# Pantheon Report

Generated at 2019-01-25 22:44:04 (UTC).

Data path: Stanford on eno1 (*remote*) →AWS California 1 on ens5 (*local*).

Repeated the test of 21 congestion control schemes 5 times.

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

NTP offsets were measured against time.stanford.edu and have been applied to correct the timestamps in logs.
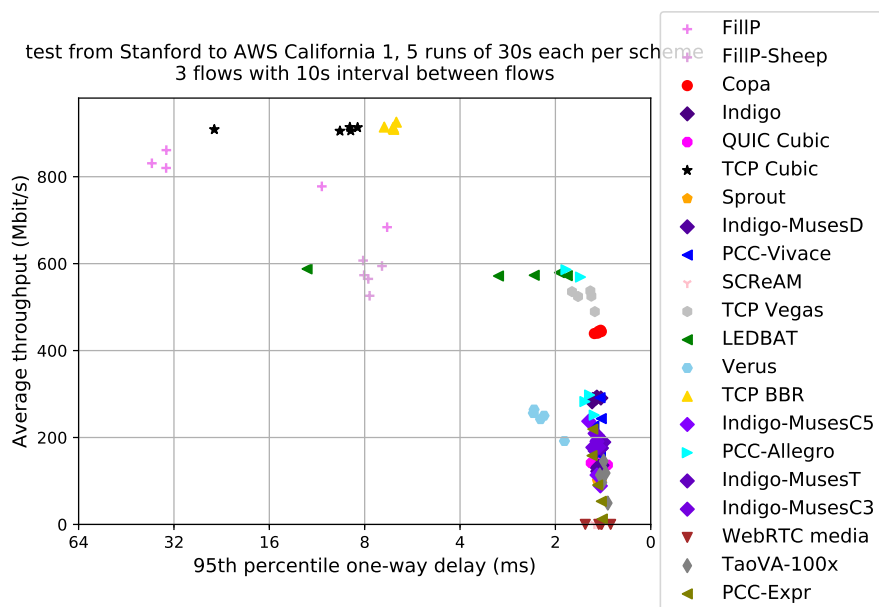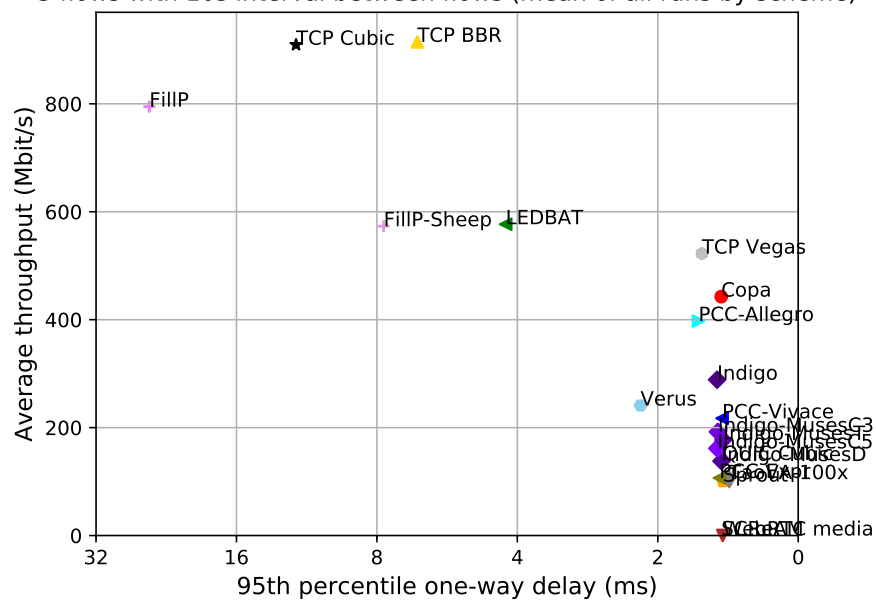
```
System info:
Linux 4.15.0-1031-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 0b8e9a949603c3842368430acf469eec3b941f9f
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ d9c5ea33091330aca25ecd105ab2db6d34d5c40d
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 Stanford to AWS California 1, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)



test from Stanford to AWS California 1, 5 runs of 30s each per scheme
3 flows with 10s interval between flows

3

| scheme | # runs | mean avg tput (Mbit/s) | | | mean 95th-%ile delay (ms) | | | mean loss rate (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | flow 1 | flow 2 | flow 3 | flow 1 | flow 2 | flow 3 | flow 1 | flow 2 | flow 3 |
| TCP BBR | 5 | 535.80 | 404.98 | 328.80 | 6.55 | 5.99 | 6.48 | 0.02 | 0.03 | 0.07 |
| Copa | 5 | 268.36 | 208.04 | 108.00 | 1.11 | 1.09 | 1.04 | 0.00 | 0.01 | 0.01 |
| TCP Cubic | 5 | 534.87 | 402.63 | 319.63 | 12.51 | 7.64 | 7.40 | 0.02 | 0.04 | 0.07 |
| FillP | 5 | 487.63 | 349.94 | 224.13 | 20.02 | 27.04 | 25.99 | 0.07 | 0.11 | 0.22 |
| FillP-Sheep | 5 | 425.00 | 190.06 | 66.38 | 8.31 | 4.22 | 2.65 | 0.00 | 0.00 | 0.00 |
| Indigo | 5 | 155.63 | 143.19 | 115.56 | 1.10 | 1.18 | 1.27 | 0.00 | 0.01 | 0.02 |
| Indigo-MusesC3 | 5 | 140.74 | 68.50 | 30.16 | 1.14 | 1.15 | 1.10 | 0.01 | 0.00 | 0.03 |
| Indigo-MusesC5 | 5 | 110.73 | 65.80 | 34.22 | 1.15 | 1.17 | 1.03 | 0.00 | 0.00 | 0.01 |
| Indigo-MusesD | 5 | 78.75 | 71.56 | 50.89 | 1.08 | 1.09 | 1.08 | 0.00 | 0.00 | 0.01 |
| Indigo-MusesT | 5 | 135.93 | 50.00 | 36.99 | 1.07 | 1.02 | 1.02 | 0.00 | 0.01 | 0.00 |
| LEDBAT | 5 | 351.95 | 243.74 | 189.40 | 4.48 | 2.17 | 1.99 | 0.00 | 0.00 | 0.01 |
| PCC-Allegro | 5 | 213.64 | 228.41 | 97.12 | 1.36 | 1.36 | 1.32 | 0.01 | 0.01 | 0.03 |
| PCC-Expr | 5 | 61.04 | 52.05 | 33.60 | 1.11 | 1.13 | 1.10 | 0.01 | 0.01 | 0.01 |
| QUIC Cubic | 5 | 76.53 | 67.16 | 56.76 | 1.10 | 1.04 | 1.06 | 0.00 | 0.01 | 0.02 |
| SCReAM | 5 | 0.22 | 0.22 | 0.22 | 1.10 | 1.09 | 1.09 | 0.00 | 0.00 | 0.00 |
| Sprout | 5 | 50.24 | 50.17 | 49.91 | 1.08 | 1.07 | 1.06 | 0.00 | 0.00 | 0.00 |
| TaoVA-100x | 5 | 54.38 | 42.33 | 66.07 | 1.00 | 0.97 | 0.99 | 0.01 | 0.00 | 0.02 |
| TCP Vegas | 5 | 264.85 | 252.63 | 268.76 | 1.26 | 1.88 | 1.62 | 0.01 | 0.01 | 0.02 |
| Verus | 5 | 152.84 | 91.46 | 82.29 | 2.28 | 1.84 | 1.49 | 0.00 | 0.01 | 0.02 |
| PCC-Vivace | 5 | 135.14 | 83.49 | 80.48 | 1.05 | 1.14 | 1.18 | 0.00 | 0.01 | 0.01 |
| WebRTC media | 5 | 0.05 | 0.05 | 0.05 | 1.10 | 1.07 | 1.06 | 0.00 | 0.04 | 0.01 |

```
Run 1: Statistics of TCP BBR

Start at: 2019-01-25 19:17:22
End at: 2019-01-25 19:17:52
Local clock offset: -0.46 ms
Remote clock offset: 0.296 ms


# Below is generated by plot.py at 2019-01-25 21:58:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 914.24 Mbit/s
95th percentile per-packet one-way delay: 6.938 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 535.47 Mbit/s
95th percentile per-packet one-way delay: 7.115 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 404.76 Mbit/s
95th percentile per-packet one-way delay: 5.866 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 328.67 Mbit/s
95th percentile per-packet one-way delay: 6.079 ms
Loss rate: 0.06%
```
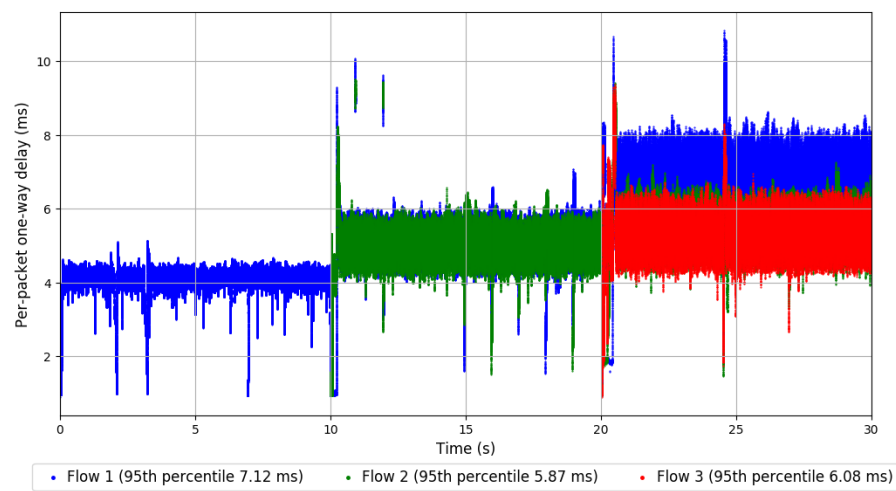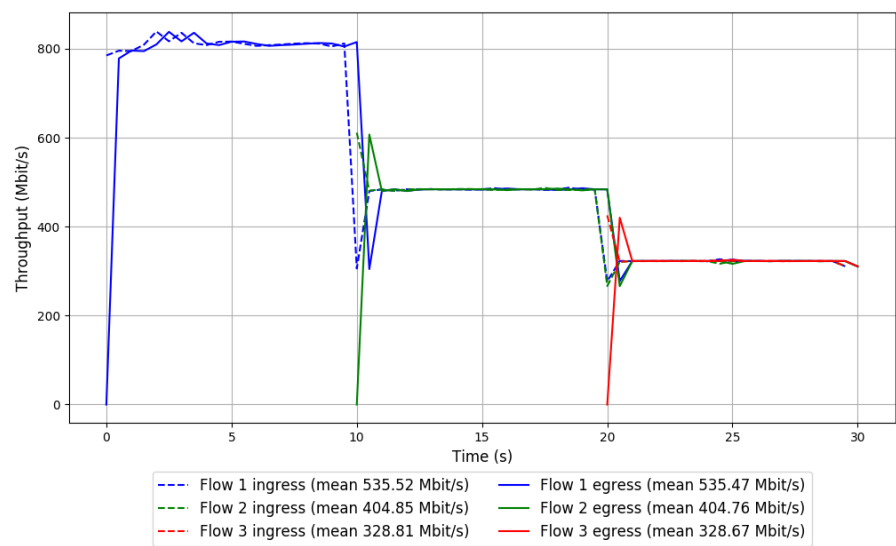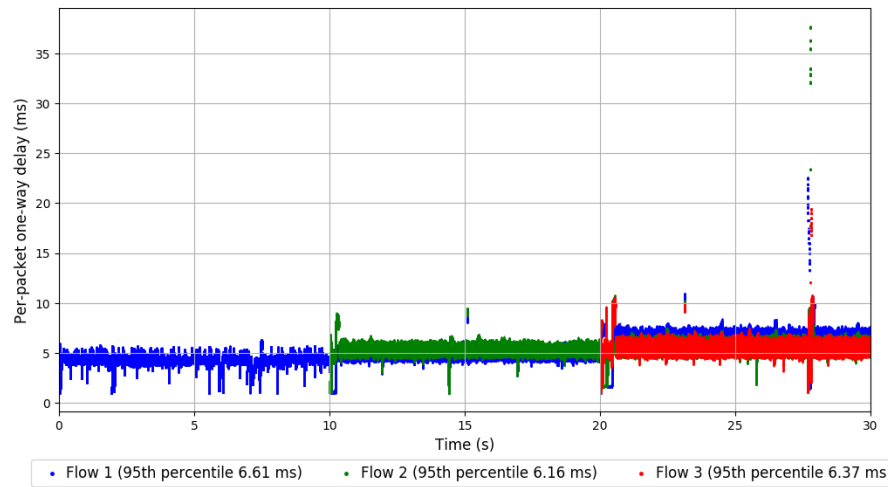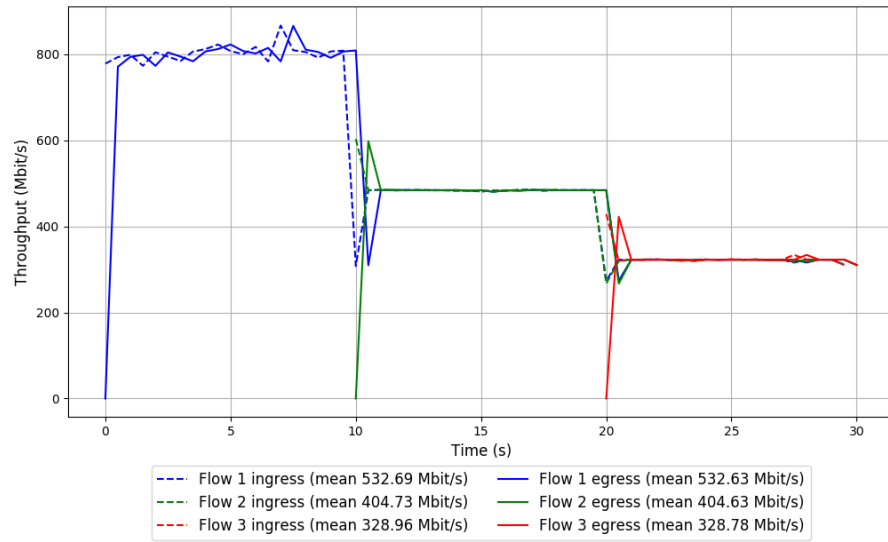
Run 1: Report of TCP BBR — Data Link

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Run 2: Statistics of TCP BBR

Start at: 2019-01-25 19:47:29
End at: 2019-01-25 19:47:59
Local clock offset: 0.096 ms
Remote clock offset: 0.651 ms


# Below is generated by plot.py at 2019-01-25 21:58:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 911.42 Mbit/s
95th percentile per-packet one-way delay: 6.501 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 532.63 Mbit/s
95th percentile per-packet one-way delay: 6.606 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 404.63 Mbit/s
95th percentile per-packet one-way delay: 6.159 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 328.78 Mbit/s
95th percentile per-packet one-way delay: 6.367 ms
Loss rate: 0.07%
```
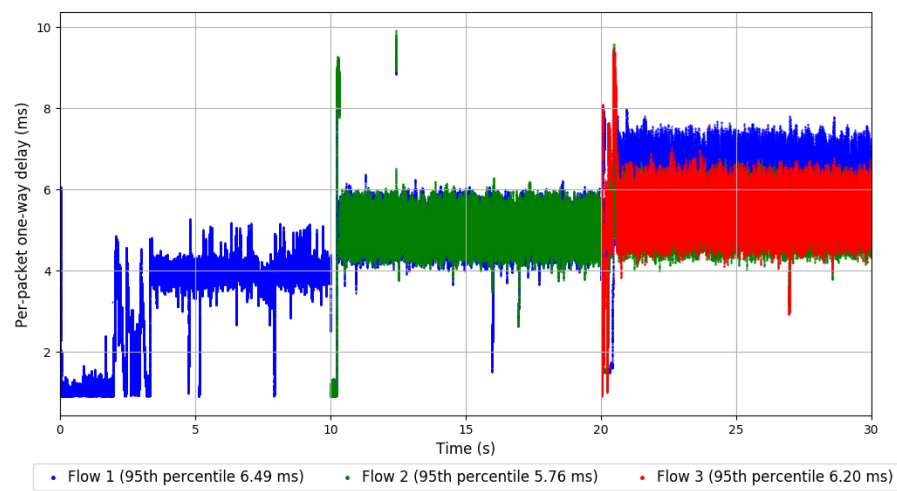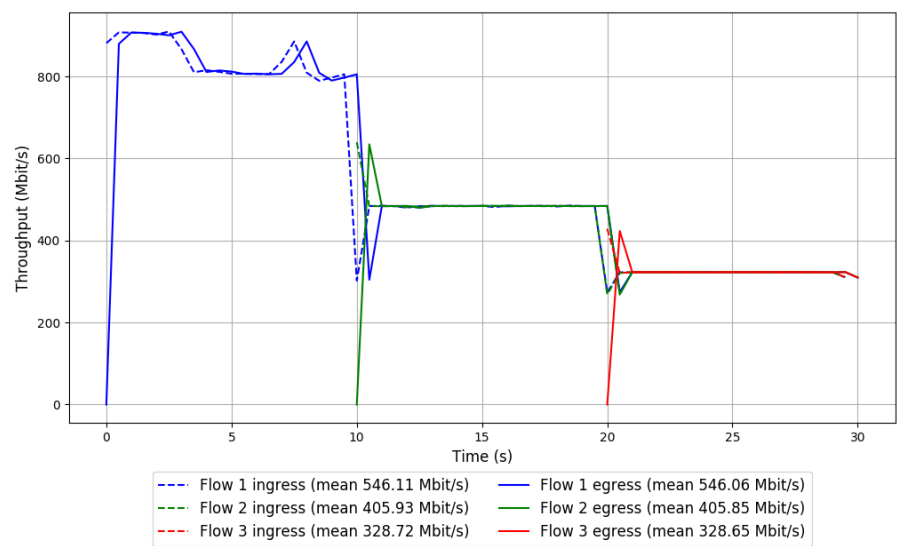
Run 2: Report of TCP BBR — Data Link



Flow 1 ingress (mean 532.69 Mbit/s)    Flow 1 egress (mean 532.63 Mbit/s)
Flow 2 ingress (mean 404.73 Mbit/s)    Flow 2 egress (mean 404.63 Mbit/s)
Flow 3 ingress (mean 328.96 Mbit/s)    Flow 3 egress (mean 328.78 Mbit/s)



• Flow 1 (95th percentile 6.61 ms)    • Flow 2 (95th percentile 6.16 ms)    • Flow 3 (95th percentile 6.37 ms)

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```
Run 3: Statistics of TCP BBR

Start at: 2019-01-25 20:17:27
End at: 2019-01-25 20:17:57
Local clock offset: 0.086 ms
Remote clock offset: 0.768 ms


# Below is generated by plot.py at 2019-01-25 21:59:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 925.53 Mbit/s
95th percentile per-packet one-way delay: 6.354 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 546.06 Mbit/s
95th percentile per-packet one-way delay: 6.485 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 405.85 Mbit/s
95th percentile per-packet one-way delay: 5.762 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 328.65 Mbit/s
95th percentile per-packet one-way delay: 6.199 ms
Loss rate: 0.06%
```
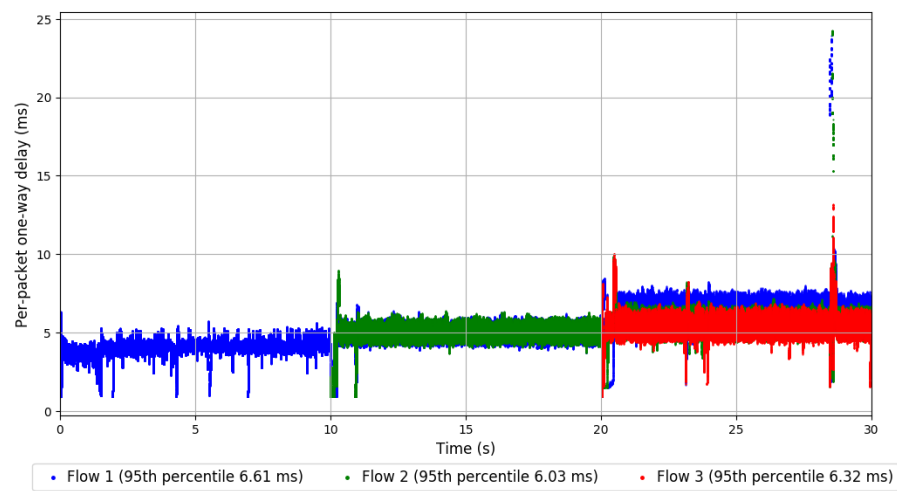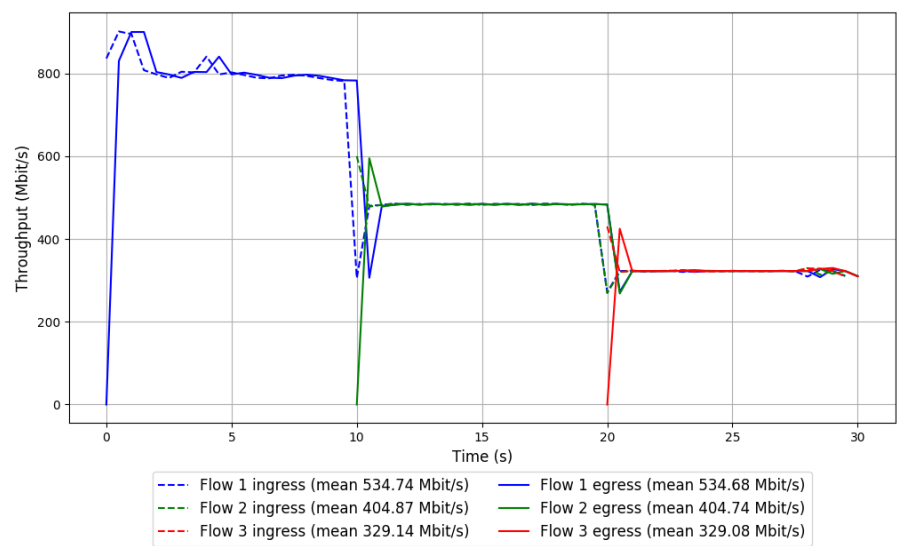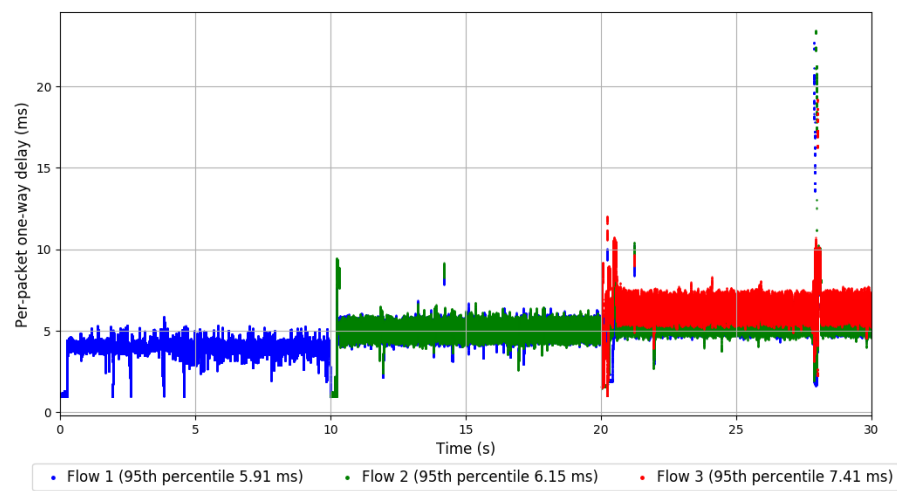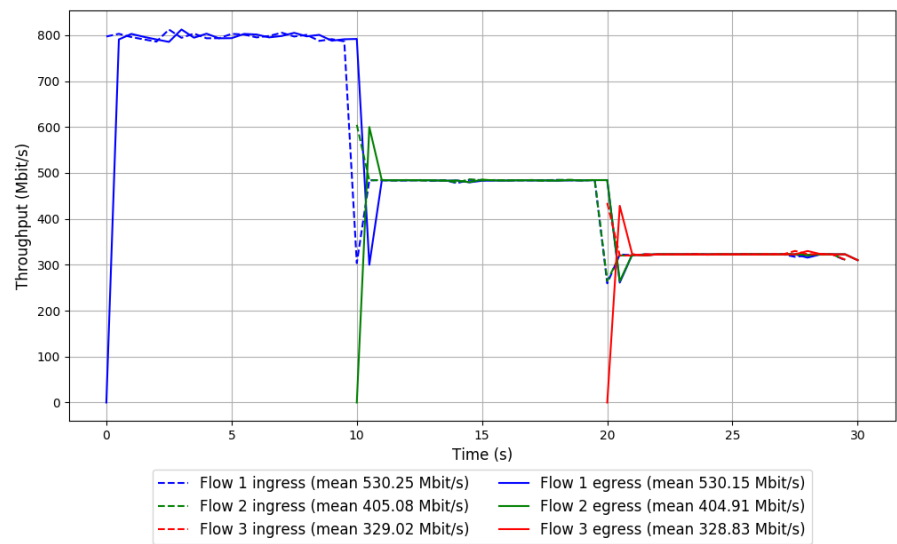
Run 3: Report of TCP BBR — Data Link



Flow 1 ingress (mean 546.11 Mbit/s) --- Flow 1 egress (mean 546.06 Mbit/s)
Flow 2 ingress (mean 405.93 Mbit/s) --- Flow 2 egress (mean 405.85 Mbit/s)
Flow 3 ingress (mean 328.72 Mbit/s) --- Flow 3 egress (mean 328.65 Mbit/s)



Flow 1 (95th percentile 6.49 ms)   •   Flow 2 (95th percentile 5.76 ms)   •   Flow 3 (95th percentile 6.20 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2019-01-25 20:47:24
End at: 2019-01-25 20:47:54
Local clock offset: 0.24 ms
Remote clock offset: 0.092 ms


# Below is generated by plot.py at 2019-01-25 21:59:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 913.63 Mbit/s
95th percentile per-packet one-way delay: 6.501 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 534.68 Mbit/s
95th percentile per-packet one-way delay: 6.611 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 404.74 Mbit/s
95th percentile per-packet one-way delay: 6.032 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 329.08 Mbit/s
95th percentile per-packet one-way delay: 6.319 ms
Loss rate: 0.06%
```
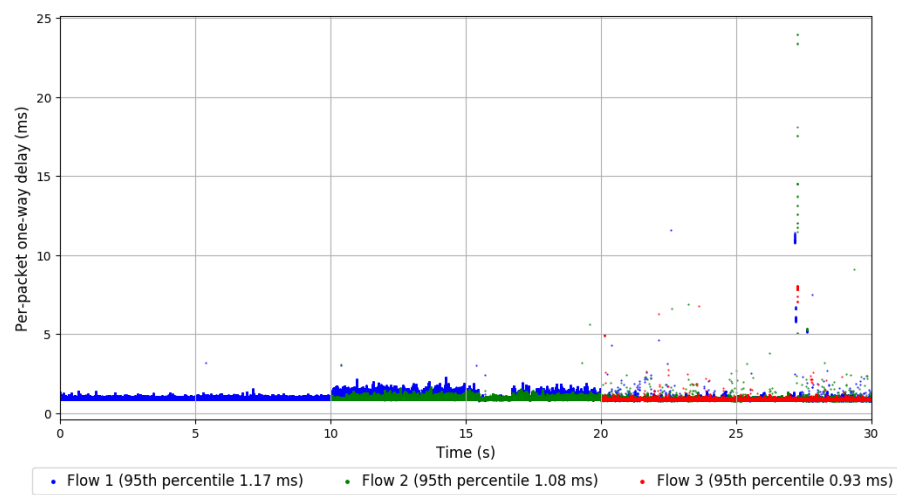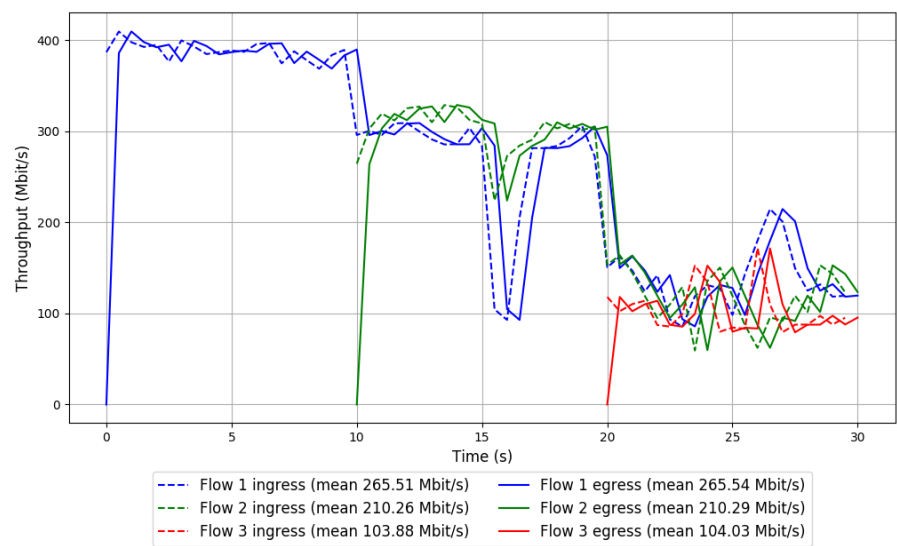
# Run 4: Report of TCP BBR — Data Link



Flow 1 ingress (mean 534.74 Mbit/s) --- Flow 1 egress (mean 534.68 Mbit/s)
Flow 2 ingress (mean 404.87 Mbit/s) --- Flow 2 egress (mean 404.74 Mbit/s)
Flow 3 ingress (mean 329.14 Mbit/s) --- Flow 3 egress (mean 329.08 Mbit/s)



Flow 1 (95th percentile 6.61 ms)    Flow 2 (95th percentile 6.03 ms)    Flow 3 (95th percentile 6.32 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2019-01-25 21:17:31
End at: 2019-01-25 21:18:01
Local clock offset: 3.401 ms
Remote clock offset: 2.012 ms


# Below is generated by plot.py at 2019-01-25 21:59:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 909.04 Mbit/s
95th percentile per-packet one-way delay: 6.474 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 530.15 Mbit/s
95th percentile per-packet one-way delay: 5.909 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 404.91 Mbit/s
95th percentile per-packet one-way delay: 6.149 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 328.83 Mbit/s
95th percentile per-packet one-way delay: 7.412 ms
Loss rate: 0.08%
```
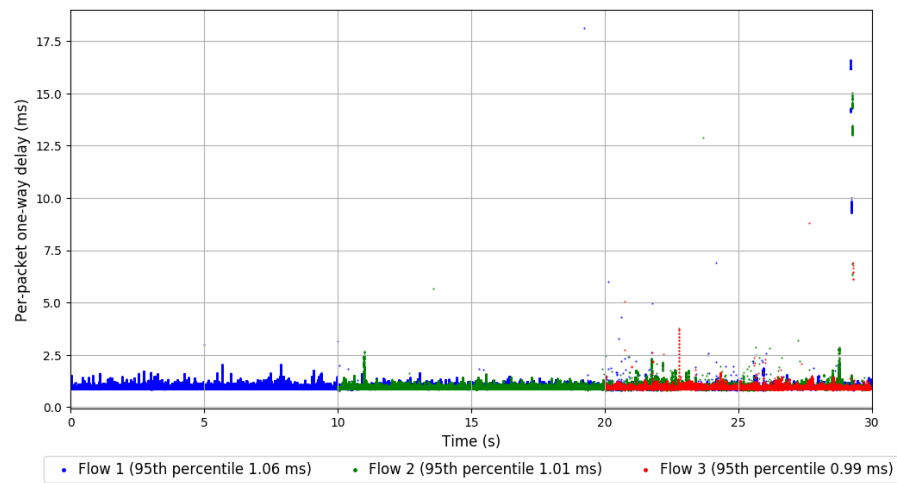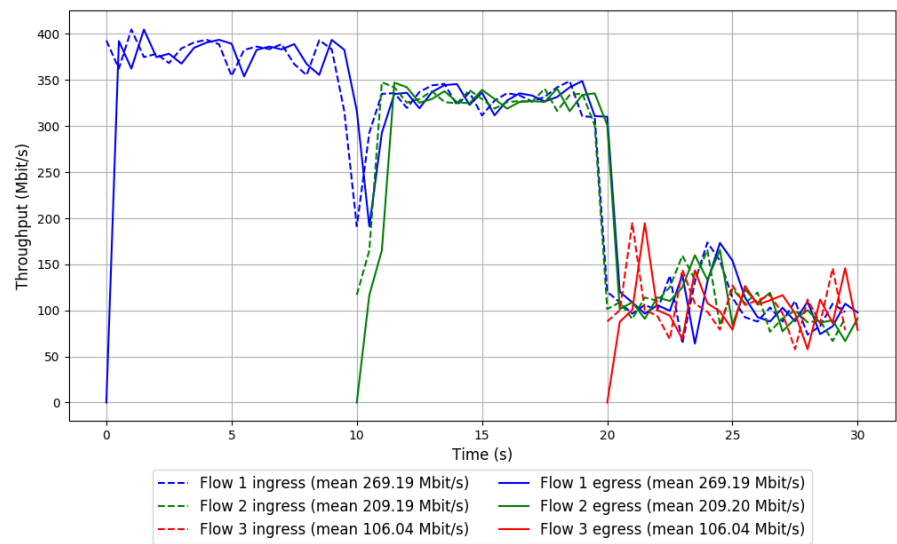
## Run 5: Report of TCP BBR — Data Link



Flow 1 ingress (mean 530.25 Mbit/s) — Flow 1 egress (mean 530.15 Mbit/s)
Flow 2 ingress (mean 405.08 Mbit/s) — Flow 2 egress (mean 404.91 Mbit/s)
Flow 3 ingress (mean 329.02 Mbit/s) — Flow 3 egress (mean 328.83 Mbit/s)



Flow 1 (95th percentile 5.91 ms) — Flow 2 (95th percentile 6.15 ms) — Flow 3 (95th percentile 7.41 ms)

```
Run 1: Statistics of Copa

Start at: 2019-01-25 19:11:32
End at: 2019-01-25 19:12:02
Local clock offset: -1.047 ms
Remote clock offset: 0.173 ms


# Below is generated by plot.py at 2019-01-25 21:59:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 440.07 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 265.54 Mbit/s
95th percentile per-packet one-way delay: 1.165 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 210.29 Mbit/s
95th percentile per-packet one-way delay: 1.080 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 104.03 Mbit/s
95th percentile per-packet one-way delay: 0.929 ms
Loss rate: 0.00%
```
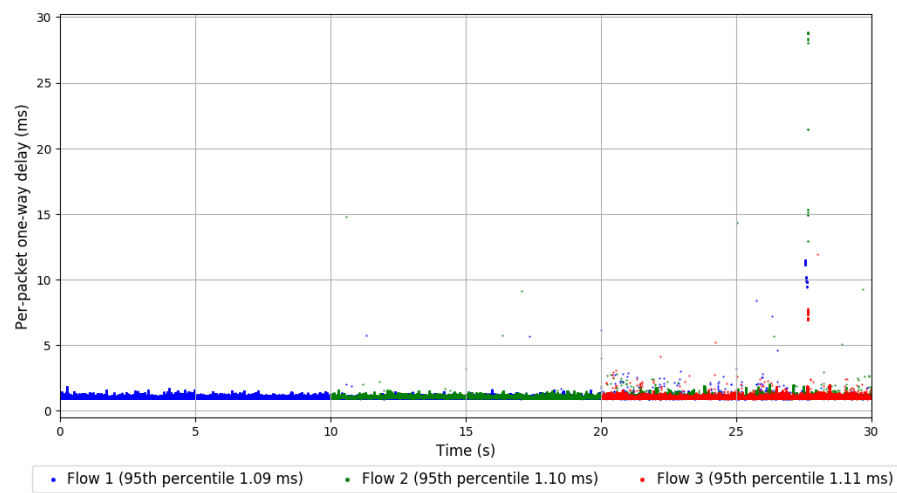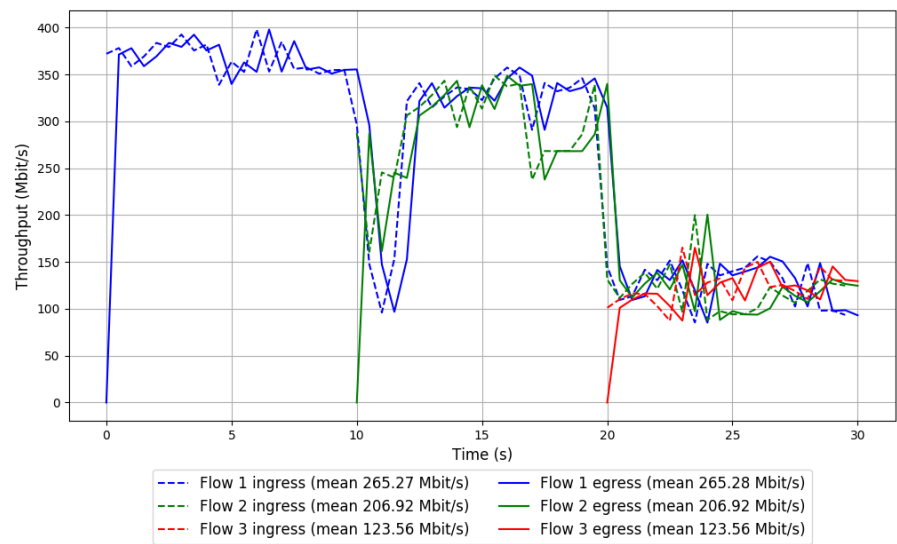
Run 1: Report of Copa — Data Link



- - - - Flow 1 ingress (mean 265.51 Mbit/s) ——— Flow 1 egress (mean 265.54 Mbit/s)
- - - - Flow 2 ingress (mean 210.26 Mbit/s) ——— Flow 2 egress (mean 210.29 Mbit/s)
- - - - Flow 3 ingress (mean 103.88 Mbit/s) ——— Flow 3 egress (mean 104.03 Mbit/s)



• Flow 1 (95th percentile 1.17 ms)   • Flow 2 (95th percentile 1.08 ms)   • Flow 3 (95th percentile 0.93 ms)

```
Run 2: Statistics of Copa

Start at: 2019-01-25 19:41:37
End at: 2019-01-25 19:42:07
Local clock offset: 0.08 ms
Remote clock offset: 0.618 ms


# Below is generated by plot.py at 2019-01-25 21:59:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 443.78 Mbit/s
95th percentile per-packet one-way delay: 1.037 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 269.19 Mbit/s
95th percentile per-packet one-way delay: 1.056 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 209.20 Mbit/s
95th percentile per-packet one-way delay: 1.009 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 106.04 Mbit/s
95th percentile per-packet one-way delay: 0.988 ms
Loss rate: 0.00%
```
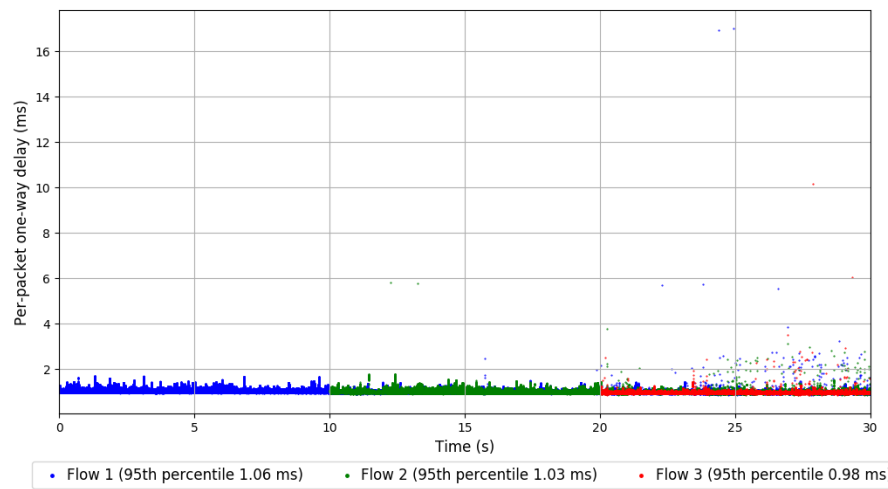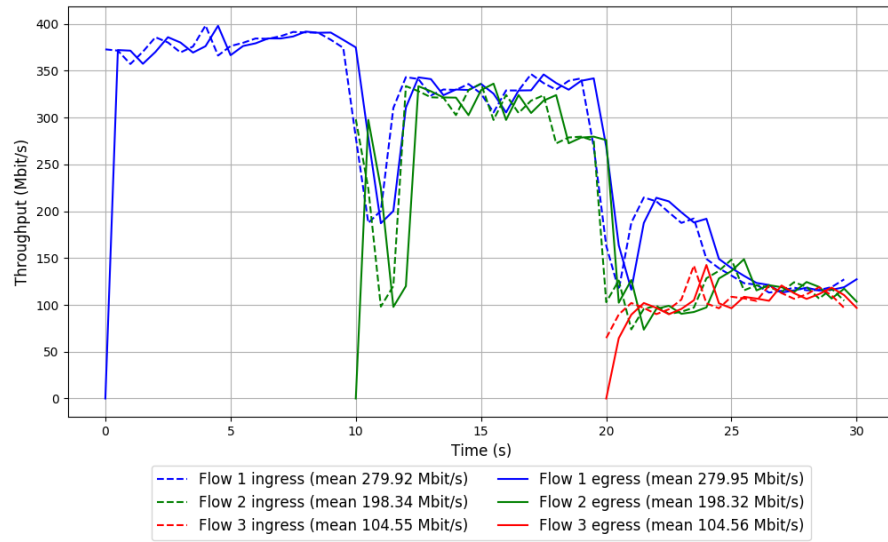
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2019-01-25 20:11:36
End at: 2019-01-25 20:12:06
Local clock offset: 0.102 ms
Remote clock offset: 0.739 ms


# Below is generated by plot.py at 2019-01-25 21:59:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 444.09 Mbit/s
95th percentile per-packet one-way delay: 1.098 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 265.28 Mbit/s
95th percentile per-packet one-way delay: 1.093 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 206.92 Mbit/s
95th percentile per-packet one-way delay: 1.104 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 123.56 Mbit/s
95th percentile per-packet one-way delay: 1.110 ms
Loss rate: 0.02%
```
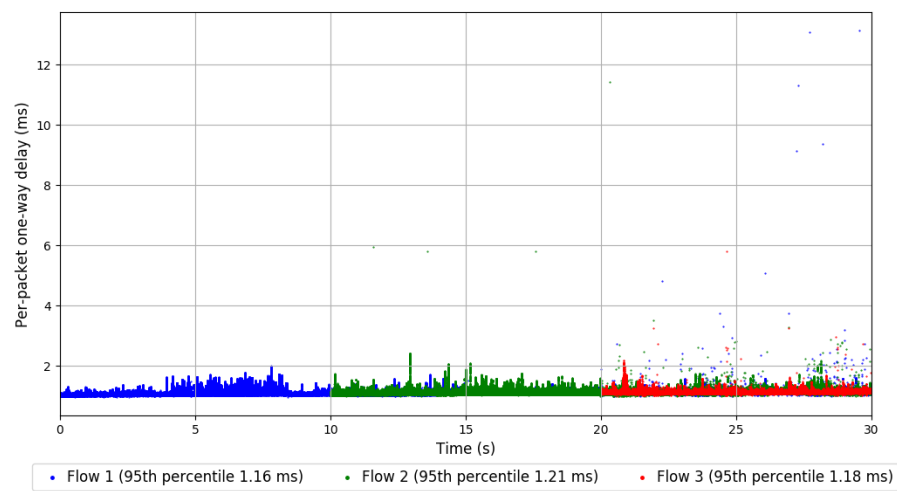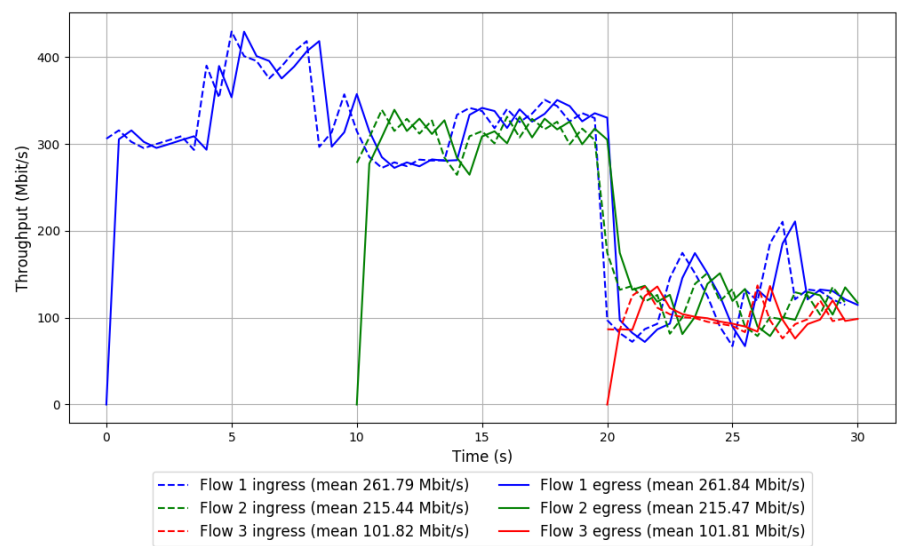
Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2019-01-25 20:41:36
End at: 2019-01-25 20:42:06
Local clock offset: 0.198 ms
Remote clock offset: 0.267 ms


# Below is generated by plot.py at 2019-01-25 22:07:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 446.73 Mbit/s
95th percentile per-packet one-way delay: 1.051 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 279.95 Mbit/s
95th percentile per-packet one-way delay: 1.064 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 198.32 Mbit/s
95th percentile per-packet one-way delay: 1.028 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 104.56 Mbit/s
95th percentile per-packet one-way delay: 0.985 ms
Loss rate: 0.01%
```
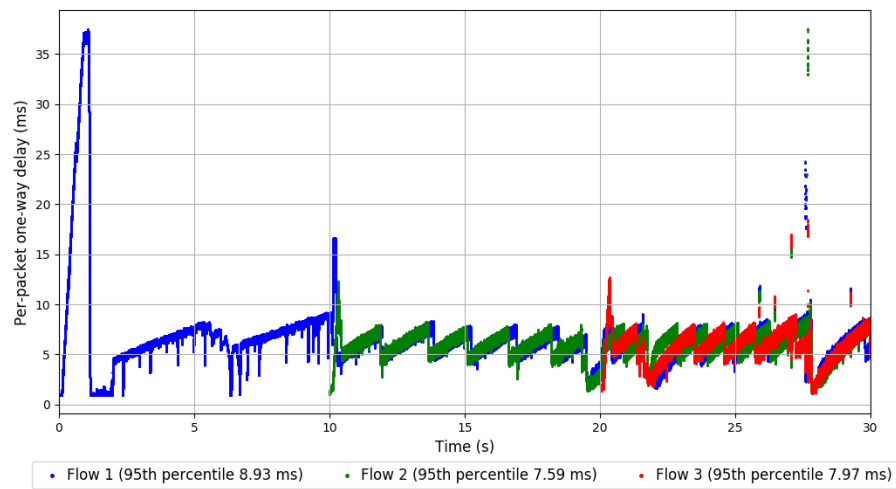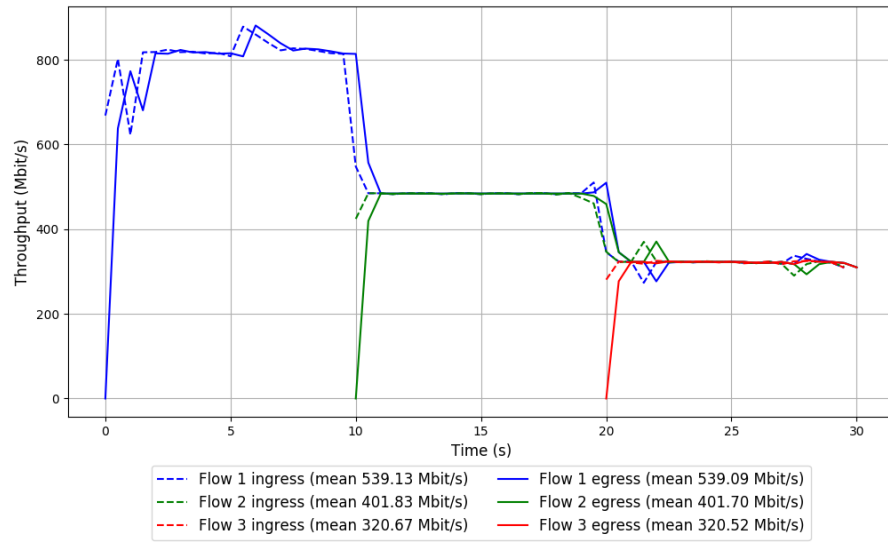
Run 4: Report of Copa — Data Link



- - - Flow 1 ingress (mean 279.92 Mbit/s) —— Flow 1 egress (mean 279.95 Mbit/s)
- - - Flow 2 ingress (mean 198.34 Mbit/s) —— Flow 2 egress (mean 198.32 Mbit/s)
- - - Flow 3 ingress (mean 104.55 Mbit/s) —— Flow 3 egress (mean 104.56 Mbit/s)



• Flow 1 (95th percentile 1.06 ms)    • Flow 2 (95th percentile 1.03 ms)    • Flow 3 (95th percentile 0.98 ms)

