Pantheon Report

Generated at 2018-12-11 14:22:04 (UTC).

Data path: AWS California 2 on `ens5` (*local*) →Mexico on `em1` (*remote*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
```
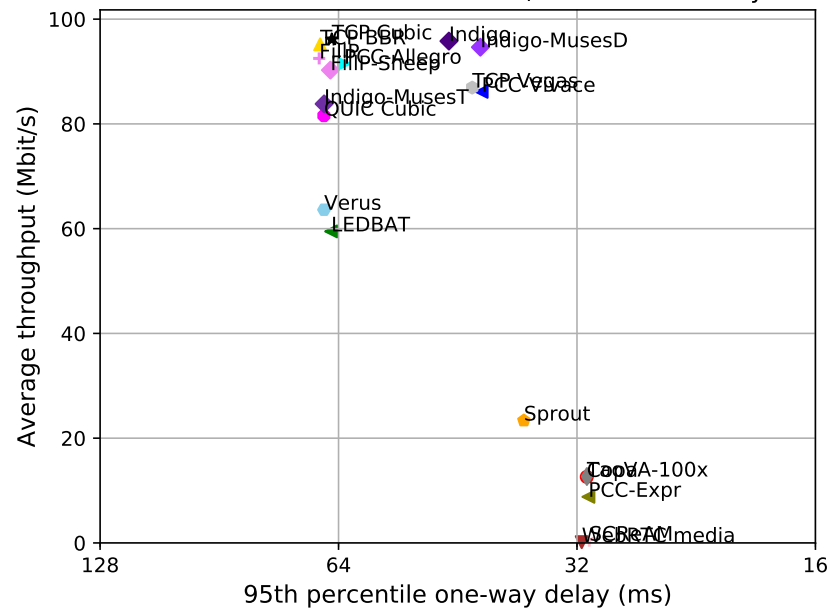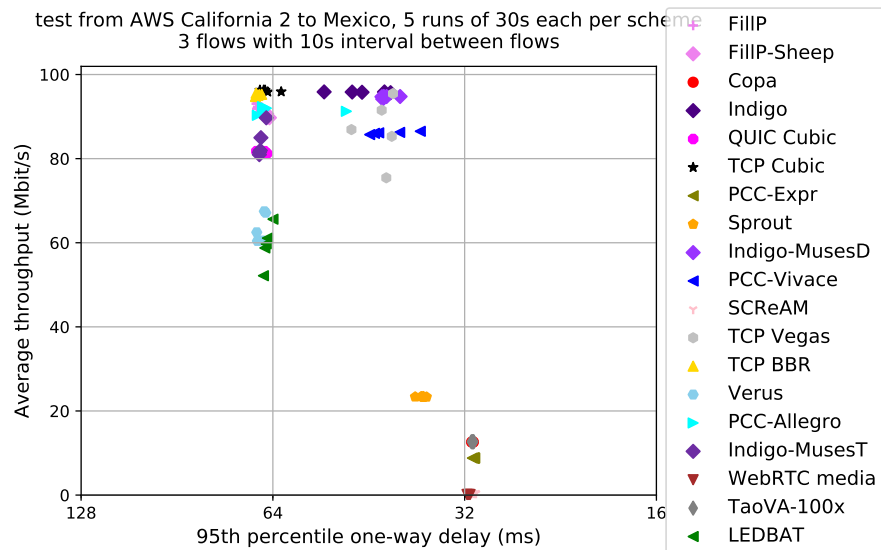
```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS California 2 to Mexico, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from AWS California 2 to Mexico, 5 runs of 30s each per scheme
3 flows with 10s interval between flows

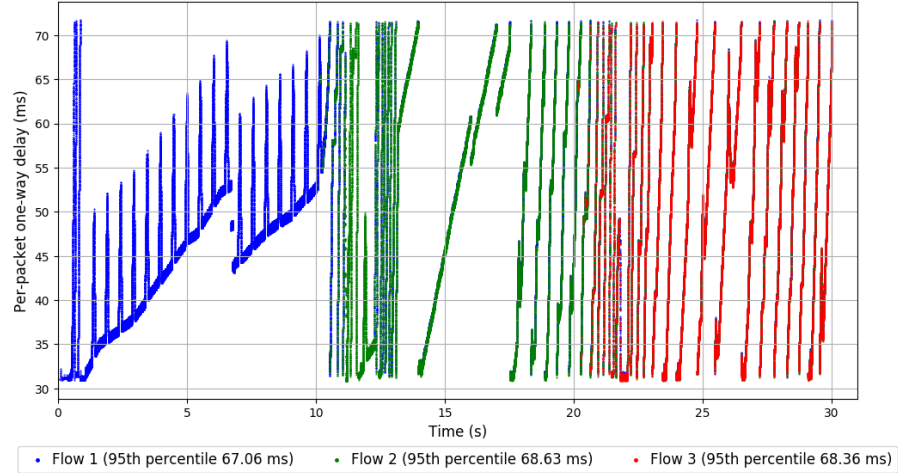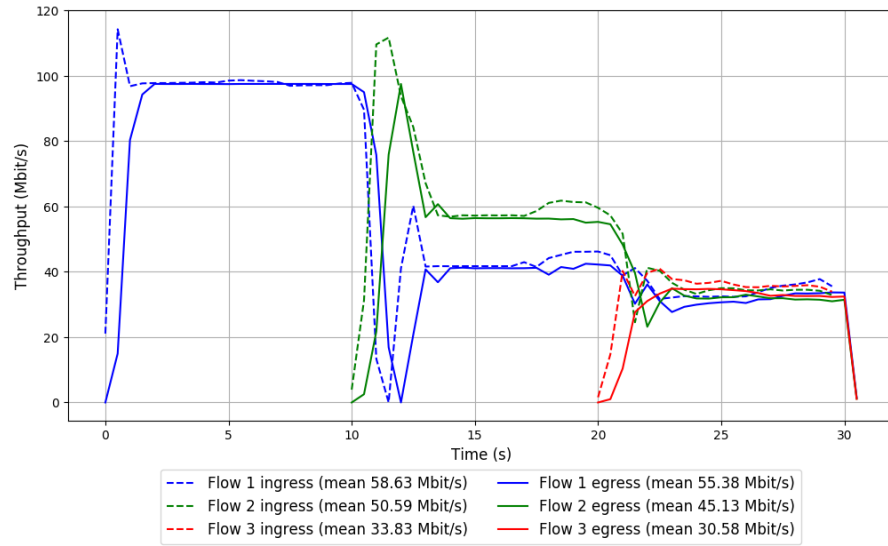| scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	56.23	43.96	30.55	66.11	68.34	68.52	6.07	10.68	10.61
Copa	5	9.16	5.19	0.04	31.17	30.97	30.93	70.50	76.83	96.47
TCP Cubic	5	75.49	18.97	24.13	64.96	66.04	66.32	0.84	0.65	0.83
FillP	5	58.26	40.93	21.51	66.54	68.77	68.03	29.94	47.85	52.87
FillP-Sheep	5	57.01	38.15	23.76	63.68	67.23	66.38	8.94	17.56	16.39
Indigo	5	67.60	26.04	33.56	43.65	49.76	53.46	0.06	0.16	0.18
Indigo-MusesD	5	59.04	32.37	42.71	42.49	42.50	41.17	0.19	0.02	0.04
Indigo-MusesT	5	42.74	48.38	30.20	66.87	65.87	67.30	39.14	28.96	38.88
LEDBAT	5	37.50	24.46	17.22	64.60	66.50	54.39	0.18	0.25	0.31
PCC-Allegro	5	81.14	9.76	11.69	62.58	64.80	64.56	4.45	5.99	10.71
PCC-Expr	5	0.03	10.78	4.95	31.73	30.95	31.00	85.71	45.68	46.47
QUIC Cubic	5	57.17	29.48	14.68	66.58	67.04	67.40	3.04	1.12	0.92
SCReAM	5	0.21	0.21	0.22	30.85	30.88	30.89	0.00	0.00	0.00
Sprout	5	11.75	11.73	11.54	37.04	37.57	37.52	0.12	0.01	0.07
TaoVA-100x	5	6.97	6.71	4.66	32.14	30.99	30.94	84.82	69.43	67.74
TCP Vegas	5	61.35	27.15	22.52	42.85	42.17	41.33	0.51	0.15	0.46
Verus	5	35.68	34.94	15.27	65.94	67.67	66.51	24.36	47.08	33.48
PCC-Vivace	5	66.40	24.35	10.72	41.09	44.75	44.52	0.01	0.02	0.06
WebRTC media	5	0.05	0.05	0.05	31.47	31.54	31.64	0.00	0.00	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-11 12:19:10
End at: 2018-12-11 12:19:40
Local clock offset: 2.625 ms
Remote clock offset: -3.208 ms


# Below is generated by plot.py at 2018-12-11 14:13:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.55 Mbit/s
95th percentile per-packet one-way delay: 67.987 ms
Loss rate: 7.72%
-- Flow 1:
Average throughput: 55.38 Mbit/s
95th percentile per-packet one-way delay: 67.063 ms
Loss rate: 5.53%
-- Flow 2:
Average throughput: 45.13 Mbit/s
95th percentile per-packet one-way delay: 68.632 ms
Loss rate: 10.86%
-- Flow 3:
Average throughput: 30.58 Mbit/s
95th percentile per-packet one-way delay: 68.362 ms
Loss rate: 9.77%
```

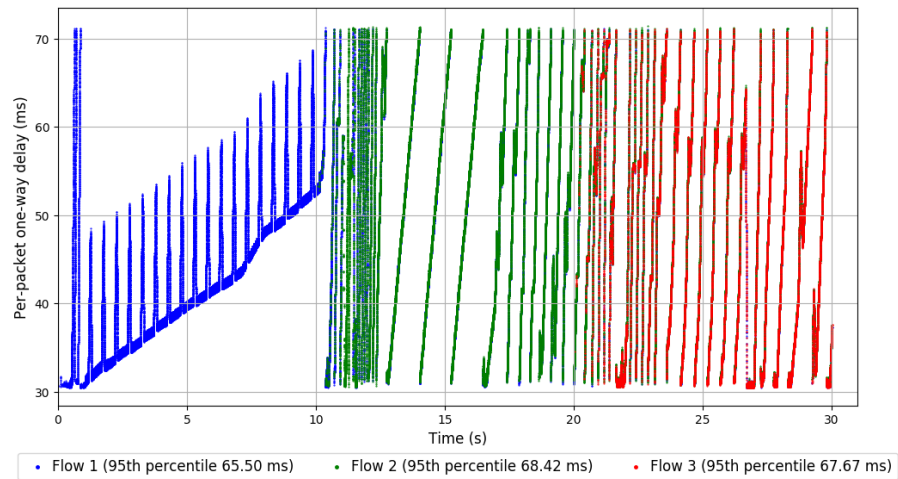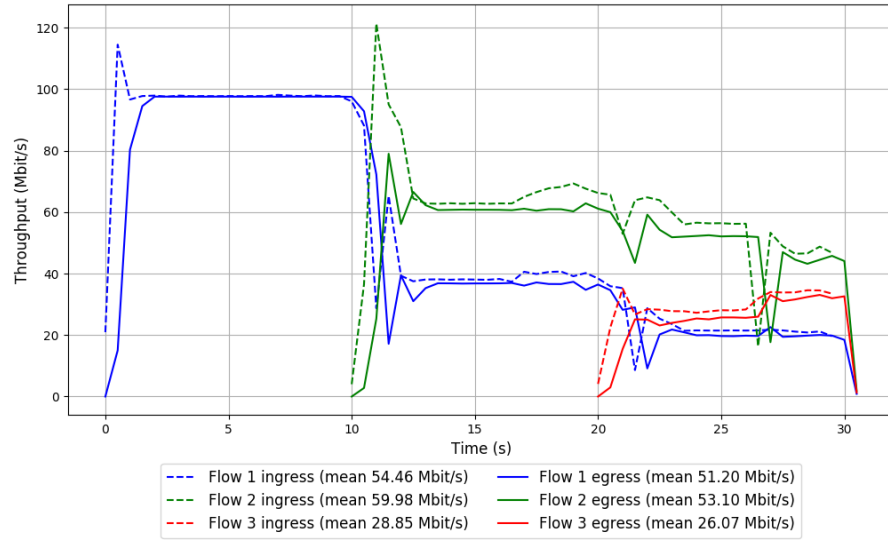Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-11 12:41:56
End at: 2018-12-11 12:42:26
Local clock offset: 3.903 ms
Remote clock offset: -3.325 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.23 Mbit/s
95th percentile per-packet one-way delay: 67.233 ms
Loss rate: 8.44%
-- Flow 1:
Average throughput: 51.20 Mbit/s
95th percentile per-packet one-way delay: 65.495 ms
Loss rate: 5.95%
-- Flow 2:
Average throughput: 53.10 Mbit/s
95th percentile per-packet one-way delay: 68.419 ms
Loss rate: 11.55%
-- Flow 3:
Average throughput: 26.07 Mbit/s
95th percentile per-packet one-way delay: 67.670 ms
Loss rate: 9.61%
```
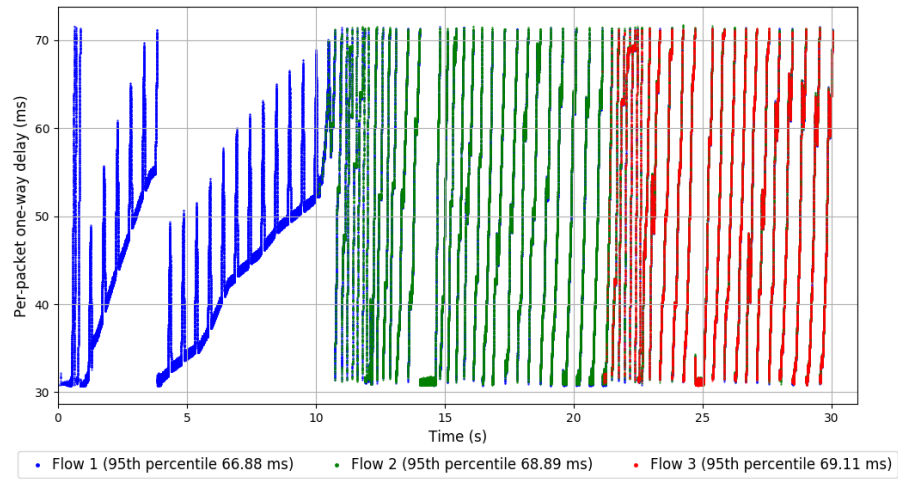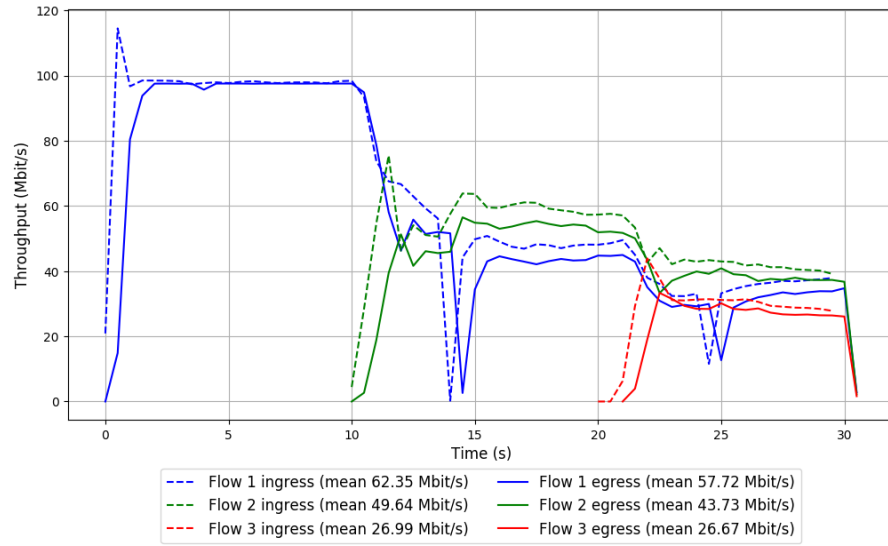
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 54.46 Mbit/s) --- Flow 1 egress (mean 51.20 Mbit/s)
Flow 2 ingress (mean 59.98 Mbit/s) --- Flow 2 egress (mean 53.10 Mbit/s)
Flow 3 ingress (mean 28.85 Mbit/s) --- Flow 3 egress (mean 26.07 Mbit/s)

Flow 1 (95th percentile 65.50 ms) Flow 2 (95th percentile 68.42 ms) Flow 3 (95th percentile 67.67 ms)

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```
Run 3: Statistics of TCP BBR

Start at: 2018-12-11 13:05:15
End at: 2018-12-11 13:05:45
Local clock offset: 3.714 ms
Remote clock offset: -3.109 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.78 Mbit/s
95th percentile per-packet one-way delay: 68.148 ms
Loss rate: 9.17%
-- Flow 1:
Average throughput: 57.72 Mbit/s
95th percentile per-packet one-way delay: 66.880 ms
Loss rate: 7.39%
-- Flow 2:
Average throughput: 43.73 Mbit/s
95th percentile per-packet one-way delay: 68.888 ms
Loss rate: 11.94%
-- Flow 3:
Average throughput: 26.67 Mbit/s
95th percentile per-packet one-way delay: 69.113 ms
Loss rate: 11.39%
```

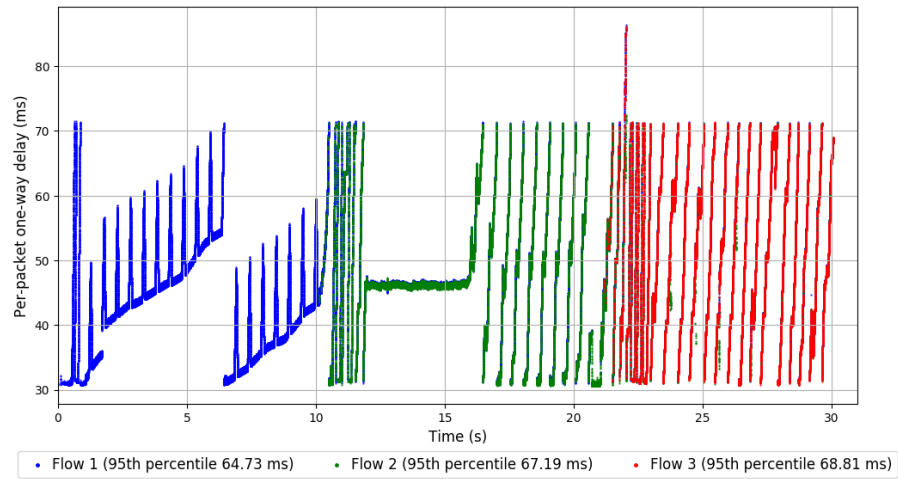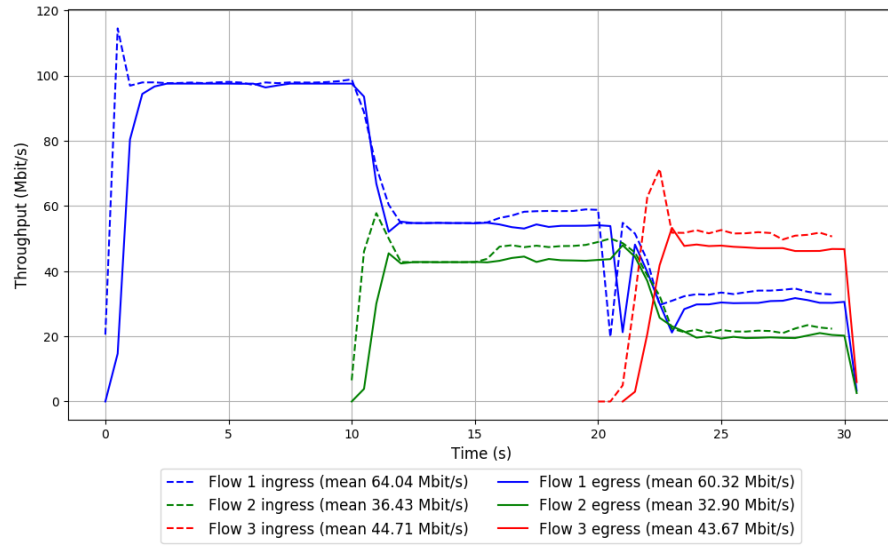Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-11 13:27:58
End at: 2018-12-11 13:28:28
Local clock offset: 0.077 ms
Remote clock offset: -3.097 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.30 Mbit/s
95th percentile per-packet one-way delay: 66.646 ms
Loss rate: 7.53%
-- Flow 1:
Average throughput: 60.32 Mbit/s
95th percentile per-packet one-way delay: 64.731 ms
Loss rate: 5.68%
-- Flow 2:
Average throughput: 32.90 Mbit/s
95th percentile per-packet one-way delay: 67.189 ms
Loss rate: 9.58%
-- Flow 3:
Average throughput: 43.67 Mbit/s
95th percentile per-packet one-way delay: 68.805 ms
Loss rate: 12.12%
```
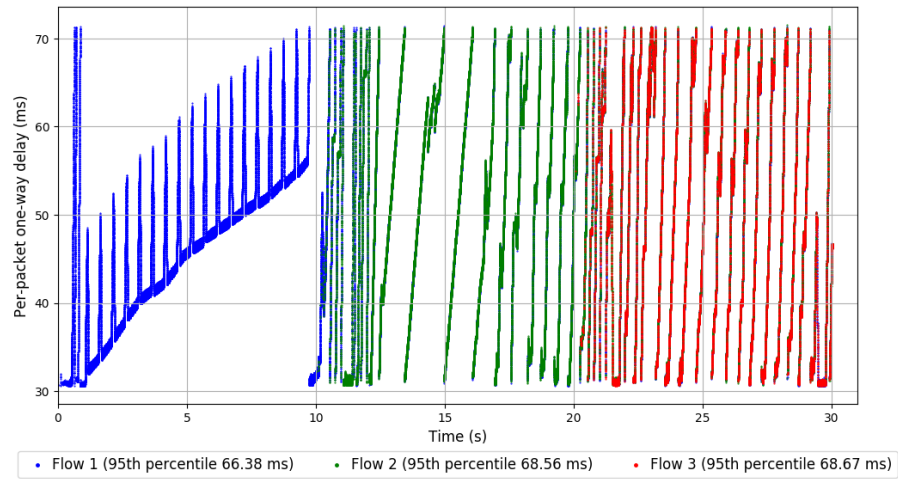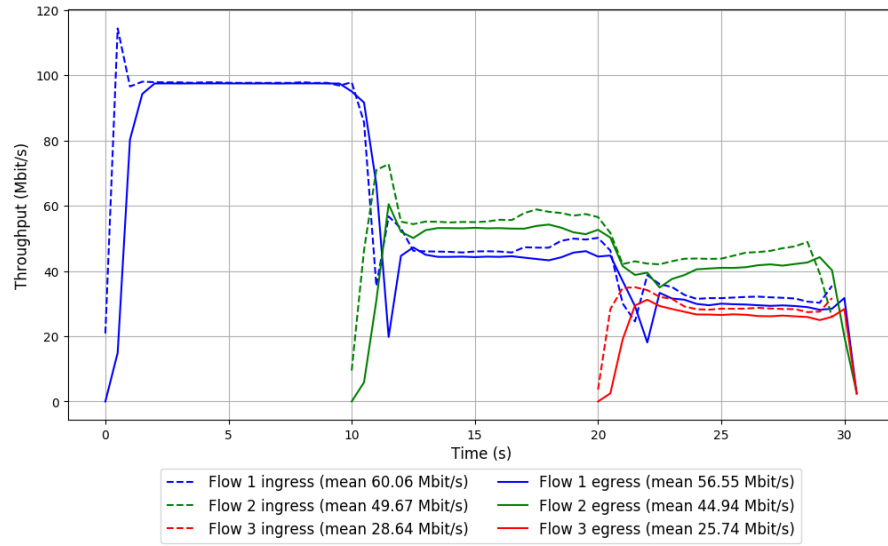
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 64.04 Mbit/s) — — — Flow 1 egress (mean 60.32 Mbit/s)
Flow 2 ingress (mean 36.43 Mbit/s) — — — Flow 2 egress (mean 32.90 Mbit/s)
Flow 3 ingress (mean 44.71 Mbit/s) — — — Flow 3 egress (mean 43.67 Mbit/s)

Flow 1 (95th percentile 64.73 ms)   Flow 2 (95th percentile 67.19 ms)   Flow 3 (95th percentile 68.81 ms)

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```
Run 5: Statistics of TCP BBR

Start at: 2018-12-11 13:50:59
End at: 2018-12-11 13:51:29
Local clock offset: -0.166 ms
Remote clock offset: -3.082 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.05 Mbit/s
95th percentile per-packet one-way delay: 67.599 ms
Loss rate: 7.38%
-- Flow 1:
Average throughput: 56.55 Mbit/s
95th percentile per-packet one-way delay: 66.377 ms
Loss rate: 5.79%
-- Flow 2:
Average throughput: 44.94 Mbit/s
95th percentile per-packet one-way delay: 68.565 ms
Loss rate: 9.45%
-- Flow 3:
Average throughput: 25.74 Mbit/s
95th percentile per-packet one-way delay: 68.669 ms
Loss rate: 10.18%
```
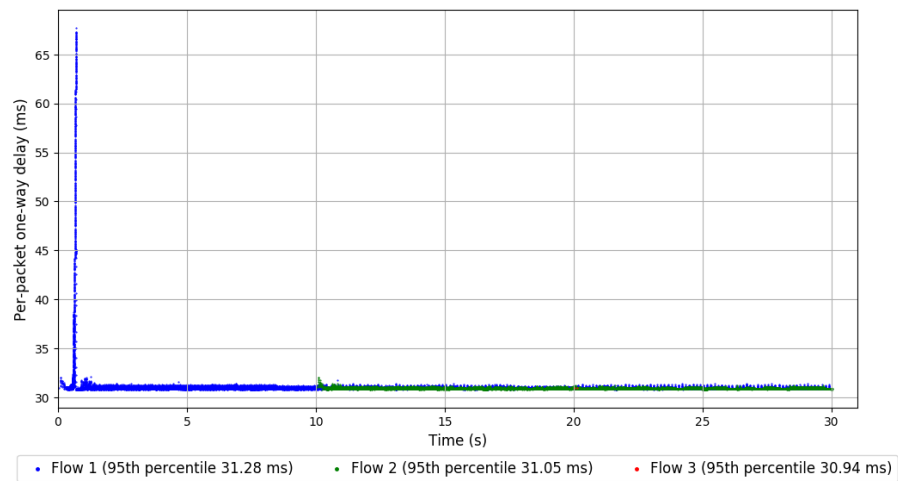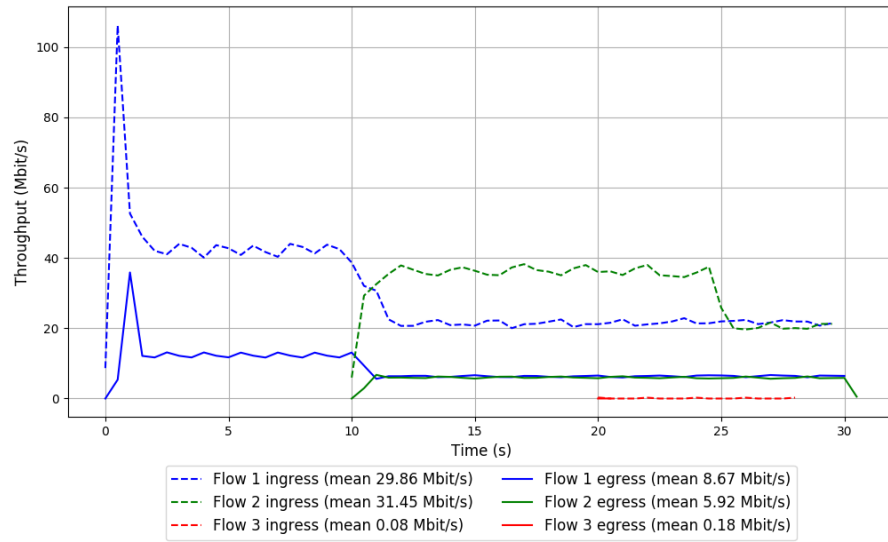
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 60.06 Mbit/s) --- Flow 1 egress (mean 56.55 Mbit/s) ——
Flow 2 ingress (mean 49.67 Mbit/s) --- Flow 2 egress (mean 44.94 Mbit/s) ——
Flow 3 ingress (mean 28.64 Mbit/s) --- Flow 3 egress (mean 25.74 Mbit/s) ——

Flow 1 (95th percentile 66.38 ms)   Flow 2 (95th percentile 68.56 ms)   Flow 3 (95th percentile 68.67 ms)
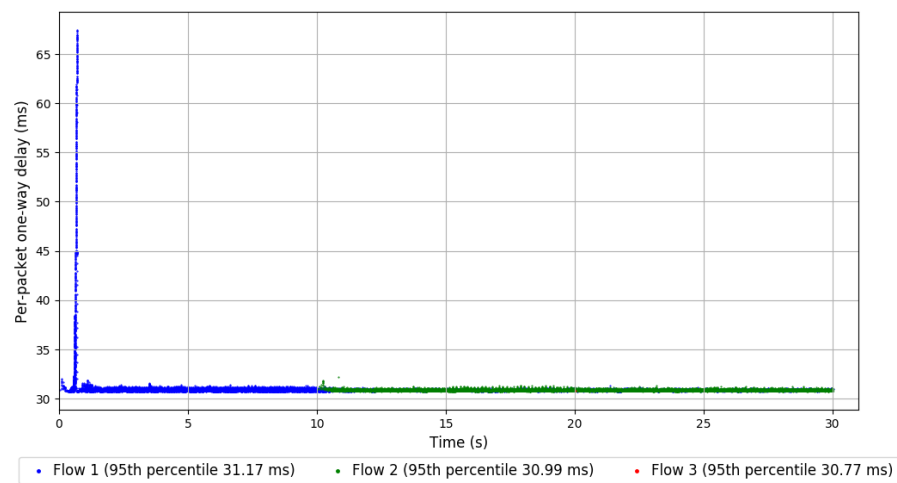
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```
Run 1: Statistics of Copa

Start at: 2018-12-11 12:37:12
End at: 2018-12-11 12:37:42
Local clock offset: 4.108 ms
Remote clock offset: -3.136 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.210 ms
Loss rate: 75.18%
-- Flow 1:
Average throughput: 8.67 Mbit/s
95th percentile per-packet one-way delay: 31.281 ms
Loss rate: 70.96%
-- Flow 2:
Average throughput: 5.92 Mbit/s
95th percentile per-packet one-way delay: 31.049 ms
Loss rate: 81.17%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 30.936 ms
Loss rate: 97.92%
```
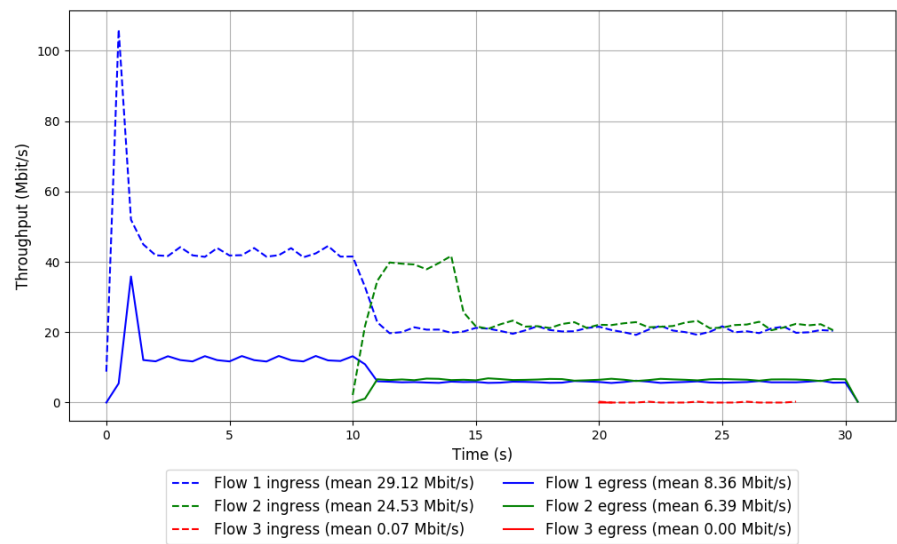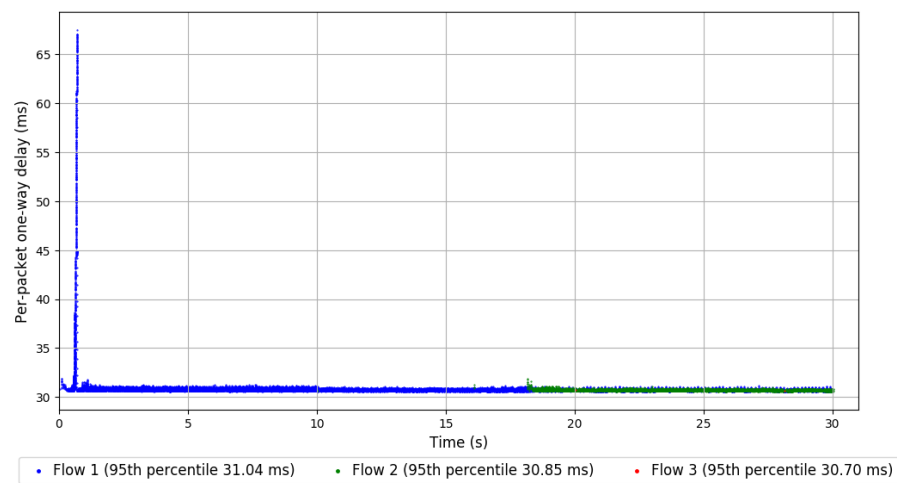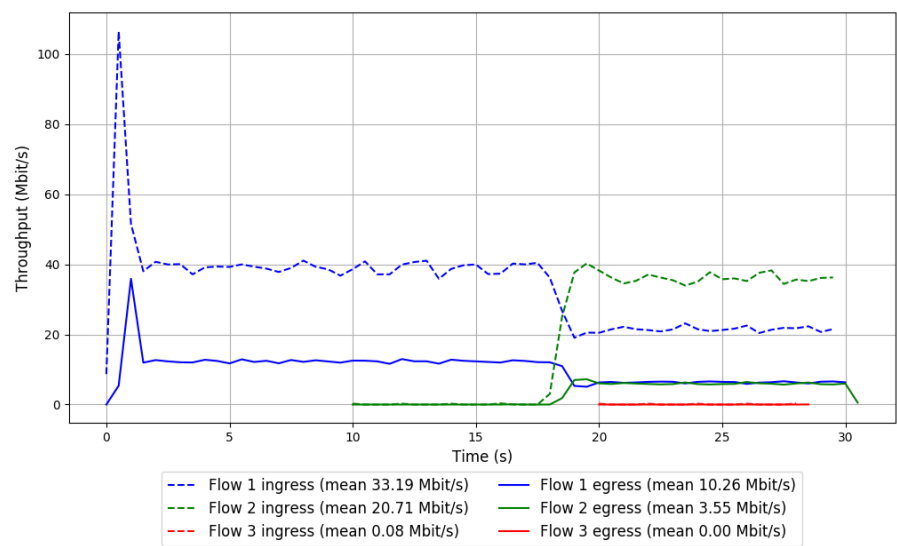
Run 1: Report of Copa — Data Link

- - - Flow 1 ingress (mean 29.86 Mbit/s)   —— Flow 1 egress (mean 8.67 Mbit/s)
- - - Flow 2 ingress (mean 31.45 Mbit/s)   —— Flow 2 egress (mean 5.92 Mbit/s)
- - - Flow 3 ingress (mean 0.08 Mbit/s)   —— Flow 3 egress (mean 0.18 Mbit/s)

• Flow 1 (95th percentile 31.28 ms)   • Flow 2 (95th percentile 31.05 ms)   • Flow 3 (95th percentile 30.94 ms)

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```
Run 2: Statistics of Copa

Start at: 2018-12-11 13:00:32
End at: 2018-12-11 13:01:02
Local clock offset: 3.651 ms
Remote clock offset: -3.167 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.092 ms
Loss rate: 72.27%
-- Flow 1:
Average throughput: 8.36 Mbit/s
95th percentile per-packet one-way delay: 31.172 ms
Loss rate: 71.31%
-- Flow 2:
Average throughput: 6.39 Mbit/s
95th percentile per-packet one-way delay: 30.992 ms
Loss rate: 73.94%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 30.766 ms
Loss rate: 99.83%
```
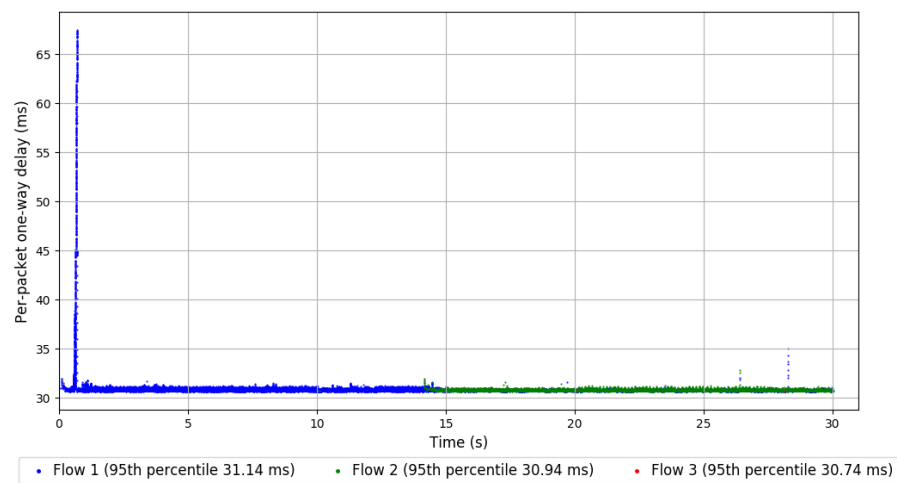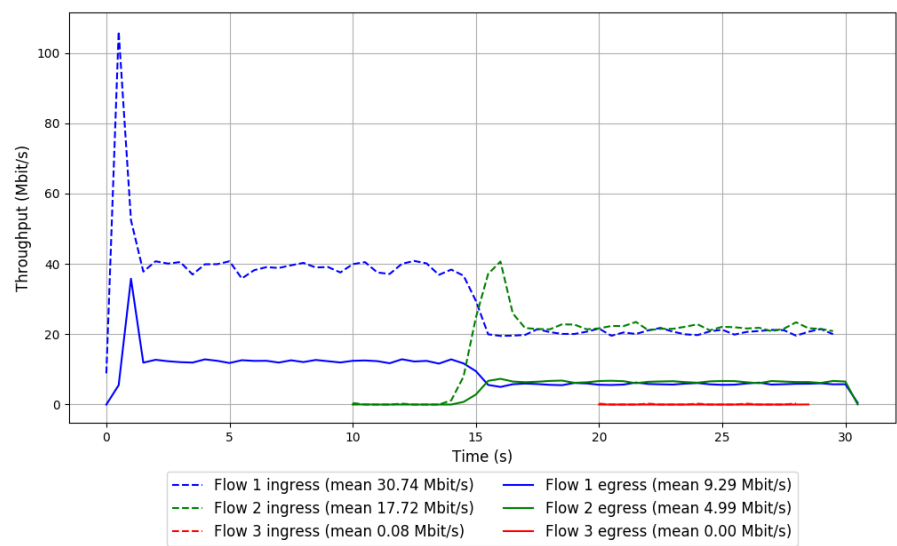
Run 2: Report of Copa — Data Link

- Flow 1 ingress (mean 29.12 Mbit/s)   — Flow 1 egress (mean 8.36 Mbit/s)
- Flow 2 ingress (mean 24.53 Mbit/s)   — Flow 2 egress (mean 6.39 Mbit/s)
- Flow 3 ingress (mean 0.07 Mbit/s)   — Flow 3 egress (mean 0.00 Mbit/s)

- Flow 1 (95th percentile 31.17 ms)   • Flow 2 (95th percentile 30.99 ms)   • Flow 3 (95th percentile 30.77 ms)

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```
Run 3: Statistics of Copa

Start at: 2018-12-11 13:23:16
End at: 2018-12-11 13:23:46
Local clock offset: 0.473 ms
Remote clock offset: -3.168 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.007 ms
Loss rate: 73.15%
-- Flow 1:
Average throughput: 10.26 Mbit/s
95th percentile per-packet one-way delay: 31.039 ms
Loss rate: 69.10%
-- Flow 2:
Average throughput: 3.55 Mbit/s
95th percentile per-packet one-way delay: 30.852 ms
Loss rate: 82.87%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 30.697 ms
Loss rate: 97.92%
```
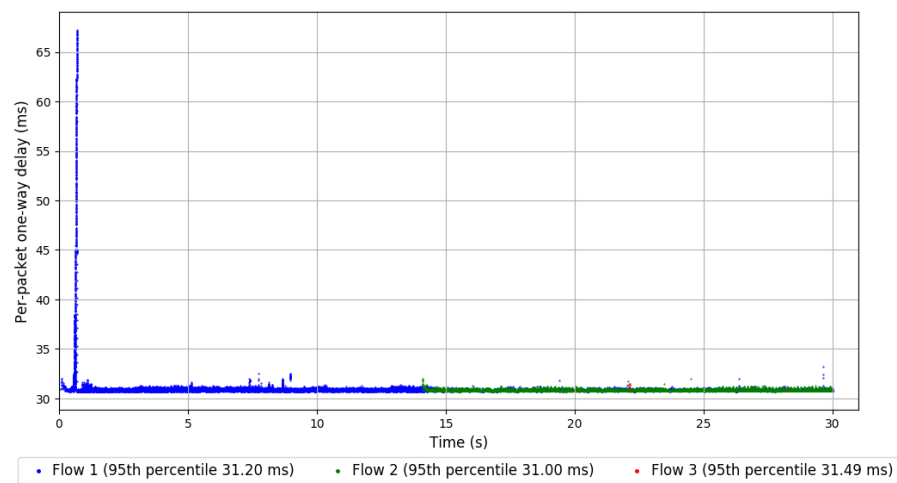
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 33.19 Mbit/s) --- Flow 1 egress (mean 10.26 Mbit/s) ———
Flow 2 ingress (mean 20.71 Mbit/s) --- Flow 2 egress (mean 3.55 Mbit/s) ———
Flow 3 ingress (mean 0.08 Mbit/s) --- Flow 3 egress (mean 0.00 Mbit/s) ———

Flow 1 (95th percentile 31.04 ms) • Flow 2 (95th percentile 30.85 ms) • Flow 3 (95th percentile 30.70 ms)

