Pantheon Report

Generated at 2017-09-18 22:30:25 (UTC).

Data path: GCE Iowa Ethernet (*local*) →GCE Sydney Ethernet (*remote*).

Repeated the test of 10 congestion control schemes 10 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
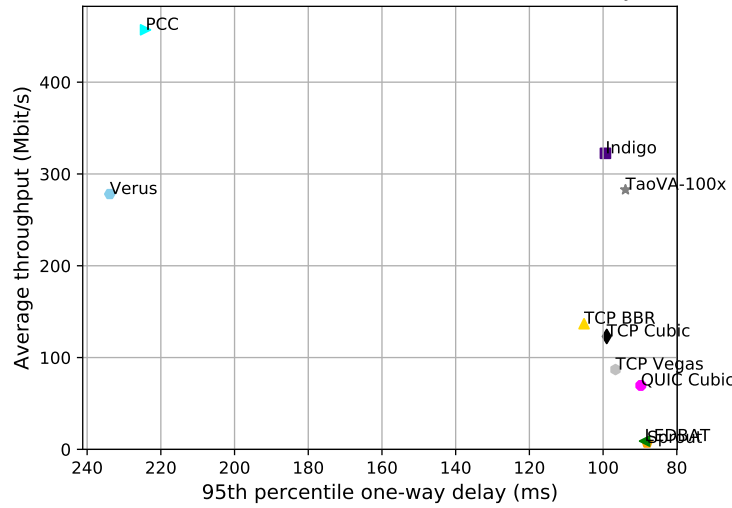
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

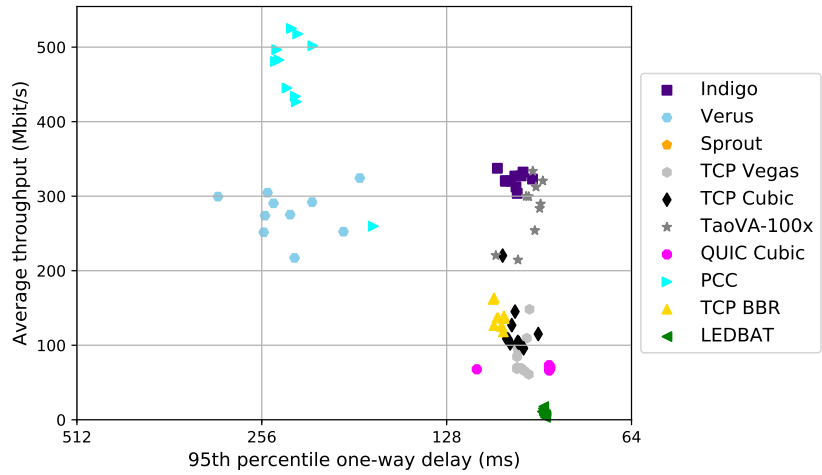Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

```
Git summary:
branch: master @ 57453dc11f8da93a2e03eea75289fea01b816298
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/genericCC @ f7ca42f251bf49b432bb71de6d13fa903515c366
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from GCE Iowa Ethernet to GCE Sydney Ethernet, 10 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from GCE Iowa Ethernet to GCE Sydney Ethernet, 10 runs of 30s each per scheme
3 flows with 10s interval between flows

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	10	65.27	66.07	81.95	105.16	105.34	104.86	0.26	0.09	0.18
TCP Cubic	10	57.47	63.53	70.29	97.96	98.21	99.68	0.17	0.07	0.12
Indigo	10	175.55	161.10	119.54	96.05	100.85	105.06	0.03	0.03	0.06
LEDBAT	9	5.61	3.89	2.52	88.75	88.64	88.33	0.61	1.35	1.52
PCC	10	378.94	89.51	56.73	599.79	209.10	204.52	2.34	1.58	1.70
QUIC Cubic	10	42.03	32.03	19.76	89.60	89.76	86.94	0.00	0.02	0.00
Sprout	9	3.69	3.56	2.51	88.07	88.07	90.94	0.24	0.13	0.51
TaoVA-100x	10	170.92	143.85	82.15	96.36	94.03	103.99	0.04	0.06	0.09
TCP Vegas	10	28.46	49.39	77.32	92.27	96.14	98.38	0.08	0.05	0.24
Verus	10	163.17	131.05	87.05	221.69	235.89	235.74	2.28	2.80	3.23

```
Run 1: Statistics of TCP BBR

Start at: 2017-09-18 19:06:23
End at: 2017-09-18 19:06:53


# Below is generated by plot.py at 2017-09-18 21:50:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 161.47 Mbit/s
95th percentile per-packet one-way delay: 107.455 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 67.94 Mbit/s
95th percentile per-packet one-way delay: 108.145 ms
Loss rate: 1.02%
-- Flow 2:
Average throughput: 69.86 Mbit/s
95th percentile per-packet one-way delay: 110.361 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 120.45 Mbit/s
95th percentile per-packet one-way delay: 103.181 ms
Loss rate: 0.01%
```
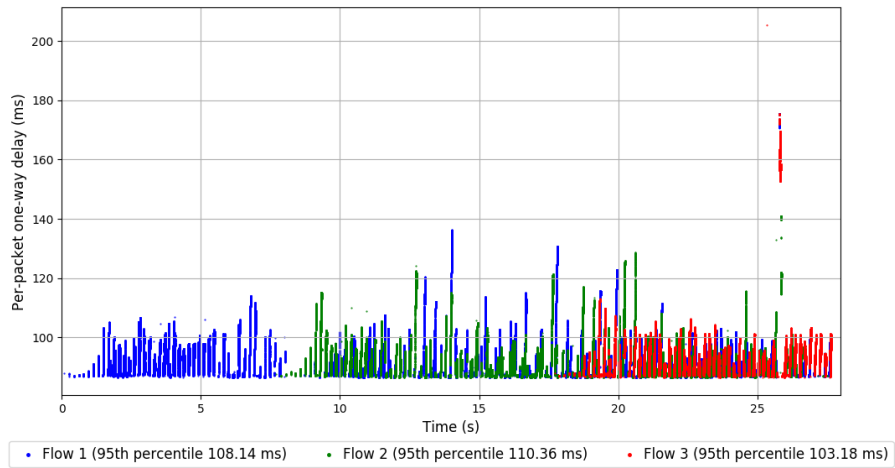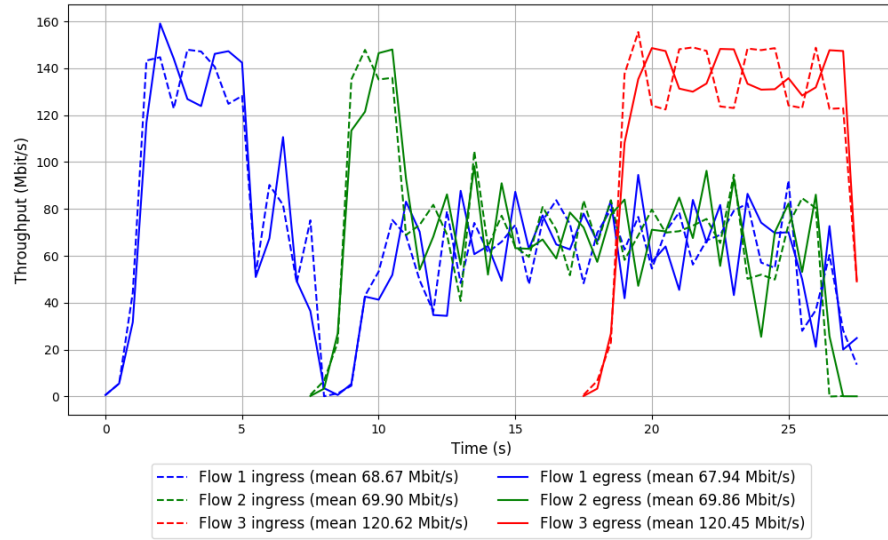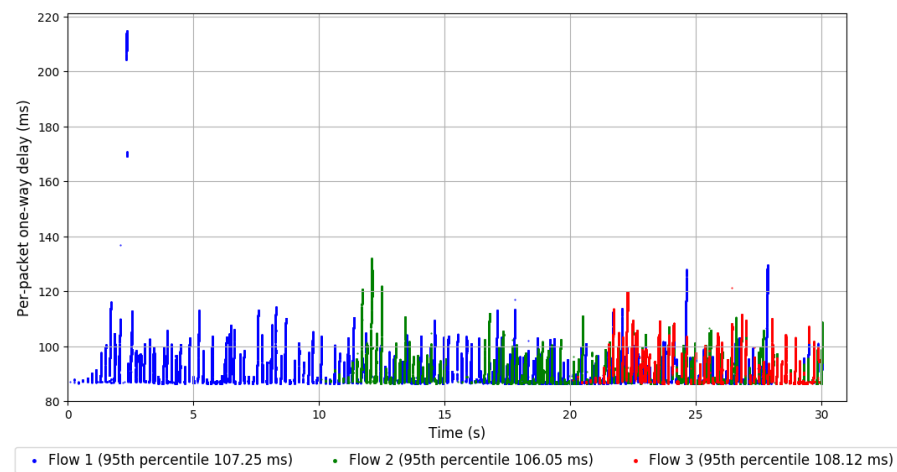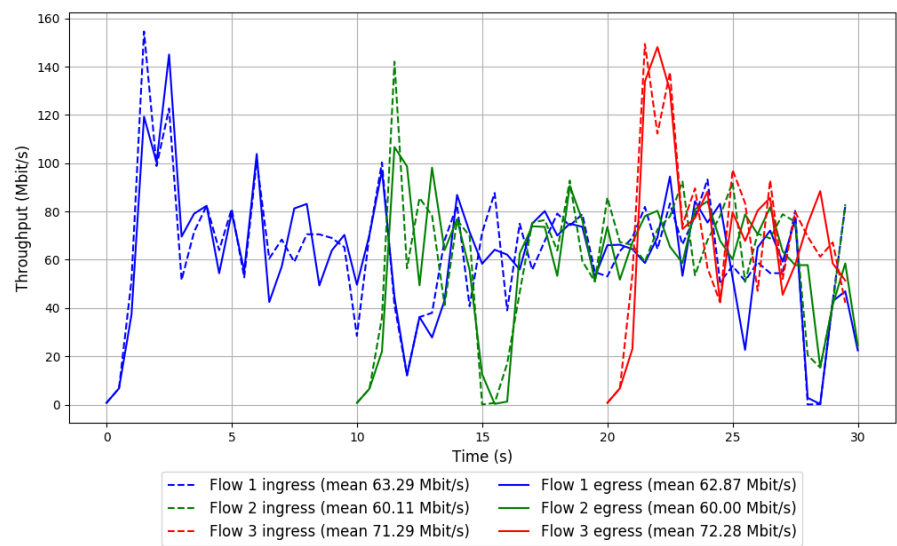
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2017-09-18 19:15:49
End at: 2017-09-18 19:16:19


# Below is generated by plot.py at 2017-09-18 21:50:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 126.40 Mbit/s
95th percentile per-packet one-way delay: 107.195 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 62.87 Mbit/s
95th percentile per-packet one-way delay: 107.245 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 60.00 Mbit/s
95th percentile per-packet one-way delay: 106.046 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 72.28 Mbit/s
95th percentile per-packet one-way delay: 108.122 ms
Loss rate: 0.20%
```

Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2017-09-18 19:25:10
End at: 2017-09-18 19:25:40


# Below is generated by plot.py at 2017-09-18 21:50:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 125.72 Mbit/s
95th percentile per-packet one-way delay: 104.255 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 67.22 Mbit/s
95th percentile per-packet one-way delay: 104.676 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 57.73 Mbit/s
95th percentile per-packet one-way delay: 104.605 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 61.39 Mbit/s
95th percentile per-packet one-way delay: 101.463 ms
Loss rate: 0.49%
```
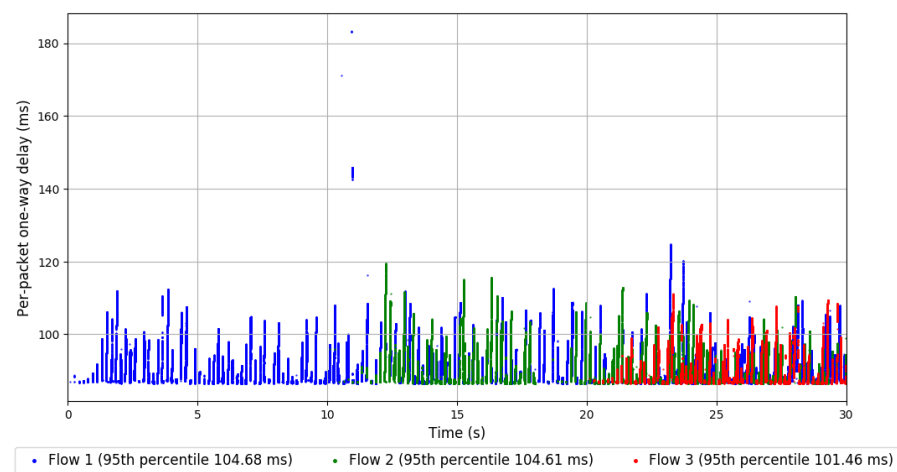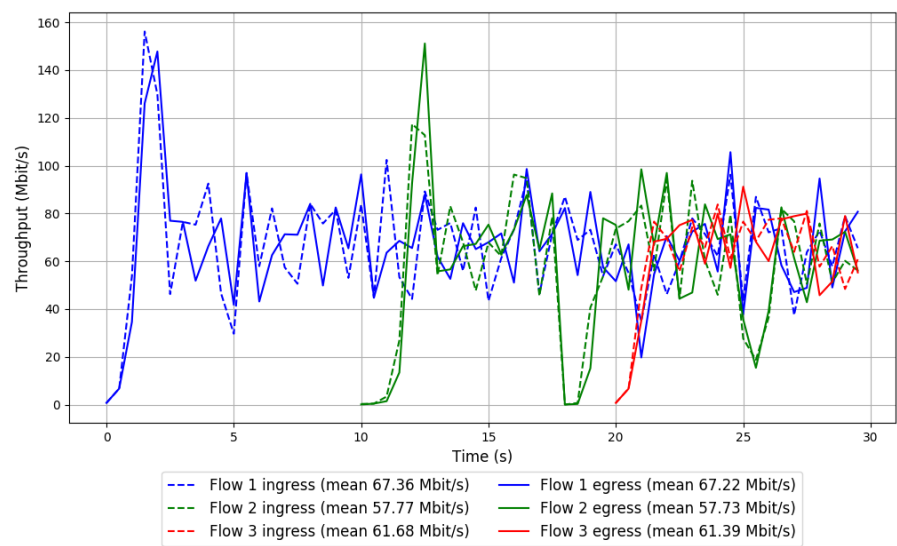
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2017-09-18 19:34:29
End at: 2017-09-18 19:34:59


# Below is generated by plot.py at 2017-09-18 21:50:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 163.52 Mbit/s
95th percentile per-packet one-way delay: 107.167 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 67.24 Mbit/s
95th percentile per-packet one-way delay: 107.375 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 85.26 Mbit/s
95th percentile per-packet one-way delay: 107.988 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 120.14 Mbit/s
95th percentile per-packet one-way delay: 106.022 ms
Loss rate: 0.00%
```
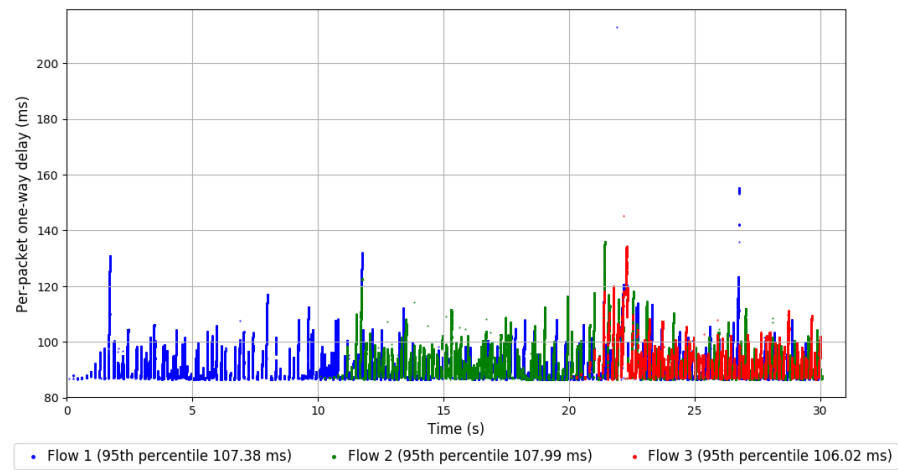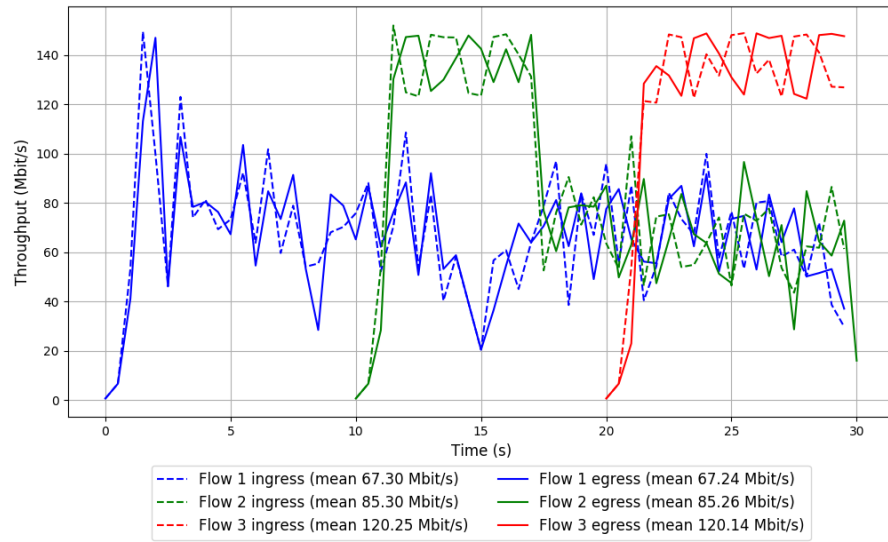
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2017-09-18 19:43:55
End at: 2017-09-18 19:44:25


# Below is generated by plot.py at 2017-09-18 21:50:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 135.81 Mbit/s
95th percentile per-packet one-way delay: 103.136 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 63.23 Mbit/s
95th percentile per-packet one-way delay: 103.722 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 71.55 Mbit/s
95th percentile per-packet one-way delay: 103.906 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 76.40 Mbit/s
95th percentile per-packet one-way delay: 101.613 ms
Loss rate: 0.02%
```
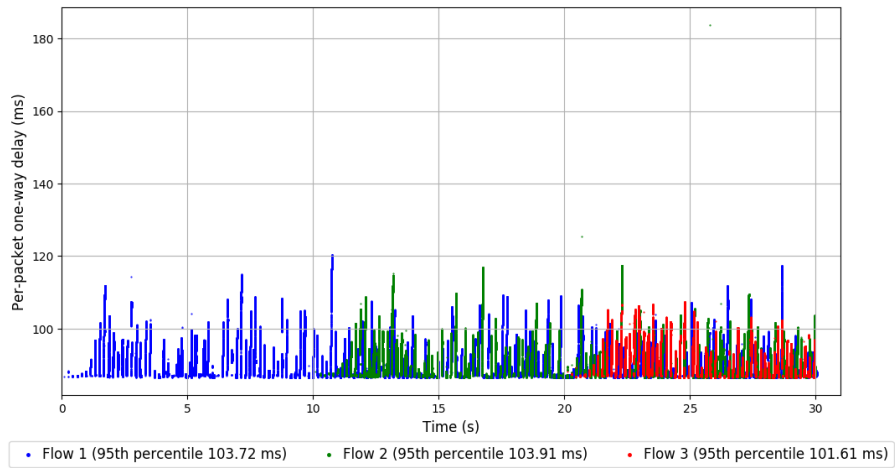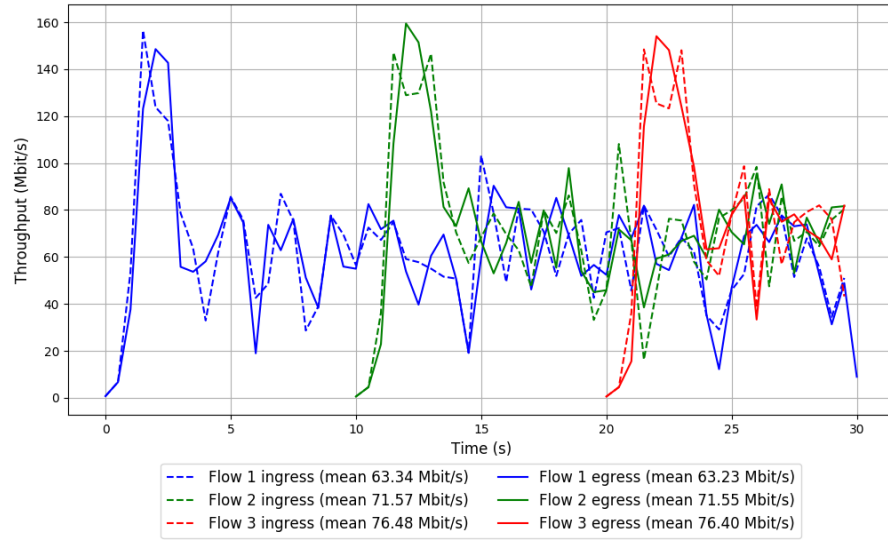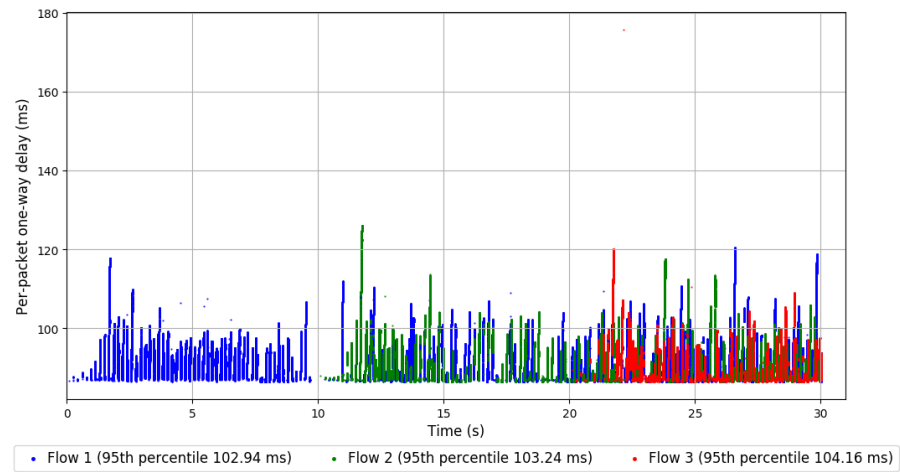
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 63.34 Mbit/s) --- Flow 1 egress (mean 63.23 Mbit/s)
Flow 2 ingress (mean 71.57 Mbit/s) --- Flow 2 egress (mean 71.55 Mbit/s)
Flow 3 ingress (mean 76.48 Mbit/s) --- Flow 3 egress (mean 76.40 Mbit/s)

Flow 1 (95th percentile 103.72 ms) Flow 2 (95th percentile 103.91 ms) Flow 3 (95th percentile 101.61 ms)

```
Run 6: Statistics of TCP BBR

Start at: 2017-09-18 19:53:19
End at: 2017-09-18 19:53:49


# Below is generated by plot.py at 2017-09-18 21:50:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 139.53 Mbit/s
95th percentile per-packet one-way delay: 103.257 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 74.19 Mbit/s
95th percentile per-packet one-way delay: 102.942 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 66.82 Mbit/s
95th percentile per-packet one-way delay: 103.244 ms
Loss rate: 0.14%
-- Flow 3:
Average throughput: 63.62 Mbit/s
95th percentile per-packet one-way delay: 104.162 ms
Loss rate: 0.20%
```
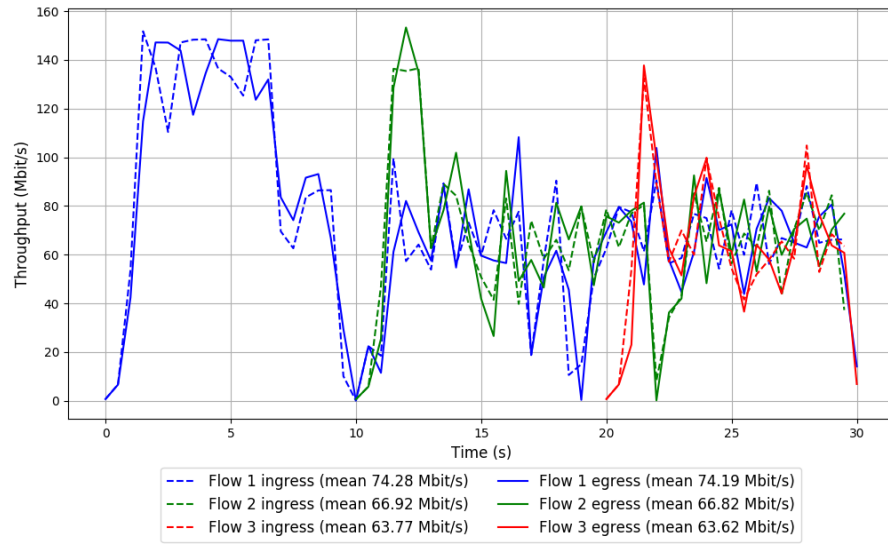
Run 6: Report of TCP BBR — Data Link

```
Run 7: Statistics of TCP BBR

Start at: 2017-09-18 20:02:32
End at: 2017-09-18 20:03:02


# Below is generated by plot.py at 2017-09-18 21:50:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 117.95 Mbit/s
95th percentile per-packet one-way delay: 103.500 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 58.70 Mbit/s
95th percentile per-packet one-way delay: 102.010 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 58.65 Mbit/s
95th percentile per-packet one-way delay: 102.417 ms
Loss rate: 0.24%
-- Flow 3:
Average throughput: 62.00 Mbit/s
95th percentile per-packet one-way delay: 107.976 ms
Loss rate: 0.47%
```
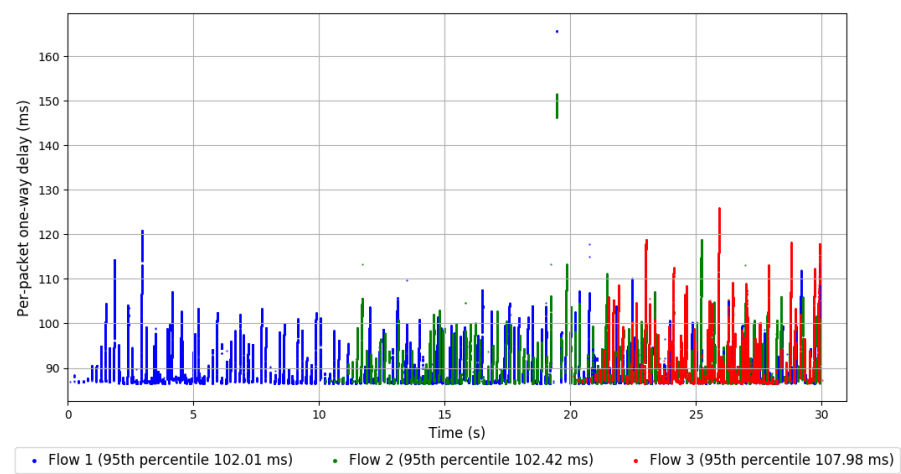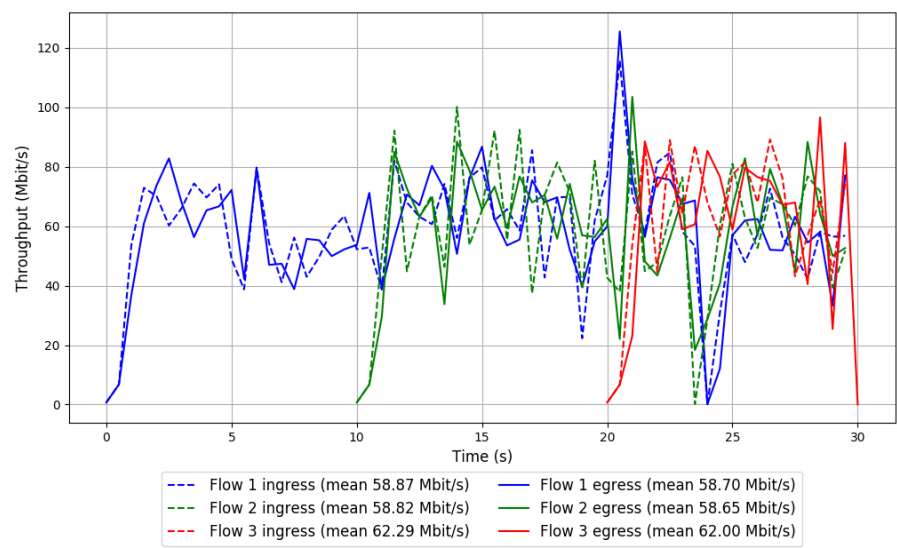
Run 7: Report of TCP BBR — Data Link

```
Run 8: Statistics of TCP BBR

Start at: 2017-09-18 20:11:51
End at: 2017-09-18 20:12:21


# Below is generated by plot.py at 2017-09-18 21:50:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 137.06 Mbit/s
95th percentile per-packet one-way delay: 105.609 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 68.04 Mbit/s
95th percentile per-packet one-way delay: 106.062 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 65.57 Mbit/s
95th percentile per-packet one-way delay: 105.762 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 76.93 Mbit/s
95th percentile per-packet one-way delay: 104.351 ms
Loss rate: 0.37%
```
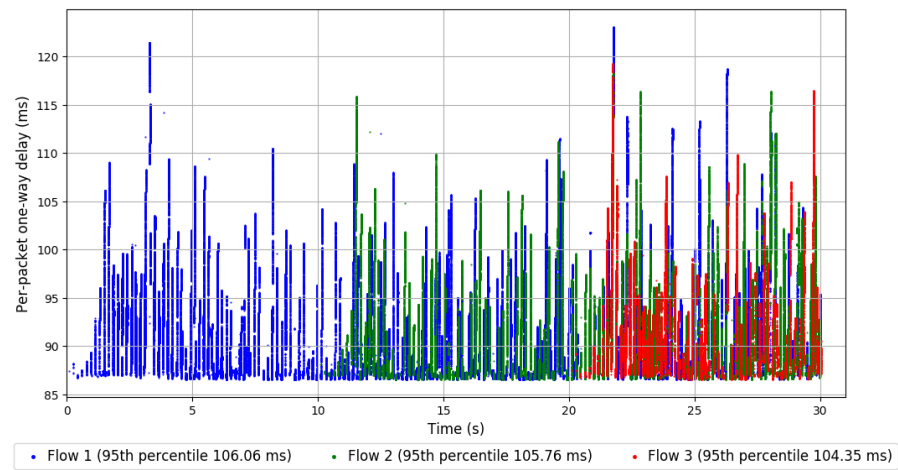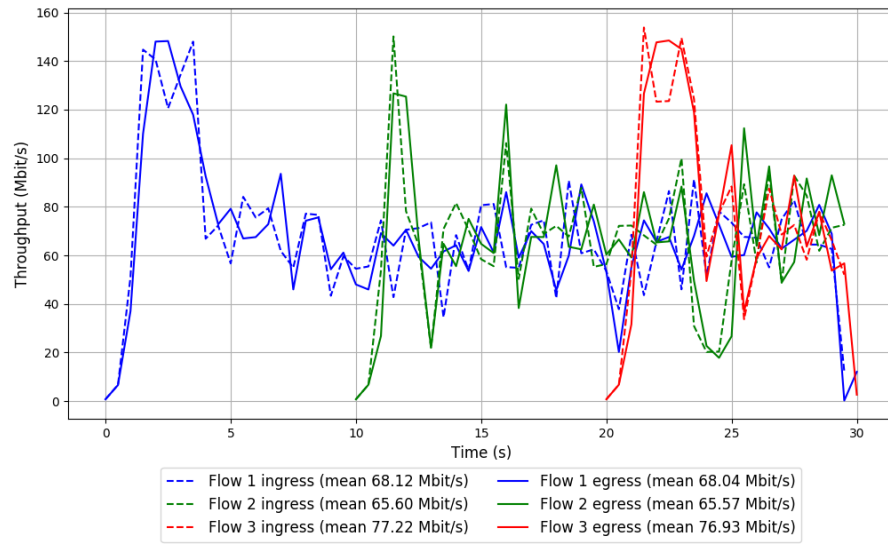
Run 8: Report of TCP BBR — Data Link

Flow 1 ingress (mean 68.12 Mbit/s) --- Flow 1 egress (mean 68.04 Mbit/s)
Flow 2 ingress (mean 65.60 Mbit/s) --- Flow 2 egress (mean 65.57 Mbit/s)
Flow 3 ingress (mean 77.22 Mbit/s) --- Flow 3 egress (mean 76.93 Mbit/s)

Flow 1 (95th percentile 106.06 ms) • Flow 2 (95th percentile 105.76 ms) • Flow 3 (95th percentile 104.35 ms)

```
Run 9: Statistics of TCP BBR

Start at: 2017-09-18 20:21:17
End at: 2017-09-18 20:21:47


# Below is generated by plot.py at 2017-09-18 21:52:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 124.82 Mbit/s
95th percentile per-packet one-way delay: 104.040 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 60.69 Mbit/s
95th percentile per-packet one-way delay: 104.151 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 65.16 Mbit/s
95th percentile per-packet one-way delay: 102.858 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 63.04 Mbit/s
95th percentile per-packet one-way delay: 105.166 ms
Loss rate: 0.03%
```
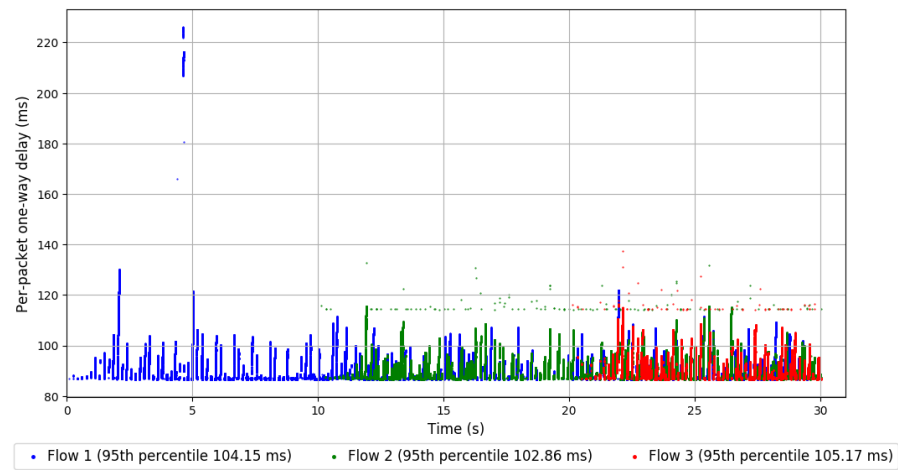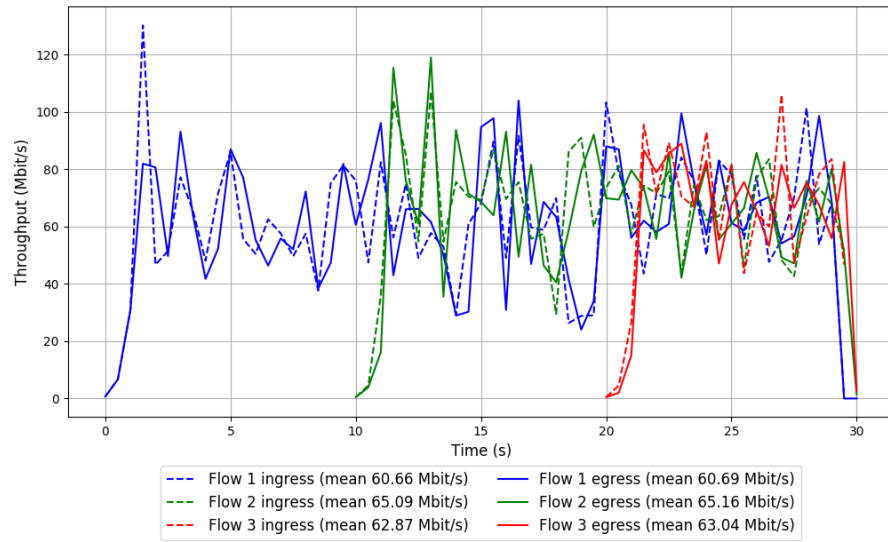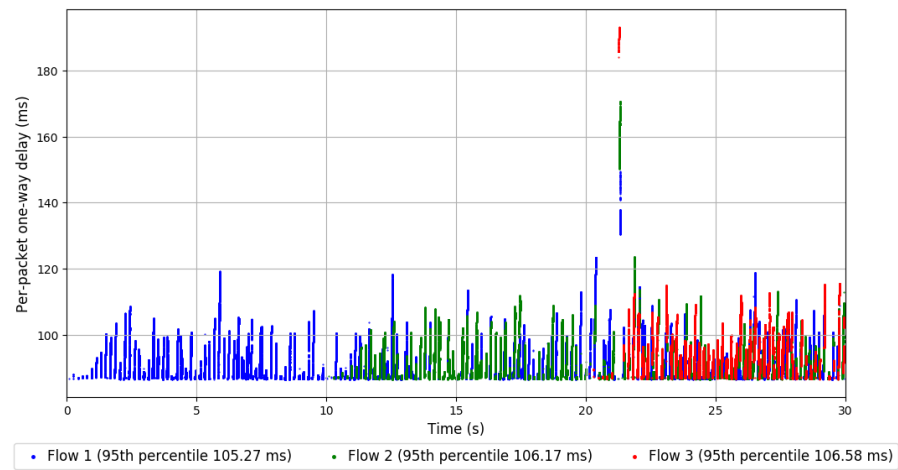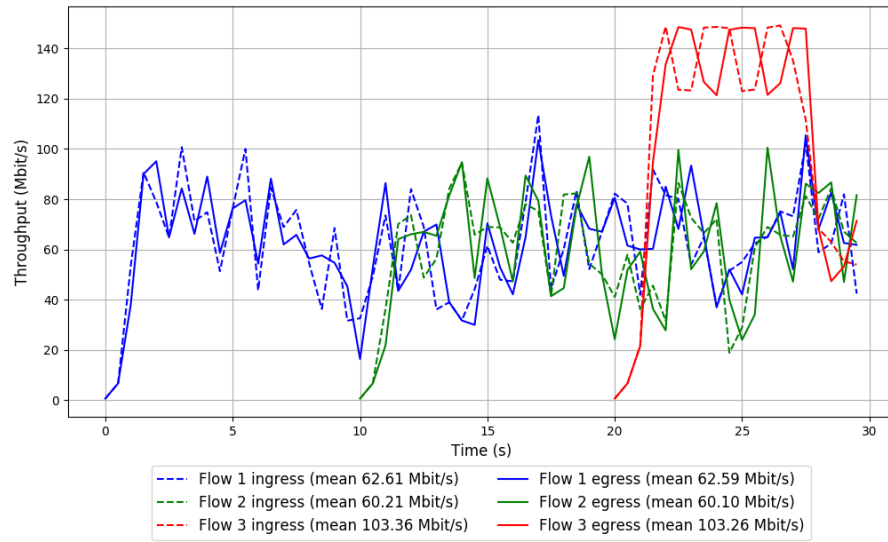
Run 9: Report of TCP BBR — Data Link

- Flow 1 ingress (mean 60.66 Mbit/s) --- Flow 1 egress (mean 60.69 Mbit/s)
- Flow 2 ingress (mean 65.09 Mbit/s) --- Flow 2 egress (mean 65.16 Mbit/s)
- Flow 3 ingress (mean 62.87 Mbit/s) --- Flow 3 egress (mean 63.04 Mbit/s)

- Flow 1 (95th percentile 104.15 ms)   • Flow 2 (95th percentile 102.86 ms)   • Flow 3 (95th percentile 105.17 ms)

```
Run 10: Statistics of TCP BBR

Start at: 2017-09-18 20:30:30
End at: 2017-09-18 20:31:00

# Below is generated by plot.py at 2017-09-18 21:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 136.49 Mbit/s
95th percentile per-packet one-way delay: 106.021 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 62.59 Mbit/s
95th percentile per-packet one-way delay: 105.273 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 60.10 Mbit/s
95th percentile per-packet one-way delay: 106.170 ms
Loss rate: 0.14%
-- Flow 3:
Average throughput: 103.26 Mbit/s
95th percentile per-packet one-way delay: 106.575 ms
Loss rate: 0.04%
```
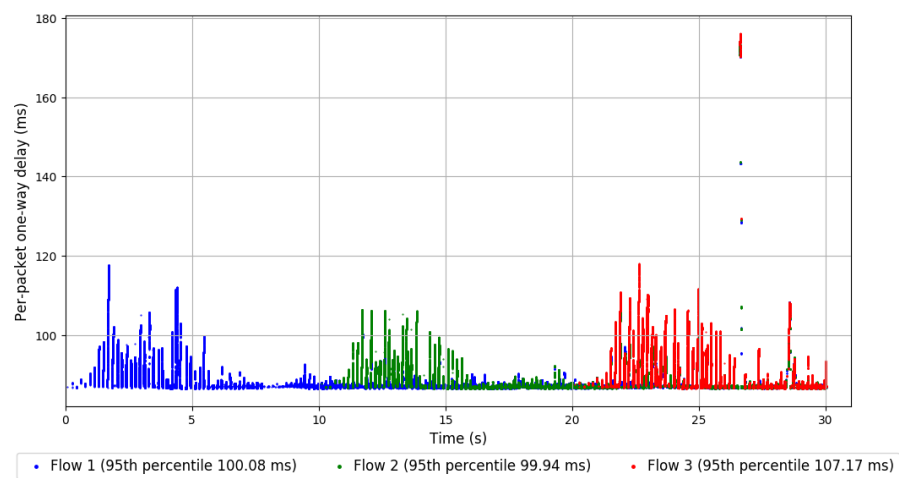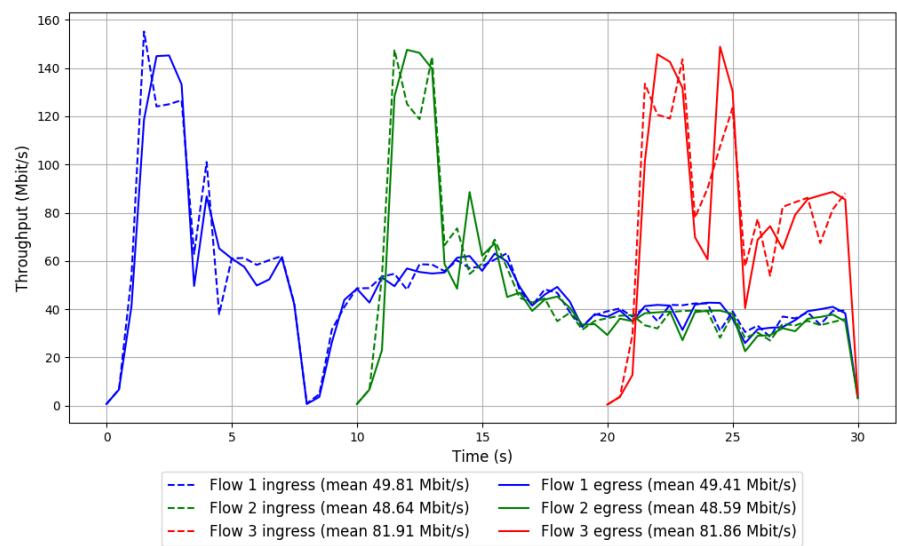
Run 10: Report of TCP BBR — Data Link

Flow 1 ingress (mean 62.61 Mbit/s) Flow 1 egress (mean 62.59 Mbit/s)
Flow 2 ingress (mean 60.21 Mbit/s) Flow 2 egress (mean 60.10 Mbit/s)
Flow 3 ingress (mean 103.36 Mbit/s) Flow 3 egress (mean 103.26 Mbit/s)

Flow 1 (95th percentile 105.27 ms) Flow 2 (95th percentile 106.17 ms) Flow 3 (95th percentile 106.58 ms)

23

