Pantheon Report

Generated at 2019-01-19 11:05:56 (UTC).

Data path: India cellular on `ppp0` (*remote*) →AWS India 1 on `ens5` (*local*).

Repeated the test of 21 congestion control schemes 3 times.

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

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

```
System info:
Linux 4.15.0-1031-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 @ c80a283586bf7b0cc1fe08c69c8f60d56498f81c
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ c3eee875824760ec5b2fd207fefe166e1afe2170
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 India cellular to AWS India 1, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

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

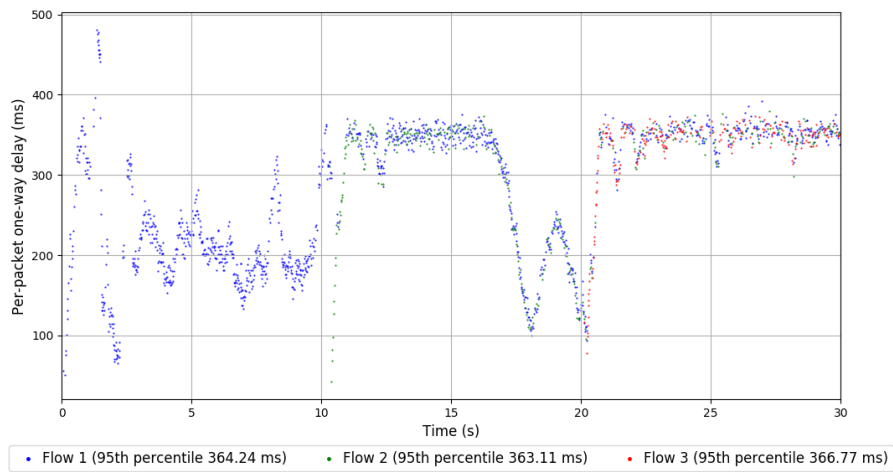| scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.60	0.27	0.42	359.03	369.80	363.05	15.68	24.59	34.30
Copa	3	0.64	0.52	0.30	330.24	340.99	347.55	1.91	5.19	8.86
TCP Cubic	3	0.56	0.39	0.49	356.80	349.31	349.55	3.94	7.28	9.46
FillP	3	0.60	0.38	0.30	359.39	370.22	362.45	38.29	58.83	69.12
FillP-Sheep	3	0.54	0.45	0.33	354.35	358.06	379.80	16.22	27.34	53.10
Indigo	3	0.56	0.36	0.39	206.11	234.61	269.38	0.90	3.54	7.28
Indigo-MusesC3	3	0.62	0.45	0.36	367.55	386.62	503.34	39.10	52.32	74.28
Indigo-MusesC5	3	0.52	0.46	0.27	371.49	371.44	438.18	55.13	51.57	74.47
Indigo-MusesD	3	0.50	0.46	0.38	364.53	367.14	367.50	45.53	50.72	61.09
Indigo-MusesT	3	0.57	0.41	0.31	368.73	408.41	462.87	43.04	58.43	70.94
LEDBAT	3	0.49	0.59	0.55	238.04	297.28	311.20	0.52	0.40	4.26
PCC-Allegro	3	0.64	0.45	0.39	474.23	686.92	719.48	75.47	90.53	94.67
PCC-Expr	2	1.06	0.00	0.38	565.40	347.82	815.60	89.08	92.31	94.23
QUIC Cubic	2	0.49	0.39	0.28	358.18	362.26	364.25	14.90	20.88	32.44
SCReAM	3	0.16	0.18	0.17	102.49	99.25	121.78	0.01	0.06	0.22
Sprout	3	0.24	0.23	0.23	133.25	142.39	161.85	-0.01	0.30	0.81
TaoVA-100x	3	0.82	0.20	0.28	355.33	371.25	368.54	23.76	70.80	56.13
TCP Vegas	3	0.49	0.38	0.47	252.89	311.88	330.89	0.46	3.05	4.55
Verus	3	0.75	0.12	0.12	365.55	412.39	434.88	30.10	42.46	66.71
PCC-Vivace	3	0.66	0.31	0.32	364.52	356.49	408.59	52.26	74.75	73.67
WebRTC media	3	0.14	0.18	0.10	419.30	352.15	372.69	13.90	9.62	14.21

```
Run 1: Statistics of TCP BBR

Start at: 2019-01-19 10:00:34
End at: 2019-01-19 10:01:04
Local clock offset: -0.275 ms
Remote clock offset: -2.912 ms

# Below is generated by plot.py at 2019-01-19 11:05:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 366.256 ms
Loss rate: 19.56%
-- Flow 1:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 358.645 ms
Loss rate: 15.29%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 379.164 ms
Loss rate: 23.81%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 360.257 ms
Loss rate: 32.26%
```
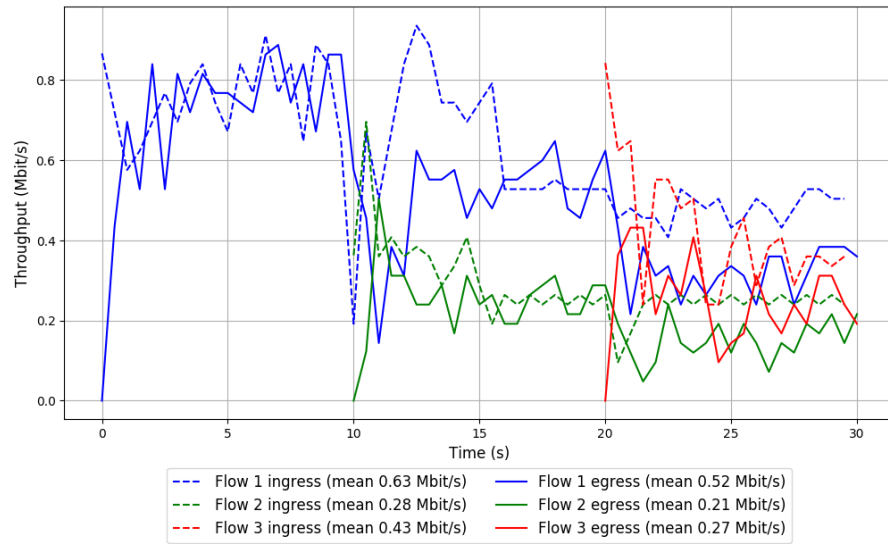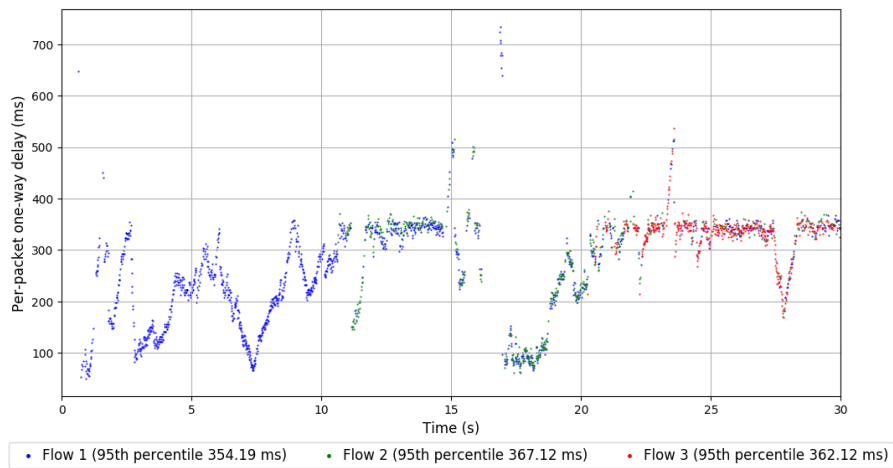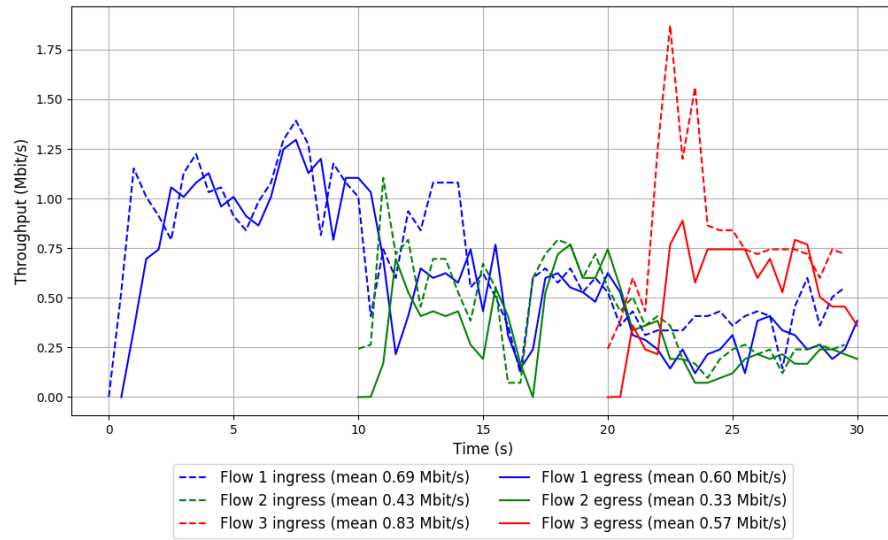
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.81 Mbit/s)   Flow 1 egress (mean 0.69 Mbit/s)
Flow 2 ingress (mean 0.33 Mbit/s)   Flow 2 egress (mean 0.26 Mbit/s)
Flow 3 ingress (mean 0.60 Mbit/s)   Flow 3 egress (mean 0.42 Mbit/s)

• Flow 1 (95th percentile 358.64 ms)   • Flow 2 (95th percentile 379.16 ms)   • Flow 3 (95th percentile 360.26 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2019-01-19 10:24:56
End at: 2019-01-19 10:25:26
Local clock offset: 0.851 ms
Remote clock offset: -3.046 ms


# Below is generated by plot.py at 2019-01-19 11:05:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 364.363 ms
Loss rate: 21.71%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 364.244 ms
Loss rate: 16.53%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 363.108 ms
Loss rate: 26.43%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 366.773 ms
Loss rate: 38.19%
```
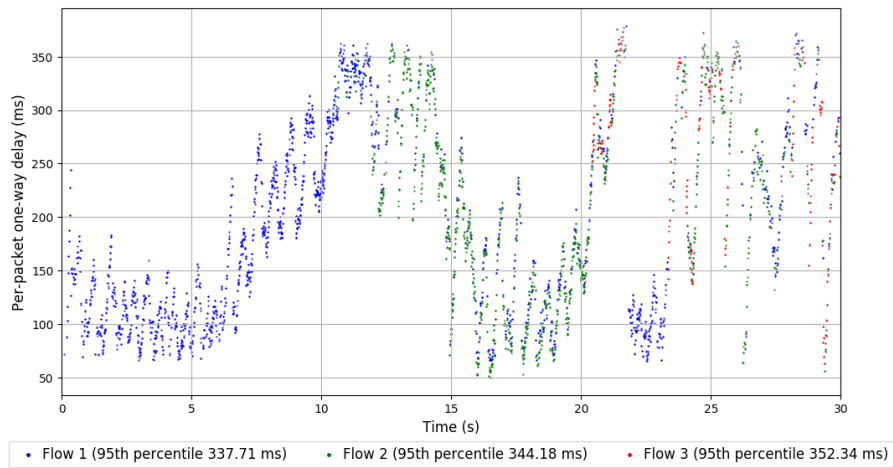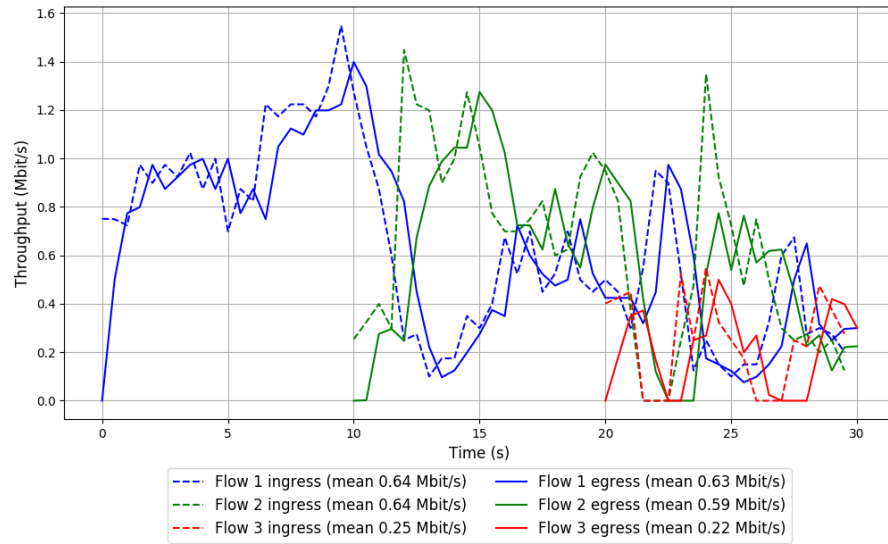
Run 2: Report of TCP BBR — Data Link

- - - - Flow 1 ingress (mean 0.63 Mbit/s) ——— Flow 1 egress (mean 0.52 Mbit/s)
- - - - Flow 2 ingress (mean 0.28 Mbit/s) ——— Flow 2 egress (mean 0.21 Mbit/s)
- - - - Flow 3 ingress (mean 0.43 Mbit/s) ——— Flow 3 egress (mean 0.27 Mbit/s)

• Flow 1 (95th percentile 364.24 ms)   • Flow 2 (95th percentile 363.11 ms)   • Flow 3 (95th percentile 366.77 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2019-01-19 10:49:20
End at: 2019-01-19 10:49:50
Local clock offset: -1.265 ms
Remote clock offset: -3.901 ms


# Below is generated by plot.py at 2019-01-19 11:05:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 358.669 ms
Loss rate: 20.91%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 354.192 ms
Loss rate: 15.21%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 367.117 ms
Loss rate: 23.52%
-- Flow 3:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 362.123 ms
Loss rate: 32.46%
```
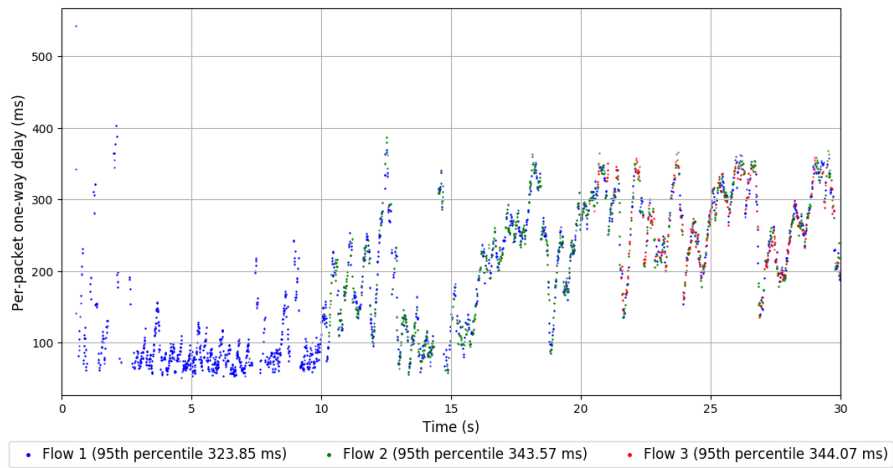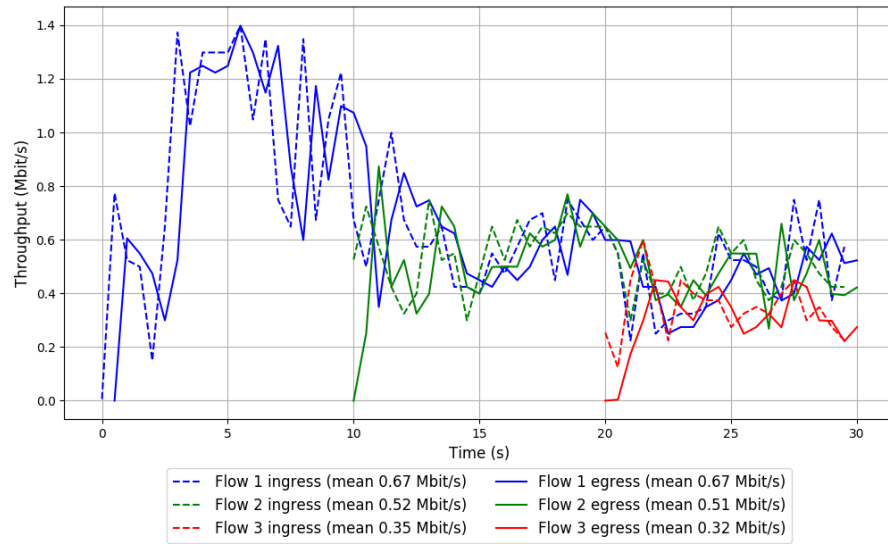
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.69 Mbit/s) --- Flow 1 egress (mean 0.60 Mbit/s) ---
Flow 2 ingress (mean 0.43 Mbit/s) --- Flow 2 egress (mean 0.33 Mbit/s) ---
Flow 3 ingress (mean 0.83 Mbit/s) --- Flow 3 egress (mean 0.57 Mbit/s) ---

• Flow 1 (95th percentile 354.19 ms) • Flow 2 (95th percentile 367.12 ms) • Flow 3 (95th percentile 362.12 ms)

```
Run 1: Statistics of Copa

Start at: 2019-01-19 09:53:25
End at: 2019-01-19 09:53:55
Local clock offset: -0.656 ms
Remote clock offset: -2.498 ms


# Below is generated by plot.py at 2019-01-19 11:05:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 342.625 ms
Loss rate: 5.29%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 337.708 ms
Loss rate: 2.06%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 344.179 ms
Loss rate: 8.74%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 352.342 ms
Loss rate: 12.68%
```
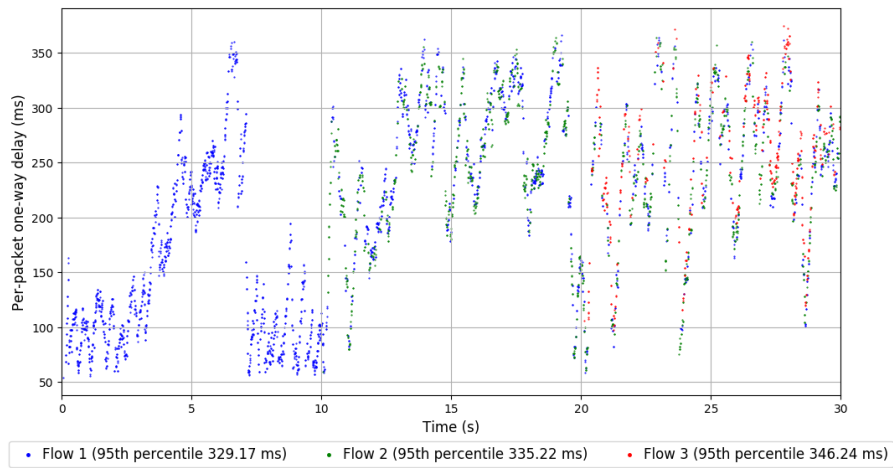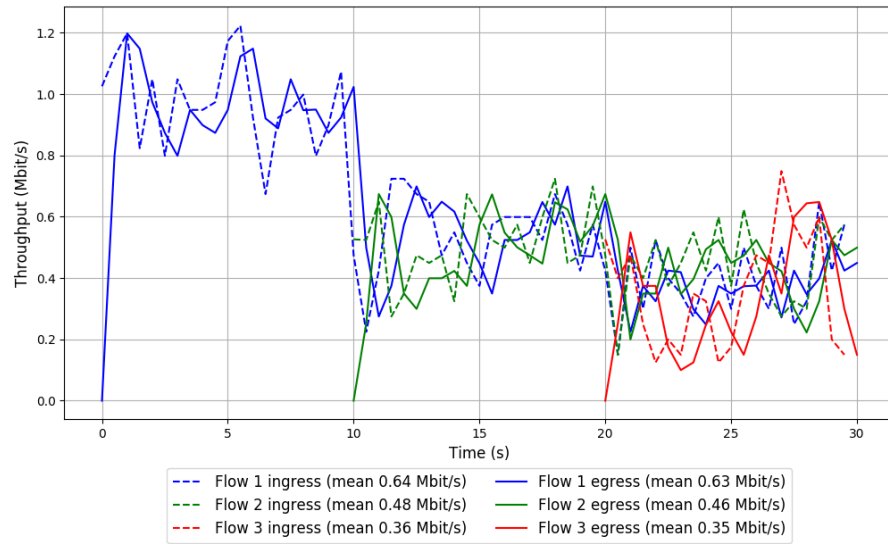
Run 1: Report of Copa — Data Link

- - - Flow 1 ingress (mean 0.64 Mbit/s) — Flow 1 egress (mean 0.63 Mbit/s)
- - - Flow 2 ingress (mean 0.64 Mbit/s) — Flow 2 egress (mean 0.59 Mbit/s)
- - - Flow 3 ingress (mean 0.25 Mbit/s) — Flow 3 egress (mean 0.22 Mbit/s)

• Flow 1 (95th percentile 337.71 ms)   • Flow 2 (95th percentile 344.18 ms)   • Flow 3 (95th percentile 352.34 ms)

```
Run 2: Statistics of Copa

Start at: 2019-01-19 10:17:55
End at: 2019-01-19 10:18:25
Local clock offset: 1.331 ms
Remote clock offset: -3.727 ms


# Below is generated by plot.py at 2019-01-19 11:05:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 337.652 ms
Loss rate: 2.62%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 323.851 ms
Loss rate: 1.28%
-- Flow 2:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 343.573 ms
Loss rate: 2.87%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 344.066 ms
Loss rate: 9.61%
```
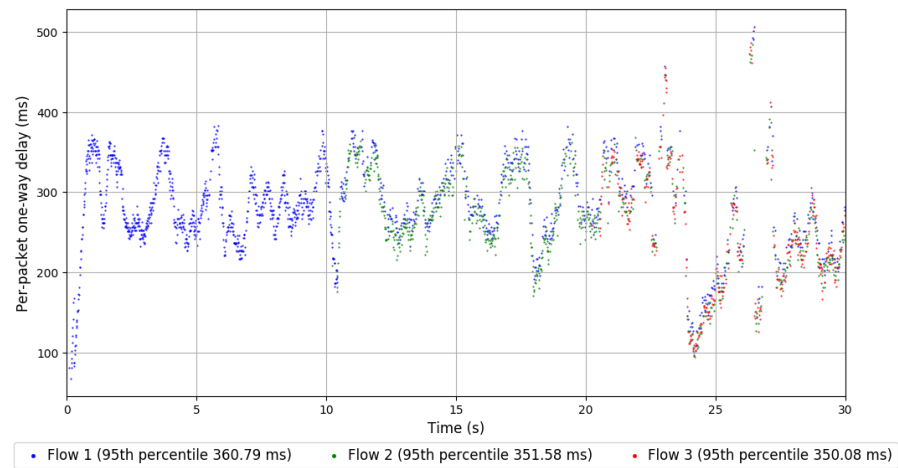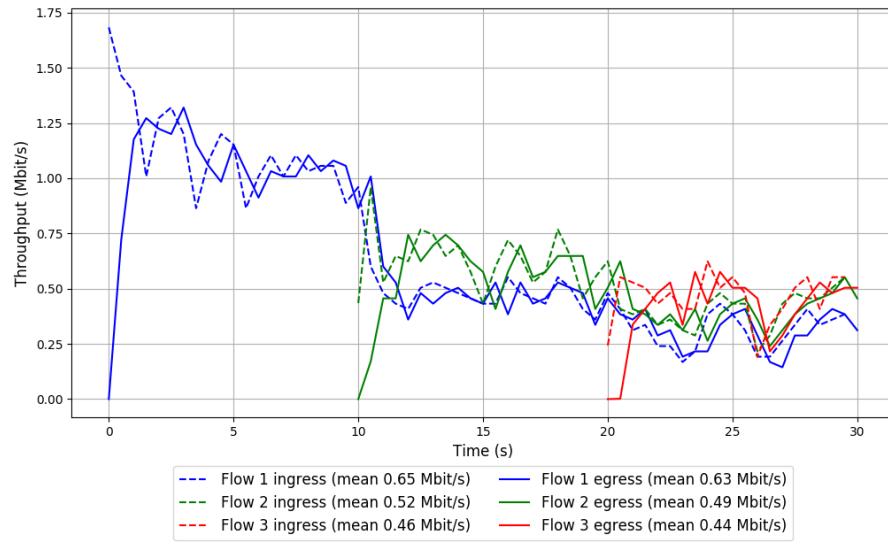
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 0.67 Mbit/s)   Flow 1 egress (mean 0.67 Mbit/s)
Flow 2 ingress (mean 0.52 Mbit/s)   Flow 2 egress (mean 0.51 Mbit/s)
Flow 3 ingress (mean 0.35 Mbit/s)   Flow 3 egress (mean 0.32 Mbit/s)

Flow 1 (95th percentile 323.85 ms)   Flow 2 (95th percentile 343.57 ms)   Flow 3 (95th percentile 344.07 ms)
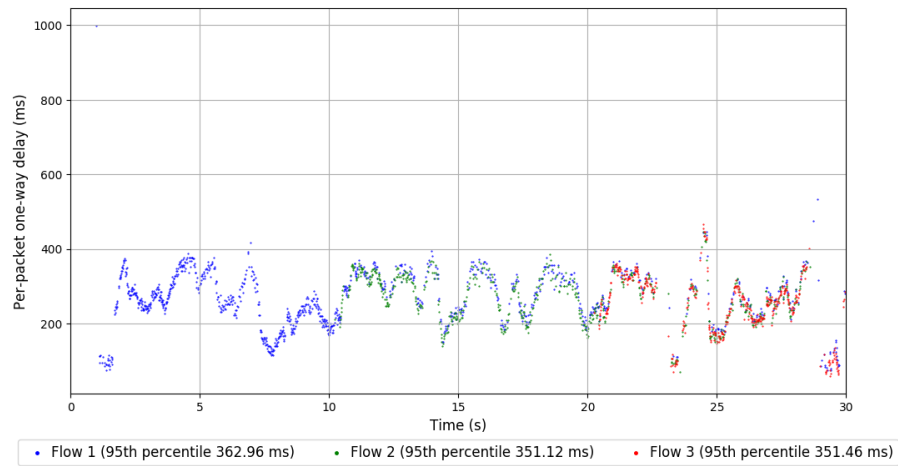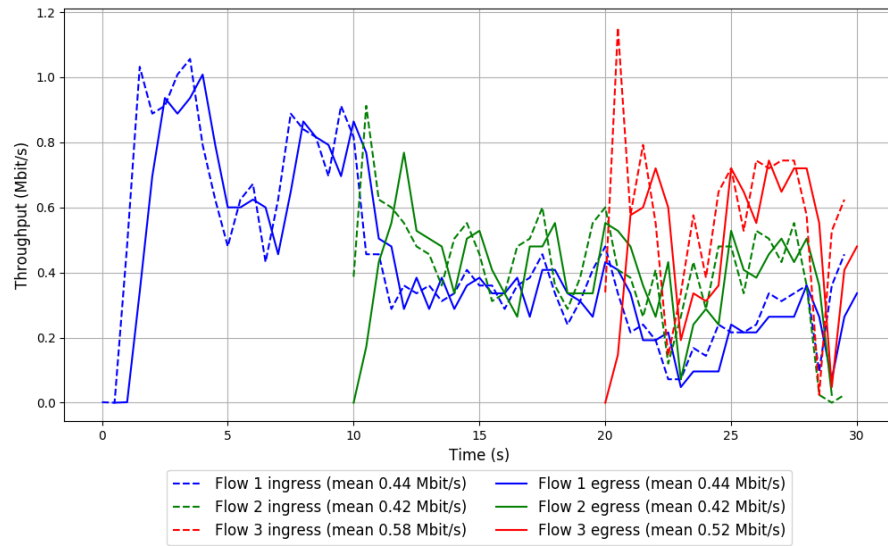
```
Run 3: Statistics of Copa

