Pantheon Report

Generated at 2018-02-19 21:06:53 (UTC).

Data path: AWS California 1 Ethernet (*local*) →Stanford 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 `time.stanford.edu` 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 California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)
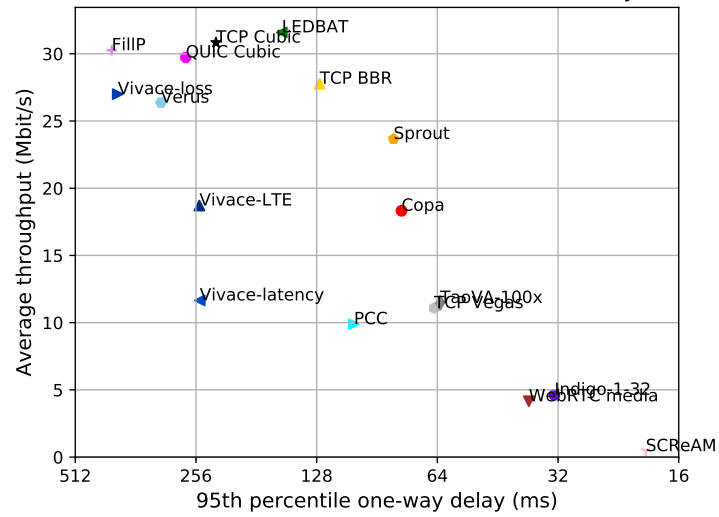
test from AWS California 1 Ethernet to Stanford ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows
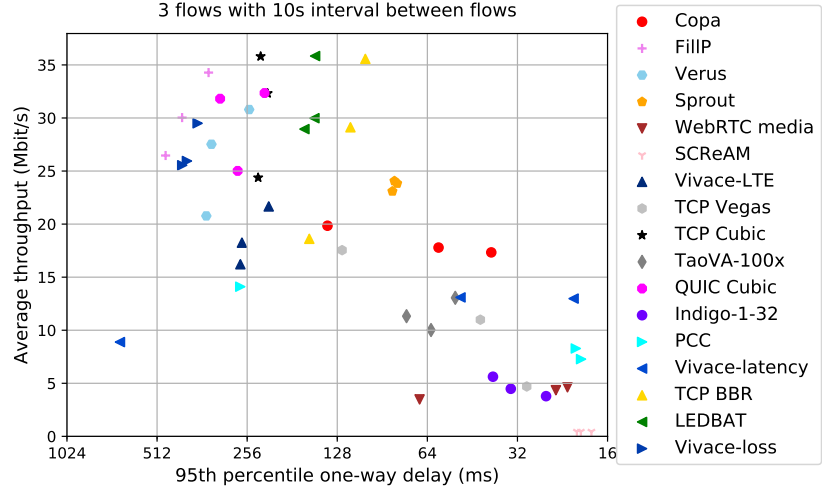
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	16.14	12.06	10.76	115.21	139.70	127.87	0.02	0.05	0.15
TCP Cubic	3	16.78	17.52	7.36	221.20	231.29	234.23	0.29	0.78	1.80
LEDBAT	3	26.19	6.59	3.14	152.28	169.16	181.29	0.27	0.47	1.44
PCC	3	3.30	6.74	6.27	92.21	101.99	111.20	0.22	0.37	0.70
QUIC Cubic	3	21.36	9.72	6.03	239.92	307.92	344.71	0.38	1.11	2.83
SCReAM	3	0.22	0.22	0.22	19.40	19.18	17.19	0.00	0.00	0.00
WebRTC media	3	2.23	1.42	0.50	34.01	39.83	47.63	0.01	0.04	0.00
Sprout	3	12.64	11.38	10.26	75.69	86.02	92.12	0.04	0.10	0.21
TaoVA-100x	3	4.83	5.85	8.19	48.88	59.07	69.66	0.02	0.00	0.32
TCP Vegas	3	2.42	7.30	11.27	40.45	52.23	70.32	0.00	0.00	0.00
Verus	3	17.63	9.41	8.16	309.93	324.58	319.82	7.05	8.37	13.99
Copa	3	11.06	7.15	7.51	74.18	84.73	52.87	0.10	0.17	0.01
FillP	3	14.96	13.51	19.65	386.27	415.17	412.03	60.89	65.53	69.44
Indigo-1-32	3	1.58	2.58	4.13	31.47	31.00	30.45	0.00	0.02	0.09
Vivace-latency	3	6.12	5.66	5.24	179.17	259.99	274.35	1.36	2.57	4.57
Vivace-loss	3	16.66	11.82	7.58	402.33	406.53	462.40	24.52	22.51	30.69
Vivace-LTE	3	13.01	4.77	7.58	240.19	238.39	344.95	3.08	3.27	6.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-02-19 19:59:32
End at: 2018-02-19 20:00:02
Local clock offset: 0.354 ms
Remote clock offset: -6.915 ms


# Below is generated by plot.py at 2018-02-19 21:04:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 29.12 Mbit/s
95th percentile per-packet one-way delay: 115.657 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 16.19 Mbit/s
95th percentile per-packet one-way delay: 109.212 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 14.01 Mbit/s
95th percentile per-packet one-way delay: 131.187 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 10.50 Mbit/s
95th percentile per-packet one-way delay: 103.738 ms
Loss rate: 0.06%
```
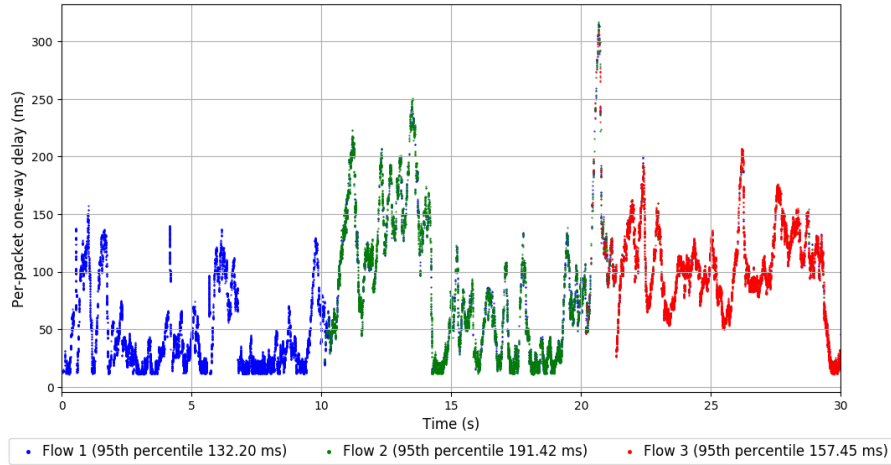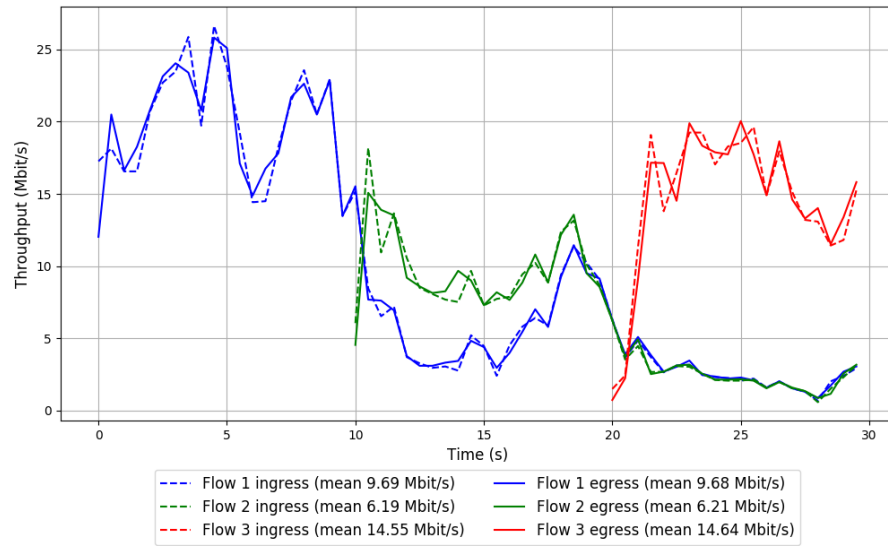
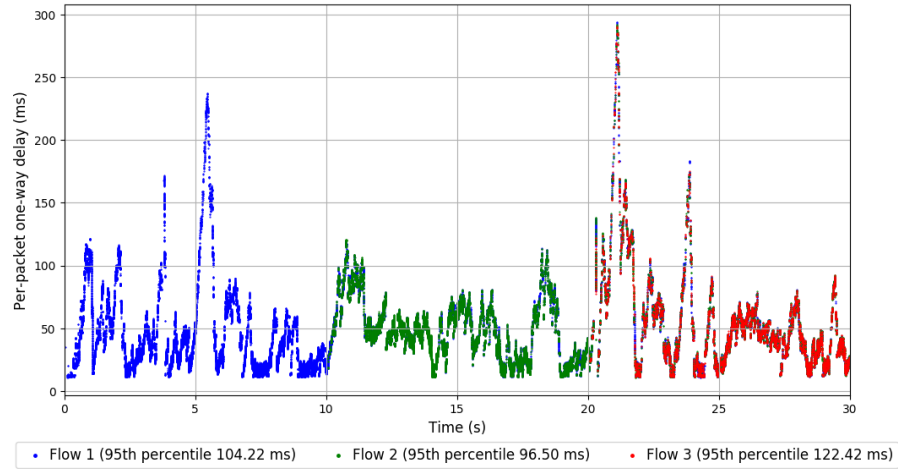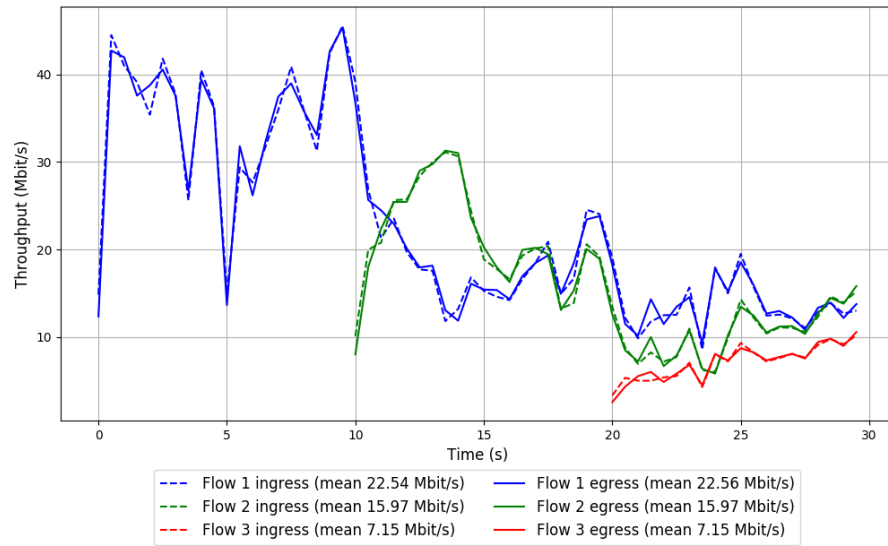Run 1: Report of TCP BBR — Data Link
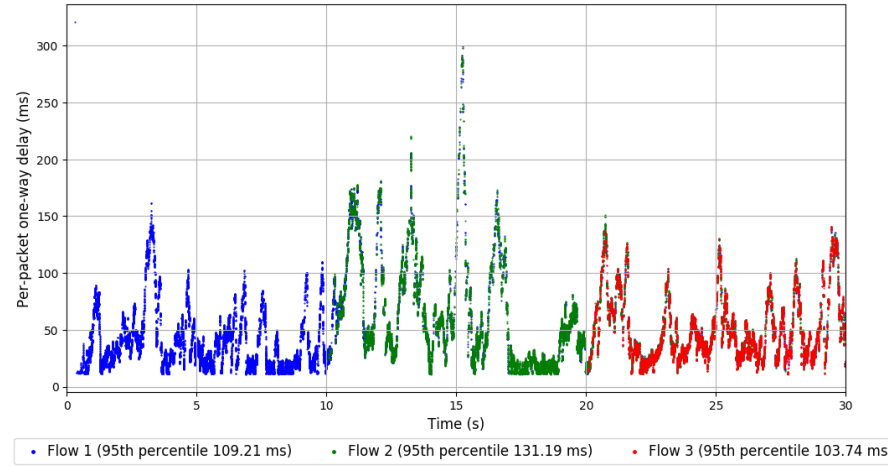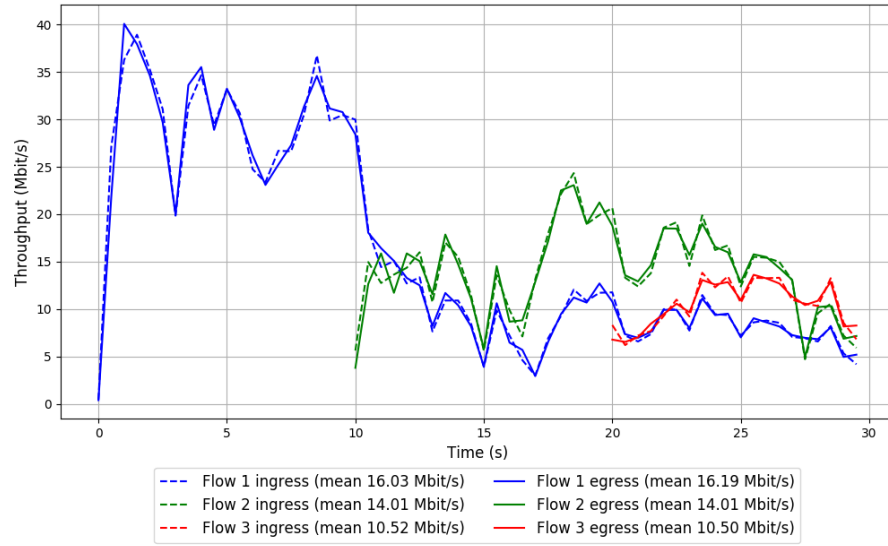
```
Run 2: Statistics of TCP BBR

Start at: 2018-02-19 20:23:29
End at: 2018-02-19 20:23:59
Local clock offset: 2.124 ms
Remote clock offset: -6.82 ms


# Below is generated by plot.py at 2018-02-19 21:04:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.62 Mbit/s
95th percentile per-packet one-way delay: 158.713 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 9.68 Mbit/s
95th percentile per-packet one-way delay: 132.196 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 6.21 Mbit/s
95th percentile per-packet one-way delay: 191.419 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 14.64 Mbit/s
95th percentile per-packet one-way delay: 157.451 ms
Loss rate: 0.22%
```
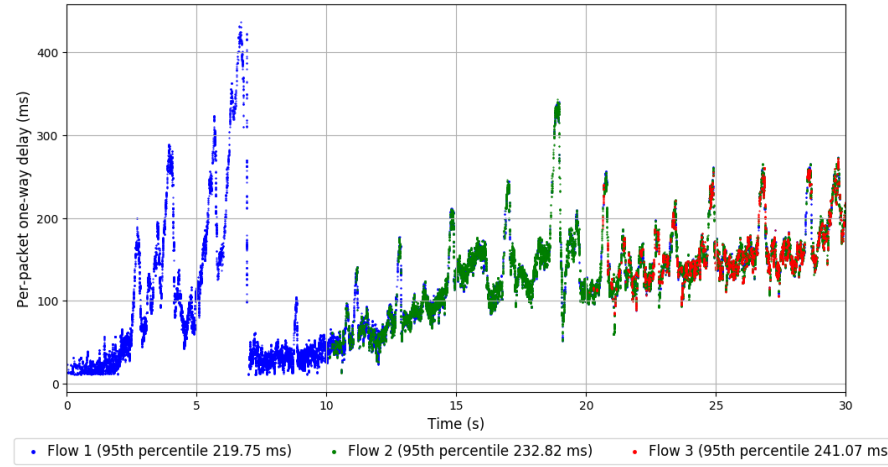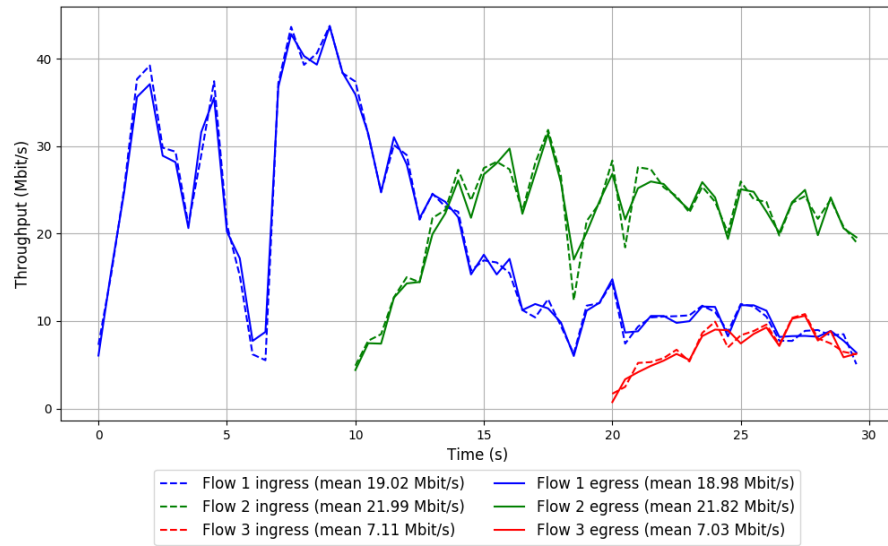
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 9.69 Mbit/s)   Flow 1 egress (mean 9.68 Mbit/s)
Flow 2 ingress (mean 6.19 Mbit/s)   Flow 2 egress (mean 6.21 Mbit/s)
Flow 3 ingress (mean 14.55 Mbit/s)   Flow 3 egress (mean 14.64 Mbit/s)

Flow 1 (95th percentile 132.20 ms)   Flow 2 (95th percentile 191.42 ms)   Flow 3 (95th percentile 157.45 ms)

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```
Run 3: Statistics of TCP BBR

Start at: 2018-02-19 20:47:23
End at: 2018-02-19 20:47:53
Local clock offset: 2.39 ms
Remote clock offset: -6.914 ms


# Below is generated by plot.py at 2018-02-19 21:04:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.57 Mbit/s
95th percentile per-packet one-way delay: 103.124 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 22.56 Mbit/s
95th percentile per-packet one-way delay: 104.224 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 15.97 Mbit/s
95th percentile per-packet one-way delay: 96.501 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 7.15 Mbit/s
95th percentile per-packet one-way delay: 122.425 ms
Loss rate: 0.17%
```
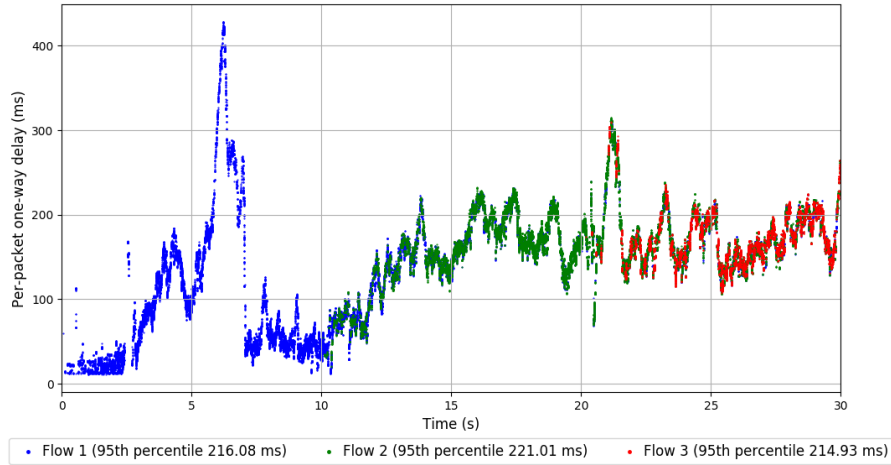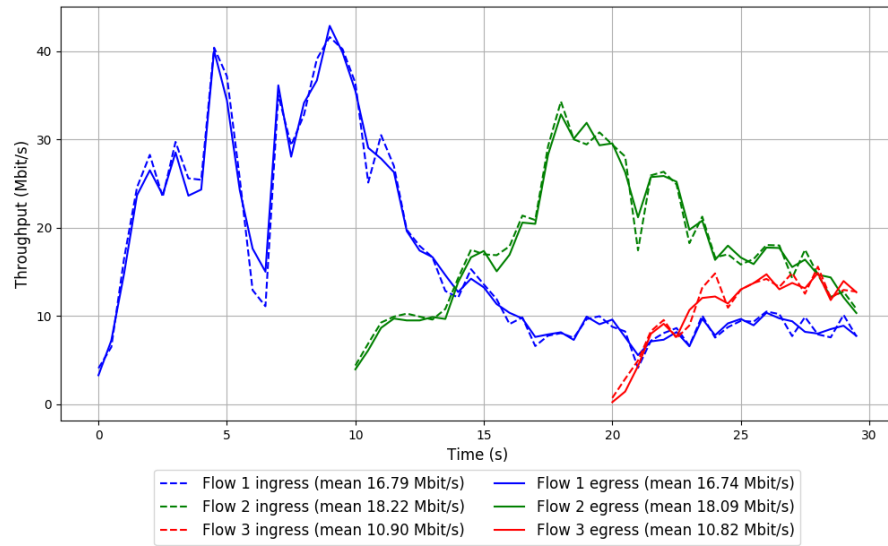
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 22.54 Mbit/s)   Flow 1 egress (mean 22.56 Mbit/s)
Flow 2 ingress (mean 15.97 Mbit/s)   Flow 2 egress (mean 15.97 Mbit/s)
Flow 3 ingress (mean 7.15 Mbit/s)   Flow 3 egress (mean 7.15 Mbit/s)

Flow 1 (95th percentile 104.22 ms)   Flow 2 (95th percentile 96.50 ms)   Flow 3 (95th percentile 122.42 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2018-02-19 19:54:13
End at: 2018-02-19 19:54:43
Local clock offset: 0.277 ms
Remote clock offset: -6.979 ms


