Pantheon Report

Generated at 2018-11-30 17:34:56 (UTC).

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

Repeated the test of 19 congestion control schemes 5 times.

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

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.
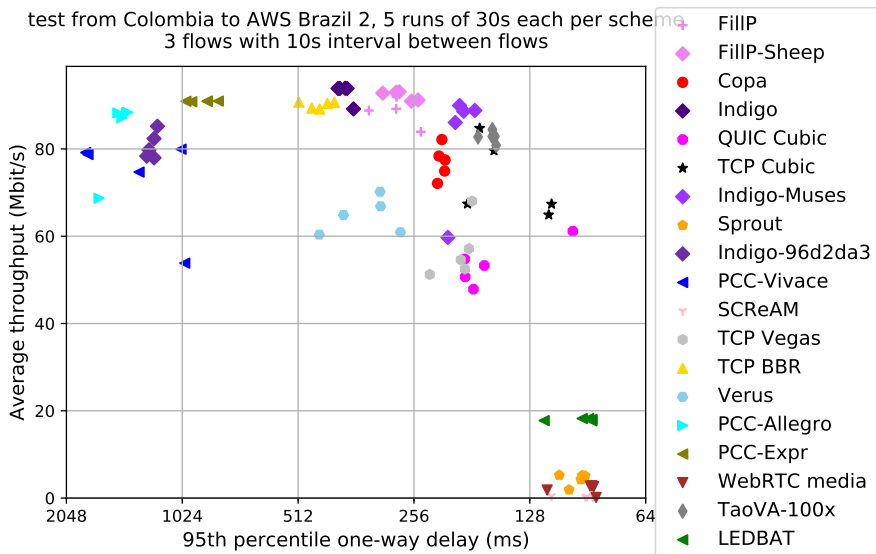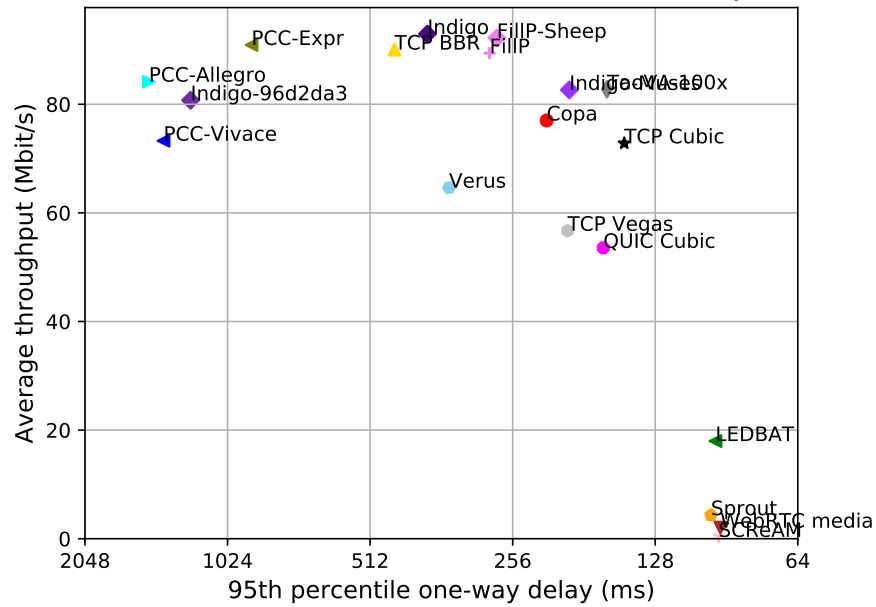
```
System info:
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
```

```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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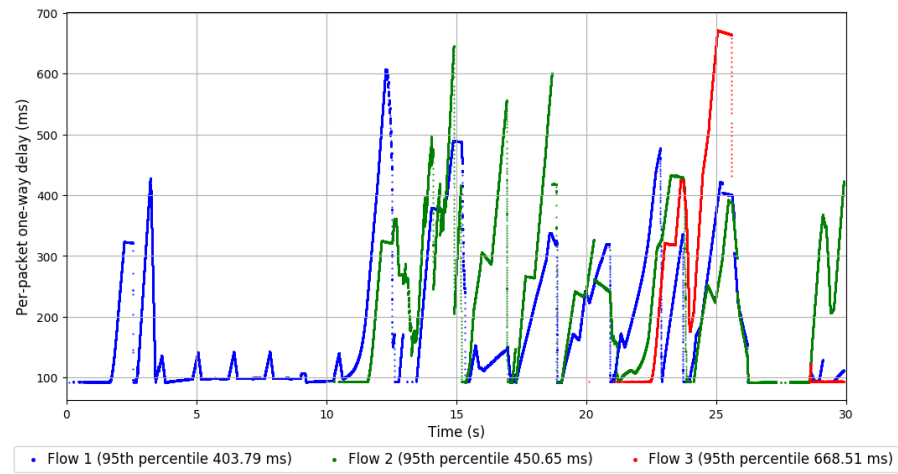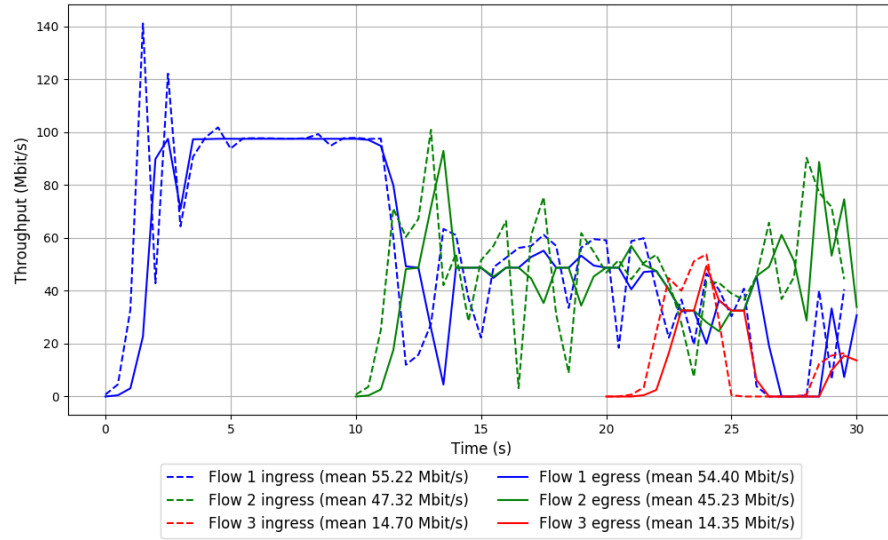3 flows with 10s interval between flows (mean of all runs by scheme)

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	54.54	39.69	27.88	414.69	531.84	492.61	2.10	4.42	7.07
Copa	5	46.23	33.93	25.07	218.61	155.46	155.47	0.65	0.87	2.02
TCP Cubic	5	41.99	33.60	25.92	158.28	149.39	153.49	0.41	0.70	2.36
FillP	5	55.44	36.90	28.44	286.45	284.97	312.47	0.99	2.91	3.77
FillP-Sheep	5	56.65	38.57	30.31	293.90	224.99	311.28	1.09	1.69	3.45
Indigo	5	57.59	38.90	29.38	414.89	148.54	146.87	6.91	1.28	3.22
Indigo-96d2da3	5	49.31	33.75	27.63	1175.80	1364.12	1189.90	23.49	33.66	40.57
LEDBAT	5	11.76	7.62	3.63	95.51	95.29	94.43	1.16	1.77	3.63
Indigo-Muses	5	52.55	35.07	22.76	190.42	210.59	211.16	1.03	2.22	3.50
PCC-Allegro	5	50.67	35.97	29.53	1411.12	1259.62	1422.23	24.14	18.13	21.52
PCC-Expr	5	56.70	38.98	25.80	929.33	805.86	247.26	26.08	5.66	2.85
QUIC Cubic	5	36.80	18.15	14.42	130.79	187.03	270.87	0.61	1.48	2.32
SCReAM	5	0.16	0.16	0.21	94.10	93.99	93.83	0.44	0.86	1.59
Sprout	5	2.49	1.91	1.78	96.95	97.78	95.31	0.69	0.99	3.96
TaoVA-100x	5	48.64	36.70	29.62	156.80	169.84	159.65	0.50	0.90	2.21
TCP Vegas	5	29.84	29.79	21.52	211.00	169.62	218.54	0.46	0.53	1.90
Verus	5	39.32	26.76	23.00	315.79	410.33	401.80	0.57	1.73	3.35
PCC-Vivace	5	46.78	30.77	19.59	1243.26	905.44	326.07	4.16	4.48	3.17
WebRTC media	5	1.14	0.61	0.30	93.15	93.20	93.11	0.39	0.80	1.61

```
Run 1: Statistics of TCP BBR

Start at: 2018-11-30 15:34:18
End at: 2018-11-30 15:34:48
Local clock offset: -4.488 ms
Remote clock offset: -175.106 ms


# Below is generated by plot.py at 2018-11-30 17:24:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.15 Mbit/s
95th percentile per-packet one-way delay: 450.209 ms
Loss rate: 3.27%
-- Flow 1:
Average throughput: 54.40 Mbit/s
95th percentile per-packet one-way delay: 403.792 ms
Loss rate: 2.06%
-- Flow 2:
Average throughput: 45.23 Mbit/s
95th percentile per-packet one-way delay: 450.649 ms
Loss rate: 5.26%
-- Flow 3:
Average throughput: 14.35 Mbit/s
95th percentile per-packet one-way delay: 668.510 ms
Loss rate: 4.10%
```
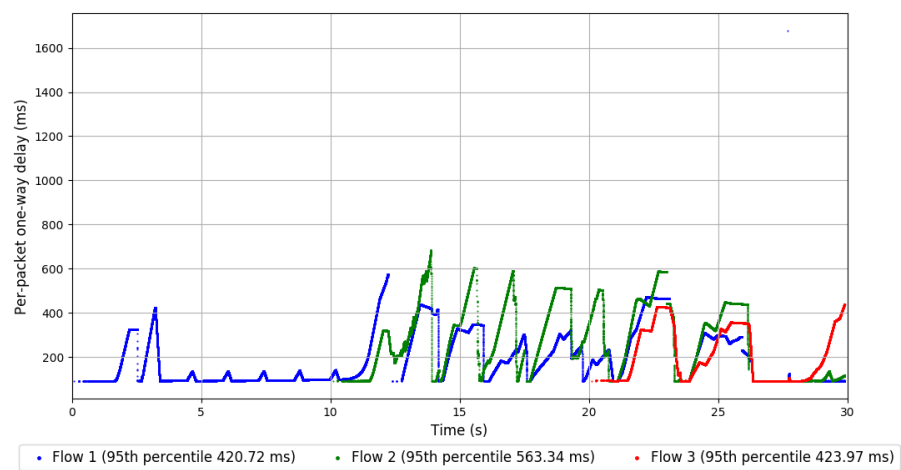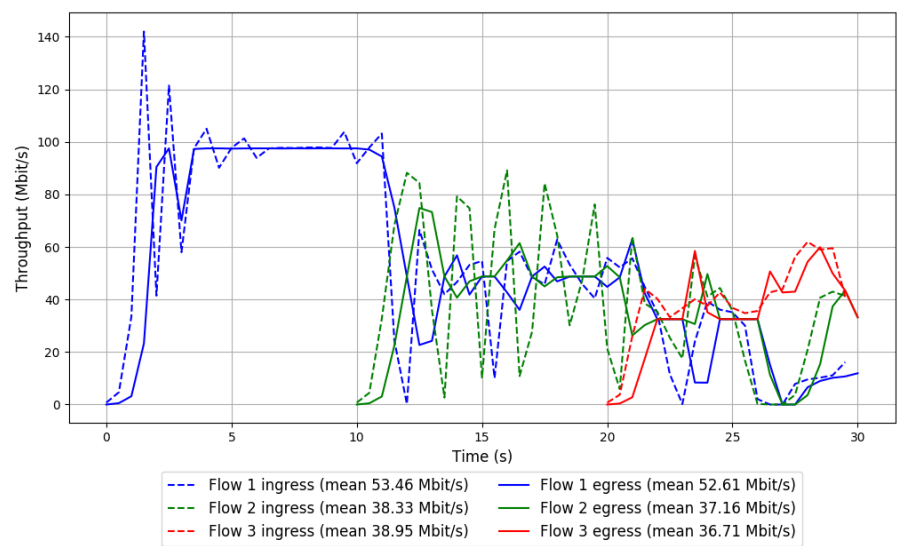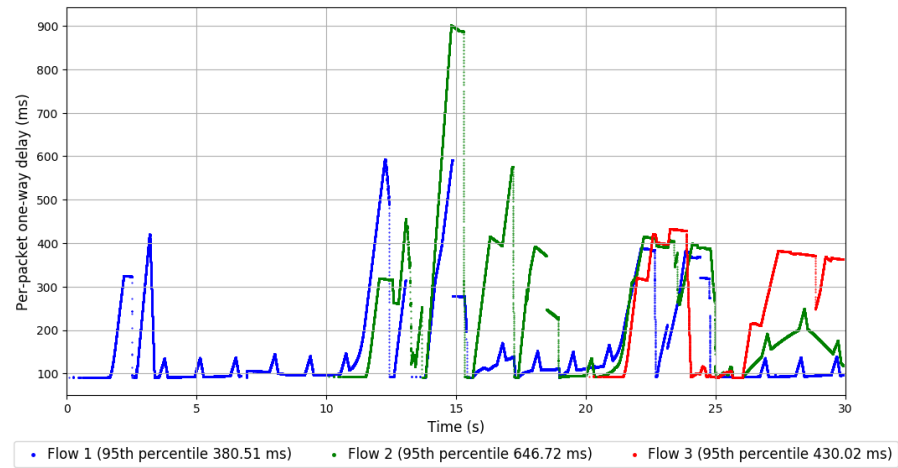
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 55.22 Mbit/s)   Flow 1 egress (mean 54.40 Mbit/s)
Flow 2 ingress (mean 47.32 Mbit/s)   Flow 2 egress (mean 45.23 Mbit/s)
Flow 3 ingress (mean 14.70 Mbit/s)   Flow 3 egress (mean 14.35 Mbit/s)

Flow 1 (95th percentile 403.79 ms)   Flow 2 (95th percentile 450.65 ms)   Flow 3 (95th percentile 668.51 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2018-11-30 15:58:47
End at: 2018-11-30 15:59:17
Local clock offset: -5.322 ms
Remote clock offset: -181.395 ms


# Below is generated by plot.py at 2018-11-30 17:24:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.35 Mbit/s
95th percentile per-packet one-way delay: 471.717 ms
Loss rate: 3.38%
-- Flow 1:
Average throughput: 52.61 Mbit/s
95th percentile per-packet one-way delay: 420.716 ms
Loss rate: 2.16%
-- Flow 2:
Average throughput: 37.16 Mbit/s
95th percentile per-packet one-way delay: 563.343 ms
Loss rate: 3.90%
-- Flow 3:
Average throughput: 36.71 Mbit/s
95th percentile per-packet one-way delay: 423.966 ms
Loss rate: 7.40%
```
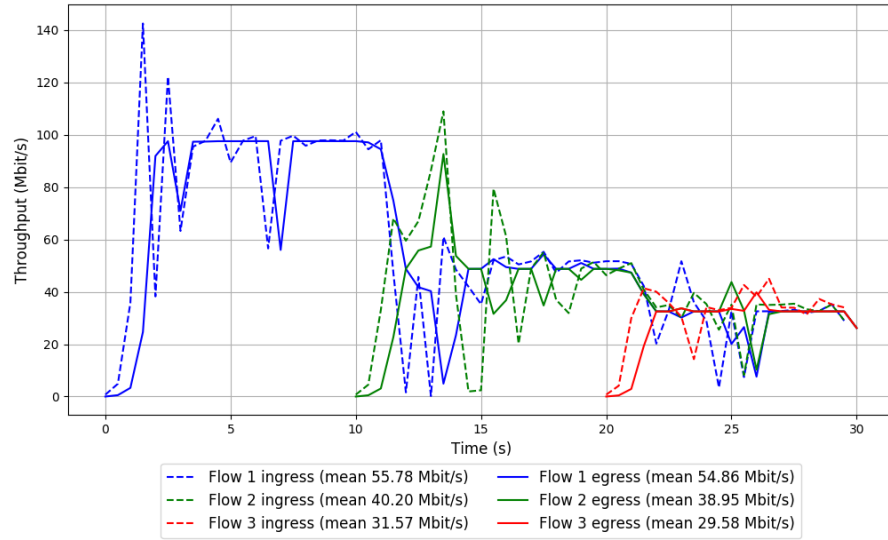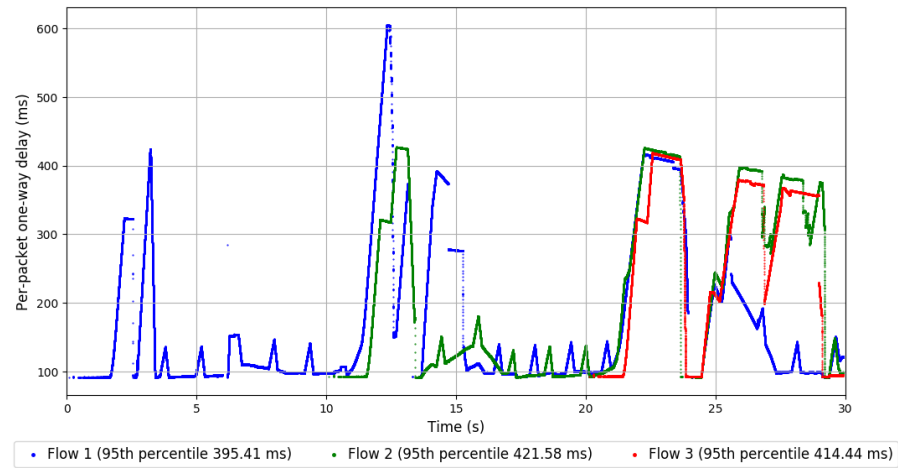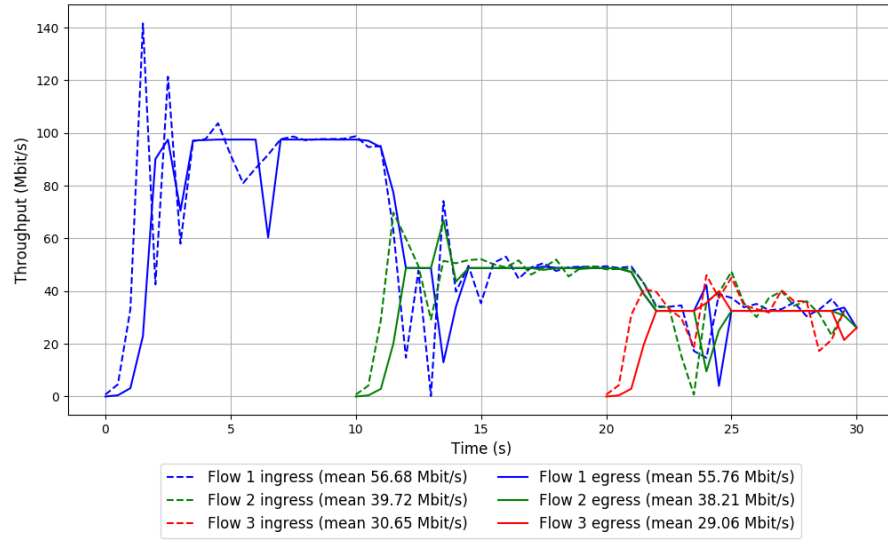
Run 2: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 53.46 Mbit/s) —— Flow 1 egress (mean 52.61 Mbit/s)
- - - Flow 2 ingress (mean 38.33 Mbit/s) —— Flow 2 egress (mean 37.16 Mbit/s)
- - - Flow 3 ingress (mean 38.95 Mbit/s) —— Flow 3 egress (mean 36.71 Mbit/s)

• Flow 1 (95th percentile 420.72 ms)　　• Flow 2 (95th percentile 563.34 ms)　　• Flow 3 (95th percentile 423.97 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-11-30 16:23:11
End at: 2018-11-30 16:23:41
Local clock offset: -4.786 ms
Remote clock offset: -187.486 ms


# Below is generated by plot.py at 2018-11-30 17:24:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.44 Mbit/s
95th percentile per-packet one-way delay: 429.665 ms
Loss rate: 3.36%
-- Flow 1:
Average throughput: 54.86 Mbit/s
95th percentile per-packet one-way delay: 380.511 ms
Loss rate: 2.23%
-- Flow 2:
Average throughput: 38.95 Mbit/s
95th percentile per-packet one-way delay: 646.716 ms
Loss rate: 3.94%
-- Flow 3:
Average throughput: 29.58 Mbit/s
95th percentile per-packet one-way delay: 430.025 ms
Loss rate: 7.95%
```
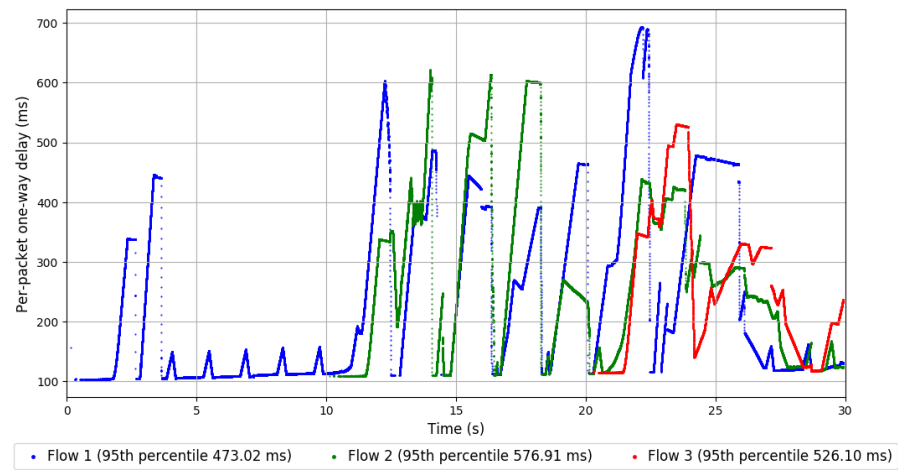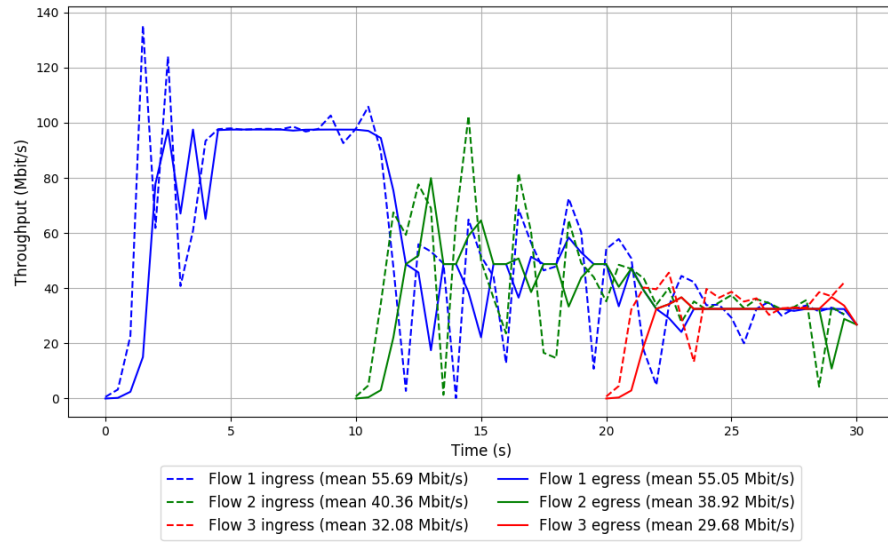
Run 3: Report of TCP BBR — Data Link

- - - - Flow 1 ingress (mean 55.78 Mbit/s)   ——— Flow 1 egress (mean 54.86 Mbit/s)
- - - - Flow 2 ingress (mean 40.20 Mbit/s)   ——— Flow 2 egress (mean 38.95 Mbit/s)
- - - - Flow 3 ingress (mean 31.57 Mbit/s)   ——— Flow 3 egress (mean 29.58 Mbit/s)

- Flow 1 (95th percentile 380.51 ms)   • Flow 2 (95th percentile 646.72 ms)   • Flow 3 (95th percentile 430.02 ms)

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```
Run 4: Statistics of TCP BBR

Start at: 2018-11-30 16:47:42
End at: 2018-11-30 16:48:13
Local clock offset: -4.347 ms
Remote clock offset: -193.551 ms


# Below is generated by plot.py at 2018-11-30 17:24:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.68 Mbit/s
95th percentile per-packet one-way delay: 412.271 ms
Loss rate: 3.39%
-- Flow 1:
Average throughput: 55.76 Mbit/s
95th percentile per-packet one-way delay: 395.410 ms
Loss rate: 2.19%
-- Flow 2:
Average throughput: 38.21 Mbit/s
95th percentile per-packet one-way delay: 421.578 ms
Loss rate: 4.63%
-- Flow 3:
Average throughput: 29.06 Mbit/s
95th percentile per-packet one-way delay: 414.441 ms
Loss rate: 6.86%
```
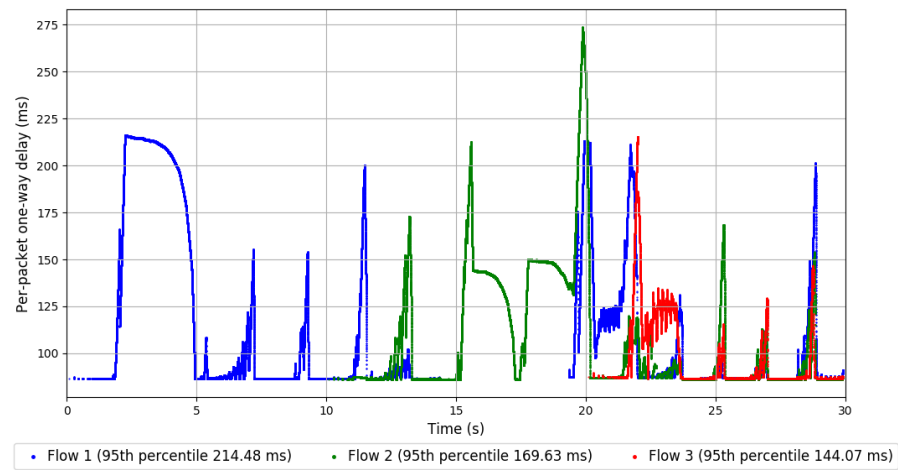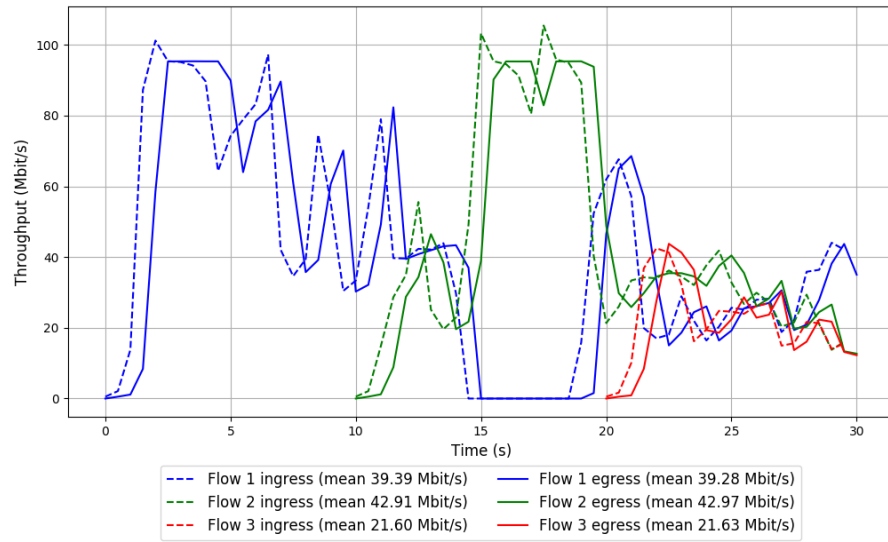
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 56.68 Mbit/s)   Flow 1 egress (mean 55.76 Mbit/s)
Flow 2 ingress (mean 39.72 Mbit/s)   Flow 2 egress (mean 38.21 Mbit/s)
Flow 3 ingress (mean 30.65 Mbit/s)   Flow 3 egress (mean 29.06 Mbit/s)

Flow 1 (95th percentile 395.41 ms)   Flow 2 (95th percentile 421.58 ms)   Flow 3 (95th percentile 414.44 ms)

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```
Run 5: Statistics of TCP BBR

Start at: 2018-11-30 17:12:08
End at: 2018-11-30 17:12:38
Local clock offset: -3.661 ms
Remote clock offset: 658.407 ms


# Below is generated by plot.py at 2018-11-30 17:24:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.71 Mbit/s
95th percentile per-packet one-way delay: 509.465 ms
Loss rate: 3.40%
-- Flow 1:
Average throughput: 55.05 Mbit/s
95th percentile per-packet one-way delay: 473.022 ms
Loss rate: 1.85%
-- Flow 2:
Average throughput: 38.92 Mbit/s
95th percentile per-packet one-way delay: 576.914 ms
Loss rate: 4.38%
-- Flow 3:
Average throughput: 29.68 Mbit/s
95th percentile per-packet one-way delay: 526.102 ms
Loss rate: 9.06%
```
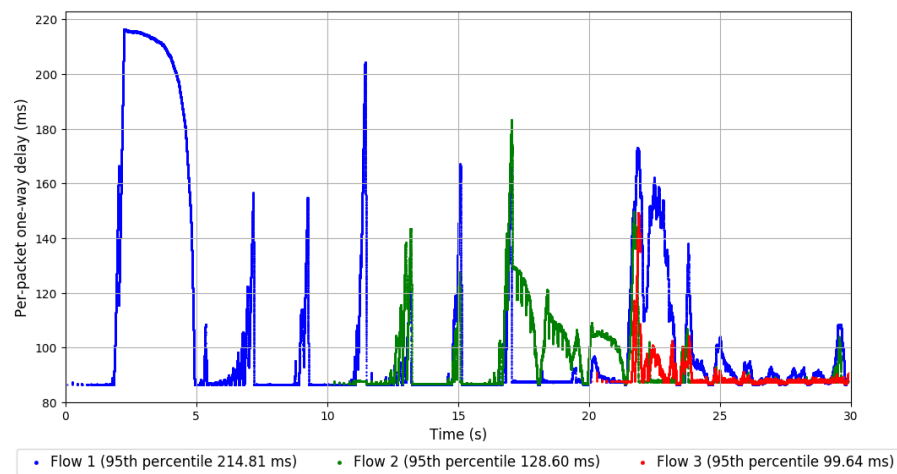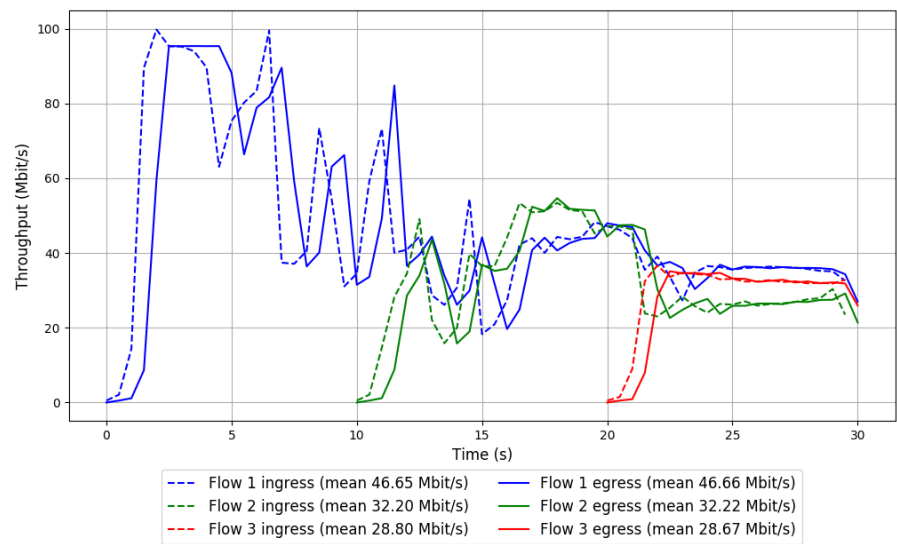
Run 5: Report of TCP BBR — Data Link

Legend (top plot):
- Flow 1 ingress (mean 55.69 Mbit/s)
- Flow 1 egress (mean 55.05 Mbit/s)
- Flow 2 ingress (mean 40.36 Mbit/s)
- Flow 2 egress (mean 38.92 Mbit/s)
- Flow 3 ingress (mean 32.08 Mbit/s)
- Flow 3 egress (mean 29.68 Mbit/s)

Legend (bottom plot):
- Flow 1 (95th percentile 473.02 ms)
- Flow 2 (95th percentile 576.91 ms)
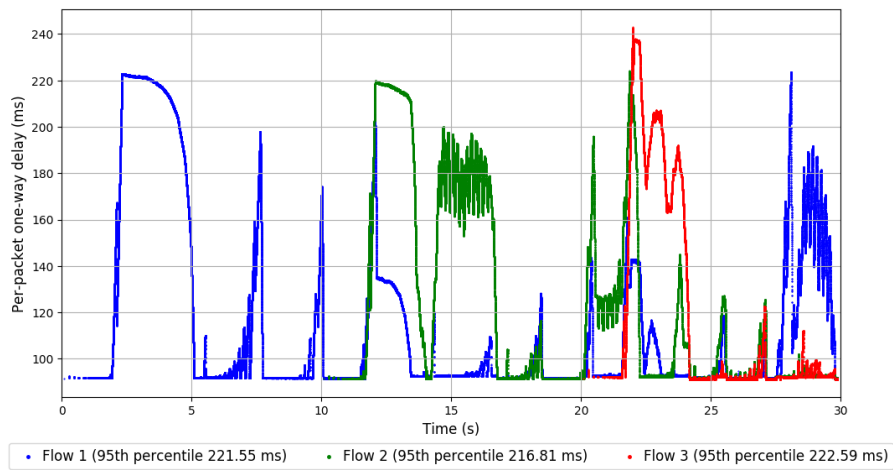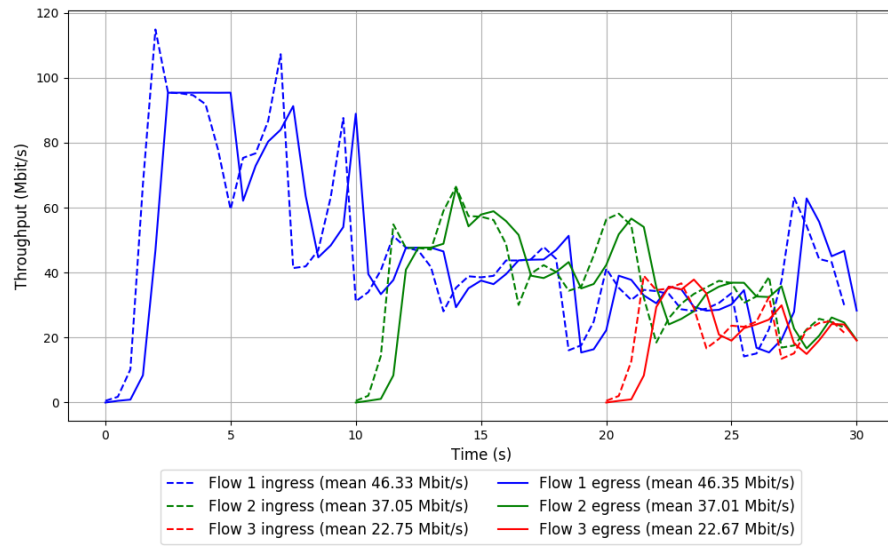- Flow 3 (95th percentile 526.10 ms)

```
Run 1: Statistics of Copa

Start at: 2018-11-30 15:20:03
End at: 2018-11-30 15:20:33
Local clock offset: -4.335 ms
Remote clock offset: -165.428 ms


# Below is generated by plot.py at 2018-11-30 17:25:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 74.94 Mbit/s
95th percentile per-packet one-way delay: 213.103 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 39.28 Mbit/s
95th percentile per-packet one-way delay: 214.482 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 42.97 Mbit/s
95th percentile per-packet one-way delay: 169.631 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 21.63 Mbit/s
95th percentile per-packet one-way delay: 144.070 ms
Loss rate: 1.59%
```

Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 39.39 Mbit/s) — — — Flow 1 egress (mean 39.28 Mbit/s)
Flow 2 ingress (mean 42.91 Mbit/s) — — — Flow 2 egress (mean 42.97 Mbit/s)
Flow 3 ingress (mean 21.60 Mbit/s) — — — Flow 3 egress (mean 21.63 Mbit/s)

Flow 1 (95th percentile 214.48 ms) • Flow 2 (95th percentile 169.63 ms) • Flow 3 (95th percentile 144.07 ms)

```
Run 2: Statistics of Copa

Start at: 2018-11-30 15:44:37
End at: 2018-11-30 15:45:07
Local clock offset: -5.244 ms
Remote clock offset: -172.923 ms


# Below is generated by plot.py at 2018-11-30 17:25:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.48 Mbit/s
95th percentile per-packet one-way delay: 212.532 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 46.66 Mbit/s
95th percentile per-packet one-way delay: 214.809 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 32.22 Mbit/s
95th percentile per-packet one-way delay: 128.605 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 28.67 Mbit/s
95th percentile per-packet one-way delay: 99.644 ms
Loss rate: 2.18%
```
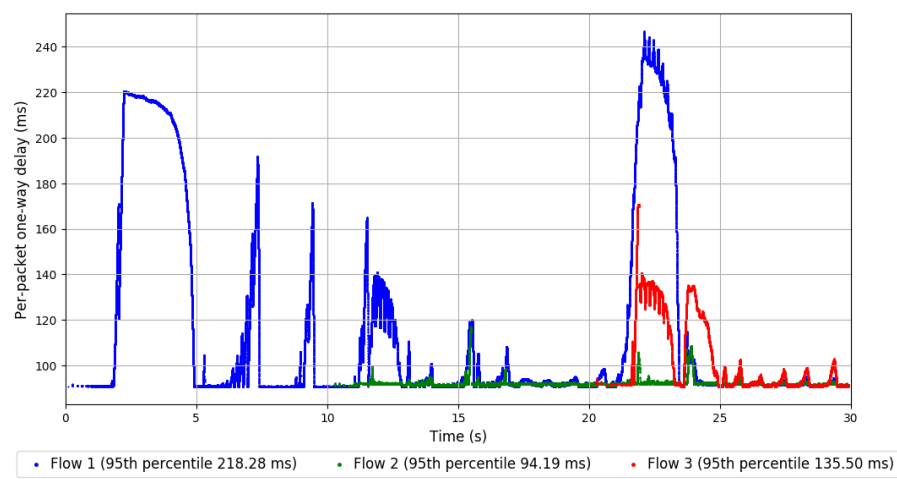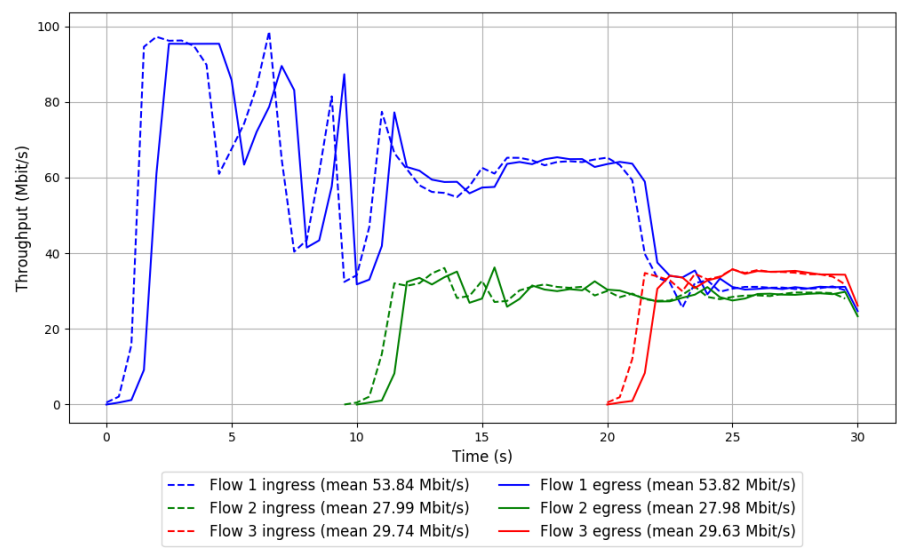
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-11-30 16:09:07
End at: 2018-11-30 16:09:37
Local clock offset: -5.334 ms
Remote clock offset: -184.011 ms


# Below is generated by plot.py at 2018-11-30 17:25:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.37 Mbit/s
95th percentile per-packet one-way delay: 220.411 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 46.35 Mbit/s
95th percentile per-packet one-way delay: 221.552 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 37.01 Mbit/s
95th percentile per-packet one-way delay: 216.808 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 22.67 Mbit/s
95th percentile per-packet one-way delay: 222.593 ms
Loss rate: 2.09%
```
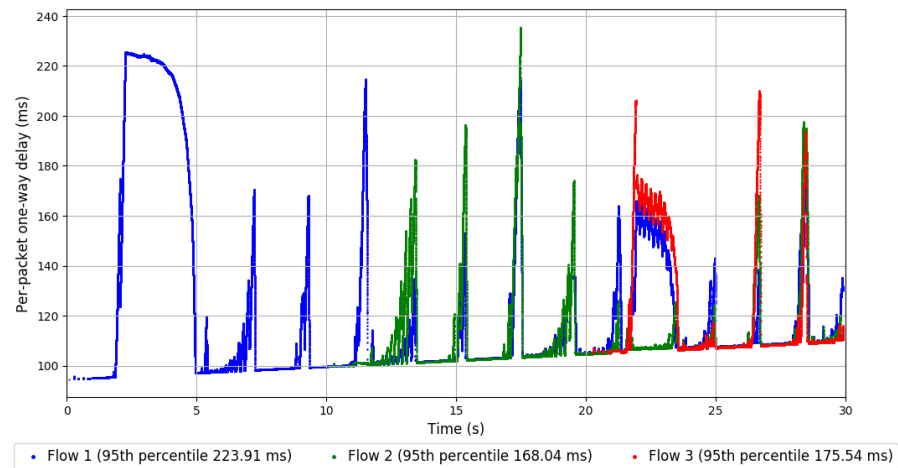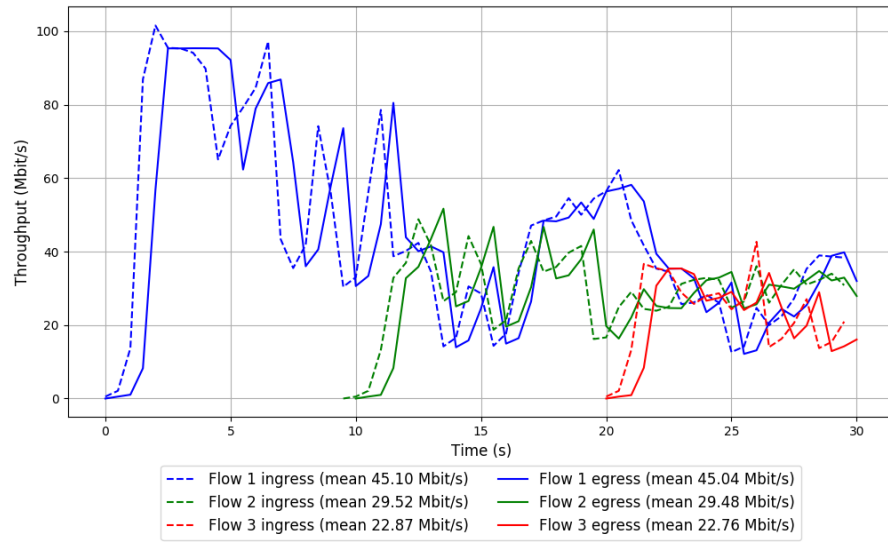
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 46.33 Mbit/s)   Flow 1 egress (mean 46.35 Mbit/s)
Flow 2 ingress (mean 37.05 Mbit/s)   Flow 2 egress (mean 37.01 Mbit/s)
Flow 3 ingress (mean 22.75 Mbit/s)   Flow 3 egress (mean 22.67 Mbit/s)

