

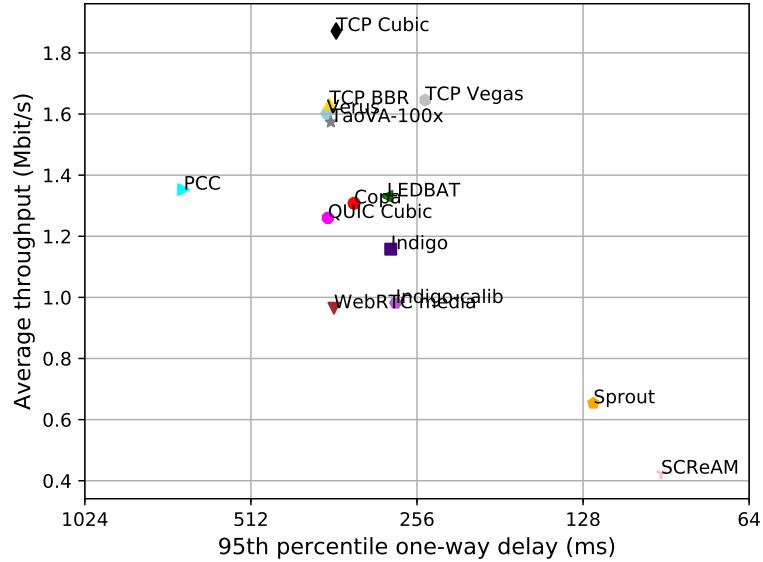
Pantheon Report

Generated at 2017-12-05 09:34:12 (UTC).
Data path: India ppp0 (*remote*) → AWS India 1 Ethernet (*local*).
Repeated the test of 14 congestion control schemes 3 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).
NTP offsets were measured against nets.org.sg and have been applied to correct the timestamps in logs.

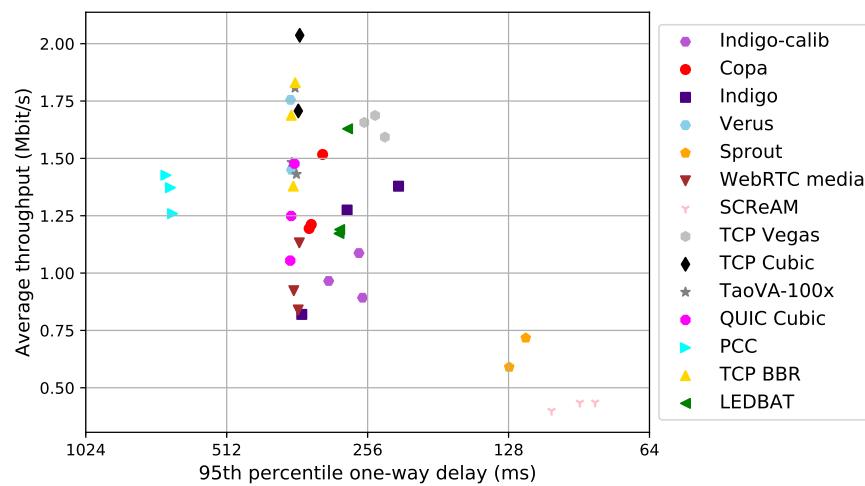
Git summary:

```
branch: indigos @ e3a57ad5ac5cfaca0e3f983c8dd4cc3509e0262
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/genericCC @ b5b7c38e8391001927dc41c6cfa2627d03dde737
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fab936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
  M src/examples/cellsim.cc
  M src/examples/sproutbt2.cc
  M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows



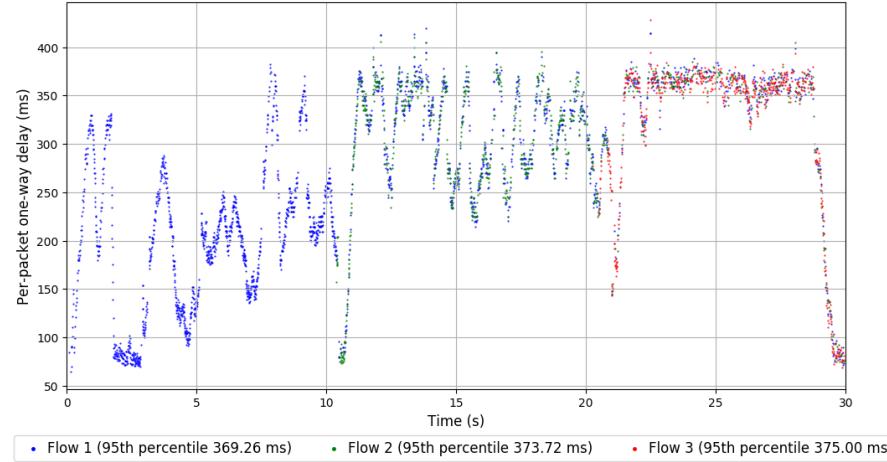
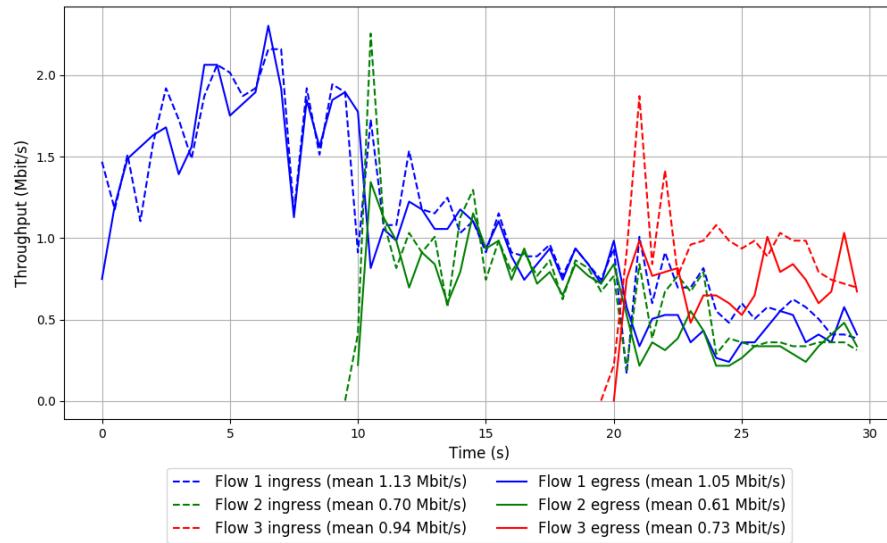
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.95	0.70	0.67	365.60	371.07	370.51	7.57	14.80	21.13
TCP Cubic	2	1.27	0.70	0.42	357.87	362.36	363.35	2.92	4.81	9.11
LEDBAT	3	0.75	0.68	0.41	278.25	295.36	328.41	0.38	1.21	3.05
PCC	3	0.80	0.61	0.55	427.41	700.84	755.26	72.19	91.99	90.87
QUIC Cubic	3	0.79	0.47	0.50	369.74	373.28	374.59	10.13	17.71	20.30
SCReAM	3	0.21	0.21	0.22	89.98	94.11	91.84	0.29	0.34	0.60
WebRTC media	3	0.48	0.35	0.15	356.80	359.71	365.91	5.74	8.55	16.06
Sprout	2	0.33	0.35	0.28	122.19	122.41	126.62	0.42	0.78	2.62
TaoVA-100x	3	1.14	0.41	0.64	363.09	375.52	372.13	16.31	57.32	46.16
TCP Vegas	3	0.85	0.73	0.94	242.40	220.66	280.16	0.26	0.52	1.40
Verus	2	1.47	0.15	0.14	372.60	383.08	372.24	23.63	63.09	42.97
Copa	3	0.82	0.60	0.37	308.64	344.22	356.08	1.31	2.99	6.35
Indigo	3	0.47	0.53	1.04	251.72	282.90	307.03	4.58	2.90	5.02
Indigo-calib	3	0.62	0.30	0.48	288.11	251.63	282.08	7.42	10.55	11.83

Run 1: Statistics of TCP BBR

```
Start at: 2017-12-05 08:09:50
End at: 2017-12-05 08:10:20
Local clock offset: 3.146 ms
Remote clock offset: -18.623 ms

# Below is generated by plot.py at 2017-12-05 09:33:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 372.577 ms
Loss rate: 11.69%
-- Flow 1:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 369.257 ms
Loss rate: 7.29%
-- Flow 2:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 373.717 ms
Loss rate: 13.11%
-- Flow 3:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 375.000 ms
Loss rate: 25.41%
```

Run 1: Report of TCP BBR — Data Link

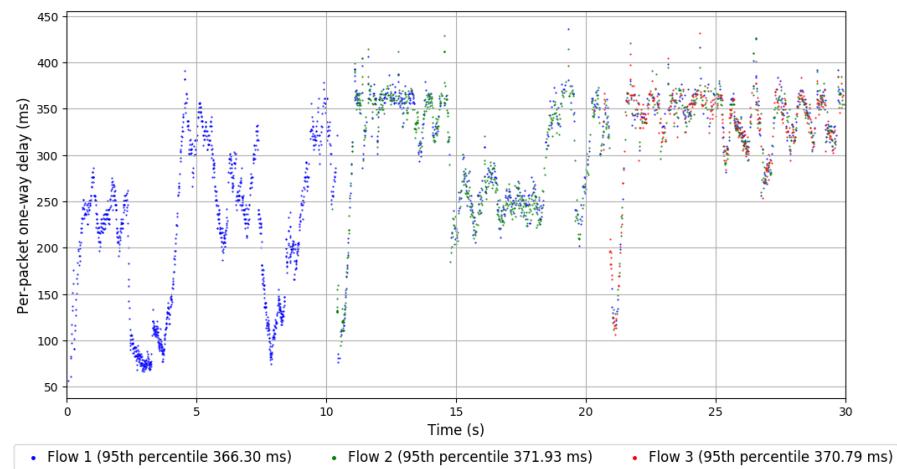
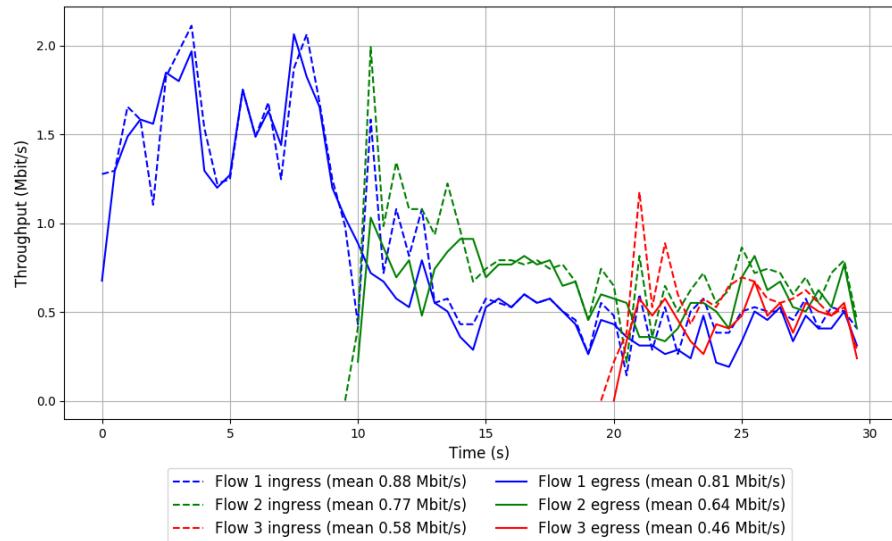


Run 2: Statistics of TCP BBR

```
Start at: 2017-12-05 08:25:21
End at: 2017-12-05 08:25:51
Local clock offset: 2.063 ms
Remote clock offset: -16.394 ms

# Below is generated by plot.py at 2017-12-05 09:33:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 369.017 ms
Loss rate: 13.16%
-- Flow 1:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 366.296 ms
Loss rate: 8.41%
-- Flow 2:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 371.930 ms
Loss rate: 17.29%
-- Flow 3:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 370.793 ms
Loss rate: 23.95%
```

Run 2: Report of TCP BBR — Data Link

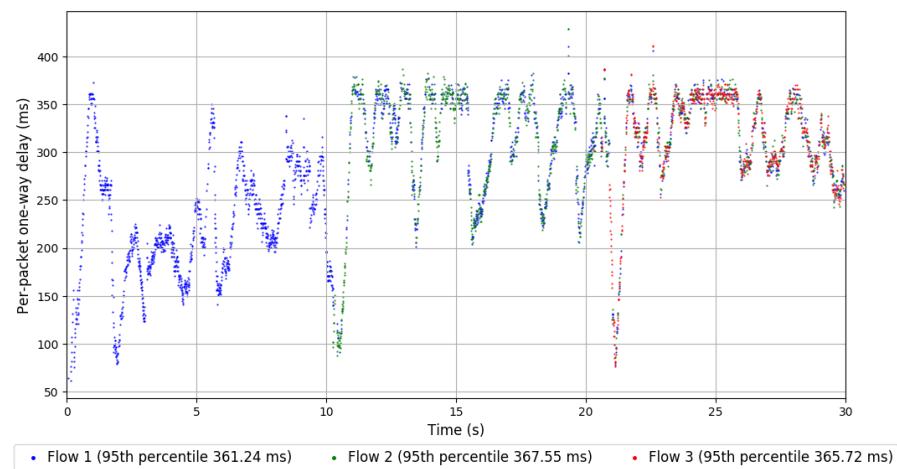
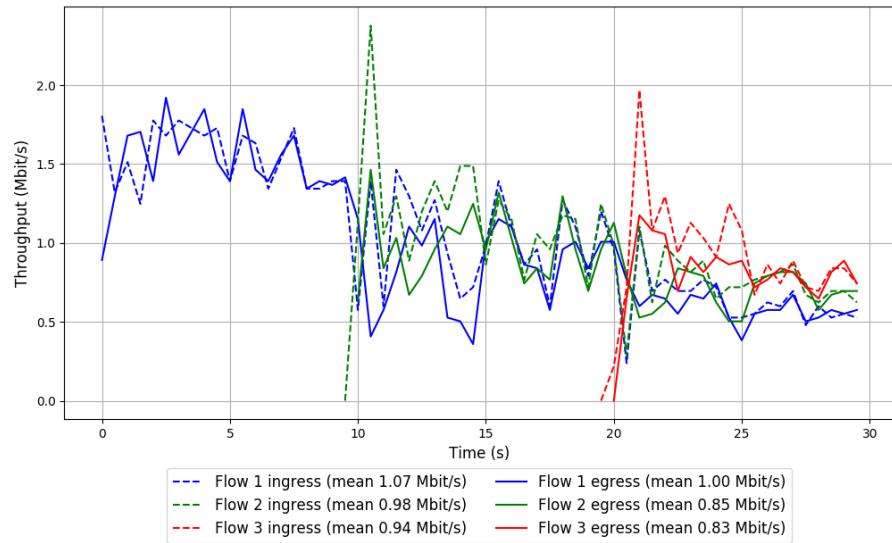


Run 3: Statistics of TCP BBR

```
Start at: 2017-12-05 08:40:49
End at: 2017-12-05 08:41:19
Local clock offset: 3.287 ms
Remote clock offset: -15.228 ms

# Below is generated by plot.py at 2017-12-05 09:33:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 365.541 ms
Loss rate: 10.32%
-- Flow 1:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 361.243 ms
Loss rate: 7.00%
-- Flow 2:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 367.549 ms
Loss rate: 13.99%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 365.724 ms
Loss rate: 14.04%
```

Run 3: Report of TCP BBR — Data Link

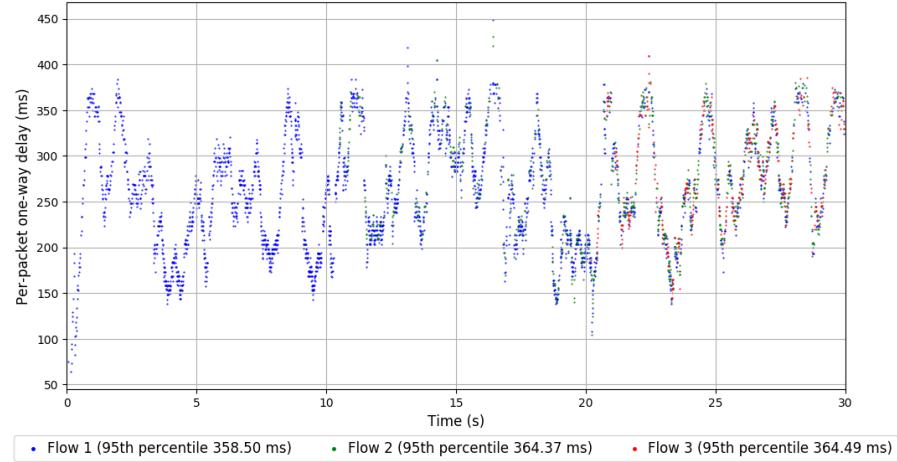
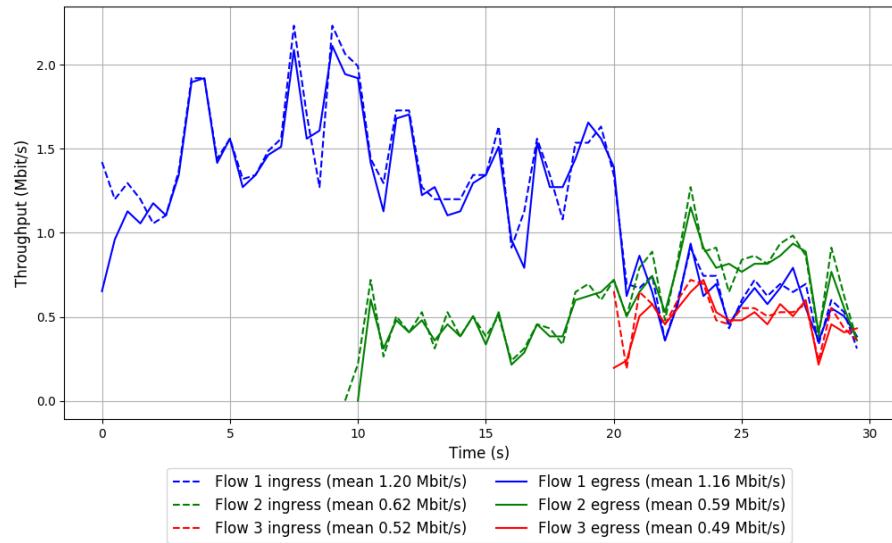


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2017-12-05 08:07:37
End at: 2017-12-05 08:08:07
Local clock offset: 2.645 ms
Remote clock offset: -18.661 ms

# Below is generated by plot.py at 2017-12-05 09:33:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.71 Mbit/s
95th percentile per-packet one-way delay: 359.965 ms
Loss rate: 4.37%
-- Flow 1:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 358.495 ms
Loss rate: 3.71%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 364.367 ms
Loss rate: 5.09%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 364.485 ms
Loss rate: 7.22%
```

