Pantheon Report

Generated at 2018-03-20 10:14:57 (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.

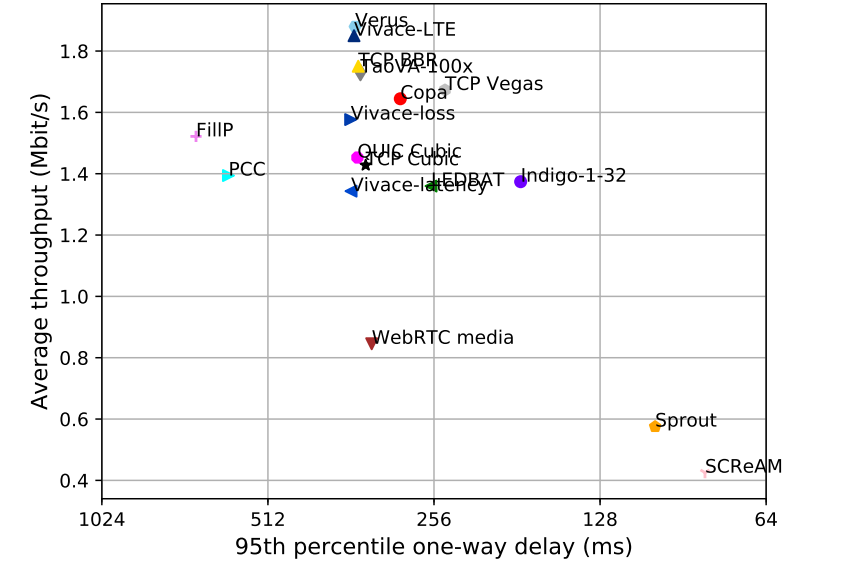Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

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

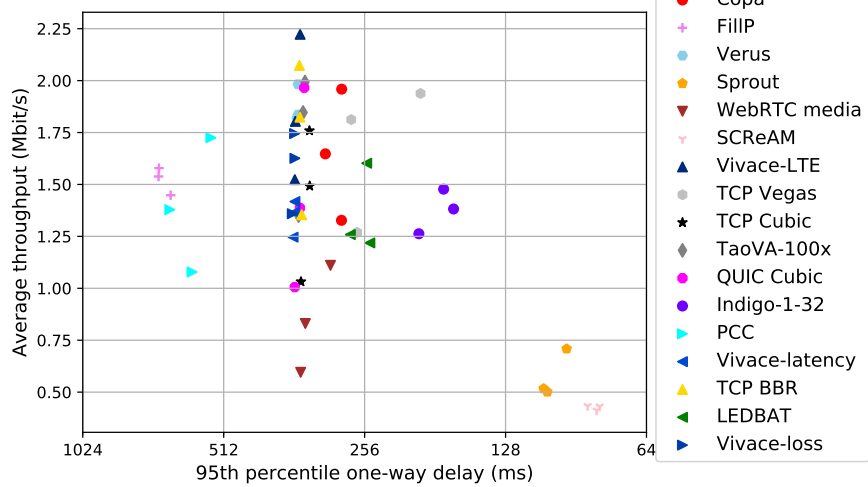NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ f12c42a2c63fdd9a862eefa0468859bf379b6623
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 9249eea3238475c4d8cca1443d28df70bff6c4a2
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from 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
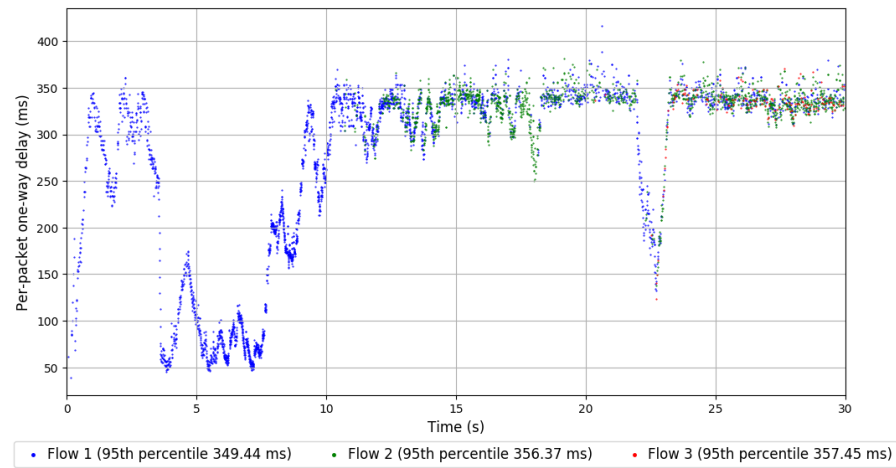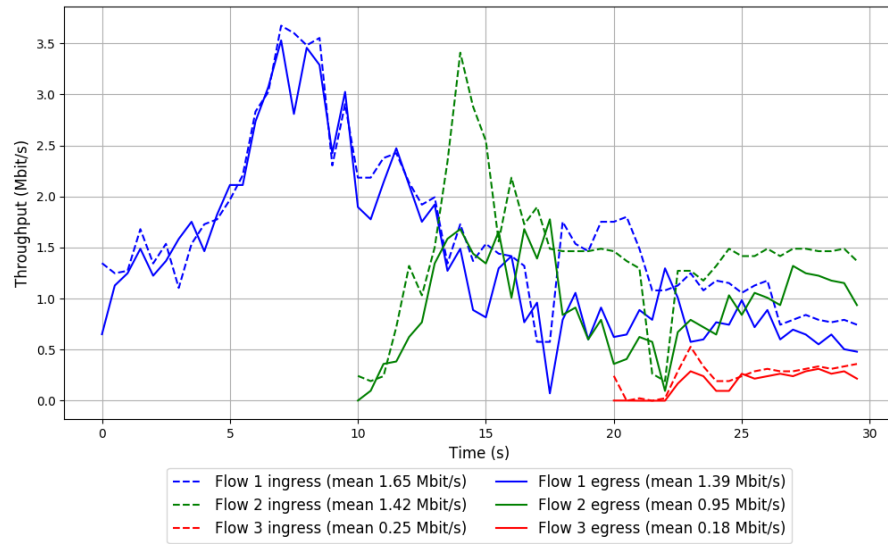3 flows with 10s interval between flows

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	1.12	0.75	0.42	349.72	353.87	350.52	12.89	23.17	18.45
TCP Cubic	3	0.91	0.57	0.45	337.52	342.03	344.85	2.92	5.40	8.79
LEDBAT	3	0.77	0.55	0.68	260.53	257.29	260.80	0.50	1.09	2.39
PCC	3	0.80	0.67	0.59	377.74	652.99	748.43	77.59	88.79	91.68
QUIC Cubic	3	0.82	0.67	0.59	351.06	354.70	353.09	10.87	12.92	19.81
SCReAM	3	0.21	0.22	0.21	75.90	89.59	83.01	0.28	0.42	0.69
WebRTC media	3	0.33	0.36	0.16	332.02	330.94	325.87	5.29	6.13	14.39
Sprout	3	0.28	0.30	0.31	102.22	99.79	102.53	0.25	0.42	1.38
TaoVA-100x	3	1.11	0.84	0.25	345.22	351.27	361.11	17.16	27.98	70.59
TCP Vegas	3	0.90	0.75	0.83	235.74	241.35	257.74	0.71	0.86	2.75
Verus	3	1.77	0.16	0.03	355.71	358.44	356.65	33.44	56.47	58.47
Copa	3	0.92	0.80	0.60	280.44	303.83	308.40	2.16	4.07	8.49
FillP	3	0.90	0.67	0.60	377.21	725.25	759.13	97.20	98.65	99.38
Indigo-1-32	3	0.65	0.65	0.92	166.87	178.91	194.90	1.05	1.60	2.46
Vivace-latency	3	0.83	0.57	0.44	359.90	364.67	365.68	42.07	57.54	67.22
Vivace-loss	3	0.96	0.72	0.48	360.57	363.79	366.39	37.53	47.50	62.33
Vivace-LTE	3	1.02	0.89	0.75	356.56	357.87	361.51	28.53	34.88	43.56

```
Run 1: Statistics of TCP BBR

Start at: 2018-03-20 08:23:43
End at: 2018-03-20 08:24:13
Local clock offset: -3.215 ms
Remote clock offset: -1.909 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 352.755 ms
Loss rate: 22.83%
-- Flow 1:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 349.436 ms
Loss rate: 15.76%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 356.368 ms
Loss rate: 34.63%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 357.455 ms
Loss rate: 28.90%
```
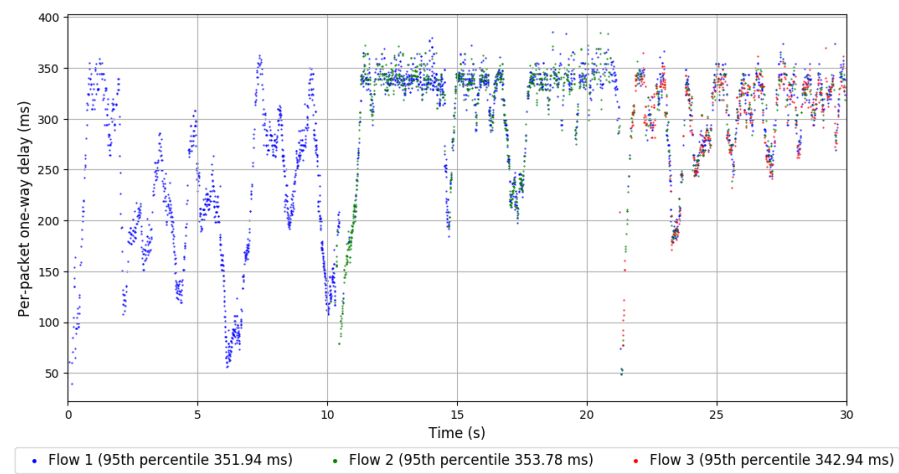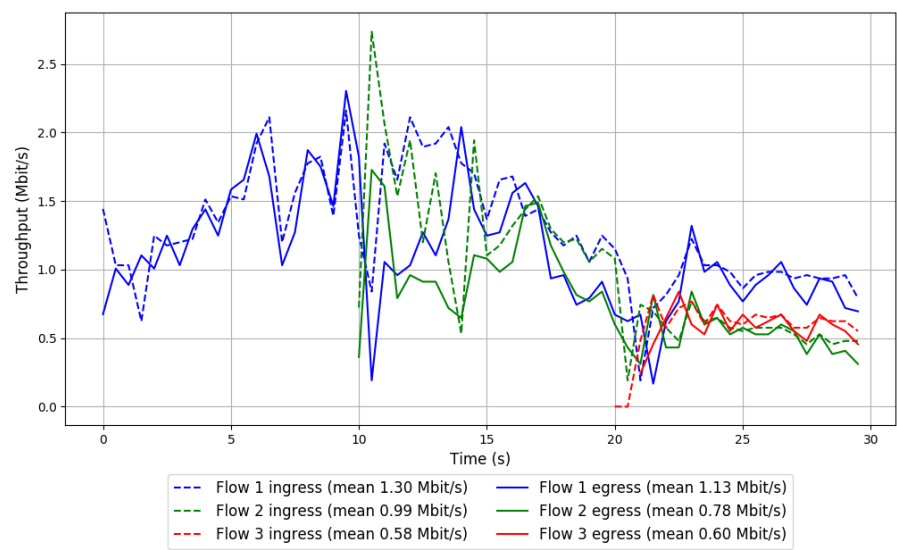
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-03-20 08:43:35
End at: 2018-03-20 08:44:05
Local clock offset: -5.447 ms
Remote clock offset: -1.574 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 351.959 ms
Loss rate: 15.44%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 351.939 ms
Loss rate: 13.04%
-- Flow 2:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 353.776 ms
Loss rate: 21.99%
-- Flow 3:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 342.938 ms
Loss rate: 9.18%
```
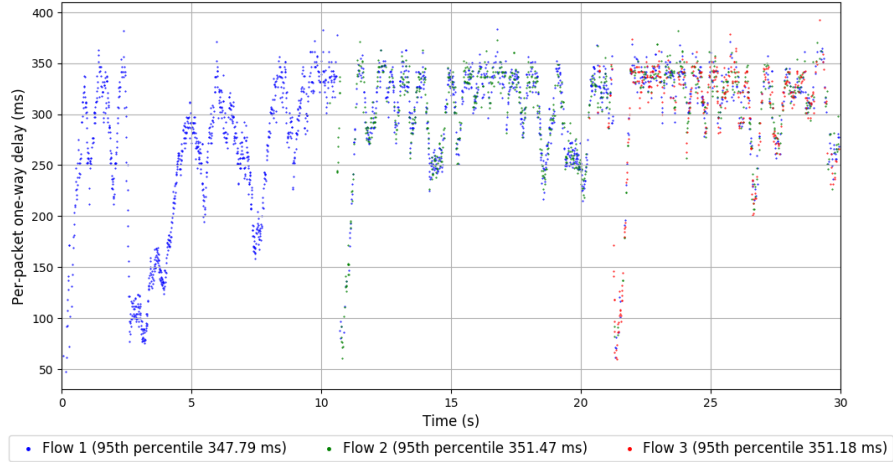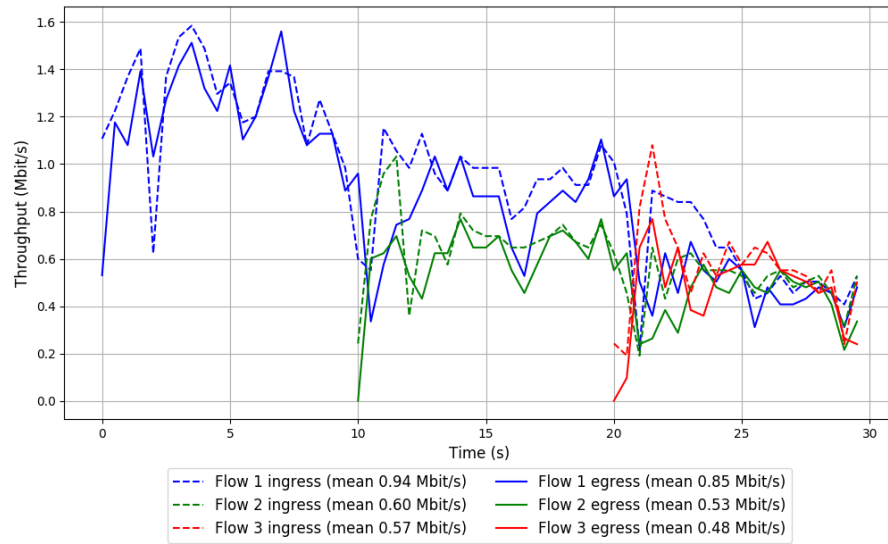
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-03-20 09:03:44
End at: 2018-03-20 09:04:14
Local clock offset: -5.256 ms
Remote clock offset: -1.032 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 348.884 ms
Loss rate: 11.57%
-- Flow 1:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 347.792 ms
Loss rate: 9.87%
-- Flow 2:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 351.466 ms
Loss rate: 12.89%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 351.180 ms
Loss rate: 17.27%
```
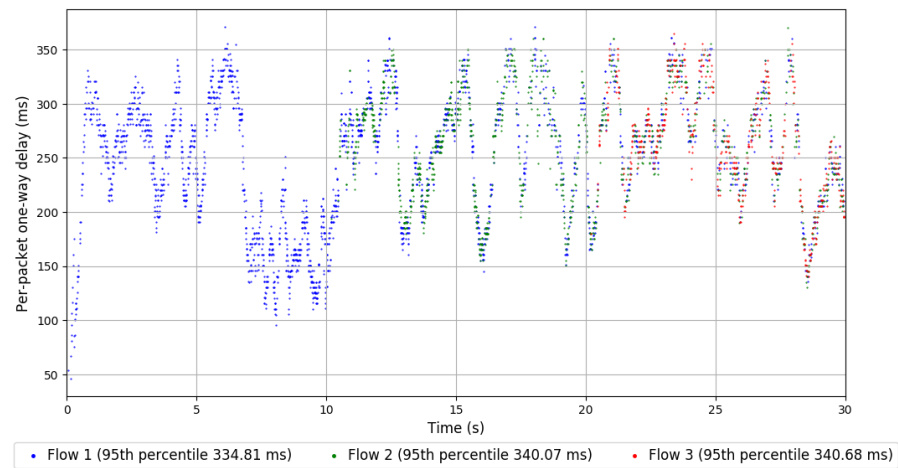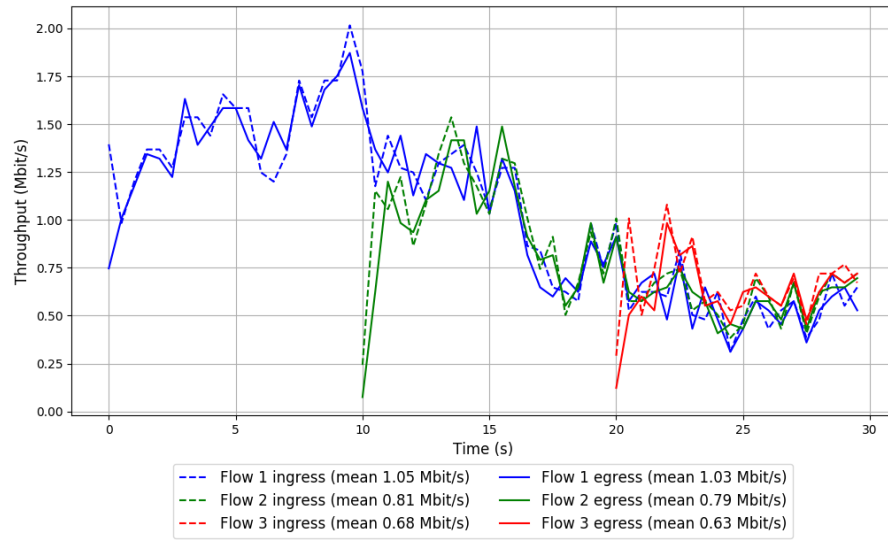
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.94 Mbit/s)   Flow 1 egress (mean 0.85 Mbit/s)
Flow 2 ingress (mean 0.60 Mbit/s)   Flow 2 egress (mean 0.53 Mbit/s)
Flow 3 ingress (mean 0.57 Mbit/s)   Flow 3 egress (mean 0.48 Mbit/s)

Flow 1 (95th percentile 347.79 ms)   Flow 2 (95th percentile 351.47 ms)   Flow 3 (95th percentile 351.18 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-03-20 08:17:03
End at: 2018-03-20 08:17:33
Local clock offset: -3.356 ms
Remote clock offset: -2.011 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 335.822 ms
Loss rate: 3.50%
-- Flow 1:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 334.813 ms
Loss rate: 2.32%
-- Flow 2:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 340.066 ms
Loss rate: 3.93%
-- Flow 3:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 340.680 ms
Loss rate: 8.03%
```
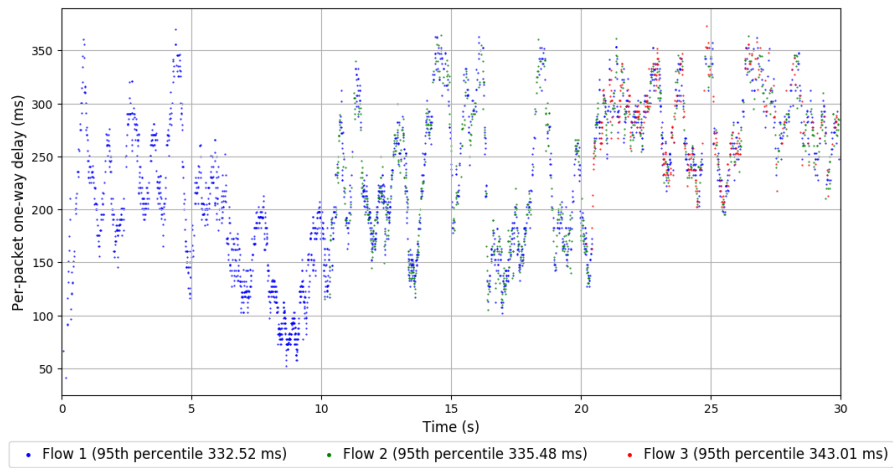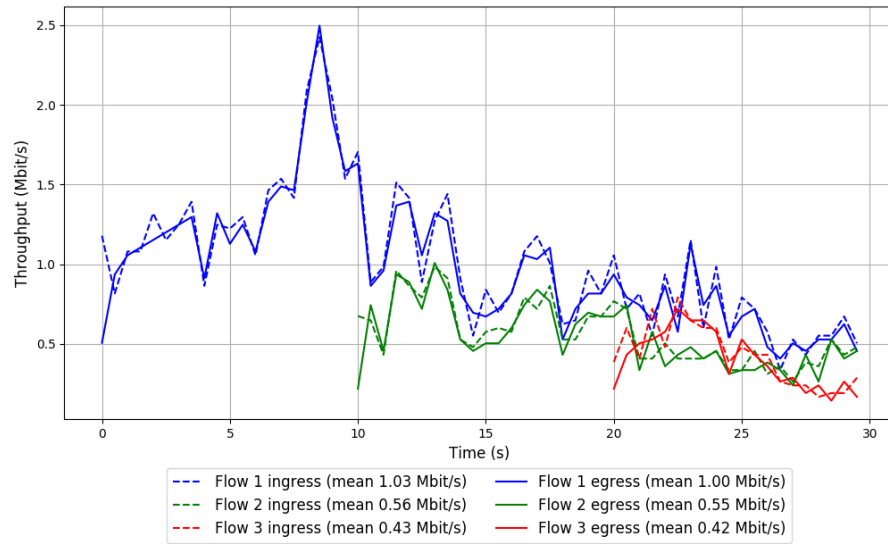
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 1.05 Mbit/s) Flow 1 egress (mean 1.03 Mbit/s)
Flow 2 ingress (mean 0.81 Mbit/s) Flow 2 egress (mean 0.79 Mbit/s)
Flow 3 ingress (mean 0.68 Mbit/s) Flow 3 egress (mean 0.63 Mbit/s)

• Flow 1 (95th percentile 334.81 ms)   • Flow 2 (95th percentile 340.07 ms)   • Flow 3 (95th percentile 340.68 ms)

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```
Run 2: Statistics of TCP Cubic

Start at: 2018-03-20 08:36:54
End at: 2018-03-20 08:37:24
Local clock offset: -3.216 ms
Remote clock offset: -2.086 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 335.420 ms
Loss rate: 3.58%
-- Flow 1:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 332.516 ms
Loss rate: 3.17%
-- Flow 2:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 335.480 ms
Loss rate: 3.83%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 343.010 ms
Loss rate: 5.90%
```
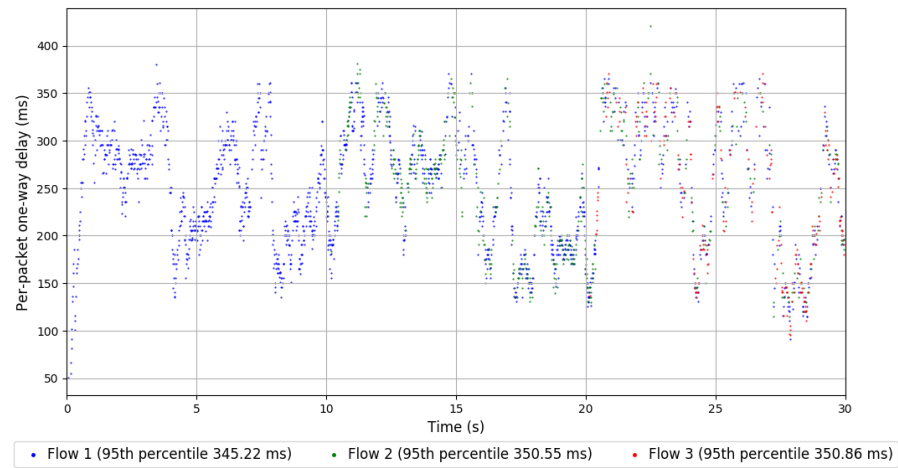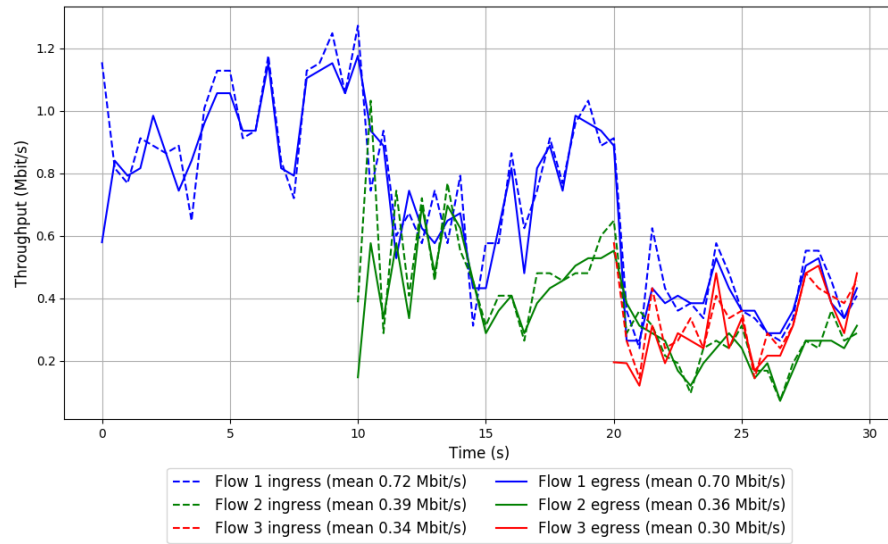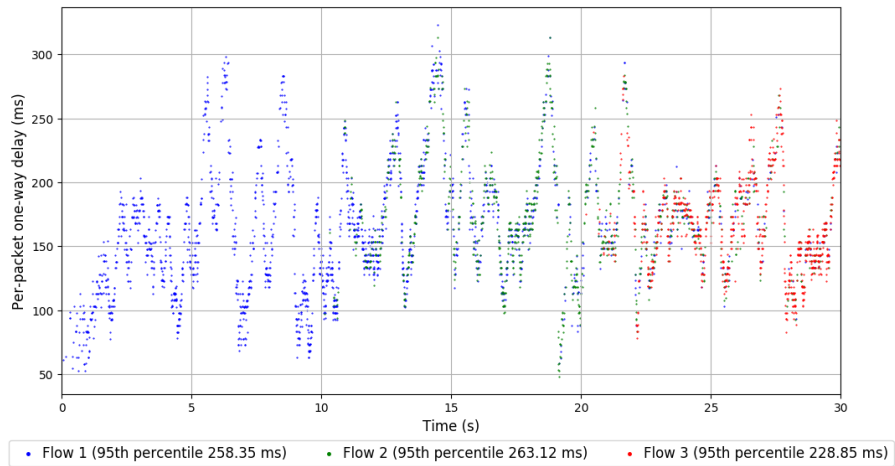
Run 2: Report of TCP Cubic — Data Link