# Below is generated by plot.py at 2018-02-19 21:04:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.80 Mbit/s
95th percentile per-packet one-way delay: 230.805 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 18.98 Mbit/s
95th percentile per-packet one-way delay: 219.747 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 21.82 Mbit/s
95th percentile per-packet one-way delay: 232.819 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 7.03 Mbit/s
95th percentile per-packet one-way delay: 241.072 ms
Loss rate: 2.05%
```

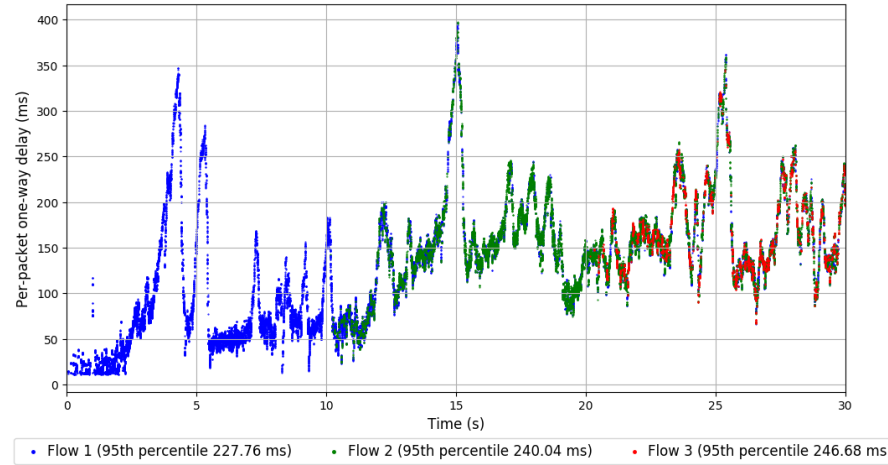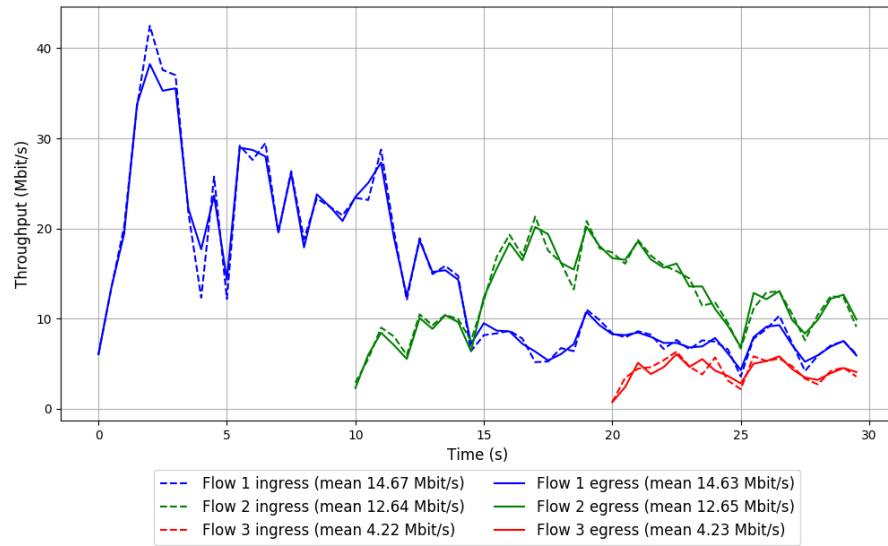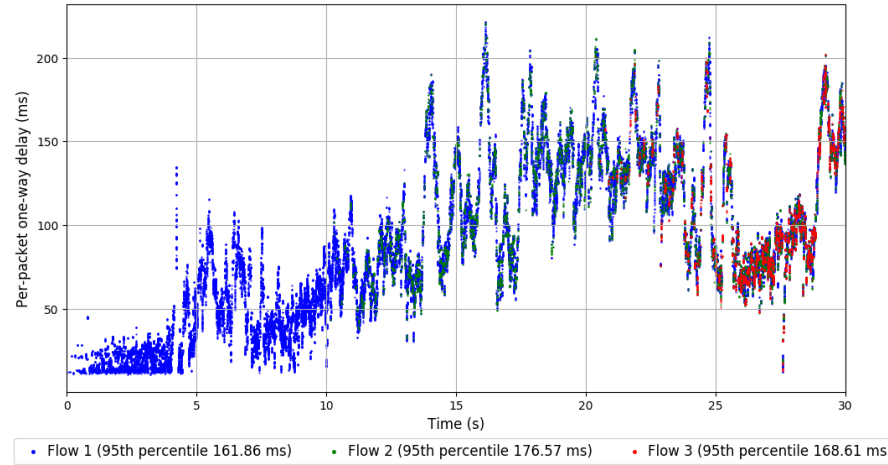Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 19.02 Mbit/s) --- Flow 1 egress (mean 18.98 Mbit/s)
Flow 2 ingress (mean 21.99 Mbit/s) --- Flow 2 egress (mean 21.82 Mbit/s)
Flow 3 ingress (mean 7.11 Mbit/s) --- Flow 3 egress (mean 7.03 Mbit/s)

Flow 1 (95th percentile 219.75 ms) • Flow 2 (95th percentile 232.82 ms) • Flow 3 (95th percentile 241.07 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-02-19 20:18:09
End at: 2018-02-19 20:18:39
Local clock offset: 1.828 ms
Remote clock offset: -6.848 ms


# Below is generated by plot.py at 2018-02-19 21:04:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 32.32 Mbit/s
95th percentile per-packet one-way delay: 218.721 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 16.74 Mbit/s
95th percentile per-packet one-way delay: 216.083 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 18.09 Mbit/s
95th percentile per-packet one-way delay: 221.011 ms
Loss rate: 0.83%
-- Flow 3:
Average throughput: 10.82 Mbit/s
95th percentile per-packet one-way delay: 214.931 ms
Loss rate: 2.27%
```

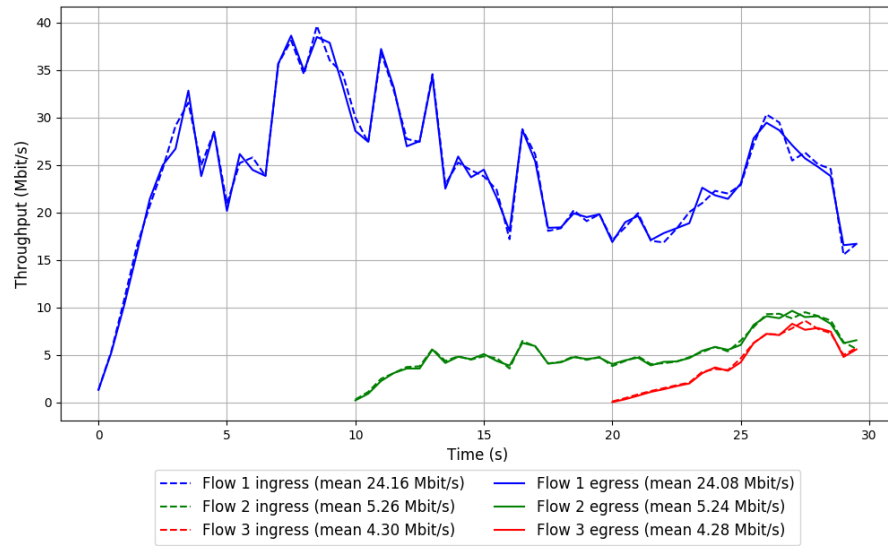Run 2: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 16.79 Mbit/s) — Flow 1 egress (mean 16.74 Mbit/s)
- - - Flow 2 ingress (mean 18.22 Mbit/s) — Flow 2 egress (mean 18.09 Mbit/s)
- - - Flow 3 ingress (mean 10.90 Mbit/s) — Flow 3 egress (mean 10.82 Mbit/s)

• Flow 1 (95th percentile 216.08 ms)   • Flow 2 (95th percentile 221.01 ms)   • Flow 3 (95th percentile 214.93 ms)
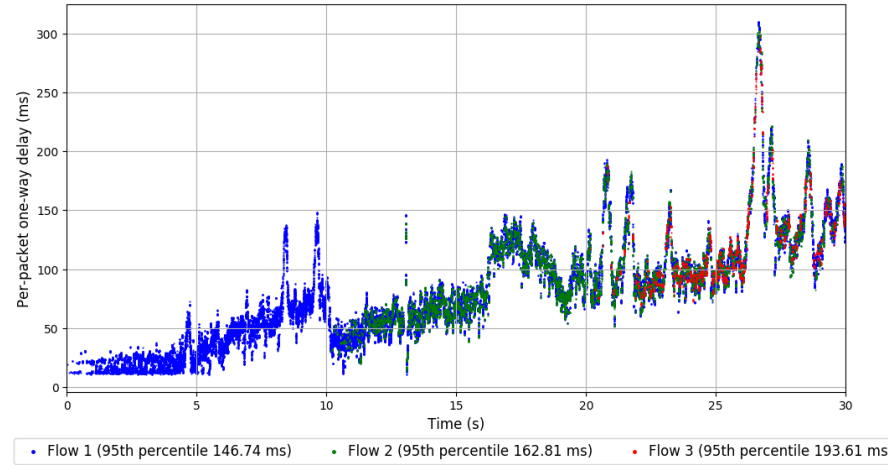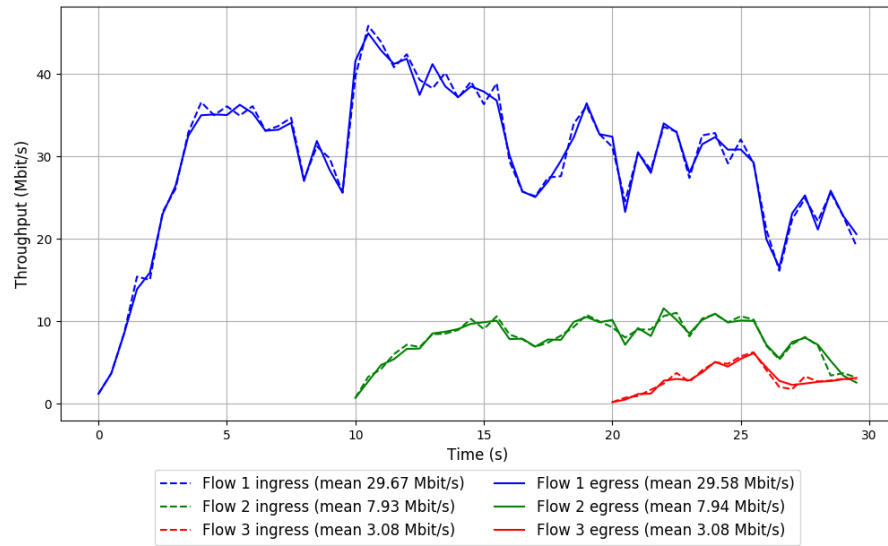
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```
Run 3: Statistics of TCP Cubic

Start at: 2018-02-19 20:42:04
End at: 2018-02-19 20:42:34
Local clock offset: 2.528 ms
Remote clock offset: -6.922 ms


# Below is generated by plot.py at 2018-02-19 21:04:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 24.38 Mbit/s
95th percentile per-packet one-way delay: 235.223 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 14.63 Mbit/s
95th percentile per-packet one-way delay: 227.762 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 12.65 Mbit/s
95th percentile per-packet one-way delay: 240.043 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 4.23 Mbit/s
95th percentile per-packet one-way delay: 246.682 ms
Loss rate: 1.09%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 14.67 Mbit/s) --- Flow 1 egress (mean 14.63 Mbit/s)
Flow 2 ingress (mean 12.64 Mbit/s) --- Flow 2 egress (mean 12.65 Mbit/s)
Flow 3 ingress (mean 4.22 Mbit/s) --- Flow 3 egress (mean 4.23 Mbit/s)

Flow 1 (95th percentile 227.76 ms)   Flow 2 (95th percentile 240.04 ms)   Flow 3 (95th percentile 246.68 ms)

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```
Run 1: Statistics of LEDBAT

Start at: 2018-02-19 20:08:50
End at: 2018-02-19 20:09:20
Local clock offset: 0.741 ms
Remote clock offset: -6.91 ms


# Below is generated by plot.py at 2018-02-19 21:04:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 28.95 Mbit/s
95th percentile per-packet one-way delay: 164.798 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 24.08 Mbit/s
95th percentile per-packet one-way delay: 161.857 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 5.24 Mbit/s
95th percentile per-packet one-way delay: 176.575 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 168.606 ms
Loss rate: 2.17%
```

Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 24.16 Mbit/s) — Flow 1 egress (mean 24.08 Mbit/s)
Flow 2 ingress (mean 5.26 Mbit/s) — Flow 2 egress (mean 5.24 Mbit/s)
Flow 3 ingress (mean 4.30 Mbit/s) — Flow 3 egress (mean 4.28 Mbit/s)

Flow 1 (95th percentile 161.86 ms)   Flow 2 (95th percentile 176.57 ms)   Flow 3 (95th percentile 168.61 ms)
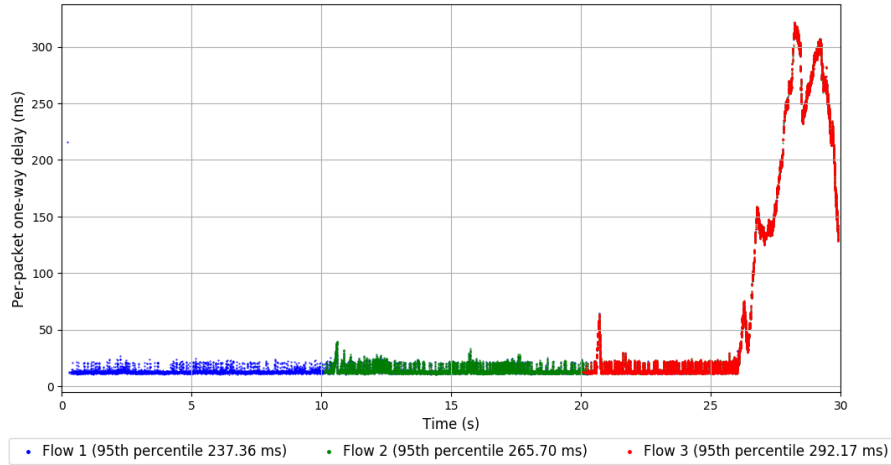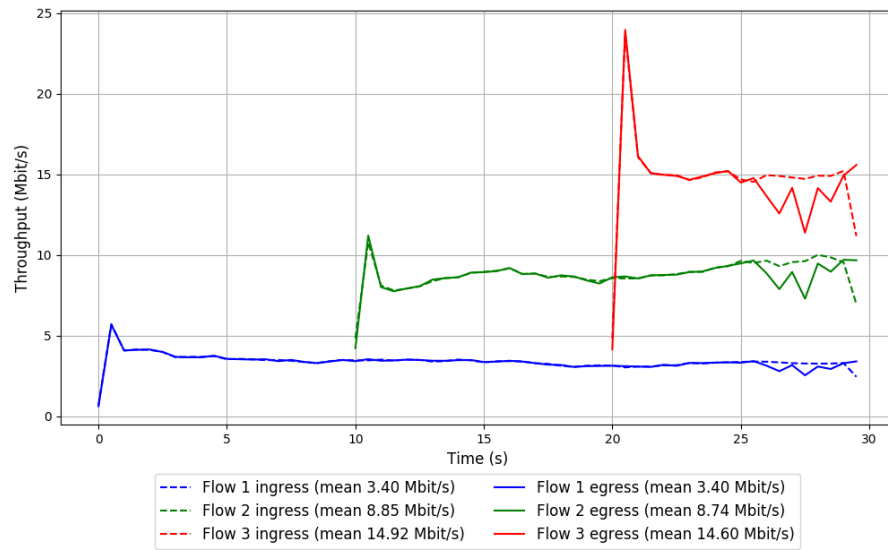
```
Run 2: Statistics of LEDBAT

Start at: 2018-02-19 20:32:46
End at: 2018-02-19 20:33:16
Local clock offset: 2.325 ms
Remote clock offset: -6.809 ms


# Below is generated by plot.py at 2018-02-19 21:04:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 29.98 Mbit/s
95th percentile per-packet one-way delay: 152.607 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 24.92 Mbit/s
95th percentile per-packet one-way delay: 148.253 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 6.59 Mbit/s
95th percentile per-packet one-way delay: 168.087 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 181.656 ms
Loss rate: 0.74%
```

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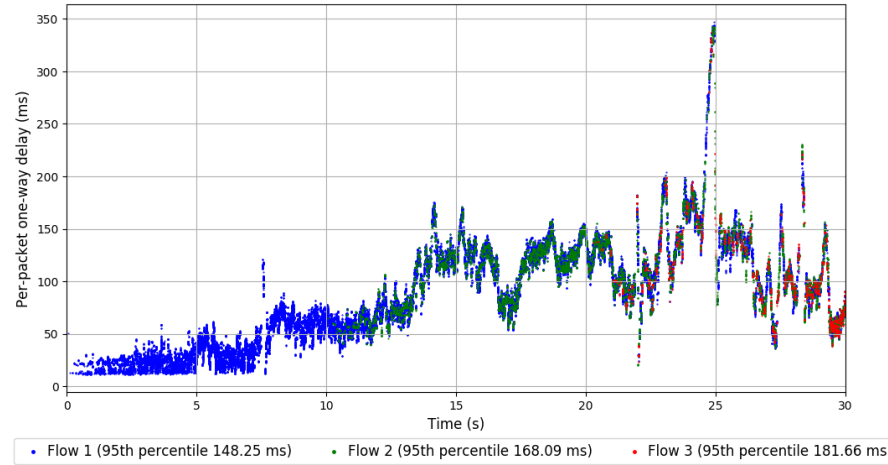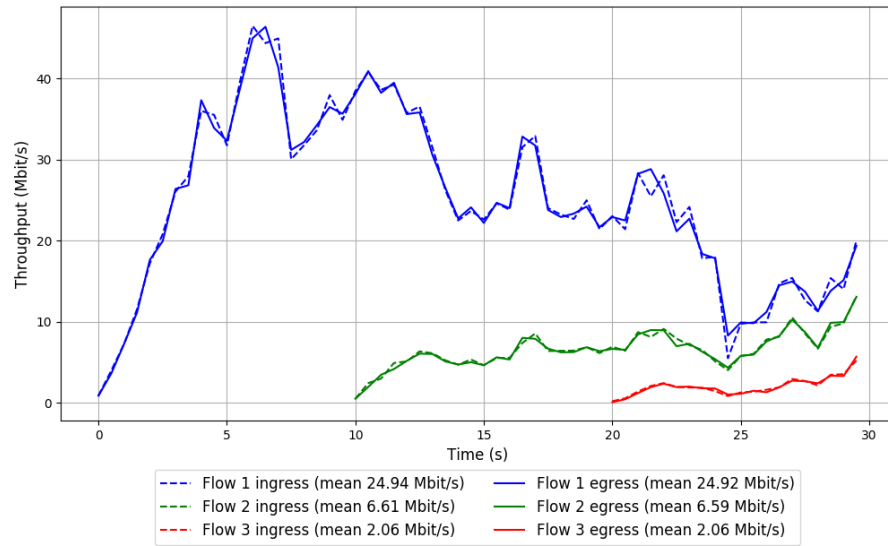
```
Run 3: Statistics of LEDBAT

Start at: 2018-02-19 20:56:42
End at: 2018-02-19 20:57:12
Local clock offset: 2.298 ms
Remote clock offset: -6.928 ms


# Below is generated by plot.py at 2018-02-19 21:05:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.84 Mbit/s
95th percentile per-packet one-way delay: 151.789 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 29.58 Mbit/s
95th percentile per-packet one-way delay: 146.738 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 7.94 Mbit/s
95th percentile per-packet one-way delay: 162.807 ms
Loss rate: 0.36%
-- Flow 3:
Average throughput: 3.08 Mbit/s
95th percentile per-packet one-way delay: 193.607 ms
Loss rate: 1.41%
```

Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC

Start at: 2018-02-19 20:14:10
End at: 2018-02-19 20:14:40
Local clock offset: 1.519 ms
Remote clock offset: -6.834 ms


# Below is generated by plot.py at 2018-02-19 21:05:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.28 Mbit/s
95th percentile per-packet one-way delay: 20.426 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.52 Mbit/s
95th percentile per-packet one-way delay: 19.973 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.58 Mbit/s
95th percentile per-packet one-way delay: 20.471 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 21.043 ms
Loss rate: 0.00%
```

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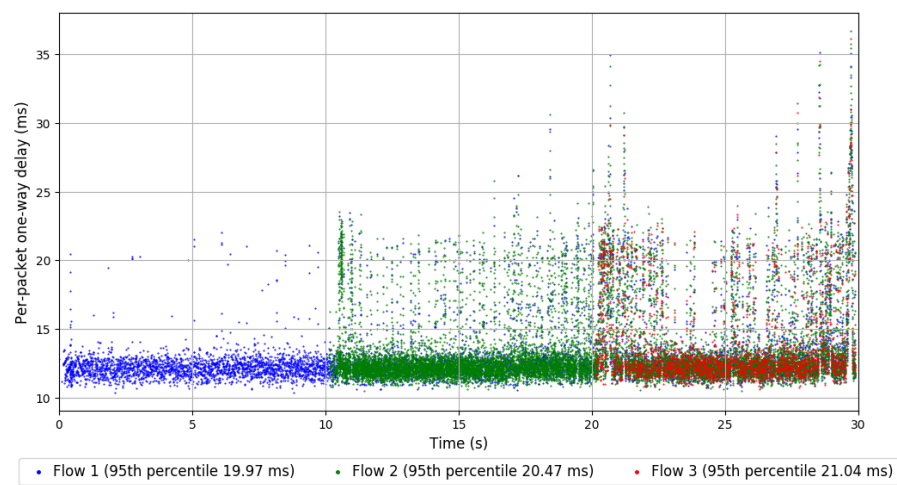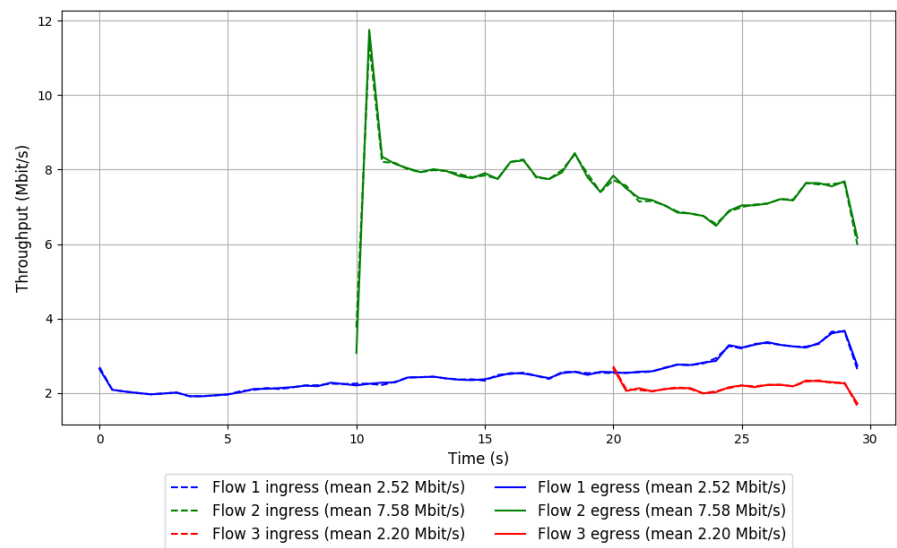
```
Run 2: Statistics of PCC

Start at: 2018-02-19 20:38:06
End at: 2018-02-19 20:38:36
Local clock offset: 2.425 ms
Remote clock offset: -6.802 ms


# Below is generated by plot.py at 2018-02-19 21:05:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.10 Mbit/s
95th percentile per-packet one-way delay: 269.938 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 3.40 Mbit/s
95th percentile per-packet one-way delay: 237.363 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 8.74 Mbit/s
95th percentile per-packet one-way delay: 265.700 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 14.60 Mbit/s
95th percentile per-packet one-way delay: 292.165 ms
Loss rate: 2.09%
```

Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 3.40 Mbit/s) ----   Flow 1 egress (mean 3.40 Mbit/s) ——
Flow 2 ingress (mean 8.85 Mbit/s) ----   Flow 2 egress (mean 8.74 Mbit/s) ——
Flow 3 ingress (mean 14.92 Mbit/s) ---- Flow 3 egress (mean 14.60 Mbit/s) ——

• Flow 1 (95th percentile 237.36 ms)   • Flow 2 (95th percentile 265.70 ms)   • Flow 3 (95th percentile 292.17 ms)

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```
Run 3: Statistics of PCC

Start at: 2018-02-19 21:02:04
End at: 2018-02-19 21:02:34
Local clock offset: 2.298 ms
Remote clock offset: -6.504 ms


