# Pantheon Report

Generated at 2018-06-19 08:36:50 (UTC).

Data path: Colombia ppp0 ppp0 (*remote*) →AWS Brazil 2 Ethernet (*local*).

Repeated the test of 16 congestion control schemes 3 times.

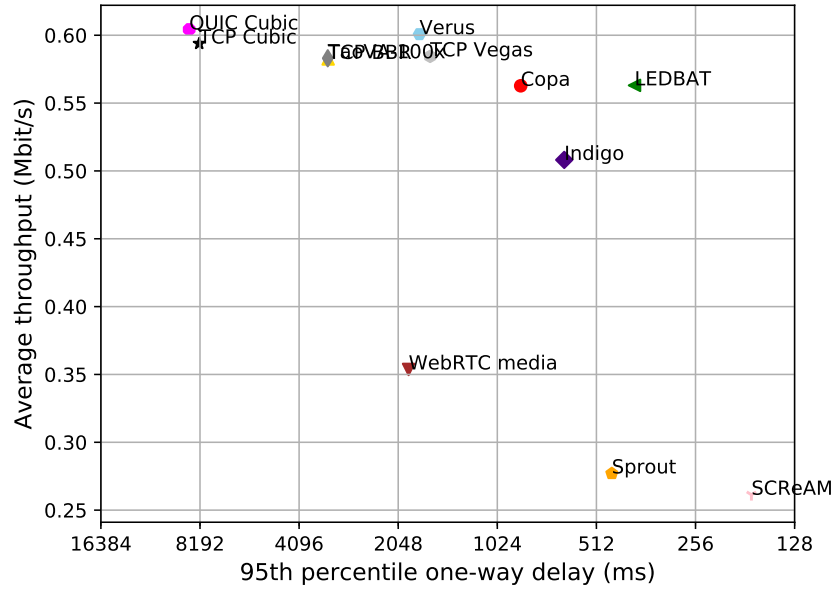Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.
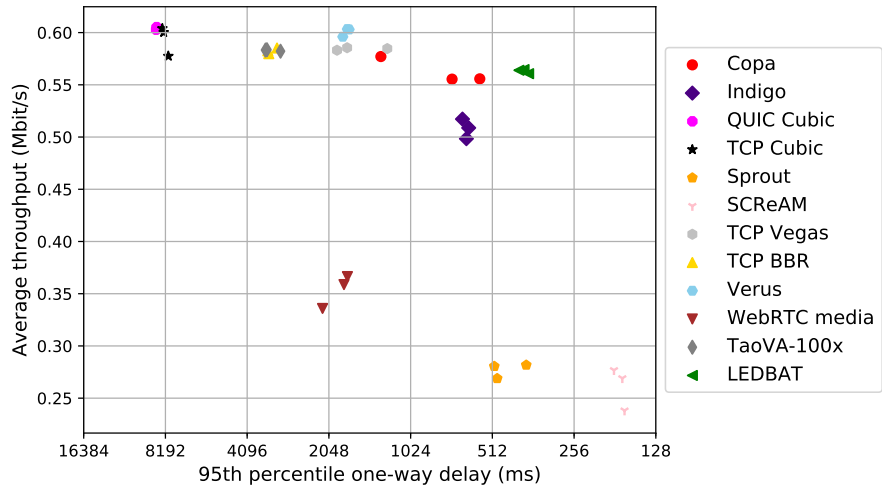
```
Git summary:
branch: master @ 9141c5f9450c85ea5ea2ea755a8e946998d3abf3
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/genericCC @ c7966e494a929986eaa5a9c169a7f381fe1bbbe5
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from Colombia ppp0 to AWS Brazil 2, 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 | 0.37 | 0.30 | 0.03 | 3288.24 | 3381.47 | 3193.09 | 2.04 | 5.56 | 38.58 |
| Copa | 3 | 0.34 | 0.27 | 0.15 | 808.74 | 892.02 | 901.09 | 2.53 | 5.50 | 8.51 |
| TCP Cubic | 3 | 0.59 | 0.01 | 0.00 | 8235.37 | 7119.32 | 8484.19 | 31.02 | 53.38 | 92.36 |
| FillP | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Indigo | 3 | 0.29 | 0.22 | 0.25 | 510.15 | 695.10 | 724.90 | 0.52 | 0.74 | 2.59 |
| LEDBAT | 3 | 0.25 | 0.36 | 0.25 | 328.79 | 395.60 | 415.56 | 0.05 | 1.07 | 6.92 |
| PCC-Allegro | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| PCC-Expr | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| QUIC Cubic | 3 | 0.60 | 0.00 | 0.00 | 8821.97 | 5941.92 | 9201.99 | 32.79 | 0.00 | 50.00 |
| SCReAM | 3 | 0.08 | 0.17 | 0.18 | 151.33 | 172.75 | 201.52 | 0.75 | 0.96 | 2.38 |
| Sprout | 3 | 0.14 | 0.14 | 0.15 | 537.76 | 412.56 | 411.65 | 0.55 | 1.22 | 2.22 |
| TaoVA-100x | 3 | 0.36 | 0.26 | 0.22 | 2673.99 | 3387.07 | 3904.74 | 4.18 | 9.49 | 23.80 |
| TCP Vegas | 3 | 0.37 | 0.24 | 0.21 | 1571.68 | 1661.83 | 1661.80 | 2.44 | 5.31 | 18.68 |
| Verus | 3 | 0.59 | 0.01 | 0.01 | 1764.82 | 1775.95 | 1824.07 | 4.27 | 8.01 | 12.42 |
| PCC-Vivace | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| WebRTC media | 3 | 0.13 | 0.15 | 0.07 | 1651.65 | 1909.58 | 1781.34 | 0.64 | 0.70 | 5.98 |

```
Run 1: Statistics of TCP BBR

Start at: 2018-06-19 07:52:43
End at: 2018-06-19 07:53:13
Local clock offset: -2.073 ms
Remote clock offset: 3.375 ms


# Below is generated by plot.py at 2018-06-19 08:36:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3437.108 ms
Loss rate: 3.56%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 3394.499 ms
Loss rate: 1.71%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 3447.195 ms
Loss rate: 4.94%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 3448.142 ms
Loss rate: 40.19%
```
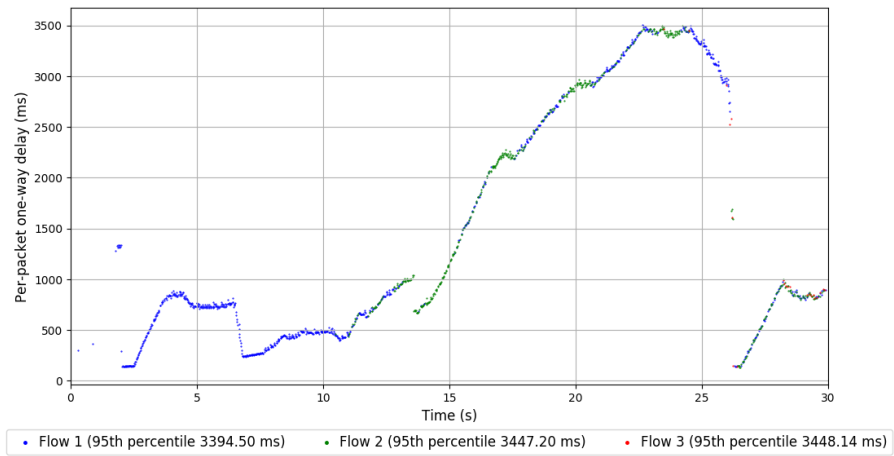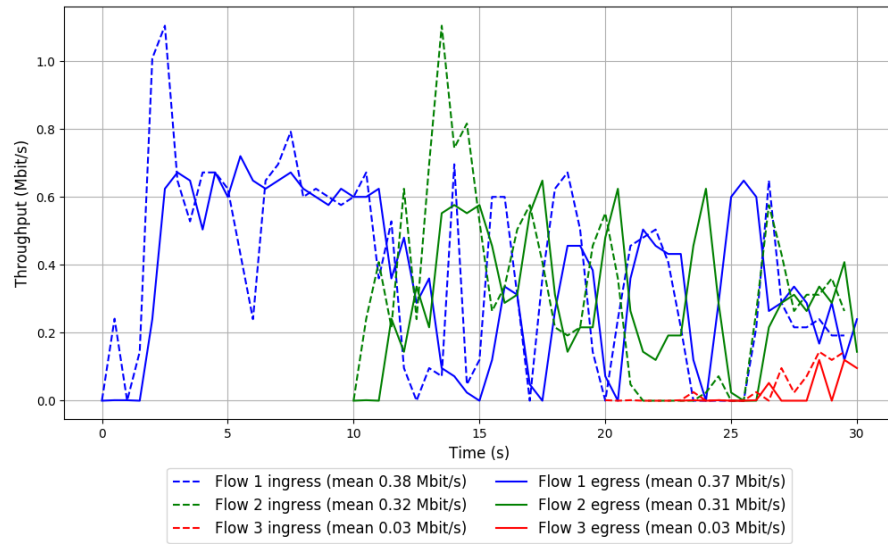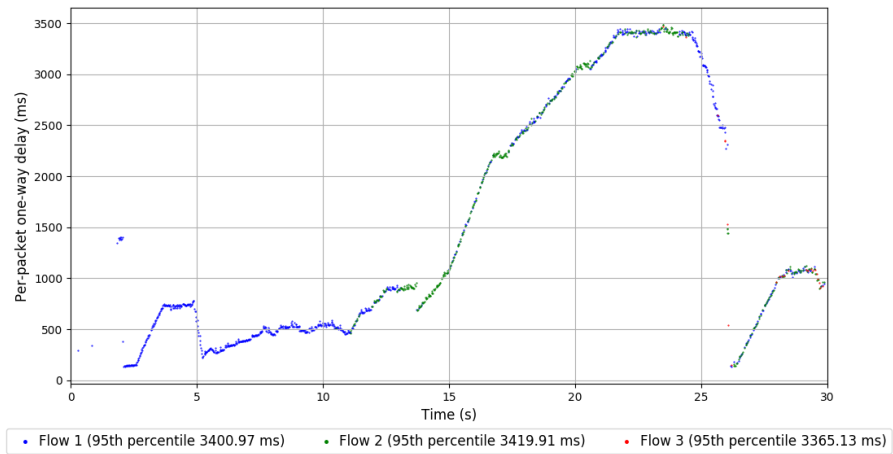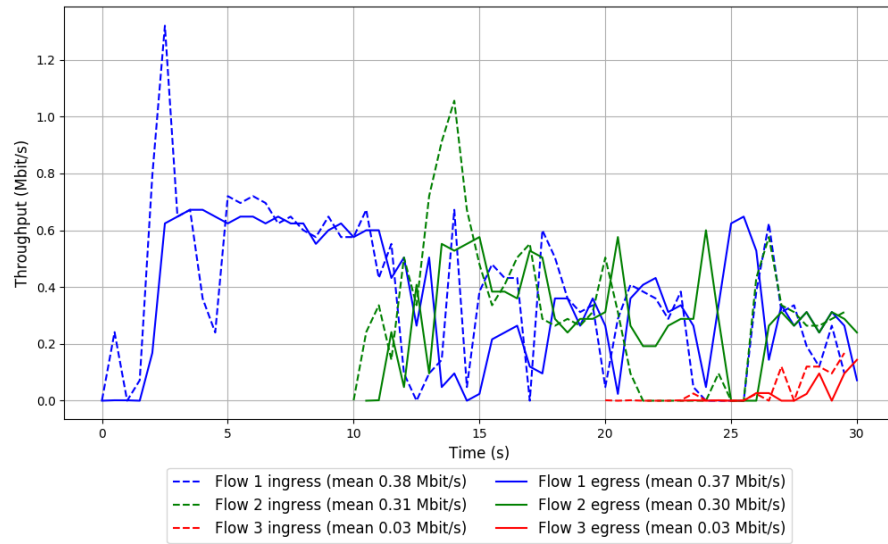
# Run 1: Report of TCP BBR — Data Link



Flow 1 ingress (mean 0.38 Mbit/s) — Flow 1 egress (mean 0.37 Mbit/s)
Flow 2 ingress (mean 0.32 Mbit/s) — Flow 2 egress (mean 0.31 Mbit/s)
Flow 3 ingress (mean 0.03 Mbit/s) — Flow 3 egress (mean 0.03 Mbit/s)



Flow 1 (95th percentile 3394.50 ms)    Flow 2 (95th percentile 3447.20 ms)    Flow 3 (95th percentile 3448.14 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2018-06-19 08:11:47
End at: 2018-06-19 08:12:17
Local clock offset: -2.401 ms
Remote clock offset: 7.851 ms


# Below is generated by plot.py at 2018-06-19 08:36:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3409.966 ms
Loss rate: 3.71%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 3400.973 ms
Loss rate: 1.81%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 3419.906 ms
Loss rate: 5.22%
-- Flow 3:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 3365.132 ms
Loss rate: 38.78%
```
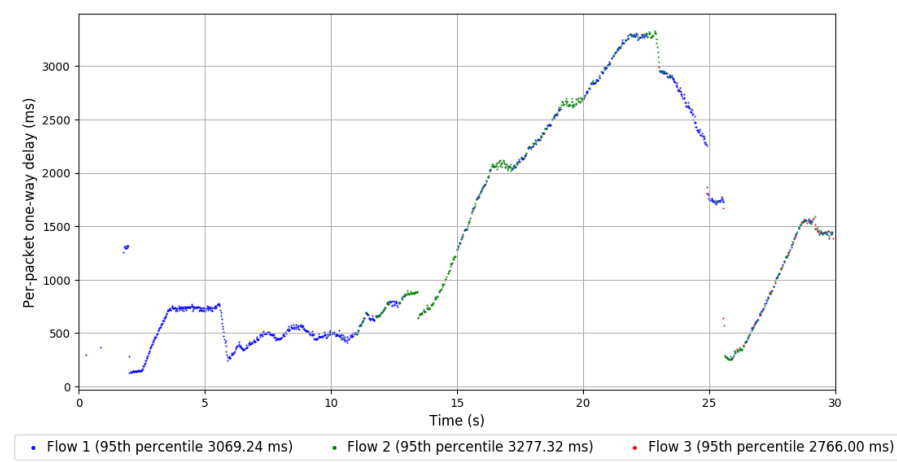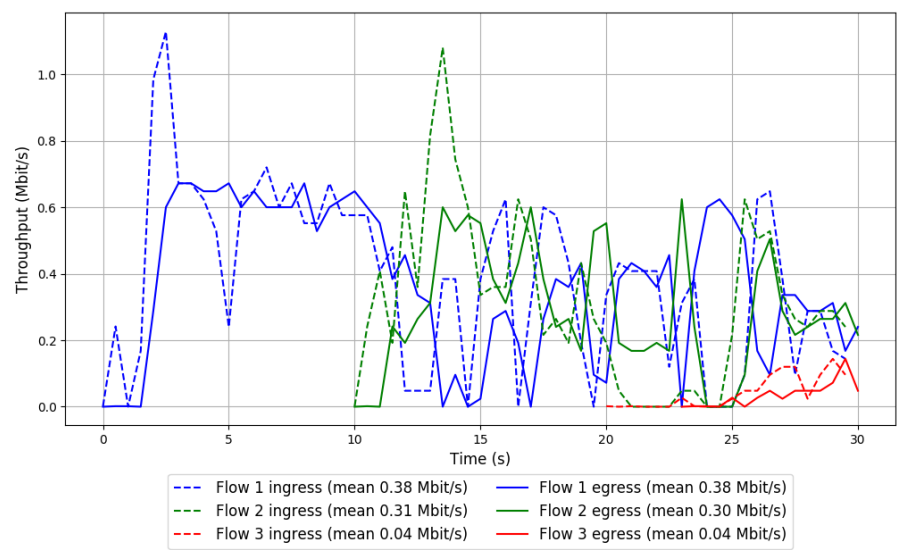
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-06-19 08:30:51
End at: 2018-06-19 08:31:21
Local clock offset: -2.722 ms
Remote clock offset: 9.849 ms


# Below is generated by plot.py at 2018-06-19 08:36:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 3179.730 ms
Loss rate: 4.75%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 3069.244 ms
Loss rate: 2.61%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 3277.318 ms
Loss rate: 6.52%
-- Flow 3:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 2765.999 ms
Loss rate: 36.76%
```
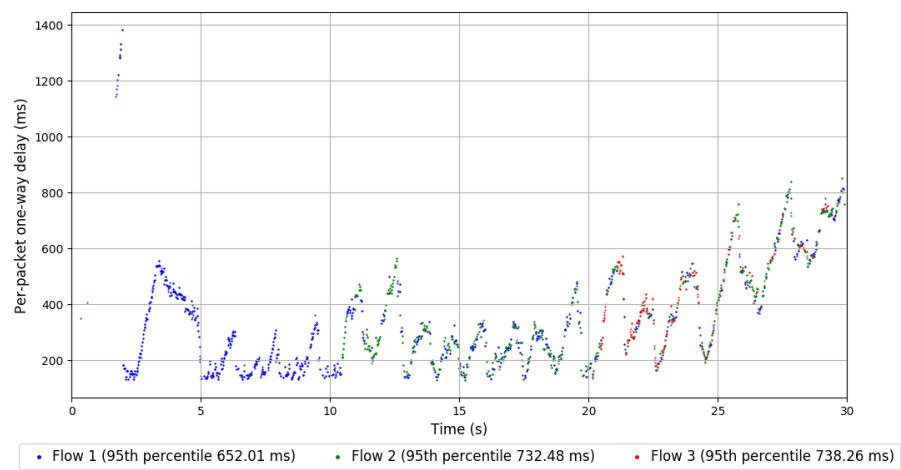
Run 3: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-06-19 07:50:20
End at: 2018-06-19 07:50:50
Local clock offset: -2.101 ms
Remote clock offset: 4.284 ms


# Below is generated by plot.py at 2018-06-19 08:36:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 720.553 ms
Loss rate: 3.22%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 652.014 ms
Loss rate: 1.98%
-- Flow 2:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 732.475 ms
Loss rate: 4.31%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 738.263 ms
Loss rate: 6.05%
```
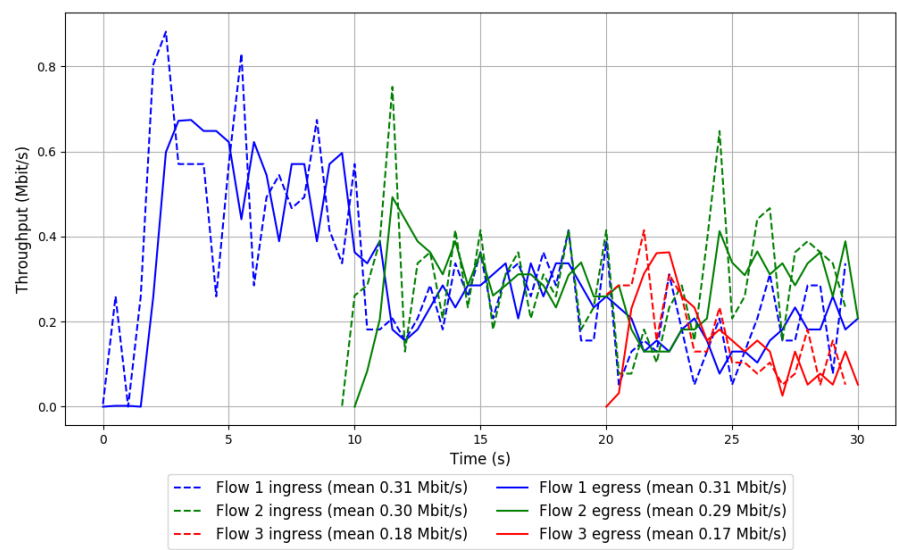
# Run 1: Report of Copa — Data Link



