Pantheon Report

Generated at 2018-12-02 18:27:44 (UTC).

Data path: Stanford on **eno1** (*remote*) →AWS India 2 on **ens5** (*local*).

Repeated the test of 19 congestion control schemes 5 times.

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

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
```
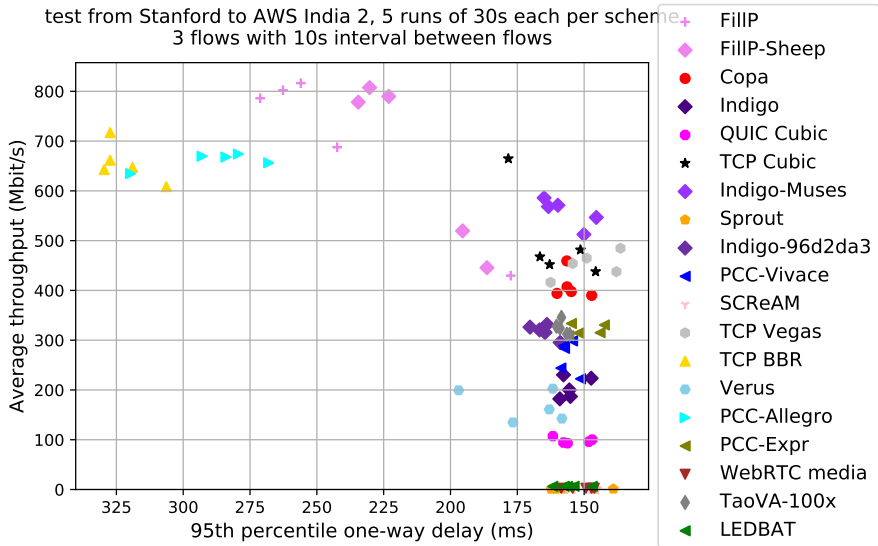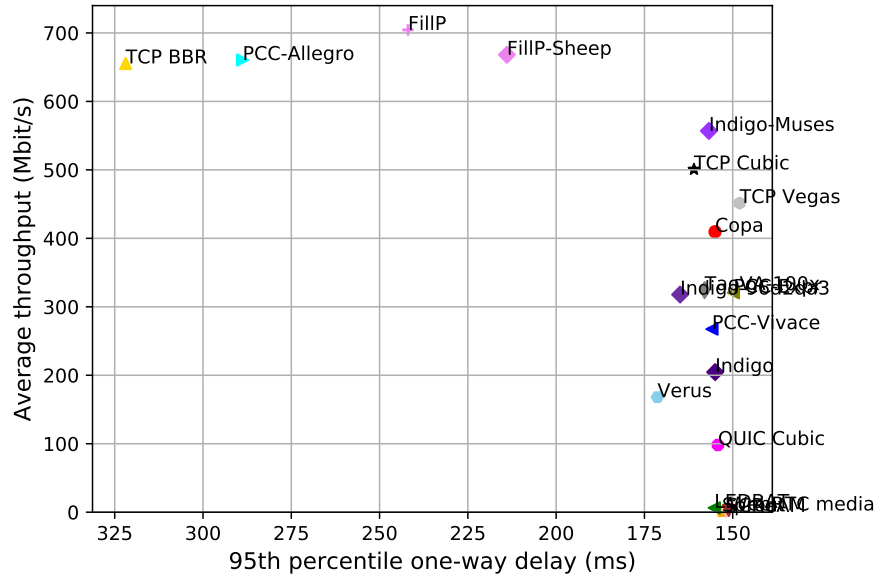
```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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

test from Stanford to AWS India 2, 5 runs of 30s each per scheme
3 flows with 10s interval between flows

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	381.69	324.07	181.72	324.82	321.33	176.20	5.31	5.99	5.36
Copa	5	258.52	179.39	99.25	153.22	153.77	151.52	0.59	1.29	4.19
TCP Cubic	5	278.41	248.16	177.26	150.53	162.95	188.36	1.00	1.68	4.81
FillP	5	386.57	356.80	251.49	247.22	233.06	202.63	1.05	1.64	4.31
FillP-Sheep	5	356.17	346.67	253.53	210.34	218.39	193.07	0.51	1.55	4.29
Indigo	5	107.01	105.40	86.02	154.32	151.76	150.54	1.07	1.55	3.69
Indigo-96d2da3	5	175.82	156.60	120.16	164.01	164.99	159.59	0.87	1.92	5.88
LEDBAT	5	4.17	2.67	1.28	150.10	152.21	152.38	1.96	3.00	5.94
Indigo-Muses	5	384.81	213.86	94.35	155.24	156.28	156.24	0.63	1.61	5.43
PCC-Allegro	5	380.20	303.94	246.81	273.35	290.20	297.52	3.40	4.82	6.38
PCC-Expr	5	221.47	107.26	86.65	148.12	145.33	146.52	0.65	1.58	3.73
QUIC Cubic	5	50.08	49.25	47.29	151.76	150.85	150.94	0.85	1.69	4.05
SCReAM	5	0.20	0.21	0.21	145.83	149.70	145.15	0.90	1.58	2.86
Sprout	5	0.55	0.62	0.63	148.60	150.79	150.48	1.14	1.44	3.27
TaoVA-100x	5	200.90	158.20	58.43	155.80	156.98	152.82	0.51	1.00	3.35
TCP Vegas	5	228.51	239.55	196.88	145.21	145.54	156.41	0.80	1.30	4.41
Verus	5	107.94	65.80	52.71	173.44	177.27	158.16	0.82	0.36	4.25
PCC-Vivace	5	185.77	99.59	48.80	153.86	148.38	154.51	0.81	1.52	4.63
WebRTC media	5	1.43	0.87	0.26	149.26	148.40	145.23	0.81	1.47	7.93

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-02 14:41:43
End at: 2018-12-02 14:42:13
Local clock offset: -0.159 ms
Remote clock offset: 4.272 ms


# Below is generated by plot.py at 2018-12-02 17:42:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 608.57 Mbit/s
95th percentile per-packet one-way delay: 306.322 ms
Loss rate: 10.22%
-- Flow 1:
Average throughput: 364.56 Mbit/s
95th percentile per-packet one-way delay: 304.970 ms
Loss rate: 12.03%
-- Flow 2:
Average throughput: 281.37 Mbit/s
95th percentile per-packet one-way delay: 308.024 ms
Loss rate: 8.39%
-- Flow 3:
Average throughput: 176.61 Mbit/s
95th percentile per-packet one-way delay: 139.184 ms
Loss rate: 3.94%
```
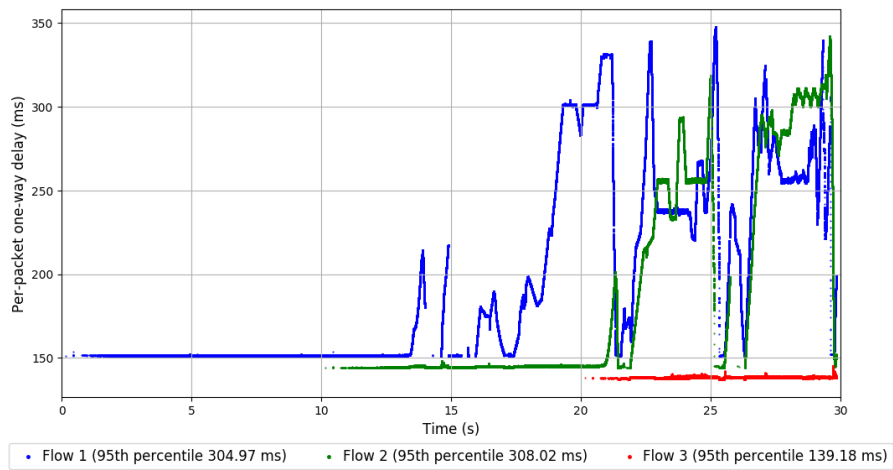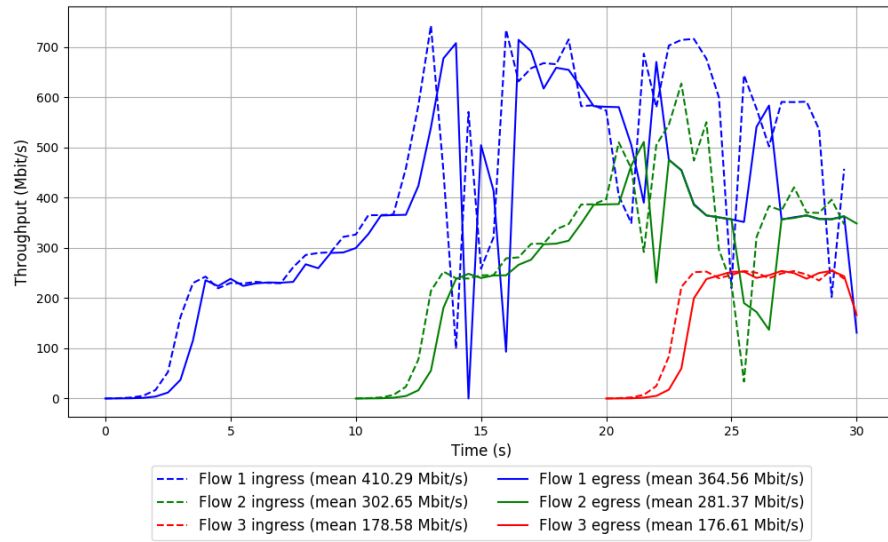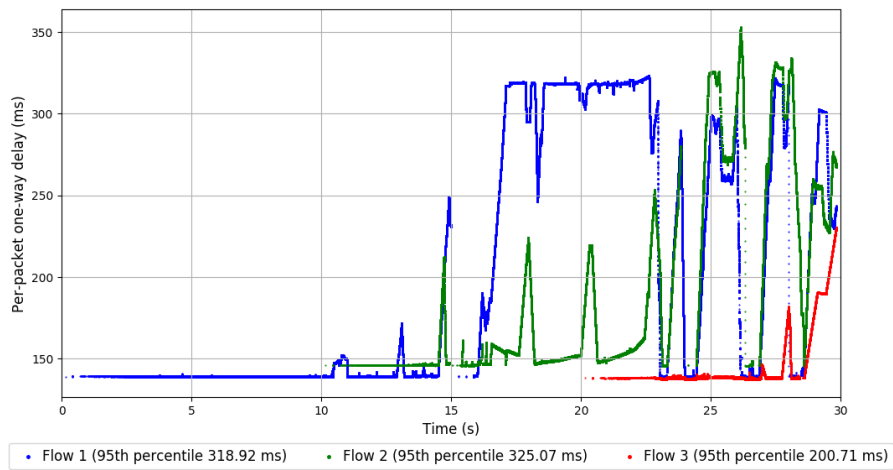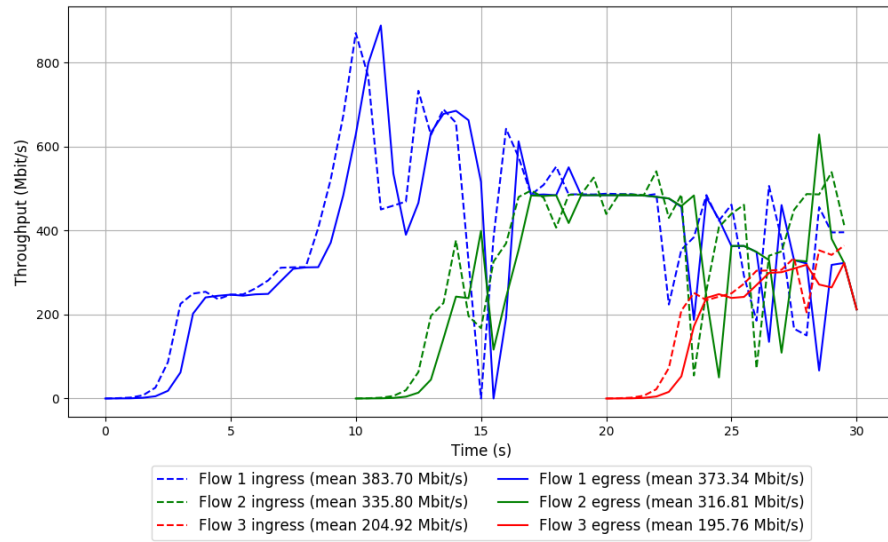
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-02 15:15:46
End at: 2018-12-02 15:16:16
Local clock offset: -0.405 ms
Remote clock offset: 4.517 ms


# Below is generated by plot.py at 2018-12-02 17:43:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 647.11 Mbit/s
95th percentile per-packet one-way delay: 318.968 ms
Loss rate: 5.12%
-- Flow 1:
Average throughput: 373.34 Mbit/s
95th percentile per-packet one-way delay: 318.924 ms
Loss rate: 3.62%
-- Flow 2:
Average throughput: 316.81 Mbit/s
95th percentile per-packet one-way delay: 325.072 ms
Loss rate: 7.04%
-- Flow 3:
Average throughput: 195.76 Mbit/s
95th percentile per-packet one-way delay: 200.707 ms
Loss rate: 7.22%
```
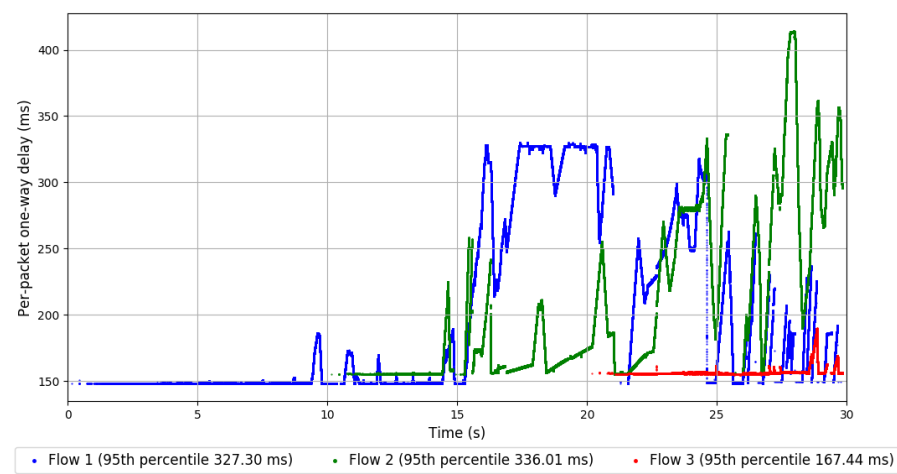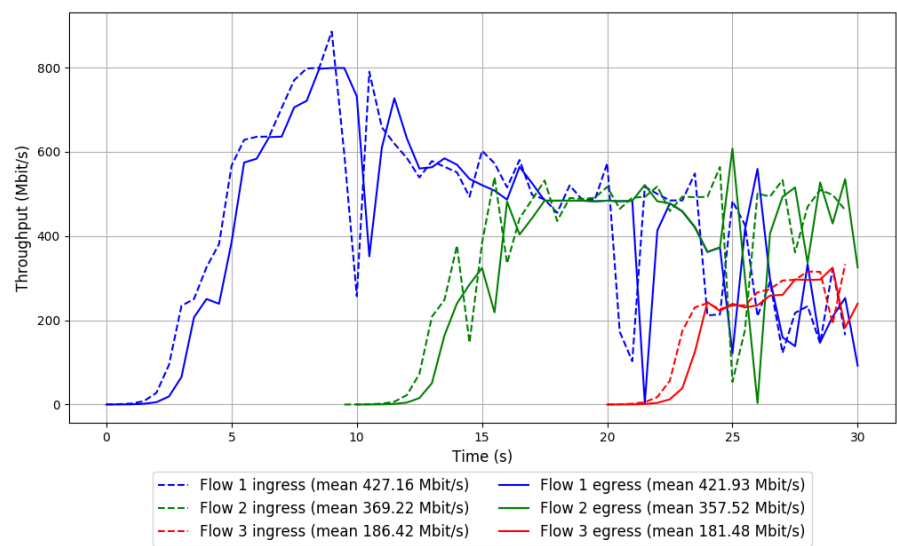
Run 2: Report of TCP BBR — Data Link

- - - - Flow 1 ingress (mean 383.70 Mbit/s)   —— Flow 1 egress (mean 373.34 Mbit/s)
- - - - Flow 2 ingress (mean 335.80 Mbit/s)   —— Flow 2 egress (mean 316.81 Mbit/s)
- - - - Flow 3 ingress (mean 204.92 Mbit/s)   —— Flow 3 egress (mean 195.76 Mbit/s)

• Flow 1 (95th percentile 318.92 ms)   • Flow 2 (95th percentile 325.07 ms)   • Flow 3 (95th percentile 200.71 ms)
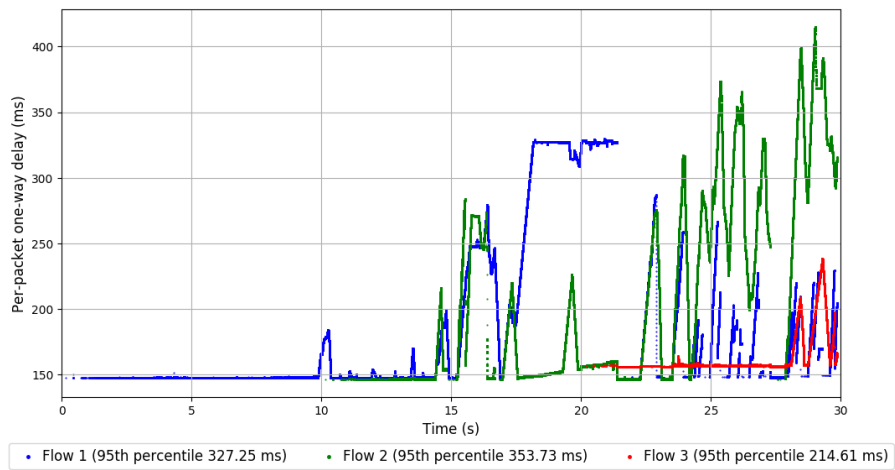
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```
Run 3: Statistics of TCP BBR

Start at: 2018-12-02 15:49:27
End at: 2018-12-02 15:49:57
Local clock offset: 7.87 ms
Remote clock offset: -0.226 ms


# Below is generated by plot.py at 2018-12-02 17:43:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 717.10 Mbit/s
95th percentile per-packet one-way delay: 327.316 ms
Loss rate: 3.38%
-- Flow 1:
Average throughput: 421.93 Mbit/s
95th percentile per-packet one-way delay: 327.303 ms
Loss rate: 2.39%
-- Flow 2:
Average throughput: 357.52 Mbit/s
95th percentile per-packet one-way delay: 336.007 ms
Loss rate: 4.58%
-- Flow 3:
Average throughput: 181.48 Mbit/s
95th percentile per-packet one-way delay: 167.436 ms
Loss rate: 5.51%
```
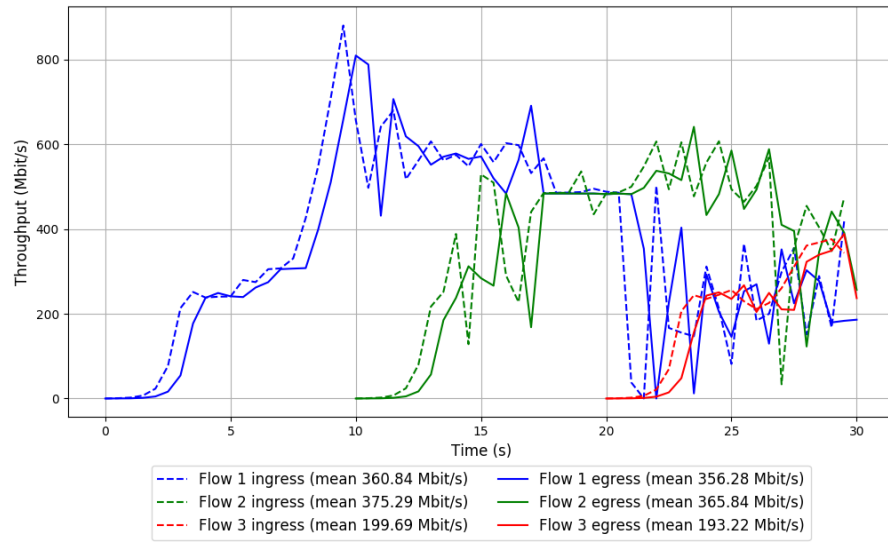
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 427.16 Mbit/s) --- Flow 1 egress (mean 421.93 Mbit/s)
Flow 2 ingress (mean 369.22 Mbit/s) --- Flow 2 egress (mean 357.52 Mbit/s)
Flow 3 ingress (mean 186.42 Mbit/s) --- Flow 3 egress (mean 181.48 Mbit/s)

Flow 1 (95th percentile 327.30 ms) • Flow 2 (95th percentile 336.01 ms) • Flow 3 (95th percentile 167.44 ms)
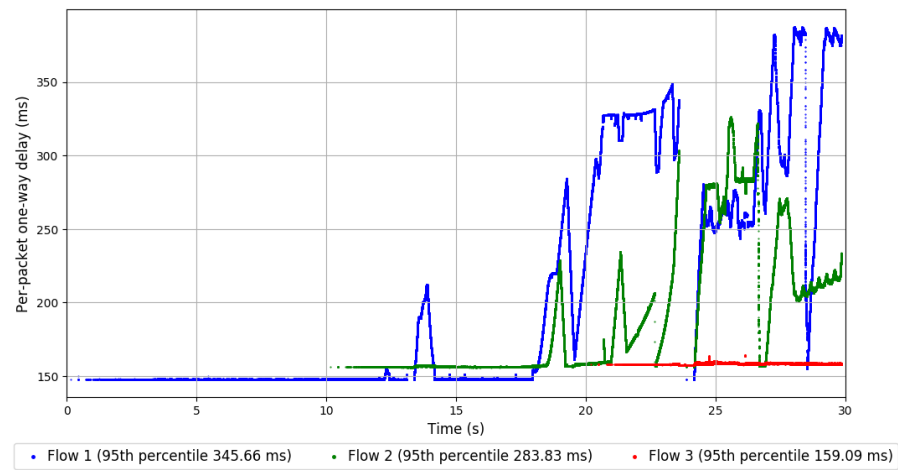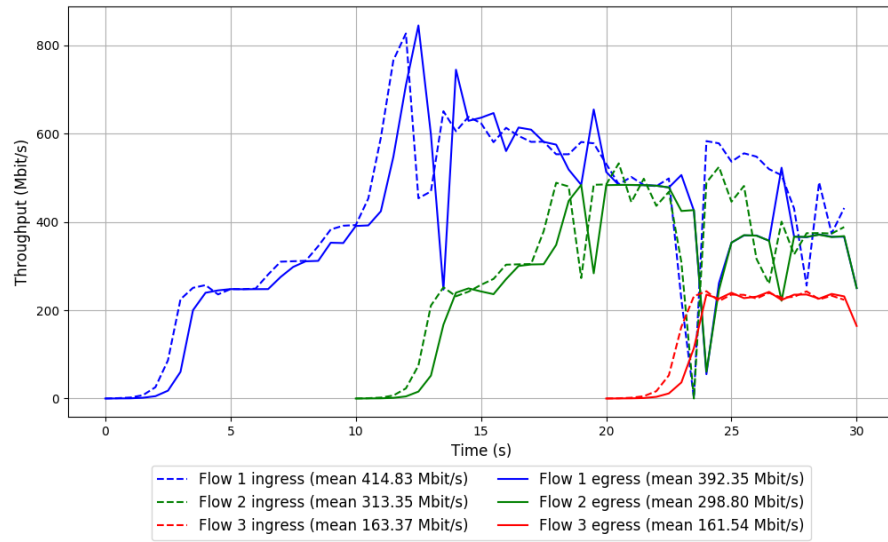
```
Run 4: Statistics of TCP BBR

Start at: 2018-12-02 16:23:07
End at: 2018-12-02 16:23:37
Local clock offset: 8.527 ms
Remote clock offset: -0.171 ms


# Below is generated by plot.py at 2018-12-02 17:43:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 661.67 Mbit/s
95th percentile per-packet one-way delay: 327.362 ms
Loss rate: 3.20%
-- Flow 1:
Average throughput: 356.28 Mbit/s
95th percentile per-packet one-way delay: 327.250 ms
Loss rate: 2.20%
-- Flow 2:
Average throughput: 365.84 Mbit/s
95th percentile per-packet one-way delay: 353.725 ms
Loss rate: 3.89%
-- Flow 3:
Average throughput: 193.22 Mbit/s
95th percentile per-packet one-way delay: 214.606 ms
Loss rate: 6.08%
```

Run 4: Report of TCP BBR — Data Link

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```
Run 5: Statistics of TCP BBR

Start at: 2018-12-02 16:57:17
End at: 2018-12-02 16:57:47
Local clock offset: 7.263 ms
Remote clock offset: -3.934 ms


# Below is generated by plot.py at 2018-12-02 17:43:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 642.97 Mbit/s
95th percentile per-packet one-way delay: 329.573 ms
Loss rate: 6.05%
-- Flow 1:
Average throughput: 392.35 Mbit/s
95th percentile per-packet one-way delay: 345.660 ms
Loss rate: 6.32%
-- Flow 2:
Average throughput: 298.80 Mbit/s
95th percentile per-packet one-way delay: 283.829 ms
Loss rate: 6.03%
-- Flow 3:
Average throughput: 161.54 Mbit/s
95th percentile per-packet one-way delay: 159.089 ms
Loss rate: 4.07%
```
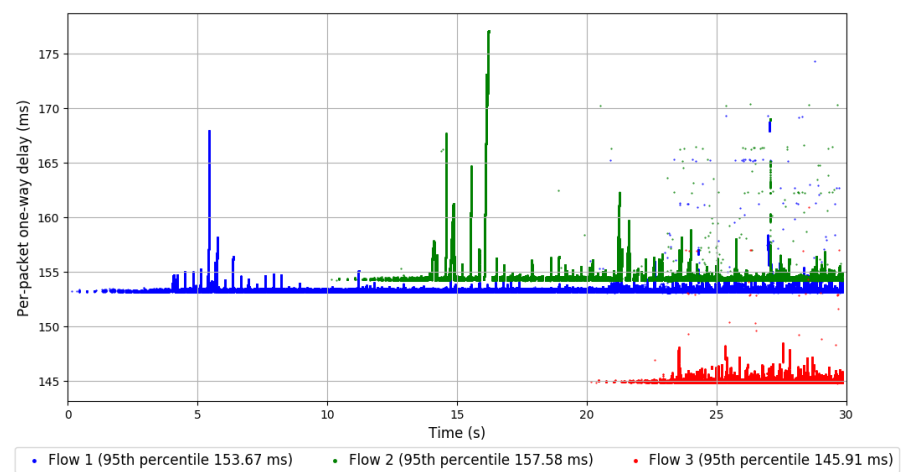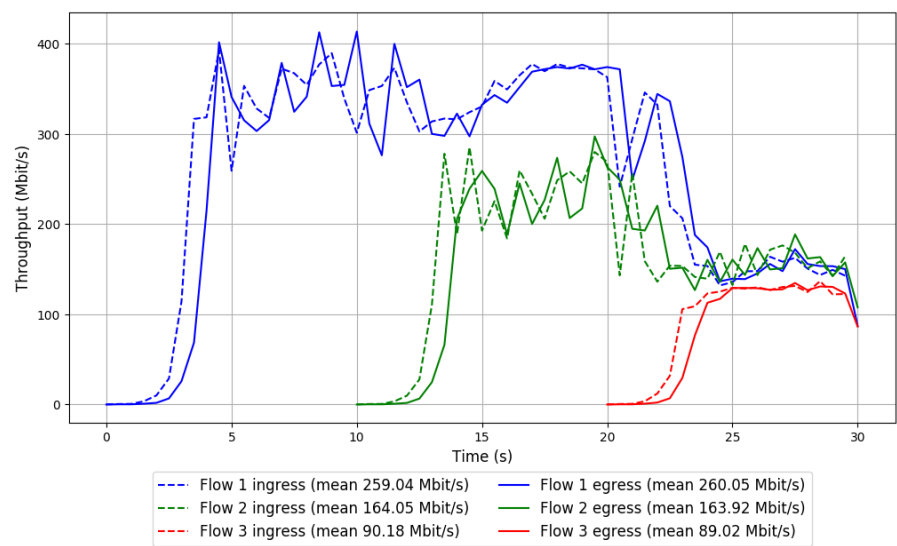
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 414.83 Mbit/s) --- Flow 1 egress (mean 392.35 Mbit/s)
Flow 2 ingress (mean 313.35 Mbit/s) --- Flow 2 egress (mean 298.80 Mbit/s)
Flow 3 ingress (mean 163.37 Mbit/s) --- Flow 3 egress (mean 161.54 Mbit/s)

Flow 1 (95th percentile 345.66 ms) • Flow 2 (95th percentile 283.83 ms) • Flow 3 (95th percentile 159.09 ms)

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```
Run 1: Statistics of Copa

Start at: 2018-12-02 14:54:41
End at: 2018-12-02 14:55:11
Local clock offset: 6.789 ms
Remote clock offset: 3.639 ms


# Below is generated by plot.py at 2018-12-02 17:44:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 397.70 Mbit/s
95th percentile per-packet one-way delay: 154.807 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 260.05 Mbit/s
95th percentile per-packet one-way delay: 153.673 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 163.92 Mbit/s
95th percentile per-packet one-way delay: 157.577 ms
Loss rate: 1.56%
-- Flow 3:
Average throughput: 89.02 Mbit/s
95th percentile per-packet one-way delay: 145.914 ms
Loss rate: 4.12%
```
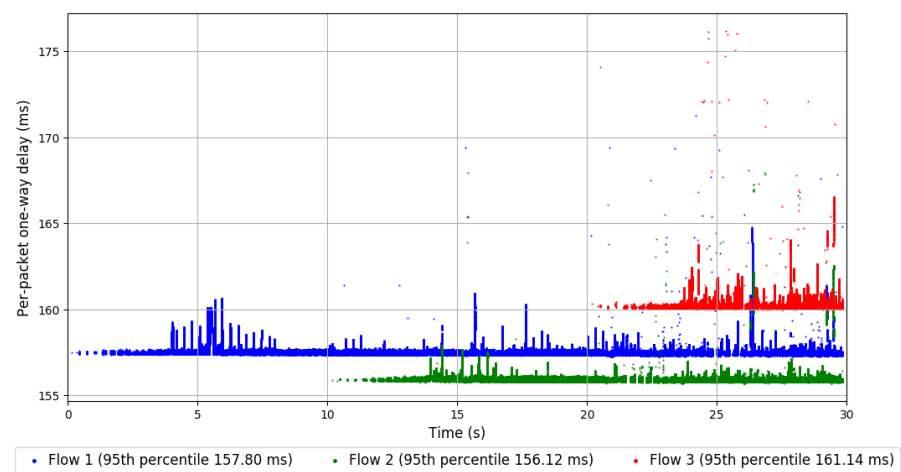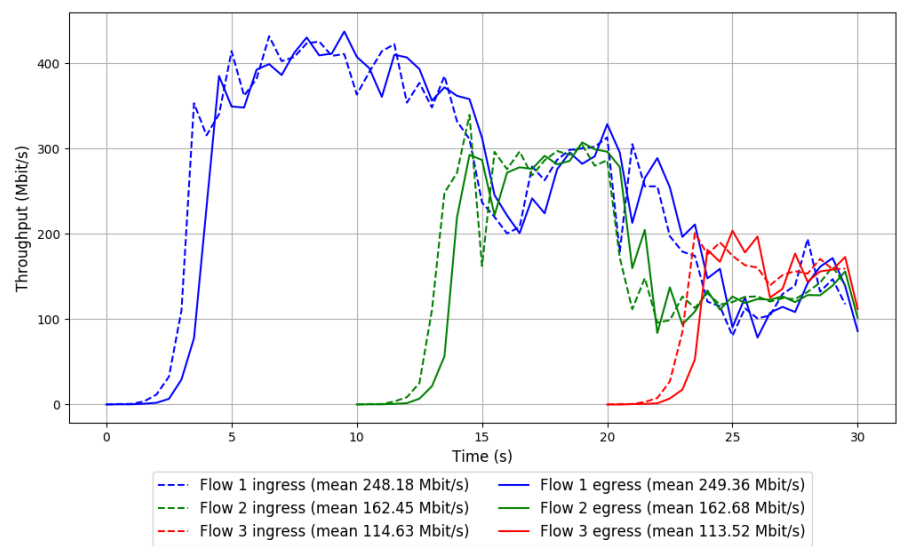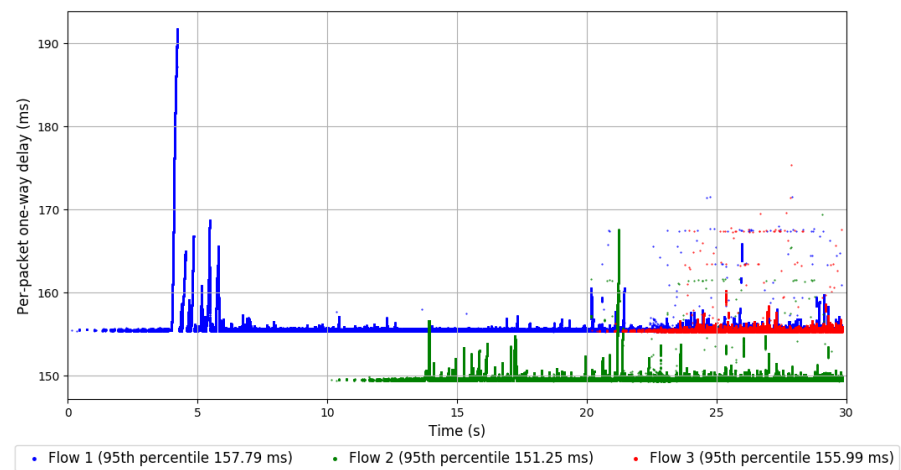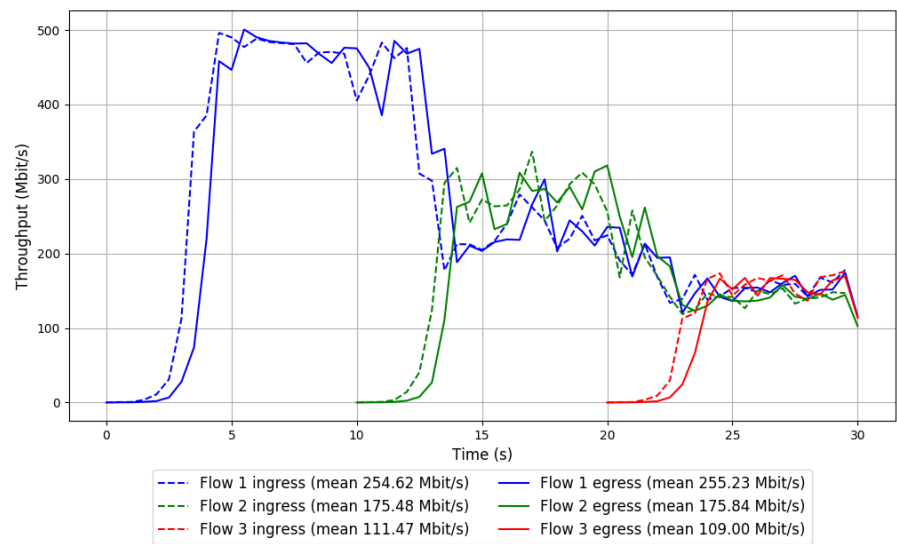
Run 1: Report of Copa — Data Link

- - - Flow 1 ingress (mean 259.04 Mbit/s) —— Flow 1 egress (mean 260.05 Mbit/s)
- - - Flow 2 ingress (mean 164.05 Mbit/s) —— Flow 2 egress (mean 163.92 Mbit/s)
- - - Flow 3 ingress (mean 90.18 Mbit/s) —— Flow 3 egress (mean 89.02 Mbit/s)

• Flow 1 (95th percentile 153.67 ms)   • Flow 2 (95th percentile 157.58 ms)   • Flow 3 (95th percentile 145.91 ms)

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```
Run 2: Statistics of Copa

Start at: 2018-12-02 15:28:16
End at: 2018-12-02 15:28:46
Local clock offset: 8.78 ms
Remote clock offset: 0.847 ms

# Below is generated by plot.py at 2018-12-02 17:44:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 394.01 Mbit/s
95th percentile per-packet one-way delay: 160.142 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 249.36 Mbit/s
95th percentile per-packet one-way delay: 157.798 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 162.68 Mbit/s
95th percentile per-packet one-way delay: 156.116 ms
Loss rate: 1.35%
-- Flow 3:
Average throughput: 113.52 Mbit/s
95th percentile per-packet one-way delay: 161.140 ms
Loss rate: 3.95%
```

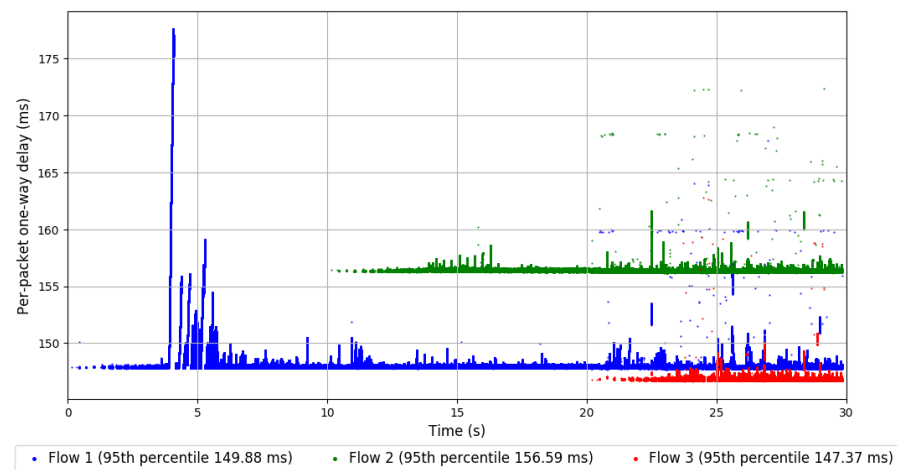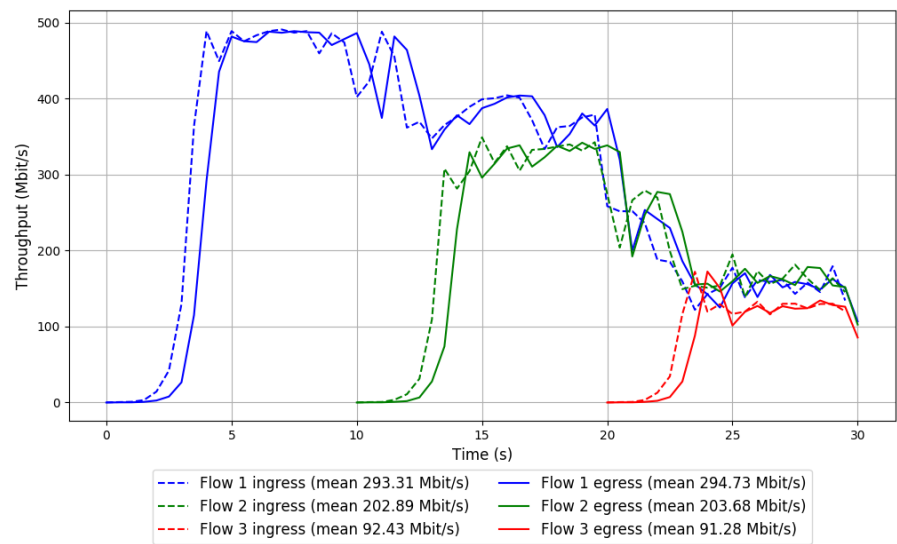Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-12-02 16:02:11
End at: 2018-12-02 16:02:41
Local clock offset: 7.671 ms
Remote clock offset: -0.162 ms


# Below is generated by plot.py at 2018-12-02 17:44:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 407.18 Mbit/s
95th percentile per-packet one-way delay: 156.403 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 255.23 Mbit/s
95th percentile per-packet one-way delay: 157.788 ms
Loss rate: 0.74%
-- Flow 2:
Average throughput: 175.84 Mbit/s
95th percentile per-packet one-way delay: 151.250 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 109.00 Mbit/s
95th percentile per-packet one-way delay: 155.986 ms
Loss rate: 5.18%
```

Run 3: Report of Copa — Data Link

- - - - Flow 1 ingress (mean 254.62 Mbit/s) —— Flow 1 egress (mean 255.23 Mbit/s)
- - - - Flow 2 ingress (mean 175.48 Mbit/s) —— Flow 2 egress (mean 175.84 Mbit/s)
- - - - Flow 3 ingress (mean 111.47 Mbit/s) —— Flow 3 egress (mean 109.00 Mbit/s)

- Flow 1 (95th percentile 157.79 ms) - Flow 2 (95th percentile 151.25 ms) - Flow 3 (95th percentile 155.99 ms)

```
Run 4: Statistics of Copa

Start at: 2018-12-02 16:36:10
End at: 2018-12-02 16:36:40
Local clock offset: 7.295 ms
Remote clock offset: -2.609 ms


# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 459.23 Mbit/s
95th percentile per-packet one-way delay: 156.488 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 294.73 Mbit/s
95th percentile per-packet one-way delay: 149.880 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 203.68 Mbit/s
95th percentile per-packet one-way delay: 156.594 ms
Loss rate: 1.13%
-- Flow 3:
Average throughput: 91.28 Mbit/s
95th percentile per-packet one-way delay: 147.365 ms
Loss rate: 4.06%
```
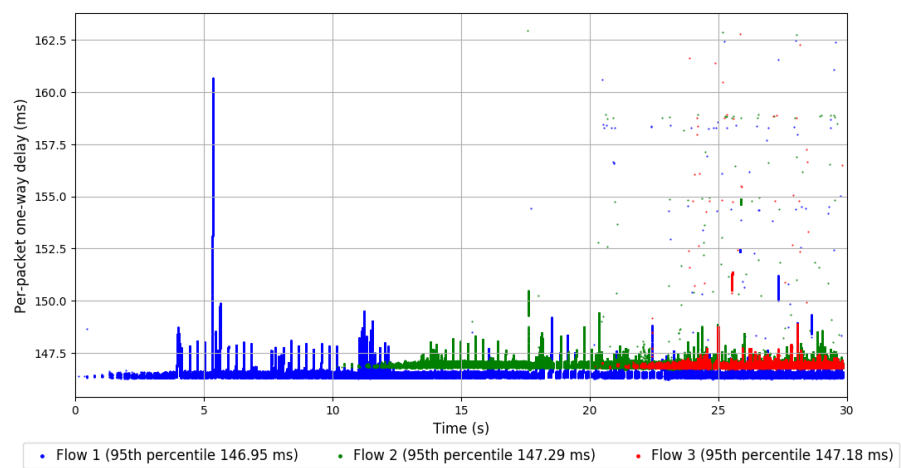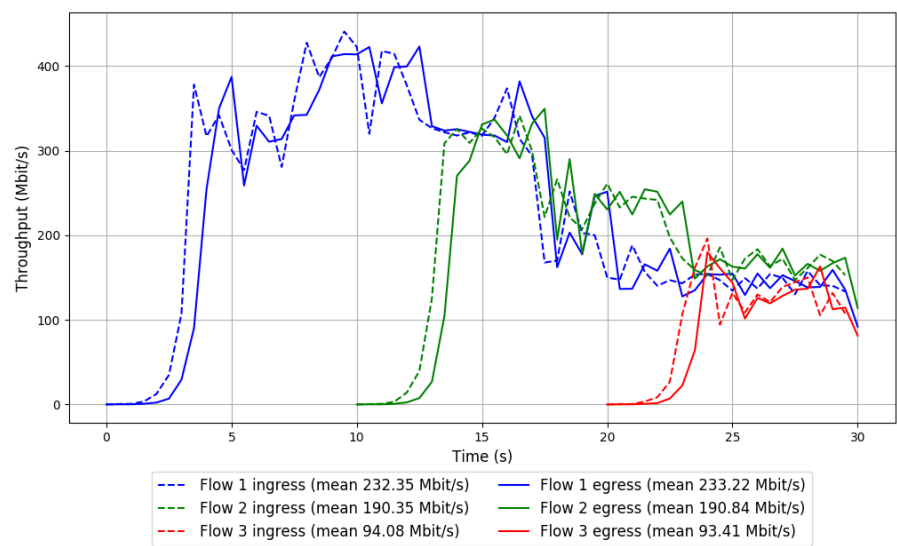
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 293.31 Mbit/s)   Flow 1 egress (mean 294.73 Mbit/s)
Flow 2 ingress (mean 202.89 Mbit/s)   Flow 2 egress (mean 203.68 Mbit/s)
Flow 3 ingress (mean 92.43 Mbit/s)   Flow 3 egress (mean 91.28 Mbit/s)

Flow 1 (95th percentile 149.88 ms)   Flow 2 (95th percentile 156.59 ms)   Flow 3 (95th percentile 147.37 ms)

