Pantheon Report

Generated at 2018-01-18 13:26:36 (UTC).

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

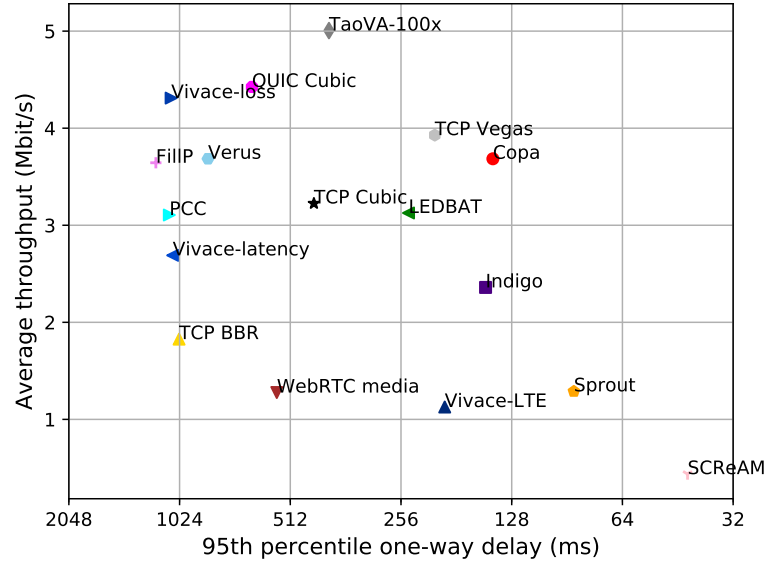Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

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

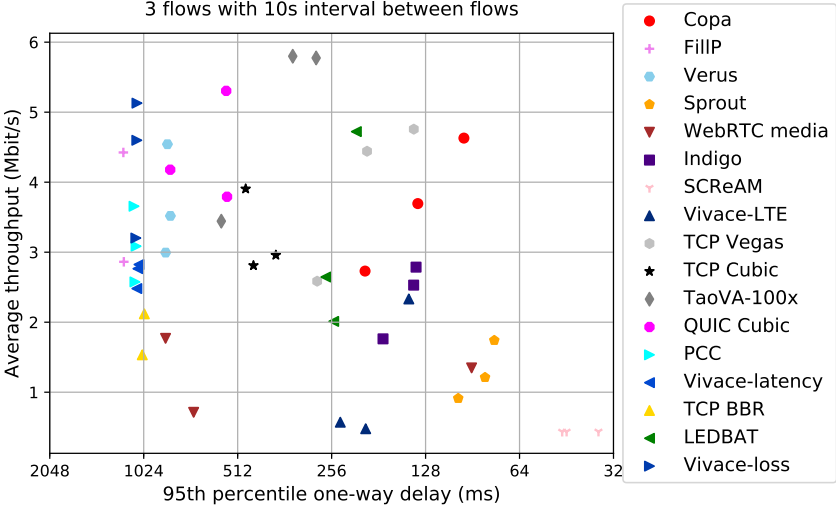NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ 54510ce29f849c716ac5c8199ca1604b6abdfbc3
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ ec9585325218d5048c4d4152fa42240af54c6e67
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
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 @ 423cbca3e8ea1d599e7b5cf725835e8a2b6bfac6
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

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

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

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	2	1.36	0.42	0.63	1026.66	1039.17	1011.75	6.28	13.91	19.15
TCP Cubic	3	1.81	1.53	1.25	389.74	449.88	568.30	0.85	1.10	1.77
LEDBAT	3	2.29	0.96	0.61	235.69	255.82	312.59	0.24	1.24	1.29
PCC	3	1.78	1.44	1.29	1071.81	1090.54	1144.76	31.62	55.59	87.83
QUIC Cubic	3	2.66	2.09	1.22	571.54	647.23	730.71	1.05	1.89	5.66
SCReAM	3	0.22	0.22	0.22	42.66	42.37	42.29	0.13	0.20	0.35
WebRTC media	3	0.69	0.40	0.19	500.55	603.52	396.81	1.35	1.89	3.06
Sprout	3	0.72	0.59	0.54	81.01	85.94	114.36	0.32	0.27	0.64
TaoVA-100x	3	2.94	2.44	1.82	314.84	450.40	586.25	0.55	1.01	3.24
TCP Vegas	3	1.92	1.80	2.47	177.22	237.24	237.28	0.42	0.65	0.60
Verus	3	2.52	1.40	0.75	751.52	960.61	899.55	5.92	16.09	15.10
Copa	3	2.24	1.68	1.31	131.83	156.44	161.78	0.20	0.51	0.91
FillP	2	2.65	0.92	1.41	1160.82	1213.89	1216.59	93.97	98.63	98.86
Indigo	3	1.21	0.90	1.70	134.78	177.66	120.41	0.12	0.12	0.34
Vivace-latency	3	1.69	1.18	0.72	1050.58	1071.38	1100.02	17.08	28.42	61.02
Vivace-loss	3	2.53	2.44	0.62	1080.34	1078.00	1073.74	44.16	36.90	43.13
Vivace-LTE	3	0.46	0.32	1.37	236.98	252.08	147.68	0.02	0.33	0.03

```
Run 1: Statistics of TCP BBR

Start at: 2018-01-18 12:27:27
End at: 2018-01-18 12:27:57
Local clock offset: -18.037 ms
Remote clock offset: -7.341 ms
```
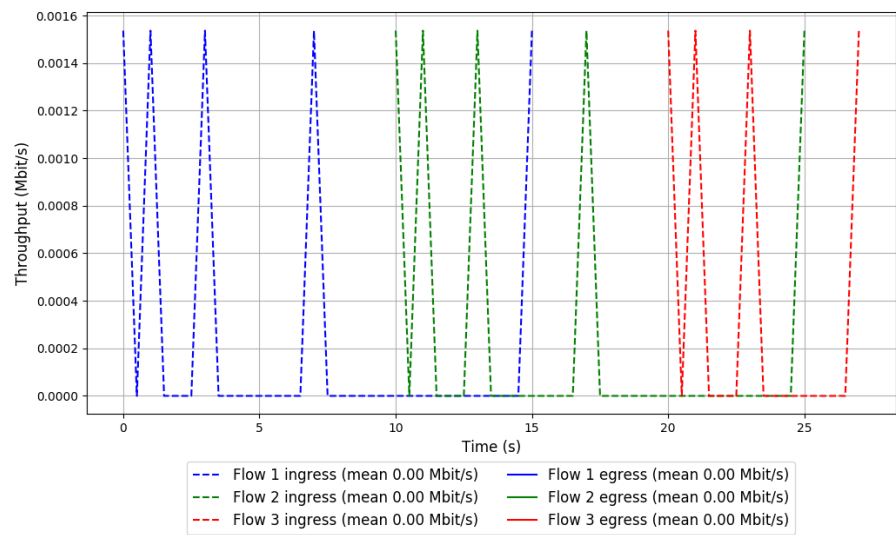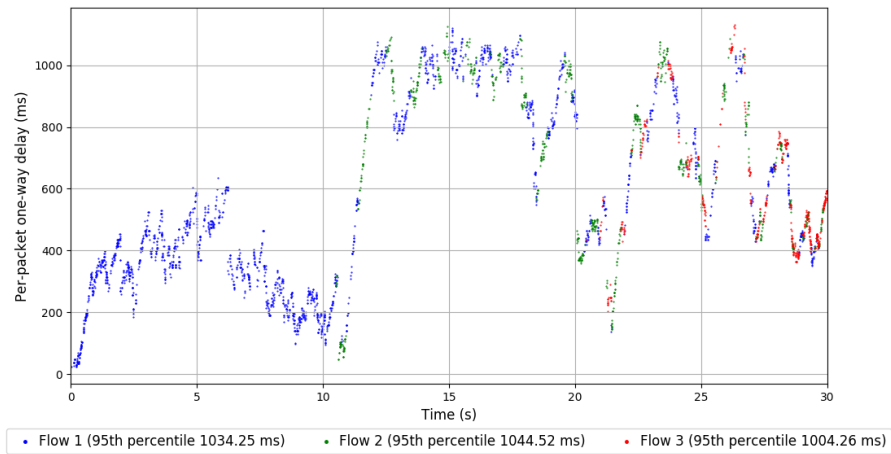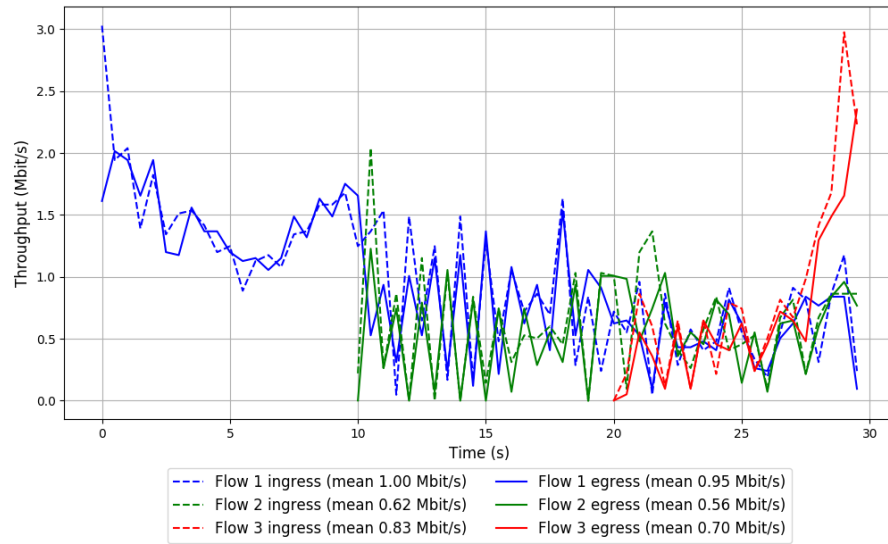
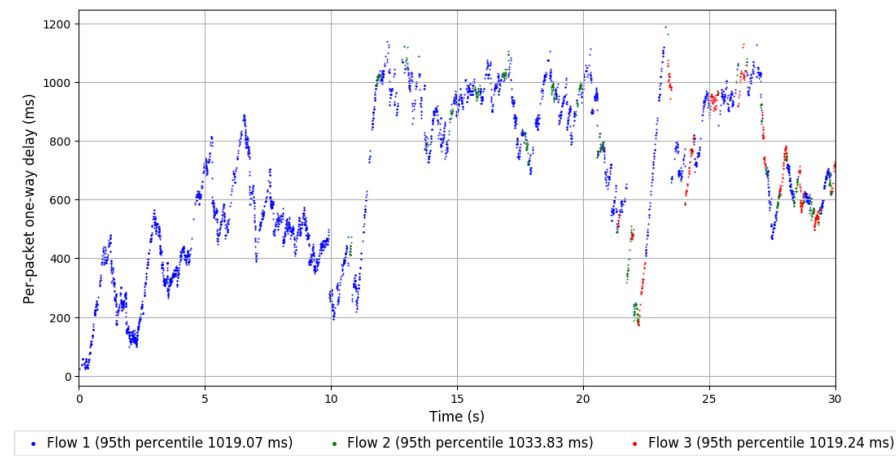Run 1: Report of TCP BBR — Data Link

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```
Run 2: Statistics of TCP BBR

Start at: 2018-01-18 12:47:27
End at: 2018-01-18 12:47:57
Local clock offset: -21.698 ms
Remote clock offset: -9.105 ms


# Below is generated by plot.py at 2018-01-18 13:25:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 1034.861 ms
Loss rate: 8.77%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 1034.252 ms
Loss rate: 5.32%
-- Flow 2:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 1044.519 ms
Loss rate: 9.85%
-- Flow 3:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 1004.264 ms
Loss rate: 19.67%
```
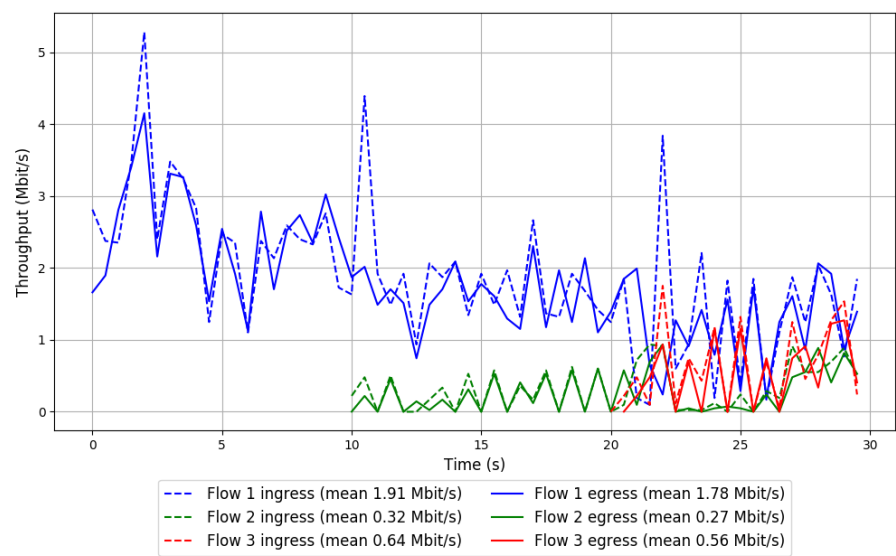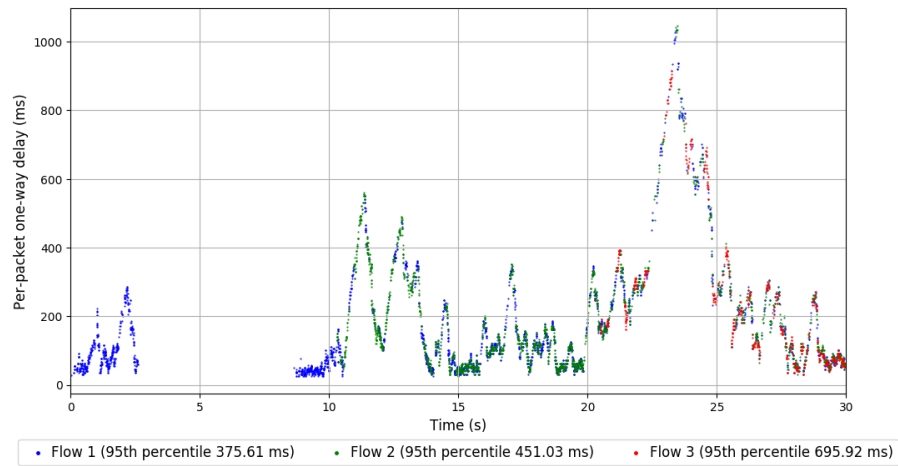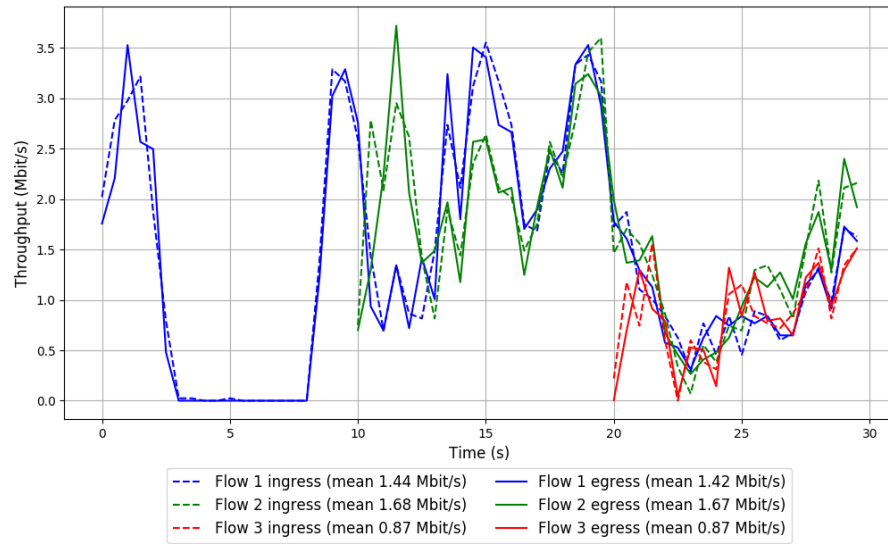
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 1.00 Mbit/s) — Flow 1 egress (mean 0.95 Mbit/s)
Flow 2 ingress (mean 0.62 Mbit/s) — Flow 2 egress (mean 0.56 Mbit/s)
Flow 3 ingress (mean 0.83 Mbit/s) — Flow 3 egress (mean 0.70 Mbit/s)

Flow 1 (95th percentile 1034.25 ms)   Flow 2 (95th percentile 1044.52 ms)   Flow 3 (95th percentile 1004.26 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-01-18 13:07:52
End at: 2018-01-18 13:08:22
Local clock offset: -20.265 ms
Remote clock offset: -10.207 ms


# Below is generated by plot.py at 2018-01-18 13:25:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.12 Mbit/s
95th percentile per-packet one-way delay: 1019.376 ms
Loss rate: 9.25%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 1019.074 ms
Loss rate: 7.24%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 1033.827 ms
Loss rate: 17.97%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 1019.241 ms
Loss rate: 18.62%
```

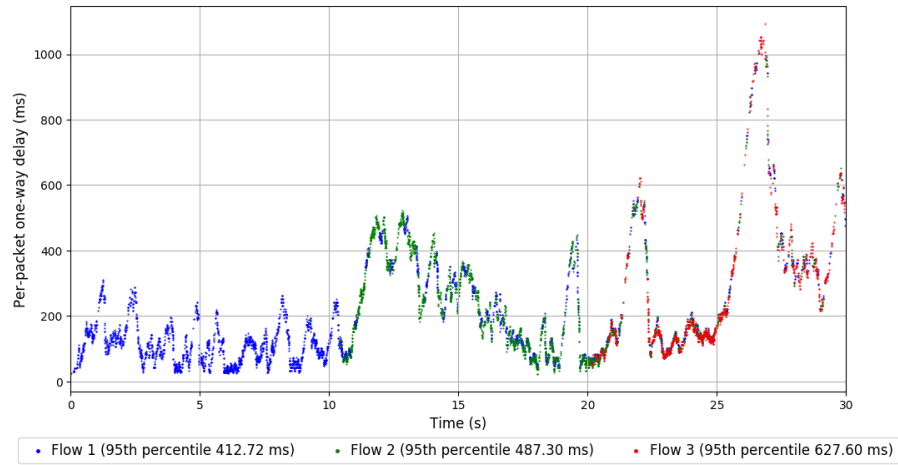Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 1.91 Mbit/s) — Flow 1 egress (mean 1.78 Mbit/s)
Flow 2 ingress (mean 0.32 Mbit/s) — Flow 2 egress (mean 0.27 Mbit/s)
Flow 3 ingress (mean 0.64 Mbit/s) — Flow 3 egress (mean 0.56 Mbit/s)

Flow 1 (95th percentile 1019.07 ms)   Flow 2 (95th percentile 1033.83 ms)   Flow 3 (95th percentile 1019.24 ms)
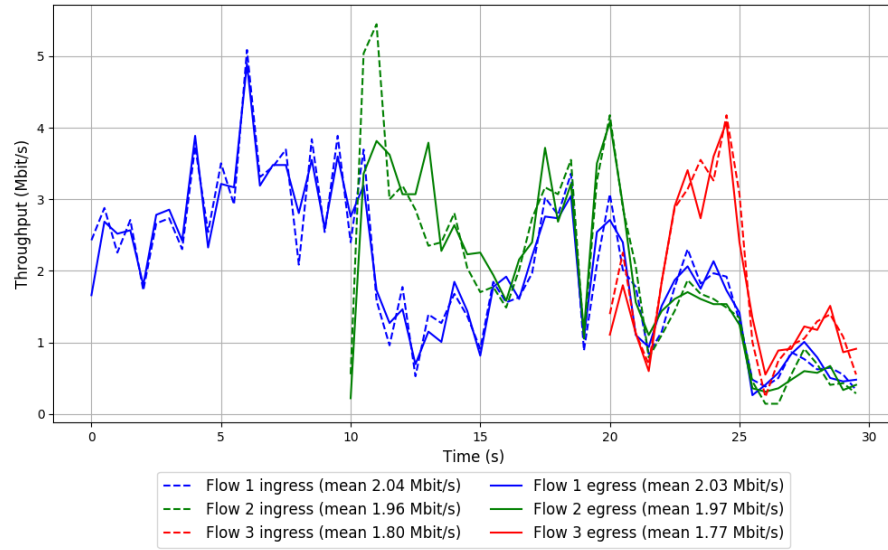
```
Run 1: Statistics of TCP Cubic

Start at: 2018-01-18 12:35:19
End at: 2018-01-18 12:35:49
Local clock offset: -20.987 ms
Remote clock offset: -7.876 ms


# Below is generated by plot.py at 2018-01-18 13:25:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.81 Mbit/s
95th percentile per-packet one-way delay: 455.703 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 375.613 ms
Loss rate: 1.42%
-- Flow 2:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 451.033 ms
Loss rate: 1.07%
-- Flow 3:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 695.920 ms
Loss rate: 1.81%
```
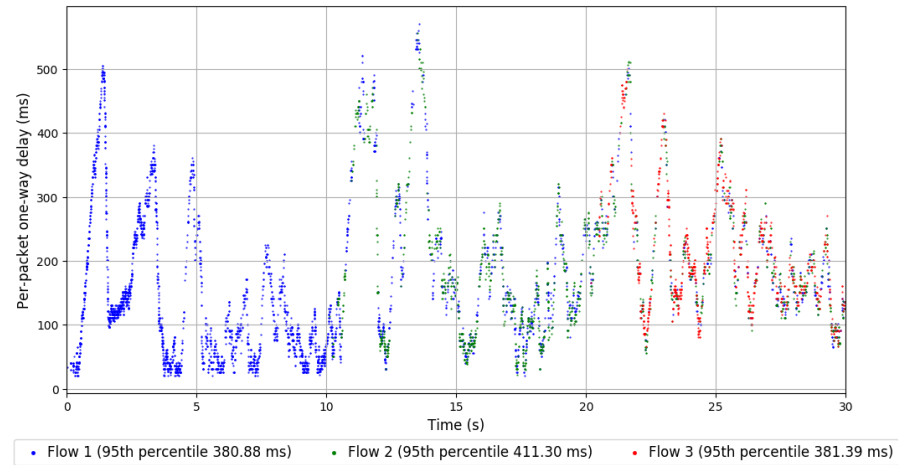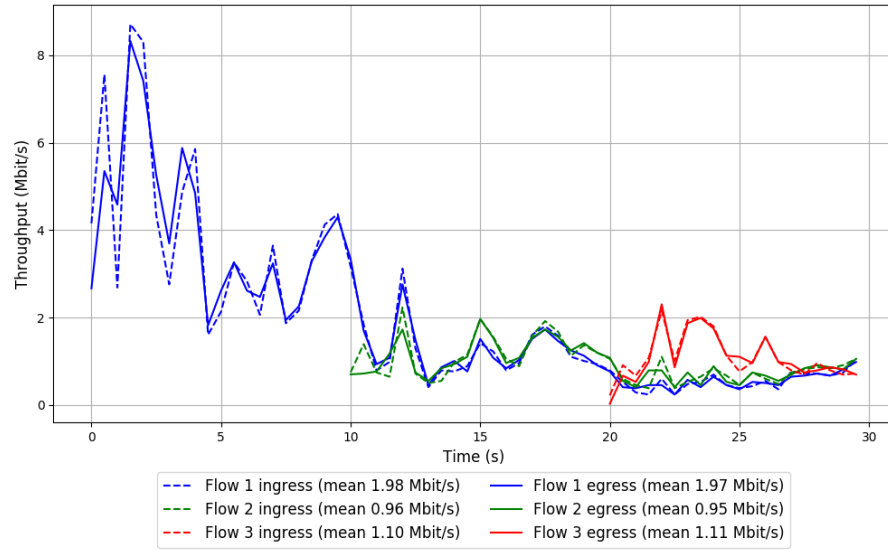
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-01-18 12:55:24
End at: 2018-01-18 12:55:54
Local clock offset: -20.817 ms
Remote clock offset: -8.542 ms