Flow 1 ingress (mean 0.31 Mbit/s) — — — Flow 1 egress (mean 0.31 Mbit/s)
Flow 2 ingress (mean 0.30 Mbit/s) — — — Flow 2 egress (mean 0.29 Mbit/s)
Flow 3 ingress (mean 0.18 Mbit/s) — — — Flow 3 egress (mean 0.17 Mbit/s)



Flow 1 (95th percentile 652.01 ms)   Flow 2 (95th percentile 732.48 ms)   Flow 3 (95th percentile 738.26 ms)

```
Run 2: Statistics of Copa

Start at: 2018-06-19 08:09:24
End at: 2018-06-19 08:09:54
Local clock offset: -2.285 ms
Remote clock offset: 4.923 ms


# Below is generated by plot.py at 2018-06-19 08:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1317.920 ms
Loss rate: 5.88%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1294.960 ms
Loss rate: 4.38%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 1339.990 ms
Loss rate: 8.09%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 1343.475 ms
Loss rate: 12.43%
```
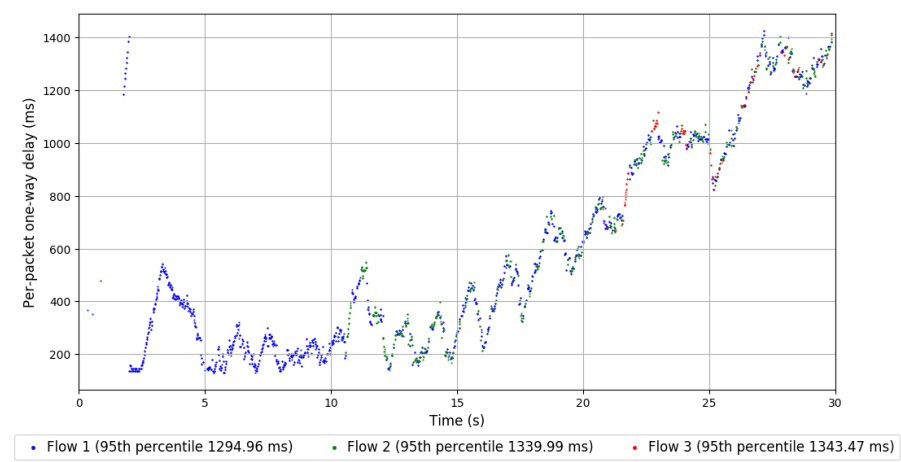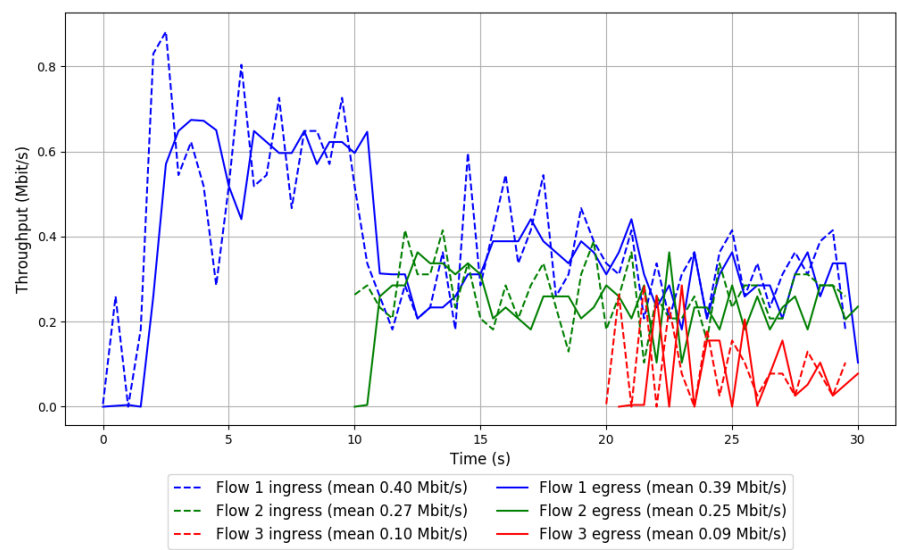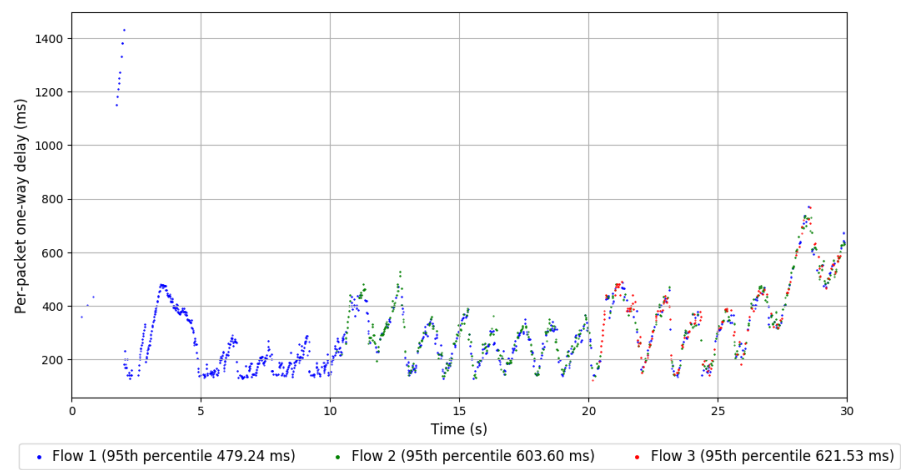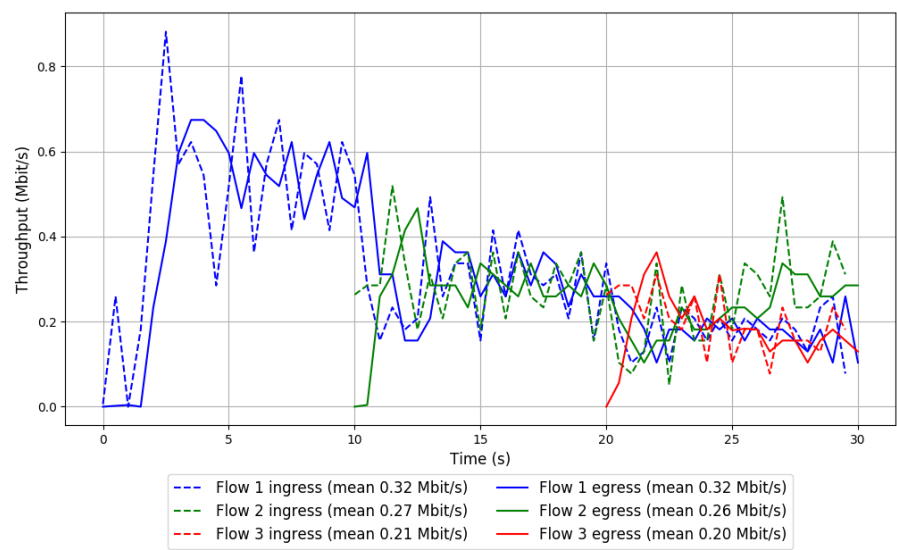
Run 2: Report of Copa — Data Link



Flow 1 ingress (mean 0.40 Mbit/s)      Flow 1 egress (mean 0.39 Mbit/s)
Flow 2 ingress (mean 0.27 Mbit/s)      Flow 2 egress (mean 0.25 Mbit/s)
Flow 3 ingress (mean 0.10 Mbit/s)      Flow 3 egress (mean 0.09 Mbit/s)



Flow 1 (95th percentile 1294.96 ms)      Flow 2 (95th percentile 1339.99 ms)      Flow 3 (95th percentile 1343.47 ms)

13

```
Run 3: Statistics of Copa

Start at: 2018-06-19 08:28:28
End at: 2018-06-19 08:28:58
Local clock offset: -2.725 ms
Remote clock offset: 4.788 ms


# Below is generated by plot.py at 2018-06-19 08:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 569.655 ms
Loss rate: 2.84%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 479.240 ms
Loss rate: 1.23%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 603.595 ms
Loss rate: 4.10%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 621.535 ms
Loss rate: 7.04%
```
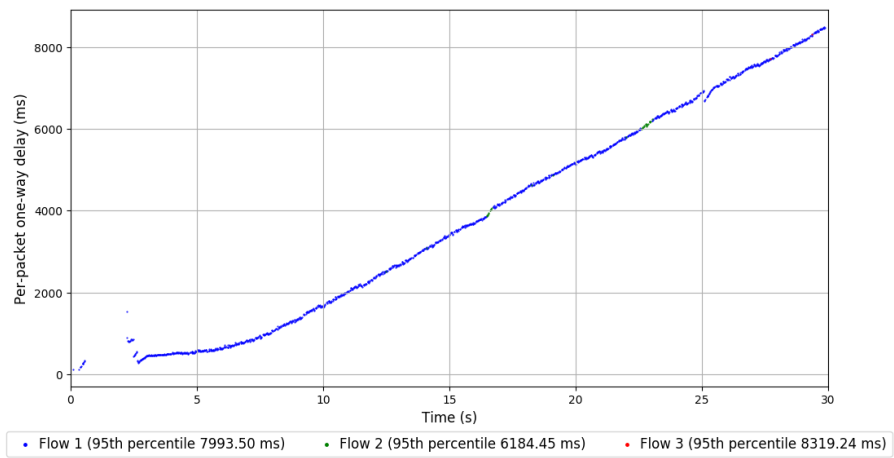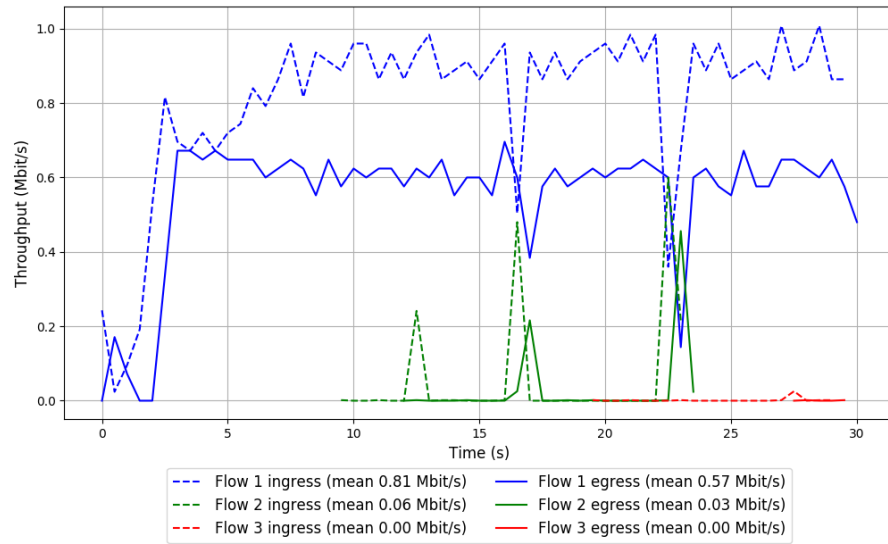
Run 3: Report of Copa — Data Link



Flow 1 ingress (mean 0.32 Mbit/s)      Flow 1 egress (mean 0.32 Mbit/s)
Flow 2 ingress (mean 0.27 Mbit/s)      Flow 2 egress (mean 0.26 Mbit/s)
Flow 3 ingress (mean 0.21 Mbit/s)      Flow 3 egress (mean 0.20 Mbit/s)



Flow 1 (95th percentile 479.24 ms)      Flow 2 (95th percentile 603.60 ms)      Flow 3 (95th percentile 621.53 ms)

15

```
Run 1: Statistics of TCP Cubic

Start at: 2018-06-19 07:47:57
End at: 2018-06-19 07:48:27
Local clock offset: -2.155 ms
Remote clock offset: 8.093 ms


# Below is generated by plot.py at 2018-06-19 08:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7993.382 ms
Loss rate: 31.60%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7993.500 ms
Loss rate: 30.88%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 6184.452 ms
Loss rate: 52.83%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8319.241 ms
Loss rate: 91.06%
```
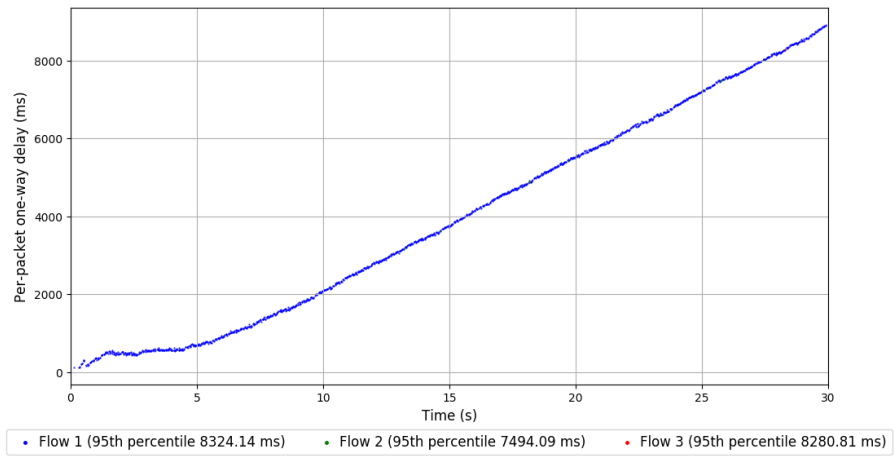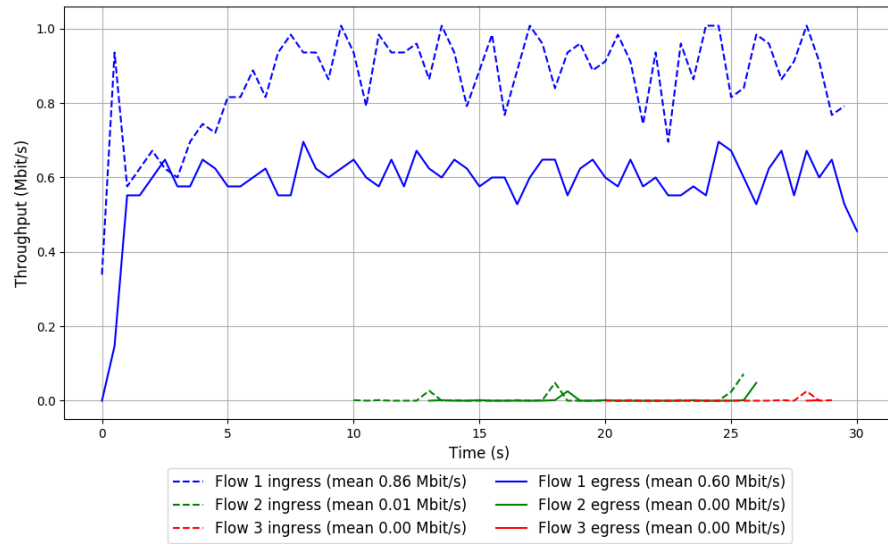
## Run 1: Report of TCP Cubic — Data Link



Legend:
- Flow 1 ingress (mean 0.81 Mbit/s) — Flow 1 egress (mean 0.57 Mbit/s)
- Flow 2 ingress (mean 0.06 Mbit/s) — Flow 2 egress (mean 0.03 Mbit/s)
- Flow 3 ingress (mean 0.00 Mbit/s) — Flow 3 egress (mean 0.00 Mbit/s)



Legend:
- Flow 1 (95th percentile 7993.50 ms)
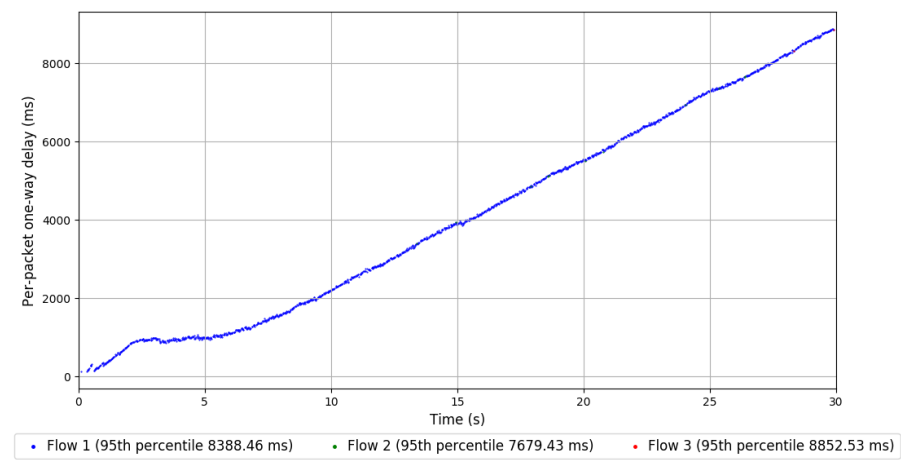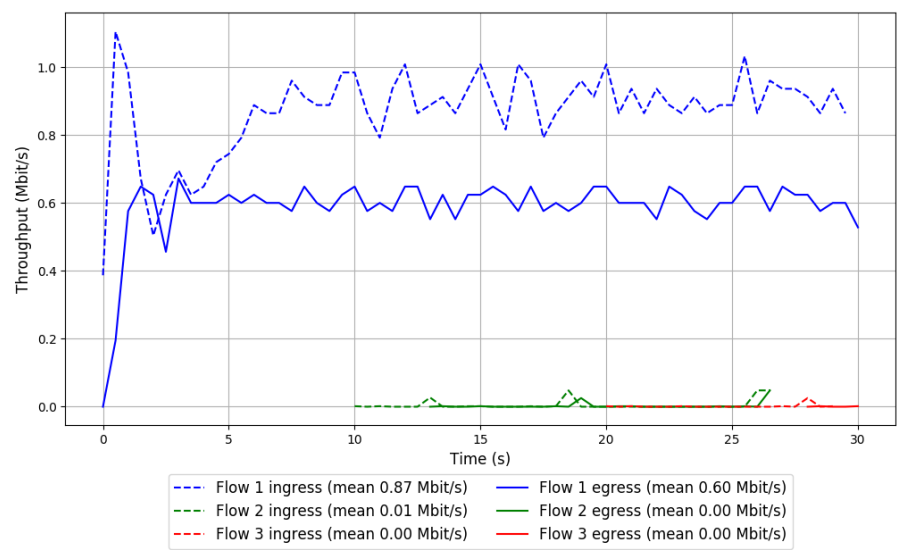- Flow 2 (95th percentile 6184.45 ms)
- Flow 3 (95th percentile 8319.24 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-06-19 08:07:01
End at: 2018-06-19 08:07:31
Local clock offset: -2.23 ms
Remote clock offset: 4.9 ms


# Below is generated by plot.py at 2018-06-19 08:36:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8314.052 ms
Loss rate: 31.10%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8324.144 ms
Loss rate: 30.98%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7494.093 ms
Loss rate: 53.86%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8280.809 ms
Loss rate: 95.34%
```

Run 2: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 0.86 Mbit/s)     Flow 1 egress (mean 0.60 Mbit/s)
Flow 2 ingress (mean 0.01 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 8324.14 ms)     Flow 2 (95th percentile 7494.09 ms)     Flow 3 (95th percentile 8280.81 ms)

19

```
Run 3: Statistics of TCP Cubic

Start at: 2018-06-19 08:26:06
End at: 2018-06-19 08:26:36
Local clock offset: -2.696 ms
Remote clock offset: 10.595 ms


# Below is generated by plot.py at 2018-06-19 08:36:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8408.608 ms
Loss rate: 31.31%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8388.460 ms
Loss rate: 31.20%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7679.430 ms
Loss rate: 53.44%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8852.530 ms
Loss rate: 90.68%
```

Run 3: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 0.87 Mbit/s) --- Flow 1 egress (mean 0.60 Mbit/s) ---
Flow 2 ingress (mean 0.01 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 8388.46 ms) • Flow 2 (95th percentile 7679.43 ms) • Flow 3 (95th percentile 8852.53 ms)

