Pantheon Report

Generated at 2018-06-30 13:38:32 (UTC).

Data path: India ppp0 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.
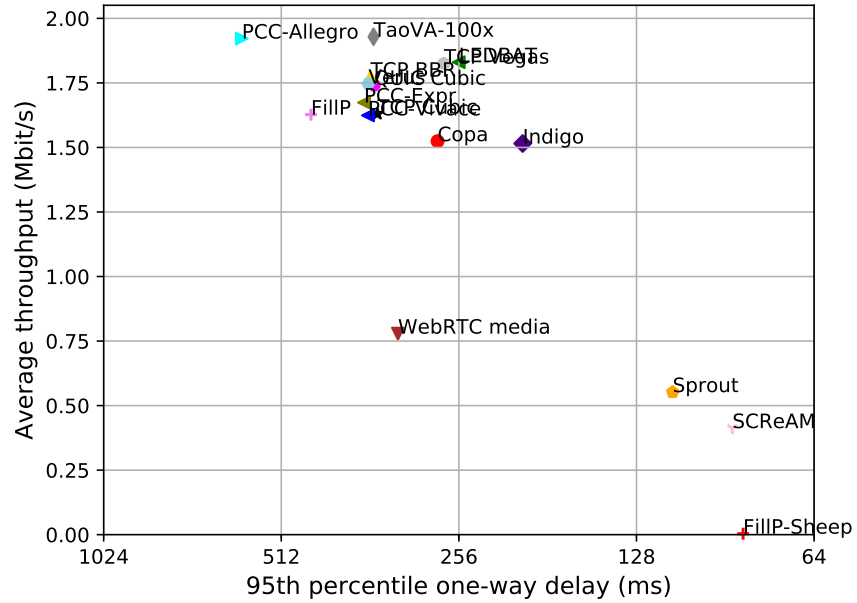
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.
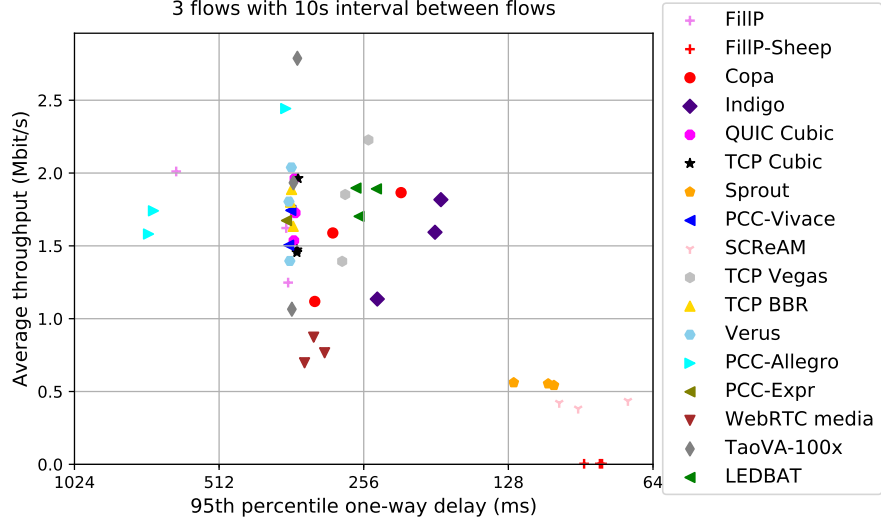
```
Git summary:
branch: master @ 715dc5f09d172e419699f6f17f1cb4c45064f212
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ 30060ab034deb3424347f5cc3db86198eac35d2a
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
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/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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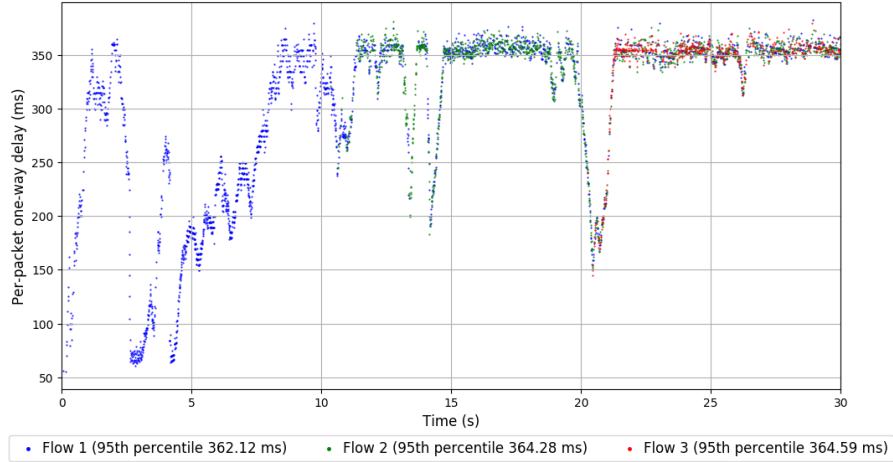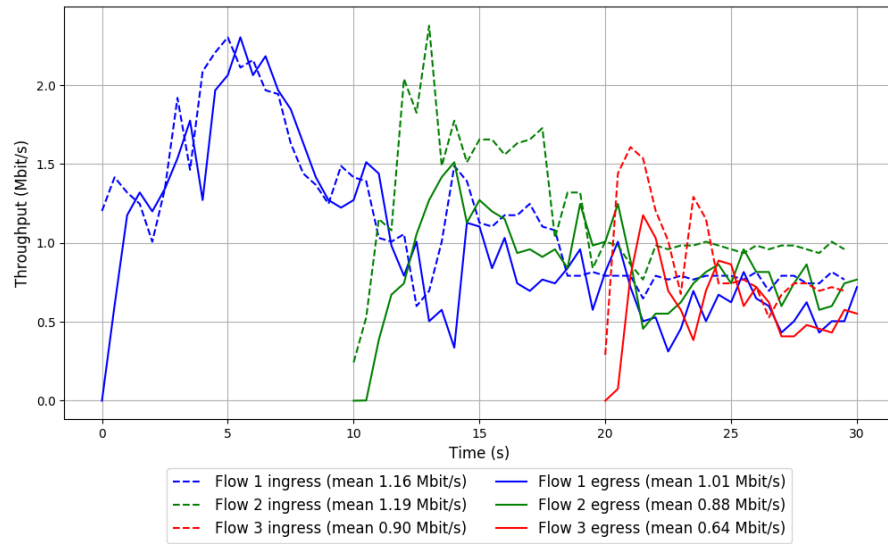3 flows with 10s interval between flows

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	1.03	0.85	0.55	359.23	362.57	363.45	10.76	20.31	30.27
Copa	3	0.88	0.70	0.56	264.10	295.92	282.52	0.91	1.58	3.80
TCP Cubic	3	0.97	0.70	0.59	349.08	354.12	351.63	3.09	5.24	8.94
FillP	3	1.09	0.50	0.68	368.88	367.28	519.20	51.72	41.13	62.57
FillP-Sheep	3	0.00	0.00	0.00	78.02	85.20	77.98	0.00	0.00	0.00
Indigo	3	0.73	0.75	0.89	190.08	215.71	217.99	1.22	1.57	2.83
LEDBAT	3	0.87	0.99	0.94	244.34	263.26	259.03	0.47	0.69	2.94
PCC-Allegro	3	1.10	0.88	0.76	449.50	606.84	805.23	62.16	69.07	85.59
PCC-Expr	1	0.97	0.76	0.77	367.35	445.94	369.40	78.80	84.78	92.35
QUIC Cubic	3	1.01	0.72	0.82	355.76	357.69	357.43	8.13	12.13	16.04
SCReAM	3	0.20	0.22	0.22	88.72	89.74	88.01	0.36	0.59	1.03
Sprout	3	0.27	0.28	0.30	104.74	114.40	148.02	0.21	0.15	1.38
TaoVA-100x	3	1.31	0.73	0.44	352.78	372.56	391.58	14.42	36.86	54.43
TCP Vegas	3	0.80	0.96	1.17	259.40	259.44	284.23	0.93	1.35	1.59
Verus	3	1.59	0.20	0.14	364.19	365.12	362.56	37.30	57.91	53.03
PCC-Vivace	2	0.96	0.76	0.56	363.12	366.67	367.44	32.84	47.03	56.38
WebRTC media	3	0.31	0.32	0.16	310.84	334.97	334.05	1.47	3.16	7.07

```
Run 1: Statistics of TCP BBR

Start at: 2018-06-30 12:56:19
End at: 2018-06-30 12:56:49
Local clock offset: 3.009 ms
Remote clock offset: -6.093 ms


# Below is generated by plot.py at 2018-06-30 13:37:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 363.537 ms
Loss rate: 20.47%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 362.121 ms
Loss rate: 13.16%
-- Flow 2:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 364.279 ms
Loss rate: 27.27%
-- Flow 3:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 364.594 ms
Loss rate: 30.87%
```
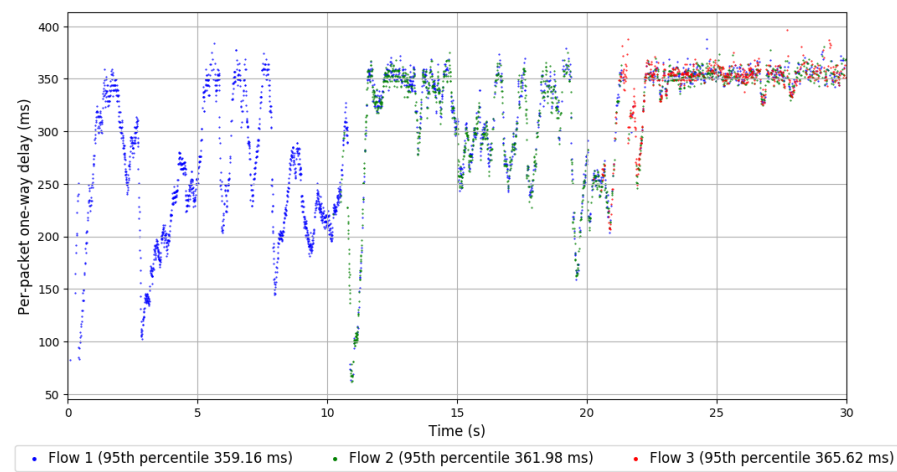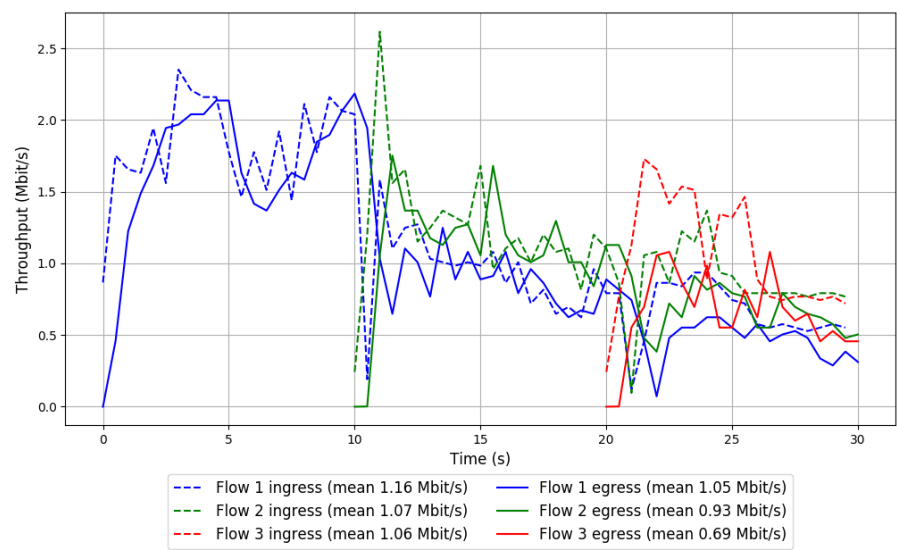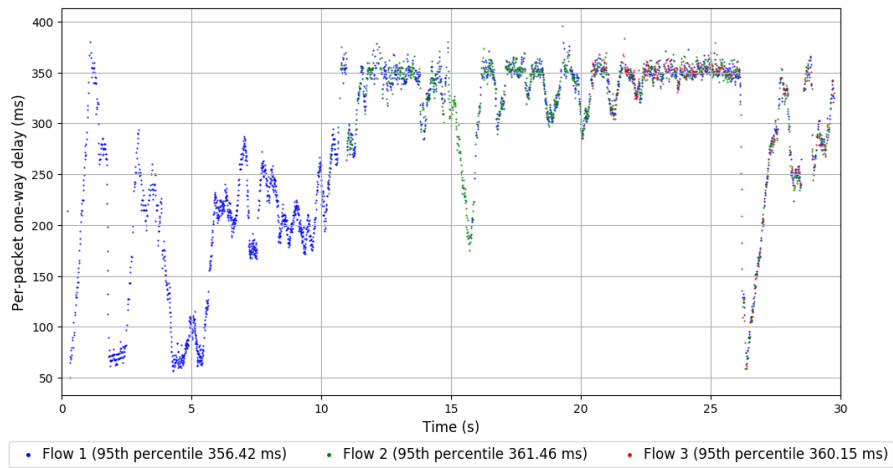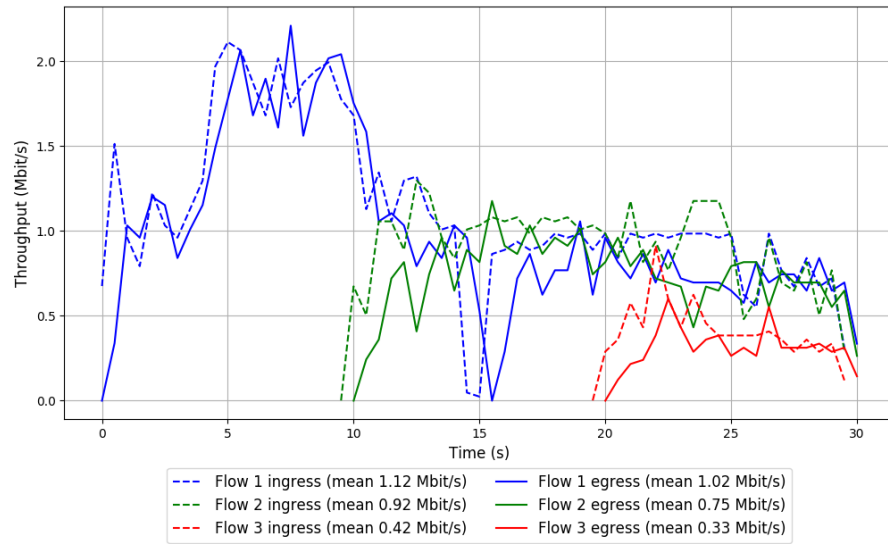
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 1.16 Mbit/s)   Flow 1 egress (mean 1.01 Mbit/s)
Flow 2 ingress (mean 1.19 Mbit/s)   Flow 2 egress (mean 0.88 Mbit/s)
Flow 3 ingress (mean 0.90 Mbit/s)   Flow 3 egress (mean 0.64 Mbit/s)

Flow 1 (95th percentile 362.12 ms)   Flow 2 (95th percentile 364.28 ms)   Flow 3 (95th percentile 364.59 ms)

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```
Run 2: Statistics of TCP BBR

Start at: 2018-06-30 13:15:20
End at: 2018-06-30 13:15:50
Local clock offset: 3.382 ms
Remote clock offset: -5.154 ms


# Below is generated by plot.py at 2018-06-30 13:37:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 361.813 ms
Loss rate: 15.47%
-- Flow 1:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 359.159 ms
Loss rate: 9.63%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 361.980 ms
Loss rate: 14.45%
-- Flow 3:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 365.620 ms
Loss rate: 36.73%
```
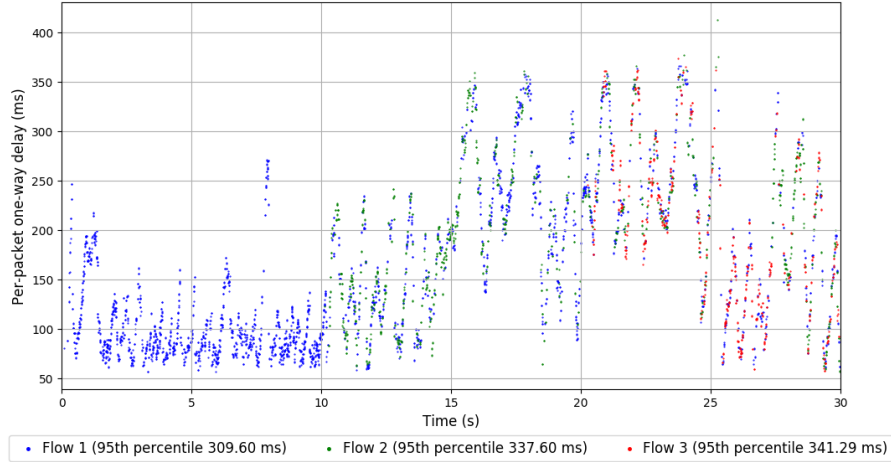
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-06-30 13:33:57
End at: 2018-06-30 13:34:27
Local clock offset: 1.383 ms
Remote clock offset: -10.143 ms


# Below is generated by plot.py at 2018-06-30 13:37:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 358.941 ms
Loss rate: 13.72%
-- Flow 1:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 356.415 ms
Loss rate: 9.50%
-- Flow 2:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 361.464 ms
Loss rate: 19.21%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 360.147 ms
Loss rate: 23.20%
```

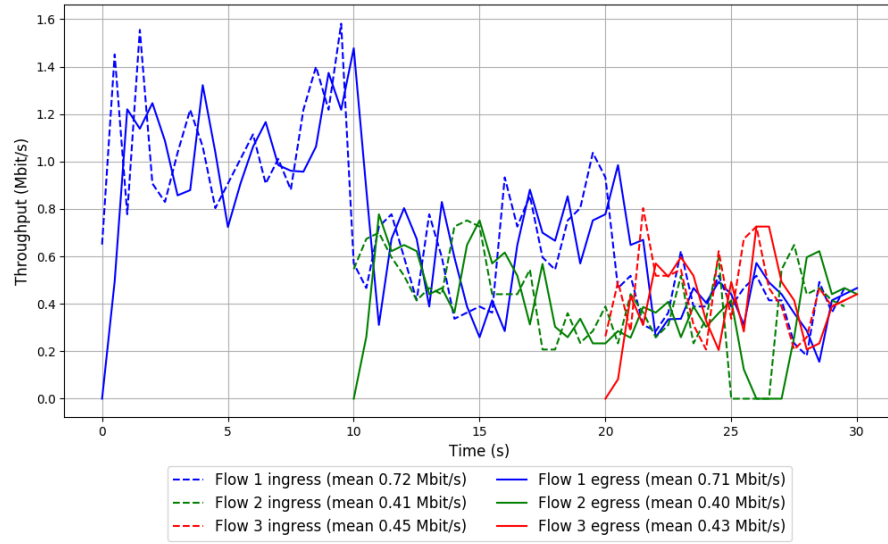# Run 3: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-06-30 12:58:30
End at: 2018-06-30 12:59:00
Local clock offset: -0.012 ms
Remote clock offset: -5.793 ms


# Below is generated by plot.py at 2018-06-30 13:37:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 323.709 ms
Loss rate: 1.88%
-- Flow 1:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 309.602 ms
Loss rate: 0.91%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 337.600 ms
Loss rate: 2.31%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 341.292 ms
Loss rate: 5.80%
```
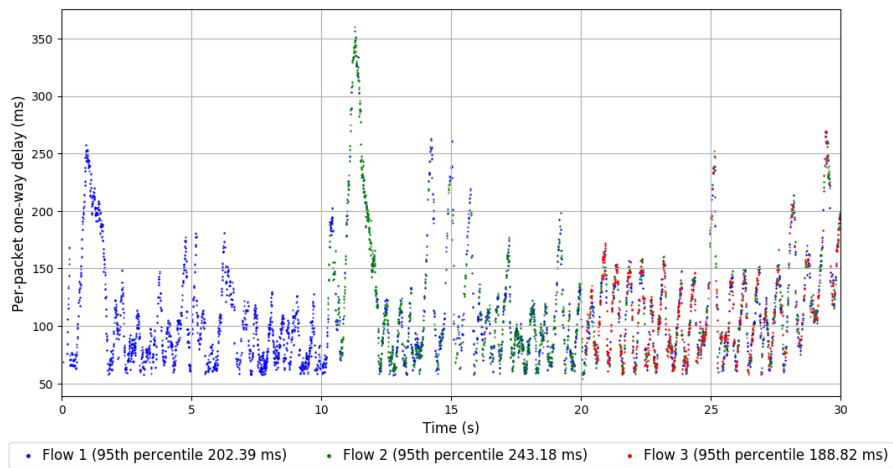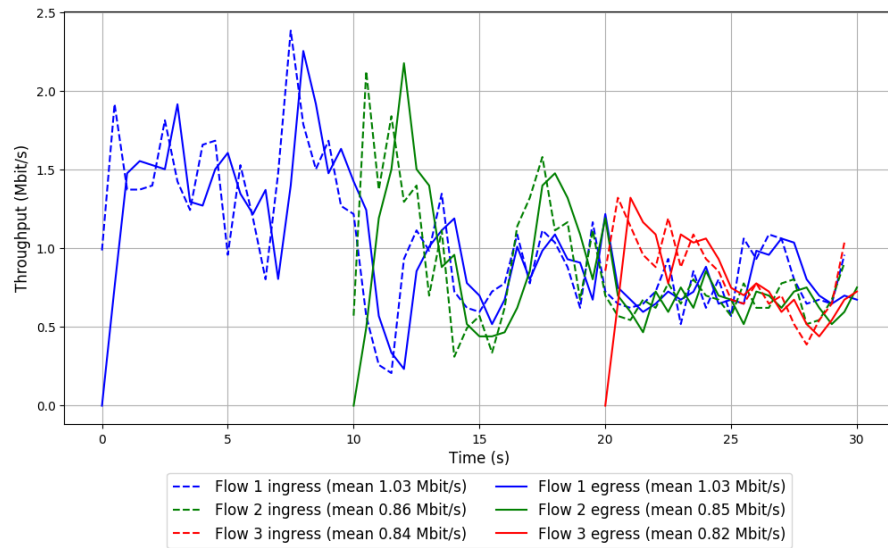
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-06-30 13:17:32
End at: 2018-06-30 13:18:02
Local clock offset: 1.819 ms
Remote clock offset: -5.037 ms


