Pantheon Report

Generated at 2018-02-17 05:38:25 (UTC).

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

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.

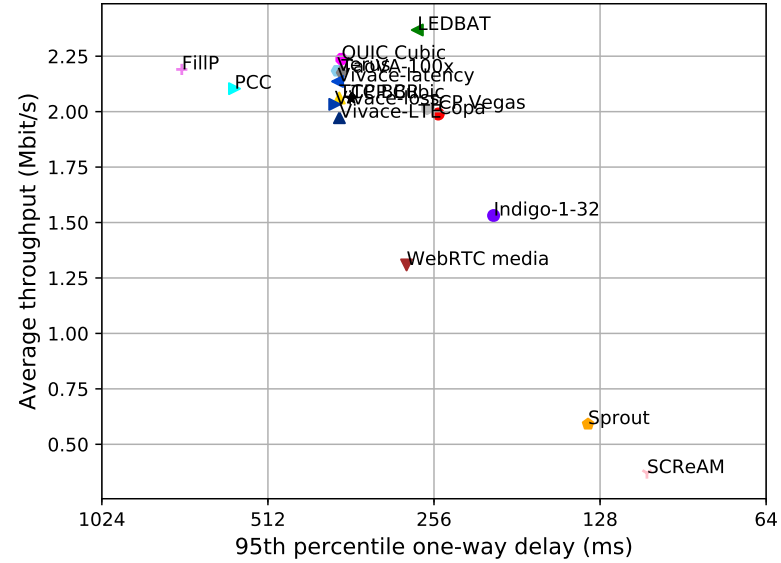Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

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

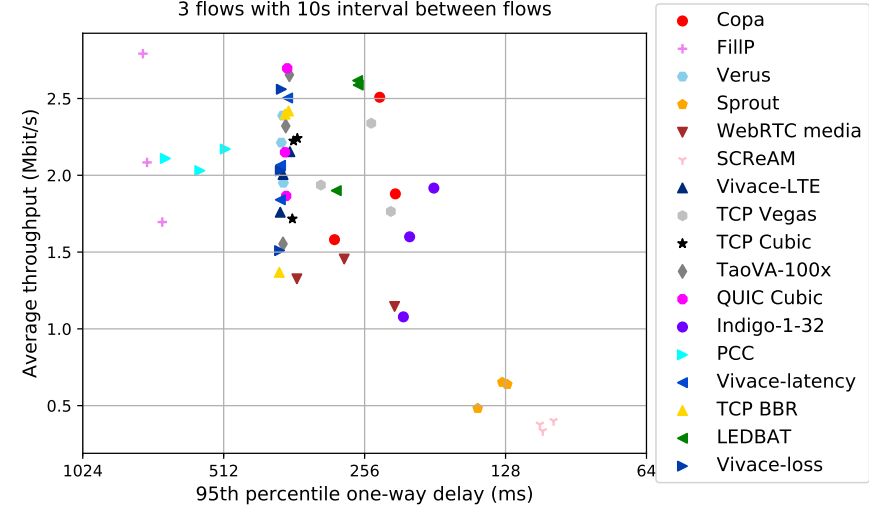NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ cccb2d77344969a7bac1df6edf6c0cfb6c77a6f8
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 8400b8926887fc4cf8c795a1d7ce2c8ac041ec72
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 India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

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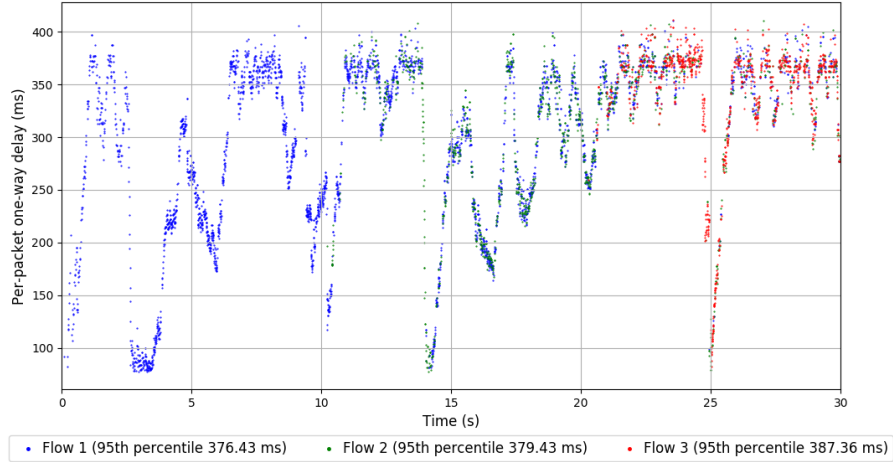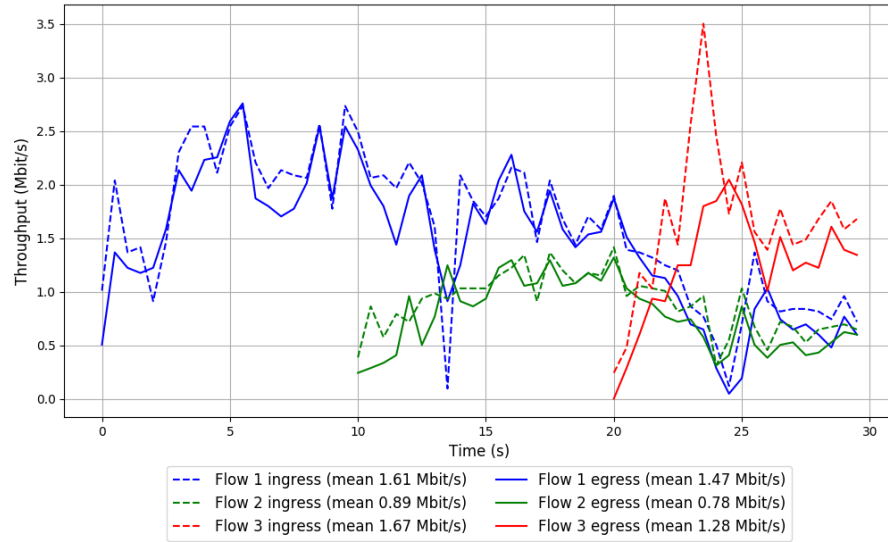3 flows with 10s interval between flows

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	1.25	0.79	0.91	377.55	381.68	386.27	11.49	17.75	24.76
TCP Cubic	3	1.27	0.90	0.61	359.82	362.89	363.29	2.57	2.44	5.57
LEDBAT	3	1.50	0.95	0.73	270.96	286.32	287.89	0.46	0.91	3.03
PCC	3	1.18	0.96	1.00	404.25	581.13	806.75	55.74	76.31	87.35
QUIC Cubic	3	1.46	0.81	0.78	374.91	378.07	379.76	6.58	10.79	13.33
SCReAM	3	0.18	0.18	0.22	99.61	100.67	104.63	0.24	0.27	0.66
WebRTC media	3	0.72	0.39	0.22	282.95	293.30	235.62	1.22	2.01	2.12
Sprout	3	0.29	0.30	0.30	130.18	135.97	145.71	0.43	0.41	0.75
TaoVA-100x	3	1.31	0.91	0.83	372.43	380.29	385.00	10.48	23.55	32.65
TCP Vegas	3	1.11	0.91	0.92	271.67	250.23	248.14	1.03	0.96	2.02
Verus	3	1.75	0.58	0.18	381.83	386.02	387.78	53.76	68.62	62.85
Copa	3	1.01	1.10	0.75	258.02	256.80	278.02	2.01	3.02	7.43
FillP	3	1.38	0.88	0.78	517.80	775.03	800.00	95.73	98.21	99.23
Indigo-1-32	3	0.77	0.72	0.83	195.71	210.55	206.28	1.01	1.31	2.36
Vivace-latency	3	1.22	0.99	0.82	377.75	384.23	394.17	20.23	30.00	43.89
Vivace-loss	3	1.25	0.92	0.57	385.03	390.10	383.47	29.70	36.42	50.24
Vivace-LTE	3	1.32	0.59	0.79	376.70	379.77	388.03	19.94	28.45	45.07

```
Run 1: Statistics of TCP BBR

Start at: 2018-02-17 03:46:43
End at: 2018-02-17 03:47:13
Local clock offset: -11.285 ms
Remote clock offset: -16.511 ms


# Below is generated by plot.py at 2018-02-17 05:37:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 378.682 ms
Loss rate: 13.14%
-- Flow 1:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 376.430 ms
Loss rate: 8.93%
-- Flow 2:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 379.434 ms
Loss rate: 13.21%
-- Flow 3:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 387.359 ms
Loss rate: 25.28%
```

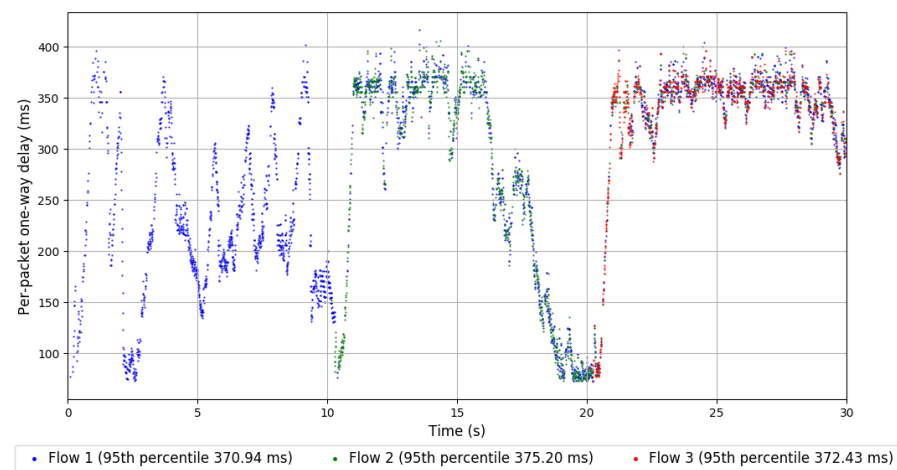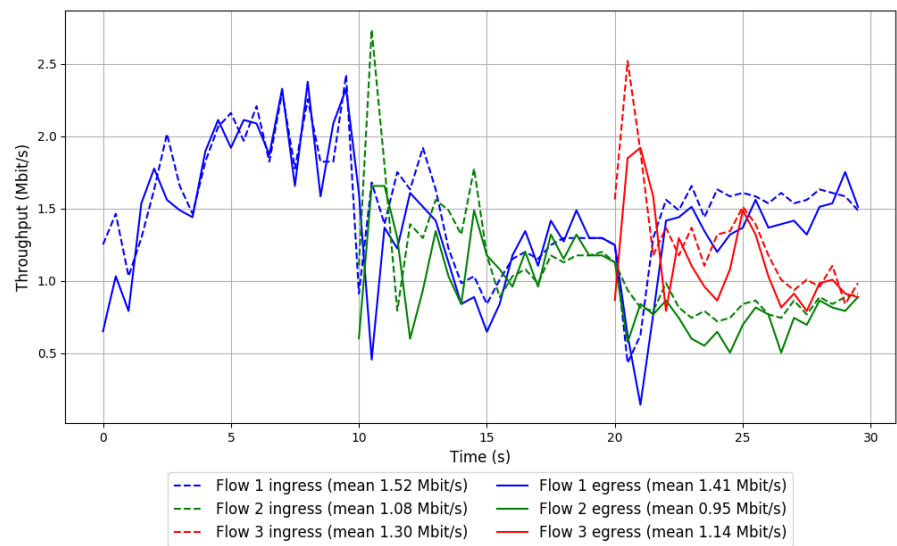Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-02-17 04:06:43
End at: 2018-02-17 04:07:13
Local clock offset: -12.993 ms
Remote clock offset: -11.98 ms


# Below is generated by plot.py at 2018-02-17 05:37:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.42 Mbit/s
95th percentile per-packet one-way delay: 372.188 ms
Loss rate: 9.54%
-- Flow 1:
Average throughput: 1.41 Mbit/s
95th percentile per-packet one-way delay: 370.935 ms
Loss rate: 7.26%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 375.197 ms
Loss rate: 12.41%
-- Flow 3:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 372.432 ms
Loss rate: 12.77%
```
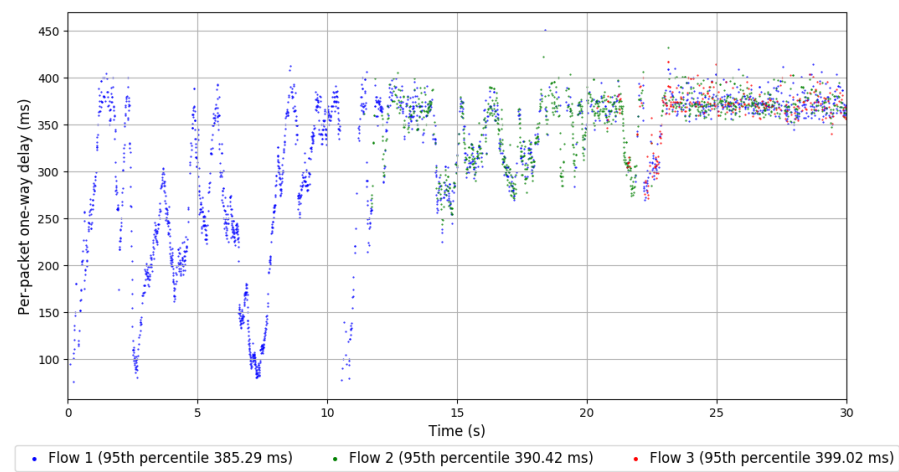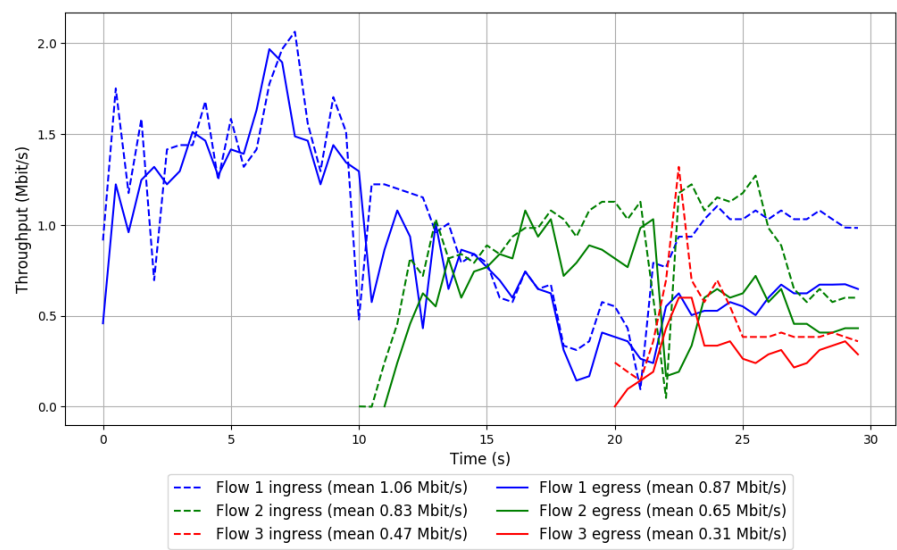
Run 2: Report of TCP BBR — Data Link

- Flow 1 ingress (mean 1.52 Mbit/s)
- Flow 1 egress (mean 1.41 Mbit/s)
- Flow 2 ingress (mean 1.08 Mbit/s)
- Flow 2 egress (mean 0.95 Mbit/s)
- Flow 3 ingress (mean 1.30 Mbit/s)
- Flow 3 egress (mean 1.14 Mbit/s)

- Flow 1 (95th percentile 370.94 ms)
- Flow 2 (95th percentile 375.20 ms)
- Flow 3 (95th percentile 372.43 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-02-17 04:26:44
End at: 2018-02-17 04:27:14
Local clock offset: -11.267 ms
Remote clock offset: -19.273 ms


# Below is generated by plot.py at 2018-02-17 05:37:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 389.438 ms
Loss rate: 22.81%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 385.294 ms
Loss rate: 18.28%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 390.419 ms
Loss rate: 27.63%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 399.023 ms
Loss rate: 36.24%
```
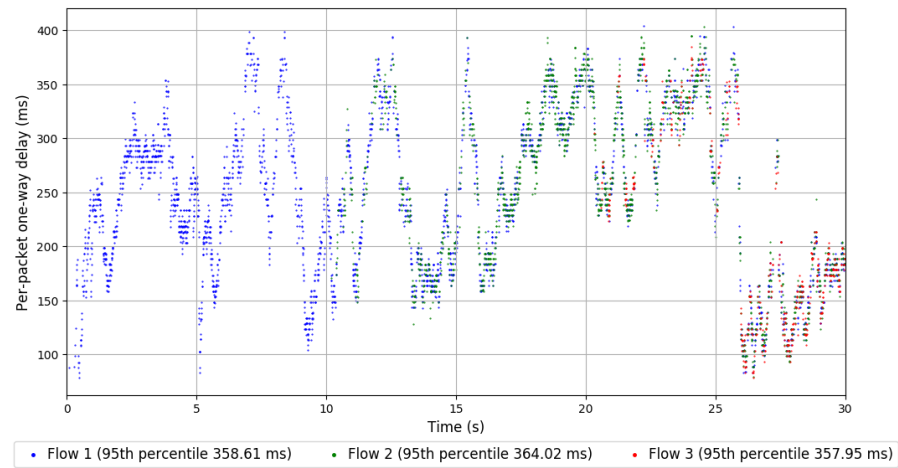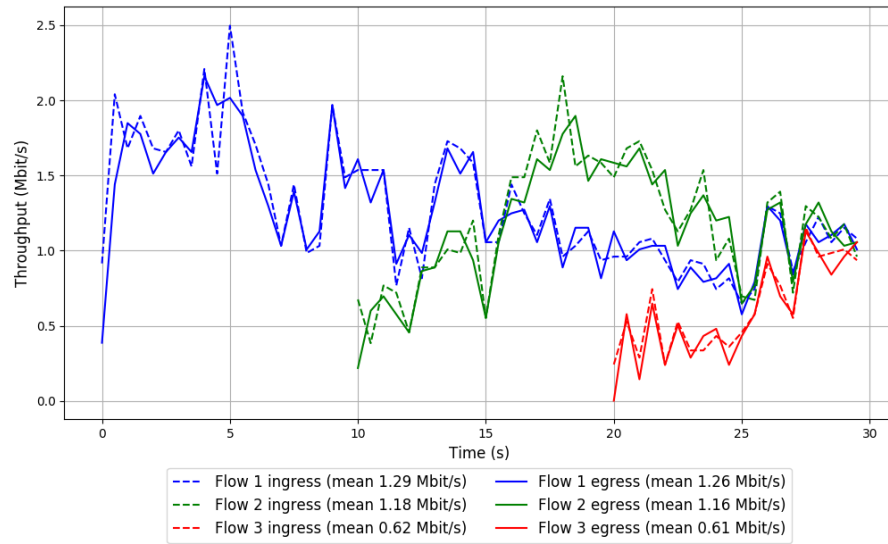
Run 3: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 1.06 Mbit/s) —— Flow 1 egress (mean 0.87 Mbit/s)
- - - Flow 2 ingress (mean 0.83 Mbit/s) —— Flow 2 egress (mean 0.65 Mbit/s)
- - - Flow 3 ingress (mean 0.47 Mbit/s) —— Flow 3 egress (mean 0.31 Mbit/s)

• Flow 1 (95th percentile 385.29 ms)   • Flow 2 (95th percentile 390.42 ms)   • Flow 3 (95th percentile 399.02 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2018-02-17 03:43:18
End at: 2018-02-17 03:43:48
Local clock offset: -9.709 ms
Remote clock offset: -16.874 ms

# Below is generated by plot.py at 2018-02-17 05:37:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 363.109 ms
Loss rate: 2.65%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 358.605 ms
Loss rate: 2.55%
-- Flow 2:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 364.024 ms
Loss rate: 2.29%
-- Flow 3:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 357.955 ms
Loss rate: 4.67%
```
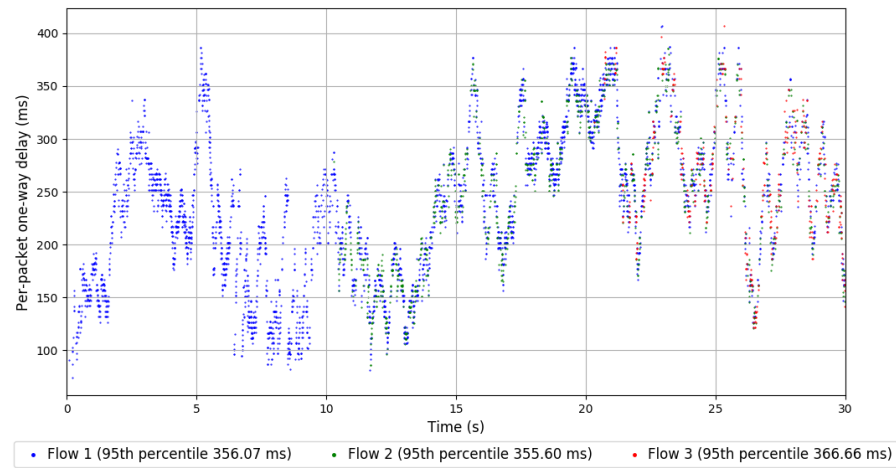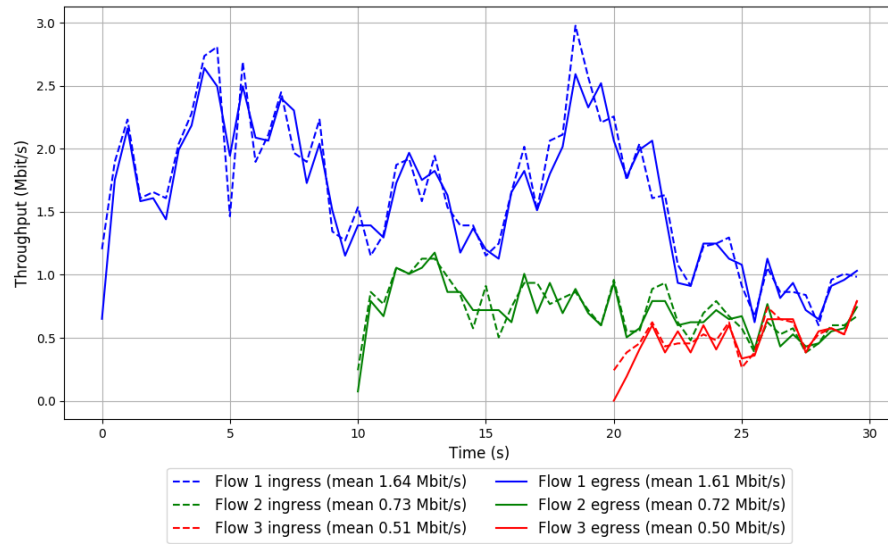
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 1.29 Mbit/s)   Flow 1 egress (mean 1.26 Mbit/s)
Flow 2 ingress (mean 1.18 Mbit/s)   Flow 2 egress (mean 1.16 Mbit/s)
Flow 3 ingress (mean 0.62 Mbit/s)   Flow 3 egress (mean 0.61 Mbit/s)

Flow 1 (95th percentile 358.61 ms)   Flow 2 (95th percentile 364.02 ms)   Flow 3 (95th percentile 357.95 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-02-17 04:03:20
End at: 2018-02-17 04:03:50
Local clock offset: -11.352 ms
Remote clock offset: -14.469 ms


# Below is generated by plot.py at 2018-02-17 05:37:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 356.369 ms
Loss rate: 2.60%
-- Flow 1:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 356.071 ms
Loss rate: 2.34%
-- Flow 2:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 355.603 ms
Loss rate: 2.40%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 366.662 ms
Loss rate: 5.66%
```