20

```
Run 4: Statistics of Copa

Start at: 2018-12-11 13:46:16
End at: 2018-12-11 13:46:46
Local clock offset: -0.198 ms
Remote clock offset: -3.102 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.082 ms
Loss rate: 70.36%
-- Flow 1:
Average throughput: 9.29 Mbit/s
95th percentile per-packet one-way delay: 31.142 ms
Loss rate: 69.78%
-- Flow 2:
Average throughput: 4.99 Mbit/s
95th percentile per-packet one-way delay: 30.941 ms
Loss rate: 71.82%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 30.739 ms
Loss rate: 97.92%
```
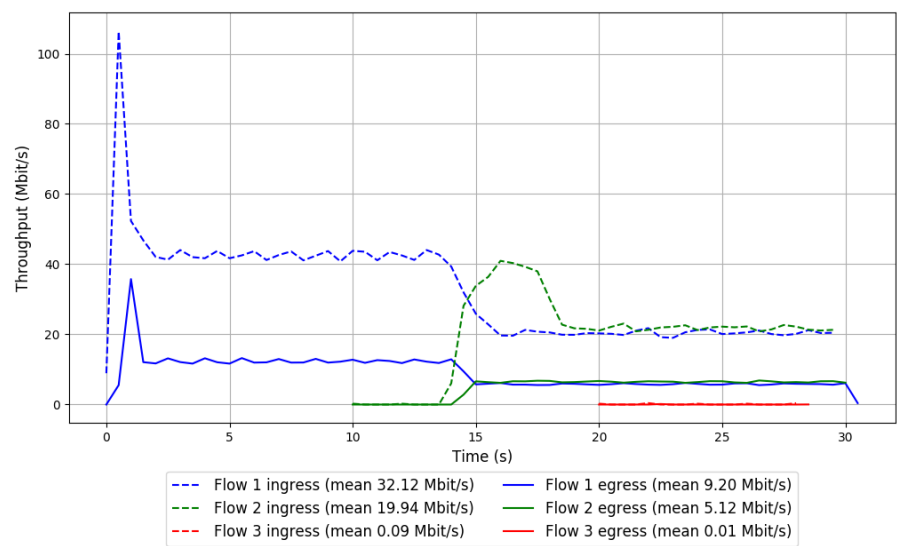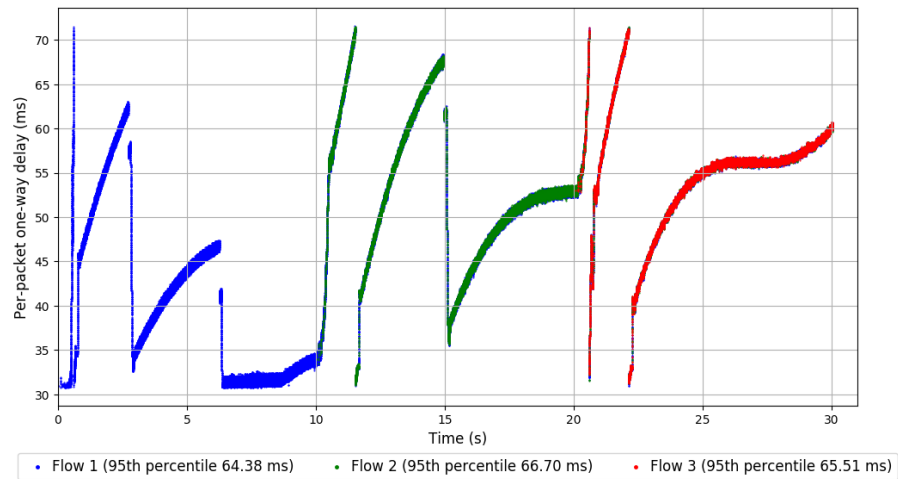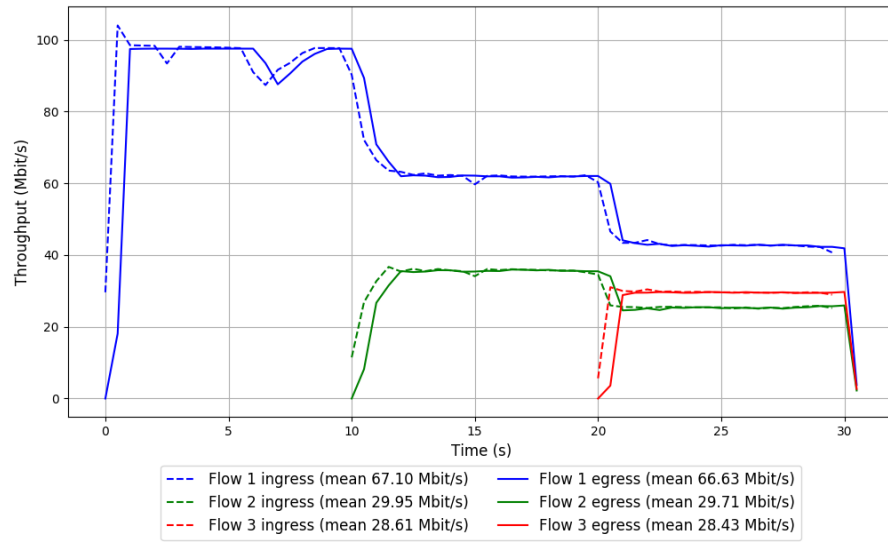
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 30.74 Mbit/s) --- Flow 1 egress (mean 9.29 Mbit/s)
Flow 2 ingress (mean 17.72 Mbit/s) --- Flow 2 egress (mean 4.99 Mbit/s)
Flow 3 ingress (mean 0.08 Mbit/s) --- Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 31.14 ms) Flow 2 (95th percentile 30.94 ms) Flow 3 (95th percentile 30.74 ms)

```
Run 5: Statistics of Copa

Start at: 2018-12-11 14:09:00
End at: 2018-12-11 14:09:30
Local clock offset: -0.303 ms
Remote clock offset: -2.92 ms


# Below is generated by plot.py at 2018-12-11 14:13:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.122 ms
Loss rate: 72.22%
-- Flow 1:
Average throughput: 9.20 Mbit/s
95th percentile per-packet one-way delay: 31.195 ms
Loss rate: 71.34%
-- Flow 2:
Average throughput: 5.12 Mbit/s
95th percentile per-packet one-way delay: 31.003 ms
Loss rate: 74.33%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 31.492 ms
Loss rate: 88.77%
```
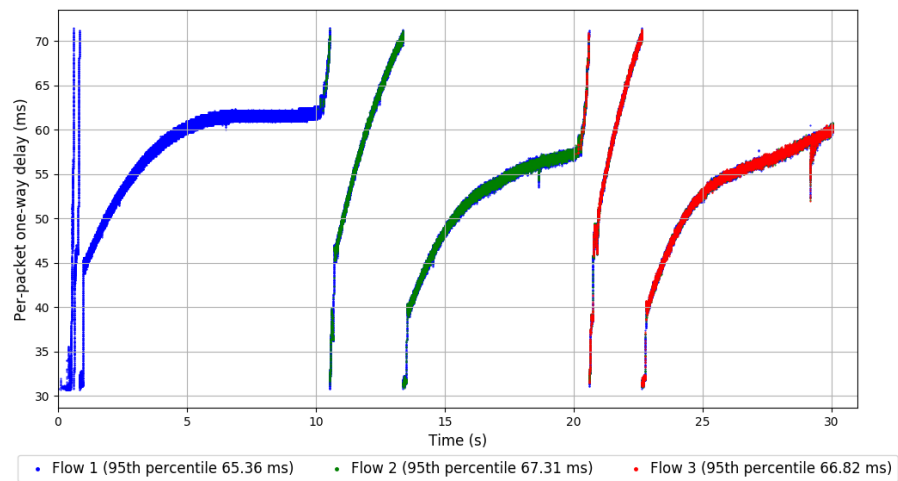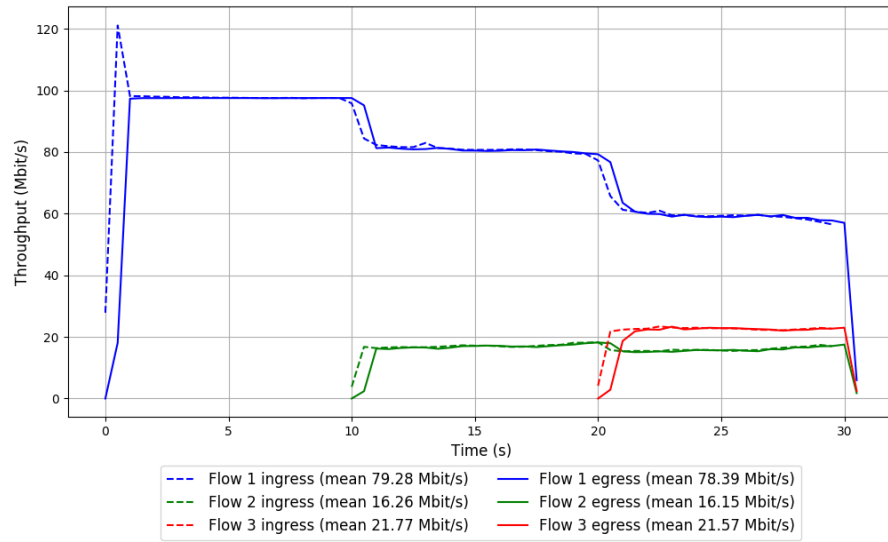
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 32.12 Mbit/s)   Flow 1 egress (mean 9.20 Mbit/s)
Flow 2 ingress (mean 19.94 Mbit/s)   Flow 2 egress (mean 5.12 Mbit/s)
Flow 3 ingress (mean 0.09 Mbit/s)   Flow 3 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 31.20 ms)   Flow 2 (95th percentile 31.00 ms)   Flow 3 (95th percentile 31.49 ms)
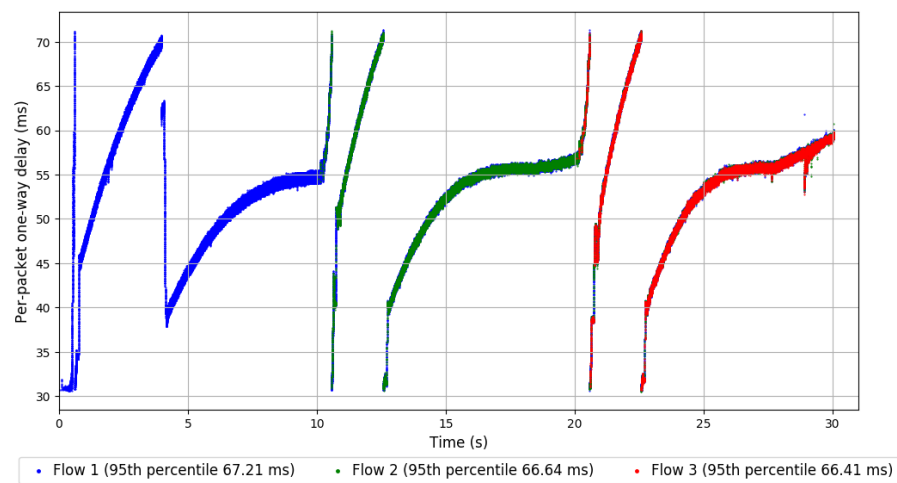
```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-11 12:25:09
End at: 2018-12-11 12:25:39
Local clock offset: 3.335 ms
Remote clock offset: -3.236 ms


# Below is generated by plot.py at 2018-12-11 14:13:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.87 Mbit/s
95th percentile per-packet one-way delay: 65.197 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 66.63 Mbit/s
95th percentile per-packet one-way delay: 64.378 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 29.71 Mbit/s
95th percentile per-packet one-way delay: 66.700 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 28.43 Mbit/s
95th percentile per-packet one-way delay: 65.512 ms
Loss rate: 0.58%
```
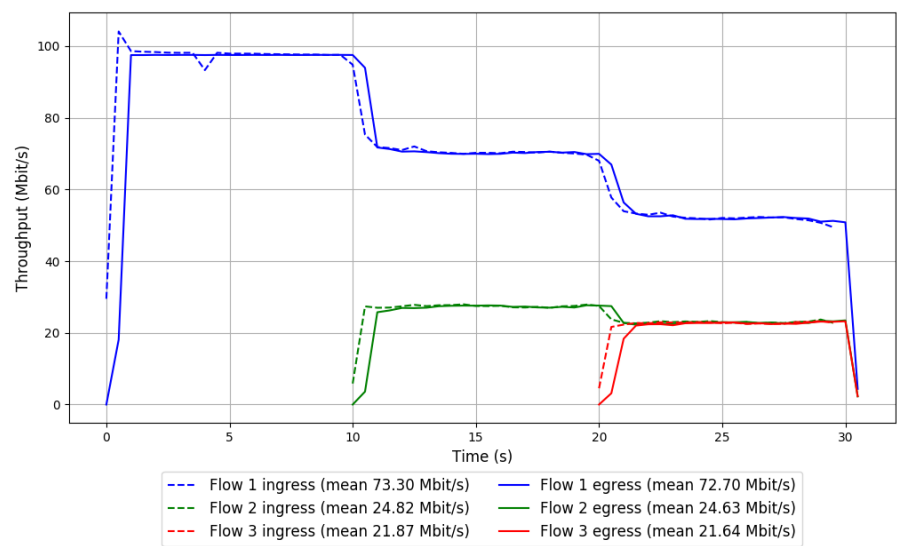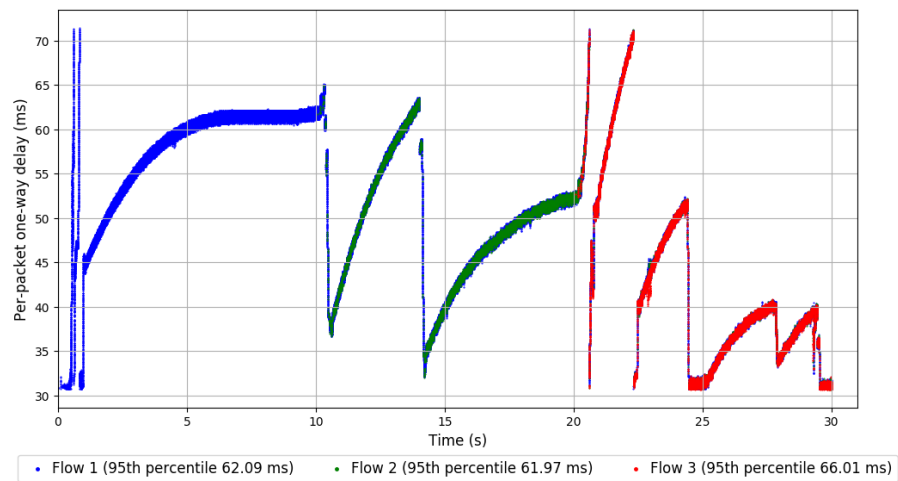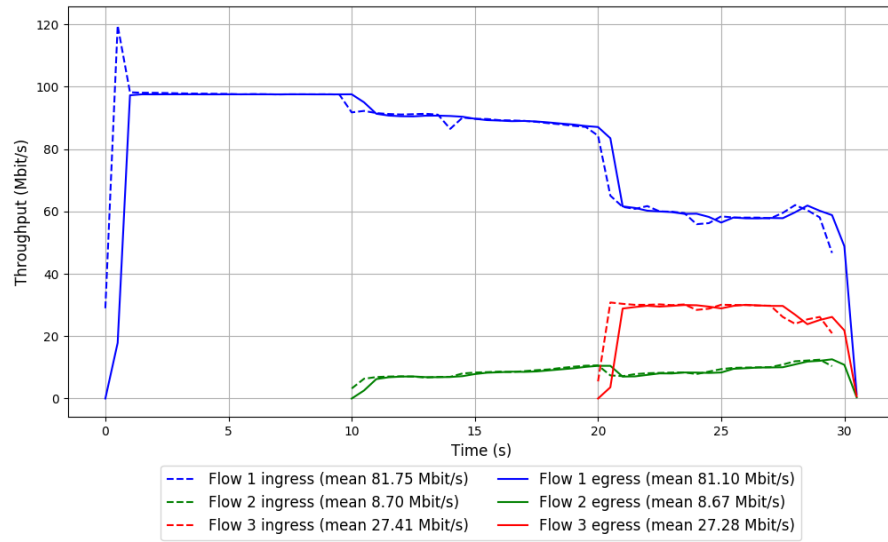
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 67.10 Mbit/s)   Flow 1 egress (mean 66.63 Mbit/s)
Flow 2 ingress (mean 29.95 Mbit/s)   Flow 2 egress (mean 29.71 Mbit/s)
Flow 3 ingress (mean 28.61 Mbit/s)   Flow 3 egress (mean 28.43 Mbit/s)

Flow 1 (95th percentile 64.38 ms)   Flow 2 (95th percentile 66.70 ms)   Flow 3 (95th percentile 65.51 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-11 12:48:13
End at: 2018-12-11 12:48:43
Local clock offset: 3.646 ms
Remote clock offset: -3.21 ms


# Below is generated by plot.py at 2018-12-11 14:13:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 65.827 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 78.39 Mbit/s
95th percentile per-packet one-way delay: 65.364 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 16.15 Mbit/s
95th percentile per-packet one-way delay: 67.315 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 21.57 Mbit/s
95th percentile per-packet one-way delay: 66.822 ms
Loss rate: 0.89%
```
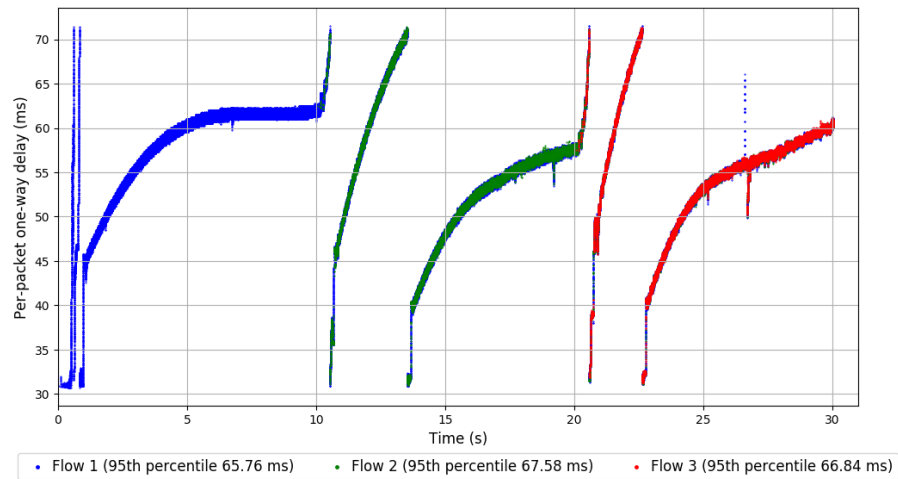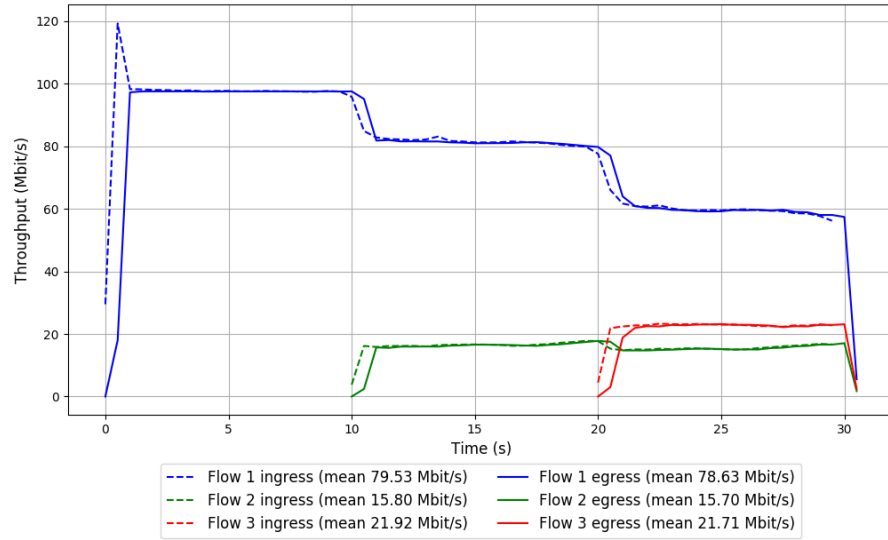
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 79.28 Mbit/s) --- Flow 1 egress (mean 78.39 Mbit/s)
Flow 2 ingress (mean 16.26 Mbit/s) --- Flow 2 egress (mean 16.15 Mbit/s)
Flow 3 ingress (mean 21.77 Mbit/s) --- Flow 3 egress (mean 21.57 Mbit/s)

Flow 1 (95th percentile 65.36 ms)   • Flow 2 (95th percentile 67.31 ms)   • Flow 3 (95th percentile 66.82 ms)

28

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-11 13:11:14
End at: 2018-12-11 13:11:44
Local clock offset: 2.723 ms
Remote clock offset: -3.186 ms


# Below is generated by plot.py at 2018-12-11 14:13:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 67.071 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 72.70 Mbit/s
95th percentile per-packet one-way delay: 67.206 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 24.63 Mbit/s
95th percentile per-packet one-way delay: 66.642 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 21.64 Mbit/s
95th percentile per-packet one-way delay: 66.410 ms
Loss rate: 1.01%
```
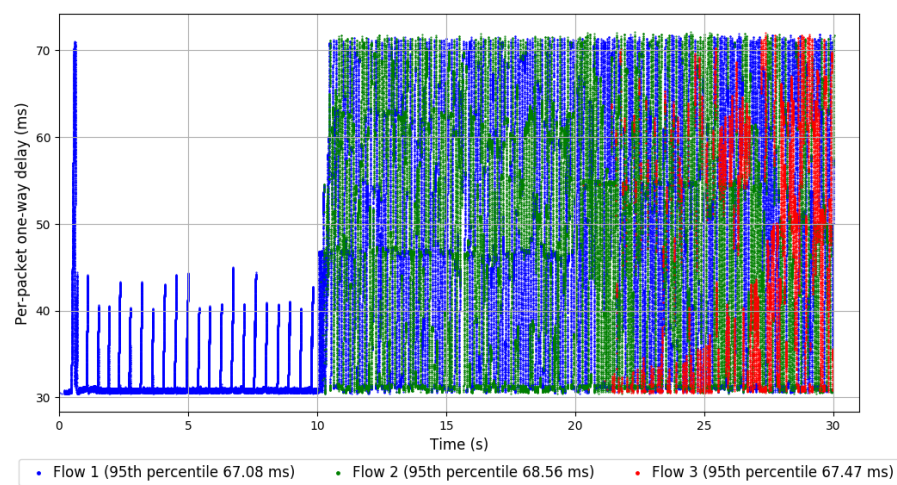
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 73.30 Mbit/s) ----   Flow 1 egress (mean 72.70 Mbit/s) ——
Flow 2 ingress (mean 24.82 Mbit/s) ----   Flow 2 egress (mean 24.63 Mbit/s) ——
Flow 3 ingress (mean 21.87 Mbit/s) ----   Flow 3 egress (mean 21.64 Mbit/s) ——

• Flow 1 (95th percentile 67.21 ms)   • Flow 2 (95th percentile 66.64 ms)   • Flow 3 (95th percentile 66.41 ms)

30

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-11 13:33:57
End at: 2018-12-11 13:34:27
Local clock offset: -0.285 ms
Remote clock offset: -3.136 ms


# Below is generated by plot.py at 2018-12-11 14:14:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.91 Mbit/s
95th percentile per-packet one-way delay: 62.106 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 81.10 Mbit/s
95th percentile per-packet one-way delay: 62.090 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 8.67 Mbit/s
95th percentile per-packet one-way delay: 61.974 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 27.28 Mbit/s
95th percentile per-packet one-way delay: 66.009 ms
Loss rate: 0.72%
```
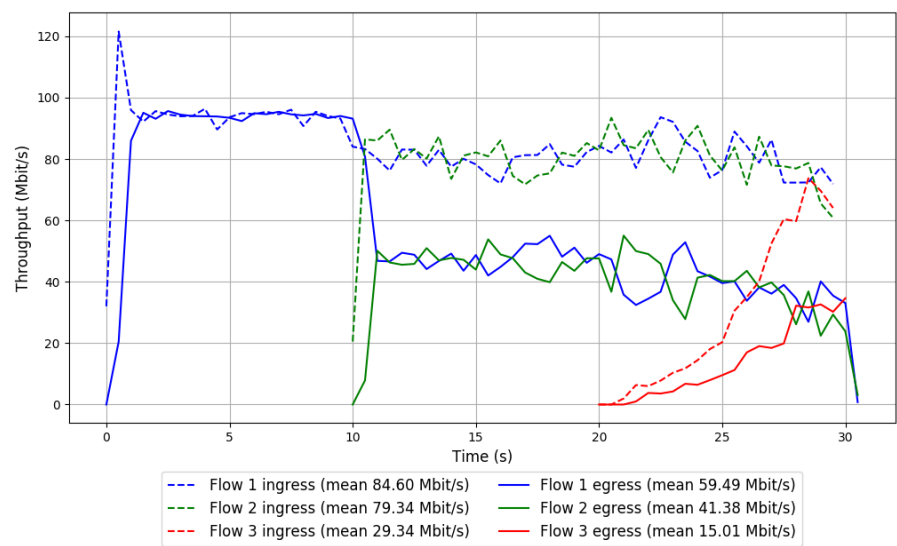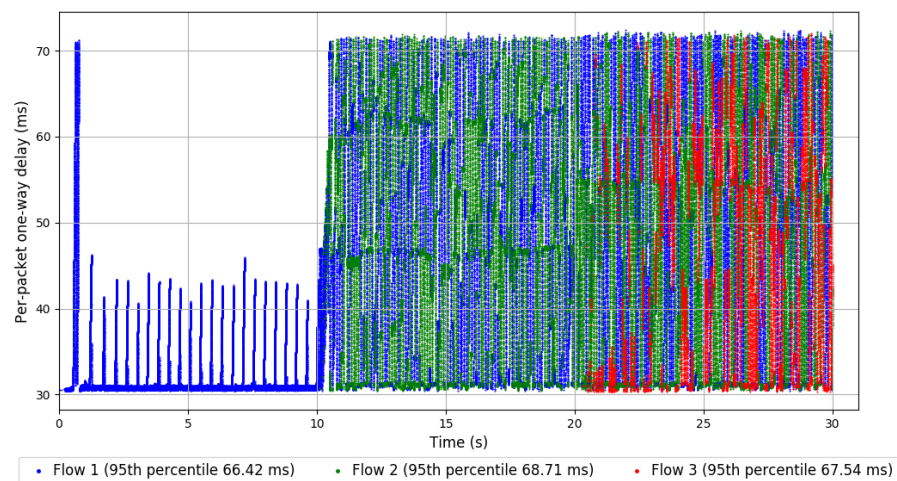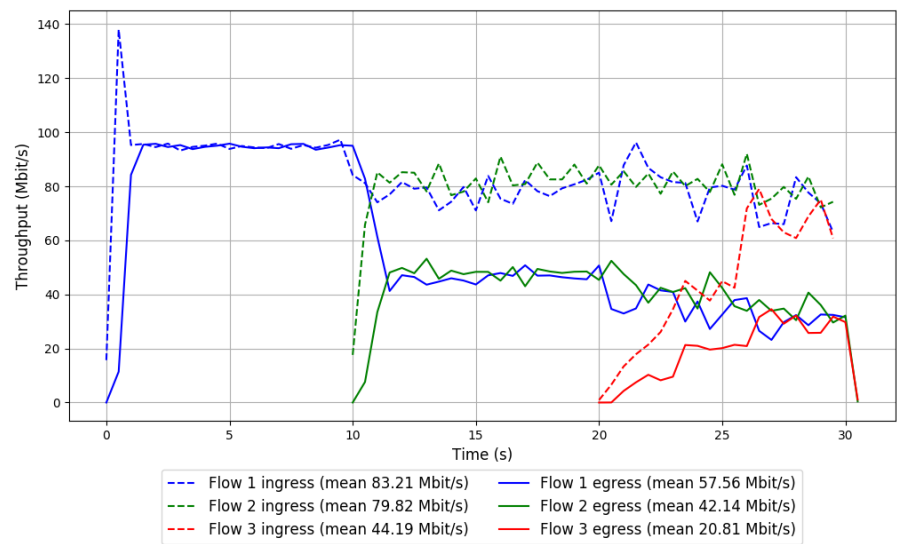
Run 4: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 81.75 Mbit/s) —— Flow 1 egress (mean 81.10 Mbit/s)
- - - Flow 2 ingress (mean 8.70 Mbit/s) —— Flow 2 egress (mean 8.67 Mbit/s)
- - - Flow 3 ingress (mean 27.41 Mbit/s) —— Flow 3 egress (mean 27.28 Mbit/s)

• Flow 1 (95th percentile 62.09 ms)   • Flow 2 (95th percentile 61.97 ms)   • Flow 3 (95th percentile 66.01 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-11 13:56:58
End at: 2018-12-11 13:57:28
Local clock offset: -0.2 ms
Remote clock offset: -2.985 ms


# Below is generated by plot.py at 2018-12-11 14:14:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 66.158 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 78.63 Mbit/s
95th percentile per-packet one-way delay: 65.764 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 15.70 Mbit/s
95th percentile per-packet one-way delay: 67.578 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 21.71 Mbit/s
95th percentile per-packet one-way delay: 66.840 ms
Loss rate: 0.93%
```
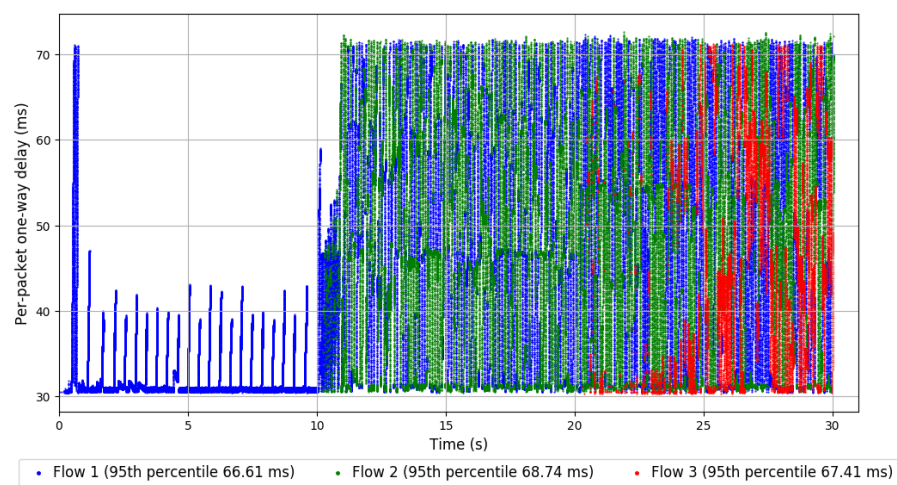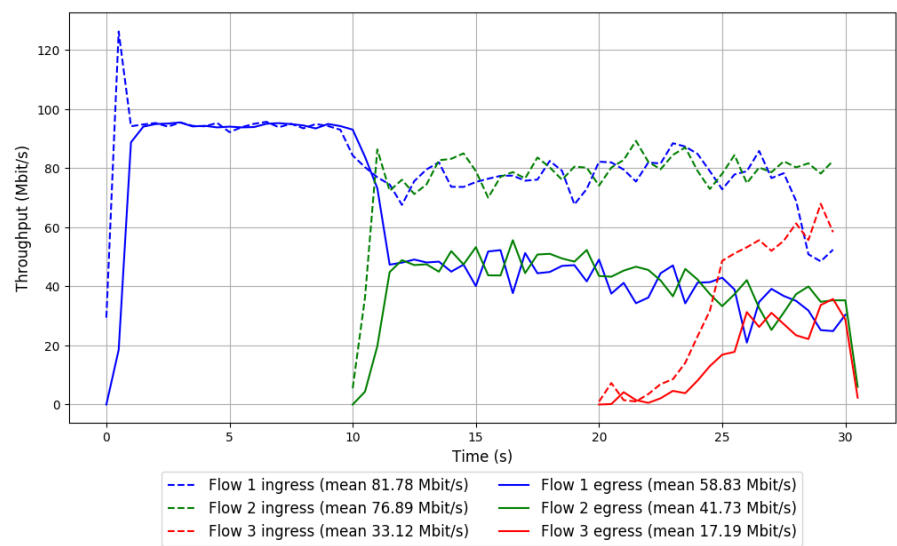
Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 79.53 Mbit/s) --- Flow 1 egress (mean 78.63 Mbit/s)
Flow 2 ingress (mean 15.80 Mbit/s) --- Flow 2 egress (mean 15.70 Mbit/s)
Flow 3 ingress (mean 21.92 Mbit/s) --- Flow 3 egress (mean 21.71 Mbit/s)

Flow 1 (95th percentile 65.76 ms) • Flow 2 (95th percentile 67.58 ms) • Flow 3 (95th percentile 66.84 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-11 12:33:39
End at: 2018-12-11 12:34:09
Local clock offset: 3.936 ms
Remote clock offset: -3.34 ms


# Below is generated by plot.py at 2018-12-11 14:14:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.87 Mbit/s
95th percentile per-packet one-way delay: 67.825 ms
Loss rate: 37.53%
-- Flow 1:
Average throughput: 59.49 Mbit/s
95th percentile per-packet one-way delay: 67.076 ms
Loss rate: 29.68%
-- Flow 2:
Average throughput: 41.38 Mbit/s
95th percentile per-packet one-way delay: 68.563 ms
Loss rate: 47.77%
-- Flow 3:
Average throughput: 15.01 Mbit/s
95th percentile per-packet one-way delay: 67.466 ms
Loss rate: 50.20%
```
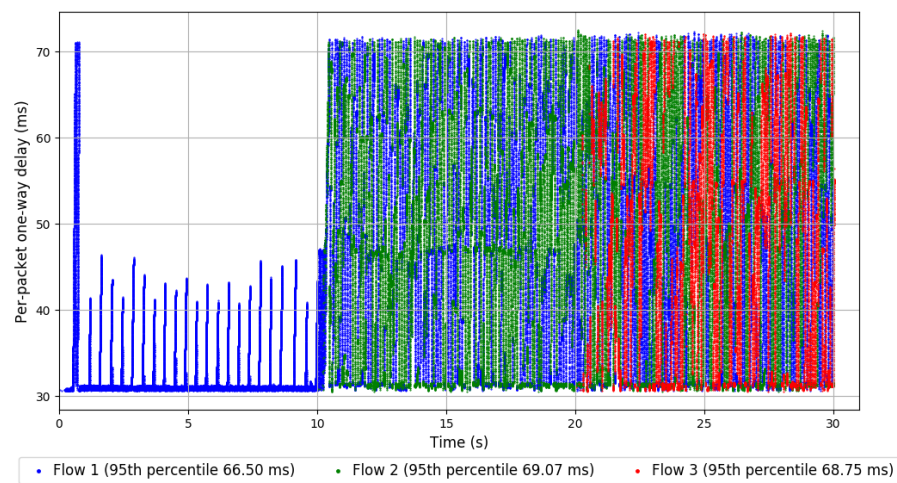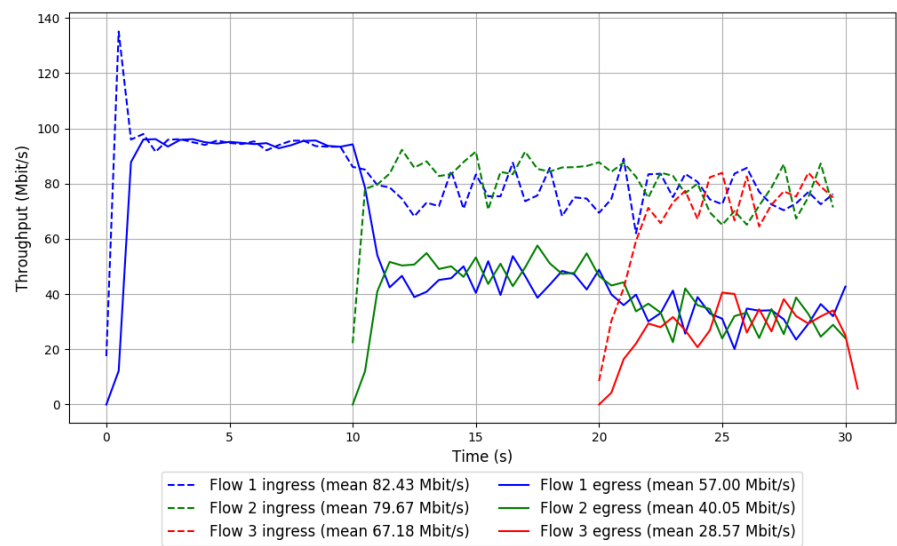
Run 1: Report of FillP — Data Link

- - - Flow 1 ingress (mean 84.60 Mbit/s) —— Flow 1 egress (mean 59.49 Mbit/s)
- - - Flow 2 ingress (mean 79.34 Mbit/s) —— Flow 2 egress (mean 41.38 Mbit/s)
- - - Flow 3 ingress (mean 29.34 Mbit/s) —— Flow 3 egress (mean 15.01 Mbit/s)

• Flow 1 (95th percentile 67.08 ms)   • Flow 2 (95th percentile 68.56 ms)   • Flow 3 (95th percentile 67.47 ms)
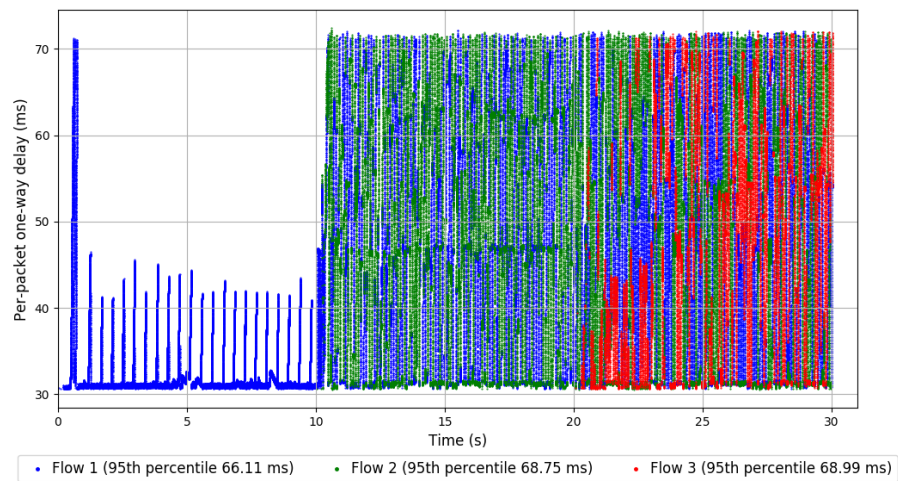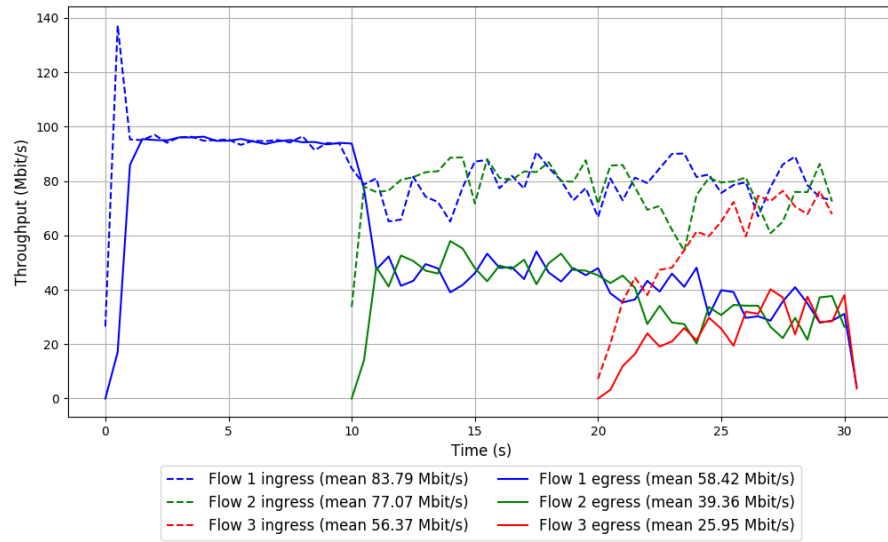
```
Run 2: Statistics of FillP

Start at: 2018-12-11 12:56:59
End at: 2018-12-11 12:57:29
Local clock offset: 3.62 ms
Remote clock offset: -3.329 ms


# Below is generated by plot.py at 2018-12-11 14:14:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.32 Mbit/s
95th percentile per-packet one-way delay: 67.582 ms
Loss rate: 38.83%
-- Flow 1:
Average throughput: 57.56 Mbit/s
95th percentile per-packet one-way delay: 66.417 ms
Loss rate: 30.82%
-- Flow 2:
Average throughput: 42.14 Mbit/s
95th percentile per-packet one-way delay: 68.712 ms
Loss rate: 47.21%
-- Flow 3:
Average throughput: 20.81 Mbit/s
95th percentile per-packet one-way delay: 67.541 ms
Loss rate: 53.86%
```

Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 83.21 Mbit/s) --- Flow 1 egress (mean 57.56 Mbit/s)
Flow 2 ingress (mean 79.82 Mbit/s) --- Flow 2 egress (mean 42.14 Mbit/s)
Flow 3 ingress (mean 44.19 Mbit/s) --- Flow 3 egress (mean 20.81 Mbit/s)

Flow 1 (95th percentile 66.42 ms) Flow 2 (95th percentile 68.71 ms) Flow 3 (95th percentile 67.54 ms)

```
Run 3: Statistics of FillP

Start at: 2018-12-11 13:19:43
End at: 2018-12-11 13:20:13
Local clock offset: 0.917 ms
Remote clock offset: -3.182 ms


# Below is generated by plot.py at 2018-12-11 14:14:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.09 Mbit/s
95th percentile per-packet one-way delay: 67.516 ms
Loss rate: 35.92%
-- Flow 1:
Average throughput: 58.83 Mbit/s
95th percentile per-packet one-way delay: 66.605 ms
Loss rate: 28.07%
-- Flow 2:
Average throughput: 41.73 Mbit/s
95th percentile per-packet one-way delay: 68.740 ms
Loss rate: 45.62%
-- Flow 3:
Average throughput: 17.19 Mbit/s
95th percentile per-packet one-way delay: 67.407 ms
Loss rate: 49.15%
```
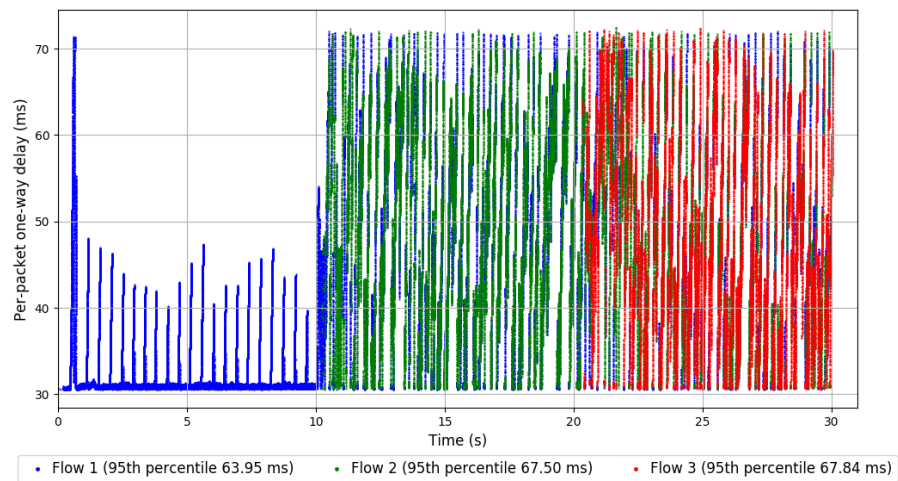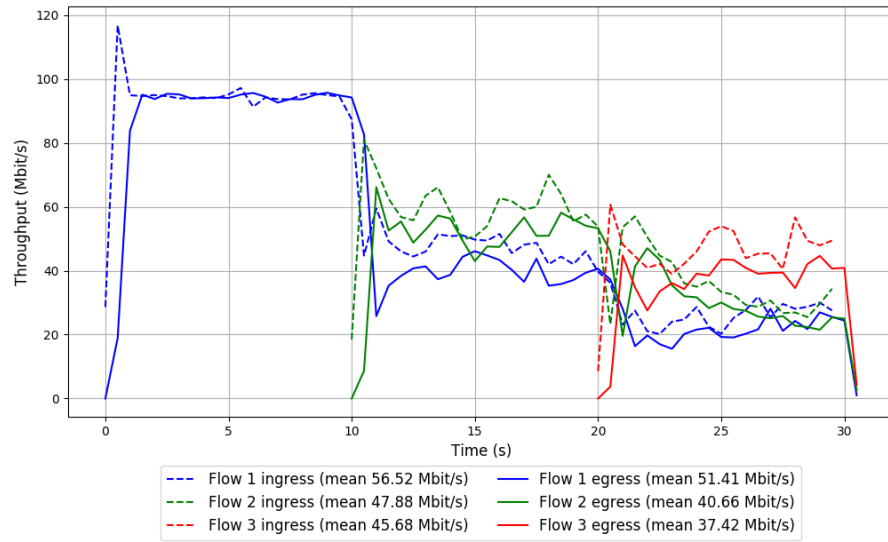
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-12-11 13:42:41
End at: 2018-12-11 13:43:11
Local clock offset: -0.287 ms
Remote clock offset: -3.129 ms


# Below is generated by plot.py at 2018-12-11 14:15:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.06 Mbit/s
95th percentile per-packet one-way delay: 67.934 ms
Loss rate: 40.96%
-- Flow 1:
Average throughput: 57.00 Mbit/s
95th percentile per-packet one-way delay: 66.505 ms
Loss rate: 30.88%
-- Flow 2:
Average throughput: 40.05 Mbit/s
95th percentile per-packet one-way delay: 69.067 ms
Loss rate: 49.72%
-- Flow 3:
Average throughput: 28.57 Mbit/s
95th percentile per-packet one-way delay: 68.752 ms
Loss rate: 57.36%
```
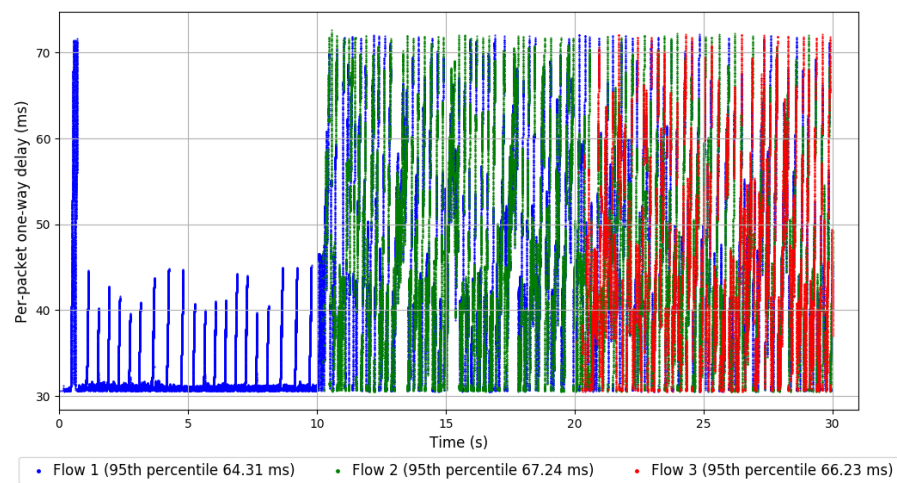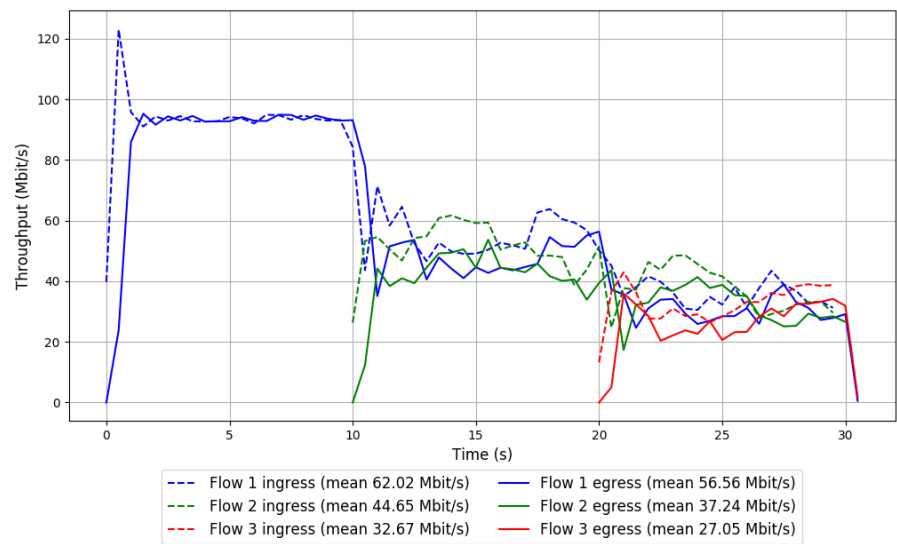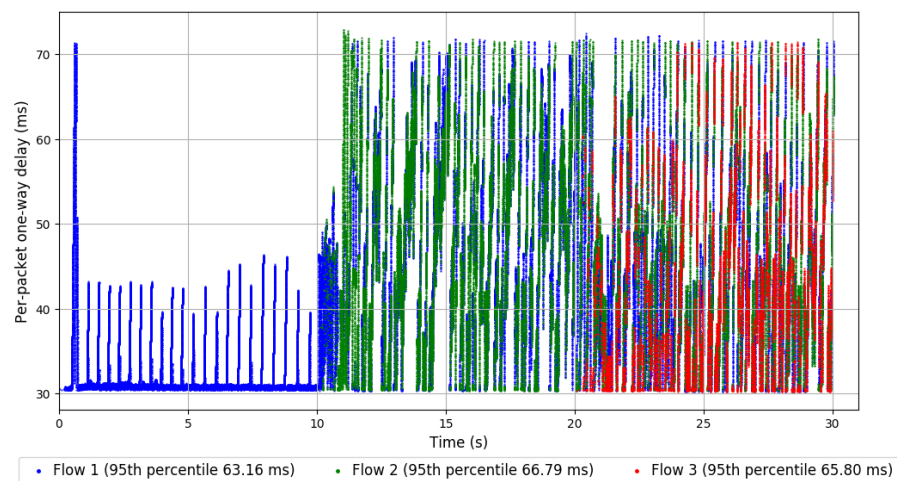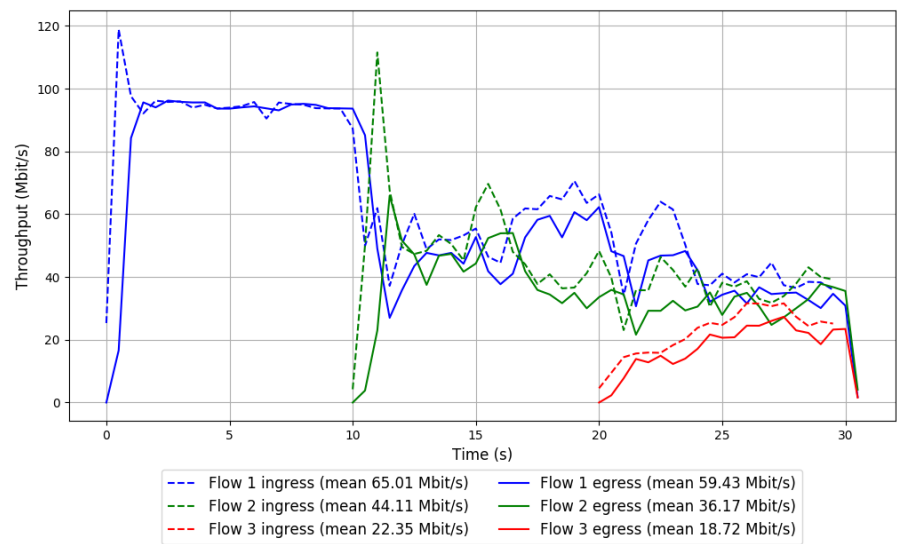
Run 4: Report of FillP — Data Link