# Below is generated by plot.py at 2018-06-30 13:37:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 214.046 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 202.391 ms
Loss rate: 0.76%
-- Flow 2:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 243.183 ms
Loss rate: 1.29%
-- Flow 3:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 188.817 ms
Loss rate: 2.64%
```
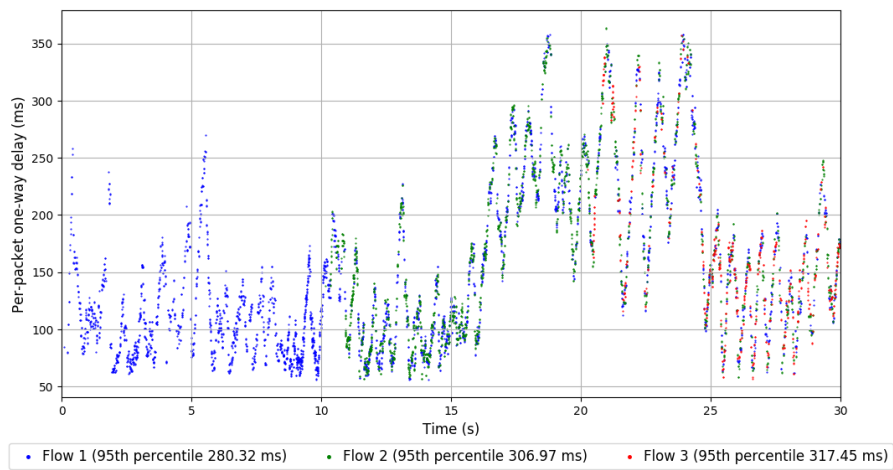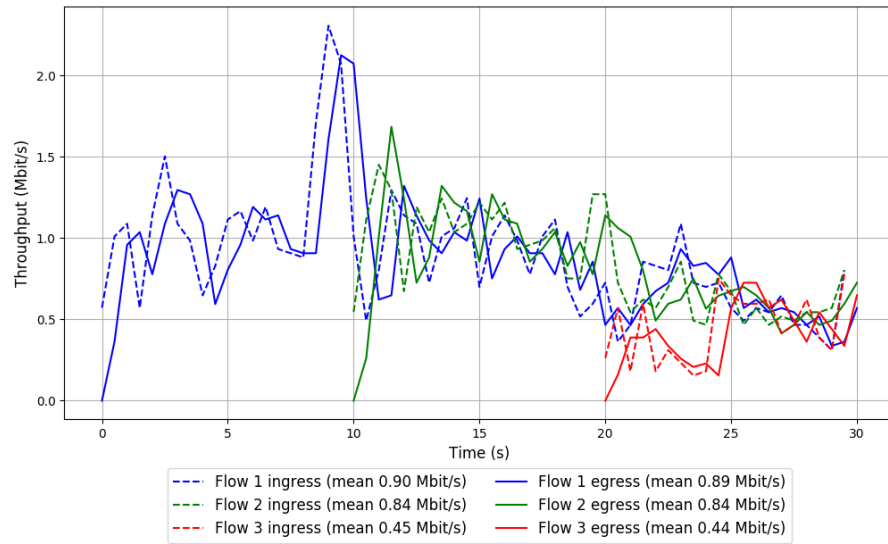
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-06-30 13:36:08
End at: 2018-06-30 13:36:38
Local clock offset: -0.606 ms
Remote clock offset: -11.311 ms

# Below is generated by plot.py at 2018-06-30 13:37:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 296.886 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 280.317 ms
Loss rate: 1.07%
-- Flow 2:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 306.971 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 317.447 ms
Loss rate: 2.97%
```
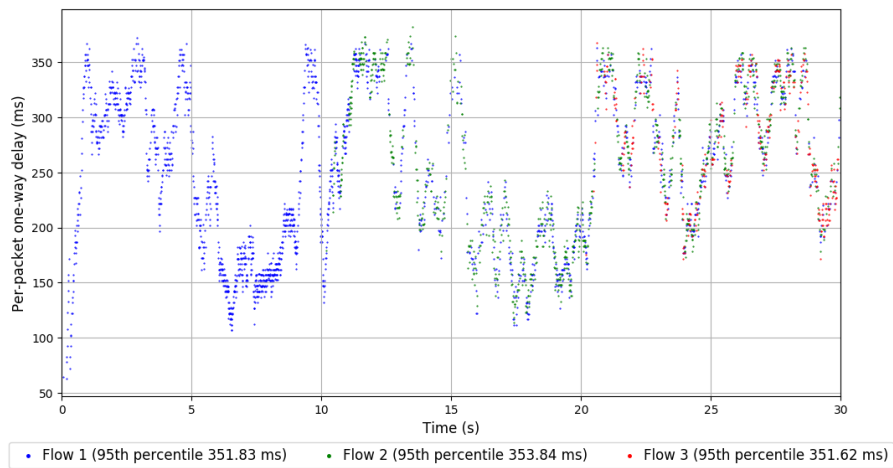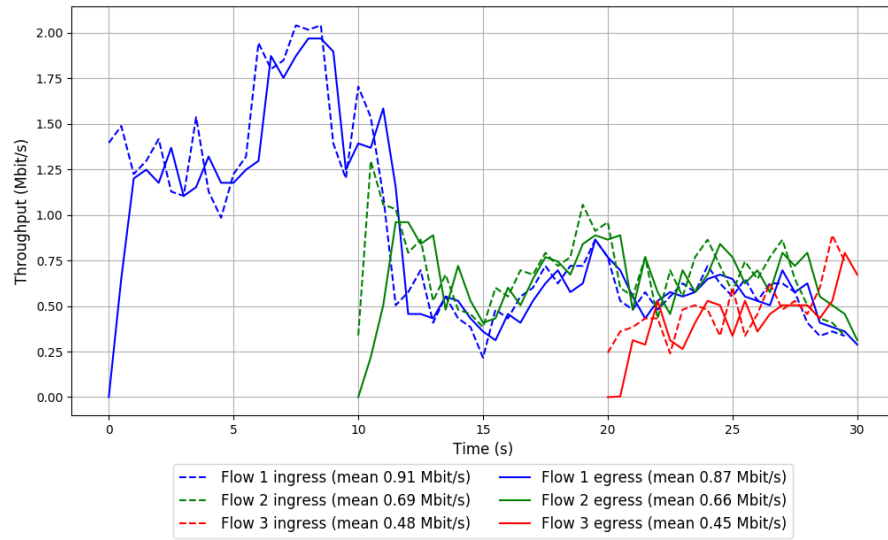
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 0.90 Mbit/s)   Flow 1 egress (mean 0.89 Mbit/s)
Flow 2 ingress (mean 0.84 Mbit/s)   Flow 2 egress (mean 0.84 Mbit/s)
Flow 3 ingress (mean 0.45 Mbit/s)   Flow 3 egress (mean 0.44 Mbit/s)

Flow 1 (95th percentile 280.32 ms)   Flow 2 (95th percentile 306.97 ms)   Flow 3 (95th percentile 317.45 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-06-30 12:57:24
End at: 2018-06-30 12:57:54
Local clock offset: 1.585 ms
Remote clock offset: -5.581 ms


# Below is generated by plot.py at 2018-06-30 13:37:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 352.635 ms
Loss rate: 4.75%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 351.826 ms
Loss rate: 4.07%
-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 353.837 ms
Loss rate: 4.71%
-- Flow 3:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 351.619 ms
Loss rate: 8.75%
```

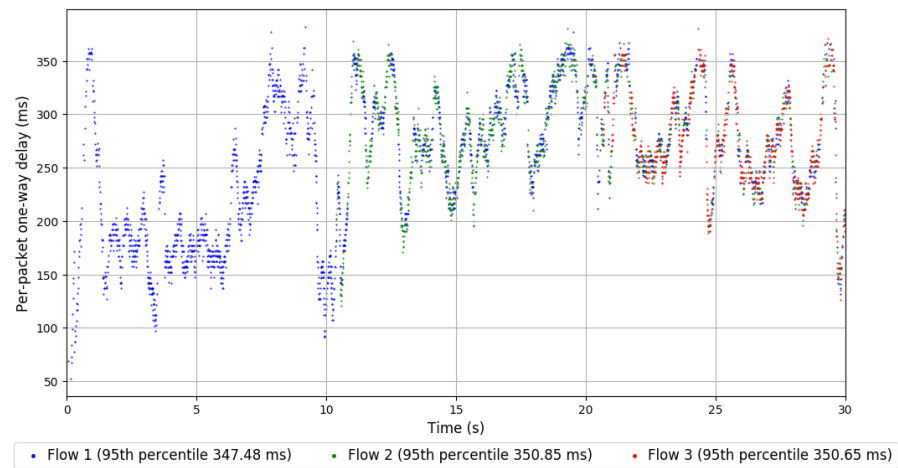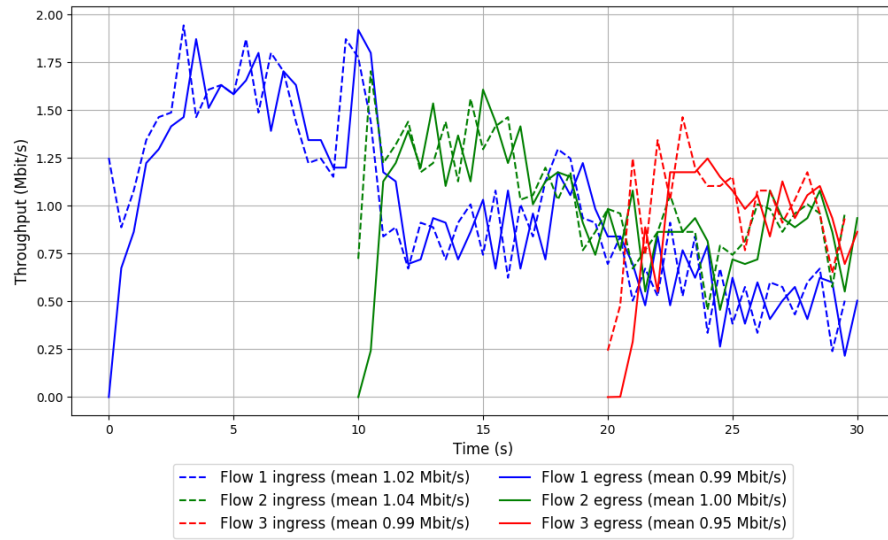Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-06-30 13:16:25
End at: 2018-06-30 13:16:55
Local clock offset: 1.212 ms
Remote clock offset: -5.853 ms


# Below is generated by plot.py at 2018-06-30 13:37:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 350.636 ms
Loss rate: 3.76%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 347.482 ms
Loss rate: 2.52%
-- Flow 2:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 350.852 ms
Loss rate: 4.06%
-- Flow 3:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 350.648 ms
Loss rate: 6.94%
```
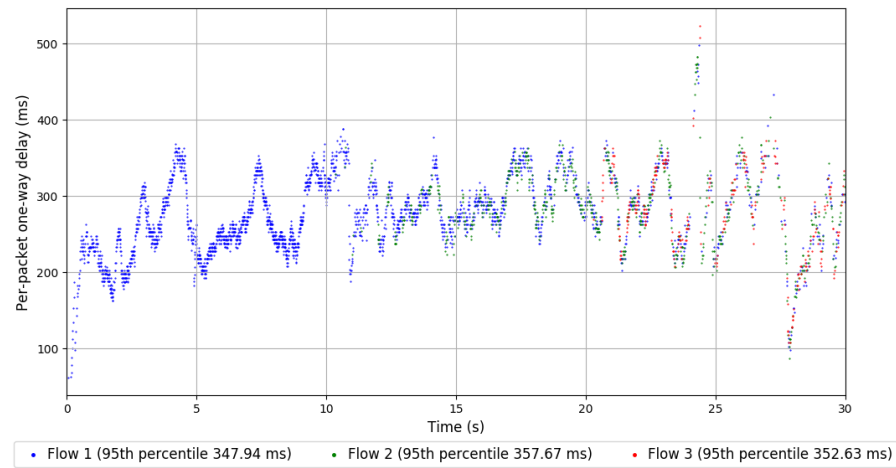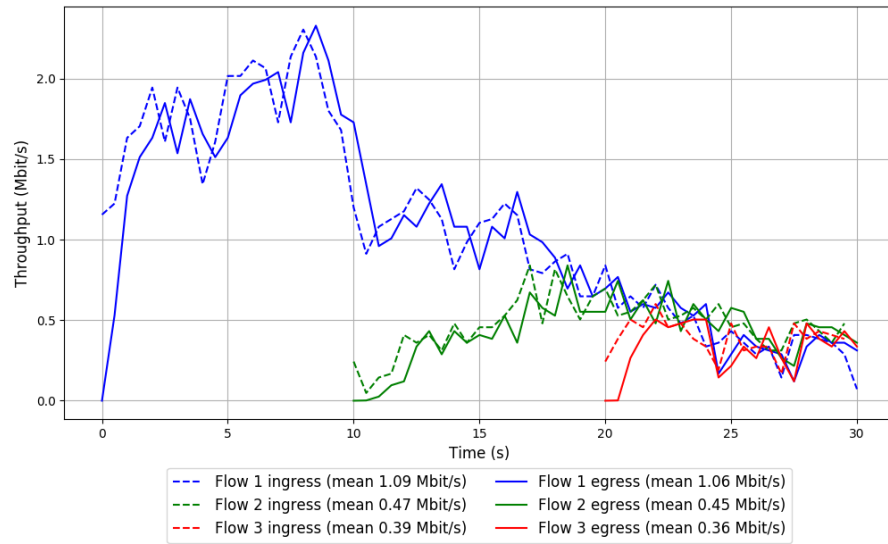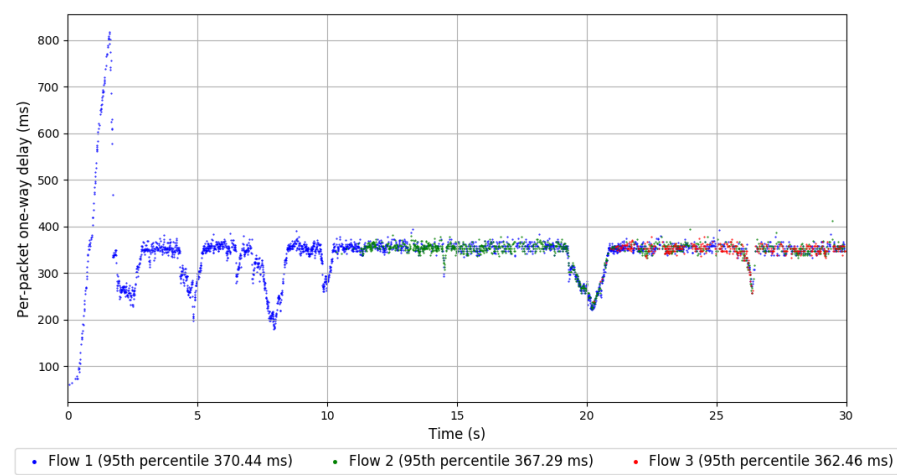
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 1.02 Mbit/s) --- Flow 1 egress (mean 0.99 Mbit/s)
Flow 2 ingress (mean 1.04 Mbit/s) --- Flow 2 egress (mean 1.00 Mbit/s)
Flow 3 ingress (mean 0.99 Mbit/s) --- Flow 3 egress (mean 0.95 Mbit/s)

Flow 1 (95th percentile 347.48 ms) • Flow 2 (95th percentile 350.85 ms) • Flow 3 (95th percentile 350.65 ms)

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```
Run 3: Statistics of TCP Cubic

Start at: 2018-06-30 13:35:03
End at: 2018-06-30 13:35:33
Local clock offset: 2.722 ms
Remote clock offset: -11.262 ms


# Below is generated by plot.py at 2018-06-30 13:37:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 352.466 ms
Loss rate: 4.28%
-- Flow 1:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 347.940 ms
Loss rate: 2.68%
-- Flow 2:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 357.672 ms
Loss rate: 6.96%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 352.631 ms
Loss rate: 11.14%
```
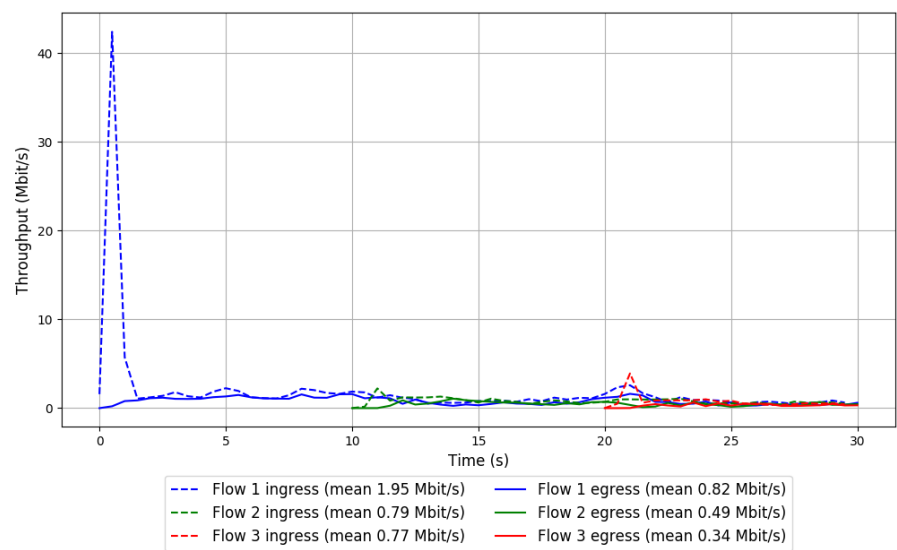
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 1.09 Mbit/s)   Flow 1 egress (mean 1.06 Mbit/s)
Flow 2 ingress (mean 0.47 Mbit/s)   Flow 2 egress (mean 0.45 Mbit/s)
Flow 3 ingress (mean 0.39 Mbit/s)   Flow 3 egress (mean 0.36 Mbit/s)

Flow 1 (95th percentile 347.94 ms)   Flow 2 (95th percentile 357.67 ms)   Flow 3 (95th percentile 352.63 ms)
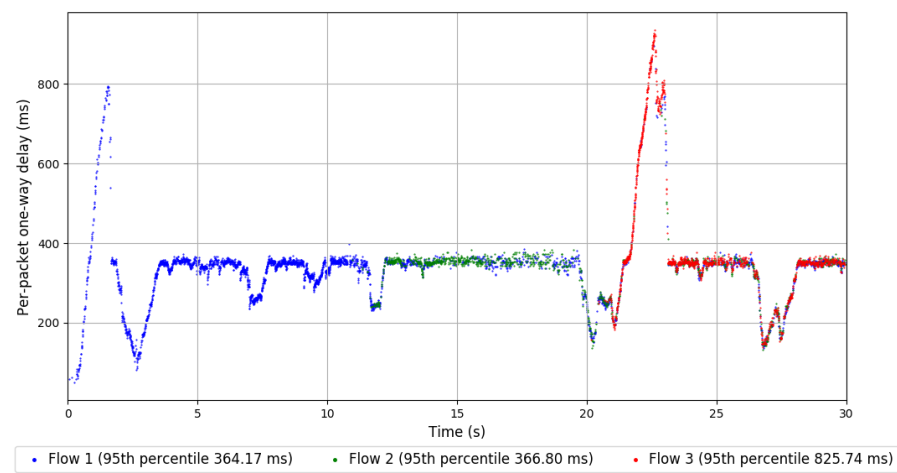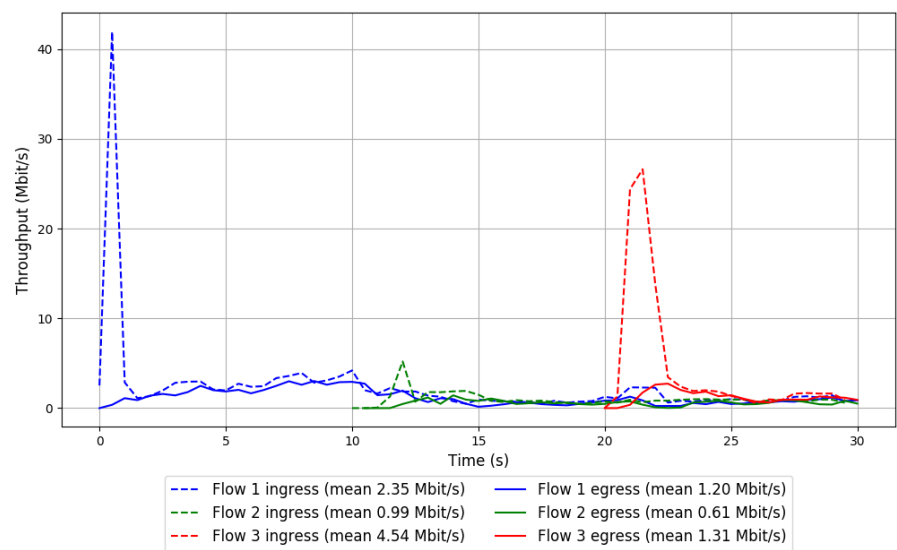
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```
Run 1: Statistics of FillP

Start at: 2018-06-30 12:41:58
End at: 2018-06-30 12:42:28
Local clock offset: -0.374 ms
Remote clock offset: -4.852 ms


# Below is generated by plot.py at 2018-06-30 13:38:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 367.784 ms
Loss rate: 54.43%
-- Flow 1:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 370.435 ms
Loss rate: 58.14%
-- Flow 2:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 367.292 ms
Loss rate: 39.45%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 362.460 ms
Loss rate: 57.07%
```
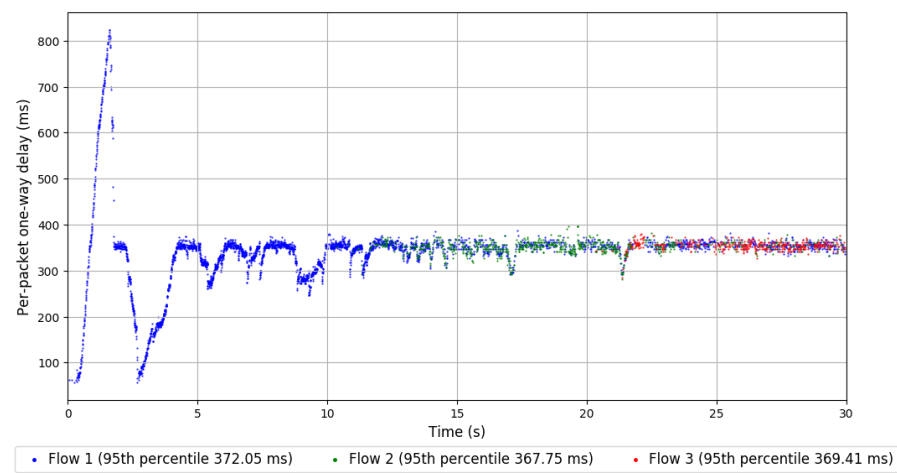
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 1.95 Mbit/s) --- Flow 1 egress (mean 0.82 Mbit/s)
Flow 2 ingress (mean 0.79 Mbit/s) --- Flow 2 egress (mean 0.49 Mbit/s)
Flow 3 ingress (mean 0.77 Mbit/s) --- Flow 3 egress (mean 0.34 Mbit/s)