Start at: 2019-01-19 10:42:24
End at: 2019-01-19 10:42:54
Local clock offset: -1.123 ms
Remote clock offset: -4.408 ms


# Below is generated by plot.py at 2019-01-19 11:05:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 333.443 ms
Loss rate: 3.06%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 329.169 ms
Loss rate: 2.39%
-- Flow 2:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 335.221 ms
Loss rate: 3.95%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 346.244 ms
Loss rate: 4.29%
```

Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 0.64 Mbit/s) --- Flow 1 egress (mean 0.63 Mbit/s) ---
Flow 2 ingress (mean 0.48 Mbit/s) --- Flow 2 egress (mean 0.46 Mbit/s) ---
Flow 3 ingress (mean 0.36 Mbit/s) --- Flow 3 egress (mean 0.35 Mbit/s) ---

· Flow 1 (95th percentile 329.17 ms)   · Flow 2 (95th percentile 335.22 ms)   · Flow 3 (95th percentile 346.24 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2019-01-19 09:56:53
End at: 2019-01-19 09:57:23
Local clock offset: -0.055 ms
Remote clock offset: -3.339 ms


# Below is generated by plot.py at 2019-01-19 11:05:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 357.079 ms
Loss rate: 5.34%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 360.792 ms
Loss rate: 4.24%
-- Flow 2:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 351.576 ms
Loss rate: 6.34%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 350.085 ms
Loss rate: 7.81%
```
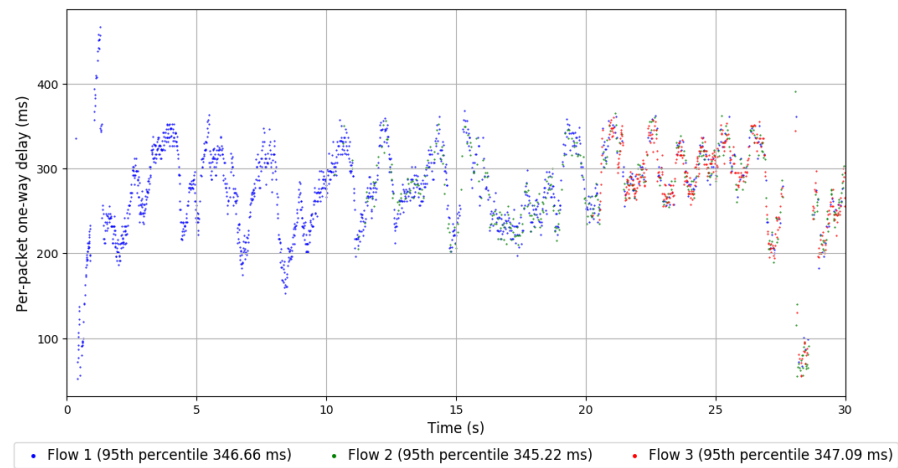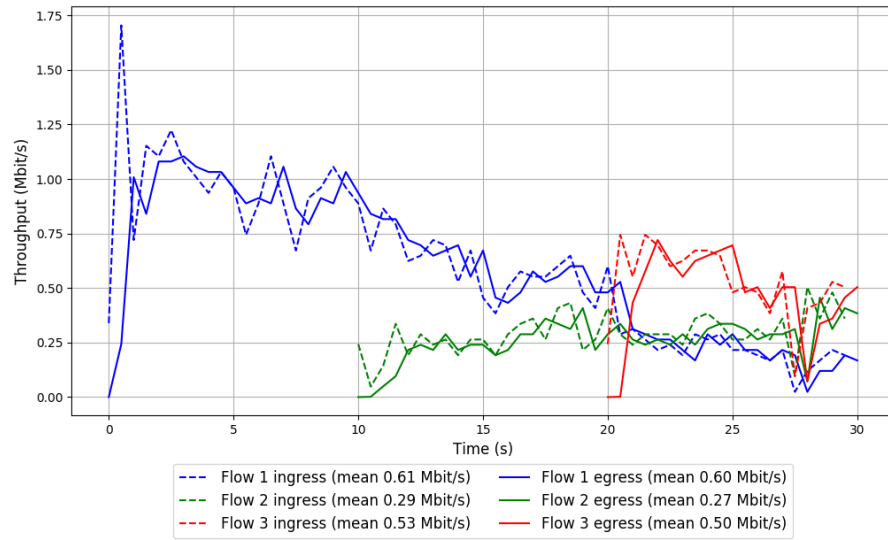
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2019-01-19 10:21:27
End at: 2019-01-19 10:21:57
Local clock offset: 2.1 ms
Remote clock offset: -3.992 ms


# Below is generated by plot.py at 2019-01-19 11:05:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 357.437 ms
Loss rate: 7.08%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 362.958 ms
Loss rate: 4.89%
-- Flow 2:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 351.122 ms
Loss rate: 7.23%
-- Flow 3:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 351.459 ms
Loss rate: 11.95%
```
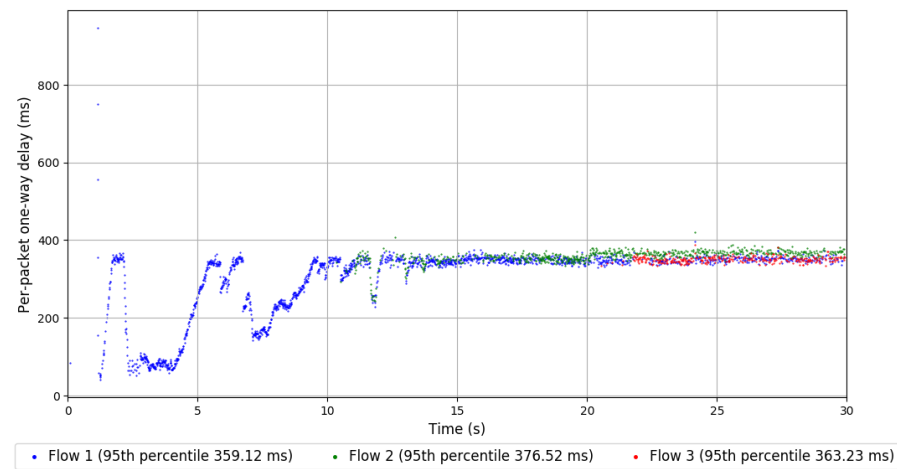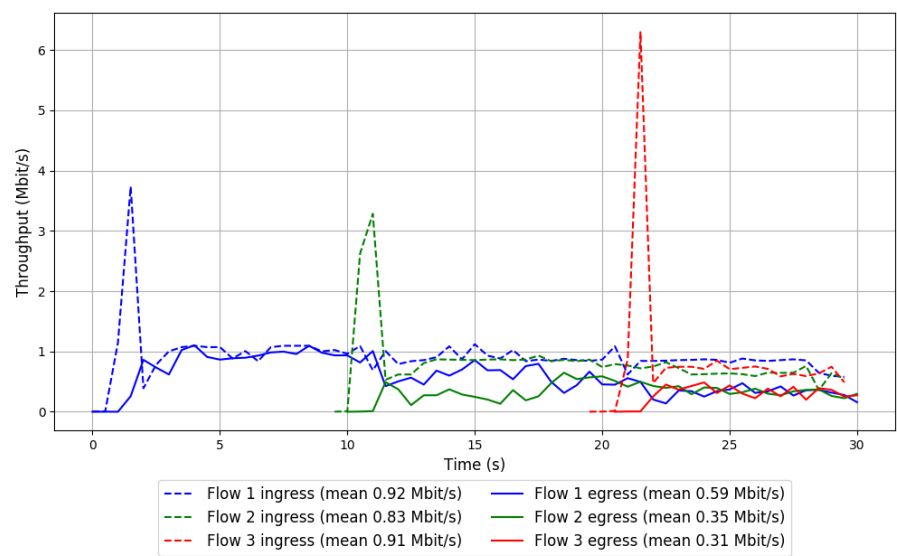
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2019-01-19 10:45:52
End at: 2019-01-19 10:46:22
Local clock offset: 0.646 ms
Remote clock offset: -3.599 ms


# Below is generated by plot.py at 2019-01-19 11:05:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 346.558 ms
Loss rate: 4.87%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 346.663 ms
Loss rate: 2.70%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 345.221 ms
Loss rate: 8.26%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 347.091 ms
Loss rate: 8.61%
```

Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2019-01-19 09:55:44
End at: 2019-01-19 09:56:14
Local clock offset: 0.67 ms
Remote clock offset: -2.965 ms


# Below is generated by plot.py at 2019-01-19 11:05:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 370.235 ms
Loss rate: 48.52%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 359.123 ms
Loss rate: 35.99%
-- Flow 2:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 376.525 ms
Loss rate: 58.85%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 363.227 ms
Loss rate: 67.79%
```
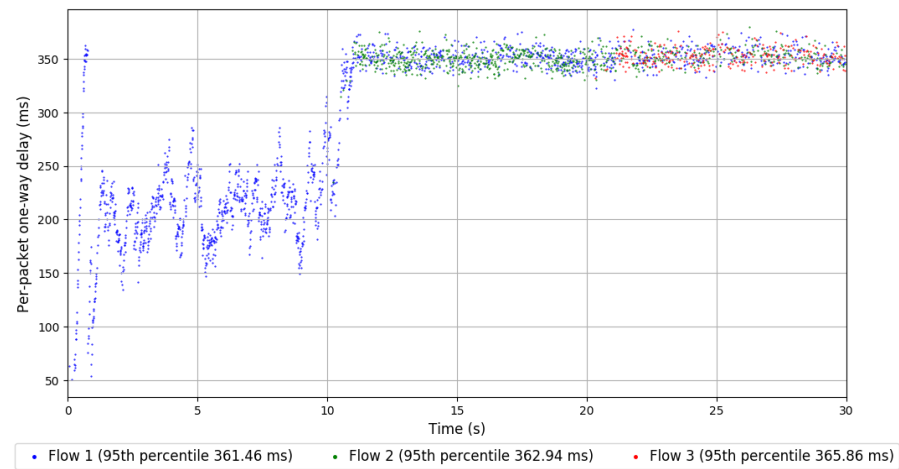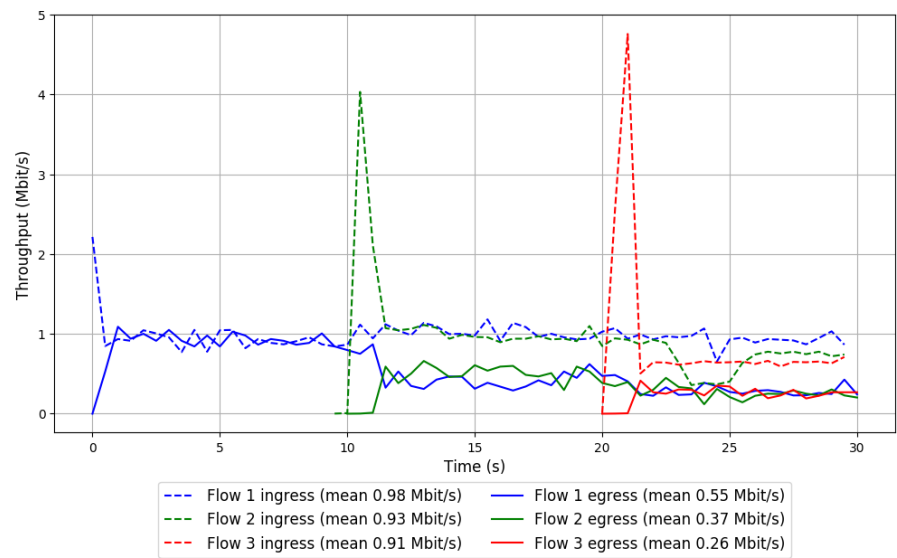
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2019-01-19 10:20:16
End at: 2019-01-19 10:20:46
Local clock offset: 1.388 ms
Remote clock offset: -3.58 ms


# Below is generated by plot.py at 2019-01-19 11:05:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 362.439 ms
Loss rate: 53.87%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 361.459 ms
Loss rate: 43.79%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 362.943 ms
Loss rate: 60.69%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 365.857 ms
Loss rate: 72.69%
```
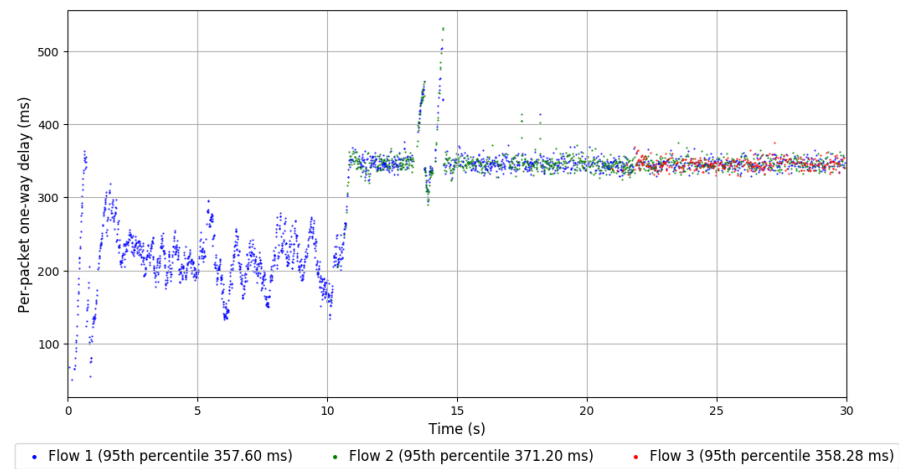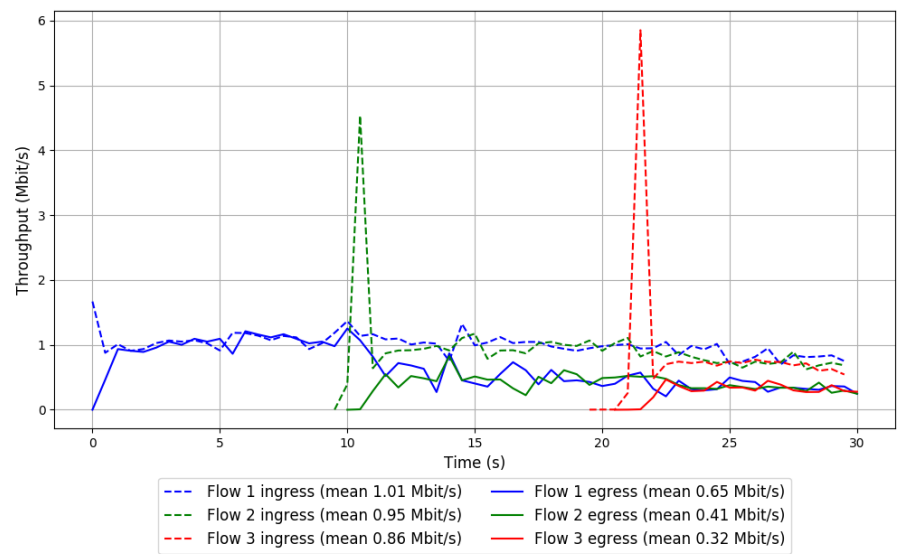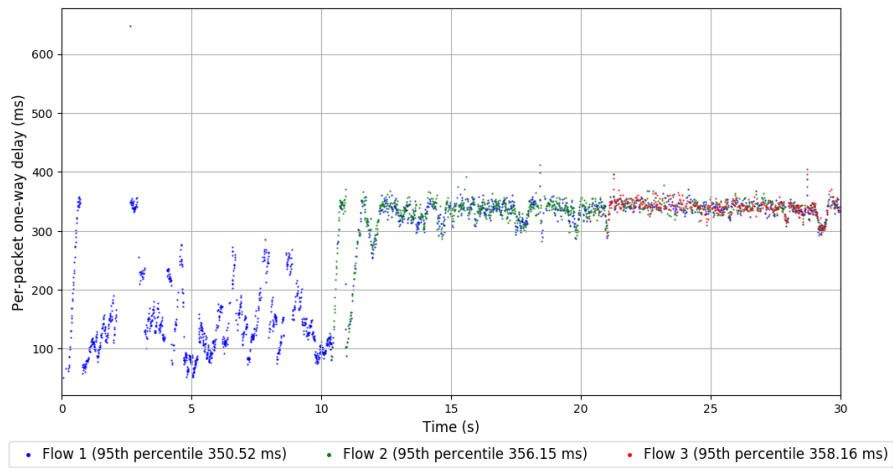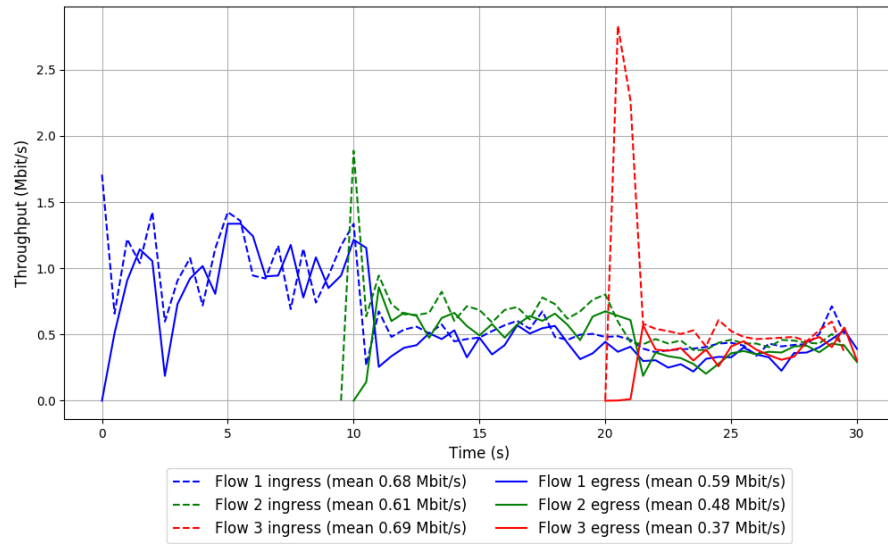
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 0.98 Mbit/s)   Flow 1 egress (mean 0.55 Mbit/s)
Flow 2 ingress (mean 0.93 Mbit/s)   Flow 2 egress (mean 0.37 Mbit/s)
Flow 3 ingress (mean 0.91 Mbit/s)   Flow 3 egress (mean 0.26 Mbit/s)

Flow 1 (95th percentile 361.46 ms)   Flow 2 (95th percentile 362.94 ms)   Flow 3 (95th percentile 365.86 ms)

```
Run 3: Statistics of FillP

Start at: 2019-01-19 10:44:42
End at: 2019-01-19 10:45:12
Local clock offset: -0.219 ms
Remote clock offset: -3.85 ms


# Below is generated by plot.py at 2019-01-19 11:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 360.105 ms
Loss rate: 47.00%
-- Flow 1:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 357.600 ms
Loss rate: 35.10%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 371.199 ms
Loss rate: 56.95%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 358.278 ms
Loss rate: 66.89%
```
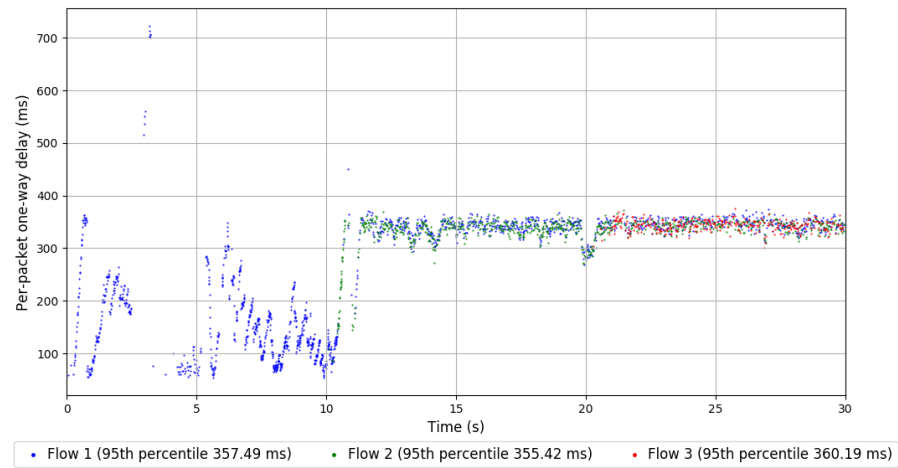
Run 3: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2019-01-19 10:09:47
End at: 2019-01-19 10:10:17
Local clock offset: -0.556 ms
Remote clock offset: -2.651 ms


# Below is generated by plot.py at 2019-01-19 11:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 354.050 ms
Loss rate: 22.20%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 350.516 ms
Loss rate: 13.57%
-- Flow 2:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 356.146 ms
Loss rate: 22.30%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 358.162 ms
Loss rate: 47.91%
```

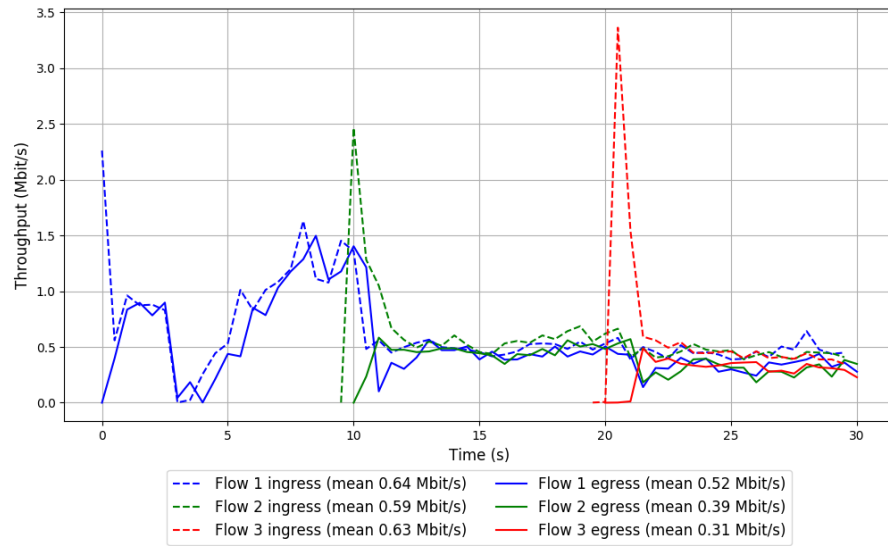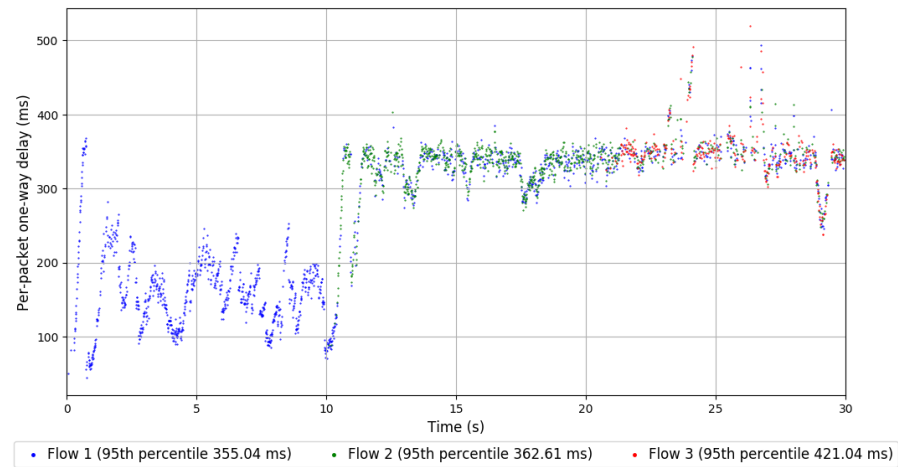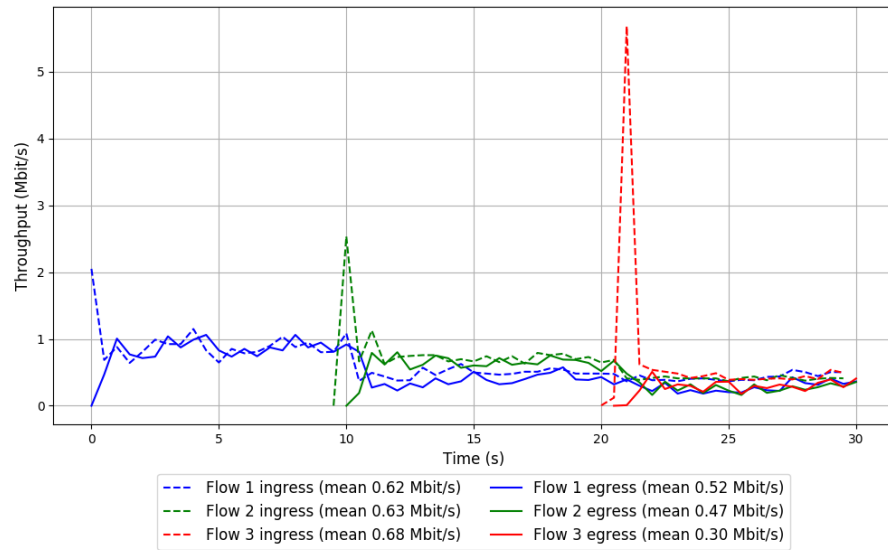Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 0.68 Mbit/s) Flow 1 egress (mean 0.59 Mbit/s)
Flow 2 ingress (mean 0.61 Mbit/s) Flow 2 egress (mean 0.48 Mbit/s)
Flow 3 ingress (mean 0.69 Mbit/s) Flow 3 egress (mean 0.37 Mbit/s)

Flow 1 (95th percentile 350.52 ms)   Flow 2 (95th percentile 356.15 ms)   Flow 3 (95th percentile 358.16 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-01-19 10:34:15
End at: 2019-01-19 10:34:45
Local clock offset: -0.176 ms
Remote clock offset: -3.752 ms


# Below is generated by plot.py at 2019-01-19 11:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 357.408 ms
Loss rate: 28.69%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 357.486 ms
Loss rate: 17.85%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 355.417 ms
Loss rate: 33.76%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 360.195 ms
Loss rate: 52.12%
```
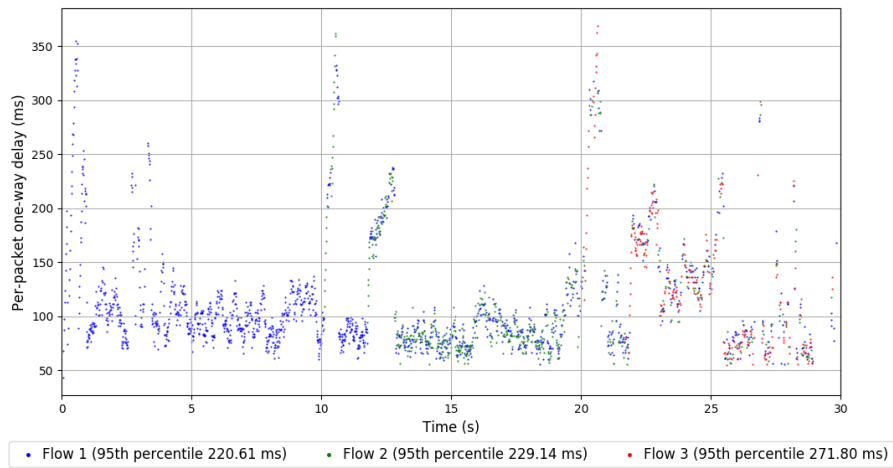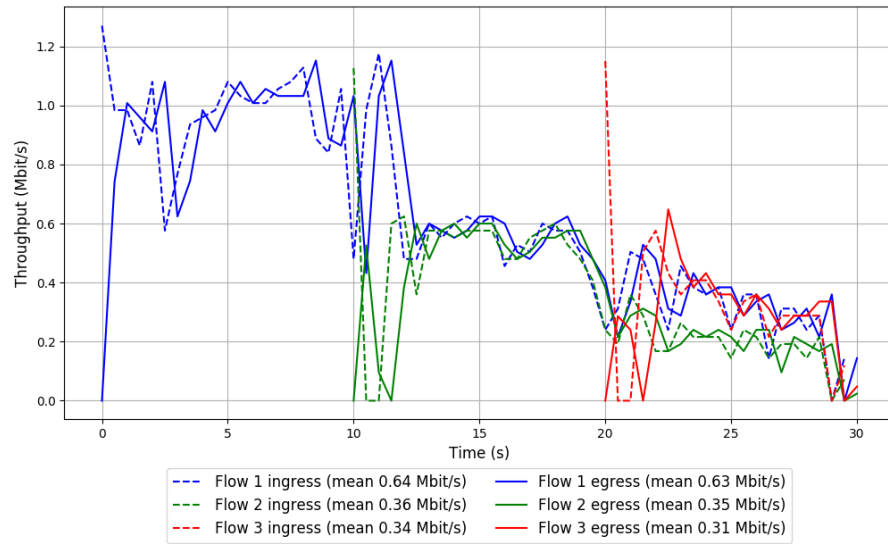
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 0.64 Mbit/s)
Flow 2 ingress (mean 0.59 Mbit/s)
Flow 3 ingress (mean 0.63 Mbit/s)
Flow 1 egress (mean 0.52 Mbit/s)
Flow 2 egress (mean 0.39 Mbit/s)
Flow 3 egress (mean 0.31 Mbit/s)