```
Run 1: Statistics of FillP

Start at: 2018-06-19 07:45:35
End at: 2018-06-19 07:46:05
Local clock offset: -2.214 ms
Remote clock offset: 6.644 ms
```

Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-06-19 08:04:39
End at: 2018-06-19 08:05:09
Local clock offset: -2.016 ms
Remote clock offset: 8.769 ms
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-06-19 08:23:44
End at: 2018-06-19 08:24:14
Local clock offset: -2.745 ms
Remote clock offset: 5.412 ms
```

Run 3: Report of FillP — Data Link



Flow 1 ingress (mean 1.59 Mbit/s)   Flow 1 egress (mean 0.55 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 21028.25 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-06-19 07:39:36
End at: 2018-06-19 07:40:06
Local clock offset: -2.494 ms
Remote clock offset: 3.913 ms


# Below is generated by plot.py at 2018-06-19 08:36:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 659.655 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 570.157 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 632.384 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 762.025 ms
Loss rate: 3.10%
```
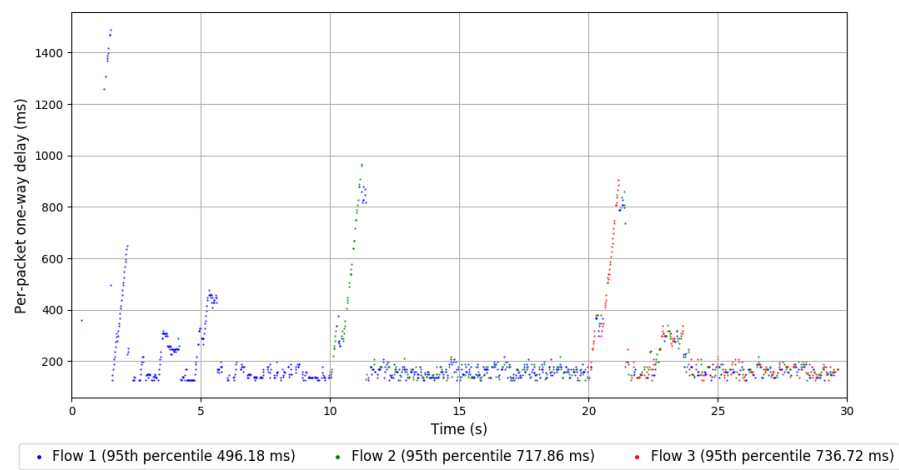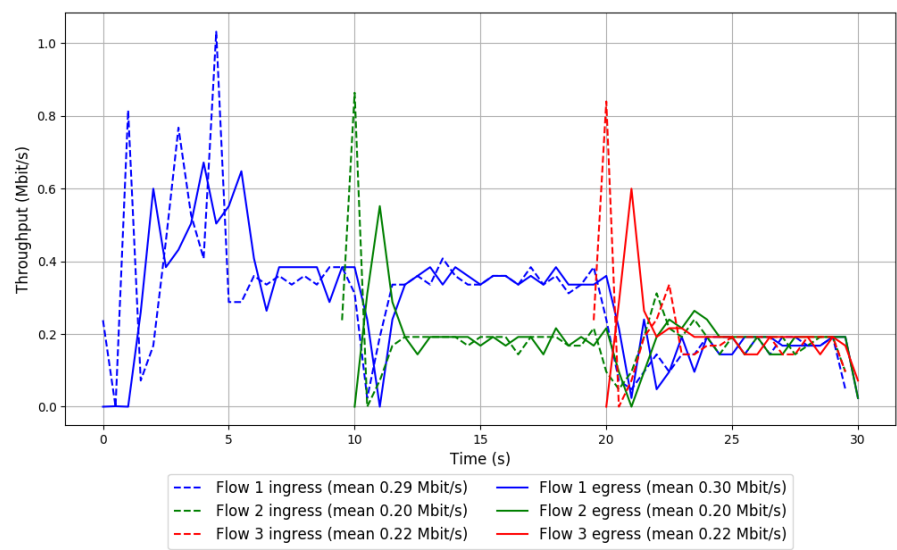
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-06-19 07:58:41
End at: 2018-06-19 07:59:11
Local clock offset: -2.067 ms
Remote clock offset: 8.516 ms


# Below is generated by plot.py at 2018-06-19 08:36:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 638.151 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 496.178 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 717.863 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 736.724 ms
Loss rate: 2.25%
```
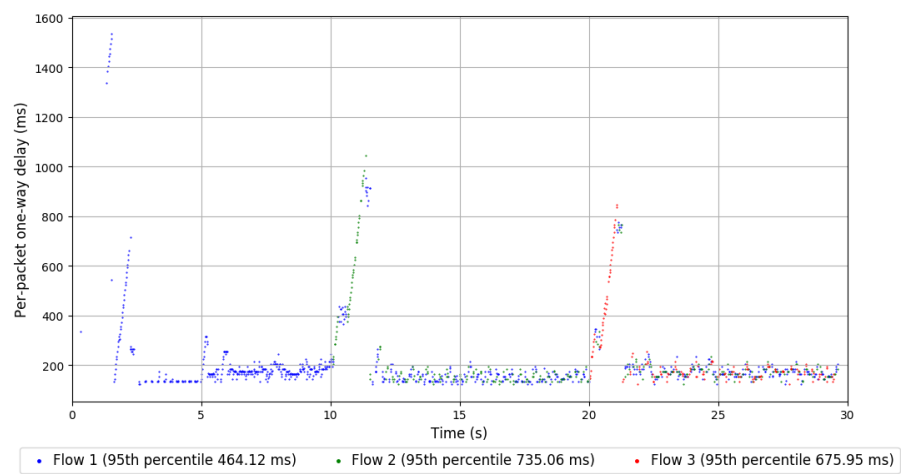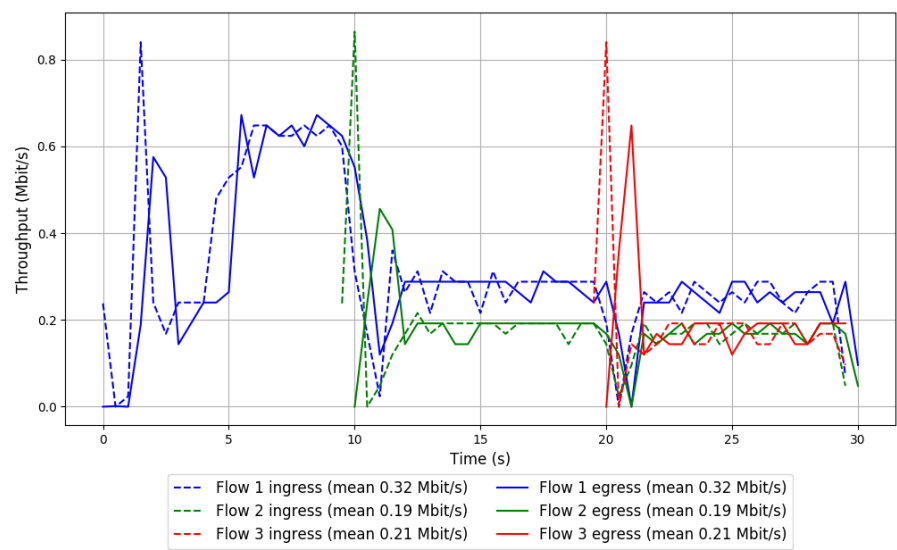
## Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-06-19 08:17:45
End at: 2018-06-19 08:18:15
Local clock offset: -2.585 ms
Remote clock offset: 8.947 ms


# Below is generated by plot.py at 2018-06-19 08:36:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 625.887 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 464.125 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 735.062 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 675.948 ms
Loss rate: 2.41%
```
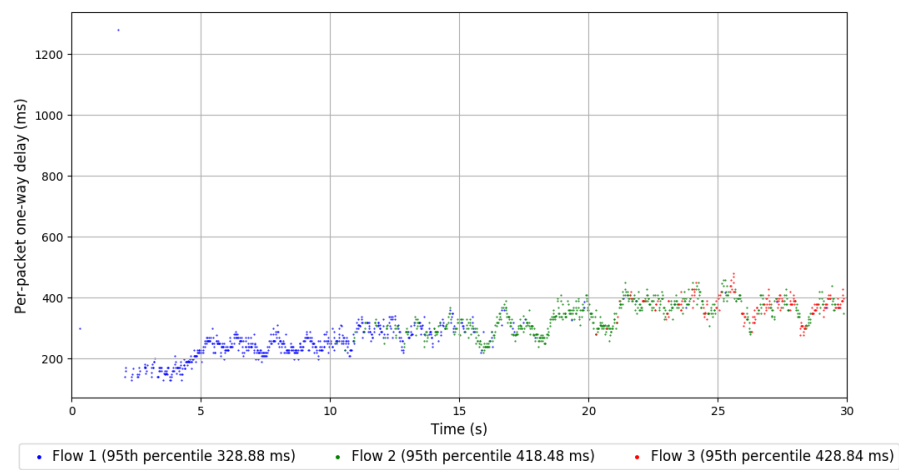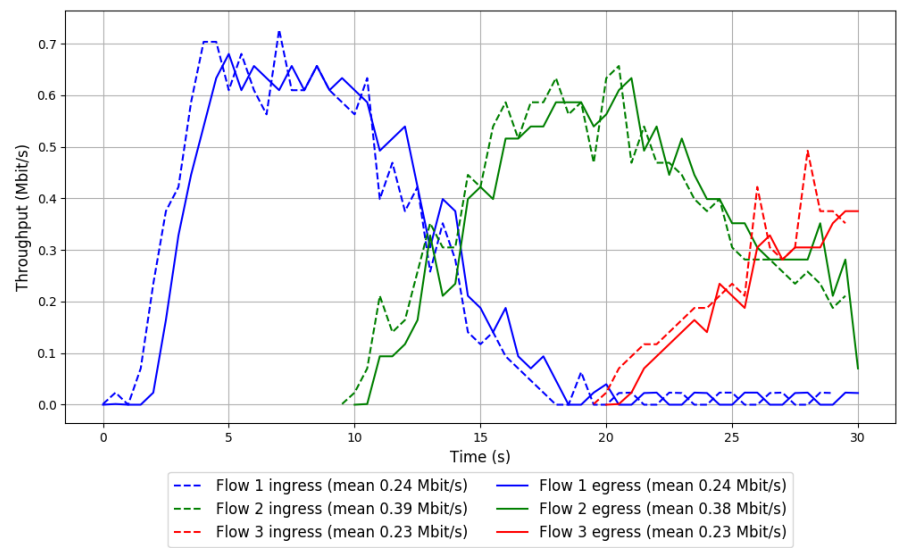
# Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-06-19 07:49:09
End at: 2018-06-19 07:49:39
Local clock offset: -2.206 ms
Remote clock offset: 3.024 ms

# Below is generated by plot.py at 2018-06-19 08:36:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 408.821 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 328.876 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 418.481 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 428.842 ms
Loss rate: 7.54%
```
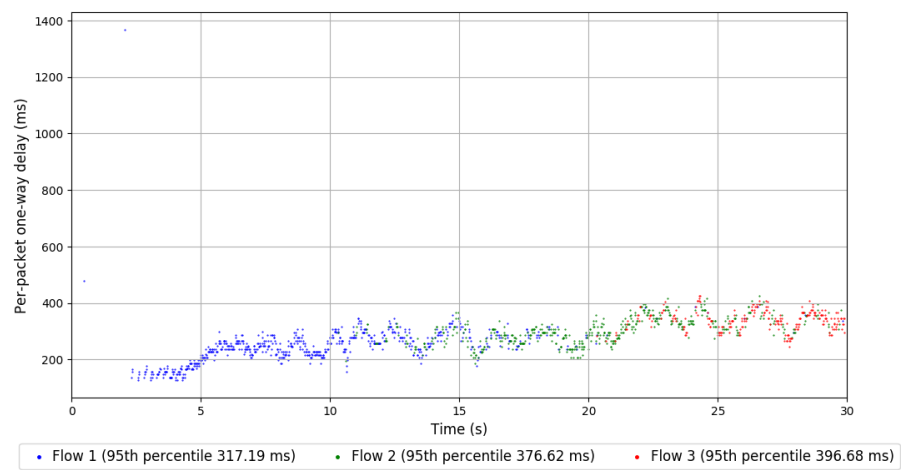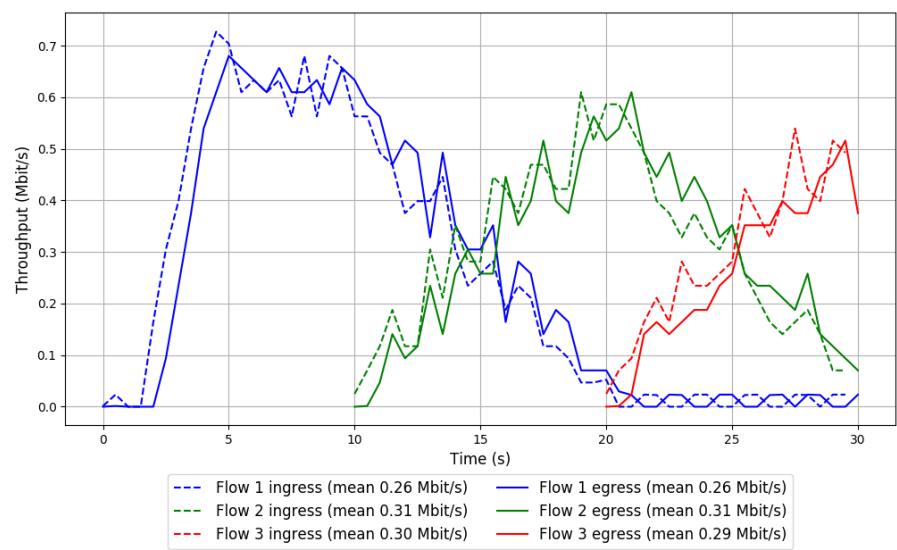
# Run 1: Report of LEDBAT — Data Link



- Flow 1 ingress (mean 0.24 Mbit/s)
- Flow 1 egress (mean 0.24 Mbit/s)
- Flow 2 ingress (mean 0.39 Mbit/s)
- Flow 2 egress (mean 0.38 Mbit/s)
- Flow 3 ingress (mean 0.23 Mbit/s)
- Flow 3 egress (mean 0.23 Mbit/s)



- Flow 1 (95th percentile 328.88 ms)
- Flow 2 (95th percentile 418.48 ms)
- Flow 3 (95th percentile 428.84 ms)

35

```
Run 2: Statistics of LEDBAT

Start at: 2018-06-19 08:08:13
End at: 2018-06-19 08:08:43
Local clock offset: -2.314 ms
Remote clock offset: 10.017 ms


# Below is generated by plot.py at 2018-06-19 08:36:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 376.529 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 317.190 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 376.617 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 396.679 ms
Loss rate: 6.74%
```
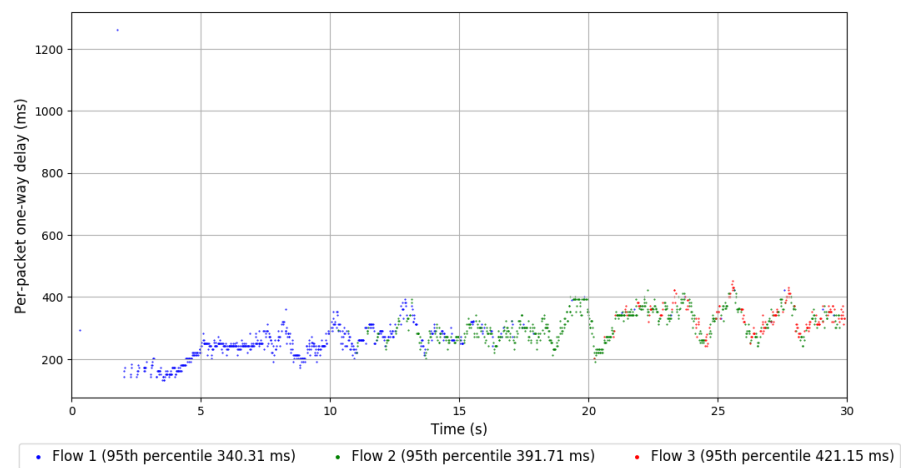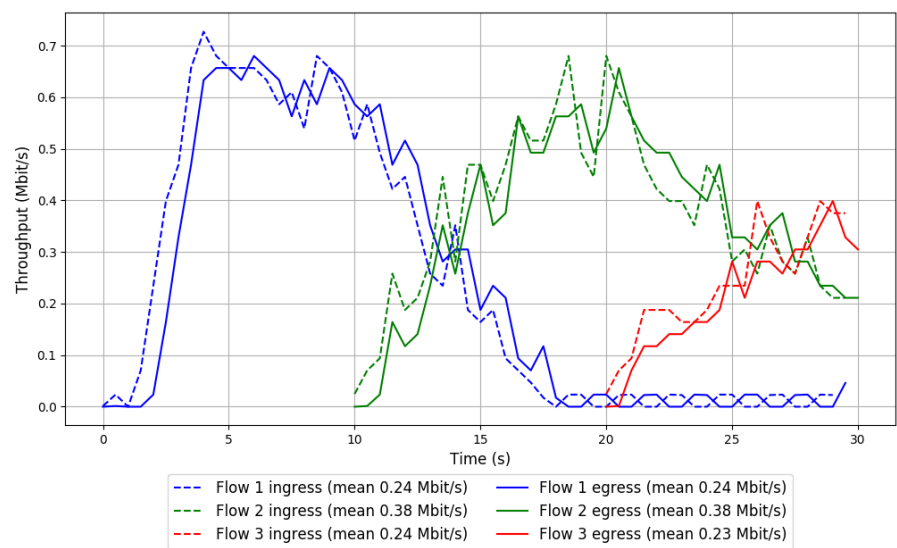
## Run 2: Report of LEDBAT — Data Link



Flow 1 ingress (mean 0.26 Mbit/s)    Flow 1 egress (mean 0.26 Mbit/s)
Flow 2 ingress (mean 0.31 Mbit/s)    Flow 2 egress (mean 0.31 Mbit/s)
Flow 3 ingress (mean 0.30 Mbit/s)    Flow 3 egress (mean 0.29 Mbit/s)



Flow 1 (95th percentile 317.19 ms)    Flow 2 (95th percentile 376.62 ms)    Flow 3 (95th percentile 396.68 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-06-19 08:27:17
End at: 2018-06-19 08:27:47
Local clock offset: -2.759 ms
Remote clock offset: 5.691 ms

