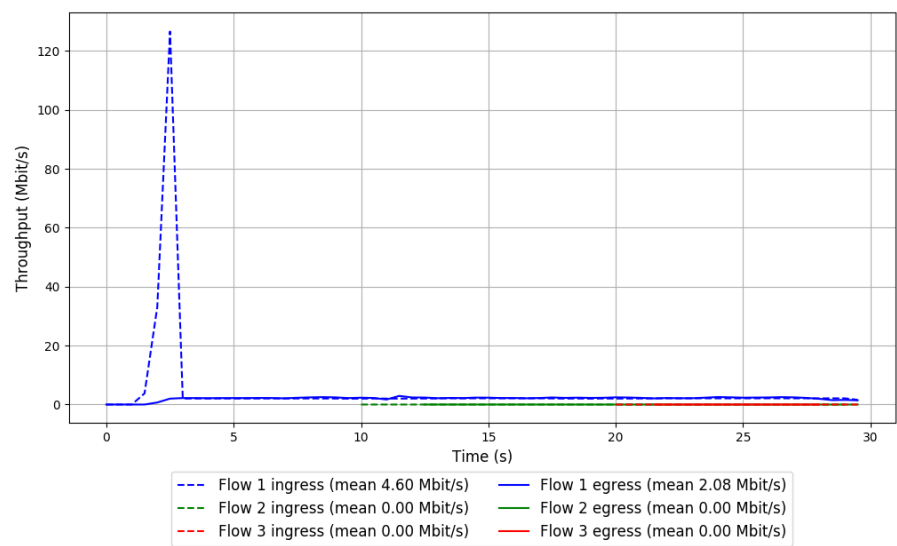
```
Run 3: Statistics of LEDBAT

Start at: 2018-02-27 10:43:16
End at: 2018-02-27 10:43:46
Local clock offset: -3.522 ms
Remote clock offset: -6.103 ms


# Below is generated by plot.py at 2018-02-27 10:47:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 286.435 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 1.50 Mbit/s
95th percentile per-packet one-way delay: 285.000 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 295.954 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 306.957 ms
Loss rate: 5.48%
```

Run 3: Report of LEDBAT — Data Link

Legend:
- Flow 1 ingress (mean 1.50 Mbit/s) — Flow 1 egress (mean 1.50 Mbit/s)
- Flow 2 ingress (mean 0.42 Mbit/s) — Flow 2 egress (mean 0.42 Mbit/s)
- Flow 3 ingress (mean 0.43 Mbit/s) — Flow 3 egress (mean 0.42 Mbit/s)

Legend:
- Flow 1 (95th percentile 285.00 ms)
- Flow 2 (95th percentile 295.95 ms)
- Flow 3 (95th percentile 306.96 ms)

21

```
Run 1: Statistics of PCC

Start at: 2018-02-27 09:54:31
End at: 2018-02-27 09:55:01
Local clock offset: -6.08 ms
Remote clock offset: -5.153 ms


# Below is generated by plot.py at 2018-02-27 10:47:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3224.843 ms
Loss rate: 54.97%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3225.707 ms
Loss rate: 54.99%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2778.768 ms
Loss rate: 5.57%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2218.563 ms
Loss rate: 7.45%
```
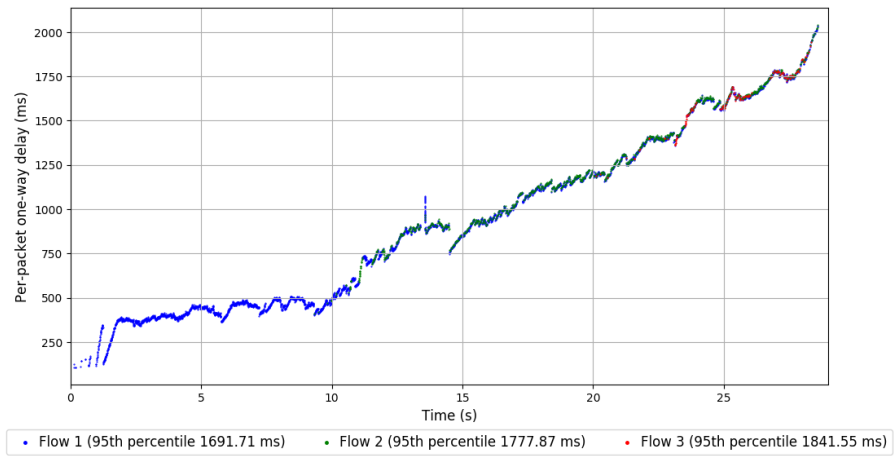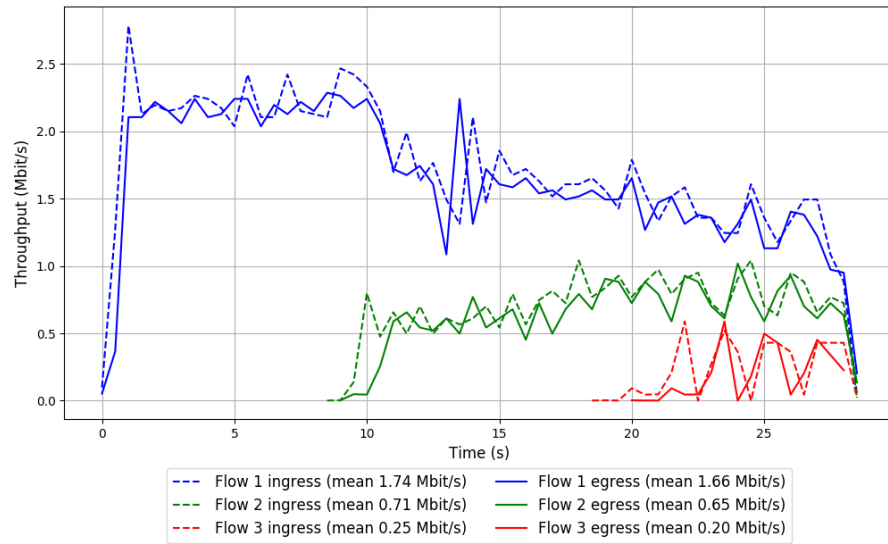
Run 1: Report of PCC — Data Link

```
Run 2: Statistics of PCC

Start at: 2018-02-27 10:17:01
End at: 2018-02-27 10:17:31
Local clock offset: -5.45 ms
Remote clock offset: -1.234 ms


# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.05 Mbit/s
95th percentile per-packet one-way delay: 3520.472 ms
Loss rate: 67.94%
-- Flow 1:
Average throughput: 2.05 Mbit/s
95th percentile per-packet one-way delay: 3522.189 ms
Loss rate: 67.96%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2893.349 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2295.208 ms
Loss rate: 7.73%
```

Run 2: Report of PCC — Data Link

```
Run 3: Statistics of PCC

Start at: 2018-02-27 10:39:31
End at: 2018-02-27 10:40:01
Local clock offset: -3.681 ms
Remote clock offset: -6.132 ms


# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 3402.636 ms
Loss rate: 55.05%
-- Flow 1:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 3403.372 ms
Loss rate: 55.07%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2593.549 ms
Loss rate: 2.87%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1727.639 ms
Loss rate: 7.28%
```
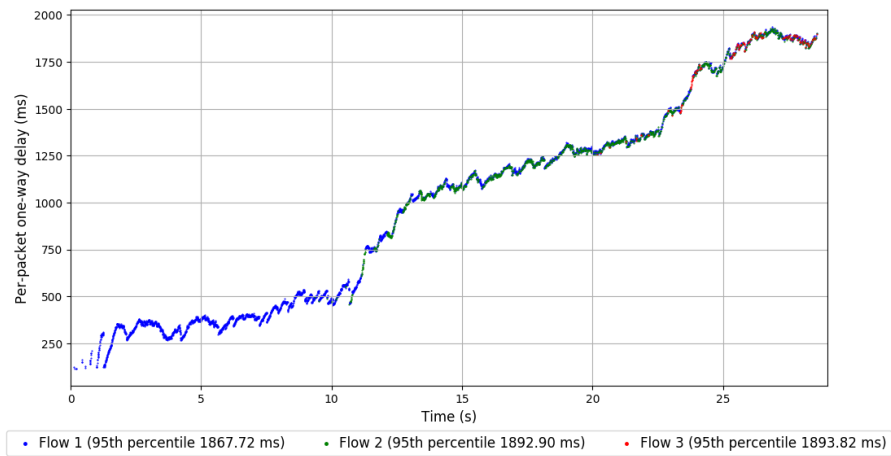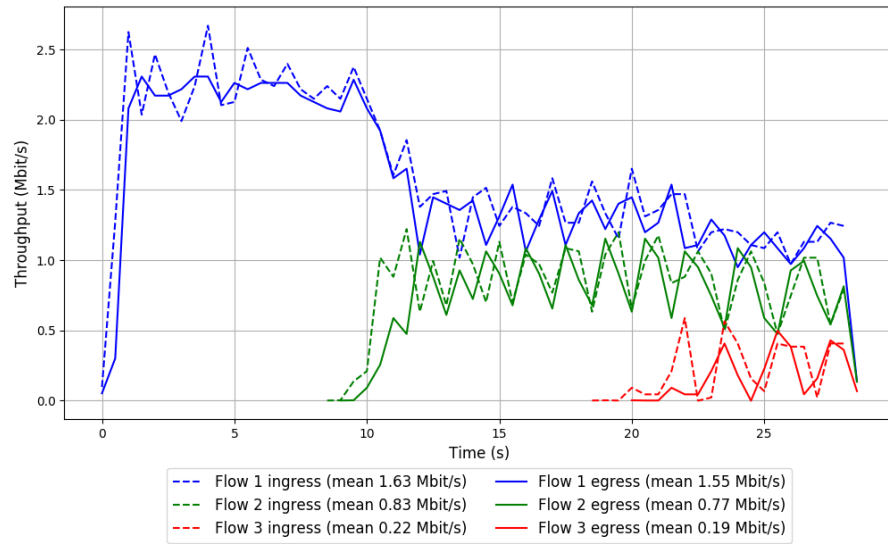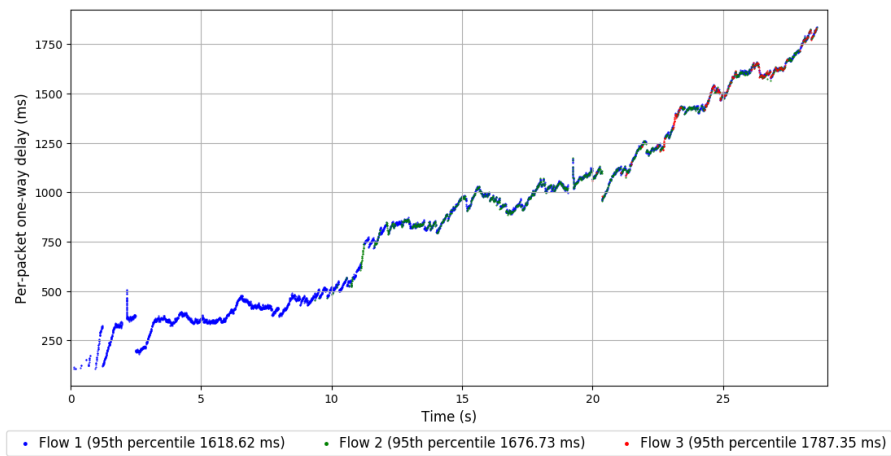
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 4.60 Mbit/s) --- Flow 1 egress (mean 2.08 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s) --- Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s) --- Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 3403.37 ms) • Flow 2 (95th percentile 2593.55 ms) • Flow 3 (95th percentile 1727.64 ms)
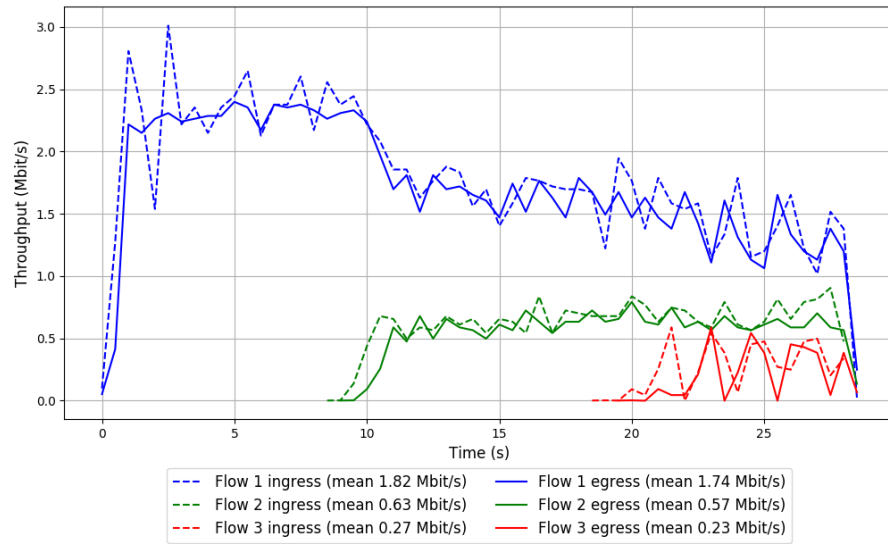
```
Run 1: Statistics of QUIC Cubic

Start at: 2018-02-27 09:39:30
End at: 2018-02-27 09:40:00
Local clock offset: -6.341 ms
Remote clock offset: -0.462 ms

# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 1747.216 ms
Loss rate: 6.85%
-- Flow 1:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 1691.714 ms
Loss rate: 4.80%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 1777.870 ms
Loss rate: 10.45%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1841.554 ms
Loss rate: 28.76%
```

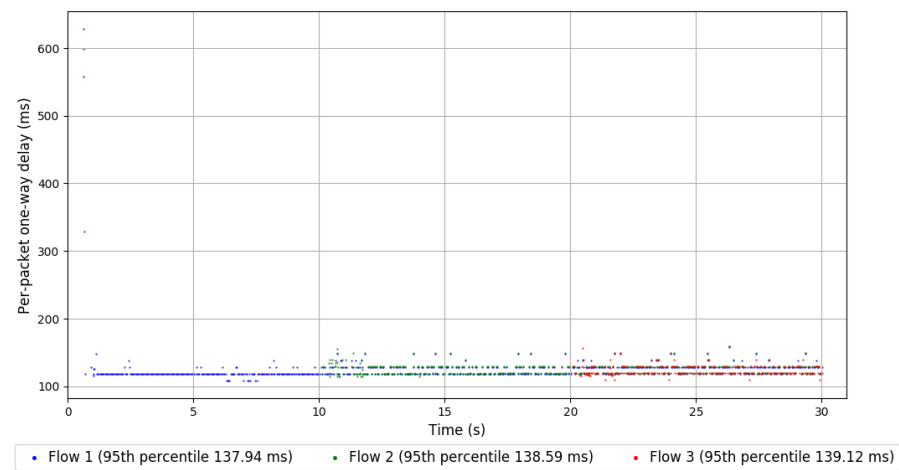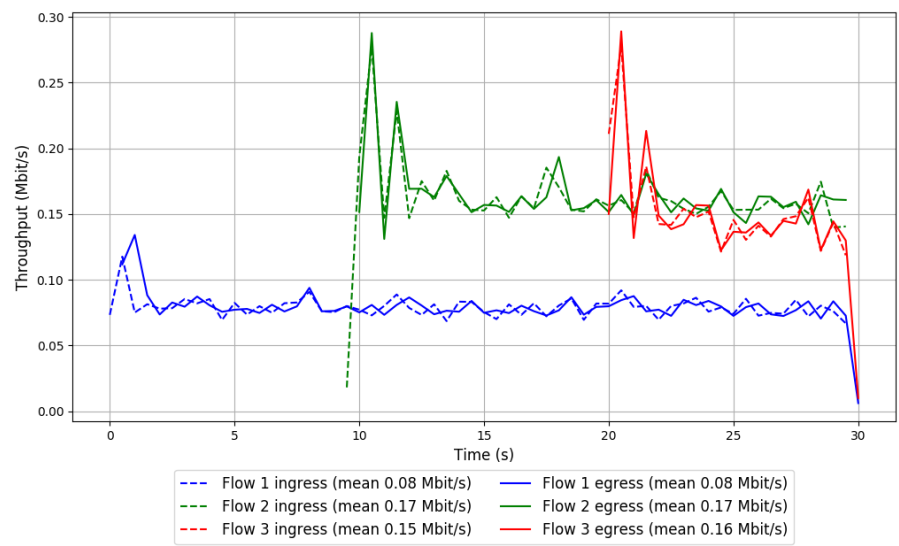Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-02-27 10:02:00
End at: 2018-02-27 10:02:30
Local clock offset: -5.763 ms
Remote clock offset: -0.294 ms


# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 1881.207 ms
Loss rate: 6.51%
-- Flow 1:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 1867.720 ms
Loss rate: 4.73%
-- Flow 2:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 1892.898 ms
Loss rate: 9.16%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1893.820 ms
Loss rate: 25.18%
```

Run 2: Report of QUIC Cubic — Data Link
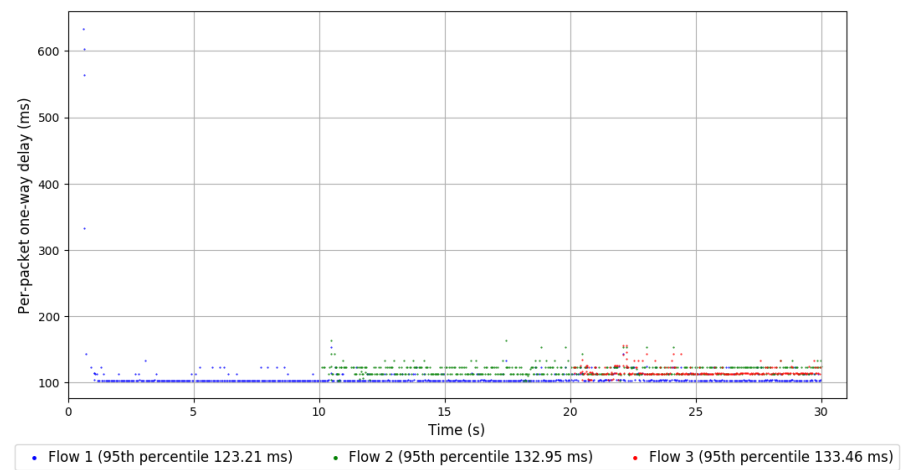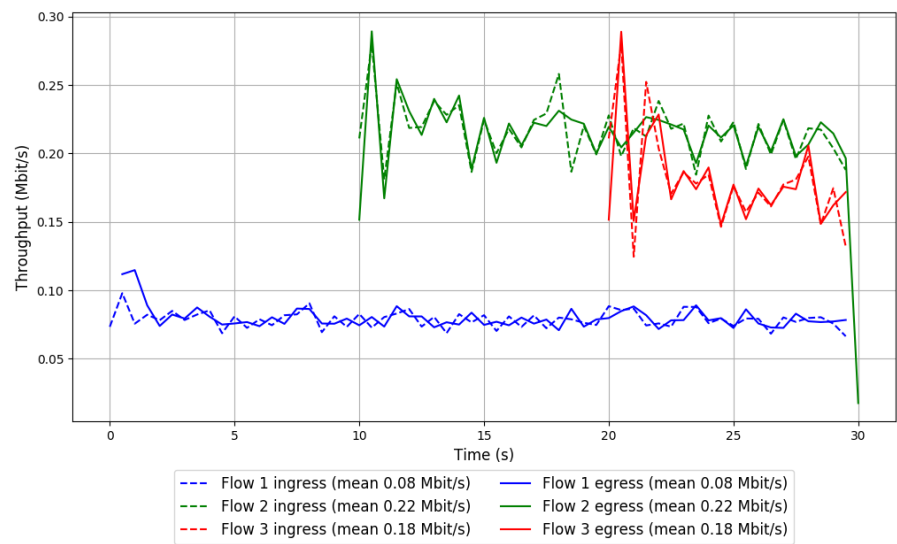

Flow 1 ingress (mean 1.63 Mbit/s) --- Flow 1 egress (mean 1.55 Mbit/s)
Flow 2 ingress (mean 0.83 Mbit/s) --- Flow 2 egress (mean 0.77 Mbit/s)
Flow 3 ingress (mean 0.22 Mbit/s) --- Flow 3 egress (mean 0.19 Mbit/s)

Flow 1 (95th percentile 1867.72 ms) Flow 2 (95th percentile 1892.90 ms) Flow 3 (95th percentile 1893.82 ms)

31

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-02-27 10:24:30
End at: 2018-02-27 10:25:00
Local clock offset: -5.299 ms
Remote clock offset: -5.249 ms


# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 1638.300 ms
Loss rate: 6.29%
-- Flow 1:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 1618.619 ms
Loss rate: 4.35%
-- Flow 2:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 1676.730 ms
Loss rate: 10.62%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 1787.354 ms
Loss rate: 24.49%
```

Run 3: Report of QUIC Cubic — Data Link
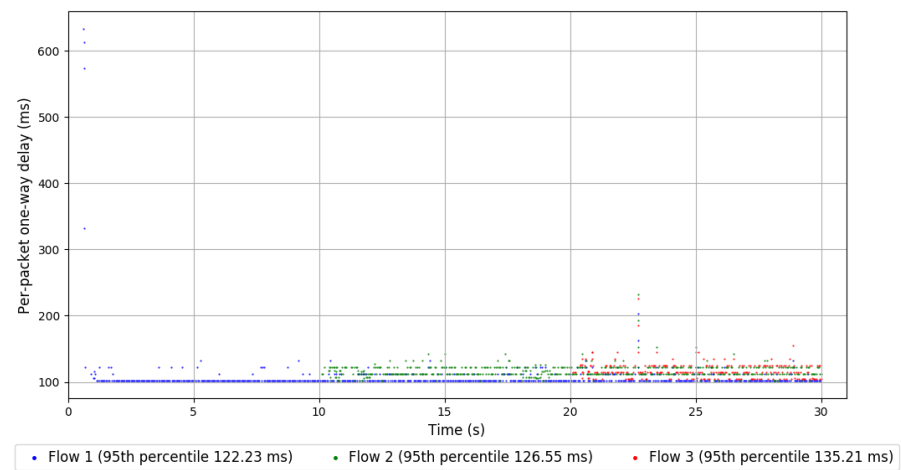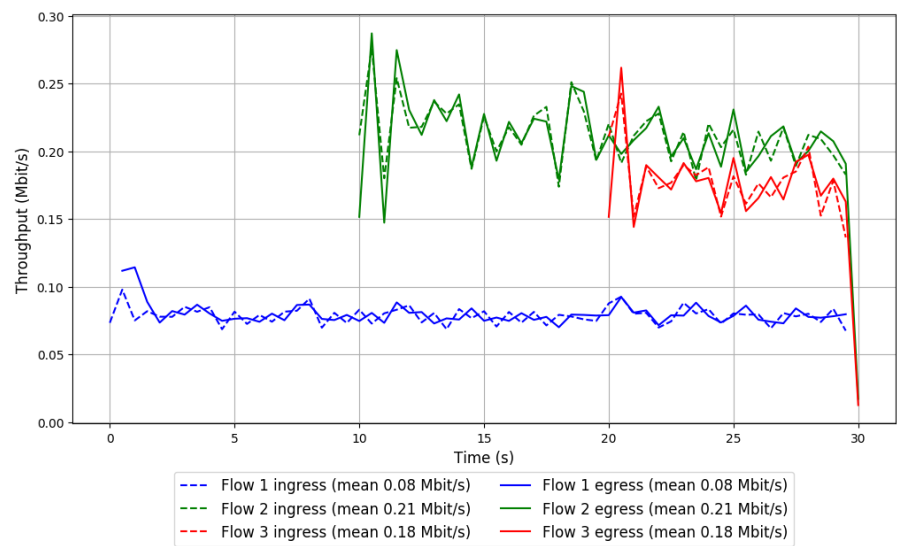

Flow 1 ingress (mean 1.82 Mbit/s) — Flow 1 egress (mean 1.74 Mbit/s)
Flow 2 ingress (mean 0.63 Mbit/s) — Flow 2 egress (mean 0.57 Mbit/s)
Flow 3 ingress (mean 0.27 Mbit/s) — Flow 3 egress (mean 0.23 Mbit/s)

Flow 1 (95th percentile 1618.62 ms)   Flow 2 (95th percentile 1676.73 ms)   Flow 3 (95th percentile 1787.35 ms)

33

```
Run 1: Statistics of SCReAM

Start at: 2018-02-27 09:50:47
End at: 2018-02-27 09:51:17
Local clock offset: -6.369 ms
Remote clock offset: 0.59 ms

# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 138.103 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 137.940 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 138.586 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 139.115 ms
Loss rate: 0.33%
```
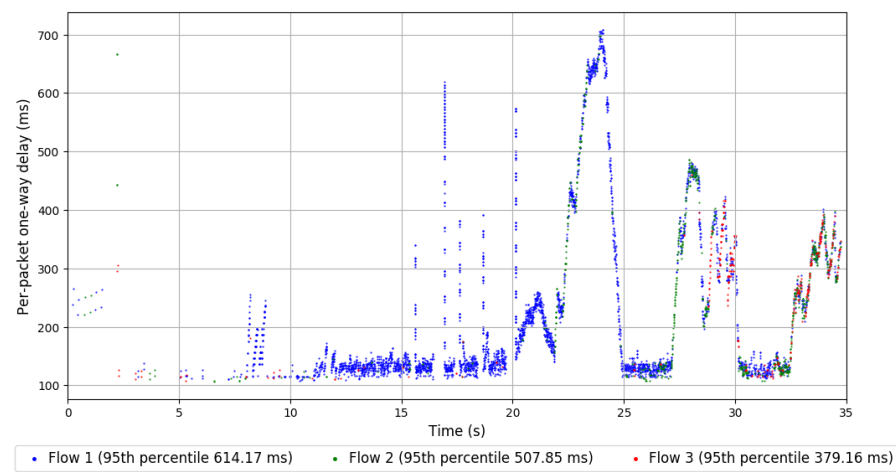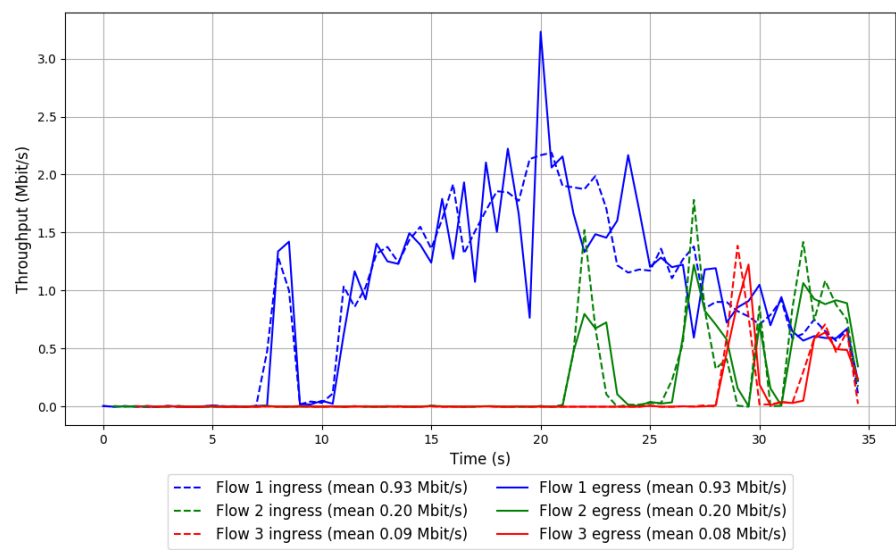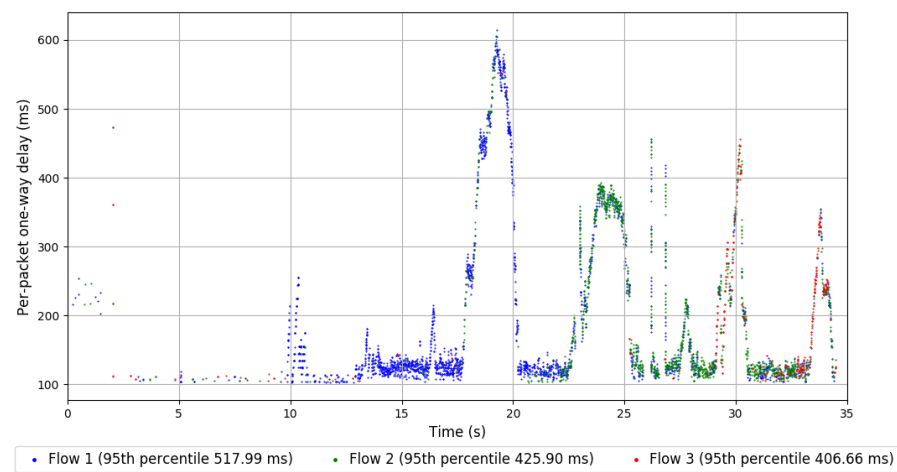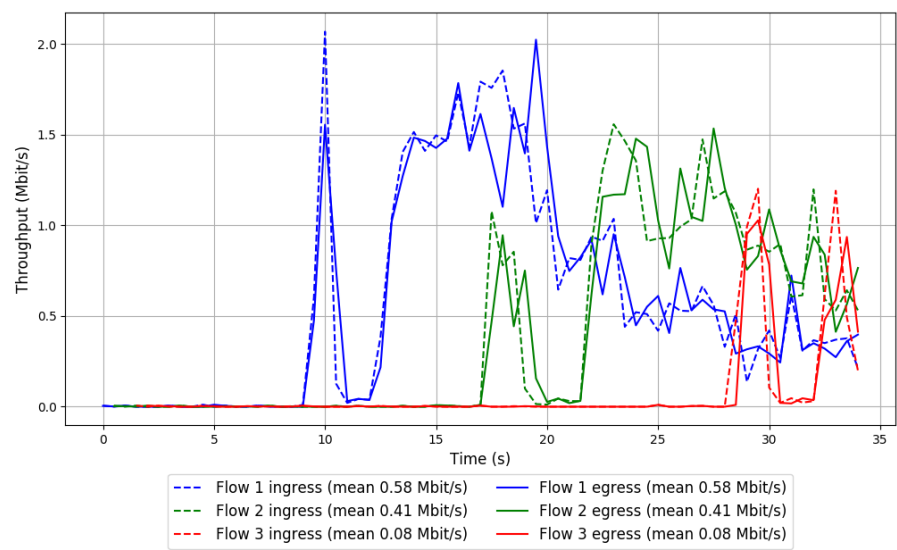
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-02-27 10:13:16
End at: 2018-02-27 10:13:46
Local clock offset: -5.421 ms
Remote clock offset: -5.179 ms


# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 123.498 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 123.214 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 132.952 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 133.458 ms
Loss rate: 0.34%
```

Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-02-27 10:35:47
End at: 2018-02-27 10:36:17
Local clock offset: -3.912 ms
Remote clock offset: -6.025 ms


# Below is generated by plot.py at 2018-02-27 10:47:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 125.113 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 122.229 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 126.554 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 135.208 ms
Loss rate: 0.00%
```

Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-02-27 09:42:01
End at: 2018-02-27 09:42:31
Local clock offset: -6.359 ms
Remote clock offset: 0.447 ms