Legend:
- Flow 1 ingress (mean 1.03 Mbit/s)
- Flow 1 egress (mean 1.00 Mbit/s)
- Flow 2 ingress (mean 0.56 Mbit/s)
- Flow 2 egress (mean 0.55 Mbit/s)
- Flow 3 ingress (mean 0.43 Mbit/s)
- Flow 3 egress (mean 0.42 Mbit/s)

Legend:
- Flow 1 (95th percentile 332.52 ms)
- Flow 2 (95th percentile 335.48 ms)
- Flow 3 (95th percentile 343.01 ms)

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```
Run 3: Statistics of TCP Cubic

Start at: 2018-03-20 08:56:58
End at: 2018-03-20 08:57:28
Local clock offset: -4.855 ms
Remote clock offset: -2.298 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 350.122 ms
Loss rate: 5.44%
-- Flow 1:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 345.222 ms
Loss rate: 3.28%
-- Flow 2:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 350.548 ms
Loss rate: 8.44%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 350.857 ms
Loss rate: 12.45%
```

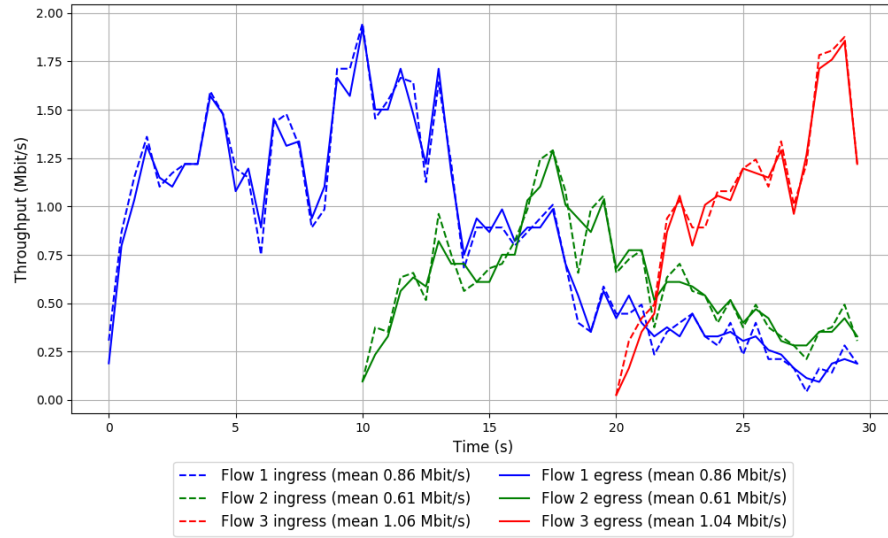Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-03-20 08:14:51
End at: 2018-03-20 08:15:22
Local clock offset: -0.515 ms
Remote clock offset: -1.583 ms

# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.60 Mbit/s
95th percentile per-packet one-way delay: 253.436 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 258.353 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 263.121 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 228.852 ms
Loss rate: 2.69%
```
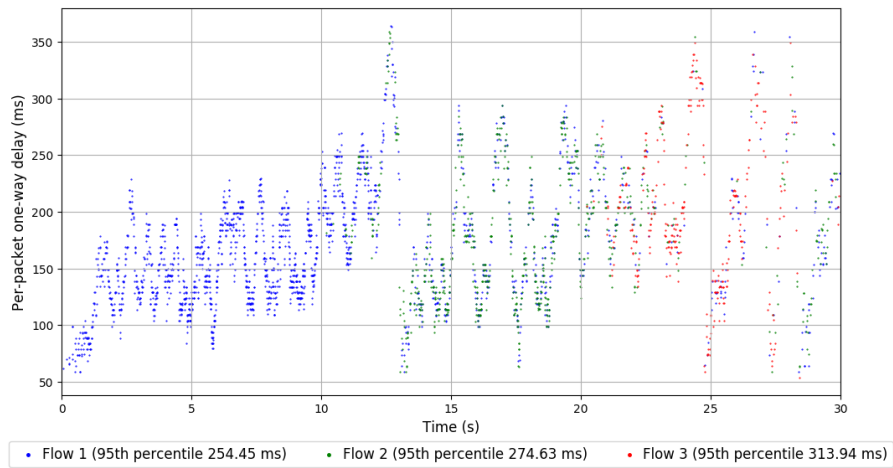
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-03-20 08:34:42
End at: 2018-03-20 08:35:12
Local clock offset: -2.017 ms
Remote clock offset: -4.57 ms


# Below is generated by plot.py at 2018-03-20 10:14:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 274.698 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 254.452 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 274.635 ms
Loss rate: 0.89%
-- Flow 3:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 313.942 ms
Loss rate: 1.20%
```
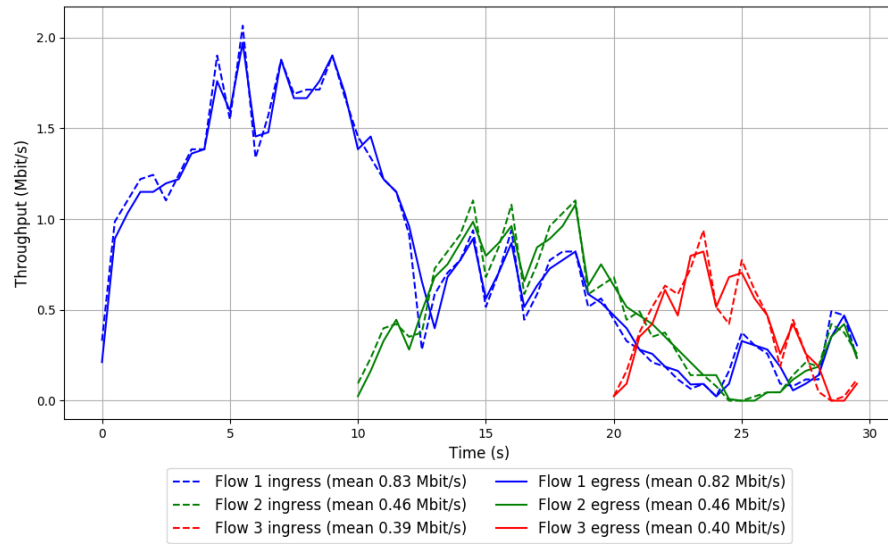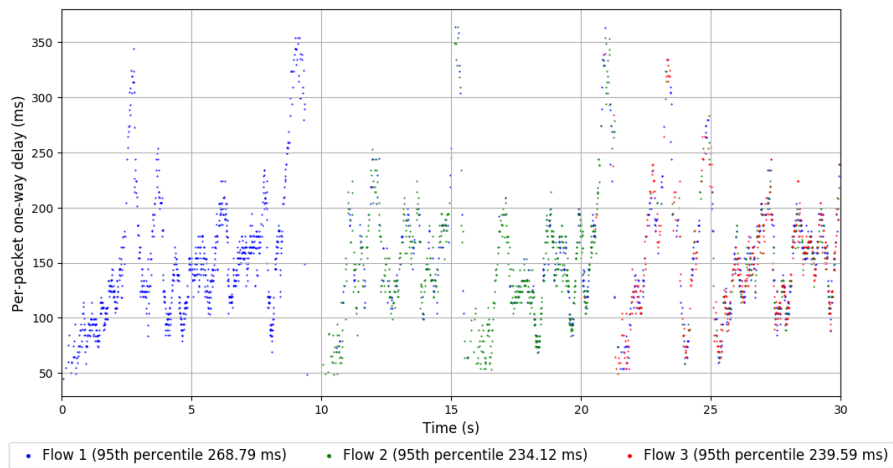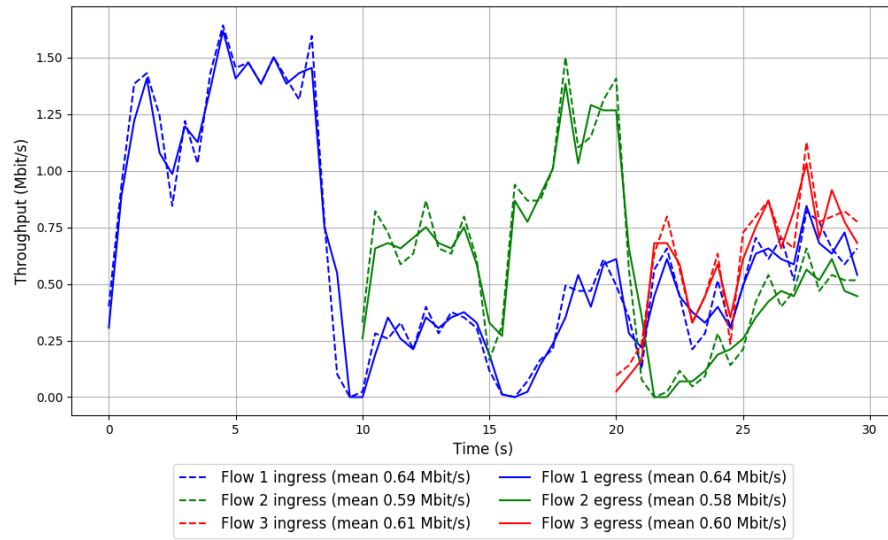
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.83 Mbit/s) --- Flow 1 egress (mean 0.82 Mbit/s) ---
Flow 2 ingress (mean 0.46 Mbit/s) --- Flow 2 egress (mean 0.46 Mbit/s) ---
Flow 3 ingress (mean 0.39 Mbit/s) --- Flow 3 egress (mean 0.40 Mbit/s) ---

Flow 1 (95th percentile 254.45 ms) · Flow 2 (95th percentile 274.63 ms) · Flow 3 (95th percentile 313.94 ms)

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```
Run 3: Statistics of LEDBAT

Start at: 2018-03-20 08:54:44
End at: 2018-03-20 08:55:14
Local clock offset: -6.439 ms
Remote clock offset: -2.385 ms

# Below is generated by plot.py at 2018-03-20 10:14:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 249.529 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 268.785 ms
Loss rate: 0.85%
-- Flow 2:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 234.122 ms
Loss rate: 1.71%
-- Flow 3:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 239.595 ms
Loss rate: 3.28%
```
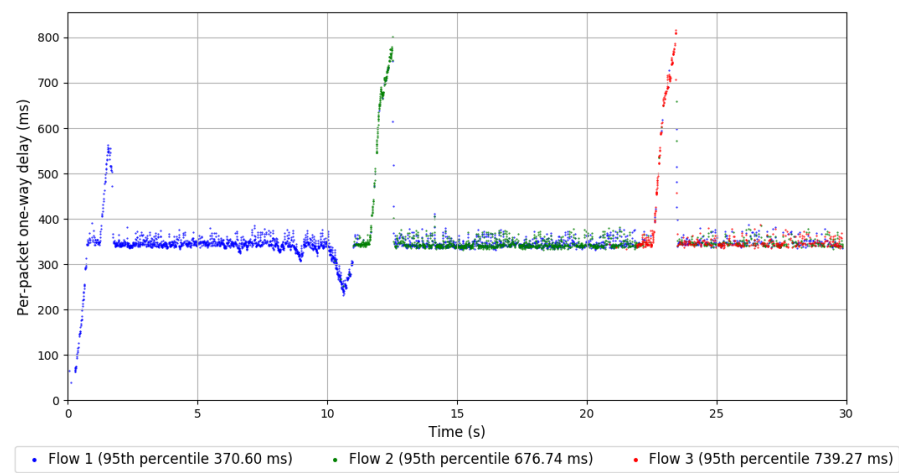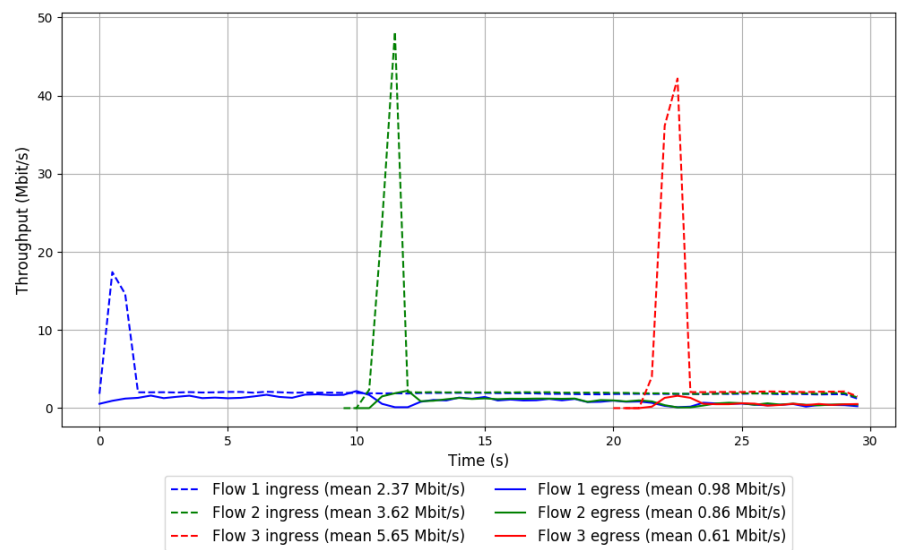
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.64 Mbit/s) --- Flow 1 egress (mean 0.64 Mbit/s)
Flow 2 ingress (mean 0.59 Mbit/s) --- Flow 2 egress (mean 0.58 Mbit/s)
Flow 3 ingress (mean 0.61 Mbit/s) --- Flow 3 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 268.79 ms) • Flow 2 (95th percentile 234.12 ms) • Flow 3 (95th percentile 239.59 ms)
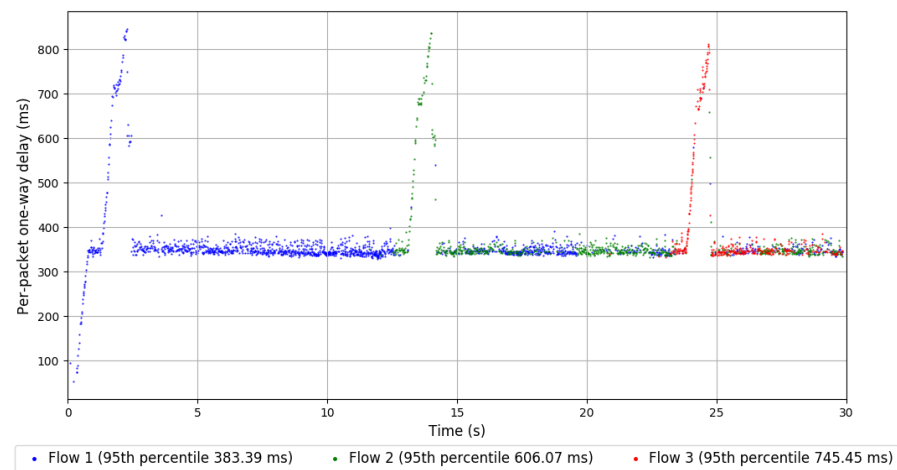
```
Run 1: Statistics of PCC

Start at: 2018-03-20 08:32:30
End at: 2018-03-20 08:33:00
Local clock offset: -1.744 ms
Remote clock offset: -1.533 ms


# Below is generated by plot.py at 2018-03-20 10:14:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 545.271 ms
Loss rate: 74.09%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 370.603 ms
Loss rate: 58.80%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 676.740 ms
Loss rate: 76.71%
-- Flow 3:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 739.266 ms
Loss rate: 90.22%
```
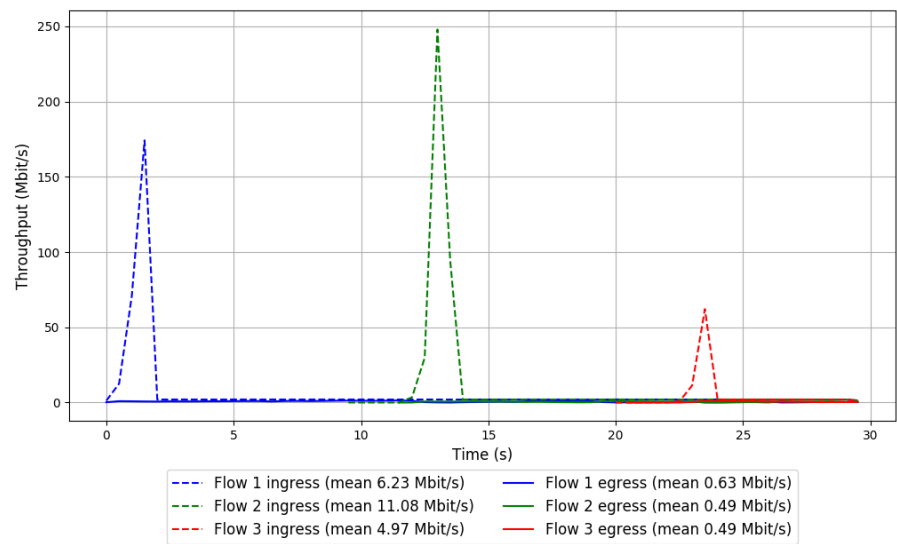
Run 1: Report of PCC — Data Link

```
Run 2: Statistics of PCC

Start at: 2018-03-20 08:52:30
End at: 2018-03-20 08:53:00
Local clock offset: -6.862 ms
Remote clock offset: -1.446 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 598.207 ms
Loss rate: 92.95%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 383.386 ms
Loss rate: 89.95%
-- Flow 2:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 606.066 ms
Loss rate: 95.91%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 745.445 ms
Loss rate: 91.04%
```

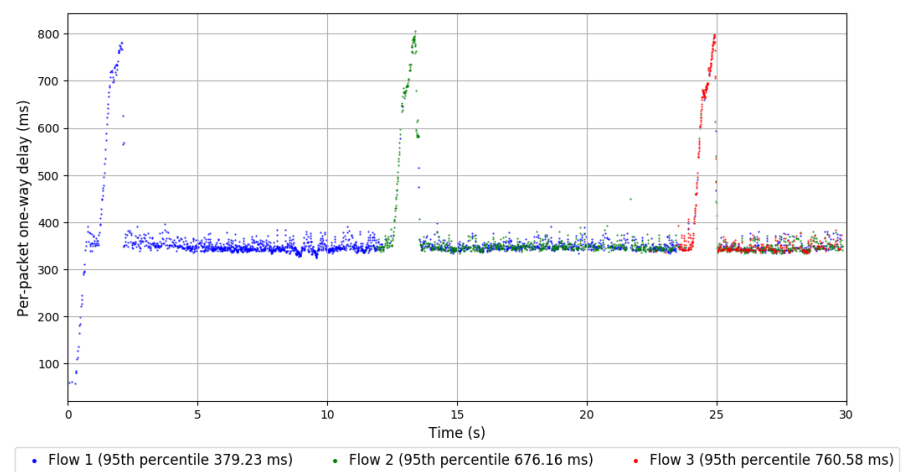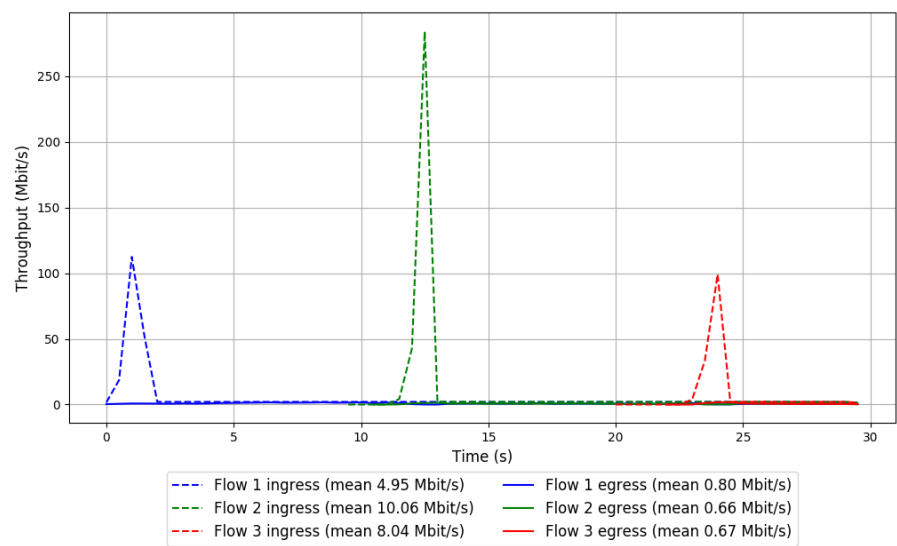Run 2: Report of PCC — Data Link