# Below is generated by plot.py at 2018-06-19 08:36:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 391.471 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 340.310 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 391.711 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 421.148 ms
Loss rate: 6.47%
```

Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-06-19 07:46:46
End at: 2018-06-19 07:47:16
Local clock offset: -2.187 ms
Remote clock offset: 6.747 ms
```
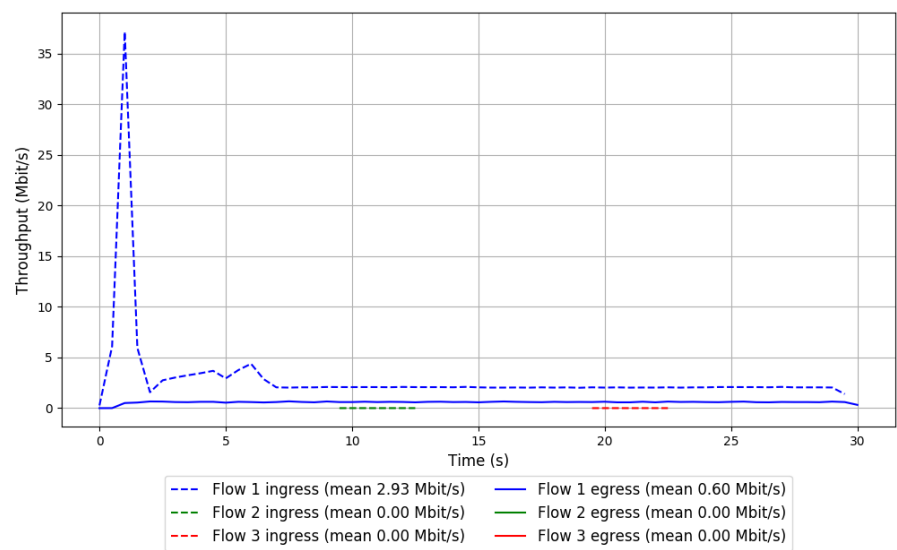
Run 1: Report of PCC-Allegro — Data Link
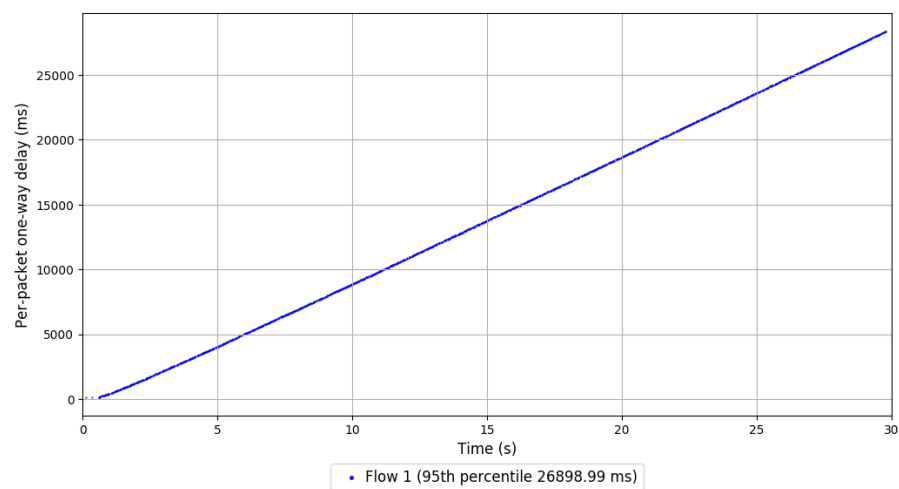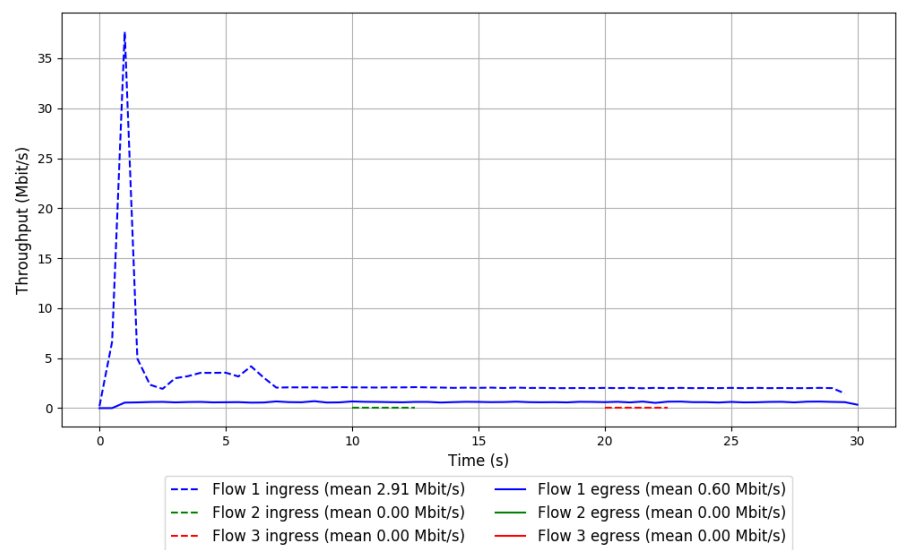
```
Run 2: Statistics of PCC-Allegro

Start at: 2018-06-19 08:05:50
End at: 2018-06-19 08:06:20
Local clock offset: -2.193 ms
Remote clock offset: 3.724 ms
```
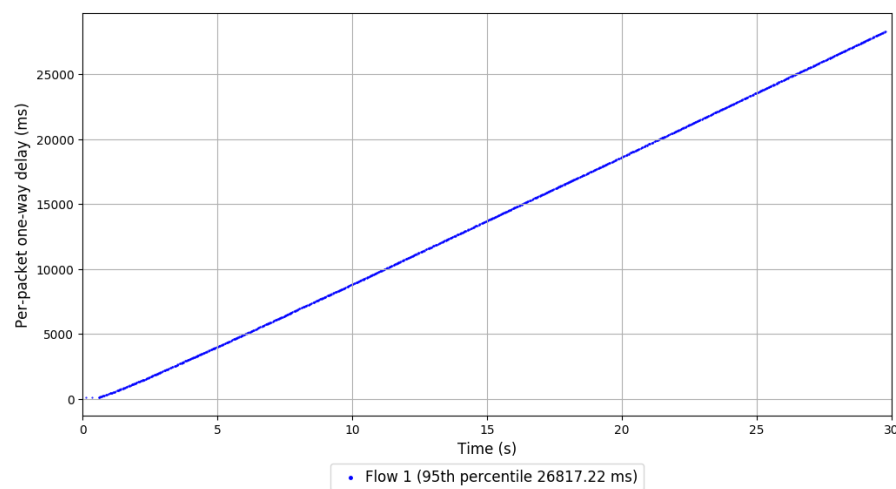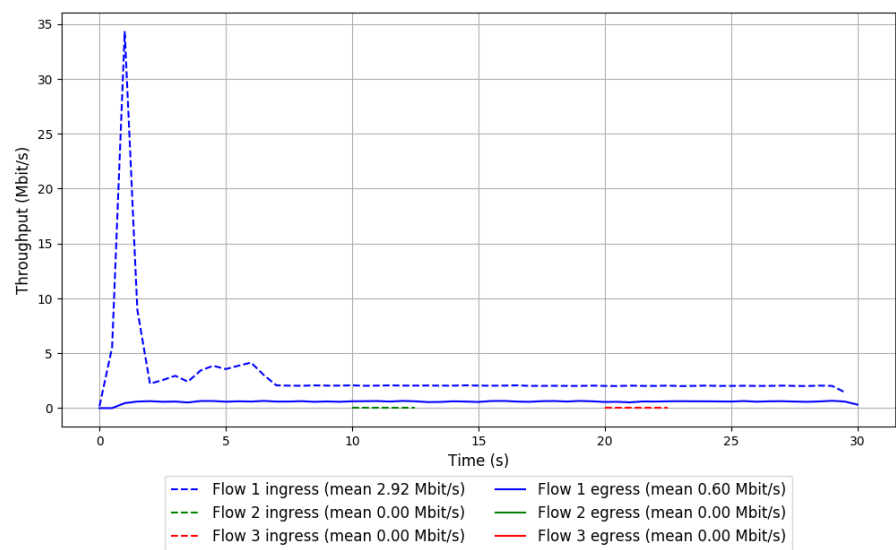
Run 2: Report of PCC-Allegro — Data Link



Flow 1 ingress (mean 2.91 Mbit/s)     Flow 1 egress (mean 0.60 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 26898.99 ms)

43

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-06-19 08:24:55
End at: 2018-06-19 08:25:25
Local clock offset: -2.692 ms
Remote clock offset: 10.572 ms
```

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



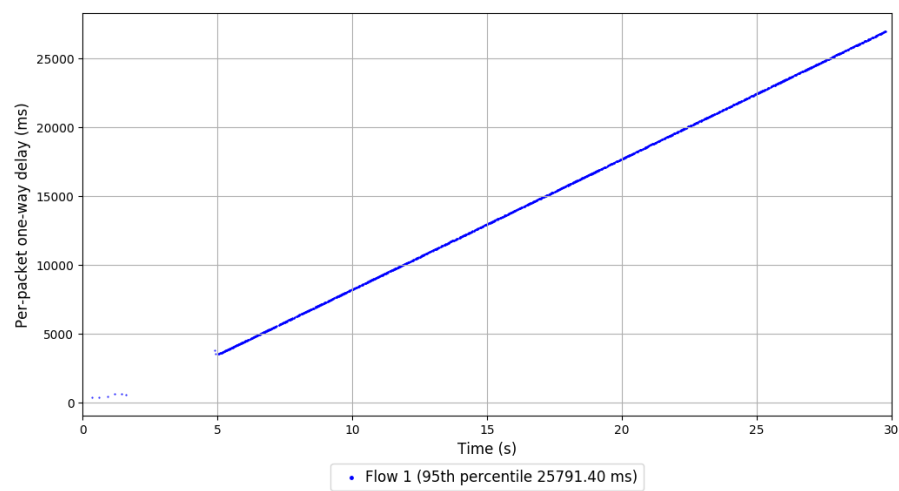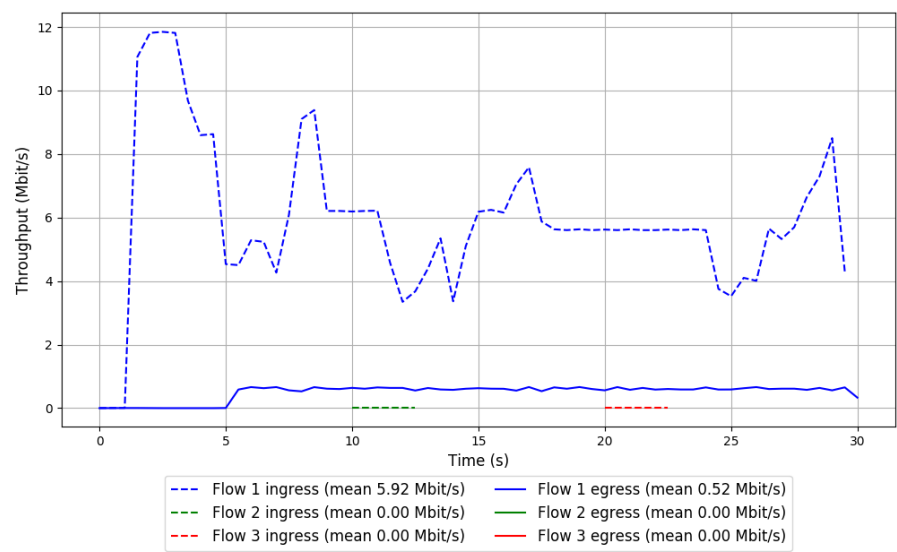Flow 1 ingress (mean 2.92 Mbit/s)  Flow 1 egress (mean 0.60 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)  Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)  Flow 3 egress (mean 0.00 Mbit/s)



• Flow 1 (95th percentile 26817.22 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-06-19 07:40:47
End at: 2018-06-19 07:41:17
Local clock offset: -2.361 ms
Remote clock offset: 8.891 ms
```

Run 1: Report of PCC-Expr — Data Link
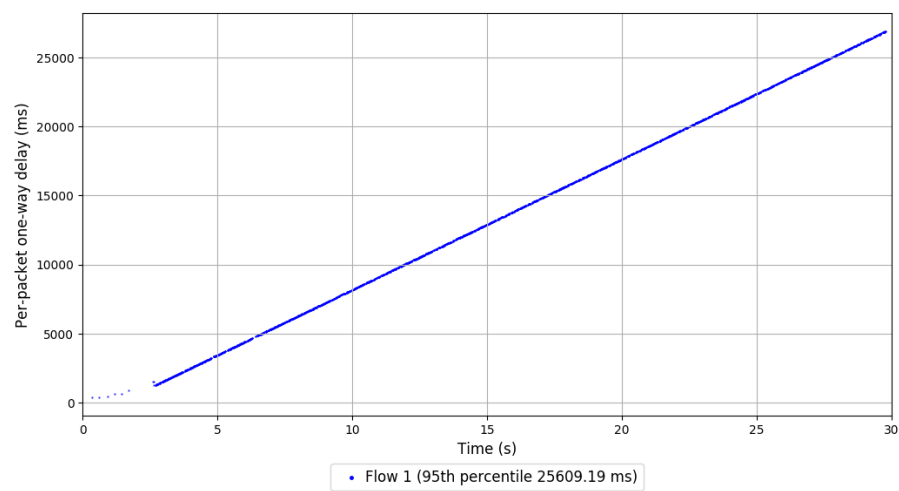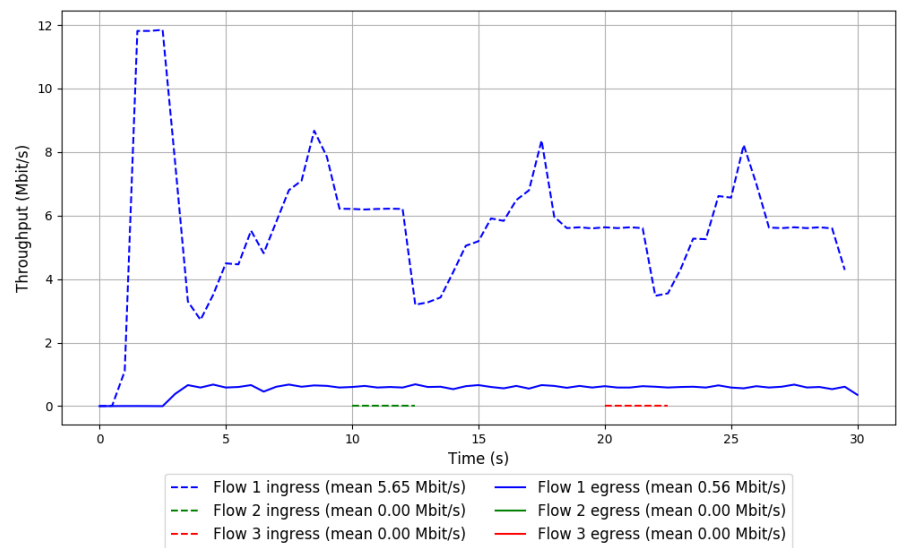
```
Run 2: Statistics of PCC-Expr

Start at: 2018-06-19 07:59:52
End at: 2018-06-19 08:00:22
Local clock offset: -2.012 ms
Remote clock offset: 9.851 ms
```

# Run 2: Report of PCC-Expr — Data Link



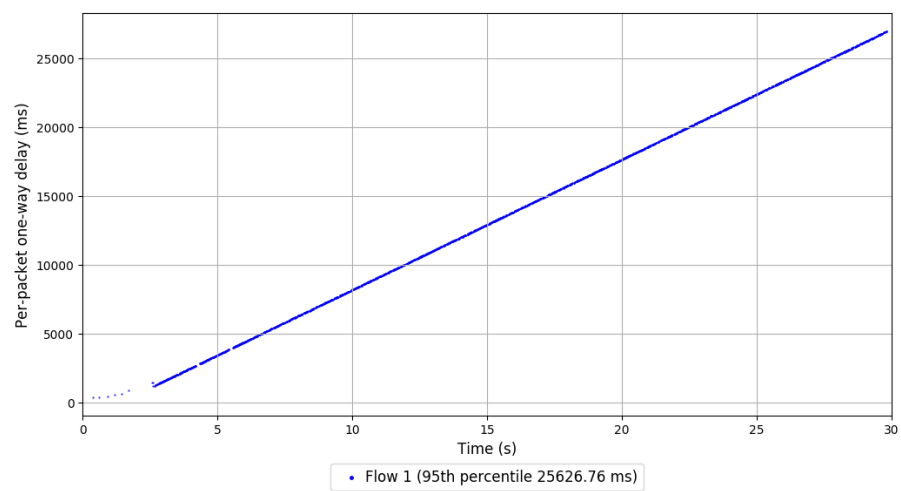Flow 1 ingress (mean 5.65 Mbit/s)  Flow 1 egress (mean 0.56 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)  Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)  Flow 3 egress (mean 0.00 Mbit/s)