```
Run 1: Statistics of TCP Cubic

Start at: 2017-09-18 19:01:55
End at: 2017-09-18 19:02:25

# Below is generated by plot.py at 2017-09-18 21:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 108.90 Mbit/s
95th percentile per-packet one-way delay: 102.239 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 49.41 Mbit/s
95th percentile per-packet one-way delay: 100.080 ms
Loss rate: 0.82%
-- Flow 2:
Average throughput: 48.59 Mbit/s
95th percentile per-packet one-way delay: 99.939 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 81.86 Mbit/s
95th percentile per-packet one-way delay: 107.167 ms
Loss rate: 0.07%
```
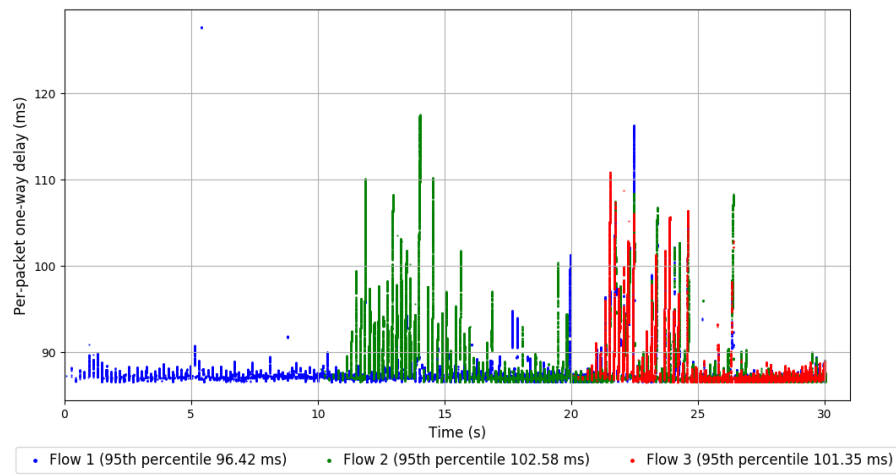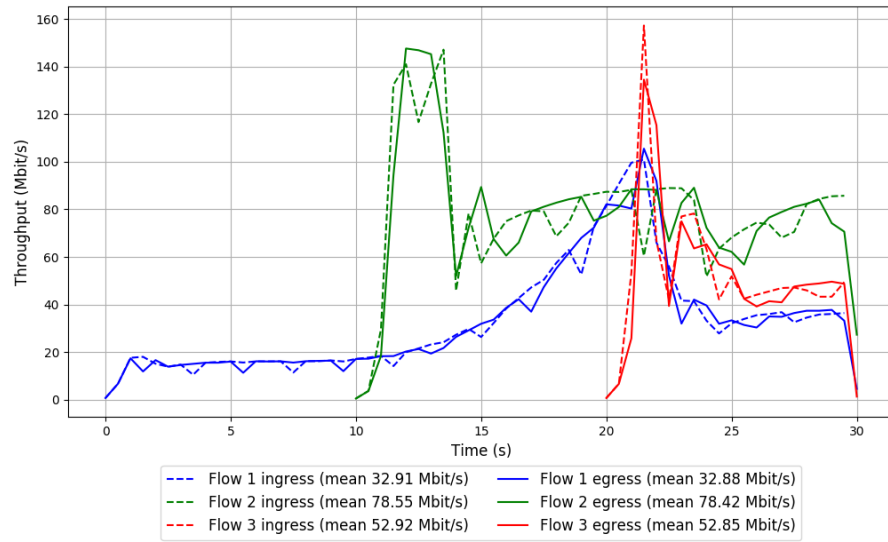
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2017-09-18 19:11:16
End at: 2017-09-18 19:11:46


# Below is generated by plot.py at 2017-09-18 21:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 102.53 Mbit/s
95th percentile per-packet one-way delay: 100.888 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 32.88 Mbit/s
95th percentile per-packet one-way delay: 96.420 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 78.42 Mbit/s
95th percentile per-packet one-way delay: 102.583 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 52.85 Mbit/s
95th percentile per-packet one-way delay: 101.353 ms
Loss rate: 0.12%
```
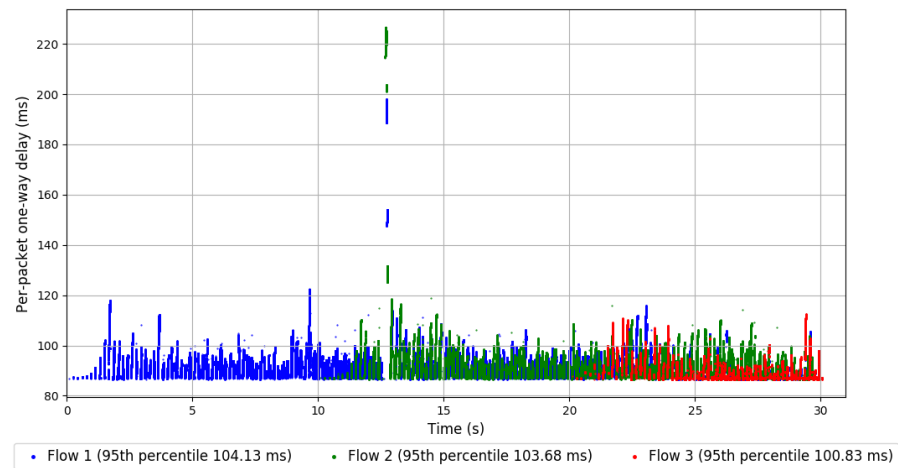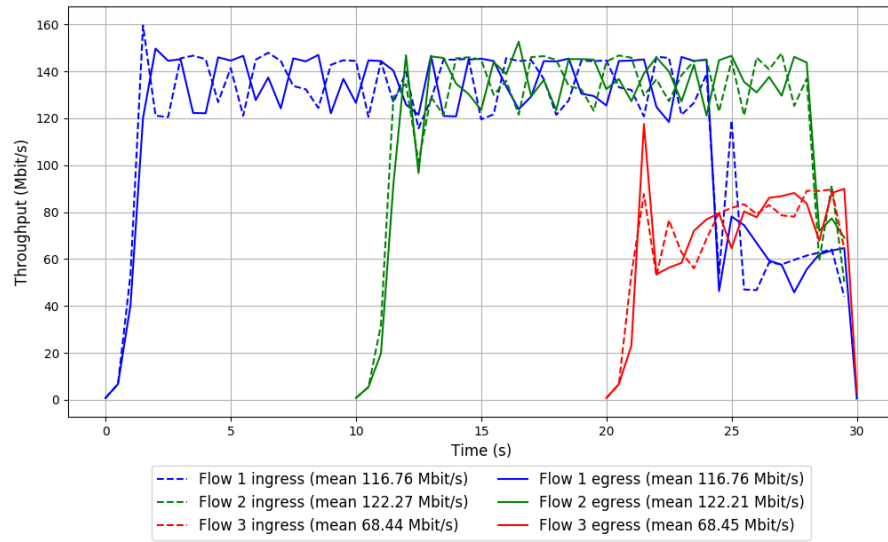
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 32.91 Mbit/s) --- Flow 1 egress (mean 32.88 Mbit/s)
Flow 2 ingress (mean 78.55 Mbit/s) --- Flow 2 egress (mean 78.42 Mbit/s)
Flow 3 ingress (mean 52.92 Mbit/s) --- Flow 3 egress (mean 52.85 Mbit/s)

Flow 1 (95th percentile 96.42 ms) Flow 2 (95th percentile 102.58 ms) Flow 3 (95th percentile 101.35 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2017-09-18 19:20:38
End at: 2017-09-18 19:21:08


# Below is generated by plot.py at 2017-09-18 21:54:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 220.29 Mbit/s
95th percentile per-packet one-way delay: 103.776 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 116.76 Mbit/s
95th percentile per-packet one-way delay: 104.129 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 122.21 Mbit/s
95th percentile per-packet one-way delay: 103.682 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 68.45 Mbit/s
95th percentile per-packet one-way delay: 100.831 ms
Loss rate: 0.00%
```
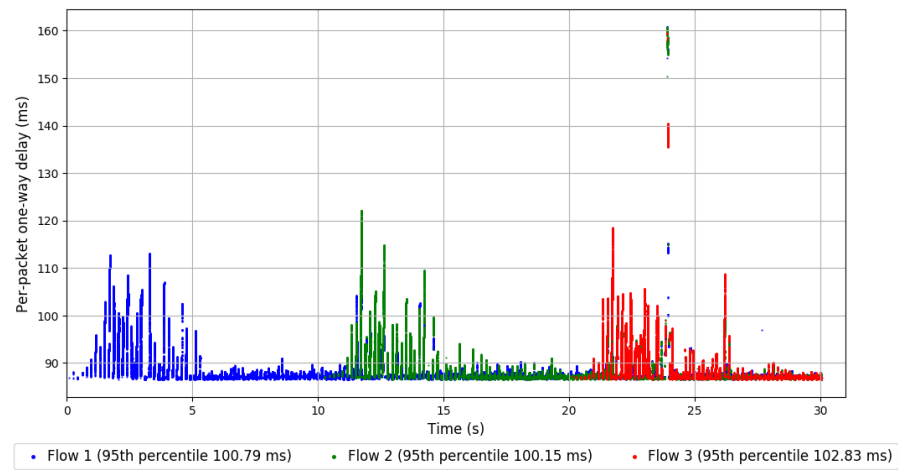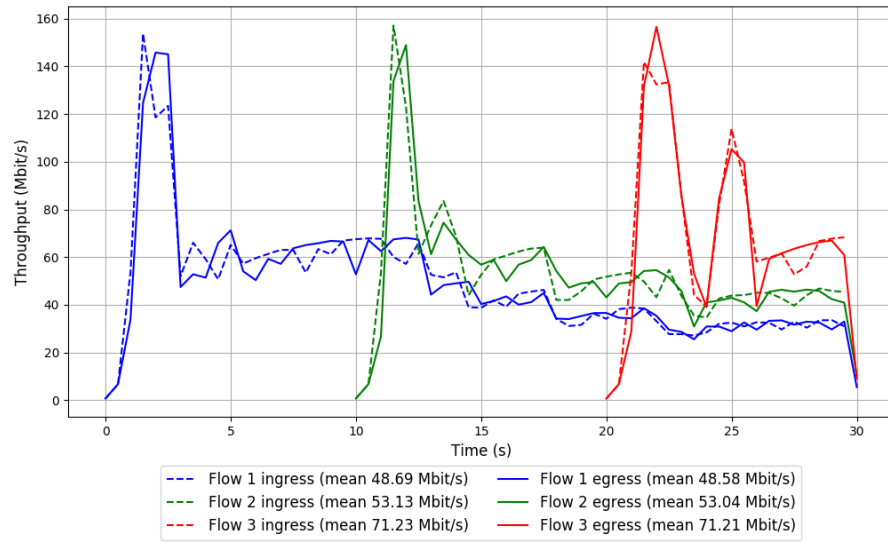
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2017-09-18 19:29:57
End at: 2017-09-18 19:30:27


# Below is generated by plot.py at 2017-09-18 21:54:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 107.53 Mbit/s
95th percentile per-packet one-way delay: 101.539 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 48.58 Mbit/s
95th percentile per-packet one-way delay: 100.789 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 53.04 Mbit/s
95th percentile per-packet one-way delay: 100.152 ms
Loss rate: 0.16%
-- Flow 3:
Average throughput: 71.21 Mbit/s
95th percentile per-packet one-way delay: 102.833 ms
Loss rate: 0.03%
```
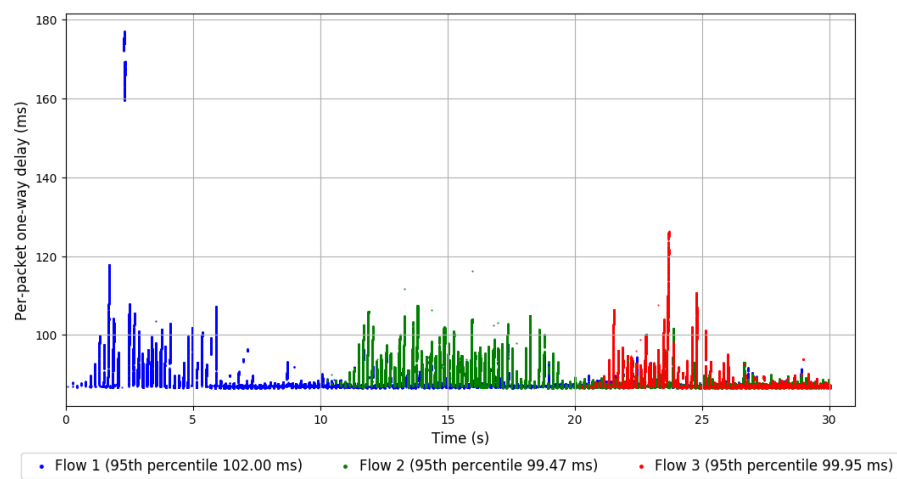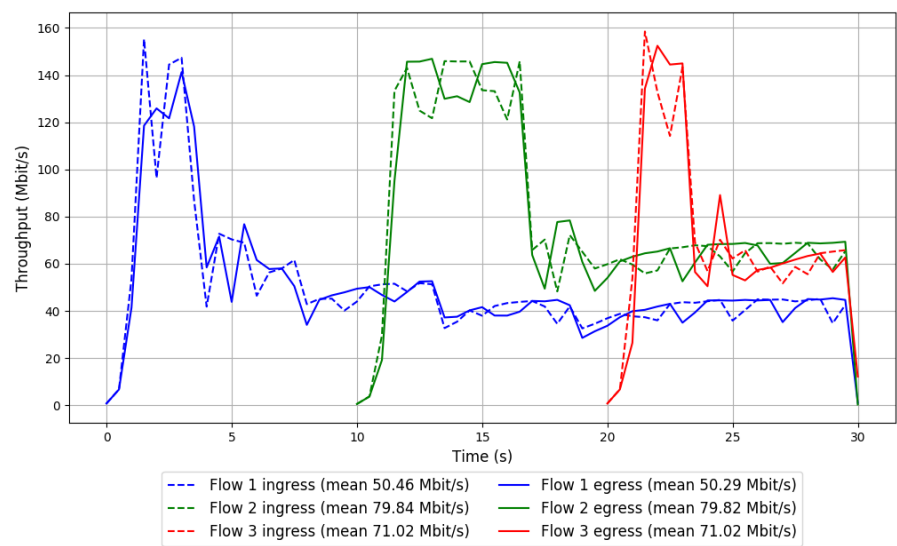
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2017-09-18 19:39:19
End at: 2017-09-18 19:39:49


# Below is generated by plot.py at 2017-09-18 21:54:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 126.94 Mbit/s
95th percentile per-packet one-way delay: 100.261 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 50.29 Mbit/s
95th percentile per-packet one-way delay: 101.997 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 79.82 Mbit/s
95th percentile per-packet one-way delay: 99.471 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 71.02 Mbit/s
95th percentile per-packet one-way delay: 99.953 ms
Loss rate: 0.00%
```
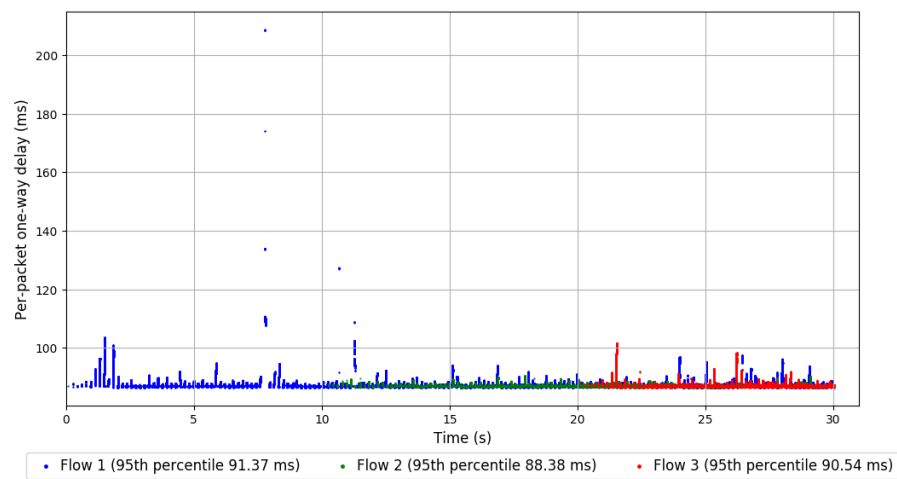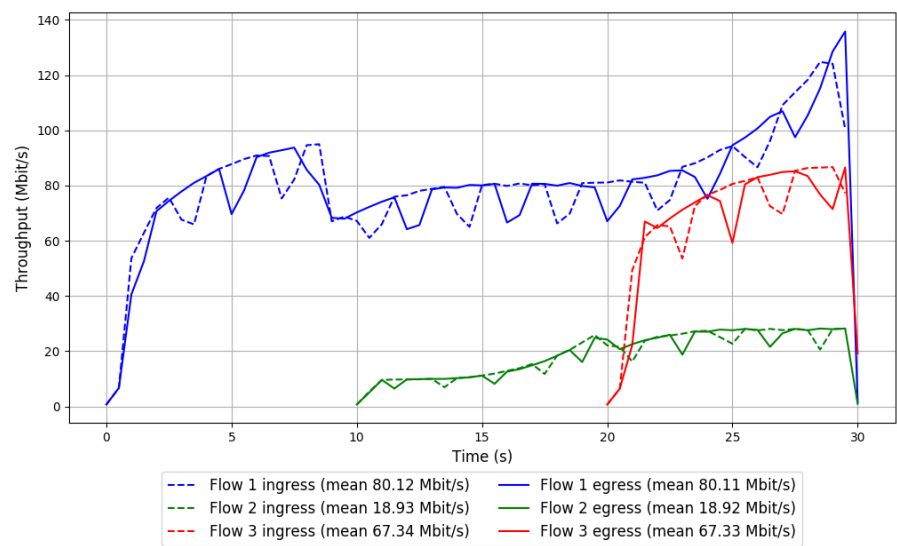
Run 5: Report of TCP Cubic — Data Link

```
Run 6: Statistics of TCP Cubic

Start at: 2017-09-18 19:48:43
End at: 2017-09-18 19:49:13


# Below is generated by plot.py at 2017-09-18 21:54:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 115.05 Mbit/s
95th percentile per-packet one-way delay: 90.789 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 80.11 Mbit/s
95th percentile per-packet one-way delay: 91.367 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 18.92 Mbit/s
95th percentile per-packet one-way delay: 88.381 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 67.33 Mbit/s
95th percentile per-packet one-way delay: 90.538 ms
Loss rate: 0.03%
```
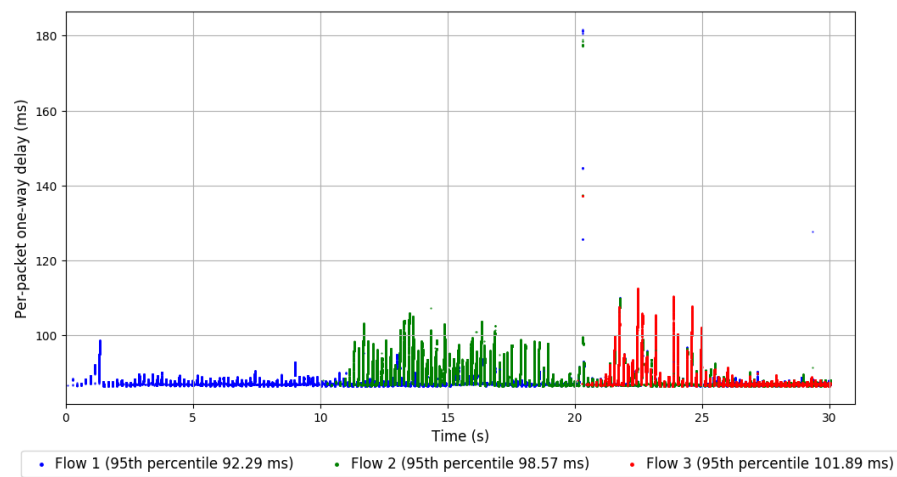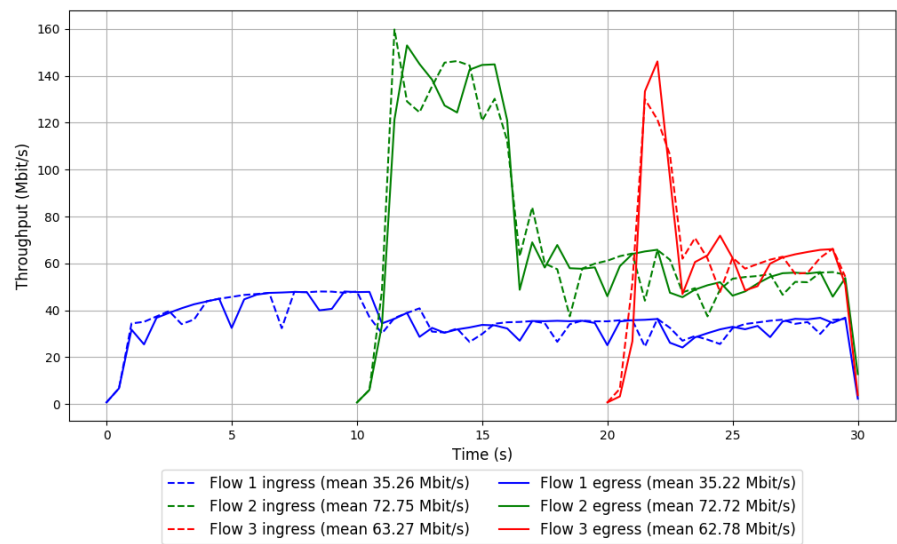
Run 6: Report of TCP Cubic — Data Link

```
Run 7: Statistics of TCP Cubic

Start at: 2017-09-18 19:58:01
End at: 2017-09-18 19:58:31


# Below is generated by plot.py at 2017-09-18 21:54:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 104.50 Mbit/s
95th percentile per-packet one-way delay: 98.061 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 35.22 Mbit/s
95th percentile per-packet one-way delay: 92.288 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 72.72 Mbit/s
95th percentile per-packet one-way delay: 98.573 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 62.78 Mbit/s
95th percentile per-packet one-way delay: 101.890 ms
Loss rate: 0.78%
```
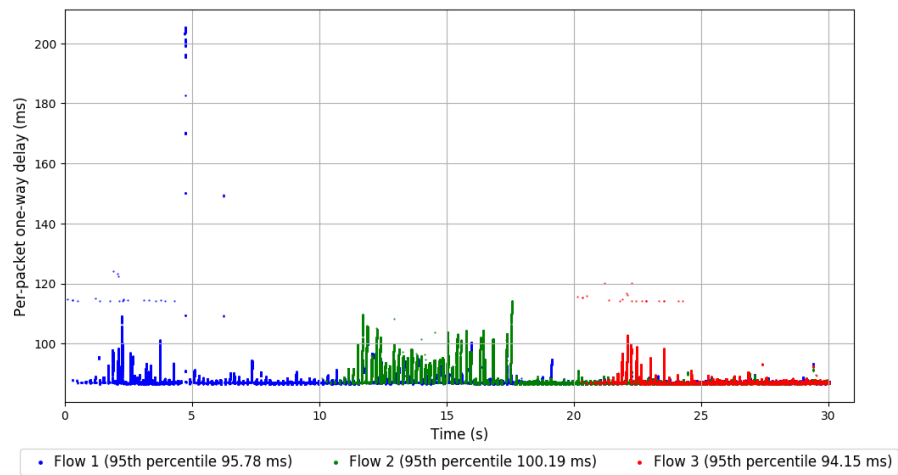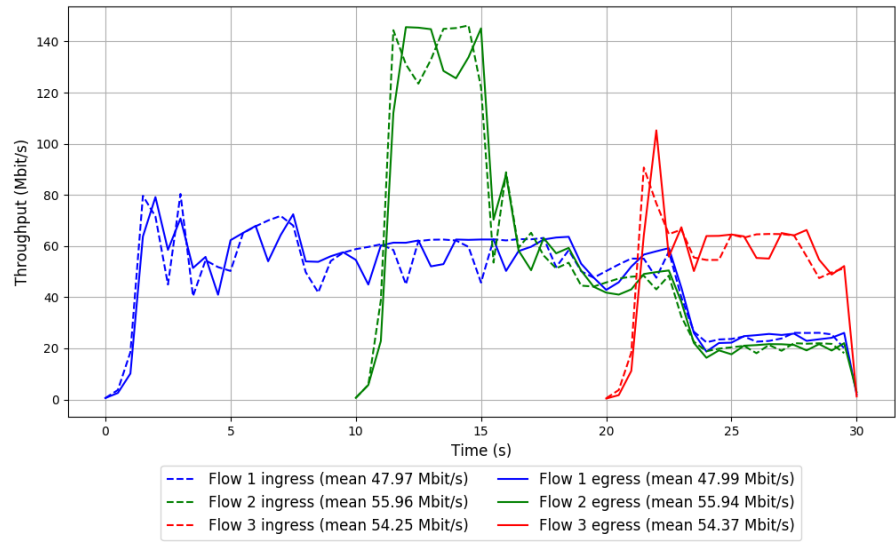
Run 7: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 35.26 Mbit/s) --- Flow 1 egress (mean 35.22 Mbit/s)
Flow 2 ingress (mean 72.75 Mbit/s) --- Flow 2 egress (mean 72.72 Mbit/s)
Flow 3 ingress (mean 63.27 Mbit/s) --- Flow 3 egress (mean 62.78 Mbit/s)

Flow 1 (95th percentile 92.29 ms)   Flow 2 (95th percentile 98.57 ms)   Flow 3 (95th percentile 101.89 ms)

```
Run 8: Statistics of TCP Cubic

Start at: 2017-09-18 20:07:16
End at: 2017-09-18 20:07:46


# Below is generated by plot.py at 2017-09-18 21:54:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 103.21 Mbit/s
95th percentile per-packet one-way delay: 97.631 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 47.99 Mbit/s
95th percentile per-packet one-way delay: 95.775 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 55.94 Mbit/s
95th percentile per-packet one-way delay: 100.193 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 54.37 Mbit/s
95th percentile per-packet one-way delay: 94.147 ms
Loss rate: 0.08%
```
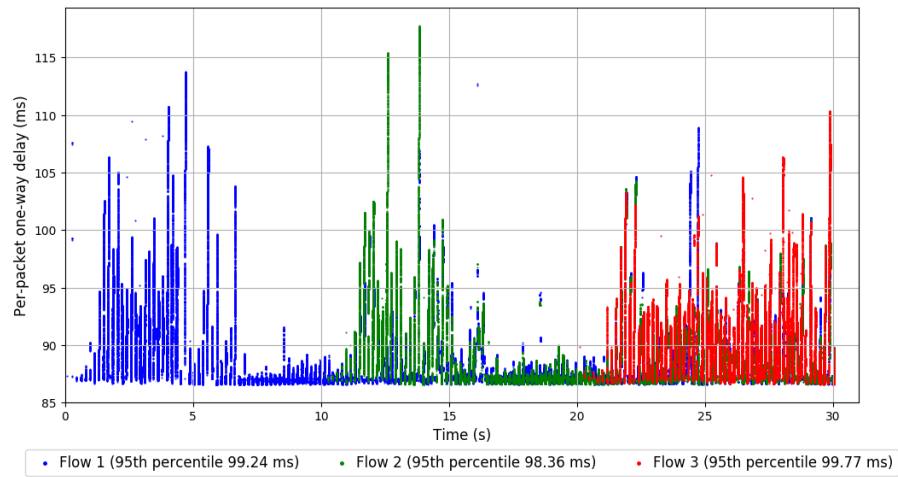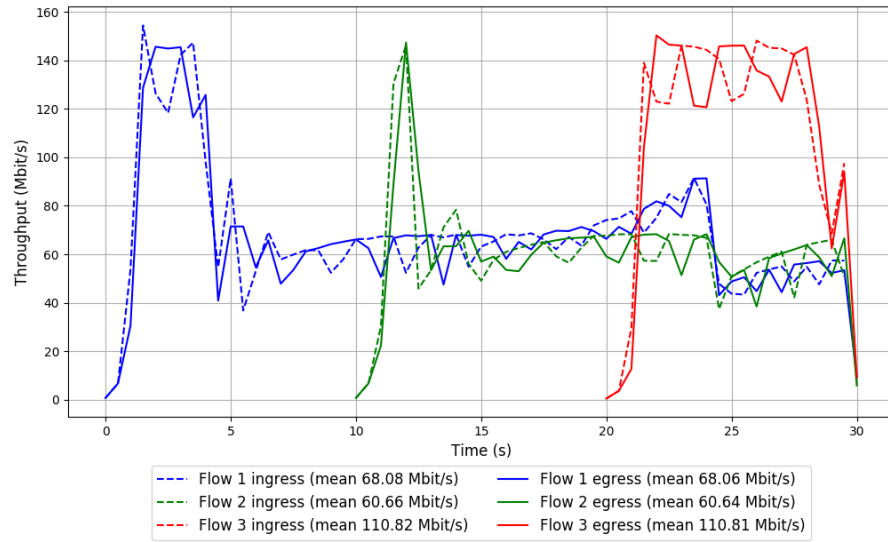
Run 8: Report of TCP Cubic — Data Link

```
Run 9: Statistics of TCP Cubic

Start at: 2017-09-18 20:16:37
End at: 2017-09-18 20:17:07


# Below is generated by plot.py at 2017-09-18 21:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 145.17 Mbit/s
95th percentile per-packet one-way delay: 99.047 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 68.06 Mbit/s
95th percentile per-packet one-way delay: 99.242 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 60.64 Mbit/s
95th percentile per-packet one-way delay: 98.363 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 110.81 Mbit/s
95th percentile per-packet one-way delay: 99.773 ms
Loss rate: 0.04%
```
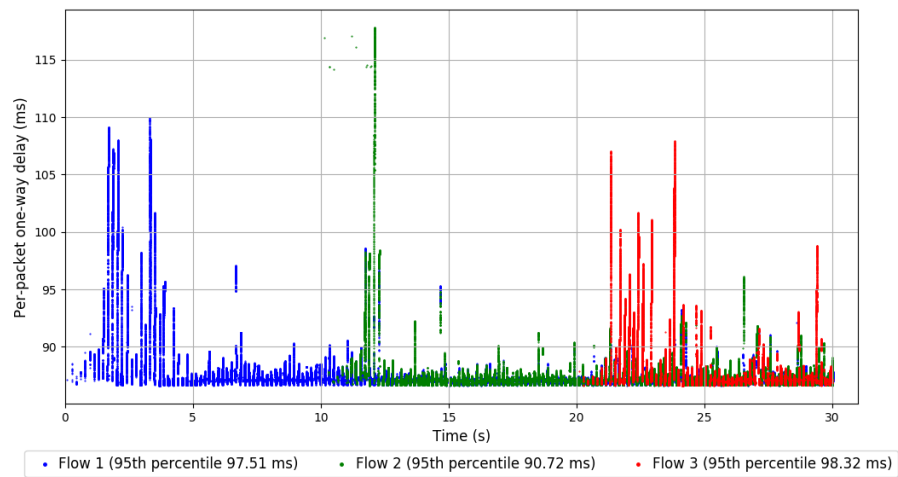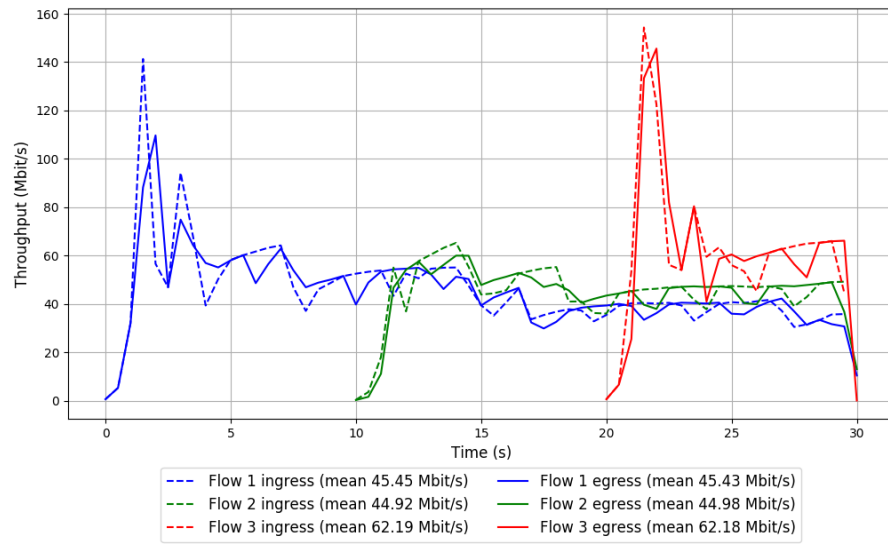
Run 9: Report of TCP Cubic — Data Link

```
Run 10: Statistics of TCP Cubic

Start at: 2017-09-18 20:26:01
End at: 2017-09-18 20:26:31


# Below is generated by plot.py at 2017-09-18 21:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.91 Mbit/s
95th percentile per-packet one-way delay: 95.919 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 45.43 Mbit/s
95th percentile per-packet one-way delay: 97.514 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 44.98 Mbit/s
95th percentile per-packet one-way delay: 90.715 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 62.18 Mbit/s
95th percentile per-packet one-way delay: 98.316 ms
Loss rate: 0.03%
```

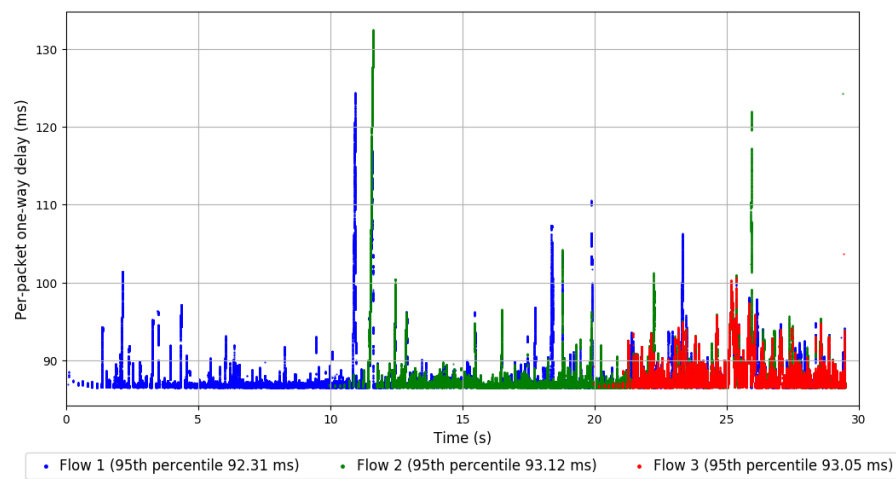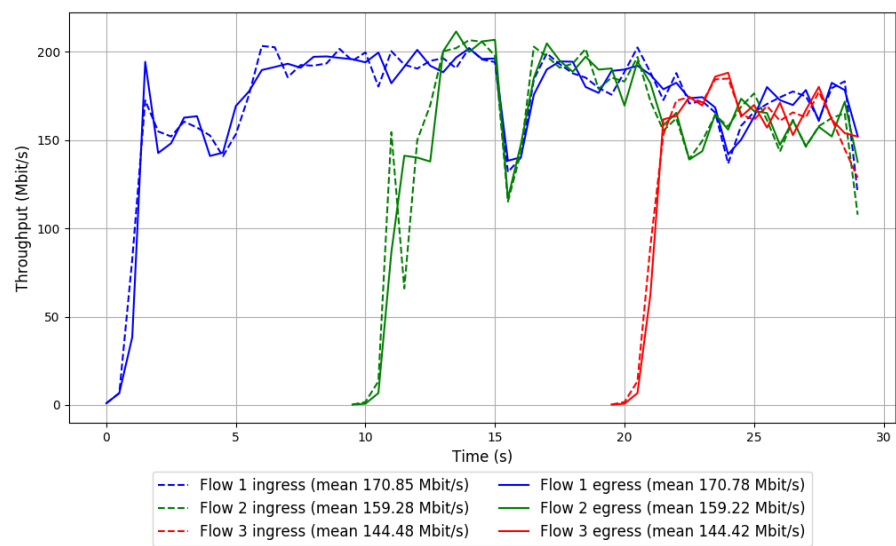Run 10: Report of TCP Cubic — Data Link

43

```
Run 1: Statistics of Indigo

Start at: 2017-09-18 19:00:02
End at: 2017-09-18 19:00:32


# Below is generated by plot.py at 2017-09-18 21:57:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 323.00 Mbit/s
95th percentile per-packet one-way delay: 92.766 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 170.78 Mbit/s
95th percentile per-packet one-way delay: 92.306 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 159.22 Mbit/s
95th percentile per-packet one-way delay: 93.124 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 144.42 Mbit/s
95th percentile per-packet one-way delay: 93.054 ms
Loss rate: 0.04%
```
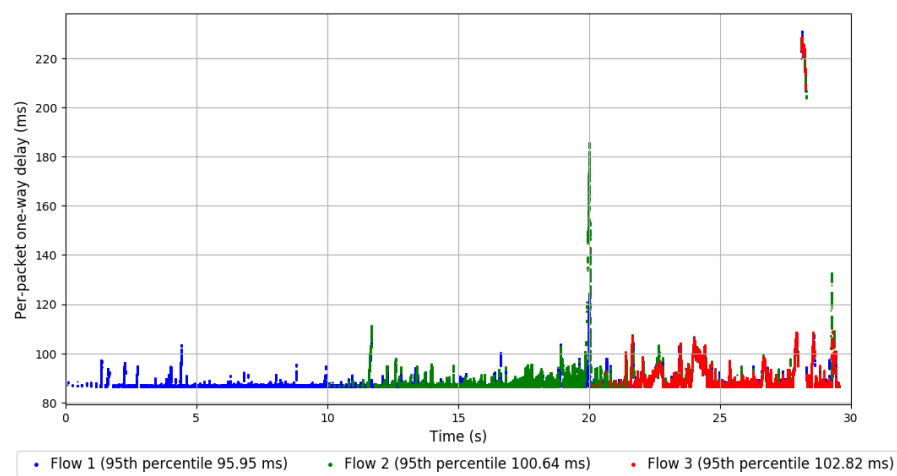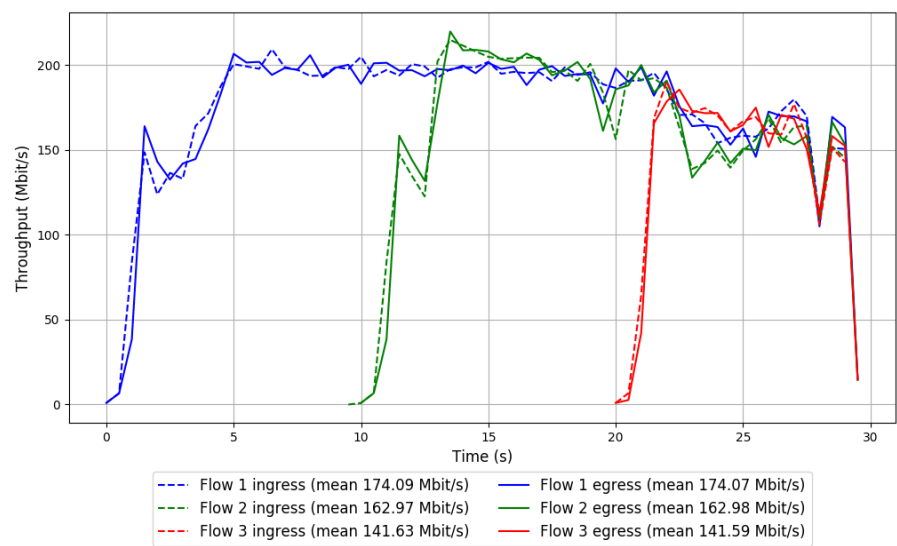
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2017-09-18 19:09:23
End at: 2017-09-18 19:09:53

# Below is generated by plot.py at 2017-09-18 21:58:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 327.08 Mbit/s
95th percentile per-packet one-way delay: 99.129 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 174.07 Mbit/s
95th percentile per-packet one-way delay: 95.947 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 162.98 Mbit/s
95th percentile per-packet one-way delay: 100.637 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 141.59 Mbit/s
95th percentile per-packet one-way delay: 102.822 ms
Loss rate: 0.04%
```
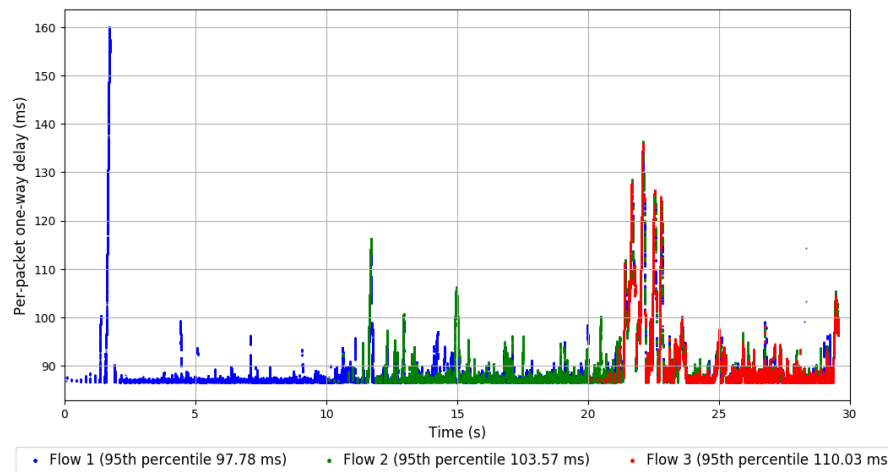
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2017-09-18 19:18:46
End at: 2017-09-18 19:19:16


# Below is generated by plot.py at 2017-09-18 21:58:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.00 Mbit/s
95th percentile per-packet one-way delay: 102.626 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 177.06 Mbit/s
95th percentile per-packet one-way delay: 97.784 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 164.98 Mbit/s
95th percentile per-packet one-way delay: 103.568 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 106.47 Mbit/s
95th percentile per-packet one-way delay: 110.027 ms
Loss rate: 0.18%
```
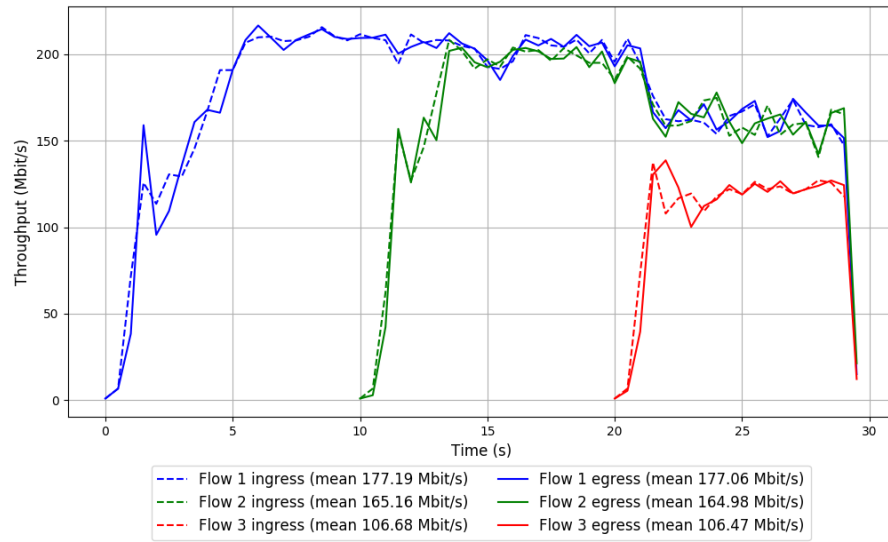
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2017-09-18 19:28:07
End at: 2017-09-18 19:28:37


# Below is generated by plot.py at 2017-09-18 21:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 303.78 Mbit/s
95th percentile per-packet one-way delay: 98.251 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 170.35 Mbit/s
95th percentile per-packet one-way delay: 96.437 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 151.92 Mbit/s
95th percentile per-packet one-way delay: 100.445 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 91.96 Mbit/s
95th percentile per-packet one-way delay: 100.572 ms
Loss rate: 0.05%
```
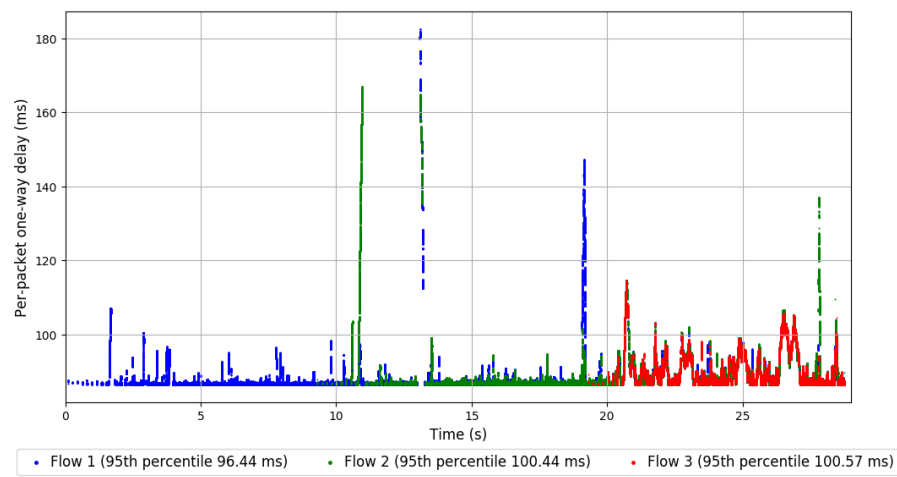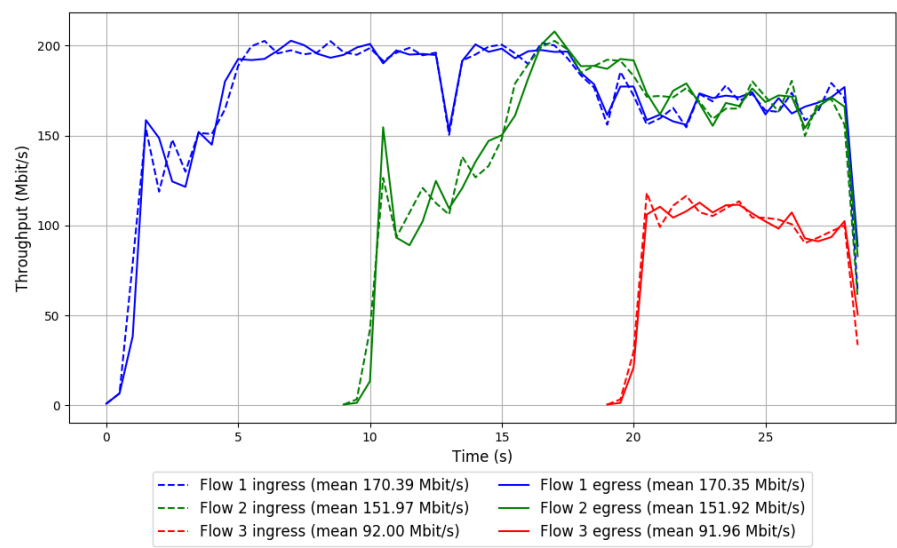
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2017-09-18 19:37:26
End at: 2017-09-18 19:37:56

