Pantheon Report

Generated at 2018-09-06 21:21:47 (UTC).

Data path: Colombia on `p4p1` (*remote*) →AWS Brazil 2 on `ens5` (*local*).

Repeated the test of 18 congestion control schemes 5 times.

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

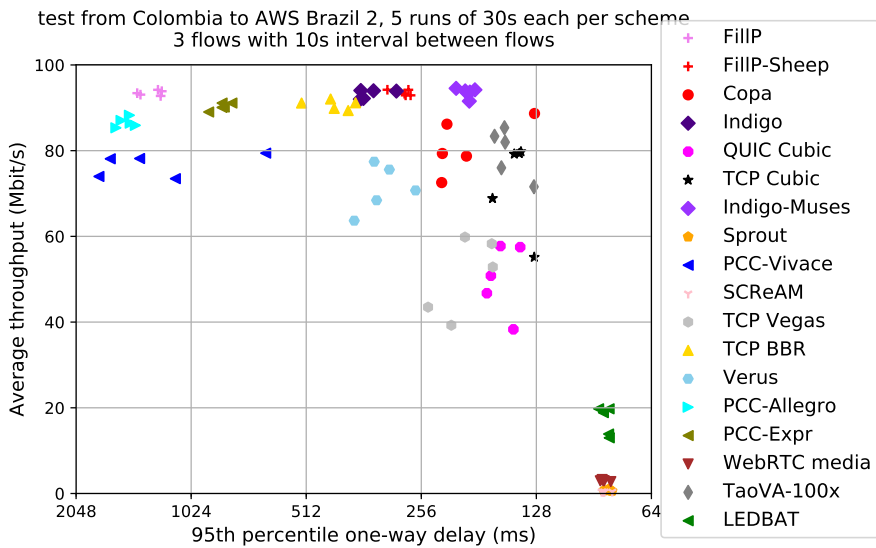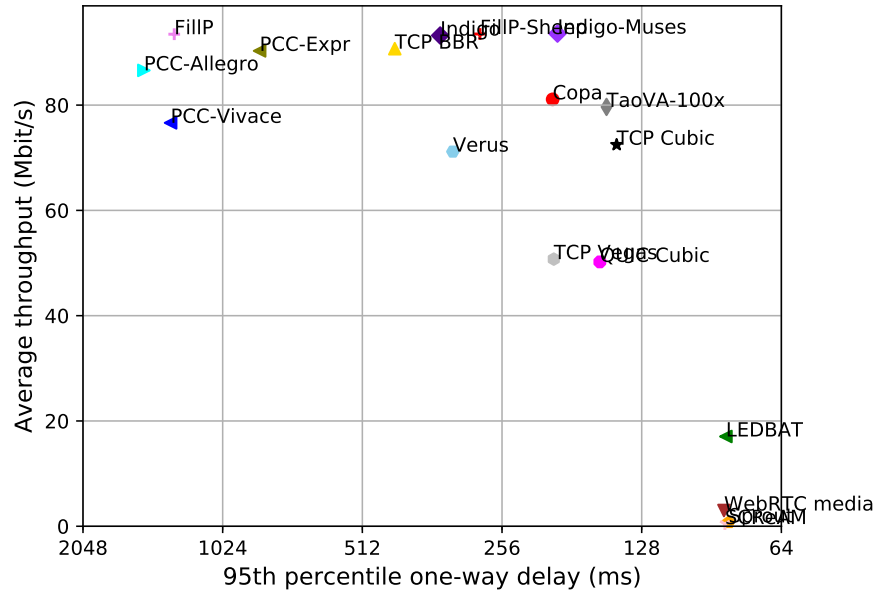NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1020-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
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

```
Git summary:
branch: muses @ f392ce15d580343f4432c3d7e068b3290f03eb4a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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

test from Colombia to AWS Brazil 2, 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	56.10	39.29	26.07	358.53	491.48	406.19	2.88	5.70	7.25
Copa	5	49.17	34.96	26.45	199.84	156.19	129.47	1.15	1.00	2.65
TCP Cubic	5	37.86	35.80	32.98	158.29	137.20	133.18	0.46	0.74	2.25
FillP	5	57.75	39.07	29.91	864.91	953.67	1546.41	7.88	23.81	47.25
FillP-Sheep	5	57.68	39.06	30.23	265.70	236.57	524.50	1.73	2.11	3.98
Indigo	5	57.98	38.59	29.69	360.56	136.47	132.43	6.57	2.04	2.71
LEDBAT	5	10.27	8.26	4.03	83.75	84.62	83.59	1.23	1.70	3.37
Indigo-Muses	5	55.98	37.35	39.11	124.45	273.33	319.38	0.52	1.11	2.37
PCC-Allegro	5	54.30	34.14	29.62	1505.29	922.40	1542.33	25.21	12.08	20.37
PCC-Expr	5	56.43	38.23	26.04	847.99	778.74	220.91	29.30	7.90	3.82
QUIC Cubic	5	27.07	23.35	23.33	122.05	188.75	212.64	1.04	1.63	2.84
SCReAM	5	0.21	0.21	0.22	83.86	84.31	83.93	0.57	0.99	1.75
Sprout	5	0.39	0.40	0.34	83.04	82.44	83.18	0.57	0.43	1.50
TaoVA-100x	5	46.91	32.19	34.55	146.72	159.45	160.06	0.51	0.76	2.14
TCP Vegas	5	24.66	27.03	25.14	226.74	180.44	194.98	0.76	0.91	1.87
Verus	5	46.74	25.54	22.84	334.82	300.41	373.53	1.56	2.22	4.21
PCC-Vivace	5	48.39	30.58	24.36	1202.28	1010.02	581.79	5.07	7.49	7.90
WebRTC media	5	1.72	0.93	0.35	84.47	84.87	84.99	0.41	0.69	1.85

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```
Run 1: Statistics of TCP BBR

Start at: 2018-09-06 19:16:20
End at: 2018-09-06 19:16:50
Local clock offset: 3.364 ms
Remote clock offset: 2.399 ms


# Below is generated by plot.py at 2018-09-06 21:11:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.87 Mbit/s
95th percentile per-packet one-way delay: 432.553 ms
Loss rate: 4.18%
-- Flow 1:
Average throughput: 58.81 Mbit/s
95th percentile per-packet one-way delay: 309.198 ms
Loss rate: 2.91%
-- Flow 2:
Average throughput: 43.26 Mbit/s
95th percentile per-packet one-way delay: 502.402 ms
Loss rate: 6.60%
-- Flow 3:
Average throughput: 7.10 Mbit/s
95th percentile per-packet one-way delay: 80.597 ms
Loss rate: 5.42%
```

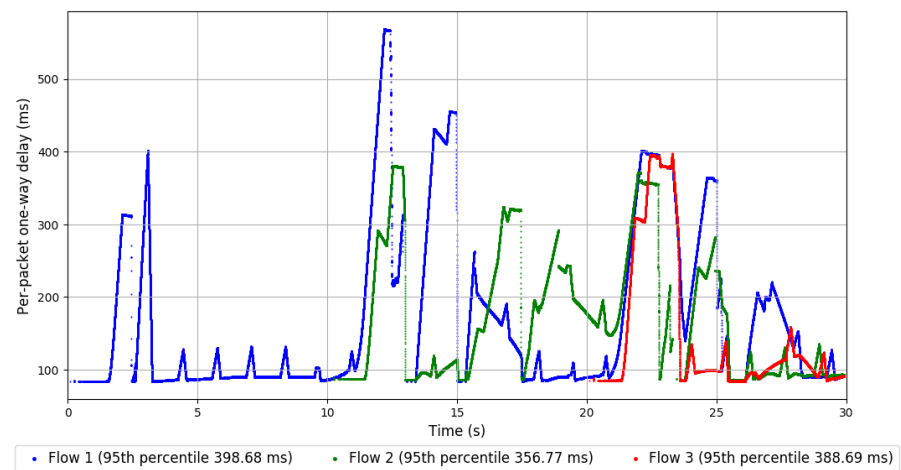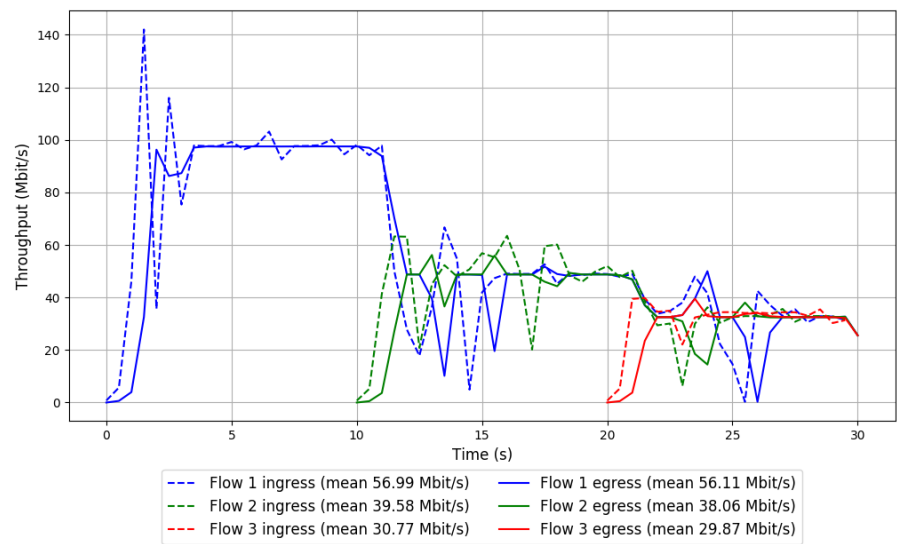Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-09-06 19:39:45
End at: 2018-09-06 19:40:15
Local clock offset: 4.269 ms
Remote clock offset: -4.085 ms


# Below is generated by plot.py at 2018-09-06 21:11:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.18 Mbit/s
95th percentile per-packet one-way delay: 380.436 ms
Loss rate: 3.09%
-- Flow 1:
Average throughput: 56.11 Mbit/s
95th percentile per-packet one-way delay: 398.683 ms
Loss rate: 2.09%
-- Flow 2:
Average throughput: 38.06 Mbit/s
95th percentile per-packet one-way delay: 356.773 ms
Loss rate: 4.68%
-- Flow 3:
Average throughput: 29.87 Mbit/s
95th percentile per-packet one-way delay: 388.691 ms
Loss rate: 4.60%
```
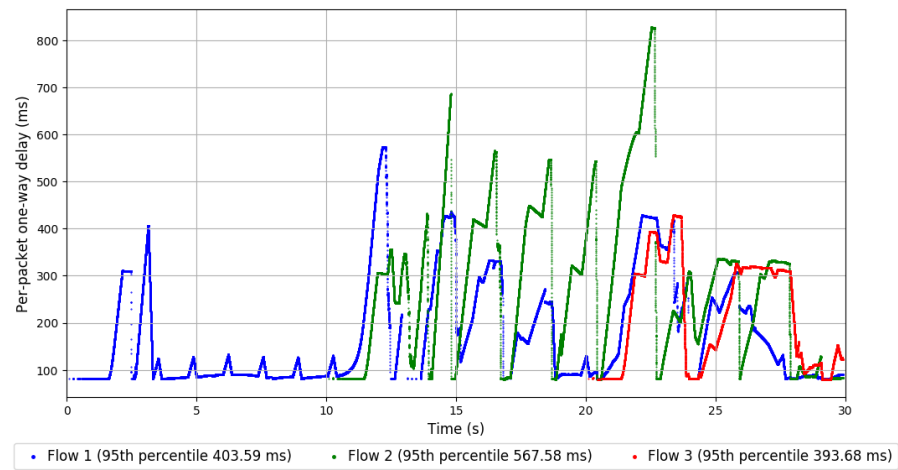
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 56.99 Mbit/s)   Flow 1 egress (mean 56.11 Mbit/s)
Flow 2 ingress (mean 39.58 Mbit/s)   Flow 2 egress (mean 38.06 Mbit/s)
Flow 3 ingress (mean 30.77 Mbit/s)   Flow 3 egress (mean 29.87 Mbit/s)

Flow 1 (95th percentile 398.68 ms)   Flow 2 (95th percentile 356.77 ms)   Flow 3 (95th percentile 388.69 ms)

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```
Run 3: Statistics of TCP BBR

Start at: 2018-09-06 20:03:01
End at: 2018-09-06 20:03:31
Local clock offset: 0.113 ms
Remote clock offset: 1.822 ms


# Below is generated by plot.py at 2018-09-06 21:11:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.06 Mbit/s
95th percentile per-packet one-way delay: 442.071 ms
Loss rate: 3.80%
-- Flow 1:
Average throughput: 55.92 Mbit/s
95th percentile per-packet one-way delay: 403.592 ms
Loss rate: 2.42%
-- Flow 2:
Average throughput: 39.19 Mbit/s
95th percentile per-packet one-way delay: 567.581 ms
Loss rate: 5.12%
-- Flow 3:
Average throughput: 30.75 Mbit/s
95th percentile per-packet one-way delay: 393.681 ms
Loss rate: 7.70%
```
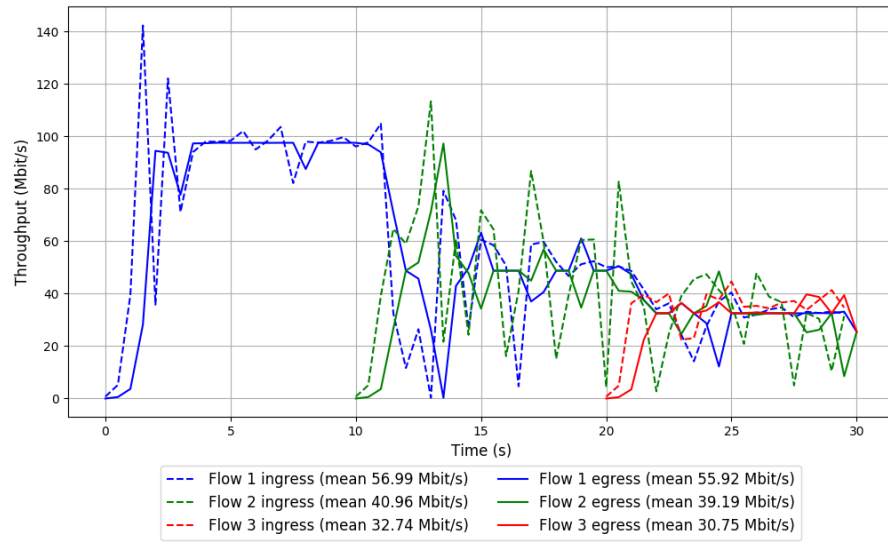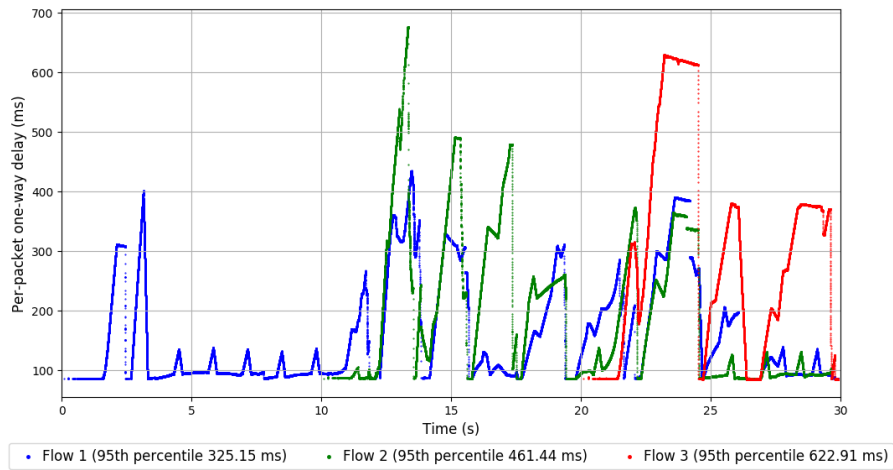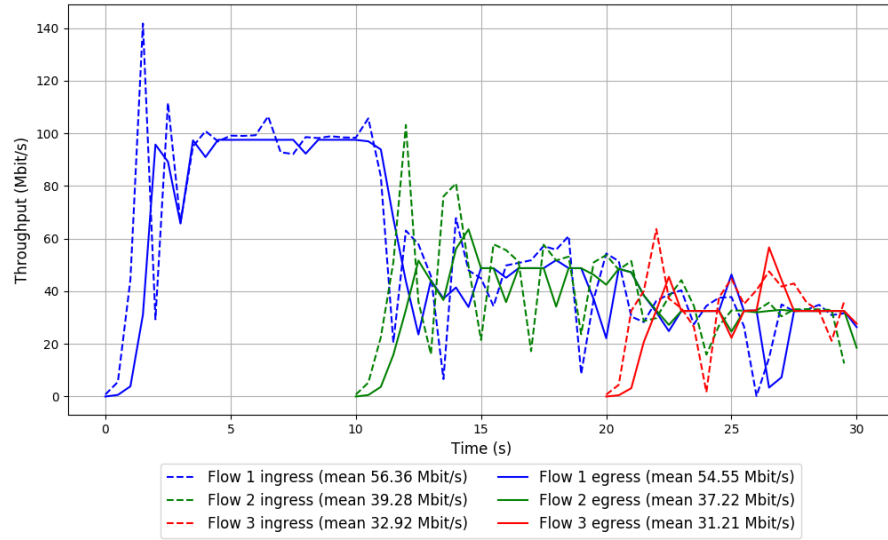
Run 3: Report of TCP BBR — Data Link

- Flow 1 ingress (mean 56.99 Mbit/s) — Flow 1 egress (mean 55.92 Mbit/s)
- Flow 2 ingress (mean 40.96 Mbit/s) — Flow 2 egress (mean 39.19 Mbit/s)
- Flow 3 ingress (mean 32.74 Mbit/s) — Flow 3 egress (mean 30.75 Mbit/s)

- Flow 1 (95th percentile 403.59 ms)   - Flow 2 (95th percentile 567.58 ms)   - Flow 3 (95th percentile 393.68 ms)

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Run 4: Statistics of TCP BBR

Start at: 2018-09-06 20:26:28
End at: 2018-09-06 20:26:58
Local clock offset: 4.294 ms
Remote clock offset: -1.642 ms


# Below is generated by plot.py at 2018-09-06 21:11:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.37 Mbit/s
95th percentile per-packet one-way delay: 397.657 ms
Loss rate: 4.83%
-- Flow 1:
Average throughput: 54.55 Mbit/s
95th percentile per-packet one-way delay: 325.148 ms
Loss rate: 3.77%
-- Flow 2:
Average throughput: 37.22 Mbit/s
95th percentile per-packet one-way delay: 461.437 ms
Loss rate: 6.26%
-- Flow 3:
Average throughput: 31.21 Mbit/s
95th percentile per-packet one-way delay: 622.911 ms
Loss rate: 6.83%
```
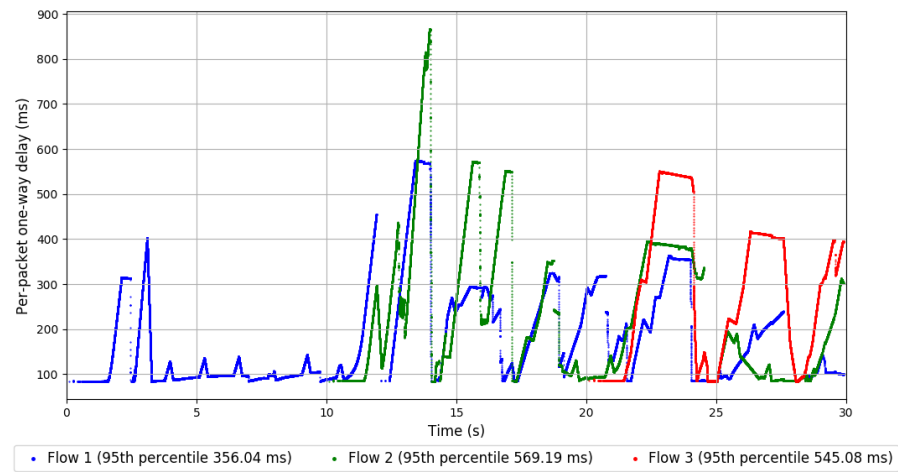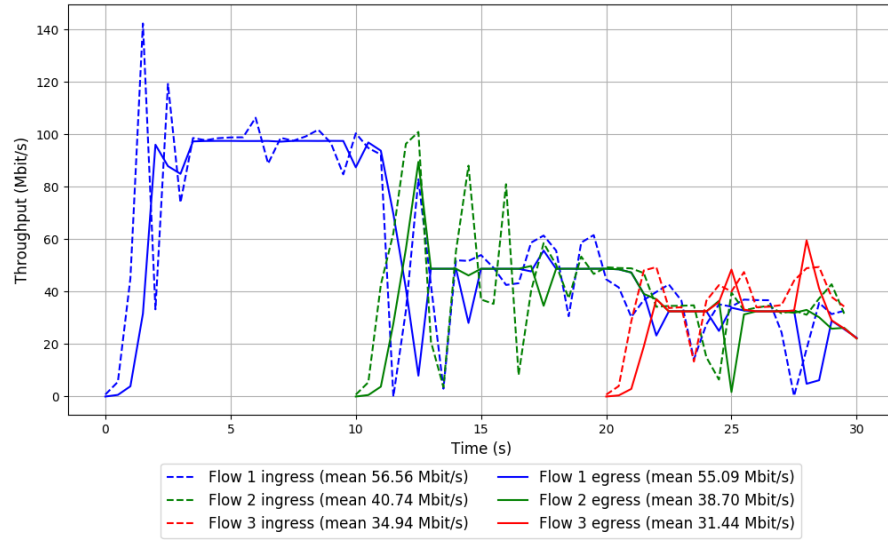
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 56.36 Mbit/s) ---- Flow 1 egress (mean 54.55 Mbit/s)
Flow 2 ingress (mean 39.28 Mbit/s) ---- Flow 2 egress (mean 37.22 Mbit/s)
Flow 3 ingress (mean 32.92 Mbit/s) ---- Flow 3 egress (mean 31.21 Mbit/s)

Flow 1 (95th percentile 325.15 ms)   Flow 2 (95th percentile 461.44 ms)   Flow 3 (95th percentile 622.91 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-09-06 20:50:11
End at: 2018-09-06 20:50:41
Local clock offset: 5.338 ms
Remote clock offset: -0.584 ms


# Below is generated by plot.py at 2018-09-06 21:11:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.12 Mbit/s
95th percentile per-packet one-way delay: 526.543 ms
Loss rate: 4.99%
-- Flow 1:
Average throughput: 55.09 Mbit/s
95th percentile per-packet one-way delay: 356.043 ms
Loss rate: 3.19%
-- Flow 2:
Average throughput: 38.70 Mbit/s
95th percentile per-packet one-way delay: 569.192 ms
Loss rate: 5.86%
-- Flow 3:
Average throughput: 31.44 Mbit/s
95th percentile per-packet one-way delay: 545.079 ms
Loss rate: 11.68%
```
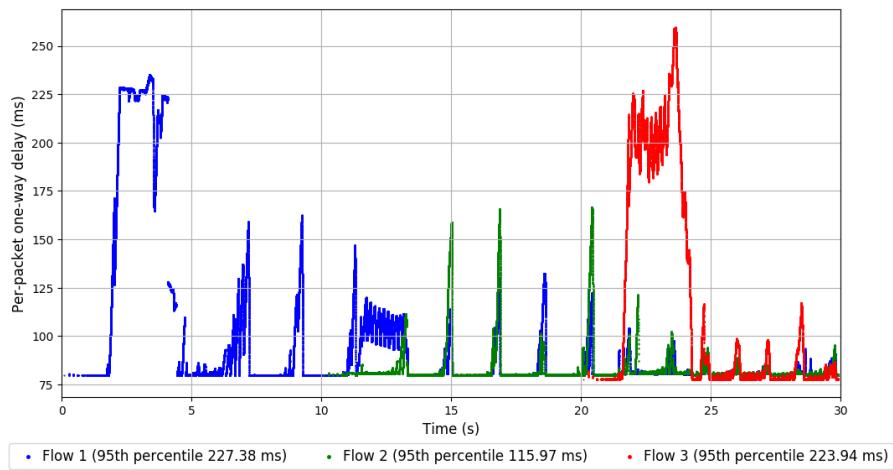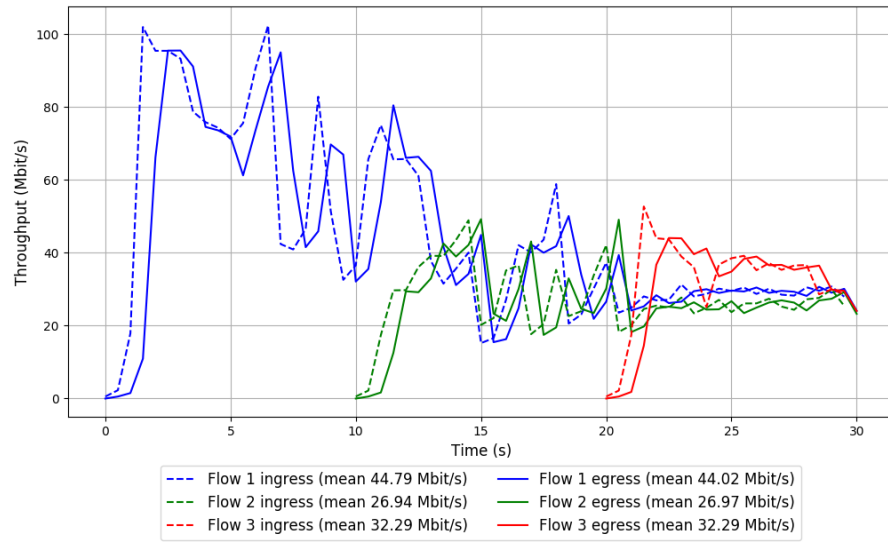
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 56.56 Mbit/s)   Flow 1 egress (mean 55.09 Mbit/s)
Flow 2 ingress (mean 40.74 Mbit/s)   Flow 2 egress (mean 38.70 Mbit/s)
Flow 3 ingress (mean 34.94 Mbit/s)   Flow 3 egress (mean 31.44 Mbit/s)

Flow 1 (95th percentile 356.04 ms)   Flow 2 (95th percentile 569.19 ms)   Flow 3 (95th percentile 545.08 ms)
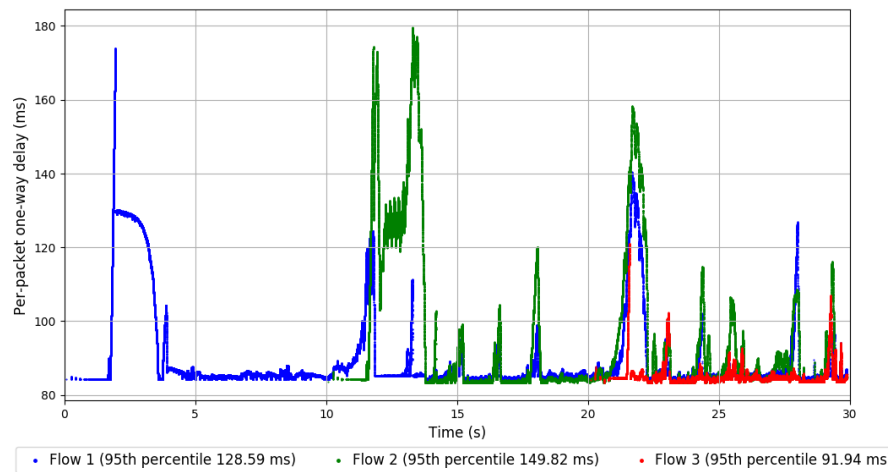
```
Run 1: Statistics of Copa

Start at: 2018-09-06 19:21:36
End at: 2018-09-06 19:22:06
Local clock offset: 3.437 ms
Remote clock offset: 0.98 ms


# Below is generated by plot.py at 2018-09-06 21:12:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.55 Mbit/s
95th percentile per-packet one-way delay: 226.399 ms
Loss rate: 1.81%
-- Flow 1:
Average throughput: 44.02 Mbit/s
95th percentile per-packet one-way delay: 227.381 ms
Loss rate: 2.29%
-- Flow 2:
Average throughput: 26.97 Mbit/s
95th percentile per-packet one-way delay: 115.971 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 32.29 Mbit/s
95th percentile per-packet one-way delay: 223.940 ms
Loss rate: 1.64%
```
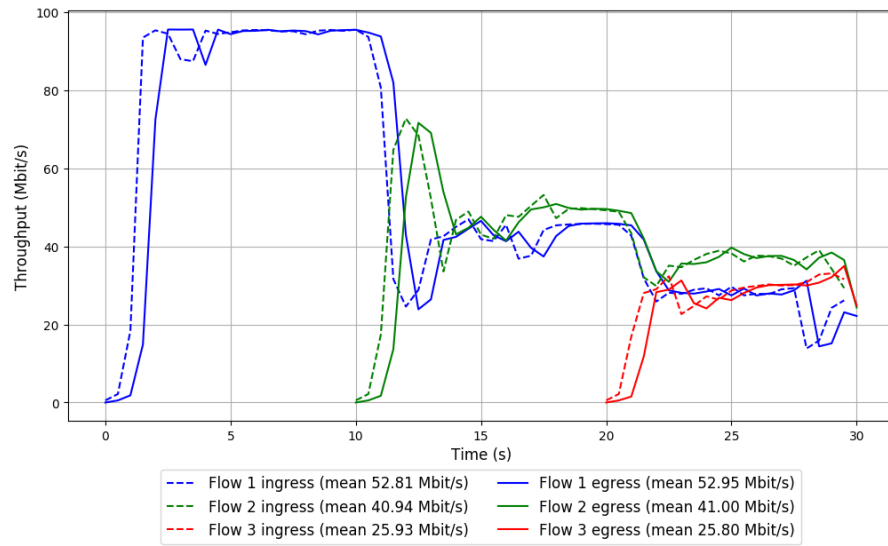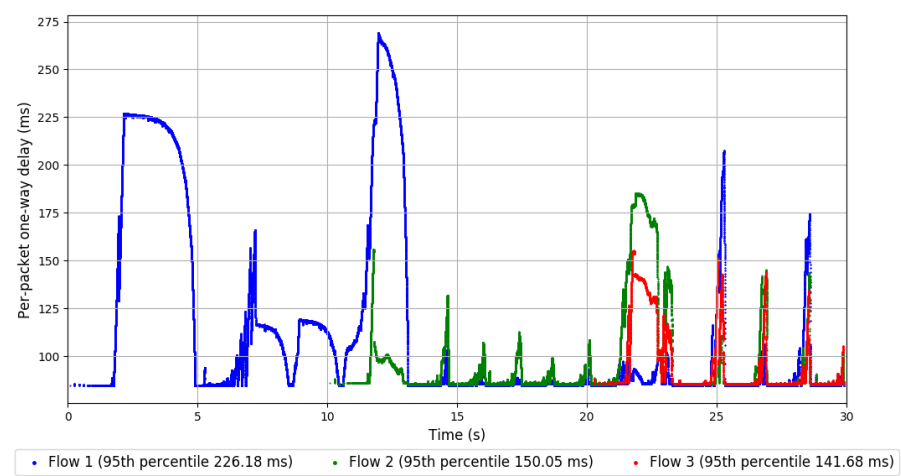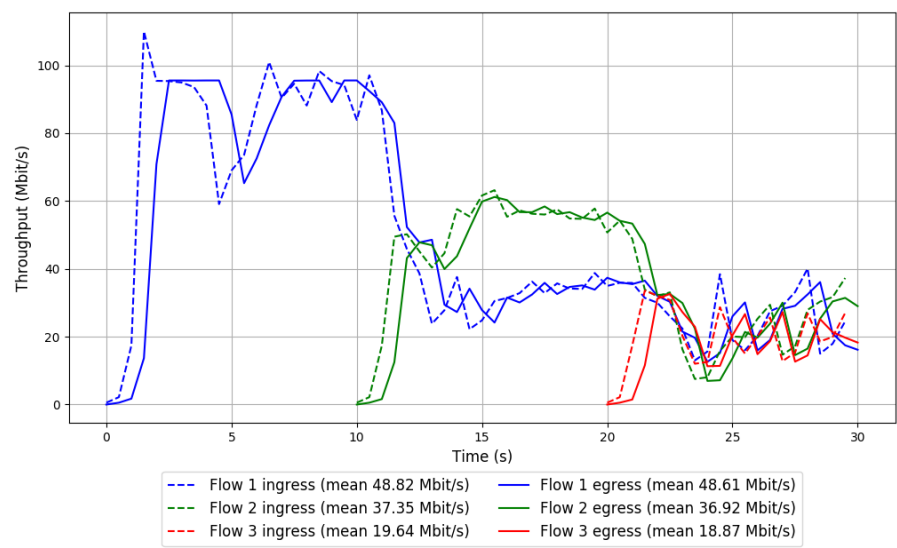
Run 1: Report of Copa — Data Link

- - - - Flow 1 ingress (mean 44.79 Mbit/s) ——— Flow 1 egress (mean 44.02 Mbit/s)
- - - - Flow 2 ingress (mean 26.94 Mbit/s) ——— Flow 2 egress (mean 26.97 Mbit/s)
- - - - Flow 3 ingress (mean 32.29 Mbit/s) ——— Flow 3 egress (mean 32.29 Mbit/s)

- Flow 1 (95th percentile 227.38 ms) • Flow 2 (95th percentile 115.97 ms) • Flow 3 (95th percentile 223.94 ms)

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```
Run 2: Statistics of Copa

Start at: 2018-09-06 19:45:04
End at: 2018-09-06 19:45:34
Local clock offset: 4.187 ms
Remote clock offset: -3.912 ms


# Below is generated by plot.py at 2018-09-06 21:12:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.67 Mbit/s
95th percentile per-packet one-way delay: 129.433 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 52.95 Mbit/s
95th percentile per-packet one-way delay: 128.586 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 41.00 Mbit/s
95th percentile per-packet one-way delay: 149.821 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 25.80 Mbit/s
95th percentile per-packet one-way delay: 91.936 ms
Loss rate: 2.14%
```
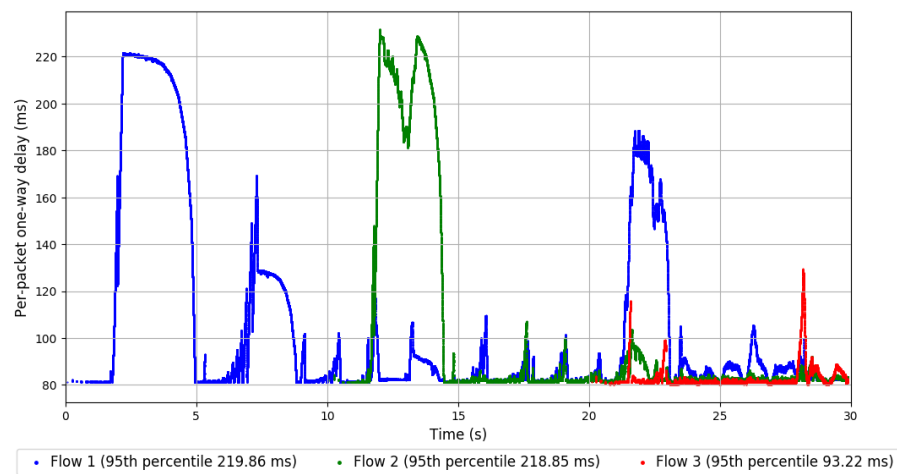
Run 2: Report of Copa — Data Link

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```
Run 3: Statistics of Copa

Start at: 2018-09-06 20:08:16
End at: 2018-09-06 20:08:46
Local clock offset: 0.55 ms
Remote clock offset: -2.338 ms


# Below is generated by plot.py at 2018-09-06 21:12:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.34 Mbit/s
95th percentile per-packet one-way delay: 225.463 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 48.61 Mbit/s
95th percentile per-packet one-way delay: 226.178 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 36.92 Mbit/s
95th percentile per-packet one-way delay: 150.046 ms
Loss rate: 1.97%
-- Flow 3:
Average throughput: 18.87 Mbit/s
95th percentile per-packet one-way delay: 141.679 ms
Loss rate: 5.50%
```
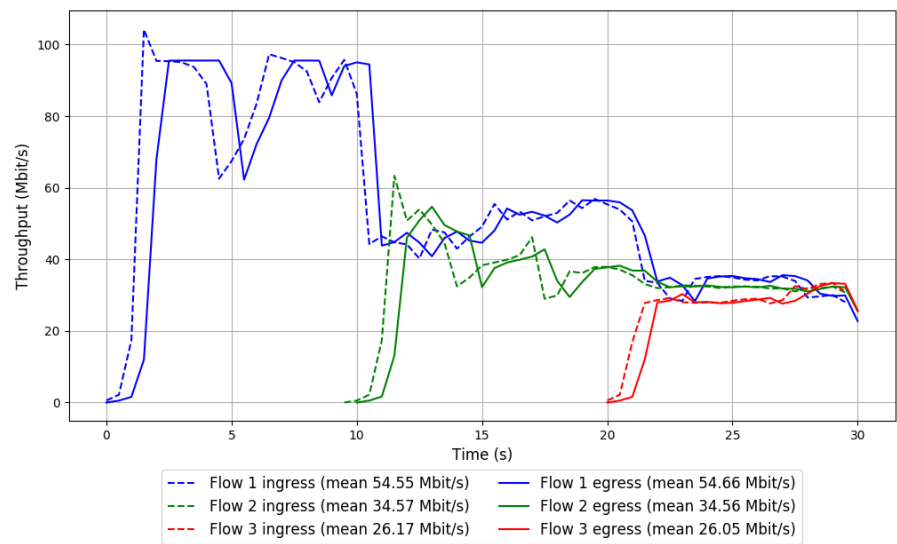
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 48.82 Mbit/s)   Flow 1 egress (mean 48.61 Mbit/s)
Flow 2 ingress (mean 37.35 Mbit/s)   Flow 2 egress (mean 36.92 Mbit/s)
Flow 3 ingress (mean 19.64 Mbit/s)   Flow 3 egress (mean 18.87 Mbit/s)

Flow 1 (95th percentile 226.18 ms)   Flow 2 (95th percentile 150.05 ms)   Flow 3 (95th percentile 141.68 ms)
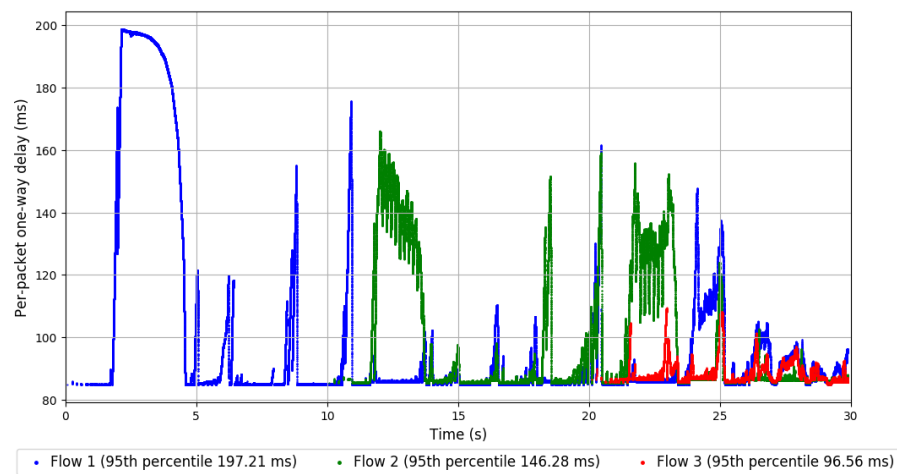
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```
Run 4: Statistics of Copa

Start at: 2018-09-06 20:31:45
End at: 2018-09-06 20:32:15
Local clock offset: 5.172 ms
Remote clock offset: 2.775 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.18 Mbit/s
95th percentile per-packet one-way delay: 219.357 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 54.66 Mbit/s
95th percentile per-packet one-way delay: 219.861 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 34.56 Mbit/s
95th percentile per-packet one-way delay: 218.854 ms
Loss rate: 0.85%
-- Flow 3:
Average throughput: 26.05 Mbit/s
95th percentile per-packet one-way delay: 93.215 ms
Loss rate: 2.13%
```
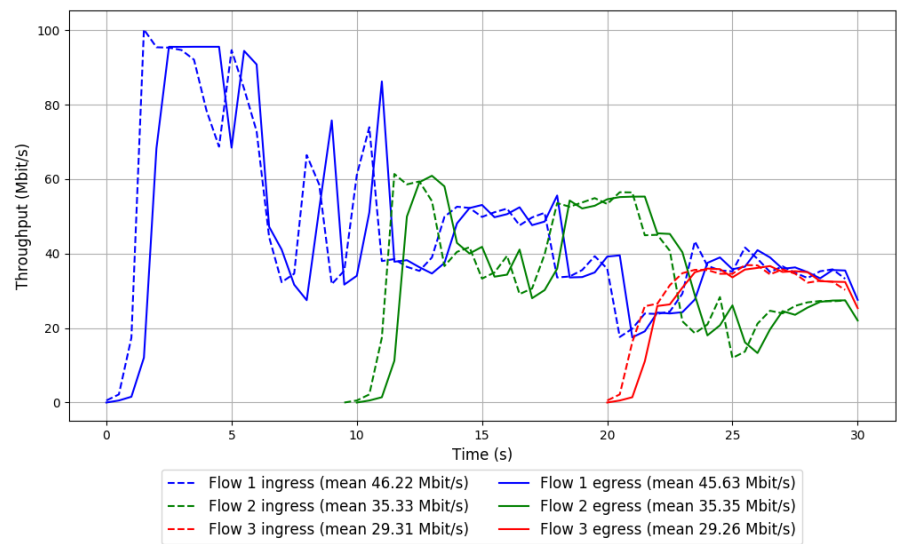
Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-09-06 20:55:33
End at: 2018-09-06 20:56:03
Local clock offset: 6.038 ms
Remote clock offset: -0.957 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.73 Mbit/s
95th percentile per-packet one-way delay: 195.033 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 45.63 Mbit/s
95th percentile per-packet one-way delay: 197.213 ms
Loss rate: 1.83%
-- Flow 2:
Average throughput: 35.35 Mbit/s
95th percentile per-packet one-way delay: 146.280 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 29.26 Mbit/s
95th percentile per-packet one-way delay: 96.564 ms
Loss rate: 1.86%
```
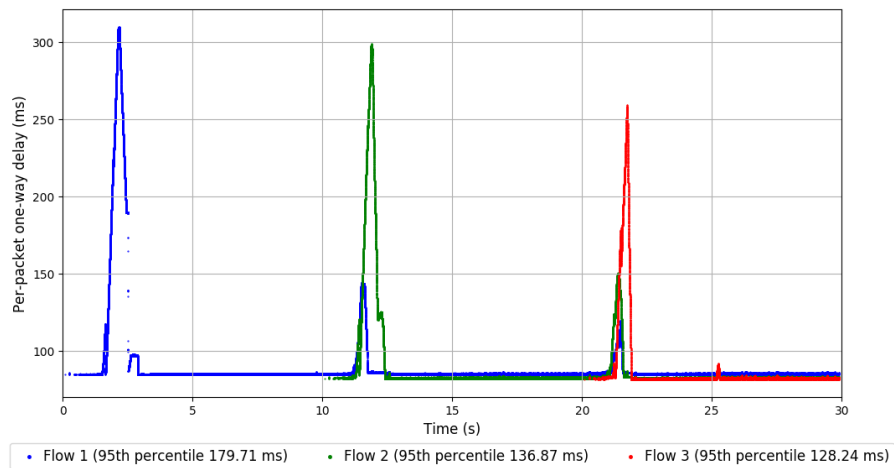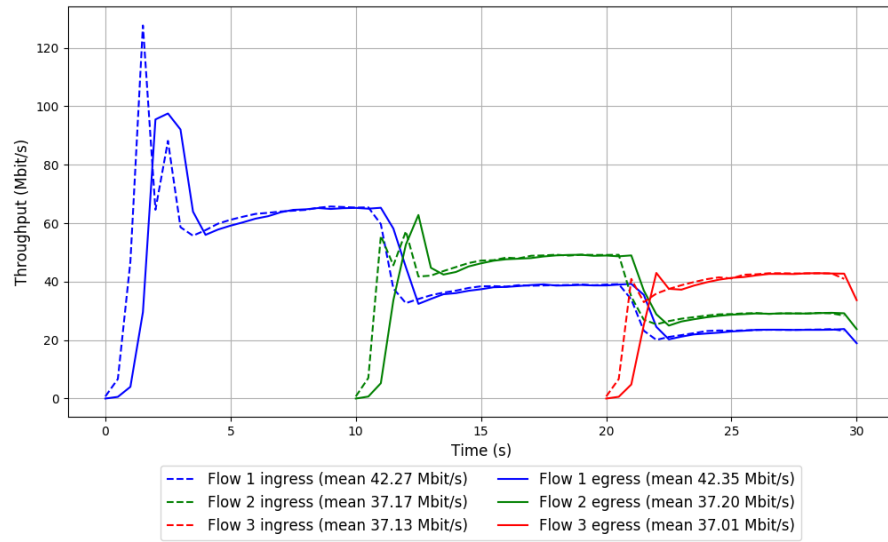
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 46.22 Mbit/s) --- Flow 1 egress (mean 45.63 Mbit/s)
Flow 2 ingress (mean 35.33 Mbit/s) --- Flow 2 egress (mean 35.35 Mbit/s)
Flow 3 ingress (mean 29.31 Mbit/s) --- Flow 3 egress (mean 29.26 Mbit/s)