Flow 1 (95th percentile 25609.19 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-06-19 08:18:56
End at: 2018-06-19 08:19:26
Local clock offset: -2.588 ms
Remote clock offset: 5.043 ms
```
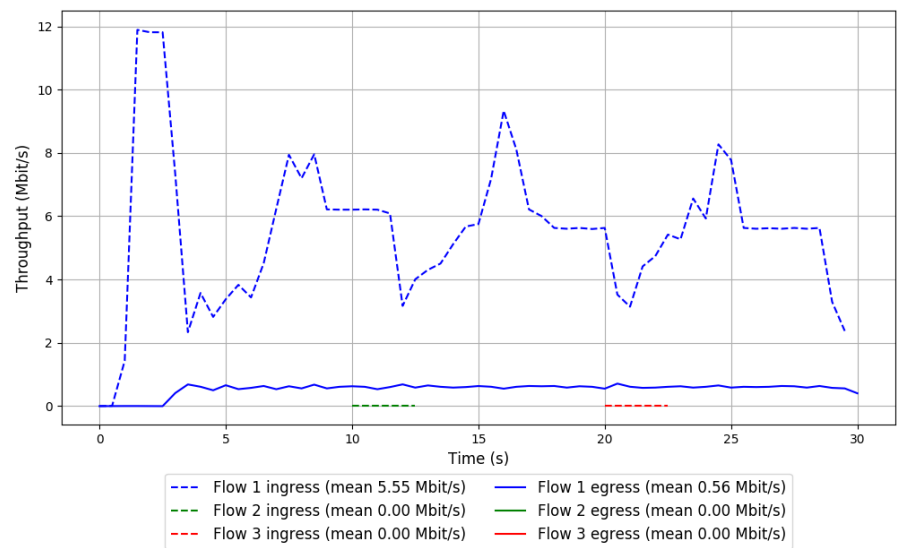
# Run 3: Report of PCC-Expr — Data Link



Flow 1 ingress (mean 5.55 Mbit/s) ----  Flow 1 egress (mean 0.56 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 25626.76 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-06-19 07:42:00
End at: 2018-06-19 07:42:30
Local clock offset: -2.327 ms
Remote clock offset: 8.998 ms


# Below is generated by plot.py at 2018-06-19 08:36:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8864.751 ms
Loss rate: 32.71%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8864.066 ms
Loss rate: 32.71%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 5813.956 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 9195.131 ms
Loss rate: 50.00%
```
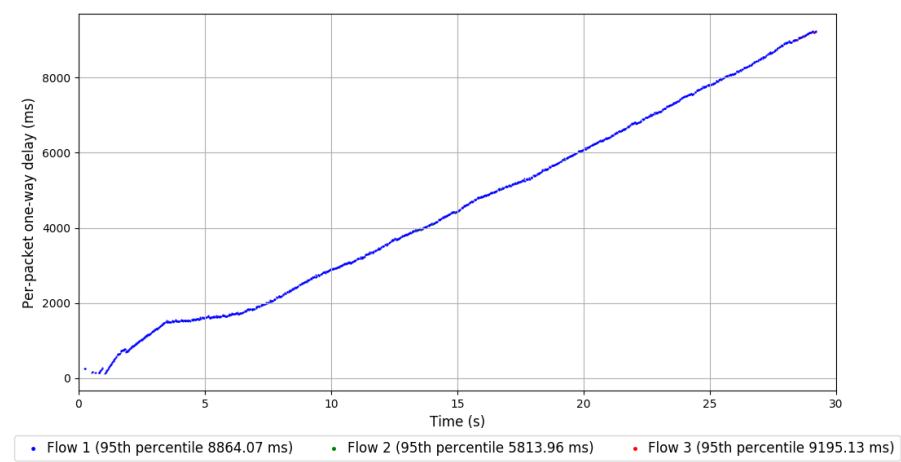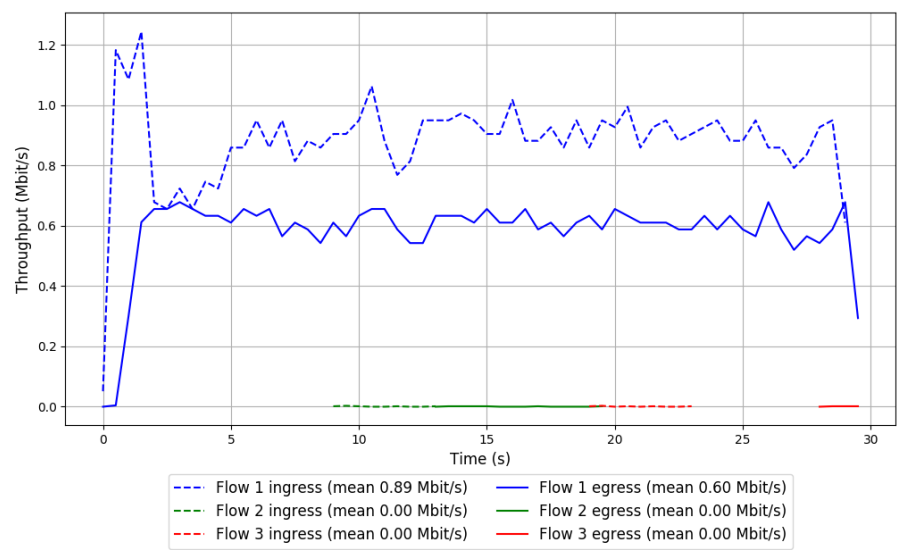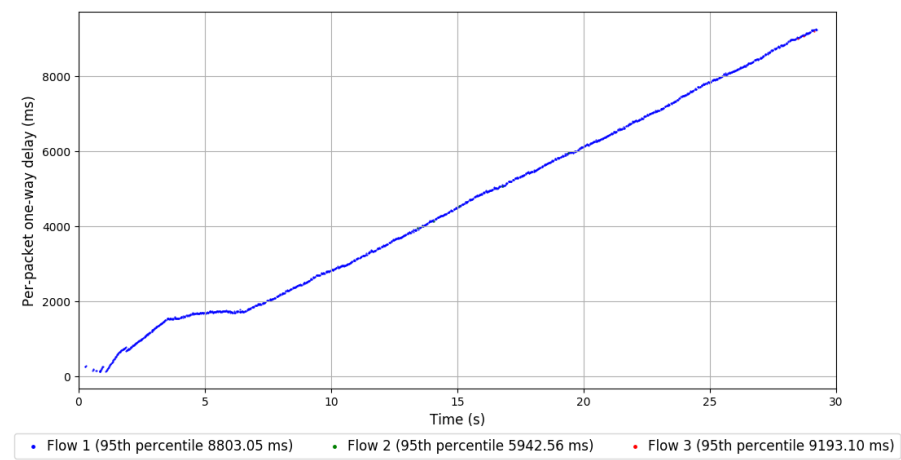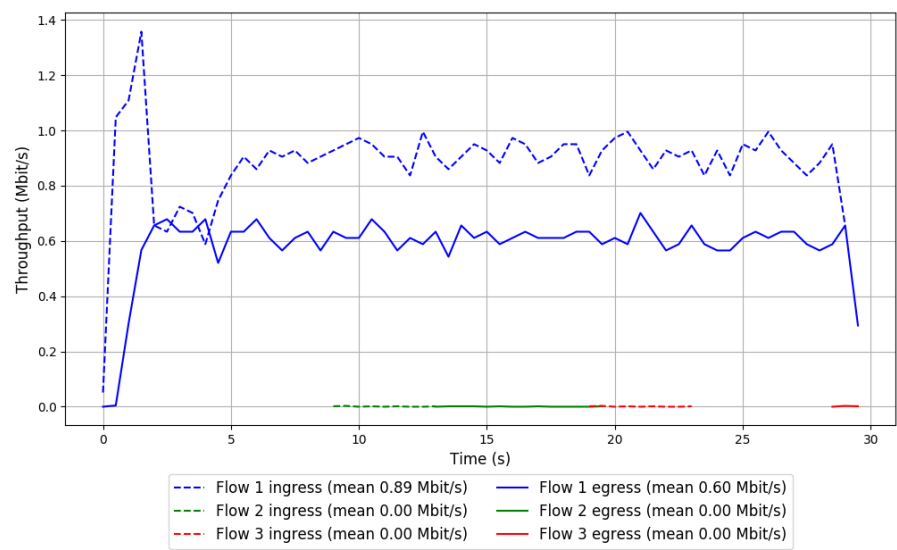
# Run 1: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 0.89 Mbit/s)    Flow 1 egress (mean 0.60 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 8864.07 ms)    Flow 2 (95th percentile 5813.96 ms)    Flow 3 (95th percentile 9195.13 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-06-19 08:01:05
End at: 2018-06-19 08:01:35
Local clock offset: -2.01 ms
Remote clock offset: 7.648 ms


# Below is generated by plot.py at 2018-06-19 08:36:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8813.220 ms
Loss rate: 32.85%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8803.049 ms
Loss rate: 32.85%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 5942.555 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 9193.101 ms
Loss rate: 50.00%
```

Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-06-19 08:20:09
End at: 2018-06-19 08:20:39
Local clock offset: -2.677 ms
Remote clock offset: 8.919 ms


# Below is generated by plot.py at 2018-06-19 08:36:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 8828.789 ms
Loss rate: 32.80%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 8798.790 ms
Loss rate: 32.81%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 6069.235 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 9217.745 ms
Loss rate: 50.00%
```
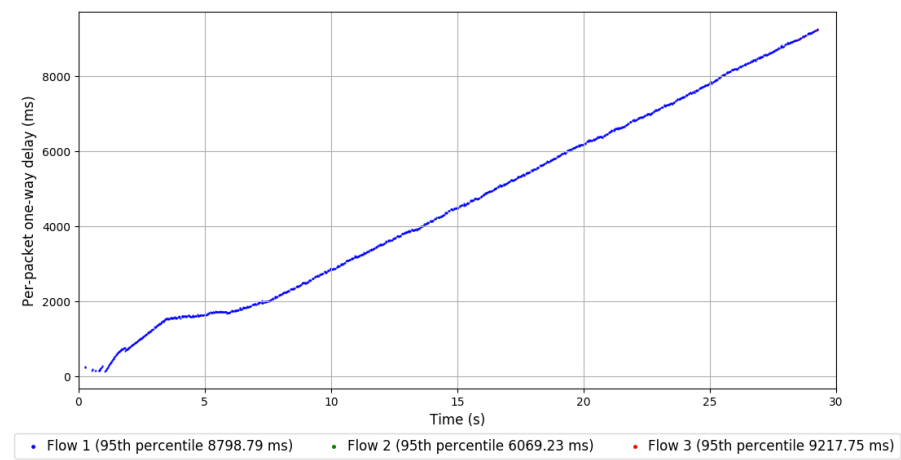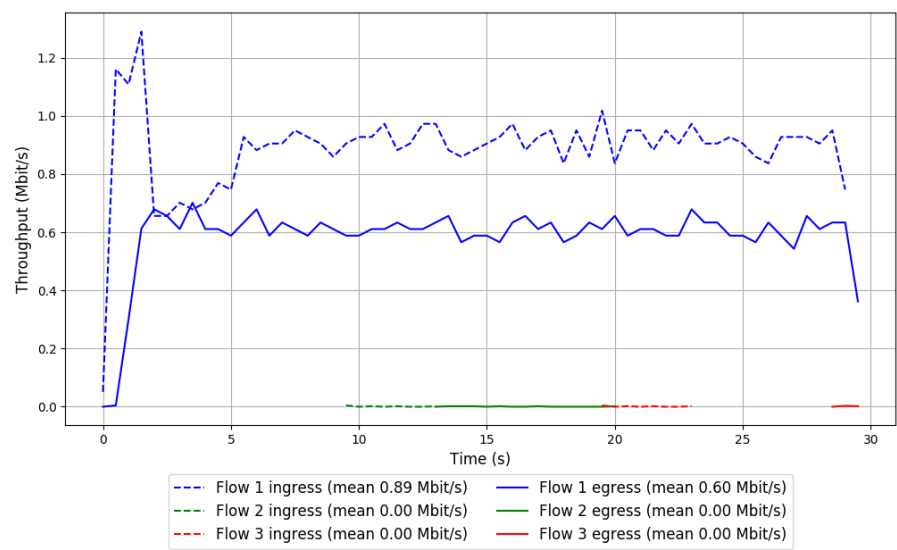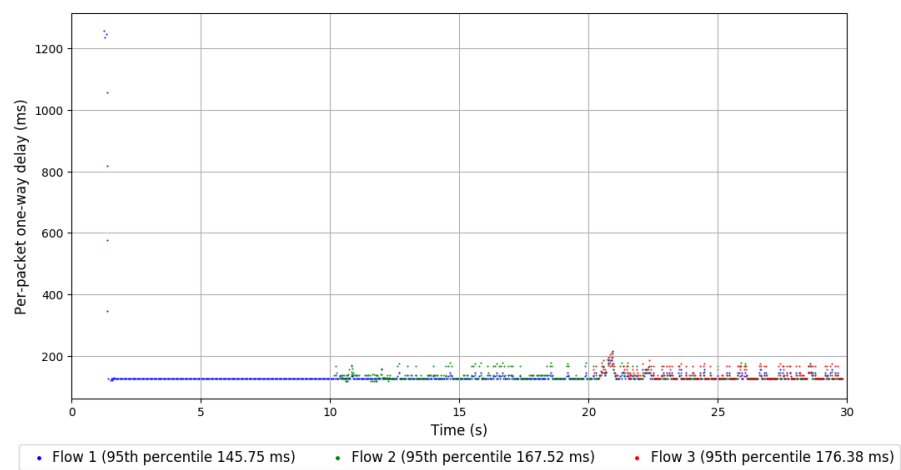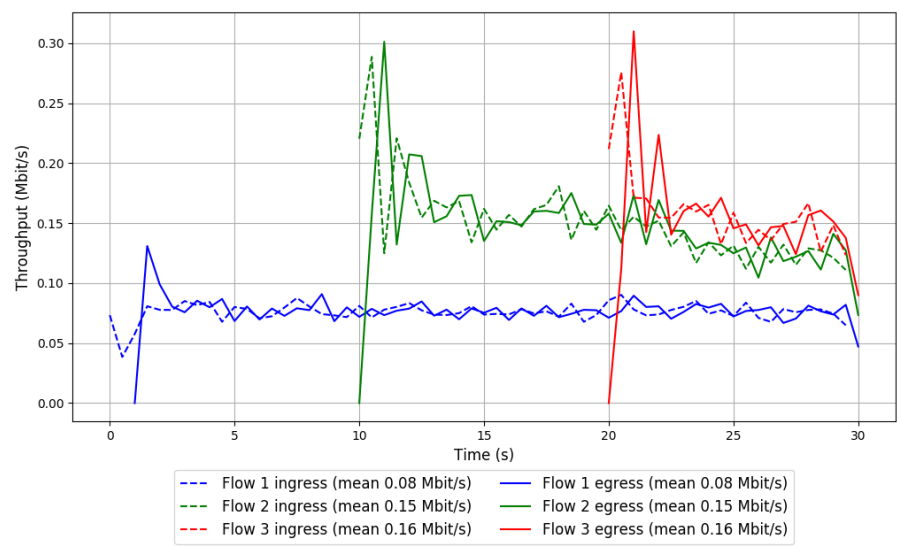
Run 3: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 0.89 Mbit/s) --- Flow 1 egress (mean 0.60 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 8798.79 ms)    • Flow 2 (95th percentile 6069.23 ms)    • Flow 3 (95th percentile 9217.75 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-06-19 07:57:29
End at: 2018-06-19 07:57:59
Local clock offset: -2.107 ms
Remote clock offset: 3.679 ms

# Below is generated by plot.py at 2018-06-19 08:36:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 166.897 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 145.747 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 167.520 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 176.379 ms
Loss rate: 2.42%
```

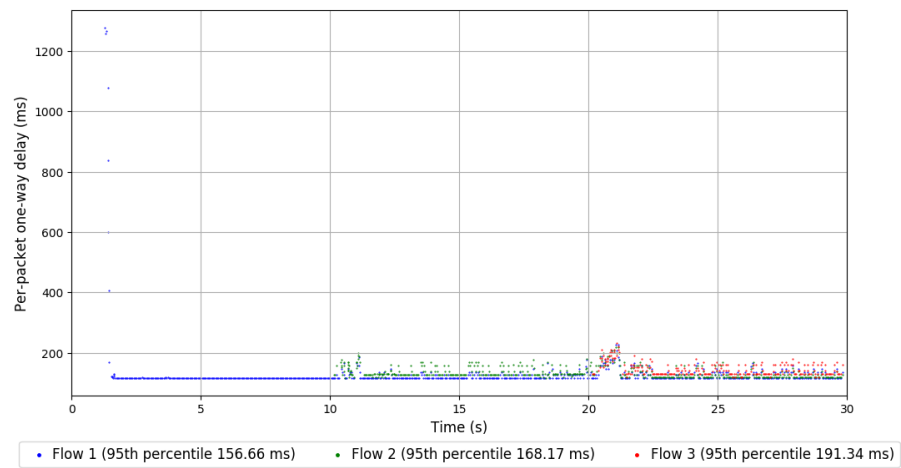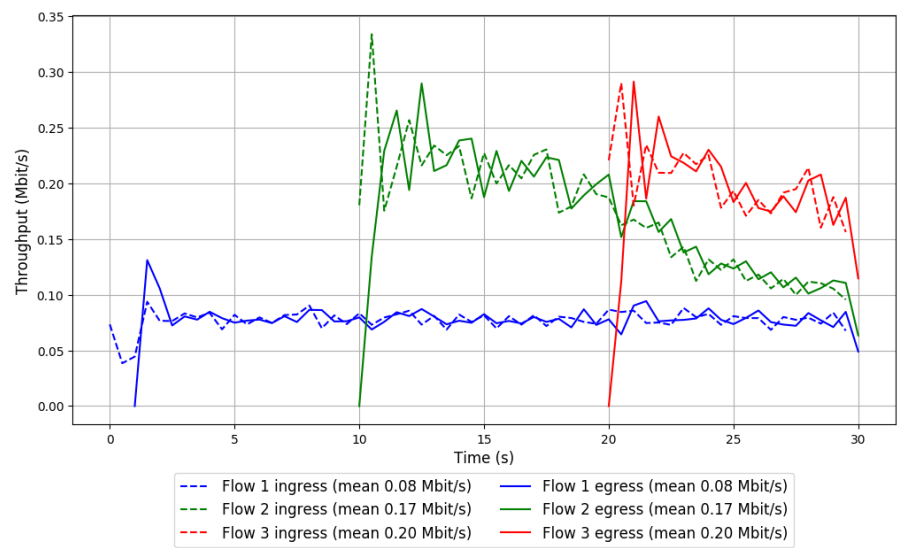# Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-06-19 08:16:34
End at: 2018-06-19 08:17:04
Local clock offset: -2.618 ms
Remote clock offset: 7.825 ms


# Below is generated by plot.py at 2018-06-19 08:36:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 170.064 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 156.663 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 168.167 ms
Loss rate: 0.79%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 191.345 ms
Loss rate: 2.43%
```

# Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-06-19 08:35:38
End at: 2018-06-19 08:36:08
Local clock offset: -2.767 ms
Remote clock offset: 5.048 ms


# Below is generated by plot.py at 2018-06-19 08:36:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 182.537 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 151.577 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 182.578 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 236.833 ms
Loss rate: 2.29%
```
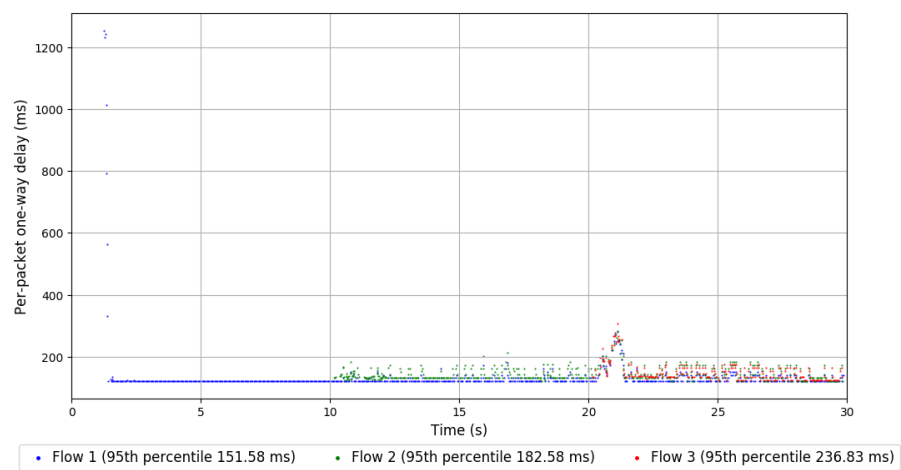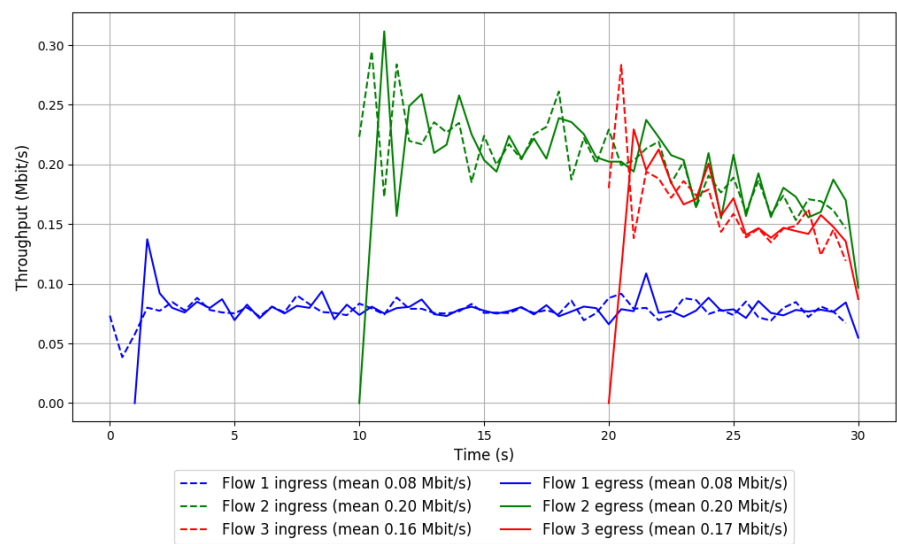
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-06-19 07:55:06
End at: 2018-06-19 07:55:36
Local clock offset: -2.044 ms
Remote clock offset: 8.407 ms


# Below is generated by plot.py at 2018-06-19 08:36:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 384.095 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 526.683 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 332.202 ms
Loss rate: 1.35%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 317.111 ms
Loss rate: 1.69%
```
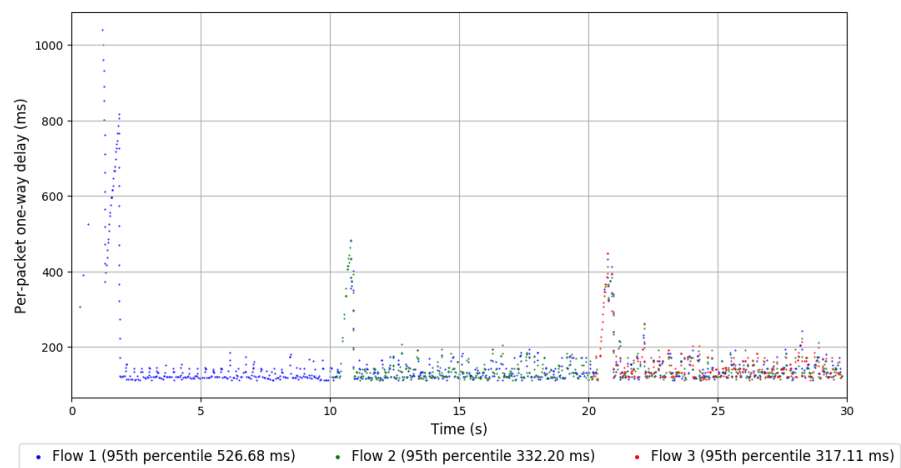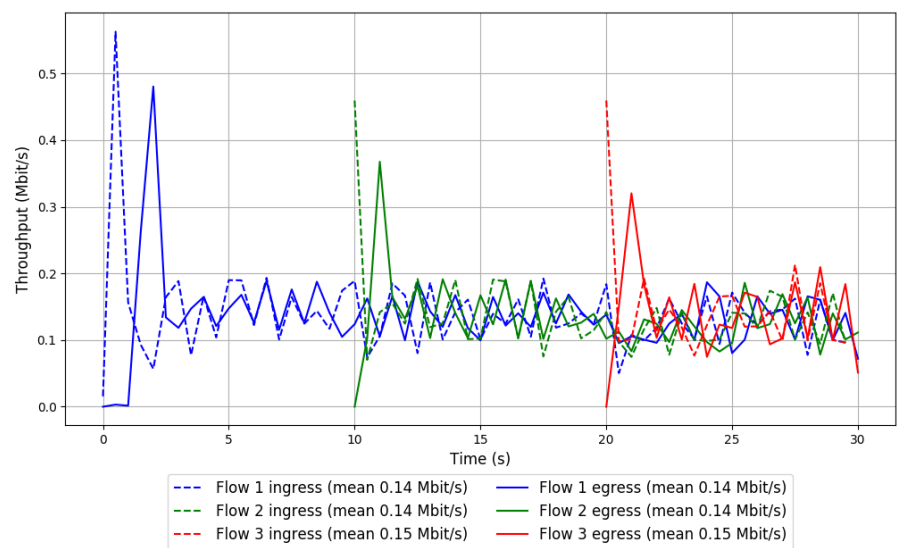
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-06-19 08:14:10
End at: 2018-06-19 08:14:40
Local clock offset: -2.495 ms
Remote clock offset: 8.895 ms