# Below is generated by plot.py at 2018-01-18 13:25:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.91 Mbit/s
95th percentile per-packet one-way delay: 482.745 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 412.722 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 487.303 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 627.602 ms
Loss rate: 2.08%
```
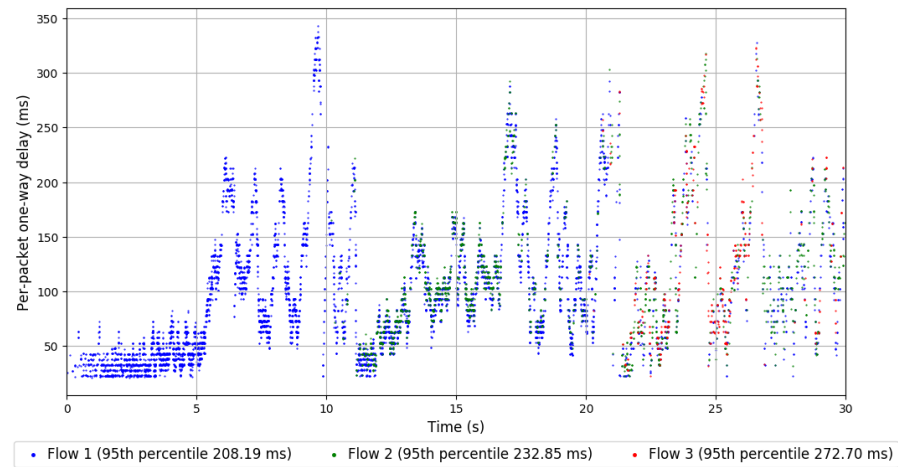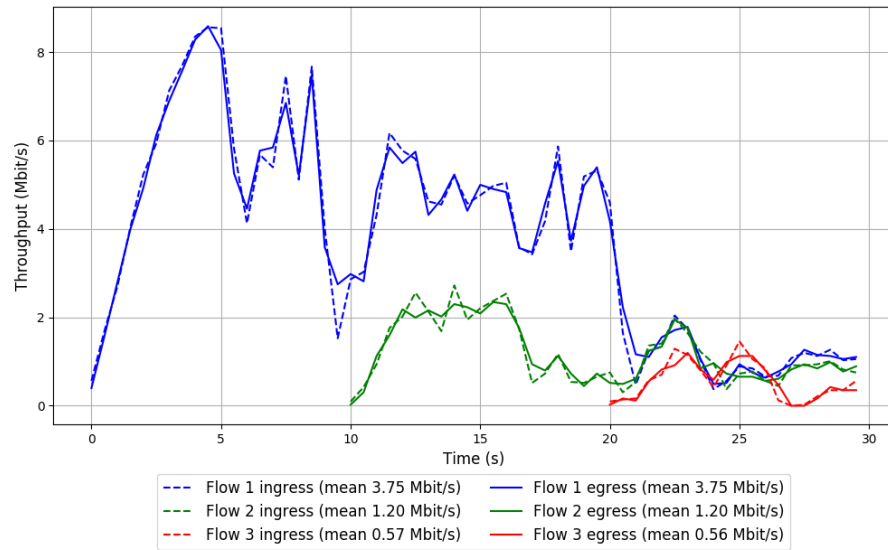
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-01-18 13:15:47
End at: 2018-01-18 13:16:17
Local clock offset: -19.566 ms
Remote clock offset: -9.874 ms


# Below is generated by plot.py at 2018-01-18 13:25:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.96 Mbit/s
95th percentile per-packet one-way delay: 386.341 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 380.875 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 411.301 ms
Loss rate: 1.19%
-- Flow 3:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 381.393 ms
Loss rate: 1.43%
```
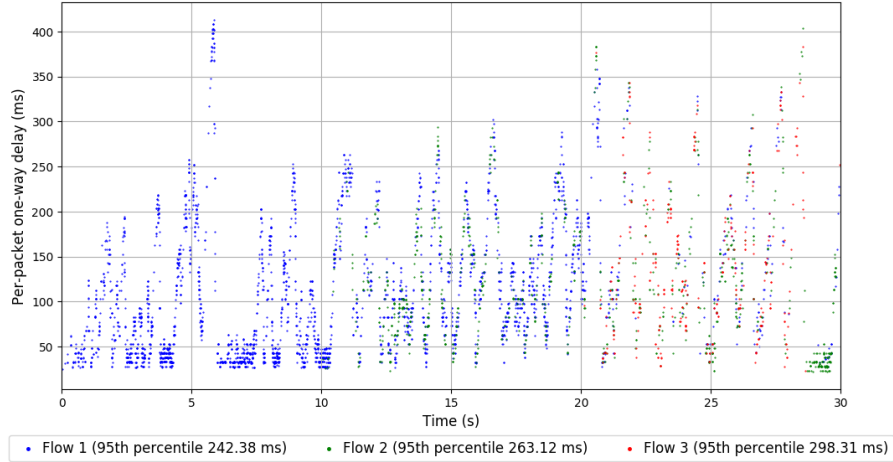
Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-01-18 12:26:19
End at: 2018-01-18 12:26:49
Local clock offset: -20.072 ms
Remote clock offset: -6.95 ms

# Below is generated by plot.py at 2018-01-18 13:25:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.72 Mbit/s
95th percentile per-packet one-way delay: 213.361 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 208.194 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 232.848 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 272.703 ms
Loss rate: 2.09%
```
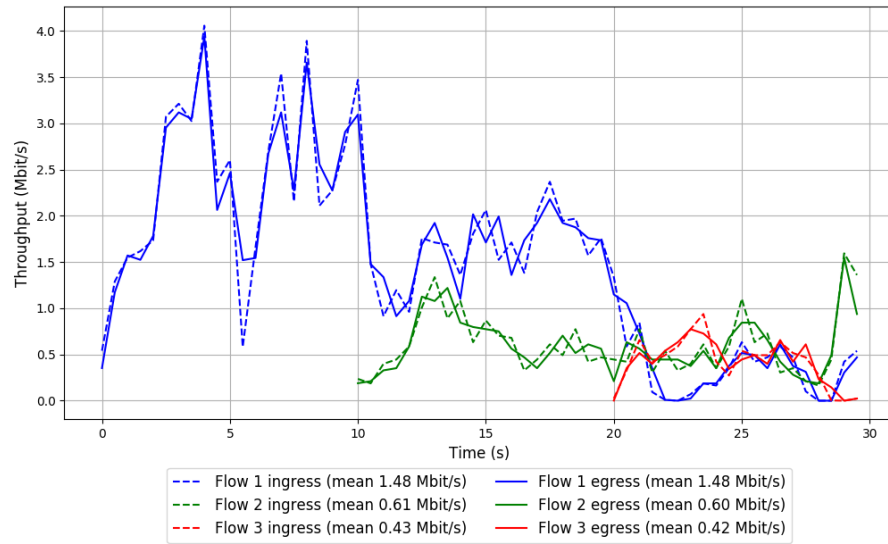
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-01-18 12:46:21
End at: 2018-01-18 12:46:51
Local clock offset: -19.256 ms
Remote clock offset: -8.297 ms

# Below is generated by plot.py at 2018-01-18 13:25:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 252.150 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 242.381 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 263.122 ms
Loss rate: 2.42%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 298.313 ms
Loss rate: 0.56%
```
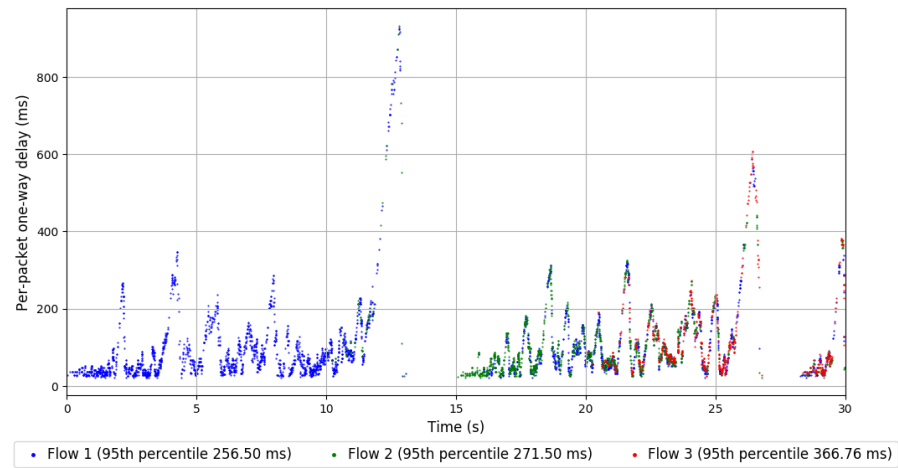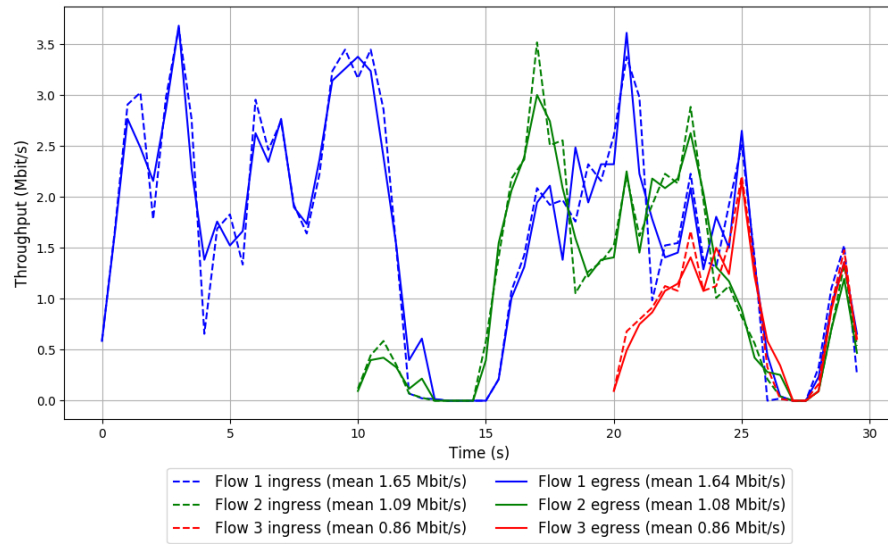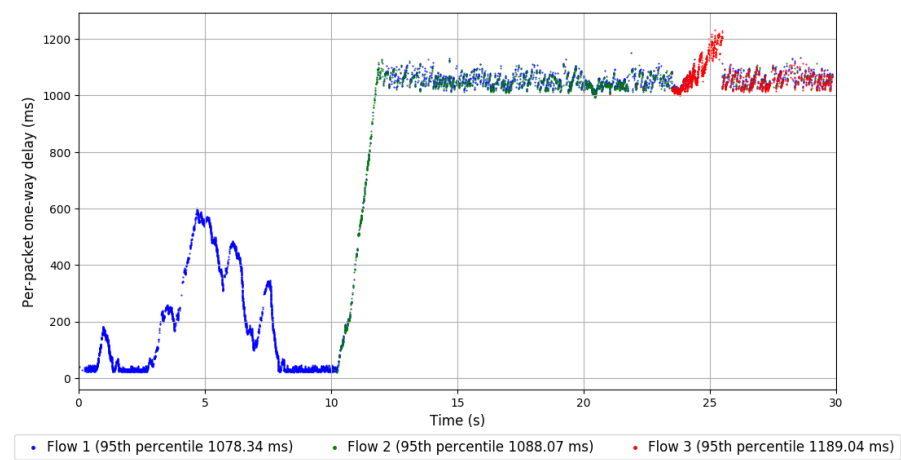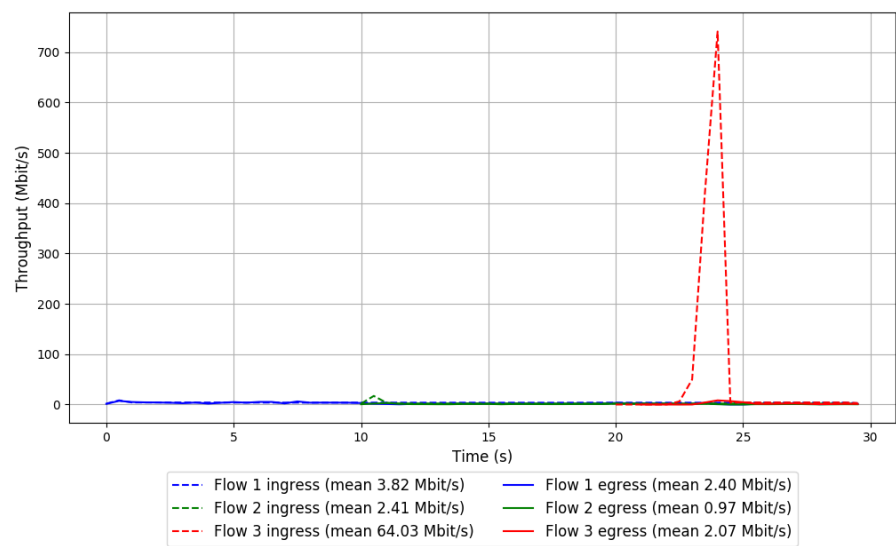
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 1.48 Mbit/s)   Flow 1 egress (mean 1.48 Mbit/s)
Flow 2 ingress (mean 0.61 Mbit/s)   Flow 2 egress (mean 0.60 Mbit/s)
Flow 3 ingress (mean 0.43 Mbit/s)   Flow 3 egress (mean 0.42 Mbit/s)

Flow 1 (95th percentile 242.38 ms)   Flow 2 (95th percentile 263.12 ms)   Flow 3 (95th percentile 298.31 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-01-18 13:06:46
End at: 2018-01-18 13:07:16
Local clock offset: -21.855 ms
Remote clock offset: -8.456 ms


# Below is generated by plot.py at 2018-01-18 13:25:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 267.245 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 1.64 Mbit/s
95th percentile per-packet one-way delay: 256.497 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 271.496 ms
Loss rate: 0.70%
-- Flow 3:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 366.761 ms
Loss rate: 1.23%
```
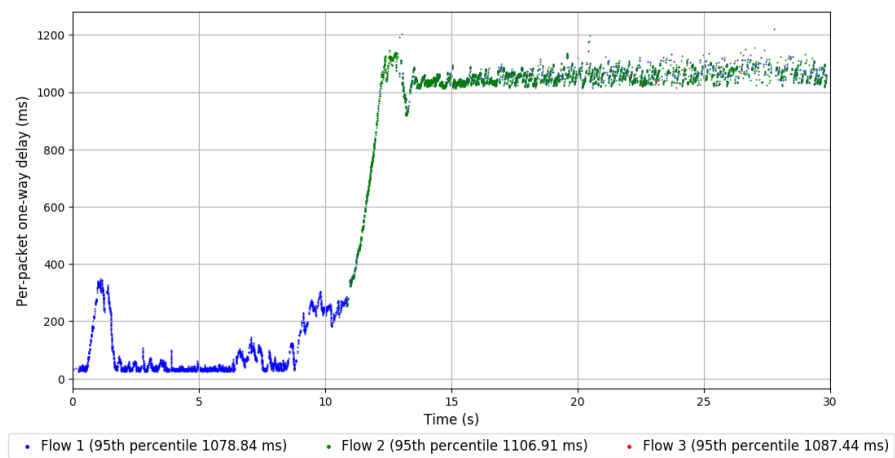
Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC

Start at: 2018-01-18 12:25:09
End at: 2018-01-18 12:25:39
Local clock offset: -18.812 ms
Remote clock offset: -9.059 ms

# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 1099.723 ms
Loss rate: 86.24%
-- Flow 1:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 1078.339 ms
Loss rate: 37.31%
-- Flow 2:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 1088.071 ms
Loss rate: 59.95%
-- Flow 3:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 1189.044 ms
Loss rate: 97.10%
```
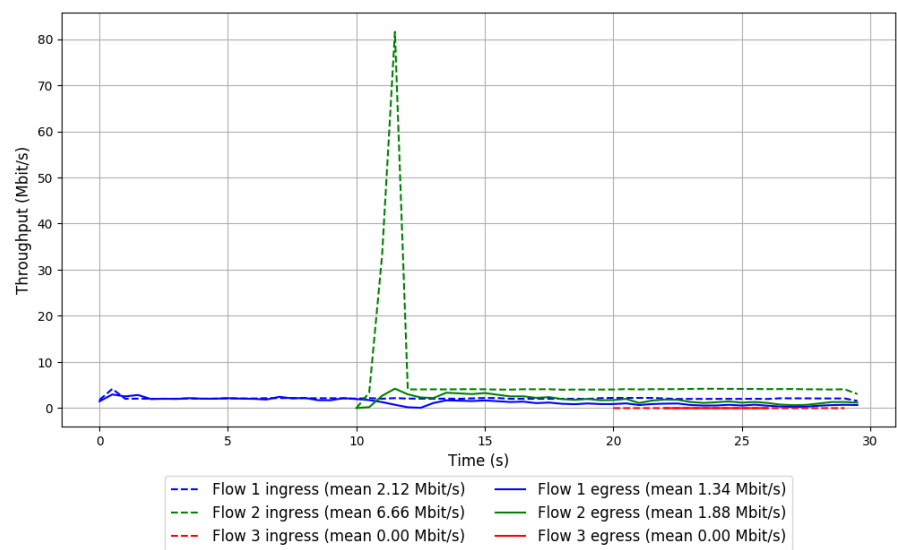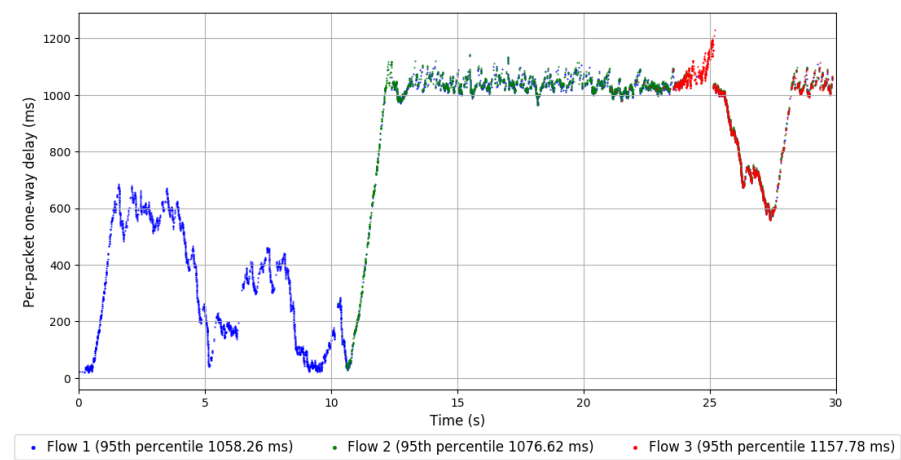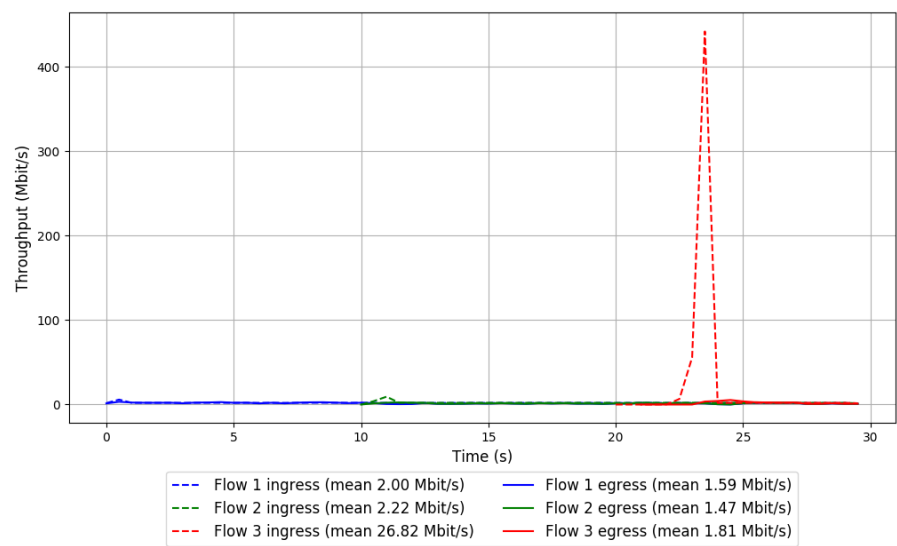
Run 1: Report of PCC — Data Link

- - - - Flow 1 ingress (mean 3.82 Mbit/s) ——— Flow 1 egress (mean 2.40 Mbit/s)
- - - - Flow 2 ingress (mean 2.41 Mbit/s) ——— Flow 2 egress (mean 0.97 Mbit/s)
- - - - Flow 3 ingress (mean 64.03 Mbit/s) ——— Flow 3 egress (mean 2.07 Mbit/s)

• Flow 1 (95th percentile 1078.34 ms)   • Flow 2 (95th percentile 1088.07 ms)   • Flow 3 (95th percentile 1189.04 ms)

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```
Run 2: Statistics of PCC