```
Run 5: Statistics of Copa

Start at: 2019-01-25 21:11:39
End at: 2019-01-25 21:12:09
Local clock offset: 2.828 ms
Remote clock offset: 0.68 ms


# Below is generated by plot.py at 2019-01-25 22:07:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 439.17 Mbit/s
95th percentile per-packet one-way delay: 1.183 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 261.84 Mbit/s
95th percentile per-packet one-way delay: 1.163 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 215.47 Mbit/s
95th percentile per-packet one-way delay: 1.208 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 101.81 Mbit/s
95th percentile per-packet one-way delay: 1.176 ms
Loss rate: 0.03%
```
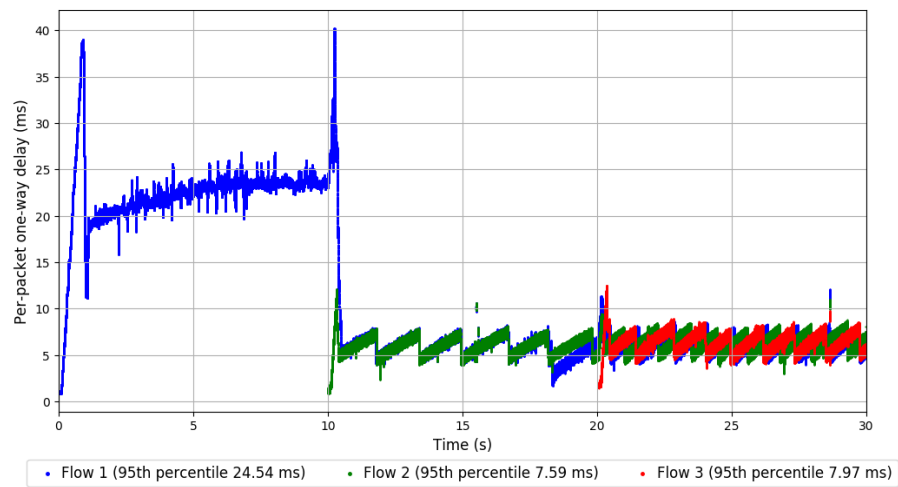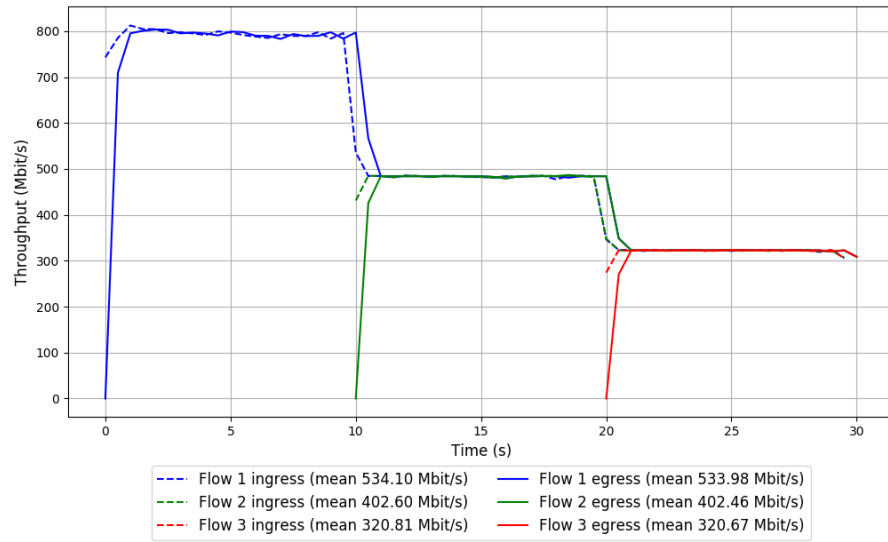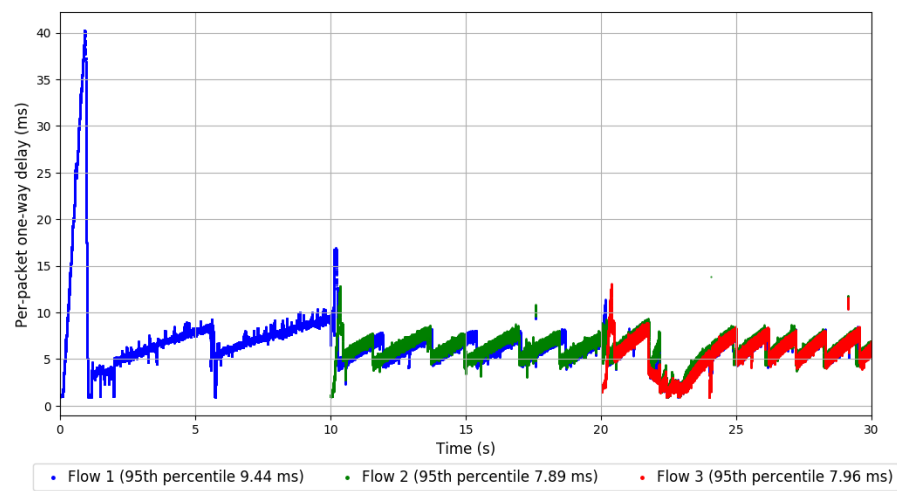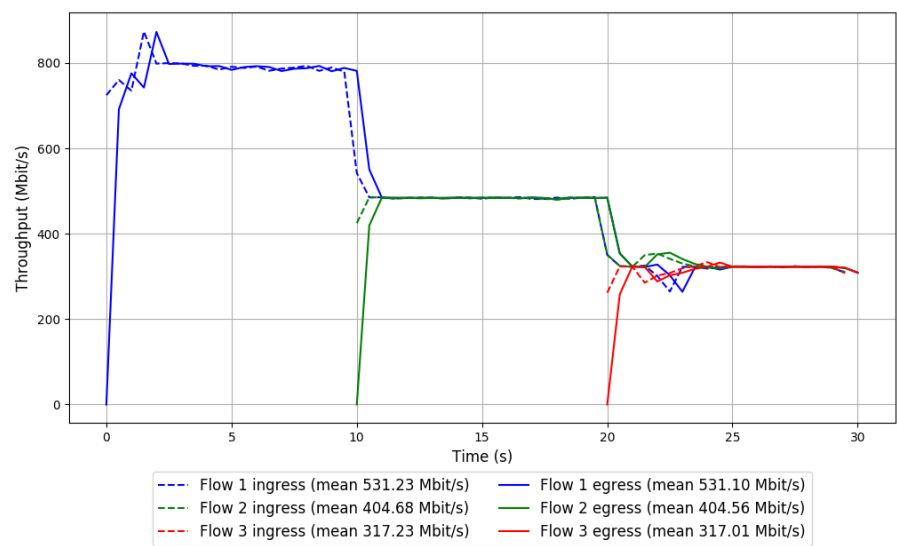
Run 5: Report of Copa — Data Link



Flow 1 ingress (mean 261.79 Mbit/s) --- Flow 1 egress (mean 261.84 Mbit/s) ---
Flow 2 ingress (mean 215.44 Mbit/s) --- Flow 2 egress (mean 215.47 Mbit/s) ---
Flow 3 ingress (mean 101.82 Mbit/s) --- Flow 3 egress (mean 101.81 Mbit/s) ---



• Flow 1 (95th percentile 1.16 ms)　　• Flow 2 (95th percentile 1.21 ms)　　• Flow 3 (95th percentile 1.18 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2019-01-25 19:34:38
End at: 2019-01-25 19:35:08
Local clock offset: 0.019 ms
Remote clock offset: 0.453 ms


# Below is generated by plot.py at 2019-01-25 22:07:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 913.23 Mbit/s
95th percentile per-packet one-way delay: 8.423 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 539.09 Mbit/s
95th percentile per-packet one-way delay: 8.928 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 401.70 Mbit/s
95th percentile per-packet one-way delay: 7.591 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 320.52 Mbit/s
95th percentile per-packet one-way delay: 7.971 ms
Loss rate: 0.07%
```
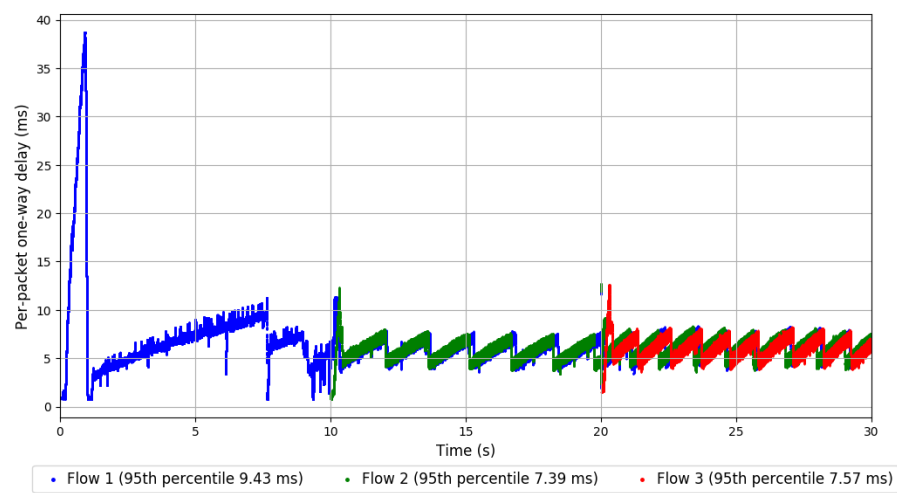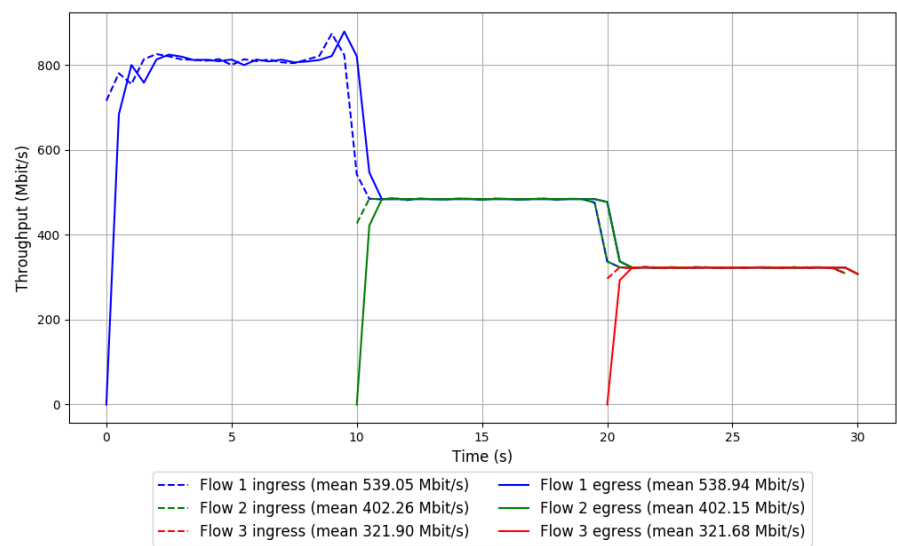
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2019-01-25 20:04:43
End at: 2019-01-25 20:05:13
Local clock offset: 0.107 ms
Remote clock offset: 0.93 ms


# Below is generated by plot.py at 2019-01-25 22:08:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 908.63 Mbit/s
95th percentile per-packet one-way delay: 23.860 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 533.98 Mbit/s
95th percentile per-packet one-way delay: 24.541 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 402.46 Mbit/s
95th percentile per-packet one-way delay: 7.587 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 320.67 Mbit/s
95th percentile per-packet one-way delay: 7.967 ms
Loss rate: 0.03%
```
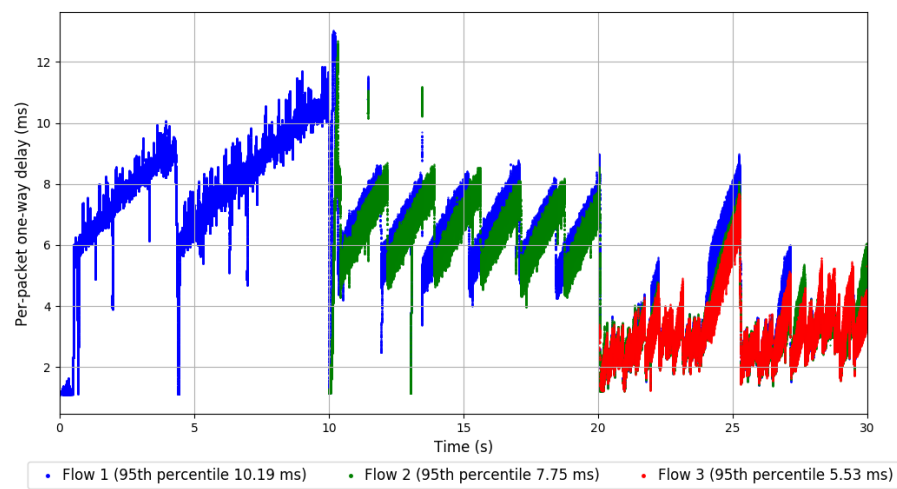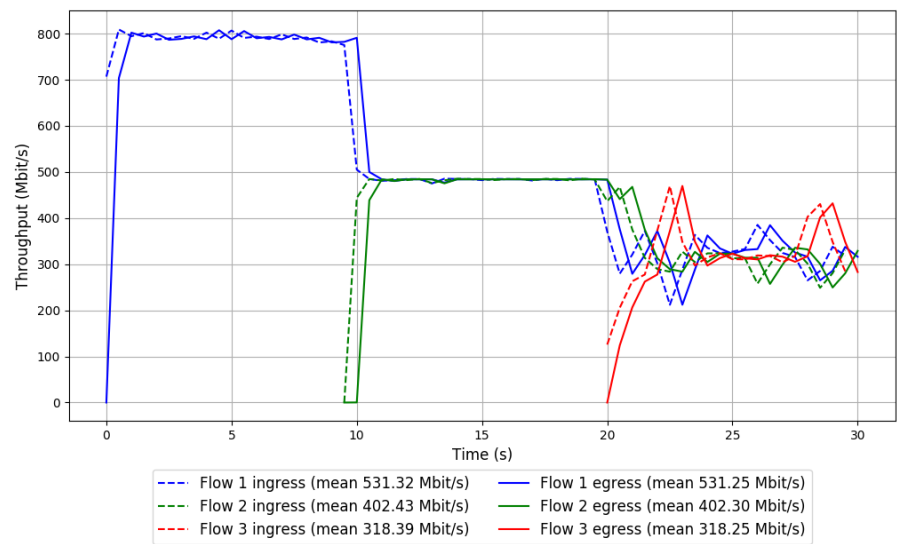
Run 2: Report of TCP Cubic — Data Link



- - - Flow 1 ingress (mean 534.10 Mbit/s) —— Flow 1 egress (mean 533.98 Mbit/s)
- - - Flow 2 ingress (mean 402.60 Mbit/s) —— Flow 2 egress (mean 402.46 Mbit/s)
- - - Flow 3 ingress (mean 320.81 Mbit/s) —— Flow 3 egress (mean 320.67 Mbit/s)



• Flow 1 (95th percentile 24.54 ms)   • Flow 2 (95th percentile 7.59 ms)   • Flow 3 (95th percentile 7.97 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2019-01-25 20:34:35
End at: 2019-01-25 20:35:05
Local clock offset: 0.175 ms
Remote clock offset: 0.743 ms


# Below is generated by plot.py at 2019-01-25 22:08:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 905.84 Mbit/s
95th percentile per-packet one-way delay: 8.851 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 531.10 Mbit/s
95th percentile per-packet one-way delay: 9.443 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 404.56 Mbit/s
95th percentile per-packet one-way delay: 7.891 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 317.01 Mbit/s
95th percentile per-packet one-way delay: 7.965 ms
Loss rate: 0.08%
```
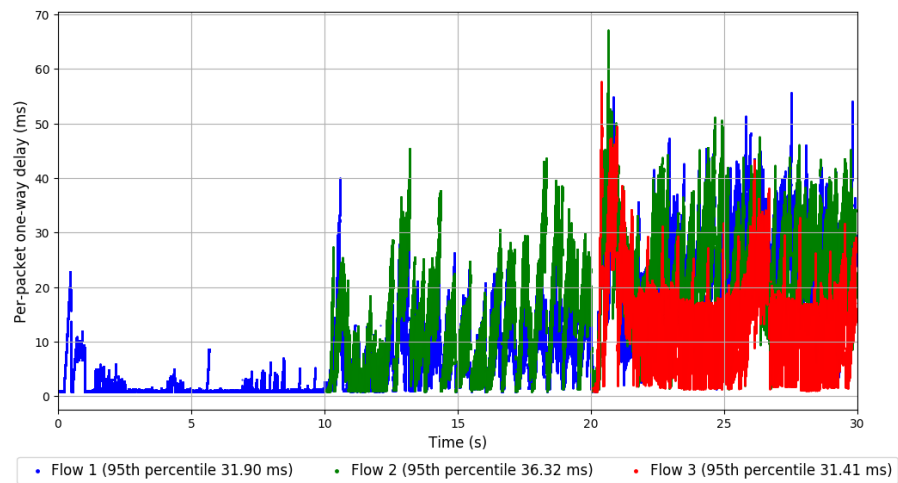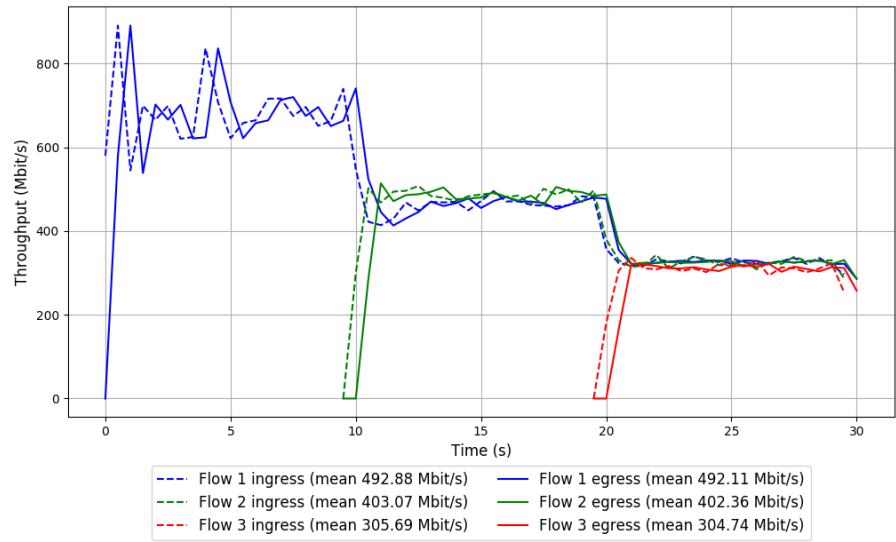
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2019-01-25 21:04:29
End at: 2019-01-25 21:04:59
Local clock offset: 1.678 ms
Remote clock offset: -0.207 ms


# Below is generated by plot.py at 2019-01-25 22:08:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 913.73 Mbit/s
95th percentile per-packet one-way delay: 8.912 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 538.94 Mbit/s
95th percentile per-packet one-way delay: 9.428 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 402.15 Mbit/s
95th percentile per-packet one-way delay: 7.392 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 321.68 Mbit/s
95th percentile per-packet one-way delay: 7.572 ms
Loss rate: 0.08%
```
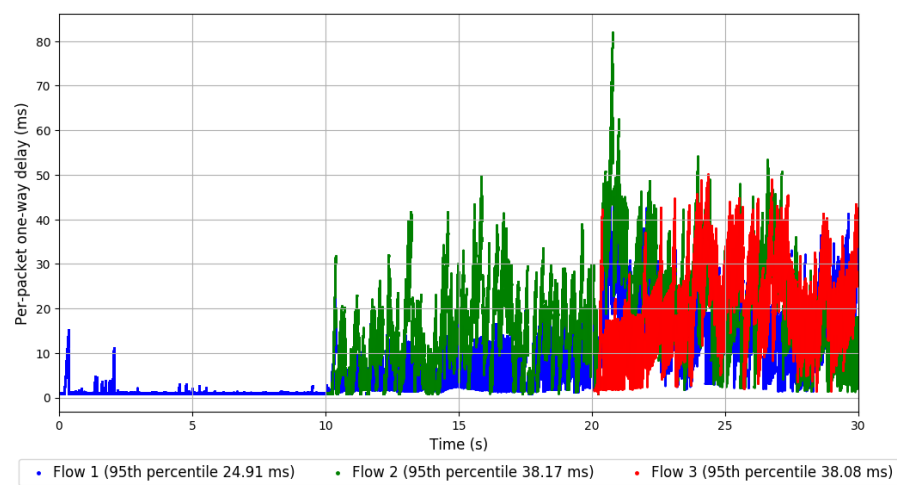
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2019-01-25 21:34:37
End at: 2019-01-25 21:35:07
Local clock offset: 2.382 ms
Remote clock offset: 3.605 ms


# Below is generated by plot.py at 2019-01-25 22:08:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 905.12 Mbit/s
95th percentile per-packet one-way delay: 9.576 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 531.25 Mbit/s
95th percentile per-packet one-way delay: 10.190 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 402.30 Mbit/s
95th percentile per-packet one-way delay: 7.746 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 318.25 Mbit/s
95th percentile per-packet one-way delay: 5.529 ms
Loss rate: 0.07%
```
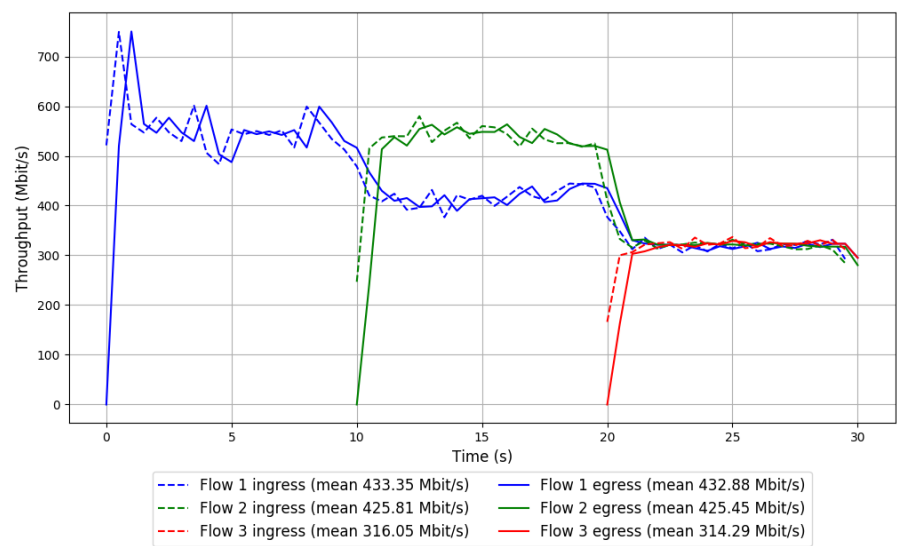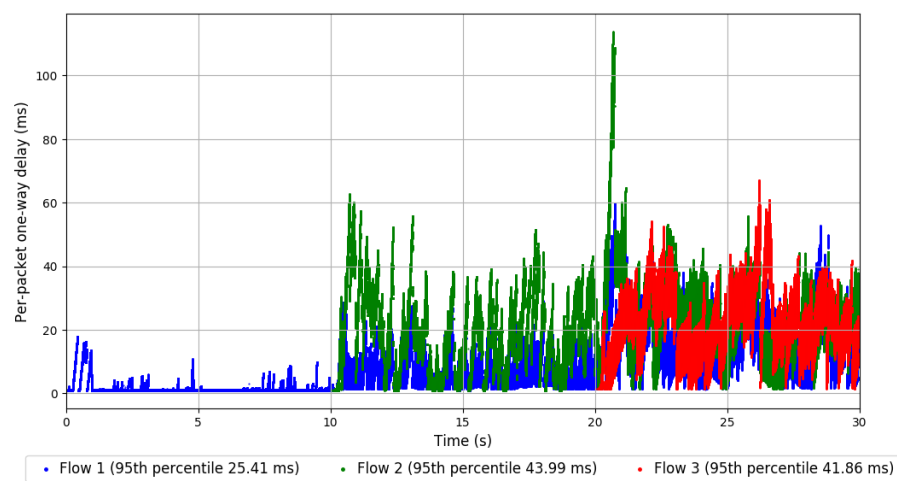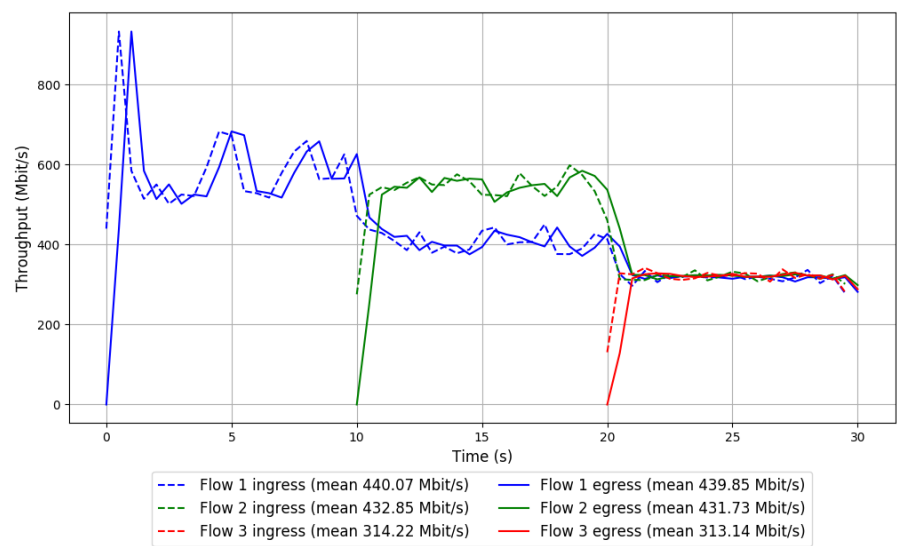
Run 5: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 531.32 Mbit/s) --- Flow 1 egress (mean 531.25 Mbit/s)
Flow 2 ingress (mean 402.43 Mbit/s) --- Flow 2 egress (mean 402.30 Mbit/s)
Flow 3 ingress (mean 318.39 Mbit/s) --- Flow 3 egress (mean 318.25 Mbit/s)



Flow 1 (95th percentile 10.19 ms)    Flow 2 (95th percentile 7.75 ms)    Flow 3 (95th percentile 5.53 ms)

```
Run 1: Statistics of FillP

Start at: 2019-01-25 19:19:06
End at: 2019-01-25 19:19:36
Local clock offset: -0.345 ms
Remote clock offset: 0.336 ms

# Below is generated by plot.py at 2019-01-25 22:10:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 861.15 Mbit/s
95th percentile per-packet one-way delay: 33.823 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 492.11 Mbit/s
95th percentile per-packet one-way delay: 31.896 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 402.36 Mbit/s
95th percentile per-packet one-way delay: 36.317 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 304.74 Mbit/s
95th percentile per-packet one-way delay: 31.407 ms
Loss rate: 0.22%
```
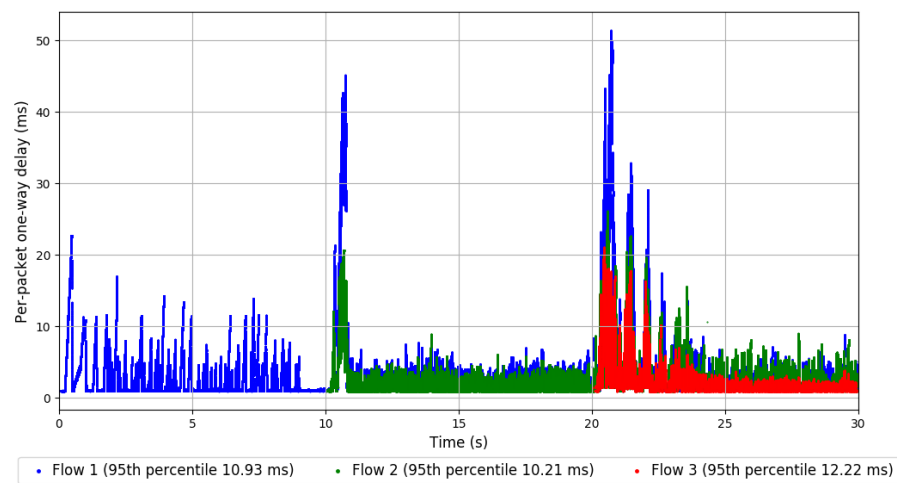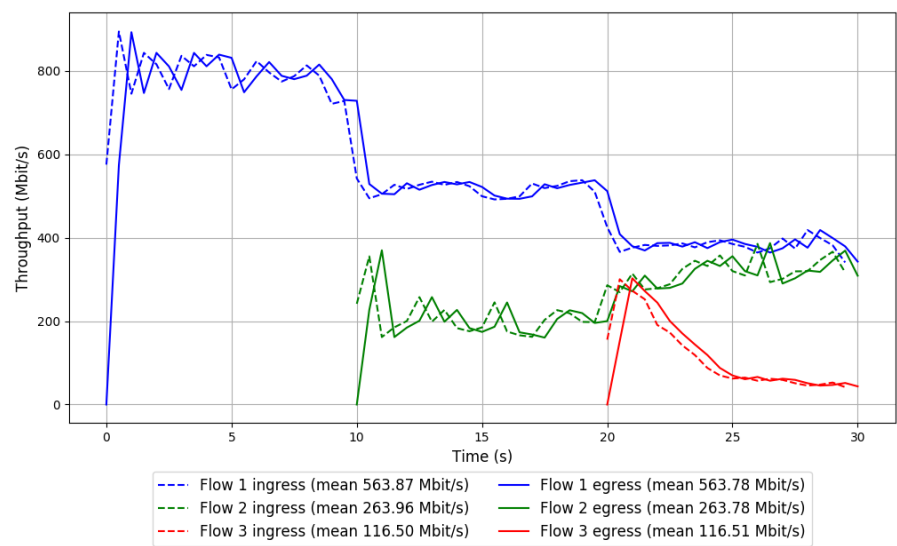
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2019-01-25 19:49:13
End at: 2019-01-25 19:49:43
Local clock offset: 0.101 ms
Remote clock offset: 0.707 ms

# Below is generated by plot.py at 2019-01-25 22:18:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 820.10 Mbit/s
95th percentile per-packet one-way delay: 33.874 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 432.88 Mbit/s
95th percentile per-packet one-way delay: 24.915 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 425.45 Mbit/s
95th percentile per-packet one-way delay: 38.169 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 314.29 Mbit/s
95th percentile per-packet one-way delay: 38.076 ms
Loss rate: 0.59%
```
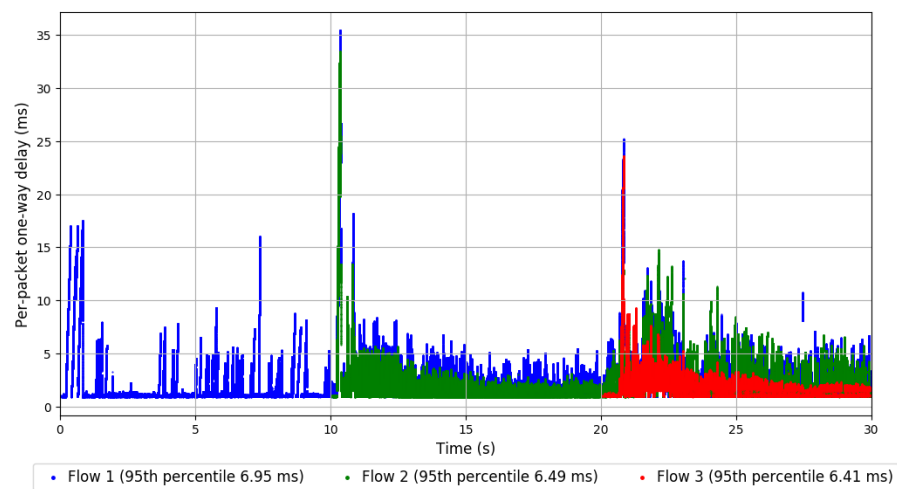
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2019-01-25 20:19:12
End at: 2019-01-25 20:19:42
Local clock offset: 0.106 ms
Remote clock offset: 0.731 ms

# Below is generated by plot.py at 2019-01-25 22:18:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 830.87 Mbit/s
95th percentile per-packet one-way delay: 37.570 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 439.85 Mbit/s
95th percentile per-packet one-way delay: 25.412 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 431.73 Mbit/s
95th percentile per-packet one-way delay: 43.995 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 313.14 Mbit/s
95th percentile per-packet one-way delay: 41.857 ms
Loss rate: 0.30%
```
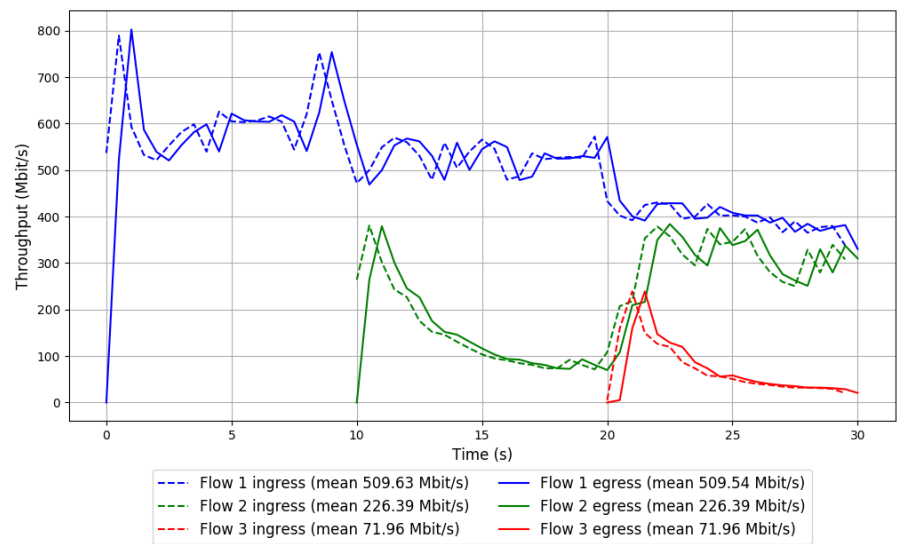
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2019-01-25 20:49:08
End at: 2019-01-25 20:49:38
Local clock offset: 0.245 ms
Remote clock offset: 0.0 ms


# Below is generated by plot.py at 2019-01-25 22:18:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 777.76 Mbit/s
95th percentile per-packet one-way delay: 10.923 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 563.78 Mbit/s
95th percentile per-packet one-way delay: 10.927 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 263.78 Mbit/s
95th percentile per-packet one-way delay: 10.212 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 116.51 Mbit/s
95th percentile per-packet one-way delay: 12.218 ms
Loss rate: 0.00%
```
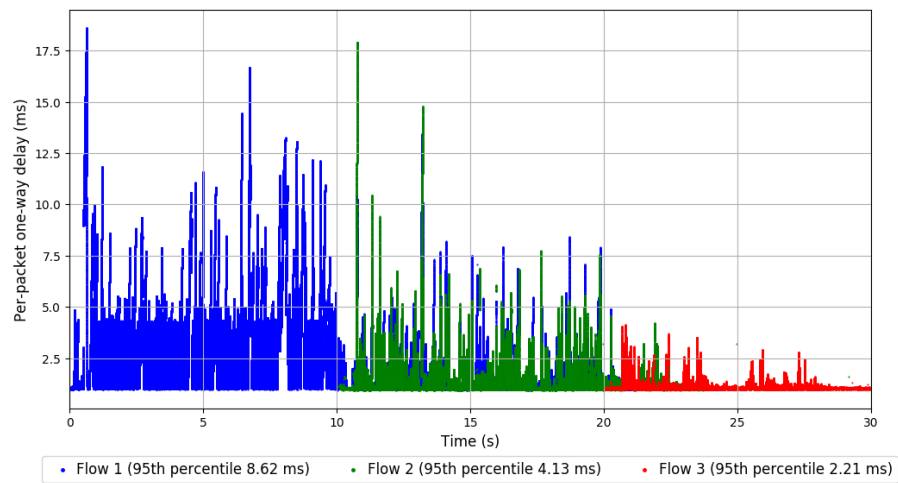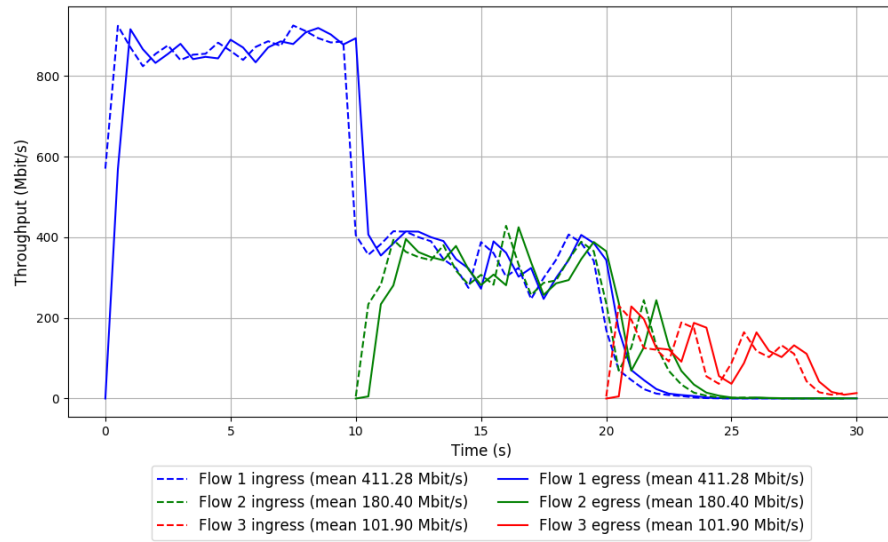
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2019-01-25 21:19:15
End at: 2019-01-25 21:19:45
Local clock offset: 3.545 ms
Remote clock offset: 2.298 ms


# Below is generated by plot.py at 2019-01-25 22:18:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 683.87 Mbit/s
95th percentile per-packet one-way delay: 6.795 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 509.54 Mbit/s
95th percentile per-packet one-way delay: 6.945 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 226.39 Mbit/s
95th percentile per-packet one-way delay: 6.490 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 71.96 Mbit/s
95th percentile per-packet one-way delay: 6.412 ms
Loss rate: 0.00%
```
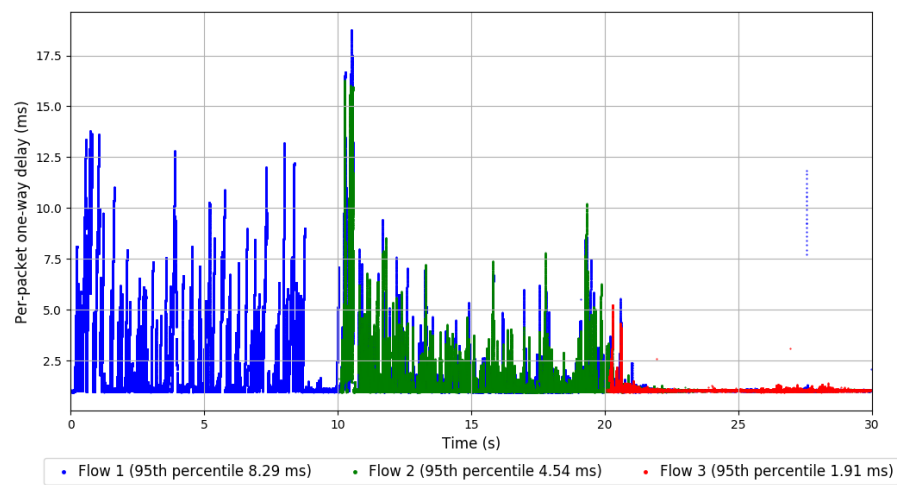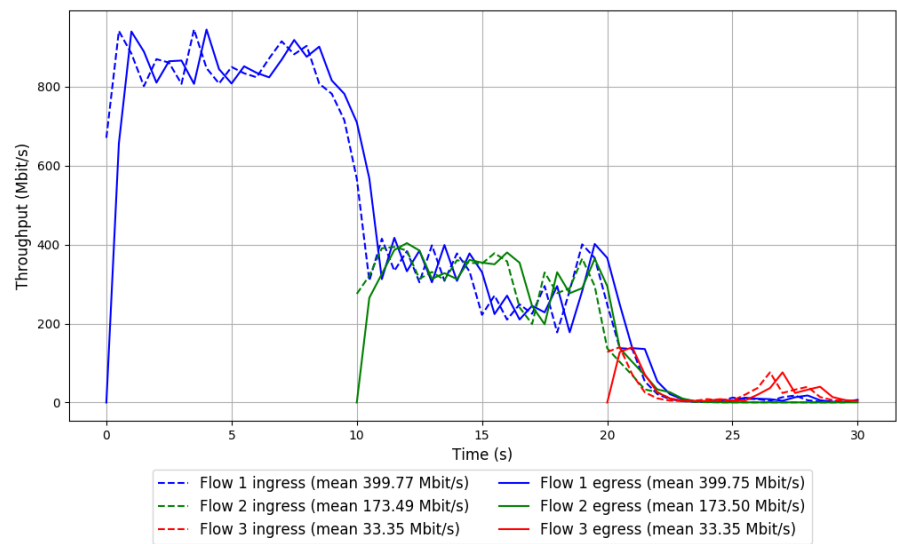
Run 5: Report of FillP — Data Link





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```
Run 1: Statistics of FillP-Sheep

Start at: 2019-01-25 19:22:02
End at: 2019-01-25 19:22:32
Local clock offset: -0.193 ms
Remote clock offset: 0.402 ms


# Below is generated by plot.py at 2019-01-25 22:18:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 564.92 Mbit/s
95th percentile per-packet one-way delay: 7.792 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 411.28 Mbit/s
95th percentile per-packet one-way delay: 8.621 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 180.40 Mbit/s
95th percentile per-packet one-way delay: 4.133 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 101.90 Mbit/s
95th percentile per-packet one-way delay: 2.205 ms
Loss rate: 0.00%
```
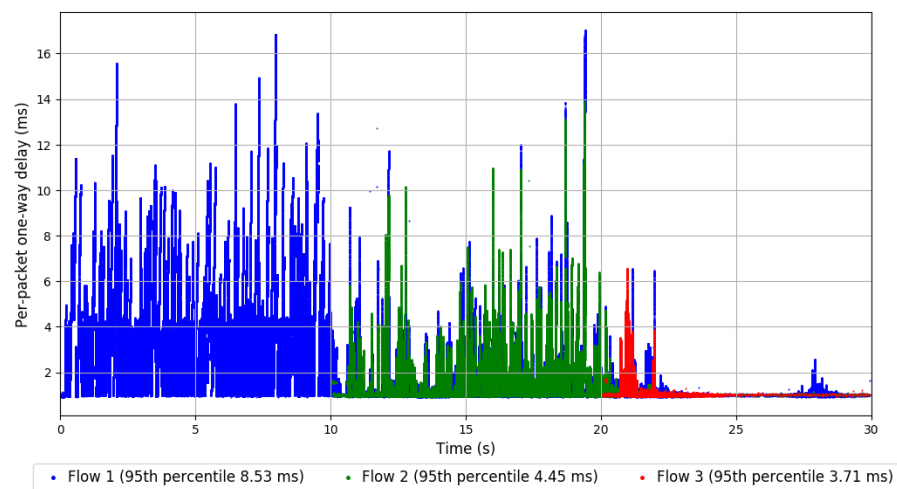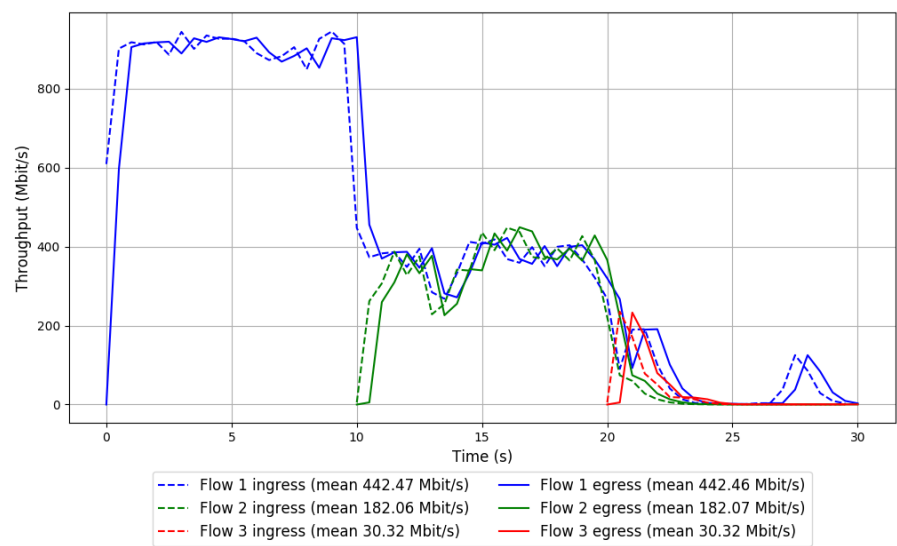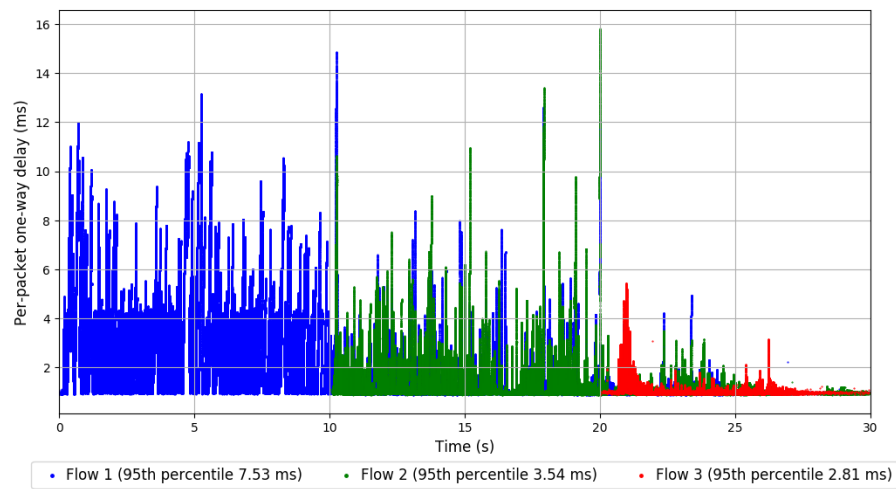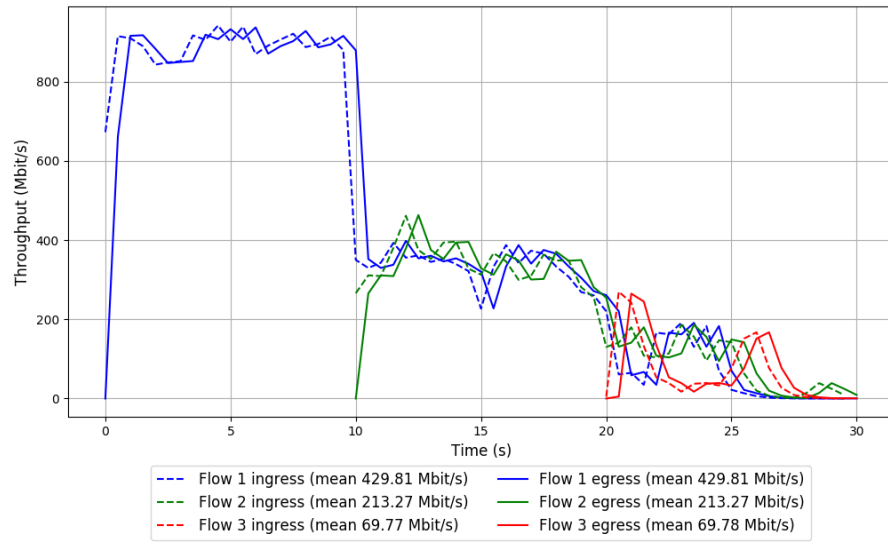
Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-01-25 19:52:08
End at: 2019-01-25 19:52:38
Local clock offset: 0.113 ms
Remote clock offset: 0.744 ms


# Below is generated by plot.py at 2019-01-25 22:18:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 526.10 Mbit/s
95th percentile per-packet one-way delay: 7.718 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 399.75 Mbit/s
95th percentile per-packet one-way delay: 8.288 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 173.50 Mbit/s
95th percentile per-packet one-way delay: 4.535 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 33.35 Mbit/s
95th percentile per-packet one-way delay: 1.910 ms
Loss rate: 0.00%
```

Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2019-01-25 20:22:06
End at: 2019-01-25 20:22:36
Local clock offset: 0.116 ms
Remote clock offset: 0.748 ms