# Below is generated by plot.py at 2018-02-19 21:05:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.28 Mbit/s
95th percentile per-packet one-way delay: 19.616 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.99 Mbit/s
95th percentile per-packet one-way delay: 19.290 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.91 Mbit/s
95th percentile per-packet one-way delay: 19.797 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 20.394 ms
Loss rate: 0.00%
```

Run 3: Report of PCC — Data Link
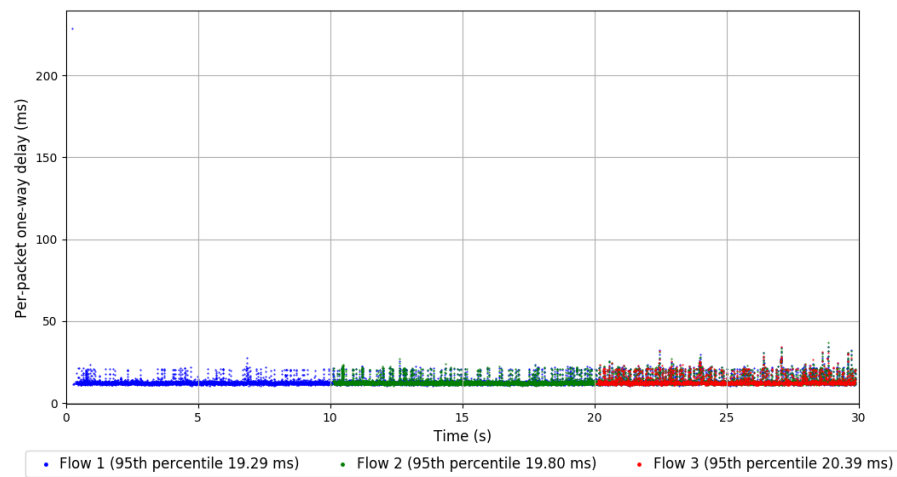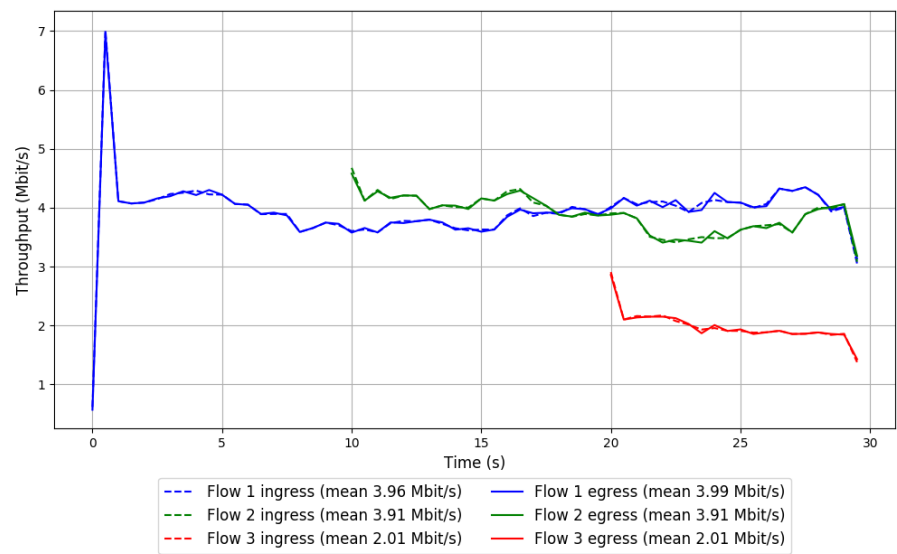
```
Run 1: Statistics of QUIC Cubic

Start at: 2018-02-19 20:12:50
End at: 2018-02-19 20:13:20
Local clock offset: 1.335 ms
Remote clock offset: -6.913 ms


# Below is generated by plot.py at 2018-02-19 21:05:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 31.82 Mbit/s
95th percentile per-packet one-way delay: 315.205 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 23.09 Mbit/s
95th percentile per-packet one-way delay: 249.912 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 11.77 Mbit/s
95th percentile per-packet one-way delay: 349.894 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 2.84 Mbit/s
95th percentile per-packet one-way delay: 429.579 ms
Loss rate: 3.68%
```

Run 1: Report of QUIC Cubic — Data Link
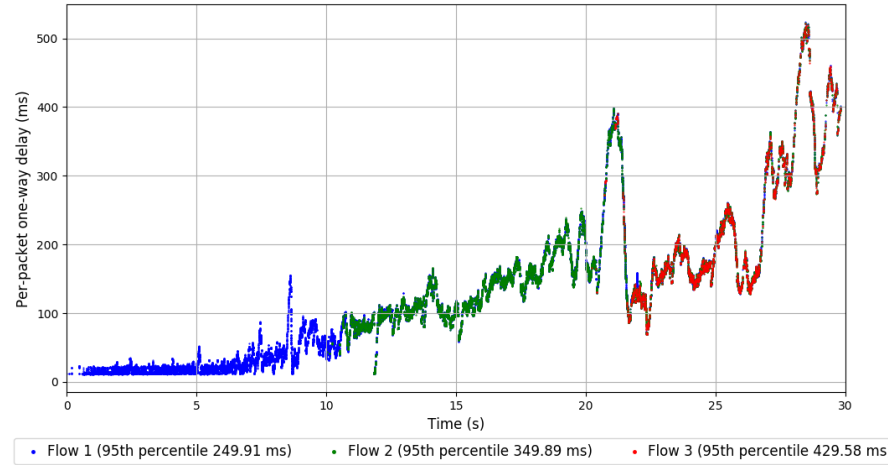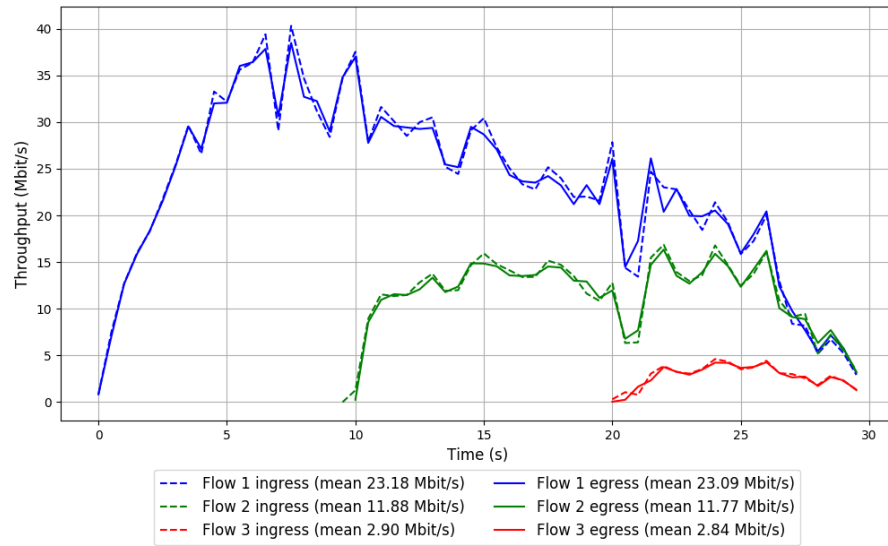
```
Run 2: Statistics of QUIC Cubic

Start at: 2018-02-19 20:36:46
End at: 2018-02-19 20:37:16
Local clock offset: 2.498 ms
Remote clock offset: -6.821 ms


# Below is generated by plot.py at 2018-02-19 21:05:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 25.01 Mbit/s
95th percentile per-packet one-way delay: 275.429 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 18.46 Mbit/s
95th percentile per-packet one-way delay: 255.154 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 6.40 Mbit/s
95th percentile per-packet one-way delay: 328.459 ms
Loss rate: 1.28%
-- Flow 3:
Average throughput: 7.27 Mbit/s
95th percentile per-packet one-way delay: 364.833 ms
Loss rate: 2.67%
```

Run 2: Report of QUIC Cubic — Data Link

31
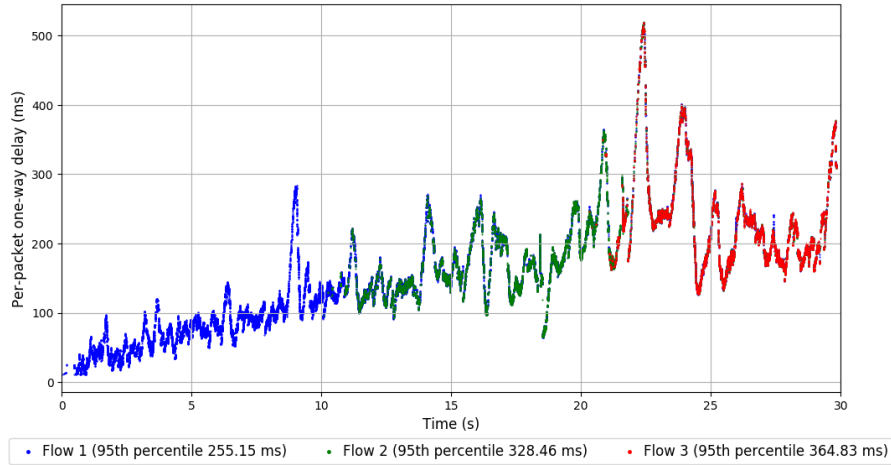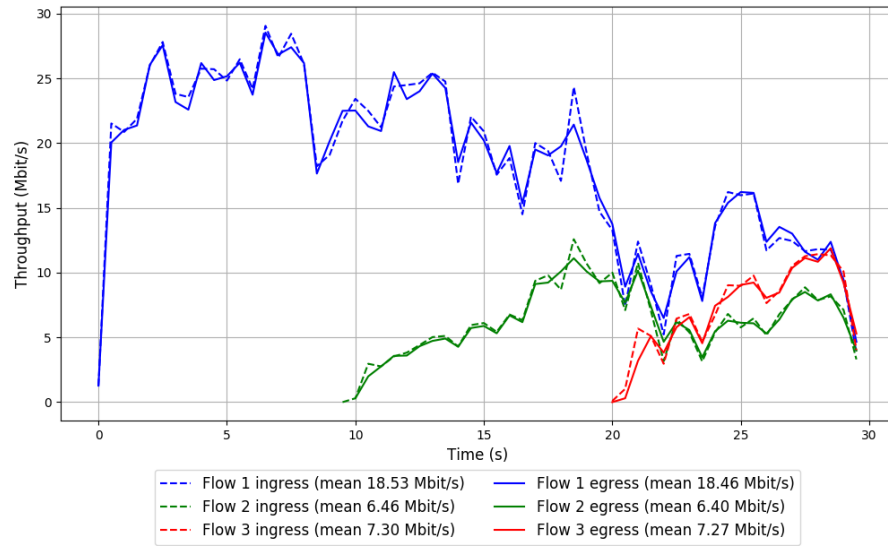
```
Run 3: Statistics of QUIC Cubic

Start at: 2018-02-19 21:00:43
End at: 2018-02-19 21:01:13
Local clock offset: 2.307 ms
Remote clock offset: -6.65 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 32.35 Mbit/s
95th percentile per-packet one-way delay: 223.918 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 22.52 Mbit/s
95th percentile per-packet one-way delay: 214.695 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 10.98 Mbit/s
95th percentile per-packet one-way delay: 245.398 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 7.97 Mbit/s
95th percentile per-packet one-way delay: 239.711 ms
Loss rate: 2.14%
```

Run 3: Report of QUIC Cubic — Data Link
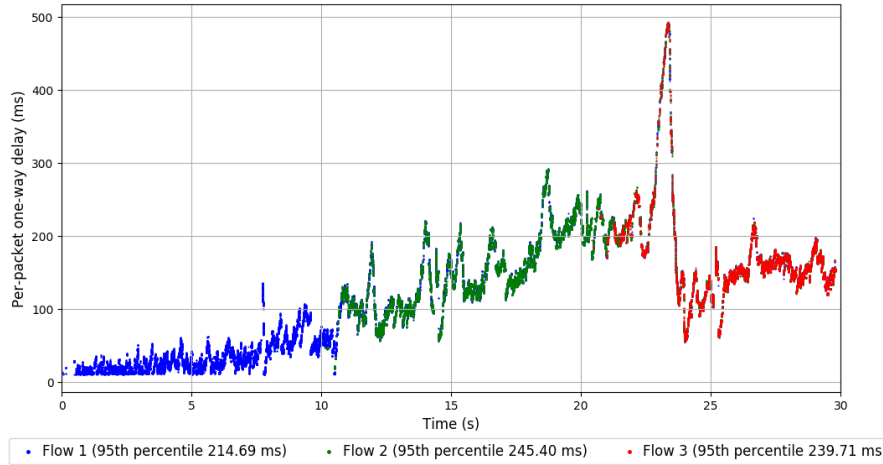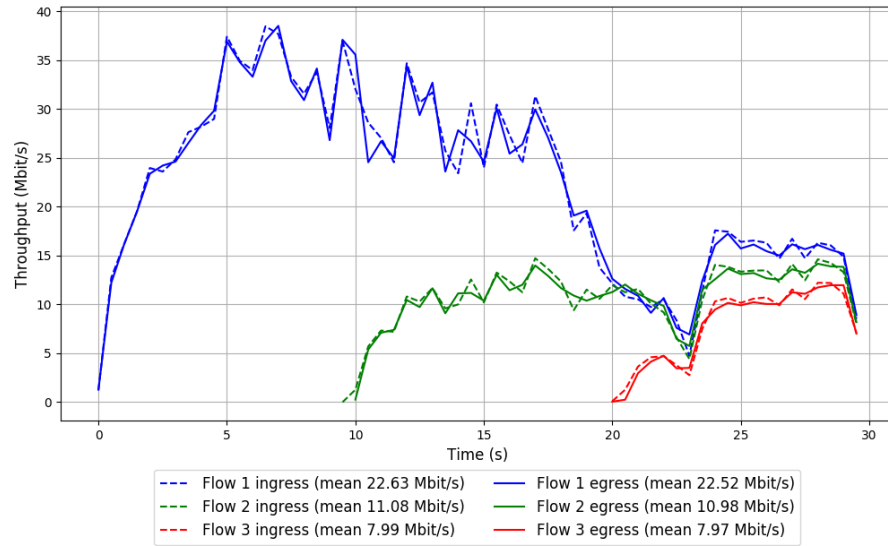
```
Run 1: Statistics of SCReAM

Start at: 2018-02-19 20:02:12
End at: 2018-02-19 20:02:42
Local clock offset: 0.226 ms
Remote clock offset: -6.886 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 19.649 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.671 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.085 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 13.457 ms
Loss rate: 0.00%
```

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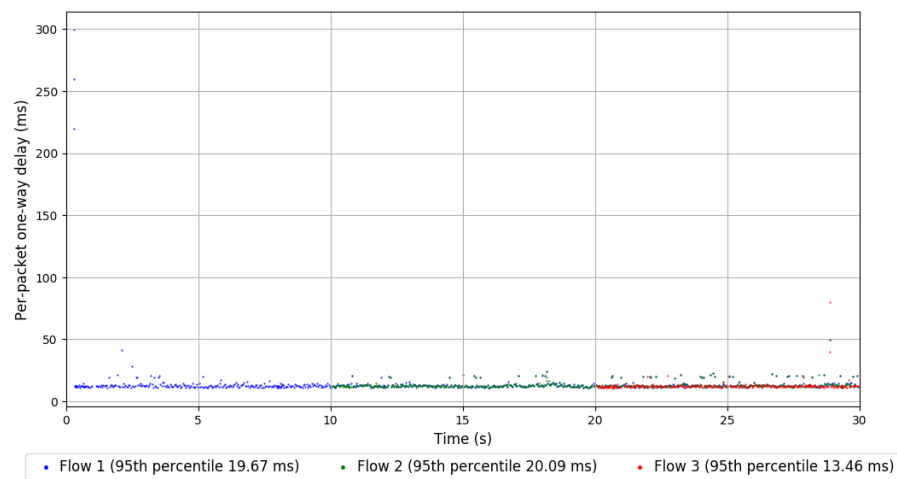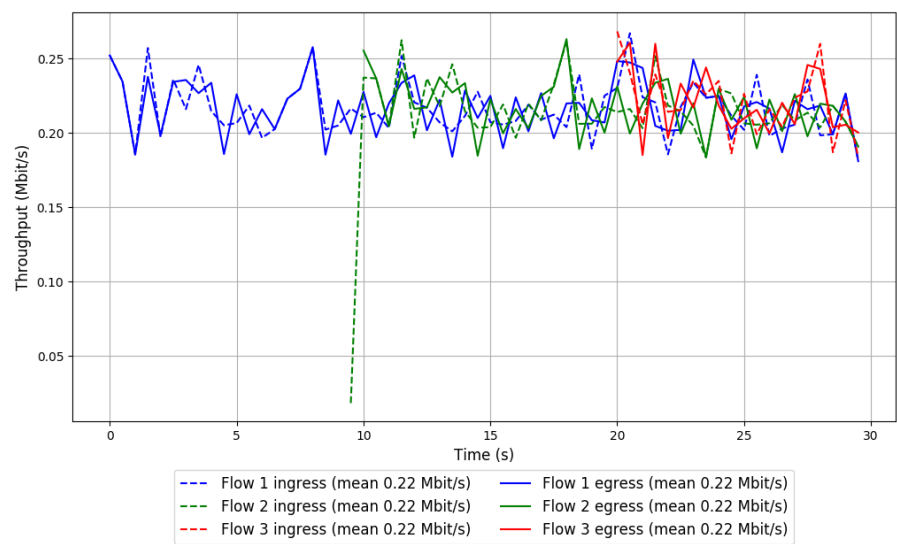
```
Run 2: Statistics of SCReAM

Start at: 2018-02-19 20:26:08
End at: 2018-02-19 20:26:38
Local clock offset: 2.15 ms
Remote clock offset: -6.889 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 20.256 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 20.423 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.999 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.793 ms
Loss rate: 0.00%
```

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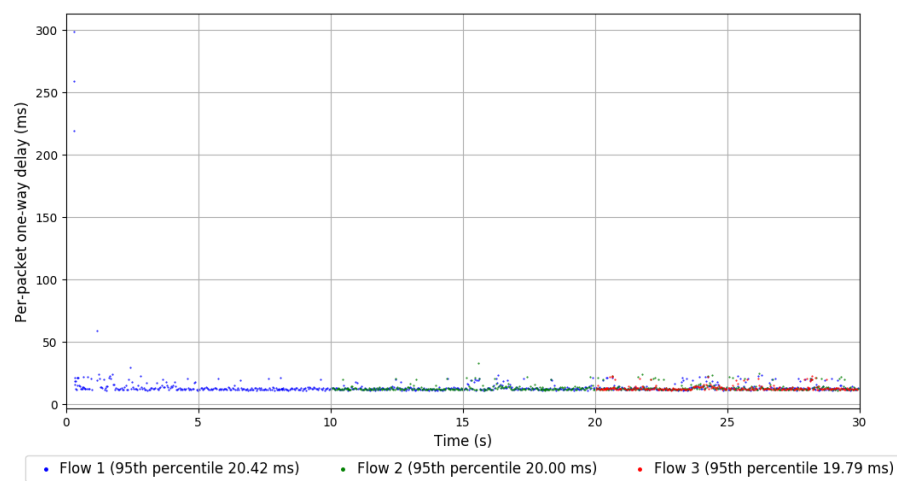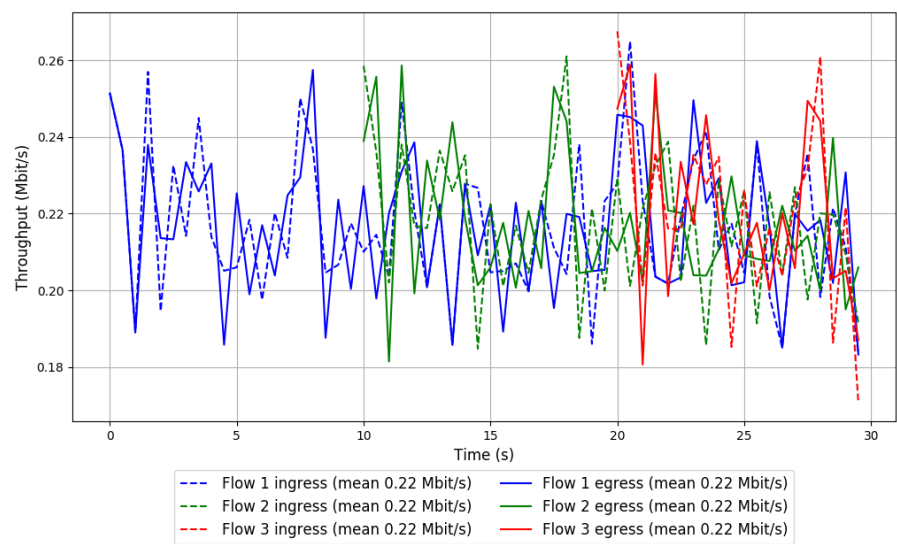
```
Run 3: Statistics of SCReAM

Start at: 2018-02-19 20:50:03
End at: 2018-02-19 20:50:33
Local clock offset: 2.238 ms
Remote clock offset: -6.923 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 18.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 18.114 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 17.468 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 18.326 ms
Loss rate: 0.00%
```

# Run 3: Report of SCReAM — Data Link
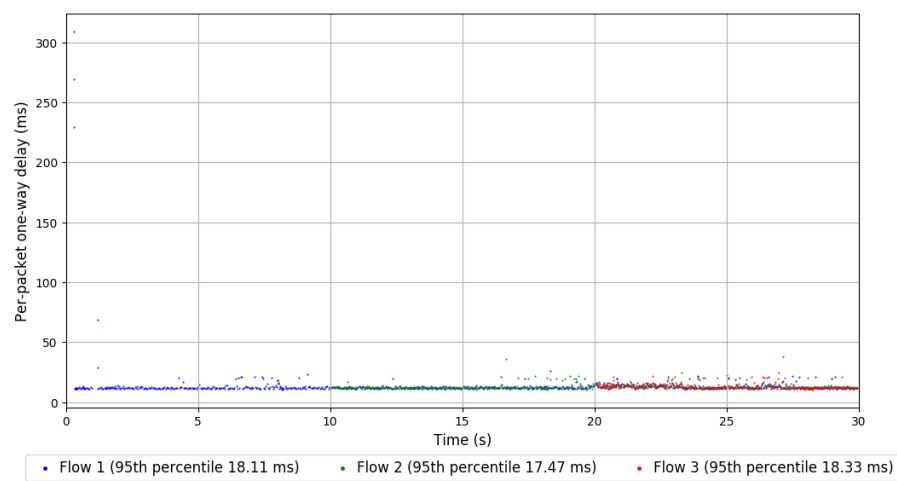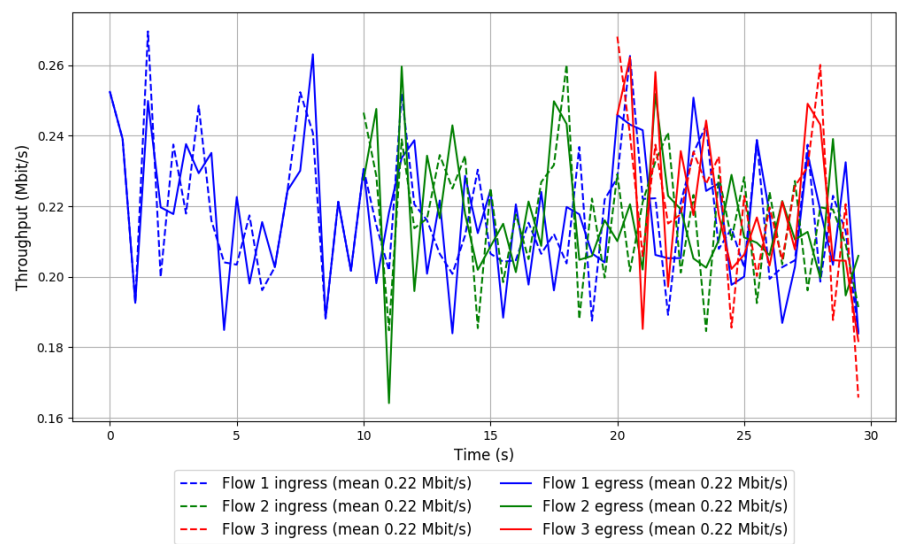
```
Run 1: Statistics of WebRTC media