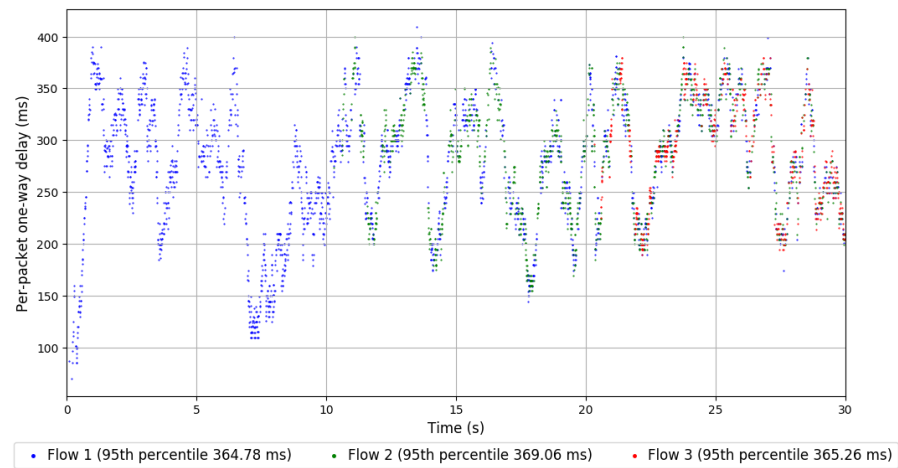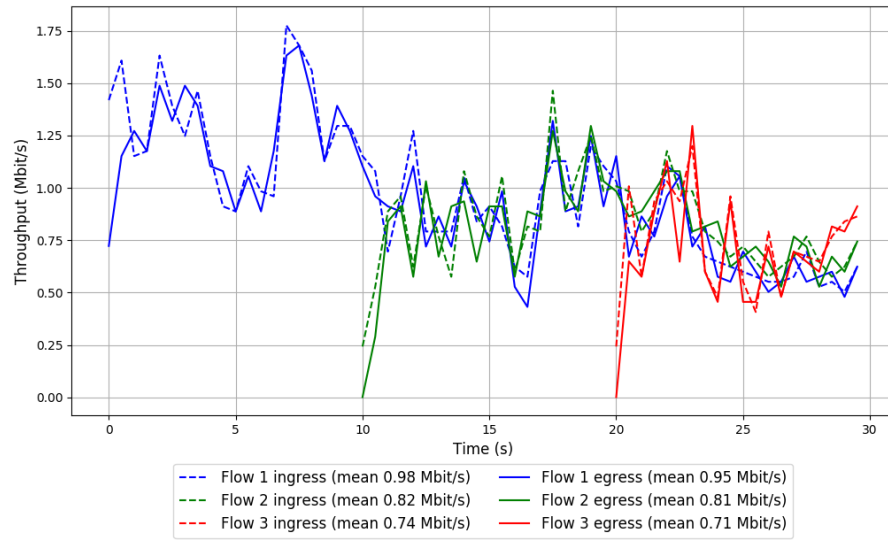Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-02-17 04:23:19
End at: 2018-02-17 04:23:49
Local clock offset: -12.735 ms
Remote clock offset: -18.782 ms


# Below is generated by plot.py at 2018-02-17 05:37:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.72 Mbit/s
95th percentile per-packet one-way delay: 365.257 ms
Loss rate: 3.26%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 364.781 ms
Loss rate: 2.83%
-- Flow 2:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 369.057 ms
Loss rate: 2.63%
-- Flow 3:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 365.257 ms
Loss rate: 6.37%
```
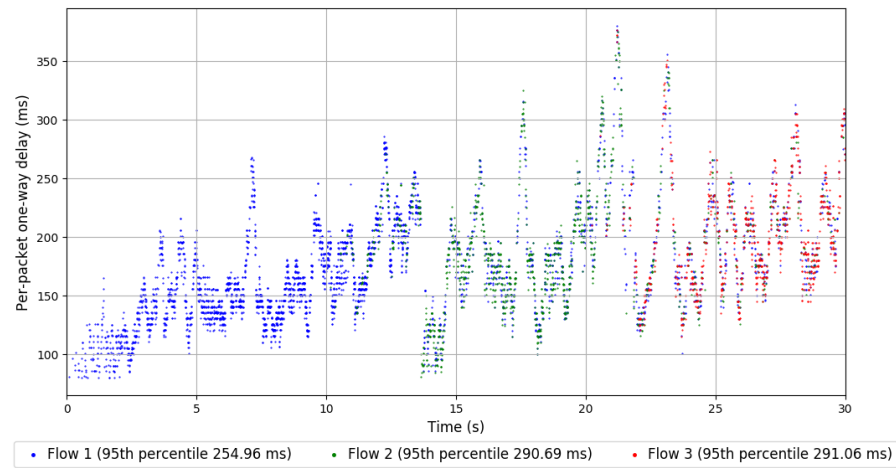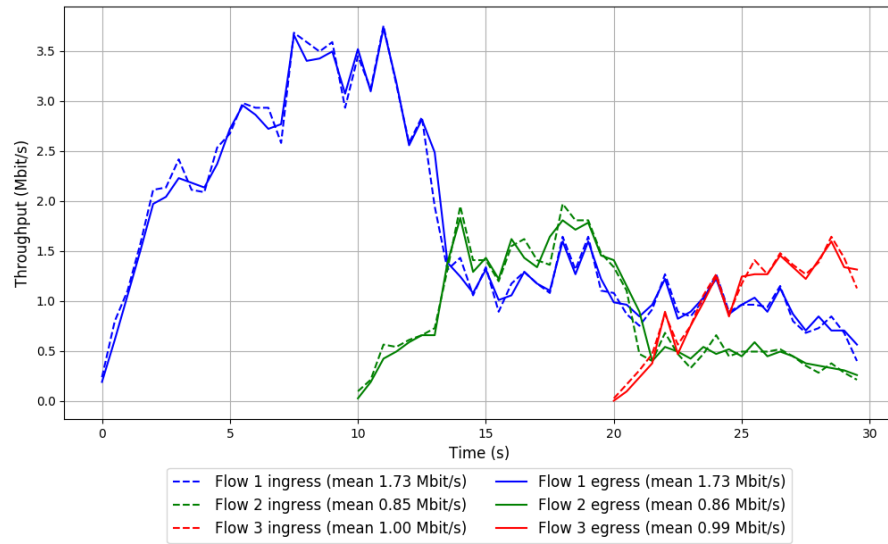
Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-02-17 03:47:49
End at: 2018-02-17 03:48:19
Local clock offset: -11.73 ms
Remote clock offset: -15.517 ms


# Below is generated by plot.py at 2018-02-17 05:37:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 264.971 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 254.959 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 290.689 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 291.062 ms
Loss rate: 2.72%
```

Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-02-17 04:07:50
End at: 2018-02-17 04:08:20
Local clock offset: -10.113 ms
Remote clock offset: -12.567 ms


# Below is generated by plot.py at 2018-02-17 05:37:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 264.153 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 1.64 Mbit/s
95th percentile per-packet one-way delay: 268.573 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 263.429 ms
Loss rate: 1.65%
-- Flow 3:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 263.370 ms
Loss rate: 2.10%
```
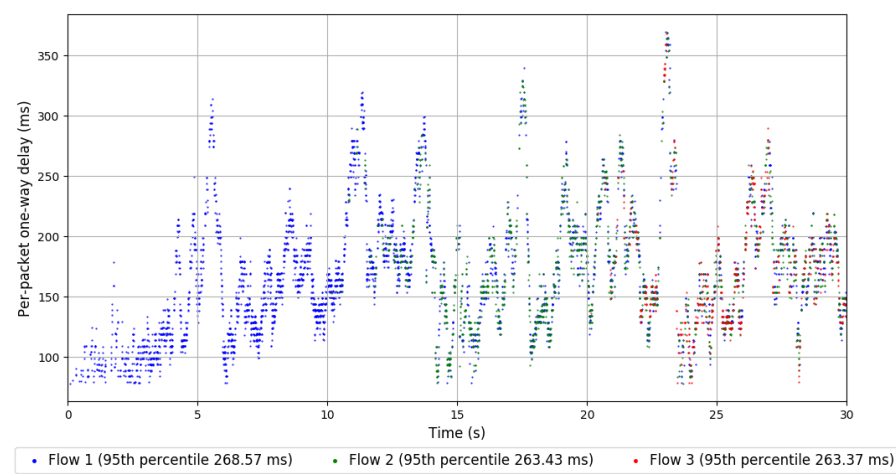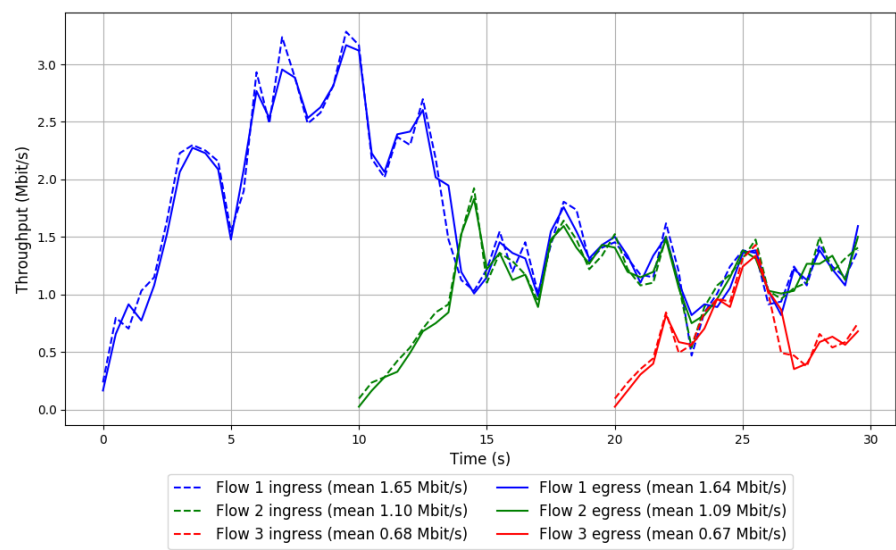
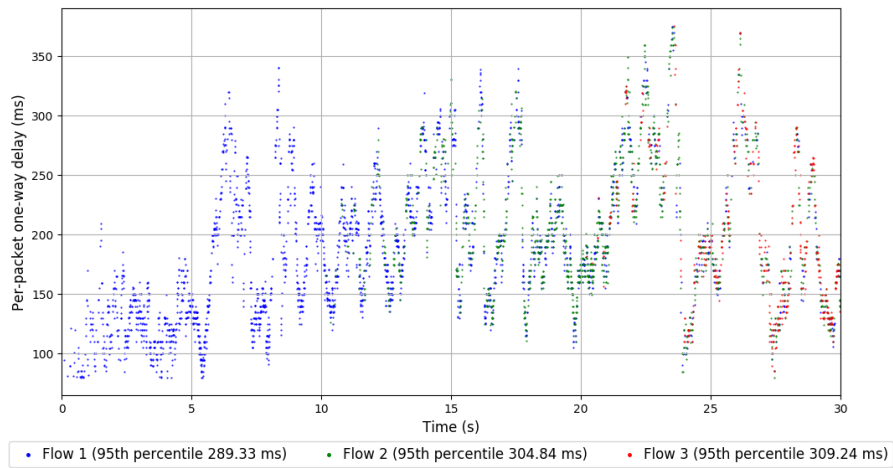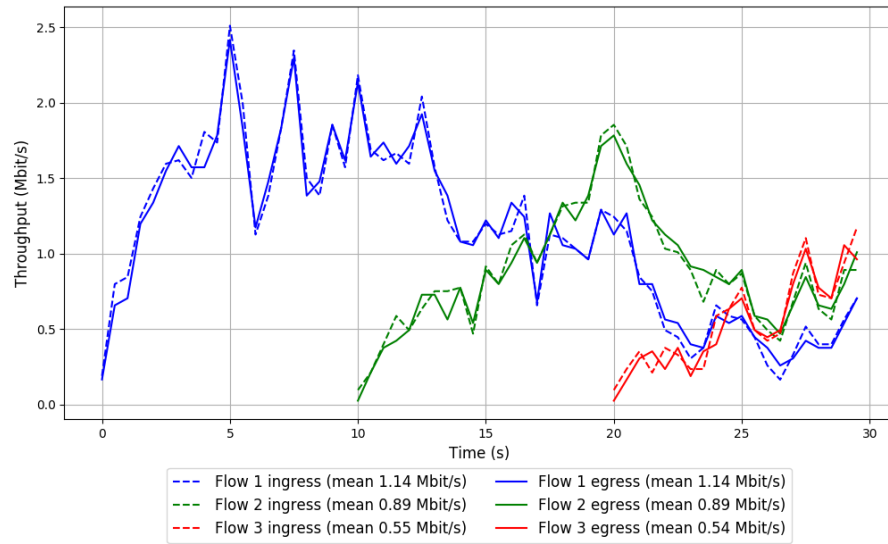Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-02-17 04:27:50
End at: 2018-02-17 04:28:20
Local clock offset: -9.5 ms
Remote clock offset: -18.232 ms


# Below is generated by plot.py at 2018-02-17 05:37:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 294.317 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 289.334 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 304.842 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 309.241 ms
Loss rate: 4.28%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 1.14 Mbit/s) --- Flow 1 egress (mean 1.14 Mbit/s) ---
Flow 2 ingress (mean 0.89 Mbit/s) --- Flow 2 egress (mean 0.89 Mbit/s) ---
Flow 3 ingress (mean 0.55 Mbit/s) --- Flow 3 egress (mean 0.54 Mbit/s) ---

Flow 1 (95th percentile 289.33 ms) • Flow 2 (95th percentile 304.84 ms) • Flow 3 (95th percentile 309.24 ms)
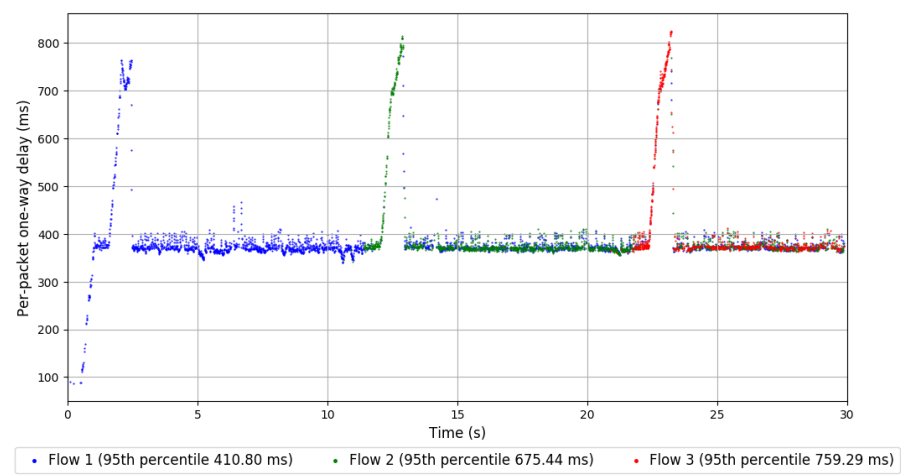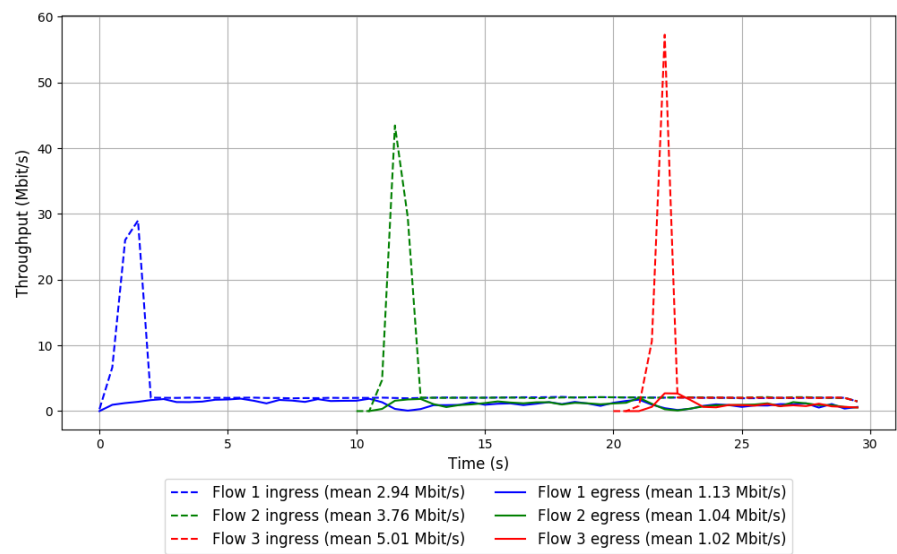
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```
Run 1: Statistics of PCC

Start at: 2018-02-17 03:44:25
End at: 2018-02-17 03:44:55
Local clock offset: -11.917 ms
Remote clock offset: -16.855 ms


# Below is generated by plot.py at 2018-02-17 05:37:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 682.006 ms
Loss rate: 70.34%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 410.799 ms
Loss rate: 61.57%
-- Flow 2:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 675.438 ms
Loss rate: 73.26%
-- Flow 3:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 759.295 ms
Loss rate: 81.53%
```

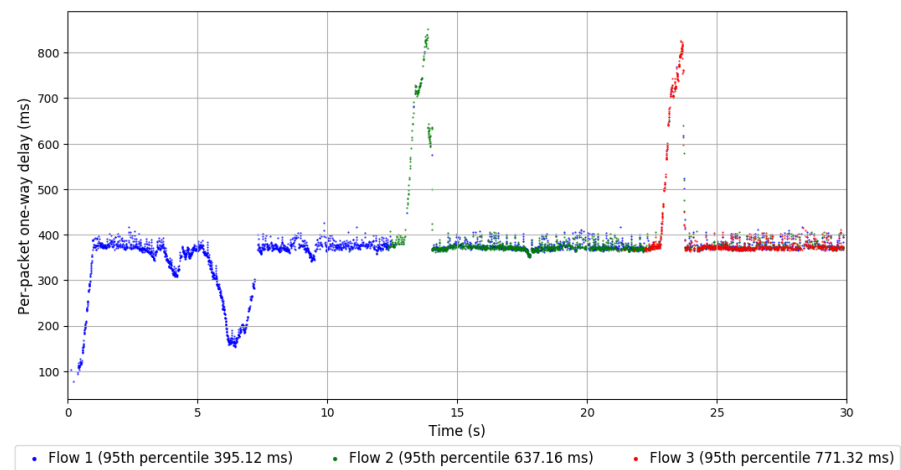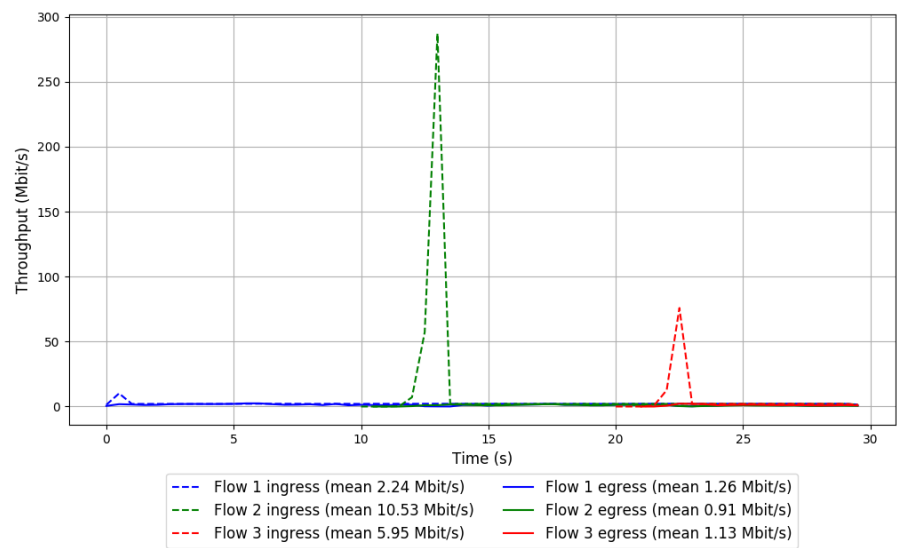Run 1: Report of PCC — Data Link

```
Run 2: Statistics of PCC

Start at: 2018-02-17 04:04:26
End at: 2018-02-17 04:04:56
Local clock offset: -9.191 ms
Remote clock offset: -13.302 ms

# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 508.092 ms
Loss rate: 80.69%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 395.125 ms
Loss rate: 43.85%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 637.162 ms
Loss rate: 91.77%
-- Flow 3:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 771.315 ms
Loss rate: 83.18%
```

Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 2.24 Mbit/s)   Flow 1 egress (mean 1.26 Mbit/s)
Flow 2 ingress (mean 10.53 Mbit/s)   Flow 2 egress (mean 0.91 Mbit/s)
Flow 3 ingress (mean 5.95 Mbit/s)   Flow 3 egress (mean 1.13 Mbit/s)