Flow 1 (95th percentile 221.55 ms)   Flow 2 (95th percentile 216.81 ms)   Flow 3 (95th percentile 222.59 ms)

```
Run 4: Statistics of Copa

Start at: 2018-11-30 16:33:38
End at: 2018-11-30 16:34:08
Local clock offset: -3.654 ms
Remote clock offset: -189.003 ms

# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.15 Mbit/s
95th percentile per-packet one-way delay: 216.631 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 53.82 Mbit/s
95th percentile per-packet one-way delay: 218.285 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 27.98 Mbit/s
95th percentile per-packet one-way delay: 94.188 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 29.63 Mbit/s
95th percentile per-packet one-way delay: 135.496 ms
Loss rate: 2.07%
```
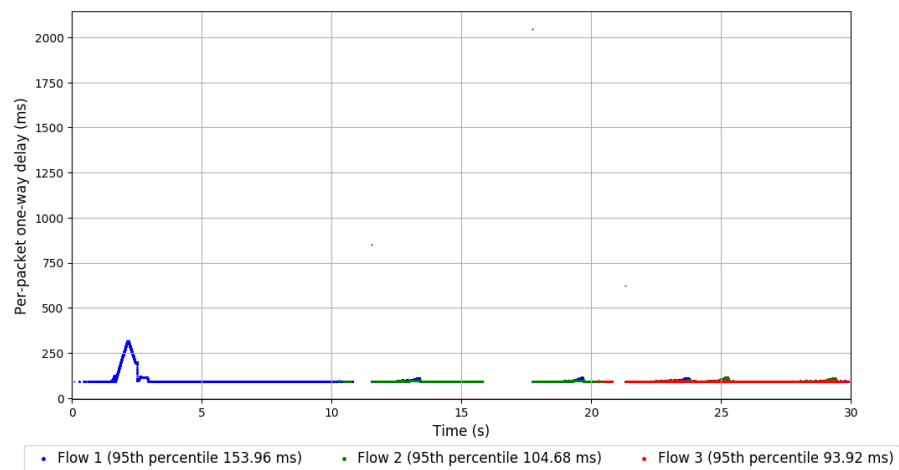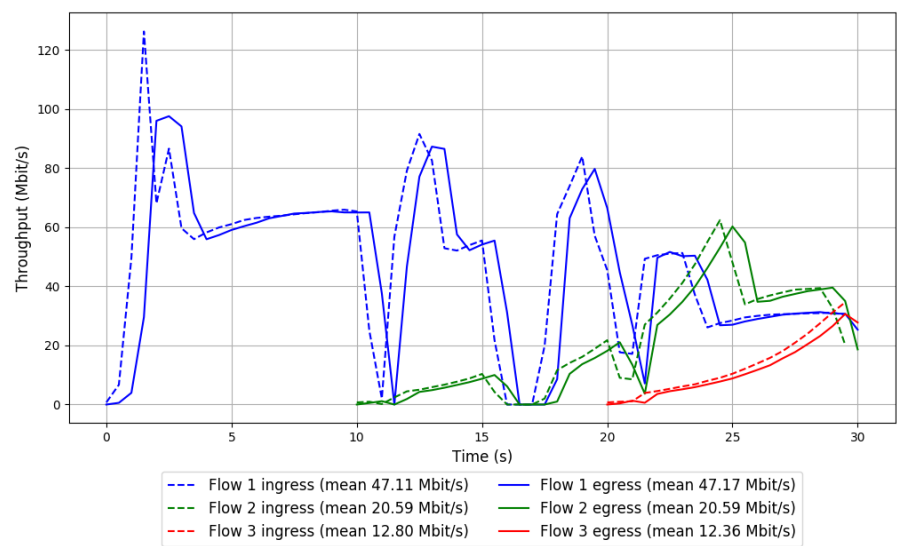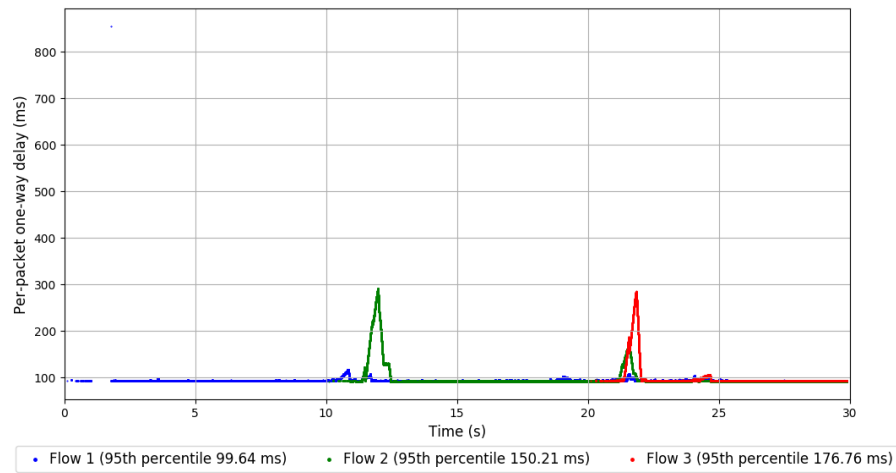
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 53.84 Mbit/s) ---- Flow 1 egress (mean 53.82 Mbit/s)
Flow 2 ingress (mean 27.99 Mbit/s) ---- Flow 2 egress (mean 27.98 Mbit/s)
Flow 3 ingress (mean 29.74 Mbit/s) ---- Flow 3 egress (mean 29.63 Mbit/s)

Flow 1 (95th percentile 218.28 ms)   Flow 2 (95th percentile 94.19 ms)   Flow 3 (95th percentile 135.50 ms)

```
Run 5: Statistics of Copa

Start at: 2018-11-30 16:58:05
End at: 2018-11-30 16:58:35
Local clock offset: -4.511 ms
Remote clock offset: 230.104 ms


# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.10 Mbit/s
95th percentile per-packet one-way delay: 222.419 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 45.04 Mbit/s
95th percentile per-packet one-way delay: 223.909 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 29.48 Mbit/s
95th percentile per-packet one-way delay: 168.044 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 22.76 Mbit/s
95th percentile per-packet one-way delay: 175.538 ms
Loss rate: 2.15%
```
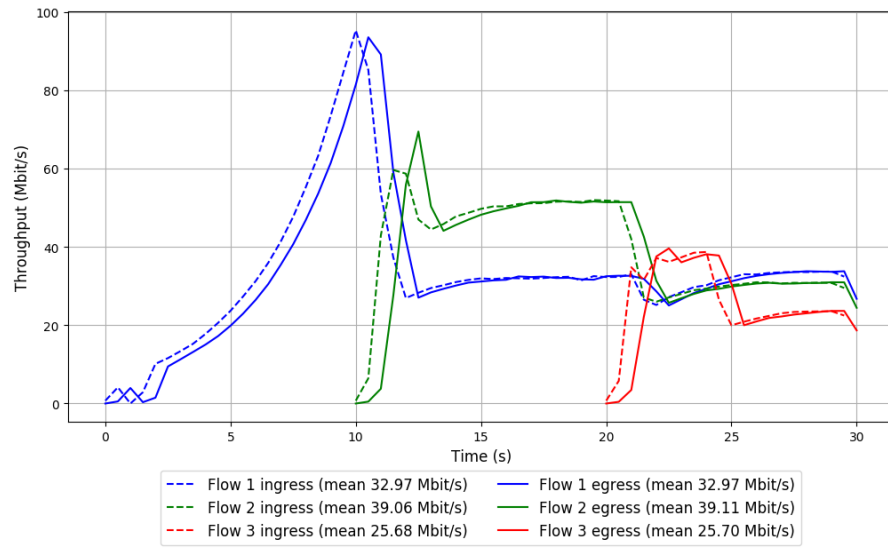
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 45.10 Mbit/s) --- Flow 1 egress (mean 45.04 Mbit/s)
Flow 2 ingress (mean 29.52 Mbit/s) --- Flow 2 egress (mean 29.48 Mbit/s)
Flow 3 ingress (mean 22.87 Mbit/s) --- Flow 3 egress (mean 22.76 Mbit/s)

Flow 1 (95th percentile 223.91 ms)   Flow 2 (95th percentile 168.04 ms)   Flow 3 (95th percentile 175.54 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2018-11-30 15:43:21
End at: 2018-11-30 15:43:51
Local clock offset: -4.477 ms
Remote clock offset: -177.477 ms


# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 64.90 Mbit/s
95th percentile per-packet one-way delay: 114.316 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 47.17 Mbit/s
95th percentile per-packet one-way delay: 153.957 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 20.59 Mbit/s
95th percentile per-packet one-way delay: 104.677 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 12.36 Mbit/s
95th percentile per-packet one-way delay: 93.918 ms
Loss rate: 5.13%
```
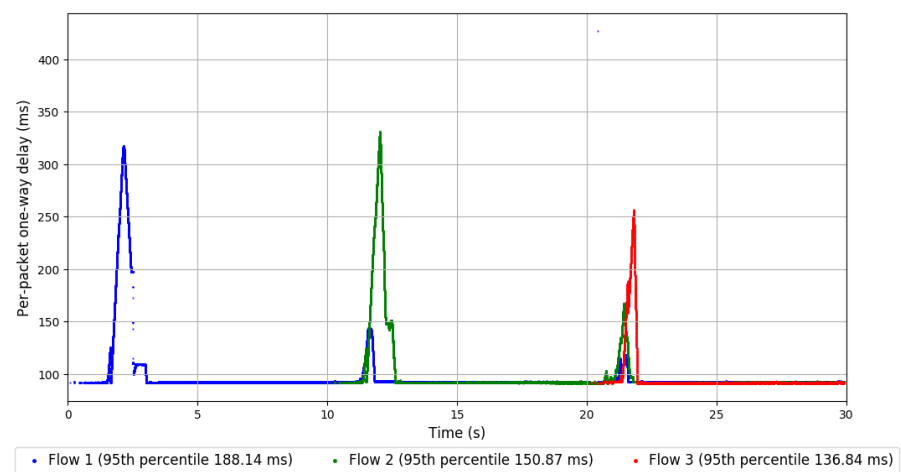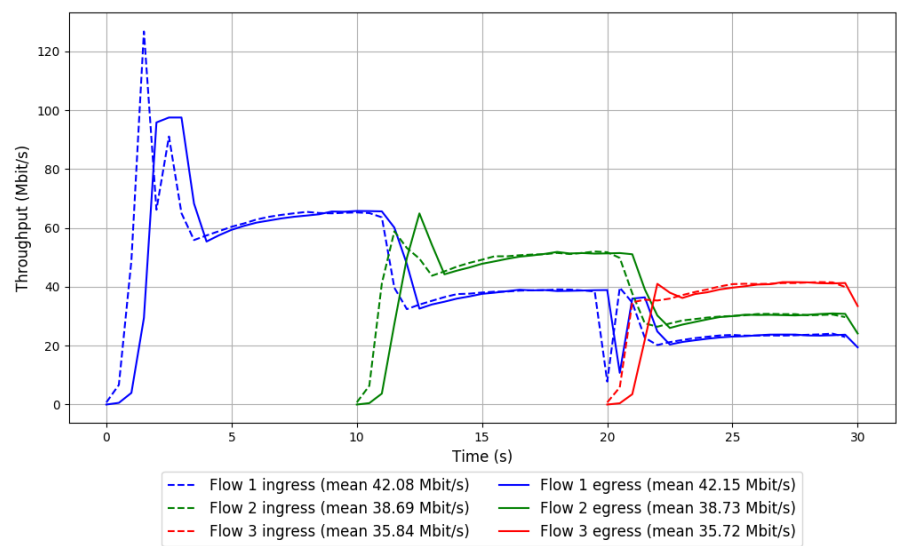
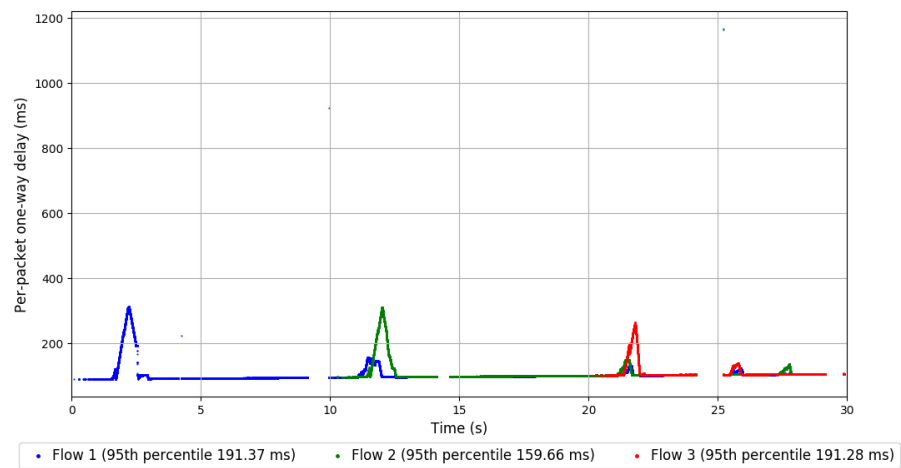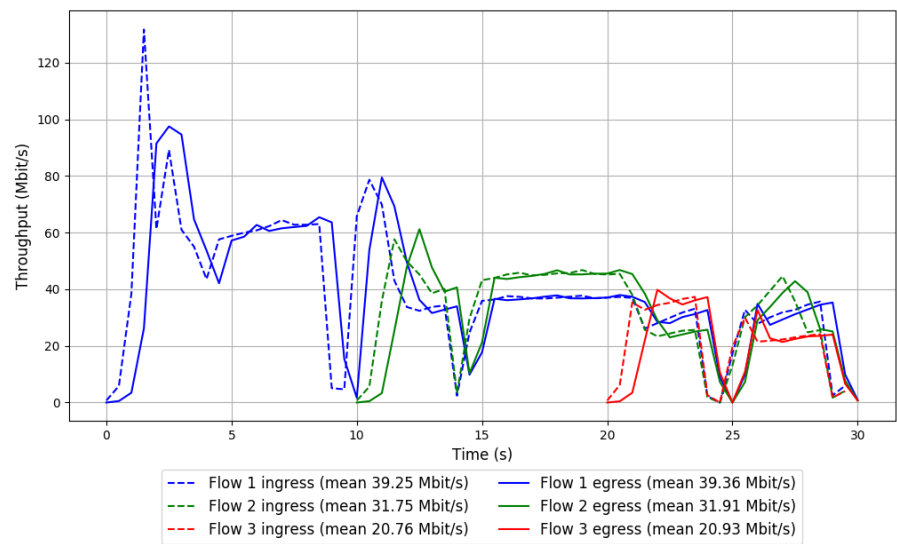Run 1: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 47.11 Mbit/s) ——— Flow 1 egress (mean 47.17 Mbit/s)
- - - Flow 2 ingress (mean 20.59 Mbit/s) ——— Flow 2 egress (mean 20.59 Mbit/s)
- - - Flow 3 ingress (mean 12.80 Mbit/s) ——— Flow 3 egress (mean 12.36 Mbit/s)

• Flow 1 (95th percentile 153.96 ms)   • Flow 2 (95th percentile 104.68 ms)   • Flow 3 (95th percentile 93.92 ms)

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```
Run 2: Statistics of TCP Cubic

Start at: 2018-11-30 16:07:50
End at: 2018-11-30 16:08:20
Local clock offset: -4.504 ms
Remote clock offset: -182.544 ms


# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.37 Mbit/s
95th percentile per-packet one-way delay: 112.415 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 32.97 Mbit/s
95th percentile per-packet one-way delay: 99.642 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 39.11 Mbit/s
95th percentile per-packet one-way delay: 150.209 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 25.70 Mbit/s
95th percentile per-packet one-way delay: 176.758 ms
Loss rate: 1.68%
```

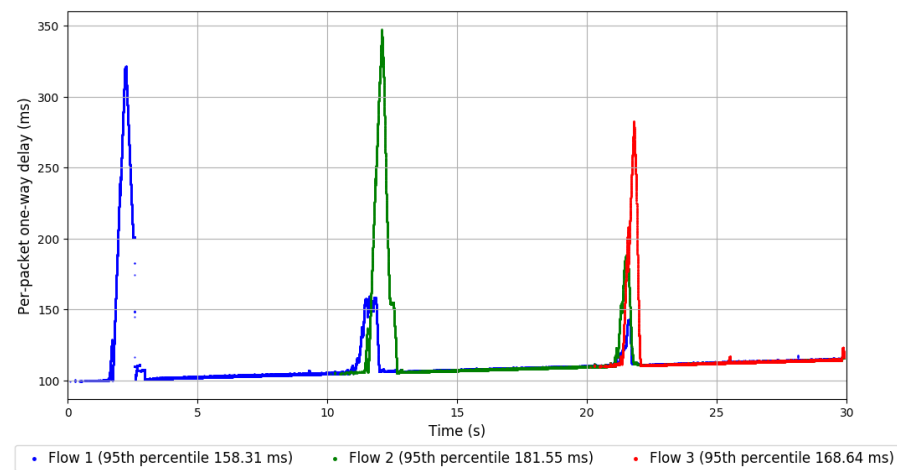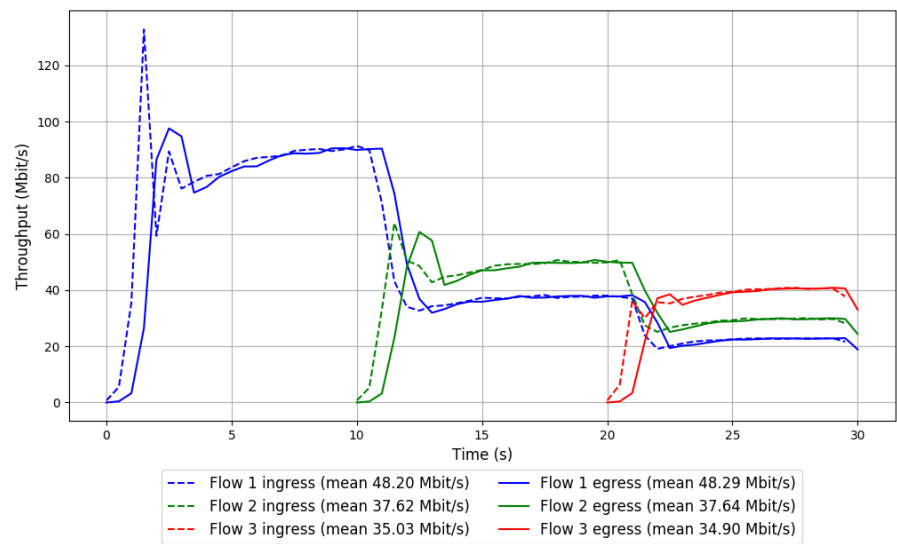Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 32.97 Mbit/s)   Flow 1 egress (mean 32.97 Mbit/s)
Flow 2 ingress (mean 39.06 Mbit/s)   Flow 2 egress (mean 39.11 Mbit/s)
Flow 3 ingress (mean 25.68 Mbit/s)   Flow 3 egress (mean 25.70 Mbit/s)

Flow 1 (95th percentile 99.64 ms)   Flow 2 (95th percentile 150.21 ms)   Flow 3 (95th percentile 176.76 ms)

28

```
Run 3: Statistics of TCP Cubic

Start at: 2018-11-30 16:32:21
End at: 2018-11-30 16:32:51
Local clock offset: -4.479 ms
Remote clock offset: -189.76 ms

# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.61 Mbit/s
95th percentile per-packet one-way delay: 158.629 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 42.15 Mbit/s
95th percentile per-packet one-way delay: 188.140 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 38.73 Mbit/s
95th percentile per-packet one-way delay: 150.873 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 35.72 Mbit/s
95th percentile per-packet one-way delay: 136.845 ms
Loss rate: 2.05%
```
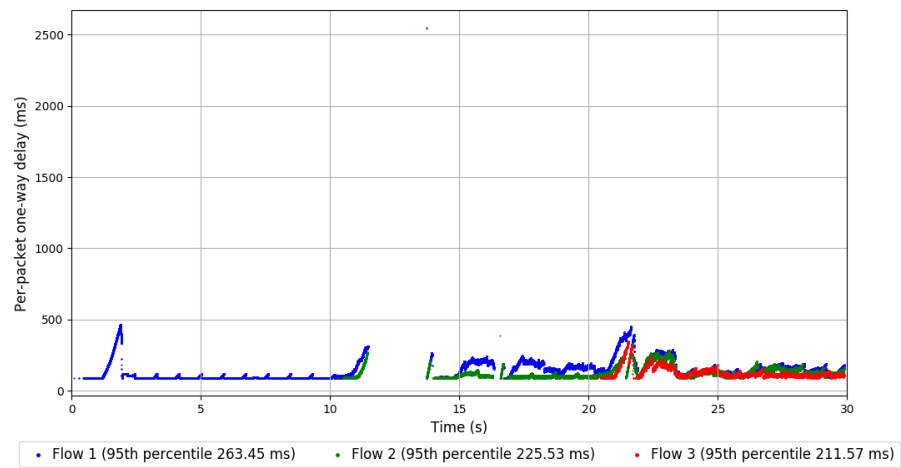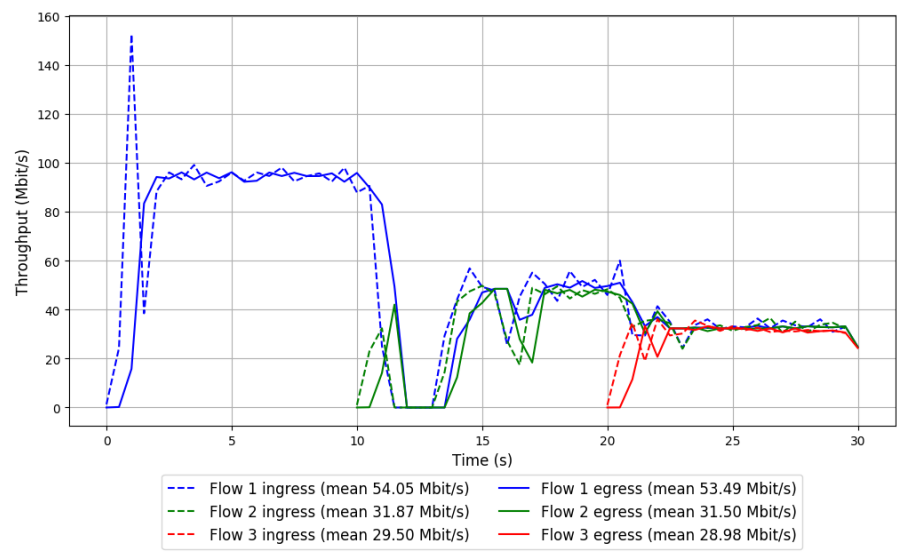
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-11-30 16:56:47
End at: 2018-11-30 16:57:17
Local clock offset: -3.675 ms
Remote clock offset: 196.127 ms


# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.41 Mbit/s
95th percentile per-packet one-way delay: 185.836 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 39.36 Mbit/s
95th percentile per-packet one-way delay: 191.368 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 31.91 Mbit/s
95th percentile per-packet one-way delay: 159.663 ms
Loss rate: 0.35%
-- Flow 3:
Average throughput: 20.93 Mbit/s
95th percentile per-packet one-way delay: 191.276 ms
Loss rate: 0.90%
```
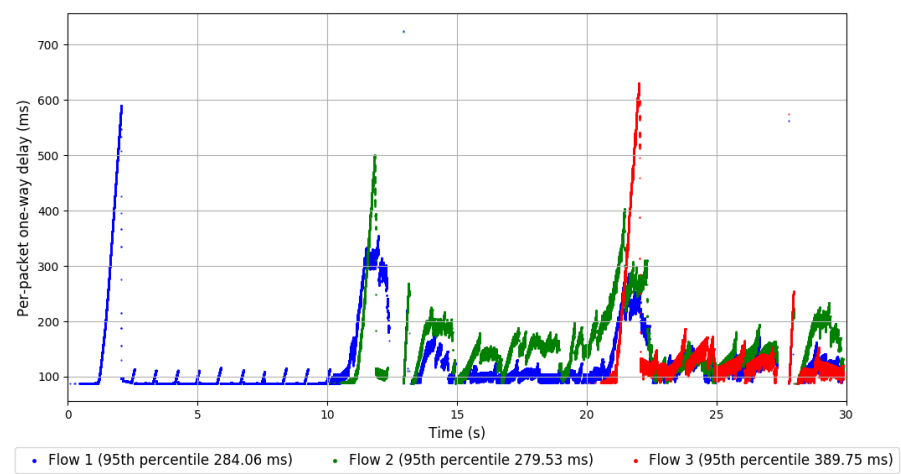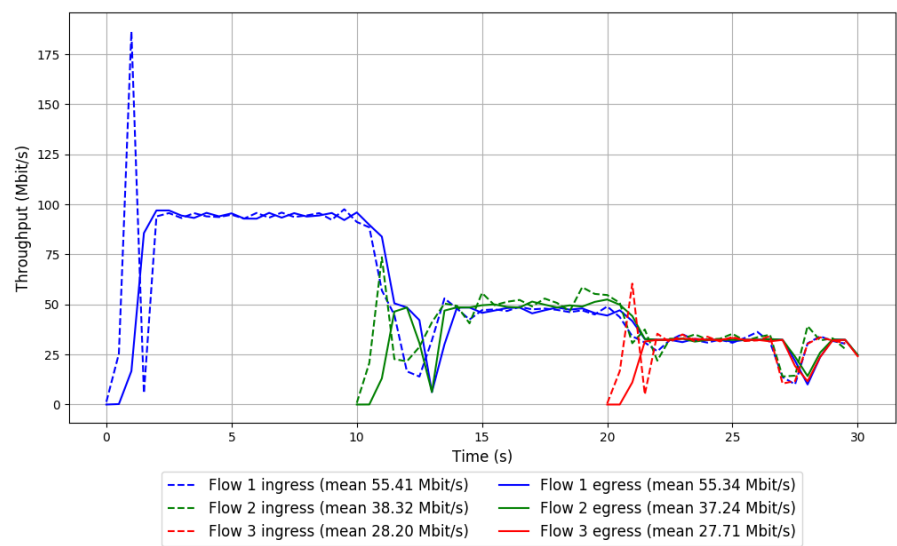
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-11-30 17:21:11
End at: 2018-11-30 17:21:41
Local clock offset: -4.967 ms
Remote clock offset: 941.862 ms

# Below is generated by plot.py at 2018-11-30 17:26:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.75 Mbit/s
95th percentile per-packet one-way delay: 172.850 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 48.29 Mbit/s
95th percentile per-packet one-way delay: 158.308 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 37.64 Mbit/s
95th percentile per-packet one-way delay: 181.547 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 34.90 Mbit/s
95th percentile per-packet one-way delay: 168.639 ms
Loss rate: 2.05%
```
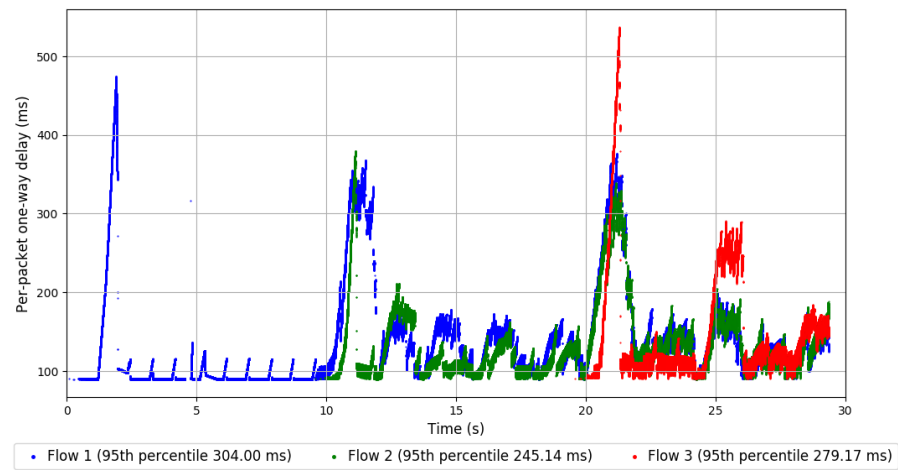
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-11-30 15:30:22
End at: 2018-11-30 15:30:52
Local clock offset: -4.392 ms
Remote clock offset: -170.417 ms


# Below is generated by plot.py at 2018-11-30 17:26:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.93 Mbit/s
95th percentile per-packet one-way delay: 245.706 ms
Loss rate: 1.89%
-- Flow 1:
Average throughput: 53.49 Mbit/s
95th percentile per-packet one-way delay: 263.447 ms
Loss rate: 1.56%
-- Flow 2:
Average throughput: 31.50 Mbit/s
95th percentile per-packet one-way delay: 225.532 ms
Loss rate: 1.98%
-- Flow 3:
Average throughput: 28.98 Mbit/s
95th percentile per-packet one-way delay: 211.570 ms
Loss rate: 3.48%
```
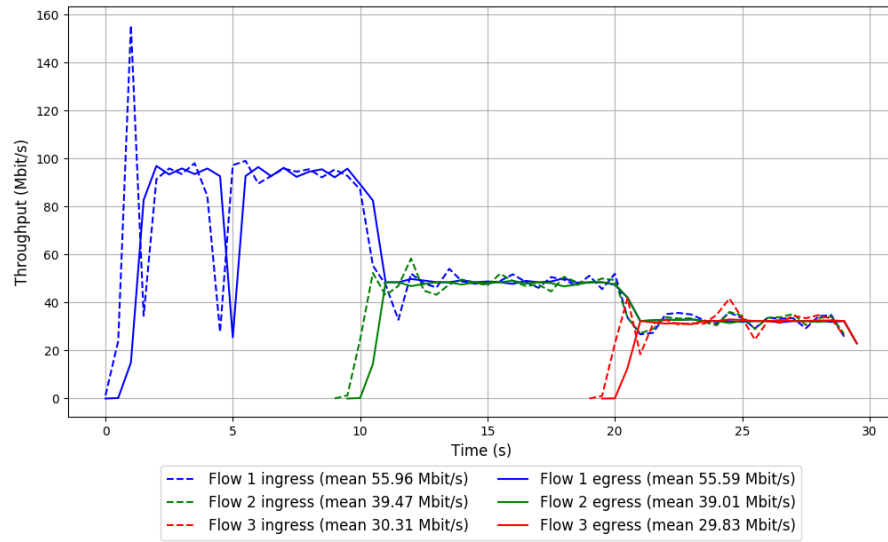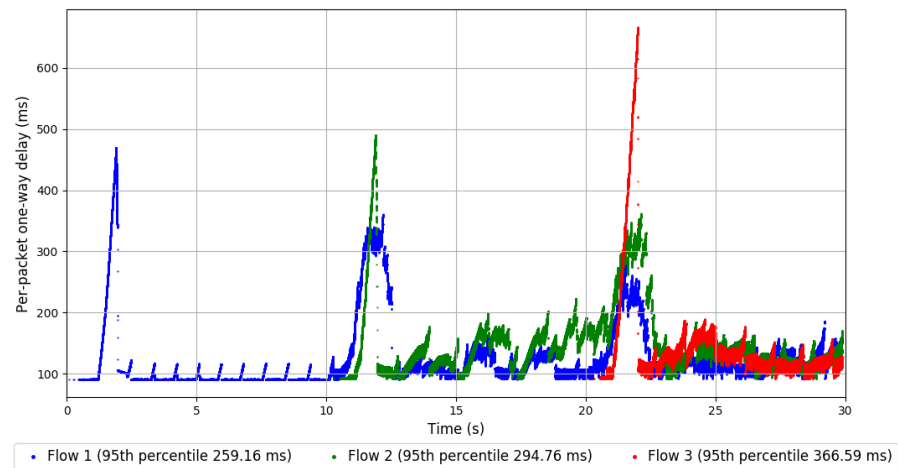
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-11-30 15:54:55
End at: 2018-11-30 15:55:25
Local clock offset: -4.477 ms
Remote clock offset: -175.781 ms

# Below is generated by plot.py at 2018-11-30 17:26:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.18 Mbit/s
95th percentile per-packet one-way delay: 284.787 ms
Loss rate: 1.80%
-- Flow 1:
Average throughput: 55.34 Mbit/s
95th percentile per-packet one-way delay: 284.055 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 37.24 Mbit/s
95th percentile per-packet one-way delay: 279.534 ms
Loss rate: 3.64%
-- Flow 3:
Average throughput: 27.71 Mbit/s
95th percentile per-packet one-way delay: 389.754 ms
Loss rate: 3.46%
```
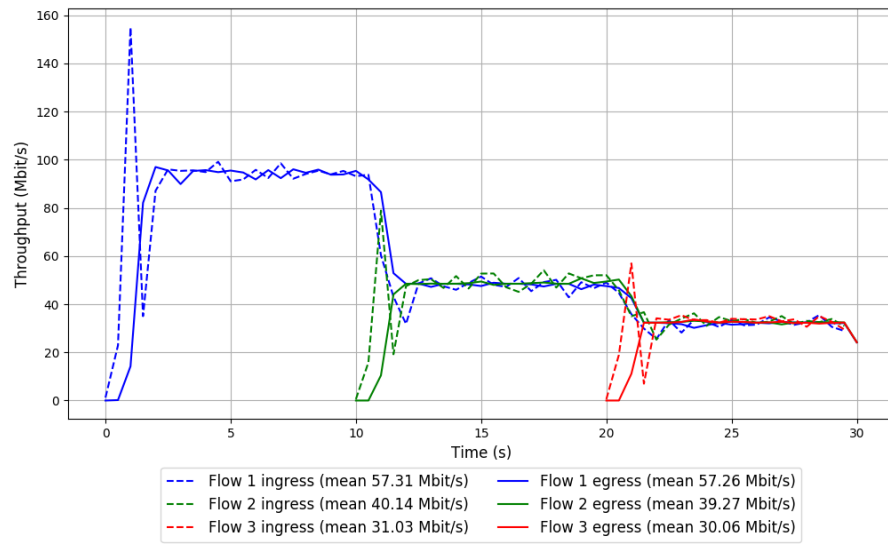
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 55.41 Mbit/s) ---- Flow 1 egress (mean 55.34 Mbit/s) ——
Flow 2 ingress (mean 38.32 Mbit/s) ---- Flow 2 egress (mean 37.24 Mbit/s) ——
Flow 3 ingress (mean 28.20 Mbit/s) ---- Flow 3 egress (mean 27.71 Mbit/s) ——

Flow 1 (95th percentile 284.06 ms)   Flow 2 (95th percentile 279.53 ms)   Flow 3 (95th percentile 389.75 ms)
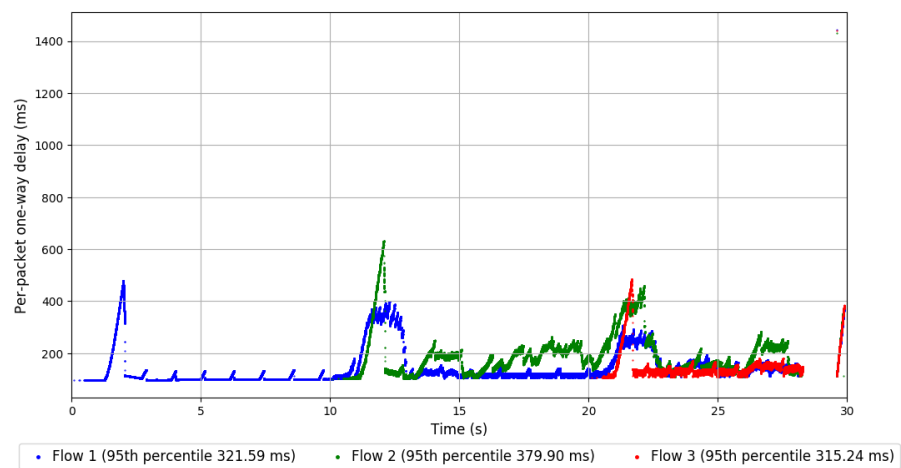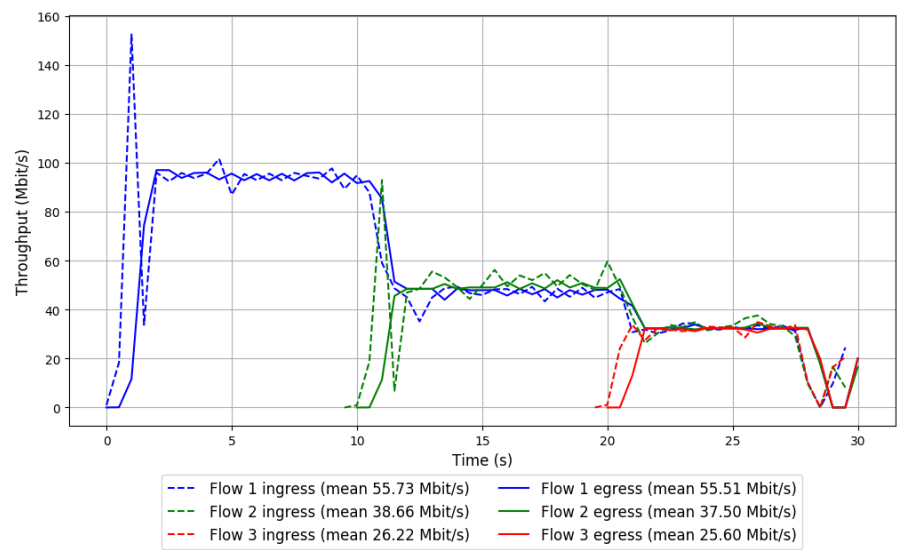
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```
Run 3: Statistics of FillP

Start at: 2018-11-30 16:19:19
End at: 2018-11-30 16:19:49
Local clock offset: -4.982 ms
Remote clock offset: -185.383 ms


# Below is generated by plot.py at 2018-11-30 17:26:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.93 Mbit/s
95th percentile per-packet one-way delay: 284.093 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 55.59 Mbit/s
95th percentile per-packet one-way delay: 303.996 ms
Loss rate: 1.19%
-- Flow 2:
Average throughput: 39.01 Mbit/s
95th percentile per-packet one-way delay: 245.142 ms
Loss rate: 2.01%
-- Flow 3:
Average throughput: 29.83 Mbit/s
95th percentile per-packet one-way delay: 279.173 ms
Loss rate: 3.19%
```
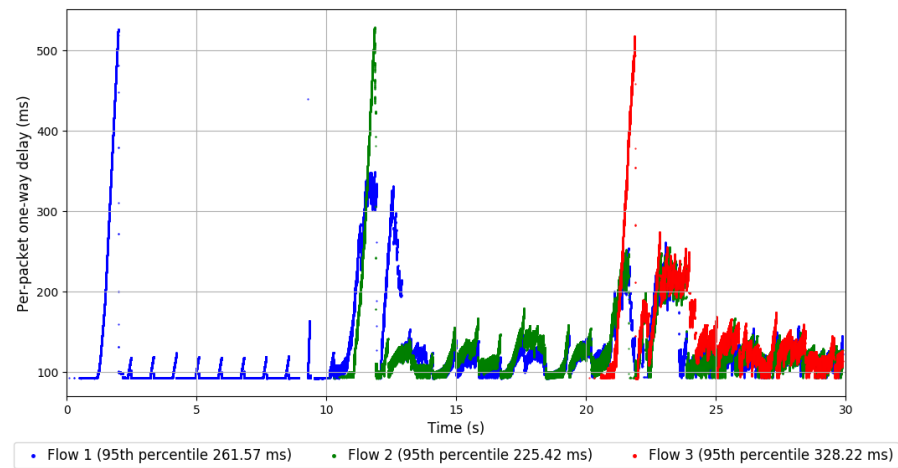
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-11-30 16:43:49
End at: 2018-11-30 16:44:19
Local clock offset: -3.51 ms
Remote clock offset: -191.431 ms


# Below is generated by plot.py at 2018-11-30 17:26:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.21 Mbit/s
95th percentile per-packet one-way delay: 282.044 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 57.26 Mbit/s
95th percentile per-packet one-way delay: 259.161 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 39.27 Mbit/s
95th percentile per-packet one-way delay: 294.758 ms
Loss rate: 2.99%
-- Flow 3:
Average throughput: 30.06 Mbit/s
95th percentile per-packet one-way delay: 366.590 ms
Loss rate: 4.70%
```
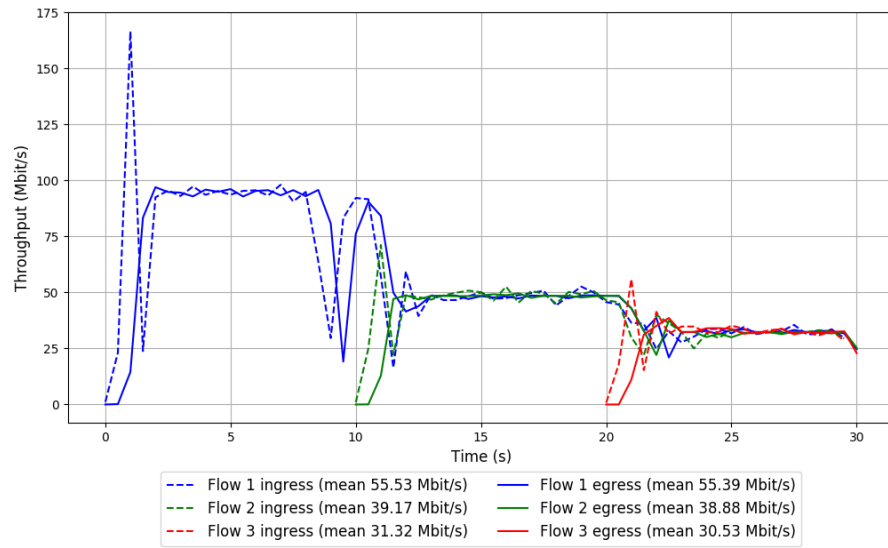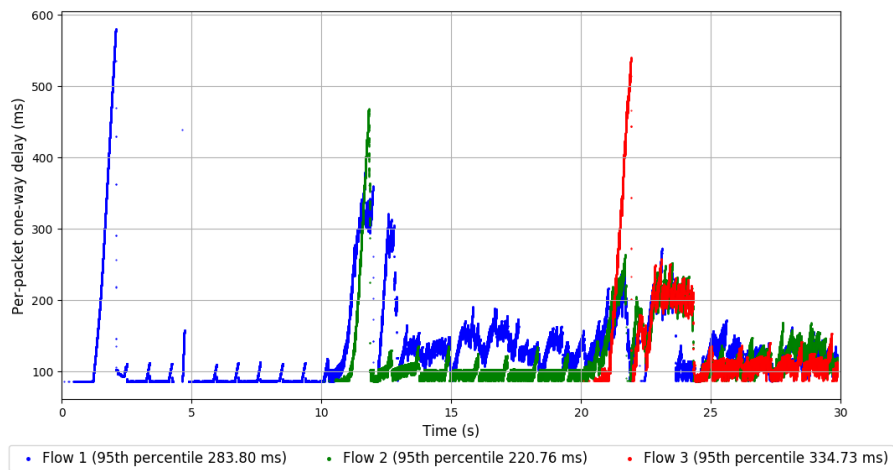
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 57.31 Mbit/s) --- Flow 1 egress (mean 57.26 Mbit/s)
Flow 2 ingress (mean 40.14 Mbit/s) --- Flow 2 egress (mean 39.27 Mbit/s)
Flow 3 ingress (mean 31.03 Mbit/s) --- Flow 3 egress (mean 30.06 Mbit/s)