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```
Run 3: Statistics of PCC

Start at: 2018-03-20 09:12:42
End at: 2018-03-20 09:13:12
Local clock offset: -3.468 ms
Remote clock offset: -3.354 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 667.362 ms
Loss rate: 90.38%
-- Flow 1:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 379.231 ms
Loss rate: 84.02%
-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 676.157 ms
Loss rate: 93.75%
-- Flow 3:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 760.579 ms
Loss rate: 93.77%
```
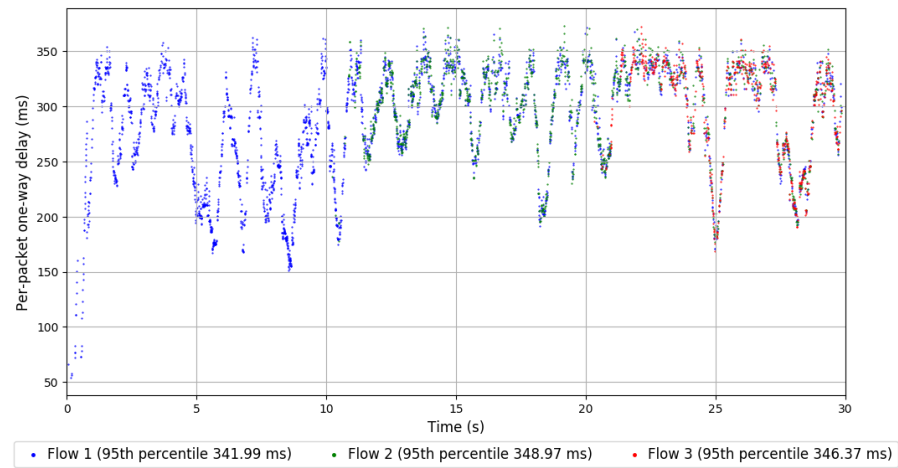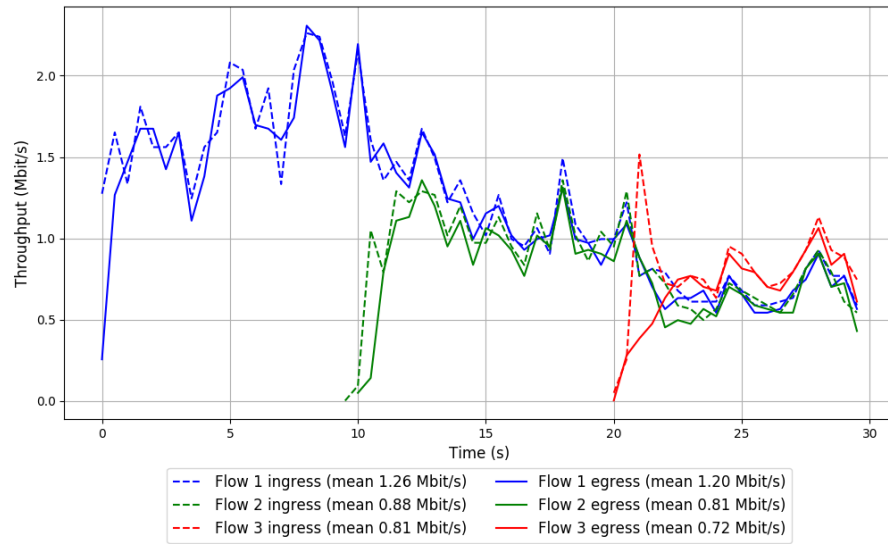
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 4.95 Mbit/s)   Flow 1 egress (mean 0.80 Mbit/s)
Flow 2 ingress (mean 10.06 Mbit/s)   Flow 2 egress (mean 0.66 Mbit/s)
Flow 3 ingress (mean 8.04 Mbit/s)   Flow 3 egress (mean 0.67 Mbit/s)

Flow 1 (95th percentile 379.23 ms)   Flow 2 (95th percentile 676.16 ms)   Flow 3 (95th percentile 760.58 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-03-20 08:30:18
End at: 2018-03-20 08:30:48
Local clock offset: -1.742 ms
Remote clock offset: -0.672 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 344.571 ms
Loss rate: 6.73%
-- Flow 1:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 341.987 ms
Loss rate: 4.44%
-- Flow 2:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 348.973 ms
Loss rate: 8.60%
-- Flow 3:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 346.371 ms
Loss rate: 13.45%
```
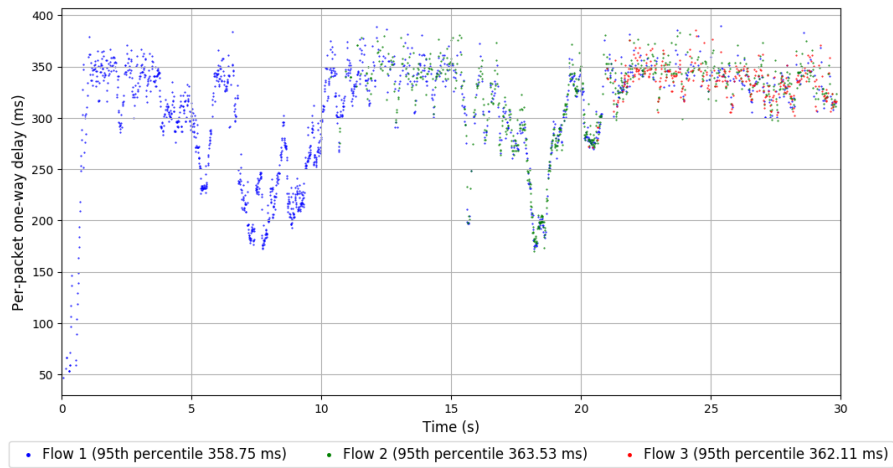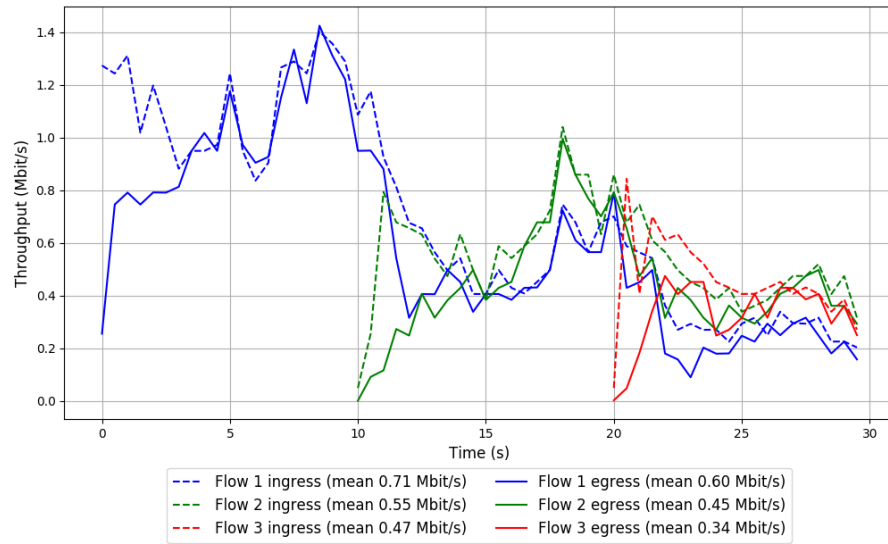
Run 1: Report of QUIC Cubic — Data Link

- Flow 1 ingress (mean 1.26 Mbit/s) — Flow 1 egress (mean 1.20 Mbit/s)
- Flow 2 ingress (mean 0.88 Mbit/s) — Flow 2 egress (mean 0.81 Mbit/s)
- Flow 3 ingress (mean 0.81 Mbit/s) — Flow 3 egress (mean 0.72 Mbit/s)

- Flow 1 (95th percentile 341.99 ms)   • Flow 2 (95th percentile 348.97 ms)   • Flow 3 (95th percentile 346.37 ms)
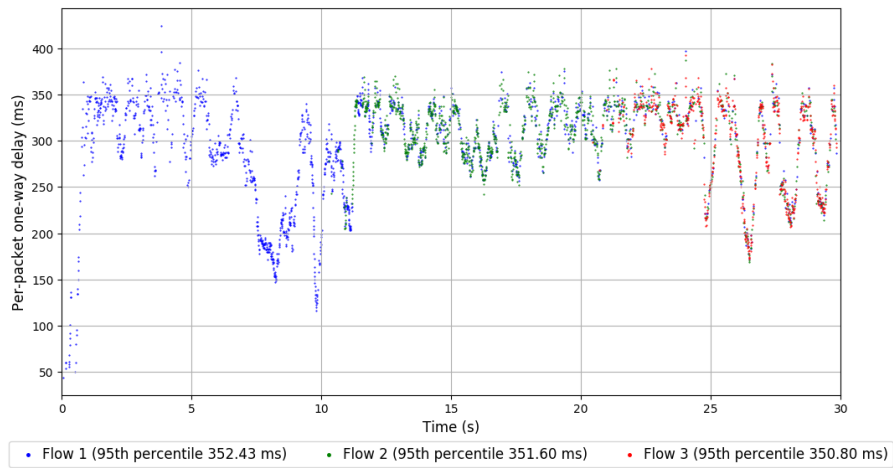
```
Run 2: Statistics of QUIC Cubic

Start at: 2018-03-20 08:50:16
End at: 2018-03-20 08:50:46
Local clock offset: -4.346 ms
Remote clock offset: -2.131 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 361.028 ms
Loss rate: 18.24%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 358.745 ms
Loss rate: 15.18%
-- Flow 2:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 363.530 ms
Loss rate: 19.55%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 362.105 ms
Loss rate: 29.24%
```

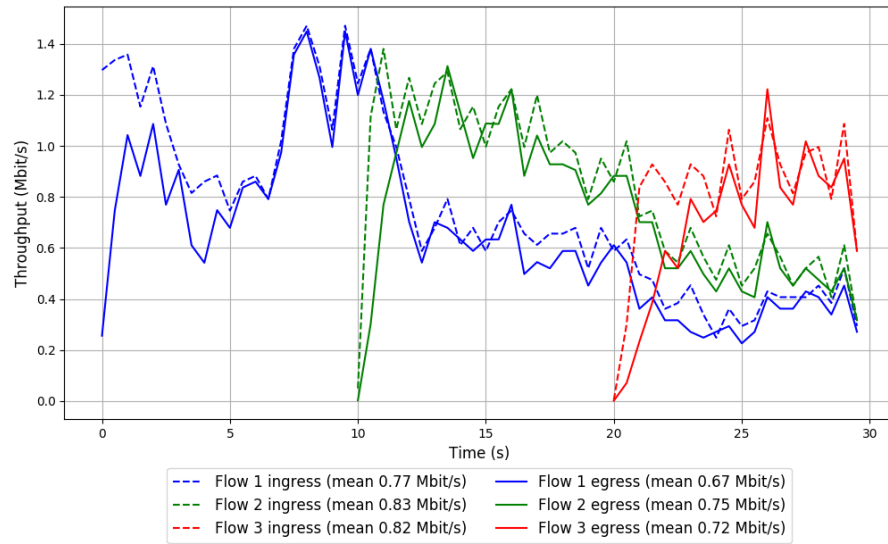Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-03-20 09:10:28
End at: 2018-03-20 09:10:58
Local clock offset: -6.062 ms
Remote clock offset: -2.422 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 351.855 ms
Loss rate: 12.80%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 352.433 ms
Loss rate: 12.99%
-- Flow 2:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 351.602 ms
Loss rate: 10.61%
-- Flow 3:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 350.803 ms
Loss rate: 16.73%
```

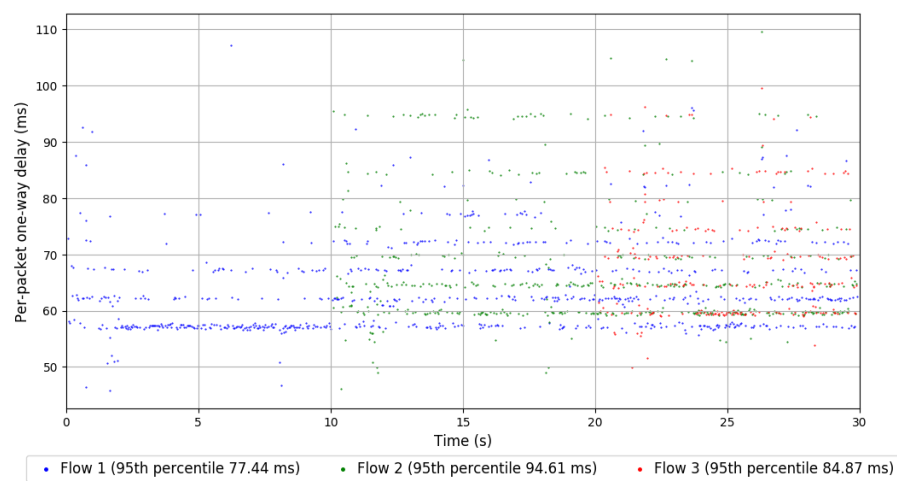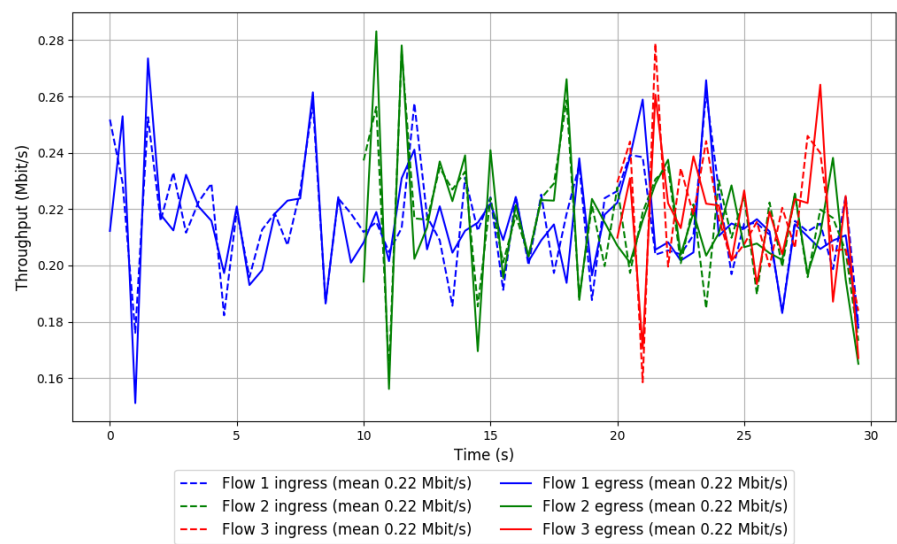# Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.77 Mbit/s) --- Flow 1 egress (mean 0.67 Mbit/s)
Flow 2 ingress (mean 0.83 Mbit/s) --- Flow 2 egress (mean 0.75 Mbit/s)
Flow 3 ingress (mean 0.82 Mbit/s) --- Flow 3 egress (mean 0.72 Mbit/s)

Flow 1 (95th percentile 352.43 ms) • Flow 2 (95th percentile 351.60 ms) • Flow 3 (95th percentile 350.80 ms)
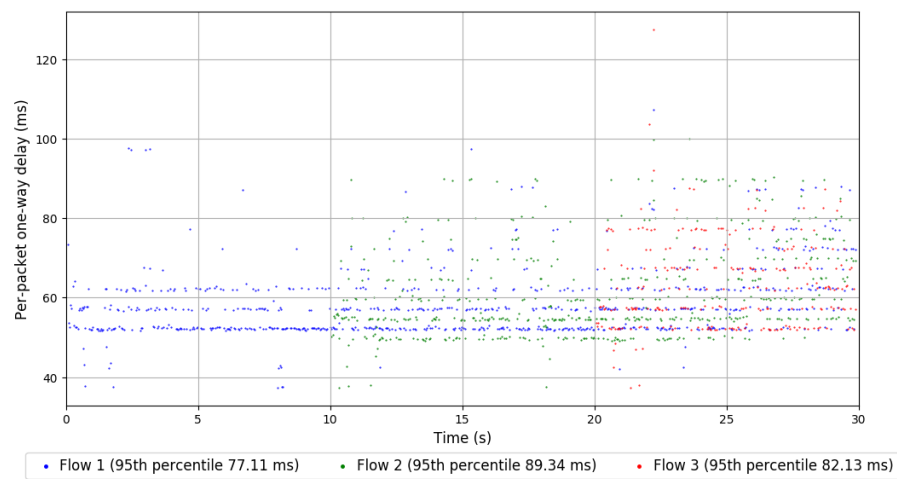
33

```
Run 1: Statistics of SCReAM

Start at: 2018-03-20 08:13:46
End at: 2018-03-20 08:14:16
Local clock offset: 0.231 ms
Remote clock offset: -1.892 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 85.482 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 77.435 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 94.609 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.873 ms
Loss rate: 0.74%
```
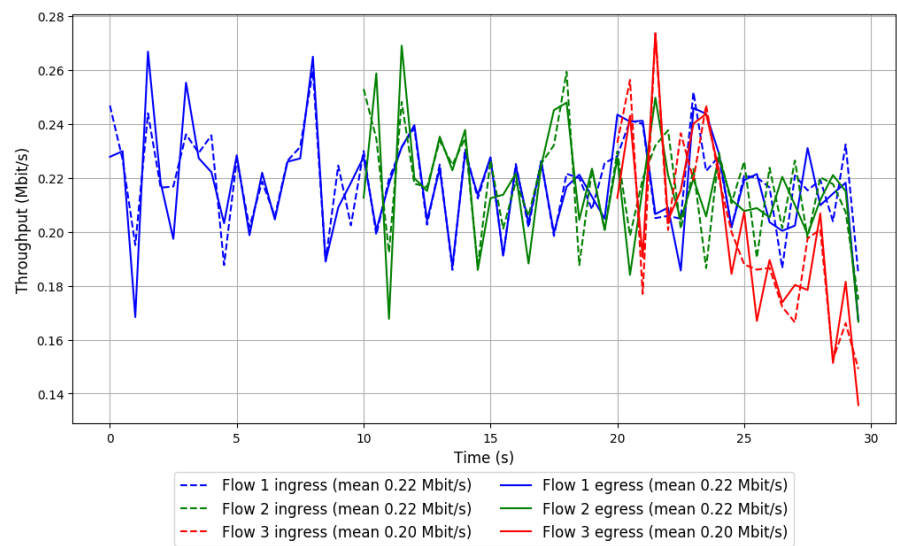
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-03-20 08:33:37
End at: 2018-03-20 08:34:07
Local clock offset: -0.165 ms
Remote clock offset: -1.877 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 80.588 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 77.106 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 89.337 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 82.131 ms
Loss rate: 0.65%
```
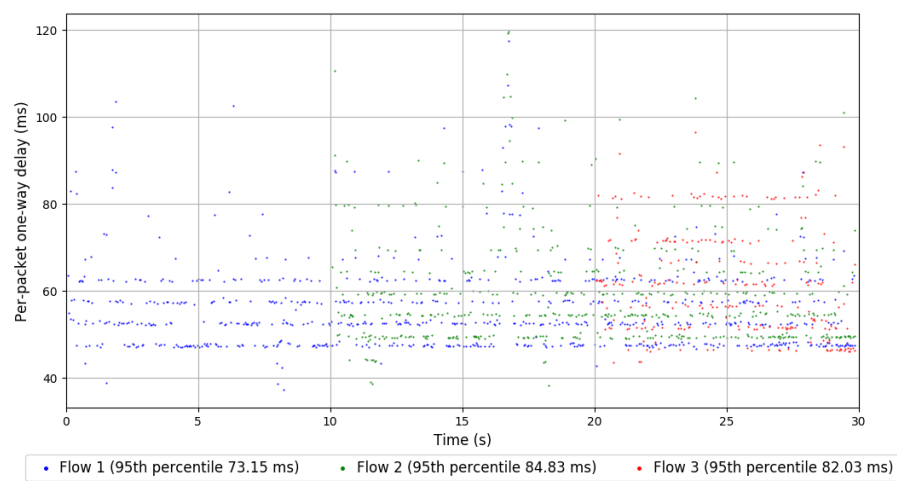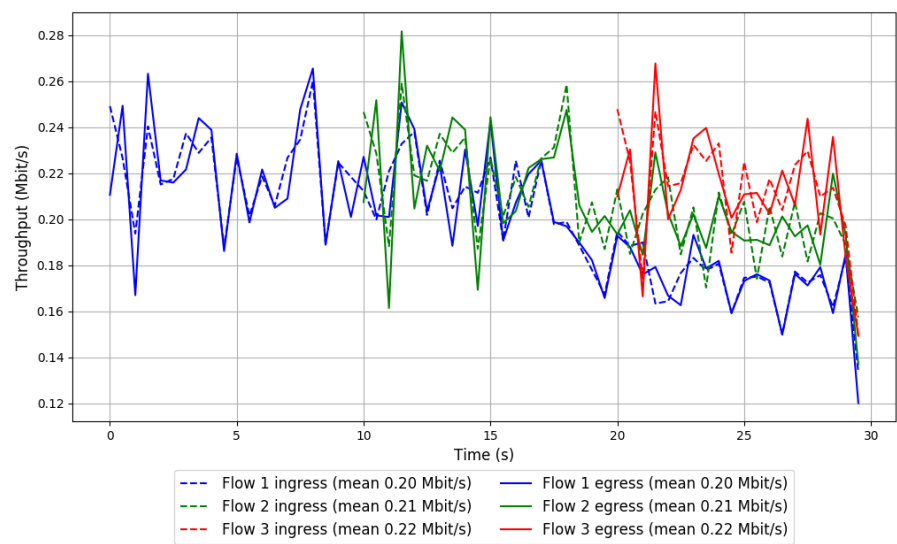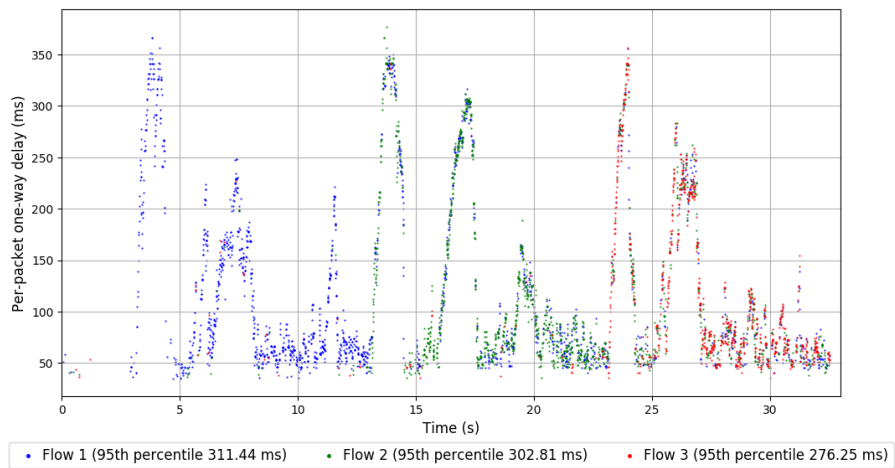
Run 2: Report of SCReAM — Data Link