# Below is generated by plot.py at 2018-02-27 10:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 582.358 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 614.175 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 507.851 ms
Loss rate: 2.11%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 379.163 ms
Loss rate: 4.25%
```
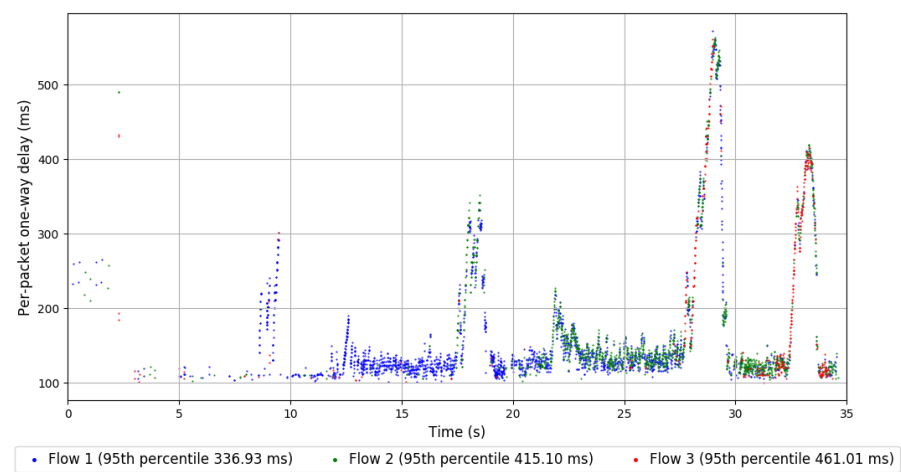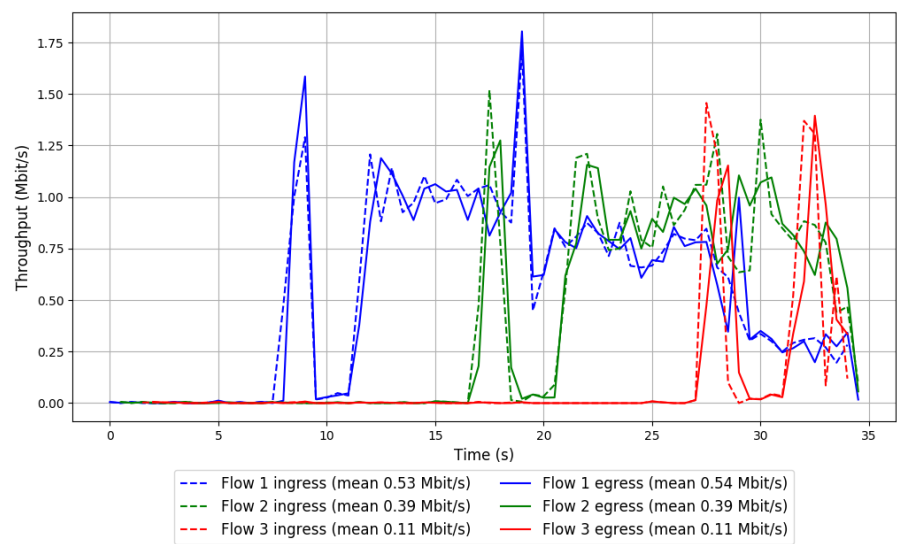
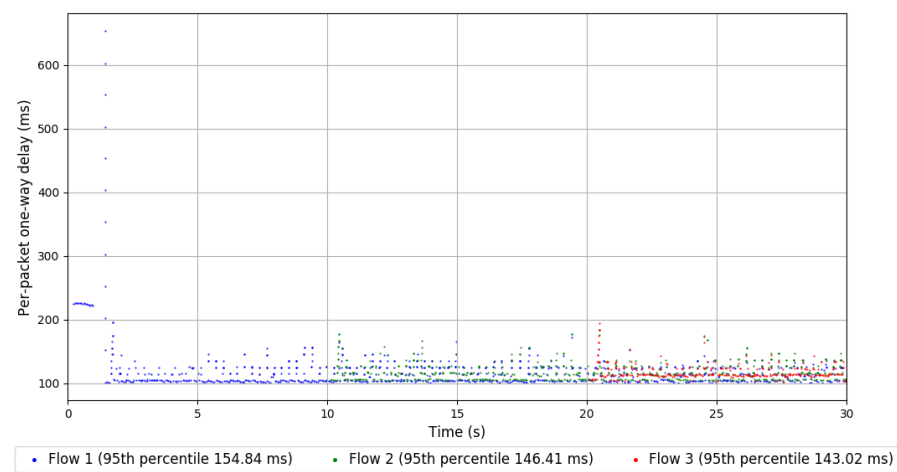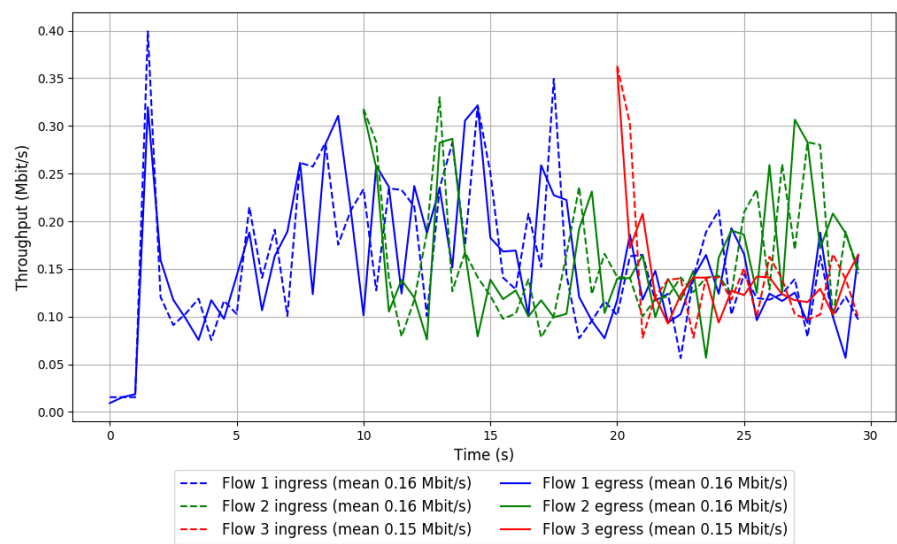Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.93 Mbit/s) — Flow 1 egress (mean 0.93 Mbit/s)
Flow 2 ingress (mean 0.20 Mbit/s) — Flow 2 egress (mean 0.20 Mbit/s)
Flow 3 ingress (mean 0.09 Mbit/s) — Flow 3 egress (mean 0.08 Mbit/s)

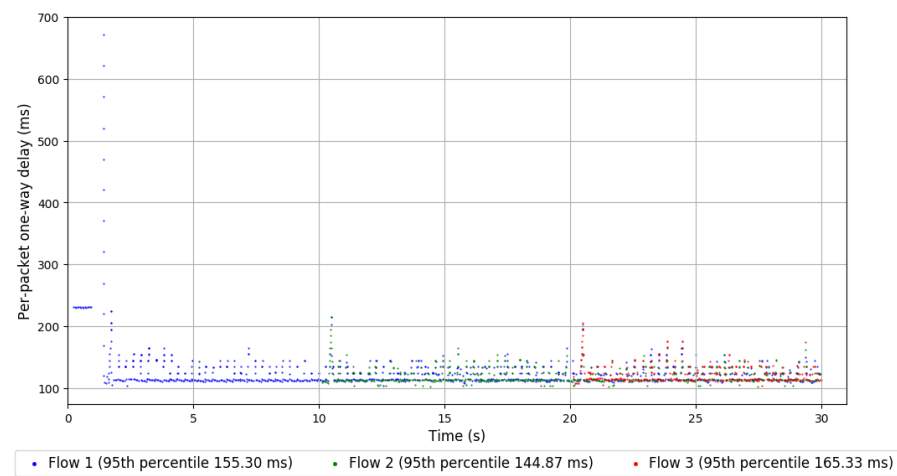Flow 1 (95th percentile 614.17 ms)   Flow 2 (95th percentile 507.85 ms)   Flow 3 (95th percentile 379.16 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-02-27 10:04:31
End at: 2018-02-27 10:05:01
Local clock offset: -5.62 ms
Remote clock offset: -5.145 ms


# Below is generated by plot.py at 2018-02-27 10:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 474.313 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 517.986 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 425.897 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 406.664 ms
Loss rate: 1.45%
```
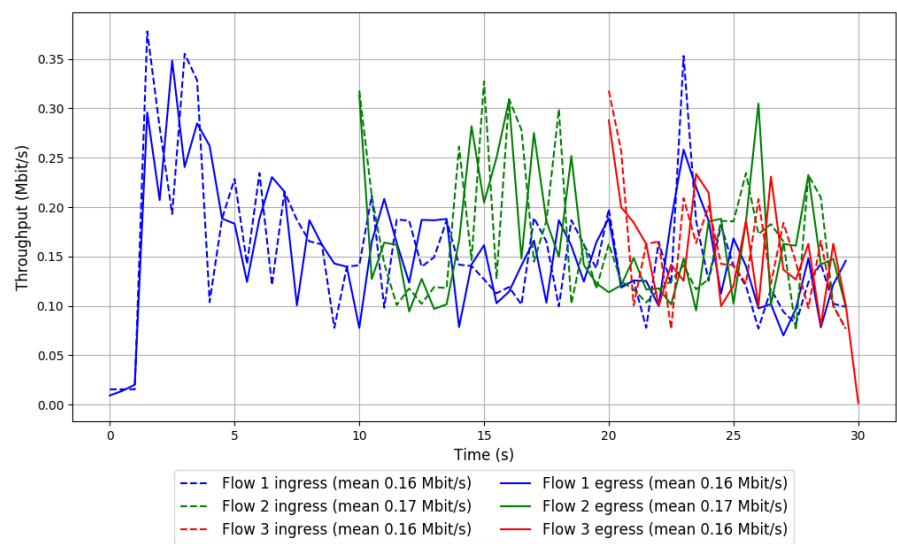
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-02-27 10:27:01
End at: 2018-02-27 10:27:31
Local clock offset: -5.102 ms
Remote clock offset: -5.174 ms

# Below is generated by plot.py at 2018-02-27 10:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 402.316 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 336.928 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 415.097 ms
Loss rate: 0.29%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 461.009 ms
Loss rate: 0.00%
```
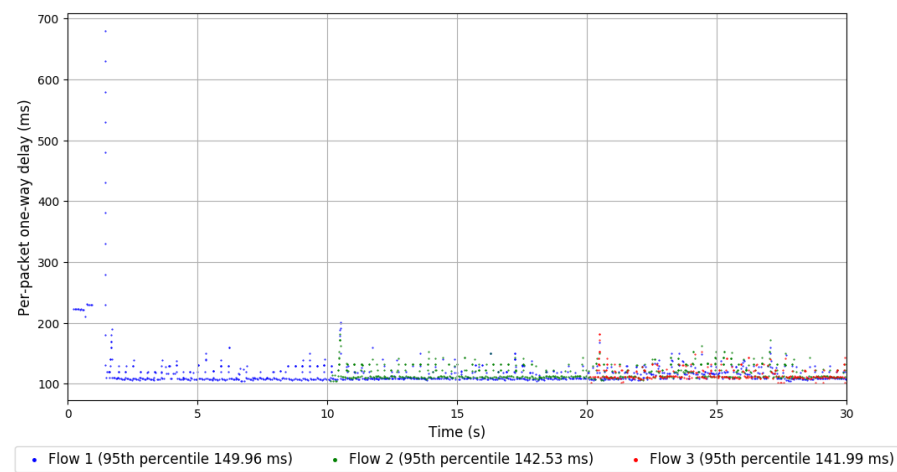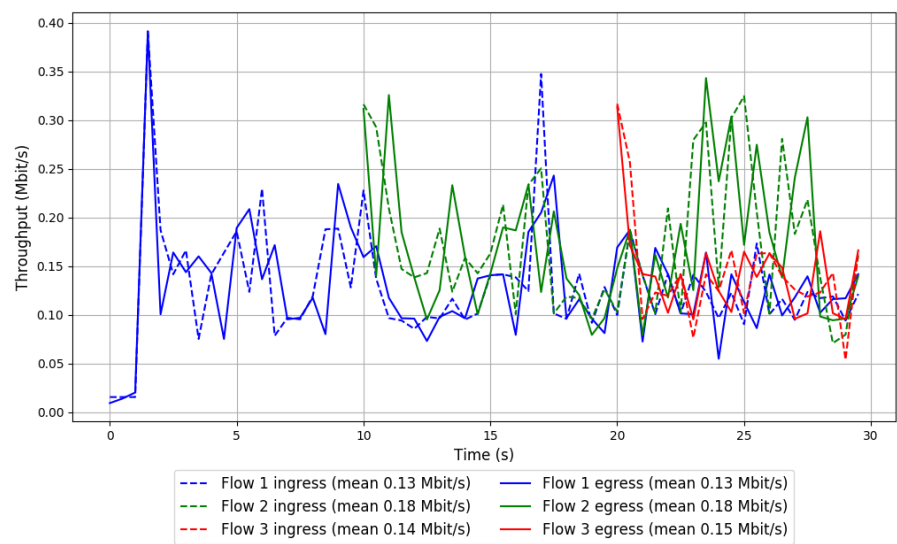
Run 3: Report of WebRTC media — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-02-27 09:57:01
End at: 2018-02-27 09:57:31
Local clock offset: -5.971 ms
Remote clock offset: -5.114 ms


# Below is generated by plot.py at 2018-02-27 10:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 146.408 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 154.837 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 146.408 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 143.024 ms
Loss rate: 0.06%
```
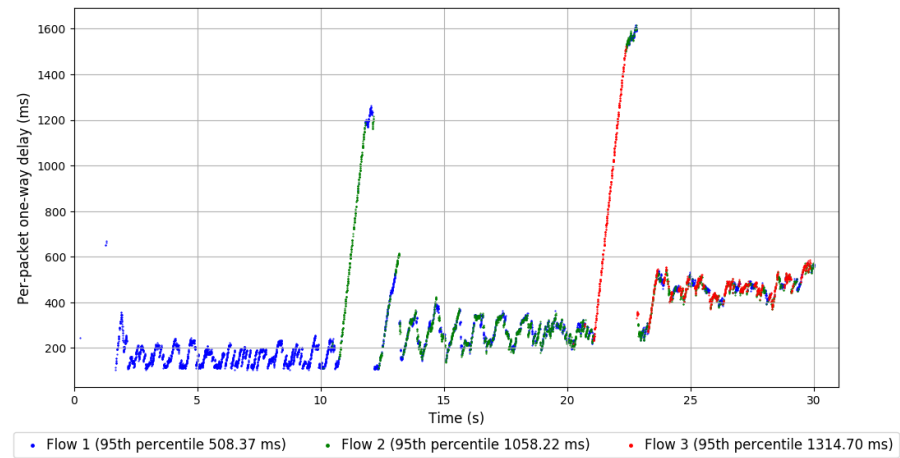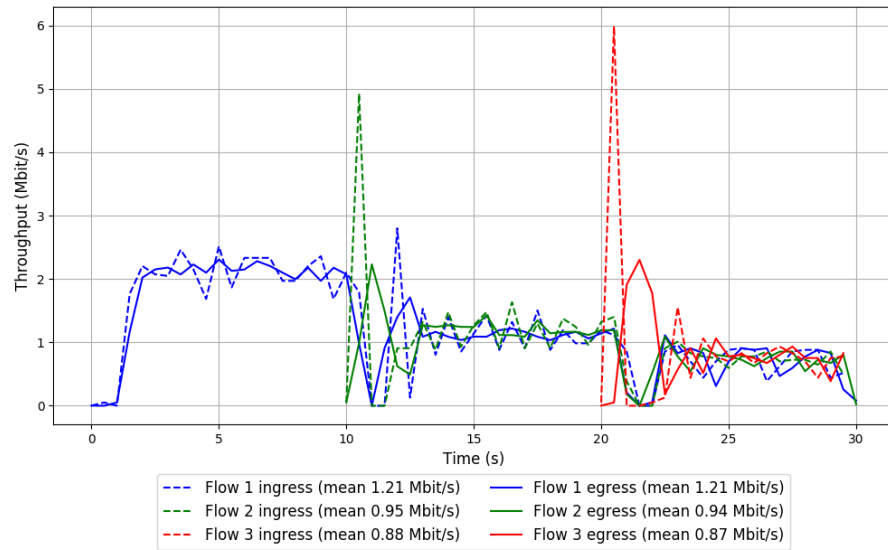
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-02-27 10:19:31
End at: 2018-02-27 10:20:01
Local clock offset: -5.363 ms
Remote clock offset: -0.305 ms


# Below is generated by plot.py at 2018-02-27 10:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 154.695 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 155.299 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 144.867 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 165.333 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-02-27 10:42:01
End at: 2018-02-27 10:42:31
Local clock offset: -3.51 ms
Remote clock offset: -5.309 ms