Start at: 2018-01-18 12:45:15
End at: 2018-01-18 12:45:45
Local clock offset: -18.586 ms
Remote clock offset: -7.749 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 1092.385 ms
Loss rate: 60.72%
-- Flow 1:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 1078.843 ms
Loss rate: 36.86%
-- Flow 2:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 1106.915 ms
Loss rate: 72.13%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1087.439 ms
Loss rate: 72.41%
```
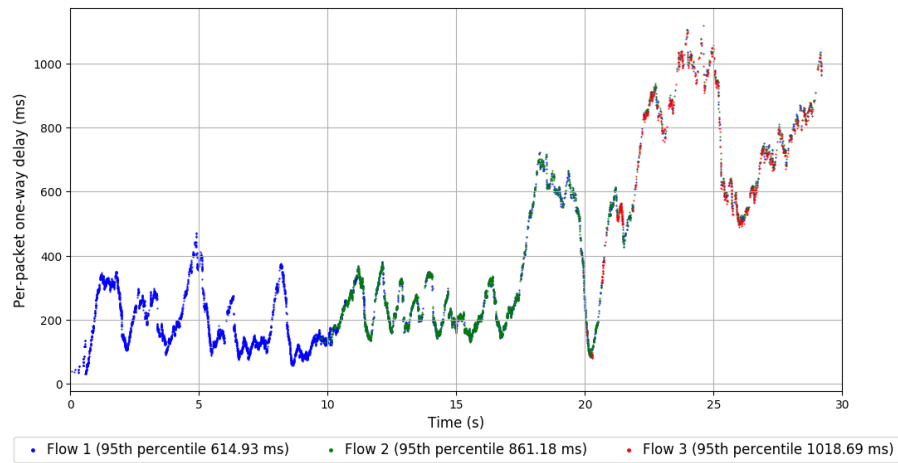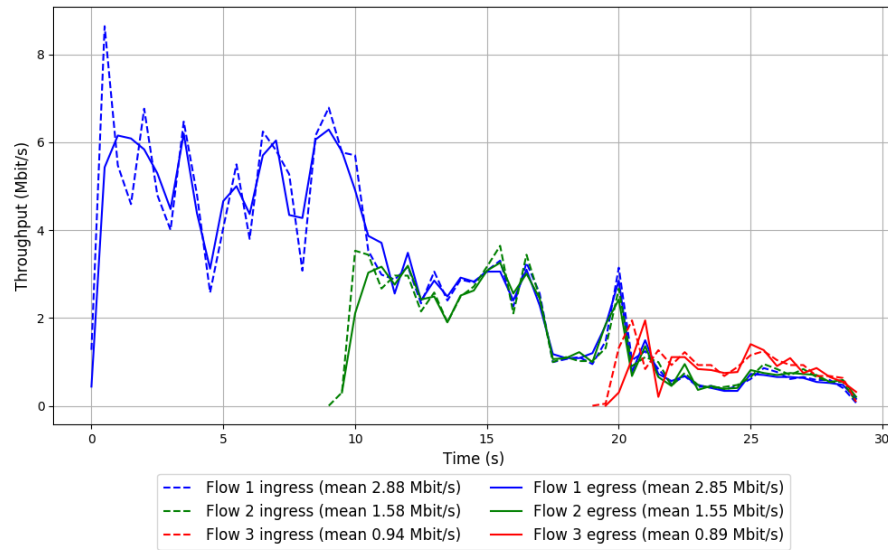
Run 2: Report of PCC — Data Link

```
Run 3: Statistics of PCC

Start at: 2018-01-18 13:05:40
End at: 2018-01-18 13:06:10
Local clock offset: -18.437 ms
Remote clock offset: -8.587 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.09 Mbit/s
95th percentile per-packet one-way delay: 1083.183 ms
Loss rate: 74.99%
-- Flow 1:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 1058.261 ms
Loss rate: 20.68%
-- Flow 2:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 1076.620 ms
Loss rate: 34.69%
-- Flow 3:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 1157.784 ms
Loss rate: 93.97%
```

Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 2.00 Mbit/s)   Flow 1 egress (mean 1.59 Mbit/s)
Flow 2 ingress (mean 2.22 Mbit/s)   Flow 2 egress (mean 1.47 Mbit/s)
Flow 3 ingress (mean 26.82 Mbit/s)   Flow 3 egress (mean 1.81 Mbit/s)

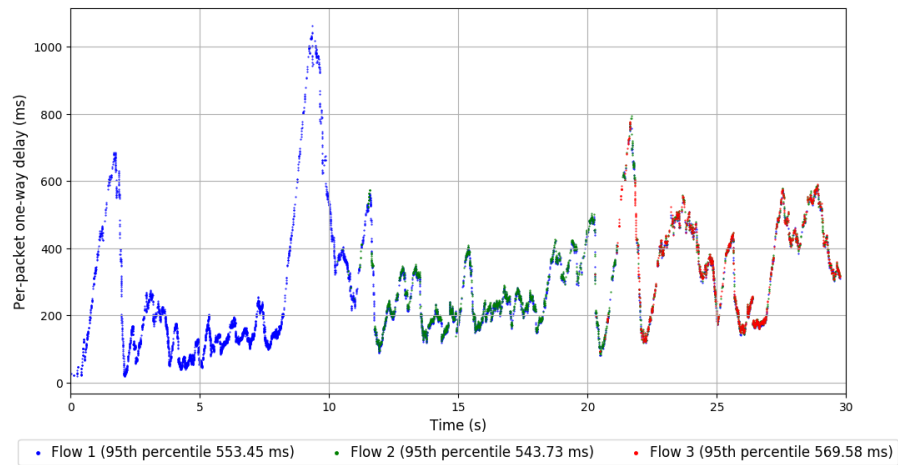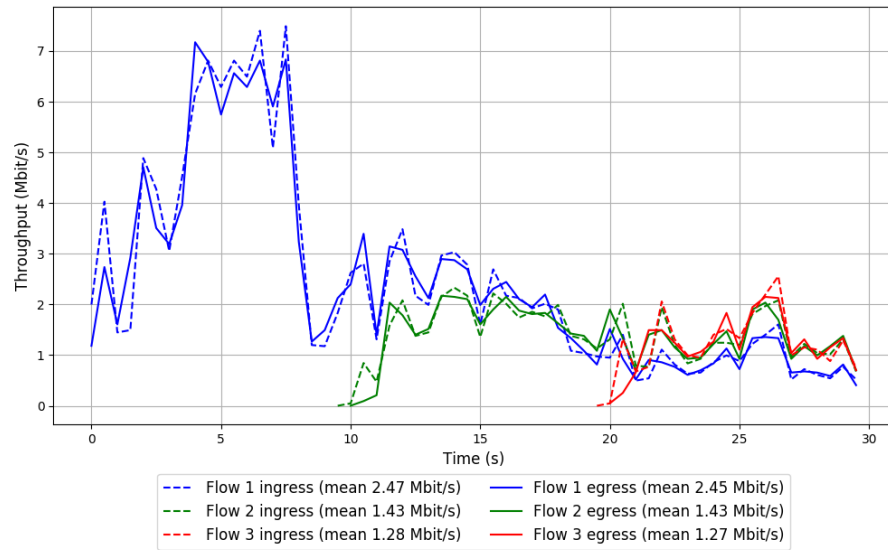Flow 1 (95th percentile 1058.26 ms)   Flow 2 (95th percentile 1076.62 ms)   Flow 3 (95th percentile 1157.78 ms)
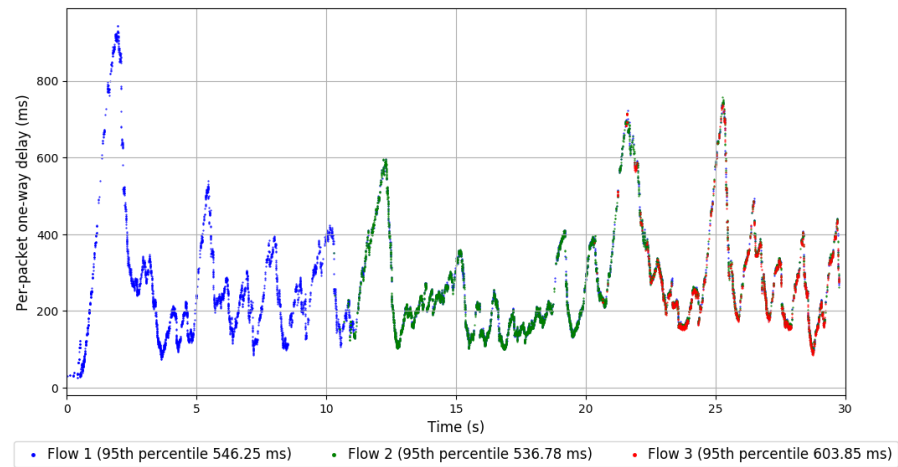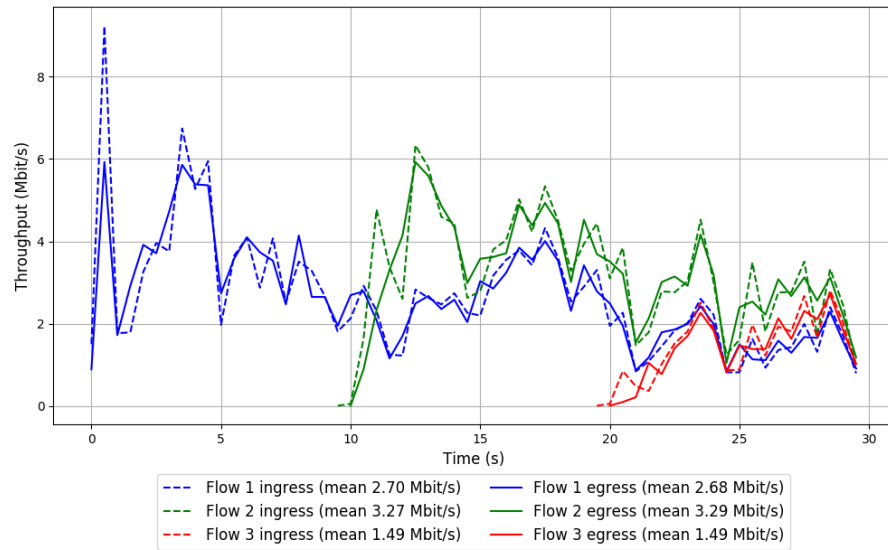
```
Run 1: Statistics of QUIC Cubic

Start at: 2018-01-18 12:31:55
End at: 2018-01-18 12:32:25
Local clock offset: -24.724 ms
Remote clock offset: -15.028 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.18 Mbit/s
95th percentile per-packet one-way delay: 842.243 ms
Loss rate: 2.07%
-- Flow 1:
Average throughput: 2.85 Mbit/s
95th percentile per-packet one-way delay: 614.927 ms
Loss rate: 1.19%
-- Flow 2:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 861.185 ms
Loss rate: 2.39%
-- Flow 3:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 1018.688 ms
Loss rate: 9.12%
```

Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 2.88 Mbit/s) — Flow 1 egress (mean 2.85 Mbit/s)
Flow 2 ingress (mean 1.58 Mbit/s) — Flow 2 egress (mean 1.55 Mbit/s)
Flow 3 ingress (mean 0.94 Mbit/s) — Flow 3 egress (mean 0.89 Mbit/s)

Flow 1 (95th percentile 614.93 ms)   Flow 2 (95th percentile 861.18 ms)   Flow 3 (95th percentile 1018.69 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-01-18 12:52:06
End at: 2018-01-18 12:52:36
Local clock offset: -19.208 ms
Remote clock offset: -9.374 ms

# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 553.753 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 553.447 ms
Loss rate: 1.04%
-- Flow 2:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 543.730 ms
Loss rate: 2.15%
-- Flow 3:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 569.583 ms
Loss rate: 4.05%
```