Flow 1 (95th percentile 259.16 ms) • Flow 2 (95th percentile 294.76 ms) • Flow 3 (95th percentile 366.59 ms)

```
Run 5: Statistics of FillP

Start at: 2018-11-30 17:08:16
End at: 2018-11-30 17:08:46
Local clock offset: -4.432 ms
Remote clock offset: 544.309 ms


# Below is generated by plot.py at 2018-11-30 17:27:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.80 Mbit/s
95th percentile per-packet one-way delay: 335.269 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 55.51 Mbit/s
95th percentile per-packet one-way delay: 321.590 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 37.50 Mbit/s
95th percentile per-packet one-way delay: 379.899 ms
Loss rate: 3.91%
-- Flow 3:
Average throughput: 25.60 Mbit/s
95th percentile per-packet one-way delay: 315.242 ms
Loss rate: 4.01%
```
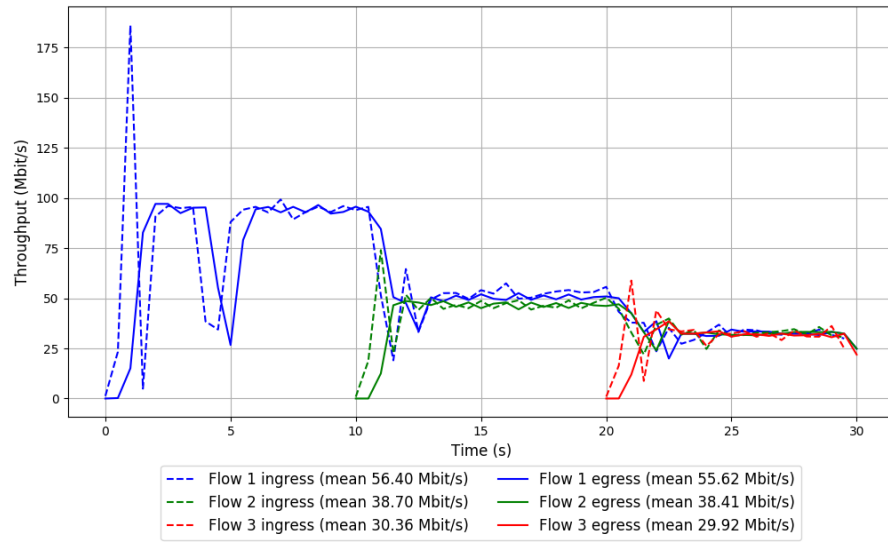
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 55.73 Mbit/s)   Flow 1 egress (mean 55.51 Mbit/s)
Flow 2 ingress (mean 38.66 Mbit/s)   Flow 2 egress (mean 37.50 Mbit/s)
Flow 3 ingress (mean 26.22 Mbit/s)   Flow 3 egress (mean 25.60 Mbit/s)

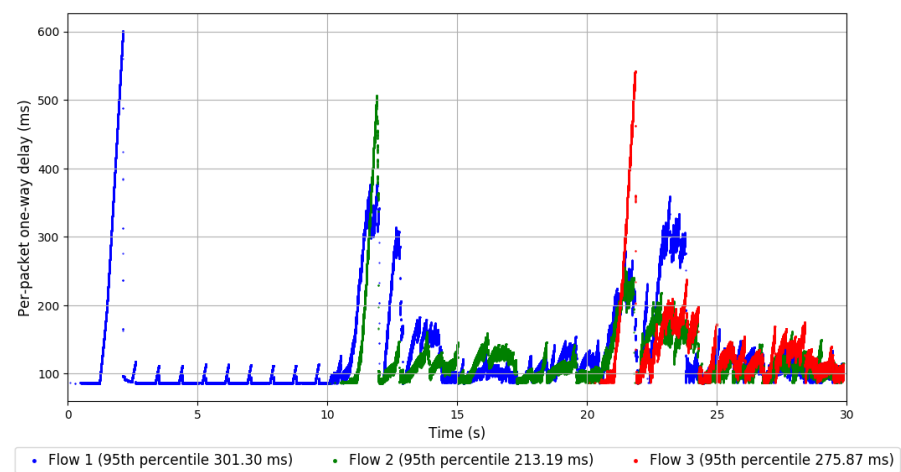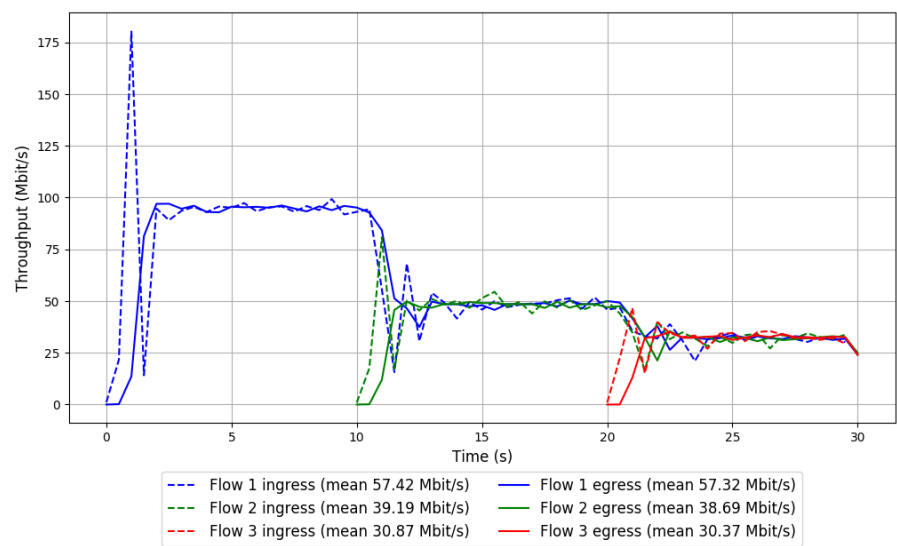Flow 1 (95th percentile 321.59 ms)   Flow 2 (95th percentile 379.90 ms)   Flow 3 (95th percentile 315.24 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-11-30 15:26:32
End at: 2018-11-30 15:27:02
Local clock offset: -4.358 ms
Remote clock offset: -173.25 ms


# Below is generated by plot.py at 2018-11-30 17:27:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.22 Mbit/s
95th percentile per-packet one-way delay: 249.902 ms
Loss rate: 1.39%
-- Flow 1:
Average throughput: 55.39 Mbit/s
95th percentile per-packet one-way delay: 261.569 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 38.88 Mbit/s
95th percentile per-packet one-way delay: 225.421 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 30.53 Mbit/s
95th percentile per-packet one-way delay: 328.217 ms
Loss rate: 3.96%
```

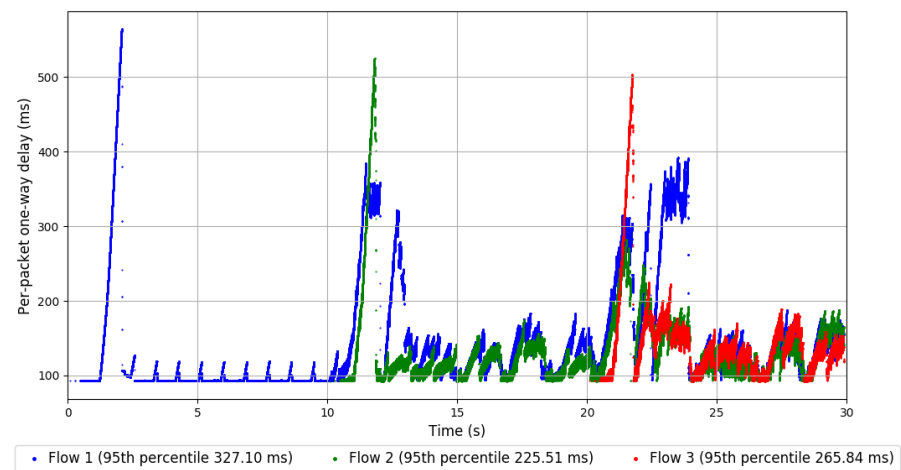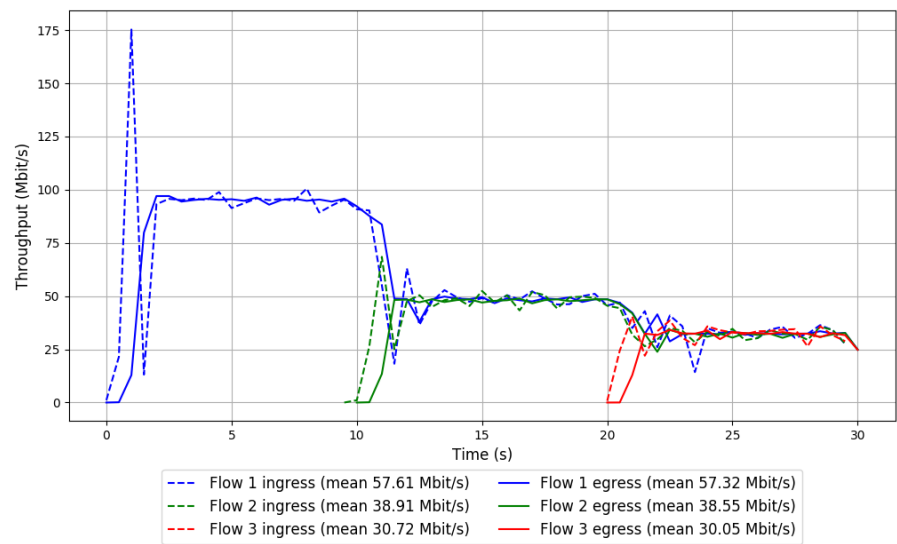Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-11-30 15:51:06
End at: 2018-11-30 15:51:36
Local clock offset: -5.241 ms
Remote clock offset: -174.428 ms


# Below is generated by plot.py at 2018-11-30 17:27:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.95 Mbit/s
95th percentile per-packet one-way delay: 259.905 ms
Loss rate: 1.95%
-- Flow 1:
Average throughput: 55.62 Mbit/s
95th percentile per-packet one-way delay: 283.798 ms
Loss rate: 1.90%
-- Flow 2:
Average throughput: 38.41 Mbit/s
95th percentile per-packet one-way delay: 220.758 ms
Loss rate: 1.58%
-- Flow 3:
Average throughput: 29.92 Mbit/s
95th percentile per-packet one-way delay: 334.726 ms
Loss rate: 3.17%
```

Run 2: Report of FillP-Sheep — Data Link

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```
Run 3: Statistics of FillP-Sheep

Start at: 2018-11-30 16:15:35
End at: 2018-11-30 16:16:05
Local clock offset: -5.186 ms
Remote clock offset: -180.646 ms


# Below is generated by plot.py at 2018-11-30 17:27:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.98 Mbit/s
95th percentile per-packet one-way delay: 284.717 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 57.32 Mbit/s
95th percentile per-packet one-way delay: 301.303 ms
Loss rate: 0.74%
-- Flow 2:
Average throughput: 38.69 Mbit/s
95th percentile per-packet one-way delay: 213.194 ms
Loss rate: 2.09%
-- Flow 3:
Average throughput: 30.37 Mbit/s
95th percentile per-packet one-way delay: 275.869 ms
Loss rate: 3.14%
```

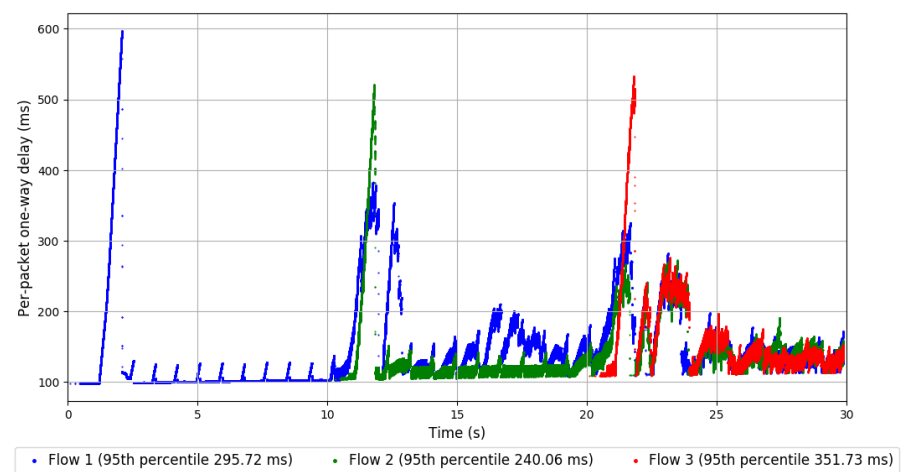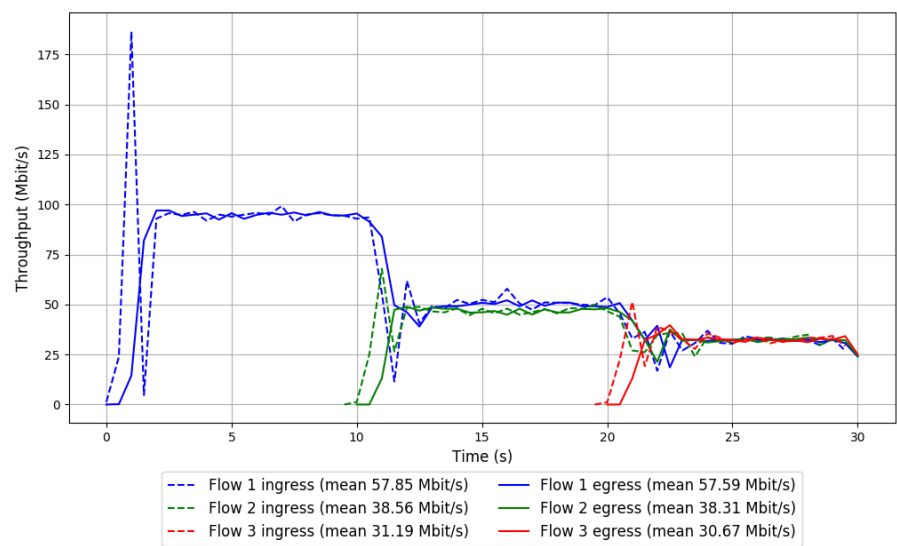Run 3: Report of FillP-Sheep — Data Link

- - - Flow 1 ingress (mean 57.42 Mbit/s) ——— Flow 1 egress (mean 57.32 Mbit/s)
- - - Flow 2 ingress (mean 39.19 Mbit/s) ——— Flow 2 egress (mean 38.69 Mbit/s)
- - - Flow 3 ingress (mean 30.87 Mbit/s) ——— Flow 3 egress (mean 30.37 Mbit/s)

- Flow 1 (95th percentile 301.30 ms)   • Flow 2 (95th percentile 213.19 ms)   • Flow 3 (95th percentile 275.87 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-11-30 16:40:07
End at: 2018-11-30 16:40:37
Local clock offset: -3.555 ms
Remote clock offset: -191.792 ms


# Below is generated by plot.py at 2018-11-30 17:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.79 Mbit/s
95th percentile per-packet one-way delay: 308.552 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 57.32 Mbit/s
95th percentile per-packet one-way delay: 327.098 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 38.55 Mbit/s
95th percentile per-packet one-way delay: 225.509 ms
Loss rate: 1.76%
-- Flow 3:
Average throughput: 30.05 Mbit/s
95th percentile per-packet one-way delay: 265.839 ms
Loss rate: 3.68%
```

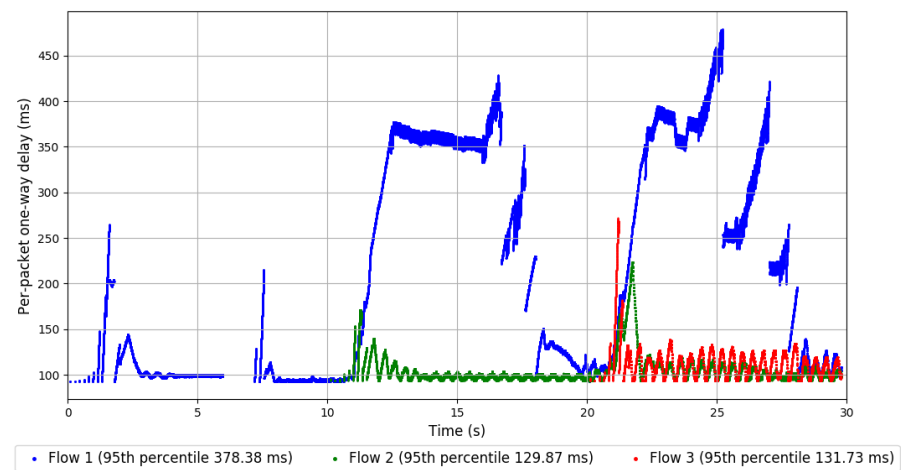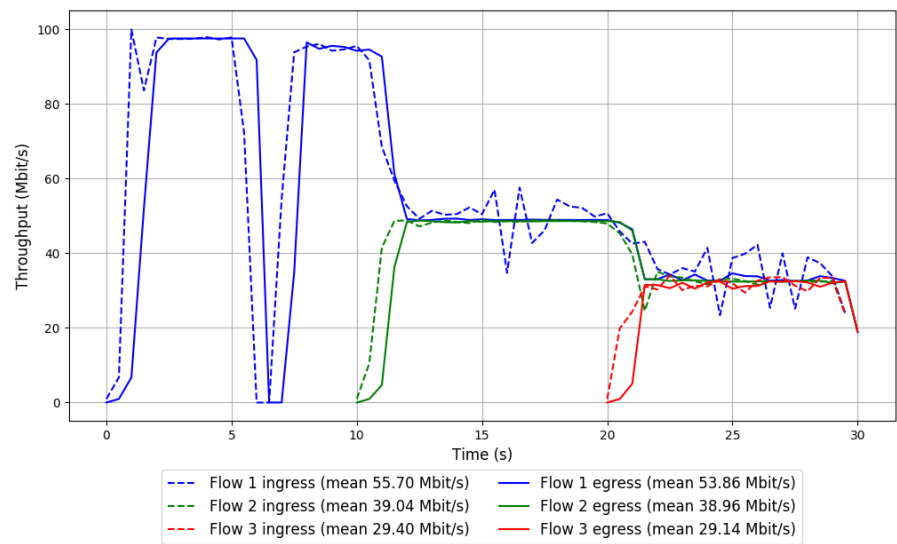Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 57.61 Mbit/s) —— Flow 1 egress (mean 57.32 Mbit/s)
Flow 2 ingress (mean 38.91 Mbit/s) —— Flow 2 egress (mean 38.55 Mbit/s)
Flow 3 ingress (mean 30.72 Mbit/s) —— Flow 3 egress (mean 30.05 Mbit/s)

Flow 1 (95th percentile 327.10 ms)   Flow 2 (95th percentile 225.51 ms)   Flow 3 (95th percentile 265.84 ms)

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```
Run 5: Statistics of FillP-Sheep

Start at: 2018-11-30 17:04:33
End at: 2018-11-30 17:05:03
Local clock offset: -4.524 ms
Remote clock offset: 426.791 ms


# Below is generated by plot.py at 2018-11-30 17:28:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.10 Mbit/s
95th percentile per-packet one-way delay: 279.640 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 57.59 Mbit/s
95th percentile per-packet one-way delay: 295.719 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 38.31 Mbit/s
95th percentile per-packet one-way delay: 240.058 ms
Loss rate: 1.45%
-- Flow 3:
Average throughput: 30.67 Mbit/s
95th percentile per-packet one-way delay: 351.725 ms
Loss rate: 3.30%
```

Run 5: Report of FillP-Sheep — Data Link
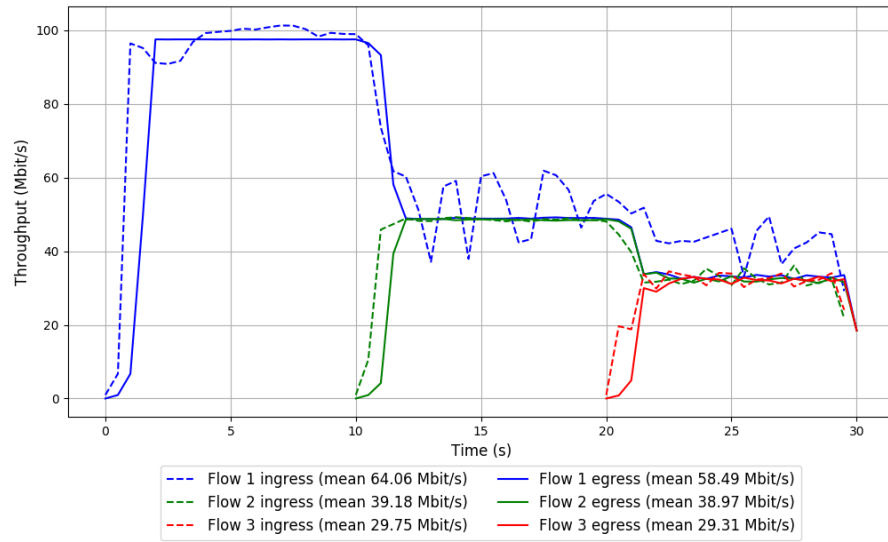

Flow 1 ingress (mean 57.85 Mbit/s) —— Flow 1 egress (mean 57.59 Mbit/s)
Flow 2 ingress (mean 38.56 Mbit/s) —— Flow 2 egress (mean 38.31 Mbit/s)
Flow 3 ingress (mean 31.19 Mbit/s) —— Flow 3 egress (mean 30.67 Mbit/s)

Flow 1 (95th percentile 295.72 ms)   Flow 2 (95th percentile 240.06 ms)   Flow 3 (95th percentile 351.73 ms)
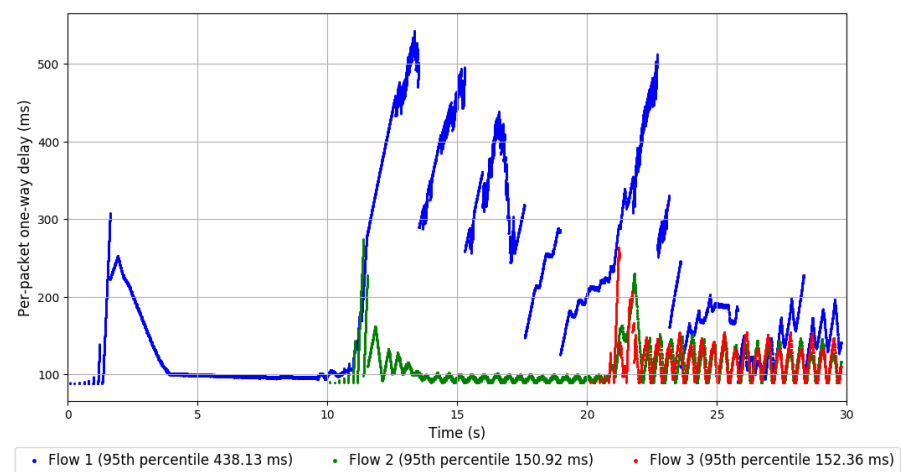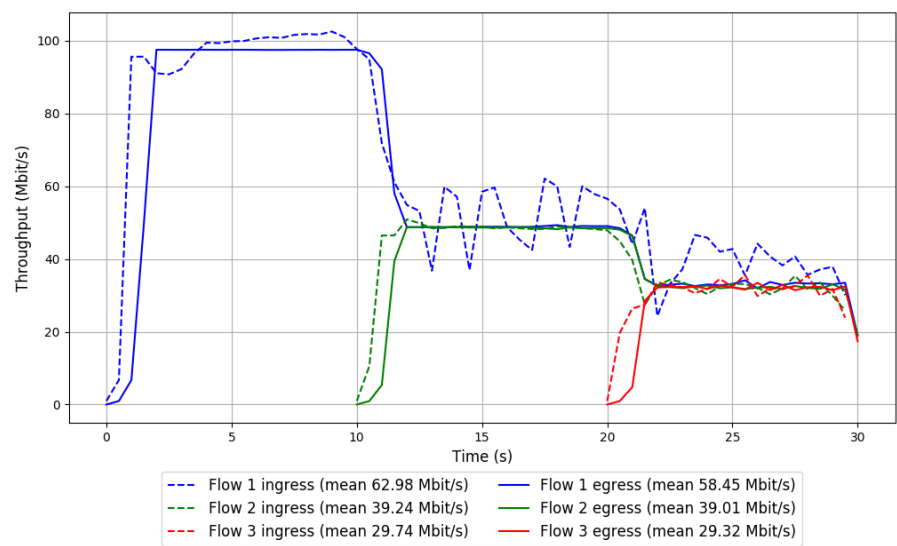
54

```
Run 1: Statistics of Indigo

Start at: 2018-11-30 15:36:50
End at: 2018-11-30 15:37:20
Local clock offset: -4.448 ms
Remote clock offset: -175.883 ms


# Below is generated by plot.py at 2018-11-30 17:28:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.17 Mbit/s
95th percentile per-packet one-way delay: 367.522 ms
Loss rate: 2.93%
-- Flow 1:
Average throughput: 53.86 Mbit/s
95th percentile per-packet one-way delay: 378.382 ms
Loss rate: 3.86%
-- Flow 2:
Average throughput: 38.96 Mbit/s
95th percentile per-packet one-way delay: 129.872 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 29.14 Mbit/s
95th percentile per-packet one-way delay: 131.726 ms
Loss rate: 2.61%
```
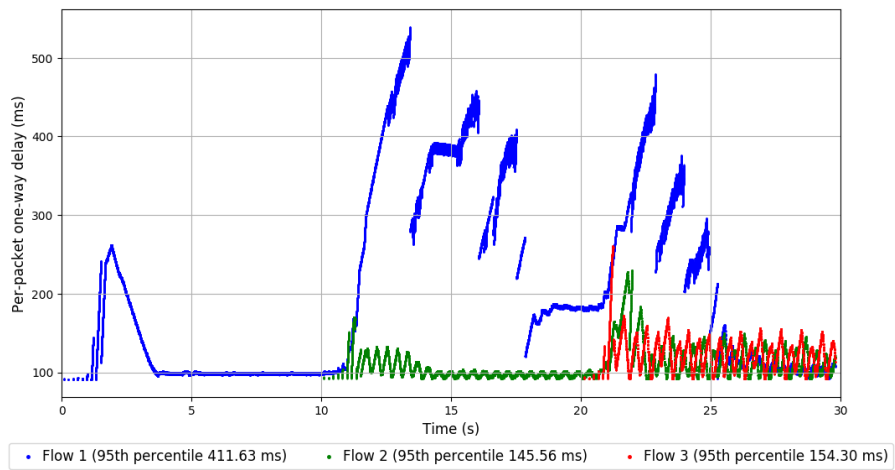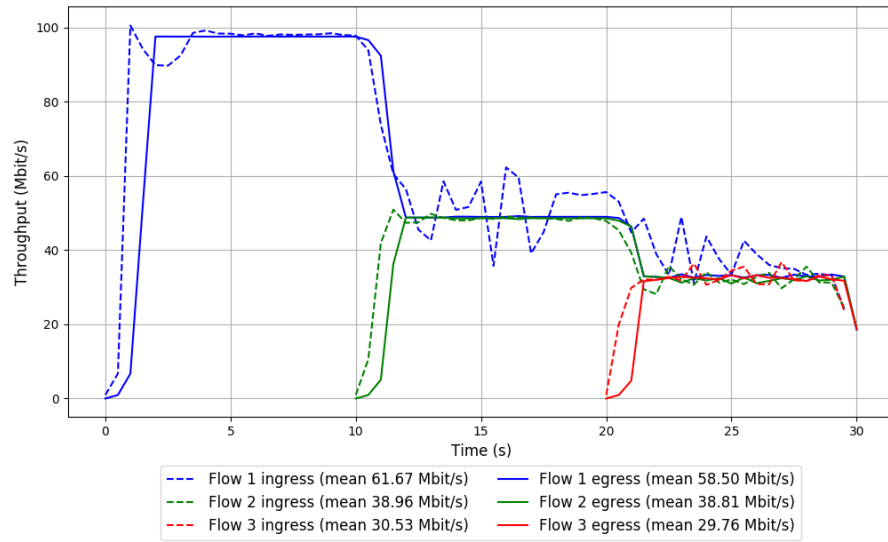
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-11-30 16:01:18
End at: 2018-11-30 16:01:48
Local clock offset: -4.483 ms
Remote clock offset: -180.969 ms


# Below is generated by plot.py at 2018-11-30 17:28:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.86 Mbit/s
95th percentile per-packet one-way delay: 381.917 ms
Loss rate: 6.59%
-- Flow 1:
Average throughput: 58.49 Mbit/s
95th percentile per-packet one-way delay: 412.688 ms
Loss rate: 9.21%
-- Flow 2:
Average throughput: 38.97 Mbit/s
95th percentile per-packet one-way delay: 152.673 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 29.31 Mbit/s
95th percentile per-packet one-way delay: 140.342 ms
Loss rate: 3.22%
```
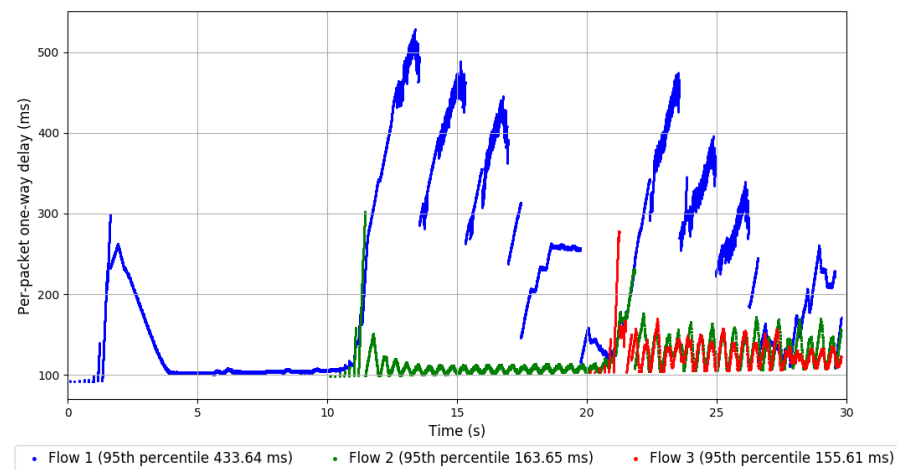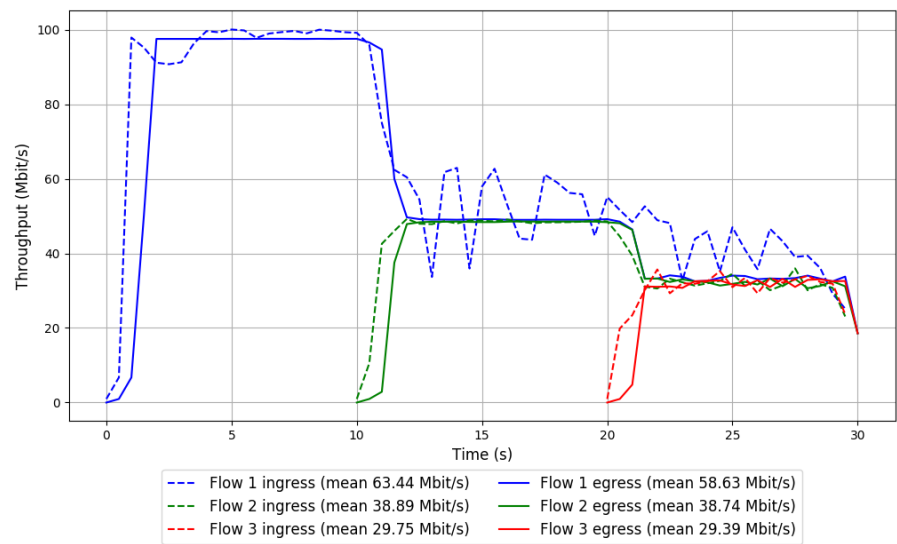
Run 2: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 64.06 Mbit/s)   —— Flow 1 egress (mean 58.49 Mbit/s)
- - - Flow 2 ingress (mean 39.18 Mbit/s)   —— Flow 2 egress (mean 38.97 Mbit/s)
- - - Flow 3 ingress (mean 29.75 Mbit/s)   —— Flow 3 egress (mean 29.31 Mbit/s)

• Flow 1 (95th percentile 412.69 ms)   • Flow 2 (95th percentile 152.67 ms)   • Flow 3 (95th percentile 140.34 ms)

```
Run 3: Statistics of Indigo

Start at: 2018-11-30 16:25:43
End at: 2018-11-30 16:26:13
Local clock offset: -4.677 ms
Remote clock offset: -184.511 ms


# Below is generated by plot.py at 2018-11-30 17:28:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.86 Mbit/s
95th percentile per-packet one-way delay: 403.193 ms
Loss rate: 5.61%
-- Flow 1:
Average throughput: 58.45 Mbit/s
95th percentile per-packet one-way delay: 438.131 ms
Loss rate: 7.72%
-- Flow 2:
Average throughput: 39.01 Mbit/s
95th percentile per-packet one-way delay: 150.921 ms
Loss rate: 1.45%
-- Flow 3:
Average throughput: 29.32 Mbit/s
95th percentile per-packet one-way delay: 152.364 ms
Loss rate: 3.10%
```
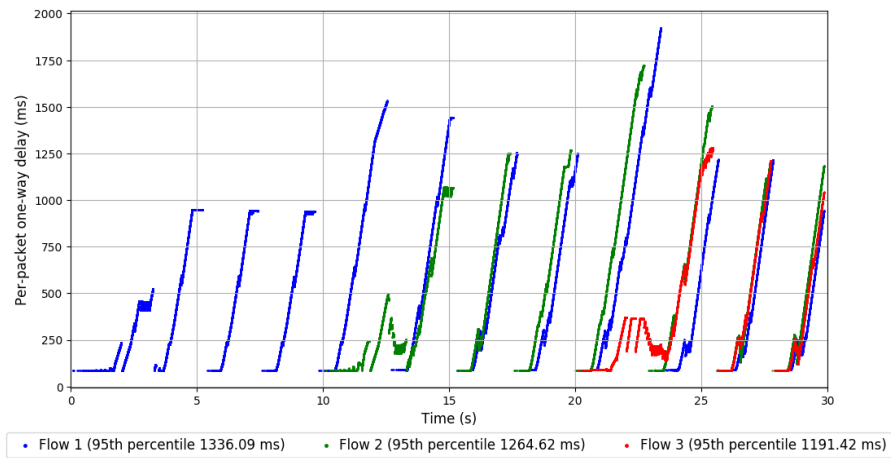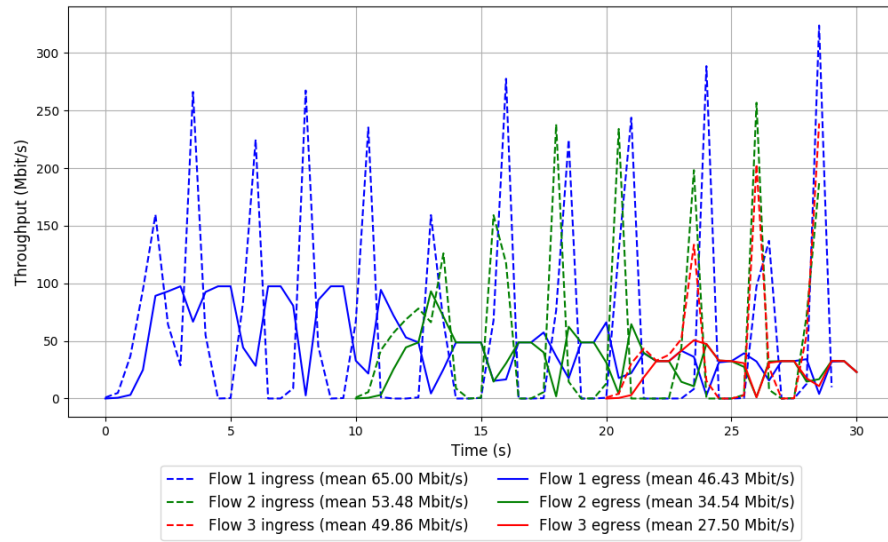
Run 3: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 62.98 Mbit/s)   —— Flow 1 egress (mean 58.45 Mbit/s)
- - - Flow 2 ingress (mean 39.24 Mbit/s)   —— Flow 2 egress (mean 39.01 Mbit/s)
- - - Flow 3 ingress (mean 29.74 Mbit/s)   —— Flow 3 egress (mean 29.32 Mbit/s)

• Flow 1 (95th percentile 438.13 ms)   • Flow 2 (95th percentile 150.92 ms)   • Flow 3 (95th percentile 152.36 ms)

60

```
Run 4: Statistics of Indigo

Start at: 2018-11-30 16:50:14
End at: 2018-11-30 16:50:44
Local clock offset: -3.623 ms
Remote clock offset: -193.148 ms


# Below is generated by plot.py at 2018-11-30 17:28:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.91 Mbit/s
95th percentile per-packet one-way delay: 386.313 ms
Loss rate: 4.35%
-- Flow 1:
Average throughput: 58.50 Mbit/s
95th percentile per-packet one-way delay: 411.627 ms
Loss rate: 5.68%
-- Flow 2:
Average throughput: 38.81 Mbit/s
95th percentile per-packet one-way delay: 145.557 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 29.76 Mbit/s
95th percentile per-packet one-way delay: 154.297 ms
Loss rate: 4.26%
```
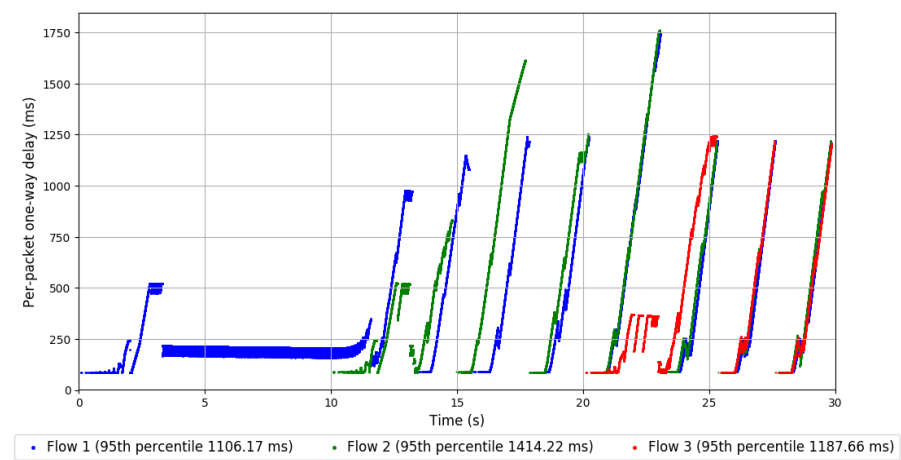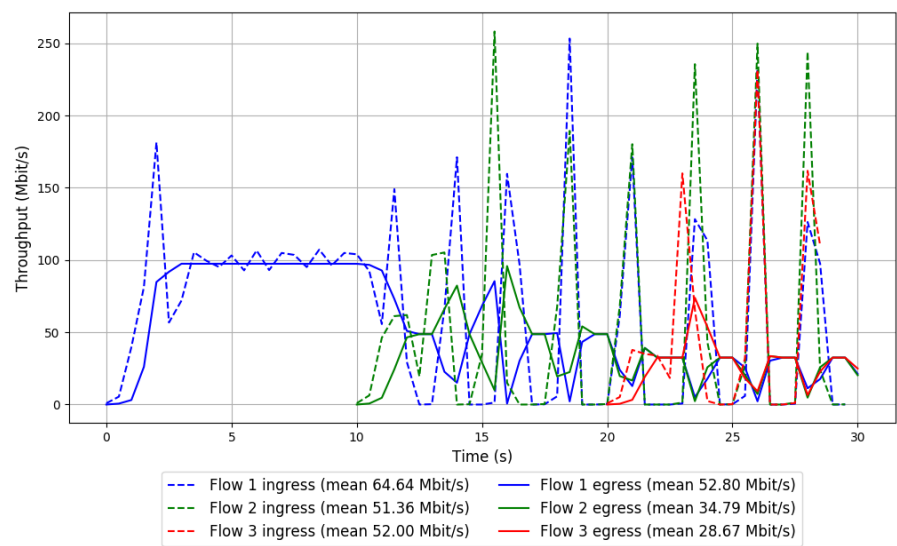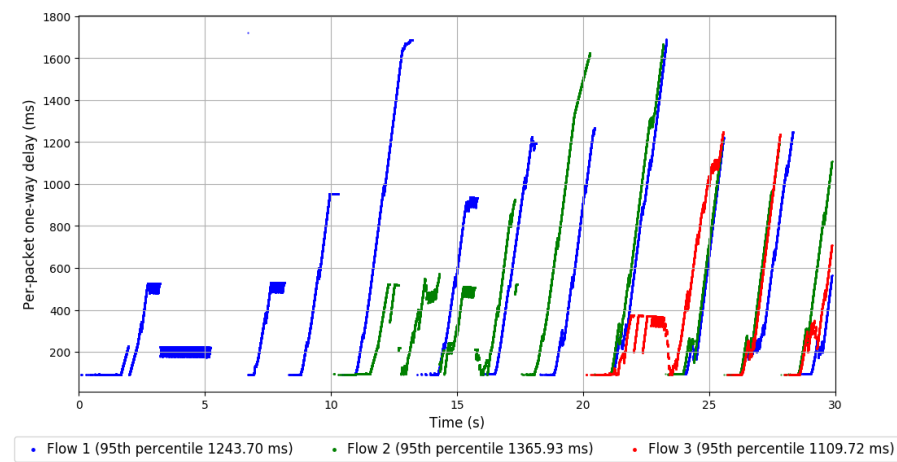
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-11-30 17:14:40
End at: 2018-11-30 17:15:10
Local clock offset: -3.671 ms
Remote clock offset: 748.047 ms


# Below is generated by plot.py at 2018-11-30 17:28:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.87 Mbit/s
95th percentile per-packet one-way delay: 398.840 ms
Loss rate: 5.76%
-- Flow 1:
Average throughput: 58.63 Mbit/s
95th percentile per-packet one-way delay: 433.638 ms
Loss rate: 8.06%
-- Flow 2:
Average throughput: 38.74 Mbit/s
95th percentile per-packet one-way delay: 163.653 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 29.39 Mbit/s
95th percentile per-packet one-way delay: 155.611 ms
Loss rate: 2.89%
```

Run 5: Report of Indigo — Data Link

- - - - Flow 1 ingress (mean 63.44 Mbit/s)   —— Flow 1 egress (mean 58.63 Mbit/s)
- - - - Flow 2 ingress (mean 38.89 Mbit/s)   —— Flow 2 egress (mean 38.74 Mbit/s)
- - - - Flow 3 ingress (mean 29.75 Mbit/s)   —— Flow 3 egress (mean 29.39 Mbit/s)

• Flow 1 (95th percentile 433.64 ms)   • Flow 2 (95th percentile 163.65 ms)   • Flow 3 (95th percentile 155.61 ms)
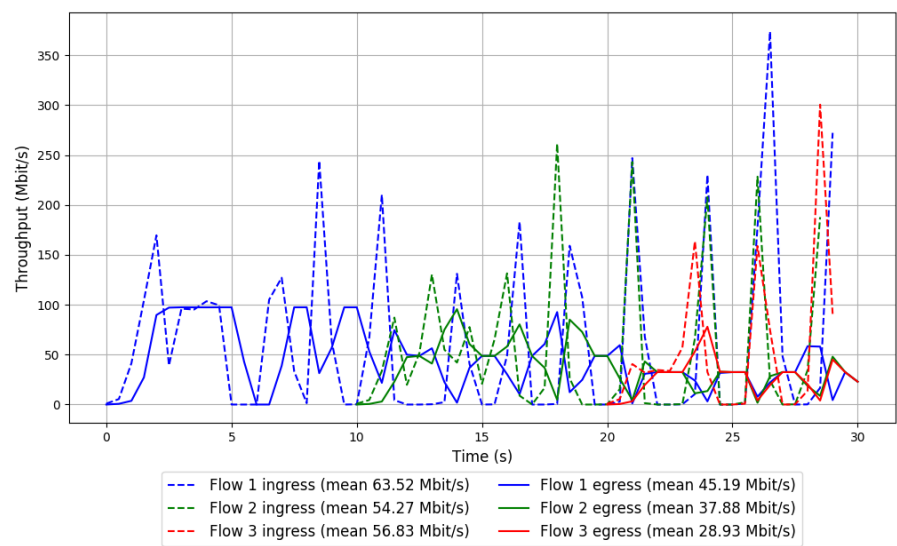
64