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

• Flow 1 (95th percentile 77.11 ms)   • Flow 2 (95th percentile 89.34 ms)   • Flow 3 (95th percentile 82.13 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-03-20 08:53:38
End at: 2018-03-20 08:54:08
Local clock offset: -5.904 ms
Remote clock offset: -1.492 ms

# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 81.772 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 73.154 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 84.831 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 82.035 ms
Loss rate: 0.67%
```
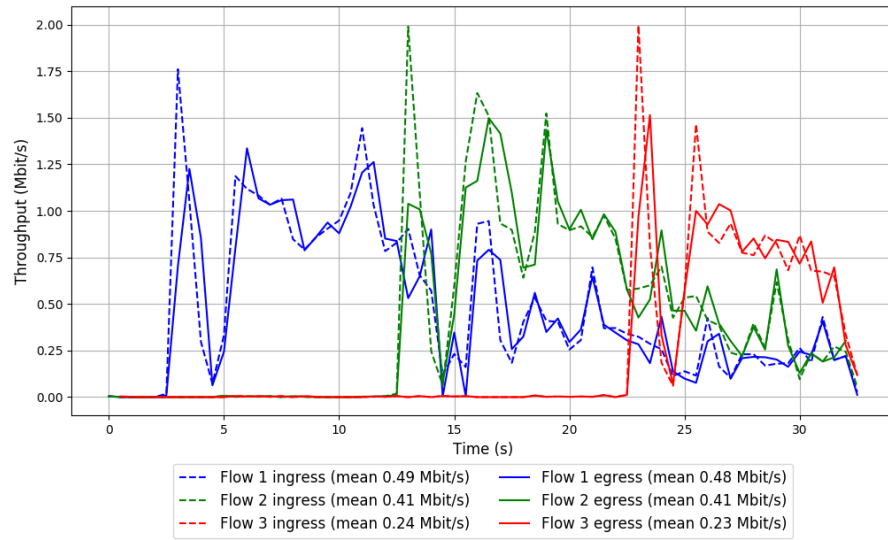
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-03-20 08:15:57
End at: 2018-03-20 08:16:27
Local clock offset: -2.42 ms
Remote clock offset: -1.418 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 302.806 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 311.439 ms
Loss rate: 1.80%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 302.806 ms
Loss rate: 2.19%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 276.250 ms
Loss rate: 2.30%
```

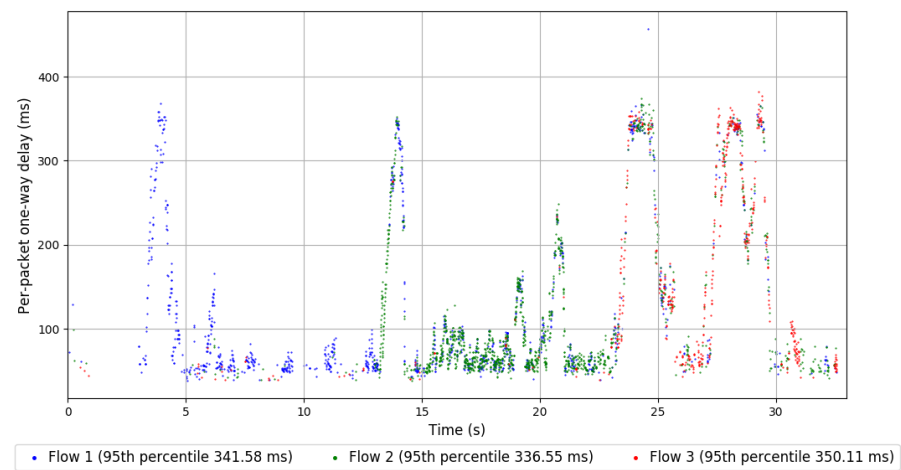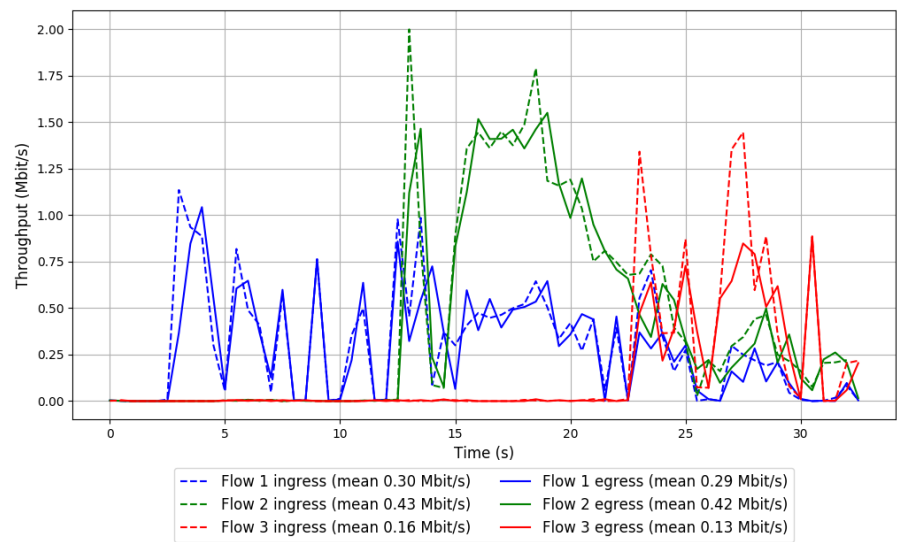Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.49 Mbit/s)   Flow 1 egress (mean 0.48 Mbit/s)
Flow 2 ingress (mean 0.41 Mbit/s)   Flow 2 egress (mean 0.41 Mbit/s)
Flow 3 ingress (mean 0.24 Mbit/s)   Flow 3 egress (mean 0.23 Mbit/s)

Flow 1 (95th percentile 311.44 ms)   Flow 2 (95th percentile 302.81 ms)   Flow 3 (95th percentile 276.25 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-03-20 08:35:48
End at: 2018-03-20 08:36:18
Local clock offset: -0.867 ms
Remote clock offset: -2.178 ms

# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 342.642 ms
Loss rate: 7.46%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 341.581 ms
Loss rate: 6.14%
-- Flow 2:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 336.546 ms
Loss rate: 3.29%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 350.107 ms
Loss rate: 20.94%
```

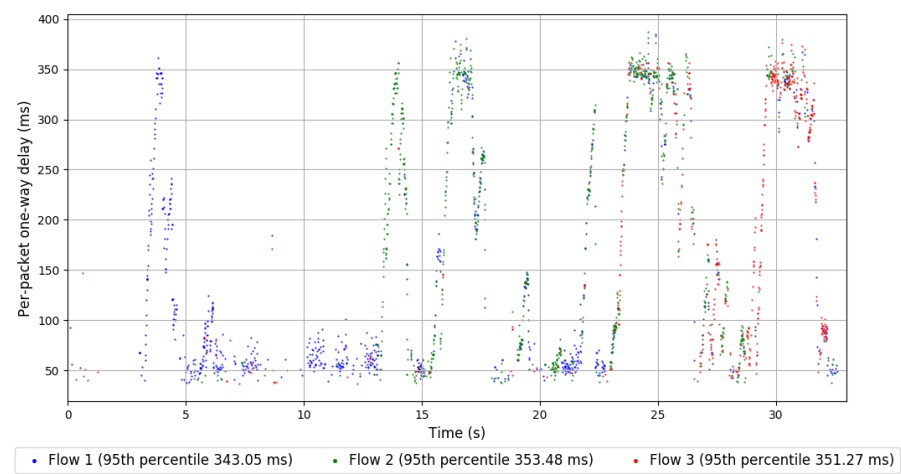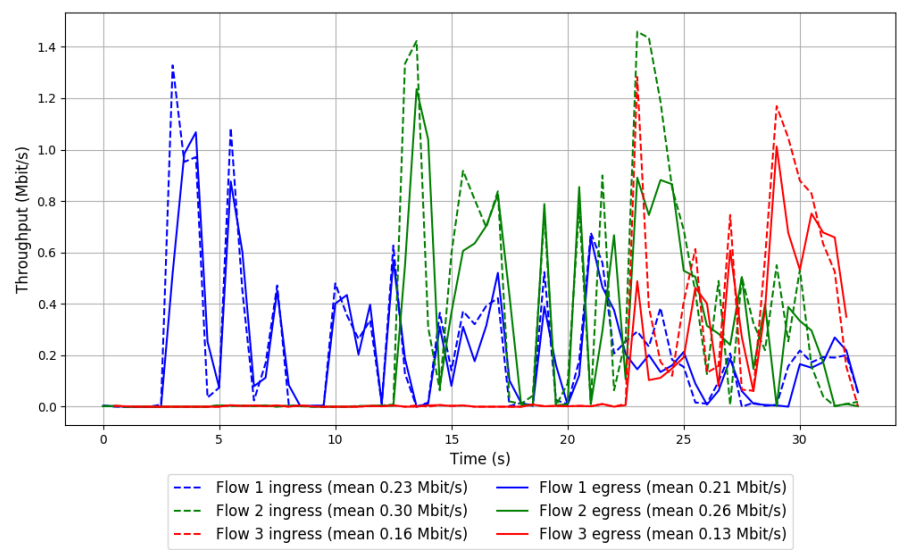Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-03-20 08:55:51
End at: 2018-03-20 08:56:21
Local clock offset: -4.294 ms
Remote clock offset: -2.324 ms

# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 350.666 ms
Loss rate: 12.81%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 343.049 ms
Loss rate: 7.93%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 353.480 ms
Loss rate: 12.91%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 351.267 ms
Loss rate: 19.94%
```

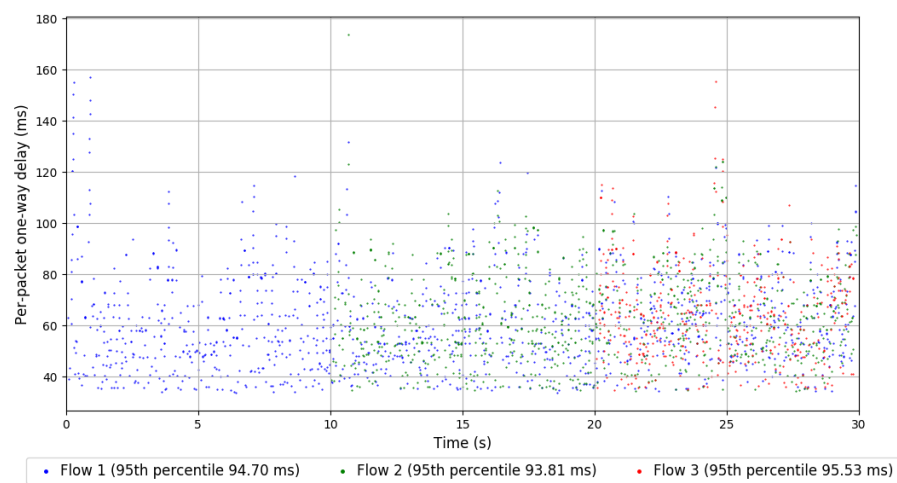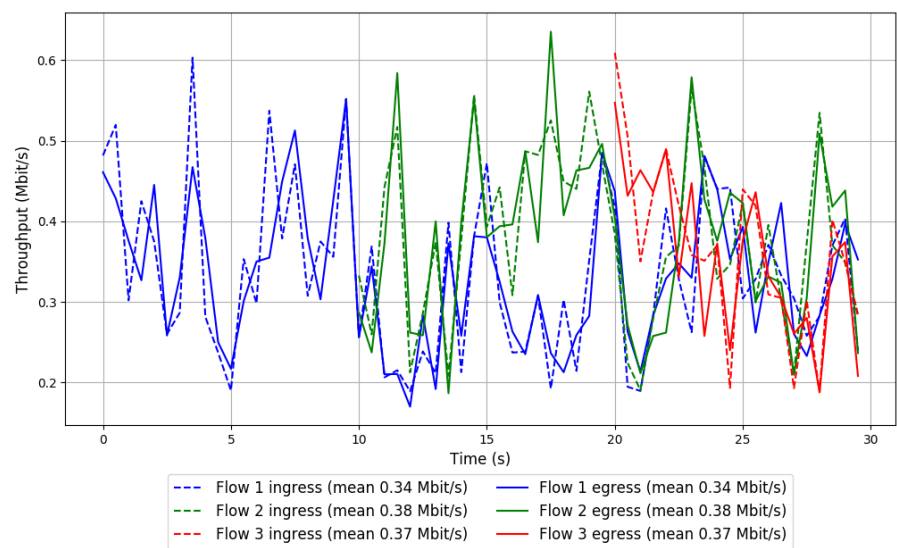Run 3: Report of WebRTC media — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-03-20 08:31:25
End at: 2018-03-20 08:31:55
Local clock offset: -3.015 ms
Remote clock offset: -1.357 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 94.796 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 94.698 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 93.806 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 95.525 ms
Loss rate: 1.90%
```
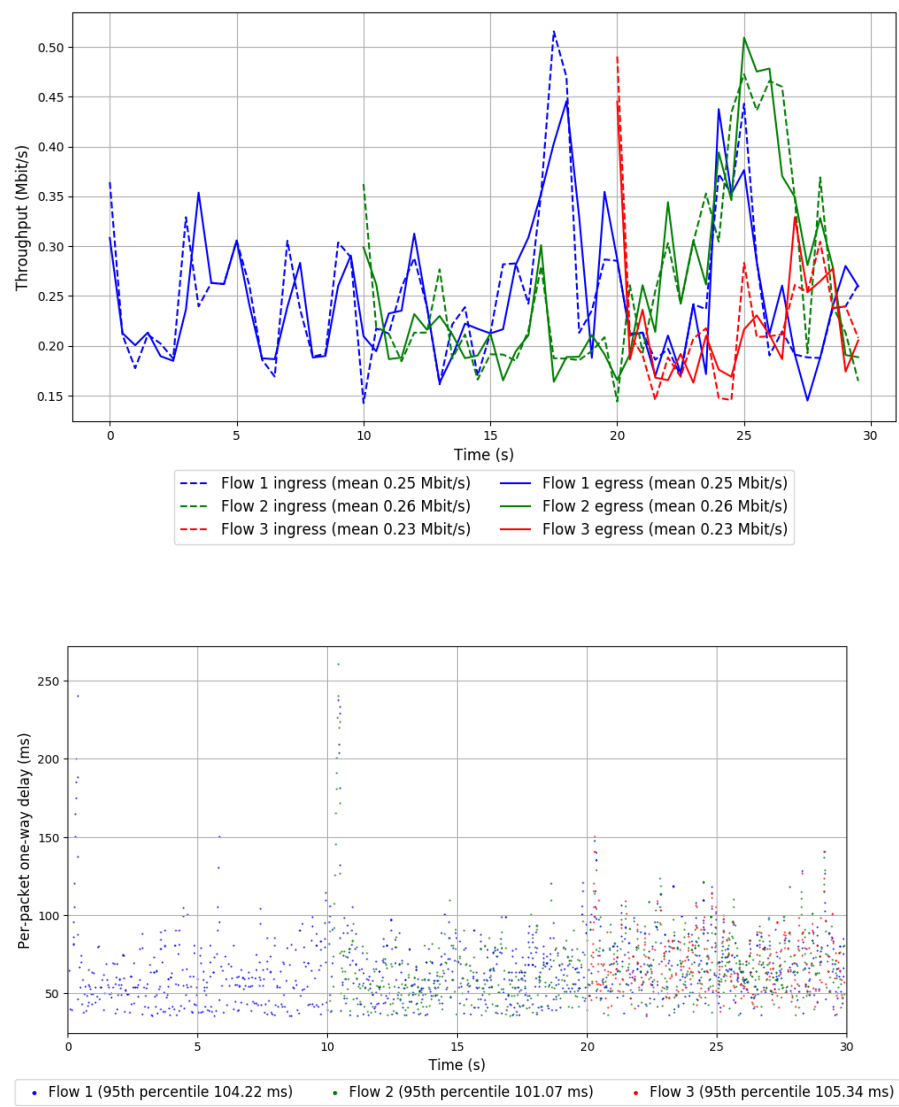
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-03-20 08:51:23
End at: 2018-03-20 08:51:53
Local clock offset: -4.462 ms
Remote clock offset: -1.136 ms


# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 104.232 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 104.225 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 101.073 ms
Loss rate: 0.21%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 105.343 ms
Loss rate: 1.53%
```

Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-03-20 09:11:35
End at: 2018-03-20 09:12:05
Local clock offset: -2.974 ms
Remote clock offset: -2.31 ms

# Below is generated by plot.py at 2018-03-20 10:14:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 106.138 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 107.743 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 104.499 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 106.711 ms
Loss rate: 0.71%
```
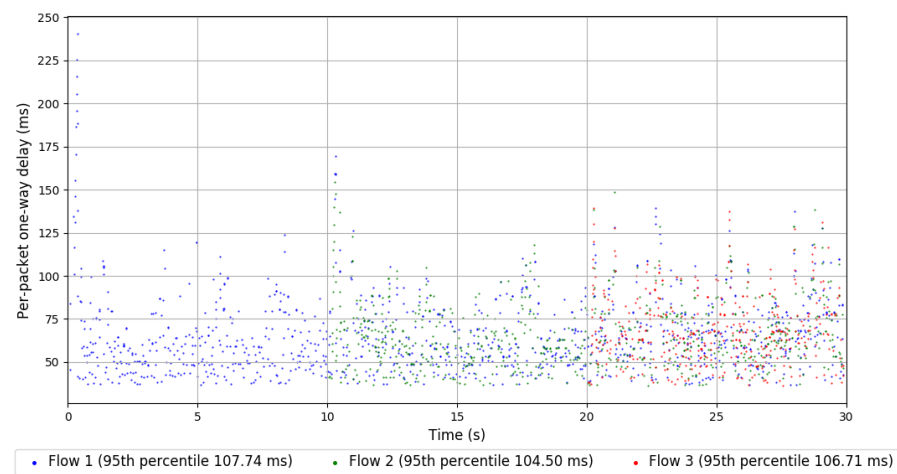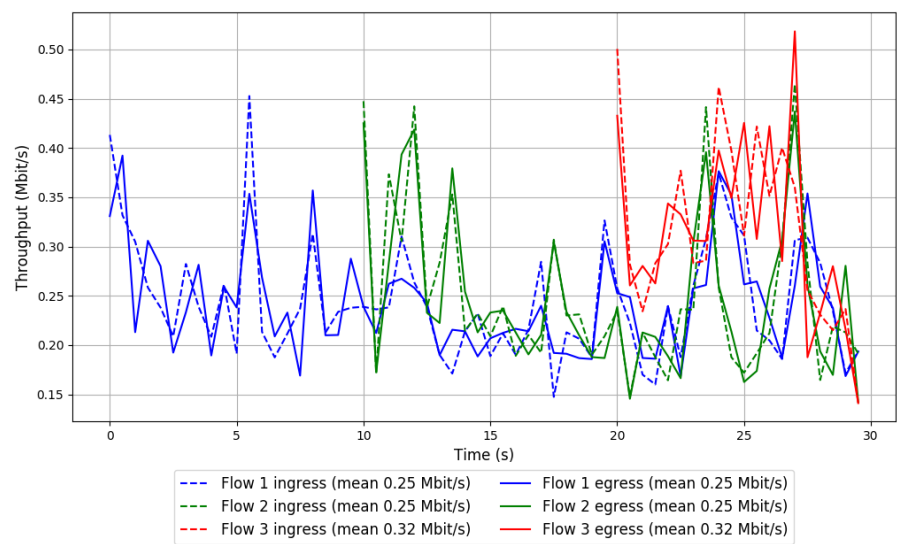
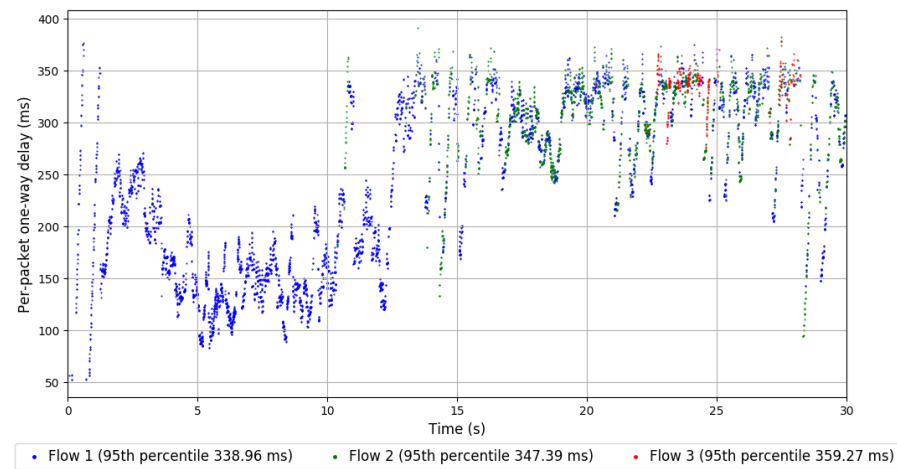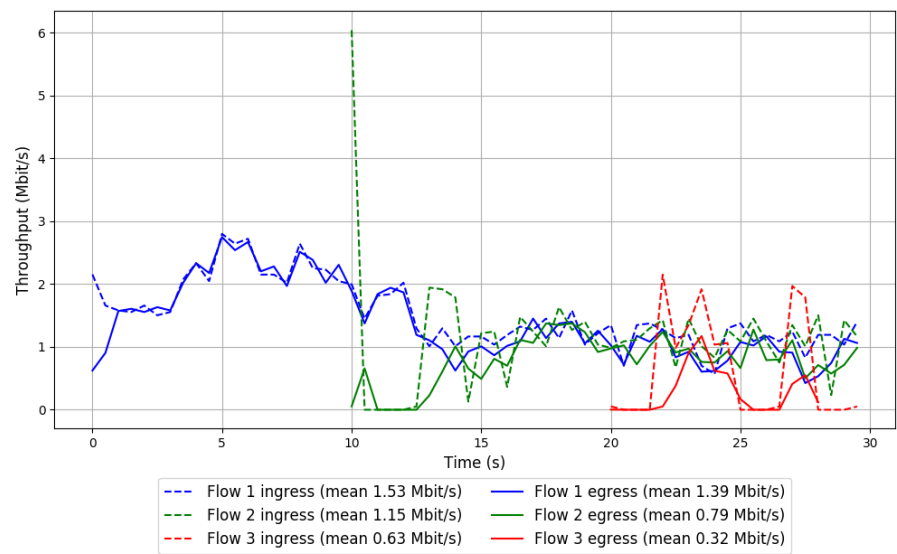Run 3: Report of Sprout — Data Link

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

Start at: 2018-03-20 08:27:01
End at: 2018-03-20 08:27:31
Local clock offset: -3.155 ms
Remote clock offset: -1.717 ms


# Below is generated by plot.py at 2018-03-20 10:14:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 343.265 ms
Loss rate: 20.63%
-- Flow 1:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 338.965 ms
Loss rate: 9.37%
-- Flow 2:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 347.395 ms
Loss rate: 32.42%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 359.274 ms
Loss rate: 60.04%
```
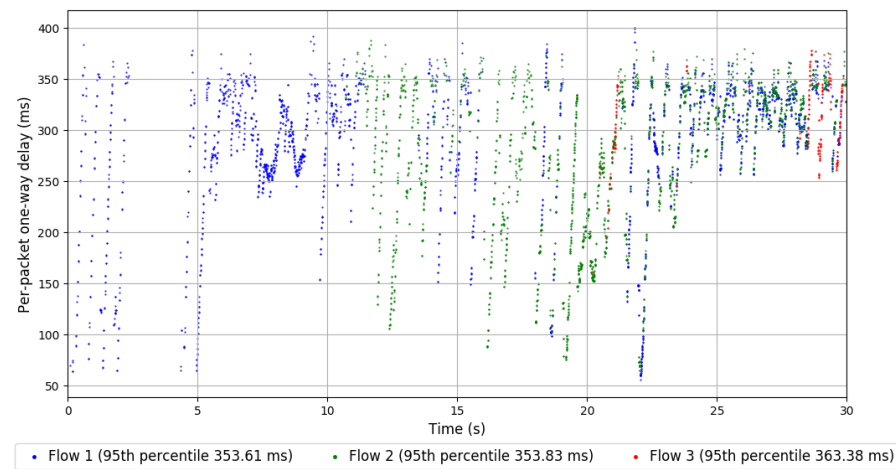
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.53 Mbit/s)   Flow 1 egress (mean 1.39 Mbit/s)
Flow 2 ingress (mean 1.15 Mbit/s)   Flow 2 egress (mean 0.79 Mbit/s)
Flow 3 ingress (mean 0.63 Mbit/s)   Flow 3 egress (mean 0.32 Mbit/s)