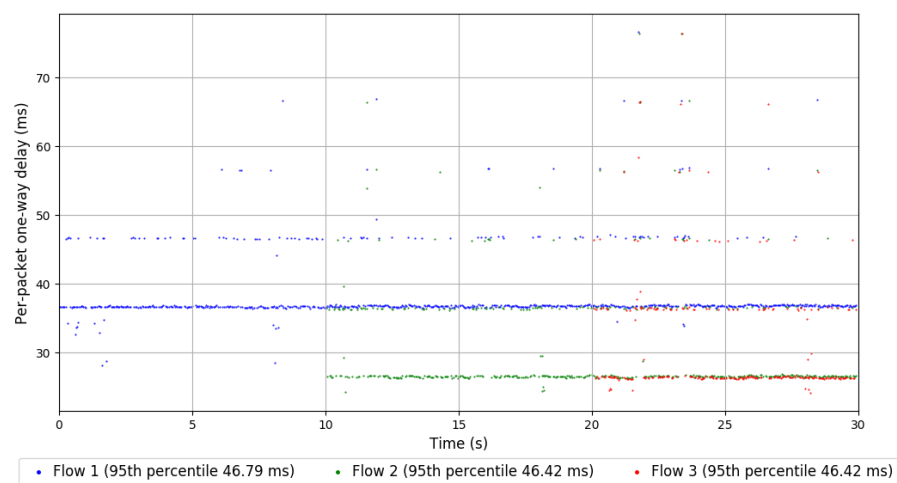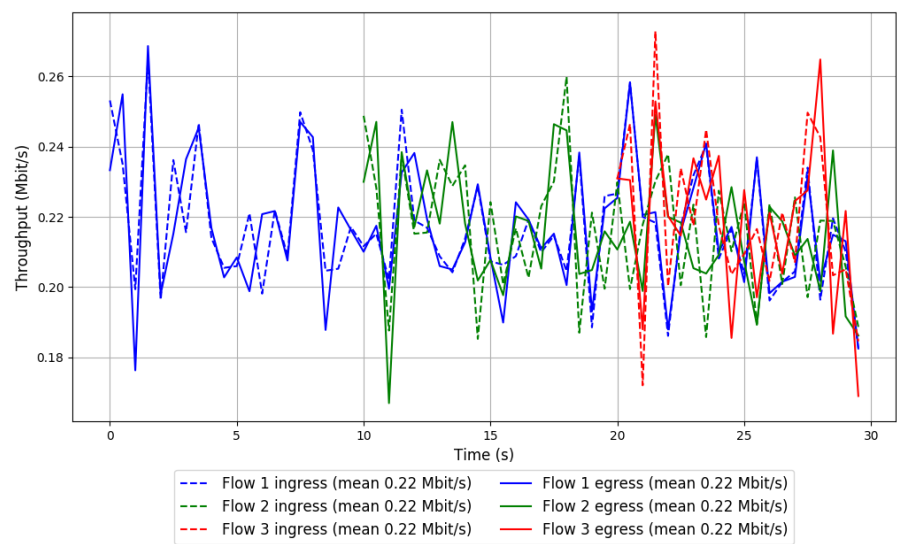Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-01-18 13:12:24
End at: 2018-01-18 13:12:54
Local clock offset: -22.337 ms
Remote clock offset: -10.524 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.30 Mbit/s
95th percentile per-packet one-way delay: 557.224 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 2.68 Mbit/s
95th percentile per-packet one-way delay: 546.253 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 3.29 Mbit/s
95th percentile per-packet one-way delay: 536.778 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 603.853 ms
Loss rate: 3.80%
```

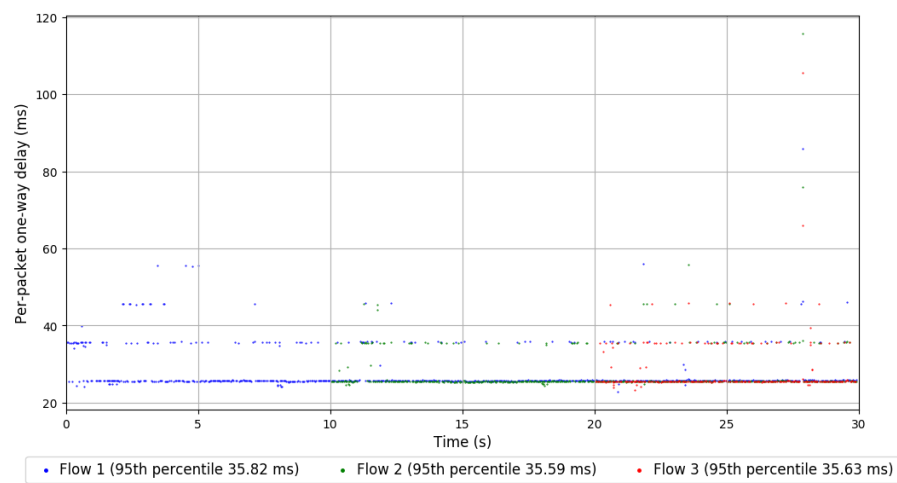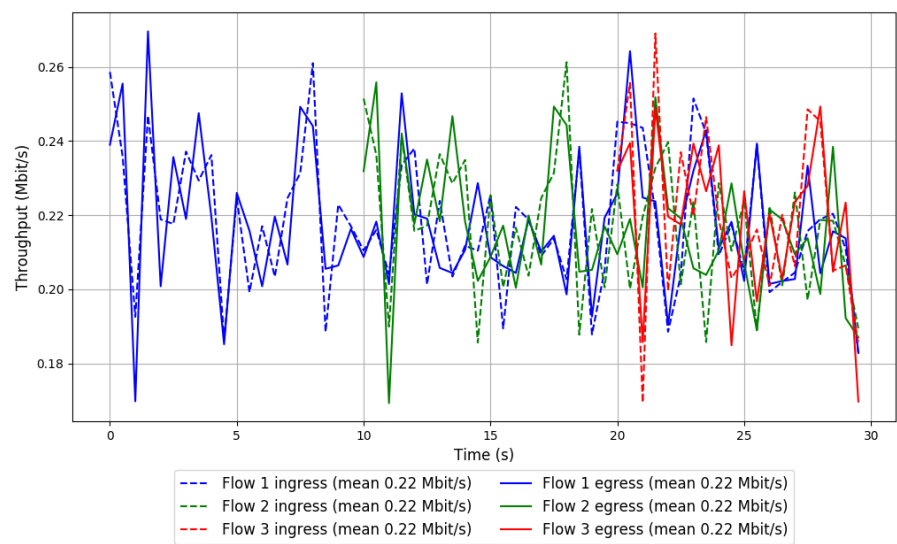Run 3: Report of QUIC Cubic — Data Link

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```
Run 1: Statistics of SCReAM

Start at: 2018-01-18 12:28:35
End at: 2018-01-18 12:29:05
Local clock offset: -20.563 ms
Remote clock offset: -6.821 ms

# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 46.724 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.793 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.423 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.419 ms
Loss rate: 0.35%
```
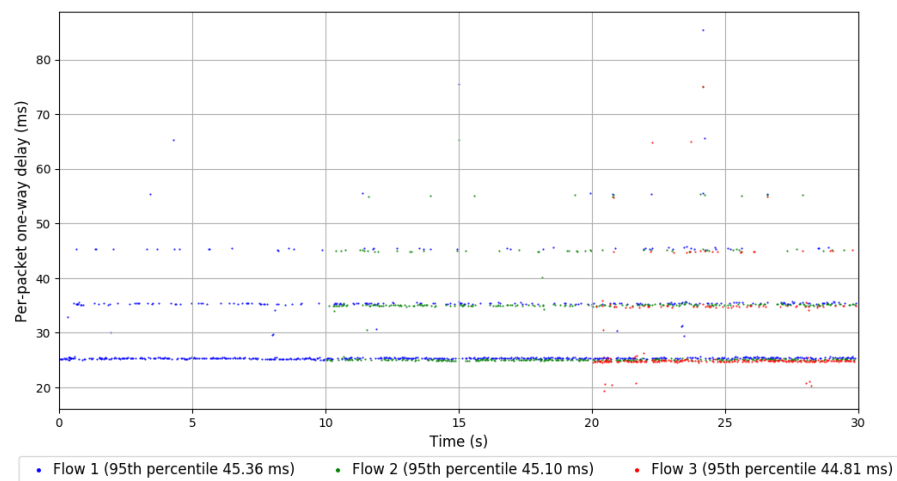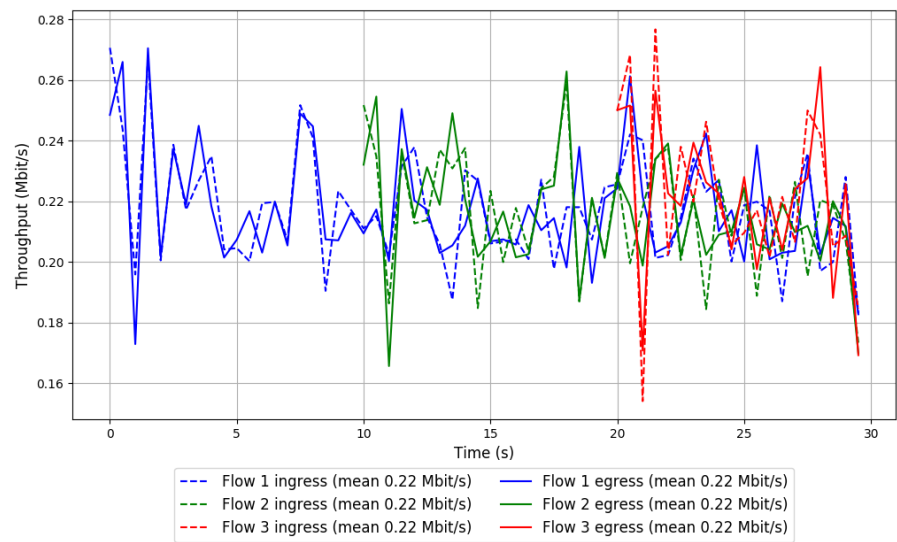
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-01-18 12:48:32
End at: 2018-01-18 12:49:02
Local clock offset: -20.063 ms
Remote clock offset: -7.98 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 35.753 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.821 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.588 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 35.631 ms
Loss rate: 0.35%
```
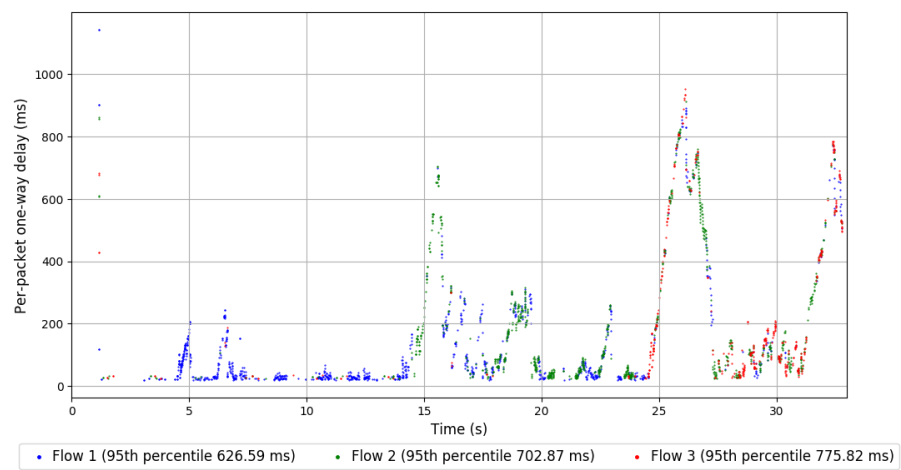
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-01-18 13:08:58
End at: 2018-01-18 13:09:28
Local clock offset: -20.539 ms
Remote clock offset: -9.213 ms

# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 45.221 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 45.357 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 45.102 ms
Loss rate: 0.21%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 44.809 ms
Loss rate: 0.35%
```
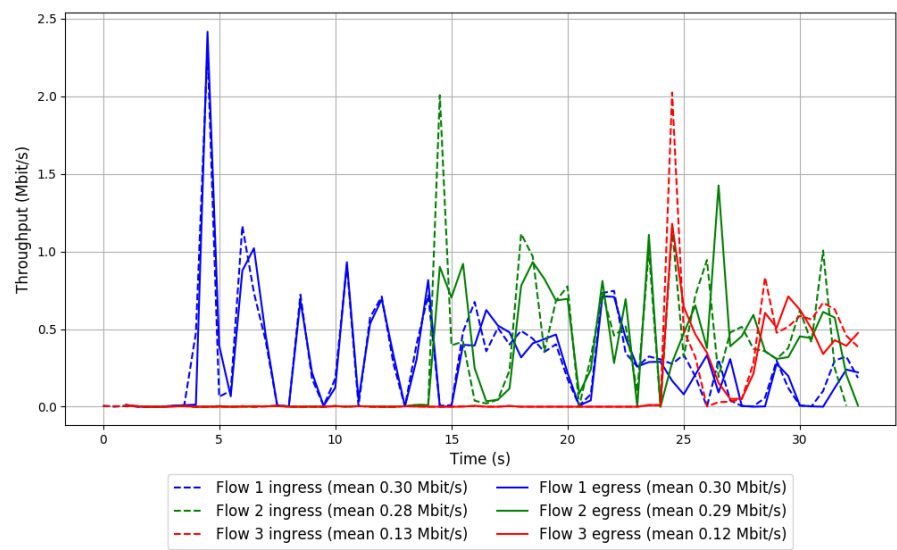
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-01-18 12:41:57
End at: 2018-01-18 12:42:27
Local clock offset: -19.117 ms
Remote clock offset: -7.15 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 708.584 ms
Loss rate: 2.69%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 626.588 ms
Loss rate: 2.05%
-- Flow 2:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 702.873 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 775.816 ms
Loss rate: 7.75%
```

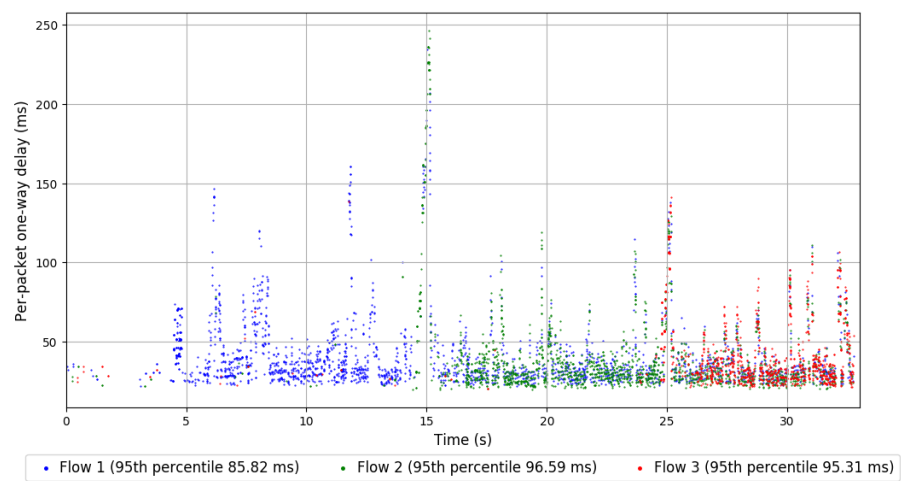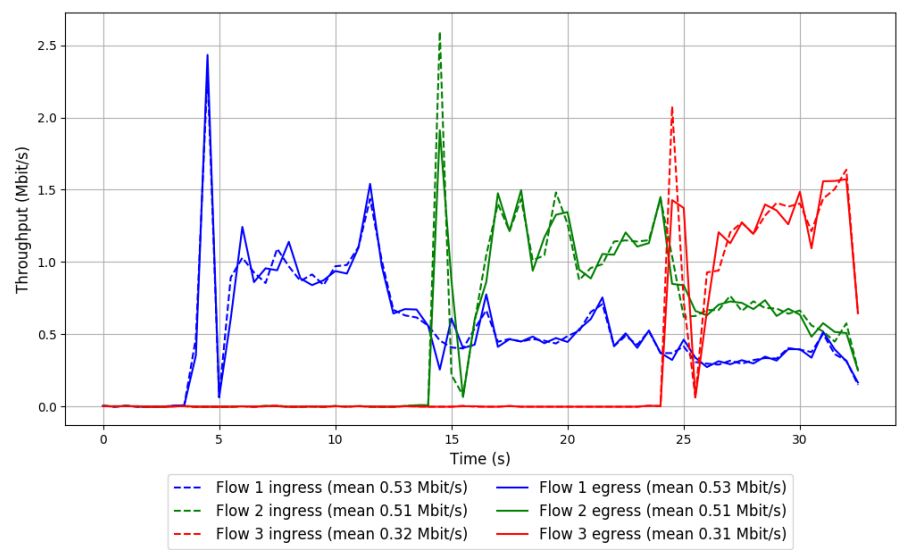Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.30 Mbit/s)
Flow 1 egress (mean 0.30 Mbit/s)
Flow 2 ingress (mean 0.28 Mbit/s)
Flow 2 egress (mean 0.29 Mbit/s)
Flow 3 ingress (mean 0.13 Mbit/s)
Flow 3 egress (mean 0.12 Mbit/s)

Flow 1 (95th percentile 626.59 ms)
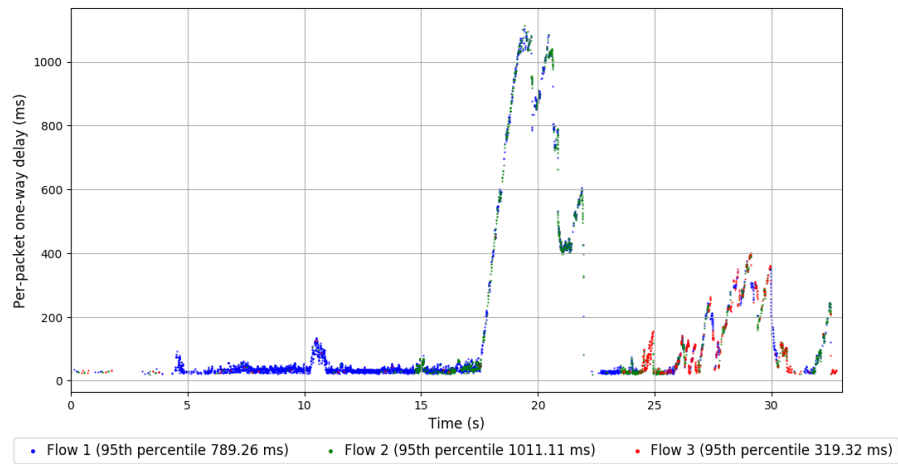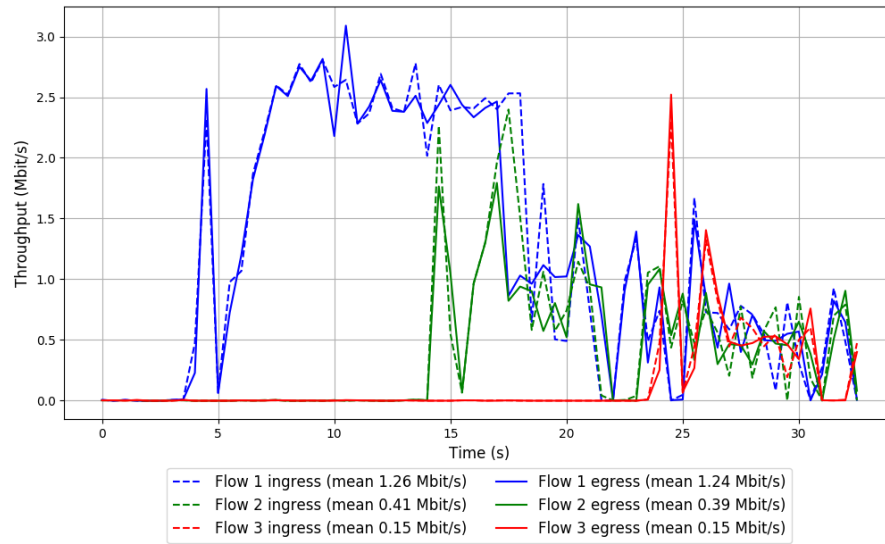Flow 2 (95th percentile 702.87 ms)
Flow 3 (95th percentile 775.82 ms)

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```
Run 2: Statistics of WebRTC media

Start at: 2018-01-18 13:02:07
End at: 2018-01-18 13:02:37
Local clock offset: -20.008 ms
Remote clock offset: -10.789 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 91.157 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 85.818 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 96.589 ms
Loss rate: 0.29%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 95.307 ms
Loss rate: 0.46%
```
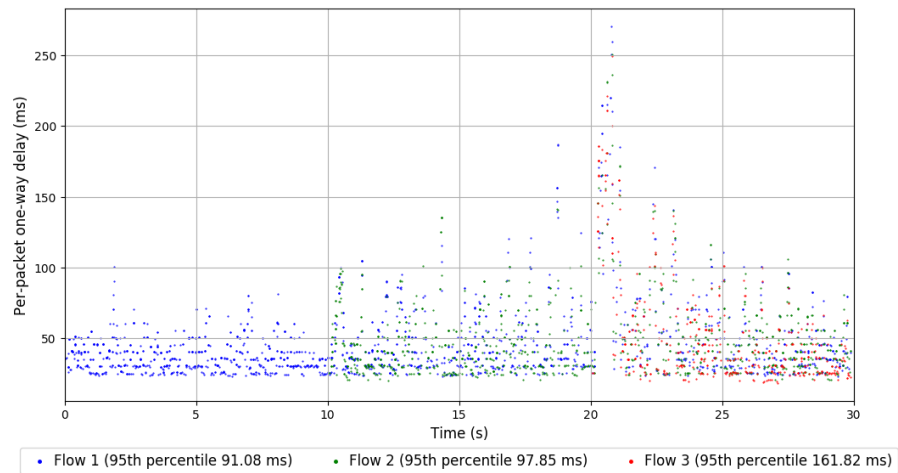
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-01-18 13:22:40
End at: 2018-01-18 13:23:10
Local clock offset: -18.726 ms
Remote clock offset: -7.996 ms

# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 871.672 ms
Loss rate: 2.40%
-- Flow 1:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 789.258 ms
Loss rate: 1.96%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1011.107 ms
Loss rate: 4.32%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 319.321 ms
Loss rate: 0.98%
```

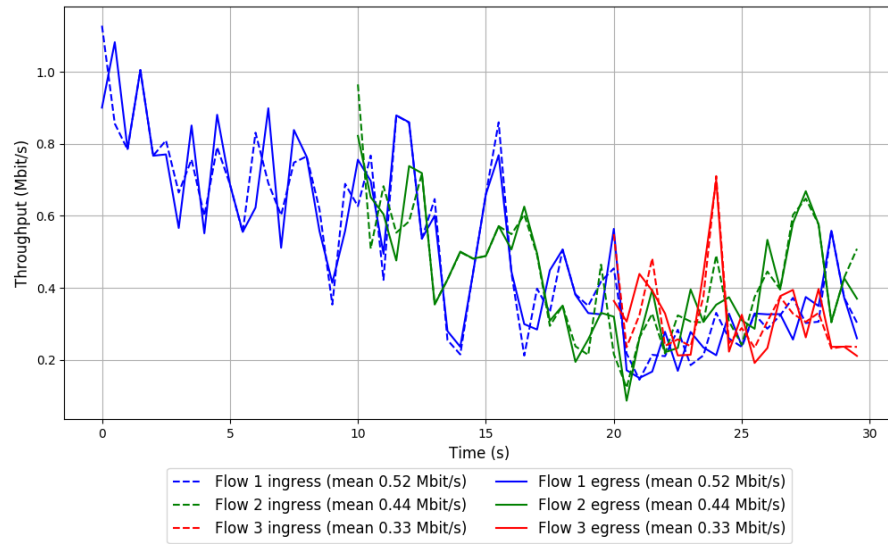Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.26 Mbit/s)   Flow 1 egress (mean 1.24 Mbit/s)
Flow 2 ingress (mean 0.41 Mbit/s)   Flow 2 egress (mean 0.39 Mbit/s)
Flow 3 ingress (mean 0.15 Mbit/s)   Flow 3 egress (mean 0.15 Mbit/s)

Flow 1 (95th percentile 789.26 ms)   Flow 2 (95th percentile 1011.11 ms)   Flow 3 (95th percentile 319.32 ms)
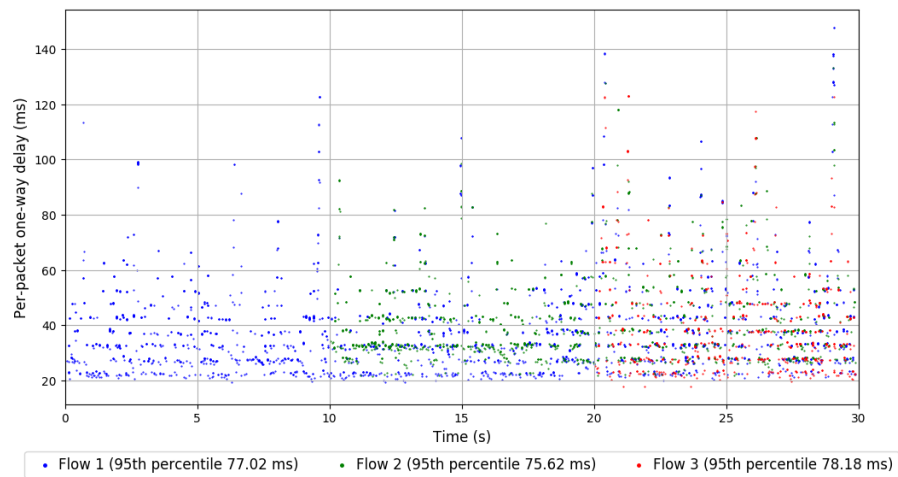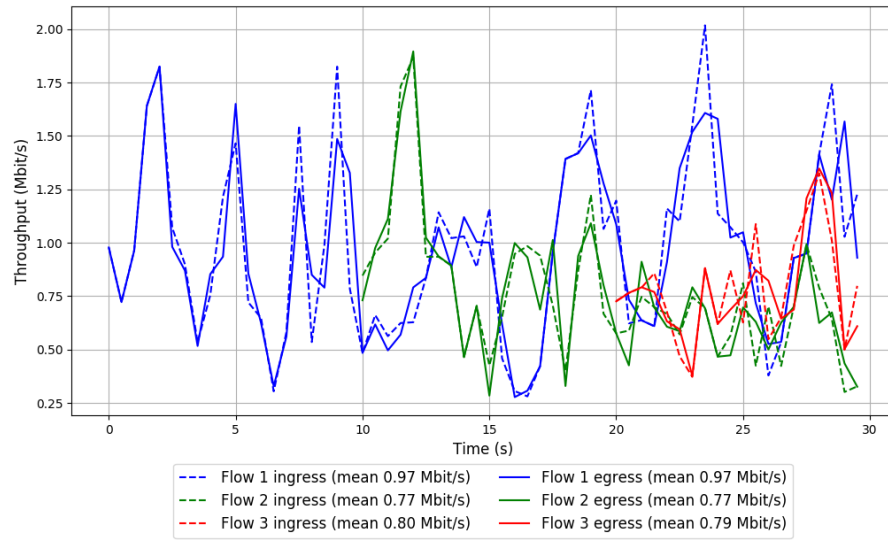
```
Run 1: Statistics of Sprout

Start at: 2018-01-18 12:43:03
End at: 2018-01-18 12:43:33
Local clock offset: -19.622 ms
Remote clock offset: -8.858 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 100.593 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 91.085 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 97.847 ms
Loss rate: 0.80%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 161.816 ms
Loss rate: 0.70%
```
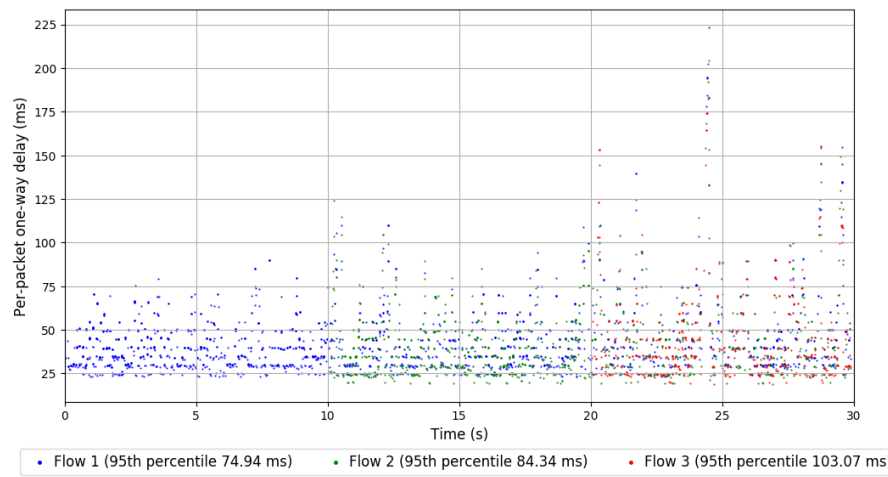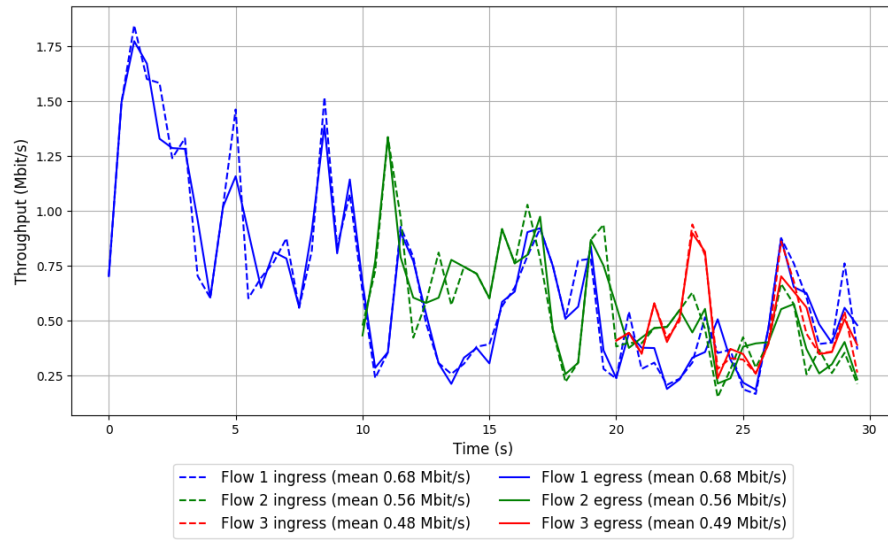
Run 1: Report of Sprout — Data Link

Flow 1 ingress (mean 0.52 Mbit/s)   Flow 1 egress (mean 0.52 Mbit/s)
Flow 2 ingress (mean 0.44 Mbit/s)   Flow 2 egress (mean 0.44 Mbit/s)
Flow 3 ingress (mean 0.33 Mbit/s)   Flow 3 egress (mean 0.33 Mbit/s)

Flow 1 (95th percentile 91.08 ms)   Flow 2 (95th percentile 97.85 ms)   Flow 3 (95th percentile 161.82 ms)