# Below is generated by plot.py at 2018-02-27 10:47:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 142.646 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 149.964 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 142.527 ms
Loss rate: 0.34%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 141.985 ms
Loss rate: 0.06%
```
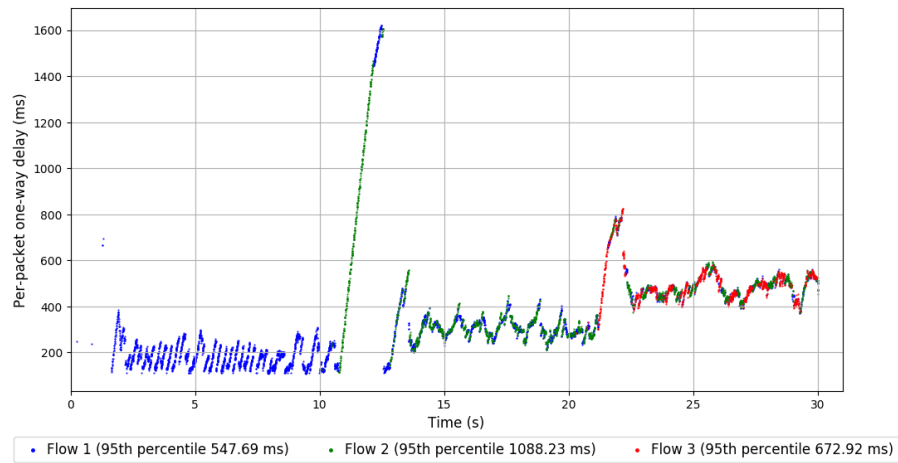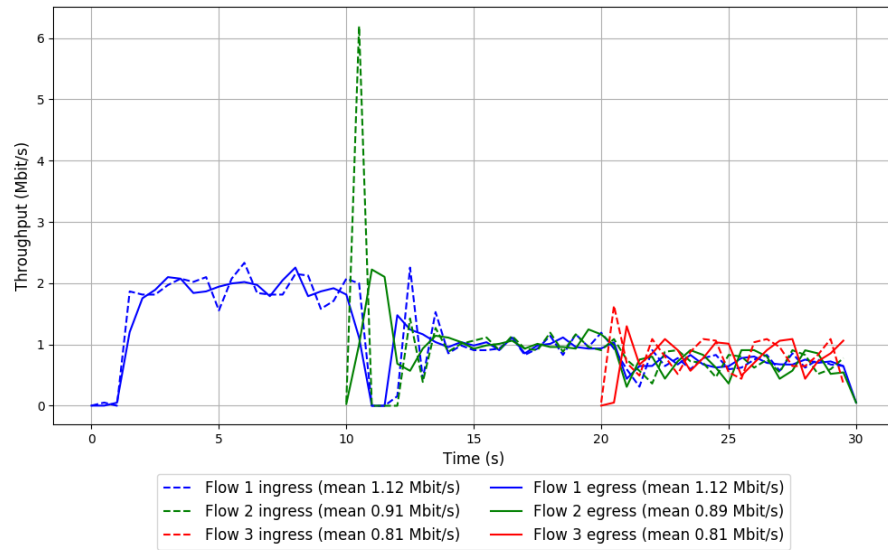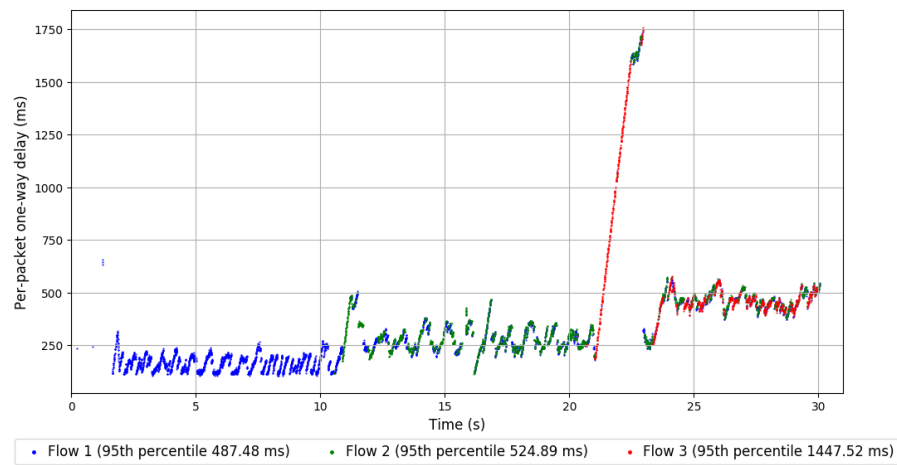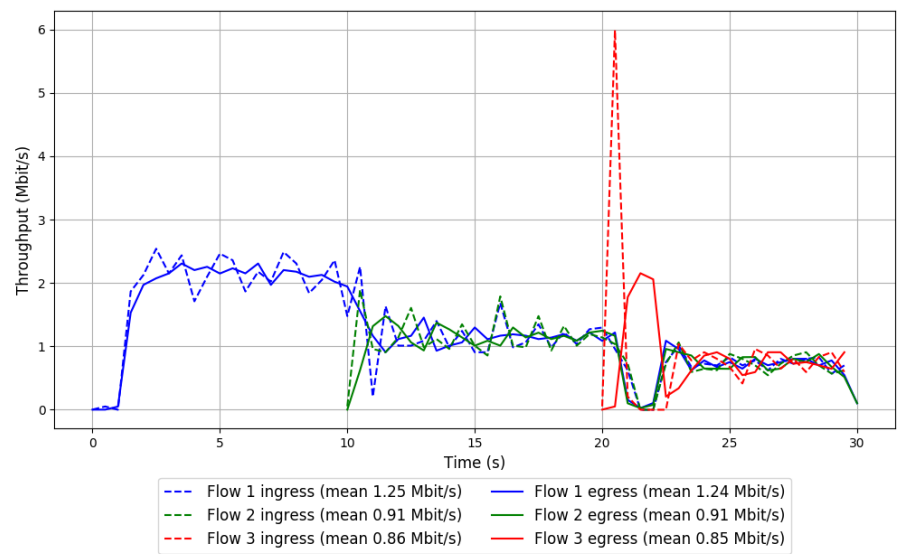
Run 3: Report of Sprout — Data Link

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

Start at: 2018-02-27 09:59:30
End at: 2018-02-27 10:00:00
Local clock offset: -5.794 ms
Remote clock offset: -6.05 ms


# Below is generated by plot.py at 2018-02-27 10:47:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 1076.625 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 508.373 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 1058.217 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 1314.704 ms
Loss rate: 4.45%
```

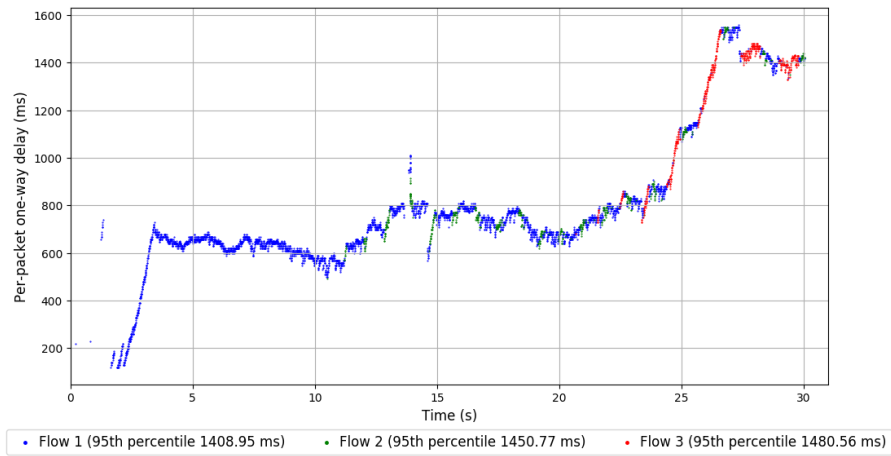# Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-02-27 10:22:00
End at: 2018-02-27 10:22:30
Local clock offset: -5.319 ms
Remote clock offset: -0.378 ms


# Below is generated by plot.py at 2018-02-27 10:47:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 751.713 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 547.688 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 1088.226 ms
Loss rate: 2.08%
-- Flow 3:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 672.919 ms
Loss rate: 2.27%
```
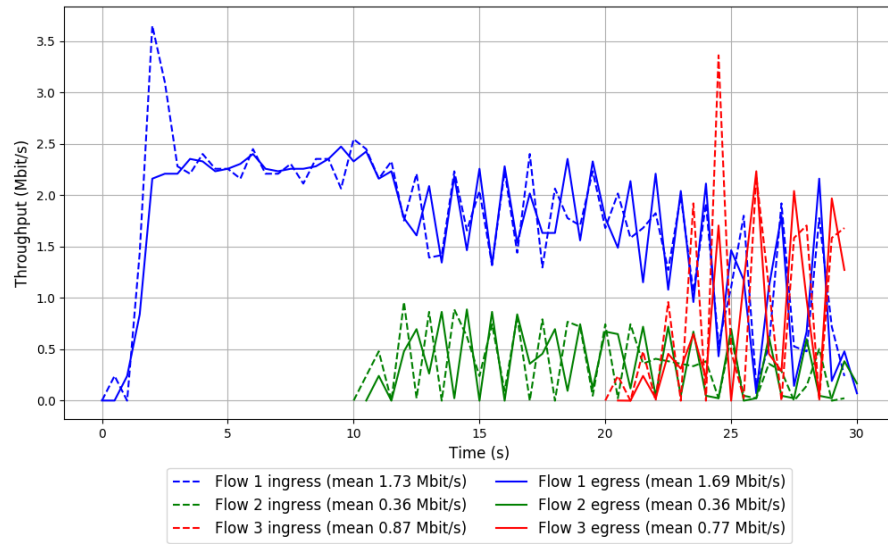
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.12 Mbit/s) --- Flow 1 egress (mean 1.12 Mbit/s)
Flow 2 ingress (mean 0.91 Mbit/s) --- Flow 2 egress (mean 0.89 Mbit/s)
Flow 3 ingress (mean 0.81 Mbit/s) --- Flow 3 egress (mean 0.81 Mbit/s)

Flow 1 (95th percentile 547.69 ms)   Flow 2 (95th percentile 1088.23 ms)   Flow 3 (95th percentile 672.92 ms)

55

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

Start at: 2018-02-27 10:44:30
End at: 2018-02-27 10:45:00
Local clock offset: -3.362 ms
Remote clock offset: -1.326 ms

# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 683.519 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 487.483 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 524.886 ms
Loss rate: 1.64%
-- Flow 3:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 1447.518 ms
Loss rate: 3.50%
```
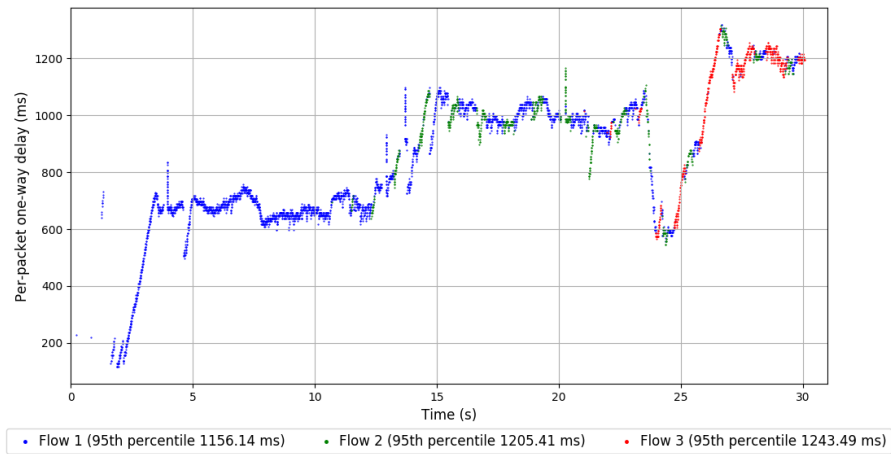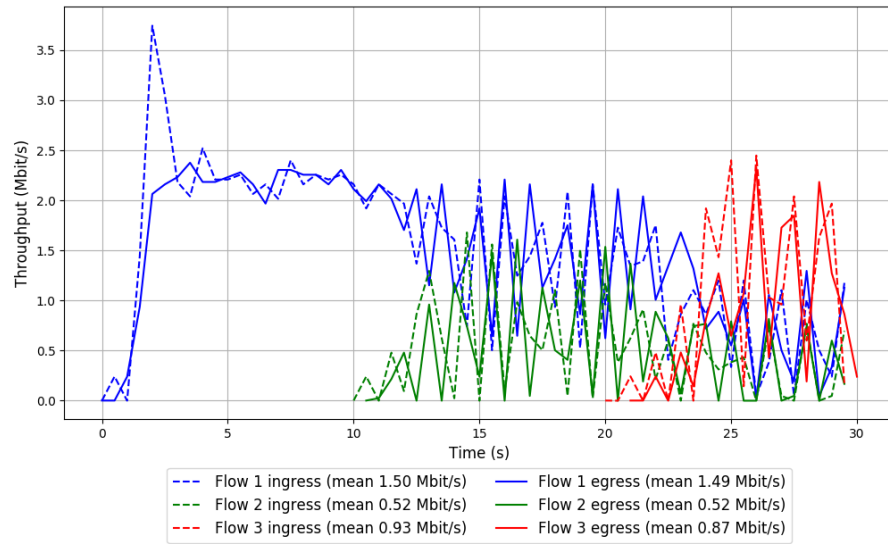
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.25 Mbit/s) --- Flow 1 egress (mean 1.24 Mbit/s)
Flow 2 ingress (mean 0.91 Mbit/s) --- Flow 2 egress (mean 0.91 Mbit/s)
Flow 3 ingress (mean 0.86 Mbit/s) --- Flow 3 egress (mean 0.85 Mbit/s)

Flow 1 (95th percentile 487.48 ms) • Flow 2 (95th percentile 524.89 ms) • Flow 3 (95th percentile 1447.52 ms)
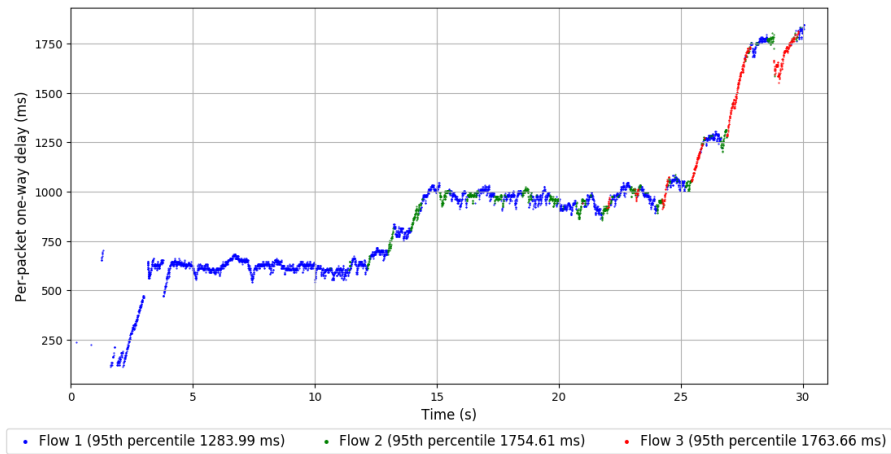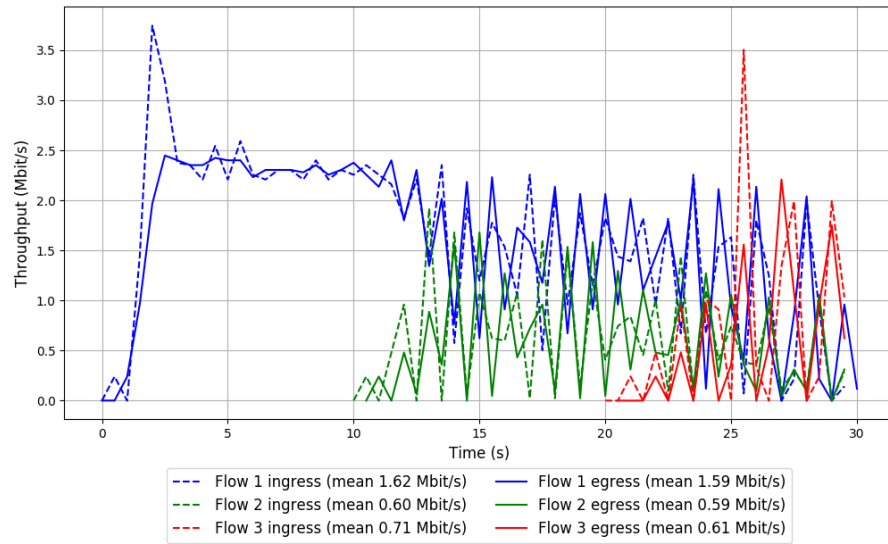
```
Run 1: Statistics of TCP Vegas

Start at: 2018-02-27 09:44:30
End at: 2018-02-27 09:45:00
Local clock offset: -6.351 ms
Remote clock offset: -5.565 ms


# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 1440.867 ms
Loss rate: 4.43%
-- Flow 1:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 1408.952 ms
Loss rate: 2.53%
-- Flow 2:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 1450.772 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 1480.555 ms
Loss rate: 18.86%
```

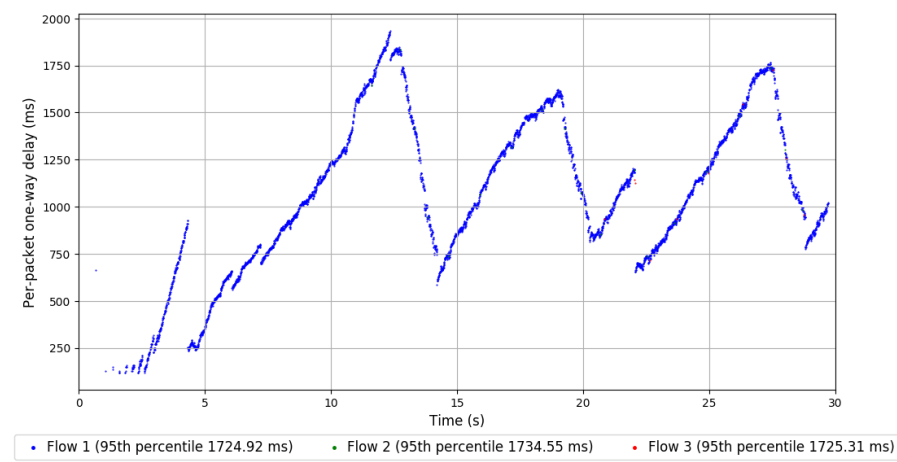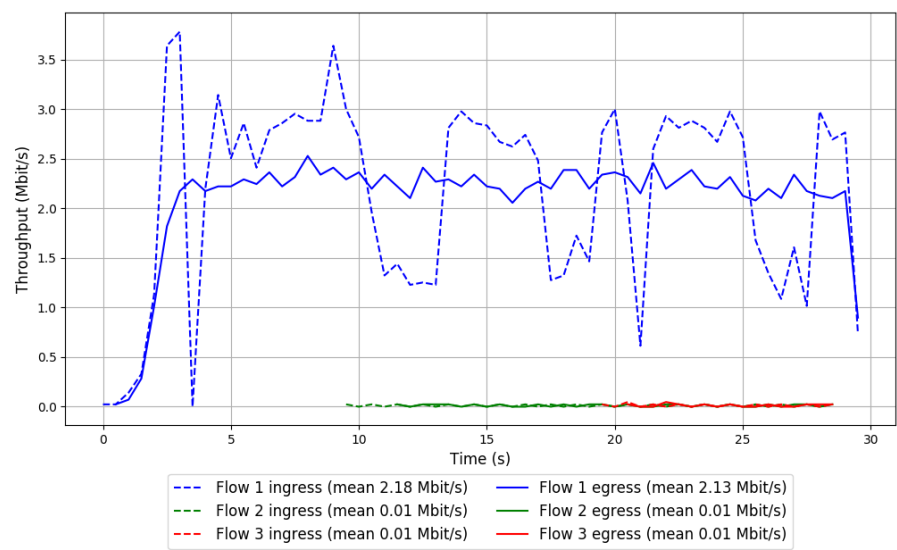Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-02-27 10:07:00
End at: 2018-02-27 10:07:30
Local clock offset: -5.605 ms
Remote clock offset: -1.177 ms


# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 1213.625 ms
Loss rate: 3.88%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 1156.142 ms
Loss rate: 1.74%
-- Flow 2:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 1205.414 ms
Loss rate: 3.77%
-- Flow 3:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 1243.486 ms
Loss rate: 14.45%
```
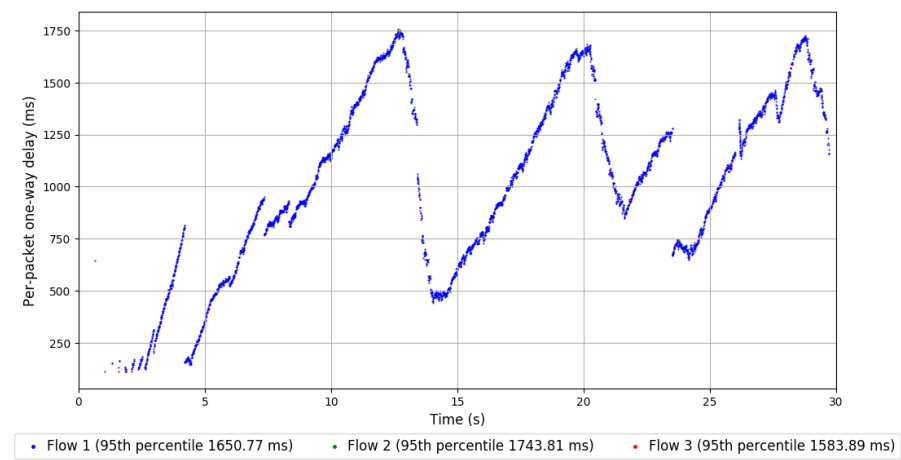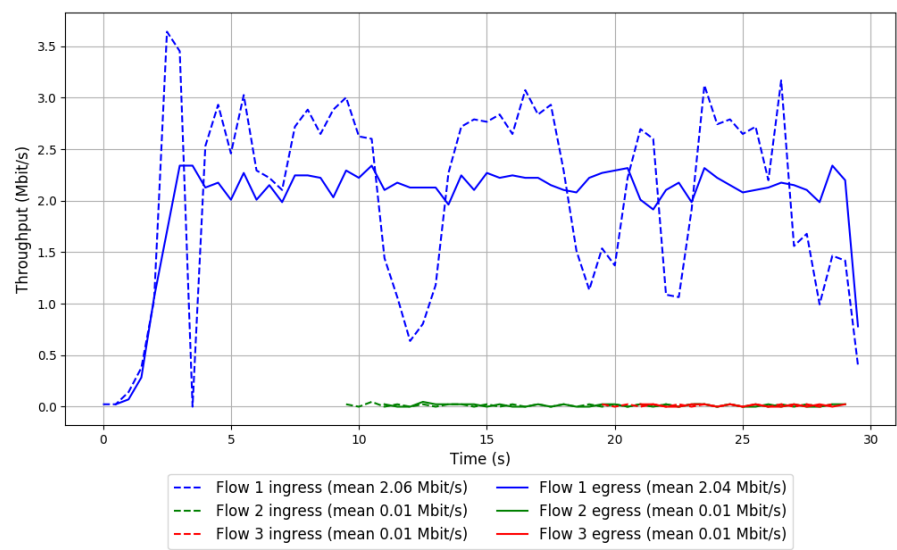
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-02-27 10:29:30
End at: 2018-02-27 10:30:00
Local clock offset: -4.639 ms
Remote clock offset: -5.155 ms


# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 1723.244 ms
Loss rate: 5.06%
-- Flow 1:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 1283.992 ms
Loss rate: 2.25%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1754.610 ms
Loss rate: 5.79%
-- Flow 3:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 1763.665 ms
Loss rate: 23.24%
```

Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-02-27 09:47:00
End at: 2018-02-27 09:47:30
Local clock offset: -6.352 ms
Remote clock offset: -4.773 ms


# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 1724.969 ms
Loss rate: 4.03%
-- Flow 1:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 1724.918 ms
Loss rate: 4.01%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1734.549 ms
Loss rate: 5.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1725.311 ms
Loss rate: 9.09%
```
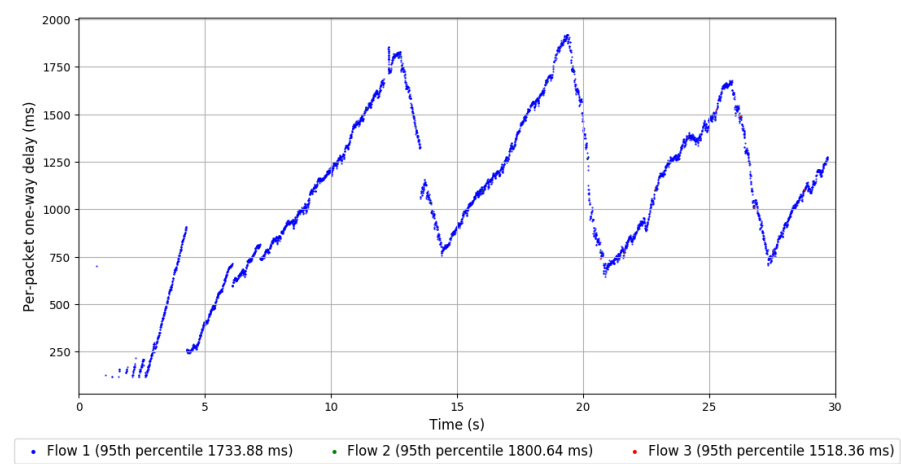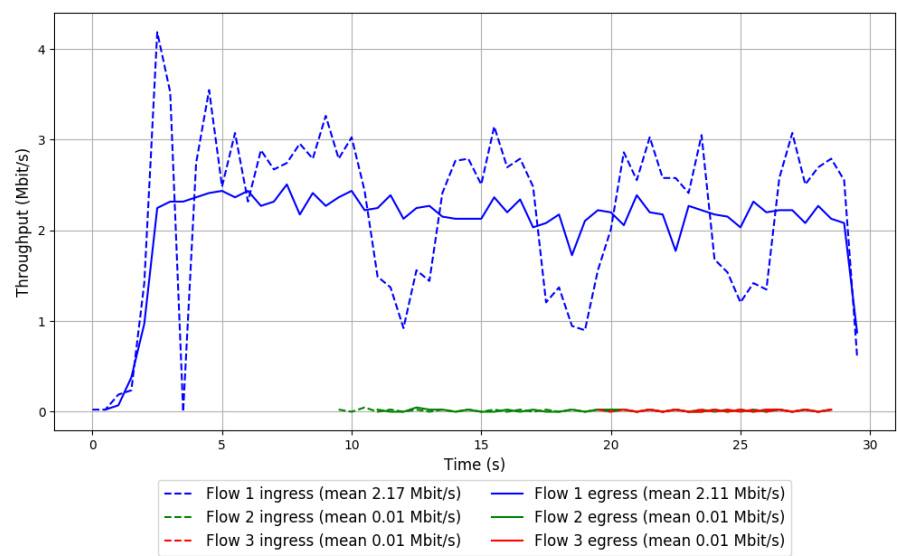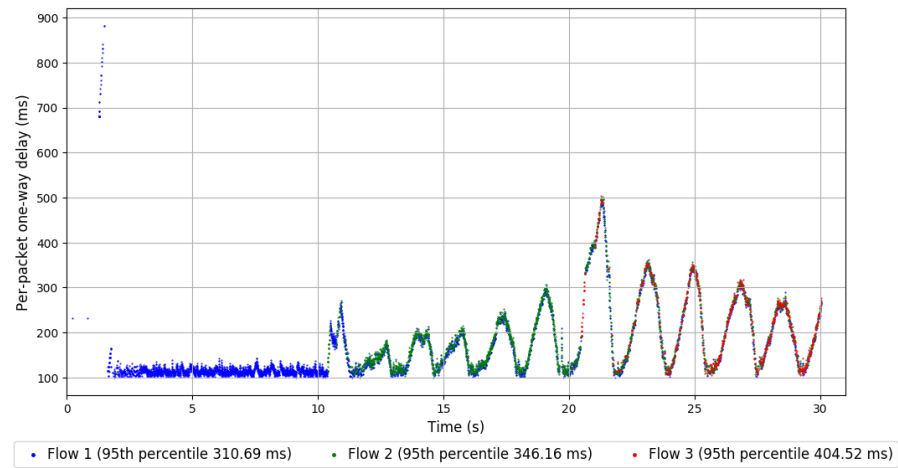
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 2.18 Mbit/s) --- Flow 1 egress (mean 2.13 Mbit/s)
Flow 2 ingress (mean 0.01 Mbit/s) --- Flow 2 egress (mean 0.01 Mbit/s)
Flow 3 ingress (mean 0.01 Mbit/s) --- Flow 3 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 1724.92 ms) • Flow 2 (95th percentile 1734.55 ms) • Flow 3 (95th percentile 1725.31 ms)

```
Run 2: Statistics of Verus

Start at: 2018-02-27 10:09:29
End at: 2018-02-27 10:09:59
Local clock offset: -5.491 ms
Remote clock offset: -5.166 ms


# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.05 Mbit/s
95th percentile per-packet one-way delay: 1650.940 ms
Loss rate: 2.72%
-- Flow 1:
Average throughput: 2.04 Mbit/s
95th percentile per-packet one-way delay: 1650.769 ms
Loss rate: 2.69%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1743.807 ms
Loss rate: 4.55%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1583.889 ms
Loss rate: 10.00%
```
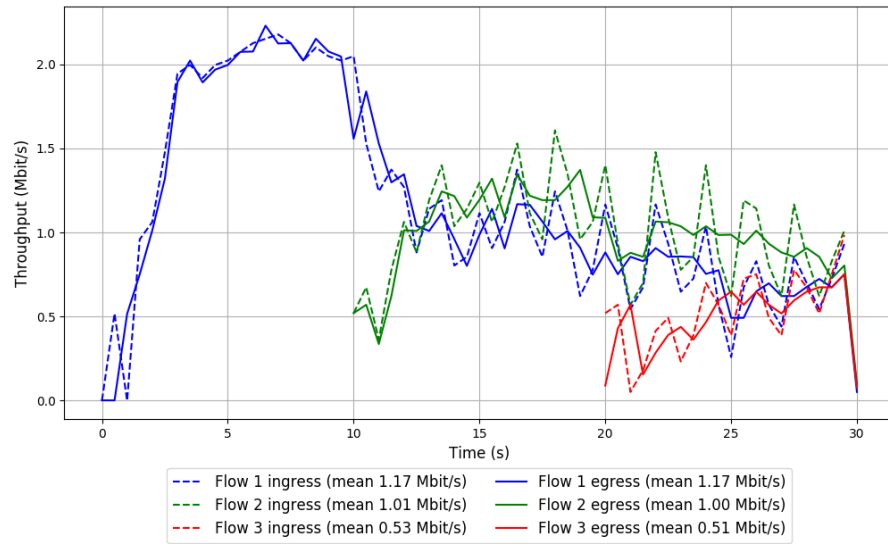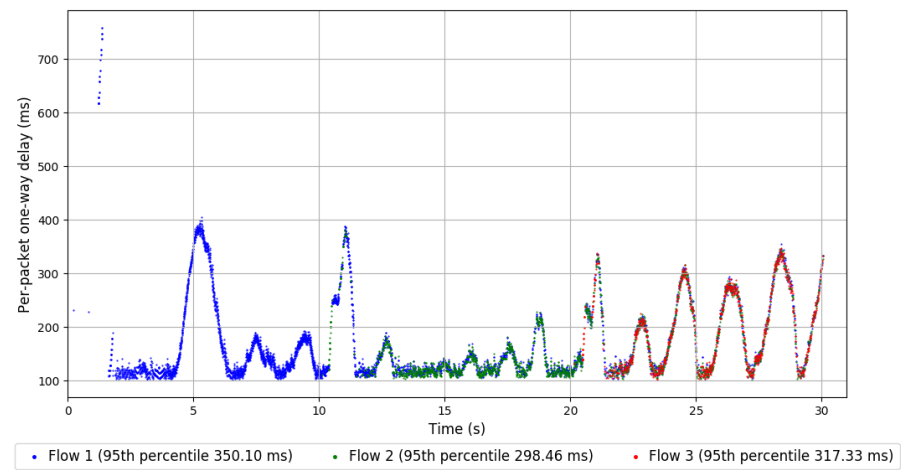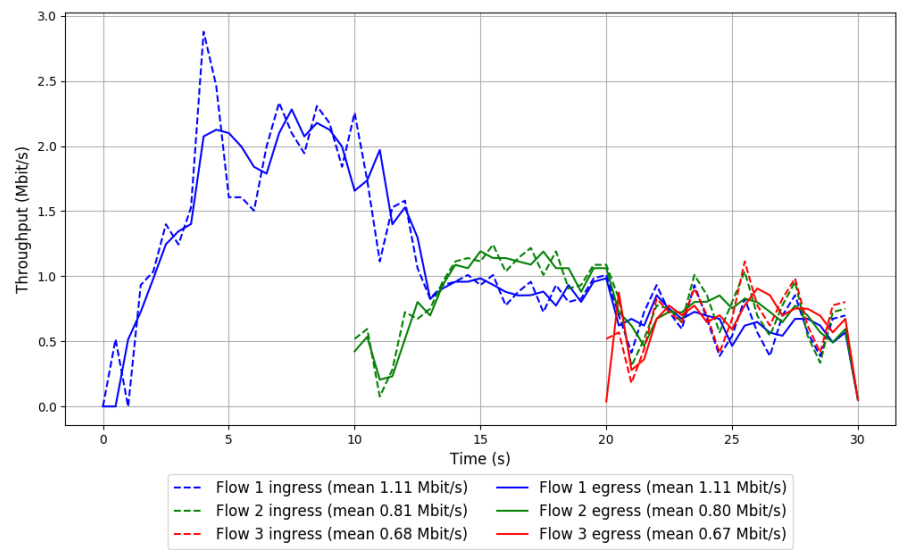
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-02-27 10:32:00
End at: 2018-02-27 10:32:30
Local clock offset: -4.292 ms
Remote clock offset: -1.174 ms


# Below is generated by plot.py at 2018-02-27 10:47:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 1733.912 ms
Loss rate: 4.93%
-- Flow 1:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 1733.876 ms
Loss rate: 4.92%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1800.640 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1518.362 ms
Loss rate: 10.00%
```

Run 3: Report of Verus — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-02-27 09:52:01
End at: 2018-02-27 09:52:31
Local clock offset: -6.288 ms
Remote clock offset: -5.118 ms