Flow 1 (95th percentile 395.12 ms)   Flow 2 (95th percentile 637.16 ms)   Flow 3 (95th percentile 771.32 ms)
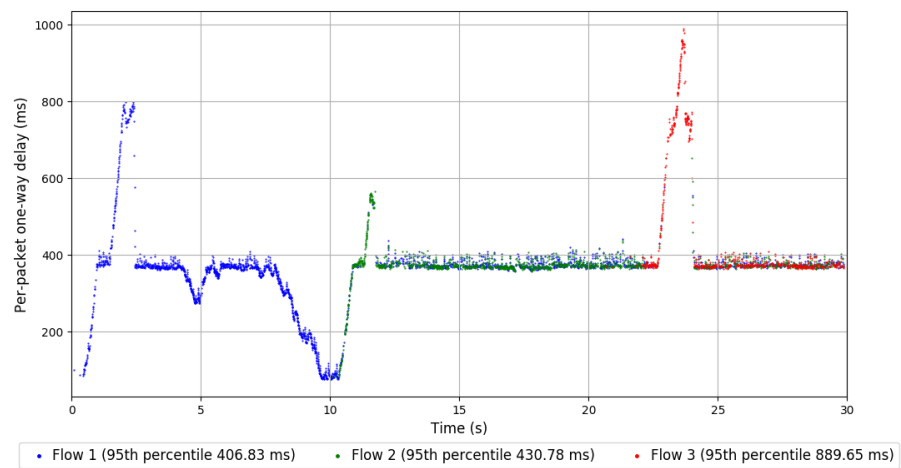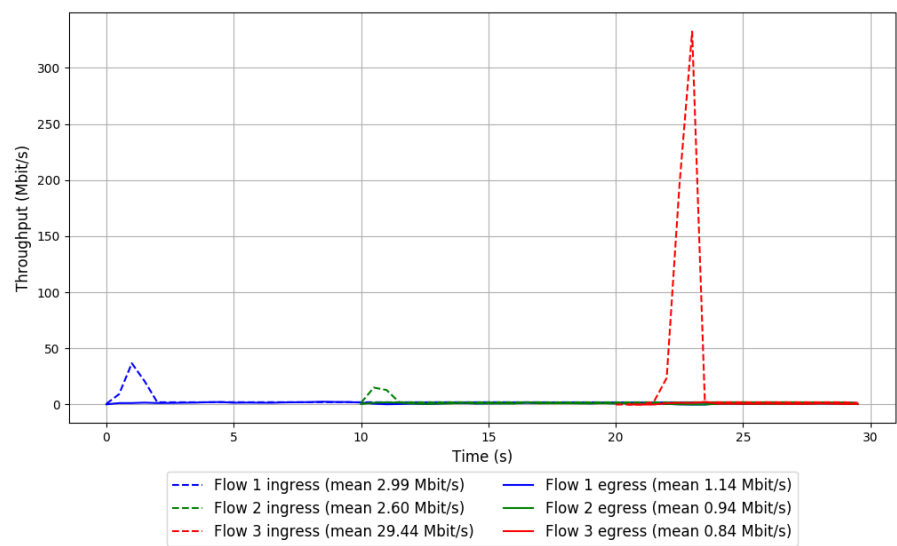
25

```
Run 3: Statistics of PCC

Start at: 2018-02-17 04:24:26
End at: 2018-02-17 04:24:56
Local clock offset: -10.795 ms
Remote clock offset: -17.375 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 575.856 ms
Loss rate: 85.96%
-- Flow 1:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 406.833 ms
Loss rate: 61.81%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 430.783 ms
Loss rate: 63.90%
-- Flow 3:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 889.646 ms
Loss rate: 97.33%
```
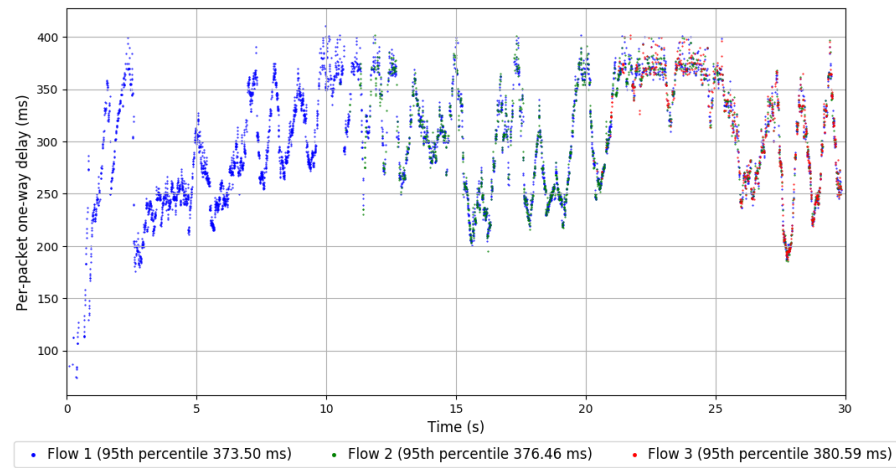
Run 3: Report of PCC — Data Link

- Flow 1 ingress (mean 2.99 Mbit/s)
- Flow 1 egress (mean 1.14 Mbit/s)
- Flow 2 ingress (mean 2.60 Mbit/s)
- Flow 2 egress (mean 0.94 Mbit/s)
- Flow 3 ingress (mean 29.44 Mbit/s)
- Flow 3 egress (mean 0.84 Mbit/s)

- Flow 1 (95th percentile 406.83 ms)
- Flow 2 (95th percentile 430.78 ms)
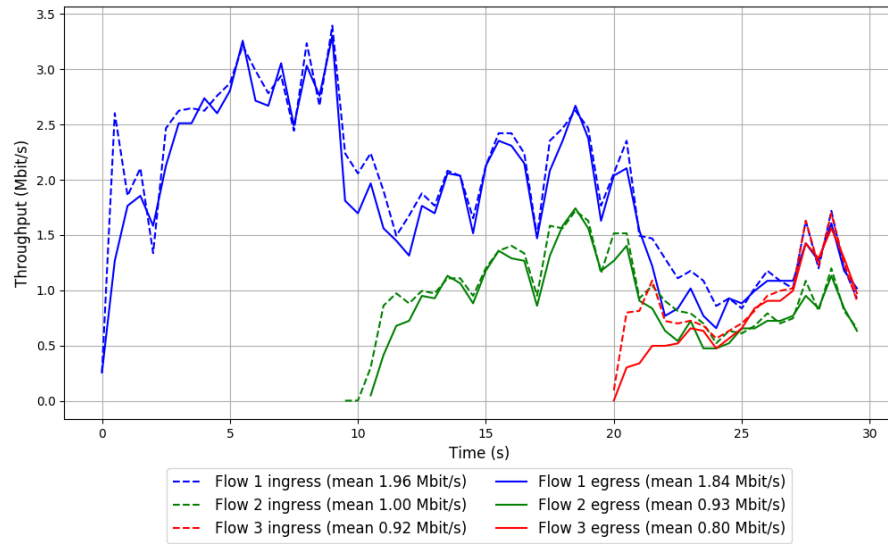- Flow 3 (95th percentile 889.65 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-02-17 03:50:03
End at: 2018-02-17 03:50:33
Local clock offset: -11.553 ms
Remote clock offset: -15.273 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.70 Mbit/s
95th percentile per-packet one-way delay: 374.636 ms
Loss rate: 8.02%
-- Flow 1:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 373.503 ms
Loss rate: 6.54%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 376.460 ms
Loss rate: 9.28%
-- Flow 3:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 380.587 ms
Loss rate: 14.85%
```

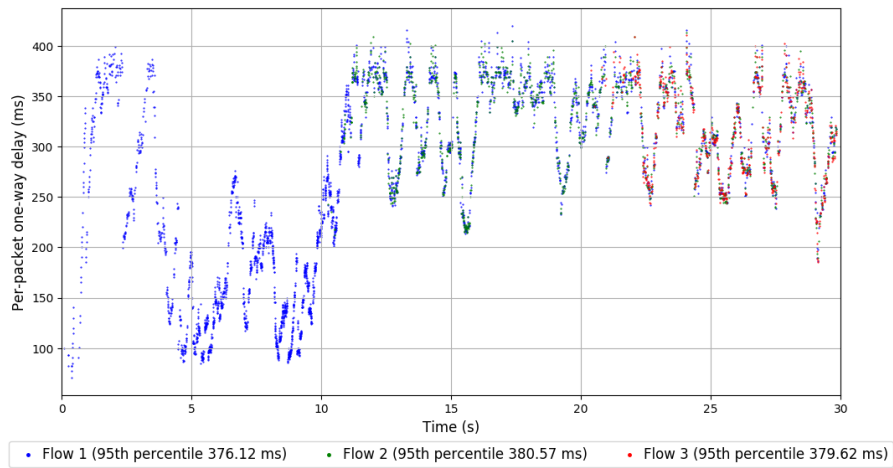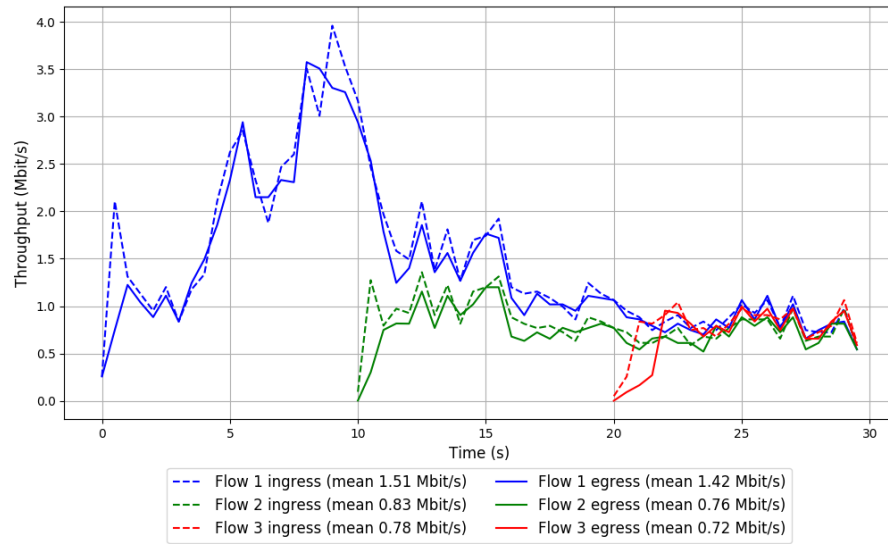Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 1.96 Mbit/s)   Flow 1 egress (mean 1.84 Mbit/s)
Flow 2 ingress (mean 1.00 Mbit/s)   Flow 2 egress (mean 0.93 Mbit/s)
Flow 3 ingress (mean 0.92 Mbit/s)   Flow 3 egress (mean 0.80 Mbit/s)

Flow 1 (95th percentile 373.50 ms)   Flow 2 (95th percentile 376.46 ms)   Flow 3 (95th percentile 380.59 ms)

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```
Run 2: Statistics of QUIC Cubic

Start at: 2018-02-17 04:10:03
End at: 2018-02-17 04:10:33
Local clock offset: -9.496 ms
Remote clock offset: -13.483 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 378.665 ms
Loss rate: 7.44%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 376.122 ms
Loss rate: 5.95%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 380.569 ms
Loss rate: 9.68%
-- Flow 3:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 379.624 ms
Loss rate: 11.34%
```
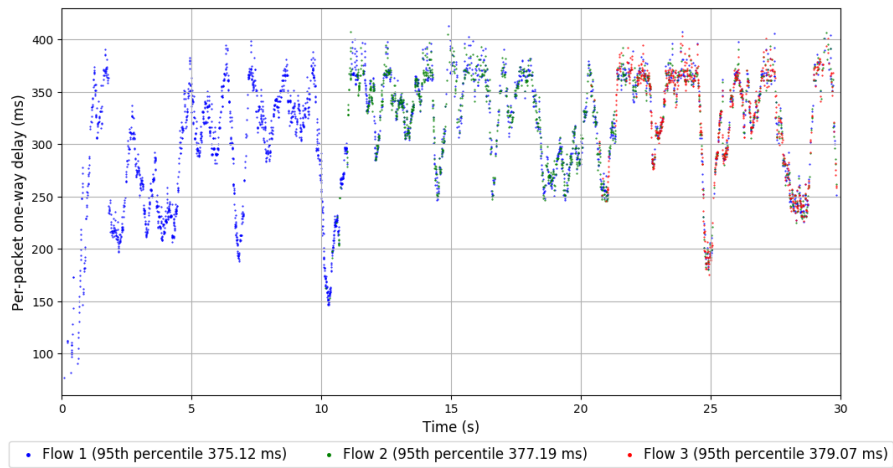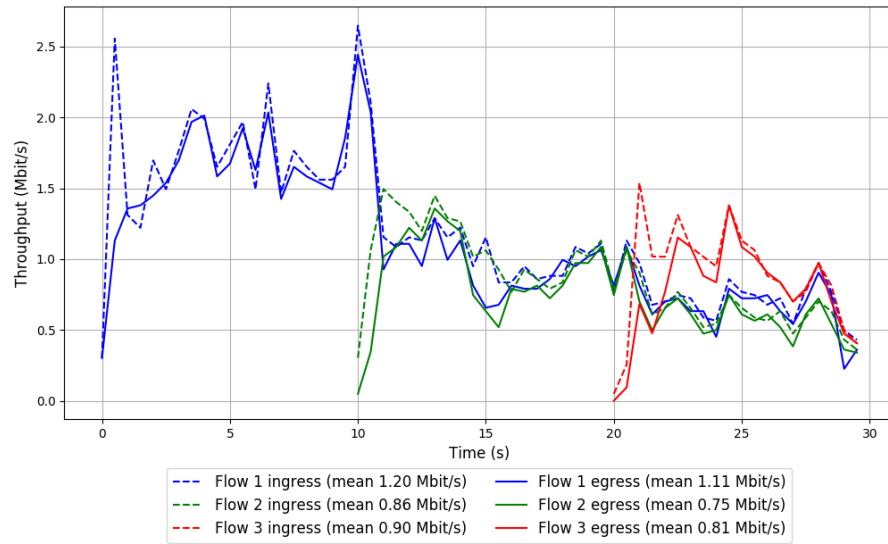
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 1.51 Mbit/s)   Flow 1 egress (mean 1.42 Mbit/s)
Flow 2 ingress (mean 0.83 Mbit/s)   Flow 2 egress (mean 0.76 Mbit/s)
Flow 3 ingress (mean 0.78 Mbit/s)   Flow 3 egress (mean 0.72 Mbit/s)

Flow 1 (95th percentile 376.12 ms)   Flow 2 (95th percentile 380.57 ms)   Flow 3 (95th percentile 379.62 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-02-17 04:30:02
End at: 2018-02-17 04:30:32
Local clock offset: -11.93 ms
Remote clock offset: -20.071 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 376.489 ms
Loss rate: 9.90%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 375.120 ms
Loss rate: 7.26%
-- Flow 2:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 377.192 ms
Loss rate: 13.40%
-- Flow 3:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 379.067 ms
Loss rate: 13.79%
```

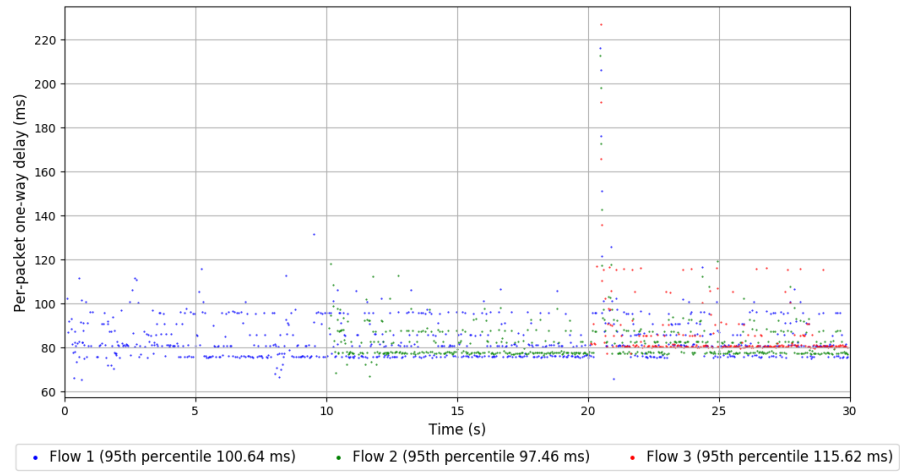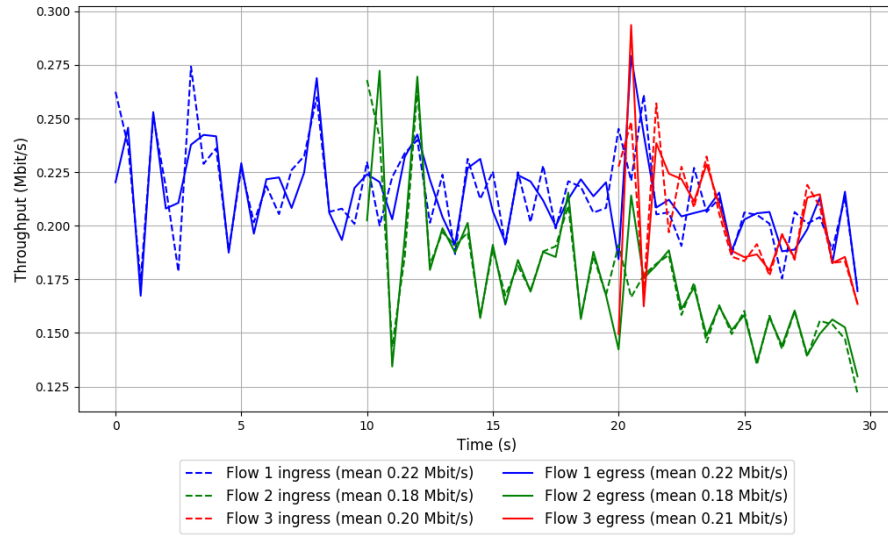Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 1.20 Mbit/s)   Flow 1 egress (mean 1.11 Mbit/s)
Flow 2 ingress (mean 0.86 Mbit/s)   Flow 2 egress (mean 0.75 Mbit/s)
Flow 3 ingress (mean 0.90 Mbit/s)   Flow 3 egress (mean 0.81 Mbit/s)

Flow 1 (95th percentile 375.12 ms)   Flow 2 (95th percentile 377.19 ms)   Flow 3 (95th percentile 379.07 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-02-17 03:41:06
End at: 2018-02-17 03:41:36
Local clock offset: -13.38 ms
Remote clock offset: -20.046 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 101.081 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 100.635 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 97.456 ms
Loss rate: 0.18%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 115.619 ms
Loss rate: 0.71%
```
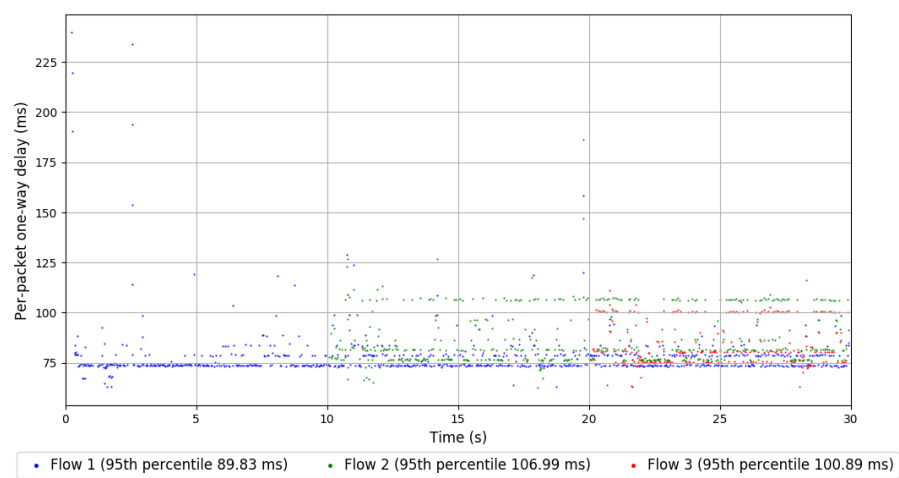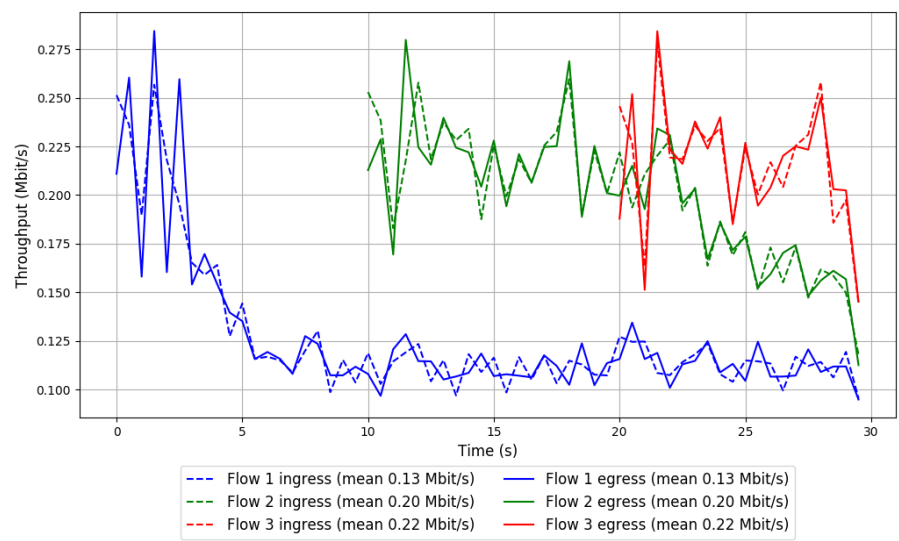
Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.22 Mbit/s)   Flow 1 egress (mean 0.22 Mbit/s)
Flow 2 ingress (mean 0.18 Mbit/s)   Flow 2 egress (mean 0.18 Mbit/s)
Flow 3 ingress (mean 0.20 Mbit/s)   Flow 3 egress (mean 0.21 Mbit/s)

Flow 1 (95th percentile 100.64 ms)   Flow 2 (95th percentile 97.46 ms)   Flow 3 (95th percentile 115.62 ms)
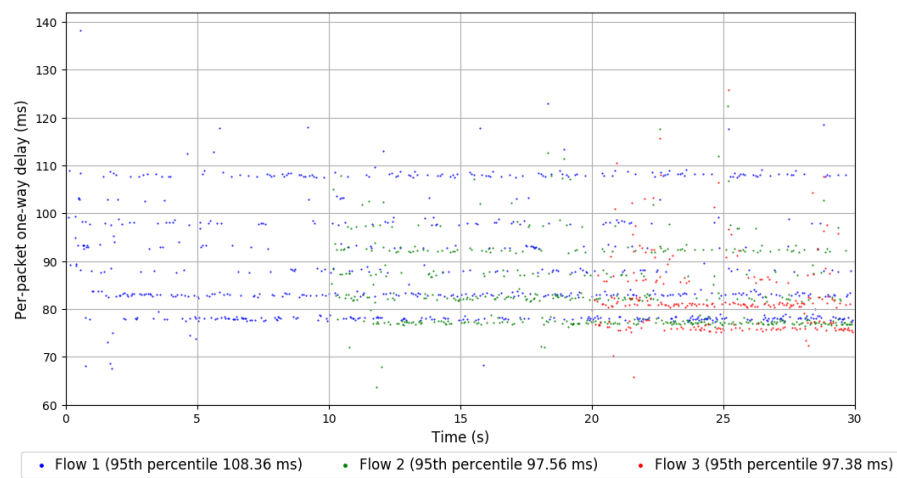
```
Run 2: Statistics of SCReAM

Start at: 2018-02-17 04:01:08
End at: 2018-02-17 04:01:38
Local clock offset: -13.122 ms
Remote clock offset: -12.958 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 106.579 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 89.834 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 106.989 ms
Loss rate: 0.31%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 100.887 ms
Loss rate: 0.63%
```

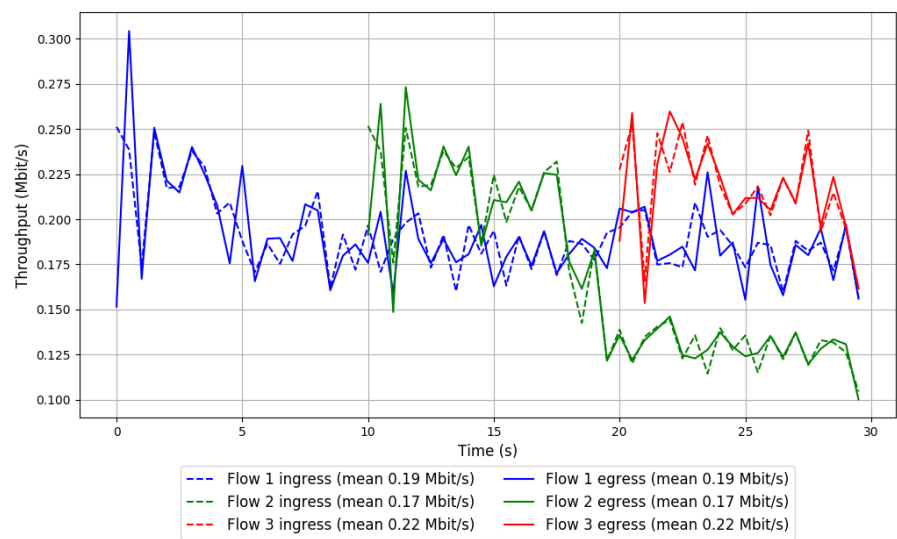# Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-02-17 04:21:07
End at: 2018-02-17 04:21:37
Local clock offset: -12.335 ms
Remote clock offset: -15.676 ms