Flow 1 (95th percentile 338.96 ms)   Flow 2 (95th percentile 347.39 ms)   Flow 3 (95th percentile 359.27 ms)
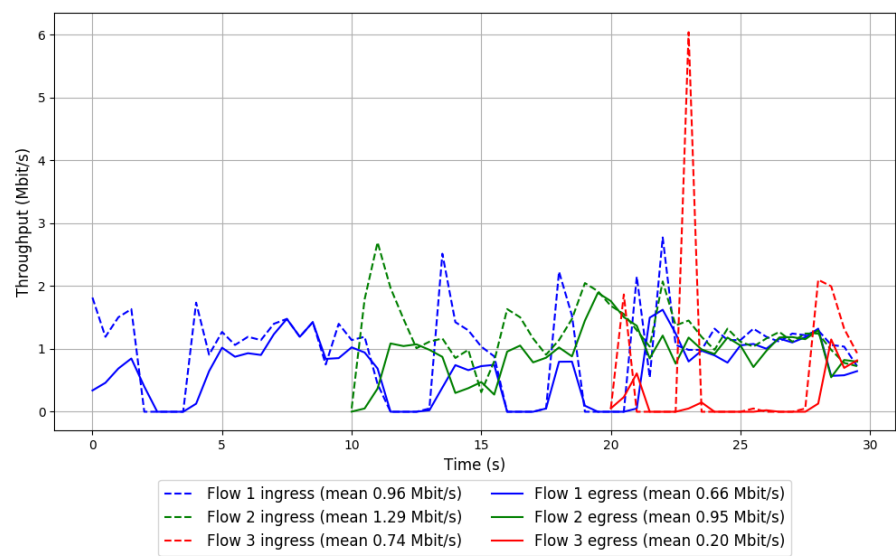
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```
Run 2: Statistics of TaoVA-100x

Start at: 2018-03-20 08:46:55
End at: 2018-03-20 08:47:25
Local clock offset: -3.629 ms
Remote clock offset: -1.739 ms


# Below is generated by plot.py at 2018-03-20 10:14:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 354.302 ms
Loss rate: 34.01%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 353.606 ms
Loss rate: 30.92%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 353.833 ms
Loss rate: 26.46%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 363.383 ms
Loss rate: 72.83%
```
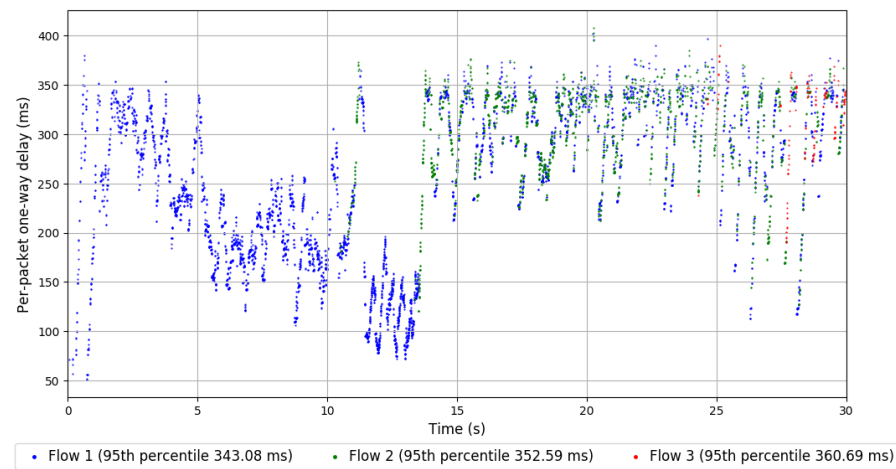
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.96 Mbit/s) --- Flow 1 egress (mean 0.66 Mbit/s)
Flow 2 ingress (mean 1.29 Mbit/s) --- Flow 2 egress (mean 0.95 Mbit/s)
Flow 3 ingress (mean 0.74 Mbit/s) --- Flow 3 egress (mean 0.20 Mbit/s)

Flow 1 (95th percentile 353.61 ms)   Flow 2 (95th percentile 353.83 ms)   Flow 3 (95th percentile 363.38 ms)

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

Start at: 2018-03-20 09:07:06
End at: 2018-03-20 09:07:36
Local clock offset: -6.013 ms
Remote clock offset: -1.53 ms


# Below is generated by plot.py at 2018-03-20 10:14:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 346.508 ms
Loss rate: 21.24%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 343.081 ms
Loss rate: 11.18%
-- Flow 2:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 352.591 ms
Loss rate: 25.06%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 360.688 ms
Loss rate: 78.91%
```
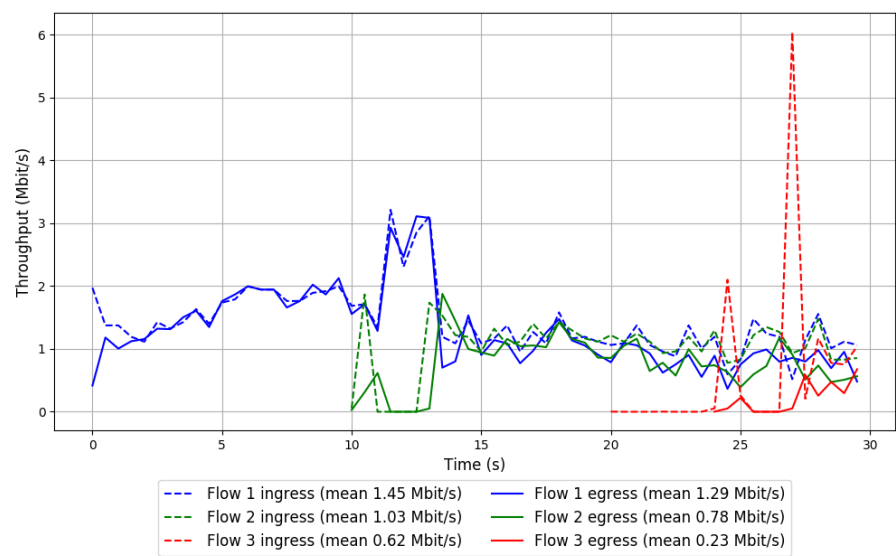
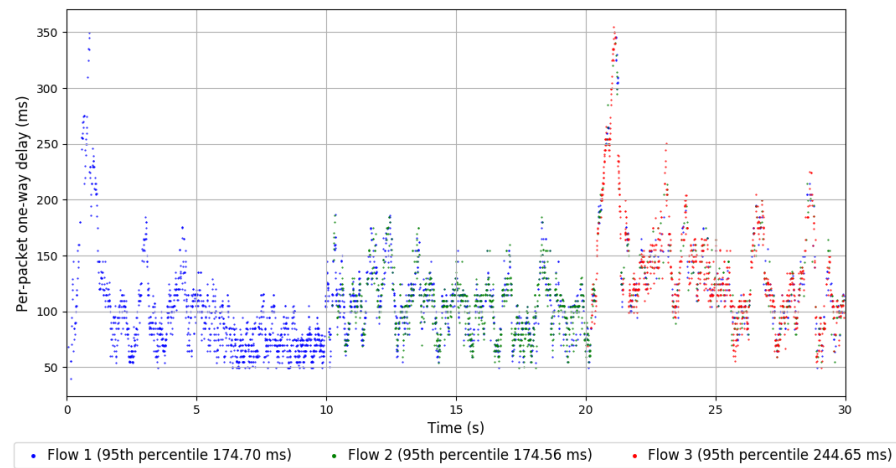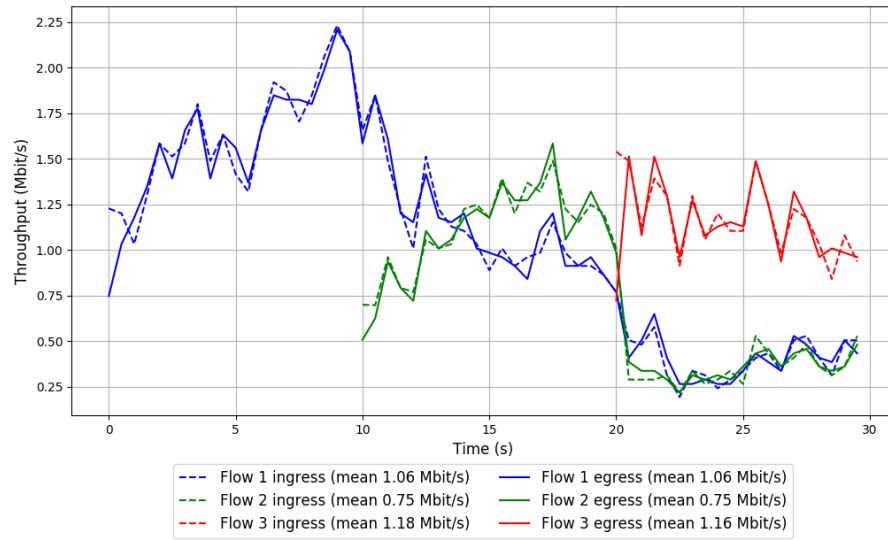Run 3: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-03-20 08:24:49
End at: 2018-03-20 08:25:19
Local clock offset: -1.009 ms
Remote clock offset: -1.298 ms


# Below is generated by plot.py at 2018-03-20 10:14:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 194.478 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 174.702 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 174.563 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 244.648 ms
Loss rate: 2.55%
```

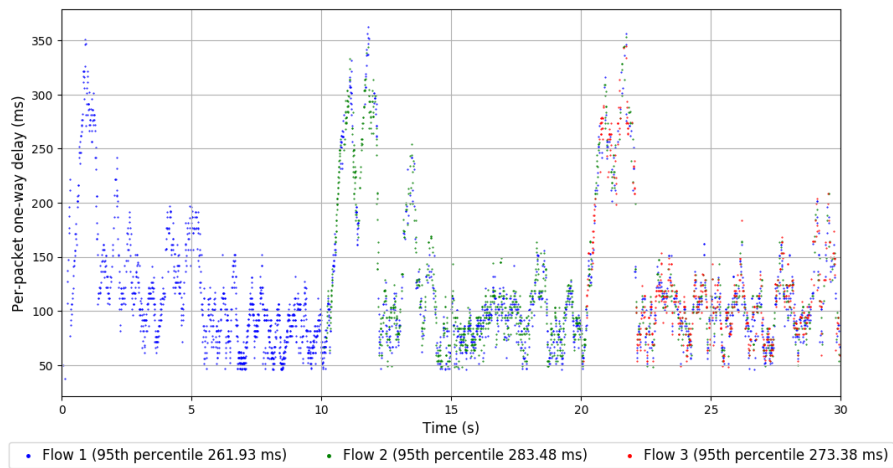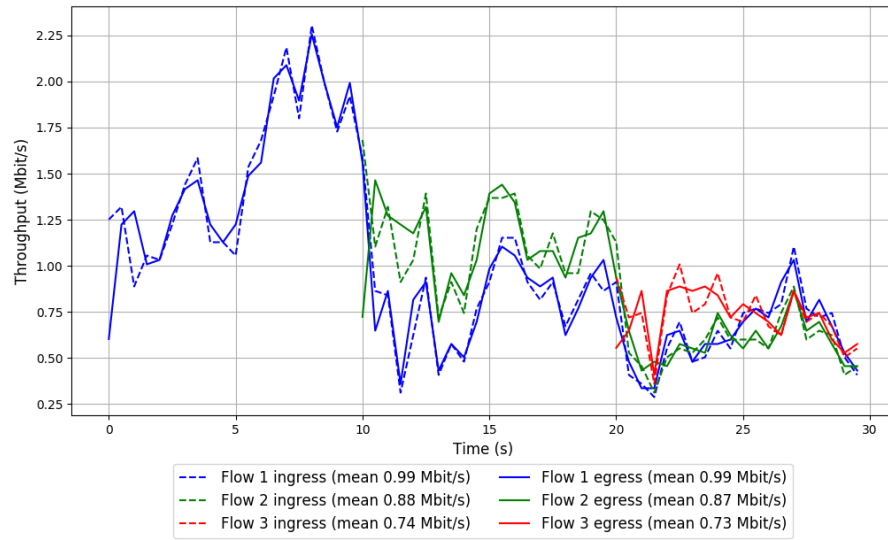# Run 1: Report of TCP Vegas — Data Link

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```
Run 2: Statistics of TCP Vegas

Start at: 2018-03-20 08:44:41
End at: 2018-03-20 08:45:11
Local clock offset: -5.748 ms
Remote clock offset: -1.909 ms


# Below is generated by plot.py at 2018-03-20 10:14:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 273.478 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 261.926 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 283.480 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 273.382 ms
Loss rate: 1.80%
```

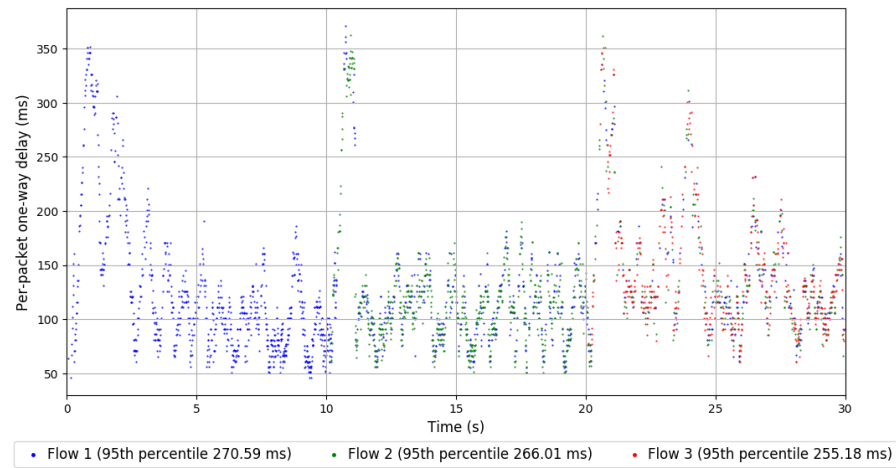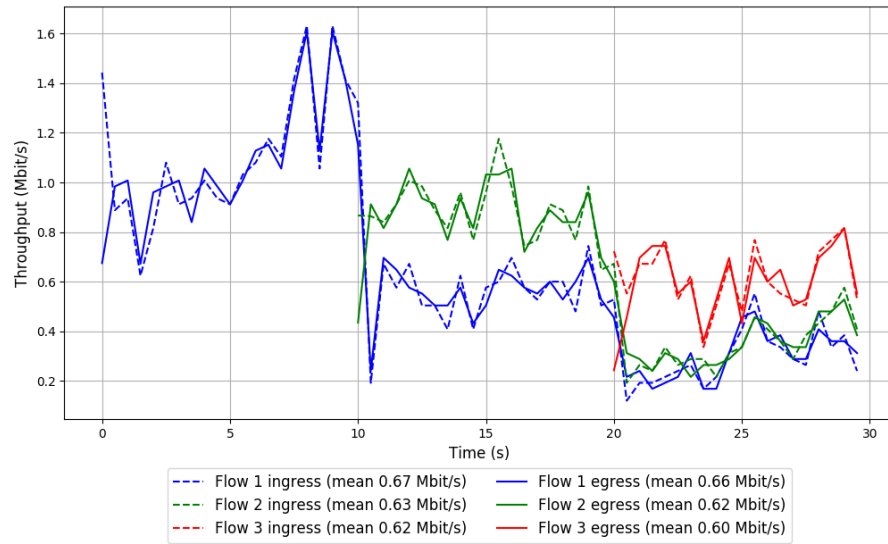Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-03-20 09:04:51
End at: 2018-03-20 09:05:21
Local clock offset: -6.536 ms
Remote clock offset: -1.898 ms


# Below is generated by plot.py at 2018-03-20 10:14:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 265.712 ms
Loss rate: 1.71%
-- Flow 1:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 270.591 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 266.012 ms
Loss rate: 1.44%
-- Flow 3:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 255.179 ms
Loss rate: 3.90%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.67 Mbit/s)   Flow 1 egress (mean 0.66 Mbit/s)
Flow 2 ingress (mean 0.63 Mbit/s)   Flow 2 egress (mean 0.62 Mbit/s)
Flow 3 ingress (mean 0.62 Mbit/s)   Flow 3 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 270.59 ms)   Flow 2 (95th percentile 266.01 ms)   Flow 3 (95th percentile 255.18 ms)
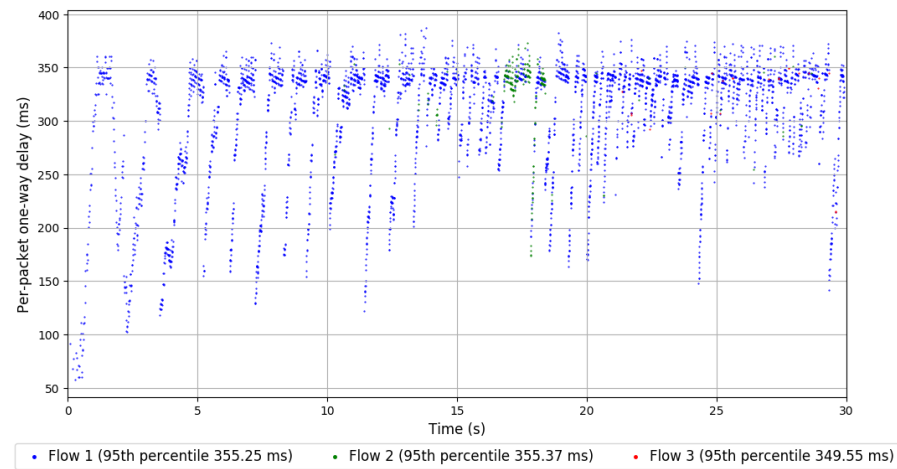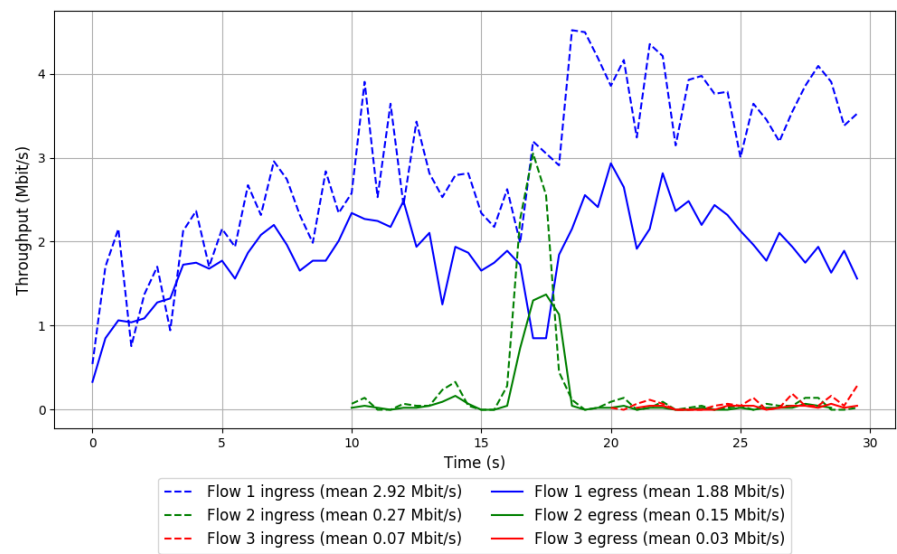
63

```
Run 1: Statistics of Verus

Start at: 2018-03-20 08:22:36
End at: 2018-03-20 08:23:06
Local clock offset: -1.311 ms
Remote clock offset: -1.346 ms


# Below is generated by plot.py at 2018-03-20 10:14:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 355.251 ms
Loss rate: 36.71%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 355.251 ms
Loss rate: 35.82%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 355.369 ms
Loss rate: 48.12%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 349.547 ms
Loss rate: 61.02%
```