Flow 1 (95th percentile 357.49 ms)
Flow 2 (95th percentile 355.42 ms)
Flow 3 (95th percentile 360.19 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2019-01-19 10:58:40
End at: 2019-01-19 10:59:10
Local clock offset: 0.947 ms
Remote clock offset: -4.213 ms


# Below is generated by plot.py at 2019-01-19 11:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 362.613 ms
Loss rate: 27.62%
-- Flow 1:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 355.038 ms
Loss rate: 17.24%
-- Flow 2:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 362.613 ms
Loss rate: 25.97%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 421.041 ms
Loss rate: 59.27%
```

Run 3: Report of FillP-Sheep — Data Link
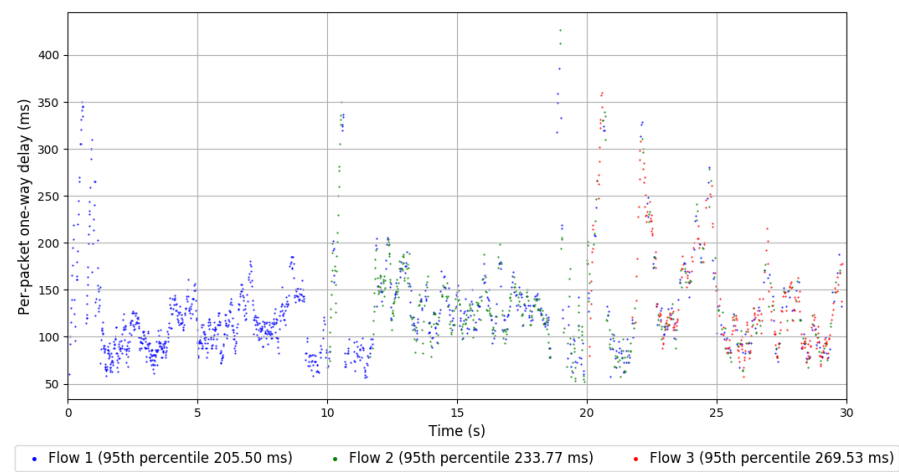

Flow 1 ingress (mean 0.62 Mbit/s) --- Flow 1 egress (mean 0.52 Mbit/s) ---
Flow 2 ingress (mean 0.63 Mbit/s) --- Flow 2 egress (mean 0.47 Mbit/s) ---
Flow 3 ingress (mean 0.68 Mbit/s) --- Flow 3 egress (mean 0.30 Mbit/s) ---

Flow 1 (95th percentile 355.04 ms)   Flow 2 (95th percentile 362.61 ms)   Flow 3 (95th percentile 421.04 ms)
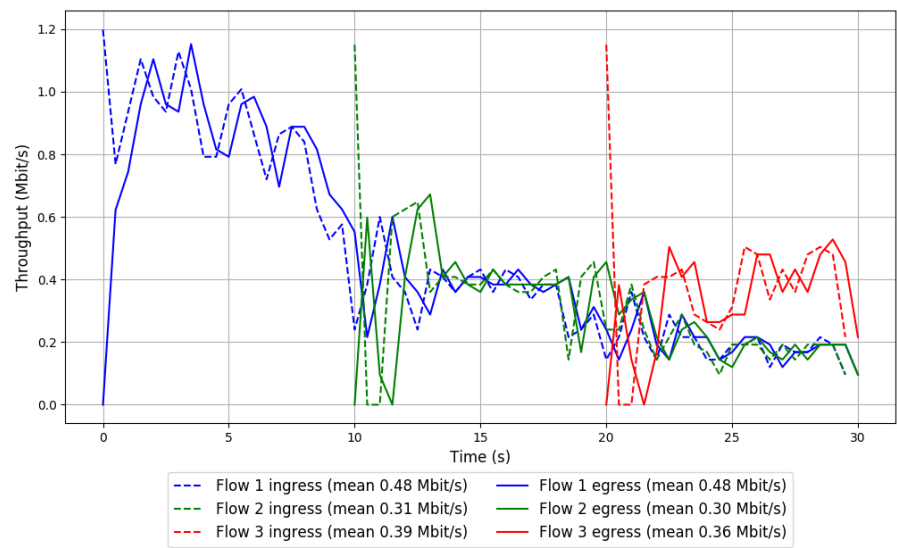
```
Run 1: Statistics of Indigo

Start at: 2019-01-19 10:02:53
End at: 2019-01-19 10:03:23
Local clock offset: -0.34 ms
Remote clock offset: -2.906 ms


# Below is generated by plot.py at 2019-01-19 11:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 225.377 ms
Loss rate: 2.46%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 220.614 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 229.140 ms
Loss rate: 4.08%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 271.801 ms
Loss rate: 9.82%
```
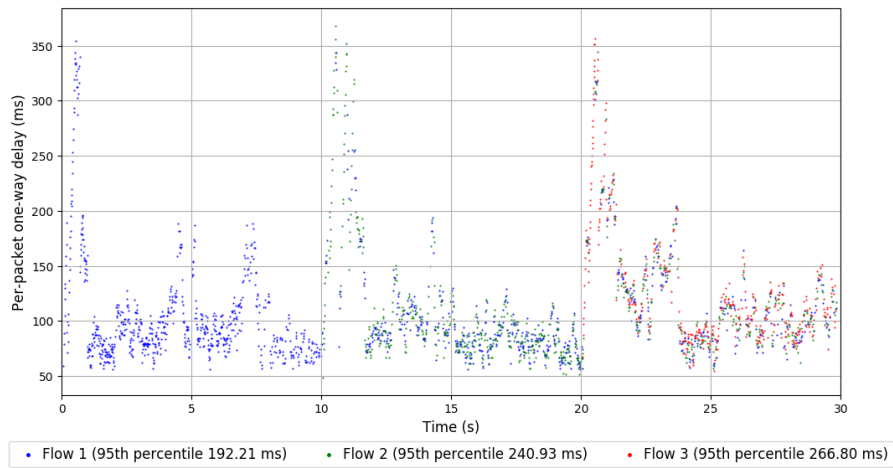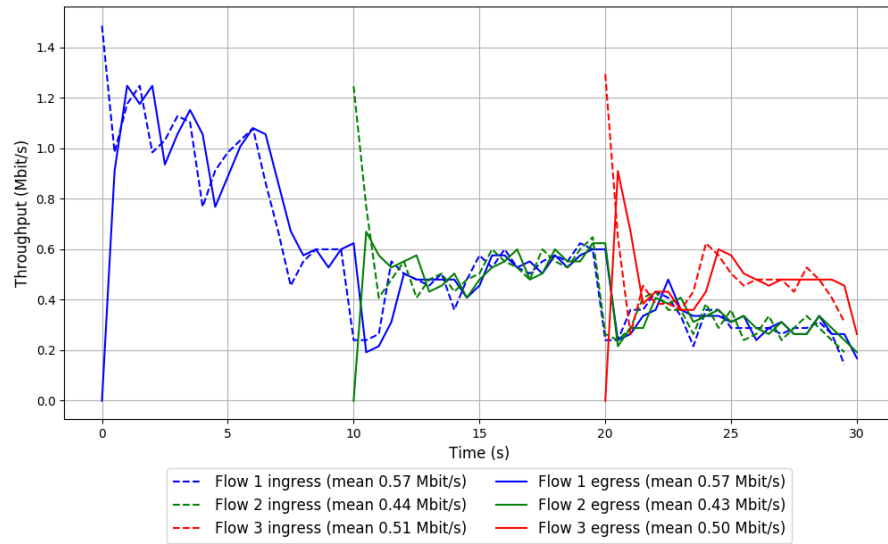
Run 1: Report of Indigo — Data Link

Flow 1 ingress (mean 0.64 Mbit/s) — — —   Flow 1 egress (mean 0.63 Mbit/s)
Flow 2 ingress (mean 0.36 Mbit/s) — — —   Flow 2 egress (mean 0.35 Mbit/s)
Flow 3 ingress (mean 0.34 Mbit/s) — — —   Flow 3 egress (mean 0.31 Mbit/s)

Flow 1 (95th percentile 220.61 ms)   Flow 2 (95th percentile 229.14 ms)   Flow 3 (95th percentile 271.80 ms)

```
Run 2: Statistics of Indigo

Start at: 2019-01-19 10:27:15
End at: 2019-01-19 10:27:45
Local clock offset: -0.489 ms
Remote clock offset: -3.121 ms


# Below is generated by plot.py at 2019-01-19 11:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 233.774 ms
Loss rate: 3.21%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 205.499 ms
Loss rate: 1.42%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 233.774 ms
Loss rate: 3.52%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 269.531 ms
Loss rate: 9.38%
```
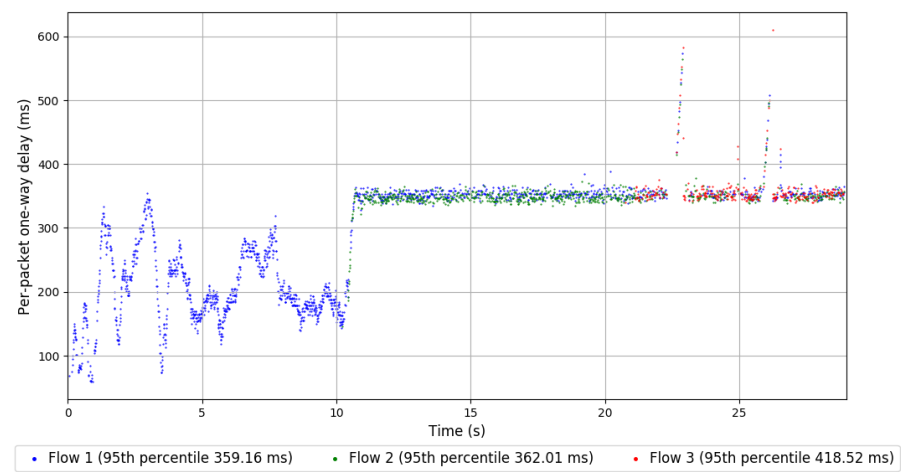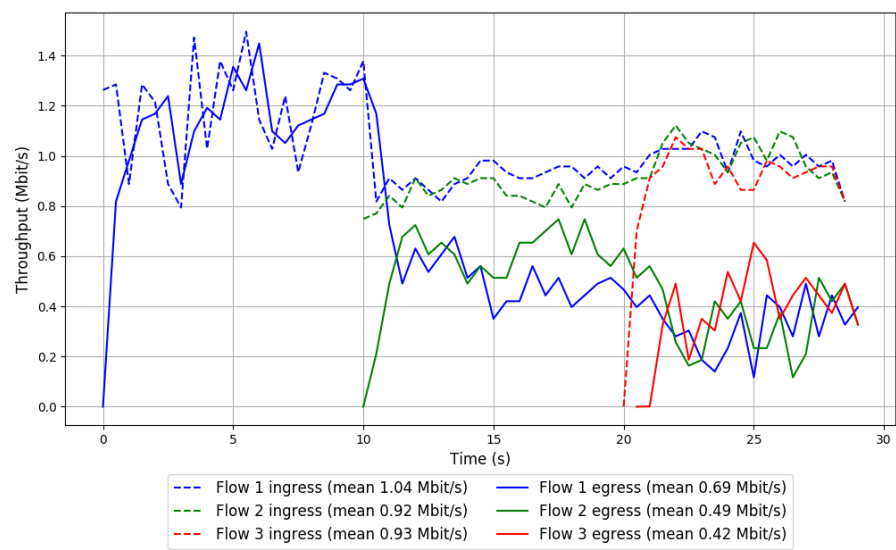
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-01-19 10:51:38
End at: 2019-01-19 10:52:08
Local clock offset: 0.821 ms
Remote clock offset: -4.444 ms


# Below is generated by plot.py at 2019-01-19 11:05:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 219.710 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 192.214 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 240.926 ms
Loss rate: 3.03%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 266.797 ms
Loss rate: 2.64%
```

Run 3: Report of Indigo — Data Link

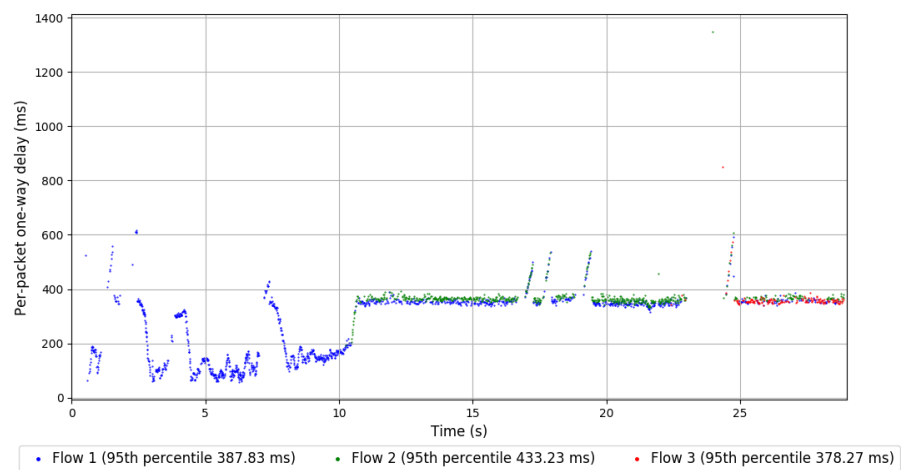Flow 1 ingress (mean 0.57 Mbit/s)   Flow 1 egress (mean 0.57 Mbit/s)
Flow 2 ingress (mean 0.44 Mbit/s)   Flow 2 egress (mean 0.43 Mbit/s)
Flow 3 ingress (mean 0.51 Mbit/s)   Flow 3 egress (mean 0.50 Mbit/s)

Flow 1 (95th percentile 192.21 ms)   Flow 2 (95th percentile 240.93 ms)   Flow 3 (95th percentile 266.80 ms)
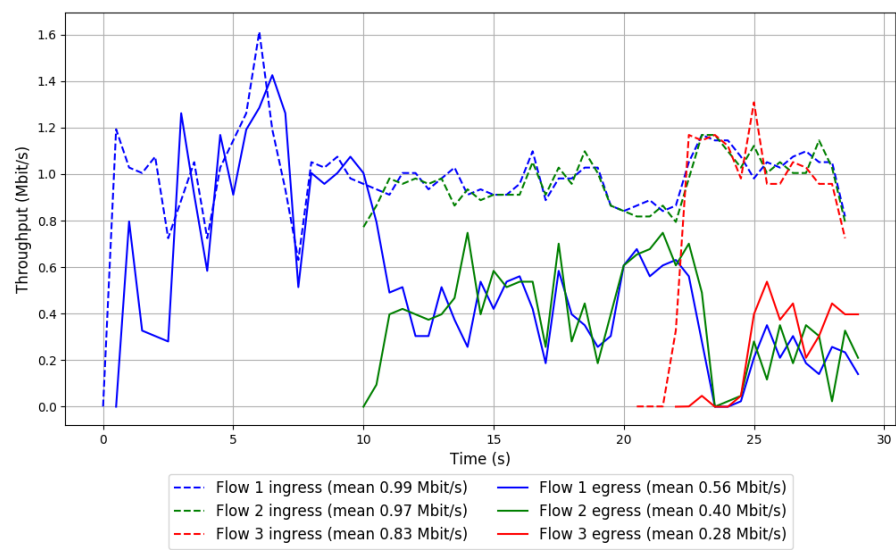
40

```
Run 1: Statistics of Indigo-MusesC3

Start at: 2019-01-19 10:08:37
End at: 2019-01-19 10:09:07
Local clock offset: 0.086 ms
Remote clock offset: -2.744 ms


# Below is generated by plot.py at 2019-01-19 11:05:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 362.496 ms
Loss rate: 41.29%
-- Flow 1:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 359.163 ms
Loss rate: 33.50%
-- Flow 2:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 362.014 ms
Loss rate: 47.65%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 418.519 ms
Loss rate: 56.95%
```
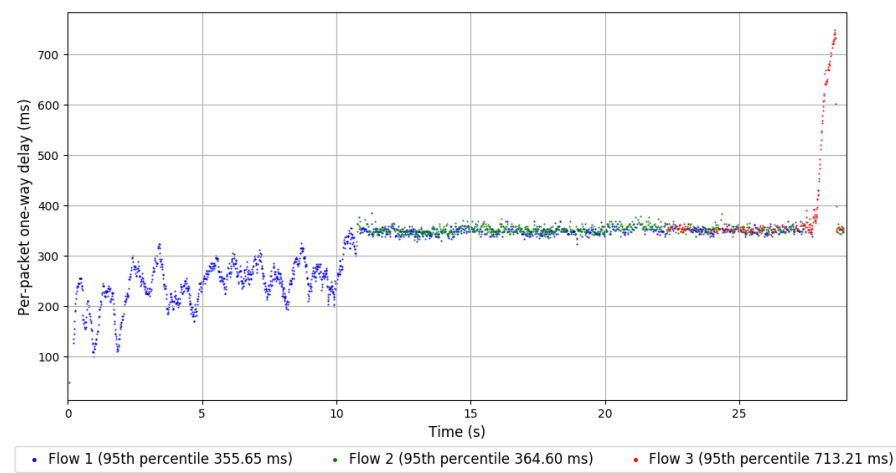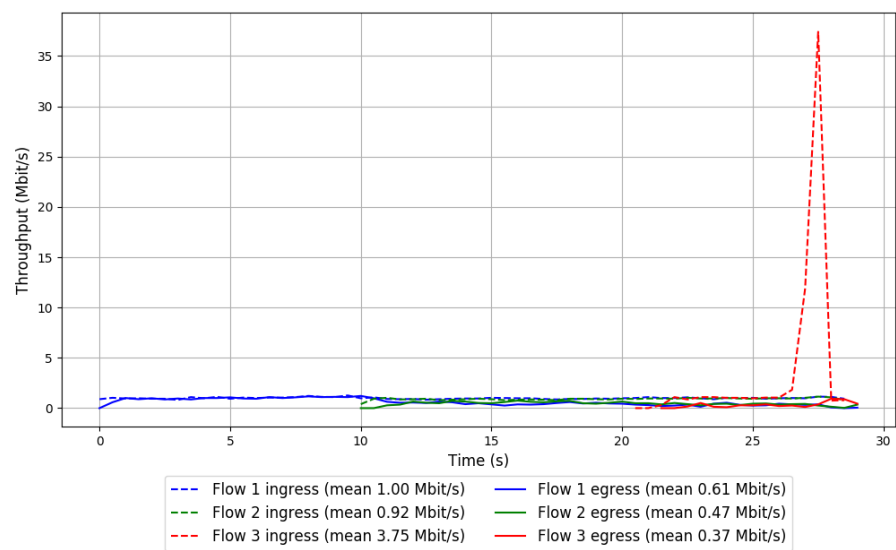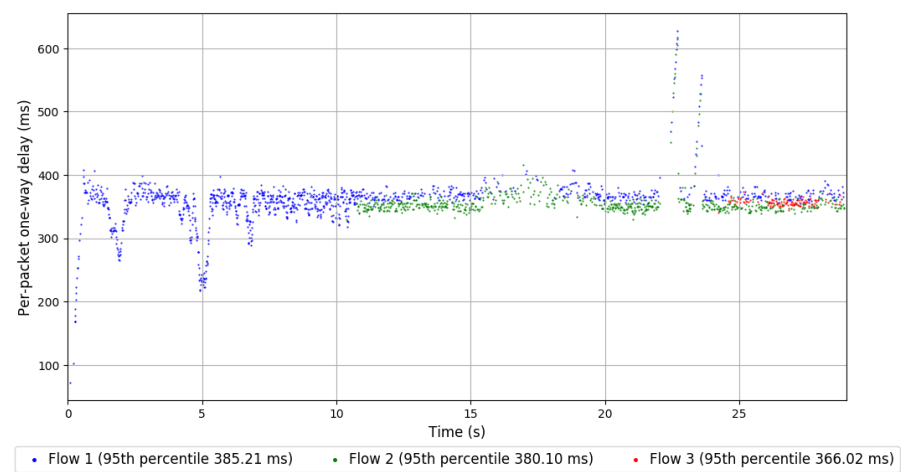
Run 1: Report of Indigo-MusesC3 — Data Link

```
Run 2: Statistics of Indigo-MusesC3

Start at: 2019-01-19 10:33:06
End at: 2019-01-19 10:33:36
Local clock offset: 0.384 ms
Remote clock offset: -3.533 ms


# Below is generated by plot.py at 2019-01-19 11:05:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 395.070 ms
Loss rate: 53.61%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 387.834 ms
Loss rate: 44.91%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 433.234 ms
Loss rate: 59.42%
-- Flow 3:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 378.275 ms
Loss rate: 74.03%
```

Run 2: Report of Indigo-MusesC3 — Data Link

Flow 1 ingress (mean 0.99 Mbit/s) --- Flow 1 egress (mean 0.56 Mbit/s)
Flow 2 ingress (mean 0.97 Mbit/s) --- Flow 2 egress (mean 0.40 Mbit/s)
Flow 3 ingress (mean 0.83 Mbit/s) --- Flow 3 egress (mean 0.28 Mbit/s)

Flow 1 (95th percentile 387.83 ms)   Flow 2 (95th percentile 433.23 ms)   Flow 3 (95th percentile 378.27 ms)

44

```
Run 3: Statistics of Indigo-MusesC3

Start at: 2019-01-19 10:57:31
End at: 2019-01-19 10:58:01
Local clock offset: -0.364 ms
Remote clock offset: -4.041 ms


# Below is generated by plot.py at 2019-01-19 11:05:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 365.256 ms
Loss rate: 62.70%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 355.652 ms
Loss rate: 38.90%
-- Flow 2:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 364.600 ms
Loss rate: 49.90%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 713.213 ms
Loss rate: 91.86%
```
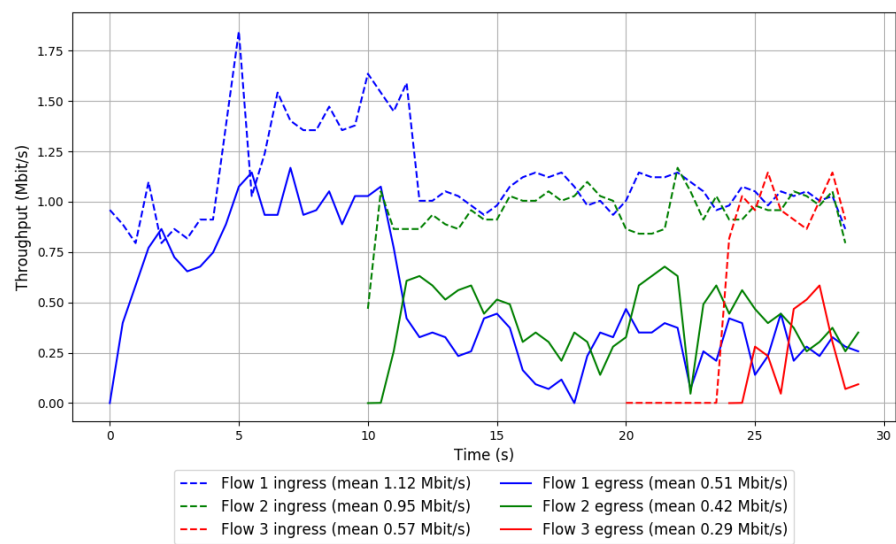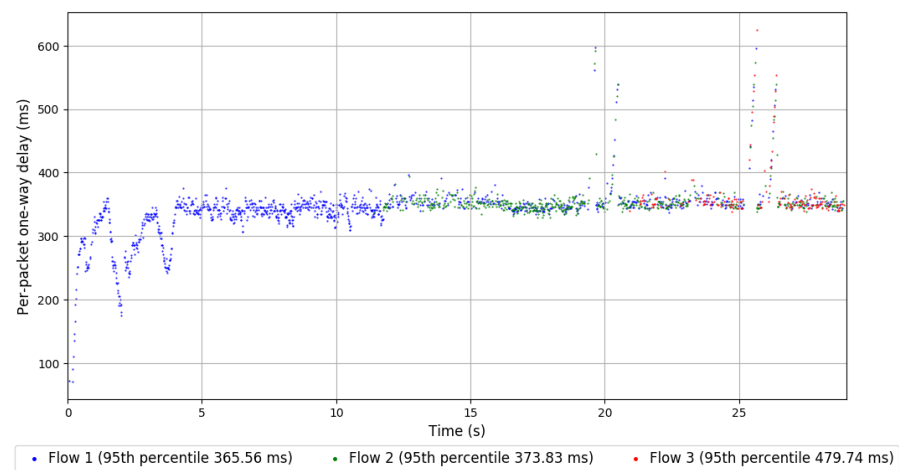
Run 3: Report of Indigo-MusesC3 — Data Link