# Below is generated by plot.py at 2018-02-17 05:37:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 108.108 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 108.361 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 97.555 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 97.379 ms
Loss rate: 0.65%
```
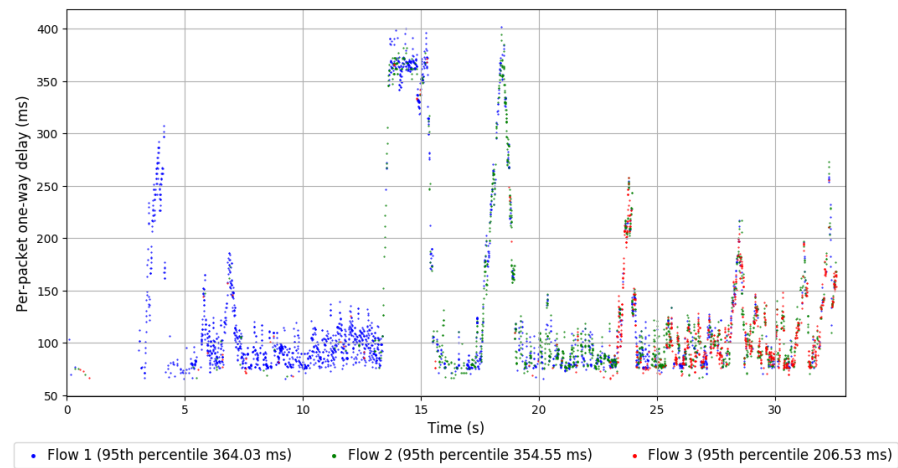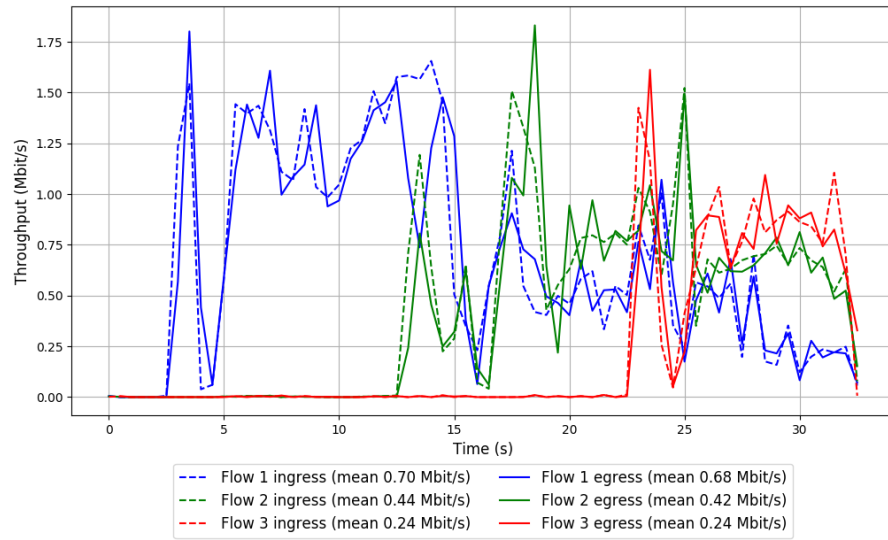
Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.19 Mbit/s) --- Flow 1 egress (mean 0.19 Mbit/s)
Flow 2 ingress (mean 0.17 Mbit/s) --- Flow 2 egress (mean 0.17 Mbit/s)
Flow 3 ingress (mean 0.22 Mbit/s) --- Flow 3 egress (mean 0.22 Mbit/s)

Flow 1 (95th percentile 108.36 ms) • Flow 2 (95th percentile 97.56 ms) • Flow 3 (95th percentile 97.38 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-02-17 03:42:12
End at: 2018-02-17 03:42:42
Local clock offset: -13.404 ms
Remote clock offset: -19.237 ms


# Below is generated by plot.py at 2018-02-17 05:37:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 357.220 ms
Loss rate: 3.03%
-- Flow 1:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 364.029 ms
Loss rate: 2.91%
-- Flow 2:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 354.545 ms
Loss rate: 4.27%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 206.527 ms
Loss rate: 1.09%
```

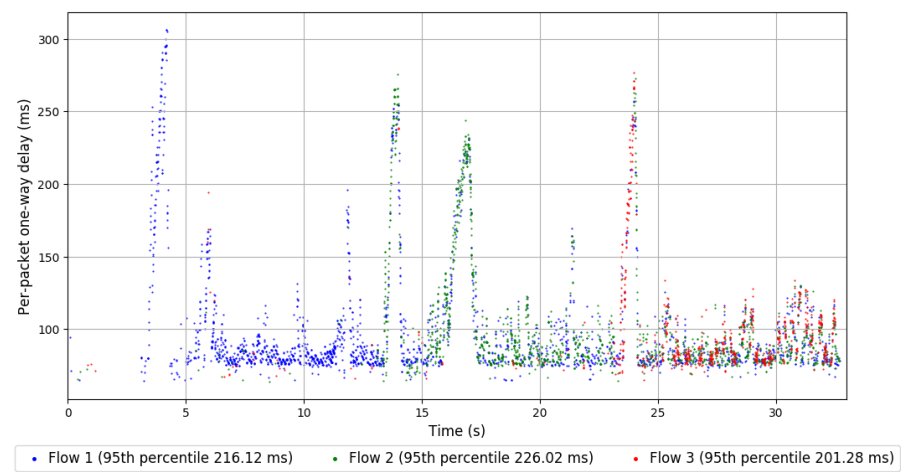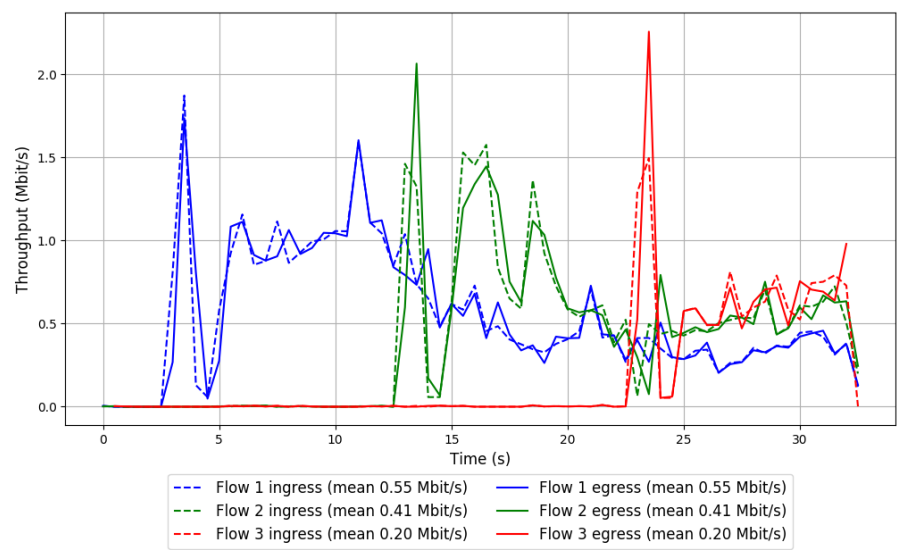Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-02-17 04:02:14
End at: 2018-02-17 04:02:44
Local clock offset: -12.776 ms
Remote clock offset: -15.035 ms

# Below is generated by plot.py at 2018-02-17 05:37:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 220.920 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 216.117 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 226.016 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 201.279 ms
Loss rate: 0.02%
```

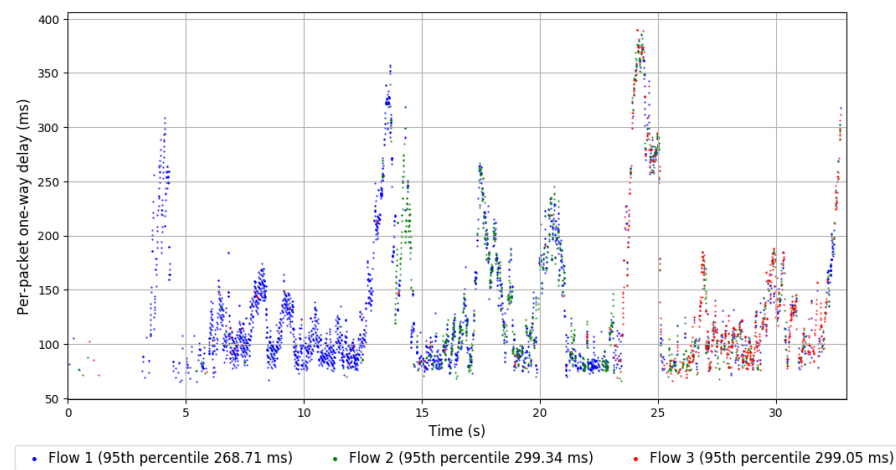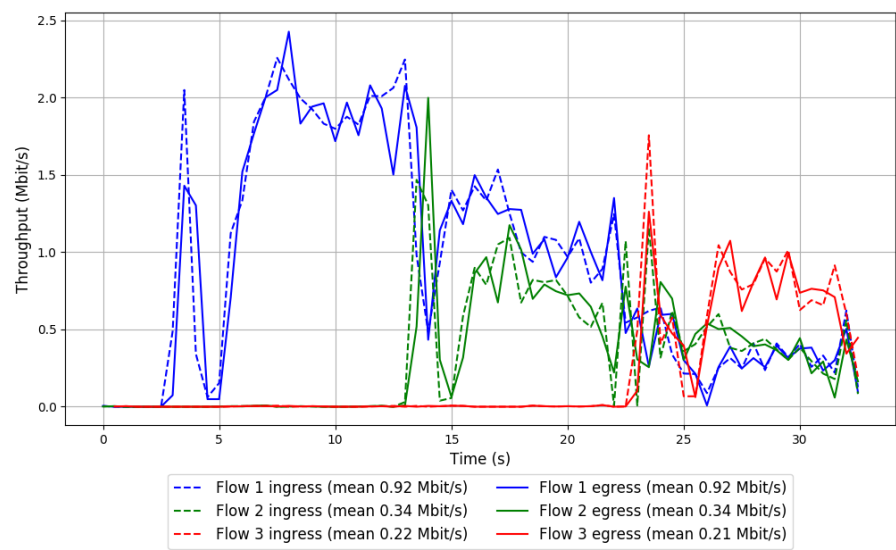Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.55 Mbit/s) --- Flow 1 egress (mean 0.55 Mbit/s)
Flow 2 ingress (mean 0.41 Mbit/s) --- Flow 2 egress (mean 0.41 Mbit/s)
Flow 3 ingress (mean 0.20 Mbit/s) --- Flow 3 egress (mean 0.20 Mbit/s)

Flow 1 (95th percentile 216.12 ms)   Flow 2 (95th percentile 226.02 ms)   Flow 3 (95th percentile 201.28 ms)

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```
Run 3: Statistics of WebRTC media

Start at: 2018-02-17 04:22:13
End at: 2018-02-17 04:22:43
Local clock offset: -10.853 ms
Remote clock offset: -16.128 ms

# Below is generated by plot.py at 2018-02-17 05:37:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 283.008 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 268.706 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 299.343 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 299.052 ms
Loss rate: 5.26%
```

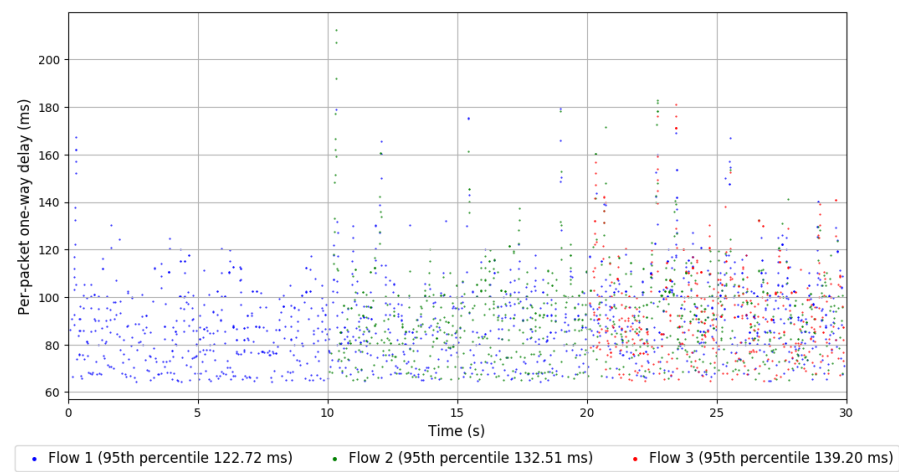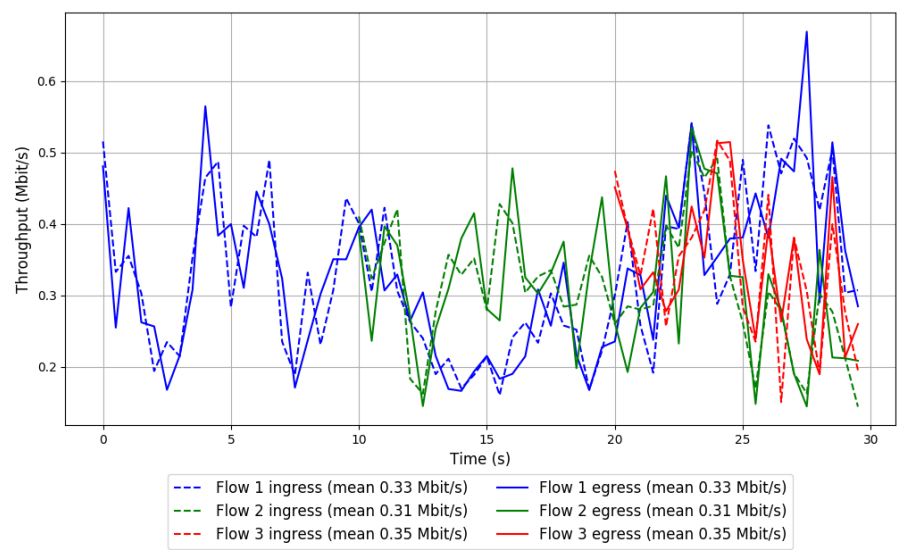Run 3: Report of WebRTC media — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-02-17 03:55:35
End at: 2018-02-17 03:56:05
Local clock offset: -14.423 ms
Remote clock offset: -16.1 ms


# Below is generated by plot.py at 2018-02-17 05:37:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 130.058 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 122.721 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 132.513 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 139.196 ms
Loss rate: 0.31%
```

Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-02-17 04:15:35
End at: 2018-02-17 04:16:05
Local clock offset: -8.63 ms
Remote clock offset: -12.252 ms


# Below is generated by plot.py at 2018-02-17 05:37:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 126.920 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 121.844 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 131.964 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 136.965 ms
Loss rate: 0.36%
```
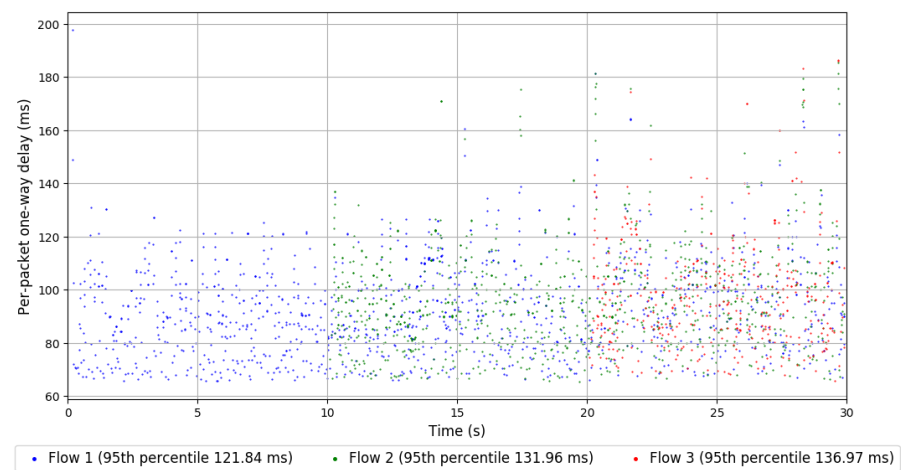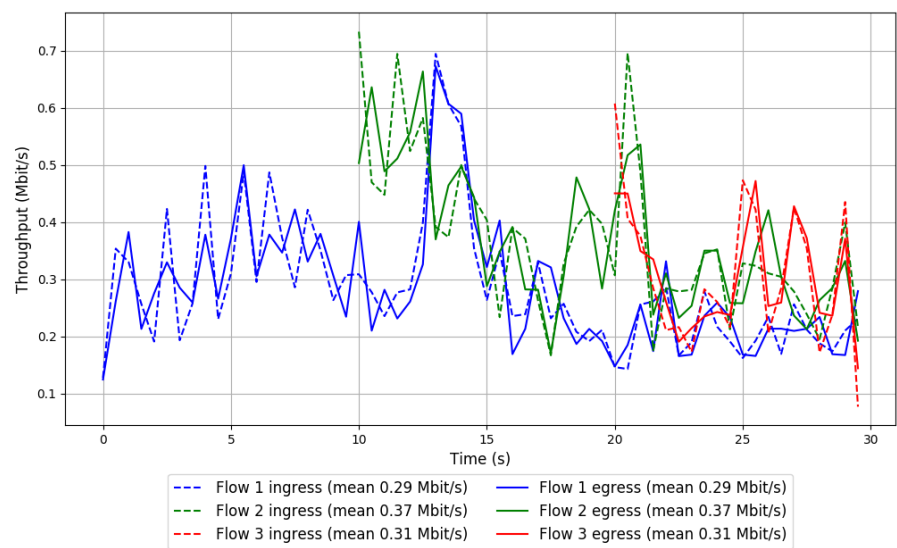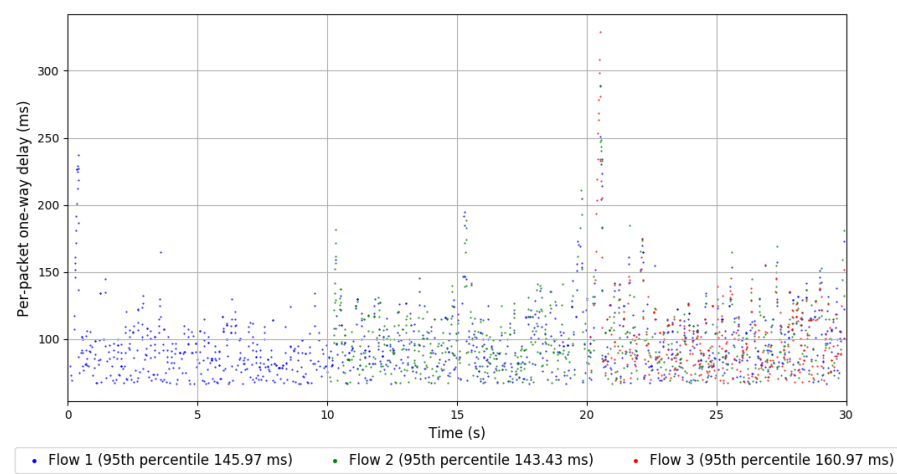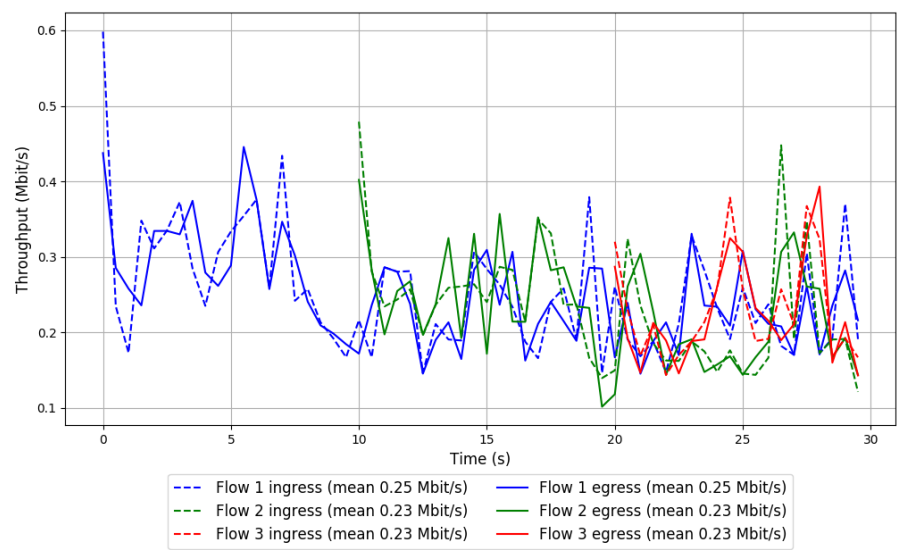
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-02-17 04:35:35
End at: 2018-02-17 04:36:05
Local clock offset: -6.158 ms
Remote clock offset: -18.574 ms


# Below is generated by plot.py at 2018-02-17 05:37:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 146.795 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 145.965 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 143.427 ms
Loss rate: 0.26%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 160.973 ms
Loss rate: 1.58%
```
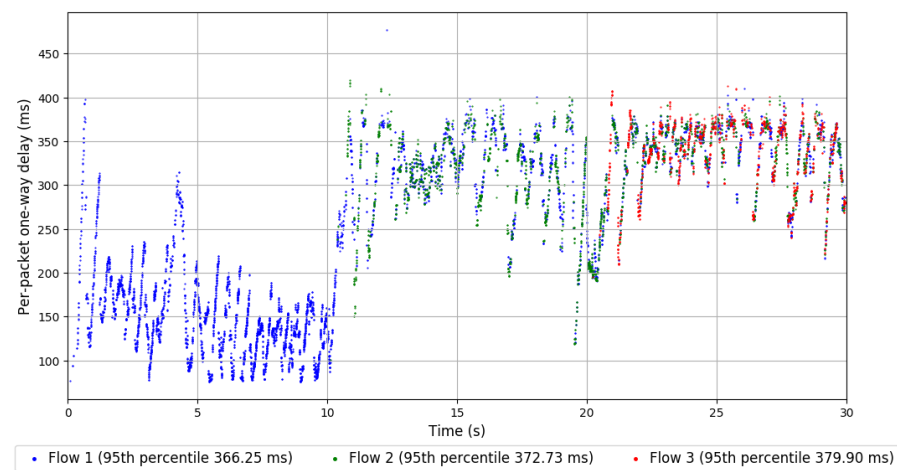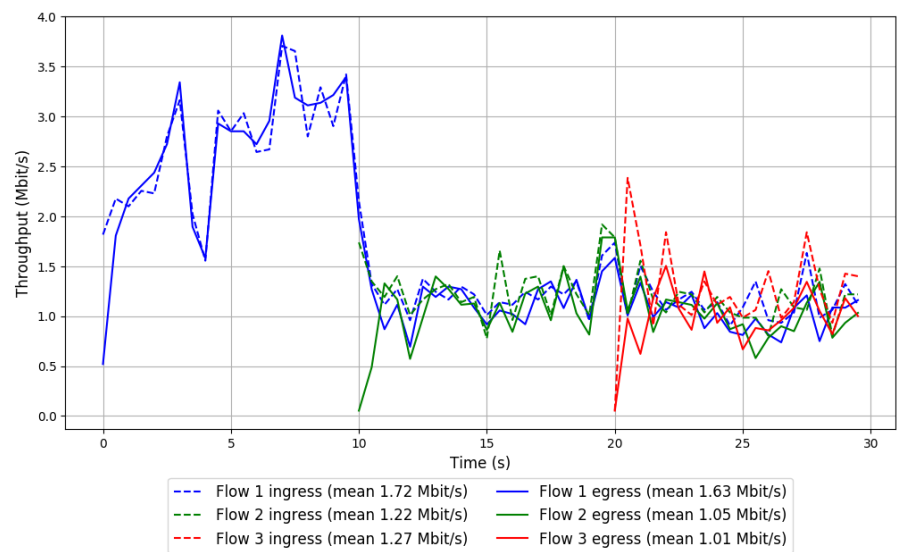
Run 3: Report of Sprout — Data Link

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

Start at: 2018-02-17 03:38:53
End at: 2018-02-17 03:39:23
Local clock offset: -10.667 ms
Remote clock offset: -17.573 ms

# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 370.626 ms
Loss rate: 10.40%
-- Flow 1:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 366.254 ms
Loss rate: 5.55%
-- Flow 2:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 372.728 ms
Loss rate: 14.58%
-- Flow 3:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 379.897 ms
Loss rate: 22.17%
```