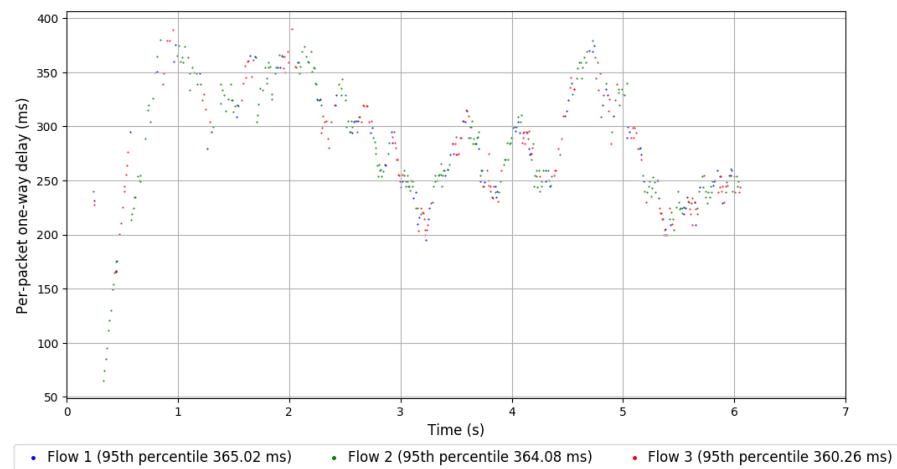
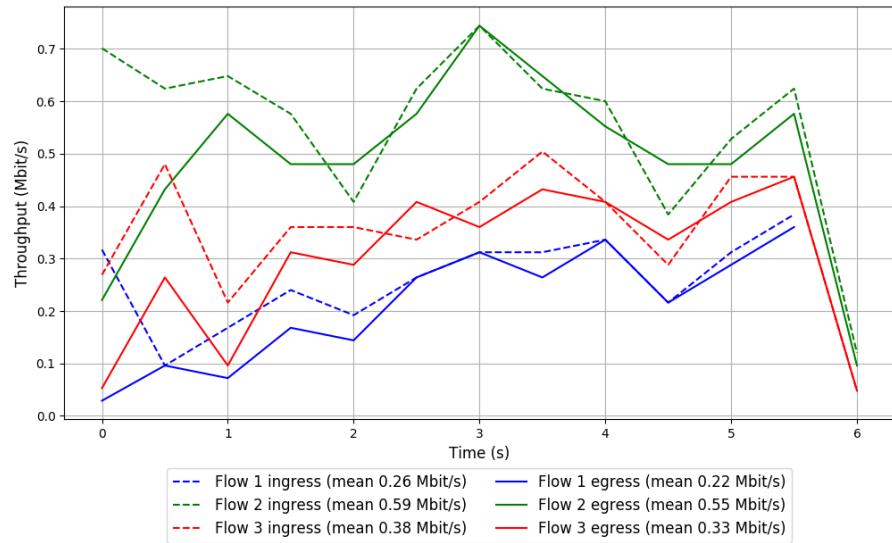
Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2017-12-05 08:23:05
End at: 2017-12-05 08:23:35
Local clock offset: 4.422 ms
Remote clock offset: -16.595 ms

Run 2: Report of TCP Cubic — Data Link

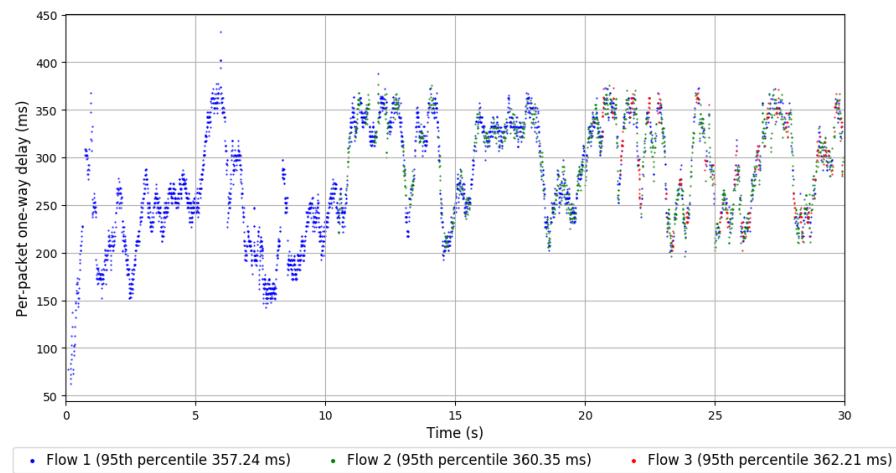
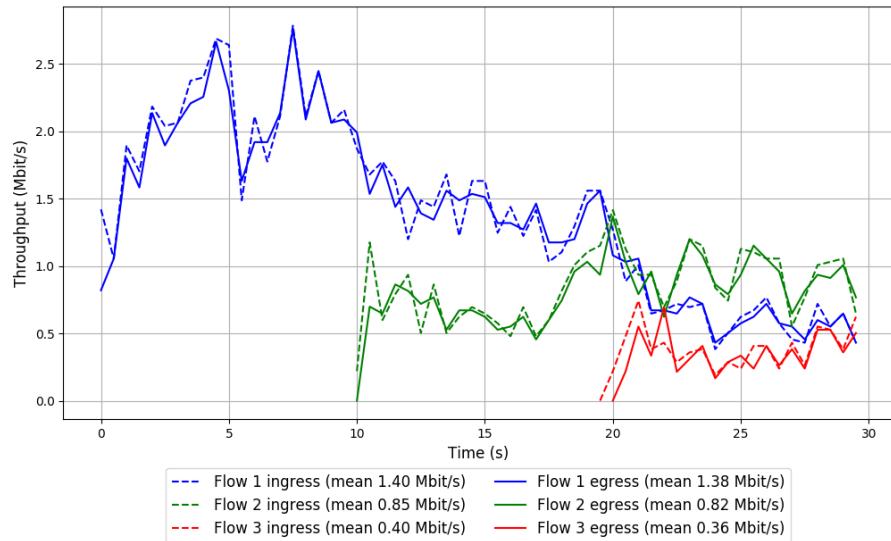


Run 3: Statistics of TCP Cubic

```
Start at: 2017-12-05 08:38:37
End at: 2017-12-05 08:39:07
Local clock offset: 3.82 ms
Remote clock offset: -15.449 ms

# Below is generated by plot.py at 2017-12-05 09:33:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.04 Mbit/s
95th percentile per-packet one-way delay: 357.528 ms
Loss rate: 3.34%
-- Flow 1:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 357.241 ms
Loss rate: 2.14%
-- Flow 2:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 360.352 ms
Loss rate: 4.54%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 362.213 ms
Loss rate: 11.00%
```

Run 3: Report of TCP Cubic — Data Link

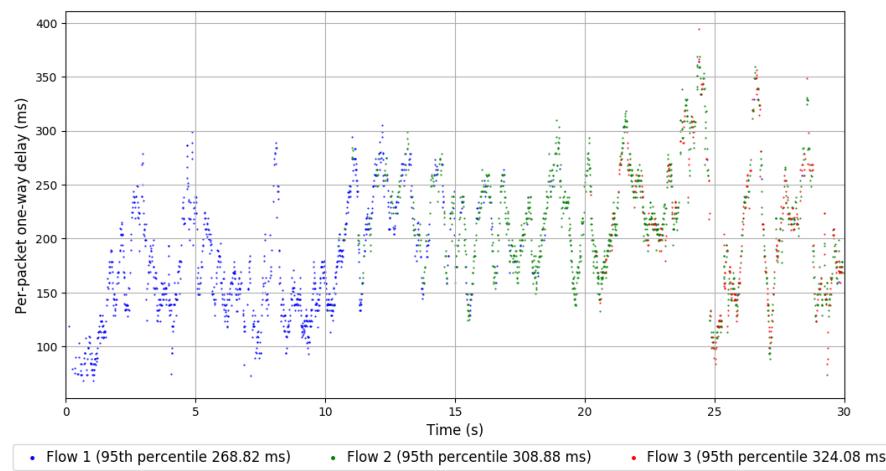
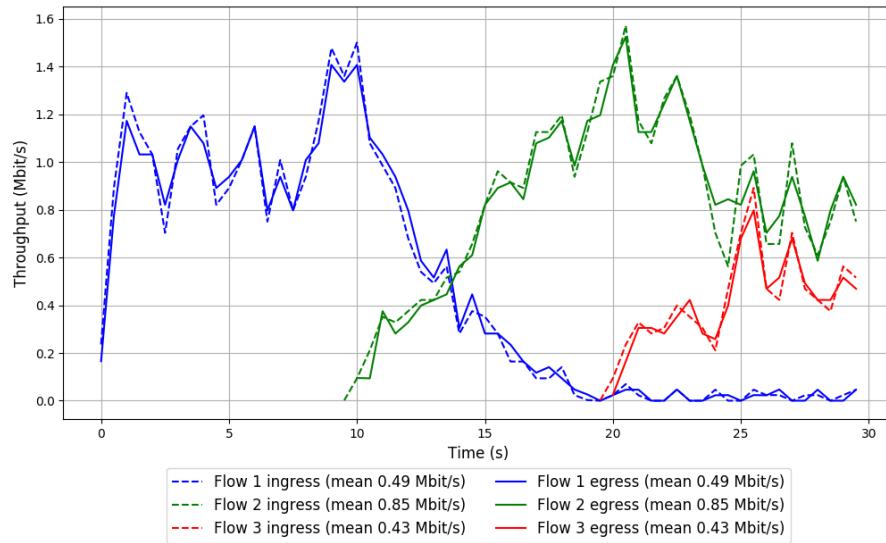


```
Run 1: Statistics of LEDBAT
```

```
Start at: 2017-12-05 08:12:02
End at: 2017-12-05 08:12:32
Local clock offset: -1.274 ms
Remote clock offset: -17.903 ms

# Below is generated by plot.py at 2017-12-05 09:33:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 293.730 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 268.825 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 308.881 ms
Loss rate: 0.83%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 324.080 ms
Loss rate: 3.03%
```

Run 1: Report of LEDBAT — Data Link

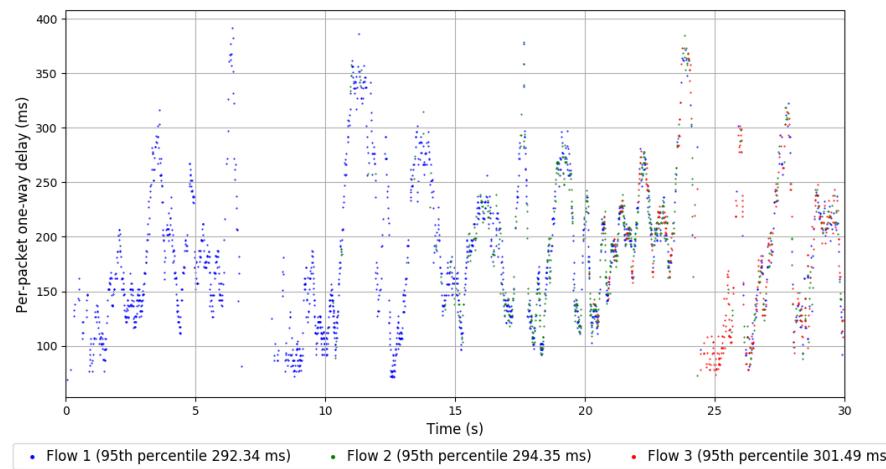
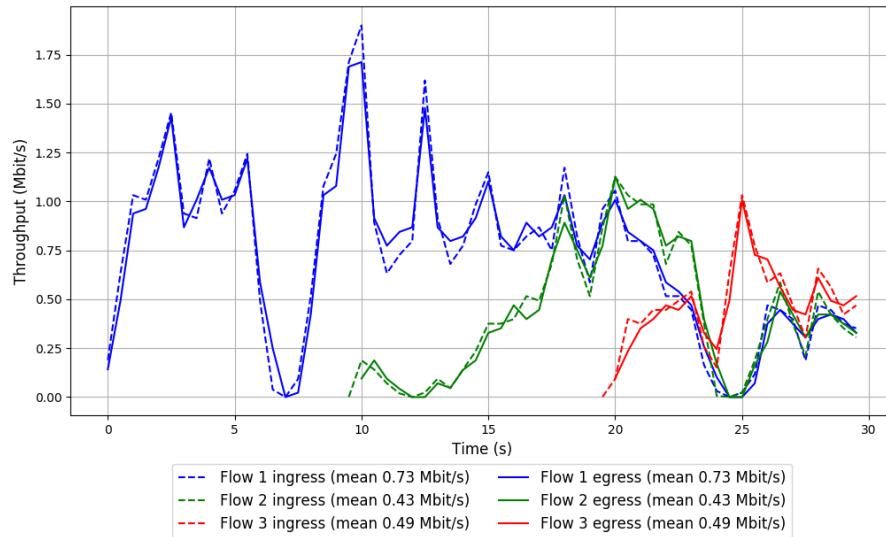


Run 2: Statistics of LEDBAT

```
Start at: 2017-12-05 08:27:34
End at: 2017-12-05 08:28:04
Local clock offset: 4.372 ms
Remote clock offset: -17.117 ms

# Below is generated by plot.py at 2017-12-05 09:33:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 294.703 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 292.339 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 294.353 ms
Loss rate: 1.51%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 301.490 ms
Loss rate: 2.17%
```

Run 2: Report of LEDBAT — Data Link

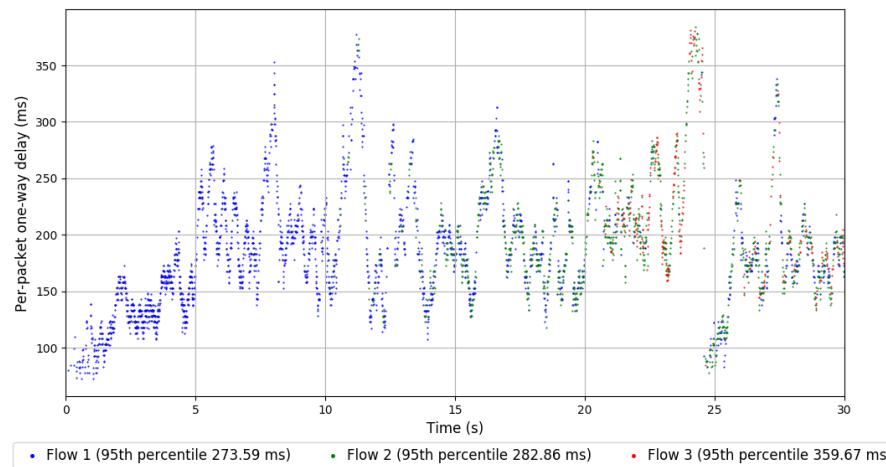
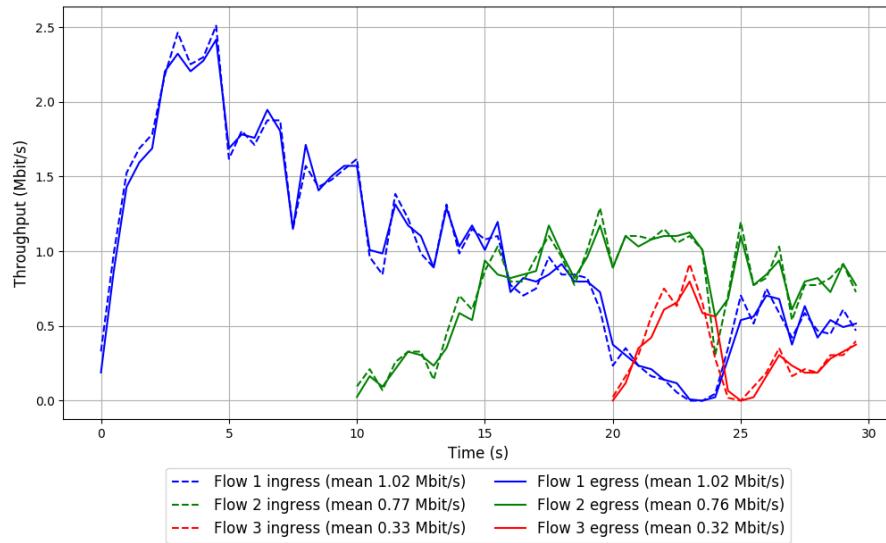


Run 3: Statistics of LEDBAT

```
Start at: 2017-12-05 08:43:02
End at: 2017-12-05 08:43:32
Local clock offset: 6.925 ms
Remote clock offset: -15.732 ms

# Below is generated by plot.py at 2017-12-05 09:33:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 282.553 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 273.591 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 282.859 ms
Loss rate: 1.30%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 359.667 ms
Loss rate: 3.96%
```