```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-30 15:42:03
End at: 2018-11-30 15:42:33
Local clock offset: -4.473 ms
Remote clock offset: -172.342 ms

# Below is generated by plot.py at 2018-11-30 17:28:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.36 Mbit/s
95th percentile per-packet one-way delay: 1266.525 ms
Loss rate: 29.90%
-- Flow 1:
Average throughput: 46.43 Mbit/s
95th percentile per-packet one-way delay: 1336.085 ms
Loss rate: 26.71%
-- Flow 2:
Average throughput: 34.54 Mbit/s
95th percentile per-packet one-way delay: 1264.620 ms
Loss rate: 31.94%
-- Flow 3:
Average throughput: 27.50 Mbit/s
95th percentile per-packet one-way delay: 1191.418 ms
Loss rate: 38.92%
```
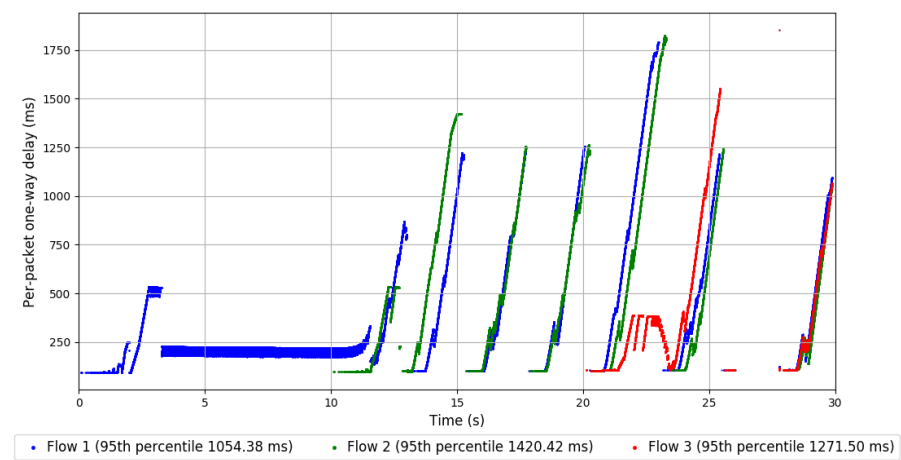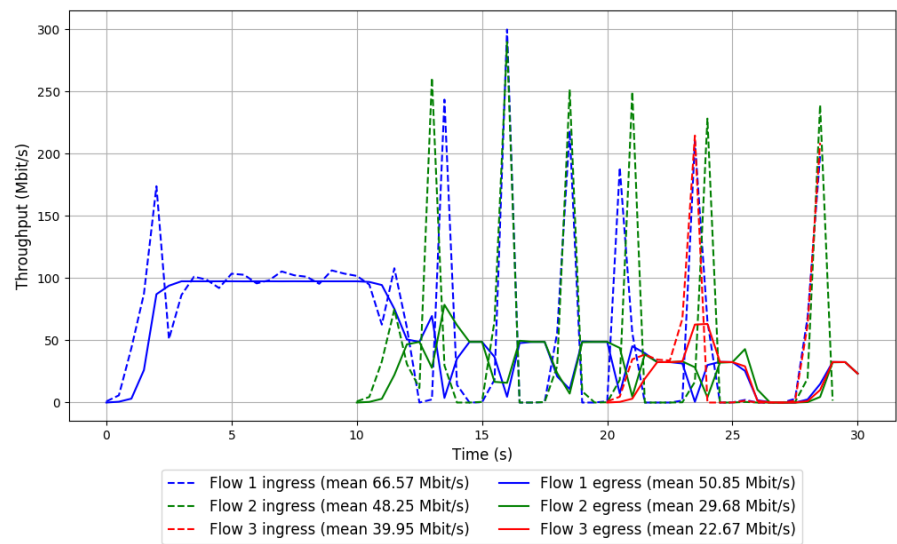
Run 1: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 65.00 Mbit/s)   Flow 1 egress (mean 46.43 Mbit/s)
Flow 2 ingress (mean 53.48 Mbit/s)   Flow 2 egress (mean 34.54 Mbit/s)
Flow 3 ingress (mean 49.86 Mbit/s)   Flow 3 egress (mean 27.50 Mbit/s)

Flow 1 (95th percentile 1336.09 ms)   Flow 2 (95th percentile 1264.62 ms)   Flow 3 (95th percentile 1191.42 ms)

66

```
Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-30 16:06:32
End at: 2018-11-30 16:07:02
Local clock offset: -5.258 ms
Remote clock offset: -178.409 ms


# Below is generated by plot.py at 2018-11-30 17:28:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.20 Mbit/s
95th percentile per-packet one-way delay: 1188.069 ms
Loss rate: 25.57%
-- Flow 1:
Average throughput: 52.80 Mbit/s
95th percentile per-packet one-way delay: 1106.173 ms
Loss rate: 18.84%
-- Flow 2:
Average throughput: 34.79 Mbit/s
95th percentile per-packet one-way delay: 1414.221 ms
Loss rate: 32.95%
-- Flow 3:
Average throughput: 28.67 Mbit/s
95th percentile per-packet one-way delay: 1187.664 ms
Loss rate: 37.73%
```
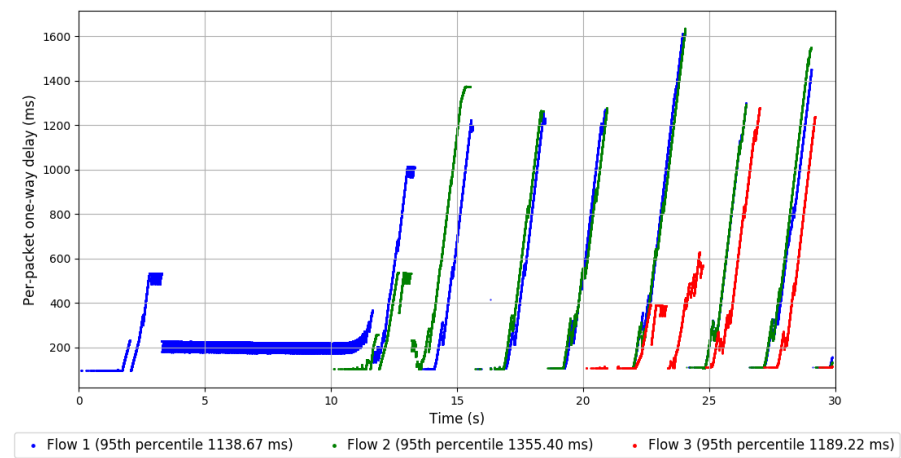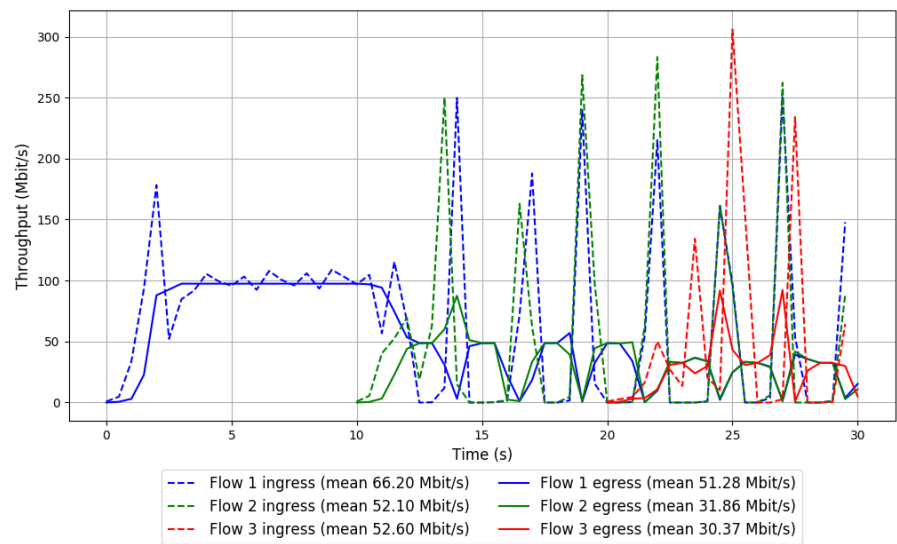
Run 2: Report of Indigo-96d2da3 — Data Link

```
Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-30 16:31:03
End at: 2018-11-30 16:31:33
Local clock offset: -3.706 ms
Remote clock offset: -189.566 ms


# Below is generated by plot.py at 2018-11-30 17:29:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.79 Mbit/s
95th percentile per-packet one-way delay: 1249.111 ms
Loss rate: 30.35%
-- Flow 1:
Average throughput: 45.19 Mbit/s
95th percentile per-packet one-way delay: 1243.703 ms
Loss rate: 27.96%
-- Flow 2:
Average throughput: 37.88 Mbit/s
95th percentile per-packet one-way delay: 1365.928 ms
Loss rate: 26.84%
-- Flow 3:
Average throughput: 28.93 Mbit/s
95th percentile per-packet one-way delay: 1109.721 ms
Loss rate: 45.83%
```
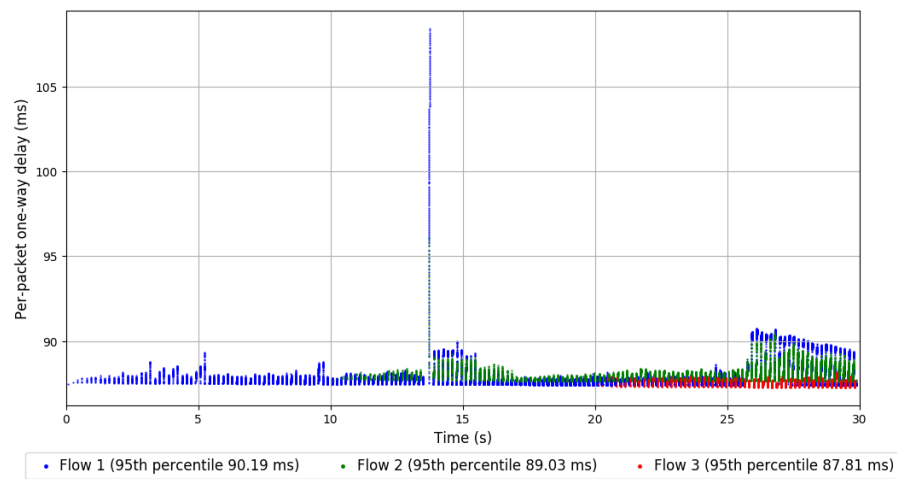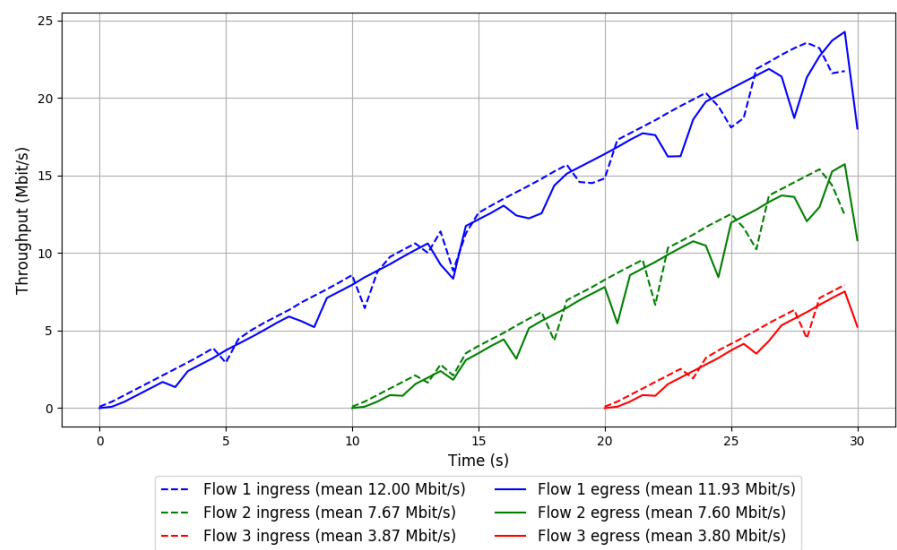
Run 3: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 63.52 Mbit/s) — Flow 1 egress (mean 45.19 Mbit/s)
Flow 2 ingress (mean 54.27 Mbit/s) — Flow 2 egress (mean 37.88 Mbit/s)
Flow 3 ingress (mean 56.83 Mbit/s) — Flow 3 egress (mean 28.93 Mbit/s)

Flow 1 (95th percentile 1243.70 ms) · Flow 2 (95th percentile 1365.93 ms) · Flow 3 (95th percentile 1109.72 ms)

70

```
Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-30 16:55:29
End at: 2018-11-30 16:55:59
Local clock offset: -3.689 ms
Remote clock offset: 151.986 ms


# Below is generated by plot.py at 2018-11-30 17:29:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.96 Mbit/s
95th percentile per-packet one-way delay: 1212.284 ms
Loss rate: 27.48%
-- Flow 1:
Average throughput: 50.85 Mbit/s
95th percentile per-packet one-way delay: 1054.379 ms
Loss rate: 20.98%
-- Flow 2:
Average throughput: 29.68 Mbit/s
95th percentile per-packet one-way delay: 1420.423 ms
Loss rate: 37.20%
-- Flow 3:
Average throughput: 22.67 Mbit/s
95th percentile per-packet one-way delay: 1271.496 ms
Loss rate: 37.12%
```
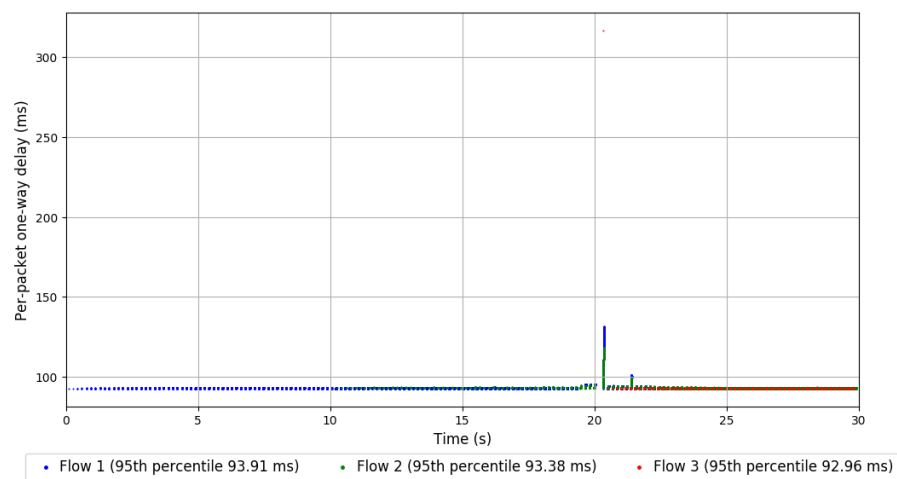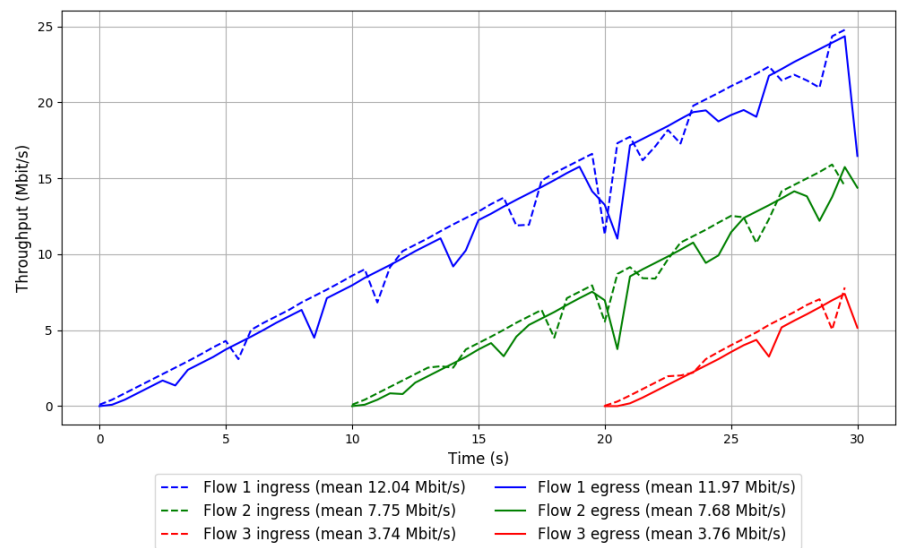
Run 4: Report of Indigo-96d2da3 — Data Link

```
Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-30 17:19:53
End at: 2018-11-30 17:20:23
Local clock offset: -4.977 ms
Remote clock offset: 905.32 ms


# Below is generated by plot.py at 2018-11-30 17:29:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.36 Mbit/s
95th percentile per-packet one-way delay: 1212.123 ms
Loss rate: 30.74%
-- Flow 1:
Average throughput: 51.28 Mbit/s
95th percentile per-packet one-way delay: 1138.669 ms
Loss rate: 22.94%
-- Flow 2:
Average throughput: 31.86 Mbit/s
95th percentile per-packet one-way delay: 1355.403 ms
Loss rate: 39.35%
-- Flow 3:
Average throughput: 30.37 Mbit/s
95th percentile per-packet one-way delay: 1189.221 ms
Loss rate: 43.24%
```
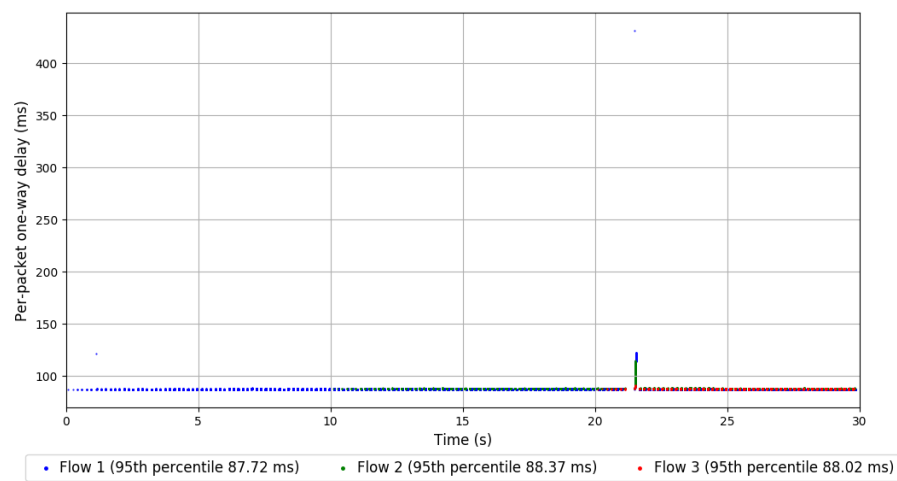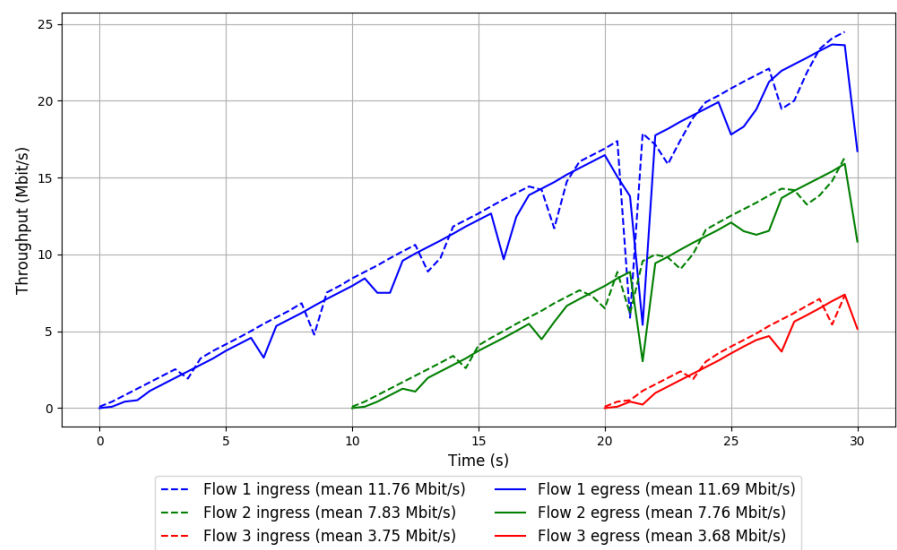
Run 5: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 66.20 Mbit/s) --- Flow 1 egress (mean 51.28 Mbit/s)
Flow 2 ingress (mean 52.10 Mbit/s) --- Flow 2 egress (mean 31.86 Mbit/s)
Flow 3 ingress (mean 52.60 Mbit/s) --- Flow 3 egress (mean 30.37 Mbit/s)

Flow 1 (95th percentile 1138.67 ms)   Flow 2 (95th percentile 1355.40 ms)   Flow 3 (95th percentile 1189.22 ms)

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```
Run 1: Statistics of LEDBAT

Start at: 2018-11-30 15:21:23
End at: 2018-11-30 15:21:53
Local clock offset: -4.361 ms
Remote clock offset: -166.994 ms

# Below is generated by plot.py at 2018-11-30 17:29:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.21 Mbit/s
95th percentile per-packet one-way delay: 90.039 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 11.93 Mbit/s
95th percentile per-packet one-way delay: 90.187 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 89.030 ms
Loss rate: 1.78%
-- Flow 3:
Average throughput: 3.80 Mbit/s
95th percentile per-packet one-way delay: 87.808 ms
Loss rate: 3.53%
```
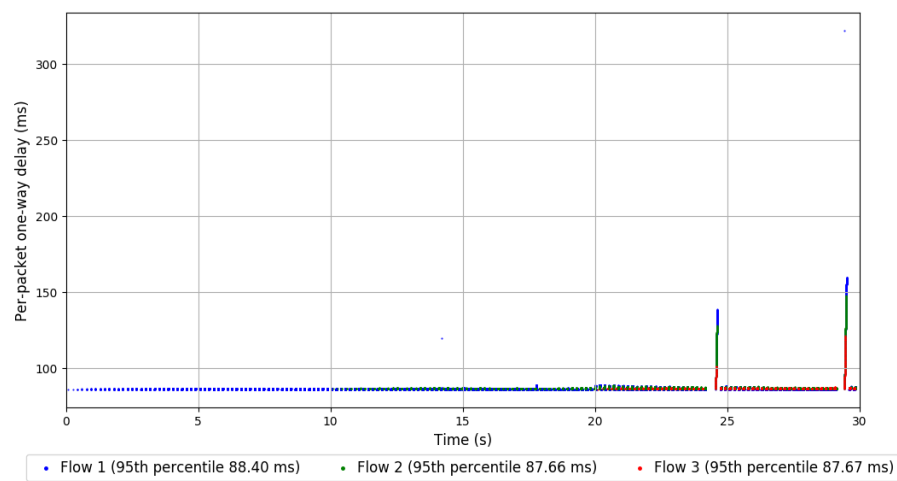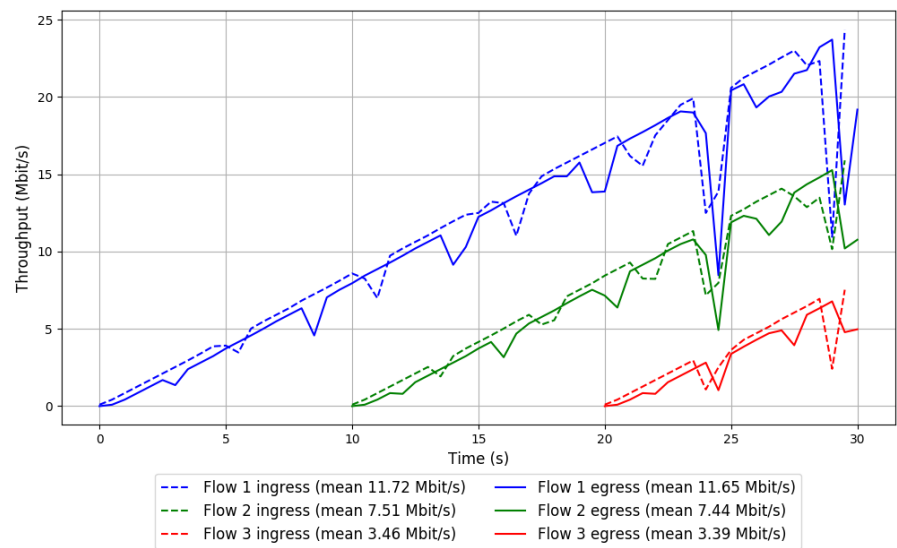
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-11-30 15:45:58
End at: 2018-11-30 15:46:28
Local clock offset: -4.489 ms
Remote clock offset: -178.248 ms

# Below is generated by plot.py at 2018-11-30 17:29:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.23 Mbit/s
95th percentile per-packet one-way delay: 93.587 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 11.97 Mbit/s
95th percentile per-packet one-way delay: 93.911 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 7.68 Mbit/s
95th percentile per-packet one-way delay: 93.380 ms
Loss rate: 1.77%
-- Flow 3:
Average throughput: 3.76 Mbit/s
95th percentile per-packet one-way delay: 92.958 ms
Loss rate: 3.60%
```
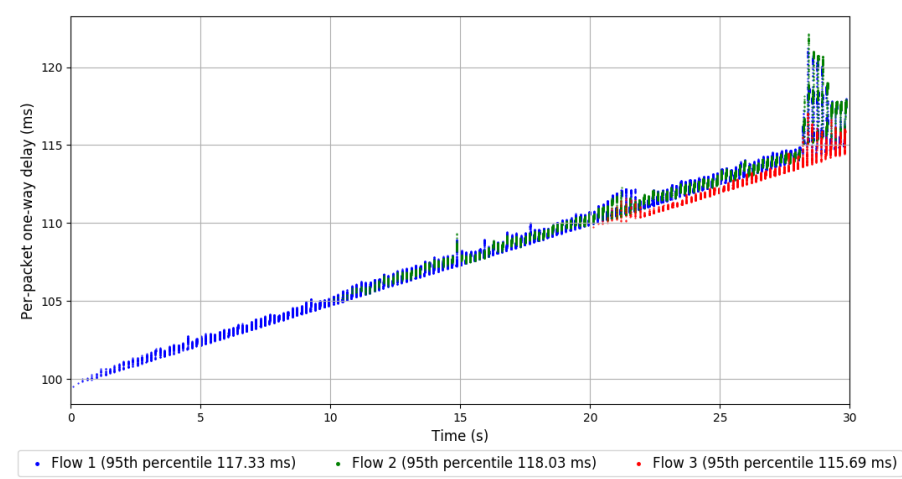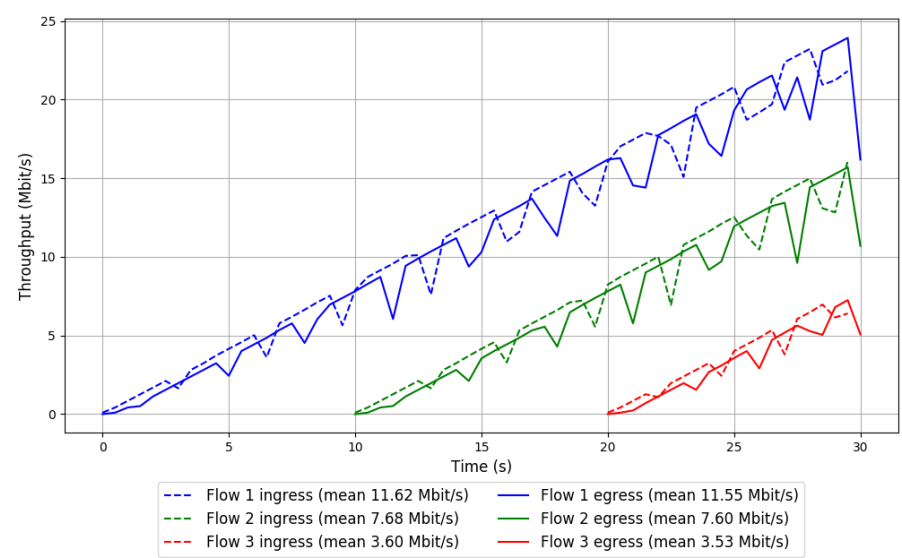
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-11-30 16:10:27
End at: 2018-11-30 16:10:57
Local clock offset: -4.501 ms
Remote clock offset: -179.434 ms

# Below is generated by plot.py at 2018-11-30 17:29:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.02 Mbit/s
95th percentile per-packet one-way delay: 88.243 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 11.69 Mbit/s
95th percentile per-packet one-way delay: 87.722 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 88.366 ms
Loss rate: 1.76%
-- Flow 3:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 88.022 ms
Loss rate: 3.60%
```
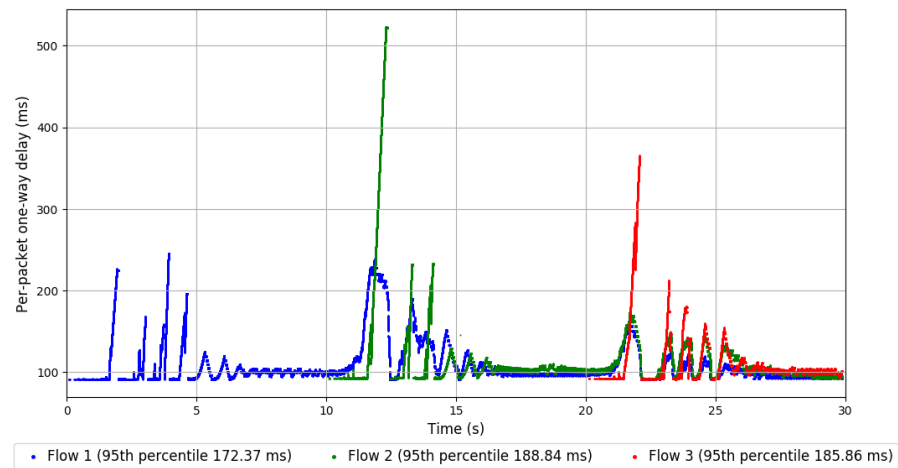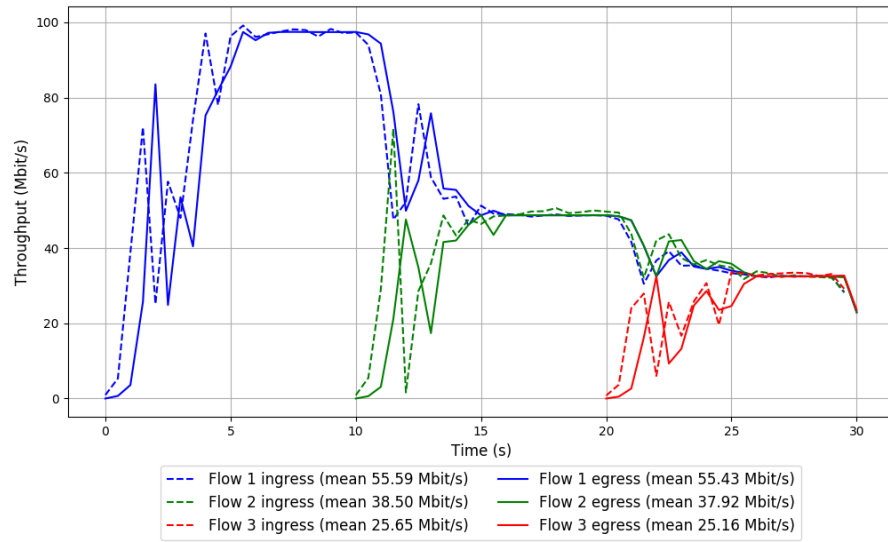
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 11.76 Mbit/s)   Flow 1 egress (mean 11.69 Mbit/s)
Flow 2 ingress (mean 7.83 Mbit/s)   Flow 2 egress (mean 7.76 Mbit/s)
Flow 3 ingress (mean 3.75 Mbit/s)   Flow 3 egress (mean 3.68 Mbit/s)

Flow 1 (95th percentile 87.72 ms)   Flow 2 (95th percentile 88.37 ms)   Flow 3 (95th percentile 88.02 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-11-30 16:34:59
End at: 2018-11-30 16:35:29
Local clock offset: -3.628 ms
Remote clock offset: -184.204 ms


# Below is generated by plot.py at 2018-11-30 17:29:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.69 Mbit/s
95th percentile per-packet one-way delay: 88.329 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 11.65 Mbit/s
95th percentile per-packet one-way delay: 88.398 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 7.44 Mbit/s
95th percentile per-packet one-way delay: 87.659 ms
Loss rate: 1.79%
-- Flow 3:
Average throughput: 3.39 Mbit/s
95th percentile per-packet one-way delay: 87.670 ms
Loss rate: 3.74%
```

Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-11-30 16:59:25
End at: 2018-11-30 16:59:55
Local clock offset: -4.464 ms
Remote clock offset: 266.388 ms

# Below is generated by plot.py at 2018-11-30 17:29:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.74 Mbit/s
95th percentile per-packet one-way delay: 117.482 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 11.55 Mbit/s
95th percentile per-packet one-way delay: 117.335 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 118.032 ms
Loss rate: 1.77%
-- Flow 3:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 115.692 ms
Loss rate: 3.66%
```
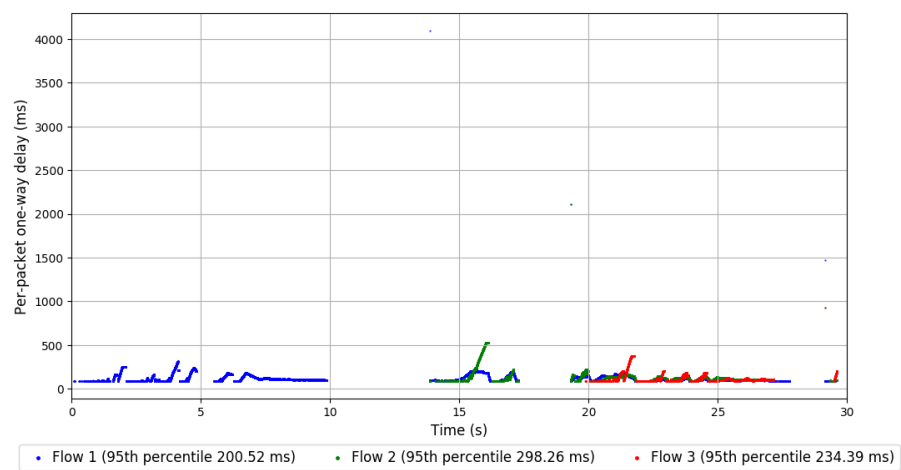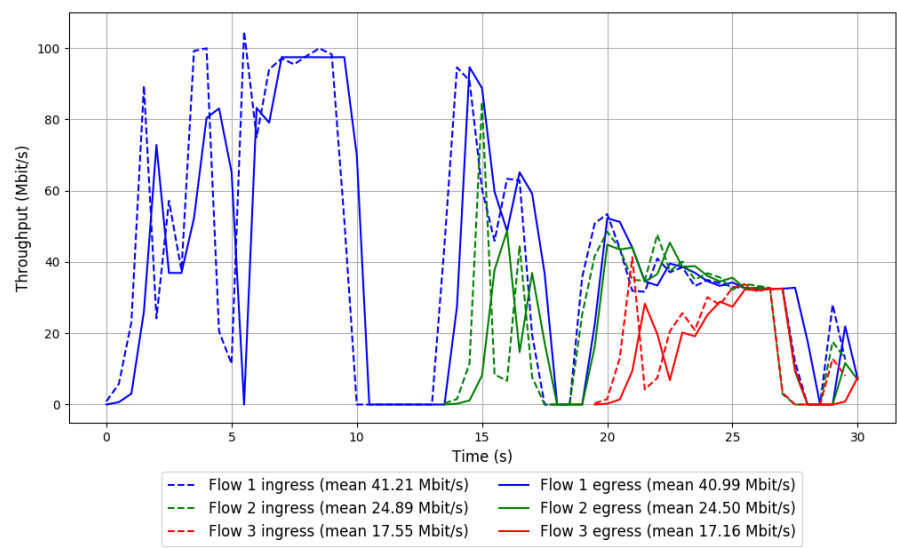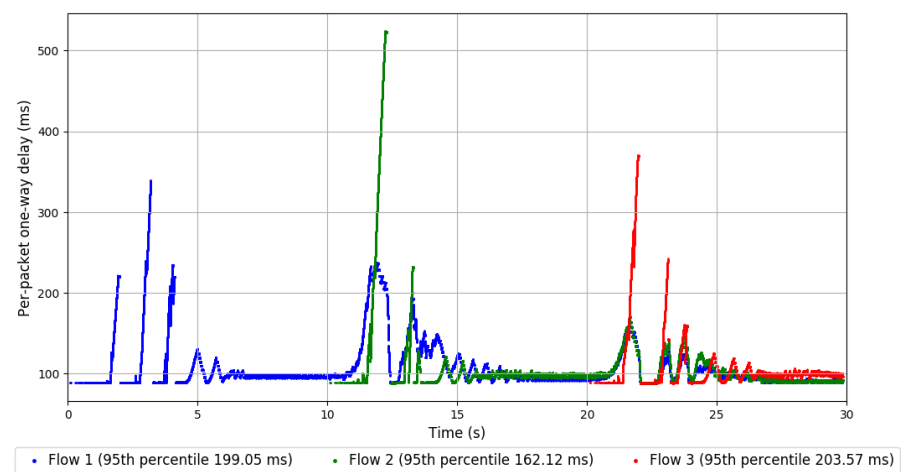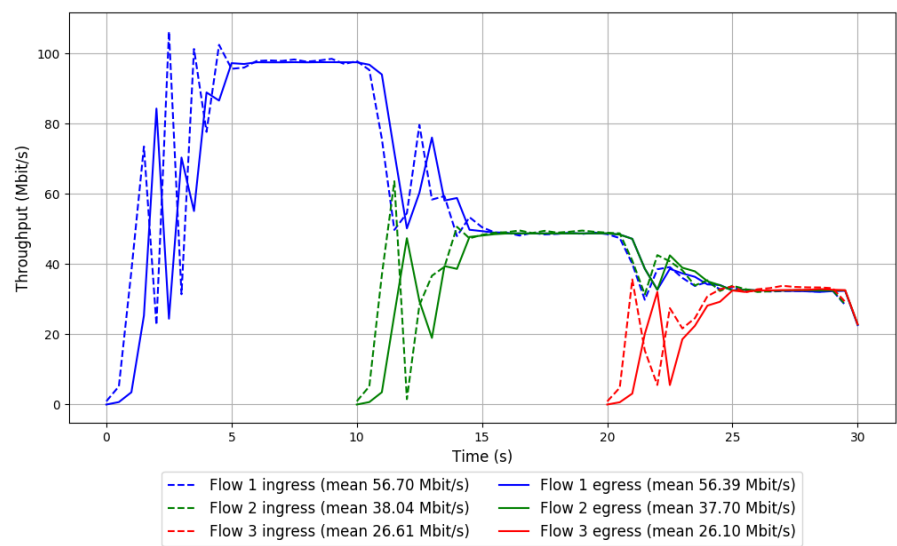
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-11-30 15:25:14
End at: 2018-11-30 15:25:44
Local clock offset: -4.337 ms
Remote clock offset: -171.832 ms

# Below is generated by plot.py at 2018-11-30 17:29:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.82 Mbit/s
95th percentile per-packet one-way delay: 177.900 ms
Loss rate: 1.55%
-- Flow 1:
Average throughput: 55.43 Mbit/s
95th percentile per-packet one-way delay: 172.369 ms
Loss rate: 0.85%
-- Flow 2:
Average throughput: 37.92 Mbit/s
95th percentile per-packet one-way delay: 188.843 ms
Loss rate: 2.38%
-- Flow 3:
Average throughput: 25.16 Mbit/s
95th percentile per-packet one-way delay: 185.856 ms
Loss rate: 3.62%
```
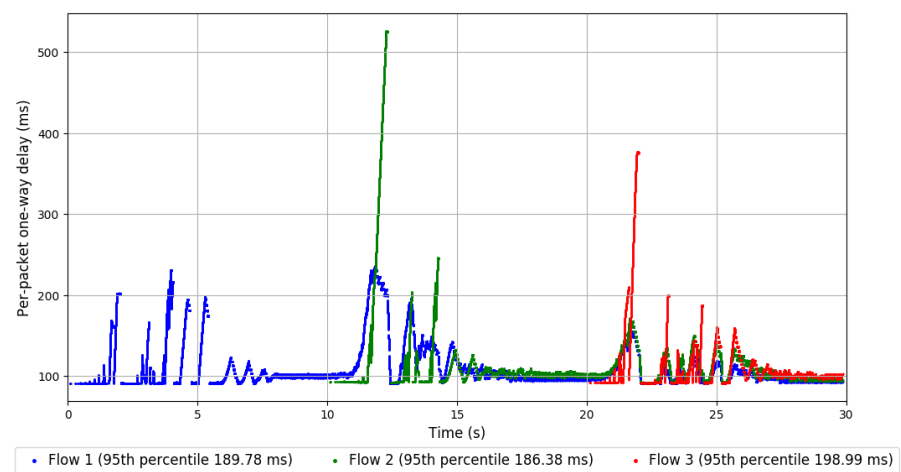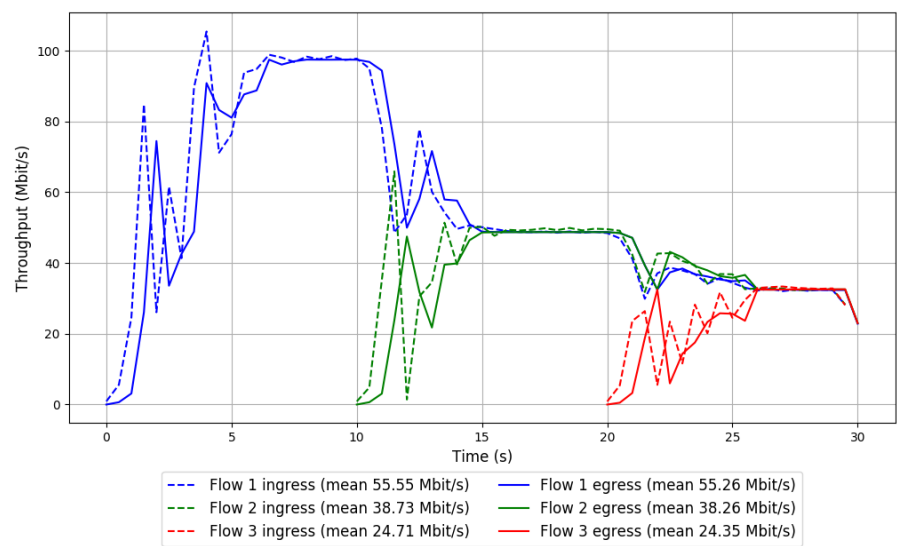
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-11-30 15:49:50
End at: 2018-11-30 15:50:20
Local clock offset: -4.547 ms
Remote clock offset: -175.536 ms

# Below is generated by plot.py at 2018-11-30 17:29:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.72 Mbit/s
95th percentile per-packet one-way delay: 209.014 ms
Loss rate: 1.74%
-- Flow 1:
Average throughput: 40.99 Mbit/s
95th percentile per-packet one-way delay: 200.518 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 24.50 Mbit/s
95th percentile per-packet one-way delay: 298.260 ms
Loss rate: 2.67%
-- Flow 3:
Average throughput: 17.16 Mbit/s
95th percentile per-packet one-way delay: 234.387 ms
Loss rate: 3.98%
```

Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 41.21 Mbit/s) --- Flow 1 egress (mean 40.99 Mbit/s)
Flow 2 ingress (mean 24.89 Mbit/s) --- Flow 2 egress (mean 24.50 Mbit/s)
Flow 3 ingress (mean 17.55 Mbit/s) --- Flow 3 egress (mean 17.16 Mbit/s)

• Flow 1 (95th percentile 200.52 ms)   • Flow 2 (95th percentile 298.26 ms)   • Flow 3 (95th percentile 234.39 ms)

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-11-30 16:14:17
End at: 2018-11-30 16:14:47
Local clock offset: -4.563 ms
Remote clock offset: -180.582 ms


# Below is generated by plot.py at 2018-11-30 17:30:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.95 Mbit/s
95th percentile per-packet one-way delay: 194.828 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 56.39 Mbit/s
95th percentile per-packet one-way delay: 199.050 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 37.70 Mbit/s
95th percentile per-packet one-way delay: 162.123 ms
Loss rate: 1.75%
-- Flow 3:
Average throughput: 26.10 Mbit/s
95th percentile per-packet one-way delay: 203.573 ms
Loss rate: 3.63%
```

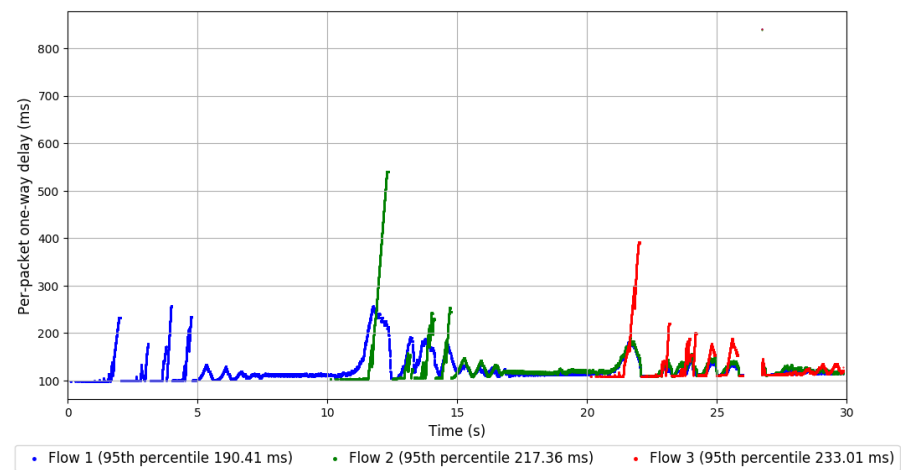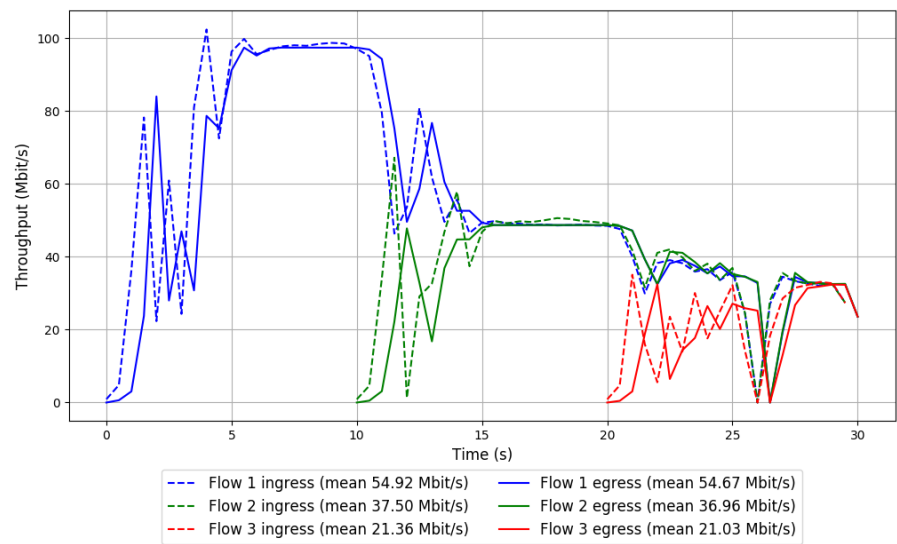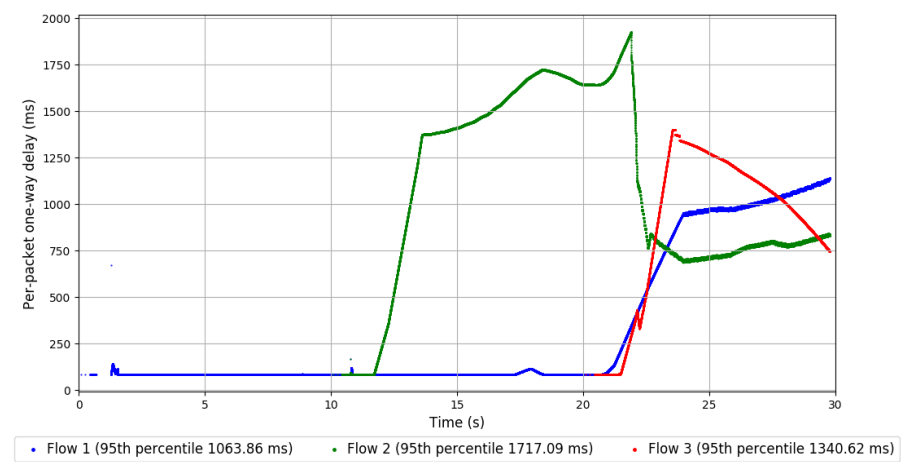Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 56.70 Mbit/s) --- Flow 1 egress (mean 56.39 Mbit/s)
Flow 2 ingress (mean 38.04 Mbit/s) --- Flow 2 egress (mean 37.70 Mbit/s)
Flow 3 ingress (mean 26.61 Mbit/s) --- Flow 3 egress (mean 26.10 Mbit/s)

Flow 1 (95th percentile 199.05 ms)   Flow 2 (95th percentile 162.12 ms)   Flow 3 (95th percentile 203.57 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-11-30 16:38:50
End at: 2018-11-30 16:39:20
Local clock offset: -4.392 ms
Remote clock offset: -191.347 ms


# Below is generated by plot.py at 2018-11-30 17:30:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.63 Mbit/s
95th percentile per-packet one-way delay: 190.147 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 55.26 Mbit/s
95th percentile per-packet one-way delay: 189.779 ms
Loss rate: 1.09%
-- Flow 2:
Average throughput: 38.26 Mbit/s
95th percentile per-packet one-way delay: 186.377 ms
Loss rate: 2.06%
-- Flow 3:
Average throughput: 24.35 Mbit/s
95th percentile per-packet one-way delay: 198.987 ms
Loss rate: 3.16%
```

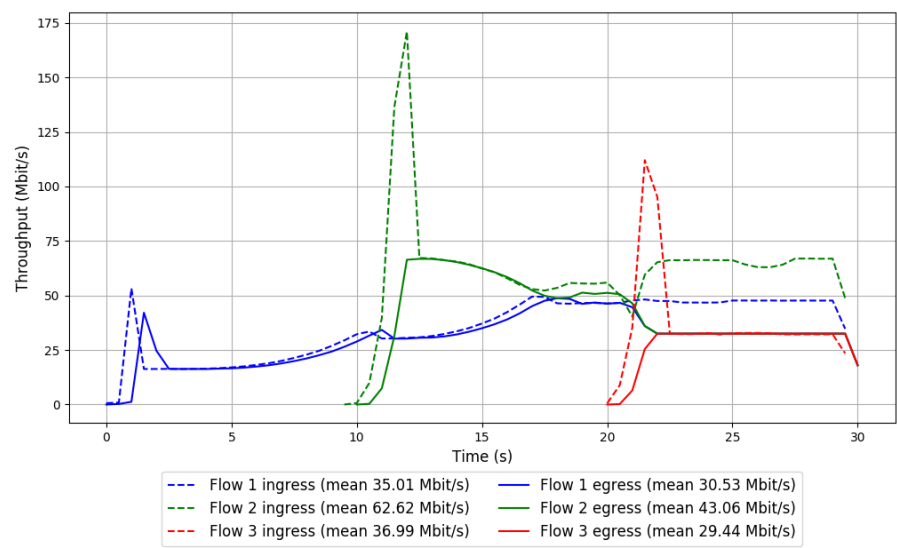Run 4: Report of Indigo-Muses — Data Link

- - - - Flow 1 ingress (mean 55.55 Mbit/s)   —— Flow 1 egress (mean 55.26 Mbit/s)
- - - - Flow 2 ingress (mean 38.73 Mbit/s)   —— Flow 2 egress (mean 38.26 Mbit/s)
- - - - Flow 3 ingress (mean 24.71 Mbit/s)   —— Flow 3 egress (mean 24.35 Mbit/s)

• Flow 1 (95th percentile 189.78 ms)   • Flow 2 (95th percentile 186.38 ms)   • Flow 3 (95th percentile 198.99 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-11-30 17:03:16
End at: 2018-11-30 17:03:46
Local clock offset: -3.76 ms
Remote clock offset: 387.973 ms


# Below is generated by plot.py at 2018-11-30 17:30:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.06 Mbit/s
95th percentile per-packet one-way delay: 199.940 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 54.67 Mbit/s
95th percentile per-packet one-way delay: 190.406 ms
Loss rate: 0.99%
-- Flow 2:
Average throughput: 36.96 Mbit/s
95th percentile per-packet one-way delay: 217.363 ms
Loss rate: 2.25%
-- Flow 3:
Average throughput: 21.03 Mbit/s
95th percentile per-packet one-way delay: 233.006 ms
Loss rate: 3.13%
```

Run 5: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 54.92 Mbit/s) — — Flow 1 egress (mean 54.67 Mbit/s)
Flow 2 ingress (mean 37.50 Mbit/s) — — Flow 2 egress (mean 36.96 Mbit/s)
Flow 3 ingress (mean 21.36 Mbit/s) — — Flow 3 egress (mean 21.03 Mbit/s)

Flow 1 (95th percentile 190.41 ms)   Flow 2 (95th percentile 217.36 ms)   Flow 3 (95th percentile 233.01 ms)
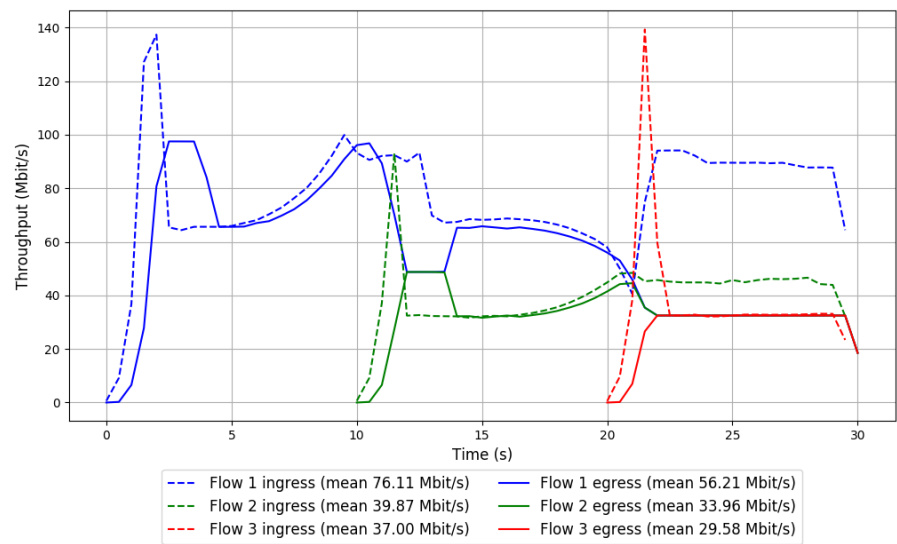
94

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-30 15:38:09
End at: 2018-11-30 15:38:39
Local clock offset: -5.259 ms
Remote clock offset: -170.246 ms

# Below is generated by plot.py at 2018-11-30 17:30:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.69 Mbit/s
95th percentile per-packet one-way delay: 1684.500 ms
Loss rate: 23.17%
-- Flow 1:
Average throughput: 30.53 Mbit/s
95th percentile per-packet one-way delay: 1063.859 ms
Loss rate: 13.31%
-- Flow 2:
Average throughput: 43.06 Mbit/s
95th percentile per-packet one-way delay: 1717.087 ms
Loss rate: 31.84%
-- Flow 3:
Average throughput: 29.44 Mbit/s
95th percentile per-packet one-way delay: 1340.620 ms
Loss rate: 21.84%
```
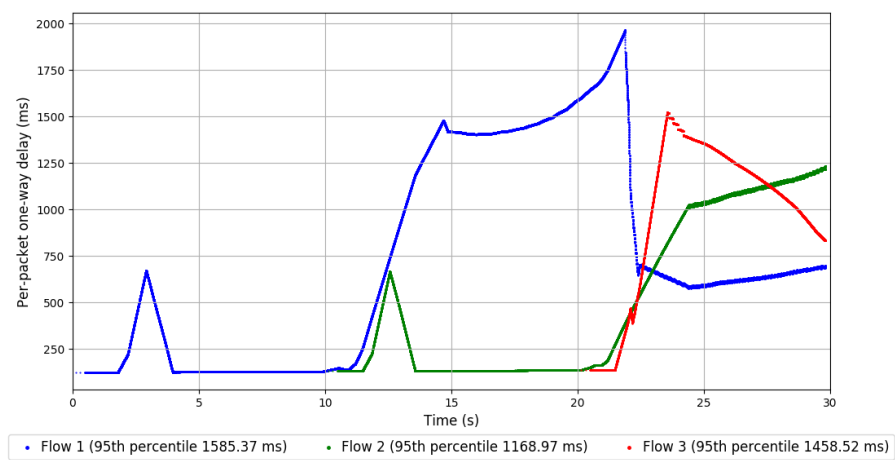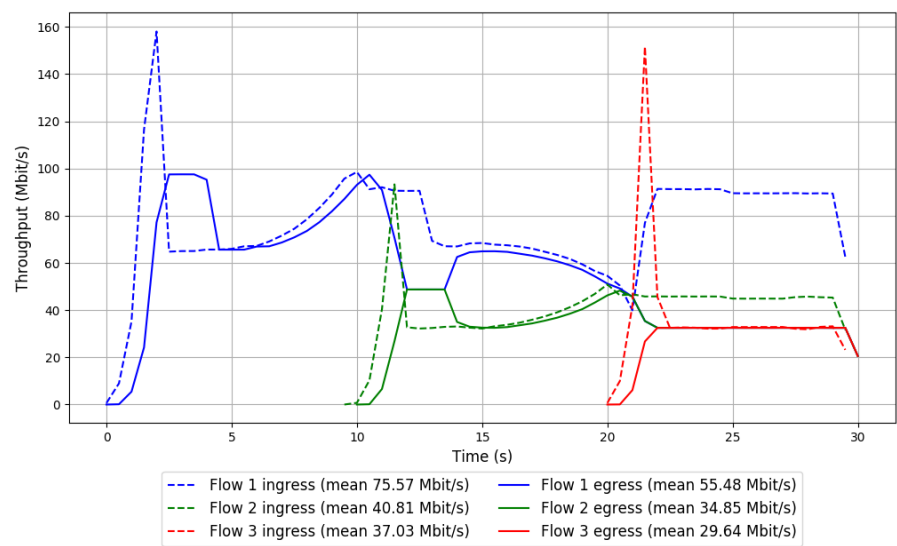
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-11-30 16:02:37
End at: 2018-11-30 16:03:07
Local clock offset: -4.491 ms
Remote clock offset: -181.548 ms


# Below is generated by plot.py at 2018-11-30 17:30:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.17 Mbit/s
95th percentile per-packet one-way delay: 1469.136 ms
Loss rate: 23.31%
-- Flow 1:
Average throughput: 55.10 Mbit/s
95th percentile per-packet one-way delay: 1471.663 ms
Loss rate: 27.43%
-- Flow 2:
Average throughput: 33.89 Mbit/s
95th percentile per-packet one-way delay: 1166.783 ms
Loss rate: 11.53%
-- Flow 3:
Average throughput: 29.44 Mbit/s
95th percentile per-packet one-way delay: 1561.979 ms
Loss rate: 22.17%
```

Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 75.49 Mbit/s) --- Flow 1 egress (mean 55.10 Mbit/s)
Flow 2 ingress (mean 37.97 Mbit/s) --- Flow 2 egress (mean 33.89 Mbit/s)
Flow 3 ingress (mean 37.16 Mbit/s) --- Flow 3 egress (mean 29.44 Mbit/s)

Flow 1 (95th percentile 1471.66 ms)   Flow 2 (95th percentile 1166.78 ms)   Flow 3 (95th percentile 1561.98 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-11-30 16:27:02
End at: 2018-11-30 16:27:32
Local clock offset: -3.871 ms
Remote clock offset: -187.601 ms


# Below is generated by plot.py at 2018-11-30 17:30:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.37 Mbit/s
95th percentile per-packet one-way delay: 1419.408 ms
Loss rate: 23.48%
-- Flow 1:
Average throughput: 56.21 Mbit/s
95th percentile per-packet one-way delay: 1462.438 ms
Loss rate: 26.57%
-- Flow 2:
Average throughput: 33.96 Mbit/s
95th percentile per-packet one-way delay: 1100.422 ms
Loss rate: 15.54%
-- Flow 3:
Average throughput: 29.58 Mbit/s
95th percentile per-packet one-way delay: 1409.822 ms
Loss rate: 21.47%
```
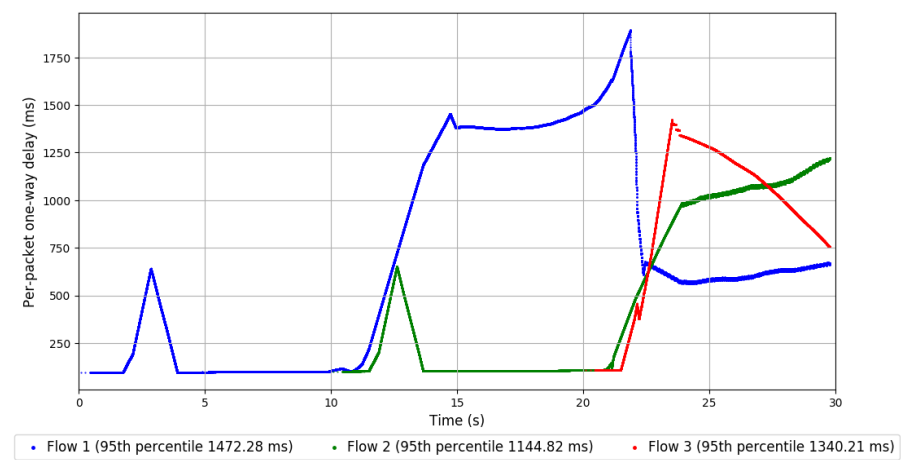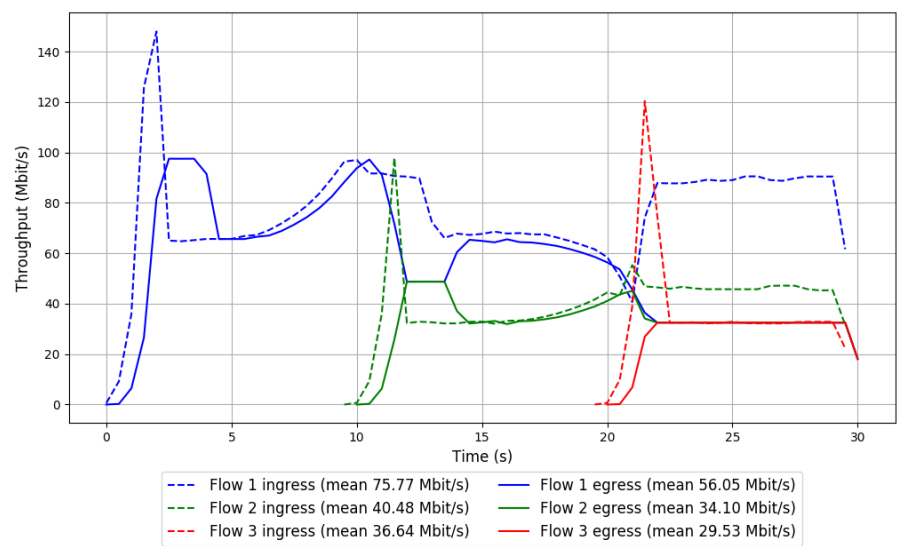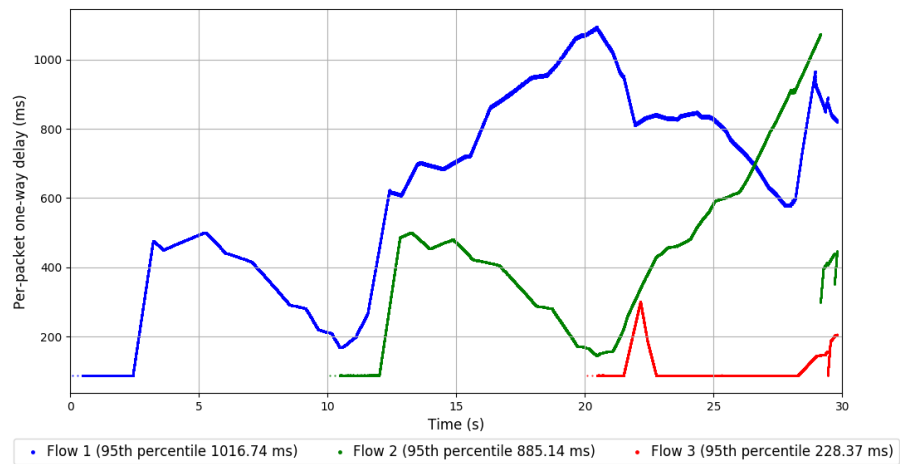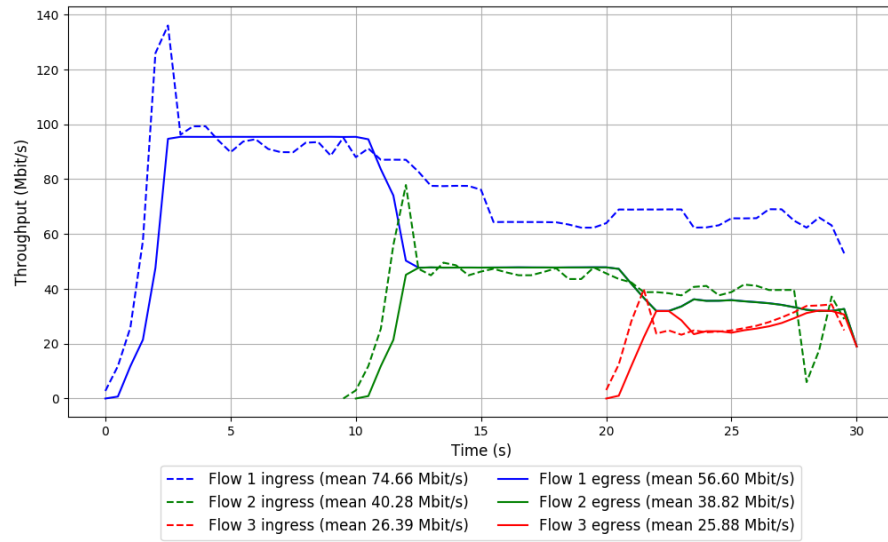
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 76.11 Mbit/s) --- Flow 1 egress (mean 56.21 Mbit/s)
Flow 2 ingress (mean 39.87 Mbit/s) --- Flow 2 egress (mean 33.96 Mbit/s)
Flow 3 ingress (mean 37.00 Mbit/s) --- Flow 3 egress (mean 29.58 Mbit/s)

Flow 1 (95th percentile 1462.44 ms)   Flow 2 (95th percentile 1100.42 ms)   Flow 3 (95th percentile 1409.82 ms)

100

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-11-30 16:51:33
End at: 2018-11-30 16:52:03
Local clock offset: -4.407 ms
Remote clock offset: -2.854 ms

# Below is generated by plot.py at 2018-11-30 17:30:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.26 Mbit/s
95th percentile per-packet one-way delay: 1505.194 ms
Loss rate: 23.61%
-- Flow 1:
Average throughput: 55.48 Mbit/s
95th percentile per-packet one-way delay: 1585.374 ms
Loss rate: 26.96%
-- Flow 2:
Average throughput: 34.85 Mbit/s
95th percentile per-packet one-way delay: 1168.975 ms
Loss rate: 15.29%
-- Flow 3:
Average throughput: 29.64 Mbit/s
95th percentile per-packet one-way delay: 1458.523 ms
Loss rate: 21.35%
```
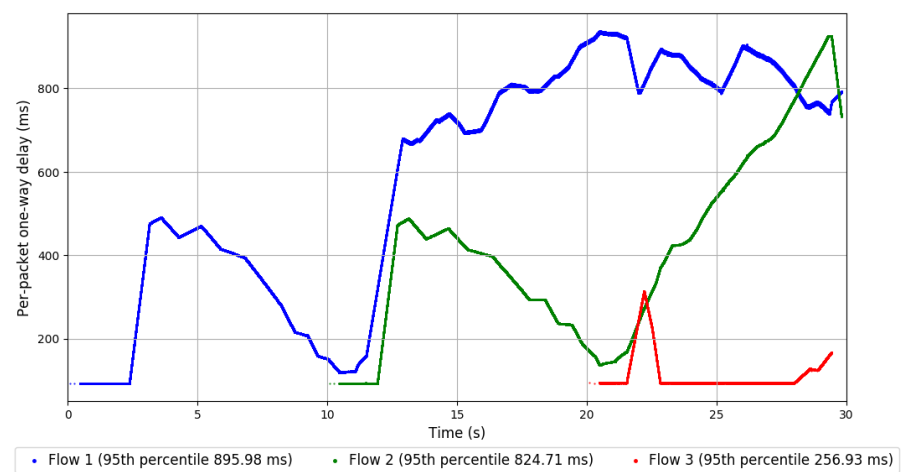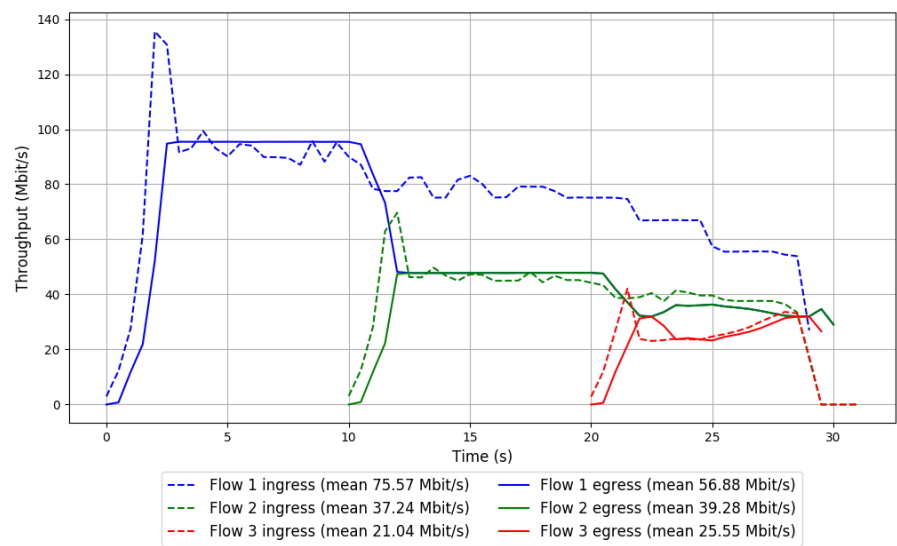
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 75.57 Mbit/s)   Flow 1 egress (mean 55.48 Mbit/s)
Flow 2 ingress (mean 40.81 Mbit/s)   Flow 2 egress (mean 34.85 Mbit/s)
Flow 3 ingress (mean 37.03 Mbit/s)   Flow 3 egress (mean 29.64 Mbit/s)

Flow 1 (95th percentile 1585.37 ms)   Flow 2 (95th percentile 1168.97 ms)   Flow 3 (95th percentile 1458.52 ms)
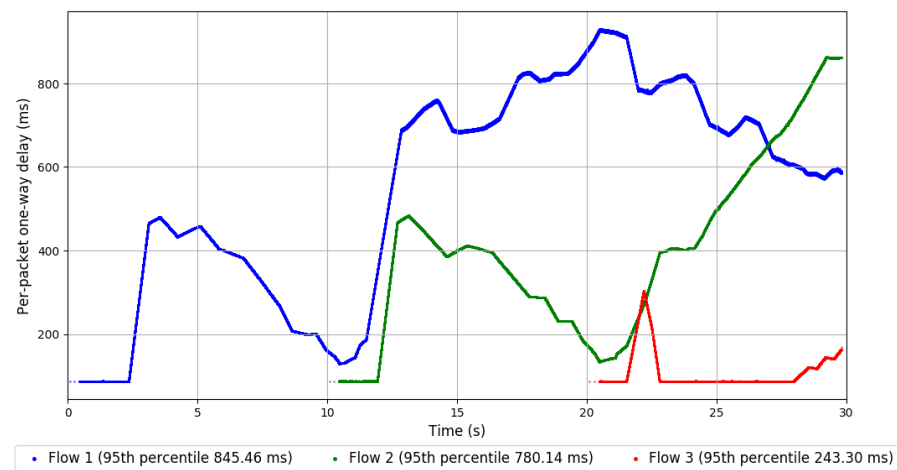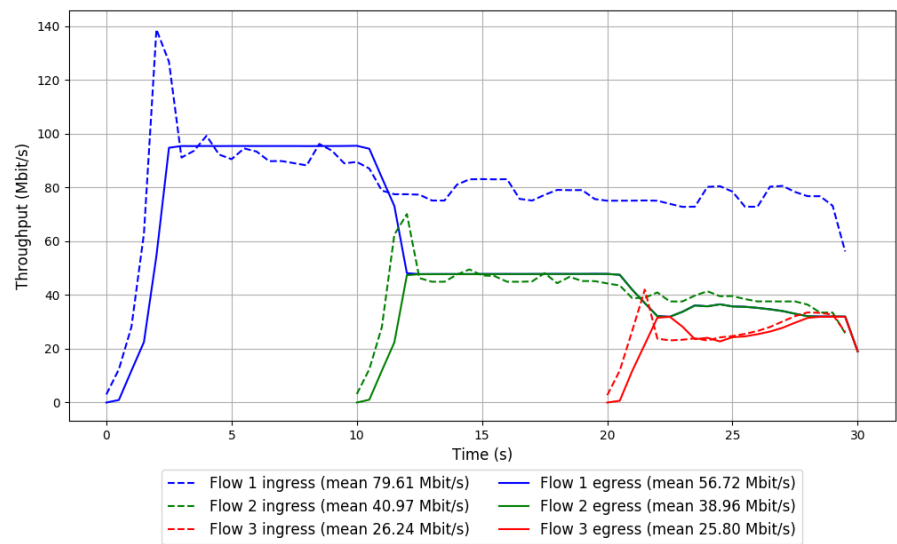
```
Run 5: Statistics of PCC-Allegro

Start at: 2018-11-30 17:15:59
End at: 2018-11-30 17:16:29
Local clock offset: -3.805 ms
Remote clock offset: 785.222 ms


# Below is generated by plot.py at 2018-11-30 17:30:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.30 Mbit/s
95th percentile per-packet one-way delay: 1429.574 ms
Loss rate: 23.48%
-- Flow 1:
Average throughput: 56.05 Mbit/s
95th percentile per-packet one-way delay: 1472.278 ms
Loss rate: 26.41%
-- Flow 2:
Average throughput: 34.10 Mbit/s
95th percentile per-packet one-way delay: 1144.815 ms
Loss rate: 16.44%
-- Flow 3:
Average throughput: 29.53 Mbit/s
95th percentile per-packet one-way delay: 1340.213 ms
Loss rate: 20.76%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 75.77 Mbit/s) --- Flow 1 egress (mean 56.05 Mbit/s)
Flow 2 ingress (mean 40.48 Mbit/s) --- Flow 2 egress (mean 34.10 Mbit/s)
Flow 3 ingress (mean 36.64 Mbit/s) --- Flow 3 egress (mean 29.53 Mbit/s)

Flow 1 (95th percentile 1472.28 ms)   Flow 2 (95th percentile 1144.82 ms)   Flow 3 (95th percentile 1340.21 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-30 15:39:26
End at: 2018-11-30 15:39:56
Local clock offset: -5.207 ms
Remote clock offset: -171.728 ms


# Below is generated by plot.py at 2018-11-30 17:31:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.82 Mbit/s
95th percentile per-packet one-way delay: 967.333 ms
Loss rate: 18.06%
-- Flow 1:
Average throughput: 56.60 Mbit/s
95th percentile per-packet one-way delay: 1016.743 ms
Loss rate: 24.63%
-- Flow 2:
Average throughput: 38.82 Mbit/s
95th percentile per-packet one-way delay: 885.145 ms
Loss rate: 4.46%
-- Flow 3:
Average throughput: 25.88 Mbit/s
95th percentile per-packet one-way delay: 228.369 ms
Loss rate: 3.65%
```

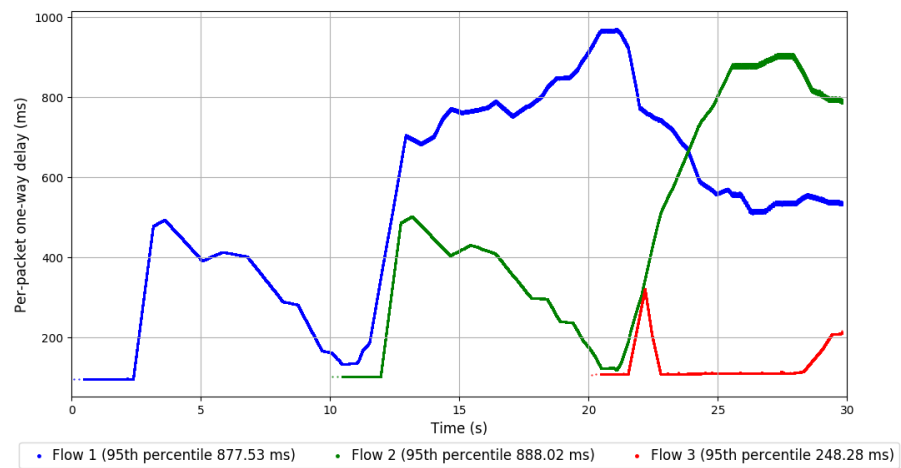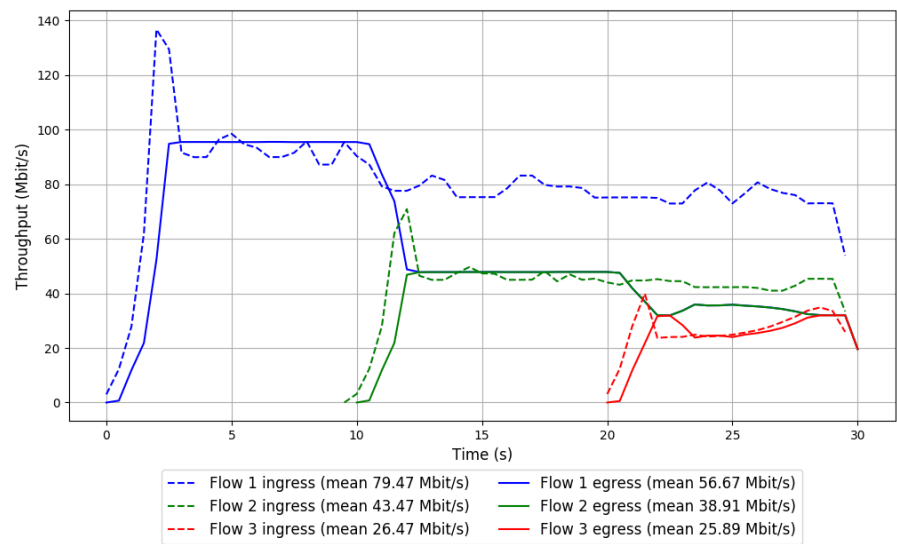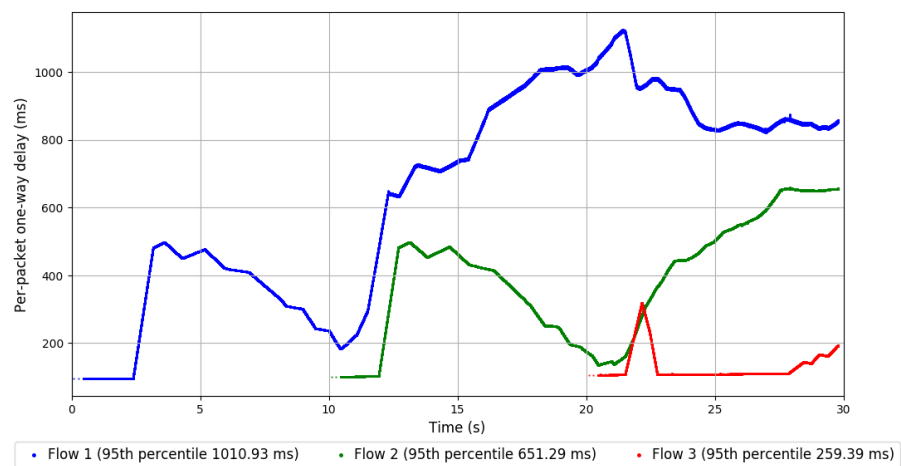Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 74.66 Mbit/s) — Flow 1 egress (mean 56.60 Mbit/s)
Flow 2 ingress (mean 40.28 Mbit/s) — Flow 2 egress (mean 38.82 Mbit/s)
Flow 3 ingress (mean 26.39 Mbit/s) — Flow 3 egress (mean 25.88 Mbit/s)

Flow 1 (95th percentile 1016.74 ms)   Flow 2 (95th percentile 885.14 ms)   Flow 3 (95th percentile 228.37 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-11-30 16:03:54
End at: 2018-11-30 16:04:24
Local clock offset: -4.491 ms
Remote clock offset: -182.636 ms


# Below is generated by plot.py at 2018-11-30 17:32:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.94 Mbit/s
95th percentile per-packet one-way delay: 883.138 ms
Loss rate: 16.67%
-- Flow 1:
Average throughput: 56.88 Mbit/s
95th percentile per-packet one-way delay: 895.975 ms
Loss rate: 23.54%
-- Flow 2:
Average throughput: 39.28 Mbit/s
95th percentile per-packet one-way delay: 824.710 ms
Loss rate: 2.52%
-- Flow 3:
Average throughput: 25.55 Mbit/s
95th percentile per-packet one-way delay: 256.933 ms
Loss rate: 0.06%
```

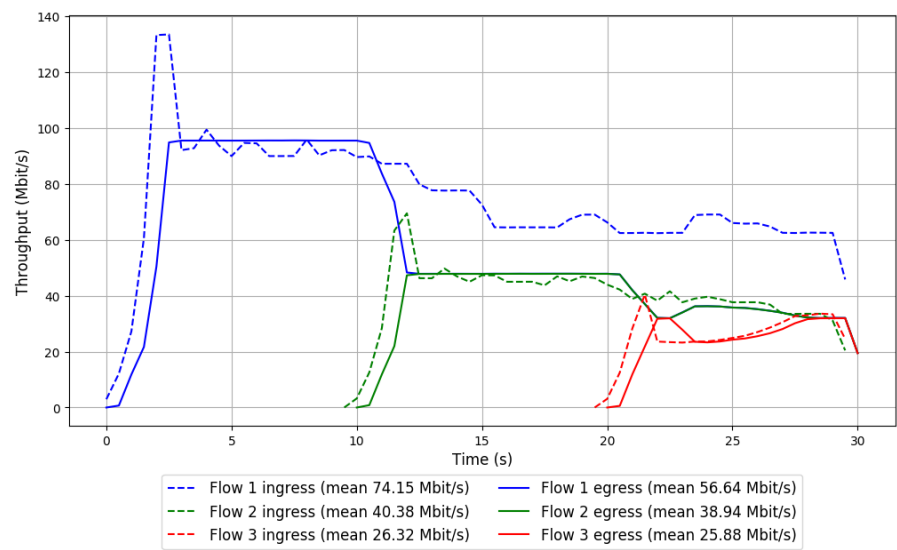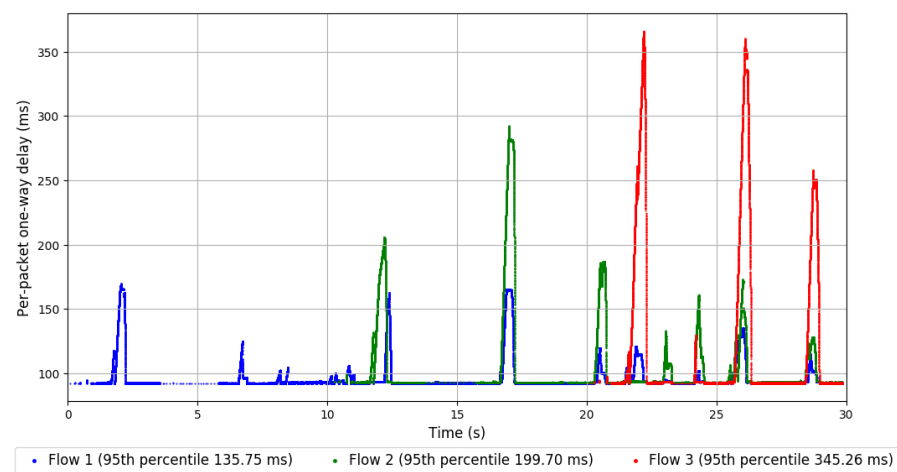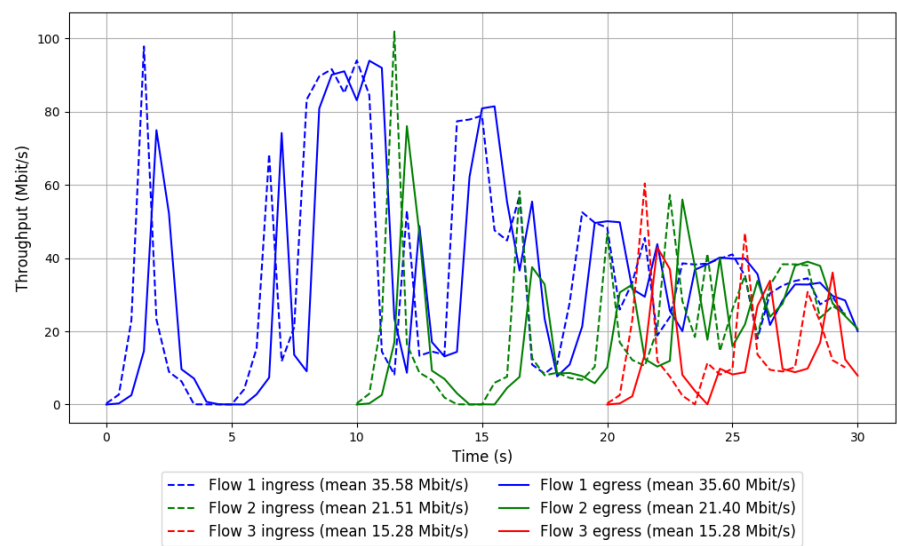Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 75.57 Mbit/s) — — — Flow 1 egress (mean 56.88 Mbit/s)
Flow 2 ingress (mean 37.24 Mbit/s) — — — Flow 2 egress (mean 39.28 Mbit/s)
Flow 3 ingress (mean 21.04 Mbit/s) — — — Flow 3 egress (mean 25.55 Mbit/s)