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

- - - Flow 1 ingress (mean 1.72 Mbit/s)   —— Flow 1 egress (mean 1.63 Mbit/s)
- - - Flow 2 ingress (mean 1.22 Mbit/s)   —— Flow 2 egress (mean 1.05 Mbit/s)
- - - Flow 3 ingress (mean 1.27 Mbit/s)   —— Flow 3 egress (mean 1.01 Mbit/s)

• Flow 1 (95th percentile 366.25 ms)   • Flow 2 (95th percentile 372.73 ms)   • Flow 3 (95th percentile 379.90 ms)
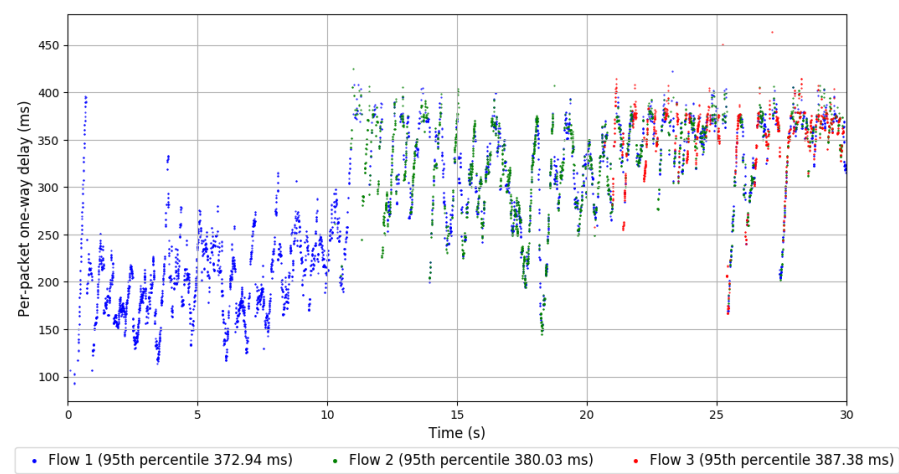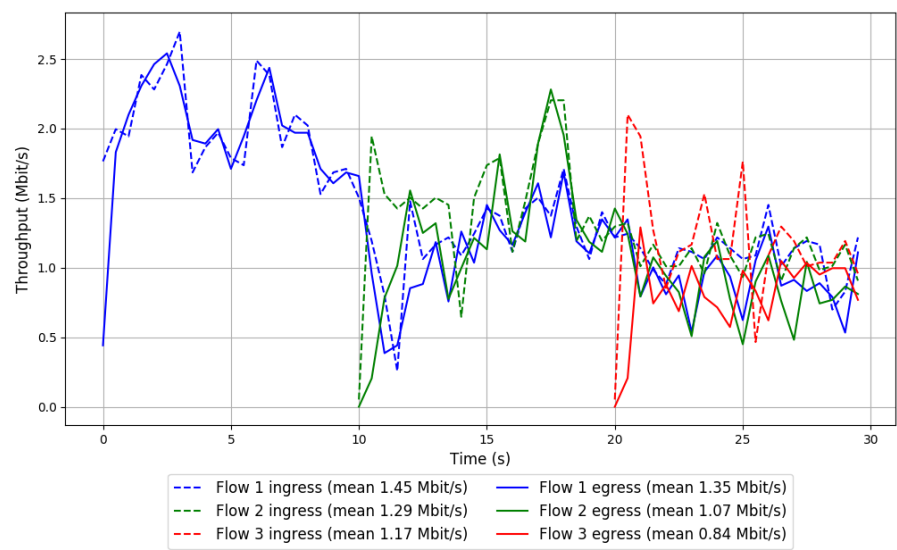
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-02-17 03:58:55
End at: 2018-02-17 03:59:25
Local clock offset: -15.253 ms
Remote clock offset: -22.118 ms


# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 377.309 ms
Loss rate: 14.17%
-- Flow 1:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 372.945 ms
Loss rate: 7.57%
-- Flow 2:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 380.026 ms
Loss rate: 17.87%
-- Flow 3:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 387.385 ms
Loss rate: 30.76%
```

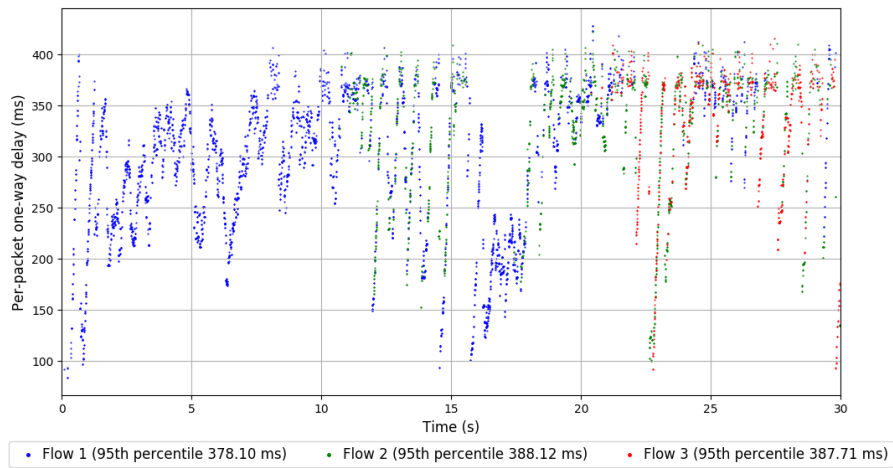# Run 2: Report of TaoVA-100x — Data Link

- Flow 1 ingress (mean 1.45 Mbit/s)
- Flow 1 egress (mean 1.35 Mbit/s)
- Flow 2 ingress (mean 1.29 Mbit/s)
- Flow 2 egress (mean 1.07 Mbit/s)
- Flow 3 ingress (mean 1.17 Mbit/s)
- Flow 3 egress (mean 0.84 Mbit/s)

- Flow 1 (95th percentile 372.94 ms)
- Flow 2 (95th percentile 380.03 ms)
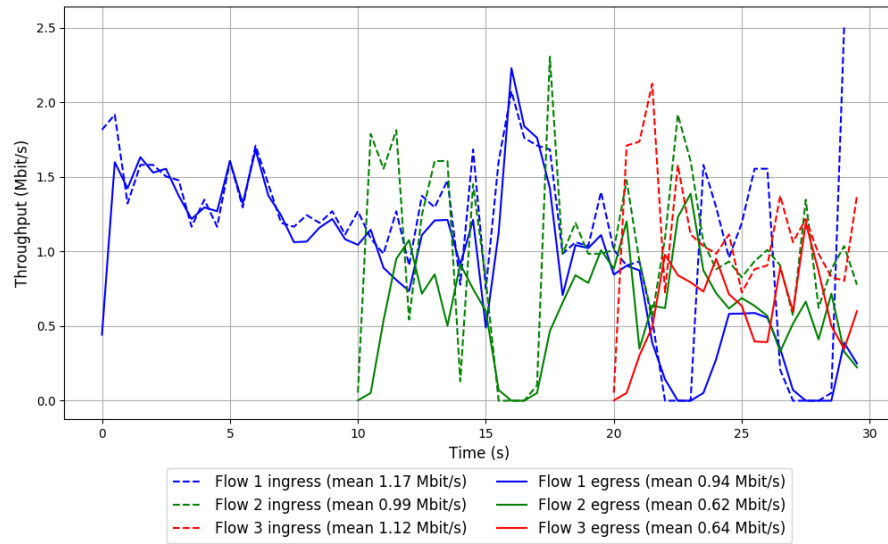- Flow 3 (95th percentile 387.38 ms)

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

Start at: 2018-02-17 04:18:54
End at: 2018-02-17 04:19:24
Local clock offset: -10.558 ms
Remote clock offset: -16.594 ms

# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 382.423 ms
Loss rate: 28.91%
-- Flow 1:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 378.098 ms
Loss rate: 18.32%
-- Flow 2:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 388.124 ms
Loss rate: 38.20%
-- Flow 3:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 387.710 ms
Loss rate: 45.02%
```

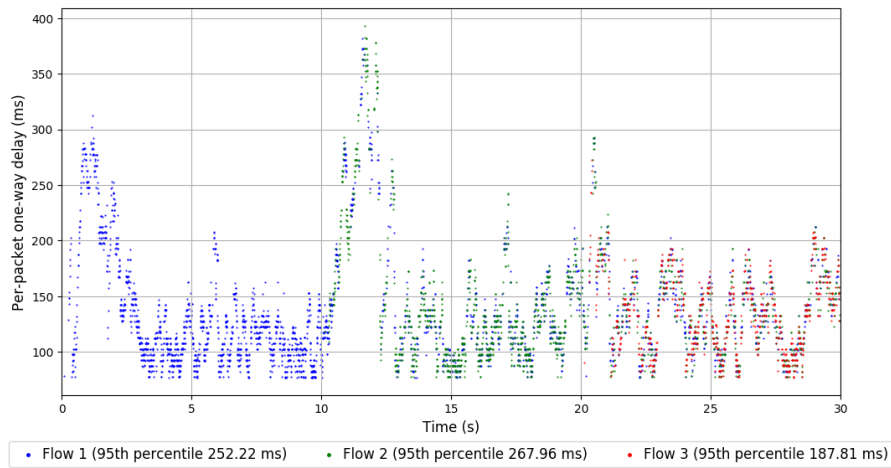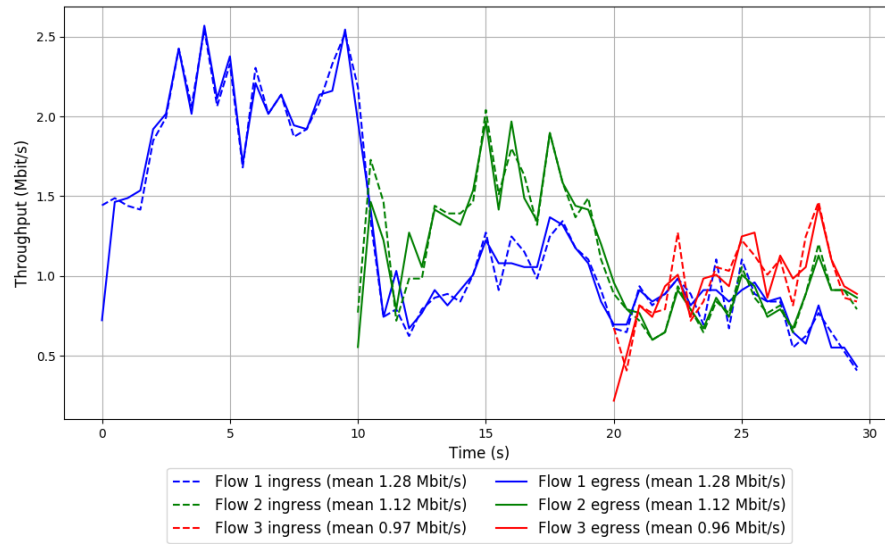# Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.17 Mbit/s) --- Flow 1 egress (mean 0.94 Mbit/s)
Flow 2 ingress (mean 0.99 Mbit/s) --- Flow 2 egress (mean 0.62 Mbit/s)
Flow 3 ingress (mean 1.12 Mbit/s) --- Flow 3 egress (mean 0.64 Mbit/s)

Flow 1 (95th percentile 378.10 ms)   Flow 2 (95th percentile 388.12 ms)   Flow 3 (95th percentile 387.71 ms)

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```
Run 1: Statistics of TCP Vegas

Start at: 2018-02-17 03:51:09
End at: 2018-02-17 03:51:39
Local clock offset: -14.618 ms
Remote clock offset: -15.785 ms


# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 247.786 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 252.216 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 267.963 ms
Loss rate: 0.54%
-- Flow 3:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 187.812 ms
Loss rate: 1.88%
```

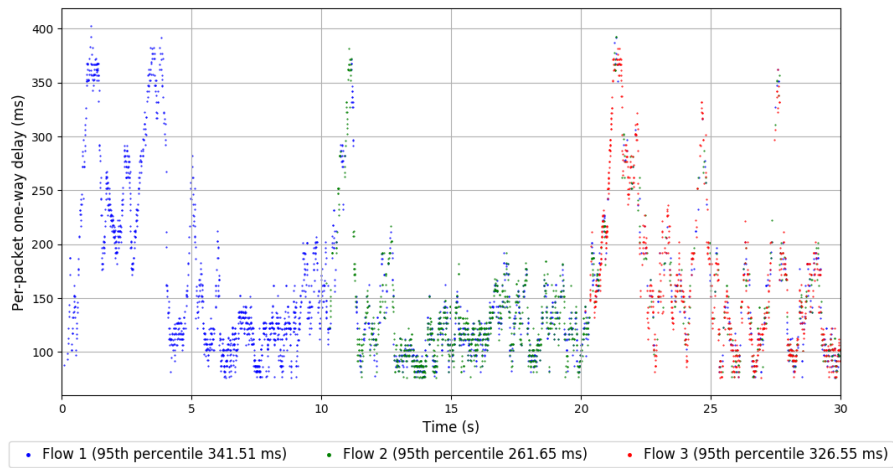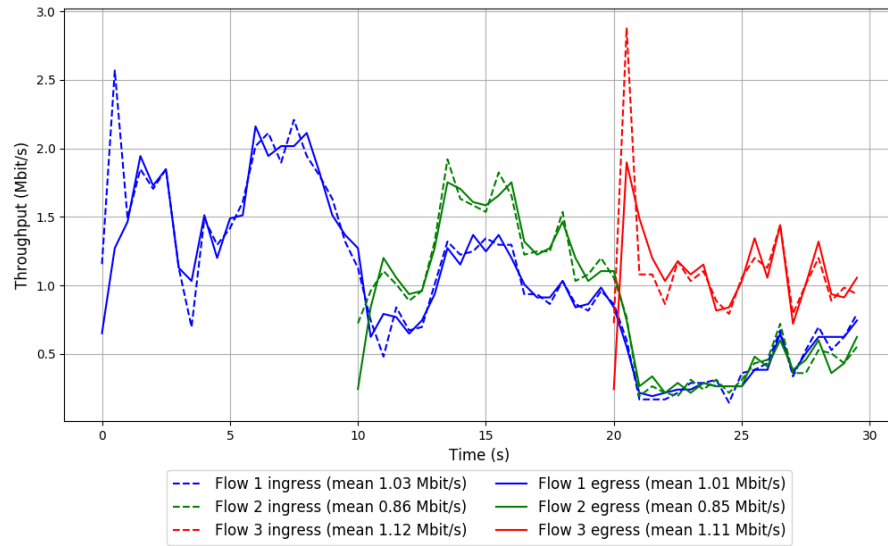Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-02-17 04:11:09
End at: 2018-02-17 04:11:39
Local clock offset: -12.524 ms
Remote clock offset: -13.604 ms


# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 317.470 ms
Loss rate: 1.81%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 341.507 ms
Loss rate: 2.11%
-- Flow 2:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 261.652 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 326.545 ms
Loss rate: 2.26%
```
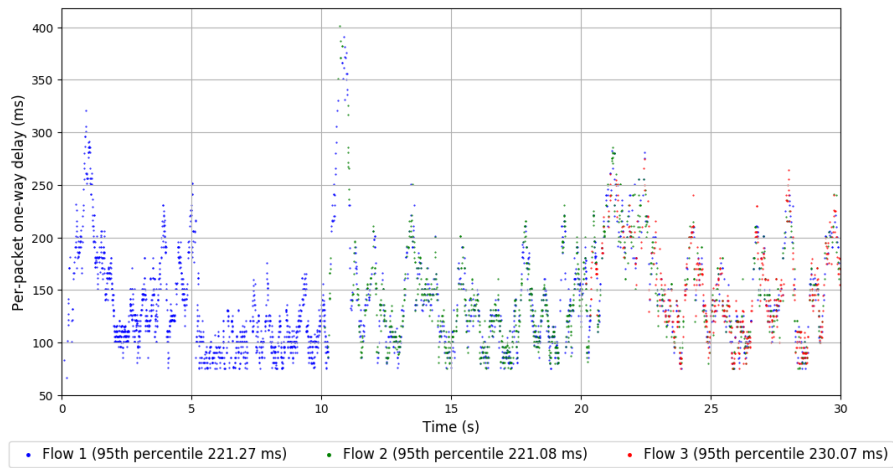
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 1.03 Mbit/s) — Flow 1 egress (mean 1.01 Mbit/s)
Flow 2 ingress (mean 0.86 Mbit/s) — Flow 2 egress (mean 0.85 Mbit/s)
Flow 3 ingress (mean 1.12 Mbit/s) — Flow 3 egress (mean 1.11 Mbit/s)

Flow 1 (95th percentile 341.51 ms) • Flow 2 (95th percentile 261.65 ms) • Flow 3 (95th percentile 326.55 ms)
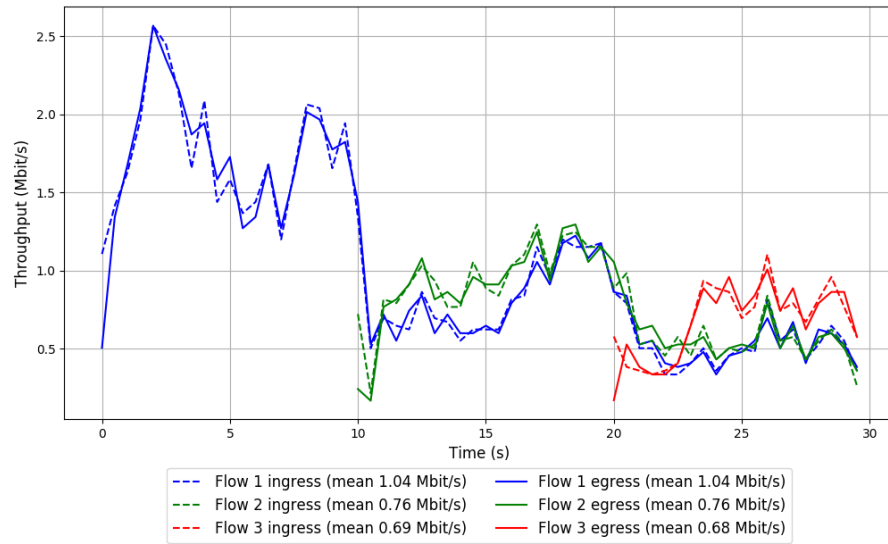
```
Run 3: Statistics of TCP Vegas

Start at: 2018-02-17 04:31:08
End at: 2018-02-17 04:31:38
Local clock offset: -11.549 ms
Remote clock offset: -19.375 ms


# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 225.033 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 221.274 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 221.079 ms
Loss rate: 1.34%
-- Flow 3:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 230.071 ms
Loss rate: 1.93%
```
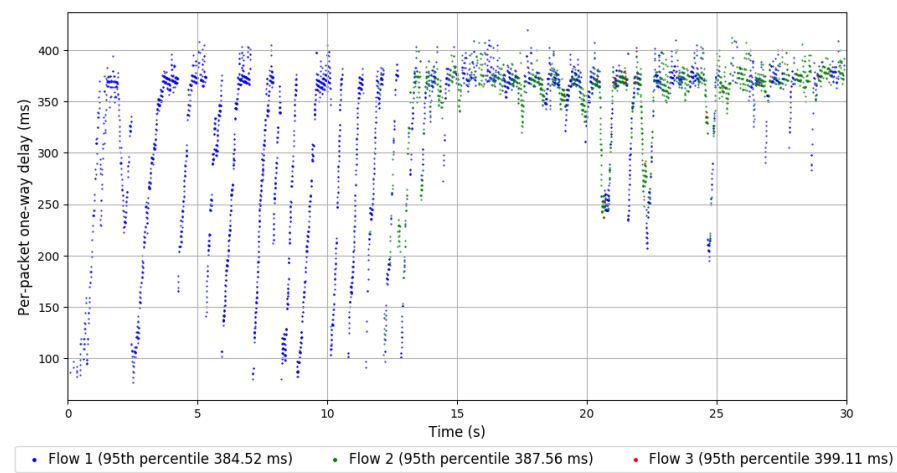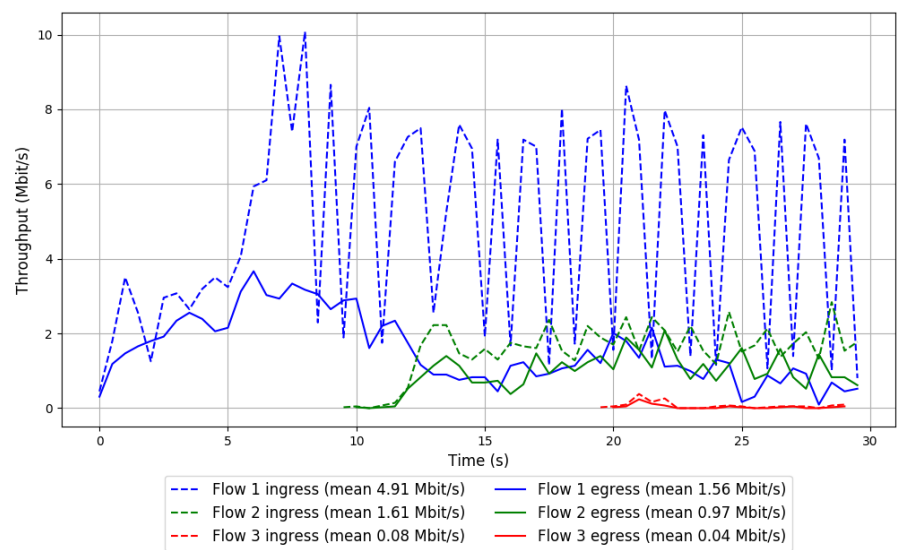
Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-02-17 03:37:45
End at: 2018-02-17 03:38:15
Local clock offset: -11.156 ms
Remote clock offset: -18.987 ms

# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 385.575 ms
Loss rate: 63.26%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 384.519 ms
Loss rate: 68.33%
-- Flow 2:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 387.563 ms
Loss rate: 40.27%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 399.105 ms
Loss rate: 51.61%
```
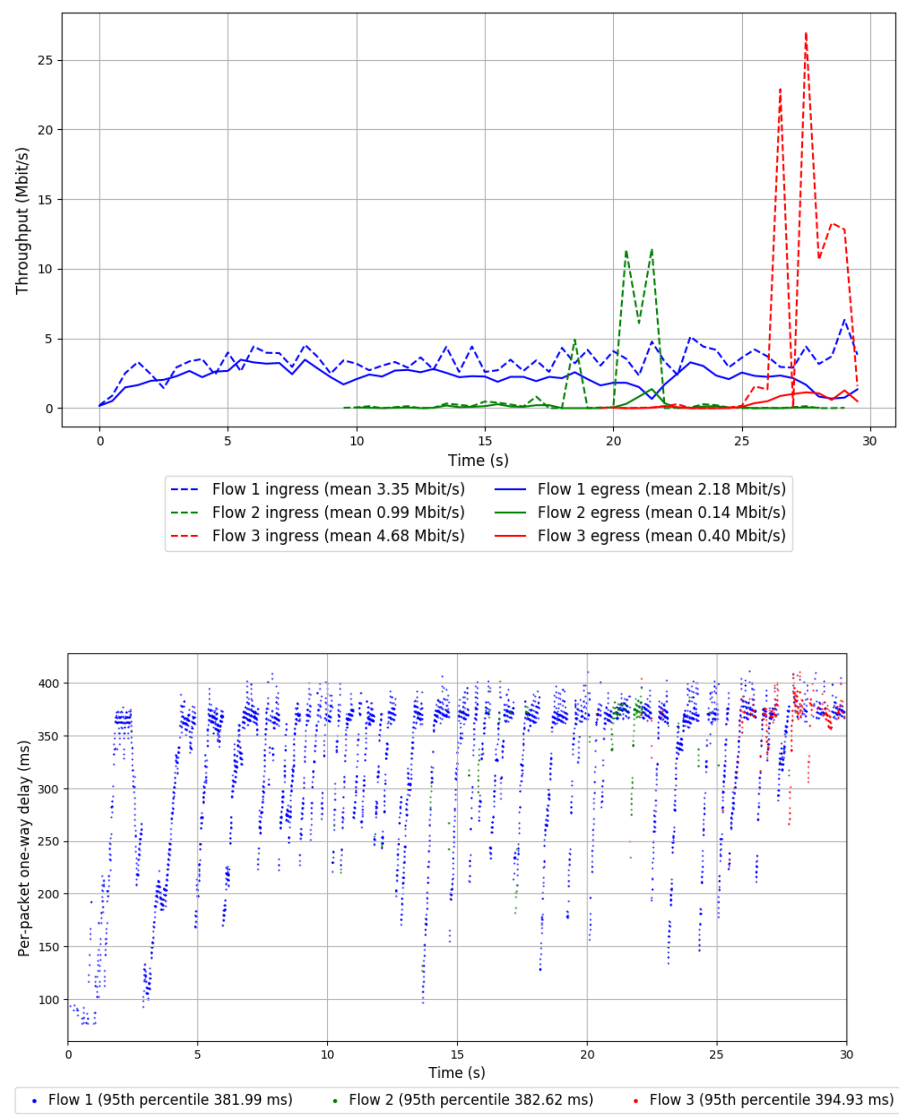
Run 1: Report of Verus — Data Link

- Flow 1 ingress (mean 4.91 Mbit/s)
- Flow 1 egress (mean 1.56 Mbit/s)
- Flow 2 ingress (mean 1.61 Mbit/s)
- Flow 2 egress (mean 0.97 Mbit/s)
- Flow 3 ingress (mean 0.08 Mbit/s)
- Flow 3 egress (mean 0.04 Mbit/s)

- Flow 1 (95th percentile 384.52 ms)
- Flow 2 (95th percentile 387.56 ms)
- Flow 3 (95th percentile 399.11 ms)

```
Run 2: Statistics of Verus

Start at: 2018-02-17 03:57:49
End at: 2018-02-17 03:58:19
Local clock offset: -10.961 ms
Remote clock offset: -13.034 ms


# Below is generated by plot.py at 2018-02-17 05:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 383.036 ms
Loss rate: 56.91%
-- Flow 1:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 381.985 ms
Loss rate: 35.25%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 382.621 ms
Loss rate: 87.01%
-- Flow 3:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 394.928 ms
Loss rate: 91.66%
```
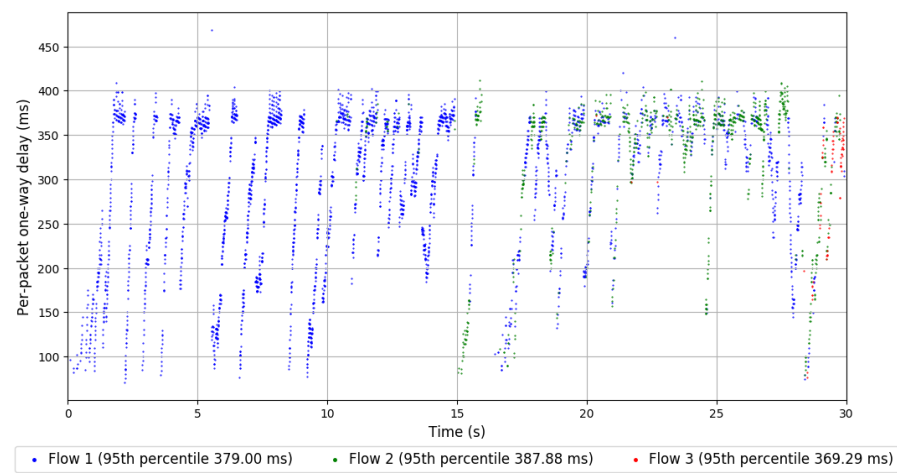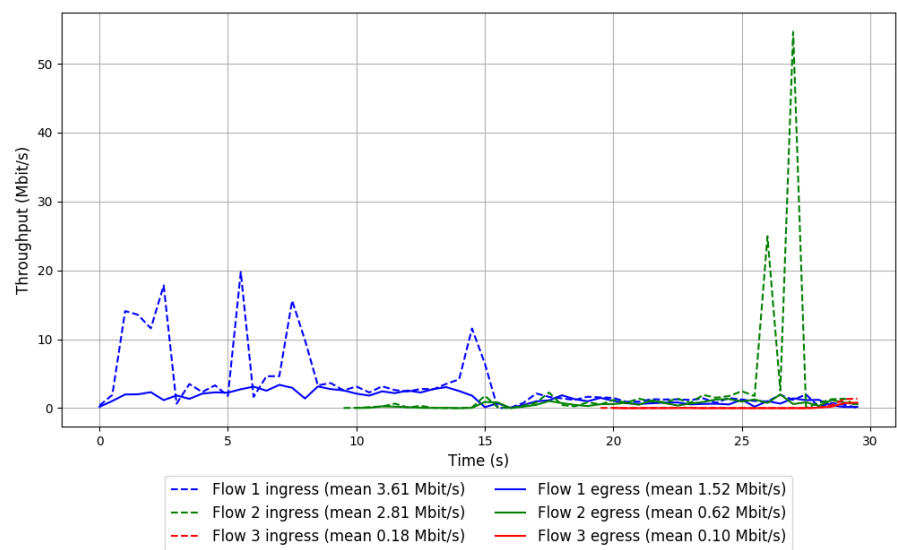
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-02-17 04:17:47
End at: 2018-02-17 04:18:17
Local clock offset: -11.901 ms
Remote clock offset: -14.485 ms


# Below is generated by plot.py at 2018-02-17 05:38:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 381.810 ms
Loss rate: 64.65%
-- Flow 1:
Average throughput: 1.52 Mbit/s
95th percentile per-packet one-way delay: 378.997 ms
Loss rate: 57.69%
-- Flow 2:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 387.875 ms
Loss rate: 78.58%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 369.293 ms
Loss rate: 45.27%
```
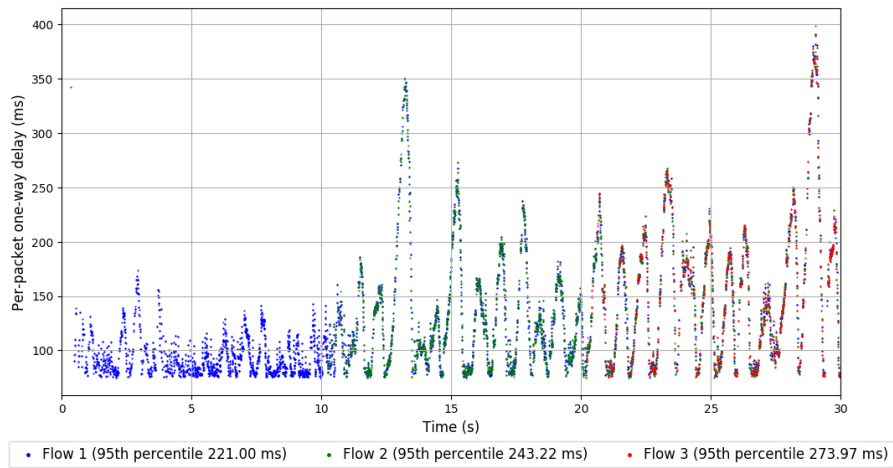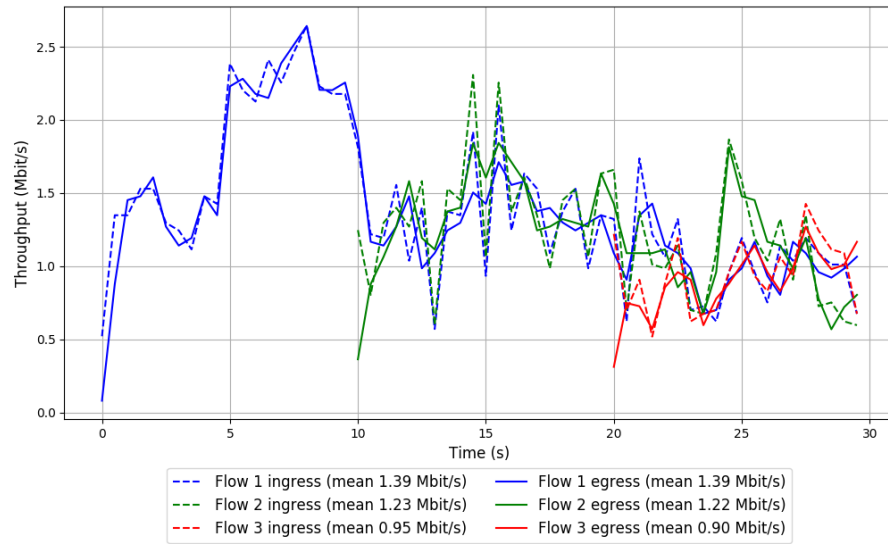
Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 3.61 Mbit/s)   Flow 1 egress (mean 1.52 Mbit/s)
Flow 2 ingress (mean 2.81 Mbit/s)   Flow 2 egress (mean 0.62 Mbit/s)
Flow 3 ingress (mean 0.18 Mbit/s)   Flow 3 egress (mean 0.10 Mbit/s)

• Flow 1 (95th percentile 379.00 ms)   • Flow 2 (95th percentile 387.88 ms)   • Flow 3 (95th percentile 369.29 ms)

```
Run 1: Statistics of Copa

Start at: 2018-02-17 03:48:56
End at: 2018-02-17 03:49:26
Local clock offset: -14.235 ms
Remote clock offset: -17.245 ms


# Below is generated by plot.py at 2018-02-17 05:38:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 237.707 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 221.003 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 243.215 ms
Loss rate: 1.77%
-- Flow 3:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 273.971 ms
Loss rate: 5.71%
```
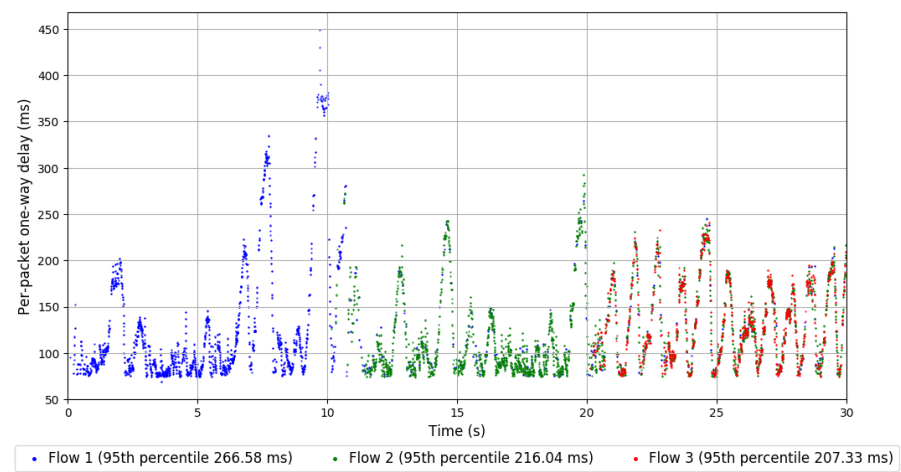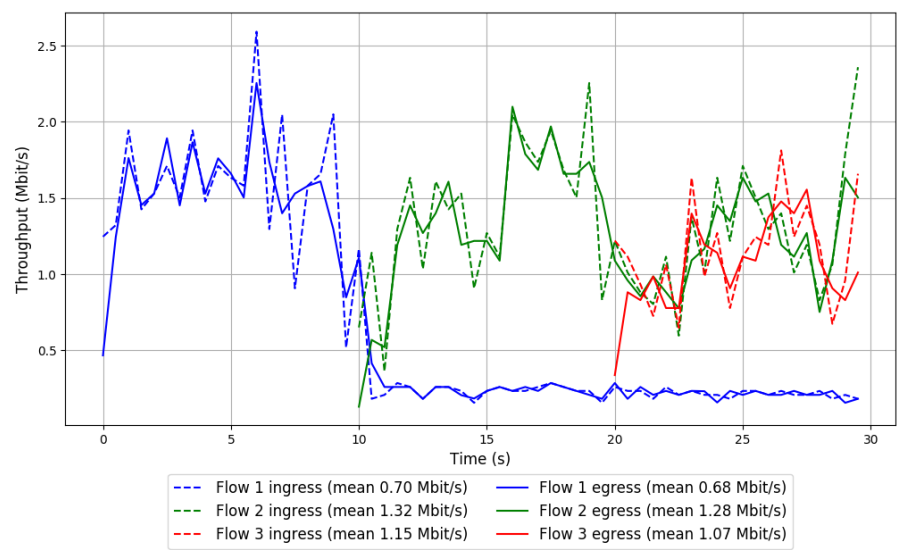
Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 1.39 Mbit/s) —— Flow 1 egress (mean 1.39 Mbit/s)
Flow 2 ingress (mean 1.23 Mbit/s) —— Flow 2 egress (mean 1.22 Mbit/s)
Flow 3 ingress (mean 0.95 Mbit/s) —— Flow 3 egress (mean 0.90 Mbit/s)

• Flow 1 (95th percentile 221.00 ms)   • Flow 2 (95th percentile 243.22 ms)   • Flow 3 (95th percentile 273.97 ms)

```
Run 2: Statistics of Copa

Start at: 2018-02-17 04:08:56
End at: 2018-02-17 04:09:26
Local clock offset: -10.853 ms
Remote clock offset: -11.769 ms

# Below is generated by plot.py at 2018-02-17 05:38:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 220.071 ms
Loss rate: 4.32%
-- Flow 1:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 266.581 ms
Loss rate: 2.72%
-- Flow 2:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 216.037 ms
Loss rate: 3.98%
-- Flow 3:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 207.327 ms
Loss rate: 8.04%
```
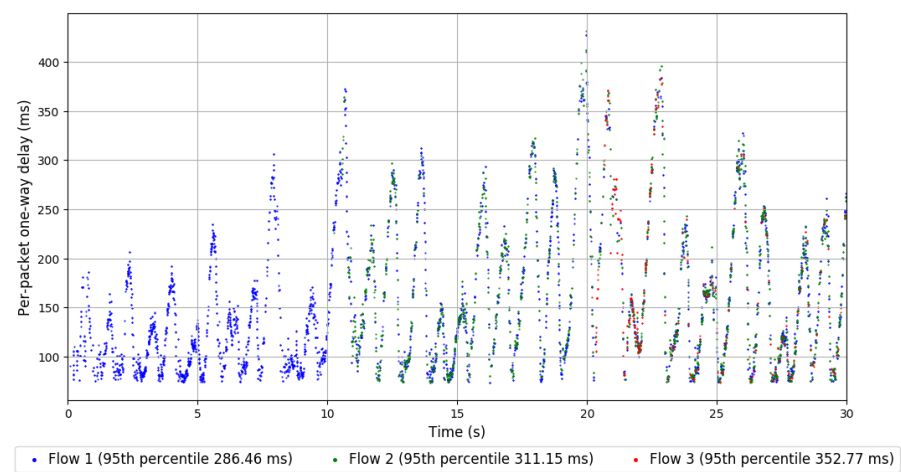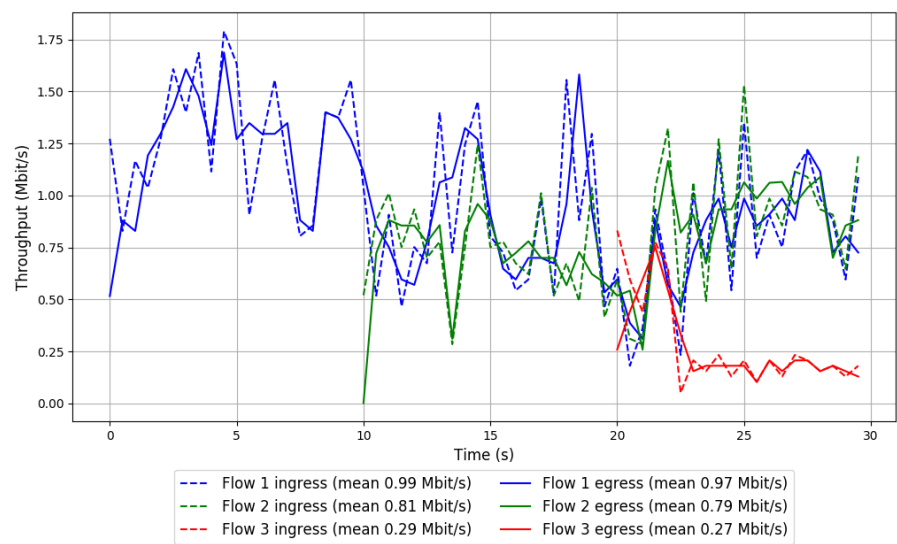
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 0.70 Mbit/s) Flow 1 egress (mean 0.68 Mbit/s)
Flow 2 ingress (mean 1.32 Mbit/s) Flow 2 egress (mean 1.28 Mbit/s)
Flow 3 ingress (mean 1.15 Mbit/s) Flow 3 egress (mean 1.07 Mbit/s)

Flow 1 (95th percentile 266.58 ms)   Flow 2 (95th percentile 216.04 ms)   Flow 3 (95th percentile 207.33 ms)

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```
Run 3: Statistics of Copa

Start at: 2018-02-17 04:28:56
End at: 2018-02-17 04:29:26
Local clock offset: -11.577 ms
Remote clock offset: -17.034 ms


# Below is generated by plot.py at 2018-02-17 05:38:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 296.868 ms
Loss rate: 3.01%
-- Flow 1:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 286.461 ms
Loss rate: 2.31%
-- Flow 2:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 311.148 ms
Loss rate: 3.30%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 352.773 ms
Loss rate: 8.55%
```
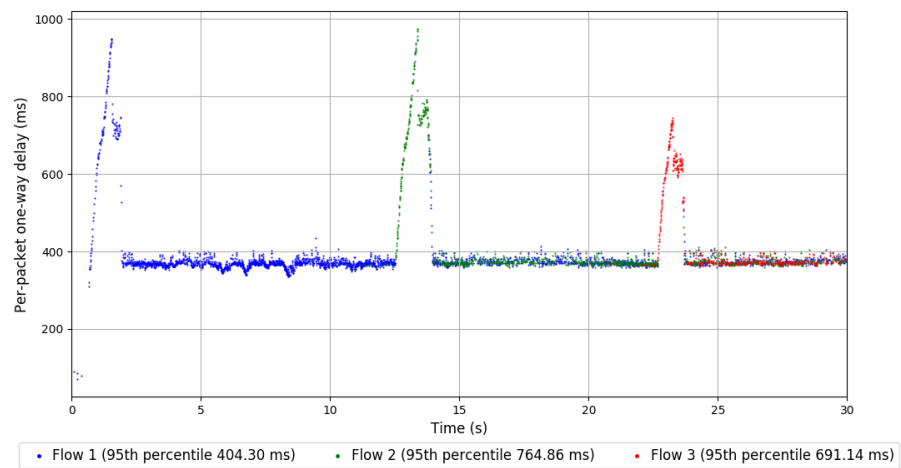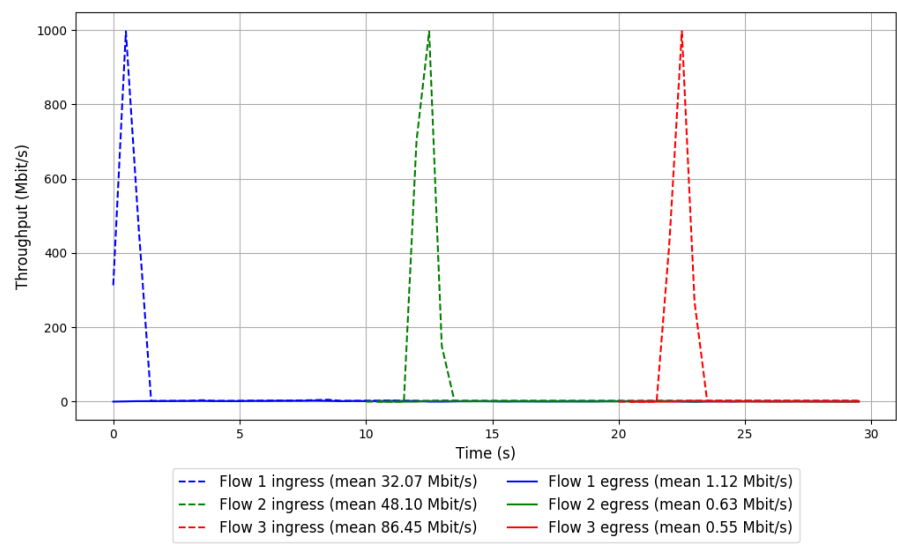
Run 3: Report of Copa — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-02-17 03:45:31
End at: 2018-02-17 03:46:01
Local clock offset: -12.758 ms
Remote clock offset: -16.039 ms

# Below is generated by plot.py at 2018-02-17 05:38:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 692.503 ms
Loss rate: 98.18%
-- Flow 1:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 404.296 ms
Loss rate: 96.53%
-- Flow 2:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 764.859 ms
Loss rate: 98.73%
-- Flow 3:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 691.141 ms
Loss rate: 99.40%
```
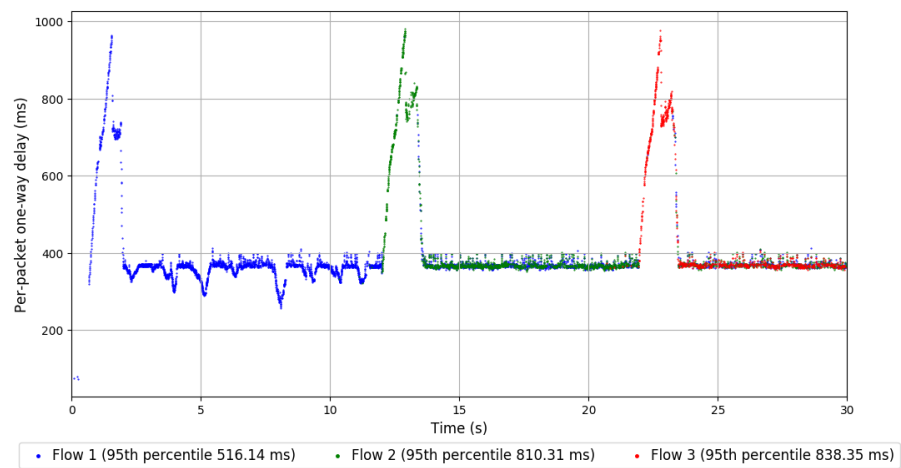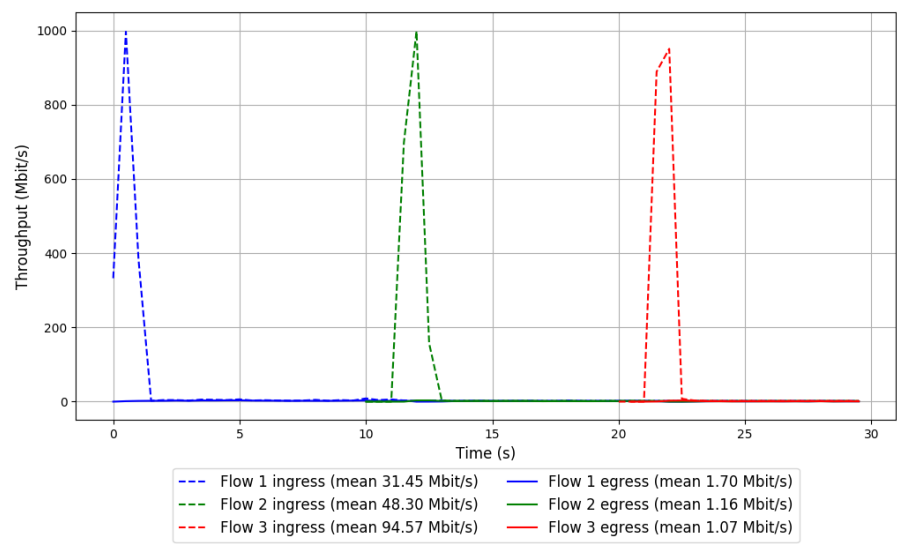
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 32.07 Mbit/s) --- Flow 1 egress (mean 1.12 Mbit/s)
Flow 2 ingress (mean 48.10 Mbit/s) --- Flow 2 egress (mean 0.63 Mbit/s)
Flow 3 ingress (mean 86.45 Mbit/s) --- Flow 3 egress (mean 0.55 Mbit/s)