# Below is generated by plot.py at 2017-09-18 21:59:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.91 Mbit/s
95th percentile per-packet one-way delay: 102.743 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 175.64 Mbit/s
95th percentile per-packet one-way delay: 97.193 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 160.97 Mbit/s
95th percentile per-packet one-way delay: 106.416 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 122.64 Mbit/s
95th percentile per-packet one-way delay: 120.605 ms
Loss rate: 0.11%
```
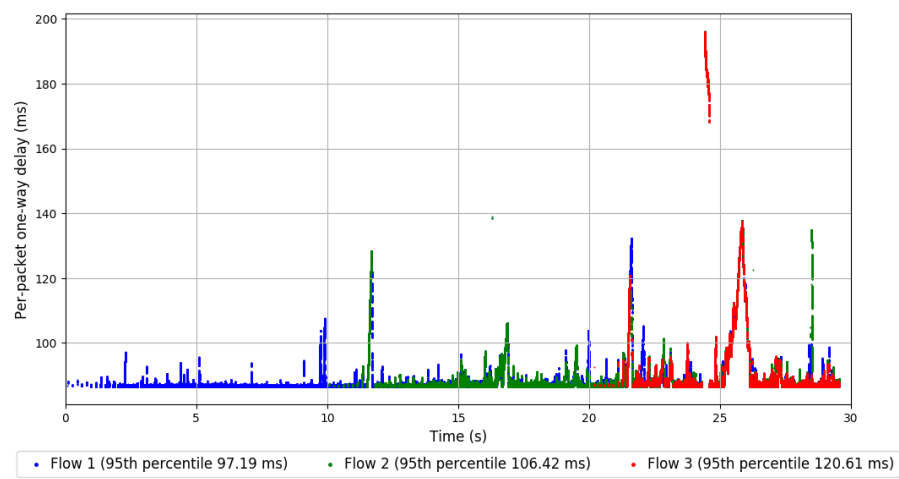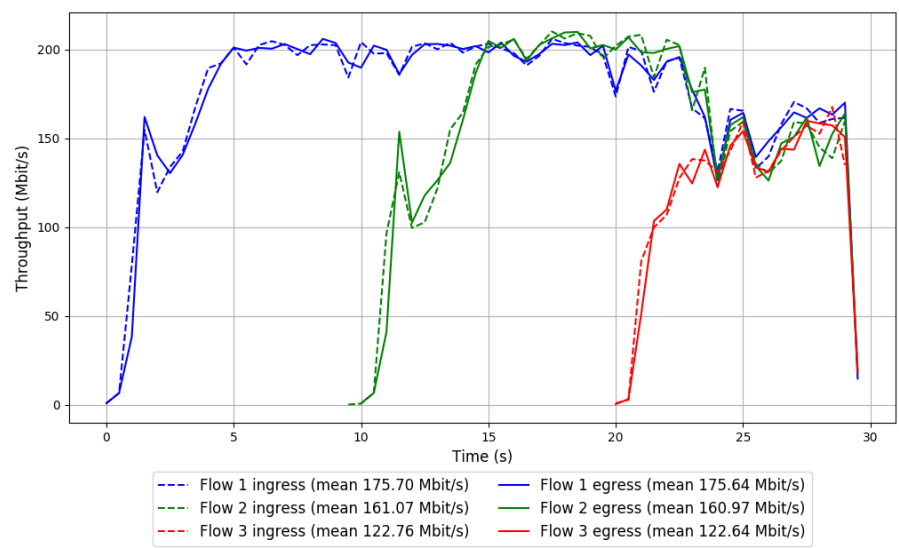
Run 5: Report of Indigo — Data Link

53

```
Run 6: Statistics of Indigo

Start at: 2017-09-18 19:46:51
End at: 2017-09-18 19:47:21


# Below is generated by plot.py at 2017-09-18 21:59:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.41 Mbit/s
95th percentile per-packet one-way delay: 100.701 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 181.97 Mbit/s
95th percentile per-packet one-way delay: 97.446 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 164.72 Mbit/s
95th percentile per-packet one-way delay: 101.606 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 93.28 Mbit/s
95th percentile per-packet one-way delay: 111.995 ms
Loss rate: 0.02%
```
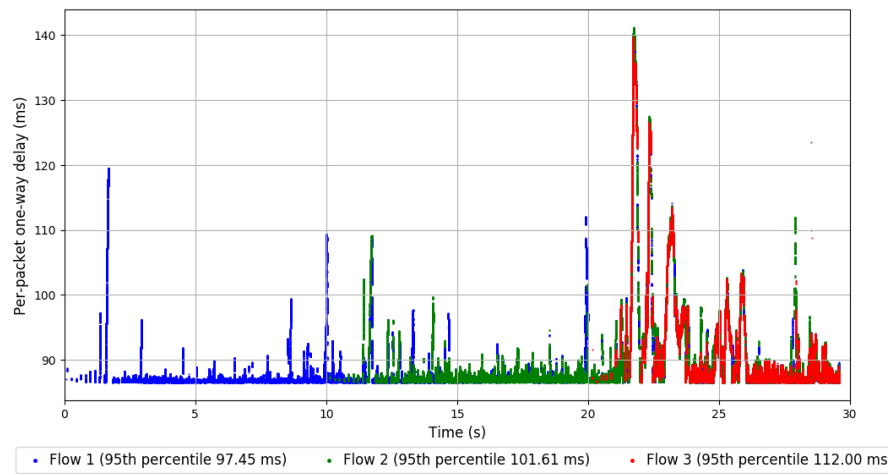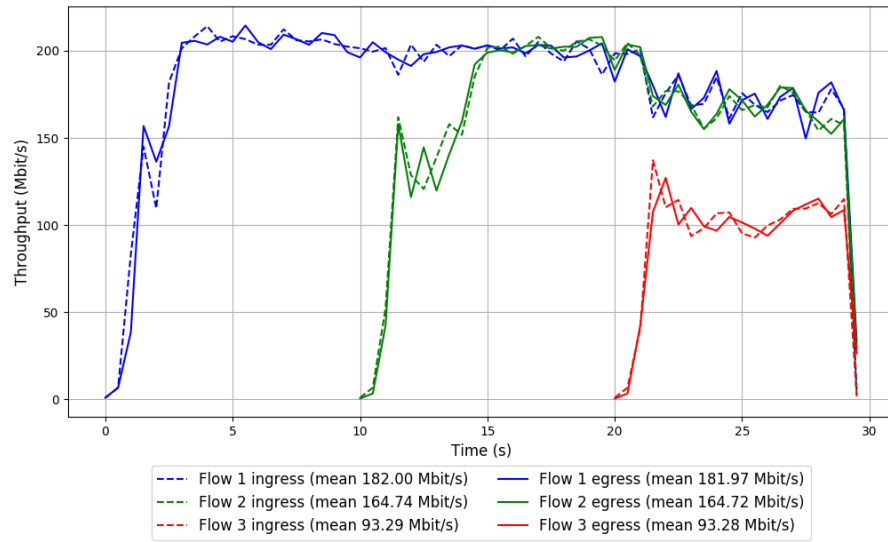
Run 6: Report of Indigo — Data Link

```
Run 7: Statistics of Indigo

Start at: 2017-09-18 19:56:09
End at: 2017-09-18 19:56:39


# Below is generated by plot.py at 2017-09-18 21:59:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 312.46 Mbit/s
95th percentile per-packet one-way delay: 98.704 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 174.16 Mbit/s
95th percentile per-packet one-way delay: 96.488 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 157.38 Mbit/s
95th percentile per-packet one-way delay: 98.868 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 107.97 Mbit/s
95th percentile per-packet one-way delay: 103.096 ms
Loss rate: 0.01%
```
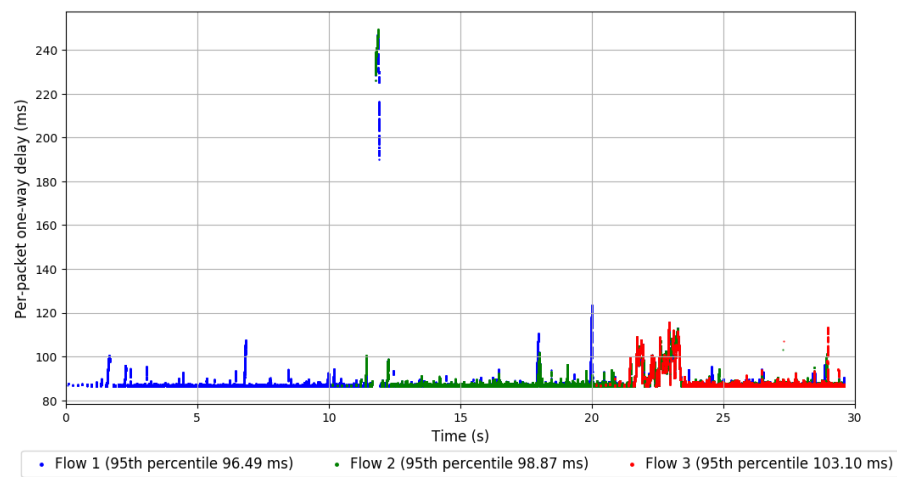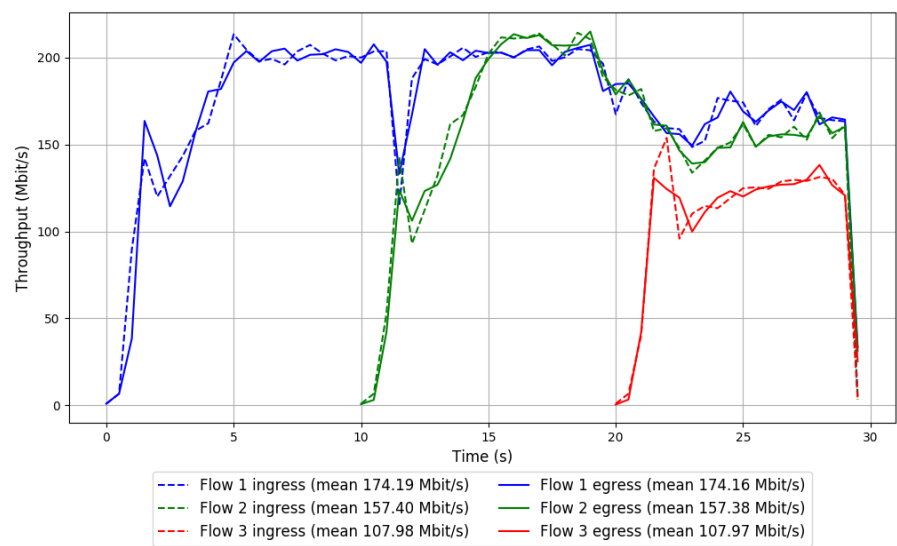
Run 7: Report of Indigo — Data Link

```
Run 8: Statistics of Indigo

Start at: 2017-09-18 20:05:24
End at: 2017-09-18 20:05:54


# Below is generated by plot.py at 2017-09-18 22:00:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 337.47 Mbit/s
95th percentile per-packet one-way delay: 105.825 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 172.90 Mbit/s
95th percentile per-packet one-way delay: 100.226 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 166.93 Mbit/s
95th percentile per-packet one-way delay: 106.985 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 138.30 Mbit/s
95th percentile per-packet one-way delay: 111.429 ms
Loss rate: 0.10%
```
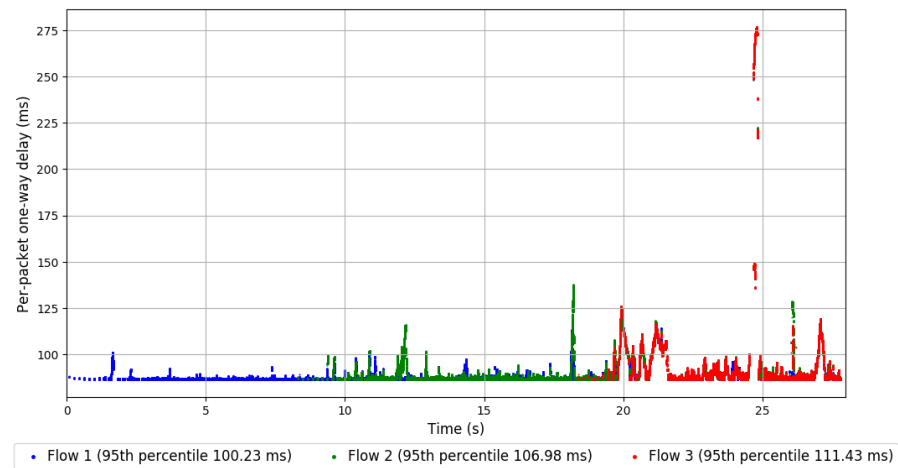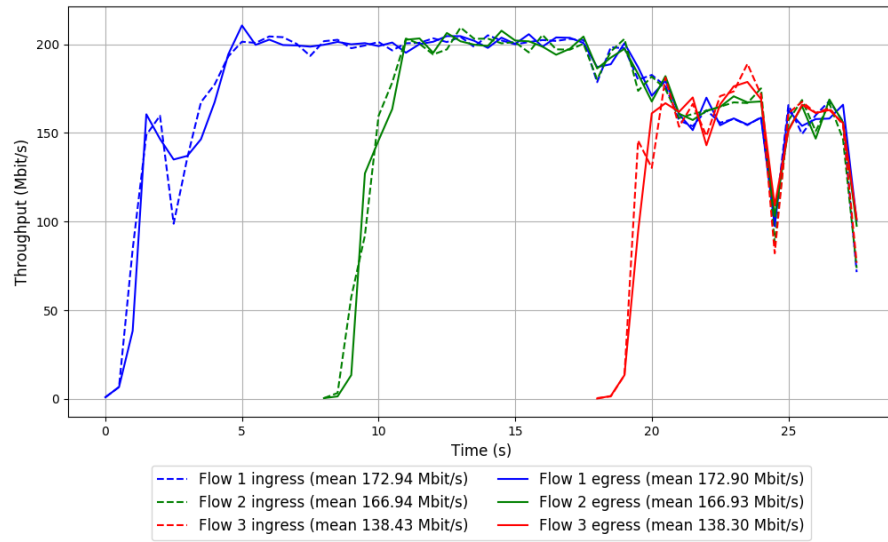
Run 8: Report of Indigo — Data Link

```
Run 9: Statistics of Indigo

Start at: 2017-09-18 20:14:45
End at: 2017-09-18 20:15:15


# Below is generated by plot.py at 2017-09-18 22:02:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 327.25 Mbit/s
95th percentile per-packet one-way delay: 96.775 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 178.05 Mbit/s
95th percentile per-packet one-way delay: 93.471 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 160.91 Mbit/s
95th percentile per-packet one-way delay: 99.639 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 107.46 Mbit/s
95th percentile per-packet one-way delay: 98.609 ms
Loss rate: 0.04%
```
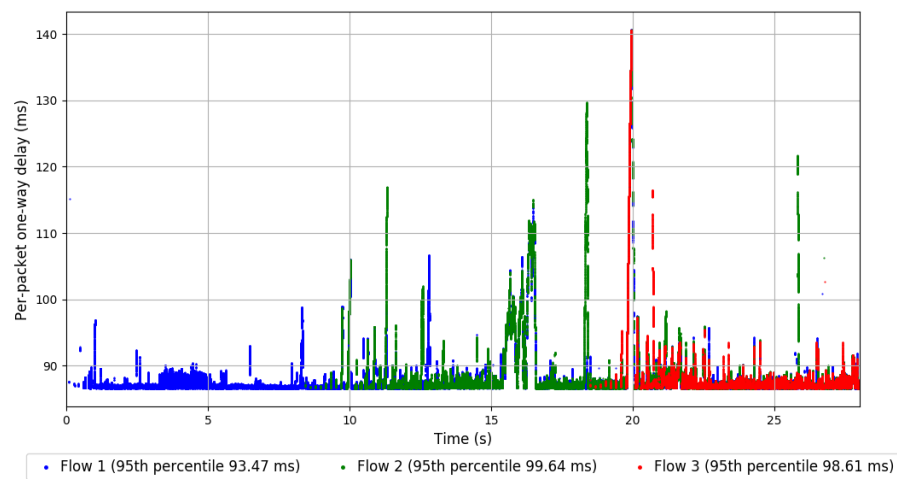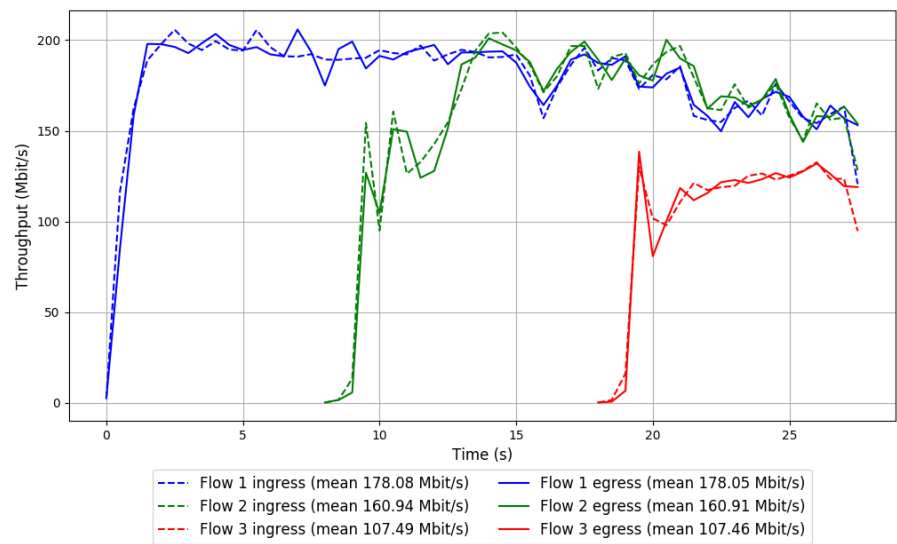
Run 9: Report of Indigo — Data Link

```
Run 10: Statistics of Indigo

Start at: 2017-09-18 20:24:07
End at: 2017-09-18 20:24:37


# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 332.37 Mbit/s
95th percentile per-packet one-way delay: 96.118 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 180.53 Mbit/s
95th percentile per-packet one-way delay: 93.154 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 160.97 Mbit/s
95th percentile per-packet one-way delay: 97.201 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 141.27 Mbit/s
95th percentile per-packet one-way delay: 98.417 ms
Loss rate: 0.03%
```
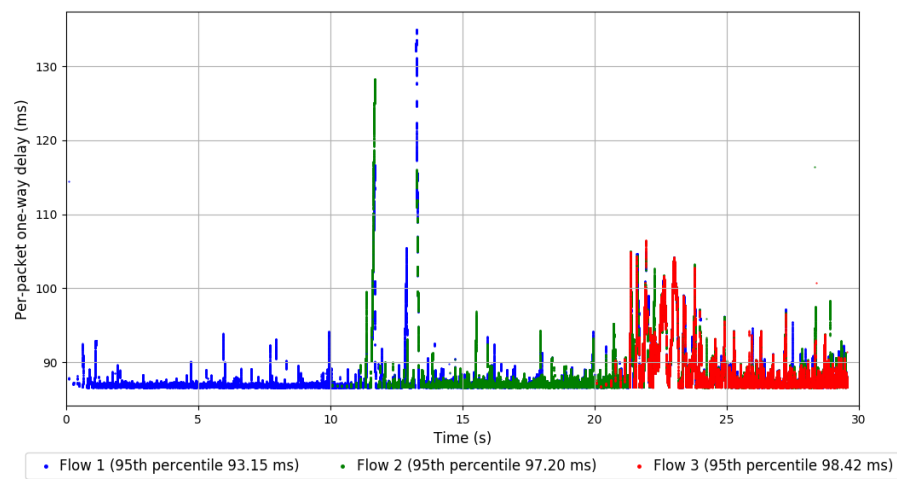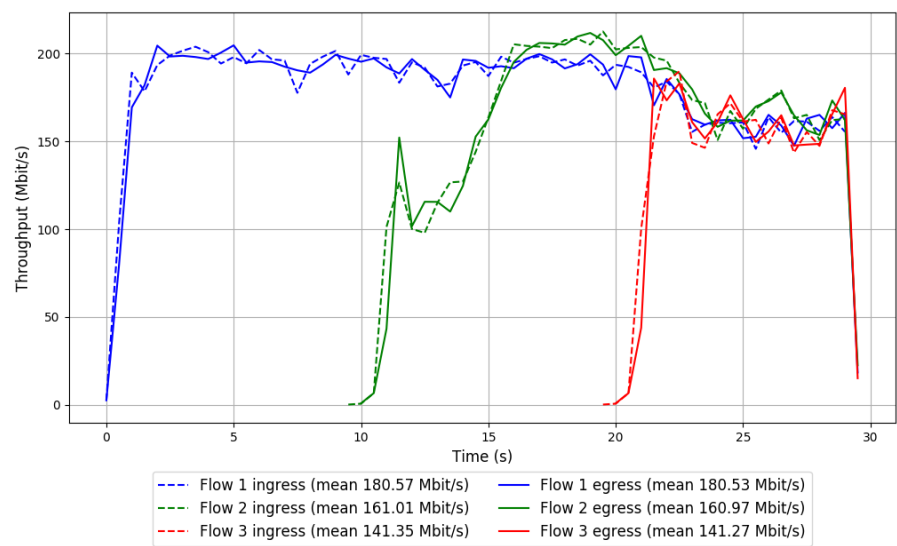
Run 10: Report of Indigo — Data Link

- - - - Flow 1 ingress (mean 180.57 Mbit/s)   —— Flow 1 egress (mean 180.53 Mbit/s)
- - - - Flow 2 ingress (mean 161.01 Mbit/s)   —— Flow 2 egress (mean 160.97 Mbit/s)
- - - - Flow 3 ingress (mean 141.35 Mbit/s)   —— Flow 3 egress (mean 141.27 Mbit/s)

- Flow 1 (95th percentile 93.15 ms)   - Flow 2 (95th percentile 97.20 ms)   - Flow 3 (95th percentile 98.42 ms)
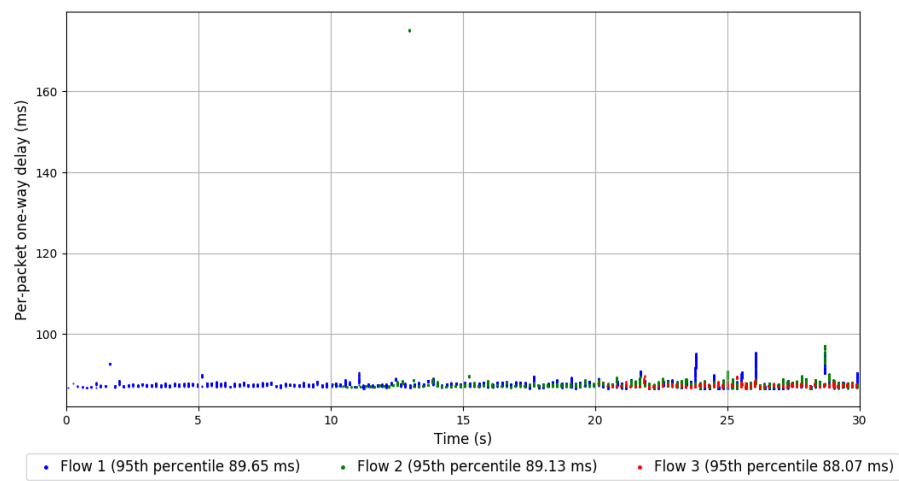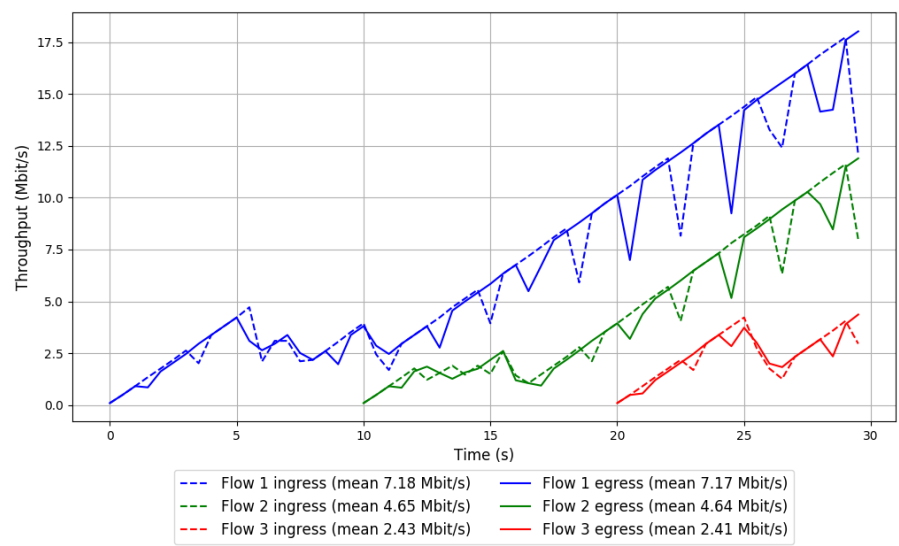
63

```
Run 1: Statistics of LEDBAT

Start at: 2017-09-18 19:05:38
End at: 2017-09-18 19:06:08

# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 11.04 Mbit/s
95th percentile per-packet one-way delay: 89.421 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 7.17 Mbit/s
95th percentile per-packet one-way delay: 89.646 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 4.64 Mbit/s
95th percentile per-packet one-way delay: 89.129 ms
Loss rate: 0.13%
-- Flow 3:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 88.074 ms
Loss rate: 0.79%
```

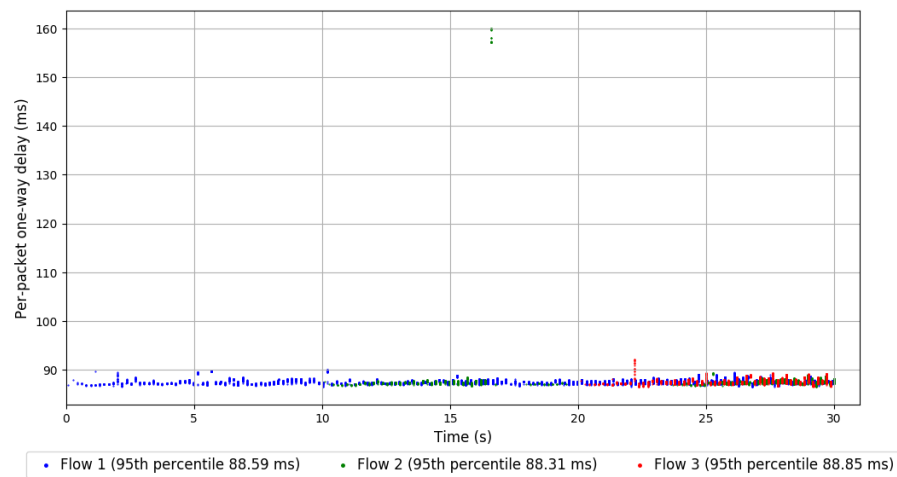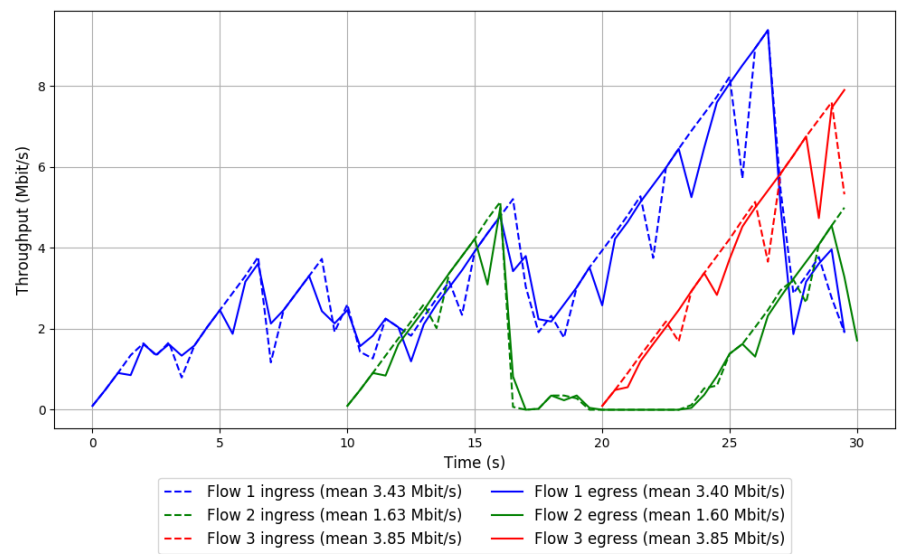## Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2017-09-18 19:15:05
End at: 2017-09-18 19:15:35


# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.72 Mbit/s
95th percentile per-packet one-way delay: 88.670 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 3.40 Mbit/s
95th percentile per-packet one-way delay: 88.590 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 1.60 Mbit/s
95th percentile per-packet one-way delay: 88.310 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 88.846 ms
Loss rate: 0.00%
```

Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2017-09-18 19:24:26
End at: 2017-09-18 19:24:56

# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 9.04 Mbit/s
95th percentile per-packet one-way delay: 88.894 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 3.35 Mbit/s
95th percentile per-packet one-way delay: 88.370 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 7.92 Mbit/s
95th percentile per-packet one-way delay: 89.057 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 89.191 ms
Loss rate: 4.02%
```
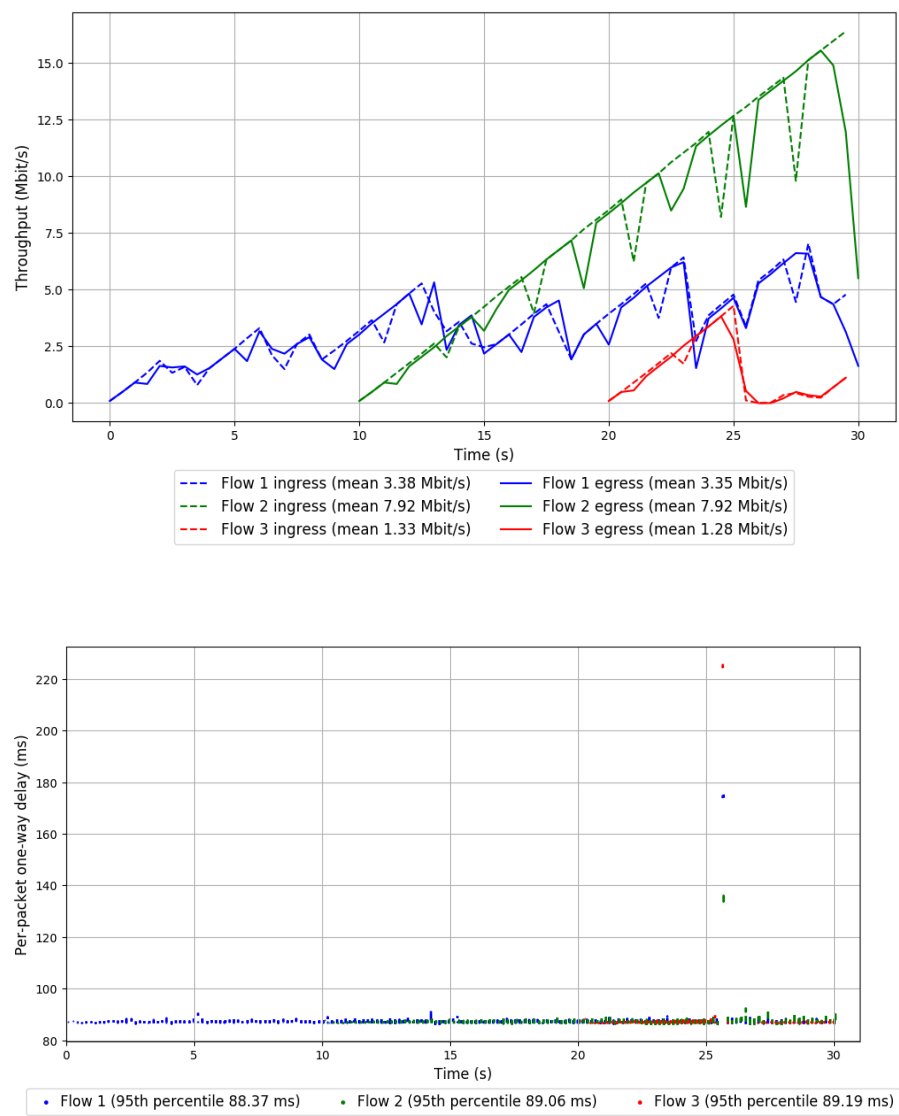
Run 3: Report of LEDBAT — Data Link

- Flow 1 ingress (mean 3.38 Mbit/s)
- Flow 1 egress (mean 3.35 Mbit/s)
- Flow 2 ingress (mean 7.92 Mbit/s)
- Flow 2 egress (mean 7.92 Mbit/s)
- Flow 3 ingress (mean 1.33 Mbit/s)
- Flow 3 egress (mean 1.28 Mbit/s)

- Flow 1 (95th percentile 88.37 ms)
- Flow 2 (95th percentile 89.06 ms)
- Flow 3 (95th percentile 89.19 ms)

69

```
Run 4: Statistics of LEDBAT

Start at: 2017-09-18 19:33:45
End at: 2017-09-18 19:34:15


# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 88.396 ms
Loss rate: 4.02%
-- Flow 1:
Average throughput: 1.80 Mbit/s
95th percentile per-packet one-way delay: 88.555 ms
Loss rate: 2.56%
-- Flow 2:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 88.302 ms
Loss rate: 5.70%
-- Flow 3:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 87.936 ms
Loss rate: 5.52%
```
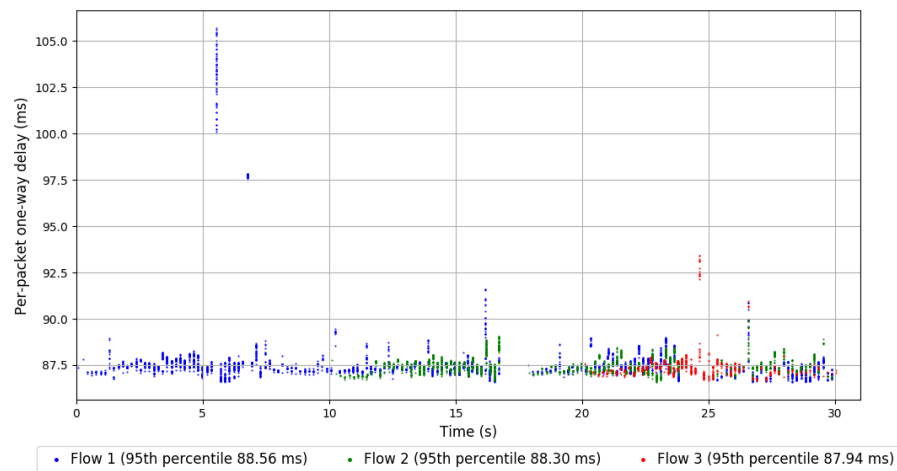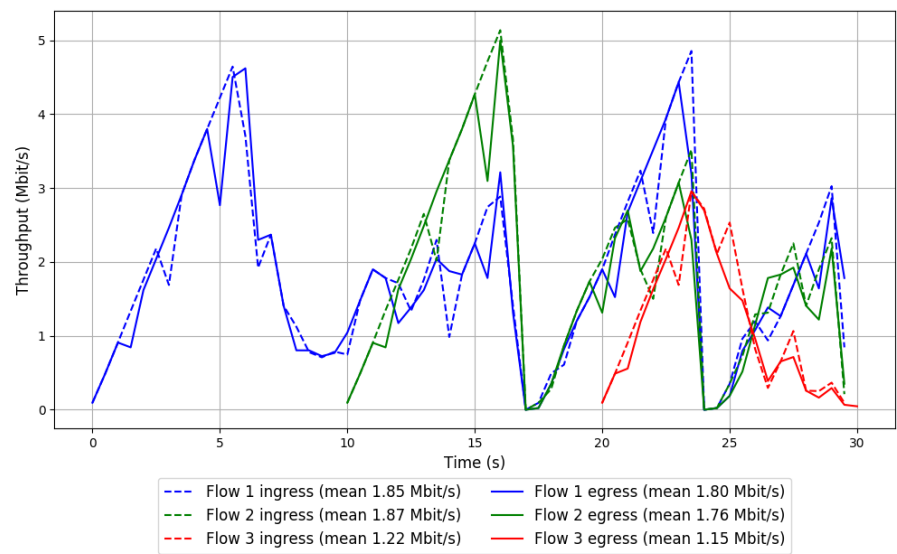
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2017-09-18 19:43:09
End at: 2017-09-18 19:43:39

# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 17.68 Mbit/s
95th percentile per-packet one-way delay: 88.957 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.60 Mbit/s
95th percentile per-packet one-way delay: 89.044 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.27 Mbit/s
95th percentile per-packet one-way delay: 89.022 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.93 Mbit/s
95th percentile per-packet one-way delay: 88.248 ms
Loss rate: 0.00%
```
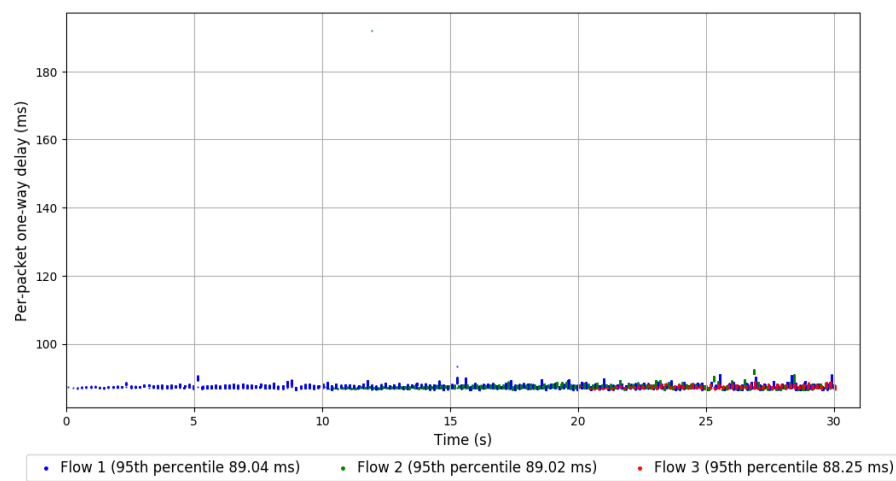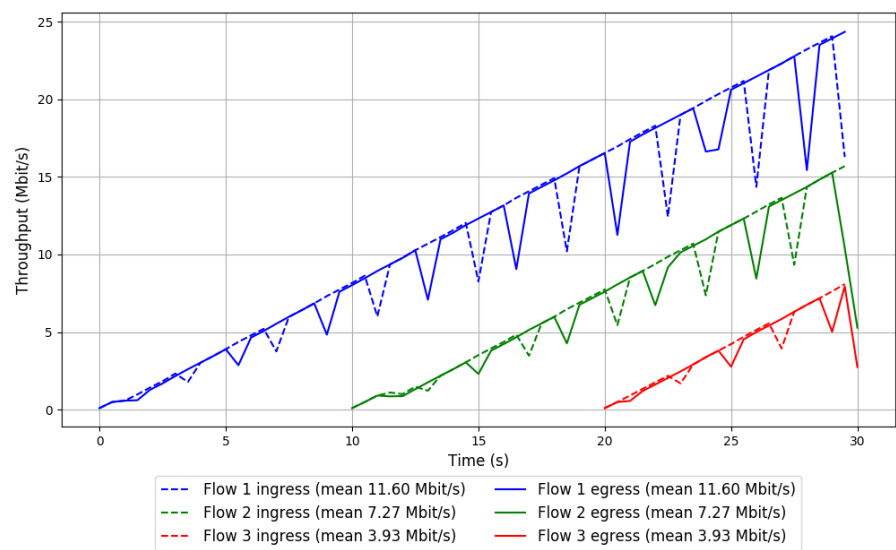
Run 5: Report of LEDBAT — Data Link

```
Run 6: Statistics of LEDBAT

Start at: 2017-09-18 19:52:34
End at: 2017-09-18 19:53:04

# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.95 Mbit/s
95th percentile per-packet one-way delay: 88.742 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 4.64 Mbit/s
95th percentile per-packet one-way delay: 88.758 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 3.04 Mbit/s
95th percentile per-packet one-way delay: 88.772 ms
Loss rate: 1.57%
-- Flow 3:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 87.720 ms
Loss rate: 0.00%
```
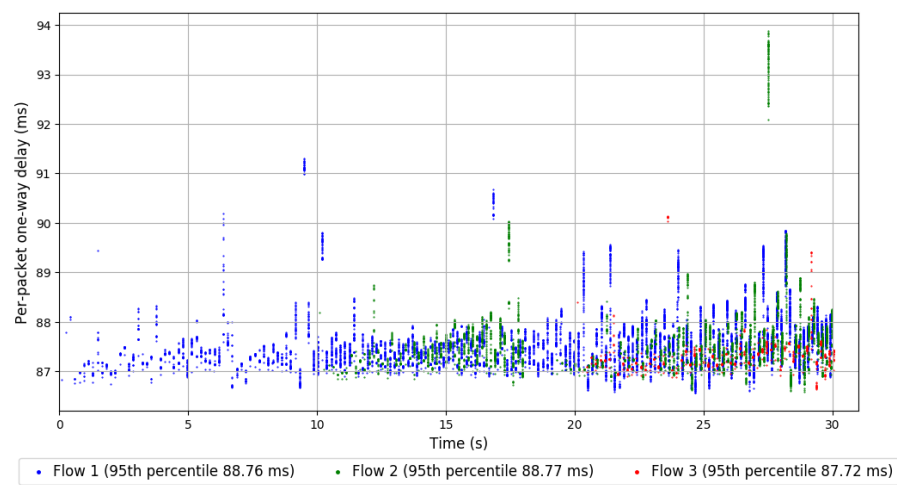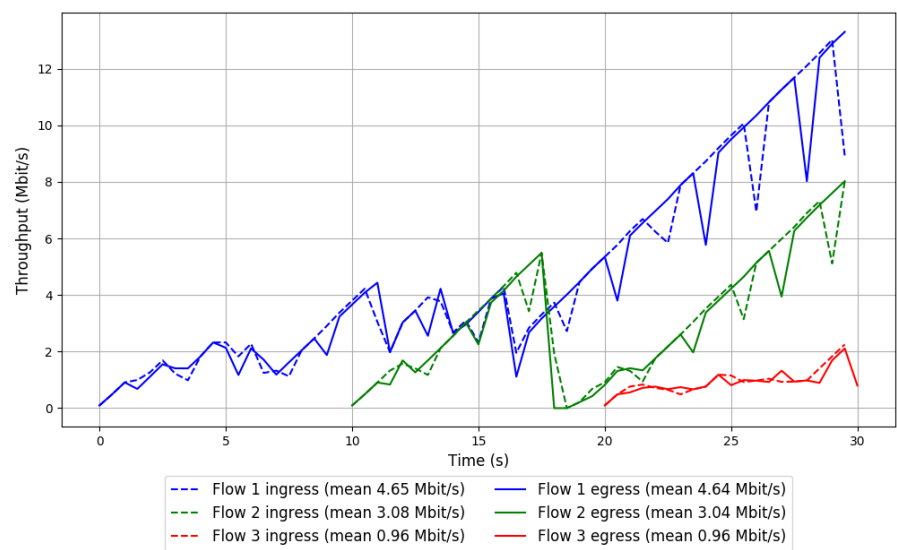
Run 6: Report of LEDBAT — Data Link

```
Run 7: Statistics of LEDBAT

Start at: 2017-09-18 20:01:47
End at: 2017-09-18 20:02:17

# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.14 Mbit/s
95th percentile per-packet one-way delay: 88.278 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 3.78 Mbit/s
95th percentile per-packet one-way delay: 88.225 ms
Loss rate: 0.95%
-- Flow 2:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 88.413 ms
Loss rate: 2.63%
-- Flow 3:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 87.996 ms
Loss rate: 3.35%
```
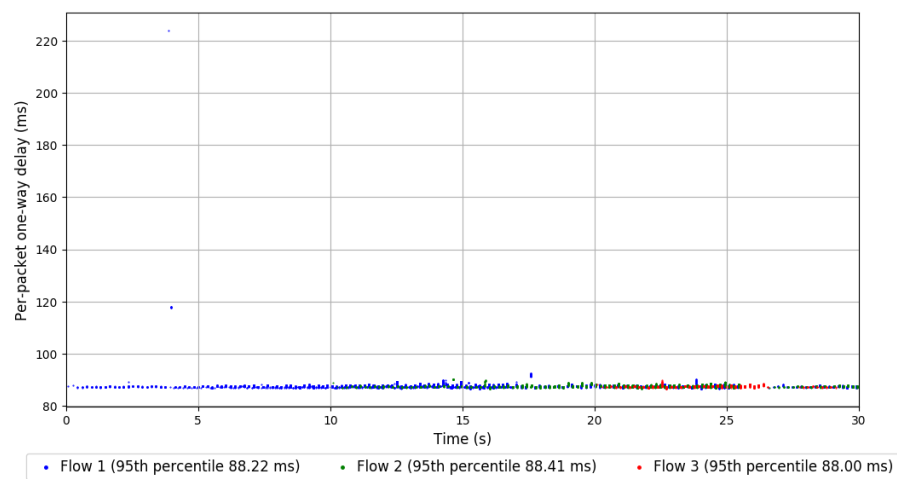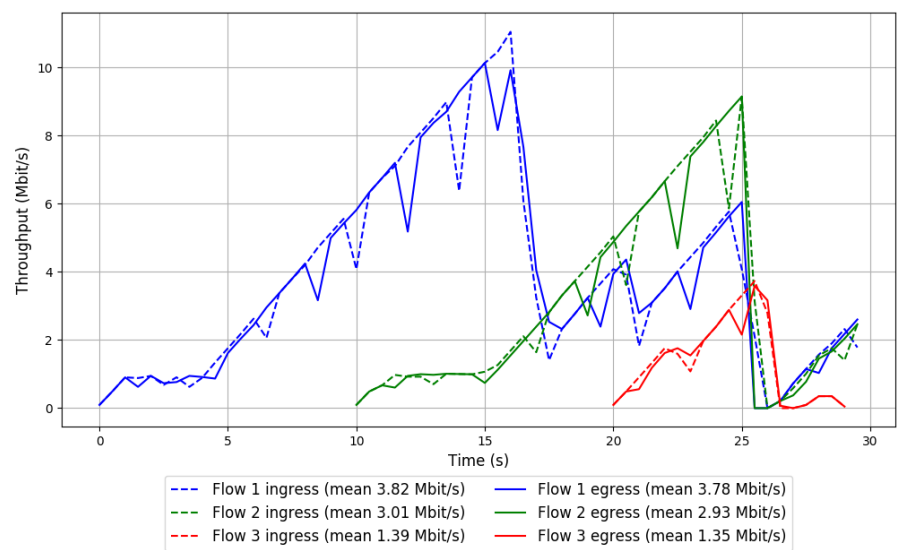
Run 7: Report of LEDBAT — Data Link

```
Run 8: Statistics of LEDBAT

Start at: 2017-09-18 20:11:06
End at: 2017-09-18 20:11:36

# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.35 Mbit/s
95th percentile per-packet one-way delay: 88.380 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 3.14 Mbit/s
95th percentile per-packet one-way delay: 88.408 ms
Loss rate: 0.11%
-- Flow 2:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 88.429 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 88.261 ms
Loss rate: 0.00%
```
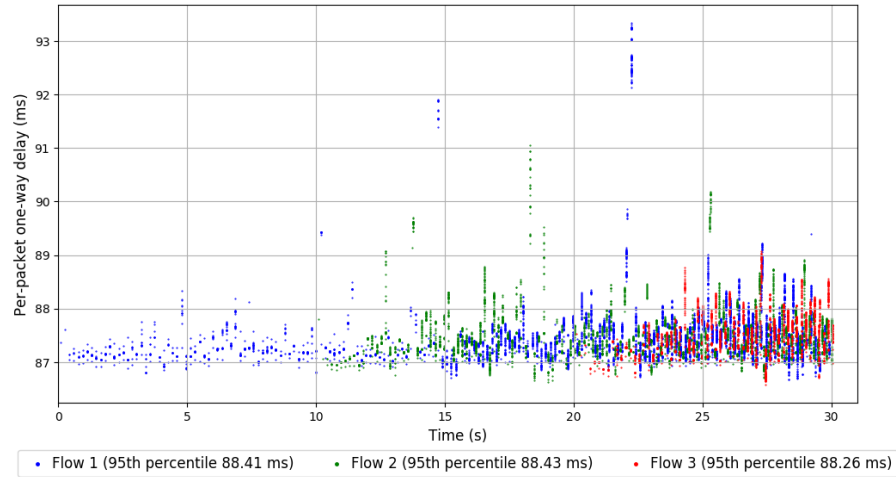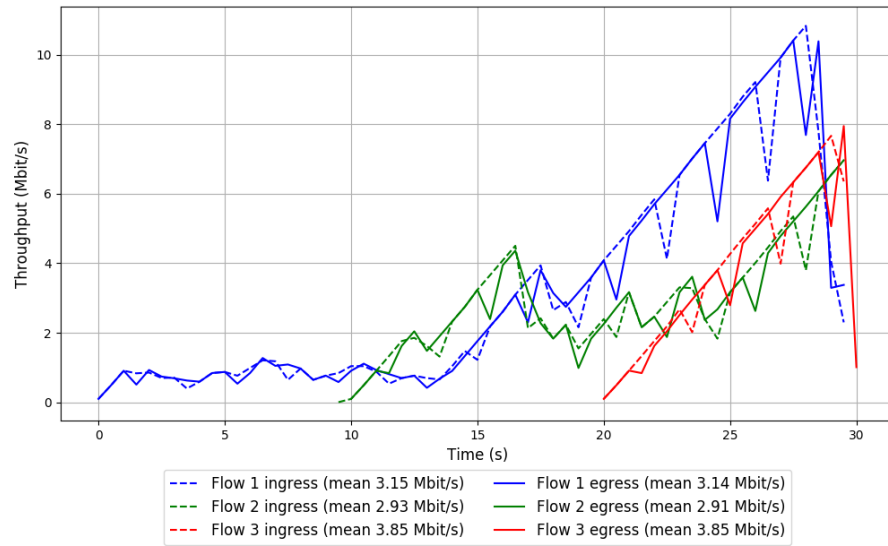
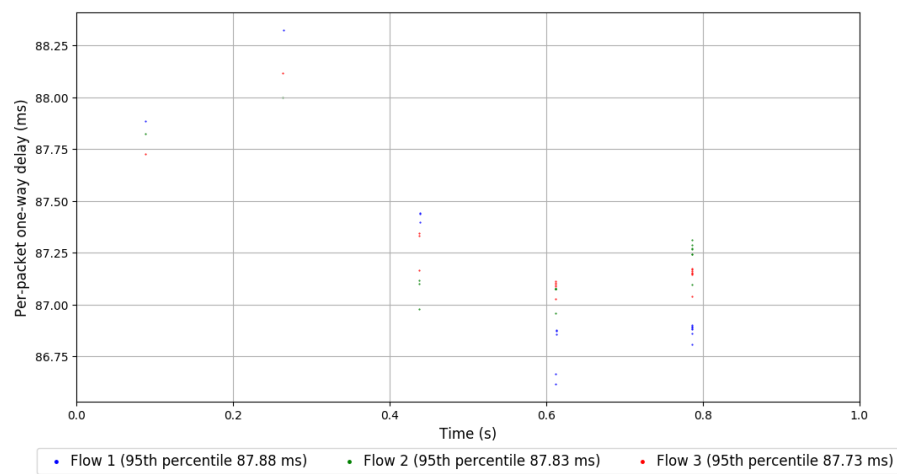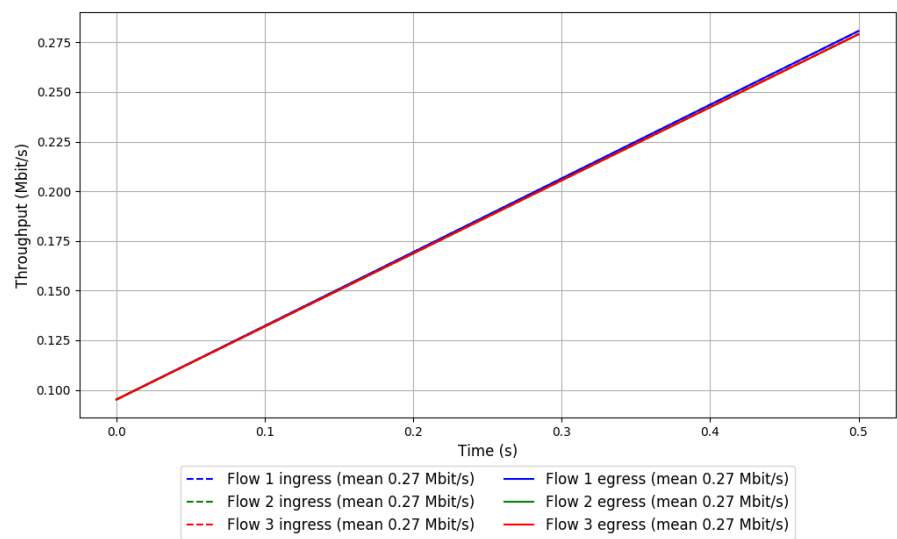# Run 8: Report of LEDBAT — Data Link