- - - Flow 1 ingress (mean 82.43 Mbit/s) —— Flow 1 egress (mean 57.00 Mbit/s)
- - - Flow 2 ingress (mean 79.67 Mbit/s) —— Flow 2 egress (mean 40.05 Mbit/s)
- - - Flow 3 ingress (mean 67.18 Mbit/s) —— Flow 3 egress (mean 28.57 Mbit/s)

- Flow 1 (95th percentile 66.50 ms)   · Flow 2 (95th percentile 69.07 ms)   · Flow 3 (95th percentile 68.75 ms)

```
Run 5: Statistics of FillP

Start at: 2018-12-11 14:05:27
End at: 2018-12-11 14:05:57
Local clock offset: -0.292 ms
Remote clock offset: -2.951 ms


# Below is generated by plot.py at 2018-12-11 14:15:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.16 Mbit/s
95th percentile per-packet one-way delay: 67.643 ms
Loss rate: 39.33%
-- Flow 1:
Average throughput: 58.42 Mbit/s
95th percentile per-packet one-way delay: 66.105 ms
Loss rate: 30.23%
-- Flow 2:
Average throughput: 39.36 Mbit/s
95th percentile per-packet one-way delay: 68.753 ms
Loss rate: 48.92%
-- Flow 3:
Average throughput: 25.95 Mbit/s
95th percentile per-packet one-way delay: 68.993 ms
Loss rate: 53.78%
```
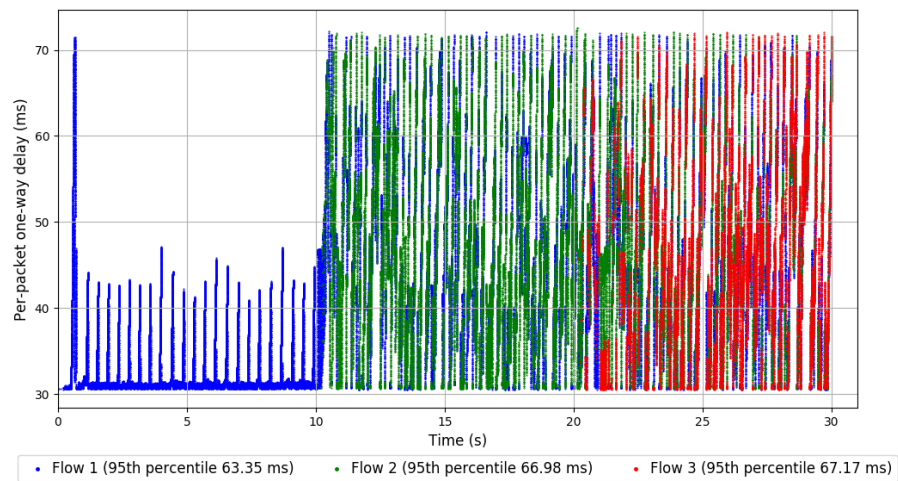
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 83.79 Mbit/s) --- Flow 1 egress (mean 58.42 Mbit/s)
Flow 2 ingress (mean 77.07 Mbit/s) --- Flow 2 egress (mean 39.36 Mbit/s)
Flow 3 ingress (mean 56.37 Mbit/s) --- Flow 3 egress (mean 25.95 Mbit/s)

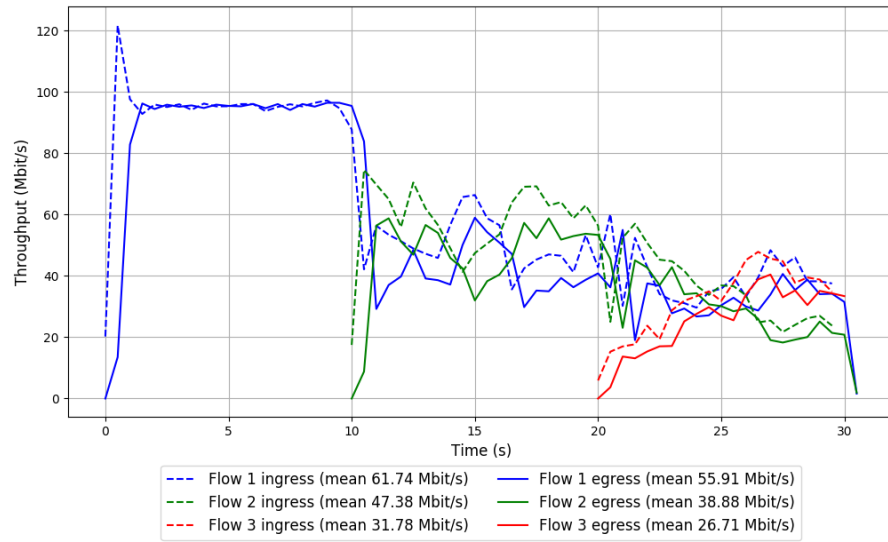Flow 1 (95th percentile 66.11 ms)   Flow 2 (95th percentile 68.75 ms)   Flow 3 (95th percentile 68.99 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-11 12:22:44
End at: 2018-12-11 12:23:14
Local clock offset: 3.094 ms
Remote clock offset: -3.38 ms


# Below is generated by plot.py at 2018-12-11 14:15:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.81 Mbit/s
95th percentile per-packet one-way delay: 66.227 ms
Loss rate: 12.16%
-- Flow 1:
Average throughput: 51.41 Mbit/s
95th percentile per-packet one-way delay: 63.952 ms
Loss rate: 8.98%
-- Flow 2:
Average throughput: 40.66 Mbit/s
95th percentile per-packet one-way delay: 67.500 ms
Loss rate: 14.98%
-- Flow 3:
Average throughput: 37.42 Mbit/s
95th percentile per-packet one-way delay: 67.844 ms
Loss rate: 18.07%
```

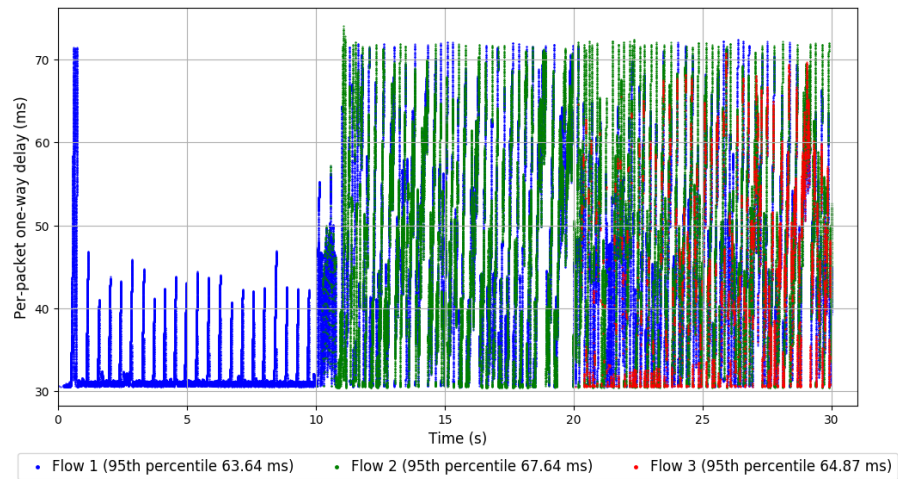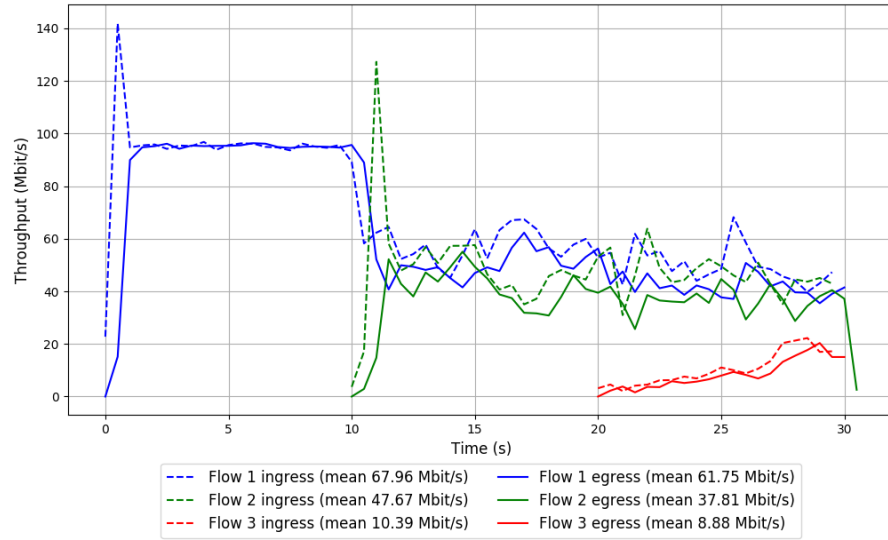Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 56.52 Mbit/s) --- Flow 1 egress (mean 51.41 Mbit/s) ———
Flow 2 ingress (mean 47.88 Mbit/s) --- Flow 2 egress (mean 40.66 Mbit/s) ———
Flow 3 ingress (mean 45.68 Mbit/s) --- Flow 3 egress (mean 37.42 Mbit/s) ———

Flow 1 (95th percentile 63.95 ms)   Flow 2 (95th percentile 67.50 ms)   Flow 3 (95th percentile 67.84 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-11 12:45:40
End at: 2018-12-11 12:46:10
Local clock offset: 3.733 ms
Remote clock offset: -3.226 ms


# Below is generated by plot.py at 2018-12-11 14:15:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.32 Mbit/s
95th percentile per-packet one-way delay: 65.696 ms
Loss rate: 11.93%
-- Flow 1:
Average throughput: 56.56 Mbit/s
95th percentile per-packet one-way delay: 64.312 ms
Loss rate: 8.79%
-- Flow 2:
Average throughput: 37.24 Mbit/s
95th percentile per-packet one-way delay: 67.237 ms
Loss rate: 16.54%
-- Flow 3:
Average throughput: 27.05 Mbit/s
95th percentile per-packet one-way delay: 66.229 ms
Loss rate: 17.21%
```

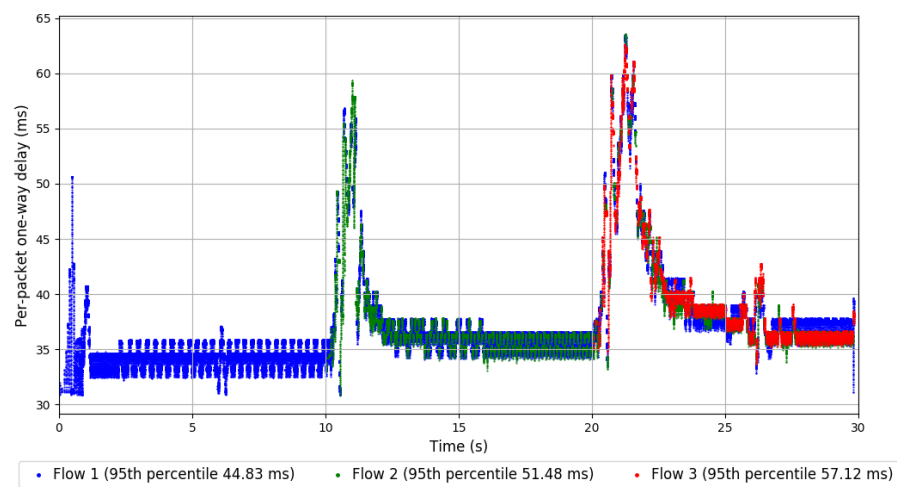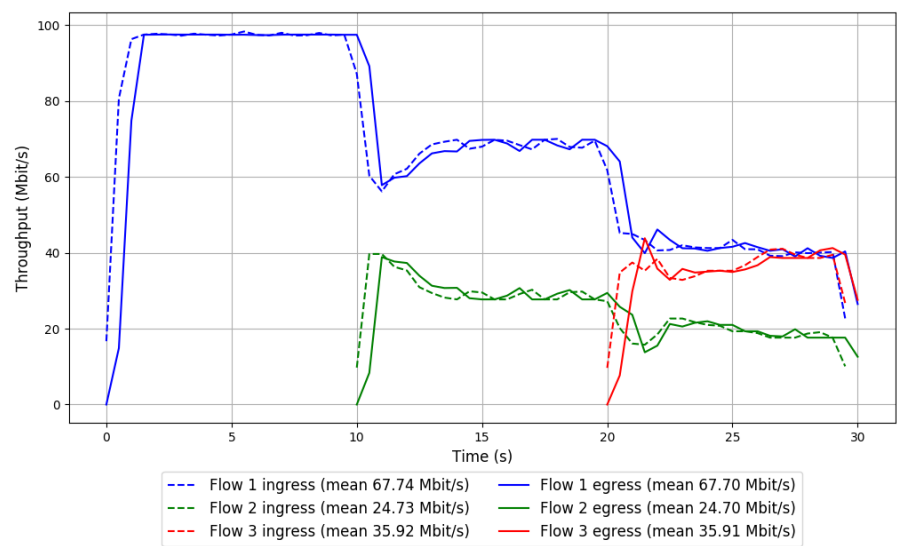# Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 62.02 Mbit/s) --- Flow 1 egress (mean 56.56 Mbit/s)
Flow 2 ingress (mean 44.65 Mbit/s) --- Flow 2 egress (mean 37.24 Mbit/s)
Flow 3 ingress (mean 32.67 Mbit/s) --- Flow 3 egress (mean 27.05 Mbit/s)

Flow 1 (95th percentile 64.31 ms) Flow 2 (95th percentile 67.24 ms) Flow 3 (95th percentile 66.23 ms)
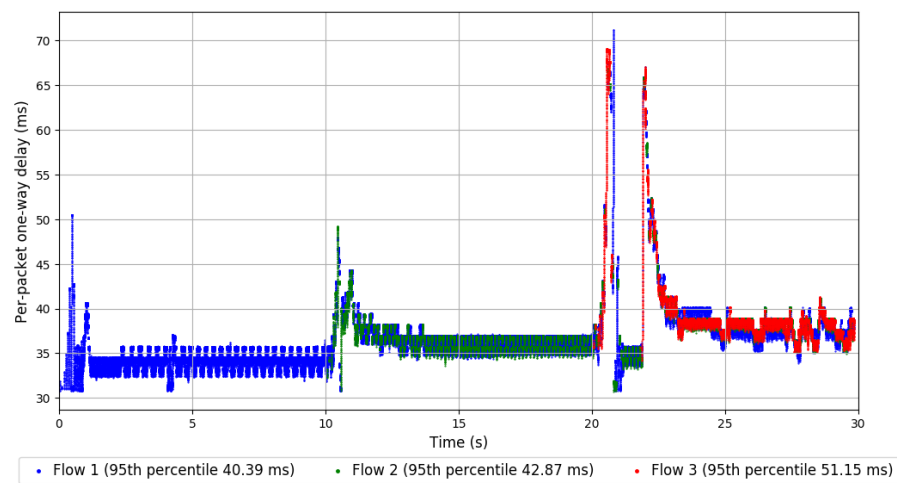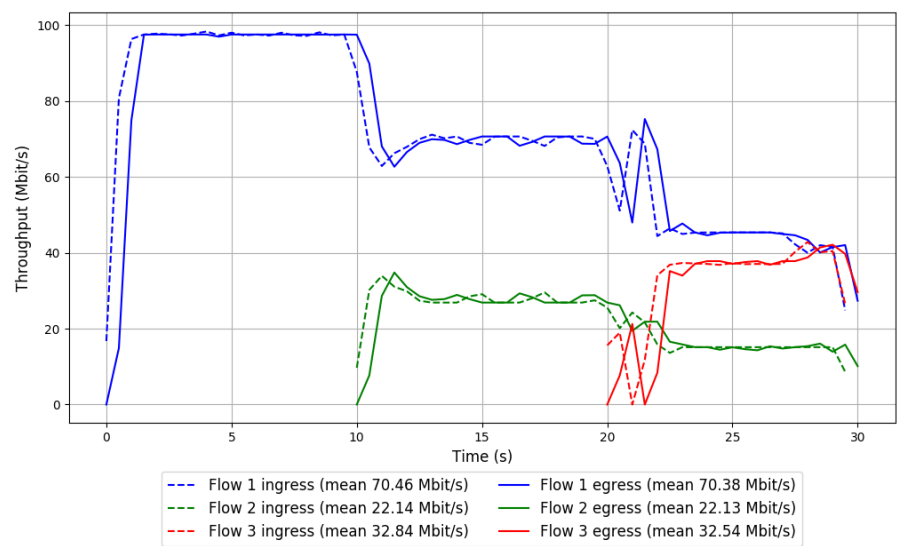
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-11 13:08:49
End at: 2018-12-11 13:09:19
Local clock offset: 3.673 ms
Remote clock offset: -3.137 ms


# Below is generated by plot.py at 2018-12-11 14:15:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.73 Mbit/s
95th percentile per-packet one-way delay: 64.811 ms
Loss rate: 11.74%
-- Flow 1:
Average throughput: 59.43 Mbit/s
95th percentile per-packet one-way delay: 63.159 ms
Loss rate: 8.48%
-- Flow 2:
Average throughput: 36.17 Mbit/s
95th percentile per-packet one-way delay: 66.792 ms
Loss rate: 17.85%
-- Flow 3:
Average throughput: 18.72 Mbit/s
95th percentile per-packet one-way delay: 65.802 ms
Loss rate: 16.04%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 65.01 Mbit/s)   Flow 1 egress (mean 59.43 Mbit/s)
Flow 2 ingress (mean 44.11 Mbit/s)   Flow 2 egress (mean 36.17 Mbit/s)
Flow 3 ingress (mean 22.35 Mbit/s)   Flow 3 egress (mean 18.72 Mbit/s)

Flow 1 (95th percentile 63.16 ms)   Flow 2 (95th percentile 66.79 ms)   Flow 3 (95th percentile 65.80 ms)
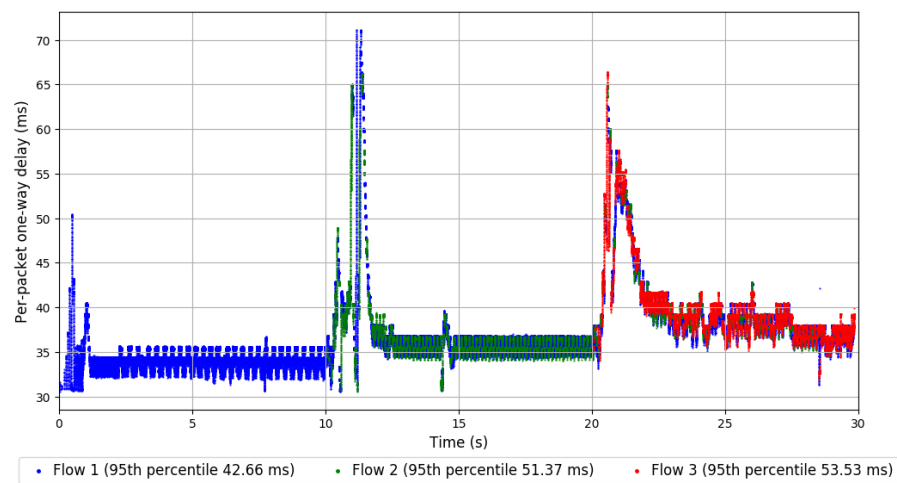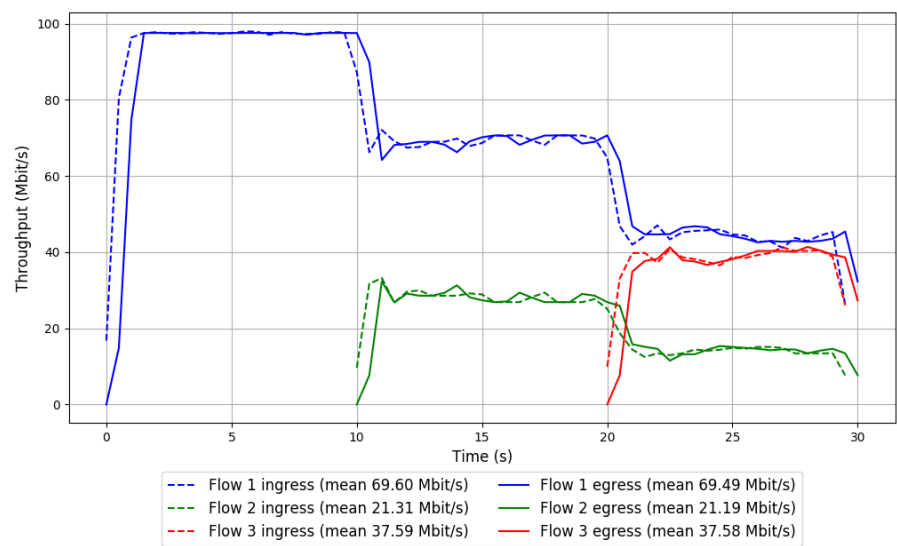
```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-11 13:31:32
End at: 2018-12-11 13:32:02
Local clock offset: -0.154 ms
Remote clock offset: -3.154 ms


# Below is generated by plot.py at 2018-12-11 14:16:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.63 Mbit/s
95th percentile per-packet one-way delay: 65.451 ms
Loss rate: 12.61%
-- Flow 1:
Average throughput: 55.91 Mbit/s
95th percentile per-packet one-way delay: 63.355 ms
Loss rate: 9.36%
-- Flow 2:
Average throughput: 38.88 Mbit/s
95th percentile per-packet one-way delay: 66.982 ms
Loss rate: 17.80%
-- Flow 3:
Average throughput: 26.71 Mbit/s
95th percentile per-packet one-way delay: 67.168 ms
Loss rate: 16.13%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 61.74 Mbit/s)   Flow 1 egress (mean 55.91 Mbit/s)
Flow 2 ingress (mean 47.38 Mbit/s)   Flow 2 egress (mean 38.88 Mbit/s)
Flow 3 ingress (mean 31.78 Mbit/s)   Flow 3 egress (mean 26.71 Mbit/s)

Flow 1 (95th percentile 63.35 ms)   Flow 2 (95th percentile 66.98 ms)   Flow 3 (95th percentile 67.17 ms)
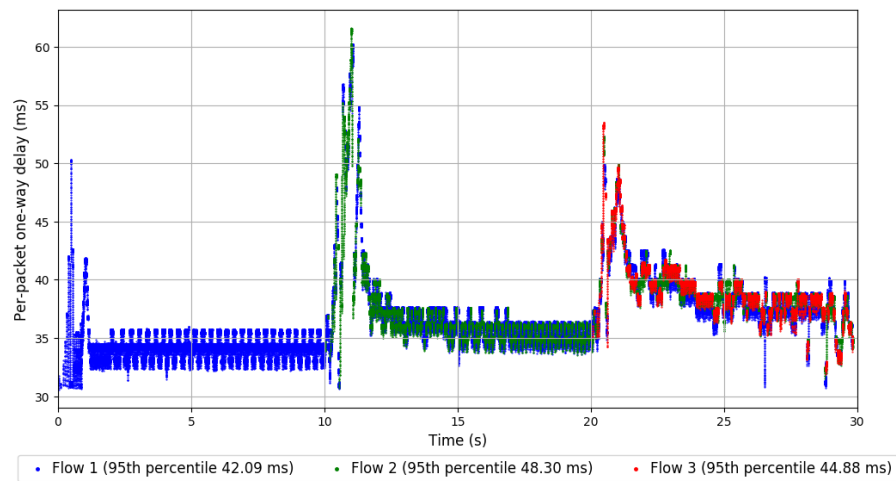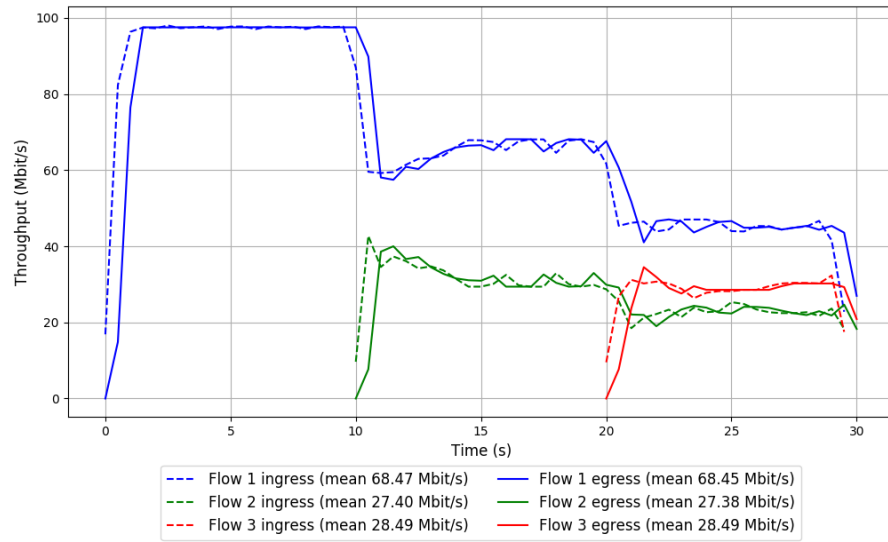
```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-11 13:54:32
End at: 2018-12-11 13:55:02
Local clock offset: -0.163 ms
Remote clock offset: -3.021 ms


# Below is generated by plot.py at 2018-12-11 14:16:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.84 Mbit/s
95th percentile per-packet one-way delay: 65.474 ms
Loss rate: 12.83%
-- Flow 1:
Average throughput: 61.75 Mbit/s
95th percentile per-packet one-way delay: 63.643 ms
Loss rate: 9.10%
-- Flow 2:
Average throughput: 37.81 Mbit/s
95th percentile per-packet one-way delay: 67.644 ms
Loss rate: 20.62%
-- Flow 3:
Average throughput: 8.88 Mbit/s
95th percentile per-packet one-way delay: 64.873 ms
Loss rate: 14.52%
```
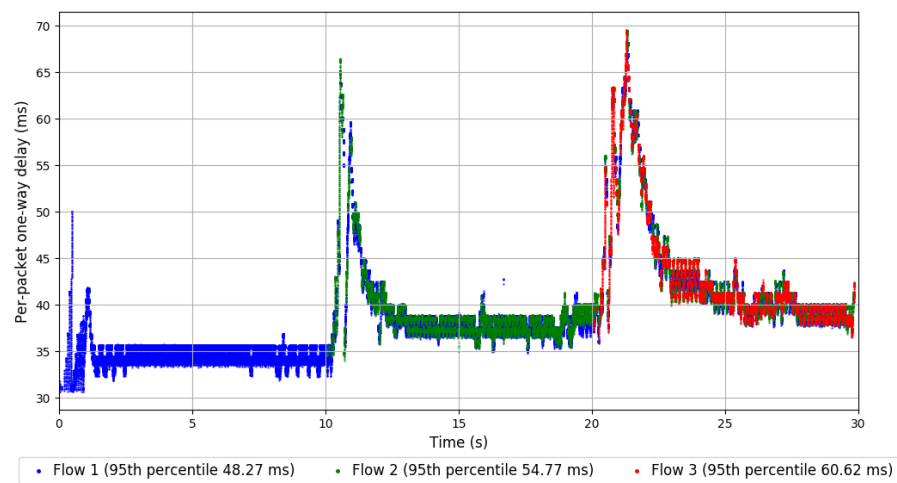
Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-12-11 12:28:50
End at: 2018-12-11 12:29:20
Local clock offset: 3.609 ms
Remote clock offset: -3.212 ms


# Below is generated by plot.py at 2018-12-11 14:16:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 48.049 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 67.70 Mbit/s
95th percentile per-packet one-way delay: 44.834 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 24.70 Mbit/s
95th percentile per-packet one-way delay: 51.482 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 35.91 Mbit/s
95th percentile per-packet one-way delay: 57.115 ms
Loss rate: 0.00%
```
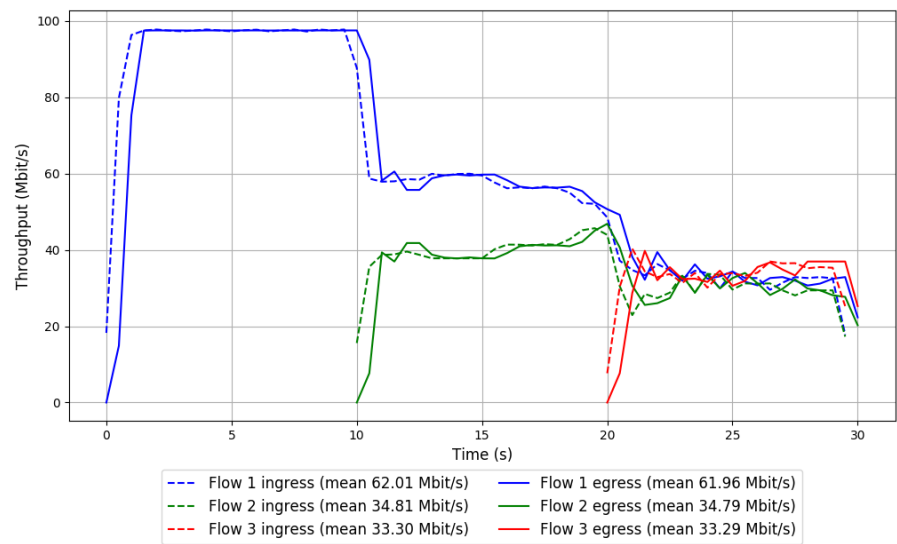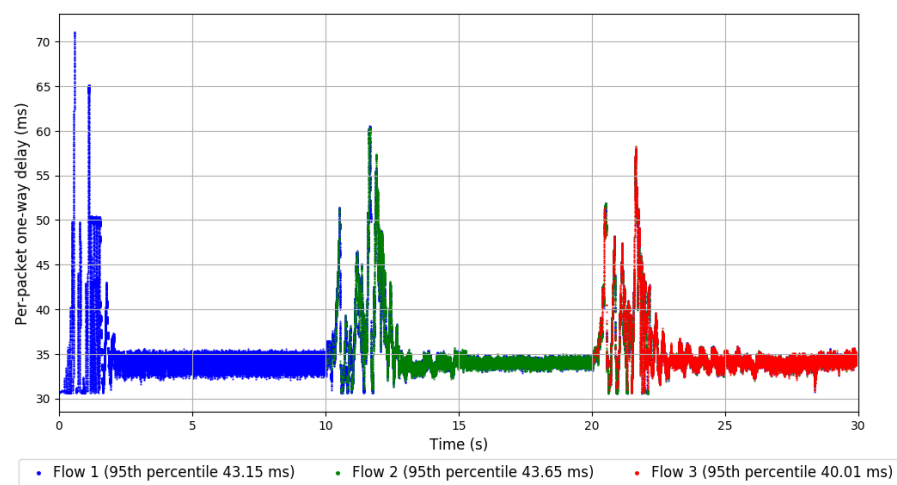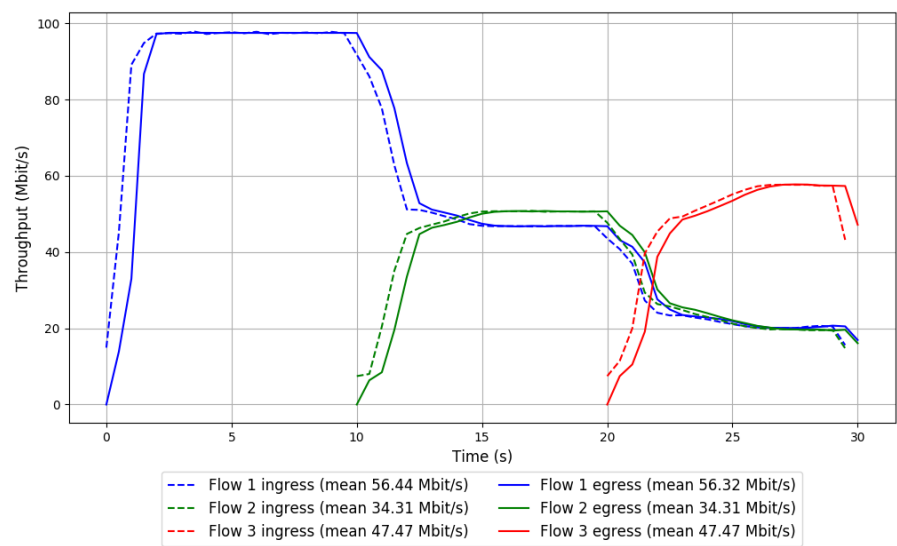
Run 1: Report of Indigo — Data Link

Flow 1 ingress (mean 67.74 Mbit/s) — Flow 1 egress (mean 67.70 Mbit/s)
Flow 2 ingress (mean 24.73 Mbit/s) — Flow 2 egress (mean 24.70 Mbit/s)
Flow 3 ingress (mean 35.92 Mbit/s) — Flow 3 egress (mean 35.91 Mbit/s)

Flow 1 (95th percentile 44.83 ms) · Flow 2 (95th percentile 51.48 ms) · Flow 3 (95th percentile 57.12 ms)

```
Run 2: Statistics of Indigo

Start at: 2018-12-11 12:52:08
End at: 2018-12-11 12:52:39
Local clock offset: 3.613 ms
Remote clock offset: -3.168 ms


# Below is generated by plot.py at 2018-12-11 14:16:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.68 Mbit/s
95th percentile per-packet one-way delay: 41.822 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 70.38 Mbit/s
95th percentile per-packet one-way delay: 40.389 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 22.13 Mbit/s
95th percentile per-packet one-way delay: 42.868 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 32.54 Mbit/s
95th percentile per-packet one-way delay: 51.154 ms
Loss rate: 0.88%
```

Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-11 13:14:54
End at: 2018-12-11 13:15:24
Local clock offset: 1.764 ms
Remote clock offset: -3.159 ms


# Below is generated by plot.py at 2018-12-11 14:16:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.78 Mbit/s
95th percentile per-packet one-way delay: 46.367 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 69.49 Mbit/s
95th percentile per-packet one-way delay: 42.658 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 21.19 Mbit/s
95th percentile per-packet one-way delay: 51.371 ms
Loss rate: 0.55%
-- Flow 3:
Average throughput: 37.58 Mbit/s
95th percentile per-packet one-way delay: 53.535 ms
Loss rate: 0.00%
```
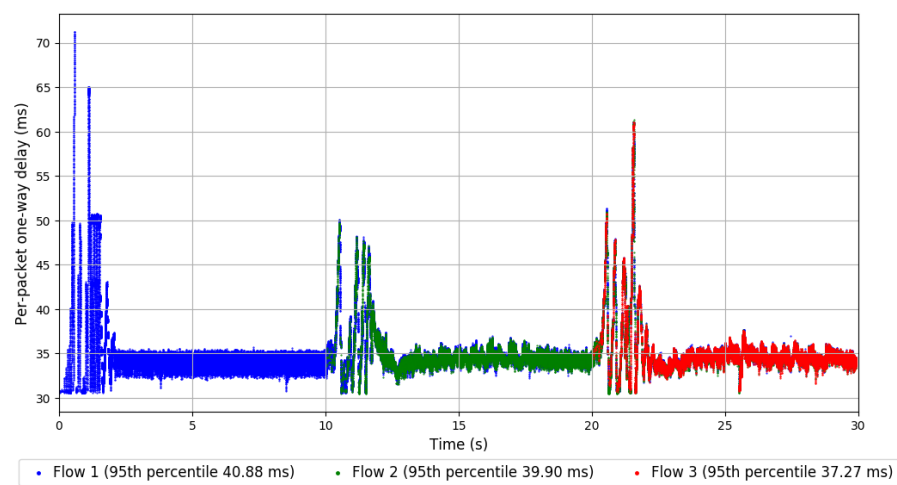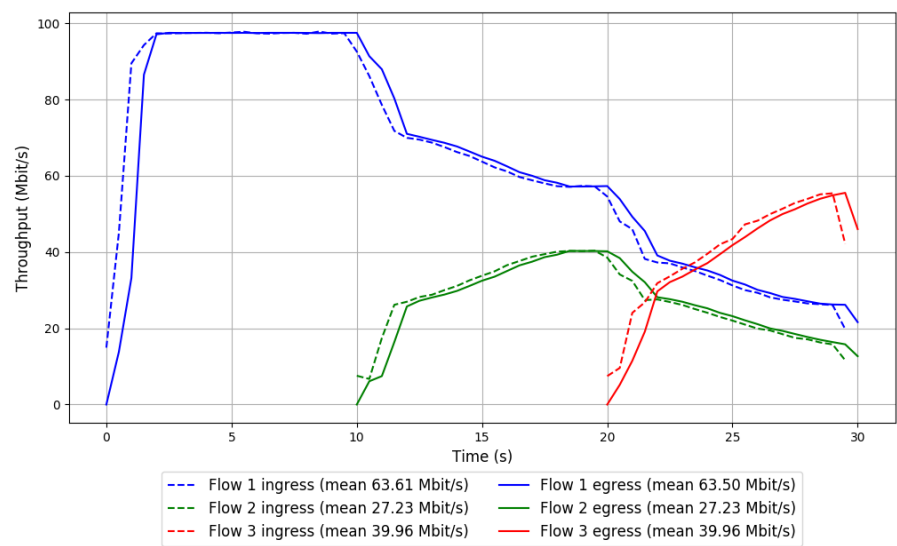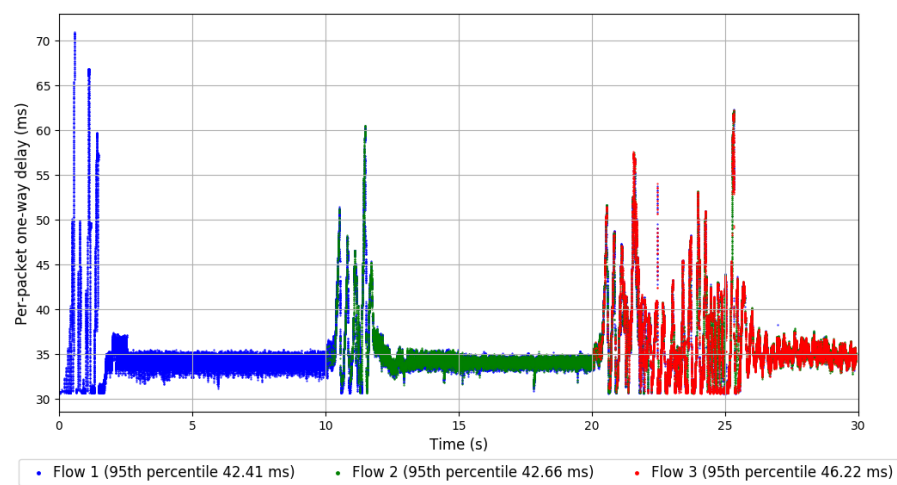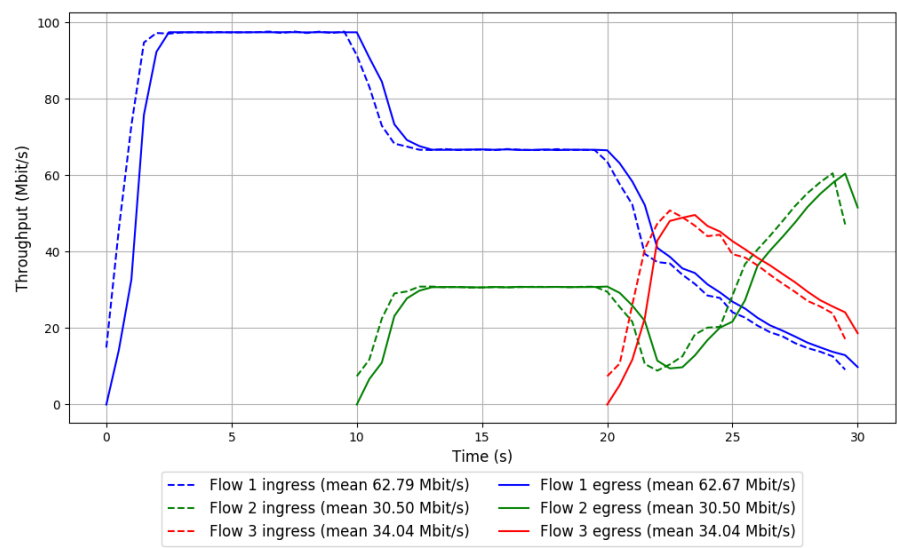
Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 69.60 Mbit/s)   Flow 1 egress (mean 69.49 Mbit/s)
Flow 2 ingress (mean 21.31 Mbit/s)   Flow 2 egress (mean 21.19 Mbit/s)
Flow 3 ingress (mean 37.59 Mbit/s)   Flow 3 egress (mean 37.58 Mbit/s)

Flow 1 (95th percentile 42.66 ms)   Flow 2 (95th percentile 51.37 ms)   Flow 3 (95th percentile 53.53 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-12-11 13:37:44
End at: 2018-12-11 13:38:14
Local clock offset: -0.469 ms
Remote clock offset: -3.096 ms


# Below is generated by plot.py at 2018-12-11 14:16:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.86 Mbit/s
95th percentile per-packet one-way delay: 42.757 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 68.45 Mbit/s
95th percentile per-packet one-way delay: 42.086 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 27.38 Mbit/s
95th percentile per-packet one-way delay: 48.304 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 28.49 Mbit/s
95th percentile per-packet one-way delay: 44.885 ms
Loss rate: 0.00%
```
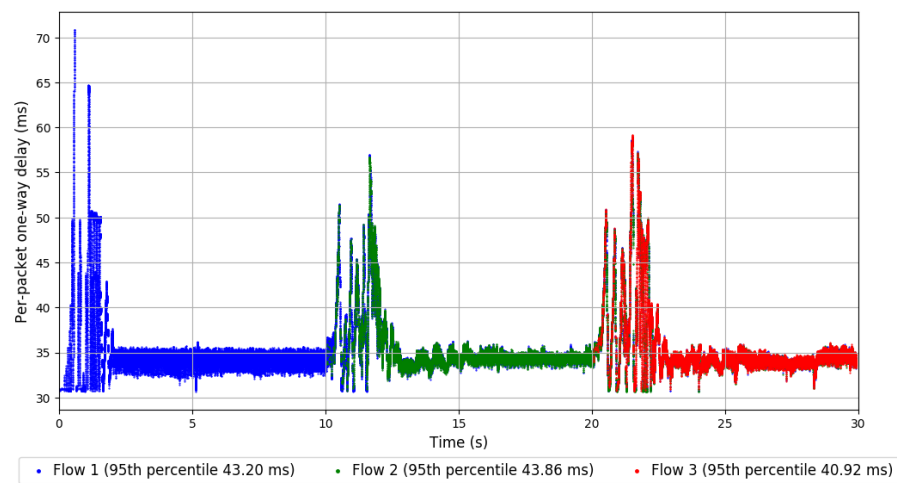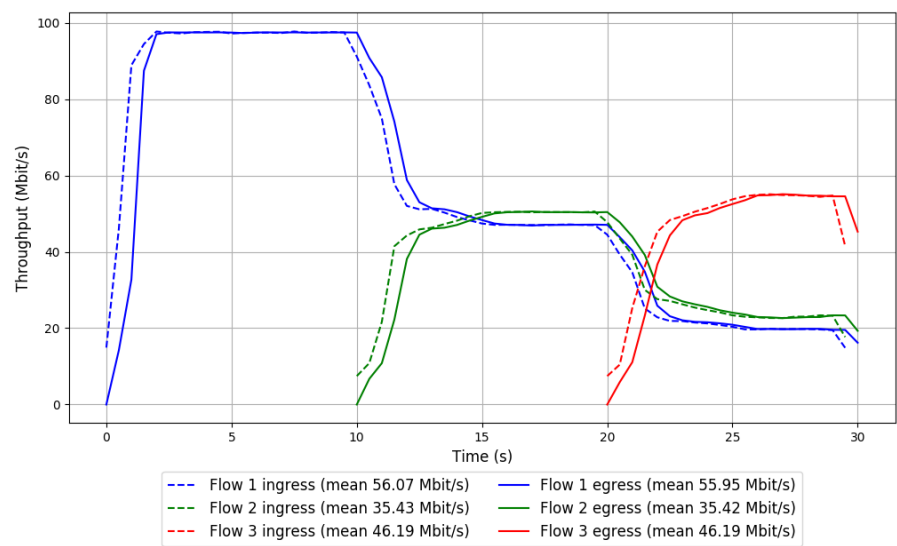
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 68.47 Mbit/s)   Flow 1 egress (mean 68.45 Mbit/s)
Flow 2 ingress (mean 27.40 Mbit/s)   Flow 2 egress (mean 27.38 Mbit/s)
Flow 3 ingress (mean 28.49 Mbit/s)   Flow 3 egress (mean 28.49 Mbit/s)