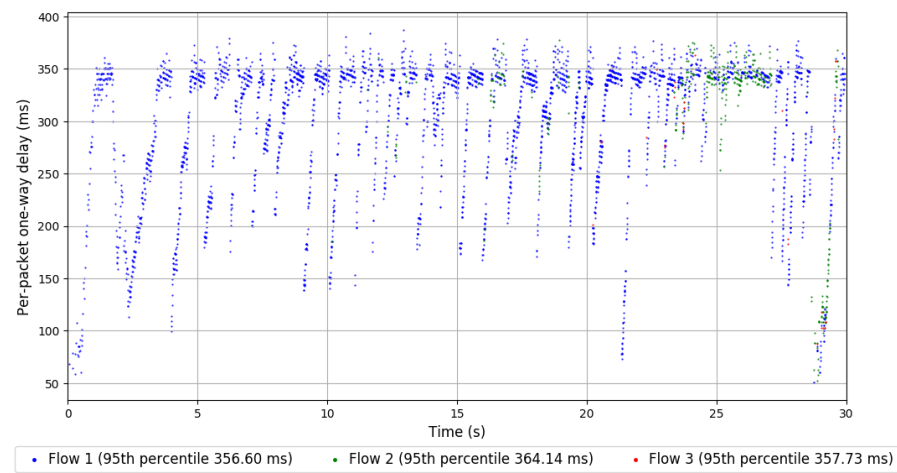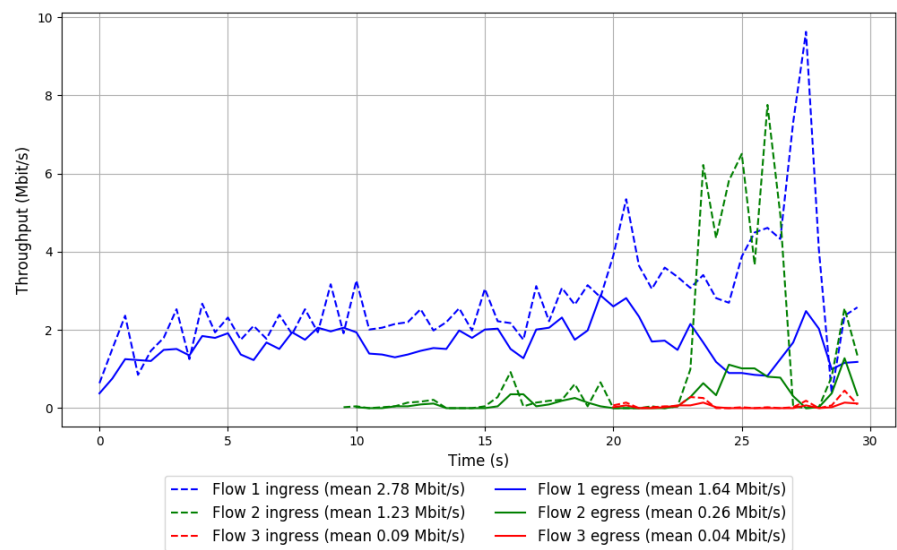Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-03-20 08:42:28
End at: 2018-03-20 08:42:58
Local clock offset: -4.01 ms
Remote clock offset: -0.978 ms


# Below is generated by plot.py at 2018-03-20 10:14:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 357.158 ms
Loss rate: 49.93%
-- Flow 1:
Average throughput: 1.64 Mbit/s
95th percentile per-packet one-way delay: 356.599 ms
Loss rate: 41.29%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 364.142 ms
Loss rate: 79.13%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 357.728 ms
Loss rate: 55.41%
```
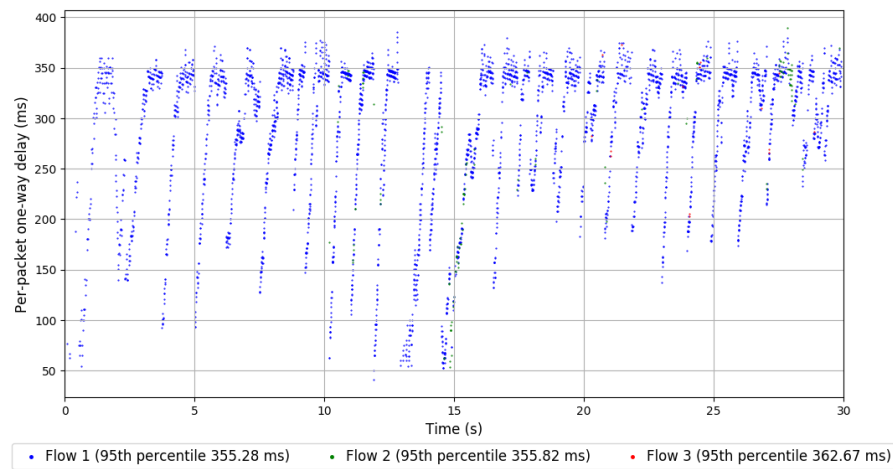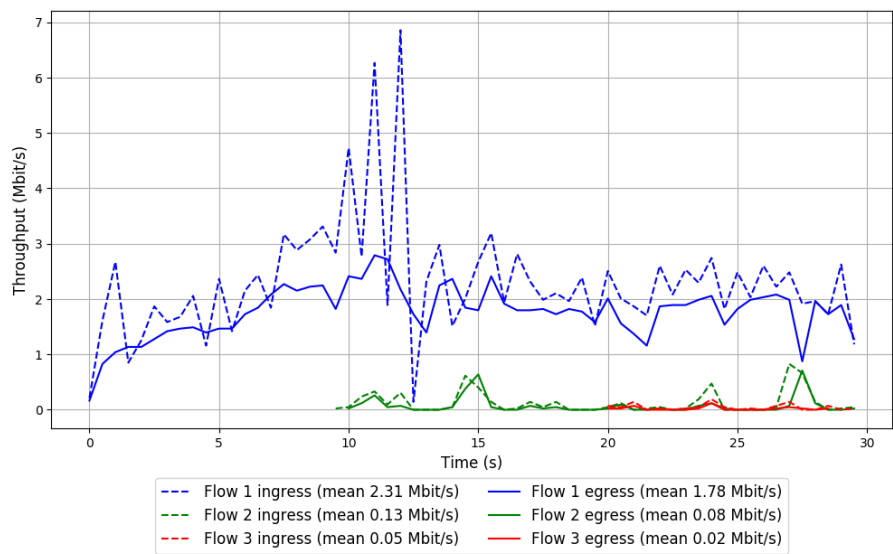
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-03-20 09:02:36
End at: 2018-03-20 09:03:06
Local clock offset: -4.314 ms
Remote clock offset: -2.462 ms


# Below is generated by plot.py at 2018-03-20 10:14:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 355.315 ms
Loss rate: 24.14%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 355.276 ms
Loss rate: 23.22%
-- Flow 2:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 355.816 ms
Loss rate: 42.15%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 362.665 ms
Loss rate: 58.97%
```
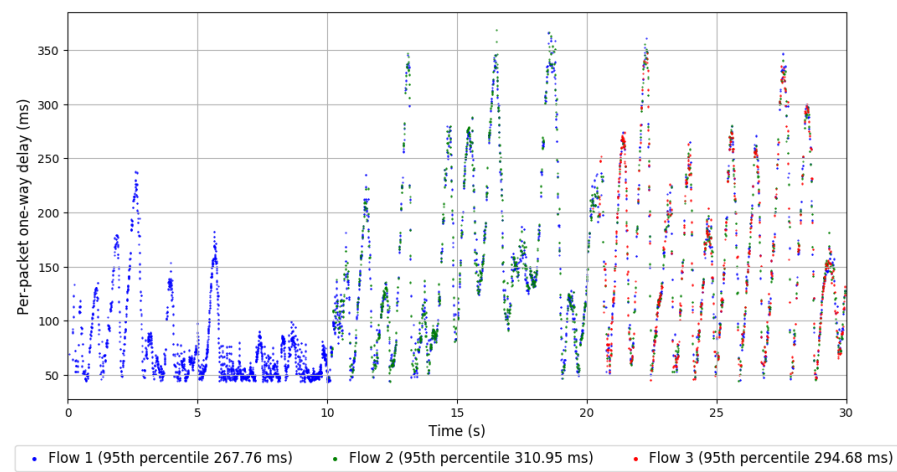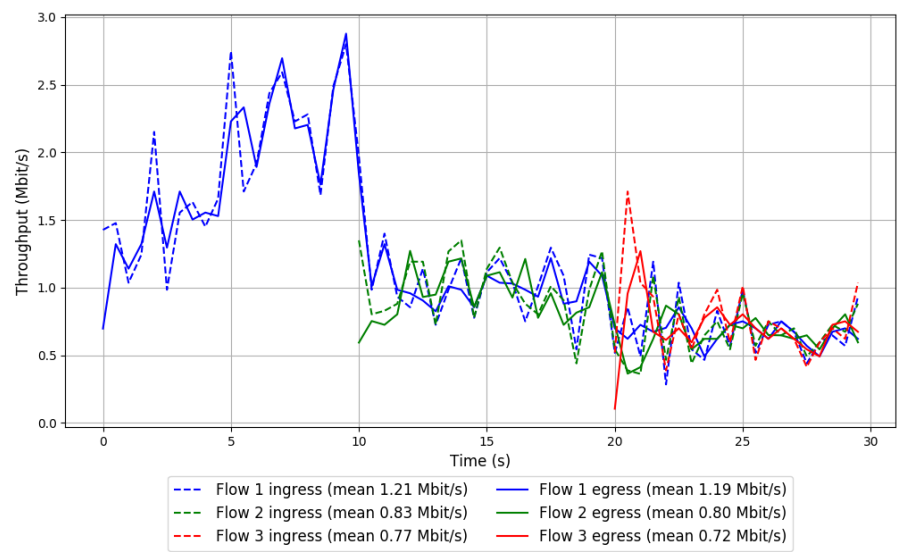
Run 3: Report of Verus — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-03-20 08:21:30
End at: 2018-03-20 08:22:00
Local clock offset: -3.404 ms
Remote clock offset: -1.222 ms


# Below is generated by plot.py at 2018-03-20 10:14:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 286.587 ms
Loss rate: 3.47%
-- Flow 1:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 267.756 ms
Loss rate: 1.99%
-- Flow 2:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 310.950 ms
Loss rate: 4.28%
-- Flow 3:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 294.683 ms
Loss rate: 8.74%
```

Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 1.21 Mbit/s)   Flow 1 egress (mean 1.19 Mbit/s)
Flow 2 ingress (mean 0.83 Mbit/s)   Flow 2 egress (mean 0.80 Mbit/s)
Flow 3 ingress (mean 0.77 Mbit/s)   Flow 3 egress (mean 0.72 Mbit/s)

Flow 1 (95th percentile 267.76 ms)   Flow 2 (95th percentile 310.95 ms)   Flow 3 (95th percentile 294.68 ms)
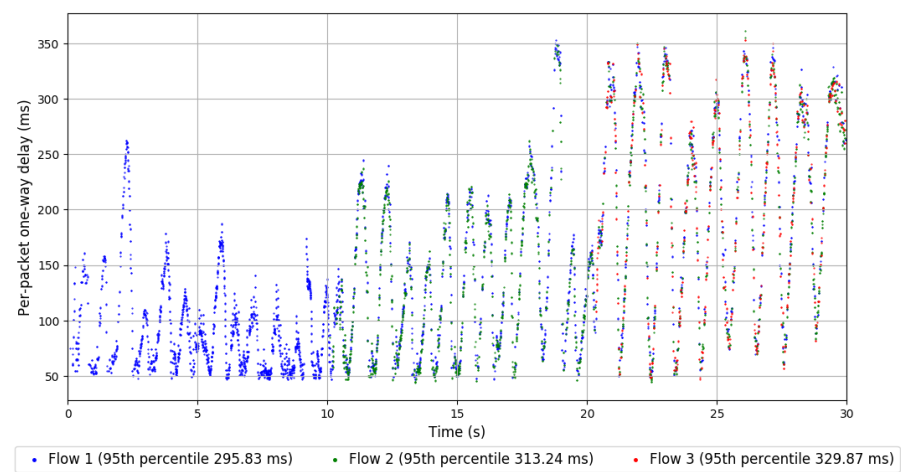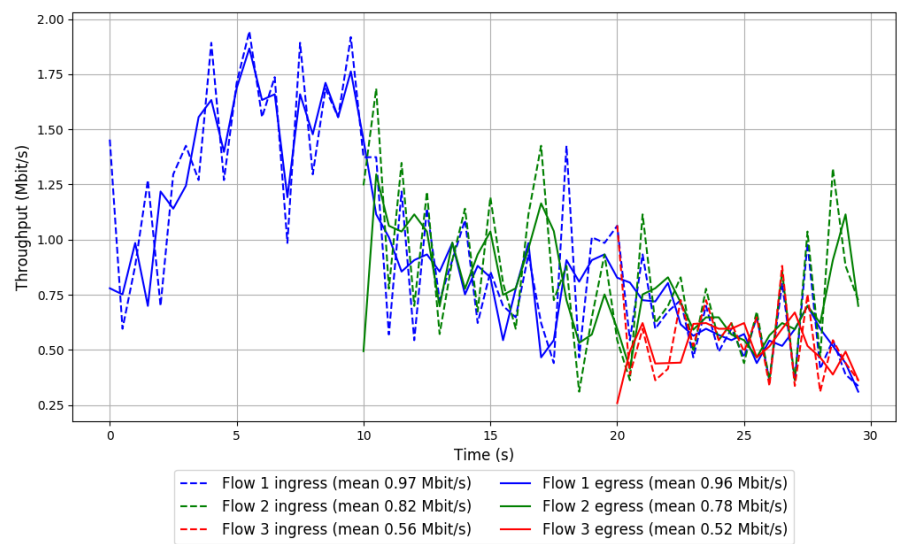
```
Run 2: Statistics of Copa

Start at: 2018-03-20 08:41:22
End at: 2018-03-20 08:41:52
Local clock offset: -5.081 ms
Remote clock offset: -1.154 ms


# Below is generated by plot.py at 2018-03-20 10:14:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 310.531 ms
Loss rate: 3.31%
-- Flow 1:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 295.831 ms
Loss rate: 1.77%
-- Flow 2:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 313.243 ms
Loss rate: 4.62%
-- Flow 3:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 329.868 ms
Loss rate: 7.58%
```
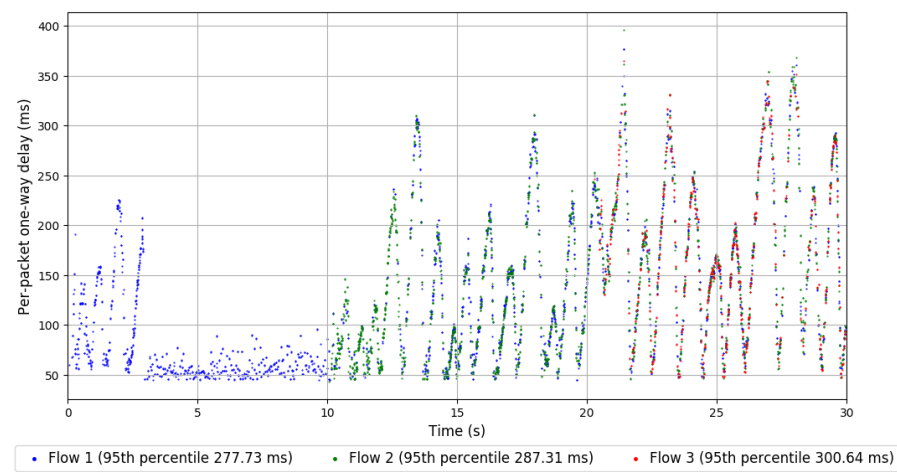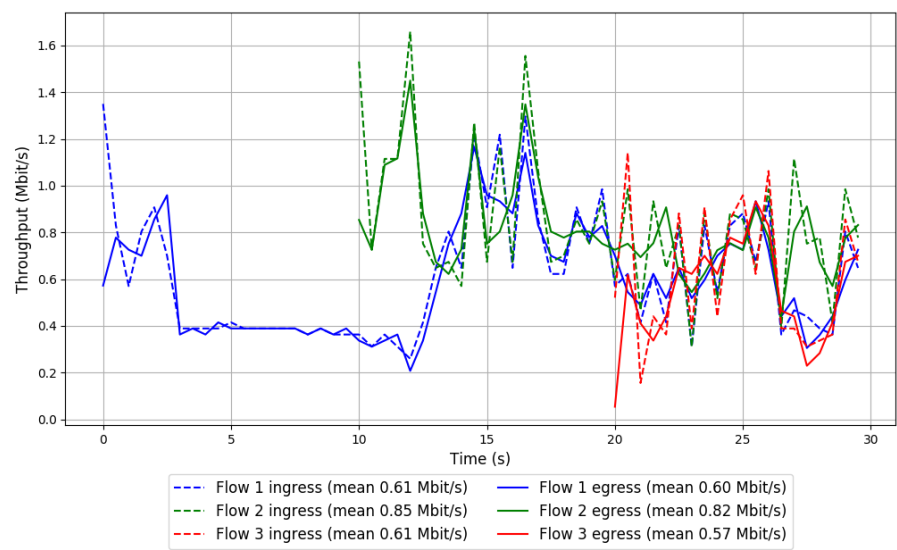
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-03-20 09:01:29
End at: 2018-03-20 09:01:59
Local clock offset: -6.827 ms
Remote clock offset: -1.286 ms

# Below is generated by plot.py at 2018-03-20 10:14:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 286.855 ms
Loss rate: 3.90%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 277.733 ms
Loss rate: 2.72%
-- Flow 2:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 287.309 ms
Loss rate: 3.31%
-- Flow 3:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 300.643 ms
Loss rate: 9.16%
```

Run 3: Report of Copa — Data Link

- Flow 1 ingress (mean 0.61 Mbit/s)
- Flow 1 egress (mean 0.60 Mbit/s)
- Flow 2 ingress (mean 0.85 Mbit/s)
- Flow 2 egress (mean 0.82 Mbit/s)
- Flow 3 ingress (mean 0.61 Mbit/s)
- Flow 3 egress (mean 0.57 Mbit/s)

- Flow 1 (95th percentile 277.73 ms)
- Flow 2 (95th percentile 287.31 ms)
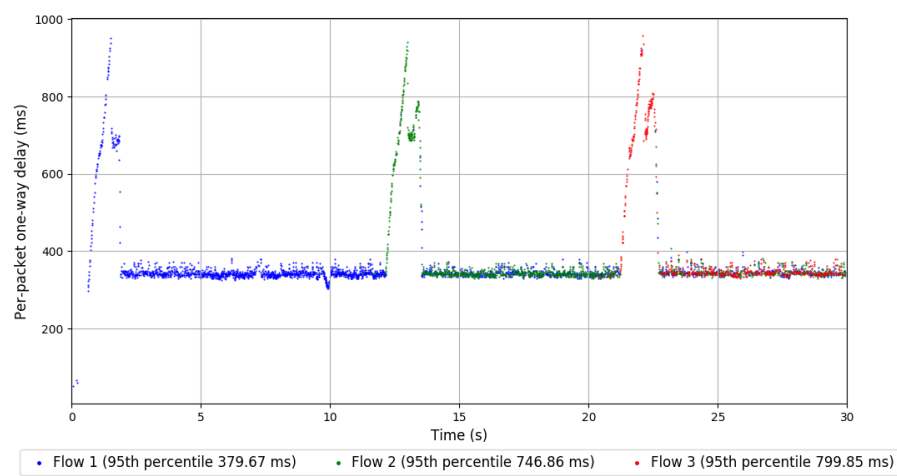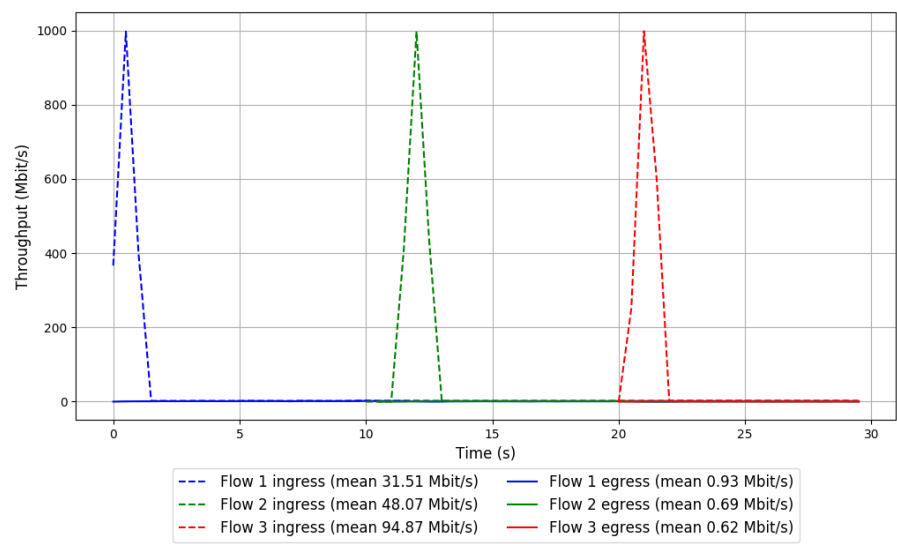- Flow 3 (95th percentile 300.64 ms)

```
Run 1: Statistics of FillP

Start at: 2018-03-20 08:18:09
End at: 2018-03-20 08:18:39
Local clock offset: -3.351 ms
Remote clock offset: -2.306 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 703.878 ms
Loss rate: 98.34%
-- Flow 1:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 379.671 ms
Loss rate: 97.05%
-- Flow 2:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 746.862 ms
Loss rate: 98.61%
-- Flow 3:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 799.848 ms
Loss rate: 99.37%
```
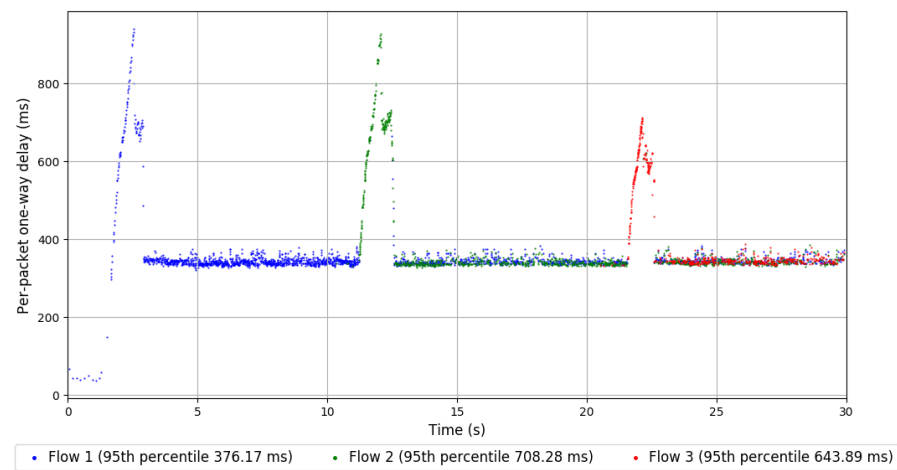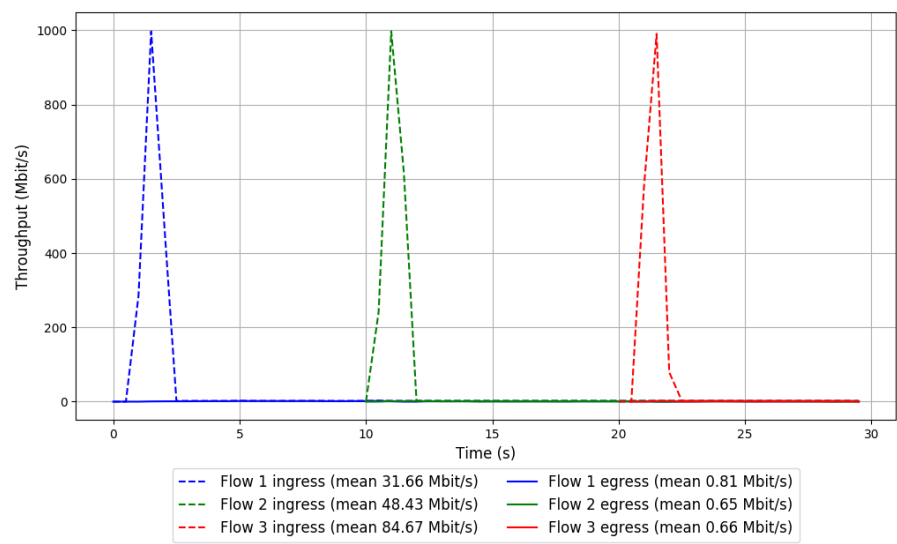
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-03-20 08:38:00
End at: 2018-03-20 08:38:30
Local clock offset: -5.679 ms
Remote clock offset: -1.686 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 664.550 ms
Loss rate: 98.43%
-- Flow 1:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 376.169 ms
Loss rate: 97.44%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 708.277 ms
Loss rate: 98.68%
-- Flow 3:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 643.893 ms
Loss rate: 99.26%
```

Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 31.66 Mbit/s)   Flow 1 egress (mean 0.81 Mbit/s)
Flow 2 ingress (mean 48.43 Mbit/s)   Flow 2 egress (mean 0.65 Mbit/s)
Flow 3 ingress (mean 84.67 Mbit/s)   Flow 3 egress (mean 0.66 Mbit/s)

Flow 1 (95th percentile 376.17 ms)   Flow 2 (95th percentile 708.28 ms)   Flow 3 (95th percentile 643.89 ms)
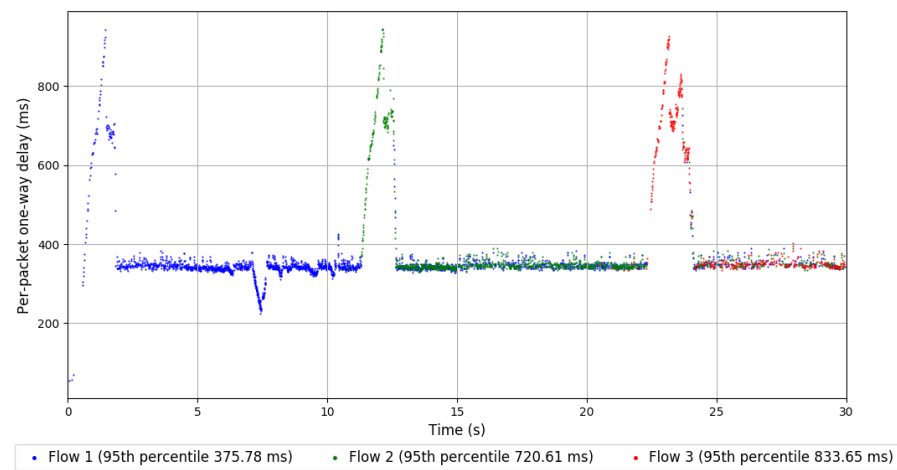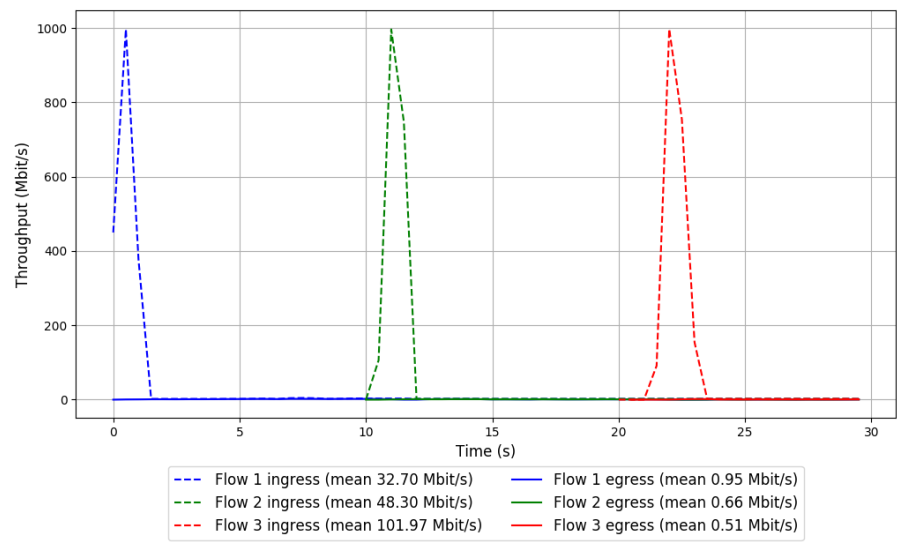
79