Run 3: Report of LEDBAT — Data Link

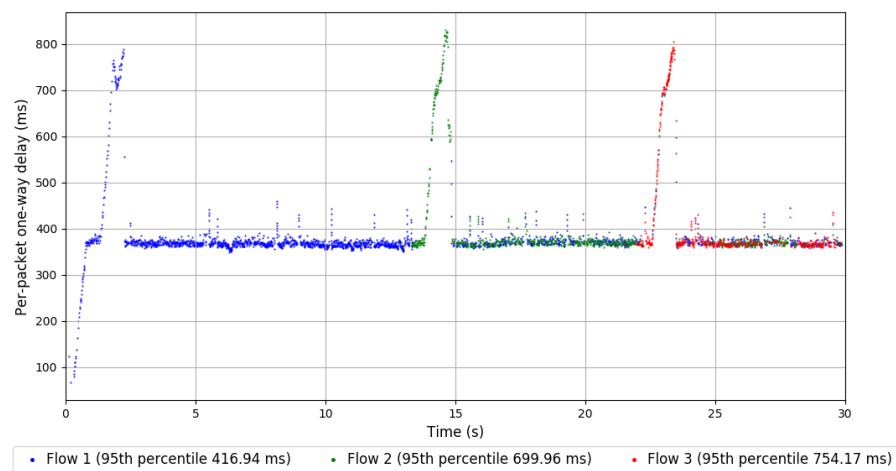
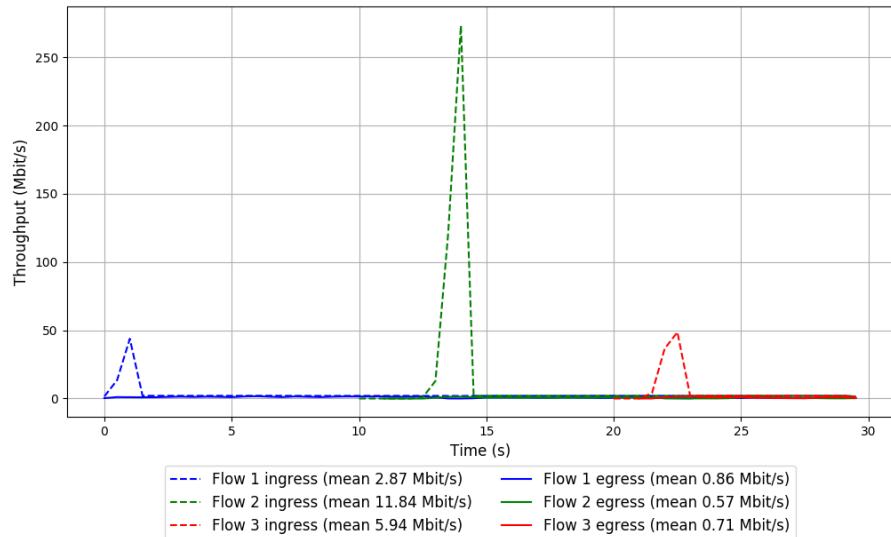


Run 1: Statistics of PCC

```
Start at: 2017-12-05 08:06:30
End at: 2017-12-05 08:07:00
Local clock offset: 4.759 ms
Remote clock offset: -16.762 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 690.506 ms
Loss rate: 88.82%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 416.936 ms
Loss rate: 70.15%
-- Flow 2:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 699.955 ms
Loss rate: 95.49%
-- Flow 3:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 754.167 ms
Loss rate: 89.36%
```

Run 1: Report of PCC — Data Link

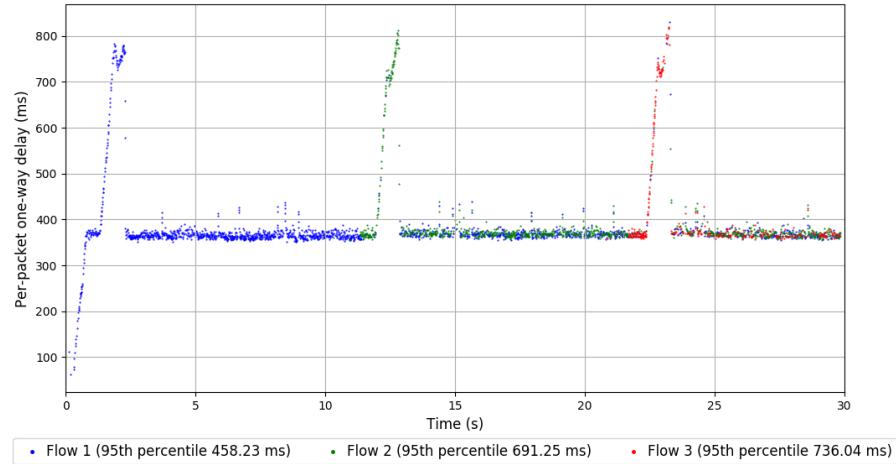
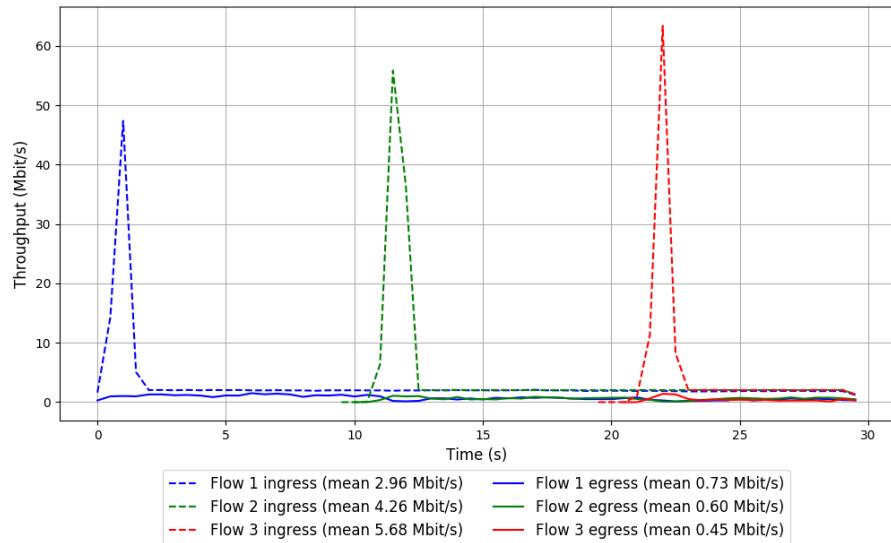


Run 2: Statistics of PCC

```
Start at: 2017-12-05 08:21:59
End at: 2017-12-05 08:22:29
Local clock offset: 4.538 ms
Remote clock offset: -15.197 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 668.202 ms
Loss rate: 83.65%
-- Flow 1:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 458.234 ms
Loss rate: 75.46%
-- Flow 2:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 691.255 ms
Loss rate: 86.20%
-- Flow 3:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 736.042 ms
Loss rate: 92.75%
```

Run 2: Report of PCC — Data Link

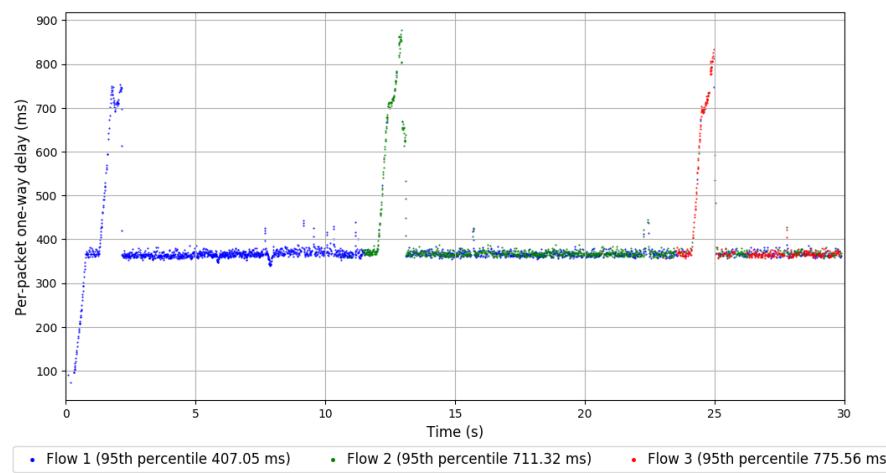
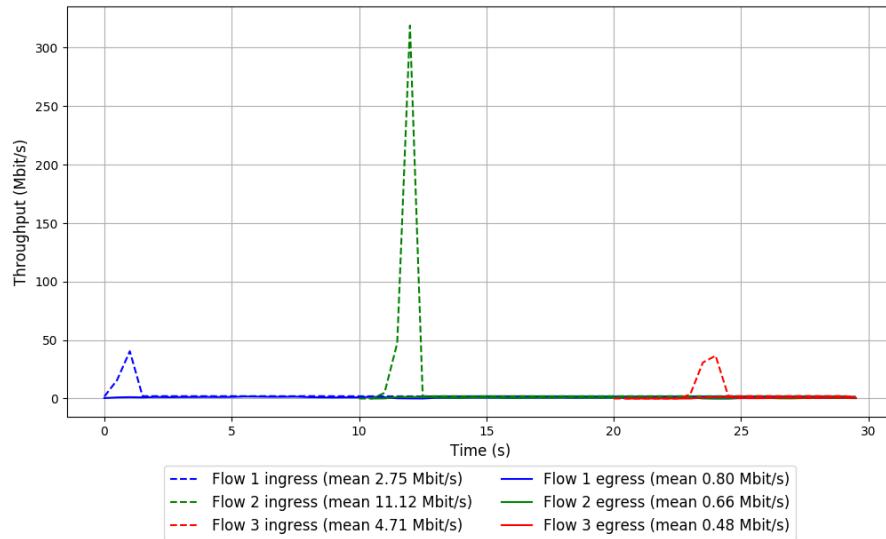


Run 3: Statistics of PCC

```
Start at: 2017-12-05 08:37:29
End at: 2017-12-05 08:37:59
Local clock offset: 5.099 ms
Remote clock offset: -15.657 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 675.301 ms
Loss rate: 88.30%
-- Flow 1:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 407.048 ms
Loss rate: 70.96%
-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 711.324 ms
Loss rate: 94.28%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 775.564 ms
Loss rate: 90.50%
```

Run 3: Report of PCC — Data Link

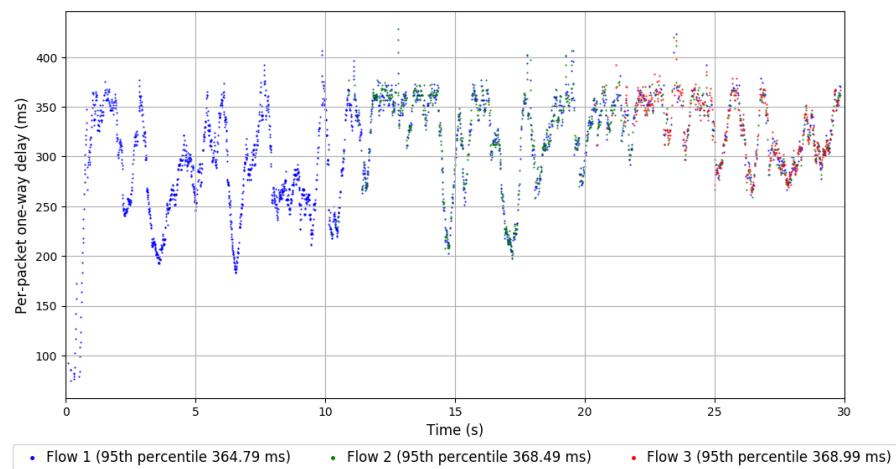
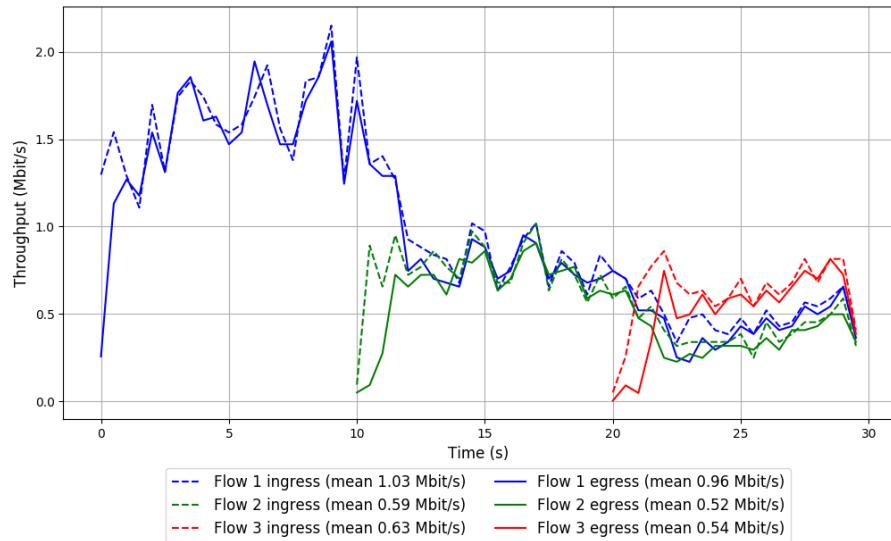


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2017-12-05 08:03:10
End at: 2017-12-05 08:03:40
Local clock offset: 0.257 ms
Remote clock offset: -17.432 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 366.845 ms
Loss rate: 9.68%
-- Flow 1:
Average throughput: 0.96 Mbit/s
95th percentile per-packet one-way delay: 364.789 ms
Loss rate: 7.07%
-- Flow 2:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 368.487 ms
Loss rate: 12.64%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 368.994 ms
Loss rate: 17.05%
```

Run 1: Report of QUIC Cubic — Data Link

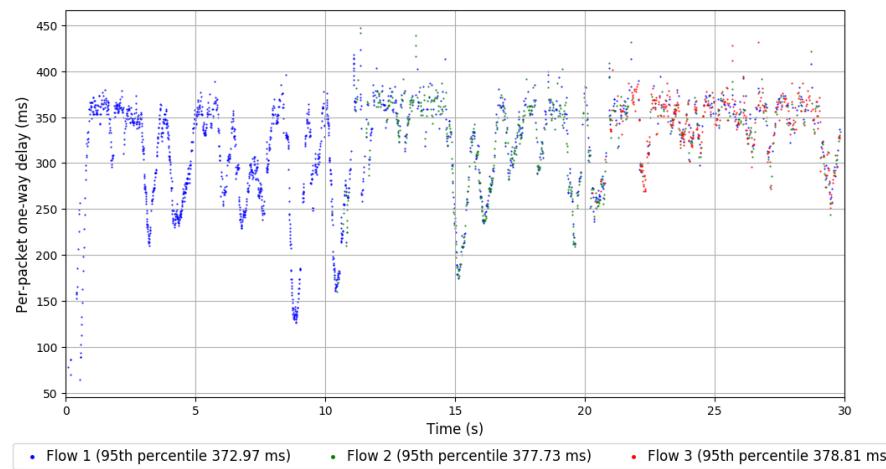
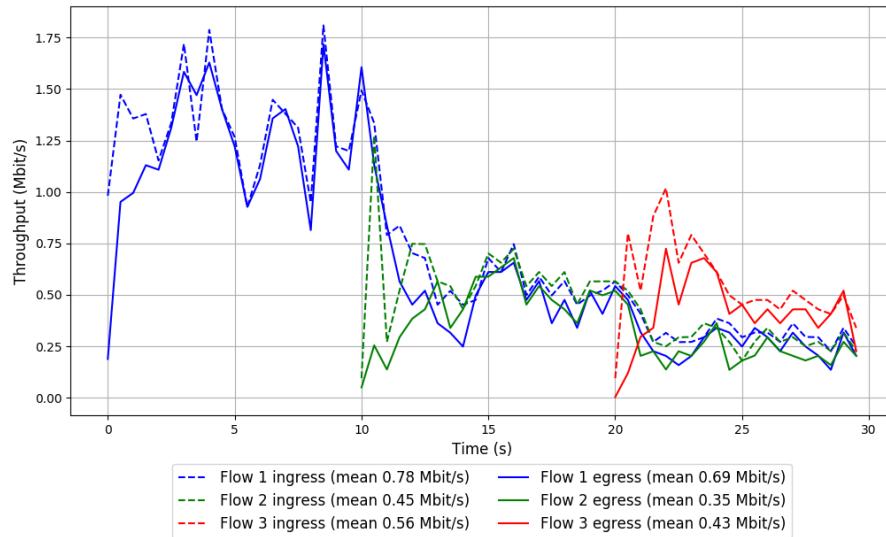


Run 2: Statistics of QUIC Cubic

```
Start at: 2017-12-05 08:18:41
End at: 2017-12-05 08:19:11
Local clock offset: 1.29 ms
Remote clock offset: -17.769 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 374.521 ms
Loss rate: 16.91%
-- Flow 1:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 372.971 ms
Loss rate: 11.83%
-- Flow 2:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 377.725 ms
Loss rate: 24.73%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 378.811 ms
Loss rate: 25.54%
```

Run 2: Report of QUIC Cubic — Data Link

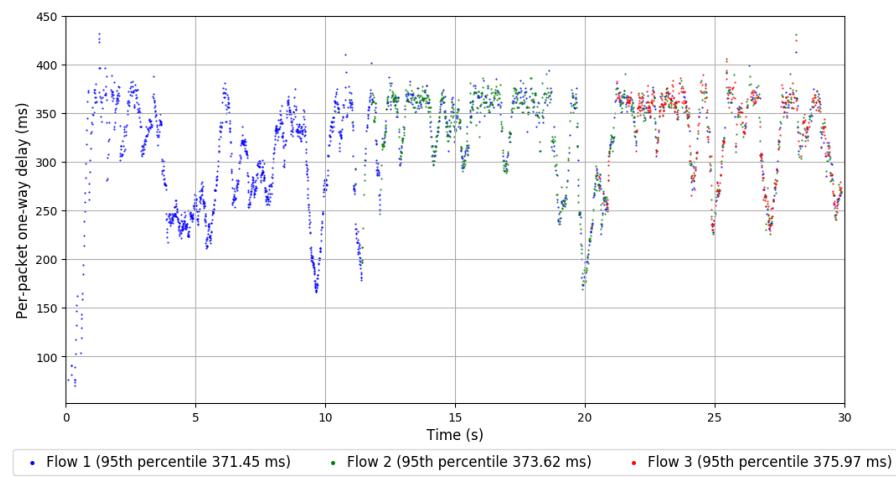
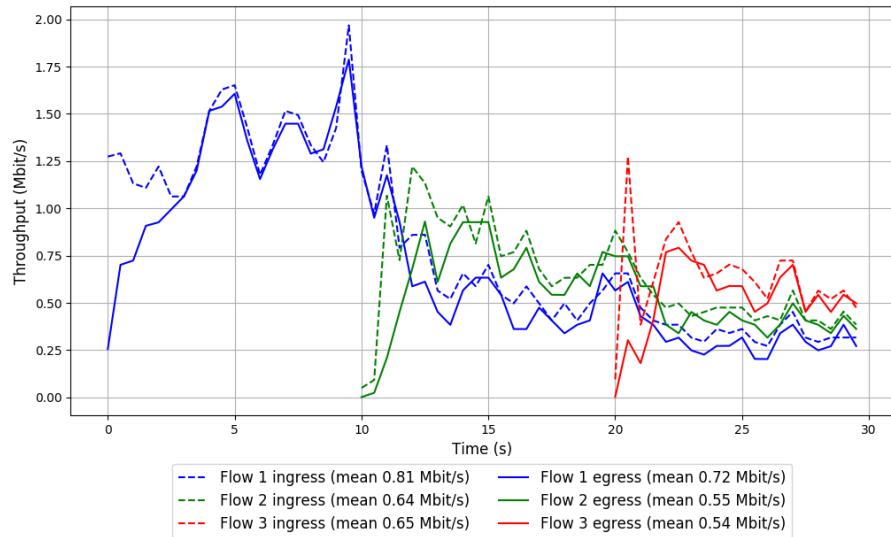


Run 3: Statistics of QUIC Cubic