# Below is generated by plot.py at 2018-02-27 10:47:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 337.946 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 310.686 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 346.158 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 404.517 ms
Loss rate: 3.90%
```
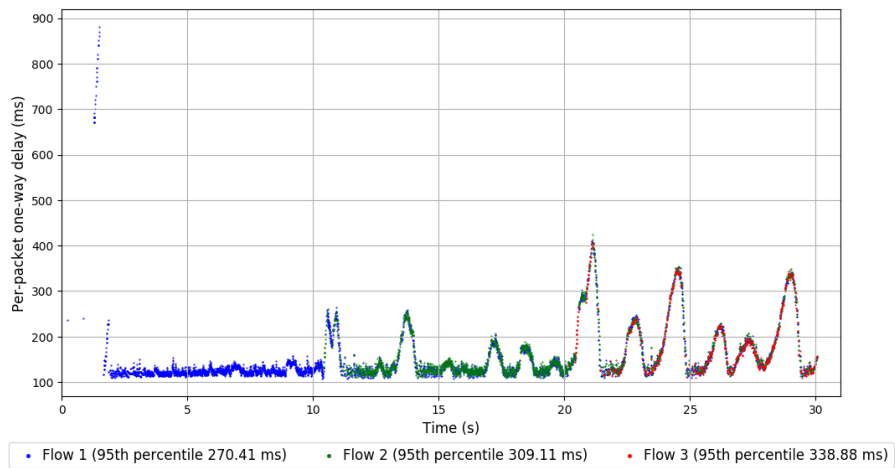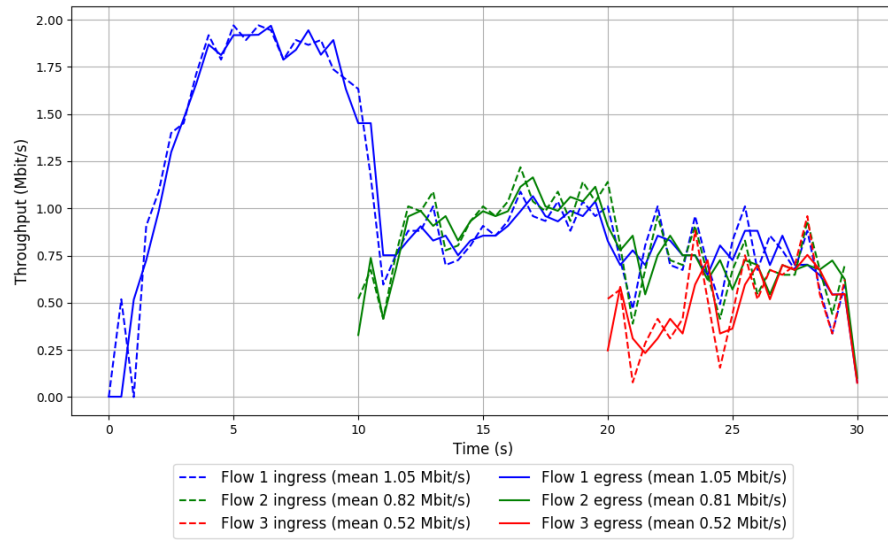
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-02-27 10:14:31
End at: 2018-02-27 10:15:01
Local clock offset: -5.419 ms
Remote clock offset: -5.153 ms


# Below is generated by plot.py at 2018-02-27 10:47:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 327.029 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 350.103 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 298.457 ms
Loss rate: 1.28%
-- Flow 3:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 317.334 ms
Loss rate: 2.87%
```
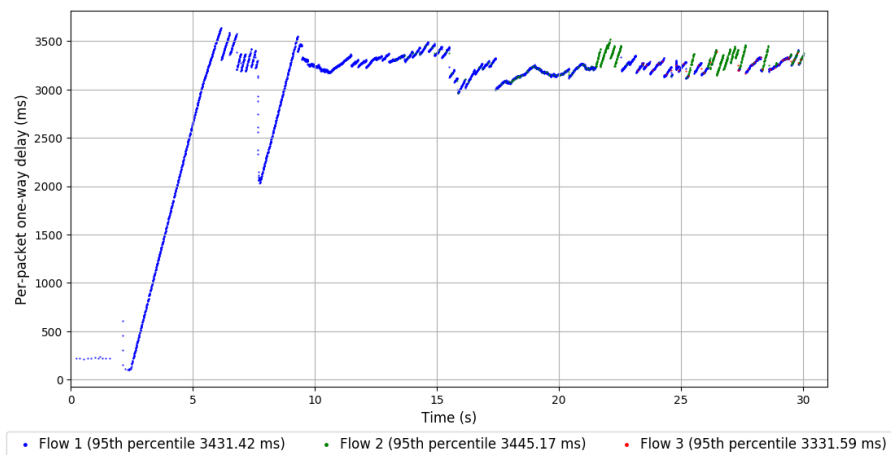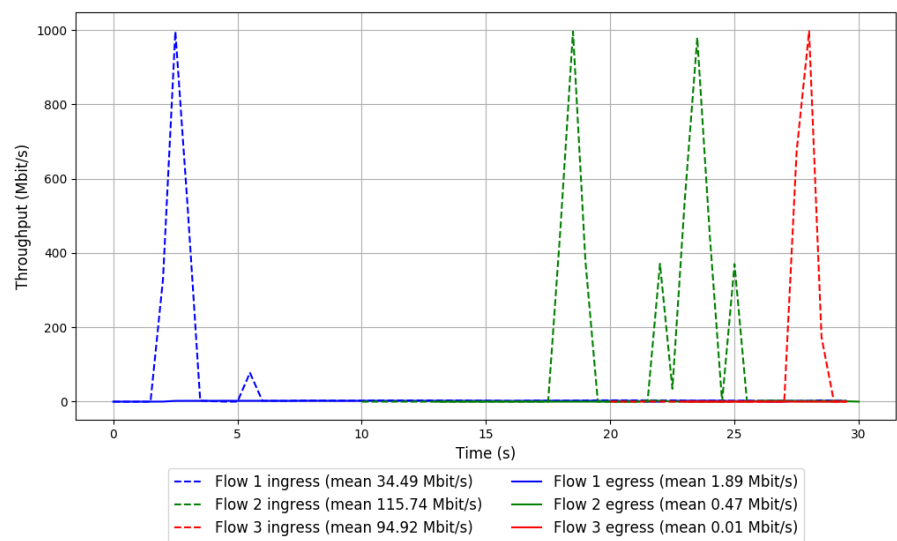
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-02-27 10:37:02
End at: 2018-02-27 10:37:32
Local clock offset: -3.833 ms
Remote clock offset: 0.421 ms


# Below is generated by plot.py at 2018-02-27 10:47:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 305.524 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 270.406 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 309.111 ms
Loss rate: 0.32%
-- Flow 3:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 338.876 ms
Loss rate: 1.00%
```
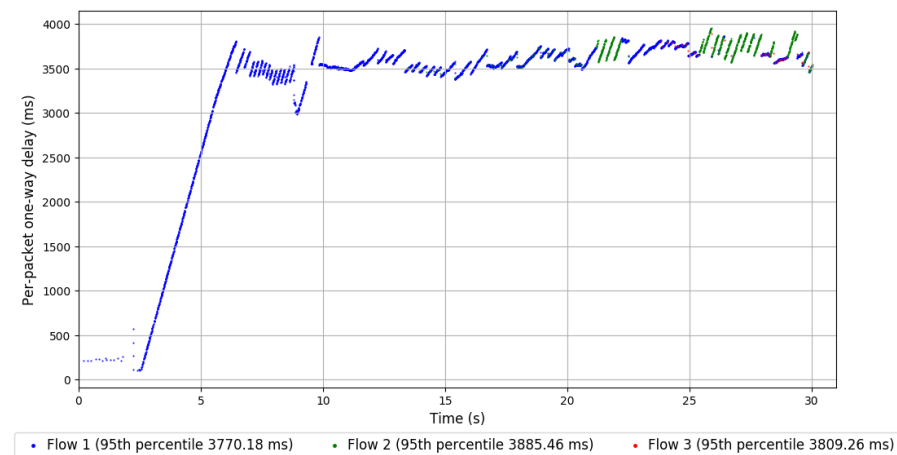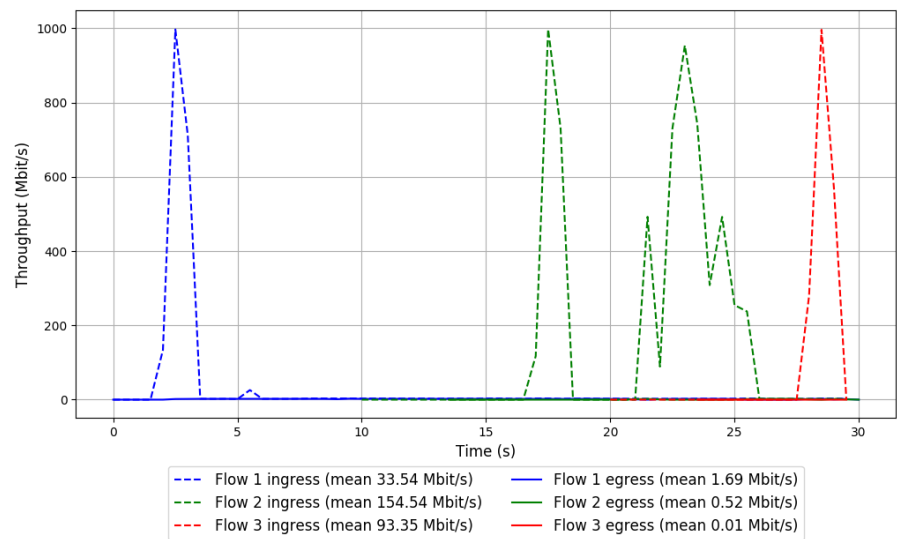
Run 3: Report of Copa — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-02-27 09:48:15
End at: 2018-02-27 09:48:45
Local clock offset: -6.424 ms
Remote clock offset: -5.629 ms

# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 3434.067 ms
Loss rate: 98.50%
-- Flow 1:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 3431.424 ms
Loss rate: 94.55%
-- Flow 2:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 3445.167 ms
Loss rate: 99.66%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 3331.595 ms
Loss rate: 100.00%
```
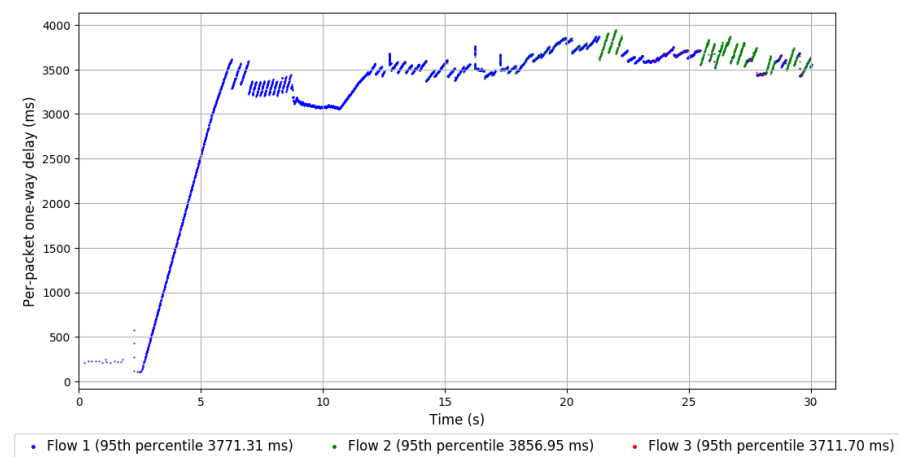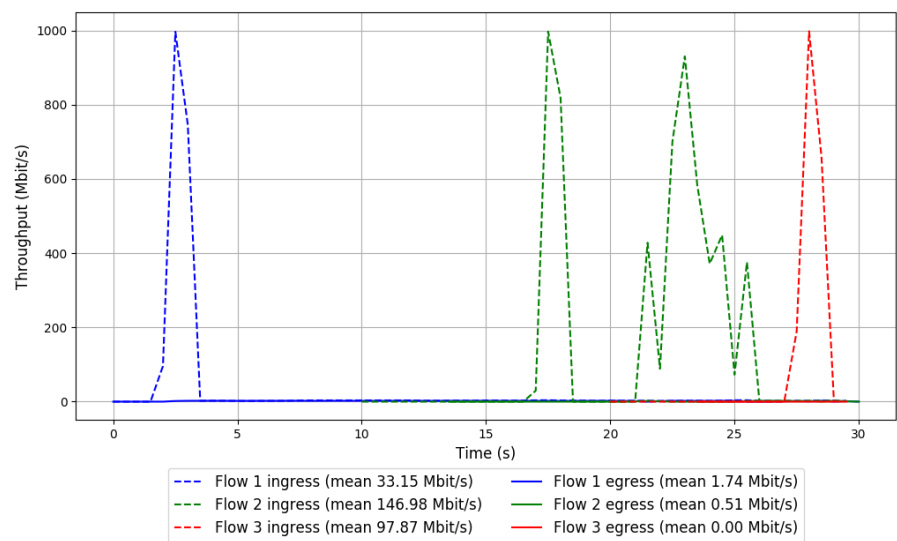
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-02-27 10:10:45
End at: 2018-02-27 10:11:15
Local clock offset: -5.498 ms
Remote clock offset: -5.983 ms

# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 3812.777 ms
Loss rate: 98.82%
-- Flow 1:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 3770.184 ms
Loss rate: 94.97%
-- Flow 2:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 3885.461 ms
Loss rate: 99.72%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 3809.265 ms
Loss rate: 100.00%
```
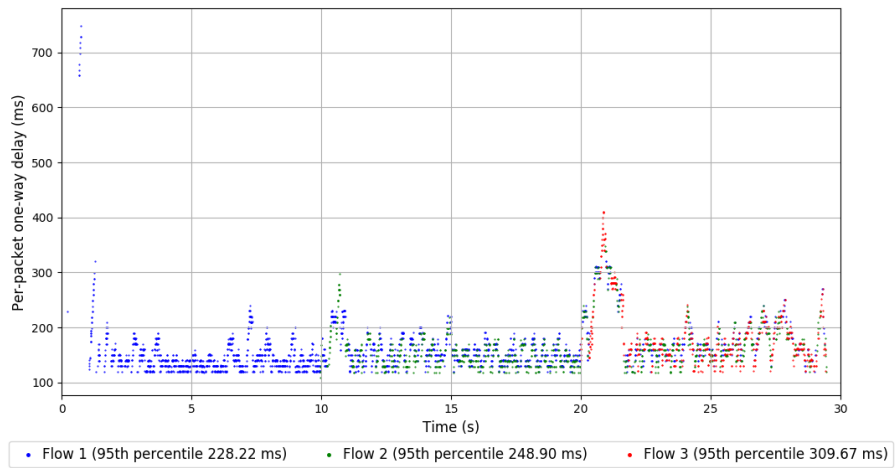
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-02-27 10:33:15
End at: 2018-02-27 10:33:45
Local clock offset: -4.209 ms
Remote clock offset: -0.293 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 3797.766 ms
Loss rate: 98.76%
-- Flow 1:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 3771.314 ms
Loss rate: 94.79%
-- Flow 2:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 3856.949 ms
Loss rate: 99.71%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3711.699 ms
Loss rate: 100.00%
```

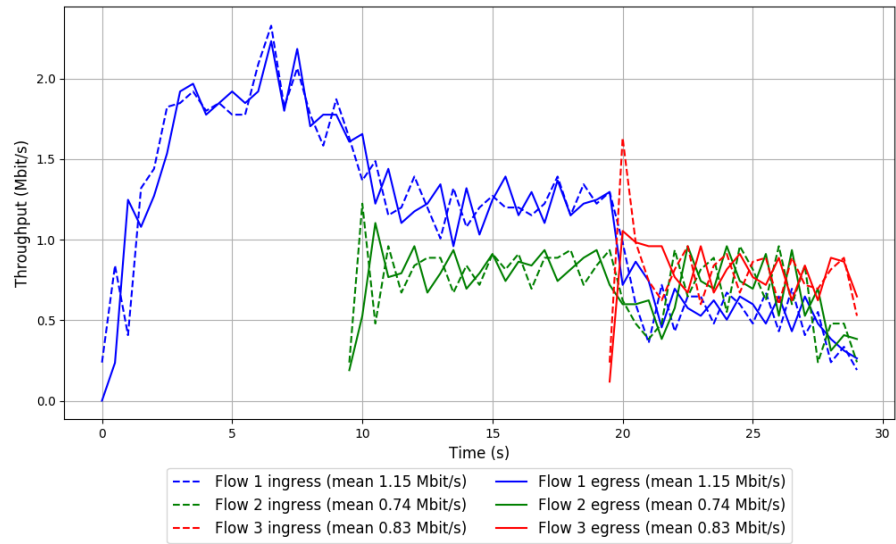# Run 3: Report of FillP — Data Link

```
Run 1: Statistics of Indigo-1-32

Start at: 2018-02-27 09:49:32
End at: 2018-02-27 09:50:02
Local clock offset: -6.436 ms
Remote clock offset: 0.473 ms

# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 259.005 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 228.221 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 248.904 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 309.666 ms
Loss rate: 1.06%
```
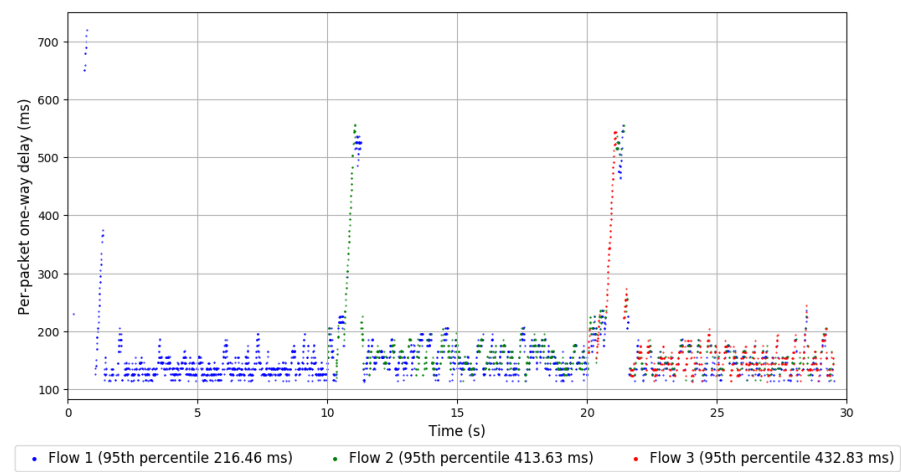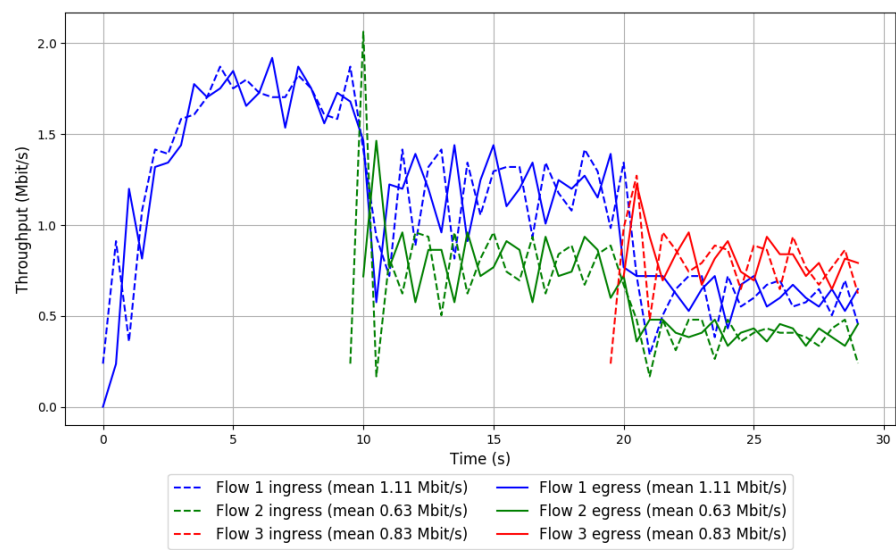
Run 1: Report of Indigo-1-32 — Data Link

```
Run 2: Statistics of Indigo-1-32

Start at: 2018-02-27 10:12:02
End at: 2018-02-27 10:12:32
Local clock offset: -5.428 ms
Remote clock offset: 0.446 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.79 Mbit/s
95th percentile per-packet one-way delay: 304.850 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 216.461 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 413.633 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 432.835 ms
Loss rate: 1.07%
```