# Below is generated by plot.py at 2019-01-25 22:18:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 573.42 Mbit/s
95th percentile per-packet one-way delay: 8.037 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 442.46 Mbit/s
95th percentile per-packet one-way delay: 8.525 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 182.07 Mbit/s
95th percentile per-packet one-way delay: 4.450 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 30.32 Mbit/s
95th percentile per-packet one-way delay: 3.708 ms
Loss rate: 0.00%
```
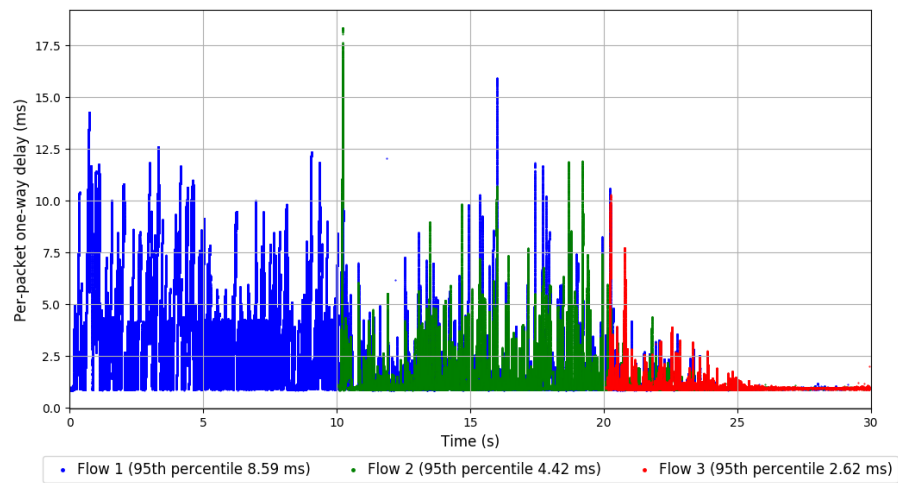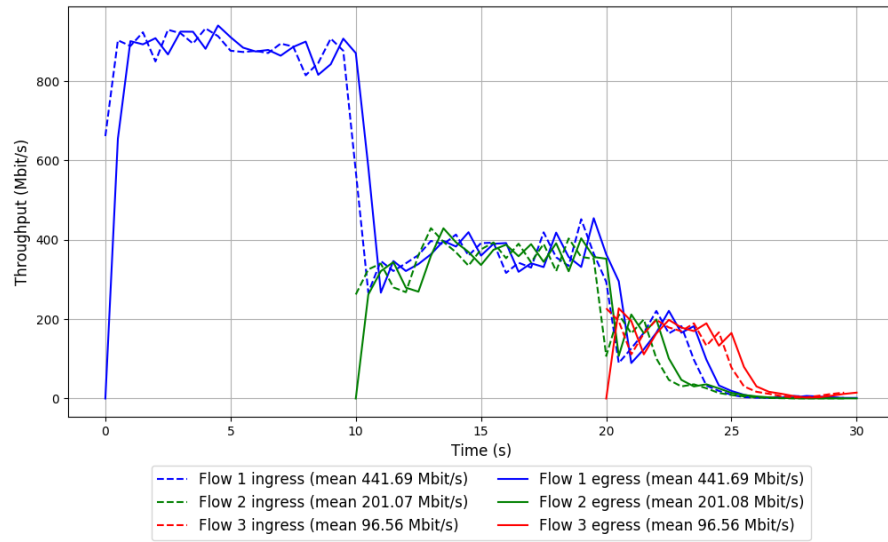
Run 3: Report of FillP-Sheep — Data Link



Flow 1 ingress (mean 442.47 Mbit/s)  Flow 1 egress (mean 442.46 Mbit/s)
Flow 2 ingress (mean 182.06 Mbit/s)  Flow 2 egress (mean 182.07 Mbit/s)
Flow 3 ingress (mean 30.32 Mbit/s)  Flow 3 egress (mean 30.32 Mbit/s)



Flow 1 (95th percentile 8.53 ms)   Flow 2 (95th percentile 4.45 ms)   Flow 3 (95th percentile 3.71 ms)

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```
Run 4: Statistics of FillP-Sheep

Start at: 2019-01-25 20:52:01
End at: 2019-01-25 20:52:31
Local clock offset: 0.253 ms
Remote clock offset: -0.017 ms

# Below is generated by plot.py at 2019-01-25 22:19:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 594.48 Mbit/s
95th percentile per-packet one-way delay: 7.054 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 429.81 Mbit/s
95th percentile per-packet one-way delay: 7.525 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 213.27 Mbit/s
95th percentile per-packet one-way delay: 3.544 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 69.78 Mbit/s
95th percentile per-packet one-way delay: 2.815 ms
Loss rate: 0.00%
```
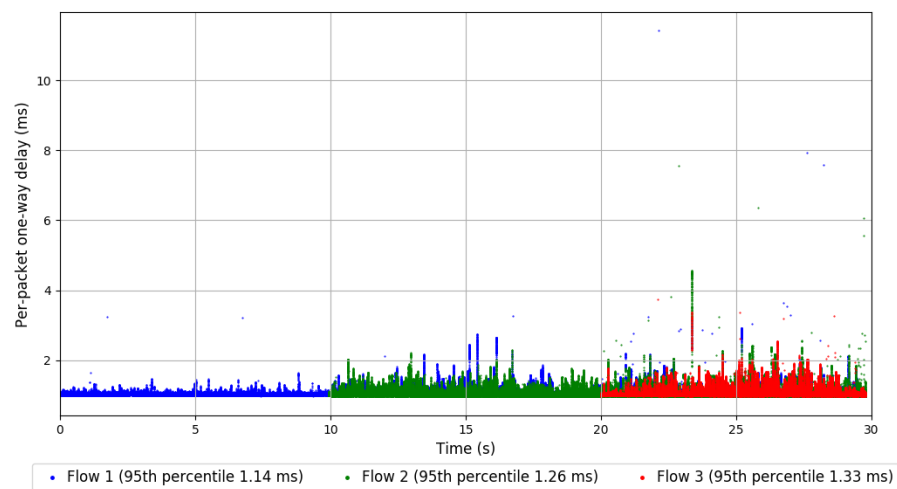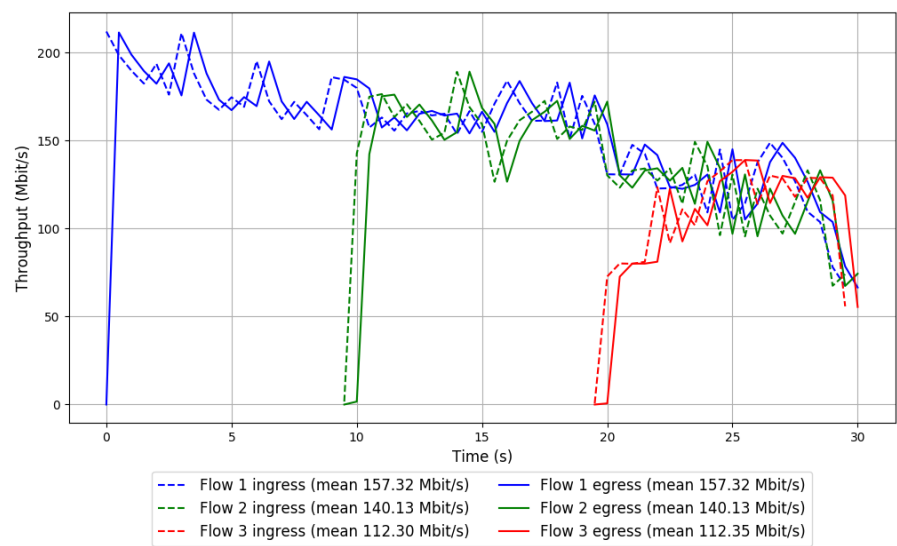
Run 4: Report of FillP-Sheep — Data Link

```
Run 5: Statistics of FillP-Sheep

Start at: 2019-01-25 21:22:05
End at: 2019-01-25 21:22:35
Local clock offset: 3.749 ms
Remote clock offset: 2.701 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 607.13 Mbit/s
95th percentile per-packet one-way delay: 8.091 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 441.69 Mbit/s
95th percentile per-packet one-way delay: 8.589 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 201.08 Mbit/s
95th percentile per-packet one-way delay: 4.420 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 96.56 Mbit/s
95th percentile per-packet one-way delay: 2.618 ms
Loss rate: 0.00%
```
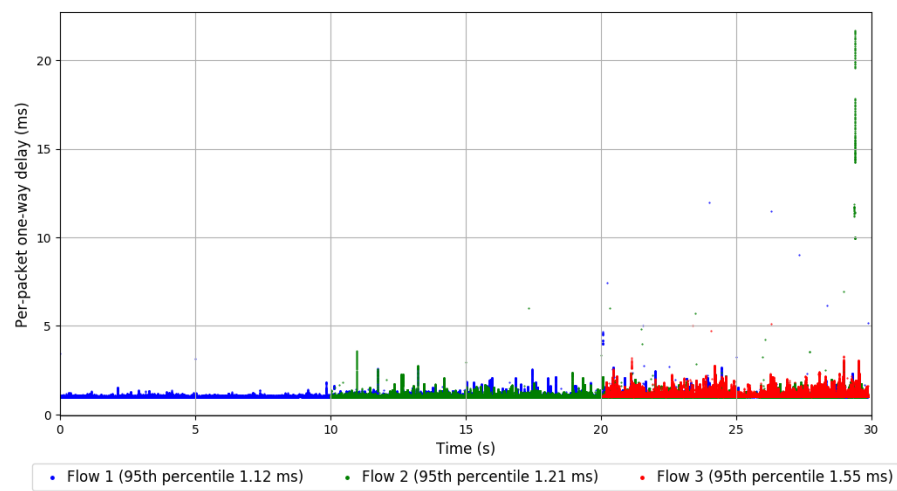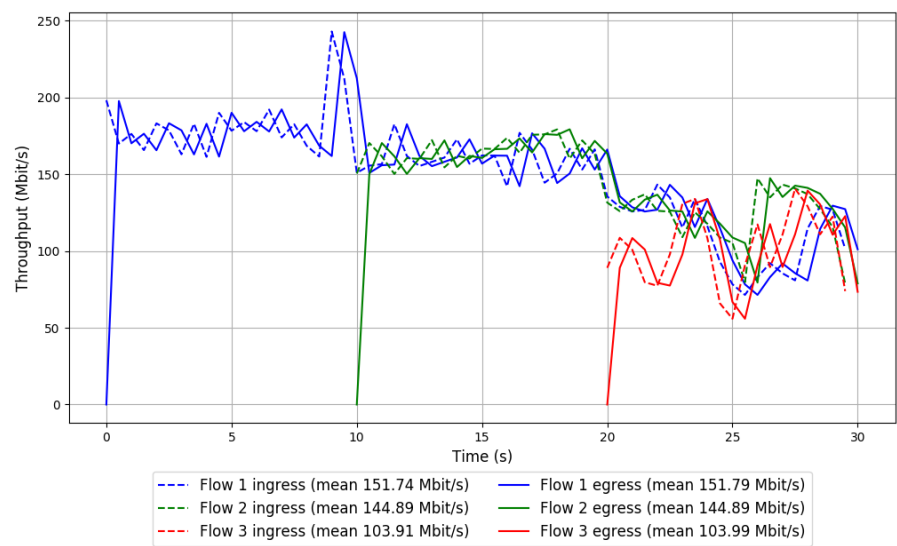
Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2019-01-25 19:28:48
End at: 2019-01-25 19:29:18
Local clock offset: -0.003 ms
Remote clock offset: 0.48 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 287.60 Mbit/s
95th percentile per-packet one-way delay: 1.214 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 157.32 Mbit/s
95th percentile per-packet one-way delay: 1.141 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 140.13 Mbit/s
95th percentile per-packet one-way delay: 1.262 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 112.35 Mbit/s
95th percentile per-packet one-way delay: 1.333 ms
Loss rate: 0.02%
```
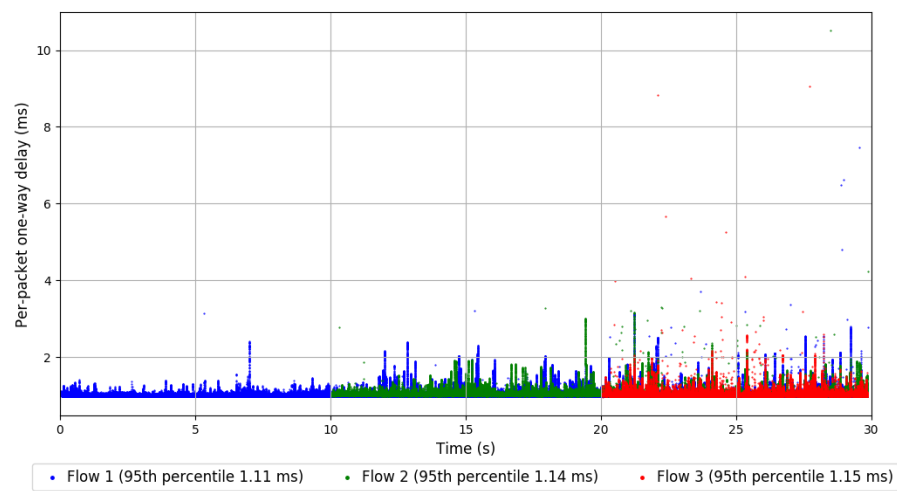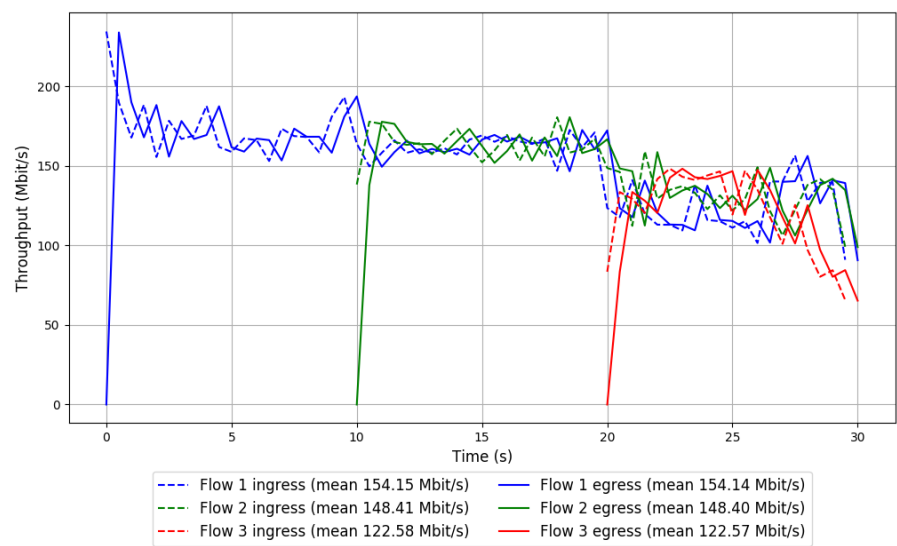
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2019-01-25 19:58:52
End at: 2019-01-25 19:59:22
Local clock offset: 0.138 ms
Remote clock offset: 0.927 ms

# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 282.14 Mbit/s
95th percentile per-packet one-way delay: 1.230 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 151.79 Mbit/s
95th percentile per-packet one-way delay: 1.119 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 144.89 Mbit/s
95th percentile per-packet one-way delay: 1.210 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 103.99 Mbit/s
95th percentile per-packet one-way delay: 1.549 ms
Loss rate: 0.02%
```
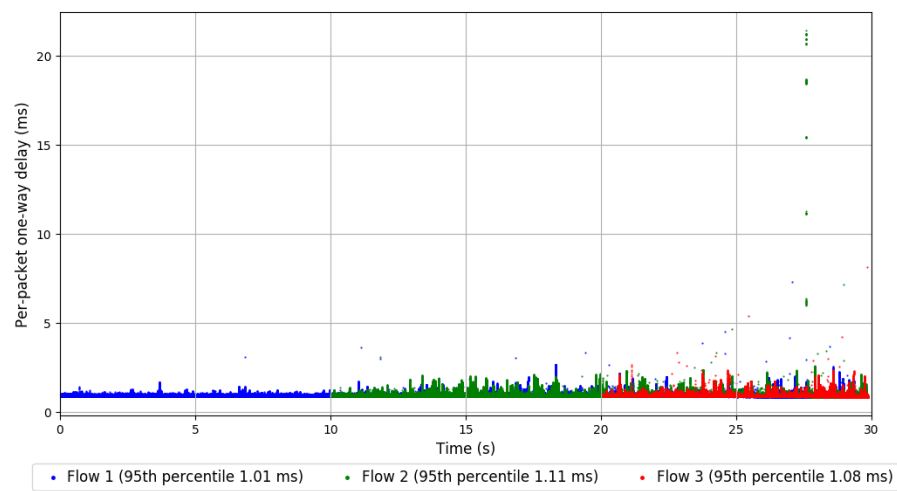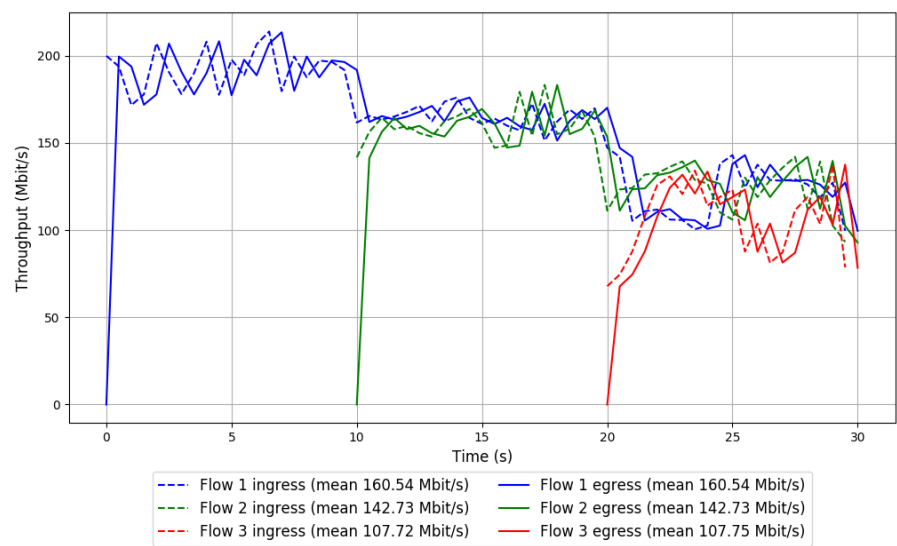
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-01-25 20:28:45
End at: 2019-01-25 20:29:15
Local clock offset: 0.122 ms
Remote clock offset: 0.736 ms

# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 292.93 Mbit/s
95th percentile per-packet one-way delay: 1.130 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 154.14 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 148.40 Mbit/s
95th percentile per-packet one-way delay: 1.141 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 122.57 Mbit/s
95th percentile per-packet one-way delay: 1.149 ms
Loss rate: 0.02%
```
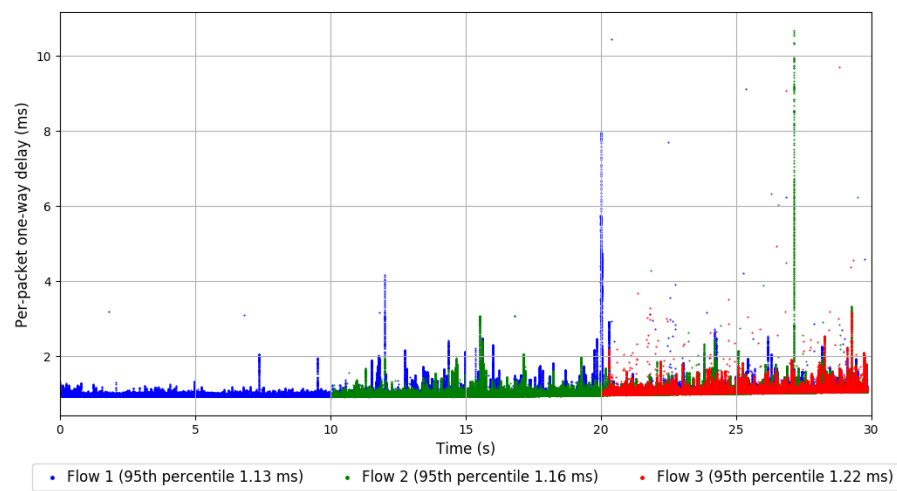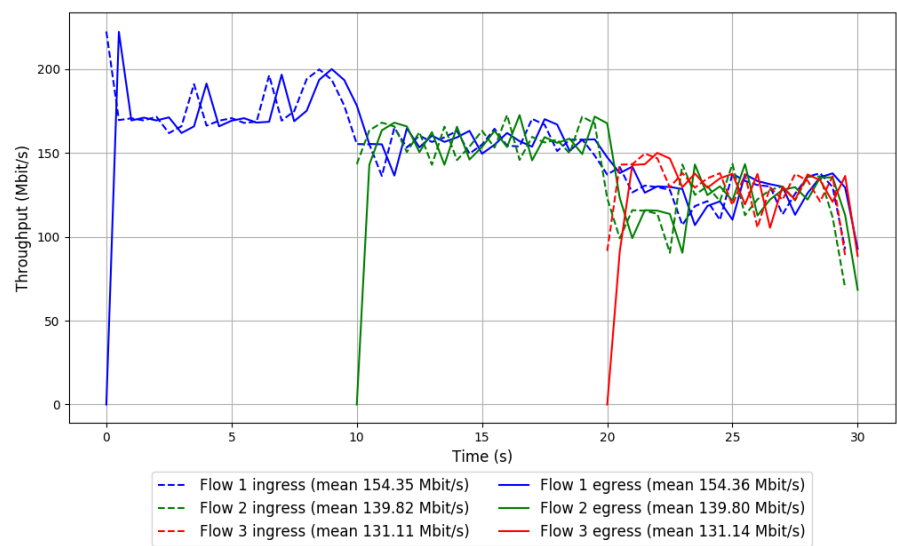
Run 3: Report of Indigo — Data Link



Flow 1 ingress (mean 154.15 Mbit/s)   Flow 1 egress (mean 154.14 Mbit/s)
Flow 2 ingress (mean 148.41 Mbit/s)   Flow 2 egress (mean 148.40 Mbit/s)
Flow 3 ingress (mean 122.58 Mbit/s)   Flow 3 egress (mean 122.57 Mbit/s)



Flow 1 (95th percentile 1.11 ms)   Flow 2 (95th percentile 1.14 ms)   Flow 3 (95th percentile 1.15 ms)

```
Run 4: Statistics of Indigo

Start at: 2019-01-25 20:58:40
End at: 2019-01-25 20:59:10
Local clock offset: 0.295 ms
Remote clock offset: -0.079 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 290.83 Mbit/s
95th percentile per-packet one-way delay: 1.047 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 160.54 Mbit/s
95th percentile per-packet one-way delay: 1.013 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 142.73 Mbit/s
95th percentile per-packet one-way delay: 1.107 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 107.75 Mbit/s
95th percentile per-packet one-way delay: 1.081 ms
Loss rate: 0.03%
```
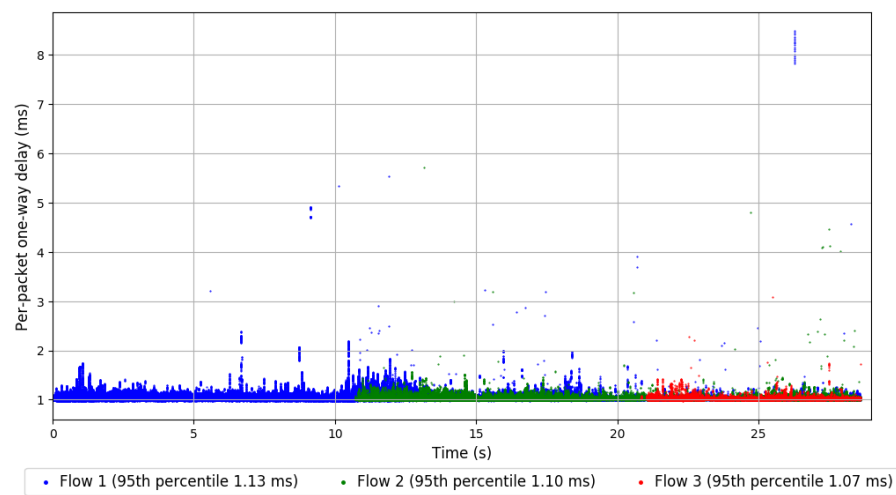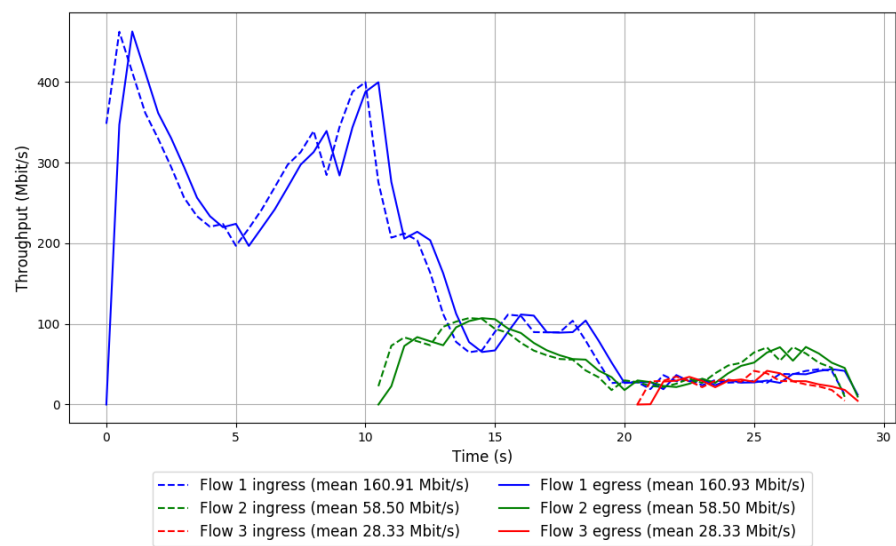
Run 4: Report of Indigo — Data Link



- - - Flow 1 ingress (mean 160.54 Mbit/s) —— Flow 1 egress (mean 160.54 Mbit/s)
- - - Flow 2 ingress (mean 142.73 Mbit/s) —— Flow 2 egress (mean 142.73 Mbit/s)
- - - Flow 3 ingress (mean 107.72 Mbit/s) —— Flow 3 egress (mean 107.75 Mbit/s)



- Flow 1 (95th percentile 1.01 ms)   • Flow 2 (95th percentile 1.11 ms)   • Flow 3 (95th percentile 1.08 ms)

```
Run 5: Statistics of Indigo

Start at: 2019-01-25 21:28:45
End at: 2019-01-25 21:29:15
Local clock offset: 4.116 ms
Remote clock offset: 3.235 ms

# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 290.28 Mbit/s
95th percentile per-packet one-way delay: 1.156 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 154.36 Mbit/s
95th percentile per-packet one-way delay: 1.128 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 139.80 Mbit/s
95th percentile per-packet one-way delay: 1.164 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 131.14 Mbit/s
95th percentile per-packet one-way delay: 1.220 ms
Loss rate: 0.00%
```
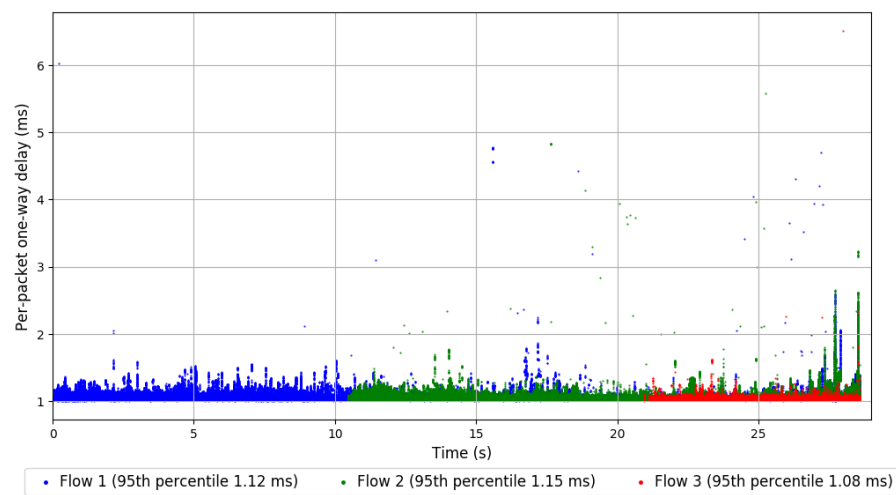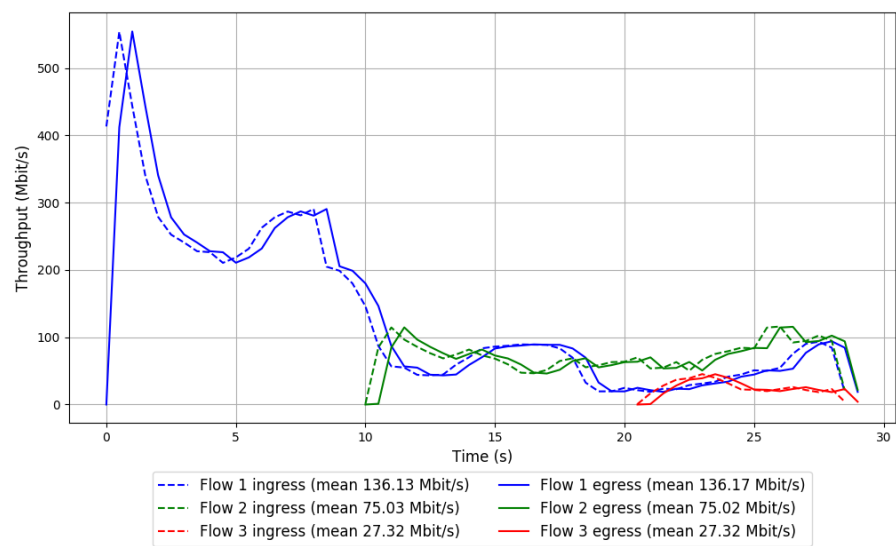
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesC3

Start at: 2019-01-25 19:40:17
End at: 2019-01-25 19:40:47
Local clock offset: 0.061 ms
Remote clock offset: 0.471 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 205.20 Mbit/s
95th percentile per-packet one-way delay: 1.124 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 160.93 Mbit/s
95th percentile per-packet one-way delay: 1.130 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 58.50 Mbit/s
95th percentile per-packet one-way delay: 1.096 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 28.33 Mbit/s
95th percentile per-packet one-way delay: 1.071 ms
Loss rate: 0.03%
```
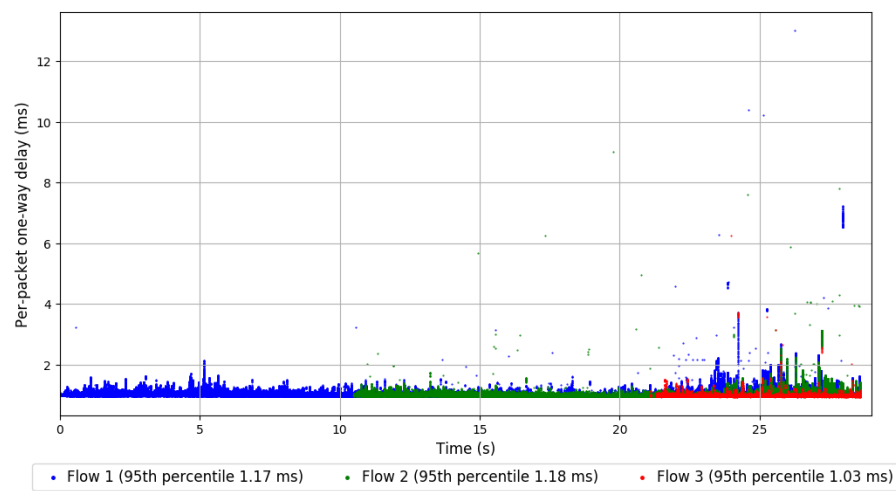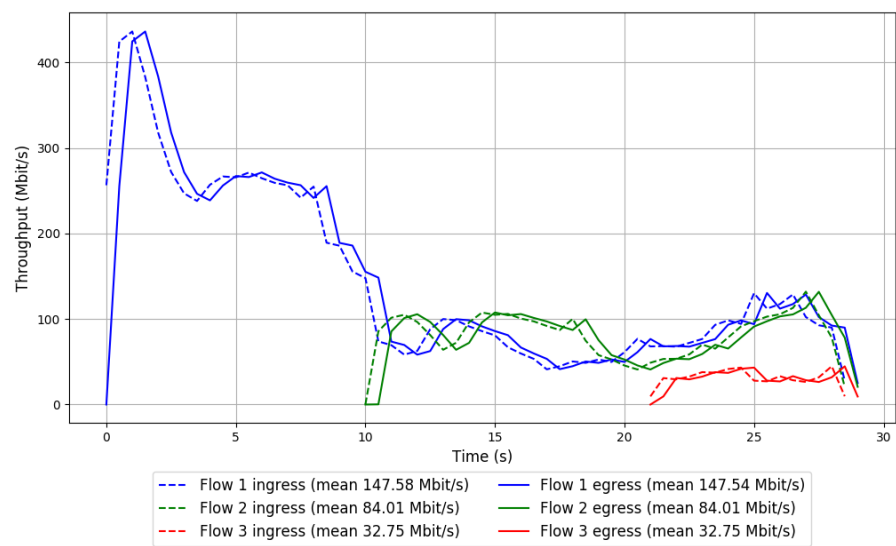
# Run 1: Report of Indigo-MusesC3 — Data Link

```
Run 2: Statistics of Indigo-MusesC3

Start at: 2019-01-25 20:10:17
End at: 2019-01-25 20:10:47
Local clock offset: 0.102 ms
Remote clock offset: 0.711 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 191.00 Mbit/s
95th percentile per-packet one-way delay: 1.128 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 136.17 Mbit/s
95th percentile per-packet one-way delay: 1.122 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 75.02 Mbit/s
95th percentile per-packet one-way delay: 1.153 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 27.32 Mbit/s
95th percentile per-packet one-way delay: 1.078 ms
Loss rate: 0.00%
```
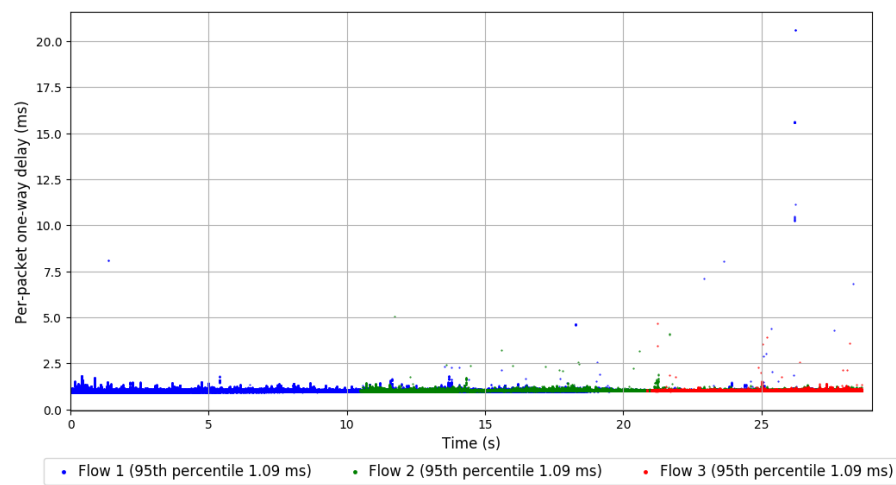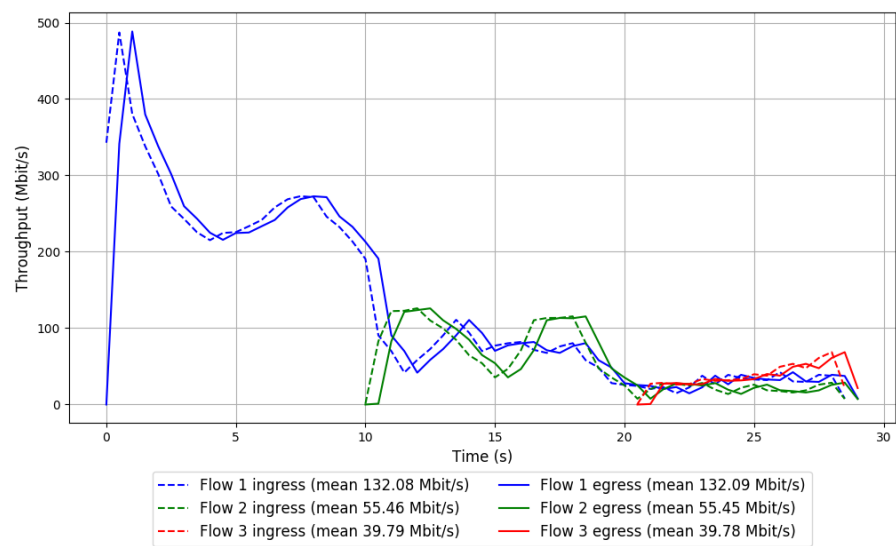
Run 2: Report of Indigo-MusesC3 — Data Link



Flow 1 ingress (mean 136.13 Mbit/s) --- Flow 1 egress (mean 136.17 Mbit/s)
Flow 2 ingress (mean 75.03 Mbit/s) --- Flow 2 egress (mean 75.02 Mbit/s)
Flow 3 ingress (mean 27.32 Mbit/s) --- Flow 3 egress (mean 27.32 Mbit/s)



Flow 1 (95th percentile 1.12 ms)   Flow 2 (95th percentile 1.15 ms)   Flow 3 (95th percentile 1.08 ms)

```
Run 3: Statistics of Indigo-MusesC3

Start at: 2019-01-25 20:40:16
End at: 2019-01-25 20:40:46
Local clock offset: 0.214 ms
Remote clock offset: 0.327 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 209.32 Mbit/s
95th percentile per-packet one-way delay: 1.168 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 147.54 Mbit/s
95th percentile per-packet one-way delay: 1.170 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 84.01 Mbit/s
95th percentile per-packet one-way delay: 1.181 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 32.75 Mbit/s
95th percentile per-packet one-way delay: 1.031 ms
Loss rate: 0.08%
```
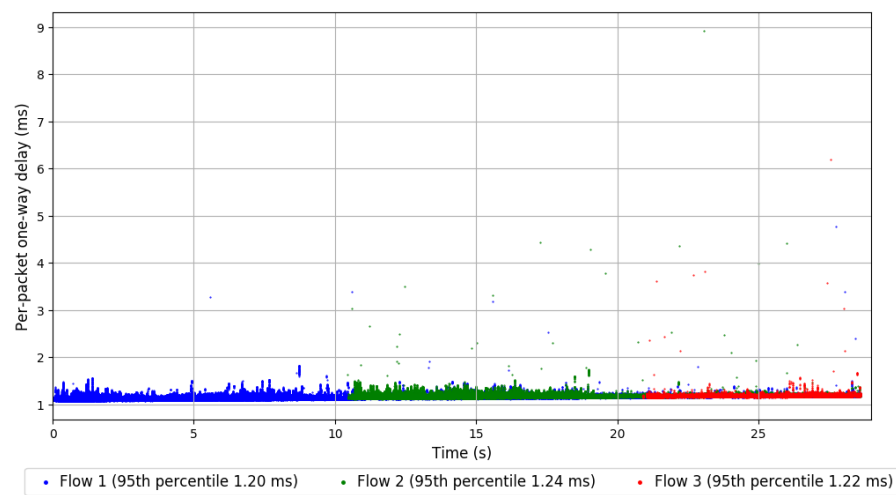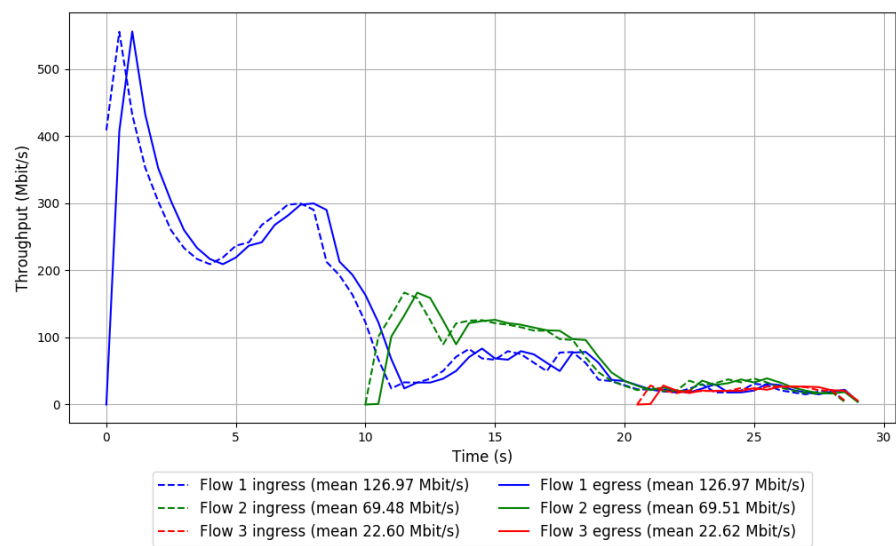
# Run 3: Report of Indigo-MusesC3 — Data Link



Flow 1 ingress (mean 147.58 Mbit/s) — Flow 1 egress (mean 147.54 Mbit/s)
Flow 2 ingress (mean 84.01 Mbit/s) — Flow 2 egress (mean 84.01 Mbit/s)
Flow 3 ingress (mean 32.75 Mbit/s) — Flow 3 egress (mean 32.75 Mbit/s)



Flow 1 (95th percentile 1.17 ms) • Flow 2 (95th percentile 1.18 ms) • Flow 3 (95th percentile 1.03 ms)

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```
Run 4: Statistics of Indigo-MusesC3

Start at: 2019-01-25 21:10:19
End at: 2019-01-25 21:10:49
Local clock offset: 2.665 ms
Remote clock offset: 0.348 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 178.01 Mbit/s
95th percentile per-packet one-way delay: 1.089 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 132.09 Mbit/s
95th percentile per-packet one-way delay: 1.087 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 55.45 Mbit/s
95th percentile per-packet one-way delay: 1.092 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 39.78 Mbit/s
95th percentile per-packet one-way delay: 1.089 ms
Loss rate: 0.03%
```
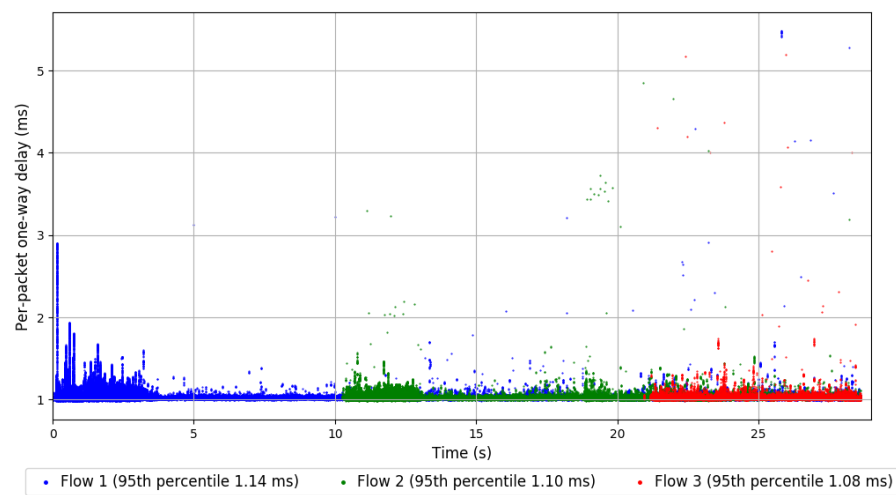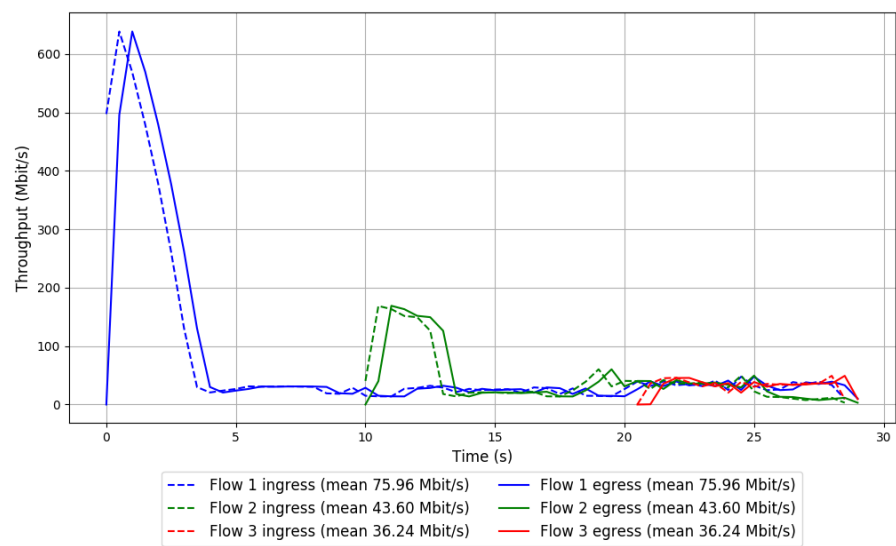
Run 4: Report of Indigo-MusesC3 — Data Link