```
Start at: 2017-12-05 08:34:11
End at: 2017-12-05 08:34:41
Local clock offset: 4.875 ms
Remote clock offset: -17.175 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 372.816 ms
Loss rate: 13.74%
-- Flow 1:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 371.455 ms
Loss rate: 11.49%
-- Flow 2:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 373.625 ms
Loss rate: 15.75%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 375.967 ms
Loss rate: 18.31%
```

Run 3: Report of QUIC Cubic — Data Link

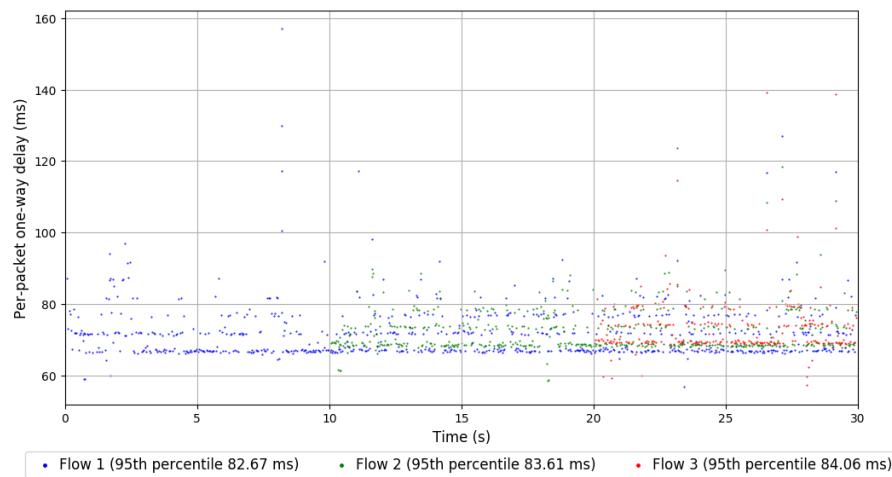
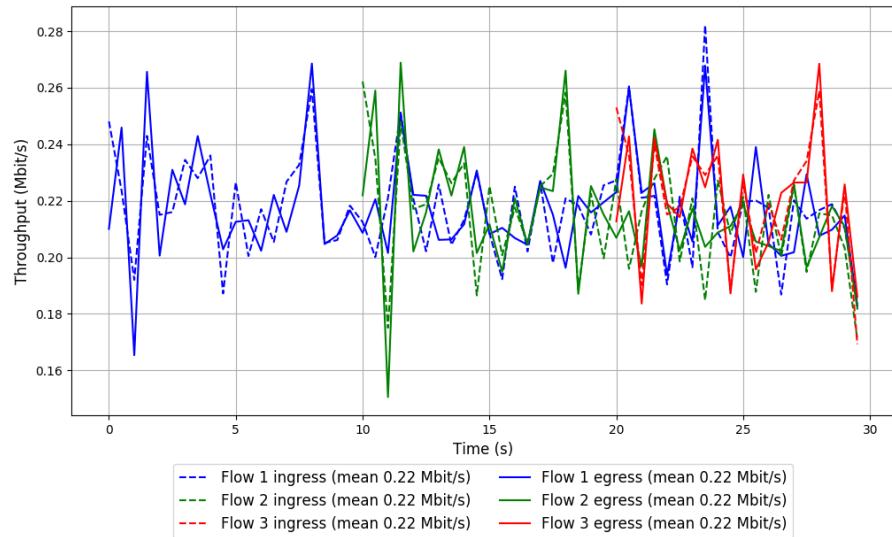


```
Run 1: Statistics of SCReAM
```

```
Start at: 2017-12-05 08:14:15
End at: 2017-12-05 08:14:45
Local clock offset: 2.397 ms
Remote clock offset: -17.809 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 83.609 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 82.673 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 83.609 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.056 ms
Loss rate: 0.35%
```

Run 1: Report of SCReAM — Data Link

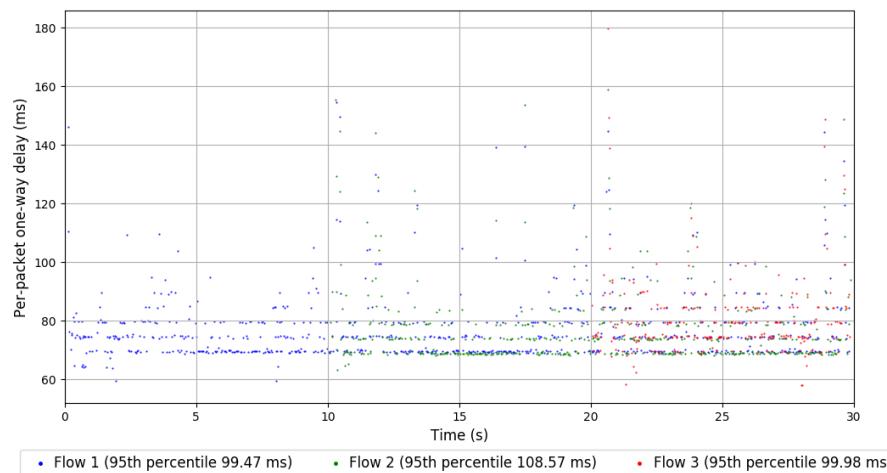
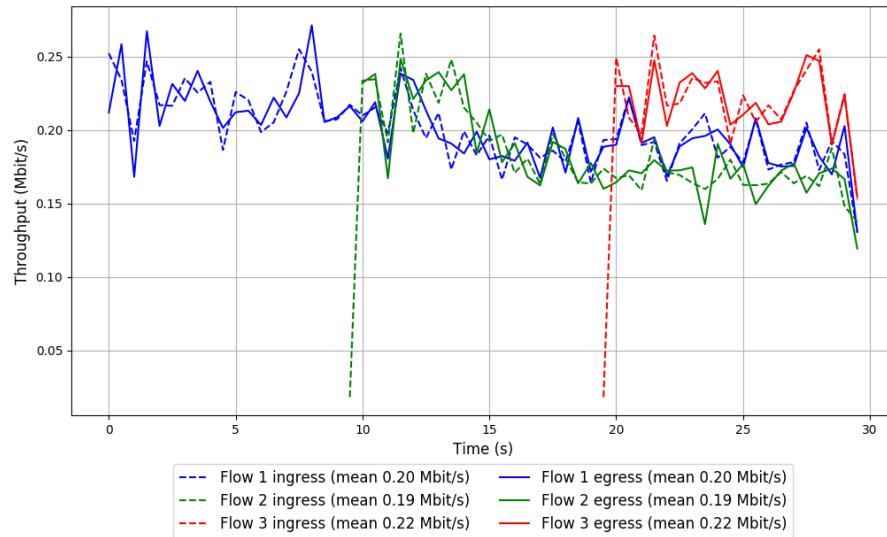


Run 2: Statistics of SCReAM

```
Start at: 2017-12-05 08:29:46
End at: 2017-12-05 08:30:16
Local clock offset: 2.366 ms
Remote clock offset: -16.542 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 103.604 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 99.471 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 108.569 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 99.978 ms
Loss rate: 0.74%
```

Run 2: Report of SCReAM — Data Link

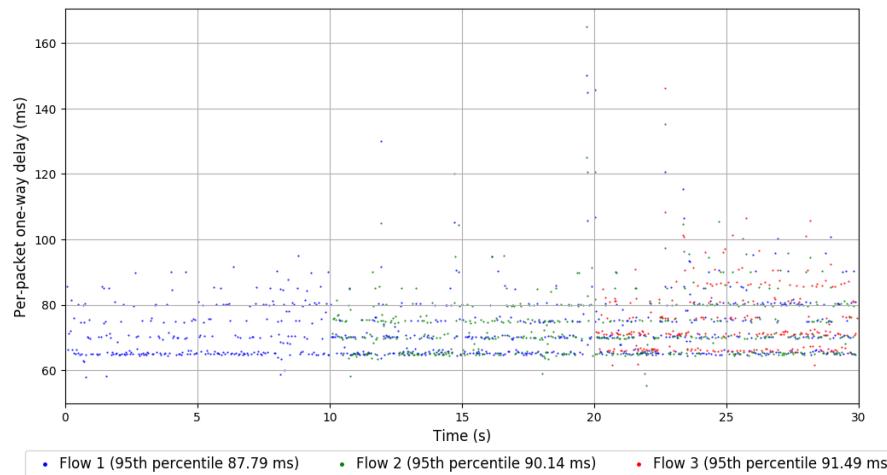
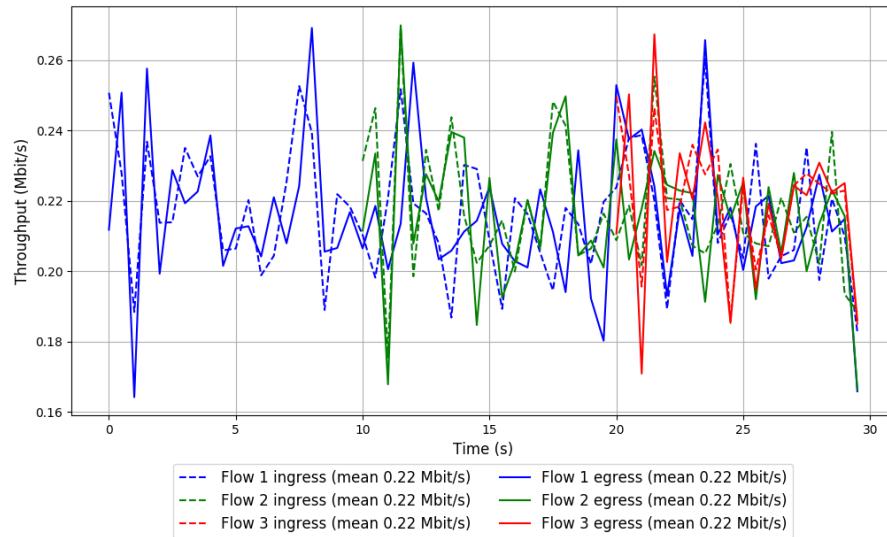


Run 3: Statistics of SCReAM

```
Start at: 2017-12-05 08:45:14
End at: 2017-12-05 08:45:44
Local clock offset: 3.377 ms
Remote clock offset: -14.463 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 90.137 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.790 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 90.137 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 91.494 ms
Loss rate: 0.71%
```

Run 3: Report of SCReAM — Data Link

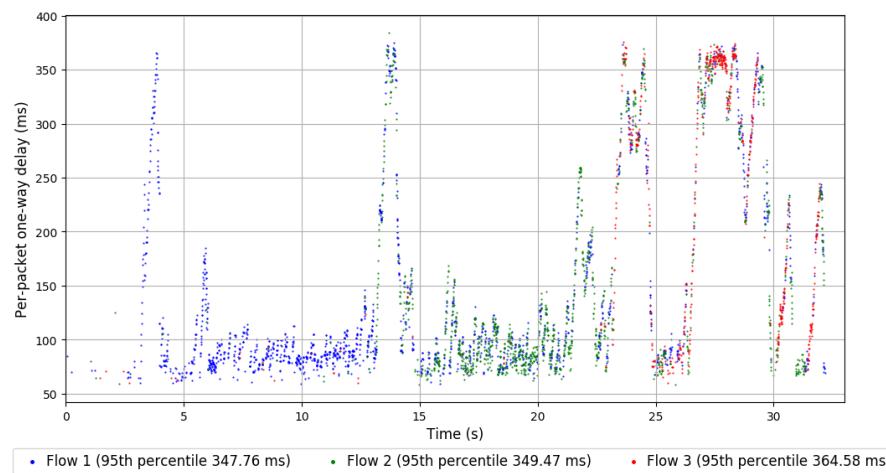
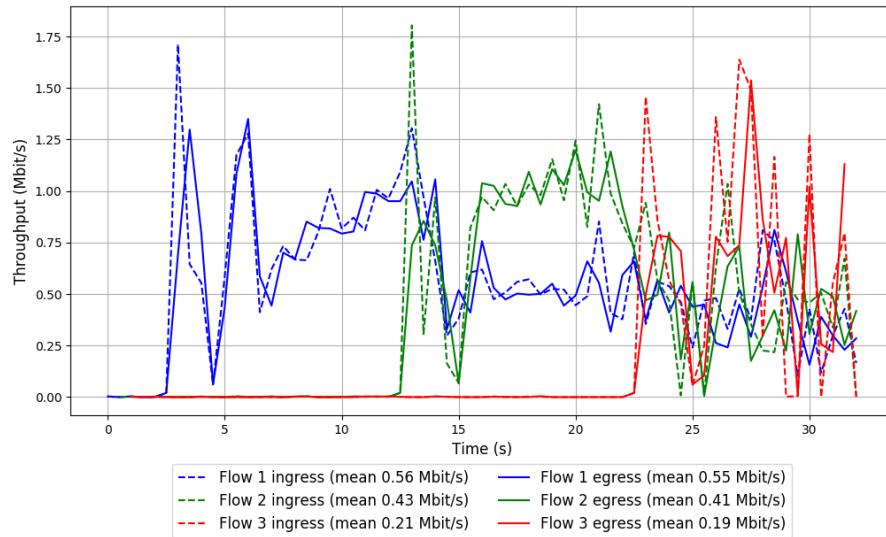


```
Run 1: Statistics of WebRTC media

Start at: 2017-12-05 08:04:18
End at: 2017-12-05 08:04:48
Local clock offset: 3.64 ms
Remote clock offset: -17.405 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 358.182 ms
Loss rate: 4.32%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 347.764 ms
Loss rate: 1.98%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 349.472 ms
Loss rate: 3.91%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 364.578 ms
Loss rate: 11.69%
```

Run 1: Report of WebRTC media — Data Link

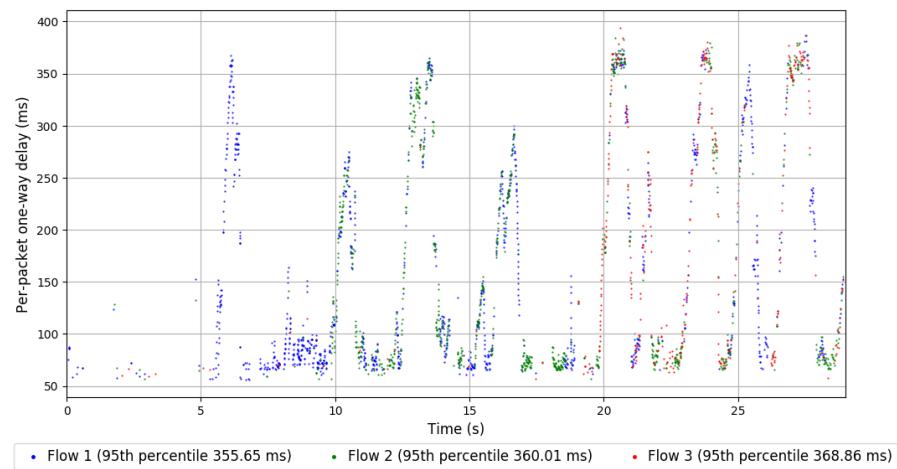
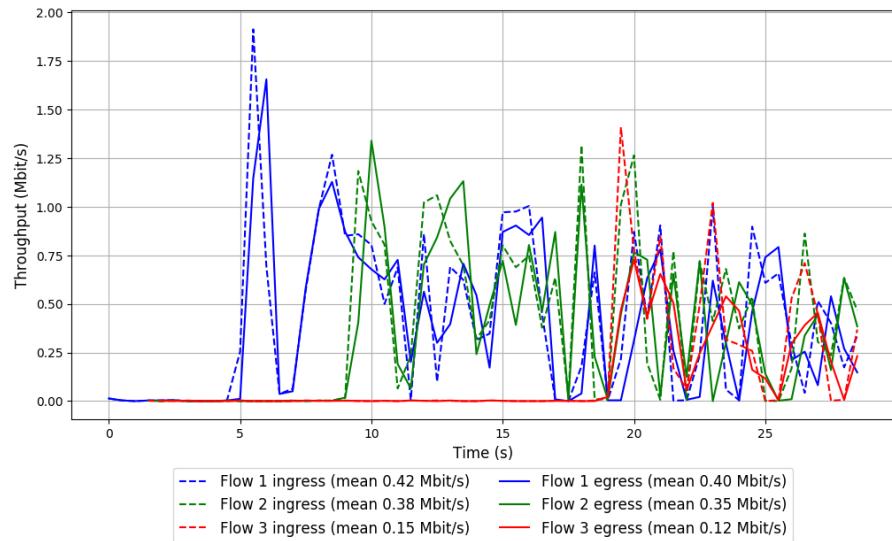


Run 2: Statistics of WebRTC media