Flow 1 (95th percentile 42.09 ms)   Flow 2 (95th percentile 48.30 ms)   Flow 3 (95th percentile 44.88 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-12-11 14:00:38
End at: 2018-12-11 14:01:08
Local clock offset: -0.236 ms
Remote clock offset: -2.967 ms


# Below is generated by plot.py at 2018-12-11 14:16:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.87 Mbit/s
95th percentile per-packet one-way delay: 53.174 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 61.96 Mbit/s
95th percentile per-packet one-way delay: 48.265 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 34.79 Mbit/s
95th percentile per-packet one-way delay: 54.770 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 33.29 Mbit/s
95th percentile per-packet one-way delay: 60.621 ms
Loss rate: 0.00%
```
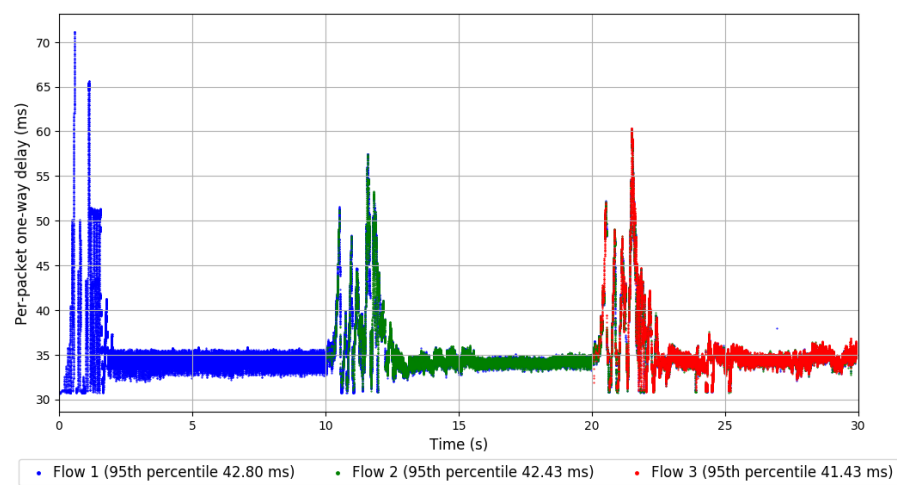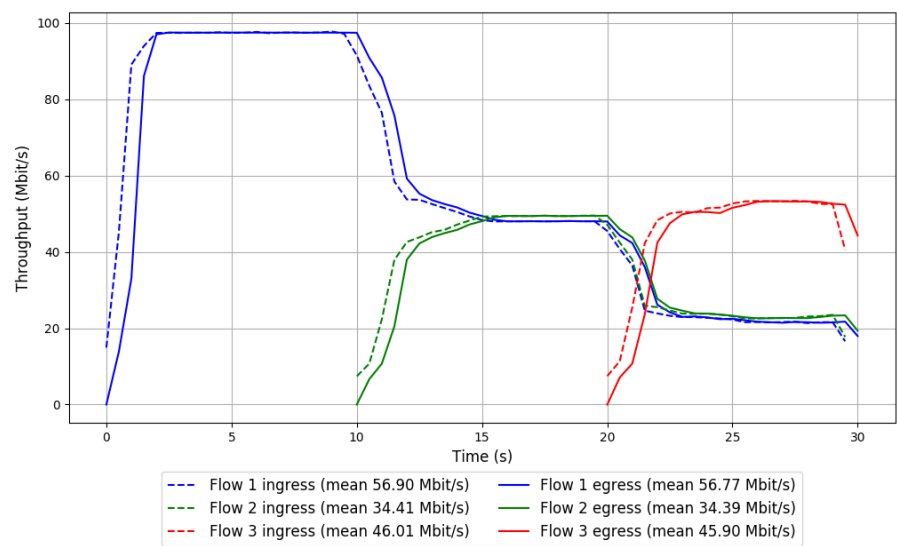
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2018-12-11 12:38:22
End at: 2018-12-11 12:38:52
Local clock offset: 4.183 ms
Remote clock offset: -3.313 ms


# Below is generated by plot.py at 2018-12-11 14:16:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.79 Mbit/s
95th percentile per-packet one-way delay: 42.862 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 56.32 Mbit/s
95th percentile per-packet one-way delay: 43.146 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 34.31 Mbit/s
95th percentile per-packet one-way delay: 43.650 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 47.47 Mbit/s
95th percentile per-packet one-way delay: 40.005 ms
Loss rate: 0.00%
```

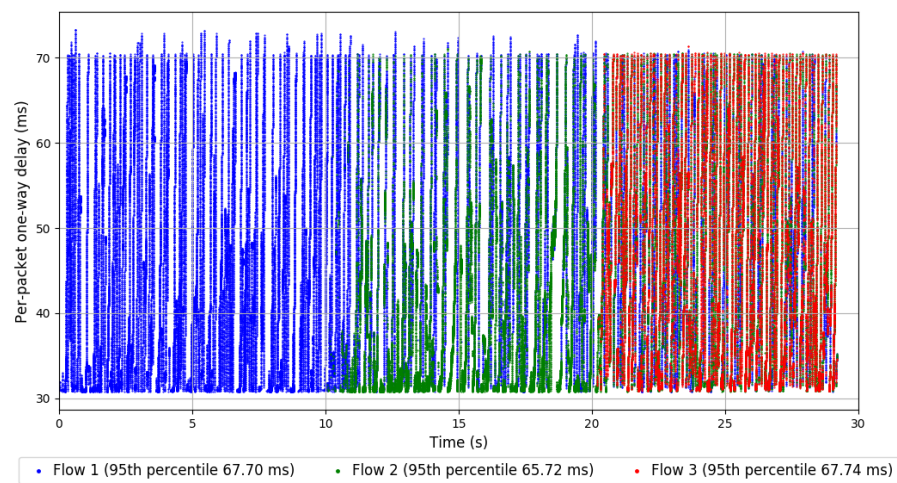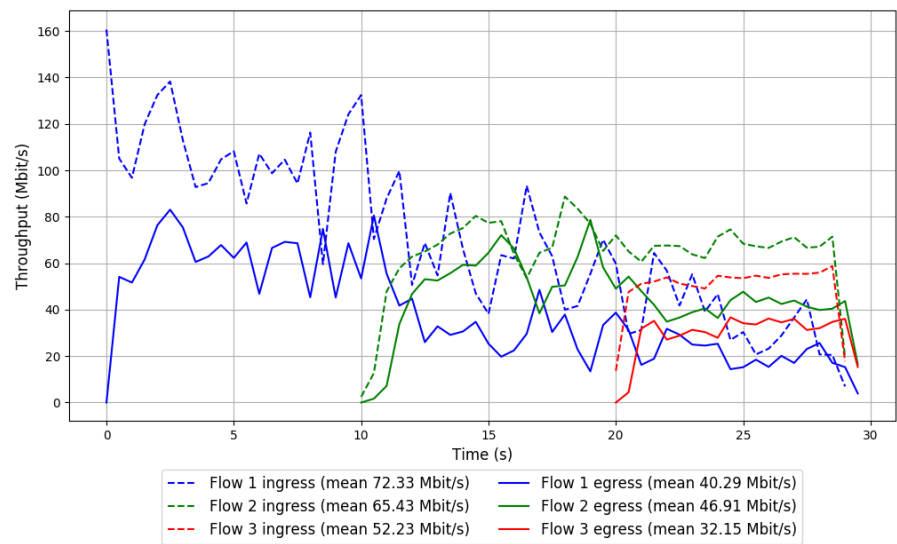Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2018-12-11 13:01:41
End at: 2018-12-11 13:02:11
Local clock offset: 3.676 ms
Remote clock offset: -3.37 ms


# Below is generated by plot.py at 2018-12-11 14:17:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.77 Mbit/s
95th percentile per-packet one-way delay: 40.405 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 63.50 Mbit/s
95th percentile per-packet one-way delay: 40.881 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 27.23 Mbit/s
95th percentile per-packet one-way delay: 39.896 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 39.96 Mbit/s
95th percentile per-packet one-way delay: 37.274 ms
Loss rate: 0.00%
```
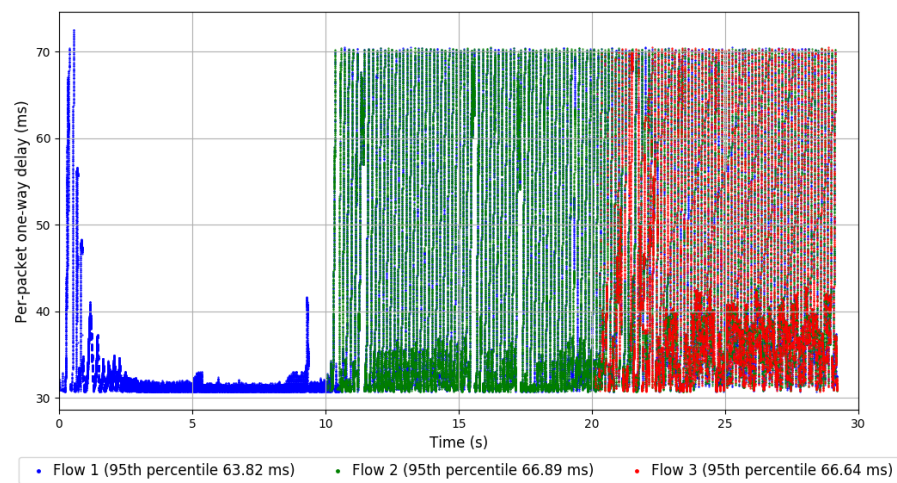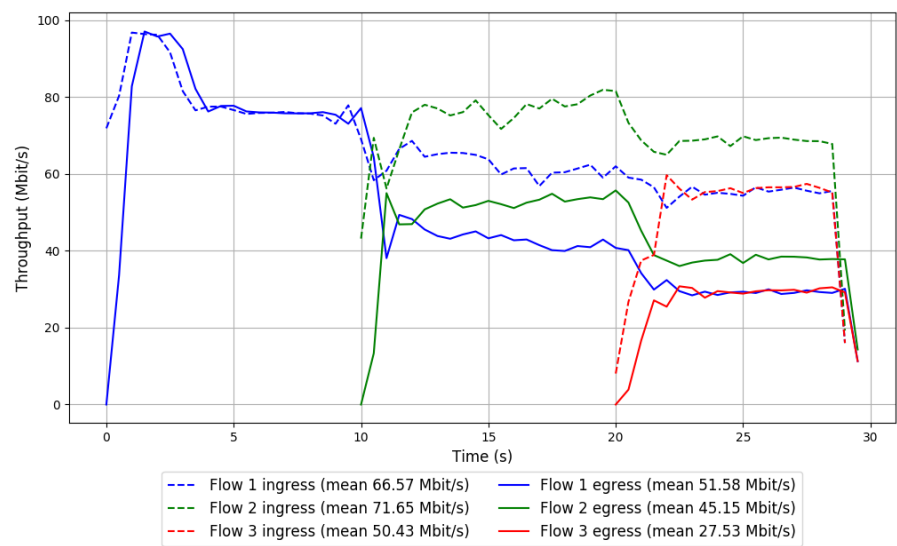
Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2018-12-11 13:24:25
End at: 2018-12-11 13:24:55
Local clock offset: 0.358 ms
Remote clock offset: -3.118 ms


# Below is generated by plot.py at 2018-12-11 14:17:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.17 Mbit/s
95th percentile per-packet one-way delay: 43.024 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 62.67 Mbit/s
95th percentile per-packet one-way delay: 42.414 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 30.50 Mbit/s
95th percentile per-packet one-way delay: 42.657 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 34.04 Mbit/s
95th percentile per-packet one-way delay: 46.223 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 62.79 Mbit/s)
Flow 1 egress (mean 62.67 Mbit/s)
Flow 2 ingress (mean 30.50 Mbit/s)
Flow 2 egress (mean 30.50 Mbit/s)
Flow 3 ingress (mean 34.04 Mbit/s)
Flow 3 egress (mean 34.04 Mbit/s)

Flow 1 (95th percentile 42.41 ms)
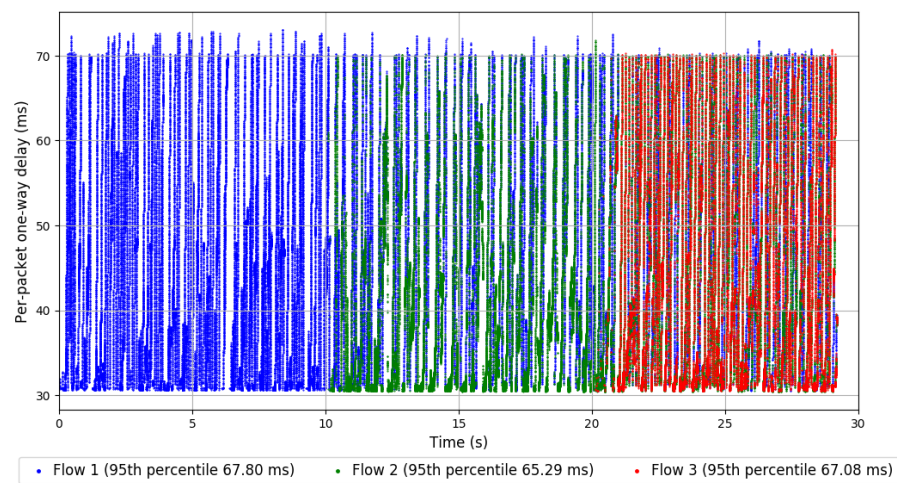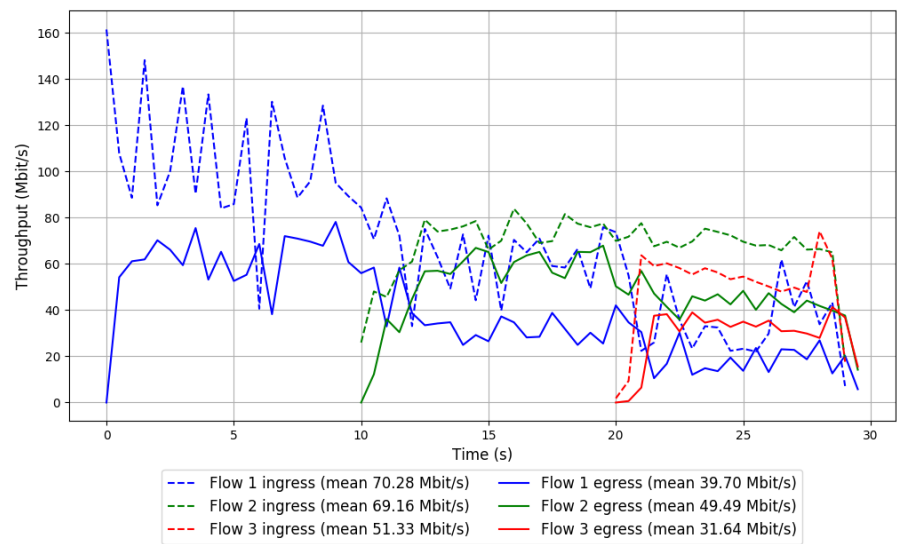Flow 2 (95th percentile 42.66 ms)
Flow 3 (95th percentile 46.22 ms)

```
Run 4: Statistics of Indigo-MusesD

Start at: 2018-12-11 13:47:25
End at: 2018-12-11 13:47:55
Local clock offset: -0.195 ms
Remote clock offset: -3.088 ms


# Below is generated by plot.py at 2018-12-11 14:17:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 43.151 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 55.95 Mbit/s
95th percentile per-packet one-way delay: 43.199 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 35.42 Mbit/s
95th percentile per-packet one-way delay: 43.860 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 46.19 Mbit/s
95th percentile per-packet one-way delay: 40.916 ms
Loss rate: 0.00%
```

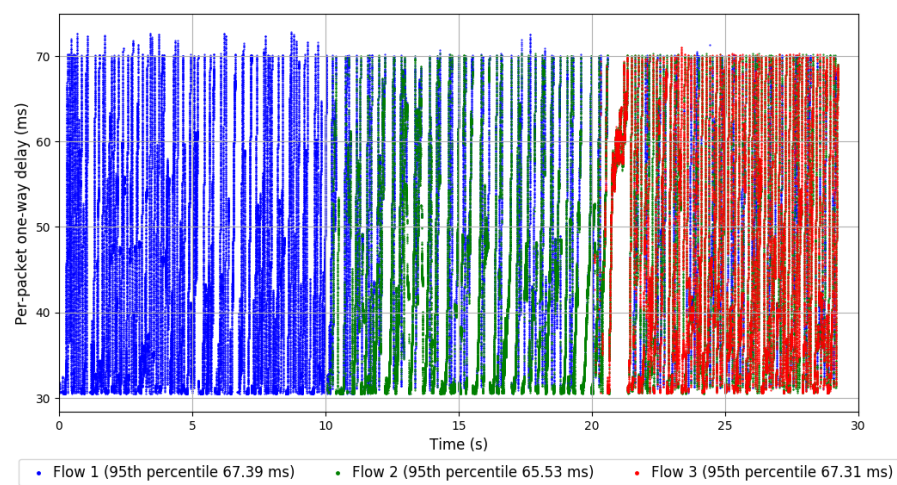Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2018-12-11 14:10:09
End at: 2018-12-11 14:10:39
Local clock offset: -0.215 ms
Remote clock offset: -2.905 ms


# Below is generated by plot.py at 2018-12-11 14:17:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.77 Mbit/s
95th percentile per-packet one-way delay: 42.434 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 56.77 Mbit/s
95th percentile per-packet one-way delay: 42.795 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 34.39 Mbit/s
95th percentile per-packet one-way delay: 42.428 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 45.90 Mbit/s
95th percentile per-packet one-way delay: 41.429 ms
Loss rate: 0.22%
```
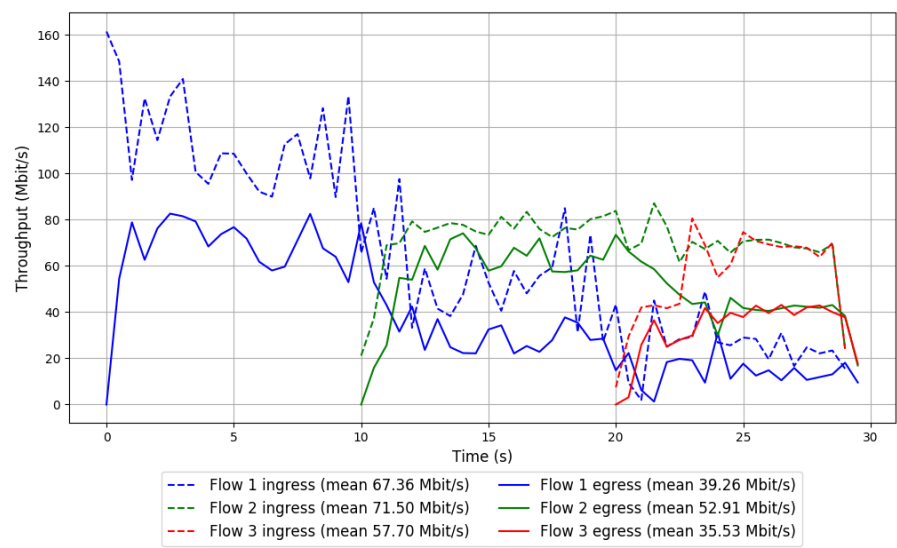
Run 5: Report of Indigo-MusesD — Data Link

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```
Run 1: Statistics of Indigo-MusesT

Start at: 2018-12-11 12:30:04
End at: 2018-12-11 12:30:34
Local clock offset: 3.7 ms
Remote clock offset: -3.188 ms


# Below is generated by plot.py at 2018-12-11 14:17:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.95 Mbit/s
95th percentile per-packet one-way delay: 67.207 ms
Loss rate: 38.37%
-- Flow 1:
Average throughput: 40.29 Mbit/s
95th percentile per-packet one-way delay: 67.699 ms
Loss rate: 44.30%
-- Flow 2:
Average throughput: 46.91 Mbit/s
95th percentile per-packet one-way delay: 65.723 ms
Loss rate: 28.36%
-- Flow 3:
Average throughput: 32.15 Mbit/s
95th percentile per-packet one-way delay: 67.738 ms
Loss rate: 38.43%
```

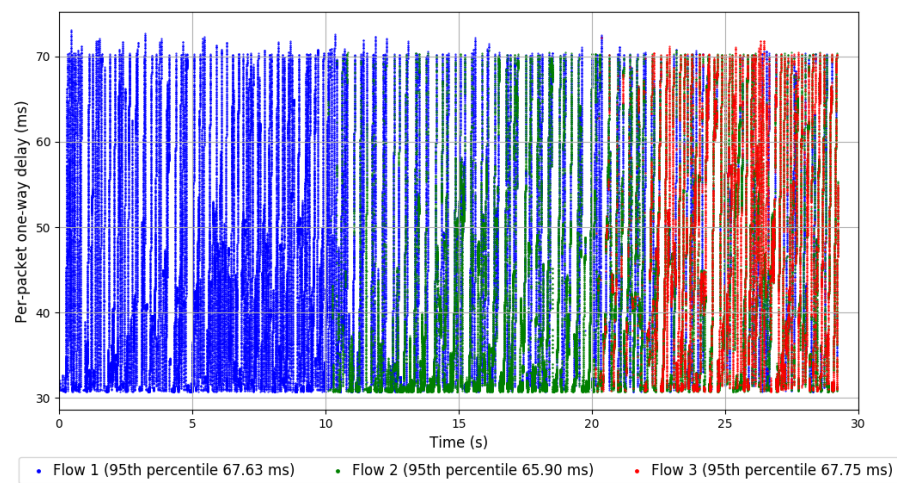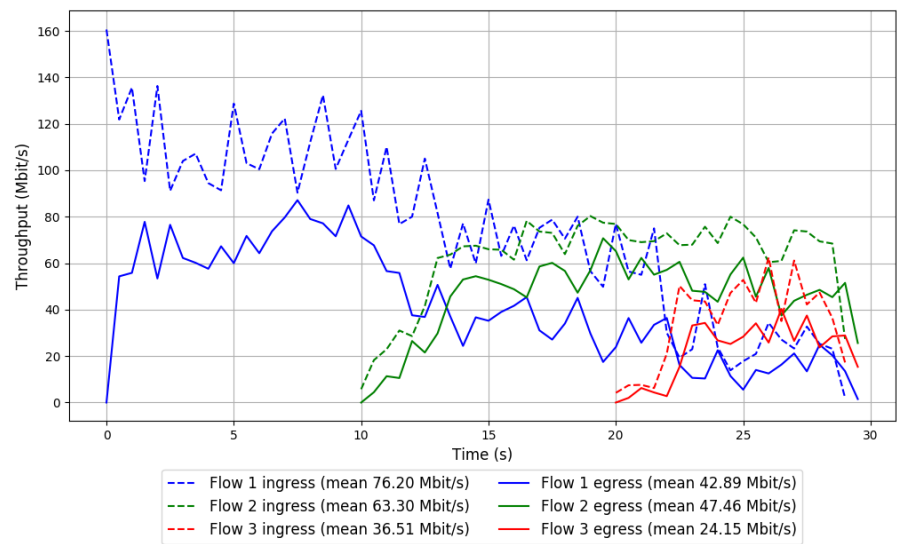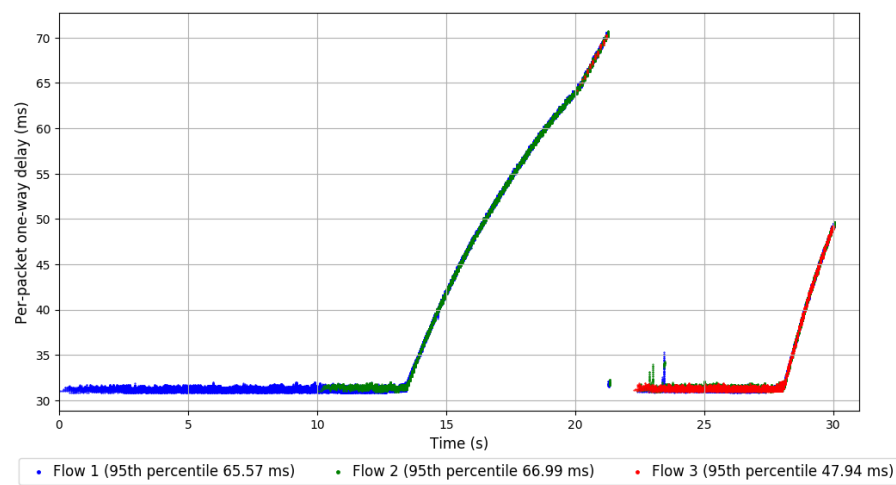Run 1: Report of Indigo-MusesT — Data Link

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```
Run 2: Statistics of Indigo-MusesT

Start at: 2018-12-11 12:53:24
End at: 2018-12-11 12:53:54
Local clock offset: 3.602 ms
Remote clock offset: -3.173 ms


# Below is generated by plot.py at 2018-12-11 14:17:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.71 Mbit/s
95th percentile per-packet one-way delay: 65.541 ms
Loss rate: 30.55%
-- Flow 1:
Average throughput: 51.58 Mbit/s
95th percentile per-packet one-way delay: 63.820 ms
Loss rate: 22.52%
-- Flow 2:
Average throughput: 45.15 Mbit/s
95th percentile per-packet one-way delay: 66.891 ms
Loss rate: 36.99%
-- Flow 3:
Average throughput: 27.53 Mbit/s
95th percentile per-packet one-way delay: 66.638 ms
Loss rate: 45.41%
```
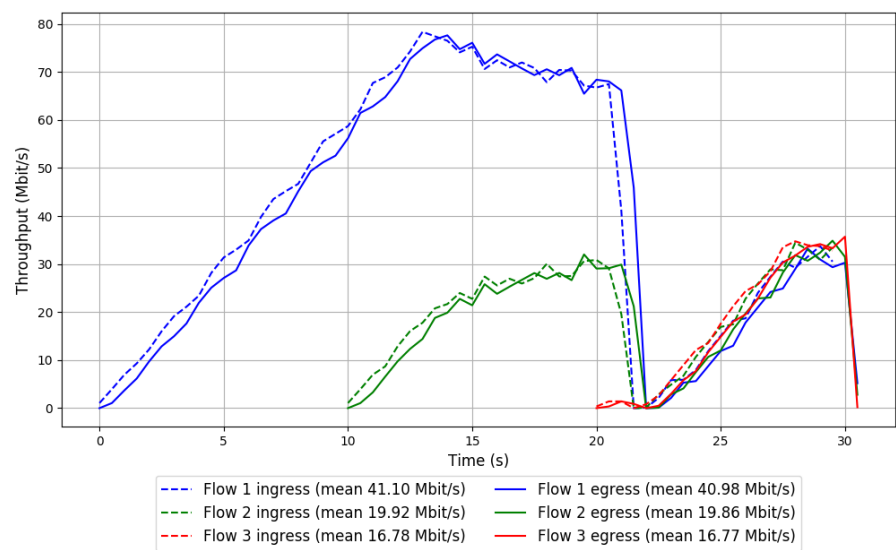
Run 2: Report of Indigo-MusesT — Data Link

- - - - Flow 1 ingress (mean 66.57 Mbit/s) ———— Flow 1 egress (mean 51.58 Mbit/s)
- - - - Flow 2 ingress (mean 71.65 Mbit/s) ———— Flow 2 egress (mean 45.15 Mbit/s)
- - - - Flow 3 ingress (mean 50.43 Mbit/s) ———— Flow 3 egress (mean 27.53 Mbit/s)

- Flow 1 (95th percentile 63.82 ms)   - Flow 2 (95th percentile 66.89 ms)   - Flow 3 (95th percentile 66.64 ms)

```
Run 3: Statistics of Indigo-MusesT

Start at: 2018-12-11 13:16:09
End at: 2018-12-11 13:16:39
Local clock offset: 1.504 ms
Remote clock offset: -3.191 ms

# Below is generated by plot.py at 2018-12-11 14:17:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.94 Mbit/s
95th percentile per-packet one-way delay: 66.978 ms
Loss rate: 37.73%
-- Flow 1:
Average throughput: 39.70 Mbit/s
95th percentile per-packet one-way delay: 67.801 ms
Loss rate: 43.49%
-- Flow 2:
Average throughput: 49.49 Mbit/s
95th percentile per-packet one-way delay: 65.292 ms
Loss rate: 28.52%
-- Flow 3:
Average throughput: 31.64 Mbit/s
95th percentile per-packet one-way delay: 67.084 ms
Loss rate: 38.57%
```

Run 3: Report of Indigo-MusesT — Data Link
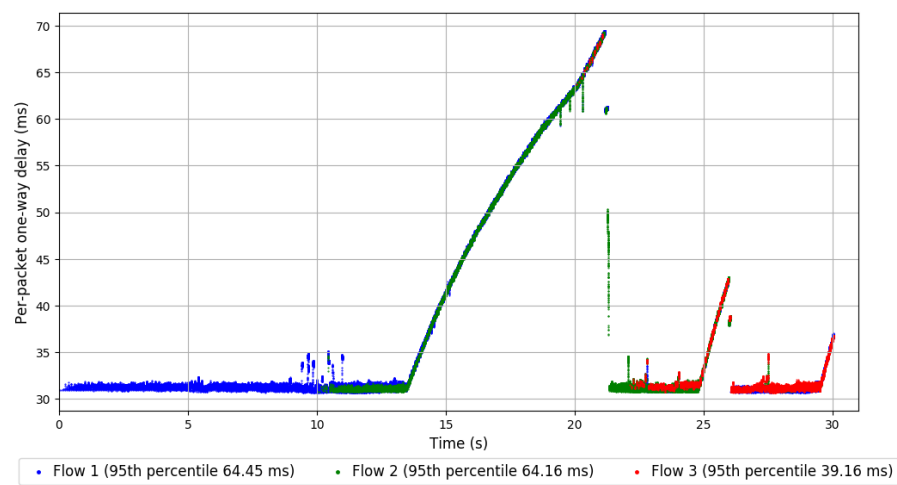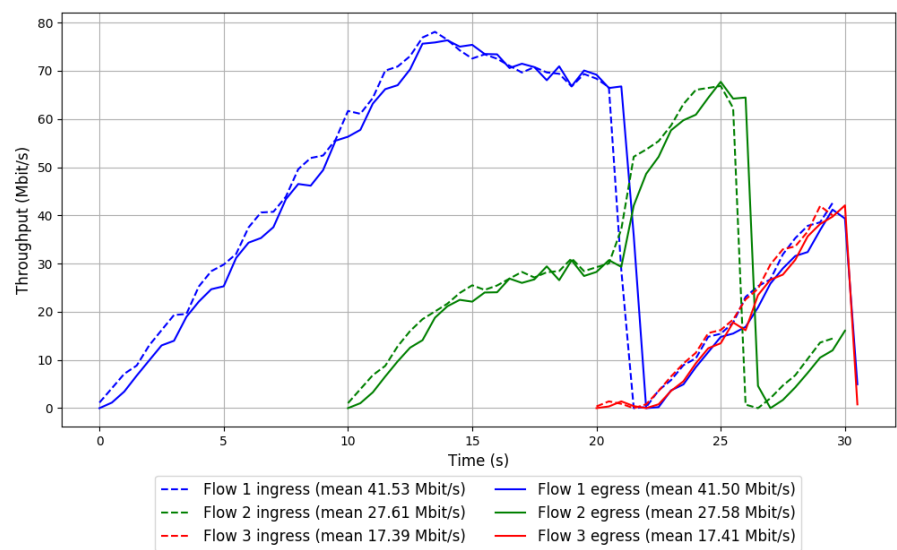

Flow 1 ingress (mean 70.28 Mbit/s) ---- Flow 1 egress (mean 39.70 Mbit/s)
Flow 2 ingress (mean 69.16 Mbit/s) ---- Flow 2 egress (mean 49.49 Mbit/s)
Flow 3 ingress (mean 51.33 Mbit/s) ---- Flow 3 egress (mean 31.64 Mbit/s)

Flow 1 (95th percentile 67.80 ms)   Flow 2 (95th percentile 65.29 ms)   Flow 3 (95th percentile 67.08 ms)

```
Run 4: Statistics of Indigo-MusesT

Start at: 2018-12-11 13:39:03
End at: 2018-12-11 13:39:33
Local clock offset: -0.461 ms
Remote clock offset: -3.305 ms


# Below is generated by plot.py at 2018-12-11 14:18:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.98 Mbit/s
95th percentile per-packet one-way delay: 66.824 ms
Loss rate: 35.62%
-- Flow 1:
Average throughput: 39.26 Mbit/s
95th percentile per-packet one-way delay: 67.392 ms
Loss rate: 41.70%
-- Flow 2:
Average throughput: 52.91 Mbit/s
95th percentile per-packet one-way delay: 65.526 ms
Loss rate: 25.86%
-- Flow 3:
Average throughput: 35.53 Mbit/s
95th percentile per-packet one-way delay: 67.305 ms
Loss rate: 38.30%
```

Run 4: Report of Indigo-MusesT — Data Link
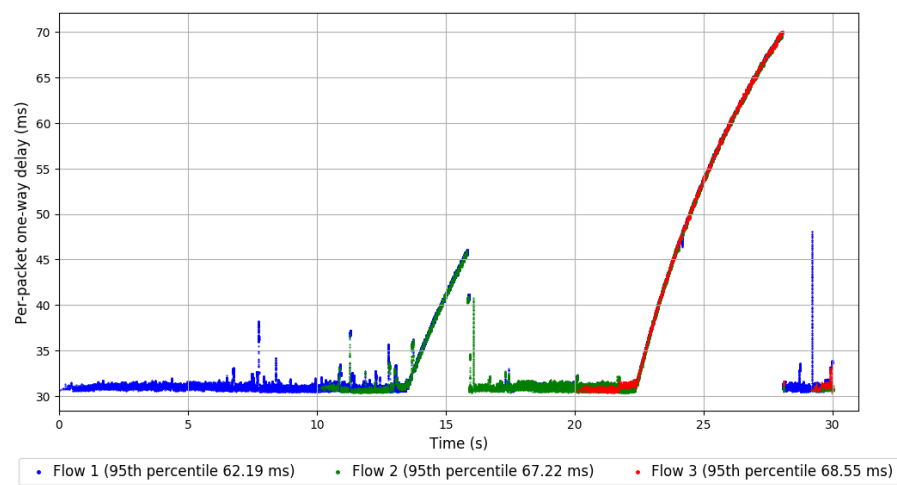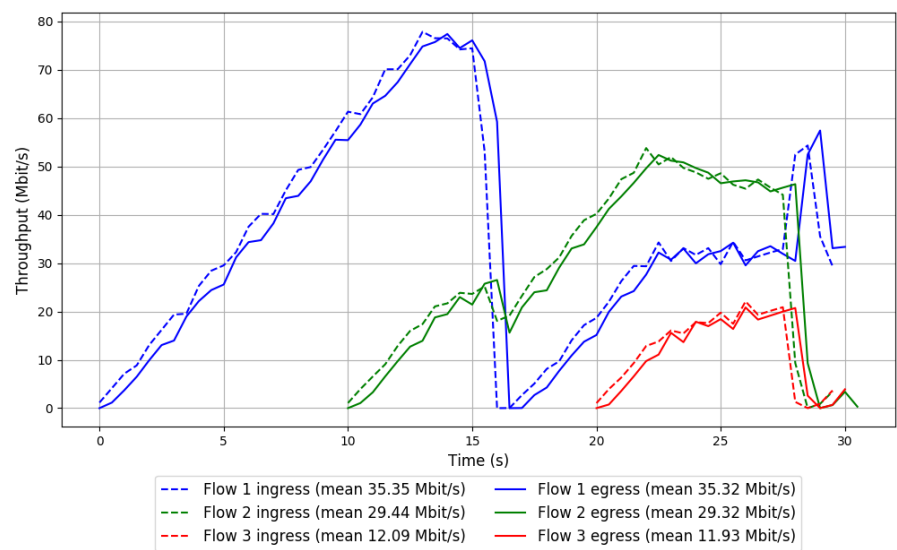
```
Run 5: Statistics of Indigo-MusesT

Start at: 2018-12-11 14:01:52
End at: 2018-12-11 14:02:22
Local clock offset: -0.24 ms
Remote clock offset: -2.945 ms


# Below is generated by plot.py at 2018-12-11 14:18:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.52 Mbit/s
95th percentile per-packet one-way delay: 67.158 ms
Loss rate: 36.80%
-- Flow 1:
Average throughput: 42.89 Mbit/s
95th percentile per-packet one-way delay: 67.627 ms
Loss rate: 43.67%
-- Flow 2:
Average throughput: 47.46 Mbit/s
95th percentile per-packet one-way delay: 65.899 ms
Loss rate: 25.05%
-- Flow 3:
Average throughput: 24.15 Mbit/s
95th percentile per-packet one-way delay: 67.749 ms
Loss rate: 33.70%
```

Run 5: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 76.20 Mbit/s)   Flow 1 egress (mean 42.89 Mbit/s)
Flow 2 ingress (mean 63.30 Mbit/s)   Flow 2 egress (mean 47.46 Mbit/s)
Flow 3 ingress (mean 36.51 Mbit/s)   Flow 3 egress (mean 24.15 Mbit/s)

Flow 1 (95th percentile 67.63 ms)   Flow 2 (95th percentile 65.90 ms)   Flow 3 (95th percentile 67.75 ms)
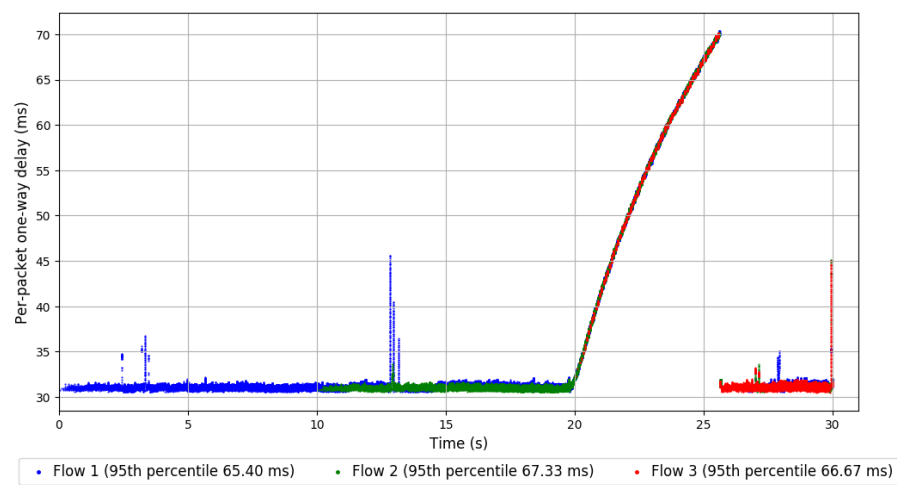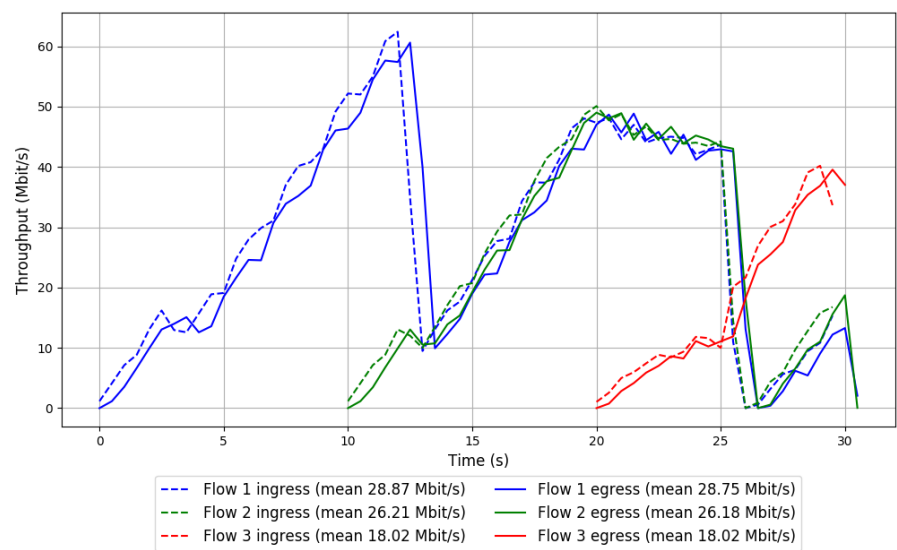
```
Run 1: Statistics of LEDBAT

Start at: 2018-12-11 12:20:24
End at: 2018-12-11 12:20:54
Local clock offset: 2.819 ms
Remote clock offset: -3.214 ms


# Below is generated by plot.py at 2018-12-11 14:18:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.74 Mbit/s
95th percentile per-packet one-way delay: 65.578 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 40.98 Mbit/s
95th percentile per-packet one-way delay: 65.574 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 19.86 Mbit/s
95th percentile per-packet one-way delay: 66.989 ms
Loss rate: 0.21%
-- Flow 3:
Average throughput: 16.77 Mbit/s
95th percentile per-packet one-way delay: 47.942 ms
Loss rate: 0.15%
```
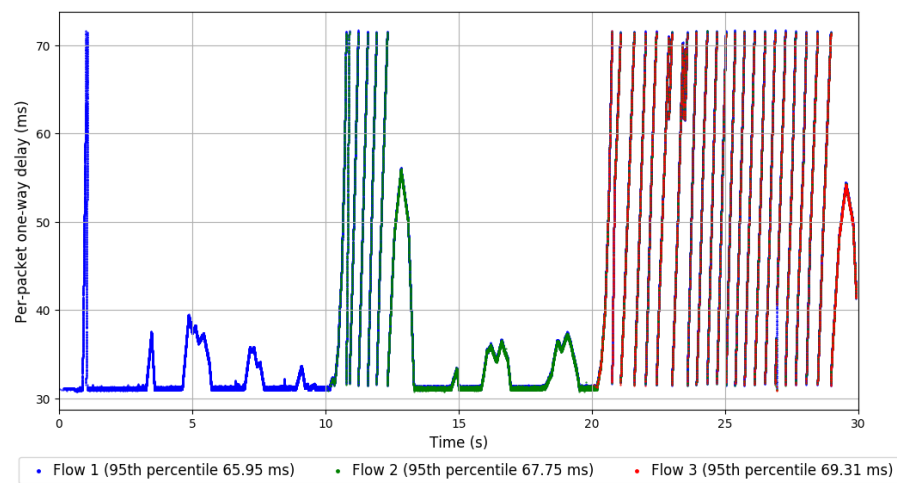
Run 1: Report of LEDBAT — Data Link