```
Run 5: Statistics of Indigo-MusesC3

Start at: 2019-01-25 21:40:22
End at: 2019-01-25 21:40:52
Local clock offset: 1.204 ms
Remote clock offset: 3.754 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 177.19 Mbit/s
95th percentile per-packet one-way delay: 1.215 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 126.97 Mbit/s
95th percentile per-packet one-way delay: 1.198 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 69.51 Mbit/s
95th percentile per-packet one-way delay: 1.240 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 22.62 Mbit/s
95th percentile per-packet one-way delay: 1.224 ms
Loss rate: 0.01%
```
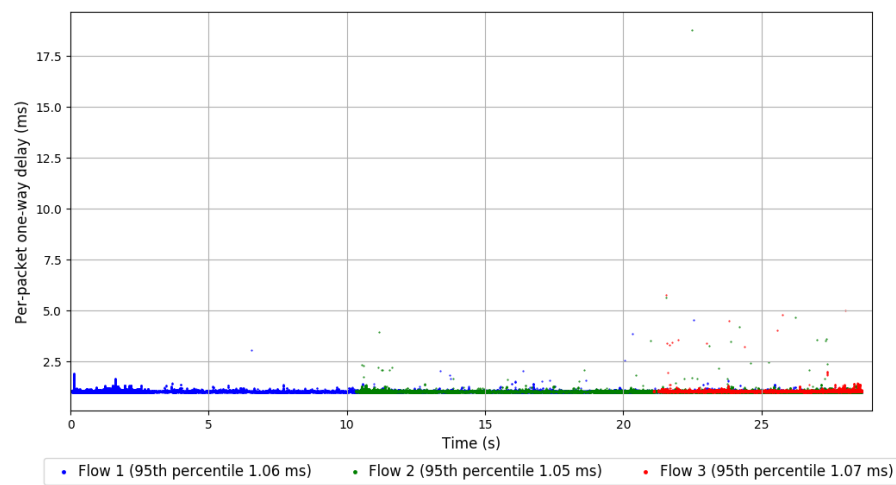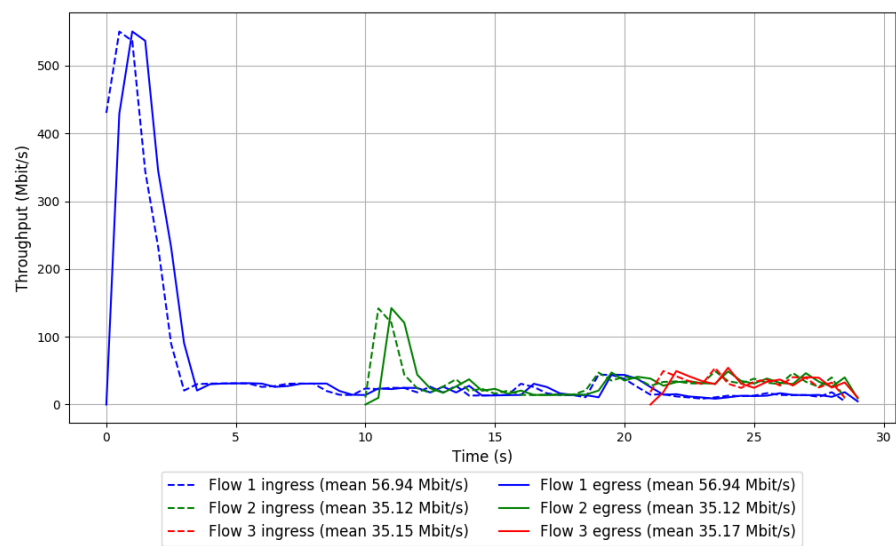
Run 5: Report of Indigo-MusesC3 — Data Link





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```
Run 1: Statistics of Indigo-MusesC5

Start at: 2019-01-25 19:36:22
End at: 2019-01-25 19:36:52
Local clock offset: 0.042 ms
Remote clock offset: 0.424 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 113.64 Mbit/s
95th percentile per-packet one-way delay: 1.127 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 75.96 Mbit/s
95th percentile per-packet one-way delay: 1.137 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 43.60 Mbit/s
95th percentile per-packet one-way delay: 1.105 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 36.24 Mbit/s
95th percentile per-packet one-way delay: 1.083 ms
Loss rate: 0.00%
```
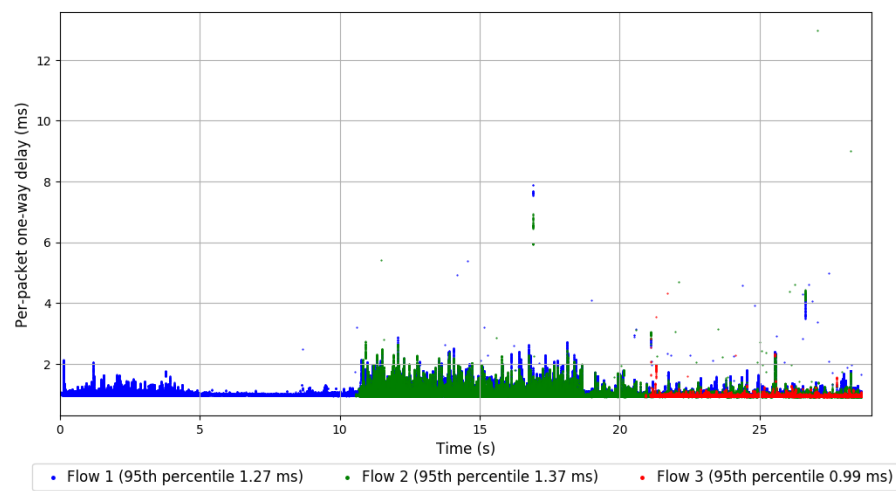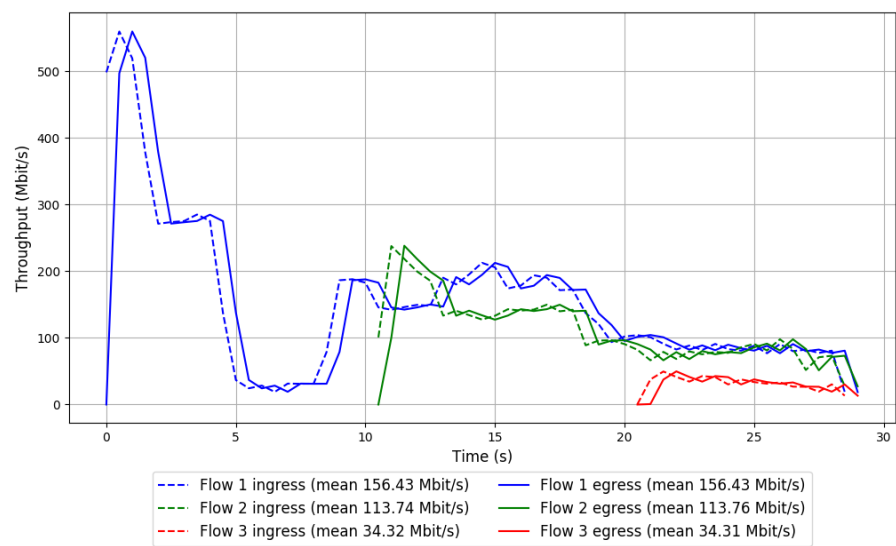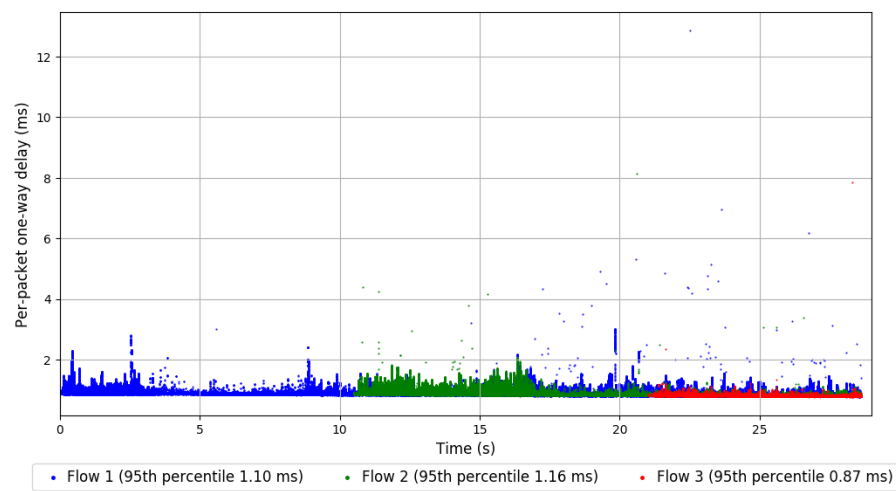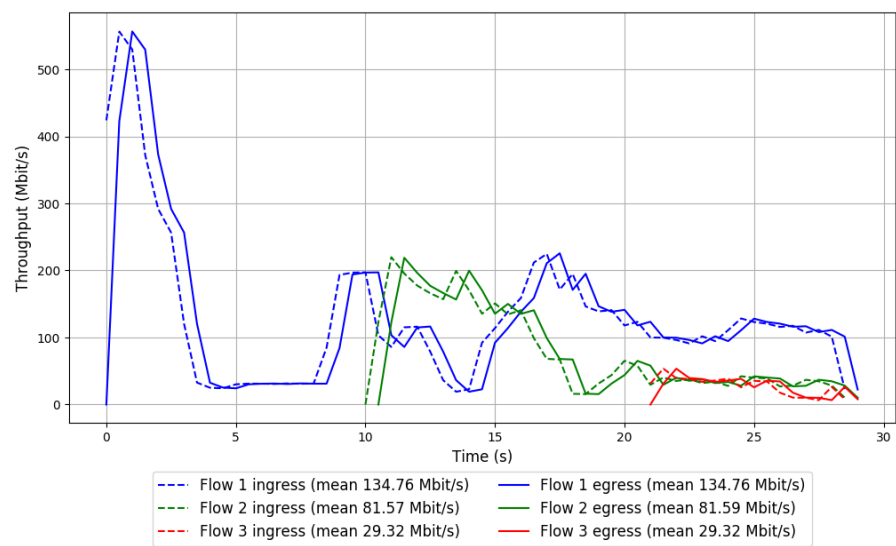
Run 1: Report of Indigo-MusesC5 — Data Link

```
Run 2: Statistics of Indigo-MusesC5

Start at: 2019-01-25 20:06:27
End at: 2019-01-25 20:06:57
Local clock offset: 0.113 ms
Remote clock offset: 0.788 ms


# Below is generated by plot.py at 2019-01-25 22:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.64 Mbit/s
95th percentile per-packet one-way delay: 1.057 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 56.94 Mbit/s
95th percentile per-packet one-way delay: 1.056 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 35.12 Mbit/s
95th percentile per-packet one-way delay: 1.052 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 35.17 Mbit/s
95th percentile per-packet one-way delay: 1.067 ms
Loss rate: 0.01%
```

Run 2: Report of Indigo-MusesC5 — Data Link

```
Run 3: Statistics of Indigo-MusesC5

Start at: 2019-01-25 20:36:19
End at: 2019-01-25 20:36:49
Local clock offset: 0.179 ms
Remote clock offset: 0.578 ms


# Below is generated by plot.py at 2019-01-25 22:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 237.43 Mbit/s
95th percentile per-packet one-way delay: 1.301 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 156.43 Mbit/s
95th percentile per-packet one-way delay: 1.275 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 113.76 Mbit/s
95th percentile per-packet one-way delay: 1.368 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 34.31 Mbit/s
95th percentile per-packet one-way delay: 0.988 ms
Loss rate: 0.04%
```
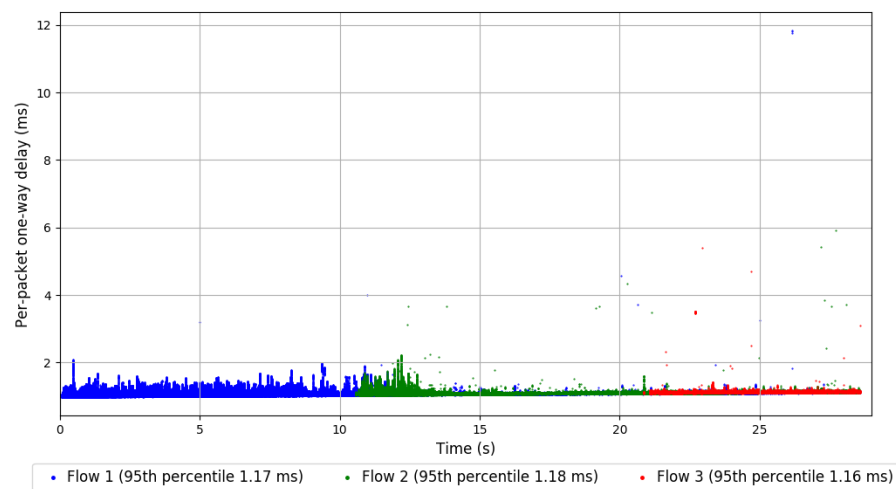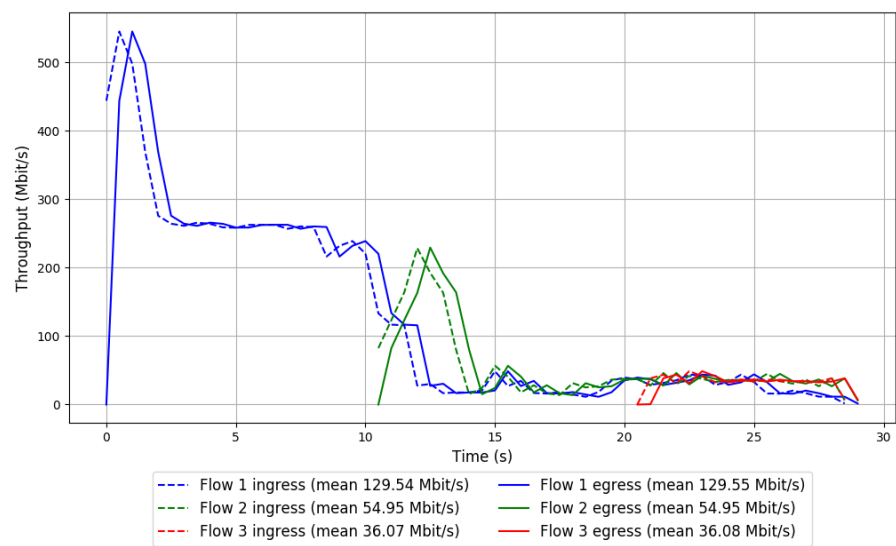
Run 3: Report of Indigo-MusesC5 — Data Link



- - - Flow 1 ingress (mean 156.43 Mbit/s) —— Flow 1 egress (mean 156.43 Mbit/s)
- - - Flow 2 ingress (mean 113.74 Mbit/s) —— Flow 2 egress (mean 113.76 Mbit/s)
- - - Flow 3 ingress (mean 34.32 Mbit/s) —— Flow 3 egress (mean 34.31 Mbit/s)



- Flow 1 (95th percentile 1.27 ms)    - Flow 2 (95th percentile 1.37 ms)    - Flow 3 (95th percentile 0.99 ms)

```
Run 4: Statistics of Indigo-MusesC5

Start at: 2019-01-25 21:06:13
End at: 2019-01-25 21:06:43
Local clock offset: 2.011 ms
Remote clock offset: -0.291 ms


# Below is generated by plot.py at 2019-01-25 22:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 194.18 Mbit/s
95th percentile per-packet one-way delay: 1.112 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 134.76 Mbit/s
95th percentile per-packet one-way delay: 1.099 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 81.59 Mbit/s
95th percentile per-packet one-way delay: 1.160 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 29.32 Mbit/s
95th percentile per-packet one-way delay: 0.870 ms
Loss rate: 0.00%
```
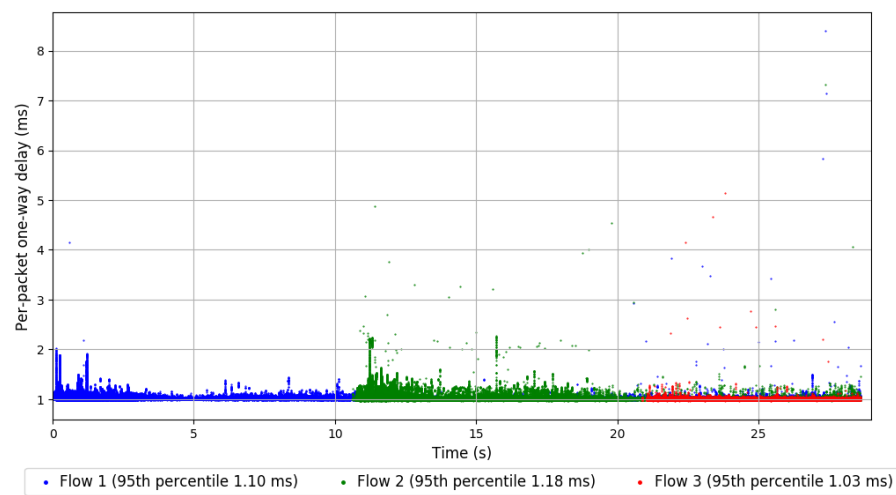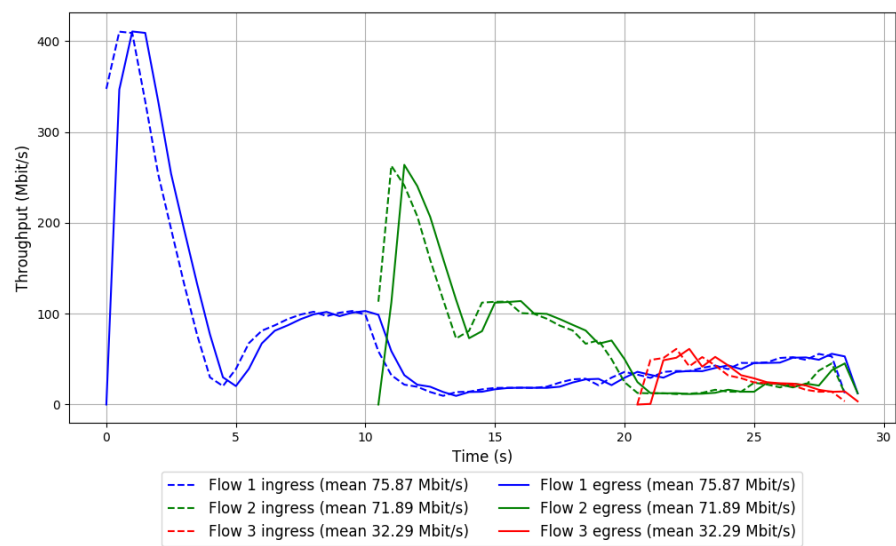
Run 4: Report of Indigo-MusesC5 — Data Link

```
Run 5: Statistics of Indigo-MusesC5

Start at: 2019-01-25 21:36:20
End at: 2019-01-25 21:36:50
Local clock offset: 1.921 ms
Remote clock offset: 3.718 ms


# Below is generated by plot.py at 2019-01-25 22:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 173.95 Mbit/s
95th percentile per-packet one-way delay: 1.170 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 129.55 Mbit/s
95th percentile per-packet one-way delay: 1.169 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 54.95 Mbit/s
95th percentile per-packet one-way delay: 1.184 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 36.08 Mbit/s
95th percentile per-packet one-way delay: 1.155 ms
Loss rate: 0.02%
```
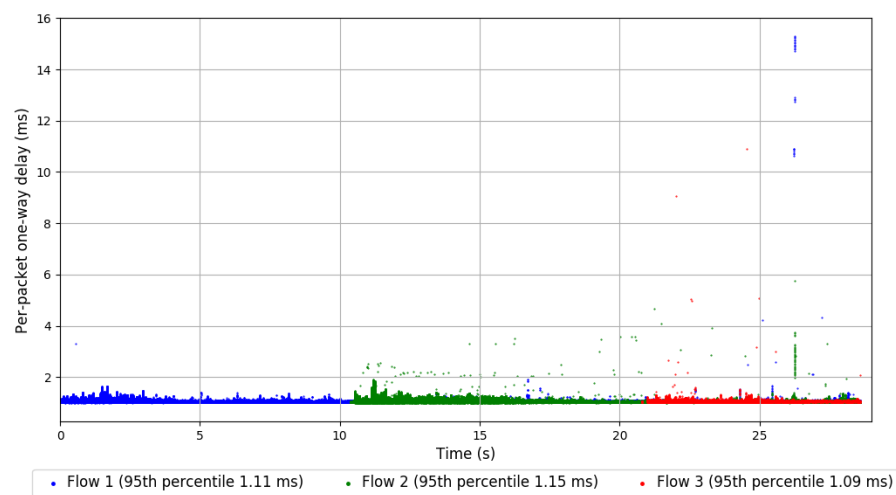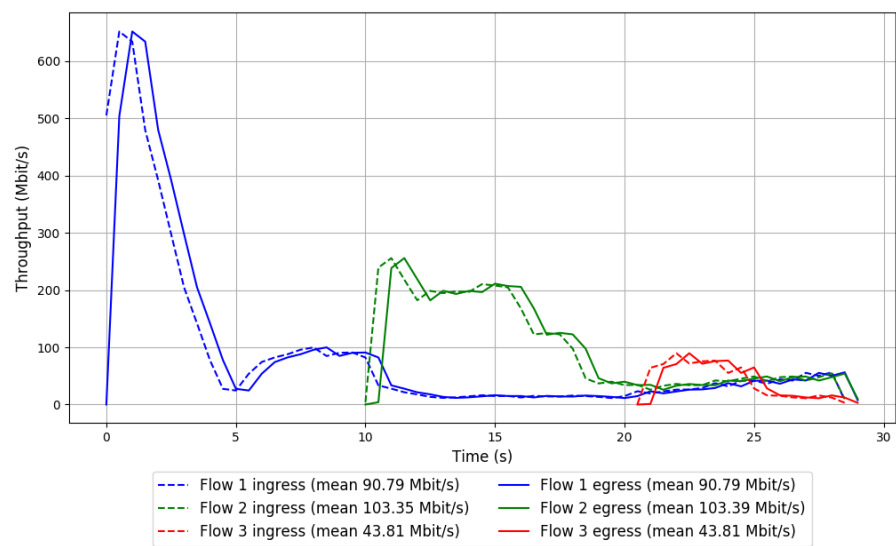
Run 5: Report of Indigo-MusesC5 — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-25 19:20:44
End at: 2019-01-25 19:21:14
Local clock offset: -0.249 ms
Remote clock offset: 0.381 ms

# Below is generated by plot.py at 2019-01-25 22:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 129.83 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 75.87 Mbit/s
95th percentile per-packet one-way delay: 1.100 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 71.89 Mbit/s
95th percentile per-packet one-way delay: 1.175 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 32.29 Mbit/s
95th percentile per-packet one-way delay: 1.034 ms
Loss rate: 0.02%
```
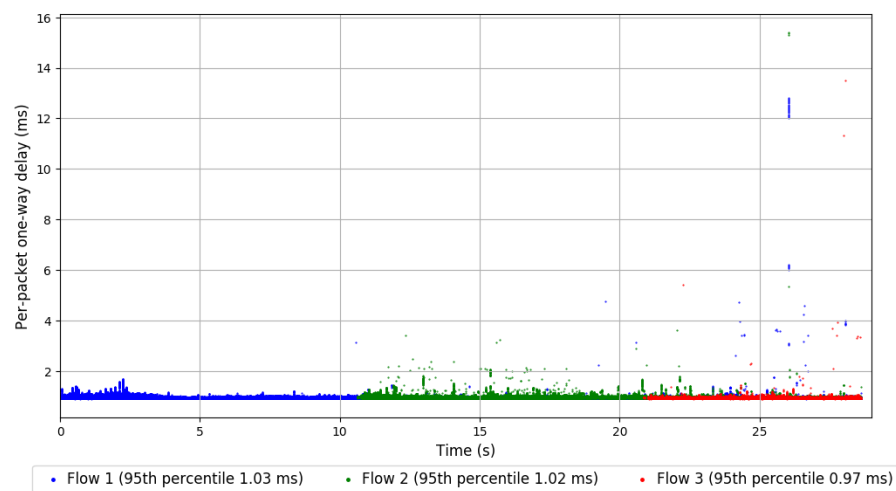
Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-25 19:50:49
End at: 2019-01-25 19:51:19
Local clock offset: 0.116 ms
Remote clock offset: 0.719 ms


# Below is generated by plot.py at 2019-01-25 22:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 168.59 Mbit/s
95th percentile per-packet one-way delay: 1.127 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 90.79 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 103.39 Mbit/s
95th percentile per-packet one-way delay: 1.154 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 43.81 Mbit/s
95th percentile per-packet one-way delay: 1.094 ms
Loss rate: 0.01%
```
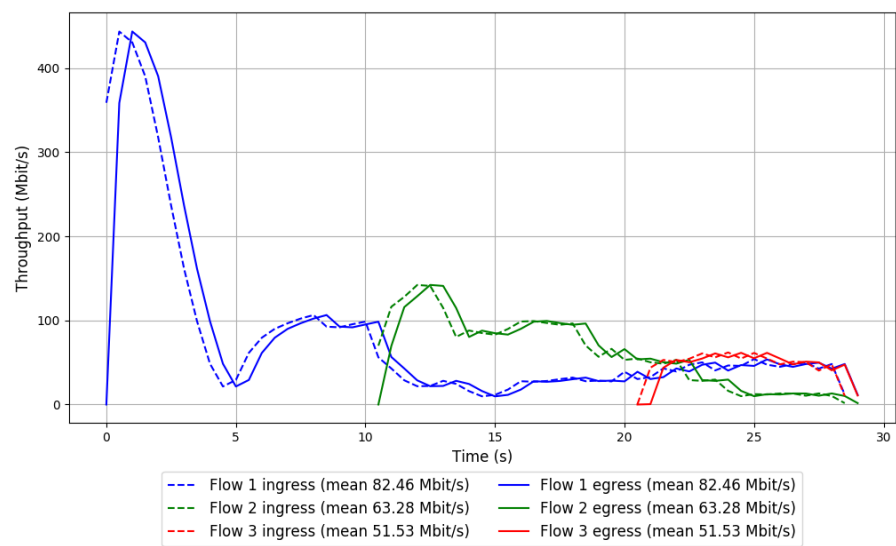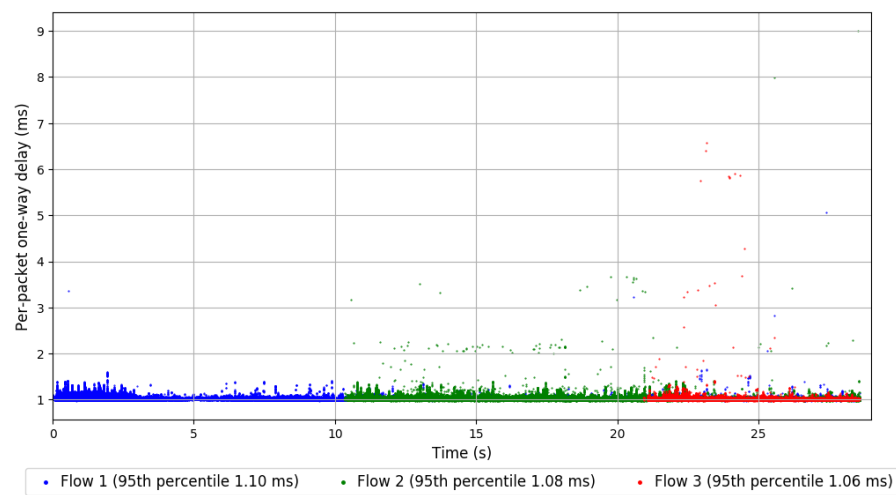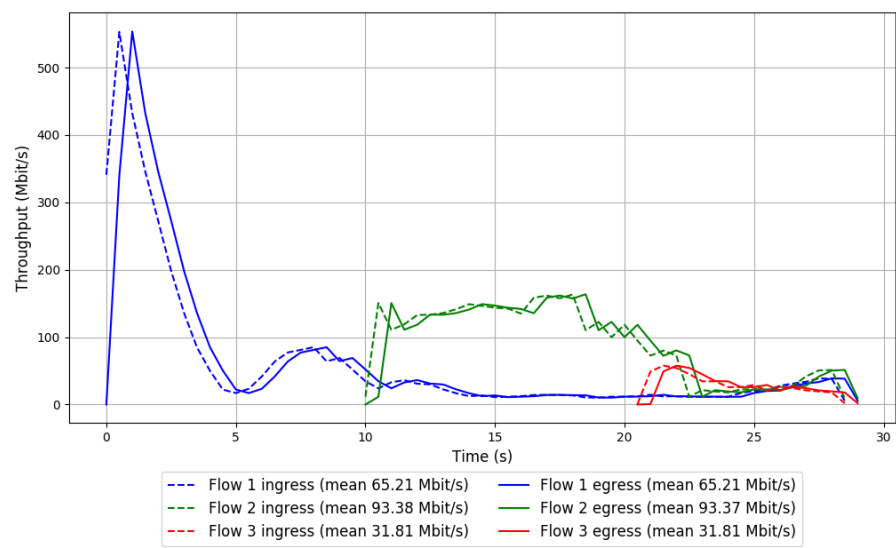
Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-25 20:20:48
End at: 2019-01-25 20:21:18
Local clock offset: 0.103 ms
Remote clock offset: 0.786 ms


# Below is generated by plot.py at 2019-01-25 22:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 136.19 Mbit/s
95th percentile per-packet one-way delay: 1.023 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 82.46 Mbit/s
95th percentile per-packet one-way delay: 1.030 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 63.28 Mbit/s
95th percentile per-packet one-way delay: 1.017 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 51.53 Mbit/s
95th percentile per-packet one-way delay: 0.971 ms
Loss rate: 0.00%
```
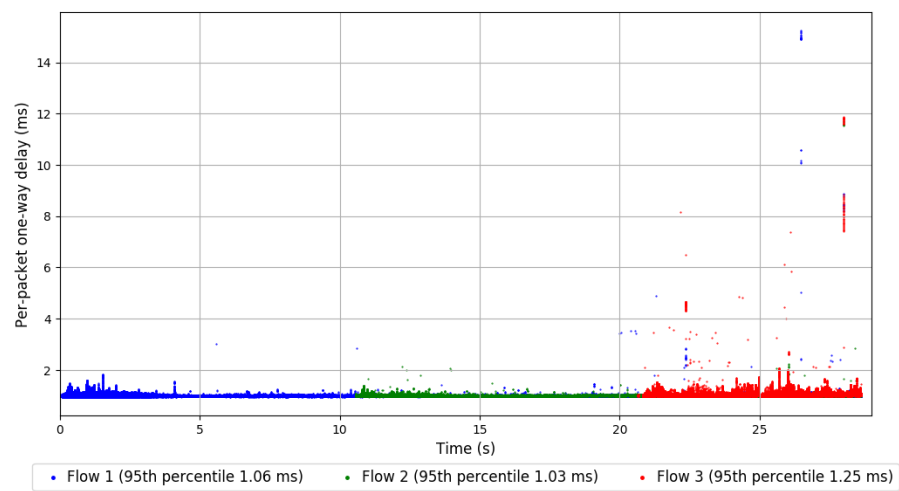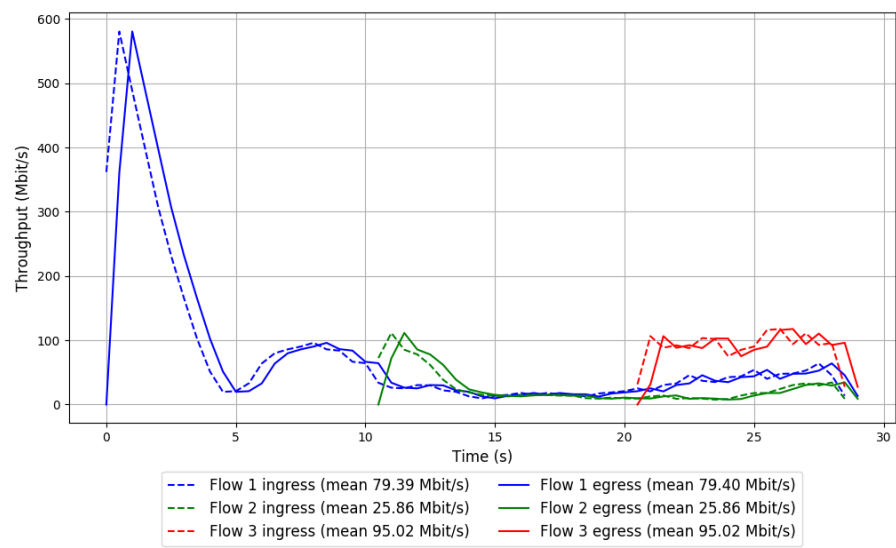
Run 3: Report of Indigo-MusesD — Data Link



- - - Flow 1 ingress (mean 82.46 Mbit/s)      —— Flow 1 egress (mean 82.46 Mbit/s)
- - - Flow 2 ingress (mean 63.28 Mbit/s)      —— Flow 2 egress (mean 63.28 Mbit/s)
- - - Flow 3 ingress (mean 51.53 Mbit/s)      —— Flow 3 egress (mean 51.53 Mbit/s)



• Flow 1 (95th percentile 1.03 ms)      • Flow 2 (95th percentile 1.02 ms)      • Flow 3 (95th percentile 0.97 ms)

```
Run 4: Statistics of Indigo-MusesD

Start at: 2019-01-25 20:50:43
End at: 2019-01-25 20:51:13
Local clock offset: 0.255 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2019-01-25 22:24:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 133.31 Mbit/s
95th percentile per-packet one-way delay: 1.093 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 65.21 Mbit/s
95th percentile per-packet one-way delay: 1.104 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 93.37 Mbit/s
95th percentile per-packet one-way delay: 1.079 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 31.81 Mbit/s
95th percentile per-packet one-way delay: 1.059 ms
Loss rate: 0.00%
```
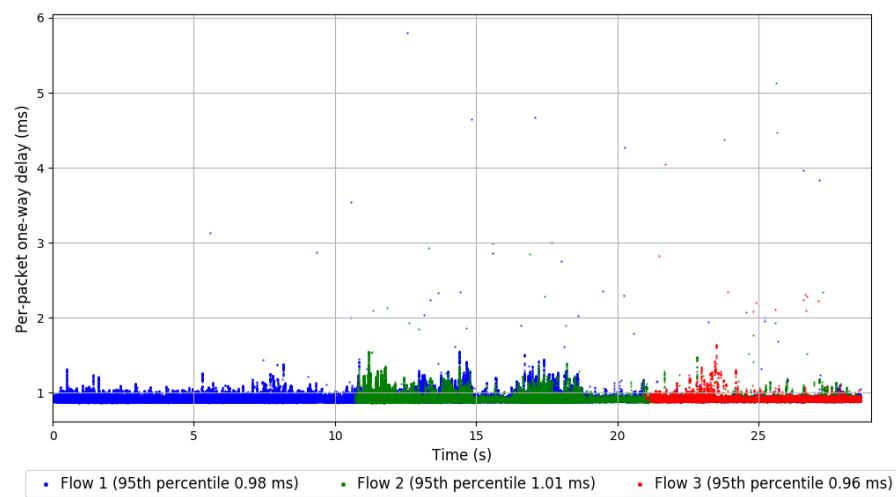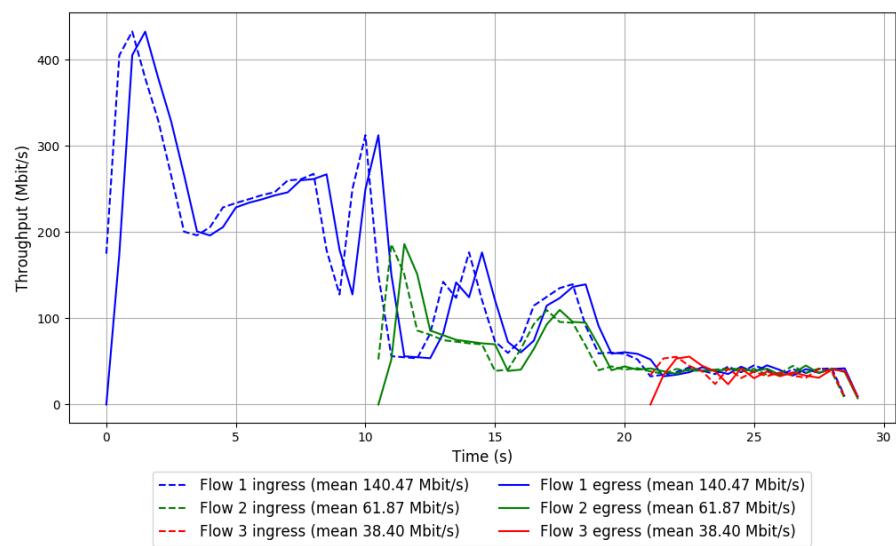
Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2019-01-25 21:20:48
End at: 2019-01-25 21:21:18
Local clock offset: 3.648 ms
Remote clock offset: 2.508 ms

# Below is generated by plot.py at 2019-01-25 22:24:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 122.17 Mbit/s
95th percentile per-packet one-way delay: 1.112 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 79.40 Mbit/s
95th percentile per-packet one-way delay: 1.063 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 25.86 Mbit/s
95th percentile per-packet one-way delay: 1.034 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 95.02 Mbit/s
95th percentile per-packet one-way delay: 1.245 ms
Loss rate: 0.00%
```
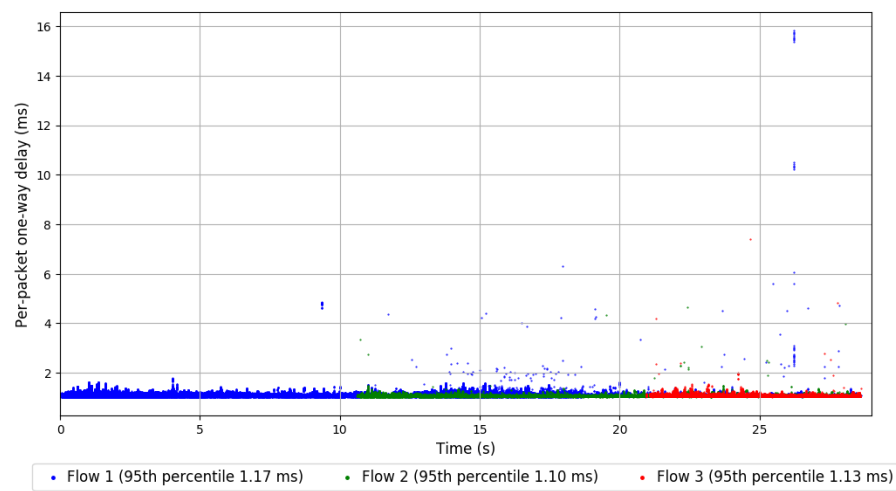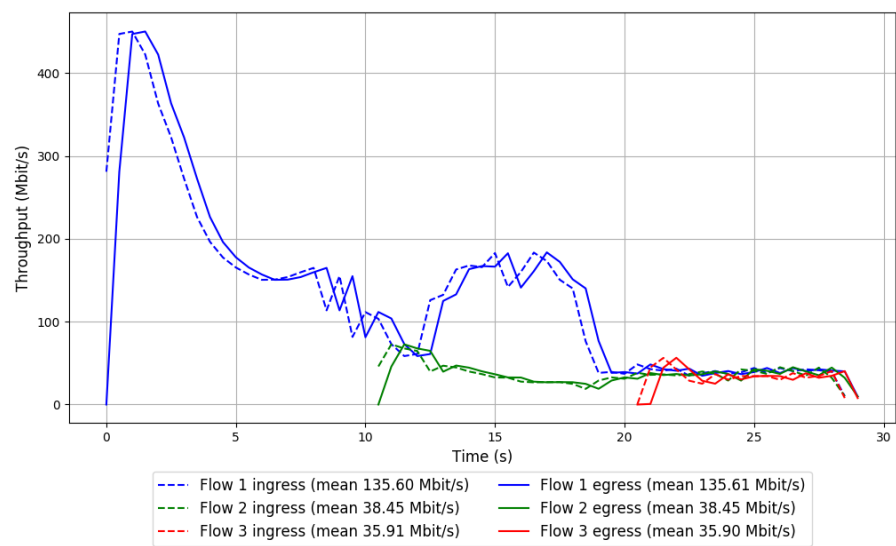
Run 5: Report of Indigo-MusesD — Data Link



- - - Flow 1 ingress (mean 79.39 Mbit/s) —— Flow 1 egress (mean 79.40 Mbit/s)
- - - Flow 2 ingress (mean 25.86 Mbit/s) —— Flow 2 egress (mean 25.86 Mbit/s)
- - - Flow 3 ingress (mean 95.02 Mbit/s) —— Flow 3 egress (mean 95.02 Mbit/s)



• Flow 1 (95th percentile 1.06 ms)    • Flow 2 (95th percentile 1.03 ms)    • Flow 3 (95th percentile 1.25 ms)

```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-01-25 19:23:31
End at: 2019-01-25 19:24:01
Local clock offset: -0.152 ms
Remote clock offset: 0.574 ms


# Below is generated by plot.py at 2019-01-25 22:25:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 189.36 Mbit/s
95th percentile per-packet one-way delay: 0.986 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 140.47 Mbit/s
95th percentile per-packet one-way delay: 0.983 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 61.87 Mbit/s
95th percentile per-packet one-way delay: 1.006 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 38.40 Mbit/s
95th percentile per-packet one-way delay: 0.962 ms
Loss rate: 0.00%
```
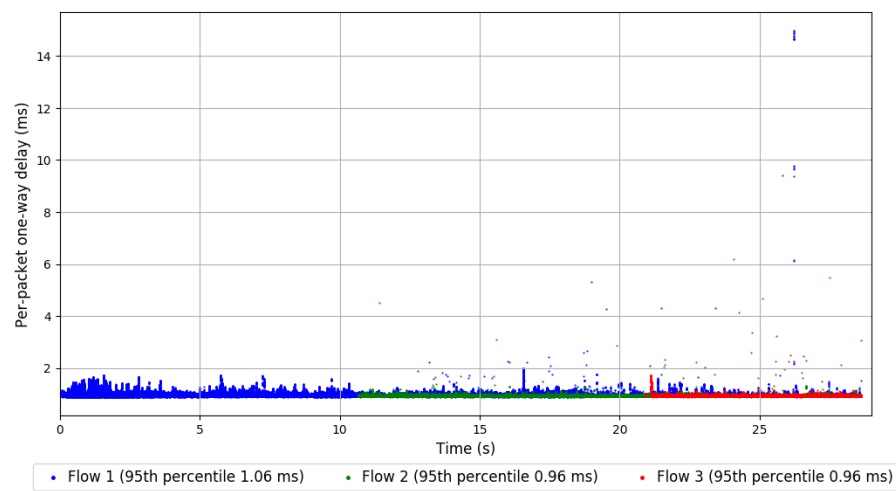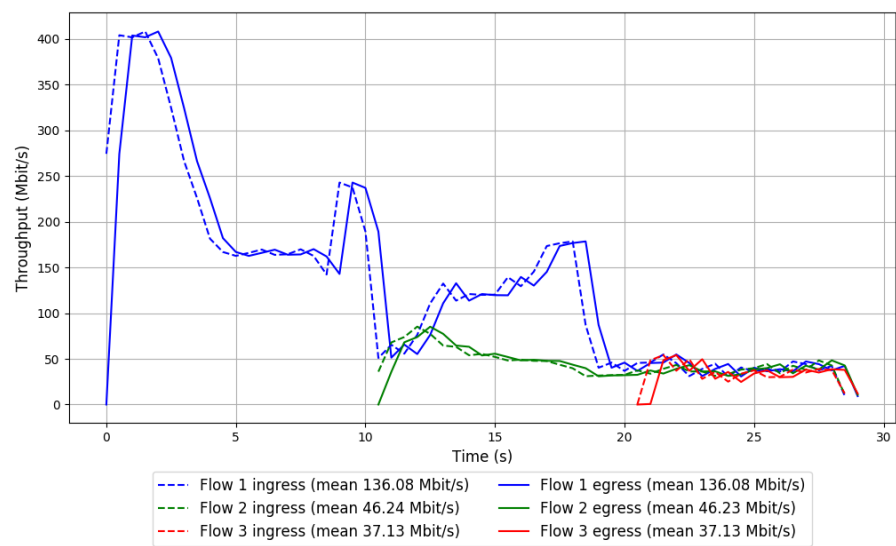
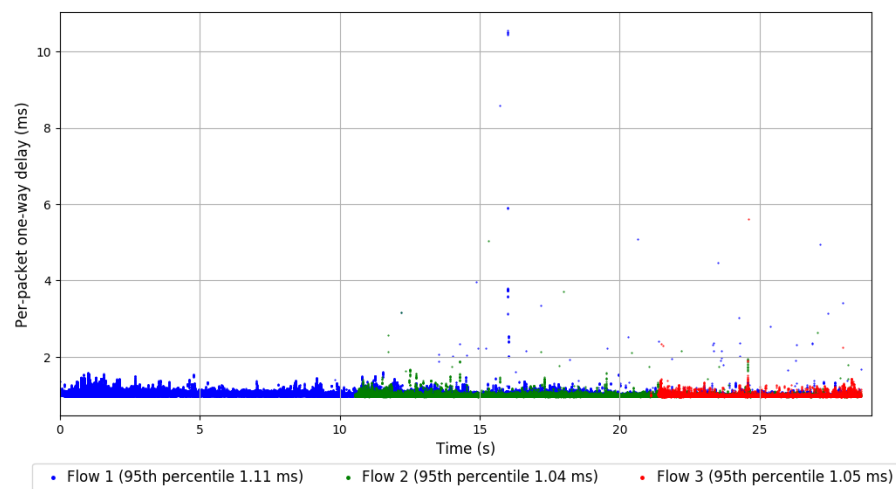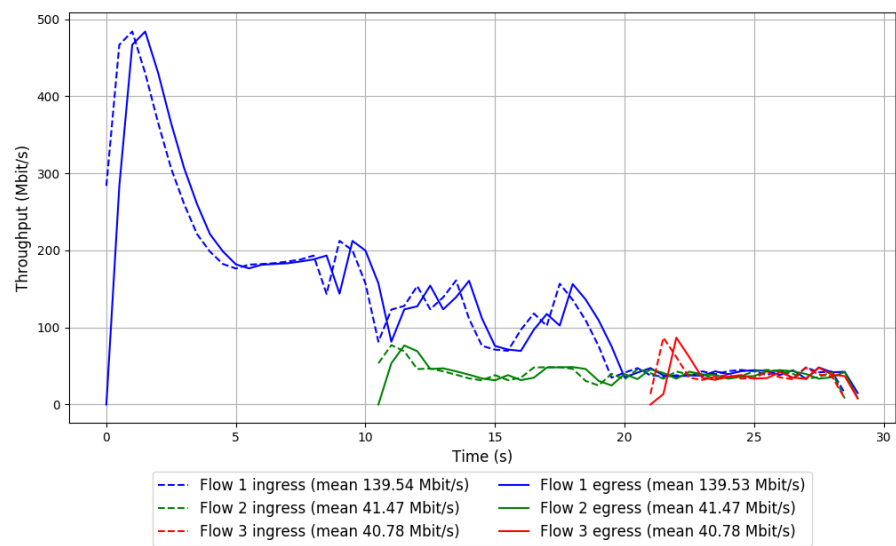Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-01-25 19:53:36
End at: 2019-01-25 19:54:06
Local clock offset: 0.137 ms
Remote clock offset: 0.79 ms


# Below is generated by plot.py at 2019-01-25 22:25:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 169.40 Mbit/s
95th percentile per-packet one-way delay: 1.166 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 135.61 Mbit/s
95th percentile per-packet one-way delay: 1.172 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 38.45 Mbit/s
95th percentile per-packet one-way delay: 1.101 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 35.90 Mbit/s
95th percentile per-packet one-way delay: 1.132 ms
Loss rate: 0.01%
```

# Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-25 20:23:35
End at: 2019-01-25 20:24:05
Local clock offset: 0.112 ms
Remote clock offset: 0.825 ms


# Below is generated by plot.py at 2019-01-25 22:25:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 175.08 Mbit/s
95th percentile per-packet one-way delay: 1.042 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 136.08 Mbit/s
95th percentile per-packet one-way delay: 1.057 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 46.23 Mbit/s
95th percentile per-packet one-way delay: 0.960 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 37.13 Mbit/s
95th percentile per-packet one-way delay: 0.965 ms
Loss rate: 0.00%
```
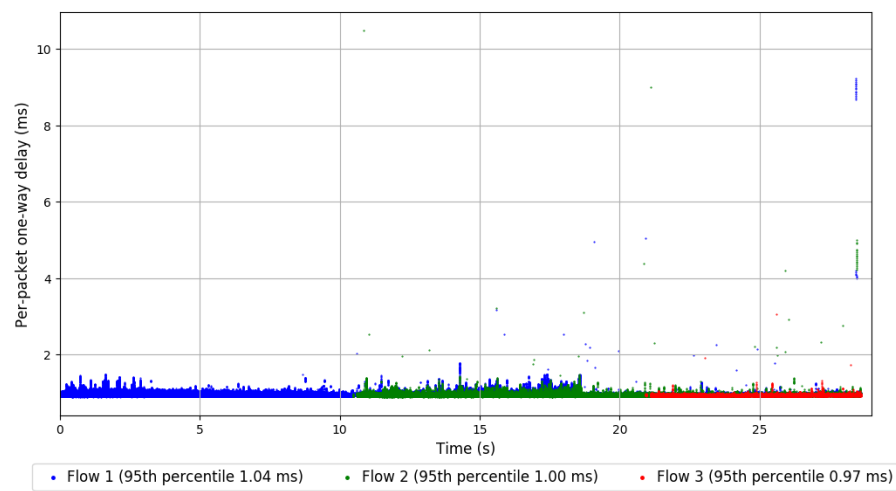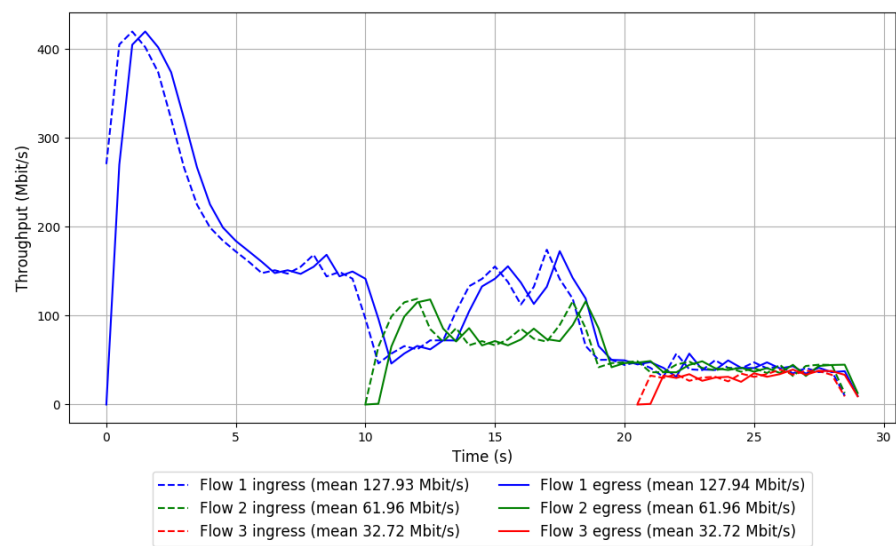
Run 3: Report of Indigo-MusesT — Data Link



Flow 1 ingress (mean 136.08 Mbit/s) — Flow 1 egress (mean 136.08 Mbit/s)
Flow 2 ingress (mean 46.24 Mbit/s) — Flow 2 egress (mean 46.23 Mbit/s)
Flow 3 ingress (mean 37.13 Mbit/s) — Flow 3 egress (mean 37.13 Mbit/s)