```
Start at: 2017-12-05 08:19:47
End at: 2017-12-05 08:20:17
Local clock offset: 2.543 ms
Remote clock offset: -16.872 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 360.160 ms
Loss rate: 9.37%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 355.655 ms
Loss rate: 5.53%
-- Flow 2:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 360.009 ms
Loss rate: 8.99%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 368.856 ms
Loss rate: 21.76%
```

Run 2: Report of WebRTC media — Data Link

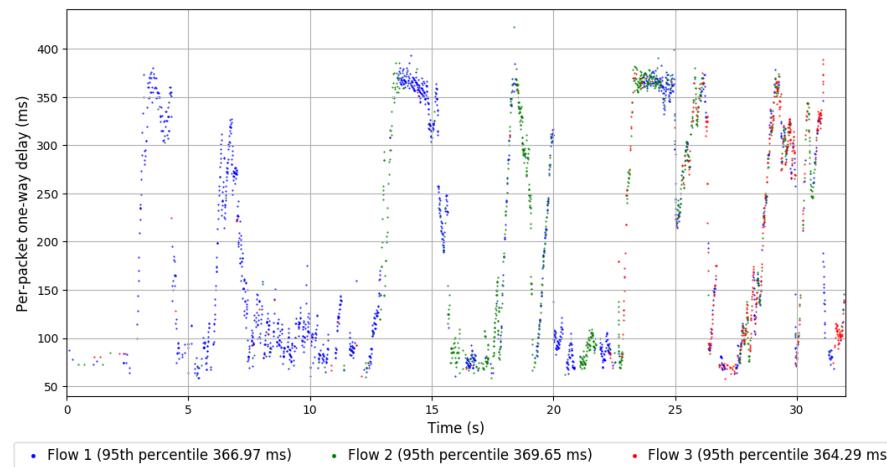
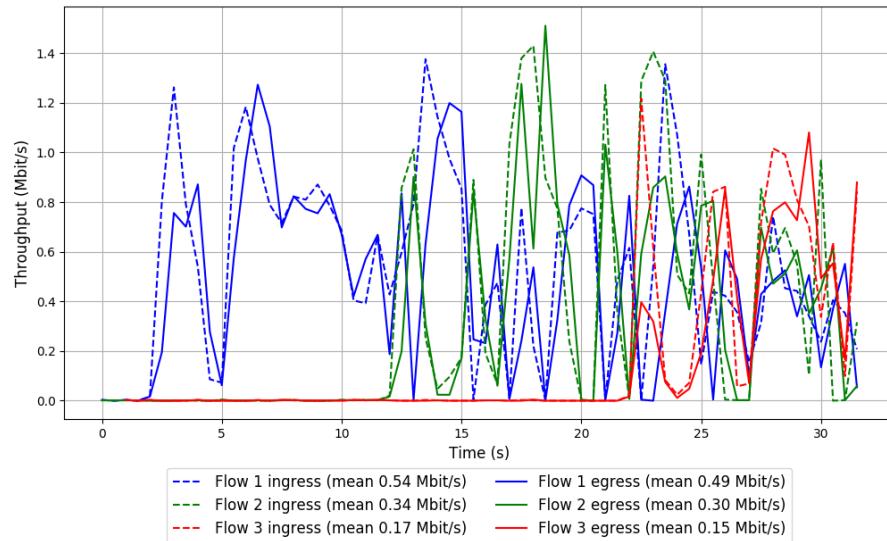


Run 3: Statistics of WebRTC media

```
Start at: 2017-12-05 08:35:17
End at: 2017-12-05 08:35:47
Local clock offset: 4.273 ms
Remote clock offset: -16.291 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 368.081 ms
Loss rate: 11.49%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 366.966 ms
Loss rate: 9.72%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 369.651 ms
Loss rate: 12.75%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 364.294 ms
Loss rate: 14.73%
```

Run 3: Report of WebRTC media — Data Link

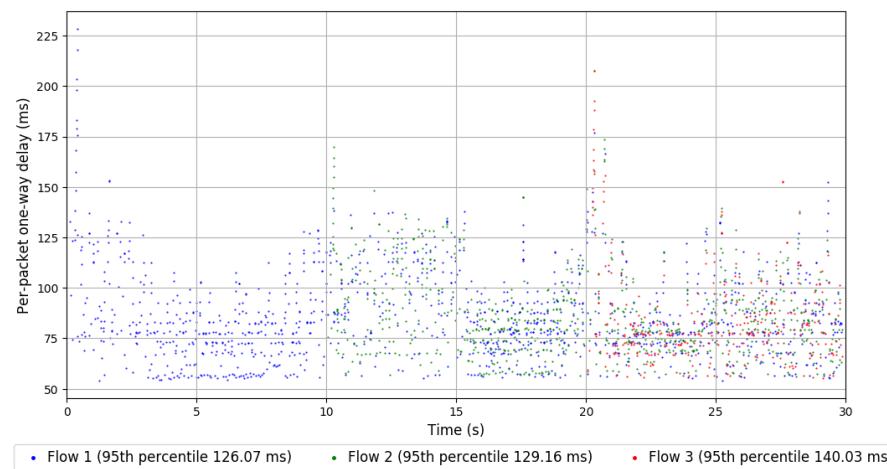
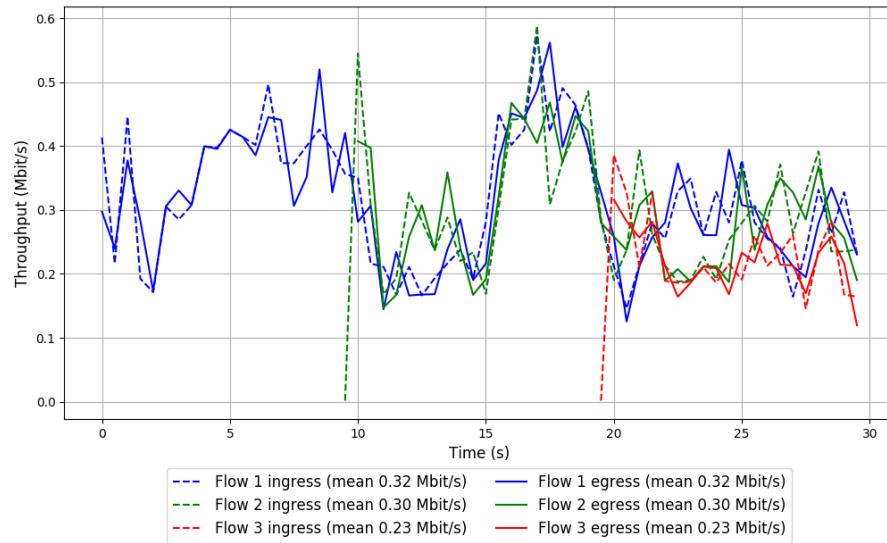


Run 1: Statistics of Sprout

```
Start at: 2017-12-05 08:13:09
End at: 2017-12-05 08:13:39
Local clock offset: 1.05 ms
Remote clock offset: -17.021 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 127.593 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 126.073 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 129.155 ms
Loss rate: 0.81%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 140.030 ms
Loss rate: 3.02%
```

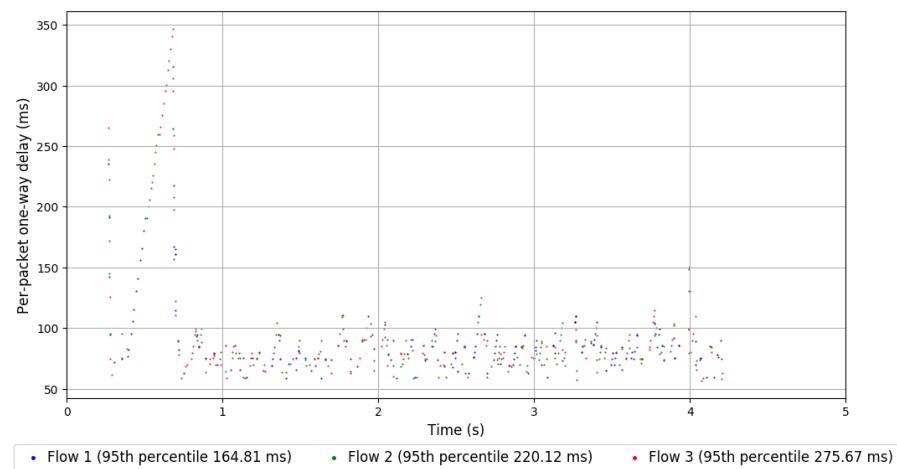
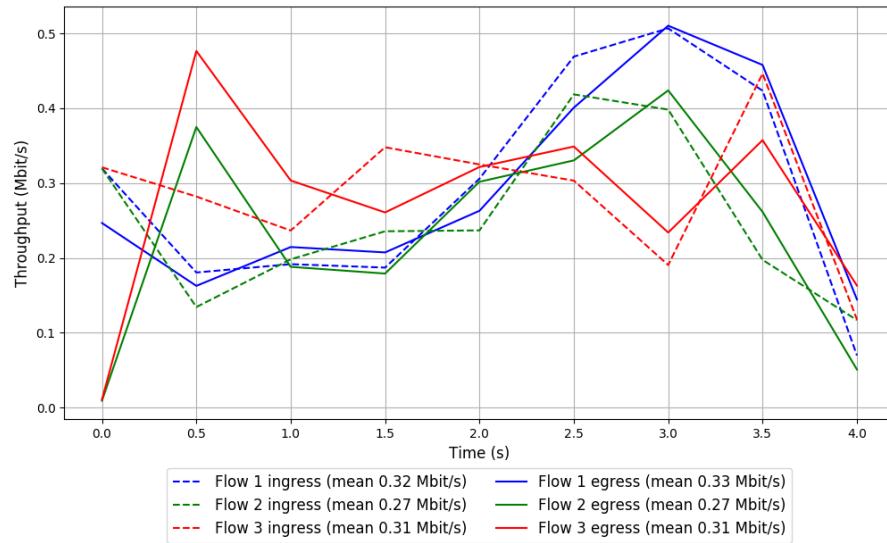
Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2017-12-05 08:28:40
End at: 2017-12-05 08:29:10
Local clock offset: 3.314 ms
Remote clock offset: -15.806 ms

Run 2: Report of Sprout — Data Link

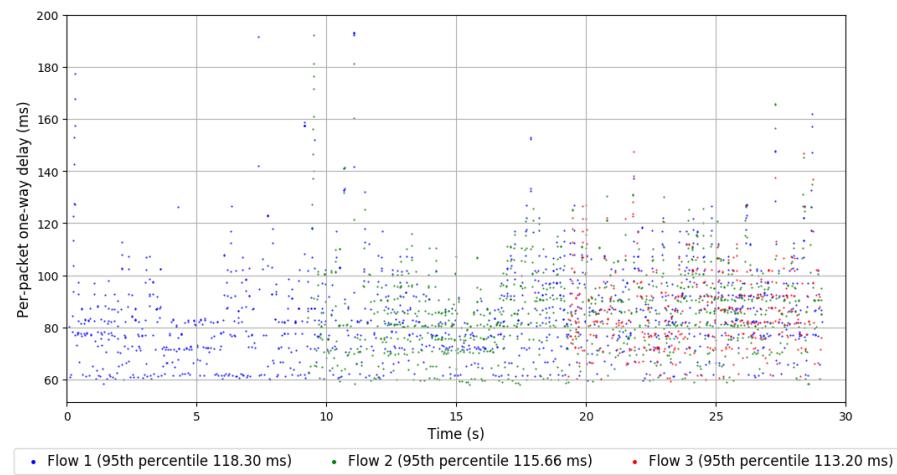
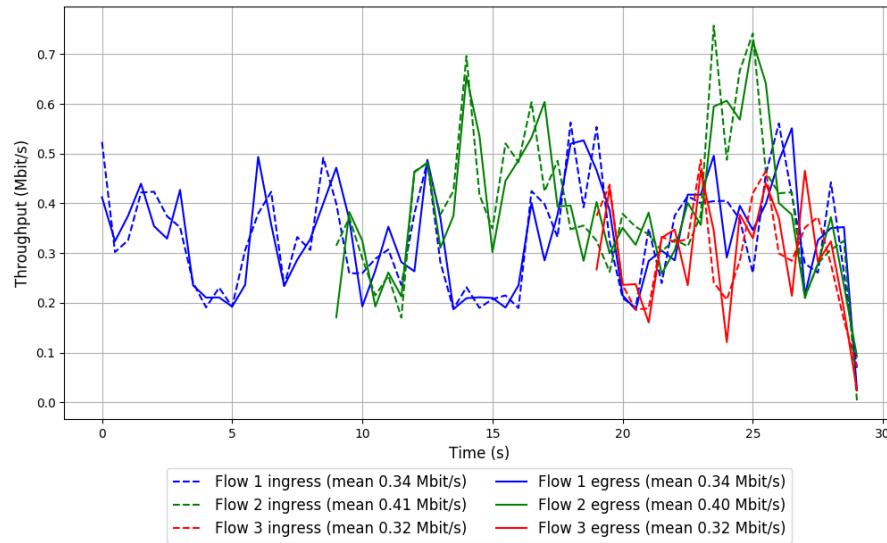


Run 3: Statistics of Sprout

```
Start at: 2017-12-05 08:44:08
End at: 2017-12-05 08:44:38
Local clock offset: 4.706 ms
Remote clock offset: -16.756 ms

# Below is generated by plot.py at 2017-12-05 09:33:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 117.610 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 118.298 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 115.656 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 113.200 ms
Loss rate: 2.21%
```

Run 3: Report of Sprout — Data Link

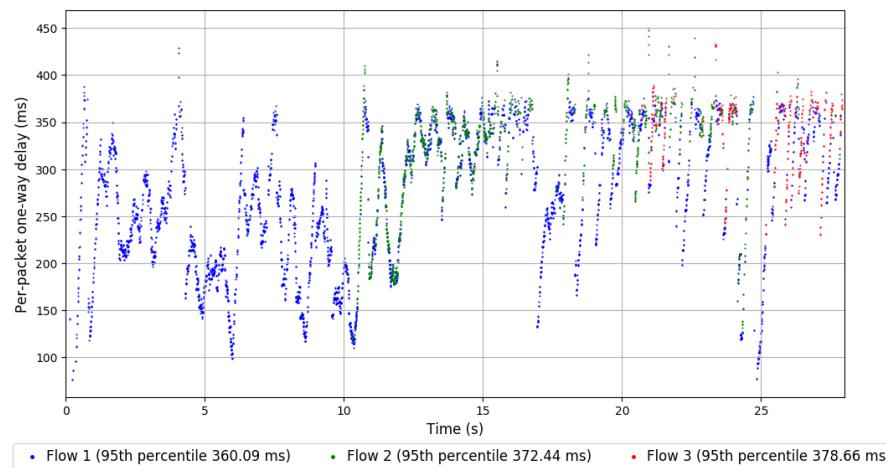
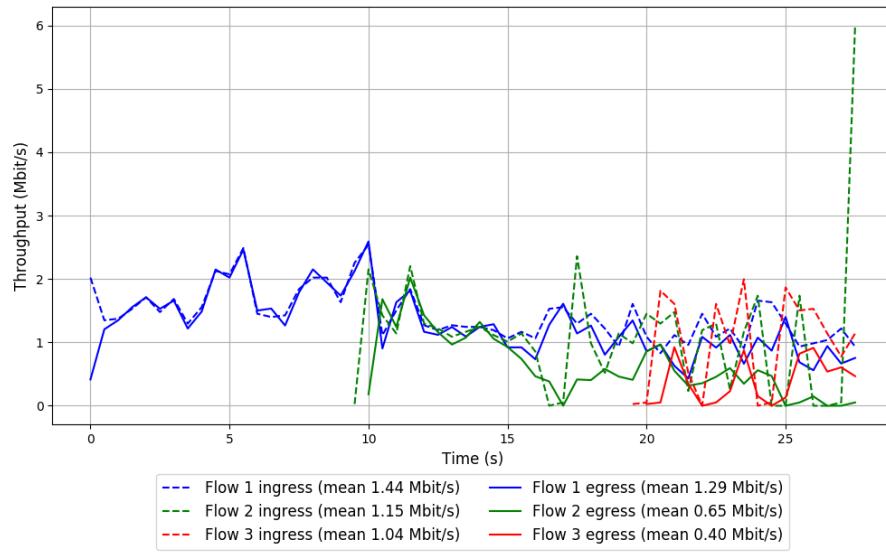


Run 1: Statistics of TaoVA-100x

```
Start at: 2017-12-05 08:08:43
End at: 2017-12-05 08:09:13
Local clock offset: 0.943 ms
Remote clock offset: -18.504 ms