- - - - Flow 1 ingress (mean 41.10 Mbit/s)　——— Flow 1 egress (mean 40.98 Mbit/s)
- - - - Flow 2 ingress (mean 19.92 Mbit/s)　——— Flow 2 egress (mean 19.86 Mbit/s)
- - - - Flow 3 ingress (mean 16.78 Mbit/s)　——— Flow 3 egress (mean 16.77 Mbit/s)

- Flow 1 (95th percentile 65.57 ms)　• Flow 2 (95th percentile 66.99 ms)　• Flow 3 (95th percentile 47.94 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-11 12:43:17
End at: 2018-12-11 12:43:47
Local clock offset: 3.835 ms
Remote clock offset: -3.127 ms


# Below is generated by plot.py at 2018-12-11 14:18:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.60 Mbit/s
95th percentile per-packet one-way delay: 63.982 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 41.50 Mbit/s
95th percentile per-packet one-way delay: 64.449 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 27.58 Mbit/s
95th percentile per-packet one-way delay: 64.162 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 17.41 Mbit/s
95th percentile per-packet one-way delay: 39.155 ms
Loss rate: 0.14%
```
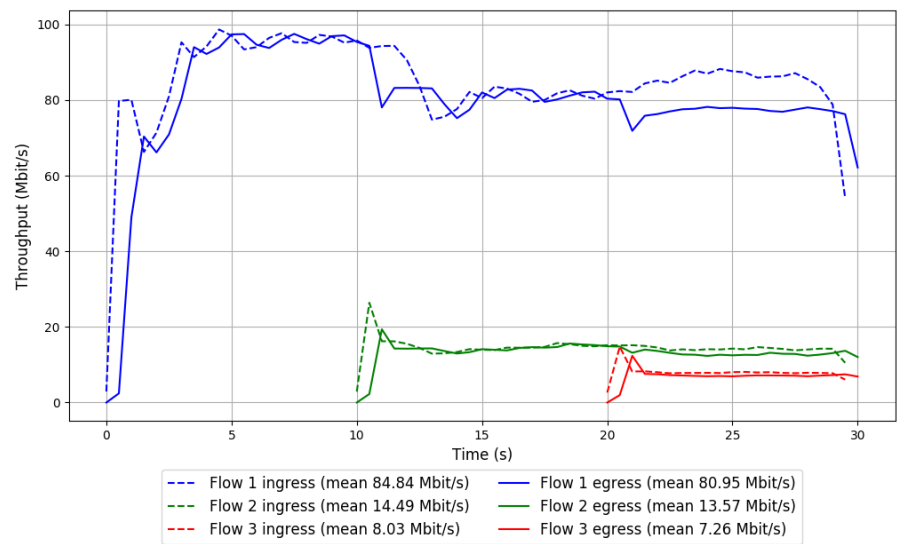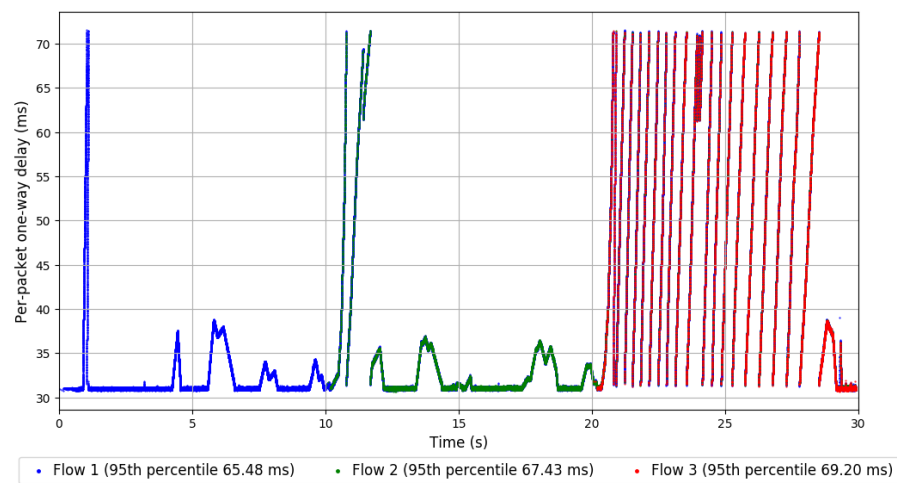
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-11 13:06:29
End at: 2018-12-11 13:06:59
Local clock offset: 3.747 ms
Remote clock offset: -3.158 ms


# Below is generated by plot.py at 2018-12-11 14:18:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 61.11 Mbit/s
95th percentile per-packet one-way delay: 65.275 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 40.95 Mbit/s
95th percentile per-packet one-way delay: 65.399 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 19.34 Mbit/s
95th percentile per-packet one-way delay: 66.828 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 21.96 Mbit/s
95th percentile per-packet one-way delay: 49.654 ms
Loss rate: 0.03%
```
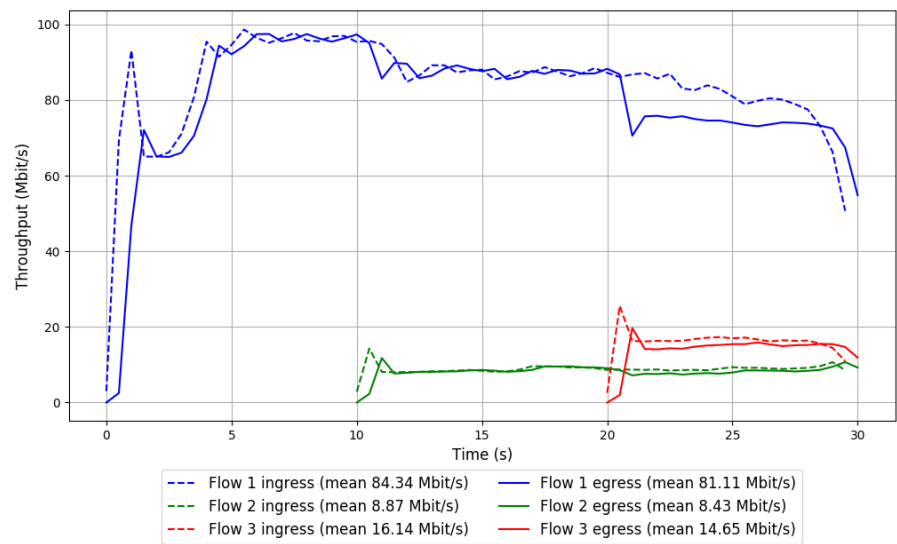
Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-11 13:29:12
End at: 2018-12-11 13:29:42
Local clock offset: -0.024 ms
Remote clock offset: -3.338 ms


# Below is generated by plot.py at 2018-12-11 14:18:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 58.76 Mbit/s
95th percentile per-packet one-way delay: 65.887 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 35.32 Mbit/s
95th percentile per-packet one-way delay: 62.189 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 29.32 Mbit/s
95th percentile per-packet one-way delay: 67.217 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 11.93 Mbit/s
95th percentile per-packet one-way delay: 68.548 ms
Loss rate: 1.23%
```
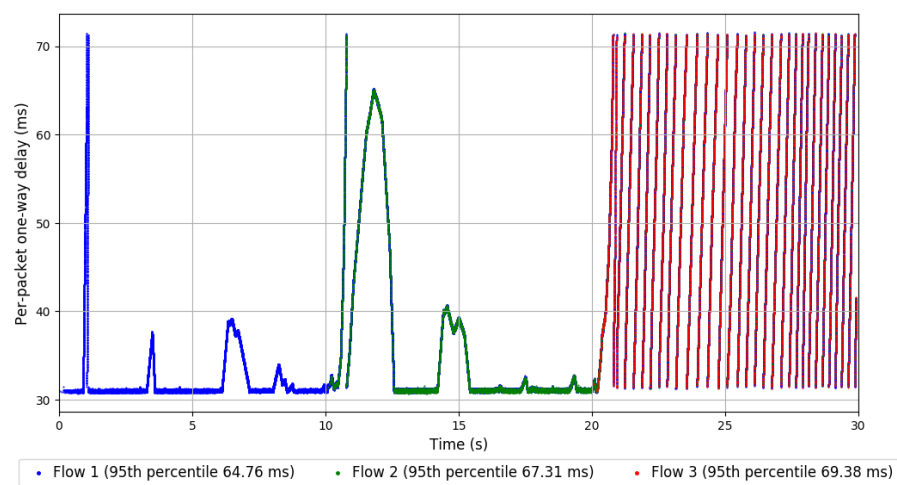
Run 4: Report of LEDBAT — Data Link

- - - - Flow 1 ingress (mean 35.35 Mbit/s) ——— Flow 1 egress (mean 35.32 Mbit/s)
- - - - Flow 2 ingress (mean 29.44 Mbit/s) ——— Flow 2 egress (mean 29.32 Mbit/s)
- - - - Flow 3 ingress (mean 12.09 Mbit/s) ——— Flow 3 egress (mean 11.93 Mbit/s)

• Flow 1 (95th percentile 62.19 ms)   • Flow 2 (95th percentile 67.22 ms)   • Flow 3 (95th percentile 68.55 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-11 13:52:13
End at: 2018-12-11 13:52:43
Local clock offset: -0.178 ms
Remote clock offset: -3.206 ms


# Below is generated by plot.py at 2018-12-11 14:18:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 52.16 Mbit/s
95th percentile per-packet one-way delay: 66.227 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 28.75 Mbit/s
95th percentile per-packet one-way delay: 65.401 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 26.18 Mbit/s
95th percentile per-packet one-way delay: 67.325 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 18.02 Mbit/s
95th percentile per-packet one-way delay: 66.674 ms
Loss rate: 0.01%
```
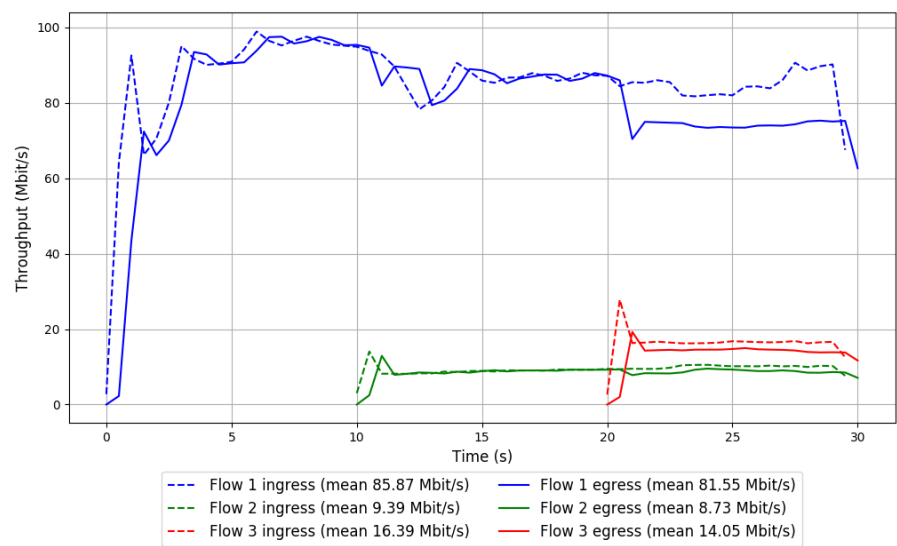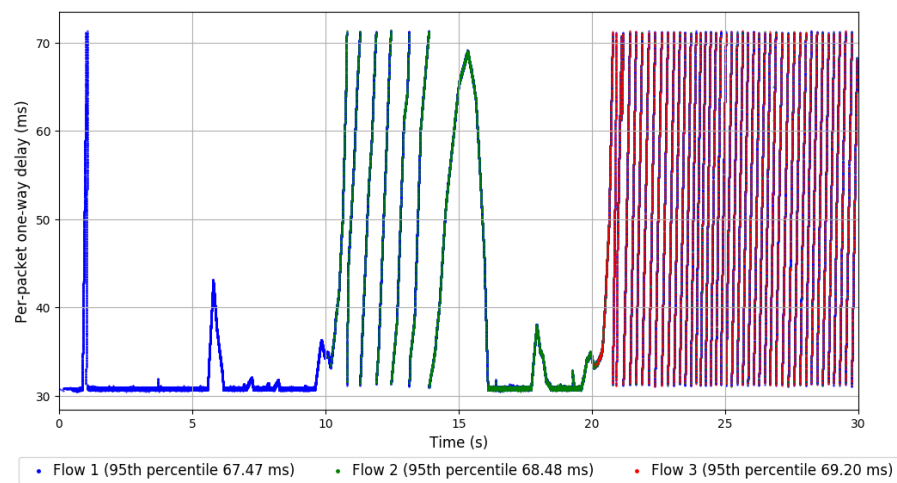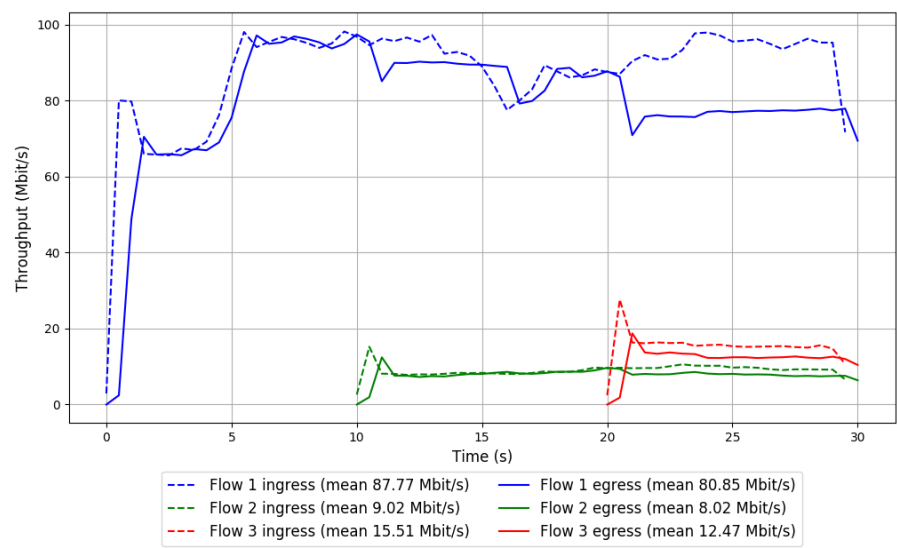
Run 5: Report of LEDBAT — Data Link

- - - Flow 1 ingress (mean 28.87 Mbit/s)   —— Flow 1 egress (mean 28.75 Mbit/s)
- - - Flow 2 ingress (mean 26.21 Mbit/s)   —— Flow 2 egress (mean 26.18 Mbit/s)
- - - Flow 3 ingress (mean 18.02 Mbit/s)   —— Flow 3 egress (mean 18.02 Mbit/s)

• Flow 1 (95th percentile 65.40 ms)   • Flow 2 (95th percentile 67.33 ms)   • Flow 3 (95th percentile 66.67 ms)
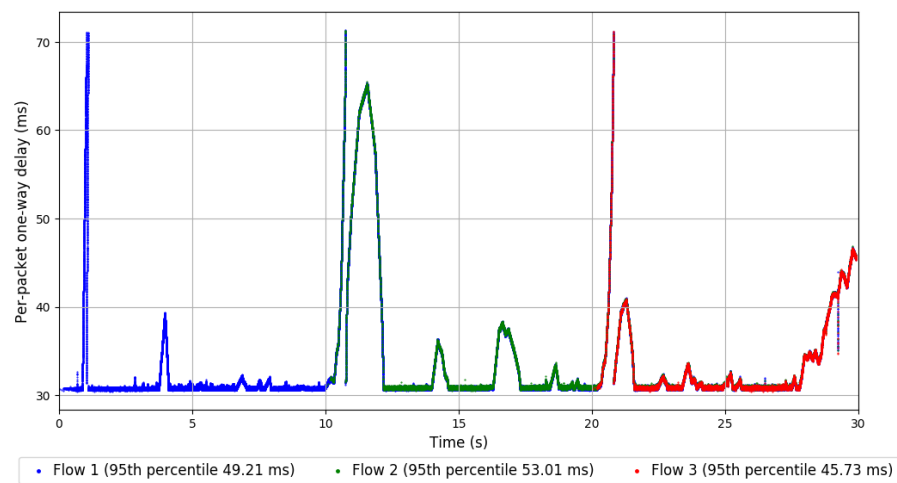
94

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-11 12:16:50
End at: 2018-12-11 12:17:20
Local clock offset: 2.274 ms
Remote clock offset: -3.208 ms


# Below is generated by plot.py at 2018-12-11 14:19:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.37 Mbit/s
95th percentile per-packet one-way delay: 66.443 ms
Loss rate: 4.85%
-- Flow 1:
Average throughput: 80.95 Mbit/s
95th percentile per-packet one-way delay: 65.953 ms
Loss rate: 4.55%
-- Flow 2:
Average throughput: 13.57 Mbit/s
95th percentile per-packet one-way delay: 67.746 ms
Loss rate: 6.26%
-- Flow 3:
Average throughput: 7.26 Mbit/s
95th percentile per-packet one-way delay: 69.310 ms
Loss rate: 9.54%
```
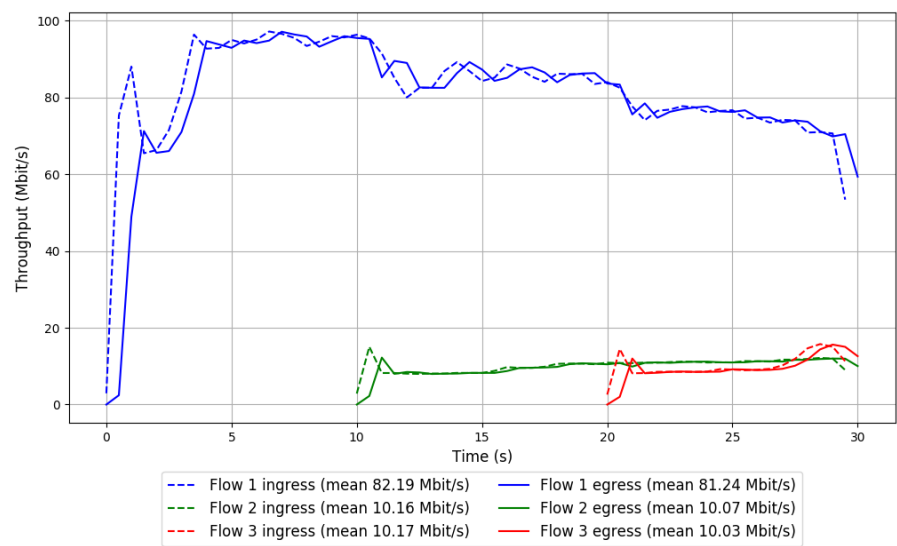
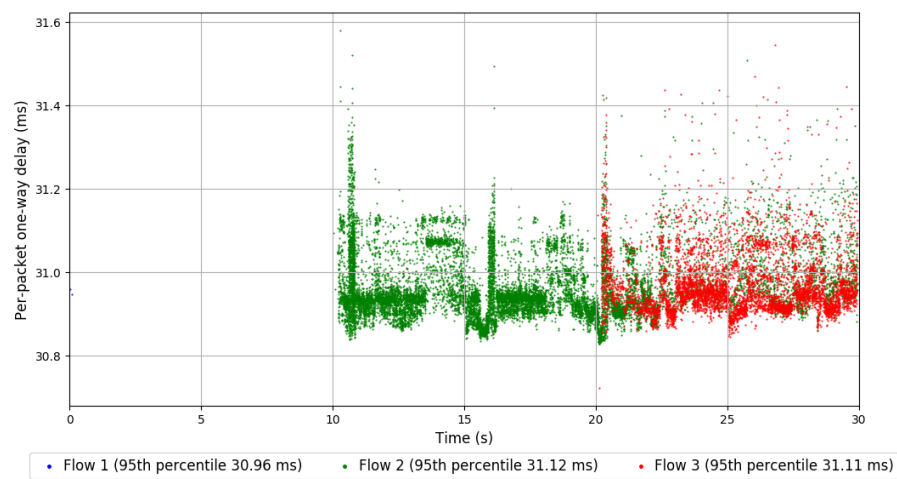Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-11 12:39:35
End at: 2018-12-11 12:40:05
Local clock offset: 4.061 ms
Remote clock offset: -3.108 ms


# Below is generated by plot.py at 2018-12-11 14:19:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.54 Mbit/s
95th percentile per-packet one-way delay: 66.158 ms
Loss rate: 4.21%
-- Flow 1:
Average throughput: 81.11 Mbit/s
95th percentile per-packet one-way delay: 65.479 ms
Loss rate: 3.84%
-- Flow 2:
Average throughput: 8.43 Mbit/s
95th percentile per-packet one-way delay: 67.432 ms
Loss rate: 4.94%
-- Flow 3:
Average throughput: 14.65 Mbit/s
95th percentile per-packet one-way delay: 69.196 ms
Loss rate: 9.23%
```
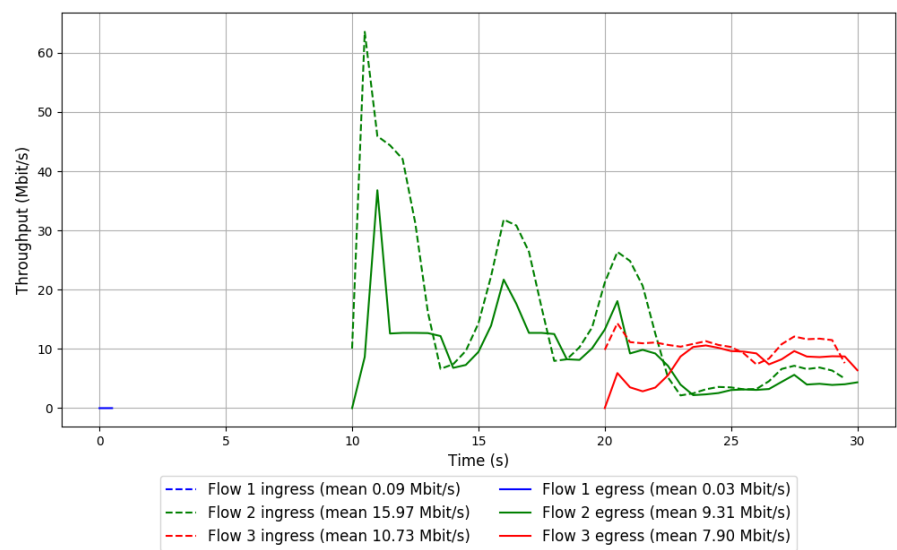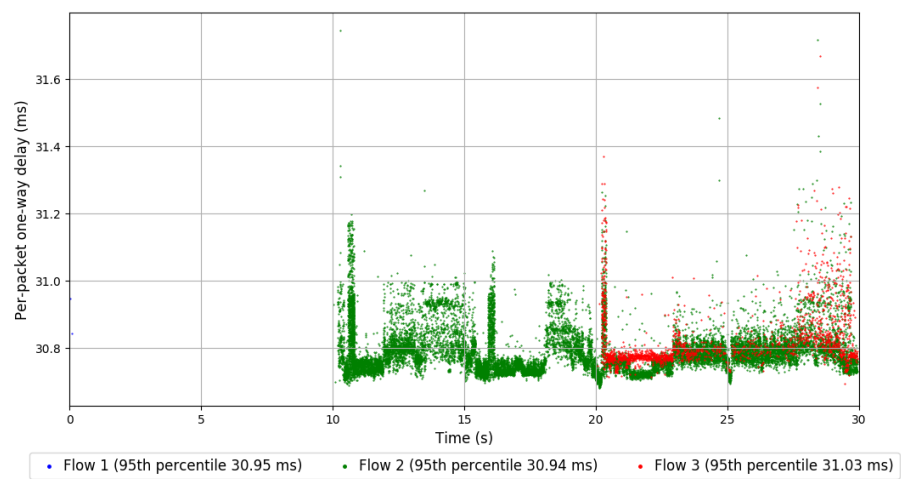
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 84.34 Mbit/s) ----   Flow 1 egress (mean 81.11 Mbit/s) ——
Flow 2 ingress (mean 8.87 Mbit/s) ----   Flow 2 egress (mean 8.43 Mbit/s) ——
Flow 3 ingress (mean 16.14 Mbit/s) ----   Flow 3 egress (mean 14.65 Mbit/s) ——

Flow 1 (95th percentile 65.48 ms)   Flow 2 (95th percentile 67.43 ms)   Flow 3 (95th percentile 69.20 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-11 13:02:54
End at: 2018-12-11 13:03:25
Local clock offset: 3.678 ms
Remote clock offset: -3.15 ms

# Below is generated by plot.py at 2018-12-11 14:19:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.99 Mbit/s
95th percentile per-packet one-way delay: 65.526 ms
Loss rate: 5.64%
-- Flow 1:
Average throughput: 81.55 Mbit/s
95th percentile per-packet one-way delay: 64.761 ms
Loss rate: 5.00%
-- Flow 2:
Average throughput: 8.73 Mbit/s
95th percentile per-packet one-way delay: 67.314 ms
Loss rate: 6.95%
-- Flow 3:
Average throughput: 14.05 Mbit/s
95th percentile per-packet one-way delay: 69.377 ms
Loss rate: 14.23%
```
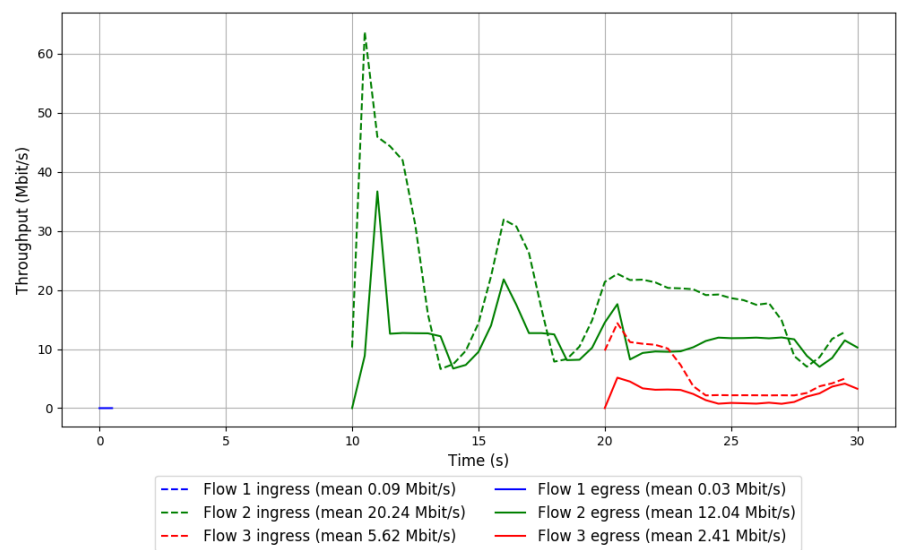
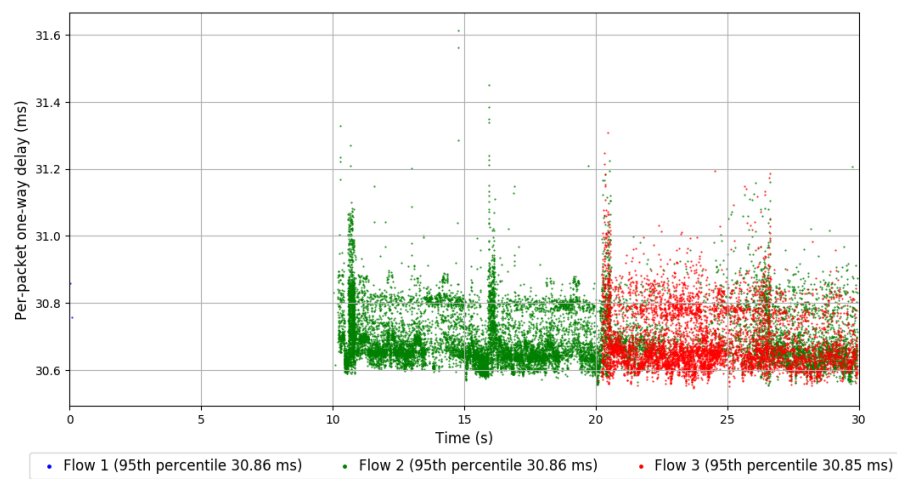Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-11 13:25:38
End at: 2018-12-11 13:26:08
Local clock offset: 0.249 ms
Remote clock offset: -3.143 ms


# Below is generated by plot.py at 2018-12-11 14:19:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.30 Mbit/s
95th percentile per-packet one-way delay: 67.690 ms
Loss rate: 8.57%
-- Flow 1:
Average throughput: 80.85 Mbit/s
95th percentile per-packet one-way delay: 67.475 ms
Loss rate: 7.78%
-- Flow 2:
Average throughput: 8.02 Mbit/s
95th percentile per-packet one-way delay: 68.477 ms
Loss rate: 10.96%
-- Flow 3:
Average throughput: 12.47 Mbit/s
95th percentile per-packet one-way delay: 69.203 ms
Loss rate: 19.30%
```
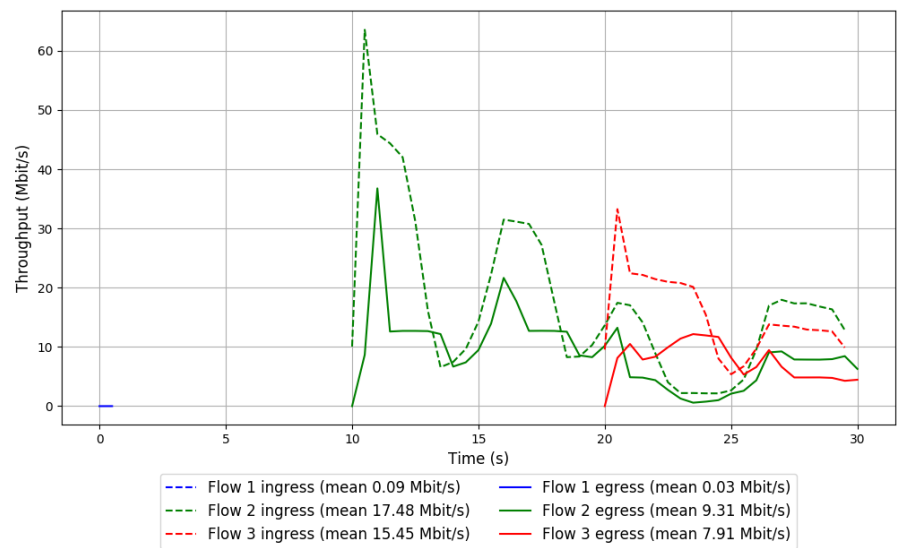
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 87.77 Mbit/s)   Flow 1 egress (mean 80.85 Mbit/s)
Flow 2 ingress (mean 9.02 Mbit/s)   Flow 2 egress (mean 8.02 Mbit/s)
Flow 3 ingress (mean 15.51 Mbit/s)   Flow 3 egress (mean 12.47 Mbit/s)

Flow 1 (95th percentile 67.47 ms)   Flow 2 (95th percentile 68.48 ms)   Flow 3 (95th percentile 69.20 ms)
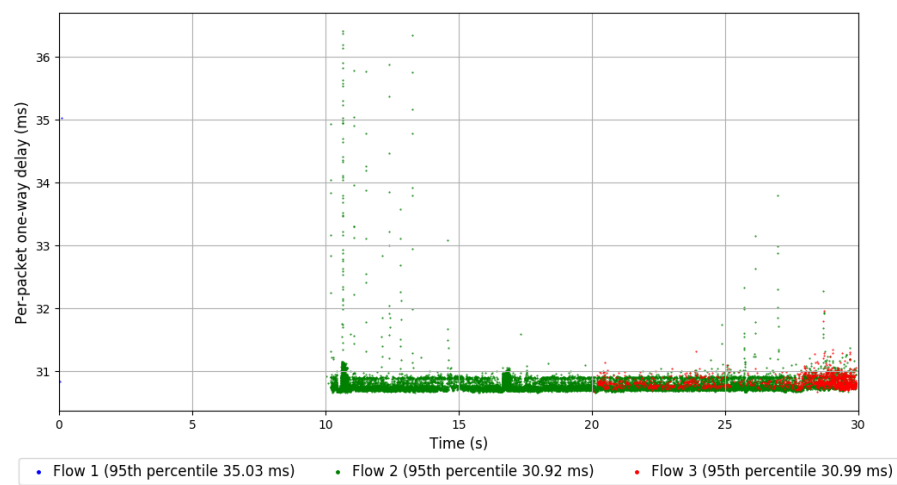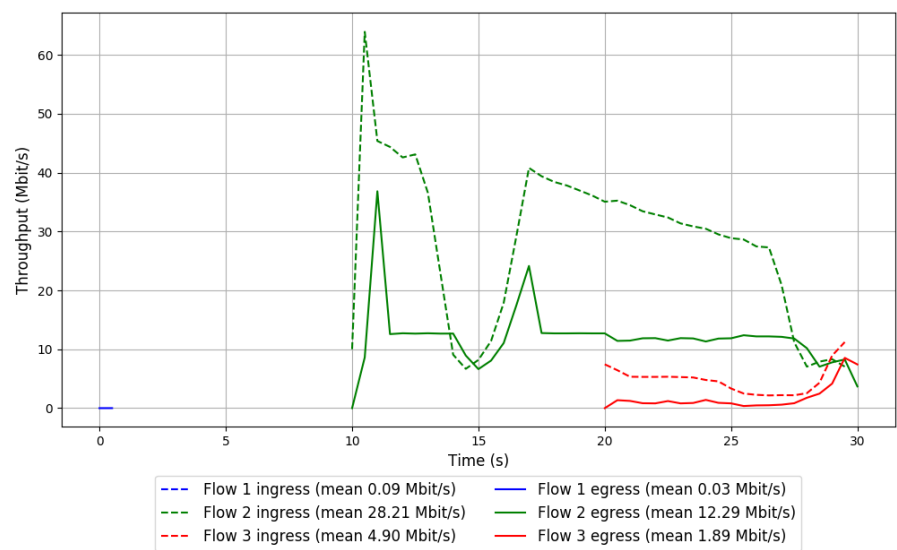
```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-11 13:48:39
End at: 2018-12-11 13:49:09
Local clock offset: -0.182 ms
Remote clock offset: -3.175 ms


# Below is generated by plot.py at 2018-12-11 14:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 49.069 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 81.24 Mbit/s
95th percentile per-packet one-way delay: 49.208 ms
Loss rate: 1.10%
-- Flow 2:
Average throughput: 10.07 Mbit/s
95th percentile per-packet one-way delay: 53.007 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 10.03 Mbit/s
95th percentile per-packet one-way delay: 45.727 ms
Loss rate: 1.23%
```

Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-11 12:31:17
End at: 2018-12-11 12:31:47
Local clock offset: 3.786 ms
Remote clock offset: -3.129 ms


# Below is generated by plot.py at 2018-12-11 14:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 31.117 ms
Loss rate: 37.86%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.958 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 9.31 Mbit/s
95th percentile per-packet one-way delay: 31.119 ms
Loss rate: 41.69%
-- Flow 3:
Average throughput: 7.90 Mbit/s
95th percentile per-packet one-way delay: 31.108 ms
Loss rate: 26.38%
```
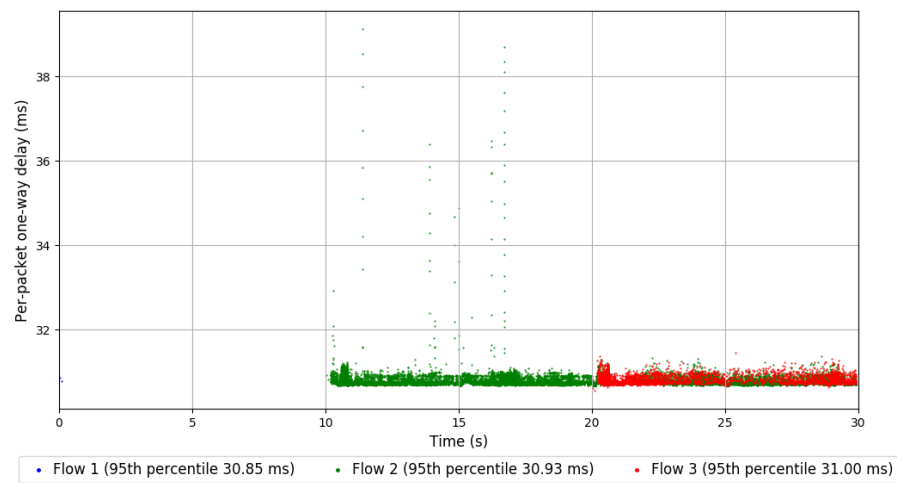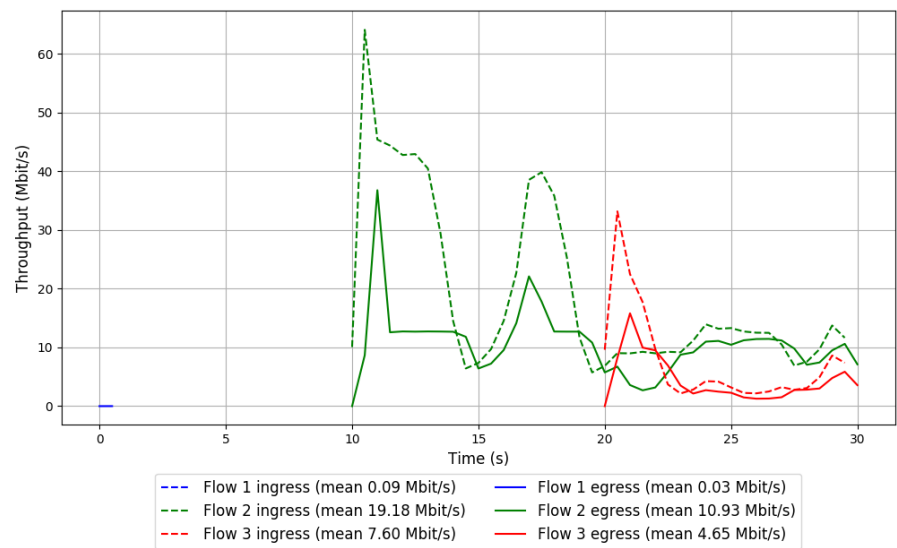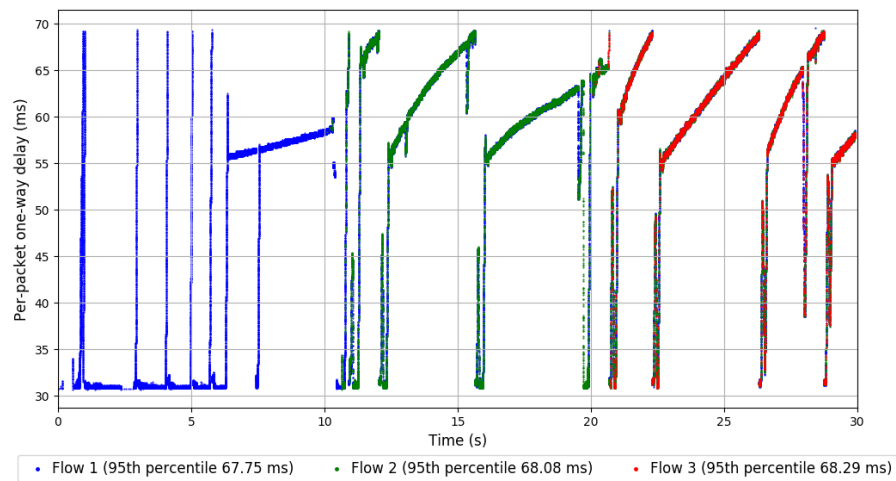
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.09 Mbit/s)   Flow 1 egress (mean 0.03 Mbit/s)
Flow 2 ingress (mean 15.97 Mbit/s)   Flow 2 egress (mean 9.31 Mbit/s)
Flow 3 ingress (mean 10.73 Mbit/s)   Flow 3 egress (mean 7.90 Mbit/s)

Flow 1 (95th percentile 30.96 ms)   Flow 2 (95th percentile 31.12 ms)   Flow 3 (95th percentile 31.11 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-11 12:54:37
End at: 2018-12-11 12:55:07
Local clock offset: 3.603 ms
Remote clock offset: -3.162 ms


# Below is generated by plot.py at 2018-12-11 14:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.81 Mbit/s
95th percentile per-packet one-way delay: 30.941 ms
Loss rate: 42.51%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.948 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 12.04 Mbit/s
95th percentile per-packet one-way delay: 30.936 ms
Loss rate: 40.50%
-- Flow 3:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 31.032 ms
Loss rate: 57.11%
```
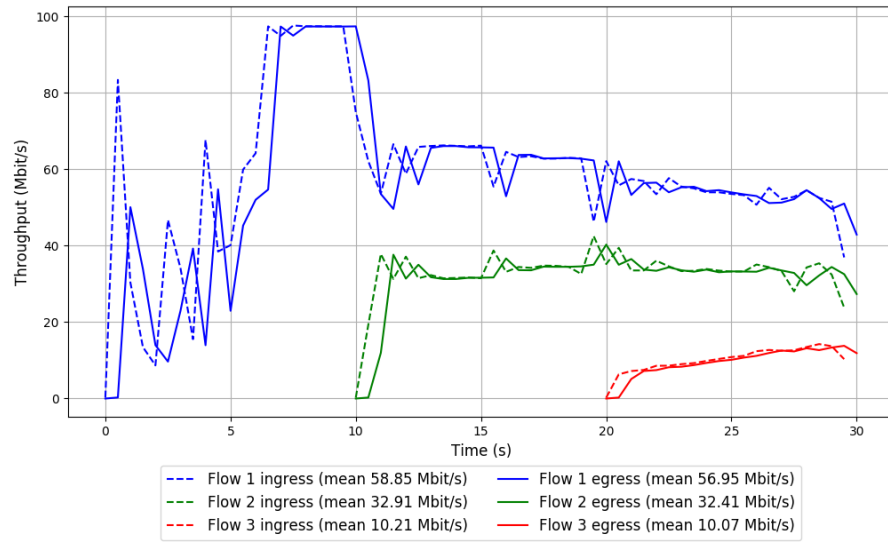
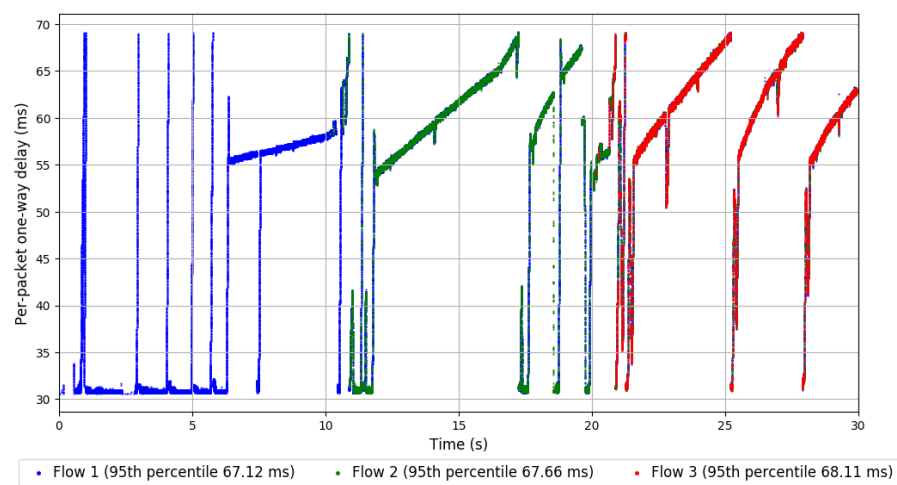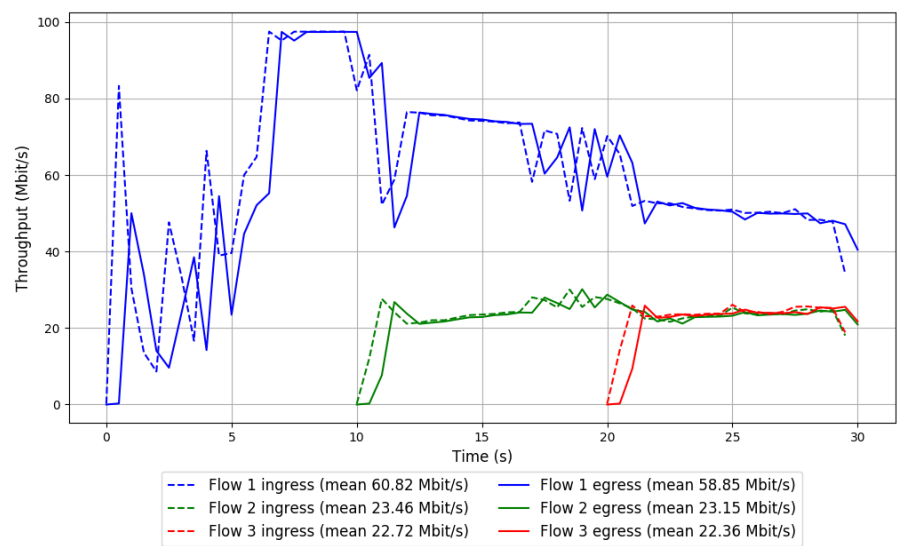## Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-11 13:17:22
End at: 2018-12-11 13:17:52
Local clock offset: 1.261 ms
Remote clock offset: -3.165 ms