Flow 1 (95th percentile 1.06 ms)   Flow 2 (95th percentile 0.96 ms)   Flow 3 (95th percentile 0.96 ms)

```
Run 4: Statistics of Indigo-MusesT

Start at: 2019-01-25 20:53:31
End at: 2019-01-25 20:54:01
Local clock offset: 0.25 ms
Remote clock offset: -0.083 ms


# Below is generated by plot.py at 2019-01-25 22:25:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 176.45 Mbit/s
95th percentile per-packet one-way delay: 1.108 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 139.53 Mbit/s
95th percentile per-packet one-way delay: 1.115 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 41.47 Mbit/s
95th percentile per-packet one-way delay: 1.041 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 40.78 Mbit/s
95th percentile per-packet one-way delay: 1.052 ms
Loss rate: 0.00%
```
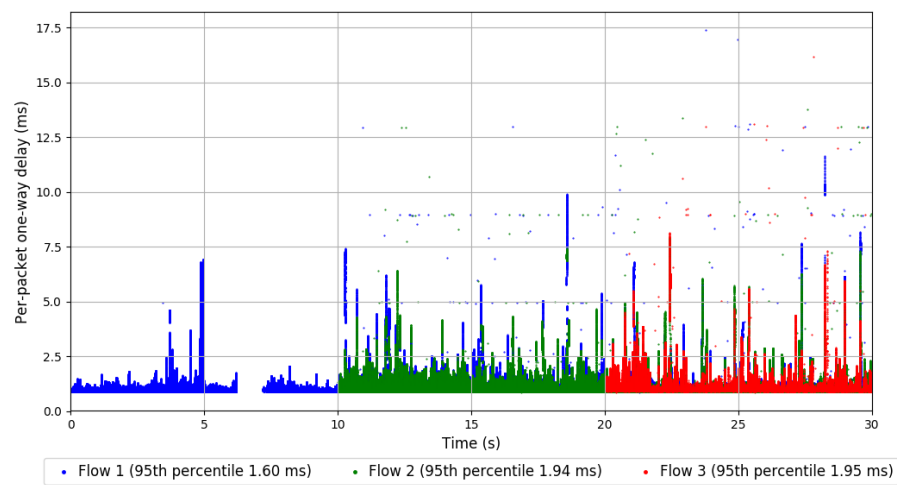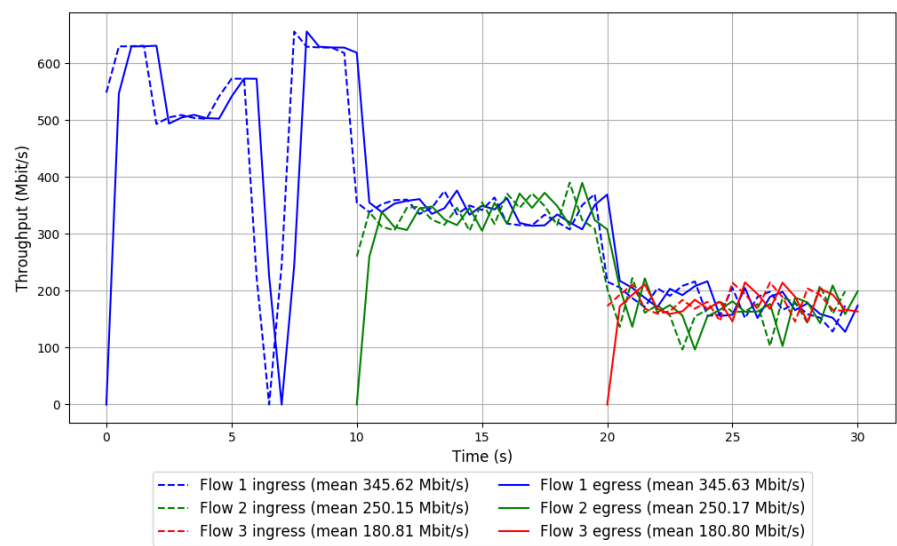
Run 4: Report of Indigo-MusesT — Data Link

```
Run 5: Statistics of Indigo-MusesT

Start at: 2019-01-25 21:23:35
End at: 2019-01-25 21:24:05
Local clock offset: 3.847 ms
Remote clock offset: 2.88 ms


# Below is generated by plot.py at 2019-01-25 22:26:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 176.01 Mbit/s
95th percentile per-packet one-way delay: 1.037 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 127.94 Mbit/s
95th percentile per-packet one-way delay: 1.044 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 61.96 Mbit/s
95th percentile per-packet one-way delay: 1.005 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 32.72 Mbit/s
95th percentile per-packet one-way delay: 0.967 ms
Loss rate: 0.00%
```
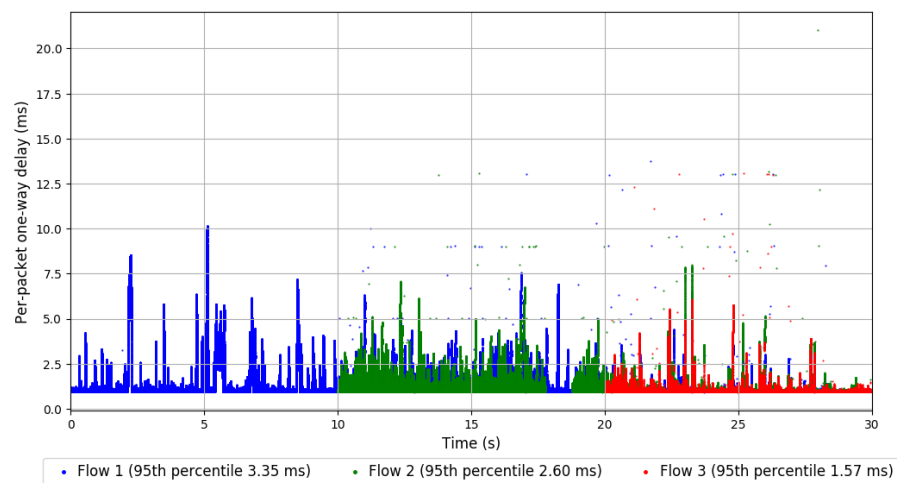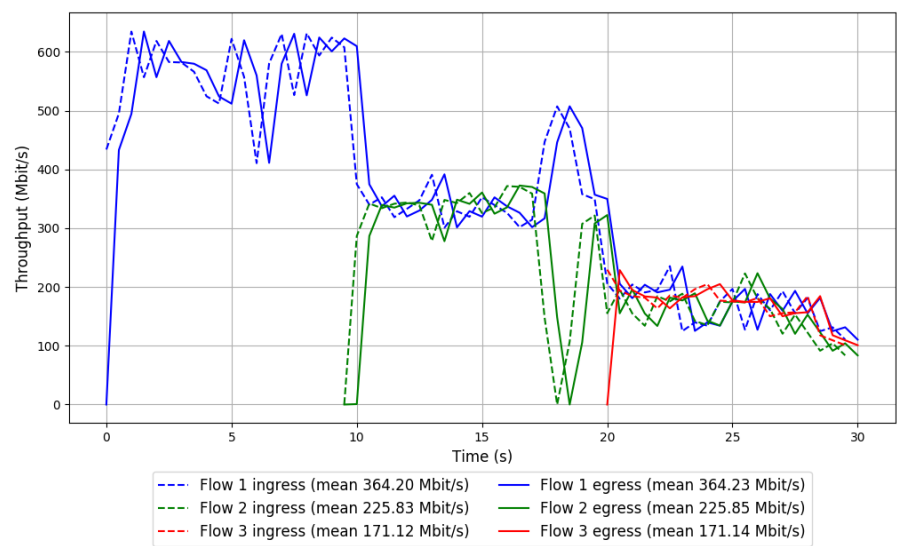
Run 5: Report of Indigo-MusesT — Data Link



- - - Flow 1 ingress (mean 127.93 Mbit/s) —— Flow 1 egress (mean 127.94 Mbit/s)
- - - Flow 2 ingress (mean 61.96 Mbit/s) —— Flow 2 egress (mean 61.96 Mbit/s)
- - - Flow 3 ingress (mean 32.72 Mbit/s) —— Flow 3 egress (mean 32.72 Mbit/s)



• Flow 1 (95th percentile 1.04 ms)    • Flow 2 (95th percentile 1.00 ms)    • Flow 3 (95th percentile 0.97 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2019-01-25 19:30:14
End at: 2019-01-25 19:30:44
Local clock offset: 0.017 ms
Remote clock offset: 0.536 ms

# Below is generated by plot.py at 2019-01-25 22:30:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 572.31 Mbit/s
95th percentile per-packet one-way delay: 1.751 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 345.63 Mbit/s
95th percentile per-packet one-way delay: 1.604 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 250.17 Mbit/s
95th percentile per-packet one-way delay: 1.937 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 180.80 Mbit/s
95th percentile per-packet one-way delay: 1.949 ms
Loss rate: 0.02%
```
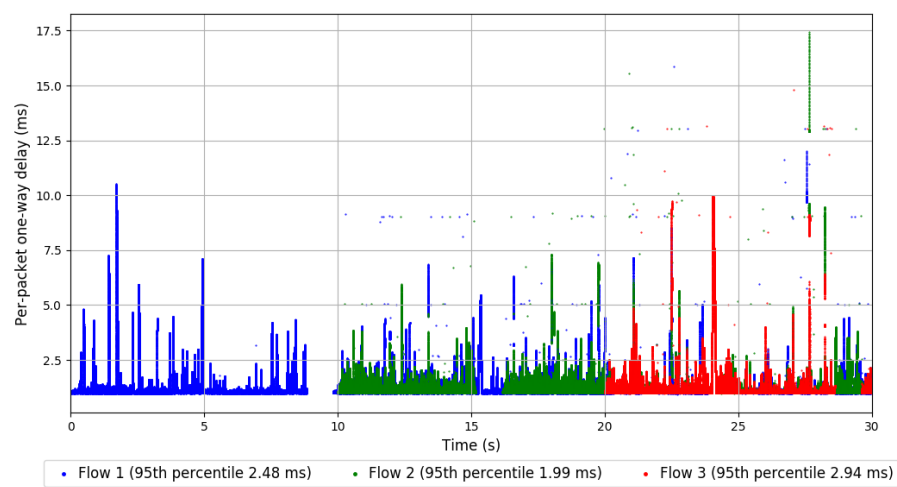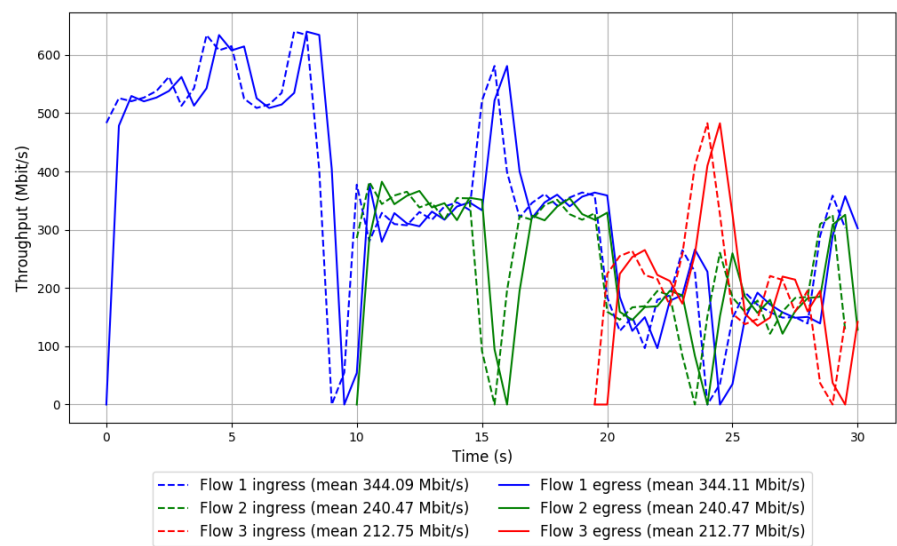
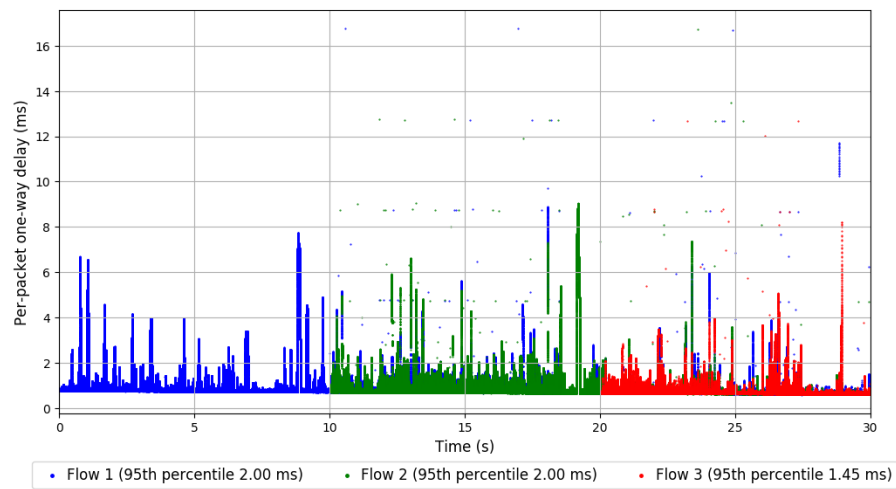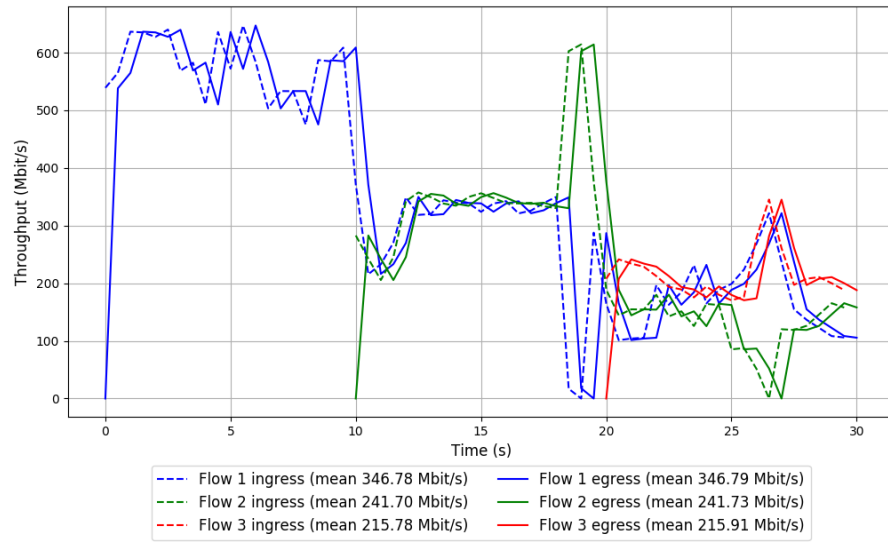# Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2019-01-25 20:00:18
End at: 2019-01-25 20:00:48
Local clock offset: 0.124 ms
Remote clock offset: 0.978 ms


# Below is generated by plot.py at 2019-01-25 22:30:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 571.59 Mbit/s
95th percentile per-packet one-way delay: 3.025 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 364.23 Mbit/s
95th percentile per-packet one-way delay: 3.353 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 225.85 Mbit/s
95th percentile per-packet one-way delay: 2.599 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 171.14 Mbit/s
95th percentile per-packet one-way delay: 1.567 ms
Loss rate: 0.01%
```

## Run 2: Report of LEDBAT — Data Link



Flow 1 ingress (mean 364.20 Mbit/s)    Flow 1 egress (mean 364.23 Mbit/s)
Flow 2 ingress (mean 225.83 Mbit/s)    Flow 2 egress (mean 225.85 Mbit/s)
Flow 3 ingress (mean 171.12 Mbit/s)    Flow 3 egress (mean 171.14 Mbit/s)



Flow 1 (95th percentile 3.35 ms)    Flow 2 (95th percentile 2.60 ms)    Flow 3 (95th percentile 1.57 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2019-01-25 20:30:11
End at: 2019-01-25 20:30:41
Local clock offset: 0.124 ms
Remote clock offset: 0.741 ms


# Below is generated by plot.py at 2019-01-25 22:31:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 573.22 Mbit/s
95th percentile per-packet one-way delay: 2.333 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 344.11 Mbit/s
95th percentile per-packet one-way delay: 2.480 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 240.47 Mbit/s
95th percentile per-packet one-way delay: 1.989 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 212.77 Mbit/s
95th percentile per-packet one-way delay: 2.935 ms
Loss rate: 0.01%
```
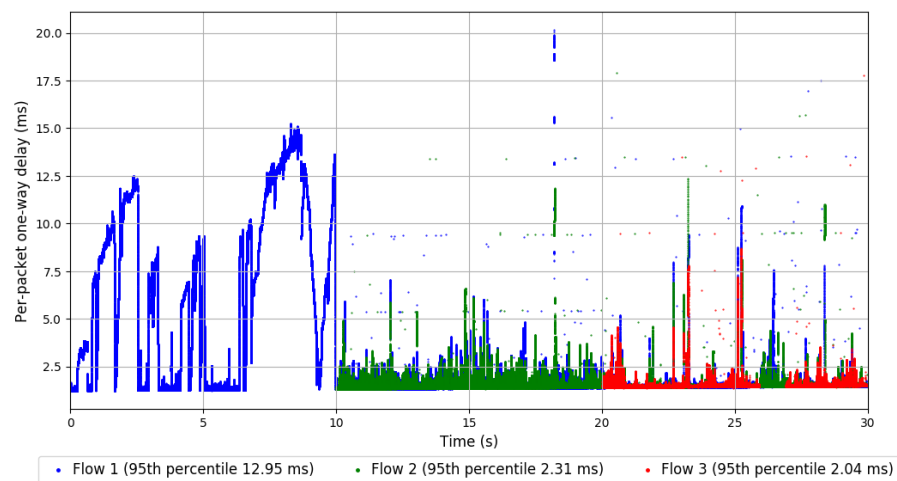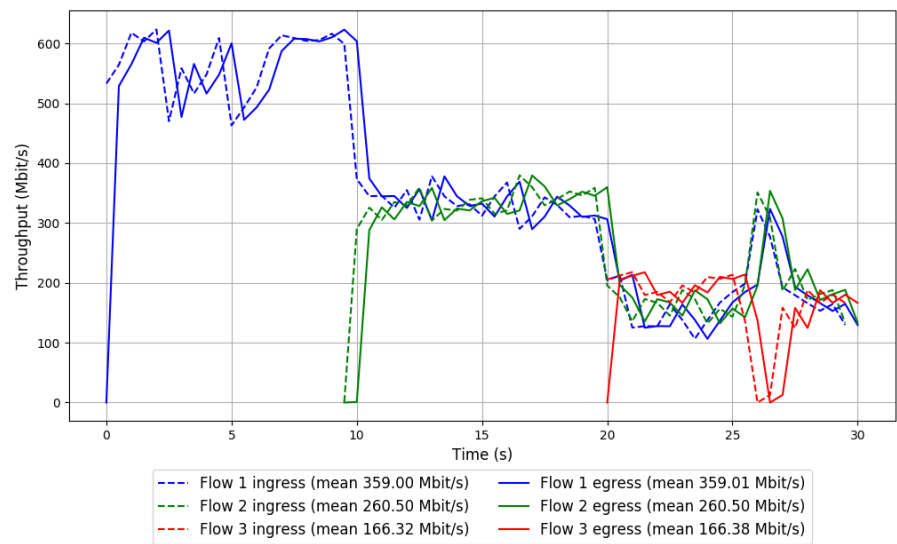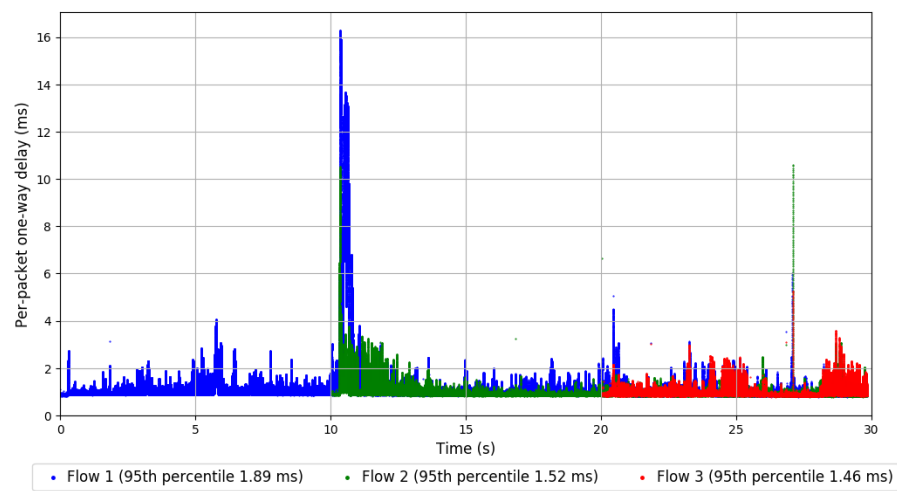
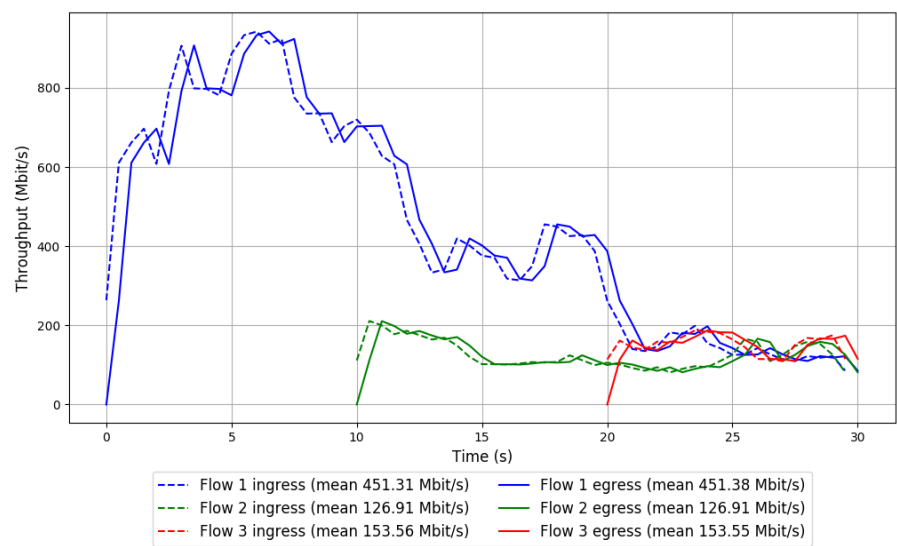## Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2019-01-25 21:00:06
End at: 2019-01-25 21:00:36
Local clock offset: 0.441 ms
Remote clock offset: -0.181 ms


# Below is generated by plot.py at 2019-01-25 22:32:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 579.32 Mbit/s
95th percentile per-packet one-way delay: 1.916 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 346.79 Mbit/s
95th percentile per-packet one-way delay: 2.002 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 241.73 Mbit/s
95th percentile per-packet one-way delay: 1.999 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 215.91 Mbit/s
95th percentile per-packet one-way delay: 1.449 ms
Loss rate: 0.01%
```

# Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2019-01-25 21:30:12
End at: 2019-01-25 21:30:42
Local clock offset: 3.915 ms
Remote clock offset: 3.323 ms


# Below is generated by plot.py at 2019-01-25 22:32:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 587.93 Mbit/s
95th percentile per-packet one-way delay: 12.162 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 359.01 Mbit/s
95th percentile per-packet one-way delay: 12.951 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 260.50 Mbit/s
95th percentile per-packet one-way delay: 2.315 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 166.38 Mbit/s
95th percentile per-packet one-way delay: 2.040 ms
Loss rate: 0.01%
```
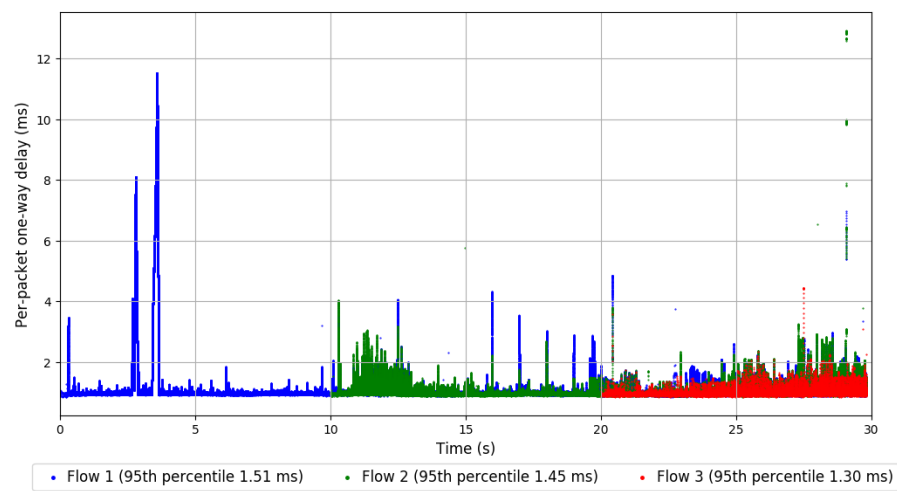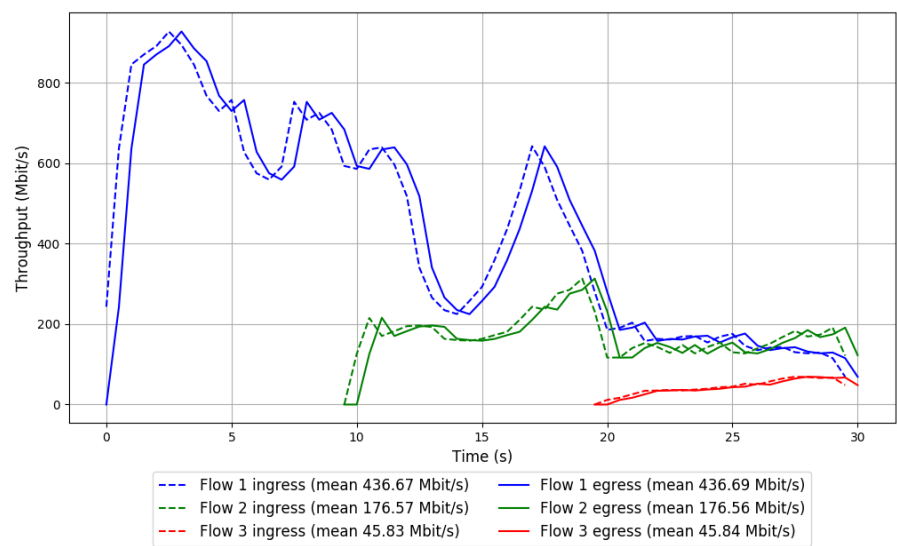
Run 5: Report of LEDBAT — Data Link



Flow 1 ingress (mean 359.00 Mbit/s)     Flow 1 egress (mean 359.01 Mbit/s)
Flow 2 ingress (mean 260.50 Mbit/s)     Flow 2 egress (mean 260.50 Mbit/s)
Flow 3 ingress (mean 166.32 Mbit/s)     Flow 3 egress (mean 166.38 Mbit/s)



Flow 1 (95th percentile 12.95 ms)     Flow 2 (95th percentile 2.31 ms)     Flow 3 (95th percentile 2.04 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-01-25 19:27:20
End at: 2019-01-25 19:27:50
Local clock offset: -0.045 ms
Remote clock offset: 0.614 ms


# Below is generated by plot.py at 2019-01-25 22:32:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 586.18 Mbit/s
95th percentile per-packet one-way delay: 1.778 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 451.38 Mbit/s
95th percentile per-packet one-way delay: 1.891 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 126.91 Mbit/s
95th percentile per-packet one-way delay: 1.516 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 153.55 Mbit/s
95th percentile per-packet one-way delay: 1.459 ms
Loss rate: 0.02%
```
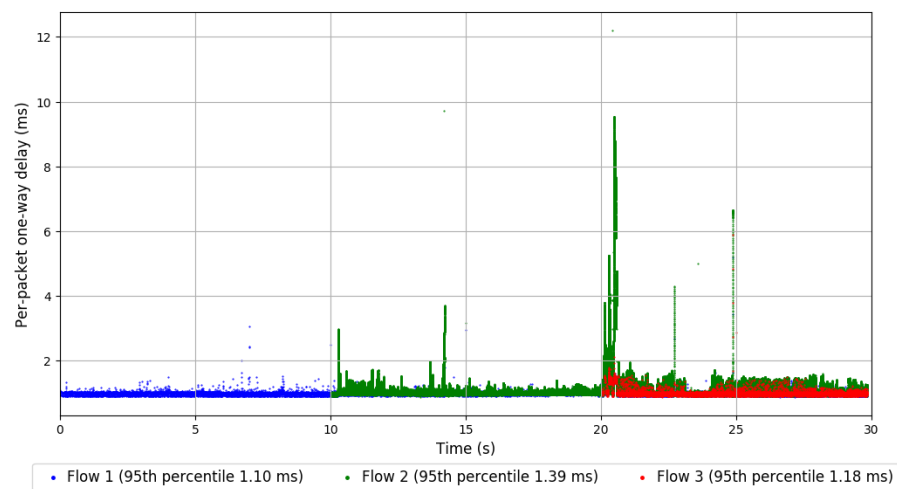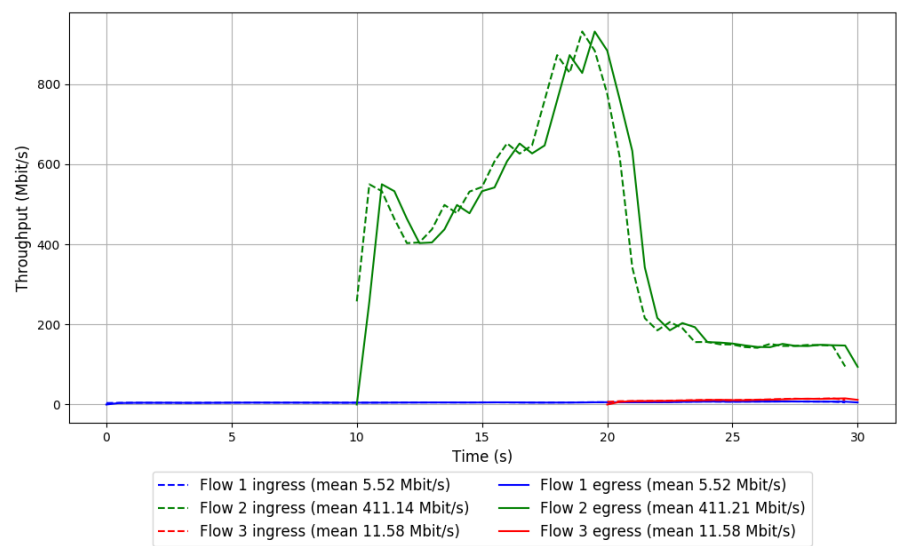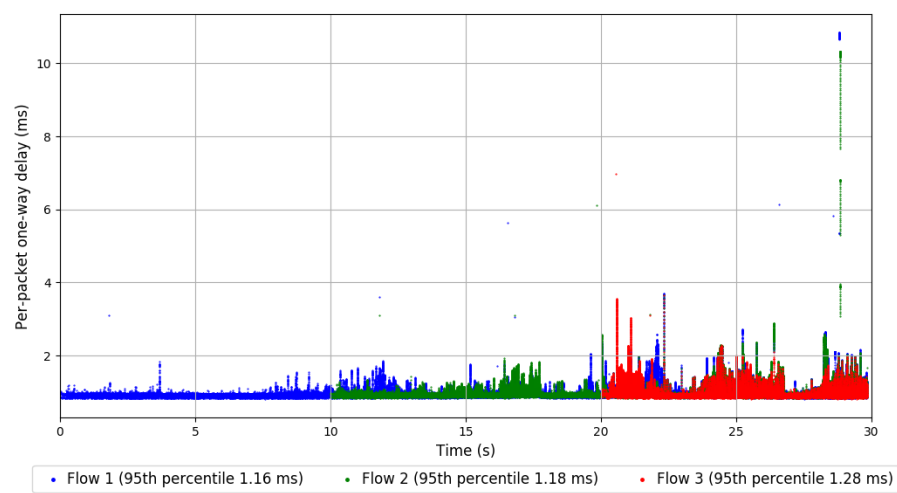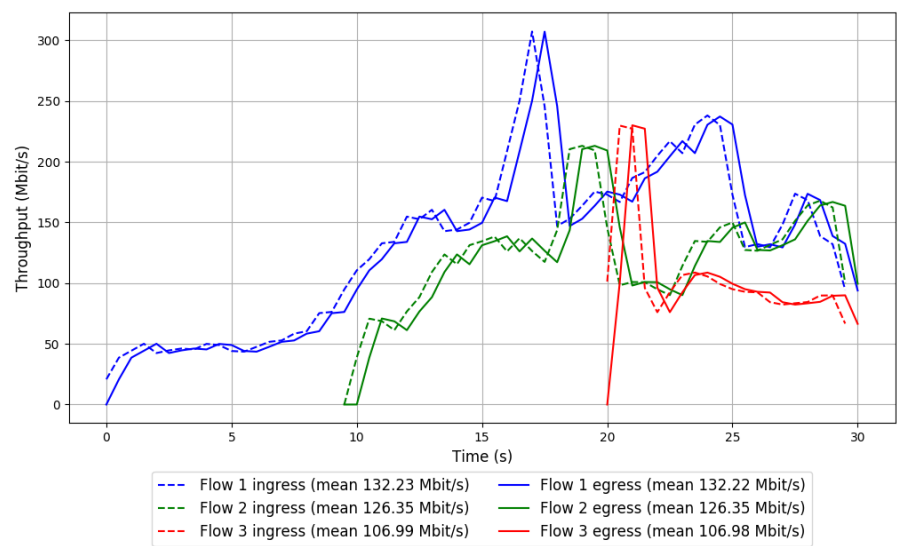
## Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-01-25 19:57:25
End at: 2019-01-25 19:57:55
Local clock offset: 0.13 ms
Remote clock offset: 0.958 ms


# Below is generated by plot.py at 2019-01-25 22:32:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 569.16 Mbit/s
95th percentile per-packet one-way delay: 1.474 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 436.69 Mbit/s
95th percentile per-packet one-way delay: 1.506 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 176.56 Mbit/s
95th percentile per-packet one-way delay: 1.447 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 45.84 Mbit/s
95th percentile per-packet one-way delay: 1.300 ms
Loss rate: 0.03%
```

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



- - - Flow 1 ingress (mean 436.67 Mbit/s)     —— Flow 1 egress (mean 436.69 Mbit/s)
- - - Flow 2 ingress (mean 176.57 Mbit/s)     —— Flow 2 egress (mean 176.56 Mbit/s)
- - - Flow 3 ingress (mean 45.83 Mbit/s)     —— Flow 3 egress (mean 45.84 Mbit/s)



- Flow 1 (95th percentile 1.51 ms)    • Flow 2 (95th percentile 1.45 ms)    • Flow 3 (95th percentile 1.30 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2019-01-25 20:27:24
End at: 2019-01-25 20:27:54
Local clock offset: 0.12 ms
Remote clock offset: 0.758 ms


# Below is generated by plot.py at 2019-01-25 22:32:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 282.71 Mbit/s
95th percentile per-packet one-way delay: 1.381 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 5.52 Mbit/s
95th percentile per-packet one-way delay: 1.103 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 411.21 Mbit/s
95th percentile per-packet one-way delay: 1.393 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 11.58 Mbit/s
95th percentile per-packet one-way delay: 1.176 ms
Loss rate: 0.03%
```
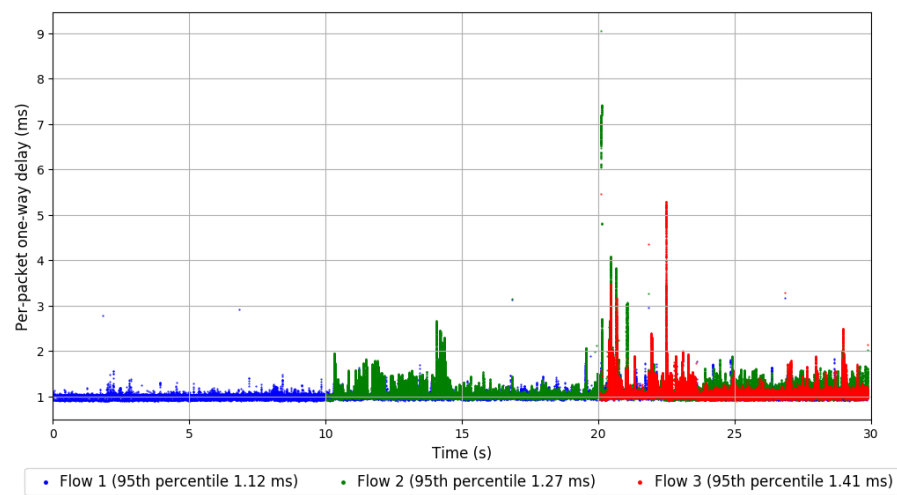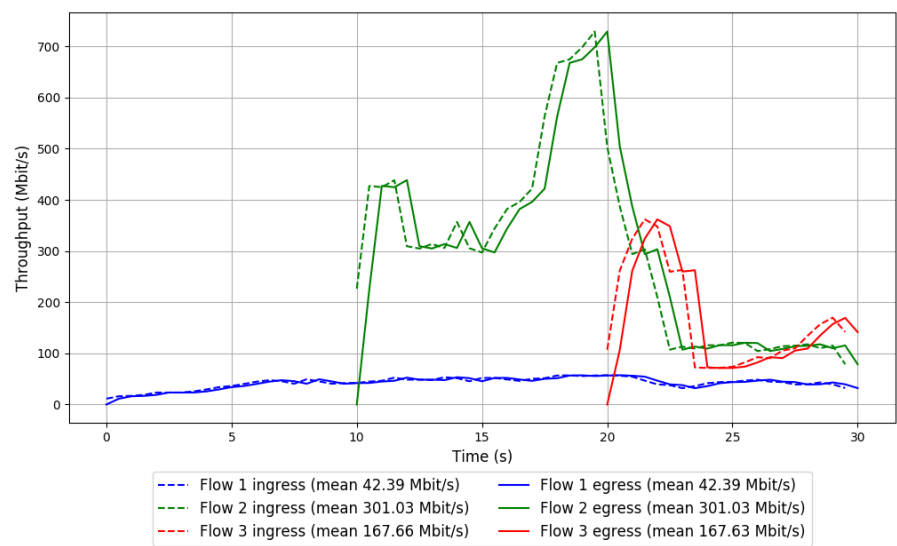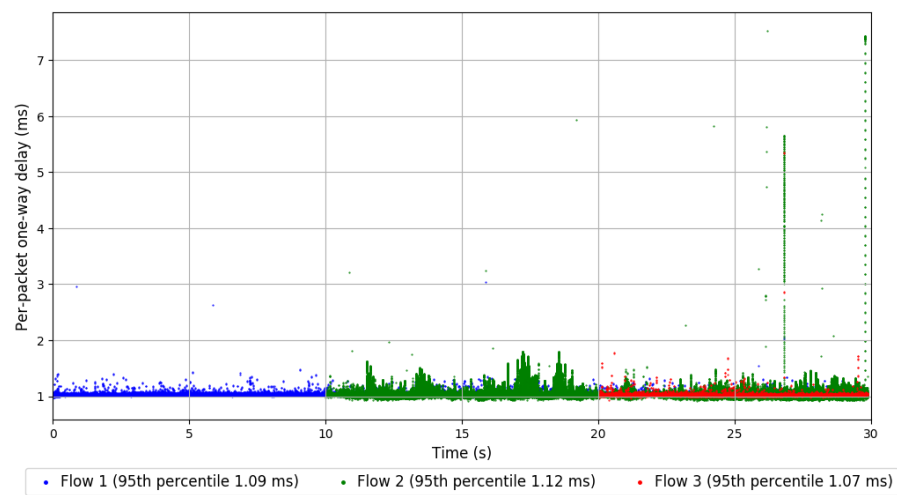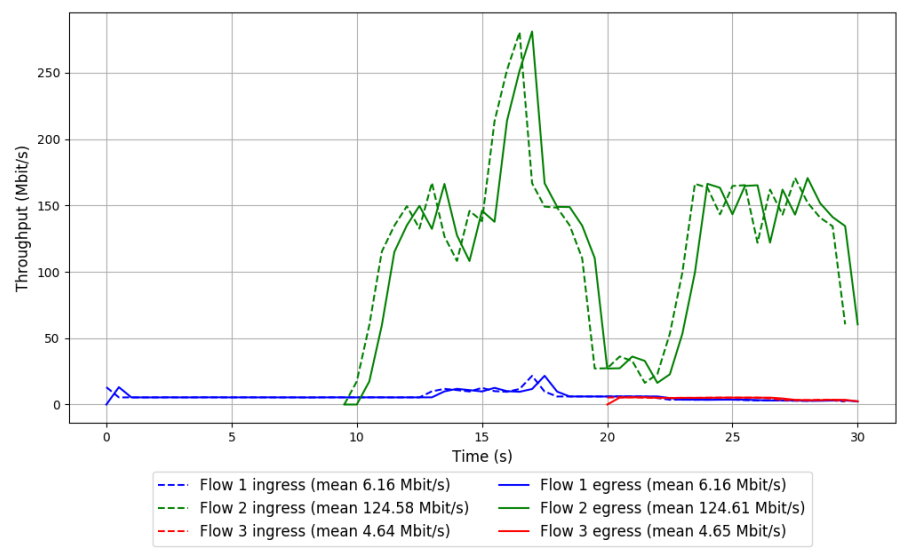
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2019-01-25 20:57:20
End at: 2019-01-25 20:57:50
Local clock offset: 0.272 ms
Remote clock offset: -0.068 ms


# Below is generated by plot.py at 2019-01-25 22:32:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 251.50 Mbit/s
95th percentile per-packet one-way delay: 1.186 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 132.22 Mbit/s
95th percentile per-packet one-way delay: 1.160 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 126.35 Mbit/s
95th percentile per-packet one-way delay: 1.179 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 106.98 Mbit/s
95th percentile per-packet one-way delay: 1.276 ms
Loss rate: 0.03%
```

Run 4: Report of PCC-Allegro — Data Link

```
Run 5: Statistics of PCC-Allegro

Start at: 2019-01-25 21:27:24
End at: 2019-01-25 21:27:54
Local clock offset: 4.071 ms
Remote clock offset: 3.13 ms


# Below is generated by plot.py at 2019-01-25 22:34:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 297.74 Mbit/s
95th percentile per-packet one-way delay: 1.283 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 42.39 Mbit/s
95th percentile per-packet one-way delay: 1.117 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 301.03 Mbit/s
95th percentile per-packet one-way delay: 1.271 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 167.63 Mbit/s
95th percentile per-packet one-way delay: 1.406 ms
Loss rate: 0.02%
```
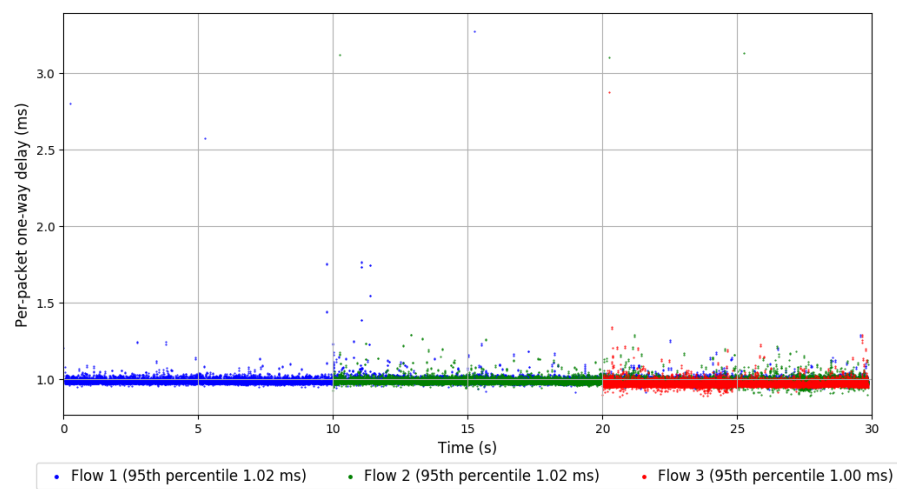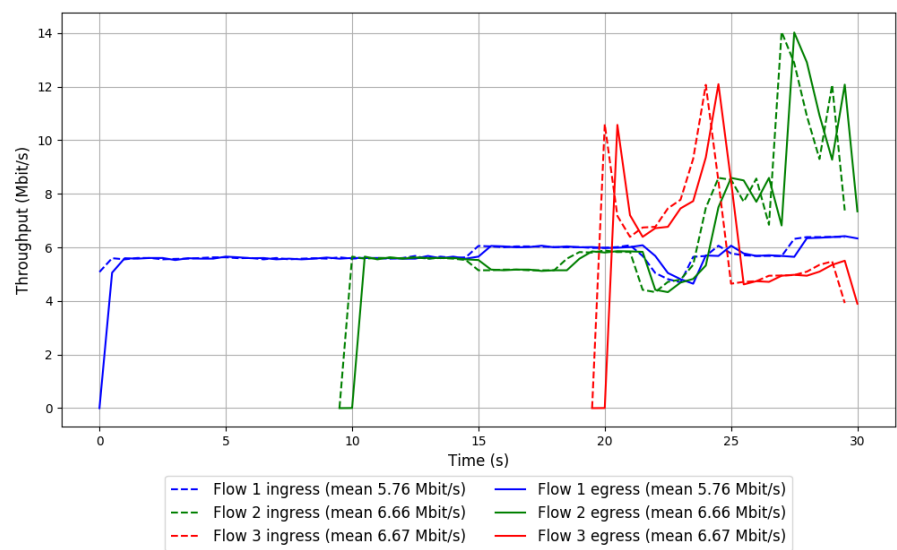
Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2019-01-25 19:38:58
End at: 2019-01-25 19:39:28
Local clock offset: 0.056 ms
Remote clock offset: 0.442 ms


# Below is generated by plot.py at 2019-01-25 22:34:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.61 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 6.16 Mbit/s
95th percentile per-packet one-way delay: 1.087 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 124.61 Mbit/s
95th percentile per-packet one-way delay: 1.118 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 4.65 Mbit/s
95th percentile per-packet one-way delay: 1.073 ms
Loss rate: 0.03%
```
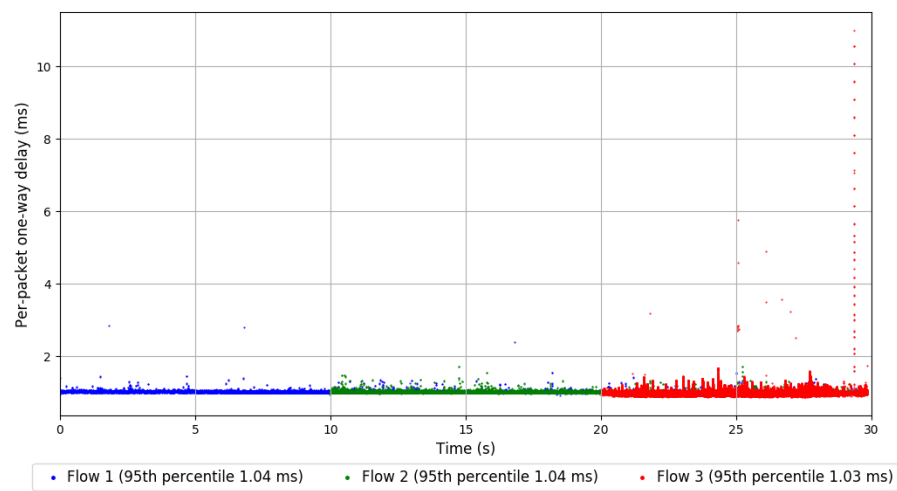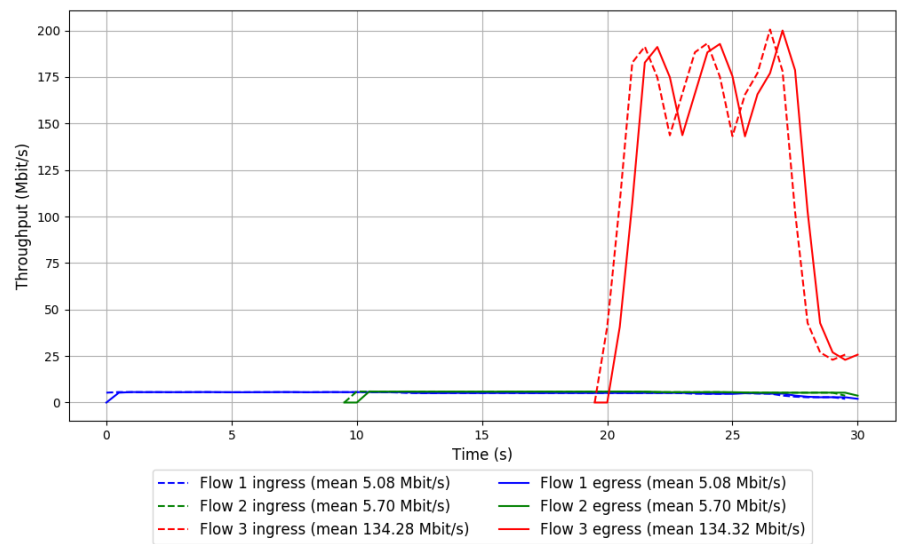
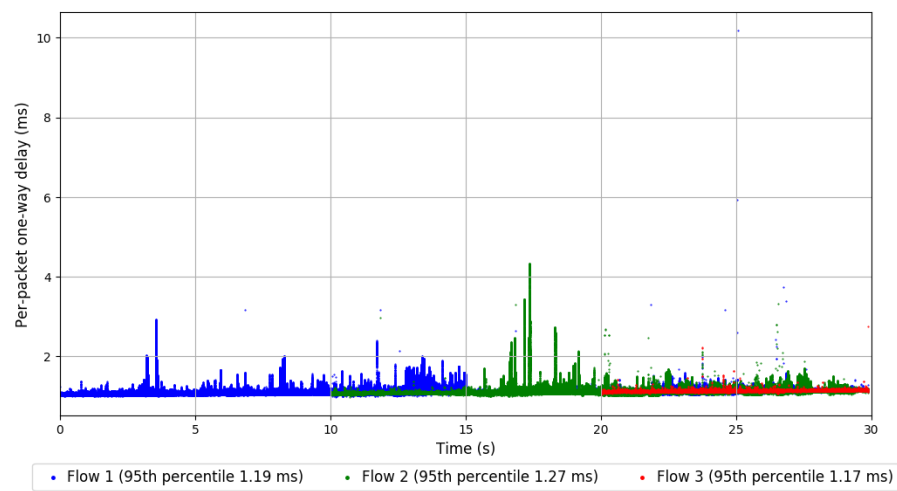## Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2019-01-25 20:09:02
End at: 2019-01-25 20:09:32
Local clock offset: 0.112 ms
Remote clock offset: 0.793 ms