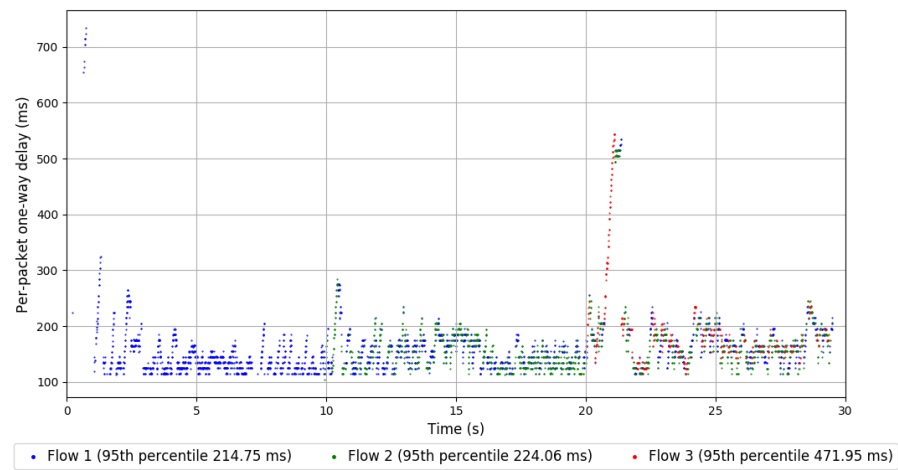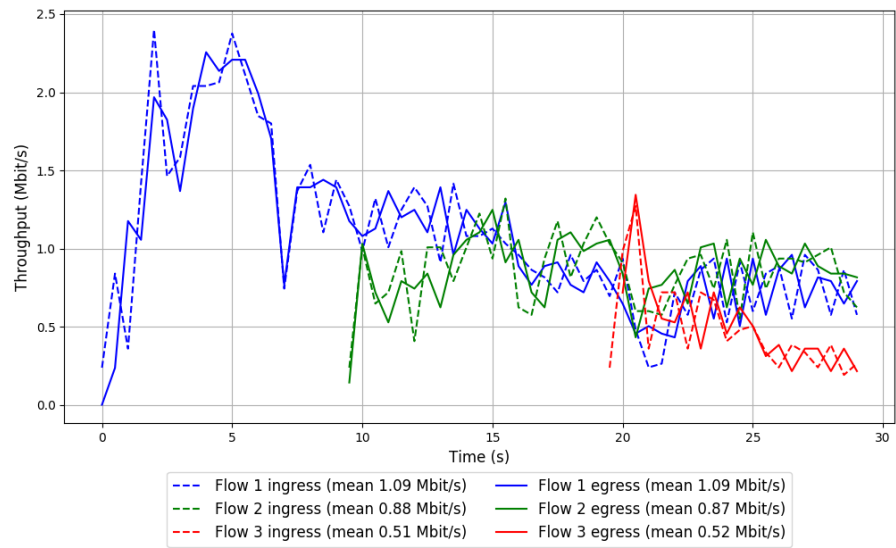# Run 2: Report of Indigo-1-32 — Data Link

```
Run 3: Statistics of Indigo-1-32

Start at: 2018-02-27 10:34:32
End at: 2018-02-27 10:35:02
Local clock offset: -4.096 ms
Remote clock offset: -5.106 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 233.858 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 214.747 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 224.059 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 471.947 ms
Loss rate: 0.73%
```

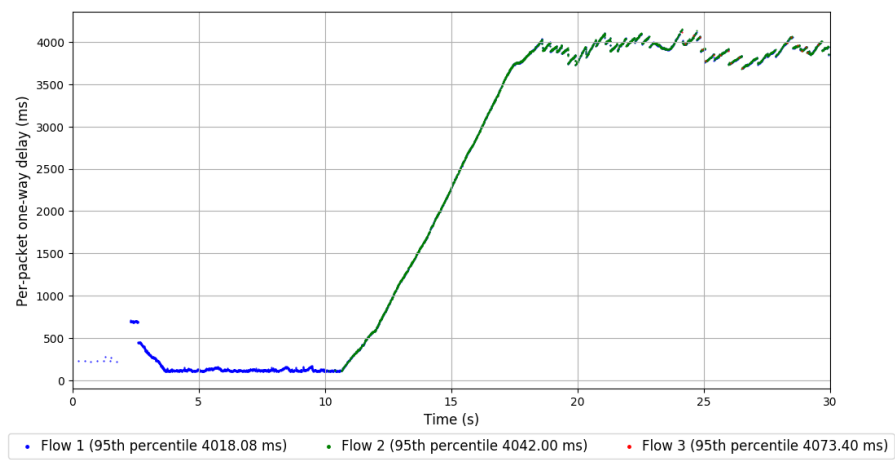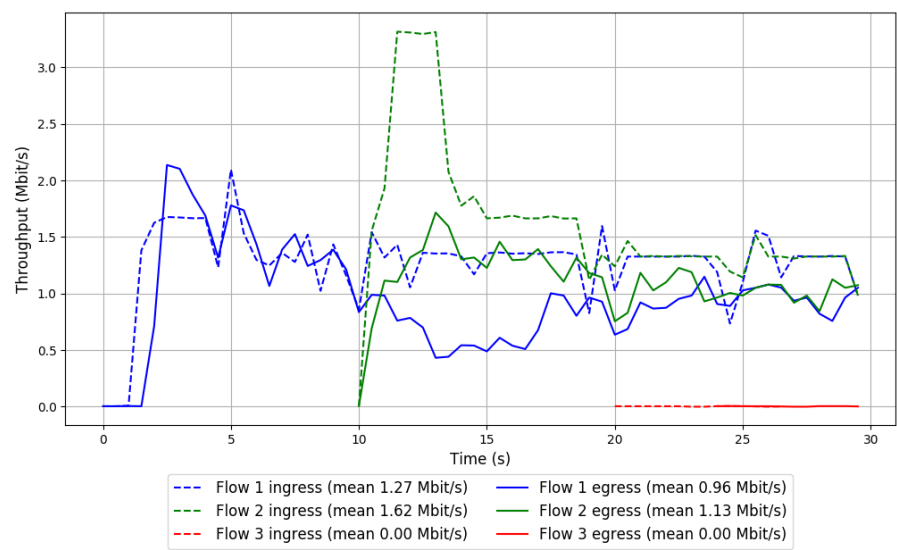Run 3: Report of Indigo-1-32 — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-02-27 10:00:45
End at: 2018-02-27 10:01:15
Local clock offset: -5.74 ms
Remote clock offset: -6.009 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.71 Mbit/s
95th percentile per-packet one-way delay: 4029.984 ms
Loss rate: 27.67%
-- Flow 1:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 4018.081 ms
Loss rate: 25.11%
-- Flow 2:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 4041.998 ms
Loss rate: 30.70%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 4073.400 ms
Loss rate: 5.60%
```
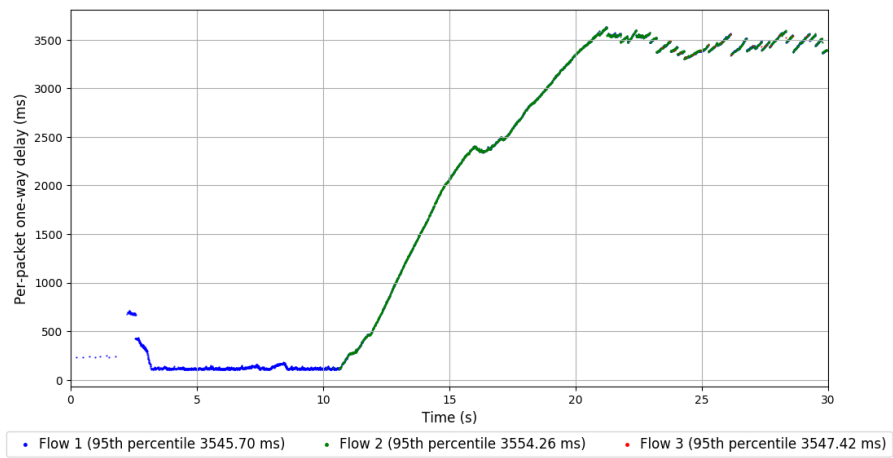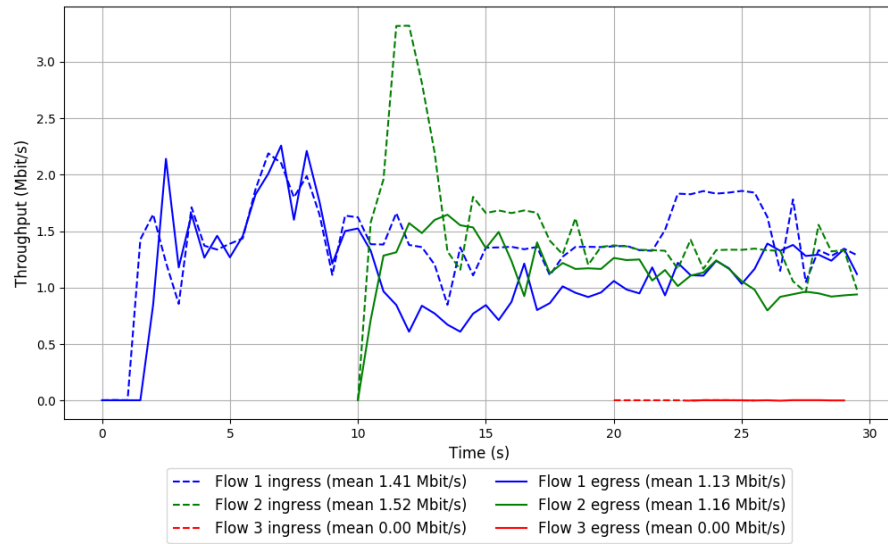
Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-02-27 10:23:15
End at: 2018-02-27 10:23:45
Local clock offset: -5.4 ms
Remote clock offset: -5.217 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 3548.788 ms
Loss rate: 21.52%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 3545.702 ms
Loss rate: 19.86%
-- Flow 2:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 3554.264 ms
Loss rate: 23.84%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3547.421 ms
Loss rate: 0.00%
```

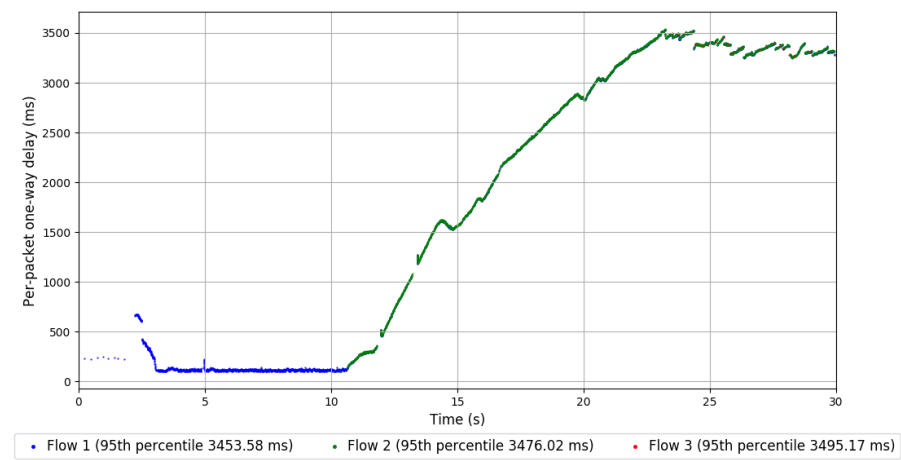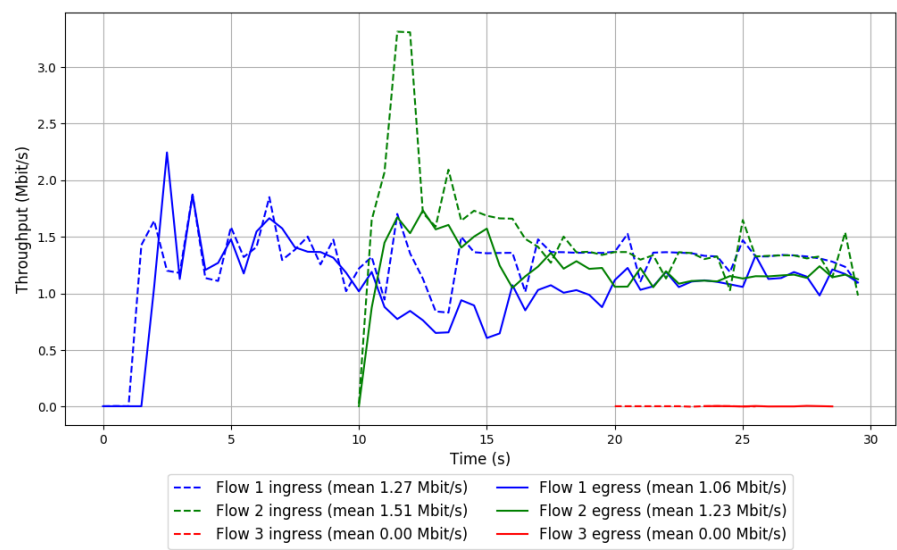# Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-02-27 10:45:45
End at: 2018-02-27 10:46:15
Local clock offset: -3.339 ms
Remote clock offset: -6.075 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 3464.939 ms
Loss rate: 17.52%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 3453.584 ms
Loss rate: 16.36%
-- Flow 2:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 3476.017 ms
Loss rate: 18.98%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3495.170 ms
Loss rate: 0.00%
```
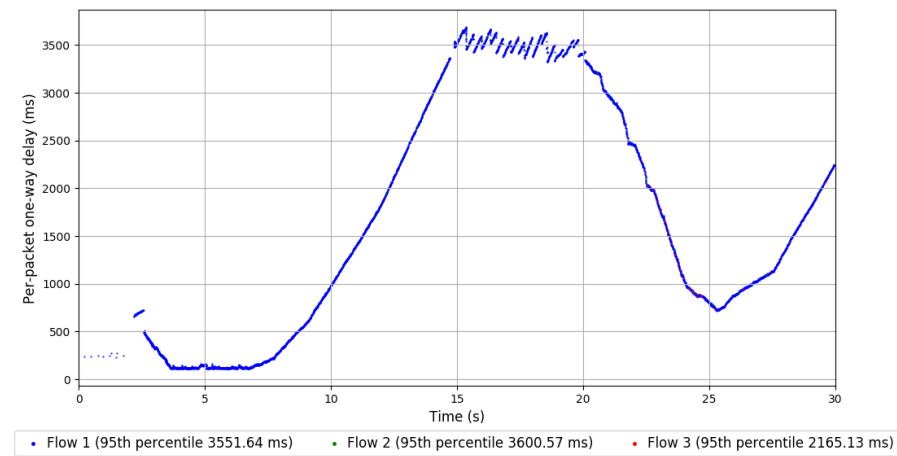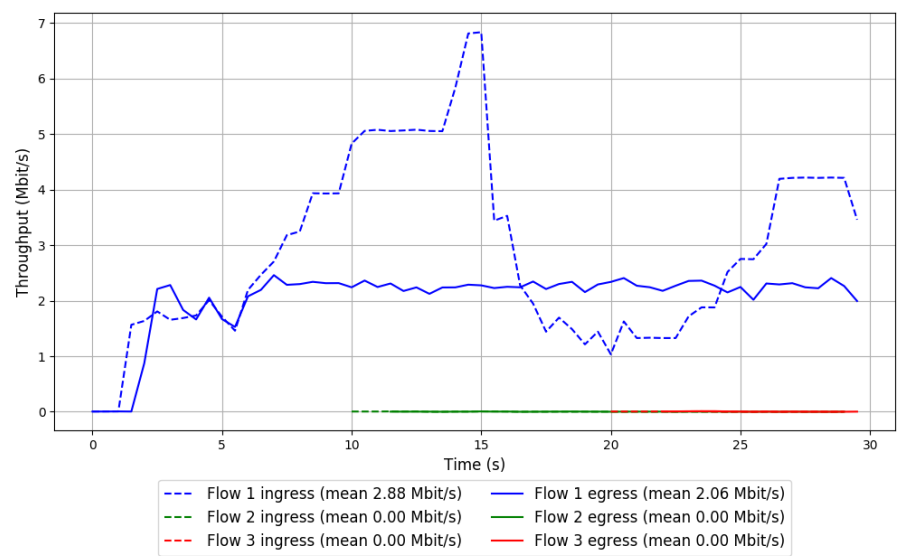
Run 3: Report of Vivace-latency — Data Link