Flow 1 (95th percentile 197.21 ms)　Flow 2 (95th percentile 146.28 ms)　Flow 3 (95th percentile 96.56 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-06 19:26:55
End at: 2018-09-06 19:27:25
Local clock offset: 3.539 ms
Remote clock offset: -3.056 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.22 Mbit/s
95th percentile per-packet one-way delay: 146.180 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 42.35 Mbit/s
95th percentile per-packet one-way delay: 179.710 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 37.20 Mbit/s
95th percentile per-packet one-way delay: 136.874 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 37.01 Mbit/s
95th percentile per-packet one-way delay: 128.237 ms
Loss rate: 1.95%
```
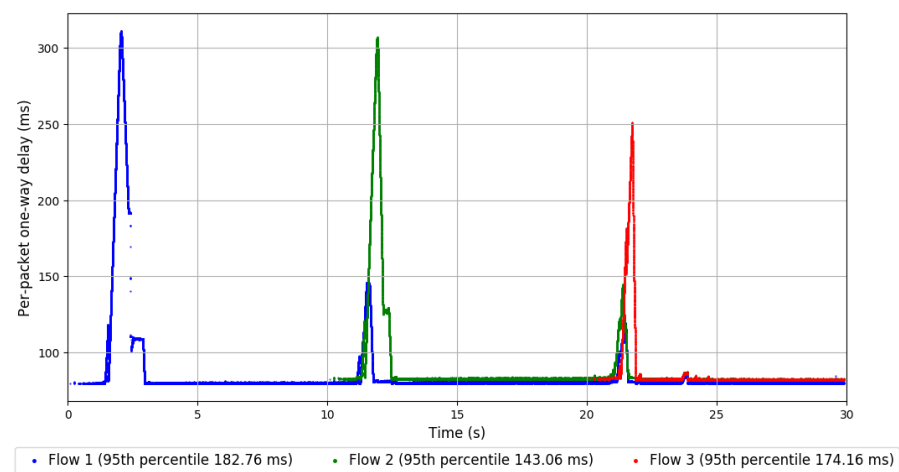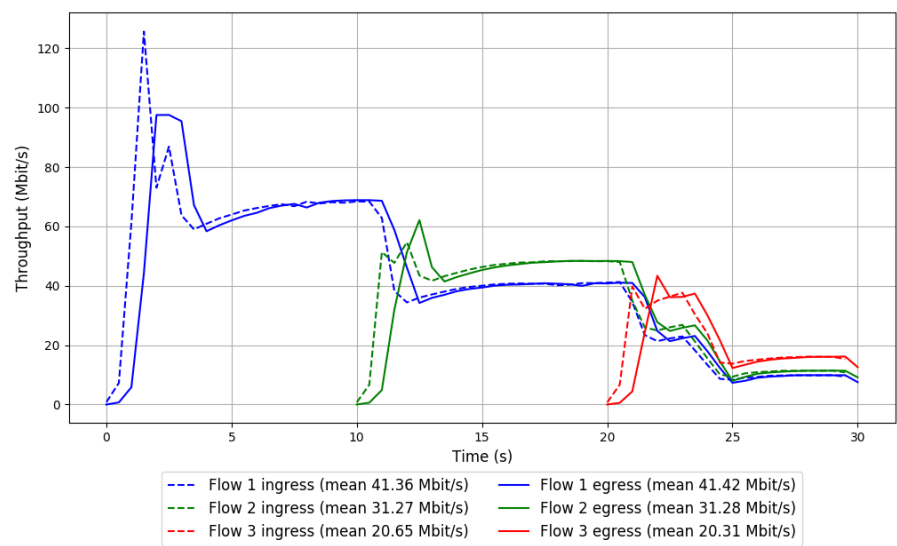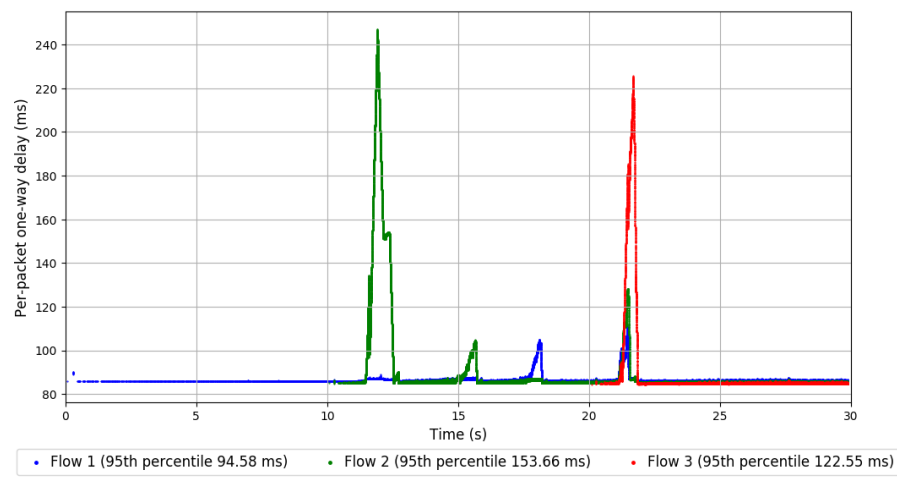
Run 1: Report of TCP Cubic — Data Link

- - - - Flow 1 ingress (mean 42.27 Mbit/s) ——— Flow 1 egress (mean 42.35 Mbit/s)
- - - - Flow 2 ingress (mean 37.17 Mbit/s) ——— Flow 2 egress (mean 37.20 Mbit/s)
- - - - Flow 3 ingress (mean 37.13 Mbit/s) ——— Flow 3 egress (mean 37.01 Mbit/s)

• Flow 1 (95th percentile 179.71 ms) • Flow 2 (95th percentile 136.87 ms) • Flow 3 (95th percentile 128.24 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-06 19:50:15
End at: 2018-09-06 19:50:45
Local clock offset: 2.7 ms
Remote clock offset: 0.377 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.86 Mbit/s
95th percentile per-packet one-way delay: 166.697 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 41.42 Mbit/s
95th percentile per-packet one-way delay: 182.762 ms
Loss rate: 0.40%
-- Flow 2:
Average throughput: 31.28 Mbit/s
95th percentile per-packet one-way delay: 143.056 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 20.31 Mbit/s
95th percentile per-packet one-way delay: 174.161 ms
Loss rate: 3.34%
```

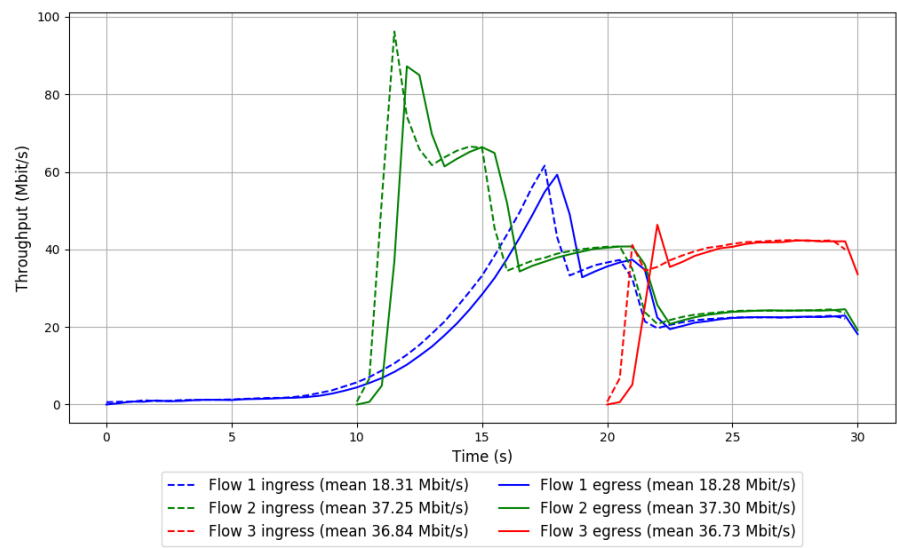Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-06 20:13:39
End at: 2018-09-06 20:14:09
Local clock offset: 0.266 ms
Remote clock offset: -2.059 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 55.14 Mbit/s
95th percentile per-packet one-way delay: 129.612 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 18.28 Mbit/s
95th percentile per-packet one-way delay: 94.583 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 37.30 Mbit/s
95th percentile per-packet one-way delay: 153.655 ms
Loss rate: 0.69%
-- Flow 3:
Average throughput: 36.73 Mbit/s
95th percentile per-packet one-way delay: 122.545 ms
Loss rate: 1.95%
```
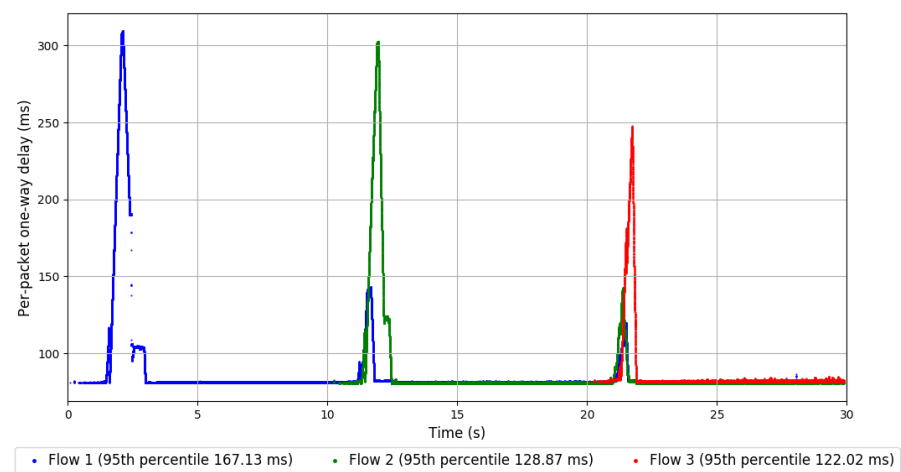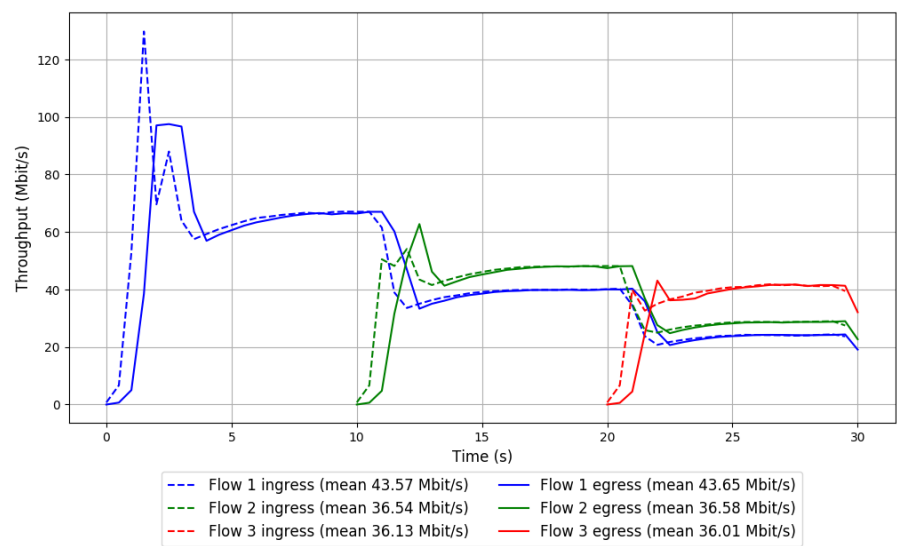
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 18.31 Mbit/s) --- Flow 1 egress (mean 18.28 Mbit/s)
Flow 2 ingress (mean 37.25 Mbit/s) --- Flow 2 egress (mean 37.30 Mbit/s)
Flow 3 ingress (mean 36.84 Mbit/s) --- Flow 3 egress (mean 36.73 Mbit/s)

Flow 1 (95th percentile 94.58 ms) • Flow 2 (95th percentile 153.66 ms) • Flow 3 (95th percentile 122.55 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-09-06 20:36:57
End at: 2018-09-06 20:37:27
Local clock offset: 5.743 ms
Remote clock offset: 3.311 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.77 Mbit/s
95th percentile per-packet one-way delay: 140.441 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 43.65 Mbit/s
95th percentile per-packet one-way delay: 167.135 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 36.58 Mbit/s
95th percentile per-packet one-way delay: 128.865 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 36.01 Mbit/s
95th percentile per-packet one-way delay: 122.019 ms
Loss rate: 1.97%
```
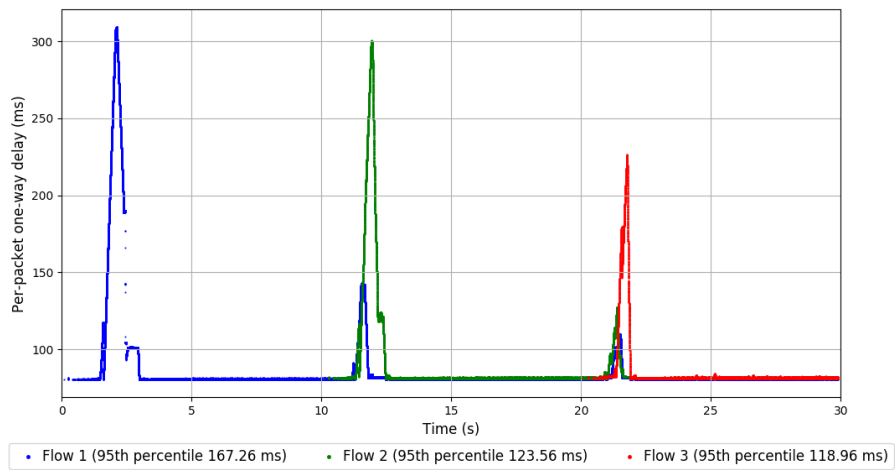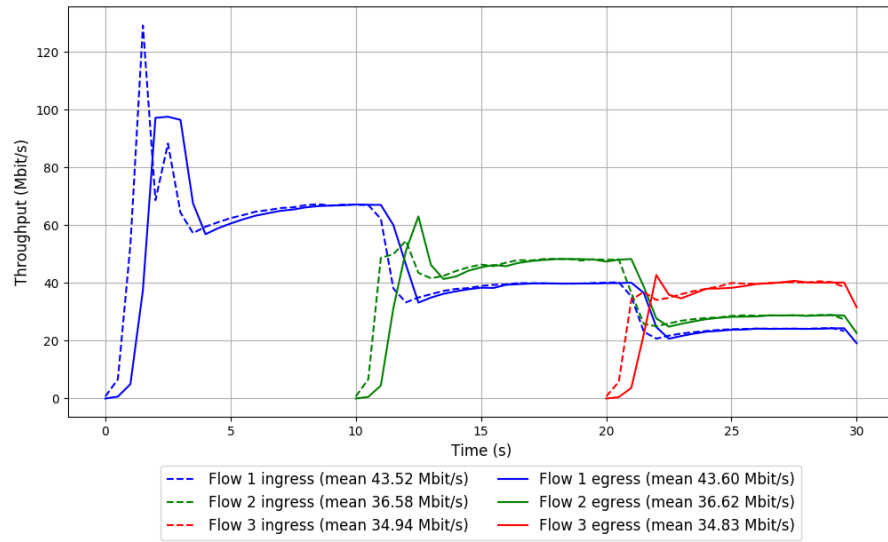
Run 4: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 43.57 Mbit/s)   —— Flow 1 egress (mean 43.65 Mbit/s)
- - - Flow 2 ingress (mean 36.54 Mbit/s)   —— Flow 2 egress (mean 36.58 Mbit/s)
- - - Flow 3 ingress (mean 36.13 Mbit/s)   —— Flow 3 egress (mean 36.01 Mbit/s)

- Flow 1 (95th percentile 167.13 ms)   • Flow 2 (95th percentile 128.87 ms)   • Flow 3 (95th percentile 122.02 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-09-06 21:00:48
End at: 2018-09-06 21:01:18
Local clock offset: 5.288 ms
Remote clock offset: 3.414 ms


# Below is generated by plot.py at 2018-09-06 21:13:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.35 Mbit/s
95th percentile per-packet one-way delay: 141.869 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 43.60 Mbit/s
95th percentile per-packet one-way delay: 167.262 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 36.62 Mbit/s
95th percentile per-packet one-way delay: 123.561 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 34.83 Mbit/s
95th percentile per-packet one-way delay: 118.958 ms
Loss rate: 2.02%
```
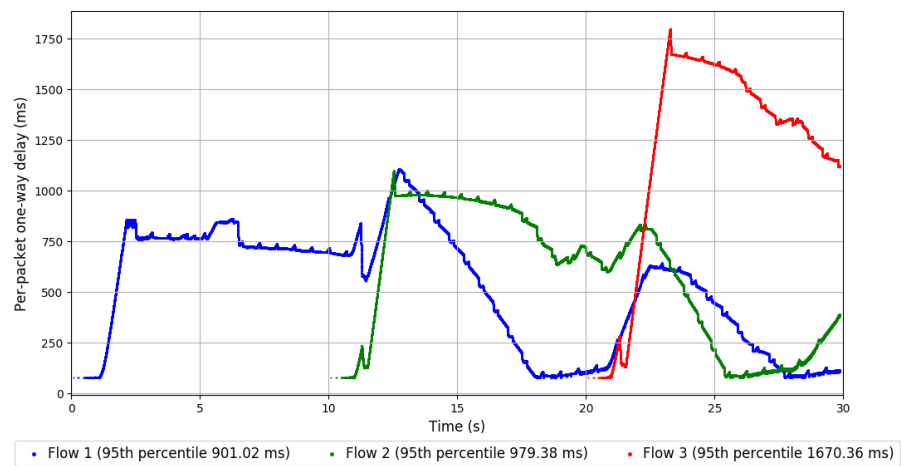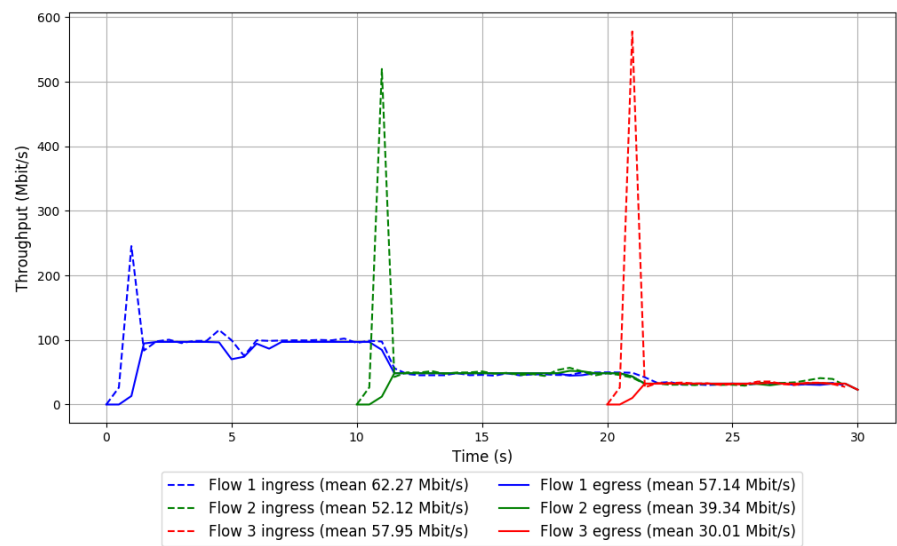
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-09-06 19:25:35
End at: 2018-09-06 19:26:05
Local clock offset: 4.314 ms
Remote clock offset: 1.131 ms


# Below is generated by plot.py at 2018-09-06 21:14:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.07 Mbit/s
95th percentile per-packet one-way delay: 1389.854 ms
Loss rate: 20.30%
-- Flow 1:
Average throughput: 57.14 Mbit/s
95th percentile per-packet one-way delay: 901.018 ms
Loss rate: 8.74%
-- Flow 2:
Average throughput: 39.34 Mbit/s
95th percentile per-packet one-way delay: 979.381 ms
Loss rate: 25.13%
-- Flow 3:
Average throughput: 30.01 Mbit/s
95th percentile per-packet one-way delay: 1670.356 ms
Loss rate: 49.06%
```
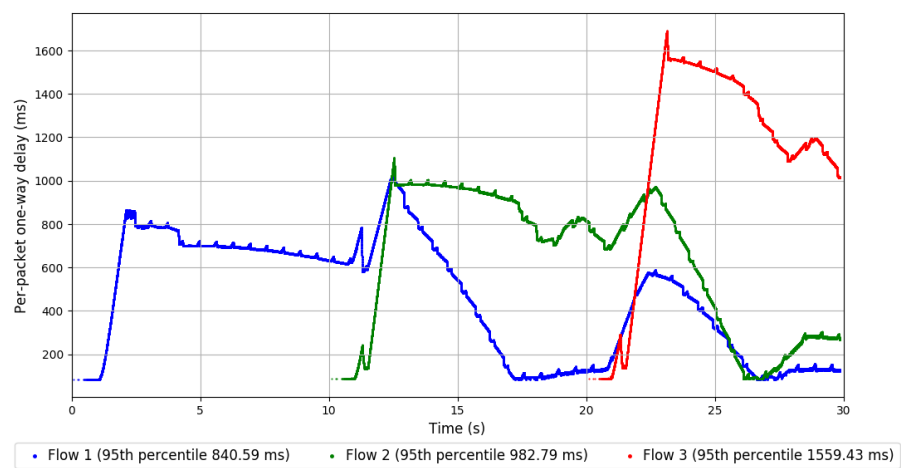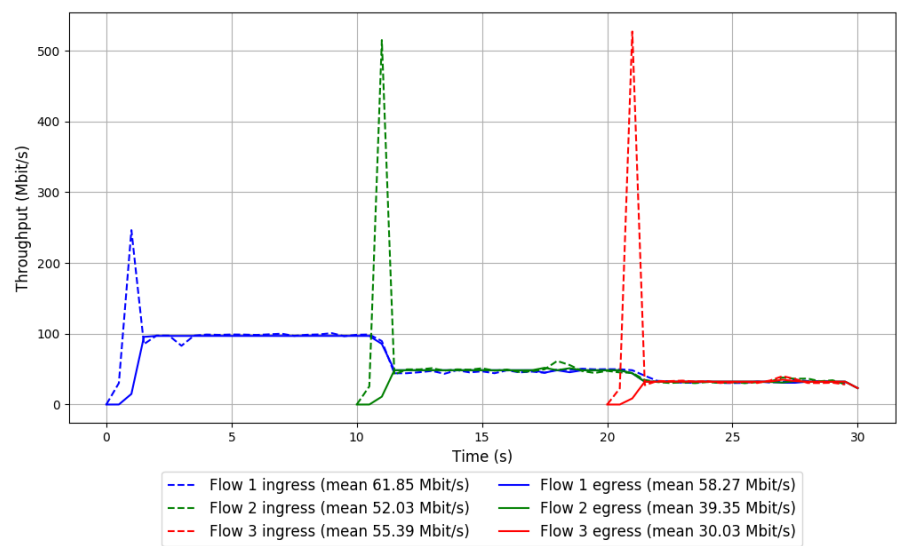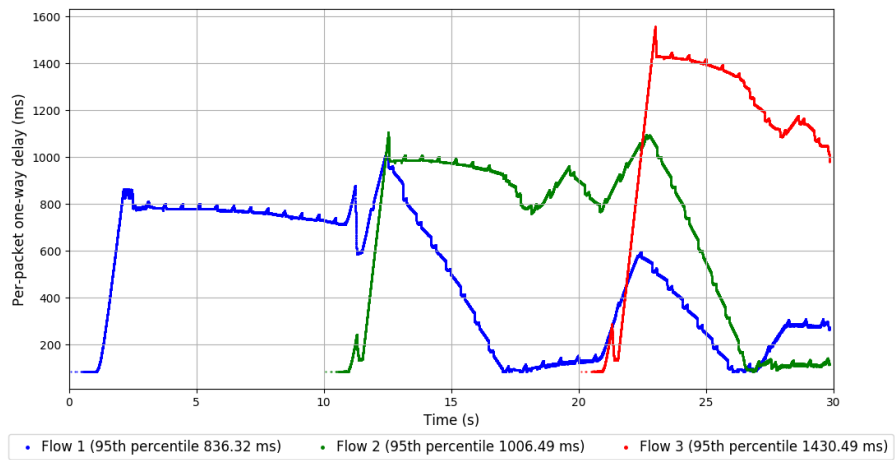
Run 1: Report of FillP — Data Link

- - - Flow 1 ingress (mean 62.27 Mbit/s)   —— Flow 1 egress (mean 57.14 Mbit/s)
- - - Flow 2 ingress (mean 52.12 Mbit/s)   —— Flow 2 egress (mean 39.34 Mbit/s)
- - - Flow 3 ingress (mean 57.95 Mbit/s)   —— Flow 3 egress (mean 30.01 Mbit/s)

• Flow 1 (95th percentile 901.02 ms)   • Flow 2 (95th percentile 979.38 ms)   • Flow 3 (95th percentile 1670.36 ms)

```
Run 2: Statistics of FillP

Start at: 2018-09-06 19:48:57
End at: 2018-09-06 19:49:27
Local clock offset: 2.31 ms
Remote clock offset: -3.92 ms


# Below is generated by plot.py at 2018-09-06 21:14:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.20 Mbit/s
95th percentile per-packet one-way delay: 1250.723 ms
Loss rate: 18.40%
-- Flow 1:
Average throughput: 58.27 Mbit/s
95th percentile per-packet one-way delay: 840.590 ms
Loss rate: 6.31%
-- Flow 2:
Average throughput: 39.35 Mbit/s
95th percentile per-packet one-way delay: 982.791 ms
Loss rate: 25.00%
-- Flow 3:
Average throughput: 30.03 Mbit/s
95th percentile per-packet one-way delay: 1559.429 ms
Loss rate: 46.69%
```
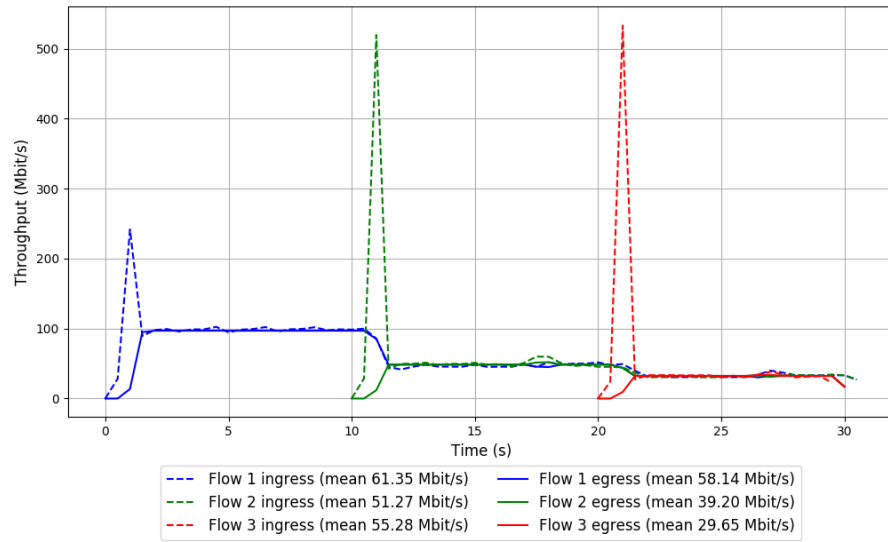
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 61.85 Mbit/s)   Flow 1 egress (mean 58.27 Mbit/s)
Flow 2 ingress (mean 52.03 Mbit/s)   Flow 2 egress (mean 39.35 Mbit/s)
Flow 3 ingress (mean 55.39 Mbit/s)   Flow 3 egress (mean 30.03 Mbit/s)

Flow 1 (95th percentile 840.59 ms)   Flow 2 (95th percentile 982.79 ms)   Flow 3 (95th percentile 1559.43 ms)

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```
Run 3: Statistics of FillP

Start at: 2018-09-06 20:12:09
End at: 2018-09-06 20:12:39
Local clock offset: -0.498 ms
Remote clock offset: -2.097 ms

# Below is generated by plot.py at 2018-09-06 21:14:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.87 Mbit/s
95th percentile per-packet one-way delay: 1222.287 ms
Loss rate: 20.58%
-- Flow 1:
Average throughput: 58.14 Mbit/s
95th percentile per-packet one-way delay: 836.323 ms
Loss rate: 8.73%
-- Flow 2:
Average throughput: 39.20 Mbit/s
95th percentile per-packet one-way delay: 1006.494 ms
Loss rate: 27.69%
-- Flow 3:
Average throughput: 29.65 Mbit/s
95th percentile per-packet one-way delay: 1430.495 ms
Loss rate: 47.51%
```
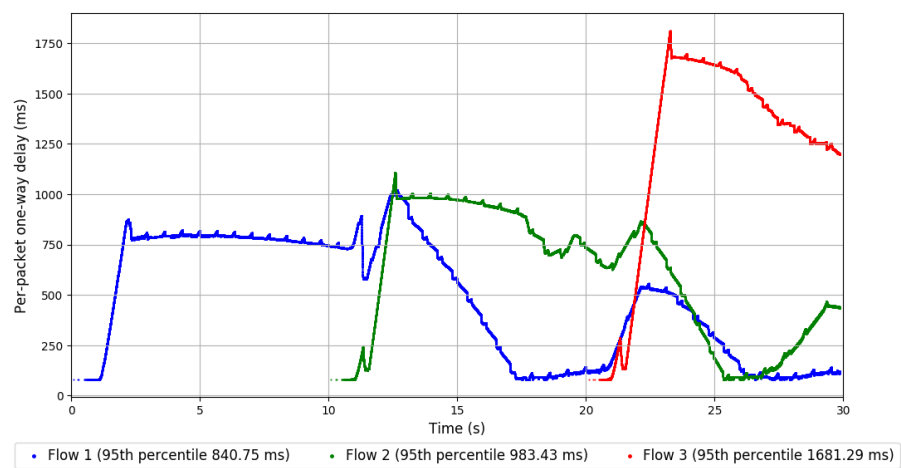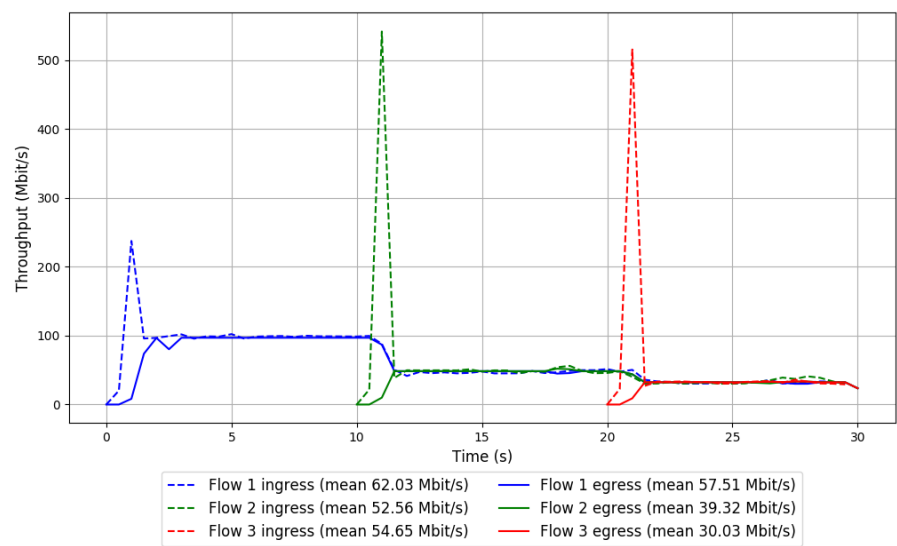
Run 3: Report of FillP — Data Link

- - - Flow 1 ingress (mean 61.35 Mbit/s) —— Flow 1 egress (mean 58.14 Mbit/s)
- - - Flow 2 ingress (mean 51.27 Mbit/s) —— Flow 2 egress (mean 39.20 Mbit/s)
- - - Flow 3 ingress (mean 55.28 Mbit/s) —— Flow 3 egress (mean 29.65 Mbit/s)

• Flow 1 (95th percentile 836.32 ms)   • Flow 2 (95th percentile 1006.49 ms)   • Flow 3 (95th percentile 1430.49 ms)
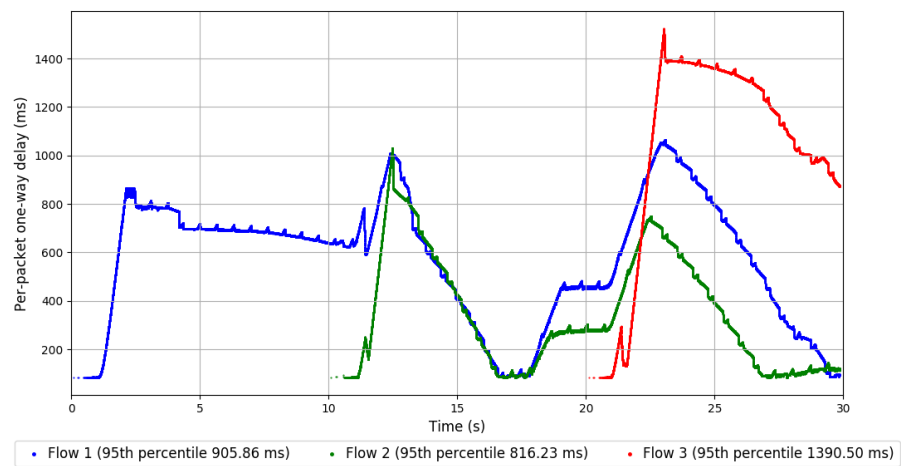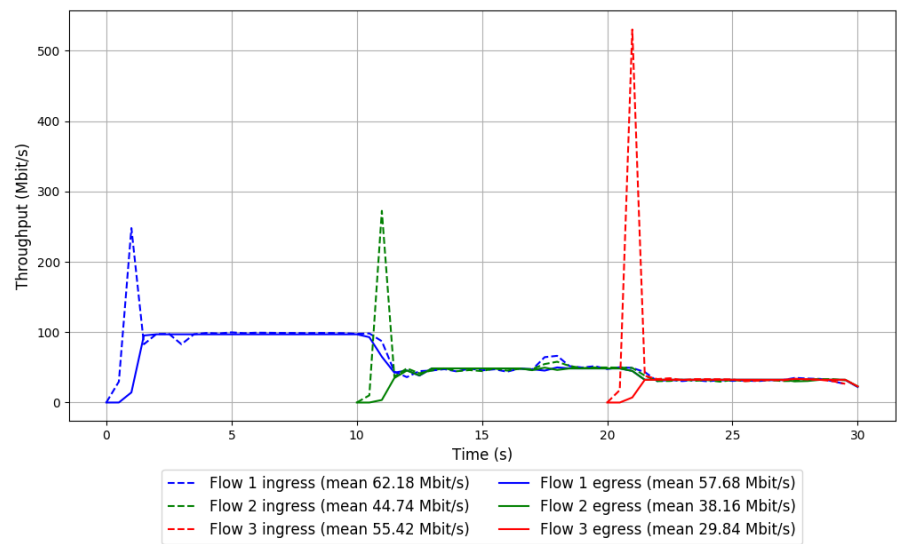
```
Run 4: Statistics of FillP

Start at: 2018-09-06 20:35:39
End at: 2018-09-06 20:36:09
Local clock offset: 4.865 ms
Remote clock offset: 3.273 ms


# Below is generated by plot.py at 2018-09-06 21:14:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.42 Mbit/s
95th percentile per-packet one-way delay: 1417.237 ms
Loss rate: 19.27%
-- Flow 1:
Average throughput: 57.51 Mbit/s
95th percentile per-packet one-way delay: 840.750 ms
Loss rate: 7.81%
-- Flow 2:
Average throughput: 39.32 Mbit/s
95th percentile per-packet one-way delay: 983.429 ms
Loss rate: 25.82%
-- Flow 3:
Average throughput: 30.03 Mbit/s
95th percentile per-packet one-way delay: 1681.293 ms
Loss rate: 45.93%
```
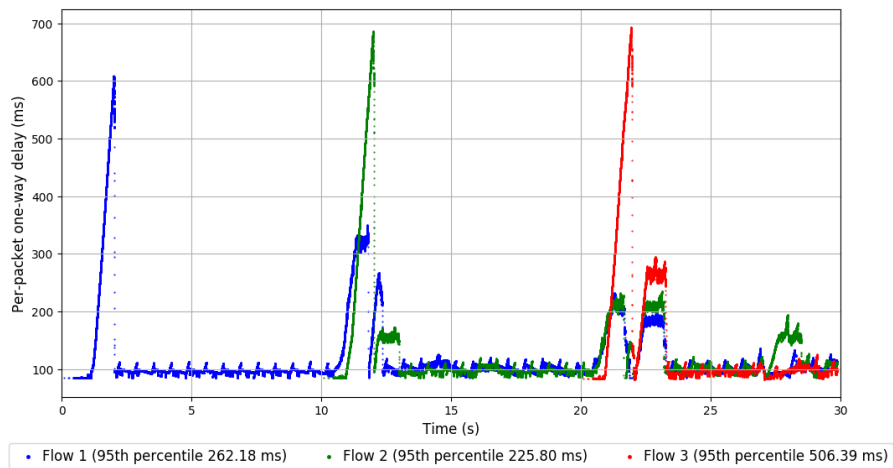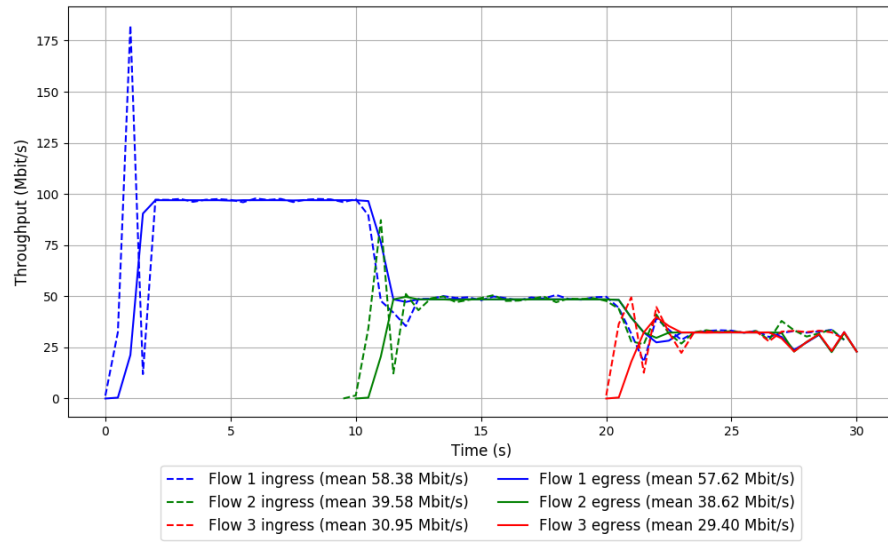
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-09-06 20:59:28
End at: 2018-09-06 20:59:58
Local clock offset: 5.283 ms
Remote clock offset: -0.438 ms


# Below is generated by plot.py at 2018-09-06 21:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.77 Mbit/s
95th percentile per-packet one-way delay: 1230.690 ms
Loss rate: 16.39%
-- Flow 1:
Average throughput: 57.68 Mbit/s
95th percentile per-packet one-way delay: 905.855 ms
Loss rate: 7.79%
-- Flow 2:
Average throughput: 38.16 Mbit/s
95th percentile per-packet one-way delay: 816.232 ms
Loss rate: 15.43%
-- Flow 3:
Average throughput: 29.84 Mbit/s
95th percentile per-packet one-way delay: 1390.497 ms
Loss rate: 47.08%
```

Run 5: Report of FillP — Data Link

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```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-06 19:28:12
End at: 2018-09-06 19:28:42
Local clock offset: 4.321 ms
Remote clock offset: -3.126 ms