# Below is generated by plot.py at 2017-12-05 09:34:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 365.770 ms
Loss rate: 27.23%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 360.093 ms
Loss rate: 10.89%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 372.441 ms
Loss rate: 44.78%
-- Flow 3:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 378.662 ms
Loss rate: 63.04%
```

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

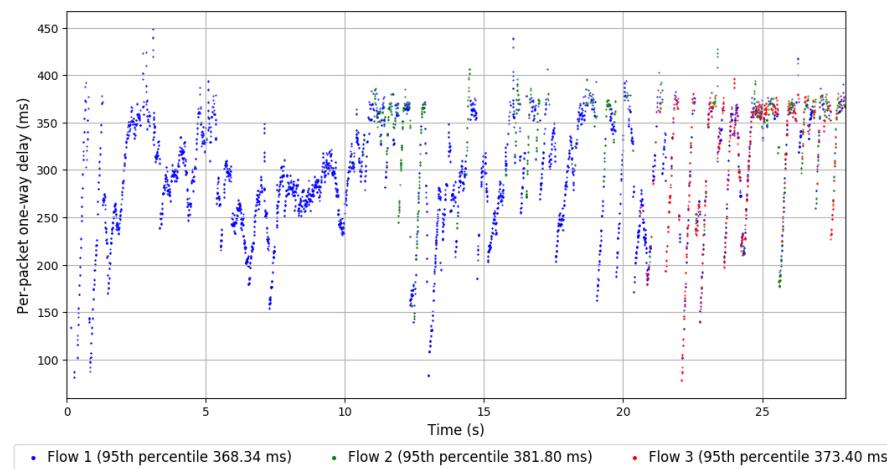
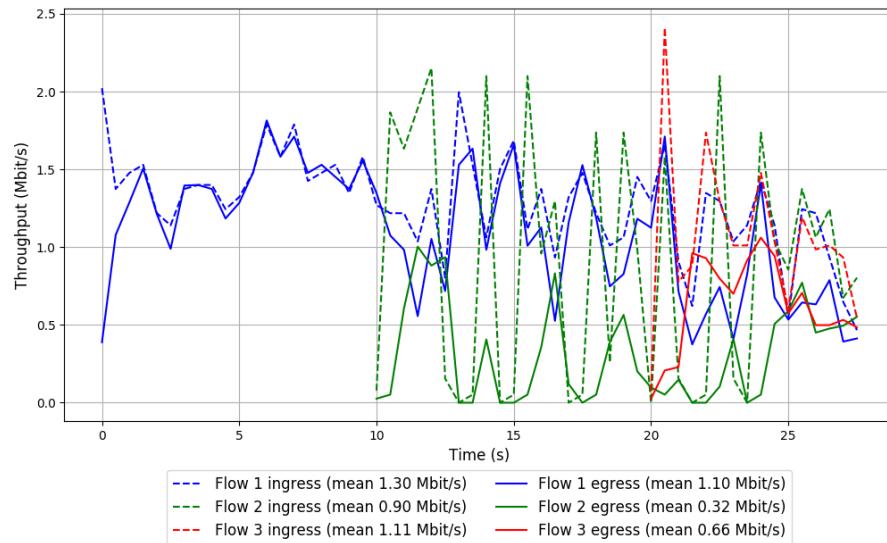


Run 2: Statistics of TaoVA-100x

```
Start at: 2017-12-05 08:24:14
End at: 2017-12-05 08:24:44
Local clock offset: 5.295 ms
Remote clock offset: -17.904 ms

# Below is generated by plot.py at 2017-12-05 09:34:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 371.570 ms
Loss rate: 31.80%
-- Flow 1:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 368.343 ms
Loss rate: 14.99%
-- Flow 2:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 381.804 ms
Loss rate: 64.99%
-- Flow 3:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 373.403 ms
Loss rate: 40.72%
```

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

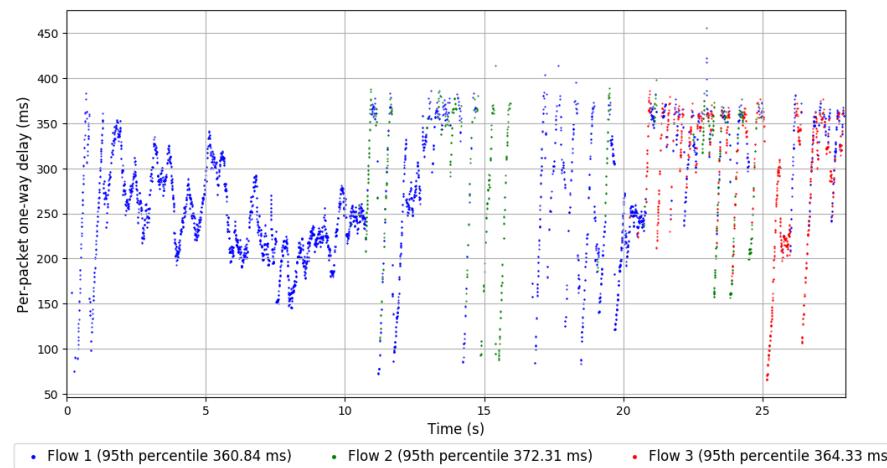
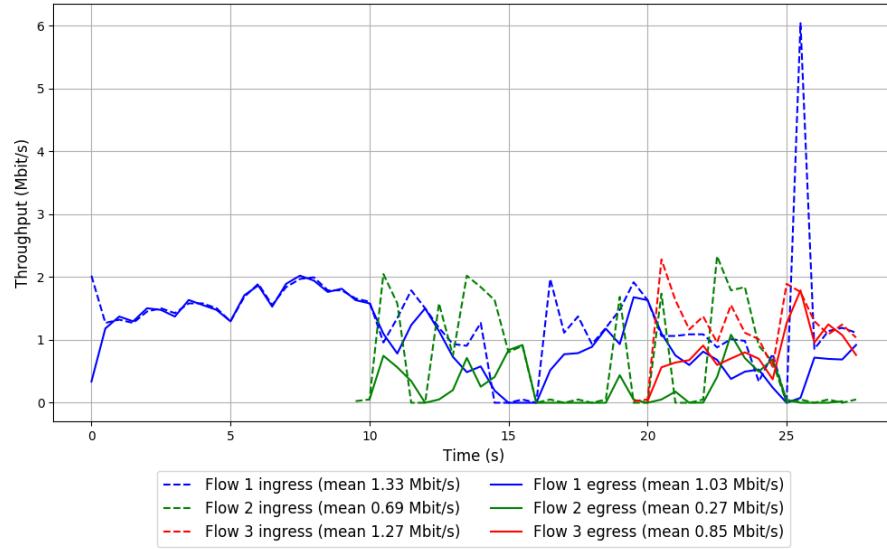


Run 3: Statistics of TaoVA-100x

```
Start at: 2017-12-05 08:39:43
End at: 2017-12-05 08:40:13
Local clock offset: 2.01 ms
Remote clock offset: -14.828 ms

# Below is generated by plot.py at 2017-12-05 09:34:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 363.246 ms
Loss rate: 33.12%
-- Flow 1:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 360.842 ms
Loss rate: 23.06%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 372.307 ms
Loss rate: 62.20%
-- Flow 3:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 364.327 ms
Loss rate: 34.73%
```

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

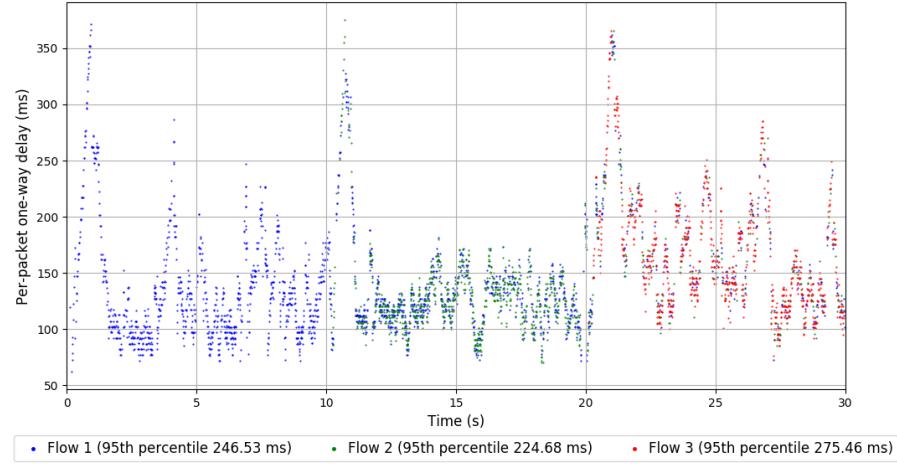
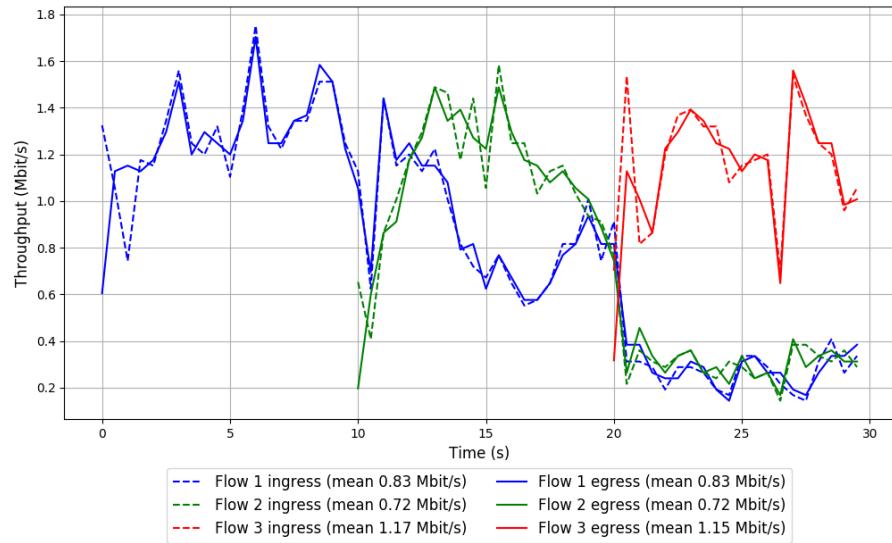


Run 1: Statistics of TCP Vegas

```
Start at: 2017-12-05 08:15:21
End at: 2017-12-05 08:15:51
Local clock offset: 2.687 ms
Remote clock offset: -17.919 ms

# Below is generated by plot.py at 2017-12-05 09:34:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 246.764 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 246.534 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 224.681 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 275.456 ms
Loss rate: 2.28%
```

Run 1: Report of TCP Vegas — Data Link

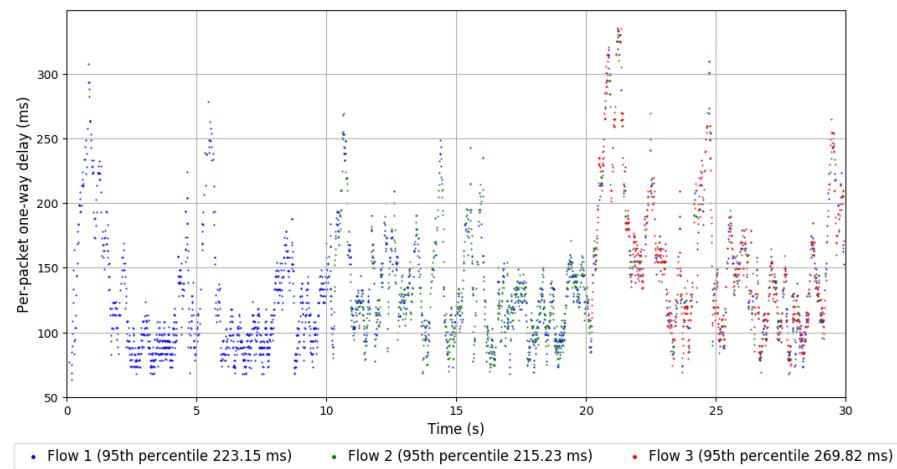
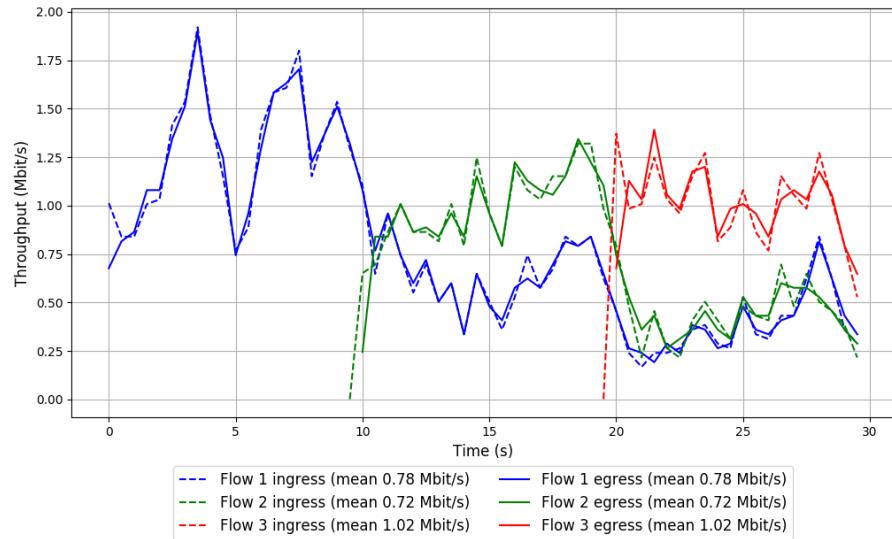


Run 2: Statistics of TCP Vegas

```
Start at: 2017-12-05 08:30:51
End at: 2017-12-05 08:31:21
Local clock offset: 2.881 ms
Remote clock offset: -16.275 ms

# Below is generated by plot.py at 2017-12-05 09:34:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 235.164 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 223.152 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 215.228 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 269.821 ms
Loss rate: 0.83%
```

Run 2: Report of TCP Vegas — Data Link

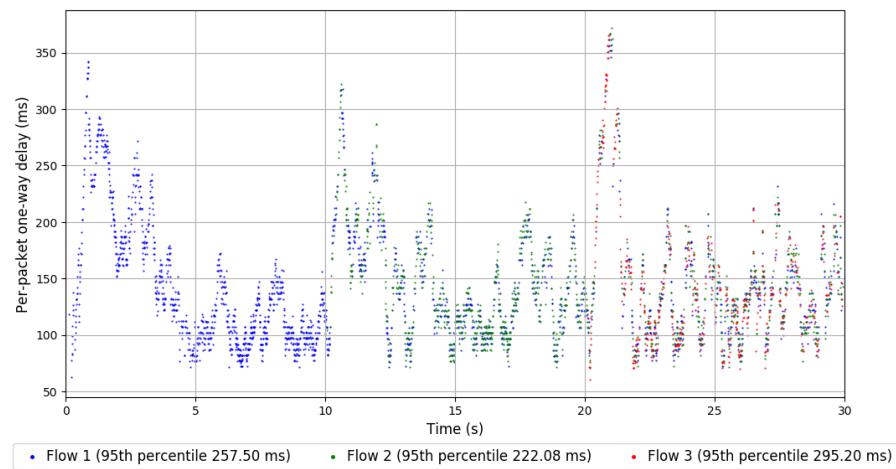
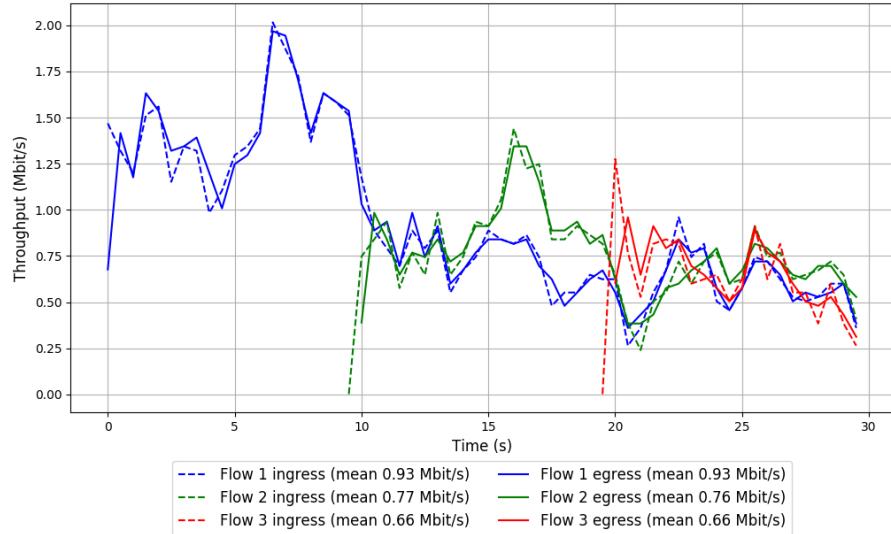


Run 3: Statistics of TCP Vegas

```
Start at: 2017-12-05 08:46:20
End at: 2017-12-05 08:46:50
Local clock offset: 3.615 ms
Remote clock offset: -17.387 ms