```
Run 3: Statistics of FillP

Start at: 2018-03-20 08:58:04
End at: 2018-03-20 08:58:34
Local clock offset: -5.094 ms
Remote clock offset: -1.832 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 705.308 ms
Loss rate: 98.44%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 375.780 ms
Loss rate: 97.11%
-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 720.606 ms
Loss rate: 98.66%
-- Flow 3:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 833.649 ms
Loss rate: 99.52%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 32.70 Mbit/s) — Flow 1 egress (mean 0.95 Mbit/s)
Flow 2 ingress (mean 48.30 Mbit/s) — Flow 2 egress (mean 0.66 Mbit/s)
Flow 3 ingress (mean 101.97 Mbit/s) — Flow 3 egress (mean 0.51 Mbit/s)

Flow 1 (95th percentile 375.78 ms) • Flow 2 (95th percentile 720.61 ms) • Flow 3 (95th percentile 833.65 ms)
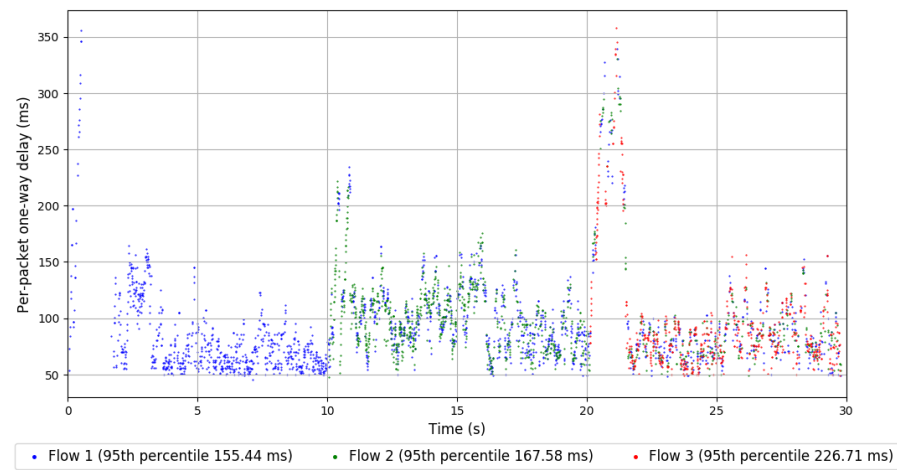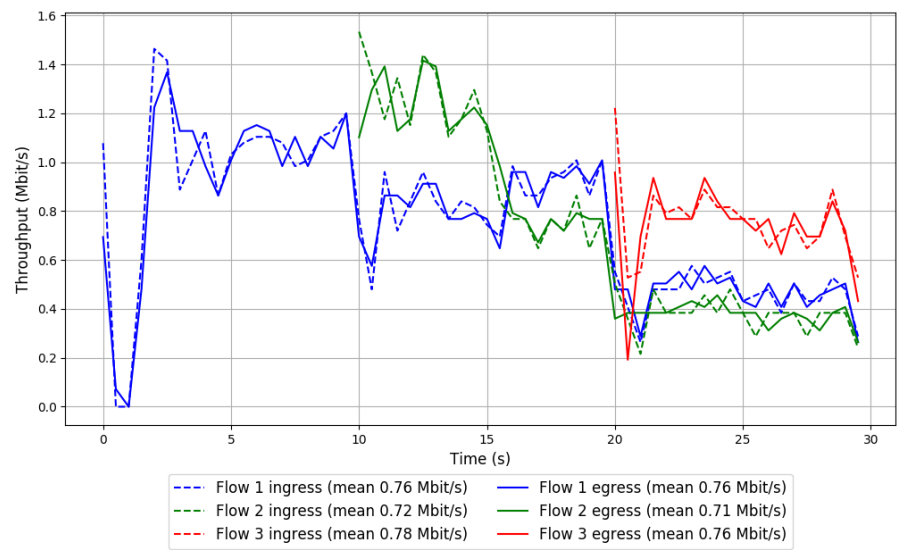
```
Run 1: Statistics of Indigo-1-32

Start at: 2018-03-20 08:20:24
End at: 2018-03-20 08:20:54
Local clock offset: -0.374 ms
Remote clock offset: -1.997 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 173.575 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 155.435 ms
Loss rate: 1.00%
-- Flow 2:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 167.579 ms
Loss rate: 0.93%
-- Flow 3:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 226.714 ms
Loss rate: 3.16%
```

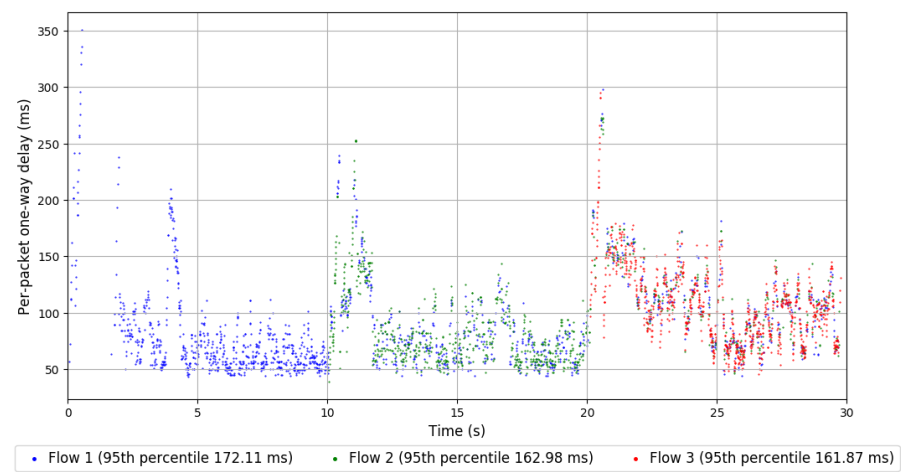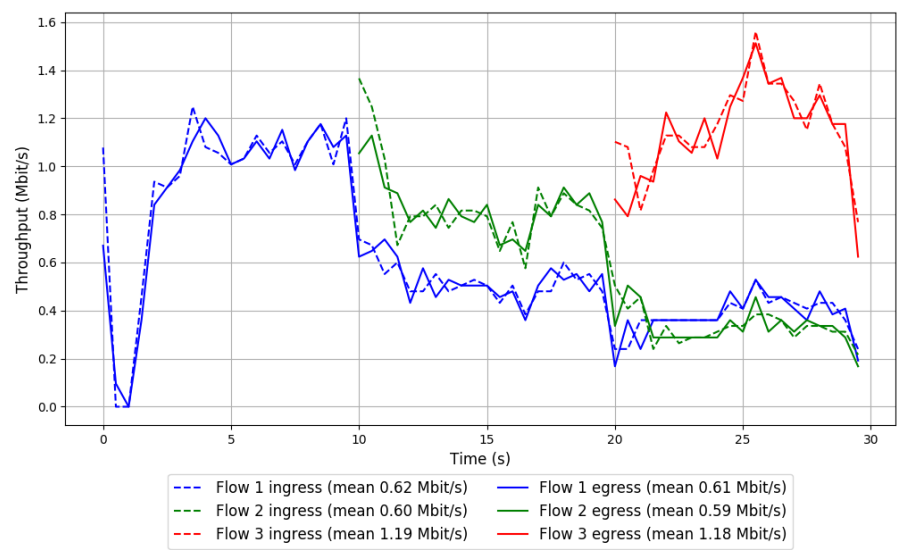Run 1: Report of Indigo-1-32 — Data Link

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

Start at: 2018-03-20 08:40:16
End at: 2018-03-20 08:40:46
Local clock offset: -6.137 ms
Remote clock offset: -1.816 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 165.303 ms
Loss rate: 1.53%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 172.107 ms
Loss rate: 1.18%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 162.978 ms
Loss rate: 1.42%
-- Flow 3:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 161.869 ms
Loss rate: 2.17%
```

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

- - - Flow 1 ingress (mean 0.62 Mbit/s) —— Flow 1 egress (mean 0.61 Mbit/s)
- - - Flow 2 ingress (mean 0.60 Mbit/s) —— Flow 2 egress (mean 0.59 Mbit/s)
- - - Flow 3 ingress (mean 1.19 Mbit/s) —— Flow 3 egress (mean 1.18 Mbit/s)

• Flow 1 (95th percentile 172.11 ms)　　• Flow 2 (95th percentile 162.98 ms)　　• Flow 3 (95th percentile 161.87 ms)
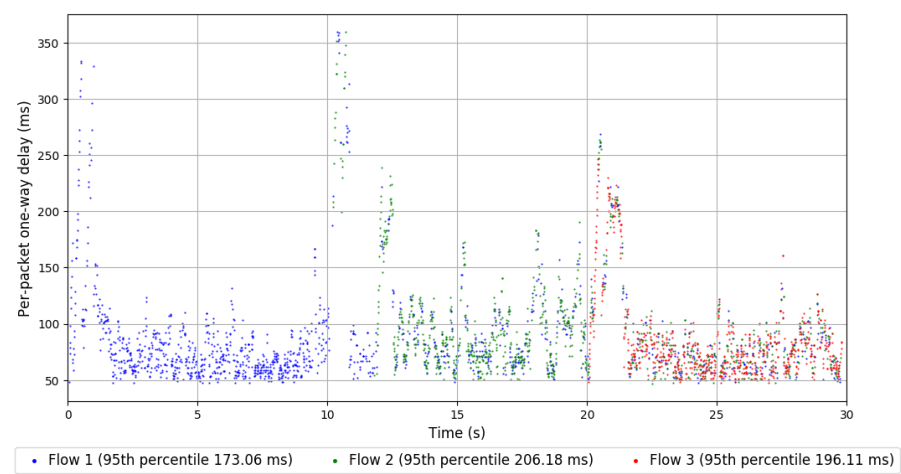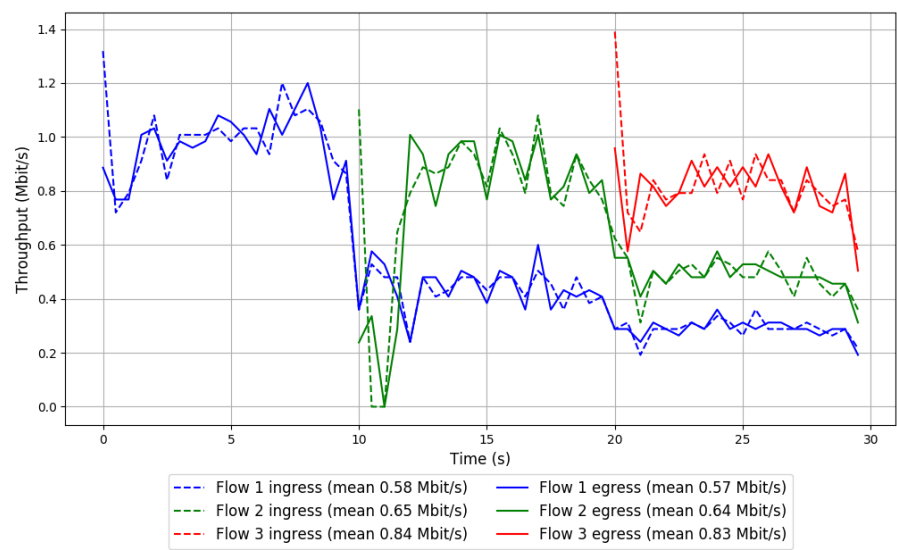
```
Run 3: Statistics of Indigo-1-32

Start at: 2018-03-20 09:00:23
End at: 2018-03-20 09:00:53
Local clock offset: -5.871 ms
Remote clock offset: -2.346 ms

# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 196.050 ms
Loss rate: 1.70%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 173.063 ms
Loss rate: 0.98%
-- Flow 2:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 206.181 ms
Loss rate: 2.44%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 196.108 ms
Loss rate: 2.05%
```

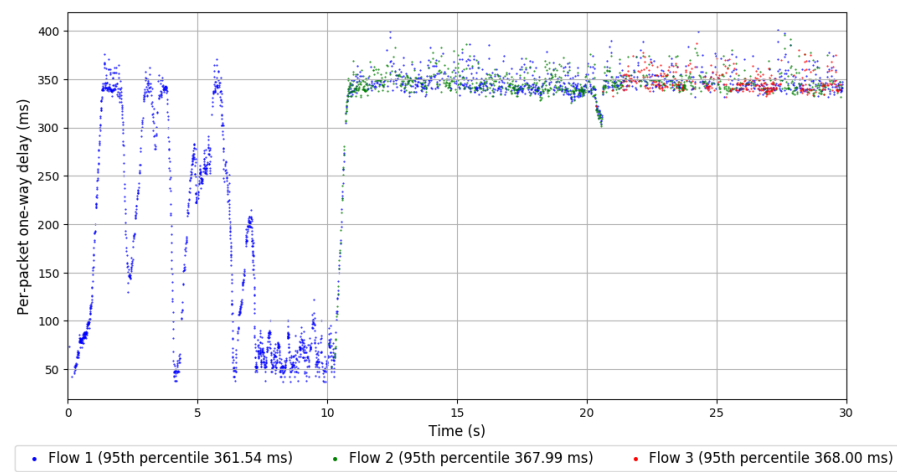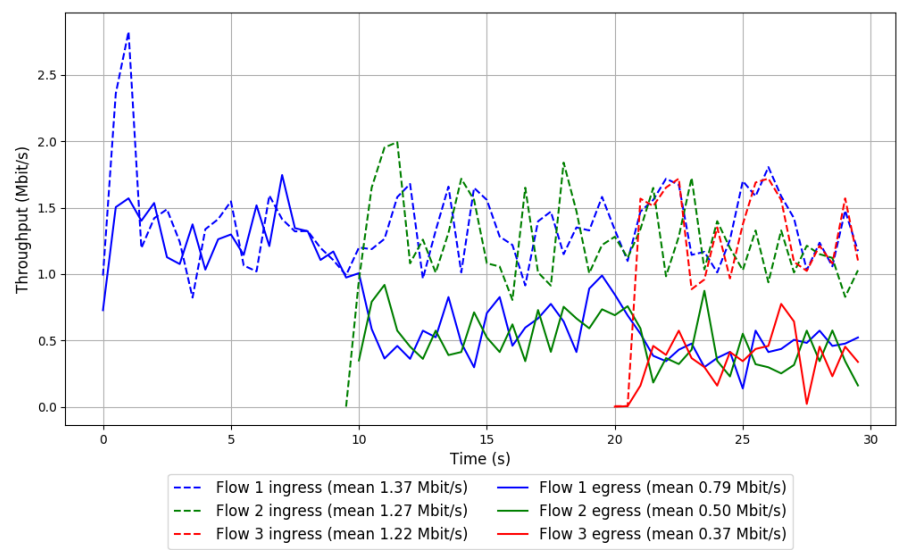## Run 3: Report of Indigo-1-32 — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-03-20 08:28:07
End at: 2018-03-20 08:28:37
Local clock offset: -1.777 ms
Remote clock offset: -0.734 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 363.968 ms
Loss rate: 52.62%
-- Flow 1:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 361.538 ms
Loss rate: 42.29%
-- Flow 2:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 367.985 ms
Loss rate: 60.67%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 368.001 ms
Loss rate: 70.90%
```