# Below is generated by plot.py at 2018-09-06 21:14:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.91 Mbit/s
95th percentile per-packet one-way delay: 281.350 ms
Loss rate: 2.74%
-- Flow 1:
Average throughput: 57.62 Mbit/s
95th percentile per-packet one-way delay: 262.182 ms
Loss rate: 1.84%
-- Flow 2:
Average throughput: 38.62 Mbit/s
95th percentile per-packet one-way delay: 225.803 ms
Loss rate: 3.25%
-- Flow 3:
Average throughput: 29.40 Mbit/s
95th percentile per-packet one-way delay: 506.388 ms
Loss rate: 6.59%
```
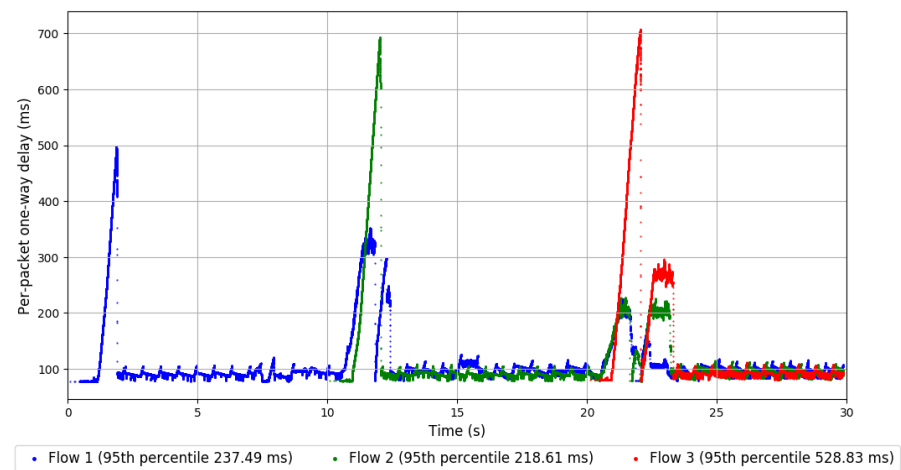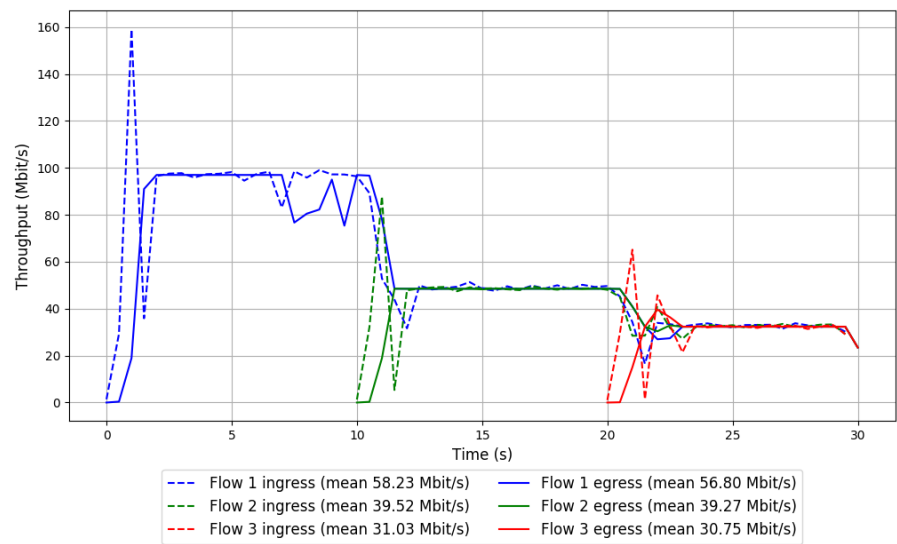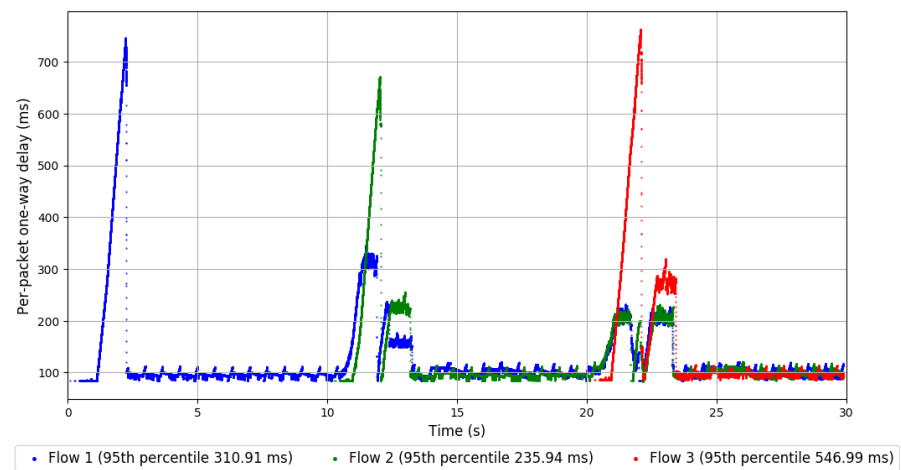
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 58.38 Mbit/s) ---- Flow 1 egress (mean 57.62 Mbit/s) ——
Flow 2 ingress (mean 39.58 Mbit/s) ---- Flow 2 egress (mean 38.62 Mbit/s) ——
Flow 3 ingress (mean 30.95 Mbit/s) ---- Flow 3 egress (mean 29.40 Mbit/s) ——

Flow 1 (95th percentile 262.18 ms) • Flow 2 (95th percentile 225.80 ms) • Flow 3 (95th percentile 506.39 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-06 19:51:32
End at: 2018-09-06 19:52:02
Local clock offset: 2.474 ms
Remote clock offset: 2.564 ms


# Below is generated by plot.py at 2018-09-06 21:14:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.91 Mbit/s
95th percentile per-packet one-way delay: 273.031 ms
Loss rate: 2.54%
-- Flow 1:
Average throughput: 56.80 Mbit/s
95th percentile per-packet one-way delay: 237.488 ms
Loss rate: 3.02%
-- Flow 2:
Average throughput: 39.27 Mbit/s
95th percentile per-packet one-way delay: 218.612 ms
Loss rate: 1.45%
-- Flow 3:
Average throughput: 30.75 Mbit/s
95th percentile per-packet one-way delay: 528.825 ms
Loss rate: 2.60%
```

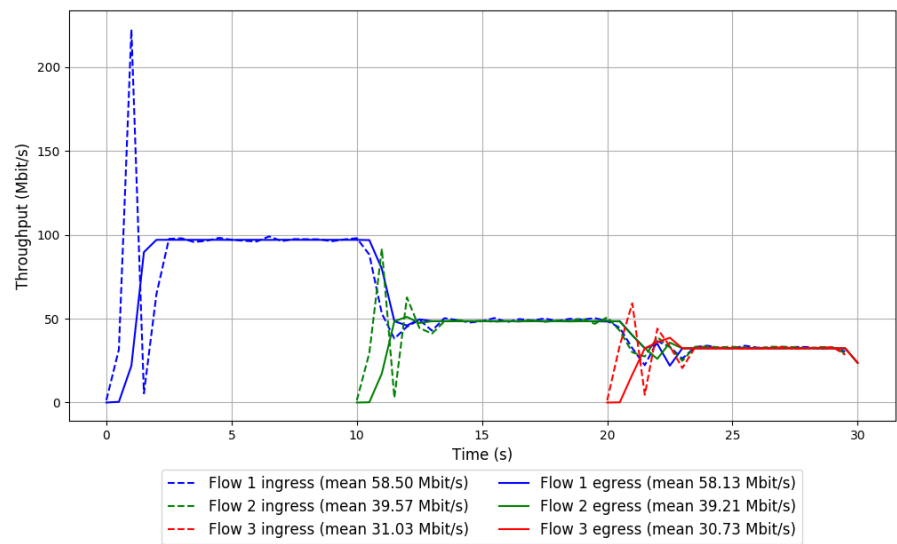Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 58.23 Mbit/s)   Flow 1 egress (mean 56.80 Mbit/s)
Flow 2 ingress (mean 39.52 Mbit/s)   Flow 2 egress (mean 39.27 Mbit/s)
Flow 3 ingress (mean 31.03 Mbit/s)   Flow 3 egress (mean 30.75 Mbit/s)

Flow 1 (95th percentile 237.49 ms)   Flow 2 (95th percentile 218.61 ms)   Flow 3 (95th percentile 528.83 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-06 20:14:55
End at: 2018-09-06 20:15:25
Local clock offset: -0.584 ms
Remote clock offset: -1.565 ms


# Below is generated by plot.py at 2018-09-06 21:15:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.21 Mbit/s
95th percentile per-packet one-way delay: 313.981 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 58.13 Mbit/s
95th percentile per-packet one-way delay: 310.906 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 39.21 Mbit/s
95th percentile per-packet one-way delay: 235.938 ms
Loss rate: 1.71%
-- Flow 3:
Average throughput: 30.73 Mbit/s
95th percentile per-packet one-way delay: 546.991 ms
Loss rate: 2.67%
```
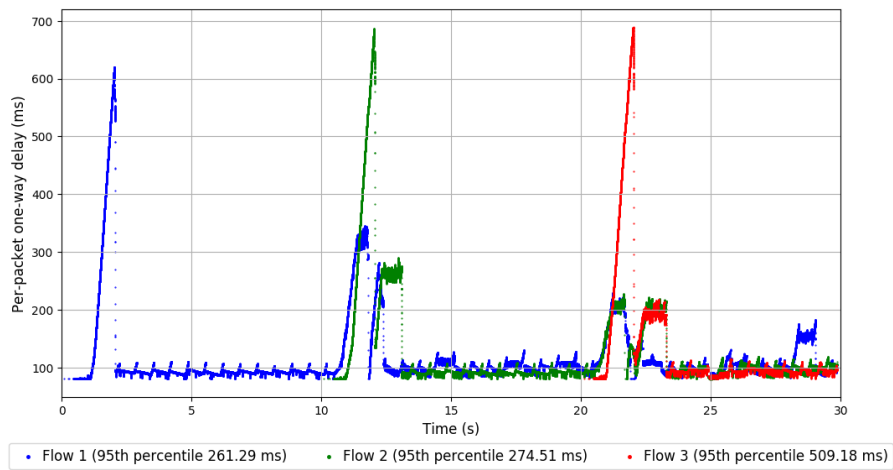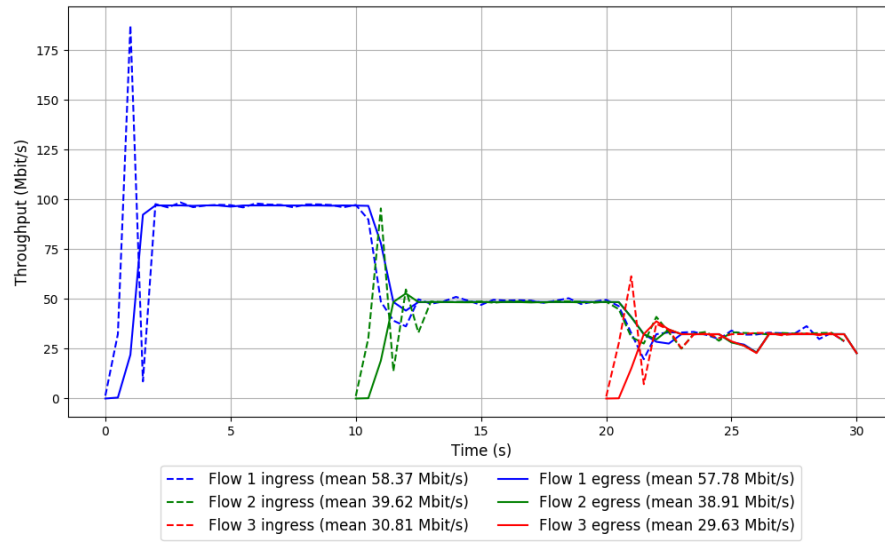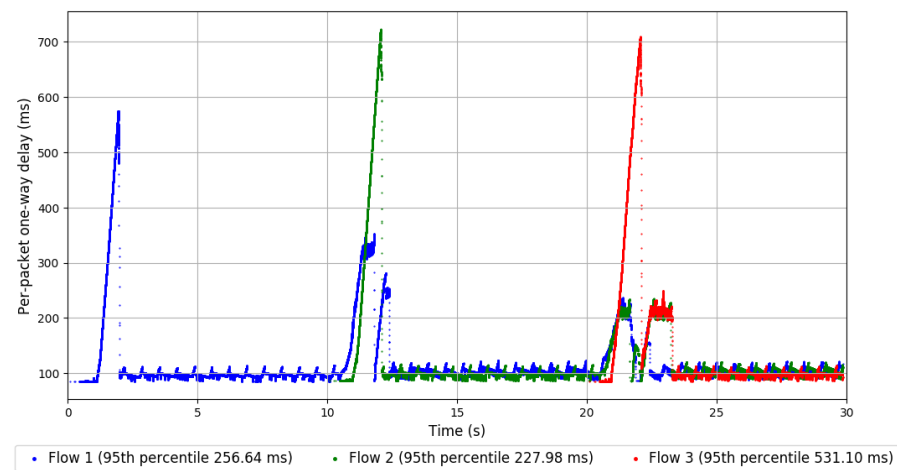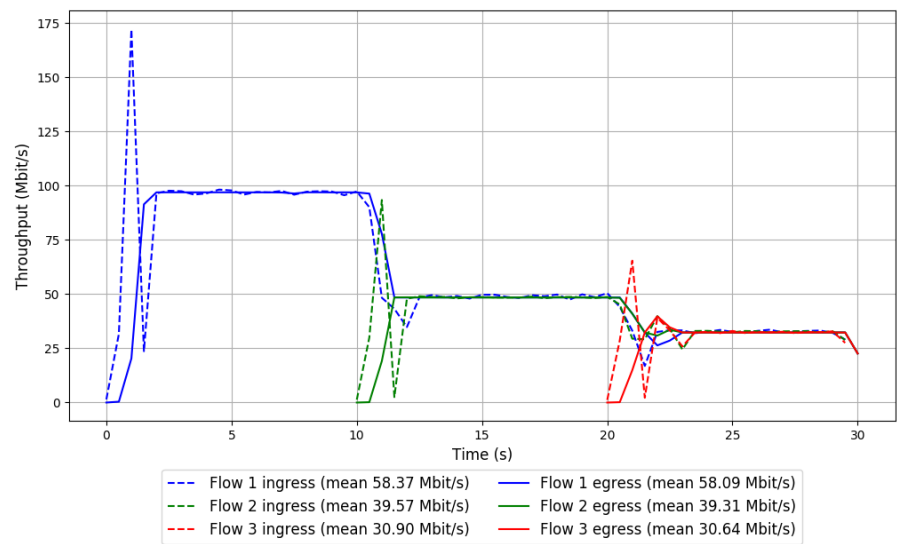
Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 58.50 Mbit/s) --- Flow 1 egress (mean 58.13 Mbit/s)
Flow 2 ingress (mean 39.57 Mbit/s) --- Flow 2 egress (mean 39.21 Mbit/s)
Flow 3 ingress (mean 31.03 Mbit/s) --- Flow 3 egress (mean 30.73 Mbit/s)

Flow 1 (95th percentile 310.91 ms) Flow 2 (95th percentile 235.94 ms) Flow 3 (95th percentile 546.99 ms)

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```
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-06 20:38:14
End at: 2018-09-06 20:38:44
Local clock offset: 5.072 ms
Remote clock offset: 2.951 ms


# Below is generated by plot.py at 2018-09-06 21:15:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.29 Mbit/s
95th percentile per-packet one-way delay: 283.115 ms
Loss rate: 2.28%
-- Flow 1:
Average throughput: 57.78 Mbit/s
95th percentile per-packet one-way delay: 261.289 ms
Loss rate: 1.56%
-- Flow 2:
Average throughput: 38.91 Mbit/s
95th percentile per-packet one-way delay: 274.515 ms
Loss rate: 2.62%
-- Flow 3:
Average throughput: 29.63 Mbit/s
95th percentile per-packet one-way delay: 509.175 ms
Loss rate: 5.49%
```

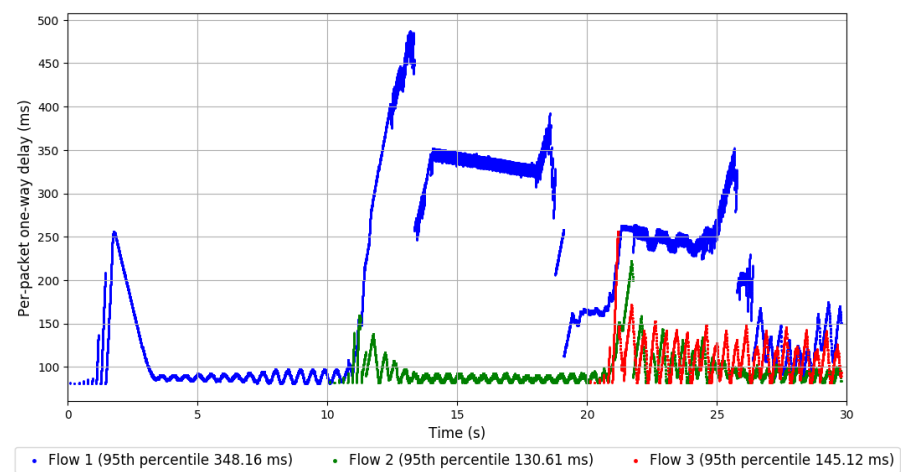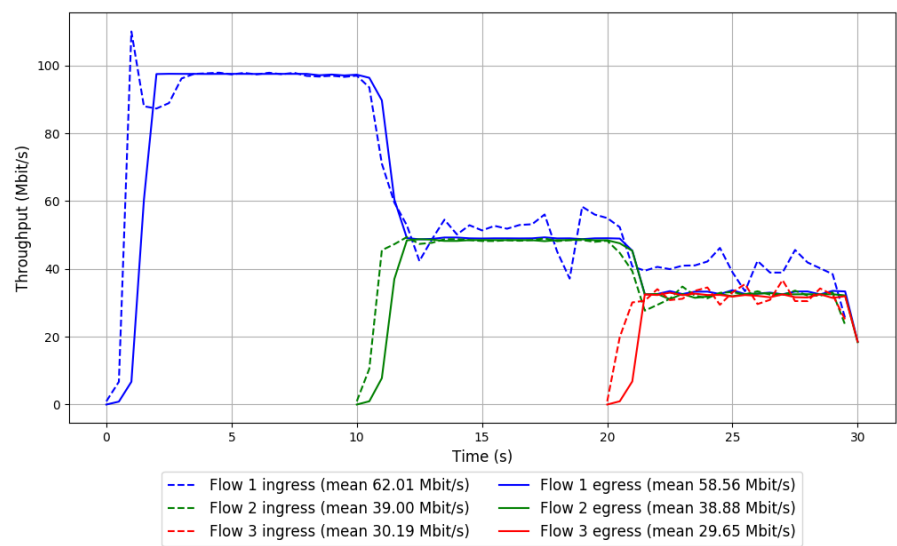# Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 58.37 Mbit/s) --- Flow 1 egress (mean 57.78 Mbit/s)
Flow 2 ingress (mean 39.62 Mbit/s) --- Flow 2 egress (mean 38.91 Mbit/s)
Flow 3 ingress (mean 30.81 Mbit/s) --- Flow 3 egress (mean 29.63 Mbit/s)

Flow 1 (95th percentile 261.29 ms)   Flow 2 (95th percentile 274.51 ms)   Flow 3 (95th percentile 509.18 ms)

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```
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-06 21:02:05
End at: 2018-09-06 21:02:35
Local clock offset: 5.293 ms
Remote clock offset: -0.884 ms


# Below is generated by plot.py at 2018-09-06 21:15:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.20 Mbit/s
95th percentile per-packet one-way delay: 276.683 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 58.09 Mbit/s
95th percentile per-packet one-way delay: 256.643 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 39.31 Mbit/s
95th percentile per-packet one-way delay: 227.981 ms
Loss rate: 1.50%
-- Flow 3:
Average throughput: 30.64 Mbit/s
95th percentile per-packet one-way delay: 531.099 ms
Loss rate: 2.56%
```
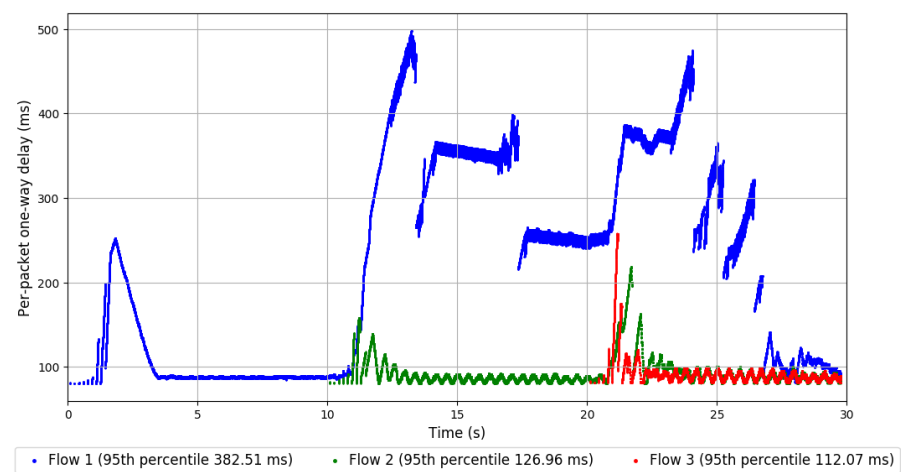
Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 58.37 Mbit/s) --- Flow 1 egress (mean 58.09 Mbit/s)
Flow 2 ingress (mean 39.57 Mbit/s) --- Flow 2 egress (mean 39.31 Mbit/s)
Flow 3 ingress (mean 30.90 Mbit/s) --- Flow 3 egress (mean 30.64 Mbit/s)

Flow 1 (95th percentile 256.64 ms) • Flow 2 (95th percentile 227.98 ms) • Flow 3 (95th percentile 531.10 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-09-06 19:17:41
End at: 2018-09-06 19:18:11
Local clock offset: 4.197 ms
Remote clock offset: 1.428 ms


# Below is generated by plot.py at 2018-09-06 21:15:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.98 Mbit/s
95th percentile per-packet one-way delay: 341.363 ms
Loss rate: 4.52%
-- Flow 1:
Average throughput: 58.56 Mbit/s
95th percentile per-packet one-way delay: 348.160 ms
Loss rate: 6.09%
-- Flow 2:
Average throughput: 38.88 Mbit/s
95th percentile per-packet one-way delay: 130.613 ms
Loss rate: 1.15%
-- Flow 3:
Average throughput: 29.65 Mbit/s
95th percentile per-packet one-way delay: 145.125 ms
Loss rate: 3.44%
```
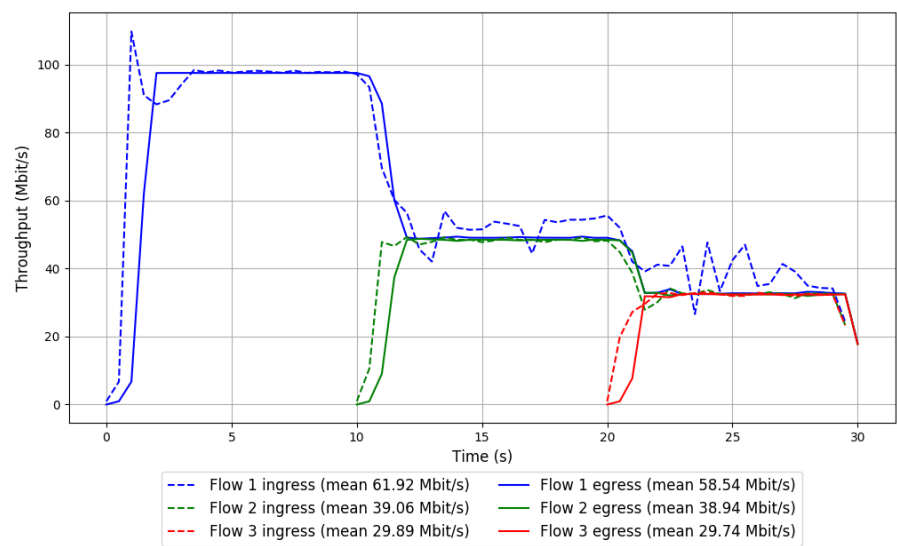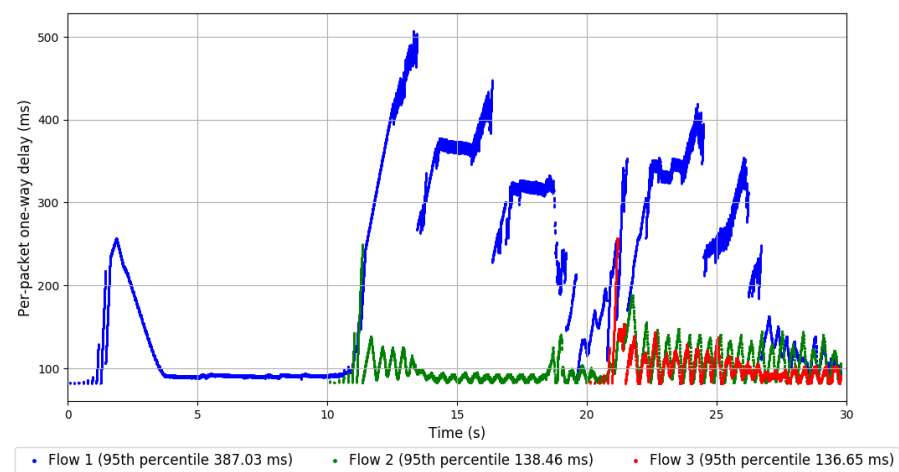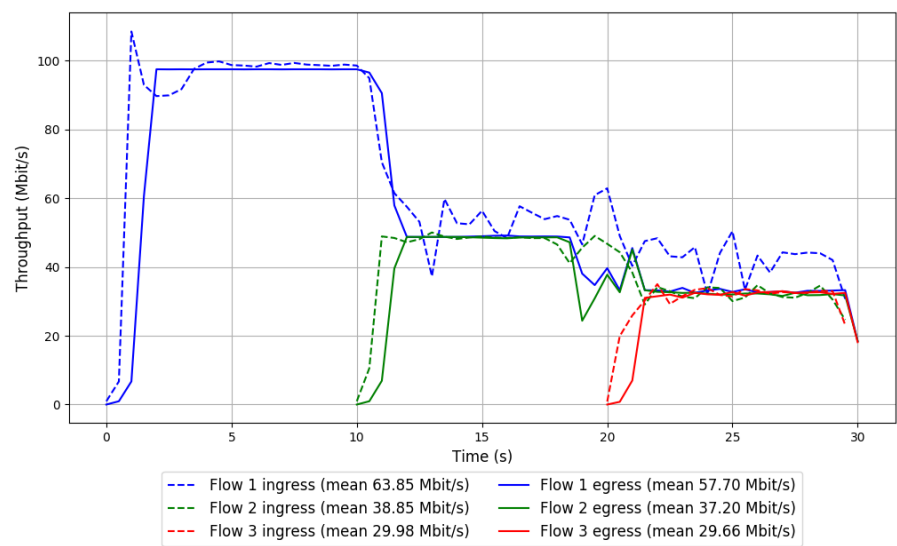
Run 1: Report of Indigo — Data Link

Flow 1 ingress (mean 62.01 Mbit/s) --- Flow 1 egress (mean 58.56 Mbit/s)
Flow 2 ingress (mean 39.00 Mbit/s) --- Flow 2 egress (mean 38.88 Mbit/s)
Flow 3 ingress (mean 30.19 Mbit/s) --- Flow 3 egress (mean 29.65 Mbit/s)

Flow 1 (95th percentile 348.16 ms) • Flow 2 (95th percentile 130.61 ms) • Flow 3 (95th percentile 145.12 ms)

```
Run 2: Statistics of Indigo

Start at: 2018-09-06 19:41:03
End at: 2018-09-06 19:41:33
Local clock offset: 3.44 ms
Remote clock offset: 1.26 ms

# Below is generated by plot.py at 2018-09-06 21:15:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.04 Mbit/s
95th percentile per-packet one-way delay: 368.512 ms
Loss rate: 4.31%
-- Flow 1:
Average throughput: 58.54 Mbit/s
95th percentile per-packet one-way delay: 382.507 ms
Loss rate: 5.98%
-- Flow 2:
Average throughput: 38.94 Mbit/s
95th percentile per-packet one-way delay: 126.957 ms
Loss rate: 1.13%
-- Flow 3:
Average throughput: 29.74 Mbit/s
95th percentile per-packet one-way delay: 112.073 ms
Loss rate: 2.18%
```

Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-09-06 20:04:20
End at: 2018-09-06 20:04:50
Local clock offset: 0.846 ms
Remote clock offset: 1.437 ms


# Below is generated by plot.py at 2018-09-06 21:16:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.01 Mbit/s
95th percentile per-packet one-way delay: 369.521 ms
Loss rate: 8.08%
-- Flow 1:
Average throughput: 57.70 Mbit/s
95th percentile per-packet one-way delay: 387.032 ms
Loss rate: 10.13%
-- Flow 2:
Average throughput: 37.20 Mbit/s
95th percentile per-packet one-way delay: 138.464 ms
Loss rate: 5.06%
-- Flow 3:
Average throughput: 29.66 Mbit/s
95th percentile per-packet one-way delay: 136.650 ms
Loss rate: 2.73%
```
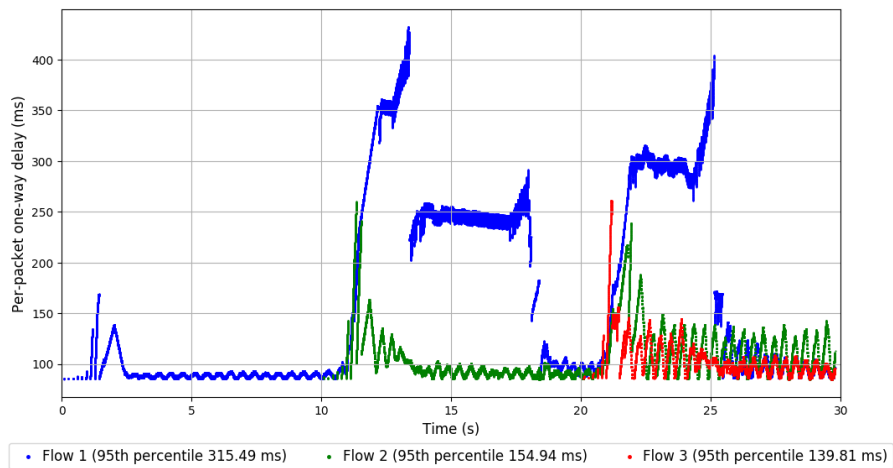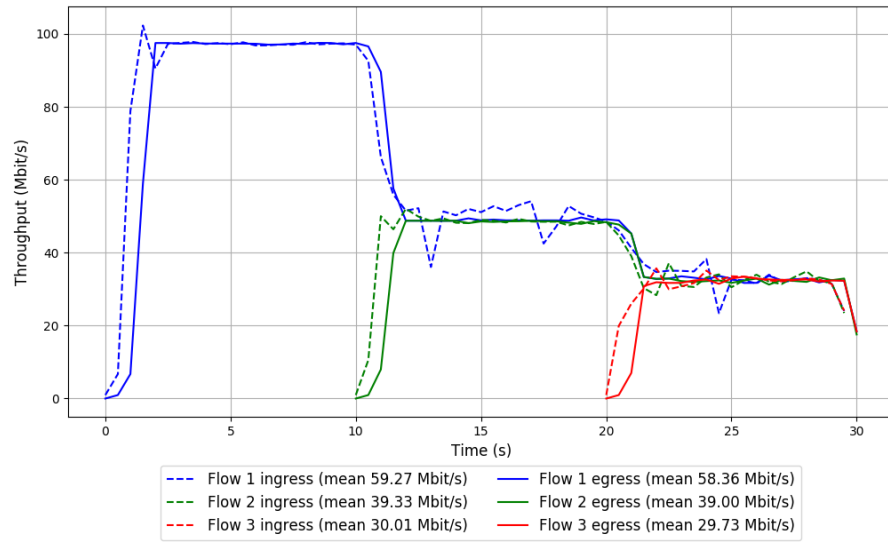
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-09-06 20:27:50
End at: 2018-09-06 20:28:20
Local clock offset: 3.825 ms
Remote clock offset: -1.731 ms


# Below is generated by plot.py at 2018-09-06 21:16:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.90 Mbit/s
95th percentile per-packet one-way delay: 297.390 ms
Loss rate: 2.00%
-- Flow 1:
Average throughput: 58.36 Mbit/s
95th percentile per-packet one-way delay: 315.487 ms
Loss rate: 2.07%
-- Flow 2:
Average throughput: 39.00 Mbit/s
95th percentile per-packet one-way delay: 154.941 ms
Loss rate: 1.64%
-- Flow 3:
Average throughput: 29.73 Mbit/s
95th percentile per-packet one-way delay: 139.810 ms
Loss rate: 2.60%
```
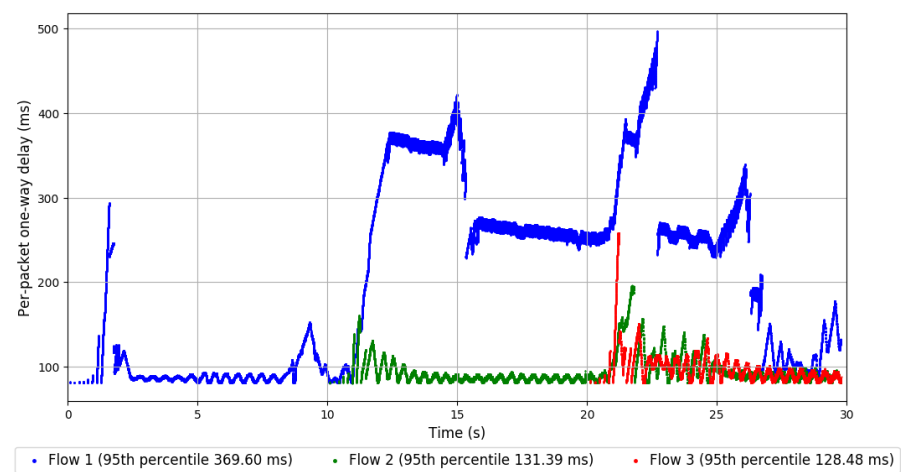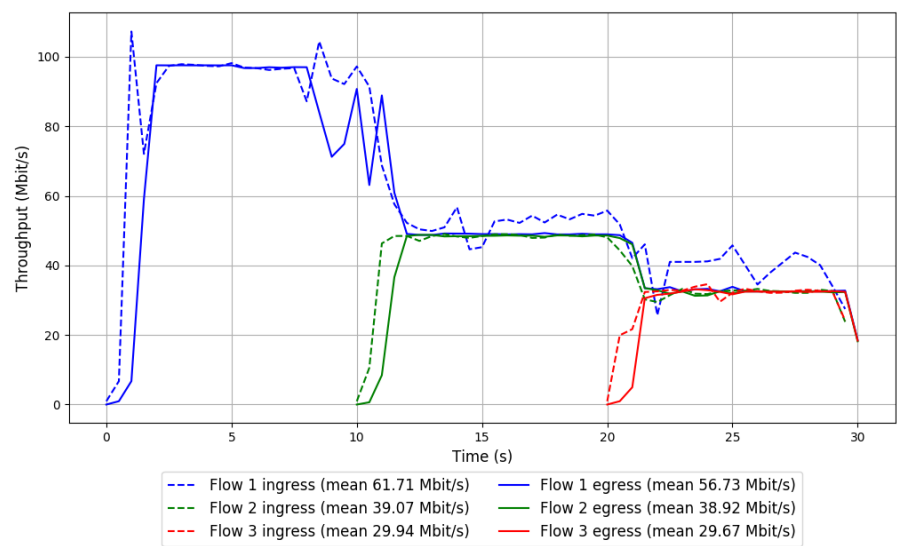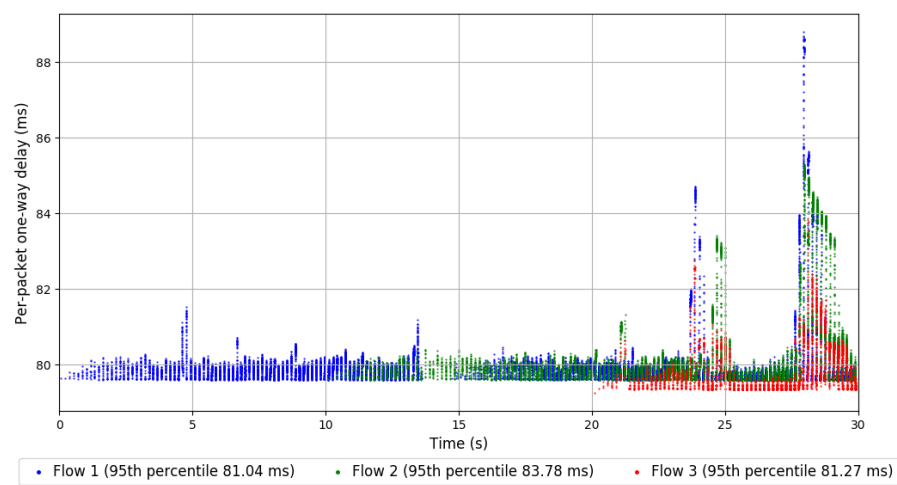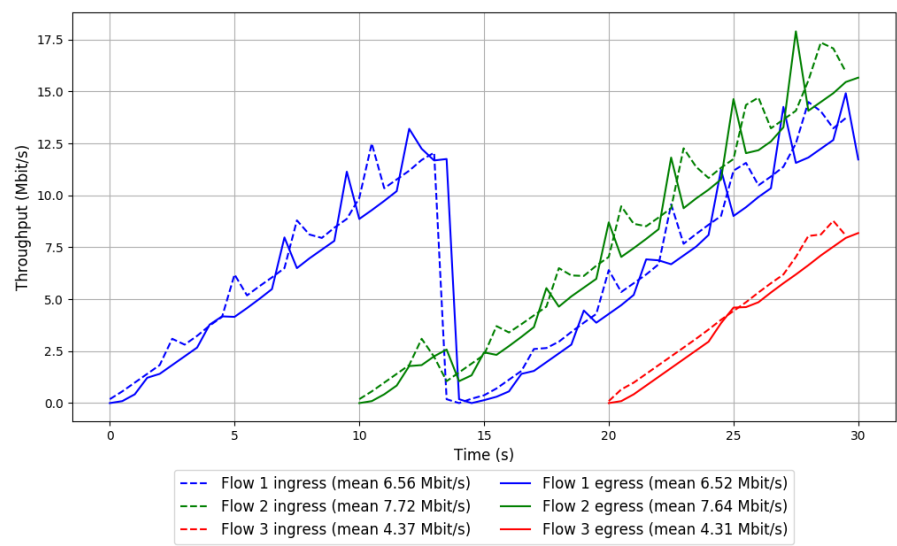
Run 4: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 59.27 Mbit/s)   —— Flow 1 egress (mean 58.36 Mbit/s)
- - - Flow 2 ingress (mean 39.33 Mbit/s)   —— Flow 2 egress (mean 39.00 Mbit/s)
- - - Flow 3 ingress (mean 30.01 Mbit/s)   —— Flow 3 egress (mean 29.73 Mbit/s)

• Flow 1 (95th percentile 315.49 ms)   • Flow 2 (95th percentile 154.94 ms)   • Flow 3 (95th percentile 139.81 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-09-06 20:51:30
End at: 2018-09-06 20:52:00
Local clock offset: 6.072 ms
Remote clock offset: 3.394 ms


# Below is generated by plot.py at 2018-09-06 21:16:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.18 Mbit/s
95th percentile per-packet one-way delay: 362.868 ms
Loss rate: 6.02%
-- Flow 1:
Average throughput: 56.73 Mbit/s
95th percentile per-packet one-way delay: 369.600 ms
Loss rate: 8.59%
-- Flow 2:
Average throughput: 38.92 Mbit/s
95th percentile per-packet one-way delay: 131.389 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 29.67 Mbit/s
95th percentile per-packet one-way delay: 128.480 ms
Loss rate: 2.60%
```
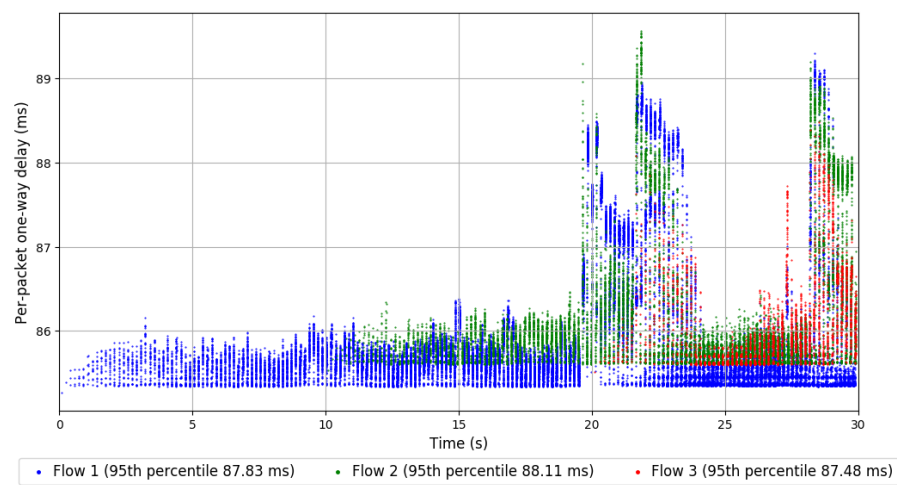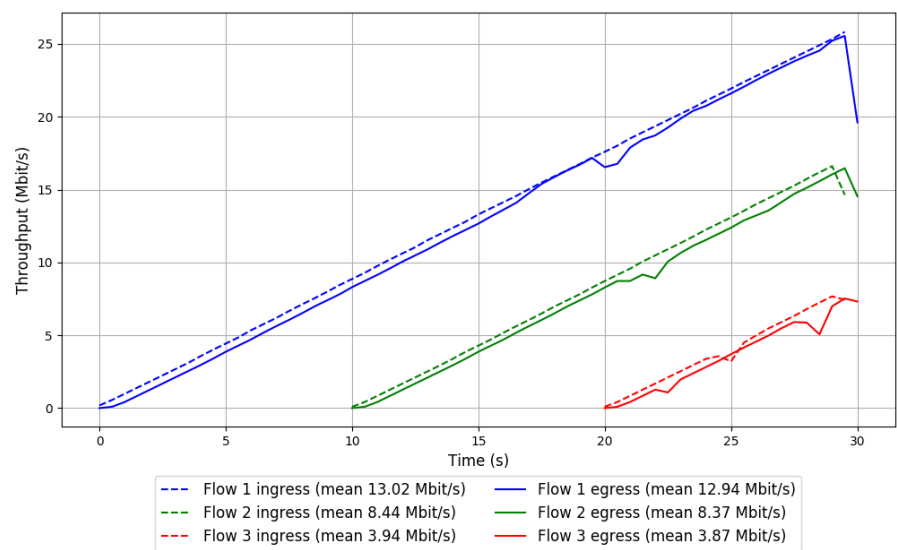
Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 61.71 Mbit/s)   Flow 1 egress (mean 56.73 Mbit/s)
Flow 2 ingress (mean 39.07 Mbit/s)   Flow 2 egress (mean 38.92 Mbit/s)
Flow 3 ingress (mean 29.94 Mbit/s)   Flow 3 egress (mean 29.67 Mbit/s)

Flow 1 (95th percentile 369.60 ms)   Flow 2 (95th percentile 131.39 ms)   Flow 3 (95th percentile 128.48 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-09-06 19:12:26
End at: 2018-09-06 19:12:56
Local clock offset: 3.437 ms
Remote clock offset: 2.004 ms


# Below is generated by plot.py at 2018-09-06 21:16:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.99 Mbit/s
95th percentile per-packet one-way delay: 82.527 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 6.52 Mbit/s
95th percentile per-packet one-way delay: 81.042 ms
Loss rate: 1.26%
-- Flow 2:
Average throughput: 7.64 Mbit/s
95th percentile per-packet one-way delay: 83.785 ms
Loss rate: 1.78%
-- Flow 3:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 81.267 ms
Loss rate: 3.01%
```
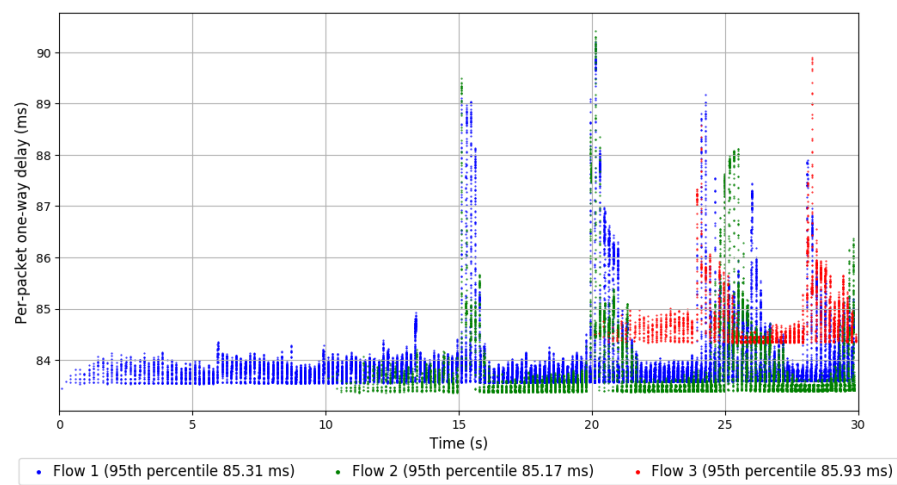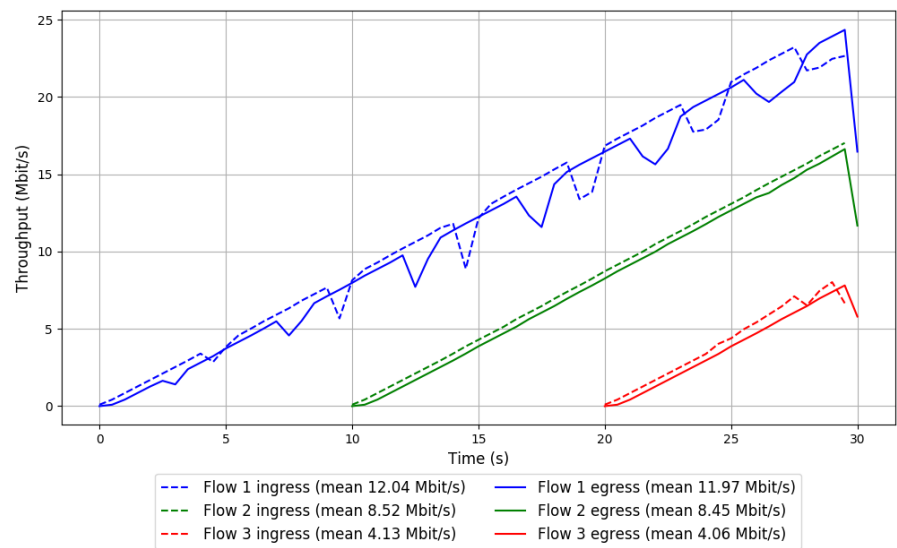
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 6.56 Mbit/s) — — — Flow 1 egress (mean 6.52 Mbit/s)
Flow 2 ingress (mean 7.72 Mbit/s) — — — Flow 2 egress (mean 7.64 Mbit/s)
Flow 3 ingress (mean 4.37 Mbit/s) — — — Flow 3 egress (mean 4.31 Mbit/s)