```
Run 5: Statistics of Copa

Start at: 2018-12-02 17:10:24
End at: 2018-12-02 17:10:54
Local clock offset: 7.328 ms
Remote clock offset: -3.2 ms

# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 390.00 Mbit/s
95th percentile per-packet one-way delay: 147.177 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 233.22 Mbit/s
95th percentile per-packet one-way delay: 146.948 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 190.84 Mbit/s
95th percentile per-packet one-way delay: 147.288 ms
Loss rate: 1.16%
-- Flow 3:
Average throughput: 93.41 Mbit/s
95th percentile per-packet one-way delay: 147.181 ms
Loss rate: 3.66%
```
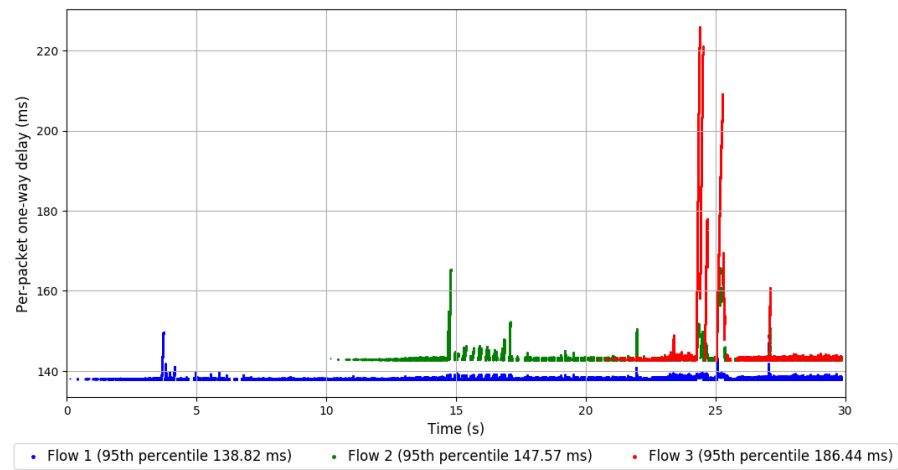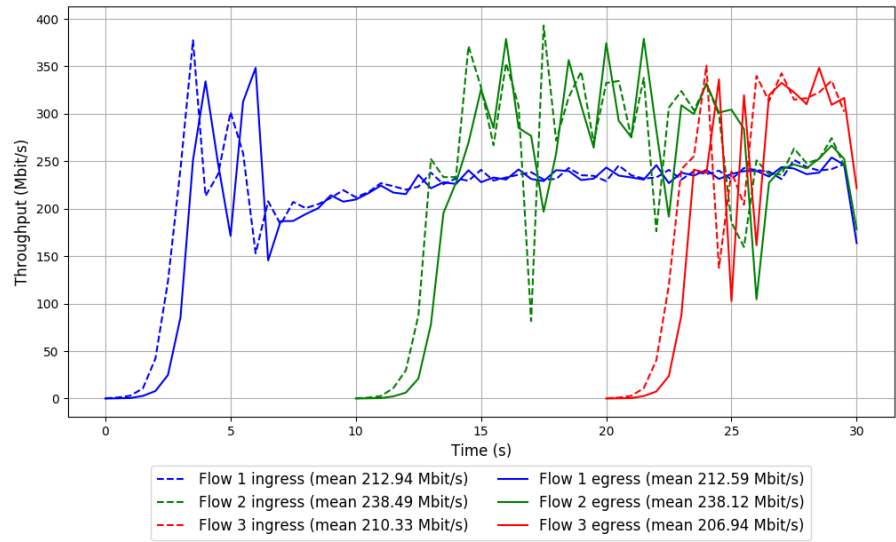
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-02 14:43:49
End at: 2018-12-02 14:44:19
Local clock offset: 0.032 ms
Remote clock offset: 4.014 ms

# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 437.82 Mbit/s
95th percentile per-packet one-way delay: 145.695 ms
Loss rate: 1.82%
-- Flow 1:
Average throughput: 212.59 Mbit/s
95th percentile per-packet one-way delay: 138.821 ms
Loss rate: 1.11%
-- Flow 2:
Average throughput: 238.12 Mbit/s
95th percentile per-packet one-way delay: 147.574 ms
Loss rate: 1.61%
-- Flow 3:
Average throughput: 206.94 Mbit/s
95th percentile per-packet one-way delay: 186.441 ms
Loss rate: 4.49%
```
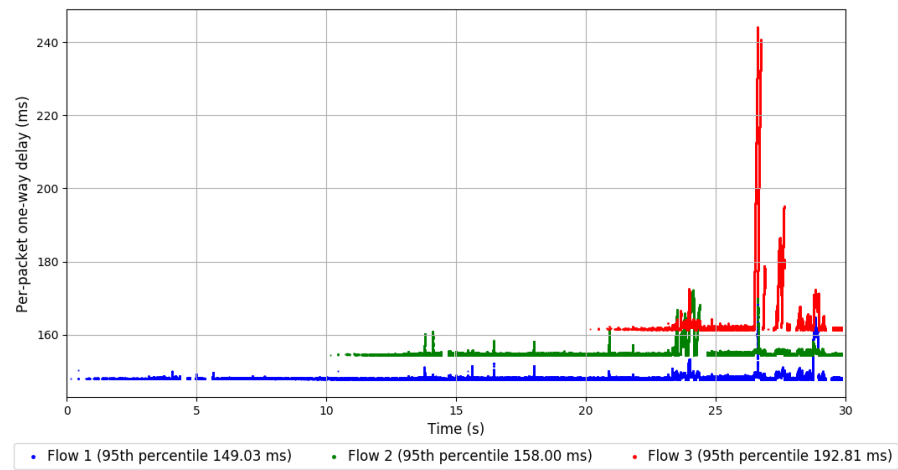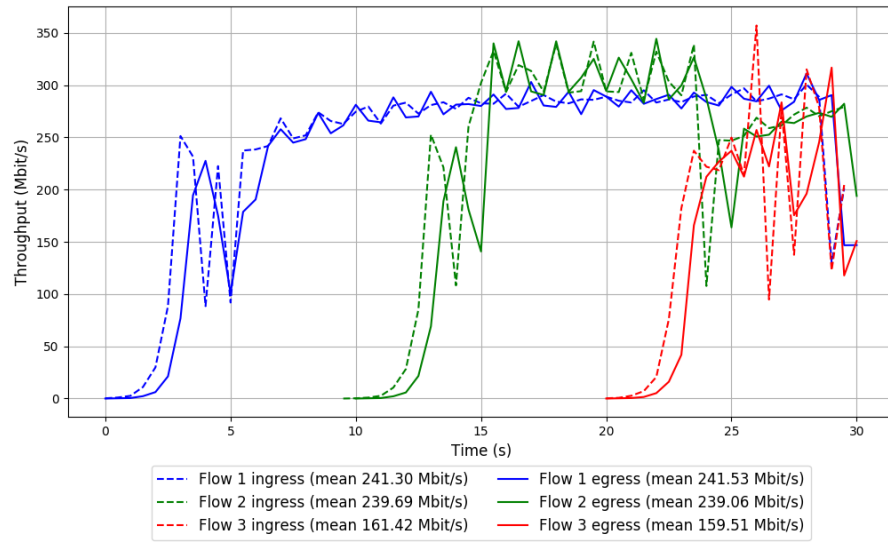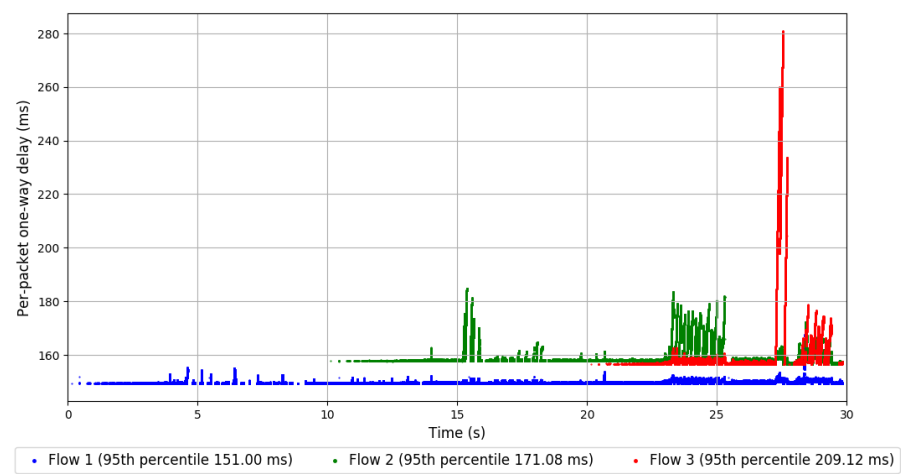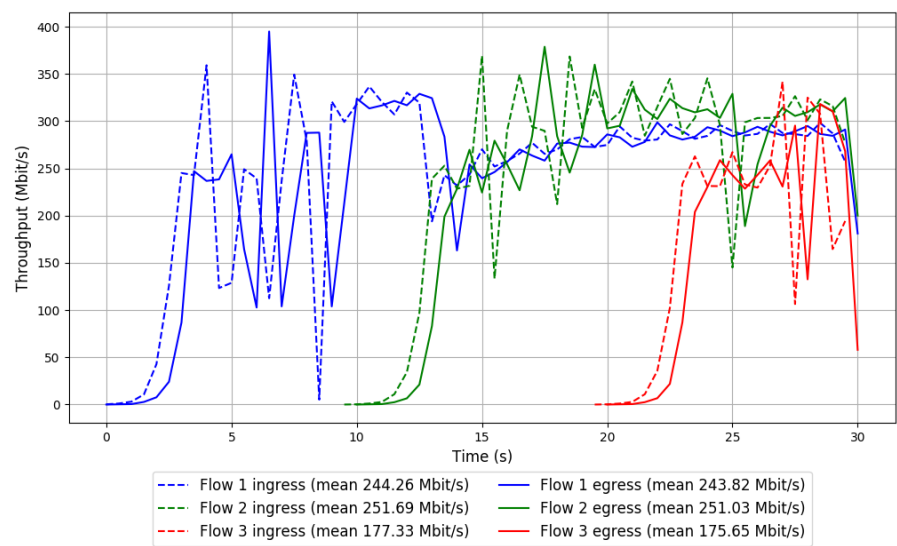
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-02 15:17:55
End at: 2018-12-02 15:18:25
Local clock offset: 7.422 ms
Remote clock offset: 3.635 ms


# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 452.00 Mbit/s
95th percentile per-packet one-way delay: 162.911 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 241.53 Mbit/s
95th percentile per-packet one-way delay: 149.030 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 239.06 Mbit/s
95th percentile per-packet one-way delay: 158.001 ms
Loss rate: 1.73%
-- Flow 3:
Average throughput: 159.51 Mbit/s
95th percentile per-packet one-way delay: 192.814 ms
Loss rate: 4.18%
```

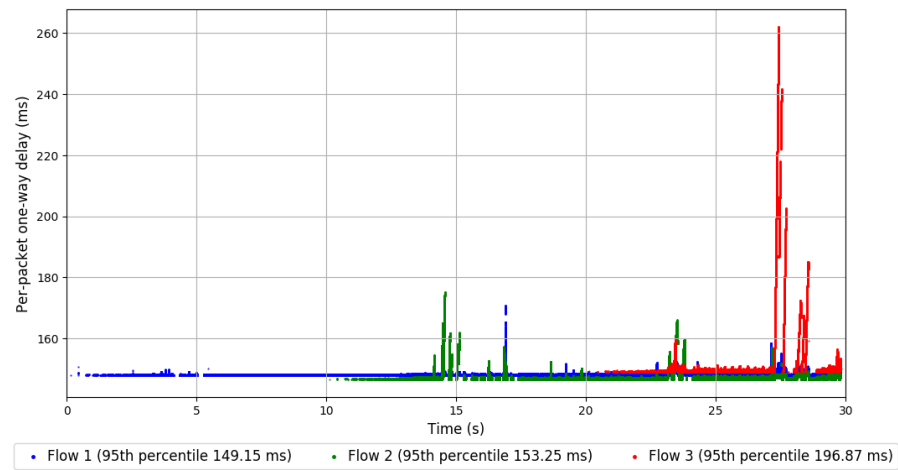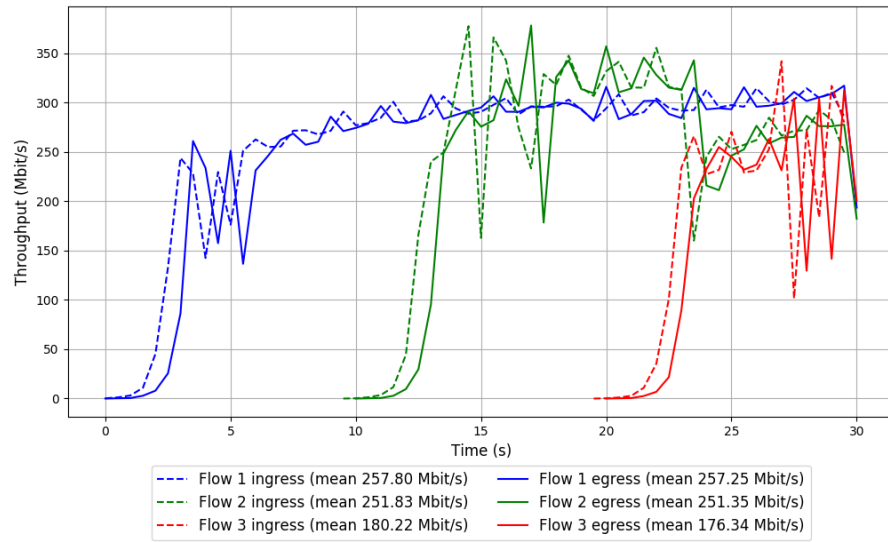Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-02 15:51:38
End at: 2018-12-02 15:52:08
Local clock offset: 7.8 ms
Remote clock offset: -0.295 ms


# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 467.63 Mbit/s
95th percentile per-packet one-way delay: 166.537 ms
Loss rate: 1.69%
-- Flow 1:
Average throughput: 243.82 Mbit/s
95th percentile per-packet one-way delay: 150.999 ms
Loss rate: 1.13%
-- Flow 2:
Average throughput: 251.03 Mbit/s
95th percentile per-packet one-way delay: 171.076 ms
Loss rate: 1.73%
-- Flow 3:
Average throughput: 175.65 Mbit/s
95th percentile per-packet one-way delay: 209.117 ms
Loss rate: 3.86%
```

Run 3: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 244.26 Mbit/s) —— Flow 1 egress (mean 243.82 Mbit/s)
- - - Flow 2 ingress (mean 251.69 Mbit/s) —— Flow 2 egress (mean 251.03 Mbit/s)
- - - Flow 3 ingress (mean 177.33 Mbit/s) —— Flow 3 egress (mean 175.65 Mbit/s)

- Flow 1 (95th percentile 151.00 ms)   - Flow 2 (95th percentile 171.08 ms)   - Flow 3 (95th percentile 209.12 ms)

30

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-02 16:25:15
End at: 2018-12-02 16:25:45
Local clock offset: 7.357 ms
Remote clock offset: -0.399 ms


# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 481.54 Mbit/s
95th percentile per-packet one-way delay: 151.371 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 257.25 Mbit/s
95th percentile per-packet one-way delay: 149.153 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 251.35 Mbit/s
95th percentile per-packet one-way delay: 153.251 ms
Loss rate: 1.60%
-- Flow 3:
Average throughput: 176.34 Mbit/s
95th percentile per-packet one-way delay: 196.865 ms
Loss rate: 4.95%
```
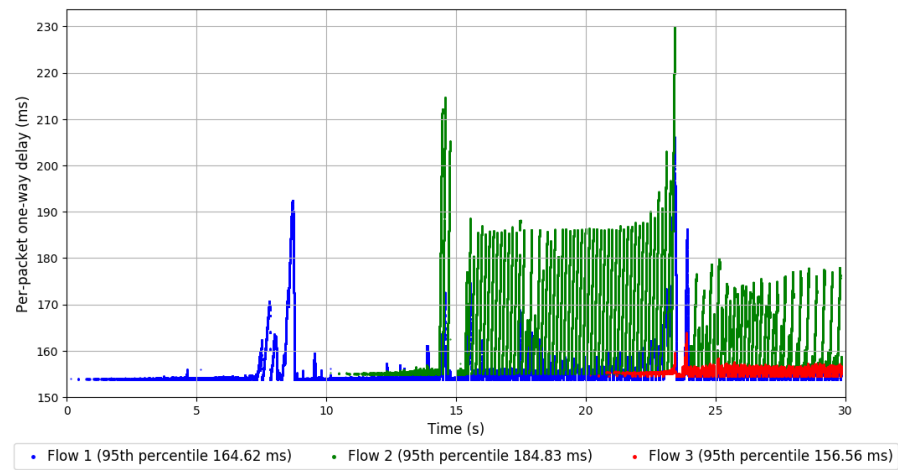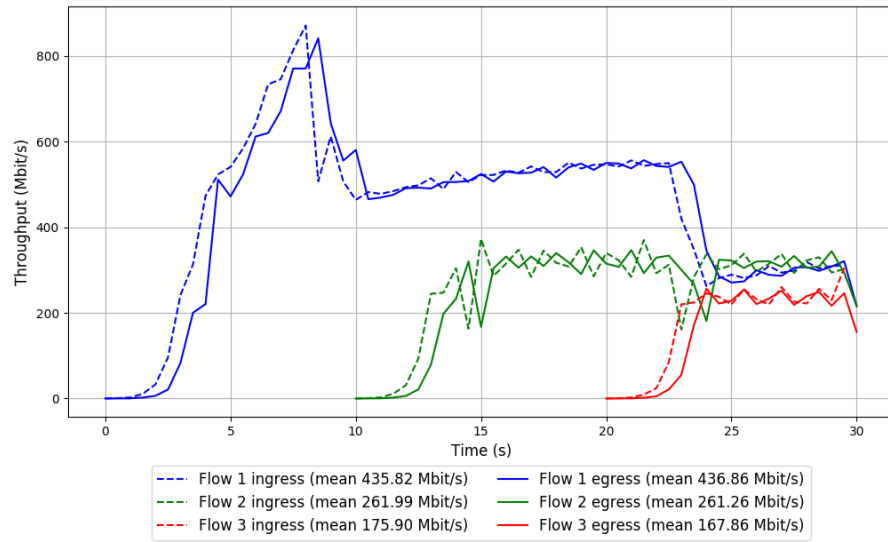
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-02 16:59:23
End at: 2018-12-02 16:59:53
Local clock offset: 7.166 ms
Remote clock offset: -3.949 ms


# Below is generated by plot.py at 2018-12-02 17:52:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 664.64 Mbit/s
95th percentile per-packet one-way delay: 178.355 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 436.86 Mbit/s
95th percentile per-packet one-way delay: 164.623 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 261.26 Mbit/s
95th percentile per-packet one-way delay: 184.834 ms
Loss rate: 1.73%
-- Flow 3:
Average throughput: 167.86 Mbit/s
95th percentile per-packet one-way delay: 156.559 ms
Loss rate: 6.56%
```
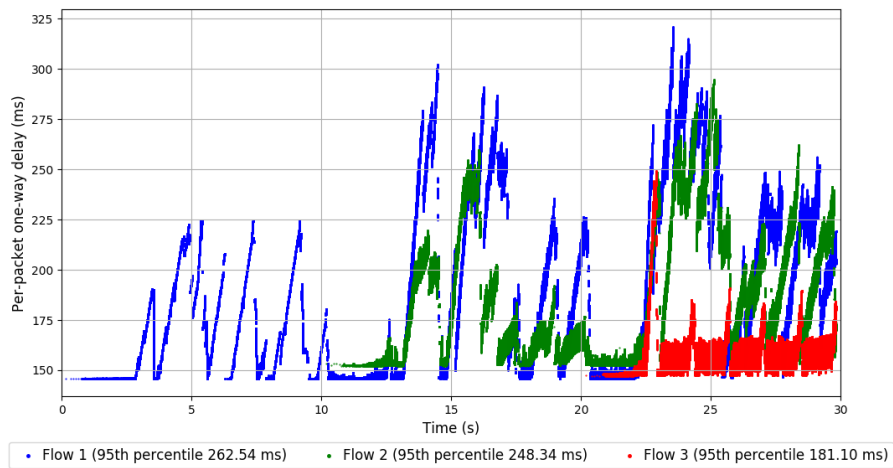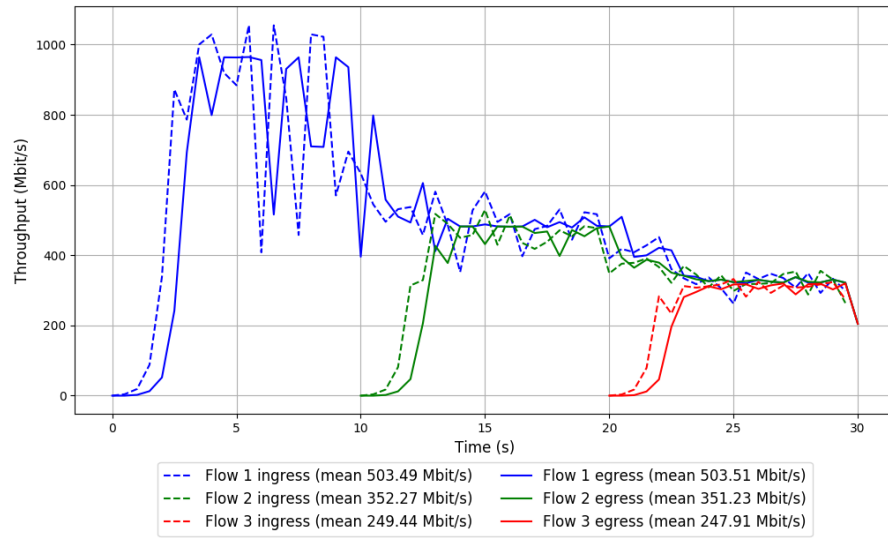
Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 435.82 Mbit/s) ---- Flow 1 egress (mean 436.86 Mbit/s) ——
Flow 2 ingress (mean 261.99 Mbit/s) ---- Flow 2 egress (mean 261.26 Mbit/s) ——
Flow 3 ingress (mean 175.90 Mbit/s) ---- Flow 3 egress (mean 167.86 Mbit/s) ——

Flow 1 (95th percentile 164.62 ms)   Flow 2 (95th percentile 184.83 ms)   Flow 3 (95th percentile 156.56 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-02 14:47:24
End at: 2018-12-02 14:47:54
Local clock offset: 7.838 ms
Remote clock offset: 3.762 ms

# Below is generated by plot.py at 2018-12-02 17:54:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 816.43 Mbit/s
95th percentile per-packet one-way delay: 256.007 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 503.51 Mbit/s
95th percentile per-packet one-way delay: 262.535 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 351.23 Mbit/s
95th percentile per-packet one-way delay: 248.343 ms
Loss rate: 1.78%
-- Flow 3:
Average throughput: 247.91 Mbit/s
95th percentile per-packet one-way delay: 181.097 ms
Loss rate: 3.47%
```
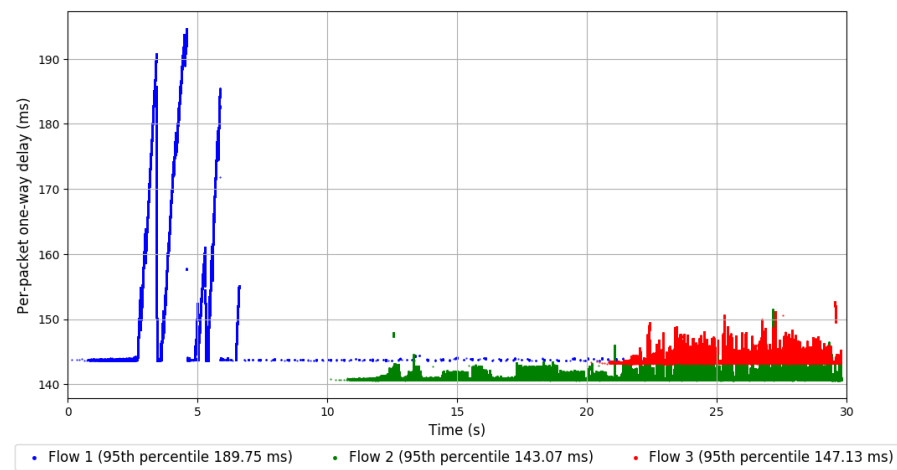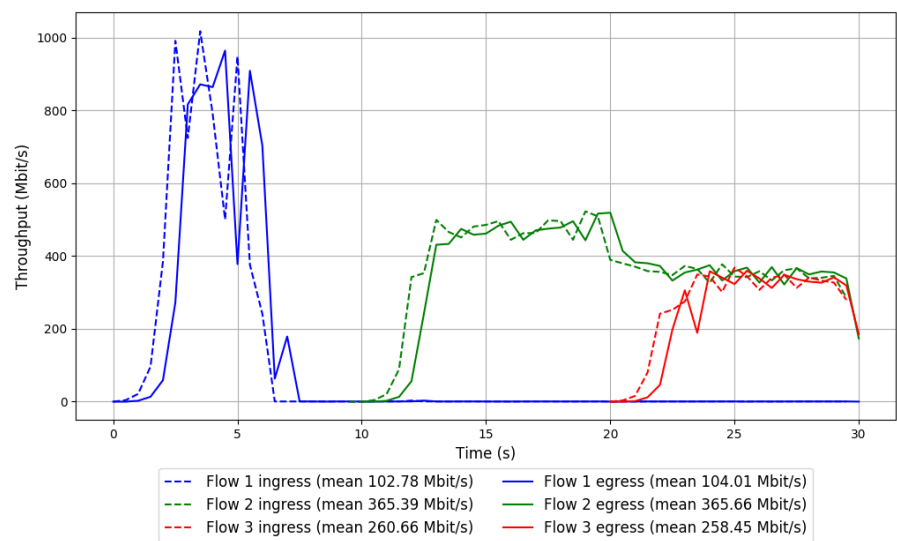
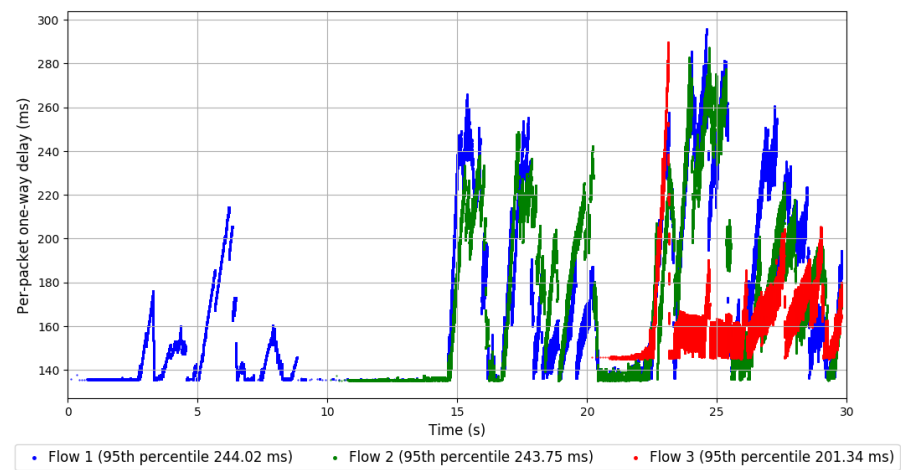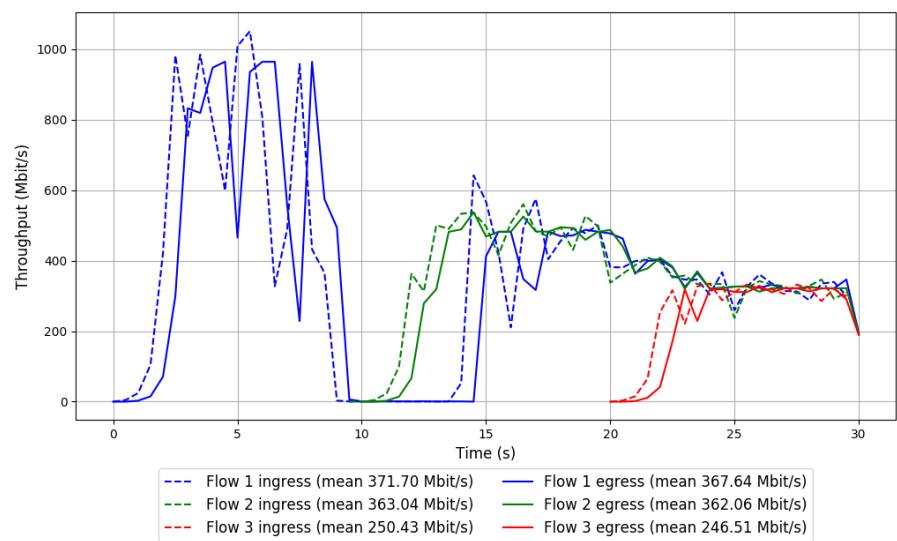# Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-02 15:21:27
End at: 2018-12-02 15:21:57
Local clock offset: -2.496 ms
Remote clock offset: 2.472 ms


# Below is generated by plot.py at 2018-12-02 17:54:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 429.63 Mbit/s
95th percentile per-packet one-way delay: 177.455 ms
Loss rate: 1.53%
-- Flow 1:
Average throughput: 104.01 Mbit/s
95th percentile per-packet one-way delay: 189.748 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 365.66 Mbit/s
95th percentile per-packet one-way delay: 143.071 ms
Loss rate: 1.38%
-- Flow 3:
Average throughput: 258.45 Mbit/s
95th percentile per-packet one-way delay: 147.133 ms
Loss rate: 3.74%
```
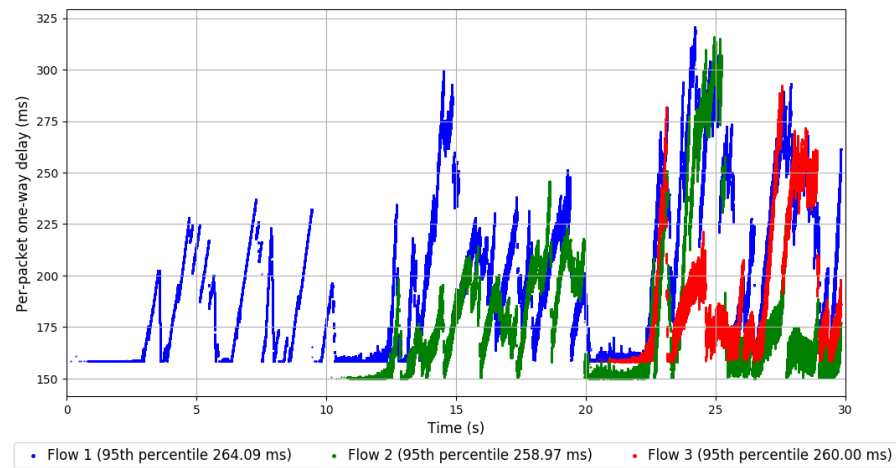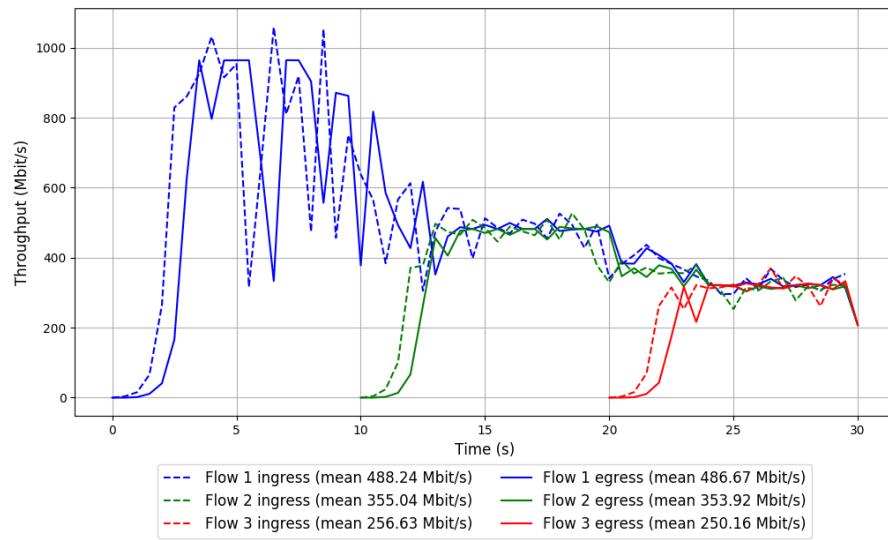
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 102.78 Mbit/s)   Flow 1 egress (mean 104.01 Mbit/s)
Flow 2 ingress (mean 365.39 Mbit/s)   Flow 2 egress (mean 365.66 Mbit/s)
Flow 3 ingress (mean 260.66 Mbit/s)   Flow 3 egress (mean 258.45 Mbit/s)

Flow 1 (95th percentile 189.75 ms)   Flow 2 (95th percentile 143.07 ms)   Flow 3 (95th percentile 147.13 ms)

```
Run 3: Statistics of FillP

Start at: 2018-12-02 15:55:12
End at: 2018-12-02 15:55:42
Local clock offset: -3.773 ms
Remote clock offset: -0.289 ms


# Below is generated by plot.py at 2018-12-02 17:56:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 687.66 Mbit/s
95th percentile per-packet one-way delay: 242.399 ms
Loss rate: 2.17%
-- Flow 1:
Average throughput: 367.64 Mbit/s
95th percentile per-packet one-way delay: 244.018 ms
Loss rate: 1.98%
-- Flow 2:
Average throughput: 362.06 Mbit/s
95th percentile per-packet one-way delay: 243.753 ms
Loss rate: 1.68%
-- Flow 3:
Average throughput: 246.51 Mbit/s
95th percentile per-packet one-way delay: 201.341 ms
Loss rate: 4.43%
```

Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-12-02 16:28:51
End at: 2018-12-02 16:29:21
Local clock offset: 9.444 ms
Remote clock offset: -1.413 ms


# Below is generated by plot.py at 2018-12-02 17:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 802.20 Mbit/s
95th percentile per-packet one-way delay: 262.662 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 486.67 Mbit/s
95th percentile per-packet one-way delay: 264.088 ms
Loss rate: 1.29%
-- Flow 2:
Average throughput: 353.92 Mbit/s
95th percentile per-packet one-way delay: 258.969 ms
Loss rate: 1.70%
-- Flow 3:
Average throughput: 250.16 Mbit/s
95th percentile per-packet one-way delay: 259.995 ms
Loss rate: 5.39%
```
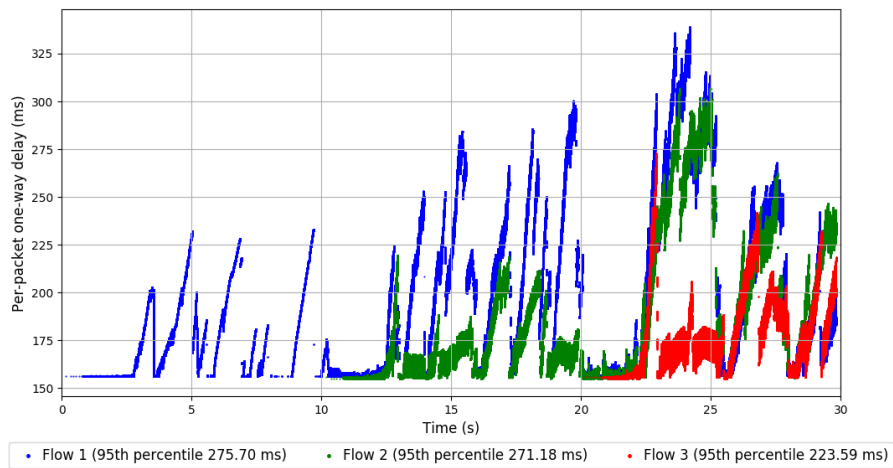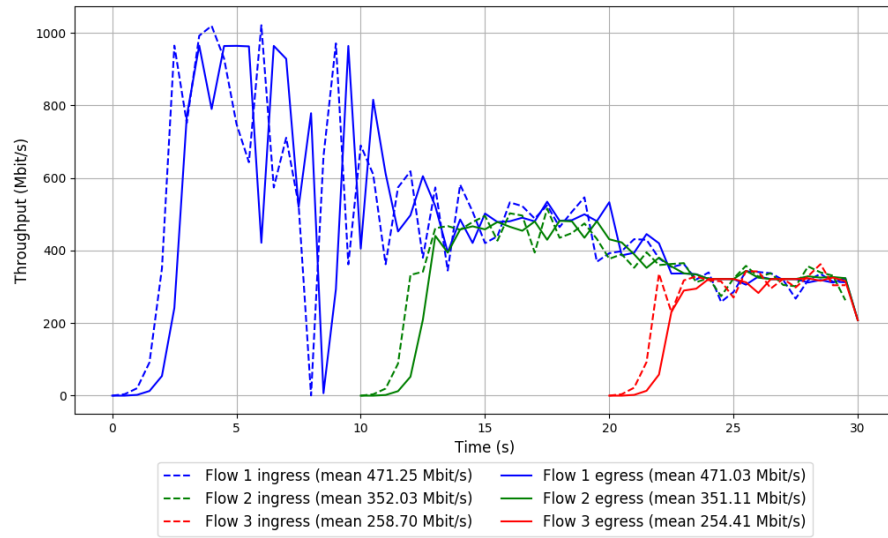
Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-12-02 17:03:05
End at: 2018-12-02 17:03:35
Local clock offset: 8.926 ms
Remote clock offset: -3.56 ms

# Below is generated by plot.py at 2018-12-02 17:59:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 786.10 Mbit/s
95th percentile per-packet one-way delay: 271.203 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 471.03 Mbit/s
95th percentile per-packet one-way delay: 275.703 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 351.11 Mbit/s
95th percentile per-packet one-way delay: 271.184 ms
Loss rate: 1.66%
-- Flow 3:
Average throughput: 254.41 Mbit/s
95th percentile per-packet one-way delay: 223.591 ms
Loss rate: 4.54%
```
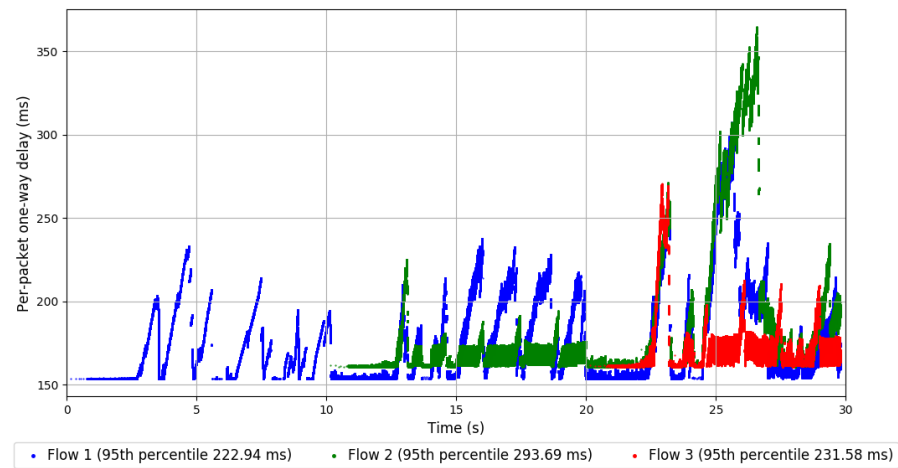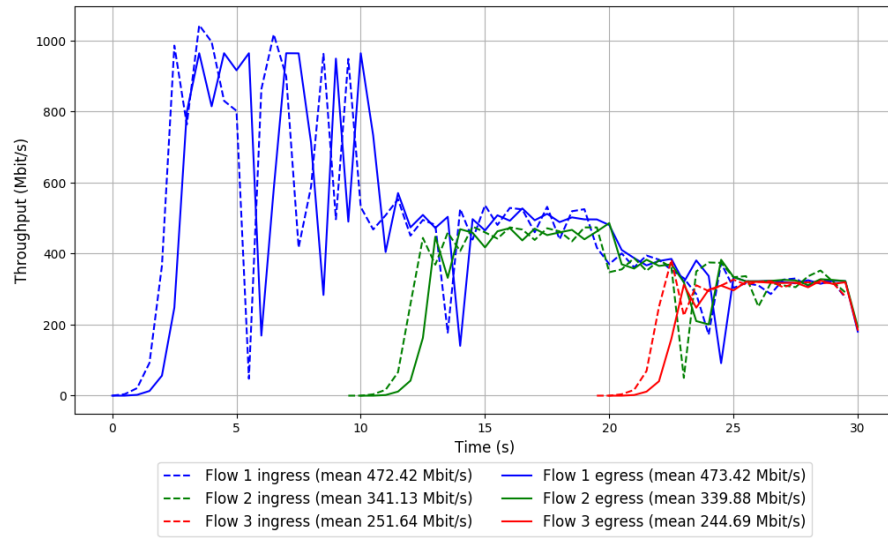
Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-02 14:49:27
End at: 2018-12-02 14:49:57
Local clock offset: 9.114 ms
Remote clock offset: 3.654 ms


# Below is generated by plot.py at 2018-12-02 18:01:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 778.21 Mbit/s
95th percentile per-packet one-way delay: 234.503 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 473.42 Mbit/s
95th percentile per-packet one-way delay: 222.936 ms
Loss rate: 0.76%
-- Flow 2:
Average throughput: 339.88 Mbit/s
95th percentile per-packet one-way delay: 293.692 ms
Loss rate: 1.80%
-- Flow 3:
Average throughput: 244.69 Mbit/s
95th percentile per-packet one-way delay: 231.583 ms
Loss rate: 5.61%
```
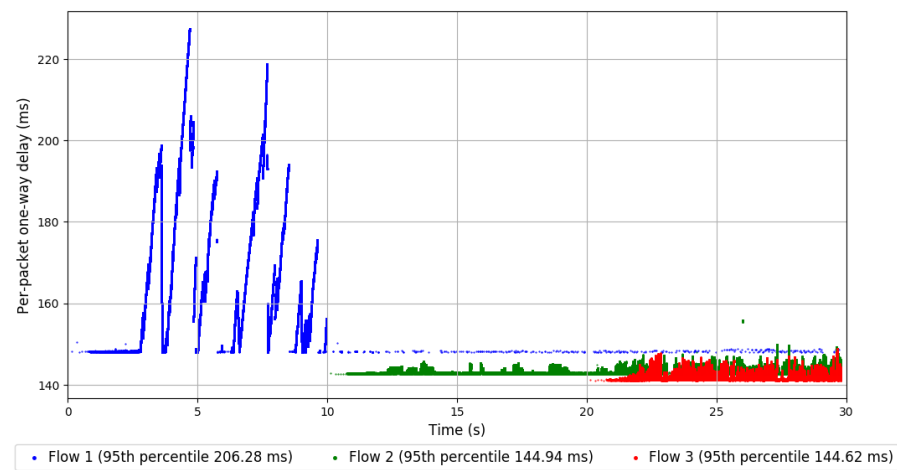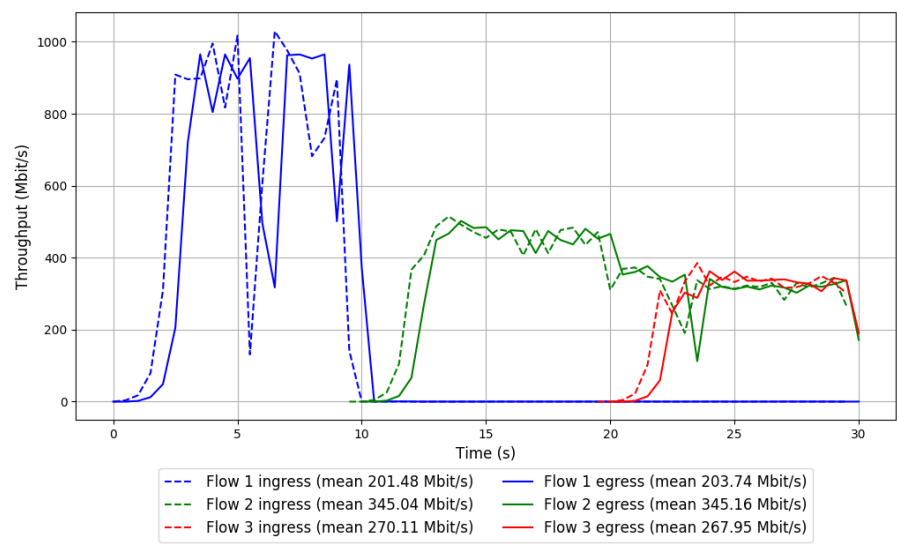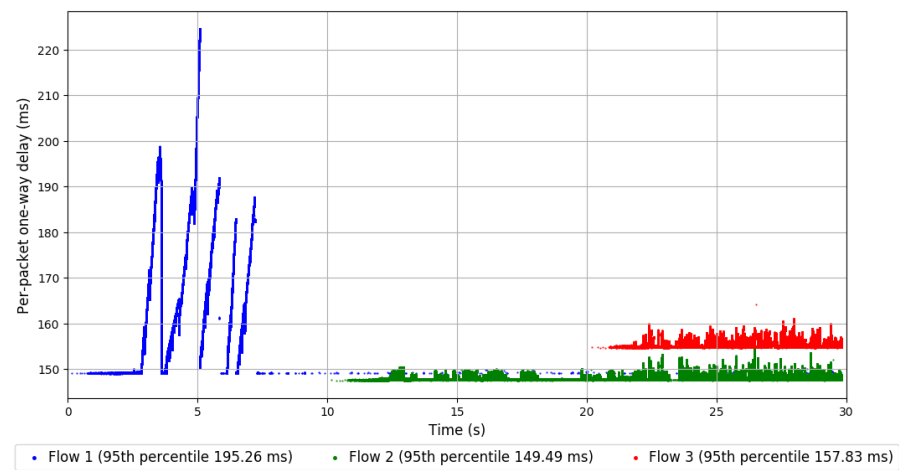
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 472.42 Mbit/s) --- Flow 1 egress (mean 473.42 Mbit/s)
Flow 2 ingress (mean 341.13 Mbit/s) --- Flow 2 egress (mean 339.88 Mbit/s)
Flow 3 ingress (mean 251.64 Mbit/s) --- Flow 3 egress (mean 244.69 Mbit/s)

Flow 1 (95th percentile 222.94 ms) • Flow 2 (95th percentile 293.69 ms) • Flow 3 (95th percentile 231.58 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-02 15:23:14
End at: 2018-12-02 15:23:44
Local clock offset: -4.734 ms
Remote clock offset: 1.871 ms


# Below is generated by plot.py at 2018-12-02 18:01:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 519.65 Mbit/s
95th percentile per-packet one-way delay: 195.469 ms
Loss rate: 1.30%
-- Flow 1:
Average throughput: 203.74 Mbit/s
95th percentile per-packet one-way delay: 206.280 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 345.16 Mbit/s
95th percentile per-packet one-way delay: 144.943 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 267.95 Mbit/s
95th percentile per-packet one-way delay: 144.623 ms
Loss rate: 3.81%
```