```
Run 2: Statistics of Sprout

Start at: 2018-01-18 13:03:18
End at: 2018-01-18 13:03:48
Local clock offset: -20.762 ms
Remote clock offset: -9.63 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 77.105 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 77.015 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 75.624 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 78.179 ms
Loss rate: 1.20%
```
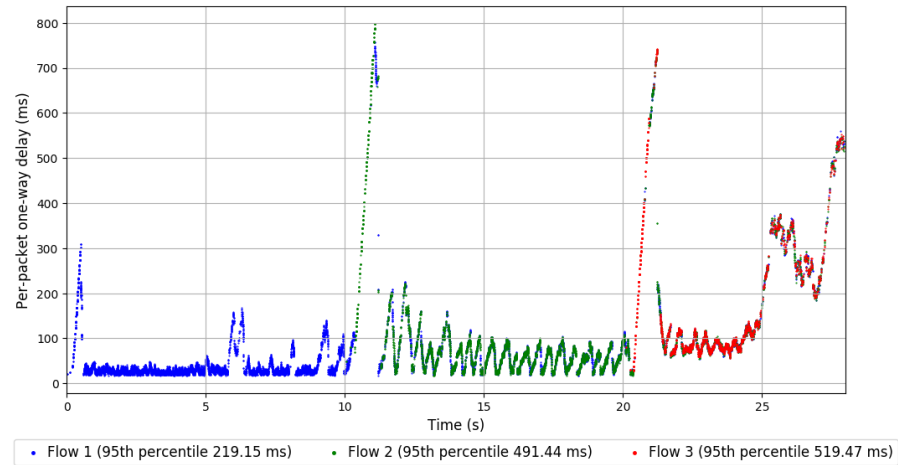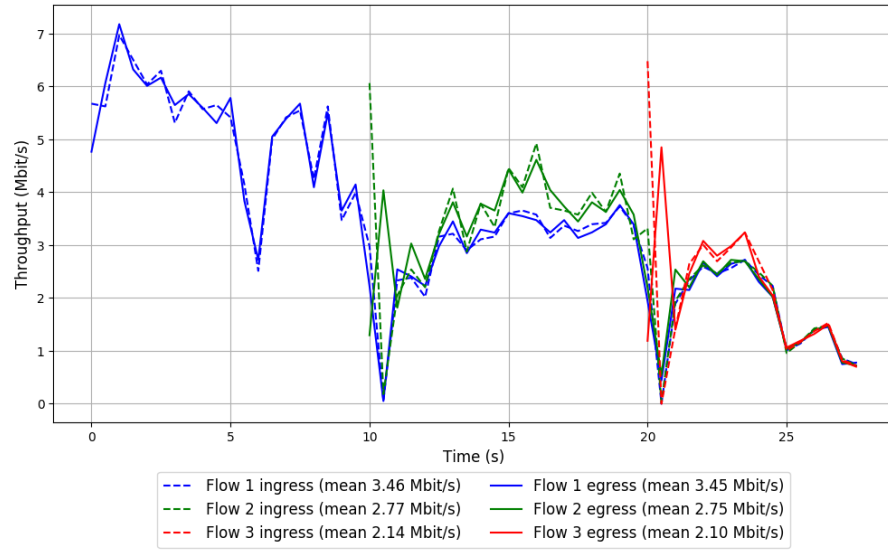
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-01-18 13:23:46
End at: 2018-01-18 13:24:16
Local clock offset: -20.641 ms
Remote clock offset: -8.988 ms


# Below is generated by plot.py at 2018-01-18 13:25:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 82.549 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 74.937 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 84.336 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 103.072 ms
Loss rate: 0.02%
```
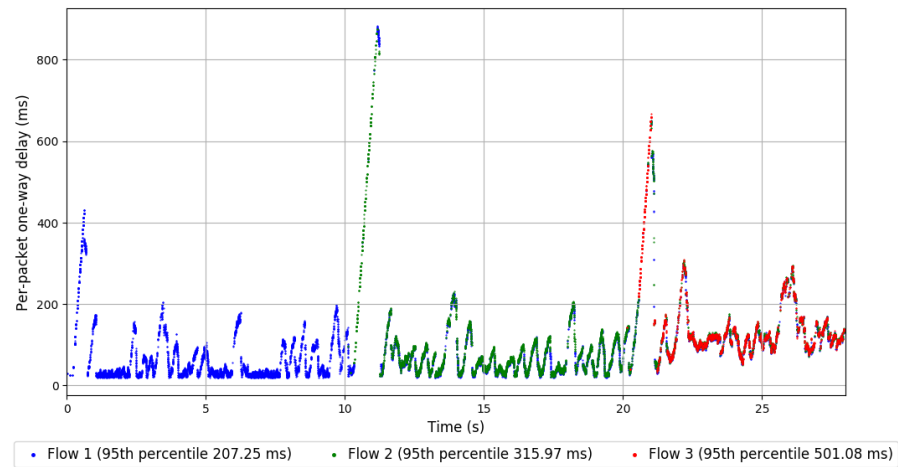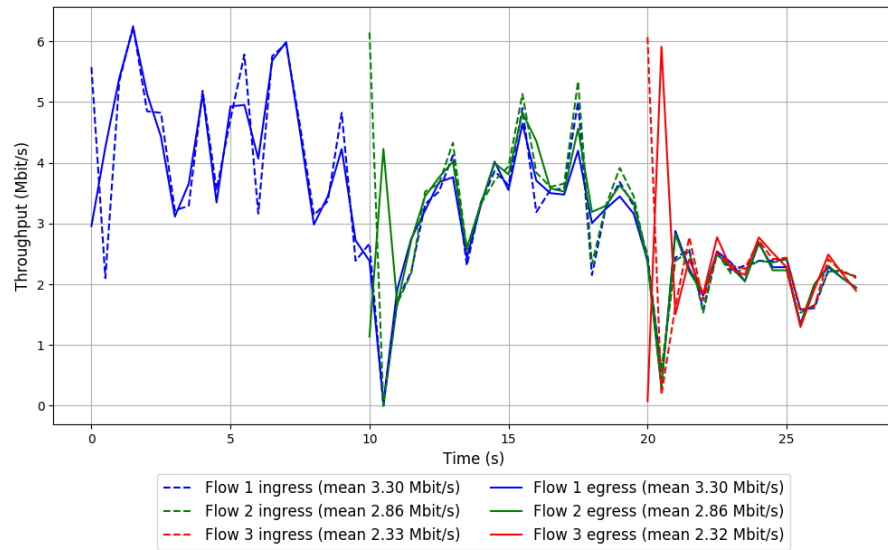
Run 3: Report of Sprout — Data Link

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

Start at: 2018-01-18 12:40:51
End at: 2018-01-18 12:41:21
Local clock offset: -19.317 ms
Remote clock offset: -8.335 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.80 Mbit/s
95th percentile per-packet one-way delay: 341.030 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 3.45 Mbit/s
95th percentile per-packet one-way delay: 219.146 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 2.75 Mbit/s
95th percentile per-packet one-way delay: 491.441 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 519.470 ms
Loss rate: 2.59%
```

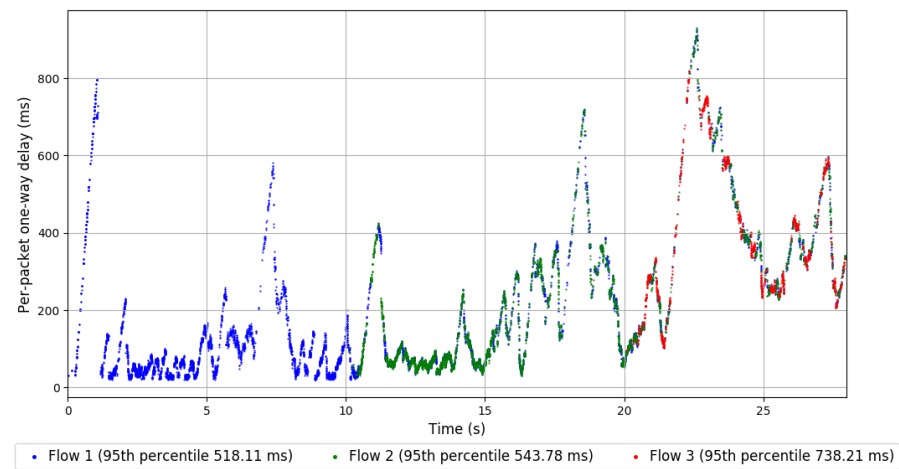Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-01-18 13:00:58
End at: 2018-01-18 13:01:28
Local clock offset: -20.678 ms
Remote clock offset: -10.483 ms

# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.77 Mbit/s
95th percentile per-packet one-way delay: 286.942 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 3.30 Mbit/s
95th percentile per-packet one-way delay: 207.255 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 315.971 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 501.077 ms
Loss rate: 1.96%
```

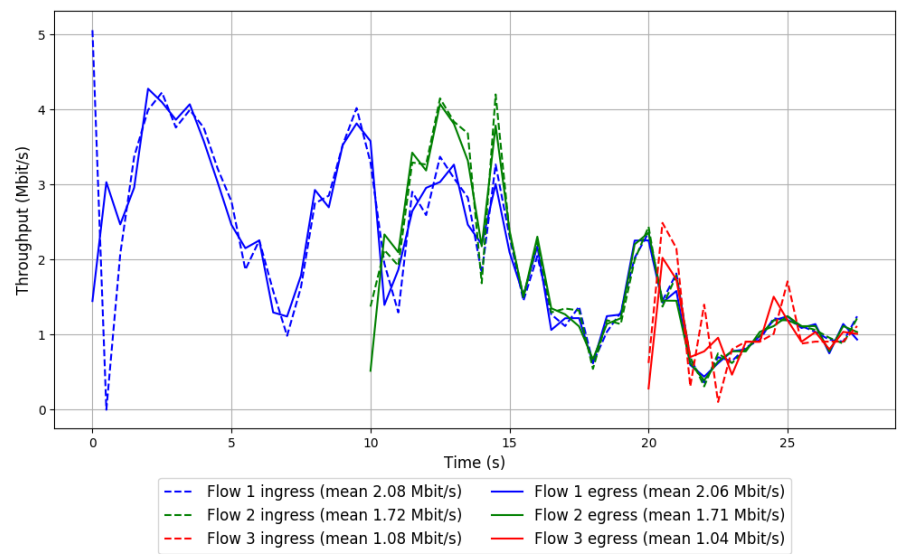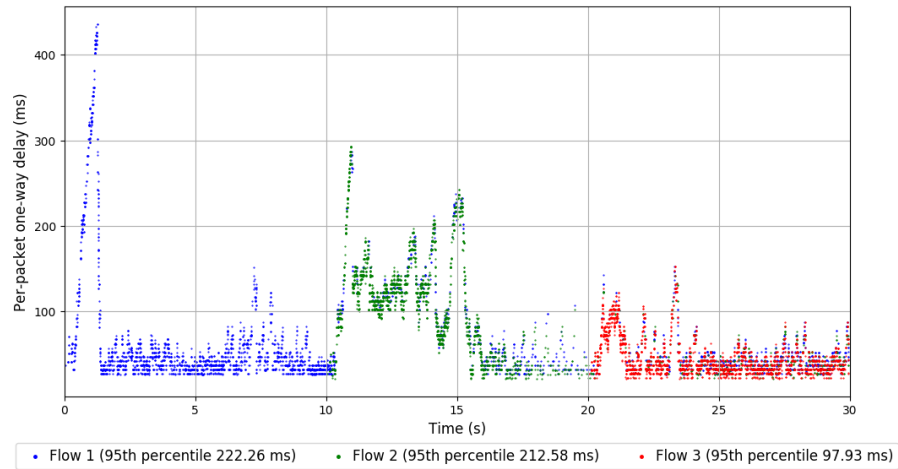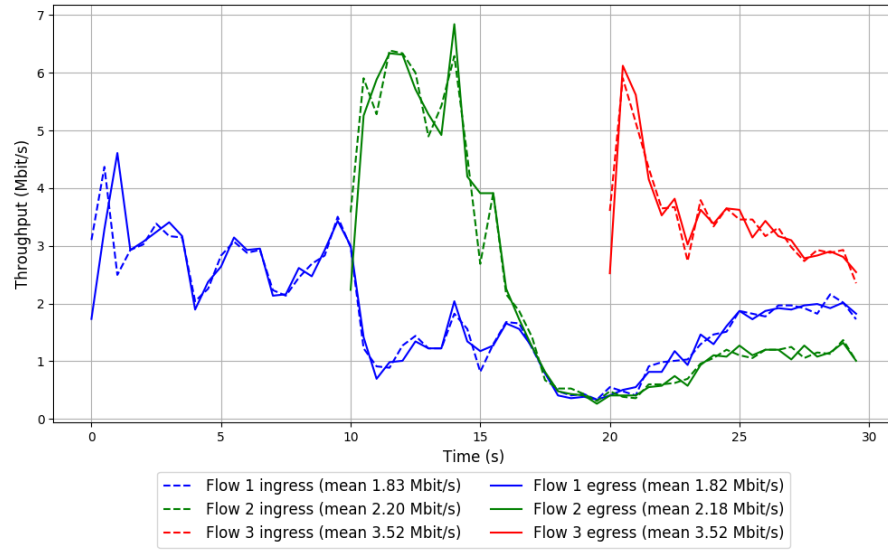# Run 2: Report of TaoVA-100x — Data Link

- Flow 1 ingress (mean 3.30 Mbit/s)
- Flow 1 egress (mean 3.30 Mbit/s)
- Flow 2 ingress (mean 2.86 Mbit/s)
- Flow 2 egress (mean 2.86 Mbit/s)
- Flow 3 ingress (mean 2.33 Mbit/s)
- Flow 3 egress (mean 2.32 Mbit/s)

- Flow 1 (95th percentile 207.25 ms)
- Flow 2 (95th percentile 315.97 ms)
- Flow 3 (95th percentile 501.08 ms)

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

Start at: 2018-01-18 13:21:34
End at: 2018-01-18 13:22:04
Local clock offset: -21.938 ms
Remote clock offset: -9.838 ms

# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.44 Mbit/s
95th percentile per-packet one-way delay: 577.647 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 518.114 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 1.71 Mbit/s
95th percentile per-packet one-way delay: 543.783 ms
Loss rate: 1.52%
-- Flow 3:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 738.212 ms
Loss rate: 5.17%
```
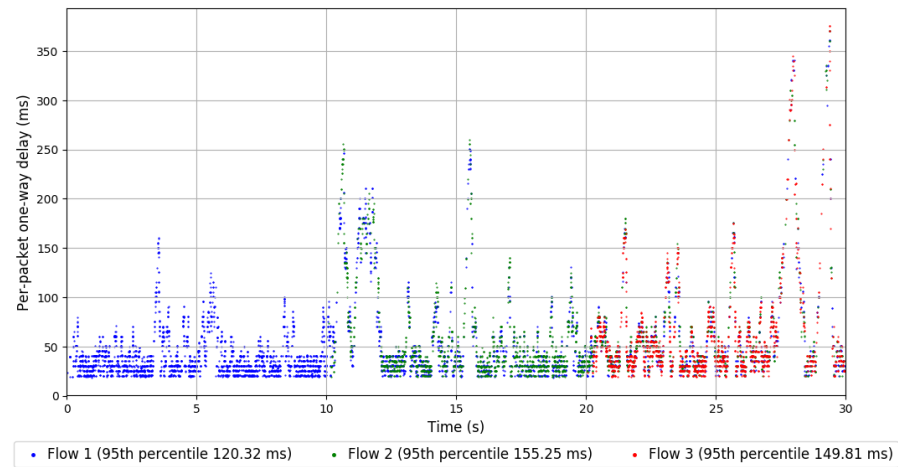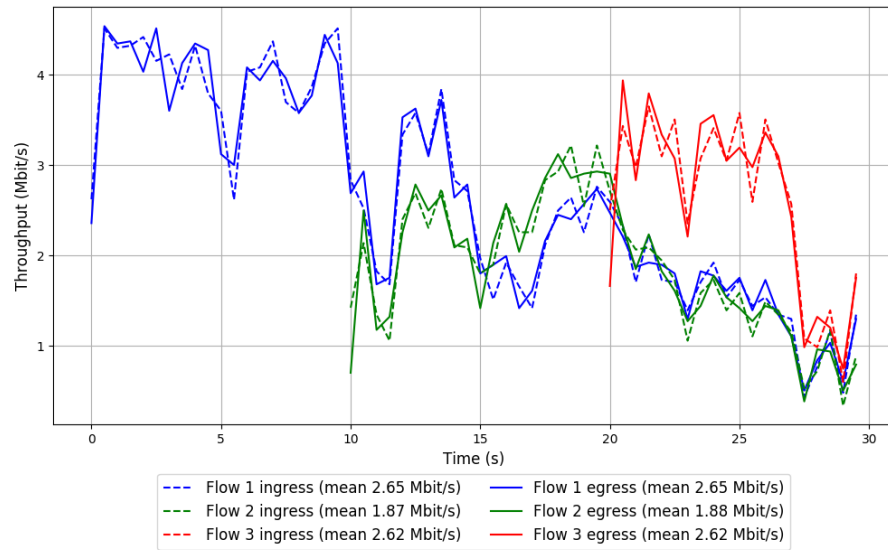
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 2.08 Mbit/s)   Flow 1 egress (mean 2.06 Mbit/s)
Flow 2 ingress (mean 1.72 Mbit/s)   Flow 2 egress (mean 1.71 Mbit/s)
Flow 3 ingress (mean 1.08 Mbit/s)   Flow 3 egress (mean 1.04 Mbit/s)

Flow 1 (95th percentile 518.11 ms)   Flow 2 (95th percentile 543.78 ms)   Flow 3 (95th percentile 738.21 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-01-18 12:36:25
End at: 2018-01-18 12:36:55
Local clock offset: -20.77 ms
Remote clock offset: -6.975 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.44 Mbit/s
95th percentile per-packet one-way delay: 197.135 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 222.259 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 212.578 ms
Loss rate: 0.90%
-- Flow 3:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 97.929 ms
Loss rate: 0.34%
```
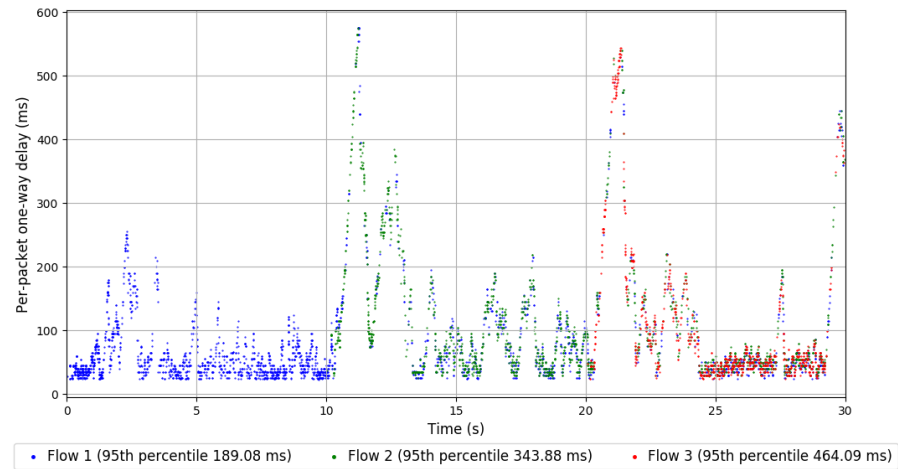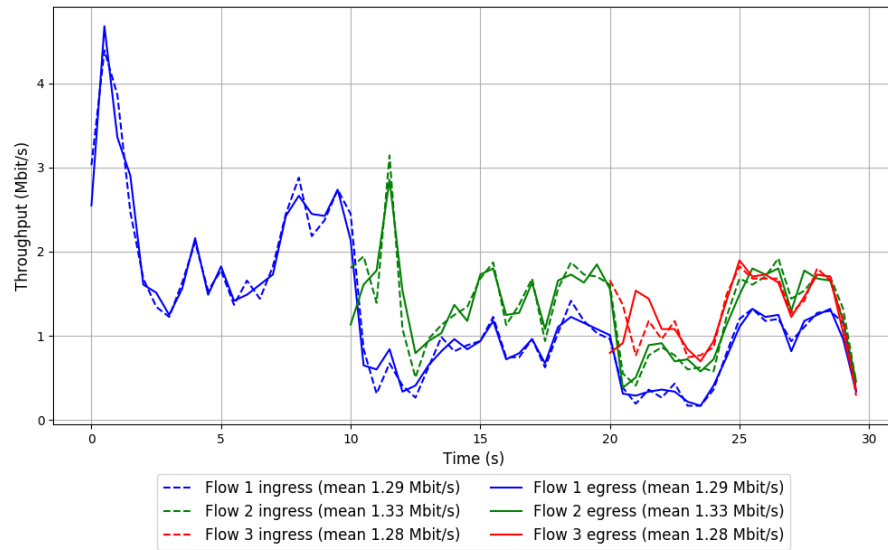
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-01-18 12:56:29
End at: 2018-01-18 12:56:59
Local clock offset: -19.869 ms
Remote clock offset: -9.958 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.76 Mbit/s
95th percentile per-packet one-way delay: 139.630 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 120.319 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 155.252 ms
Loss rate: 0.32%
-- Flow 3:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 149.807 ms
Loss rate: 0.41%
```
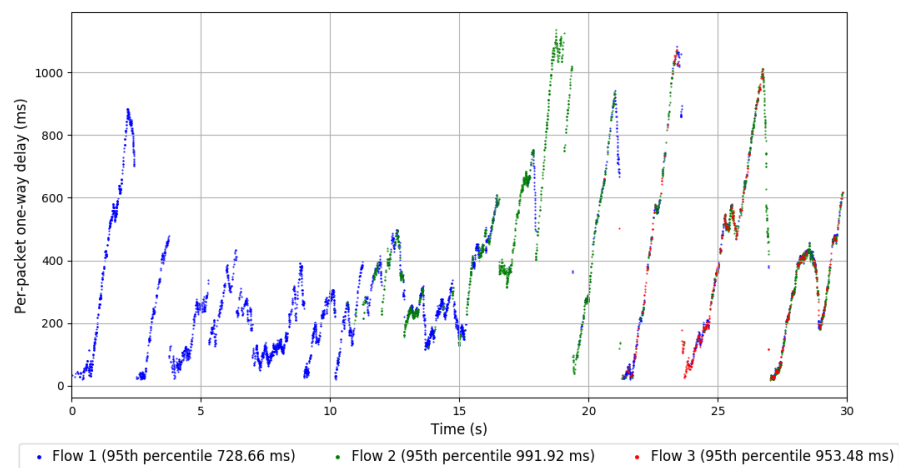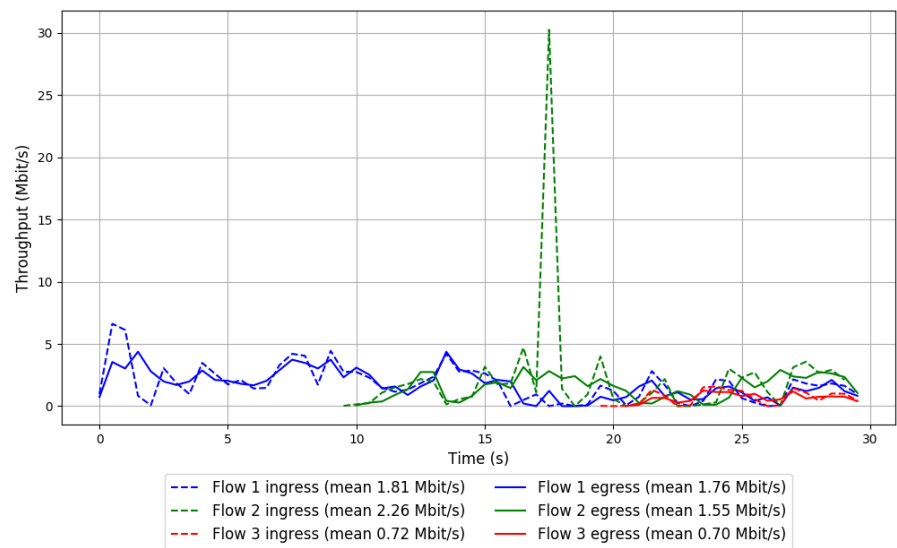
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 2.65 Mbit/s)   Flow 1 egress (mean 2.65 Mbit/s)
Flow 2 ingress (mean 1.87 Mbit/s)   Flow 2 egress (mean 1.88 Mbit/s)
Flow 3 ingress (mean 2.62 Mbit/s)   Flow 3 egress (mean 2.62 Mbit/s)

Flow 1 (95th percentile 120.32 ms)   Flow 2 (95th percentile 155.25 ms)   Flow 3 (95th percentile 149.81 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-01-18 13:16:53
End at: 2018-01-18 13:17:23
Local clock offset: -21.352 ms
Remote clock offset: -8.436 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 284.826 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 189.077 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 343.877 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 464.094 ms
Loss rate: 1.04%
```