Flow 1 ingress (mean 1.00 Mbit/s) — Flow 1 egress (mean 0.61 Mbit/s)
Flow 2 ingress (mean 0.92 Mbit/s) — Flow 2 egress (mean 0.47 Mbit/s)
Flow 3 ingress (mean 3.75 Mbit/s) — Flow 3 egress (mean 0.37 Mbit/s)

Flow 1 (95th percentile 355.65 ms) · Flow 2 (95th percentile 364.60 ms) · Flow 3 (95th percentile 713.21 ms)

```
Run 1: Statistics of Indigo-MusesC5

Start at: 2019-01-19 09:59:11
End at: 2019-01-19 09:59:41
Local clock offset: -0.234 ms
Remote clock offset: -3.483 ms

# Below is generated by plot.py at 2019-01-19 11:05:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 382.977 ms
Loss rate: 56.89%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 385.210 ms
Loss rate: 54.57%
-- Flow 2:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 380.100 ms
Loss rate: 56.61%
-- Flow 3:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 366.018 ms
Loss rate: 73.39%
```
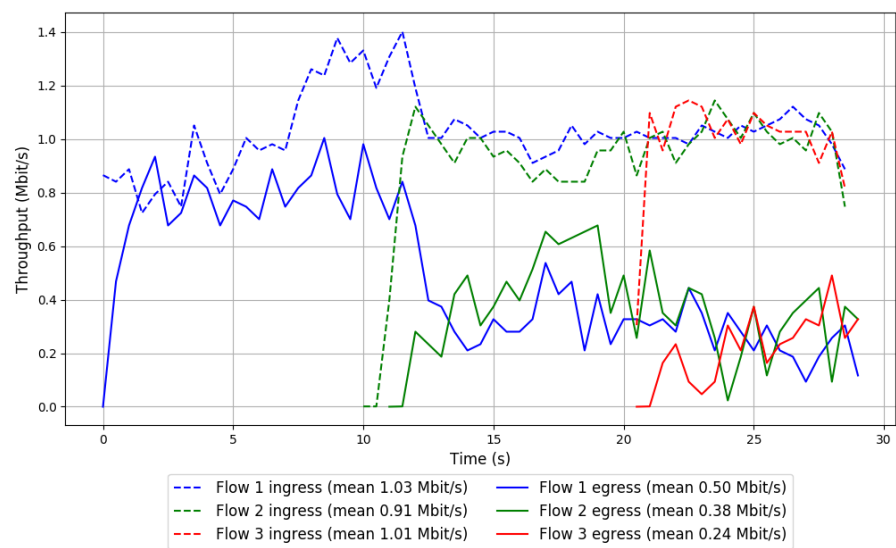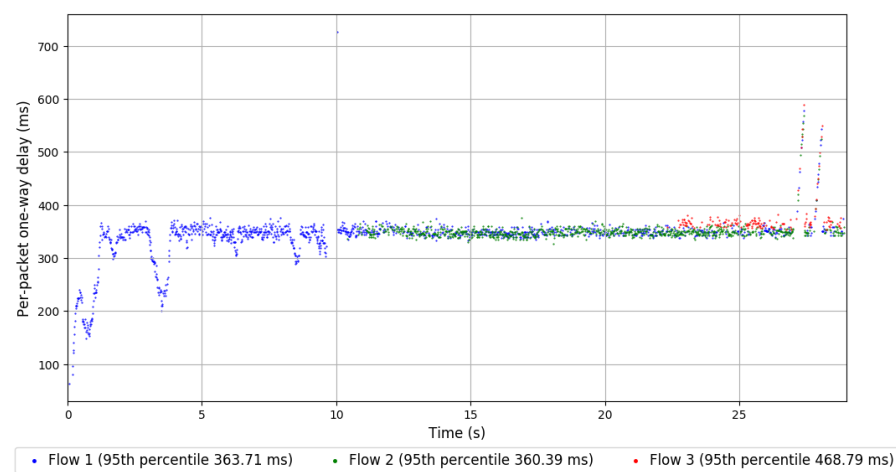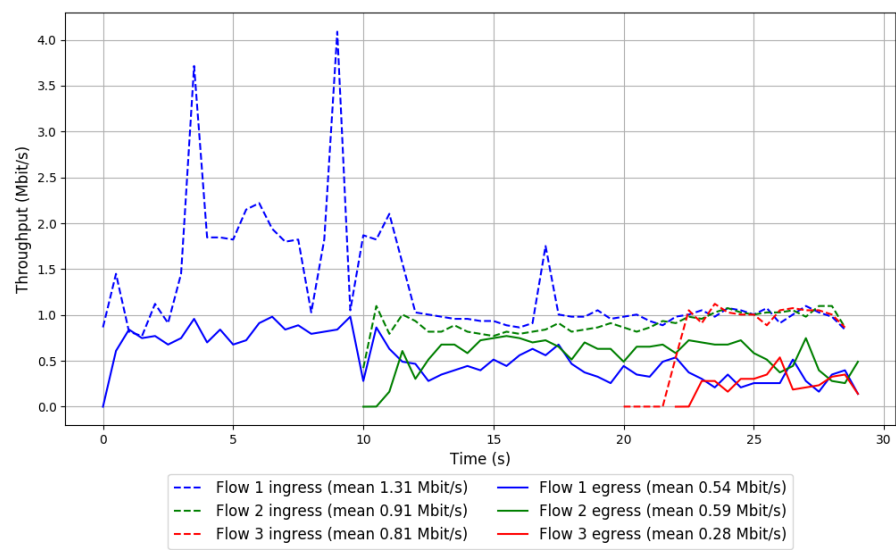
Run 1: Report of Indigo-MusesC5 — Data Link

```
Run 2: Statistics of Indigo-MusesC5

Start at: 2019-01-19 10:23:47
End at: 2019-01-19 10:24:17
Local clock offset: -0.618 ms
Remote clock offset: -3.34 ms


# Below is generated by plot.py at 2019-01-19 11:05:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 369.492 ms
Loss rate: 58.45%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 365.560 ms
Loss rate: 51.61%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 373.832 ms
Loss rate: 61.28%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 479.739 ms
Loss rate: 76.91%
```

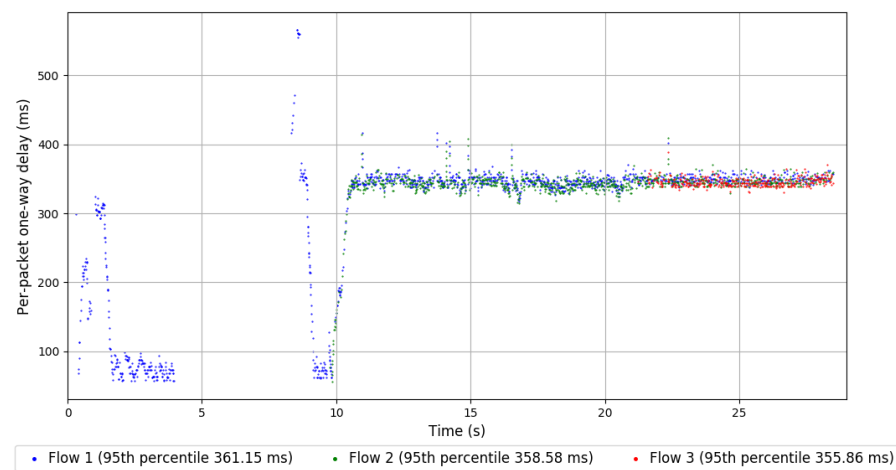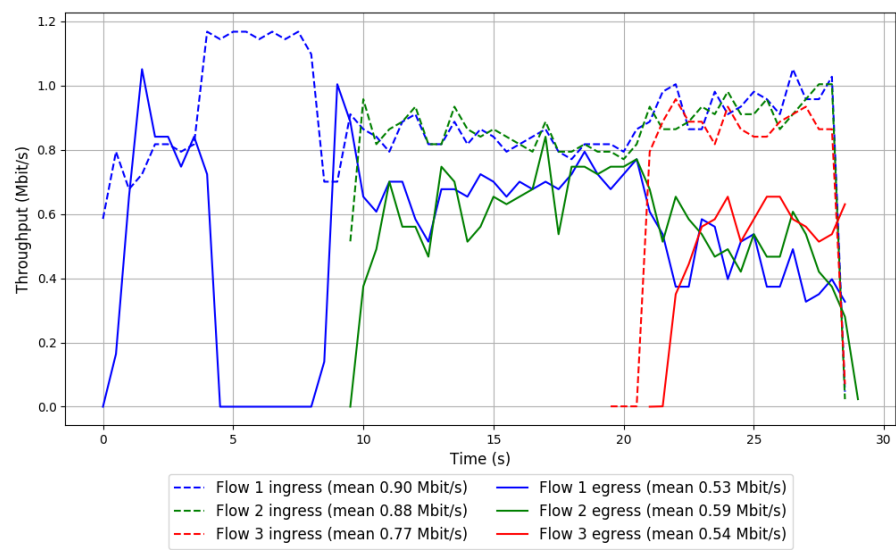Run 2: Report of Indigo-MusesC5 — Data Link

Flow 1 ingress (mean 1.03 Mbit/s)   Flow 1 egress (mean 0.50 Mbit/s)
Flow 2 ingress (mean 0.91 Mbit/s)   Flow 2 egress (mean 0.38 Mbit/s)
Flow 3 ingress (mean 1.01 Mbit/s)   Flow 3 egress (mean 0.24 Mbit/s)

Flow 1 (95th percentile 365.56 ms)   Flow 2 (95th percentile 373.83 ms)   Flow 3 (95th percentile 479.74 ms)
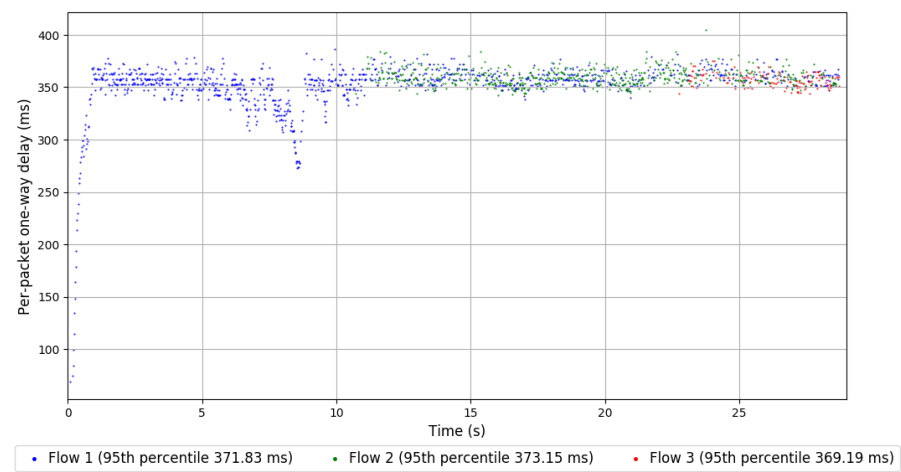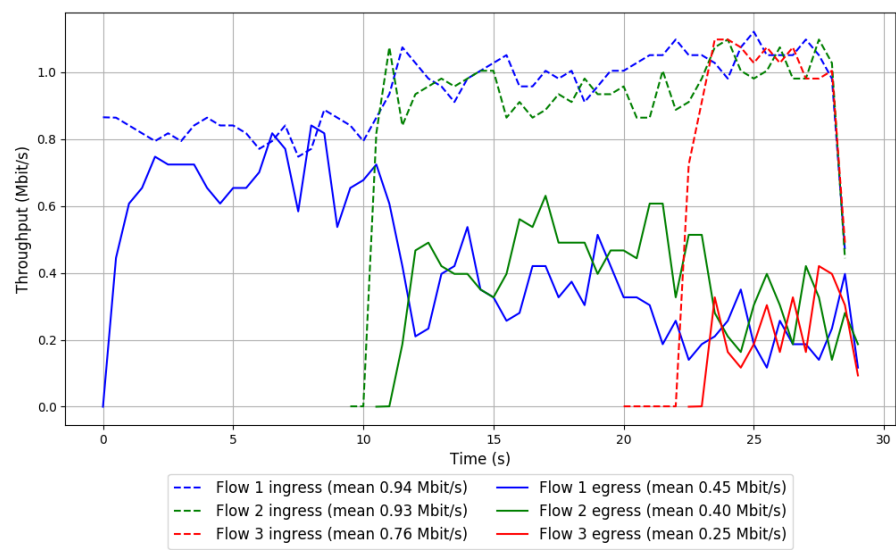
```
Run 3: Statistics of Indigo-MusesC5

Start at: 2019-01-19 10:48:11
End at: 2019-01-19 10:48:41
Local clock offset: 0.683 ms
Remote clock offset: -4.119 ms


# Below is generated by plot.py at 2019-01-19 11:05:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 367.766 ms
Loss rate: 54.54%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 363.707 ms
Loss rate: 59.22%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 360.393 ms
Loss rate: 36.82%
-- Flow 3:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 468.792 ms
Loss rate: 73.12%
```

Run 3: Report of Indigo-MusesC5 — Data Link

Flow 1 ingress (mean 1.31 Mbit/s) --- Flow 1 egress (mean 0.54 Mbit/s)
Flow 2 ingress (mean 0.91 Mbit/s) --- Flow 2 egress (mean 0.59 Mbit/s)
Flow 3 ingress (mean 0.81 Mbit/s) --- Flow 3 egress (mean 0.28 Mbit/s)

Flow 1 (95th percentile 363.71 ms)   Flow 2 (95th percentile 360.39 ms)   Flow 3 (95th percentile 468.79 ms)

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-19 10:12:05
End at: 2019-01-19 10:12:35
Local clock offset: -0.299 ms
Remote clock offset: -3.294 ms


# Below is generated by plot.py at 2019-01-19 11:05:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 358.711 ms
Loss rate: 38.42%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 361.150 ms
Loss rate: 41.52%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 358.579 ms
Loss rate: 32.60%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 355.856 ms
Loss rate: 40.92%
```
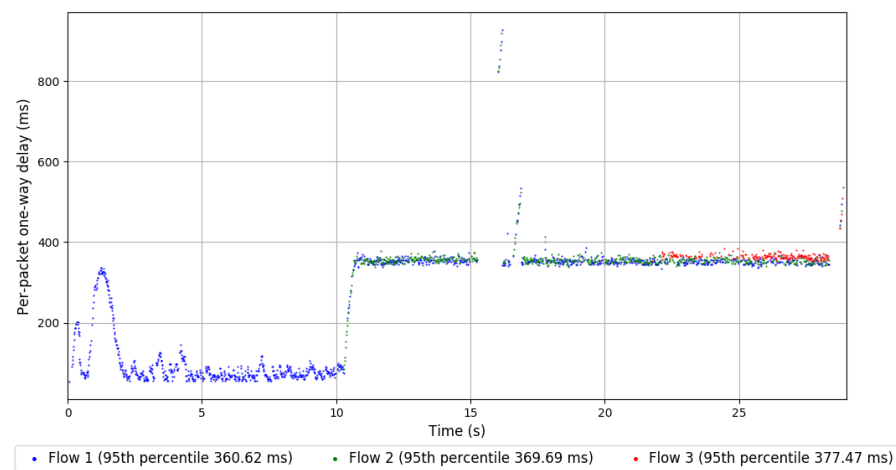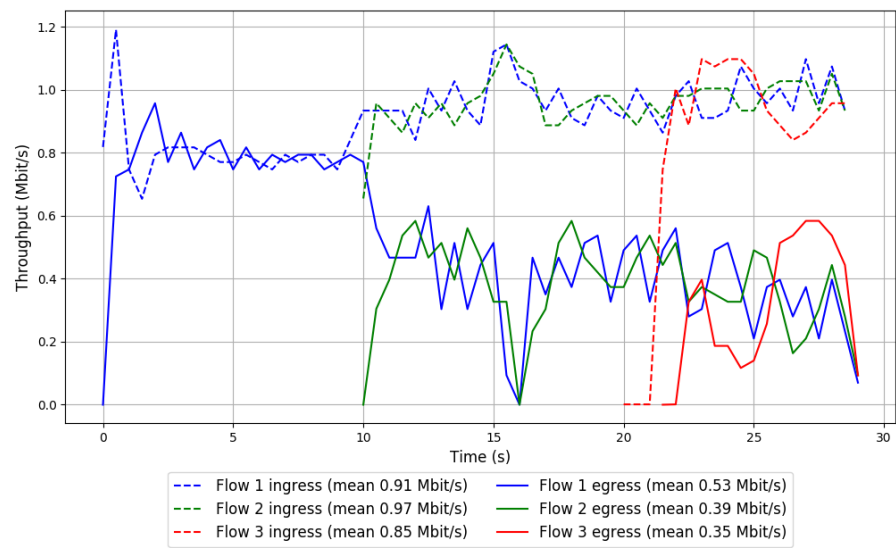
Run 1: Report of Indigo-MusesD — Data Link

- Flow 1 ingress (mean 0.90 Mbit/s)
- Flow 1 egress (mean 0.53 Mbit/s)
- Flow 2 ingress (mean 0.88 Mbit/s)
- Flow 2 egress (mean 0.59 Mbit/s)
- Flow 3 ingress (mean 0.77 Mbit/s)
- Flow 3 egress (mean 0.54 Mbit/s)

- Flow 1 (95th percentile 361.15 ms)
- Flow 2 (95th percentile 358.58 ms)
- Flow 3 (95th percentile 355.86 ms)

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-19 10:36:33
End at: 2019-01-19 10:37:03
Local clock offset: 2.32 ms
Remote clock offset: -3.851 ms


# Below is generated by plot.py at 2019-01-19 11:05:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 372.053 ms
Loss rate: 58.09%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 371.827 ms
Loss rate: 52.93%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 373.147 ms
Loss rate: 59.51%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 369.187 ms
Loss rate: 76.40%
```

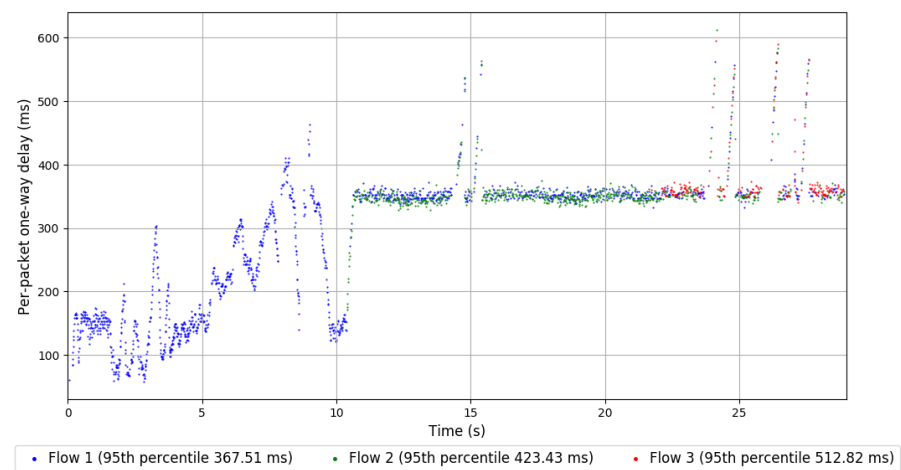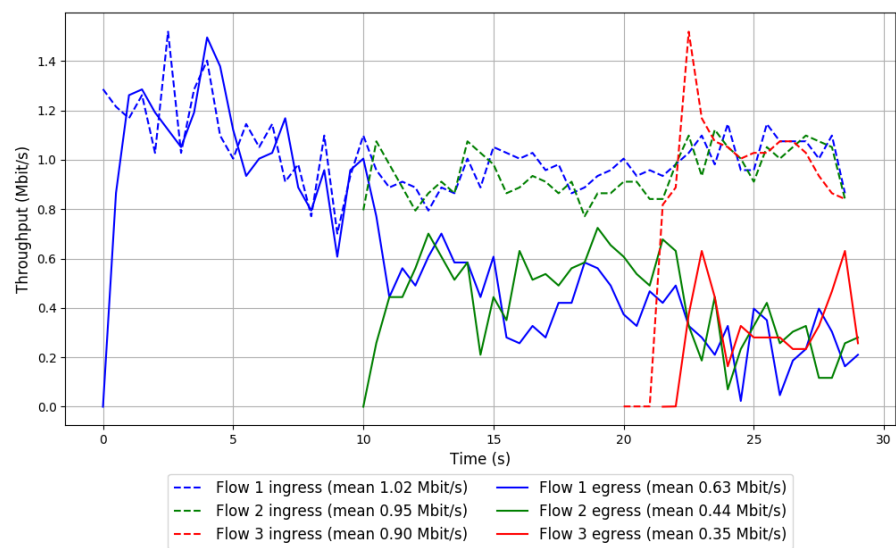Run 2: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 0.94 Mbit/s)   Flow 1 egress (mean 0.45 Mbit/s)
Flow 2 ingress (mean 0.93 Mbit/s)   Flow 2 egress (mean 0.40 Mbit/s)
Flow 3 ingress (mean 0.76 Mbit/s)   Flow 3 egress (mean 0.25 Mbit/s)

Flow 1 (95th percentile 371.83 ms)   Flow 2 (95th percentile 373.15 ms)   Flow 3 (95th percentile 369.19 ms)

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-19 11:00:58
End at: 2019-01-19 11:01:28
Local clock offset: 1.059 ms
Remote clock offset: -3.93 ms


# Below is generated by plot.py at 2019-01-19 11:05:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 368.256 ms
Loss rate: 51.74%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 360.617 ms
Loss rate: 42.14%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 369.694 ms
Loss rate: 60.04%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 377.469 ms
Loss rate: 65.96%
```
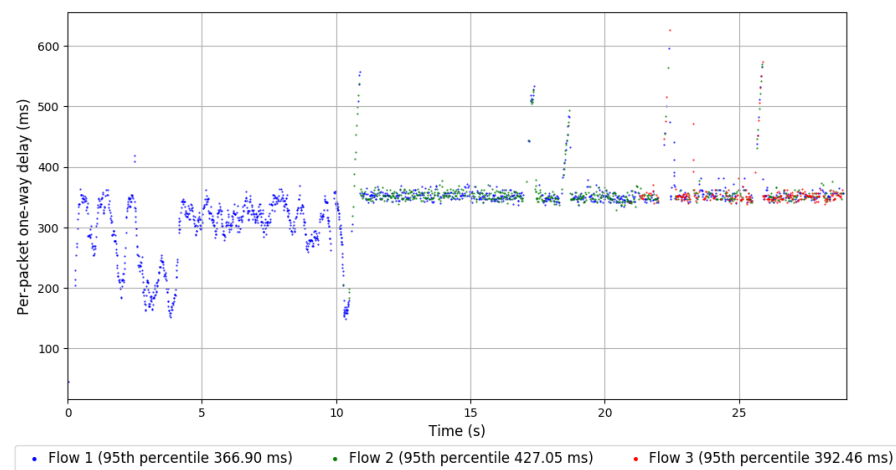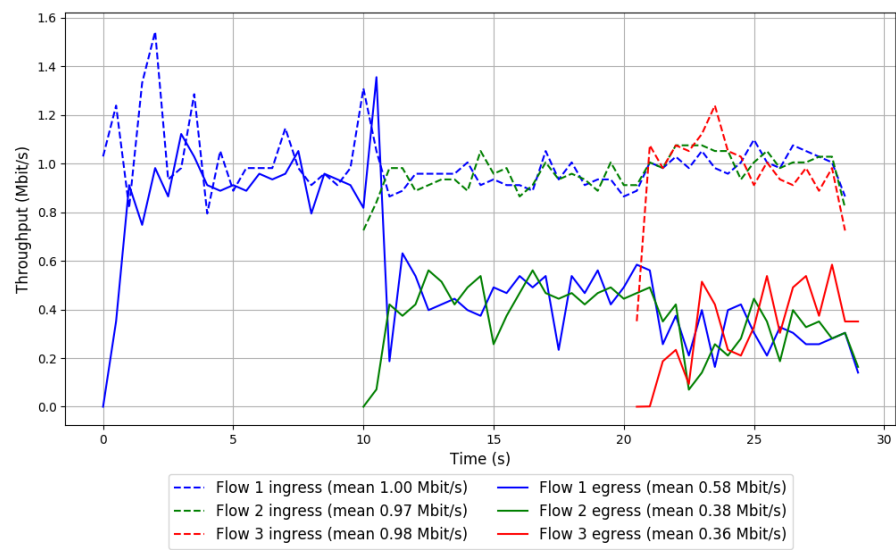
Run 3: Report of Indigo-MusesD — Data Link

```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-01-19 09:58:02
End at: 2019-01-19 09:58:32
Local clock offset: 0.512 ms
Remote clock offset: -2.669 ms