# Below is generated by plot.py at 2018-06-19 08:36:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 503.641 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 539.351 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 416.966 ms
Loss rate: 1.35%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 556.661 ms
Loss rate: 1.55%
```
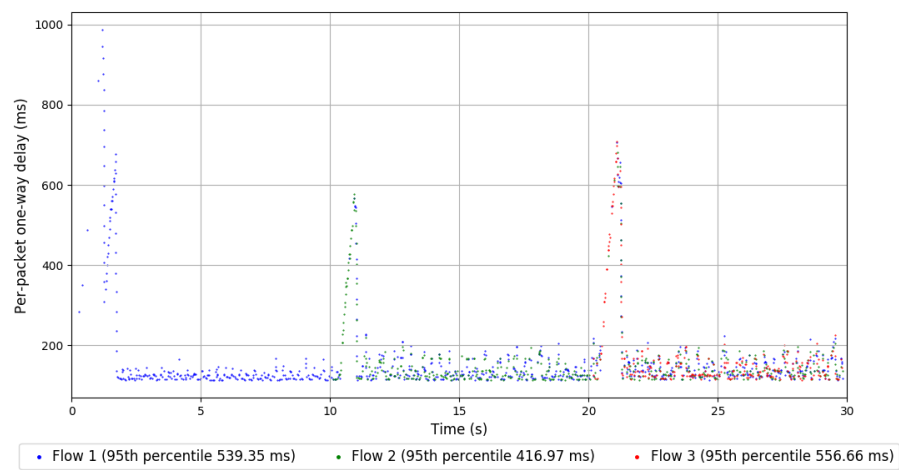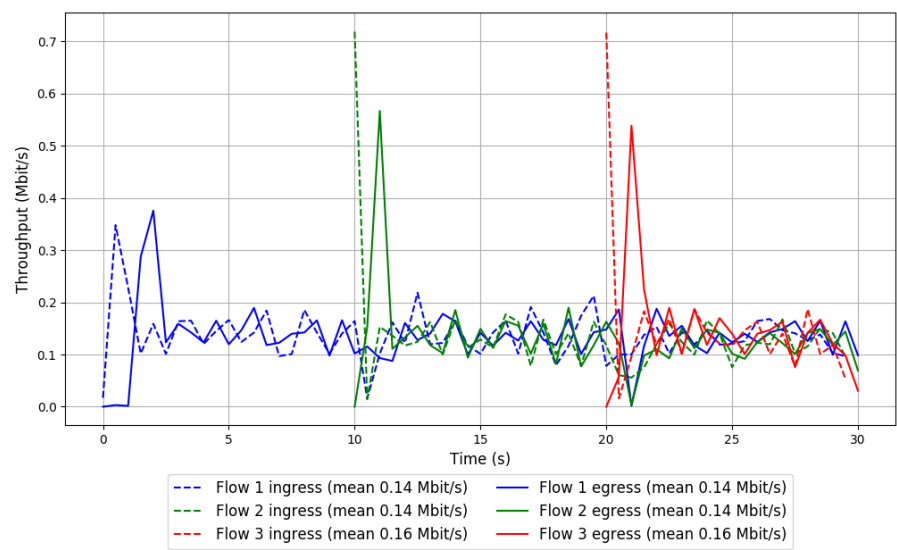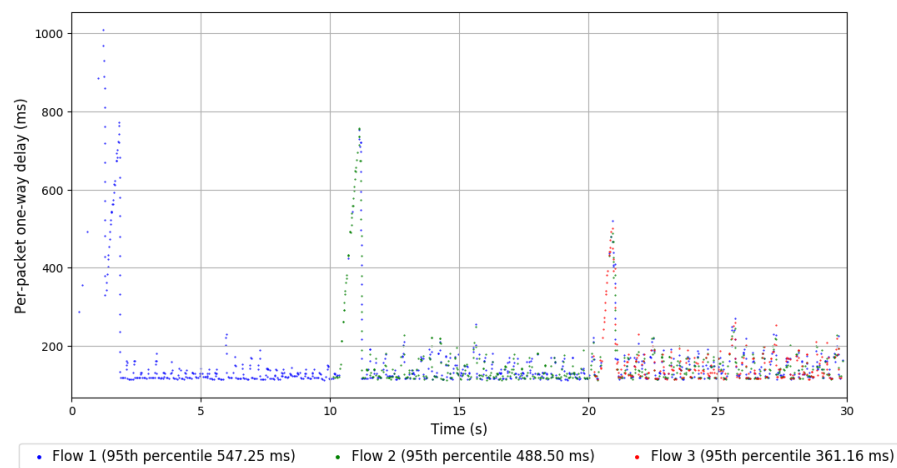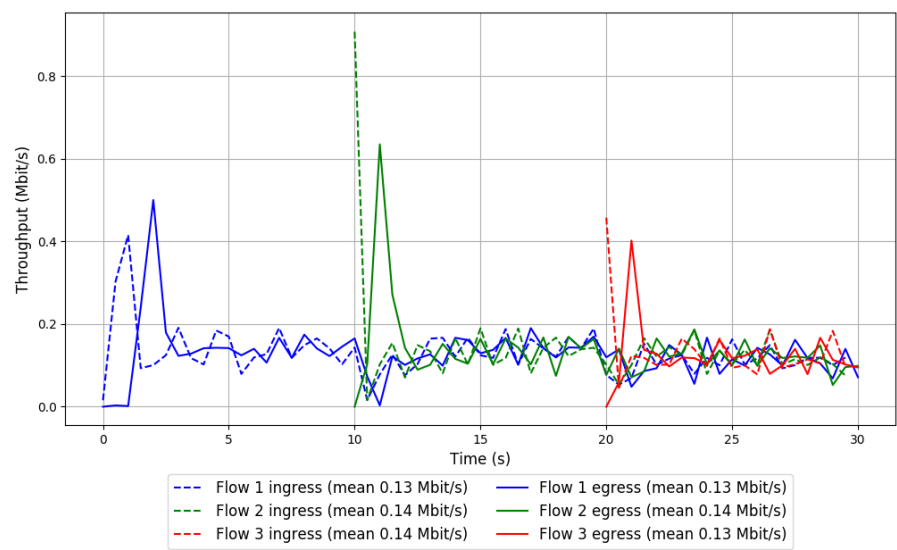
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-06-19 08:33:15
End at: 2018-06-19 08:33:45
Local clock offset: -2.74 ms
Remote clock offset: 9.943 ms


# Below is generated by plot.py at 2018-06-19 08:36:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 491.498 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 547.255 ms
Loss rate: 0.99%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 488.498 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 361.164 ms
Loss rate: 3.42%
```

Run 3: Report of Sprout — Data Link

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

Start at: 2018-06-19 07:53:55
End at: 2018-06-19 07:54:25
Local clock offset: -2.113 ms
Remote clock offset: 4.538 ms


# Below is generated by plot.py at 2018-06-19 08:36:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3505.947 ms
Loss rate: 8.49%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 2743.818 ms
Loss rate: 4.22%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 3643.911 ms
Loss rate: 11.82%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 4027.652 ms
Loss rate: 20.39%
```
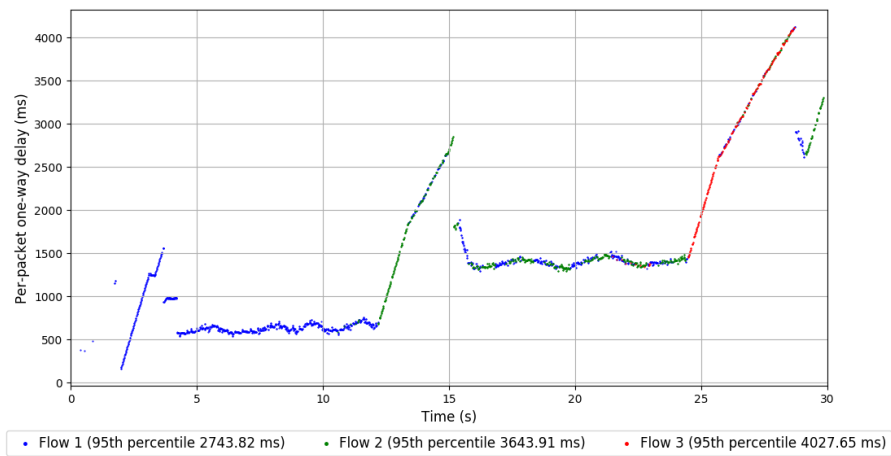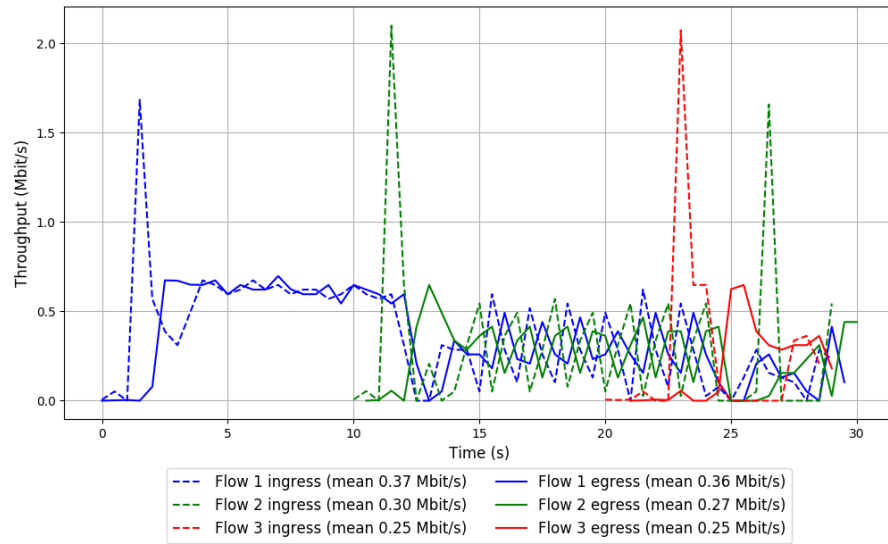
# Run 1: Report of TaoVA-100x — Data Link



Flow 1 ingress (mean 0.37 Mbit/s) — — — Flow 1 egress (mean 0.36 Mbit/s)
Flow 2 ingress (mean 0.30 Mbit/s) — — — Flow 2 egress (mean 0.27 Mbit/s)
Flow 3 ingress (mean 0.25 Mbit/s) — — — Flow 3 egress (mean 0.25 Mbit/s)



Flow 1 (95th percentile 2743.82 ms) • Flow 2 (95th percentile 3643.91 ms) • Flow 3 (95th percentile 4027.65 ms)

71

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

Start at: 2018-06-19 08:12:59
End at: 2018-06-19 08:13:29
Local clock offset: -2.452 ms
Remote clock offset: 3.966 ms


# Below is generated by plot.py at 2018-06-19 08:36:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3463.217 ms
Loss rate: 7.78%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 2731.114 ms
Loss rate: 4.15%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 3661.053 ms
Loss rate: 8.53%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 4043.323 ms
Loss rate: 22.63%
```
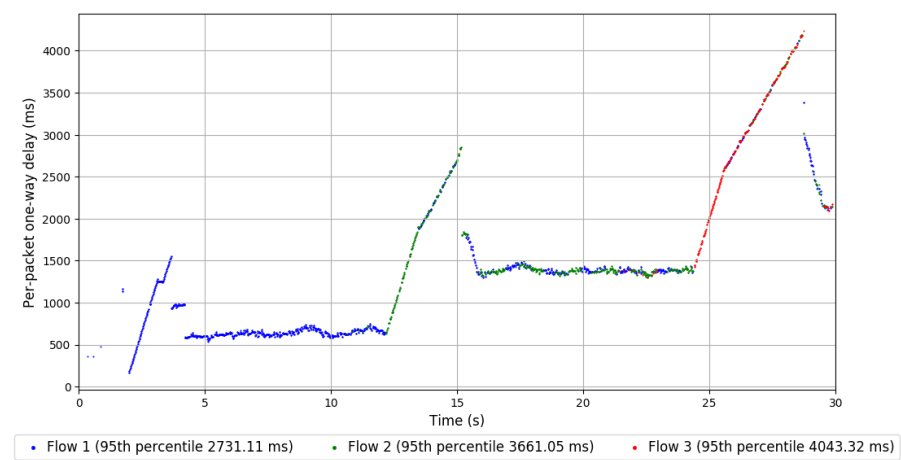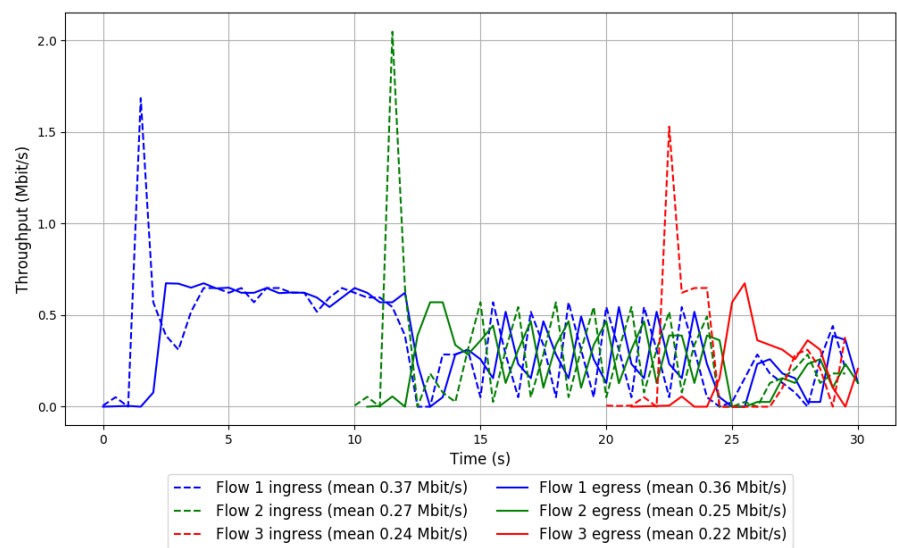
# Run 2: Report of TaoVA-100x — Data Link



Flow 1 ingress (mean 0.37 Mbit/s)     Flow 1 egress (mean 0.36 Mbit/s)
Flow 2 ingress (mean 0.27 Mbit/s)     Flow 2 egress (mean 0.25 Mbit/s)
Flow 3 ingress (mean 0.24 Mbit/s)     Flow 3 egress (mean 0.22 Mbit/s)



Flow 1 (95th percentile 2731.11 ms)     Flow 2 (95th percentile 3661.05 ms)     Flow 3 (95th percentile 4043.32 ms)
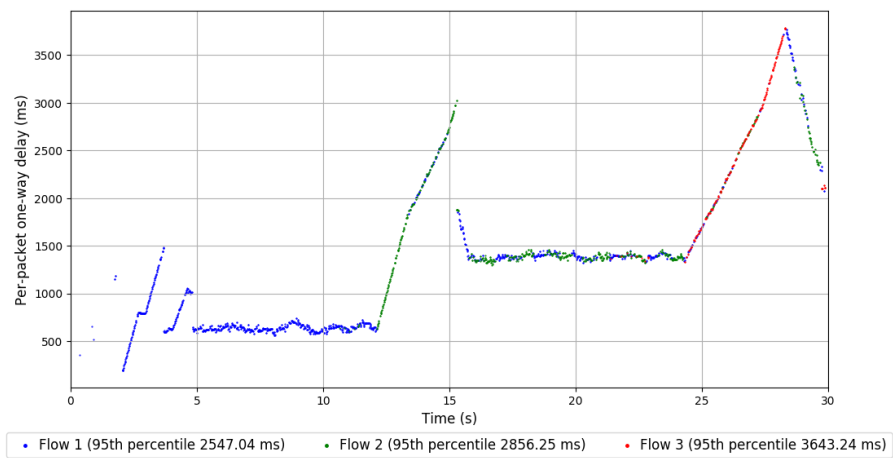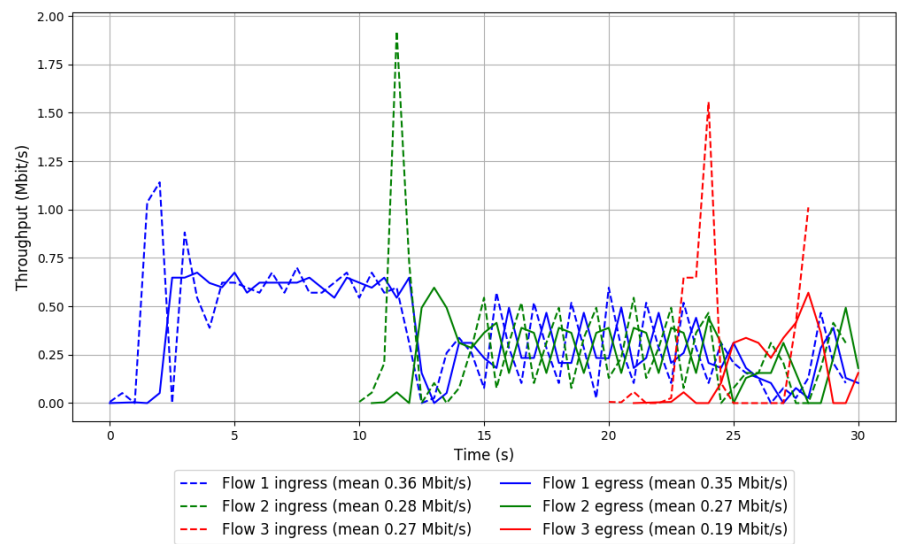
73

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

Start at: 2018-06-19 08:32:03
End at: 2018-06-19 08:32:33
Local clock offset: -2.745 ms
Remote clock offset: 10.043 ms


# Below is generated by plot.py at 2018-06-19 08:36:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3086.863 ms
Loss rate: 8.23%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 2547.044 ms
Loss rate: 4.16%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 2856.253 ms
Loss rate: 8.11%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 3643.238 ms
Loss rate: 28.38%
```

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





75