Run 9: Statistics of LEDBAT

Start at: 2017-09-18 20:20:33
End at: 2017-09-18 20:21:03

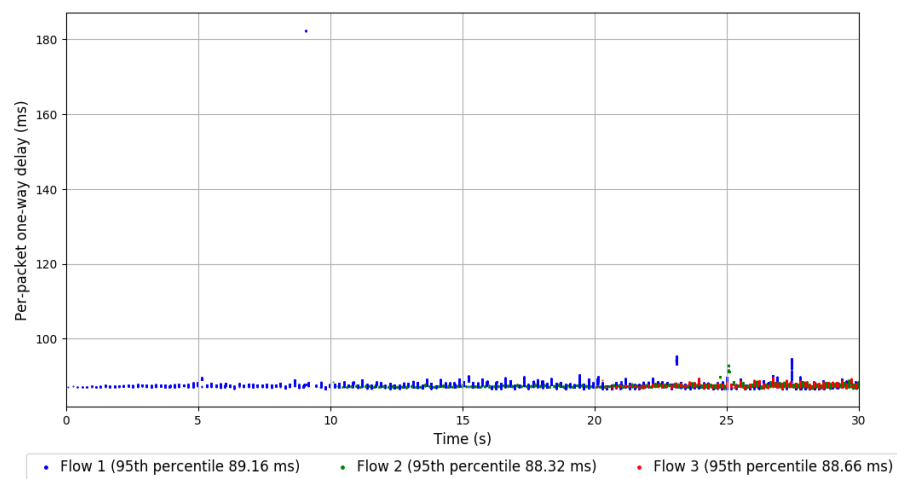# Run 9: Report of LEDBAT — Data Link

```
Run 10: Statistics of LEDBAT

Start at: 2017-09-18 20:29:45
End at: 2017-09-18 20:30:15


# Below is generated by plot.py at 2017-09-18 22:03:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.85 Mbit/s
95th percentile per-packet one-way delay: 89.053 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.64 Mbit/s
95th percentile per-packet one-way delay: 89.159 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.97 Mbit/s
95th percentile per-packet one-way delay: 88.322 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.86 Mbit/s
95th percentile per-packet one-way delay: 88.662 ms
Loss rate: 0.00%
```

Run 10: Report of LEDBAT — Data Link

Flow 1 ingress (mean 11.64 Mbit/s) --- Flow 1 egress (mean 11.64 Mbit/s)
Flow 2 ingress (mean 2.97 Mbit/s) --- Flow 2 egress (mean 2.97 Mbit/s)
Flow 3 ingress (mean 3.86 Mbit/s) --- Flow 3 egress (mean 3.86 Mbit/s)

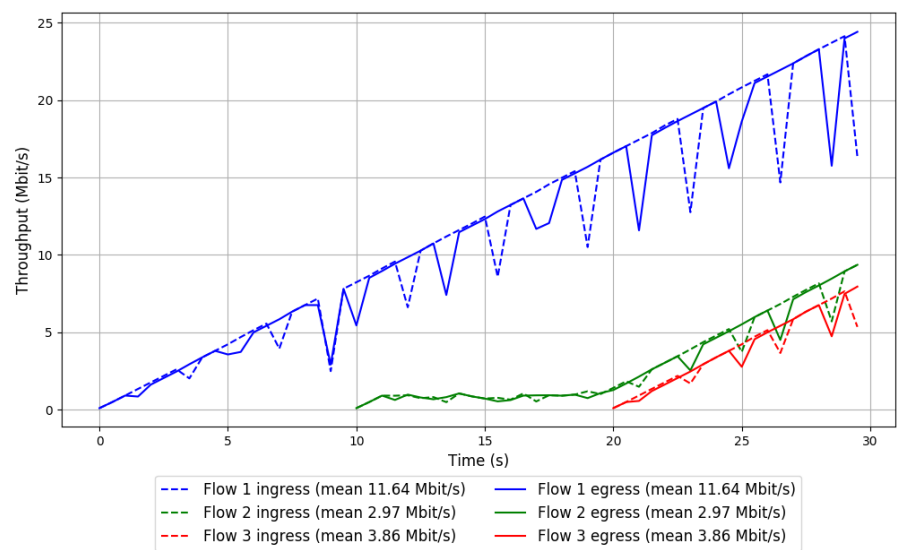Flow 1 (95th percentile 89.16 ms)   Flow 2 (95th percentile 88.32 ms)   Flow 3 (95th percentile 88.66 ms)
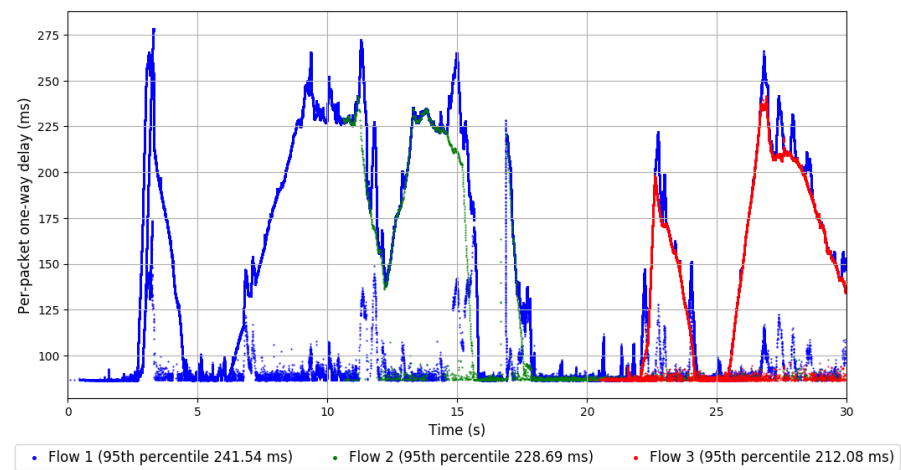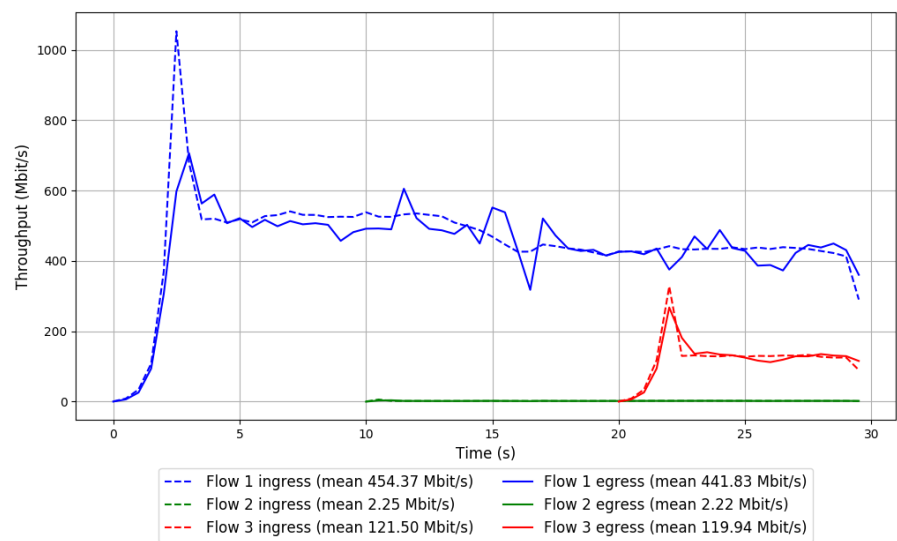
```
Run 1: Statistics of PCC

Start at: 2017-09-18 19:04:34
End at: 2017-09-18 19:05:04


# Below is generated by plot.py at 2017-09-18 22:07:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 482.83 Mbit/s
95th percentile per-packet one-way delay: 240.060 ms
Loss rate: 2.63%
-- Flow 1:
Average throughput: 441.83 Mbit/s
95th percentile per-packet one-way delay: 241.537 ms
Loss rate: 2.75%
-- Flow 2:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 228.688 ms
Loss rate: 1.40%
-- Flow 3:
Average throughput: 119.94 Mbit/s
95th percentile per-packet one-way delay: 212.083 ms
Loss rate: 1.25%
```

Run 1: Report of PCC — Data Link

- - - - Flow 1 ingress (mean 454.37 Mbit/s) —— Flow 1 egress (mean 441.83 Mbit/s)
- - - - Flow 2 ingress (mean 2.25 Mbit/s) —— Flow 2 egress (mean 2.22 Mbit/s)
- - - - Flow 3 ingress (mean 121.50 Mbit/s) —— Flow 3 egress (mean 119.94 Mbit/s)

- Flow 1 (95th percentile 241.54 ms) • Flow 2 (95th percentile 228.69 ms) • Flow 3 (95th percentile 212.08 ms)
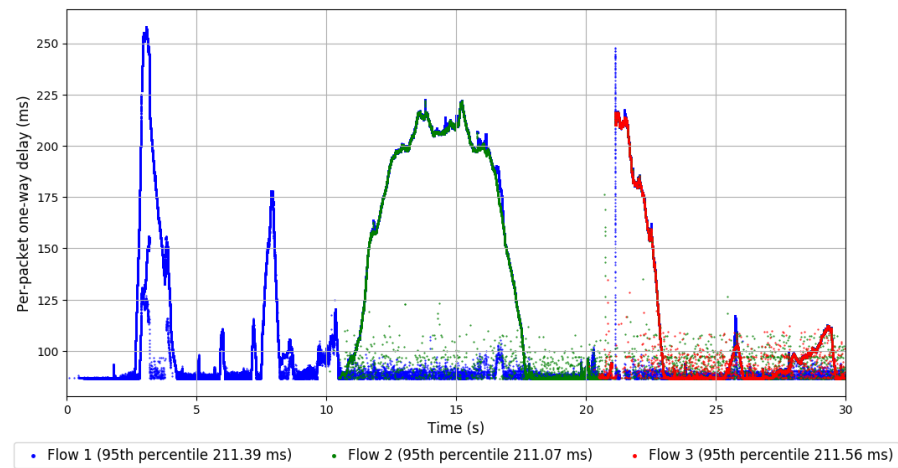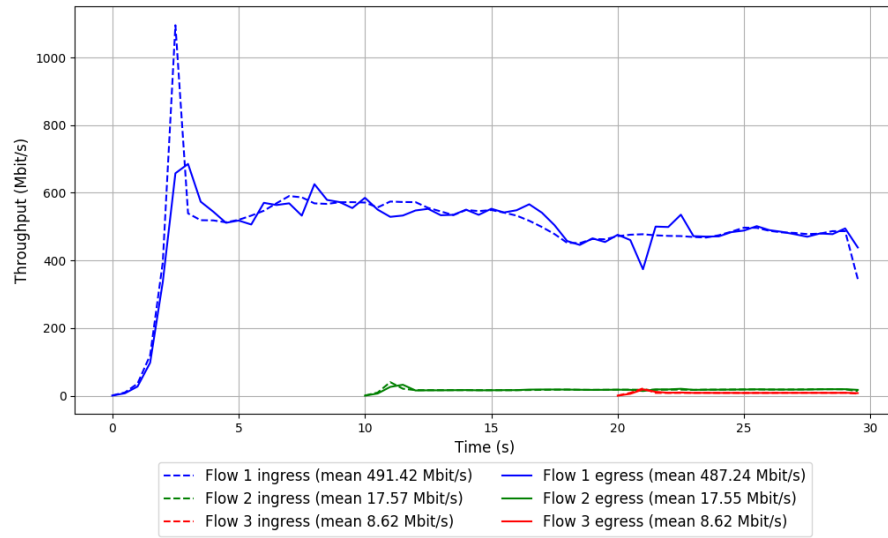
```
Run 2: Statistics of PCC

Start at: 2017-09-18 19:14:00
End at: 2017-09-18 19:14:30

# Below is generated by plot.py at 2017-09-18 22:07:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 501.74 Mbit/s
95th percentile per-packet one-way delay: 211.385 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 487.24 Mbit/s
95th percentile per-packet one-way delay: 211.391 ms
Loss rate: 0.85%
-- Flow 2:
Average throughput: 17.55 Mbit/s
95th percentile per-packet one-way delay: 211.074 ms
Loss rate: 0.14%
-- Flow 3:
Average throughput: 8.62 Mbit/s
95th percentile per-packet one-way delay: 211.556 ms
Loss rate: 0.06%
```

Run 2: Report of PCC — Data Link

```
Run 3: Statistics of PCC

Start at: 2017-09-18 19:23:31
End at: 2017-09-18 19:24:01


# Below is generated by plot.py at 2017-09-18 22:07:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 259.65 Mbit/s
95th percentile per-packet one-way delay: 168.495 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 36.04 Mbit/s
95th percentile per-packet one-way delay: 3913.557 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 274.08 Mbit/s
95th percentile per-packet one-way delay: 158.230 ms
Loss rate: 0.22%
-- Flow 3:
Average throughput: 127.20 Mbit/s
95th percentile per-packet one-way delay: 190.828 ms
Loss rate: 0.01%
```
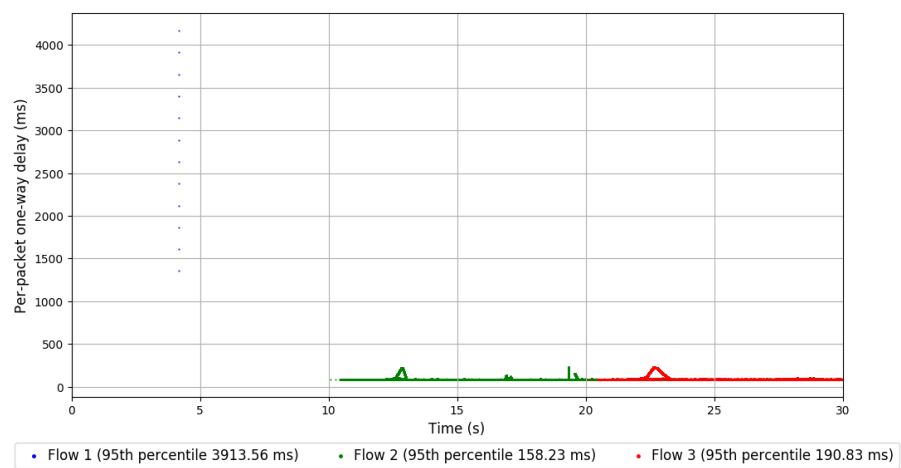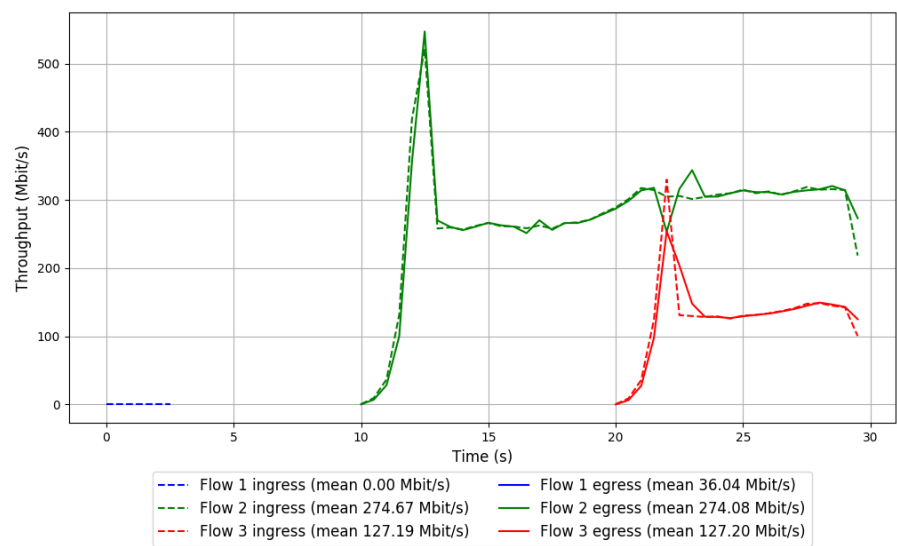
Run 3: Report of PCC — Data Link

```
Run 4: Statistics of PCC

Start at: 2017-09-18 19:32:41
End at: 2017-09-18 19:33:11


# Below is generated by plot.py at 2017-09-18 22:07:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 480.78 Mbit/s
95th percentile per-packet one-way delay: 243.155 ms
Loss rate: 3.79%
-- Flow 1:
Average throughput: 468.77 Mbit/s
95th percentile per-packet one-way delay: 243.601 ms
Loss rate: 3.84%
-- Flow 2:
Average throughput: 2.08 Mbit/s
95th percentile per-packet one-way delay: 242.818 ms
Loss rate: 3.73%
-- Flow 3:
Average throughput: 32.30 Mbit/s
95th percentile per-packet one-way delay: 237.720 ms
Loss rate: 1.68%
```
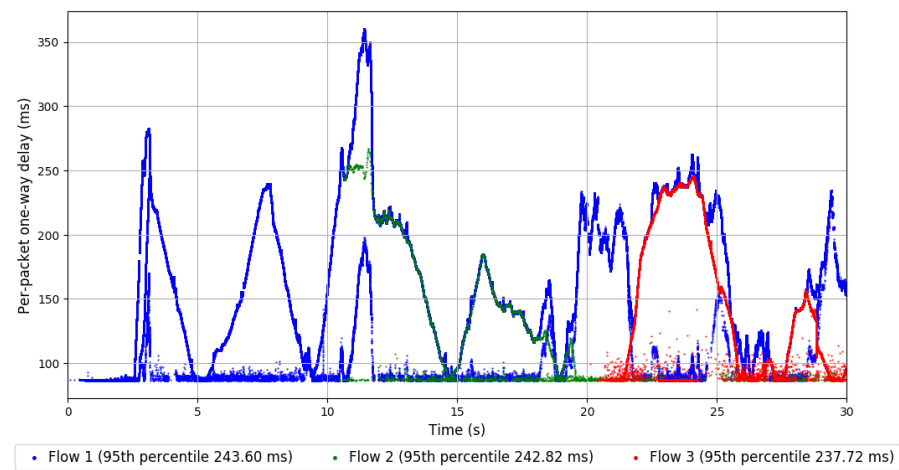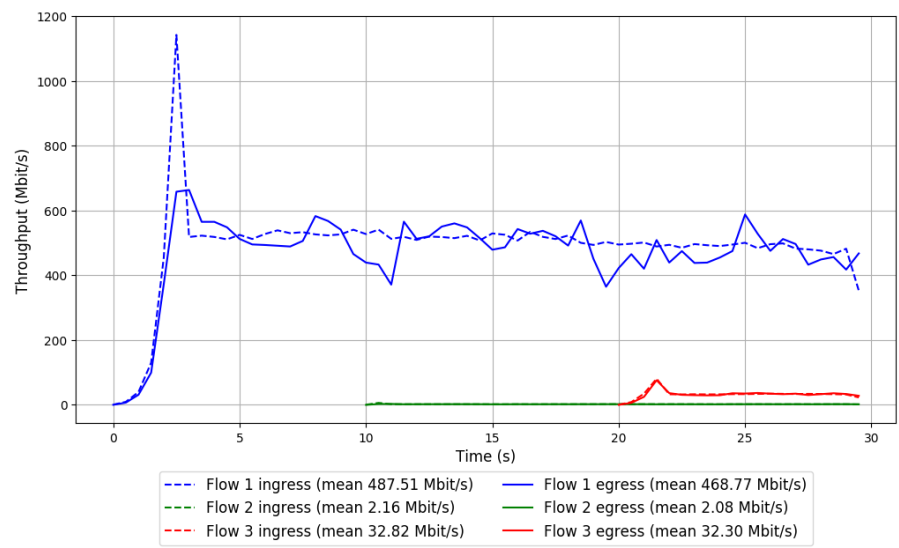
Run 4: Report of PCC — Data Link

```
Run 5: Statistics of PCC

Start at: 2017-09-18 19:42:07
End at: 2017-09-18 19:42:37


# Below is generated by plot.py at 2017-09-18 22:07:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 445.13 Mbit/s
95th percentile per-packet one-way delay: 232.920 ms
Loss rate: 4.19%
-- Flow 1:
Average throughput: 441.82 Mbit/s
95th percentile per-packet one-way delay: 232.944 ms
Loss rate: 4.20%
-- Flow 2:
Average throughput: 3.97 Mbit/s
95th percentile per-packet one-way delay: 230.997 ms
Loss rate: 3.15%
-- Flow 3:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 231.564 ms
Loss rate: 4.08%
```
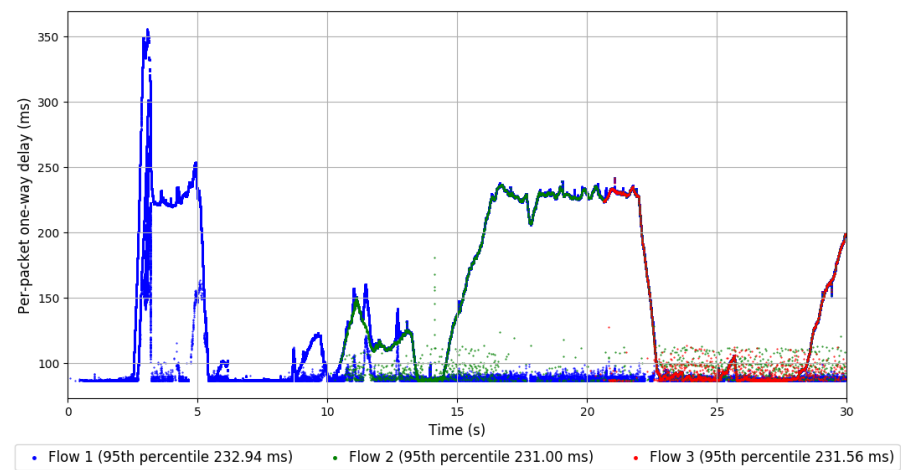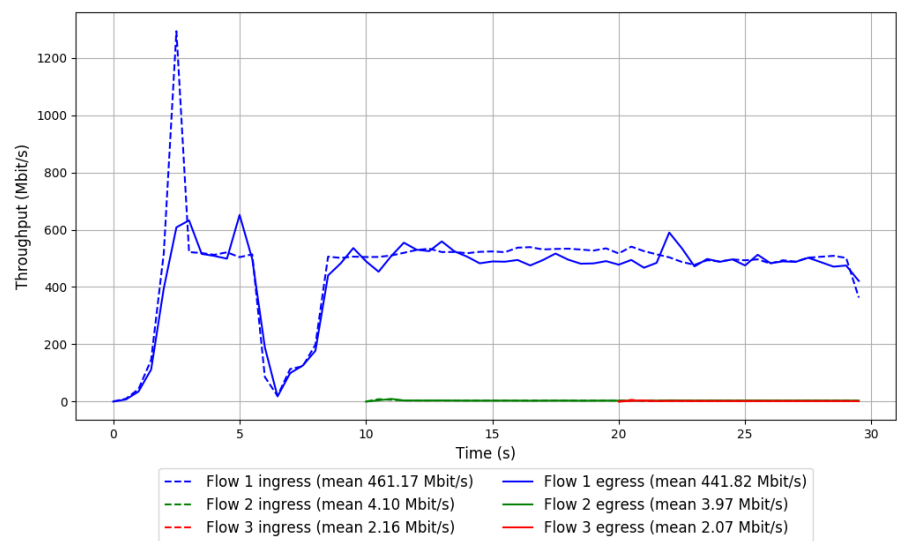
Run 5: Report of PCC — Data Link

```
Run 6: Statistics of PCC

Start at: 2017-09-18 19:51:28
End at: 2017-09-18 19:51:58


# Below is generated by plot.py at 2017-09-18 22:09:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 525.07 Mbit/s
95th percentile per-packet one-way delay: 229.064 ms
Loss rate: 1.90%
-- Flow 1:
Average throughput: 463.31 Mbit/s
95th percentile per-packet one-way delay: 233.350 ms
Loss rate: 1.95%
-- Flow 2:
Average throughput: 62.32 Mbit/s
95th percentile per-packet one-way delay: 212.498 ms
Loss rate: 1.52%
-- Flow 3:
Average throughput: 61.76 Mbit/s
95th percentile per-packet one-way delay: 211.191 ms
Loss rate: 1.71%
```
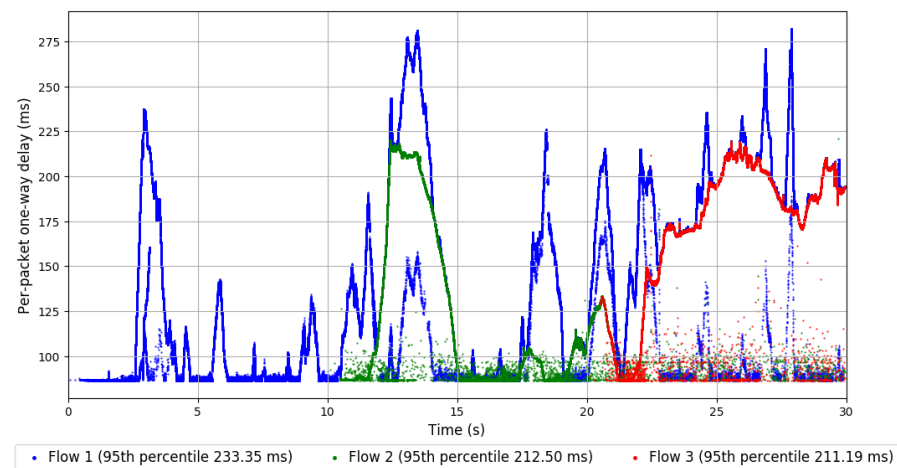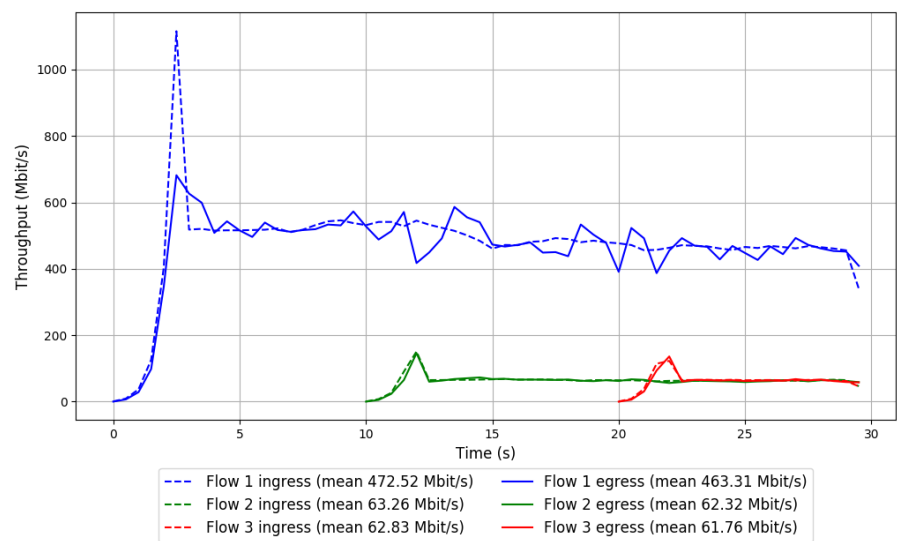
Run 6: Report of PCC — Data Link

Flow 1 ingress (mean 472.52 Mbit/s)   Flow 1 egress (mean 463.31 Mbit/s)
Flow 2 ingress (mean 63.26 Mbit/s)   Flow 2 egress (mean 62.32 Mbit/s)
Flow 3 ingress (mean 62.83 Mbit/s)   Flow 3 egress (mean 61.76 Mbit/s)

Flow 1 (95th percentile 233.35 ms)   Flow 2 (95th percentile 212.50 ms)   Flow 3 (95th percentile 211.19 ms)

95

```
Run 7: Statistics of PCC

Start at: 2017-09-18 20:00:42
End at: 2017-09-18 20:01:12


# Below is generated by plot.py at 2017-09-18 22:12:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 496.68 Mbit/s
95th percentile per-packet one-way delay: 242.078 ms
Loss rate: 2.28%
-- Flow 1:
Average throughput: 402.64 Mbit/s
95th percentile per-packet one-way delay: 243.326 ms
Loss rate: 2.66%
-- Flow 2:
Average throughput: 110.80 Mbit/s
95th percentile per-packet one-way delay: 210.073 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 61.96 Mbit/s
95th percentile per-packet one-way delay: 134.440 ms
Loss rate: 0.10%
```
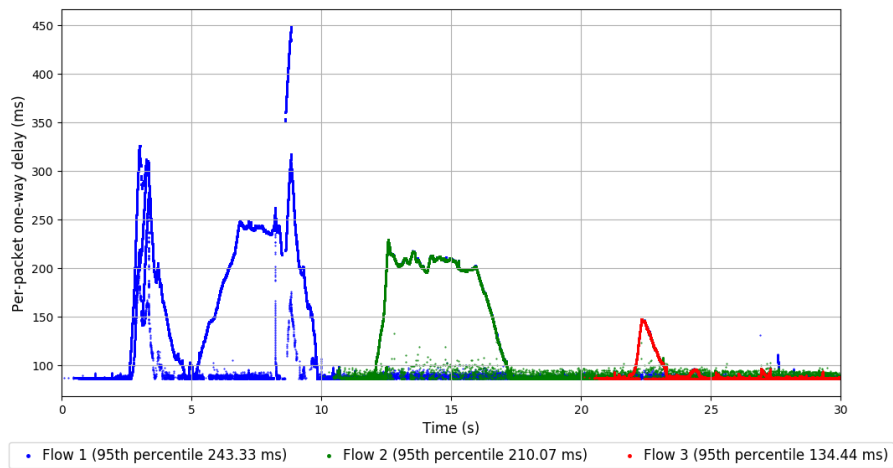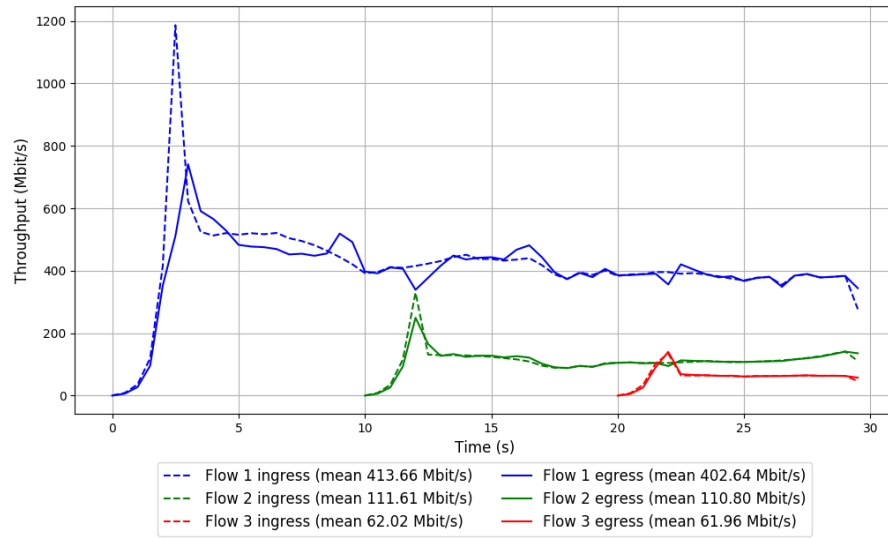
Run 7: Report of PCC — Data Link

Flow 1 ingress (mean 413.66 Mbit/s) --- Flow 1 egress (mean 402.64 Mbit/s)
Flow 2 ingress (mean 111.61 Mbit/s) --- Flow 2 egress (mean 110.80 Mbit/s)
Flow 3 ingress (mean 62.02 Mbit/s) --- Flow 3 egress (mean 61.96 Mbit/s)

Flow 1 (95th percentile 243.33 ms)   Flow 2 (95th percentile 210.07 ms)   Flow 3 (95th percentile 134.44 ms)

97

```
Run 8: Statistics of PCC

Start at: 2017-09-18 20:10:03
End at: 2017-09-18 20:10:33


# Below is generated by plot.py at 2017-09-18 22:12:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 434.00 Mbit/s
95th percentile per-packet one-way delay: 225.640 ms
Loss rate: 2.14%
-- Flow 1:
Average throughput: 255.60 Mbit/s
95th percentile per-packet one-way delay: 229.523 ms
Loss rate: 2.99%
-- Flow 2:
Average throughput: 252.41 Mbit/s
95th percentile per-packet one-way delay: 158.627 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 32.82 Mbit/s
95th percentile per-packet one-way delay: 164.681 ms
Loss rate: 0.03%
```
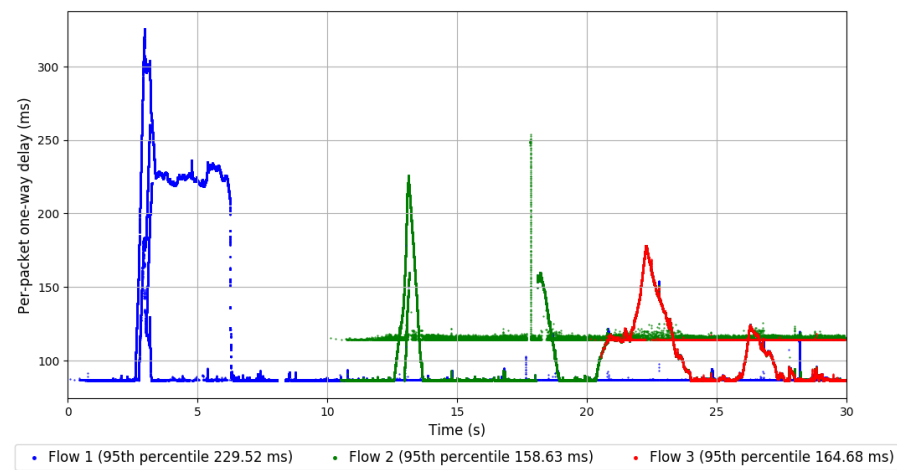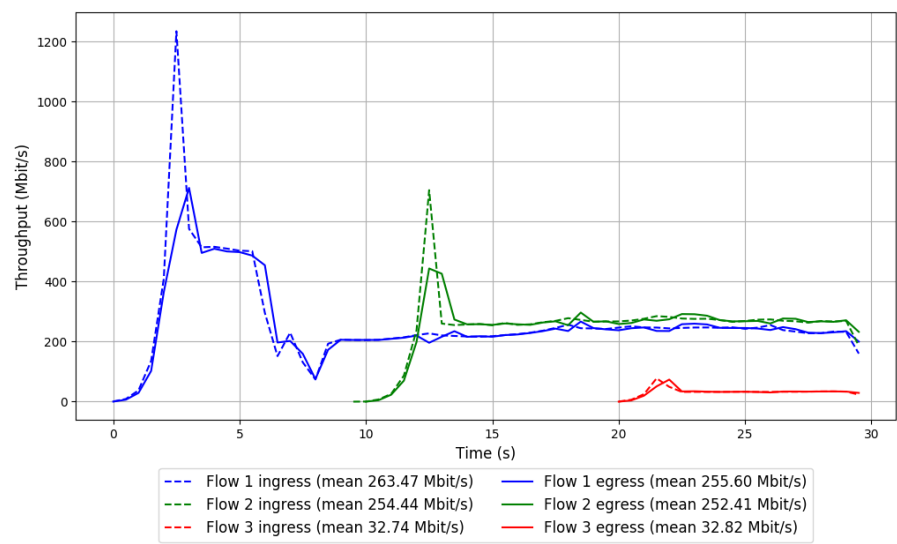
Run 8: Report of PCC — Data Link

```
Run 9: Statistics of PCC

Start at: 2017-09-18 20:19:27
End at: 2017-09-18 20:19:57


# Below is generated by plot.py at 2017-09-18 22:13:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 517.73 Mbit/s
95th percentile per-packet one-way delay: 223.746 ms
Loss rate: 2.34%
-- Flow 1:
Average throughput: 476.22 Mbit/s
95th percentile per-packet one-way delay: 224.443 ms
Loss rate: 2.32%
-- Flow 2:
Average throughput: 33.22 Mbit/s
95th percentile per-packet one-way delay: 212.481 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 59.12 Mbit/s
95th percentile per-packet one-way delay: 224.611 ms
Loss rate: 3.83%
```
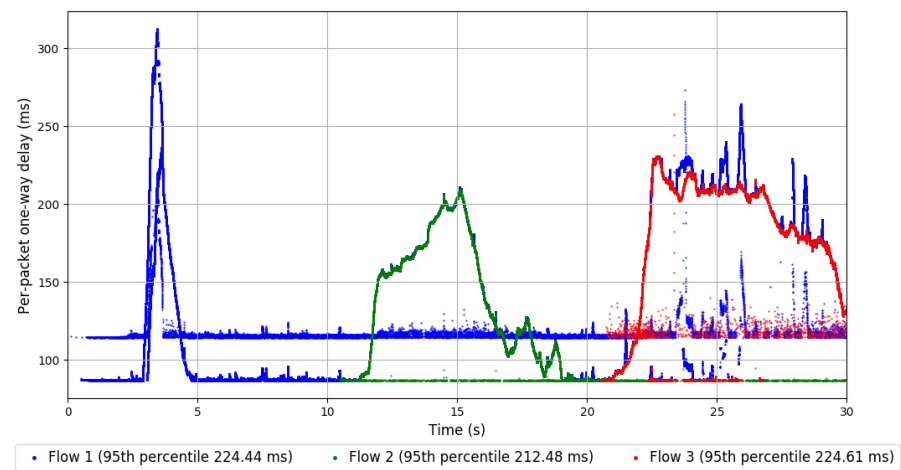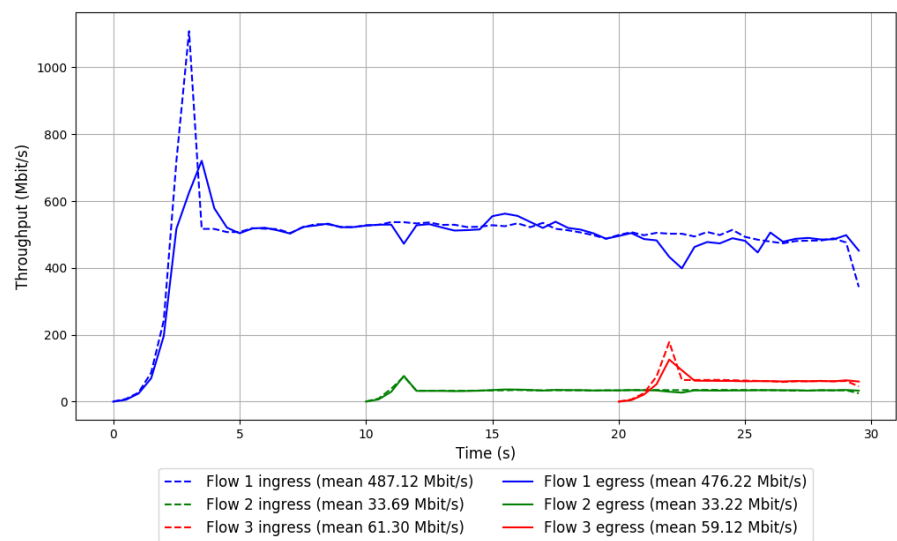
Run 9: Report of PCC — Data Link

- Flow 1 ingress (mean 487.12 Mbit/s)
- Flow 1 egress (mean 476.22 Mbit/s)
- Flow 2 ingress (mean 33.69 Mbit/s)
- Flow 2 egress (mean 33.22 Mbit/s)
- Flow 3 ingress (mean 61.30 Mbit/s)
- Flow 3 egress (mean 59.12 Mbit/s)