# Below is generated by plot.py at 2019-01-19 11:05:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 399.090 ms
Loss rate: 47.88%
-- Flow 1:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 367.508 ms
Loss rate: 38.78%
-- Flow 2:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 423.432 ms
Loss rate: 54.26%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 512.824 ms
Loss rate: 67.98%
```

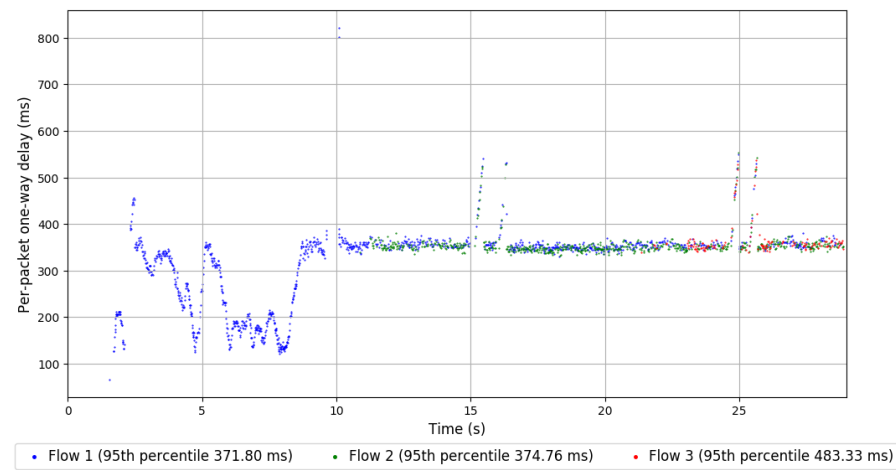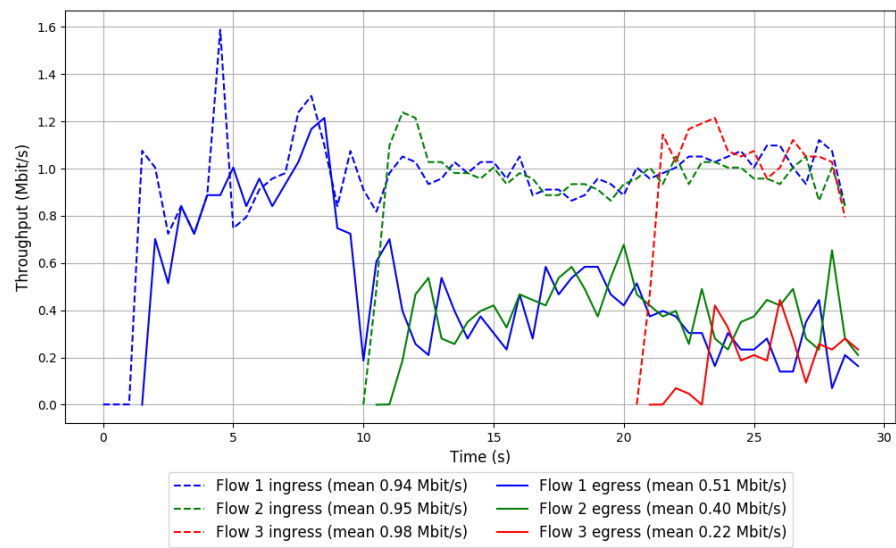Run 1: Report of Indigo-MusesT — Data Link

- - - Flow 1 ingress (mean 1.02 Mbit/s) ——— Flow 1 egress (mean 0.63 Mbit/s)
- - - Flow 2 ingress (mean 0.95 Mbit/s) ——— Flow 2 egress (mean 0.44 Mbit/s)
- - - Flow 3 ingress (mean 0.90 Mbit/s) ——— Flow 3 egress (mean 0.35 Mbit/s)

• Flow 1 (95th percentile 367.51 ms)   • Flow 2 (95th percentile 423.43 ms)   • Flow 3 (95th percentile 512.82 ms)

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-01-19 10:22:37
End at: 2019-01-19 10:23:07
Local clock offset: 0.998 ms
Remote clock offset: -3.37 ms


# Below is generated by plot.py at 2019-01-19 11:05:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 370.198 ms
Loss rate: 51.63%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 366.897 ms
Loss rate: 41.84%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 427.047 ms
Loss rate: 61.28%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 392.463 ms
Loss rate: 64.75%
```

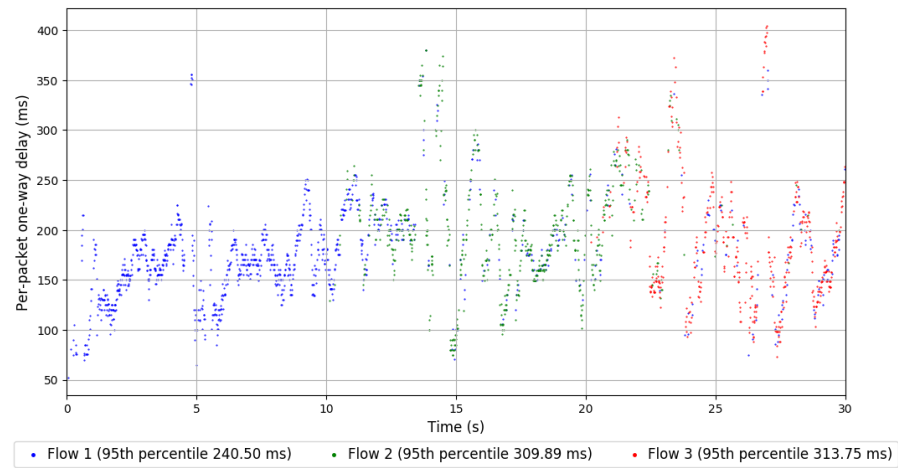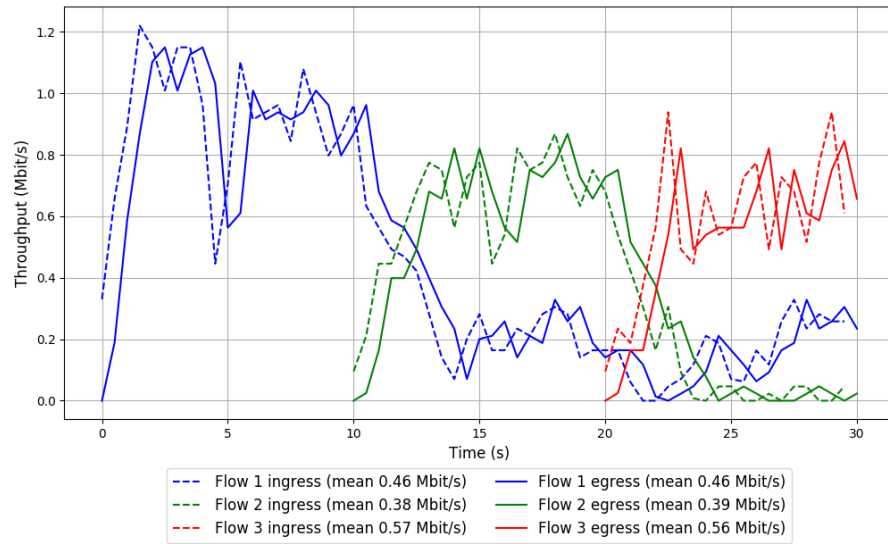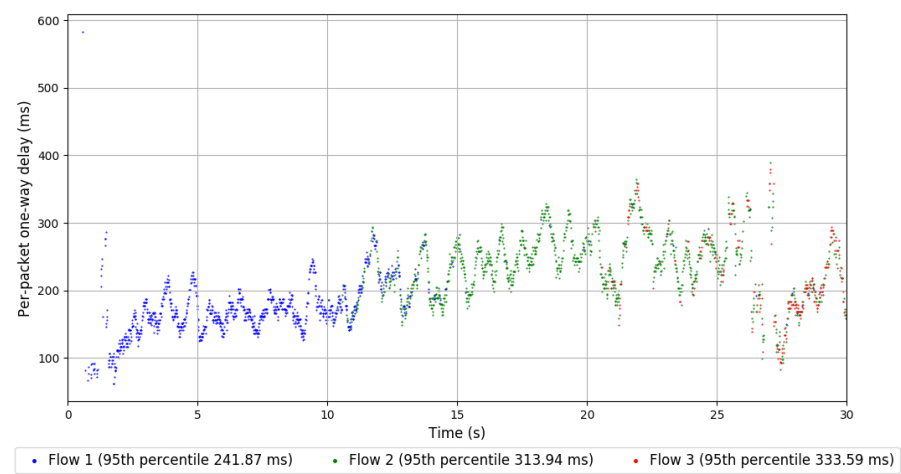Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-19 10:47:01
End at: 2019-01-19 10:47:31
Local clock offset: -1.31 ms
Remote clock offset: -4.269 ms


# Below is generated by plot.py at 2019-01-19 11:05:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 375.363 ms
Loss rate: 57.17%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 371.799 ms
Loss rate: 48.51%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 374.763 ms
Loss rate: 59.75%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 483.328 ms
Loss rate: 80.08%
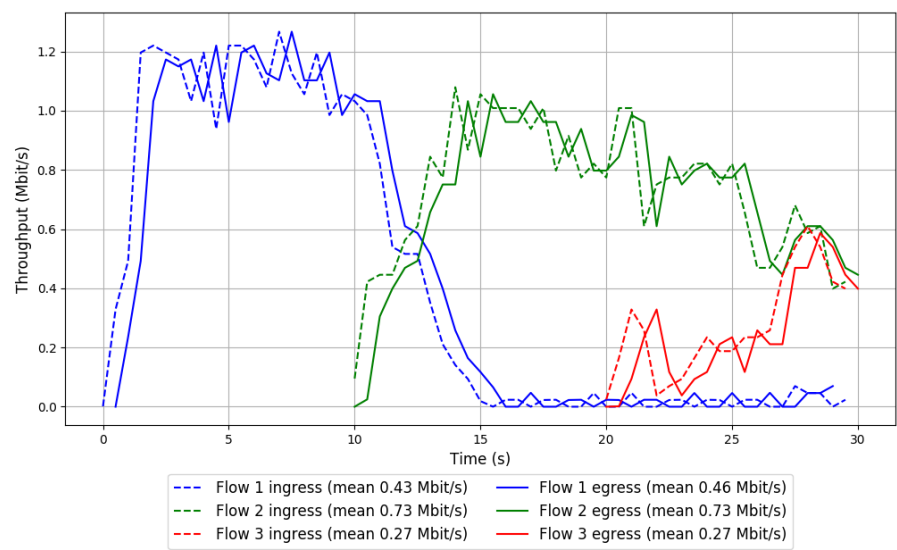```

Run 3: Report of Indigo-MusesT — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2019-01-19 10:15:37
End at: 2019-01-19 10:16:07
Local clock offset: -0.154 ms
Remote clock offset: -3.575 ms

Below is generated by plot.py at 2019-01-19 11:05:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 280.369 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 240.503 ms
Loss rate: 0.68%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 309.887 ms
Loss rate: -0.01%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 313.753 ms
Loss rate: 3.31%
```
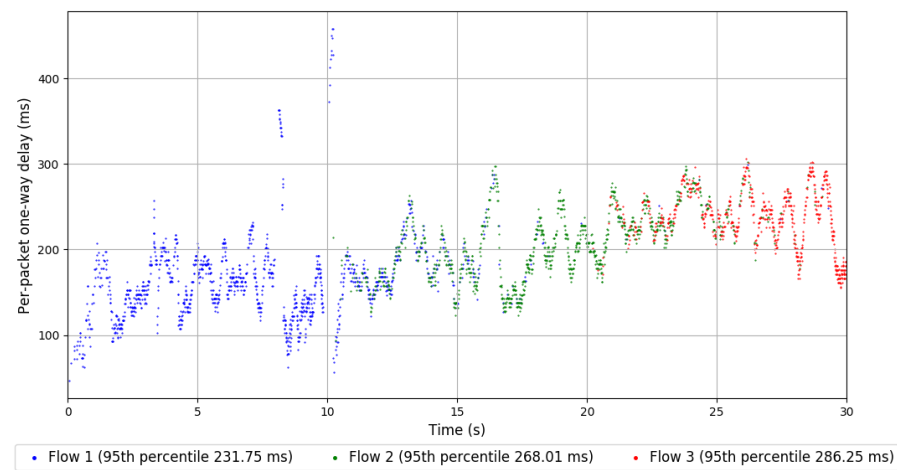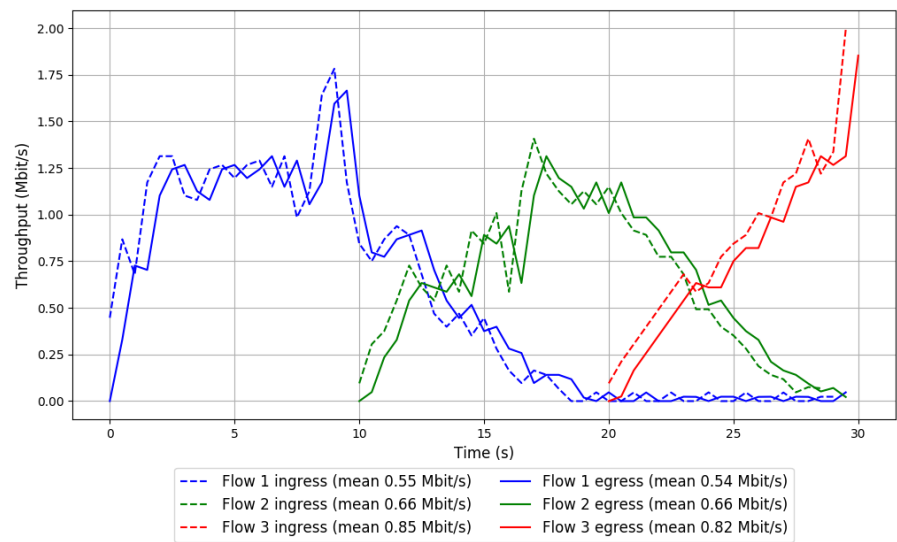
# Run 1: Report of LEDBAT — Data Link



Flow 1 ingress (mean 0.46 Mbit/s) --- Flow 1 egress (mean 0.46 Mbit/s)
Flow 2 ingress (mean 0.38 Mbit/s) --- Flow 2 egress (mean 0.39 Mbit/s)
Flow 3 ingress (mean 0.57 Mbit/s) --- Flow 3 egress (mean 0.56 Mbit/s)



Flow 1 (95th percentile 240.50 ms) · Flow 2 (95th percentile 309.89 ms) · Flow 3 (95th percentile 313.75 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2019-01-19 10:40:06
End at: 2019-01-19 10:40:36
Local clock offset: 1.15 ms
Remote clock offset: -4.049 ms

Below is generated by plot.py at 2019-01-19 11:05:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 303.453 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 241.874 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 313.935 ms
Loss rate: 1.20%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 333.590 ms
Loss rate: 4.75%
```
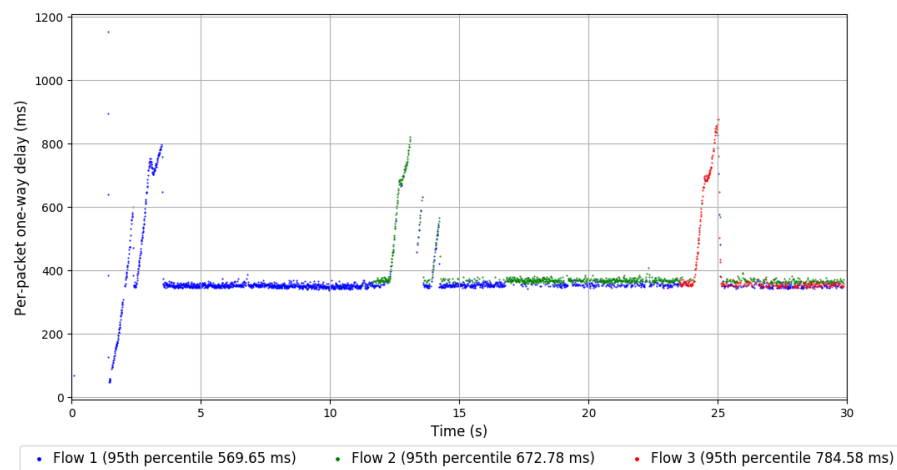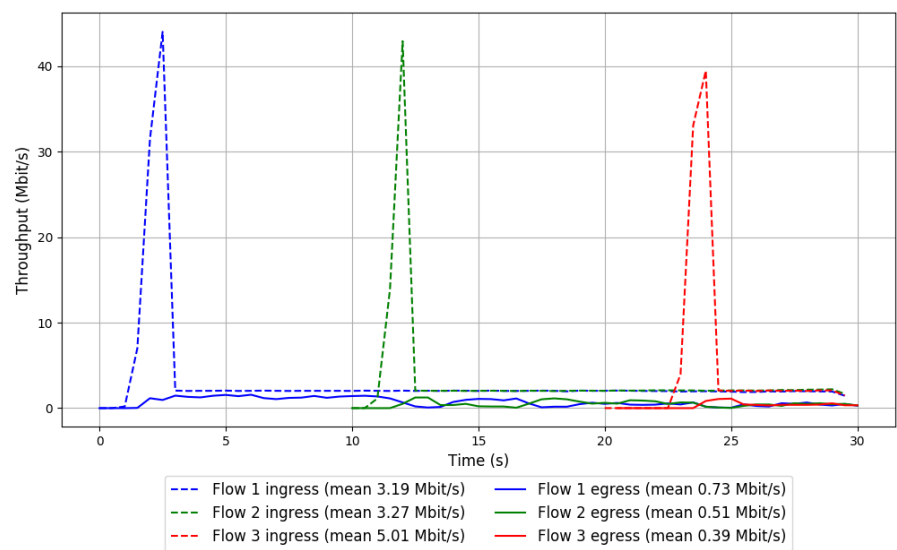
# Run 2: Report of LEDBAT — Data Link



Flow 1 ingress (mean 0.43 Mbit/s)    Flow 1 egress (mean 0.46 Mbit/s)
Flow 2 ingress (mean 0.73 Mbit/s)    Flow 2 egress (mean 0.73 Mbit/s)
Flow 3 ingress (mean 0.27 Mbit/s)    Flow 3 egress (mean 0.27 Mbit/s)



Flow 1 (95th percentile 241.87 ms)    Flow 2 (95th percentile 313.94 ms)    Flow 3 (95th percentile 333.59 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2019-01-19 11:04:28
End at: 2019-01-19 11:04:58
Local clock offset: 1.756 ms
Remote clock offset: -4.224 ms

Below is generated by plot.py at 2019-01-19 11:05:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 276.087 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 231.754 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 268.008 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 286.250 ms
Loss rate: 4.73%
```
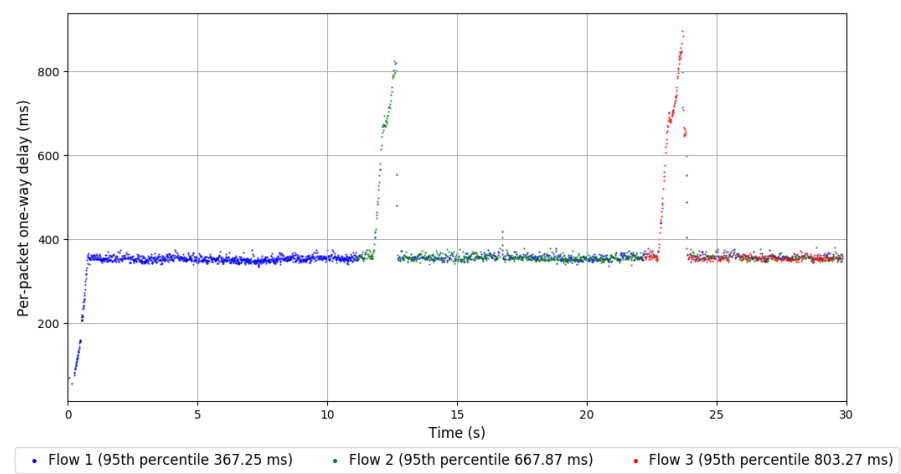
# Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-01-19 10:13:15
End at: 2019-01-19 10:13:45
Local clock offset: -3.564 ms
Remote clock offset: -8.129 ms

Below is generated by plot.py at 2019-01-19 11:05:34
Datalink statistics
-- Total of 3 flows:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 684.953 ms
Loss rate: 83.14%
-- Flow 1:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 569.649 ms
Loss rate: 77.12%
-- Flow 2:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 672.782 ms
Loss rate: 84.54%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 784.579 ms
Loss rate: 92.92%
```
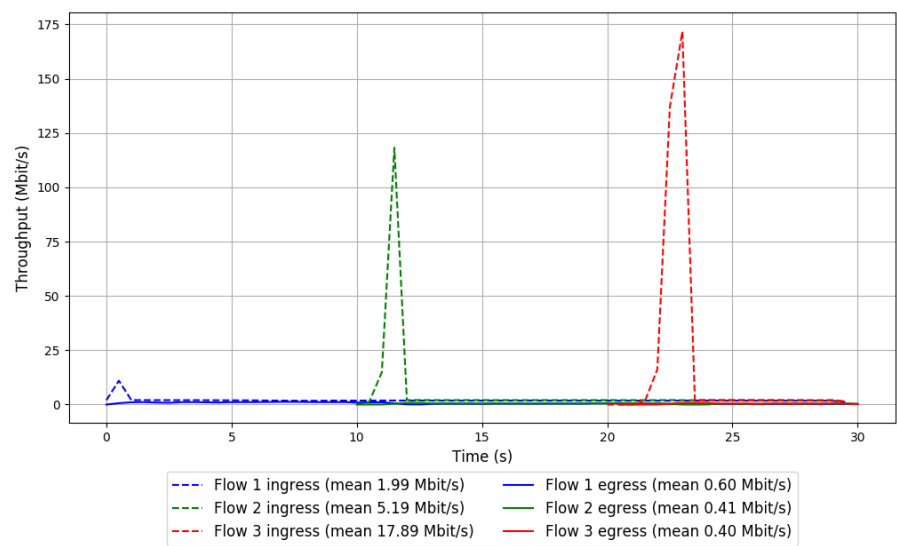
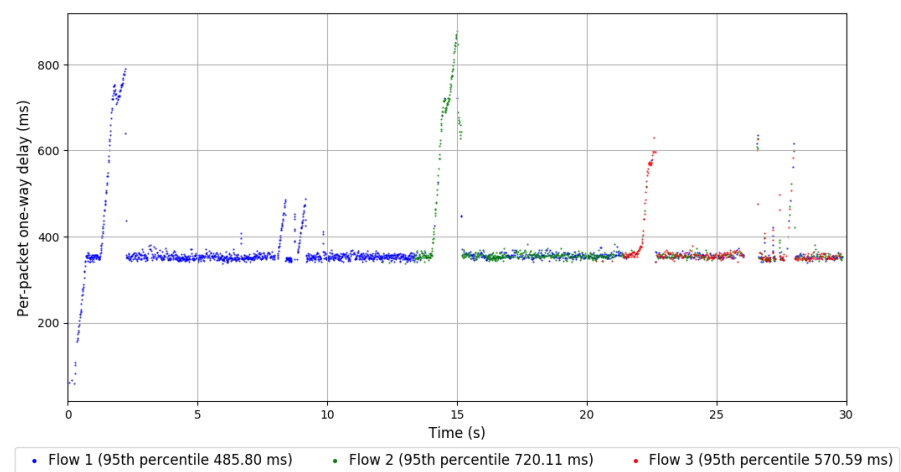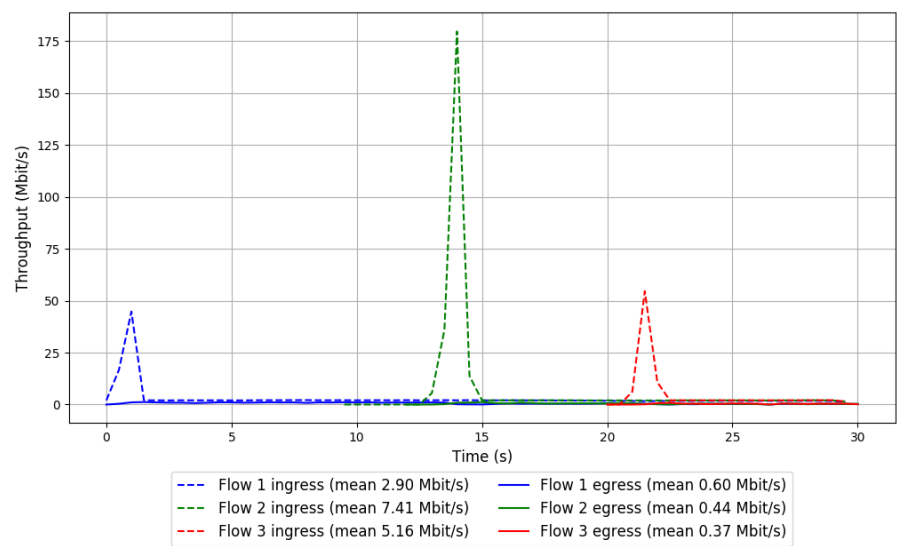## Run 1: Report of PCC-Allegro — Data Link



Flow 1 ingress (mean 3.19 Mbit/s)    Flow 1 egress (mean 0.73 Mbit/s)
Flow 2 ingress (mean 3.27 Mbit/s)    Flow 2 egress (mean 0.51 Mbit/s)
Flow 3 ingress (mean 5.01 Mbit/s)    Flow 3 egress (mean 0.39 Mbit/s)



Flow 1 (95th percentile 569.65 ms)    Flow 2 (95th percentile 672.78 ms)    Flow 3 (95th percentile 784.58 ms)

72

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-01-19 10:37:42
End at: 2019-01-19 10:38:12
Local clock offset: 0.065 ms
Remote clock offset: -3.41 ms


# Below is generated by plot.py at 2019-01-19 11:05:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 486.148 ms
Loss rate: 91.31%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 367.246 ms
Loss rate: 69.78%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 667.870 ms
Loss rate: 92.30%
-- Flow 3:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 803.269 ms
Loss rate: 97.98%
```

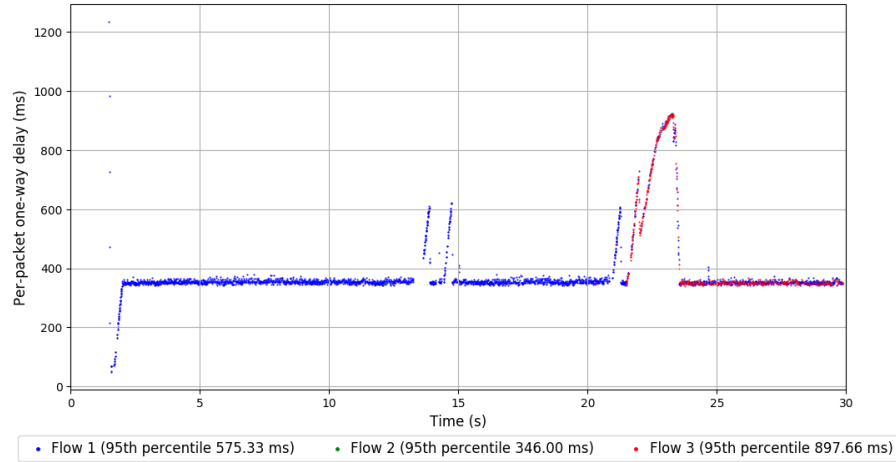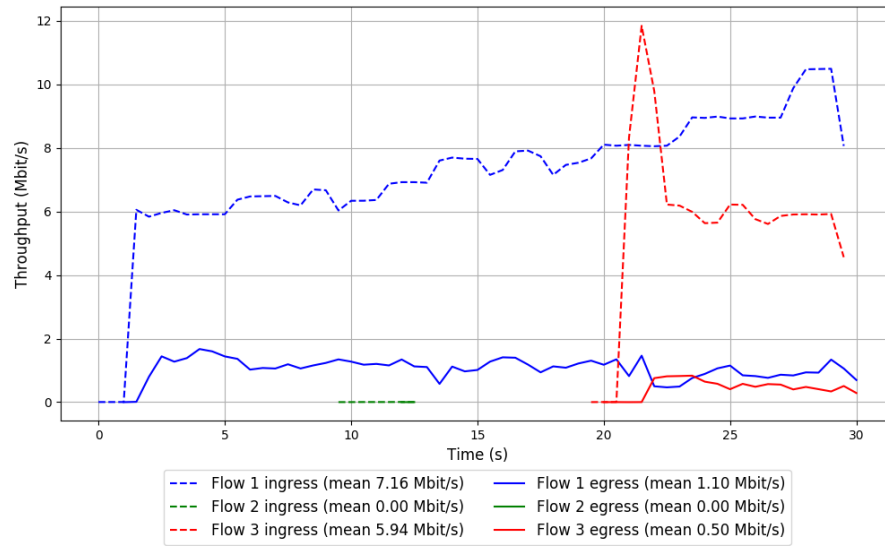Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 1.99 Mbit/s) --- Flow 1 egress (mean 0.60 Mbit/s)
Flow 2 ingress (mean 5.19 Mbit/s) --- Flow 2 egress (mean 0.41 Mbit/s)
Flow 3 ingress (mean 17.89 Mbit/s) --- Flow 3 egress (mean 0.40 Mbit/s)

Flow 1 (95th percentile 367.25 ms) • Flow 2 (95th percentile 667.87 ms) • Flow 3 (95th percentile 803.27 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2019-01-19 11:02:07
End at: 2019-01-19 11:02:37
Local clock offset: 0.59 ms
Remote clock offset: -3.843 ms


# Below is generated by plot.py at 2019-01-19 11:05:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 636.080 ms
Loss rate: 89.83%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 485.803 ms
Loss rate: 79.51%
-- Flow 2:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 720.106 ms
Loss rate: 94.76%
-- Flow 3:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 570.588 ms
Loss rate: 93.11%
```