Flow 1 (95th percentile 404.30 ms)   Flow 2 (95th percentile 764.86 ms)   Flow 3 (95th percentile 691.14 ms)

```
Run 2: Statistics of FillP

Start at: 2018-02-17 04:05:33
End at: 2018-02-17 04:06:03
Local clock offset: -12.798 ms
Remote clock offset: -13.004 ms

# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 761.707 ms
Loss rate: 97.07%
-- Flow 1:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 516.139 ms
Loss rate: 94.61%
-- Flow 2:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 810.311 ms
Loss rate: 97.63%
-- Flow 3:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 838.347 ms
Loss rate: 98.95%
```
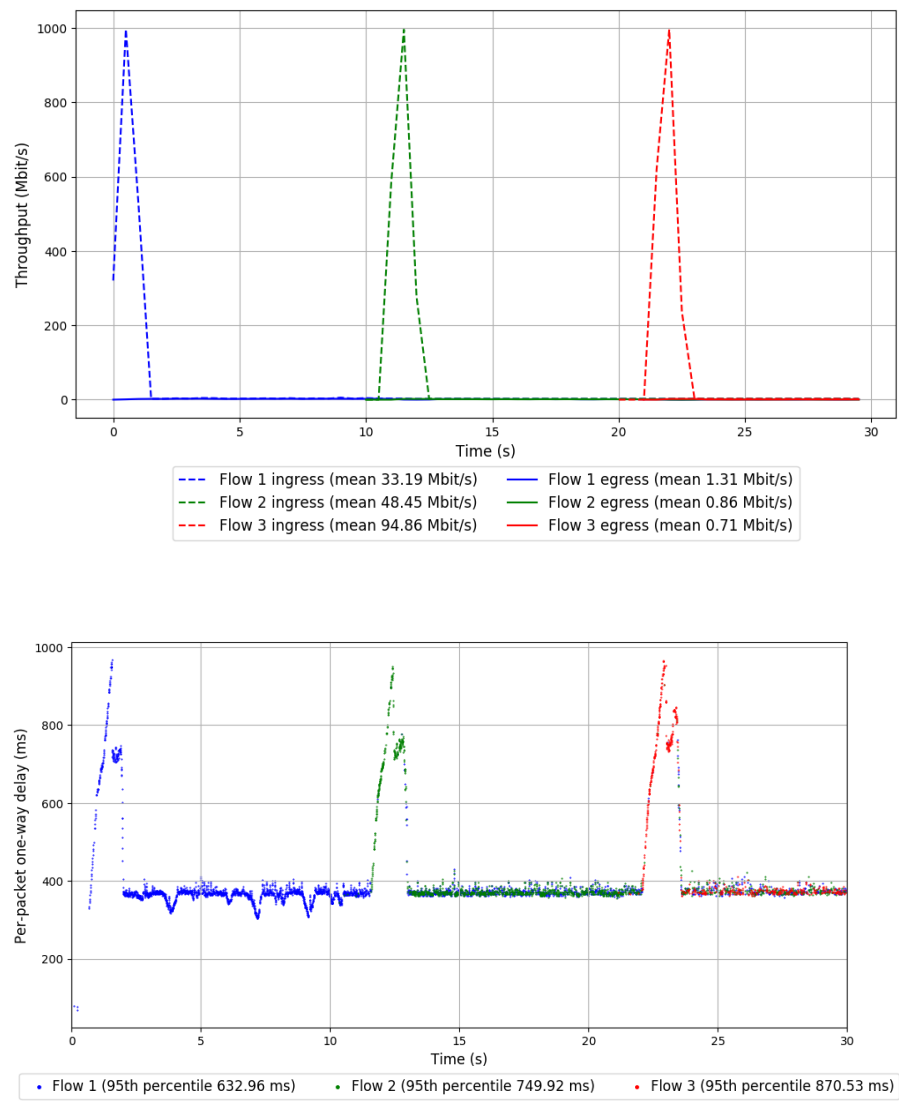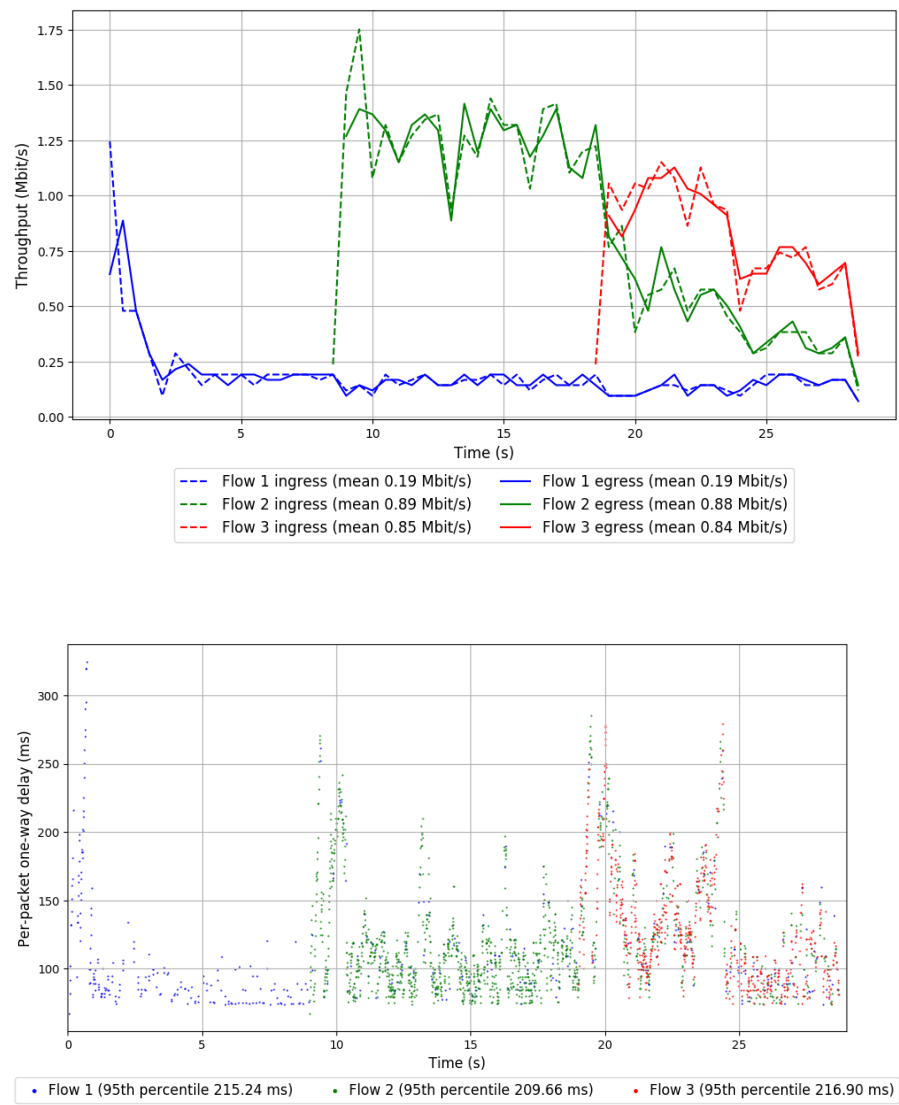
Run 2: Report of FillP — Data Link

- - - Flow 1 ingress (mean 31.45 Mbit/s) —— Flow 1 egress (mean 1.70 Mbit/s)
- - - Flow 2 ingress (mean 48.30 Mbit/s) —— Flow 2 egress (mean 1.16 Mbit/s)
- - - Flow 3 ingress (mean 94.57 Mbit/s) —— Flow 3 egress (mean 1.07 Mbit/s)

• Flow 1 (95th percentile 516.14 ms)   • Flow 2 (95th percentile 810.31 ms)   • Flow 3 (95th percentile 838.35 ms)

```
Run 3: Statistics of FillP

Start at: 2018-02-17 04:25:33
End at: 2018-02-17 04:26:03
Local clock offset: -12.687 ms
Remote clock offset: -17.749 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 746.345 ms
Loss rate: 97.85%
-- Flow 1:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 632.956 ms
Loss rate: 96.05%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 749.923 ms
Loss rate: 98.26%
-- Flow 3:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 870.526 ms
Loss rate: 99.34%
```
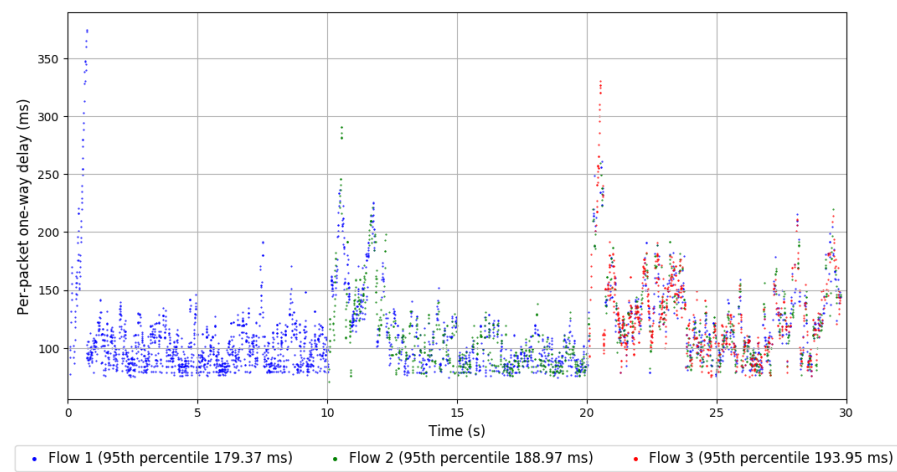
Run 3: Report of FillP — Data Link

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

Start at: 2018-02-17 03:53:22
End at: 2018-02-17 03:53:52
Local clock offset: -13.176 ms
Remote clock offset: -13.706 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 211.568 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 215.240 ms
Loss rate: 1.31%
-- Flow 2:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 209.657 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 216.896 ms
Loss rate: 2.31%
```

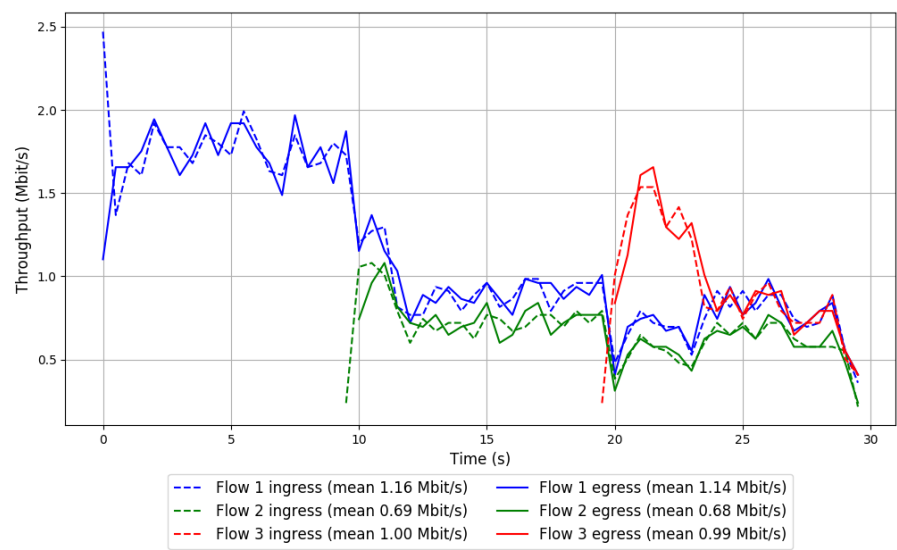Run 1: Report of Indigo-1-32 — Data Link

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

Start at: 2018-02-17 04:13:22
End at: 2018-02-17 04:13:52
Local clock offset: -12.443 ms
Remote clock offset: -14.335 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 182.129 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 179.371 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 188.974 ms
Loss rate: 1.68%
-- Flow 3:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 193.946 ms
Loss rate: 1.85%
```

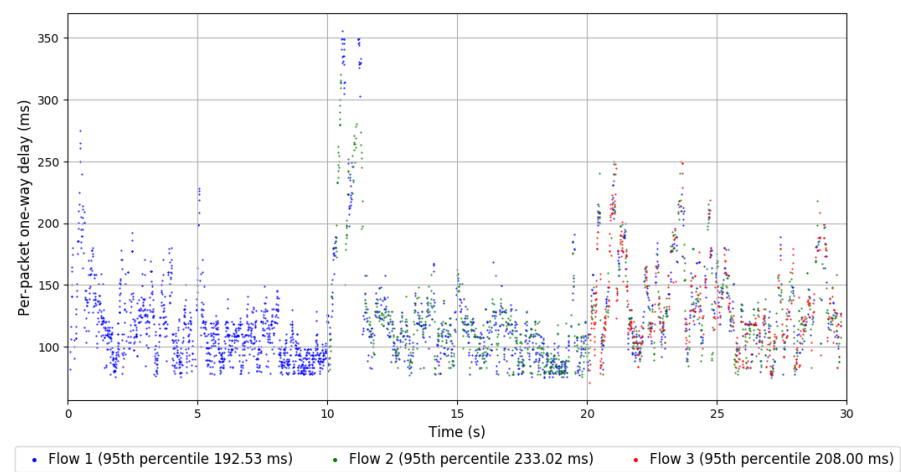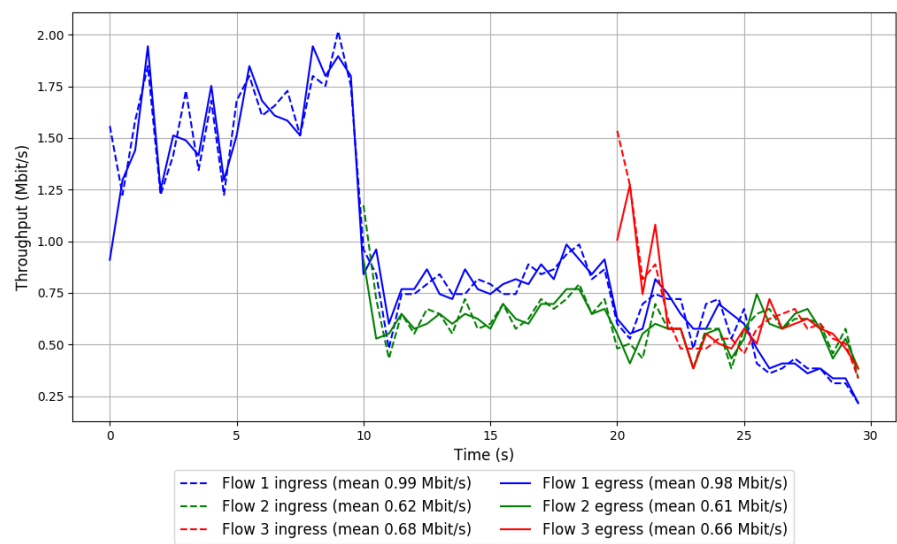Run 2: Report of Indigo-1-32 — Data Link

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

Start at: 2018-02-17 04:33:21
End at: 2018-02-17 04:33:51
Local clock offset: -9.005 ms
Remote clock offset: -18.557 ms

# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.60 Mbit/s
95th percentile per-packet one-way delay: 205.164 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 192.526 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 233.021 ms
Loss rate: 1.48%
-- Flow 3:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 207.997 ms
Loss rate: 2.92%
```

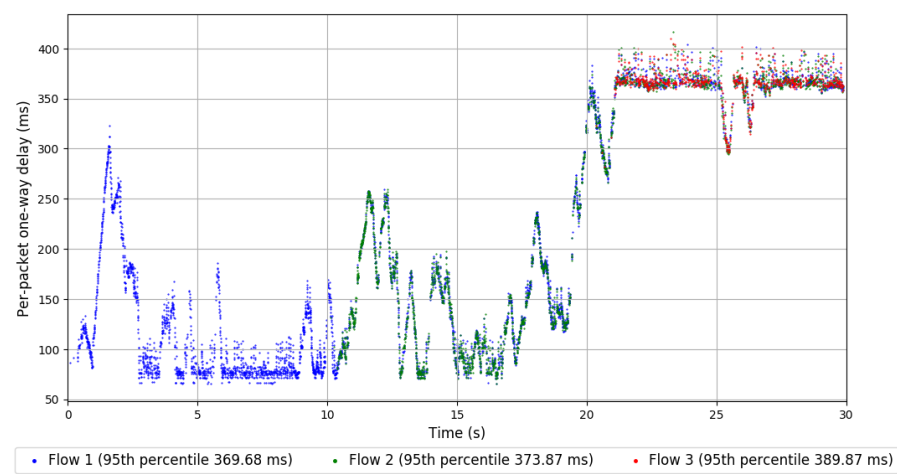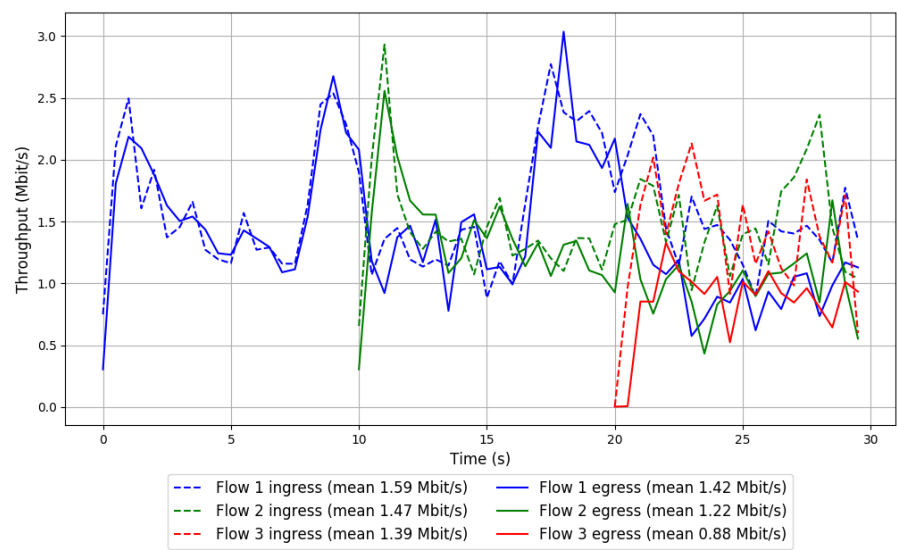Run 3: Report of Indigo-1-32 — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-02-17 03:54:28
End at: 2018-02-17 03:54:58
Local clock offset: -14.254 ms
Remote clock offset: -13.778 ms

# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 373.873 ms
Loss rate: 17.60%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 369.680 ms
Loss rate: 11.25%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 373.873 ms
Loss rate: 18.17%
-- Flow 3:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 389.870 ms
Loss rate: 38.50%
```