Flow 1 (95th percentile 81.04 ms) • Flow 2 (95th percentile 83.78 ms) • Flow 3 (95th percentile 81.27 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-09-06 19:35:50
End at: 2018-09-06 19:36:20
Local clock offset: 3.519 ms
Remote clock offset: -4.124 ms


# Below is generated by plot.py at 2018-09-06 21:16:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.77 Mbit/s
95th percentile per-packet one-way delay: 87.990 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 12.94 Mbit/s
95th percentile per-packet one-way delay: 87.828 ms
Loss rate: 1.11%
-- Flow 2:
Average throughput: 8.37 Mbit/s
95th percentile per-packet one-way delay: 88.110 ms
Loss rate: 1.68%
-- Flow 3:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 87.477 ms
Loss rate: 3.47%
```

Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-09-06 19:59:08
End at: 2018-09-06 19:59:38
Local clock offset: 0.561 ms
Remote clock offset: -2.176 ms


# Below is generated by plot.py at 2018-09-06 21:16:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.87 Mbit/s
95th percentile per-packet one-way delay: 85.482 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 11.97 Mbit/s
95th percentile per-packet one-way delay: 85.305 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.45 Mbit/s
95th percentile per-packet one-way delay: 85.174 ms
Loss rate: 1.69%
-- Flow 3:
Average throughput: 4.06 Mbit/s
95th percentile per-packet one-way delay: 85.931 ms
Loss rate: 3.42%
```
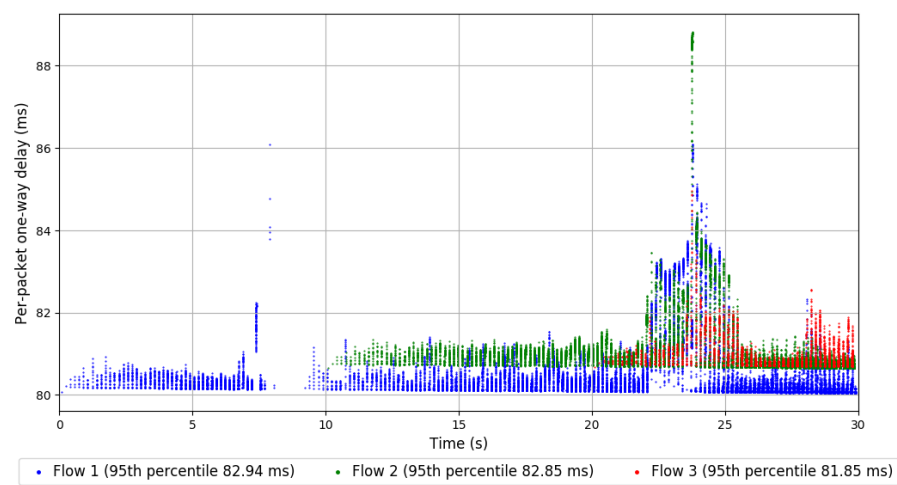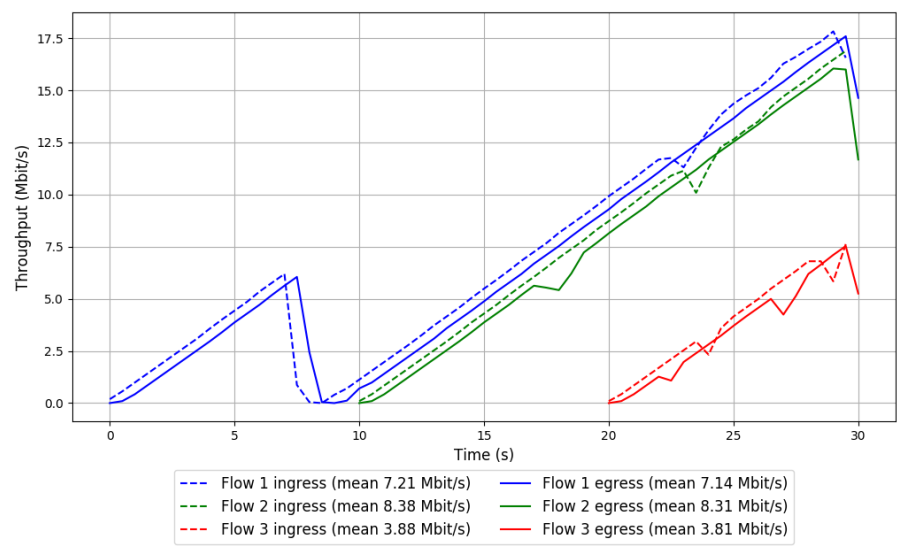
Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-09-06 20:22:32
End at: 2018-09-06 20:23:02
Local clock offset: 2.627 ms
Remote clock offset: 2.719 ms


# Below is generated by plot.py at 2018-09-06 21:16:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.88 Mbit/s
95th percentile per-packet one-way delay: 82.850 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 82.945 ms
Loss rate: 1.53%
-- Flow 2:
Average throughput: 8.31 Mbit/s
95th percentile per-packet one-way delay: 82.850 ms
Loss rate: 1.70%
-- Flow 3:
Average throughput: 3.81 Mbit/s
95th percentile per-packet one-way delay: 81.852 ms
Loss rate: 3.53%
```
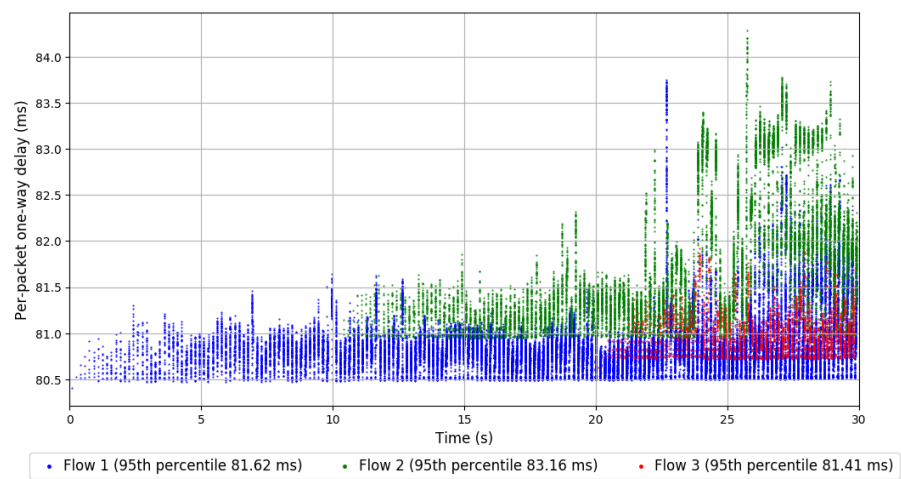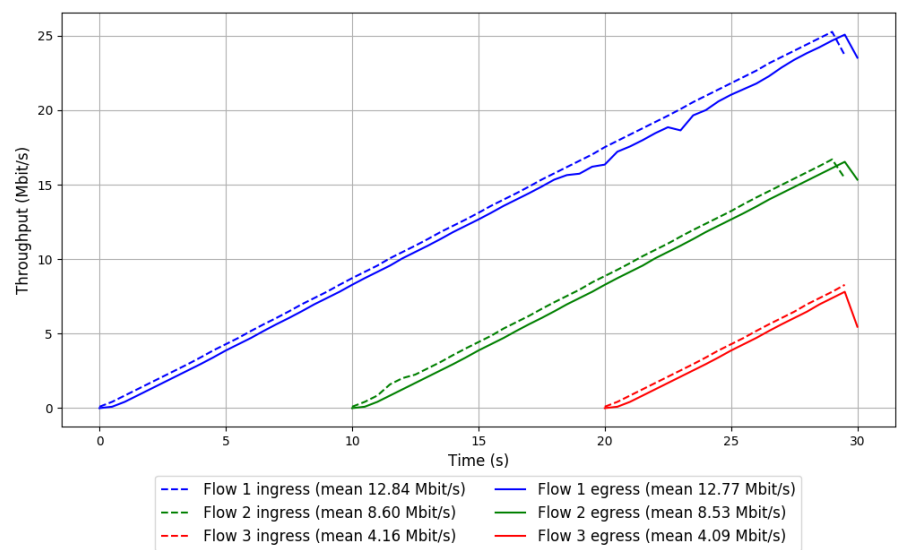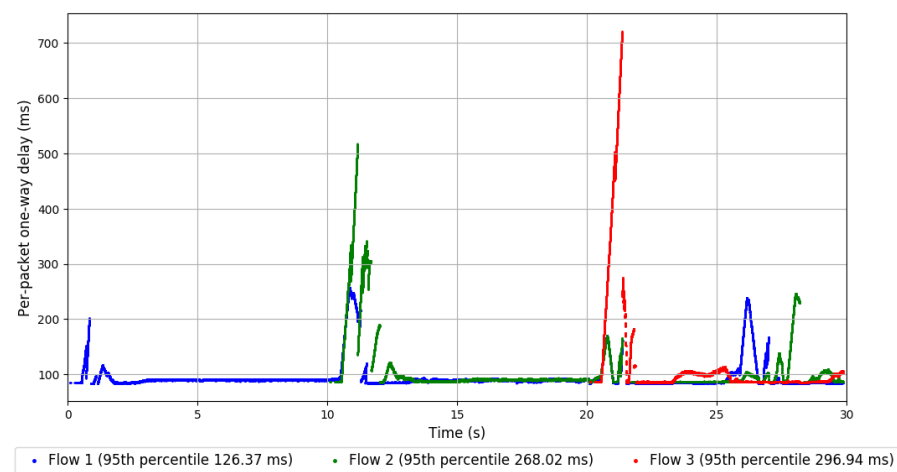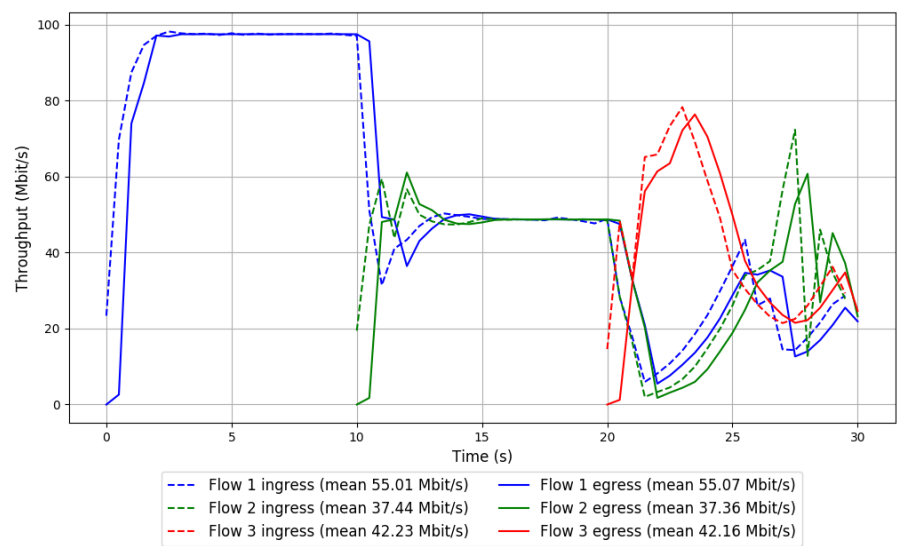
Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 7.21 Mbit/s)   Flow 1 egress (mean 7.14 Mbit/s)
Flow 2 ingress (mean 8.38 Mbit/s)   Flow 2 egress (mean 8.31 Mbit/s)
Flow 3 ingress (mean 3.88 Mbit/s)   Flow 3 egress (mean 3.81 Mbit/s)

Flow 1 (95th percentile 82.94 ms)   Flow 2 (95th percentile 82.85 ms)   Flow 3 (95th percentile 81.85 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-09-06 20:45:56
End at: 2018-09-06 20:46:26
Local clock offset: 6.304 ms
Remote clock offset: 3.123 ms

# Below is generated by plot.py at 2018-09-06 21:16:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.76 Mbit/s
95th percentile per-packet one-way delay: 82.603 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 12.77 Mbit/s
95th percentile per-packet one-way delay: 81.624 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 8.53 Mbit/s
95th percentile per-packet one-way delay: 83.157 ms
Loss rate: 1.67%
-- Flow 3:
Average throughput: 4.09 Mbit/s
95th percentile per-packet one-way delay: 81.412 ms
Loss rate: 3.43%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.84 Mbit/s) — Flow 1 egress (mean 12.77 Mbit/s)
Flow 2 ingress (mean 8.60 Mbit/s) — Flow 2 egress (mean 8.53 Mbit/s)
Flow 3 ingress (mean 4.16 Mbit/s) — Flow 3 egress (mean 4.09 Mbit/s)

Flow 1 (95th percentile 81.62 ms) — Flow 2 (95th percentile 83.16 ms) — Flow 3 (95th percentile 81.41 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-06 19:31:58
End at: 2018-09-06 19:32:28
Local clock offset: 3.538 ms
Remote clock offset: -4.099 ms


# Below is generated by plot.py at 2018-09-06 21:16:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.67 Mbit/s
95th percentile per-packet one-way delay: 191.031 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 55.07 Mbit/s
95th percentile per-packet one-way delay: 126.367 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 37.36 Mbit/s
95th percentile per-packet one-way delay: 268.018 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 42.16 Mbit/s
95th percentile per-packet one-way delay: 296.943 ms
Loss rate: 1.86%
```
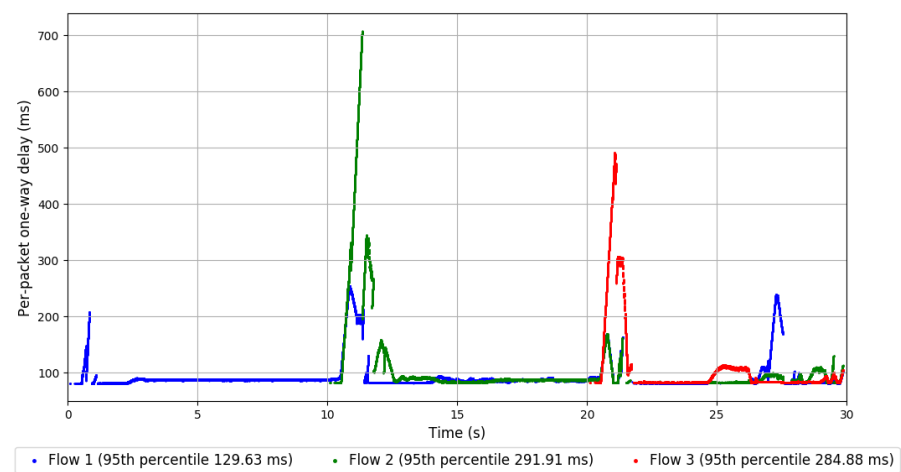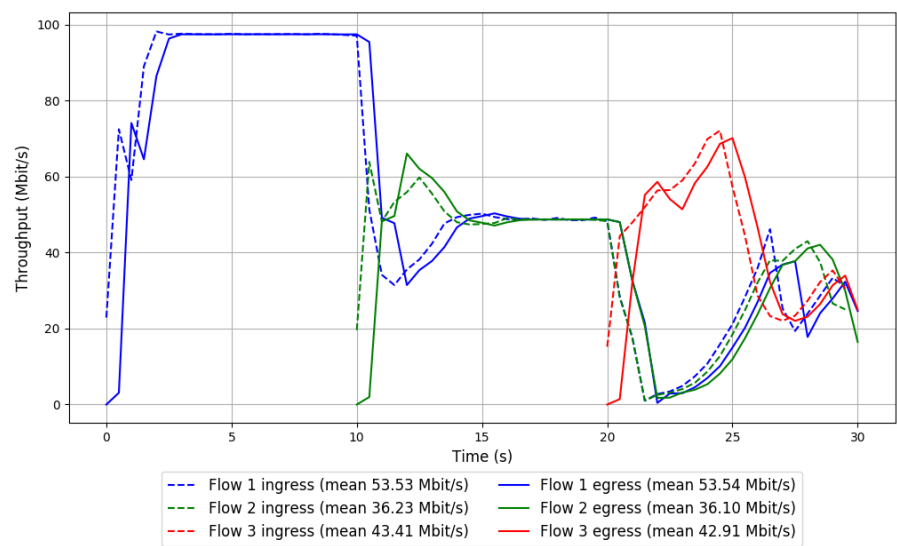
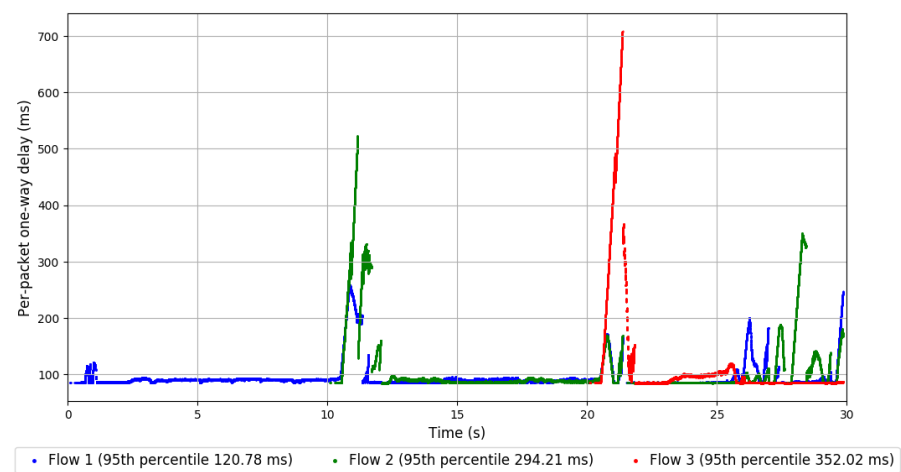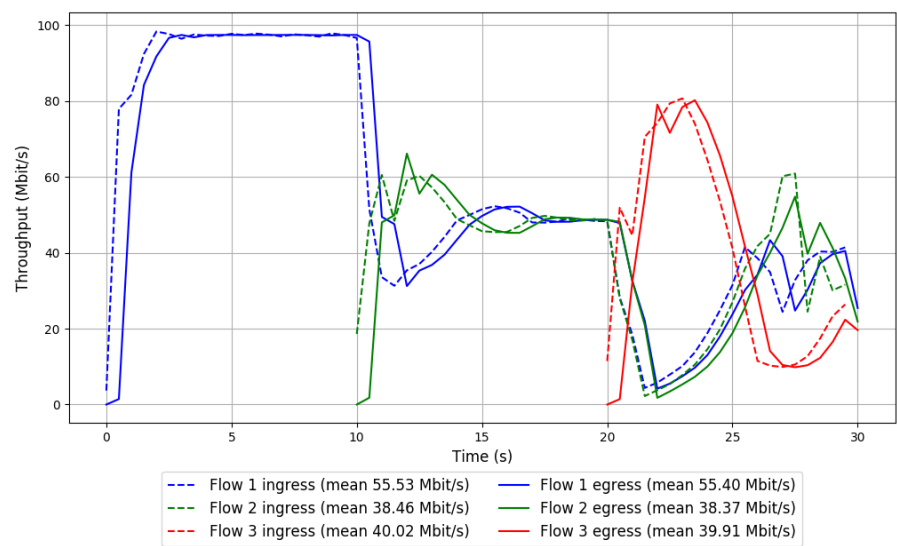Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-06 19:55:17
End at: 2018-09-06 19:55:47
Local clock offset: 1.058 ms
Remote clock offset: 1.446 ms


# Below is generated by plot.py at 2018-09-06 21:16:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.55 Mbit/s
95th percentile per-packet one-way delay: 191.696 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 53.54 Mbit/s
95th percentile per-packet one-way delay: 129.631 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 36.10 Mbit/s
95th percentile per-packet one-way delay: 291.910 ms
Loss rate: 1.20%
-- Flow 3:
Average throughput: 42.91 Mbit/s
95th percentile per-packet one-way delay: 284.877 ms
Loss rate: 2.84%
```

Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 53.53 Mbit/s)   Flow 1 egress (mean 53.54 Mbit/s)
Flow 2 ingress (mean 36.23 Mbit/s)   Flow 2 egress (mean 36.10 Mbit/s)
Flow 3 ingress (mean 43.41 Mbit/s)   Flow 3 egress (mean 42.91 Mbit/s)

Flow 1 (95th percentile 129.63 ms)   Flow 2 (95th percentile 291.91 ms)   Flow 3 (95th percentile 284.88 ms)

77

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-06 20:18:40
End at: 2018-09-06 20:19:10
Local clock offset: 1.187 ms
Remote clock offset: -1.557 ms


# Below is generated by plot.py at 2018-09-06 21:16:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.94 Mbit/s
95th percentile per-packet one-way delay: 196.462 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 55.40 Mbit/s
95th percentile per-packet one-way delay: 120.775 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 38.37 Mbit/s
95th percentile per-packet one-way delay: 294.208 ms
Loss rate: 1.09%
-- Flow 3:
Average throughput: 39.91 Mbit/s
95th percentile per-packet one-way delay: 352.022 ms
Loss rate: 1.97%
```
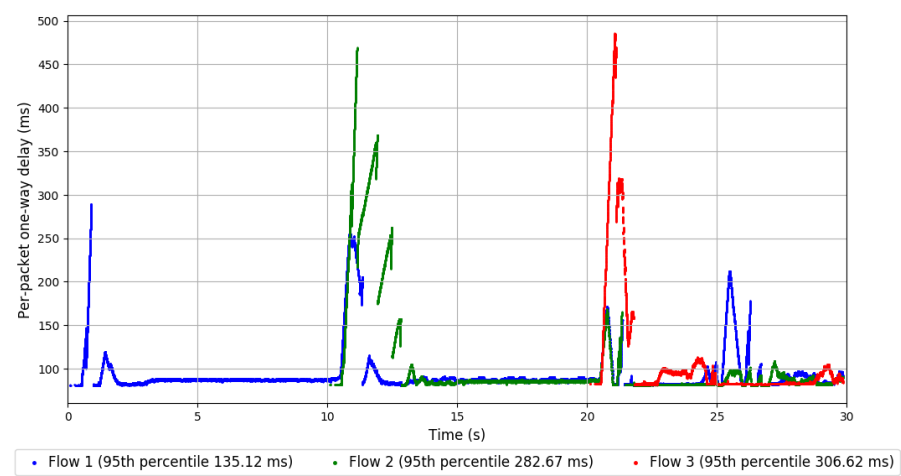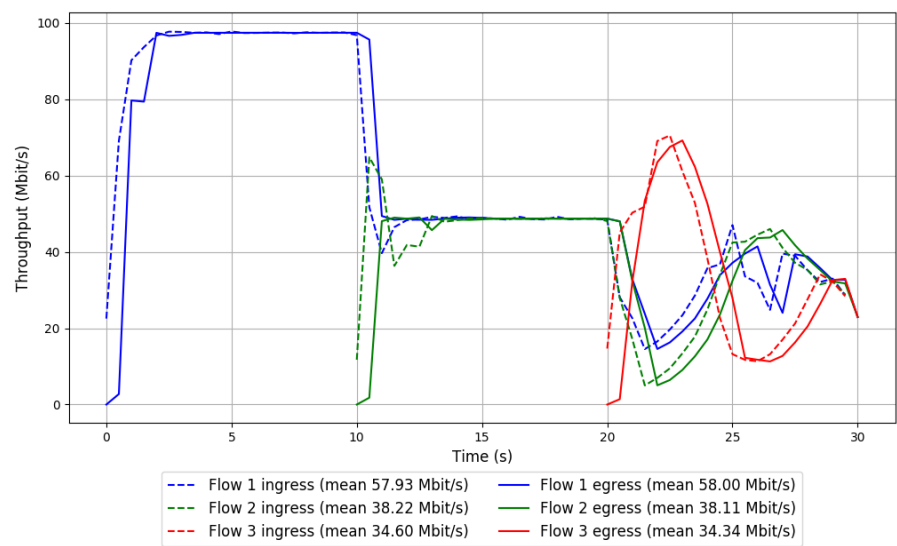
Run 3: Report of Indigo-Muses — Data Link

- - - - Flow 1 ingress (mean 55.53 Mbit/s)   —— Flow 1 egress (mean 55.40 Mbit/s)
- - - - Flow 2 ingress (mean 38.46 Mbit/s)   —— Flow 2 egress (mean 38.37 Mbit/s)
- - - - Flow 3 ingress (mean 40.02 Mbit/s)   —— Flow 3 egress (mean 39.91 Mbit/s)

- Flow 1 (95th percentile 120.78 ms)   • Flow 2 (95th percentile 294.21 ms)   • Flow 3 (95th percentile 352.02 ms)

79

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-06 20:42:01
End at: 2018-09-06 20:42:31
Local clock offset: 5.381 ms
Remote clock offset: 2.689 ms


# Below is generated by plot.py at 2018-09-06 21:16:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.54 Mbit/s
95th percentile per-packet one-way delay: 207.549 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 58.00 Mbit/s
95th percentile per-packet one-way delay: 135.117 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 38.11 Mbit/s
95th percentile per-packet one-way delay: 282.672 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 34.34 Mbit/s
95th percentile per-packet one-way delay: 306.620 ms
Loss rate: 2.46%
```
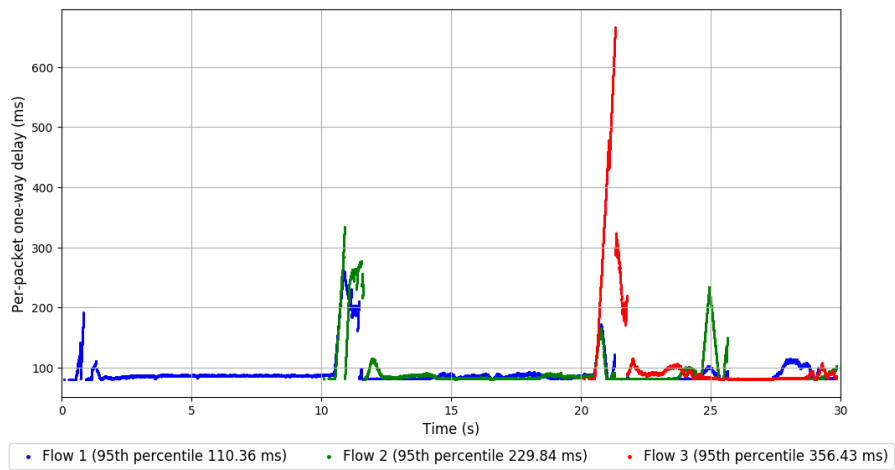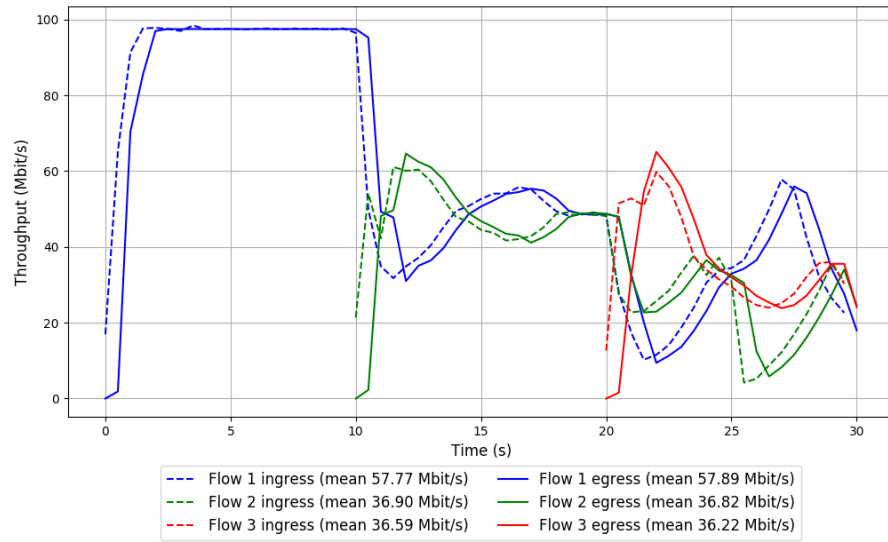
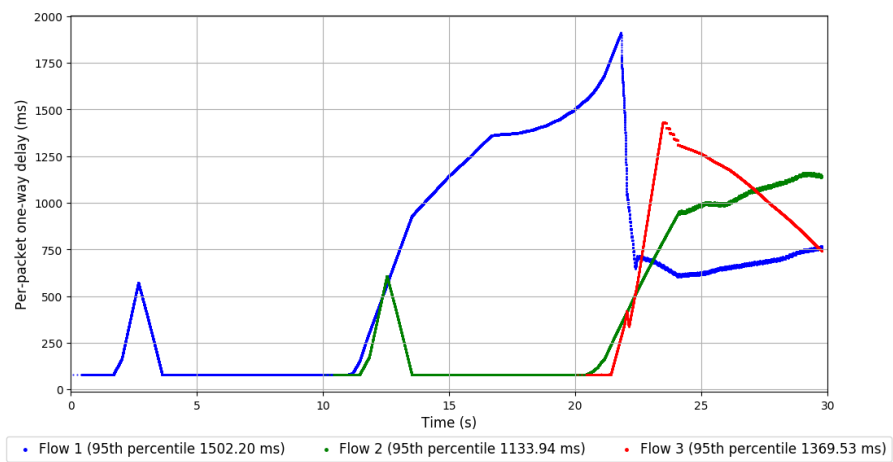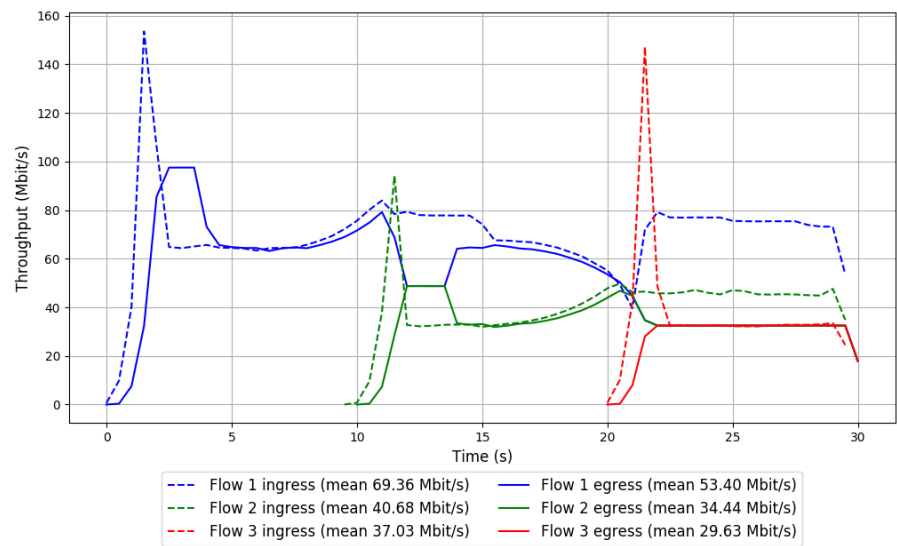Run 4: Report of Indigo-Muses — Data Link

- - - Flow 1 ingress (mean 57.93 Mbit/s) ——— Flow 1 egress (mean 58.00 Mbit/s)
- - - Flow 2 ingress (mean 38.22 Mbit/s) ——— Flow 2 egress (mean 38.11 Mbit/s)
- - - Flow 3 ingress (mean 34.60 Mbit/s) ——— Flow 3 egress (mean 34.34 Mbit/s)

• Flow 1 (95th percentile 135.12 ms)   • Flow 2 (95th percentile 282.67 ms)   • Flow 3 (95th percentile 306.62 ms)

81

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-06 21:05:51
End at: 2018-09-06 21:06:21
Local clock offset: 5.374 ms
Remote clock offset: 3.124 ms


# Below is generated by plot.py at 2018-09-06 21:16:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.20 Mbit/s
95th percentile per-packet one-way delay: 185.315 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 57.89 Mbit/s
95th percentile per-packet one-way delay: 110.356 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 36.82 Mbit/s
95th percentile per-packet one-way delay: 229.844 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 36.22 Mbit/s
95th percentile per-packet one-way delay: 356.434 ms
Loss rate: 2.73%
```
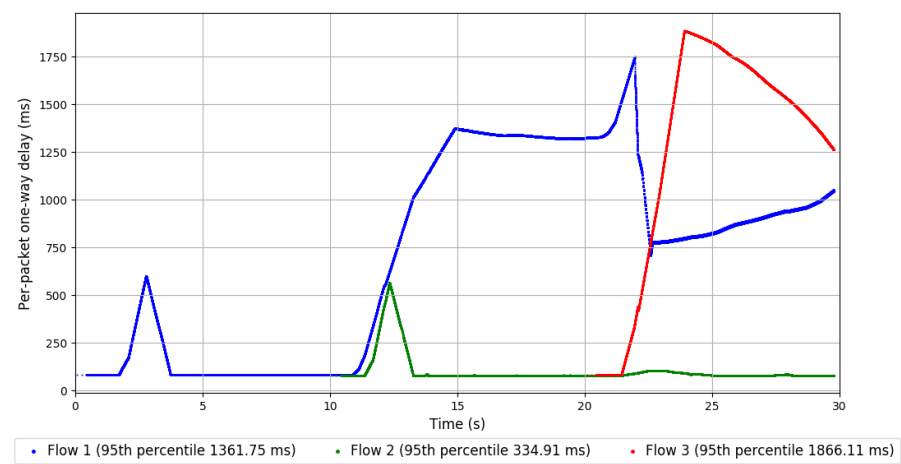
Run 5: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 57.77 Mbit/s) --- Flow 1 egress (mean 57.89 Mbit/s)
Flow 2 ingress (mean 36.90 Mbit/s) --- Flow 2 egress (mean 36.82 Mbit/s)
Flow 3 ingress (mean 36.59 Mbit/s) --- Flow 3 egress (mean 36.22 Mbit/s)

Flow 1 (95th percentile 110.36 ms)   Flow 2 (95th percentile 229.84 ms)   Flow 3 (95th percentile 356.43 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-06 19:15:02
End at: 2018-09-06 19:15:32
Local clock offset: 3.422 ms
Remote clock offset: 0.876 ms


# Below is generated by plot.py at 2018-09-06 21:17:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.91 Mbit/s
95th percentile per-packet one-way delay: 1433.064 ms
Loss rate: 21.37%
-- Flow 1:
Average throughput: 53.40 Mbit/s
95th percentile per-packet one-way delay: 1502.199 ms
Loss rate: 23.45%
-- Flow 2:
Average throughput: 34.44 Mbit/s
95th percentile per-packet one-way delay: 1133.941 ms
Loss rate: 16.07%
-- Flow 3:
Average throughput: 29.63 Mbit/s
95th percentile per-packet one-way delay: 1369.529 ms
Loss rate: 21.35%
```
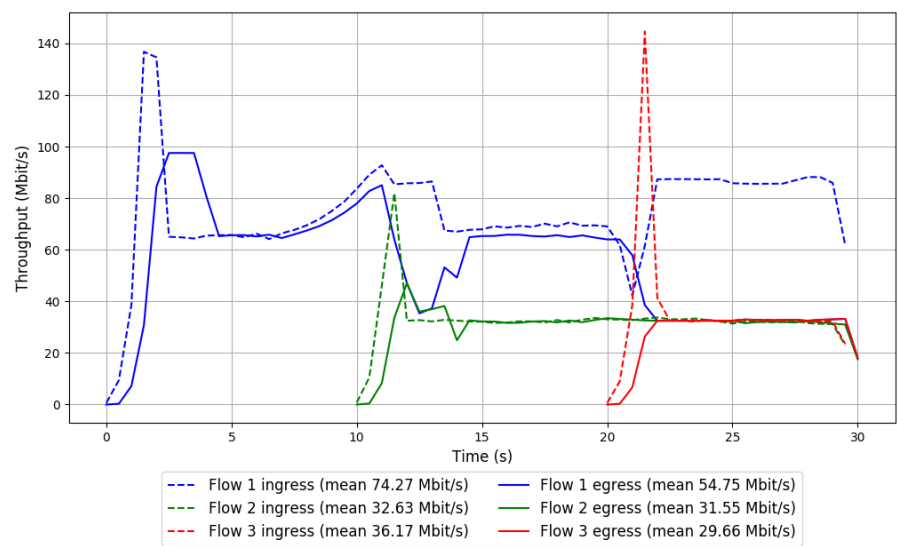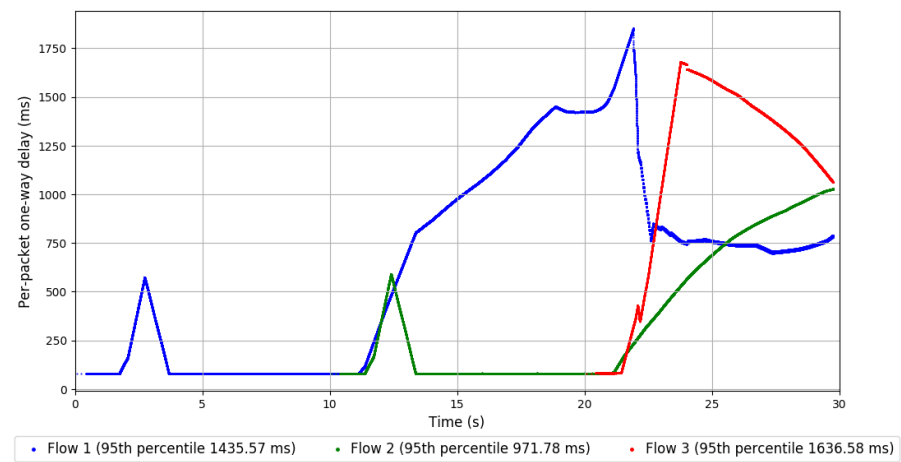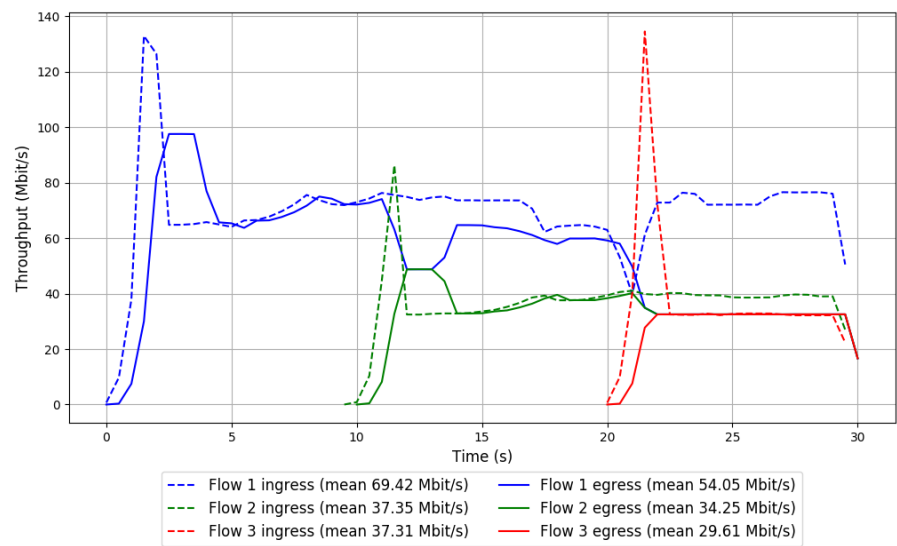
Run 1: Report of PCC-Allegro — Data Link

- - - Flow 1 ingress (mean 69.36 Mbit/s) —— Flow 1 egress (mean 53.40 Mbit/s)
- - - Flow 2 ingress (mean 40.68 Mbit/s) —— Flow 2 egress (mean 34.44 Mbit/s)
- - - Flow 3 ingress (mean 37.03 Mbit/s) —— Flow 3 egress (mean 29.63 Mbit/s)

- Flow 1 (95th percentile 1502.20 ms)   • Flow 2 (95th percentile 1133.94 ms)   • Flow 3 (95th percentile 1369.53 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-06 19:38:27
End at: 2018-09-06 19:38:57
Local clock offset: 4.284 ms
Remote clock offset: 1.198 ms


# Below is generated by plot.py at 2018-09-06 21:17:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.34 Mbit/s
95th percentile per-packet one-way delay: 1611.198 ms
Loss rate: 21.36%
-- Flow 1:
Average throughput: 54.75 Mbit/s
95th percentile per-packet one-way delay: 1361.748 ms
Loss rate: 26.70%
-- Flow 2:
Average throughput: 31.55 Mbit/s
95th percentile per-packet one-way delay: 334.912 ms
Loss rate: 4.13%
-- Flow 3:
Average throughput: 29.66 Mbit/s
95th percentile per-packet one-way delay: 1866.109 ms
Loss rate: 19.40%
```
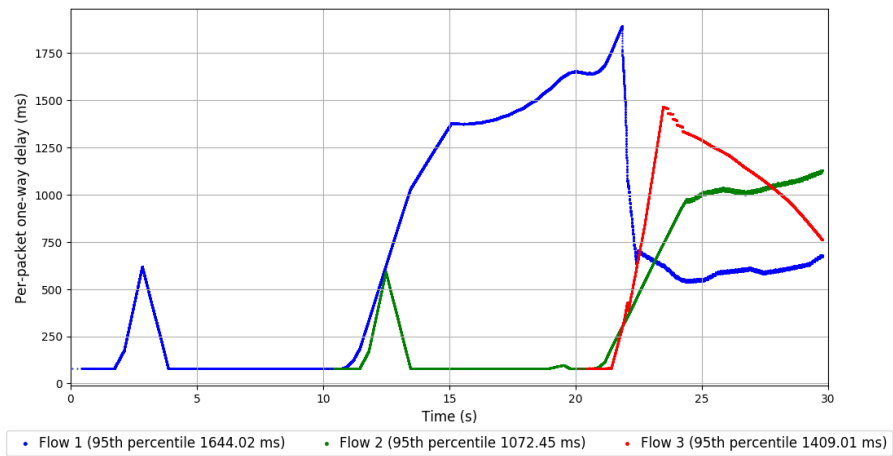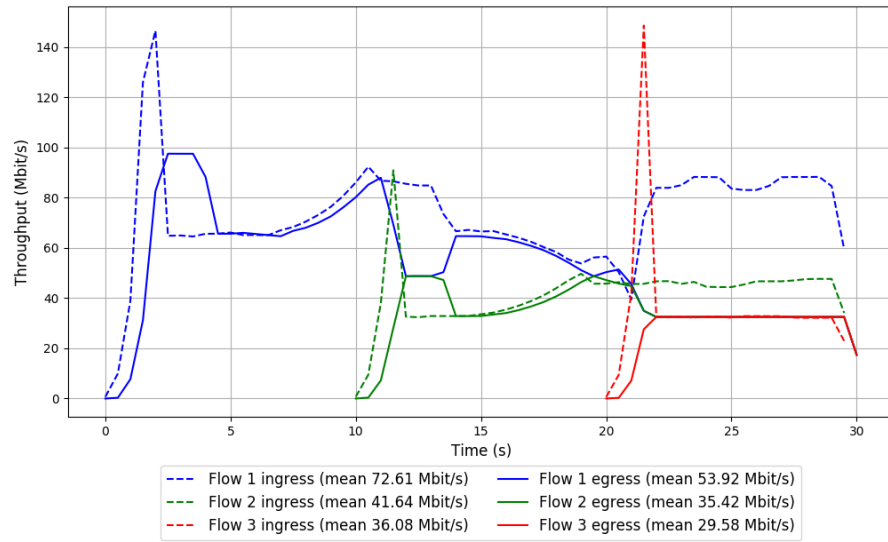
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 74.27 Mbit/s) —— Flow 1 egress (mean 54.75 Mbit/s)
Flow 2 ingress (mean 32.63 Mbit/s) —— Flow 2 egress (mean 31.55 Mbit/s)
Flow 3 ingress (mean 36.17 Mbit/s) —— Flow 3 egress (mean 29.66 Mbit/s)