Start at: 2018-02-19 19:55:33
End at: 2018-02-19 19:56:03
Local clock offset: 0.365 ms
Remote clock offset: -6.963 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.48 Mbit/s
95th percentile per-packet one-way delay: 67.944 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 56.914 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 73.395 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 89.638 ms
Loss rate: 0.00%
```

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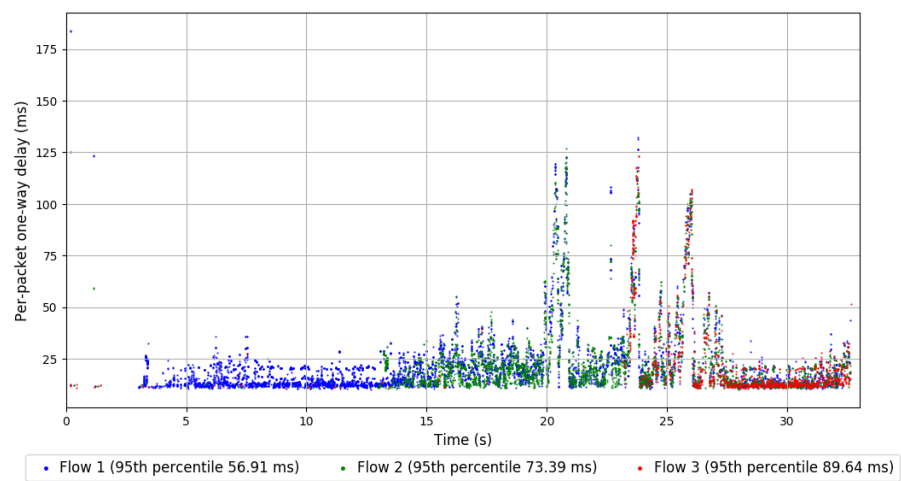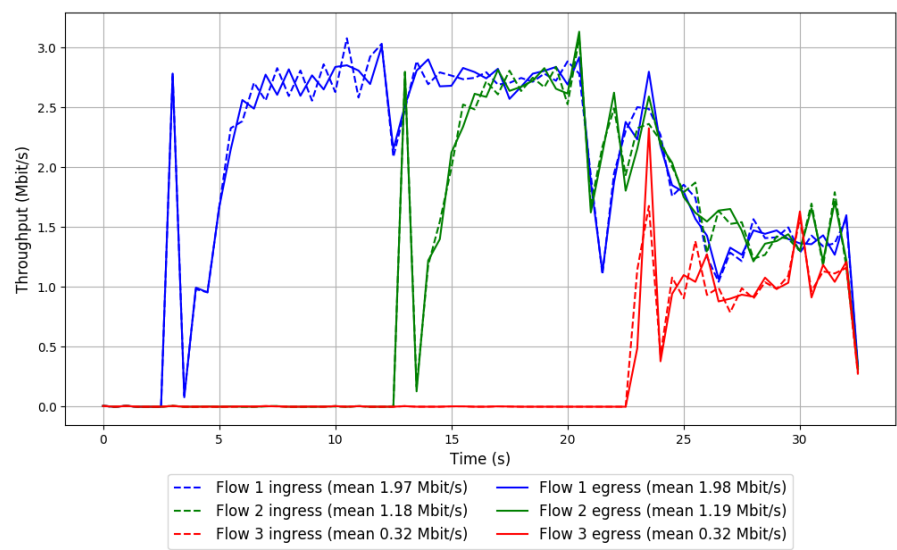
```
Run 2: Statistics of WebRTC media

Start at: 2018-02-19 20:19:29
End at: 2018-02-19 20:19:59
Local clock offset: 1.918 ms
Remote clock offset: -6.887 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.62 Mbit/s
95th percentile per-packet one-way delay: 21.781 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 21.824 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 21.937 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 21.383 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link
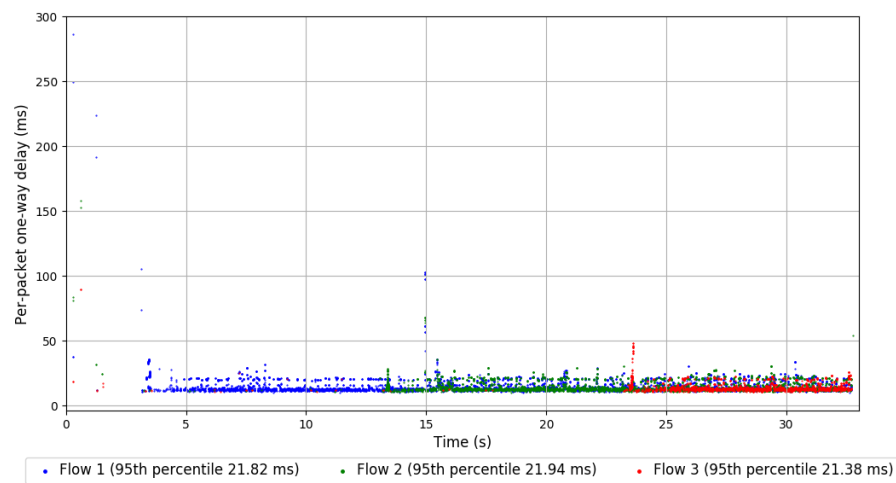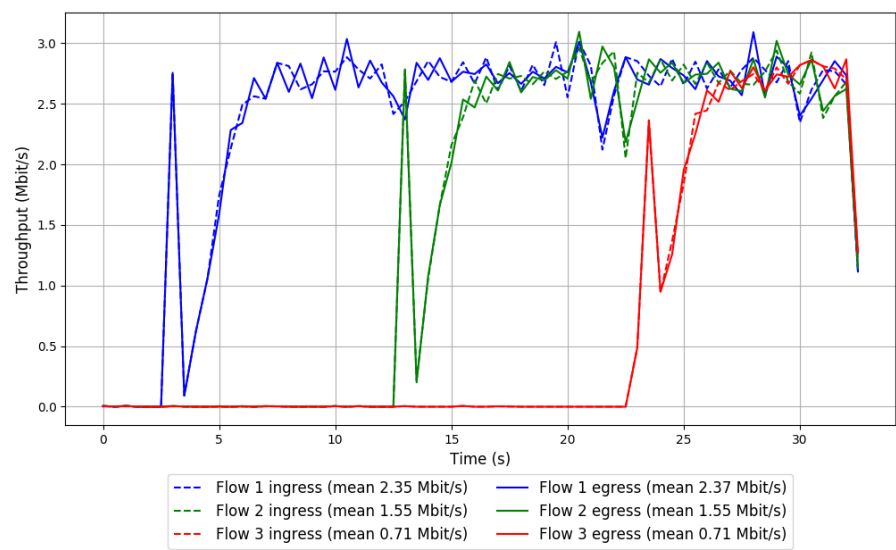
```
Run 3: Statistics of WebRTC media

Start at: 2018-02-19 20:43:24
End at: 2018-02-19 20:43:54
Local clock offset: 2.459 ms
Remote clock offset: -6.919 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.35 Mbit/s
95th percentile per-packet one-way delay: 23.810 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 23.293 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 24.165 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 31.865 ms
Loss rate: 0.00%
```

Run 3: Report of WebRTC media — Data Link
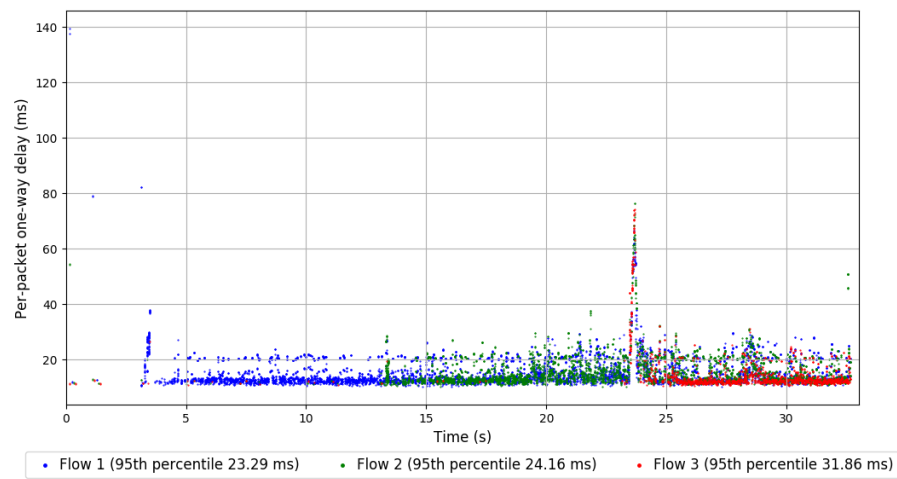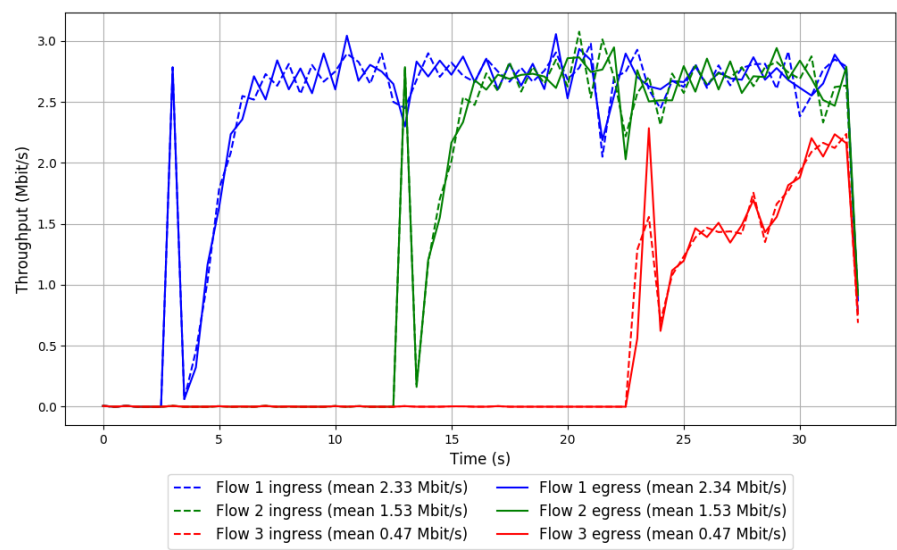
```
Run 1: Statistics of Sprout

Start at: 2018-02-19 20:00:52
End at: 2018-02-19 20:01:22
Local clock offset: 0.333 ms
Remote clock offset: -6.841 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 24.07 Mbit/s
95th percentile per-packet one-way delay: 82.436 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.76 Mbit/s
95th percentile per-packet one-way delay: 73.695 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 11.46 Mbit/s
95th percentile per-packet one-way delay: 86.777 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 10.88 Mbit/s
95th percentile per-packet one-way delay: 92.177 ms
Loss rate: 0.00%
```
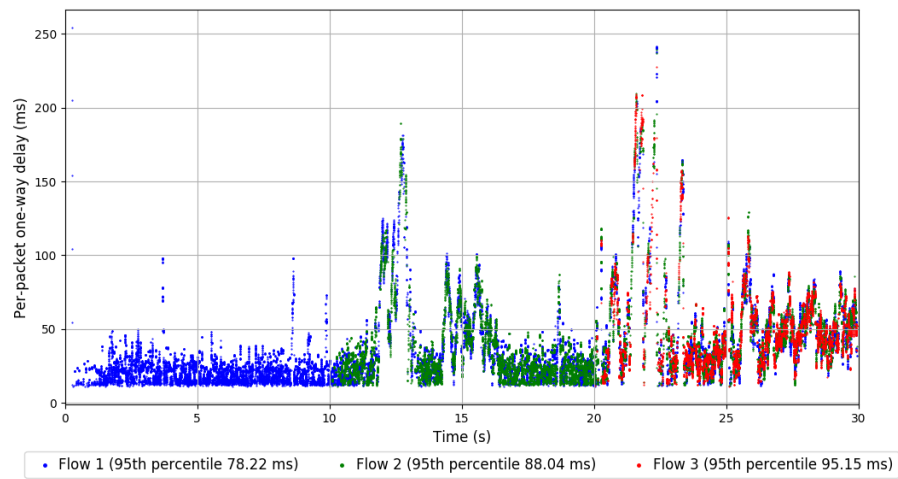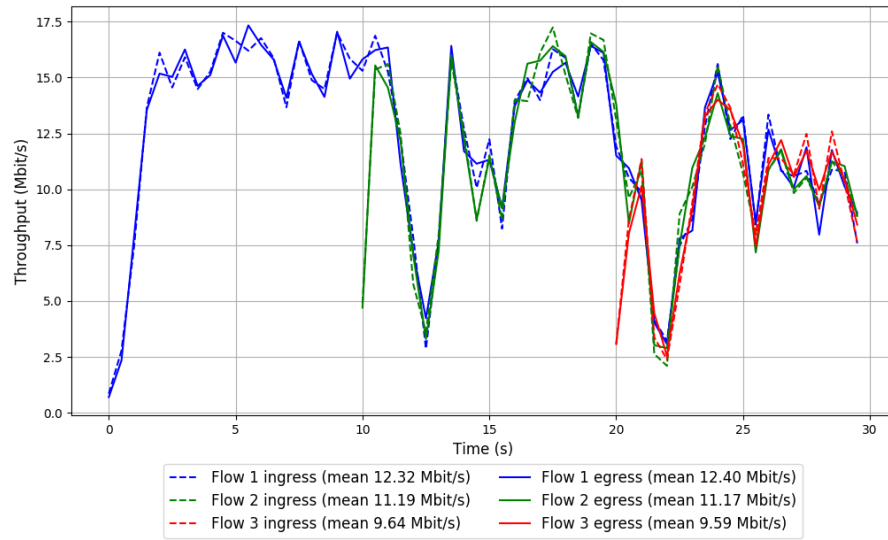
Run 1: Report of Sprout — Data Link
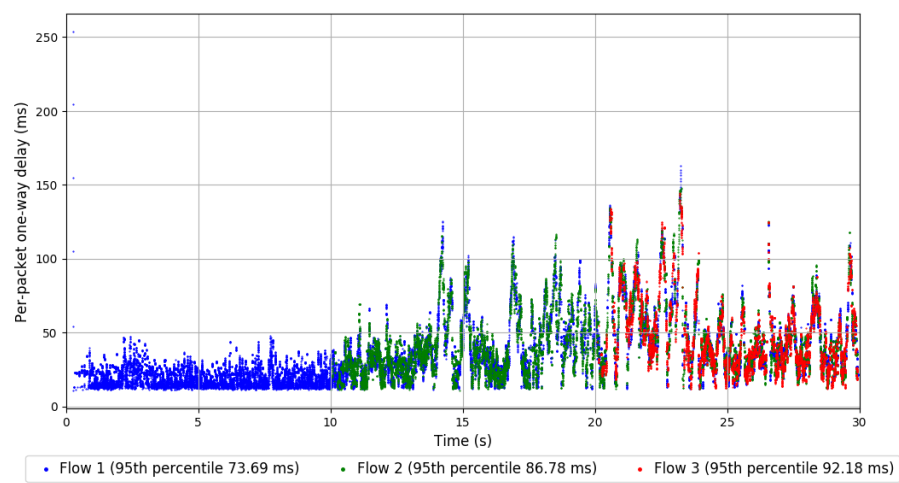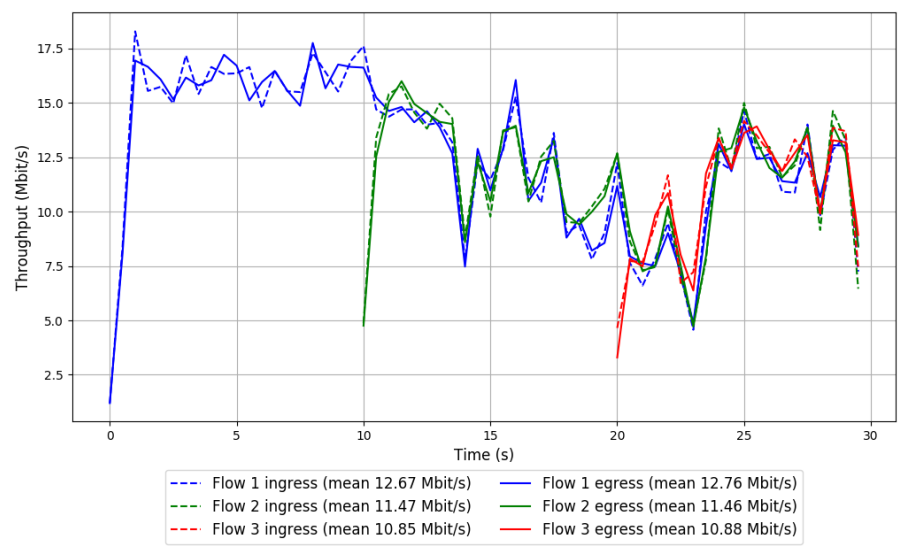
```
Run 2: Statistics of Sprout

Start at: 2018-02-19 20:24:48
End at: 2018-02-19 20:25:18
Local clock offset: 2.2 ms
Remote clock offset: -6.885 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.83 Mbit/s
95th percentile per-packet one-way delay: 80.755 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 12.77 Mbit/s
95th percentile per-packet one-way delay: 75.163 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 11.52 Mbit/s
95th percentile per-packet one-way delay: 83.242 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 10.31 Mbit/s
95th percentile per-packet one-way delay: 89.031 ms
Loss rate: 0.40%
```

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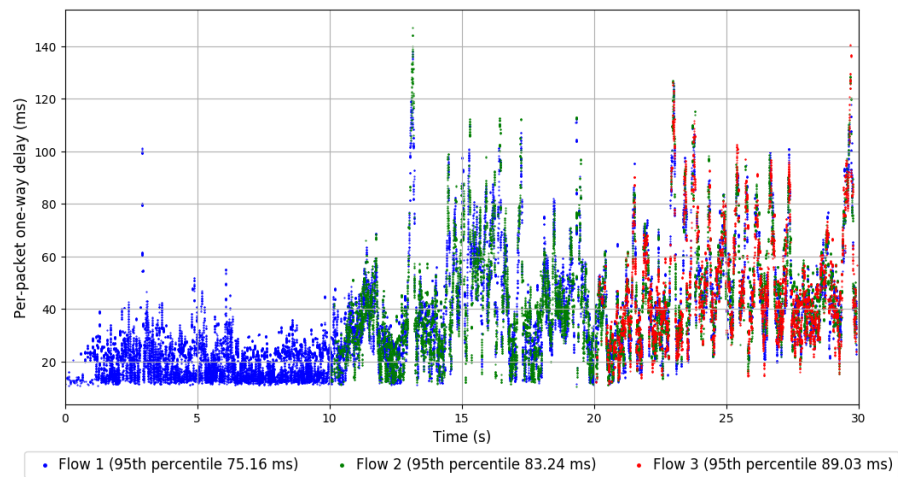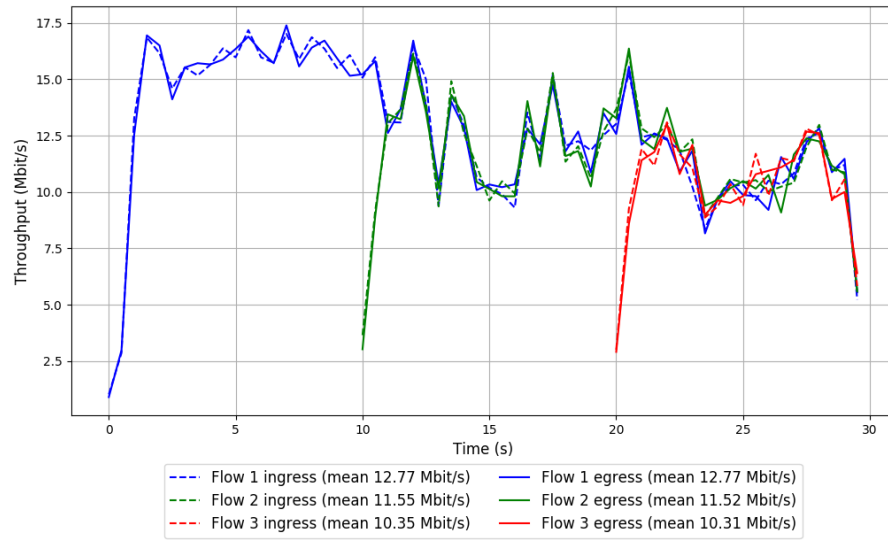
```
Run 3: Statistics of Sprout

Start at: 2018-02-19 20:48:44
End at: 2018-02-19 20:49:14
Local clock offset: 2.267 ms
Remote clock offset: -6.9 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.09 Mbit/s
95th percentile per-packet one-way delay: 83.750 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 12.40 Mbit/s
95th percentile per-packet one-way delay: 78.222 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 11.17 Mbit/s
95th percentile per-packet one-way delay: 88.038 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 9.59 Mbit/s
95th percentile per-packet one-way delay: 95.147 ms
Loss rate: 0.24%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 12.32 Mbit/s)   Flow 1 egress (mean 12.40 Mbit/s)
Flow 2 ingress (mean 11.19 Mbit/s)   Flow 2 egress (mean 11.17 Mbit/s)
Flow 3 ingress (mean 9.64 Mbit/s)   Flow 3 egress (mean 9.59 Mbit/s)

Flow 1 (95th percentile 78.22 ms)   Flow 2 (95th percentile 88.04 ms)   Flow 3 (95th percentile 95.15 ms)

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

Start at: 2018-02-19 19:56:52
End at: 2018-02-19 19:57:22
Local clock offset: 0.375 ms
Remote clock offset: -6.982 ms


# Below is generated by plot.py at 2018-02-19 21:05:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.02 Mbit/s
95th percentile per-packet one-way delay: 62.219 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 4.85 Mbit/s
95th percentile per-packet one-way delay: 67.259 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 5.19 Mbit/s
95th percentile per-packet one-way delay: 58.643 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 5.03 Mbit/s
95th percentile per-packet one-way delay: 60.199 ms
Loss rate: 0.03%
```
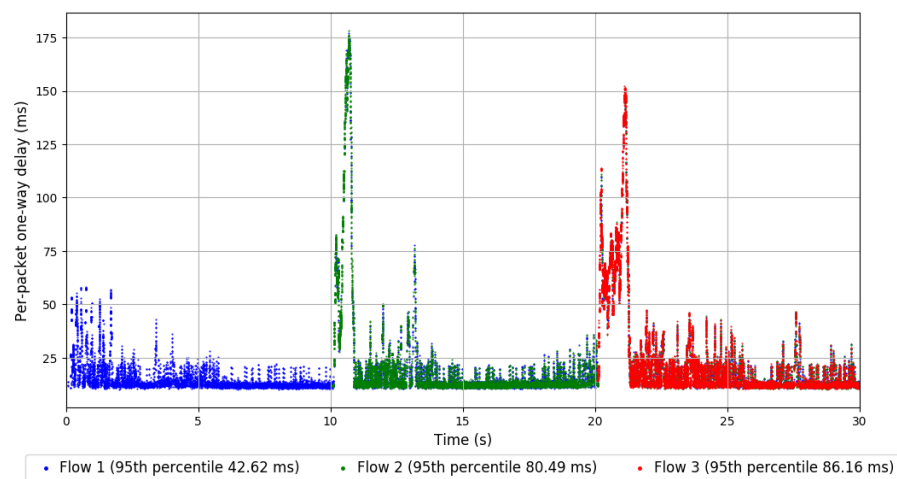
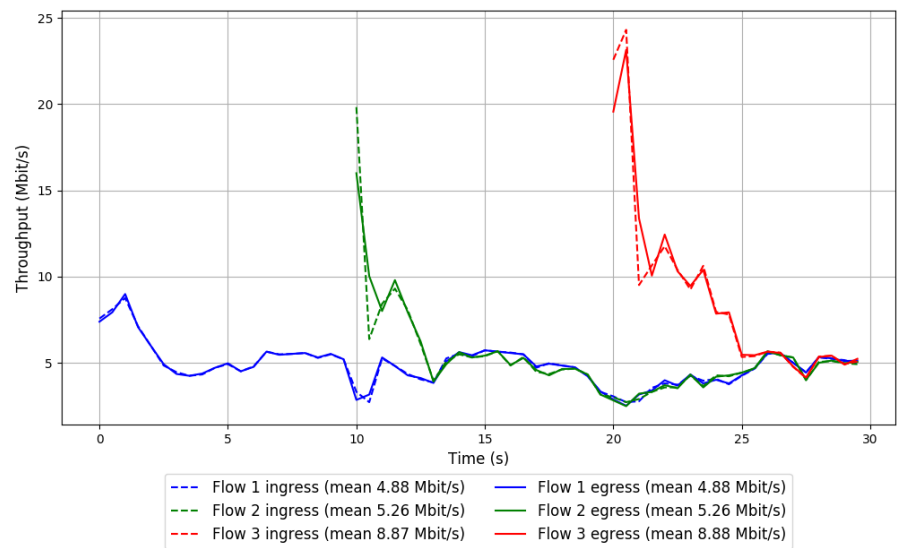Run 1: Report of TaoVA-100x — Data Link
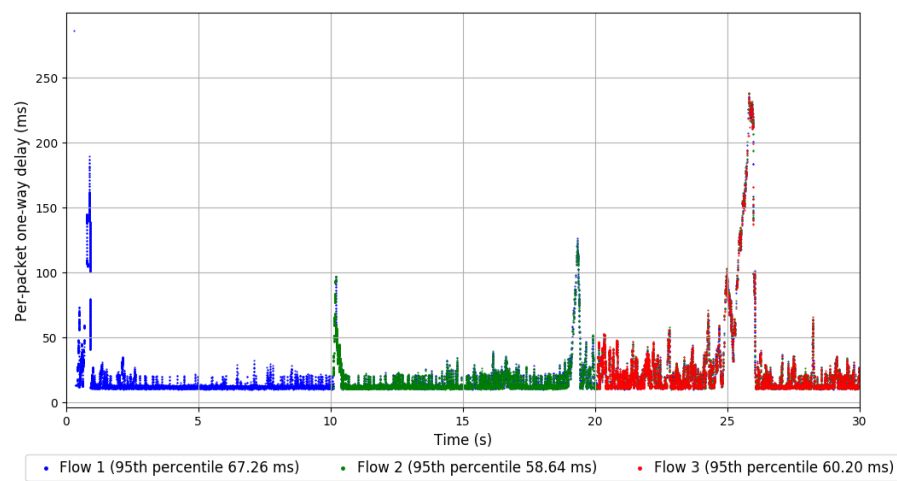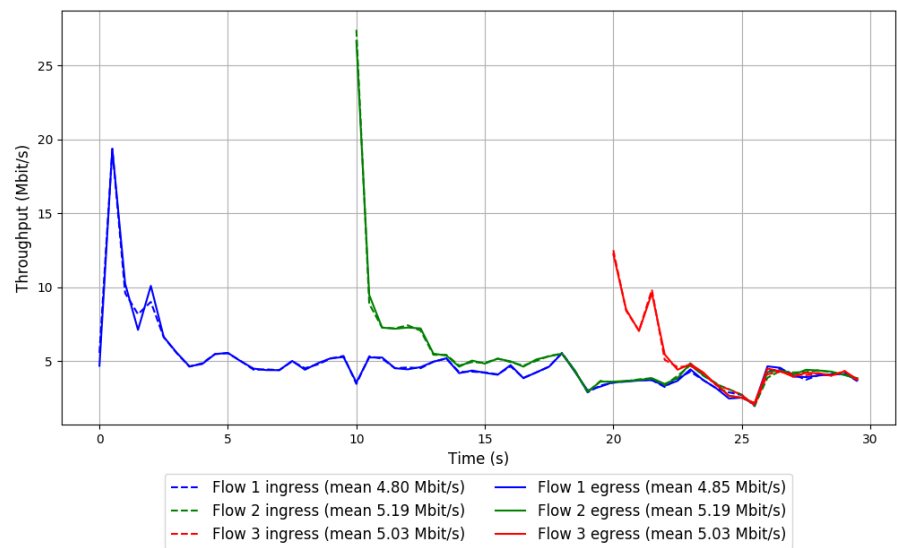
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-02-19 20:20:49
End at: 2018-02-19 20:21:19
Local clock offset: 2.004 ms
Remote clock offset: -6.839 ms