# Below is generated by plot.py at 2018-12-11 14:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.81 Mbit/s
95th percentile per-packet one-way delay: 30.855 ms
Loss rate: 47.37%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.858 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 9.31 Mbit/s
95th percentile per-packet one-way delay: 30.856 ms
Loss rate: 46.75%
-- Flow 3:
Average throughput: 7.91 Mbit/s
95th percentile per-packet one-way delay: 30.851 ms
Loss rate: 48.78%
```
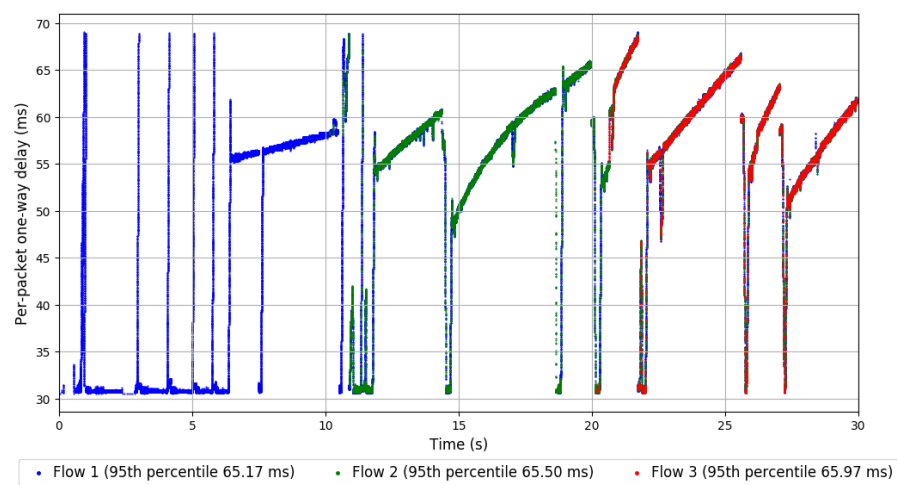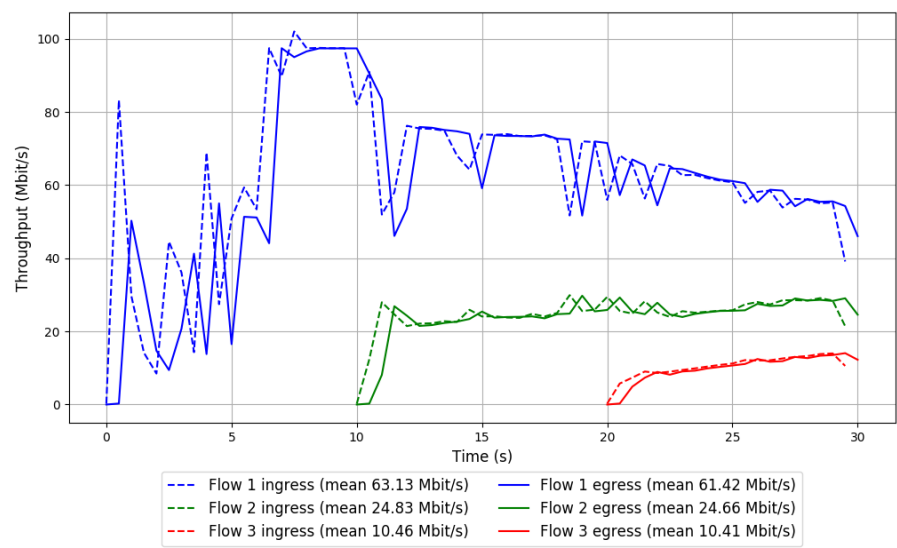
Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-11 13:40:18
End at: 2018-12-11 13:40:48
Local clock offset: -0.374 ms
Remote clock offset: -3.114 ms


# Below is generated by plot.py at 2018-12-11 14:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 30.924 ms
Loss rate: 56.81%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 35.035 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 12.29 Mbit/s
95th percentile per-packet one-way delay: 30.918 ms
Loss rate: 56.42%
-- Flow 3:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 30.989 ms
Loss rate: 61.36%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.09 Mbit/s) --- Flow 1 egress (mean 0.03 Mbit/s)
Flow 2 ingress (mean 28.21 Mbit/s) --- Flow 2 egress (mean 12.29 Mbit/s)
Flow 3 ingress (mean 4.90 Mbit/s) --- Flow 3 egress (mean 1.89 Mbit/s)

Flow 1 (95th percentile 35.03 ms) • Flow 2 (95th percentile 30.92 ms) • Flow 3 (95th percentile 30.99 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-11 14:03:05
End at: 2018-12-11 14:03:35
Local clock offset: -0.263 ms
Remote clock offset: -2.934 ms


# Below is generated by plot.py at 2018-12-11 14:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 30.953 ms
Loss rate: 42.32%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.854 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.93 Mbit/s
95th percentile per-packet one-way delay: 30.935 ms
Loss rate: 43.02%
-- Flow 3:
Average throughput: 4.65 Mbit/s
95th percentile per-packet one-way delay: 31.003 ms
Loss rate: 38.73%
```
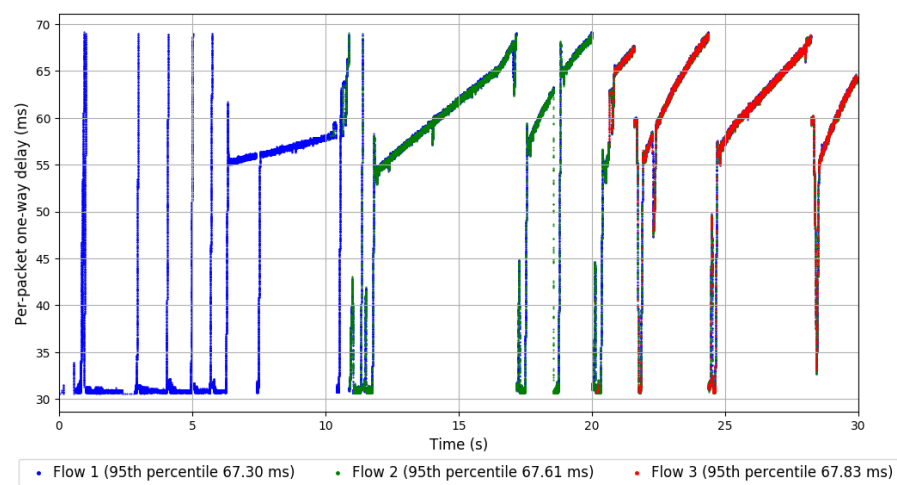
Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-11 12:32:26
End at: 2018-12-11 12:32:56
Local clock offset: 3.872 ms
Remote clock offset: -3.122 ms


# Below is generated by plot.py at 2018-12-11 14:19:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.78 Mbit/s
95th percentile per-packet one-way delay: 67.936 ms
Loss rate: 2.64%
-- Flow 1:
Average throughput: 56.95 Mbit/s
95th percentile per-packet one-way delay: 67.746 ms
Loss rate: 3.14%
-- Flow 2:
Average throughput: 32.41 Mbit/s
95th percentile per-packet one-way delay: 68.084 ms
Loss rate: 1.49%
-- Flow 3:
Average throughput: 10.07 Mbit/s
95th percentile per-packet one-way delay: 68.291 ms
Loss rate: 1.41%
```
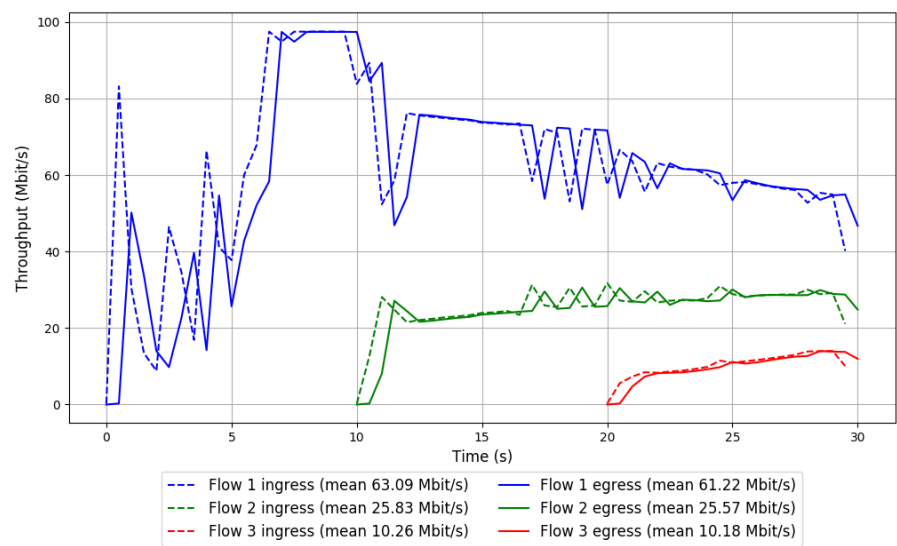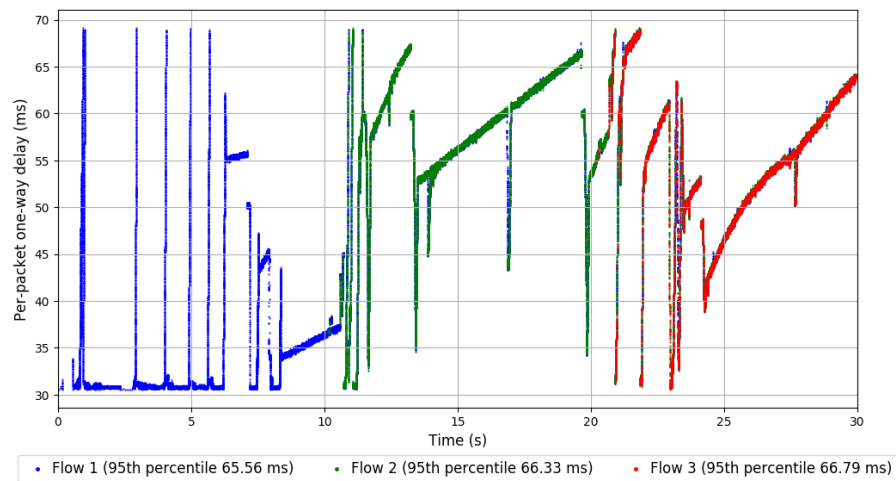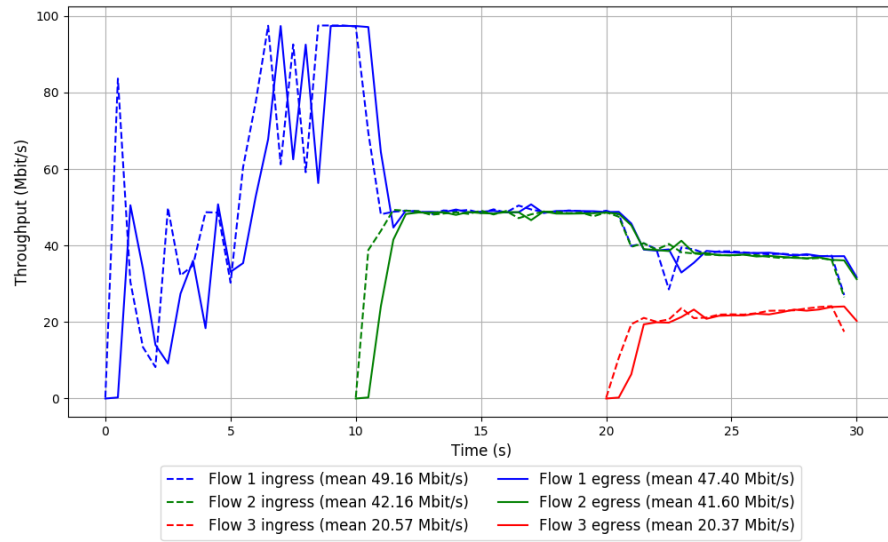
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-11 12:55:46
End at: 2018-12-11 12:56:16
Local clock offset: 3.619 ms
Remote clock offset: -3.157 ms


# Below is generated by plot.py at 2018-12-11 14:19:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.58 Mbit/s
95th percentile per-packet one-way delay: 67.386 ms
Loss rate: 2.65%
-- Flow 1:
Average throughput: 58.85 Mbit/s
95th percentile per-packet one-way delay: 67.124 ms
Loss rate: 3.13%
-- Flow 2:
Average throughput: 23.15 Mbit/s
95th percentile per-packet one-way delay: 67.655 ms
Loss rate: 1.31%
-- Flow 3:
Average throughput: 22.36 Mbit/s
95th percentile per-packet one-way delay: 68.109 ms
Loss rate: 1.48%
```
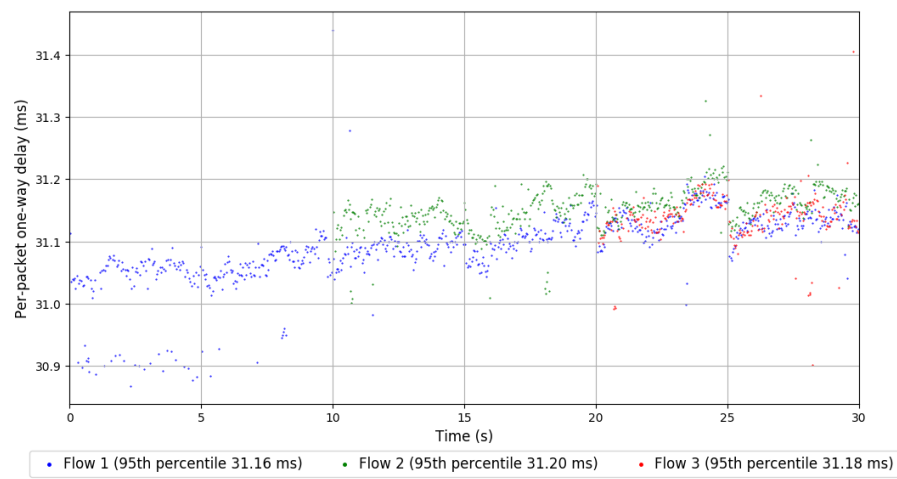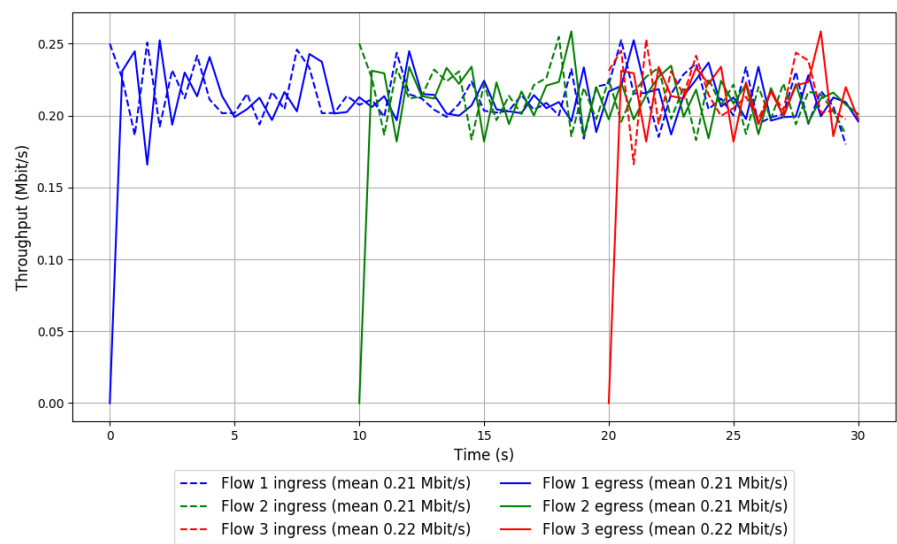
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 60.82 Mbit/s) --- Flow 1 egress (mean 58.85 Mbit/s)
Flow 2 ingress (mean 23.46 Mbit/s) --- Flow 2 egress (mean 23.15 Mbit/s)
Flow 3 ingress (mean 22.72 Mbit/s) --- Flow 3 egress (mean 22.36 Mbit/s)

Flow 1 (95th percentile 67.12 ms)   Flow 2 (95th percentile 67.66 ms)   Flow 3 (95th percentile 68.11 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-11 13:18:31
End at: 2018-12-11 13:19:01
Local clock offset: 1.047 ms
Remote clock offset: -3.165 ms


# Below is generated by plot.py at 2018-12-11 14:19:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.21 Mbit/s
95th percentile per-packet one-way delay: 65.309 ms
Loss rate: 2.12%
-- Flow 1:
Average throughput: 61.42 Mbit/s
95th percentile per-packet one-way delay: 65.170 ms
Loss rate: 2.60%
-- Flow 2:
Average throughput: 24.66 Mbit/s
95th percentile per-packet one-way delay: 65.504 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 10.41 Mbit/s
95th percentile per-packet one-way delay: 65.973 ms
Loss rate: 0.31%
```
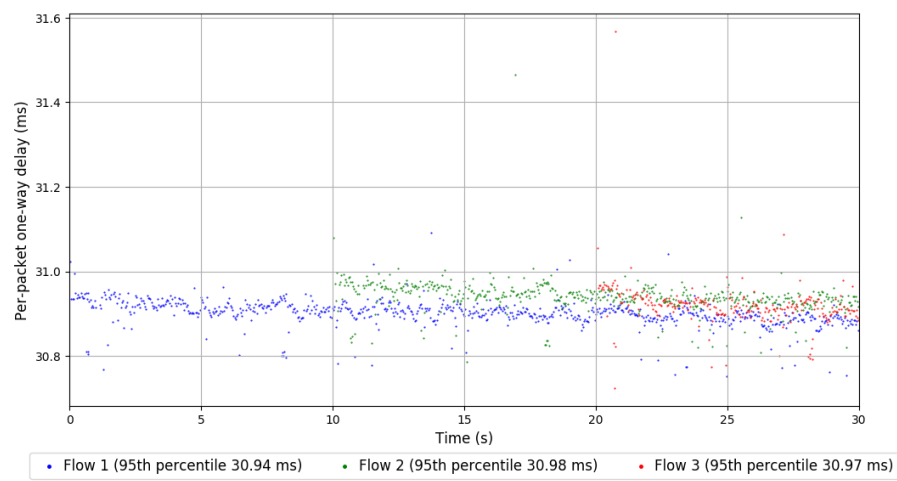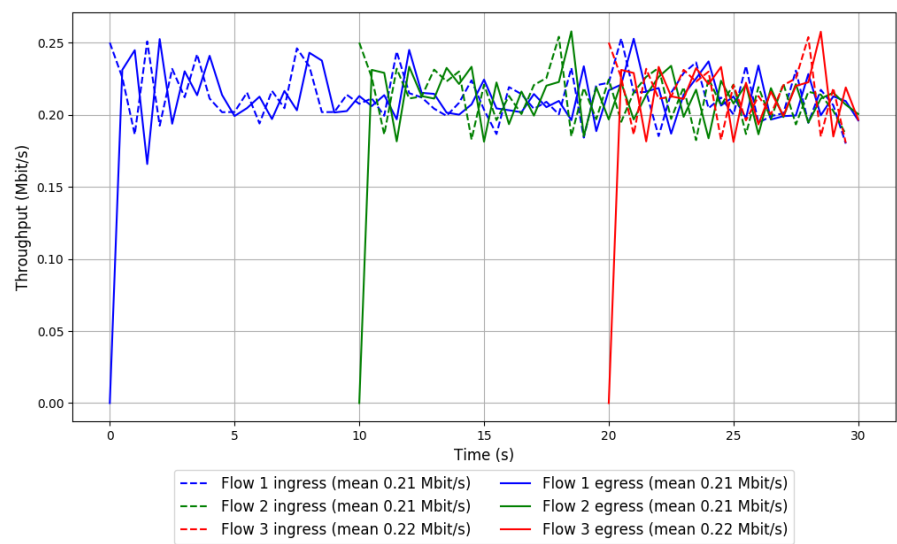
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 63.13 Mbit/s) — — —   Flow 1 egress (mean 61.42 Mbit/s) ———
Flow 2 ingress (mean 24.83 Mbit/s) — — —   Flow 2 egress (mean 24.66 Mbit/s) ———
Flow 3 ingress (mean 10.46 Mbit/s) — — —   Flow 3 egress (mean 10.41 Mbit/s) ———

Flow 1 (95th percentile 65.17 ms)   Flow 2 (95th percentile 65.50 ms)   Flow 3 (95th percentile 65.97 ms)
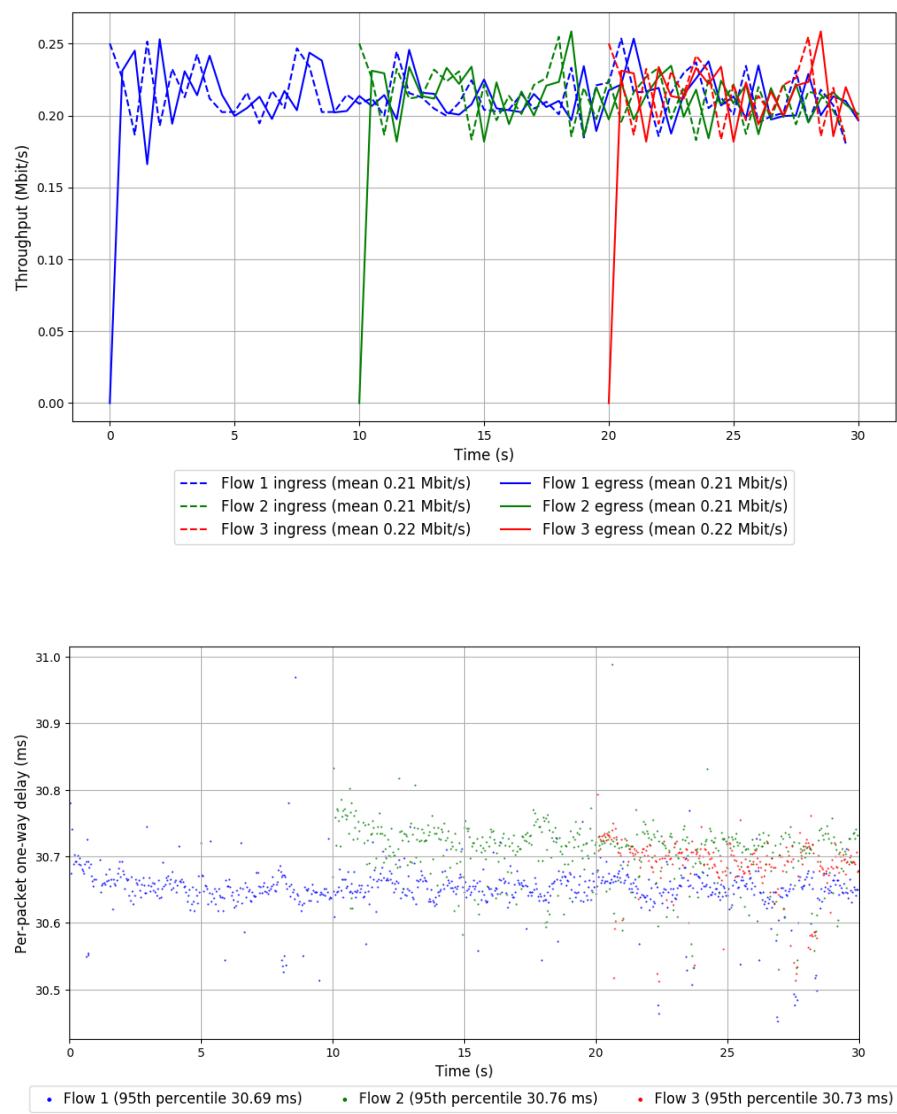
```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-11 13:41:27
End at: 2018-12-11 13:41:57
Local clock offset: -0.344 ms
Remote clock offset: -3.14 ms

# Below is generated by plot.py at 2018-12-11 14:20:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.53 Mbit/s
95th percentile per-packet one-way delay: 67.387 ms
Loss rate: 2.38%
-- Flow 1:
Average throughput: 61.22 Mbit/s
95th percentile per-packet one-way delay: 67.304 ms
Loss rate: 2.86%
-- Flow 2:
Average throughput: 25.57 Mbit/s
95th percentile per-packet one-way delay: 67.612 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 10.18 Mbit/s
95th percentile per-packet one-way delay: 67.831 ms
Loss rate: 0.56%
```
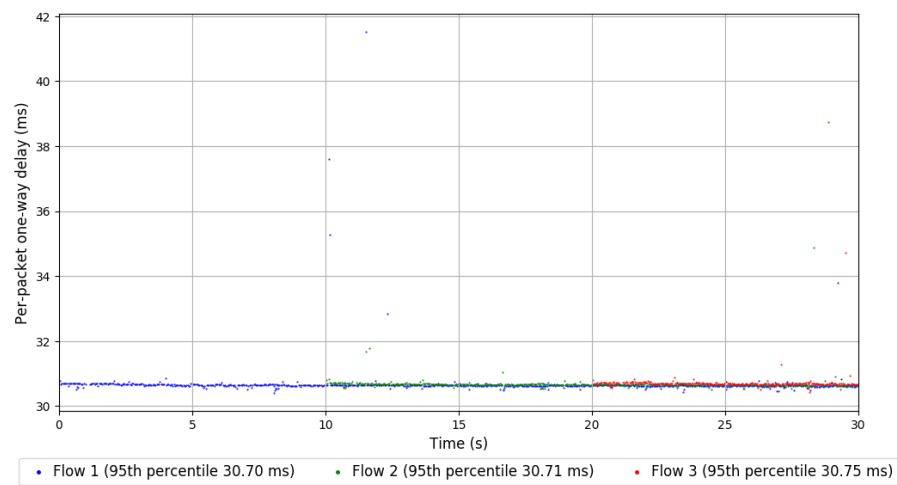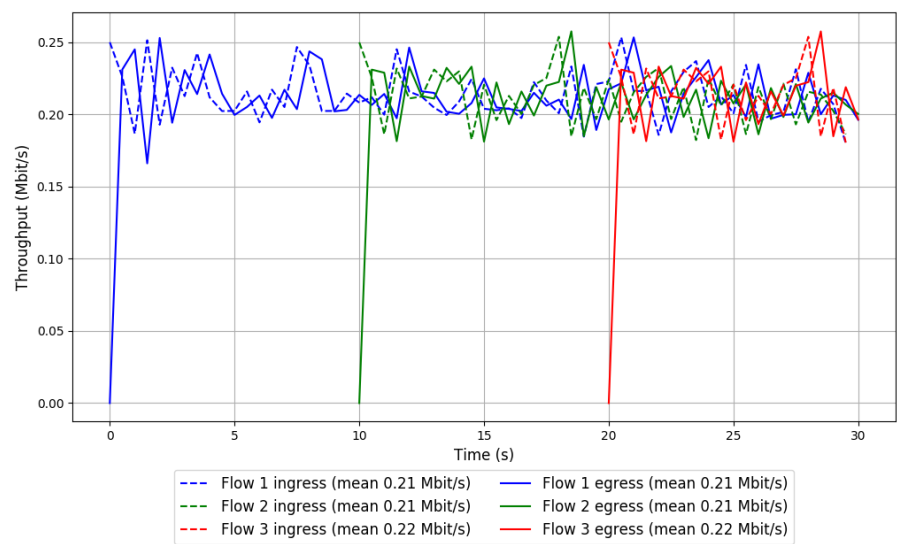
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 63.09 Mbit/s) --- Flow 1 egress (mean 61.22 Mbit/s)
Flow 2 ingress (mean 25.83 Mbit/s) --- Flow 2 egress (mean 25.57 Mbit/s)
Flow 3 ingress (mean 10.26 Mbit/s) --- Flow 3 egress (mean 10.18 Mbit/s)

Flow 1 (95th percentile 67.30 ms)   Flow 2 (95th percentile 67.61 ms)   Flow 3 (95th percentile 67.83 ms)

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```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-11 14:04:14
End at: 2018-12-11 14:04:44
Local clock offset: -0.286 ms
Remote clock offset: -2.979 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.77 Mbit/s
95th percentile per-packet one-way delay: 65.884 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 47.40 Mbit/s
95th percentile per-packet one-way delay: 65.559 ms
Loss rate: 3.47%
-- Flow 2:
Average throughput: 41.60 Mbit/s
95th percentile per-packet one-way delay: 66.331 ms
Loss rate: 1.20%
-- Flow 3:
Average throughput: 20.37 Mbit/s
95th percentile per-packet one-way delay: 66.792 ms
Loss rate: 0.86%
```
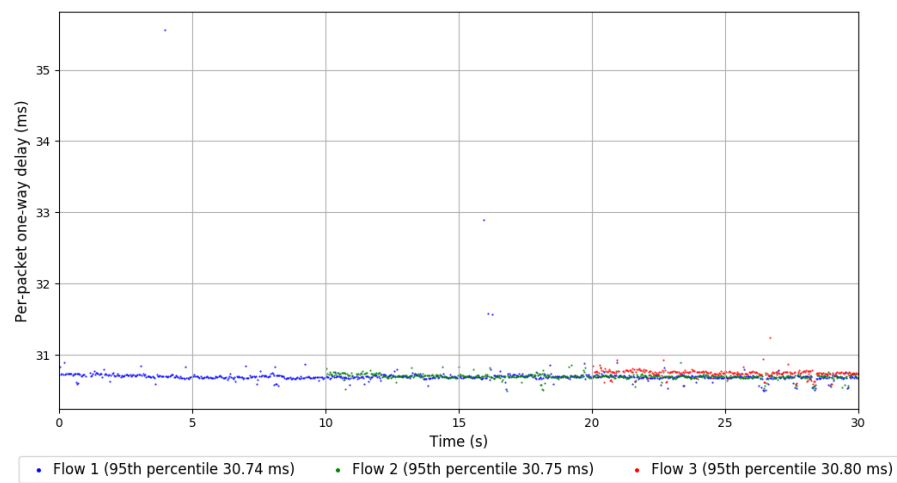
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 49.16 Mbit/s) --- Flow 1 egress (mean 47.40 Mbit/s)
Flow 2 ingress (mean 42.16 Mbit/s) --- Flow 2 egress (mean 41.60 Mbit/s)
Flow 3 ingress (mean 20.57 Mbit/s) --- Flow 3 egress (mean 20.37 Mbit/s)

Flow 1 (95th percentile 65.56 ms)   Flow 2 (95th percentile 66.33 ms)   Flow 3 (95th percentile 66.79 ms)
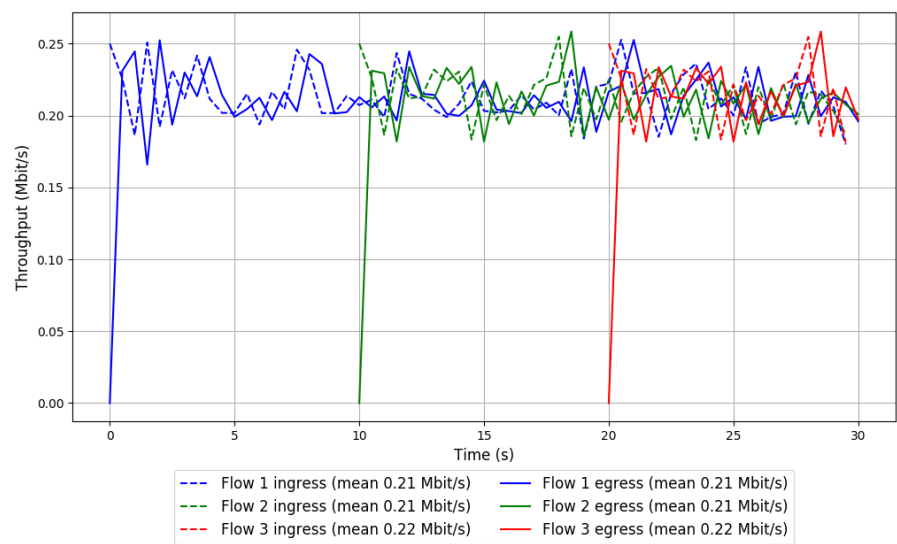
```
Run 1: Statistics of SCReAM

Start at: 2018-12-11 12:18:02
End at: 2018-12-11 12:18:32
Local clock offset: 2.454 ms
Remote clock offset: -3.171 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 31.188 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.163 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.200 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 31.185 ms
Loss rate: 0.00%
```
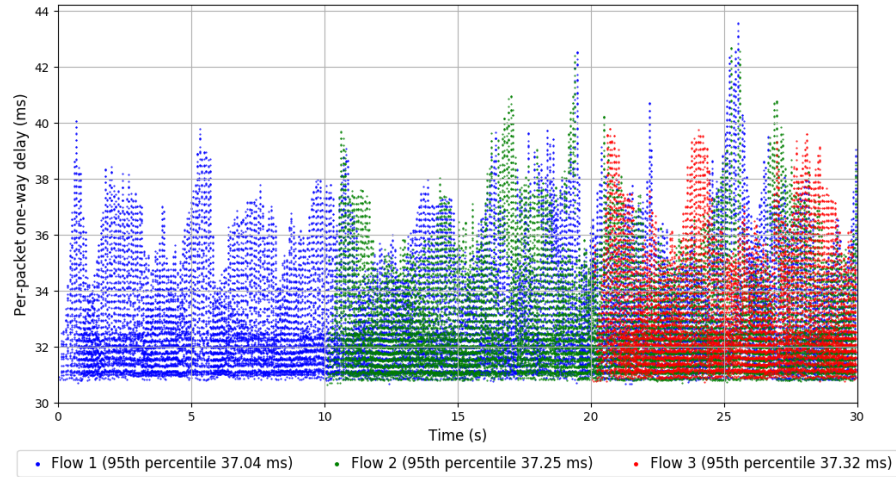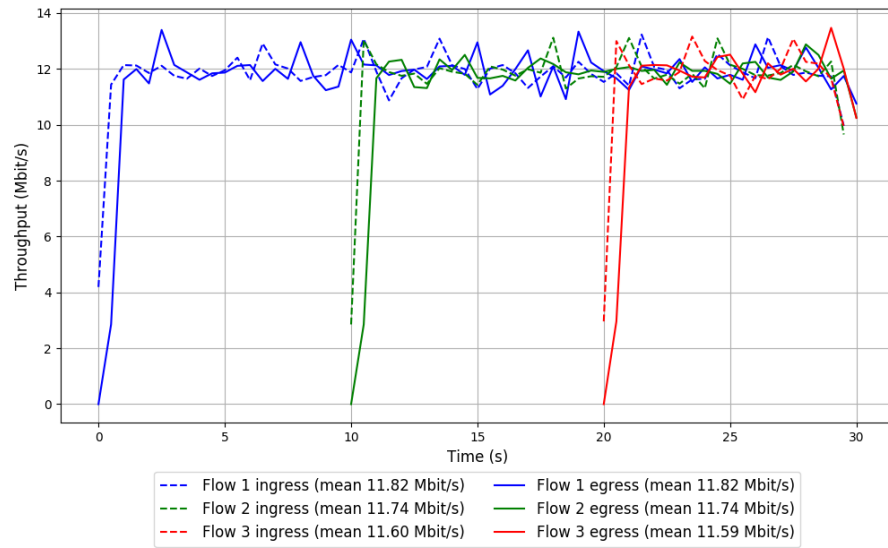
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-12-11 12:40:47
End at: 2018-12-11 12:41:17
Local clock offset: 3.976 ms
Remote clock offset: -3.131 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.969 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.939 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.980 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.967 ms
Loss rate: 0.00%
```
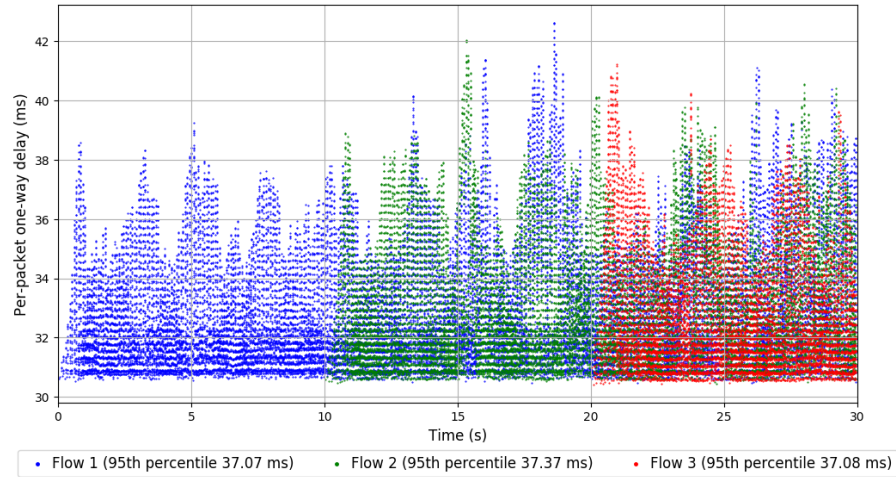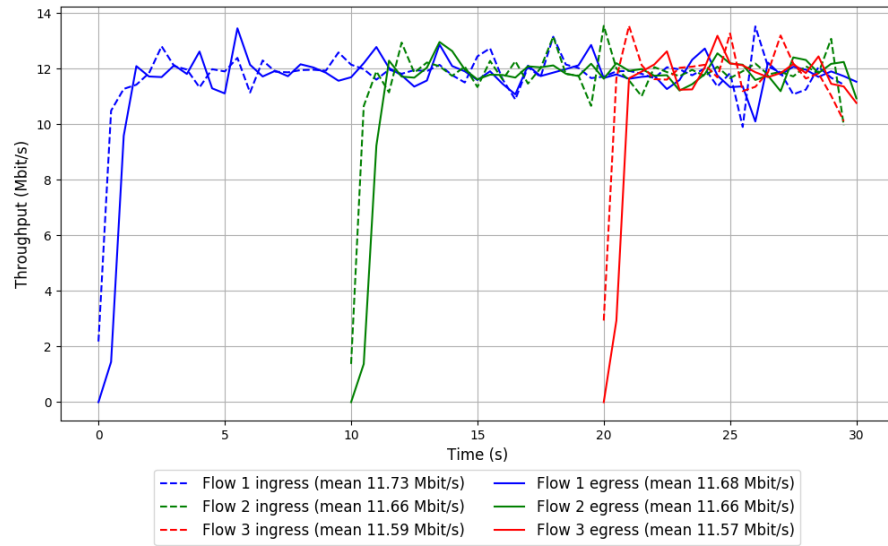
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-12-11 13:04:07
End at: 2018-12-11 13:04:37
Local clock offset: 3.698 ms
Remote clock offset: -3.371 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.742 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.692 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.759 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.731 ms
Loss rate: 0.00%
```