- Flow 1 (95th percentile 224.44 ms)
- Flow 2 (95th percentile 212.48 ms)
- Flow 3 (95th percentile 224.61 ms)

```
Run 10: Statistics of PCC

Start at: 2017-09-18 20:28:43
End at: 2017-09-18 20:29:13


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 426.76 Mbit/s
95th percentile per-packet one-way delay: 224.926 ms
Loss rate: 2.08%
-- Flow 1:
Average throughput: 315.93 Mbit/s
95th percentile per-packet one-way delay: 224.271 ms
Loss rate: 1.80%
-- Flow 2:
Average throughput: 136.47 Mbit/s
95th percentile per-packet one-way delay: 225.539 ms
Loss rate: 2.58%
-- Flow 3:
Average throughput: 61.47 Mbit/s
95th percentile per-packet one-way delay: 226.525 ms
Loss rate: 4.25%
```
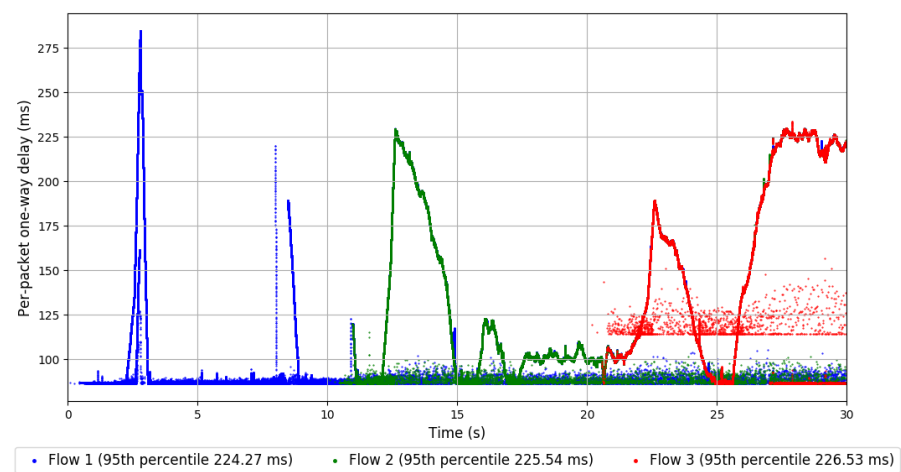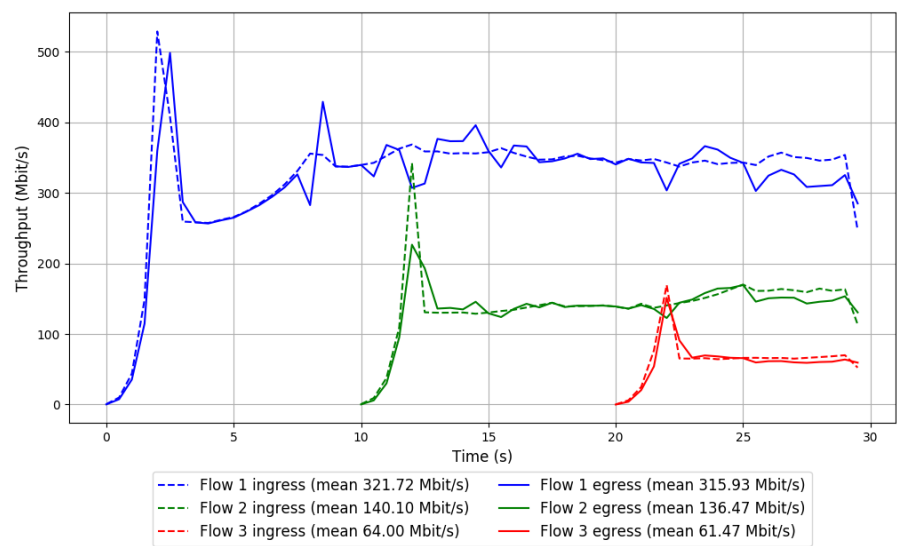
Run 10: Report of PCC — Data Link

- - - Flow 1 ingress (mean 321.72 Mbit/s) —— Flow 1 egress (mean 315.93 Mbit/s)
- - - Flow 2 ingress (mean 140.10 Mbit/s) —— Flow 2 egress (mean 136.47 Mbit/s)
- - - Flow 3 ingress (mean 64.00 Mbit/s) —— Flow 3 egress (mean 61.47 Mbit/s)

• Flow 1 (95th percentile 224.27 ms)   • Flow 2 (95th percentile 225.54 ms)   • Flow 3 (95th percentile 226.53 ms)

103

```
Run 1: Statistics of QUIC Cubic

Start at: 2017-09-18 19:02:45
End at: 2017-09-18 19:03:15


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.91 Mbit/s
95th percentile per-packet one-way delay: 87.195 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 40.25 Mbit/s
95th percentile per-packet one-way delay: 87.158 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 31.96 Mbit/s
95th percentile per-packet one-way delay: 87.333 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.20 Mbit/s
95th percentile per-packet one-way delay: 86.937 ms
Loss rate: 0.00%
```
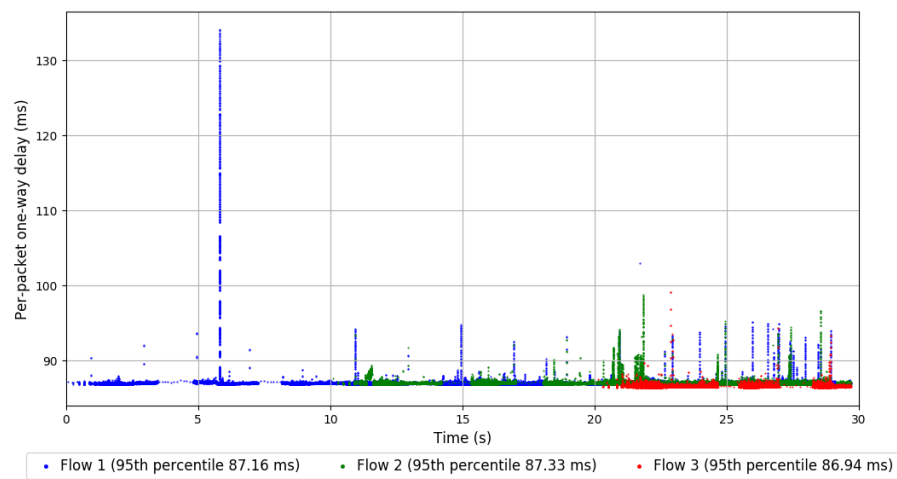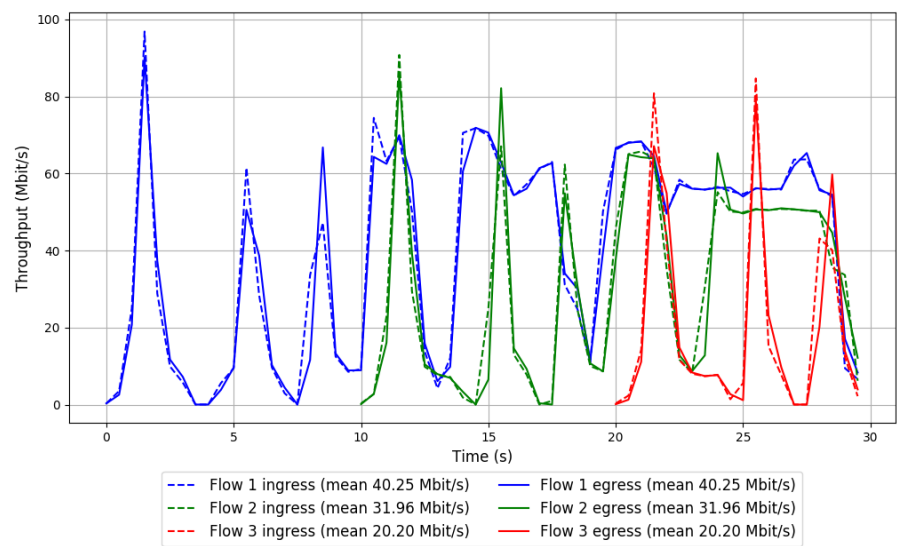
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2017-09-18 19:12:06
End at: 2017-09-18 19:12:36


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.87 Mbit/s
95th percentile per-packet one-way delay: 87.030 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 40.64 Mbit/s
95th percentile per-packet one-way delay: 86.683 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 31.51 Mbit/s
95th percentile per-packet one-way delay: 87.103 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 19.62 Mbit/s
95th percentile per-packet one-way delay: 86.681 ms
Loss rate: 0.00%
```
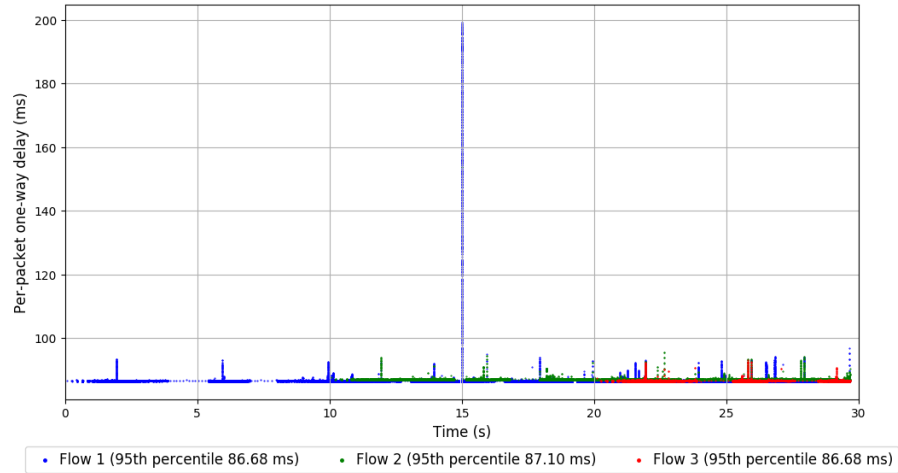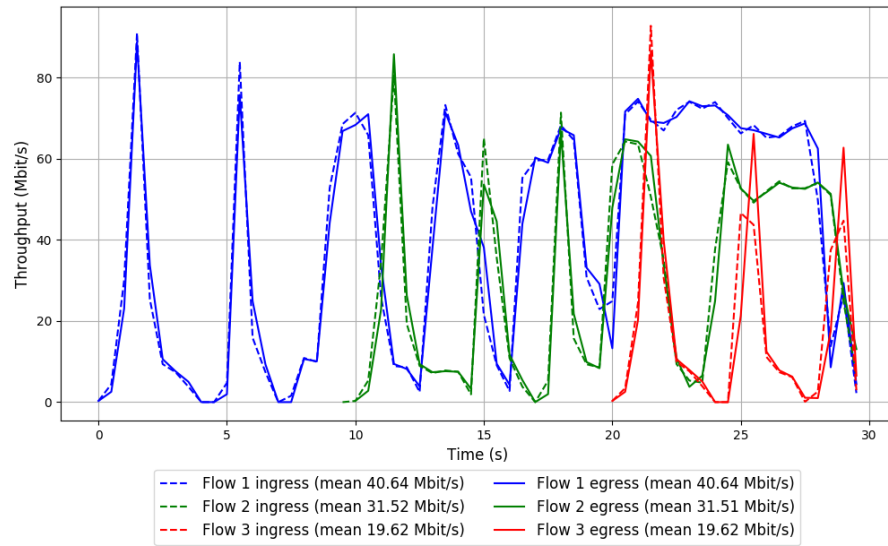
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2017-09-18 19:21:36
End at: 2017-09-18 19:22:06


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.01 Mbit/s
95th percentile per-packet one-way delay: 86.786 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 42.11 Mbit/s
95th percentile per-packet one-way delay: 86.773 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 32.10 Mbit/s
95th percentile per-packet one-way delay: 86.713 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.53 Mbit/s
95th percentile per-packet one-way delay: 86.945 ms
Loss rate: 0.00%
```
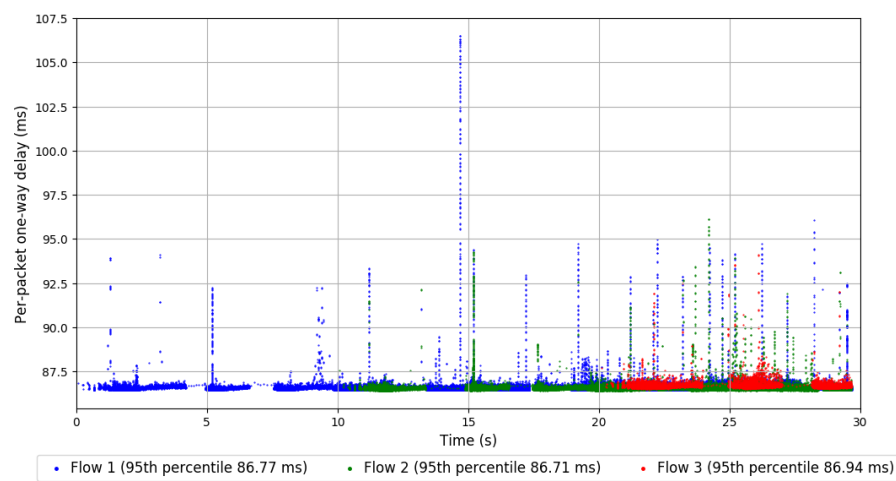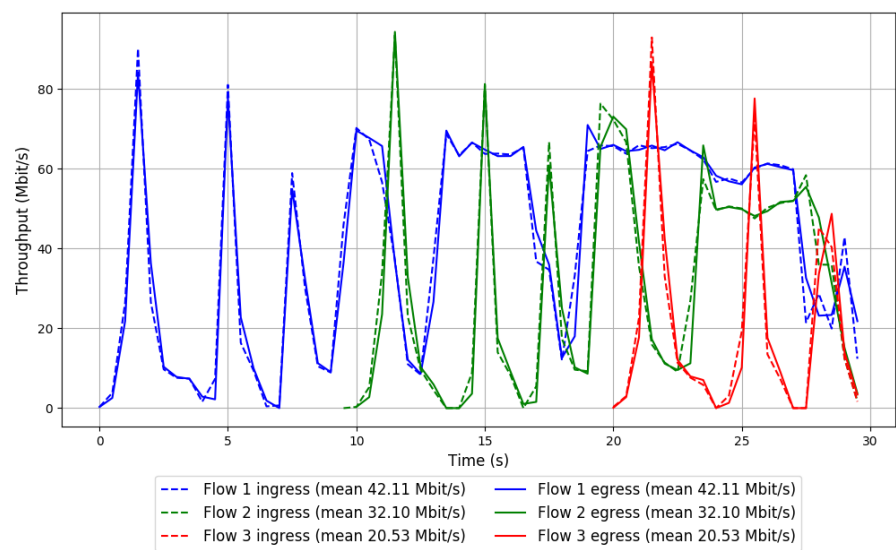
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2017-09-18 19:30:48
End at: 2017-09-18 19:31:18


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 66.08 Mbit/s
95th percentile per-packet one-way delay: 87.124 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 41.51 Mbit/s
95th percentile per-packet one-way delay: 86.755 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 27.19 Mbit/s
95th percentile per-packet one-way delay: 87.253 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.34 Mbit/s
95th percentile per-packet one-way delay: 86.818 ms
Loss rate: 0.00%
```
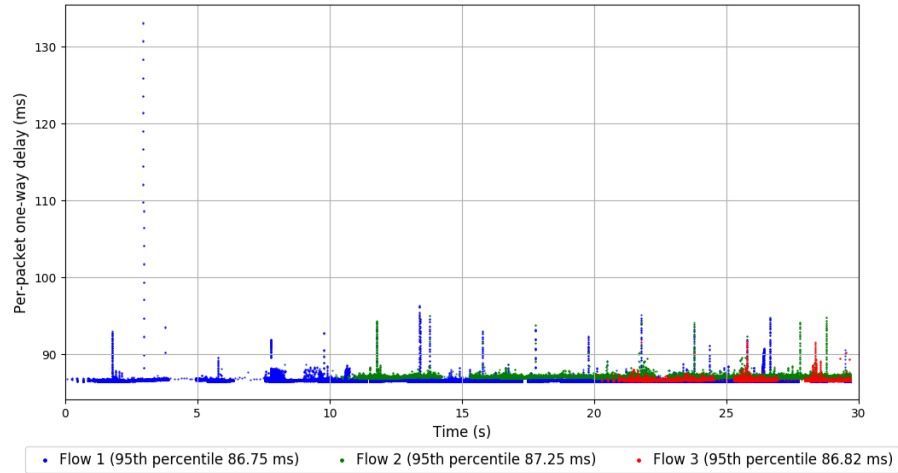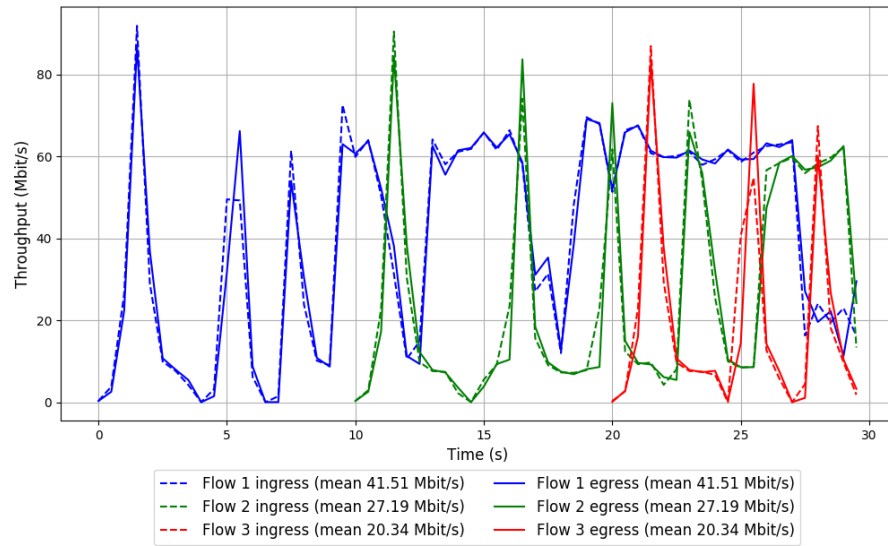
Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2017-09-18 19:40:11
End at: 2017-09-18 19:40:41


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.75 Mbit/s
95th percentile per-packet one-way delay: 87.014 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 43.20 Mbit/s
95th percentile per-packet one-way delay: 86.780 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 32.31 Mbit/s
95th percentile per-packet one-way delay: 86.709 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 19.12 Mbit/s
95th percentile per-packet one-way delay: 87.355 ms
Loss rate: 0.00%
```
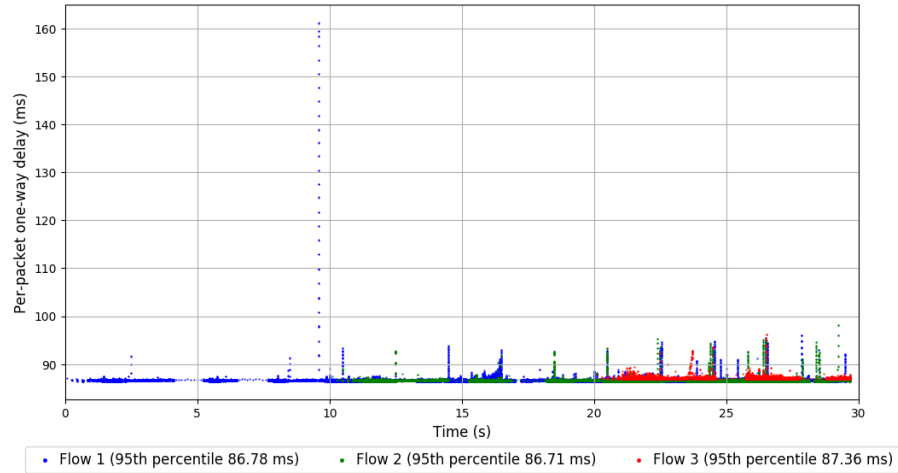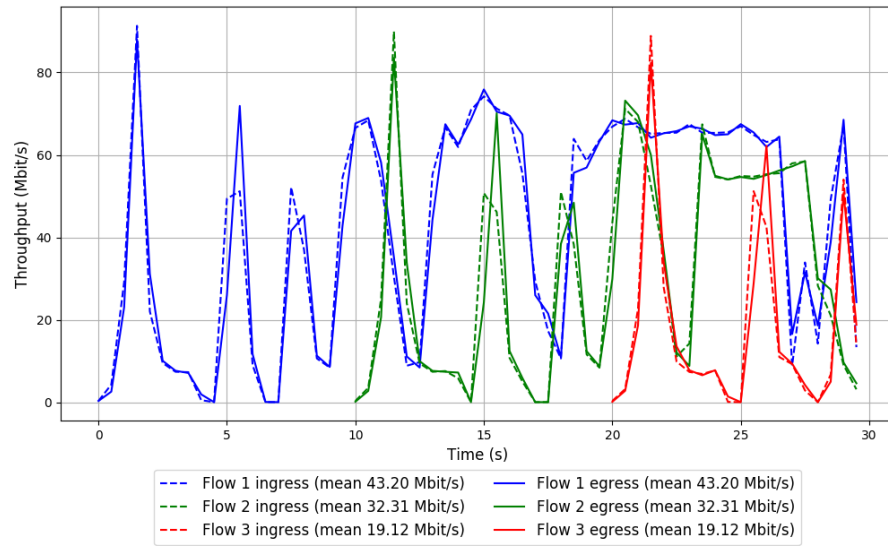
Run 5: Report of QUIC Cubic — Data Link

```
Run 6: Statistics of QUIC Cubic

Start at: 2017-09-18 19:49:34
End at: 2017-09-18 19:50:04


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 69.66 Mbit/s
95th percentile per-packet one-way delay: 86.865 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 40.84 Mbit/s
95th percentile per-packet one-way delay: 86.861 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 33.38 Mbit/s
95th percentile per-packet one-way delay: 86.893 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.74 Mbit/s
95th percentile per-packet one-way delay: 86.723 ms
Loss rate: 0.00%
```
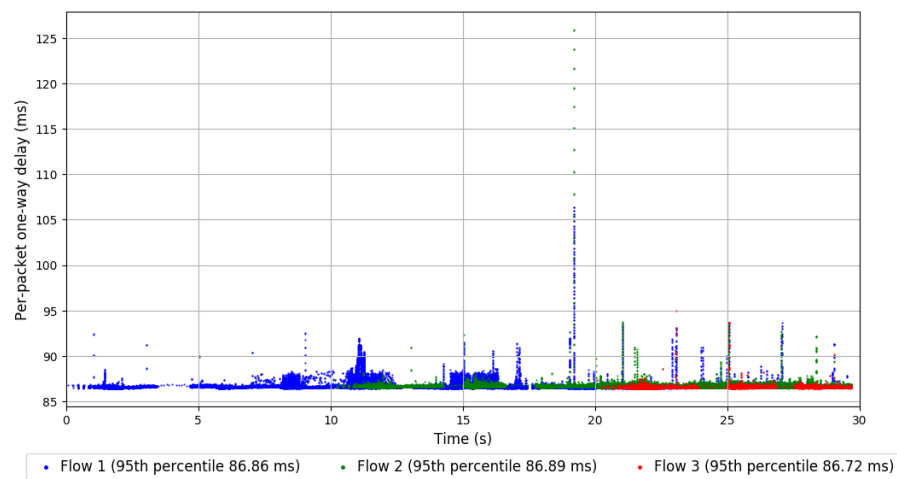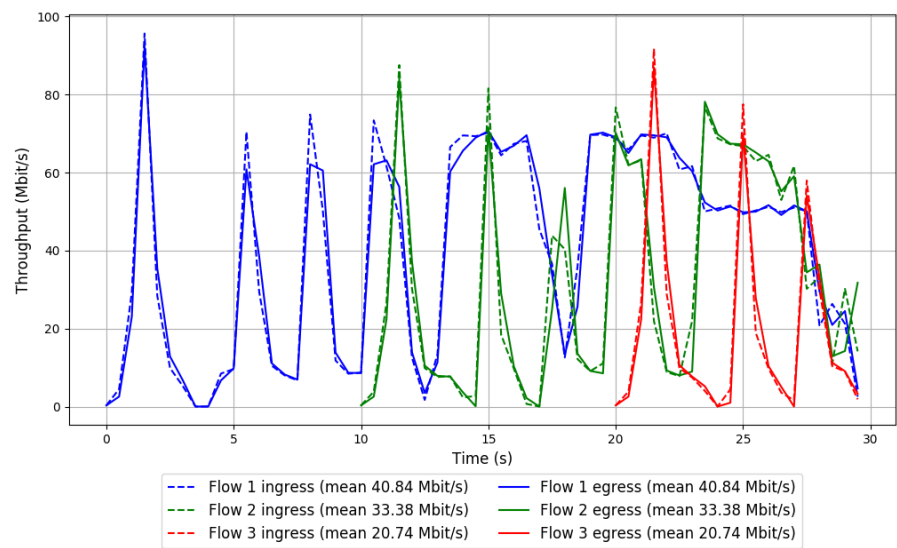
Run 6: Report of QUIC Cubic — Data Link

```
Run 7: Statistics of QUIC Cubic

Start at: 2017-09-18 19:58:51
End at: 2017-09-18 19:59:21


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.17 Mbit/s
95th percentile per-packet one-way delay: 86.974 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 41.93 Mbit/s
95th percentile per-packet one-way delay: 86.757 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 34.67 Mbit/s
95th percentile per-packet one-way delay: 86.679 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 16.46 Mbit/s
95th percentile per-packet one-way delay: 87.199 ms
Loss rate: 0.00%
```
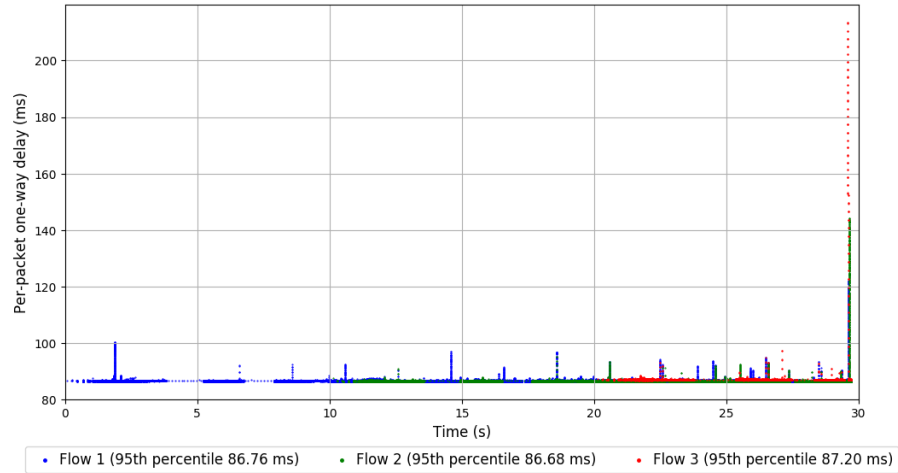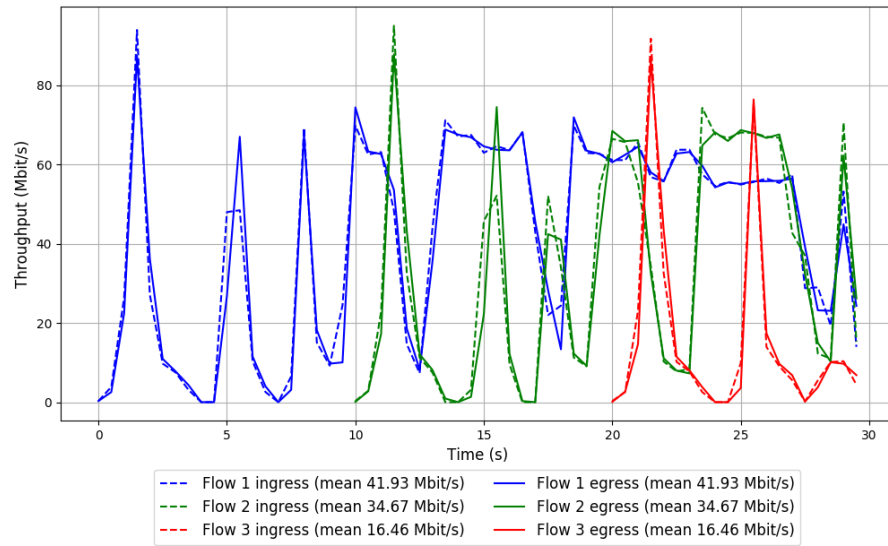
Run 7: Report of QUIC Cubic — Data Link

```
Run 8: Statistics of QUIC Cubic

Start at: 2017-09-18 20:08:07
End at: 2017-09-18 20:08:37


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 67.73 Mbit/s
95th percentile per-packet one-way delay: 114.328 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 40.68 Mbit/s
95th percentile per-packet one-way delay: 114.275 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 30.98 Mbit/s
95th percentile per-packet one-way delay: 114.403 ms
Loss rate: 0.21%
-- Flow 3:
Average throughput: 20.19 Mbit/s
95th percentile per-packet one-way delay: 86.774 ms
Loss rate: 0.00%
```
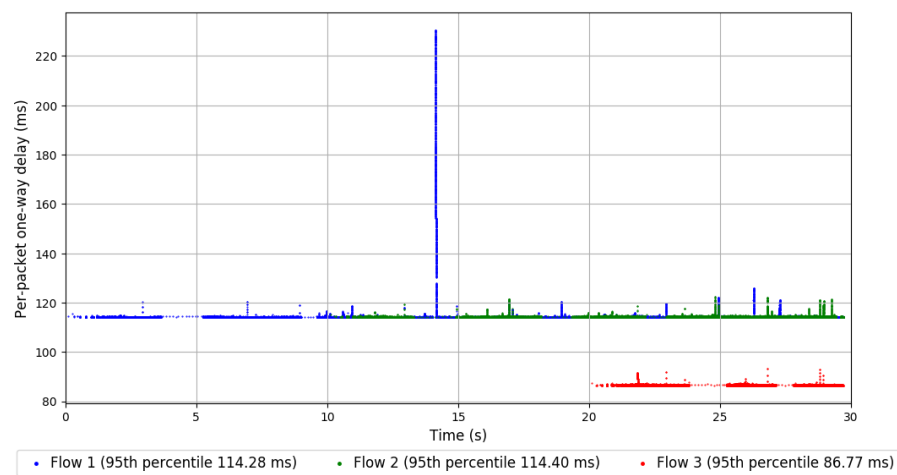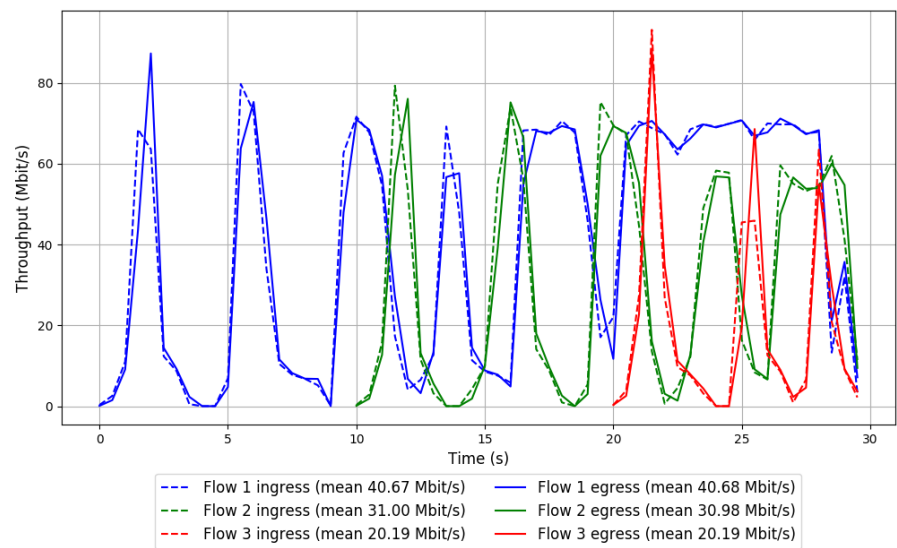
Run 8: Report of QUIC Cubic — Data Link

```
Run 9: Statistics of QUIC Cubic

Start at: 2017-09-18 20:17:30
End at: 2017-09-18 20:18:00


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 73.02 Mbit/s
95th percentile per-packet one-way delay: 87.115 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 44.09 Mbit/s
95th percentile per-packet one-way delay: 86.842 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 33.76 Mbit/s
95th percentile per-packet one-way delay: 87.220 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.33 Mbit/s
95th percentile per-packet one-way delay: 86.965 ms
Loss rate: 0.00%
```
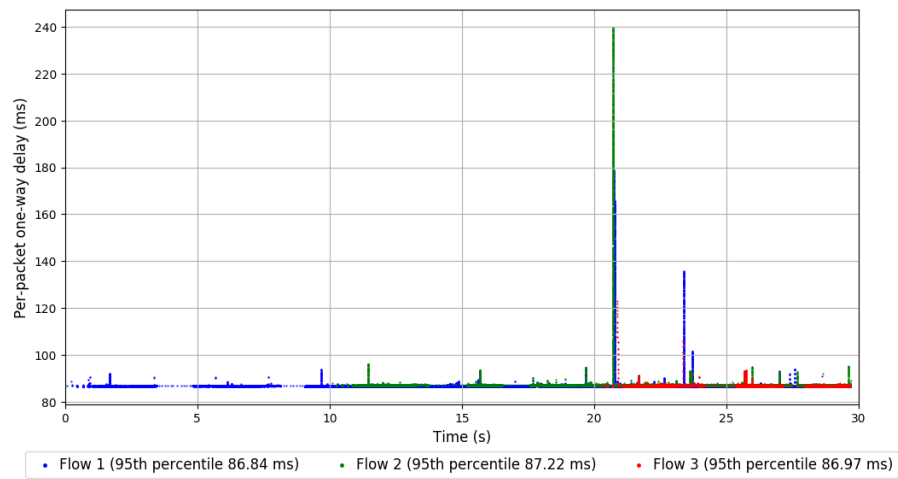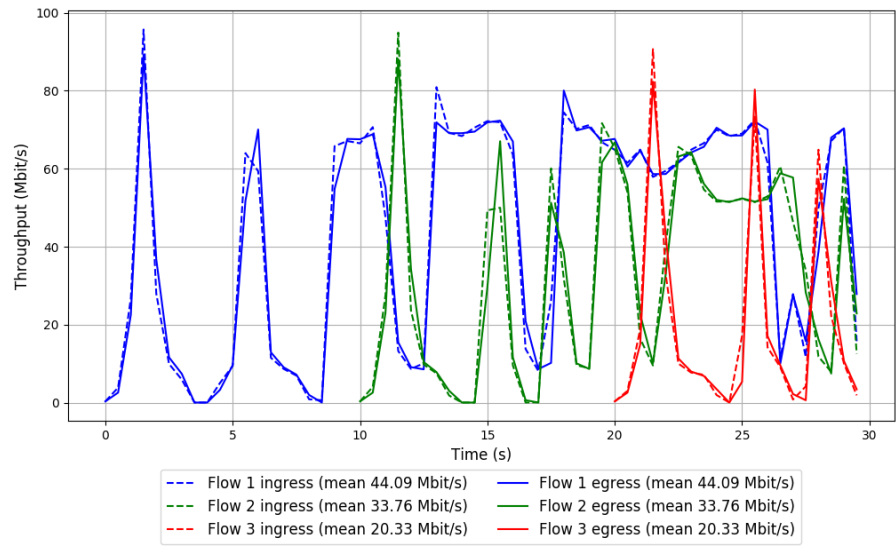
Run 9: Report of QUIC Cubic — Data Link

```
Run 10: Statistics of QUIC Cubic

Start at: 2017-09-18 20:26:51
End at: 2017-09-18 20:27:21


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.96 Mbit/s
95th percentile per-packet one-way delay: 87.218 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 45.07 Mbit/s
95th percentile per-packet one-way delay: 87.159 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 32.45 Mbit/s
95th percentile per-packet one-way delay: 87.308 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 20.09 Mbit/s
95th percentile per-packet one-way delay: 87.015 ms
Loss rate: 0.00%
```
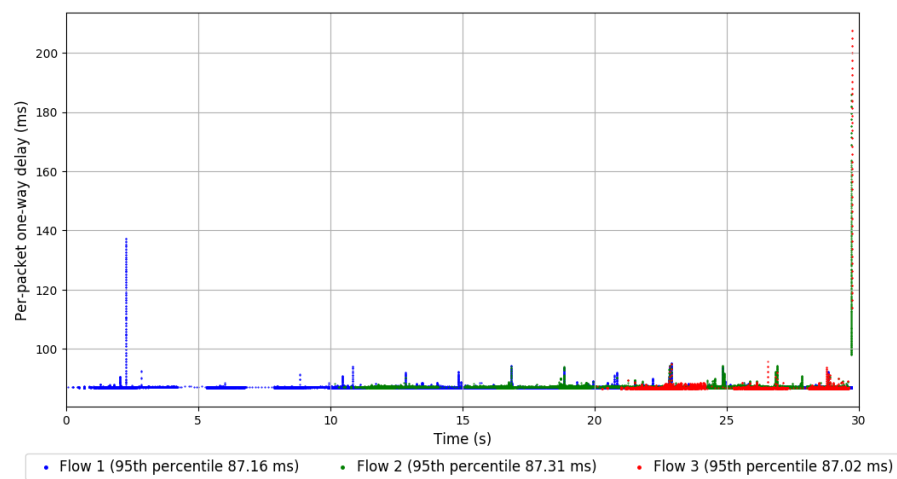
Run 10: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 45.07 Mbit/s) —— Flow 1 egress (mean 45.07 Mbit/s)
Flow 2 ingress (mean 32.46 Mbit/s) —— Flow 2 egress (mean 32.45 Mbit/s)
Flow 3 ingress (mean 20.15 Mbit/s) —— Flow 3 egress (mean 20.09 Mbit/s)

• Flow 1 (95th percentile 87.16 ms)   • Flow 2 (95th percentile 87.31 ms)   • Flow 3 (95th percentile 87.02 ms)

```
Run 1: Statistics of Sprout

Start at: 2017-09-18 19:01:10
End at: 2017-09-18 19:01:40


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.47 Mbit/s
95th percentile per-packet one-way delay: 88.202 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 3.39 Mbit/s
95th percentile per-packet one-way delay: 88.192 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 3.41 Mbit/s
95th percentile per-packet one-way delay: 88.182 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.46 Mbit/s
95th percentile per-packet one-way delay: 88.545 ms
Loss rate: 1.54%
```
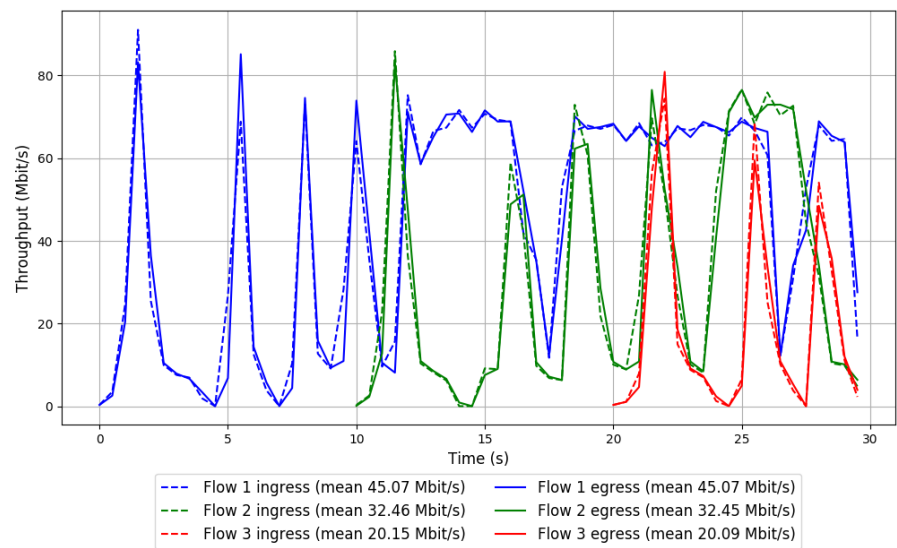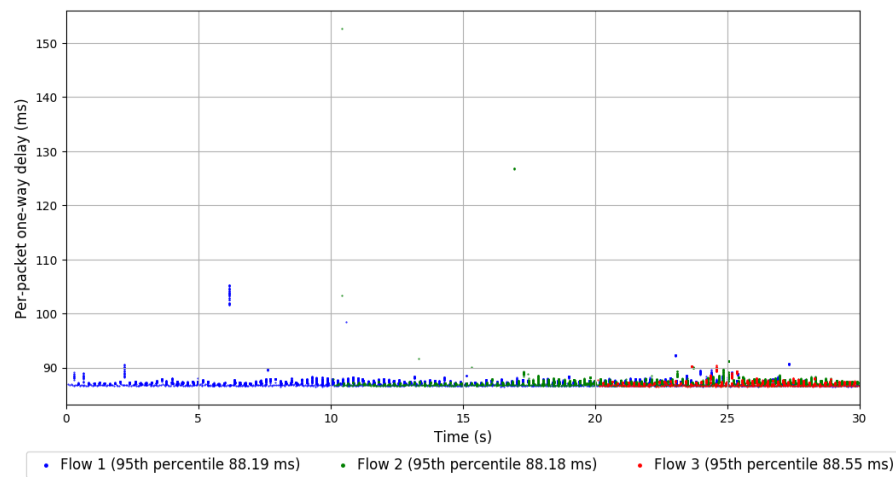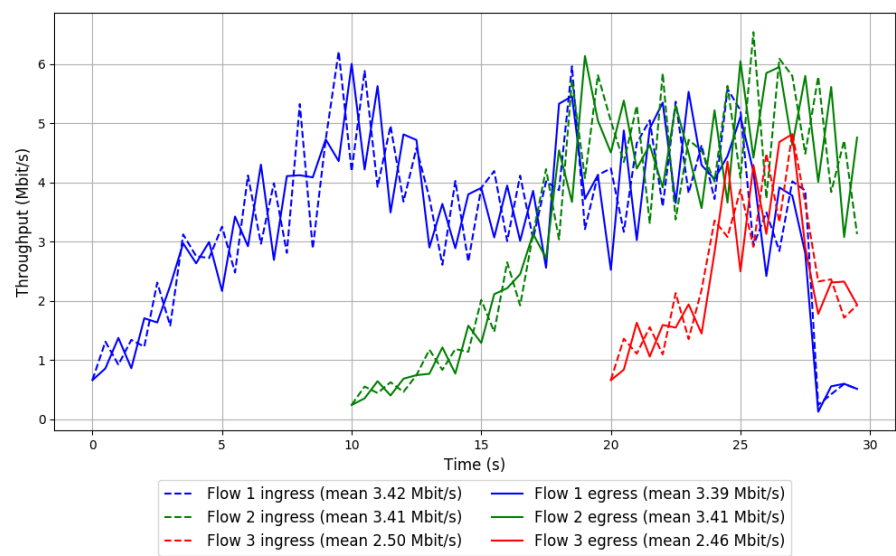
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2017-09-18 19:10:32
End at: 2017-09-18 19:11:02