Flow 1 (95th percentile 895.98 ms)   Flow 2 (95th percentile 824.71 ms)   Flow 3 (95th percentile 256.93 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-11-30 16:28:19
End at: 2018-11-30 16:28:49
Local clock offset: -3.813 ms
Remote clock offset: -182.613 ms


# Below is generated by plot.py at 2018-11-30 17:32:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.97 Mbit/s
95th percentile per-packet one-way delay: 825.379 ms
Loss rate: 21.71%
-- Flow 1:
Average throughput: 56.72 Mbit/s
95th percentile per-packet one-way delay: 845.455 ms
Loss rate: 29.17%
-- Flow 2:
Average throughput: 38.96 Mbit/s
95th percentile per-packet one-way delay: 780.137 ms
Loss rate: 5.75%
-- Flow 3:
Average throughput: 25.80 Mbit/s
95th percentile per-packet one-way delay: 243.297 ms
Loss rate: 3.35%
```

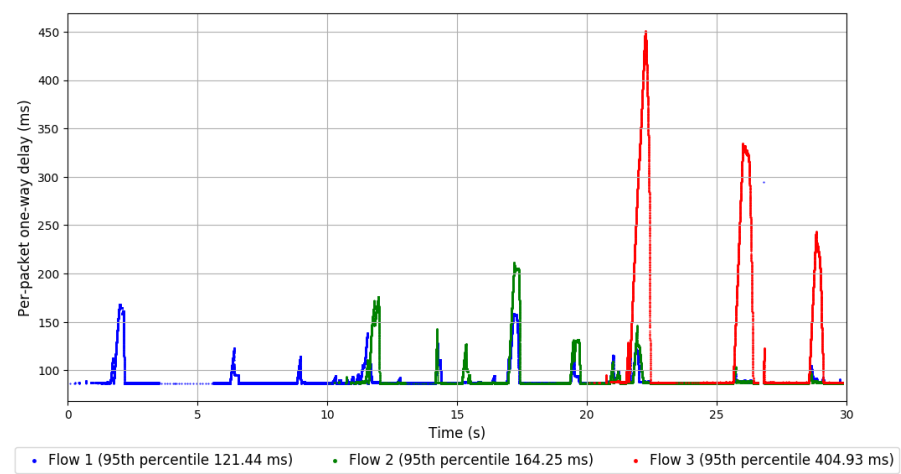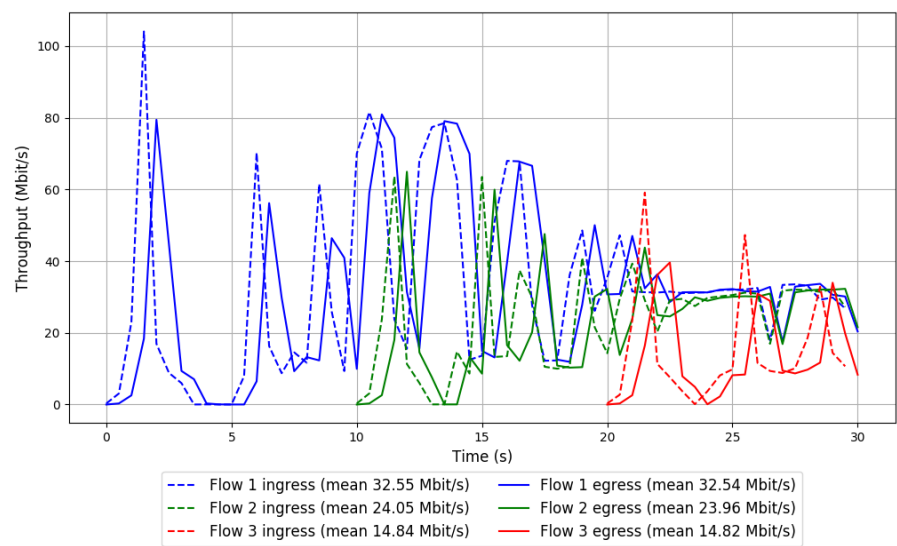Run 3: Report of PCC-Expr — Data Link

- - - Flow 1 ingress (mean 79.61 Mbit/s) ——— Flow 1 egress (mean 56.72 Mbit/s)
- - - Flow 2 ingress (mean 40.97 Mbit/s) ——— Flow 2 egress (mean 38.96 Mbit/s)
- - - Flow 3 ingress (mean 26.24 Mbit/s) ——— Flow 3 egress (mean 25.80 Mbit/s)

• Flow 1 (95th percentile 845.46 ms)　　• Flow 2 (95th percentile 780.14 ms)　　• Flow 3 (95th percentile 243.30 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-11-30 16:52:50
End at: 2018-11-30 16:53:20
Local clock offset: -3.716 ms
Remote clock offset: 67.182 ms


# Below is generated by plot.py at 2018-11-30 17:32:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.92 Mbit/s
95th percentile per-packet one-way delay: 880.701 ms
Loss rate: 22.77%
-- Flow 1:
Average throughput: 56.67 Mbit/s
95th percentile per-packet one-way delay: 877.534 ms
Loss rate: 29.06%
-- Flow 2:
Average throughput: 38.91 Mbit/s
95th percentile per-packet one-way delay: 888.025 ms
Loss rate: 11.22%
-- Flow 3:
Average throughput: 25.89 Mbit/s
95th percentile per-packet one-way delay: 248.282 ms
Loss rate: 3.84%
```

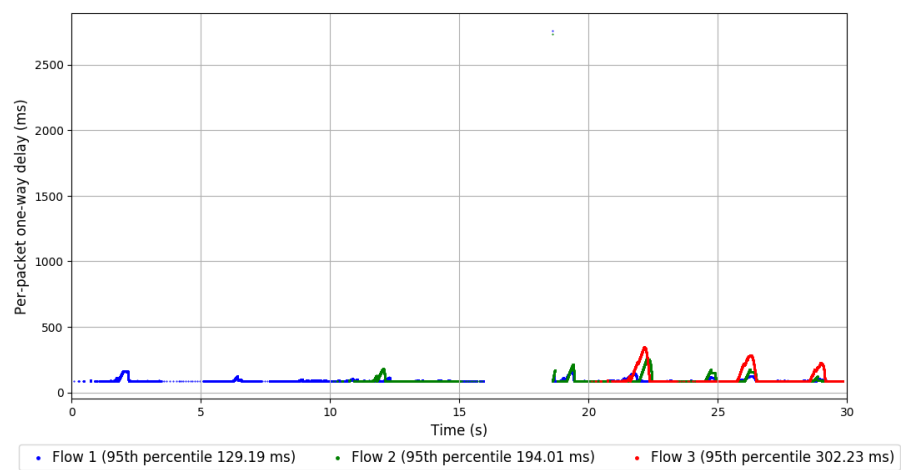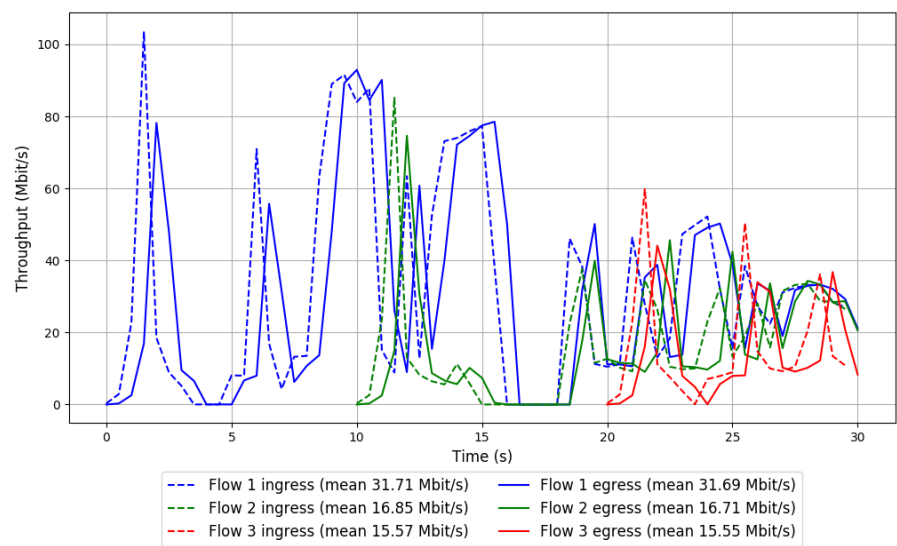Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2018-11-30 17:17:16
End at: 2018-11-30 17:17:46
Local clock offset: -3.923 ms
Remote clock offset: 825.199 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.92 Mbit/s
95th percentile per-packet one-way delay: 1001.856 ms
Loss rate: 17.56%
-- Flow 1:
Average throughput: 56.64 Mbit/s
95th percentile per-packet one-way delay: 1010.928 ms
Loss rate: 24.02%
-- Flow 2:
Average throughput: 38.94 Mbit/s
95th percentile per-packet one-way delay: 651.289 ms
Loss rate: 4.36%
-- Flow 3:
Average throughput: 25.88 Mbit/s
95th percentile per-packet one-way delay: 259.395 ms
Loss rate: 3.35%
```
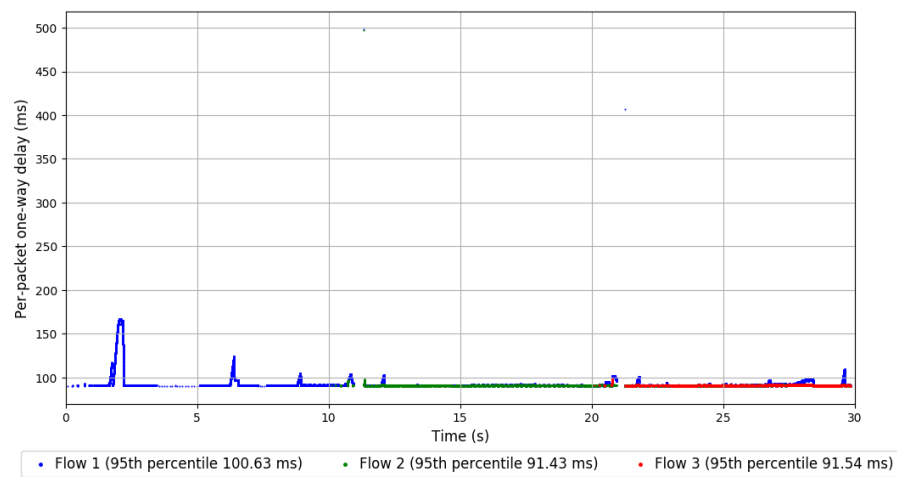
Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-11-30 15:23:58
End at: 2018-11-30 15:24:28
Local clock offset: -4.328 ms
Remote clock offset: -172.792 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 54.80 Mbit/s
95th percentile per-packet one-way delay: 188.953 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 35.60 Mbit/s
95th percentile per-packet one-way delay: 135.746 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 21.40 Mbit/s
95th percentile per-packet one-way delay: 199.696 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 15.28 Mbit/s
95th percentile per-packet one-way delay: 345.256 ms
Loss rate: 1.68%
```

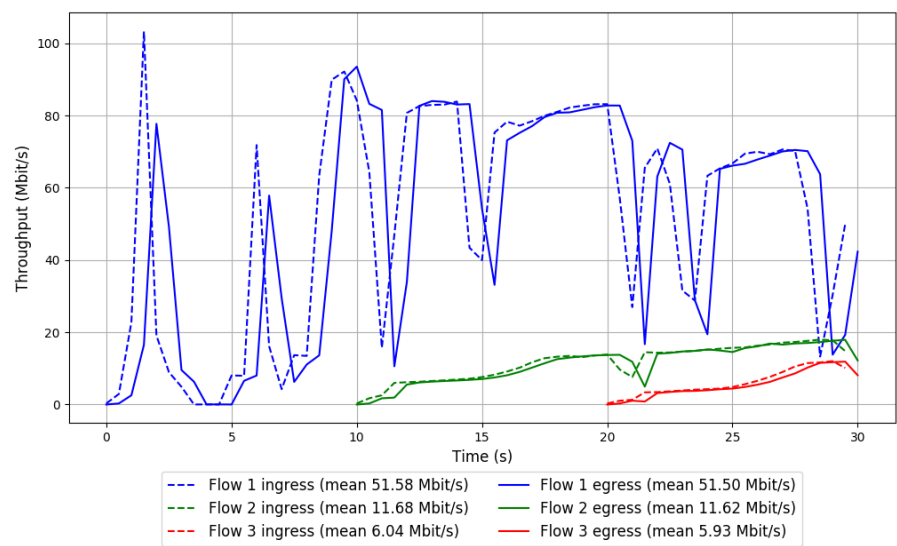# Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 35.58 Mbit/s)   Flow 1 egress (mean 35.60 Mbit/s)
Flow 2 ingress (mean 21.51 Mbit/s)   Flow 2 egress (mean 21.40 Mbit/s)
Flow 3 ingress (mean 15.28 Mbit/s)   Flow 3 egress (mean 15.28 Mbit/s)

Flow 1 (95th percentile 135.75 ms)   Flow 2 (95th percentile 199.70 ms)   Flow 3 (95th percentile 345.26 ms)
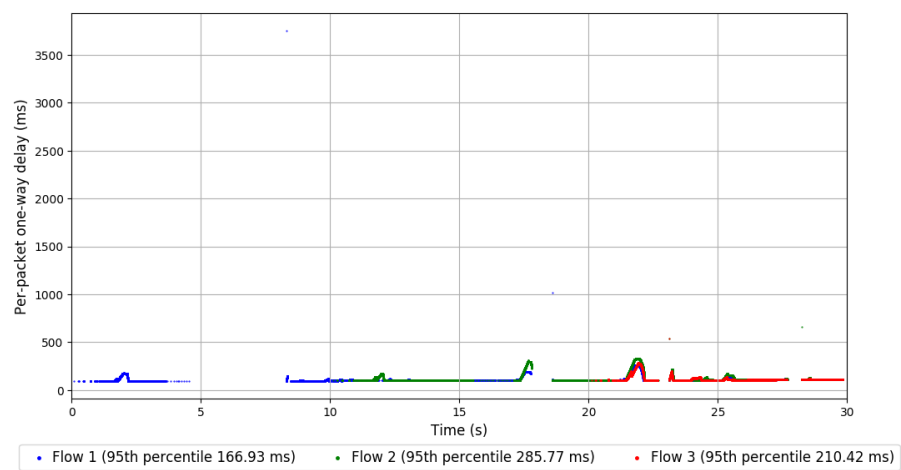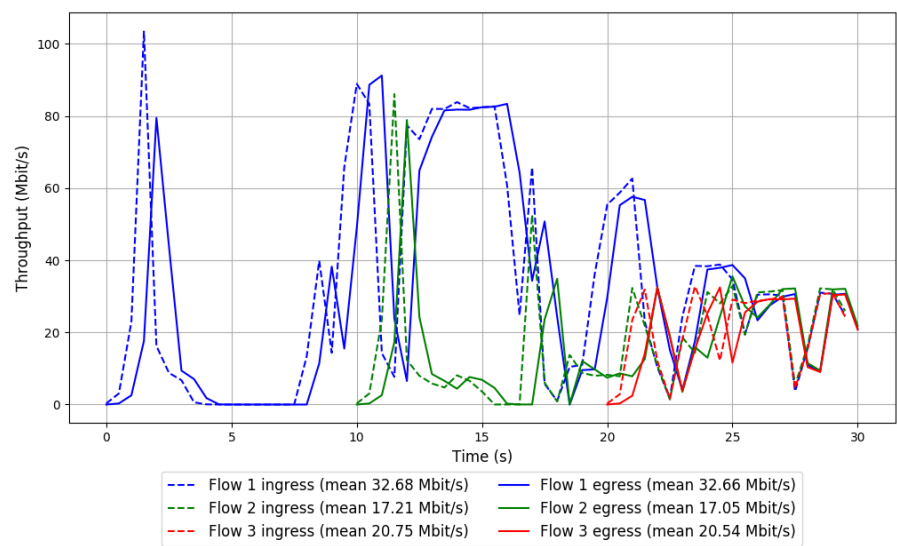
116

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-11-30 15:48:34
End at: 2018-11-30 15:49:04
Local clock offset: -5.251 ms
Remote clock offset: -173.956 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 53.29 Mbit/s
95th percentile per-packet one-way delay: 168.055 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 32.54 Mbit/s
95th percentile per-packet one-way delay: 121.441 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 23.96 Mbit/s
95th percentile per-packet one-way delay: 164.252 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 14.82 Mbit/s
95th percentile per-packet one-way delay: 404.926 ms
Loss rate: 1.89%
```
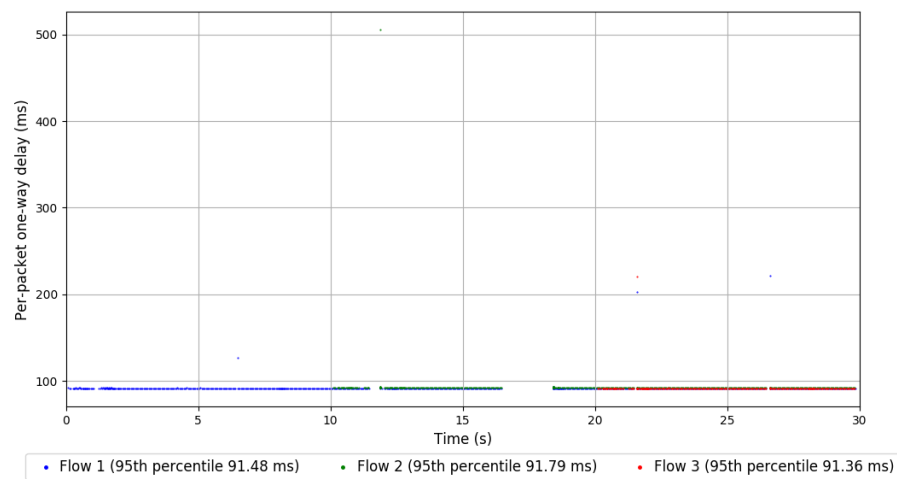
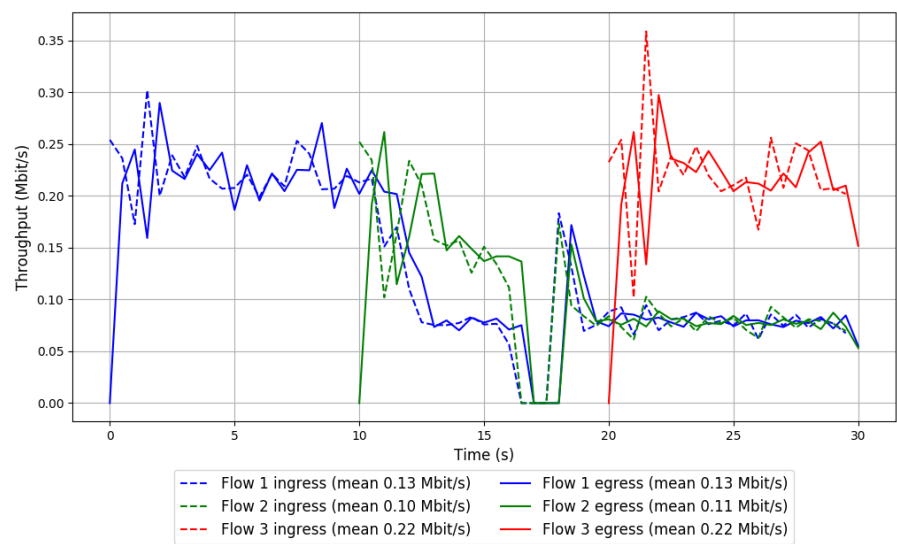Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-11-30 16:13:02
End at: 2018-11-30 16:13:32
Local clock offset: -5.269 ms
Remote clock offset: -181.107 ms

# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 47.86 Mbit/s
95th percentile per-packet one-way delay: 179.347 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 31.69 Mbit/s
95th percentile per-packet one-way delay: 129.193 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 16.71 Mbit/s
95th percentile per-packet one-way delay: 194.011 ms
Loss rate: 1.72%
-- Flow 3:
Average throughput: 15.55 Mbit/s
95th percentile per-packet one-way delay: 302.225 ms
Loss rate: 1.83%
```

Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 31.71 Mbit/s) --- Flow 1 egress (mean 31.69 Mbit/s)
Flow 2 ingress (mean 16.85 Mbit/s) --- Flow 2 egress (mean 16.71 Mbit/s)
Flow 3 ingress (mean 15.57 Mbit/s) --- Flow 3 egress (mean 15.55 Mbit/s)

Flow 1 (95th percentile 129.19 ms) • Flow 2 (95th percentile 194.01 ms) • Flow 3 (95th percentile 302.23 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-11-30 16:37:34
End at: 2018-11-30 16:38:04
Local clock offset: -4.358 ms
Remote clock offset: -189.966 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 61.15 Mbit/s
95th percentile per-packet one-way delay: 98.946 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 51.50 Mbit/s
95th percentile per-packet one-way delay: 100.628 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 11.62 Mbit/s
95th percentile per-packet one-way delay: 91.432 ms
Loss rate: 1.34%
-- Flow 3:
Average throughput: 5.93 Mbit/s
95th percentile per-packet one-way delay: 91.541 ms
Loss rate: 3.51%
```

Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 51.58 Mbit/s) — — — Flow 1 egress (mean 51.50 Mbit/s)
Flow 2 ingress (mean 11.68 Mbit/s) — — — Flow 2 egress (mean 11.62 Mbit/s)
Flow 3 ingress (mean 6.04 Mbit/s) — — — Flow 3 egress (mean 5.93 Mbit/s)

Flow 1 (95th percentile 100.63 ms)   Flow 2 (95th percentile 91.43 ms)   Flow 3 (95th percentile 91.54 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-11-30 17:02:00
End at: 2018-11-30 17:02:30
Local clock offset: -3.695 ms
Remote clock offset: 353.859 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 50.69 Mbit/s
95th percentile per-packet one-way delay: 188.457 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 32.66 Mbit/s
95th percentile per-packet one-way delay: 166.929 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 17.05 Mbit/s
95th percentile per-packet one-way delay: 285.770 ms
Loss rate: 1.75%
-- Flow 3:
Average throughput: 20.54 Mbit/s
95th percentile per-packet one-way delay: 210.417 ms
Loss rate: 2.69%
```

Run 5: Report of QUIC Cubic — Data Link

- - - Flow 1 ingress (mean 32.68 Mbit/s) —— Flow 1 egress (mean 32.66 Mbit/s)
- - - Flow 2 ingress (mean 17.21 Mbit/s) —— Flow 2 egress (mean 17.05 Mbit/s)
- - - Flow 3 ingress (mean 20.75 Mbit/s) —— Flow 3 egress (mean 20.54 Mbit/s)

• Flow 1 (95th percentile 166.93 ms)   • Flow 2 (95th percentile 285.77 ms)   • Flow 3 (95th percentile 210.42 ms)

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```
Run 1: Statistics of SCReAM

Start at: 2018-11-30 15:29:04
End at: 2018-11-30 15:29:34
Local clock offset: -4.45 ms
Remote clock offset: -172.902 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 91.682 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 91.478 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 91.787 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.364 ms
Loss rate: 1.85%
```
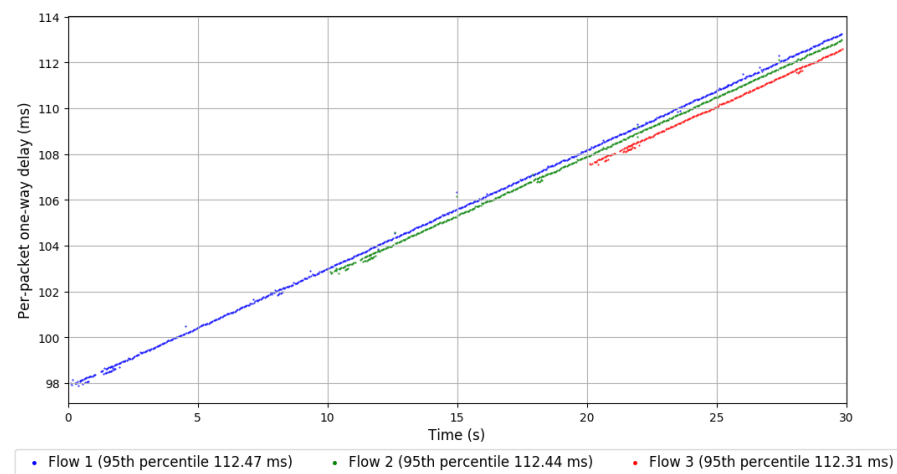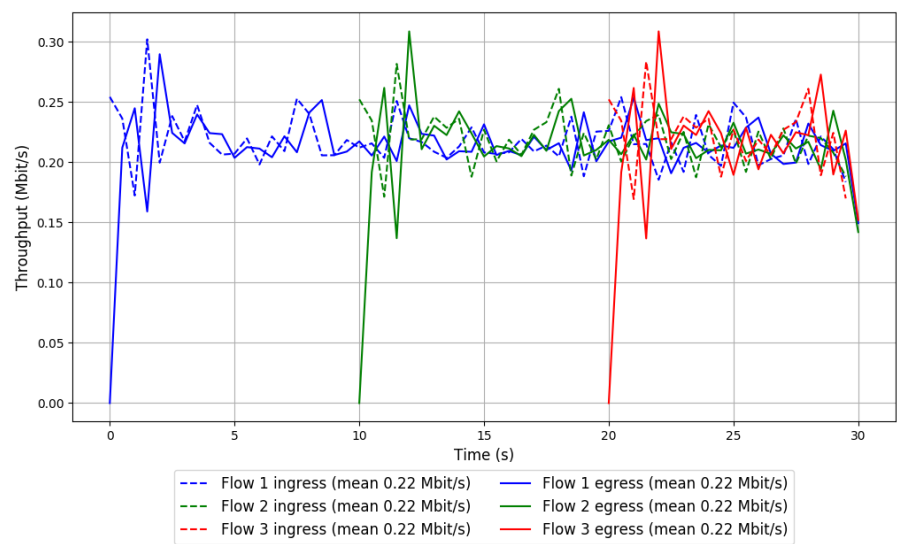
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-11-30 15:53:42
End at: 2018-11-30 15:54:12
Local clock offset: -4.473 ms
Remote clock offset: -175.021 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 87.522 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 87.594 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 87.467 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.517 ms
Loss rate: 1.84%
```
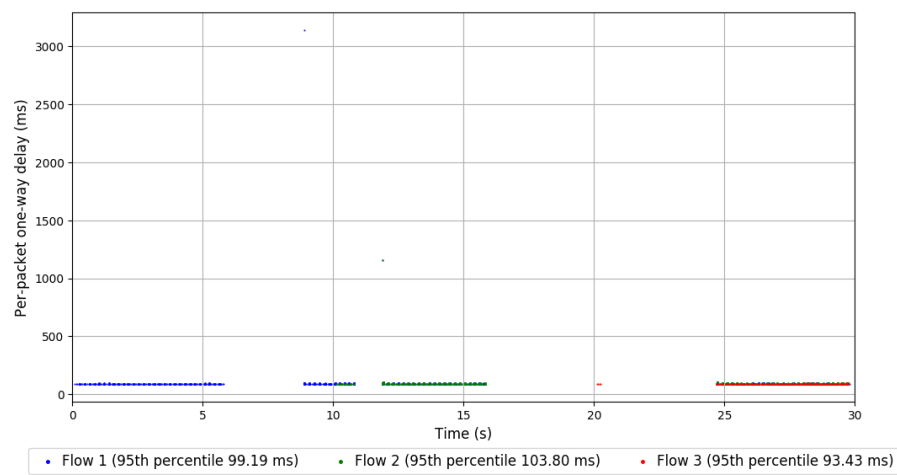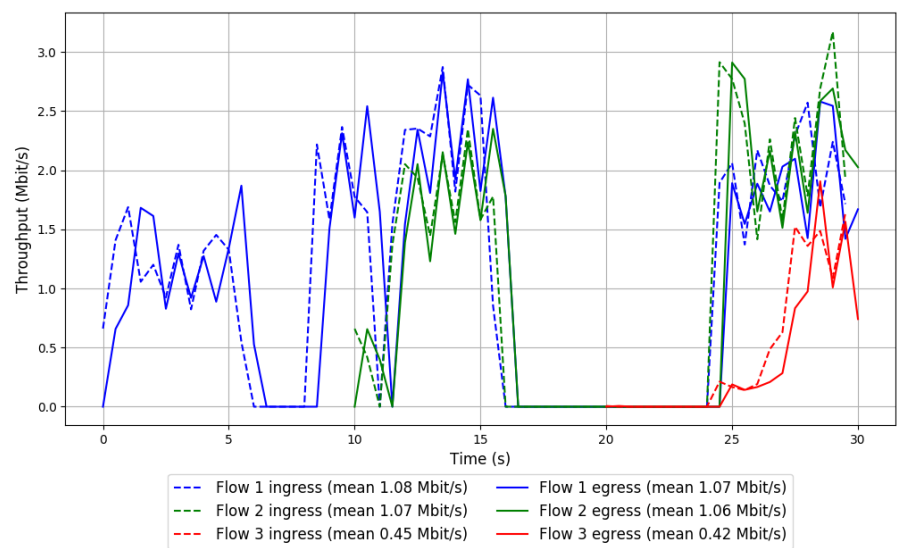
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-11-30 16:18:05
End at: 2018-11-30 16:18:35
Local clock offset: -5.055 ms
Remote clock offset: -182.352 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 88.002 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 88.016 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.991 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.481 ms
Loss rate: 1.85%
```
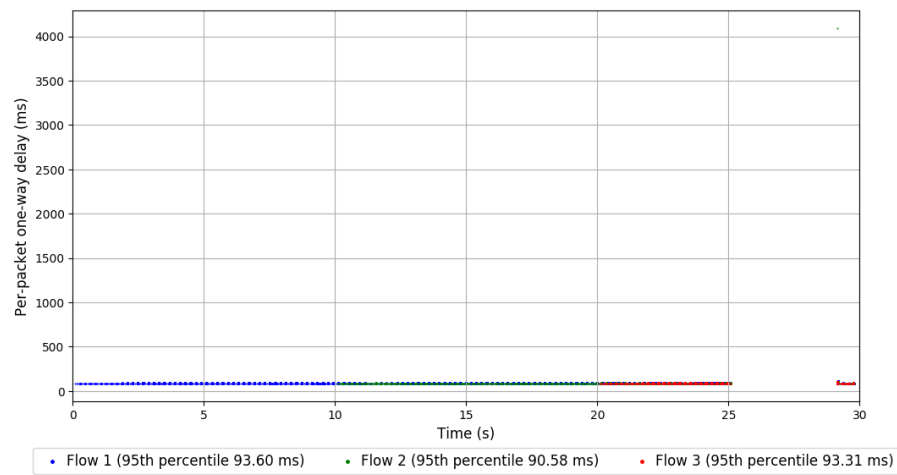
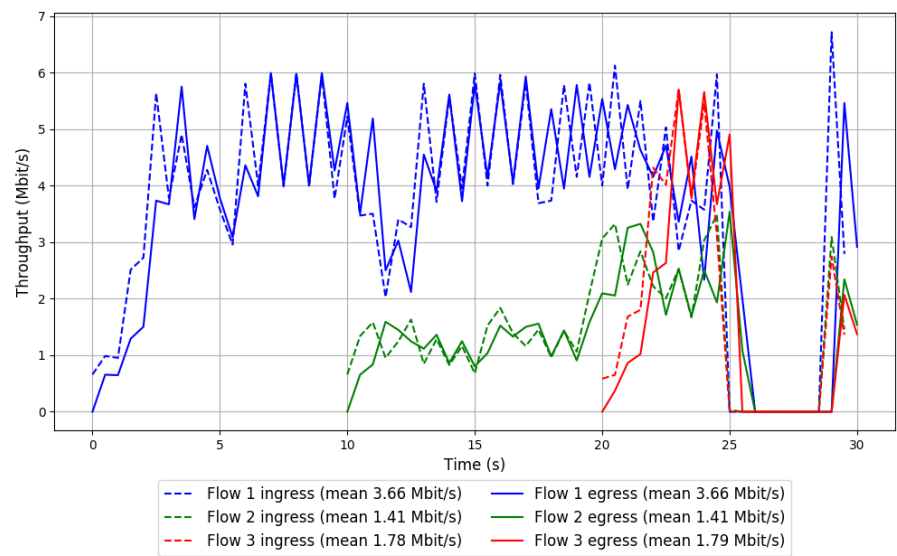# Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-11-30 16:42:37
End at: 2018-11-30 16:43:07
Local clock offset: -4.345 ms
Remote clock offset: -191.374 ms

# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 90.942 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 90.956 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 90.253 ms
Loss rate: 0.34%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 90.502 ms
Loss rate: 0.92%
```

Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-11-30 17:07:03
End at: 2018-11-30 17:07:33
Local clock offset: -3.694 ms
Remote clock offset: 505.934 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 112.412 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 112.473 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 112.445 ms
Loss rate: 1.02%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 112.308 ms
Loss rate: 1.50%
```

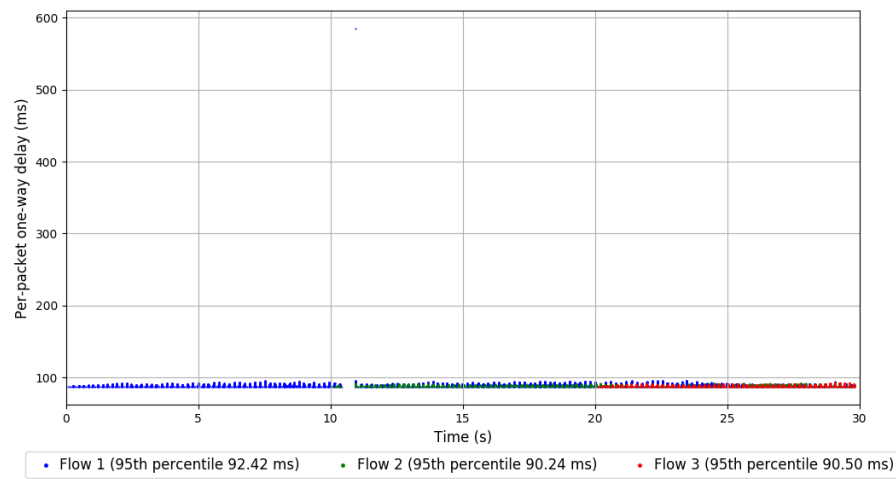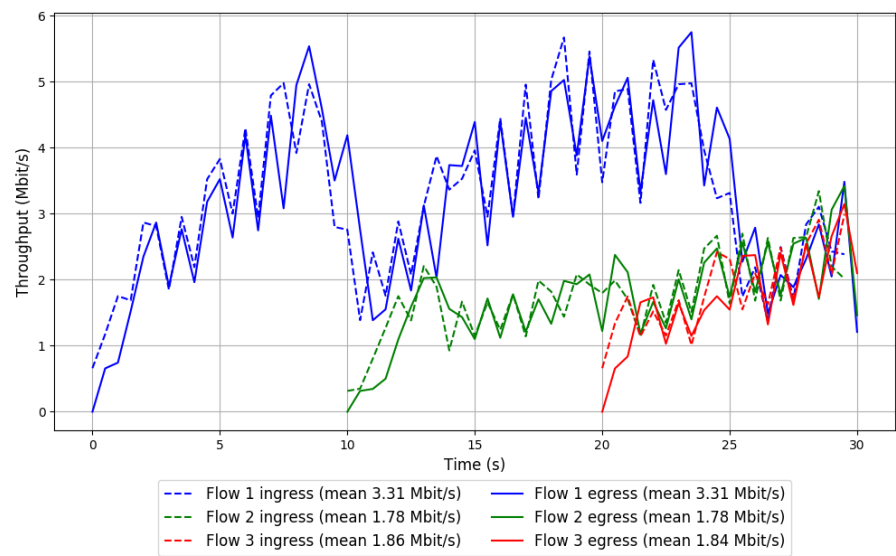# Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-11-30 15:27:51
End at: 2018-11-30 15:28:21
Local clock offset: -4.368 ms
Remote clock offset: -172.554 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 101.224 ms
Loss rate: 2.31%
-- Flow 1:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 99.186 ms
Loss rate: 1.35%
-- Flow 2:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 103.800 ms
Loss rate: 2.12%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 93.434 ms
Loss rate: 10.09%
```
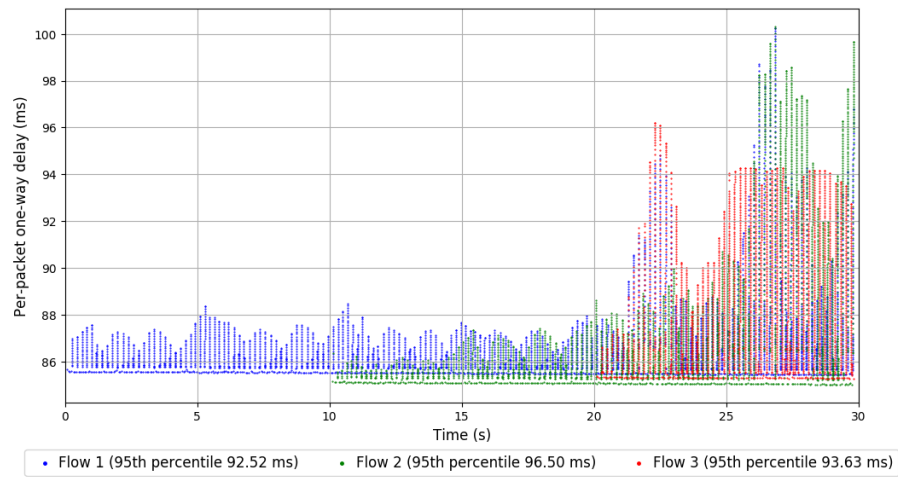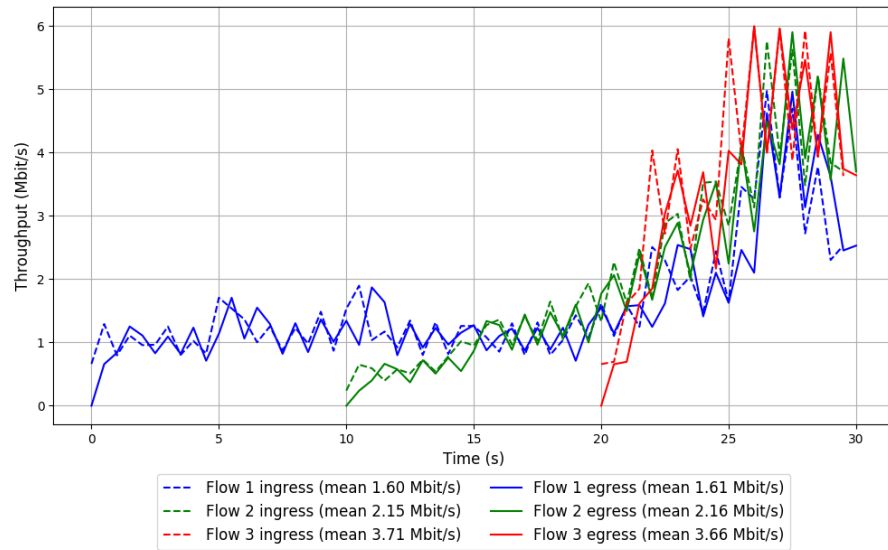
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-11-30 15:52:29
End at: 2018-11-30 15:52:59
Local clock offset: -5.241 ms
Remote clock offset: -173.721 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.18 Mbit/s
95th percentile per-packet one-way delay: 93.517 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 93.598 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 1.41 Mbit/s
95th percentile per-packet one-way delay: 90.577 ms
Loss rate: 1.19%
-- Flow 3:
Average throughput: 1.79 Mbit/s
95th percentile per-packet one-way delay: 93.315 ms
Loss rate: 1.89%
```
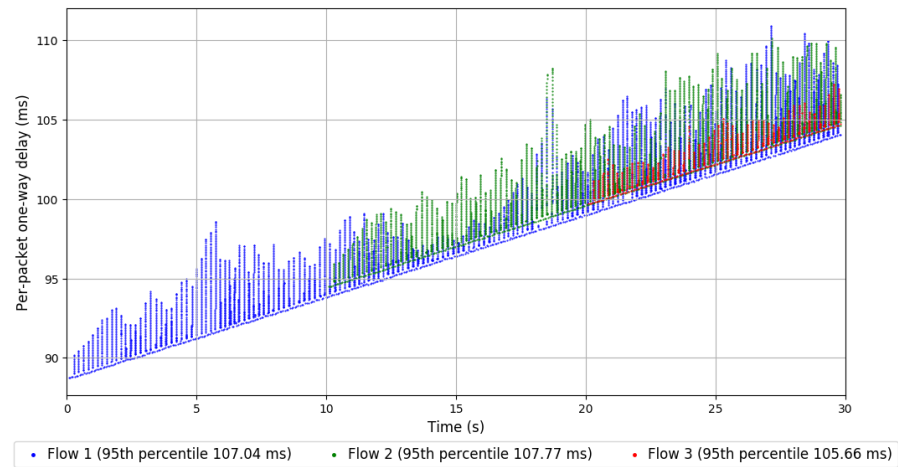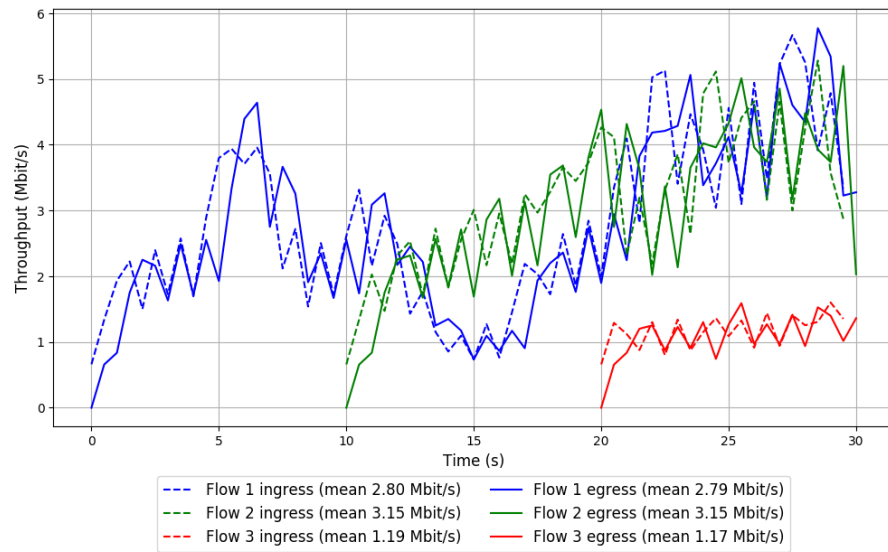
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-11-30 16:16:52
End at: 2018-11-30 16:17:22
Local clock offset: -4.322 ms
Remote clock offset: -180.987 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.09 Mbit/s
95th percentile per-packet one-way delay: 91.902 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 92.425 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 90.244 ms
Loss rate: 0.79%
-- Flow 3:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 90.497 ms
Loss rate: 2.43%
```
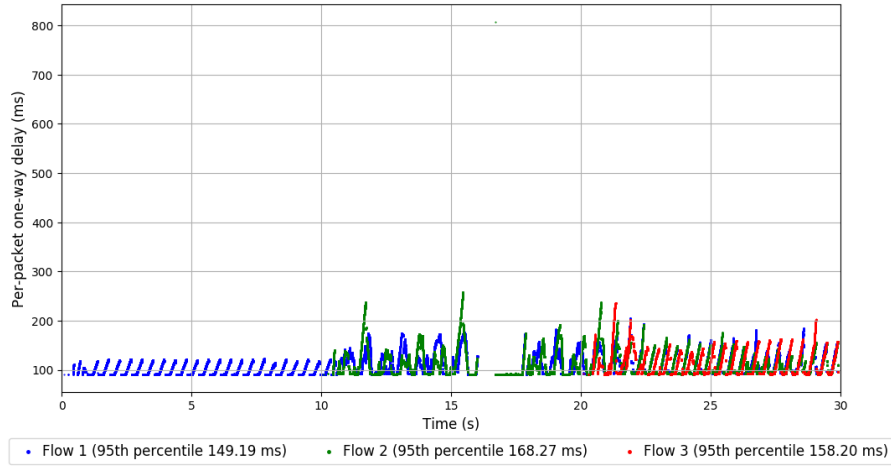
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-11-30 16:41:24
End at: 2018-11-30 16:41:54
Local clock offset: -4.298 ms
Remote clock offset: -186.033 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.24 Mbit/s
95th percentile per-packet one-way delay: 94.274 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 92.515 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 2.16 Mbit/s
95th percentile per-packet one-way delay: 96.501 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 93.630 ms
Loss rate: 2.49%
```
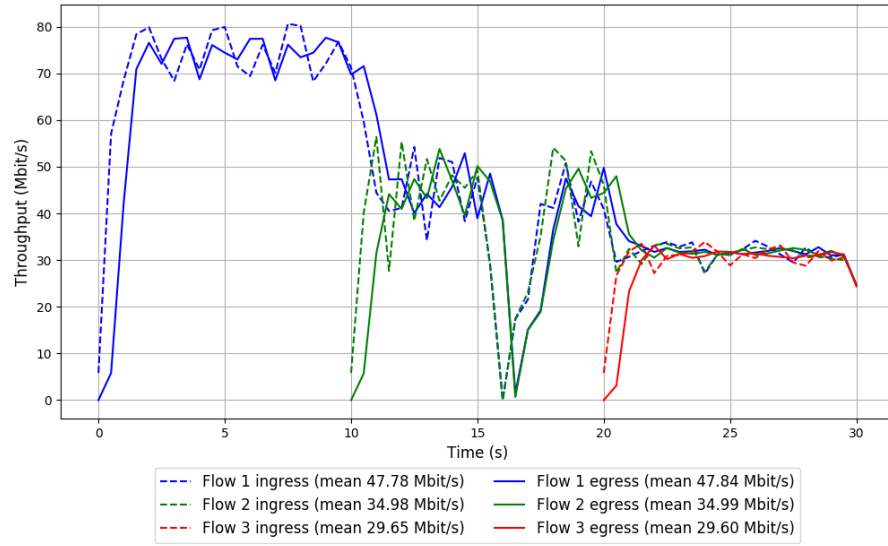
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-11-30 17:05:50
End at: 2018-11-30 17:06:20
Local clock offset: -4.521 ms
Remote clock offset: 475.678 ms


# Below is generated by plot.py at 2018-11-30 17:32:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.26 Mbit/s
95th percentile per-packet one-way delay: 107.286 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 2.79 Mbit/s
95th percentile per-packet one-way delay: 107.044 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 3.15 Mbit/s
95th percentile per-packet one-way delay: 107.773 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 105.660 ms
Loss rate: 2.92%
```