Flow 1 (95th percentile 1361.75 ms)   Flow 2 (95th percentile 334.91 ms)   Flow 3 (95th percentile 1866.11 ms)

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```
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-06 20:01:45
End at: 2018-09-06 20:02:15
Local clock offset: 0.282 ms
Remote clock offset: 1.793 ms


# Below is generated by plot.py at 2018-09-06 21:17:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.42 Mbit/s
95th percentile per-packet one-way delay: 1478.092 ms
Loss rate: 19.37%
-- Flow 1:
Average throughput: 54.05 Mbit/s
95th percentile per-packet one-way delay: 1435.573 ms
Loss rate: 22.59%
-- Flow 2:
Average throughput: 34.25 Mbit/s
95th percentile per-packet one-way delay: 971.777 ms
Loss rate: 9.07%
-- Flow 3:
Average throughput: 29.61 Mbit/s
95th percentile per-packet one-way delay: 1636.577 ms
Loss rate: 22.04%
```
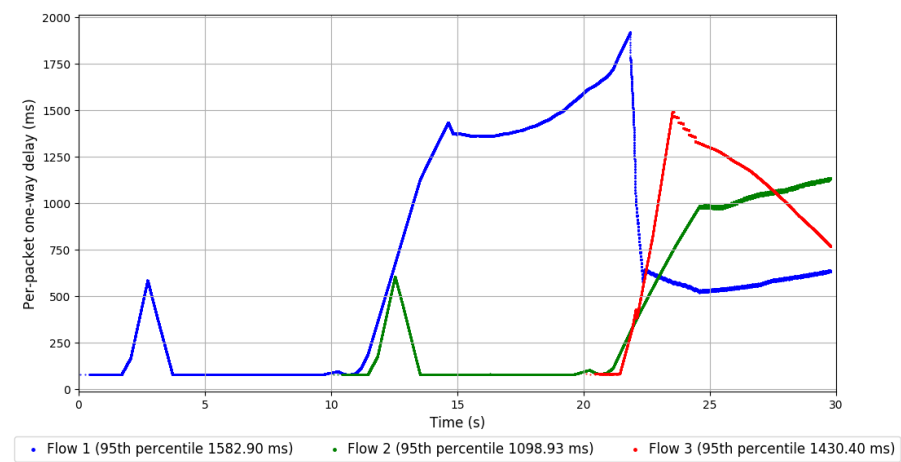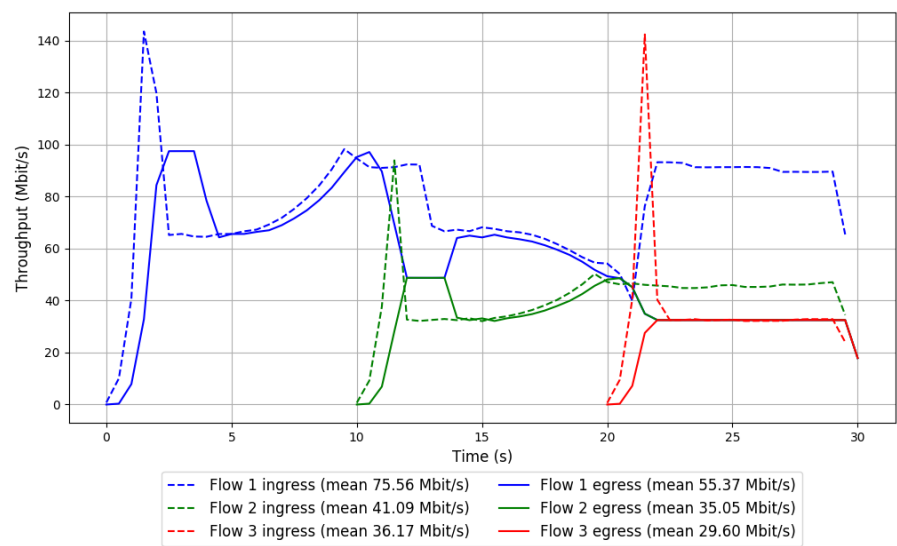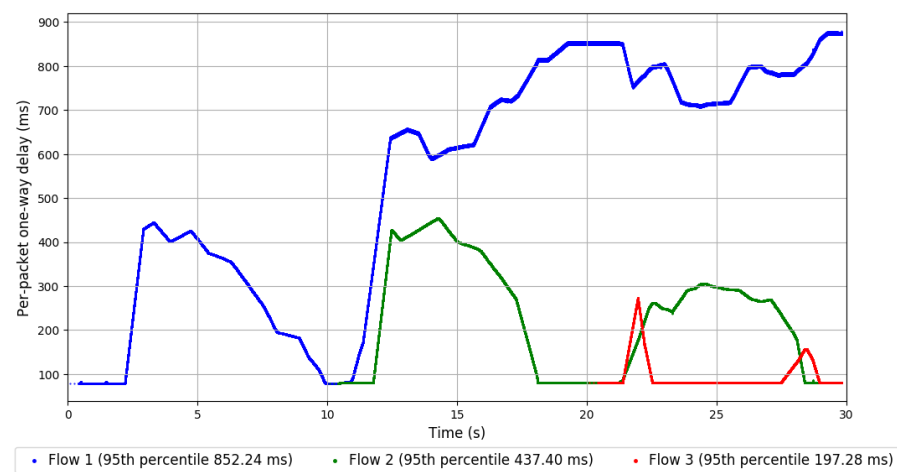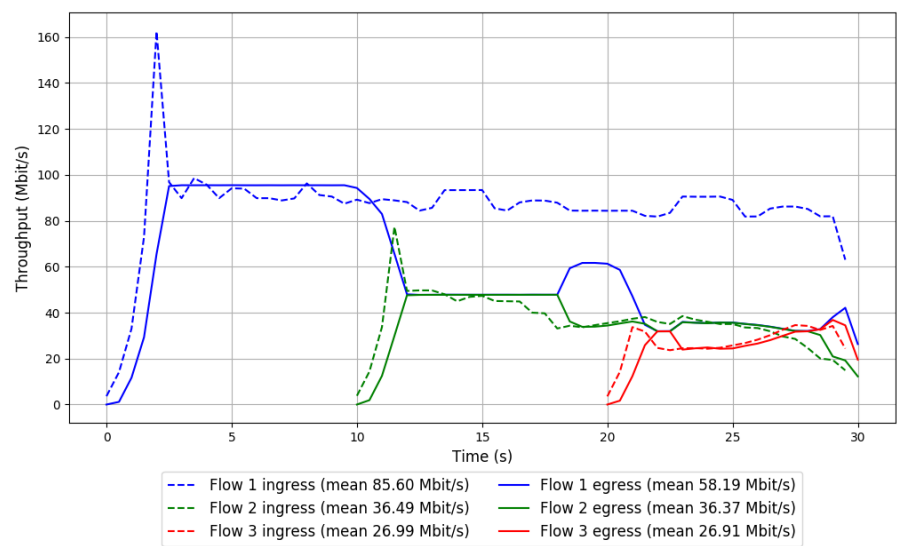
Run 3: Report of PCC-Allegro — Data Link

- - - - Flow 1 ingress (mean 69.42 Mbit/s) ——— Flow 1 egress (mean 54.05 Mbit/s)
- - - - Flow 2 ingress (mean 37.35 Mbit/s) ——— Flow 2 egress (mean 34.25 Mbit/s)
- - - - Flow 3 ingress (mean 37.31 Mbit/s) ——— Flow 3 egress (mean 29.61 Mbit/s)

• Flow 1 (95th percentile 1435.57 ms)　　• Flow 2 (95th percentile 971.78 ms)　　• Flow 3 (95th percentile 1636.58 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-06 20:25:07
End at: 2018-09-06 20:25:37
Local clock offset: 3.287 ms
Remote clock offset: 2.446 ms


# Below is generated by plot.py at 2018-09-06 21:17:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.05 Mbit/s
95th percentile per-packet one-way delay: 1561.794 ms
Loss rate: 22.86%
-- Flow 1:
Average throughput: 53.92 Mbit/s
95th percentile per-packet one-way delay: 1644.018 ms
Loss rate: 26.16%
-- Flow 2:
Average throughput: 35.42 Mbit/s
95th percentile per-packet one-way delay: 1072.451 ms
Loss rate: 15.67%
-- Flow 3:
Average throughput: 29.58 Mbit/s
95th percentile per-packet one-way delay: 1409.010 ms
Loss rate: 19.44%
```
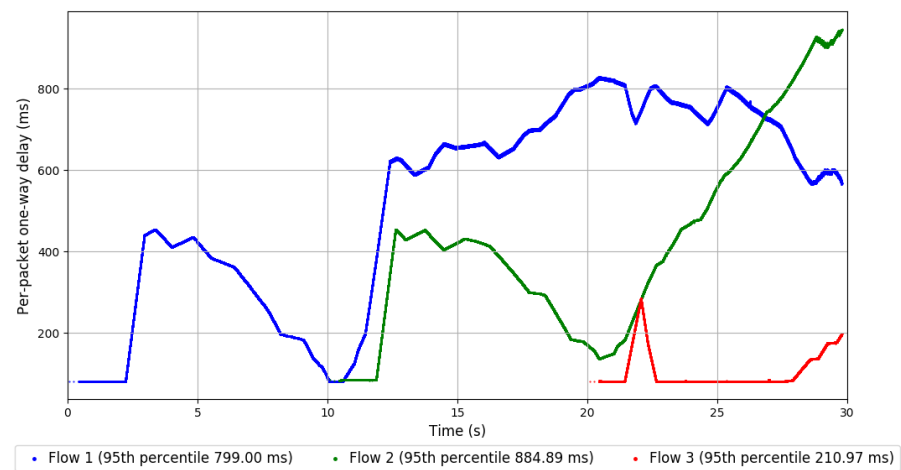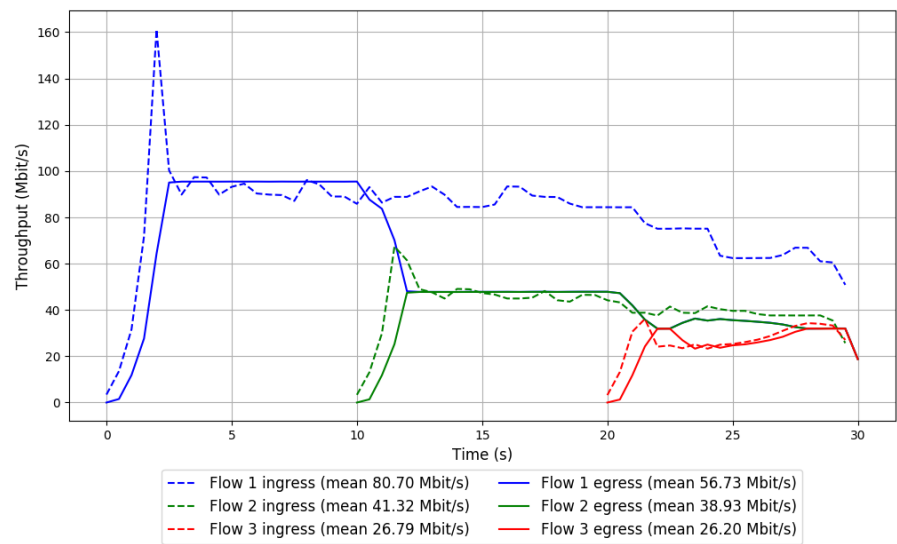
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 72.61 Mbit/s) --- Flow 1 egress (mean 53.92 Mbit/s)
Flow 2 ingress (mean 41.64 Mbit/s) --- Flow 2 egress (mean 35.42 Mbit/s)
Flow 3 ingress (mean 36.08 Mbit/s) --- Flow 3 egress (mean 29.58 Mbit/s)

Flow 1 (95th percentile 1644.02 ms)   Flow 2 (95th percentile 1072.45 ms)   Flow 3 (95th percentile 1409.01 ms)

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```
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-06 20:48:44
End at: 2018-09-06 20:49:14
Local clock offset: 5.406 ms
Remote clock offset: 3.299 ms


# Below is generated by plot.py at 2018-09-06 21:17:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.26 Mbit/s
95th percentile per-packet one-way delay: 1485.265 ms
Loss rate: 23.57%
-- Flow 1:
Average throughput: 55.37 Mbit/s
95th percentile per-packet one-way delay: 1582.898 ms
Loss rate: 27.14%
-- Flow 2:
Average throughput: 35.05 Mbit/s
95th percentile per-packet one-way delay: 1098.933 ms
Loss rate: 15.45%
-- Flow 3:
Average throughput: 29.60 Mbit/s
95th percentile per-packet one-way delay: 1430.404 ms
Loss rate: 19.62%
```
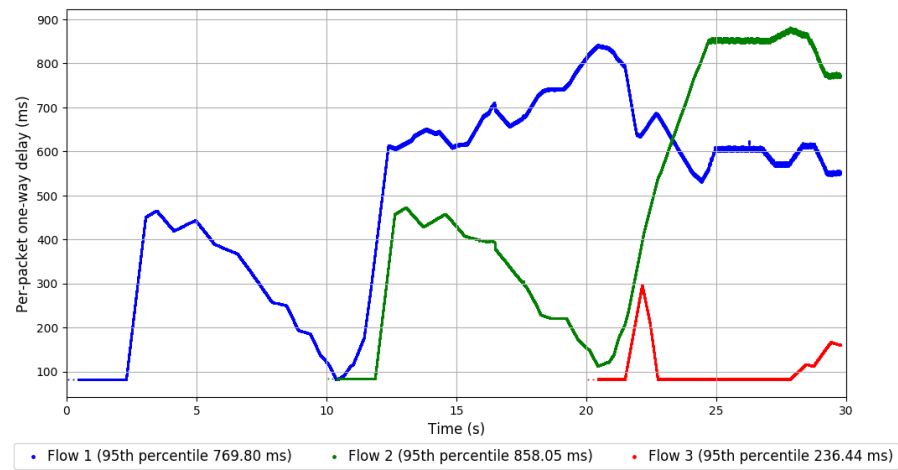
Run 5: Report of PCC-Allegro — Data Link

- - - - Flow 1 ingress (mean 75.56 Mbit/s) ——— Flow 1 egress (mean 55.37 Mbit/s)
- - - - Flow 2 ingress (mean 41.09 Mbit/s) ——— Flow 2 egress (mean 35.05 Mbit/s)
- - - - Flow 3 ingress (mean 36.17 Mbit/s) ——— Flow 3 egress (mean 29.60 Mbit/s)

• Flow 1 (95th percentile 1582.90 ms)   • Flow 2 (95th percentile 1098.93 ms)   • Flow 3 (95th percentile 1430.40 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-06 19:13:39
End at: 2018-09-06 19:14:09
Local clock offset: 3.431 ms
Remote clock offset: 2.507 ms


# Below is generated by plot.py at 2018-09-06 21:18:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.11 Mbit/s
95th percentile per-packet one-way delay: 850.089 ms
Loss rate: 23.71%
-- Flow 1:
Average throughput: 58.19 Mbit/s
95th percentile per-packet one-way delay: 852.244 ms
Loss rate: 32.38%
-- Flow 2:
Average throughput: 36.37 Mbit/s
95th percentile per-packet one-way delay: 437.397 ms
Loss rate: 1.13%
-- Flow 3:
Average throughput: 26.91 Mbit/s
95th percentile per-packet one-way delay: 197.275 ms
Loss rate: 1.92%
```
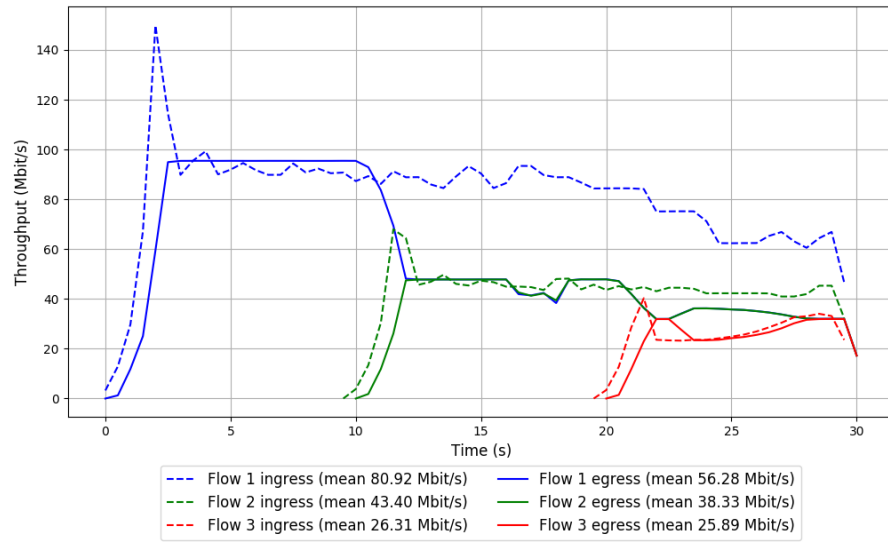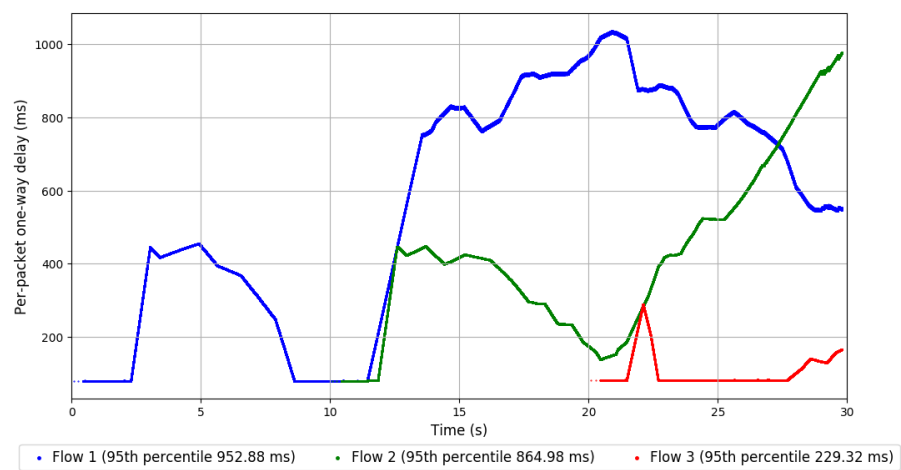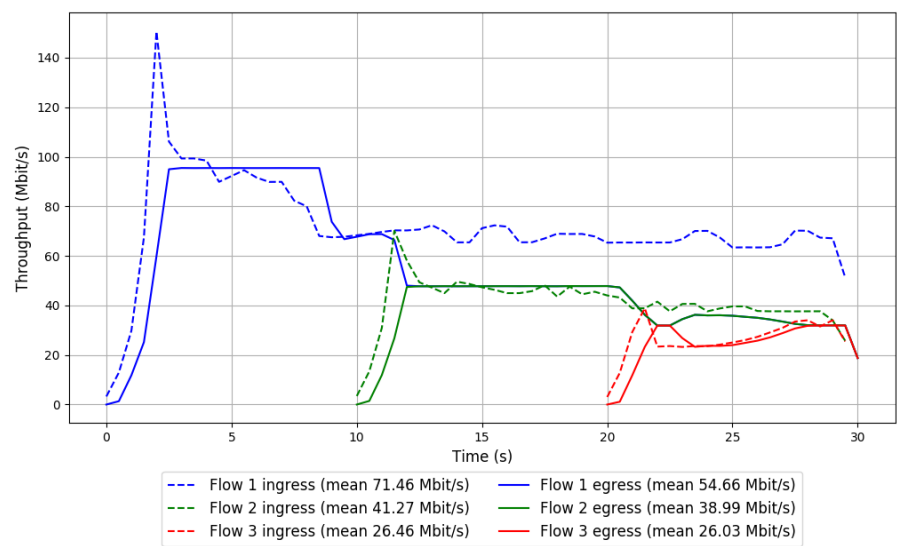
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 85.60 Mbit/s) — Flow 1 egress (mean 58.19 Mbit/s)
Flow 2 ingress (mean 36.49 Mbit/s) — Flow 2 egress (mean 36.37 Mbit/s)
Flow 3 ingress (mean 26.99 Mbit/s) — Flow 3 egress (mean 26.91 Mbit/s)

Flow 1 (95th percentile 852.24 ms) · Flow 2 (95th percentile 437.40 ms) · Flow 3 (95th percentile 197.28 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-06 19:37:05
End at: 2018-09-06 19:37:35
Local clock offset: 4.288 ms
Remote clock offset: -0.167 ms


# Below is generated by plot.py at 2018-09-06 21:18:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.11 Mbit/s
95th percentile per-packet one-way delay: 801.120 ms
Loss rate: 22.59%
-- Flow 1:
Average throughput: 56.73 Mbit/s
95th percentile per-packet one-way delay: 799.001 ms
Loss rate: 30.09%
-- Flow 2:
Average throughput: 38.93 Mbit/s
95th percentile per-packet one-way delay: 884.888 ms
Loss rate: 6.59%
-- Flow 3:
Average throughput: 26.20 Mbit/s
95th percentile per-packet one-way delay: 210.975 ms
Loss rate: 3.89%
```
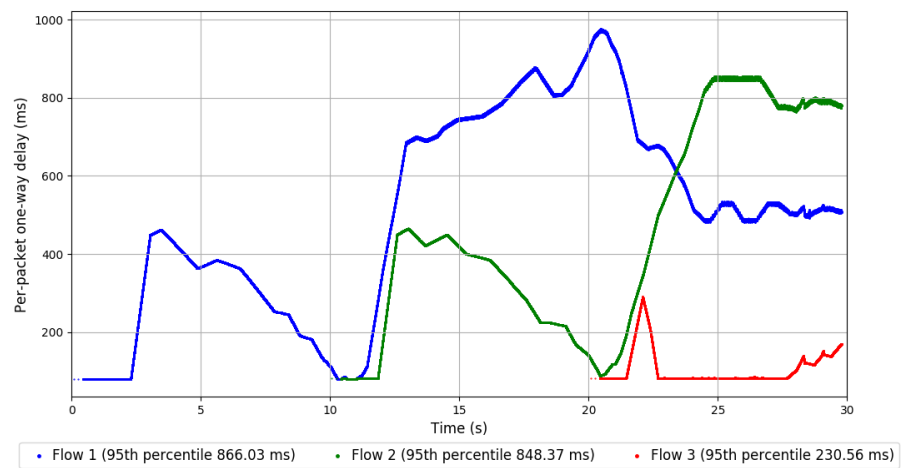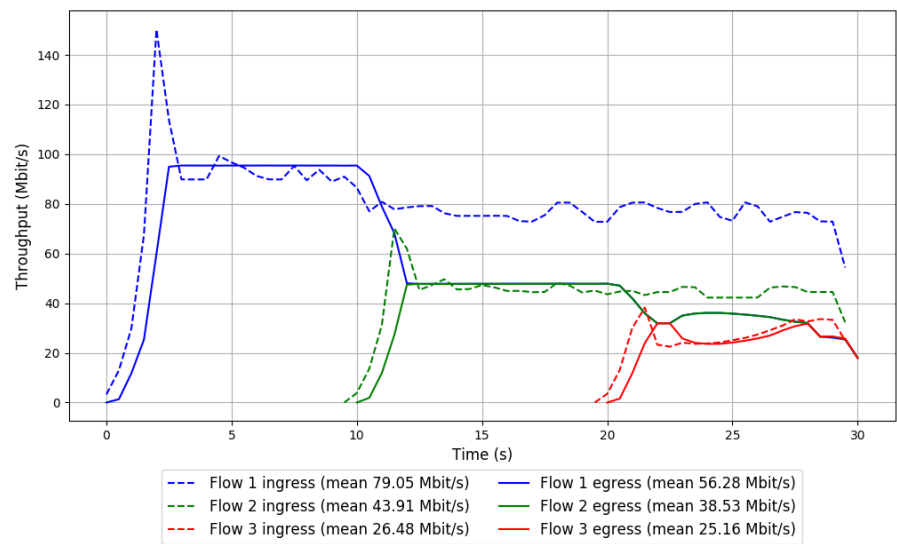
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 80.70 Mbit/s)   Flow 1 egress (mean 56.73 Mbit/s)
Flow 2 ingress (mean 41.32 Mbit/s)   Flow 2 egress (mean 38.93 Mbit/s)
Flow 3 ingress (mean 26.79 Mbit/s)   Flow 3 egress (mean 26.20 Mbit/s)

Flow 1 (95th percentile 799.00 ms)   Flow 2 (95th percentile 884.89 ms)   Flow 3 (95th percentile 210.97 ms)

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```
Run 3: Statistics of PCC-Expr

Start at: 2018-09-06 20:00:23
End at: 2018-09-06 20:00:53
Local clock offset: 1.185 ms
Remote clock offset: 1.33 ms


# Below is generated by plot.py at 2018-09-06 21:19:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.18 Mbit/s
95th percentile per-packet one-way delay: 839.177 ms
Loss rate: 24.35%
-- Flow 1:
Average throughput: 56.28 Mbit/s
95th percentile per-packet one-way delay: 769.803 ms
Loss rate: 30.86%
-- Flow 2:
Average throughput: 38.33 Mbit/s
95th percentile per-packet one-way delay: 858.054 ms
Loss rate: 12.45%
-- Flow 3:
Average throughput: 25.89 Mbit/s
95th percentile per-packet one-way delay: 236.436 ms
Loss rate: 3.32%
```
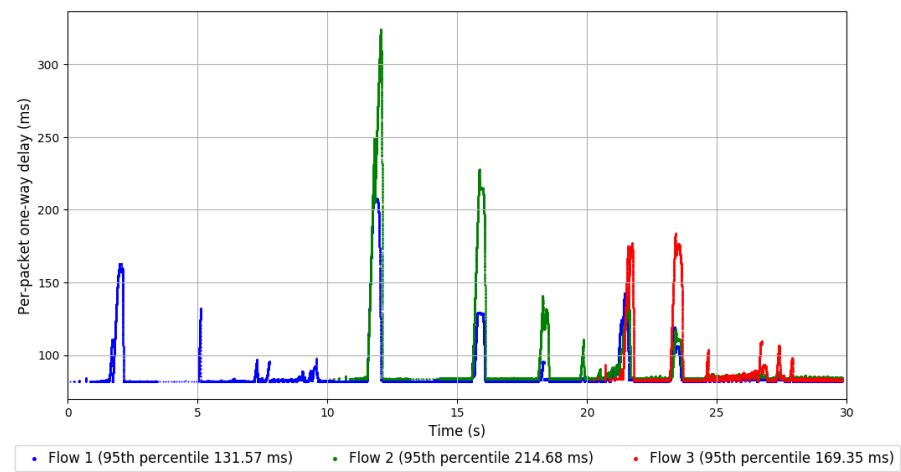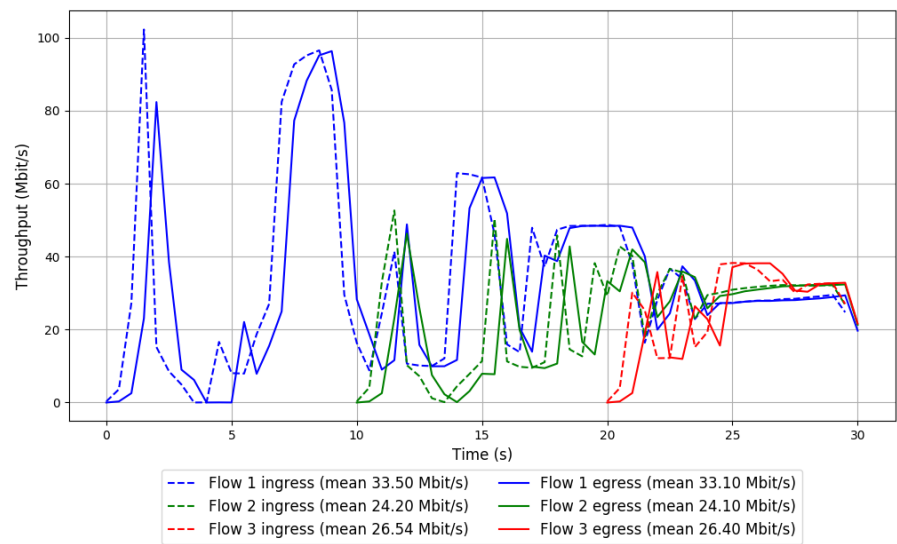
Run 3: Report of PCC-Expr — Data Link

- Flow 1 ingress (mean 80.92 Mbit/s)
- Flow 1 egress (mean 56.28 Mbit/s)
- Flow 2 ingress (mean 43.40 Mbit/s)
- Flow 2 egress (mean 38.33 Mbit/s)
- Flow 3 ingress (mean 26.31 Mbit/s)
- Flow 3 egress (mean 25.89 Mbit/s)

- Flow 1 (95th percentile 769.80 ms)
- Flow 2 (95th percentile 858.05 ms)
- Flow 3 (95th percentile 236.44 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-09-06 20:23:46
End at: 2018-09-06 20:24:16
Local clock offset: 3.668 ms
Remote clock offset: 2.401 ms

# Below is generated by plot.py at 2018-09-06 21:19:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.02 Mbit/s
95th percentile per-packet one-way delay: 921.657 ms
Loss rate: 17.78%
-- Flow 1:
Average throughput: 54.66 Mbit/s
95th percentile per-packet one-way delay: 952.881 ms
Loss rate: 23.94%
-- Flow 2:
Average throughput: 38.99 Mbit/s
95th percentile per-packet one-way delay: 864.983 ms
Loss rate: 6.33%
-- Flow 3:
Average throughput: 26.03 Mbit/s
95th percentile per-packet one-way delay: 229.316 ms
Loss rate: 3.37%
```
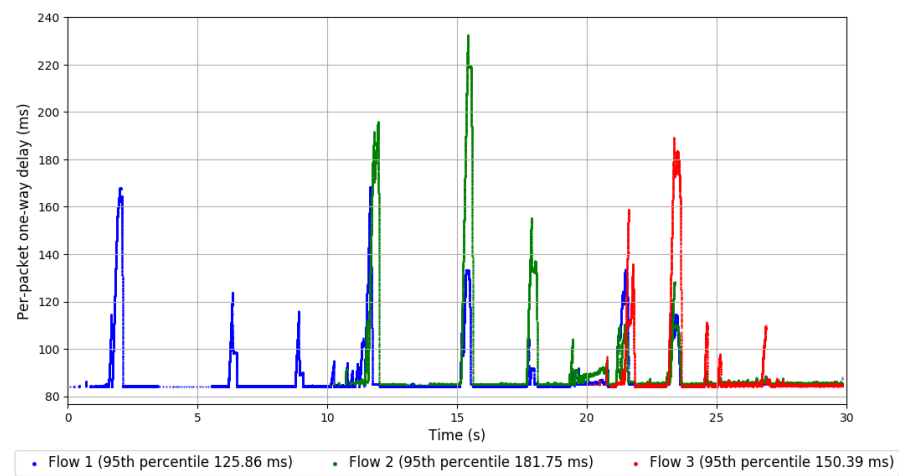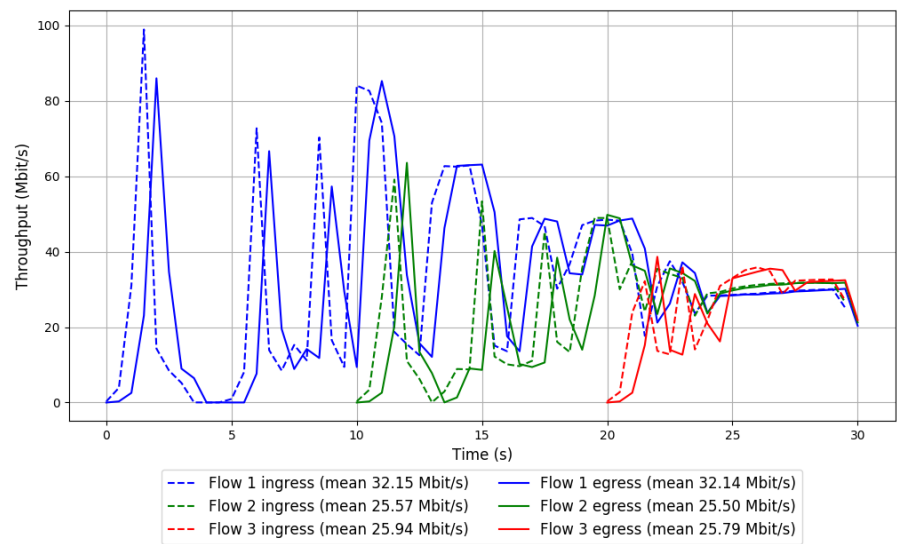
Run 4: Report of PCC-Expr — Data Link

Legend:
- Flow 1 ingress (mean 71.46 Mbit/s)
- Flow 1 egress (mean 54.66 Mbit/s)
- Flow 2 ingress (mean 41.27 Mbit/s)
- Flow 2 egress (mean 38.99 Mbit/s)
- Flow 3 ingress (mean 26.46 Mbit/s)
- Flow 3 egress (mean 26.03 Mbit/s)

Legend:
- Flow 1 (95th percentile 952.88 ms)
- Flow 2 (95th percentile 864.98 ms)
- Flow 3 (95th percentile 229.32 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-09-06 20:47:11
End at: 2018-09-06 20:47:41
Local clock offset: 5.478 ms
Remote clock offset: 3.178 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.08 Mbit/s
95th percentile per-packet one-way delay: 850.482 ms
Loss rate: 23.48%
-- Flow 1:
Average throughput: 56.28 Mbit/s
95th percentile per-packet one-way delay: 866.028 ms
Loss rate: 29.22%
-- Flow 2:
Average throughput: 38.53 Mbit/s
95th percentile per-packet one-way delay: 848.372 ms
Loss rate: 13.00%
-- Flow 3:
Average throughput: 25.16 Mbit/s
95th percentile per-packet one-way delay: 230.558 ms
Loss rate: 6.62%
```
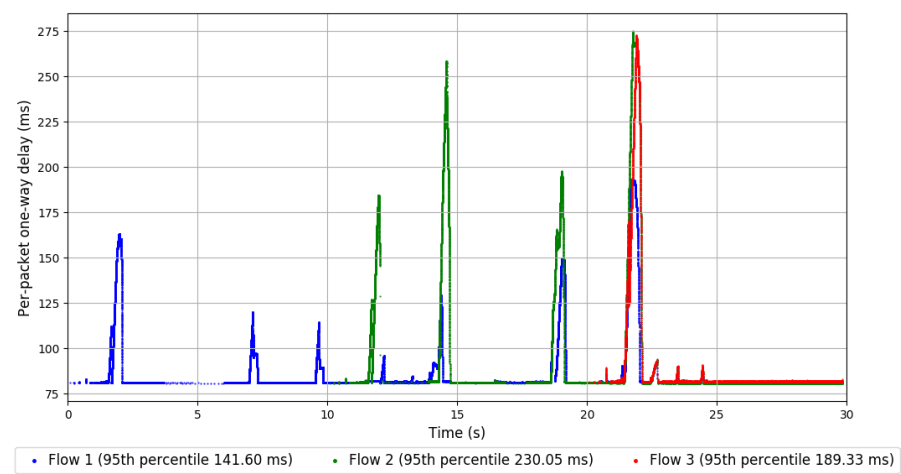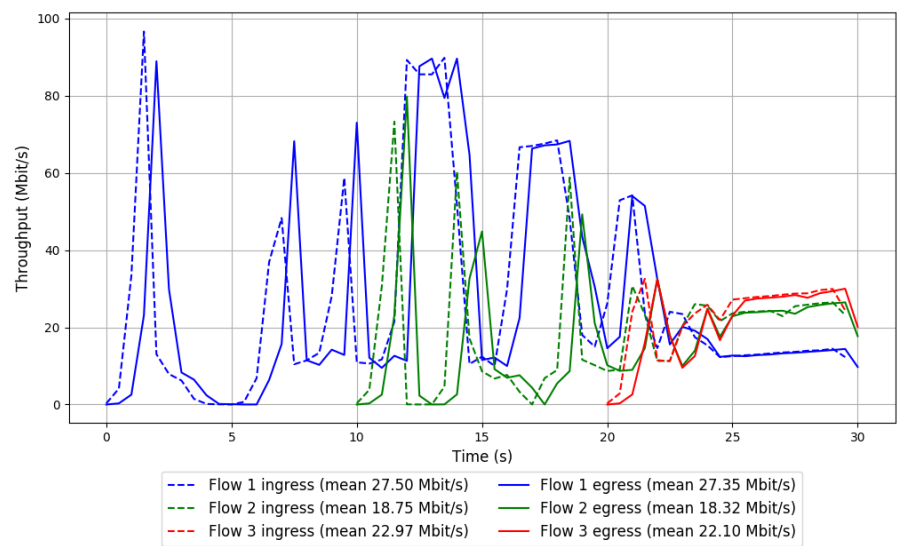
Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 79.05 Mbit/s) — Flow 1 egress (mean 56.28 Mbit/s)
Flow 2 ingress (mean 43.91 Mbit/s) — Flow 2 egress (mean 38.53 Mbit/s)
Flow 3 ingress (mean 26.48 Mbit/s) — Flow 3 egress (mean 25.16 Mbit/s)