Flow 1 (95th percentile 370.44 ms) • Flow 2 (95th percentile 367.29 ms) • Flow 3 (95th percentile 362.46 ms)
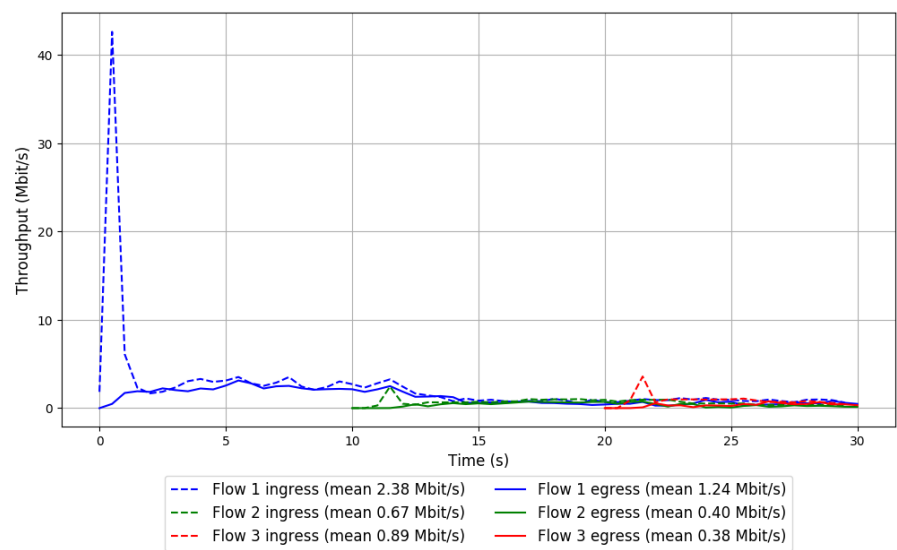
```
Run 2: Statistics of FillP

Start at: 2018-06-30 13:00:46
End at: 2018-06-30 13:01:16
Local clock offset: -5.55 ms
Remote clock offset: -12.623 ms

# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 628.873 ms
Loss rate: 55.52%
-- Flow 1:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 364.167 ms
Loss rate: 49.18%
-- Flow 2:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 366.801 ms
Loss rate: 41.58%
-- Flow 3:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 825.735 ms
Loss rate: 71.54%
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-06-30 13:19:44
End at: 2018-06-30 13:20:14
Local clock offset: 3.025 ms
Remote clock offset: -5.219 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 371.206 ms
Loss rate: 48.13%
-- Flow 1:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 372.050 ms
Loss rate: 47.85%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 367.751 ms
Loss rate: 42.36%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 369.411 ms
Loss rate: 59.09%
```
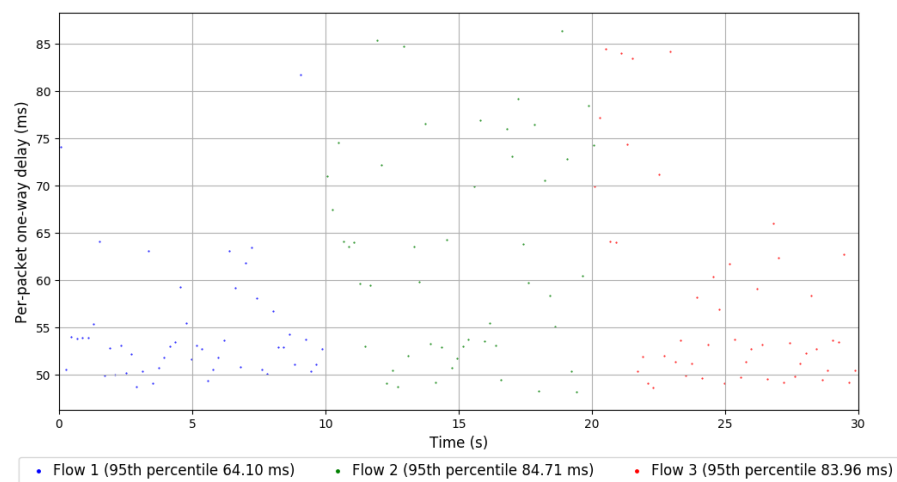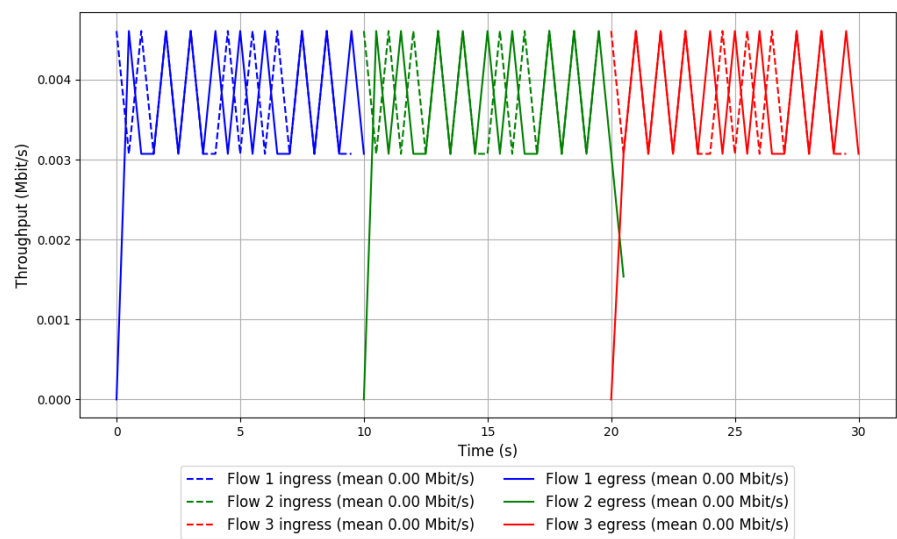
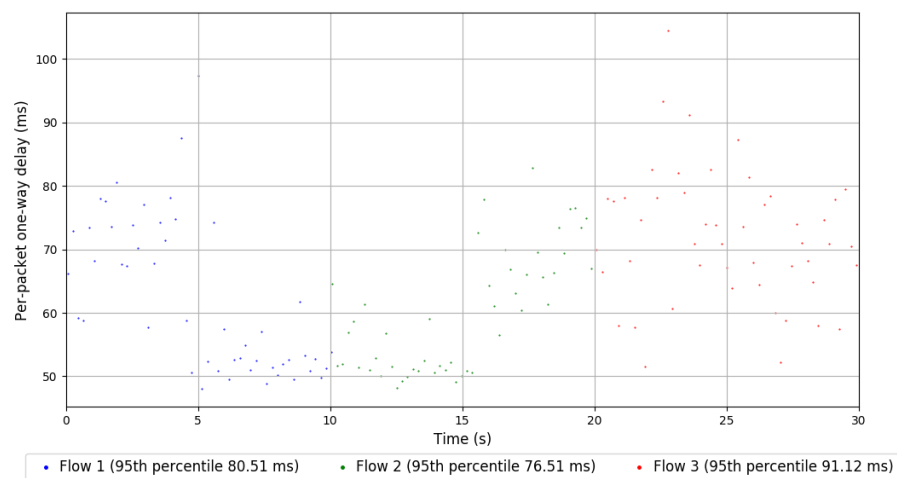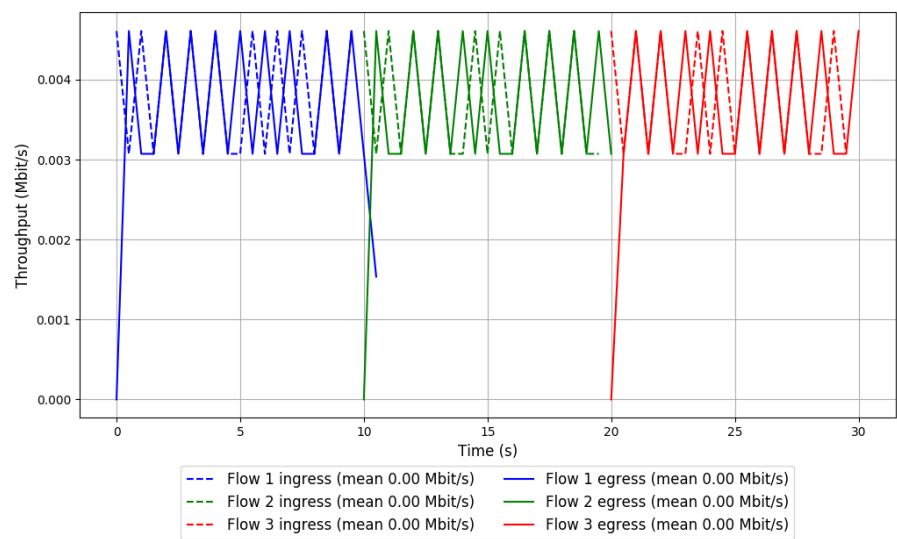# Run 3: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-06-30 12:49:40
End at: 2018-06-30 12:50:10
Local clock offset: 1.881 ms
Remote clock offset: -6.293 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 81.692 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 64.104 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 84.706 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 83.962 ms
Loss rate: 0.00%
```
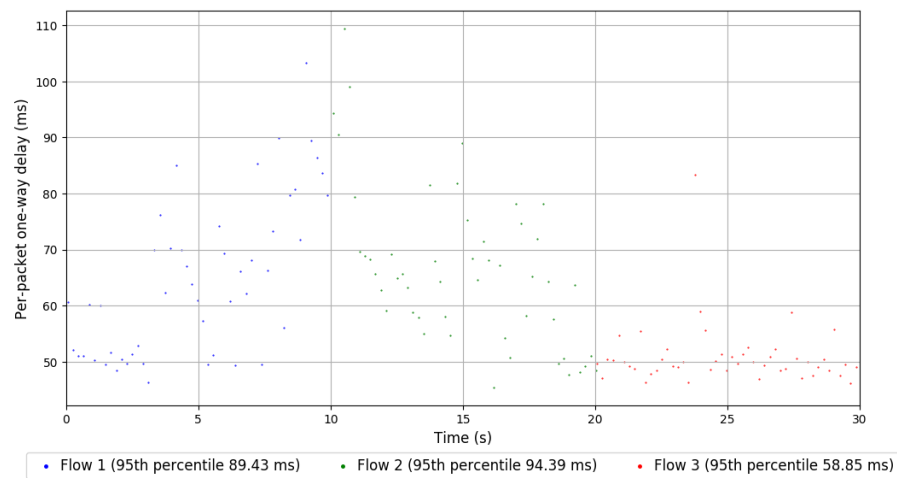
Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-06-30 13:08:27
End at: 2018-06-30 13:08:57
Local clock offset: 2.477 ms
Remote clock offset: -4.483 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 82.564 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 80.514 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 76.513 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 91.120 ms
Loss rate: 0.00%
```

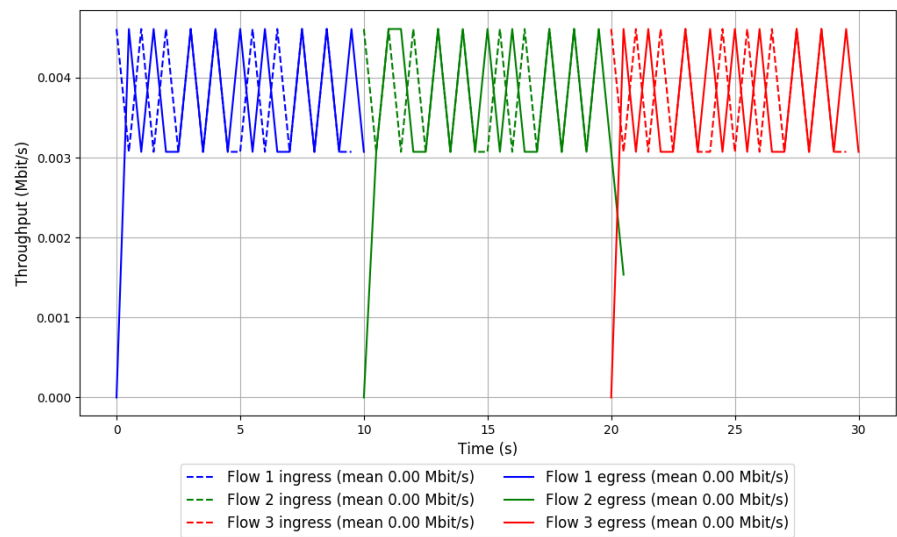Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-06-30 13:27:24
End at: 2018-06-30 13:27:54
Local clock offset: -0.459 ms
Remote clock offset: -8.779 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 89.039 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 89.428 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 94.395 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 58.850 ms
Loss rate: 0.00%
```

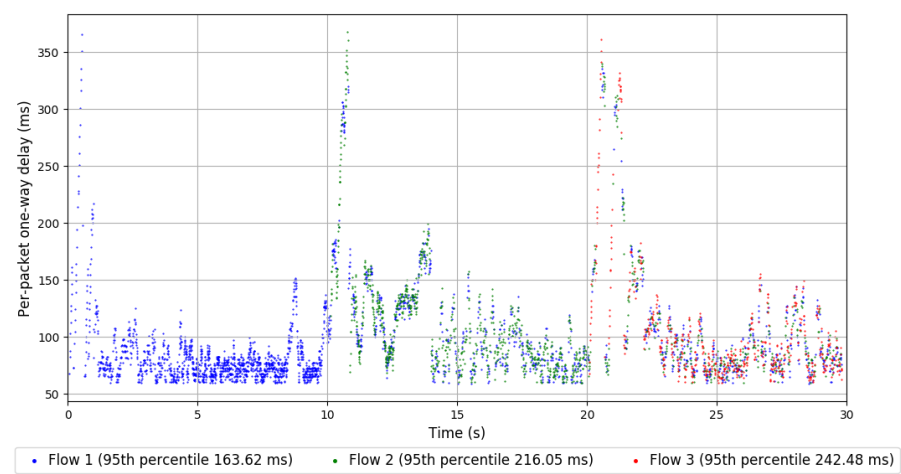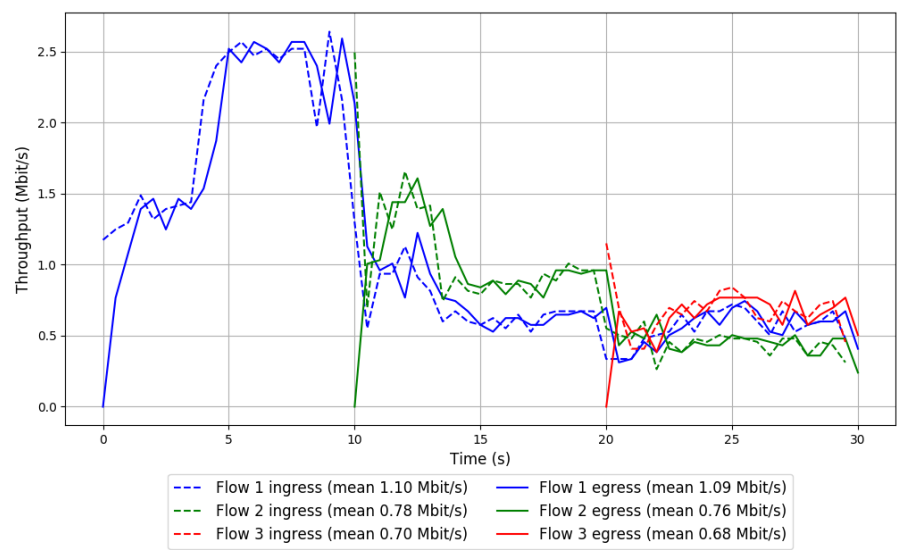## Run 3: Report of FillP-Sheep — Data Link

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```
Run 1: Statistics of Indigo

Start at: 2018-06-30 12:43:04
End at: 2018-06-30 12:43:34
Local clock offset: 0.258 ms
Remote clock offset: -4.436 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.82 Mbit/s
95th percentile per-packet one-way delay: 176.853 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 163.615 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 216.053 ms
Loss rate: 2.88%
-- Flow 3:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 242.481 ms
Loss rate: 3.00%
```
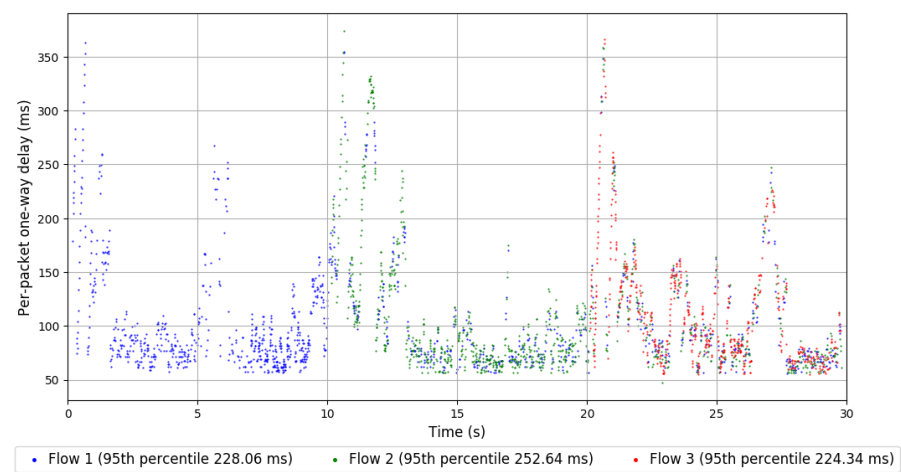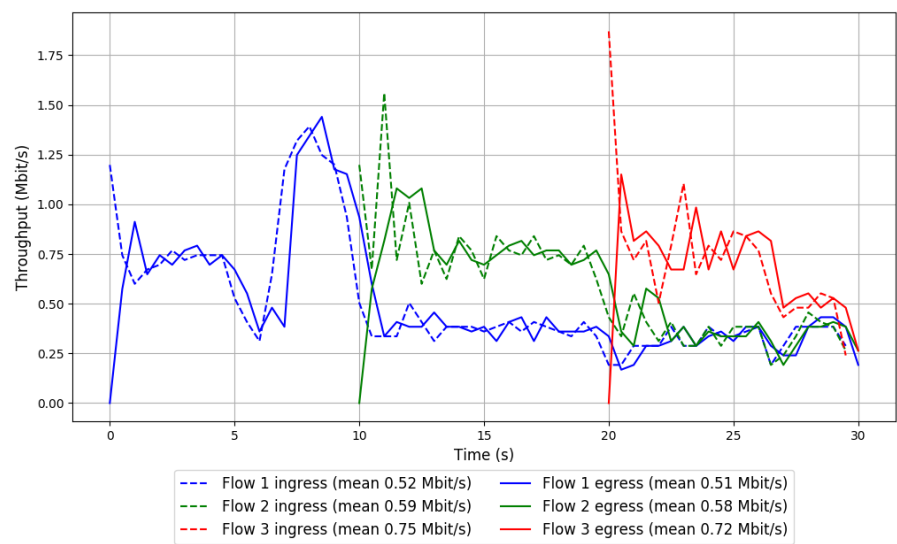
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-06-30 13:01:52
End at: 2018-06-30 13:02:22
Local clock offset: -0.286 ms
Remote clock offset: -4.782 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 239.887 ms
Loss rate: 1.96%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 228.055 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 252.637 ms
Loss rate: 1.75%
-- Flow 3:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 224.344 ms
Loss rate: 3.95%
```

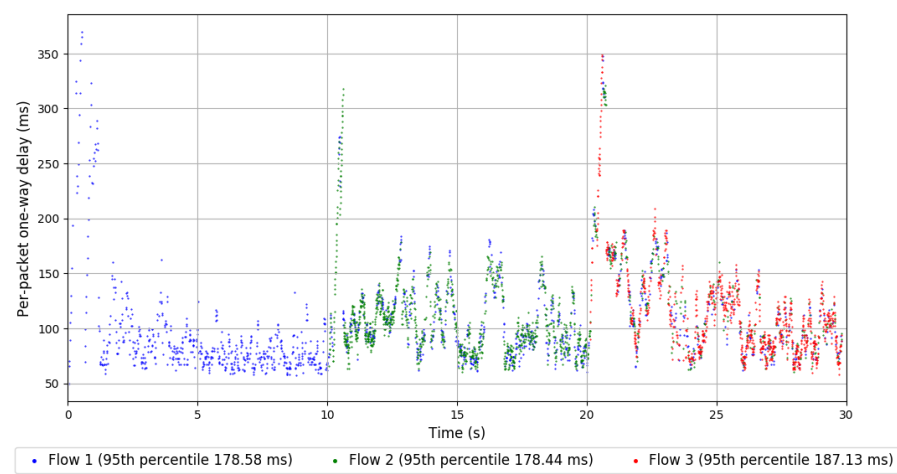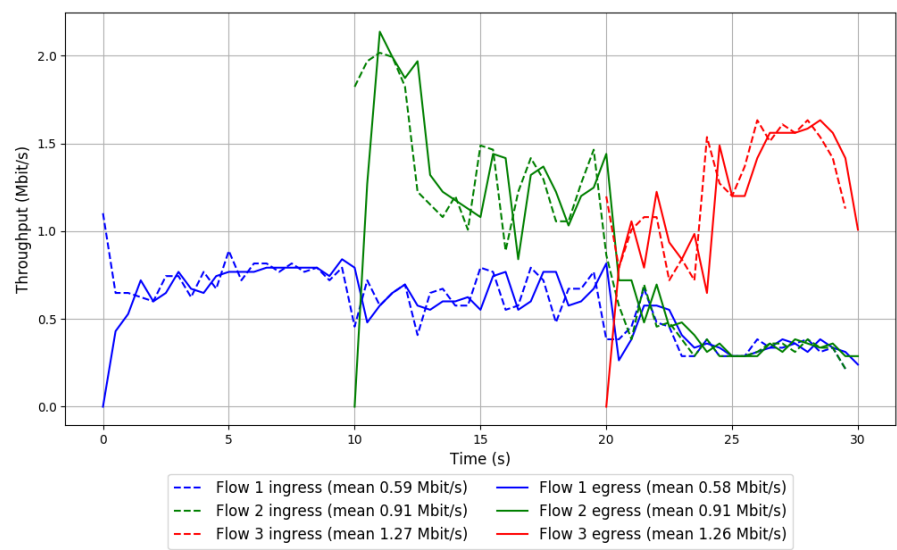Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-06-30 13:20:50
End at: 2018-06-30 13:21:20
Local clock offset: 1.623 ms
Remote clock offset: -5.773 ms

# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 181.936 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 178.582 ms
Loss rate: 1.84%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 178.444 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 187.131 ms
Loss rate: 1.55%
```
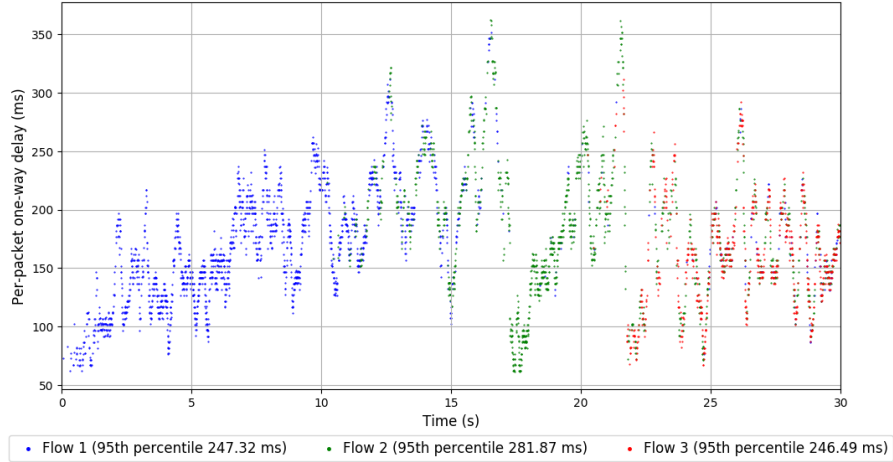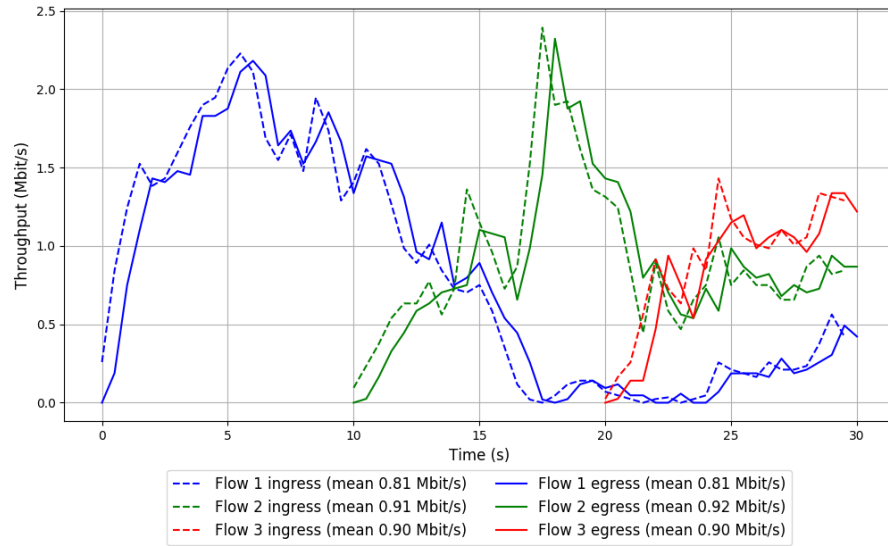
Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-06-30 12:44:10
End at: 2018-06-30 12:44:40
Local clock offset: -0.382 ms
Remote clock offset: -5.274 ms