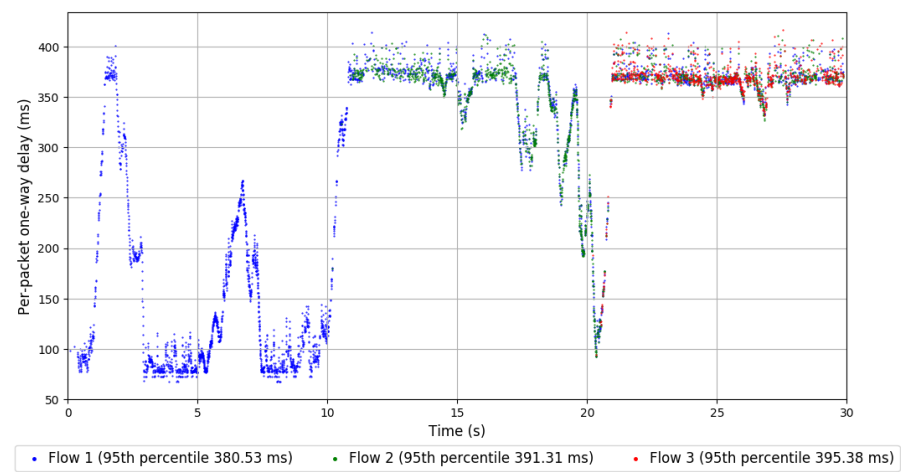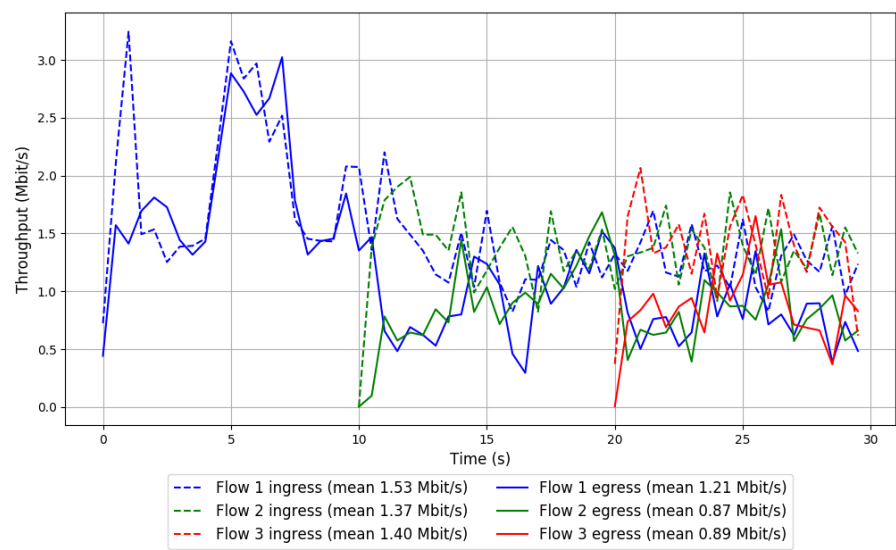Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-02-17 04:14:28
End at: 2018-02-17 04:14:58
Local clock offset: -9.812 ms
Remote clock offset: -12.054 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 387.135 ms
Loss rate: 29.04%
-- Flow 1:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 380.529 ms
Loss rate: 21.24%
-- Flow 2:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 391.309 ms
Loss rate: 37.53%
-- Flow 3:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 395.375 ms
Loss rate: 38.04%
```

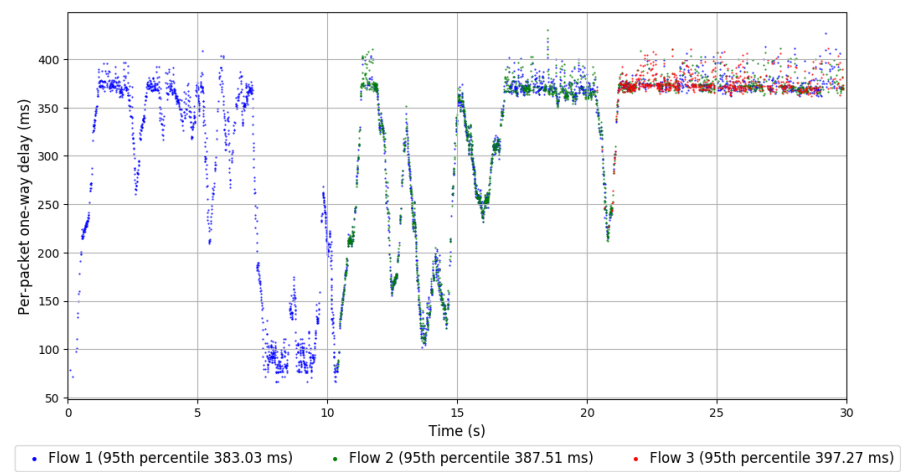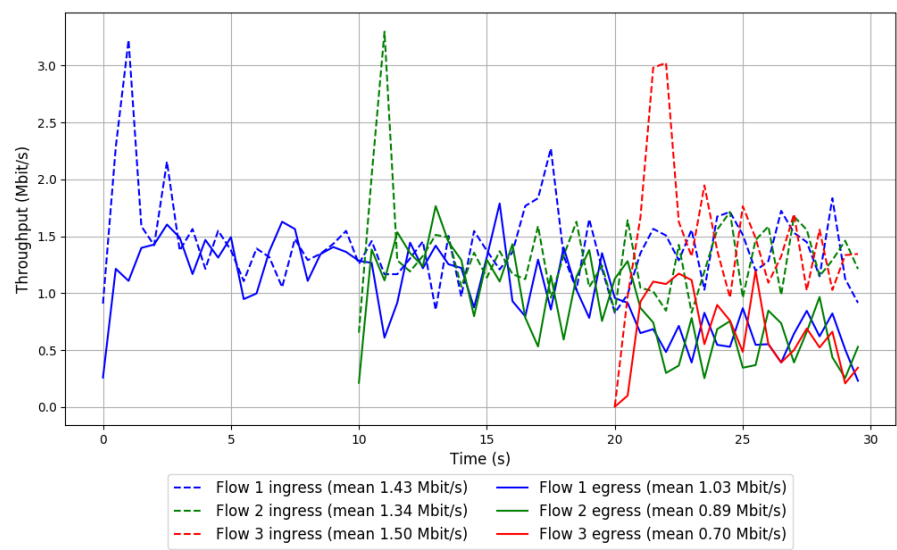Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-02-17 04:34:28
End at: 2018-02-17 04:34:58
Local clock offset: -7.301 ms
Remote clock offset: -18.478 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 387.509 ms
Loss rate: 34.85%
-- Flow 1:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 383.027 ms
Loss rate: 28.20%
-- Flow 2:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 387.509 ms
Loss rate: 34.30%
-- Flow 3:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 397.272 ms
Loss rate: 55.14%
```

Run 3: Report of Vivace-latency — Data Link

Flow 1 ingress (mean 1.43 Mbit/s)   Flow 1 egress (mean 1.03 Mbit/s)
Flow 2 ingress (mean 1.34 Mbit/s)   Flow 2 egress (mean 0.89 Mbit/s)
Flow 3 ingress (mean 1.50 Mbit/s)   Flow 3 egress (mean 0.70 Mbit/s)

Flow 1 (95th percentile 383.03 ms)   Flow 2 (95th percentile 387.51 ms)   Flow 3 (95th percentile 397.27 ms)
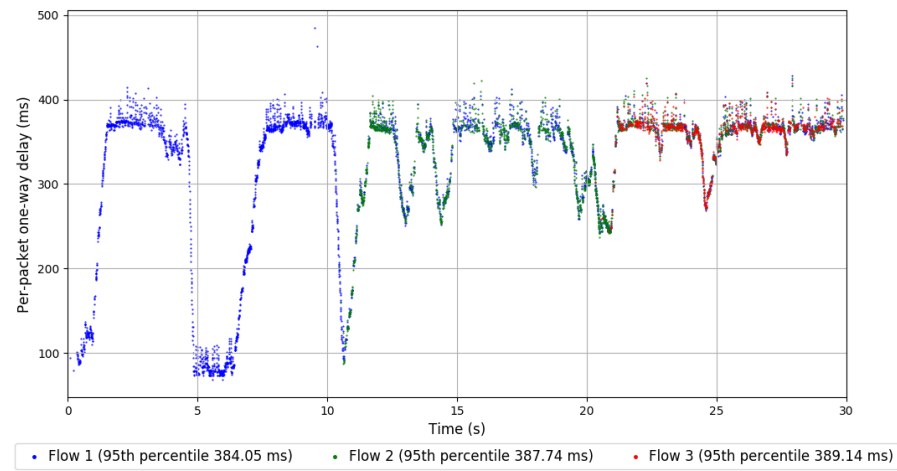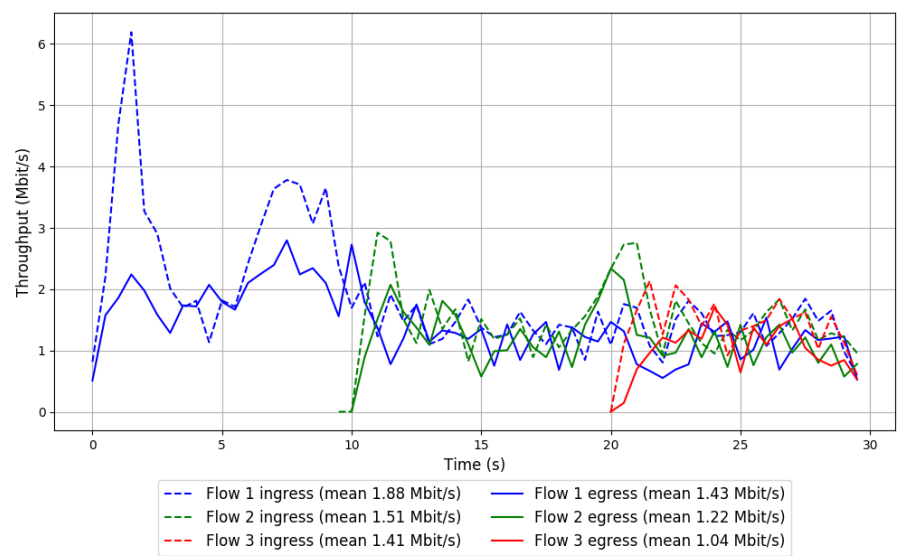
```
Run 1: Statistics of Vivace-loss

Start at: 2018-02-17 03:52:16
End at: 2018-02-17 03:52:46
Local clock offset: -12.023 ms
Remote clock offset: -14.202 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.56 Mbit/s
95th percentile per-packet one-way delay: 385.622 ms
Loss rate: 23.74%
-- Flow 1:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 384.047 ms
Loss rate: 24.21%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 387.741 ms
Loss rate: 20.76%
-- Flow 3:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 389.136 ms
Loss rate: 28.30%
```
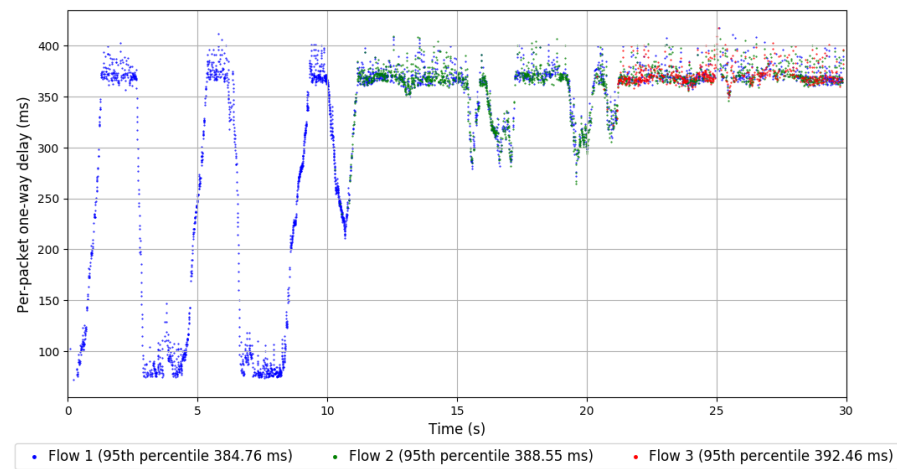
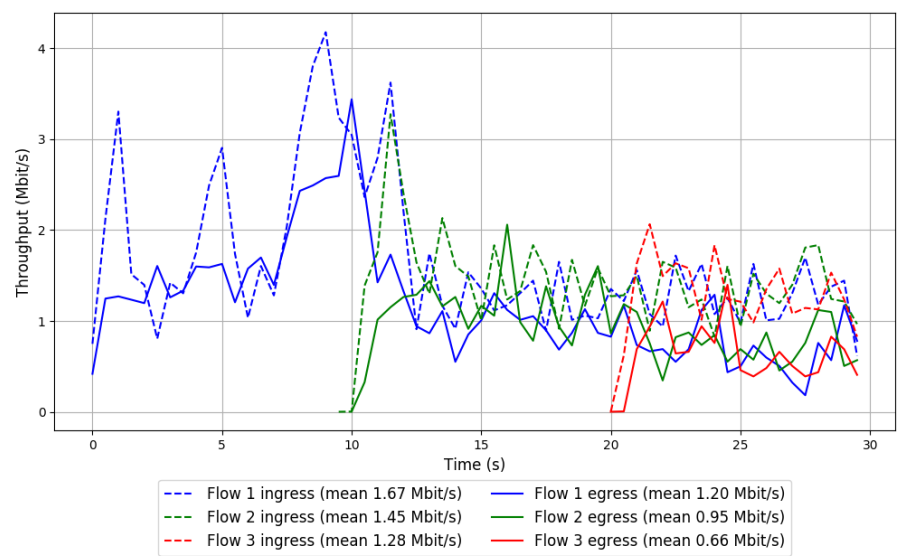Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-02-17 04:12:16
End at: 2018-02-17 04:12:46
Local clock offset: -11.986 ms
Remote clock offset: -13.064 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 387.505 ms
Loss rate: 33.71%
-- Flow 1:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 384.764 ms
Loss rate: 28.45%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 388.549 ms
Loss rate: 35.51%
-- Flow 3:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 392.458 ms
Loss rate: 50.36%
```

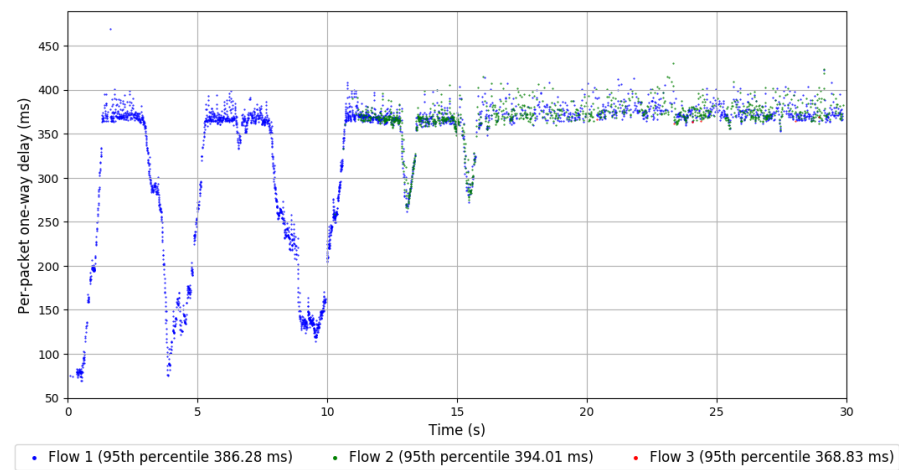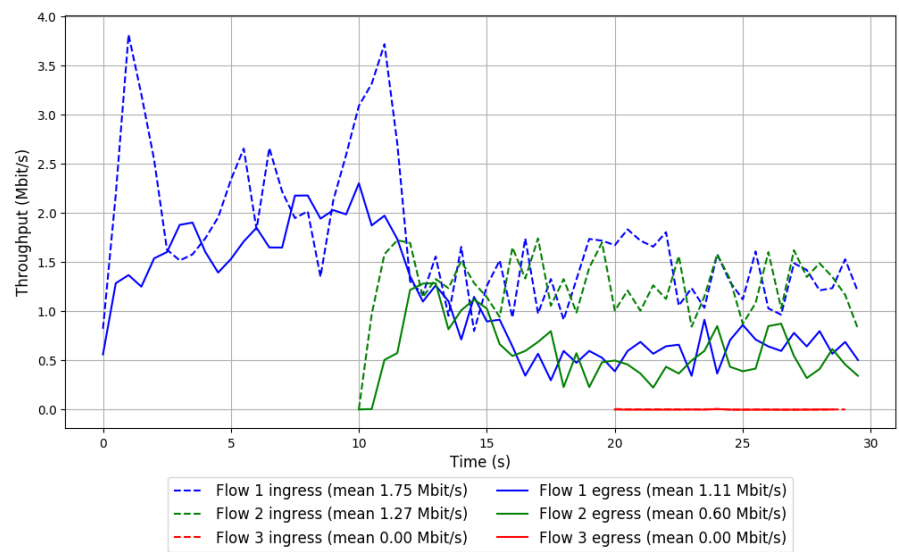Run 2: Report of Vivace-loss — Data Link

```
Run 3: Statistics of Vivace-loss

Start at: 2018-02-17 04:32:15
End at: 2018-02-17 04:32:45
Local clock offset: -10.188 ms
Remote clock offset: -17.34 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 388.925 ms
Loss rate: 41.84%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 386.279 ms
Loss rate: 36.44%
-- Flow 2:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 394.015 ms
Loss rate: 52.99%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 368.827 ms
Loss rate: 72.07%
```

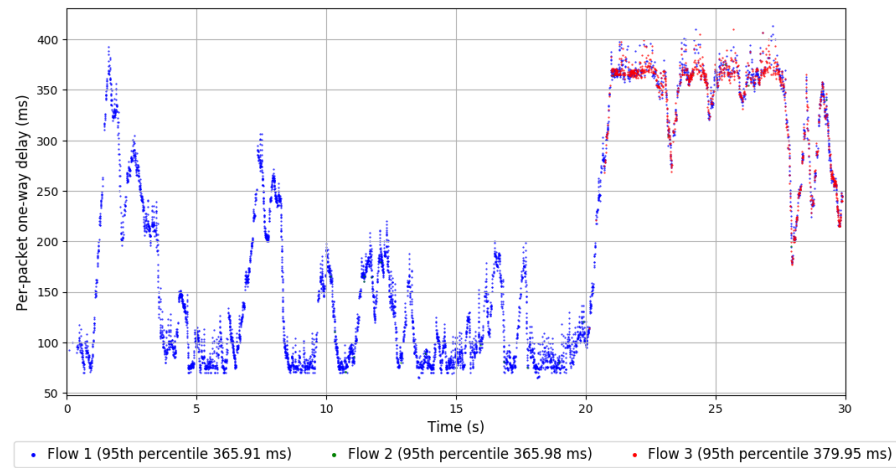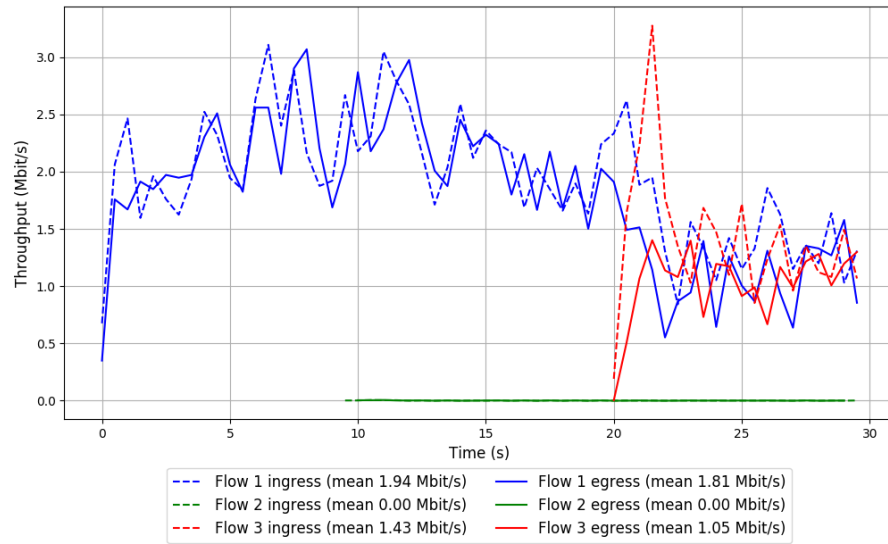Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-02-17 03:40:00
End at: 2018-02-17 03:40:30
Local clock offset: -13.03 ms
Remote clock offset: -16.867 ms


# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 369.728 ms
Loss rate: 10.83%
-- Flow 1:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 365.908 ms
Loss rate: 6.78%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 365.984 ms
Loss rate: 11.26%
-- Flow 3:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 379.953 ms
Loss rate: 27.47%
```

Run 1: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.94 Mbit/s) Flow 1 egress (mean 1.81 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s) Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 1.43 Mbit/s) Flow 3 egress (mean 1.05 Mbit/s)

Flow 1 (95th percentile 365.91 ms) Flow 2 (95th percentile 365.98 ms) Flow 3 (95th percentile 379.95 ms)
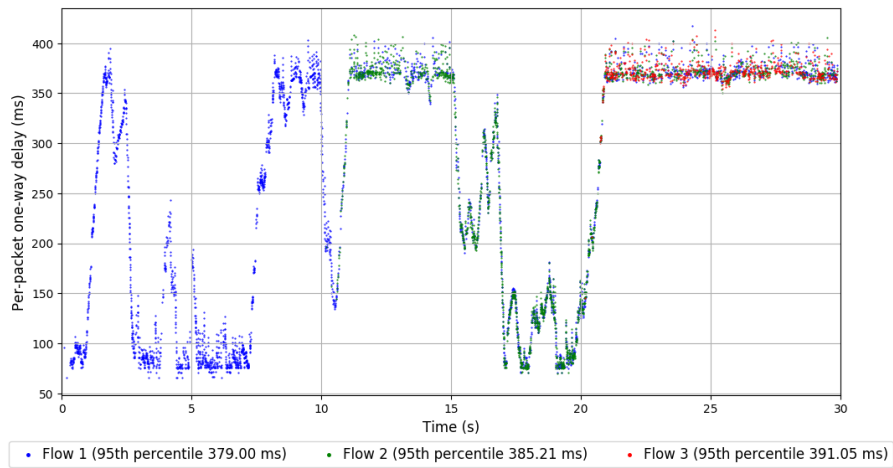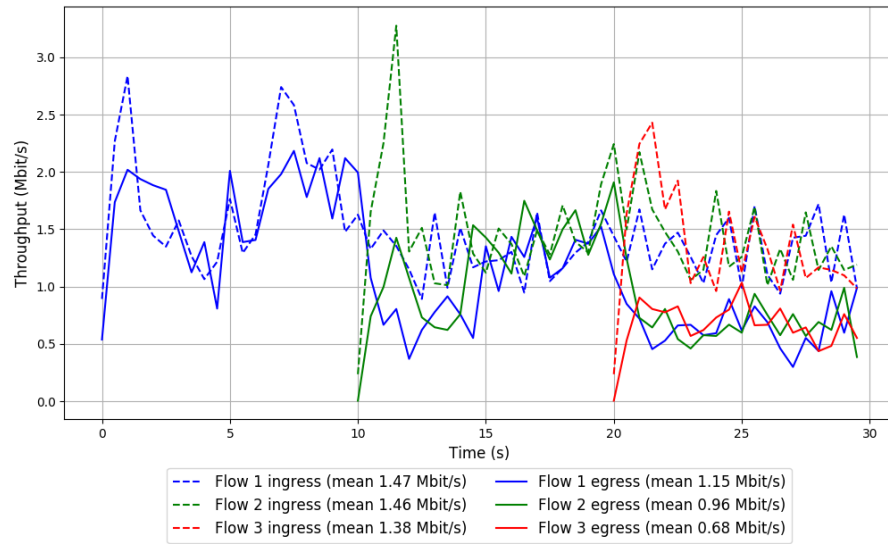
```
Run 2: Statistics of Vivace-LTE

Start at: 2018-02-17 04:00:02
End at: 2018-02-17 04:00:32
Local clock offset: -10.962 ms
Remote clock offset: -12.439 ms

# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 382.311 ms
Loss rate: 30.96%
-- Flow 1:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 378.995 ms
Loss rate: 22.27%
-- Flow 2:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 385.208 ms
Loss rate: 34.68%
-- Flow 3:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 391.049 ms
Loss rate: 51.24%
```

Run 2: Report of Vivace-LTE — Data Link

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-02-17 04:20:01
End at: 2018-02-17 04:20:31
Local clock offset: -11.536 ms
Remote clock offset: -13.889 ms

# Below is generated by plot.py at 2018-02-17 05:38:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 387.683 ms
Loss rate: 37.83%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 385.184 ms
Loss rate: 30.78%
-- Flow 2:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 388.124 ms
Loss rate: 39.42%
-- Flow 3:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 393.074 ms
Loss rate: 56.50%
```

Run 3: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.46 Mbit/s)
Flow 2 ingress (mean 1.33 Mbit/s)
Flow 3 ingress (mean 1.44 Mbit/s)
Flow 1 egress (mean 1.01 Mbit/s)
Flow 2 egress (mean 0.82 Mbit/s)
Flow 3 egress (mean 0.65 Mbit/s)

Flow 1 (95th percentile 385.18 ms)
Flow 2 (95th percentile 388.12 ms)
Flow 3 (95th percentile 393.07 ms)