Flow 1 (95th percentile 866.03 ms) • Flow 2 (95th percentile 848.37 ms) • Flow 3 (95th percentile 230.56 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-06 19:34:34
End at: 2018-09-06 19:35:04
Local clock offset: 3.523 ms
Remote clock offset: -3.086 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.74 Mbit/s
95th percentile per-packet one-way delay: 158.920 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 33.10 Mbit/s
95th percentile per-packet one-way delay: 131.573 ms
Loss rate: 1.74%
-- Flow 2:
Average throughput: 24.10 Mbit/s
95th percentile per-packet one-way delay: 214.678 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 26.40 Mbit/s
95th percentile per-packet one-way delay: 169.347 ms
Loss rate: 2.16%
```
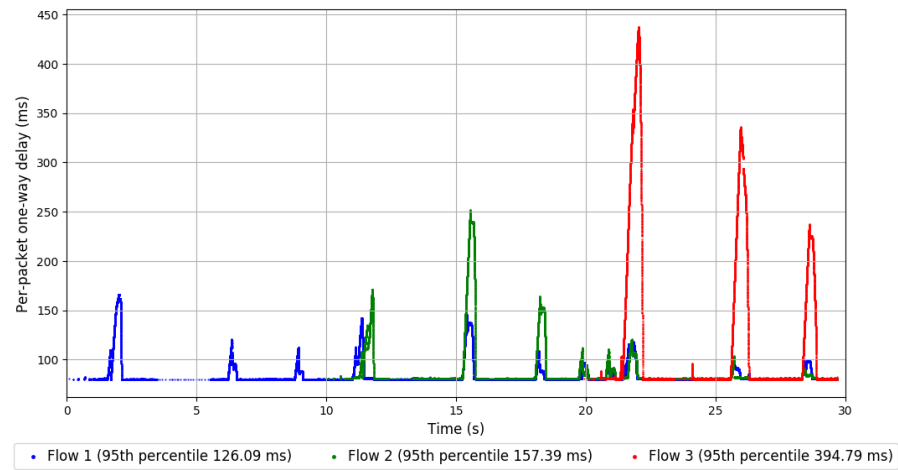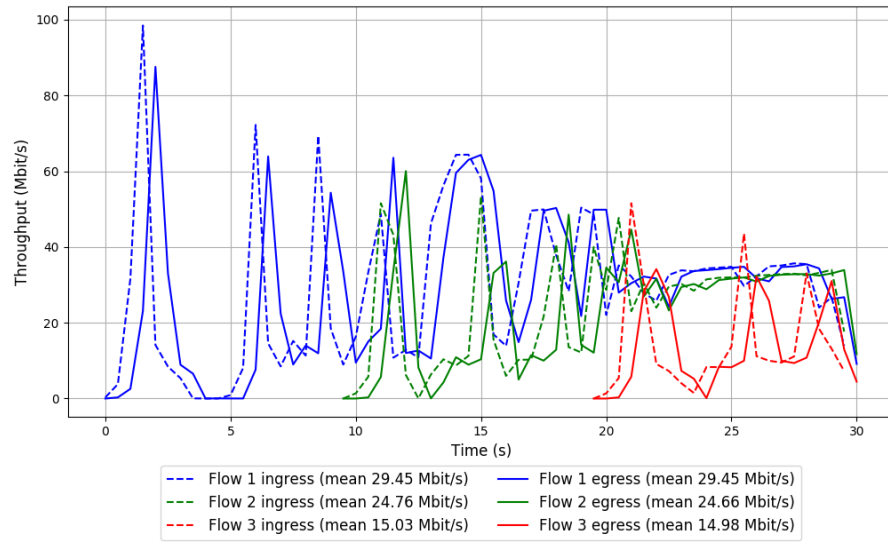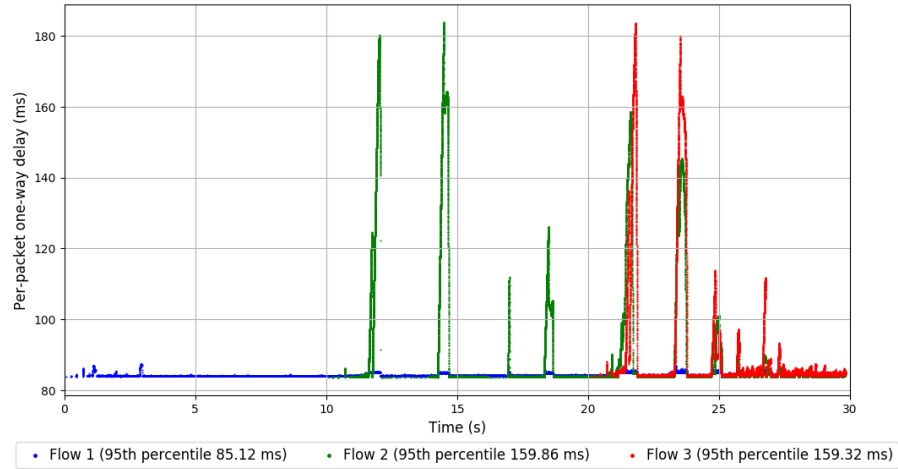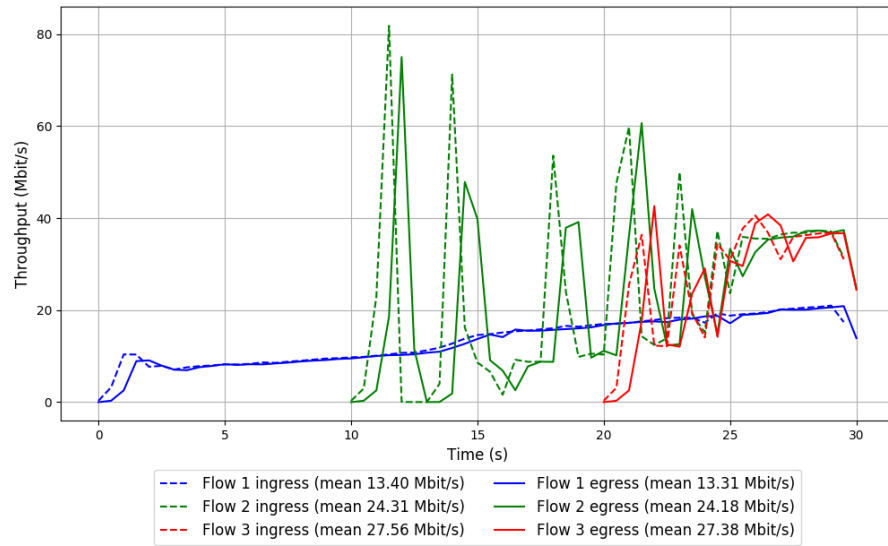
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 33.50 Mbit/s) — Flow 1 egress (mean 33.10 Mbit/s)
Flow 2 ingress (mean 24.20 Mbit/s) — Flow 2 egress (mean 24.10 Mbit/s)
Flow 3 ingress (mean 26.54 Mbit/s) — Flow 3 egress (mean 26.40 Mbit/s)

Flow 1 (95th percentile 131.57 ms) — Flow 2 (95th percentile 214.68 ms) — Flow 3 (95th percentile 169.35 ms)

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```
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-06 19:57:52
End at: 2018-09-06 19:58:22
Local clock offset: 0.725 ms
Remote clock offset: -2.309 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.49 Mbit/s
95th percentile per-packet one-way delay: 141.075 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 32.14 Mbit/s
95th percentile per-packet one-way delay: 125.855 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 25.50 Mbit/s
95th percentile per-packet one-way delay: 181.751 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 25.79 Mbit/s
95th percentile per-packet one-way delay: 150.393 ms
Loss rate: 2.23%
```

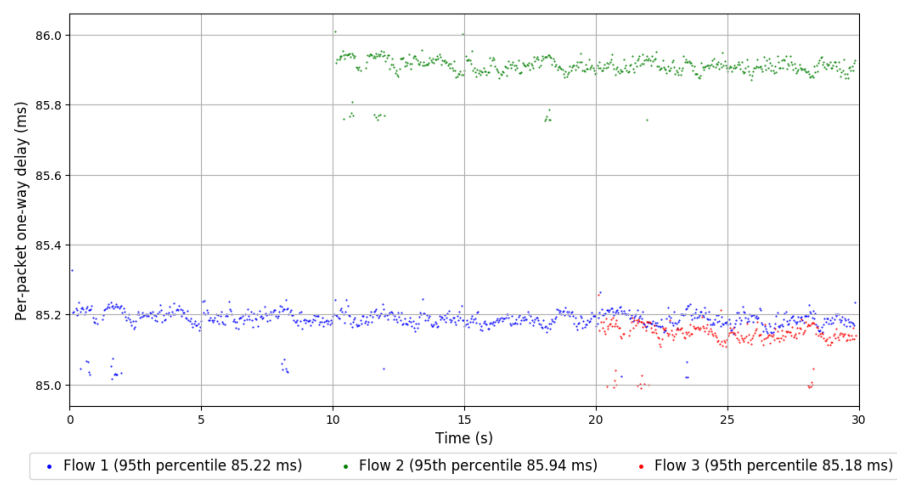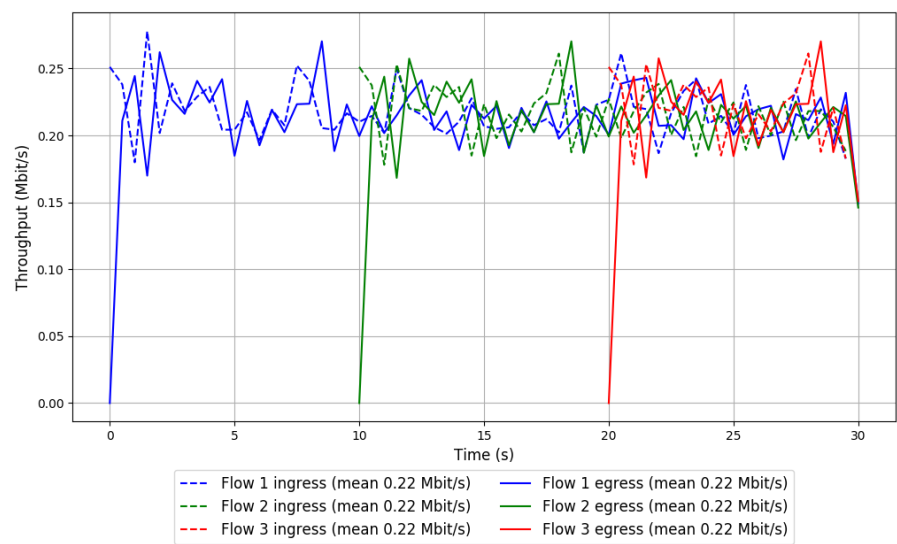## Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-06 20:21:16
End at: 2018-09-06 20:21:46
Local clock offset: 2.972 ms
Remote clock offset: 2.36 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 46.73 Mbit/s
95th percentile per-packet one-way delay: 172.446 ms
Loss rate: 2.31%
-- Flow 1:
Average throughput: 27.35 Mbit/s
95th percentile per-packet one-way delay: 141.597 ms
Loss rate: 1.10%
-- Flow 2:
Average throughput: 18.32 Mbit/s
95th percentile per-packet one-way delay: 230.050 ms
Loss rate: 3.10%
-- Flow 3:
Average throughput: 22.10 Mbit/s
95th percentile per-packet one-way delay: 189.327 ms
Loss rate: 5.42%
```

Run 3: Report of QUIC Cubic — Data Link

- - - Flow 1 ingress (mean 27.50 Mbit/s) —— Flow 1 egress (mean 27.35 Mbit/s)
- - - Flow 2 ingress (mean 18.75 Mbit/s) —— Flow 2 egress (mean 18.32 Mbit/s)
- - - Flow 3 ingress (mean 22.97 Mbit/s) —— Flow 3 egress (mean 22.10 Mbit/s)

- Flow 1 (95th percentile 141.60 ms)   - Flow 2 (95th percentile 230.05 ms)   - Flow 3 (95th percentile 189.33 ms)

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```
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-06 20:44:39
End at: 2018-09-06 20:45:10
Local clock offset: 6.311 ms
Remote clock offset: 3.503 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 50.82 Mbit/s
95th percentile per-packet one-way delay: 168.340 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 29.45 Mbit/s
95th percentile per-packet one-way delay: 126.093 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 24.66 Mbit/s
95th percentile per-packet one-way delay: 157.391 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 14.98 Mbit/s
95th percentile per-packet one-way delay: 394.787 ms
Loss rate: 2.06%
```

Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-06 21:08:38
End at: 2018-09-06 21:09:08
Local clock offset: 5.429 ms
Remote clock offset: -0.266 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 38.31 Mbit/s
95th percentile per-packet one-way delay: 146.988 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 13.31 Mbit/s
95th percentile per-packet one-way delay: 85.117 ms
Loss rate: 1.23%
-- Flow 2:
Average throughput: 24.18 Mbit/s
95th percentile per-packet one-way delay: 159.863 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 27.38 Mbit/s
95th percentile per-packet one-way delay: 159.322 ms
Loss rate: 2.33%
```

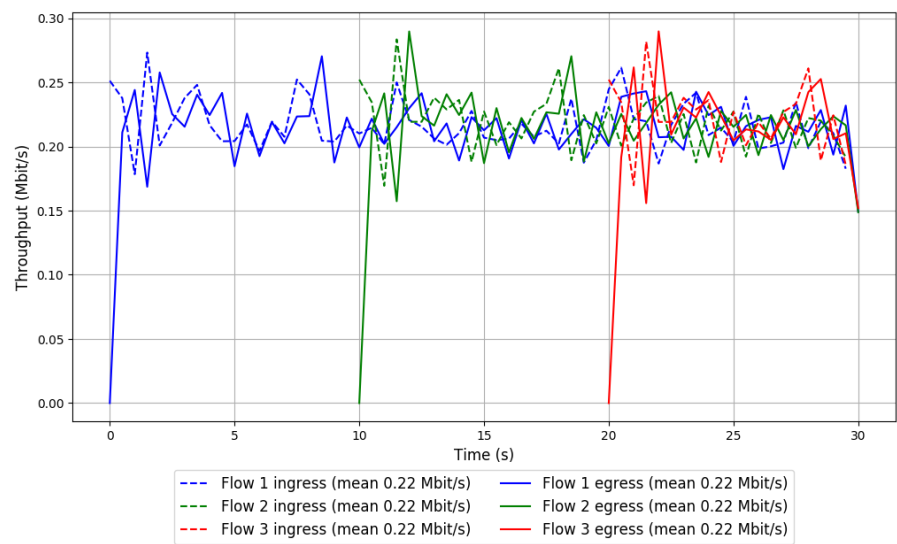Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-09-06 19:19:02
End at: 2018-09-06 19:19:32
Local clock offset: 4.24 ms
Remote clock offset: -3.225 ms

# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 85.933 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.222 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.942 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.181 ms
Loss rate: 1.45%
```
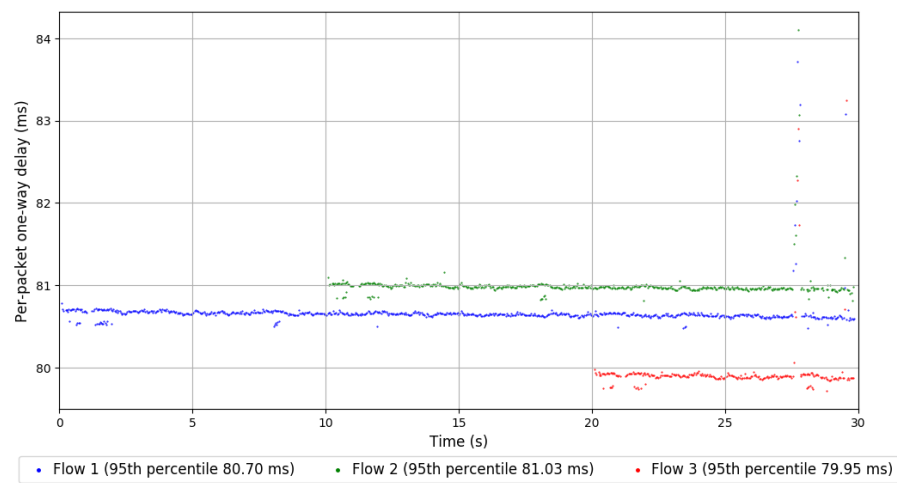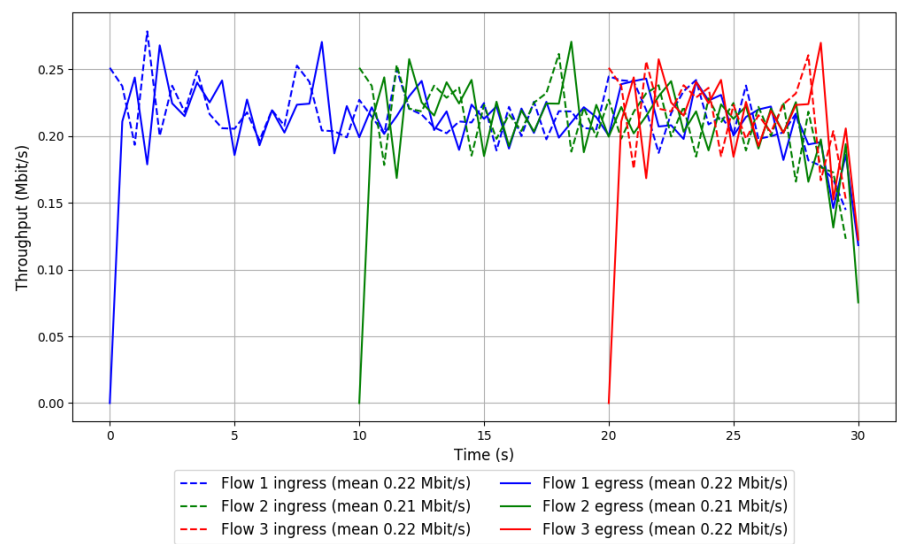
Run 1: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 85.22 ms)   Flow 2 (95th percentile 85.94 ms)   Flow 3 (95th percentile 85.18 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-09-06 19:42:26
End at: 2018-09-06 19:42:56
Local clock offset: 3.509 ms
Remote clock offset: -4.001 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 85.249 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 82.815 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 83.271 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.268 ms
Loss rate: 1.84%
```
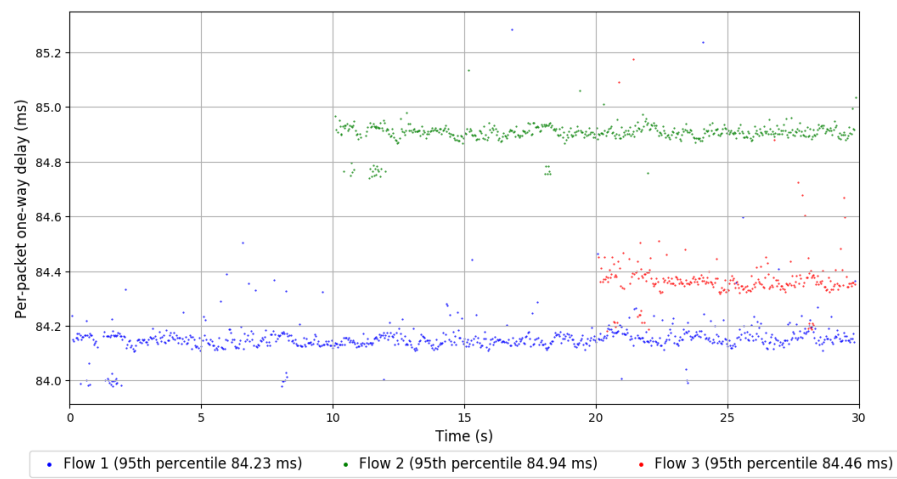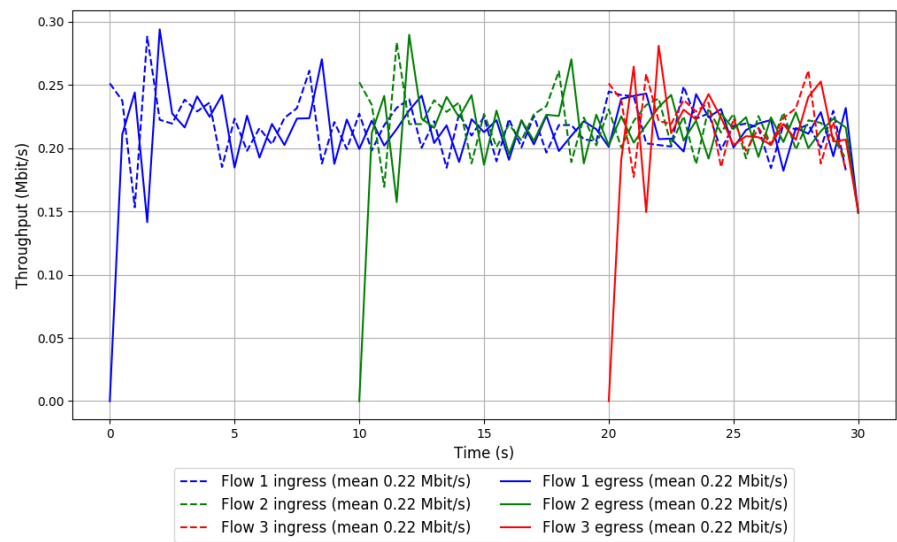
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-09-06 20:05:42
End at: 2018-09-06 20:06:12
Local clock offset: 0.724 ms
Remote clock offset: -2.417 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.358 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.341 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.365 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.809 ms
Loss rate: 1.85%
```
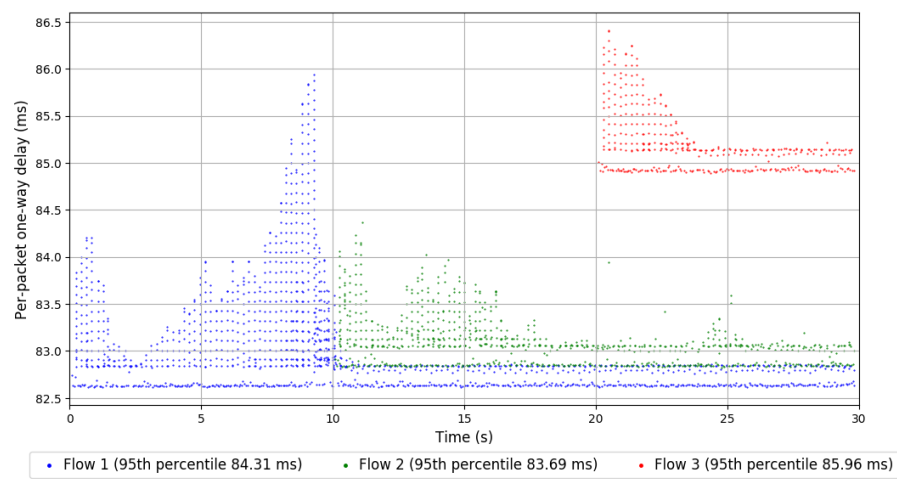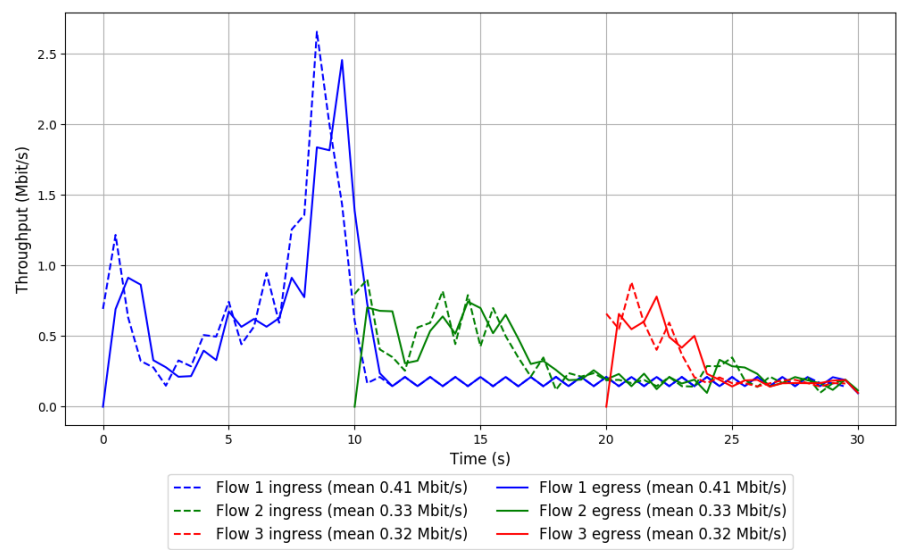
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-09-06 20:29:11
End at: 2018-09-06 20:29:41
Local clock offset: 3.993 ms
Remote clock offset: 2.448 ms

# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 81.011 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 80.704 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 81.028 ms
Loss rate: 1.47%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 79.946 ms
Loss rate: 1.77%
```

Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-09-06 20:52:50
End at: 2018-09-06 20:53:20
Local clock offset: 6.057 ms
Remote clock offset: -0.625 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 84.930 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.226 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.942 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.461 ms
Loss rate: 1.84%
```
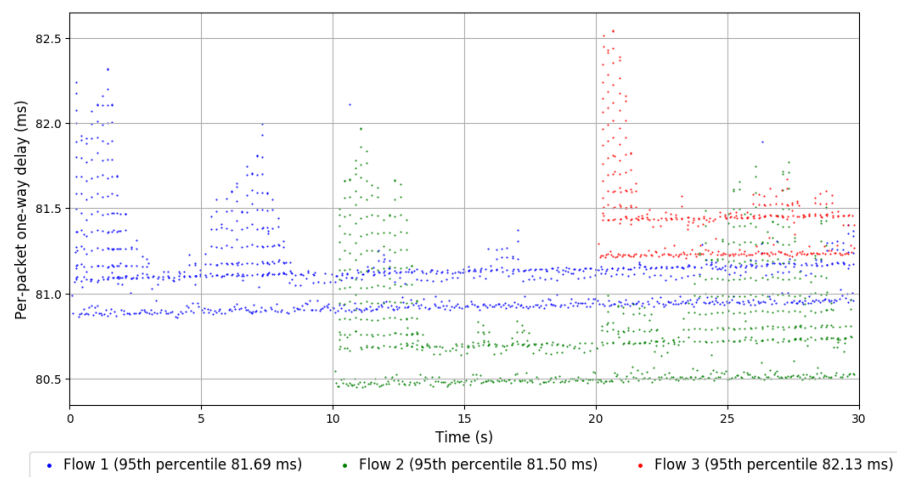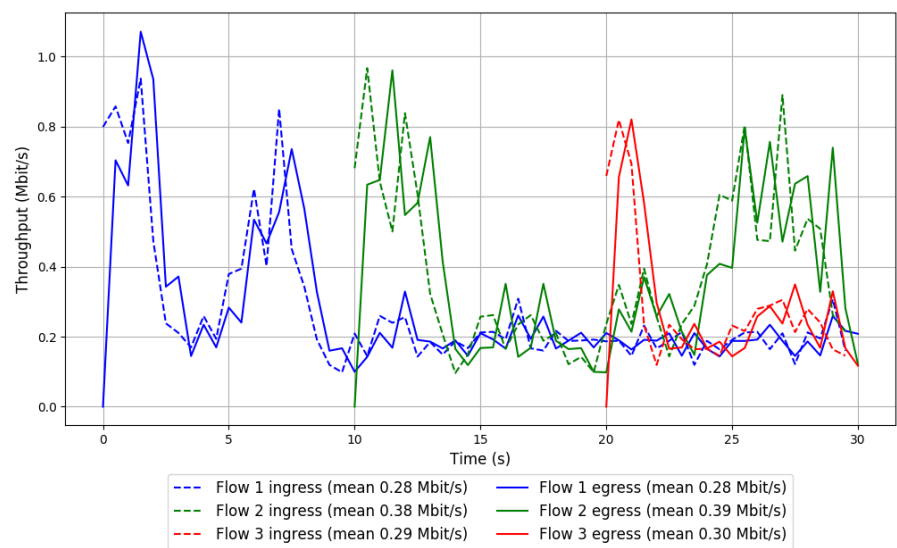
Run 5: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 84.23 ms)   Flow 2 (95th percentile 84.94 ms)   Flow 3 (95th percentile 84.46 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-09-06 19:29:30
End at: 2018-09-06 19:30:00
Local clock offset: 3.465 ms
Remote clock offset: -4.231 ms

# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 85.219 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 84.308 ms
Loss rate: 1.18%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 83.688 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 85.958 ms
Loss rate: 1.11%
```
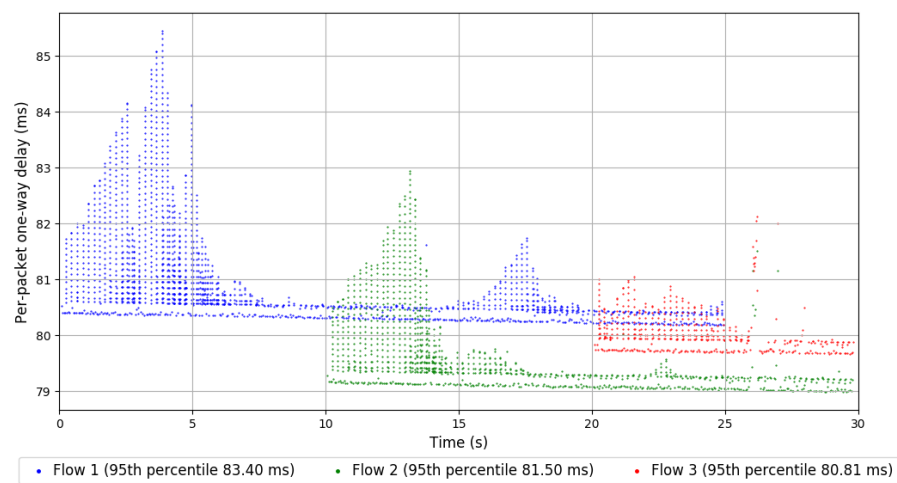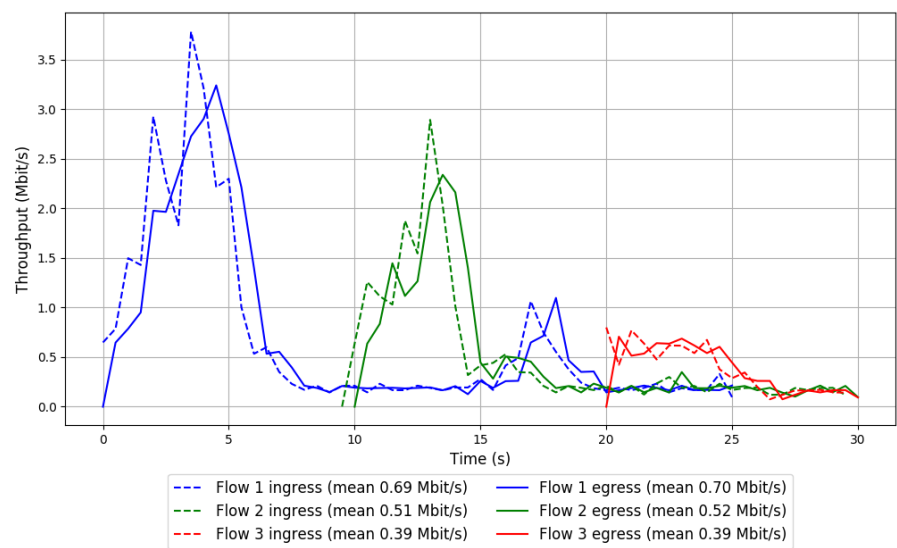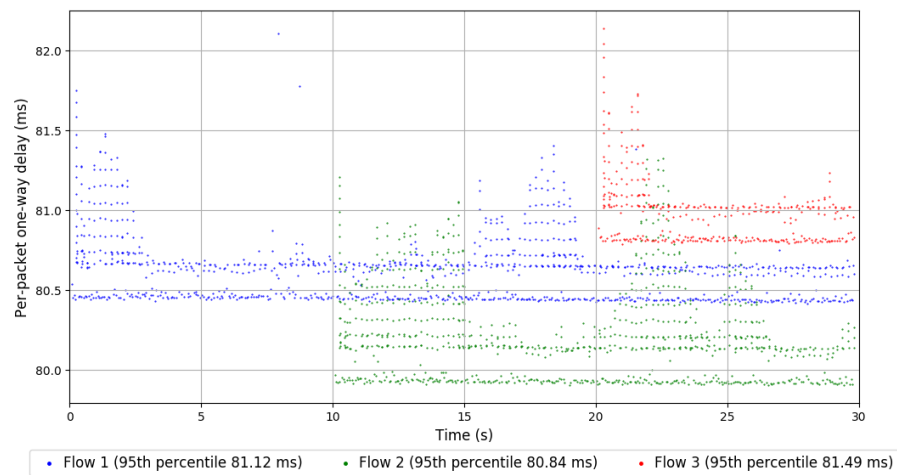
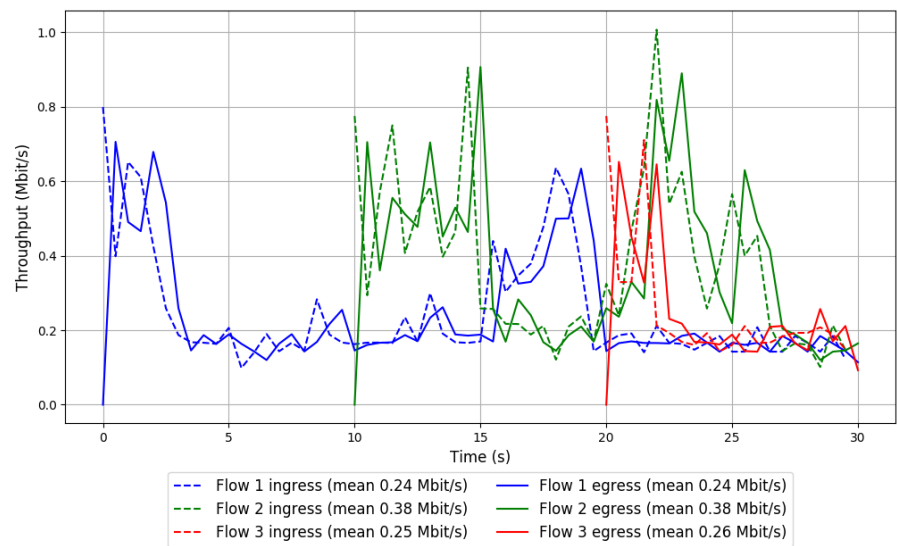# Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-09-06 19:52:49
End at: 2018-09-06 19:53:19
Local clock offset: 2.156 ms
Remote clock offset: 1.442 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 81.679 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 81.686 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 81.499 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 82.128 ms
Loss rate: 0.88%
```
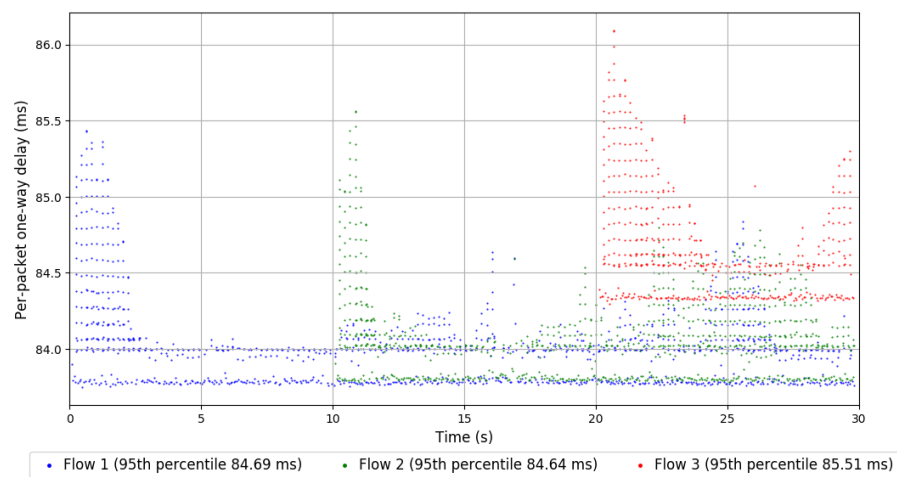
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-09-06 20:16:13
End at: 2018-09-06 20:16:43
Local clock offset: -0.16 ms
Remote clock offset: 2.297 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 82.743 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 83.397 ms
Loss rate: 0.68%
-- Flow 2:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 81.505 ms
Loss rate: 0.25%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 80.805 ms
Loss rate: 0.98%
```
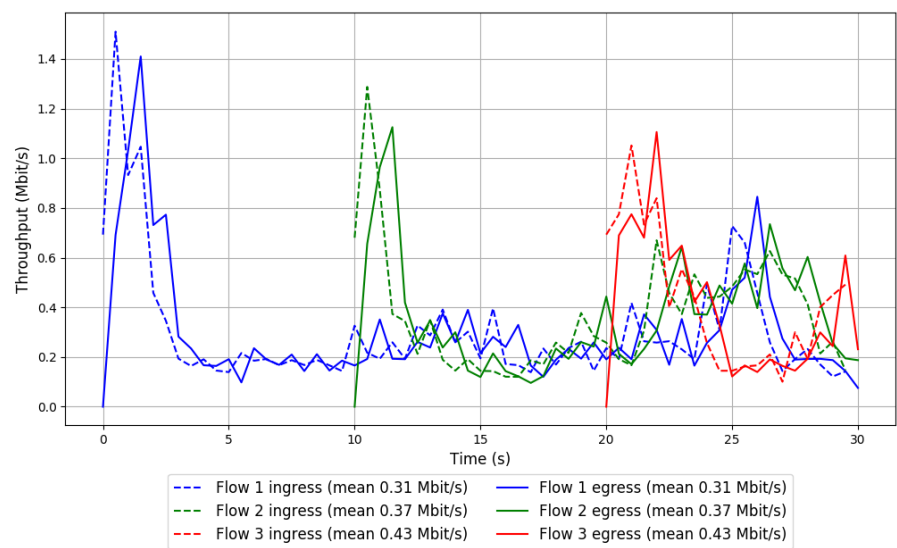
Run 3: Report of Sprout — Data Link

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```
Run 4: Statistics of Sprout

Start at: 2018-09-06 20:39:31
End at: 2018-09-06 20:40:01
Local clock offset: 5.956 ms
Remote clock offset: 3.487 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 81.124 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 81.124 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 80.842 ms
Loss rate: 0.34%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 81.488 ms
Loss rate: 1.47%
```
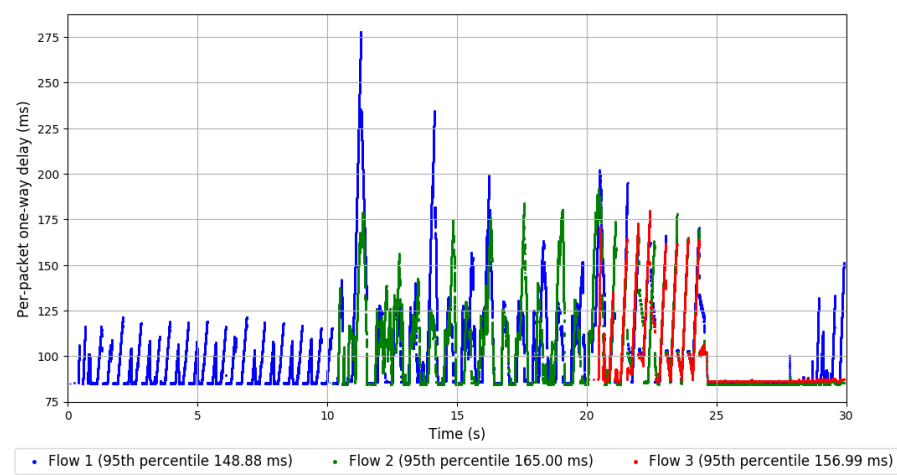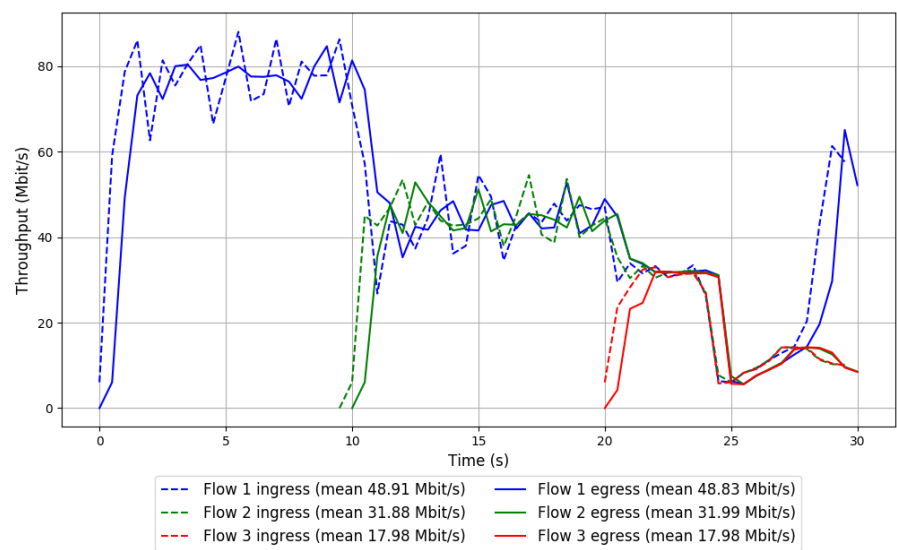
Run 4: Report of Sprout — Data Link

Flow 1 ingress (mean 0.24 Mbit/s)   Flow 1 egress (mean 0.24 Mbit/s)
Flow 2 ingress (mean 0.38 Mbit/s)   Flow 2 egress (mean 0.38 Mbit/s)
Flow 3 ingress (mean 0.25 Mbit/s)   Flow 3 egress (mean 0.26 Mbit/s)

Flow 1 (95th percentile 81.12 ms)   Flow 2 (95th percentile 80.84 ms)   Flow 3 (95th percentile 81.49 ms)

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```
Run 5: Statistics of Sprout

Start at: 2018-09-06 21:03:23
End at: 2018-09-06 21:03:53
Local clock offset: 5.314 ms
Remote clock offset: -0.605 ms