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.67 Mbit/s
95th percentile per-packet one-way delay: 87.986 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 87.934 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 4.14 Mbit/s
95th percentile per-packet one-way delay: 88.142 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.19 Mbit/s
95th percentile per-packet one-way delay: 87.806 ms
Loss rate: 0.15%
```
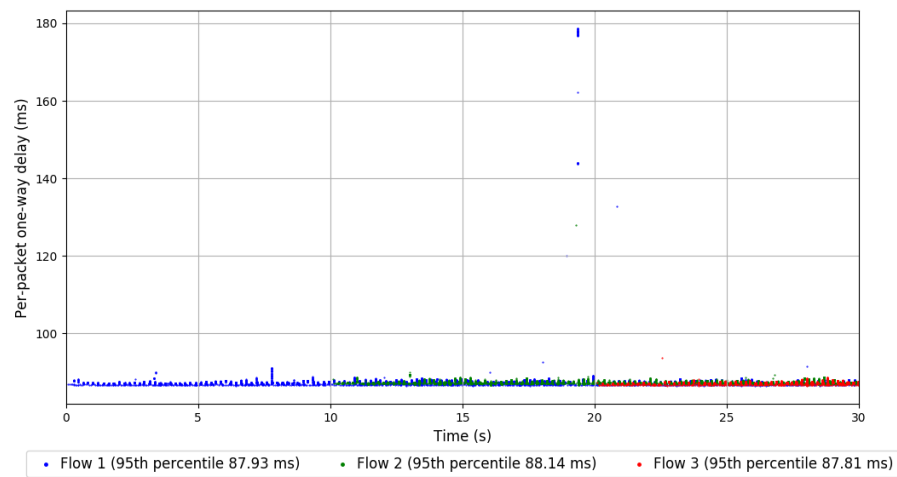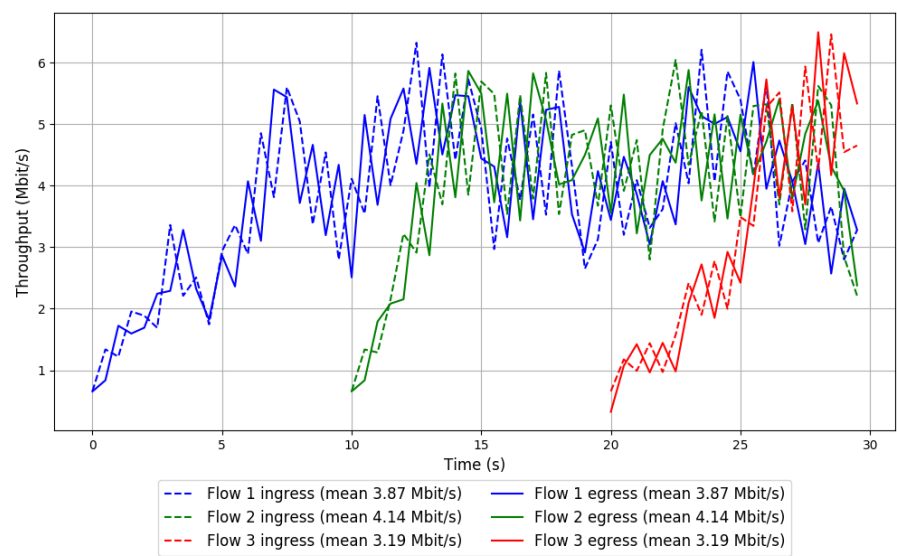
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2017-09-18 19:19:55
End at: 2017-09-18 19:20:25


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.42 Mbit/s
95th percentile per-packet one-way delay: 87.933 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 87.921 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.83 Mbit/s
95th percentile per-packet one-way delay: 87.894 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 88.088 ms
Loss rate: 0.00%
```
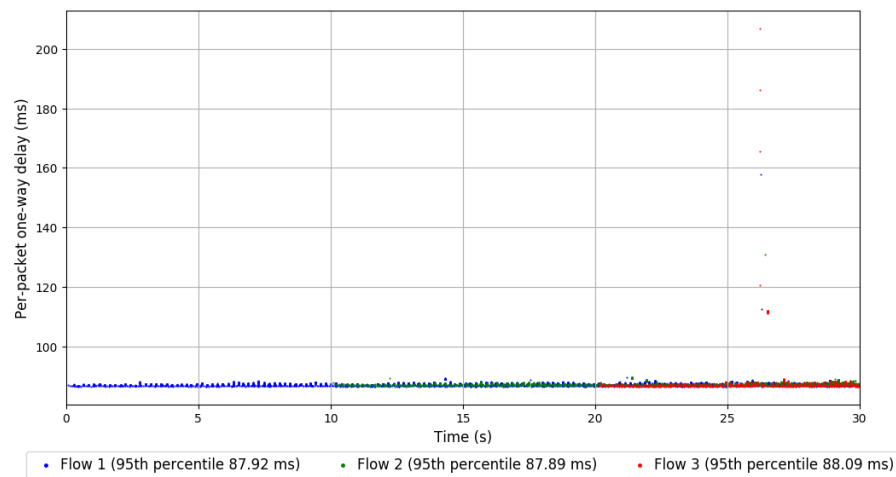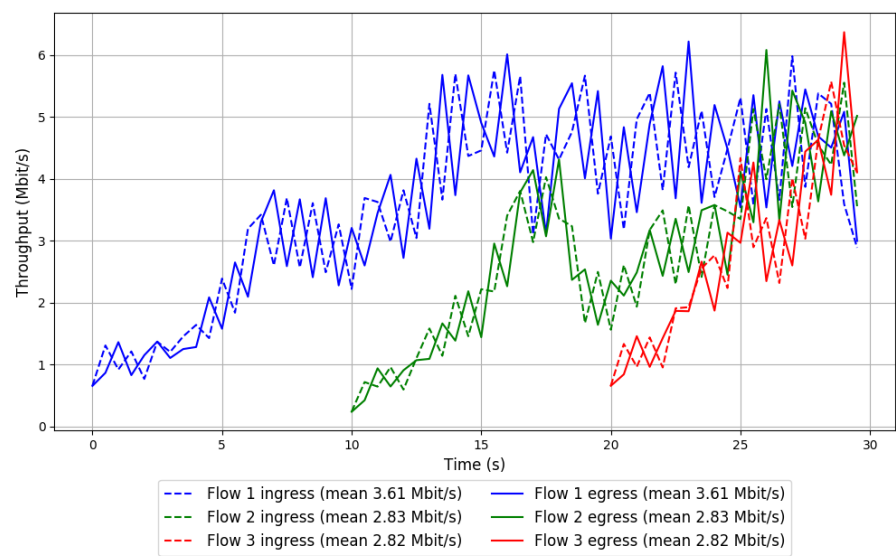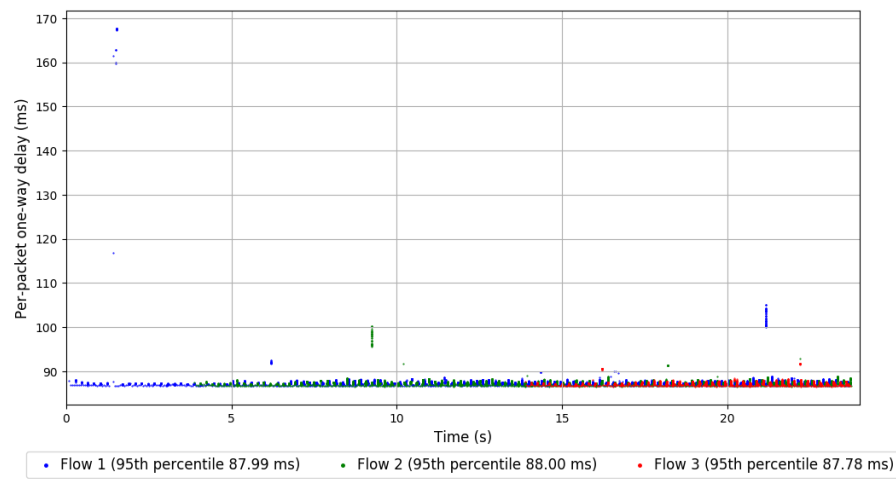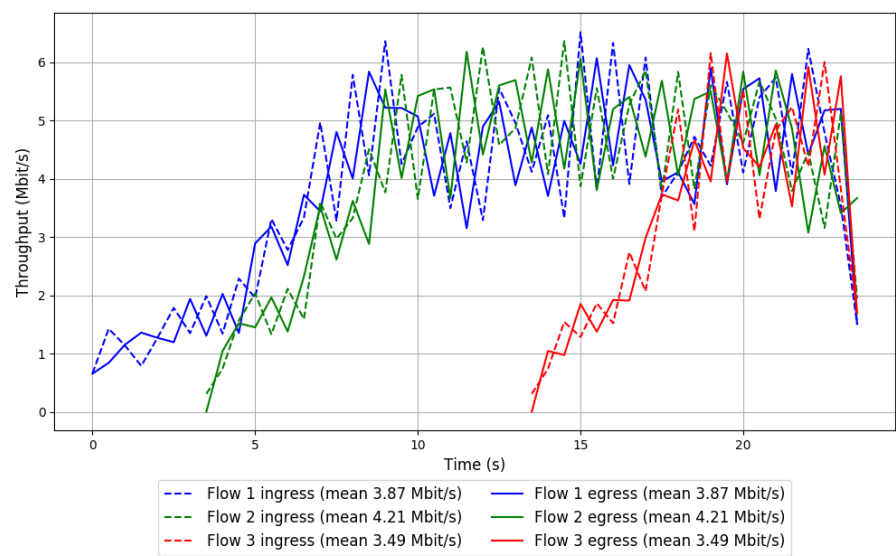
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2017-09-18 19:29:13
End at: 2017-09-18 19:29:43
```

Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2017-09-18 19:38:35
End at: 2017-09-18 19:39:05


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.87 Mbit/s
95th percentile per-packet one-way delay: 87.982 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 3.51 Mbit/s
95th percentile per-packet one-way delay: 88.048 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 87.966 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 87.827 ms
Loss rate: 2.71%
```
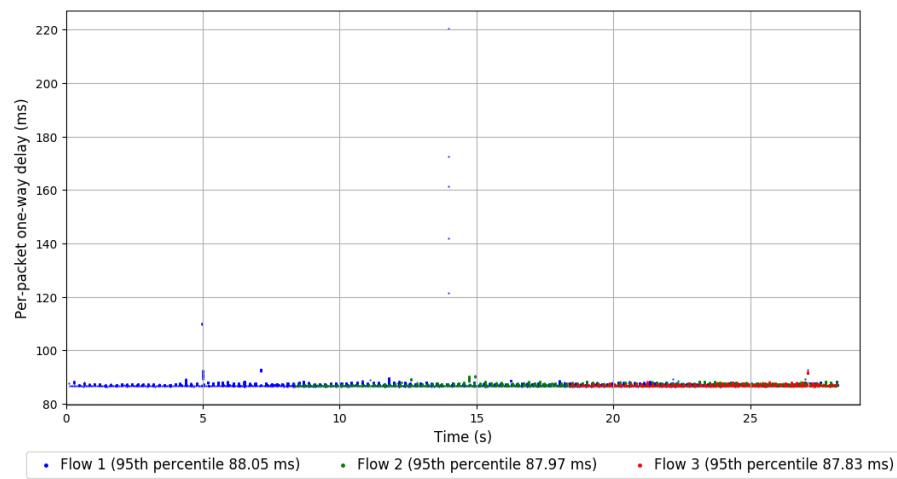
Run 5: Report of Sprout — Data Link

```
Run 6: Statistics of Sprout

Start at: 2017-09-18 19:47:59
End at: 2017-09-18 19:48:29


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.79 Mbit/s
95th percentile per-packet one-way delay: 87.850 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 3.76 Mbit/s
95th percentile per-packet one-way delay: 87.872 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 3.18 Mbit/s
95th percentile per-packet one-way delay: 87.872 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 87.627 ms
Loss rate: 0.00%
```
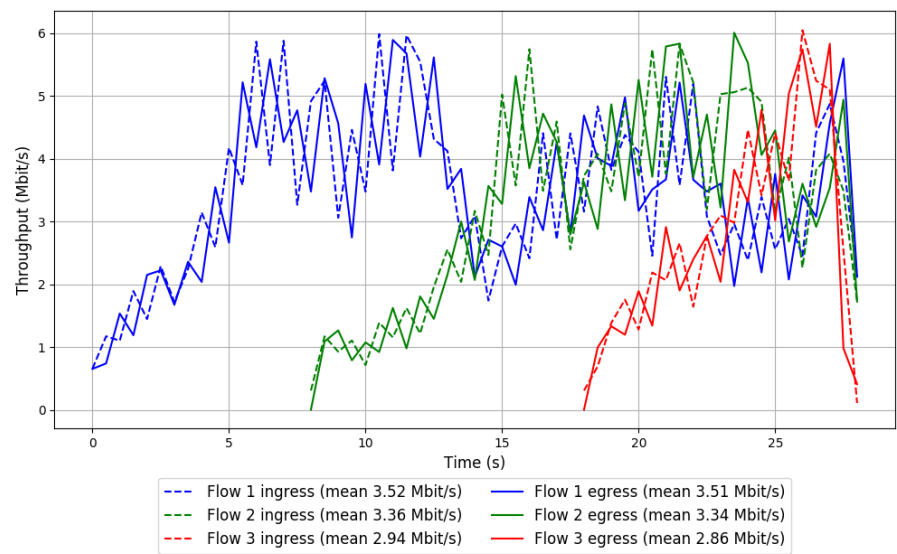
Run 6: Report of Sprout — Data Link

```
Run 7: Statistics of Sprout

Start at: 2017-09-18 19:57:17
End at: 2017-09-18 19:57:47


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.62 Mbit/s
95th percentile per-packet one-way delay: 87.926 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 87.830 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 3.80 Mbit/s
95th percentile per-packet one-way delay: 88.001 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 87.981 ms
Loss rate: 0.16%
```
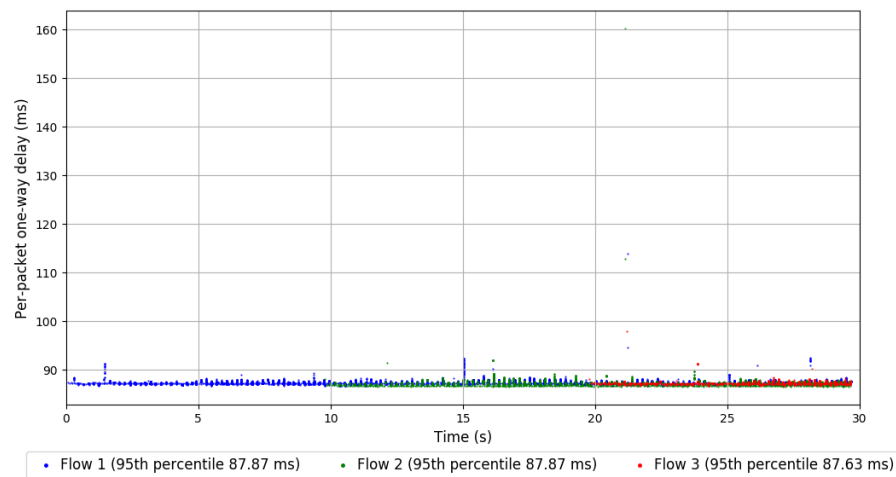
Run 7: Report of Sprout — Data Link

```
Run 8: Statistics of Sprout

Start at: 2017-09-18 20:06:32
End at: 2017-09-18 20:07:02


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.45 Mbit/s
95th percentile per-packet one-way delay: 88.151 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 3.70 Mbit/s
95th percentile per-packet one-way delay: 88.174 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 4.11 Mbit/s
95th percentile per-packet one-way delay: 88.172 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 87.879 ms
Loss rate: 0.00%
```
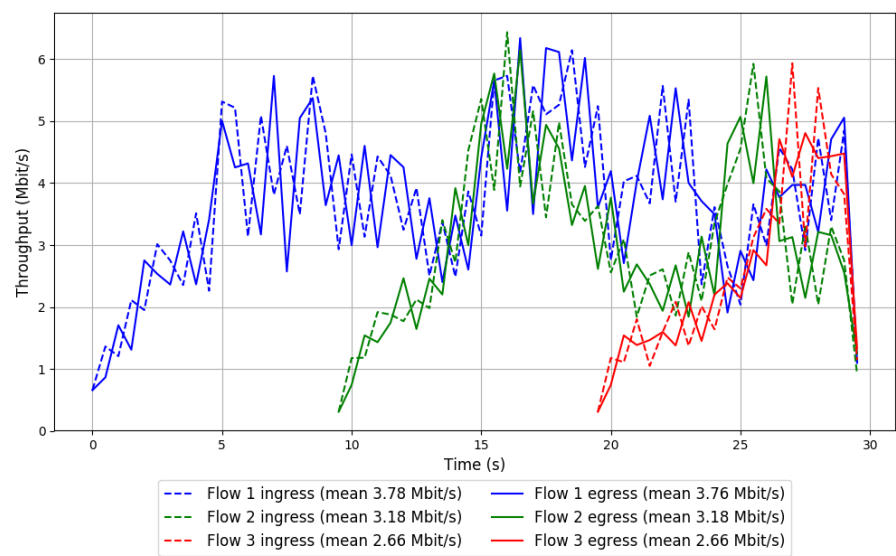
Run 8: Report of Sprout — Data Link

```
Run 9: Statistics of Sprout

Start at: 2017-09-18 20:15:53
End at: 2017-09-18 20:16:23


# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 88.410 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 4.14 Mbit/s
95th percentile per-packet one-way delay: 88.689 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.31 Mbit/s
95th percentile per-packet one-way delay: 88.223 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 88.224 ms
Loss rate: 0.00%
```
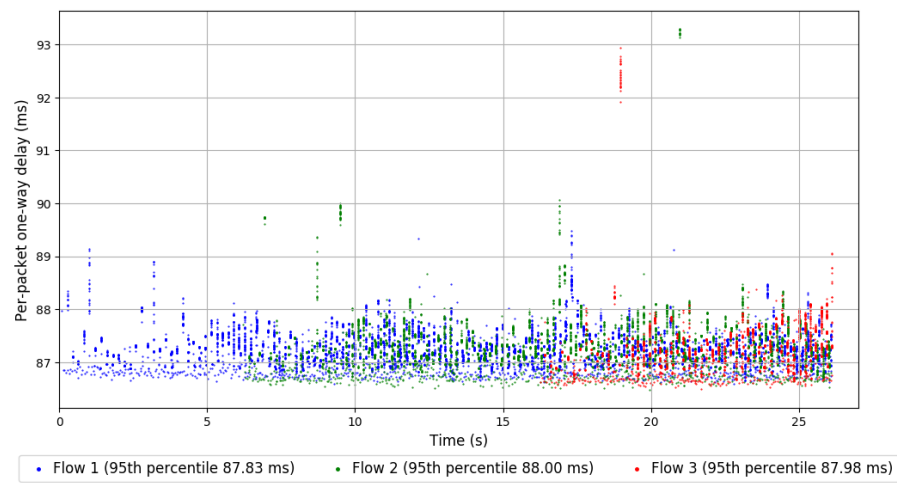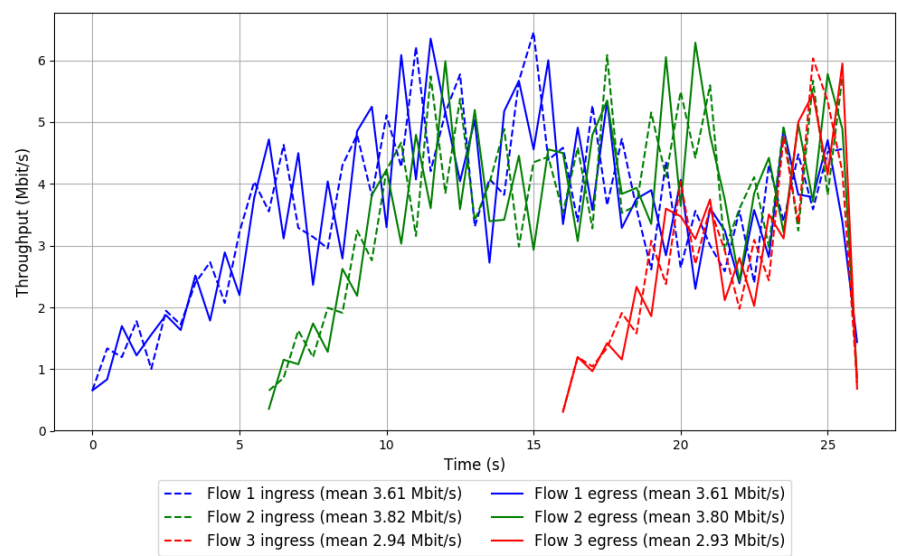
Run 9: Report of Sprout — Data Link

```
Run 10: Statistics of Sprout

Start at: 2017-09-18 20:25:17
End at: 2017-09-18 20:25:47

# Below is generated by plot.py at 2017-09-18 22:14:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.26 Mbit/s
95th percentile per-packet one-way delay: 88.126 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 3.62 Mbit/s
95th percentile per-packet one-way delay: 87.969 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 3.90 Mbit/s
95th percentile per-packet one-way delay: 88.160 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 114.494 ms
Loss rate: 0.05%
```
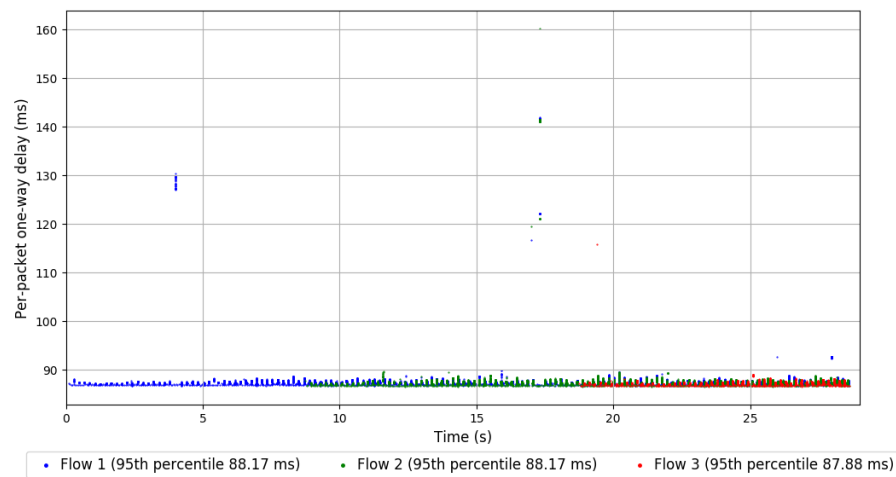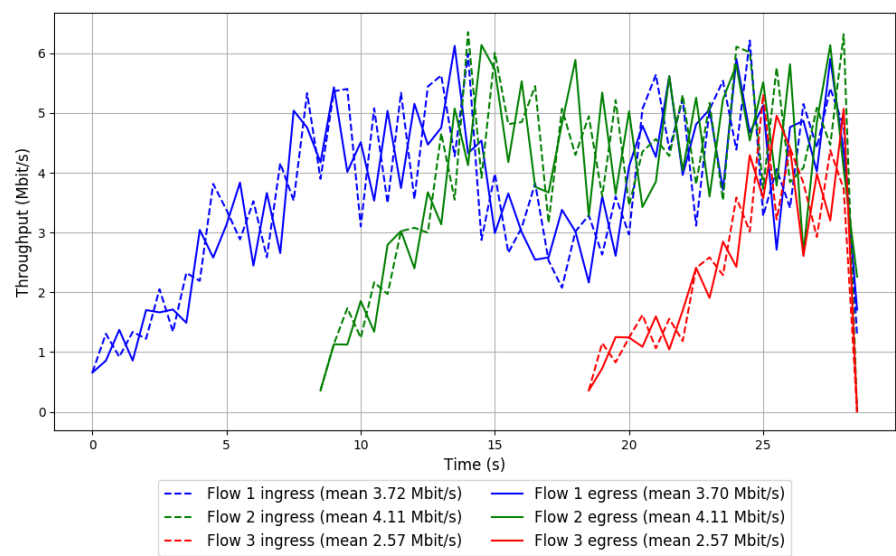
Run 10: Report of Sprout — Data Link

143

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

Start at: 2017-09-18 19:07:17
End at: 2017-09-18 19:07:47

# Below is generated by plot.py at 2017-09-18 22:20:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 312.44 Mbit/s
95th percentile per-packet one-way delay: 91.558 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 174.46 Mbit/s
95th percentile per-packet one-way delay: 90.398 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 163.26 Mbit/s
95th percentile per-packet one-way delay: 91.109 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 153.06 Mbit/s
95th percentile per-packet one-way delay: 96.062 ms
Loss rate: 0.09%
```
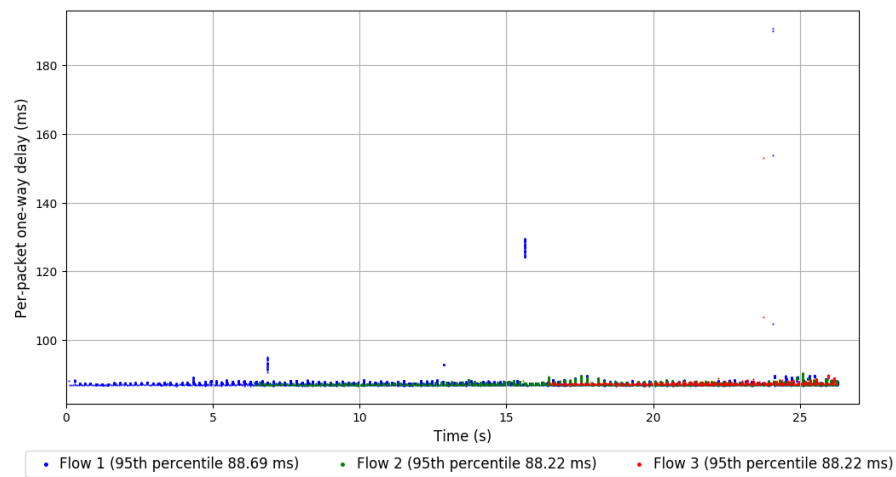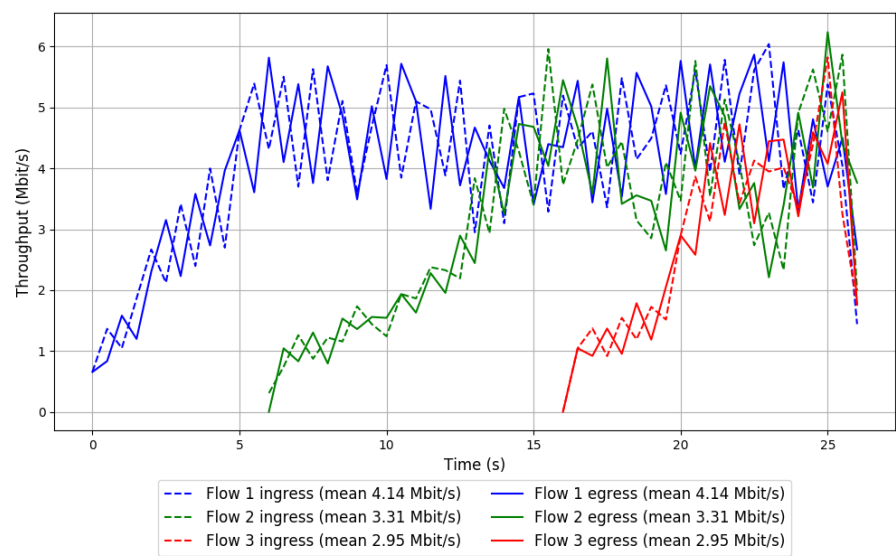
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 174.64 Mbit/s) --- Flow 1 egress (mean 174.46 Mbit/s)
Flow 2 ingress (mean 163.37 Mbit/s) --- Flow 2 egress (mean 163.26 Mbit/s)
Flow 3 ingress (mean 153.26 Mbit/s) --- Flow 3 egress (mean 153.06 Mbit/s)

Flow 1 (95th percentile 90.40 ms)   Flow 2 (95th percentile 91.11 ms)   Flow 3 (95th percentile 96.06 ms)

145

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

Start at: 2017-09-18 19:16:42
End at: 2017-09-18 19:17:12


# Below is generated by plot.py at 2017-09-18 22:21:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 333.64 Mbit/s
95th percentile per-packet one-way delay: 92.693 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 192.58 Mbit/s
95th percentile per-packet one-way delay: 93.271 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 167.37 Mbit/s
95th percentile per-packet one-way delay: 92.217 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 119.94 Mbit/s
95th percentile per-packet one-way delay: 91.408 ms
Loss rate: 0.31%
```
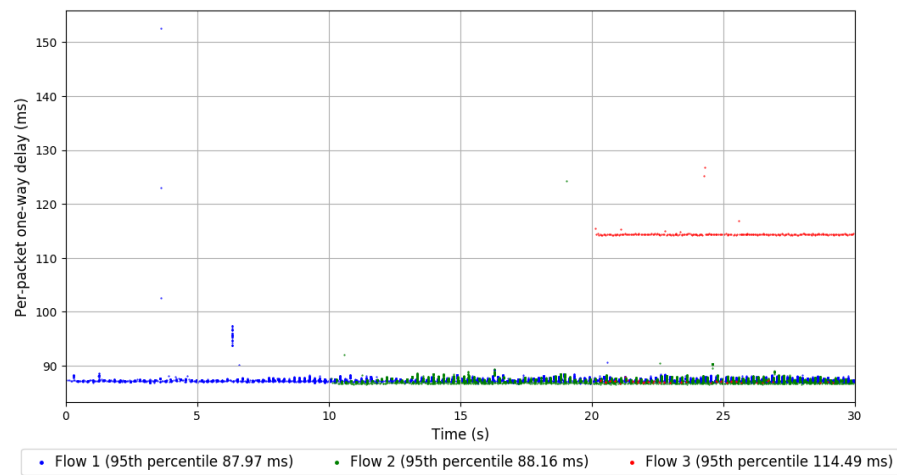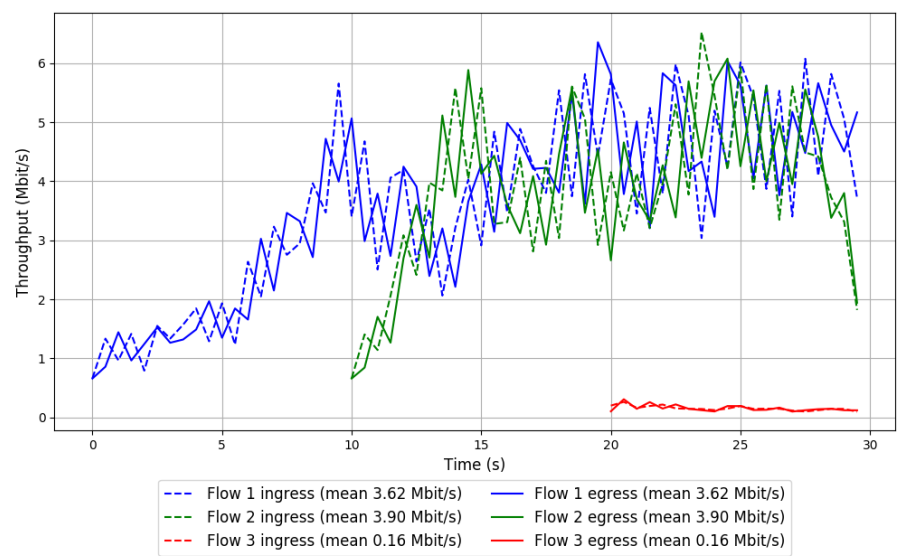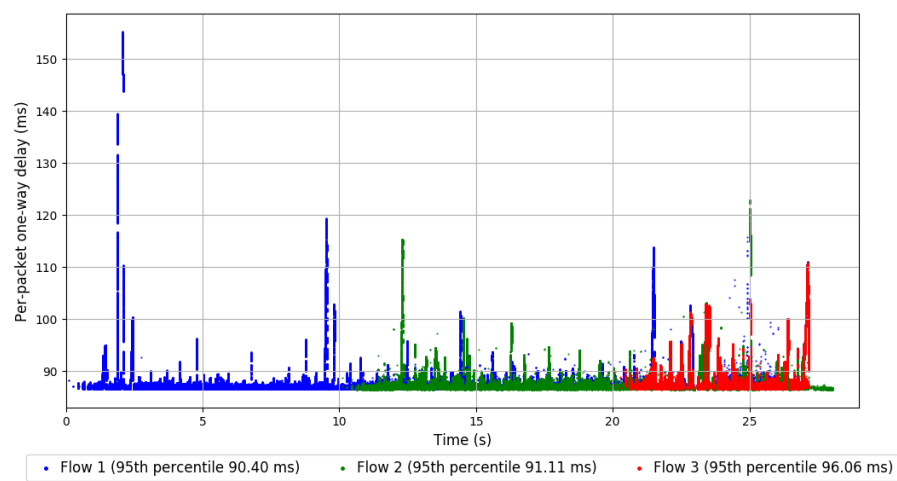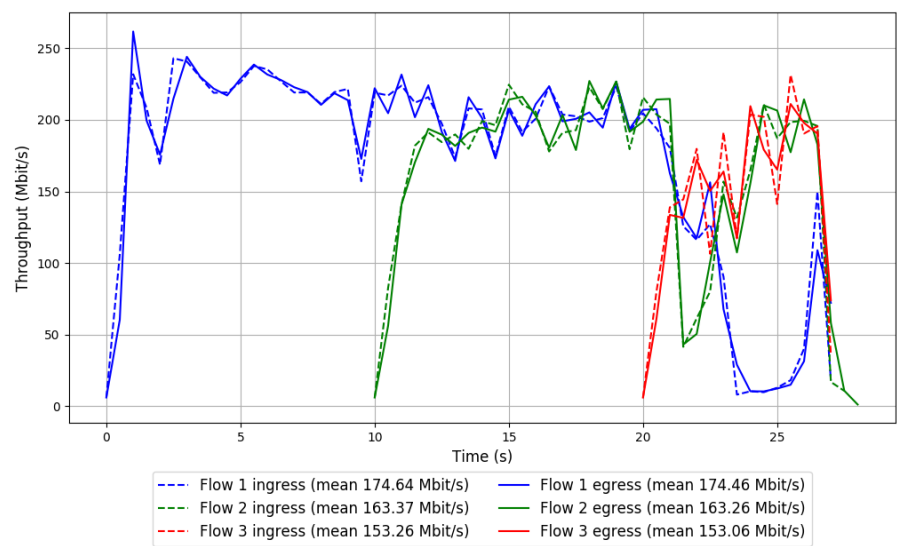
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 192.72 Mbit/s)   Flow 1 egress (mean 192.58 Mbit/s)
Flow 2 ingress (mean 167.58 Mbit/s)   Flow 2 egress (mean 167.37 Mbit/s)
Flow 3 ingress (mean 120.34 Mbit/s)   Flow 3 egress (mean 119.94 Mbit/s)

Flow 1 (95th percentile 93.27 ms)   Flow 2 (95th percentile 92.22 ms)   Flow 3 (95th percentile 91.41 ms)

147

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

Start at: 2017-09-18 19:26:03
End at: 2017-09-18 19:26:33

# Below is generated by plot.py at 2017-09-18 22:21:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.53 Mbit/s
95th percentile per-packet one-way delay: 89.247 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 206.09 Mbit/s
95th percentile per-packet one-way delay: 89.546 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 174.74 Mbit/s
95th percentile per-packet one-way delay: 88.791 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 7.96 Mbit/s
95th percentile per-packet one-way delay: 89.024 ms
Loss rate: 0.08%
```
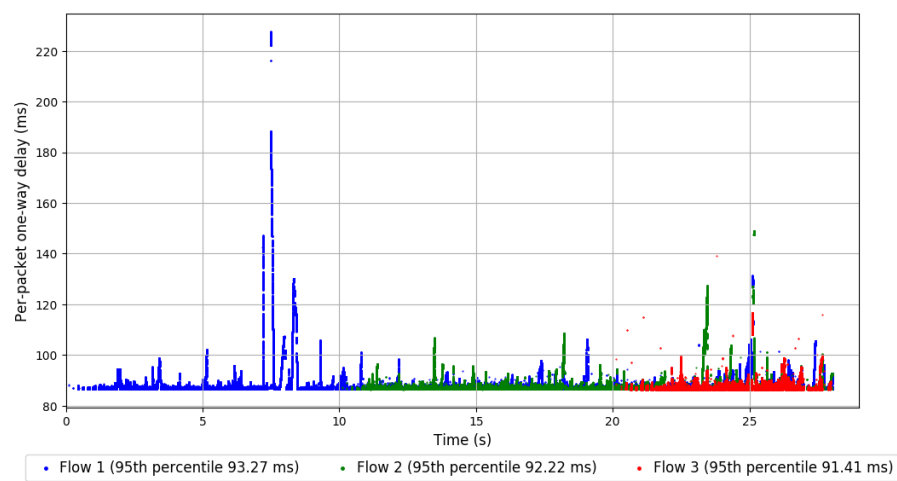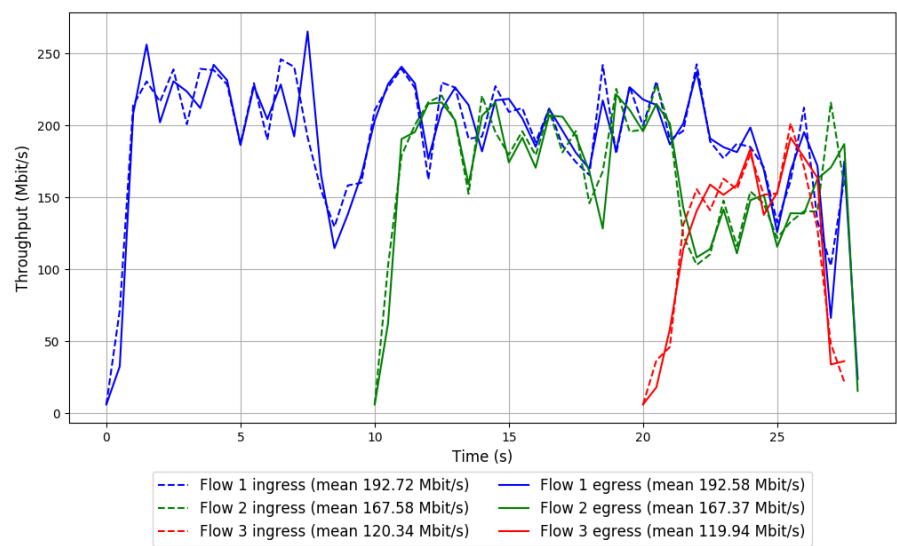
Run 3: Report of TaoVA-100x — Data Link

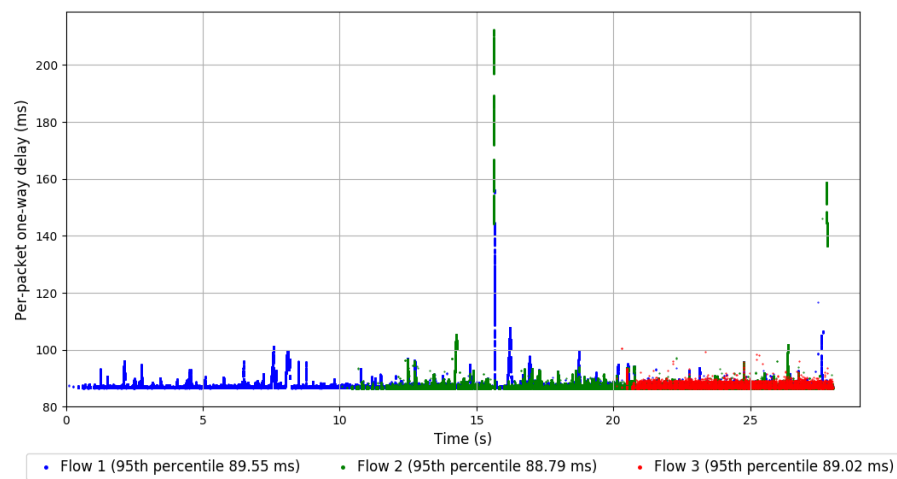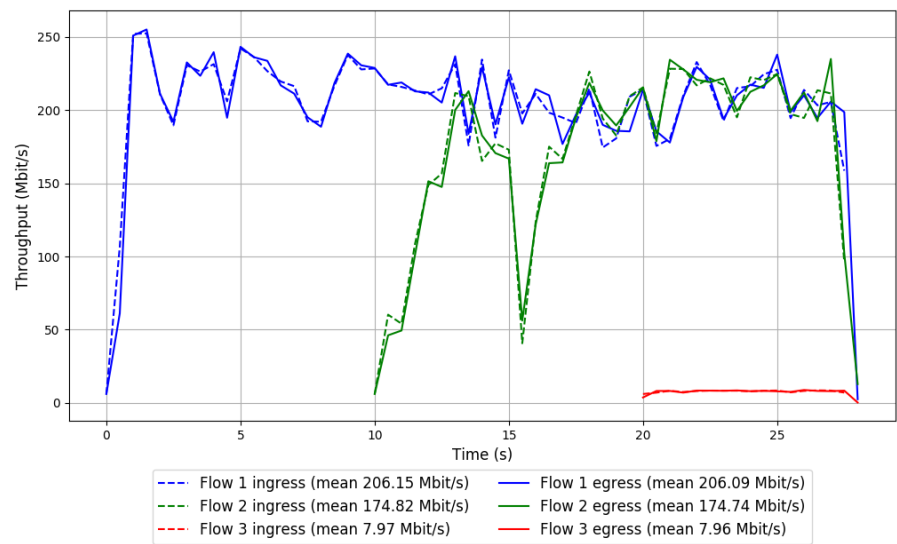Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2017-09-18 19:35:24
End at: 2017-09-18 19:35:54


# Below is generated by plot.py at 2017-09-18 22:21:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 289.65 Mbit/s
95th percentile per-packet one-way delay: 90.004 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 169.29 Mbit/s
95th percentile per-packet one-way delay: 89.431 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 141.71 Mbit/s
95th percentile per-packet one-way delay: 89.553 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 103.73 Mbit/s
95th percentile per-packet one-way delay: 97.417 ms
Loss rate: 0.14%
```

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

Flow 1 ingress (mean 169.31 Mbit/s) — — — Flow 1 egress (mean 169.29 Mbit/s)
Flow 2 ingress (mean 141.76 Mbit/s) — — — Flow 2 egress (mean 141.71 Mbit/s)
Flow 3 ingress (mean 103.87 Mbit/s) — — — Flow 3 egress (mean 103.73 Mbit/s)

Flow 1 (95th percentile 89.43 ms)   Flow 2 (95th percentile 89.55 ms)   Flow 3 (95th percentile 97.42 ms)
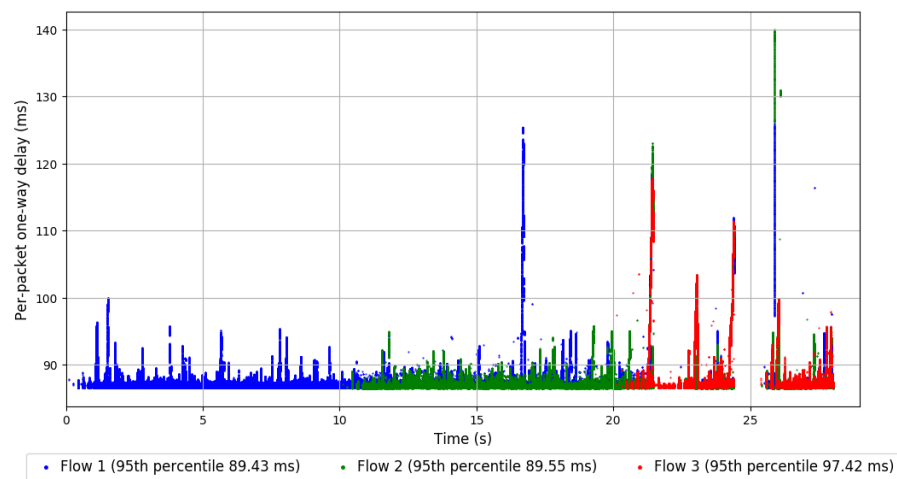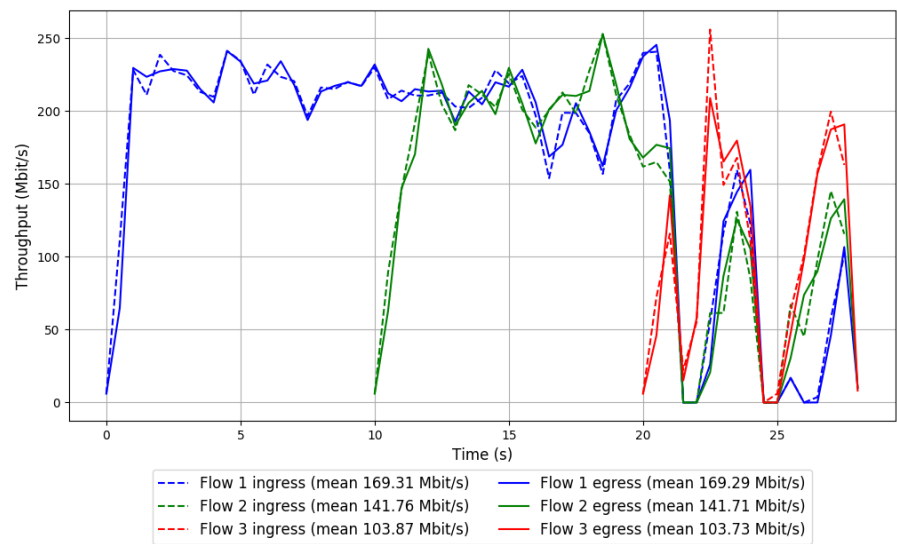
```
Run 5: Statistics of TaoVA-100x

Start at: 2017-09-18 19:44:48
End at: 2017-09-18 19:45:18


# Below is generated by plot.py at 2017-09-18 22:21:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 299.85 Mbit/s
95th percentile per-packet one-way delay: 95.001 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 177.14 Mbit/s
95th percentile per-packet one-way delay: 91.033 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 153.75 Mbit/s
95th percentile per-packet one-way delay: 101.179 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 87.29 Mbit/s
95th percentile per-packet one-way delay: 91.533 ms
Loss rate: 0.07%
```

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

Flow 1 ingress (mean 177.21 Mbit/s) --- Flow 1 egress (mean 177.14 Mbit/s)
Flow 2 ingress (mean 153.84 Mbit/s) --- Flow 2 egress (mean 153.75 Mbit/s)
Flow 3 ingress (mean 87.35 Mbit/s) --- Flow 3 egress (mean 87.29 Mbit/s)