```
Run 1: Statistics of Vivace-loss

Start at: 2018-02-27 09:53:16
End at: 2018-02-27 09:53:46
Local clock offset: -6.176 ms
Remote clock offset: -0.324 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 3552.157 ms
Loss rate: 28.80%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3551.643 ms
Loss rate: 28.81%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3600.571 ms
Loss rate: 17.32%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2165.127 ms
Loss rate: 6.97%
```
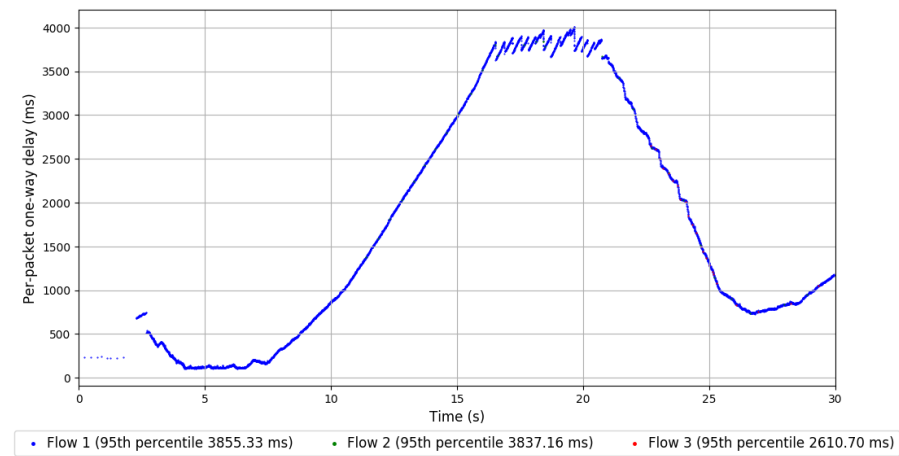
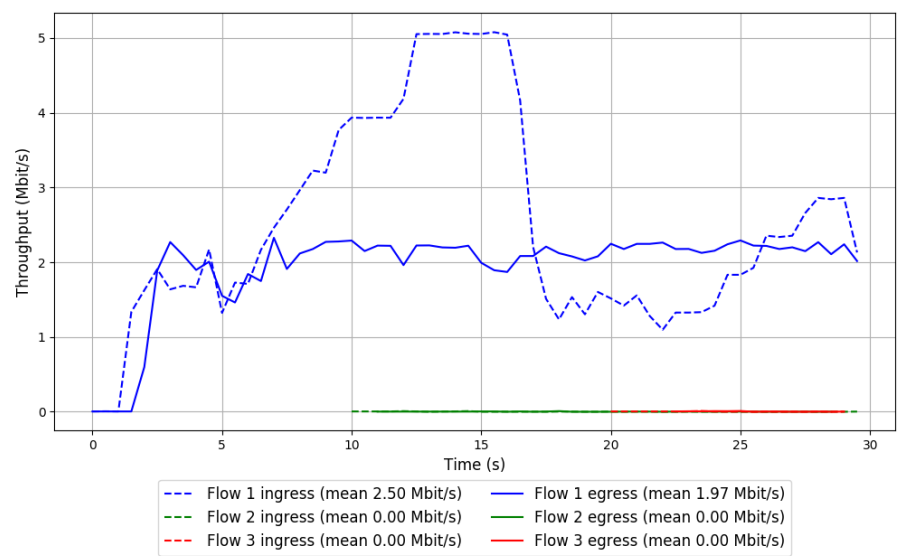Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-02-27 10:15:46
End at: 2018-02-27 10:16:16
Local clock offset: -5.389 ms
Remote clock offset: -5.174 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 3854.721 ms
Loss rate: 21.90%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 3855.327 ms
Loss rate: 21.91%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3837.158 ms
Loss rate: 14.16%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2610.695 ms
Loss rate: 3.43%
```

Run 2: Report of Vivace-loss — Data Link

```
Run 3: Statistics of Vivace-loss

Start at: 2018-02-27 10:38:16
End at: 2018-02-27 10:38:46
Local clock offset: -3.752 ms
Remote clock offset: -6.1 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.05 Mbit/s
95th percentile per-packet one-way delay: 3487.206 ms
Loss rate: 34.85%
-- Flow 1:
Average throughput: 2.05 Mbit/s
95th percentile per-packet one-way delay: 3487.008 ms
Loss rate: 34.86%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3528.993 ms
Loss rate: 22.95%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2120.609 ms
Loss rate: 10.74%
```
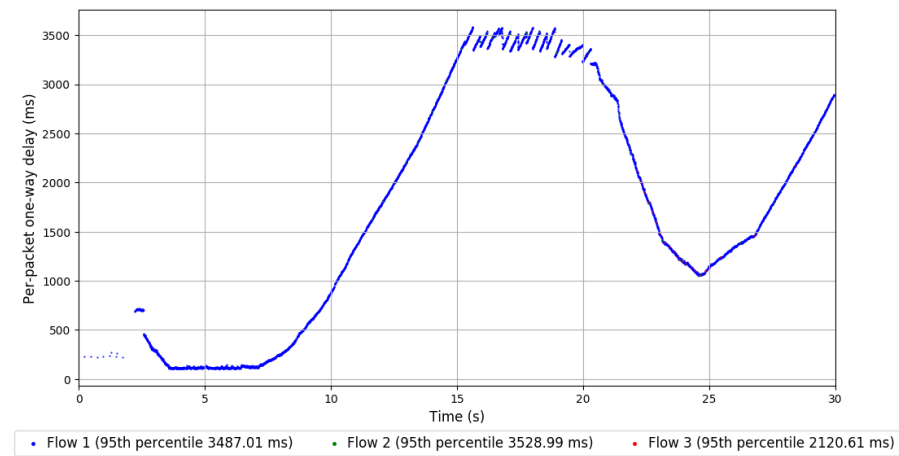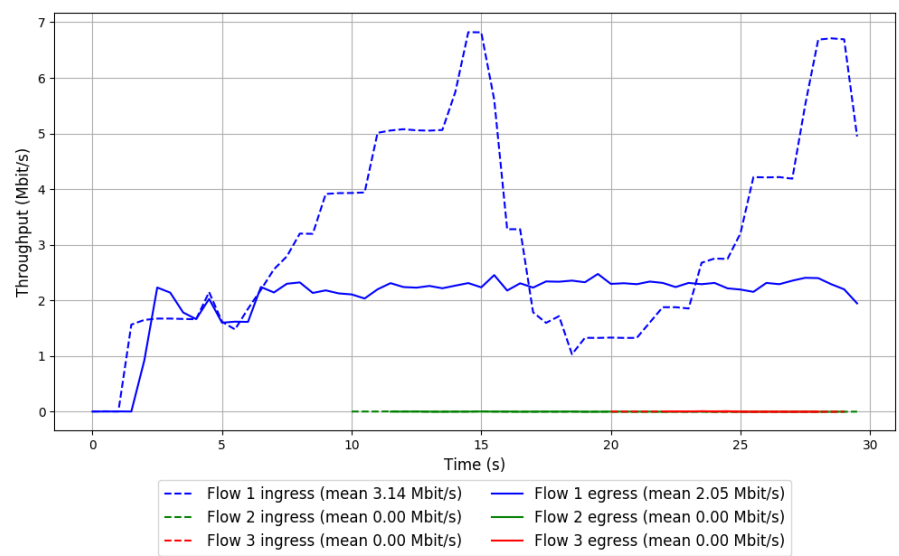
Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-02-27 09:55:46
End at: 2018-02-27 09:56:16
Local clock offset: -5.991 ms
Remote clock offset: 0.528 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 3661.884 ms
Loss rate: 22.42%
-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 3648.373 ms
Loss rate: 19.27%
-- Flow 2:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 3672.840 ms
Loss rate: 26.91%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3438.715 ms
Loss rate: 0.00%
```
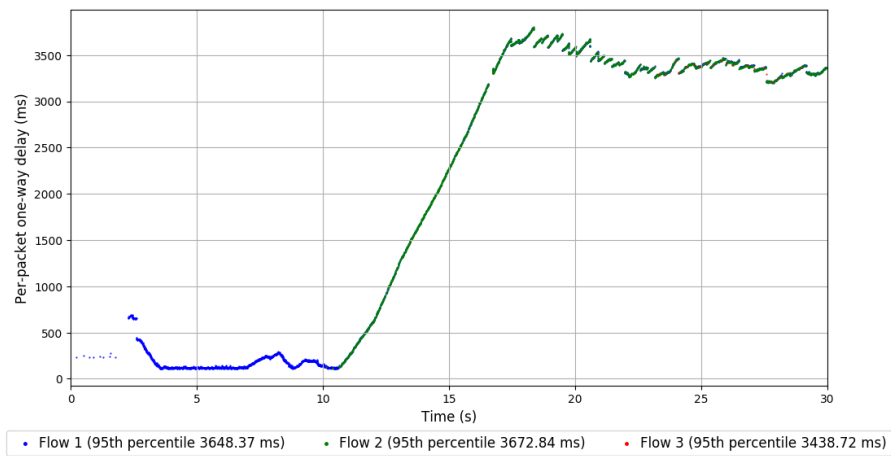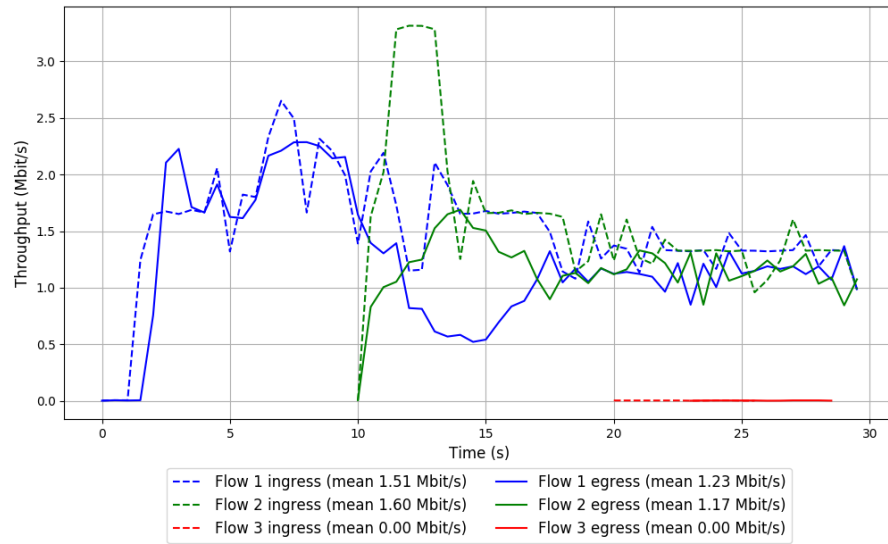
Run 1: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.51 Mbit/s) — Flow 1 egress (mean 1.23 Mbit/s)
Flow 2 ingress (mean 1.60 Mbit/s) — Flow 2 egress (mean 1.17 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s) — Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 3648.37 ms) • Flow 2 (95th percentile 3672.84 ms) • Flow 3 (95th percentile 3438.72 ms)
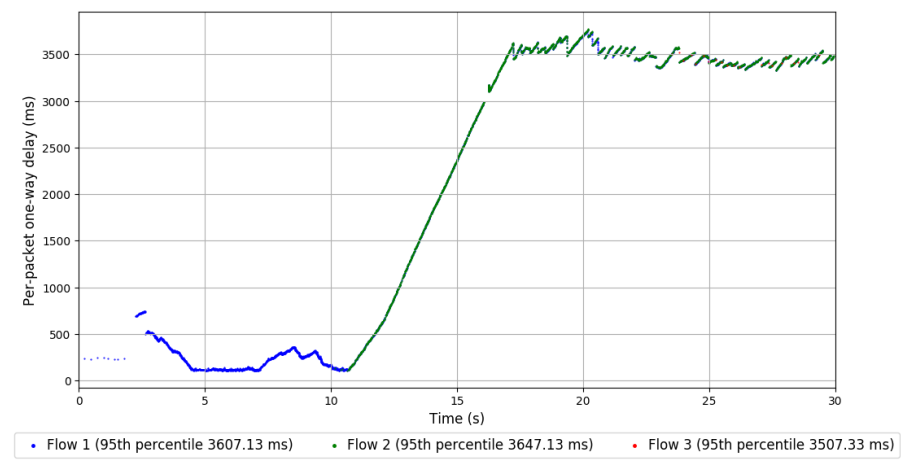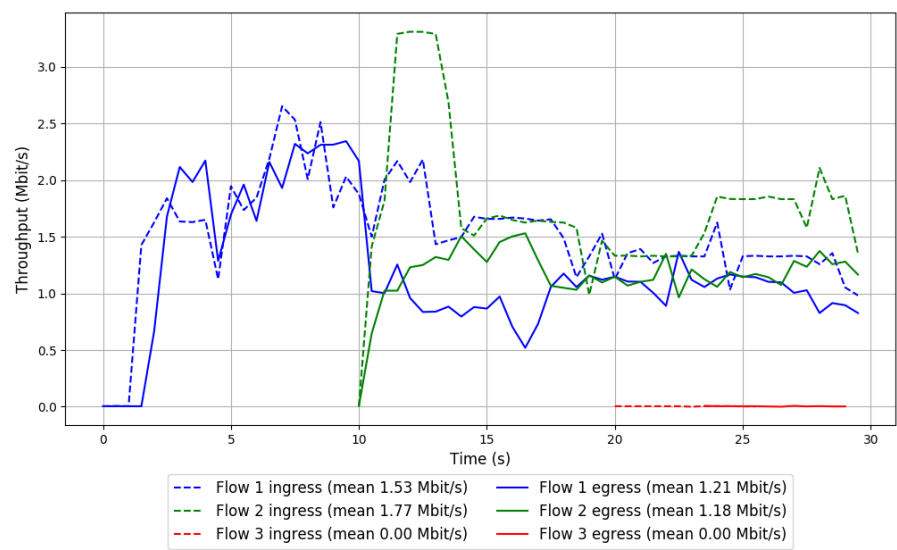
```
Run 2: Statistics of Vivace-LTE

Start at: 2018-02-27 10:18:16
End at: 2018-02-27 10:18:46
Local clock offset: -5.425 ms
Remote clock offset: -5.188 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 3627.977 ms
Loss rate: 26.52%
-- Flow 1:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 3607.129 ms
Loss rate: 21.07%
-- Flow 2:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 3647.127 ms
Loss rate: 33.60%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3507.334 ms
Loss rate: 0.00%
```

Run 2: Report of Vivace-LTE — Data Link

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-02-27 10:40:46
End at: 2018-02-27 10:41:16
Local clock offset: -3.593 ms
Remote clock offset: -5.208 ms


# Below is generated by plot.py at 2018-02-27 10:48:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 3496.946 ms
Loss rate: 19.52%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 3480.627 ms
Loss rate: 16.66%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 3517.743 ms
Loss rate: 23.62%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3331.060 ms
Loss rate: 5.60%
```

Run 3: Report of Vivace-LTE — Data Link