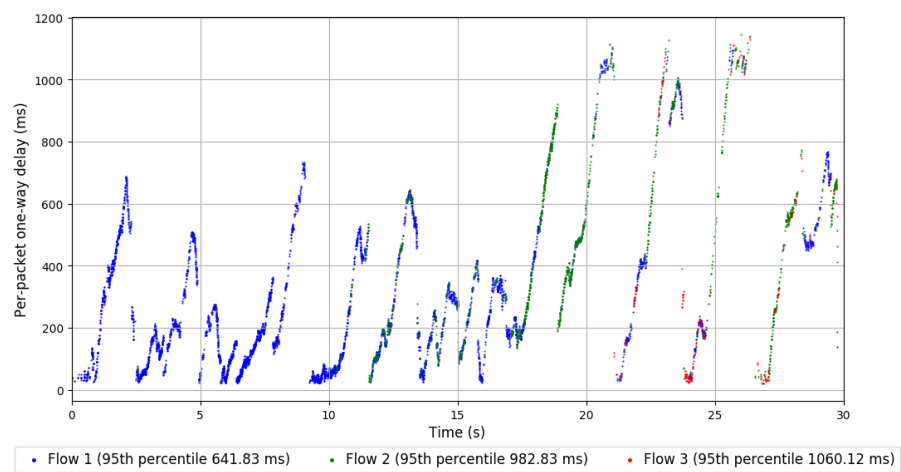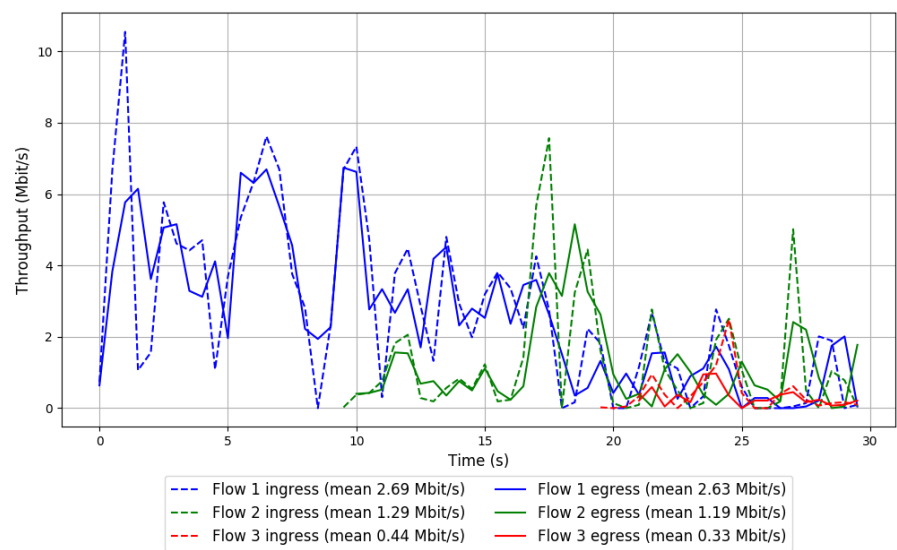Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-01-18 12:38:38
End at: 2018-01-18 12:39:08
Local clock offset: -19.421 ms
Remote clock offset: -8.932 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.99 Mbit/s
95th percentile per-packet one-way delay: 870.846 ms
Loss rate: 14.75%
-- Flow 1:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 728.656 ms
Loss rate: 2.56%
-- Flow 2:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 991.921 ms
Loss rate: 30.64%
-- Flow 3:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 953.479 ms
Loss rate: 8.83%
```
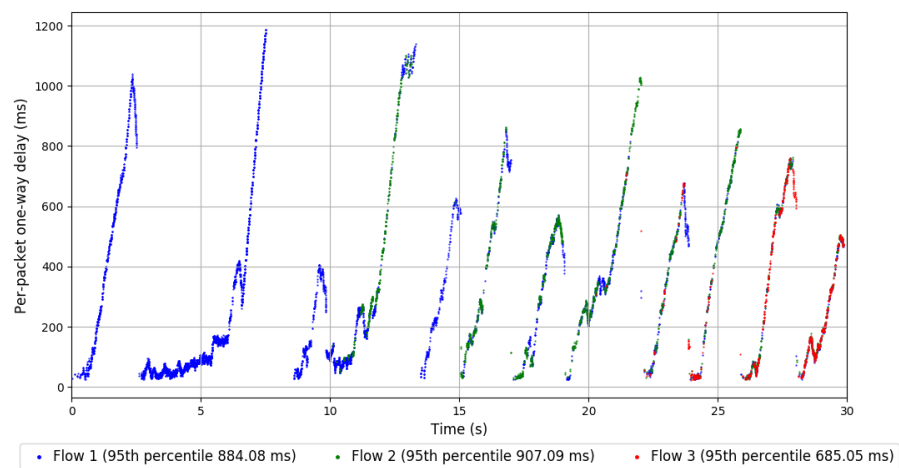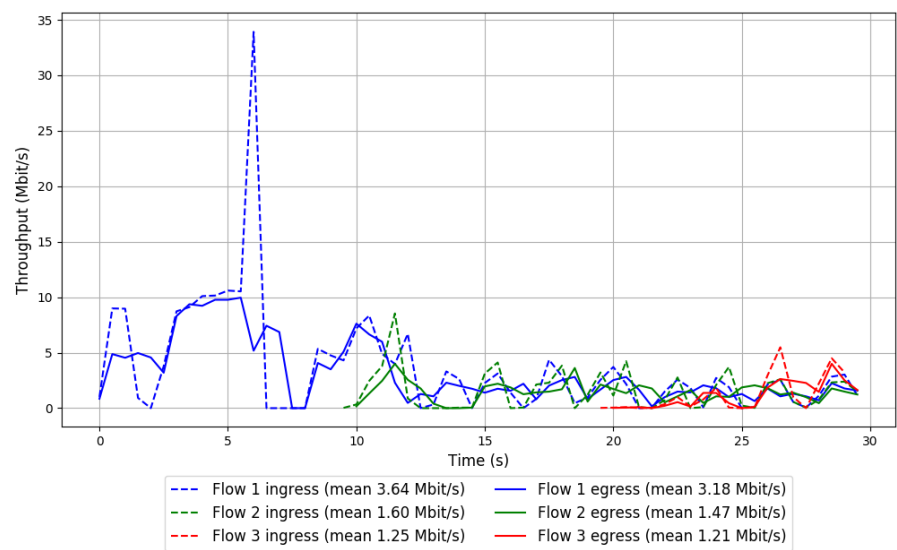
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-01-18 12:58:44
End at: 2018-01-18 12:59:14
Local clock offset: -19.352 ms
Remote clock offset: -9.908 ms

# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 841.041 ms
Loss rate: 5.18%
-- Flow 1:
Average throughput: 2.63 Mbit/s
95th percentile per-packet one-way delay: 641.832 ms
Loss rate: 2.52%
-- Flow 2:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 982.828 ms
Loss rate: 8.67%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 1060.123 ms
Loss rate: 33.97%
```
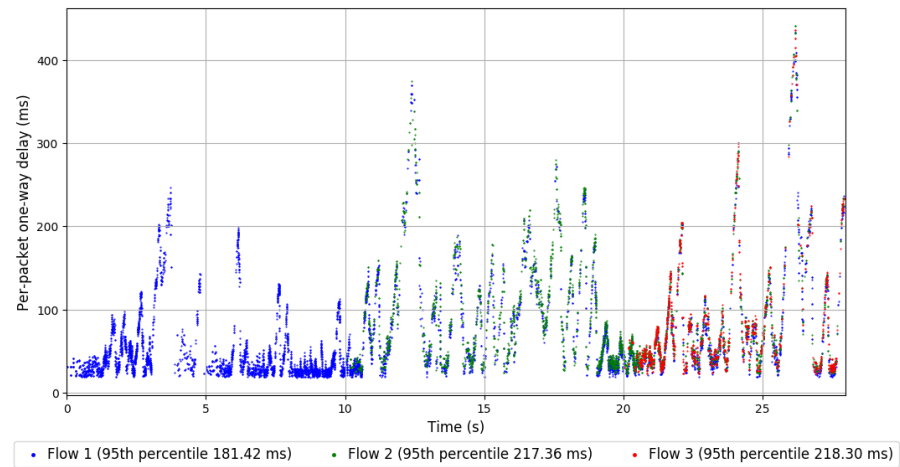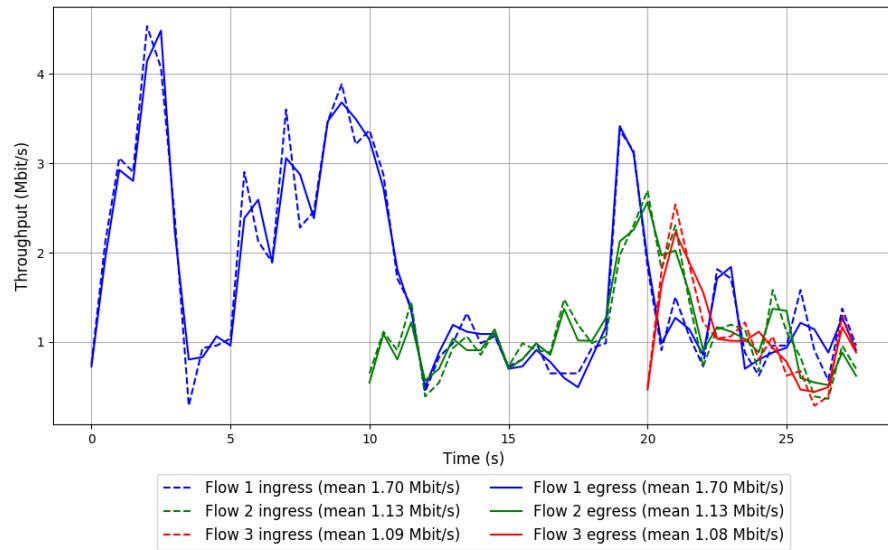
Run 2: Report of Verus — Data Link

- - - Flow 1 ingress (mean 2.69 Mbit/s)   —— Flow 1 egress (mean 2.63 Mbit/s)
- - - Flow 2 ingress (mean 1.29 Mbit/s)   —— Flow 2 egress (mean 1.19 Mbit/s)
- - - Flow 3 ingress (mean 0.44 Mbit/s)   —— Flow 3 egress (mean 0.33 Mbit/s)

- Flow 1 (95th percentile 641.83 ms)   • Flow 2 (95th percentile 982.83 ms)   • Flow 3 (95th percentile 1060.12 ms)

```
Run 3: Statistics of Verus

Start at: 2018-01-18 13:19:22
End at: 2018-01-18 13:19:52
Local clock offset: -22.14 ms
Remote clock offset: -9.355 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.54 Mbit/s
95th percentile per-packet one-way delay: 859.556 ms
Loss rate: 11.10%
-- Flow 1:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 884.078 ms
Loss rate: 12.67%
-- Flow 2:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 907.088 ms
Loss rate: 8.96%
-- Flow 3:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 685.053 ms
Loss rate: 2.49%
```
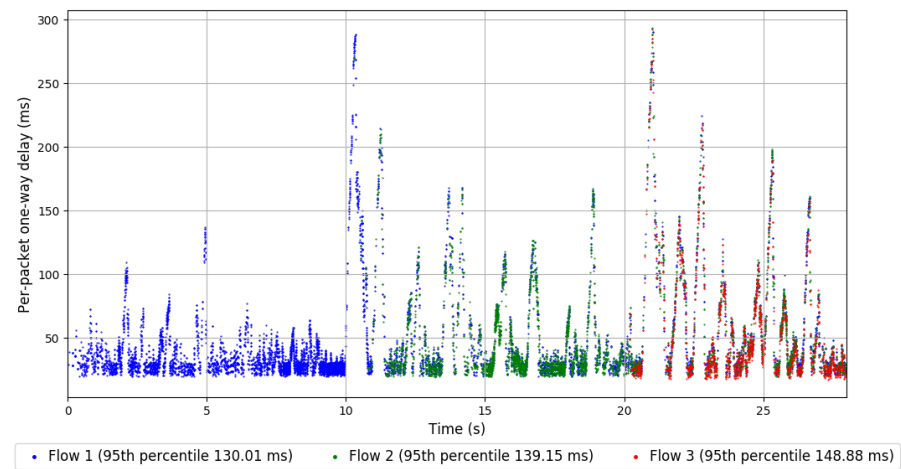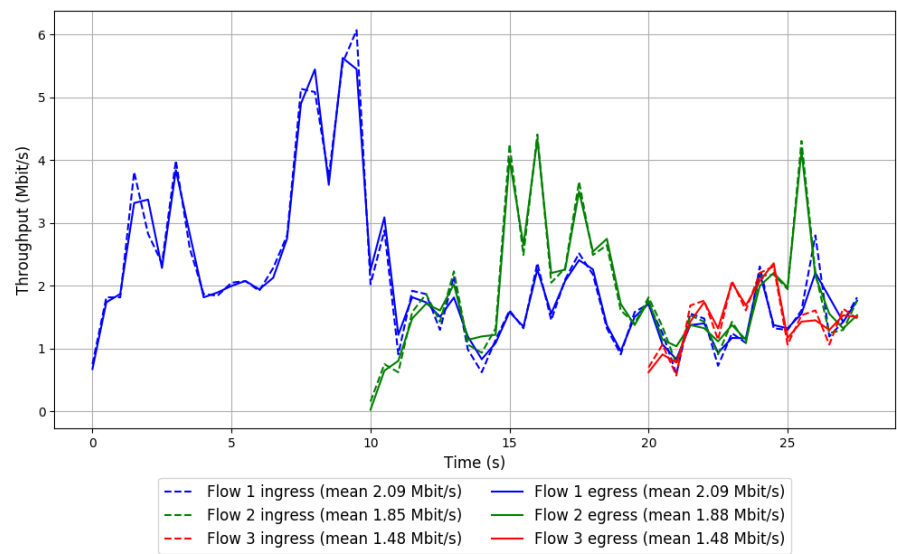
Run 3: Report of Verus — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-01-18 12:39:44
End at: 2018-01-18 12:40:14
Local clock offset: -20.58 ms
Remote clock offset: -9.25 ms


# Below is generated by plot.py at 2018-01-18 13:26:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 200.040 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 181.418 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 217.356 ms
Loss rate: 0.45%
-- Flow 3:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 218.302 ms
Loss rate: 0.90%
```
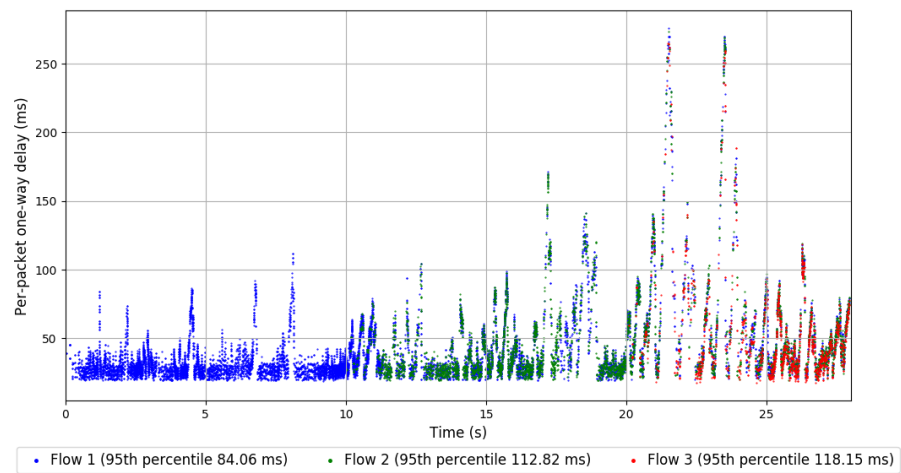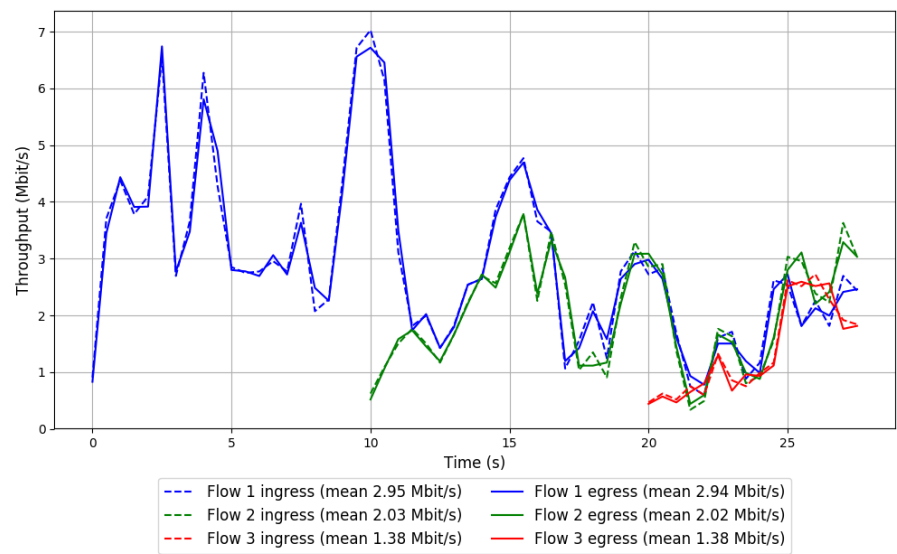
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-01-18 12:59:52
End at: 2018-01-18 13:00:22
Local clock offset: -18.726 ms
Remote clock offset: -9.021 ms

# Below is generated by plot.py at 2018-01-18 13:26:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.69 Mbit/s
95th percentile per-packet one-way delay: 135.550 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 2.09 Mbit/s
95th percentile per-packet one-way delay: 130.008 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 139.151 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 148.885 ms
Loss rate: 0.66%
```
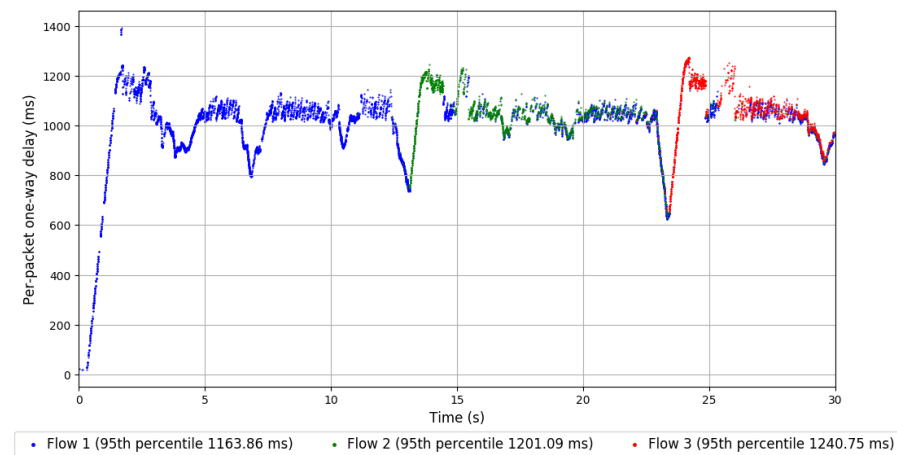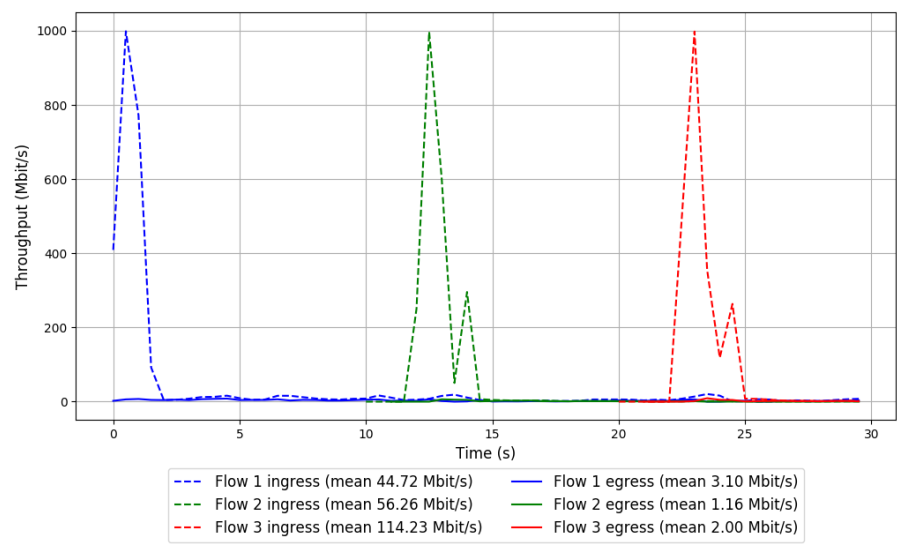
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-01-18 13:20:28
End at: 2018-01-18 13:20:58
Local clock offset: -18.782 ms
Remote clock offset: -9.109 ms