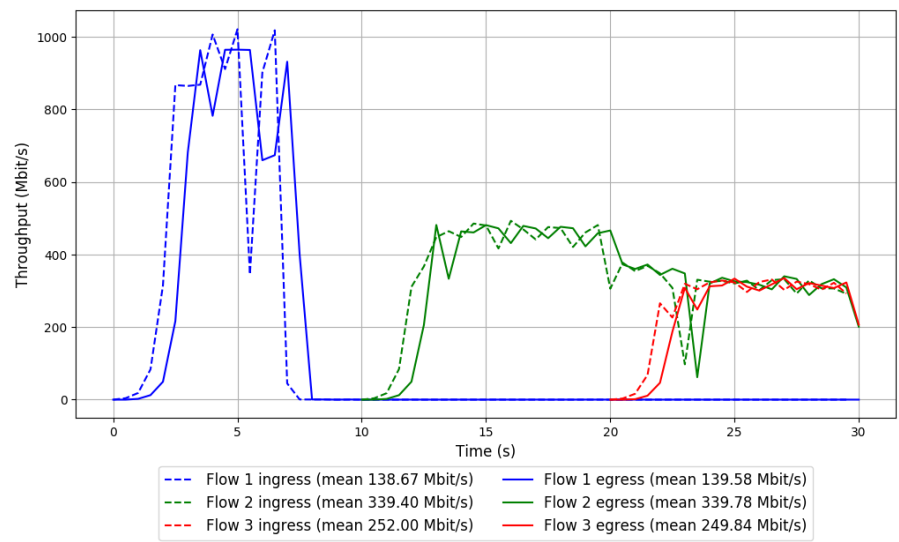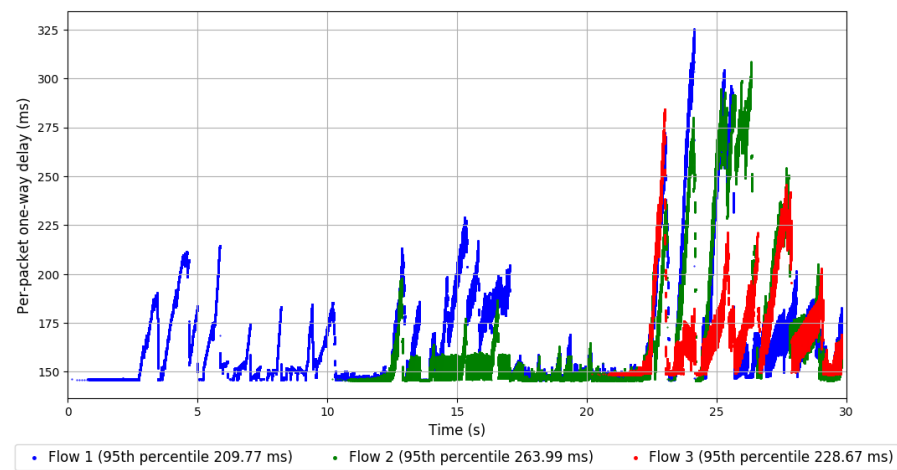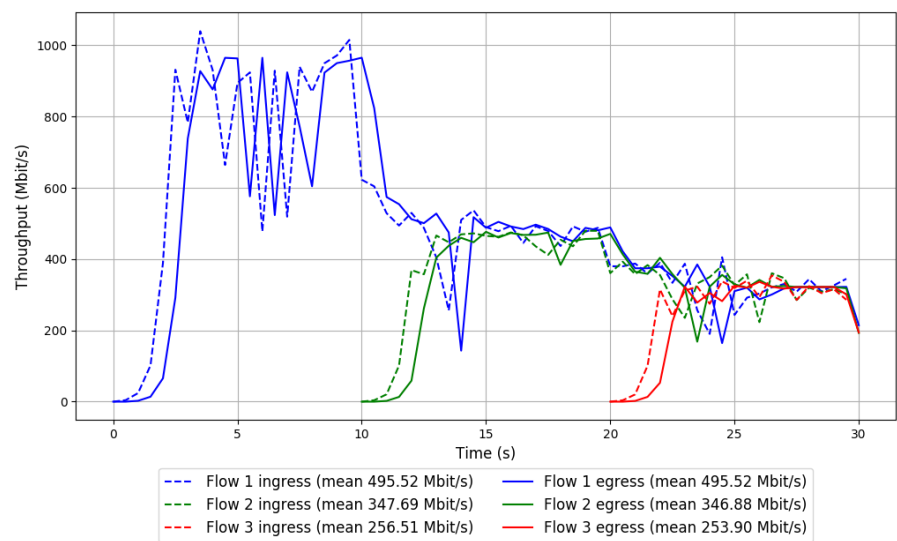Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 201.48 Mbit/s) --- Flow 1 egress (mean 203.74 Mbit/s)
Flow 2 ingress (mean 345.04 Mbit/s) --- Flow 2 egress (mean 345.16 Mbit/s)
Flow 3 ingress (mean 270.11 Mbit/s) --- Flow 3 egress (mean 267.95 Mbit/s)

Flow 1 (95th percentile 206.28 ms) • Flow 2 (95th percentile 144.94 ms) • Flow 3 (95th percentile 144.62 ms)
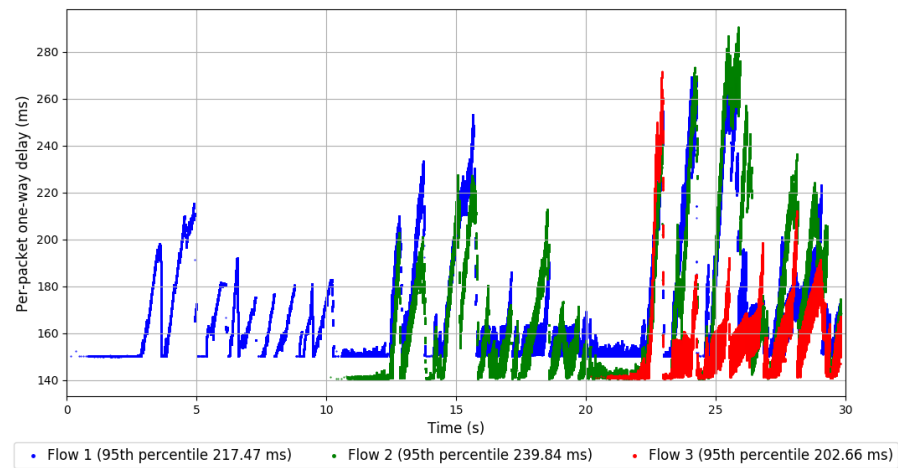
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-02 15:57:09
End at: 2018-12-02 15:57:39
Local clock offset: 8.647 ms
Remote clock offset: -0.221 ms


# Below is generated by plot.py at 2018-12-02 18:01:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 445.61 Mbit/s
95th percentile per-packet one-way delay: 186.361 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 139.58 Mbit/s
95th percentile per-packet one-way delay: 195.257 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 339.78 Mbit/s
95th percentile per-packet one-way delay: 149.491 ms
Loss rate: 1.25%
-- Flow 3:
Average throughput: 249.84 Mbit/s
95th percentile per-packet one-way delay: 157.826 ms
Loss rate: 3.78%
```
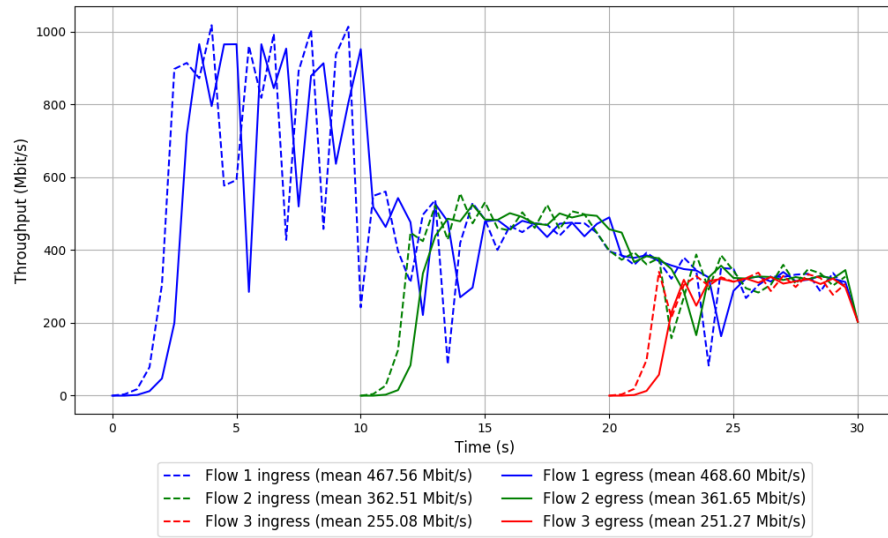
Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 138.67 Mbit/s) --- Flow 1 egress (mean 139.58 Mbit/s)
Flow 2 ingress (mean 339.40 Mbit/s) --- Flow 2 egress (mean 339.78 Mbit/s)
Flow 3 ingress (mean 252.00 Mbit/s) --- Flow 3 egress (mean 249.84 Mbit/s)

• Flow 1 (95th percentile 195.26 ms)   • Flow 2 (95th percentile 149.49 ms)   • Flow 3 (95th percentile 157.83 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-02 16:30:54
End at: 2018-12-02 16:31:24
Local clock offset: -0.545 ms
Remote clock offset: -1.822 ms


# Below is generated by plot.py at 2018-12-02 18:04:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 807.40 Mbit/s
95th percentile per-packet one-way delay: 230.289 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 495.52 Mbit/s
95th percentile per-packet one-way delay: 209.771 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 346.88 Mbit/s
95th percentile per-packet one-way delay: 263.994 ms
Loss rate: 1.64%
-- Flow 3:
Average throughput: 253.90 Mbit/s
95th percentile per-packet one-way delay: 228.673 ms
Loss rate: 3.95%
```
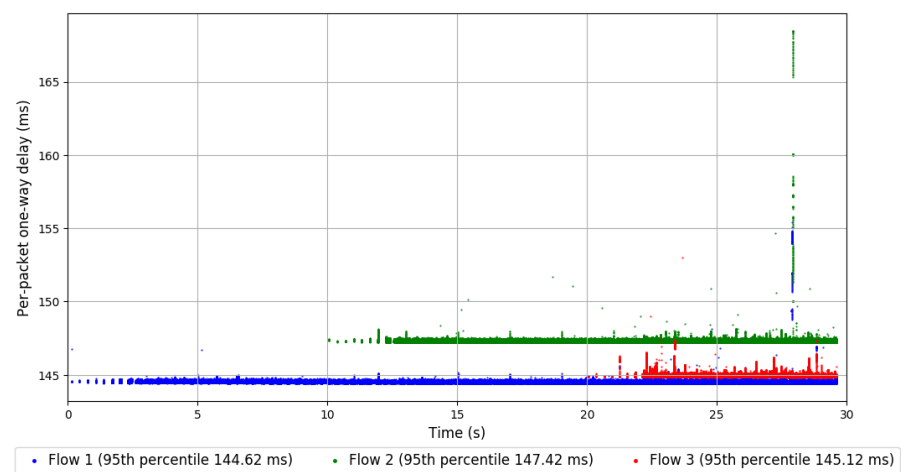
Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 495.52 Mbit/s)   Flow 1 egress (mean 495.52 Mbit/s)
Flow 2 ingress (mean 347.69 Mbit/s)   Flow 2 egress (mean 346.88 Mbit/s)
Flow 3 ingress (mean 256.51 Mbit/s)   Flow 3 egress (mean 253.90 Mbit/s)

Flow 1 (95th percentile 209.77 ms)   Flow 2 (95th percentile 263.99 ms)   Flow 3 (95th percentile 228.67 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-02 17:05:06
End at: 2018-12-02 17:05:36
Local clock offset: 1.216 ms
Remote clock offset: -3.451 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 789.70 Mbit/s
95th percentile per-packet one-way delay: 223.098 ms
Loss rate: 1.40%
-- Flow 1:
Average throughput: 468.60 Mbit/s
95th percentile per-packet one-way delay: 217.466 ms
Loss rate: 0.76%
-- Flow 2:
Average throughput: 361.65 Mbit/s
95th percentile per-packet one-way delay: 239.842 ms
Loss rate: 1.63%
-- Flow 3:
Average throughput: 251.27 Mbit/s
95th percentile per-packet one-way delay: 202.662 ms
Loss rate: 4.32%
```
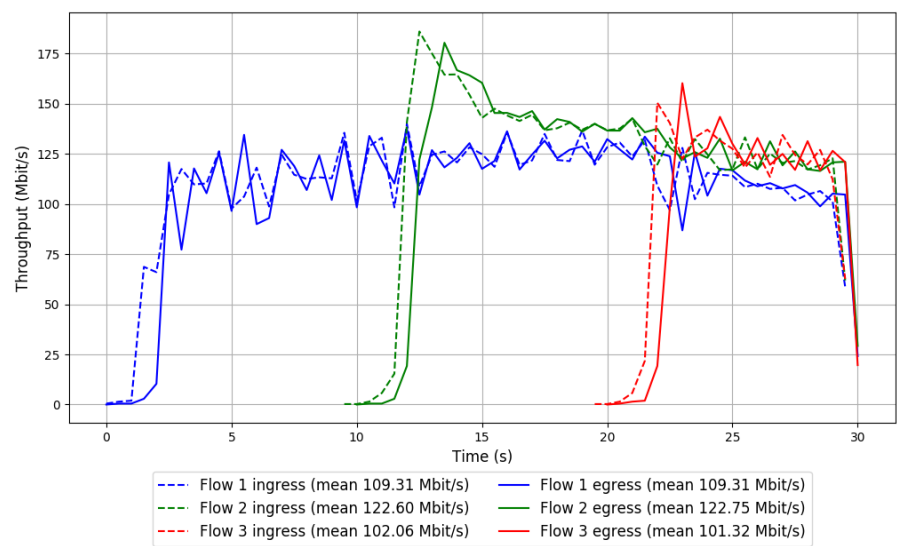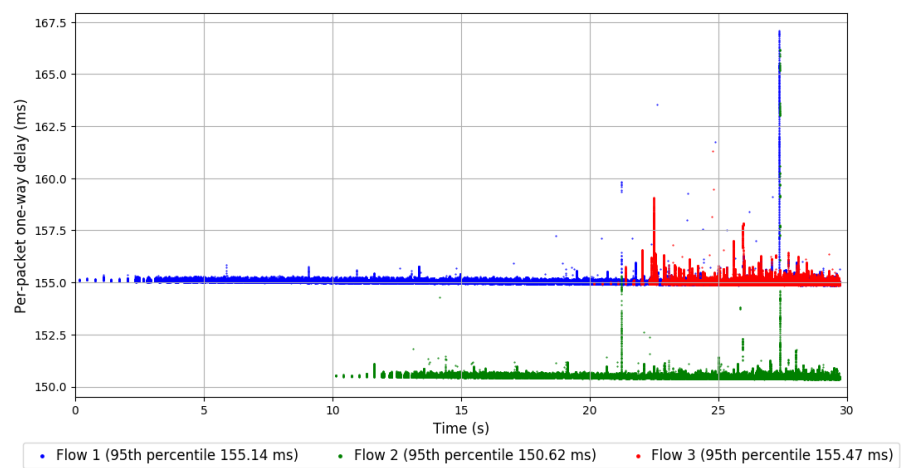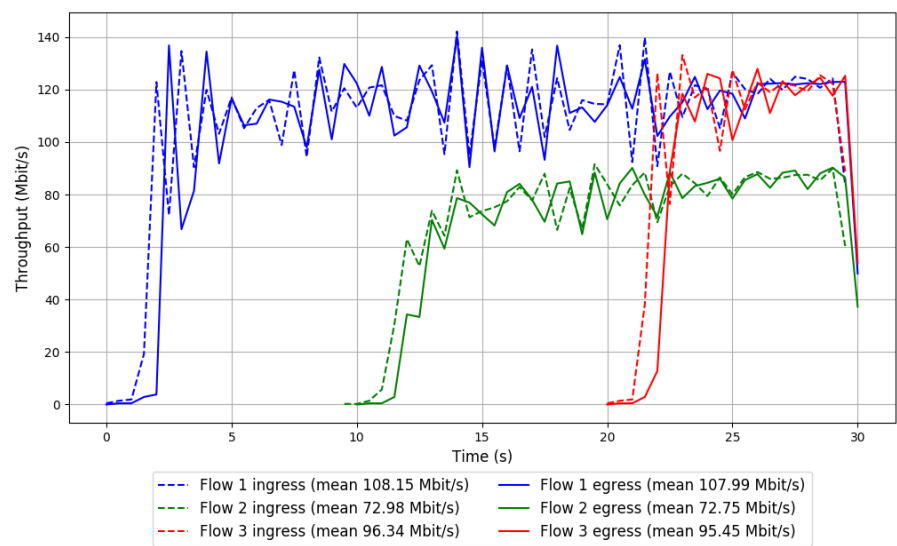
Run 5: Report of FillP-Sheep — Data Link

- - - Flow 1 ingress (mean 467.56 Mbit/s) ——— Flow 1 egress (mean 468.60 Mbit/s)
- - - Flow 2 ingress (mean 362.51 Mbit/s) ——— Flow 2 egress (mean 361.65 Mbit/s)
- - - Flow 3 ingress (mean 255.08 Mbit/s) ——— Flow 3 egress (mean 251.27 Mbit/s)

• Flow 1 (95th percentile 217.47 ms)   • Flow 2 (95th percentile 239.84 ms)   • Flow 3 (95th percentile 202.66 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-12-02 14:45:41
End at: 2018-12-02 14:46:11
Local clock offset: -1.314 ms
Remote clock offset: 3.848 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 223.61 Mbit/s
95th percentile per-packet one-way delay: 147.364 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 109.31 Mbit/s
95th percentile per-packet one-way delay: 144.625 ms
Loss rate: 0.99%
-- Flow 2:
Average throughput: 122.75 Mbit/s
95th percentile per-packet one-way delay: 147.424 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 101.32 Mbit/s
95th percentile per-packet one-way delay: 145.117 ms
Loss rate: 3.68%
```
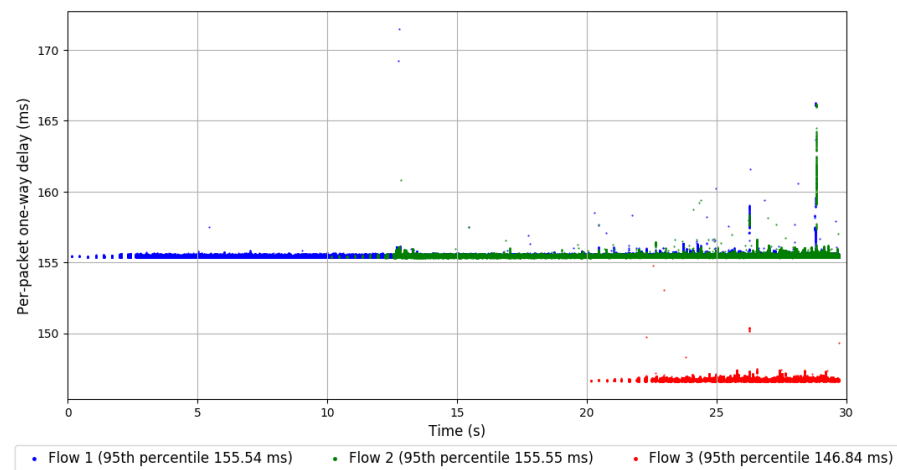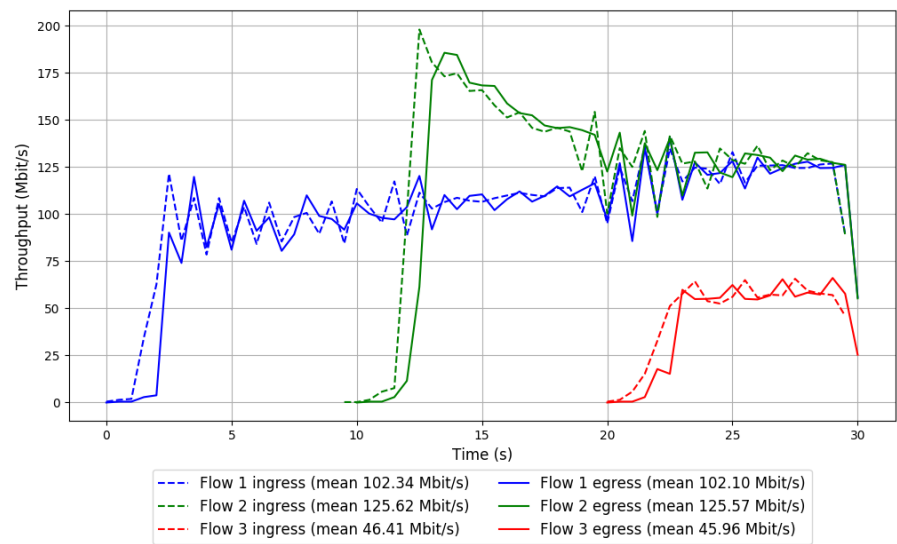
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-02 15:19:47
End at: 2018-12-02 15:20:17
Local clock offset: 7.517 ms
Remote clock offset: 2.855 ms

# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 186.92 Mbit/s
95th percentile per-packet one-way delay: 155.145 ms
Loss rate: 1.75%
-- Flow 1:
Average throughput: 107.99 Mbit/s
95th percentile per-packet one-way delay: 155.143 ms
Loss rate: 1.13%
-- Flow 2:
Average throughput: 72.75 Mbit/s
95th percentile per-packet one-way delay: 150.617 ms
Loss rate: 1.73%
-- Flow 3:
Average throughput: 95.45 Mbit/s
95th percentile per-packet one-way delay: 155.470 ms
Loss rate: 3.91%
```
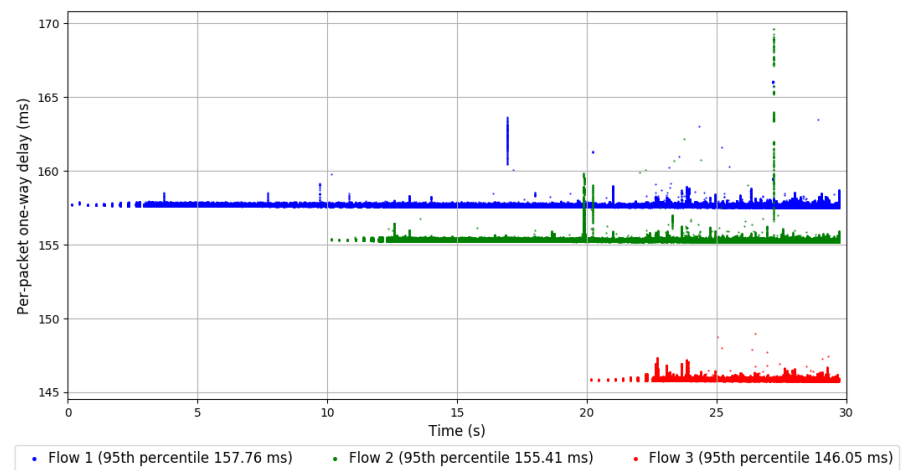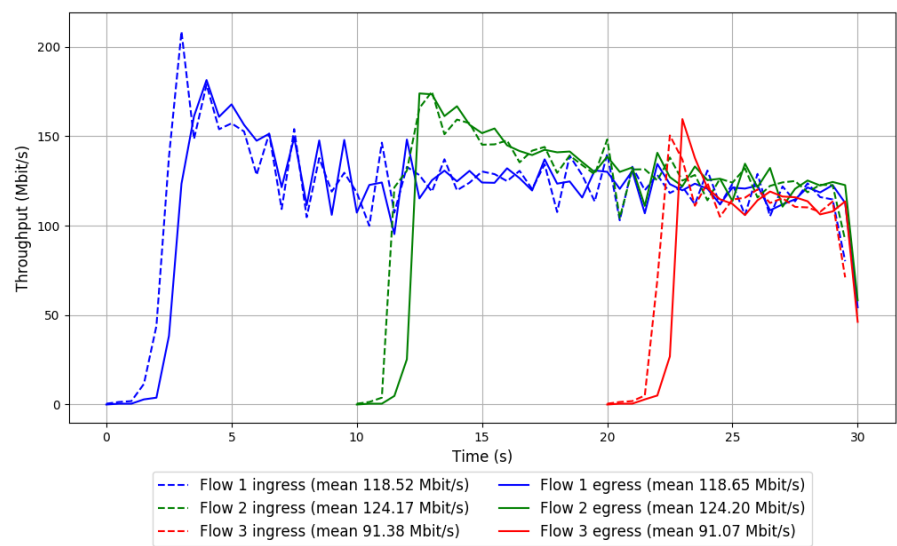
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-02 15:53:31
End at: 2018-12-02 15:54:01
Local clock offset: 7.699 ms
Remote clock offset: -0.31 ms

# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 200.05 Mbit/s
95th percentile per-packet one-way delay: 155.541 ms
Loss rate: 1.53%
-- Flow 1:
Average throughput: 102.10 Mbit/s
95th percentile per-packet one-way delay: 155.542 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 125.57 Mbit/s
95th percentile per-packet one-way delay: 155.552 ms
Loss rate: 1.51%
-- Flow 3:
Average throughput: 45.96 Mbit/s
95th percentile per-packet one-way delay: 146.839 ms
Loss rate: 3.78%
```

Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-02 16:27:08
End at: 2018-12-02 16:27:38
Local clock offset: 7.569 ms
Remote clock offset: -1.021 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 230.28 Mbit/s
95th percentile per-packet one-way delay: 157.718 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 118.65 Mbit/s
95th percentile per-packet one-way delay: 157.760 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 124.20 Mbit/s
95th percentile per-packet one-way delay: 155.405 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 91.07 Mbit/s
95th percentile per-packet one-way delay: 146.052 ms
Loss rate: 3.18%
```
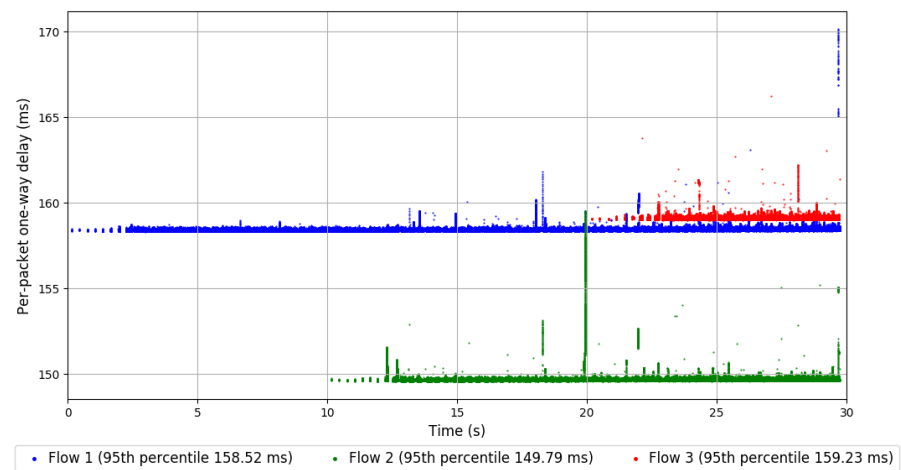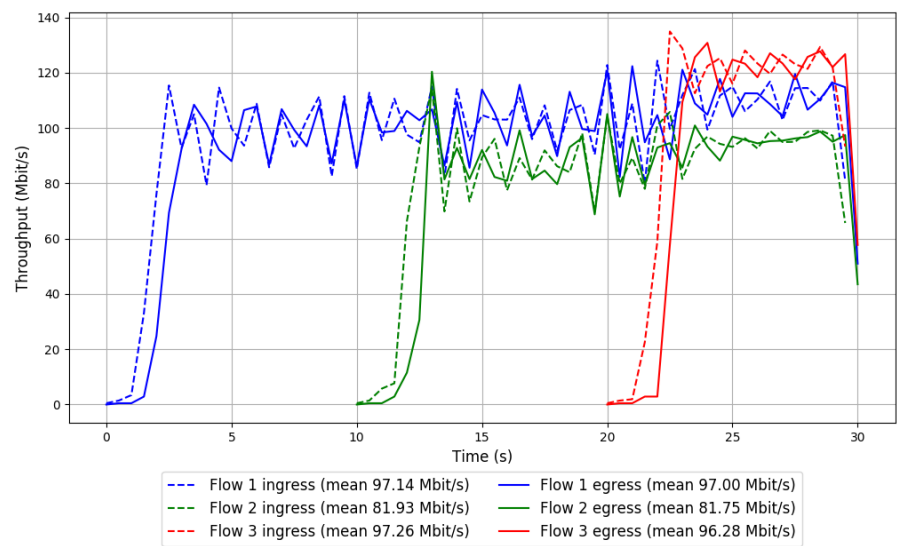
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-02 17:01:25
End at: 2018-12-02 17:01:55
Local clock offset: 11.666 ms
Remote clock offset: -3.74 ms

# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 182.14 Mbit/s
95th percentile per-packet one-way delay: 159.089 ms
Loss rate: 1.76%
-- Flow 1:
Average throughput: 97.00 Mbit/s
95th percentile per-packet one-way delay: 158.517 ms
Loss rate: 1.14%
-- Flow 2:
Average throughput: 81.75 Mbit/s
95th percentile per-packet one-way delay: 149.795 ms
Loss rate: 1.63%
-- Flow 3:
Average throughput: 96.28 Mbit/s
95th percentile per-packet one-way delay: 159.234 ms
Loss rate: 3.88%
```
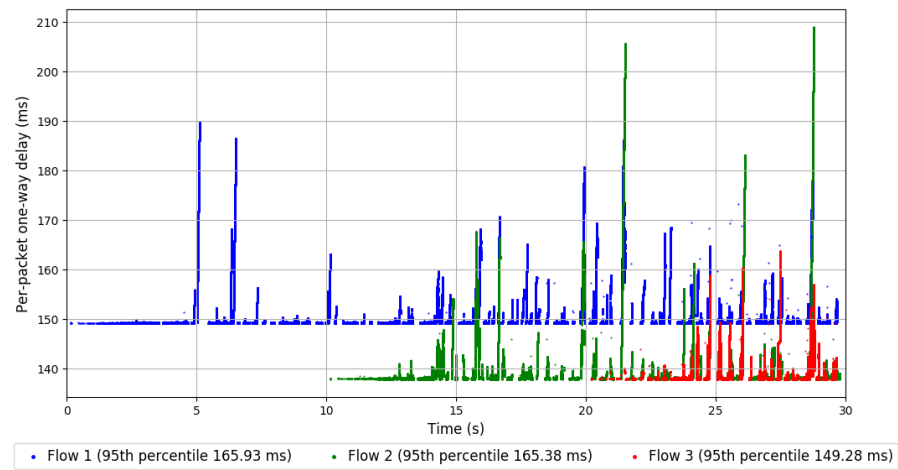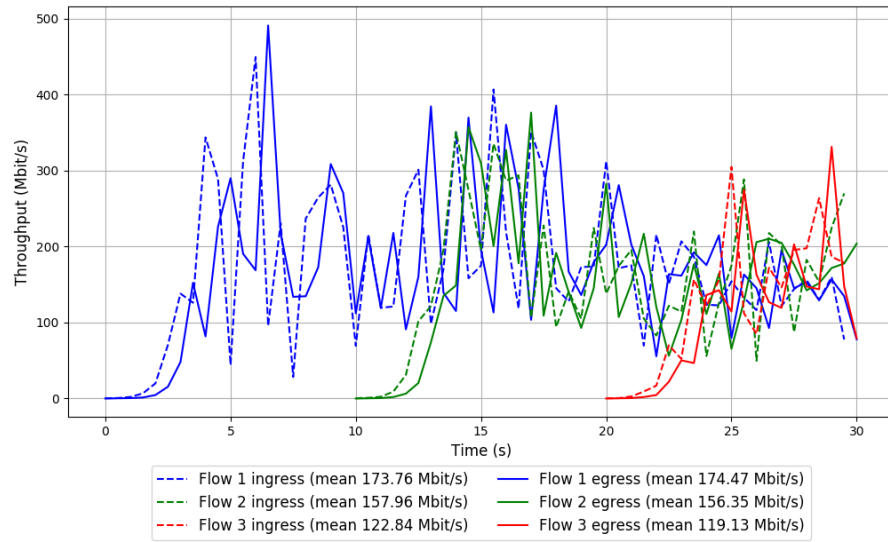
Run 5: Report of Indigo — Data Link

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

Start at: 2018-12-02 15:02:32
End at: 2018-12-02 15:03:02
Local clock offset: -3.766 ms
Remote clock offset: 3.836 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 315.53 Mbit/s
95th percentile per-packet one-way delay: 164.635 ms
Loss rate: 1.91%
-- Flow 1:
Average throughput: 174.47 Mbit/s
95th percentile per-packet one-way delay: 165.930 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 156.35 Mbit/s
95th percentile per-packet one-way delay: 165.382 ms
Loss rate: 2.20%
-- Flow 3:
Average throughput: 119.13 Mbit/s
95th percentile per-packet one-way delay: 149.276 ms
Loss rate: 7.12%
```
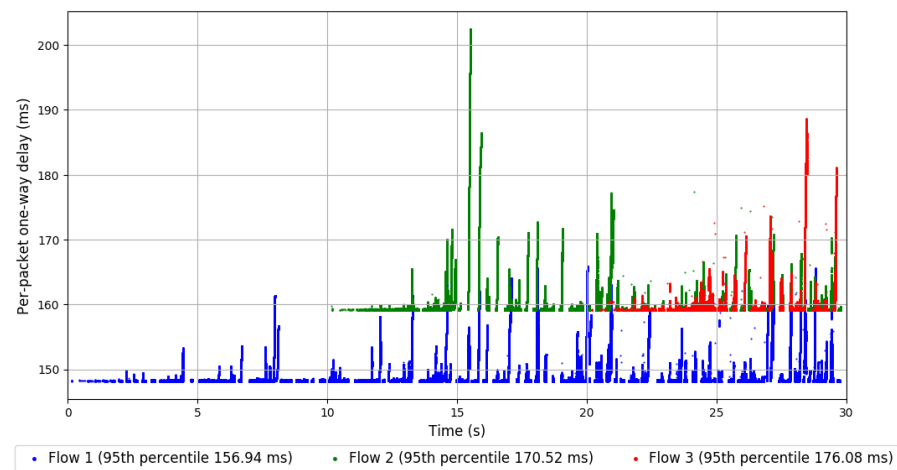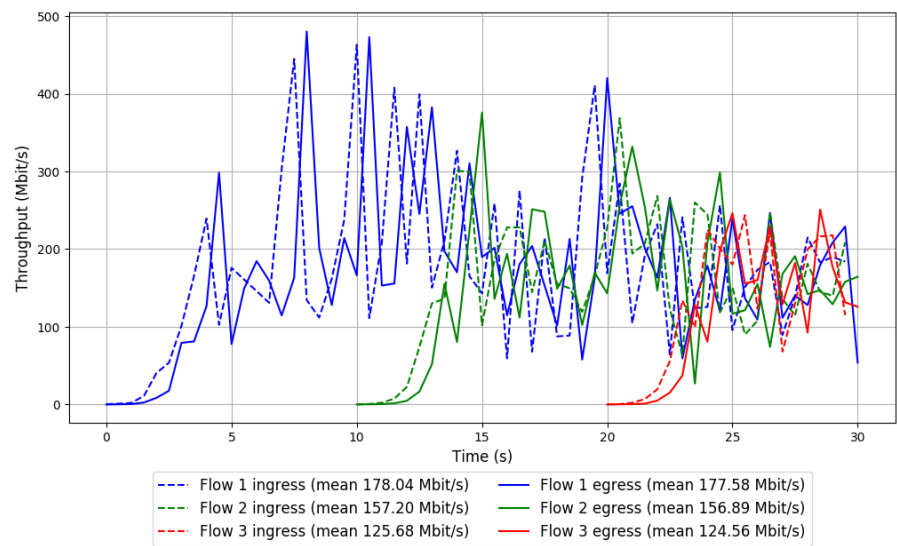
Run 1: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 15:36:07
End at: 2018-12-02 15:36:37
Local clock offset: 7.828 ms
Remote clock offset: 0.067 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.65 Mbit/s
95th percentile per-packet one-way delay: 166.690 ms
Loss rate: 1.86%
-- Flow 1:
Average throughput: 177.58 Mbit/s
95th percentile per-packet one-way delay: 156.940 ms
Loss rate: 1.31%
-- Flow 2:
Average throughput: 156.89 Mbit/s
95th percentile per-packet one-way delay: 170.517 ms
Loss rate: 1.69%
-- Flow 3:
Average throughput: 124.56 Mbit/s
95th percentile per-packet one-way delay: 176.080 ms
Loss rate: 4.67%
```
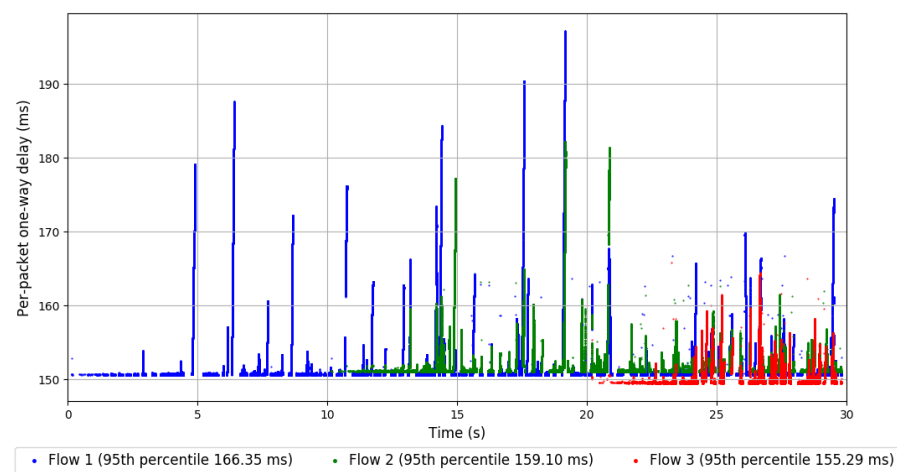
Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 16:09:59
End at: 2018-12-02 16:10:29
Local clock offset: 11.613 ms
Remote clock offset: -0.18 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 331.68 Mbit/s
95th percentile per-packet one-way delay: 163.925 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 193.05 Mbit/s
95th percentile per-packet one-way delay: 166.348 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 147.98 Mbit/s
95th percentile per-packet one-way delay: 159.099 ms
Loss rate: 2.04%
-- Flow 3:
Average throughput: 125.12 Mbit/s
95th percentile per-packet one-way delay: 155.290 ms
Loss rate: 7.16%
```
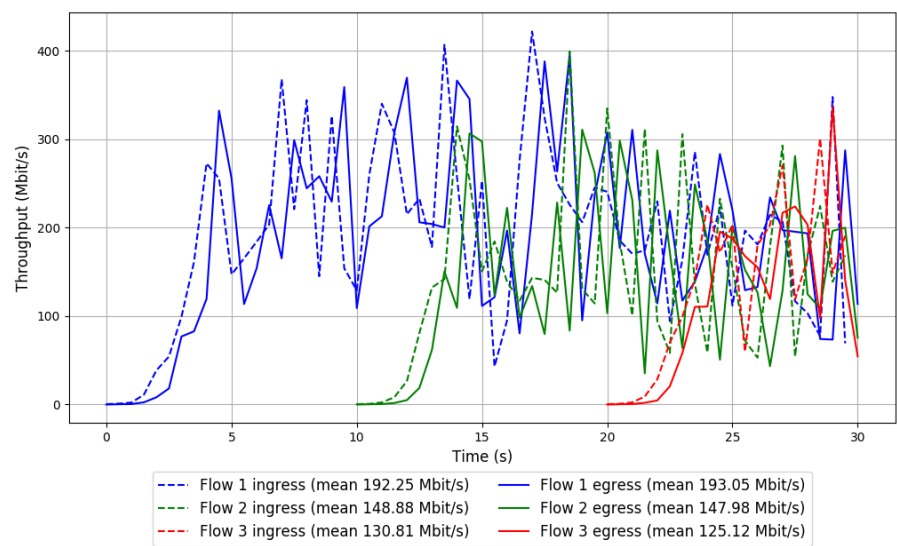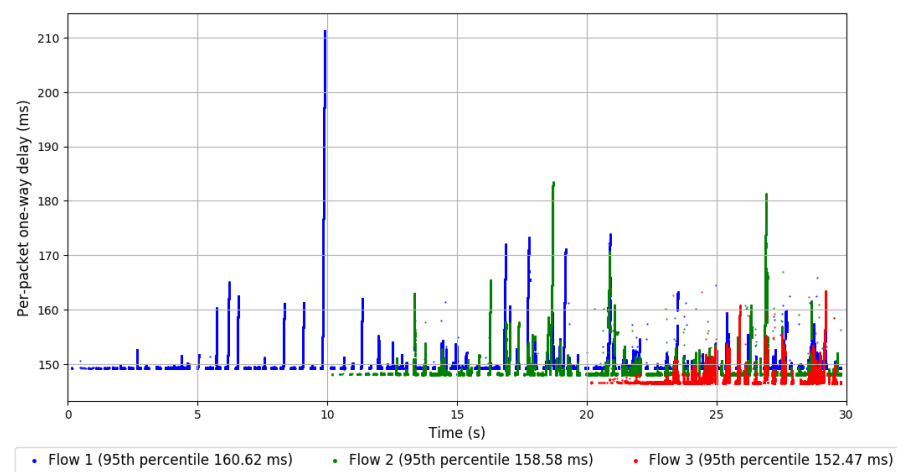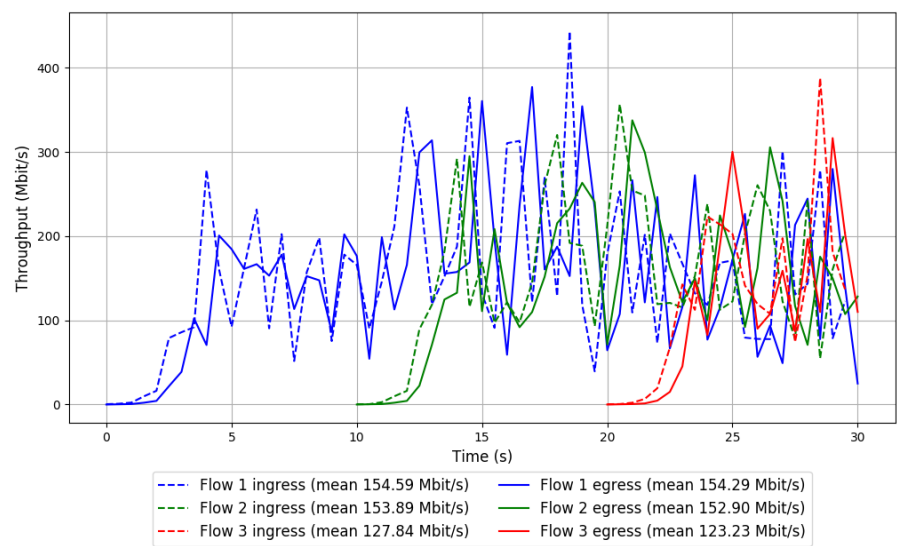
Run 3: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 192.25 Mbit/s) Flow 1 egress (mean 193.05 Mbit/s)
Flow 2 ingress (mean 148.88 Mbit/s) Flow 2 egress (mean 147.98 Mbit/s)
Flow 3 ingress (mean 130.81 Mbit/s) Flow 3 egress (mean 125.12 Mbit/s)

Flow 1 (95th percentile 166.35 ms) Flow 2 (95th percentile 159.10 ms) Flow 3 (95th percentile 155.29 ms)

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

Start at: 2018-12-02 16:44:04
End at: 2018-12-02 16:44:34
Local clock offset: 0.247 ms
Remote clock offset: -3.375 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 295.41 Mbit/s
95th percentile per-packet one-way delay: 158.978 ms
Loss rate: 2.02%
-- Flow 1:
Average throughput: 154.29 Mbit/s
95th percentile per-packet one-way delay: 160.619 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 152.90 Mbit/s
95th percentile per-packet one-way delay: 158.583 ms
Loss rate: 2.12%
-- Flow 3:
Average throughput: 123.23 Mbit/s
95th percentile per-packet one-way delay: 152.470 ms
Loss rate: 4.84%
```
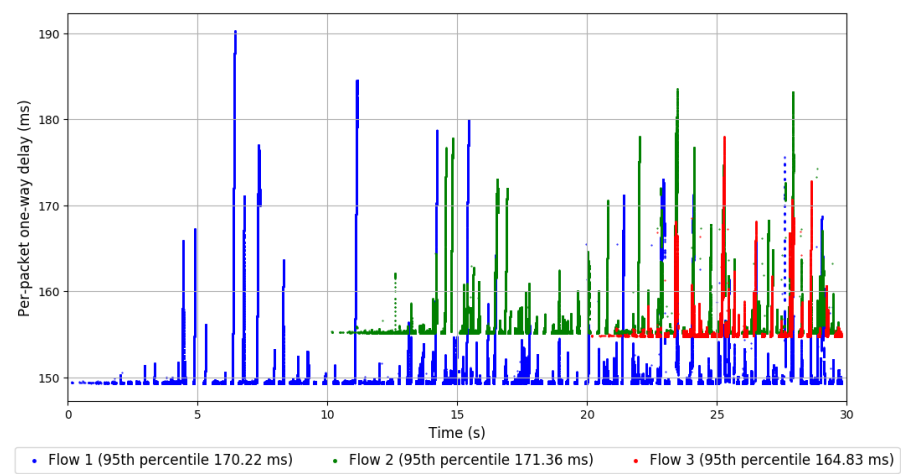
Run 4: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 17:18:12
End at: 2018-12-02 17:18:42
Local clock offset: 7.494 ms
Remote clock offset: -3.09 ms

# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 326.24 Mbit/s
95th percentile per-packet one-way delay: 170.253 ms
Loss rate: 1.60%
-- Flow 1:
Average throughput: 179.71 Mbit/s
95th percentile per-packet one-way delay: 170.221 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 168.89 Mbit/s
95th percentile per-packet one-way delay: 171.364 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 108.77 Mbit/s
95th percentile per-packet one-way delay: 164.827 ms
Loss rate: 5.59%
```
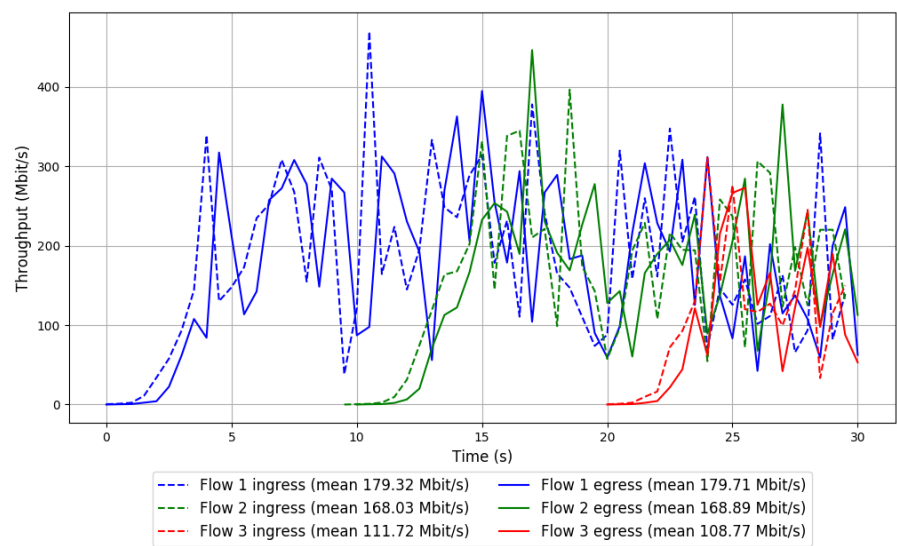
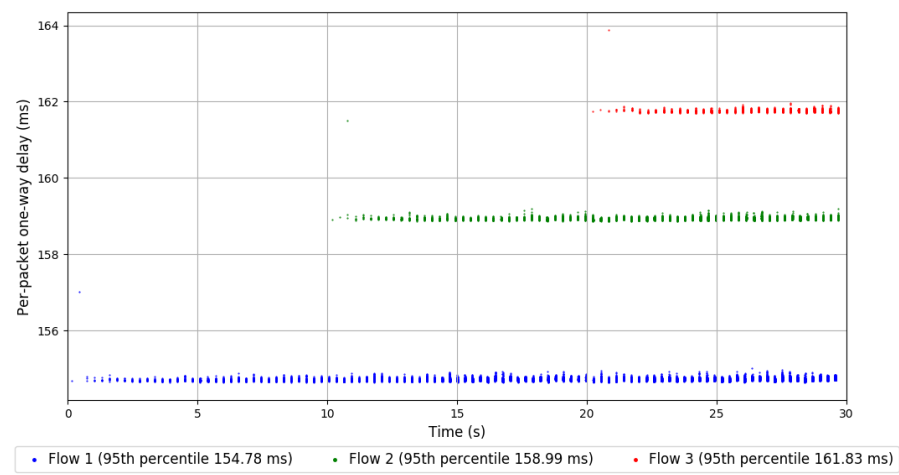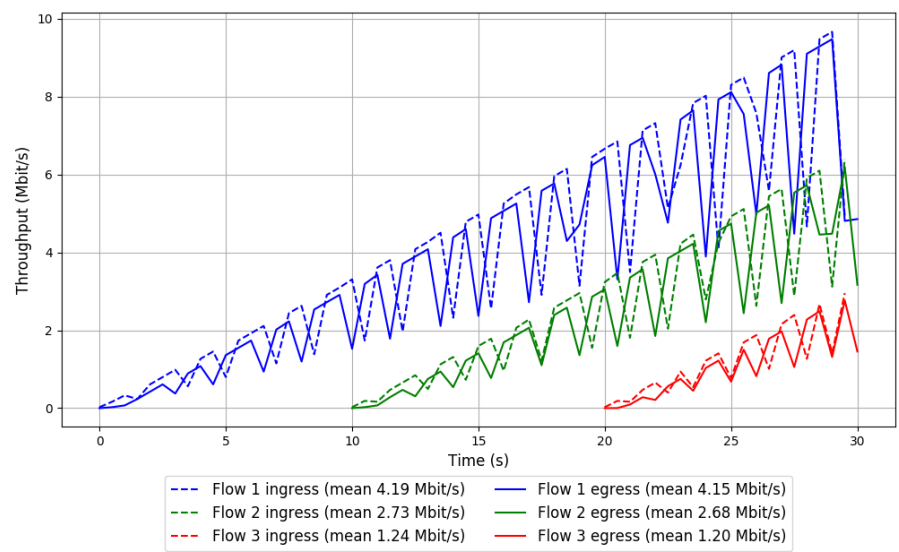Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-02 15:12:51
End at: 2018-12-02 15:13:21
Local clock offset: 7.425 ms
Remote clock offset: 4.362 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.29 Mbit/s
95th percentile per-packet one-way delay: 161.733 ms
Loss rate: 2.53%
-- Flow 1:
Average throughput: 4.15 Mbit/s
95th percentile per-packet one-way delay: 154.783 ms
Loss rate: 1.98%
-- Flow 2:
Average throughput: 2.68 Mbit/s
95th percentile per-packet one-way delay: 158.994 ms
Loss rate: 3.00%
-- Flow 3:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 161.829 ms
Loss rate: 6.20%
```
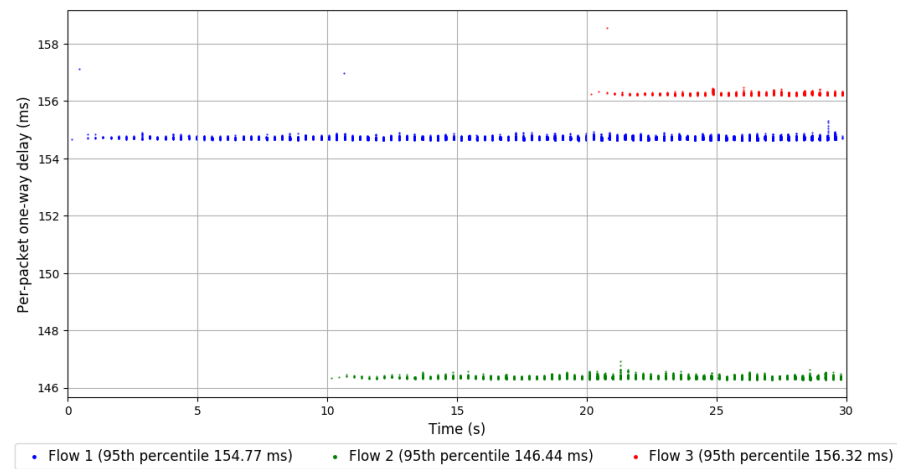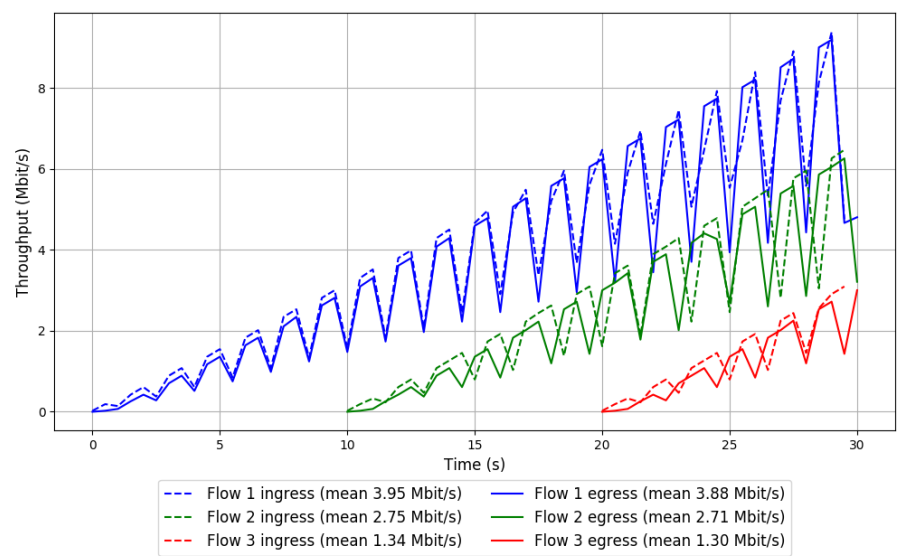
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-02 15:46:33
End at: 2018-12-02 15:47:03
Local clock offset: 7.558 ms
Remote clock offset: -0.275 ms

# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.09 Mbit/s
95th percentile per-packet one-way delay: 156.231 ms
Loss rate: 2.56%
-- Flow 1:
Average throughput: 3.88 Mbit/s
95th percentile per-packet one-way delay: 154.774 ms
Loss rate: 1.99%
-- Flow 2:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 146.438 ms
Loss rate: 2.97%
-- Flow 3:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 156.324 ms
Loss rate: 5.90%
```

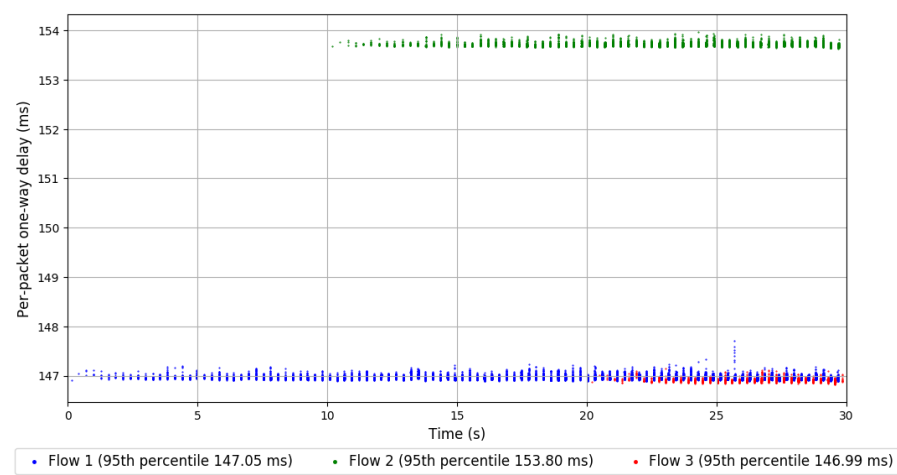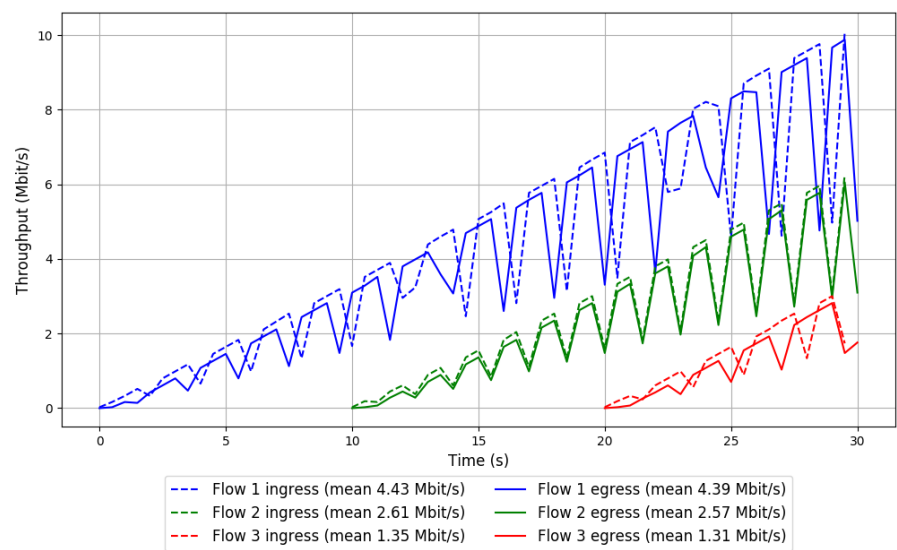# Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-02 16:20:12
End at: 2018-12-02 16:20:42
Local clock offset: 7.478 ms
Remote clock offset: -0.131 ms

# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.48 Mbit/s
95th percentile per-packet one-way delay: 153.749 ms
Loss rate: 2.47%
-- Flow 1:
Average throughput: 4.39 Mbit/s
95th percentile per-packet one-way delay: 147.046 ms
Loss rate: 1.92%
-- Flow 2:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 153.801 ms
Loss rate: 3.06%
-- Flow 3:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 146.993 ms
Loss rate: 5.60%
```
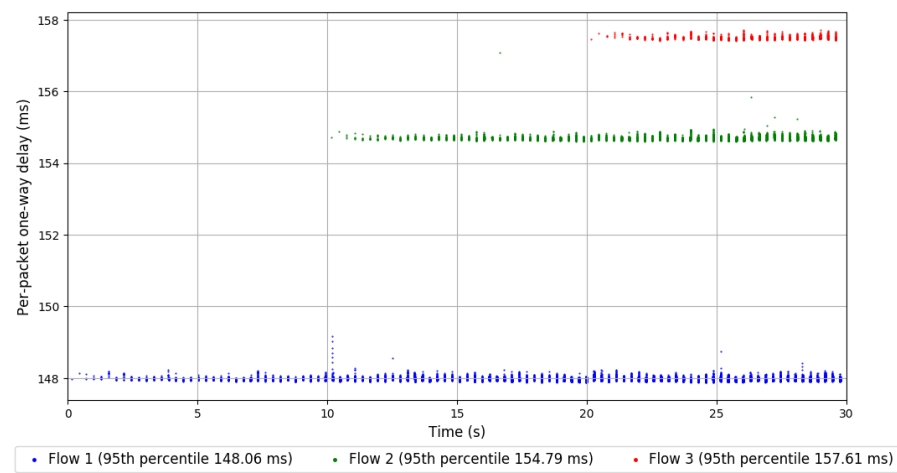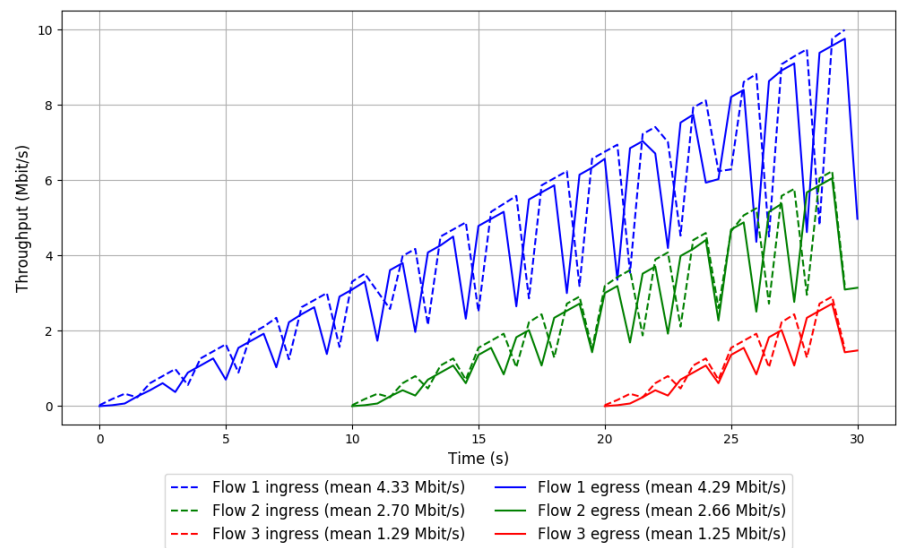
Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-02 16:54:22
End at: 2018-12-02 16:54:52
Local clock offset: 7.31 ms
Remote clock offset: -3.901 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.43 Mbit/s
95th percentile per-packet one-way delay: 157.464 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 4.29 Mbit/s
95th percentile per-packet one-way delay: 148.064 ms
Loss rate: 1.94%
-- Flow 2:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 154.789 ms
Loss rate: 3.02%
-- Flow 3:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 157.609 ms
Loss rate: 6.09%
```
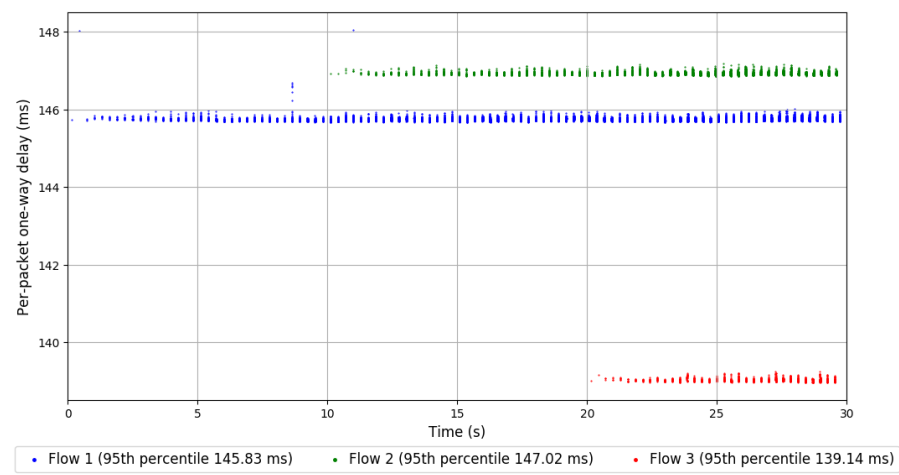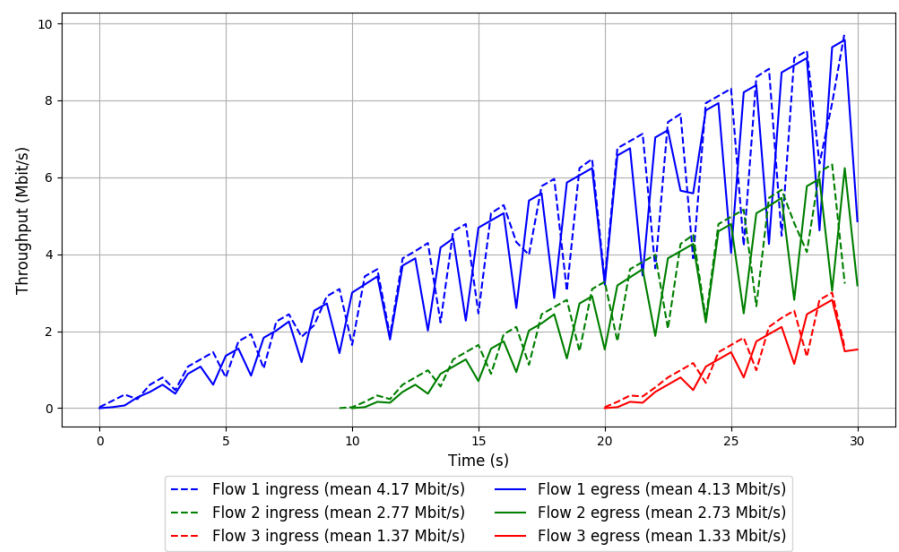
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-02 17:28:26
End at: 2018-12-02 17:28:56
Local clock offset: -0.386 ms
Remote clock offset: -3.052 ms


# Below is generated by plot.py at 2018-12-02 18:05:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.35 Mbit/s
95th percentile per-packet one-way delay: 146.963 ms
Loss rate: 2.53%
-- Flow 1:
Average throughput: 4.13 Mbit/s
95th percentile per-packet one-way delay: 145.826 ms
Loss rate: 1.98%
-- Flow 2:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 147.020 ms
Loss rate: 2.96%
-- Flow 3:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 139.136 ms
Loss rate: 5.91%
```

Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-02 15:10:53
End at: 2018-12-02 15:11:23
Local clock offset: 7.697 ms
Remote clock offset: 4.264 ms


# Below is generated by plot.py at 2018-12-02 18:08:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 568.36 Mbit/s
95th percentile per-packet one-way delay: 163.354 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 385.38 Mbit/s
95th percentile per-packet one-way delay: 159.896 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 234.43 Mbit/s
95th percentile per-packet one-way delay: 164.559 ms
Loss rate: 1.59%
-- Flow 3:
Average throughput: 85.94 Mbit/s
95th percentile per-packet one-way delay: 166.425 ms
Loss rate: 5.57%
```
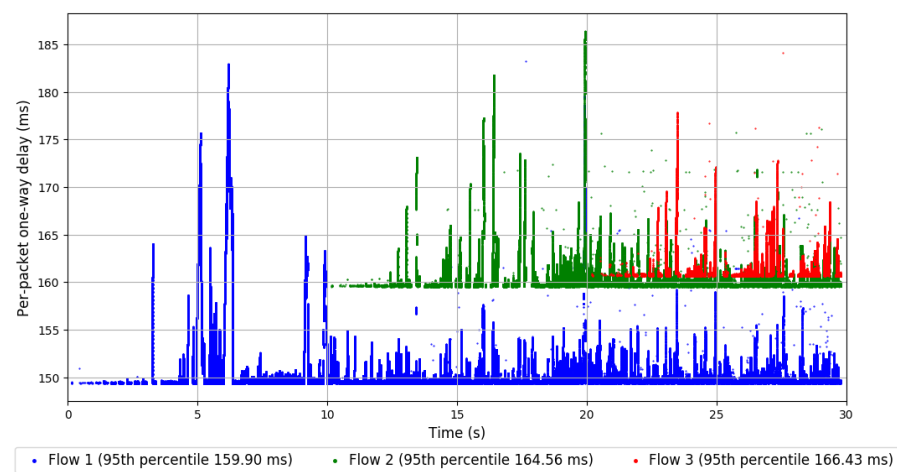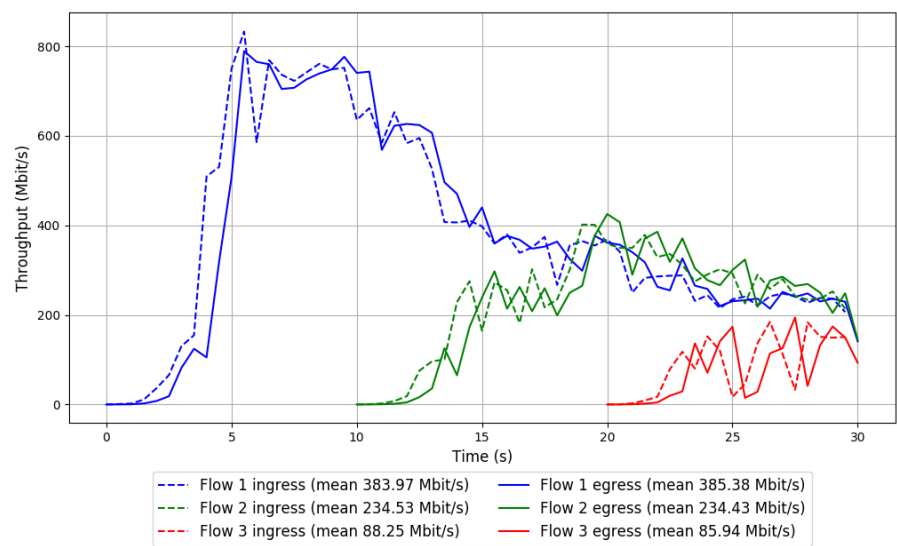
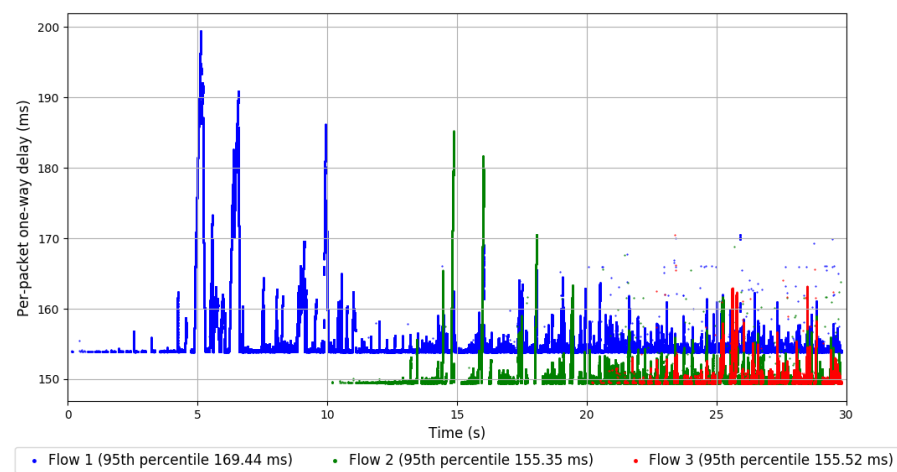Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-02 15:44:34
End at: 2018-12-02 15:45:04
Local clock offset: 7.84 ms
Remote clock offset: -0.253 ms


# Below is generated by plot.py at 2018-12-02 18:09:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 585.93 Mbit/s
95th percentile per-packet one-way delay: 164.985 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 412.94 Mbit/s
95th percentile per-packet one-way delay: 169.445 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 214.41 Mbit/s
95th percentile per-packet one-way delay: 155.352 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 96.12 Mbit/s
95th percentile per-packet one-way delay: 155.521 ms
Loss rate: 6.18%
```

Run 2: Report of Indigo-Muses — Data Link

- - - Flow 1 ingress (mean 411.19 Mbit/s) ——— Flow 1 egress (mean 412.94 Mbit/s)
- - - Flow 2 ingress (mean 214.20 Mbit/s) ——— Flow 2 egress (mean 214.41 Mbit/s)
- - - Flow 3 ingress (mean 99.49 Mbit/s) ——— Flow 3 egress (mean 96.12 Mbit/s)

• Flow 1 (95th percentile 169.44 ms) • Flow 2 (95th percentile 155.35 ms) • Flow 3 (95th percentile 155.52 ms)
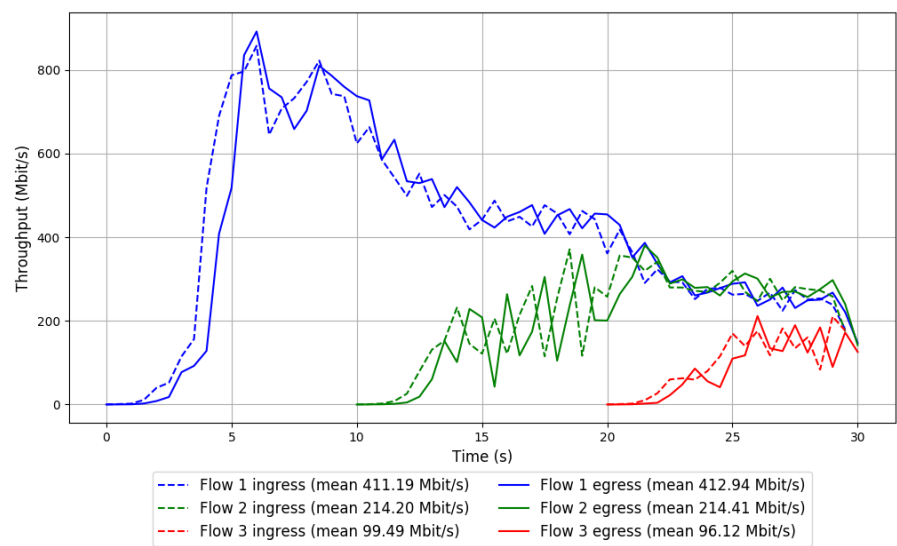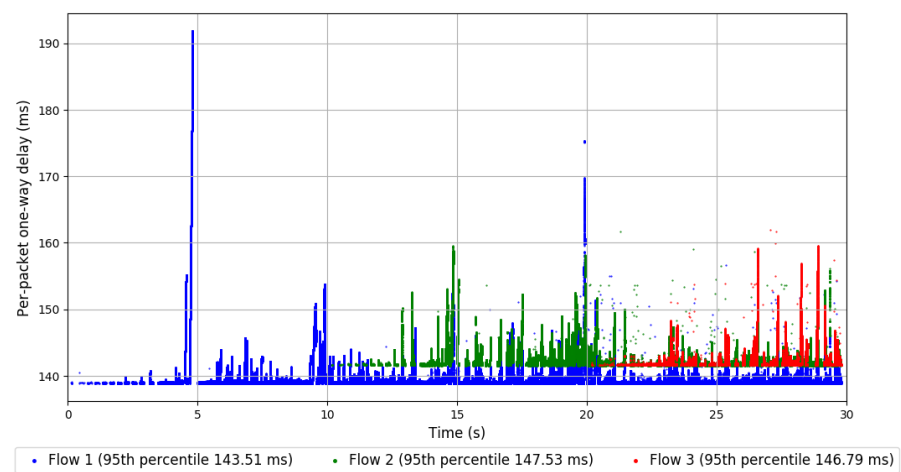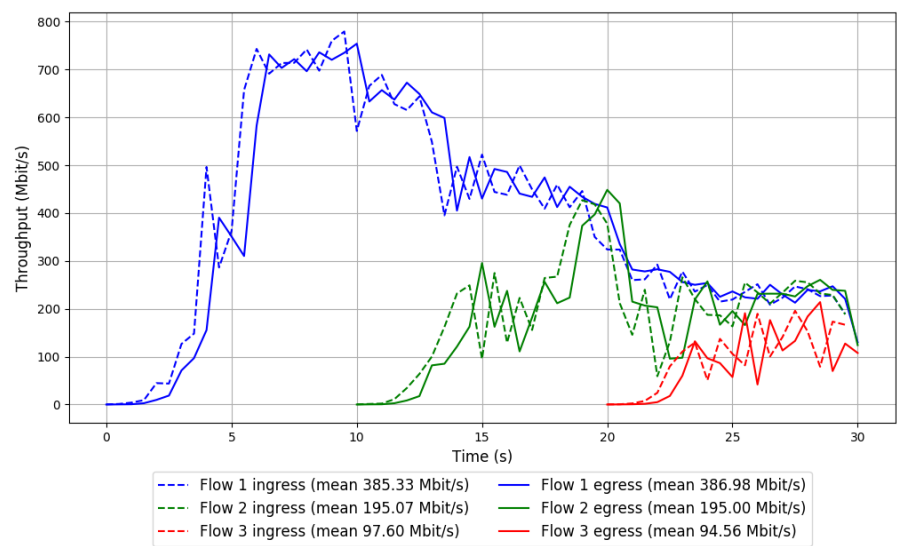
```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-02 16:18:16
End at: 2018-12-02 16:18:46
Local clock offset: 1.005 ms
Remote clock offset: -0.155 ms

# Below is generated by plot.py at 2018-12-02 18:09:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 546.65 Mbit/s
95th percentile per-packet one-way delay: 145.460 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 386.98 Mbit/s
95th percentile per-packet one-way delay: 143.513 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 195.00 Mbit/s
95th percentile per-packet one-way delay: 147.529 ms
Loss rate: 1.54%
-- Flow 3:
Average throughput: 94.56 Mbit/s
95th percentile per-packet one-way delay: 146.789 ms
Loss rate: 5.90%
```

Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 385.33 Mbit/s)   Flow 1 egress (mean 386.98 Mbit/s)
Flow 2 ingress (mean 195.07 Mbit/s)   Flow 2 egress (mean 195.00 Mbit/s)
Flow 3 ingress (mean 97.60 Mbit/s)   Flow 3 egress (mean 94.56 Mbit/s)

Flow 1 (95th percentile 143.51 ms)   Flow 2 (95th percentile 147.53 ms)   Flow 3 (95th percentile 146.79 ms)
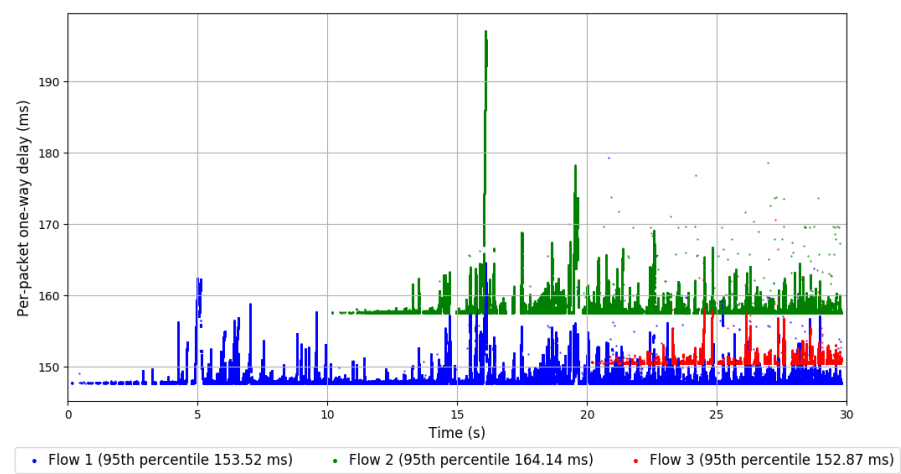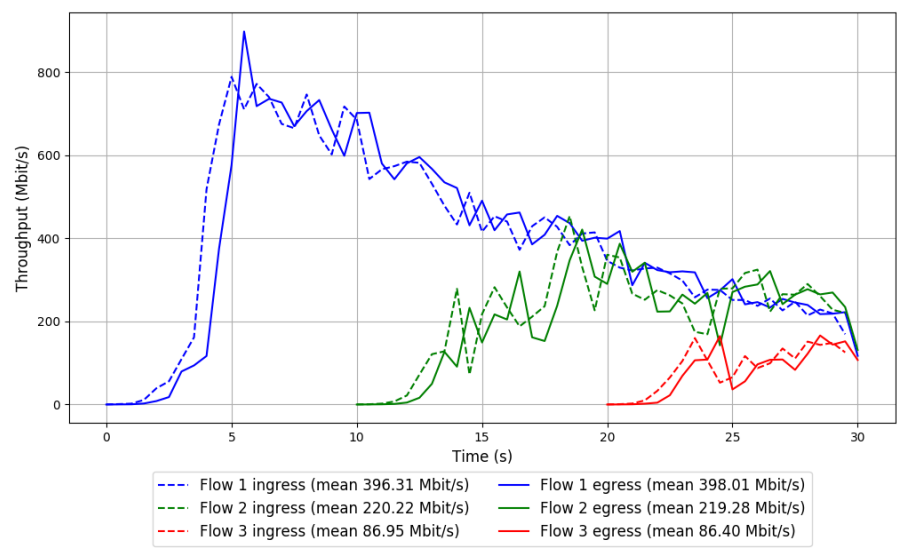
90

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-02 16:52:25
End at: 2018-12-02 16:52:55
Local clock offset: 8.716 ms
Remote clock offset: -3.739 ms


# Below is generated by plot.py at 2018-12-02 18:09:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 571.11 Mbit/s
95th percentile per-packet one-way delay: 159.826 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 398.01 Mbit/s
95th percentile per-packet one-way delay: 153.521 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 219.28 Mbit/s
95th percentile per-packet one-way delay: 164.143 ms
Loss rate: 1.92%
-- Flow 3:
Average throughput: 86.40 Mbit/s
95th percentile per-packet one-way delay: 152.870 ms
Loss rate: 3.52%
```

Run 4: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 396.31 Mbit/s)   Flow 1 egress (mean 398.01 Mbit/s)
Flow 2 ingress (mean 220.22 Mbit/s)   Flow 2 egress (mean 219.28 Mbit/s)
Flow 3 ingress (mean 86.95 Mbit/s)   Flow 3 egress (mean 86.40 Mbit/s)

Flow 1 (95th percentile 153.52 ms)   Flow 2 (95th percentile 164.14 ms)   Flow 3 (95th percentile 152.87 ms)
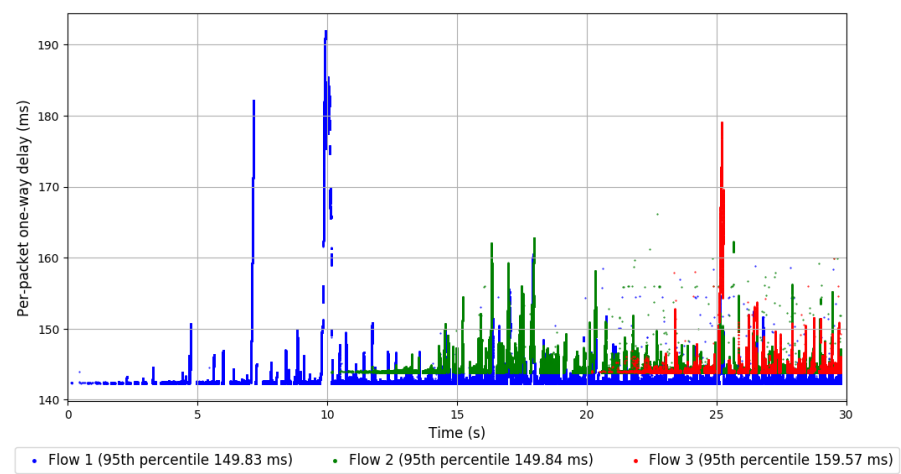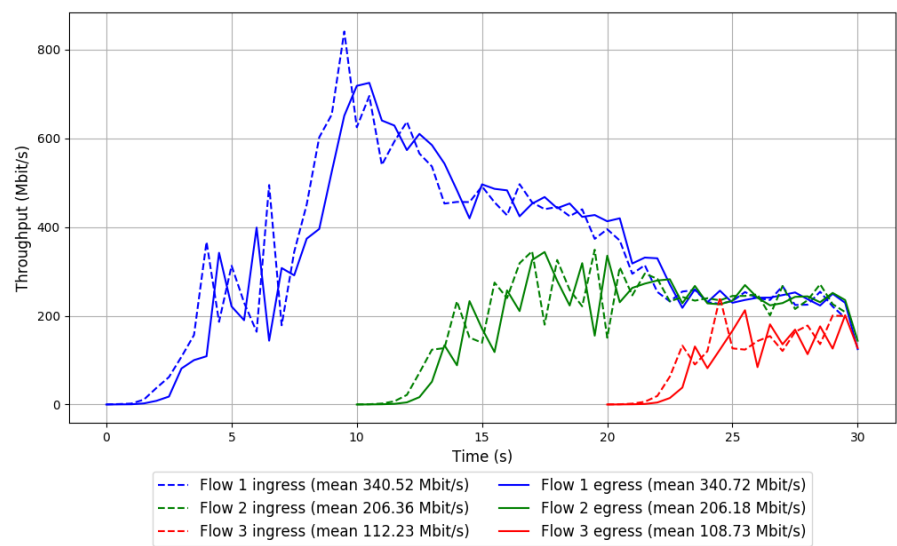
```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-02 17:26:32
End at: 2018-12-02 17:27:02
Local clock offset: -4.823 ms
Remote clock offset: -2.969 ms


# Below is generated by plot.py at 2018-12-02 18:09:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 512.43 Mbit/s
95th percentile per-packet one-way delay: 150.084 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 340.72 Mbit/s
95th percentile per-packet one-way delay: 149.826 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 206.18 Mbit/s
95th percentile per-packet one-way delay: 149.842 ms
Loss rate: 1.59%
-- Flow 3:
Average throughput: 108.73 Mbit/s
95th percentile per-packet one-way delay: 159.573 ms
Loss rate: 5.99%
```

Run 5: Report of Indigo-Muses — Data Link

- - - - Flow 1 ingress (mean 340.52 Mbit/s) —— Flow 1 egress (mean 340.72 Mbit/s)
- - - - Flow 2 ingress (mean 206.36 Mbit/s) —— Flow 2 egress (mean 206.18 Mbit/s)
- - - - Flow 3 ingress (mean 112.23 Mbit/s) —— Flow 3 egress (mean 108.73 Mbit/s)

• Flow 1 (95th percentile 149.83 ms)   • Flow 2 (95th percentile 149.84 ms)   • Flow 3 (95th percentile 159.57 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-02 15:00:38
End at: 2018-12-02 15:01:08
Local clock offset: -0.318 ms
Remote clock offset: 3.774 ms


# Below is generated by plot.py at 2018-12-02 18:11:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 669.55 Mbit/s
95th percentile per-packet one-way delay: 292.934 ms
Loss rate: 5.67%
-- Flow 1:
Average throughput: 355.76 Mbit/s
95th percentile per-packet one-way delay: 287.390 ms
Loss rate: 6.41%
-- Flow 2:
Average throughput: 325.54 Mbit/s
95th percentile per-packet one-way delay: 291.222 ms
Loss rate: 3.96%
-- Flow 3:
Average throughput: 304.44 Mbit/s
95th percentile per-packet one-way delay: 314.620 ms
Loss rate: 6.69%
```
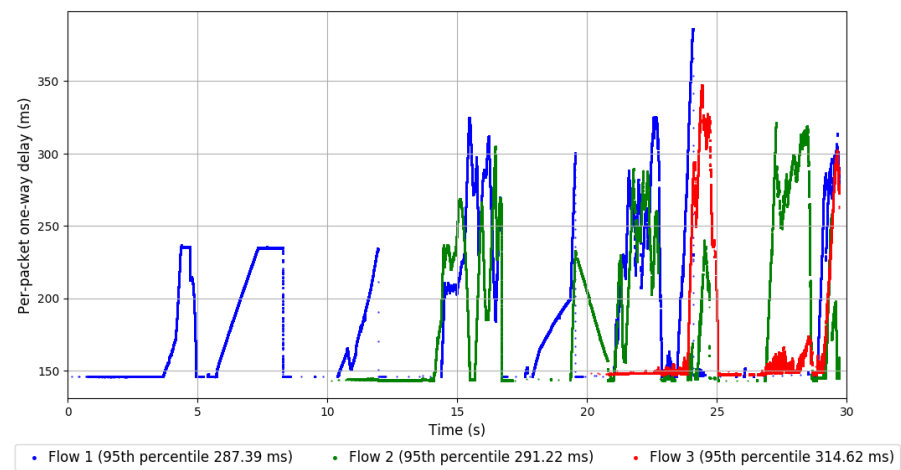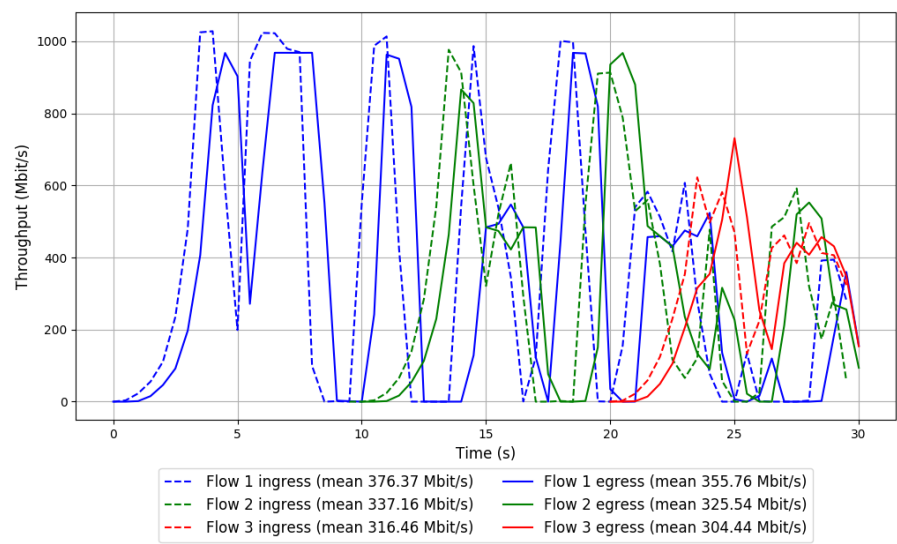
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-02 15:34:13
End at: 2018-12-02 15:34:43
Local clock offset: -5.794 ms
Remote clock offset: 0.253 ms