Run 3: Report of PCC-Allegro — Data Link
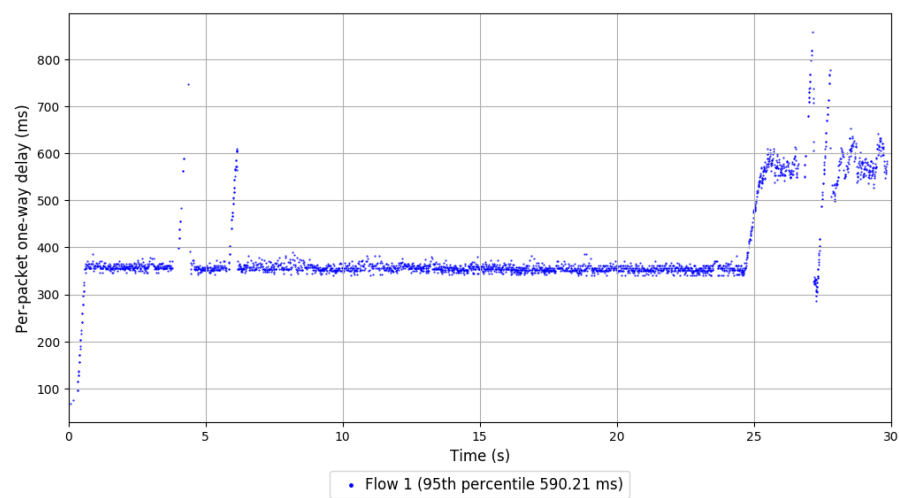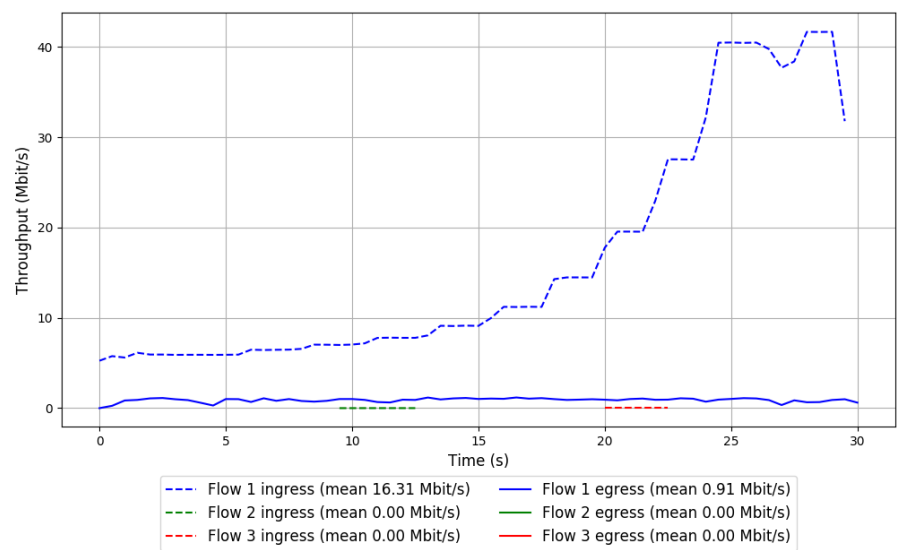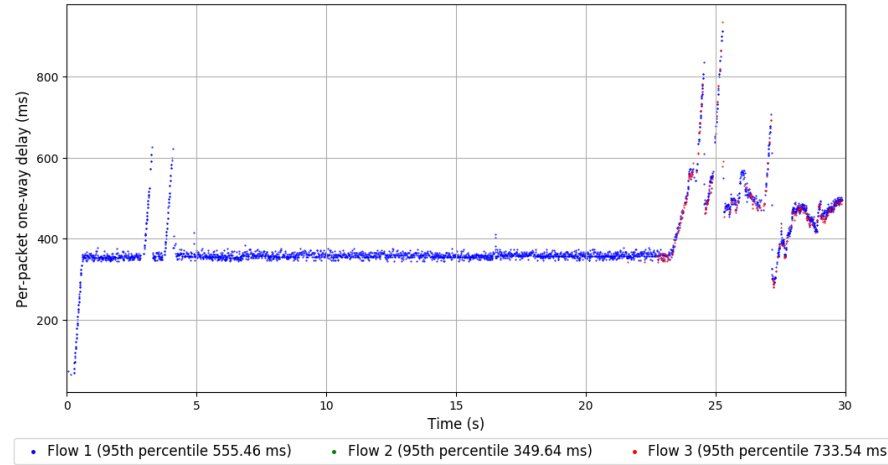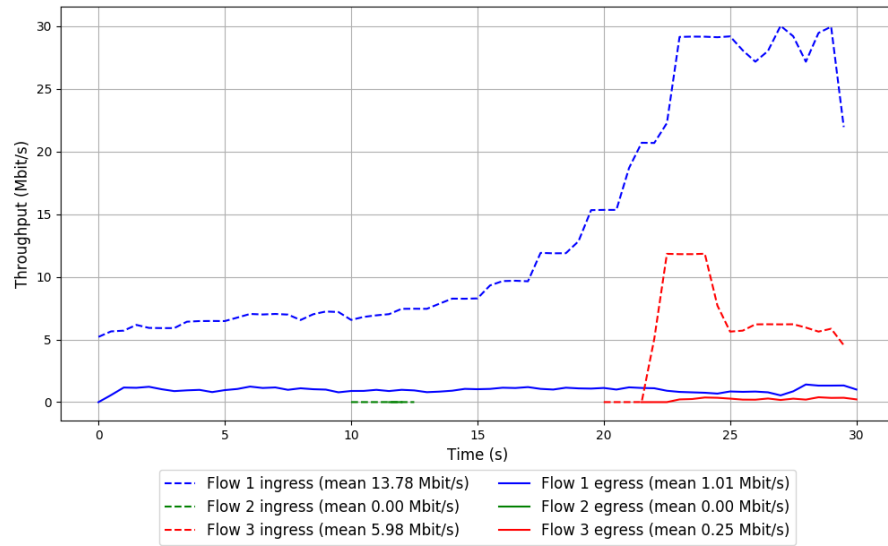
```
Run 1: Statistics of PCC-Expr

Start at: 2019-01-19 10:14:25
End at: 2019-01-19 10:14:55
Local clock offset: 0.016 ms
Remote clock offset: -4.385 ms


# Below is generated by plot.py at 2019-01-19 11:05:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 709.214 ms
Loss rate: 86.84%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 575.334 ms
Loss rate: 85.44%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 345.996 ms
Loss rate: 92.31%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 897.658 ms
Loss rate: 91.95%
```

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 7.16 Mbit/s)   Flow 1 egress (mean 1.10 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)   Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 5.94 Mbit/s)   Flow 3 egress (mean 0.50 Mbit/s)

Flow 1 (95th percentile 575.33 ms)   Flow 2 (95th percentile 346.00 ms)   Flow 3 (95th percentile 897.66 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2019-01-19 10:38:53
End at: 2019-01-19 10:39:23
Local clock offset: -0.353 ms
Remote clock offset: -3.311 ms
```

Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 16.31 Mbit/s) --- Flow 1 egress (mean 0.91 Mbit/s) ———
Flow 2 ingress (mean 0.00 Mbit/s) --- Flow 2 egress (mean 0.00 Mbit/s) ———
Flow 3 ingress (mean 0.00 Mbit/s) --- Flow 3 egress (mean 0.00 Mbit/s) ———
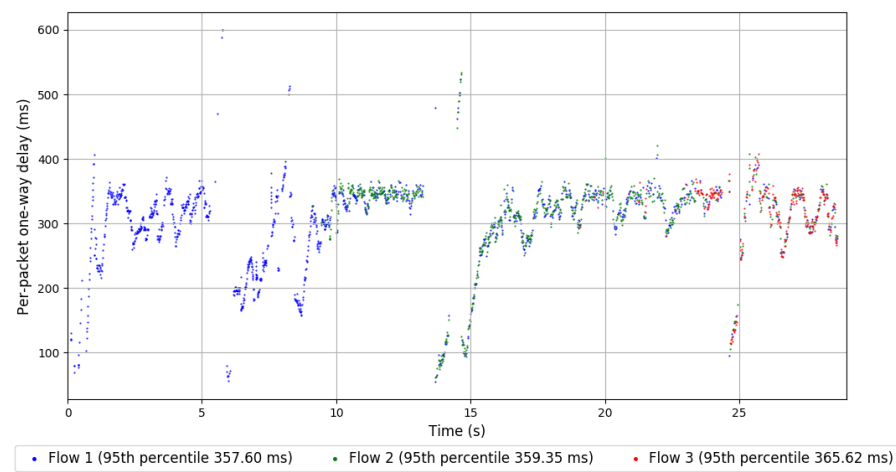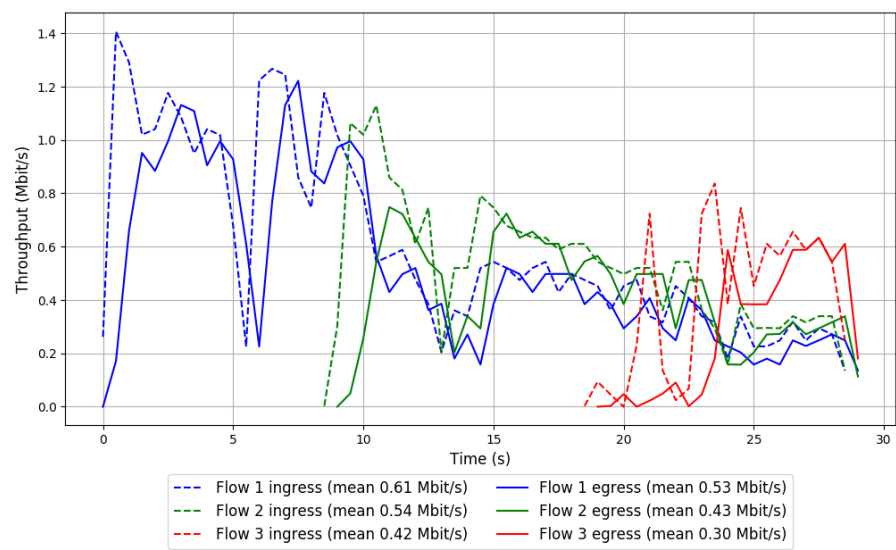

• Flow 1 (95th percentile 590.21 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2019-01-19 11:03:17
End at: 2019-01-19 11:03:47
Local clock offset: 0.031 ms
Remote clock offset: -3.301 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 565.243 ms
Loss rate: 93.20%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 555.464 ms
Loss rate: 92.72%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 349.638 ms
Loss rate: 92.31%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 733.537 ms
Loss rate: 96.52%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 13.78 Mbit/s) --- Flow 1 egress (mean 1.01 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s) --- Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 5.98 Mbit/s) --- Flow 3 egress (mean 0.25 Mbit/s)

Flow 1 (95th percentile 555.46 ms)   Flow 2 (95th percentile 349.64 ms)   Flow 3 (95th percentile 733.54 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-01-19 10:10:56
End at: 2019-01-19 10:11:26
Local clock offset: 0.125 ms
Remote clock offset: -3.515 ms
```

Run 1: Report of QUIC Cubic — Data Link

Figure is missing

Figure is missing

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-01-19 10:35:24
End at: 2019-01-19 10:35:54
Local clock offset: 0.011 ms
Remote clock offset: -4.036 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 361.659 ms
Loss rate: 20.15%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 358.766 ms
Loss rate: 16.28%
-- Flow 2:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 365.167 ms
Loss rate: 21.21%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 362.879 ms
Loss rate: 34.64%
```

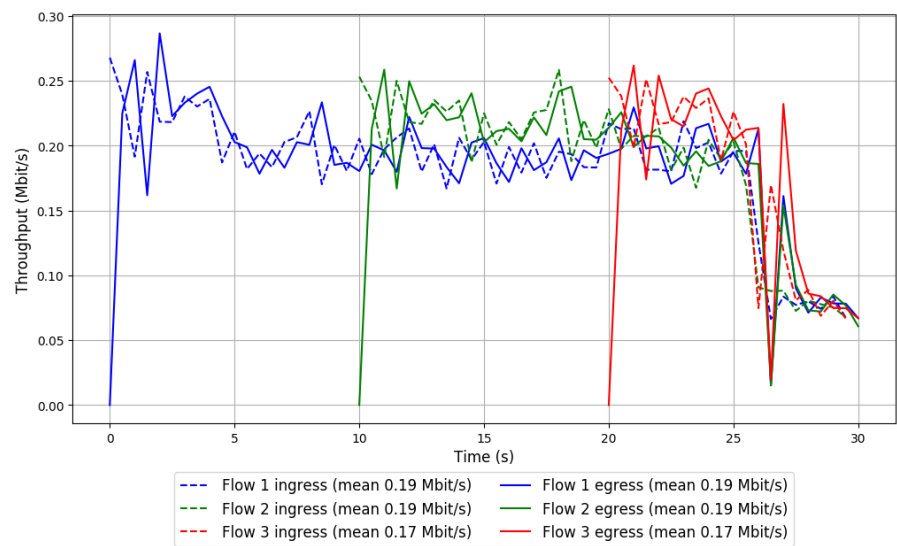Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-01-19 10:59:49
End at: 2019-01-19 11:00:19
Local clock offset: 0.223 ms
Remote clock offset: -3.714 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 359.189 ms
Loss rate: 18.00%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 357.596 ms
Loss rate: 13.52%
-- Flow 2:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 359.348 ms
Loss rate: 20.56%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 365.622 ms
Loss rate: 30.23%
```
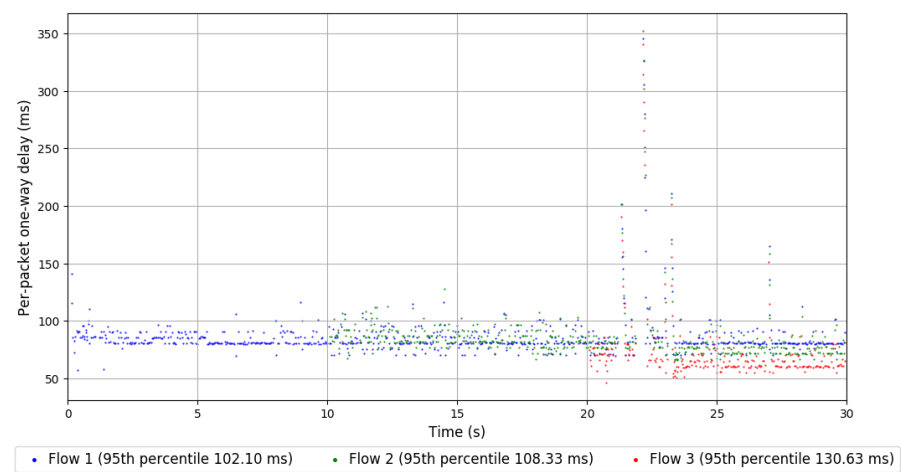
Run 3: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2019-01-19 10:05:11
End at: 2019-01-19 10:05:41
Local clock offset: -1.333 ms
Remote clock offset: -3.529 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 100.031 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 104.375 ms
Loss rate: -0.11%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 90.359 ms
Loss rate: 0.36%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 113.013 ms
Loss rate: 0.33%
```
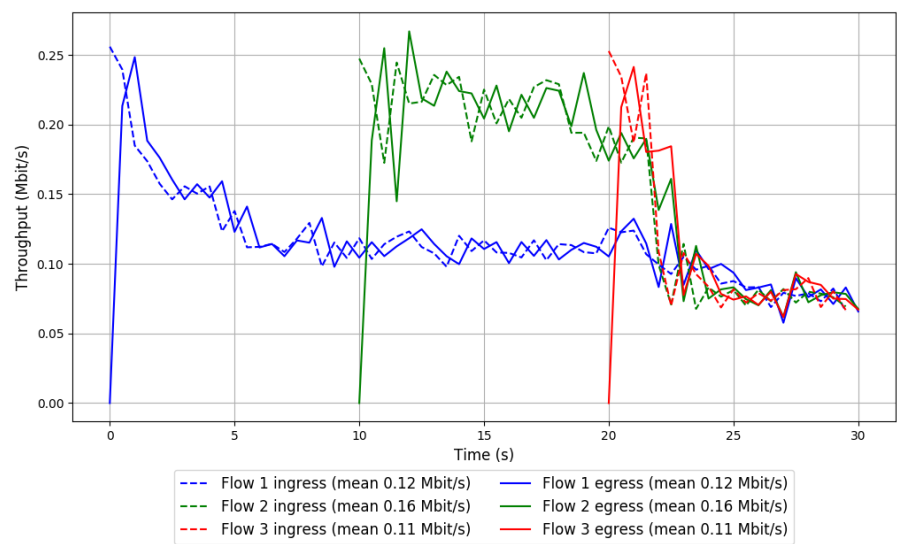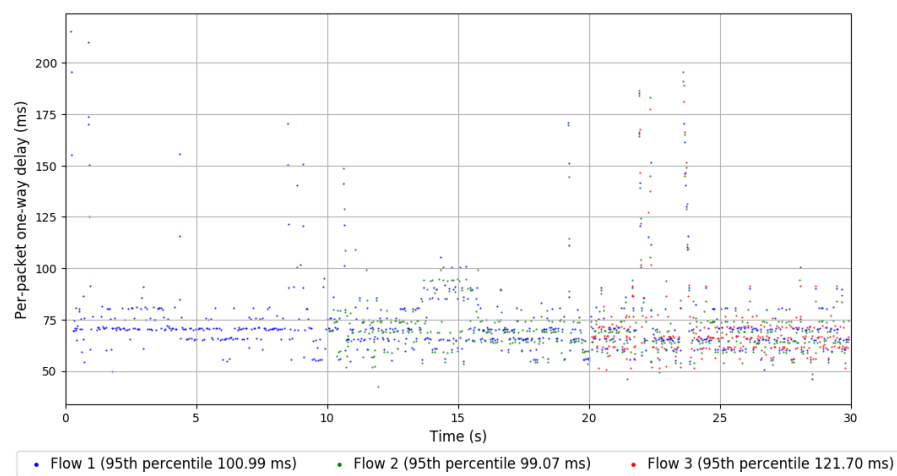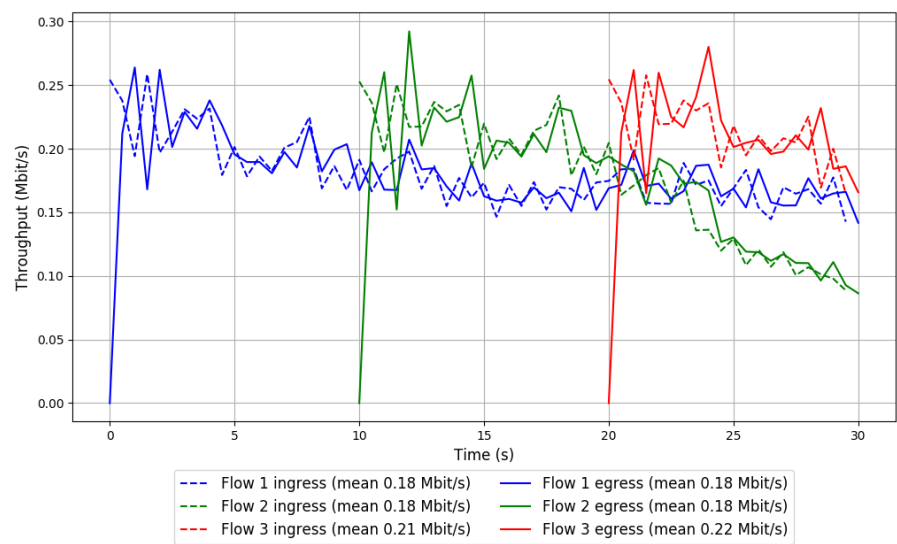
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2019-01-19 10:29:36
End at: 2019-01-19 10:30:06
Local clock offset: 1.572 ms
Remote clock offset: -3.12 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 107.380 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 102.103 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 108.332 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 130.632 ms
Loss rate: 0.51%
```
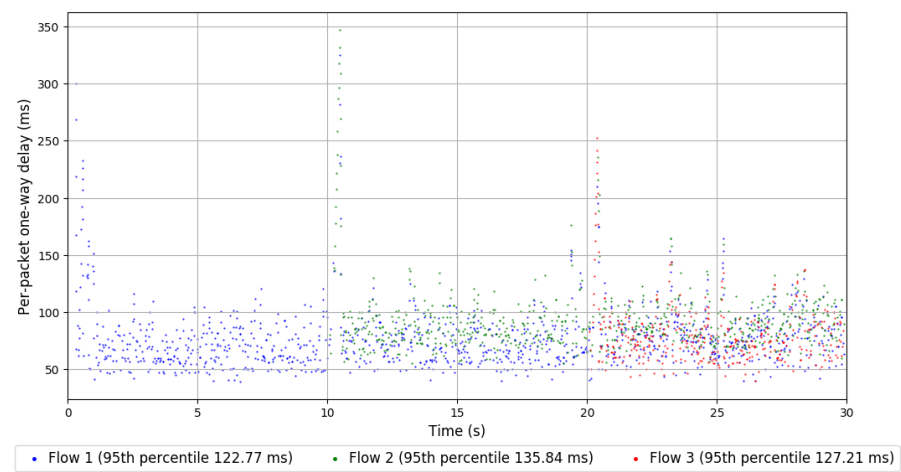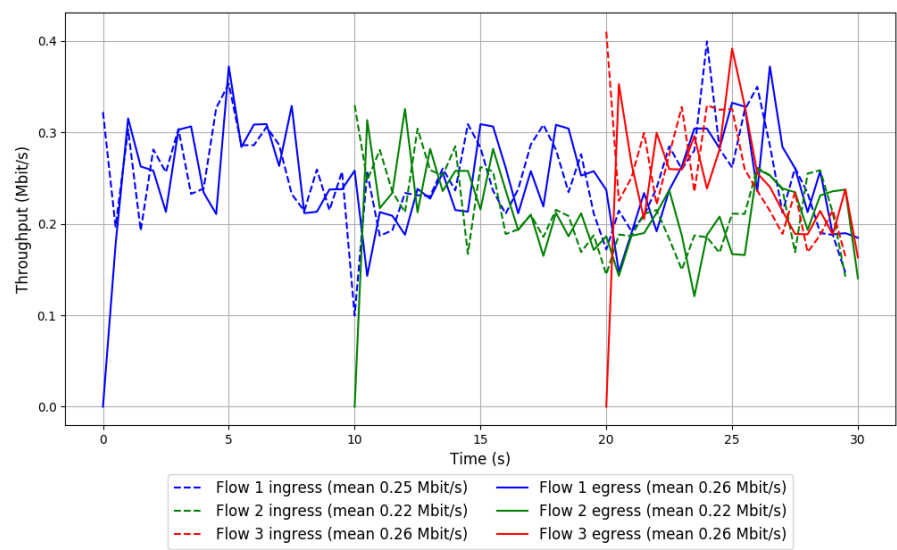
Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.12 Mbit/s) Flow 1 egress (mean 0.12 Mbit/s)
Flow 2 ingress (mean 0.16 Mbit/s) Flow 2 egress (mean 0.16 Mbit/s)
Flow 3 ingress (mean 0.11 Mbit/s) Flow 3 egress (mean 0.11 Mbit/s)

Flow 1 (95th percentile 102.10 ms) Flow 2 (95th percentile 108.33 ms) Flow 3 (95th percentile 130.63 ms)

92

```
Run 3: Statistics of SCReAM

Start at: 2019-01-19 10:54:04
End at: 2019-01-19 10:54:34
Local clock offset: -0.706 ms
Remote clock offset: -3.241 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 101.593 ms
Loss rate: -0.16%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 100.987 ms
Loss rate: -0.02%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 99.067 ms
Loss rate: -0.37%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 121.700 ms
Loss rate: -0.17%
```
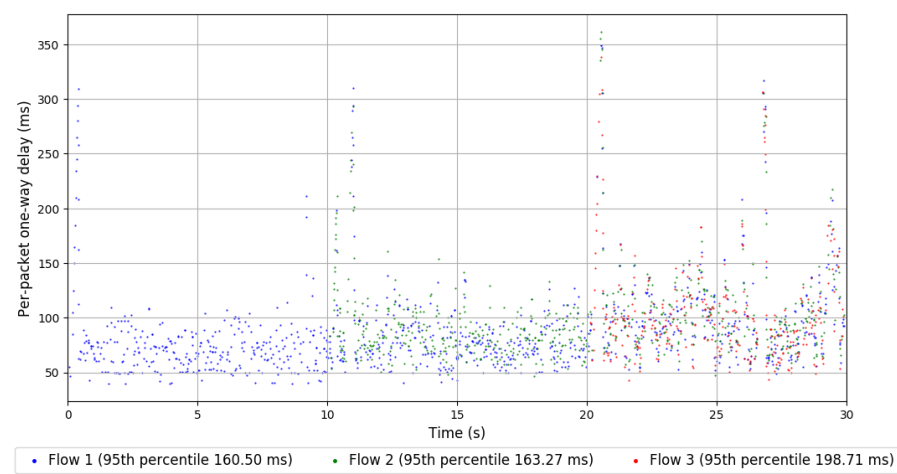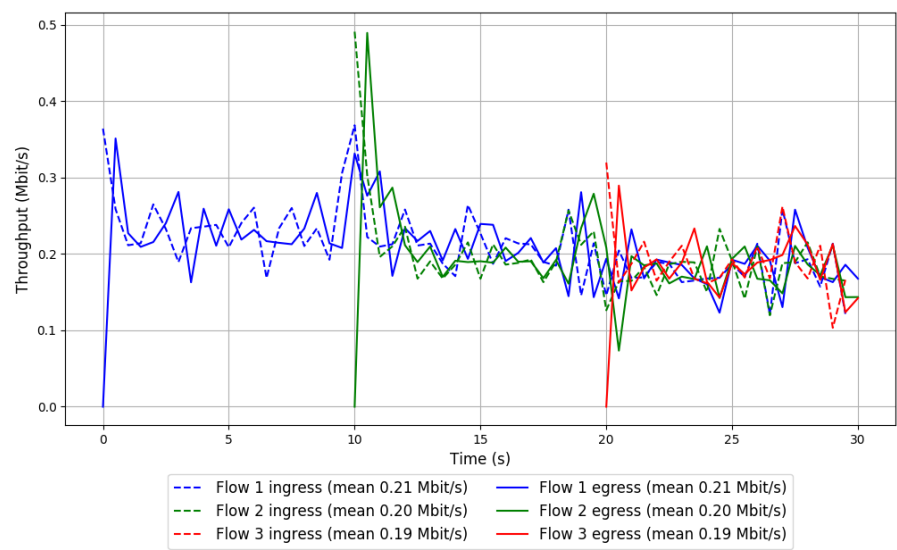
Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.18 Mbit/s) ---- Flow 1 egress (mean 0.18 Mbit/s)
Flow 2 ingress (mean 0.18 Mbit/s) ---- Flow 2 egress (mean 0.18 Mbit/s)
Flow 3 ingress (mean 0.21 Mbit/s) ---- Flow 3 egress (mean 0.22 Mbit/s)