Run 3: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 30.69 ms)   Flow 2 (95th percentile 30.76 ms)   Flow 3 (95th percentile 30.73 ms)
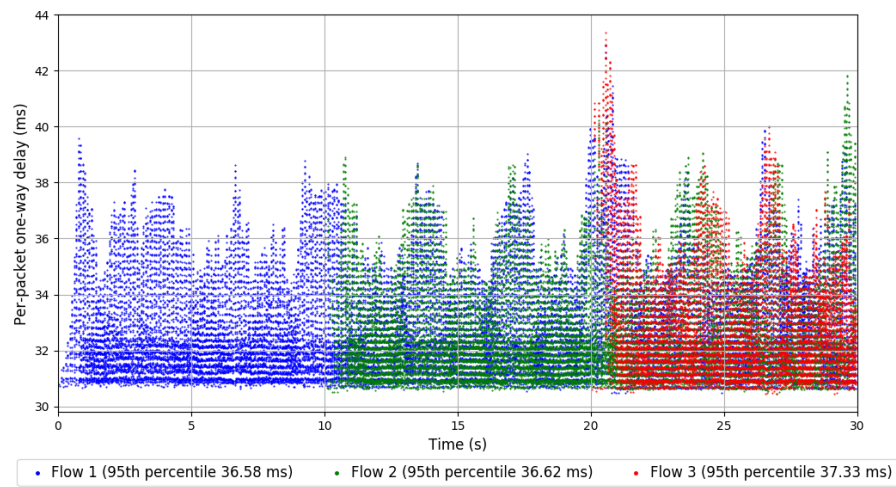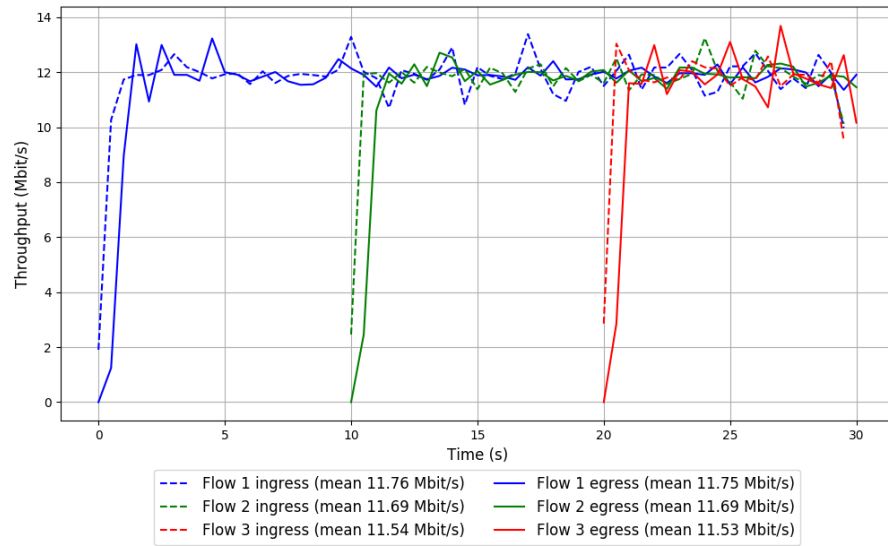
```
Run 4: Statistics of SCReAM

Start at: 2018-12-11 13:26:50
End at: 2018-12-11 13:27:20
Local clock offset: 0.173 ms
Remote clock offset: -3.269 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.721 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.696 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.714 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.750 ms
Loss rate: 0.00%
```
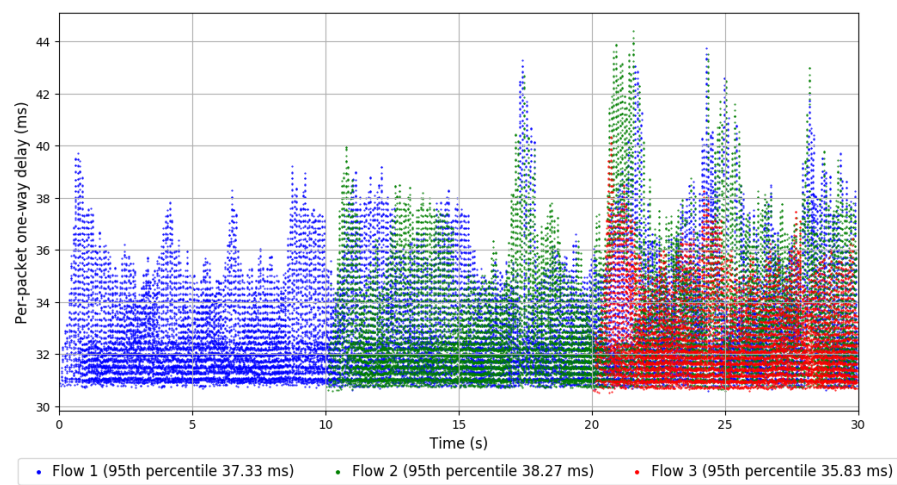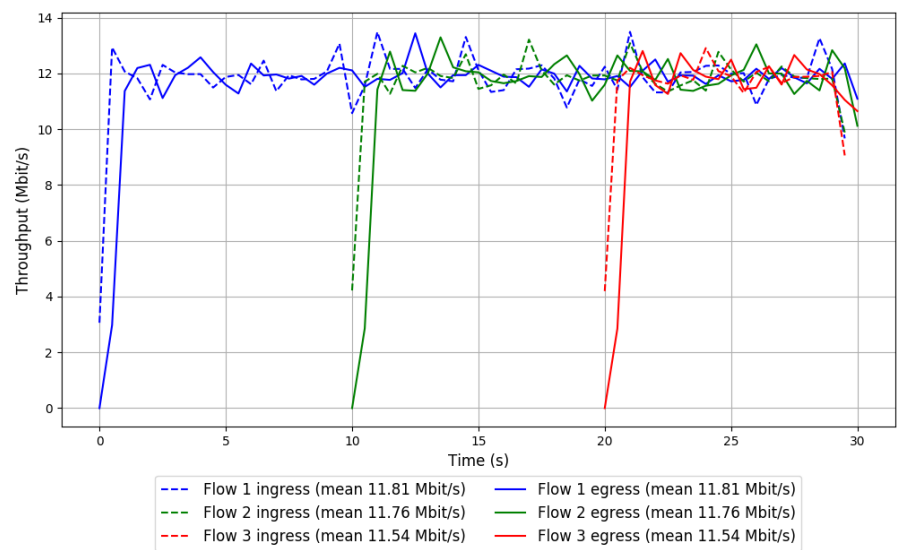
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-12-11 13:49:51
End at: 2018-12-11 13:50:21
Local clock offset: -0.169 ms
Remote clock offset: -3.212 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.777 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.742 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.751 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.797 ms
Loss rate: 0.00%
```

Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-12-11 12:36:03
End at: 2018-12-11 12:36:33
Local clock offset: 4.037 ms
Remote clock offset: -3.174 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.45 Mbit/s
95th percentile per-packet one-way delay: 37.164 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 11.82 Mbit/s
95th percentile per-packet one-way delay: 37.039 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 11.74 Mbit/s
95th percentile per-packet one-way delay: 37.250 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.59 Mbit/s
95th percentile per-packet one-way delay: 37.322 ms
Loss rate: 0.00%
```
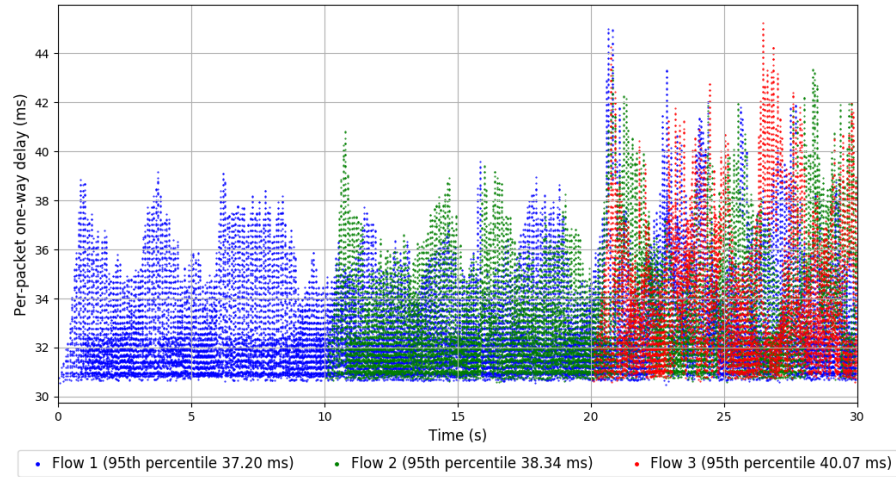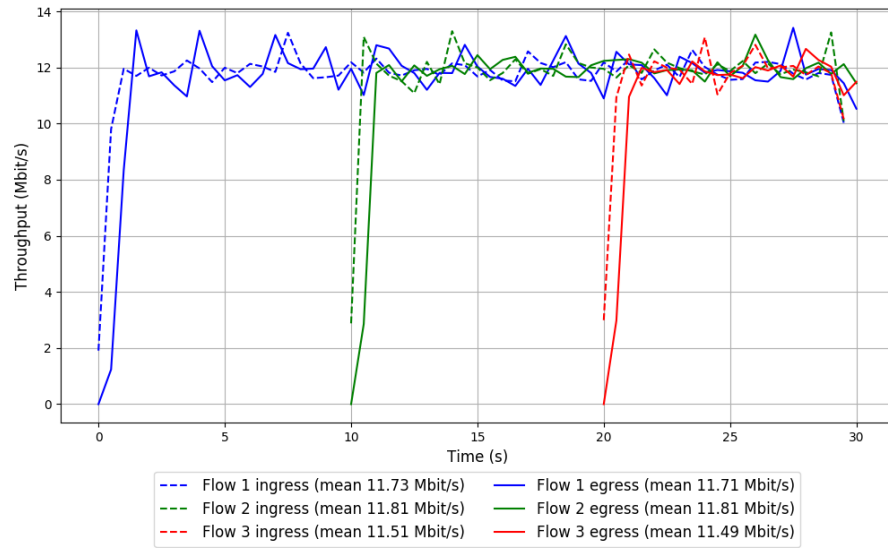
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-11 12:59:22
End at: 2018-12-11 12:59:52
Local clock offset: 3.649 ms
Remote clock offset: -3.349 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.26 Mbit/s
95th percentile per-packet one-way delay: 37.153 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 11.68 Mbit/s
95th percentile per-packet one-way delay: 37.071 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 11.66 Mbit/s
95th percentile per-packet one-way delay: 37.367 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 11.57 Mbit/s
95th percentile per-packet one-way delay: 37.078 ms
Loss rate: 0.16%
```
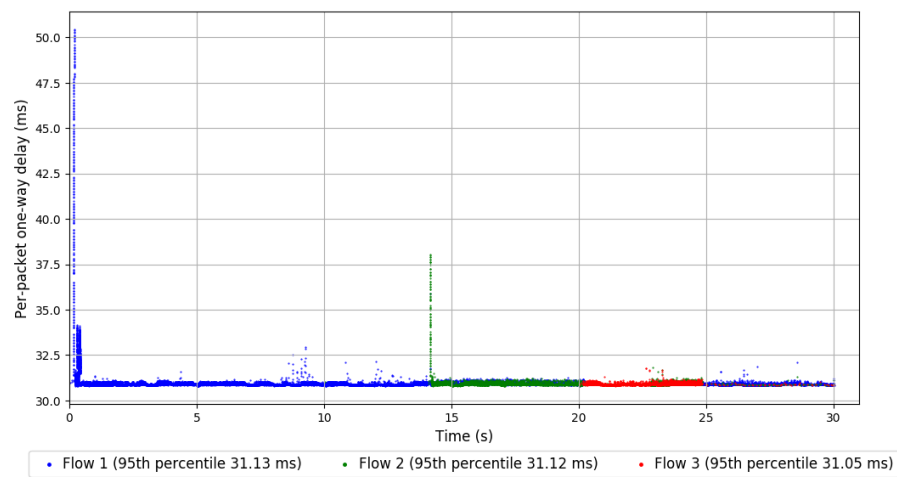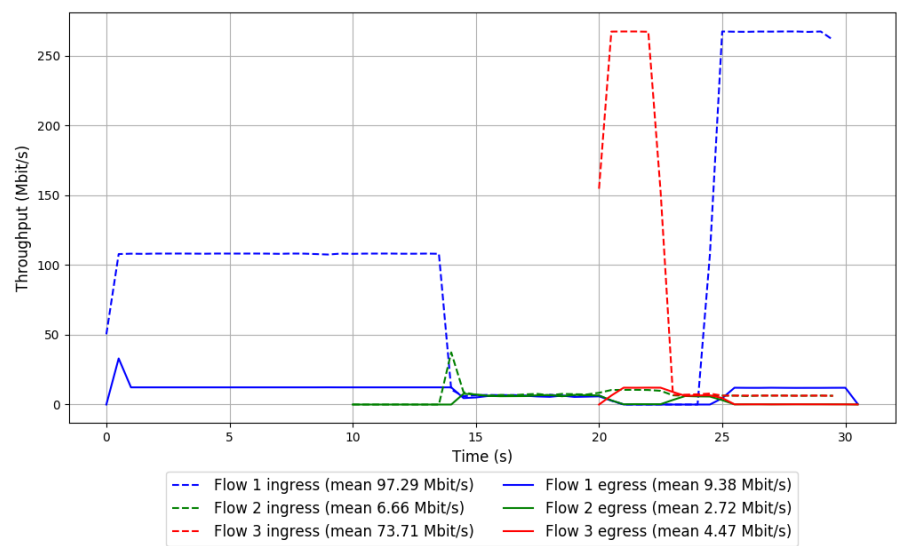
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-11 13:22:07
End at: 2018-12-11 13:22:37
Local clock offset: 0.587 ms
Remote clock offset: -3.162 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.33 Mbit/s
95th percentile per-packet one-way delay: 36.725 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 11.75 Mbit/s
95th percentile per-packet one-way delay: 36.576 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 11.69 Mbit/s
95th percentile per-packet one-way delay: 36.616 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.53 Mbit/s
95th percentile per-packet one-way delay: 37.327 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-12-11 13:45:06
End at: 2018-12-11 13:45:36
Local clock offset: -0.222 ms
Remote clock offset: -3.082 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.44 Mbit/s
95th percentile per-packet one-way delay: 37.423 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.81 Mbit/s
95th percentile per-packet one-way delay: 37.332 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 11.76 Mbit/s
95th percentile per-packet one-way delay: 38.274 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.54 Mbit/s
95th percentile per-packet one-way delay: 35.828 ms
Loss rate: 0.00%
```
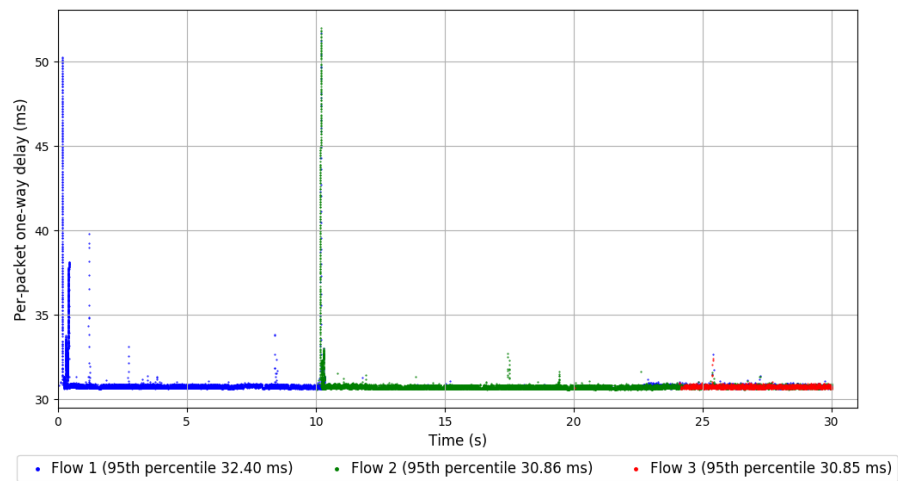
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-11 14:07:50
End at: 2018-12-11 14:08:21
Local clock offset: -0.328 ms
Remote clock offset: -2.952 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.37 Mbit/s
95th percentile per-packet one-way delay: 38.259 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 11.71 Mbit/s
95th percentile per-packet one-way delay: 37.202 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 11.81 Mbit/s
95th percentile per-packet one-way delay: 38.343 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 11.49 Mbit/s
95th percentile per-packet one-way delay: 40.069 ms
Loss rate: 0.21%
```

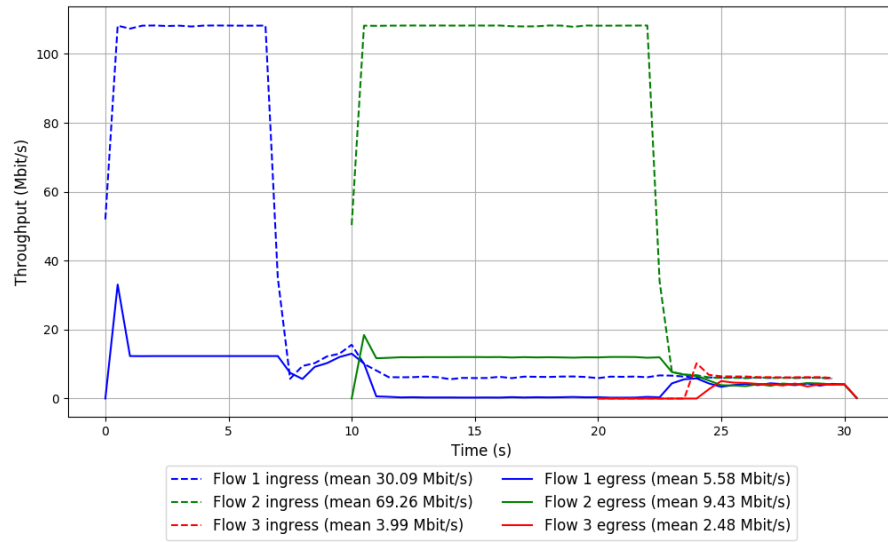Run 5: Report of Sprout — Data Link

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

Start at: 2018-12-11 12:34:52
End at: 2018-12-11 12:35:22
Local clock offset: 4.004 ms
Remote clock offset: -3.141 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.109 ms
Loss rate: 89.95%
-- Flow 1:
Average throughput: 9.38 Mbit/s
95th percentile per-packet one-way delay: 31.130 ms
Loss rate: 90.35%
-- Flow 2:
Average throughput: 2.72 Mbit/s
95th percentile per-packet one-way delay: 31.119 ms
Loss rate: 59.21%
-- Flow 3:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 31.046 ms
Loss rate: 93.93%
```

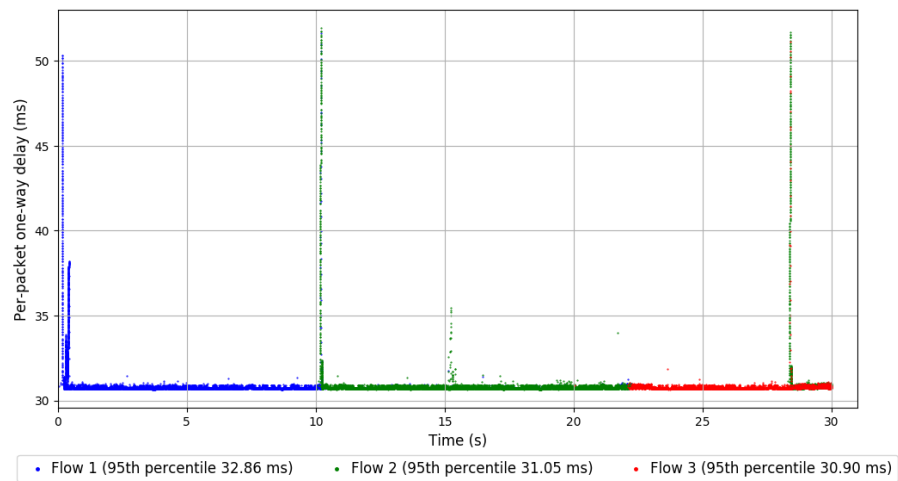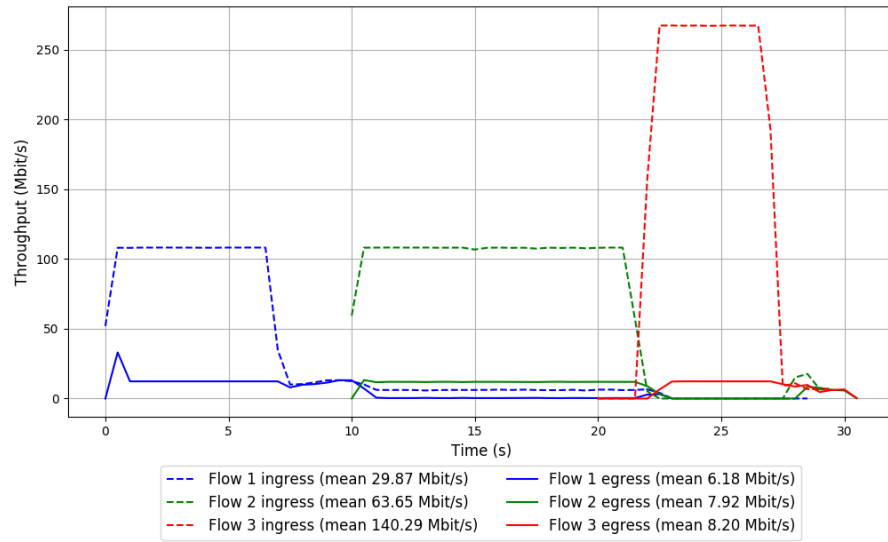Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 97.29 Mbit/s)   Flow 1 egress (mean 9.38 Mbit/s)
Flow 2 ingress (mean 6.66 Mbit/s)   Flow 2 egress (mean 2.72 Mbit/s)
Flow 3 ingress (mean 73.71 Mbit/s)   Flow 3 egress (mean 4.47 Mbit/s)

Flow 1 (95th percentile 31.13 ms)   Flow 2 (95th percentile 31.12 ms)   Flow 3 (95th percentile 31.05 ms)

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

Start at: 2018-12-11 12:58:12
End at: 2018-12-11 12:58:42
Local clock offset: 3.645 ms
Remote clock offset: -3.181 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 30.974 ms
Loss rate: 87.03%
-- Flow 1:
Average throughput: 5.52 Mbit/s
95th percentile per-packet one-way delay: 32.372 ms
Loss rate: 86.95%
-- Flow 2:
Average throughput: 8.73 Mbit/s
95th percentile per-packet one-way delay: 30.949 ms
Loss rate: 88.38%
-- Flow 3:
Average throughput: 4.08 Mbit/s
95th percentile per-packet one-way delay: 30.955 ms
Loss rate: 75.42%
```
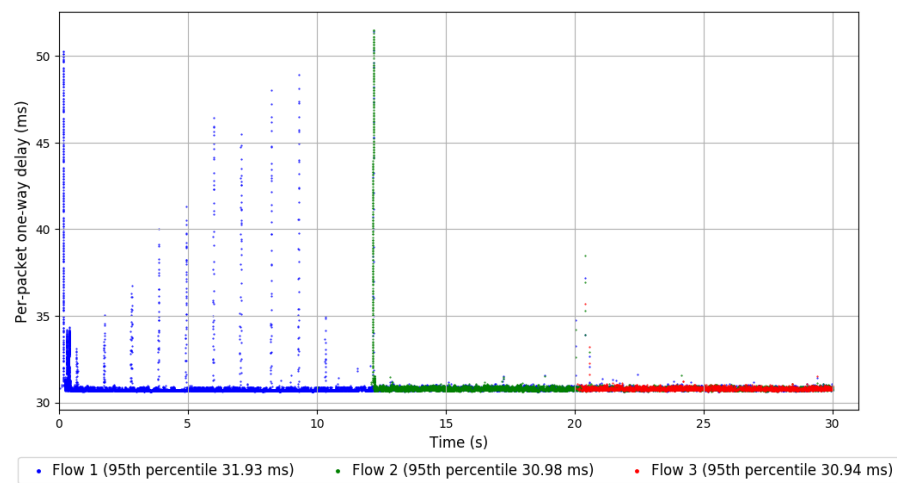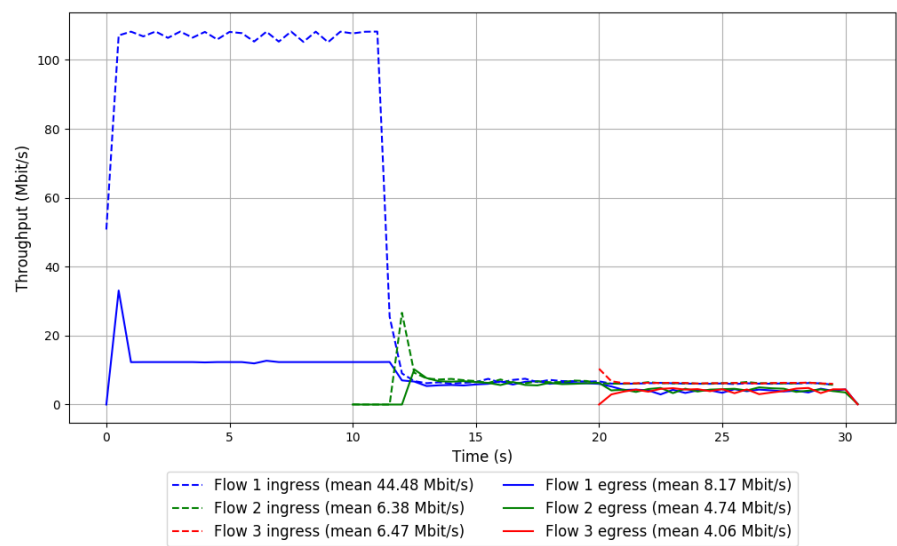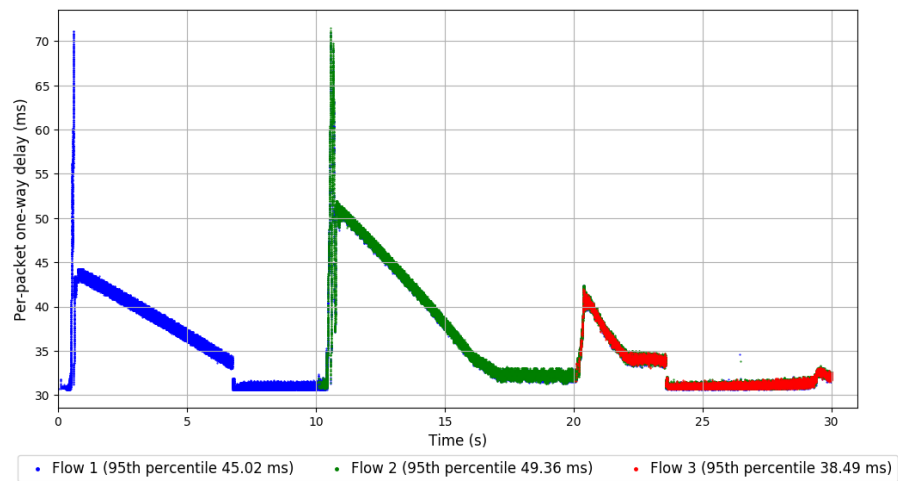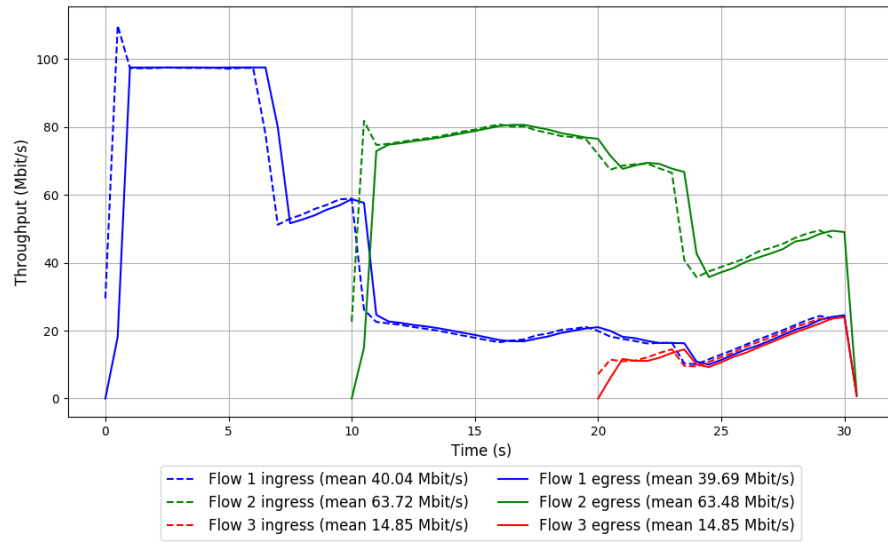
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 42.28 Mbit/s) — — — Flow 1 egress (mean 5.52 Mbit/s)
Flow 2 ingress (mean 75.01 Mbit/s) — — — Flow 2 egress (mean 8.73 Mbit/s)
Flow 3 ingress (mean 16.61 Mbit/s) — — — Flow 3 egress (mean 4.08 Mbit/s)

Flow 1 (95th percentile 32.37 ms) · Flow 2 (95th percentile 30.95 ms) · Flow 3 (95th percentile 30.95 ms)

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

Start at: 2018-12-11 13:20:57
End at: 2018-12-11 13:21:27
Local clock offset: 0.73 ms
Remote clock offset: -3.169 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.004 ms
Loss rate: 83.65%
-- Flow 1:
Average throughput: 5.58 Mbit/s
95th percentile per-packet one-way delay: 32.404 ms
Loss rate: 81.47%
-- Flow 2:
Average throughput: 9.43 Mbit/s
95th percentile per-packet one-way delay: 30.857 ms
Loss rate: 86.39%
-- Flow 3:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 30.853 ms
Loss rate: 37.86%
```

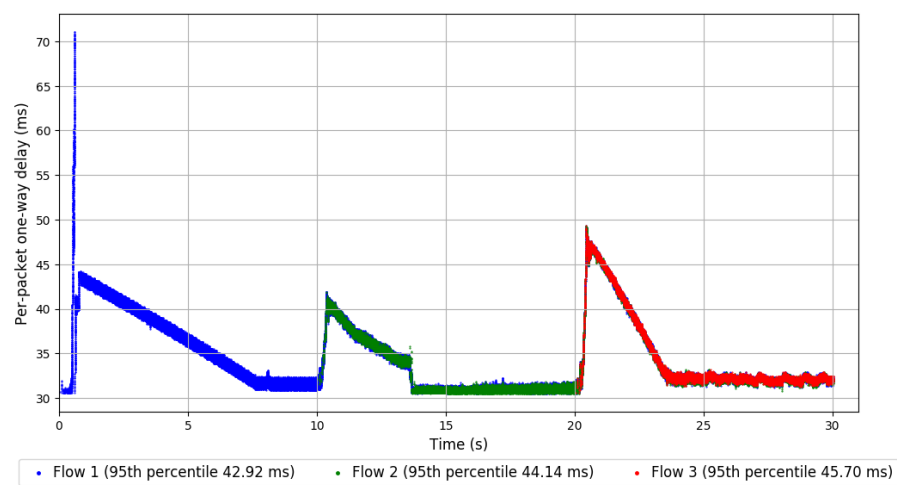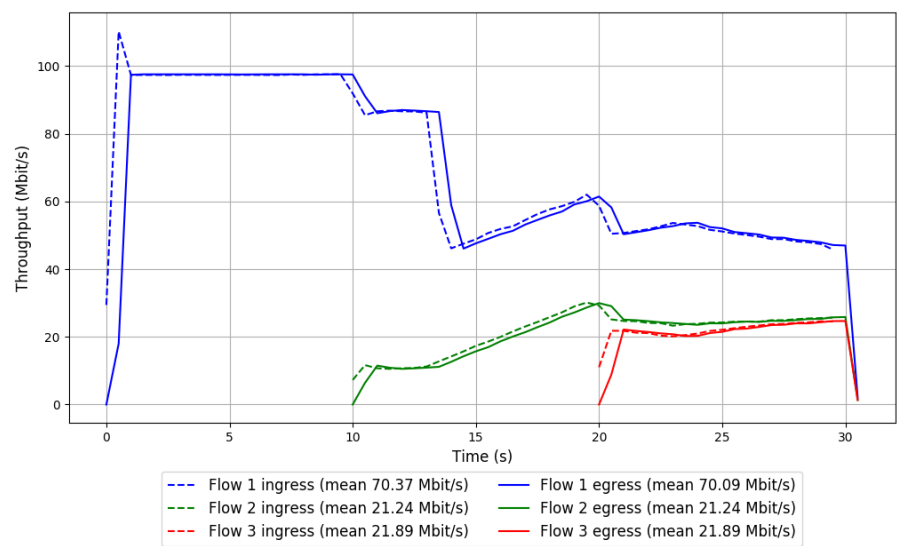Run 3: Report of TaoVA-100x — Data Link

```
Run 4: Statistics of TaoVA-100x

Start at: 2018-12-11 13:43:55
End at: 2018-12-11 13:44:25
Local clock offset: -0.266 ms
Remote clock offset: -3.129 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.231 ms
Loss rate: 89.23%
-- Flow 1:
Average throughput: 6.18 Mbit/s
95th percentile per-packet one-way delay: 32.863 ms
Loss rate: 83.67%
-- Flow 2:
Average throughput: 7.92 Mbit/s
95th percentile per-packet one-way delay: 31.055 ms
Loss rate: 87.56%
-- Flow 3:
Average throughput: 8.20 Mbit/s
95th percentile per-packet one-way delay: 30.900 ms
Loss rate: 94.16%
```

Run 4: Report of TaoVA-100x — Data Link

- - - Flow 1 ingress (mean 29.87 Mbit/s) —— Flow 1 egress (mean 6.18 Mbit/s)
- - - Flow 2 ingress (mean 63.65 Mbit/s) —— Flow 2 egress (mean 7.92 Mbit/s)
- - - Flow 3 ingress (mean 140.29 Mbit/s) —— Flow 3 egress (mean 8.20 Mbit/s)

• Flow 1 (95th percentile 32.86 ms)   • Flow 2 (95th percentile 31.05 ms)   • Flow 3 (95th percentile 30.90 ms)

```
Run 5: Statistics of TaoVA-100x

Start at: 2018-12-11 14:06:41
End at: 2018-12-11 14:07:11
Local clock offset: -0.318 ms
Remote clock offset: -2.933 ms


# Below is generated by plot.py at 2018-12-11 14:20:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.137 ms
Loss rate: 75.09%
-- Flow 1:
Average throughput: 8.17 Mbit/s
95th percentile per-packet one-way delay: 31.931 ms
Loss rate: 81.64%
-- Flow 2:
Average throughput: 4.74 Mbit/s
95th percentile per-packet one-way delay: 30.978 ms
Loss rate: 25.62%
-- Flow 3:
Average throughput: 4.06 Mbit/s
95th percentile per-packet one-way delay: 30.943 ms
Loss rate: 37.31%
```

Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-11 12:23:56
End at: 2018-12-11 12:24:26
Local clock offset: 3.199 ms
Remote clock offset: -3.425 ms


# Below is generated by plot.py at 2018-12-11 14:20:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.91 Mbit/s
95th percentile per-packet one-way delay: 48.180 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 39.69 Mbit/s
95th percentile per-packet one-way delay: 45.023 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 63.48 Mbit/s
95th percentile per-packet one-way delay: 49.356 ms
Loss rate: 0.37%
-- Flow 3:
Average throughput: 14.85 Mbit/s
95th percentile per-packet one-way delay: 38.488 ms
Loss rate: 0.03%
```
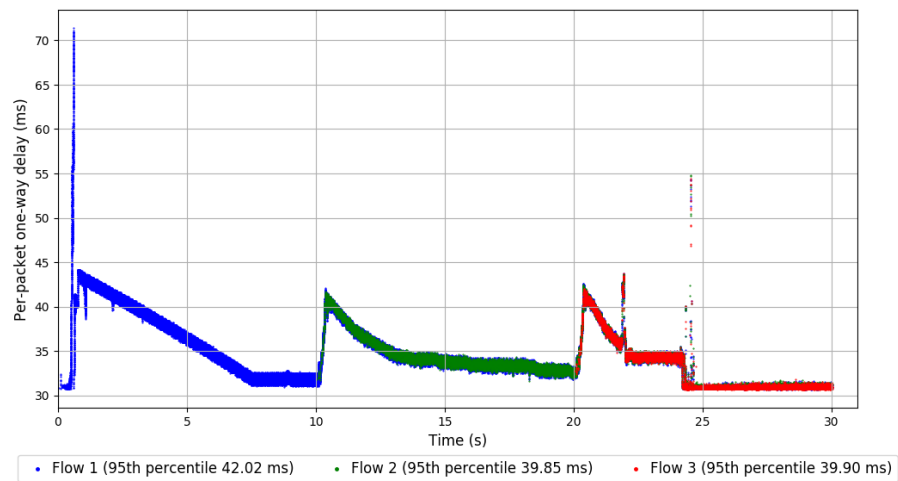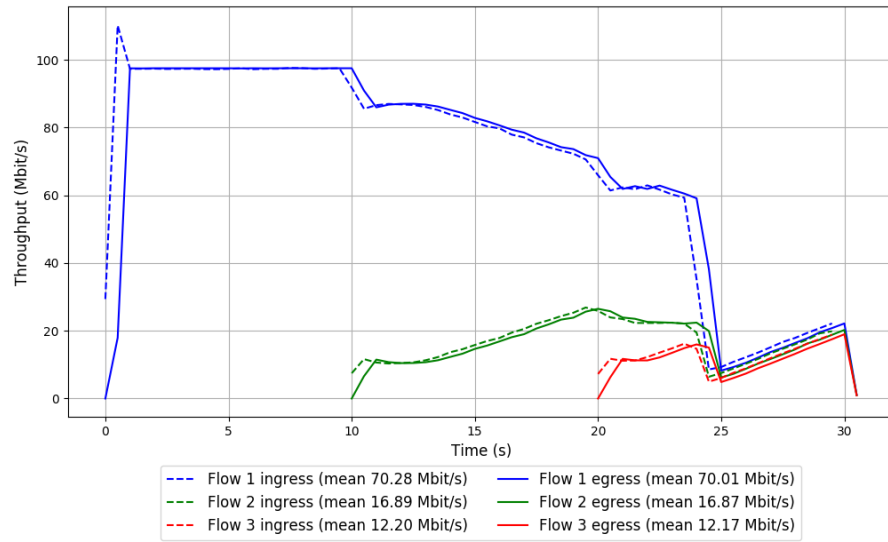
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-11 12:46:59
End at: 2018-12-11 12:47:29
Local clock offset: 3.691 ms
Remote clock offset: -3.334 ms


# Below is generated by plot.py at 2018-12-11 14:21:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.52 Mbit/s
95th percentile per-packet one-way delay: 43.187 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 70.09 Mbit/s
95th percentile per-packet one-way delay: 42.924 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 21.24 Mbit/s
95th percentile per-packet one-way delay: 44.141 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 21.89 Mbit/s
95th percentile per-packet one-way delay: 45.698 ms
Loss rate: 0.00%
```
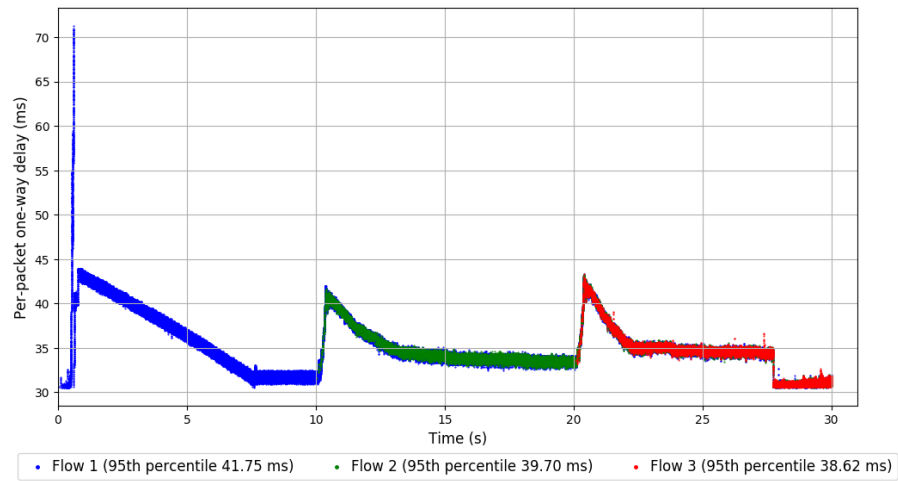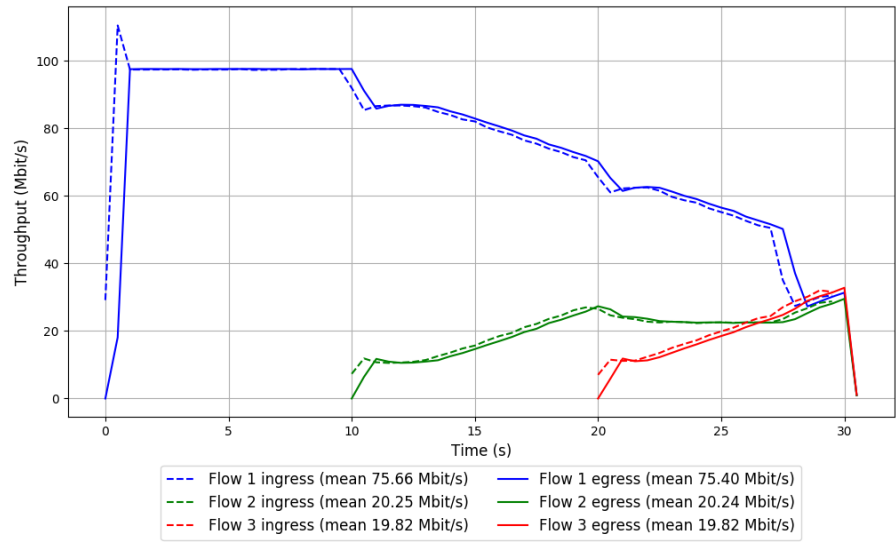
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-11 13:10:02
End at: 2018-12-11 13:10:32
Local clock offset: 3.124 ms
Remote clock offset: -3.151 ms


# Below is generated by plot.py at 2018-12-11 14:21:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 75.44 Mbit/s
95th percentile per-packet one-way delay: 42.476 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 51.57 Mbit/s
95th percentile per-packet one-way delay: 42.543 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 13.94 Mbit/s
95th percentile per-packet one-way delay: 37.808 ms
Loss rate: 0.28%
-- Flow 3:
Average throughput: 43.87 Mbit/s
95th percentile per-packet one-way delay: 43.921 ms
Loss rate: 2.03%
```
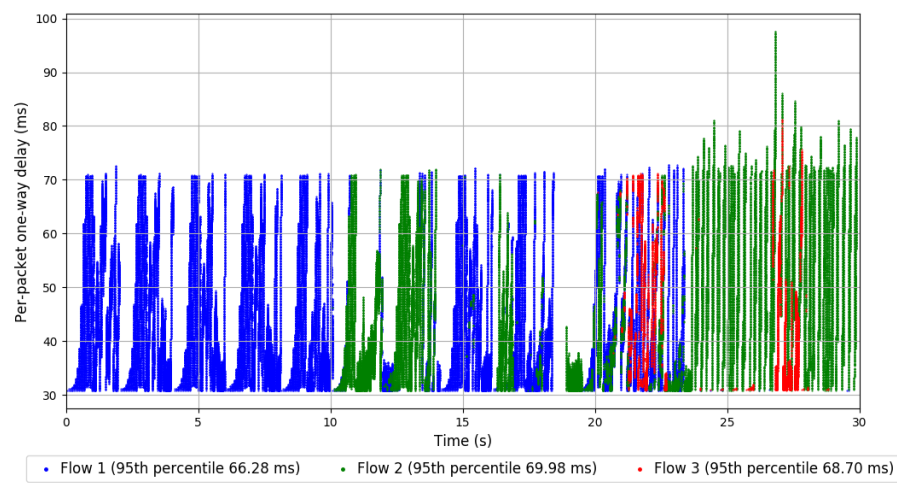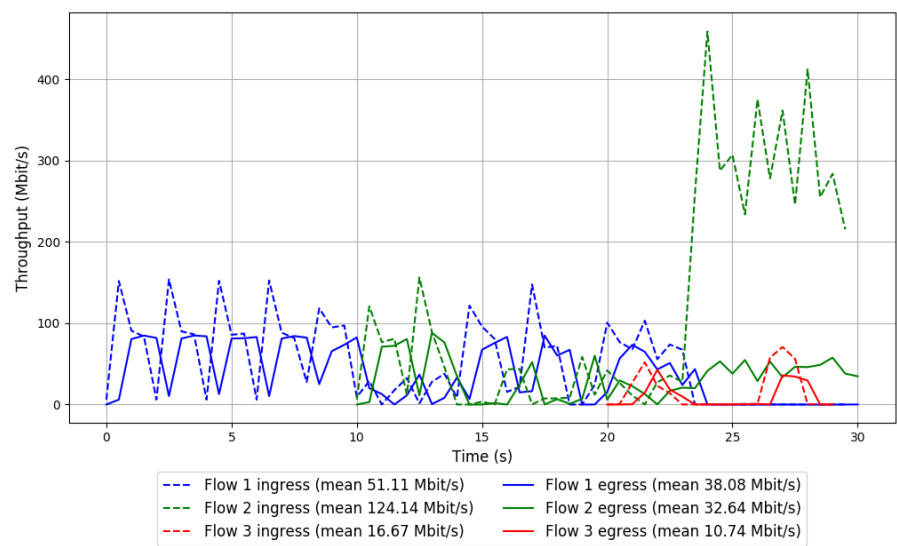
Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-11 13:32:44
End at: 2018-12-11 13:33:14
Local clock offset: -0.226 ms
Remote clock offset: -3.108 ms


# Below is generated by plot.py at 2018-12-11 14:21:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.30 Mbit/s
95th percentile per-packet one-way delay: 41.644 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 70.01 Mbit/s
95th percentile per-packet one-way delay: 42.019 ms
Loss rate: 0.40%
-- Flow 2:
Average throughput: 16.87 Mbit/s
95th percentile per-packet one-way delay: 39.851 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 12.17 Mbit/s
95th percentile per-packet one-way delay: 39.897 ms
Loss rate: 0.23%
```
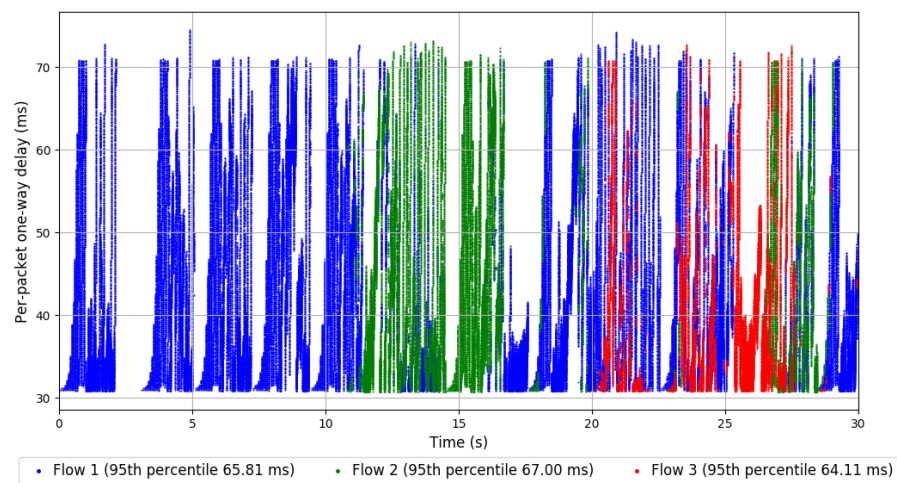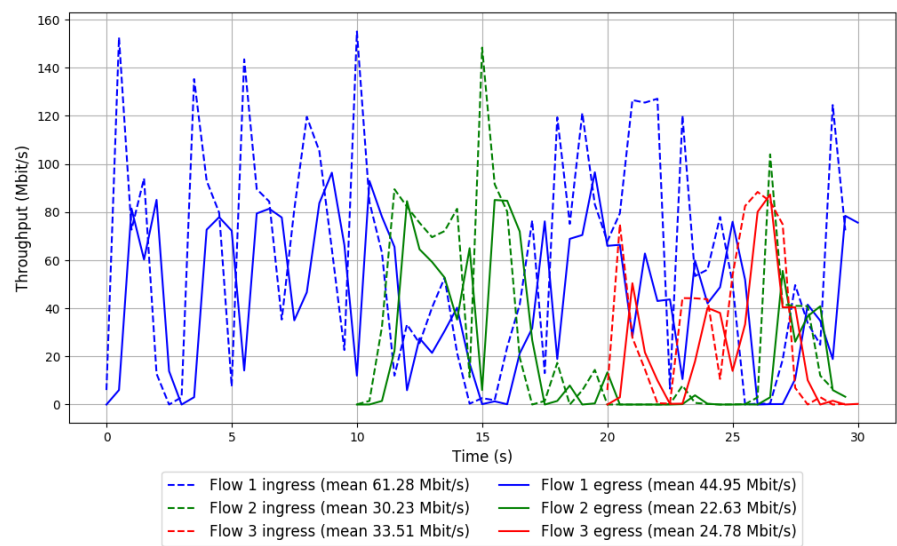
Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-11 13:55:45
End at: 2018-12-11 13:56:15
Local clock offset: -0.187 ms
Remote clock offset: -3.19 ms