# Below is generated by plot.py at 2018-12-02 18:12:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 674.09 Mbit/s
95th percentile per-packet one-way delay: 279.334 ms
Loss rate: 4.55%
-- Flow 1:
Average throughput: 426.08 Mbit/s
95th percentile per-packet one-way delay: 258.662 ms
Loss rate: 4.26%
-- Flow 2:
Average throughput: 277.58 Mbit/s
95th percentile per-packet one-way delay: 308.889 ms
Loss rate: 5.52%
-- Flow 3:
Average throughput: 202.90 Mbit/s
95th percentile per-packet one-way delay: 295.123 ms
Loss rate: 3.72%
```
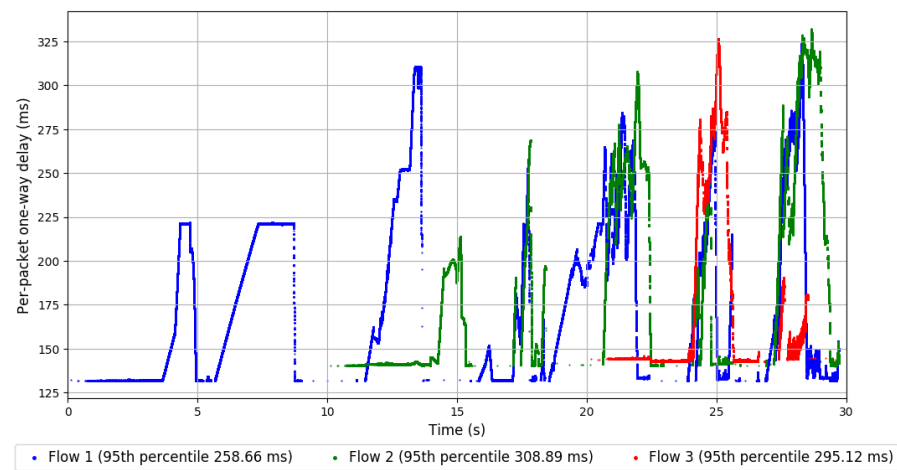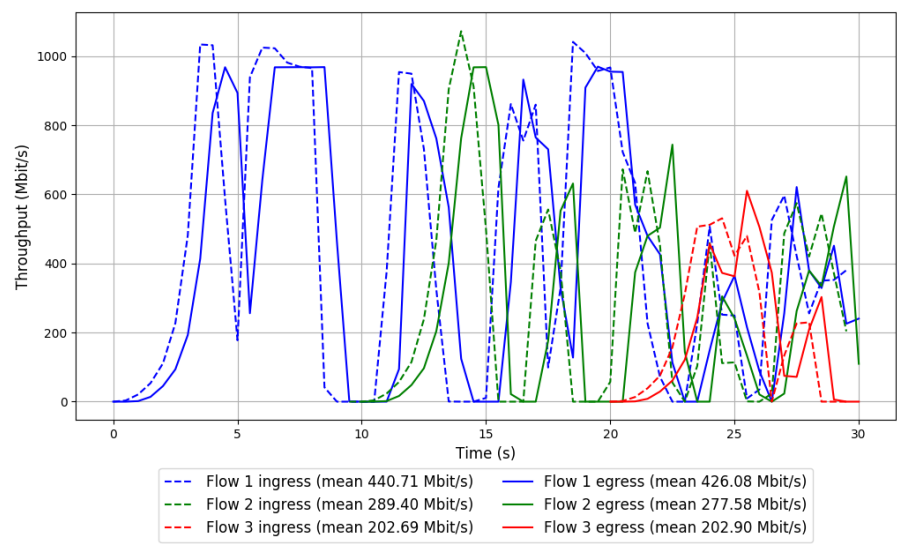
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 440.71 Mbit/s)
Flow 2 ingress (mean 289.40 Mbit/s)
Flow 3 ingress (mean 202.69 Mbit/s)
Flow 1 egress (mean 426.08 Mbit/s)
Flow 2 egress (mean 277.58 Mbit/s)
Flow 3 egress (mean 202.90 Mbit/s)

Flow 1 (95th percentile 258.66 ms)
Flow 2 (95th percentile 308.89 ms)
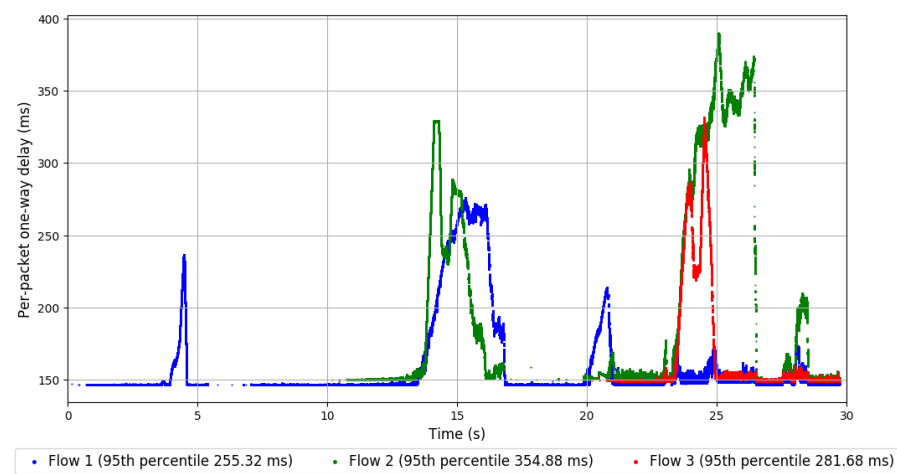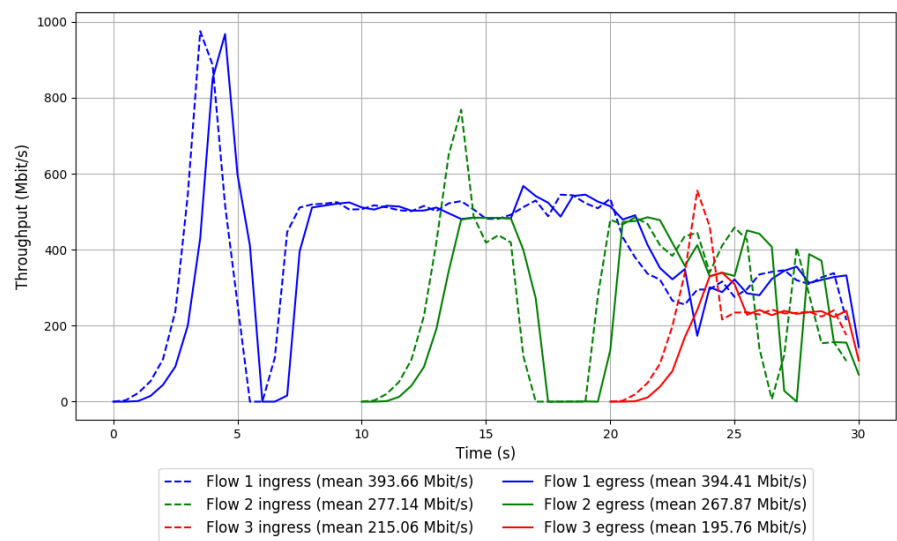Flow 3 (95th percentile 295.12 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-02 16:08:08
End at: 2018-12-02 16:08:38
Local clock offset: 8.465 ms
Remote clock offset: -0.143 ms


# Below is generated by plot.py at 2018-12-02 18:12:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 634.58 Mbit/s
95th percentile per-packet one-way delay: 319.646 ms
Loss rate: 3.07%
-- Flow 1:
Average throughput: 394.41 Mbit/s
95th percentile per-packet one-way delay: 255.322 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 267.87 Mbit/s
95th percentile per-packet one-way delay: 354.877 ms
Loss rate: 4.73%
-- Flow 3:
Average throughput: 195.76 Mbit/s
95th percentile per-packet one-way delay: 281.675 ms
Loss rate: 11.62%
```

Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 393.66 Mbit/s)   Flow 1 egress (mean 394.41 Mbit/s)
Flow 2 ingress (mean 277.14 Mbit/s)   Flow 2 egress (mean 267.87 Mbit/s)
Flow 3 ingress (mean 215.06 Mbit/s)   Flow 3 egress (mean 195.76 Mbit/s)

Flow 1 (95th percentile 255.32 ms)   Flow 2 (95th percentile 354.88 ms)   Flow 3 (95th percentile 281.68 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-02 16:42:11
End at: 2018-12-02 16:42:41
Local clock offset: -0.565 ms
Remote clock offset: -3.19 ms


# Below is generated by plot.py at 2018-12-02 18:15:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 656.31 Mbit/s
95th percentile per-packet one-way delay: 268.000 ms
Loss rate: 6.21%
-- Flow 1:
Average throughput: 355.36 Mbit/s
95th percentile per-packet one-way delay: 292.448 ms
Loss rate: 4.98%
-- Flow 2:
Average throughput: 321.15 Mbit/s
95th percentile per-packet one-way delay: 254.485 ms
Loss rate: 8.89%
-- Flow 3:
Average throughput: 277.39 Mbit/s
95th percentile per-packet one-way delay: 267.222 ms
Loss rate: 4.39%
```
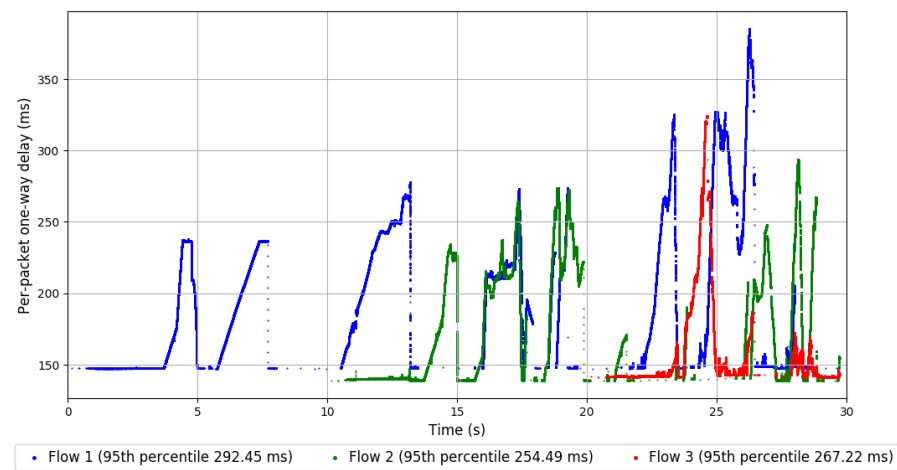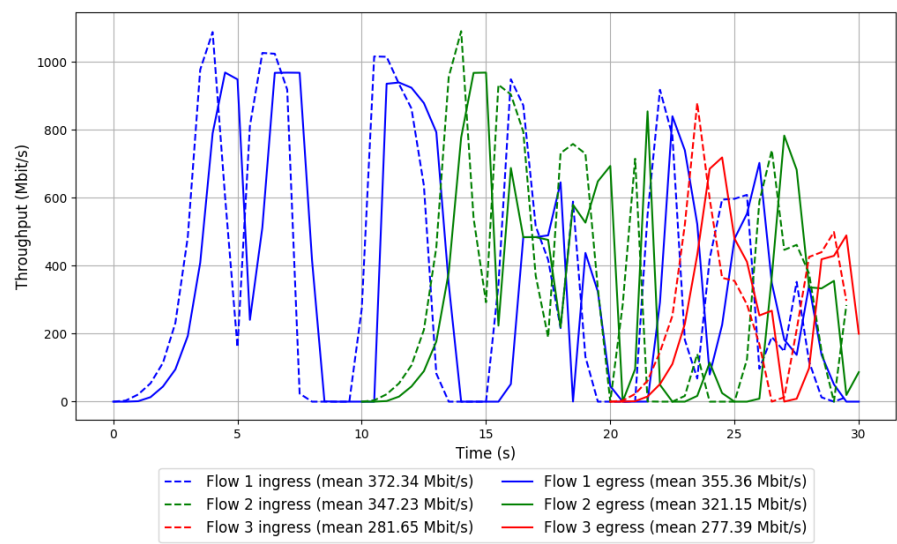
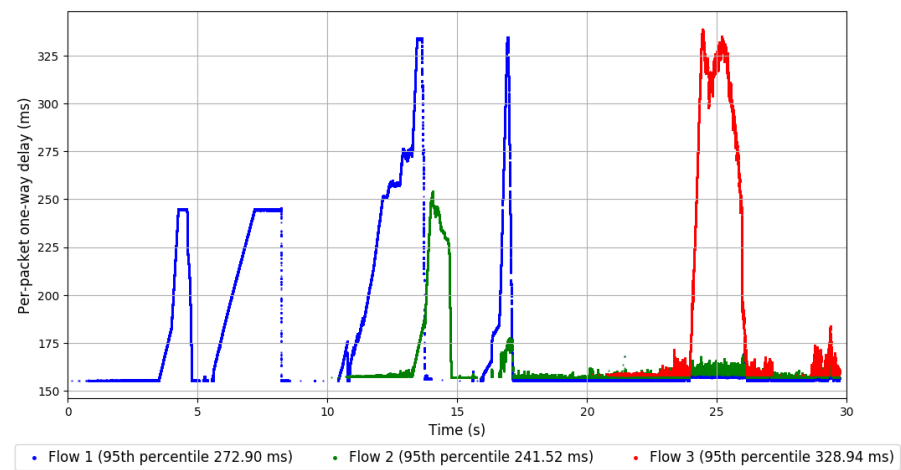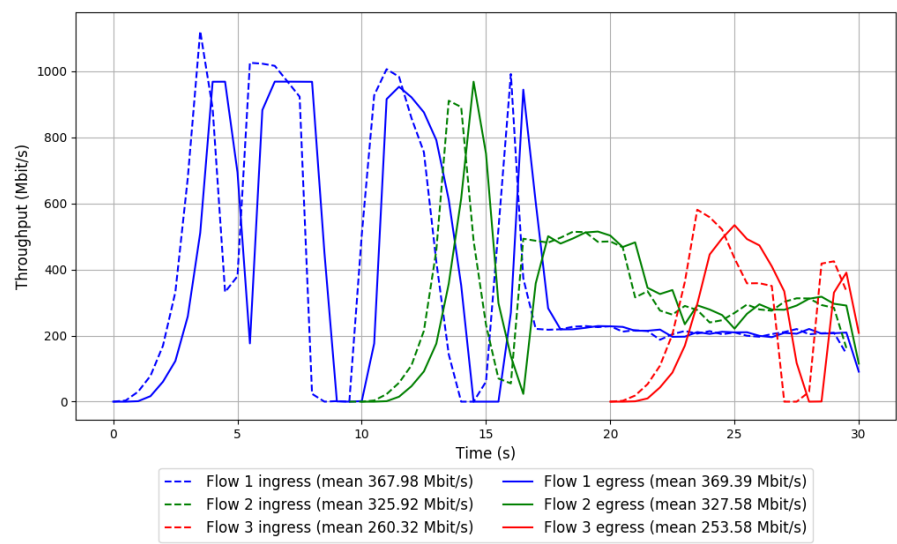# Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 372.34 Mbit/s) --- Flow 1 egress (mean 355.36 Mbit/s)
Flow 2 ingress (mean 347.23 Mbit/s) --- Flow 2 egress (mean 321.15 Mbit/s)
Flow 3 ingress (mean 281.65 Mbit/s) --- Flow 3 egress (mean 277.39 Mbit/s)

Flow 1 (95th percentile 292.45 ms) • Flow 2 (95th percentile 254.49 ms) • Flow 3 (95th percentile 267.22 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-02 17:16:19
End at: 2018-12-02 17:16:49
Local clock offset: 8.031 ms
Remote clock offset: -3.101 ms


# Below is generated by plot.py at 2018-12-02 18:16:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 667.89 Mbit/s
95th percentile per-packet one-way delay: 284.009 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 369.39 Mbit/s
95th percentile per-packet one-way delay: 272.904 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 327.58 Mbit/s
95th percentile per-packet one-way delay: 241.518 ms
Loss rate: 1.02%
-- Flow 3:
Average throughput: 253.58 Mbit/s
95th percentile per-packet one-way delay: 328.944 ms
Loss rate: 5.50%
```

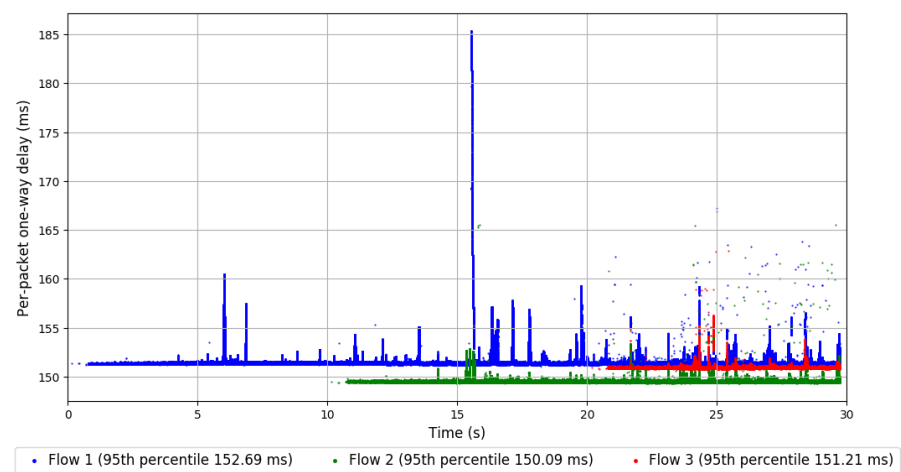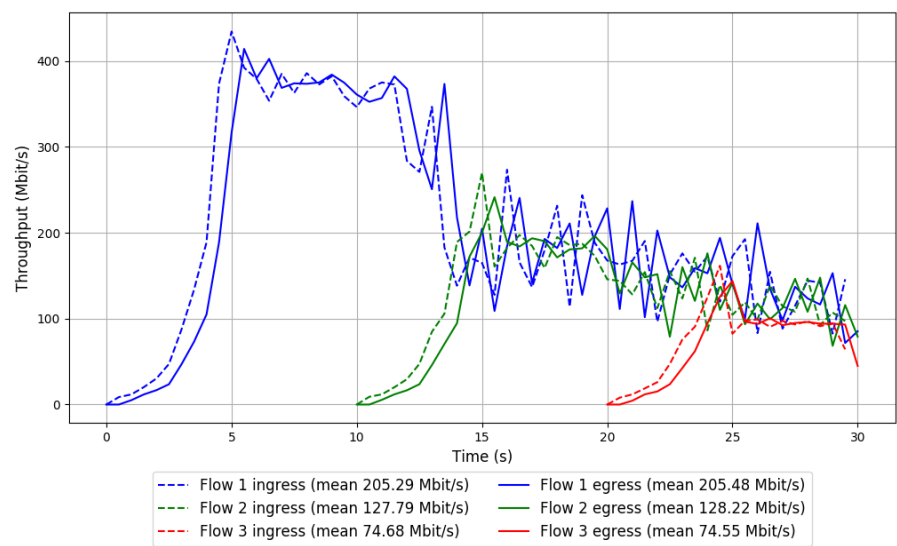# Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 367.98 Mbit/s) Flow 1 egress (mean 369.39 Mbit/s)
Flow 2 ingress (mean 325.92 Mbit/s) Flow 2 egress (mean 327.58 Mbit/s)
Flow 3 ingress (mean 260.32 Mbit/s) Flow 3 egress (mean 253.58 Mbit/s)

Flow 1 (95th percentile 272.90 ms)   Flow 2 (95th percentile 241.52 ms)   Flow 3 (95th percentile 328.94 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-02 15:08:56
End at: 2018-12-02 15:09:26
Local clock offset: 7.738 ms
Remote clock offset: 4.157 ms


# Below is generated by plot.py at 2018-12-02 18:16:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 314.38 Mbit/s
95th percentile per-packet one-way delay: 152.082 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 205.48 Mbit/s
95th percentile per-packet one-way delay: 152.689 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 128.22 Mbit/s
95th percentile per-packet one-way delay: 150.085 ms
Loss rate: 1.16%
-- Flow 3:
Average throughput: 74.55 Mbit/s
95th percentile per-packet one-way delay: 151.209 ms
Loss rate: 3.26%
```

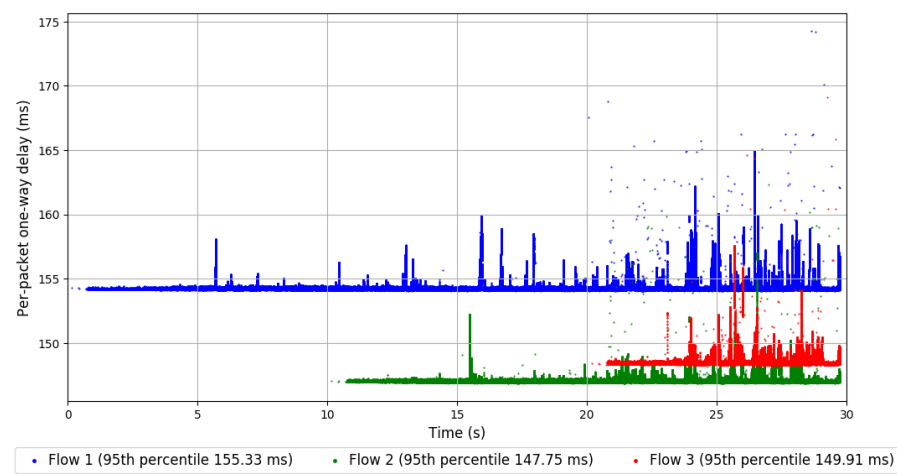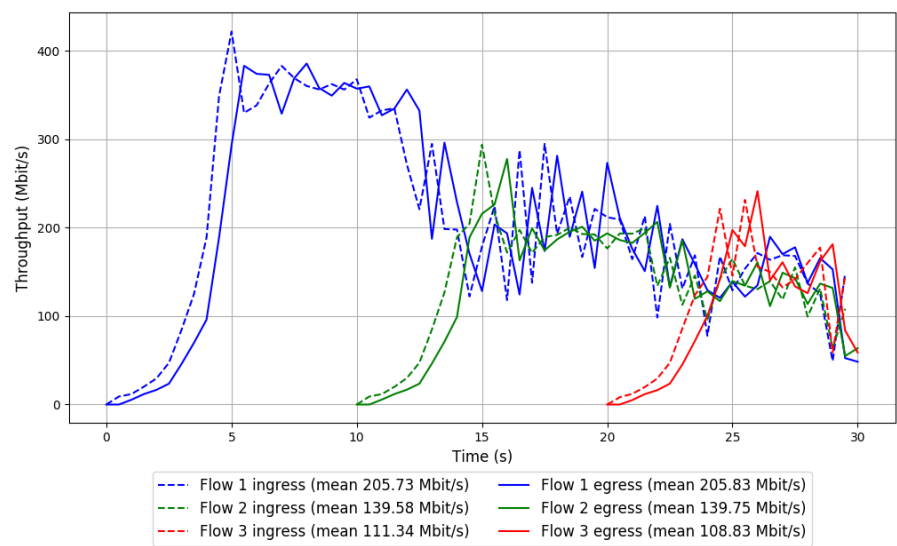# Run 1: Report of PCC-Expr — Data Link

- - - - Flow 1 ingress (mean 205.29 Mbit/s) ——— Flow 1 egress (mean 205.48 Mbit/s)
- - - - Flow 2 ingress (mean 127.79 Mbit/s) ——— Flow 2 egress (mean 128.22 Mbit/s)
- - - - Flow 3 ingress (mean 74.68 Mbit/s) ——— Flow 3 egress (mean 74.55 Mbit/s)

- Flow 1 (95th percentile 152.69 ms)   - Flow 2 (95th percentile 150.09 ms)   - Flow 3 (95th percentile 151.21 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-02 15:42:35
End at: 2018-12-02 15:43:05
Local clock offset: 7.798 ms
Remote clock offset: -0.175 ms


# Below is generated by plot.py at 2018-12-02 18:16:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 333.51 Mbit/s
95th percentile per-packet one-way delay: 154.776 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 205.83 Mbit/s
95th percentile per-packet one-way delay: 155.333 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 139.75 Mbit/s
95th percentile per-packet one-way delay: 147.747 ms
Loss rate: 1.32%
-- Flow 3:
Average throughput: 108.83 Mbit/s
95th percentile per-packet one-way delay: 149.906 ms
Loss rate: 5.07%
```
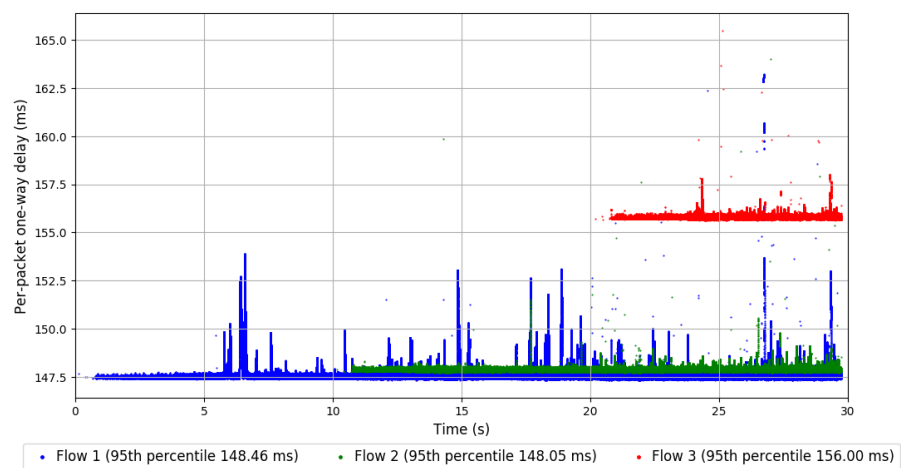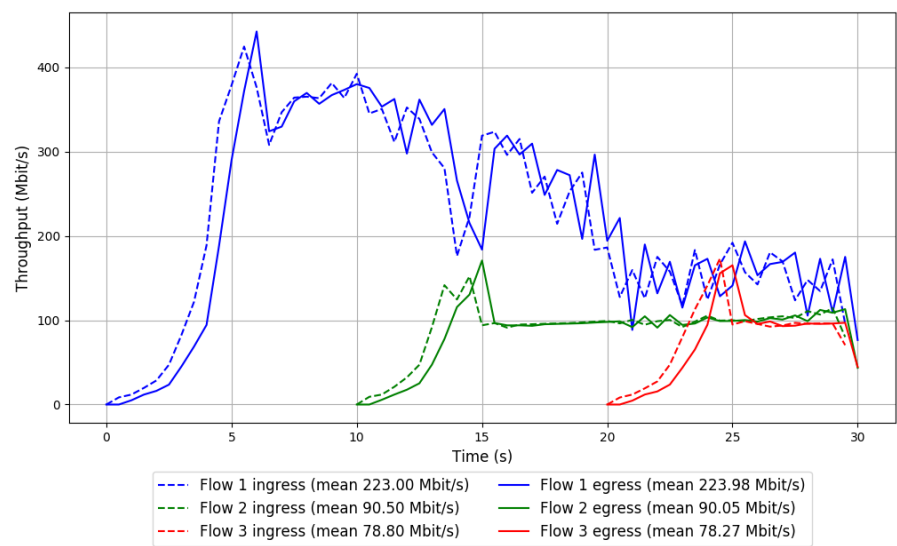
Run 2: Report of PCC-Expr — Data Link

Legend (top plot):
- Flow 1 ingress (mean 205.73 Mbit/s) — Flow 1 egress (mean 205.83 Mbit/s)
- Flow 2 ingress (mean 139.58 Mbit/s) — Flow 2 egress (mean 139.75 Mbit/s)
- Flow 3 ingress (mean 111.34 Mbit/s) — Flow 3 egress (mean 108.83 Mbit/s)

Legend (bottom plot):
- Flow 1 (95th percentile 155.33 ms)
- Flow 2 (95th percentile 147.75 ms)
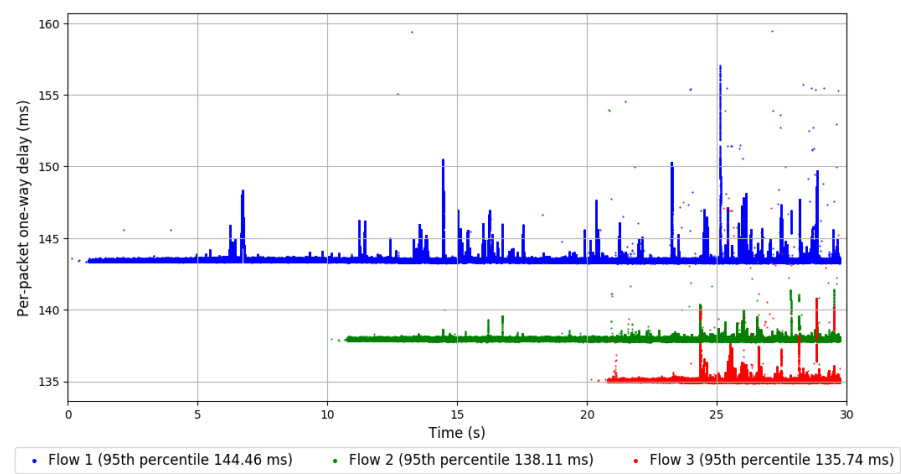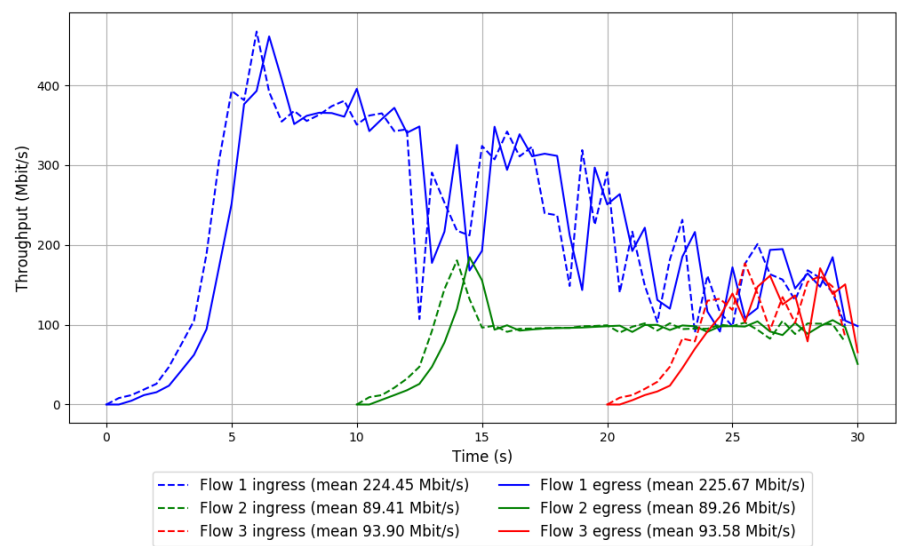- Flow 3 (95th percentile 149.91 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-02 16:16:21
End at: 2018-12-02 16:16:51
Local clock offset: 8.384 ms
Remote clock offset: -0.17 ms

# Below is generated by plot.py at 2018-12-02 18:16:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 308.79 Mbit/s
95th percentile per-packet one-way delay: 155.760 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 223.98 Mbit/s
95th percentile per-packet one-way delay: 148.462 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 90.05 Mbit/s
95th percentile per-packet one-way delay: 148.046 ms
Loss rate: 1.91%
-- Flow 3:
Average throughput: 78.27 Mbit/s
95th percentile per-packet one-way delay: 155.996 ms
Loss rate: 3.60%
```
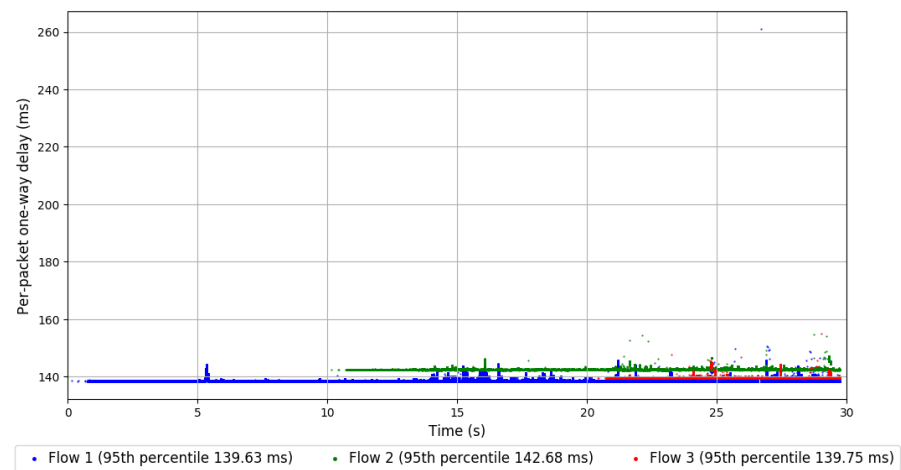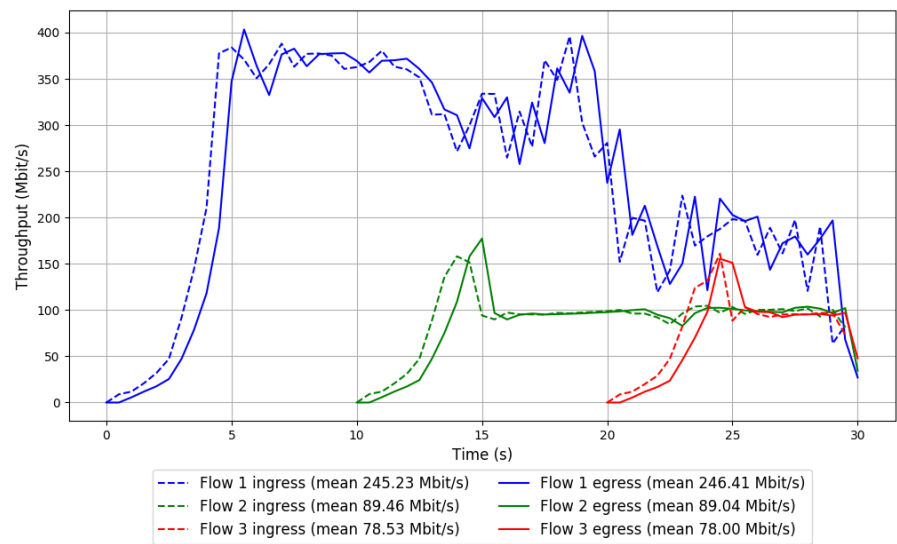
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 223.00 Mbit/s) --- Flow 1 egress (mean 223.98 Mbit/s)
Flow 2 ingress (mean 90.50 Mbit/s) --- Flow 2 egress (mean 90.05 Mbit/s)
Flow 3 ingress (mean 78.80 Mbit/s) --- Flow 3 egress (mean 78.27 Mbit/s)

Flow 1 (95th percentile 148.46 ms) · Flow 2 (95th percentile 148.05 ms) · Flow 3 (95th percentile 156.00 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-02 16:50:28
End at: 2018-12-02 16:50:58
Local clock offset: -4.028 ms
Remote clock offset: -3.704 ms


# Below is generated by plot.py at 2018-12-02 18:18:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 315.04 Mbit/s
95th percentile per-packet one-way delay: 144.046 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 225.67 Mbit/s
95th percentile per-packet one-way delay: 144.463 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 89.26 Mbit/s
95th percentile per-packet one-way delay: 138.106 ms
Loss rate: 1.59%
-- Flow 3:
Average throughput: 93.58 Mbit/s
95th percentile per-packet one-way delay: 135.742 ms
Loss rate: 3.22%
```
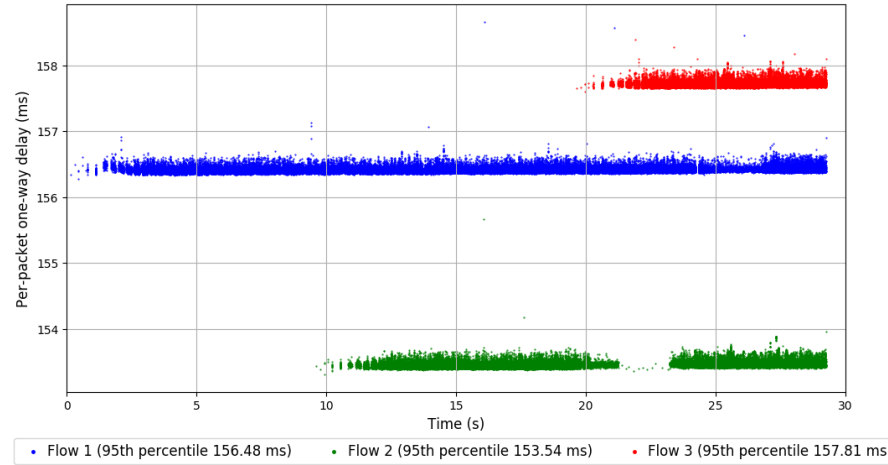
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 224.45 Mbit/s) — Flow 1 egress (mean 225.67 Mbit/s)
Flow 2 ingress (mean 89.41 Mbit/s) — Flow 2 egress (mean 89.26 Mbit/s)
Flow 3 ingress (mean 93.90 Mbit/s) — Flow 3 egress (mean 93.58 Mbit/s)

Flow 1 (95th percentile 144.46 ms)   Flow 2 (95th percentile 138.11 ms)   Flow 3 (95th percentile 135.74 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-02 17:24:34
End at: 2018-12-02 17:25:04
Local clock offset: 0.554 ms
Remote clock offset: -3.098 ms

# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 330.58 Mbit/s
95th percentile per-packet one-way delay: 142.418 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 246.41 Mbit/s
95th percentile per-packet one-way delay: 139.628 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 89.04 Mbit/s
95th percentile per-packet one-way delay: 142.683 ms
Loss rate: 1.90%
-- Flow 3:
Average throughput: 78.00 Mbit/s
95th percentile per-packet one-way delay: 139.751 ms
Loss rate: 3.52%
```
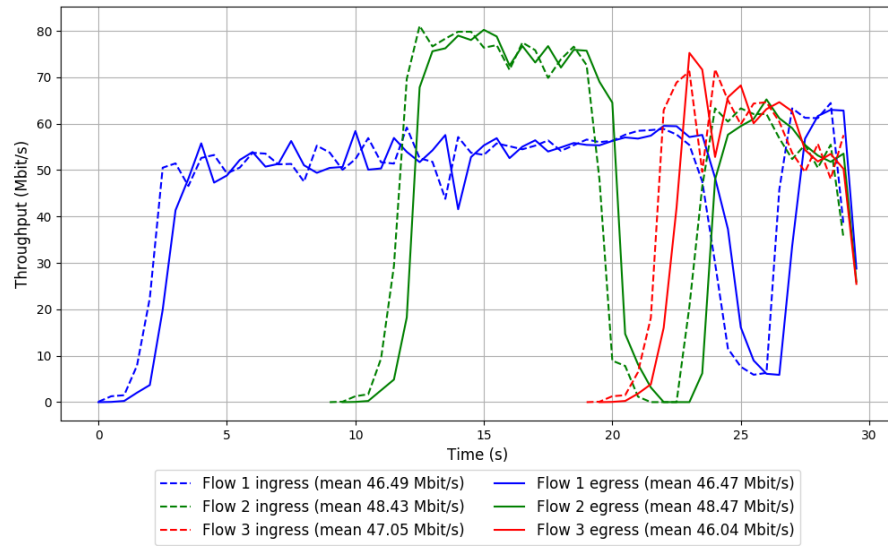
Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 245.23 Mbit/s) — Flow 1 egress (mean 246.41 Mbit/s)
Flow 2 ingress (mean 89.46 Mbit/s) — Flow 2 egress (mean 89.04 Mbit/s)
Flow 3 ingress (mean 78.53 Mbit/s) — Flow 3 egress (mean 78.00 Mbit/s)

Flow 1 (95th percentile 139.63 ms)   Flow 2 (95th percentile 142.68 ms)   Flow 3 (95th percentile 139.75 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-02 15:04:17
End at: 2018-12-02 15:04:47
Local clock offset: 8.873 ms
Remote clock offset: 4.028 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.35 Mbit/s
95th percentile per-packet one-way delay: 157.735 ms
Loss rate: 1.85%
-- Flow 1:
Average throughput: 46.47 Mbit/s
95th percentile per-packet one-way delay: 156.484 ms
Loss rate: 1.09%
-- Flow 2:
Average throughput: 48.47 Mbit/s
95th percentile per-packet one-way delay: 153.539 ms
Loss rate: 1.38%
-- Flow 3:
Average throughput: 46.04 Mbit/s
95th percentile per-packet one-way delay: 157.809 ms
Loss rate: 5.08%
```
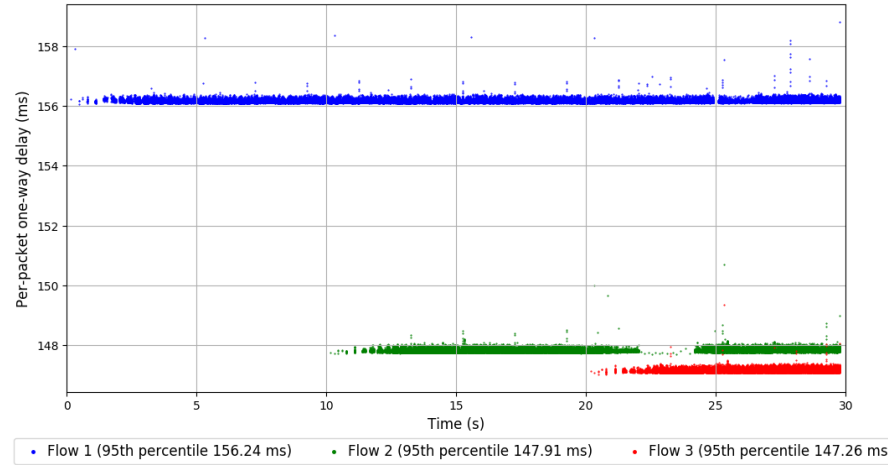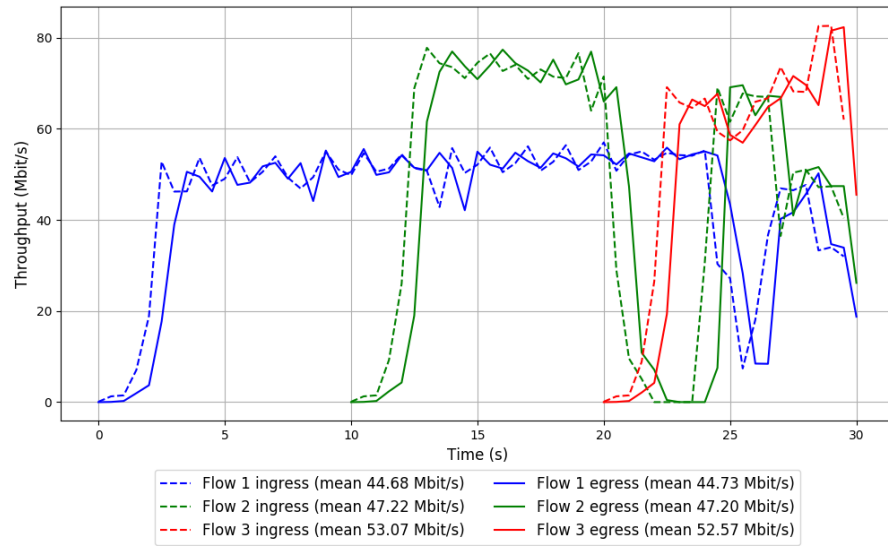
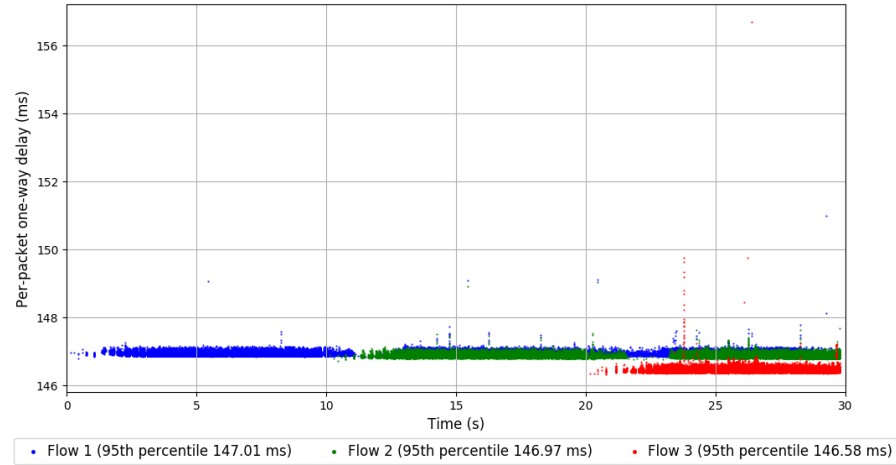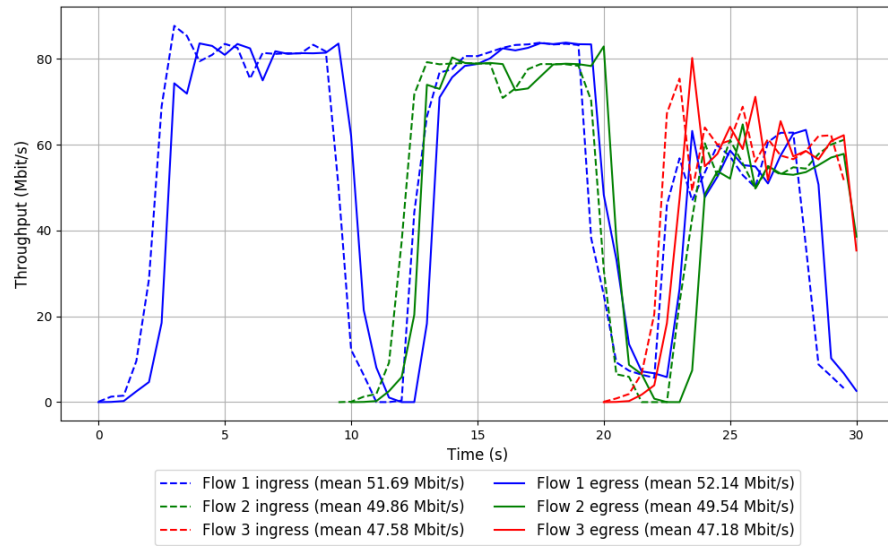Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-02 15:37:53
End at: 2018-12-02 15:38:23
Local clock offset: 7.531 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 107.17 Mbit/s
95th percentile per-packet one-way delay: 161.690 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 58.88 Mbit/s
95th percentile per-packet one-way delay: 158.974 ms
Loss rate: 1.10%
-- Flow 2:
Average throughput: 50.10 Mbit/s
95th percentile per-packet one-way delay: 157.527 ms
Loss rate: 1.66%
-- Flow 3:
Average throughput: 46.71 Mbit/s
95th percentile per-packet one-way delay: 161.774 ms
Loss rate: 3.93%
```

Run 2: Report of QUIC Cubic — Data Link

- - - Flow 1 ingress (mean 58.93 Mbit/s) —— Flow 1 egress (mean 58.88 Mbit/s)
- - - Flow 2 ingress (mean 50.18 Mbit/s) —— Flow 2 egress (mean 50.10 Mbit/s)
- - - Flow 3 ingress (mean 47.08 Mbit/s) —— Flow 3 egress (mean 46.71 Mbit/s)

• Flow 1 (95th percentile 158.97 ms)   • Flow 2 (95th percentile 157.53 ms)   • Flow 3 (95th percentile 161.77 ms)
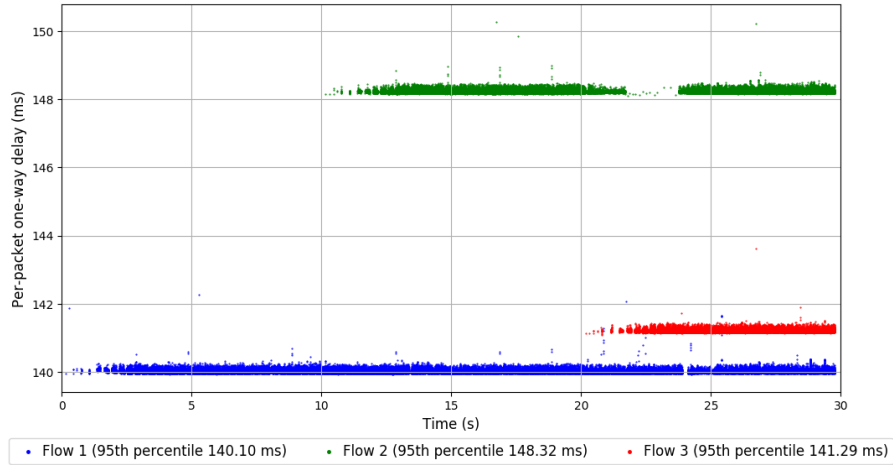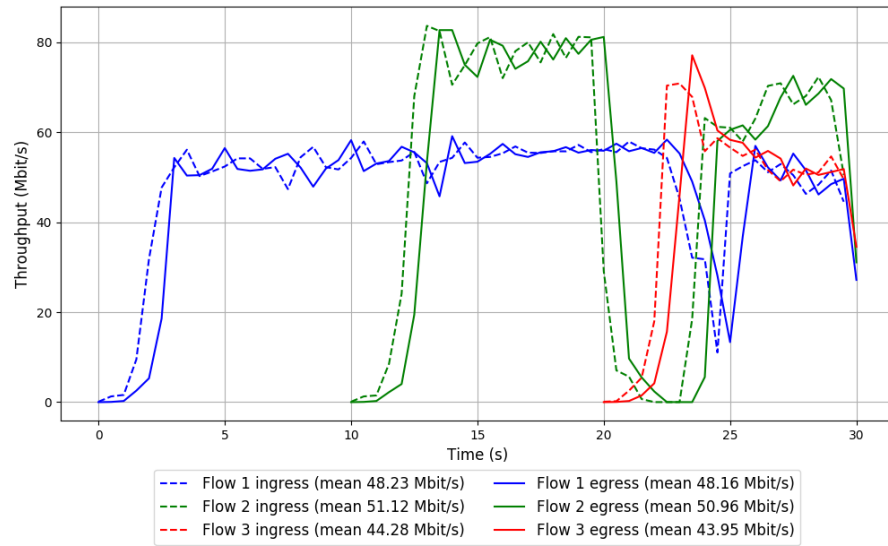
118

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-02 16:11:45
End at: 2018-12-02 16:12:15
Local clock offset: 8.9 ms
Remote clock offset: -0.072 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.03 Mbit/s
95th percentile per-packet one-way delay: 156.202 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 44.73 Mbit/s
95th percentile per-packet one-way delay: 156.239 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 47.20 Mbit/s
95th percentile per-packet one-way delay: 147.915 ms
Loss rate: 1.50%
-- Flow 3:
Average throughput: 52.57 Mbit/s
95th percentile per-packet one-way delay: 147.260 ms
Loss rate: 3.88%
```

Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-02 16:45:48
End at: 2018-12-02 16:46:18
Local clock offset: 7.398 ms
Remote clock offset: -3.403 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 100.27 Mbit/s
95th percentile per-packet one-way delay: 146.993 ms
Loss rate: 1.30%
-- Flow 1:
Average throughput: 52.14 Mbit/s
95th percentile per-packet one-way delay: 147.015 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 49.54 Mbit/s
95th percentile per-packet one-way delay: 146.970 ms
Loss rate: 2.10%
-- Flow 3:
Average throughput: 47.18 Mbit/s
95th percentile per-packet one-way delay: 146.577 ms
Loss rate: 3.68%
```

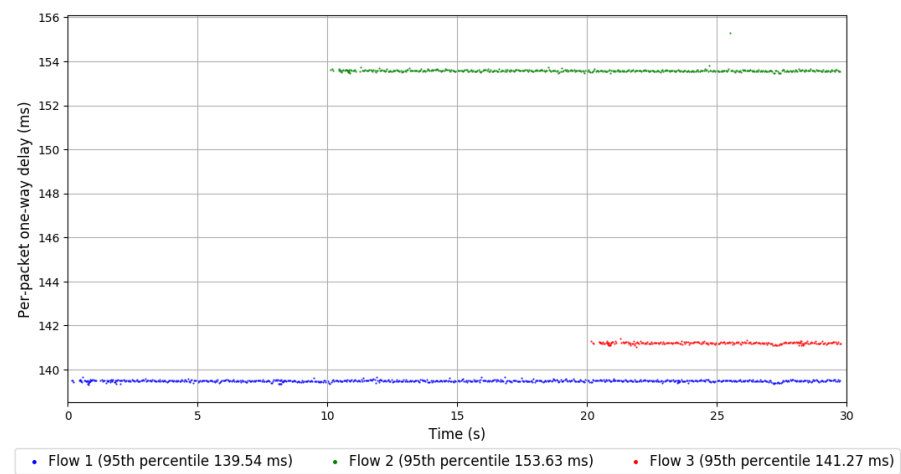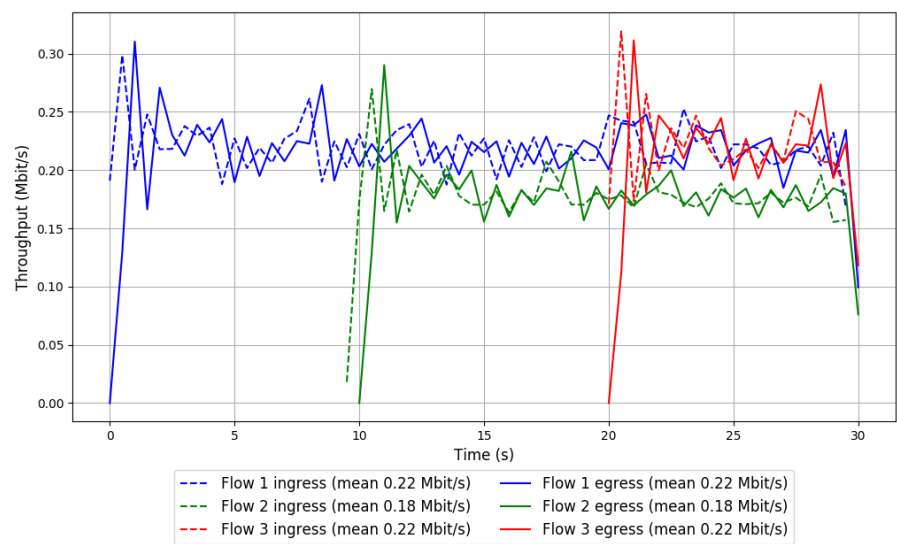Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-02 17:19:57
End at: 2018-12-02 17:20:27
Local clock offset: 0.608 ms
Remote clock offset: -3.002 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.09 Mbit/s
95th percentile per-packet one-way delay: 148.265 ms
Loss rate: 1.75%
-- Flow 1:
Average throughput: 48.16 Mbit/s
95th percentile per-packet one-way delay: 140.100 ms
Loss rate: 1.11%
-- Flow 2:
Average throughput: 50.96 Mbit/s
95th percentile per-packet one-way delay: 148.319 ms
Loss rate: 1.83%
-- Flow 3:
Average throughput: 43.95 Mbit/s
95th percentile per-packet one-way delay: 141.288 ms
Loss rate: 3.66%
```
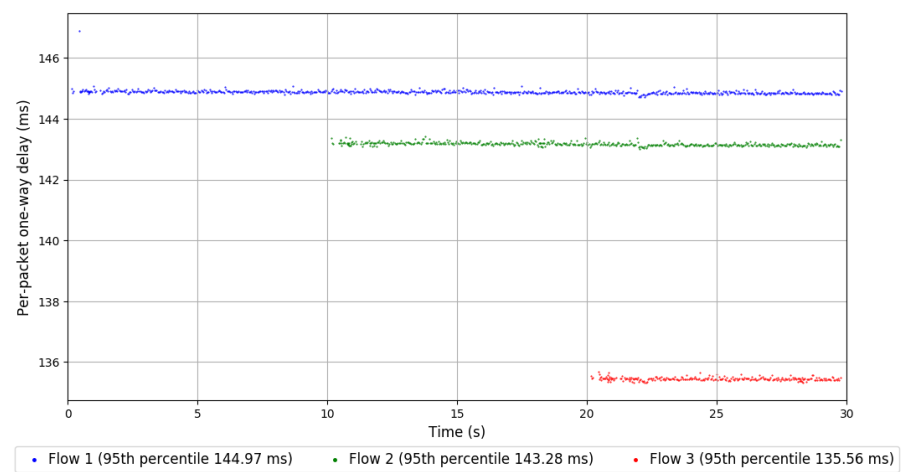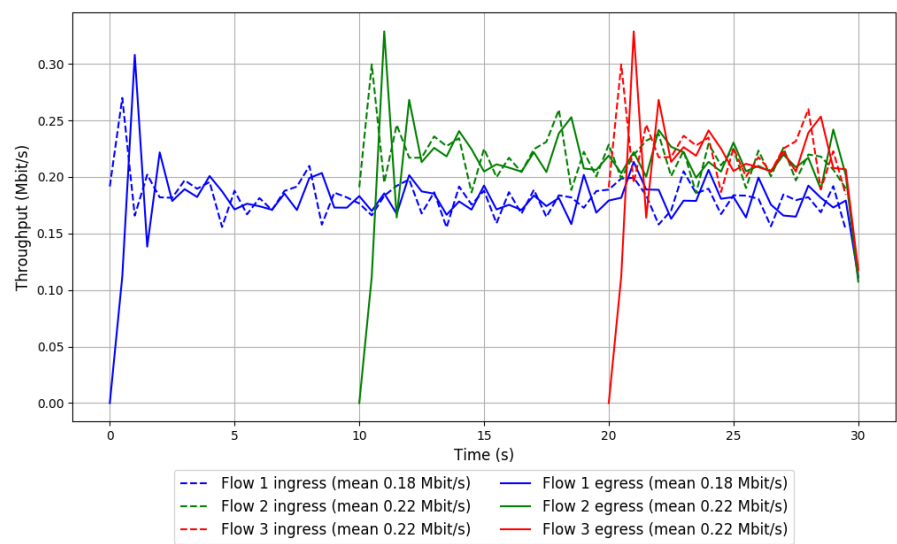
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 48.23 Mbit/s)   Flow 1 egress (mean 48.16 Mbit/s)
Flow 2 ingress (mean 51.12 Mbit/s)   Flow 2 egress (mean 50.96 Mbit/s)
Flow 3 ingress (mean 44.28 Mbit/s)   Flow 3 egress (mean 43.95 Mbit/s)

• Flow 1 (95th percentile 140.10 ms)   • Flow 2 (95th percentile 148.32 ms)   • Flow 3 (95th percentile 141.29 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-02 14:53:14
End at: 2018-12-02 14:53:44
Local clock offset: 0.607 ms
Remote clock offset: 3.637 ms

# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 153.606 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 139.538 ms
Loss rate: 0.91%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 153.631 ms
Loss rate: 1.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 141.267 ms
Loss rate: 2.67%
```
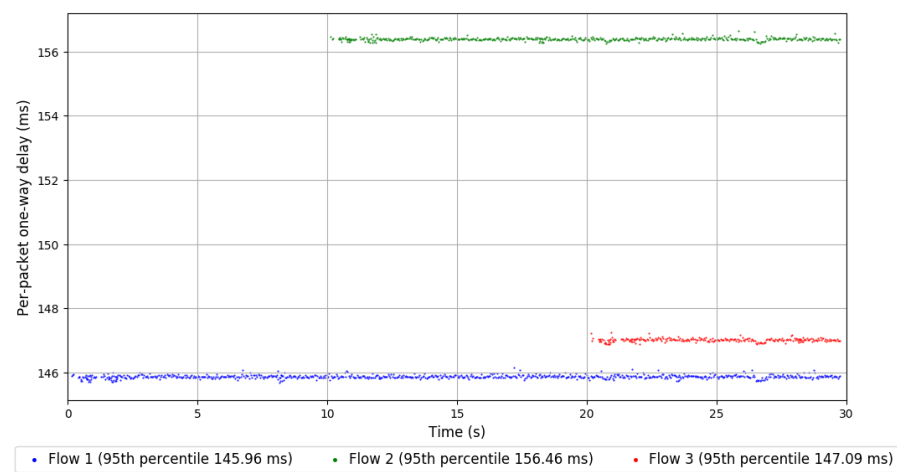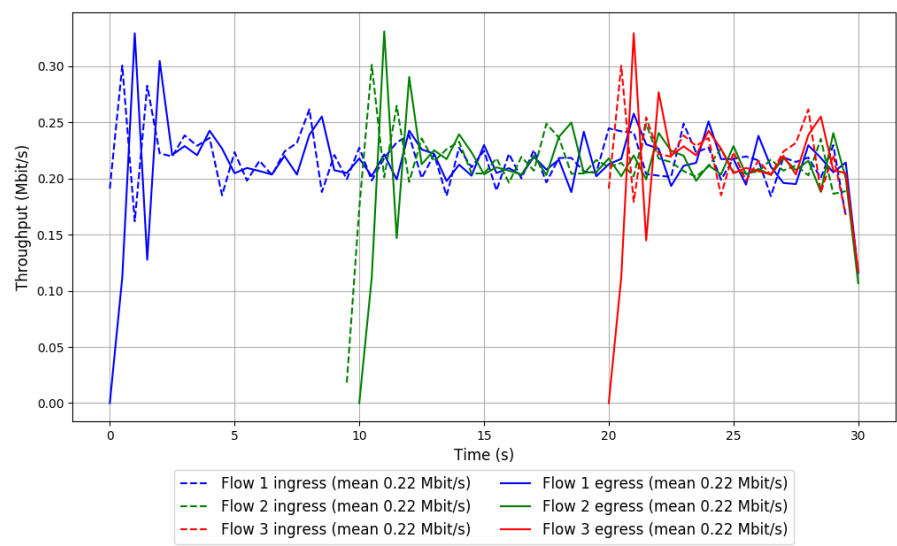
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-12-02 15:26:49
End at: 2018-12-02 15:27:19
Local clock offset: -2.724 ms
Remote clock offset: 1.079 ms

# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 144.938 ms
Loss rate: 1.55%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 144.965 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 143.284 ms
Loss rate: 1.63%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 135.558 ms
Loss rate: 3.01%
```

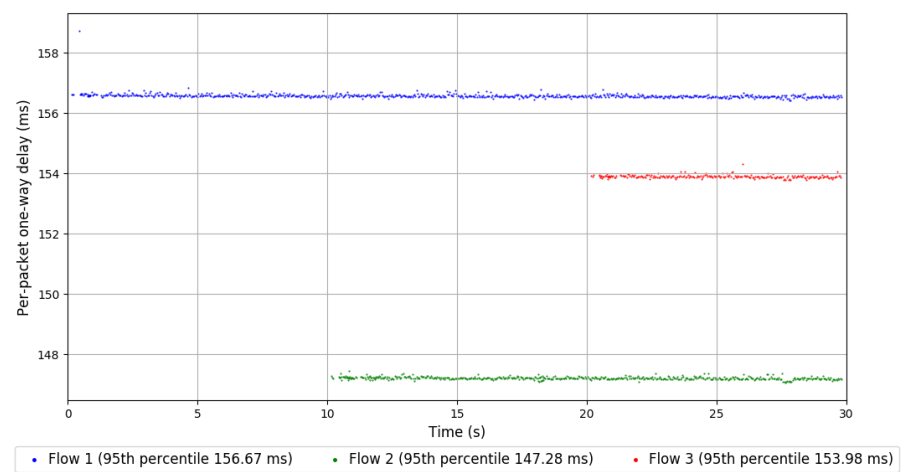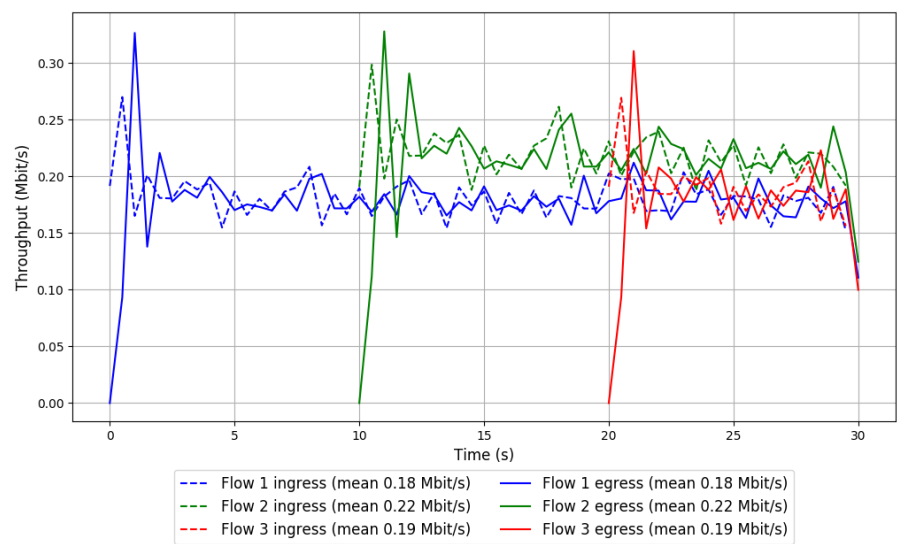# Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-12-02 16:00:45
End at: 2018-12-02 16:01:15
Local clock offset: 7.475 ms
Remote clock offset: -0.2 ms

# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 156.429 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 145.962 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 156.460 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 147.095 ms
Loss rate: 2.65%
```
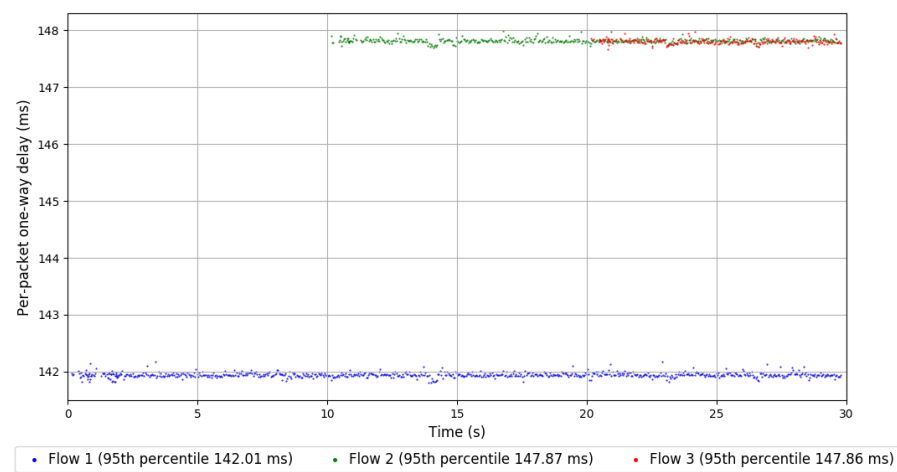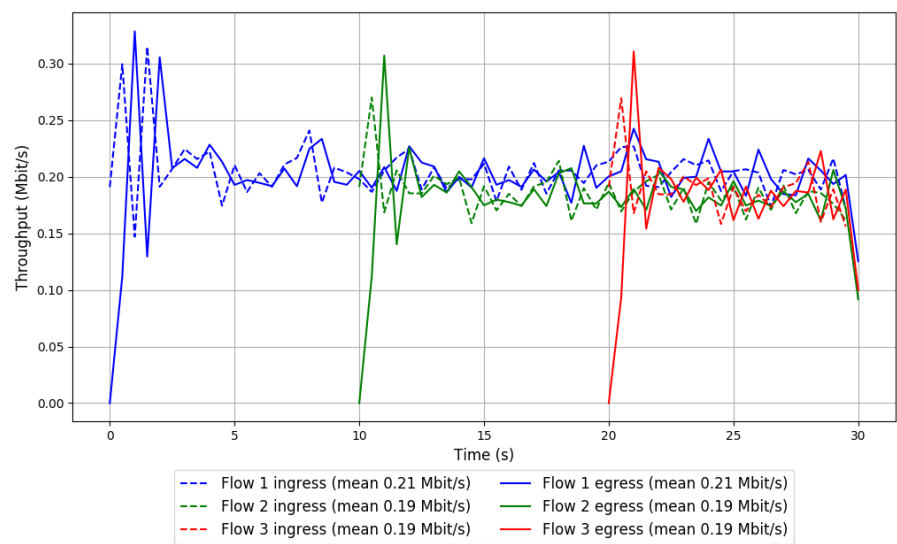
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-02 16:34:44
End at: 2018-12-02 16:35:14
Local clock offset: 7.641 ms
Remote clock offset: -2.418 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 156.634 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 156.667 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 147.279 ms
Loss rate: 1.44%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 153.980 ms
Loss rate: 2.98%
```

Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-12-02 17:08:57
End at: 2018-12-02 17:09:27
Local clock offset: 0.044 ms
Remote clock offset: -3.174 ms

# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 147.847 ms
Loss rate: 1.46%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 142.007 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 147.868 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 147.857 ms
Loss rate: 2.98%
```
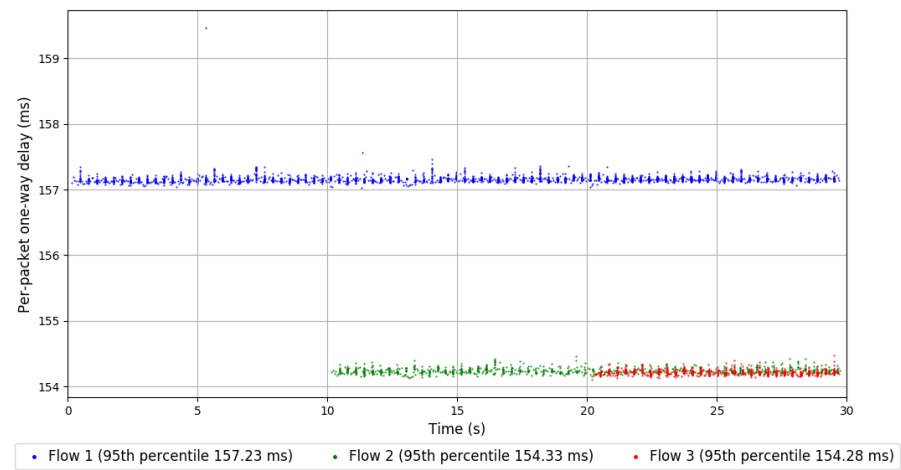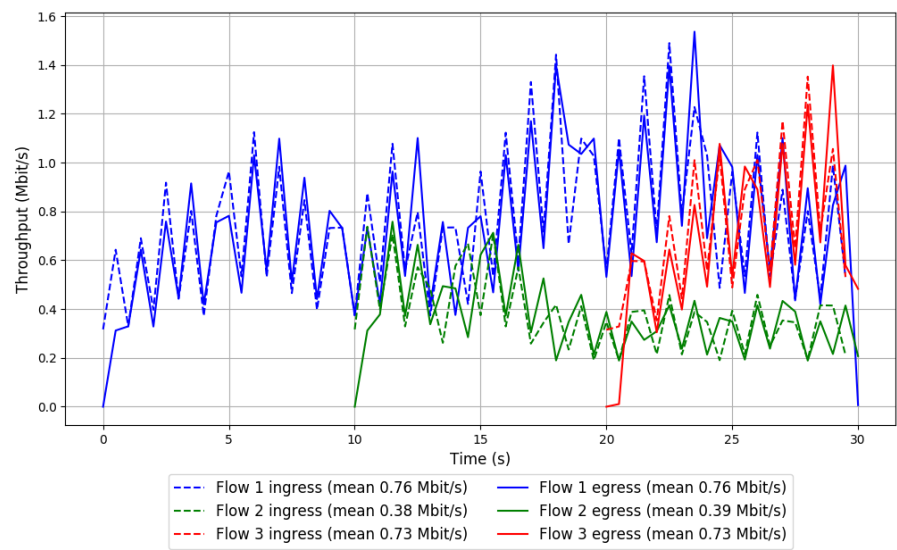
Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-12-02 15:07:28
End at: 2018-12-02 15:07:58
Local clock offset: 5.308 ms
Remote clock offset: 4.154 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 157.211 ms
Loss rate: 1.69%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 157.233 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 154.327 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 154.285 ms
Loss rate: 3.67%
```
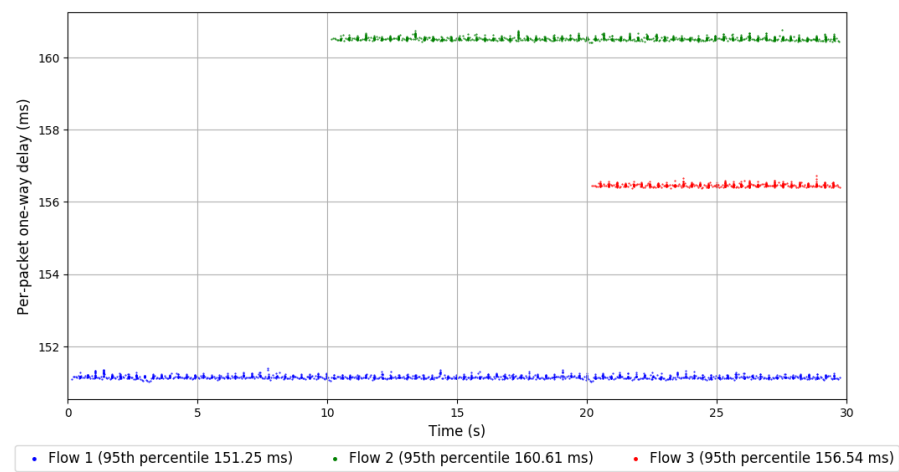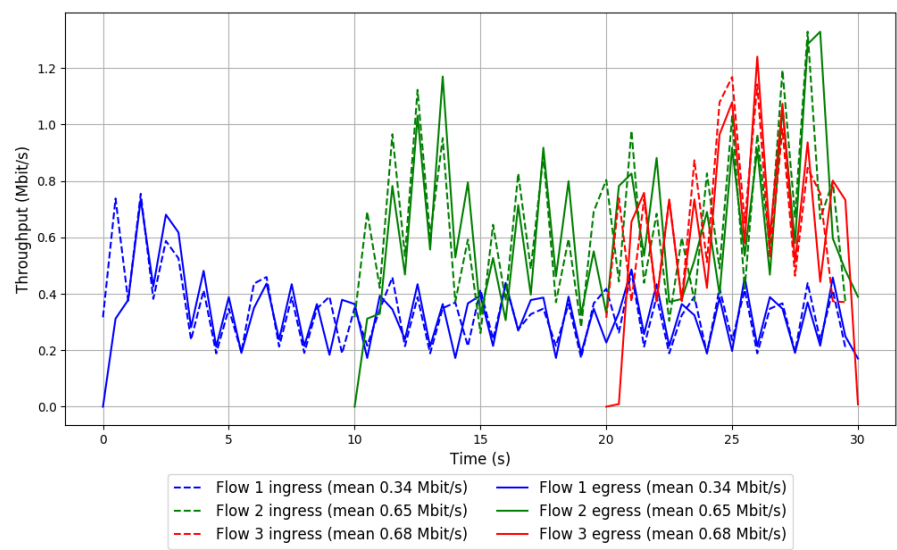
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-02 15:41:08
End at: 2018-12-02 15:41:38
Local clock offset: 7.656 ms
Remote clock offset: -0.136 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 160.569 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 151.245 ms
Loss rate: 1.02%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 160.612 ms
Loss rate: 1.42%
-- Flow 3:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 156.538 ms
Loss rate: 2.74%
```

Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-02 16:14:54
End at: 2018-12-02 16:15:24
Local clock offset: 12.165 ms
Remote clock offset: -0.087 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 162.309 ms
Loss rate: 2.07%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 151.688 ms
Loss rate: 1.05%
-- Flow 2:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 161.051 ms
Loss rate: 1.30%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 162.410 ms
Loss rate: 5.87%
```
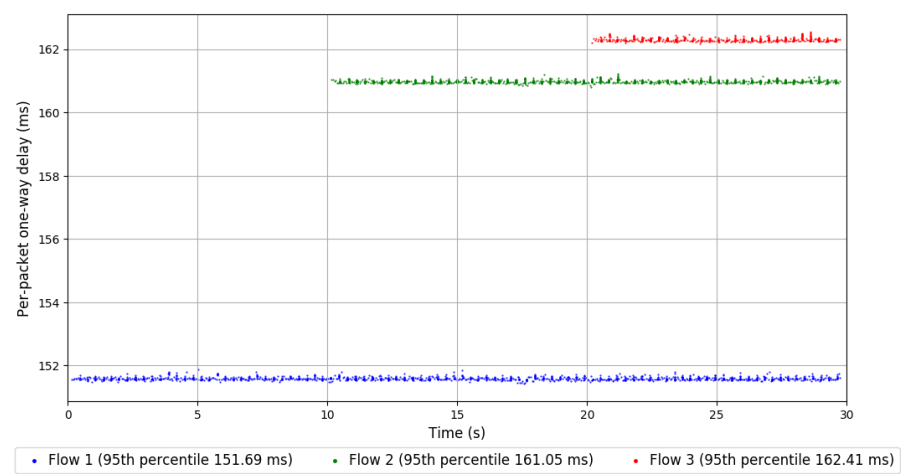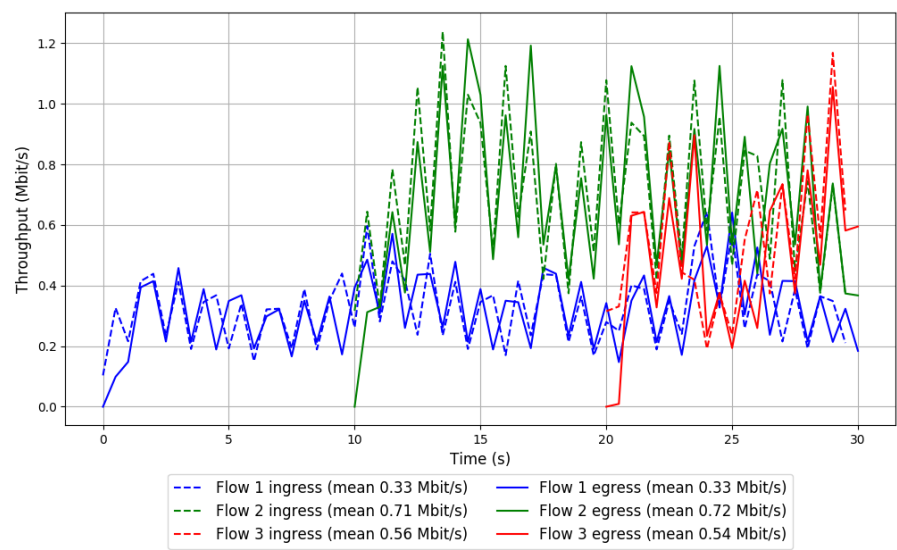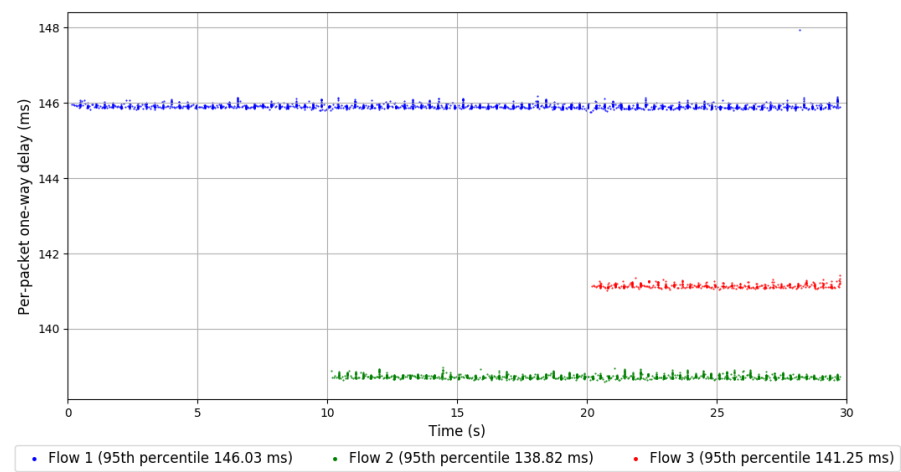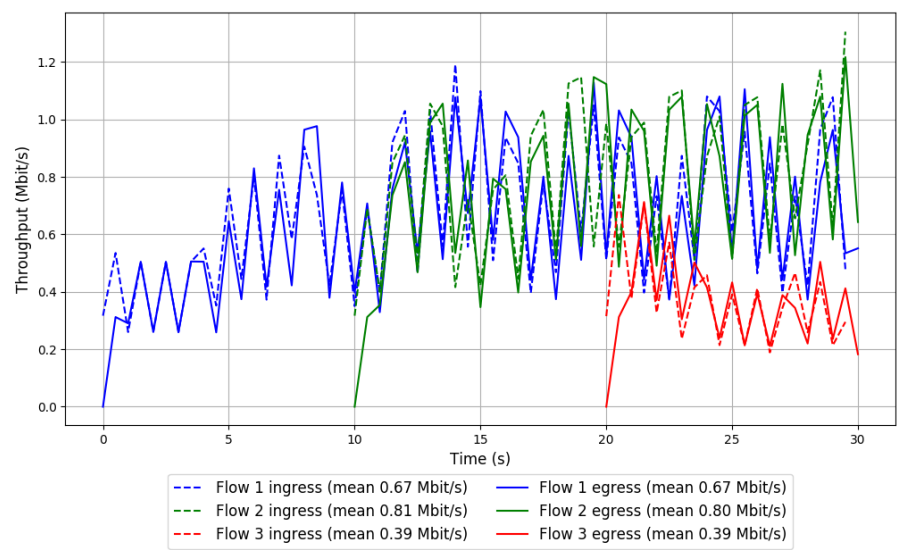
Run 3: Report of Sprout — Data Link

140

```
Run 4: Statistics of Sprout

Start at: 2018-12-02 16:49:01
End at: 2018-12-02 16:49:31
Local clock offset: -0.733 ms
Remote clock offset: -3.544 ms

# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.32 Mbit/s
95th percentile per-packet one-way delay: 145.989 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 146.028 ms
Loss rate: 1.19%
-- Flow 2:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 138.825 ms
Loss rate: 2.07%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 141.254 ms
Loss rate: 1.55%
```

Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-02 17:23:08
End at: 2018-12-02 17:23:38
Local clock offset: -2.773 ms
Remote clock offset: -3.087 ms


# Below is generated by plot.py at 2018-12-02 18:18:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 139.090 ms
Loss rate: 1.45%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 136.788 ms
Loss rate: 1.27%
-- Flow 2:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 139.145 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 137.906 ms
Loss rate: 2.50%
```
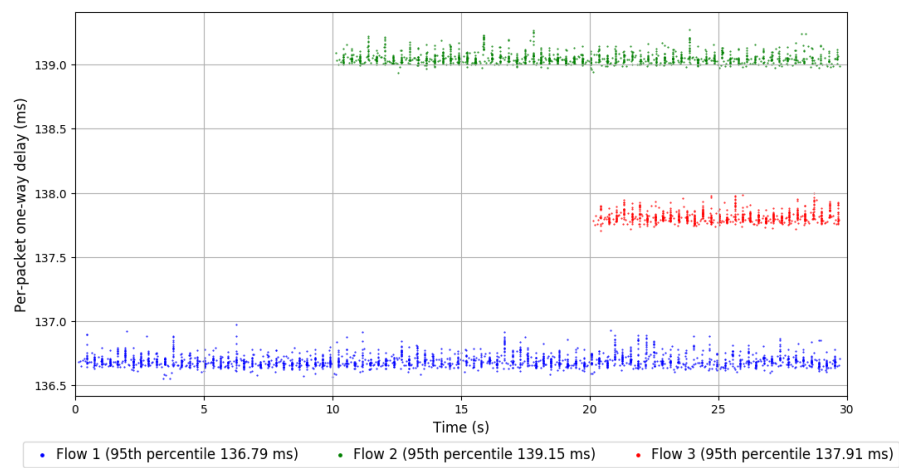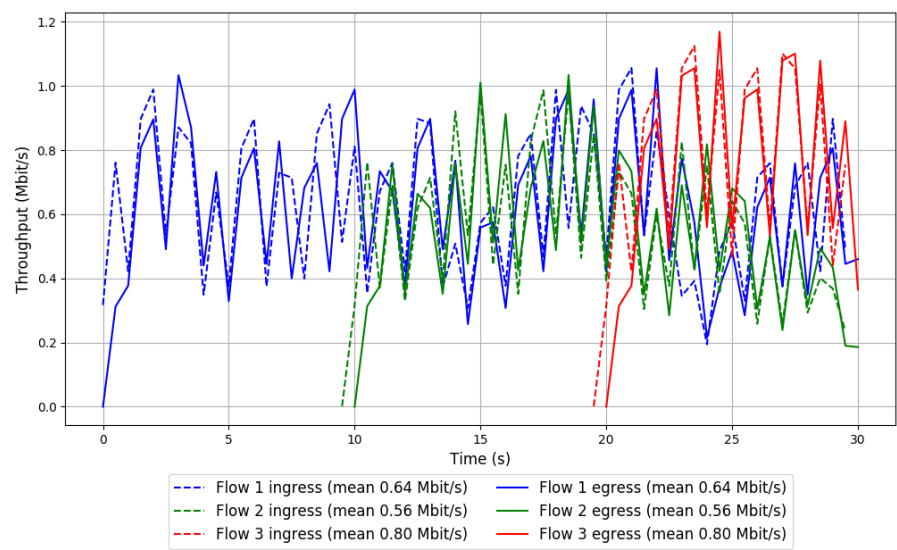
Run 5: Report of Sprout — Data Link

144

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

Start at: 2018-12-02 14:58:37
End at: 2018-12-02 14:59:07
Local clock offset: 6.495 ms
Remote clock offset: 3.688 ms

# Below is generated by plot.py at 2018-12-02 18:23:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 345.85 Mbit/s
95th percentile per-packet one-way delay: 158.487 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 209.92 Mbit/s
95th percentile per-packet one-way delay: 158.076 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 166.37 Mbit/s
95th percentile per-packet one-way delay: 158.587 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 80.16 Mbit/s
95th percentile per-packet one-way delay: 159.085 ms
Loss rate: 3.52%
```
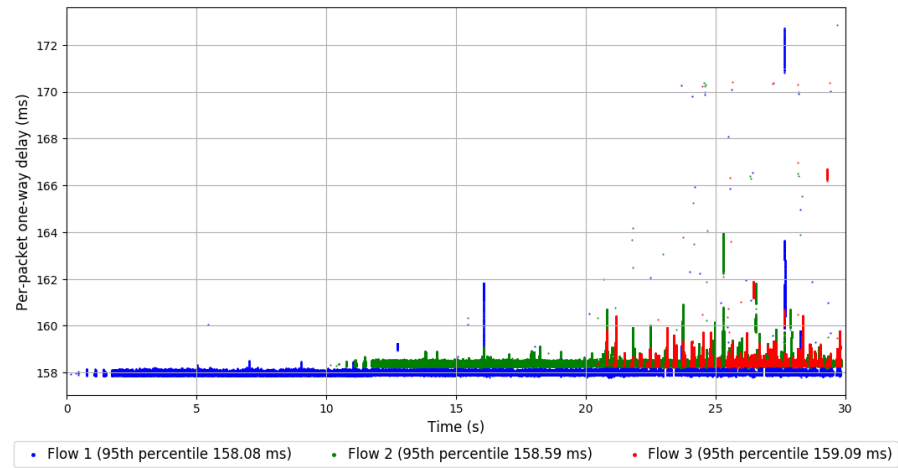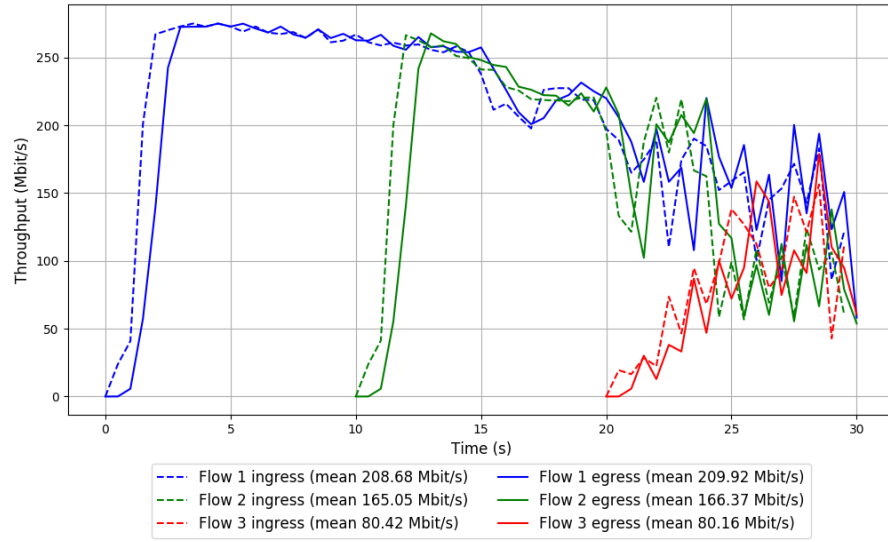
Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-02 15:32:13
End at: 2018-12-02 15:32:43
Local clock offset: 8.576 ms
Remote clock offset: 0.356 ms