Flow 1 (95th percentile 91.03 ms) • Flow 2 (95th percentile 101.18 ms) • Flow 3 (95th percentile 91.53 ms)

```
Run 6: Statistics of TaoVA-100x

Start at: 2017-09-18 19:54:12
End at: 2017-09-18 19:54:43

# Below is generated by plot.py at 2017-09-18 22:21:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 254.02 Mbit/s
95th percentile per-packet one-way delay: 91.959 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 151.45 Mbit/s
95th percentile per-packet one-way delay: 91.671 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 120.89 Mbit/s
95th percentile per-packet one-way delay: 91.576 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 87.94 Mbit/s
95th percentile per-packet one-way delay: 93.543 ms
Loss rate: 0.02%
```
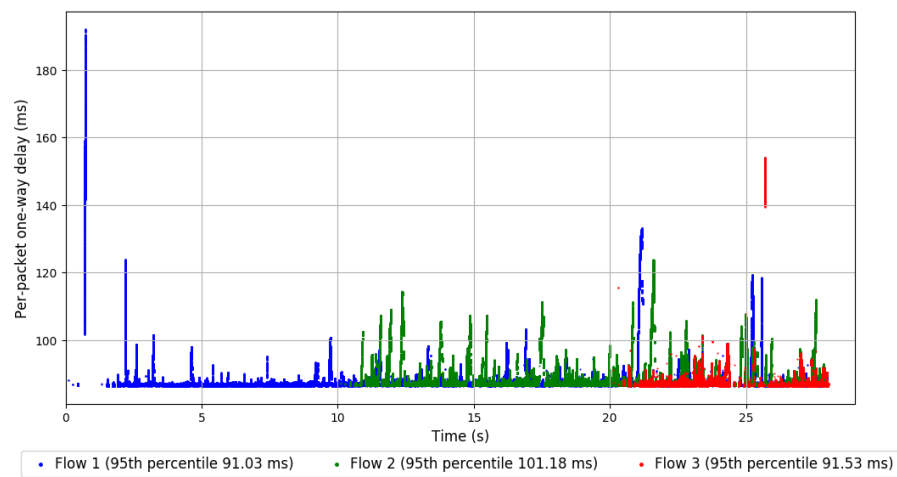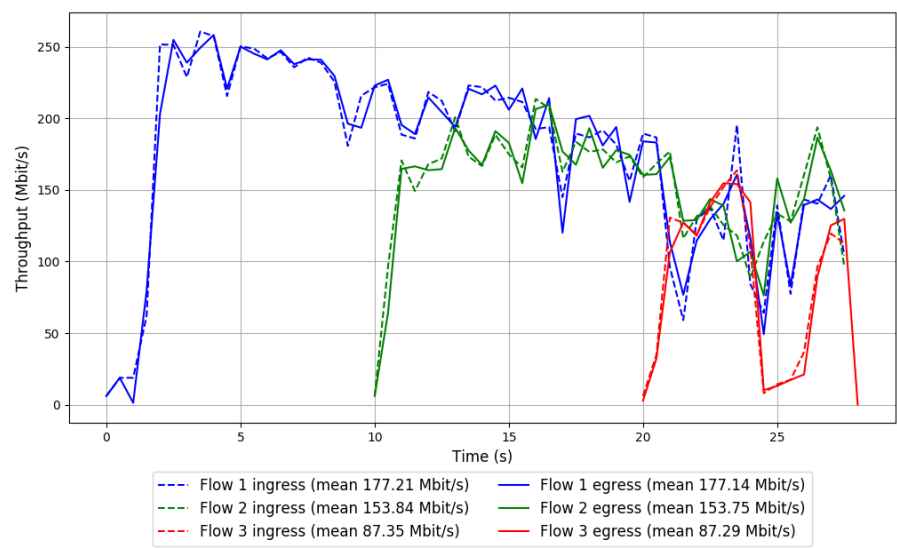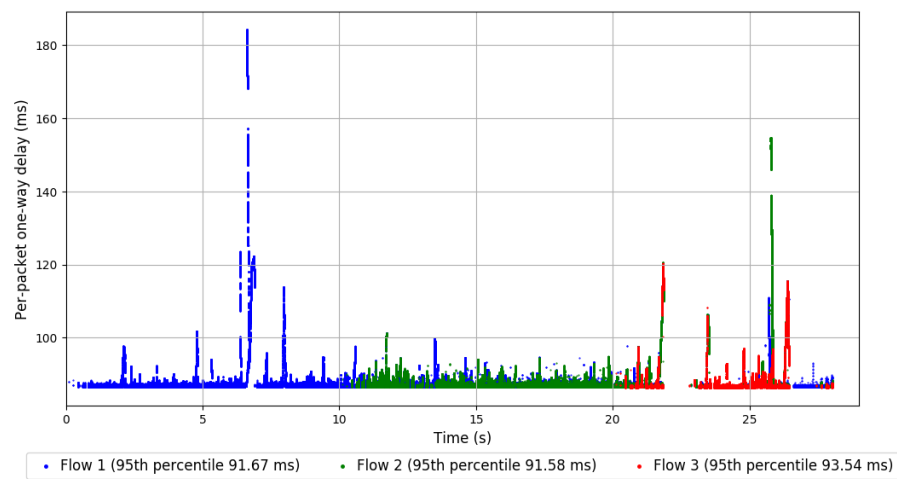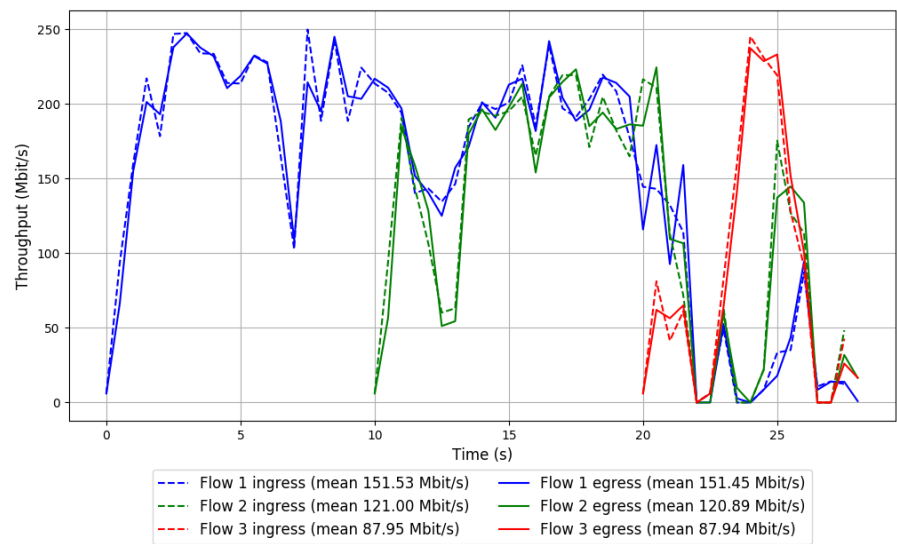
Run 6: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 151.53 Mbit/s) --- Flow 1 egress (mean 151.45 Mbit/s)
Flow 2 ingress (mean 121.00 Mbit/s) --- Flow 2 egress (mean 120.89 Mbit/s)
Flow 3 ingress (mean 87.95 Mbit/s) --- Flow 3 egress (mean 87.94 Mbit/s)

Flow 1 (95th percentile 91.67 ms) • Flow 2 (95th percentile 91.58 ms) • Flow 3 (95th percentile 93.54 ms)
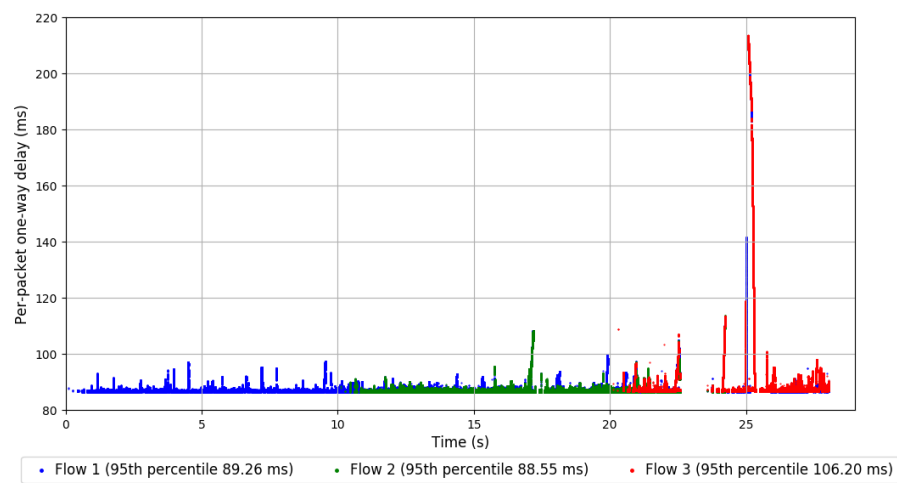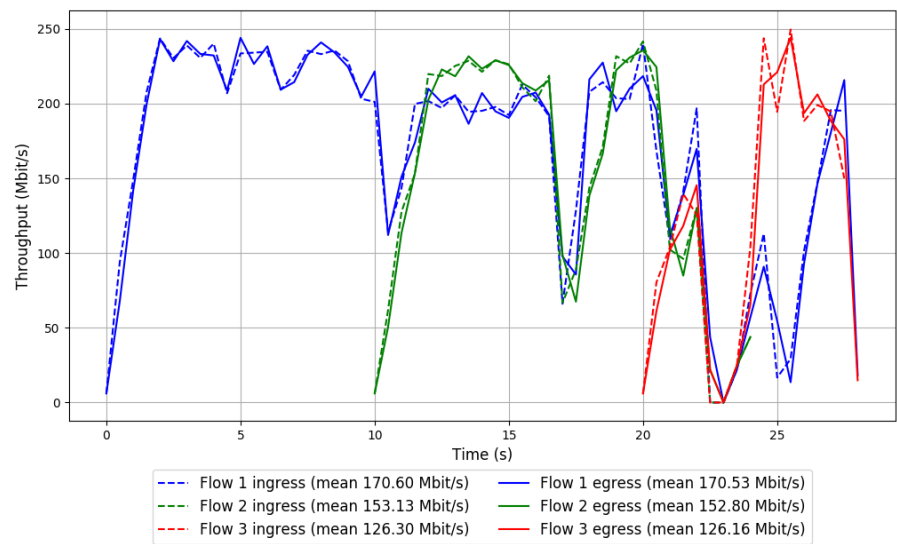
```
Run 7: Statistics of TaoVA-100x

Start at: 2017-09-18 20:03:24
End at: 2017-09-18 20:03:54


# Below is generated by plot.py at 2017-09-18 22:21:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 283.67 Mbit/s
95th percentile per-packet one-way delay: 90.309 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 170.53 Mbit/s
95th percentile per-packet one-way delay: 89.263 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 152.80 Mbit/s
95th percentile per-packet one-way delay: 88.553 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 126.16 Mbit/s
95th percentile per-packet one-way delay: 106.202 ms
Loss rate: 0.09%
```

Run 7: Report of TaoVA-100x — Data Link

```
Run 8: Statistics of TaoVA-100x

Start at: 2017-09-18 20:12:44
End at: 2017-09-18 20:13:14

# Below is generated by plot.py at 2017-09-18 22:24:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 299.43 Mbit/s
95th percentile per-packet one-way delay: 94.100 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 175.29 Mbit/s
95th percentile per-packet one-way delay: 98.014 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 192.40 Mbit/s
95th percentile per-packet one-way delay: 88.664 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 5.05 Mbit/s
95th percentile per-packet one-way delay: 114.757 ms
Loss rate: 0.00%
```
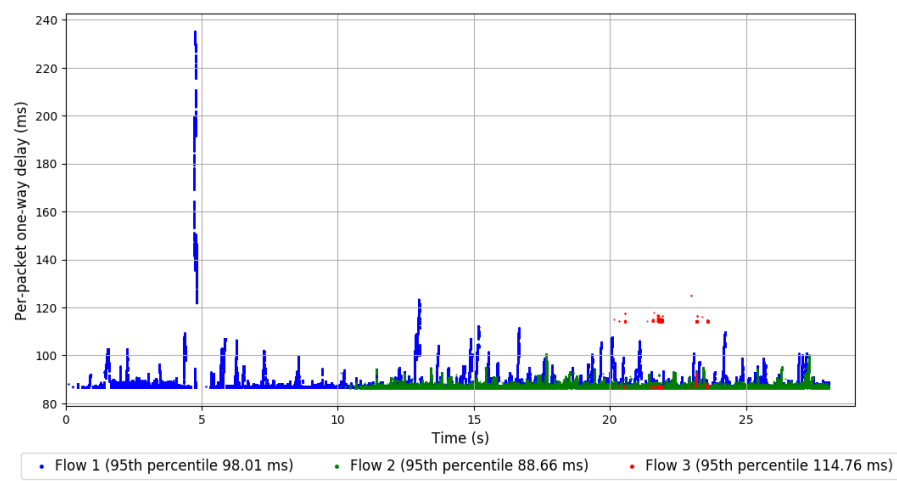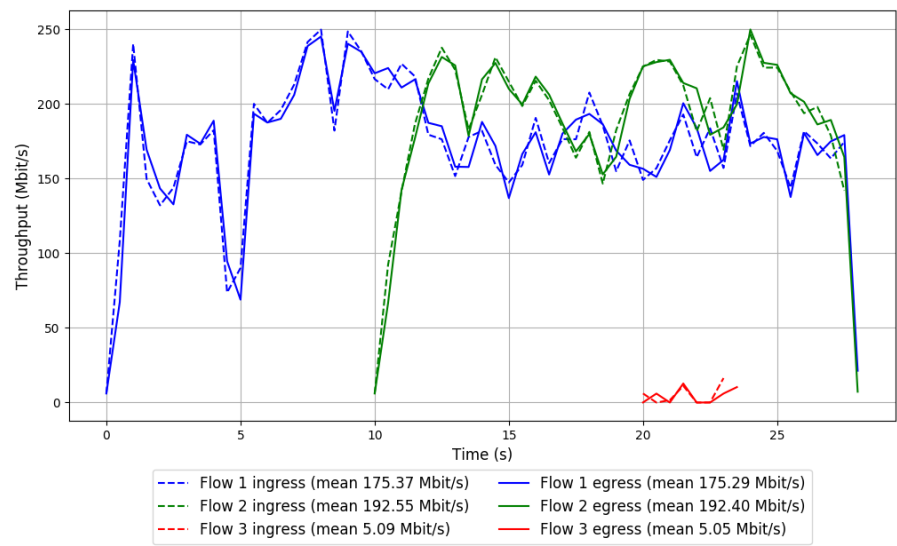
Run 8: Report of TaoVA-100x — Data Link

```
Run 9: Statistics of TaoVA-100x

Start at: 2017-09-18 20:22:09
End at: 2017-09-18 20:22:39


# Below is generated by plot.py at 2017-09-18 22:25:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 214.51 Mbit/s
95th percentile per-packet one-way delay: 97.961 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 200.13 Mbit/s
95th percentile per-packet one-way delay: 90.834 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 17.61 Mbit/s
95th percentile per-packet one-way delay: 114.440 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 10.89 Mbit/s
95th percentile per-packet one-way delay: 114.410 ms
Loss rate: 0.03%
```
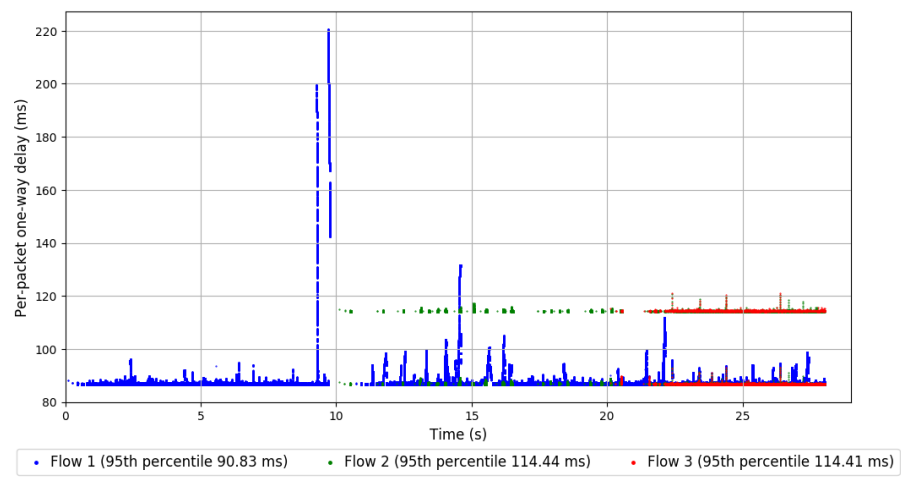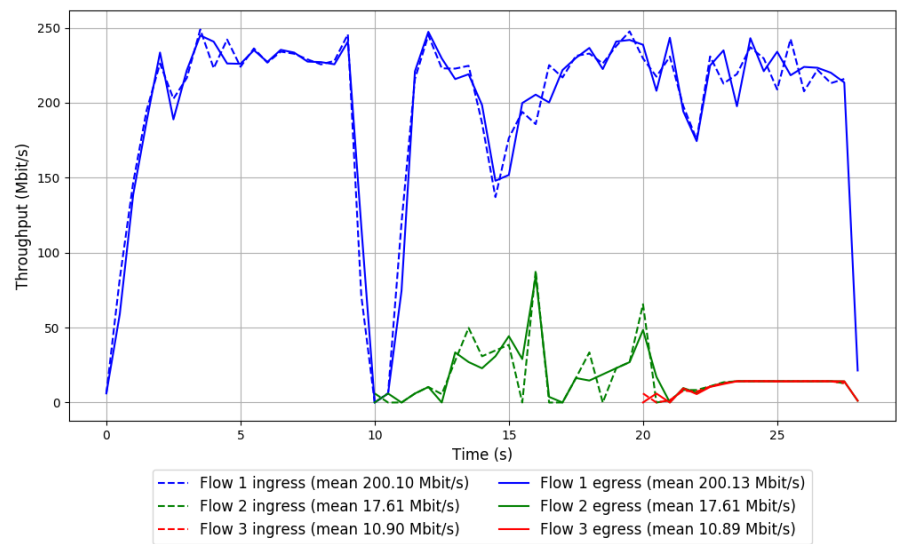
Run 9: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 200.10 Mbit/s)   Flow 1 egress (mean 200.13 Mbit/s)
Flow 2 ingress (mean 17.61 Mbit/s)   Flow 2 egress (mean 17.61 Mbit/s)
Flow 3 ingress (mean 10.90 Mbit/s)   Flow 3 egress (mean 10.89 Mbit/s)

Flow 1 (95th percentile 90.83 ms)   Flow 2 (95th percentile 114.44 ms)   Flow 3 (95th percentile 114.41 ms)
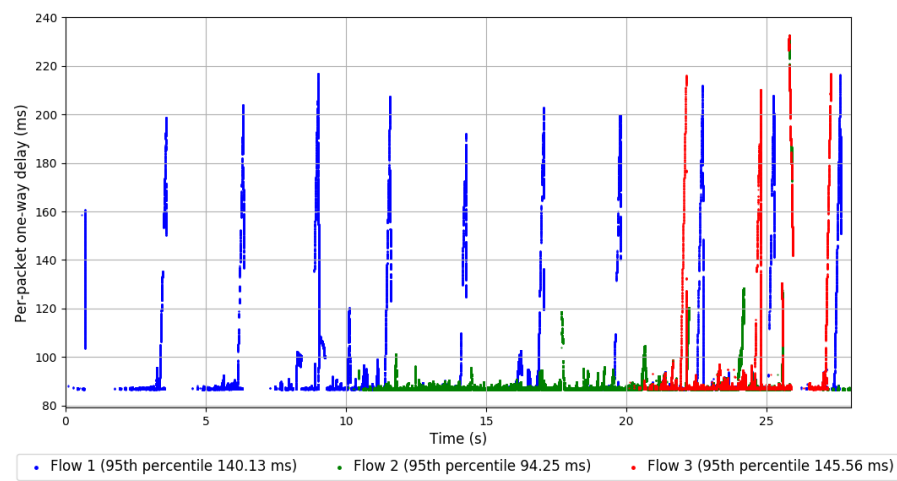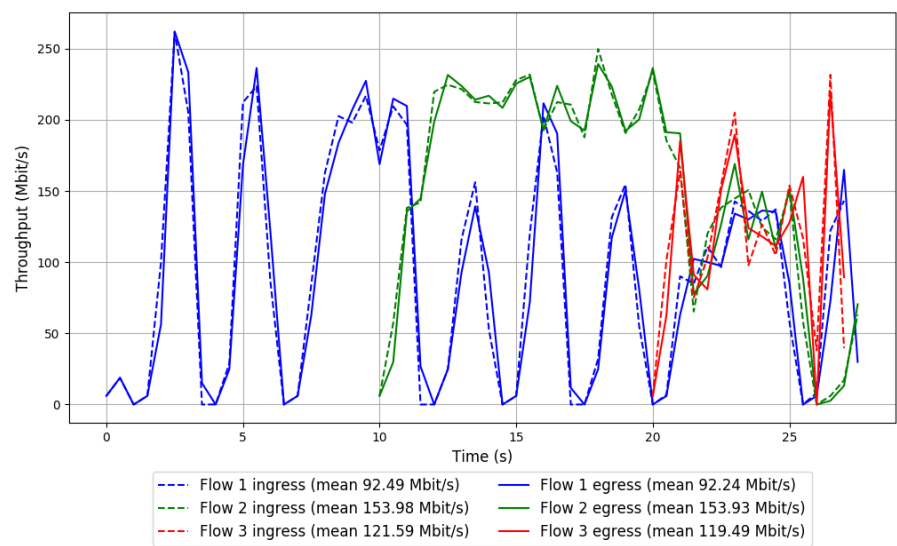
```
Run 10: Statistics of TaoVA-100x

Start at: 2017-09-18 20:31:23
End at: 2017-09-18 20:31:53


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 220.55 Mbit/s
95th percentile per-packet one-way delay: 106.432 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 92.24 Mbit/s
95th percentile per-packet one-way delay: 140.135 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 153.93 Mbit/s
95th percentile per-packet one-way delay: 94.252 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 119.49 Mbit/s
95th percentile per-packet one-way delay: 145.564 ms
Loss rate: 0.08%
```

Run 10: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 92.49 Mbit/s)   Flow 1 egress (mean 92.24 Mbit/s)
Flow 2 ingress (mean 153.98 Mbit/s)   Flow 2 egress (mean 153.93 Mbit/s)
Flow 3 ingress (mean 121.59 Mbit/s)   Flow 3 egress (mean 119.49 Mbit/s)

Flow 1 (95th percentile 140.13 ms)   Flow 2 (95th percentile 94.25 ms)   Flow 3 (95th percentile 145.56 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2017-09-18 19:08:32
End at: 2017-09-18 19:09:02

# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 109.48 Mbit/s
95th percentile per-packet one-way delay: 94.768 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 38.30 Mbit/s
95th percentile per-packet one-way delay: 90.033 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 65.07 Mbit/s
95th percentile per-packet one-way delay: 98.738 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 84.01 Mbit/s
95th percentile per-packet one-way delay: 92.397 ms
Loss rate: 0.00%
```
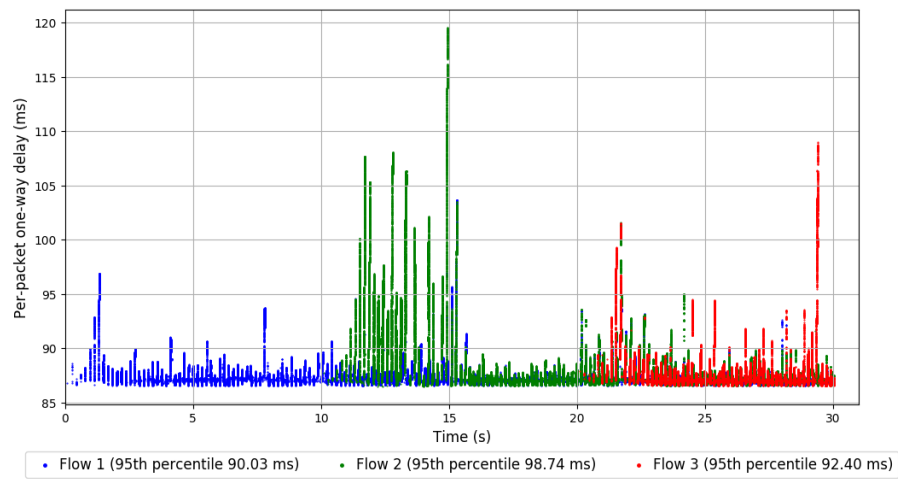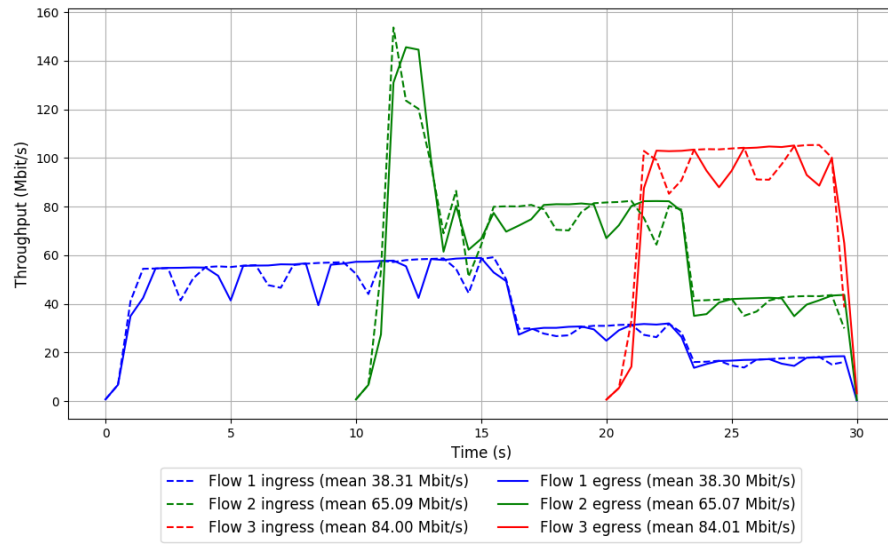
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2017-09-18 19:17:58
End at: 2017-09-18 19:18:28


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.64 Mbit/s
95th percentile per-packet one-way delay: 95.653 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 26.32 Mbit/s
95th percentile per-packet one-way delay: 90.449 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 30.61 Mbit/s
95th percentile per-packet one-way delay: 94.605 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 57.30 Mbit/s
95th percentile per-packet one-way delay: 99.483 ms
Loss rate: 0.04%
```
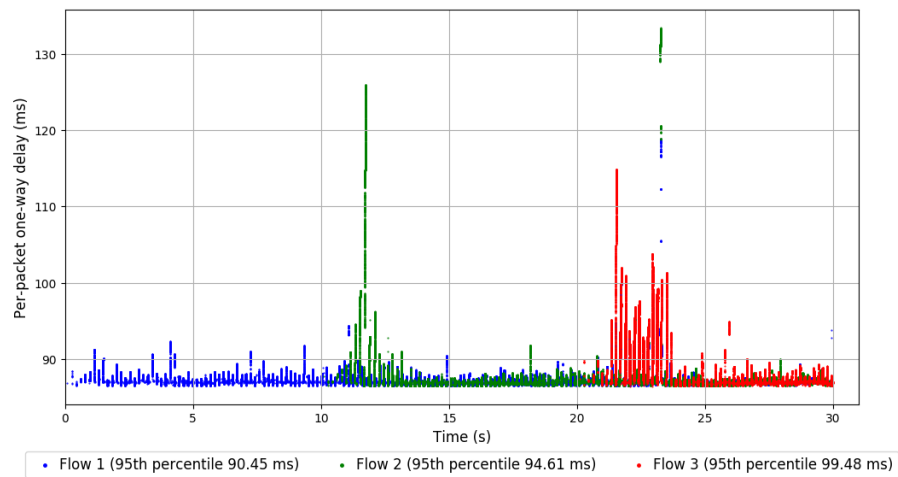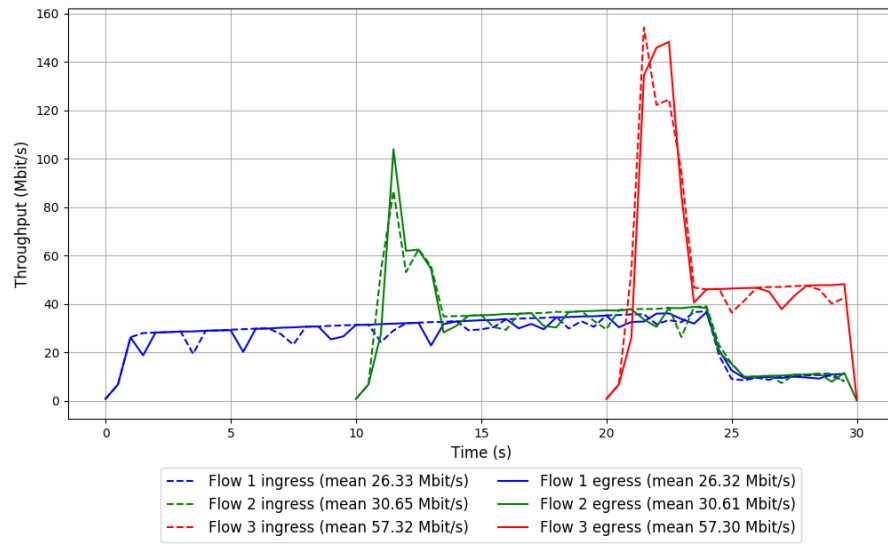
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2017-09-18 19:27:18
End at: 2017-09-18 19:27:48


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.28 Mbit/s
95th percentile per-packet one-way delay: 98.243 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 27.51 Mbit/s
95th percentile per-packet one-way delay: 93.880 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 15.51 Mbit/s
95th percentile per-packet one-way delay: 92.708 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 98.06 Mbit/s
95th percentile per-packet one-way delay: 100.370 ms
Loss rate: 0.03%
```
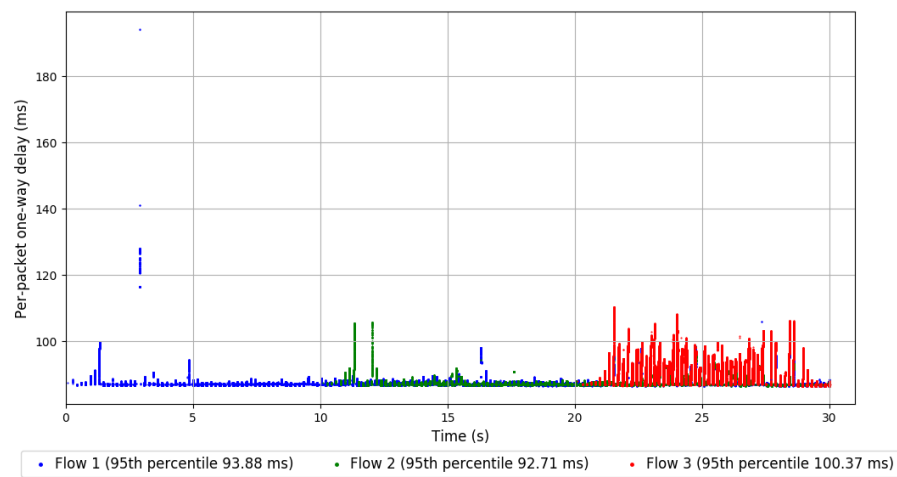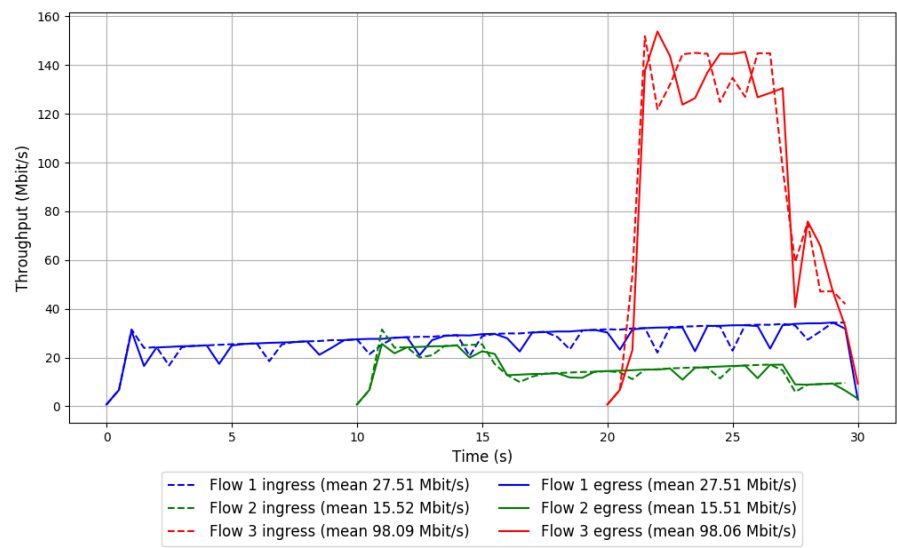
Run 3: Report of TCP Vegas — Data Link

169

```
Run 4: Statistics of TCP Vegas

Start at: 2017-09-18 19:36:36
End at: 2017-09-18 19:37:06

# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.82 Mbit/s
95th percentile per-packet one-way delay: 97.940 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 6.97 Mbit/s
95th percentile per-packet one-way delay: 90.337 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 93.56 Mbit/s
95th percentile per-packet one-way delay: 95.750 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 71.12 Mbit/s
95th percentile per-packet one-way delay: 102.031 ms
Loss rate: 0.26%
```
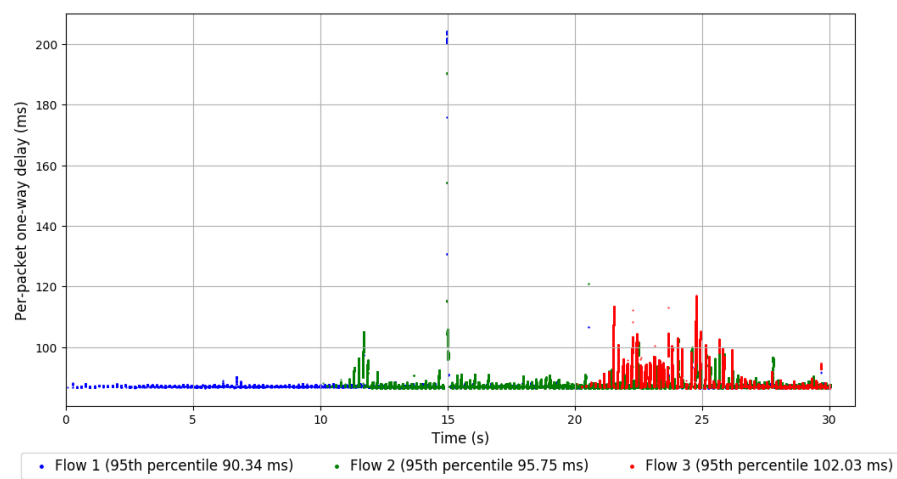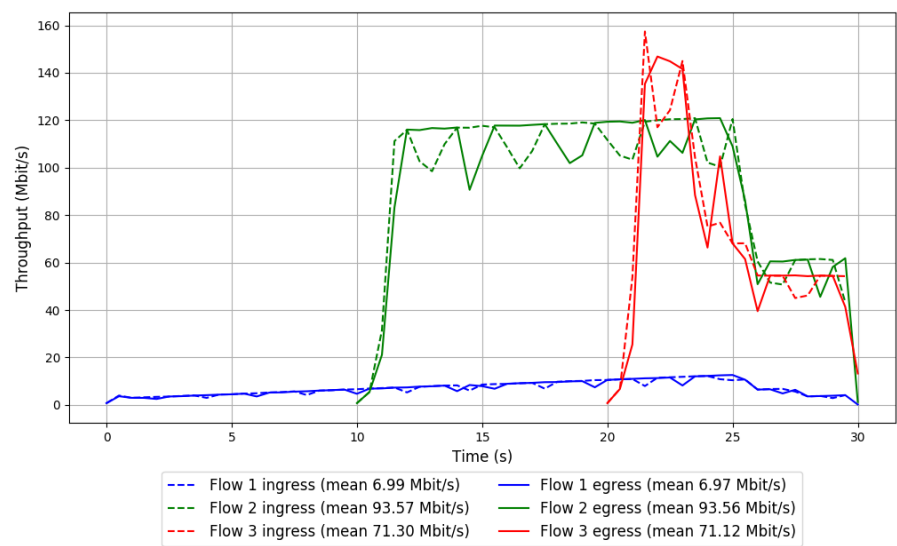
Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2017-09-18 19:46:02
End at: 2017-09-18 19:46:32


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.53 Mbit/s
95th percentile per-packet one-way delay: 98.316 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 8.92 Mbit/s
95th percentile per-packet one-way delay: 91.977 ms
Loss rate: 0.12%
-- Flow 2:
Average throughput: 61.90 Mbit/s
95th percentile per-packet one-way delay: 94.636 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 103.85 Mbit/s
95th percentile per-packet one-way delay: 99.997 ms
Loss rate: 0.01%
```
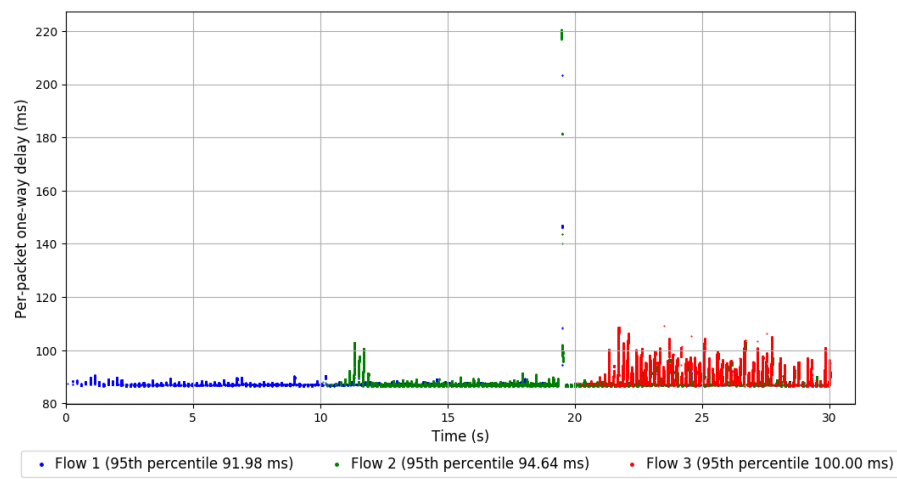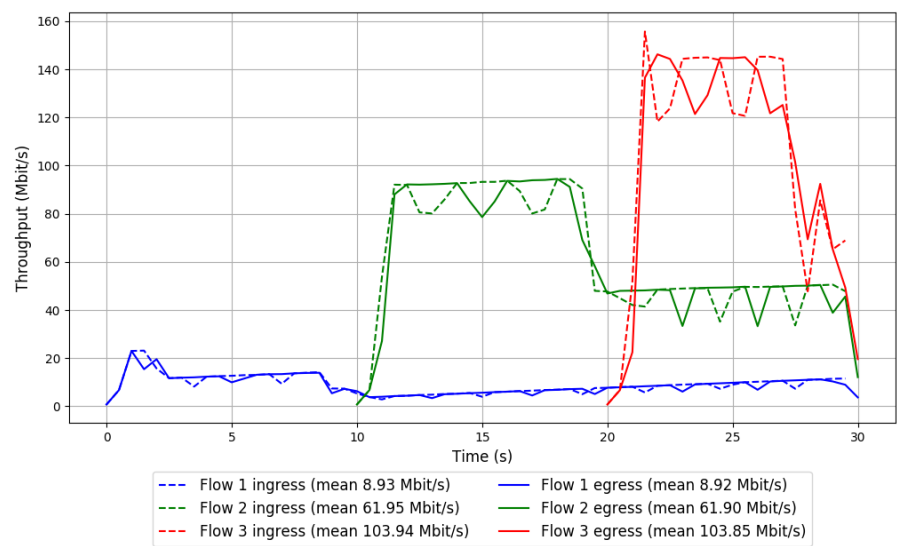
Run 5: Report of TCP Vegas — Data Link

```
Run 6: Statistics of TCP Vegas

Start at: 2017-09-18 19:55:21
End at: 2017-09-18 19:55:51


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 60.95 Mbit/s
95th percentile per-packet one-way delay: 94.081 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 30.79 Mbit/s
95th percentile per-packet one-way delay: 91.124 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 25.68 Mbit/s
95th percentile per-packet one-way delay: 96.281 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 39.46 Mbit/s
95th percentile per-packet one-way delay: 95.918 ms
Loss rate: 1.82%
```
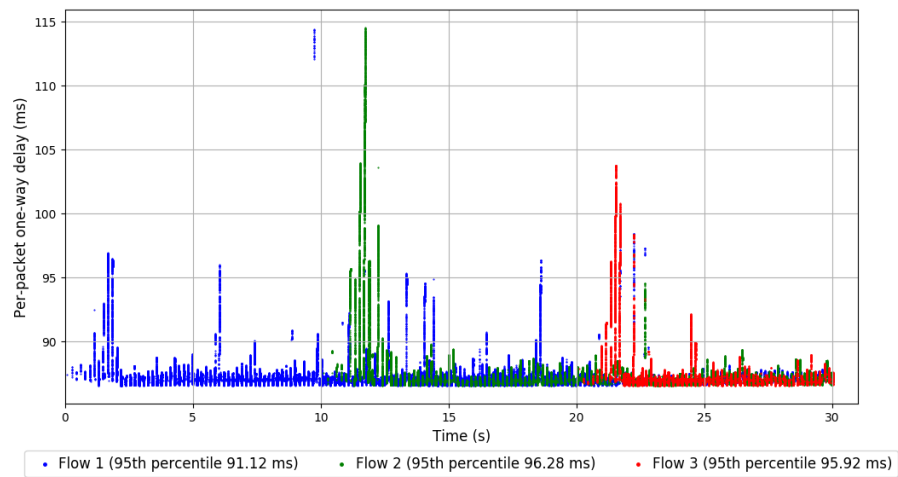
Run 6: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 30.88 Mbit/s) --- Flow 1 egress (mean 30.79 Mbit/s)
Flow 2 ingress (mean 25.69 Mbit/s) --- Flow 2 egress (mean 25.68 Mbit/s)
Flow 3 ingress (mean 40.17 Mbit/s) --- Flow 3 egress (mean 39.46 Mbit/s)

Flow 1 (95th percentile 91.12 ms) Flow 2 (95th percentile 96.28 ms) Flow 3 (95th percentile 95.92 ms)