# Below is generated by plot.py at 2018-06-30 13:38:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 261.765 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 247.316 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 281.867 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 246.491 ms
Loss rate: 2.49%
```

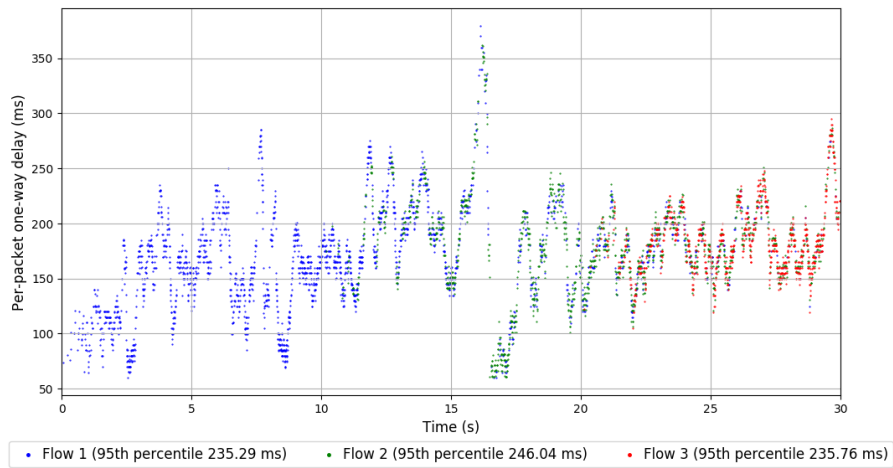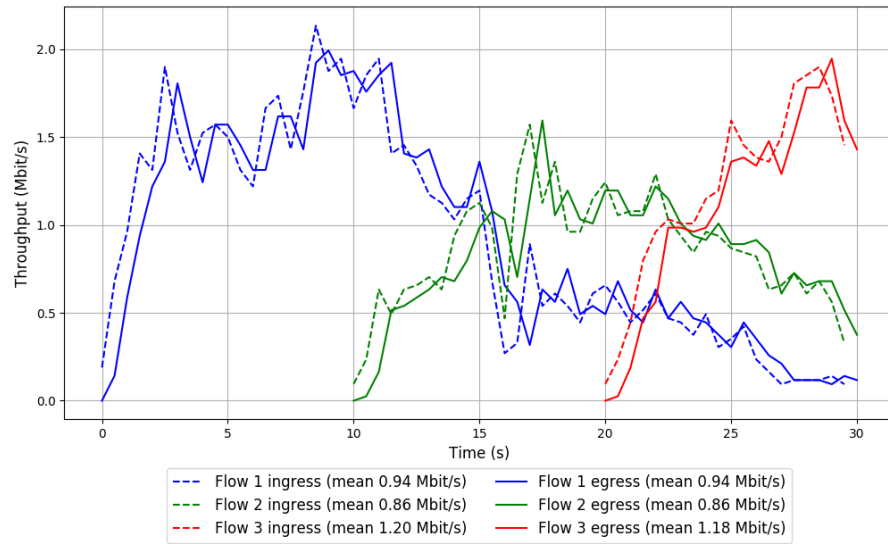Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-06-30 13:02:57
End at: 2018-06-30 13:03:27
Local clock offset: 1.419 ms
Remote clock offset: -5.454 ms

# Below is generated by plot.py at 2018-06-30 13:38:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 240.902 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 235.290 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 246.043 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 235.761 ms
Loss rate: 3.33%
```
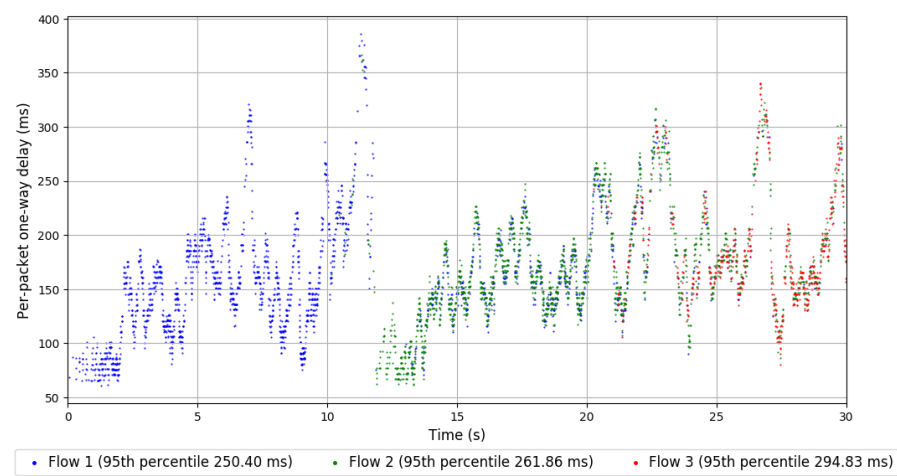
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.94 Mbit/s)   Flow 1 egress (mean 0.94 Mbit/s)
Flow 2 ingress (mean 0.86 Mbit/s)   Flow 2 egress (mean 0.86 Mbit/s)
Flow 3 ingress (mean 1.20 Mbit/s)   Flow 3 egress (mean 1.18 Mbit/s)

Flow 1 (95th percentile 235.29 ms)   Flow 2 (95th percentile 246.04 ms)   Flow 3 (95th percentile 235.76 ms)
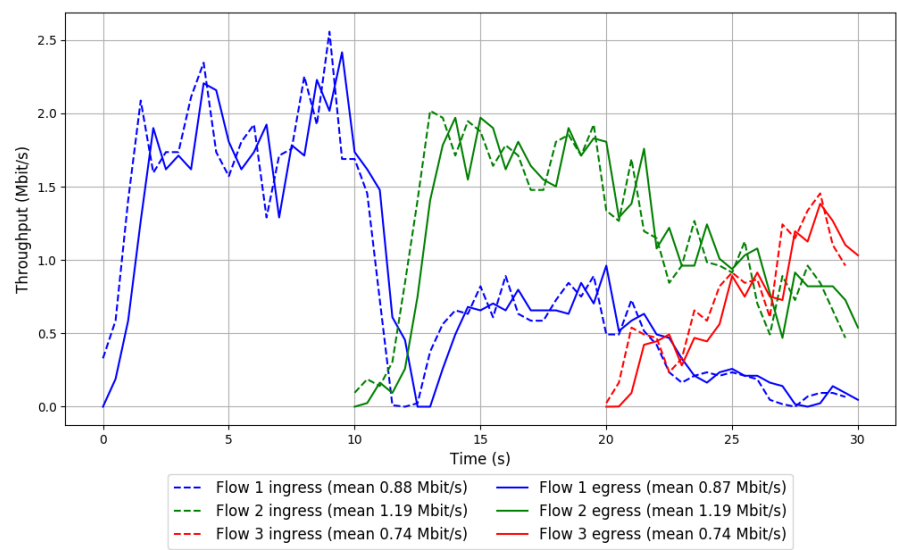
43

```
Run 3: Statistics of LEDBAT

Start at: 2018-06-30 13:21:55
End at: 2018-06-30 13:22:25
Local clock offset: 2.964 ms
Remote clock offset: -6.596 ms


# Below is generated by plot.py at 2018-06-30 13:38:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 265.730 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 250.402 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 261.862 ms
Loss rate: 0.55%
-- Flow 3:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 294.831 ms
Loss rate: 3.01%
```
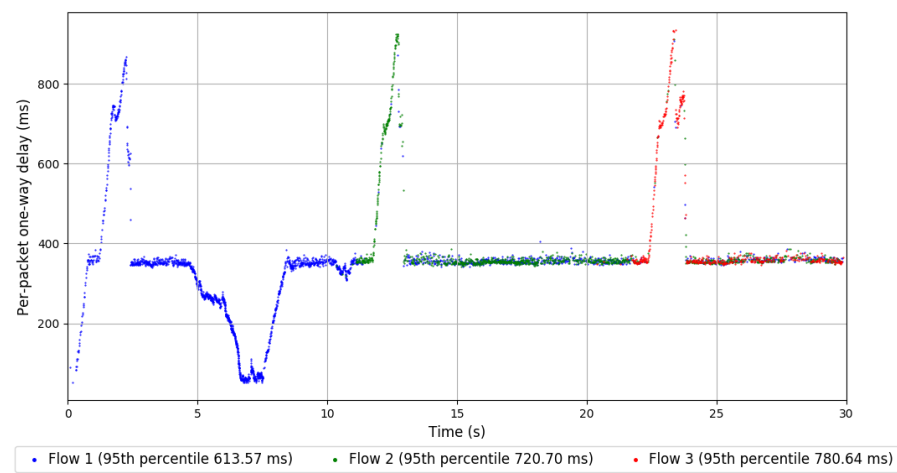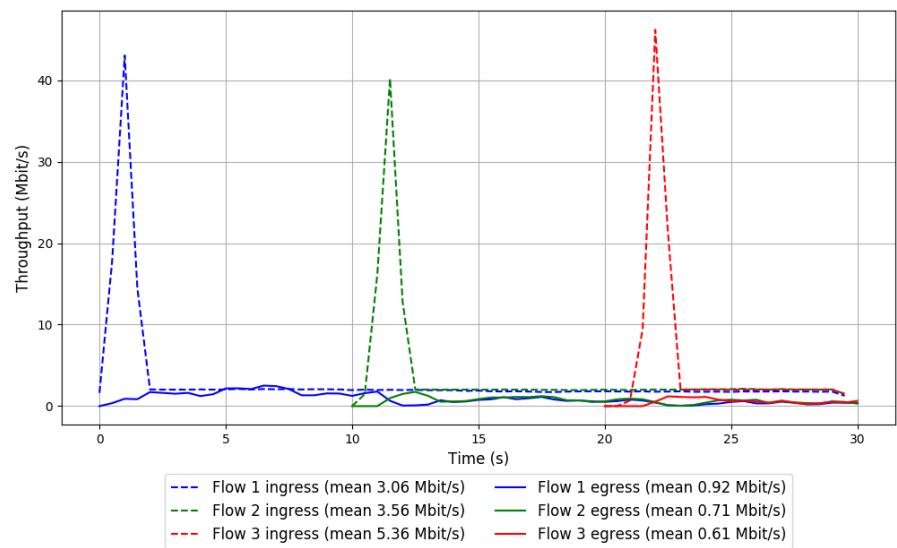
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.88 Mbit/s) — Flow 1 egress (mean 0.87 Mbit/s)
Flow 2 ingress (mean 1.19 Mbit/s) — Flow 2 egress (mean 1.19 Mbit/s)
Flow 3 ingress (mean 0.74 Mbit/s) — Flow 3 egress (mean 0.74 Mbit/s)

Flow 1 (95th percentile 250.40 ms) • Flow 2 (95th percentile 261.86 ms) • Flow 3 (95th percentile 294.83 ms)

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```
Run 1: Statistics of PCC-Allegro

Start at: 2018-06-30 12:53:03
End at: 2018-06-30 12:53:33
Local clock offset: -0.146 ms
Remote clock offset: -5.998 ms


# Below is generated by plot.py at 2018-06-30 13:38:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 718.043 ms
Loss rate: 78.09%
-- Flow 1:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 613.572 ms
Loss rate: 69.99%
-- Flow 2:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 720.696 ms
Loss rate: 80.38%
-- Flow 3:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 780.640 ms
Loss rate: 89.06%
```

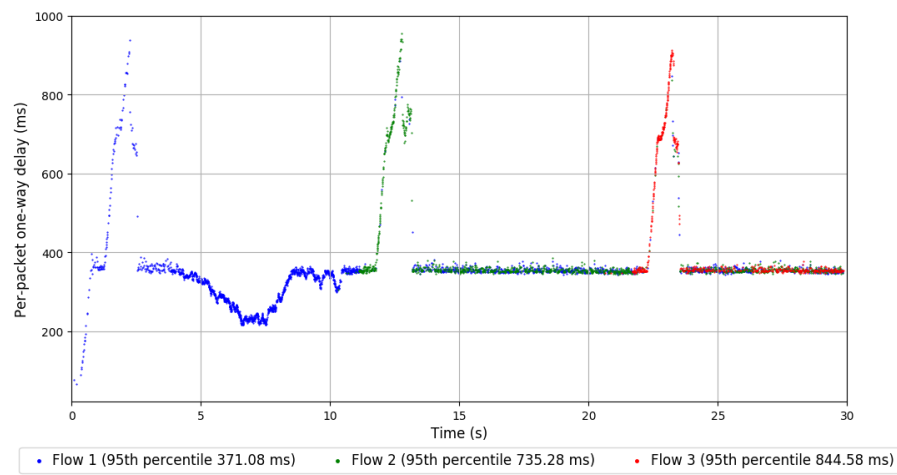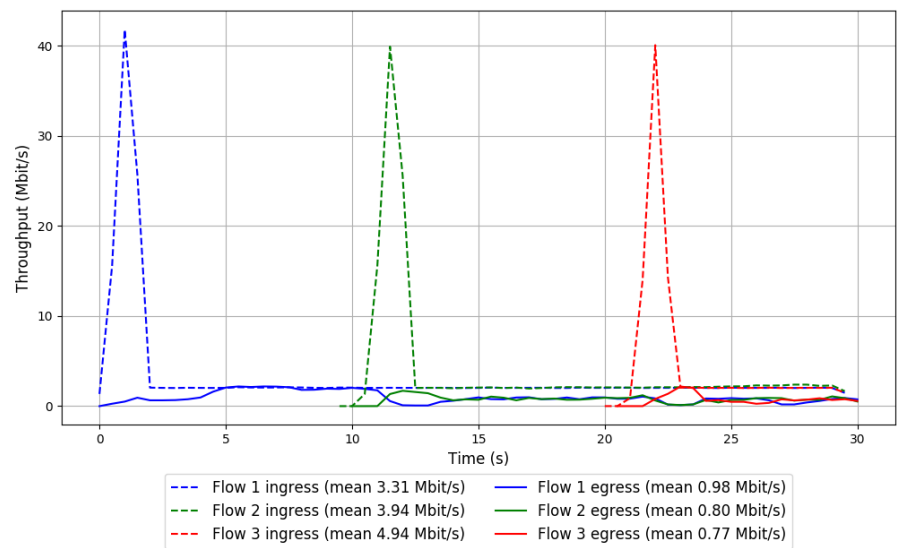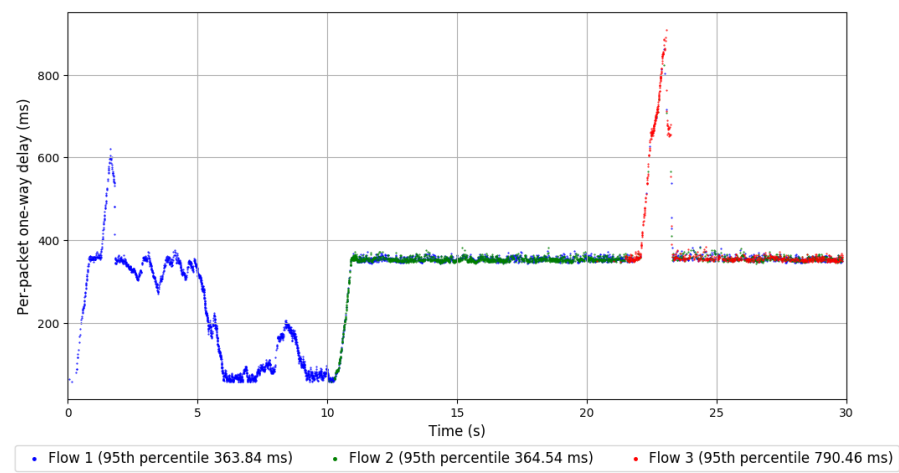Run 1: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 3.06 Mbit/s)   Flow 1 egress (mean 0.92 Mbit/s)
Flow 2 ingress (mean 3.56 Mbit/s)   Flow 2 egress (mean 0.71 Mbit/s)
Flow 3 ingress (mean 5.36 Mbit/s)   Flow 3 egress (mean 0.61 Mbit/s)

Flow 1 (95th percentile 613.57 ms)   Flow 2 (95th percentile 720.70 ms)   Flow 3 (95th percentile 780.64 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-06-30 13:11:45
End at: 2018-06-30 13:12:15
Local clock offset: -0.266 ms
Remote clock offset: -5.955 ms

# Below is generated by plot.py at 2018-06-30 13:38:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 701.283 ms
Loss rate: 77.05%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 371.081 ms
Loss rate: 70.64%
-- Flow 2:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 735.284 ms
Loss rate: 79.98%
-- Flow 3:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 844.584 ms
Loss rate: 85.38%
```