# Below is generated by plot.py at 2019-01-25 22:34:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.39 Mbit/s
95th percentile per-packet one-way delay: 1.016 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 5.76 Mbit/s
95th percentile per-packet one-way delay: 1.018 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 6.66 Mbit/s
95th percentile per-packet one-way delay: 1.016 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 6.67 Mbit/s
95th percentile per-packet one-way delay: 1.005 ms
Loss rate: 0.02%
```
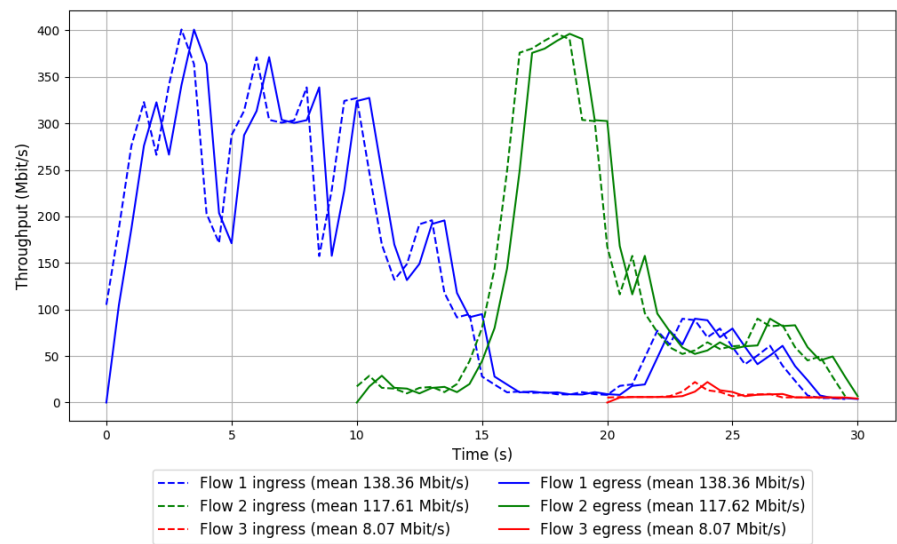
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2019-01-25 20:38:59
End at: 2019-01-25 20:39:29
Local clock offset: 0.204 ms
Remote clock offset: 0.387 ms


# Below is generated by plot.py at 2019-01-25 22:34:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 53.24 Mbit/s
95th percentile per-packet one-way delay: 1.037 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 5.08 Mbit/s
95th percentile per-packet one-way delay: 1.042 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 5.70 Mbit/s
95th percentile per-packet one-way delay: 1.044 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 134.32 Mbit/s
95th percentile per-packet one-way delay: 1.033 ms
Loss rate: 0.00%
```
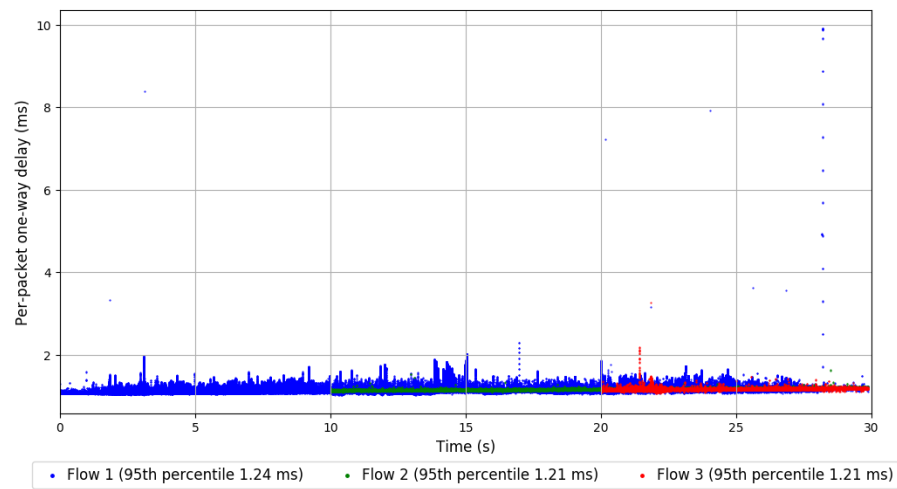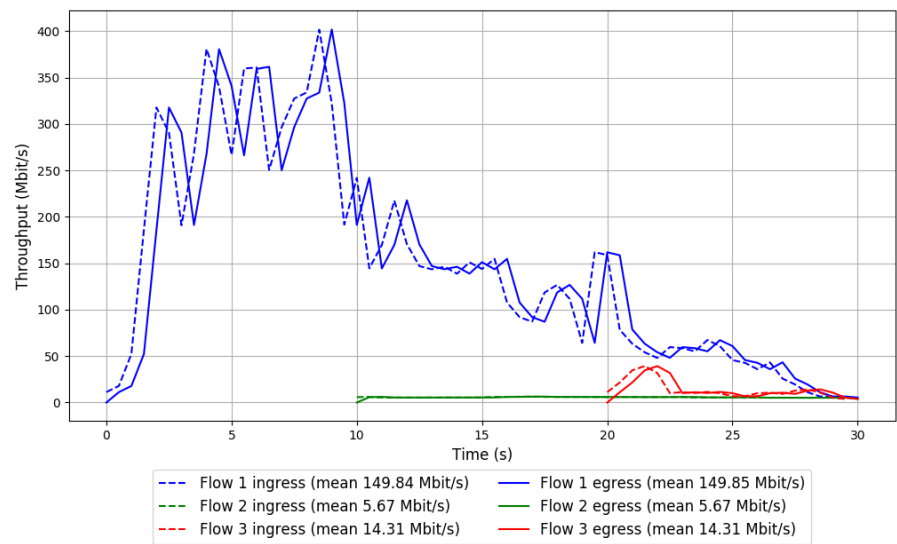
Run 3: Report of PCC-Expr — Data Link



Flow 1 ingress (mean 5.08 Mbit/s) --- Flow 1 egress (mean 5.08 Mbit/s)
Flow 2 ingress (mean 5.70 Mbit/s) --- Flow 2 egress (mean 5.70 Mbit/s)
Flow 3 ingress (mean 134.28 Mbit/s) --- Flow 3 egress (mean 134.32 Mbit/s)



Flow 1 (95th percentile 1.04 ms)   Flow 2 (95th percentile 1.04 ms)   Flow 3 (95th percentile 1.03 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2019-01-25 21:08:52
End at: 2019-01-25 21:09:22
Local clock offset: 2.452 ms
Remote clock offset: -0.264 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 219.21 Mbit/s
95th percentile per-packet one-way delay: 1.216 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 138.36 Mbit/s
95th percentile per-packet one-way delay: 1.186 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 117.62 Mbit/s
95th percentile per-packet one-way delay: 1.266 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 8.07 Mbit/s
95th percentile per-packet one-way delay: 1.170 ms
Loss rate: 0.00%
```
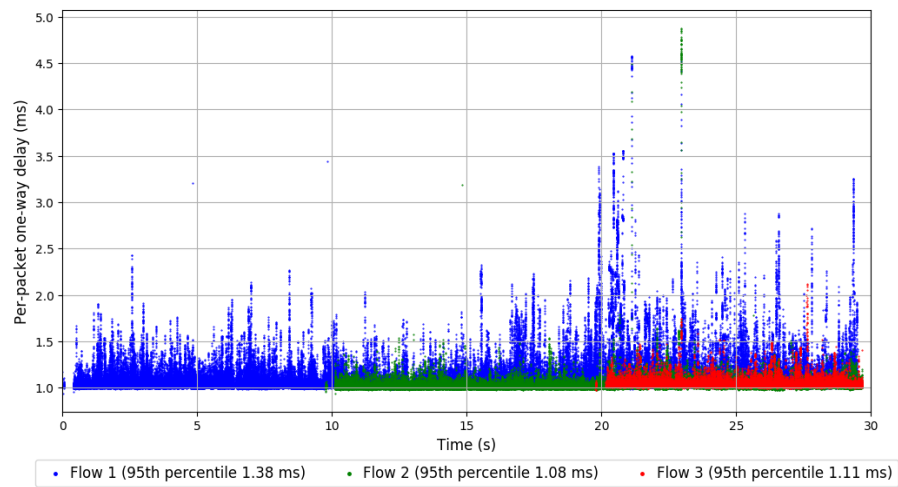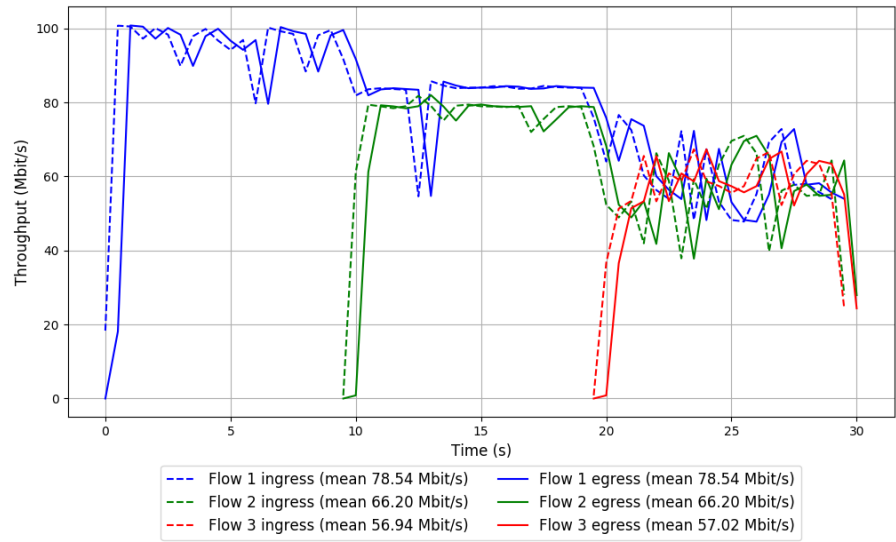
# Run 4: Report of PCC-Expr — Data Link



Flow 1 ingress (mean 138.36 Mbit/s) --- Flow 1 egress (mean 138.36 Mbit/s)
Flow 2 ingress (mean 117.61 Mbit/s) --- Flow 2 egress (mean 117.62 Mbit/s)
Flow 3 ingress (mean 8.07 Mbit/s) --- Flow 3 egress (mean 8.07 Mbit/s)



• Flow 1 (95th percentile 1.19 ms)    • Flow 2 (95th percentile 1.27 ms)    • Flow 3 (95th percentile 1.17 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2019-01-25 21:38:59
End at: 2019-01-25 21:39:29
Local clock offset: 1.445 ms
Remote clock offset: 3.744 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 158.34 Mbit/s
95th percentile per-packet one-way delay: 1.233 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 149.85 Mbit/s
95th percentile per-packet one-way delay: 1.237 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 5.67 Mbit/s
95th percentile per-packet one-way delay: 1.207 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 14.31 Mbit/s
95th percentile per-packet one-way delay: 1.214 ms
Loss rate: 0.01%
```
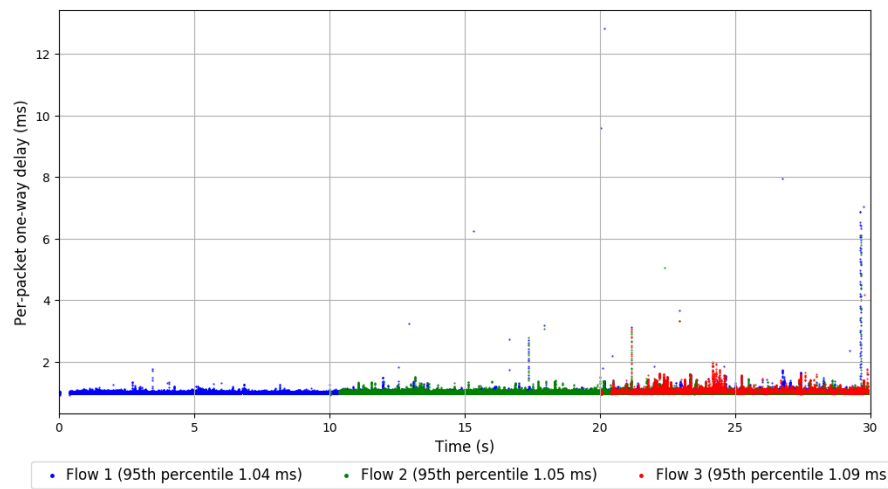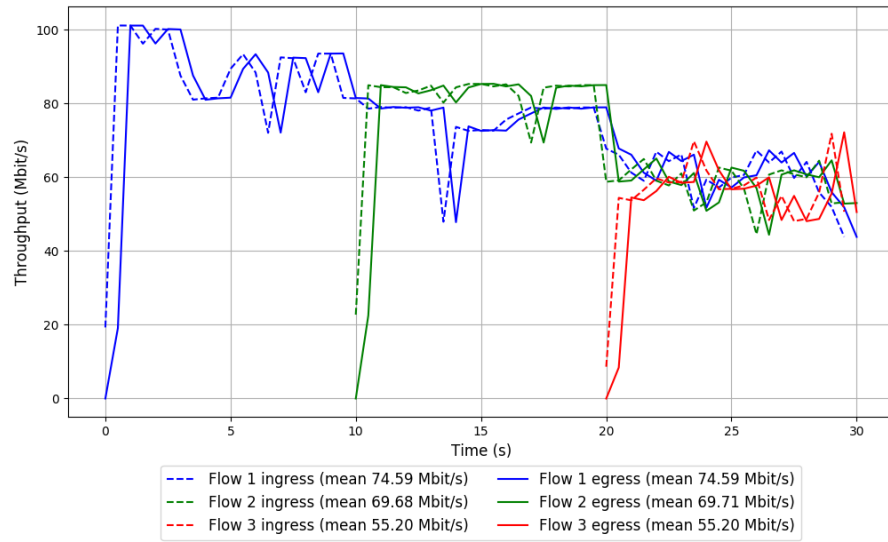
## Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-01-25 19:37:39
End at: 2019-01-25 19:38:09
Local clock offset: 0.055 ms
Remote clock offset: 0.435 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 141.53 Mbit/s
95th percentile per-packet one-way delay: 1.254 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 78.54 Mbit/s
95th percentile per-packet one-way delay: 1.376 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 66.20 Mbit/s
95th percentile per-packet one-way delay: 1.077 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 57.02 Mbit/s
95th percentile per-packet one-way delay: 1.107 ms
Loss rate: 0.02%
```
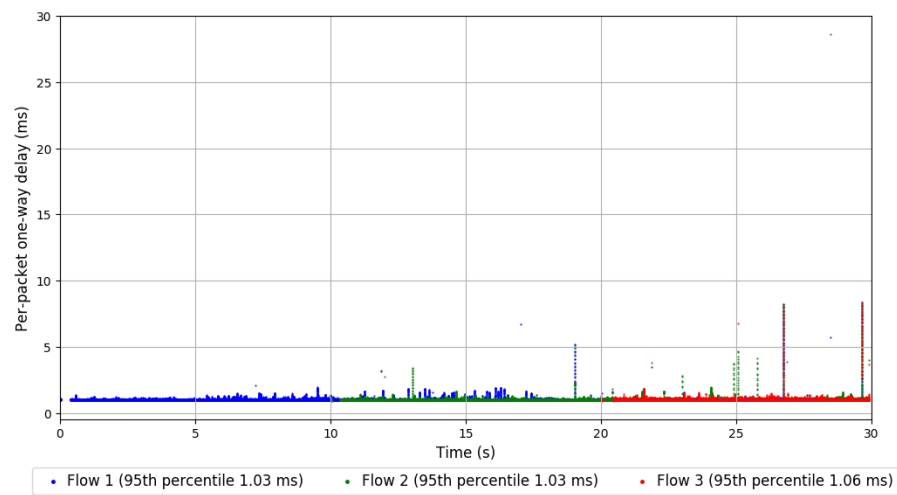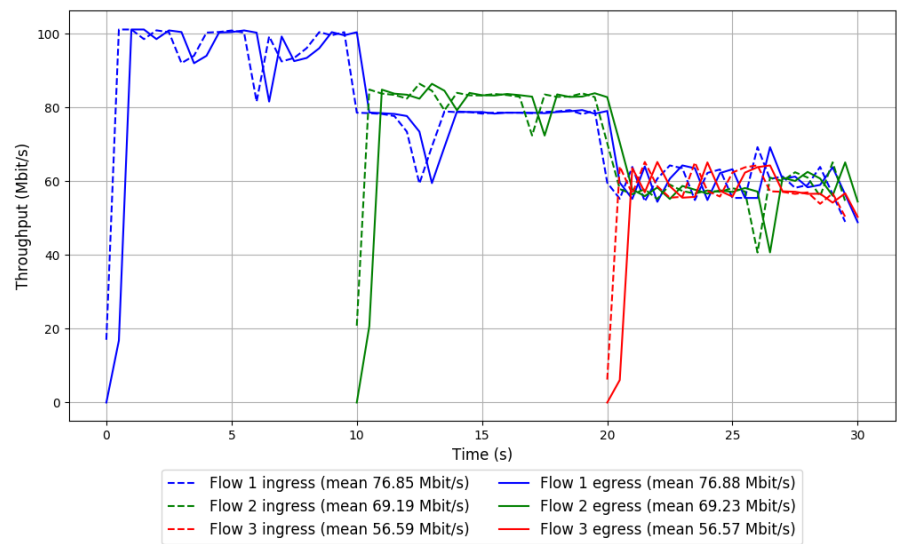
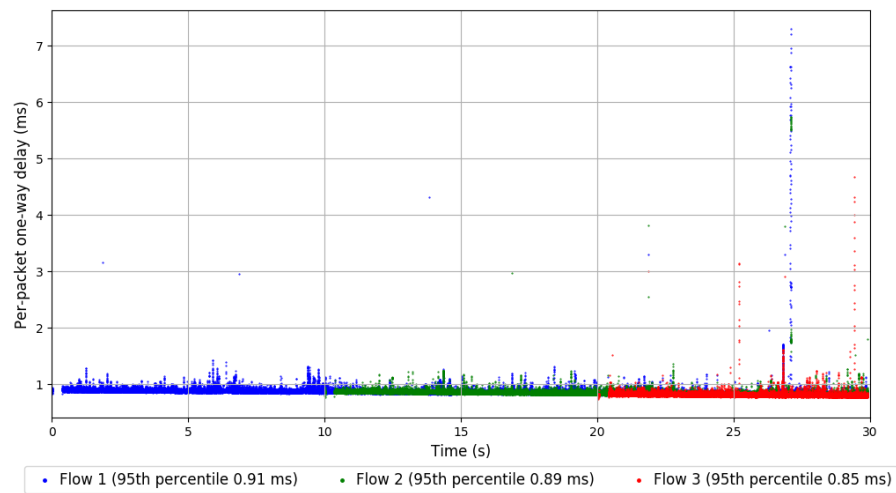Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-01-25 20:07:44
End at: 2019-01-25 20:08:14
Local clock offset: 0.101 ms
Remote clock offset: 0.76 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 139.20 Mbit/s
95th percentile per-packet one-way delay: 1.051 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 74.59 Mbit/s
95th percentile per-packet one-way delay: 1.039 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 69.71 Mbit/s
95th percentile per-packet one-way delay: 1.055 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 55.20 Mbit/s
95th percentile per-packet one-way delay: 1.093 ms
Loss rate: 0.01%
```
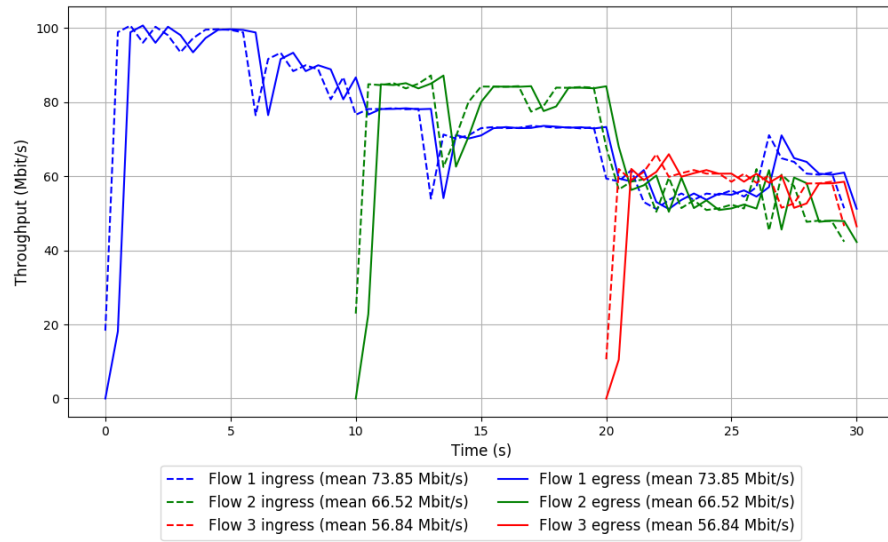
# Run 2: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 74.59 Mbit/s) --- Flow 1 egress (mean 74.59 Mbit/s)
Flow 2 ingress (mean 69.68 Mbit/s) --- Flow 2 egress (mean 69.71 Mbit/s)
Flow 3 ingress (mean 55.20 Mbit/s) --- Flow 3 egress (mean 55.20 Mbit/s)



Flow 1 (95th percentile 1.04 ms) • Flow 2 (95th percentile 1.05 ms) • Flow 3 (95th percentile 1.09 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-01-25 20:37:40
End at: 2019-01-25 20:38:10
Local clock offset: 0.203 ms
Remote clock offset: 0.461 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 141.64 Mbit/s
95th percentile per-packet one-way delay: 1.036 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 76.88 Mbit/s
95th percentile per-packet one-way delay: 1.033 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 69.23 Mbit/s
95th percentile per-packet one-way delay: 1.030 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 56.57 Mbit/s
95th percentile per-packet one-way delay: 1.061 ms
Loss rate: 0.01%
```
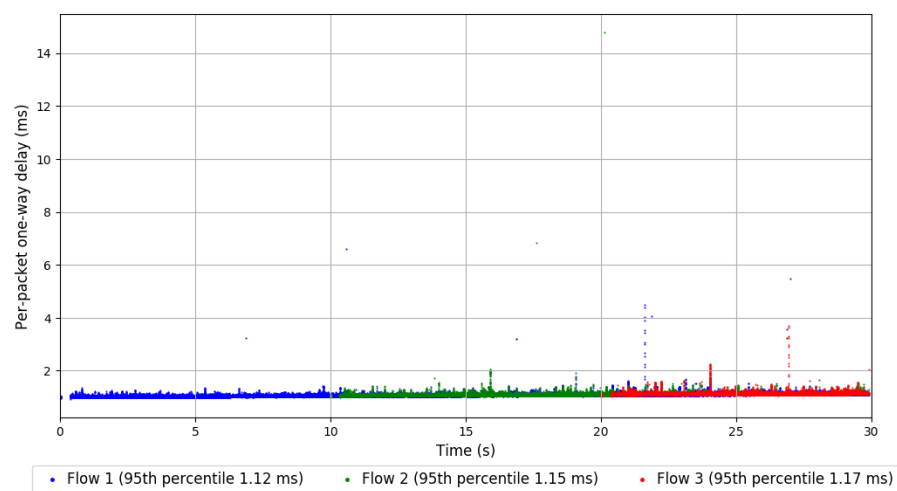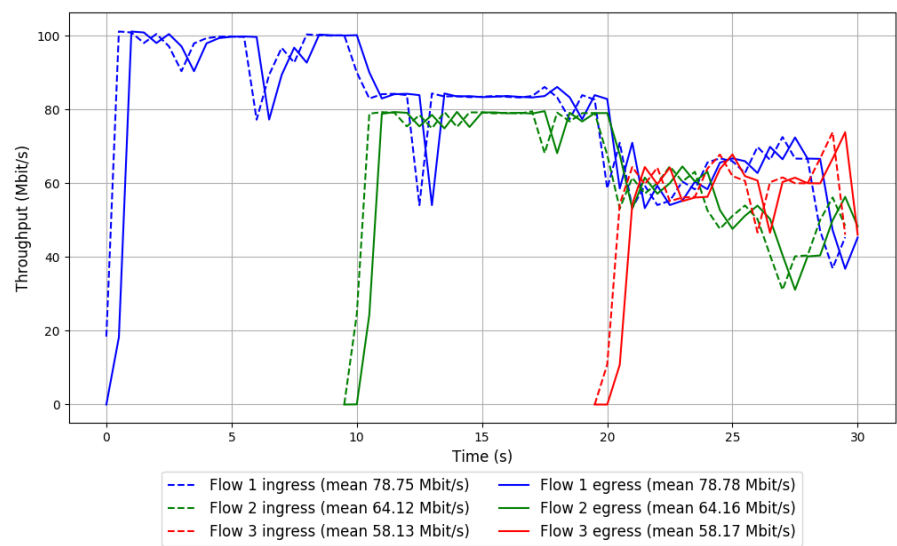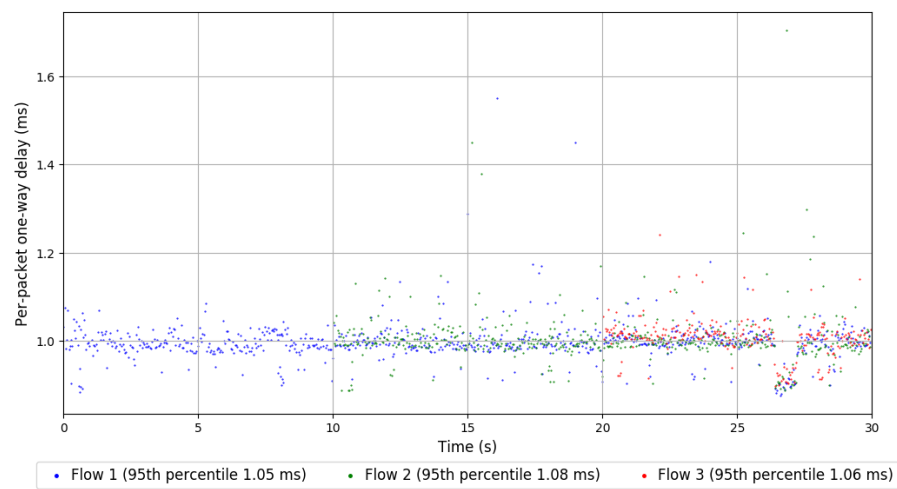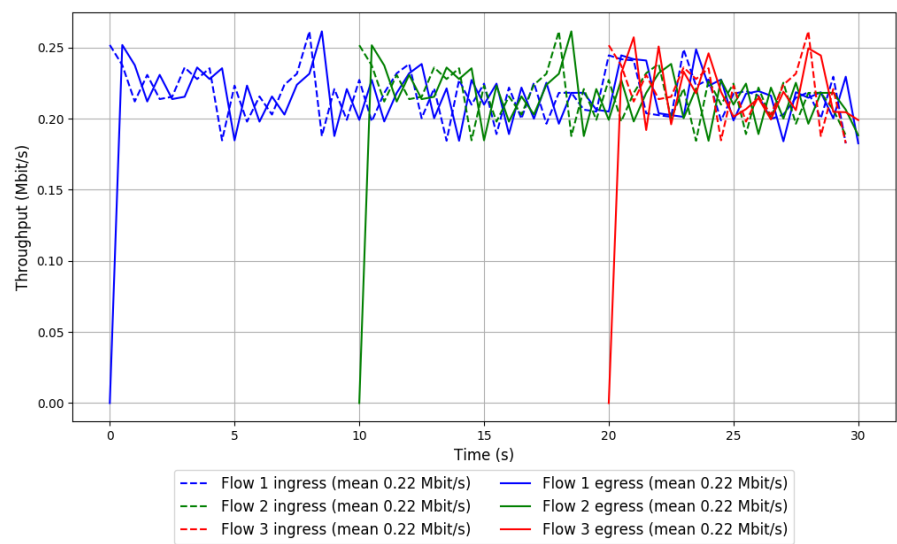
Run 3: Report of QUIC Cubic — Data Link



- - - Flow 1 ingress (mean 76.85 Mbit/s) —— Flow 1 egress (mean 76.88 Mbit/s)
- - - Flow 2 ingress (mean 69.19 Mbit/s) —— Flow 2 egress (mean 69.23 Mbit/s)
- - - Flow 3 ingress (mean 56.59 Mbit/s) —— Flow 3 egress (mean 56.57 Mbit/s)



• Flow 1 (95th percentile 1.03 ms)    • Flow 2 (95th percentile 1.03 ms)    • Flow 3 (95th percentile 1.06 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2019-01-25 21:07:33
End at: 2019-01-25 21:08:03
Local clock offset: 2.256 ms
Remote clock offset: -0.282 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 136.91 Mbit/s
95th percentile per-packet one-way delay: 0.904 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 73.85 Mbit/s
95th percentile per-packet one-way delay: 0.911 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 66.52 Mbit/s
95th percentile per-packet one-way delay: 0.889 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 56.84 Mbit/s
95th percentile per-packet one-way delay: 0.855 ms
Loss rate: 0.02%
```

Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2019-01-25 21:37:40
End at: 2019-01-25 21:38:10
Local clock offset: 1.638 ms
Remote clock offset: 3.737 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 140.75 Mbit/s
95th percentile per-packet one-way delay: 1.145 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 78.78 Mbit/s
95th percentile per-packet one-way delay: 1.125 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 64.16 Mbit/s
95th percentile per-packet one-way delay: 1.148 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 58.17 Mbit/s
95th percentile per-packet one-way delay: 1.167 ms
Loss rate: 0.02%
```
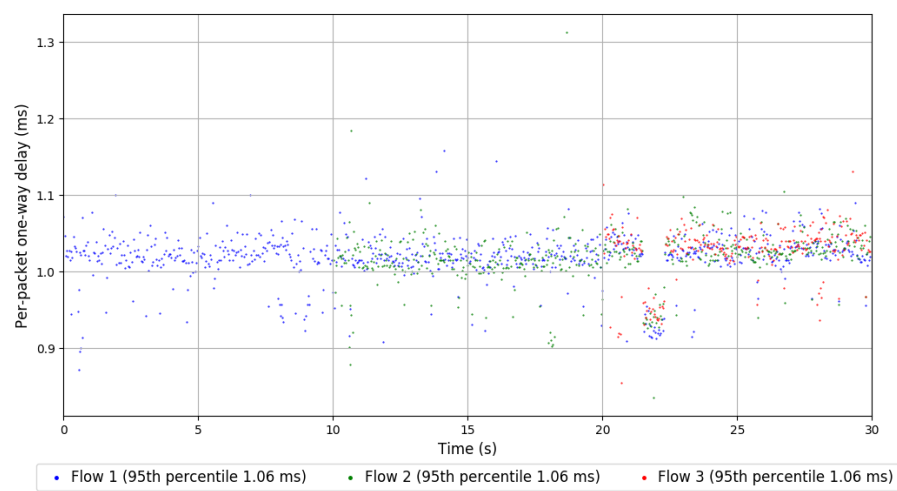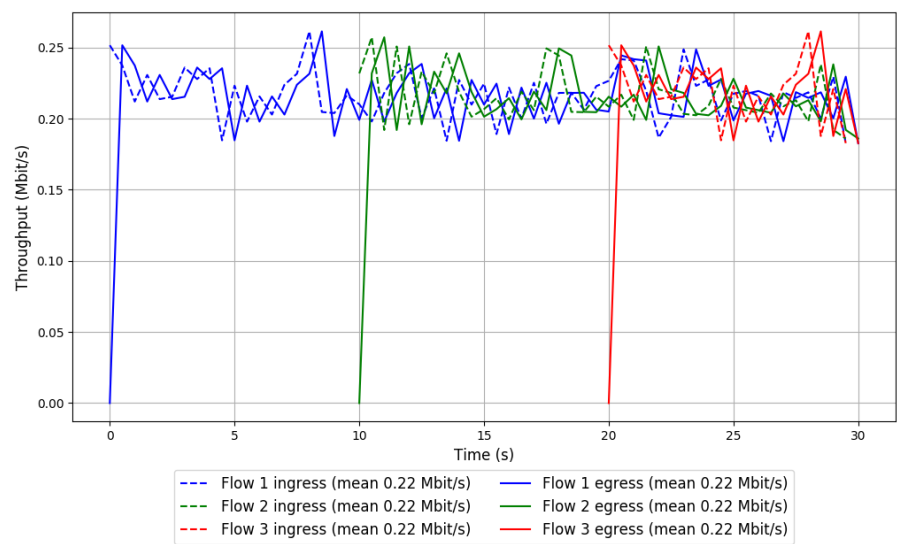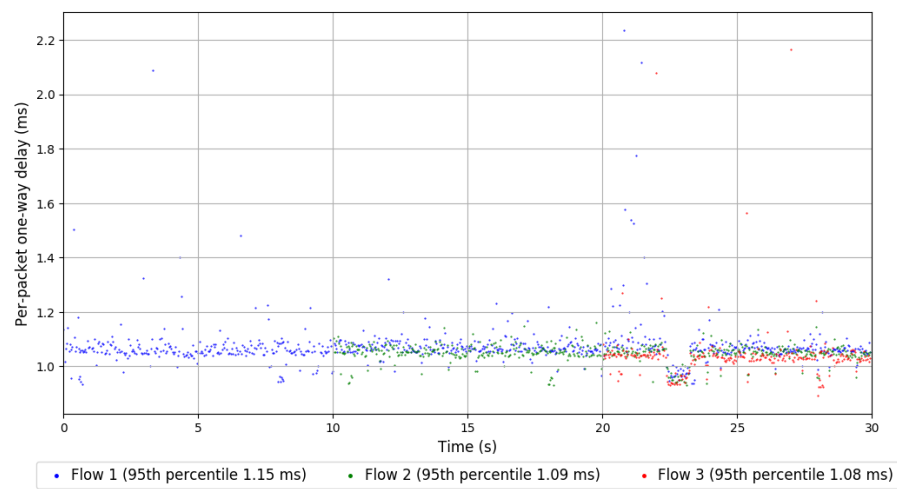
Run 5: Report of QUIC Cubic — Data Link



- - - Flow 1 ingress (mean 78.75 Mbit/s) —— Flow 1 egress (mean 78.78 Mbit/s)
- - - Flow 2 ingress (mean 64.12 Mbit/s) —— Flow 2 egress (mean 64.16 Mbit/s)
- - - Flow 3 ingress (mean 58.13 Mbit/s) —— Flow 3 egress (mean 58.17 Mbit/s)



• Flow 1 (95th percentile 1.12 ms)   • Flow 2 (95th percentile 1.15 ms)   • Flow 3 (95th percentile 1.17 ms)

```
Run 1: Statistics of SCReAM

Start at: 2019-01-25 19:24:51
End at: 2019-01-25 19:25:21
Local clock offset: -0.113 ms
Remote clock offset: 0.641 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.058 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.048 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.077 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.058 ms
Loss rate: 0.00%
```
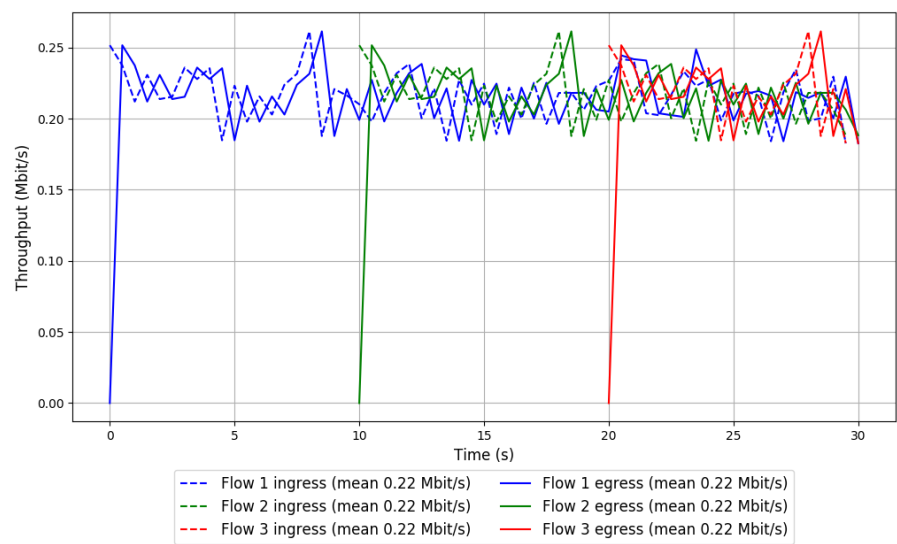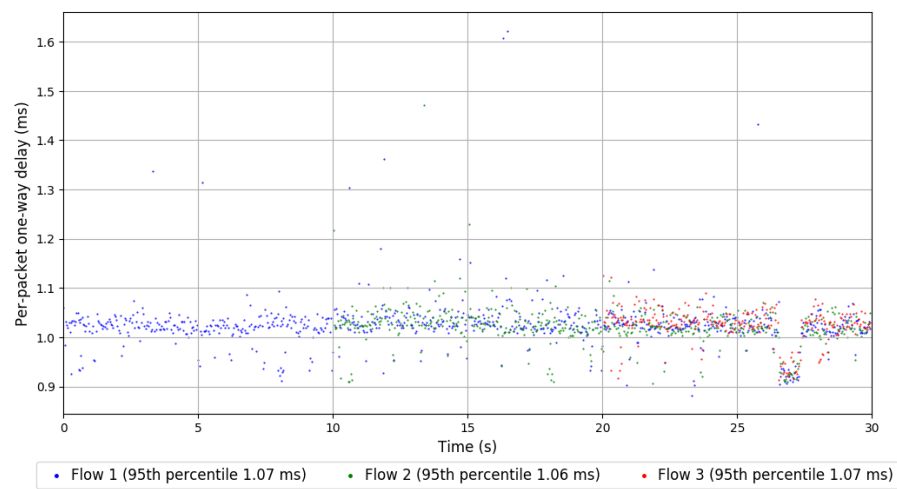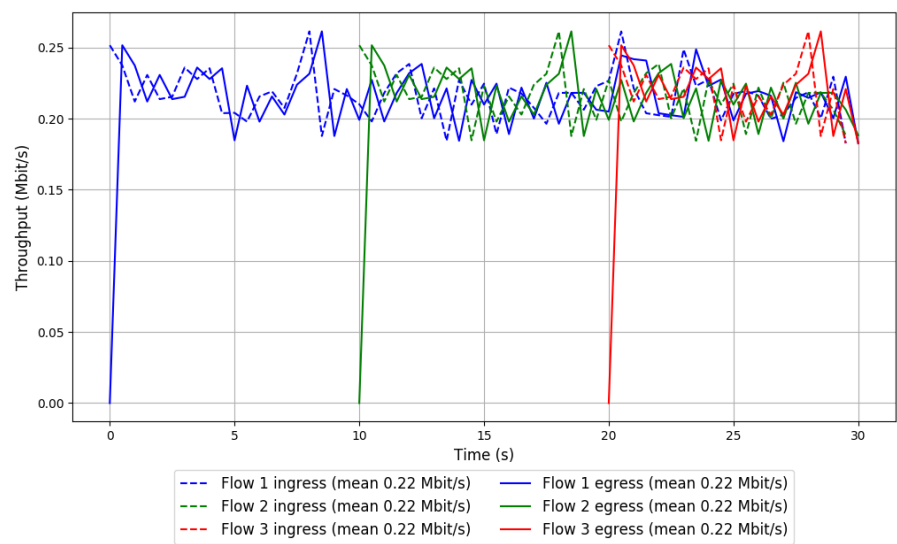
# Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2019-01-25 19:54:55
End at: 2019-01-25 19:55:25
Local clock offset: 0.116 ms
Remote clock offset: 0.936 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.061 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.057 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.064 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.065 ms
Loss rate: 0.00%
```

Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2019-01-25 20:24:55
End at: 2019-01-25 20:25:25
Local clock offset: 0.118 ms
Remote clock offset: 0.815 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.114 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.153 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.092 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.079 ms
Loss rate: 0.00%
```
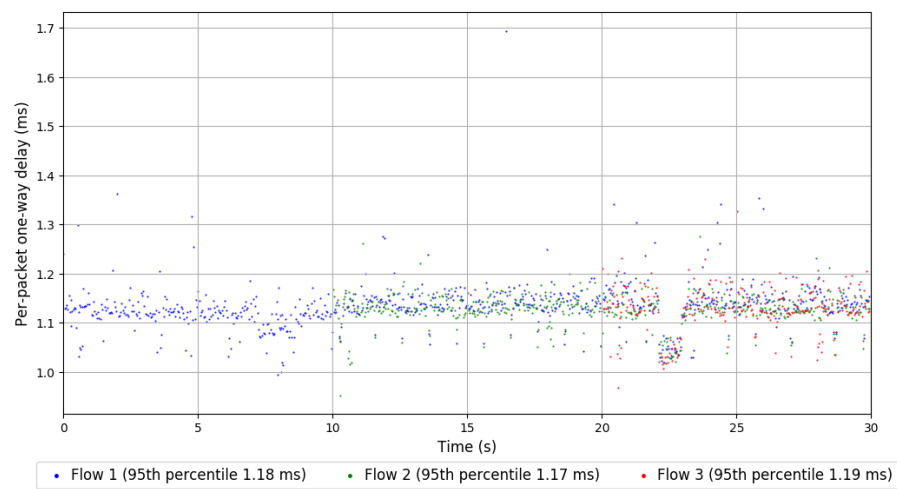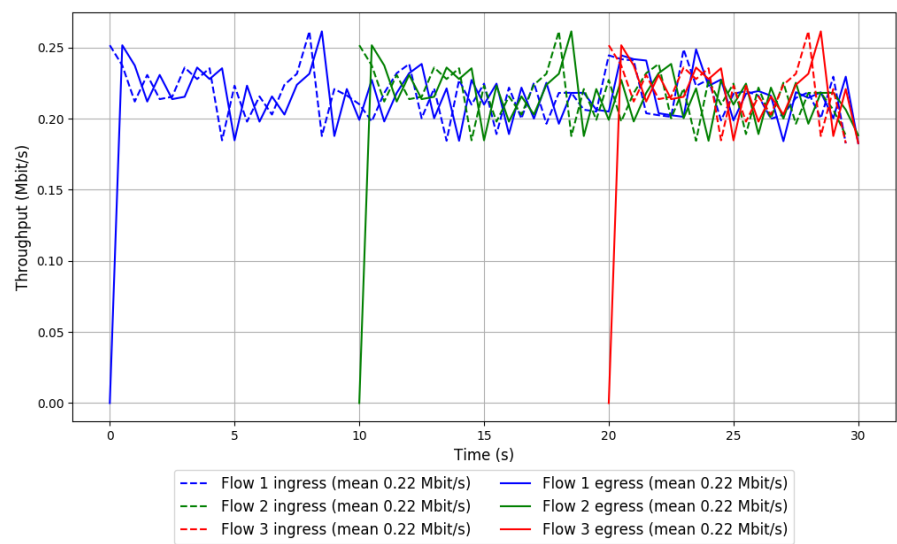
# Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2019-01-25 20:54:50
End at: 2019-01-25 20:55:20
Local clock offset: 0.269 ms
Remote clock offset: -0.024 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.066 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.066 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.064 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.067 ms
Loss rate: 0.00%
```
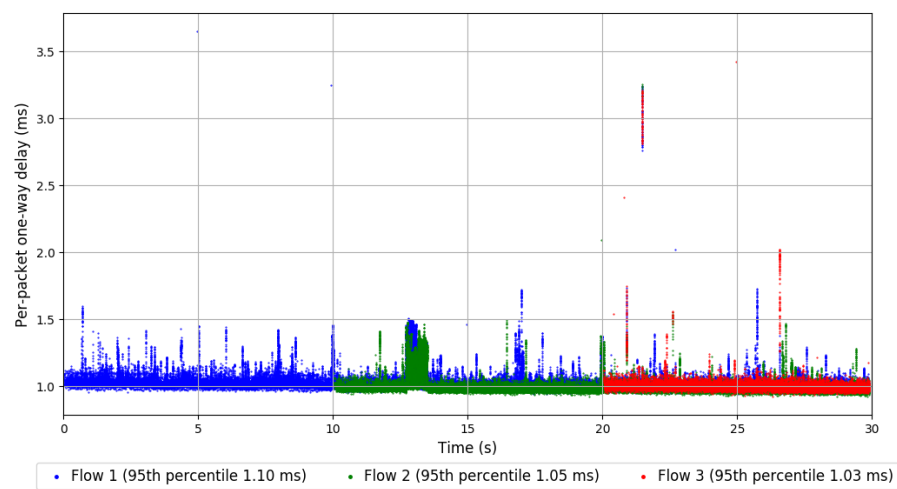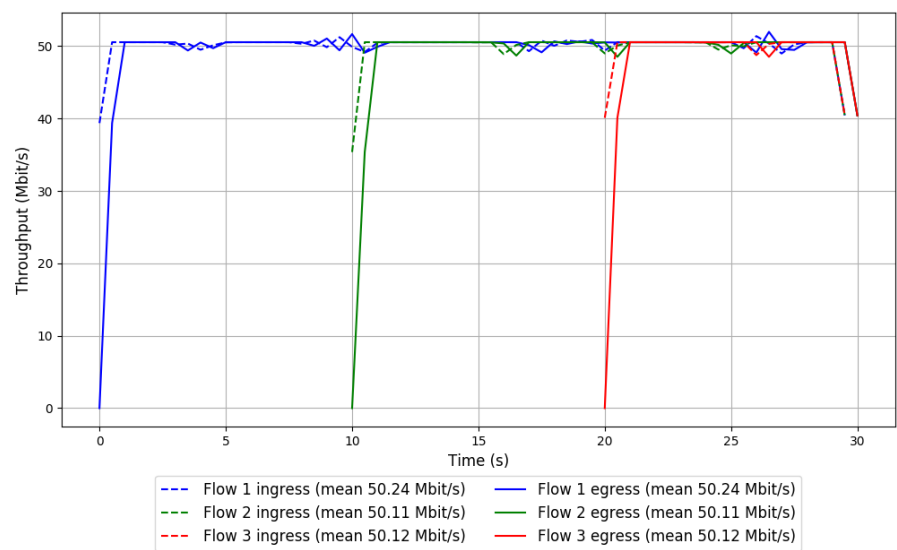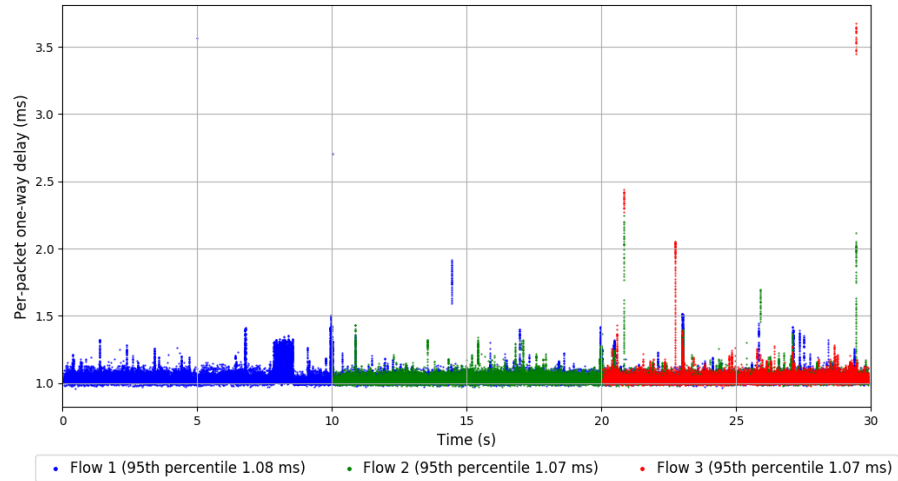
## Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2019-01-25 21:24:55
End at: 2019-01-25 21:25:25
Local clock offset: 3.918 ms
Remote clock offset: 2.91 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.181 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.183 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.169 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.192 ms
Loss rate: 0.00%
```
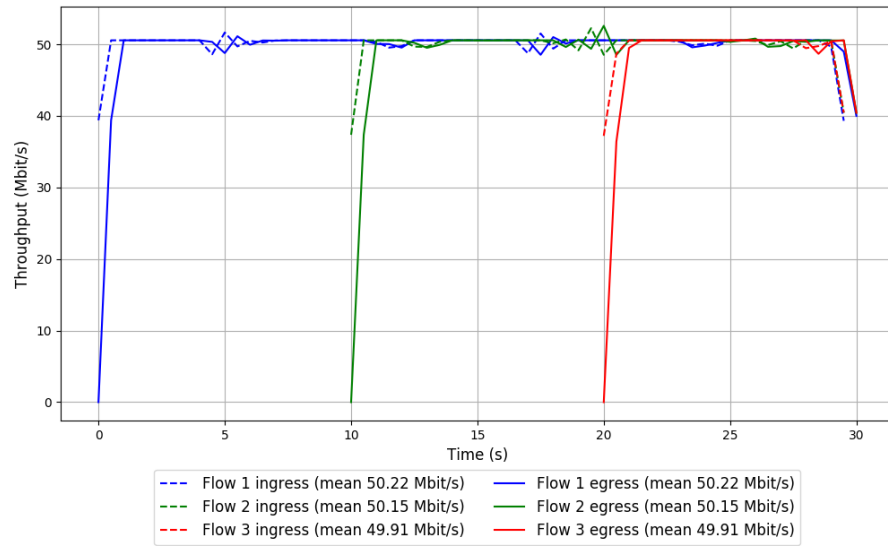
Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2019-01-25 19:26:04
End at: 2019-01-25 19:26:34
Local clock offset: -0.087 ms
Remote clock offset: 0.563 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 100.05 Mbit/s
95th percentile per-packet one-way delay: 1.073 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.24 Mbit/s
95th percentile per-packet one-way delay: 1.097 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.11 Mbit/s
95th percentile per-packet one-way delay: 1.053 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 50.12 Mbit/s
95th percentile per-packet one-way delay: 1.033 ms
Loss rate: 0.00%
```
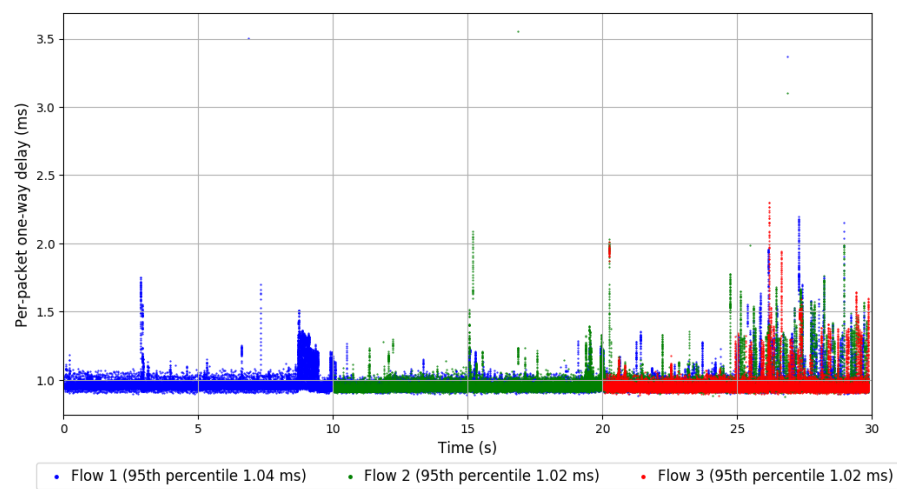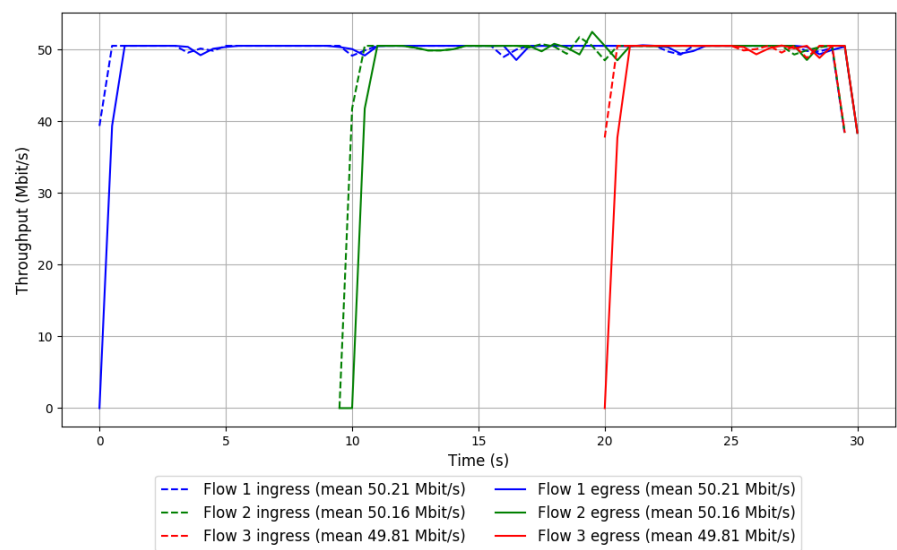
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-01-25 19:56:09
End at: 2019-01-25 19:56:39
Local clock offset: 0.126 ms
Remote clock offset: 0.87 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.99 Mbit/s
95th percentile per-packet one-way delay: 1.075 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.22 Mbit/s
95th percentile per-packet one-way delay: 1.082 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.15 Mbit/s
95th percentile per-packet one-way delay: 1.068 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 49.91 Mbit/s
95th percentile per-packet one-way delay: 1.072 ms
Loss rate: 0.00%
```
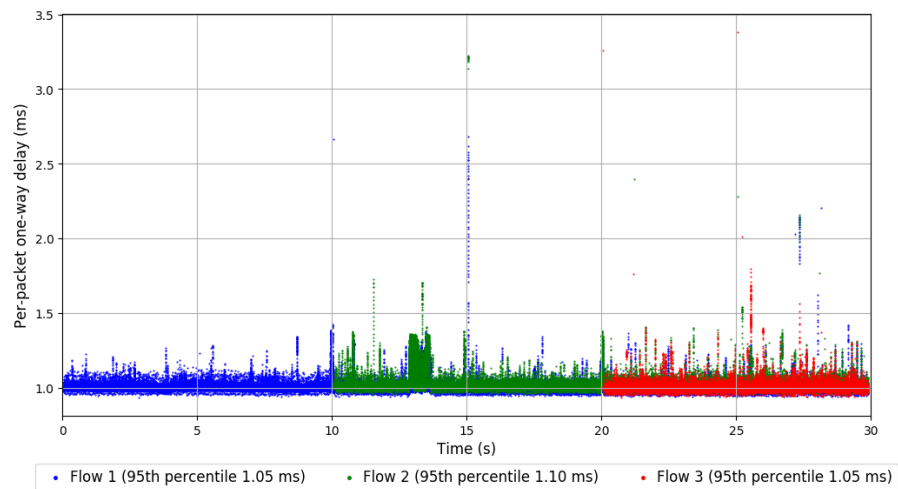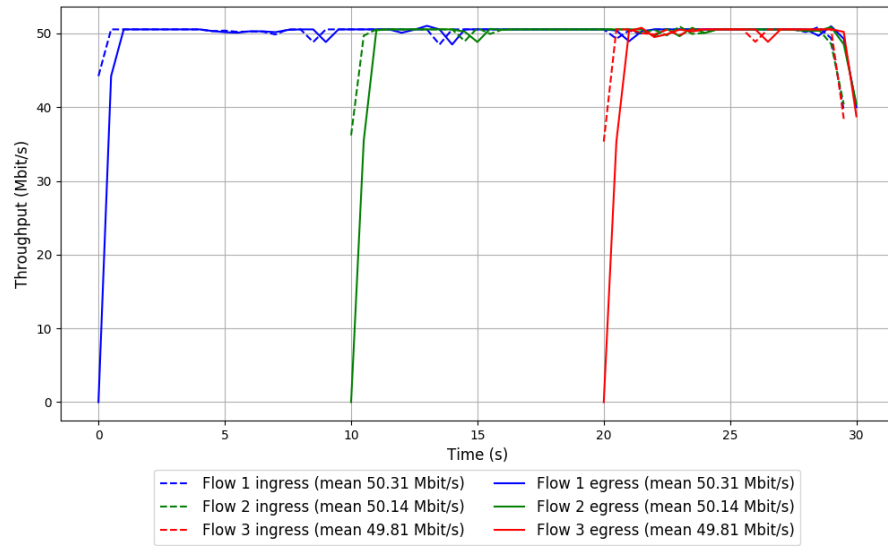
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2019-01-25 20:26:08
End at: 2019-01-25 20:26:38
Local clock offset: 0.11 ms
Remote clock offset: 0.826 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 100.04 Mbit/s
95th percentile per-packet one-way delay: 1.029 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.21 Mbit/s
95th percentile per-packet one-way delay: 1.038 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.16 Mbit/s
95th percentile per-packet one-way delay: 1.020 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 49.81 Mbit/s
95th percentile per-packet one-way delay: 1.016 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2019-01-25 20:56:04
End at: 2019-01-25 20:56:34
Local clock offset: 0.269 ms
Remote clock offset: -0.109 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 100.01 Mbit/s
95th percentile per-packet one-way delay: 1.065 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.31 Mbit/s
95th percentile per-packet one-way delay: 1.052 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.14 Mbit/s
95th percentile per-packet one-way delay: 1.096 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 49.81 Mbit/s
95th percentile per-packet one-way delay: 1.050 ms
Loss rate: 0.00%
```
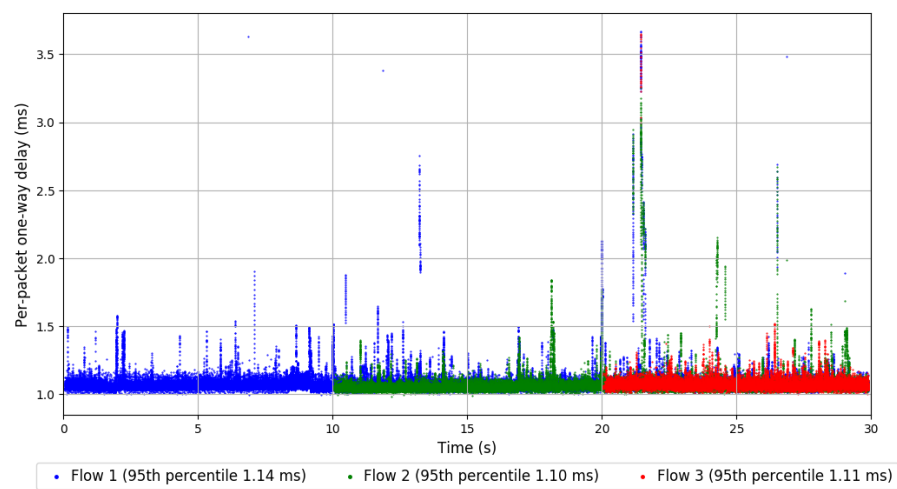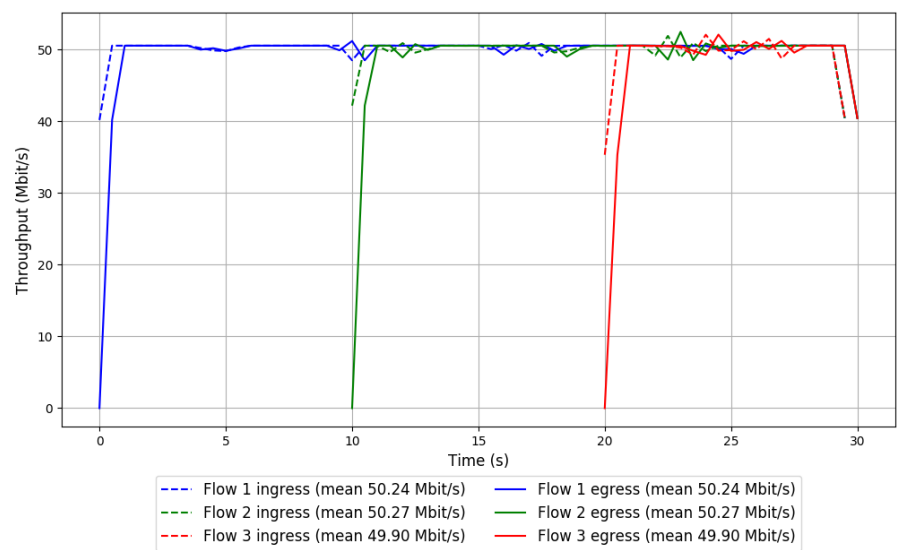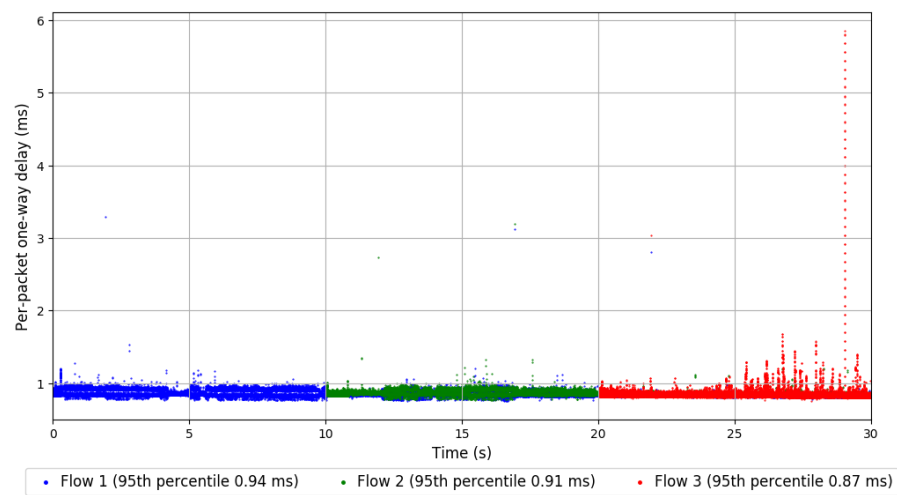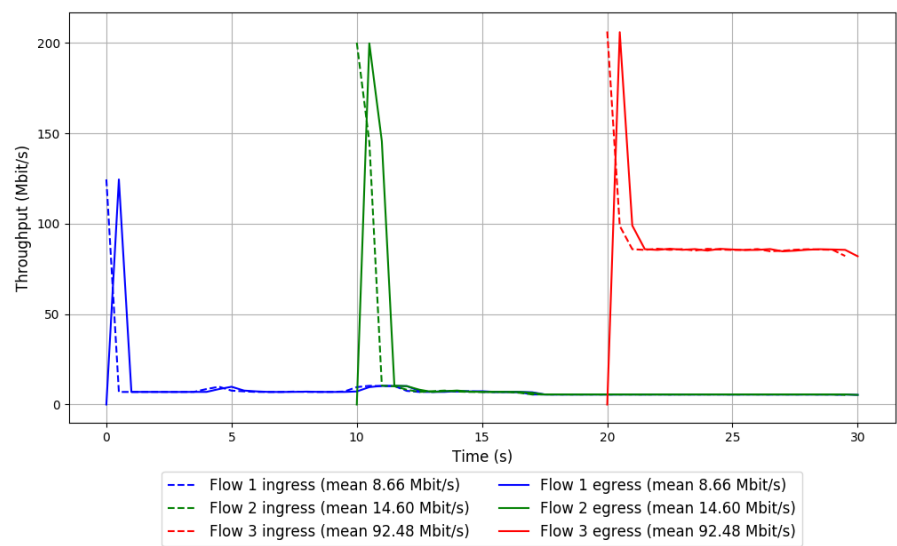
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2019-01-25 21:26:08
End at: 2019-01-25 21:26:38
Local clock offset: 3.978 ms
Remote clock offset: 2.975 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 100.09 Mbit/s
95th percentile per-packet one-way delay: 1.123 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.24 Mbit/s
95th percentile per-packet one-way delay: 1.135 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.27 Mbit/s
95th percentile per-packet one-way delay: 1.105 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 49.90 Mbit/s
95th percentile per-packet one-way delay: 1.115 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link

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

Start at: 2019-01-25 19:13:13
End at: 2019-01-25 19:13:43
Local clock offset: -0.829 ms
Remote clock offset: 0.279 ms


# Below is generated by plot.py at 2019-01-25 22:36:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 49.11 Mbit/s
95th percentile per-packet one-way delay: 0.901 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 8.66 Mbit/s
95th percentile per-packet one-way delay: 0.937 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 14.60 Mbit/s
95th percentile per-packet one-way delay: 0.910 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 92.48 Mbit/s
95th percentile per-packet one-way delay: 0.871 ms
Loss rate: 0.02%
```
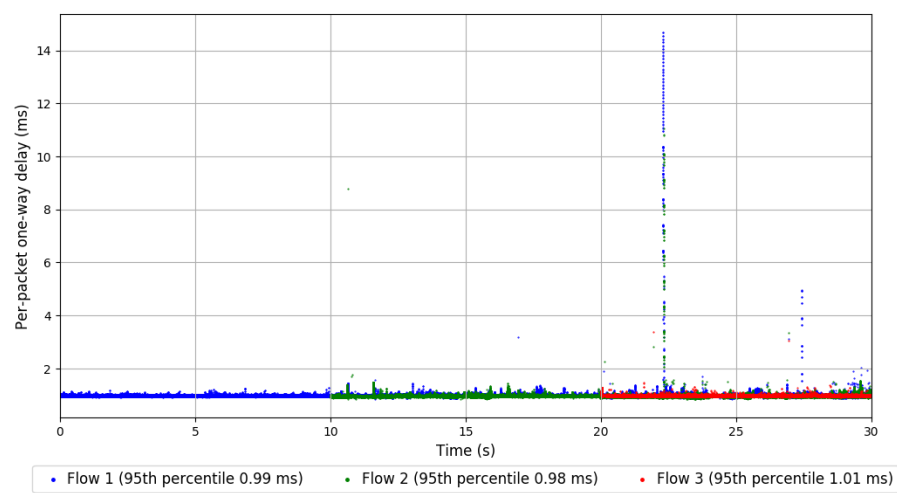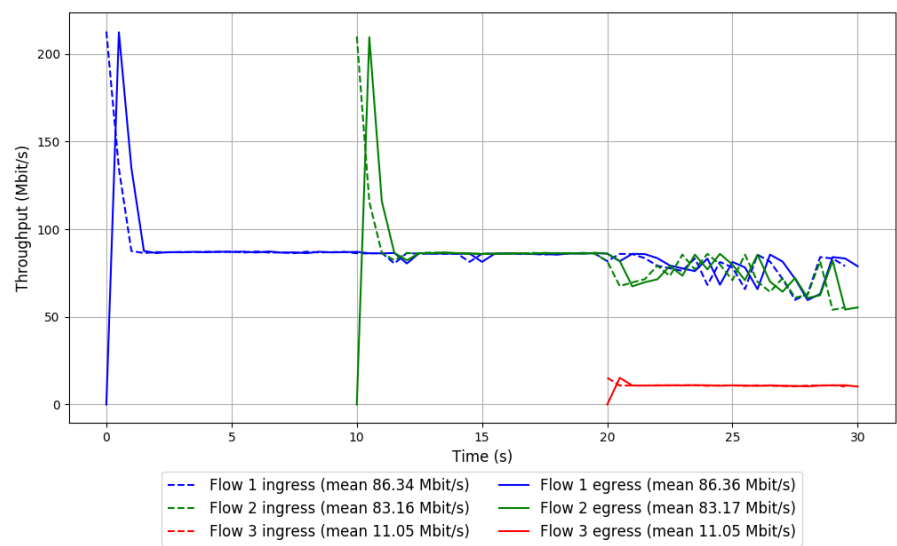
Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-25 19:43:20
End at: 2019-01-25 19:43:50
Local clock offset: 0.089 ms
Remote clock offset: 0.611 ms


# Below is generated by plot.py at 2019-01-25 22:38:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 145.45 Mbit/s
95th percentile per-packet one-way delay: 0.987 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 86.36 Mbit/s
95th percentile per-packet one-way delay: 0.990 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 83.17 Mbit/s
95th percentile per-packet one-way delay: 0.976 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.05 Mbit/s
95th percentile per-packet one-way delay: 1.007 ms
Loss rate: 0.01%
```
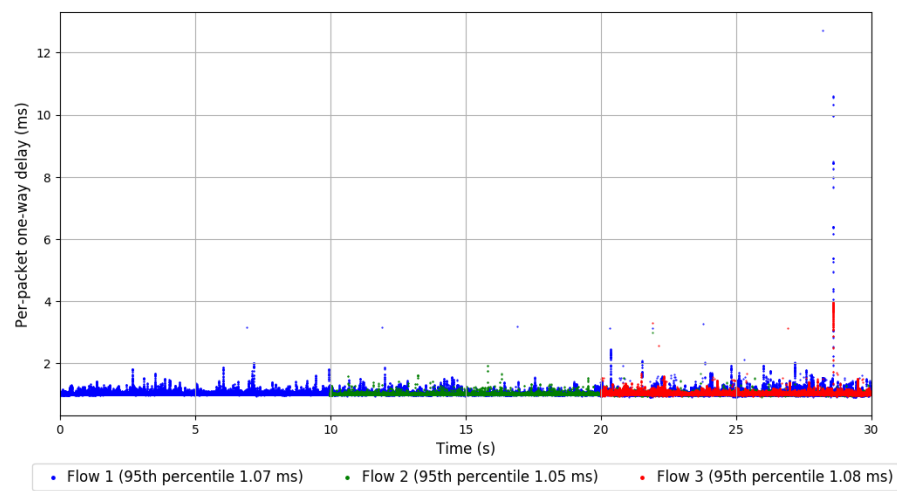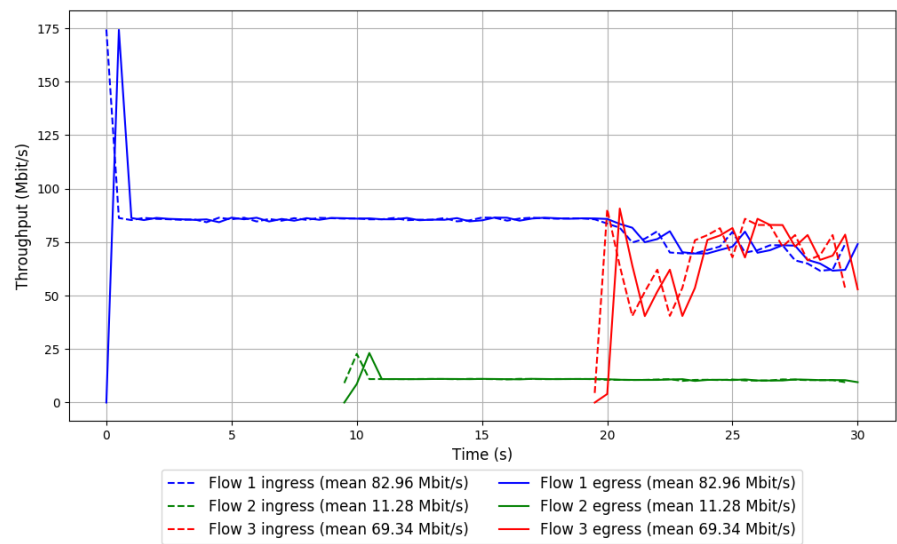
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-25 20:13:19
End at: 2019-01-25 20:13:49
Local clock offset: 0.094 ms
Remote clock offset: 0.723 ms


# Below is generated by plot.py at 2019-01-25 22:38:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 113.54 Mbit/s
95th percentile per-packet one-way delay: 1.070 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 82.96 Mbit/s
95th percentile per-packet one-way delay: 1.068 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 11.28 Mbit/s
95th percentile per-packet one-way delay: 1.051 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 69.34 Mbit/s
95th percentile per-packet one-way delay: 1.085 ms
Loss rate: 0.03%
```
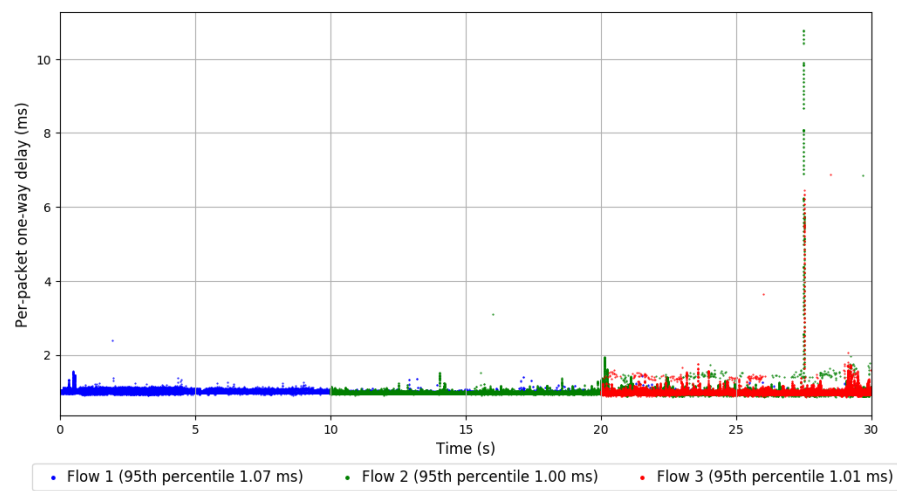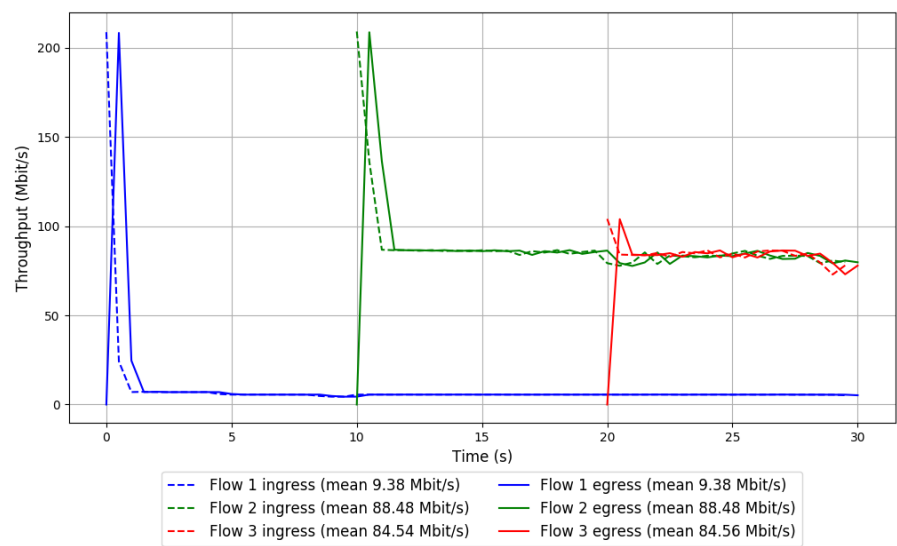
Run 3: Report of TaoVA-100x — Data Link



Flow 1 ingress (mean 82.96 Mbit/s)      Flow 1 egress (mean 82.96 Mbit/s)
Flow 2 ingress (mean 11.28 Mbit/s)      Flow 2 egress (mean 11.28 Mbit/s)
Flow 3 ingress (mean 69.34 Mbit/s)      Flow 3 egress (mean 69.34 Mbit/s)



Flow 1 (95th percentile 1.07 ms)      Flow 2 (95th percentile 1.05 ms)      Flow 3 (95th percentile 1.08 ms)

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

Start at: 2019-01-25 20:43:18
End at: 2019-01-25 20:43:48
Local clock offset: 0.225 ms
Remote clock offset: 0.198 ms

# Below is generated by plot.py at 2019-01-25 22:38:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.42 Mbit/s
95th percentile per-packet one-way delay: 1.013 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 9.38 Mbit/s
95th percentile per-packet one-way delay: 1.075 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 88.48 Mbit/s
95th percentile per-packet one-way delay: 0.999 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 84.56 Mbit/s
95th percentile per-packet one-way delay: 1.013 ms
Loss rate: 0.02%
```
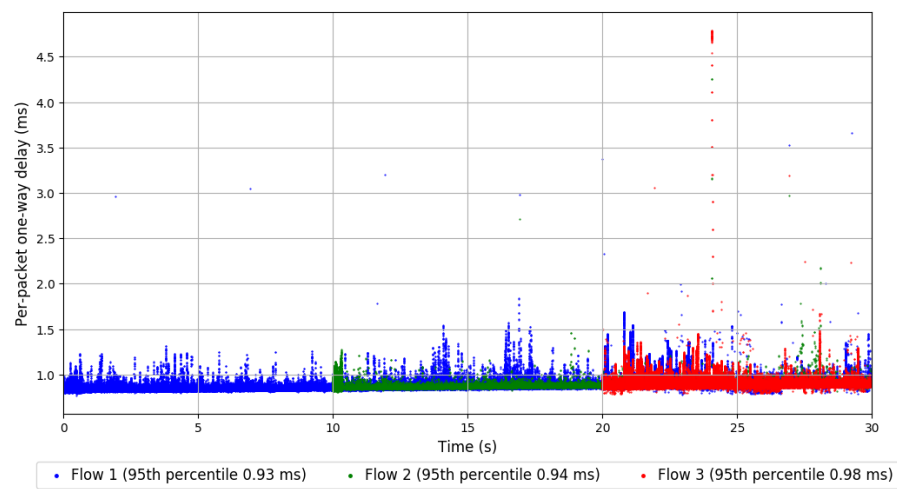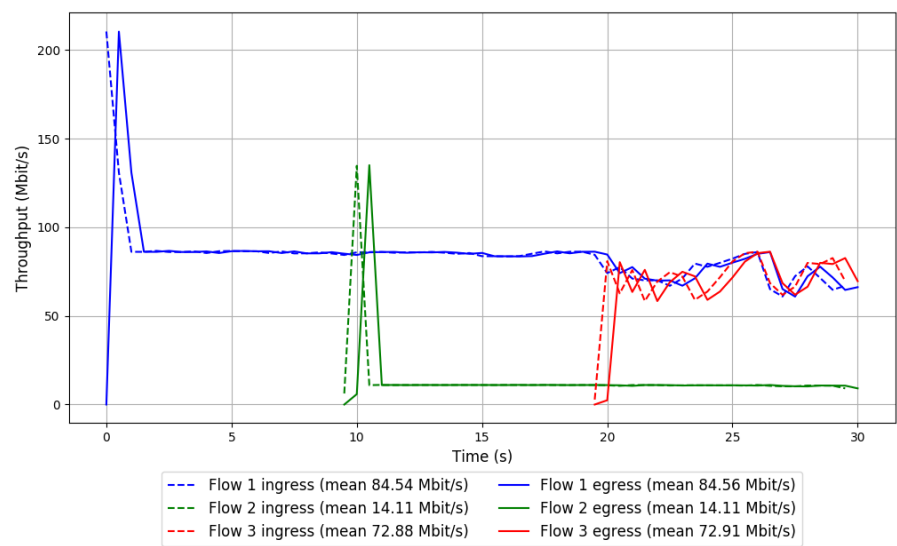
Run 4: Report of TaoVA-100x — Data Link

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

Start at: 2019-01-25 21:13:20
End at: 2019-01-25 21:13:50
Local clock offset: 3.011 ms
Remote clock offset: 1.323 ms


# Below is generated by plot.py at 2019-01-25 22:38:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 118.19 Mbit/s
95th percentile per-packet one-way delay: 0.944 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 84.56 Mbit/s
95th percentile per-packet one-way delay: 0.934 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 14.11 Mbit/s
95th percentile per-packet one-way delay: 0.937 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 72.91 Mbit/s
95th percentile per-packet one-way delay: 0.980 ms
Loss rate: 0.02%
```
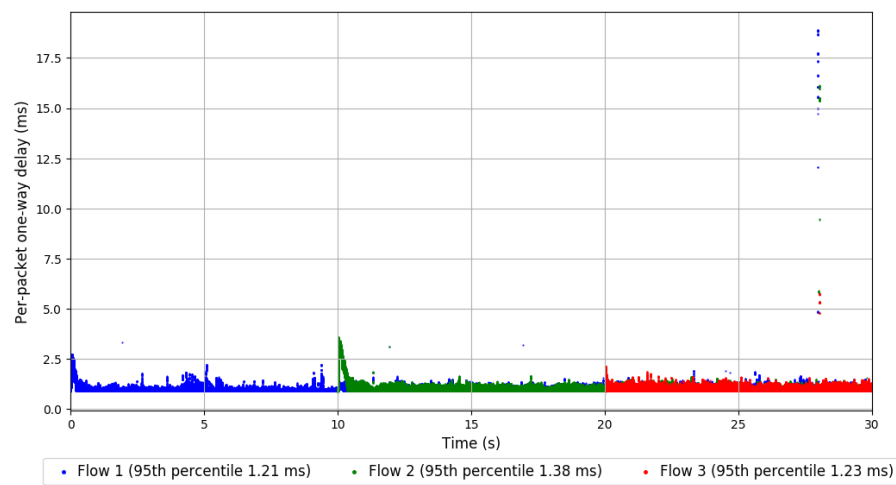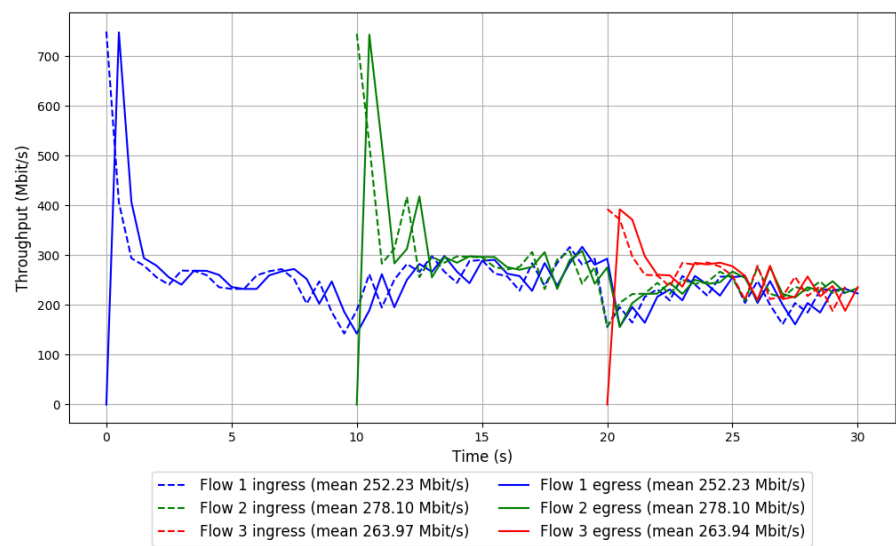
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2019-01-25 19:31:53
End at: 2019-01-25 19:32:23
Local clock offset: 0.021 ms
Remote clock offset: 0.5 ms


# Below is generated by plot.py at 2019-01-25 22:41:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 525.19 Mbit/s
95th percentile per-packet one-way delay: 1.246 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 252.23 Mbit/s
95th percentile per-packet one-way delay: 1.206 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 278.10 Mbit/s
95th percentile per-packet one-way delay: 1.384 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 263.94 Mbit/s
95th percentile per-packet one-way delay: 1.229 ms
Loss rate: 0.02%
```
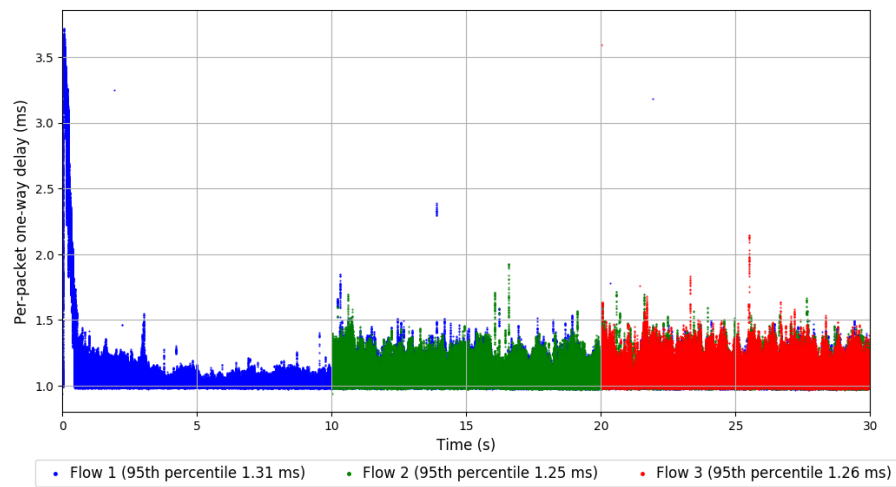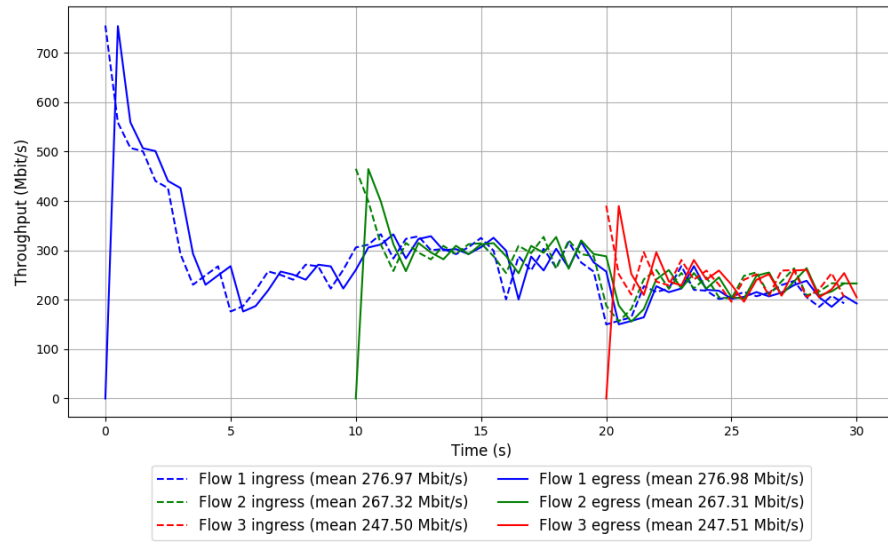
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2019-01-25 20:01:57
End at: 2019-01-25 20:02:27
Local clock offset: 0.126 ms
Remote clock offset: 0.901 ms


# Below is generated by plot.py at 2019-01-25 22:41:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 537.21 Mbit/s
95th percentile per-packet one-way delay: 1.267 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 276.98 Mbit/s
95th percentile per-packet one-way delay: 1.306 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 267.31 Mbit/s
95th percentile per-packet one-way delay: 1.245 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 247.51 Mbit/s
95th percentile per-packet one-way delay: 1.265 ms
Loss rate: 0.02%
```
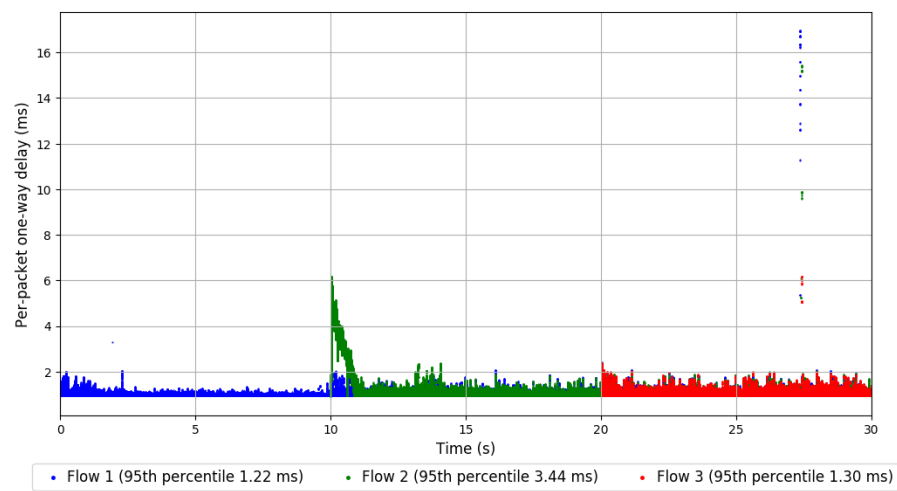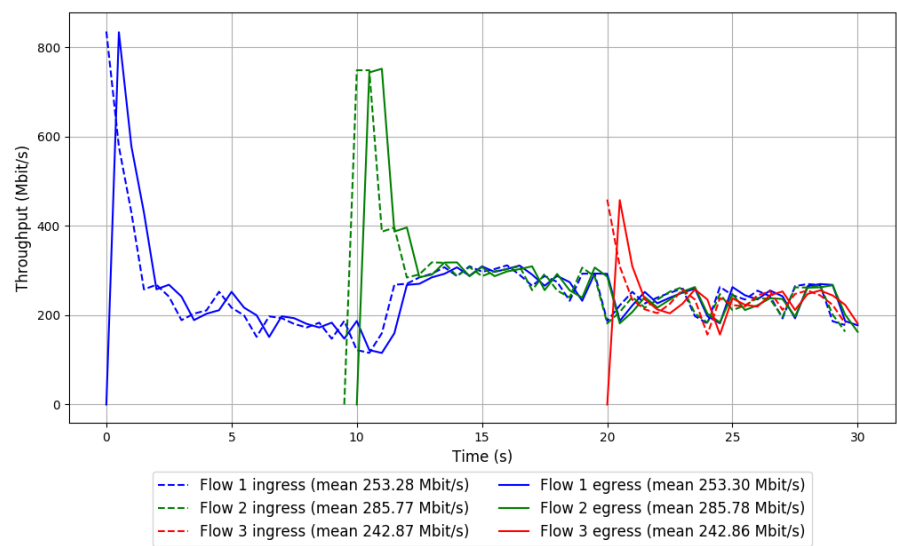
## Run 2: Report of TCP Vegas — Data Link



Flow 1 ingress (mean 276.97 Mbit/s) --- Flow 1 egress (mean 276.98 Mbit/s)
Flow 2 ingress (mean 267.32 Mbit/s) --- Flow 2 egress (mean 267.31 Mbit/s)
Flow 3 ingress (mean 247.50 Mbit/s) --- Flow 3 egress (mean 247.51 Mbit/s)



Flow 1 (95th percentile 1.31 ms)   Flow 2 (95th percentile 1.25 ms)   Flow 3 (95th percentile 1.26 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2019-01-25 20:31:50
End at: 2019-01-25 20:32:20
Local clock offset: 0.134 ms
Remote clock offset: 0.765 ms


# Below is generated by plot.py at 2019-01-25 22:41:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 524.43 Mbit/s
95th percentile per-packet one-way delay: 1.525 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 253.30 Mbit/s
95th percentile per-packet one-way delay: 1.219 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 285.78 Mbit/s
95th percentile per-packet one-way delay: 3.441 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 242.86 Mbit/s
95th percentile per-packet one-way delay: 1.296 ms
Loss rate: 0.01%
```
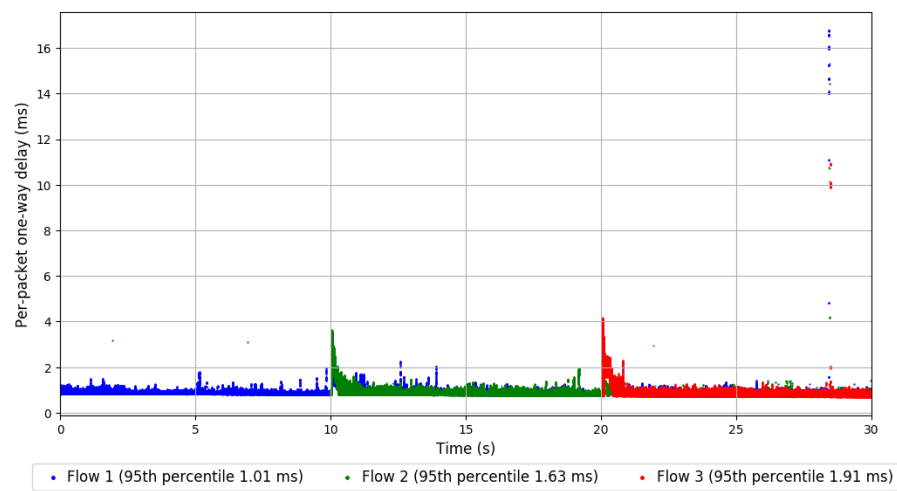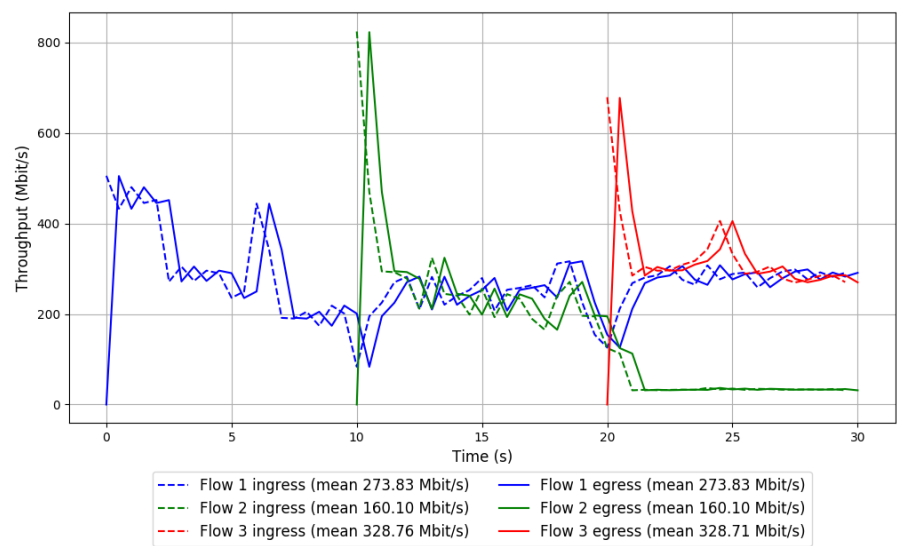
Run 3: Report of TCP Vegas — Data Link



- - - Flow 1 ingress (mean 253.28 Mbit/s)      —— Flow 1 egress (mean 253.30 Mbit/s)
- - - Flow 2 ingress (mean 285.77 Mbit/s)      —— Flow 2 egress (mean 285.78 Mbit/s)
- - - Flow 3 ingress (mean 242.87 Mbit/s)      —— Flow 3 egress (mean 242.86 Mbit/s)



•  Flow 1 (95th percentile 1.22 ms)      •  Flow 2 (95th percentile 3.44 ms)      •  Flow 3 (95th percentile 1.30 ms)

180

```
Run 4: Statistics of TCP Vegas

Start at: 2019-01-25 21:01:45
End at: 2019-01-25 21:02:15
Local clock offset: 0.981 ms
Remote clock offset: -0.23 ms


# Below is generated by plot.py at 2019-01-25 22:42:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 489.61 Mbit/s
95th percentile per-packet one-way delay: 1.173 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 273.83 Mbit/s
95th percentile per-packet one-way delay: 1.008 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 160.10 Mbit/s
95th percentile per-packet one-way delay: 1.626 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 328.71 Mbit/s
95th percentile per-packet one-way delay: 1.909 ms
Loss rate: 0.03%
```
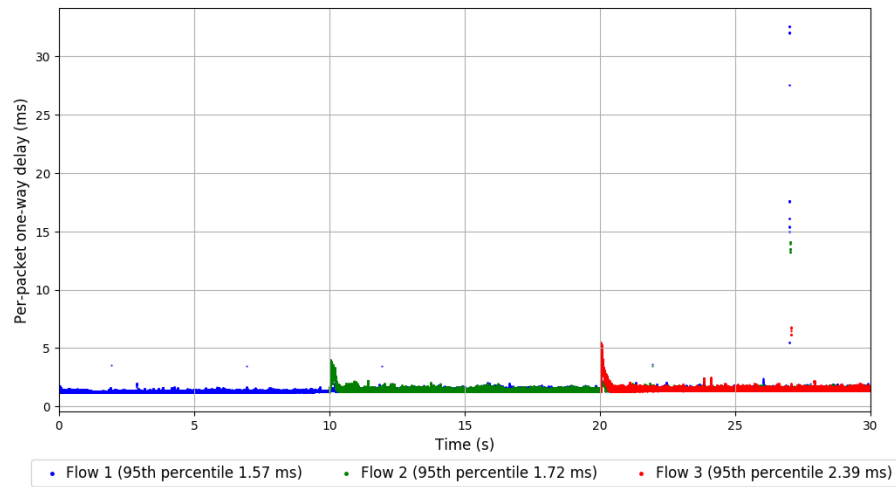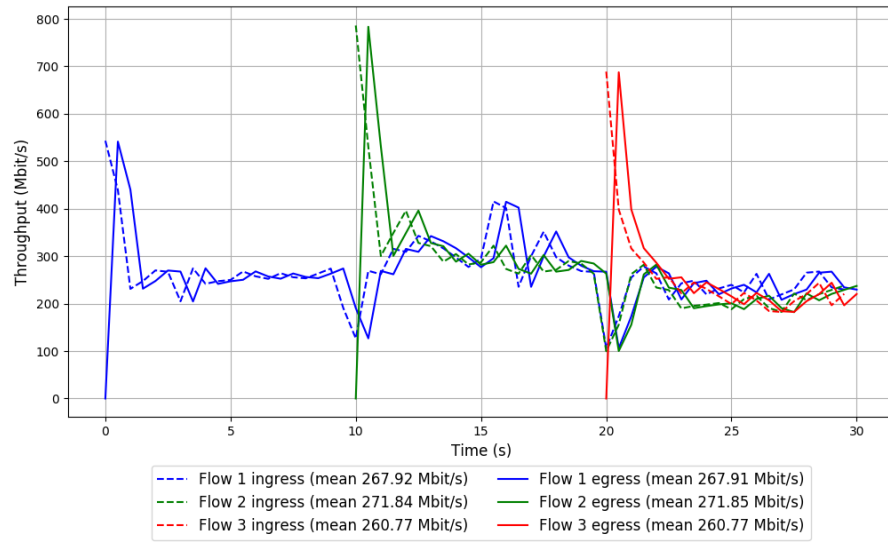
# Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2019-01-25 21:31:52
End at: 2019-01-25 21:32:22
Local clock offset: 3.248 ms
Remote clock offset: 3.42 ms