# Below is generated by plot.py at 2017-12-05 09:34:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 260.289 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 257.503 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 222.078 ms
Loss rate: 0.47%
-- Flow 3:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 295.200 ms
Loss rate: 1.10%
```

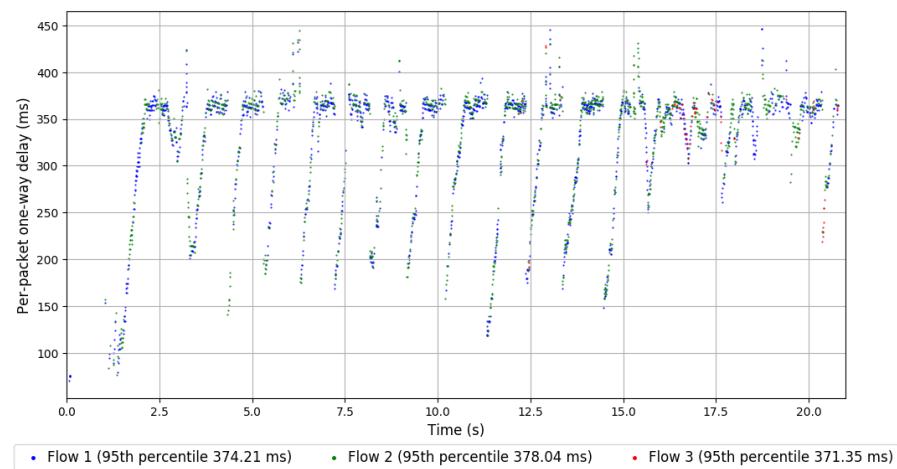
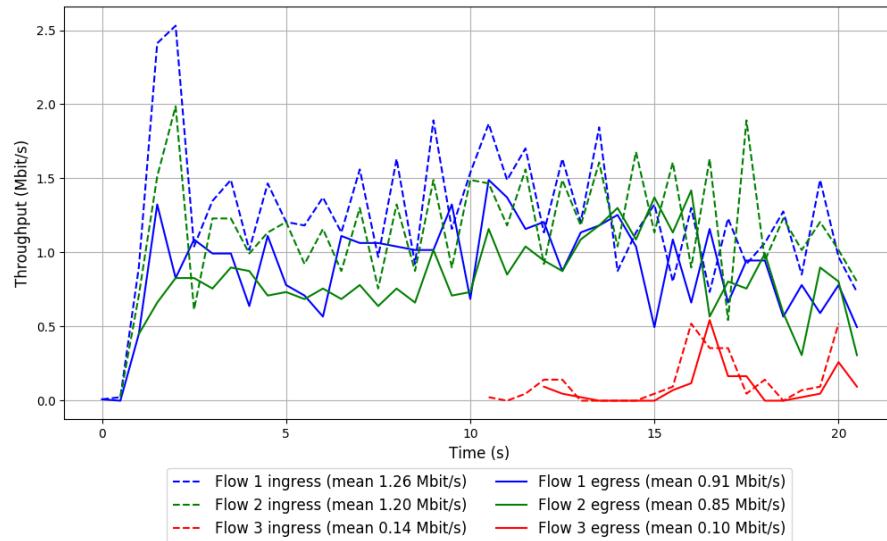
Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2017-12-05 08:10:56
End at: 2017-12-05 08:11:26
Local clock offset: 1.923 ms
Remote clock offset: -21.14 ms

Run 1: Report of Verus — Data Link

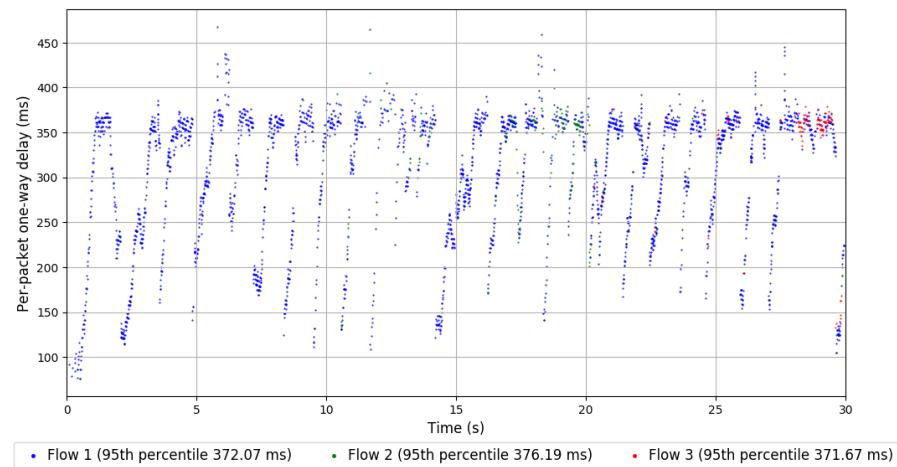
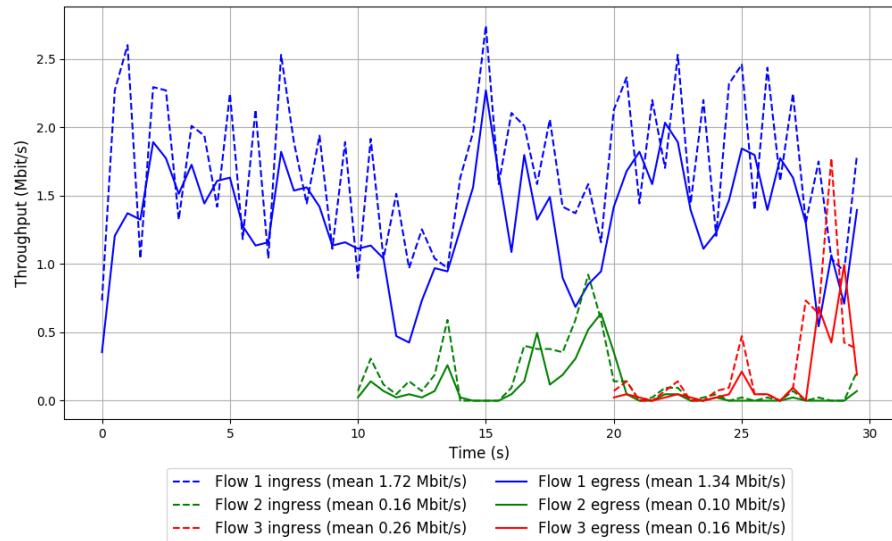


Run 2: Statistics of Verus

```
Start at: 2017-12-05 08:26:27
End at: 2017-12-05 08:26:57
Local clock offset: 4.39 ms
Remote clock offset: -15.968 ms

# Below is generated by plot.py at 2017-12-05 09:34:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.45 Mbit/s
95th percentile per-packet one-way delay: 372.327 ms
Loss rate: 24.12%
-- Flow 1:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 372.067 ms
Loss rate: 22.26%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 376.191 ms
Loss rate: 39.08%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 371.672 ms
Loss rate: 43.18%
```

Run 2: Report of Verus — Data Link

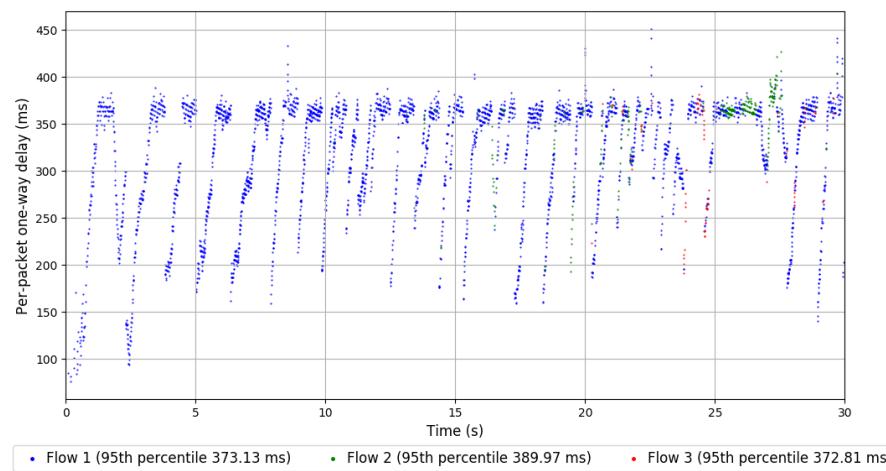
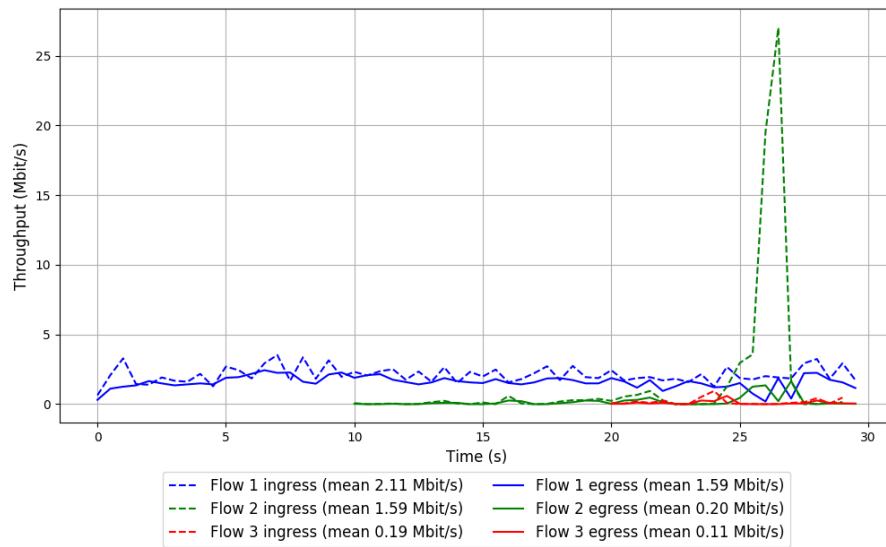


Run 3: Statistics of Verus

```
Start at: 2017-12-05 08:41:55
End at: 2017-12-05 08:42:25
Local clock offset: 4.615 ms
Remote clock offset: -16.667 ms

# Below is generated by plot.py at 2017-12-05 09:34:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 373.981 ms
Loss rate: 45.23%
-- Flow 1:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 373.126 ms
Loss rate: 25.00%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 389.969 ms
Loss rate: 87.09%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 372.805 ms
Loss rate: 42.76%
```

Run 3: Report of Verus — Data Link

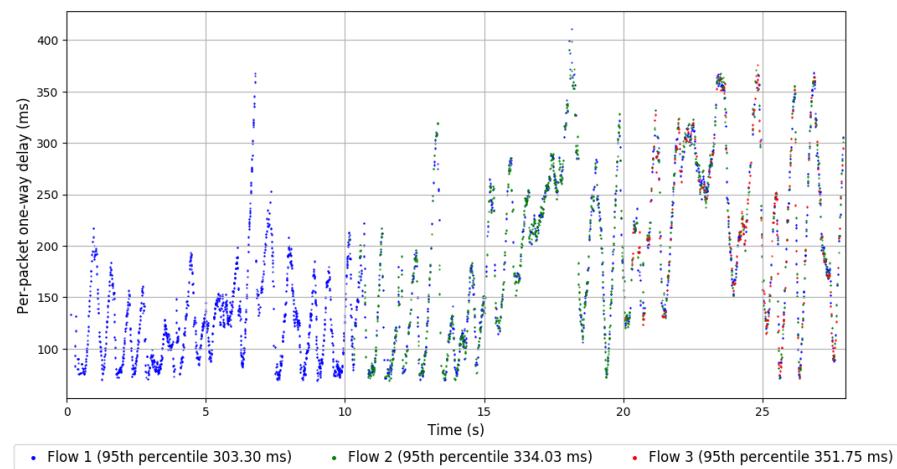
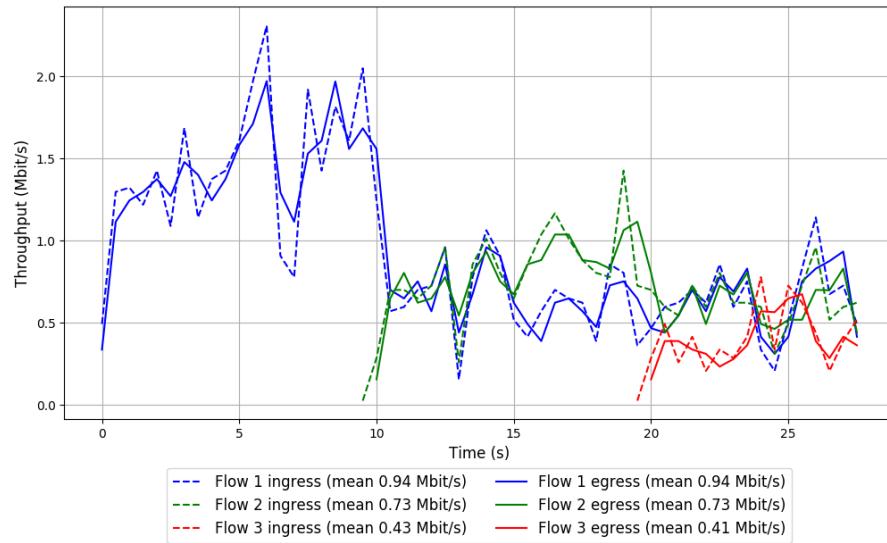


Run 1: Statistics of Copa

```
Start at: 2017-12-05 08:05:24
End at: 2017-12-05 08:05:54
Local clock offset: 3.993 ms
Remote clock offset: -16.914 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.52 Mbit/s
95th percentile per-packet one-way delay: 319.424 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 303.300 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 334.034 ms
Loss rate: 2.04%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 351.745 ms
Loss rate: 5.56%
```

Run 1: Report of Copa — Data Link

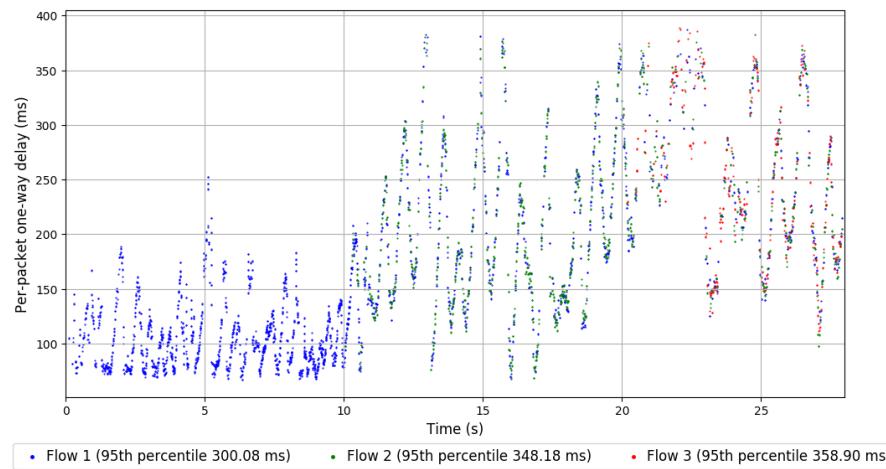
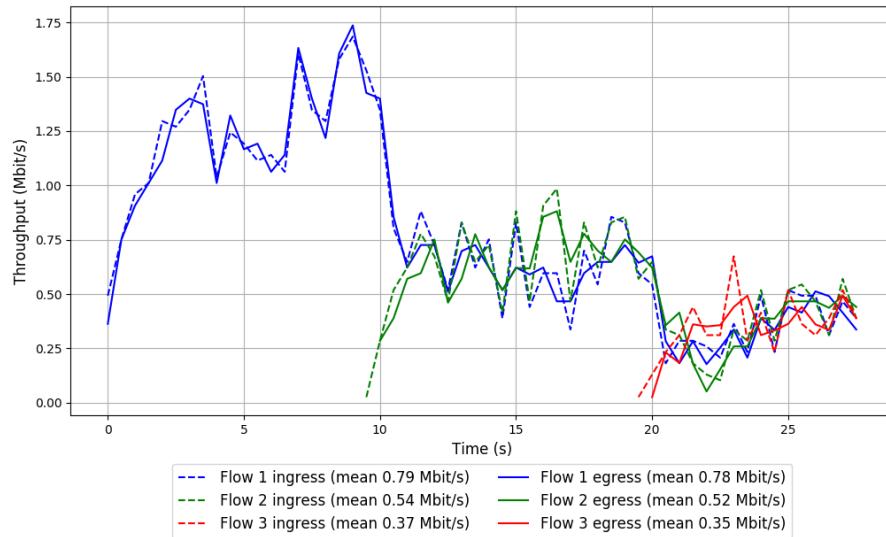


Run 2: Statistics of Copa

```
Start at: 2017-12-05 08:20:53
End at: 2017-12-05 08:21:23
Local clock offset: 3.272 ms
Remote clock offset: -17.232 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 337.771 ms
Loss rate: 2.70%
-- Flow 1:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 300.083 ms
Loss rate: 1.63%
-- Flow 2:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 348.177 ms
Loss rate: 3.94%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 358.901 ms
Loss rate: 6.67%
```

Run 2: Report of Copa — Data Link

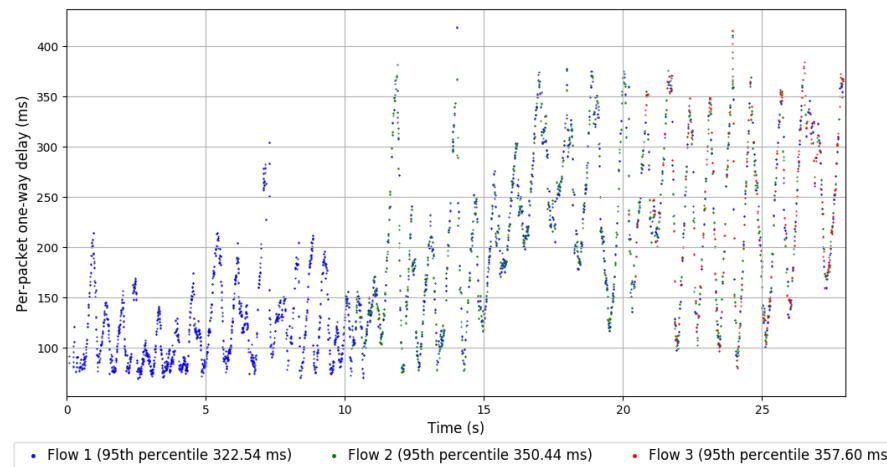
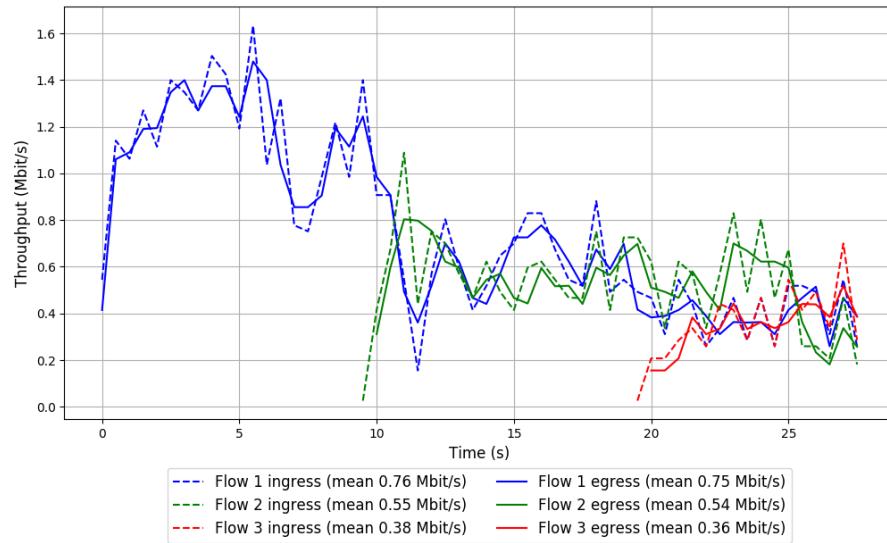


Run 3: Statistics of Copa