# Below is generated by plot.py at 2018-12-02 18:23:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 327.89 Mbit/s
95th percentile per-packet one-way delay: 160.364 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 202.26 Mbit/s
95th percentile per-packet one-way delay: 158.644 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 150.22 Mbit/s
95th percentile per-packet one-way delay: 160.227 ms
Loss rate: 0.85%
-- Flow 3:
Average throughput: 82.24 Mbit/s
95th percentile per-packet one-way delay: 160.853 ms
Loss rate: 3.40%
```
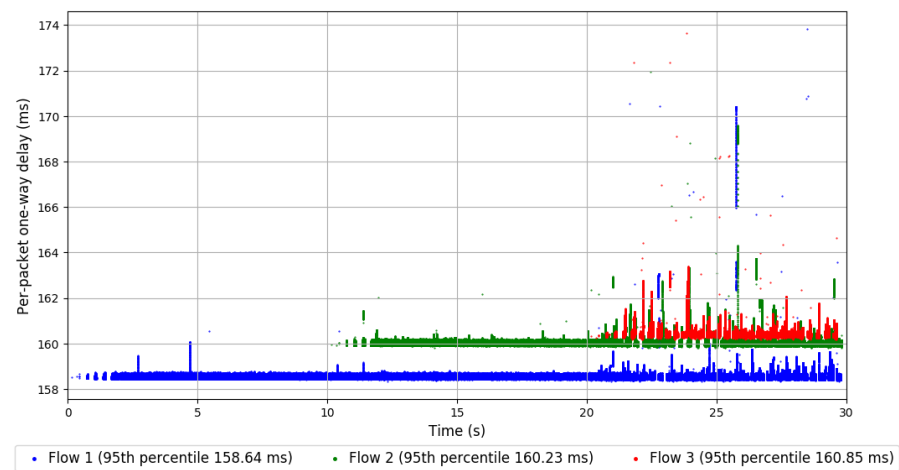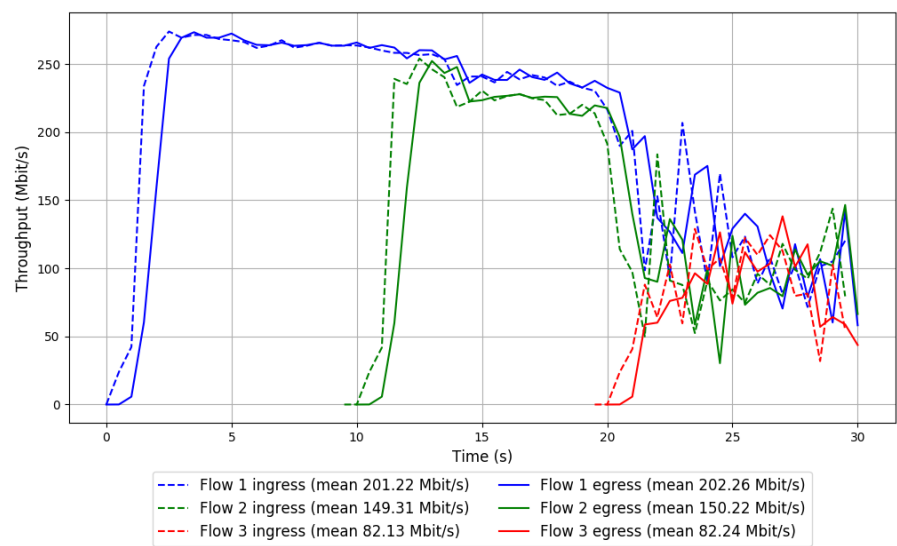
Run 2: Report of TaoVA-100x — Data Link

- - - - Flow 1 ingress (mean 201.22 Mbit/s)   ——— Flow 1 egress (mean 202.26 Mbit/s)
- - - - Flow 2 ingress (mean 149.31 Mbit/s)   ——— Flow 2 egress (mean 150.22 Mbit/s)
- - - - Flow 3 ingress (mean 82.13 Mbit/s)   ——— Flow 3 egress (mean 82.24 Mbit/s)

- Flow 1 (95th percentile 158.64 ms)   - Flow 2 (95th percentile 160.23 ms)   - Flow 3 (95th percentile 160.85 ms)

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

Start at: 2018-12-02 16:06:10
End at: 2018-12-02 16:06:40
Local clock offset: 7.471 ms
Remote clock offset: -0.17 ms

# Below is generated by plot.py at 2018-12-02 18:23:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 311.94 Mbit/s
95th percentile per-packet one-way delay: 156.461 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 195.02 Mbit/s
95th percentile per-packet one-way delay: 156.502 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 171.73 Mbit/s
95th percentile per-packet one-way delay: 154.929 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 11.36 Mbit/s
95th percentile per-packet one-way delay: 147.064 ms
Loss rate: 3.13%
```
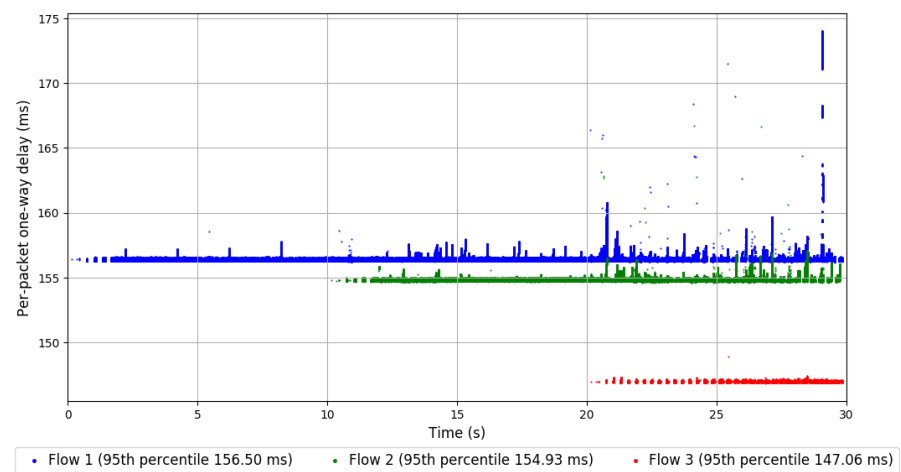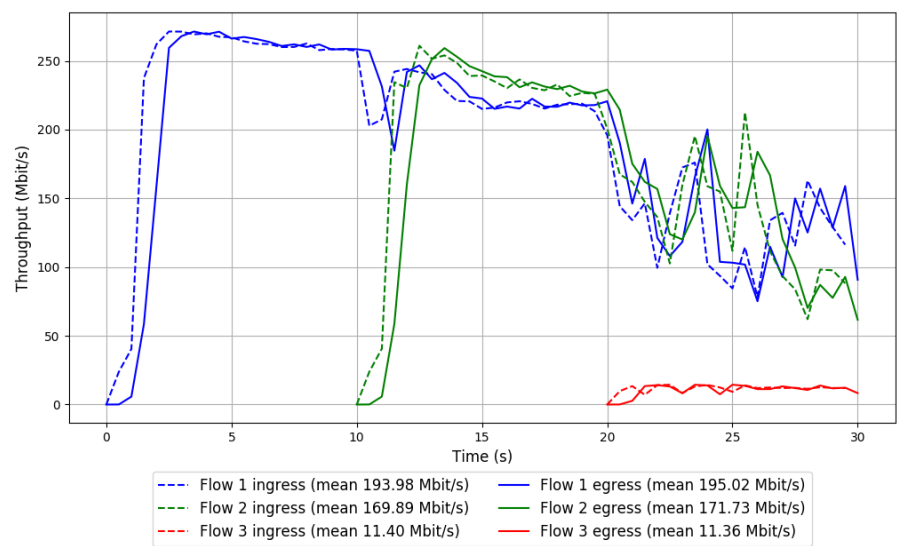
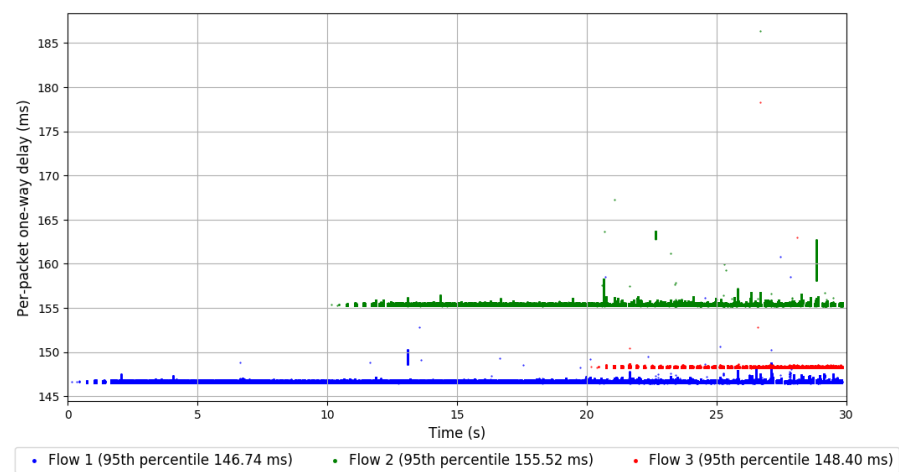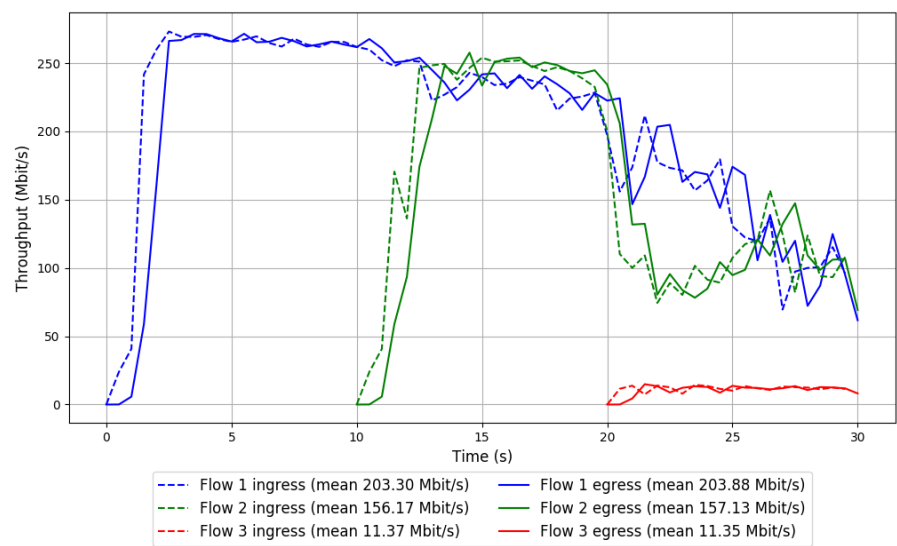Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-02 16:40:14
End at: 2018-12-02 16:40:44
Local clock offset: 7.524 ms
Remote clock offset: -3.061 ms


# Below is generated by plot.py at 2018-12-02 18:23:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 311.65 Mbit/s
95th percentile per-packet one-way delay: 155.425 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 203.88 Mbit/s
95th percentile per-packet one-way delay: 146.738 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 157.13 Mbit/s
95th percentile per-packet one-way delay: 155.523 ms
Loss rate: 0.87%
-- Flow 3:
Average throughput: 11.35 Mbit/s
95th percentile per-packet one-way delay: 148.402 ms
Loss rate: 3.02%
```

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

Flow 1 ingress (mean 203.30 Mbit/s) — — —   Flow 1 egress (mean 203.88 Mbit/s) ———
Flow 2 ingress (mean 156.17 Mbit/s) — — —   Flow 2 egress (mean 157.13 Mbit/s) ———
Flow 3 ingress (mean 11.37 Mbit/s) — — —   Flow 3 egress (mean 11.35 Mbit/s) ———

• Flow 1 (95th percentile 146.74 ms)   • Flow 2 (95th percentile 155.52 ms)   • Flow 3 (95th percentile 148.40 ms)
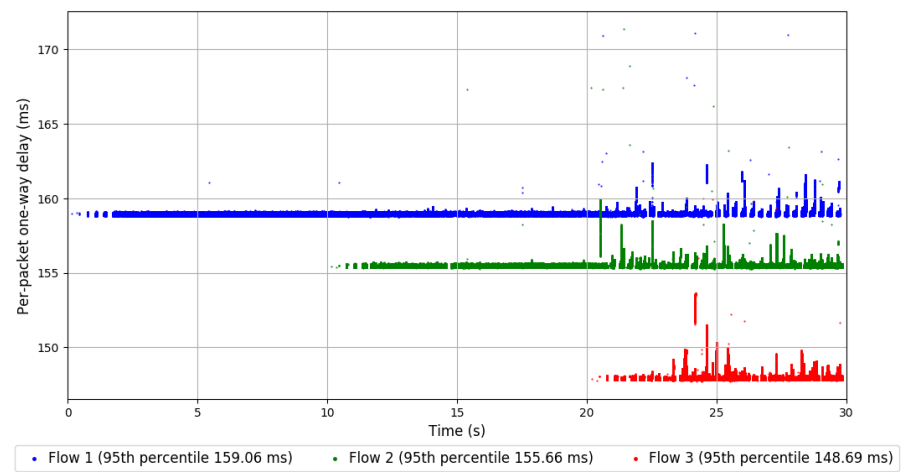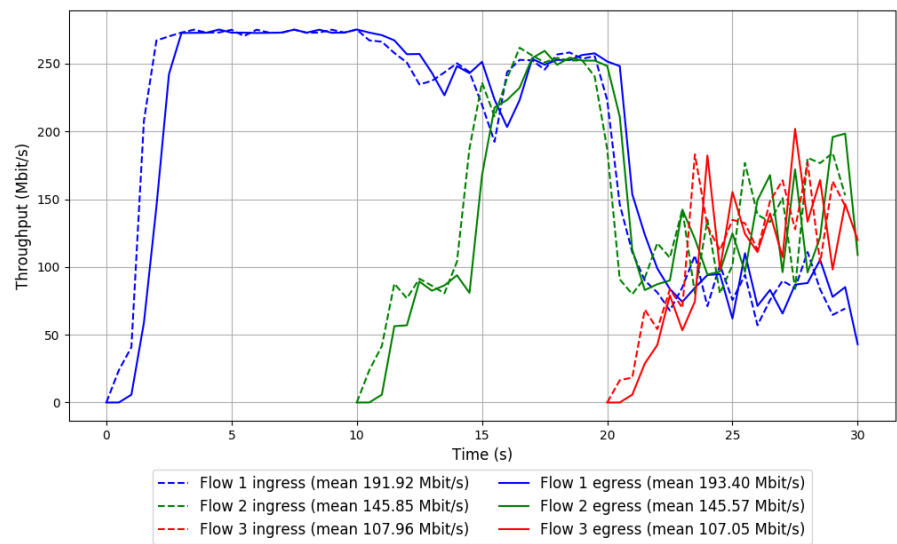
```
Run 5: Statistics of TaoVA-100x

Start at: 2018-12-02 17:14:20
End at: 2018-12-02 17:14:50
Local clock offset: 8.756 ms
Remote clock offset: -3.161 ms


# Below is generated by plot.py at 2018-12-02 18:23:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 324.20 Mbit/s
95th percentile per-packet one-way delay: 159.028 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 193.40 Mbit/s
95th percentile per-packet one-way delay: 159.058 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 145.57 Mbit/s
95th percentile per-packet one-way delay: 155.658 ms
Loss rate: 1.66%
-- Flow 3:
Average throughput: 107.05 Mbit/s
95th percentile per-packet one-way delay: 148.686 ms
Loss rate: 3.66%
```

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

Flow 1 ingress (mean 191.92 Mbit/s) --- Flow 1 egress (mean 193.40 Mbit/s)
Flow 2 ingress (mean 145.85 Mbit/s) --- Flow 2 egress (mean 145.57 Mbit/s)
Flow 3 ingress (mean 107.96 Mbit/s) --- Flow 3 egress (mean 107.05 Mbit/s)

Flow 1 (95th percentile 159.06 ms) • Flow 2 (95th percentile 155.66 ms) • Flow 3 (95th percentile 148.69 ms)

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```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-02 14:56:47
End at: 2018-12-02 14:57:17
Local clock offset: 13.689 ms
Remote clock offset: 3.682 ms


# Below is generated by plot.py at 2018-12-02 18:23:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 416.22 Mbit/s
95th percentile per-packet one-way delay: 162.563 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 243.28 Mbit/s
95th percentile per-packet one-way delay: 160.272 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 139.78 Mbit/s
95th percentile per-packet one-way delay: 152.853 ms
Loss rate: 0.88%
-- Flow 3:
Average throughput: 246.39 Mbit/s
95th percentile per-packet one-way delay: 163.247 ms
Loss rate: 5.25%
```
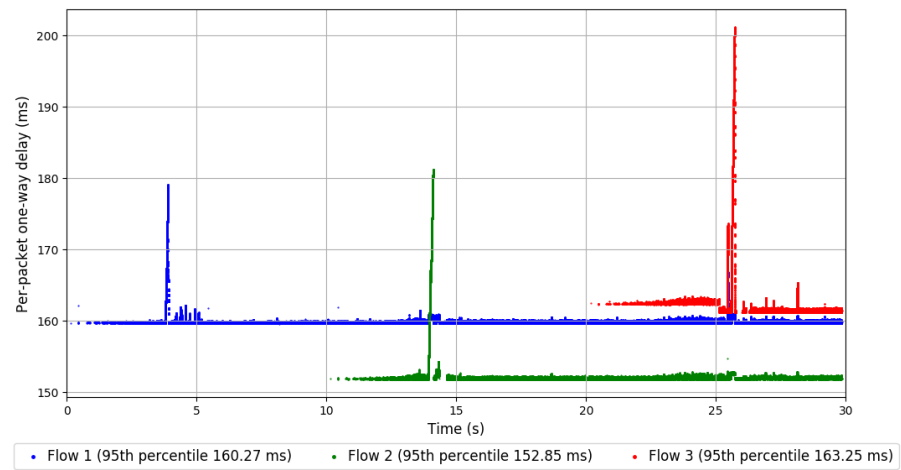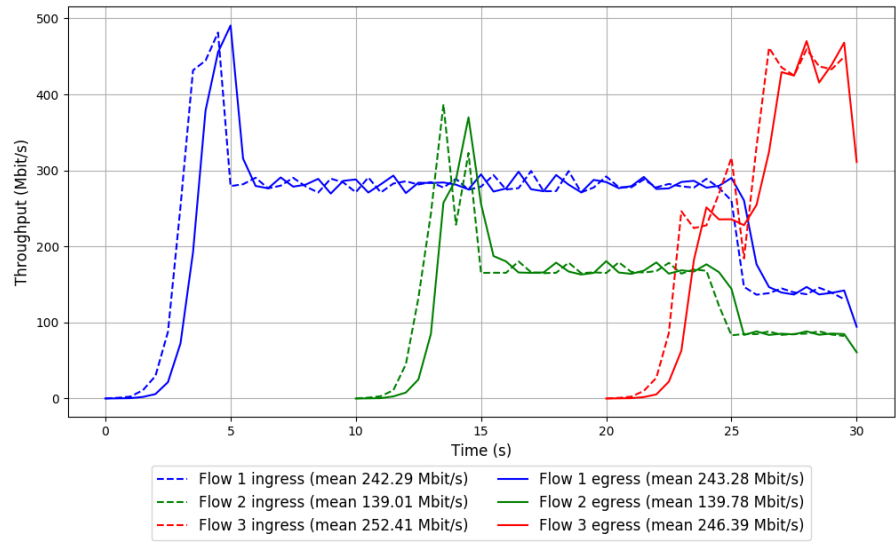
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-02 15:30:22
End at: 2018-12-02 15:30:52
Local clock offset: -5.92 ms
Remote clock offset: 0.606 ms


# Below is generated by plot.py at 2018-12-02 18:23:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 437.70 Mbit/s
95th percentile per-packet one-way delay: 137.925 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 201.43 Mbit/s
95th percentile per-packet one-way delay: 137.998 ms
Loss rate: 1.08%
-- Flow 2:
Average throughput: 280.63 Mbit/s
95th percentile per-packet one-way delay: 132.556 ms
Loss rate: 1.09%
-- Flow 3:
Average throughput: 154.08 Mbit/s
95th percentile per-packet one-way delay: 160.963 ms
Loss rate: 3.08%
```
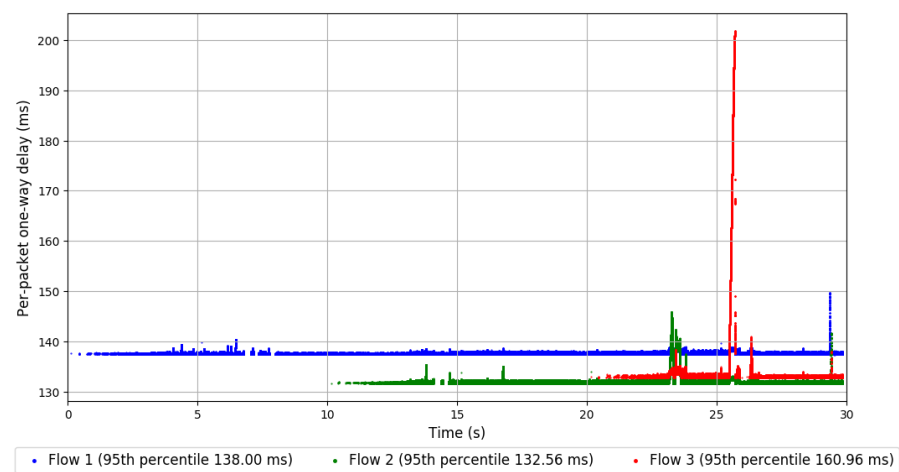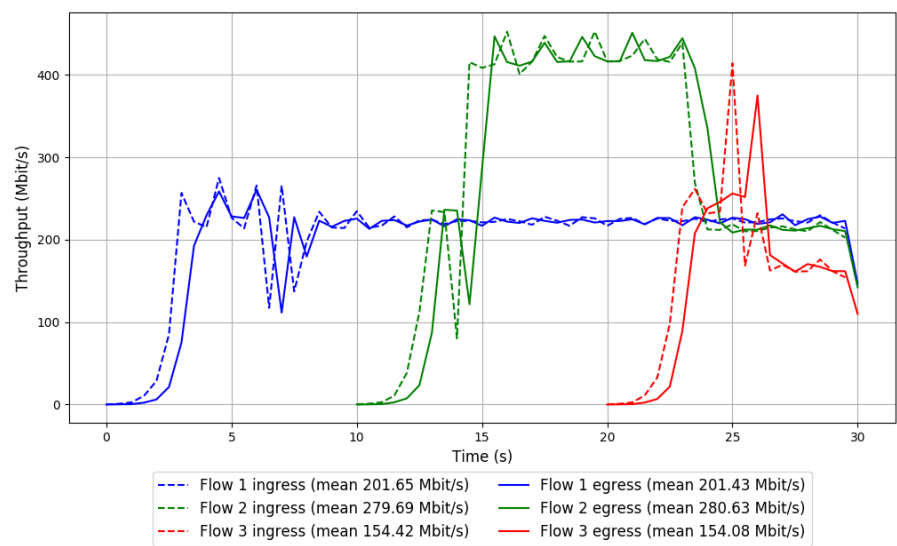
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 201.65 Mbit/s)   Flow 1 egress (mean 201.43 Mbit/s)
Flow 2 ingress (mean 279.69 Mbit/s)   Flow 2 egress (mean 280.63 Mbit/s)
Flow 3 ingress (mean 154.42 Mbit/s)   Flow 3 egress (mean 154.08 Mbit/s)

Flow 1 (95th percentile 138.00 ms)   Flow 2 (95th percentile 132.56 ms)   Flow 3 (95th percentile 160.96 ms)
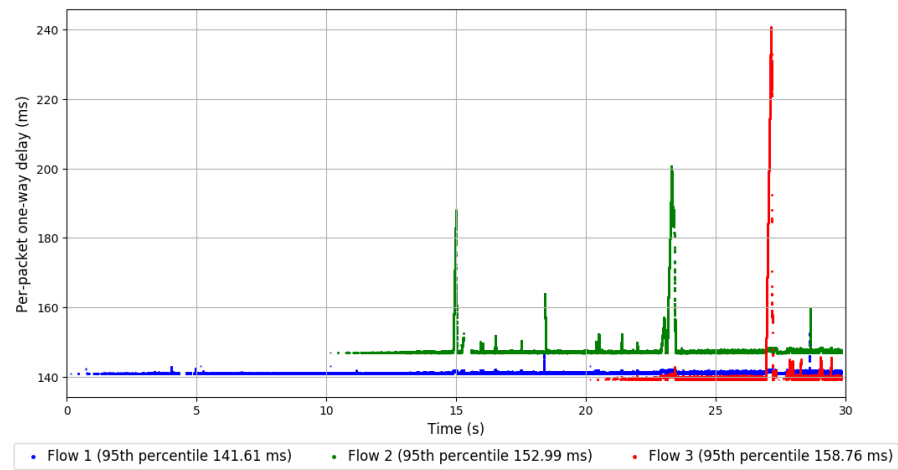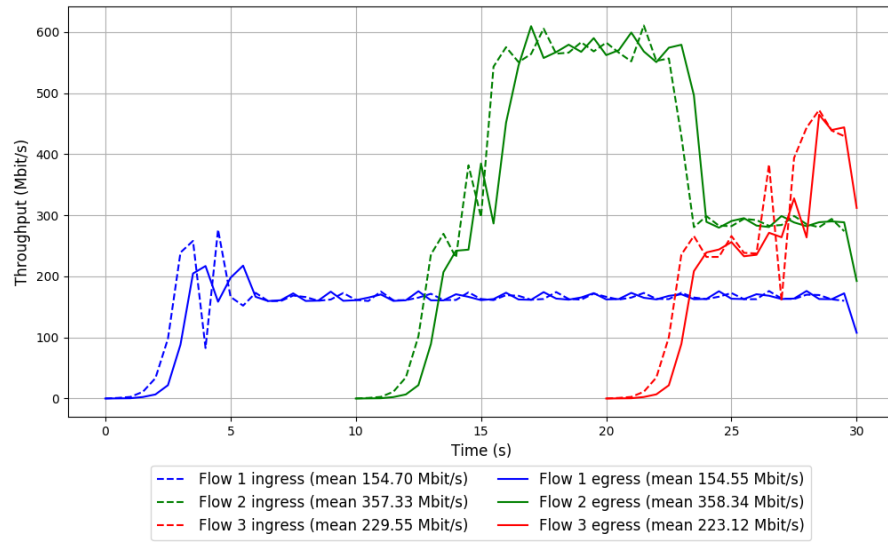
```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-02 16:04:17
End at: 2018-12-02 16:04:47
Local clock offset: 0.392 ms
Remote clock offset: -0.032 ms


# Below is generated by plot.py at 2018-12-02 18:24:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 464.79 Mbit/s
95th percentile per-packet one-way delay: 149.059 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 154.55 Mbit/s
95th percentile per-packet one-way delay: 141.607 ms
Loss rate: 1.04%
-- Flow 2:
Average throughput: 358.34 Mbit/s
95th percentile per-packet one-way delay: 152.986 ms
Loss rate: 1.17%
-- Flow 3:
Average throughput: 223.12 Mbit/s
95th percentile per-packet one-way delay: 158.763 ms
Loss rate: 5.55%
```

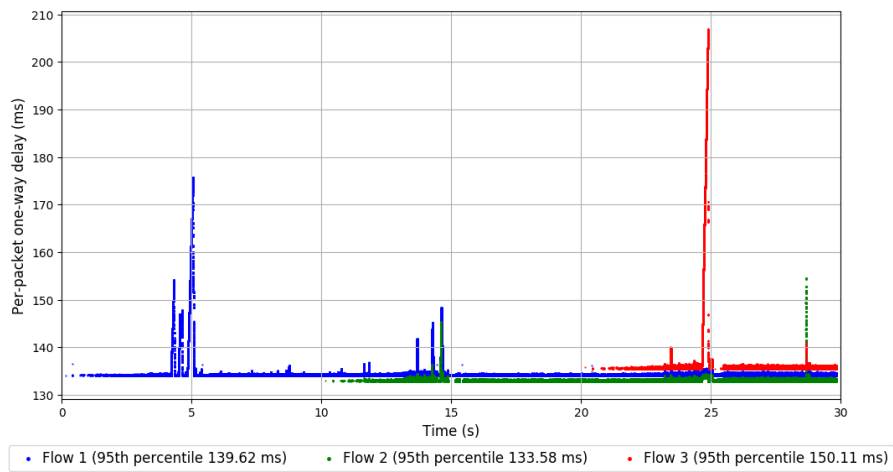# Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 154.70 Mbit/s) --- Flow 1 egress (mean 154.55 Mbit/s)
Flow 2 ingress (mean 357.33 Mbit/s) --- Flow 2 egress (mean 358.34 Mbit/s)
Flow 3 ingress (mean 229.55 Mbit/s) --- Flow 3 egress (mean 223.12 Mbit/s)

Flow 1 (95th percentile 141.61 ms)   Flow 2 (95th percentile 152.99 ms)   Flow 3 (95th percentile 158.76 ms)
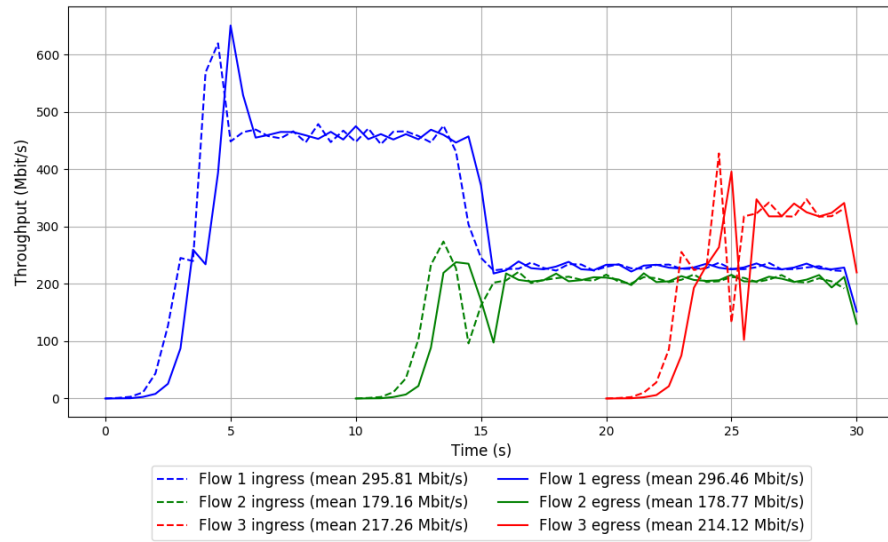
160

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-02 16:38:21
End at: 2018-12-02 16:38:51
Local clock offset: -5.015 ms
Remote clock offset: -2.843 ms


# Below is generated by plot.py at 2018-12-02 18:26:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 484.67 Mbit/s
95th percentile per-packet one-way delay: 136.408 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 296.46 Mbit/s
95th percentile per-packet one-way delay: 139.622 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 178.77 Mbit/s
95th percentile per-packet one-way delay: 133.584 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 214.12 Mbit/s
95th percentile per-packet one-way delay: 150.108 ms
Loss rate: 4.26%
```

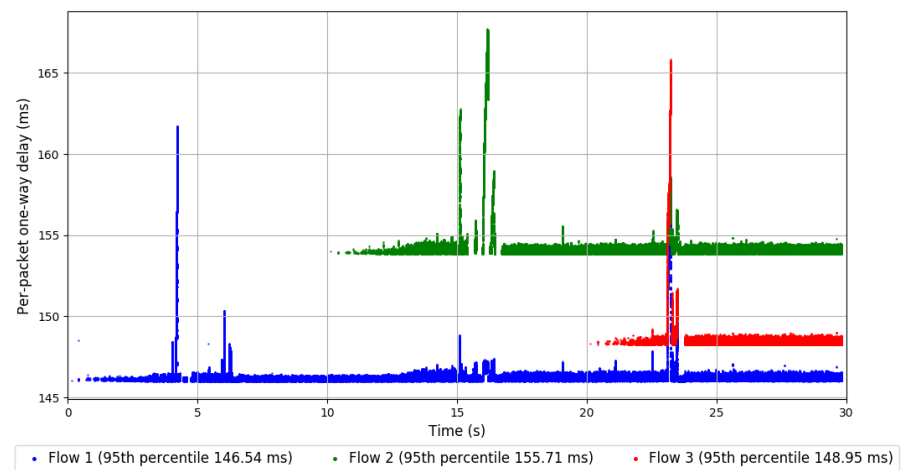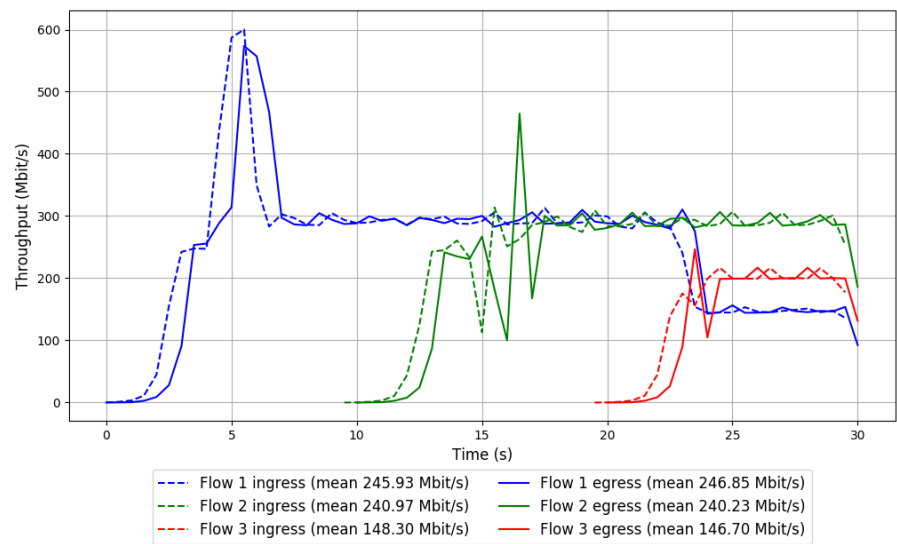## Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-02 17:12:28
End at: 2018-12-02 17:12:58
Local clock offset: 7.764 ms
Remote clock offset: -3.076 ms


# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 454.06 Mbit/s
95th percentile per-packet one-way delay: 154.295 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 246.85 Mbit/s
95th percentile per-packet one-way delay: 146.537 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 240.23 Mbit/s
95th percentile per-packet one-way delay: 155.705 ms
Loss rate: 1.75%
-- Flow 3:
Average throughput: 146.70 Mbit/s
95th percentile per-packet one-way delay: 148.952 ms
Loss rate: 3.89%
```

Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-12-02 15:05:50
End at: 2018-12-02 15:06:20
Local clock offset: 7.696 ms
Remote clock offset: 3.98 ms


# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 142.46 Mbit/s
95th percentile per-packet one-way delay: 158.306 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 94.19 Mbit/s
95th percentile per-packet one-way delay: 157.571 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 59.45 Mbit/s
95th percentile per-packet one-way delay: 161.753 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 28.52 Mbit/s
95th percentile per-packet one-way delay: 158.214 ms
Loss rate: 5.82%
```
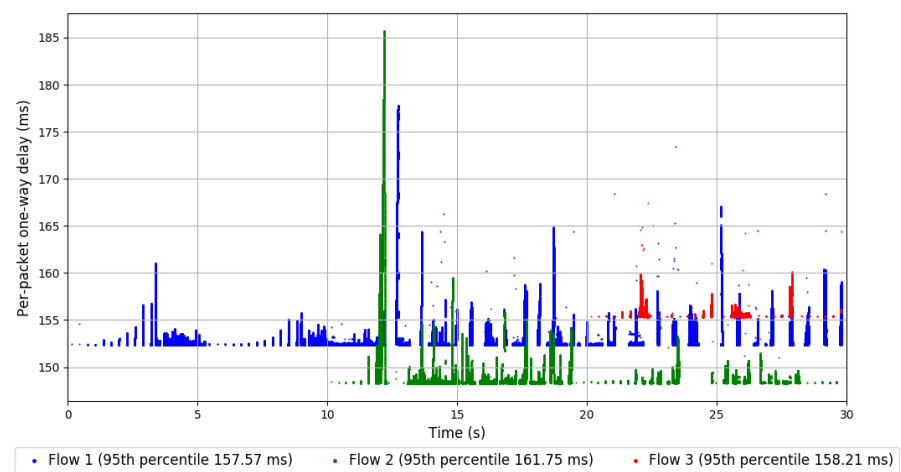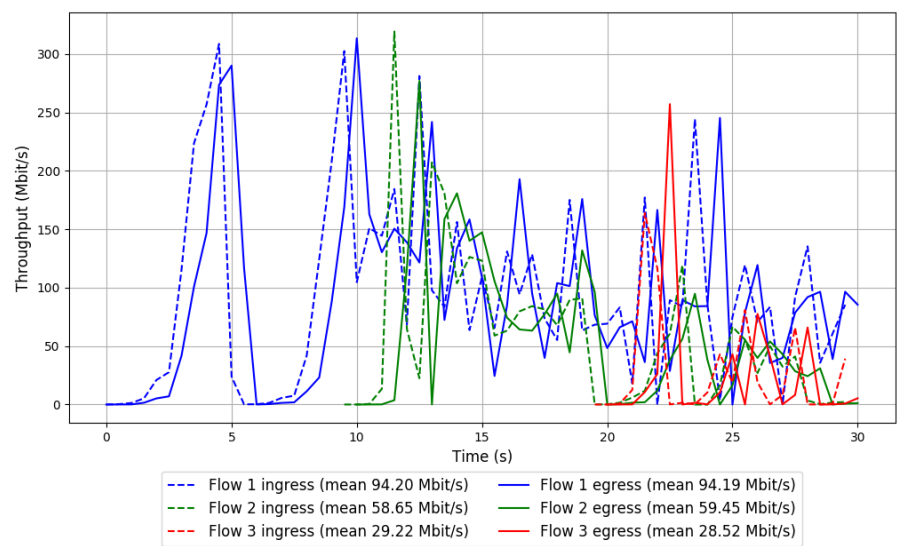
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-02 15:39:26
End at: 2018-12-02 15:39:56
Local clock offset: 7.577 ms
Remote clock offset: -0.07 ms


# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 199.34 Mbit/s
95th percentile per-packet one-way delay: 196.939 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 132.18 Mbit/s
95th percentile per-packet one-way delay: 222.604 ms
Loss rate: 2.25%
-- Flow 2:
Average throughput: 75.26 Mbit/s
95th percentile per-packet one-way delay: 158.434 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 57.47 Mbit/s
95th percentile per-packet one-way delay: 163.964 ms
Loss rate: 2.05%
```
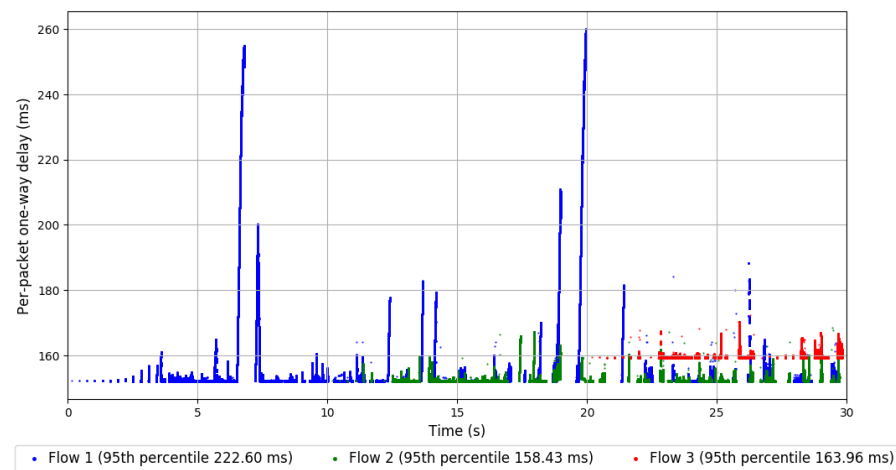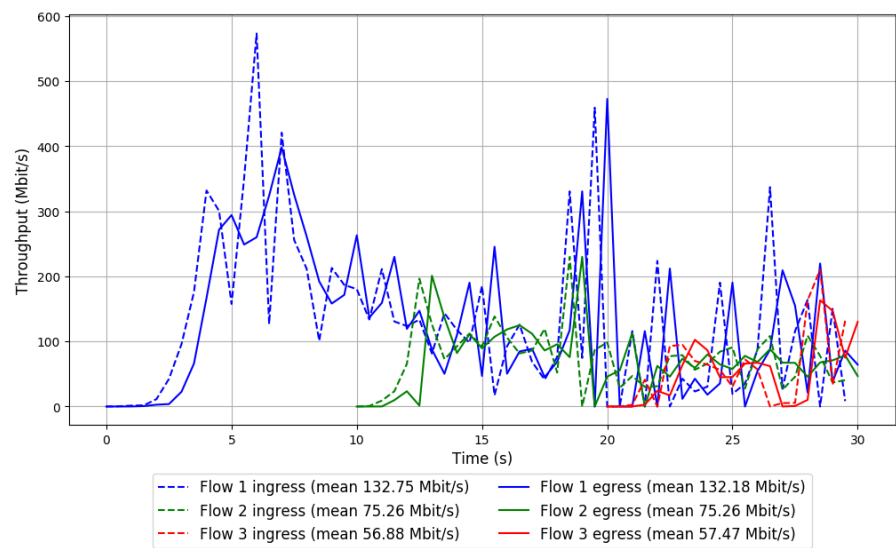
Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 132.75 Mbit/s)   Flow 1 egress (mean 132.18 Mbit/s)
Flow 2 ingress (mean 75.26 Mbit/s)   Flow 2 egress (mean 75.26 Mbit/s)
Flow 3 ingress (mean 56.88 Mbit/s)   Flow 3 egress (mean 57.47 Mbit/s)

Flow 1 (95th percentile 222.60 ms)   Flow 2 (95th percentile 158.43 ms)   Flow 3 (95th percentile 163.96 ms)
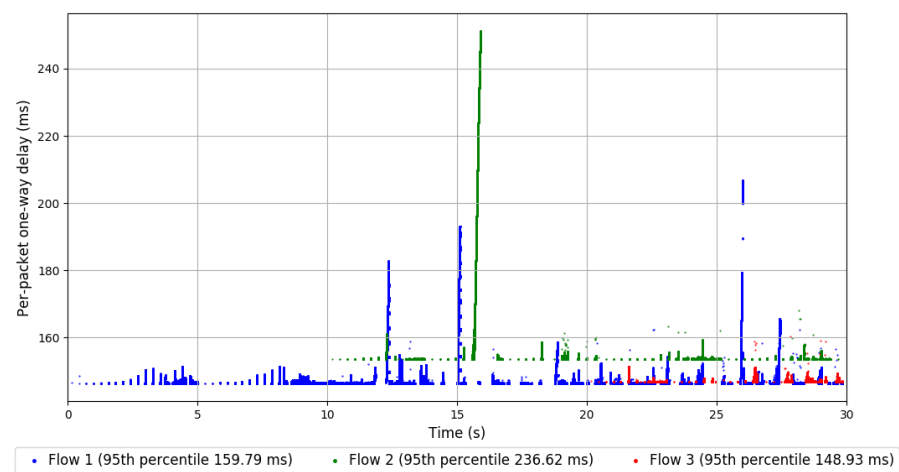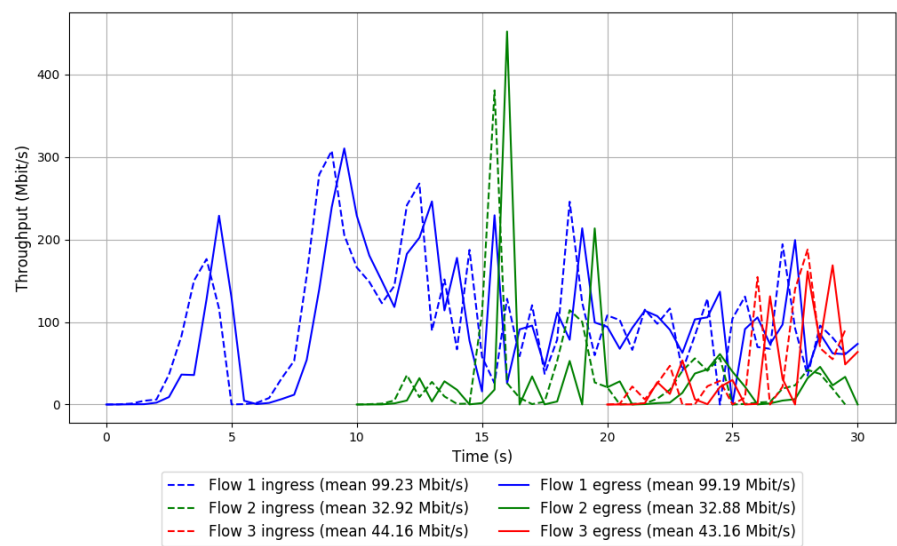
```
Run 3: Statistics of Verus