Flow 1 (95th percentile 100.99 ms)   Flow 2 (95th percentile 99.07 ms)   Flow 3 (95th percentile 121.70 ms)

```
Run 1: Statistics of Sprout

Start at: 2019-01-19 10:07:29
End at: 2019-01-19 10:07:59
Local clock offset: 0.197 ms
Remote clock offset: -2.553 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 129.714 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 122.767 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 135.840 ms
Loss rate: 0.54%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 127.212 ms
Loss rate: 0.48%
```
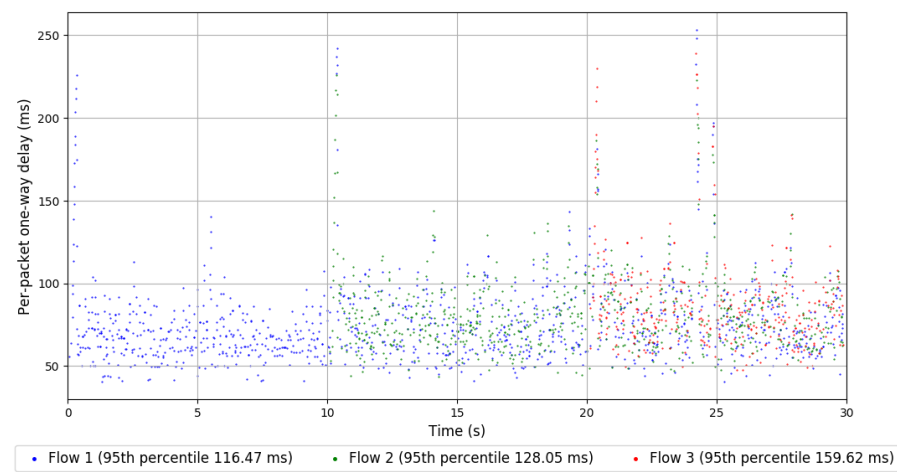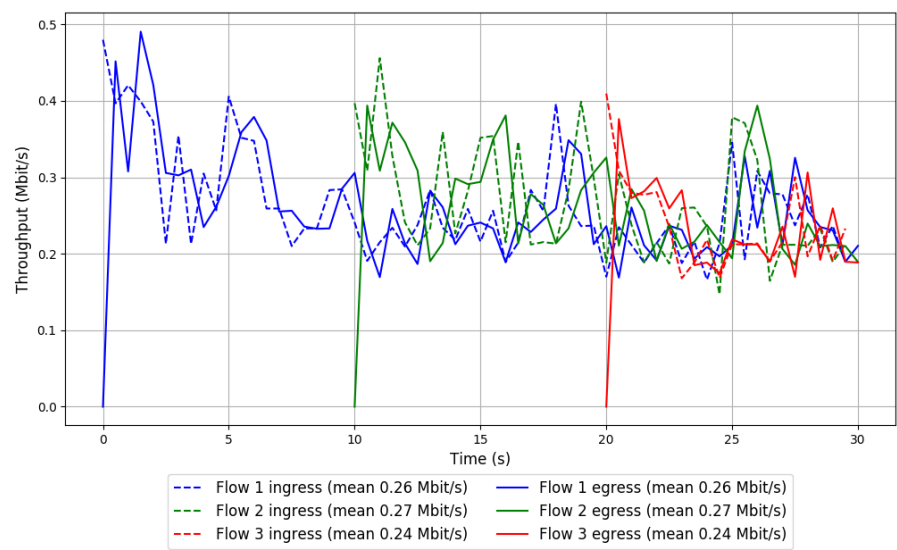
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-01-19 10:31:56
End at: 2019-01-19 10:32:26
Local clock offset: 0.077 ms
Remote clock offset: -3.146 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 175.097 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 160.503 ms
Loss rate: -0.20%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 163.270 ms
Loss rate: -0.04%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 198.710 ms
Loss rate: 1.07%
```
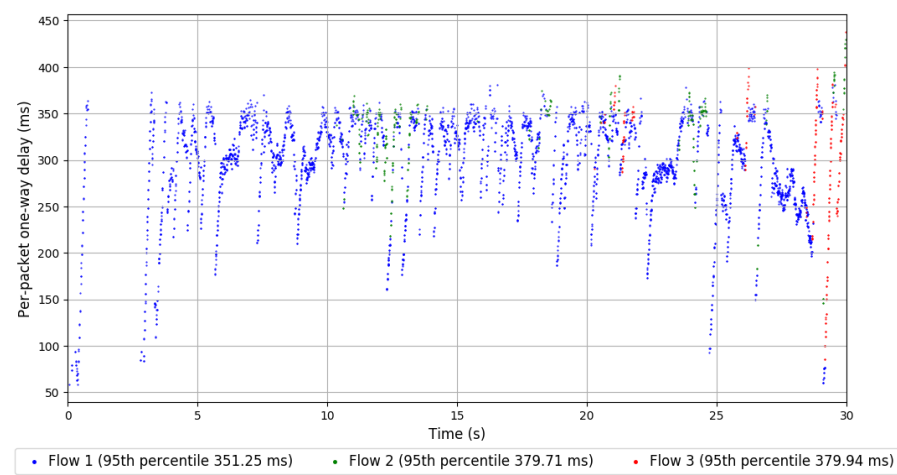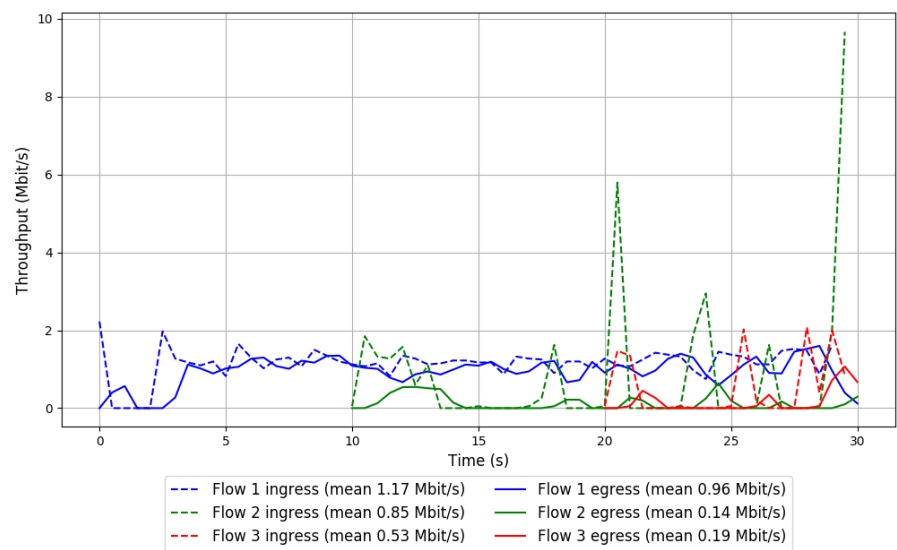
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2019-01-19 10:56:22
End at: 2019-01-19 10:56:52
Local clock offset: 1.652 ms
Remote clock offset: -4.077 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 124.565 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 116.467 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 128.054 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 159.617 ms
Loss rate: 0.87%
```
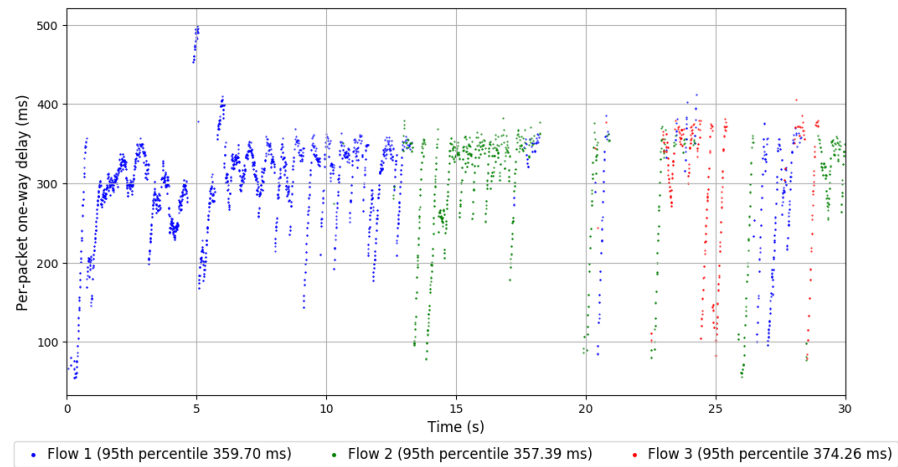
Run 3: Report of Sprout — Data Link

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

Start at: 2019-01-19 10:06:19
End at: 2019-01-19 10:06:49
Local clock offset: 0.535 ms
Remote clock offset: -3.065 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 354.235 ms
Loss rate: 41.47%
-- Flow 1:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 351.247 ms
Loss rate: 16.59%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 379.706 ms
Loss rate: 84.23%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 379.944 ms
Loss rate: 65.13%
```

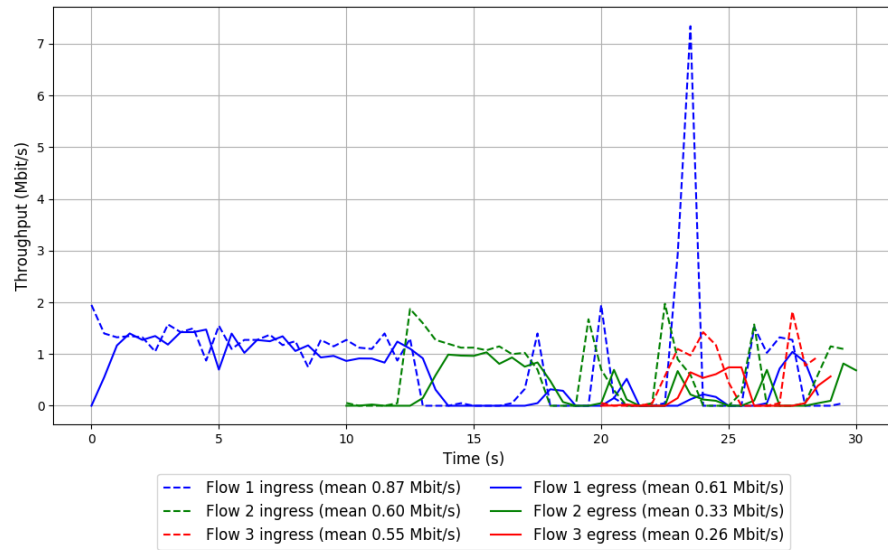# Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-19 10:30:46
End at: 2019-01-19 10:31:16
Local clock offset: 0.343 ms
Remote clock offset: -3.517 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 363.537 ms
Loss rate: 39.91%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 359.702 ms
Loss rate: 34.82%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 357.389 ms
Loss rate: 46.07%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 374.263 ms
Loss rate: 52.47%
```

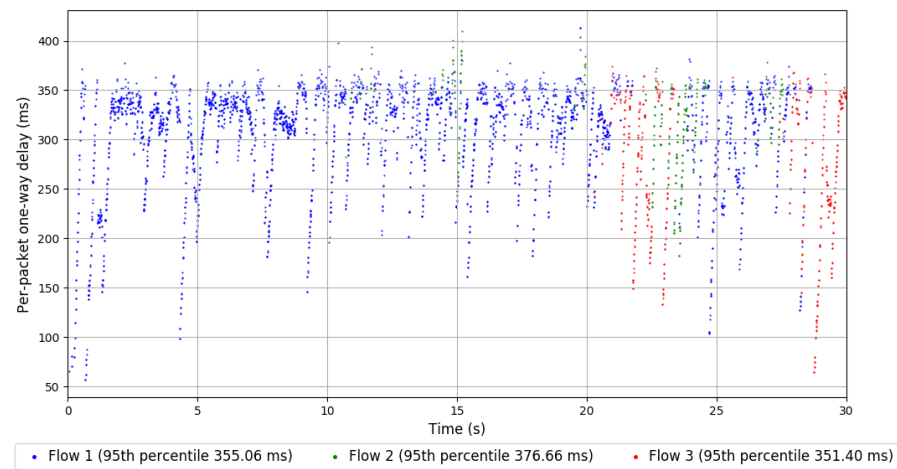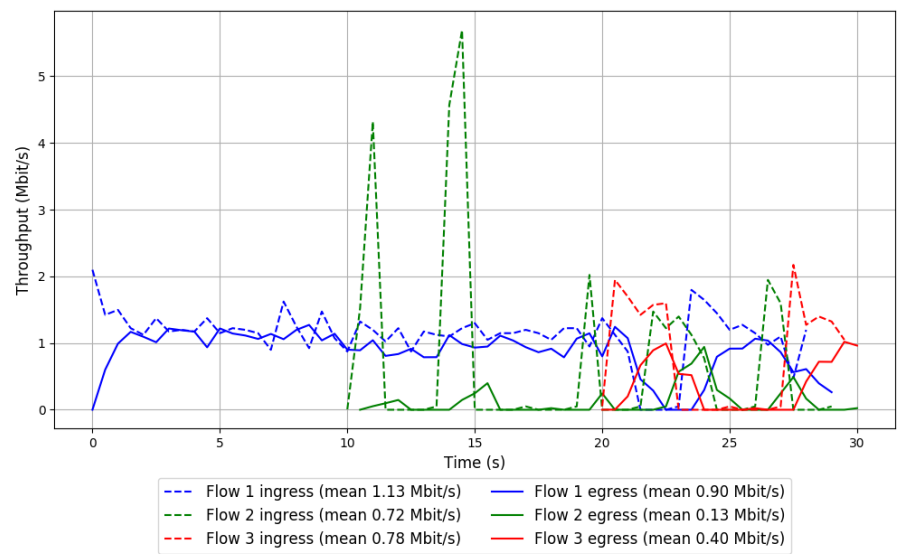Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-19 10:55:12
End at: 2019-01-19 10:55:42
Local clock offset: -1.286 ms
Remote clock offset: -4.341 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 356.307 ms
Loss rate: 40.56%
-- Flow 1:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 355.055 ms
Loss rate: 19.86%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 376.662 ms
Loss rate: 82.11%
-- Flow 3:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 351.399 ms
Loss rate: 50.80%
```

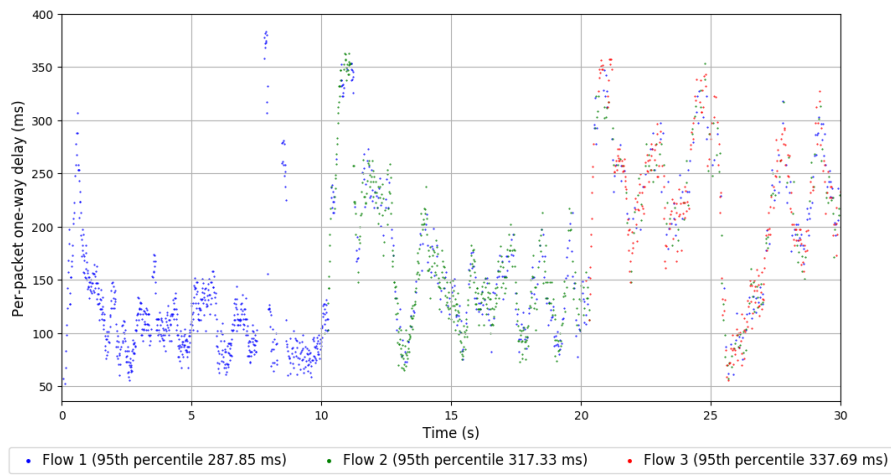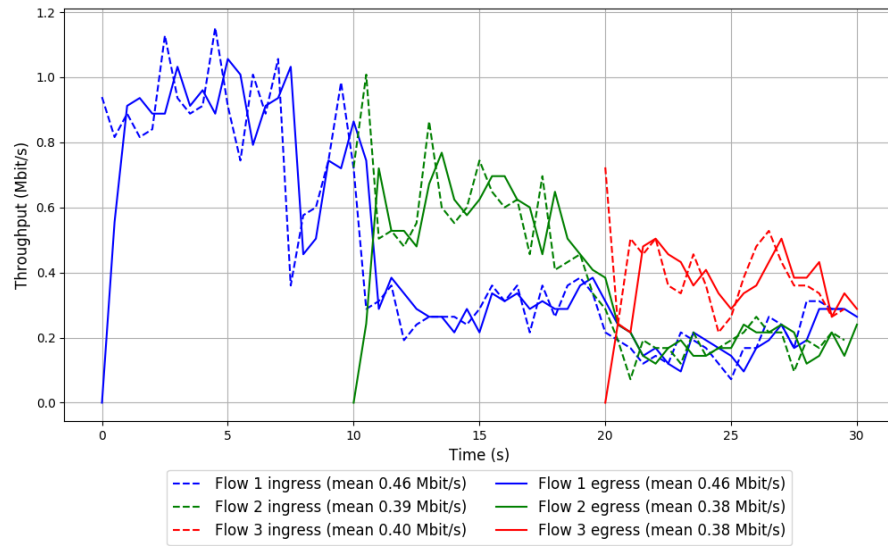Run 3: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2019-01-19 09:52:16
End at: 2019-01-19 09:52:46
Local clock offset: -1.099 ms
Remote clock offset: -3.796 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 316.707 ms
Loss rate: 2.17%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 287.850 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 317.335 ms
Loss rate: 3.71%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 337.691 ms
Loss rate: 5.20%
```

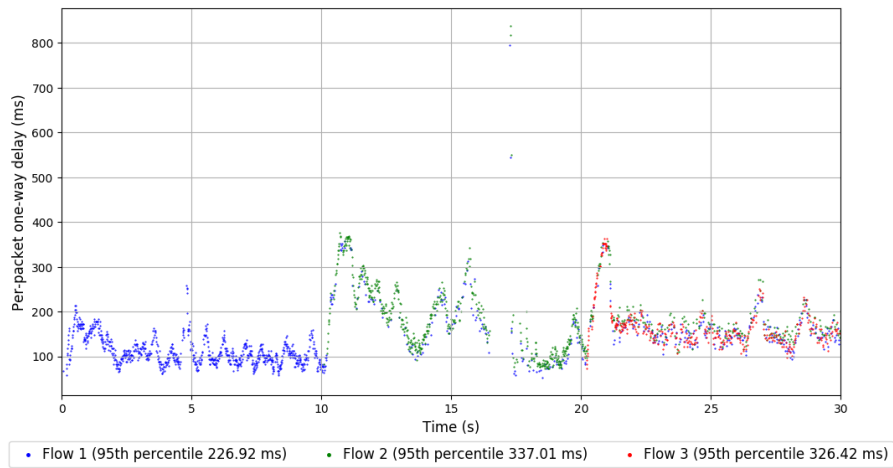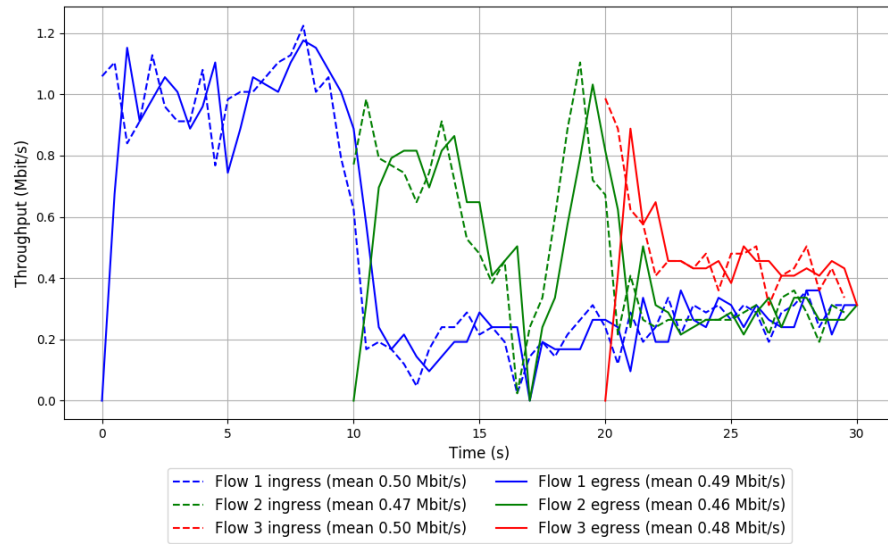Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2019-01-19 10:16:46
End at: 2019-01-19 10:17:16
Local clock offset: 1.645 ms
Remote clock offset: -3.519 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 287.201 ms
Loss rate: 1.93%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 226.917 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 337.012 ms
Loss rate: 2.42%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 326.424 ms
Loss rate: 5.08%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.50 Mbit/s)   Flow 1 egress (mean 0.49 Mbit/s)
Flow 2 ingress (mean 0.47 Mbit/s)   Flow 2 egress (mean 0.46 Mbit/s)
Flow 3 ingress (mean 0.50 Mbit/s)   Flow 3 egress (mean 0.48 Mbit/s)

Flow 1 (95th percentile 226.92 ms)   Flow 2 (95th percentile 337.01 ms)   Flow 3 (95th percentile 326.42 ms)

110

```
Run 3: Statistics of TCP Vegas

Start at: 2019-01-19 10:41:15
End at: 2019-01-19 10:41:45
Local clock offset: 2.096 ms
Remote clock offset: -3.126 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 271.377 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 243.913 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 281.292 ms
Loss rate: 3.02%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 328.548 ms
Loss rate: 3.37%
```
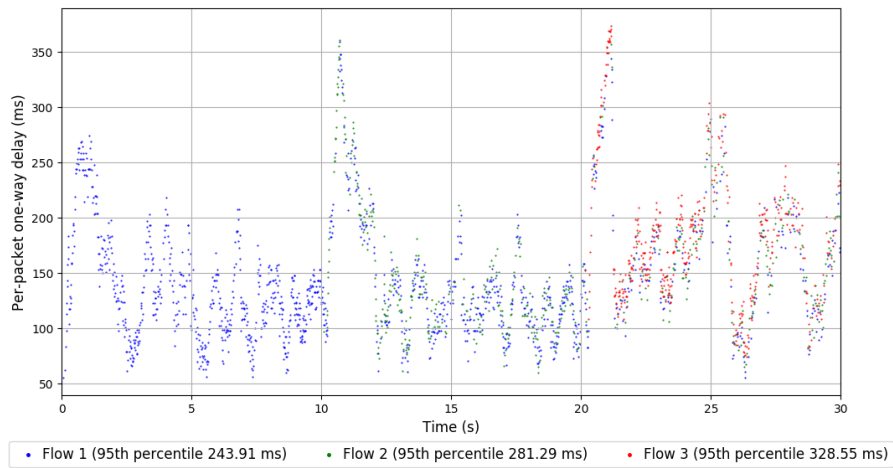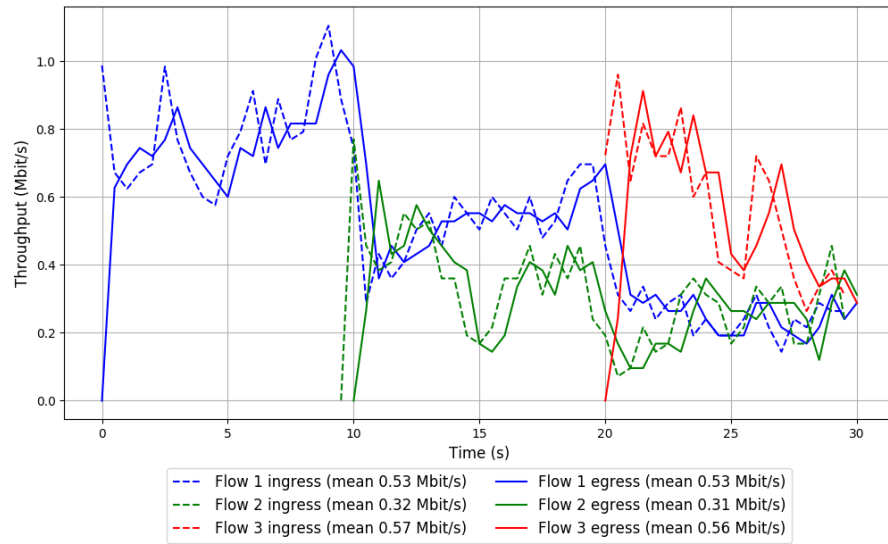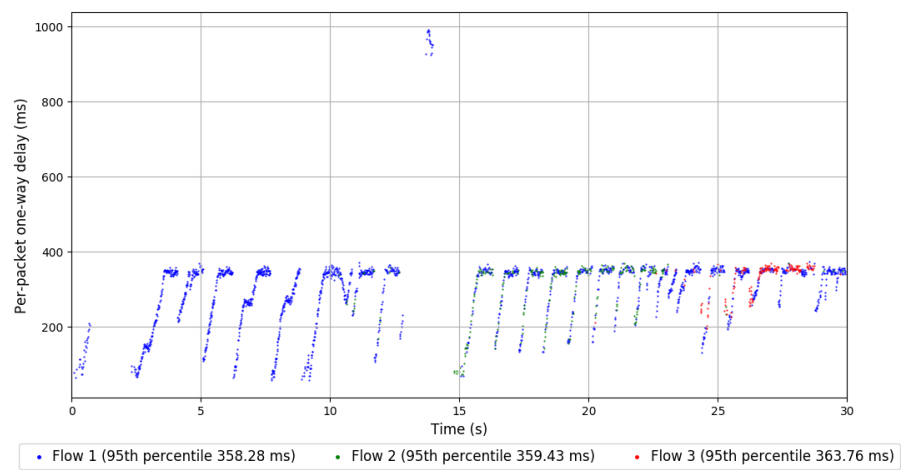
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.53 Mbit/s)   Flow 1 egress (mean 0.53 Mbit/s)
Flow 2 ingress (mean 0.32 Mbit/s)   Flow 2 egress (mean 0.31 Mbit/s)
Flow 3 ingress (mean 0.57 Mbit/s)   Flow 3 egress (mean 0.56 Mbit/s)