```
Start at: 2017-12-05 08:36:23
End at: 2017-12-05 08:36:53
Local clock offset: 6.535 ms
Remote clock offset: -16.531 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 341.302 ms
Loss rate: 2.36%
-- Flow 1:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 322.544 ms
Loss rate: 1.44%
-- Flow 2:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 350.440 ms
Loss rate: 3.00%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 357.602 ms
Loss rate: 6.82%
```

Run 3: Report of Copa — Data Link

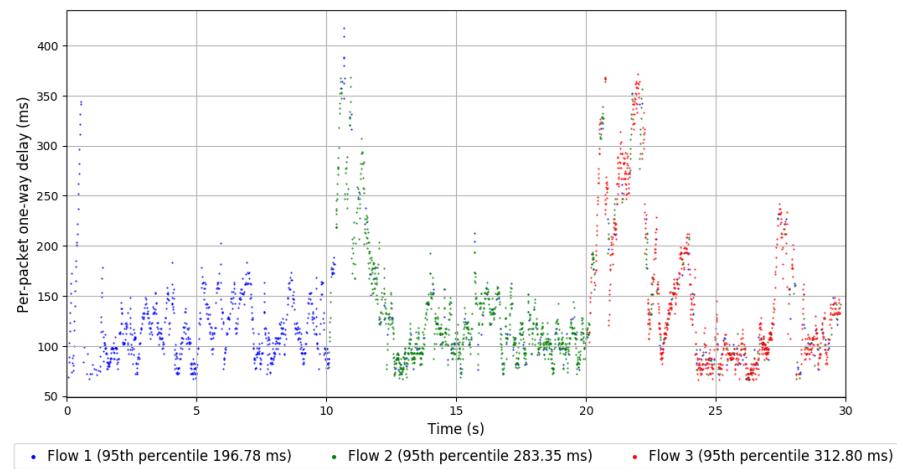
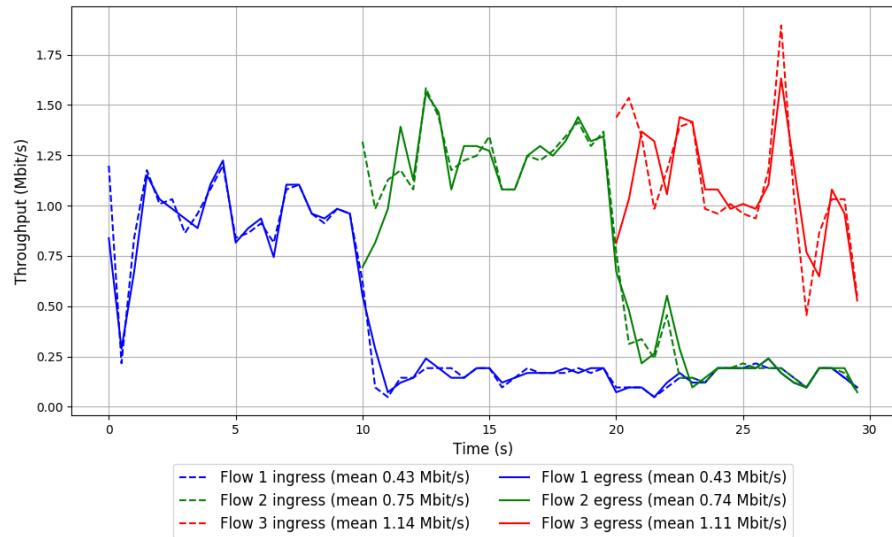


Run 1: Statistics of Indigo

```
Start at: 2017-12-05 08:02:04
End at: 2017-12-05 08:02:34
Local clock offset: 2.545 ms
Remote clock offset: -15.977 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 283.186 ms
Loss rate: 1.96%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 196.777 ms
Loss rate: 1.32%
-- Flow 2:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 283.352 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 312.798 ms
Loss rate: 3.14%
```

Run 1: Report of Indigo — Data Link

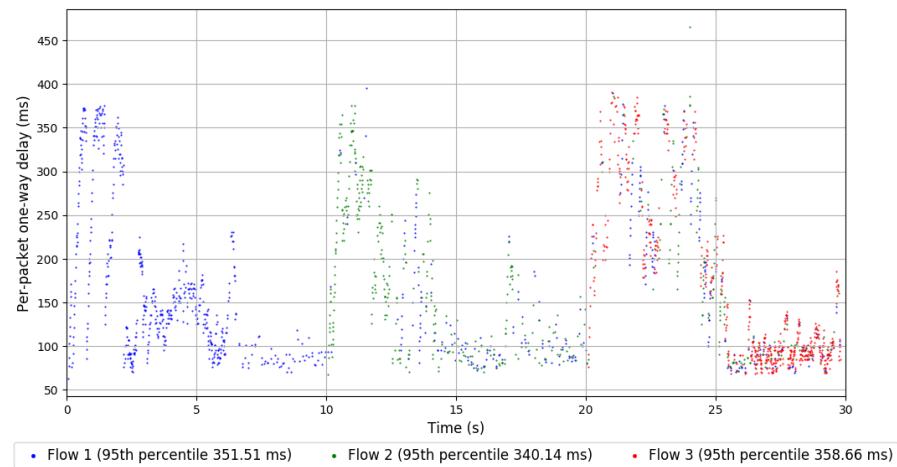
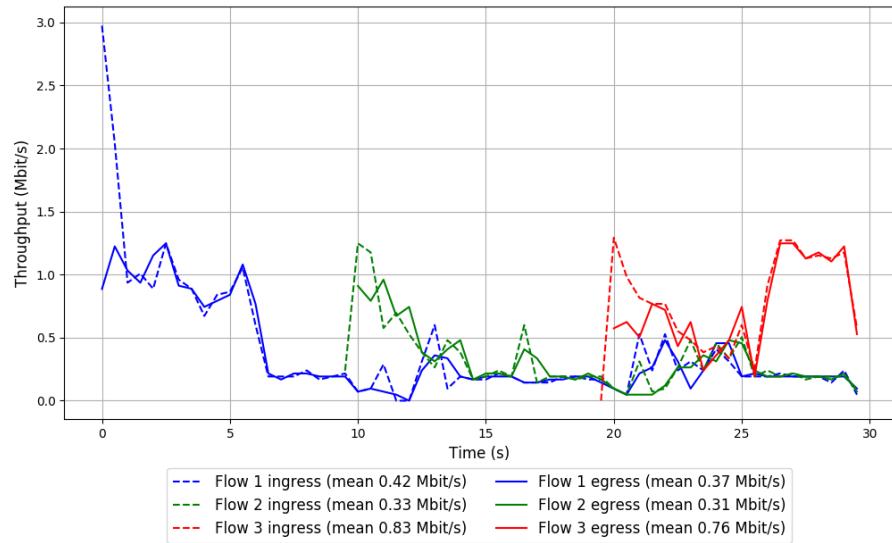


Run 2: Statistics of Indigo

```
Start at: 2017-12-05 08:17:34
End at: 2017-12-05 08:18:04
Local clock offset: 4.904 ms
Remote clock offset: -16.523 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 353.902 ms
Loss rate: 9.69%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 351.509 ms
Loss rate: 11.97%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 340.141 ms
Loss rate: 5.53%
-- Flow 3:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 358.659 ms
Loss rate: 9.59%
```

Run 2: Report of Indigo — Data Link

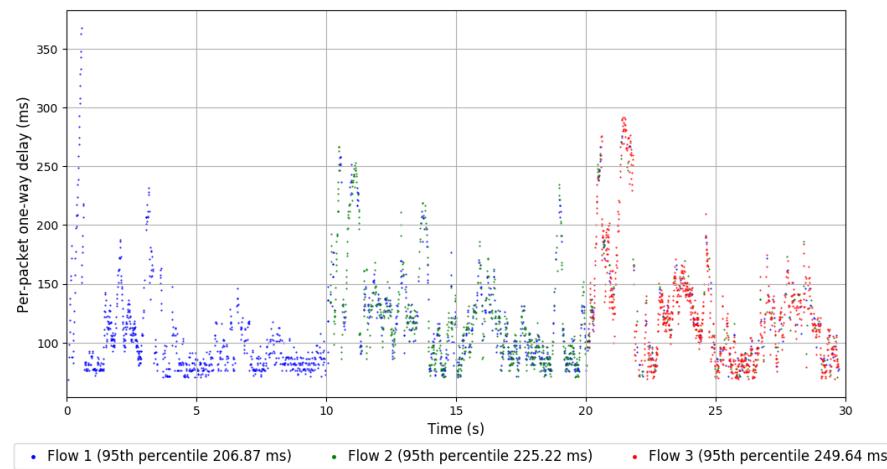
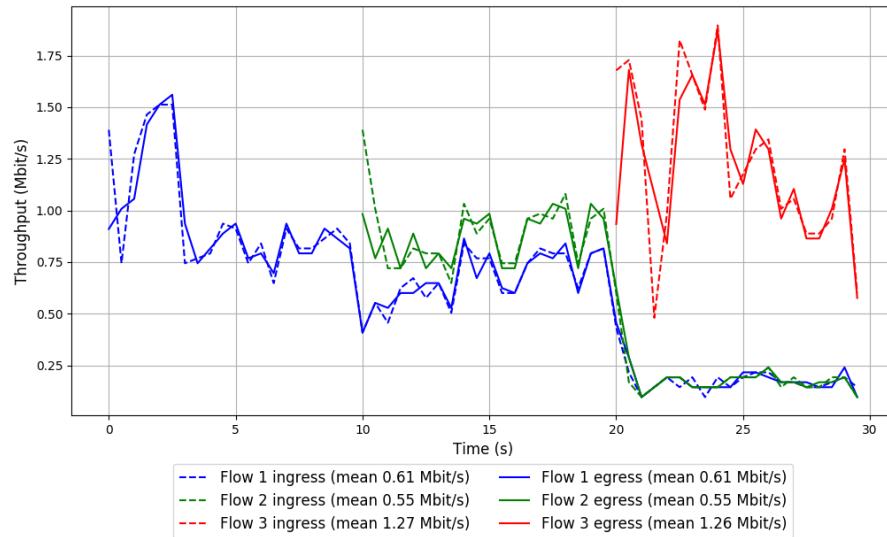


Run 3: Statistics of Indigo

```
Start at: 2017-12-05 08:33:03
End at: 2017-12-05 08:33:33
Local clock offset: 6.462 ms
Remote clock offset: -16.484 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 219.876 ms
Loss rate: 1.30%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 206.870 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 225.222 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 249.642 ms
Loss rate: 2.33%
```

Run 3: Report of Indigo — Data Link

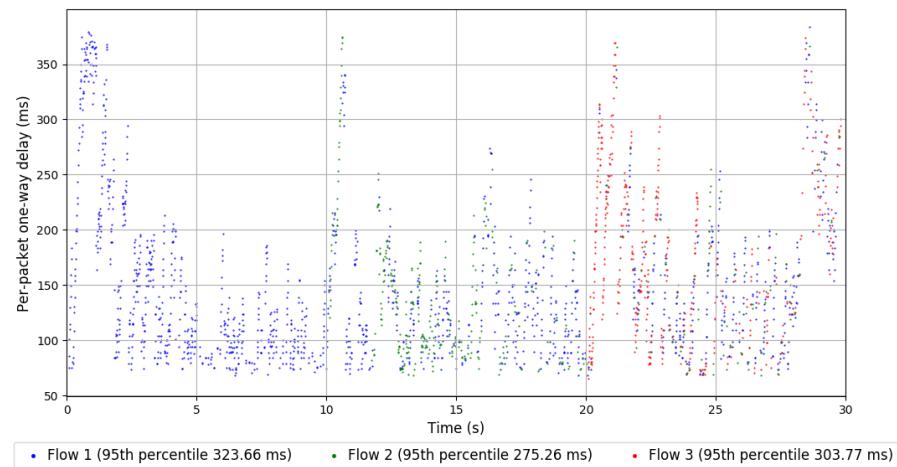
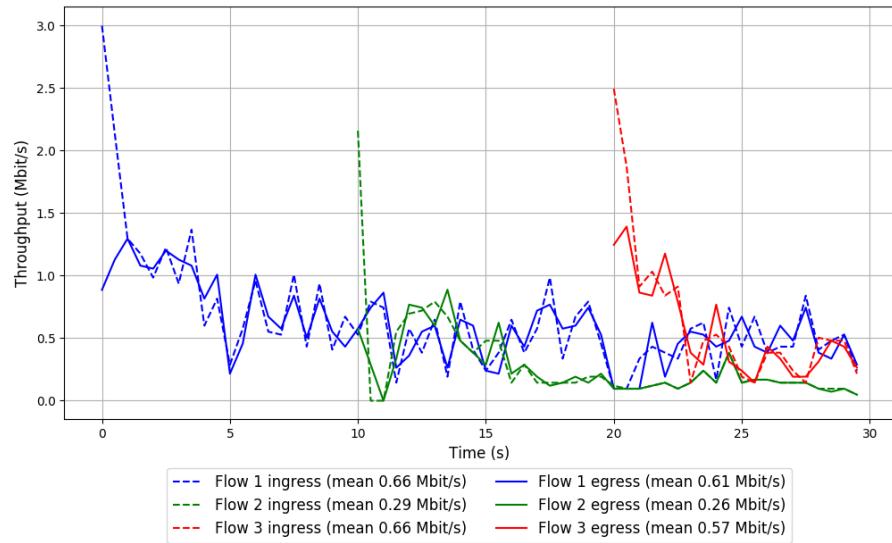


```
Run 1: Statistics of Indigo-calib

Start at: 2017-12-05 08:00:59
End at: 2017-12-05 08:01:29
Local clock offset: 3.47 ms
Remote clock offset: -16.834 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.97 Mbit/s
95th percentile per-packet one-way delay: 310.056 ms
Loss rate: 9.84%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 323.661 ms
Loss rate: 8.08%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 275.262 ms
Loss rate: 11.75%
-- Flow 3:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 303.768 ms
Loss rate: 13.49%
```

Run 1: Report of Indigo-calib — Data Link

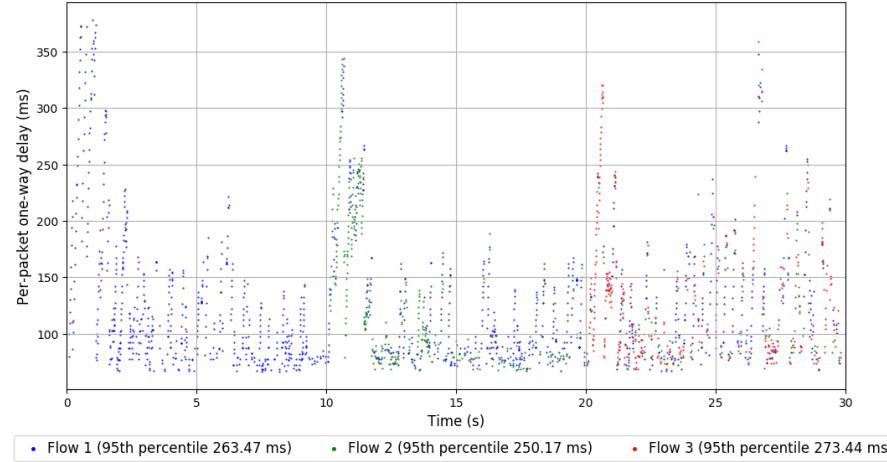
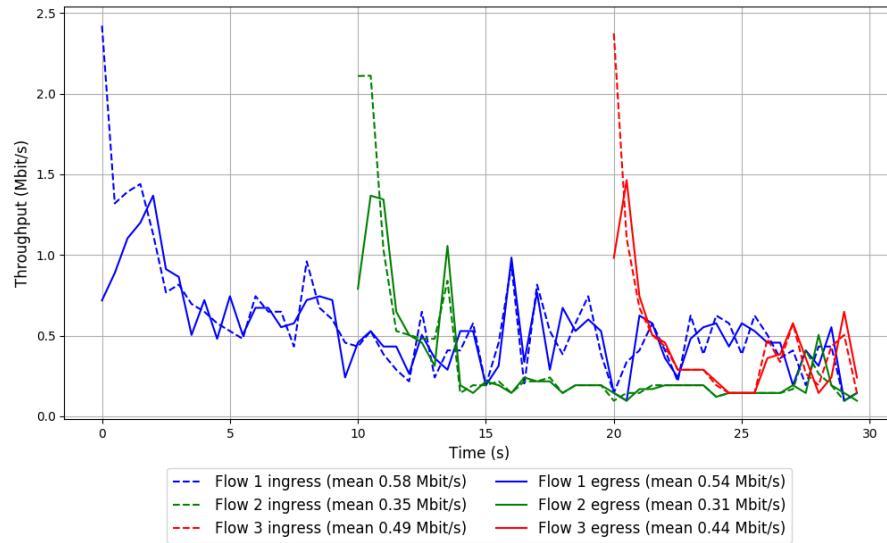


Run 2: Statistics of Indigo-calib

```
Start at: 2017-12-05 08:16:28
End at: 2017-12-05 08:16:58
Local clock offset: 3.162 ms
Remote clock offset: -16.679 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 262.505 ms
Loss rate: 8.37%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 263.473 ms
Loss rate: 6.80%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 250.166 ms
Loss rate: 11.63%
-- Flow 3:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 273.437 ms
Loss rate: 9.35%
```

Run 2: Report of Indigo-calib — Data Link



Run 3: Statistics of Indigo-calib

```
Start at: 2017-12-05 08:31:58
End at: 2017-12-05 08:32:28
Local clock offset: 5.854 ms
Remote clock offset: -16.87 ms

# Below is generated by plot.py at 2017-12-05 09:34:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 267.140 ms
Loss rate: 8.28%
-- Flow 1:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 277.187 ms
Loss rate: 7.39%
-- Flow 2:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 229.450 ms
Loss rate: 8.27%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 269.039 ms
Loss rate: 12.66%
```

Run 3: Report of Indigo-calib — Data Link