# Below is generated by plot.py at 2018-01-18 13:26:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.63 Mbit/s
95th percentile per-packet one-way delay: 96.476 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 2.94 Mbit/s
95th percentile per-packet one-way delay: 84.056 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 112.819 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 118.149 ms
Loss rate: 1.18%
```

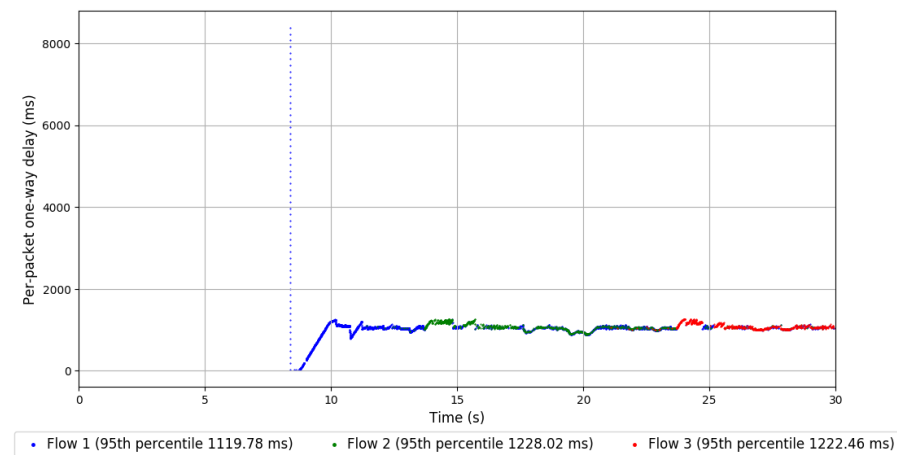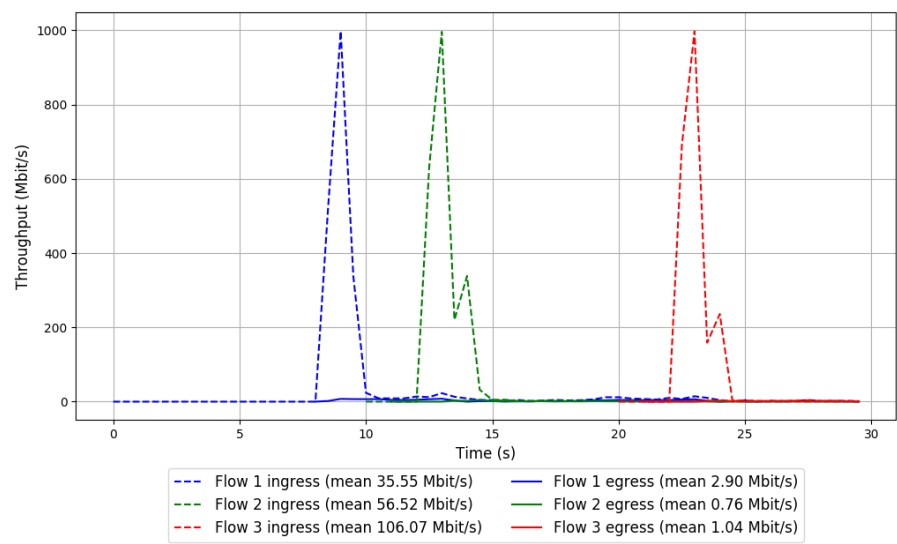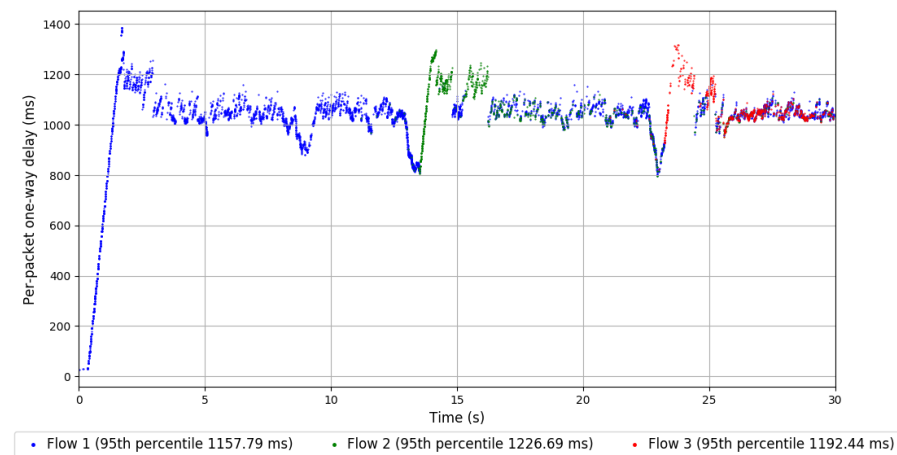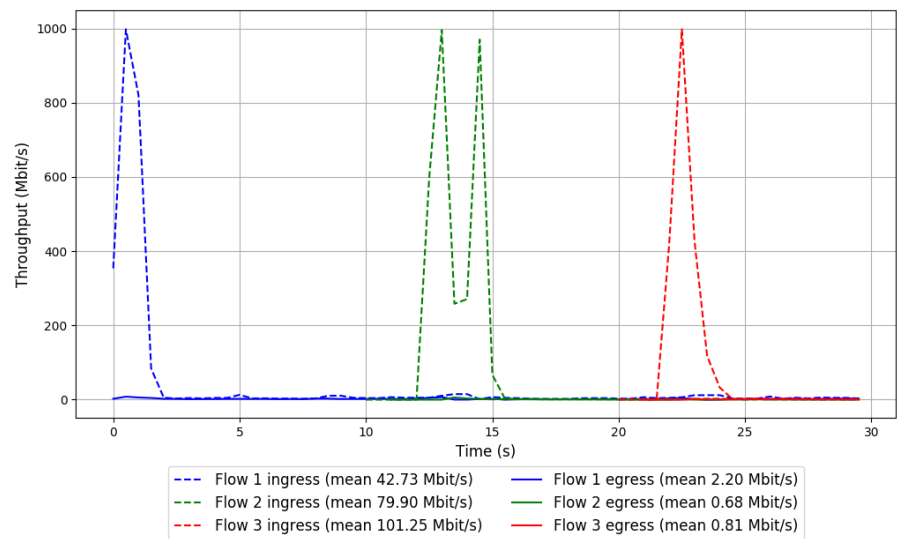Run 3: Report of Copa — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-01-18 12:30:47
End at: 2018-01-18 12:31:17
Local clock offset: -18.441 ms
Remote clock offset: -8.701 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.42 Mbit/s
95th percentile per-packet one-way delay: 1189.976 ms
Loss rate: 96.32%
-- Flow 1:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 1163.855 ms
Loss rate: 93.07%
-- Flow 2:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 1201.086 ms
Loss rate: 98.06%
-- Flow 3:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 1240.747 ms
Loss rate: 98.44%
```

Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 44.72 Mbit/s) — Flow 1 egress (mean 3.10 Mbit/s)
Flow 2 ingress (mean 56.26 Mbit/s) — Flow 2 egress (mean 1.16 Mbit/s)
Flow 3 ingress (mean 114.23 Mbit/s) — Flow 3 egress (mean 2.00 Mbit/s)

Flow 1 (95th percentile 1163.86 ms) • Flow 2 (95th percentile 1201.09 ms) • Flow 3 (95th percentile 1240.75 ms)

```
Run 2: Statistics of FillP

Start at: 2018-01-18 12:50:51
End at: 2018-01-18 12:51:21
Local clock offset: -21.396 ms
Remote clock offset: -7.182 ms
```
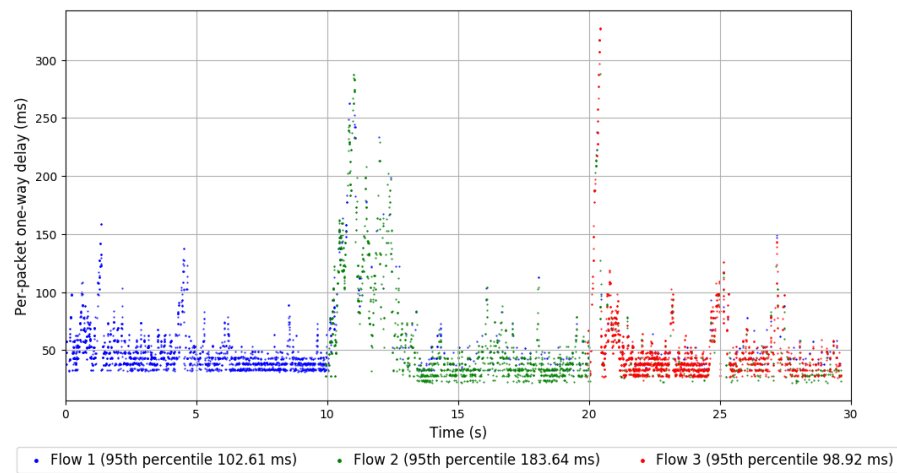
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-01-18 13:11:09
End at: 2018-01-18 13:11:39
Local clock offset: -19.578 ms
Remote clock offset: -8.882 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 1185.743 ms
Loss rate: 97.79%
-- Flow 1:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 1157.789 ms
Loss rate: 94.86%
-- Flow 2:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 1226.686 ms
Loss rate: 99.21%
-- Flow 3:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 1192.437 ms
Loss rate: 99.28%
```

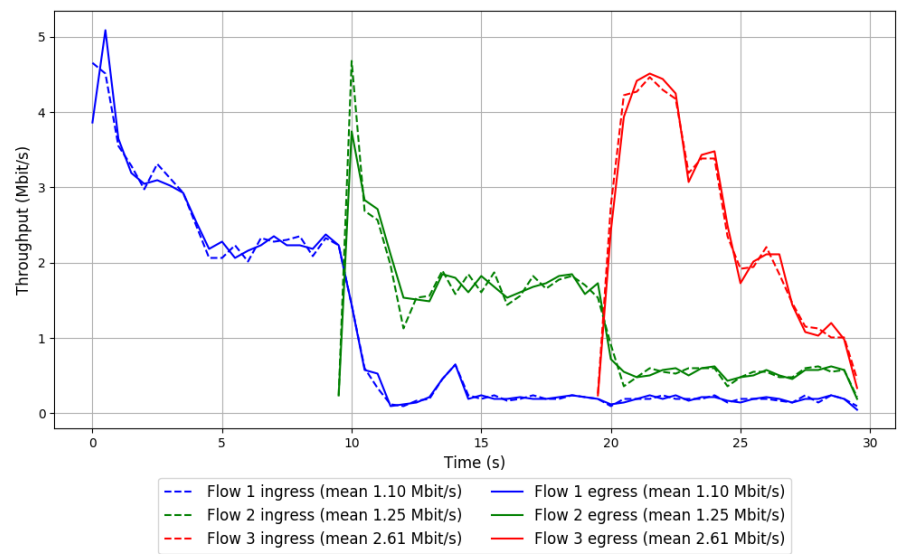Run 3: Report of FillP — Data Link
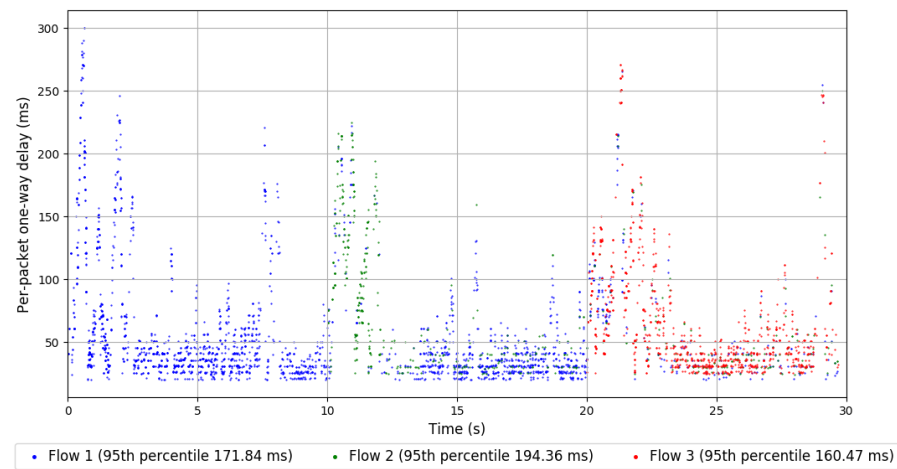

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```
Run 1: Statistics of Indigo

Start at: 2018-01-18 12:34:07
End at: 2018-01-18 12:34:37
Local clock offset: -19.189 ms
Remote clock offset: -8.005 ms

# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 137.316 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 102.606 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 183.642 ms
Loss rate: 0.15%
-- Flow 3:
Average throughput: 2.61 Mbit/s
95th percentile per-packet one-way delay: 98.925 ms
Loss rate: 0.33%
```

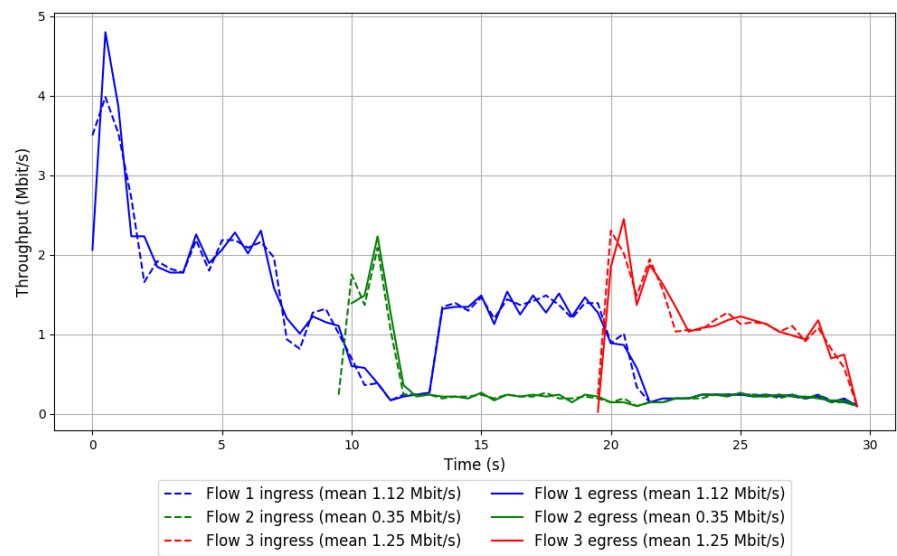Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-01-18 12:54:18
End at: 2018-01-18 12:54:48
Local clock offset: -21.417 ms
Remote clock offset: -9.5 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 175.221 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 171.844 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 194.361 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 160.469 ms
Loss rate: 0.20%
```

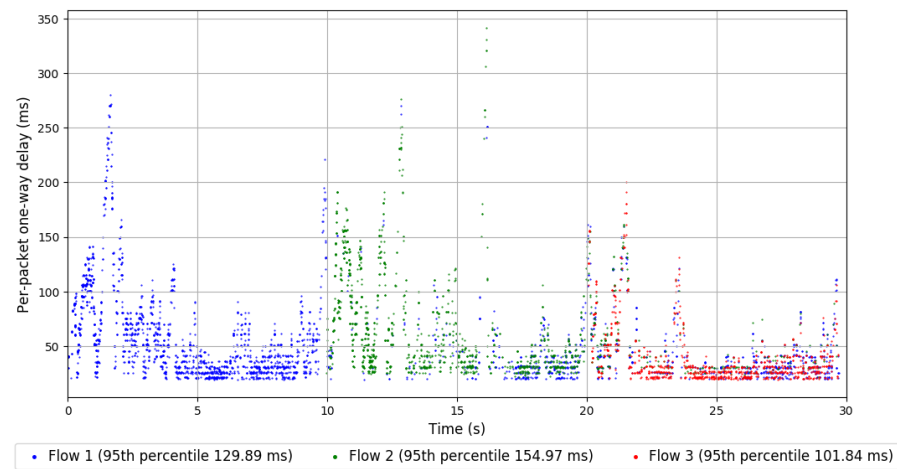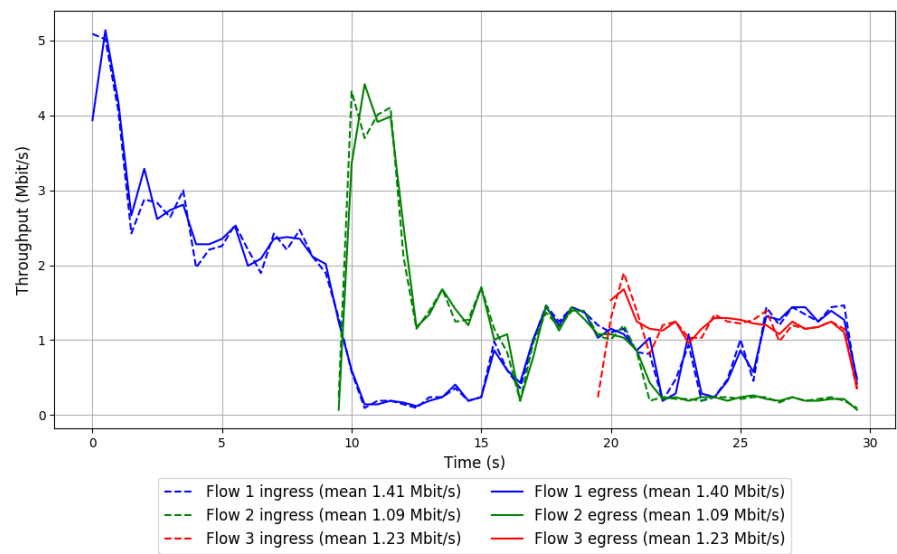Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-01-18 13:14:35
End at: 2018-01-18 13:15:05
Local clock offset: -20.08 ms
Remote clock offset: -9.557 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 139.764 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 129.886 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 154.966 ms
Loss rate: 0.22%
-- Flow 3:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 101.838 ms
Loss rate: 0.50%
```
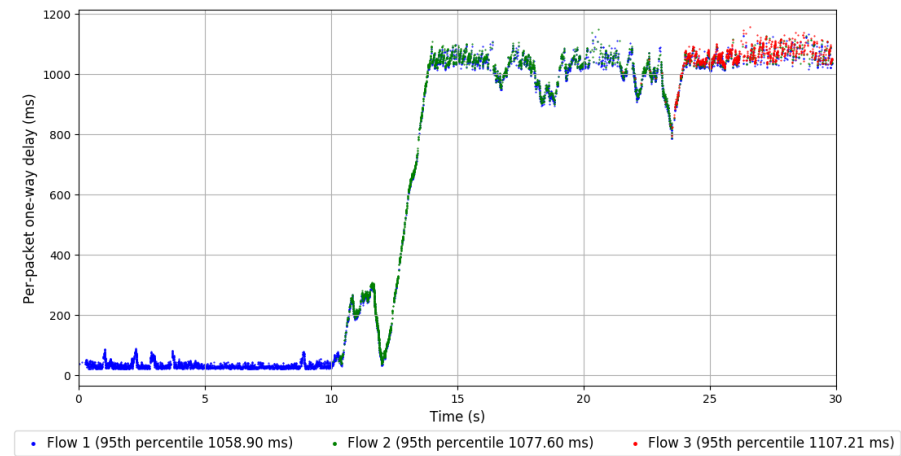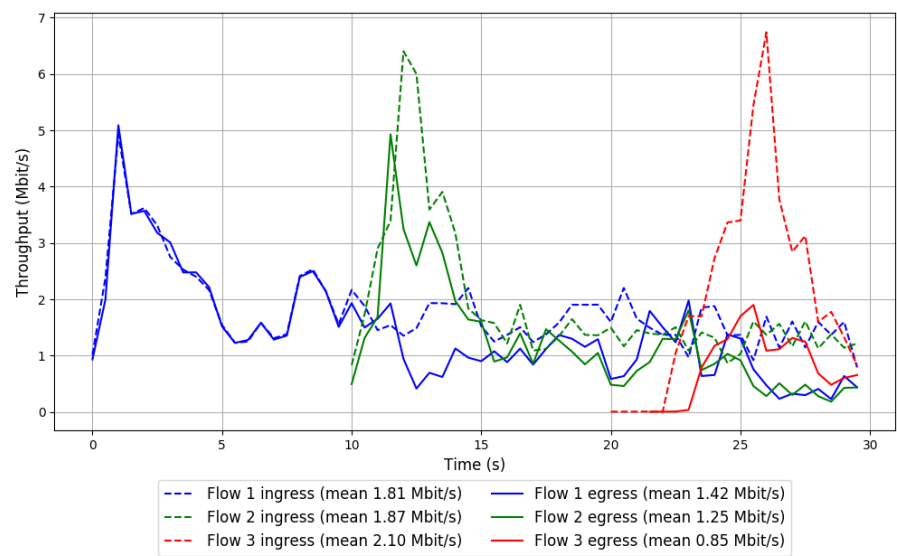
Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-01-18 12:24:03
End at: 2018-01-18 12:24:33
Local clock offset: -21.196 ms
Remote clock offset: -6.972 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 1077.569 ms
Loss rate: 33.87%
-- Flow 1:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 1058.903 ms
Loss rate: 21.72%
-- Flow 2:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 1077.602 ms
Loss rate: 33.61%
-- Flow 3:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 1107.206 ms
Loss rate: 66.00%
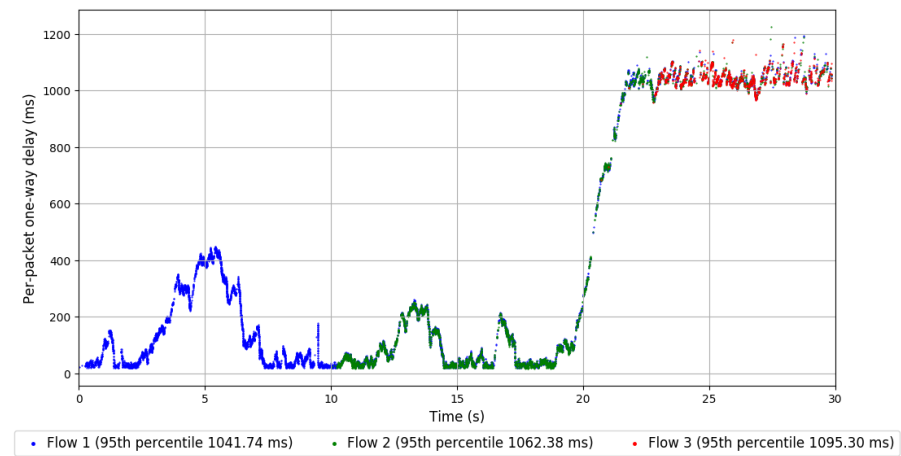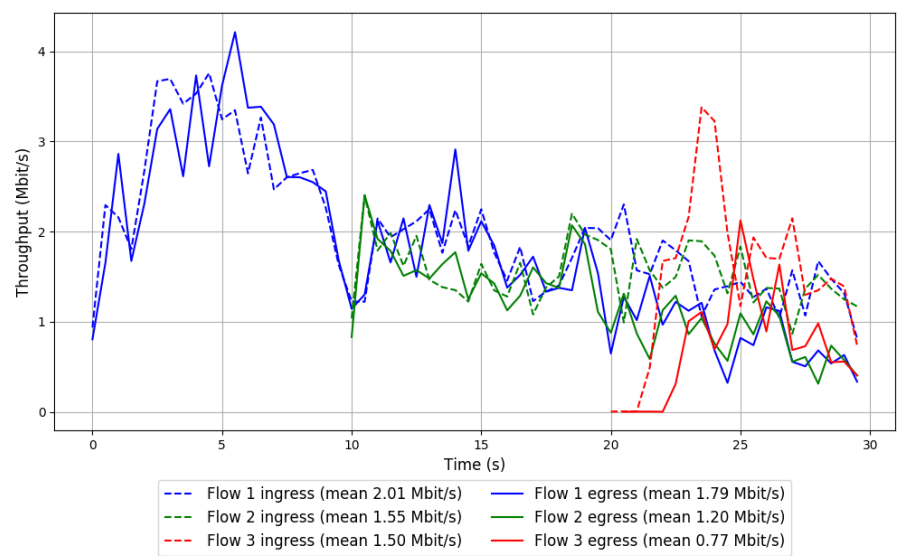```

Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-01-18 12:44:09
End at: 2018-01-18 12:44:39
Local clock offset: -18.684 ms
Remote clock offset: -9.358 ms

Below is generated by plot.py at 2018-01-18 13:26:34
Datalink statistics
-- Total of 3 flows:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 1060.696 ms
Loss rate: 20.24%
-- Flow 1:
Average throughput: 1.79 Mbit/s
95th percentile per-packet one-way delay: 1041.737 ms
Loss rate: 11.27%
-- Flow 2:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 1062.376 ms
Loss rate: 22.42%
-- Flow 3:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 1095.301 ms
Loss rate: 52.15%
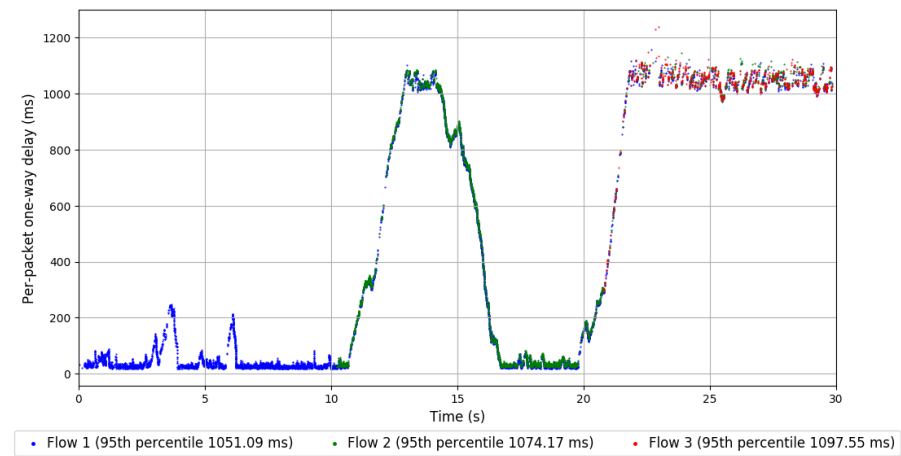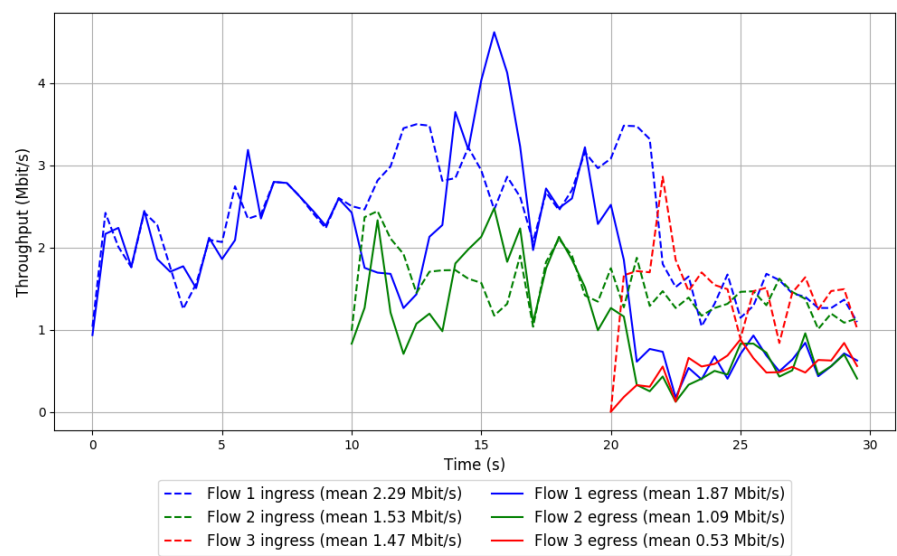```

Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-01-18 13:04:34
End at: 2018-01-18 13:05:04
Local clock offset: -19.181 ms
Remote clock offset: -9.063 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 1069.089 ms
Loss rate: 27.18%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 1051.090 ms
Loss rate: 18.25%
-- Flow 2:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 1074.174 ms
Loss rate: 29.22%
-- Flow 3:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 1097.547 ms
Loss rate: 64.92%
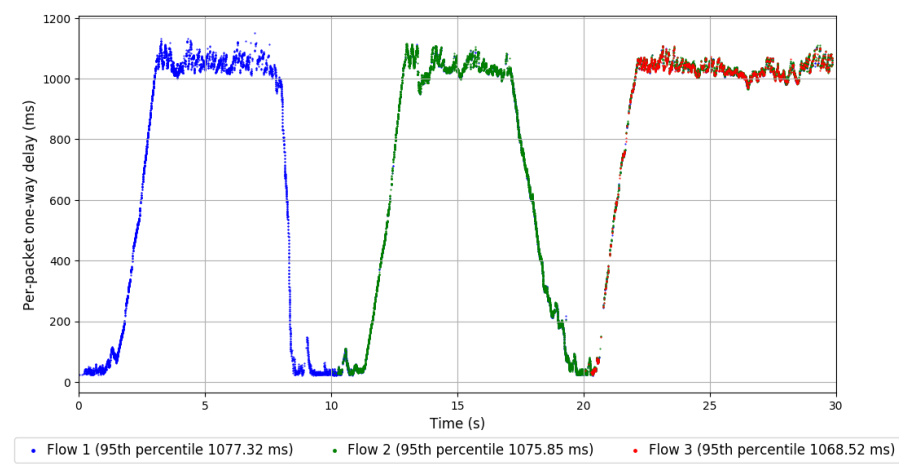```

# Run 3: Report of Vivace-latency — Data Link



Flow 1 ingress (mean 2.29 Mbit/s)    Flow 1 egress (mean 1.87 Mbit/s)
Flow 2 ingress (mean 1.53 Mbit/s)    Flow 2 egress (mean 1.09 Mbit/s)
Flow 3 ingress (mean 1.47 Mbit/s)    Flow 3 egress (mean 0.53 Mbit/s)



Flow 1 (95th percentile 1051.09 ms)    Flow 2 (95th percentile 1074.17 ms)    Flow 3 (95th percentile 1097.55 ms)
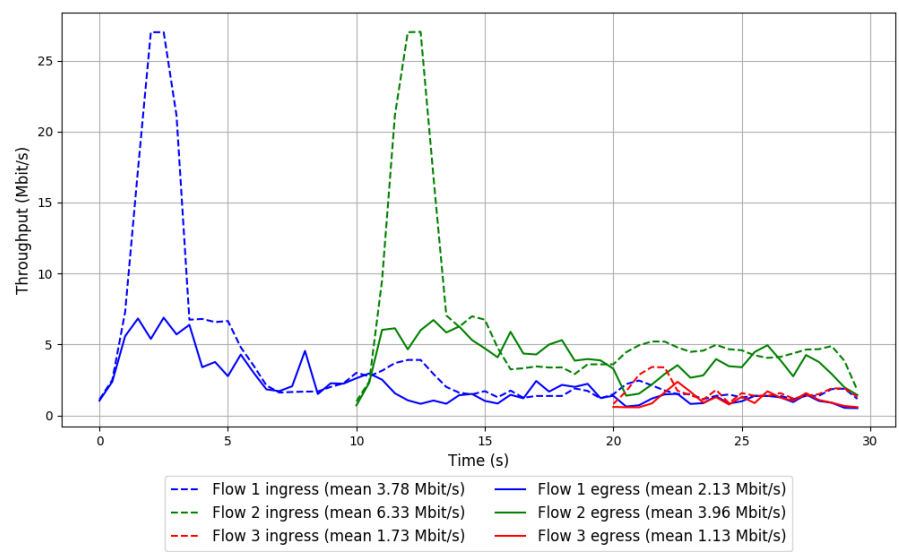
```
Run 1: Statistics of Vivace-loss

Start at: 2018-01-18 12:37:31
End at: 2018-01-18 12:38:01
Local clock offset: -21.229 ms
Remote clock offset: -8.978 ms

Below is generated by plot.py at 2018-01-18 13:26:34
Datalink statistics
-- Total of 3 flows:
Average throughput: 5.13 Mbit/s
95th percentile per-packet one-way delay: 1076.169 ms
Loss rate: 40.17%
-- Flow 1:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 1077.317 ms
Loss rate: 43.71%
-- Flow 2:
Average throughput: 3.96 Mbit/s
95th percentile per-packet one-way delay: 1075.851 ms
Loss rate: 37.66%
-- Flow 3:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 1068.522 ms
Loss rate: 35.21%
```
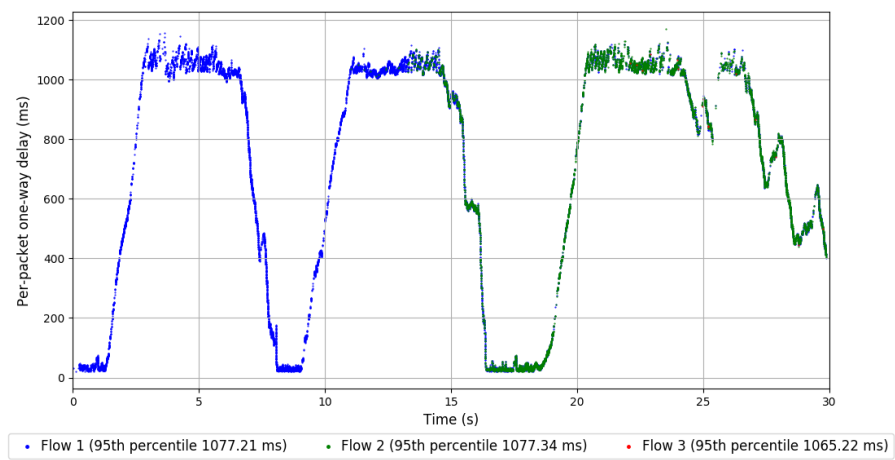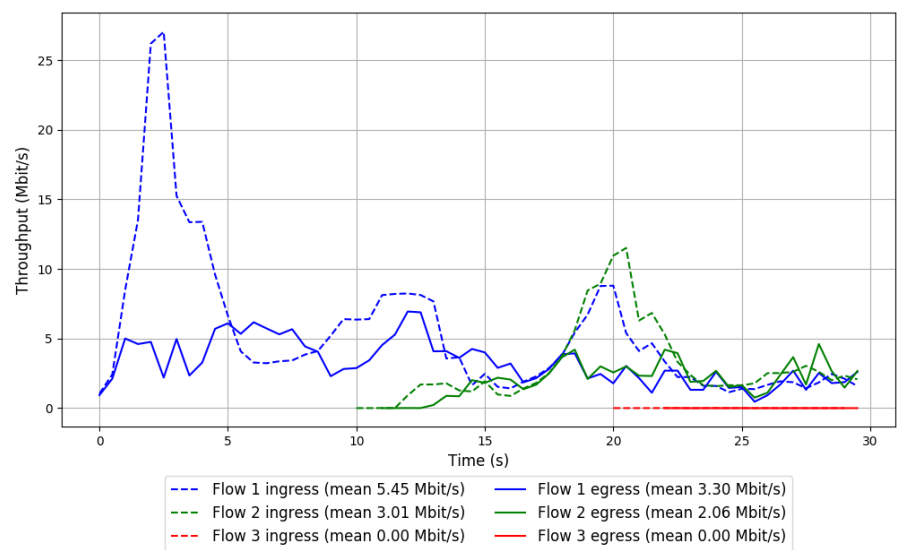
Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-01-18 12:57:37
End at: 2018-01-18 12:58:07
Local clock offset: -19.241 ms
Remote clock offset: -9.892 ms

Below is generated by plot.py at 2018-01-18 13:26:34
Datalink statistics
-- Total of 3 flows:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 1077.285 ms
Loss rate: 38.39%
-- Flow 1:
Average throughput: 3.30 Mbit/s
95th percentile per-packet one-way delay: 1077.215 ms
Loss rate: 39.62%
-- Flow 2:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 1077.344 ms
Loss rate: 35.03%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1065.217 ms
Loss rate: 41.65%
```
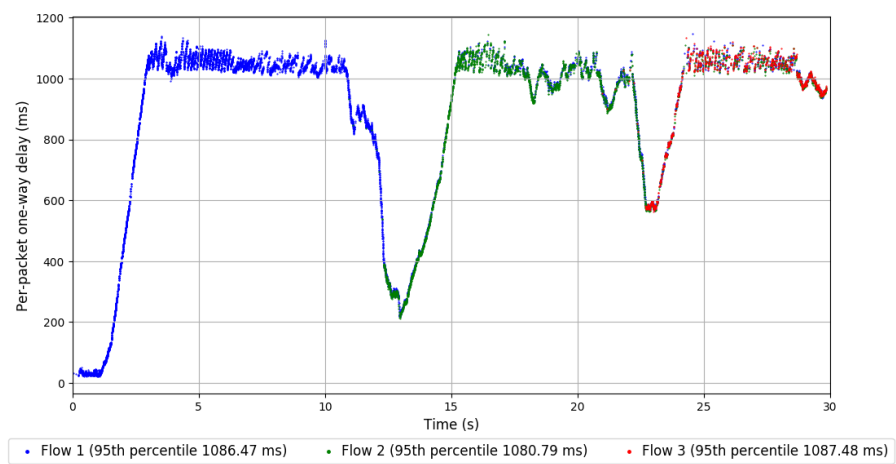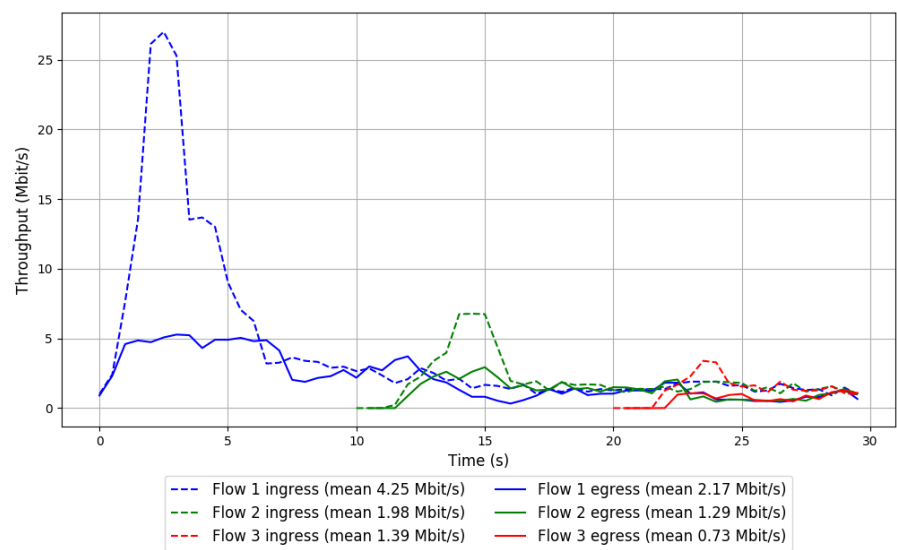
Run 2: Report of Vivace-loss — Data Link

```
Run 3: Statistics of Vivace-loss

Start at: 2018-01-18 13:18:16
End at: 2018-01-18 13:18:46
Local clock offset: -19.515 ms
Remote clock offset: -10.475 ms

Below is generated by plot.py at 2018-01-18 13:26:34
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.20 Mbit/s
95th percentile per-packet one-way delay: 1085.126 ms
Loss rate: 46.97%
-- Flow 1:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 1086.473 ms
Loss rate: 49.14%
-- Flow 2:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 1080.790 ms
Loss rate: 38.00%
-- Flow 3:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 1087.480 ms
Loss rate: 52.52%
```
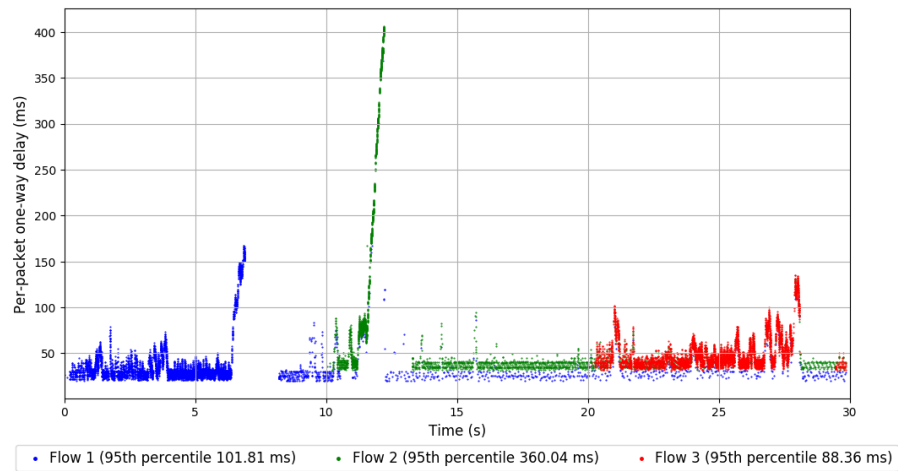
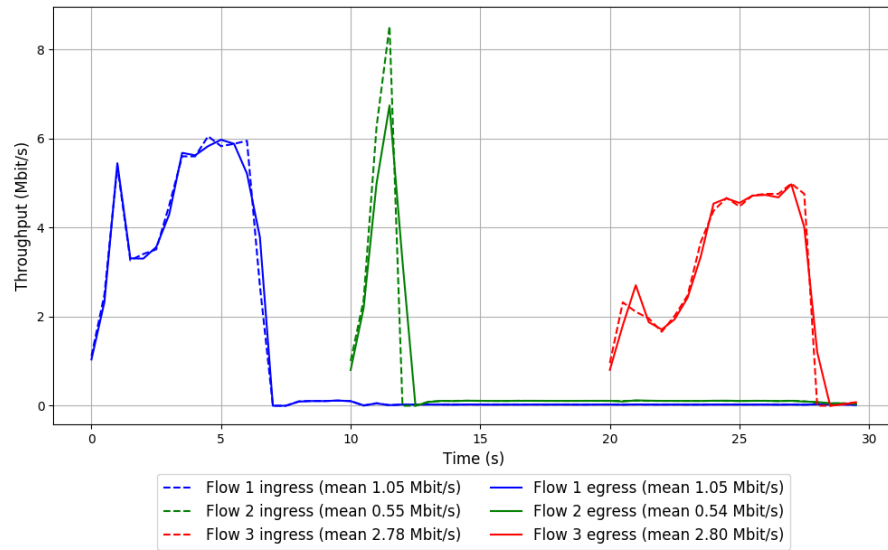Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-01-18 12:33:01
End at: 2018-01-18 12:33:31
Local clock offset: -20.737 ms
Remote clock offset: -7.712 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 144.855 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 101.813 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 360.043 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 88.358 ms
Loss rate: 0.02%
```

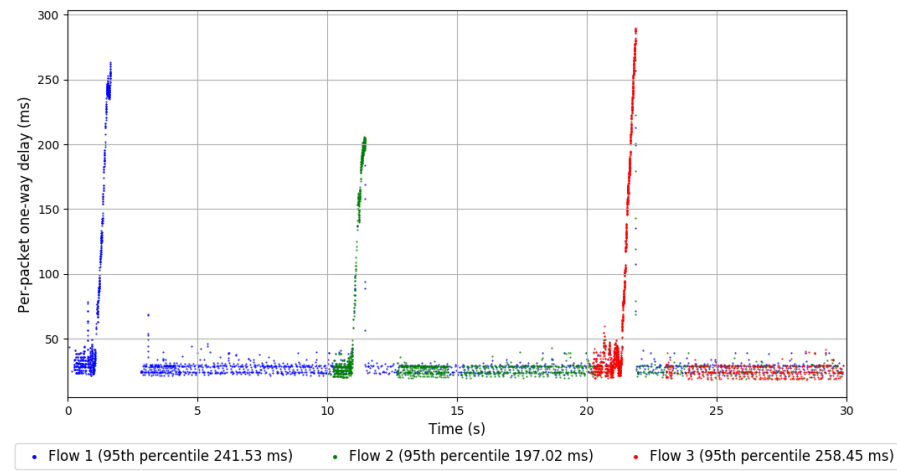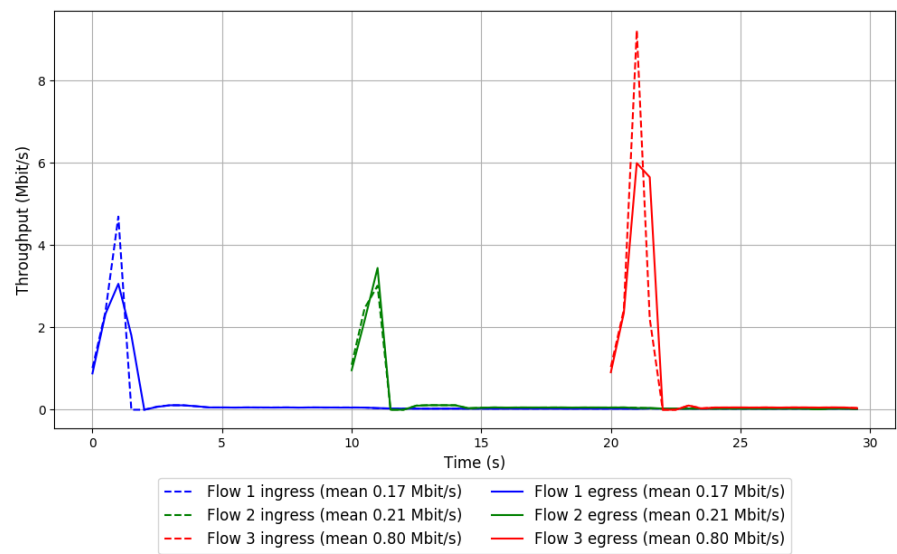Run 1: Report of Vivace-LTE — Data Link

```
Run 2: Statistics of Vivace-LTE

Start at: 2018-01-18 12:53:12
End at: 2018-01-18 12:53:42
Local clock offset: -18.794 ms
Remote clock offset: -8.99 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 240.133 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 241.525 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 197.024 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 258.448 ms
Loss rate: 0.03%
```

Run 2: Report of Vivace-LTE — Data Link

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-01-18 13:13:30
End at: 2018-01-18 13:14:00
Local clock offset: -20.902 ms
Remote clock offset: -10.395 ms


# Below is generated by plot.py at 2018-01-18 13:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 199.129 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 367.591 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 199.176 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 96.249 ms
Loss rate: 0.03%
```

Run 3: Report of Vivace-LTE — Data Link