# Below is generated by plot.py at 2018-12-11 14:21:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.47 Mbit/s
95th percentile per-packet one-way delay: 41.459 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 75.40 Mbit/s
95th percentile per-packet one-way delay: 41.746 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 20.24 Mbit/s
95th percentile per-packet one-way delay: 39.702 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 19.82 Mbit/s
95th percentile per-packet one-way delay: 38.624 ms
Loss rate: 0.00%
```

Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 75.66 Mbit/s)   Flow 1 egress (mean 75.40 Mbit/s)
Flow 2 ingress (mean 20.25 Mbit/s)   Flow 2 egress (mean 20.24 Mbit/s)
Flow 3 ingress (mean 19.82 Mbit/s)   Flow 3 egress (mean 19.82 Mbit/s)

Flow 1 (95th percentile 41.75 ms)   Flow 2 (95th percentile 39.70 ms)   Flow 3 (95th percentile 38.62 ms)
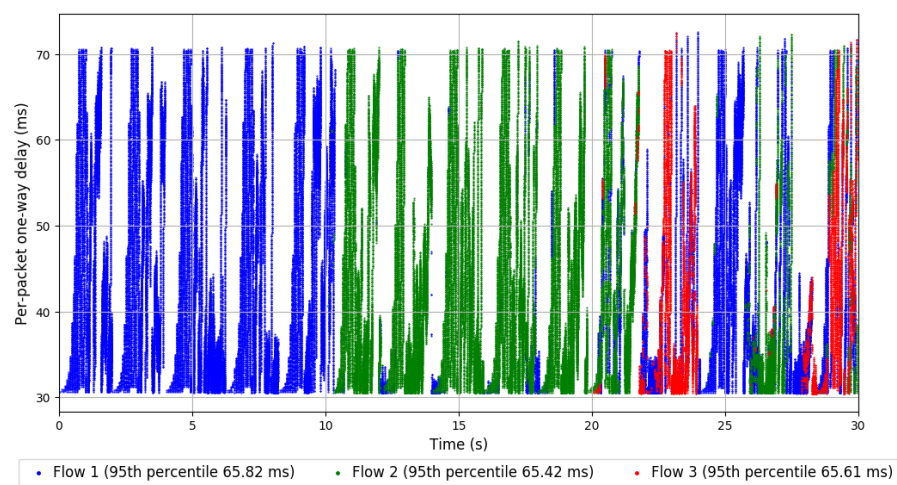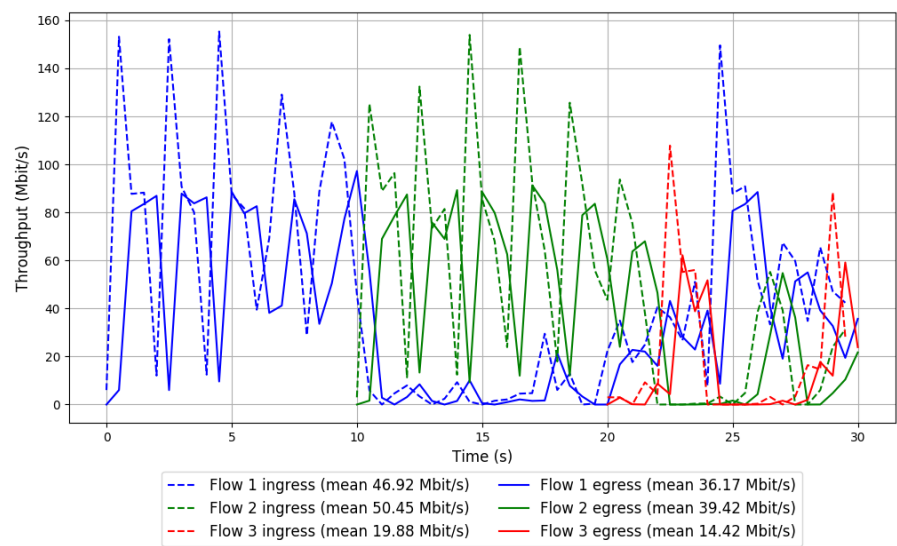
164

```
Run 1: Statistics of Verus

Start at: 2018-12-11 12:27:36
End at: 2018-12-11 12:28:06
Local clock offset: 3.514 ms
Remote clock offset: -3.168 ms


# Below is generated by plot.py at 2018-12-11 14:21:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 62.49 Mbit/s
95th percentile per-packet one-way delay: 67.838 ms
Loss rate: 54.76%
-- Flow 1:
Average throughput: 38.08 Mbit/s
95th percentile per-packet one-way delay: 66.278 ms
Loss rate: 25.66%
-- Flow 2:
Average throughput: 32.64 Mbit/s
95th percentile per-packet one-way delay: 69.976 ms
Loss rate: 73.68%
-- Flow 3:
Average throughput: 10.74 Mbit/s
95th percentile per-packet one-way delay: 68.699 ms
Loss rate: 38.53%
```
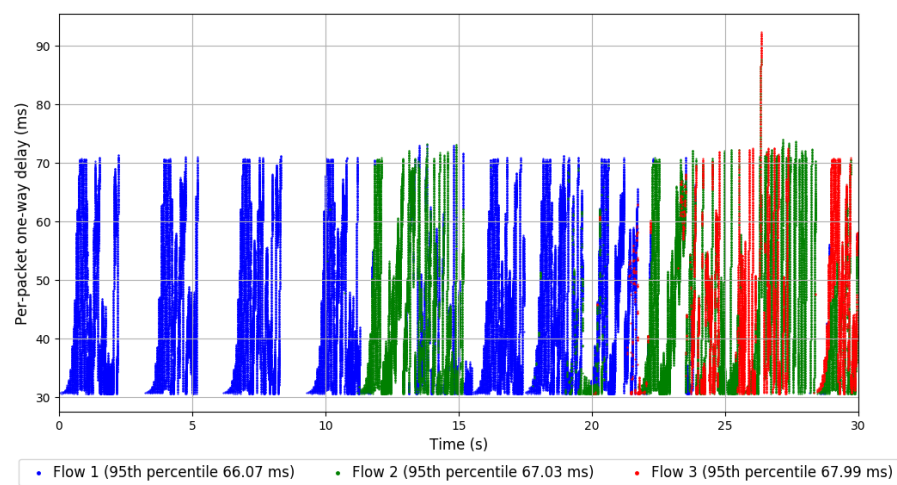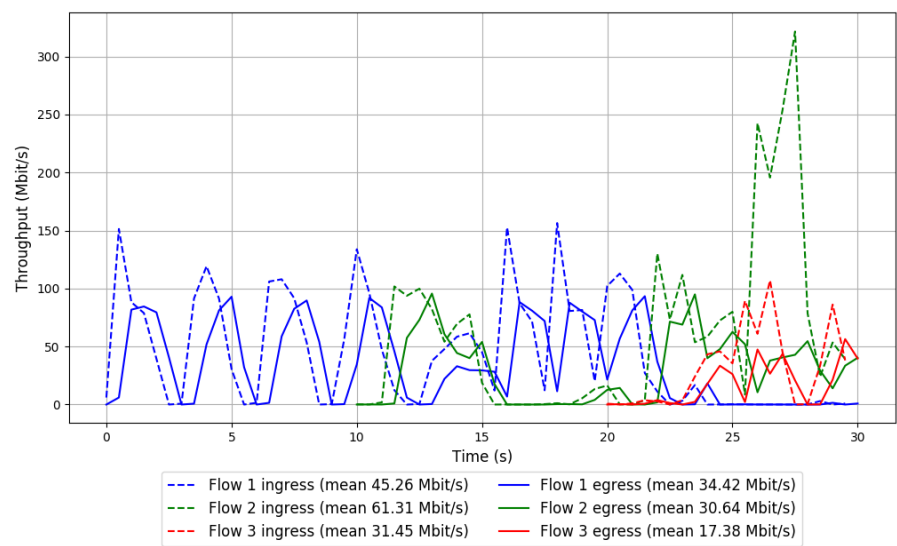
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-11 12:50:53
End at: 2018-12-11 12:51:23
Local clock offset: 3.622 ms
Remote clock offset: -3.118 ms


# Below is generated by plot.py at 2018-12-11 14:21:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.48 Mbit/s
95th percentile per-packet one-way delay: 66.012 ms
Loss rate: 26.30%
-- Flow 1:
Average throughput: 44.95 Mbit/s
95th percentile per-packet one-way delay: 65.806 ms
Loss rate: 26.60%
-- Flow 2:
Average throughput: 22.63 Mbit/s
95th percentile per-packet one-way delay: 67.001 ms
Loss rate: 25.50%
-- Flow 3:
Average throughput: 24.78 Mbit/s
95th percentile per-packet one-way delay: 64.113 ms
Loss rate: 26.00%
```
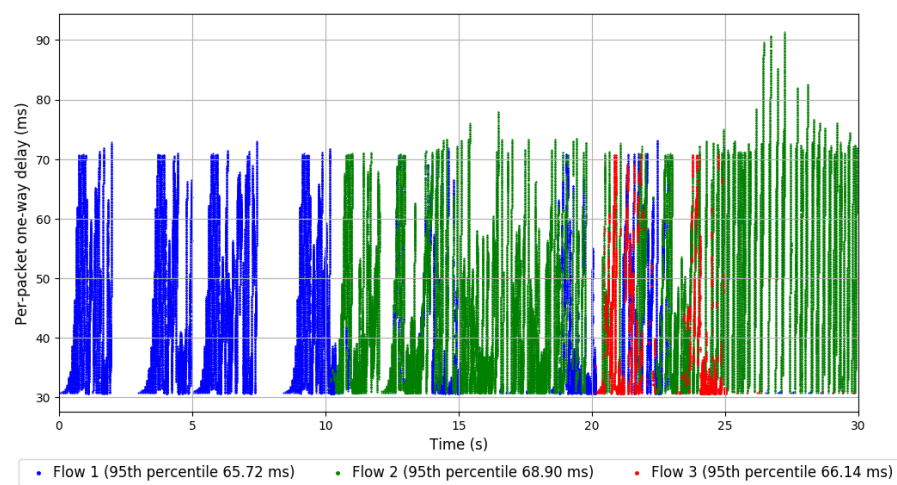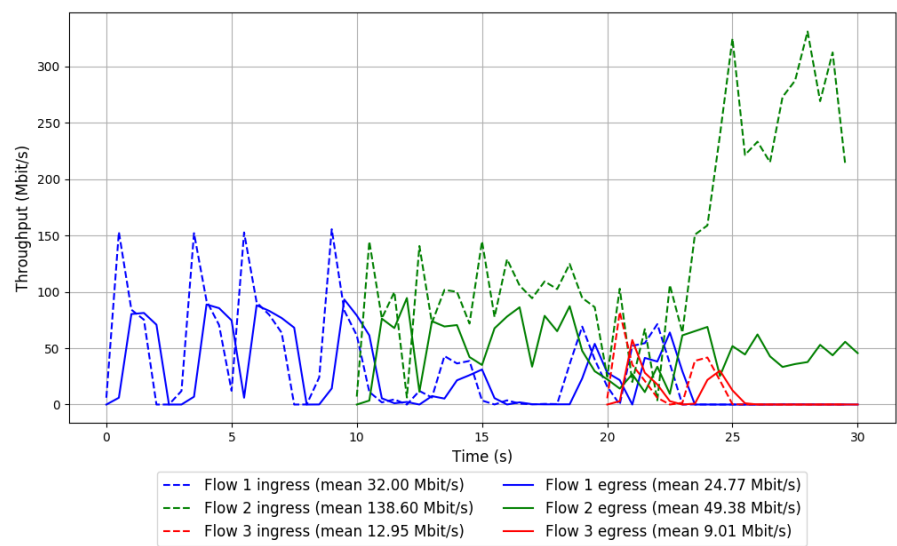
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-11 13:13:41
End at: 2018-12-11 13:14:11
Local clock offset: 1.995 ms
Remote clock offset: -3.219 ms


# Below is generated by plot.py at 2018-12-11 14:21:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.14 Mbit/s
95th percentile per-packet one-way delay: 65.659 ms
Loss rate: 22.83%
-- Flow 1:
Average throughput: 36.17 Mbit/s
95th percentile per-packet one-way delay: 65.817 ms
Loss rate: 22.87%
-- Flow 2:
Average throughput: 39.42 Mbit/s
95th percentile per-packet one-way delay: 65.420 ms
Loss rate: 21.87%
-- Flow 3:
Average throughput: 14.42 Mbit/s
95th percentile per-packet one-way delay: 65.606 ms
Loss rate: 27.42%
```
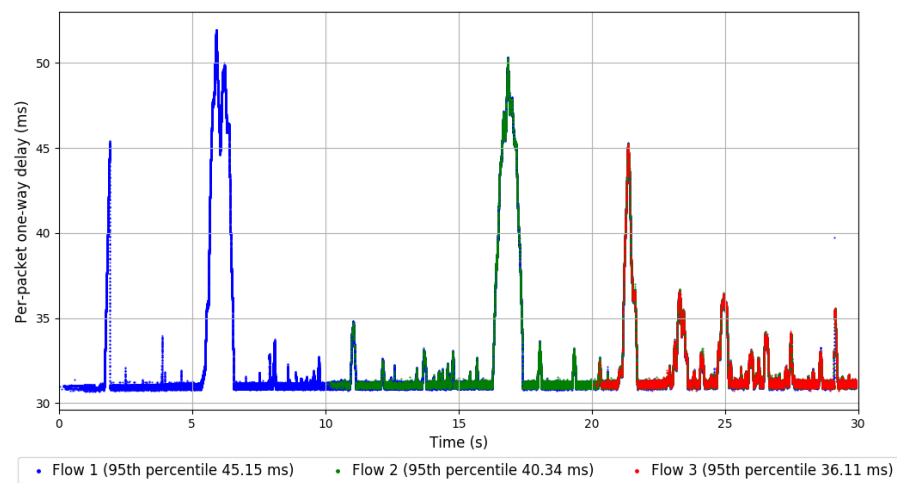
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-12-11 13:36:24
End at: 2018-12-11 13:36:54
Local clock offset: -0.396 ms
Remote clock offset: -3.112 ms


# Below is generated by plot.py at 2018-12-11 14:21:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 60.53 Mbit/s
95th percentile per-packet one-way delay: 66.569 ms
Loss rate: 37.17%
-- Flow 1:
Average throughput: 34.42 Mbit/s
95th percentile per-packet one-way delay: 66.067 ms
Loss rate: 23.89%
-- Flow 2:
Average throughput: 30.64 Mbit/s
95th percentile per-packet one-way delay: 67.029 ms
Loss rate: 50.01%
-- Flow 3:
Average throughput: 17.38 Mbit/s
95th percentile per-packet one-way delay: 67.990 ms
Loss rate: 44.58%
```
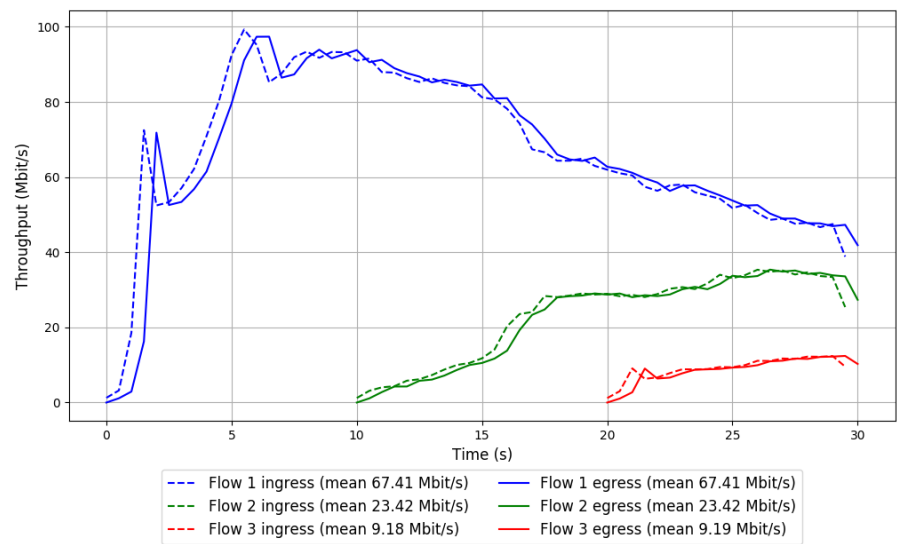
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-11 13:59:24
End at: 2018-12-11 13:59:54
Local clock offset: -0.214 ms
Remote clock offset: -2.914 ms


# Below is generated by plot.py at 2018-12-11 14:21:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 60.43 Mbit/s
95th percentile per-packet one-way delay: 67.678 ms
Loss rate: 52.90%
-- Flow 1:
Average throughput: 24.77 Mbit/s
95th percentile per-packet one-way delay: 65.718 ms
Loss rate: 22.78%
-- Flow 2:
Average throughput: 49.38 Mbit/s
95th percentile per-packet one-way delay: 68.904 ms
Loss rate: 64.36%
-- Flow 3:
Average throughput: 9.01 Mbit/s
95th percentile per-packet one-way delay: 66.135 ms
Loss rate: 30.86%
```
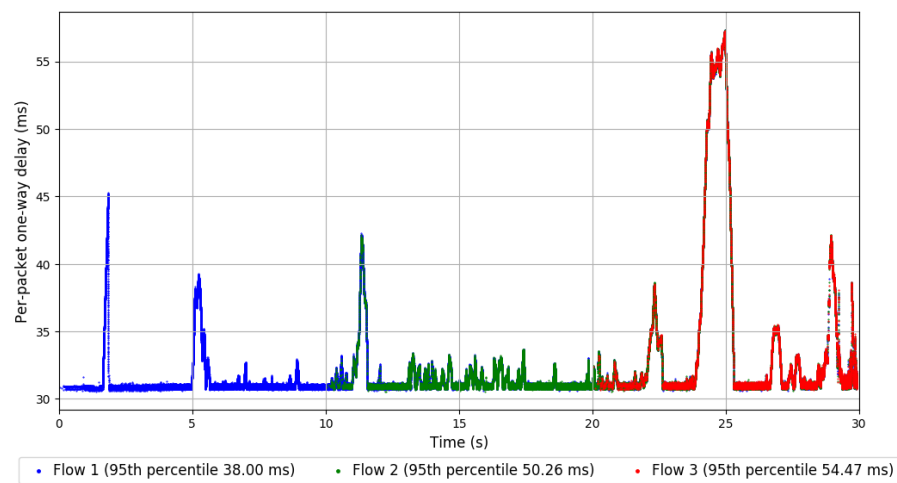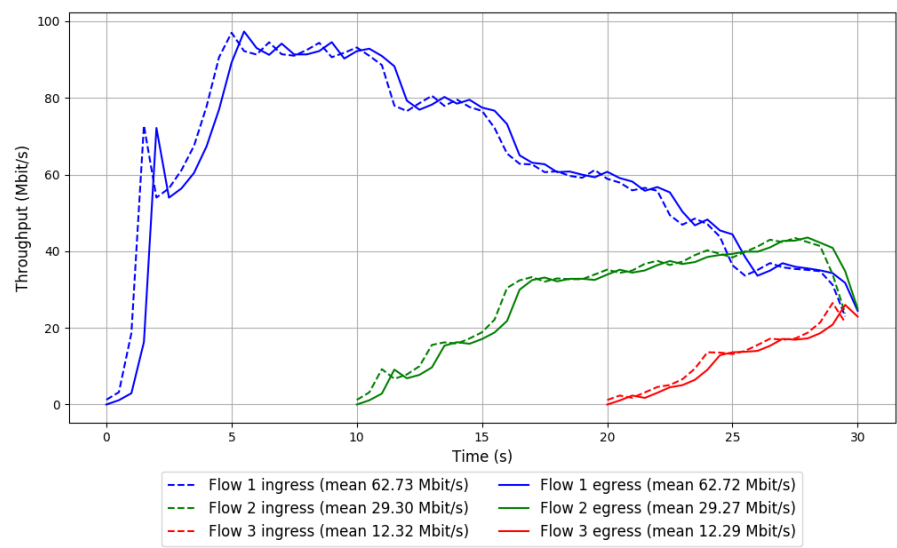
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-11 12:26:22
End at: 2018-12-11 12:26:52
Local clock offset: 3.443 ms
Remote clock offset: -3.194 ms


# Below is generated by plot.py at 2018-12-11 14:22:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.02 Mbit/s
95th percentile per-packet one-way delay: 44.327 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 67.41 Mbit/s
95th percentile per-packet one-way delay: 45.145 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 23.42 Mbit/s
95th percentile per-packet one-way delay: 40.340 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 9.19 Mbit/s
95th percentile per-packet one-way delay: 36.114 ms
Loss rate: 0.01%
```
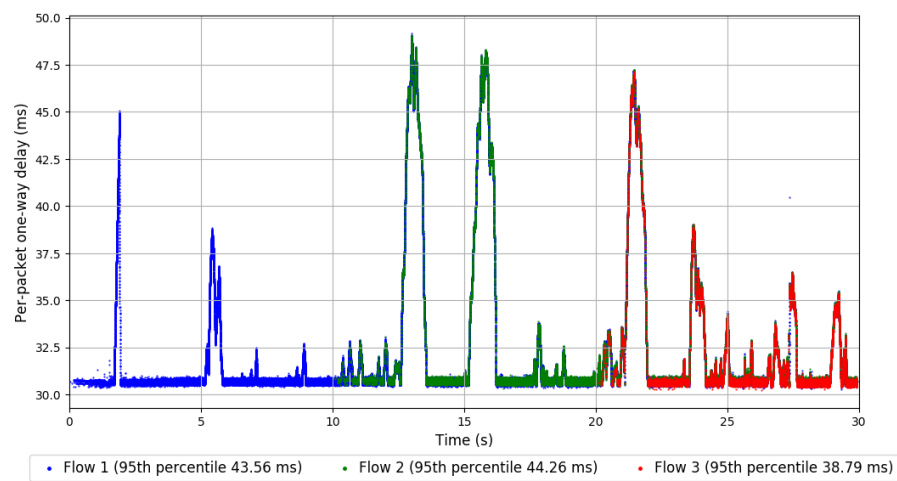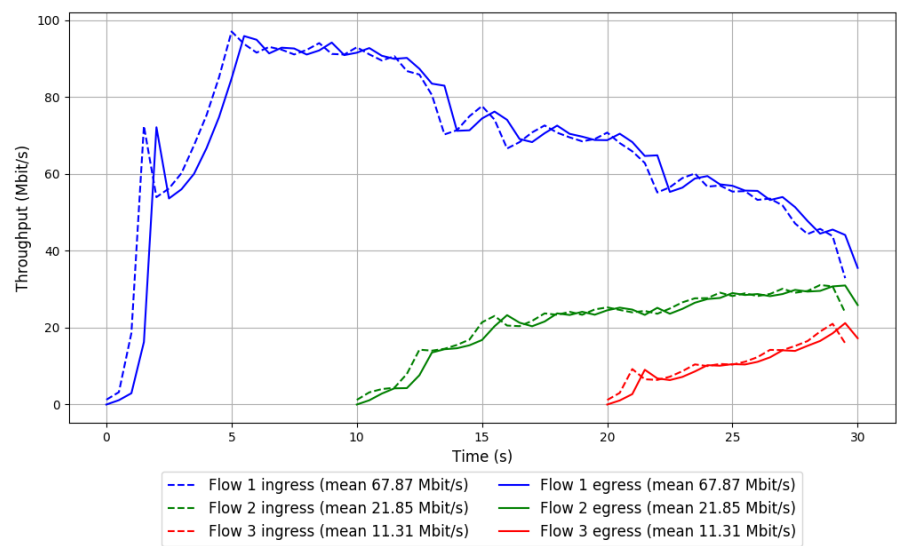
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-11 12:49:34
End at: 2018-12-11 12:50:04
Local clock offset: 3.638 ms
Remote clock offset: -3.197 ms


# Below is generated by plot.py at 2018-12-11 14:22:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.24 Mbit/s
95th percentile per-packet one-way delay: 40.472 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 62.72 Mbit/s
95th percentile per-packet one-way delay: 37.998 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 29.27 Mbit/s
95th percentile per-packet one-way delay: 50.259 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 12.29 Mbit/s
95th percentile per-packet one-way delay: 54.465 ms
Loss rate: 0.31%
```
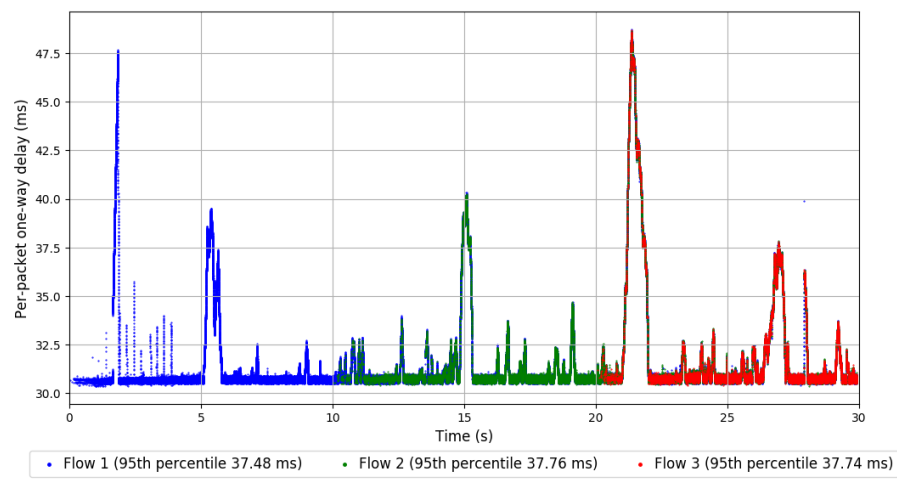
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-11 13:12:27
End at: 2018-12-11 13:12:57
Local clock offset: 2.421 ms
Remote clock offset: -3.165 ms


# Below is generated by plot.py at 2018-12-11 14:22:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.14 Mbit/s
95th percentile per-packet one-way delay: 43.657 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 67.87 Mbit/s
95th percentile per-packet one-way delay: 43.562 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 21.85 Mbit/s
95th percentile per-packet one-way delay: 44.257 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.31 Mbit/s
95th percentile per-packet one-way delay: 38.794 ms
Loss rate: 0.00%
```

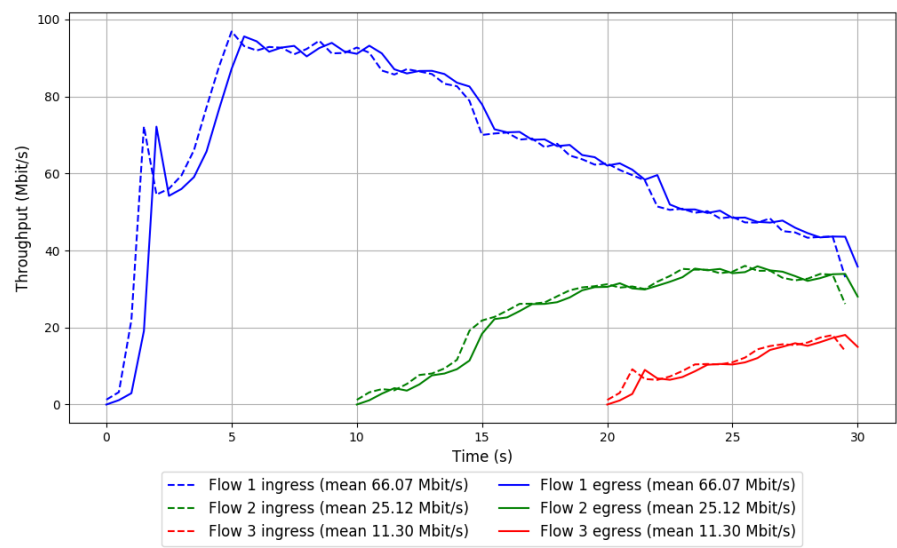## Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-11 13:35:10
End at: 2018-12-11 13:35:40
Local clock offset: -0.336 ms
Remote clock offset: -3.332 ms


# Below is generated by plot.py at 2018-12-11 14:22:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.51 Mbit/s
95th percentile per-packet one-way delay: 37.570 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 66.07 Mbit/s
95th percentile per-packet one-way delay: 37.483 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 25.12 Mbit/s
95th percentile per-packet one-way delay: 37.762 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.30 Mbit/s
95th percentile per-packet one-way delay: 37.743 ms
Loss rate: 0.00%
```

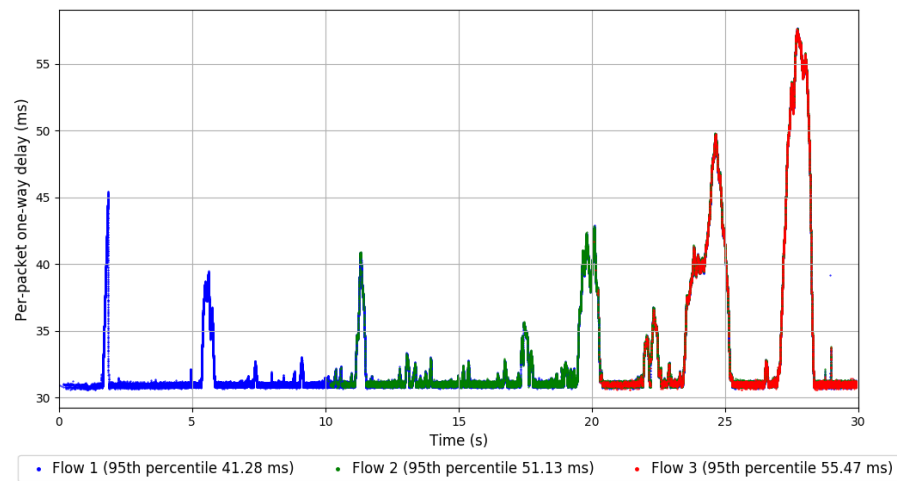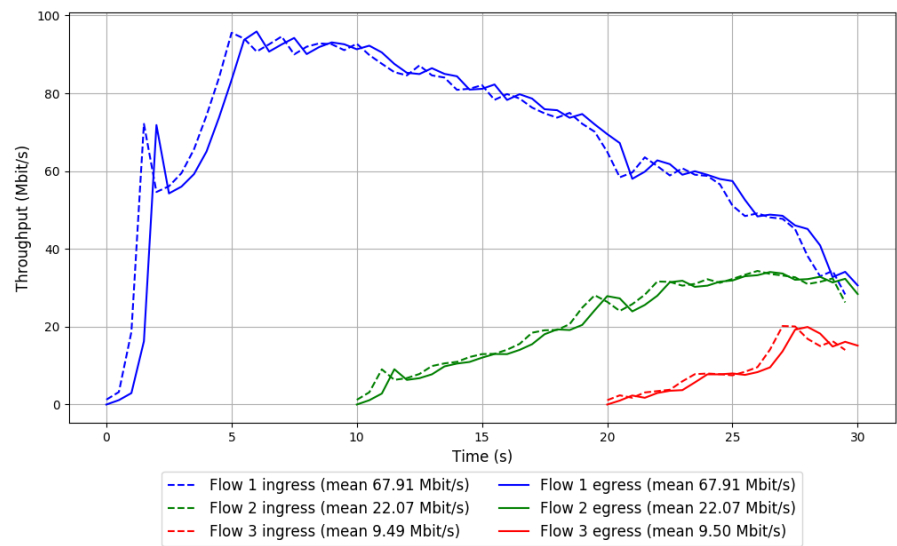Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-11 13:58:11
End at: 2018-12-11 13:58:41
Local clock offset: -0.2 ms
Remote clock offset: -2.898 ms


# Below is generated by plot.py at 2018-12-11 14:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.72 Mbit/s
95th percentile per-packet one-way delay: 45.106 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 67.91 Mbit/s
95th percentile per-packet one-way delay: 41.280 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 22.07 Mbit/s
95th percentile per-packet one-way delay: 51.130 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 9.50 Mbit/s
95th percentile per-packet one-way delay: 55.466 ms
Loss rate: 0.00%
```

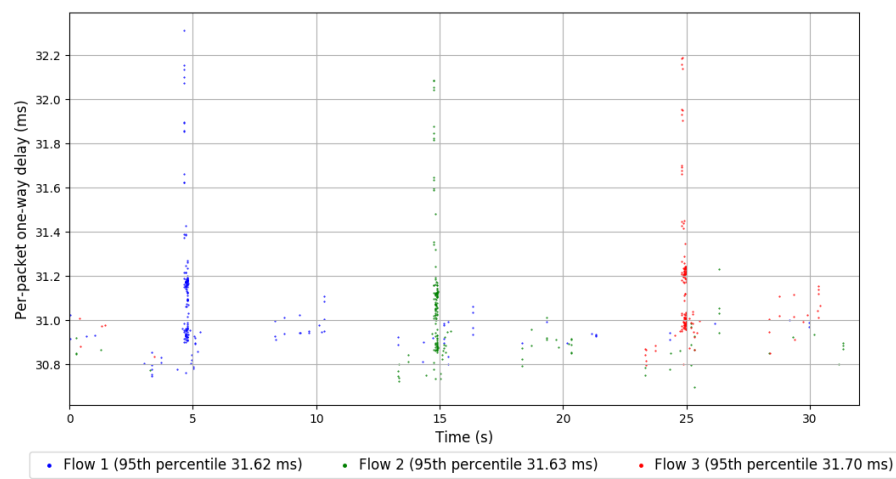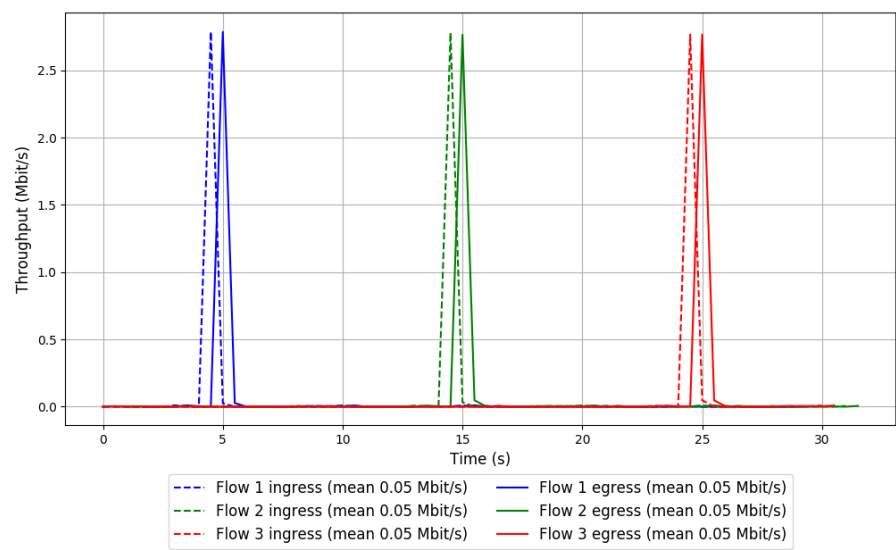Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-11 12:21:35
End at: 2018-12-11 12:22:05
Local clock offset: 2.946 ms
Remote clock offset: -3.209 ms


# Below is generated by plot.py at 2018-12-11 14:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.679 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.625 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.634 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.701 ms
Loss rate: 0.00%
```

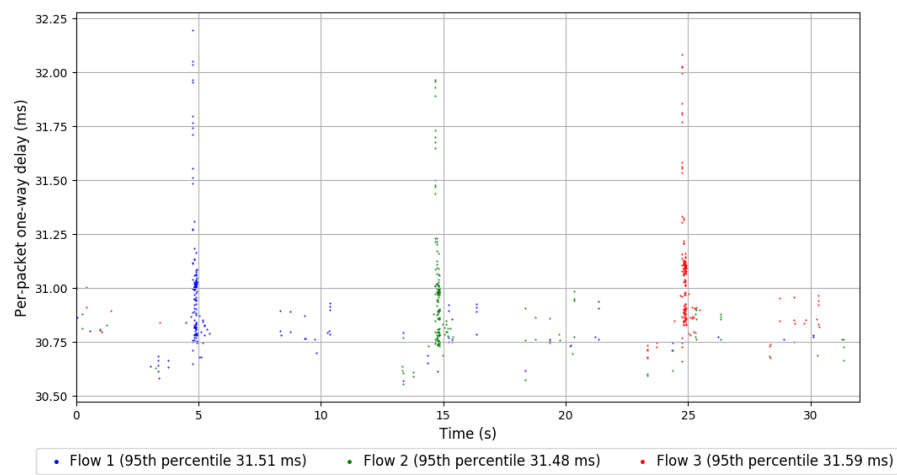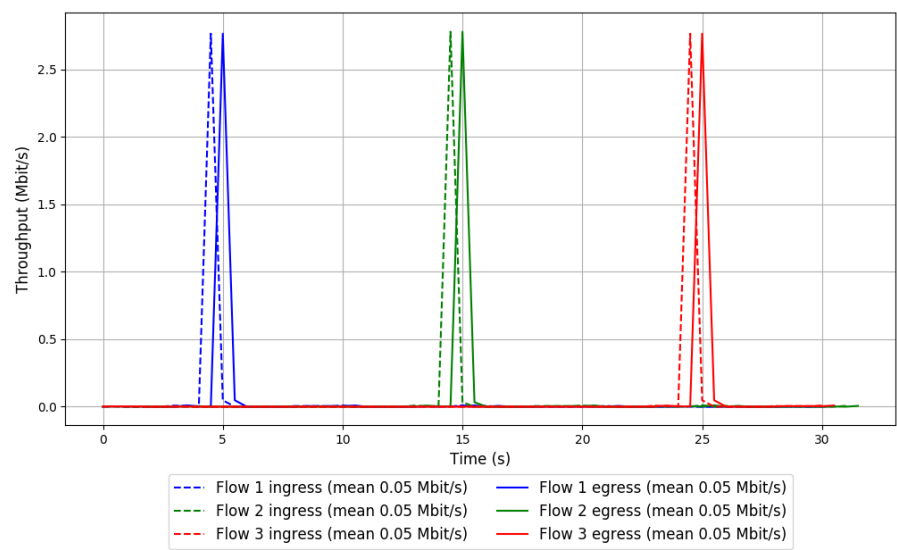Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-11 12:44:32
End at: 2018-12-11 12:45:02
Local clock offset: 3.774 ms
Remote clock offset: -3.114 ms


# Below is generated by plot.py at 2018-12-11 14:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.557 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.514 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.476 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.585 ms
Loss rate: 0.00%
```

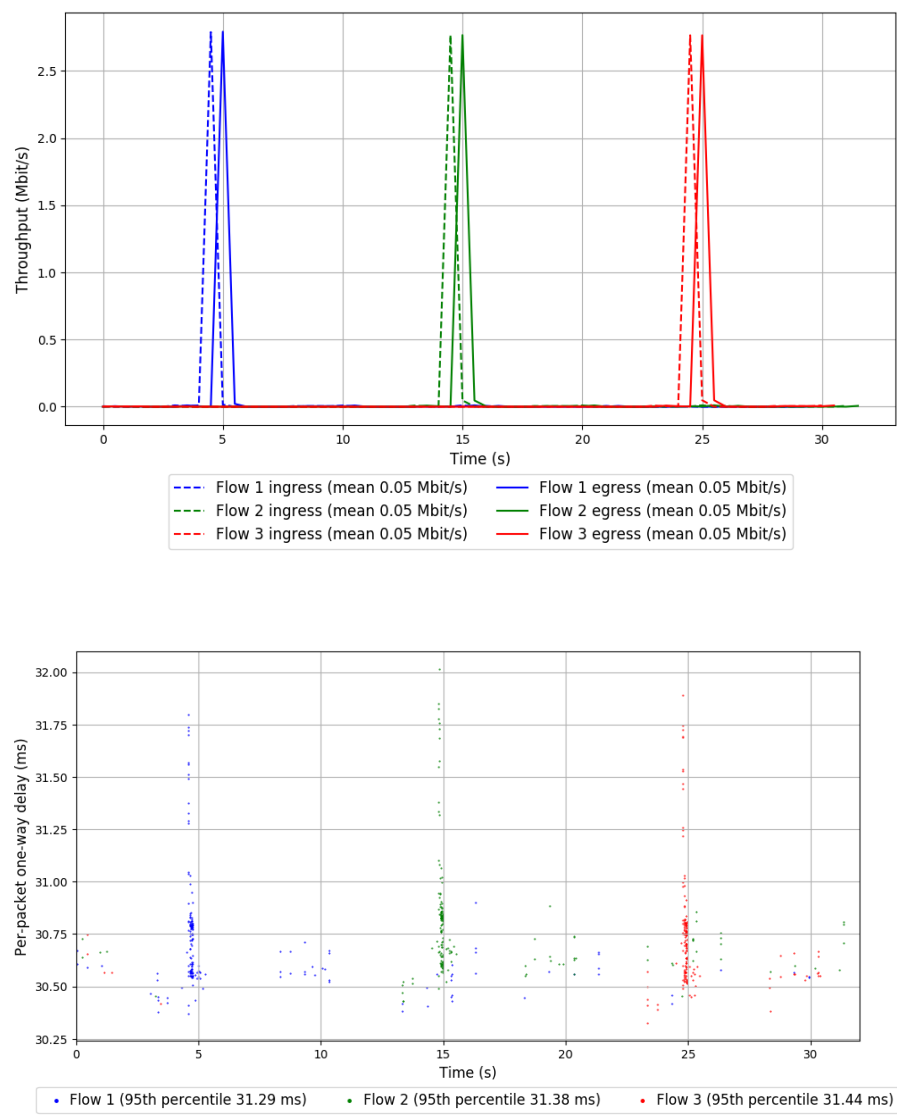Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-11 13:07:41
End at: 2018-12-11 13:08:11
Local clock offset: 3.759 ms
Remote clock offset: -3.351 ms


# Below is generated by plot.py at 2018-12-11 14:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.377 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.289 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.380 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.444 ms
Loss rate: 0.00%
```

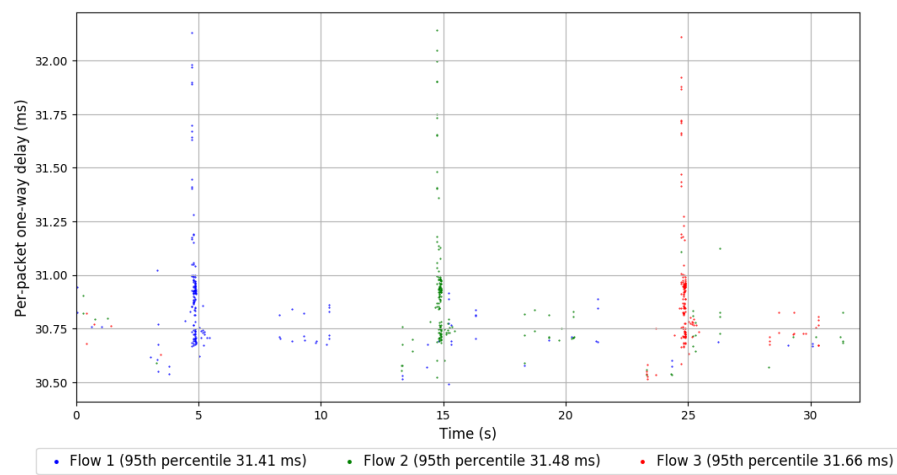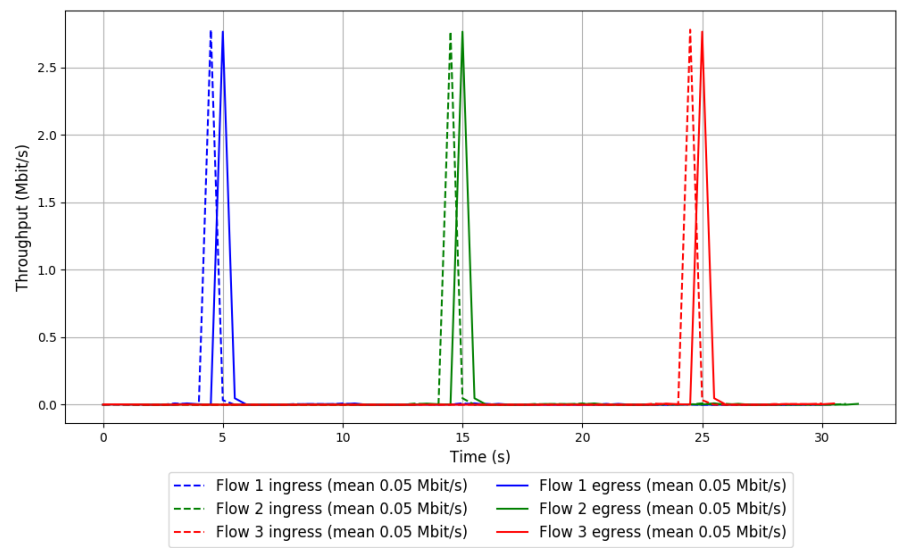Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-11 13:30:23
End at: 2018-12-11 13:30:53
Local clock offset: -0.089 ms
Remote clock offset: -3.117 ms


# Below is generated by plot.py at 2018-12-11 14:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.481 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.413 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.481 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.656 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-11 13:53:24
End at: 2018-12-11 13:53:54
Local clock offset: -0.166 ms
Remote clock offset: -2.963 ms


# Below is generated by plot.py at 2018-12-11 14:22:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.721 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.532 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.721 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.821 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link