175

```
Run 7: Statistics of TCP Vegas

Start at: 2017-09-18 20:04:36
End at: 2017-09-18 20:05:06


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.39 Mbit/s
95th percentile per-packet one-way delay: 98.334 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 20.34 Mbit/s
95th percentile per-packet one-way delay: 98.344 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 30.30 Mbit/s
95th percentile per-packet one-way delay: 101.654 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 84.09 Mbit/s
95th percentile per-packet one-way delay: 95.969 ms
Loss rate: 0.01%
```
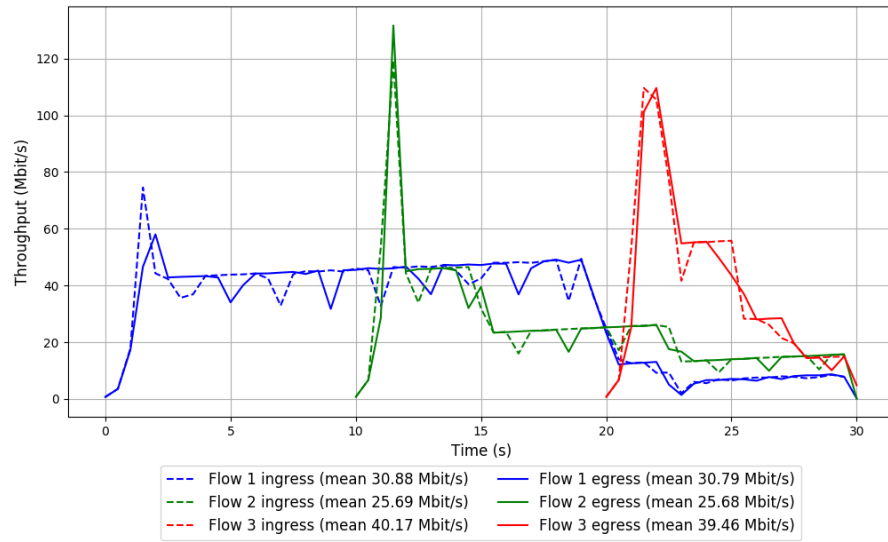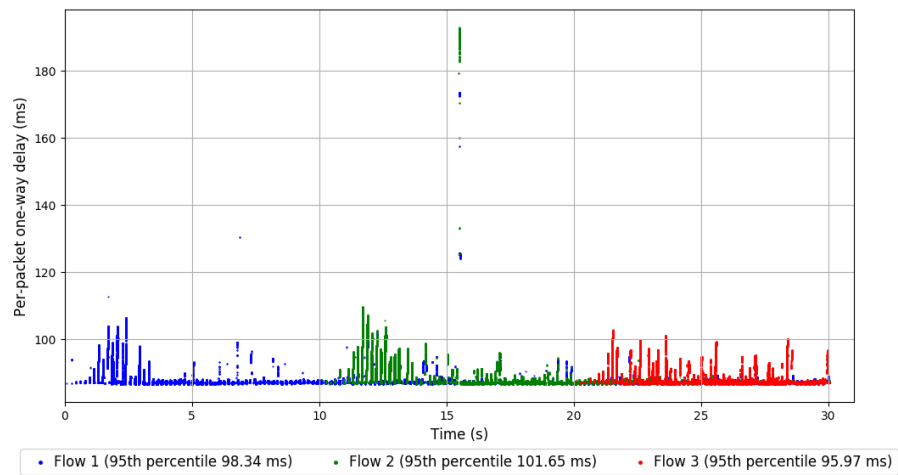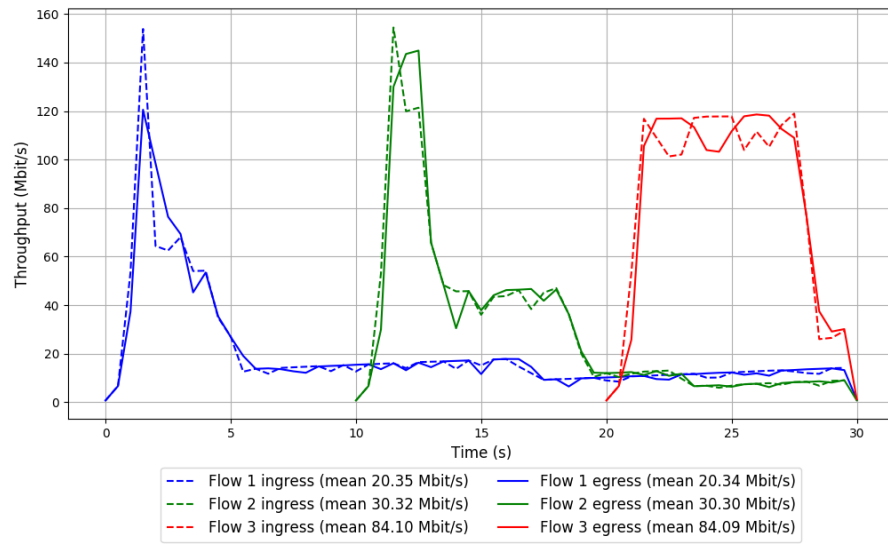
Run 7: Report of TCP Vegas — Data Link

```
Run 8: Statistics of TCP Vegas

Start at: 2017-09-18 20:13:57
End at: 2017-09-18 20:14:27


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 69.18 Mbit/s
95th percentile per-packet one-way delay: 96.728 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 22.49 Mbit/s
95th percentile per-packet one-way delay: 90.393 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 47.22 Mbit/s
95th percentile per-packet one-way delay: 98.773 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 45.95 Mbit/s
95th percentile per-packet one-way delay: 95.243 ms
Loss rate: 0.01%
```
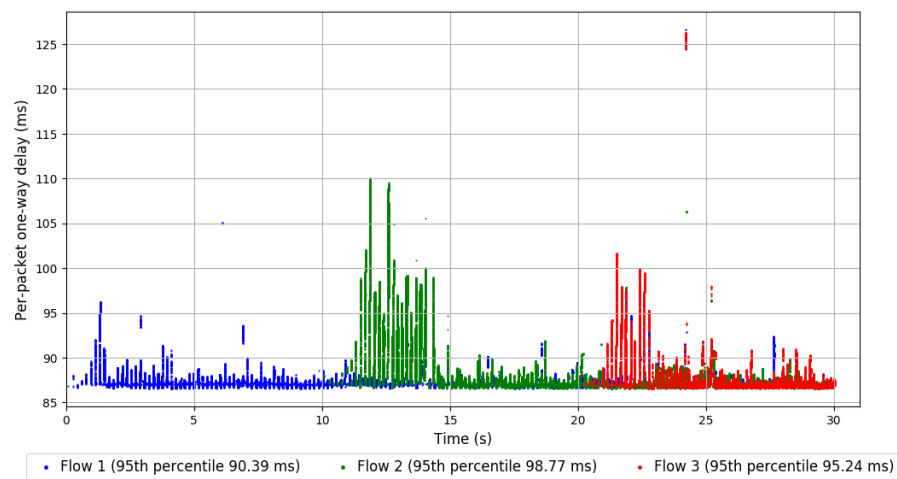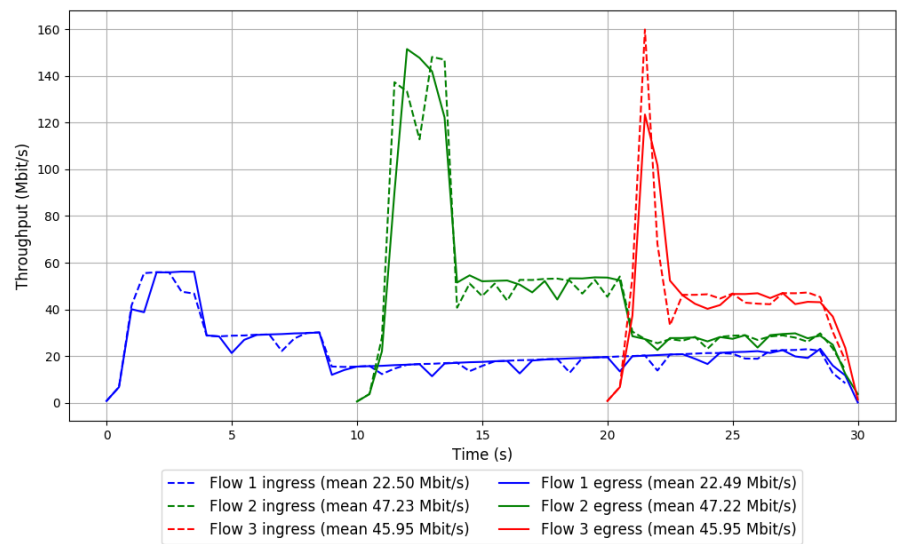
Run 8: Report of TCP Vegas — Data Link

```
Run 9: Statistics of TCP Vegas

Start at: 2017-09-18 20:23:14
End at: 2017-09-18 20:23:44


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 148.26 Mbit/s
95th percentile per-packet one-way delay: 93.815 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 93.82 Mbit/s
95th percentile per-packet one-way delay: 92.820 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 46.31 Mbit/s
95th percentile per-packet one-way delay: 93.909 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 71.36 Mbit/s
95th percentile per-packet one-way delay: 100.279 ms
Loss rate: 0.18%
```
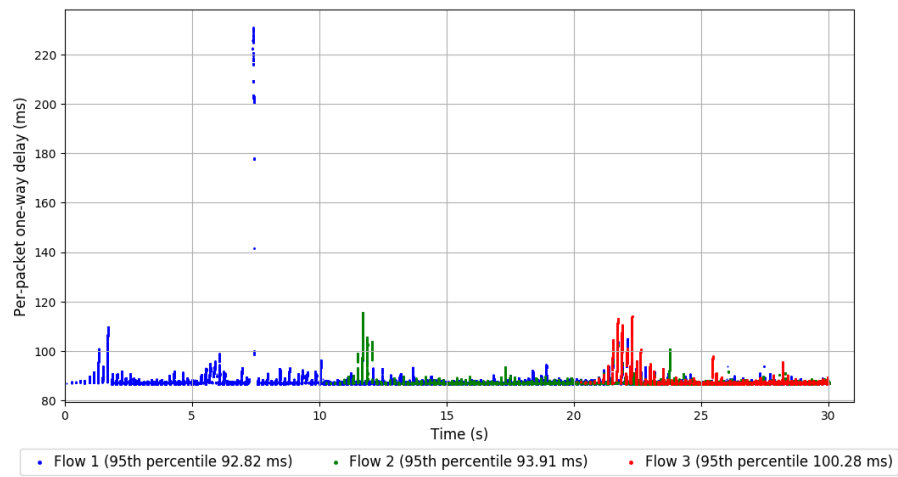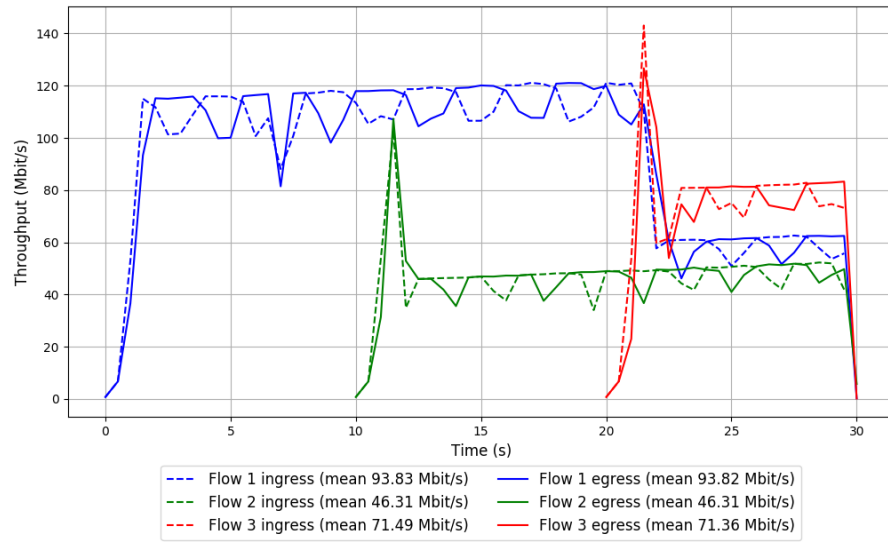
Run 9: Report of TCP Vegas — Data Link

- - - - Flow 1 ingress (mean 93.83 Mbit/s) —— Flow 1 egress (mean 93.82 Mbit/s)
- - - - Flow 2 ingress (mean 46.31 Mbit/s) —— Flow 2 egress (mean 46.31 Mbit/s)
- - - - Flow 3 ingress (mean 71.49 Mbit/s) —— Flow 3 egress (mean 71.36 Mbit/s)

• Flow 1 (95th percentile 92.82 ms)   • Flow 2 (95th percentile 93.91 ms)   • Flow 3 (95th percentile 100.28 ms)

181

```
Run 10: Statistics of TCP Vegas

Start at: 2017-09-18 20:32:29
End at: 2017-09-18 20:32:59


# Below is generated by plot.py at 2017-09-18 22:26:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.62 Mbit/s
95th percentile per-packet one-way delay: 98.506 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 9.12 Mbit/s
95th percentile per-packet one-way delay: 93.294 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 77.76 Mbit/s
95th percentile per-packet one-way delay: 94.308 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 118.00 Mbit/s
95th percentile per-packet one-way delay: 102.131 ms
Loss rate: 0.00%
```
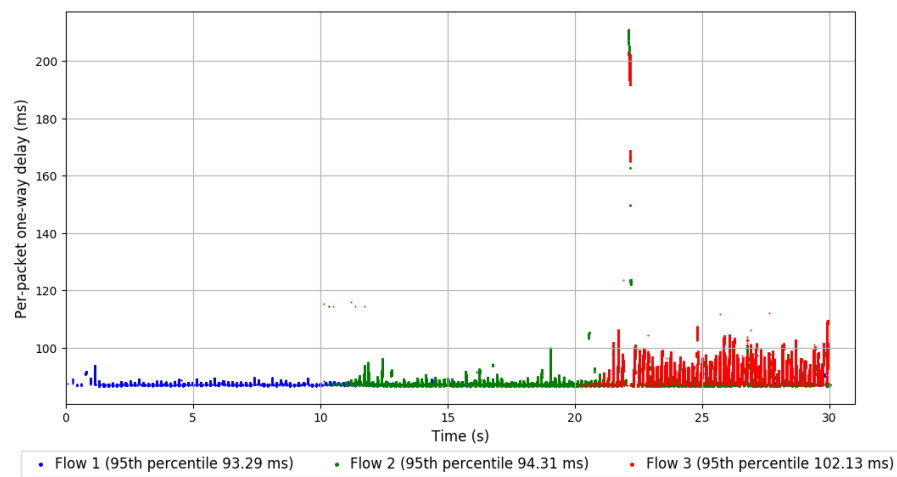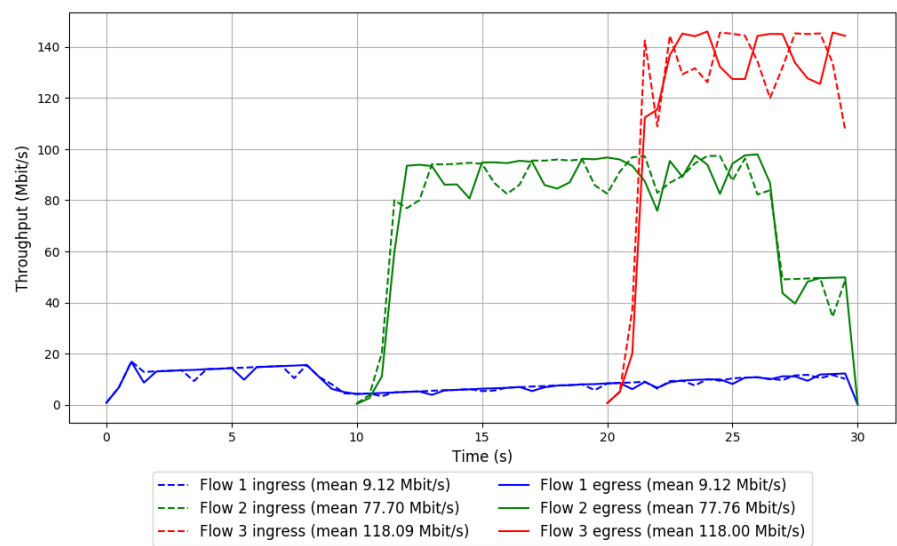
Run 10: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 9.12 Mbit/s)   Flow 1 egress (mean 9.12 Mbit/s)
Flow 2 ingress (mean 77.70 Mbit/s)   Flow 2 egress (mean 77.76 Mbit/s)
Flow 3 ingress (mean 118.09 Mbit/s)   Flow 3 egress (mean 118.00 Mbit/s)

Flow 1 (95th percentile 93.29 ms)   Flow 2 (95th percentile 94.31 ms)   Flow 3 (95th percentile 102.13 ms)

```
Run 1: Statistics of Verus

Start at: 2017-09-18 19:03:33
End at: 2017-09-18 19:04:03

# Below is generated by plot.py at 2017-09-18 22:26:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 217.16 Mbit/s
95th percentile per-packet one-way delay: 226.401 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 118.50 Mbit/s
95th percentile per-packet one-way delay: 279.062 ms
Loss rate: 1.53%
-- Flow 2:
Average throughput: 111.47 Mbit/s
95th percentile per-packet one-way delay: 174.440 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 77.79 Mbit/s
95th percentile per-packet one-way delay: 196.924 ms
Loss rate: 0.16%
```
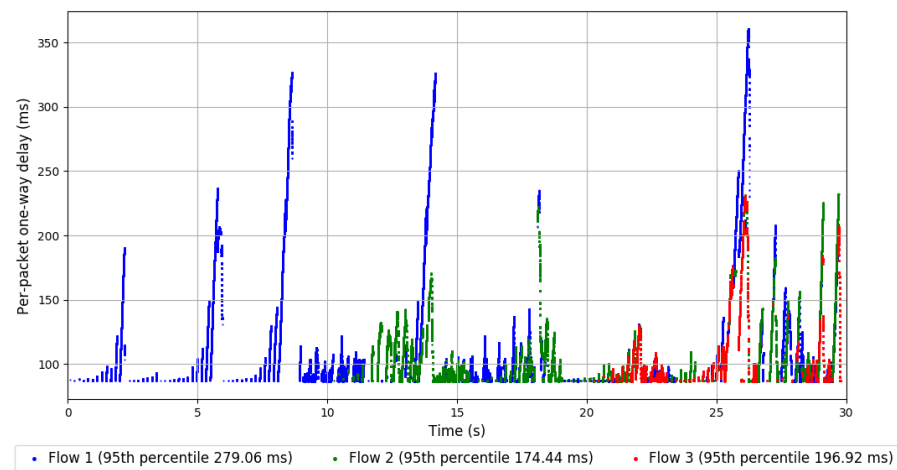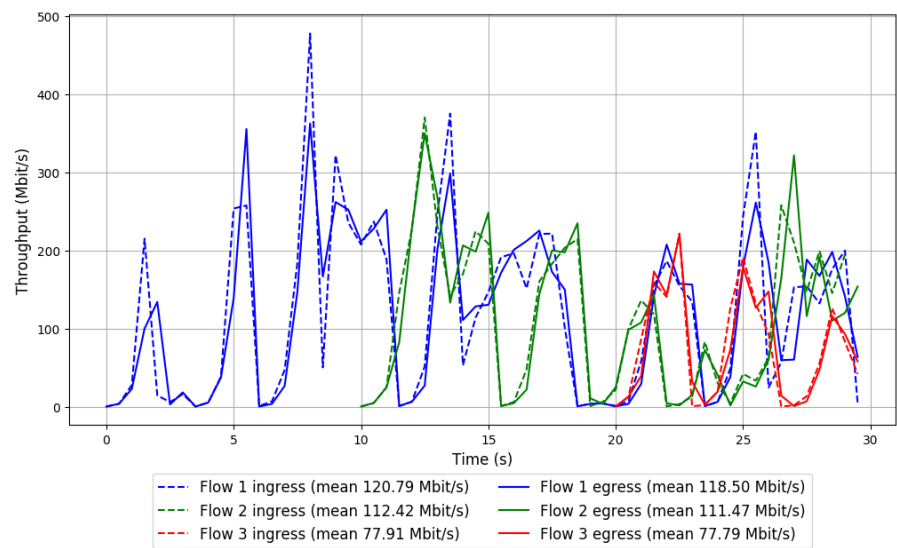
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2017-09-18 19:12:53
End at: 2017-09-18 19:13:23


# Below is generated by plot.py at 2017-09-18 22:28:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 292.08 Mbit/s
95th percentile per-packet one-way delay: 211.990 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 166.75 Mbit/s
95th percentile per-packet one-way delay: 234.568 ms
Loss rate: 2.73%
-- Flow 2:
Average throughput: 170.92 Mbit/s
95th percentile per-packet one-way delay: 200.003 ms
Loss rate: 1.00%
-- Flow 3:
Average throughput: 36.74 Mbit/s
95th percentile per-packet one-way delay: 203.297 ms
Loss rate: 2.35%
```
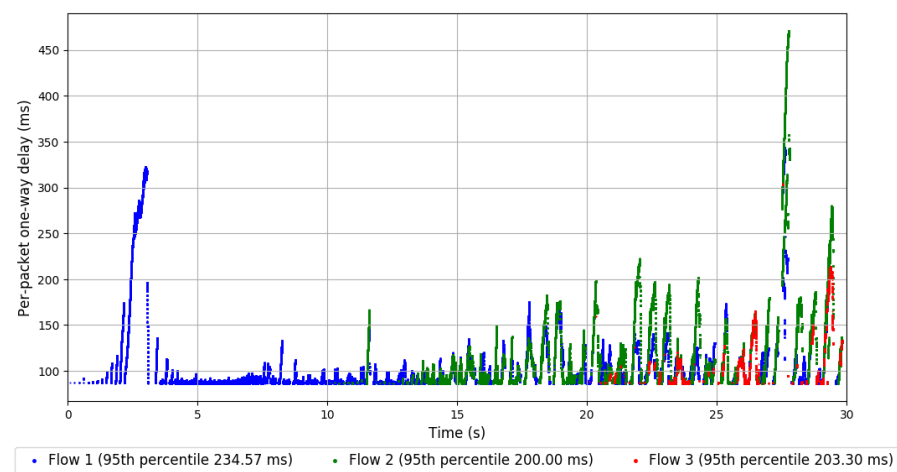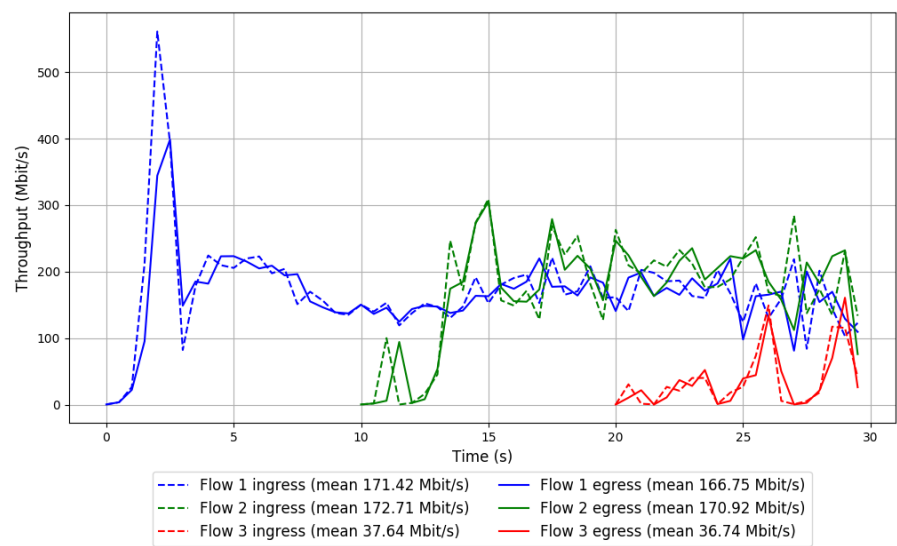
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2017-09-18 19:22:25
End at: 2017-09-18 19:22:55

# Below is generated by plot.py at 2017-09-18 22:28:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 290.42 Mbit/s
95th percentile per-packet one-way delay: 244.980 ms
Loss rate: 3.39%
-- Flow 1:
Average throughput: 178.69 Mbit/s
95th percentile per-packet one-way delay: 225.866 ms
Loss rate: 3.07%
-- Flow 2:
Average throughput: 113.44 Mbit/s
95th percentile per-packet one-way delay: 288.824 ms
Loss rate: 3.47%
-- Flow 3:
Average throughput: 112.29 Mbit/s
95th percentile per-packet one-way delay: 277.965 ms
Loss rate: 4.77%
```
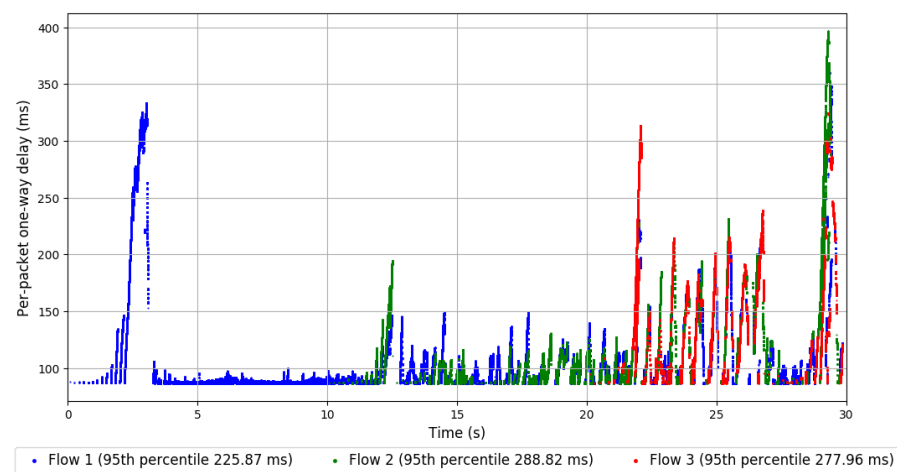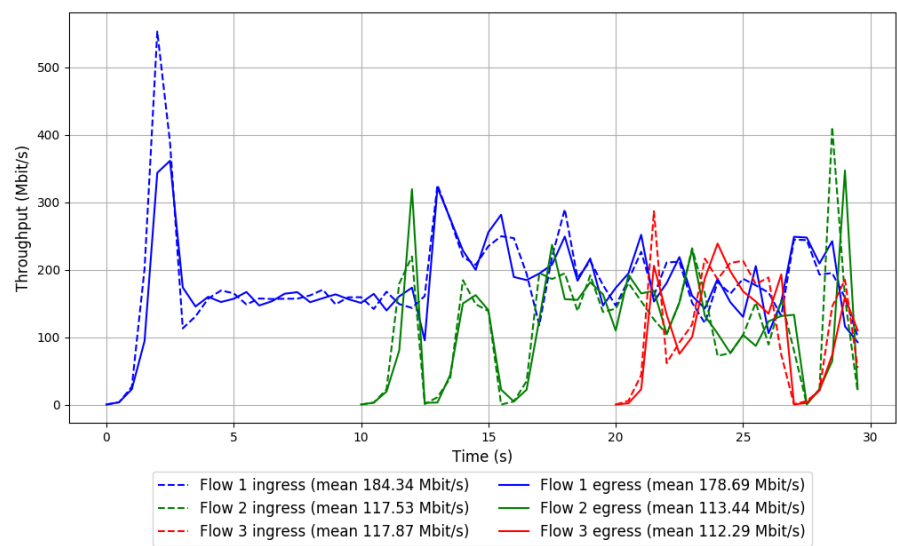
Run 3: Report of Verus — Data Link

189

```
Run 4: Statistics of Verus

Start at: 2017-09-18 19:31:36
End at: 2017-09-18 19:32:06


# Below is generated by plot.py at 2017-09-18 22:29:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 273.92 Mbit/s
95th percentile per-packet one-way delay: 252.925 ms
Loss rate: 2.15%
-- Flow 1:
Average throughput: 157.49 Mbit/s
95th percentile per-packet one-way delay: 194.677 ms
Loss rate: 1.47%
-- Flow 2:
Average throughput: 128.69 Mbit/s
95th percentile per-packet one-way delay: 277.019 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 96.80 Mbit/s
95th percentile per-packet one-way delay: 334.910 ms
Loss rate: 8.96%
```
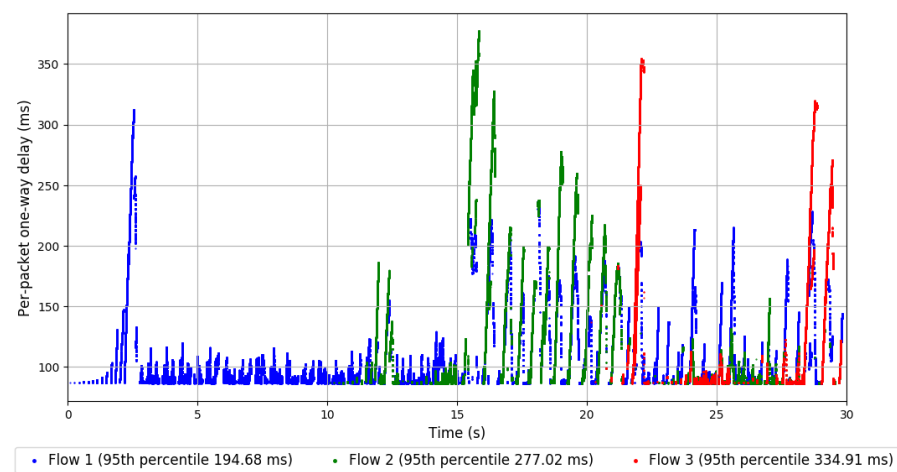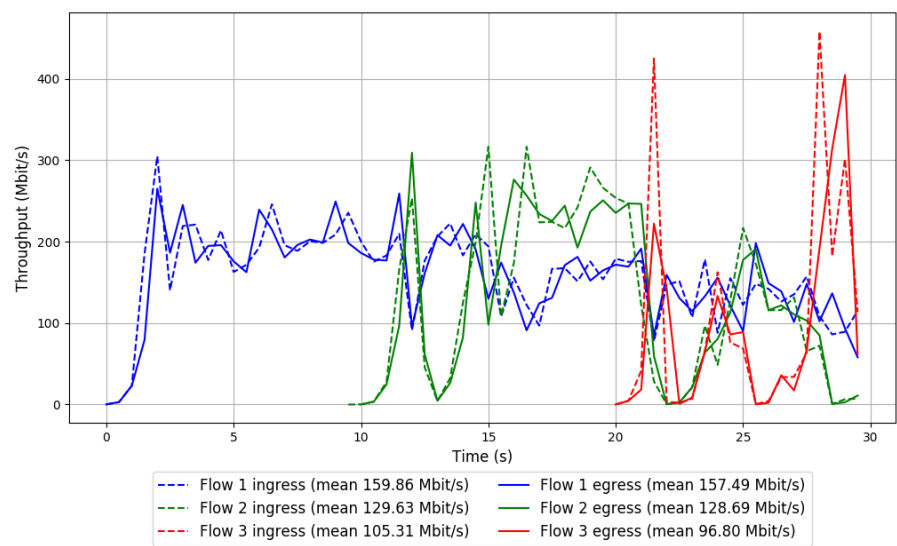
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2017-09-18 19:40:59
End at: 2017-09-18 19:41:29


# Below is generated by plot.py at 2017-09-18 22:29:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 299.43 Mbit/s
95th percentile per-packet one-way delay: 301.715 ms
Loss rate: 7.36%
-- Flow 1:
Average throughput: 147.26 Mbit/s
95th percentile per-packet one-way delay: 229.902 ms
Loss rate: 4.95%
-- Flow 2:
Average throughput: 157.68 Mbit/s
95th percentile per-packet one-way delay: 330.783 ms
Loss rate: 11.47%
-- Flow 3:
Average throughput: 148.05 Mbit/s
95th percentile per-packet one-way delay: 254.301 ms
Loss rate: 5.13%
```
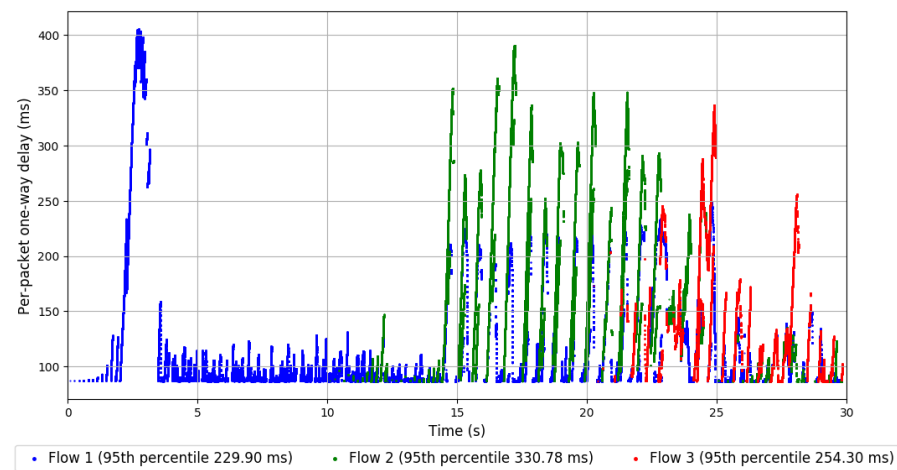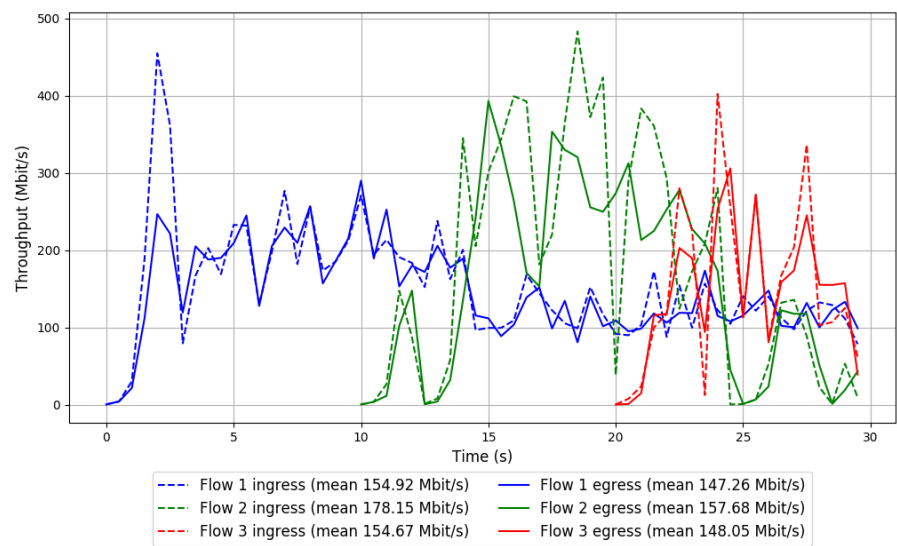
Run 5: Report of Verus — Data Link

```
Run 6: Statistics of Verus

Start at: 2017-09-18 19:50:23
End at: 2017-09-18 19:50:53


# Below is generated by plot.py at 2017-09-18 22:29:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 275.31 Mbit/s
95th percentile per-packet one-way delay: 230.172 ms
Loss rate: 2.06%
-- Flow 1:
Average throughput: 143.47 Mbit/s
95th percentile per-packet one-way delay: 259.803 ms
Loss rate: 2.79%
-- Flow 2:
Average throughput: 160.84 Mbit/s
95th percentile per-packet one-way delay: 217.968 ms
Loss rate: 1.40%
-- Flow 3:
Average throughput: 81.50 Mbit/s
95th percentile per-packet one-way delay: 204.834 ms
Loss rate: 0.62%
```
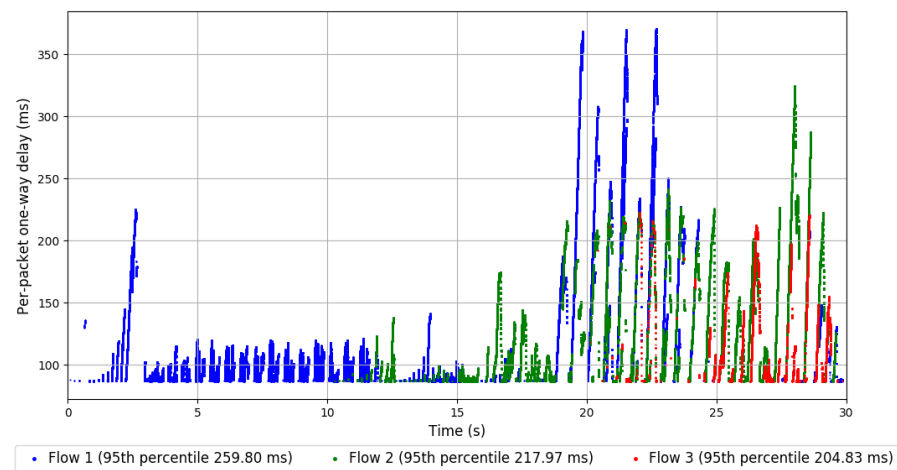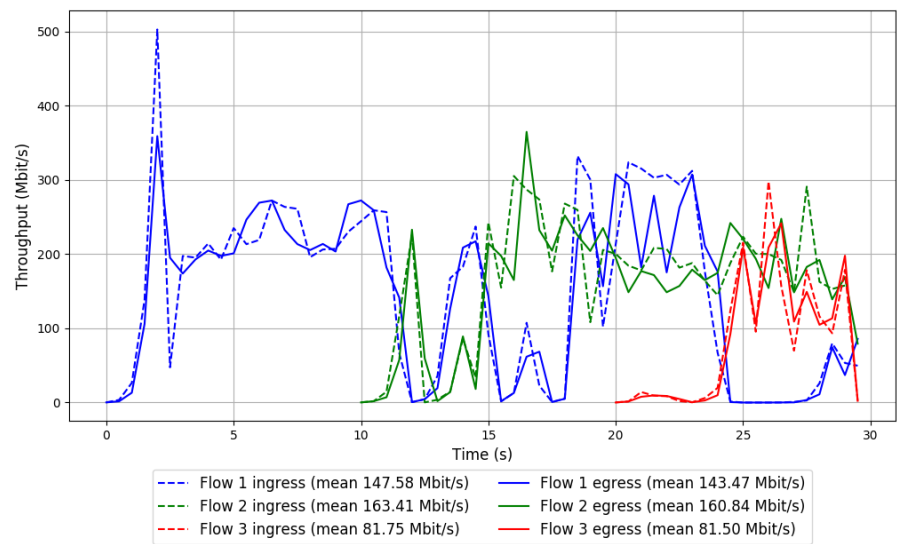
Run 6: Report of Verus — Data Link

```
Run 7: Statistics of Verus

Start at: 2017-09-18 19:59:39
End at: 2017-09-18 20:00:09


# Below is generated by plot.py at 2017-09-18 22:29:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 251.57 Mbit/s
95th percentile per-packet one-way delay: 254.178 ms
Loss rate: 3.84%
-- Flow 1:
Average throughput: 154.78 Mbit/s
95th percentile per-packet one-way delay: 234.276 ms
Loss rate: 3.83%
-- Flow 2:
Average throughput: 74.20 Mbit/s
95th percentile per-packet one-way delay: 145.482 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 145.36 Mbit/s
95th percentile per-packet one-way delay: 312.745 ms
Loss rate: 7.00%
```
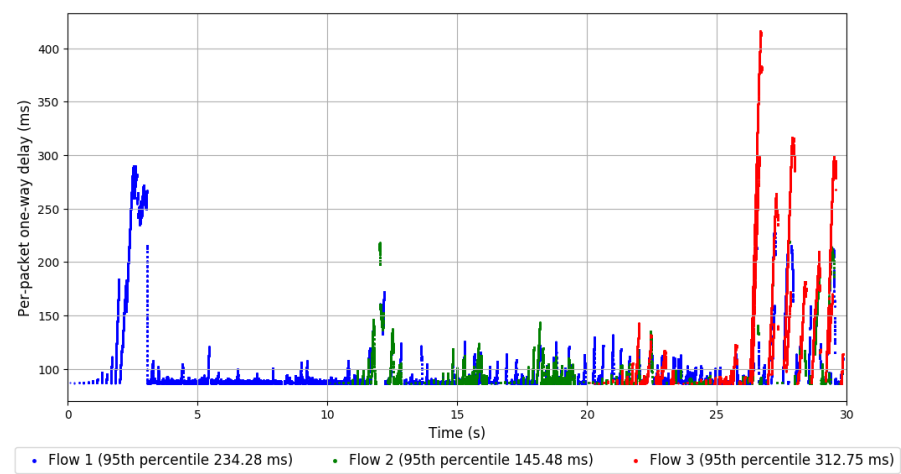
Run 7: Report of Verus — Data Link

Flow 1 ingress (mean 160.95 Mbit/s)   Flow 1 egress (mean 154.78 Mbit/s)
Flow 2 ingress (mean 74.61 Mbit/s)   Flow 2 egress (mean 74.20 Mbit/s)
Flow 3 ingress (mean 156.30 Mbit/s)   Flow 3 egress (mean 145.36 Mbit/s)

Flow 1 (95th percentile 234.28 ms)   Flow 2 (95th percentile 145.48 ms)   Flow 3 (95th percentile 312.75 ms)

197

```
Run 8: Statistics of Verus

Start at: 2017-09-18 20:08:55
End at: 2017-09-18 20:09:25


# Below is generated by plot.py at 2017-09-18 22:30:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 304.68 Mbit/s
95th percentile per-packet one-way delay: 250.546 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 200.96 Mbit/s
95th percentile per-packet one-way delay: 200.390 ms
Loss rate: 0.74%
-- Flow 2:
Average throughput: 142.07 Mbit/s
95th percentile per-packet one-way delay: 315.493 ms
Loss rate: 5.98%
-- Flow 3:
Average throughput: 28.47 Mbit/s
95th percentile per-packet one-way delay: 216.914 ms
Loss rate: 2.95%
```
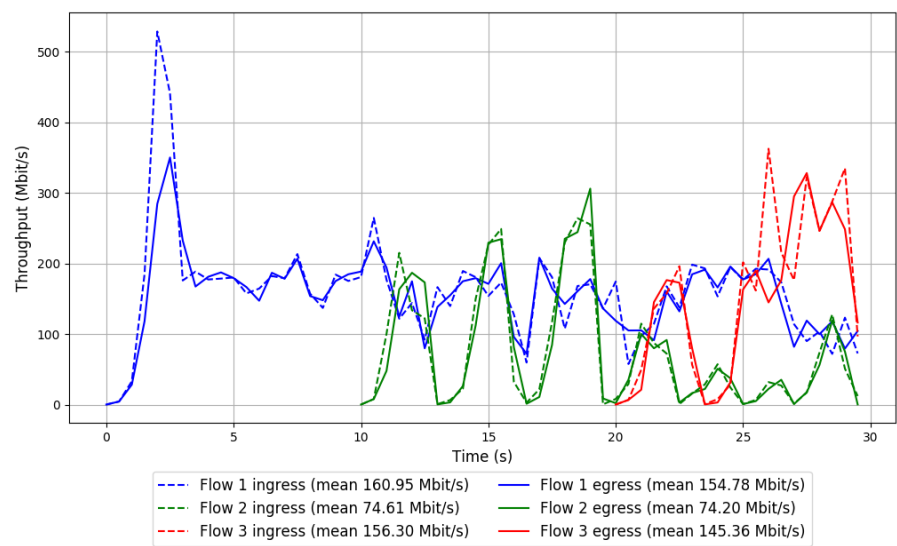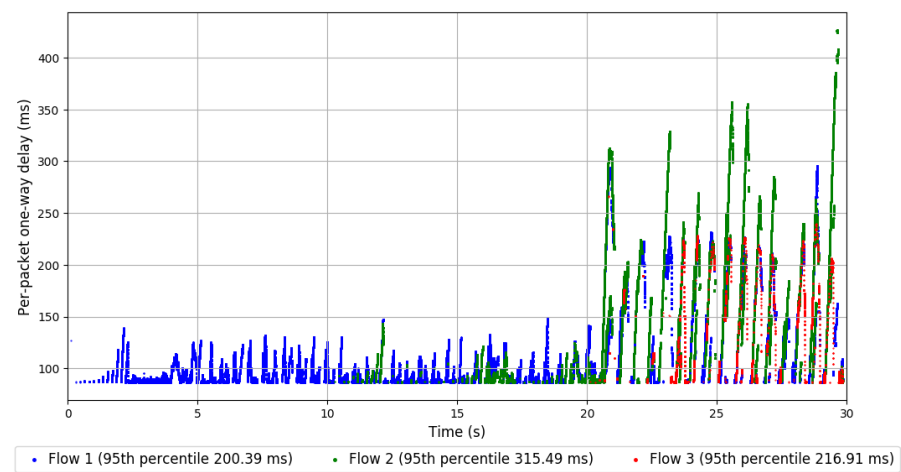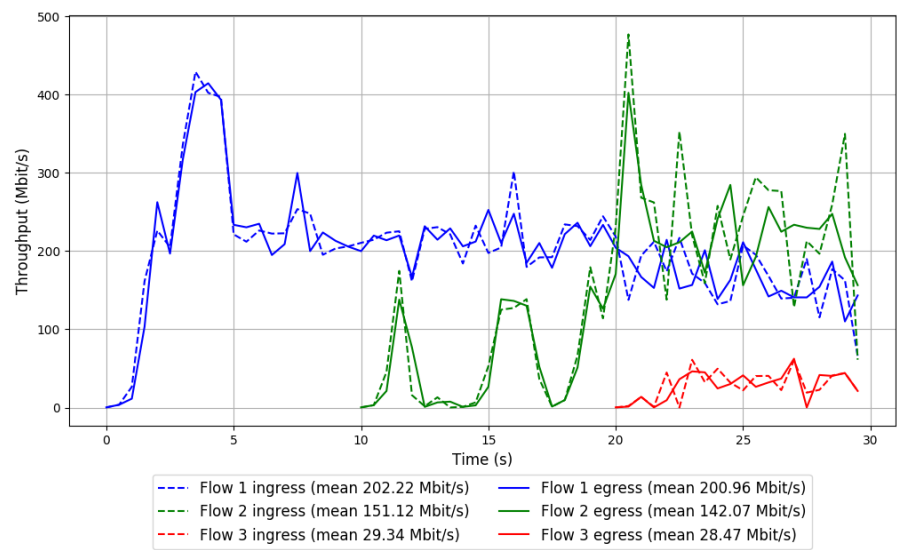
Run 8: Report of Verus — Data Link

```
Run 9: Statistics of Verus

Start at: 2017-09-18 20:18:18
End at: 2017-09-18 20:18:48


# Below is generated by plot.py at 2017-09-18 22:30:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 324.34 Mbit/s
95th percentile per-packet one-way delay: 177.251 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 201.08 Mbit/s
95th percentile per-packet one-way delay: 182.399 ms
Loss rate: 1.13%
-- Flow 2:
Average throughput: 146.10 Mbit/s
95th percentile per-packet one-way delay: 164.823 ms
Loss rate: 0.17%
-- Flow 3:
Average throughput: 82.20 Mbit/s
95th percentile per-packet one-way delay: 178.542 ms
Loss rate: 0.06%
```
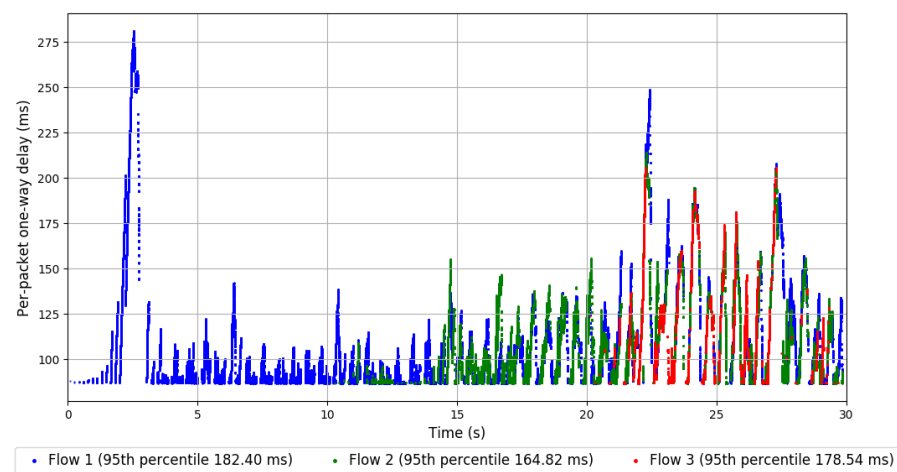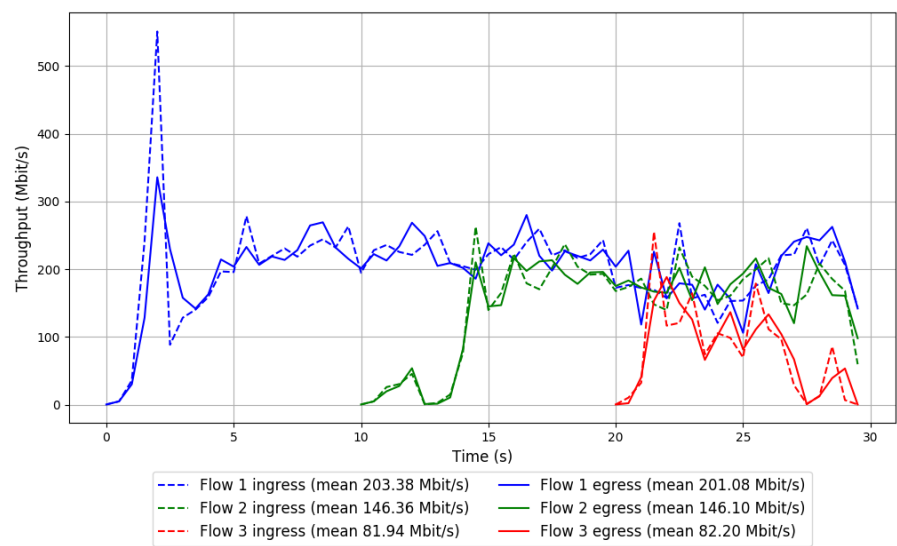
Run 9: Report of Verus — Data Link

- - - - Flow 1 ingress (mean 203.38 Mbit/s) ——— Flow 1 egress (mean 201.08 Mbit/s)
- - - - Flow 2 ingress (mean 146.36 Mbit/s) ——— Flow 2 egress (mean 146.10 Mbit/s)
- - - - Flow 3 ingress (mean 81.94 Mbit/s) ——— Flow 3 egress (mean 82.20 Mbit/s)

- Flow 1 (95th percentile 182.40 ms)   - Flow 2 (95th percentile 164.82 ms)   - Flow 3 (95th percentile 178.54 ms)

```
Run 10: Statistics of Verus

Start at: 2017-09-18 20:27:39
End at: 2017-09-18 20:28:09


# Below is generated by plot.py at 2017-09-18 22:30:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 252.37 Mbit/s
95th percentile per-packet one-way delay: 188.457 ms
Loss rate: 1.25%
-- Flow 1:
Average throughput: 162.71 Mbit/s
95th percentile per-packet one-way delay: 175.950 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 105.05 Mbit/s
95th percentile per-packet one-way delay: 244.111 ms
Loss rate: 3.15%
-- Flow 3:
Average throughput: 61.29 Mbit/s
95th percentile per-packet one-way delay: 176.965 ms
Loss rate: 0.29%
```

Run 10: Report of Verus — Data Link

203