# Below is generated by plot.py at 2019-01-25 22:43:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 535.58 Mbit/s
95th percentile per-packet one-way delay: 1.652 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 267.91 Mbit/s
95th percentile per-packet one-way delay: 1.571 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 271.85 Mbit/s
95th percentile per-packet one-way delay: 1.715 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 260.77 Mbit/s
95th percentile per-packet one-way delay: 2.390 ms
Loss rate: 0.02%
```
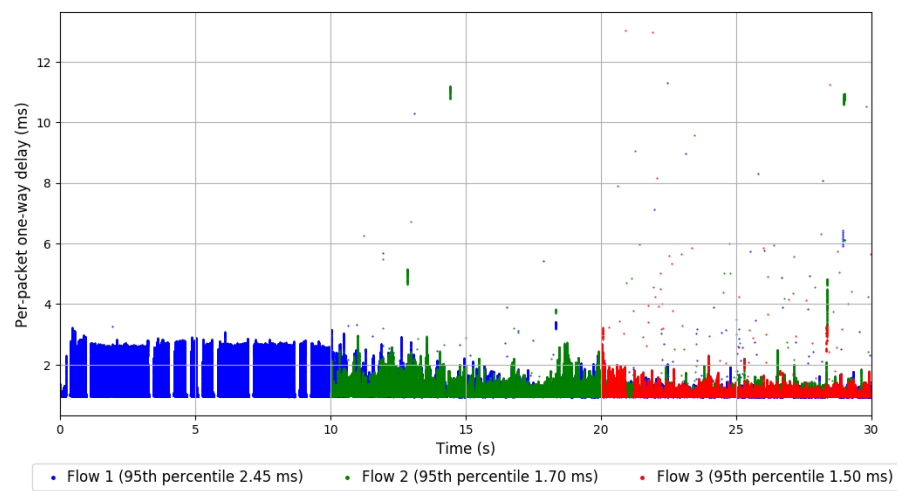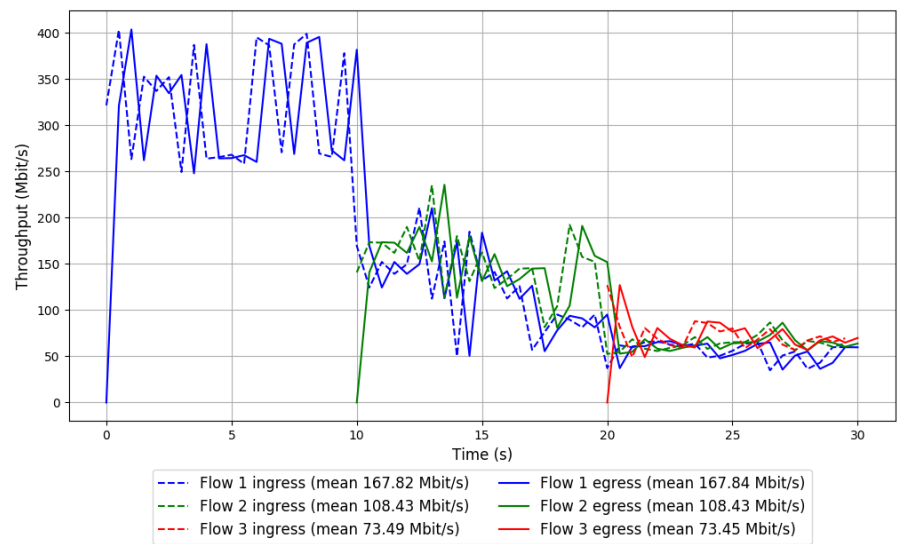
## Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2019-01-25 19:14:30
End at: 2019-01-25 19:15:00
Local clock offset: -0.694 ms
Remote clock offset: 0.193 ms


# Below is generated by plot.py at 2019-01-25 22:43:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 264.36 Mbit/s
95th percentile per-packet one-way delay: 2.335 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 167.84 Mbit/s
95th percentile per-packet one-way delay: 2.454 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 108.43 Mbit/s
95th percentile per-packet one-way delay: 1.695 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 73.45 Mbit/s
95th percentile per-packet one-way delay: 1.499 ms
Loss rate: 0.02%
```
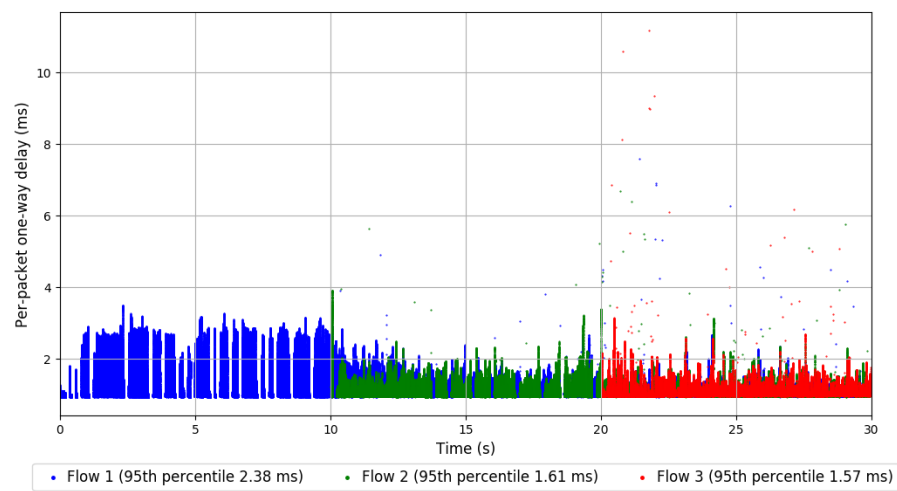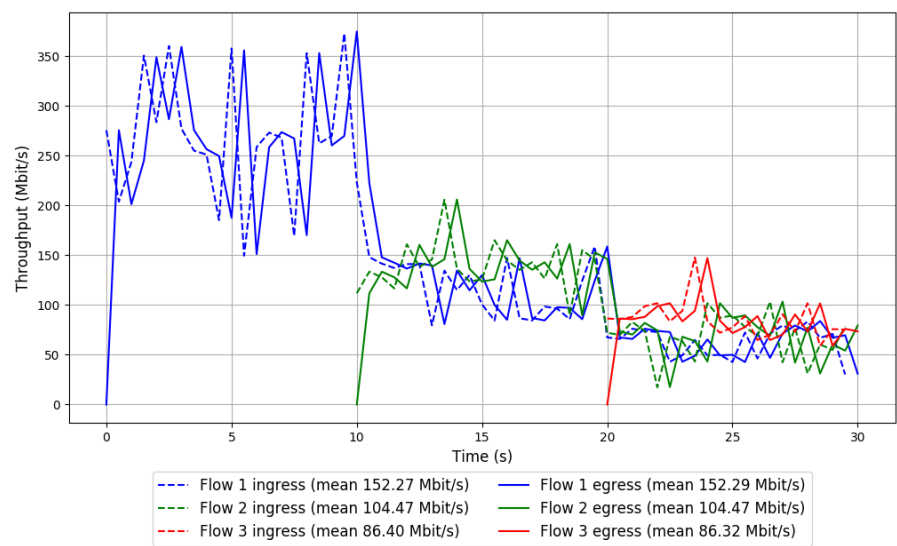
Run 1: Report of Verus — Data Link



Flow 1 ingress (mean 167.82 Mbit/s) — — — Flow 1 egress (mean 167.84 Mbit/s)
Flow 2 ingress (mean 108.43 Mbit/s) — — — Flow 2 egress (mean 108.43 Mbit/s)
Flow 3 ingress (mean 73.49 Mbit/s) — — — Flow 3 egress (mean 73.45 Mbit/s)



• Flow 1 (95th percentile 2.45 ms)   • Flow 2 (95th percentile 1.70 ms)   • Flow 3 (95th percentile 1.50 ms)

```
Run 2: Statistics of Verus

Start at: 2019-01-25 19:44:43
End at: 2019-01-25 19:45:13
Local clock offset: 0.085 ms
Remote clock offset: 0.623 ms


# Below is generated by plot.py at 2019-01-25 22:43:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 250.23 Mbit/s
95th percentile per-packet one-way delay: 2.172 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 152.29 Mbit/s
95th percentile per-packet one-way delay: 2.375 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 104.47 Mbit/s
95th percentile per-packet one-way delay: 1.609 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 86.32 Mbit/s
95th percentile per-packet one-way delay: 1.569 ms
Loss rate: 0.10%
```
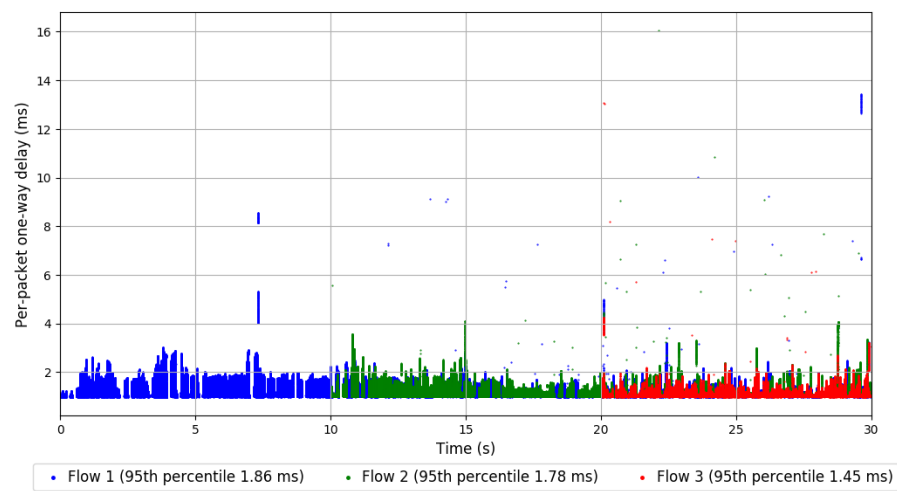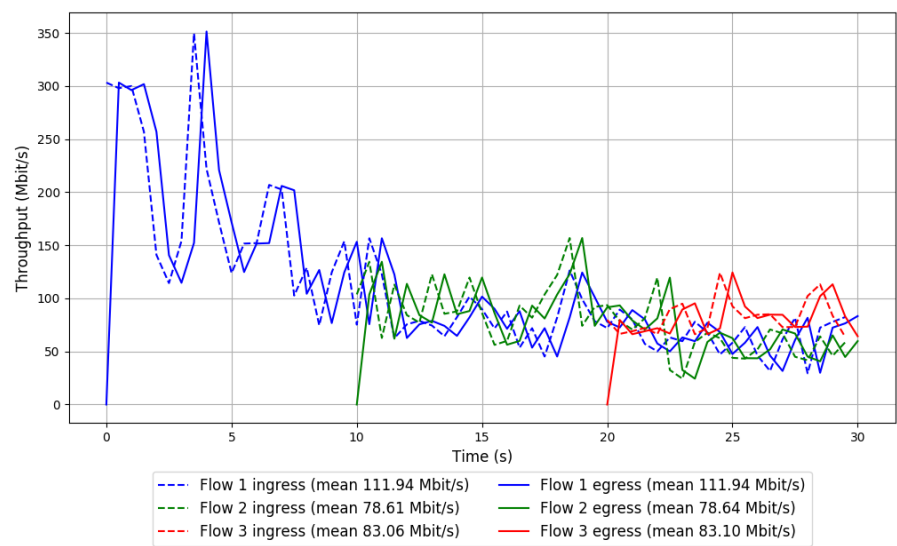
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2019-01-25 20:14:40
End at: 2019-01-25 20:15:10
Local clock offset: 0.098 ms
Remote clock offset: 0.724 ms

# Below is generated by plot.py at 2019-01-25 22:43:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 191.88 Mbit/s
95th percentile per-packet one-way delay: 1.810 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 111.94 Mbit/s
95th percentile per-packet one-way delay: 1.858 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 78.64 Mbit/s
95th percentile per-packet one-way delay: 1.783 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 83.10 Mbit/s
95th percentile per-packet one-way delay: 1.450 ms
Loss rate: 0.00%
```
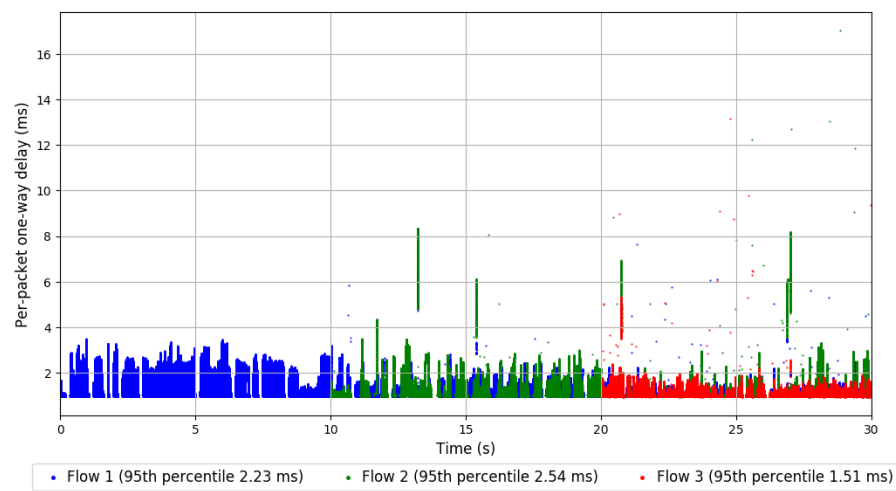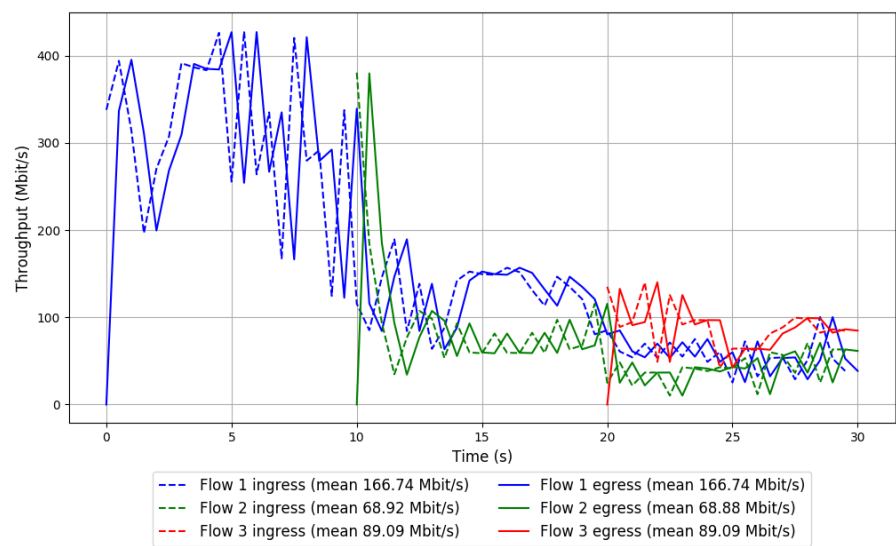
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2019-01-25 20:44:38
End at: 2019-01-25 20:45:08
Local clock offset: 0.237 ms
Remote clock offset: 0.152 ms


# Below is generated by plot.py at 2019-01-25 22:43:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 242.17 Mbit/s
95th percentile per-packet one-way delay: 2.228 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 166.74 Mbit/s
95th percentile per-packet one-way delay: 2.230 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 68.88 Mbit/s
95th percentile per-packet one-way delay: 2.542 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 89.09 Mbit/s
95th percentile per-packet one-way delay: 1.507 ms
Loss rate: 0.00%
```
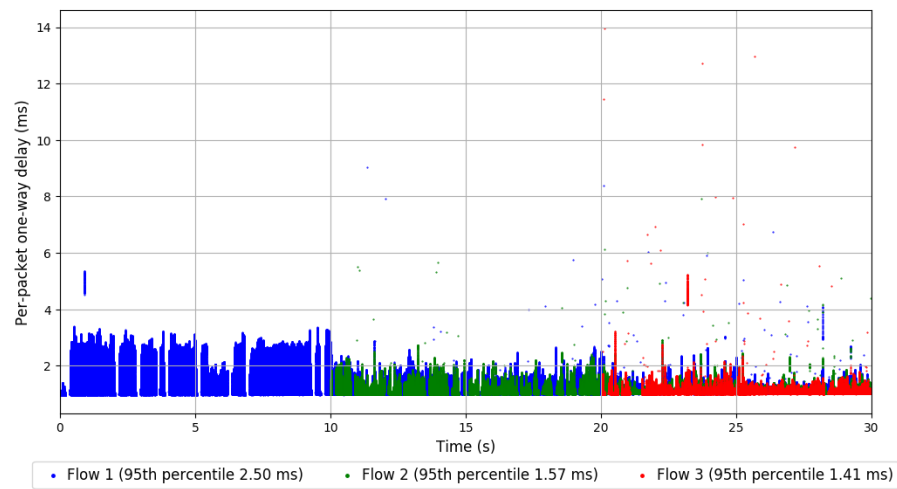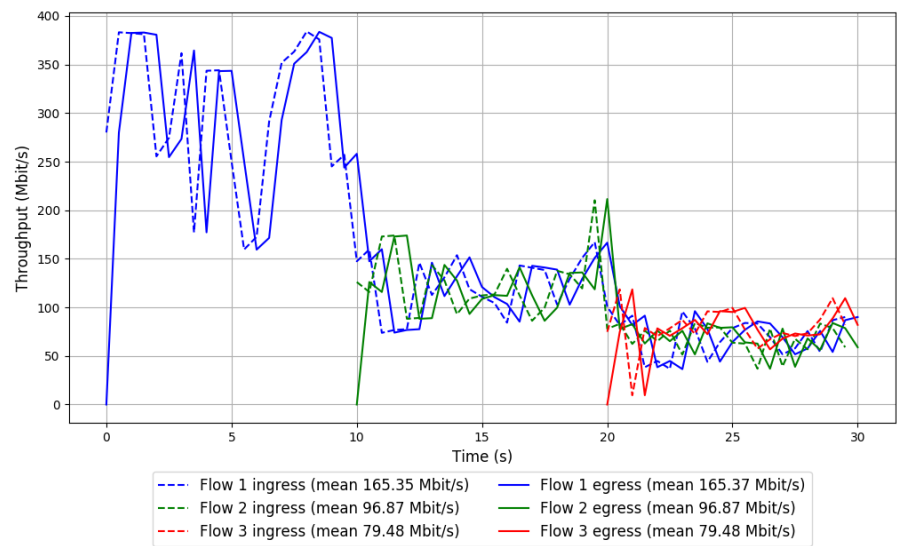
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2019-01-25 21:14:41
End at: 2019-01-25 21:15:11
Local clock offset: 3.167 ms
Remote clock offset: 1.512 ms


# Below is generated by plot.py at 2019-01-25 22:43:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 256.21 Mbit/s
95th percentile per-packet one-way delay: 2.348 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 165.37 Mbit/s
95th percentile per-packet one-way delay: 2.496 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 96.87 Mbit/s
95th percentile per-packet one-way delay: 1.569 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 79.48 Mbit/s
95th percentile per-packet one-way delay: 1.412 ms
Loss rate: 0.00%
```
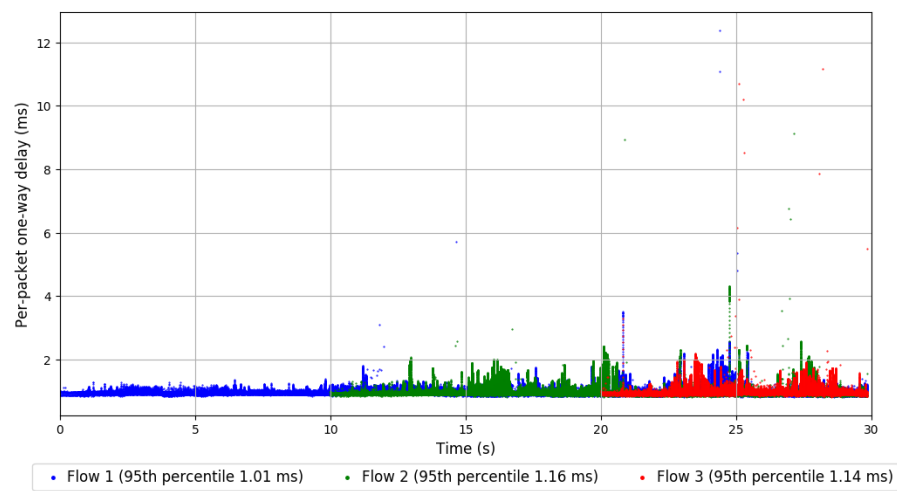
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2019-01-25 19:15:55
End at: 2019-01-25 19:16:25
Local clock offset: -0.564 ms
Remote clock offset: 0.263 ms


# Below is generated by plot.py at 2019-01-25 22:43:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 291.62 Mbit/s
95th percentile per-packet one-way delay: 1.064 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 159.36 Mbit/s
95th percentile per-packet one-way delay: 1.012 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 137.09 Mbit/s
95th percentile per-packet one-way delay: 1.155 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 124.28 Mbit/s
95th percentile per-packet one-way delay: 1.136 ms
Loss rate: 0.01%
```
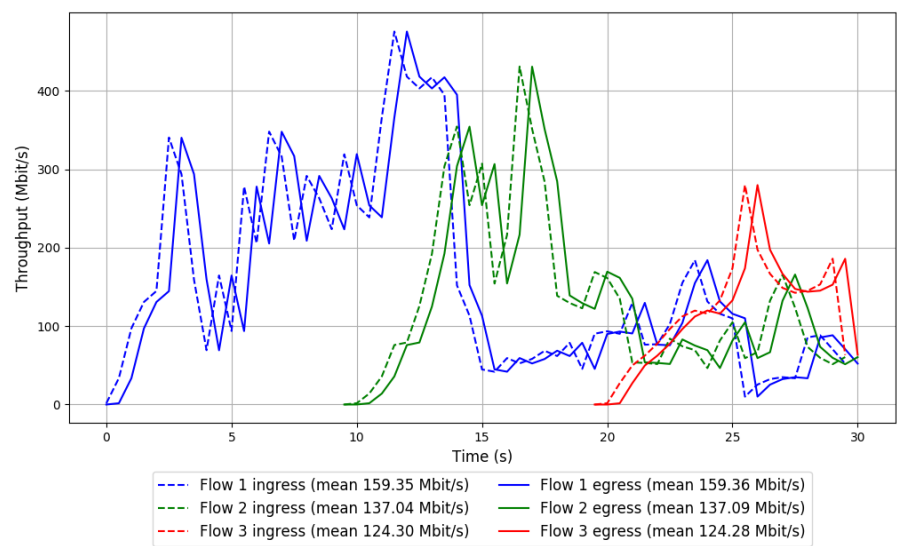
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2019-01-25 19:46:08
End at: 2019-01-25 19:46:38
Local clock offset: 0.097 ms
Remote clock offset: 0.642 ms


# Below is generated by plot.py at 2019-01-25 22:43:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 164.75 Mbit/s
95th percentile per-packet one-way delay: 1.057 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 106.14 Mbit/s
95th percentile per-packet one-way delay: 1.035 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 54.01 Mbit/s
95th percentile per-packet one-way delay: 1.045 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 68.88 Mbit/s
95th percentile per-packet one-way delay: 1.190 ms
Loss rate: 0.00%
```
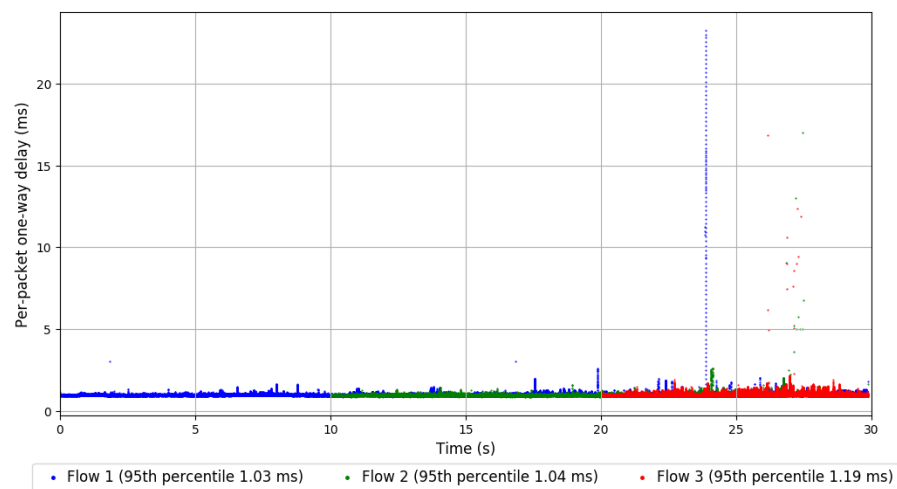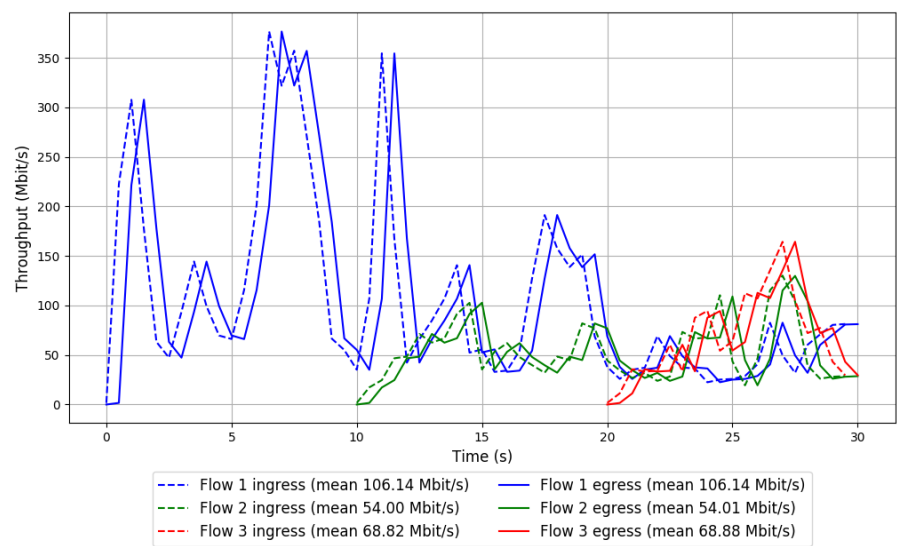
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2019-01-25 20:16:02
End at: 2019-01-25 20:16:32
Local clock offset: 0.097 ms
Remote clock offset: 0.76 ms


# Below is generated by plot.py at 2019-01-25 22:43:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 243.43 Mbit/s
95th percentile per-packet one-way delay: 1.038 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 174.01 Mbit/s
95th percentile per-packet one-way delay: 1.018 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 71.78 Mbit/s
95th percentile per-packet one-way delay: 1.093 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 65.60 Mbit/s
95th percentile per-packet one-way delay: 1.097 ms
Loss rate: 0.01%
```
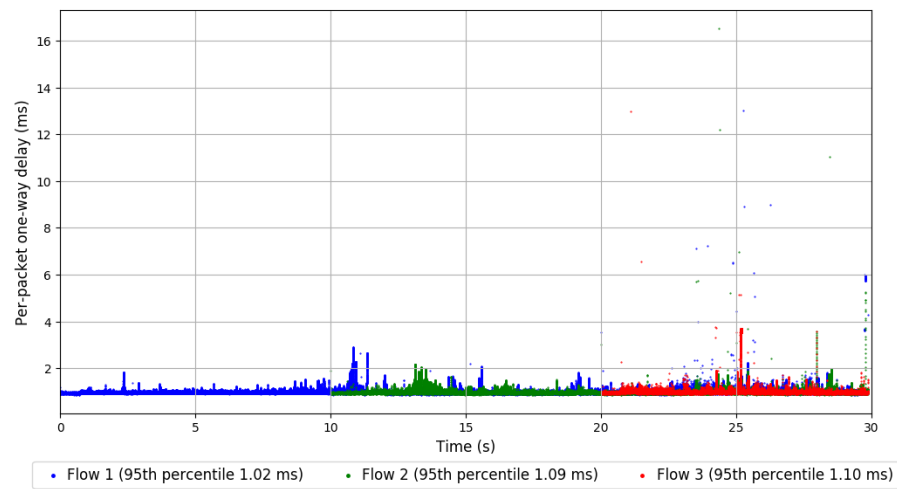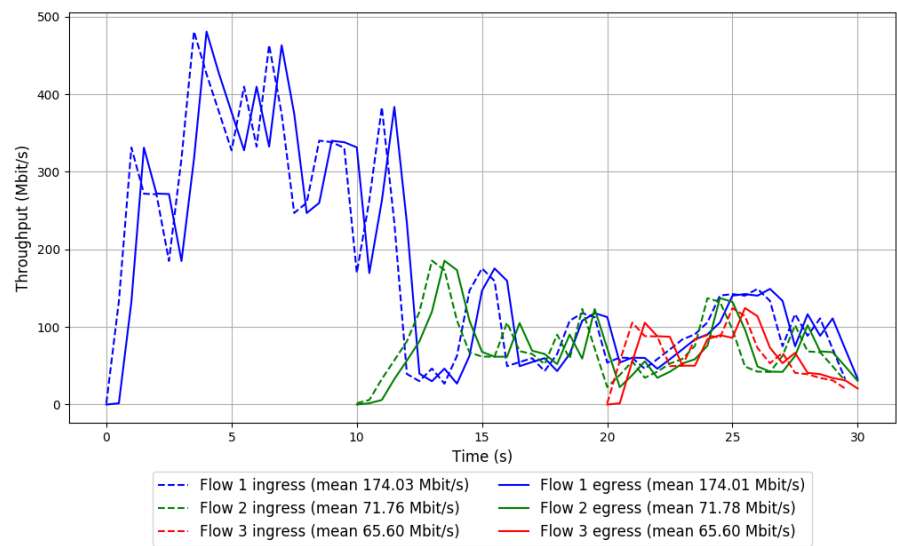
# Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2019-01-25 20:46:03
End at: 2019-01-25 20:46:33
Local clock offset: 0.239 ms
Remote clock offset: 0.142 ms


# Below is generated by plot.py at 2019-01-25 22:43:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 160.27 Mbit/s
95th percentile per-packet one-way delay: 1.071 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 86.82 Mbit/s
95th percentile per-packet one-way delay: 1.009 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 70.85 Mbit/s
95th percentile per-packet one-way delay: 1.128 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 79.84 Mbit/s
95th percentile per-packet one-way delay: 1.291 ms
Loss rate: 0.03%
```
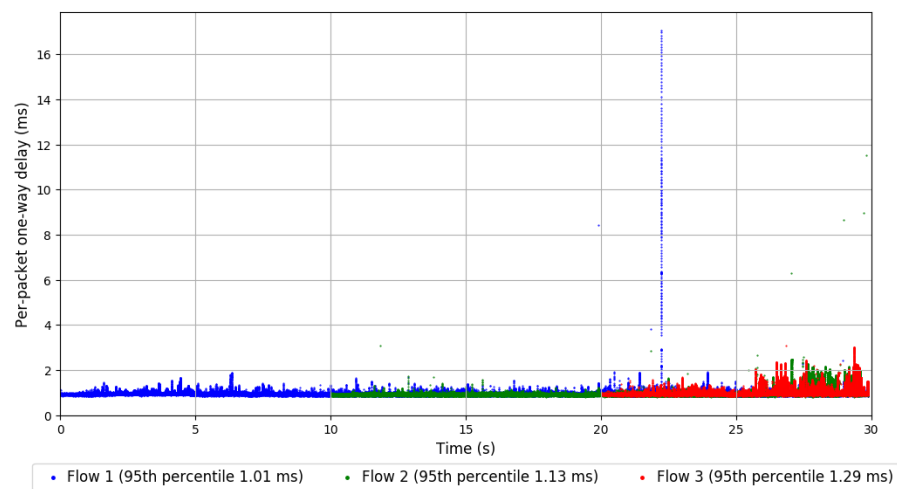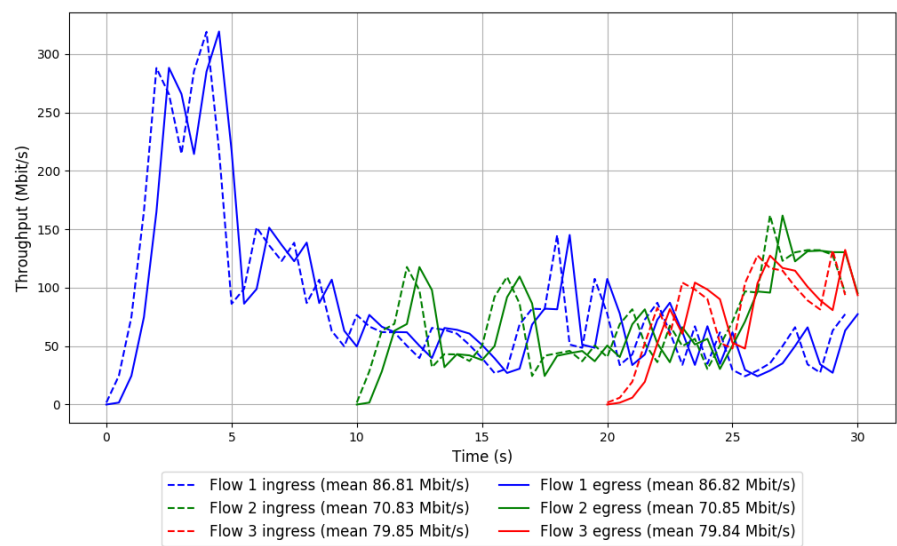
Run 4: Report of PCC-Vivace — Data Link



Flow 1 ingress (mean 86.81 Mbit/s) — Flow 1 egress (mean 86.82 Mbit/s)
Flow 2 ingress (mean 70.83 Mbit/s) — Flow 2 egress (mean 70.85 Mbit/s)
Flow 3 ingress (mean 79.85 Mbit/s) — Flow 3 egress (mean 79.84 Mbit/s)



Flow 1 (95th percentile 1.01 ms)   Flow 2 (95th percentile 1.13 ms)   Flow 3 (95th percentile 1.29 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2019-01-25 21:16:07
End at: 2019-01-25 21:16:37
Local clock offset: 3.281 ms
Remote clock offset: 1.756 ms


# Below is generated by plot.py at 2019-01-25 22:44:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 226.12 Mbit/s
95th percentile per-packet one-way delay: 1.194 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 149.39 Mbit/s
95th percentile per-packet one-way delay: 1.155 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 83.71 Mbit/s
95th percentile per-packet one-way delay: 1.292 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 63.80 Mbit/s
95th percentile per-packet one-way delay: 1.177 ms
Loss rate: 0.01%
```
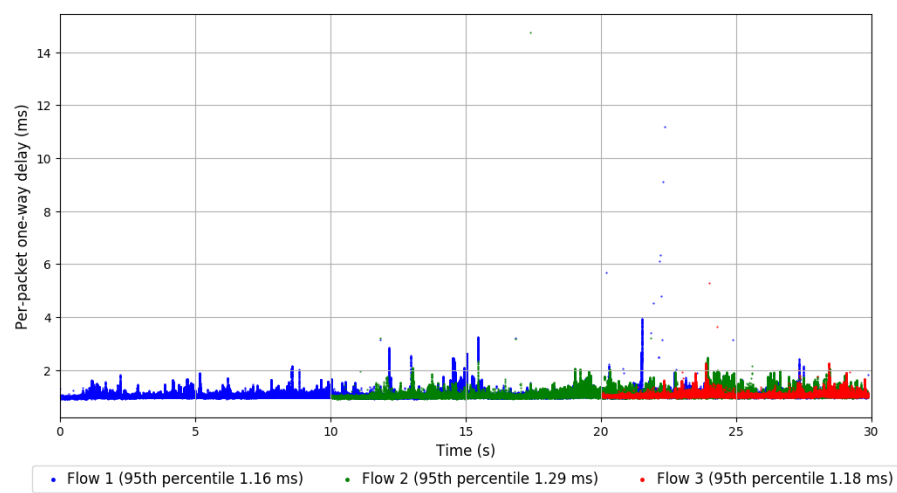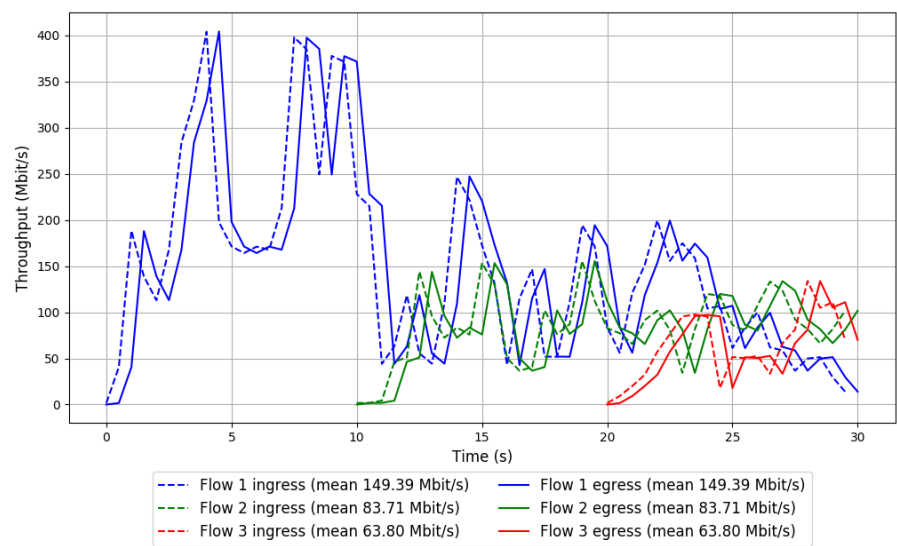
## Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2019-01-25 19:33:24
End at: 2019-01-25 19:33:54
Local clock offset: 0.017 ms
Remote clock offset: 0.439 ms


# Below is generated by plot.py at 2019-01-25 22:44:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1.089 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.083 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.143 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.073 ms
Loss rate: 0.00%
```
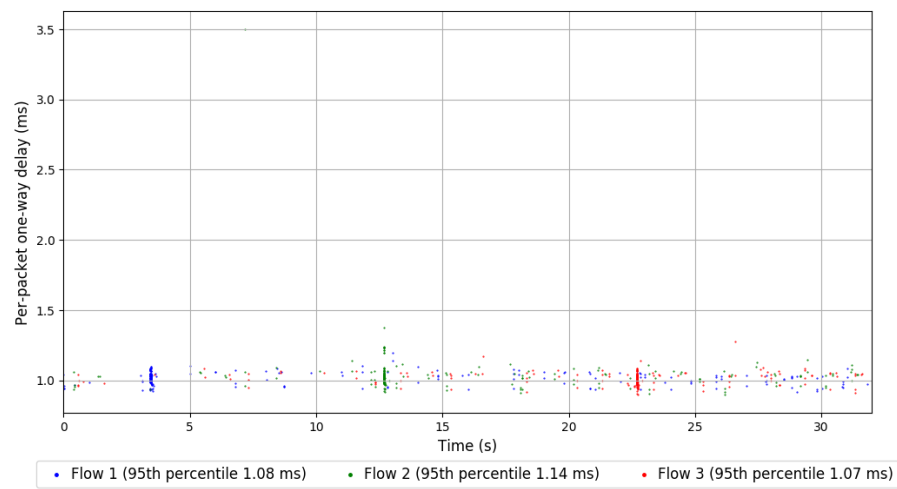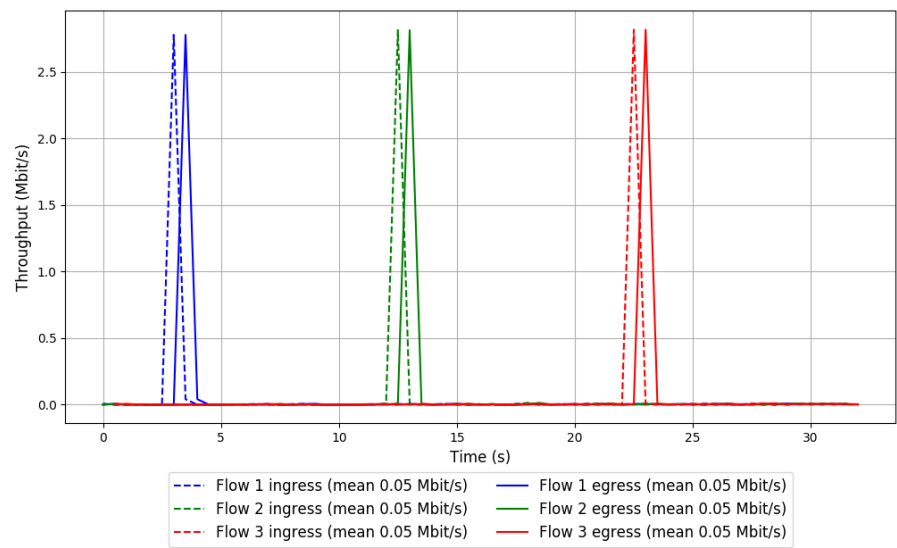
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-01-25 20:03:29
End at: 2019-01-25 20:03:59
Local clock offset: 0.12 ms
Remote clock offset: 0.945 ms


# Below is generated by plot.py at 2019-01-25 22:44:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1.027 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.052 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.022 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.015 ms
Loss rate: 0.05%
```
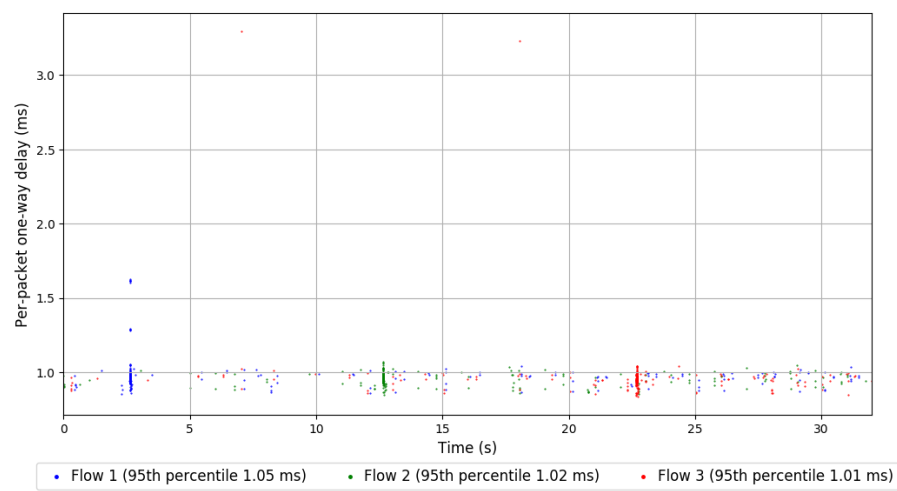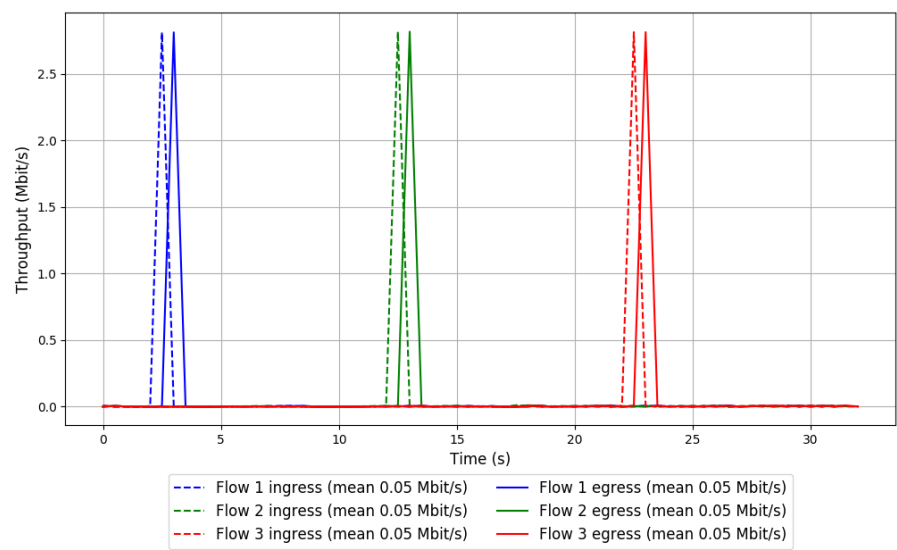
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-01-25 20:33:21
End at: 2019-01-25 20:33:51
Local clock offset: 0.159 ms
Remote clock offset: 0.822 ms


# Below is generated by plot.py at 2019-01-25 22:44:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1.043 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.119 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.031 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.017 ms
Loss rate: 0.00%
```
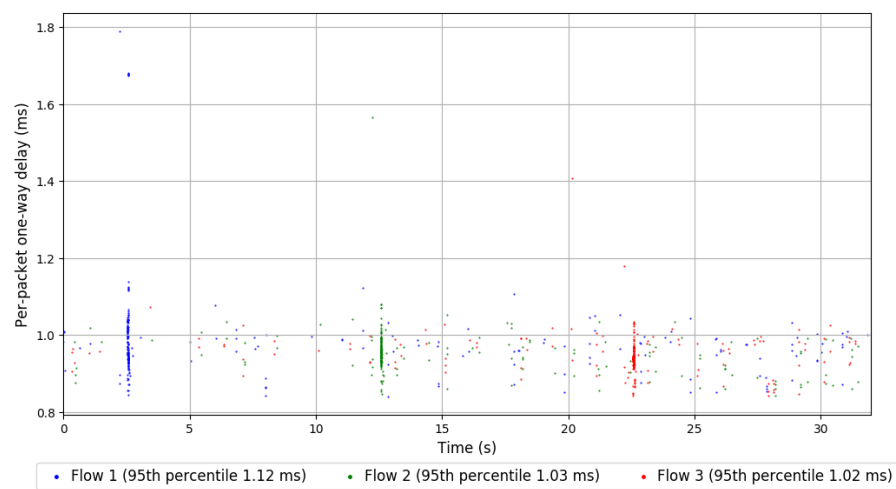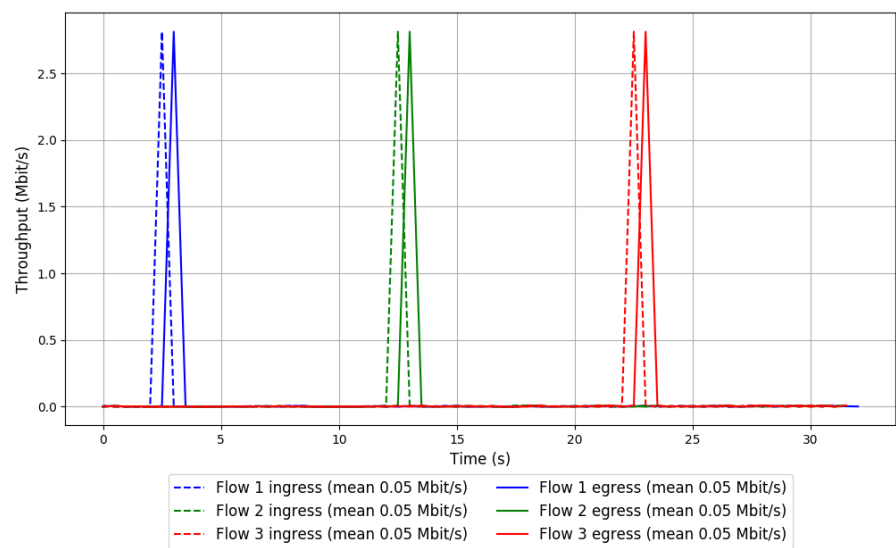
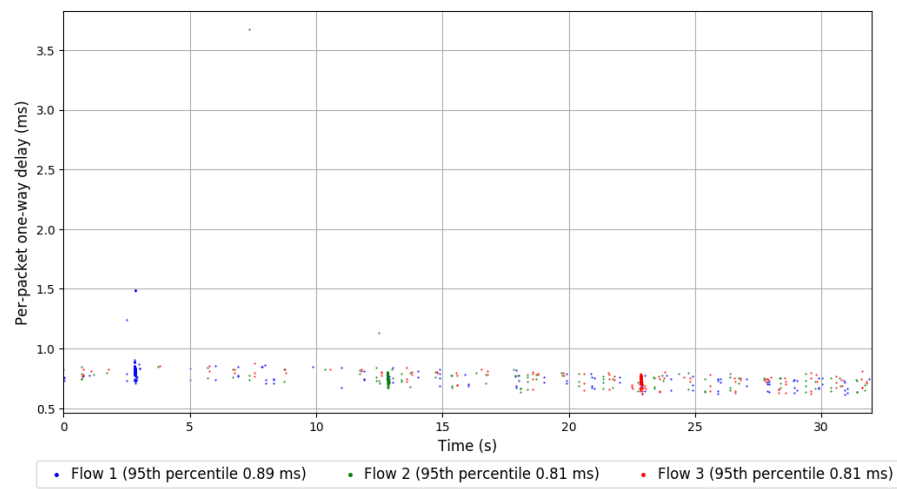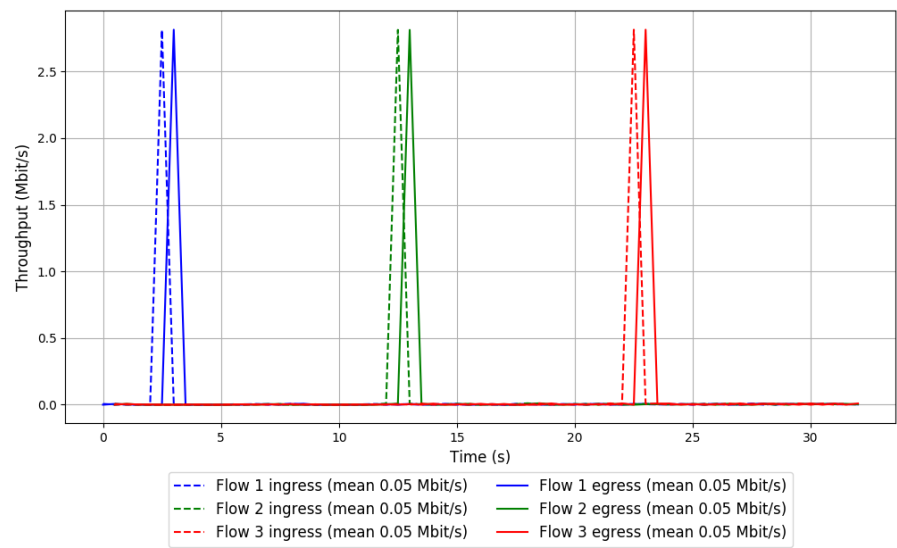Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2019-01-25 21:03:15
End at: 2019-01-25 21:03:45
Local clock offset: 1.335 ms
Remote clock offset: -0.201 ms


# Below is generated by plot.py at 2019-01-25 22:44:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 0.842 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 0.885 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 0.805 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 0.813 ms
Loss rate: 0.00%
```

## Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2019-01-25 21:33:23
End at: 2019-01-25 21:33:53
Local clock offset: 2.696 ms
Remote clock offset: 3.489 ms


# Below is generated by plot.py at 2019-01-25 22:44:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1.373 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.374 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.366 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1.377 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link