Start at: 2018-12-02 16:13:17
End at: 2018-12-02 16:13:47
Local clock offset: 7.329 ms
Remote clock offset: -0.062 ms

# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 134.85 Mbit/s
95th percentile per-packet one-way delay: 176.643 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 99.19 Mbit/s
95th percentile per-packet one-way delay: 159.788 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 32.88 Mbit/s
95th percentile per-packet one-way delay: 236.617 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 43.16 Mbit/s
95th percentile per-packet one-way delay: 148.925 ms
Loss rate: 5.06%
```

Run 3: Report of Verus — Data Link

- - - Flow 1 ingress (mean 99.23 Mbit/s) —— Flow 1 egress (mean 99.19 Mbit/s)
- - - Flow 2 ingress (mean 32.92 Mbit/s) —— Flow 2 egress (mean 32.88 Mbit/s)
- - - Flow 3 ingress (mean 44.16 Mbit/s) —— Flow 3 egress (mean 43.16 Mbit/s)

• Flow 1 (95th percentile 159.79 ms)   • Flow 2 (95th percentile 236.62 ms)   • Flow 3 (95th percentile 148.93 ms)
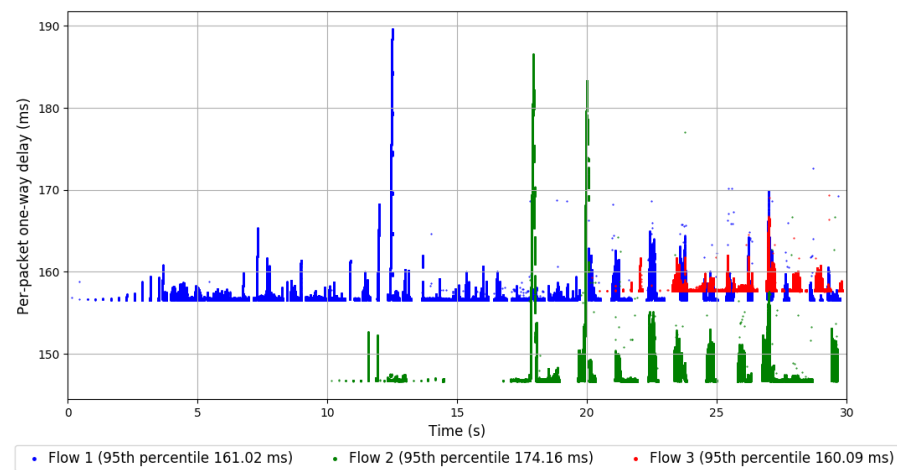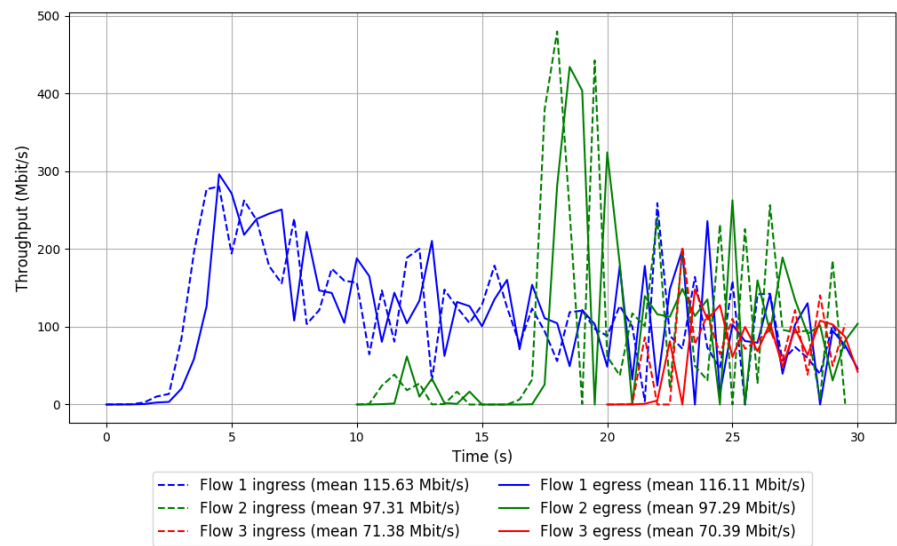
```
Run 4: Statistics of Verus

Start at: 2018-12-02 16:47:20
End at: 2018-12-02 16:47:50
Local clock offset: 8.765 ms
Remote clock offset: -3.482 ms

# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 202.63 Mbit/s
95th percentile per-packet one-way delay: 161.716 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 116.11 Mbit/s
95th percentile per-packet one-way delay: 161.023 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 97.29 Mbit/s
95th percentile per-packet one-way delay: 174.161 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 70.39 Mbit/s
95th percentile per-packet one-way delay: 160.091 ms
Loss rate: 4.34%
```
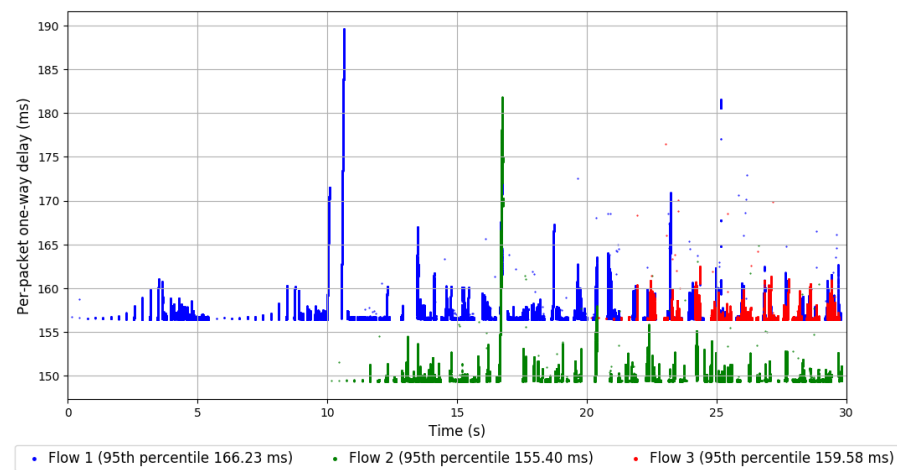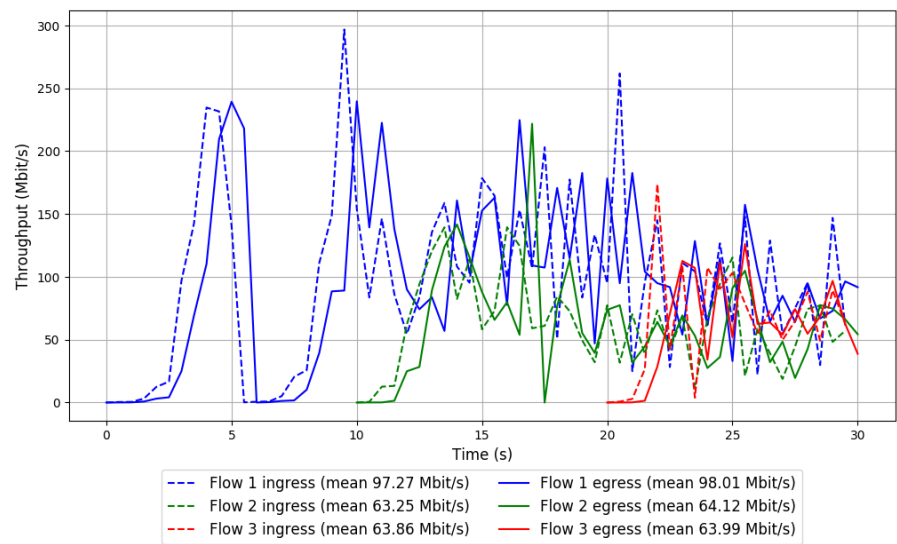
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-02 17:21:29
End at: 2018-12-02 17:21:59
Local clock offset: 8.785 ms
Remote clock offset: -3.074 ms


# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 160.98 Mbit/s
95th percentile per-packet one-way delay: 163.032 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 98.01 Mbit/s
95th percentile per-packet one-way delay: 166.231 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 64.12 Mbit/s
95th percentile per-packet one-way delay: 155.401 ms
Loss rate: 0.11%
-- Flow 3:
Average throughput: 63.99 Mbit/s
95th percentile per-packet one-way delay: 159.581 ms
Loss rate: 3.99%
```

Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-02 14:51:29
End at: 2018-12-02 14:51:59
Local clock offset: 5.844 ms
Remote clock offset: 3.634 ms


# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 243.97 Mbit/s
95th percentile per-packet one-way delay: 158.705 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 180.17 Mbit/s
95th percentile per-packet one-way delay: 166.575 ms
Loss rate: 1.21%
-- Flow 2:
Average throughput: 79.82 Mbit/s
95th percentile per-packet one-way delay: 145.176 ms
Loss rate: 1.72%
-- Flow 3:
Average throughput: 33.96 Mbit/s
95th percentile per-packet one-way delay: 158.779 ms
Loss rate: 4.70%
```
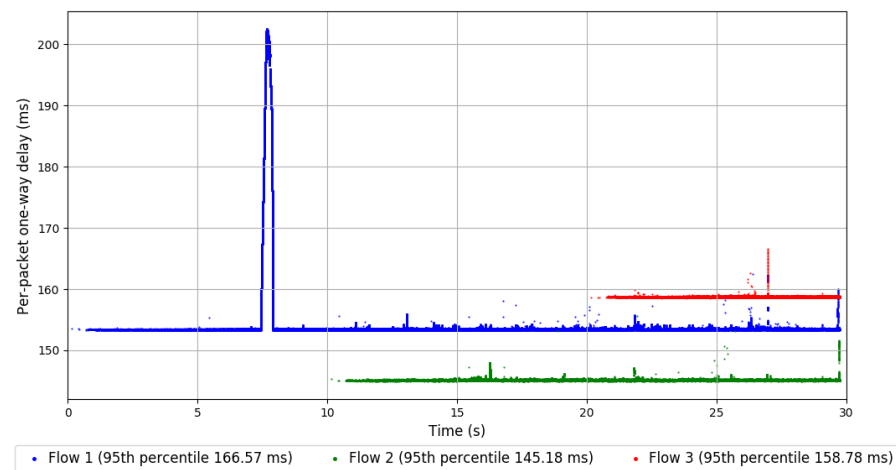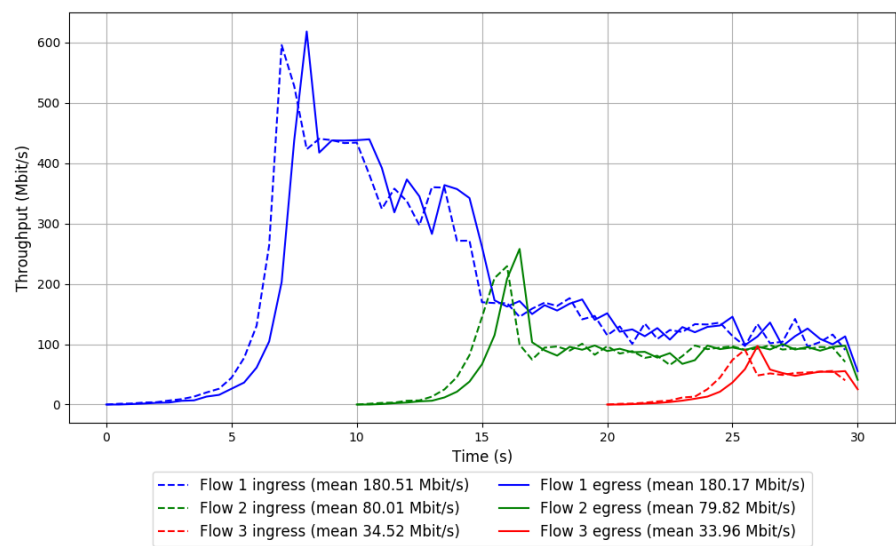
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-02 15:25:05
End at: 2018-12-02 15:25:35
Local clock offset: -2.639 ms
Remote clock offset: 1.451 ms


# Below is generated by plot.py at 2018-12-02 18:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 222.38 Mbit/s
95th percentile per-packet one-way delay: 151.356 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 158.50 Mbit/s
95th percentile per-packet one-way delay: 136.211 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 75.27 Mbit/s
95th percentile per-packet one-way delay: 149.182 ms
Loss rate: 2.01%
-- Flow 3:
Average throughput: 43.58 Mbit/s
95th percentile per-packet one-way delay: 151.511 ms
Loss rate: 3.39%
```
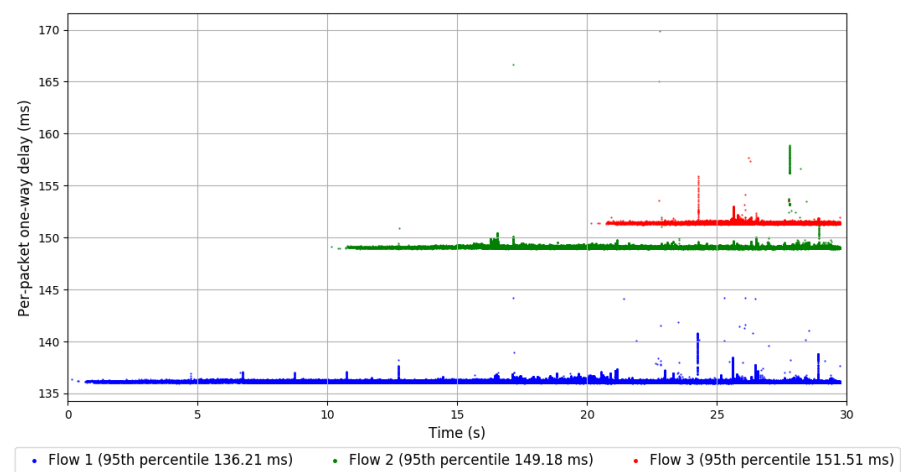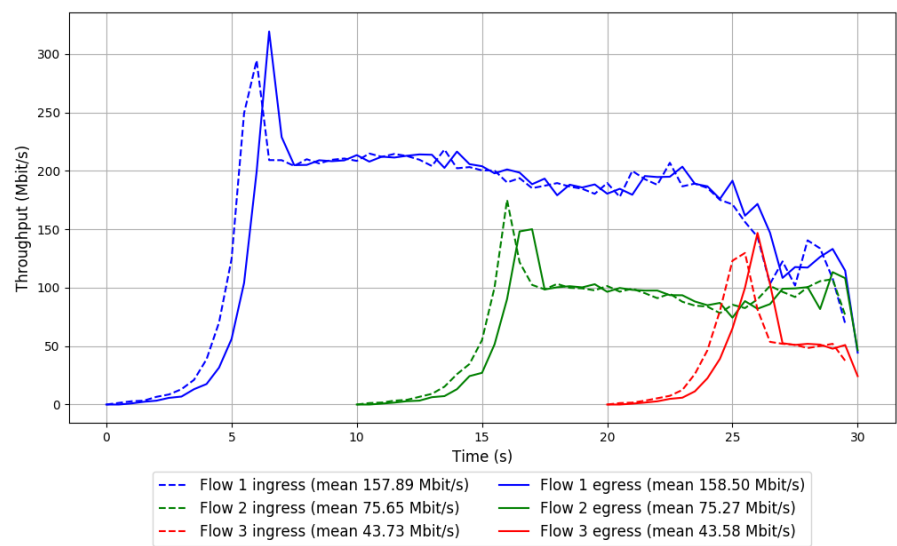
Run 2: Report of PCC-Vivace — Data Link

- - - Flow 1 ingress (mean 157.89 Mbit/s)   —— Flow 1 egress (mean 158.50 Mbit/s)
- - - Flow 2 ingress (mean 75.65 Mbit/s)   —— Flow 2 egress (mean 75.27 Mbit/s)
- - - Flow 3 ingress (mean 43.73 Mbit/s)   —— Flow 3 egress (mean 43.58 Mbit/s)

- Flow 1 (95th percentile 136.21 ms)   • Flow 2 (95th percentile 149.18 ms)   • Flow 3 (95th percentile 151.51 ms)
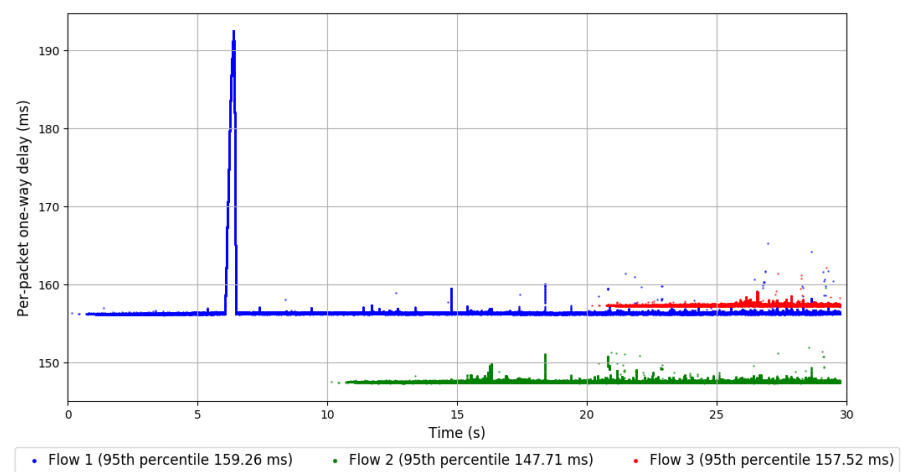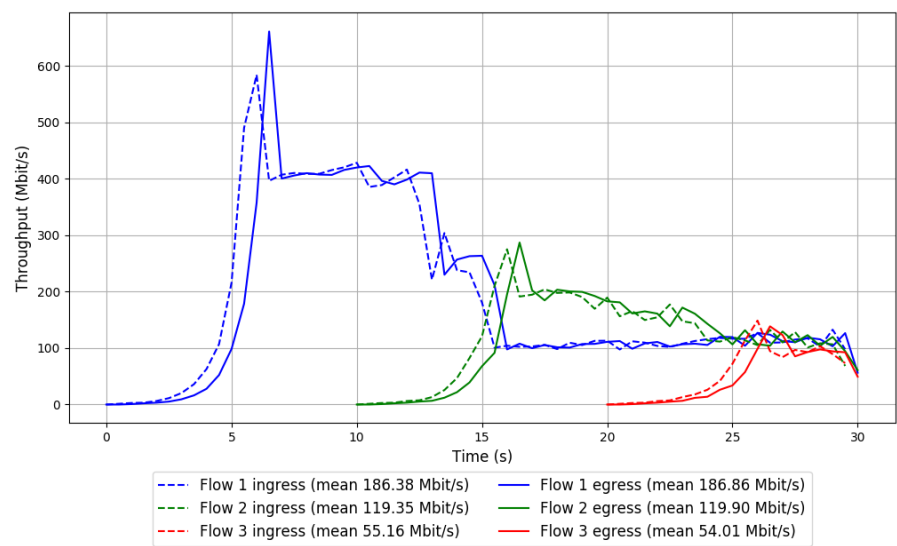
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-02 15:58:56
End at: 2018-12-02 15:59:26
Local clock offset: 8.528 ms
Remote clock offset: -0.146 ms


# Below is generated by plot.py at 2018-12-02 18:27:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 283.68 Mbit/s
95th percentile per-packet one-way delay: 157.347 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 186.86 Mbit/s
95th percentile per-packet one-way delay: 159.259 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 119.90 Mbit/s
95th percentile per-packet one-way delay: 147.714 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 54.01 Mbit/s
95th percentile per-packet one-way delay: 157.522 ms
Loss rate: 5.05%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 186.38 Mbit/s)   Flow 1 egress (mean 186.86 Mbit/s)
Flow 2 ingress (mean 119.35 Mbit/s)   Flow 2 egress (mean 119.90 Mbit/s)
Flow 3 ingress (mean 55.16 Mbit/s)   Flow 3 egress (mean 54.01 Mbit/s)

Flow 1 (95th percentile 159.26 ms)   Flow 2 (95th percentile 147.71 ms)   Flow 3 (95th percentile 157.52 ms)
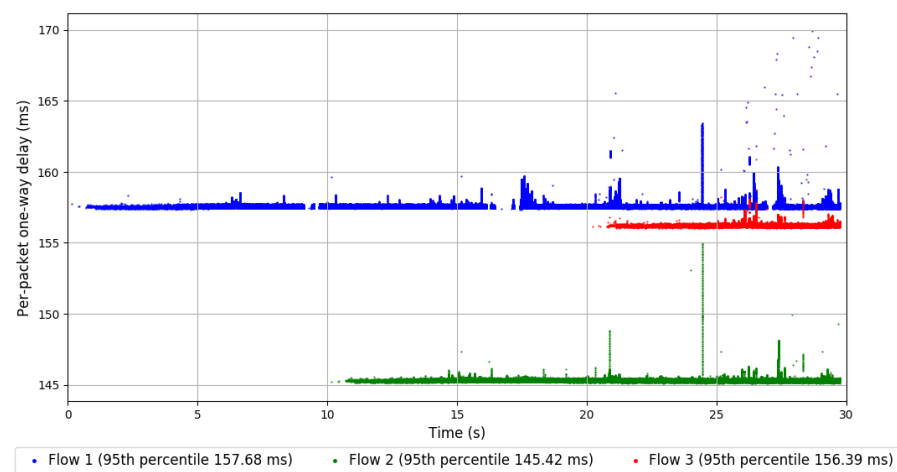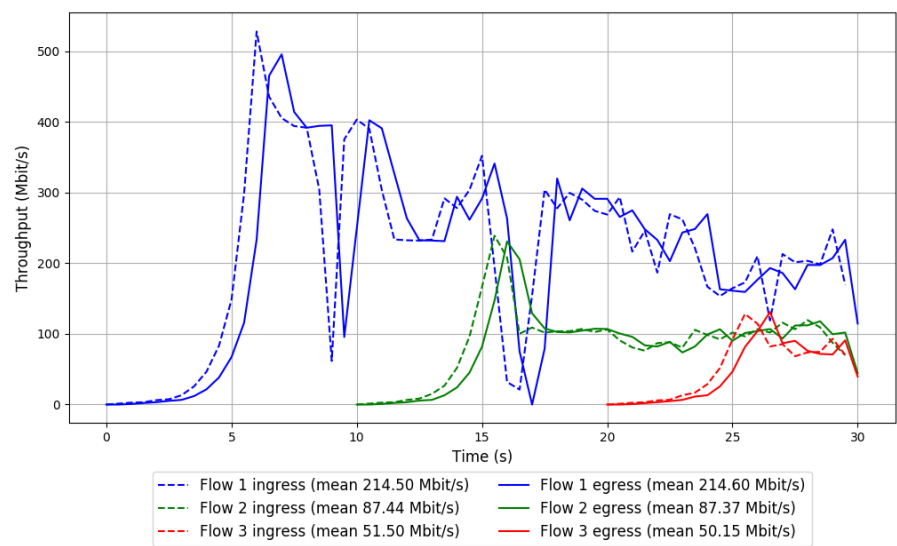
```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-02 16:32:55
End at: 2018-12-02 16:33:25
Local clock offset: 7.322 ms
Remote clock offset: -2.206 ms


# Below is generated by plot.py at 2018-12-02 18:27:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 288.61 Mbit/s
95th percentile per-packet one-way delay: 157.655 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 214.60 Mbit/s
95th percentile per-packet one-way delay: 157.678 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 87.37 Mbit/s
95th percentile per-packet one-way delay: 145.417 ms
Loss rate: 1.49%
-- Flow 3:
Average throughput: 50.15 Mbit/s
95th percentile per-packet one-way delay: 156.388 ms
Loss rate: 5.53%
```
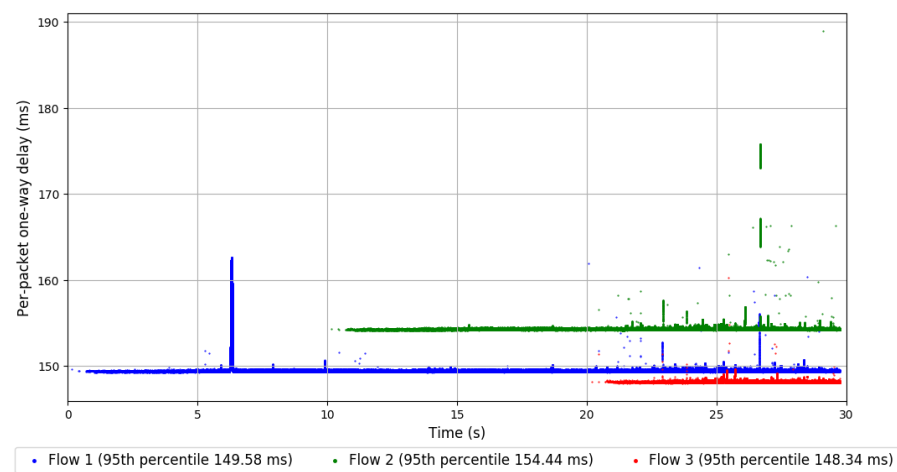
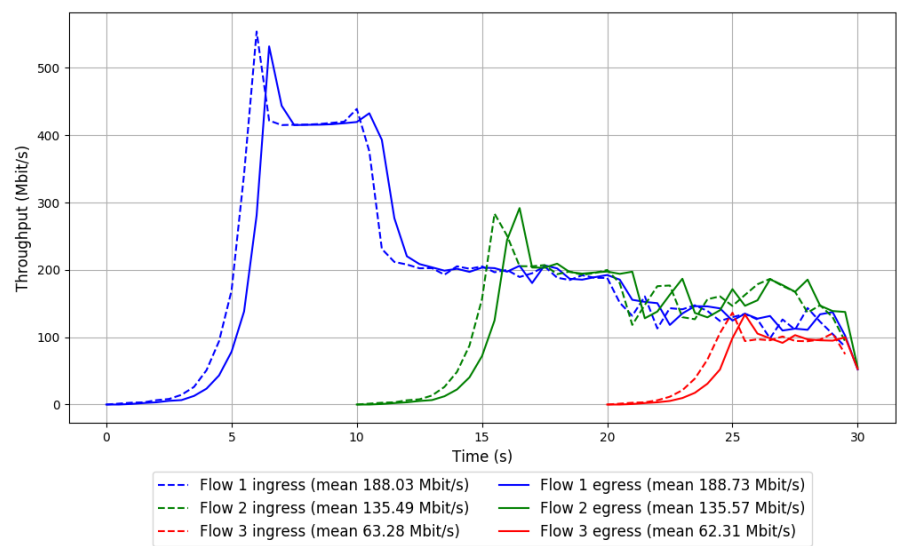# Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-02 17:07:08
End at: 2018-12-02 17:07:38
Local clock offset: 7.602 ms
Remote clock offset: -3.321 ms


# Below is generated by plot.py at 2018-12-02 18:27:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 298.49 Mbit/s
95th percentile per-packet one-way delay: 154.347 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 188.73 Mbit/s
95th percentile per-packet one-way delay: 149.578 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 135.57 Mbit/s
95th percentile per-packet one-way delay: 154.435 ms
Loss rate: 1.40%
-- Flow 3:
Average throughput: 62.31 Mbit/s
95th percentile per-packet one-way delay: 148.343 ms
Loss rate: 4.46%
```

Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 188.03 Mbit/s) --- Flow 1 egress (mean 188.73 Mbit/s)
Flow 2 ingress (mean 135.49 Mbit/s) --- Flow 2 egress (mean 135.57 Mbit/s)
Flow 3 ingress (mean 63.28 Mbit/s) --- Flow 3 egress (mean 62.31 Mbit/s)

Flow 1 (95th percentile 149.58 ms)   Flow 2 (95th percentile 154.44 ms)   Flow 3 (95th percentile 148.34 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-02 14:40:15
End at: 2018-12-02 14:40:45
Local clock offset: -5.575 ms
Remote clock offset: 4.125 ms


# Below is generated by plot.py at 2018-12-02 18:27:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 147.258 ms
Loss rate: 1.64%
-- Flow 1:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 147.284 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 143.218 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 137.863 ms
Loss rate: 6.14%
```
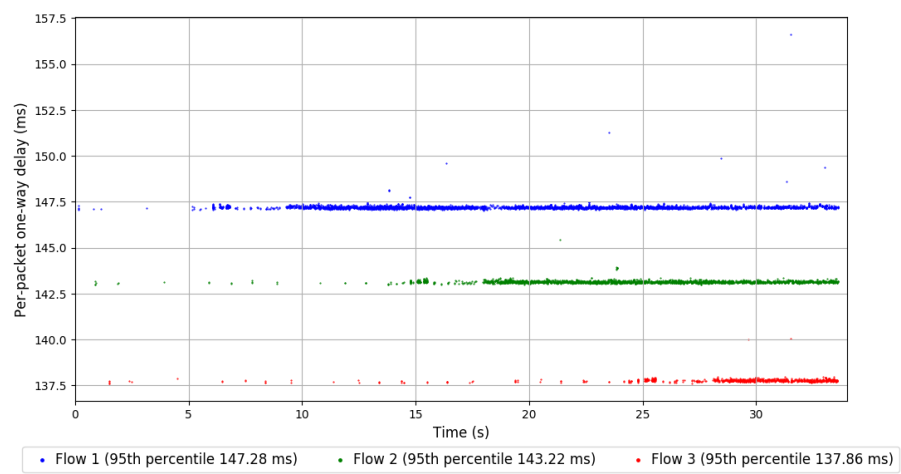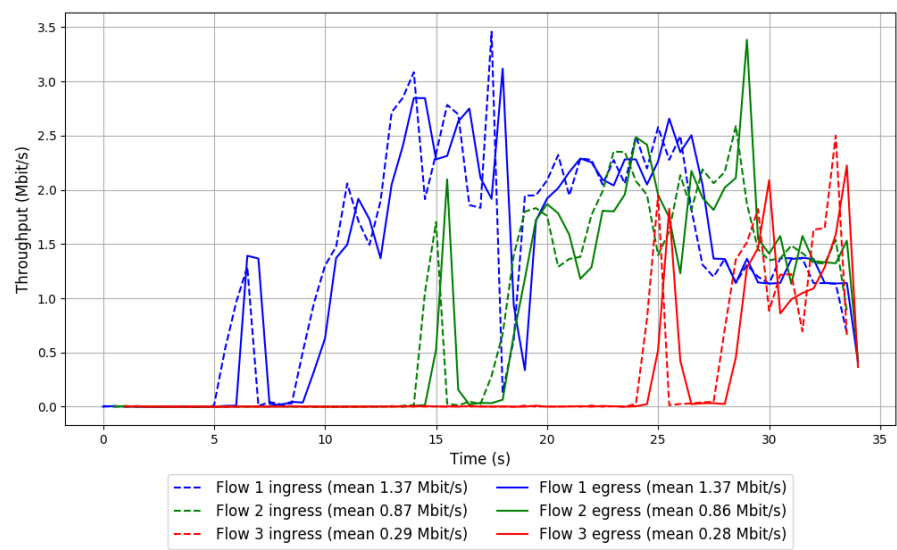
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-02 15:14:18
End at: 2018-12-02 15:14:48
Local clock offset: 5.597 ms
Remote clock offset: 4.404 ms


# Below is generated by plot.py at 2018-12-02 18:27:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 146.187 ms
Loss rate: 1.99%
-- Flow 1:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 146.213 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 145.137 ms
Loss rate: 1.52%
-- Flow 3:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 143.596 ms
Loss rate: 8.44%
```
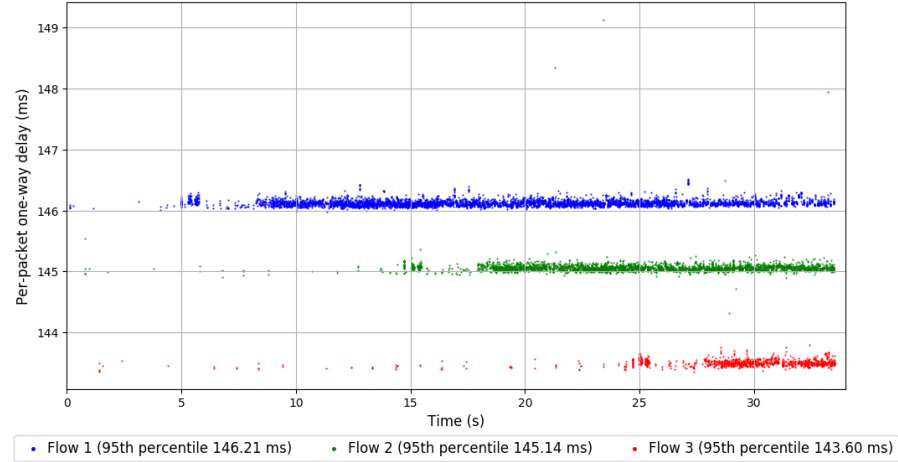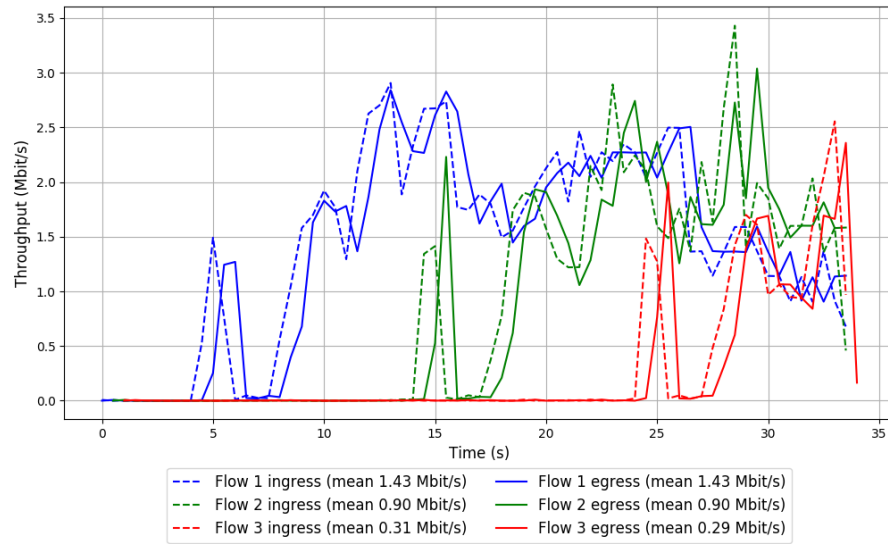
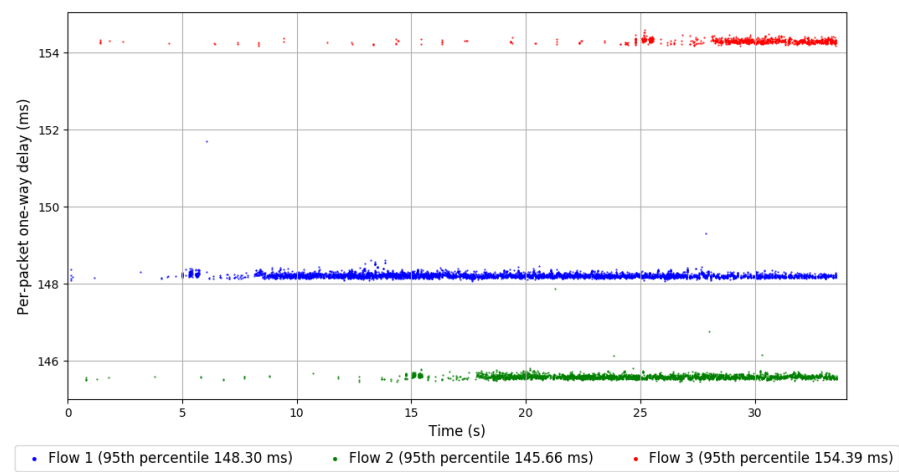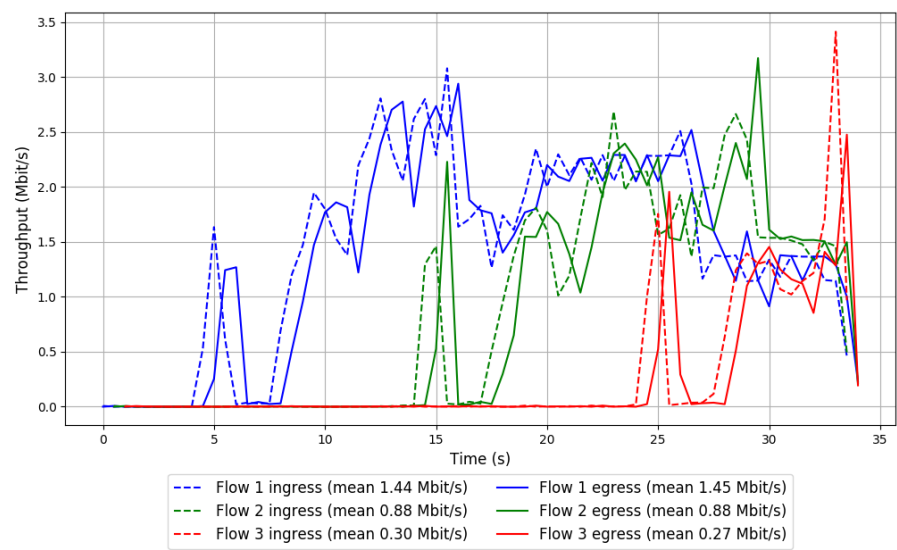Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-02 15:48:00
End at: 2018-12-02 15:48:30
Local clock offset: 7.859 ms
Remote clock offset: -0.323 ms


# Below is generated by plot.py at 2018-12-02 18:27:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 154.301 ms
Loss rate: 2.16%
-- Flow 1:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 148.304 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 145.659 ms
Loss rate: 1.15%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 154.390 ms
Loss rate: 12.42%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.44 Mbit/s) -- -- -- Flow 1 egress (mean 1.45 Mbit/s)
Flow 2 ingress (mean 0.88 Mbit/s) -- -- -- Flow 2 egress (mean 0.88 Mbit/s)
Flow 3 ingress (mean 0.30 Mbit/s) -- -- -- Flow 3 egress (mean 0.27 Mbit/s)

Flow 1 (95th percentile 148.30 ms) Flow 2 (95th percentile 145.66 ms) Flow 3 (95th percentile 154.39 ms)
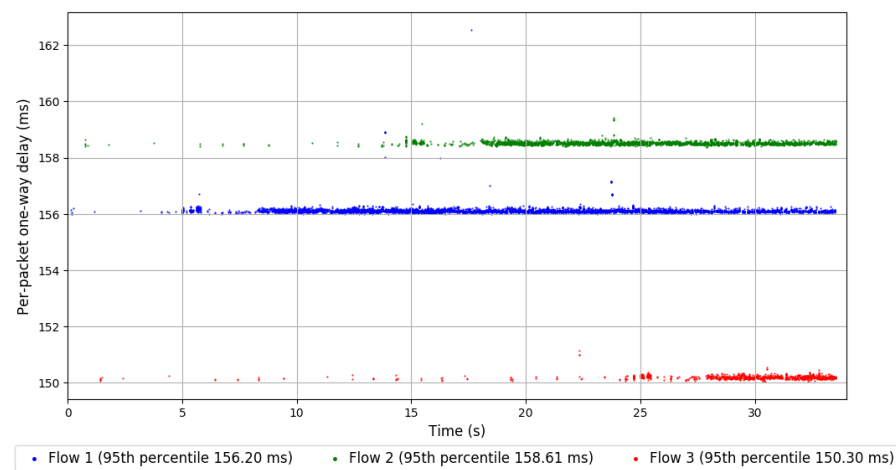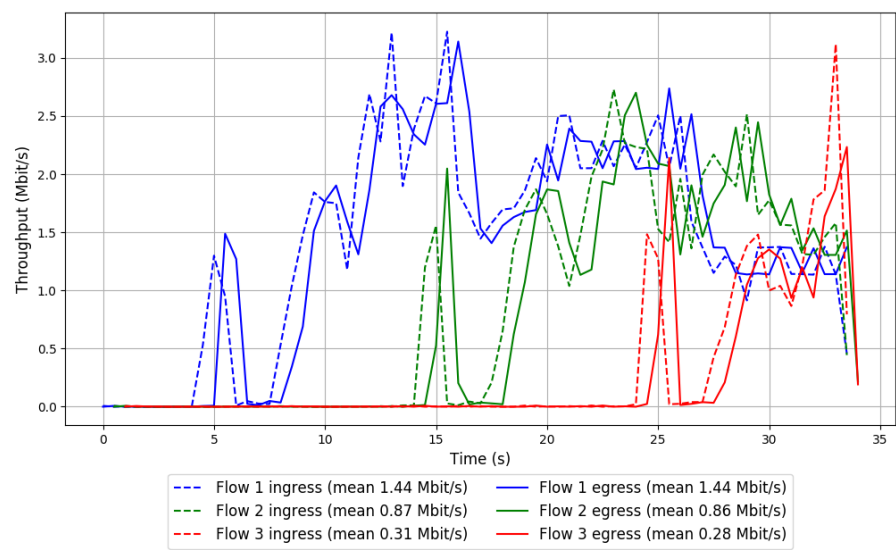
```
Run 4: Statistics of WebRTC media

Start at: 2018-12-02 16:21:40
End at: 2018-12-02 16:22:10
Local clock offset: 8.352 ms
Remote clock offset: -0.144 ms


# Below is generated by plot.py at 2018-12-02 18:27:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.55 Mbit/s
95th percentile per-packet one-way delay: 158.563 ms
Loss rate: 2.07%
-- Flow 1:
Average throughput: 1.44 Mbit/s
95th percentile per-packet one-way delay: 156.203 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 158.607 ms
Loss rate: 1.53%
-- Flow 3:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 150.298 ms
Loss rate: 10.29%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-02 16:55:49
End at: 2018-12-02 16:56:19
Local clock offset: 0.433 ms
Remote clock offset: -3.943 ms


# Below is generated by plot.py at 2018-12-02 18:27:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.46 Mbit/s
95th percentile per-packet one-way delay: 149.333 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 148.300 ms
Loss rate: 0.95%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 149.388 ms
Loss rate: 1.58%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 140.016 ms
Loss rate: 2.36%
```

Run 5: Report of WebRTC media — Data Link