```
Run 1: Statistics of TCP Vegas

Start at: 2018-06-19 07:56:18
End at: 2018-06-19 07:56:48
Local clock offset: -2.036 ms
Remote clock offset: 7.361 ms


# Below is generated by plot.py at 2018-06-19 08:36:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1248.314 ms
Loss rate: 3.54%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 1148.244 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 1248.789 ms
Loss rate: 3.17%
-- Flow 3:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 1269.014 ms
Loss rate: 12.09%
```
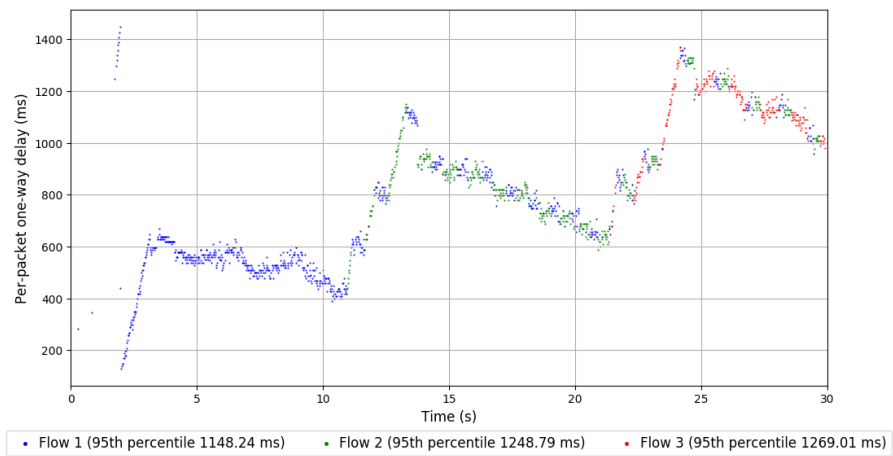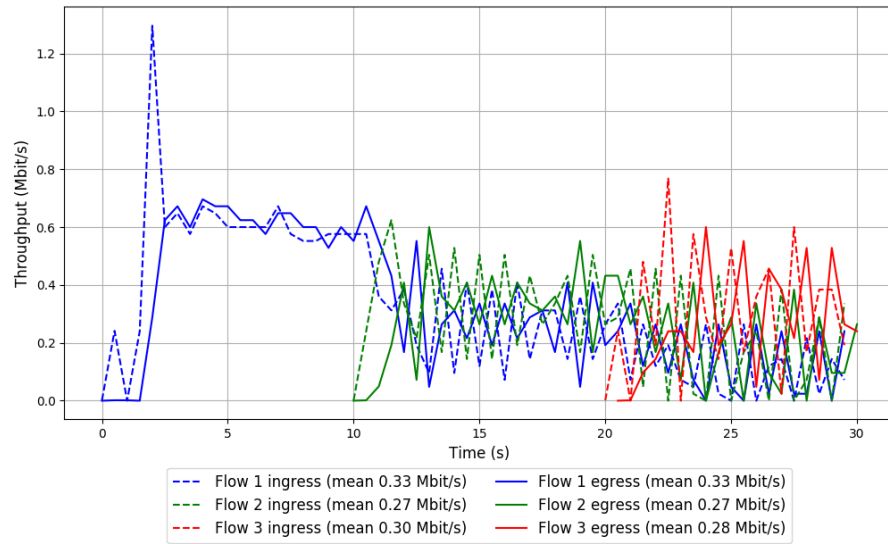
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-06-19 08:15:22
End at: 2018-06-19 08:15:52
Local clock offset: -2.57 ms
Remote clock offset: 4.999 ms


# Below is generated by plot.py at 2018-06-19 08:36:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1911.610 ms
Loss rate: 6.13%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1842.016 ms
Loss rate: 3.14%
-- Flow 2:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 1941.359 ms
Loss rate: 6.95%
-- Flow 3:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1961.519 ms
Loss rate: 24.78%
```
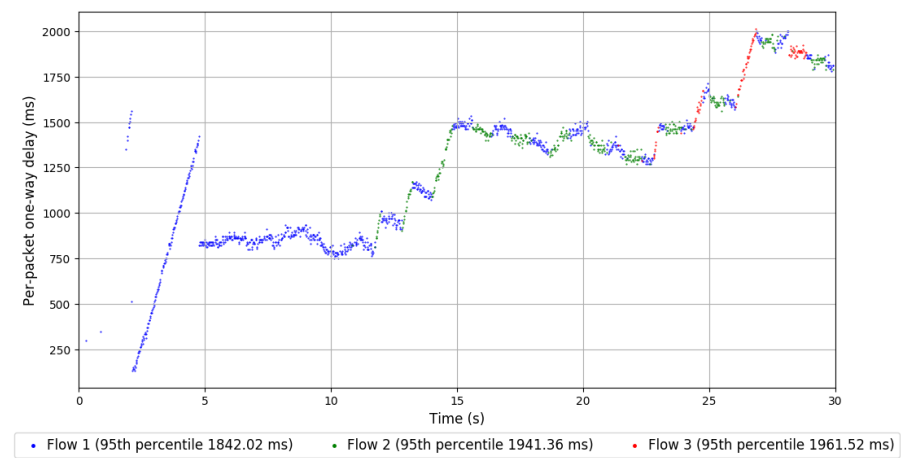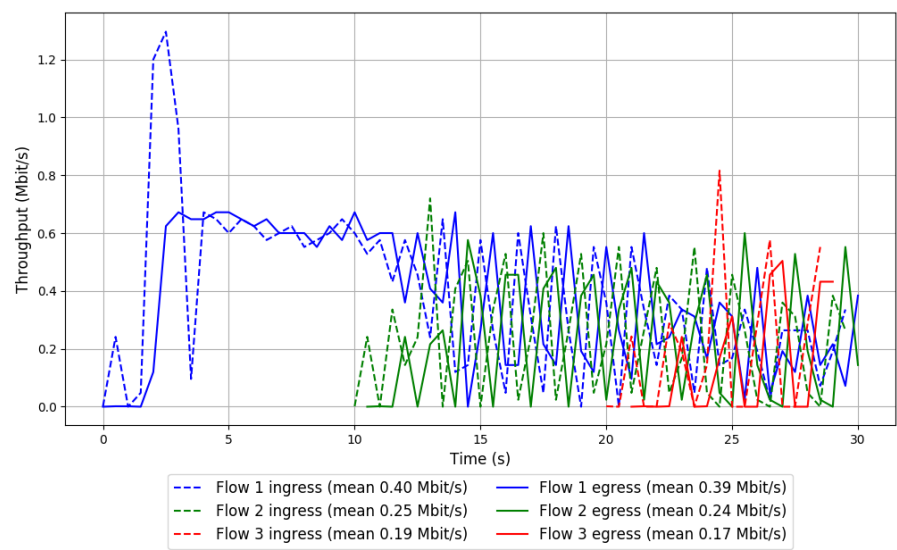
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-06-19 08:34:26
End at: 2018-06-19 08:34:56
Local clock offset: -2.831 ms
Remote clock offset: 6.176 ms


# Below is generated by plot.py at 2018-06-19 08:36:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1754.712 ms
Loss rate: 5.56%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1724.765 ms
Loss rate: 3.07%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1795.338 ms
Loss rate: 5.80%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1754.861 ms
Loss rate: 19.16%
```
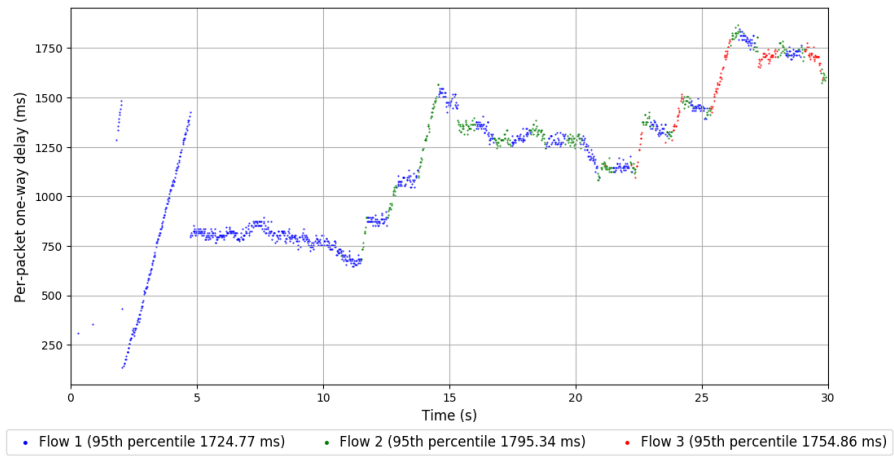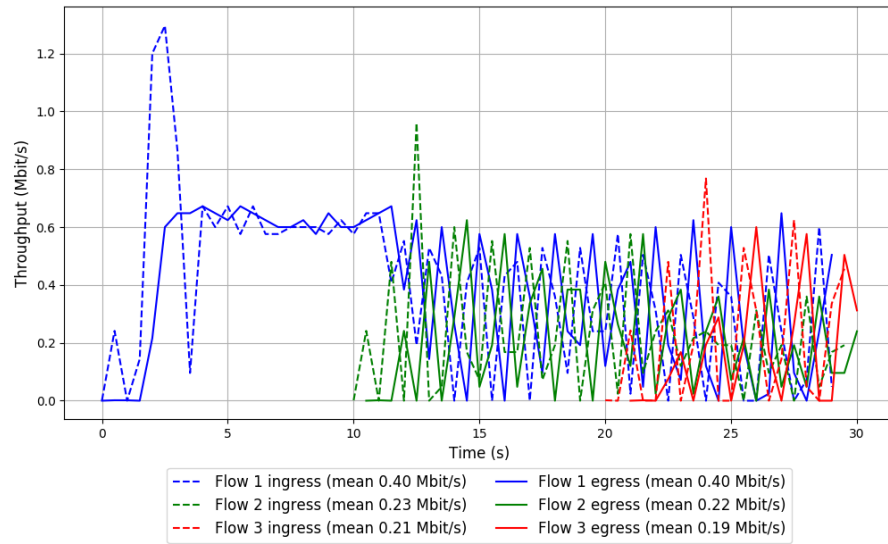
Run 3: Report of TCP Vegas — Data Link



Flow 1 ingress (mean 0.40 Mbit/s) --- Flow 1 egress (mean 0.40 Mbit/s) ---
Flow 2 ingress (mean 0.23 Mbit/s) --- Flow 2 egress (mean 0.22 Mbit/s) ---
Flow 3 ingress (mean 0.21 Mbit/s) --- Flow 3 egress (mean 0.19 Mbit/s) ---



• Flow 1 (95th percentile 1724.77 ms)    • Flow 2 (95th percentile 1795.34 ms)    • Flow 3 (95th percentile 1754.86 ms)

```
Run 1: Statistics of Verus

Start at: 2018-06-19 07:43:12
End at: 2018-06-19 07:43:42
Local clock offset: -2.273 ms
Remote clock offset: 2.684 ms


# Below is generated by plot.py at 2018-06-19 08:36:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1724.768 ms
Loss rate: 3.26%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1724.768 ms
Loss rate: 3.13%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1707.906 ms
Loss rate: 9.52%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 1808.557 ms
Loss rate: 9.09%
```
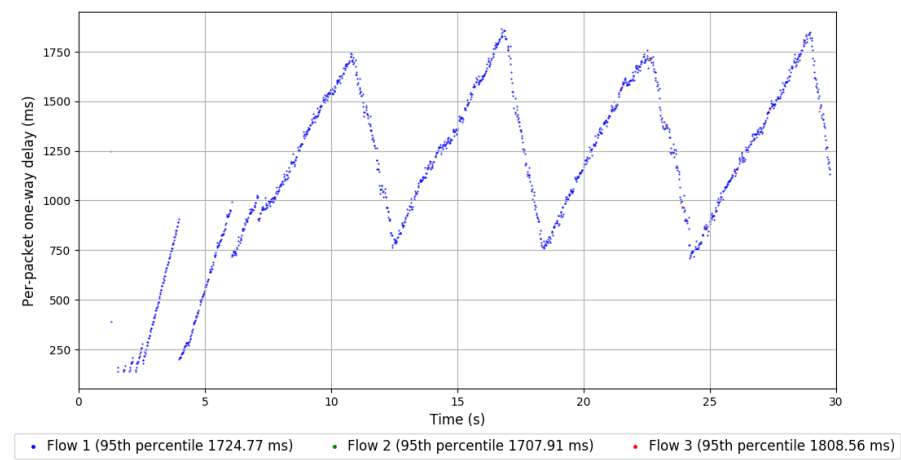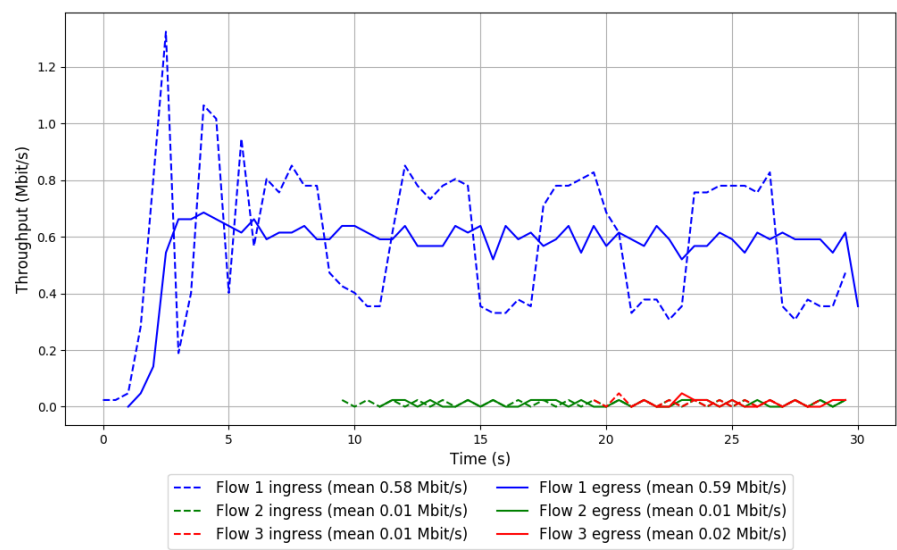
Run 1: Report of Verus — Data Link



Flow 1 ingress (mean 0.58 Mbit/s) — — Flow 1 egress (mean 0.59 Mbit/s)
Flow 2 ingress (mean 0.01 Mbit/s) — — Flow 2 egress (mean 0.01 Mbit/s)
Flow 3 ingress (mean 0.01 Mbit/s) — — Flow 3 egress (mean 0.02 Mbit/s)



Flow 1 (95th percentile 1724.77 ms)   Flow 2 (95th percentile 1707.91 ms)   Flow 3 (95th percentile 1808.56 ms)

83

```
Run 2: Statistics of Verus

Start at: 2018-06-19 08:02:17
End at: 2018-06-19 08:02:47
Local clock offset: -1.986 ms
Remote clock offset: 3.666 ms


# Below is generated by plot.py at 2018-06-19 08:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1751.254 ms
Loss rate: 3.84%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1749.305 ms
Loss rate: 3.79%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1828.631 ms
Loss rate: 5.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1809.832 ms
Loss rate: 10.00%
```
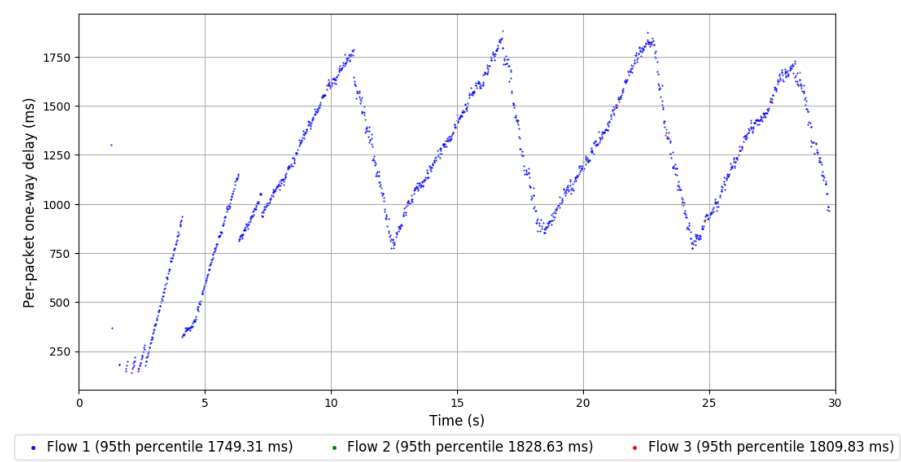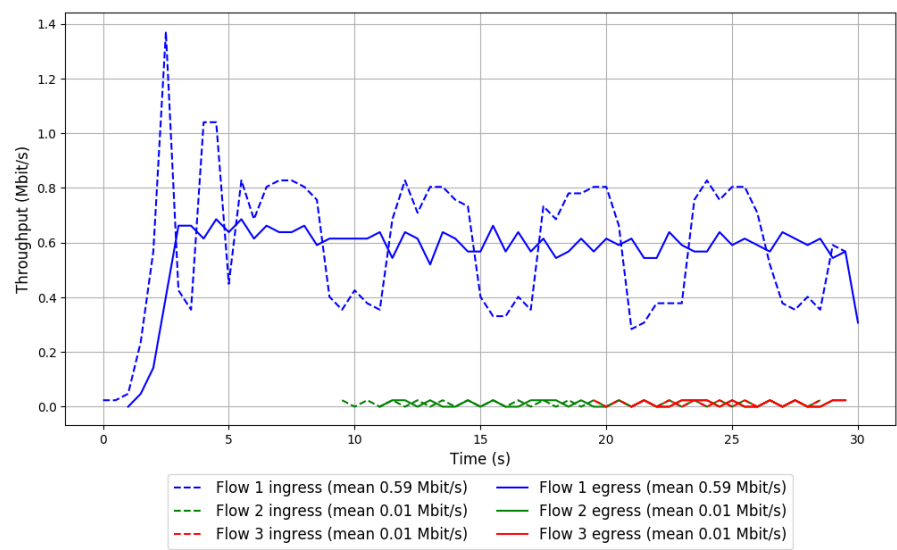
## Run 2: Report of Verus — Data Link



Flow 1 ingress (mean 0.59 Mbit/s)     Flow 1 egress (mean 0.59 Mbit/s)
Flow 2 ingress (mean 0.01 Mbit/s)     Flow 2 egress (mean 0.01 Mbit/s)
Flow 3 ingress (mean 0.01 Mbit/s)     Flow 3 egress (mean 0.01 Mbit/s)



Flow 1 (95th percentile 1749.31 ms)     Flow 2 (95th percentile 1828.63 ms)     Flow 3 (95th percentile 1809.83 ms)
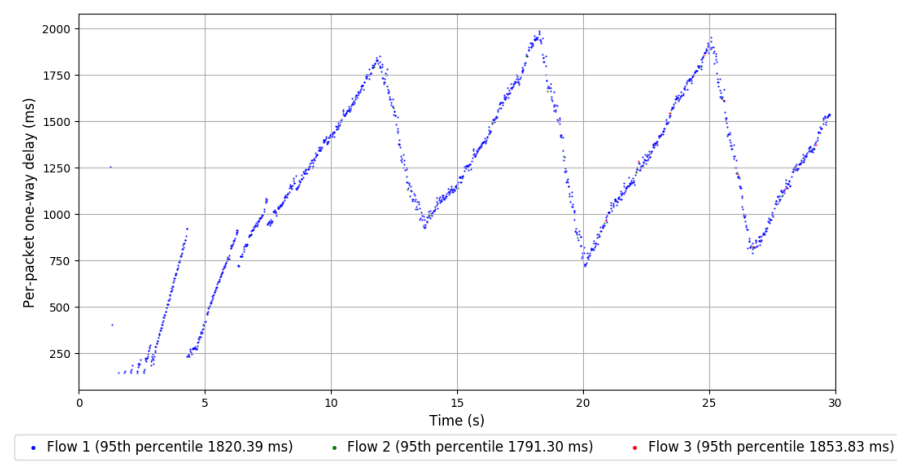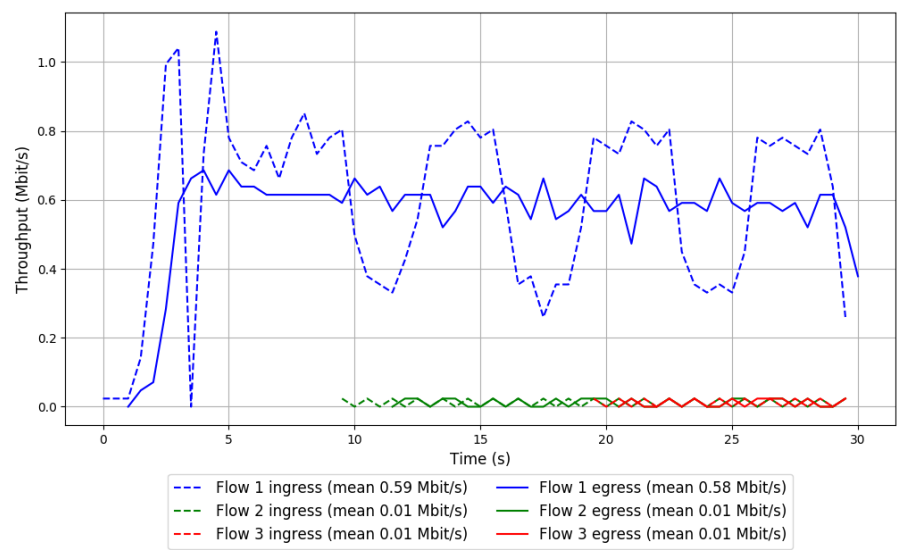
```
Run 3: Statistics of Verus