# Below is generated by plot.py at 2018-02-19 21:05:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.05 Mbit/s
95th percentile per-packet one-way delay: 51.631 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 4.76 Mbit/s
95th percentile per-packet one-way delay: 36.762 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 7.11 Mbit/s
95th percentile per-packet one-way delay: 38.072 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 10.66 Mbit/s
95th percentile per-packet one-way delay: 62.615 ms
Loss rate: 0.94%
```

Run 2: Report of TaoVA-100x — Data Link
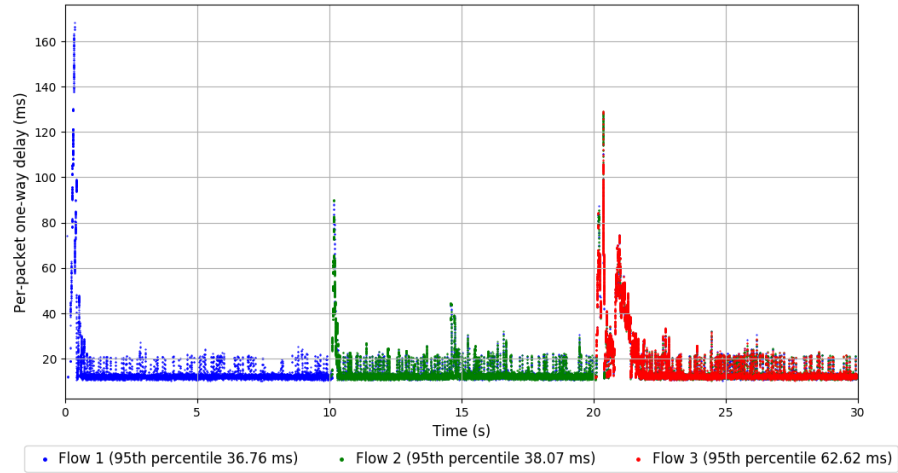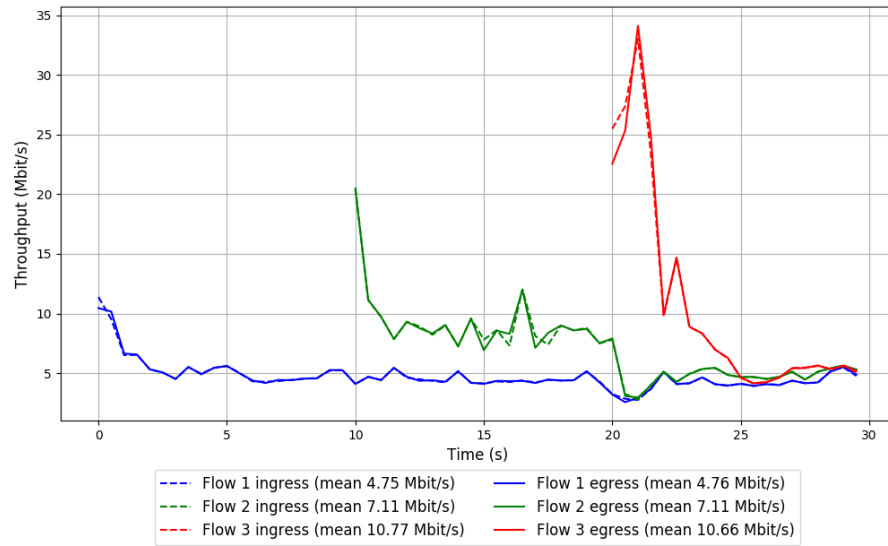
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-02-19 20:44:43
End at: 2018-02-19 20:45:13
Local clock offset: 2.343 ms
Remote clock offset: -6.926 ms


# Below is generated by plot.py at 2018-02-19 21:05:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 11.32 Mbit/s
95th percentile per-packet one-way delay: 75.129 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 4.88 Mbit/s
95th percentile per-packet one-way delay: 42.620 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 5.26 Mbit/s
95th percentile per-packet one-way delay: 80.487 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.88 Mbit/s
95th percentile per-packet one-way delay: 86.159 ms
Loss rate: 0.00%
```

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

- - Flow 1 ingress (mean 4.88 Mbit/s) —— Flow 1 egress (mean 4.88 Mbit/s)
- - Flow 2 ingress (mean 5.26 Mbit/s) —— Flow 2 egress (mean 5.26 Mbit/s)
- - Flow 3 ingress (mean 8.87 Mbit/s) —— Flow 3 egress (mean 8.88 Mbit/s)

- Flow 1 (95th percentile 42.62 ms)   - Flow 2 (95th percentile 80.49 ms)   - Flow 3 (95th percentile 86.16 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-02-19 19:51:33
End at: 2018-02-19 19:52:03
Local clock offset: 0.373 ms
Remote clock offset: -7.065 ms


# Below is generated by plot.py at 2018-02-19 21:05:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.54 Mbit/s
95th percentile per-packet one-way delay: 123.317 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 59.609 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 8.75 Mbit/s
95th percentile per-packet one-way delay: 81.748 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 27.88 Mbit/s
95th percentile per-packet one-way delay: 148.197 ms
Loss rate: 0.00%
```

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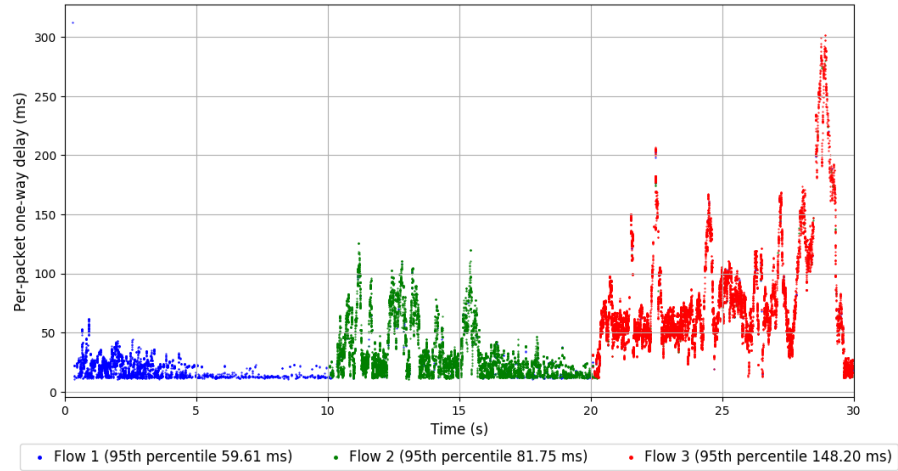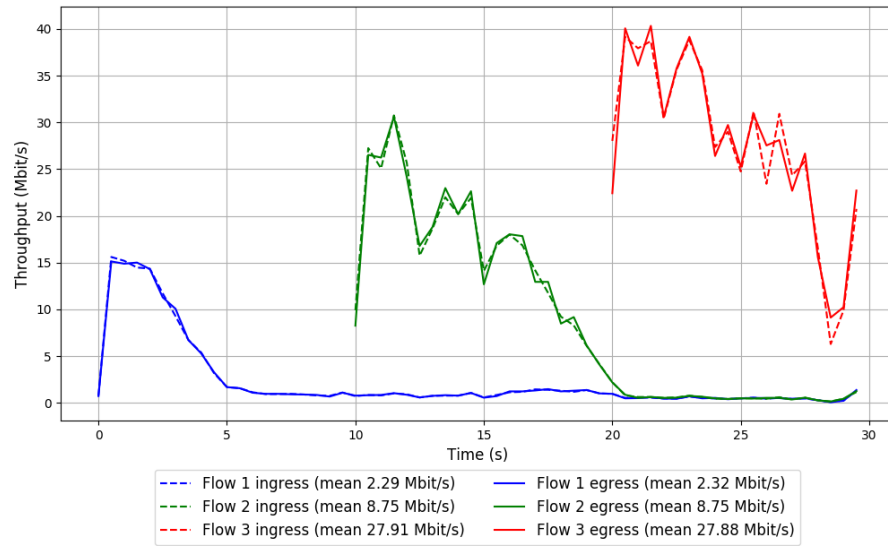
```
Run 2: Statistics of TCP Vegas

Start at: 2018-02-19 20:15:29
End at: 2018-02-19 20:15:59
Local clock offset: 1.541 ms
Remote clock offset: -6.835 ms


# Below is generated by plot.py at 2018-02-19 21:05:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.70 Mbit/s
95th percentile per-packet one-way delay: 29.793 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.05 Mbit/s
95th percentile per-packet one-way delay: 29.781 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.88 Mbit/s
95th percentile per-packet one-way delay: 29.696 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 30.103 ms
Loss rate: 0.00%
```

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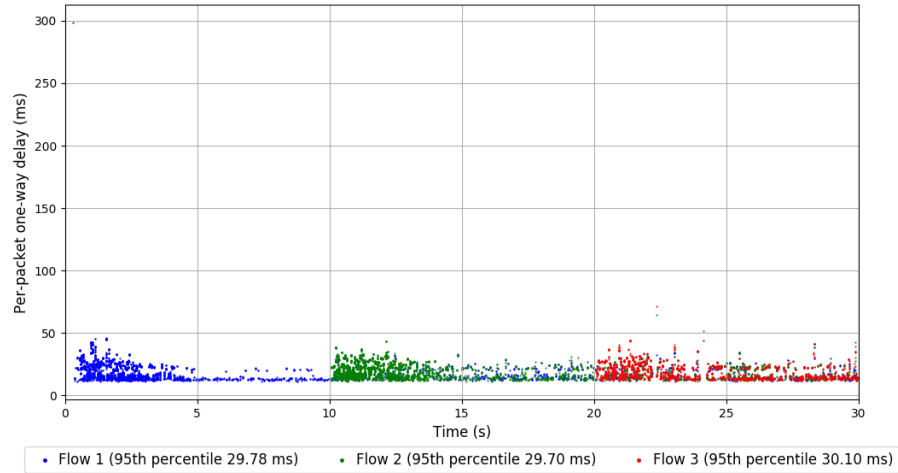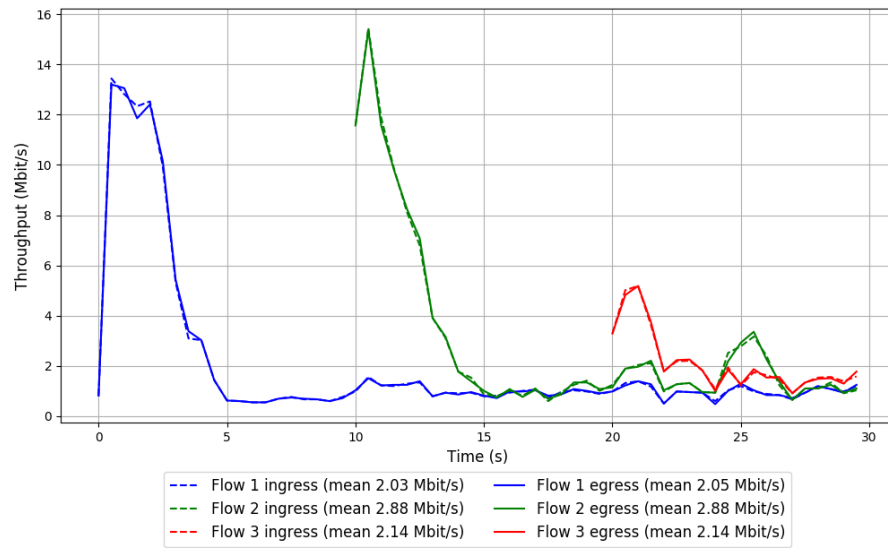
```
Run 3: Statistics of TCP Vegas

Start at: 2018-02-19 20:39:25
End at: 2018-02-19 20:39:55
Local clock offset: 2.458 ms
Remote clock offset: -6.907 ms


# Below is generated by plot.py at 2018-02-19 21:05:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.99 Mbit/s
95th percentile per-packet one-way delay: 42.569 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.89 Mbit/s
95th percentile per-packet one-way delay: 31.974 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 10.28 Mbit/s
95th percentile per-packet one-way delay: 45.247 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.80 Mbit/s
95th percentile per-packet one-way delay: 32.647 ms
Loss rate: 0.00%
```

Run 3: Report of TCP Vegas — Data Link
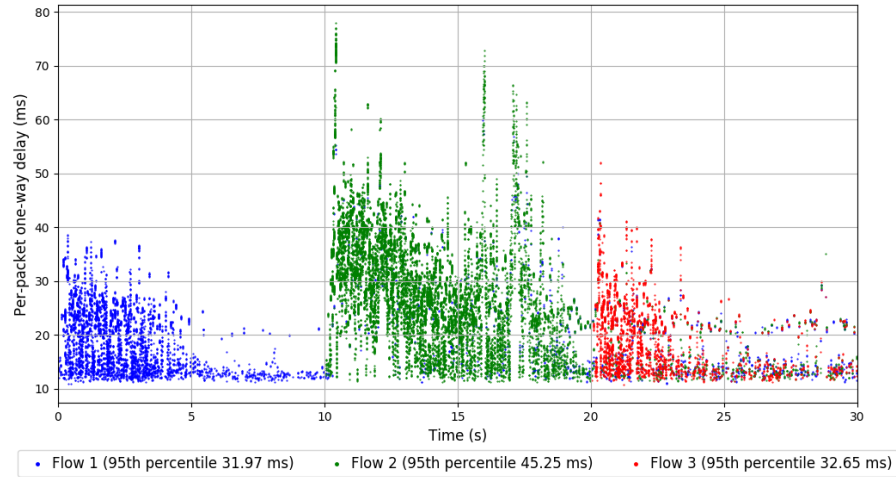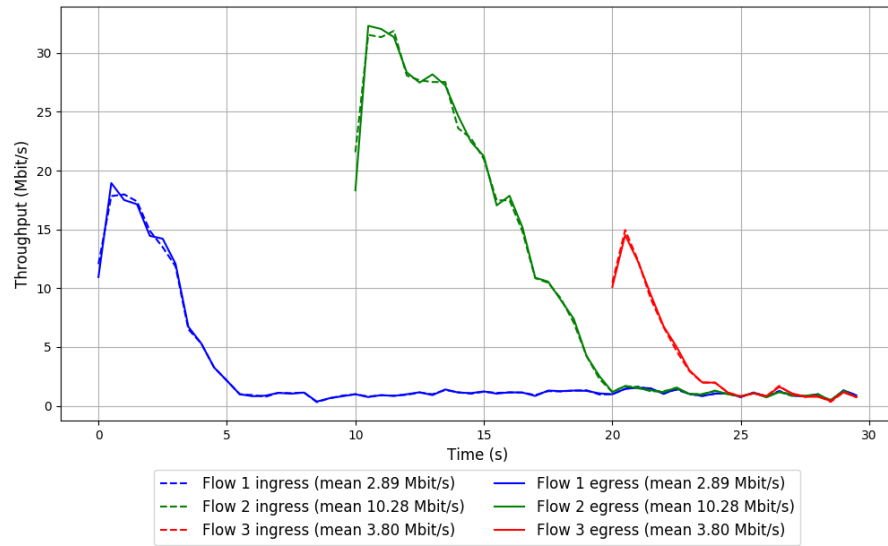
```
Run 1: Statistics of Verus

Start at: 2018-02-19 20:03:31
End at: 2018-02-19 20:04:01
Local clock offset: 0.234 ms
Remote clock offset: -6.834 ms


# Below is generated by plot.py at 2018-02-19 21:05:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 27.52 Mbit/s
95th percentile per-packet one-way delay: 336.916 ms
Loss rate: 7.91%
-- Flow 1:
Average throughput: 20.92 Mbit/s
95th percentile per-packet one-way delay: 330.456 ms
Loss rate: 7.90%
-- Flow 2:
Average throughput: 7.38 Mbit/s
95th percentile per-packet one-way delay: 372.825 ms
Loss rate: 7.02%
-- Flow 3:
Average throughput: 5.39 Mbit/s
95th percentile per-packet one-way delay: 332.836 ms
Loss rate: 10.41%
```

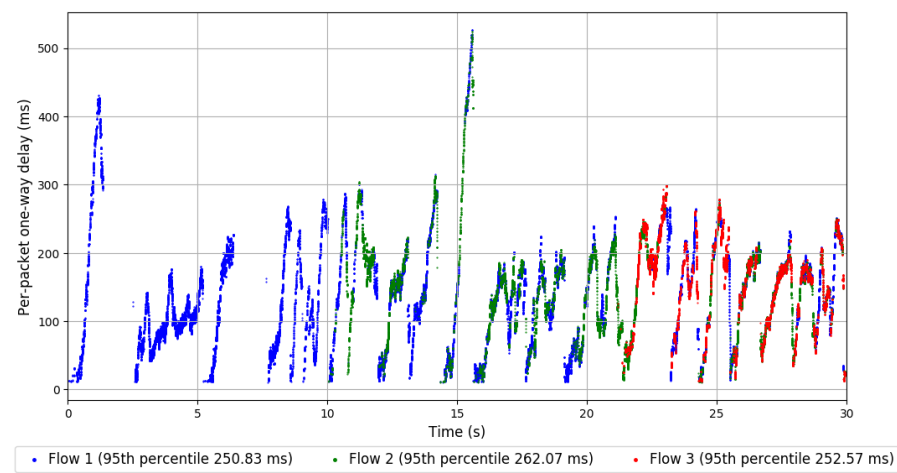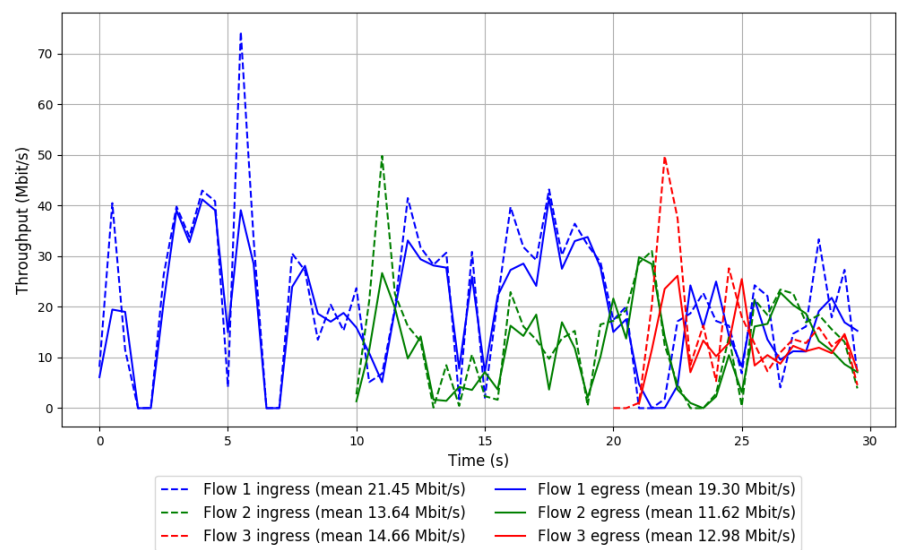Run 1: Report of Verus — Data Link
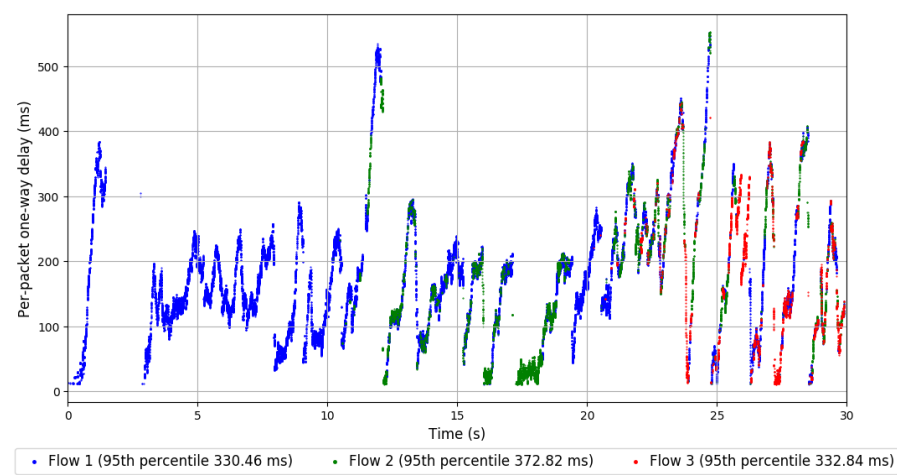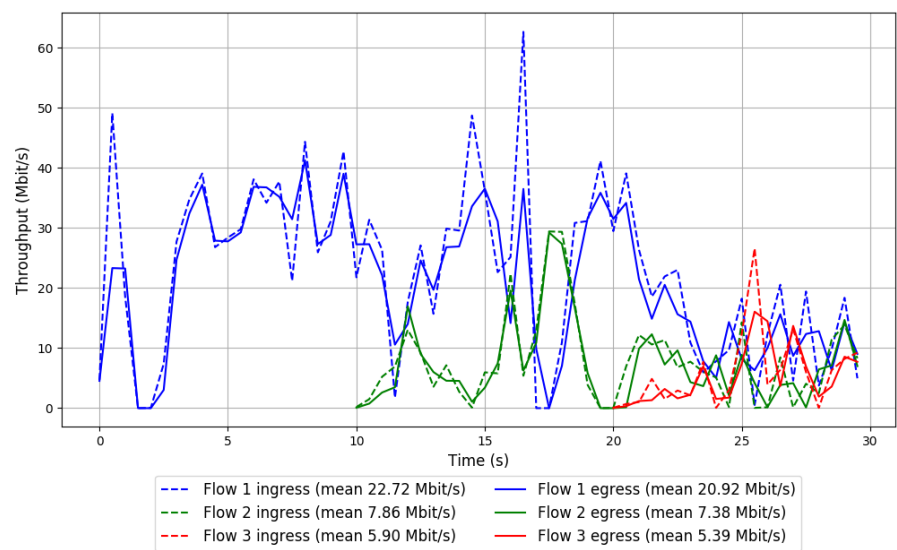
```
Run 2: Statistics of Verus