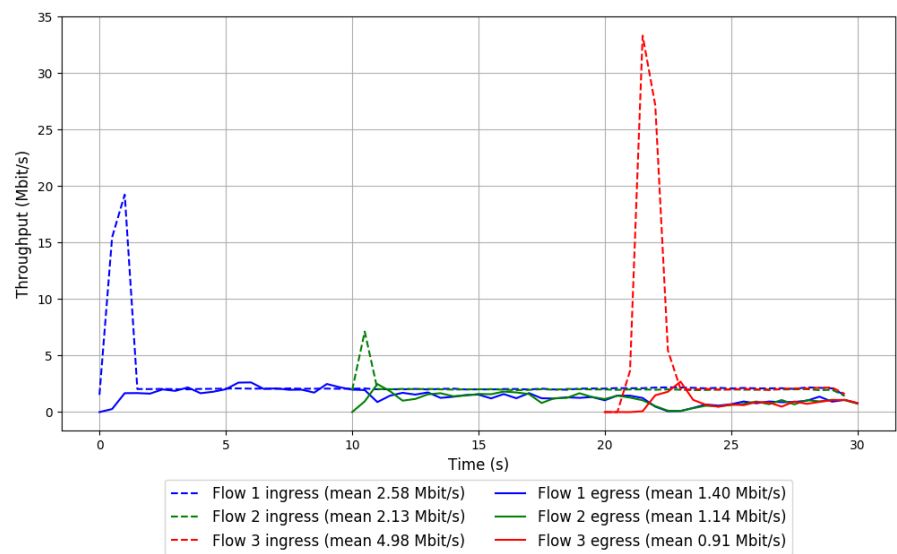Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 3.31 Mbit/s)   Flow 1 egress (mean 0.98 Mbit/s)
Flow 2 ingress (mean 3.94 Mbit/s)   Flow 2 egress (mean 0.80 Mbit/s)
Flow 3 ingress (mean 4.94 Mbit/s)   Flow 3 egress (mean 0.77 Mbit/s)

Flow 1 (95th percentile 371.08 ms)   Flow 2 (95th percentile 735.28 ms)   Flow 3 (95th percentile 844.58 ms)
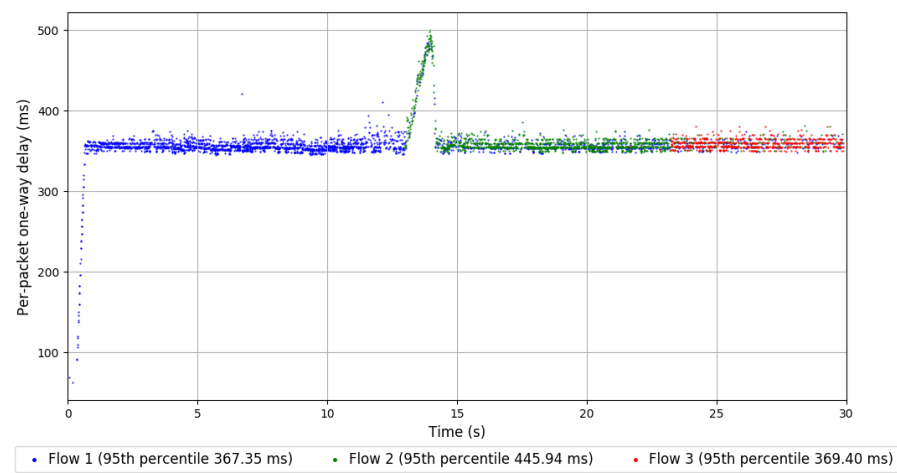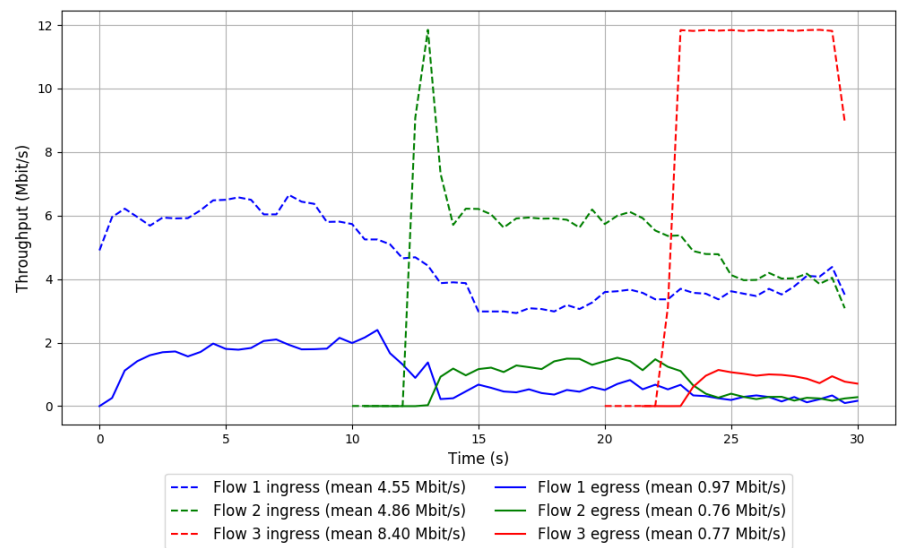
49

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-06-30 13:30:40
End at: 2018-06-30 13:31:10
Local clock offset: 3.157 ms
Remote clock offset: -9.813 ms


# Below is generated by plot.py at 2018-06-30 13:38:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 372.021 ms
Loss rate: 56.73%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 363.841 ms
Loss rate: 45.86%
-- Flow 2:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 364.538 ms
Loss rate: 46.86%
-- Flow 3:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 790.463 ms
Loss rate: 82.34%
```

Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 2.58 Mbit/s)
Flow 2 ingress (mean 2.13 Mbit/s)
Flow 3 ingress (mean 4.98 Mbit/s)
Flow 1 egress (mean 1.40 Mbit/s)
Flow 2 egress (mean 1.14 Mbit/s)
Flow 3 egress (mean 0.91 Mbit/s)

Flow 1 (95th percentile 363.84 ms)
Flow 2 (95th percentile 364.54 ms)
Flow 3 (95th percentile 790.46 ms)
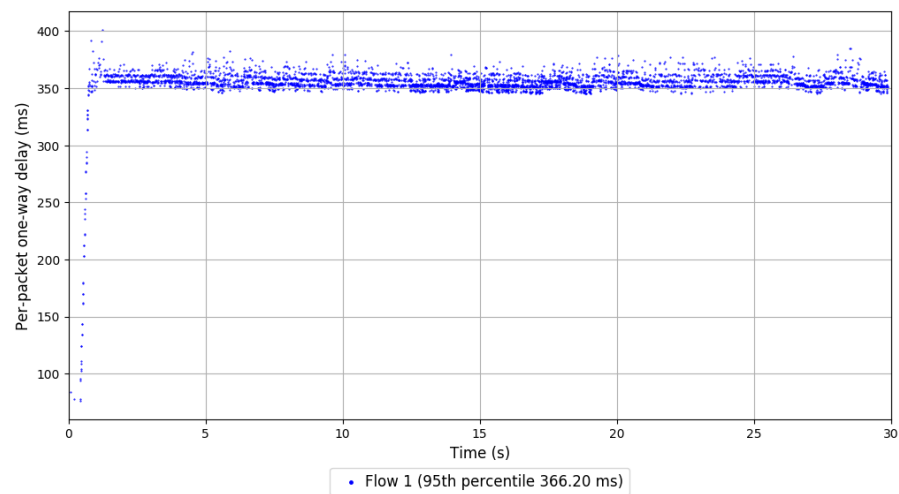
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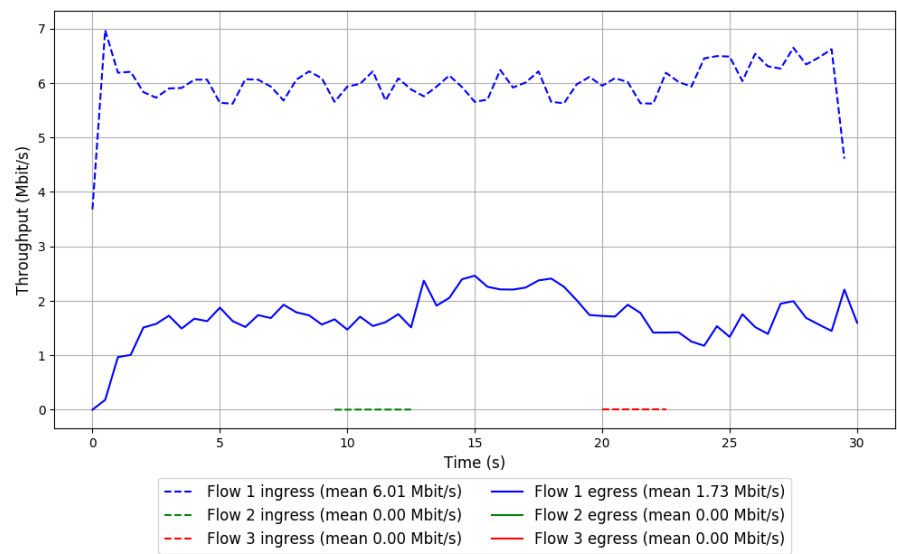```
Run 1: Statistics of PCC-Expr

Start at: 2018-06-30 12:48:33
End at: 2018-06-30 12:49:03
Local clock offset: -1.657 ms
Remote clock offset: -6.454 ms
```

Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-06-30 13:07:20
End at: 2018-06-30 13:07:50
Local clock offset: 0.483 ms
Remote clock offset: -5.898 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 370.705 ms
Loss rate: 84.19%
-- Flow 1:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 367.346 ms
Loss rate: 78.80%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 445.935 ms
Loss rate: 84.78%
-- Flow 3:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 369.396 ms
Loss rate: 92.35%
```

Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-06-30 13:26:18
End at: 2018-06-30 13:26:48
Local clock offset: 2.001 ms
Remote clock offset: -7.928 ms
```
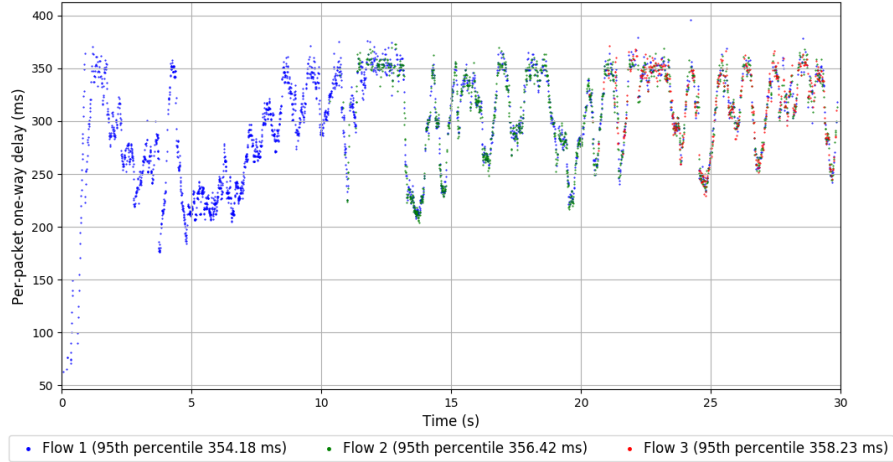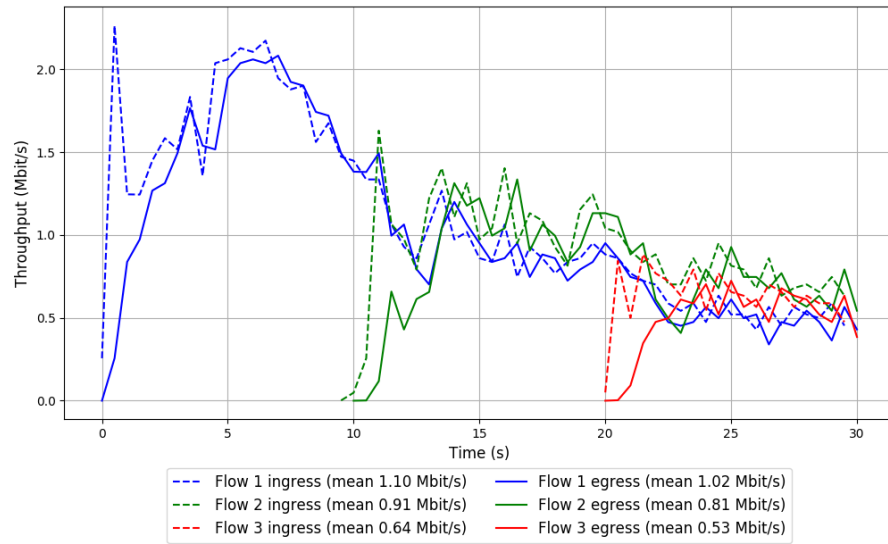
Run 3: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-06-30 12:46:21
End at: 2018-06-30 12:46:51
Local clock offset: -0.382 ms
Remote clock offset: -6.258 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 355.457 ms
Loss rate: 10.12%
-- Flow 1:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 354.175 ms
Loss rate: 6.87%
-- Flow 2:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 356.415 ms
Loss rate: 12.83%
-- Flow 3:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 358.229 ms
Loss rate: 19.28%
```

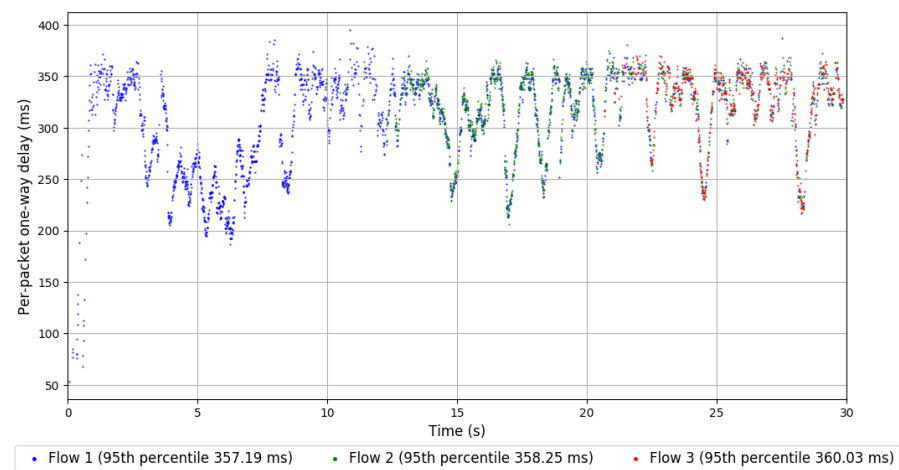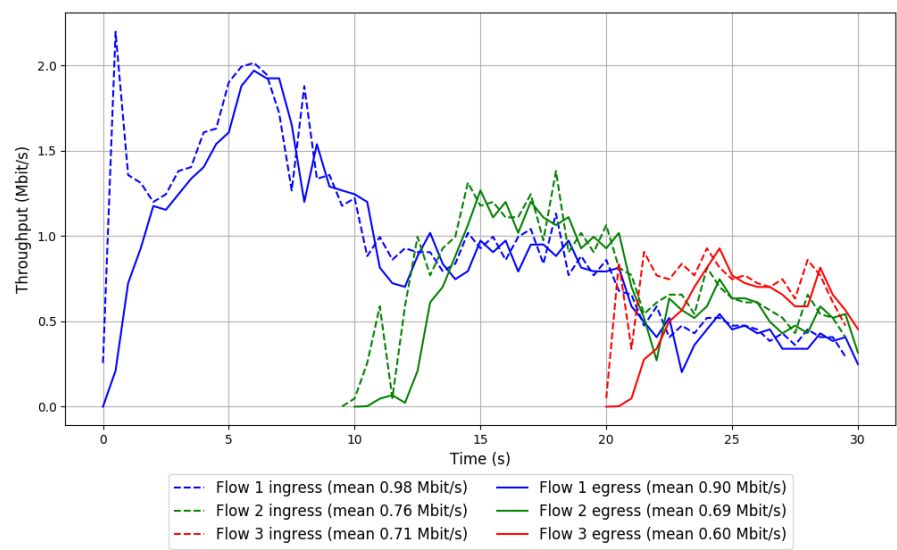Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 1.10 Mbit/s) --- Flow 1 egress (mean 1.02 Mbit/s)
Flow 2 ingress (mean 0.91 Mbit/s) --- Flow 2 egress (mean 0.81 Mbit/s)
Flow 3 ingress (mean 0.64 Mbit/s) --- Flow 3 egress (mean 0.53 Mbit/s)

Flow 1 (95th percentile 354.18 ms) • Flow 2 (95th percentile 356.42 ms) • Flow 3 (95th percentile 358.23 ms)
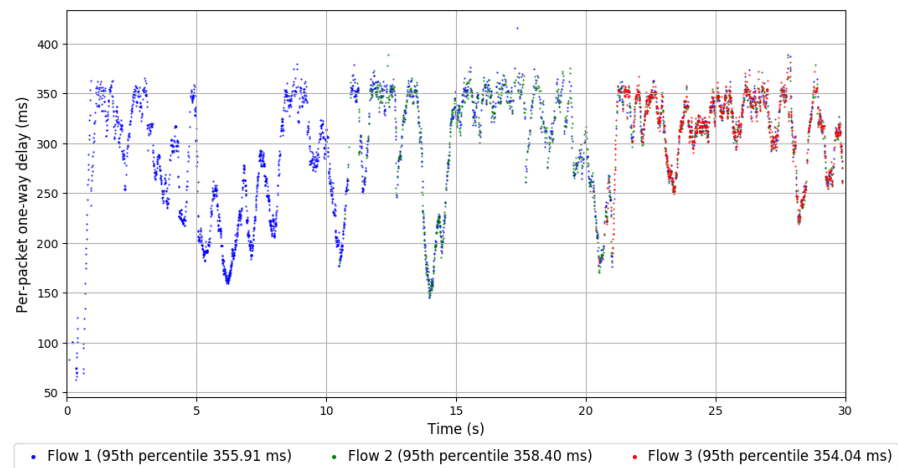
```
Run 2: Statistics of QUIC Cubic

Start at: 2018-06-30 13:05:09
End at: 2018-06-30 13:05:39
Local clock offset: 0.158 ms
Remote clock offset: -5.618 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 357.788 ms
Loss rate: 10.86%
-- Flow 1:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 357.191 ms
Loss rate: 8.67%
-- Flow 2:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 358.252 ms
Loss rate: 11.40%
-- Flow 3:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 360.031 ms
Loss rate: 18.85%
```
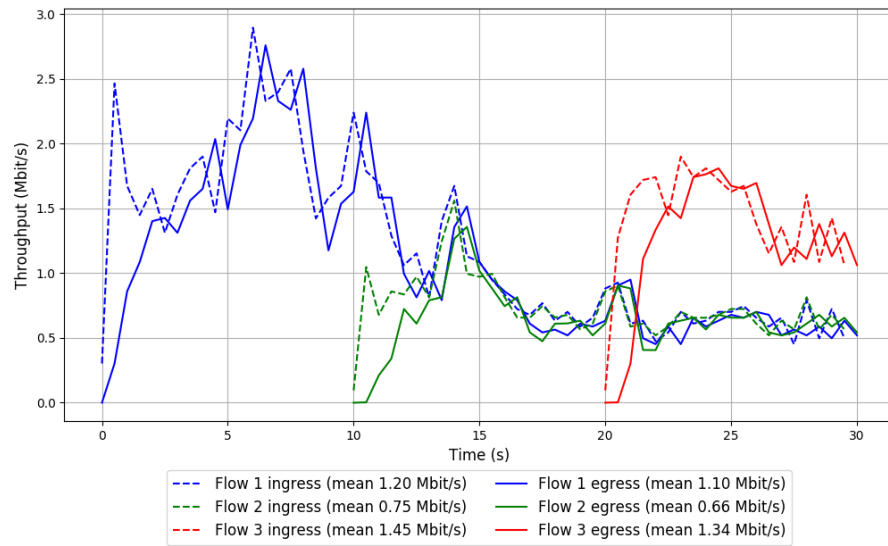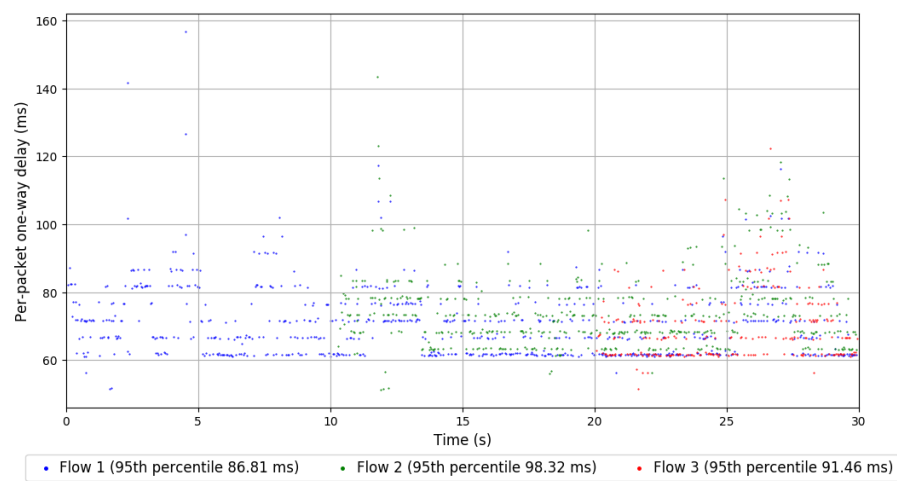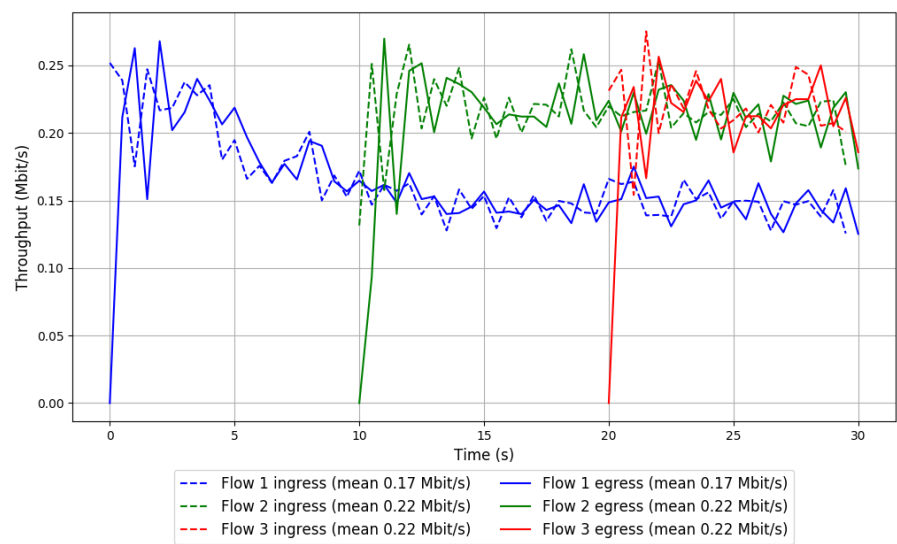
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.98 Mbit/s)
Flow 2 ingress (mean 0.76 Mbit/s)
Flow 3 ingress (mean 0.71 Mbit/s)
Flow 1 egress (mean 0.90 Mbit/s)
Flow 2 egress (mean 0.69 Mbit/s)
Flow 3 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 357.19 ms)
Flow 2 (95th percentile 358.25 ms)
Flow 3 (95th percentile 360.03 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-06-30 13:24:07
End at: 2018-06-30 13:24:37
Local clock offset: 0.411 ms
Remote clock offset: -7.148 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 356.073 ms
Loss rate: 9.85%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 355.907 ms
Loss rate: 8.84%
-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 358.396 ms
Loss rate: 12.15%
-- Flow 3:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 354.037 ms
Loss rate: 10.00%
```
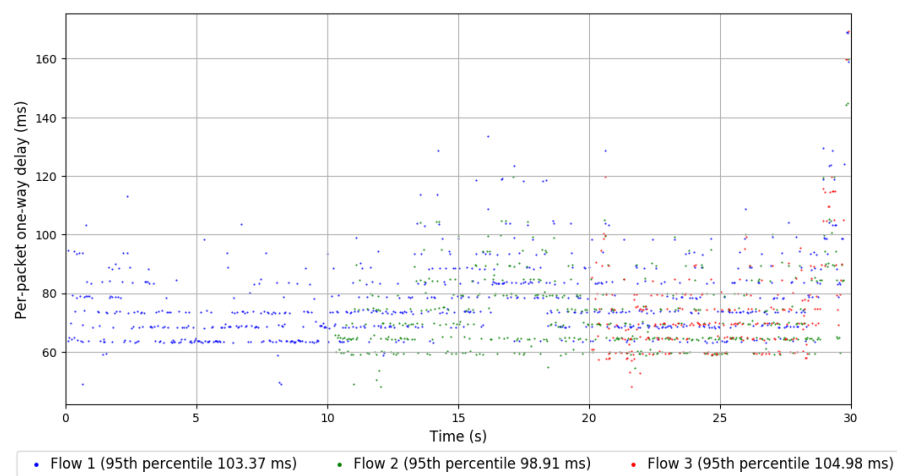
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 1.20 Mbit/s)   Flow 1 egress (mean 1.10 Mbit/s)
Flow 2 ingress (mean 0.75 Mbit/s)   Flow 2 egress (mean 0.66 Mbit/s)
Flow 3 ingress (mean 1.45 Mbit/s)   Flow 3 egress (mean 1.34 Mbit/s)