# Below is generated by plot.py at 2018-09-06 21:19:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 85.032 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 84.688 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 84.644 ms
Loss rate: 0.35%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 85.510 ms
Loss rate: 3.08%
```
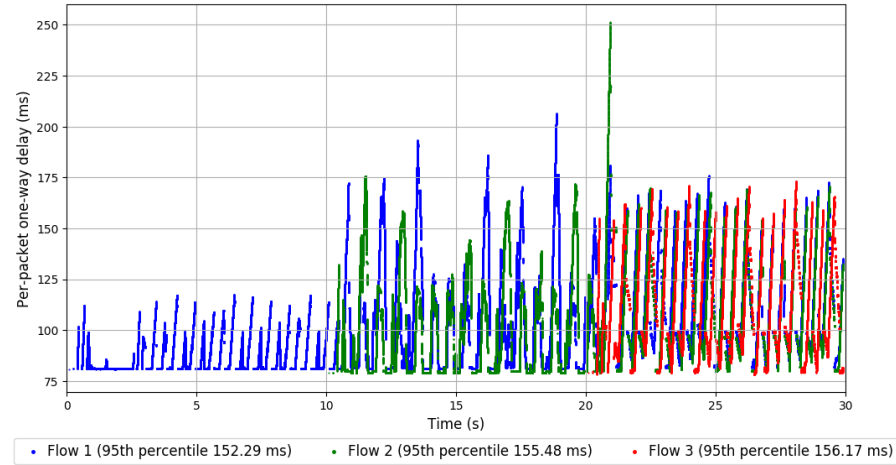
Run 5: Report of Sprout — Data Link

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

Start at: 2018-09-06 19:20:14
End at: 2018-09-06 19:20:44
Local clock offset: 4.259 ms
Remote clock offset: -3.263 ms


# Below is generated by plot.py at 2018-09-06 21:20:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 76.00 Mbit/s
95th percentile per-packet one-way delay: 157.993 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 48.83 Mbit/s
95th percentile per-packet one-way delay: 148.880 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 31.99 Mbit/s
95th percentile per-packet one-way delay: 164.996 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 17.98 Mbit/s
95th percentile per-packet one-way delay: 156.990 ms
Loss rate: 1.71%
```
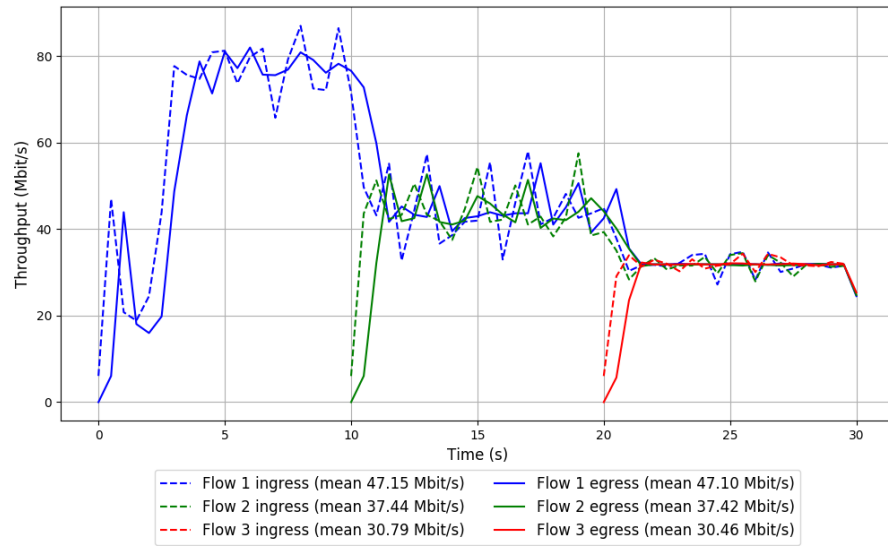
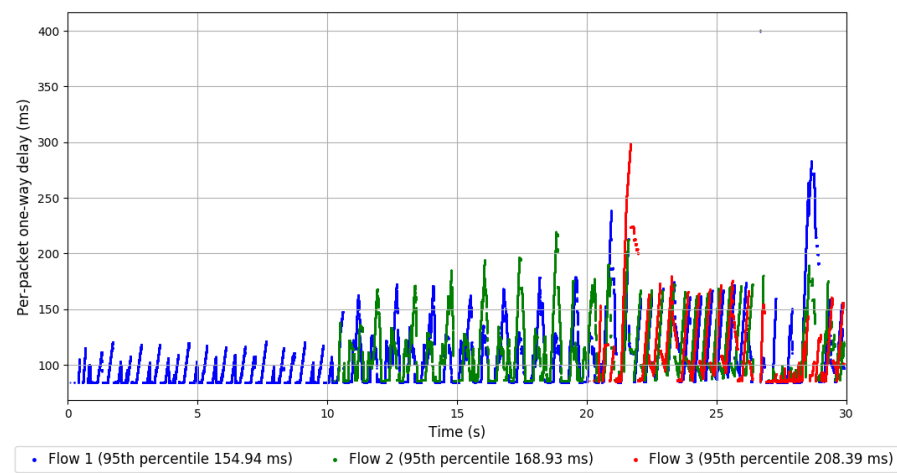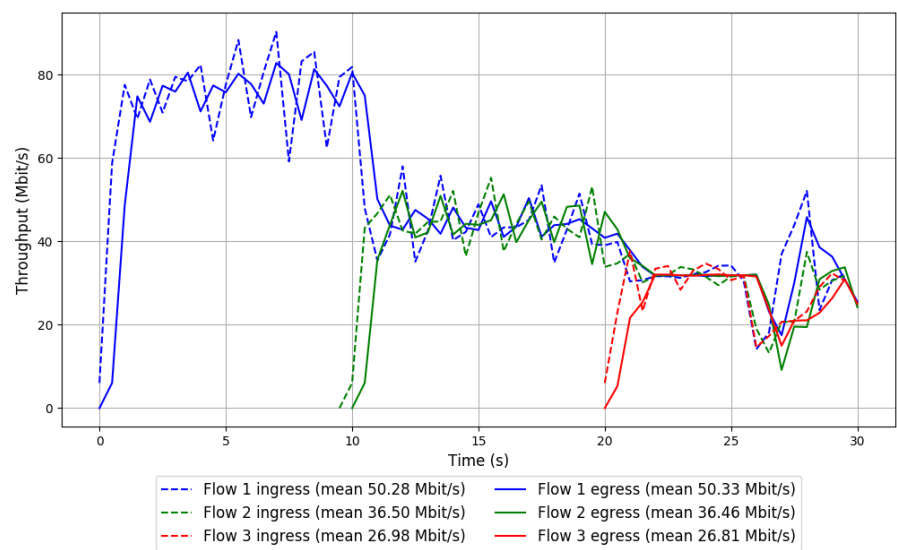Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 48.91 Mbit/s) --- Flow 1 egress (mean 48.83 Mbit/s)
Flow 2 ingress (mean 31.88 Mbit/s) --- Flow 2 egress (mean 31.99 Mbit/s)
Flow 3 ingress (mean 17.98 Mbit/s) --- Flow 3 egress (mean 17.98 Mbit/s)

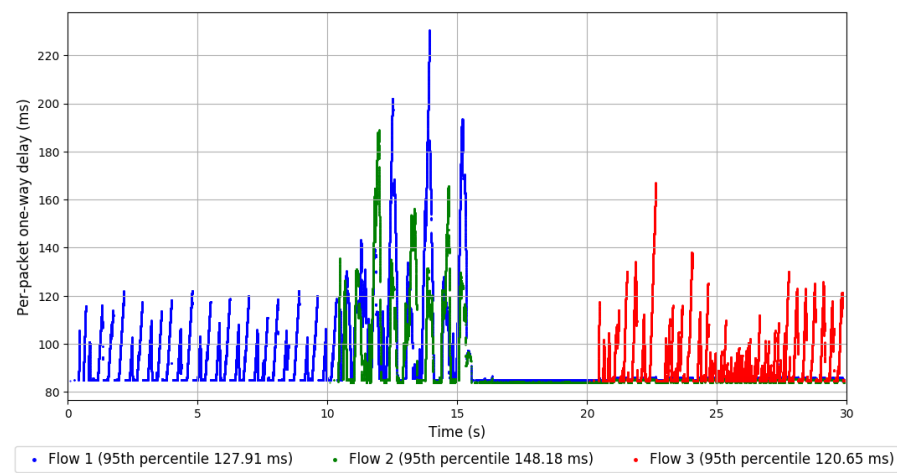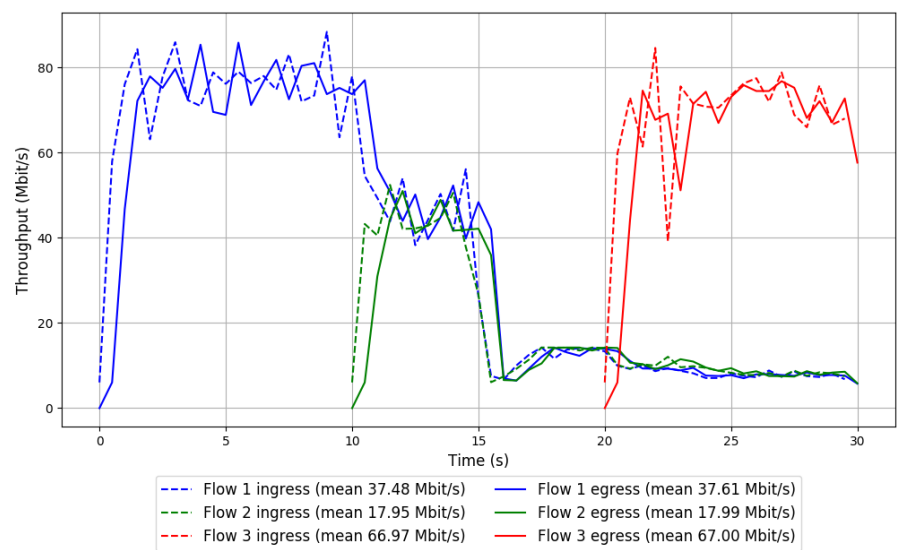Flow 1 (95th percentile 148.88 ms) · Flow 2 (95th percentile 165.00 ms) · Flow 3 (95th percentile 156.99 ms)

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

Start at: 2018-09-06 19:43:38
End at: 2018-09-06 19:44:08
Local clock offset: 4.268 ms
Remote clock offset: 1.373 ms


# Below is generated by plot.py at 2018-09-06 21:20:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.98 Mbit/s
95th percentile per-packet one-way delay: 154.475 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 47.10 Mbit/s
95th percentile per-packet one-way delay: 152.289 ms
Loss rate: 0.68%
-- Flow 2:
Average throughput: 37.42 Mbit/s
95th percentile per-packet one-way delay: 155.477 ms
Loss rate: 0.90%
-- Flow 3:
Average throughput: 30.46 Mbit/s
95th percentile per-packet one-way delay: 156.169 ms
Loss rate: 2.79%
```

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

Flow 1 ingress (mean 47.15 Mbit/s) — Flow 1 egress (mean 47.10 Mbit/s)
Flow 2 ingress (mean 37.44 Mbit/s) — Flow 2 egress (mean 37.42 Mbit/s)
Flow 3 ingress (mean 30.79 Mbit/s) — Flow 3 egress (mean 30.46 Mbit/s)

Flow 1 (95th percentile 152.29 ms) — Flow 2 (95th percentile 155.48 ms) — Flow 3 (95th percentile 156.17 ms)
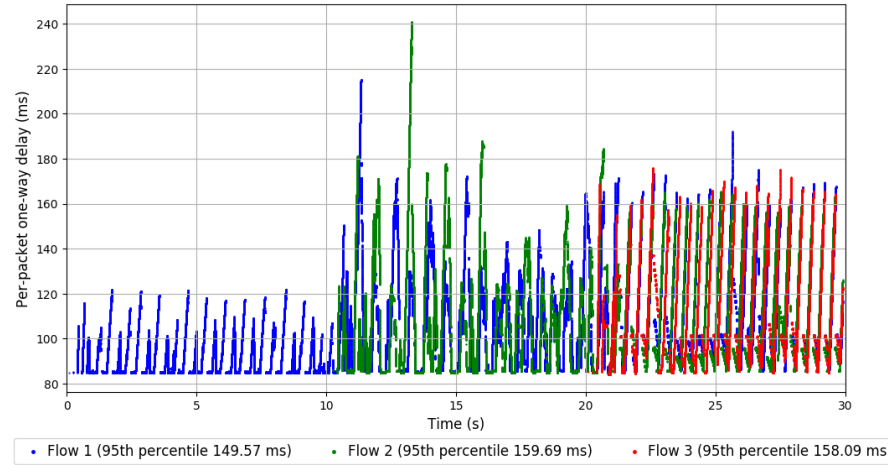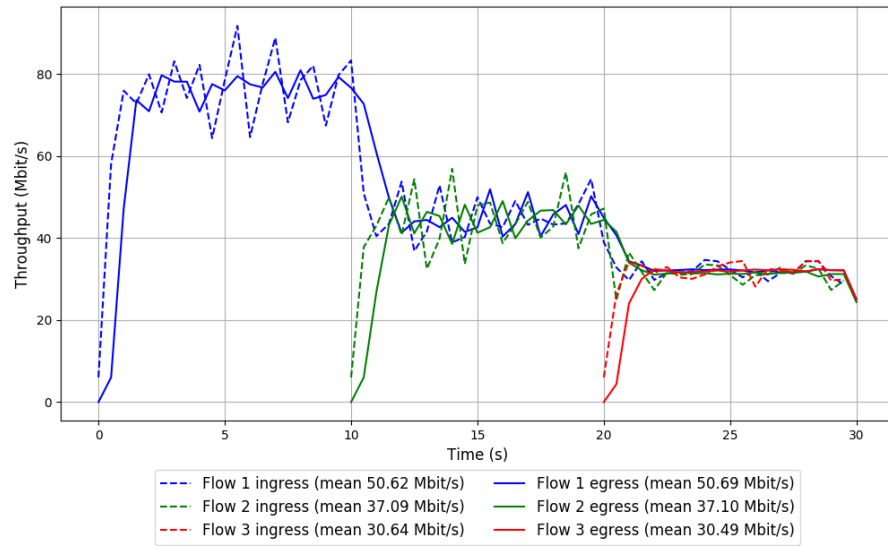
137

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

Start at: 2018-09-06 20:06:54
End at: 2018-09-06 20:07:24
Local clock offset: 0.644 ms
Remote clock offset: -1.909 ms


# Below is generated by plot.py at 2018-09-06 21:20:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.36 Mbit/s
95th percentile per-packet one-way delay: 164.647 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 50.33 Mbit/s
95th percentile per-packet one-way delay: 154.941 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 36.46 Mbit/s
95th percentile per-packet one-way delay: 168.929 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 26.81 Mbit/s
95th percentile per-packet one-way delay: 208.394 ms
Loss rate: 2.37%
```

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

- Flow 1 ingress (mean 50.28 Mbit/s)
- Flow 1 egress (mean 50.33 Mbit/s)
- Flow 2 ingress (mean 36.50 Mbit/s)
- Flow 2 egress (mean 36.46 Mbit/s)
- Flow 3 ingress (mean 26.98 Mbit/s)
- Flow 3 egress (mean 26.81 Mbit/s)

- Flow 1 (95th percentile 154.94 ms)
- Flow 2 (95th percentile 168.93 ms)
- Flow 3 (95th percentile 208.39 ms)

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

Start at: 2018-09-06 20:30:24
End at: 2018-09-06 20:30:54
Local clock offset: 4.222 ms
Remote clock offset: -1.303 ms


# Below is generated by plot.py at 2018-09-06 21:20:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 71.58 Mbit/s
95th percentile per-packet one-way delay: 129.843 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 37.61 Mbit/s
95th percentile per-packet one-way delay: 127.906 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 17.99 Mbit/s
95th percentile per-packet one-way delay: 148.175 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 67.00 Mbit/s
95th percentile per-packet one-way delay: 120.653 ms
Loss rate: 1.68%
```

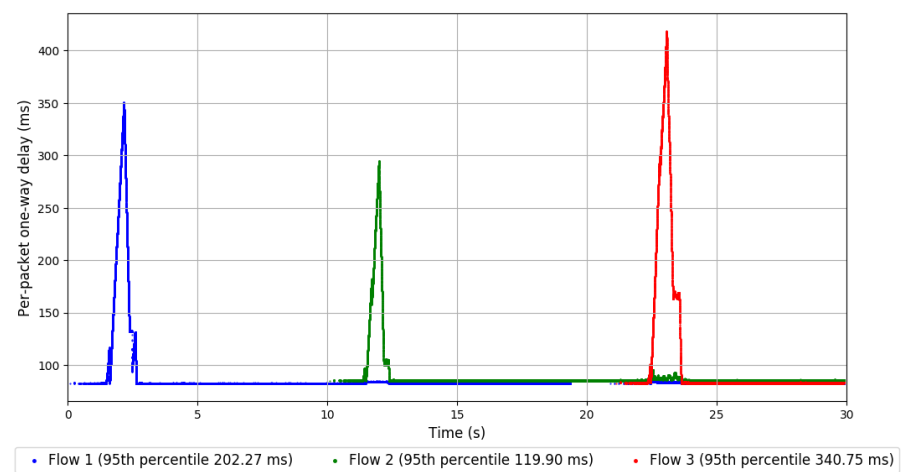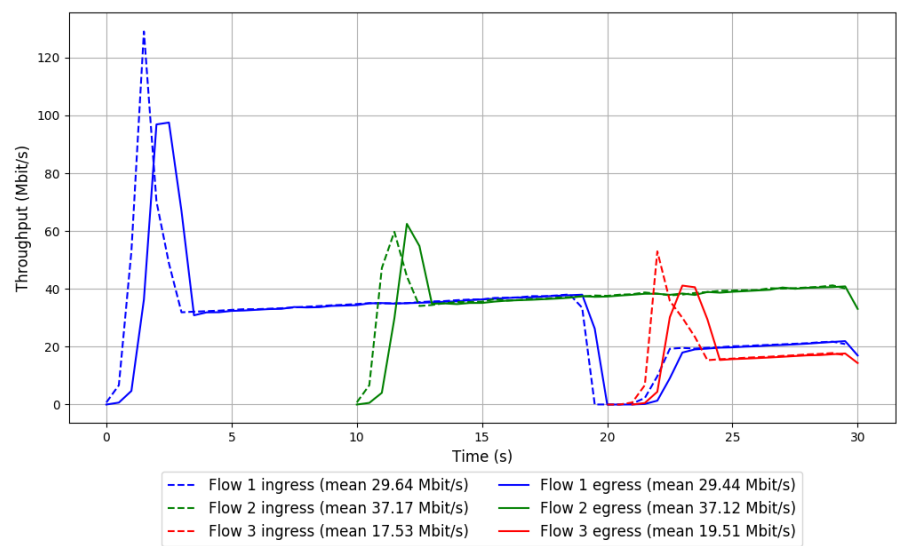# Run 4: Report of TaoVA-100x — Data Link

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

Start at: 2018-09-06 20:54:02
End at: 2018-09-06 20:54:32
Local clock offset: 5.264 ms
Remote clock offset: -0.895 ms

# Below is generated by plot.py at 2018-09-06 21:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.36 Mbit/s
95th percentile per-packet one-way delay: 155.091 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 50.69 Mbit/s
95th percentile per-packet one-way delay: 149.566 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 37.10 Mbit/s
95th percentile per-packet one-way delay: 159.691 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 30.49 Mbit/s
95th percentile per-packet one-way delay: 158.090 ms
Loss rate: 2.16%
```

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

```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-06 19:30:42
End at: 2018-09-06 19:31:12
Local clock offset: 4.307 ms
Remote clock offset: -2.975 ms


# Below is generated by plot.py at 2018-09-06 21:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.83 Mbit/s
95th percentile per-packet one-way delay: 196.792 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 29.44 Mbit/s
95th percentile per-packet one-way delay: 202.267 ms
Loss rate: 1.23%
-- Flow 2:
Average throughput: 37.12 Mbit/s
95th percentile per-packet one-way delay: 119.901 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 19.51 Mbit/s
95th percentile per-packet one-way delay: 340.745 ms
Loss rate: 1.95%
```
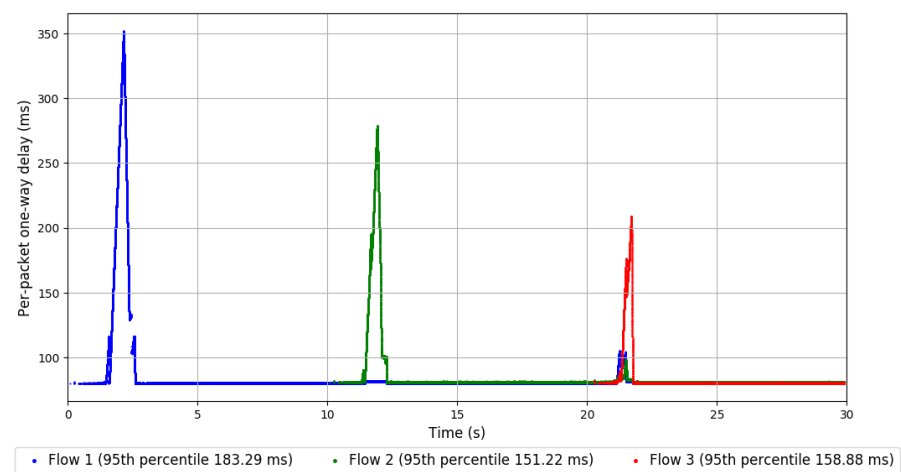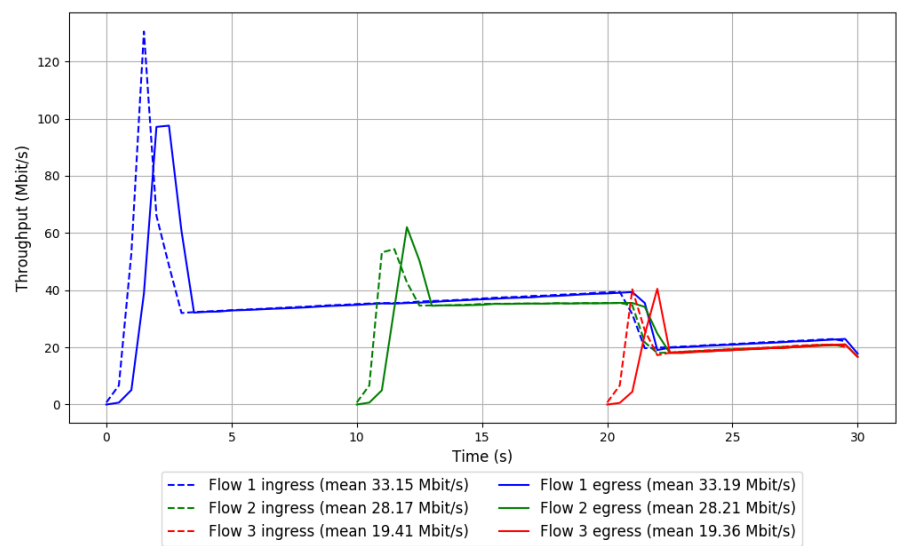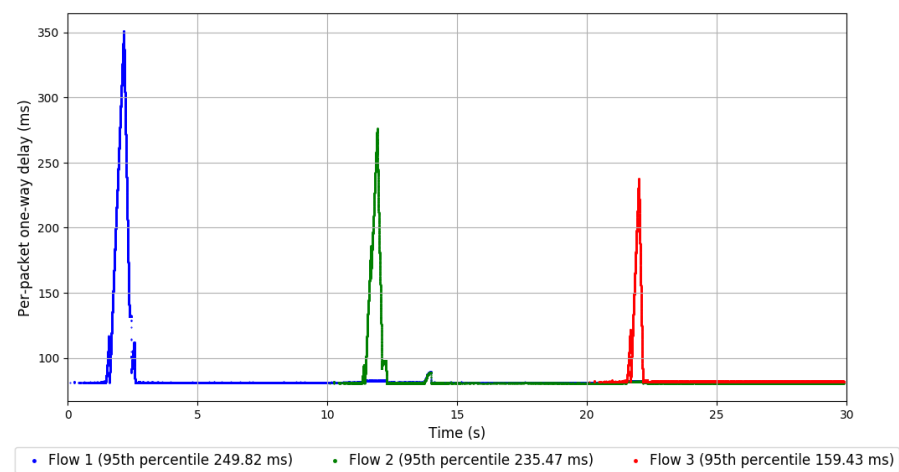
Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 29.64 Mbit/s)   Flow 1 egress (mean 29.44 Mbit/s)
Flow 2 ingress (mean 37.17 Mbit/s)   Flow 2 egress (mean 37.12 Mbit/s)
Flow 3 ingress (mean 17.53 Mbit/s)   Flow 3 egress (mean 19.51 Mbit/s)

Flow 1 (95th percentile 202.27 ms)   Flow 2 (95th percentile 119.90 ms)   Flow 3 (95th percentile 340.75 ms)

```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-06 19:54:01
End at: 2018-09-06 19:54:31
Local clock offset: 1.237 ms
Remote clock offset: 1.455 ms


# Below is generated by plot.py at 2018-09-06 21:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 58.29 Mbit/s
95th percentile per-packet one-way delay: 167.435 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 33.19 Mbit/s
95th percentile per-packet one-way delay: 183.287 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 28.21 Mbit/s
95th percentile per-packet one-way delay: 151.220 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 19.36 Mbit/s
95th percentile per-packet one-way delay: 158.883 ms
Loss rate: 1.89%
```
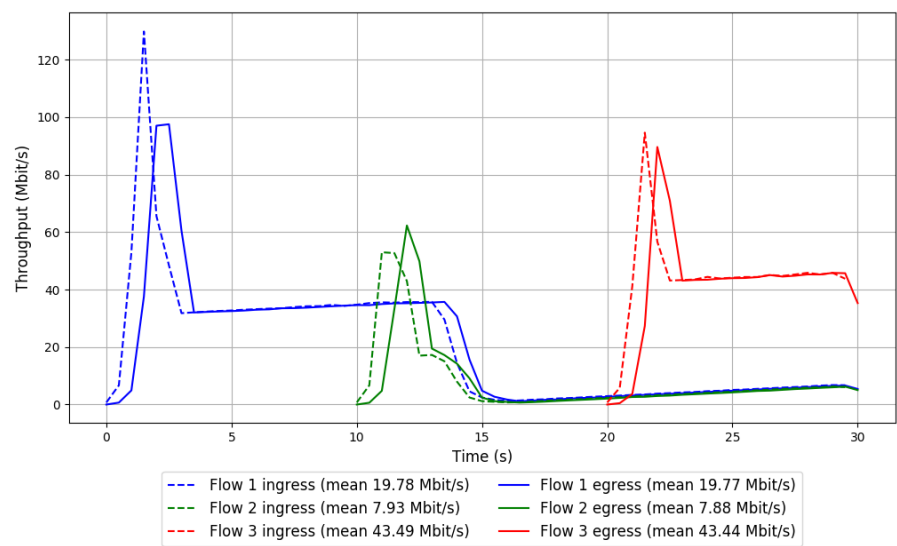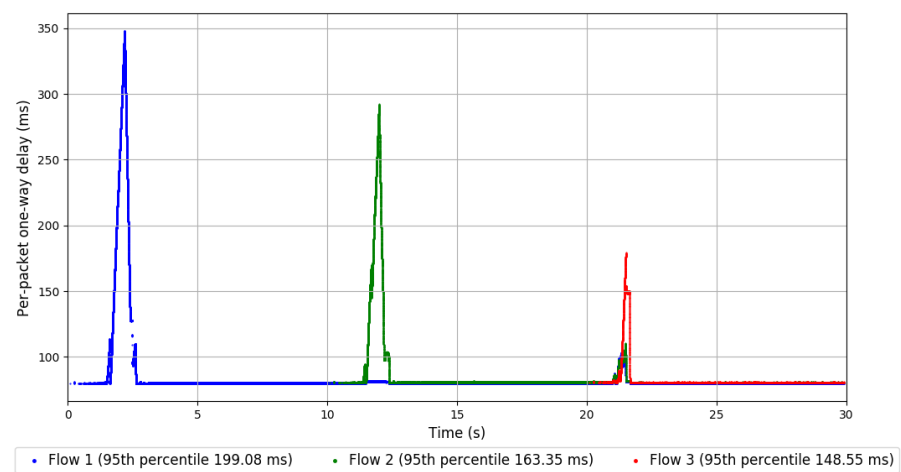
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-06 20:17:25
End at: 2018-09-06 20:17:55
Local clock offset: 1.366 ms
Remote clock offset: 1.942 ms


# Below is generated by plot.py at 2018-09-06 21:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 39.26 Mbit/s
95th percentile per-packet one-way delay: 213.636 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 19.77 Mbit/s
95th percentile per-packet one-way delay: 249.825 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 7.88 Mbit/s
95th percentile per-packet one-way delay: 235.467 ms
Loss rate: 1.47%
-- Flow 3:
Average throughput: 43.44 Mbit/s
95th percentile per-packet one-way delay: 159.427 ms
Loss rate: 1.86%
```
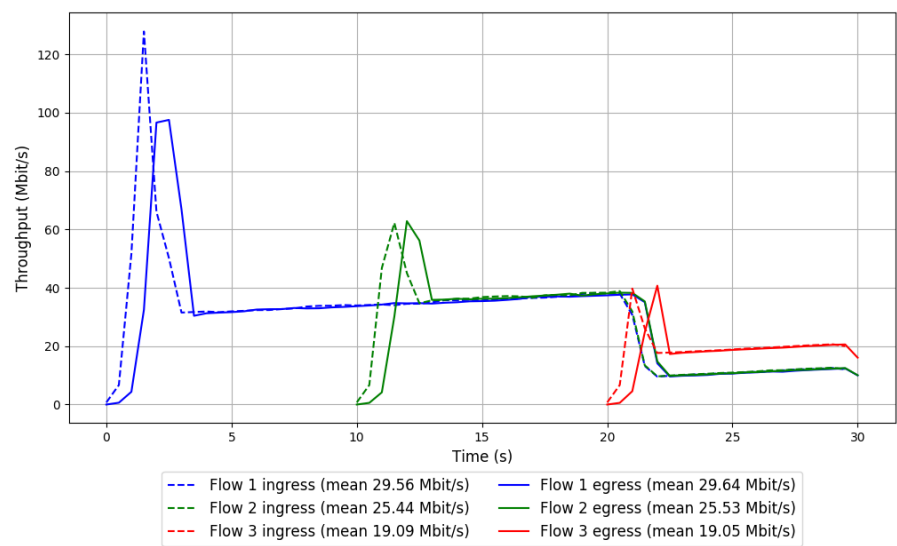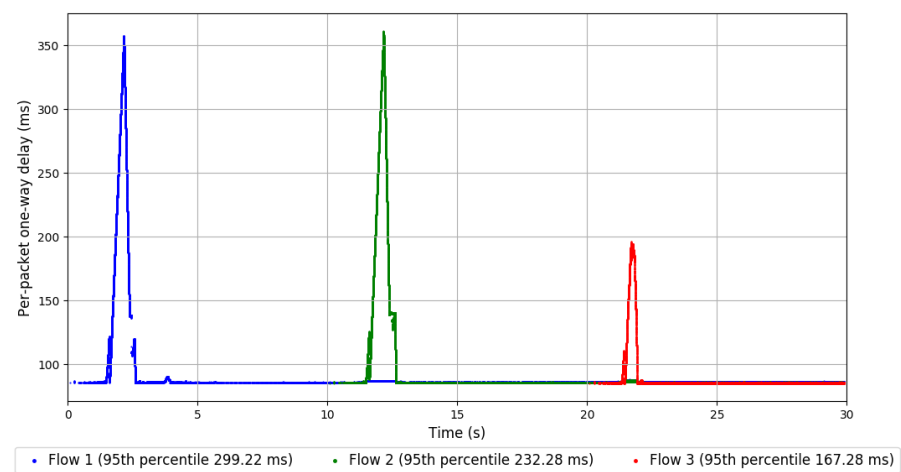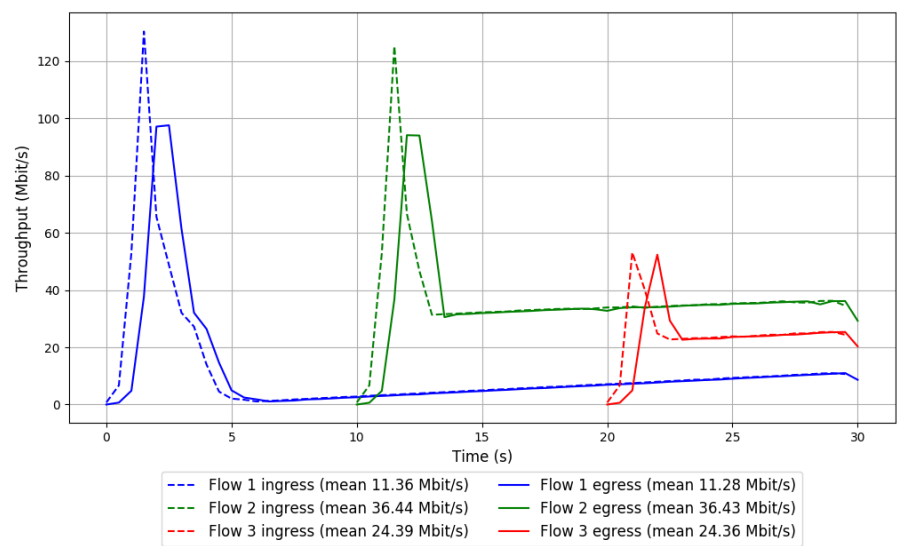
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 19.78 Mbit/s) — Flow 1 egress (mean 19.77 Mbit/s)
Flow 2 ingress (mean 7.93 Mbit/s) — Flow 2 egress (mean 7.88 Mbit/s)
Flow 3 ingress (mean 43.49 Mbit/s) — Flow 3 egress (mean 43.44 Mbit/s)

Flow 1 (95th percentile 249.82 ms)   Flow 2 (95th percentile 235.47 ms)   Flow 3 (95th percentile 159.43 ms)

149

```
Run 4: Statistics of TCP Vegas

Start at: 2018-09-06 20:40:44
End at: 2018-09-06 20:41:14
Local clock offset: 5.269 ms
Remote clock offset: 3.295 ms


# Below is generated by plot.py at 2018-09-06 21:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 52.85 Mbit/s
95th percentile per-packet one-way delay: 166.400 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 29.64 Mbit/s
95th percentile per-packet one-way delay: 199.081 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 25.53 Mbit/s
95th percentile per-packet one-way delay: 163.349 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 19.05 Mbit/s
95th percentile per-packet one-way delay: 148.549 ms
Loss rate: 1.86%
```
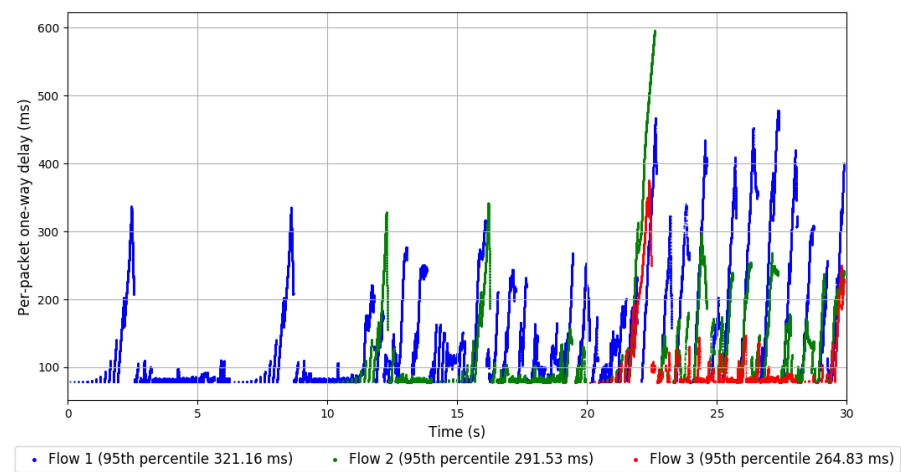
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 29.56 Mbit/s) --- Flow 1 egress (mean 29.64 Mbit/s)
Flow 2 ingress (mean 25.44 Mbit/s) --- Flow 2 egress (mean 25.53 Mbit/s)
Flow 3 ingress (mean 19.09 Mbit/s) --- Flow 3 egress (mean 19.05 Mbit/s)

Flow 1 (95th percentile 199.08 ms)   Flow 2 (95th percentile 163.35 ms)   Flow 3 (95th percentile 148.55 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-09-06 21:04:35
End at: 2018-09-06 21:05:05
Local clock offset: 6.115 ms
Remote clock offset: -0.797 ms


# Below is generated by plot.py at 2018-09-06 21:20:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 43.48 Mbit/s
95th percentile per-packet one-way delay: 245.770 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 11.28 Mbit/s
95th percentile per-packet one-way delay: 299.219 ms
Loss rate: 1.27%
-- Flow 2:
Average throughput: 36.43 Mbit/s
95th percentile per-packet one-way delay: 232.278 ms
Loss rate: 0.88%
-- Flow 3:
Average throughput: 24.36 Mbit/s
95th percentile per-packet one-way delay: 167.283 ms
Loss rate: 1.78%
```
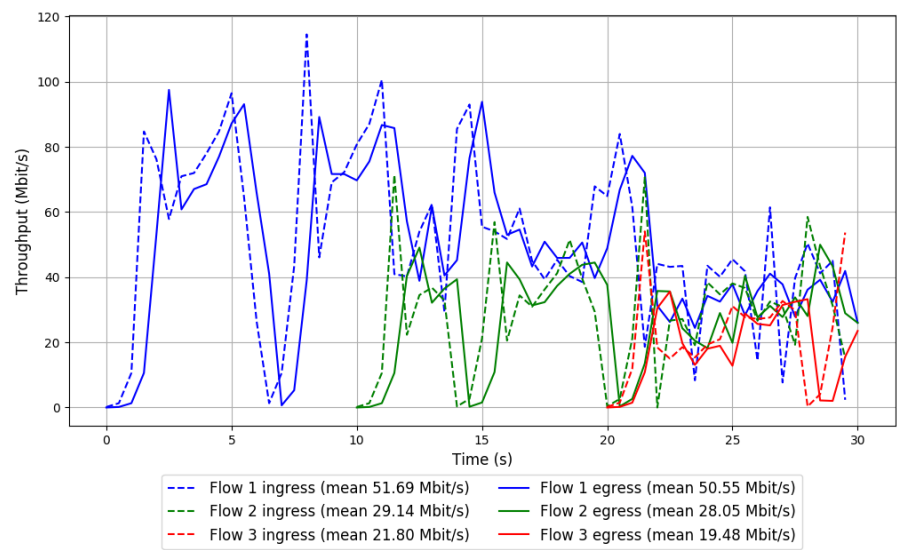
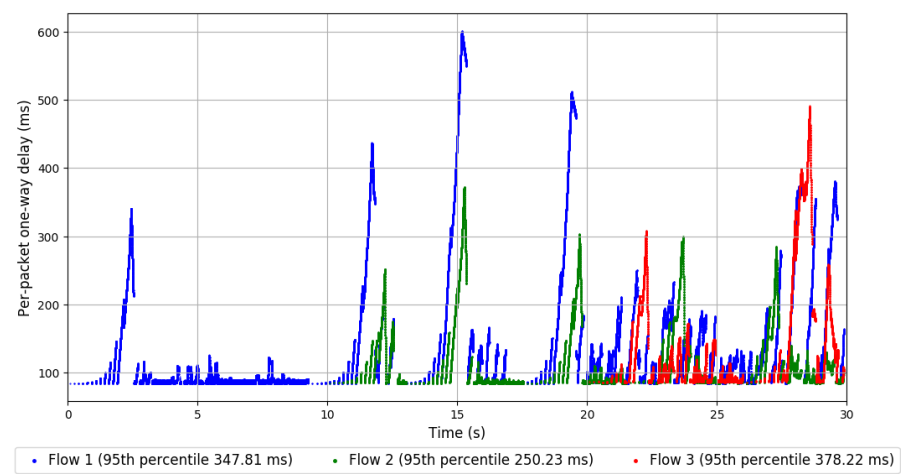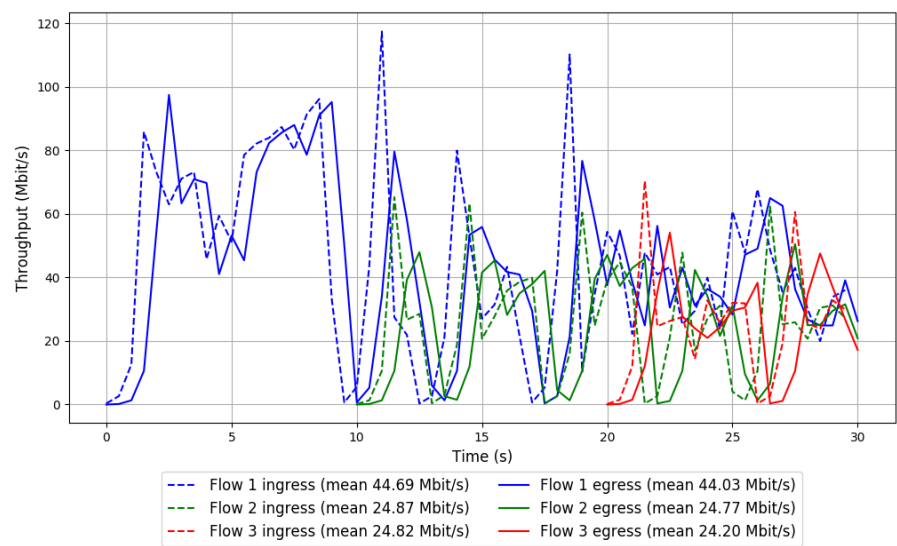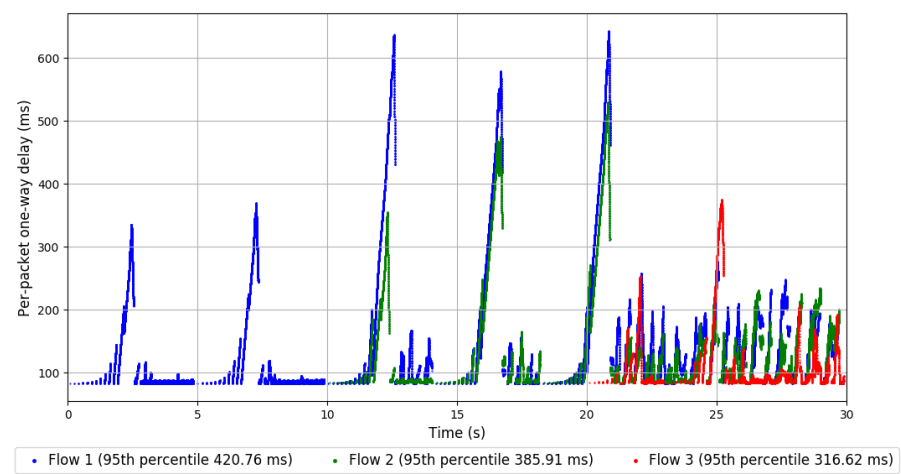Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-09-06 19:33:16
End at: 2018-09-06 19:33:46
Local clock offset: 3.518 ms
Remote clock offset: 1.259 ms


# Below is generated by plot.py at 2018-09-06 21:20:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 75.58 Mbit/s
95th percentile per-packet one-way delay: 310.292 ms
Loss rate: 2.82%
-- Flow 1:
Average throughput: 50.55 Mbit/s
95th percentile per-packet one-way delay: 321.157 ms
Loss rate: 1.34%
-- Flow 2:
Average throughput: 28.05 Mbit/s
95th percentile per-packet one-way delay: 291.534 ms
Loss rate: 3.23%
-- Flow 3:
Average throughput: 19.48 Mbit/s
95th percentile per-packet one-way delay: 264.830 ms
Loss rate: 12.16%
```

Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 51.69 Mbit/s)   Flow 1 egress (mean 50.55 Mbit/s)
Flow 2 ingress (mean 29.14 Mbit/s)   Flow 2 egress (mean 28.05 Mbit/s)
Flow 3 ingress (mean 21.80 Mbit/s)   Flow 3 egress (mean 19.48 Mbit/s)

Flow 1 (95th percentile 321.16 ms)   Flow 2 (95th percentile 291.53 ms)   Flow 3 (95th percentile 264.83 ms)
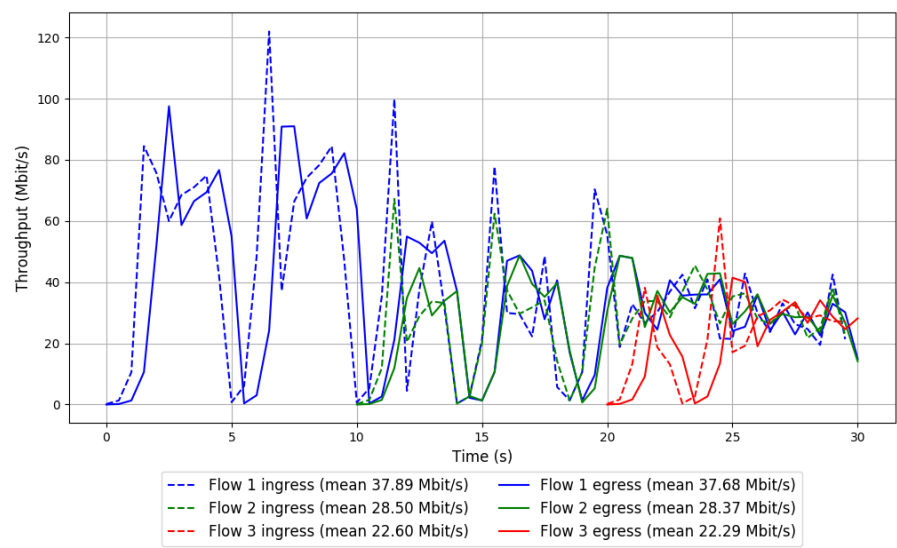
```
Run 2: Statistics of Verus

Start at: 2018-09-06 19:56:35
End at: 2018-09-06 19:57:05
Local clock offset: 1.63 ms
Remote clock offset: -2.226 ms