Start at: 2018-02-19 20:27:26
End at: 2018-02-19 20:27:56
Local clock offset: 2.266 ms
Remote clock offset: -6.885 ms


# Below is generated by plot.py at 2018-02-19 21:05:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 20.77 Mbit/s
95th percentile per-packet one-way delay: 350.513 ms
Loss rate: 3.89%
-- Flow 1:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 348.490 ms
Loss rate: 3.11%
-- Flow 2:
Average throughput: 9.23 Mbit/s
95th percentile per-packet one-way delay: 338.831 ms
Loss rate: 3.31%
-- Flow 3:
Average throughput: 6.10 Mbit/s
95th percentile per-packet one-way delay: 374.068 ms
Loss rate: 10.20%
```

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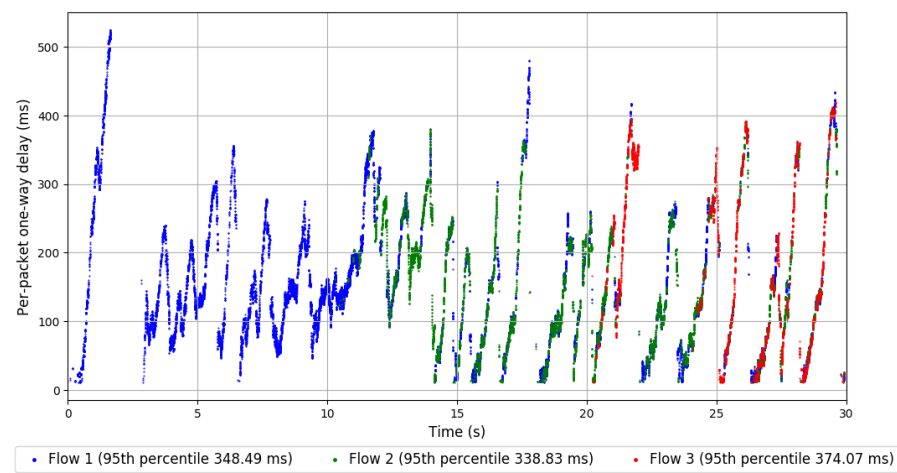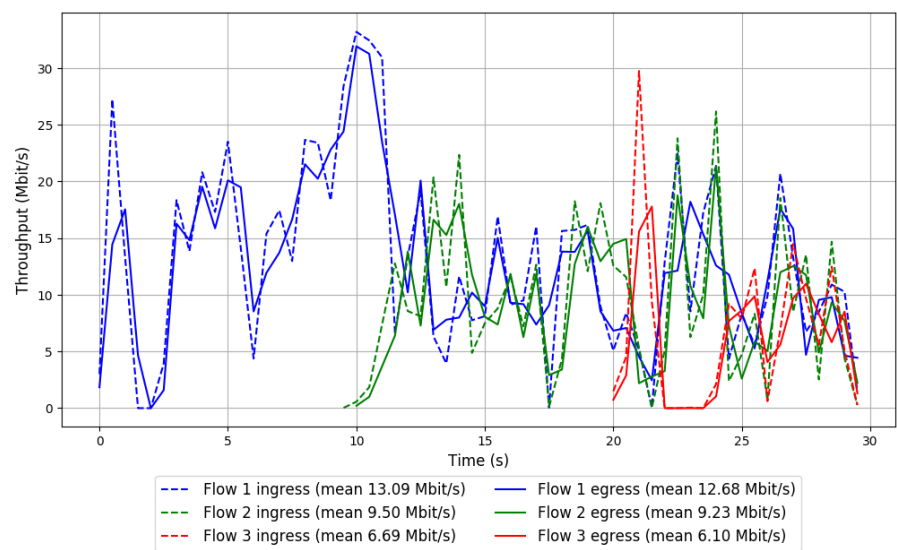
```
Run 3: Statistics of Verus

Start at: 2018-02-19 20:51:22
End at: 2018-02-19 20:51:52
Local clock offset: 2.322 ms
Remote clock offset: -6.905 ms


# Below is generated by plot.py at 2018-02-19 21:06:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 30.80 Mbit/s
95th percentile per-packet one-way delay: 252.042 ms
Loss rate: 12.86%
-- Flow 1:
Average throughput: 19.30 Mbit/s
95th percentile per-packet one-way delay: 250.833 ms
Loss rate: 10.14%
-- Flow 2:
Average throughput: 11.62 Mbit/s
95th percentile per-packet one-way delay: 262.074 ms
Loss rate: 14.77%
-- Flow 3:
Average throughput: 12.98 Mbit/s
95th percentile per-packet one-way delay: 252.569 ms
Loss rate: 21.35%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 21.45 Mbit/s)   Flow 1 egress (mean 19.30 Mbit/s)
Flow 2 ingress (mean 13.64 Mbit/s)   Flow 2 egress (mean 11.62 Mbit/s)
Flow 3 ingress (mean 14.66 Mbit/s)   Flow 3 egress (mean 12.98 Mbit/s)

Flow 1 (95th percentile 250.83 ms)   Flow 2 (95th percentile 262.07 ms)   Flow 3 (95th percentile 252.57 ms)
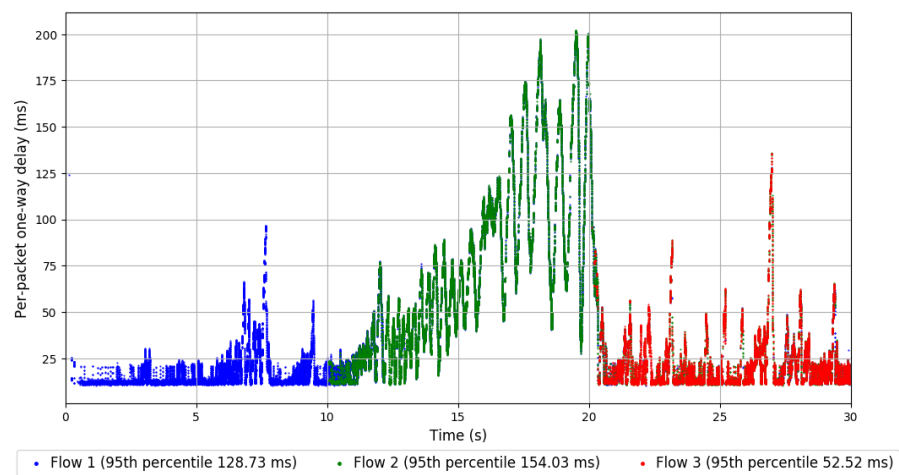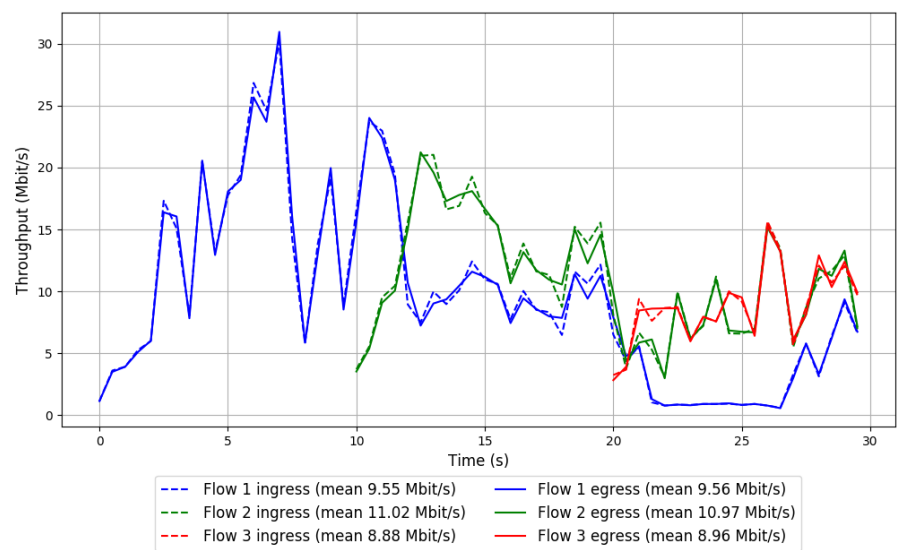
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```
Run 1: Statistics of Copa

Start at: 2018-02-19 19:52:53
End at: 2018-02-19 19:53:23
Local clock offset: 0.373 ms
Remote clock offset: -7.044 ms


# Below is generated by plot.py at 2018-02-19 21:06:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.79 Mbit/s
95th percentile per-packet one-way delay: 58.726 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 13.37 Mbit/s
95th percentile per-packet one-way delay: 56.338 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 58.831 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 10.38 Mbit/s
95th percentile per-packet one-way delay: 67.751 ms
Loss rate: 0.00%
```

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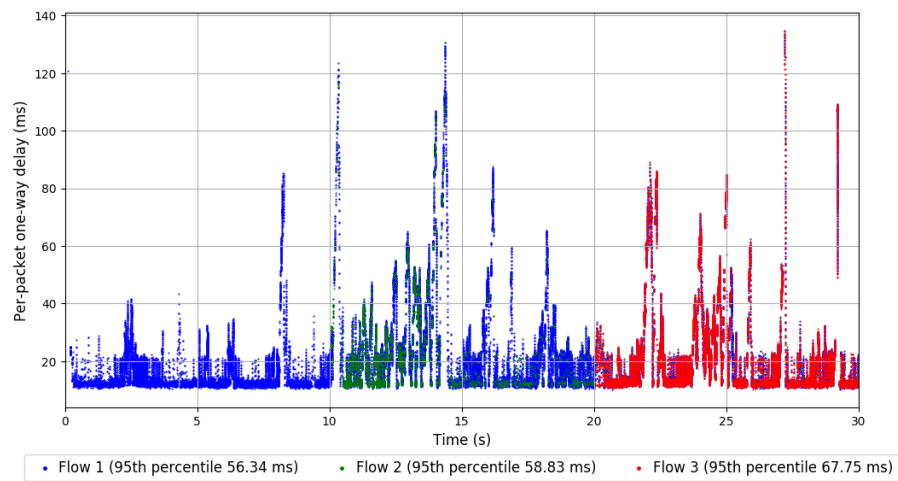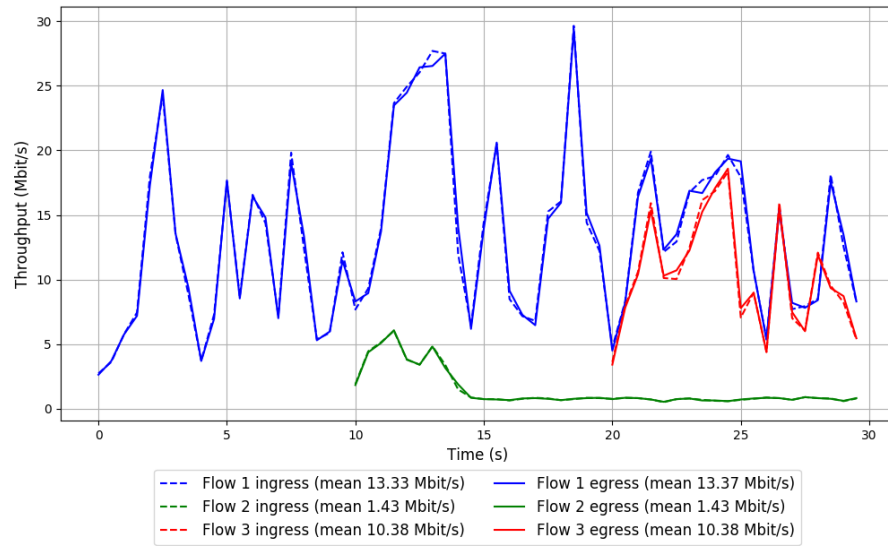
```
Run 2: Statistics of Copa

Start at: 2018-02-19 20:16:48
End at: 2018-02-19 20:17:18
Local clock offset: 1.728 ms
Remote clock offset: -6.823 ms


# Below is generated by plot.py at 2018-02-19 21:06:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.85 Mbit/s
95th percentile per-packet one-way delay: 138.003 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 9.56 Mbit/s
95th percentile per-packet one-way delay: 128.727 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 10.97 Mbit/s
95th percentile per-packet one-way delay: 154.028 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 8.96 Mbit/s
95th percentile per-packet one-way delay: 52.520 ms
Loss rate: 0.00%
```

Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-02-19 20:40:44
End at: 2018-02-19 20:41:14
Local clock offset: 2.474 ms
Remote clock offset: -6.915 ms


# Below is generated by plot.py at 2018-02-19 21:06:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.33 Mbit/s
95th percentile per-packet one-way delay: 39.141 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 10.25 Mbit/s
95th percentile per-packet one-way delay: 37.484 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 9.05 Mbit/s
95th percentile per-packet one-way delay: 41.325 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 38.343 ms
Loss rate: 0.04%
```

Run 3: Report of Copa — Data Link
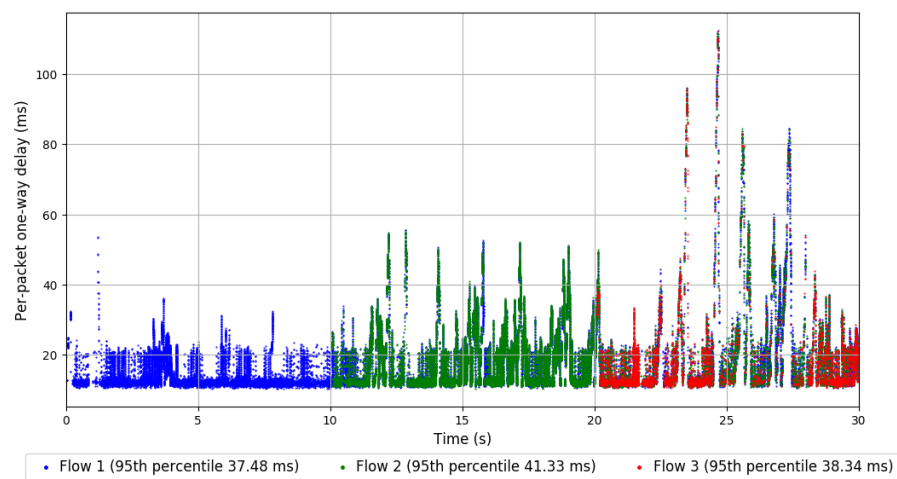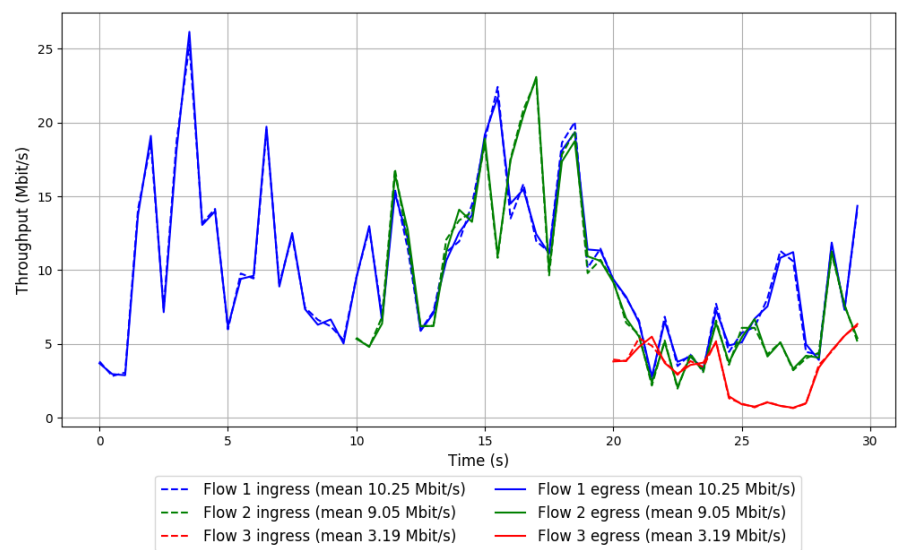
```
Run 1: Statistics of FillP

Start at: 2018-02-19 20:04:51
End at: 2018-02-19 20:05:21
Local clock offset: 0.205 ms
Remote clock offset: -6.946 ms


# Below is generated by plot.py at 2018-02-19 21:06:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 30.04 Mbit/s
95th percentile per-packet one-way delay: 422.295 ms
Loss rate: 65.38%
-- Flow 1:
Average throughput: 12.07 Mbit/s
95th percentile per-packet one-way delay: 476.789 ms
Loss rate: 68.66%
-- Flow 2:
Average throughput: 15.47 Mbit/s
95th percentile per-packet one-way delay: 300.477 ms
Loss rate: 63.24%
-- Flow 3:
Average throughput: 23.66 Mbit/s
95th percentile per-packet one-way delay: 360.313 ms
Loss rate: 62.15%
```

# Run 1: Report of FillP — Data Link
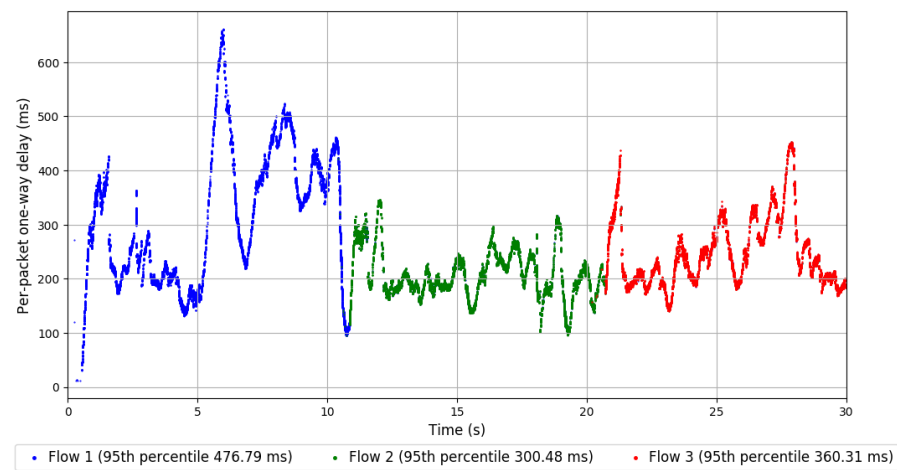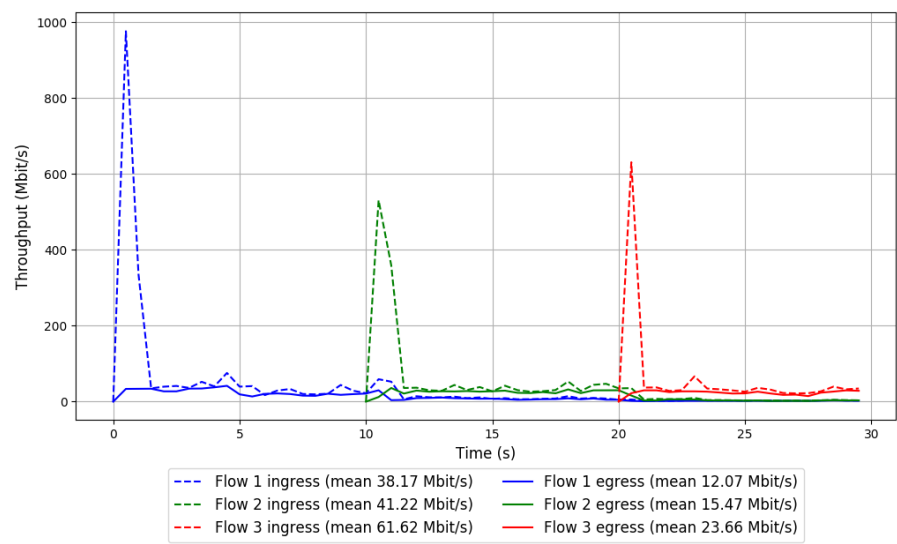
```
Run 2: Statistics of FillP

Start at: 2018-02-19 20:28:47
End at: 2018-02-19 20:29:17
Local clock offset: 2.222 ms
Remote clock offset: -6.863 ms


# Below is generated by plot.py at 2018-02-19 21:06:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 26.46 Mbit/s
95th percentile per-packet one-way delay: 479.453 ms
Loss rate: 69.03%
-- Flow 1:
Average throughput: 14.16 Mbit/s
95th percentile per-packet one-way delay: 350.227 ms
Loss rate: 64.27%
-- Flow 2:
Average throughput: 11.02 Mbit/s
95th percentile per-packet one-way delay: 544.747 ms
Loss rate: 71.70%
-- Flow 3:
Average throughput: 15.32 Mbit/s
95th percentile per-packet one-way delay: 543.886 ms
Loss rate: 75.00%
```