Start at: 2018-06-19 08:21:21
End at: 2018-06-19 08:21:51
Local clock offset: -2.643 ms
Remote clock offset: 5.159 ms


# Below is generated by plot.py at 2018-06-19 08:36:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1820.388 ms
Loss rate: 6.02%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1820.388 ms
Loss rate: 5.88%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1791.300 ms
Loss rate: 9.52%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1853.830 ms
Loss rate: 18.18%
```

## Run 3: Report of Verus — Data Link
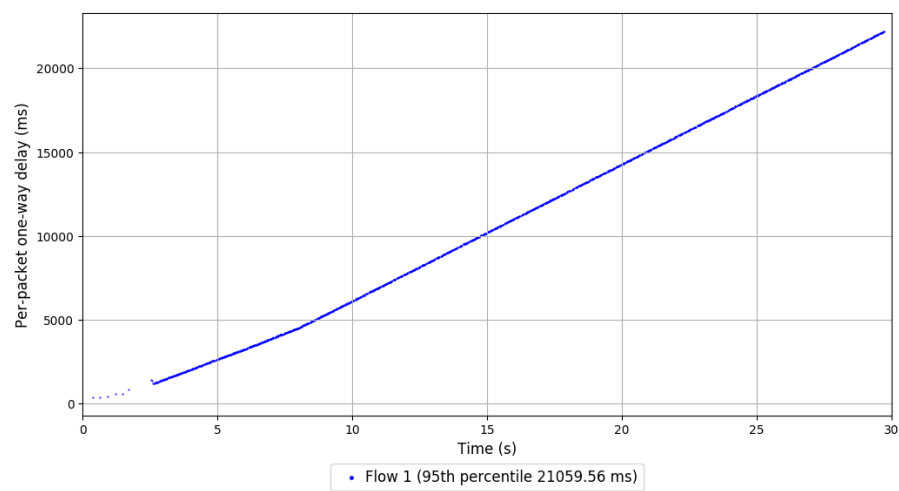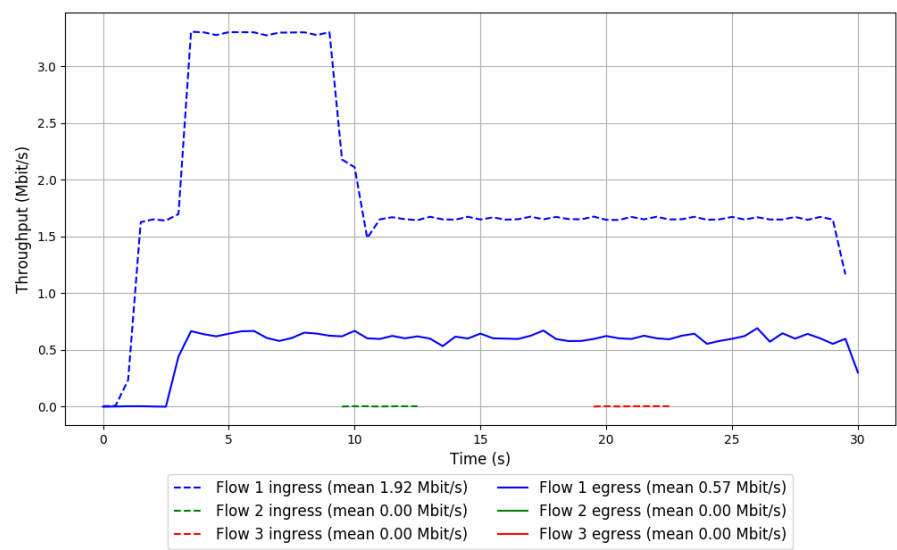
```
Run 1: Statistics of PCC-Vivace

Start at: 2018-06-19 07:44:24
End at: 2018-06-19 07:44:54
Local clock offset: -2.299 ms
Remote clock offset: 2.716 ms
```

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



Flow 1 ingress (mean 1.92 Mbit/s) --- Flow 1 egress (mean 0.57 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 21059.56 ms)
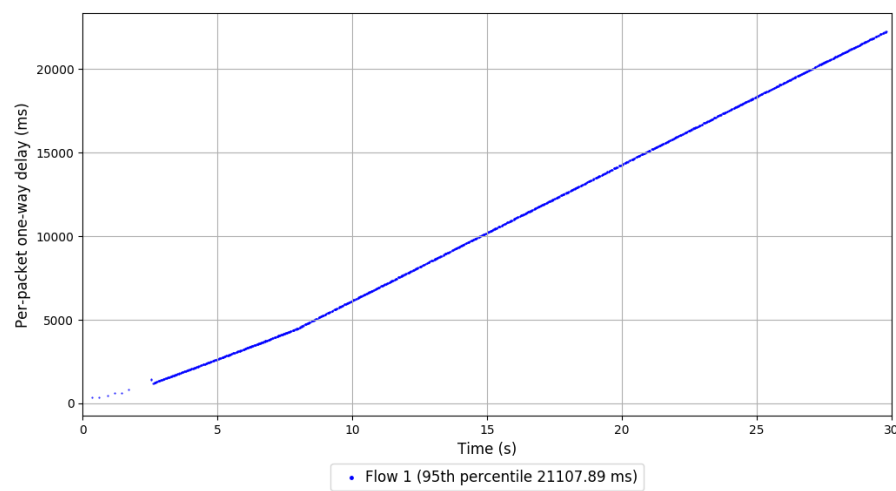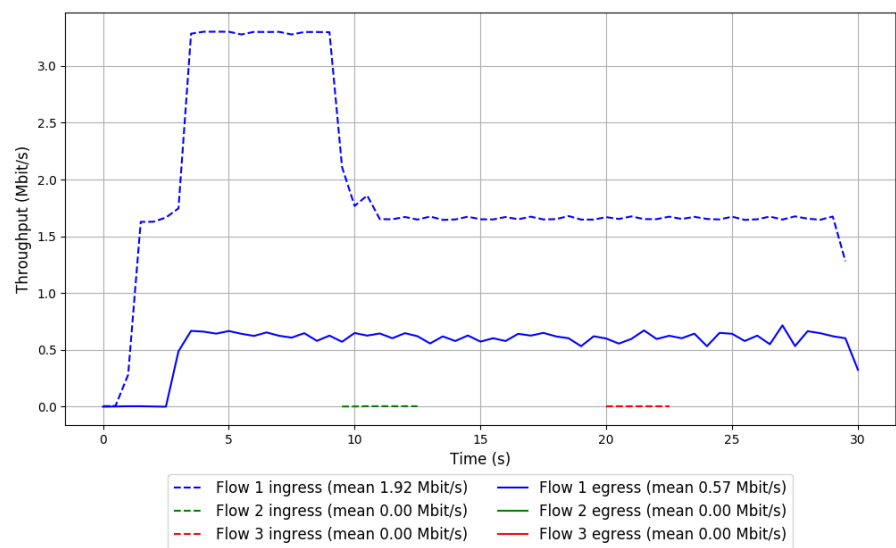
```
Run 2: Statistics of PCC-Vivace

Start at: 2018-06-19 08:03:28
End at: 2018-06-19 08:03:58
Local clock offset: -1.976 ms
Remote clock offset: 8.792 ms
```

Run 2: Report of PCC-Vivace — Data Link



Flow 1 ingress (mean 1.92 Mbit/s)          Flow 1 egress (mean 0.57 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 21107.89 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-06-19 08:22:33
End at: 2018-06-19 08:23:03
Local clock offset: -2.649 ms
Remote clock offset: 5.279 ms
```
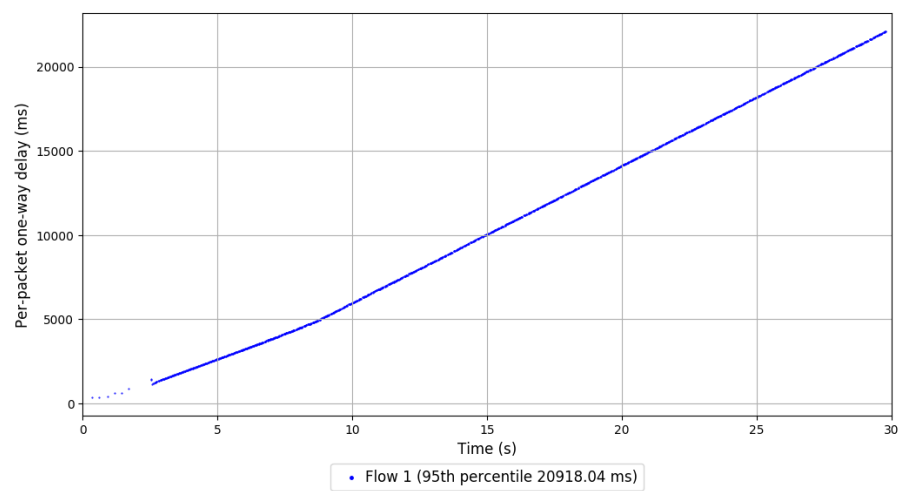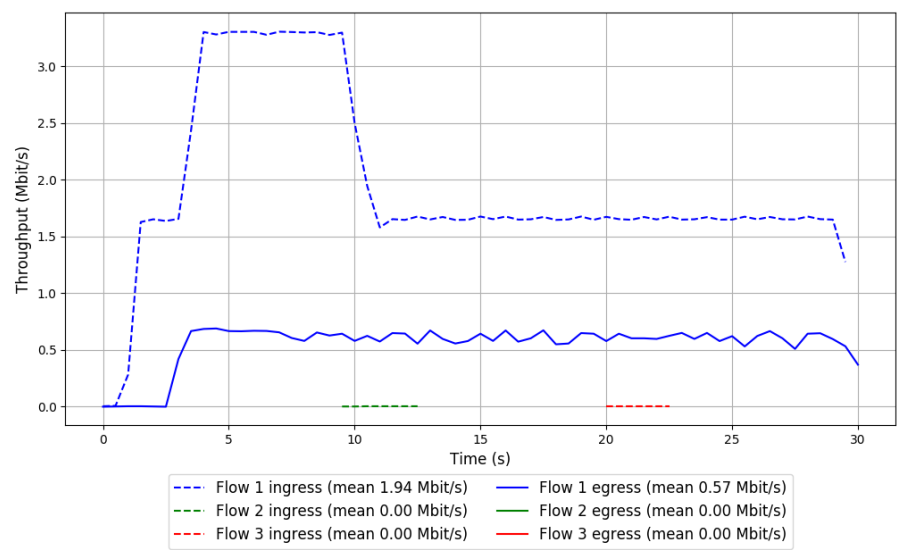
Run 3: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-06-19 07:51:32
End at: 2018-06-19 07:52:02
Local clock offset: -2.102 ms
Remote clock offset: 9.374 ms


# Below is generated by plot.py at 2018-06-19 08:36:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 1802.076 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1101.676 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 1807.252 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1853.379 ms
Loss rate: 0.12%
```
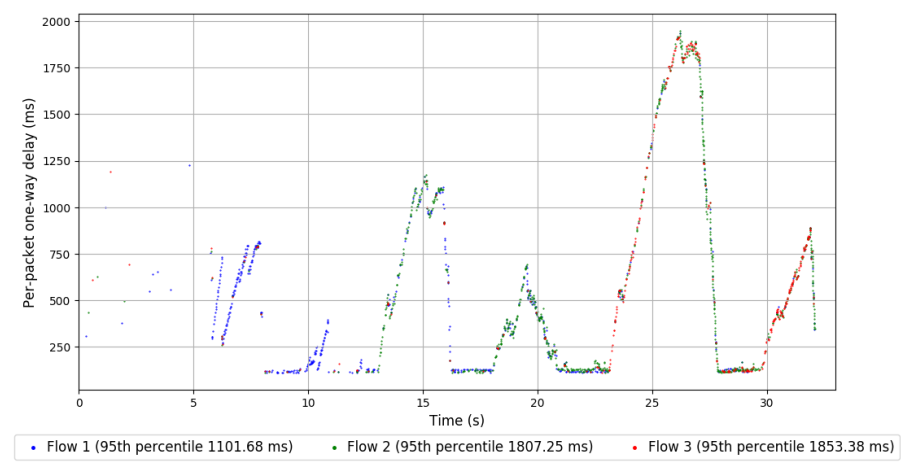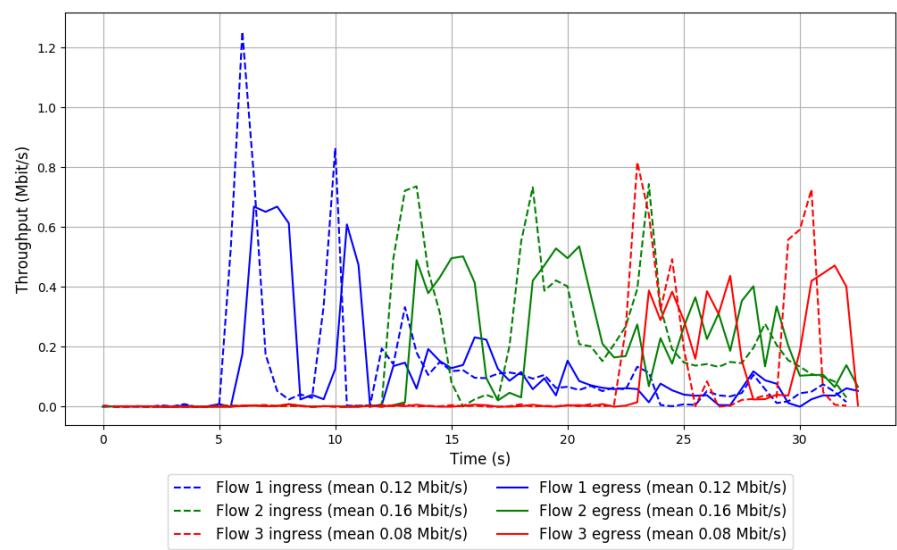
Run 1: Report of WebRTC media — Data Link



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 0.08 Mbit/s)  Flow 3 egress (mean 0.08 Mbit/s)



Flow 1 (95th percentile 1101.68 ms)   Flow 2 (95th percentile 1807.25 ms)   Flow 3 (95th percentile 1853.38 ms)

95

```
Run 2: Statistics of WebRTC media

Start at: 2018-06-19 08:10:36
End at: 2018-06-19 08:11:06
Local clock offset: -2.36 ms
Remote clock offset: 7.806 ms


# Below is generated by plot.py at 2018-06-19 08:36:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 1750.001 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1770.061 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1750.001 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1310.640 ms
Loss rate: 2.00%
```
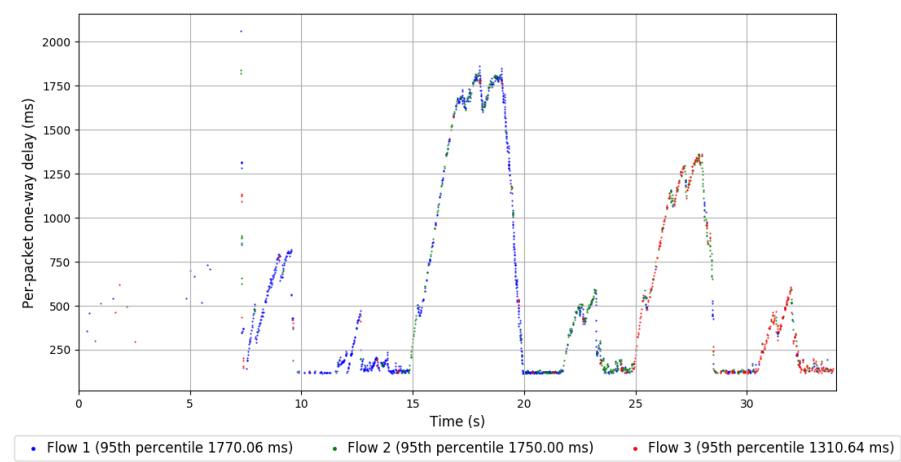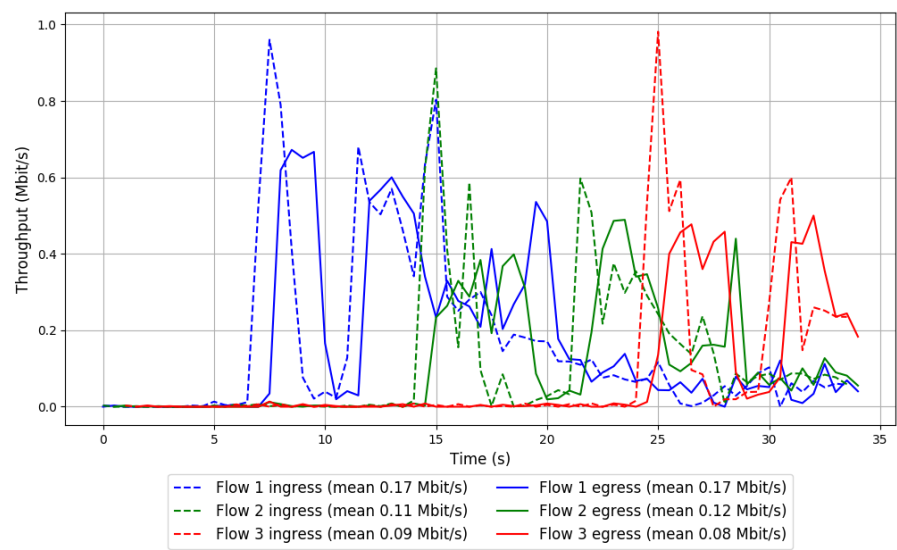
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-06-19 08:29:40
End at: 2018-06-19 08:30:10
Local clock offset: -2.728 ms
Remote clock offset: 8.791 ms


# Below is generated by plot.py at 2018-06-19 08:36:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 2161.454 ms
Loss rate: 3.90%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 2083.217 ms
Loss rate: 1.10%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 2171.473 ms
Loss rate: 1.15%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 2180.015 ms
Loss rate: 15.83%
```

Run 3: Report of WebRTC media — Data Link