# Below is generated by plot.py at 2018-09-06 21:21:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.43 Mbit/s
95th percentile per-packet one-way delay: 335.079 ms
Loss rate: 1.87%
-- Flow 1:
Average throughput: 44.03 Mbit/s
95th percentile per-packet one-way delay: 347.814 ms
Loss rate: 1.70%
-- Flow 2:
Average throughput: 24.77 Mbit/s
95th percentile per-packet one-way delay: 250.228 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 24.20 Mbit/s
95th percentile per-packet one-way delay: 378.222 ms
Loss rate: 4.09%
```

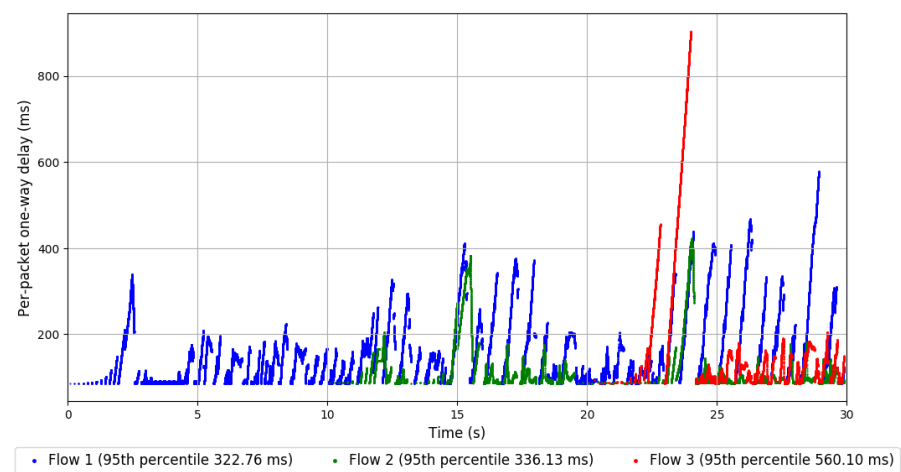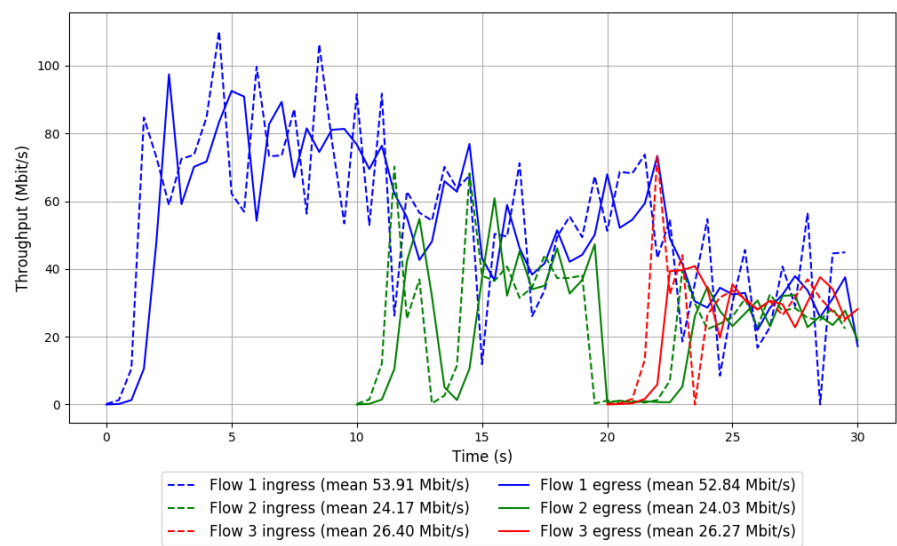## Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-09-06 20:19:59
End at: 2018-09-06 20:20:29
Local clock offset: 1.702 ms
Remote clock offset: -1.526 ms


# Below is generated by plot.py at 2018-09-06 21:21:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 63.66 Mbit/s
95th percentile per-packet one-way delay: 383.394 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 37.68 Mbit/s
95th percentile per-packet one-way delay: 420.756 ms
Loss rate: 1.10%
-- Flow 2:
Average throughput: 28.37 Mbit/s
95th percentile per-packet one-way delay: 385.914 ms
Loss rate: 2.18%
-- Flow 3:
Average throughput: 22.29 Mbit/s
95th percentile per-packet one-way delay: 316.621 ms
Loss rate: 1.92%
```

Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-09-06 20:43:19
End at: 2018-09-06 20:43:49
Local clock offset: 6.238 ms
Remote clock offset: -0.838 ms


# Below is generated by plot.py at 2018-09-06 21:21:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.42 Mbit/s
95th percentile per-packet one-way delay: 339.975 ms
Loss rate: 2.17%
-- Flow 1:
Average throughput: 52.84 Mbit/s
95th percentile per-packet one-way delay: 322.759 ms
Loss rate: 2.40%
-- Flow 2:
Average throughput: 24.03 Mbit/s
95th percentile per-packet one-way delay: 336.130 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 26.27 Mbit/s
95th percentile per-packet one-way delay: 560.101 ms
Loss rate: 2.14%
```
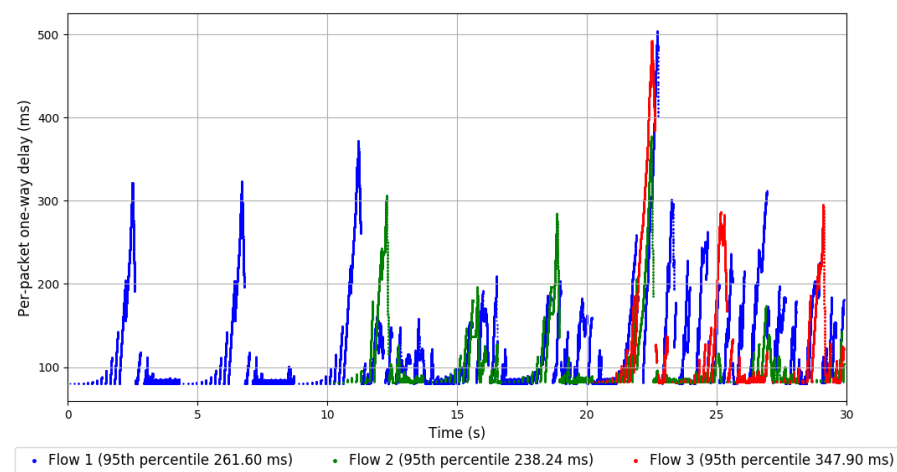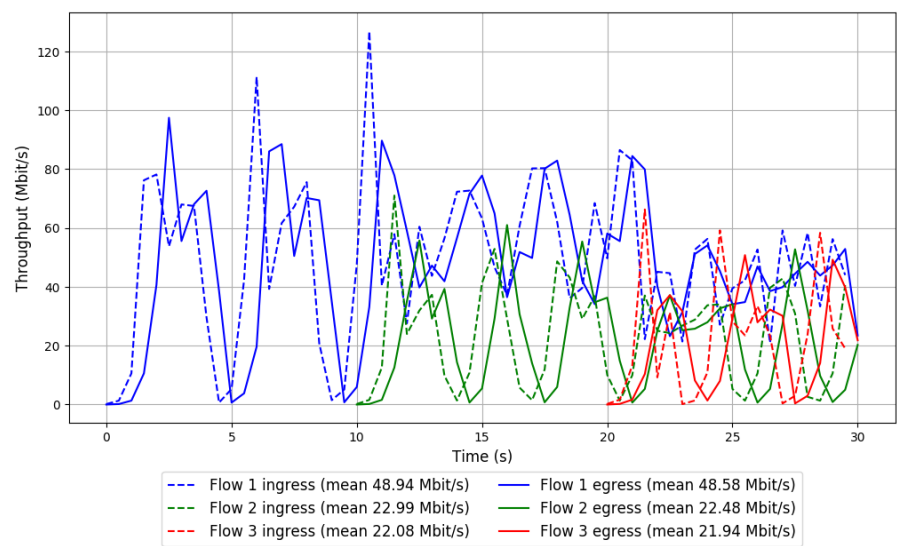
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-09-06 21:07:08
End at: 2018-09-06 21:07:38
Local clock offset: 5.404 ms
Remote clock offset: 3.159 ms


# Below is generated by plot.py at 2018-09-06 21:21:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.72 Mbit/s
95th percentile per-packet one-way delay: 264.962 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 48.58 Mbit/s
95th percentile per-packet one-way delay: 261.604 ms
Loss rate: 1.27%
-- Flow 2:
Average throughput: 22.48 Mbit/s
95th percentile per-packet one-way delay: 238.236 ms
Loss rate: 3.03%
-- Flow 3:
Average throughput: 21.94 Mbit/s
95th percentile per-packet one-way delay: 347.898 ms
Loss rate: 0.75%
```

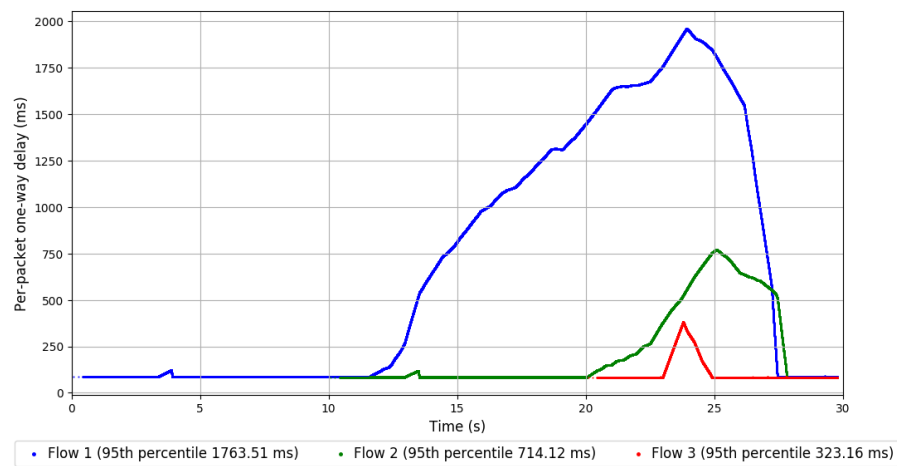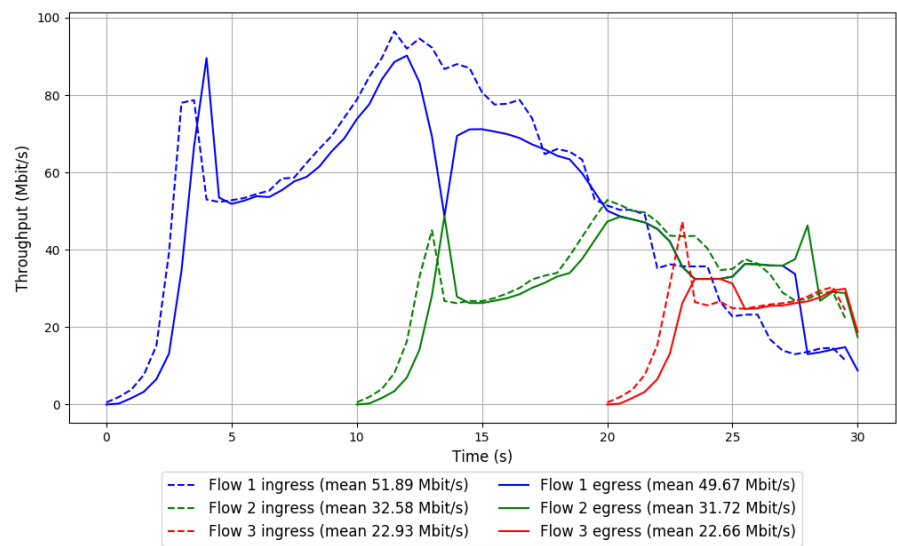## Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-06 19:24:08
End at: 2018-09-06 19:24:38
Local clock offset: 4.304 ms
Remote clock offset: -4.191 ms


# Below is generated by plot.py at 2018-09-06 21:21:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.10 Mbit/s
95th percentile per-packet one-way delay: 1667.508 ms
Loss rate: 4.28%
-- Flow 1:
Average throughput: 49.67 Mbit/s
95th percentile per-packet one-way delay: 1763.507 ms
Loss rate: 4.83%
-- Flow 2:
Average throughput: 31.72 Mbit/s
95th percentile per-packet one-way delay: 714.125 ms
Loss rate: 3.46%
-- Flow 3:
Average throughput: 22.66 Mbit/s
95th percentile per-packet one-way delay: 323.160 ms
Loss rate: 2.87%
```

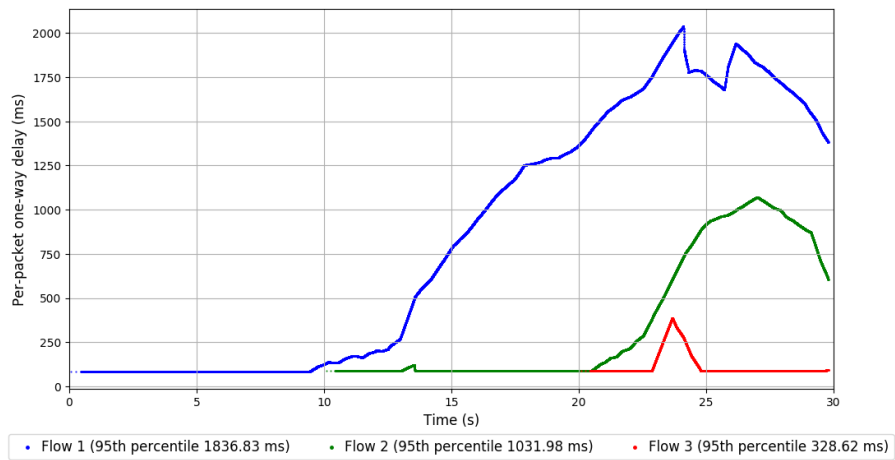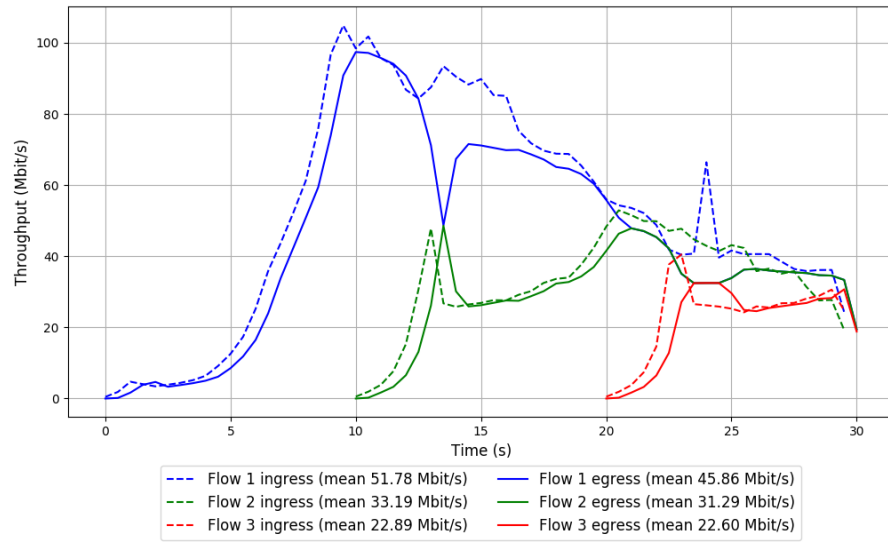# Run 1: Report of PCC-Vivace — Data Link

- - - - Flow 1 ingress (mean 51.89 Mbit/s) ——— Flow 1 egress (mean 49.67 Mbit/s)
- - - - Flow 2 ingress (mean 32.58 Mbit/s) ——— Flow 2 egress (mean 31.72 Mbit/s)
- - - - Flow 3 ingress (mean 22.93 Mbit/s) ——— Flow 3 egress (mean 22.66 Mbit/s)

• Flow 1 (95th percentile 1763.51 ms)   • Flow 2 (95th percentile 714.12 ms)   • Flow 3 (95th percentile 323.16 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-06 19:47:38
End at: 2018-09-06 19:48:08
Local clock offset: 2.696 ms
Remote clock offset: -3.954 ms


# Below is generated by plot.py at 2018-09-06 21:21:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 73.98 Mbit/s
95th percentile per-packet one-way delay: 1785.149 ms
Loss rate: 9.63%
-- Flow 1:
Average throughput: 45.86 Mbit/s
95th percentile per-packet one-way delay: 1836.830 ms
Loss rate: 11.92%
-- Flow 2:
Average throughput: 31.29 Mbit/s
95th percentile per-packet one-way delay: 1031.979 ms
Loss rate: 6.54%
-- Flow 3:
Average throughput: 22.60 Mbit/s
95th percentile per-packet one-way delay: 328.623 ms
Loss rate: 2.98%
```

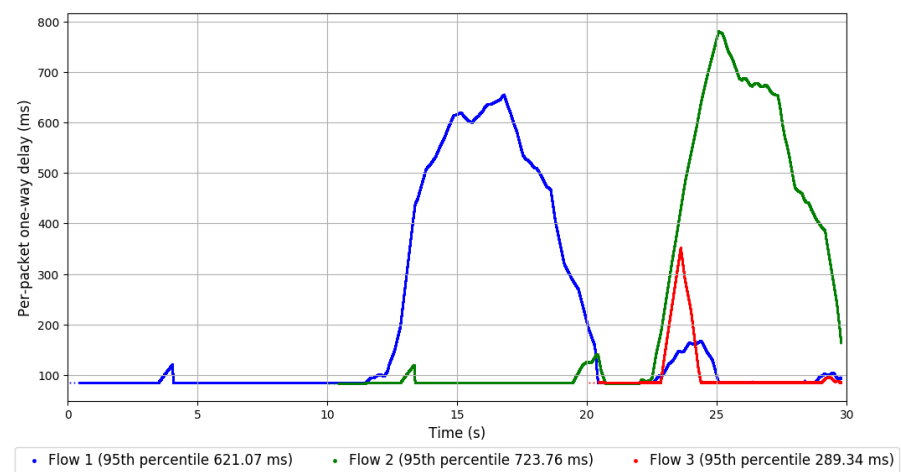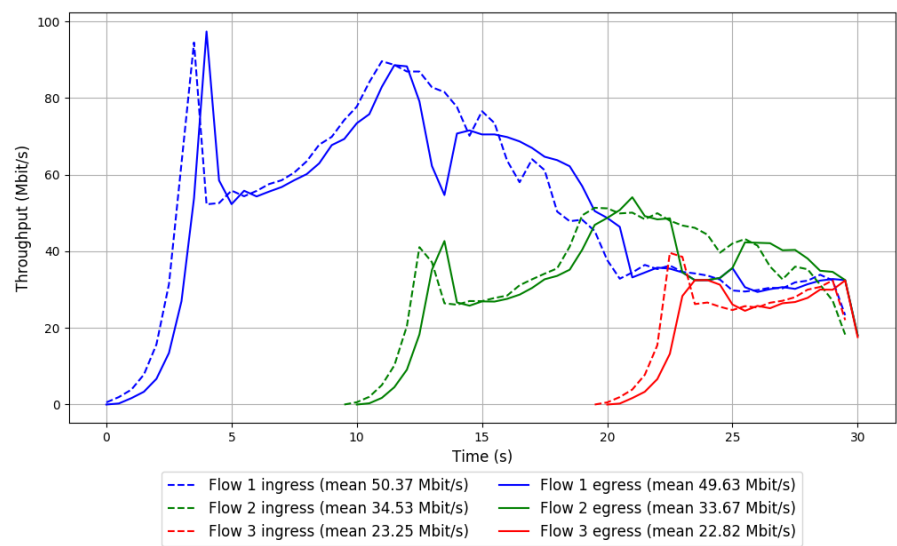Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 51.78 Mbit/s) --- Flow 1 egress (mean 45.86 Mbit/s)
Flow 2 ingress (mean 33.19 Mbit/s) --- Flow 2 egress (mean 31.29 Mbit/s)
Flow 3 ingress (mean 22.89 Mbit/s) --- Flow 3 egress (mean 22.60 Mbit/s)

Flow 1 (95th percentile 1836.83 ms) • Flow 2 (95th percentile 1031.98 ms) • Flow 3 (95th percentile 328.62 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-06 20:10:50
End at: 2018-09-06 20:11:20
Local clock offset: -0.375 ms
Remote clock offset: -2.116 ms


# Below is generated by plot.py at 2018-09-06 21:21:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.42 Mbit/s
95th percentile per-packet one-way delay: 653.718 ms
Loss rate: 2.54%
-- Flow 1:
Average throughput: 49.63 Mbit/s
95th percentile per-packet one-way delay: 621.067 ms
Loss rate: 2.02%
-- Flow 2:
Average throughput: 33.67 Mbit/s
95th percentile per-packet one-way delay: 723.759 ms
Loss rate: 3.33%
-- Flow 3:
Average throughput: 22.82 Mbit/s
95th percentile per-packet one-way delay: 289.336 ms
Loss rate: 3.59%
```

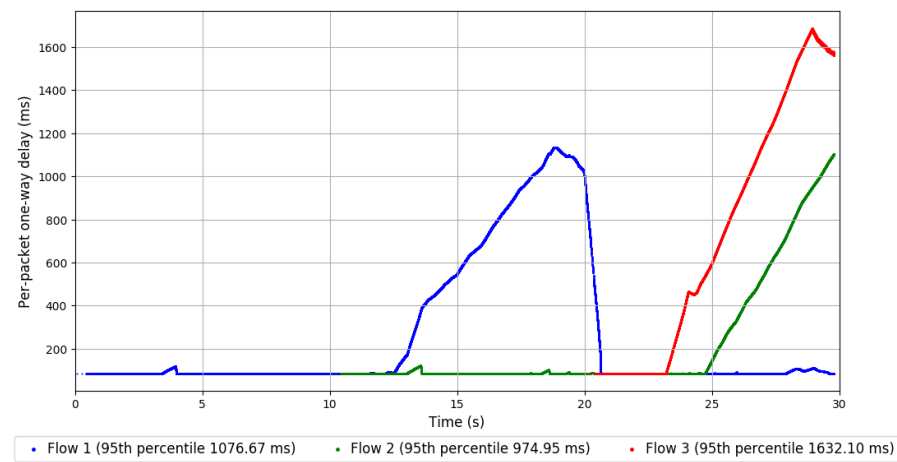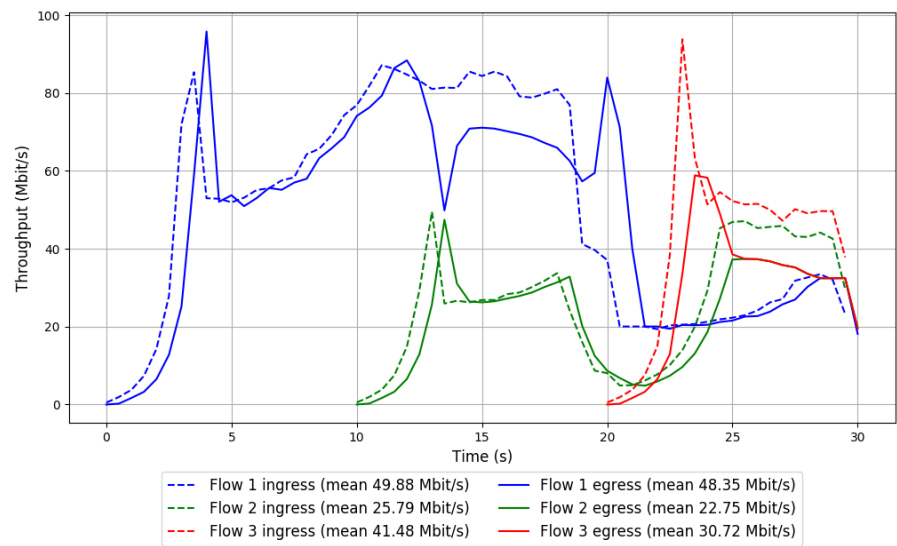# Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 50.37 Mbit/s) Flow 1 egress (mean 49.63 Mbit/s)
Flow 2 ingress (mean 34.53 Mbit/s) Flow 2 egress (mean 33.67 Mbit/s)
Flow 3 ingress (mean 23.25 Mbit/s) Flow 3 egress (mean 22.82 Mbit/s)

Flow 1 (95th percentile 621.07 ms)   Flow 2 (95th percentile 723.76 ms)   Flow 3 (95th percentile 289.34 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-06 20:34:20
End at: 2018-09-06 20:34:50
Local clock offset: 5.513 ms
Remote clock offset: -1.031 ms


# Below is generated by plot.py at 2018-09-06 21:21:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 73.47 Mbit/s
95th percentile per-packet one-way delay: 1126.459 ms
Loss rate: 9.53%
-- Flow 1:
Average throughput: 48.35 Mbit/s
95th percentile per-packet one-way delay: 1076.673 ms
Loss rate: 3.62%
-- Flow 2:
Average throughput: 22.75 Mbit/s
95th percentile per-packet one-way delay: 974.947 ms
Loss rate: 12.55%
-- Flow 3:
Average throughput: 30.72 Mbit/s
95th percentile per-packet one-way delay: 1632.103 ms
Loss rate: 27.24%
```
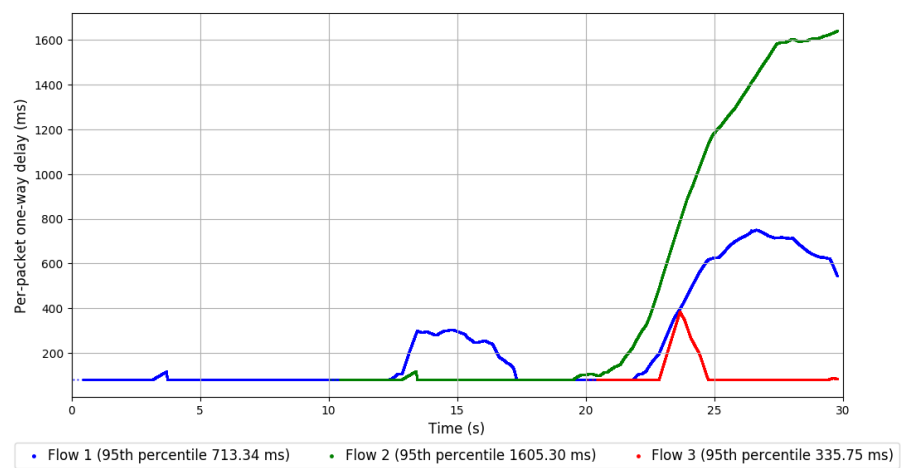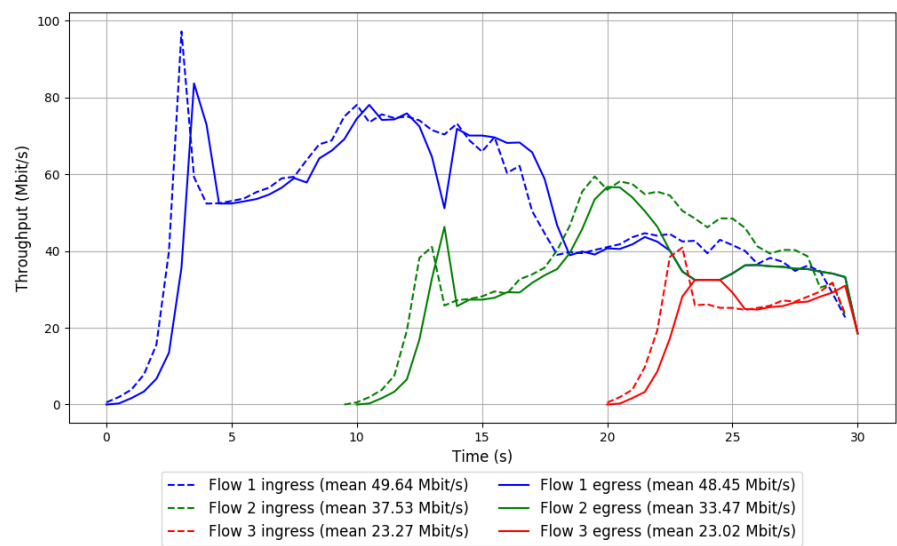
Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-06 20:58:08
End at: 2018-09-06 20:58:38
Local clock offset: 6.039 ms
Remote clock offset: 3.376 ms


# Below is generated by plot.py at 2018-09-06 21:21:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.17 Mbit/s
95th percentile per-packet one-way delay: 1397.265 ms
Loss rate: 5.56%
-- Flow 1:
Average throughput: 48.45 Mbit/s
95th percentile per-packet one-way delay: 713.343 ms
Loss rate: 2.96%
-- Flow 2:
Average throughput: 33.47 Mbit/s
95th percentile per-packet one-way delay: 1605.295 ms
Loss rate: 11.58%
-- Flow 3:
Average throughput: 23.02 Mbit/s
95th percentile per-packet one-way delay: 335.750 ms
Loss rate: 2.81%
```

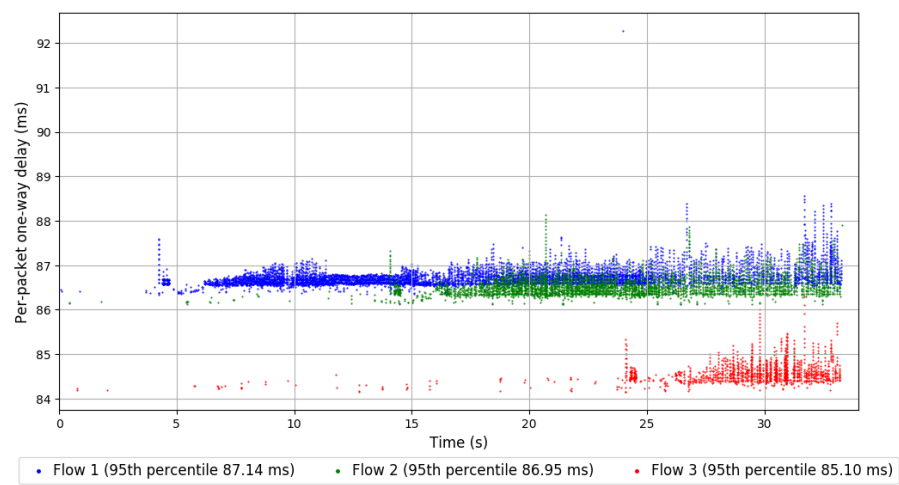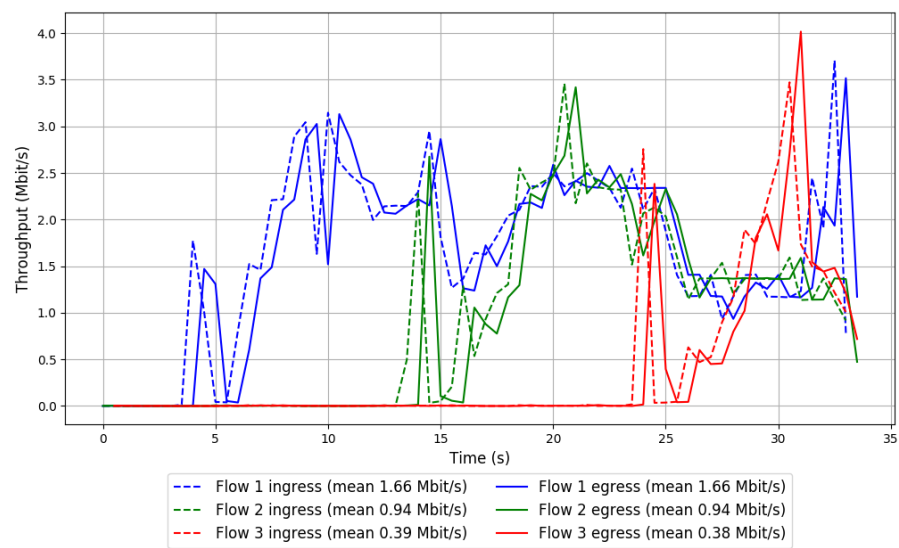## Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 49.64 Mbit/s)   Flow 1 egress (mean 48.45 Mbit/s)
Flow 2 ingress (mean 37.53 Mbit/s)   Flow 2 egress (mean 33.47 Mbit/s)
Flow 3 ingress (mean 23.27 Mbit/s)   Flow 3 egress (mean 23.02 Mbit/s)

Flow 1 (95th percentile 713.34 ms)   Flow 2 (95th percentile 1605.30 ms)   Flow 3 (95th percentile 335.75 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-09-06 19:22:56
End at: 2018-09-06 19:23:26
Local clock offset: 4.3 ms
Remote clock offset: -4.286 ms


# Below is generated by plot.py at 2018-09-06 21:21:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.96 Mbit/s
95th percentile per-packet one-way delay: 87.059 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 87.144 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 86.953 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 85.104 ms
Loss rate: 2.08%
```

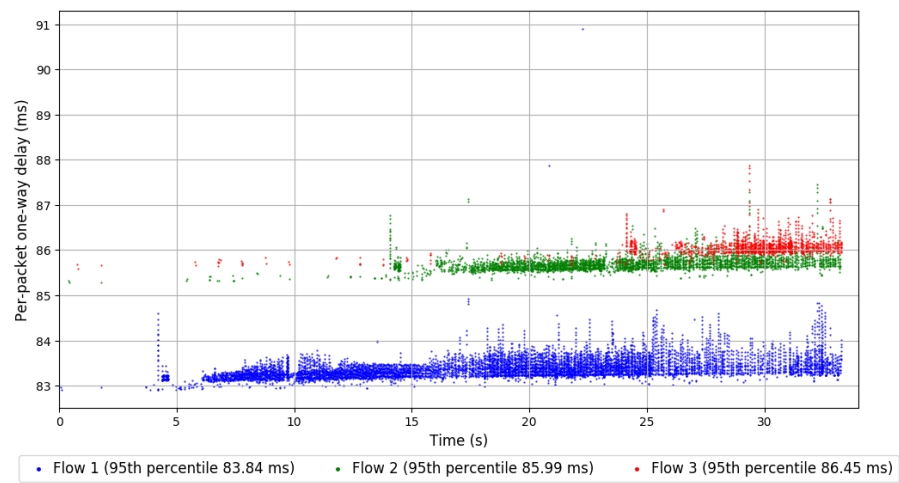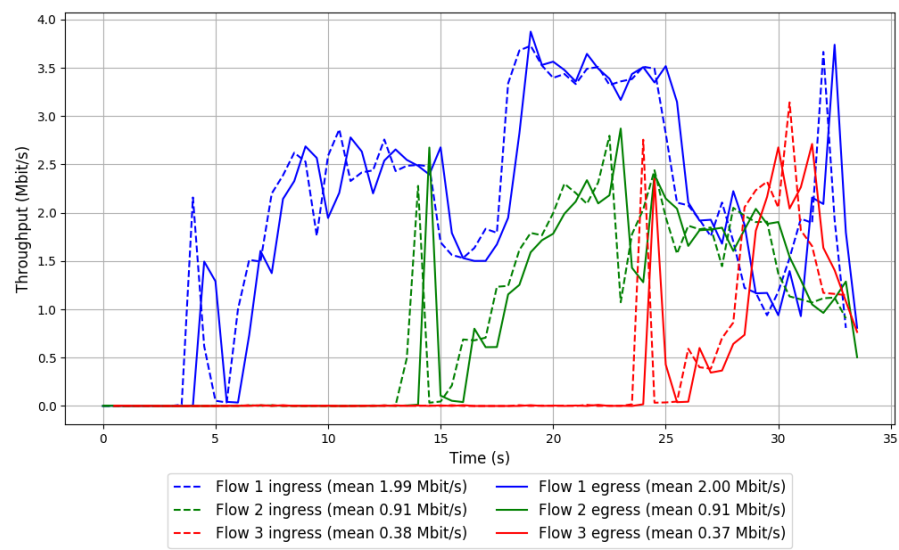Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-09-06 19:46:26
End at: 2018-09-06 19:46:56
Local clock offset: 3.147 ms
Remote clock offset: -3.959 ms


# Below is generated by plot.py at 2018-09-06 21:21:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 86.097 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 83.839 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 85.993 ms
Loss rate: 0.89%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 86.447 ms
Loss rate: 1.86%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-09-06 20:09:37
End at: 2018-09-06 20:10:07
Local clock offset: 0.479 ms
Remote clock offset: 2.372 ms


# Below is generated by plot.py at 2018-09-06 21:21:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.78 Mbit/s
95th percentile per-packet one-way delay: 81.746 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 81.356 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 81.564 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 81.914 ms
Loss rate: 1.59%
```
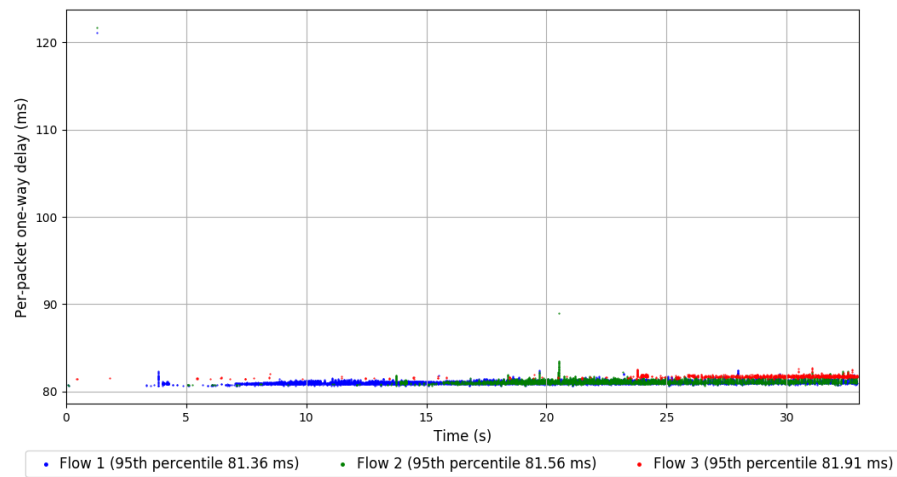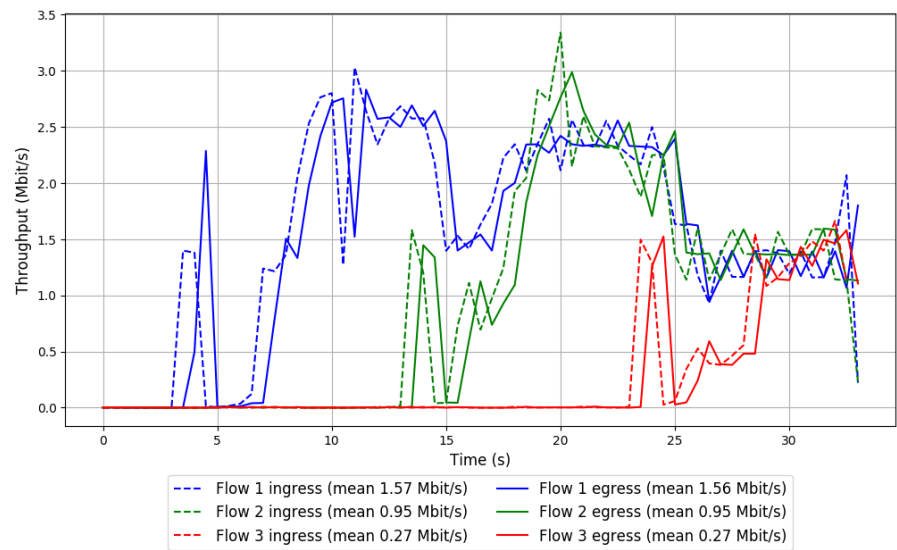
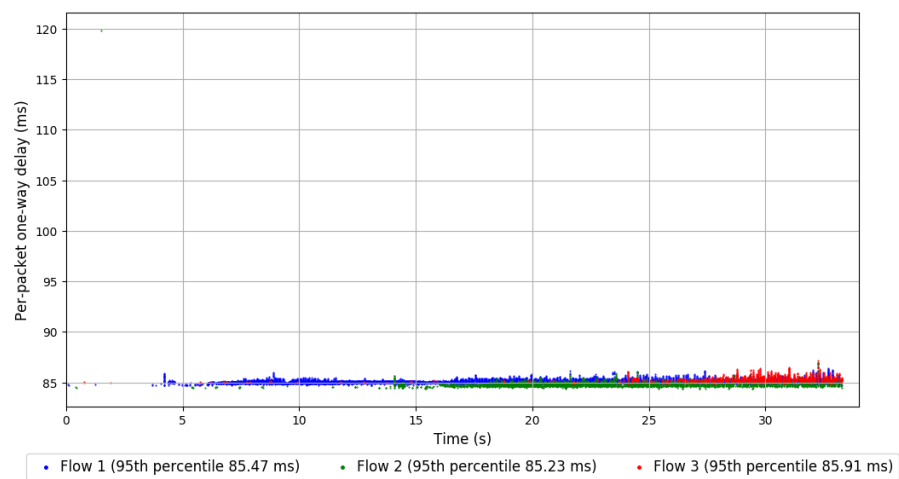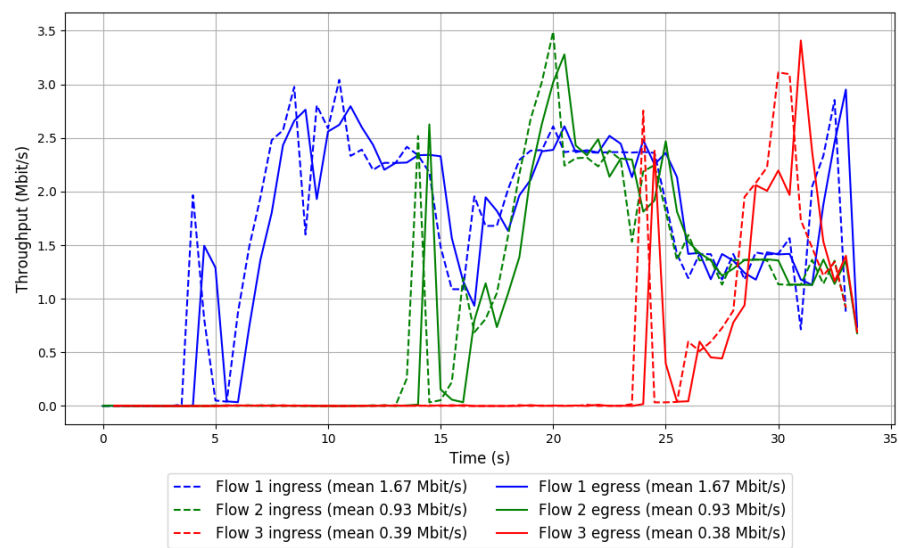Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-09-06 20:33:06
End at: 2018-09-06 20:33:36
Local clock offset: 5.344 ms
Remote clock offset: -1.486 ms


# Below is generated by plot.py at 2018-09-06 21:21:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.98 Mbit/s
95th percentile per-packet one-way delay: 85.534 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 85.473 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 85.227 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 85.909 ms
Loss rate: 1.80%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-09-06 20:56:55
End at: 2018-09-06 20:57:25
Local clock offset: 5.266 ms
Remote clock offset: -0.423 ms


# Below is generated by plot.py at 2018-09-06 21:21:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.97 Mbit/s
95th percentile per-packet one-way delay: 85.054 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 84.534 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 84.596 ms
Loss rate: 0.39%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 85.555 ms
Loss rate: 1.90%
```

Run 5: Report of WebRTC media — Data Link