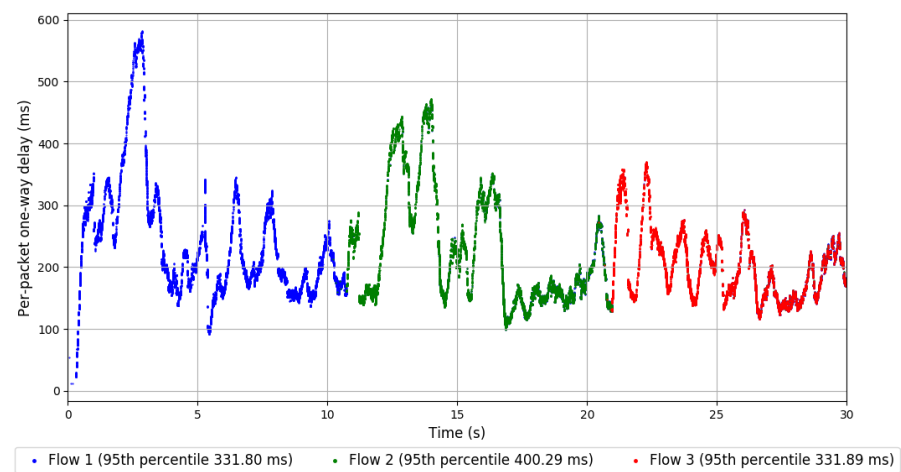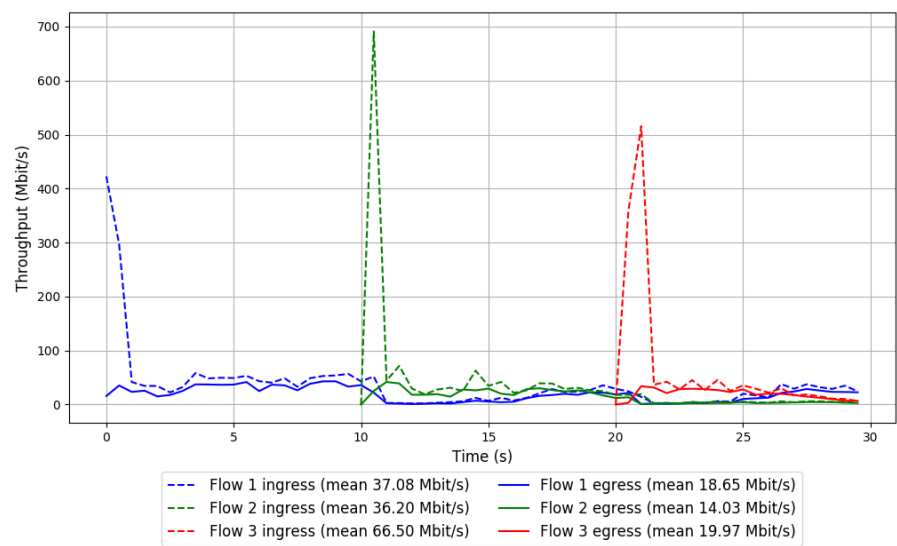# Run 2: Report of FillP — Data Link

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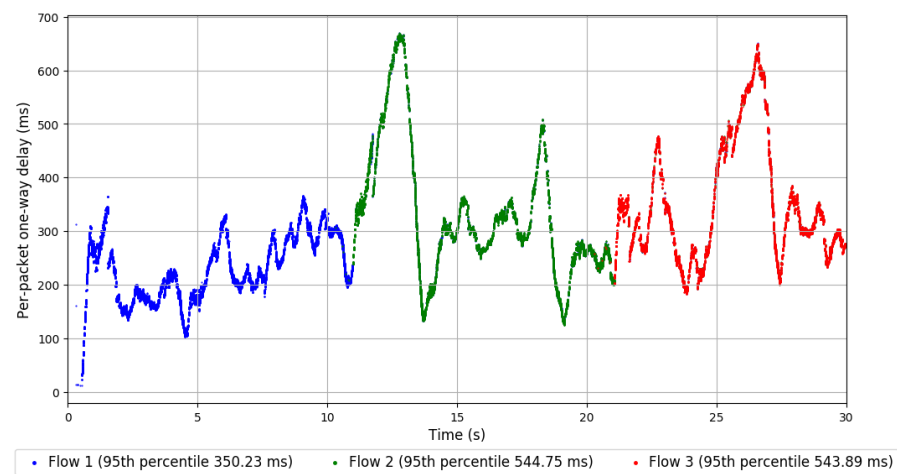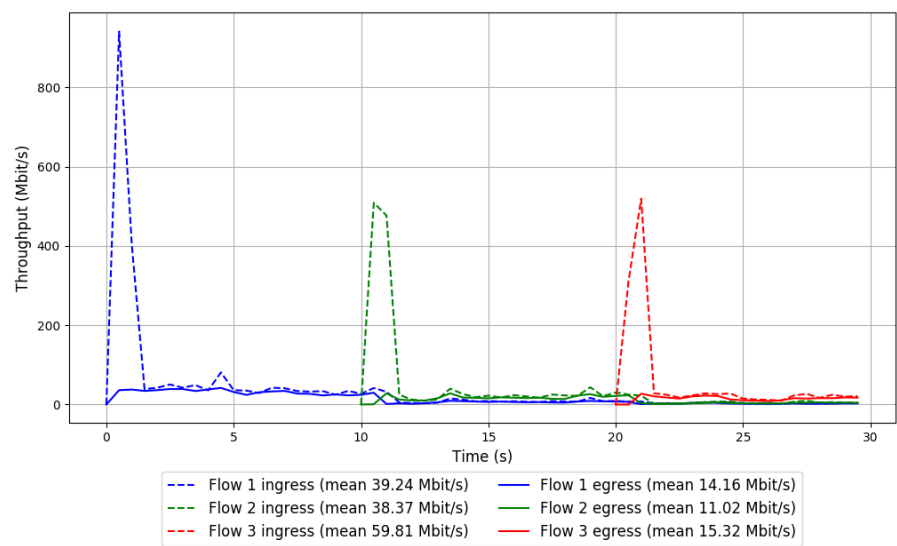
```
Run 3: Statistics of FillP

Start at: 2018-02-19 20:52:43
End at: 2018-02-19 20:53:13
Local clock offset: 2.31 ms
Remote clock offset: -6.881 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 34.28 Mbit/s
95th percentile per-packet one-way delay: 344.497 ms
Loss rate: 58.87%
-- Flow 1:
Average throughput: 18.65 Mbit/s
95th percentile per-packet one-way delay: 331.795 ms
Loss rate: 49.74%
-- Flow 2:
Average throughput: 14.03 Mbit/s
95th percentile per-packet one-way delay: 400.286 ms
Loss rate: 61.65%
-- Flow 3:
Average throughput: 19.97 Mbit/s
95th percentile per-packet one-way delay: 331.893 ms
Loss rate: 71.18%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 37.08 Mbit/s) Flow 1 egress (mean 18.65 Mbit/s)
Flow 2 ingress (mean 36.20 Mbit/s) Flow 2 egress (mean 14.03 Mbit/s)
Flow 3 ingress (mean 66.50 Mbit/s) Flow 3 egress (mean 19.97 Mbit/s)

Flow 1 (95th percentile 331.80 ms)   Flow 2 (95th percentile 400.29 ms)   Flow 3 (95th percentile 331.89 ms)
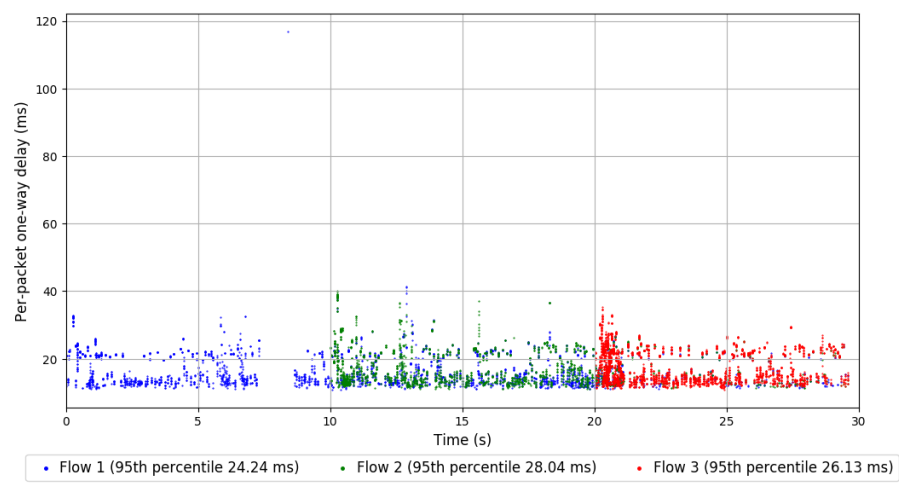
```
Run 1: Statistics of Indigo-1-32

Start at: 2018-02-19 20:06:12
End at: 2018-02-19 20:06:42
Local clock offset: 0.296 ms
Remote clock offset: -6.848 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.62 Mbit/s
95th percentile per-packet one-way delay: 38.638 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 42.037 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.09 Mbit/s
95th percentile per-packet one-way delay: 30.427 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 4.00 Mbit/s
95th percentile per-packet one-way delay: 30.993 ms
Loss rate: 0.28%
```

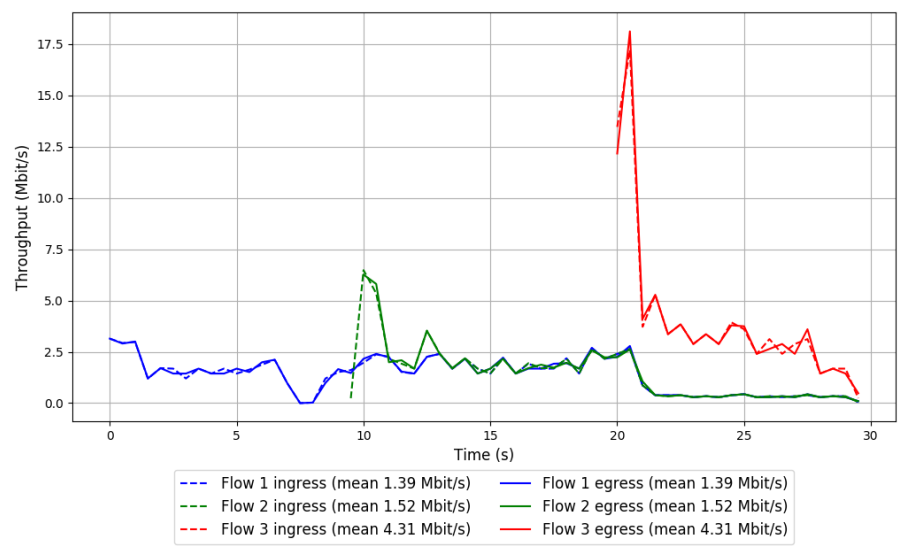Run 1: Report of Indigo-1-32 — Data Link
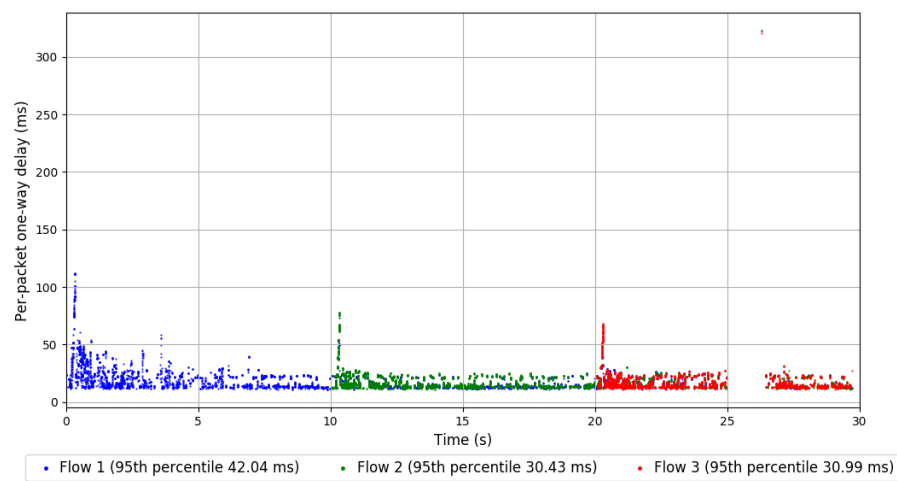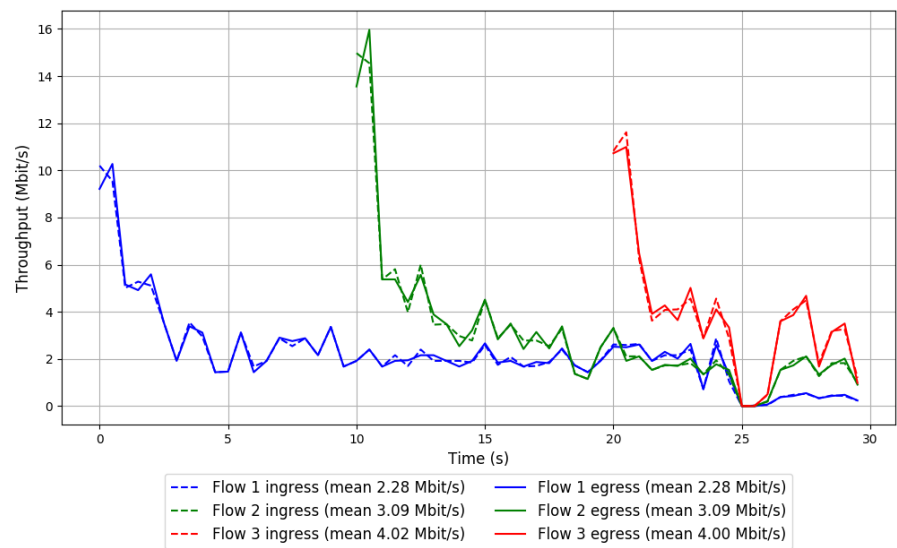
```
Run 2: Statistics of Indigo-1-32

Start at: 2018-02-19 20:30:07
End at: 2018-02-19 20:30:37
Local clock offset: 2.362 ms
Remote clock offset: -6.892 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 25.678 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 24.239 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.52 Mbit/s
95th percentile per-packet one-way delay: 28.040 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 26.130 ms
Loss rate: 0.00%
```

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

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

Start at: 2018-02-19 20:54:04
End at: 2018-02-19 20:54:34
Local clock offset: 2.297 ms
Remote clock offset: -6.785 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 33.683 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 28.133 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 34.534 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 4.09 Mbit/s
95th percentile per-packet one-way delay: 34.222 ms
Loss rate: 0.00%
```

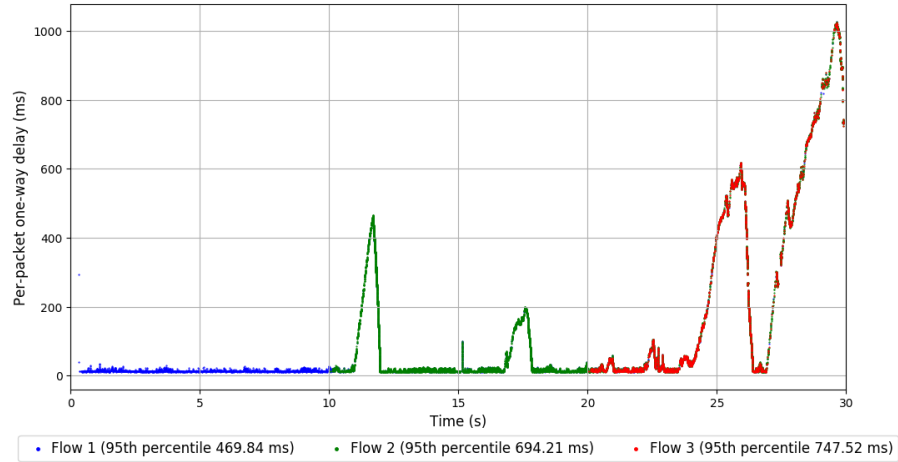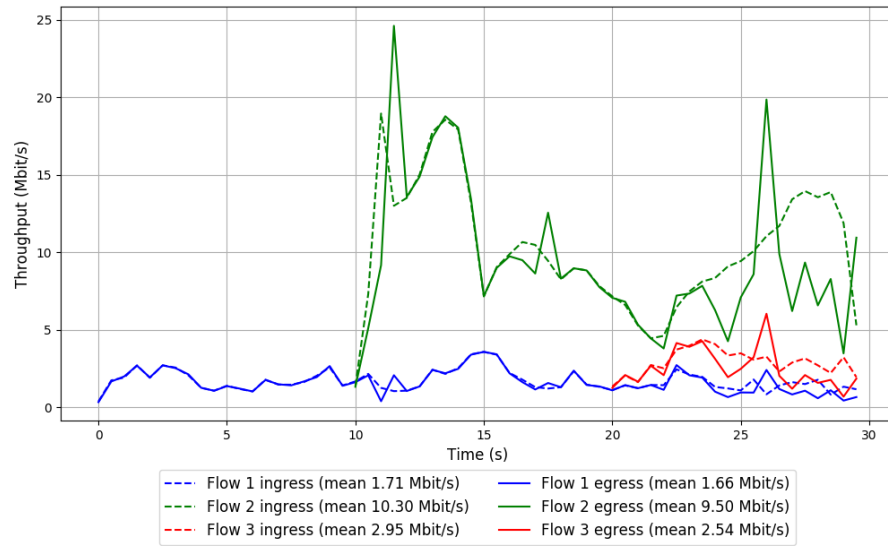Run 3: Report of Indigo-1-32 — Data Link
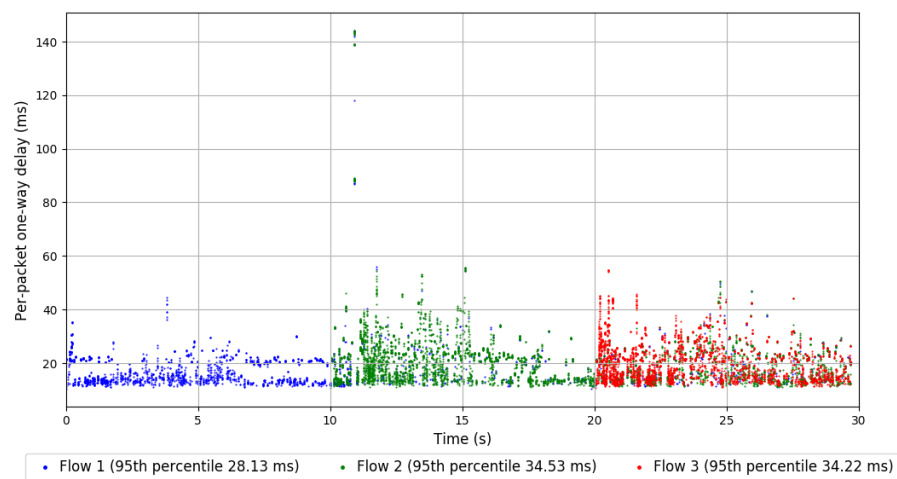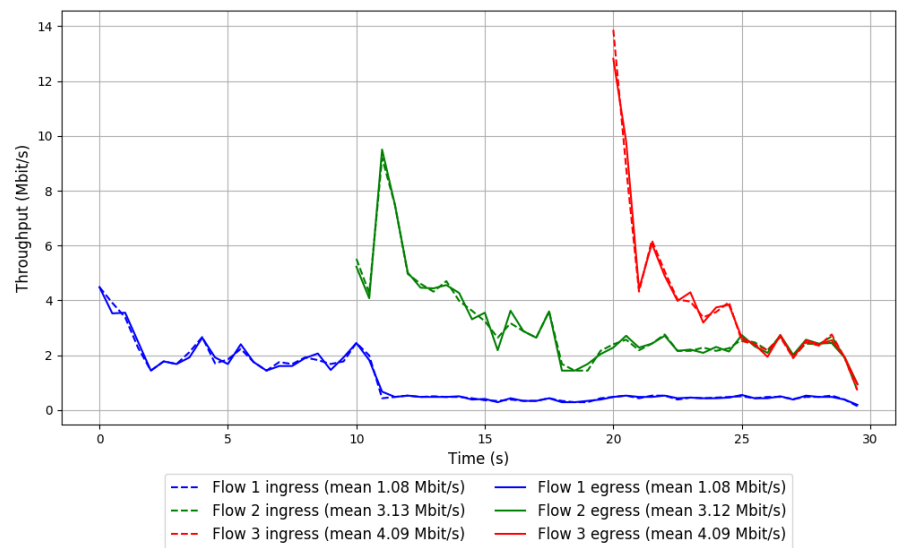
```
Run 1: Statistics of Vivace-latency

Start at: 2018-02-19 20:11:30
End at: 2018-02-19 20:12:00
Local clock offset: 1.097 ms
Remote clock offset: -6.861 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.88 Mbit/s
95th percentile per-packet one-way delay: 681.247 ms
Loss rate: 7.67%
-- Flow 1:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 469.840 ms
Loss rate: 4.08%
-- Flow 2:
Average throughput: 9.50 Mbit/s
95th percentile per-packet one-way delay: 694.205 ms
Loss rate: 7.72%
-- Flow 3:
Average throughput: 2.54 Mbit/s
95th percentile per-packet one-way delay: 747.525 ms
Loss rate: 13.72%
```
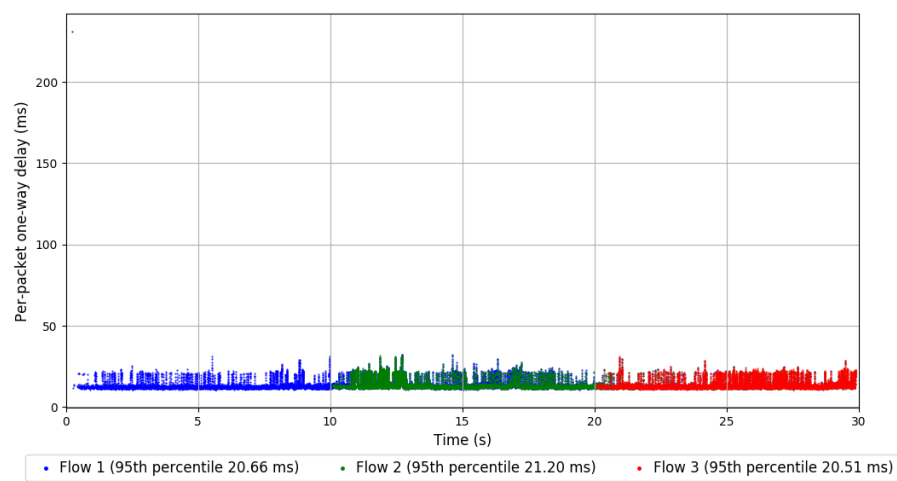
Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-02-19 20:35:26
End at: 2018-02-19 20:35:56
Local clock offset: 2.381 ms
Remote clock offset: -6.86 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.98 Mbit/s
95th percentile per-packet one-way delay: 20.782 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 6.62 Mbit/s
95th percentile per-packet one-way delay: 20.657 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 5.25 Mbit/s
95th percentile per-packet one-way delay: 21.203 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.57 Mbit/s
95th percentile per-packet one-way delay: 20.514 ms
Loss rate: 0.00%
```
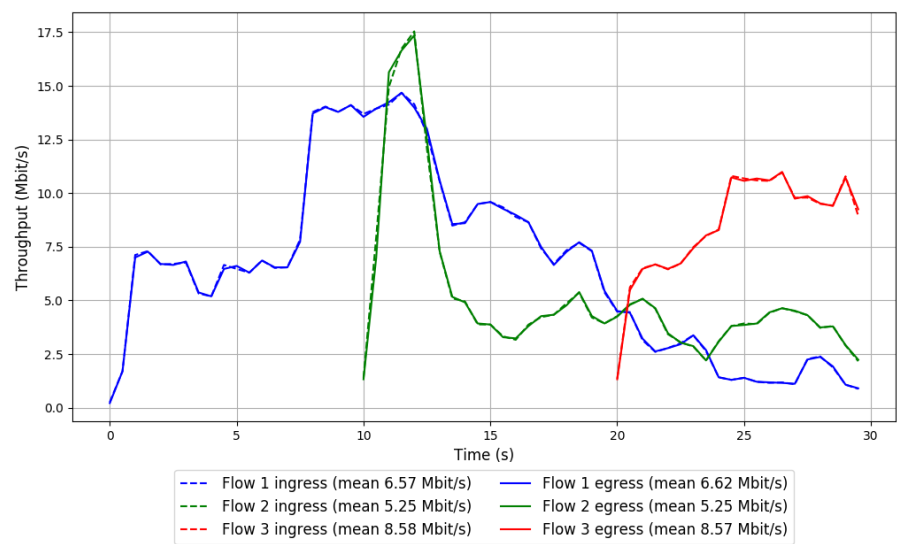
Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-02-19 20:59:23
End at: 2018-02-19 20:59:53
Local clock offset: 2.205 ms
Remote clock offset: -6.685 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.09 Mbit/s
95th percentile per-packet one-way delay: 49.605 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 10.07 Mbit/s
95th percentile per-packet one-way delay: 47.009 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 64.556 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 55.011 ms
Loss rate: 0.00%
```