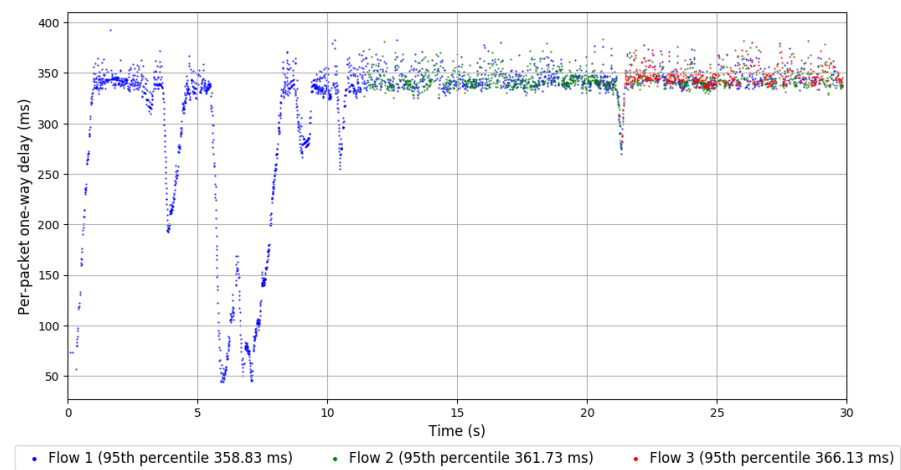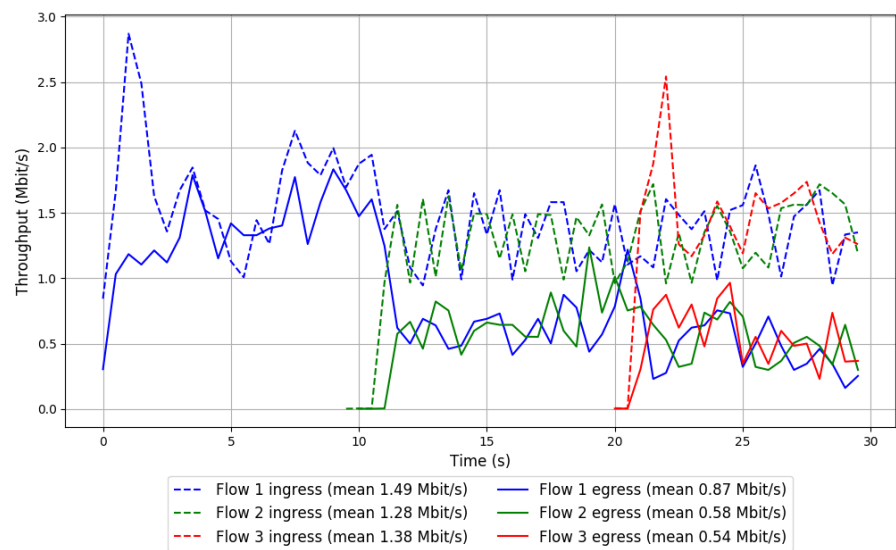Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-03-20 08:48:02
End at: 2018-03-20 08:48:32
Local clock offset: -5.625 ms
Remote clock offset: -0.805 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.42 Mbit/s
95th percentile per-packet one-way delay: 360.683 ms
Loss rate: 49.44%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 358.835 ms
Loss rate: 41.76%
-- Flow 2:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 361.731 ms
Loss rate: 55.84%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 366.135 ms
Loss rate: 62.59%
```

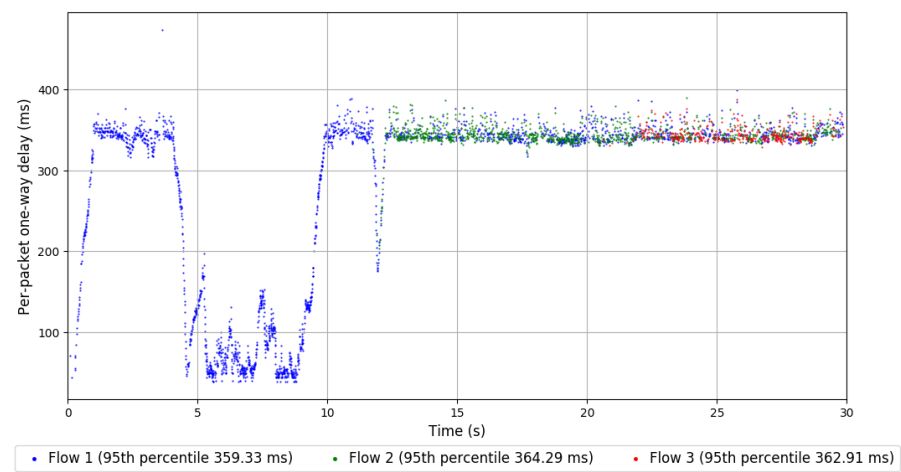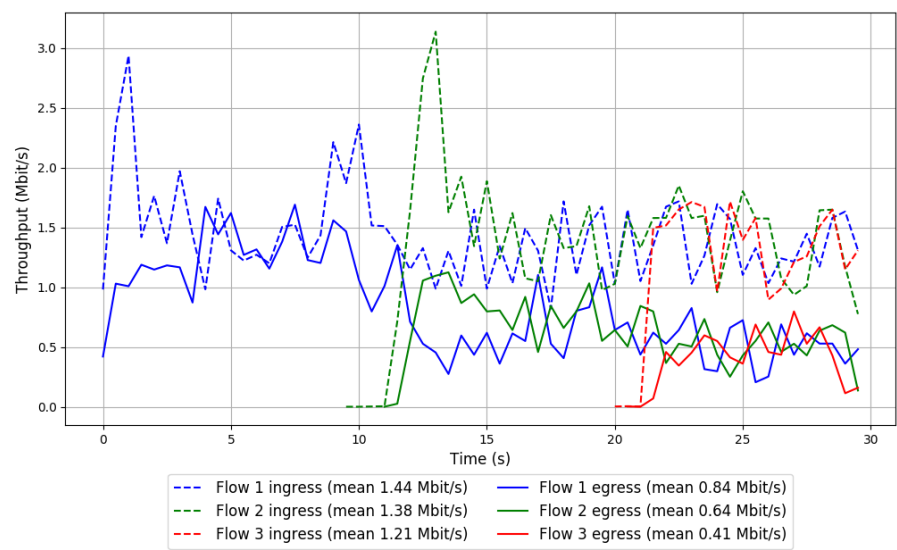Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-03-20 09:08:13
End at: 2018-03-20 09:08:43
Local clock offset: -7.505 ms
Remote clock offset: -2.626 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 361.236 ms
Loss rate: 50.55%
-- Flow 1:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 359.333 ms
Loss rate: 42.16%
-- Flow 2:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 364.292 ms
Loss rate: 56.11%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 362.910 ms
Loss rate: 68.16%
```

Run 3: Report of Vivace-latency — Data Link

Flow 1 ingress (mean 1.44 Mbit/s)   Flow 1 egress (mean 0.84 Mbit/s)
Flow 2 ingress (mean 1.38 Mbit/s)   Flow 2 egress (mean 0.64 Mbit/s)
Flow 3 ingress (mean 1.21 Mbit/s)   Flow 3 egress (mean 0.41 Mbit/s)

Flow 1 (95th percentile 359.33 ms)   Flow 2 (95th percentile 364.29 ms)   Flow 3 (95th percentile 362.91 ms)
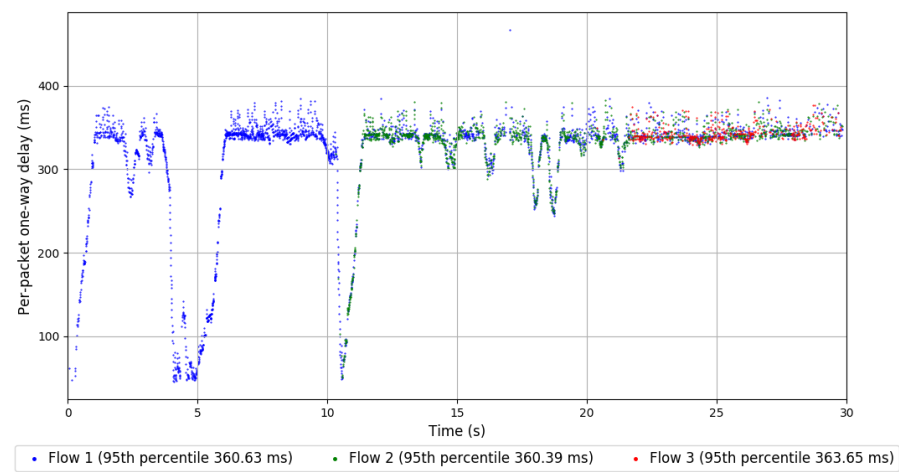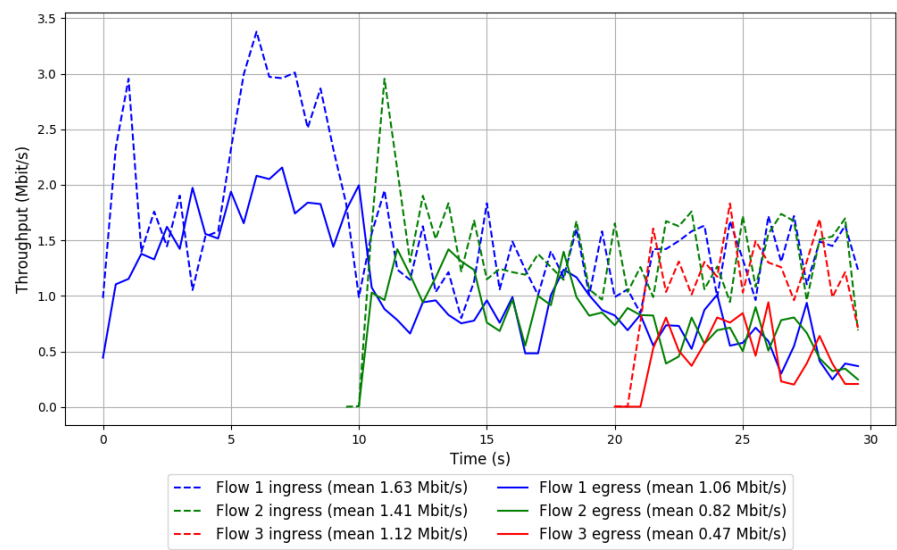
93

```
Run 1: Statistics of Vivace-loss

Start at: 2018-03-20 08:29:12
End at: 2018-03-20 08:29:42
Local clock offset: -2.914 ms
Remote clock offset: -1.642 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 361.239 ms
Loss rate: 40.66%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 360.633 ms
Loss rate: 35.19%
-- Flow 2:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 360.386 ms
Loss rate: 42.68%
-- Flow 3:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 363.651 ms
Loss rate: 59.72%
```

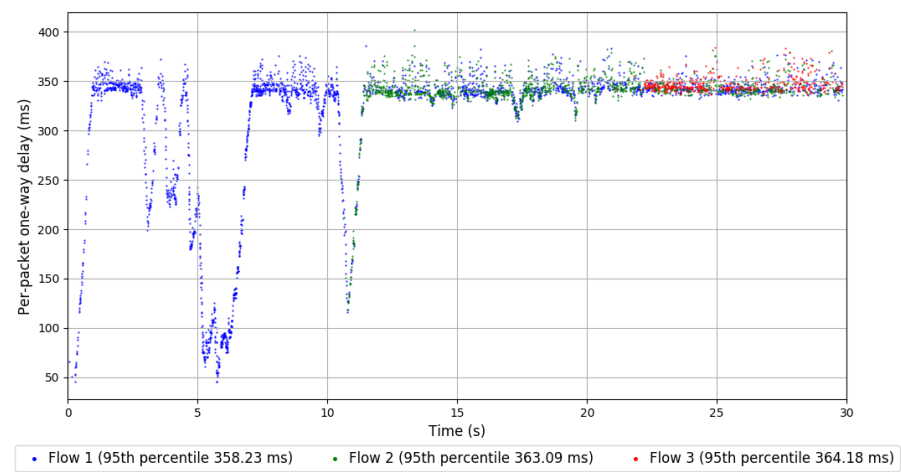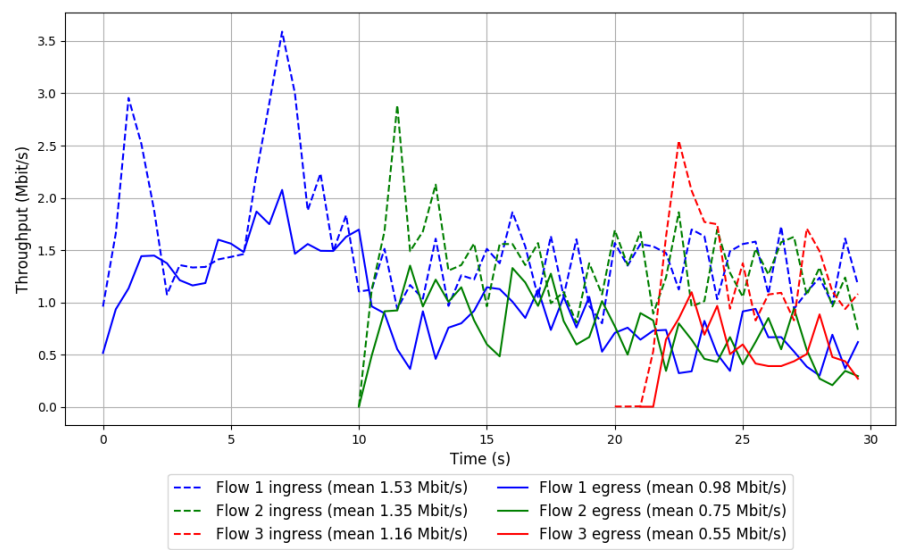Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-03-20 08:49:09
End at: 2018-03-20 08:49:39
Local clock offset: -5.943 ms
Remote clock offset: -1.604 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 360.692 ms
Loss rate: 42.28%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 358.234 ms
Loss rate: 36.41%
-- Flow 2:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 363.086 ms
Loss rate: 45.60%
-- Flow 3:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 364.181 ms
Loss rate: 58.00%
```

Run 2: Report of Vivace-loss — Data Link

Flow 1 ingress (mean 1.53 Mbit/s) --- Flow 1 egress (mean 0.98 Mbit/s)
Flow 2 ingress (mean 1.35 Mbit/s) --- Flow 2 egress (mean 0.75 Mbit/s)
Flow 3 ingress (mean 1.16 Mbit/s) --- Flow 3 egress (mean 0.55 Mbit/s)

Flow 1 (95th percentile 358.23 ms)   Flow 2 (95th percentile 363.09 ms)   Flow 3 (95th percentile 364.18 ms)
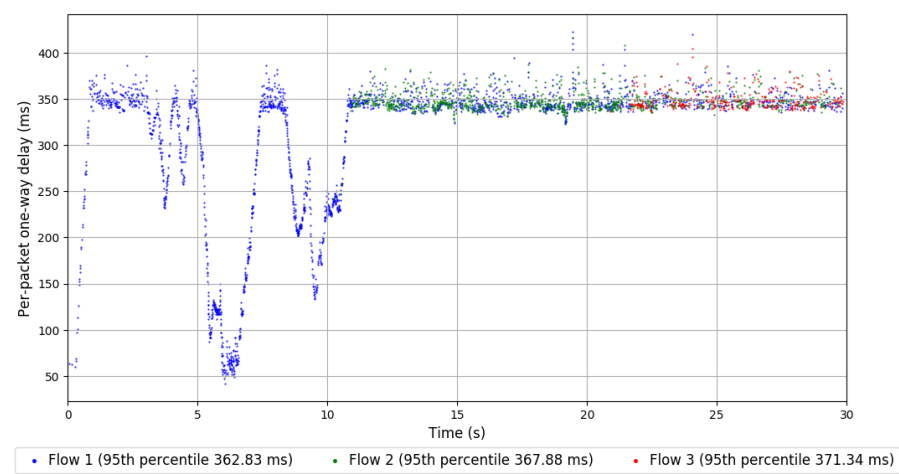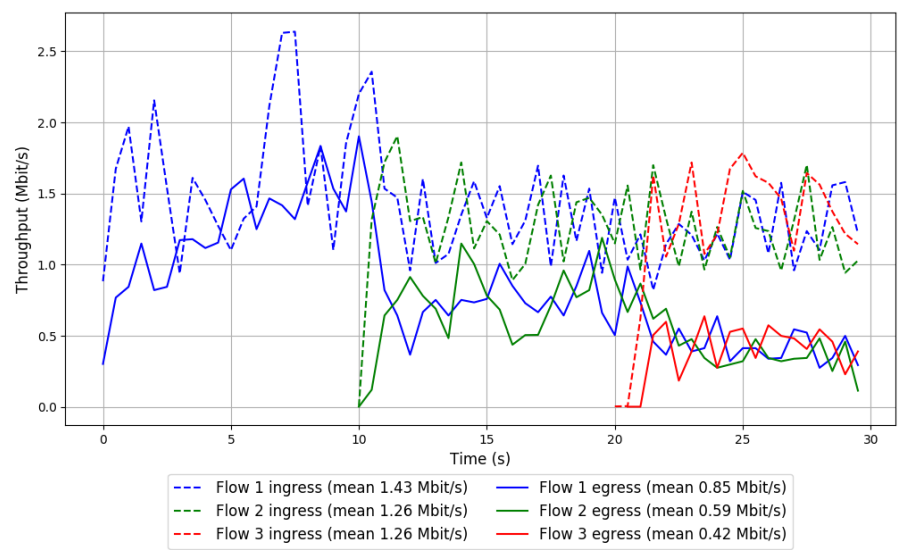
```
Run 3: Statistics of Vivace-loss

Start at: 2018-03-20 09:09:21
End at: 2018-03-20 09:09:51
Local clock offset: -3.988 ms
Remote clock offset: -2.711 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 365.377 ms
Loss rate: 49.50%
-- Flow 1:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 362.829 ms
Loss rate: 41.00%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 367.883 ms
Loss rate: 54.22%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 371.337 ms
Loss rate: 69.28%
```

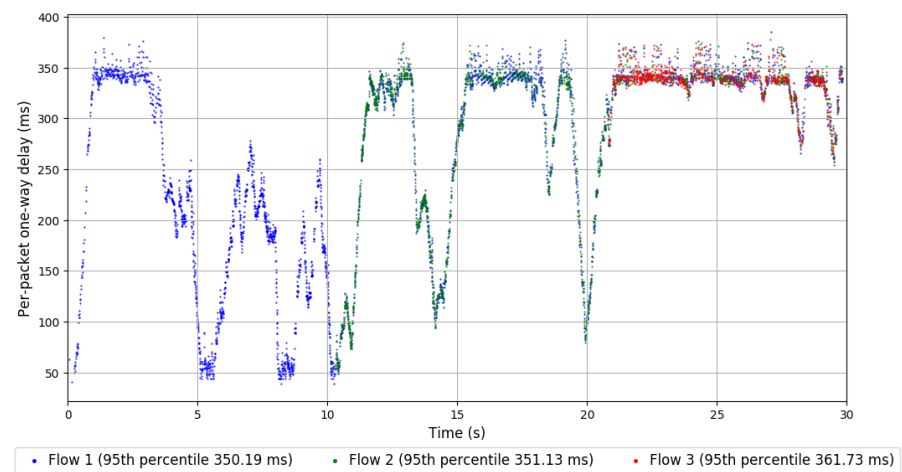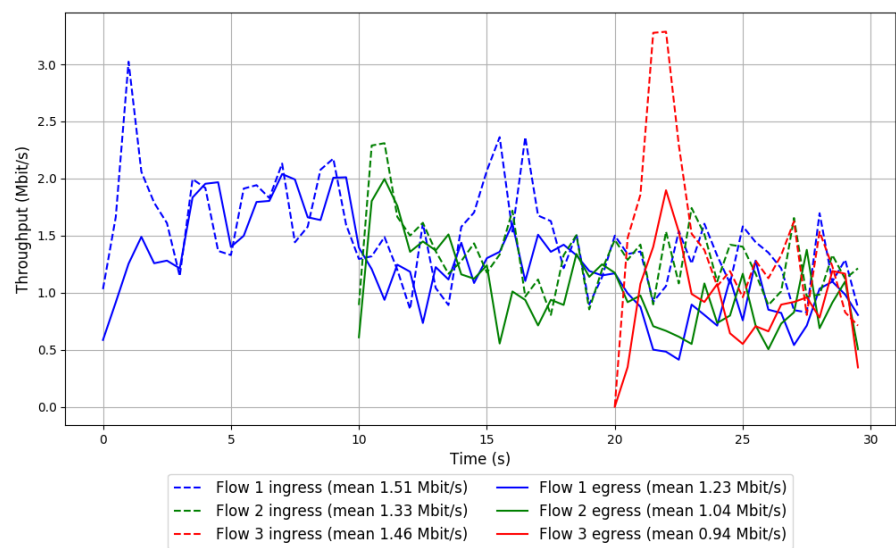Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-03-20 08:25:55
End at: 2018-03-20 08:26:25
Local clock offset: -2.417 ms
Remote clock offset: -2.512 ms

# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 351.566 ms
Loss rate: 22.92%
-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 350.186 ms
Loss rate: 18.66%
-- Flow 2:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 351.126 ms
Loss rate: 22.40%
-- Flow 3:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 361.731 ms
Loss rate: 37.19%
```

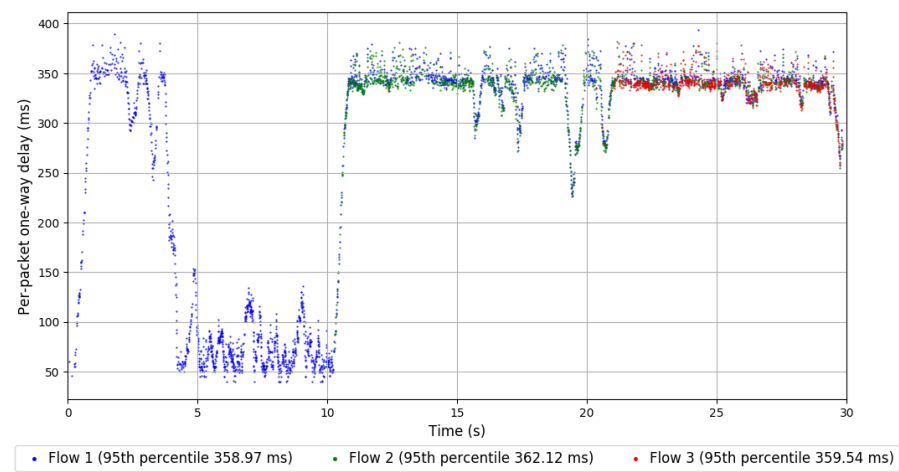Run 1: Report of Vivace-LTE — Data Link

```
Run 2: Statistics of Vivace-LTE

Start at: 2018-03-20 08:45:48
End at: 2018-03-20 08:46:18
Local clock offset: -4.515 ms
Remote clock offset: -1.942 ms

# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 359.873 ms
Loss rate: 31.49%
-- Flow 1:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 358.969 ms
Loss rate: 27.57%
-- Flow 2:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 362.115 ms
Loss rate: 36.37%
-- Flow 3:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 359.542 ms
Loss rate: 33.38%
```

Run 2: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.33 Mbit/s)   Flow 1 egress (mean 0.96 Mbit/s)
Flow 2 ingress (mean 1.38 Mbit/s)   Flow 2 egress (mean 0.88 Mbit/s)
Flow 3 ingress (mean 1.15 Mbit/s)   Flow 3 egress (mean 0.80 Mbit/s)

Flow 1 (95th percentile 358.97 ms)   Flow 2 (95th percentile 362.12 ms)   Flow 3 (95th percentile 359.54 ms)
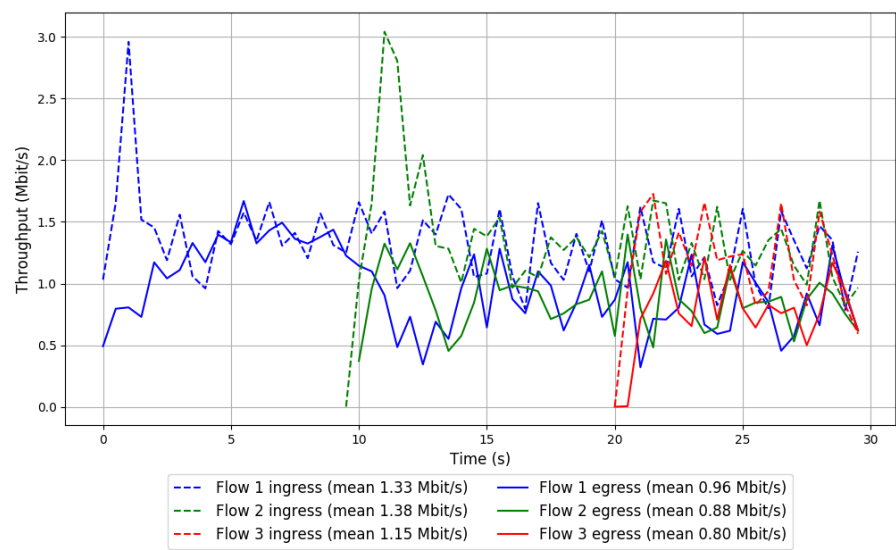
```
Run 3: Statistics of Vivace-LTE

Start at: 2018-03-20 09:05:59
End at: 2018-03-20 09:06:29
Local clock offset: -6.923 ms
Remote clock offset: -1.992 ms


# Below is generated by plot.py at 2018-03-20 10:14:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.52 Mbit/s
95th percentile per-packet one-way delay: 360.897 ms
Loss rate: 44.57%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 360.524 ms
Loss rate: 39.36%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 360.372 ms
Loss rate: 45.86%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 363.262 ms
Loss rate: 60.10%
```

Run 3: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.42 Mbit/s)   Flow 1 egress (mean 0.86 Mbit/s)
Flow 2 ingress (mean 1.39 Mbit/s)   Flow 2 egress (mean 0.76 Mbit/s)
Flow 3 ingress (mean 1.21 Mbit/s)   Flow 3 egress (mean 0.50 Mbit/s)

Flow 1 (95th percentile 360.52 ms)   Flow 2 (95th percentile 360.37 ms)   Flow 3 (95th percentile 363.26 ms)