Flow 1 (95th percentile 243.91 ms)   Flow 2 (95th percentile 281.29 ms)   Flow 3 (95th percentile 328.55 ms)
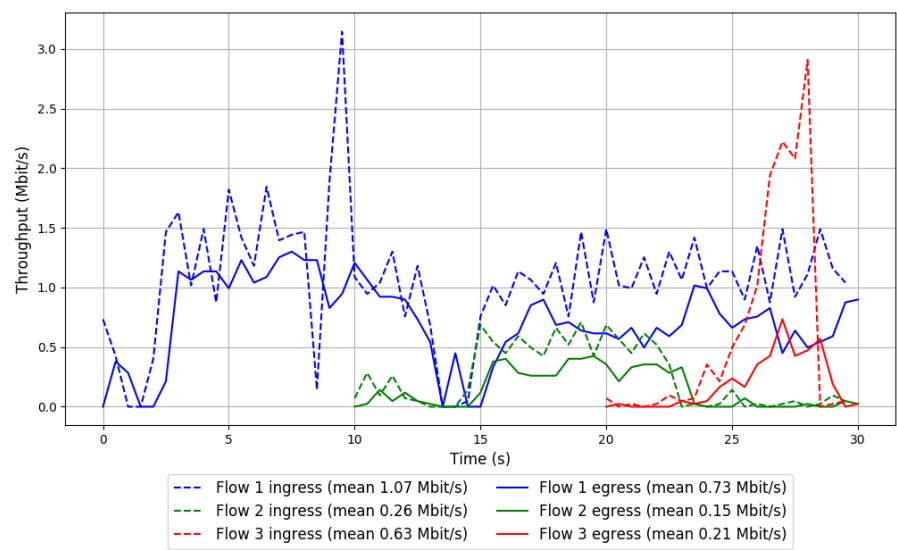
```
Run 1: Statistics of Verus

Start at: 2019-01-19 10:01:43
End at: 2019-01-19 10:02:13
Local clock offset: -0.019 ms
Remote clock offset: -3.065 ms

# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 359.713 ms
Loss rate: 38.03%
-- Flow 1:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 358.284 ms
Loss rate: 31.78%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 359.434 ms
Loss rate: 40.65%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 363.762 ms
Loss rate: 68.33%
```

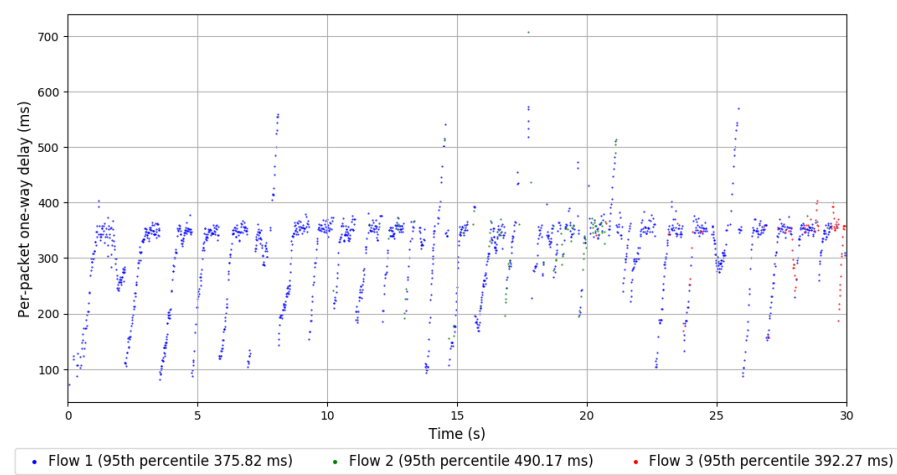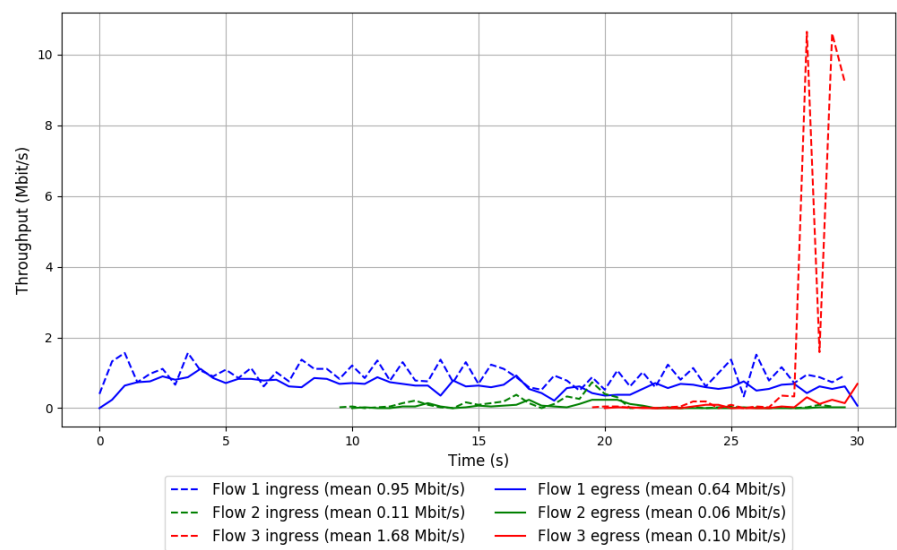Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2019-01-19 10:26:05
End at: 2019-01-19 10:26:35
Local clock offset: 0.753 ms
Remote clock offset: -3.596 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 377.367 ms
Loss rate: 55.35%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 375.819 ms
Loss rate: 32.58%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 490.169 ms
Loss rate: 50.28%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 392.270 ms
Loss rate: 94.49%
```

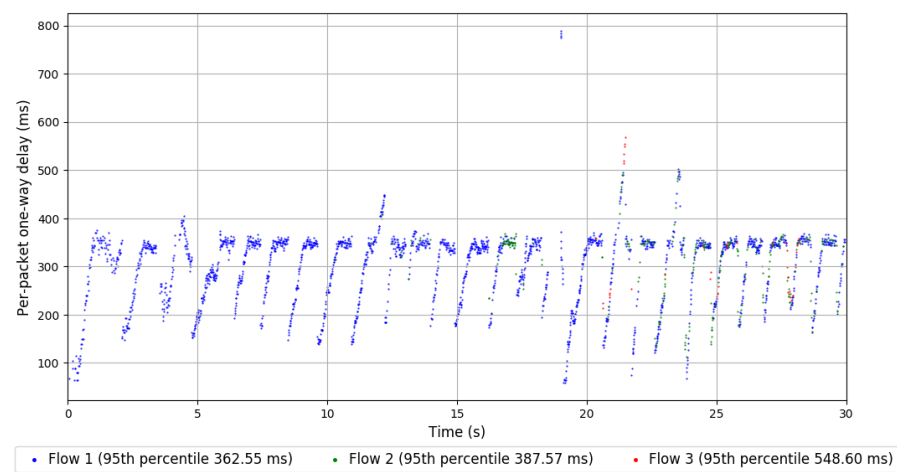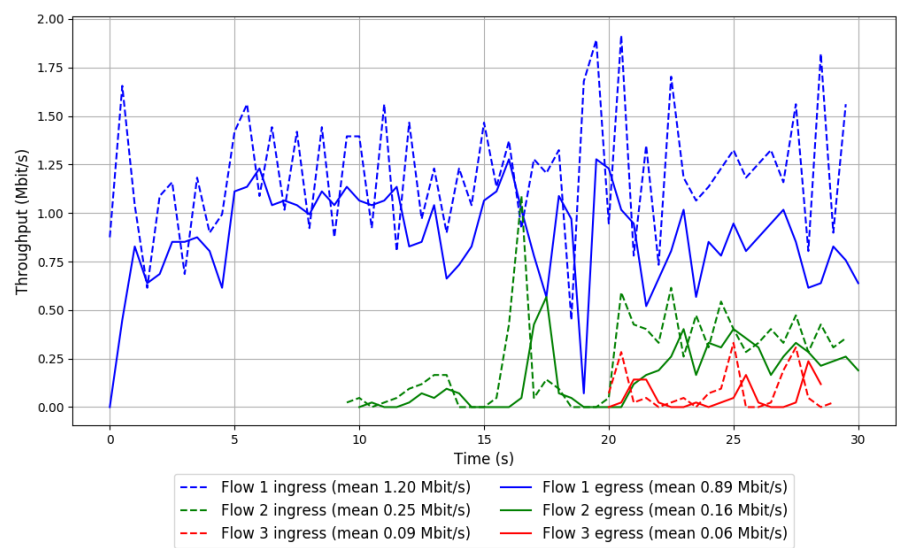Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2019-01-19 10:50:29
End at: 2019-01-19 10:50:59
Local clock offset: 0.373 ms
Remote clock offset: -3.743 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 363.282 ms
Loss rate: 27.42%
-- Flow 1:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 362.553 ms
Loss rate: 25.94%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 387.569 ms
Loss rate: 36.45%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 548.596 ms
Loss rate: 37.31%
```

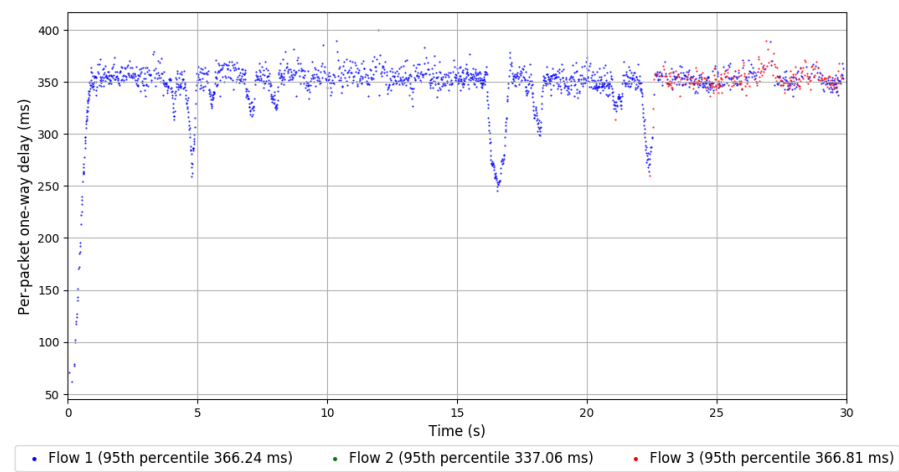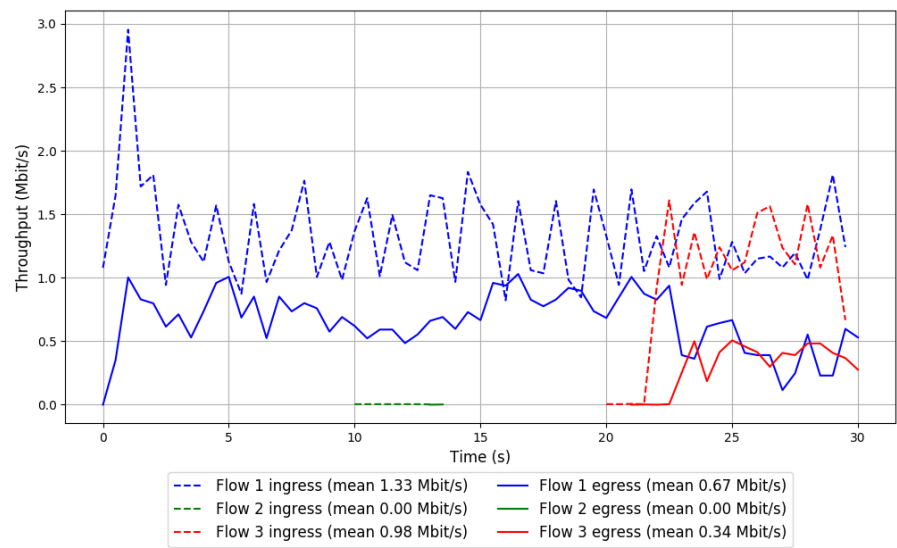## Run 3: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-01-19 09:54:35
End at: 2019-01-19 09:55:05
Local clock offset: 0.041 ms
Remote clock offset: -3.002 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 366.269 ms
Loss rate: 53.56%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 366.239 ms
Loss rate: 49.63%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 337.061 ms
Loss rate: 92.43%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 366.810 ms
Loss rate: 69.74%
```

Run 1: Report of PCC-Vivace — Data Link

- Flow 1 ingress (mean 1.33 Mbit/s)
- Flow 1 egress (mean 0.67 Mbit/s)
- Flow 2 ingress (mean 0.00 Mbit/s)
- Flow 2 egress (mean 0.00 Mbit/s)
- Flow 3 ingress (mean 0.98 Mbit/s)
- Flow 3 egress (mean 0.34 Mbit/s)

- Flow 1 (95th percentile 366.24 ms)
- Flow 2 (95th percentile 337.06 ms)
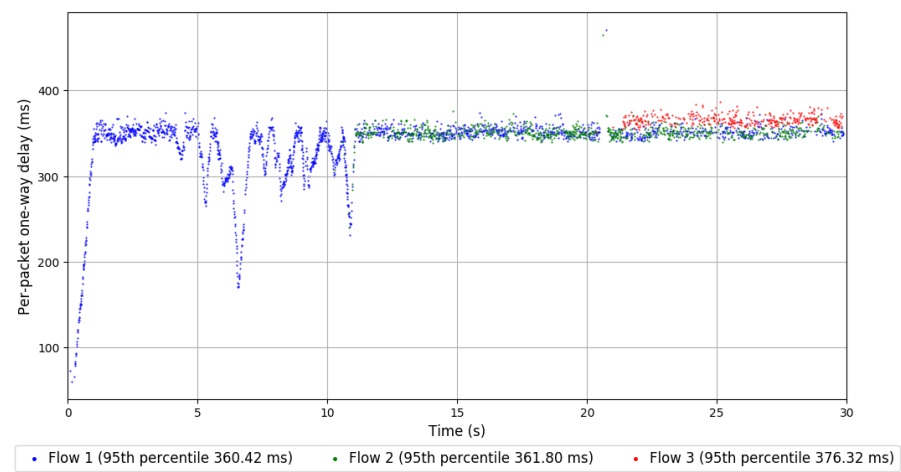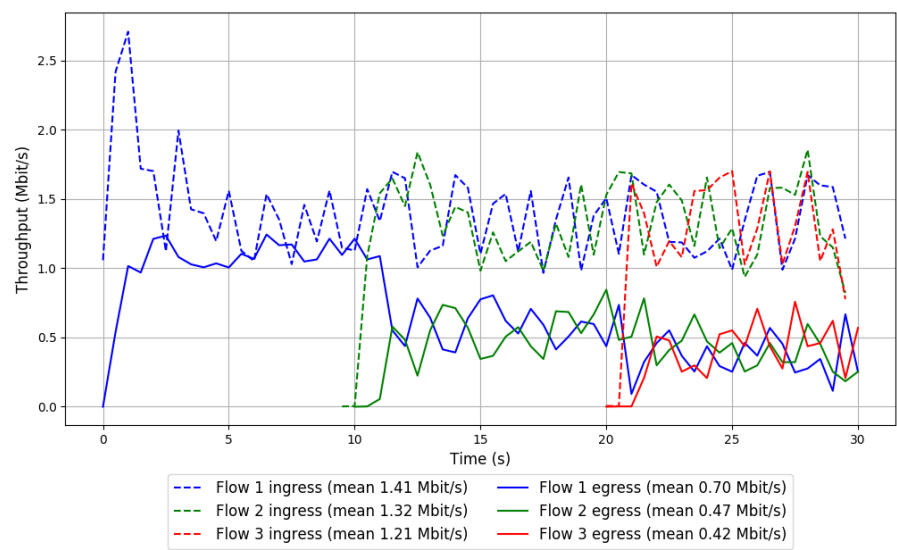- Flow 3 (95th percentile 366.81 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2019-01-19 10:19:06
End at: 2019-01-19 10:19:36
Local clock offset: 0.131 ms
Remote clock offset: -3.919 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 367.291 ms
Loss rate: 57.75%
-- Flow 1:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 360.423 ms
Loss rate: 50.44%
-- Flow 2:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 361.803 ms
Loss rate: 65.30%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 376.321 ms
Loss rate: 66.85%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 1.41 Mbit/s) --- Flow 1 egress (mean 0.70 Mbit/s)
Flow 2 ingress (mean 1.32 Mbit/s) --- Flow 2 egress (mean 0.47 Mbit/s)
Flow 3 ingress (mean 1.21 Mbit/s) --- Flow 3 egress (mean 0.42 Mbit/s)

Flow 1 (95th percentile 360.42 ms) • Flow 2 (95th percentile 361.80 ms) • Flow 3 (95th percentile 376.32 ms)
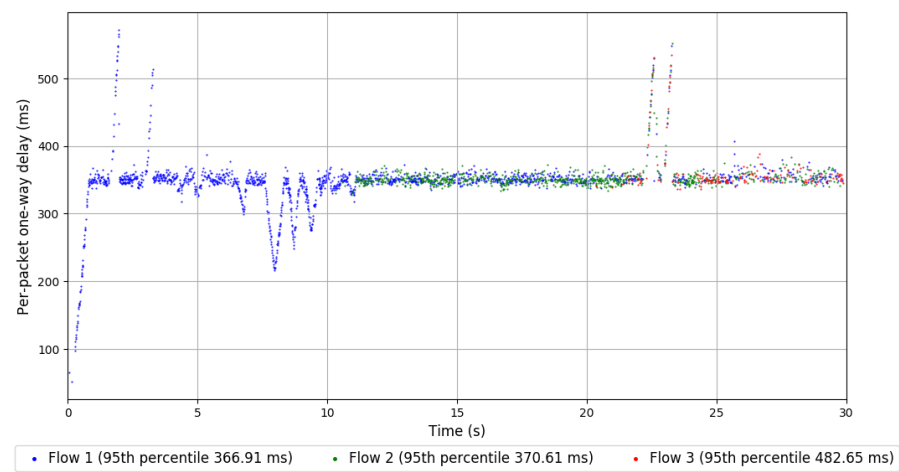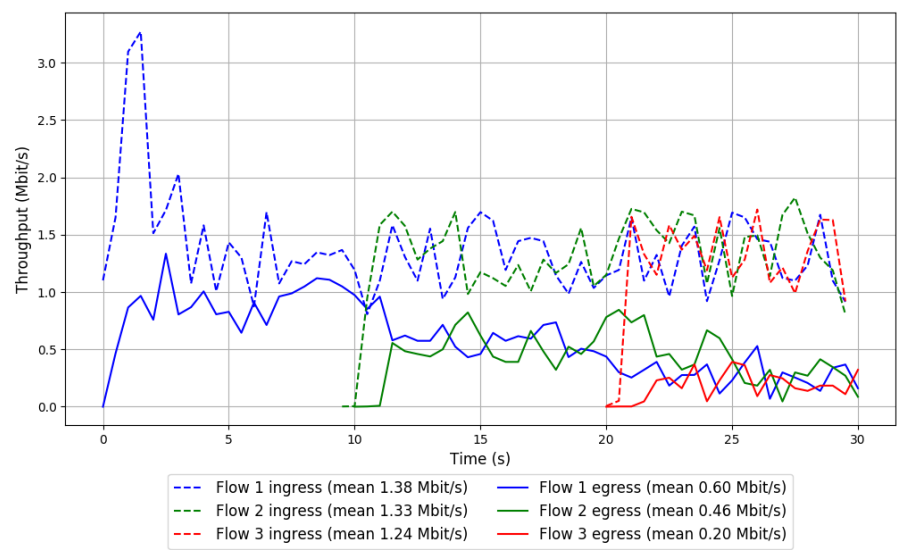
```
Run 3: Statistics of PCC-Vivace

Start at: 2019-01-19 10:43:33
End at: 2019-01-19 10:44:03
Local clock offset: 0.807 ms
Remote clock offset: -3.092 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 370.825 ms
Loss rate: 64.19%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 366.912 ms
Loss rate: 56.71%
-- Flow 2:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 370.610 ms
Loss rate: 66.51%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 482.650 ms
Loss rate: 84.42%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 1.38 Mbit/s)
Flow 2 ingress (mean 1.33 Mbit/s)
Flow 3 ingress (mean 1.24 Mbit/s)
Flow 1 egress (mean 0.60 Mbit/s)
Flow 2 egress (mean 0.46 Mbit/s)
Flow 3 egress (mean 0.20 Mbit/s)

Flow 1 (95th percentile 366.91 ms)
Flow 2 (95th percentile 370.61 ms)
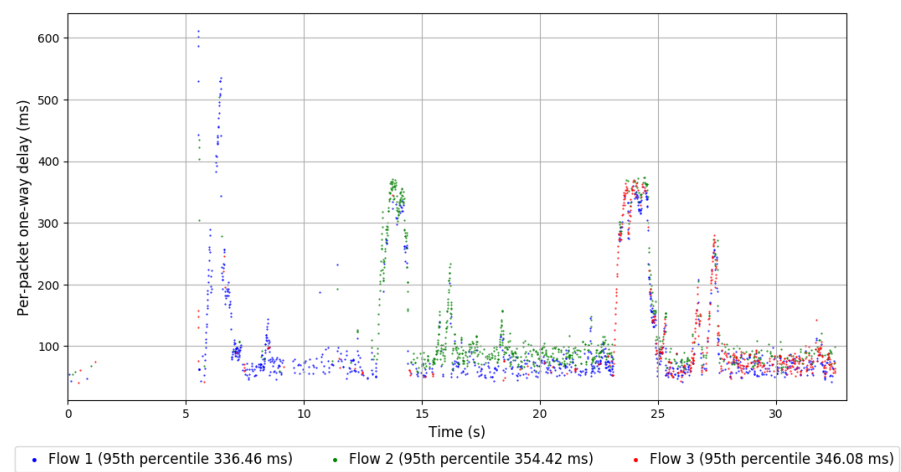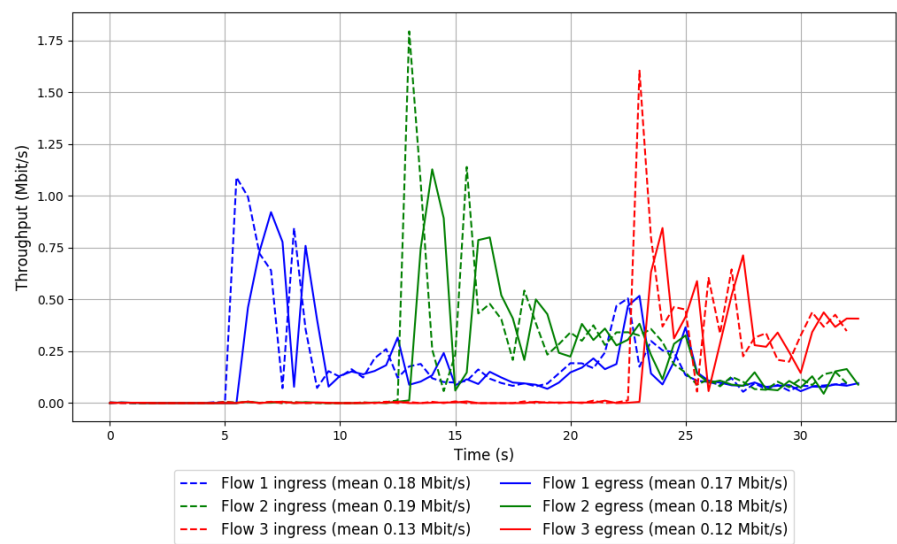Flow 3 (95th percentile 482.65 ms)

124

```
Run 1: Statistics of WebRTC media

Start at: 2019-01-19 10:04:02
End at: 2019-01-19 10:04:32
Local clock offset: -1.127 ms
Remote clock offset: -3.707 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 346.081 ms
Loss rate: 7.20%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 336.464 ms
Loss rate: 7.07%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 354.417 ms
Loss rate: 4.91%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 346.081 ms
Loss rate: 10.64%
```

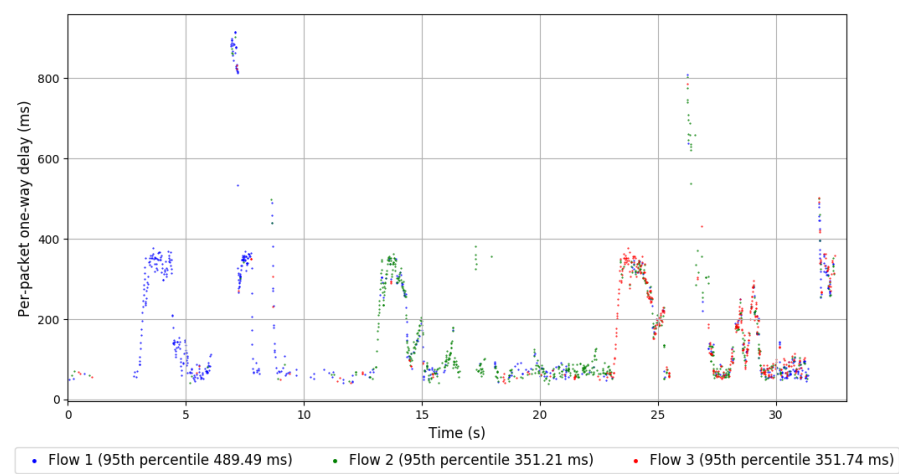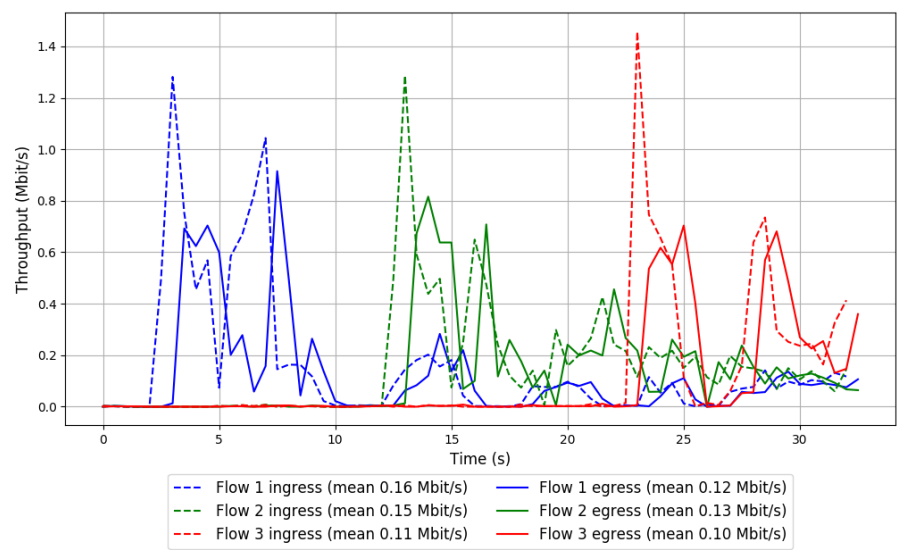Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-01-19 10:28:24
End at: 2019-01-19 10:28:54
Local clock offset: 1.215 ms
Remote clock offset: -2.386 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 364.436 ms
Loss rate: 16.74%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 489.488 ms
Loss rate: 22.54%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 351.209 ms
Loss rate: 12.43%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 351.739 ms
Loss rate: 14.47%
```

Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-01-19 10:52:55
End at: 2019-01-19 10:53:25
Local clock offset: 0.513 ms
Remote clock offset: -3.675 ms


# Below is generated by plot.py at 2019-01-19 11:05:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 372.974 ms
Loss rate: 12.95%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 431.951 ms
Loss rate: 12.10%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 350.836 ms
Loss rate: 11.53%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 420.254 ms
Loss rate: 17.53%
```

Run 3: Report of WebRTC media — Data Link