Flow 1 (95th percentile 355.91 ms)   Flow 2 (95th percentile 358.40 ms)   Flow 3 (95th percentile 354.04 ms)
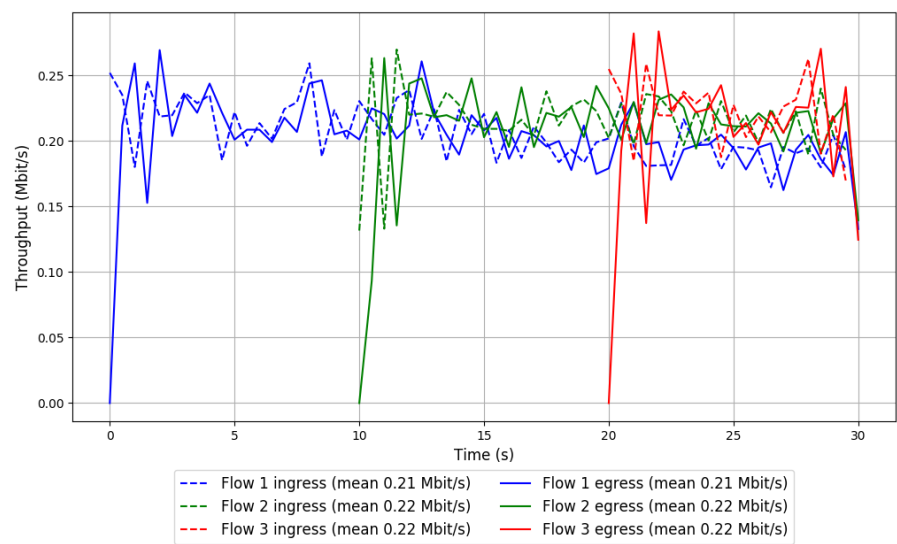
63

```
Run 1: Statistics of SCReAM

Start at: 2018-06-30 12:50:51
End at: 2018-06-30 12:51:21
Local clock offset: 2.773 ms
Remote clock offset: -7.22 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 91.621 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 86.814 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 98.320 ms
Loss rate: 0.39%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.458 ms
Loss rate: 0.71%
```
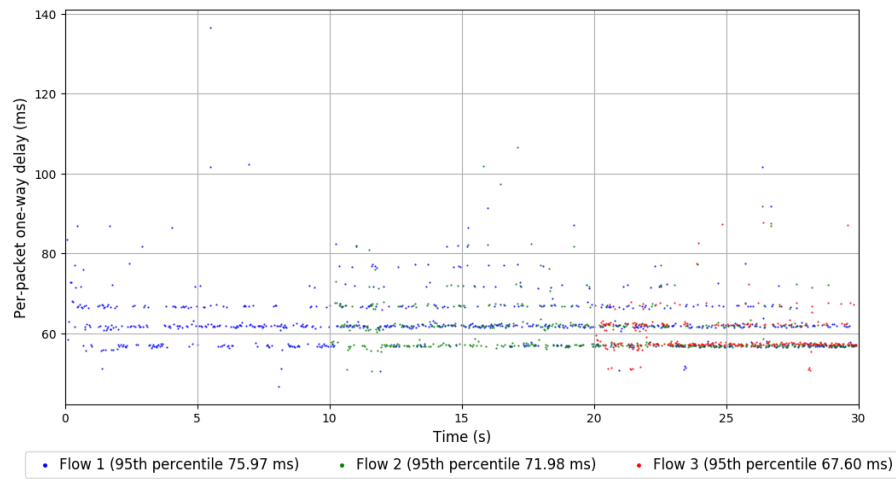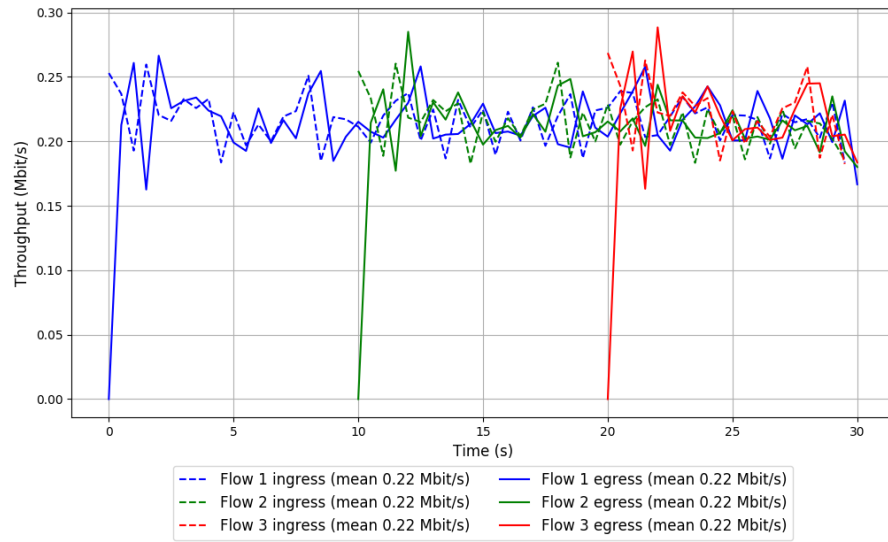
Run 1: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 86.81 ms)   Flow 2 (95th percentile 98.32 ms)   Flow 3 (95th percentile 91.46 ms)

65

```
Run 2: Statistics of SCReAM

Start at: 2018-06-30 13:09:32
End at: 2018-06-30 13:10:02
Local clock offset: 2.538 ms
Remote clock offset: -4.637 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 100.316 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 103.374 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 98.906 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 104.976 ms
Loss rate: 1.70%
```
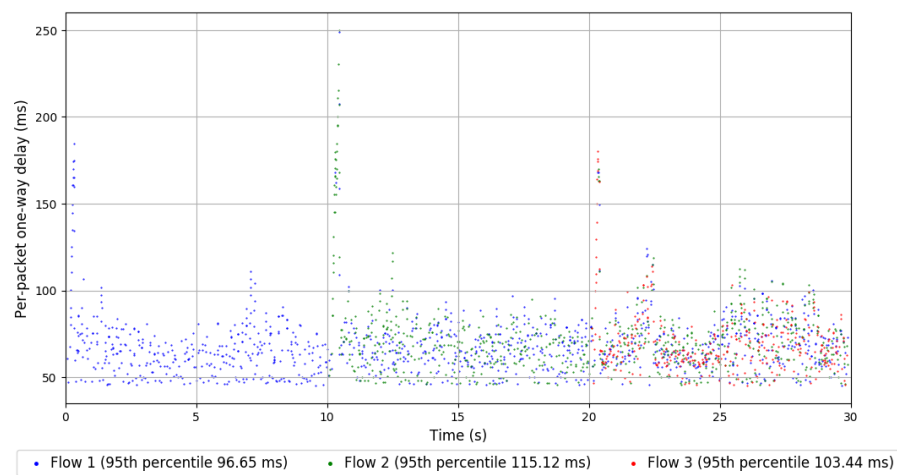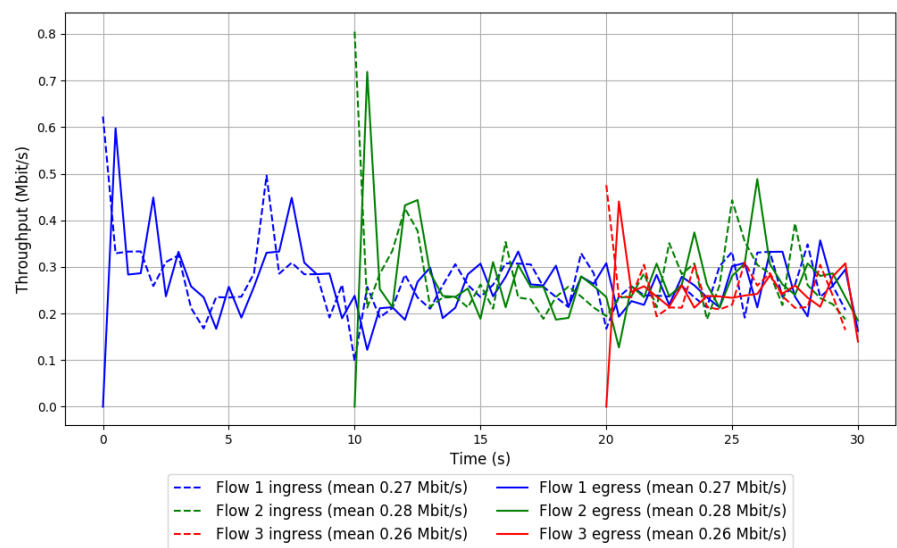
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-06-30 13:28:29
End at: 2018-06-30 13:28:59
Local clock offset: -0.022 ms
Remote clock offset: -9.188 ms

# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 72.181 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 75.967 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 71.982 ms
Loss rate: 0.39%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.604 ms
Loss rate: 0.69%
```
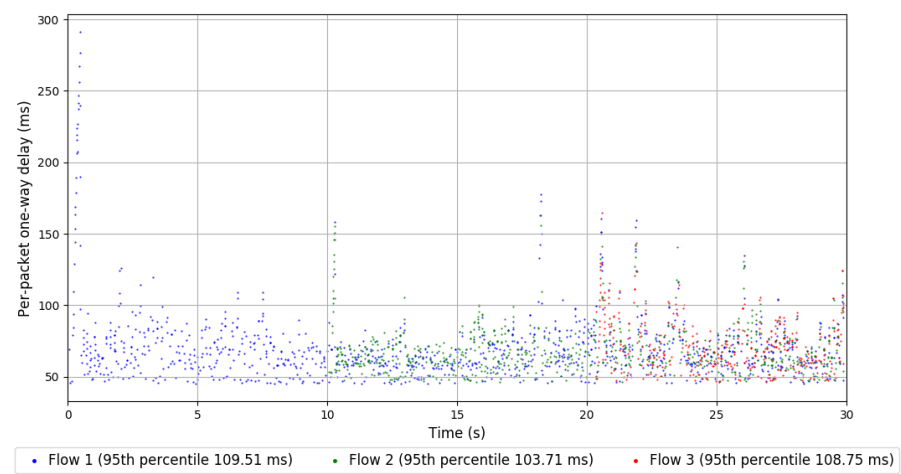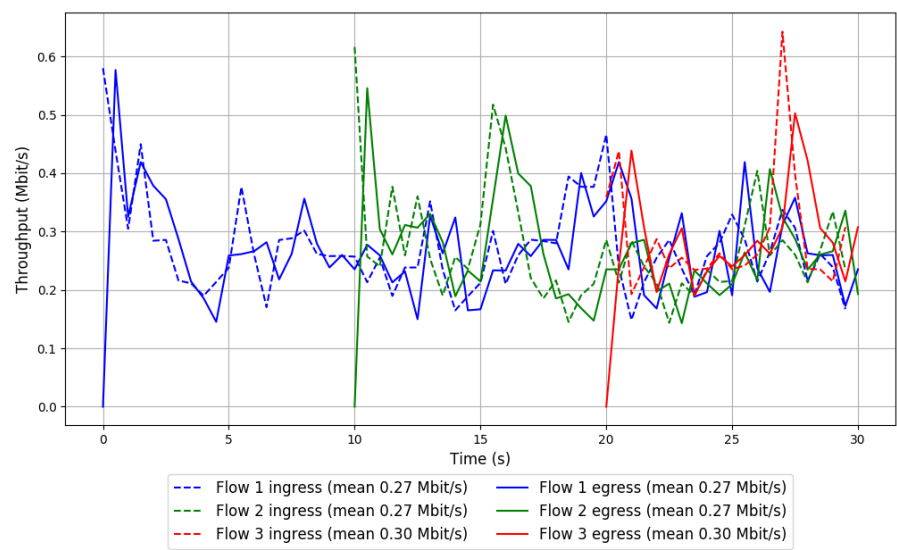
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-06-30 12:55:14
End at: 2018-06-30 12:55:44
Local clock offset: -1.286 ms
Remote clock offset: -6.259 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 102.912 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 96.654 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 115.124 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 103.436 ms
Loss rate: 0.53%
```
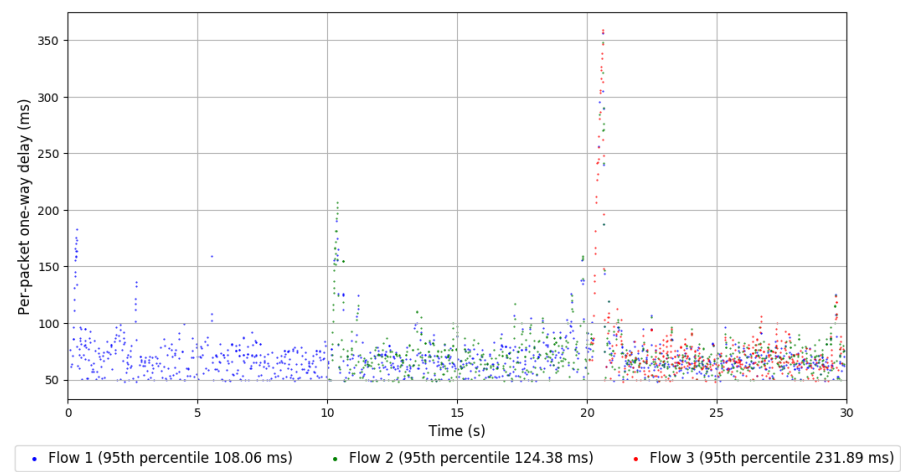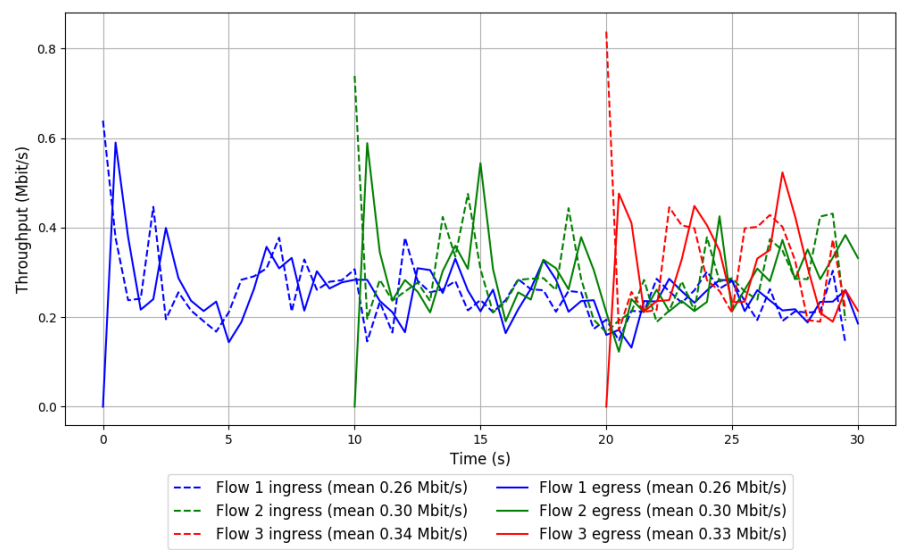
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-06-30 13:14:14
End at: 2018-06-30 13:14:44
Local clock offset: -0.227 ms
Remote clock offset: -5.422 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 105.762 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 109.506 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 103.706 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 108.745 ms
Loss rate: 0.03%
```
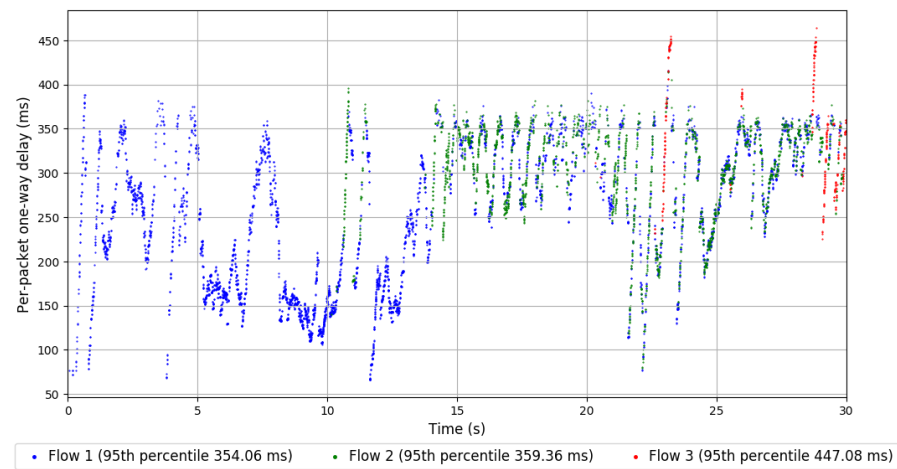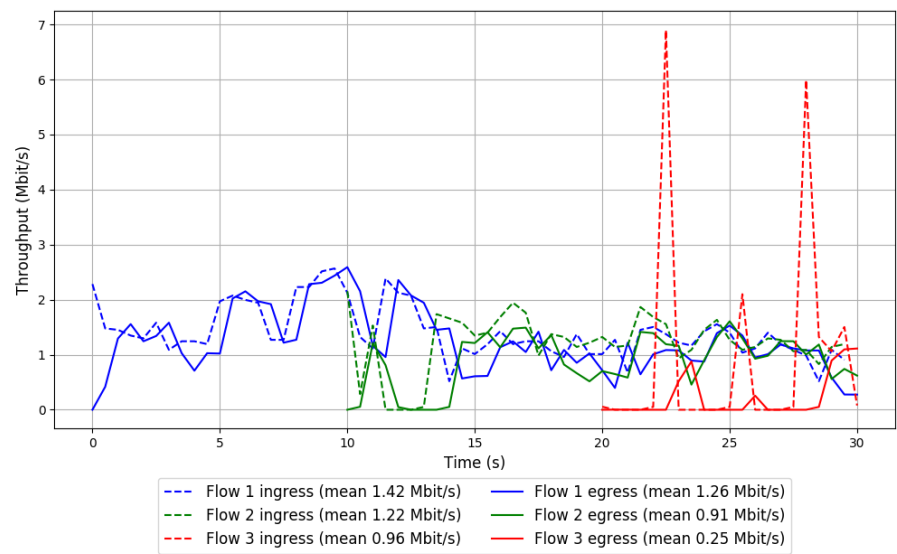
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-06-30 13:32:52
End at: 2018-06-30 13:33:22
Local clock offset: 3.454 ms
Remote clock offset: -9.943 ms


# Below is generated by plot.py at 2018-06-30 13:38:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 124.770 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 108.055 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 124.384 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 231.889 ms
Loss rate: 3.58%
```
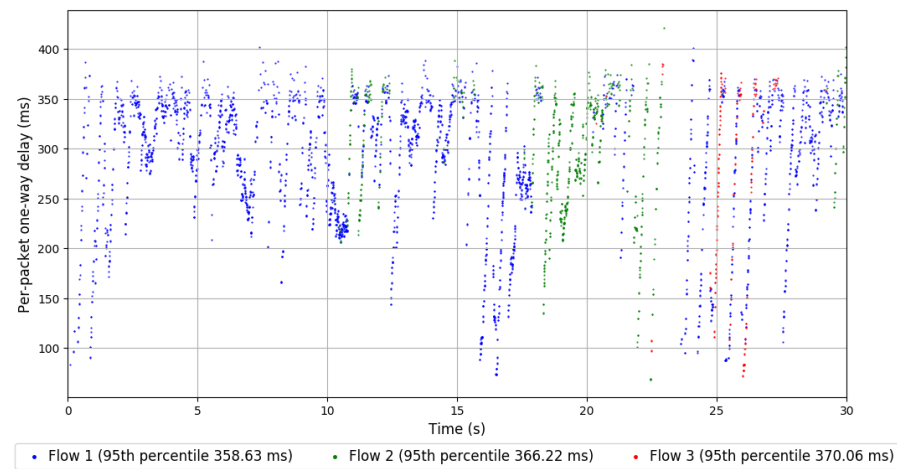
Run 3: Report of Sprout — Data Link