Run 5: Report of Sprout — Data Link

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

Start at: 2018-11-30 15:22:37
End at: 2018-11-30 15:23:07
Local clock offset: -4.308 ms
Remote clock offset: -171.07 ms


# Below is generated by plot.py at 2018-11-30 17:33:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.82 Mbit/s
95th percentile per-packet one-way delay: 156.610 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 47.84 Mbit/s
95th percentile per-packet one-way delay: 149.193 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 34.99 Mbit/s
95th percentile per-packet one-way delay: 168.274 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 29.60 Mbit/s
95th percentile per-packet one-way delay: 158.197 ms
Loss rate: 1.93%
```
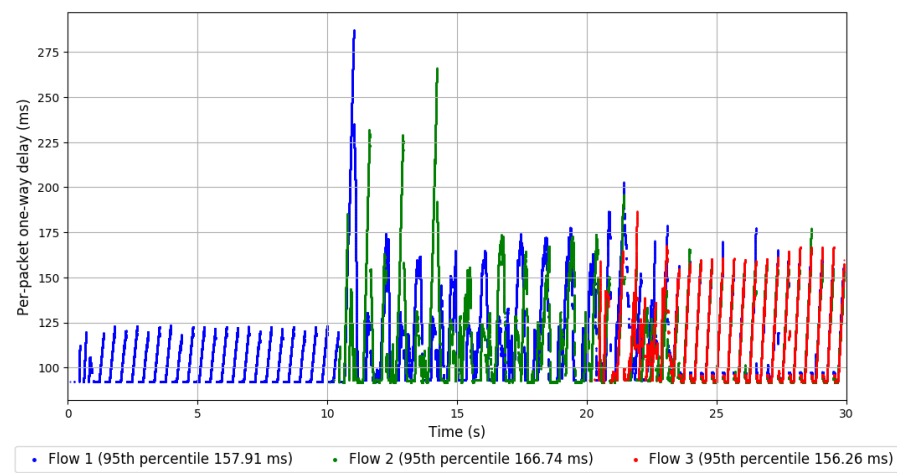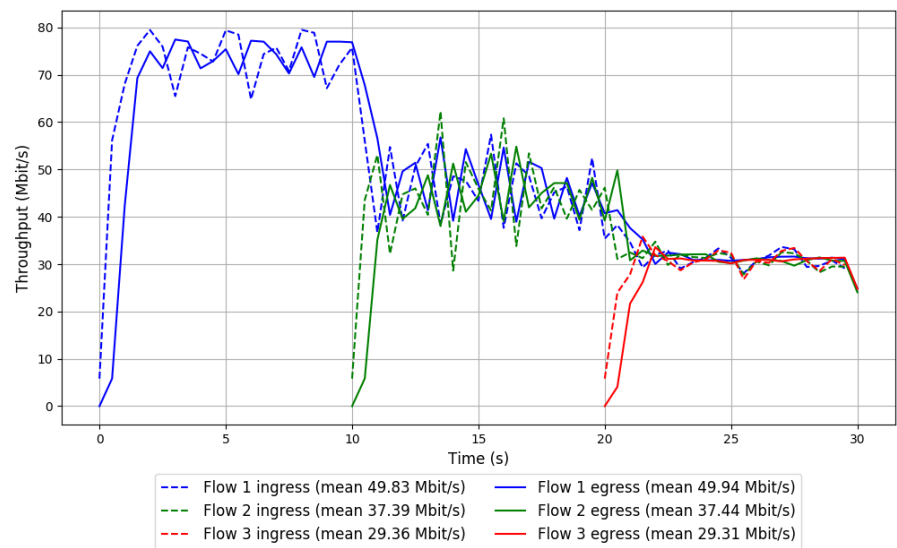
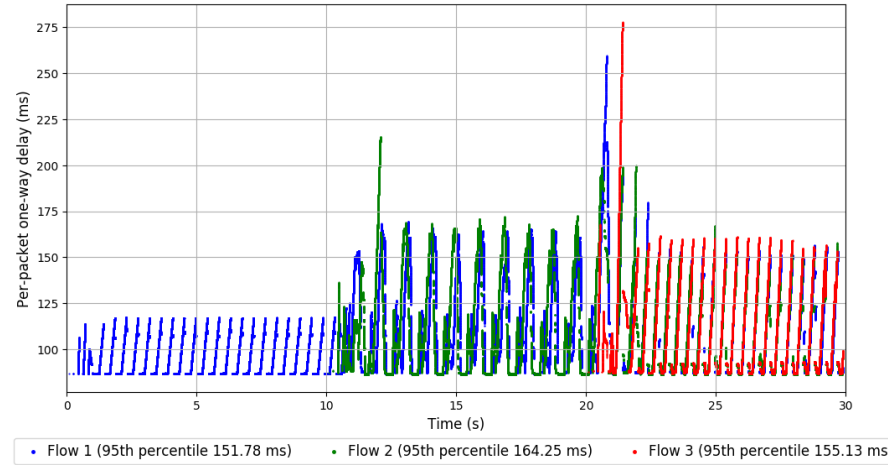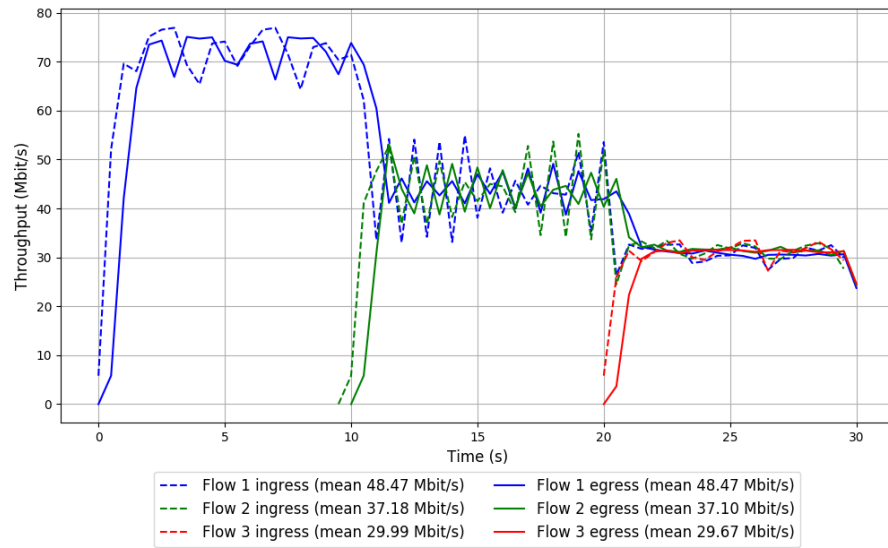Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 47.78 Mbit/s)   Flow 1 egress (mean 47.84 Mbit/s)
Flow 2 ingress (mean 34.98 Mbit/s)   Flow 2 egress (mean 34.99 Mbit/s)
Flow 3 ingress (mean 29.65 Mbit/s)   Flow 3 egress (mean 29.60 Mbit/s)

Flow 1 (95th percentile 149.19 ms)   Flow 2 (95th percentile 168.27 ms)   Flow 3 (95th percentile 158.20 ms)

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

Start at: 2018-11-30 15:47:13
End at: 2018-11-30 15:47:43
Local clock offset: -5.248 ms
Remote clock offset: -178.771 ms


# Below is generated by plot.py at 2018-11-30 17:33:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.44 Mbit/s
95th percentile per-packet one-way delay: 160.158 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 49.94 Mbit/s
95th percentile per-packet one-way delay: 157.915 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 37.44 Mbit/s
95th percentile per-packet one-way delay: 166.742 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 29.31 Mbit/s
95th percentile per-packet one-way delay: 156.265 ms
Loss rate: 1.90%
```

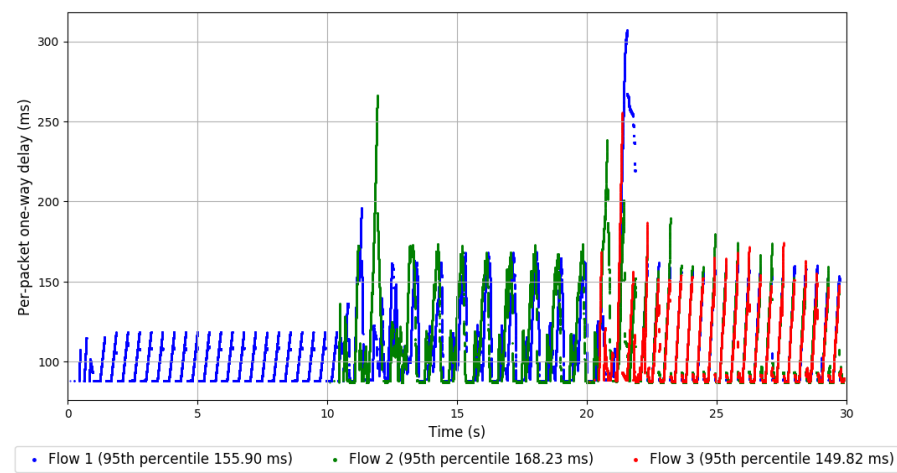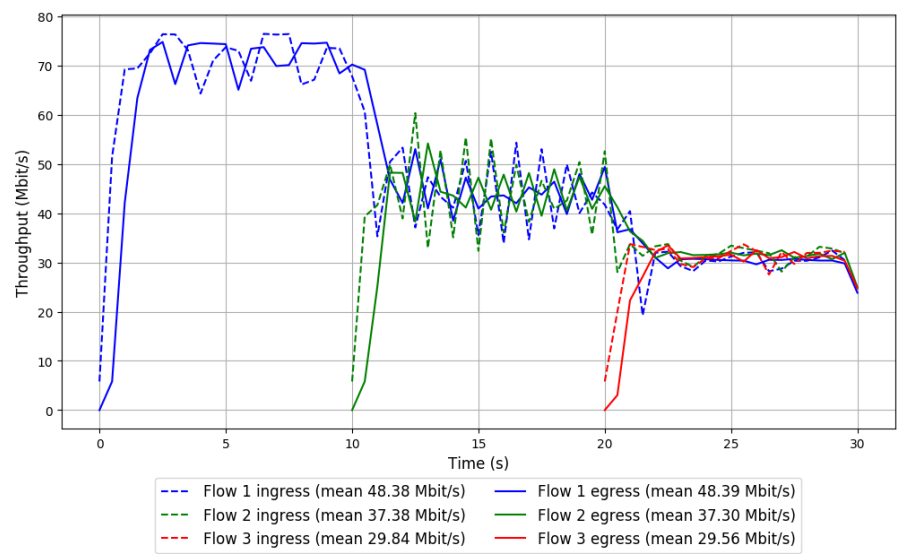Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-11-30 16:11:41
End at: 2018-11-30 16:12:11
Local clock offset: -5.267 ms
Remote clock offset: -179.705 ms

# Below is generated by plot.py at 2018-11-30 17:33:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.88 Mbit/s
95th percentile per-packet one-way delay: 157.709 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 48.47 Mbit/s
95th percentile per-packet one-way delay: 151.782 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 37.10 Mbit/s
95th percentile per-packet one-way delay: 164.251 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 29.67 Mbit/s
95th percentile per-packet one-way delay: 155.132 ms
Loss rate: 2.34%
```

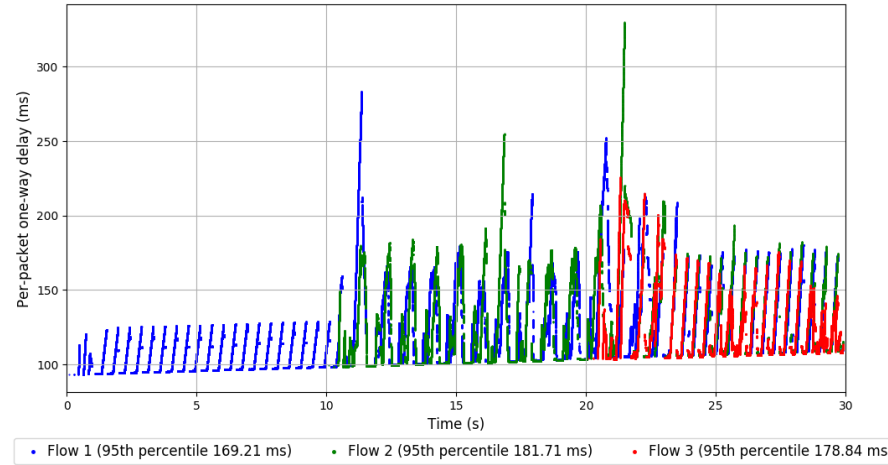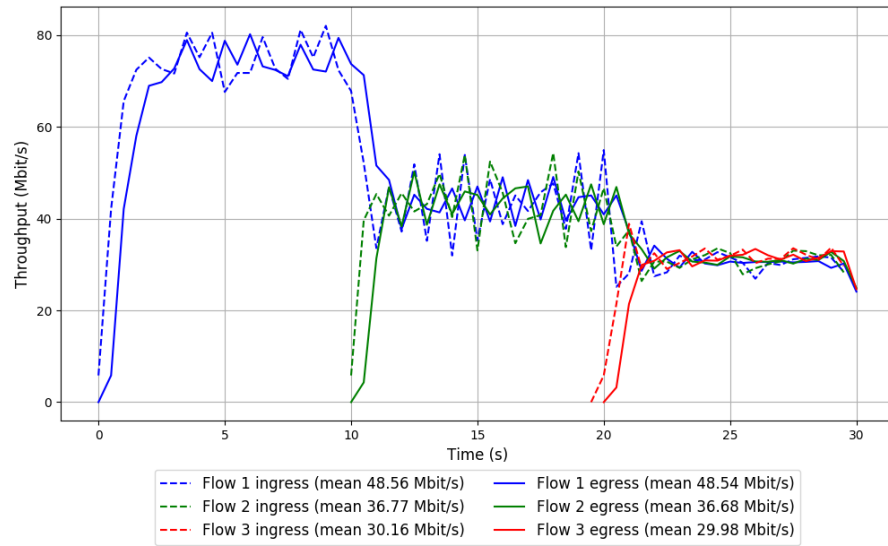Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2018-11-30 16:36:13
End at: 2018-11-30 16:36:43
Local clock offset: -3.613 ms
Remote clock offset: -185.83 ms

# Below is generated by plot.py at 2018-11-30 17:33:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.88 Mbit/s
95th percentile per-packet one-way delay: 160.270 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 48.39 Mbit/s
95th percentile per-packet one-way delay: 155.903 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 37.30 Mbit/s
95th percentile per-packet one-way delay: 168.226 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 29.56 Mbit/s
95th percentile per-packet one-way delay: 149.823 ms
Loss rate: 2.62%
```

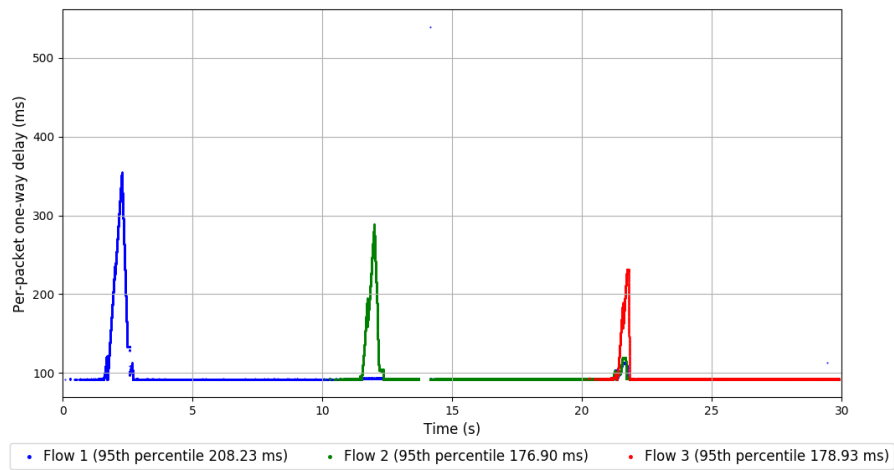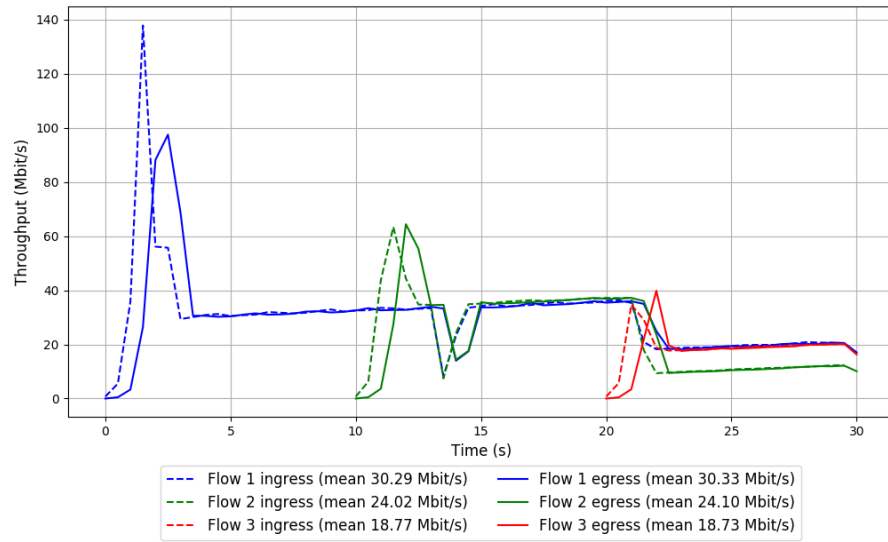## Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 48.38 Mbit/s) --- Flow 1 egress (mean 48.39 Mbit/s)
Flow 2 ingress (mean 37.38 Mbit/s) --- Flow 2 egress (mean 37.30 Mbit/s)
Flow 3 ingress (mean 29.84 Mbit/s) --- Flow 3 egress (mean 29.56 Mbit/s)

Flow 1 (95th percentile 155.90 ms)   Flow 2 (95th percentile 168.23 ms)   Flow 3 (95th percentile 149.82 ms)

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

Start at: 2018-11-30 17:00:39
End at: 2018-11-30 17:01:09
Local clock offset: -4.463 ms
Remote clock offset: 310.957 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.76 Mbit/s
95th percentile per-packet one-way delay: 174.467 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 48.54 Mbit/s
95th percentile per-packet one-way delay: 169.214 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 36.68 Mbit/s
95th percentile per-packet one-way delay: 181.707 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 29.98 Mbit/s
95th percentile per-packet one-way delay: 178.842 ms
Loss rate: 2.27%
```

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

Flow 1 ingress (mean 48.56 Mbit/s) — Flow 1 egress (mean 48.54 Mbit/s)
Flow 2 ingress (mean 36.77 Mbit/s) — Flow 2 egress (mean 36.68 Mbit/s)
Flow 3 ingress (mean 30.16 Mbit/s) — Flow 3 egress (mean 29.98 Mbit/s)

Flow 1 (95th percentile 169.21 ms) — Flow 2 (95th percentile 181.71 ms) — Flow 3 (95th percentile 178.84 ms)

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```
Run 1: Statistics of TCP Vegas

Start at: 2018-11-30 15:40:47
End at: 2018-11-30 15:41:17
Local clock offset: -4.465 ms
Remote clock offset: -176.812 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 52.49 Mbit/s
95th percentile per-packet one-way delay: 188.780 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 30.33 Mbit/s
95th percentile per-packet one-way delay: 208.233 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 24.10 Mbit/s
95th percentile per-packet one-way delay: 176.900 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 18.73 Mbit/s
95th percentile per-packet one-way delay: 178.930 ms
Loss rate: 1.94%
```
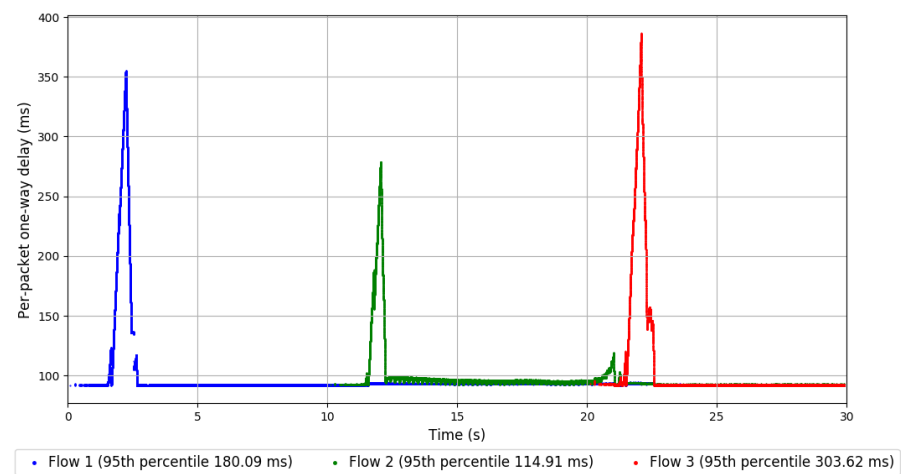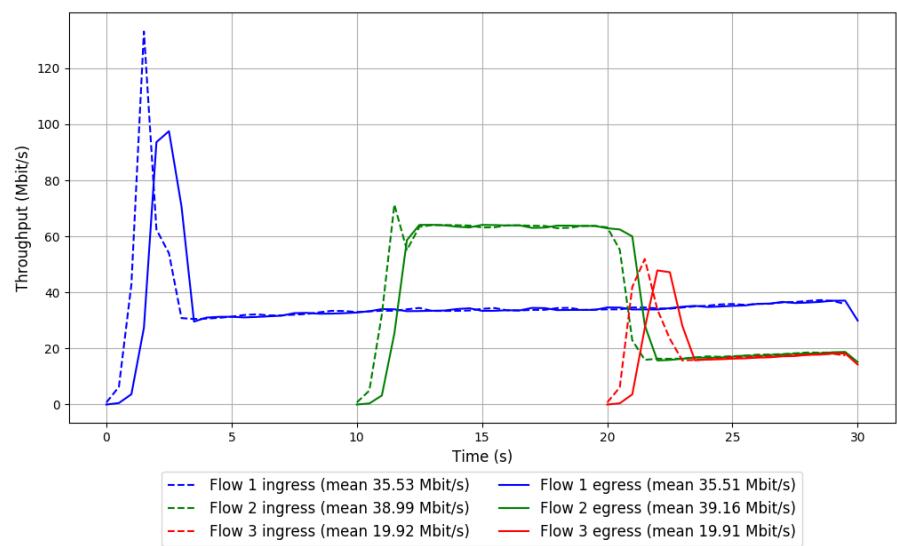
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-11-30 16:05:17
End at: 2018-11-30 16:05:47
Local clock offset: -5.273 ms
Remote clock offset: -181.896 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 51.23 Mbit/s
95th percentile per-packet one-way delay: 232.928 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 19.71 Mbit/s
95th percentile per-packet one-way delay: 263.862 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 31.79 Mbit/s
95th percentile per-packet one-way delay: 200.141 ms
Loss rate: 0.48%
-- Flow 3:
Average throughput: 31.64 Mbit/s
95th percentile per-packet one-way delay: 227.742 ms
Loss rate: 1.90%
```

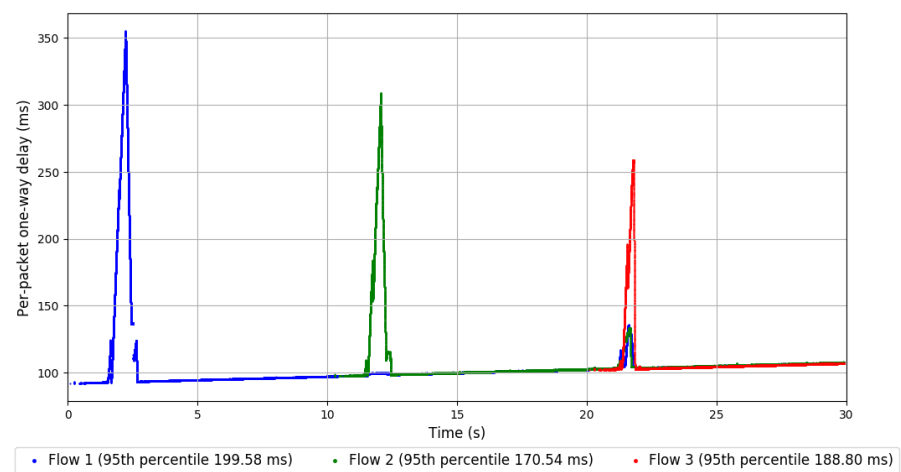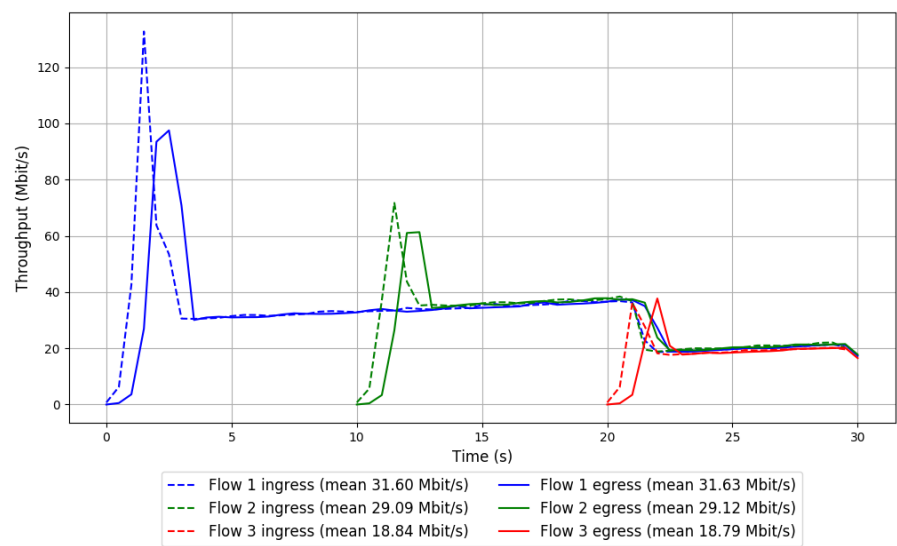Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-11-30 16:29:47
End at: 2018-11-30 16:30:17
Local clock offset: -4.563 ms
Remote clock offset: -189.332 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.05 Mbit/s
95th percentile per-packet one-way delay: 180.876 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 35.51 Mbit/s
95th percentile per-packet one-way delay: 180.092 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 39.16 Mbit/s
95th percentile per-packet one-way delay: 114.906 ms
Loss rate: 0.45%
-- Flow 3:
Average throughput: 19.91 Mbit/s
95th percentile per-packet one-way delay: 303.625 ms
Loss rate: 1.79%
```

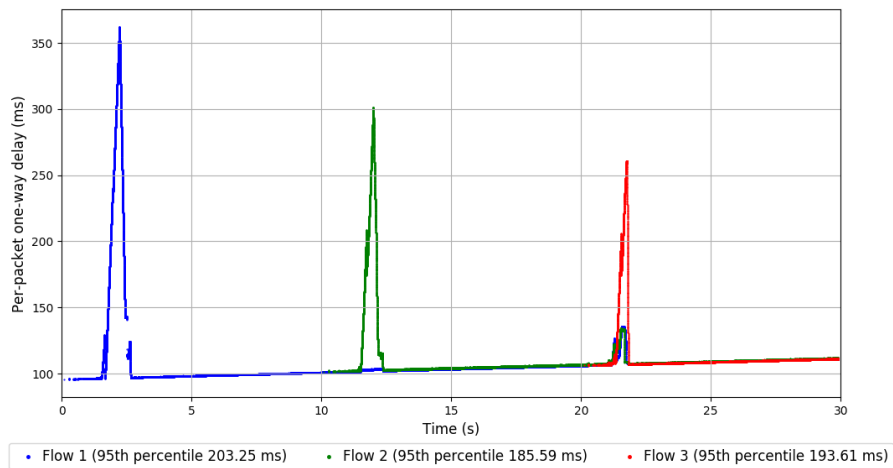## Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-11-30 16:54:13
End at: 2018-11-30 16:54:43
Local clock offset: -4.437 ms
Remote clock offset: 112.797 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.15 Mbit/s
95th percentile per-packet one-way delay: 184.319 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 31.63 Mbit/s
95th percentile per-packet one-way delay: 199.577 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 29.12 Mbit/s
95th percentile per-packet one-way delay: 170.538 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 18.79 Mbit/s
95th percentile per-packet one-way delay: 188.798 ms
Loss rate: 1.94%
```

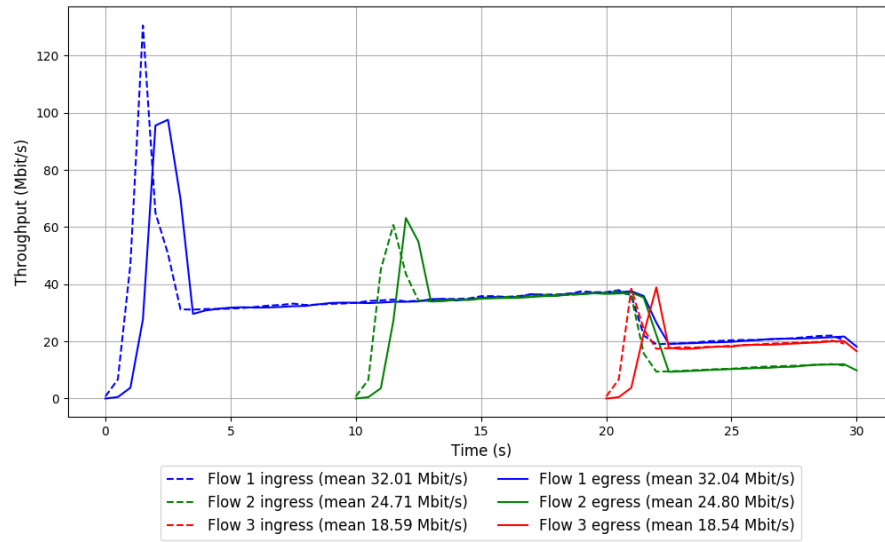# Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-11-30 17:18:37
End at: 2018-11-30 17:19:07
Local clock offset: -4.782 ms
Remote clock offset: 865.57 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 54.60 Mbit/s
95th percentile per-packet one-way delay: 193.450 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 32.04 Mbit/s
95th percentile per-packet one-way delay: 203.254 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 24.80 Mbit/s
95th percentile per-packet one-way delay: 185.594 ms
Loss rate: 0.49%
-- Flow 3:
Average throughput: 18.54 Mbit/s
95th percentile per-packet one-way delay: 193.606 ms
Loss rate: 1.94%
```
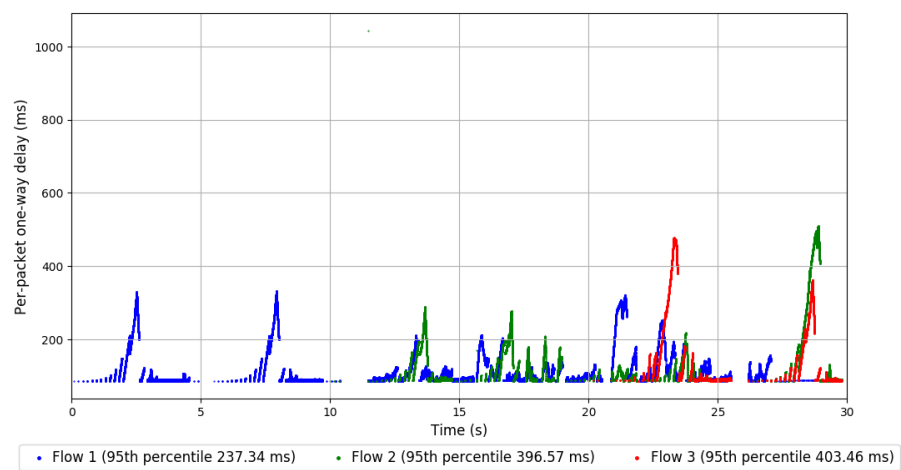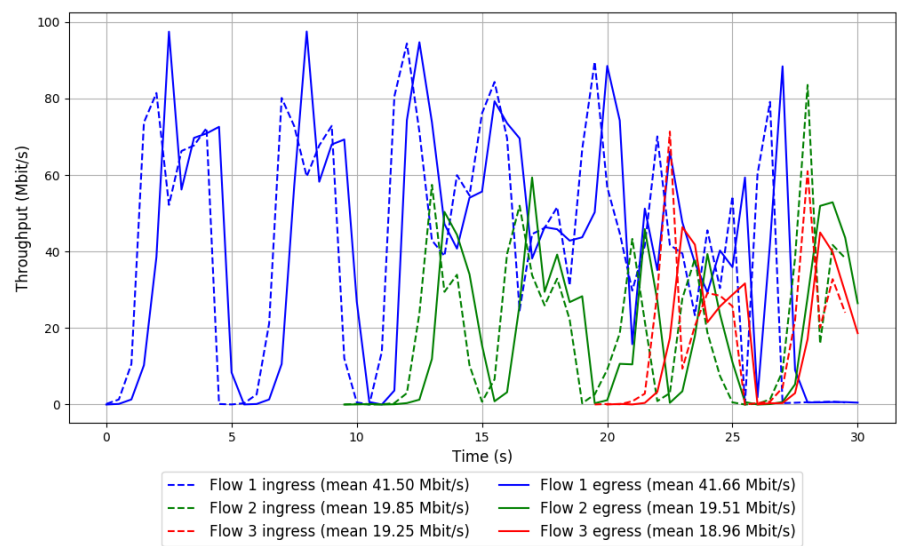
Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-11-30 15:31:42
End at: 2018-11-30 15:32:12
Local clock offset: -5.169 ms
Remote clock offset: -168.349 ms


# Below is generated by plot.py at 2018-11-30 17:34:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 60.90 Mbit/s
95th percentile per-packet one-way delay: 277.516 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 41.66 Mbit/s
95th percentile per-packet one-way delay: 237.335 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 19.51 Mbit/s
95th percentile per-packet one-way delay: 396.566 ms
Loss rate: 2.50%
-- Flow 3:
Average throughput: 18.96 Mbit/s
95th percentile per-packet one-way delay: 403.461 ms
Loss rate: 3.23%
```
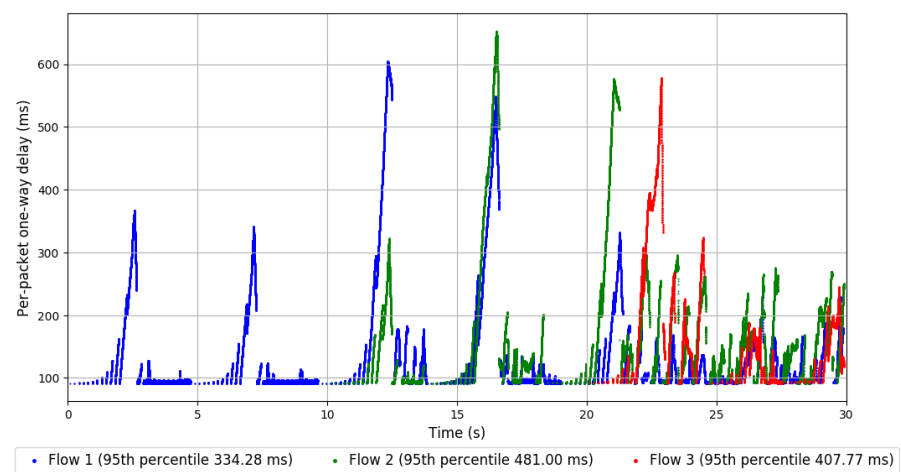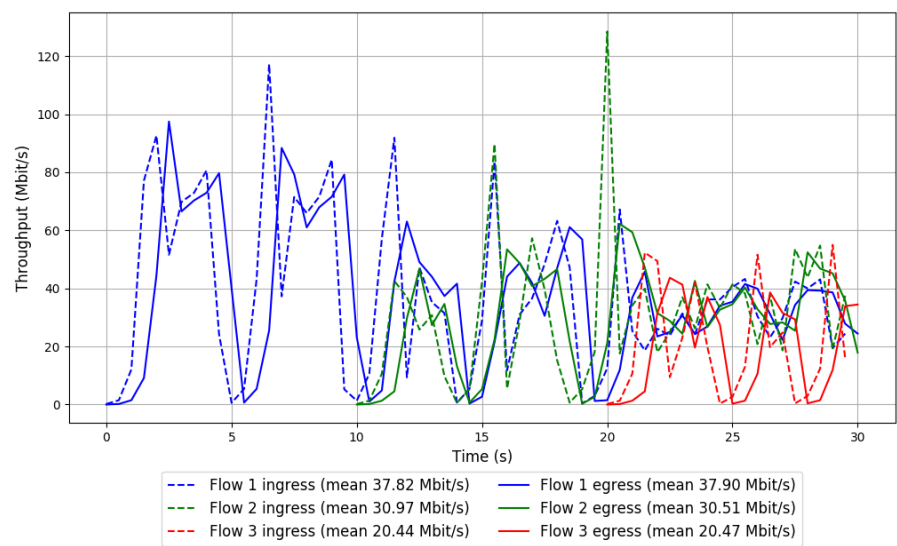
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-11-30 15:56:11
End at: 2018-11-30 15:56:41
Local clock offset: -5.248 ms
Remote clock offset: -180.789 ms

# Below is generated by plot.py at 2018-11-30 17:34:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 64.85 Mbit/s
95th percentile per-packet one-way delay: 390.279 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 37.90 Mbit/s
95th percentile per-packet one-way delay: 334.283 ms
Loss rate: 0.40%
-- Flow 2:
Average throughput: 30.51 Mbit/s
95th percentile per-packet one-way delay: 480.997 ms
Loss rate: 2.03%
-- Flow 3:
Average throughput: 20.47 Mbit/s
95th percentile per-packet one-way delay: 407.775 ms
Loss rate: 1.60%
```
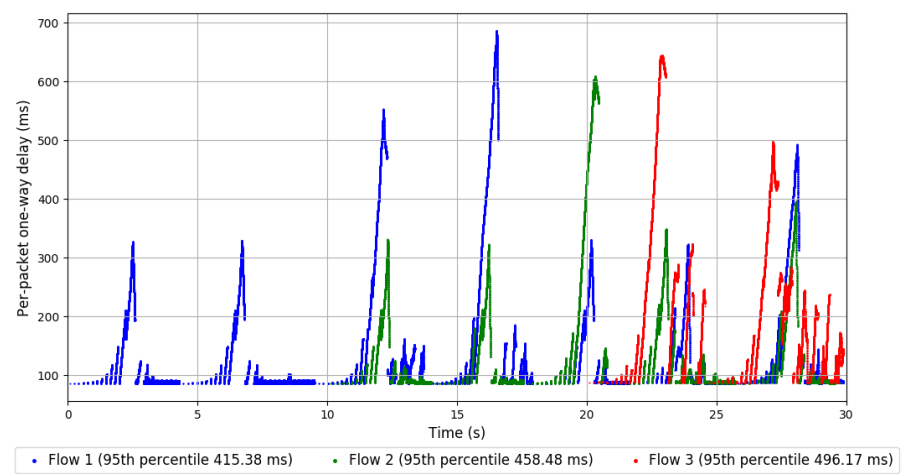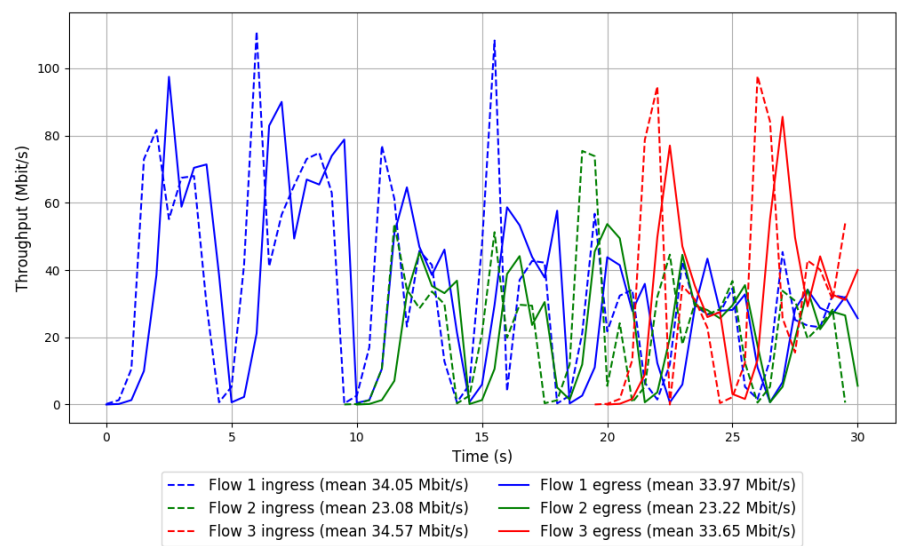
Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 37.82 Mbit/s) --- Flow 1 egress (mean 37.90 Mbit/s)
Flow 2 ingress (mean 30.97 Mbit/s) --- Flow 2 egress (mean 30.51 Mbit/s)
Flow 3 ingress (mean 20.44 Mbit/s) --- Flow 3 egress (mean 20.47 Mbit/s)