Run 3: Report of Vivace-latency — Data Link
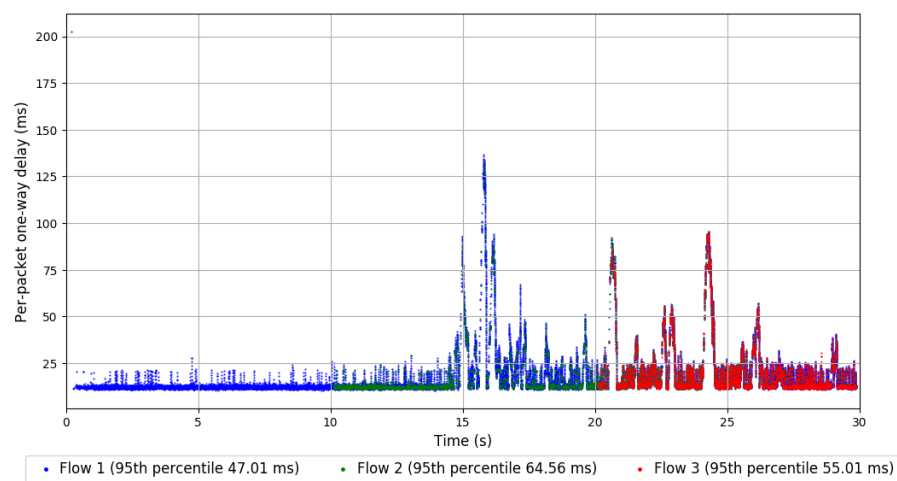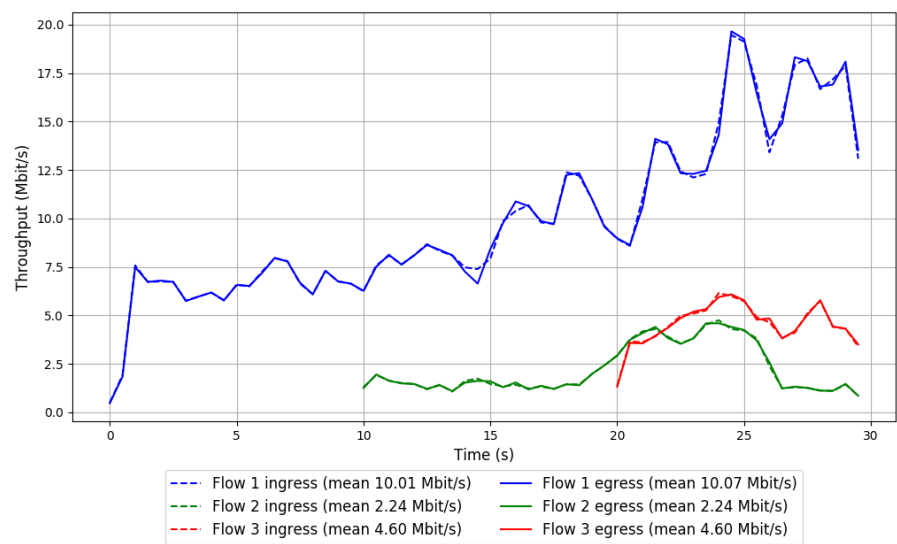
```
Run 1: Statistics of Vivace-loss

Start at: 2018-02-19 19:58:12
End at: 2018-02-19 19:58:42
Local clock offset: 0.354 ms
Remote clock offset: -6.984 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 29.50 Mbit/s
95th percentile per-packet one-way delay: 374.726 ms
Loss rate: 23.79%
-- Flow 1:
Average throughput: 21.47 Mbit/s
95th percentile per-packet one-way delay: 358.353 ms
Loss rate: 23.60%
-- Flow 2:
Average throughput: 9.12 Mbit/s
95th percentile per-packet one-way delay: 423.173 ms
Loss rate: 21.72%
-- Flow 3:
Average throughput: 6.19 Mbit/s
95th percentile per-packet one-way delay: 365.652 ms
Loss rate: 31.20%
```

Run 1: Report of Vivace-loss — Data Link

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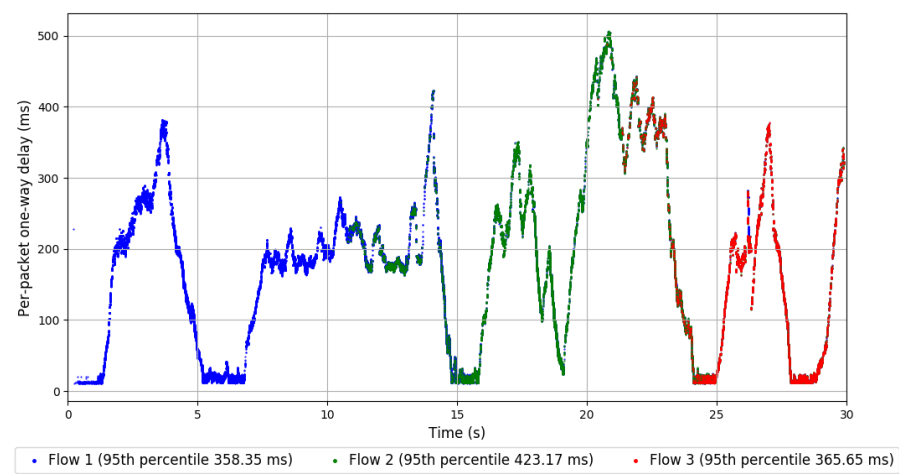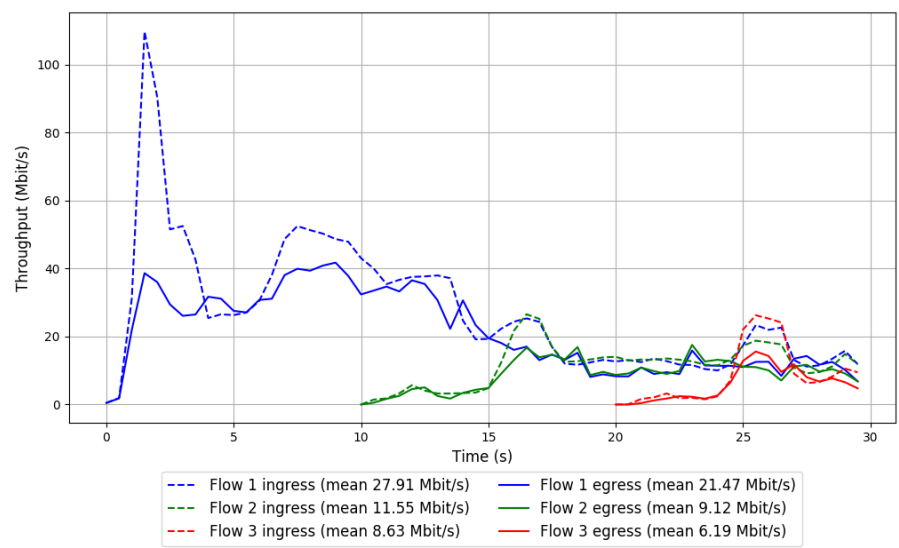
```
Run 2: Statistics of Vivace-loss

Start at: 2018-02-19 20:22:08
End at: 2018-02-19 20:22:38
Local clock offset: 2.053 ms
Remote clock offset: -6.87 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 25.55 Mbit/s
95th percentile per-packet one-way delay: 421.855 ms
Loss rate: 22.29%
-- Flow 1:
Average throughput: 18.41 Mbit/s
95th percentile per-packet one-way delay: 389.796 ms
Loss rate: 20.70%
-- Flow 2:
Average throughput: 8.01 Mbit/s
95th percentile per-packet one-way delay: 478.257 ms
Loss rate: 24.73%
-- Flow 3:
Average throughput: 5.46 Mbit/s
95th percentile per-packet one-way delay: 645.125 ms
Loss rate: 30.01%
```
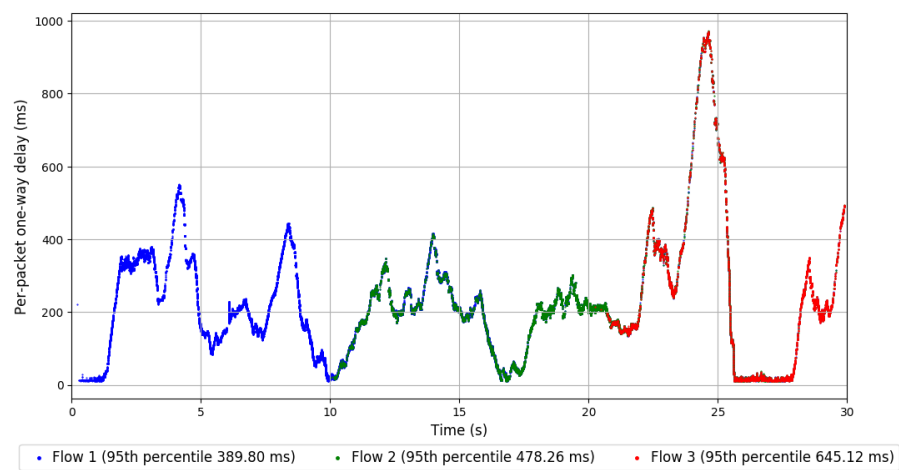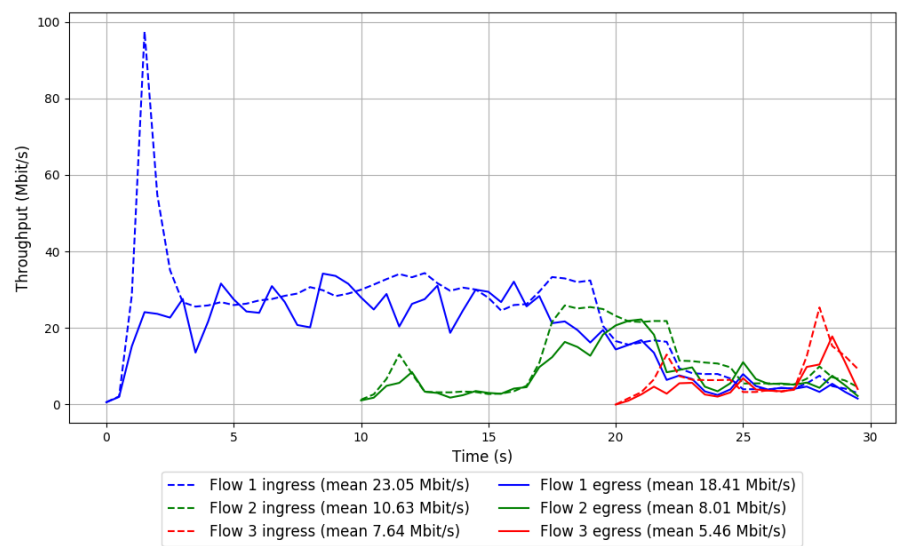
Run 2: Report of Vivace-loss — Data Link

```
Run 3: Statistics of Vivace-loss

Start at: 2018-02-19 20:46:03
End at: 2018-02-19 20:46:33
Local clock offset: 2.288 ms
Remote clock offset: -6.854 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 25.95 Mbit/s
95th percentile per-packet one-way delay: 406.845 ms
Loss rate: 25.87%
-- Flow 1:
Average throughput: 10.11 Mbit/s
95th percentile per-packet one-way delay: 458.841 ms
Loss rate: 29.27%
-- Flow 2:
Average throughput: 18.33 Mbit/s
95th percentile per-packet one-way delay: 318.171 ms
Loss rate: 21.07%
-- Flow 3:
Average throughput: 11.10 Mbit/s
95th percentile per-packet one-way delay: 376.415 ms
Loss rate: 30.85%
```

Run 3: Report of Vivace-loss — Data Link
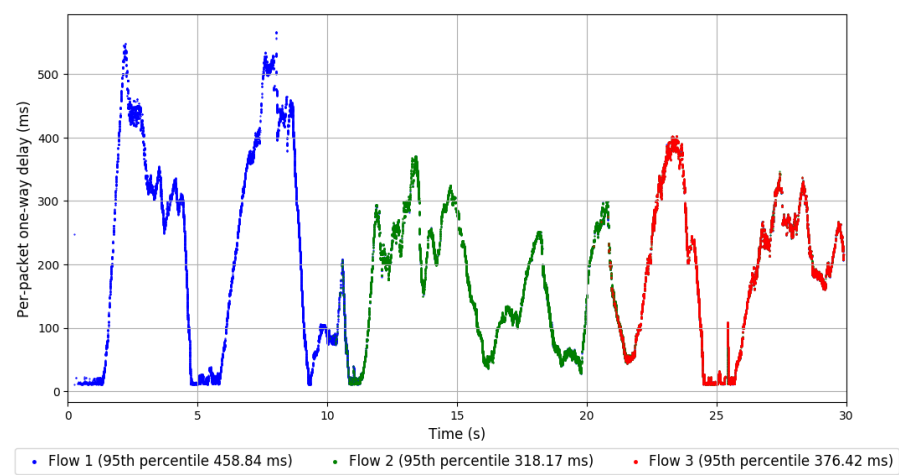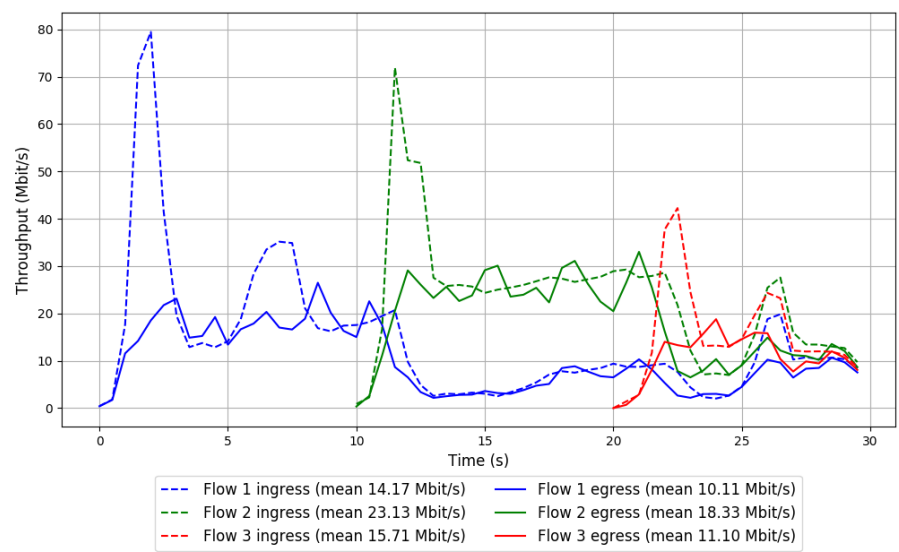
```
Run 1: Statistics of Vivace-LTE

Start at: 2018-02-19 20:10:10
End at: 2018-02-19 20:10:40
Local clock offset: 0.906 ms
Remote clock offset: -6.934 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.25 Mbit/s
95th percentile per-packet one-way delay: 266.499 ms
Loss rate: 5.05%
-- Flow 1:
Average throughput: 14.08 Mbit/s
95th percentile per-packet one-way delay: 284.809 ms
Loss rate: 5.65%
-- Flow 2:
Average throughput: 4.92 Mbit/s
95th percentile per-packet one-way delay: 213.445 ms
Loss rate: 2.51%
-- Flow 3:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 272.394 ms
Loss rate: 4.52%
```

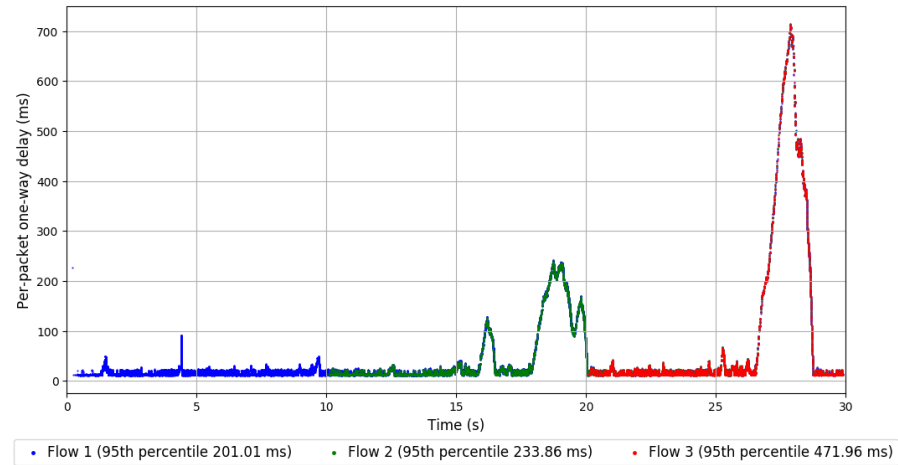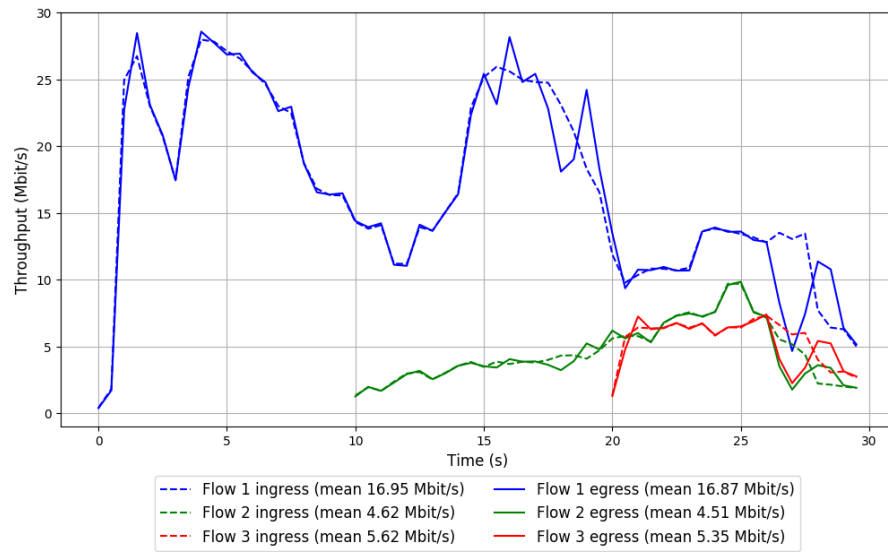Run 1: Report of Vivace-LTE — Data Link
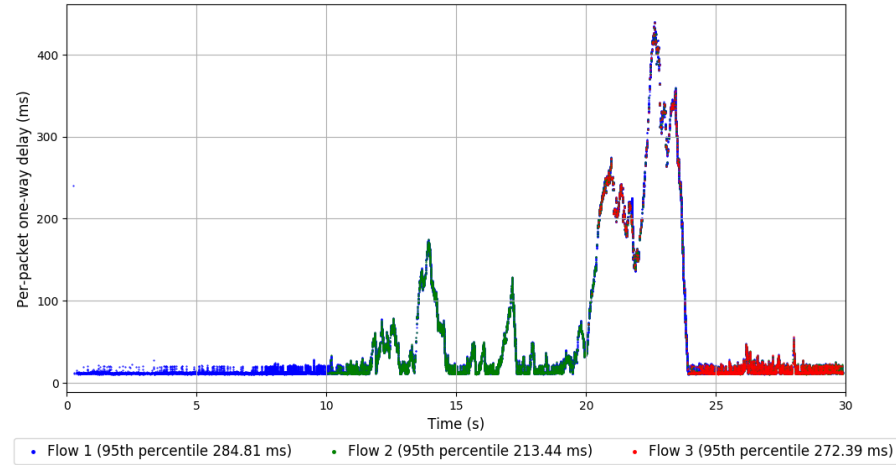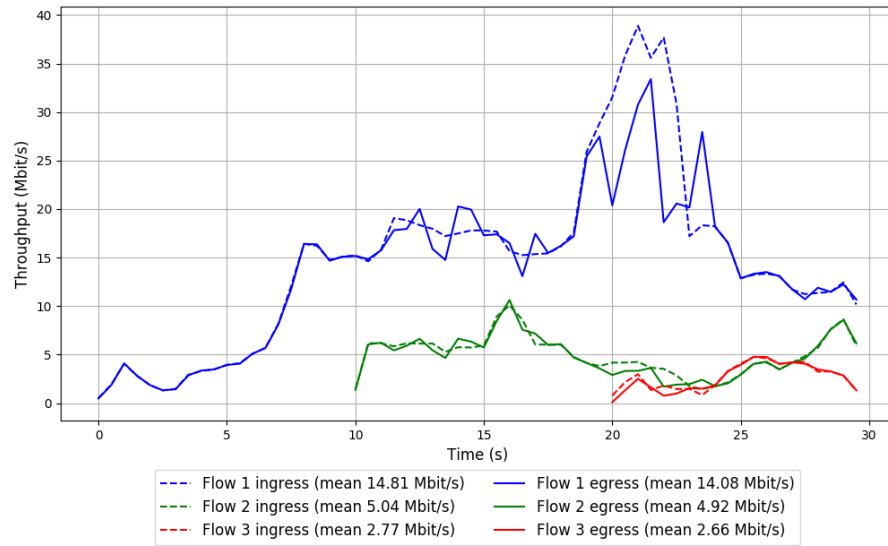
```
Run 2: Statistics of Vivace-LTE

Start at: 2018-02-19 20:34:06
End at: 2018-02-19 20:34:36
Local clock offset: 2.367 ms
Remote clock offset: -6.831 ms


# Below is generated by plot.py at 2018-02-19 21:06:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 21.67 Mbit/s
95th percentile per-packet one-way delay: 216.888 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 16.87 Mbit/s
95th percentile per-packet one-way delay: 201.007 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 4.51 Mbit/s
95th percentile per-packet one-way delay: 233.863 ms
Loss rate: 2.35%
-- Flow 3:
Average throughput: 5.35 Mbit/s
95th percentile per-packet one-way delay: 471.961 ms
Loss rate: 4.83%
```

Run 2: Report of Vivace-LTE — Data Link

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-02-19 20:58:02
End at: 2018-02-19 20:58:32
Local clock offset: 2.299 ms
Remote clock offset: -6.889 ms

# Below is generated by plot.py at 2018-02-19 21:06:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 16.22 Mbit/s
95th percentile per-packet one-way delay: 269.733 ms
Loss rate: 4.89%
-- Flow 1:
Average throughput: 8.07 Mbit/s
95th percentile per-packet one-way delay: 234.751 ms
Loss rate: 2.41%
-- Flow 2:
Average throughput: 4.87 Mbit/s
95th percentile per-packet one-way delay: 267.855 ms
Loss rate: 4.96%
-- Flow 3:
Average throughput: 14.72 Mbit/s
95th percentile per-packet one-way delay: 290.505 ms
Loss rate: 8.66%
```

Run 3: Report of Vivace-LTE — Data Link