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

Start at: 2018-06-30 12:51:57
End at: 2018-06-30 12:52:27
Local clock offset: 2.815 ms
Remote clock offset: -6.574 ms


# Below is generated by plot.py at 2018-06-30 13:38:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 358.571 ms
Loss rate: 24.29%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 354.063 ms
Loss rate: 11.88%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 359.359 ms
Loss rate: 26.07%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 447.079 ms
Loss rate: 74.90%
```

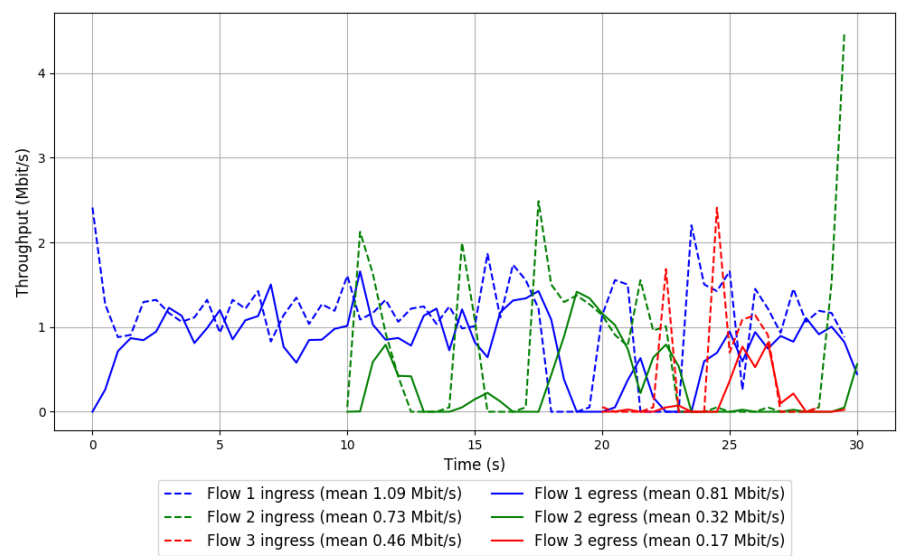Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-06-30 13:10:39
End at: 2018-06-30 13:11:09
Local clock offset: -0.099 ms
Remote clock offset: -5.147 ms


# Below is generated by plot.py at 2018-06-30 13:38:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 361.252 ms
Loss rate: 37.89%
-- Flow 1:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 358.629 ms
Loss rate: 26.75%
-- Flow 2:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 366.219 ms
Loss rate: 56.13%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 370.064 ms
Loss rate: 63.33%
```

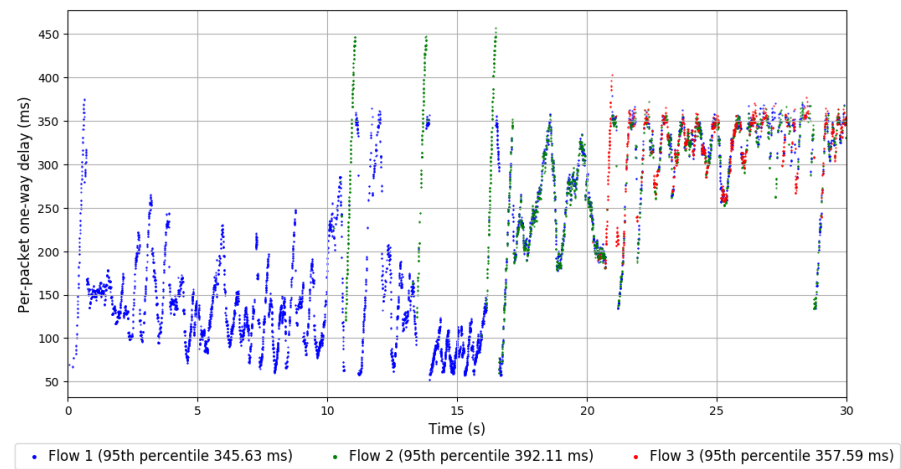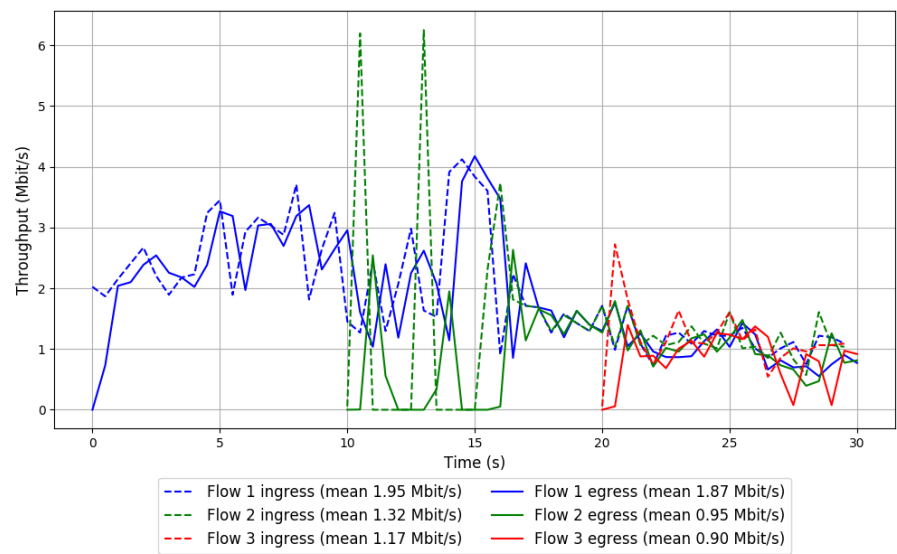Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-06-30 13:29:35
End at: 2018-06-30 13:30:05
Local clock offset: -0.14 ms
Remote clock offset: -9.432 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 351.846 ms
Loss rate: 13.57%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 345.635 ms
Loss rate: 4.62%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 392.114 ms
Loss rate: 28.38%
-- Flow 3:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 357.591 ms
Loss rate: 25.05%
```

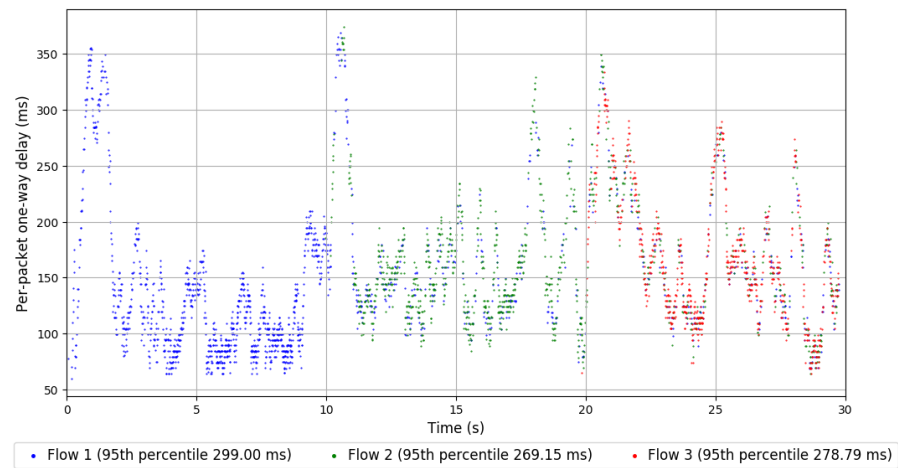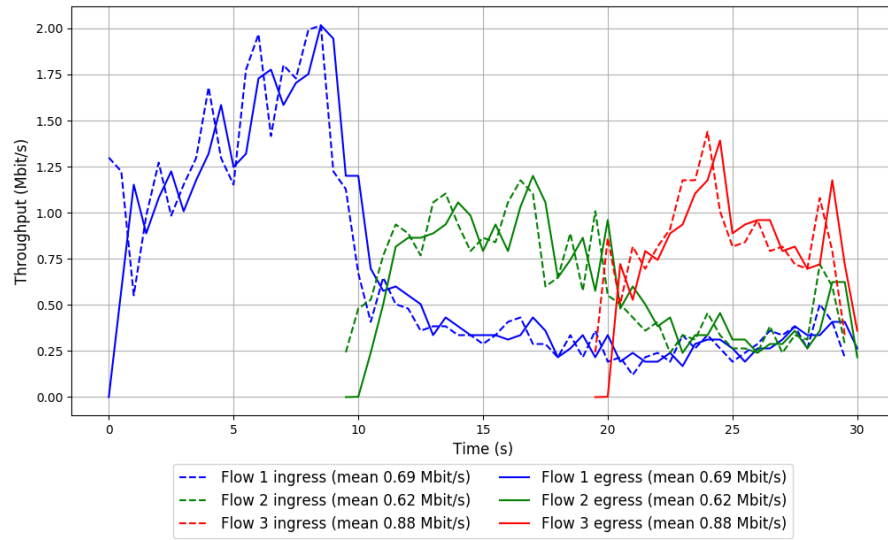Run 3: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-06-30 12:54:08
End at: 2018-06-30 12:54:38
Local clock offset: 2.141 ms
Remote clock offset: -5.976 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 283.866 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 299.000 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 269.147 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 278.793 ms
Loss rate: 1.10%
```

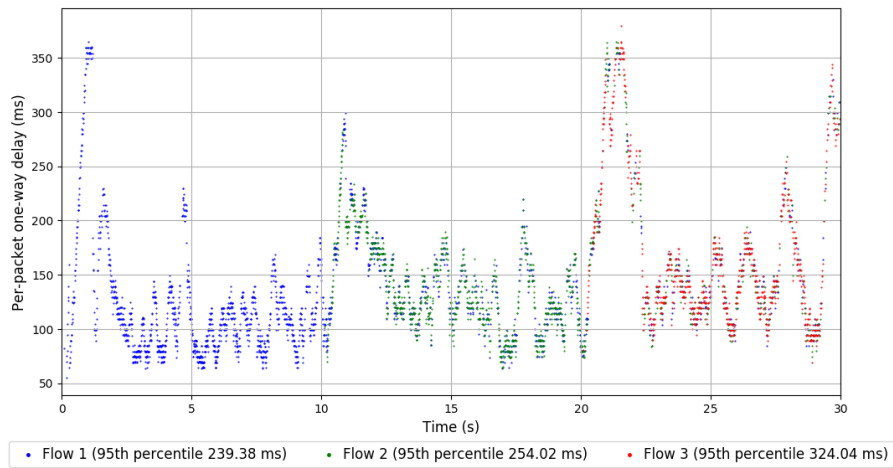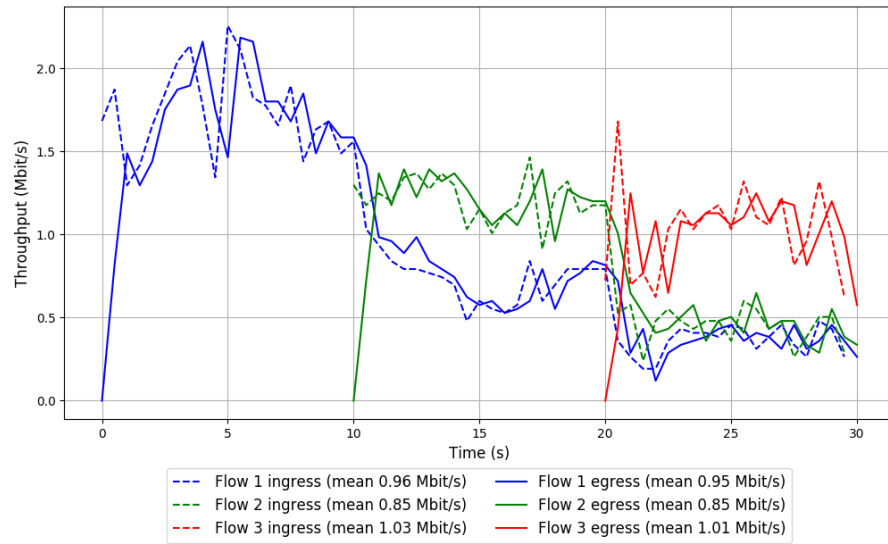Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-06-30 13:13:08
End at: 2018-06-30 13:13:38
Local clock offset: 2.429 ms
Remote clock offset: -5.683 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.85 Mbit/s
95th percentile per-packet one-way delay: 279.793 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 239.381 ms
Loss rate: 1.78%
-- Flow 2:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 254.018 ms
Loss rate: 0.70%
-- Flow 3:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 324.040 ms
Loss rate: 2.11%
```

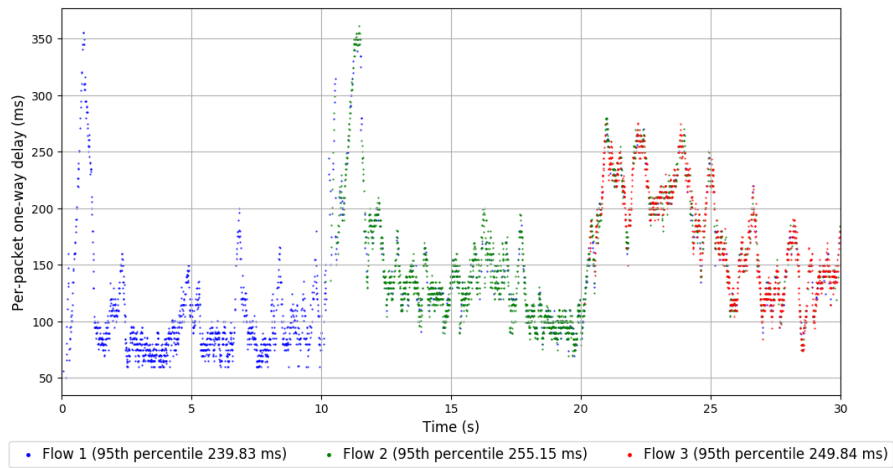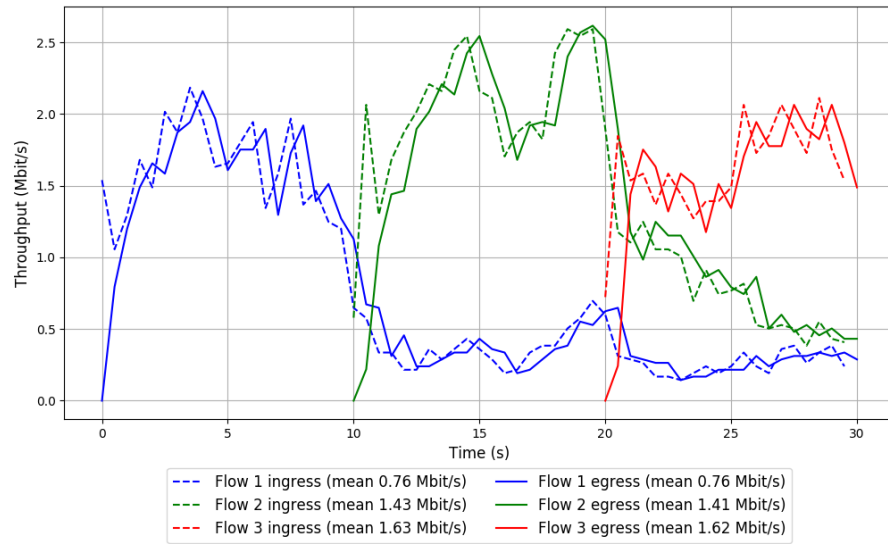Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-06-30 13:31:46
End at: 2018-06-30 13:32:16
Local clock offset: 0.333 ms
Remote clock offset: -10.064 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.23 Mbit/s
95th percentile per-packet one-way delay: 250.331 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 239.827 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 1.41 Mbit/s
95th percentile per-packet one-way delay: 255.145 ms
Loss rate: 1.60%
-- Flow 3:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 249.843 ms
Loss rate: 1.56%
```

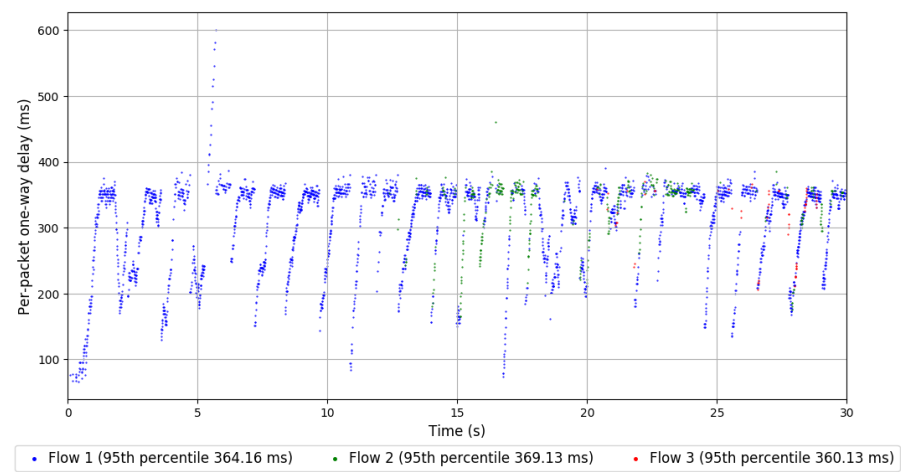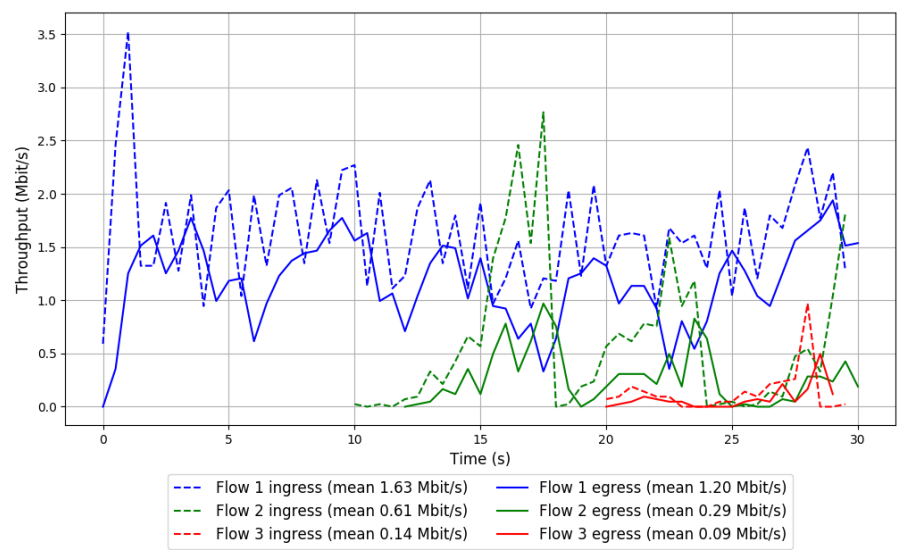Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-06-30 12:45:15
End at: 2018-06-30 12:45:45
Local clock offset: -0.146 ms
Remote clock offset: -6.547 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 364.855 ms
Loss rate: 33.30%
-- Flow 1:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 364.159 ms
Loss rate: 26.74%
-- Flow 2:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 369.134 ms
Loss rate: 58.41%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 360.134 ms
Loss rate: 43.48%
```

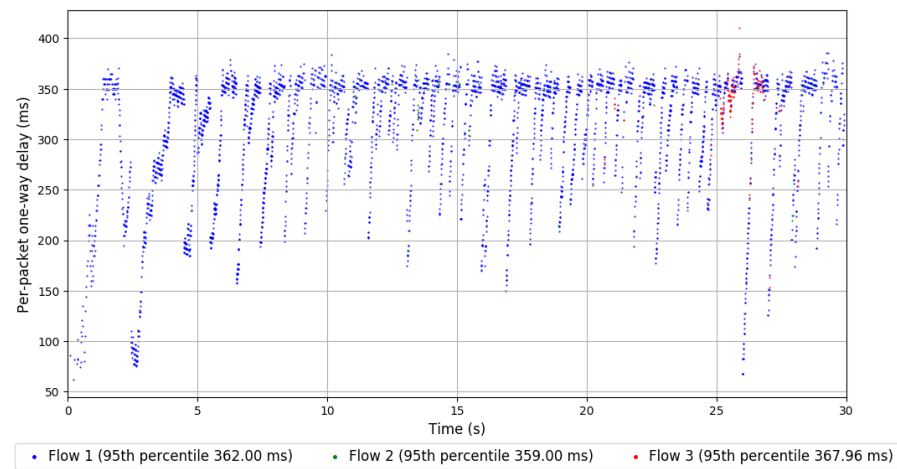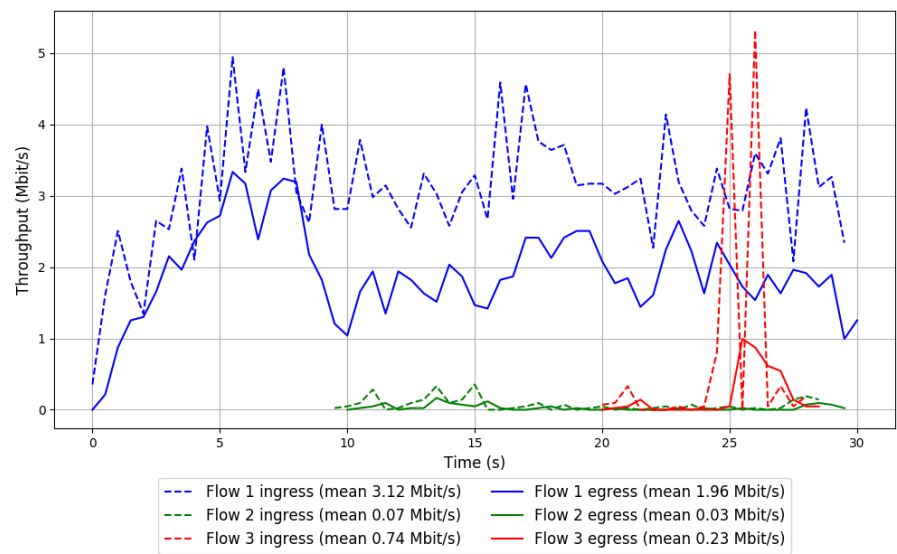Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-06-30 13:04:03
End at: 2018-06-30 13:04:33
Local clock offset: -0.075 ms
Remote clock offset: -5.395 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.04 Mbit/s
95th percentile per-packet one-way delay: 362.113 ms
Loss rate: 39.60%
-- Flow 1:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 362.004 ms
Loss rate: 37.35%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 359.002 ms
Loss rate: 56.14%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 367.959 ms
Loss rate: 70.73%
```

Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-06-30 13:23:01
End at: 2018-06-30 13:23:31
Local clock offset: 3.167 ms
Remote clock offset: -6.26 ms


# Below is generated by plot.py at 2018-06-30 13:38:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 366.334 ms
Loss rate: 49.19%
-- Flow 1:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 366.404 ms
Loss rate: 47.81%
-- Flow 2:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 367.221 ms
Loss rate: 59.18%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 359.584 ms
Loss rate: 44.87%
```
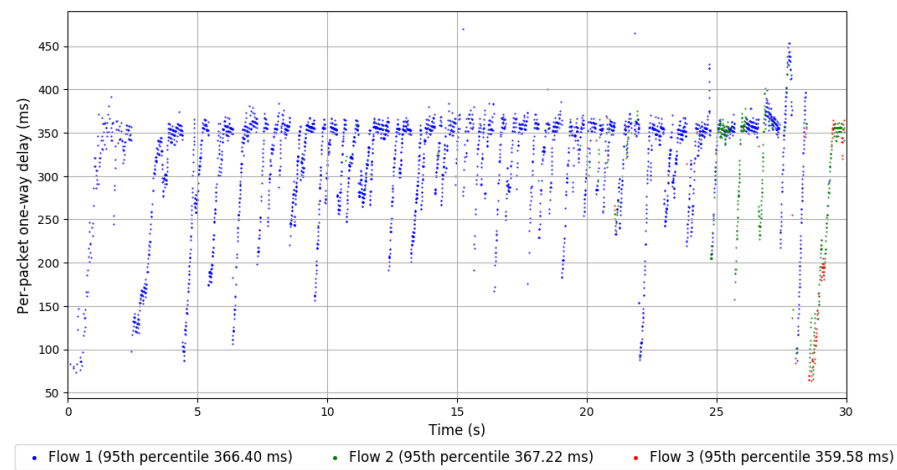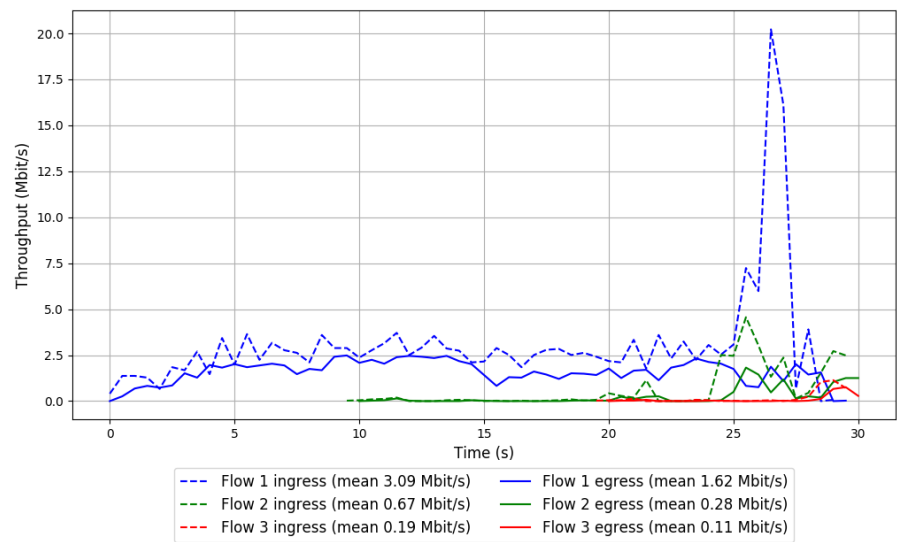
Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 3.09 Mbit/s) --- Flow 1 egress (mean 1.62 Mbit/s)
Flow 2 ingress (mean 0.67 Mbit/s) --- Flow 2 egress (mean 0.28 Mbit/s)
Flow 3 ingress (mean 0.19 Mbit/s) --- Flow 3 egress (mean 0.11 Mbit/s)

Flow 1 (95th percentile 366.40 ms) • Flow 2 (95th percentile 367.22 ms) • Flow 3 (95th percentile 359.58 ms)
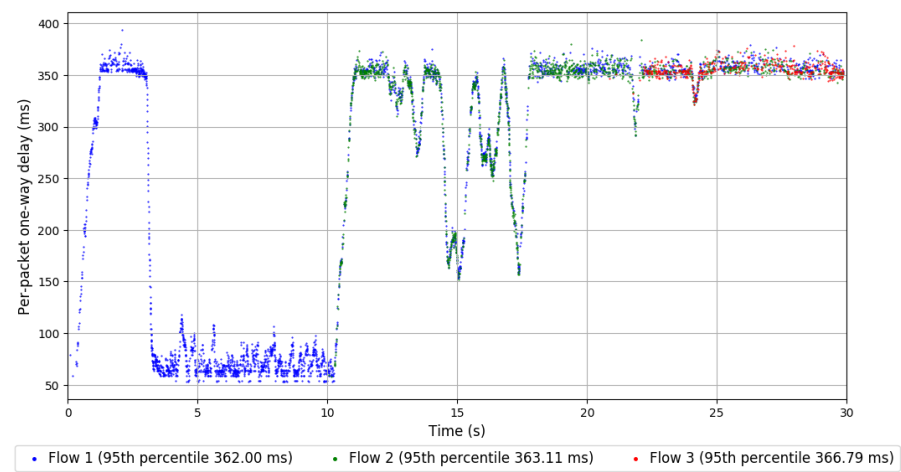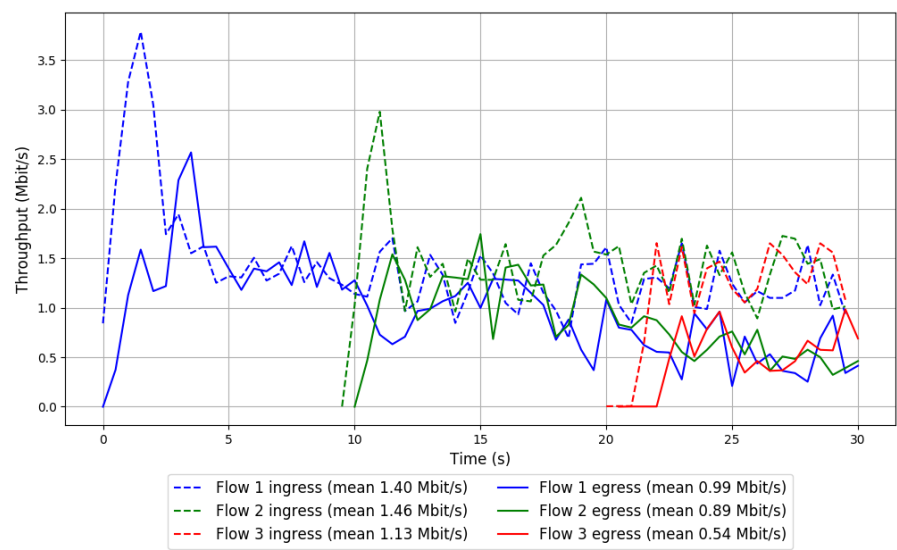
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```
Run 1: Statistics of PCC-Vivace

Start at: 2018-06-30 12:59:36
End at: 2018-06-30 13:00:06
Local clock offset: 1.902 ms
Remote clock offset: -6.173 ms


# Below is generated by plot.py at 2018-06-30 13:38:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 363.103 ms
Loss rate: 36.63%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 362.004 ms
Loss rate: 29.41%
-- Flow 2:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 363.111 ms
Loss rate: 39.49%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 366.794 ms
Loss rate: 56.29%
```

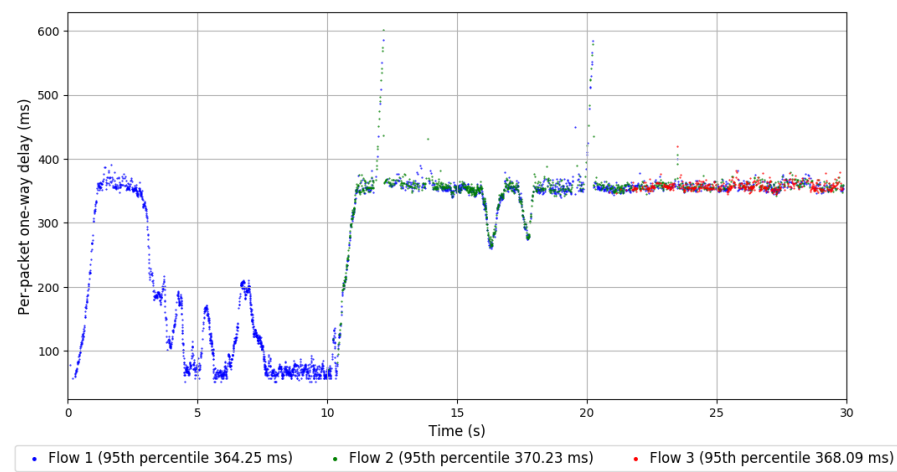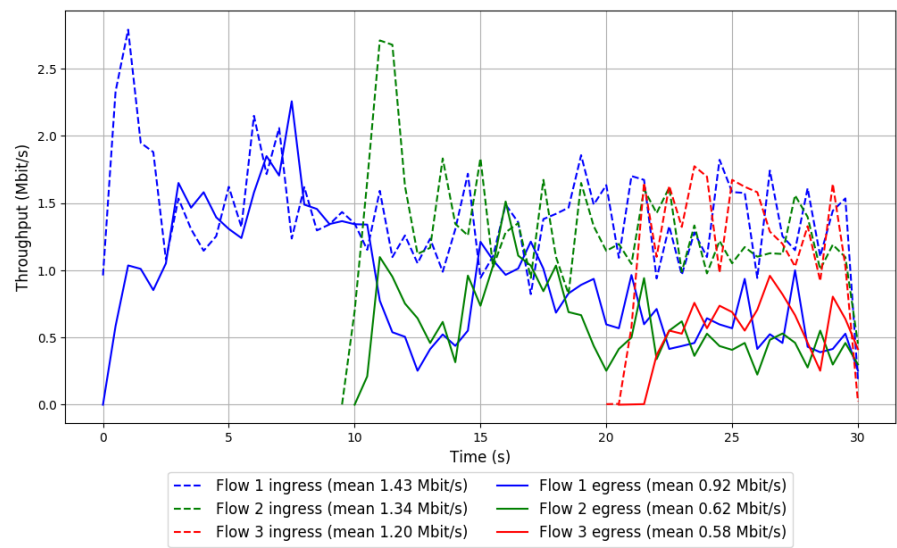Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-06-30 13:18:38
End at: 2018-06-30 13:19:08
Local clock offset: 3.445 ms
Remote clock offset: -5.266 ms


# Below is generated by plot.py at 2018-06-30 13:38:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.50 Mbit/s
95th percentile per-packet one-way delay: 366.871 ms
Loss rate: 45.27%
-- Flow 1:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 364.245 ms
Loss rate: 36.28%
-- Flow 2:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 370.230 ms
Loss rate: 54.56%
-- Flow 3:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 368.094 ms
Loss rate: 56.46%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 1.43 Mbit/s) --- Flow 1 egress (mean 0.92 Mbit/s)
Flow 2 ingress (mean 1.34 Mbit/s) --- Flow 2 egress (mean 0.62 Mbit/s)
Flow 3 ingress (mean 1.20 Mbit/s) --- Flow 3 egress (mean 0.58 Mbit/s)

Flow 1 (95th percentile 364.25 ms)   Flow 2 (95th percentile 370.23 ms)   Flow 3 (95th percentile 368.09 ms)
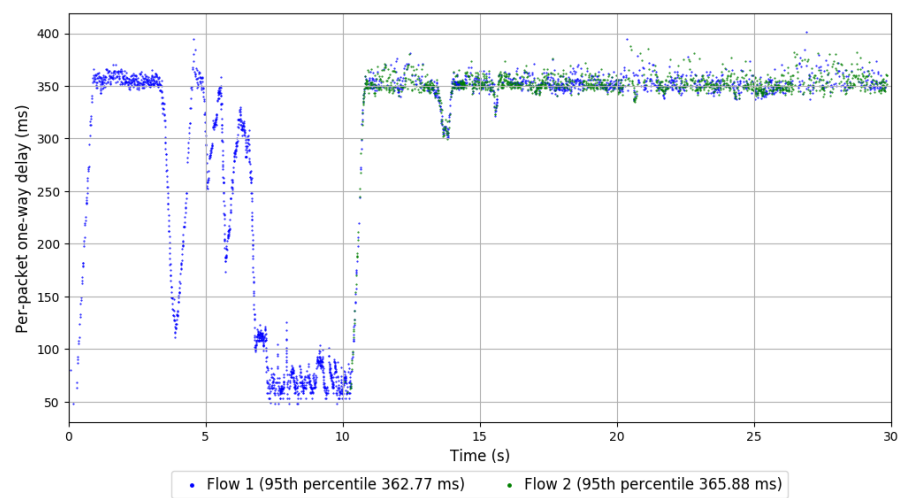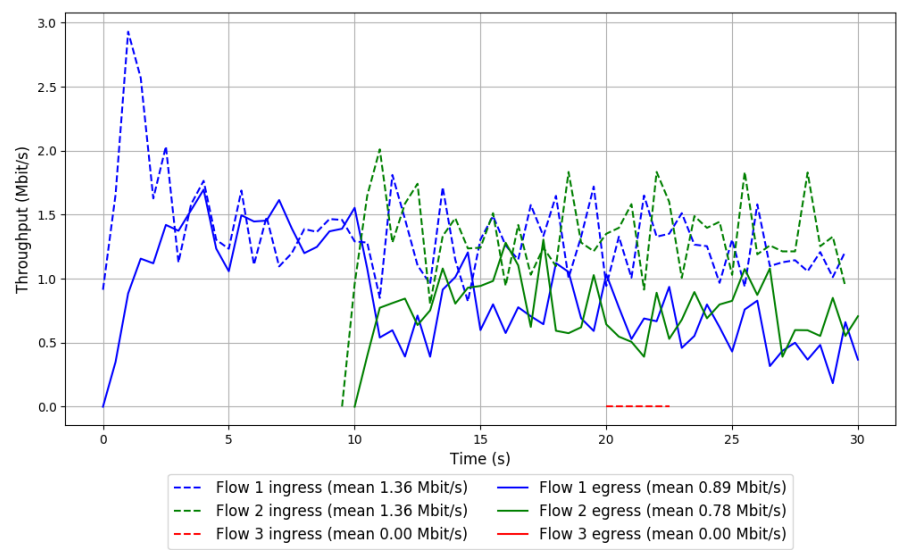
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Run 3: Statistics of PCC-Vivace

Start at: 2018-06-30 13:37:14
End at: 2018-06-30 13:37:44
Local clock offset: -0.539 ms
Remote clock offset: -10.83 ms
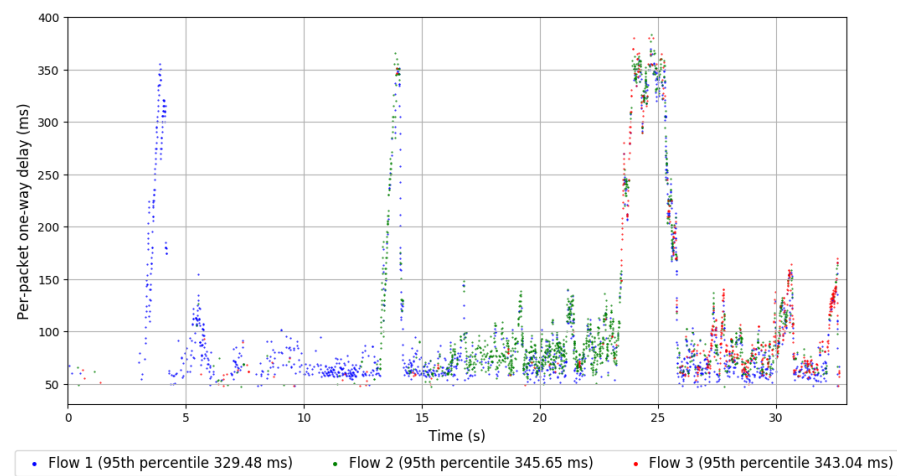
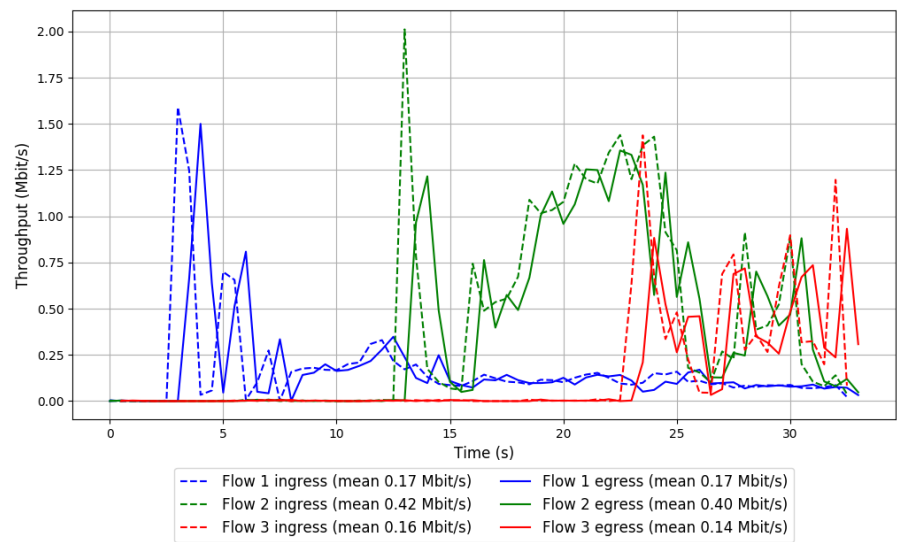Run 3: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-06-30 12:47:26
End at: 2018-06-30 12:47:56
Local clock offset: -0.355 ms
Remote clock offset: -7.344 ms


# Below is generated by plot.py at 2018-06-30 13:38:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 339.948 ms
Loss rate: 5.94%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 329.475 ms
Loss rate: 1.98%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 345.653 ms
Loss rate: 5.96%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 343.035 ms
Loss rate: 10.28%
```

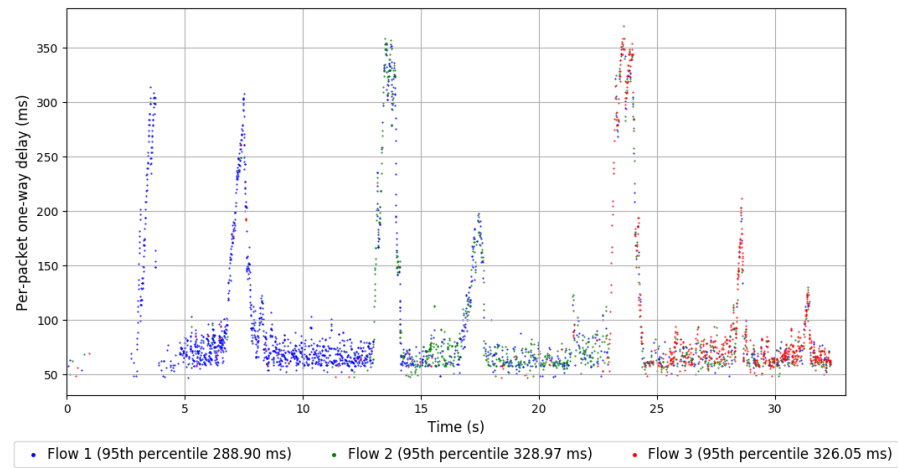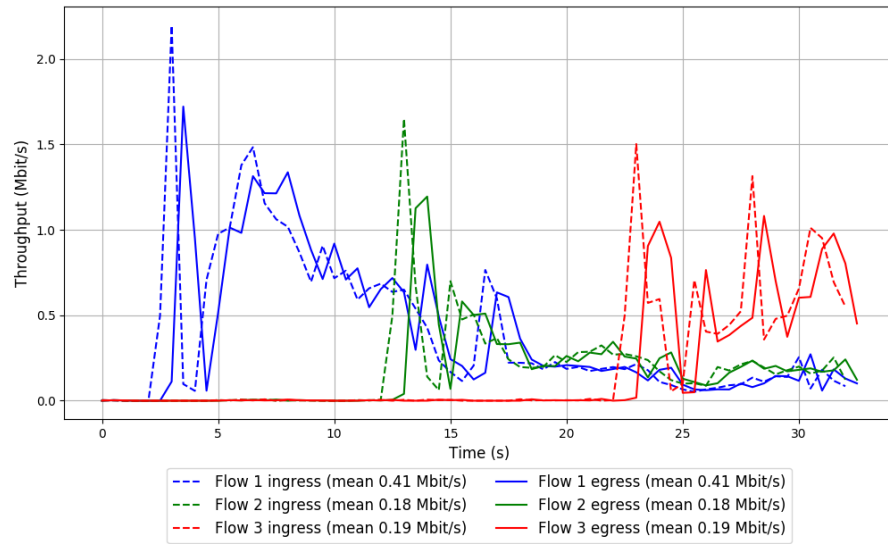Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-06-30 13:06:14
End at: 2018-06-30 13:06:44
Local clock offset: 0.109 ms
Remote clock offset: -5.349 ms


# Below is generated by plot.py at 2018-06-30 13:38:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 308.783 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 288.898 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 328.970 ms
Loss rate: 1.77%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 326.049 ms
Loss rate: 4.03%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-06-30 13:25:13
End at: 2018-06-30 13:25:43
Local clock offset: 2.731 ms
Remote clock offset: -8.019 ms


# Below is generated by plot.py at 2018-06-30 13:38:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 325.423 ms
Loss rate: 2.79%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 314.160 ms
Loss rate: 2.06%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 330.276 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 333.079 ms
Loss rate: 6.90%
```

Run 3: Report of WebRTC media — Data Link