Flow 1 (95th percentile 334.28 ms)   Flow 2 (95th percentile 481.00 ms)   Flow 3 (95th percentile 407.77 ms)

```
Run 3: Statistics of Verus

Start at: 2018-11-30 16:20:36
End at: 2018-11-30 16:21:06
Local clock offset: -4.075 ms
Remote clock offset: -180.577 ms


# Below is generated by plot.py at 2018-11-30 17:34:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 60.37 Mbit/s
95th percentile per-packet one-way delay: 450.943 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 33.97 Mbit/s
95th percentile per-packet one-way delay: 415.375 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 23.22 Mbit/s
95th percentile per-packet one-way delay: 458.484 ms
Loss rate: 0.27%
-- Flow 3:
Average throughput: 33.65 Mbit/s
95th percentile per-packet one-way delay: 496.172 ms
Loss rate: 3.66%
```

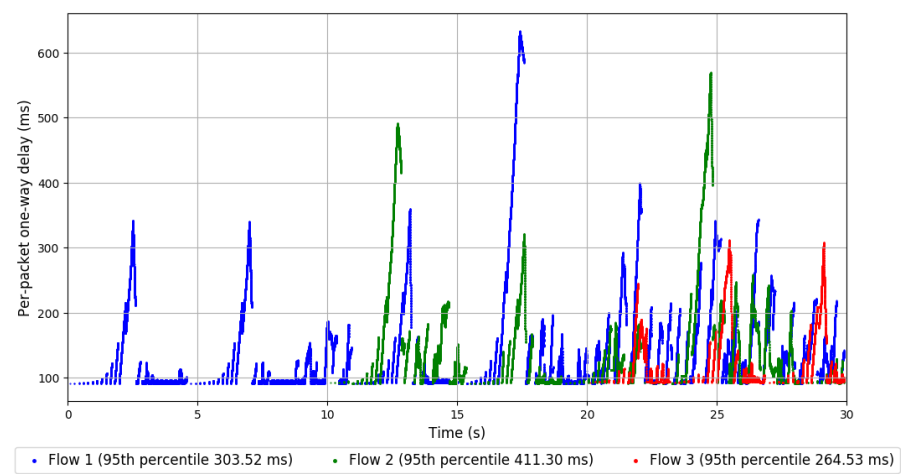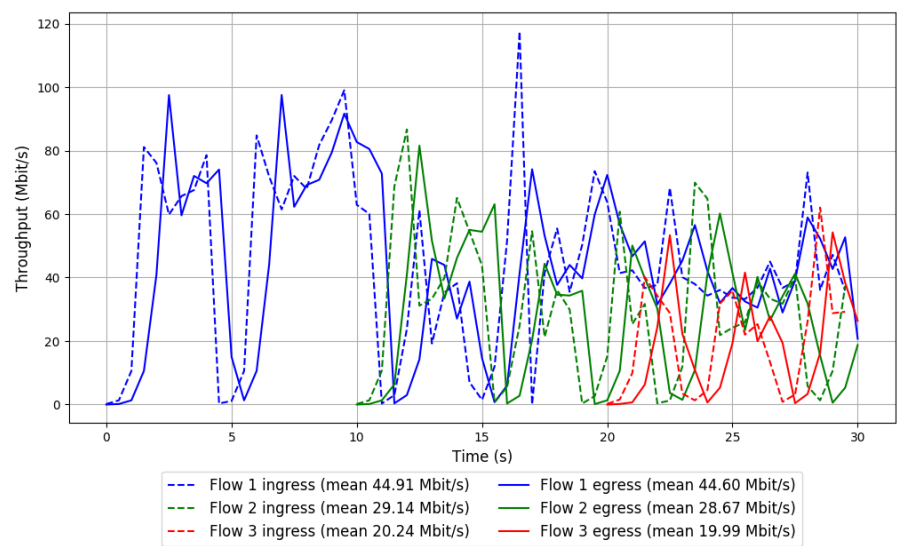Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-11-30 16:45:06
End at: 2018-11-30 16:45:36
Local clock offset: -4.27 ms
Remote clock offset: -193.043 ms

# Below is generated by plot.py at 2018-11-30 17:34:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.19 Mbit/s
95th percentile per-packet one-way delay: 313.598 ms
Loss rate: 1.61%
-- Flow 1:
Average throughput: 44.60 Mbit/s
95th percentile per-packet one-way delay: 303.522 ms
Loss rate: 1.04%
-- Flow 2:
Average throughput: 28.67 Mbit/s
95th percentile per-packet one-way delay: 411.299 ms
Loss rate: 2.46%
-- Flow 3:
Average throughput: 19.99 Mbit/s
95th percentile per-packet one-way delay: 264.532 ms
Loss rate: 2.95%
```

Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-11-30 17:09:32
End at: 2018-11-30 17:10:02
Local clock offset: -3.684 ms
Remote clock offset: 580.307 ms

# Below is generated by plot.py at 2018-11-30 17:34:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 66.86 Mbit/s
95th percentile per-packet one-way delay: 312.560 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 38.47 Mbit/s
95th percentile per-packet one-way delay: 288.448 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 31.91 Mbit/s
95th percentile per-packet one-way delay: 304.289 ms
Loss rate: 1.39%
-- Flow 3:
Average throughput: 21.93 Mbit/s
95th percentile per-packet one-way delay: 437.073 ms
Loss rate: 5.32%
```
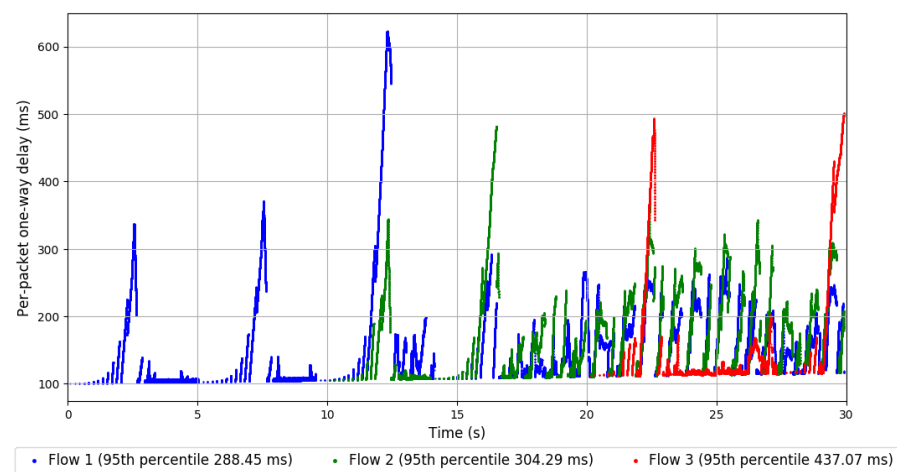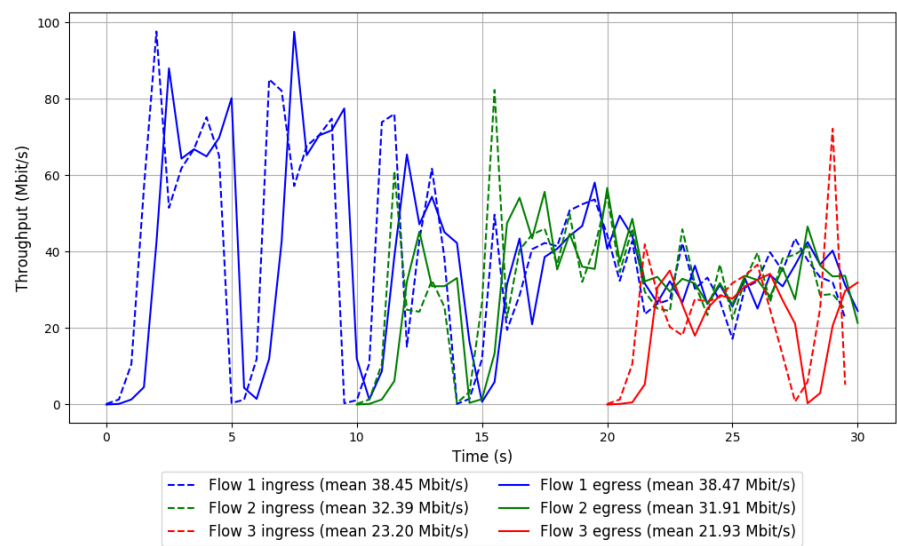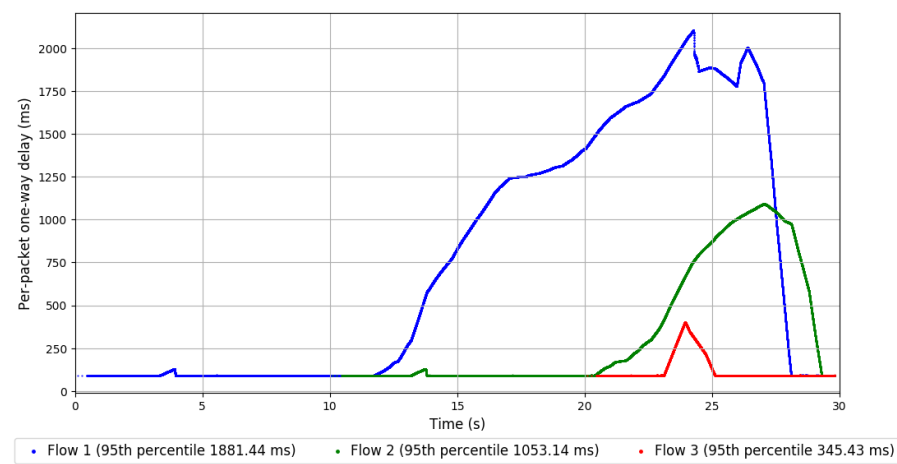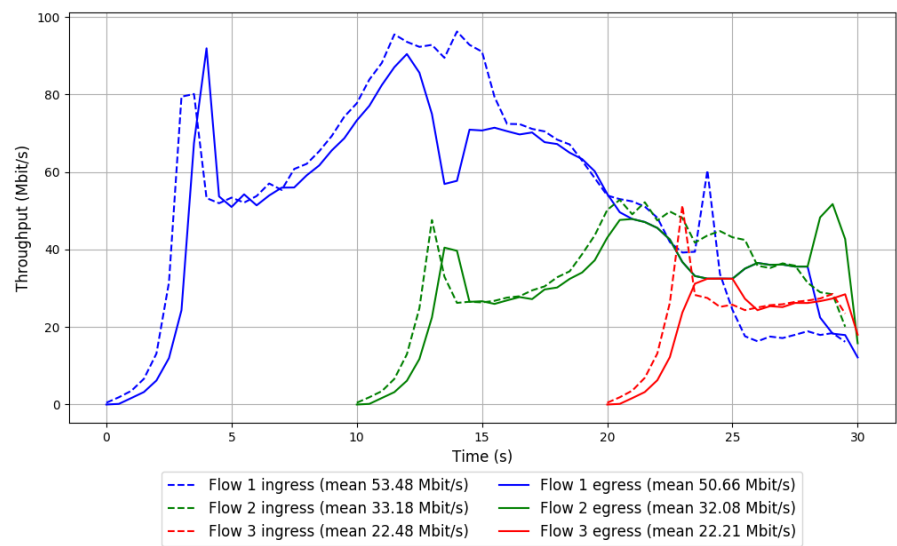
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-11-30 15:33:00
End at: 2018-11-30 15:33:30
Local clock offset: -4.414 ms
Remote clock offset: -173.817 ms


# Below is generated by plot.py at 2018-11-30 17:34:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.18 Mbit/s
95th percentile per-packet one-way delay: 1824.944 ms
Loss rate: 5.12%
-- Flow 1:
Average throughput: 50.66 Mbit/s
95th percentile per-packet one-way delay: 1881.441 ms
Loss rate: 5.83%
-- Flow 2:
Average throughput: 32.08 Mbit/s
95th percentile per-packet one-way delay: 1053.143 ms
Loss rate: 4.16%
-- Flow 3:
Average throughput: 22.21 Mbit/s
95th percentile per-packet one-way delay: 345.426 ms
Loss rate: 2.91%
```

Run 1: Report of PCC-Vivace — Data Link

- - - Flow 1 ingress (mean 53.48 Mbit/s) —— Flow 1 egress (mean 50.66 Mbit/s)
- - - Flow 2 ingress (mean 33.18 Mbit/s) —— Flow 2 egress (mean 32.08 Mbit/s)
- - - Flow 3 ingress (mean 22.48 Mbit/s) —— Flow 3 egress (mean 22.21 Mbit/s)

• Flow 1 (95th percentile 1881.44 ms)　　• Flow 2 (95th percentile 1053.14 ms)　　• Flow 3 (95th percentile 345.43 ms)
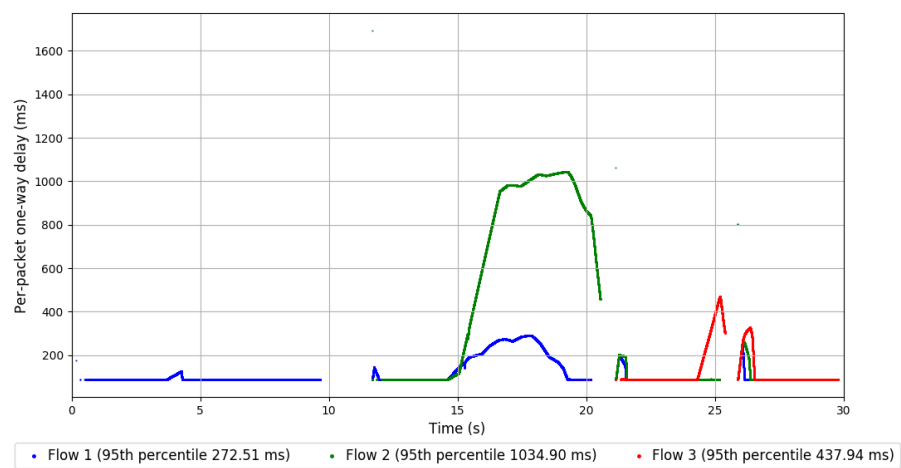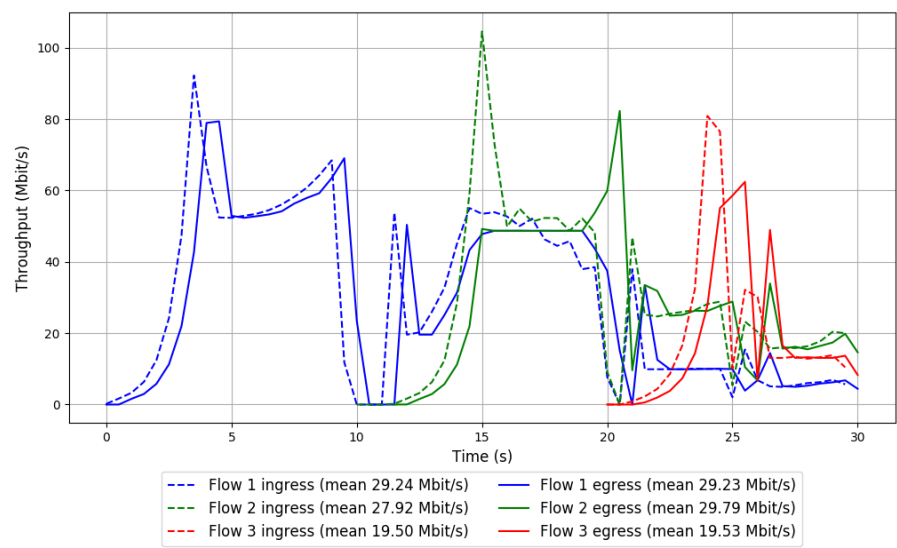
```
Run 2: Statistics of PCC-Vivace

Start at: 2018-11-30 15:57:29
End at: 2018-11-30 15:57:59
Local clock offset: -5.325 ms
Remote clock offset: -177.587 ms


# Below is generated by plot.py at 2018-11-30 17:34:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 53.83 Mbit/s
95th percentile per-packet one-way delay: 1008.846 ms
Loss rate: 1.64%
-- Flow 1:
Average throughput: 29.23 Mbit/s
95th percentile per-packet one-way delay: 272.511 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 29.79 Mbit/s
95th percentile per-packet one-way delay: 1034.896 ms
Loss rate: 2.84%
-- Flow 3:
Average throughput: 19.53 Mbit/s
95th percentile per-packet one-way delay: 437.939 ms
Loss rate: 1.62%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 29.24 Mbit/s) — — —   Flow 1 egress (mean 29.23 Mbit/s)
Flow 2 ingress (mean 27.92 Mbit/s) — — —   Flow 2 egress (mean 29.79 Mbit/s)
Flow 3 ingress (mean 19.50 Mbit/s) — — —   Flow 3 egress (mean 19.53 Mbit/s)

Flow 1 (95th percentile 272.51 ms)   Flow 2 (95th percentile 1034.90 ms)   Flow 3 (95th percentile 437.94 ms)
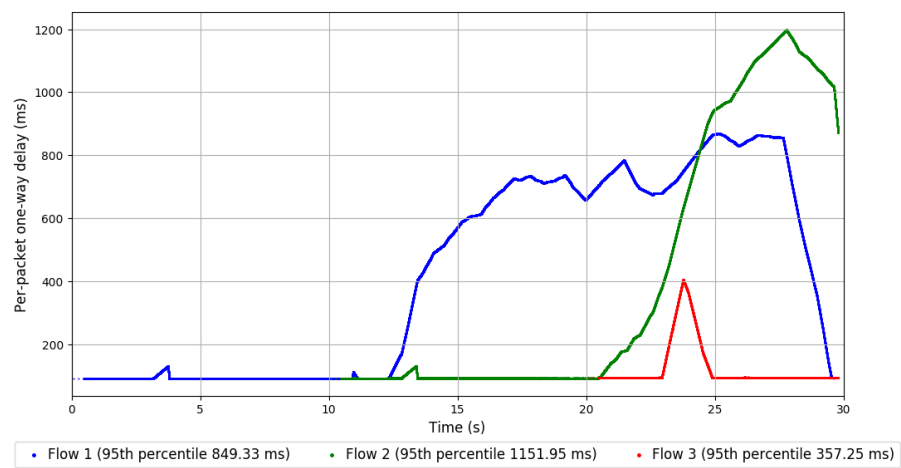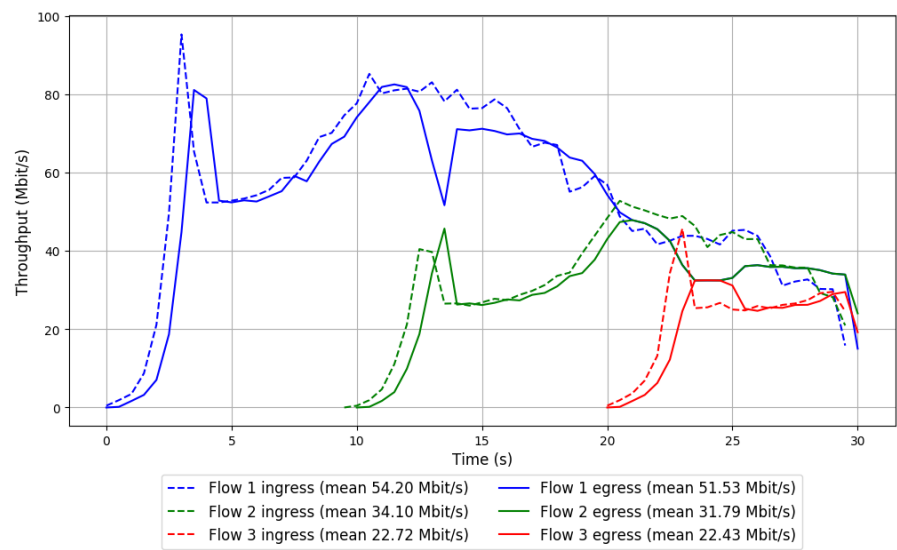
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-11-30 16:21:53
End at: 2018-11-30 16:22:23
Local clock offset: -3.988 ms
Remote clock offset: -187.272 ms


# Below is generated by plot.py at 2018-11-30 17:34:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.94 Mbit/s
95th percentile per-packet one-way delay: 1031.597 ms
Loss rate: 5.83%
-- Flow 1:
Average throughput: 51.53 Mbit/s
95th percentile per-packet one-way delay: 849.325 ms
Loss rate: 5.48%
-- Flow 2:
Average throughput: 31.79 Mbit/s
95th percentile per-packet one-way delay: 1151.947 ms
Loss rate: 7.60%
-- Flow 3:
Average throughput: 22.43 Mbit/s
95th percentile per-packet one-way delay: 357.247 ms
Loss rate: 2.99%
```

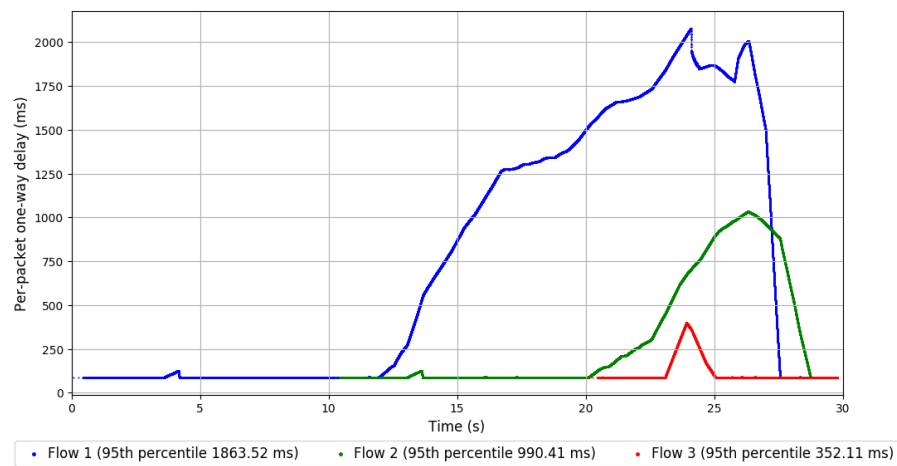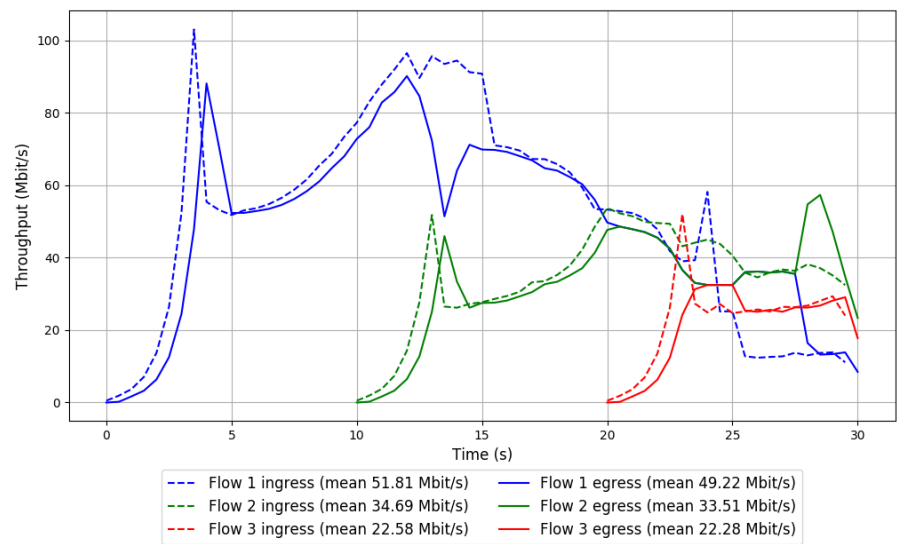## Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 54.20 Mbit/s) — Flow 1 egress (mean 51.53 Mbit/s)
Flow 2 ingress (mean 34.10 Mbit/s) — Flow 2 egress (mean 31.79 Mbit/s)
Flow 3 ingress (mean 22.72 Mbit/s) — Flow 3 egress (mean 22.43 Mbit/s)

Flow 1 (95th percentile 849.33 ms)   Flow 2 (95th percentile 1151.95 ms)   Flow 3 (95th percentile 357.25 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-11-30 16:46:24
End at: 2018-11-30 16:46:54
Local clock offset: -3.61 ms
Remote clock offset: -189.316 ms


# Below is generated by plot.py at 2018-11-30 17:34:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.72 Mbit/s
95th percentile per-packet one-way delay: 1799.962 ms
Loss rate: 4.95%
-- Flow 1:
Average throughput: 49.22 Mbit/s
95th percentile per-packet one-way delay: 1863.517 ms
Loss rate: 5.54%
-- Flow 2:
Average throughput: 33.51 Mbit/s
95th percentile per-packet one-way delay: 990.415 ms
Loss rate: 4.23%
-- Flow 3:
Average throughput: 22.28 Mbit/s
95th percentile per-packet one-way delay: 352.113 ms
Loss rate: 3.08%
```

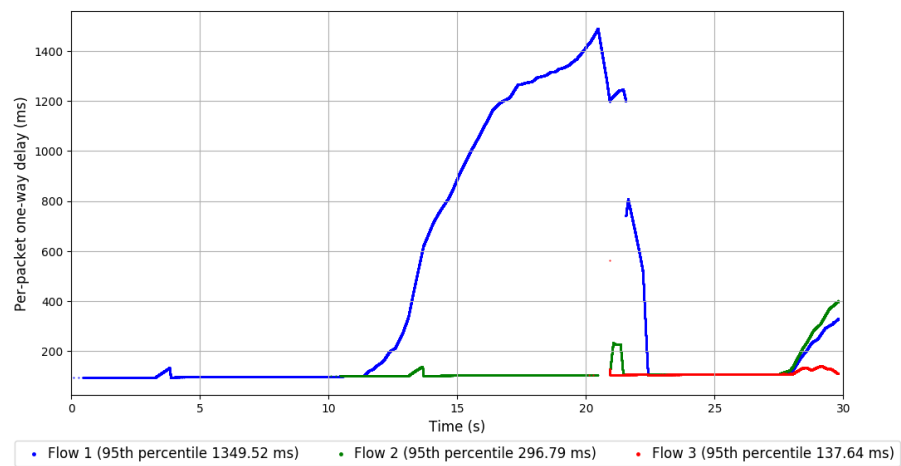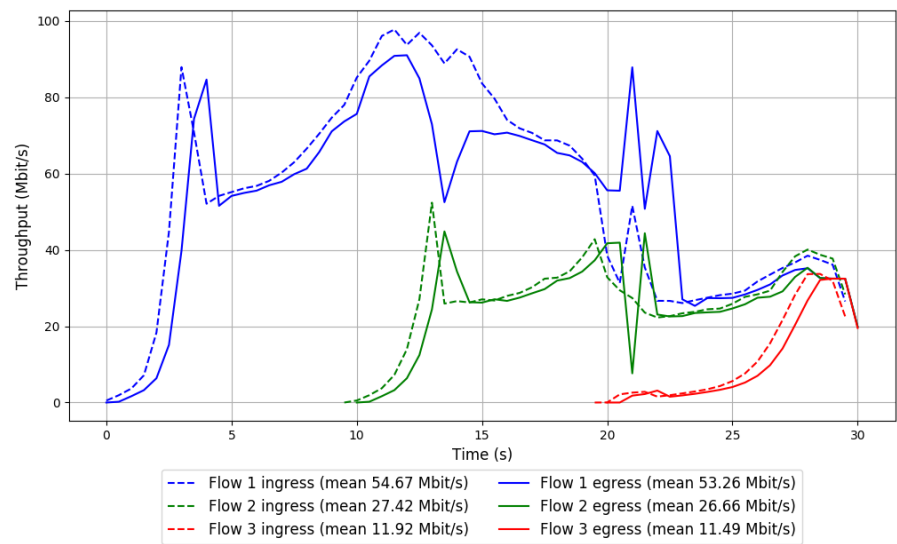# Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 51.81 Mbit/s) — Flow 1 egress (mean 49.22 Mbit/s)
Flow 2 ingress (mean 34.69 Mbit/s) — Flow 2 egress (mean 33.51 Mbit/s)
Flow 3 ingress (mean 22.58 Mbit/s) — Flow 3 egress (mean 22.28 Mbit/s)

Flow 1 (95th percentile 1863.52 ms) — Flow 2 (95th percentile 990.41 ms) — Flow 3 (95th percentile 352.11 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-11-30 17:10:50
End at: 2018-11-30 17:11:20
Local clock offset: -4.433 ms
Remote clock offset: 625.682 ms


# Below is generated by plot.py at 2018-11-30 17:34:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 74.70 Mbit/s
95th percentile per-packet one-way delay: 1326.230 ms
Loss rate: 3.31%
-- Flow 1:
Average throughput: 53.26 Mbit/s
95th percentile per-packet one-way delay: 1349.515 ms
Loss rate: 3.08%
-- Flow 2:
Average throughput: 26.66 Mbit/s
95th percentile per-packet one-way delay: 296.785 ms
Loss rate: 3.57%
-- Flow 3:
Average throughput: 11.49 Mbit/s
95th percentile per-packet one-way delay: 137.637 ms
Loss rate: 5.26%
```

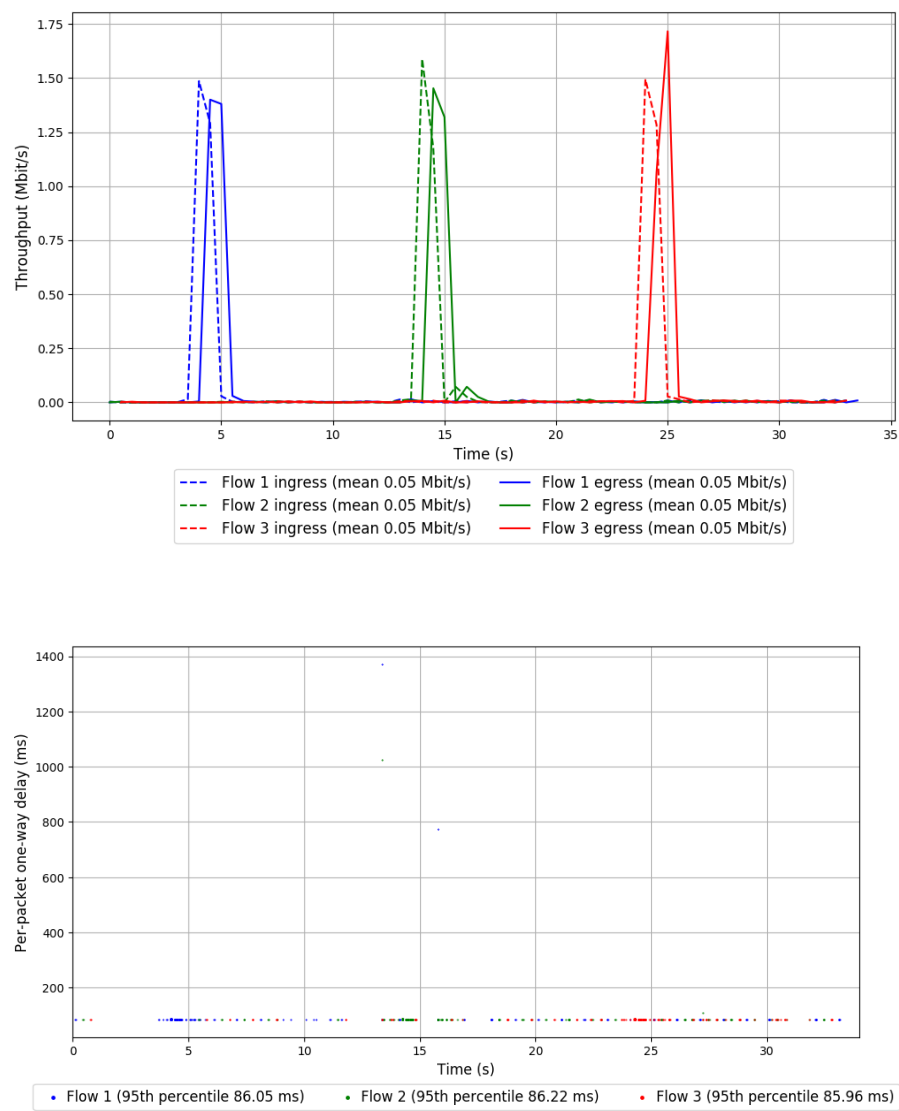# Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-11-30 15:35:37
End at: 2018-11-30 15:36:07
Local clock offset: -5.197 ms
Remote clock offset: -169.433 ms


# Below is generated by plot.py at 2018-11-30 17:34:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 86.110 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 86.047 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 86.219 ms
Loss rate: 0.29%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 85.960 ms
Loss rate: 0.00%
```

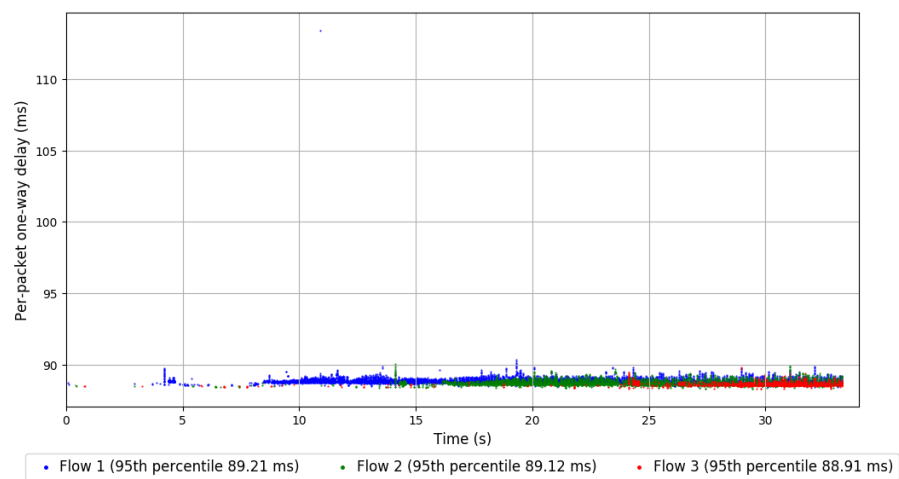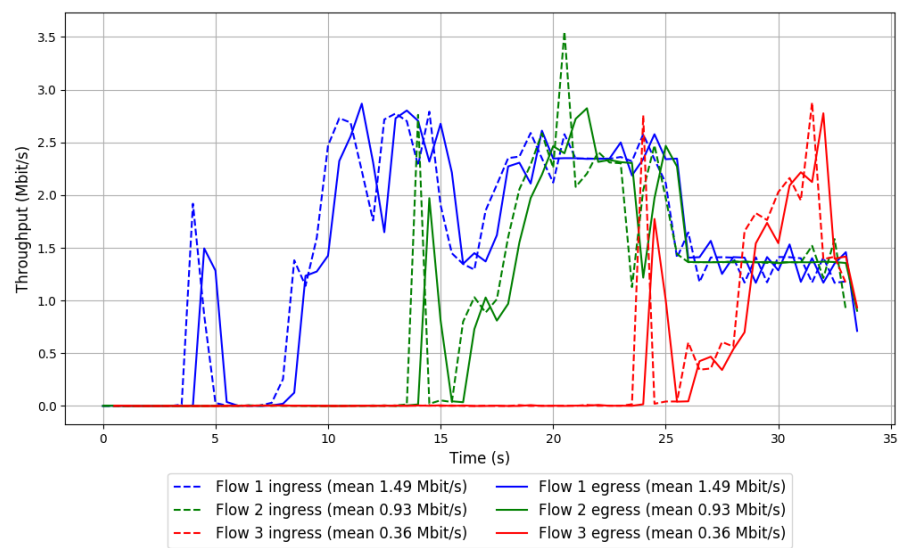Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-11-30 16:00:05
End at: 2018-11-30 16:00:35
Local clock offset: -4.506 ms
Remote clock offset: -178.045 ms


# Below is generated by plot.py at 2018-11-30 17:34:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 89.172 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 1.49 Mbit/s
95th percentile per-packet one-way delay: 89.207 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 89.122 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 88.909 ms
Loss rate: 1.97%
```

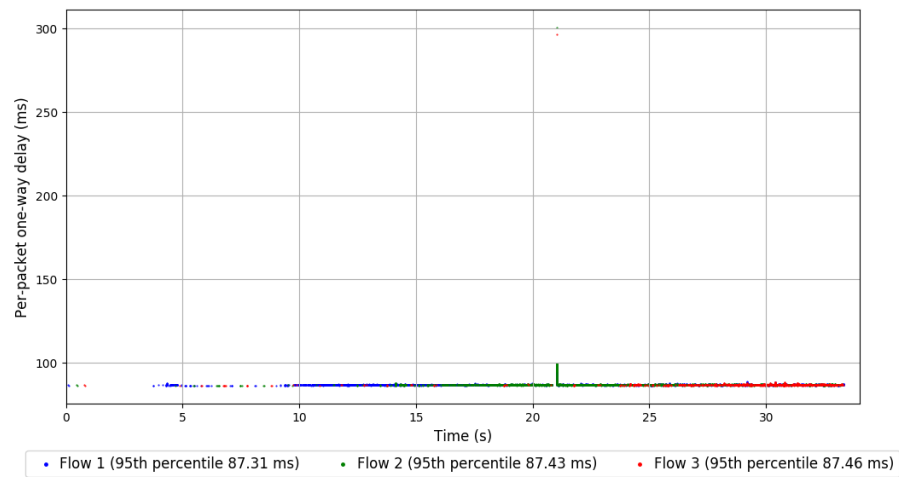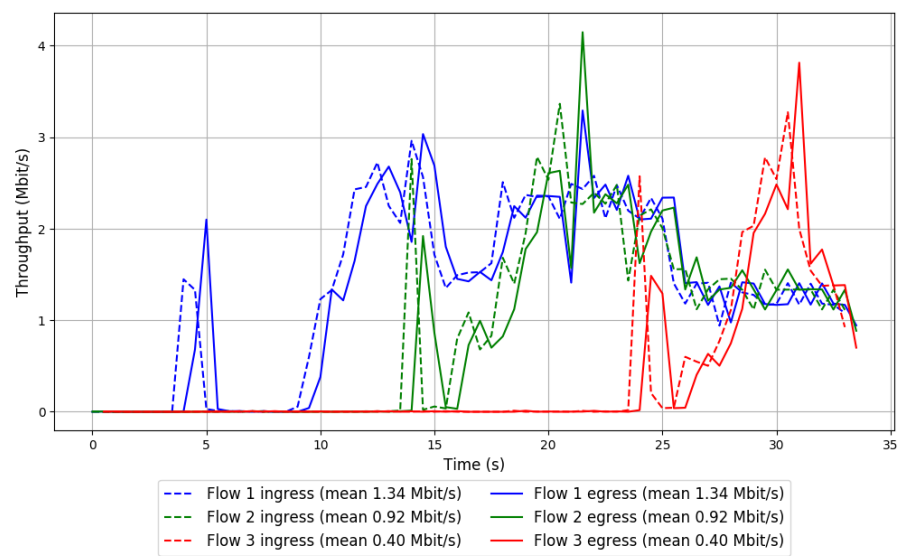Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-11-30 16:24:30
End at: 2018-11-30 16:25:00
Local clock offset: -3.946 ms
Remote clock offset: -182.645 ms

# Below is generated by plot.py at 2018-11-30 17:34:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.64 Mbit/s
95th percentile per-packet one-way delay: 87.377 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 87.309 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 87.431 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 87.457 ms
Loss rate: 1.72%
```

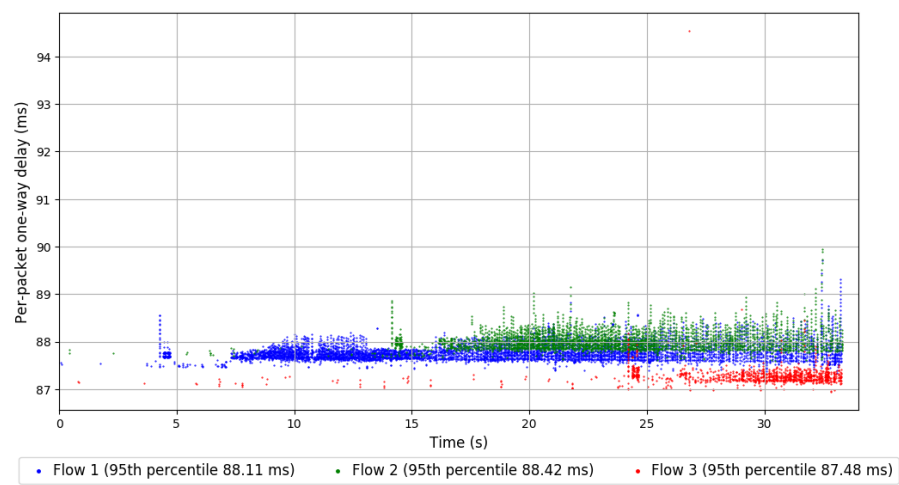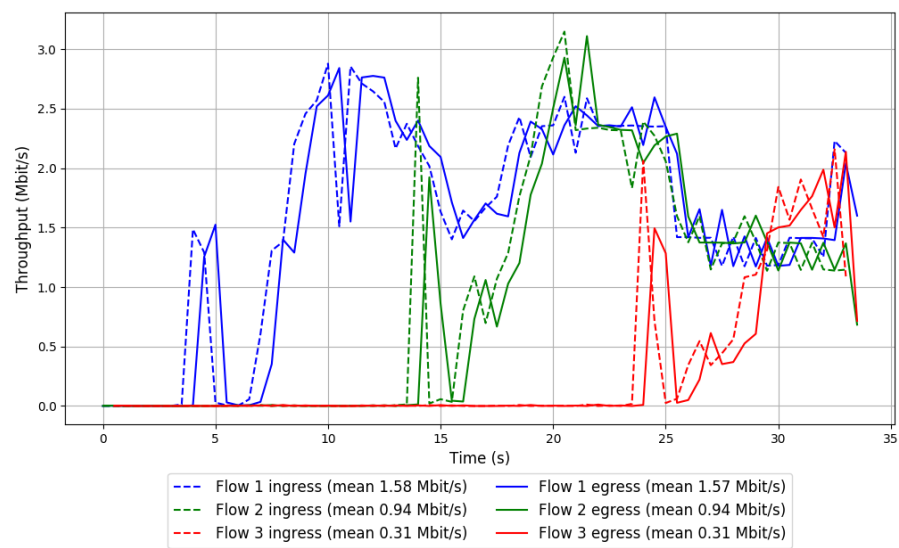Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-11-30 16:49:01
End at: 2018-11-30 16:49:31
Local clock offset: -3.598 ms
Remote clock offset: -189.091 ms

# Below is generated by plot.py at 2018-11-30 17:34:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 88.277 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 88.110 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 88.419 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 87.484 ms
Loss rate: 2.34%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-11-30 17:13:27
End at: 2018-11-30 17:13:57
Local clock offset: -3.668 ms
Remote clock offset: 701.717 ms


# Below is generated by plot.py at 2018-11-30 17:34:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 115.400 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 115.094 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 114.796 ms
Loss rate: 1.46%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 115.734 ms
Loss rate: 2.00%
```

Run 5: Report of WebRTC media — Data Link