

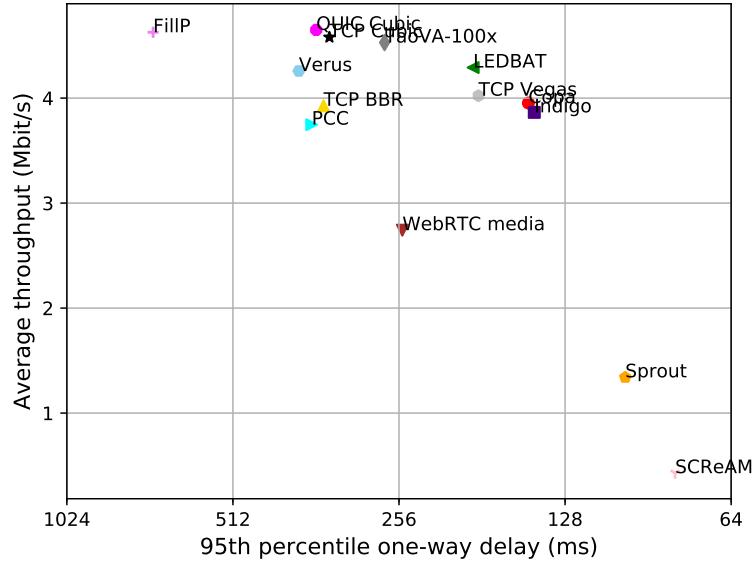
Pantheon Report

Generated at 2018-01-16 02:03:43 (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.

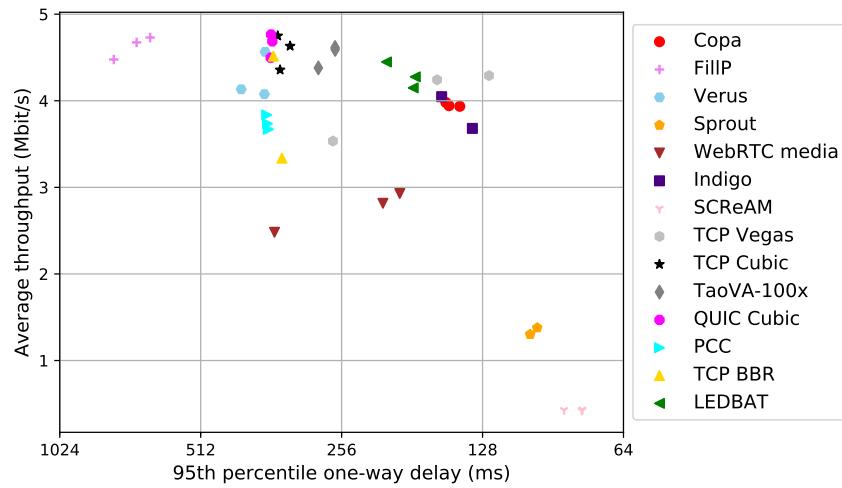
Git summary:

```
branch: master @ af8abdfa95588b0c5f2aeca9e856a1656b0c598
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
  M datagrump/sender.cc
third_party/fillp @ ec9585325218d5048c4d4152fa42240af54c6e67
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
  M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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/vivace @ 423cbca3e8ea1d599e7b5cf725835e8a2b6bfac6
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



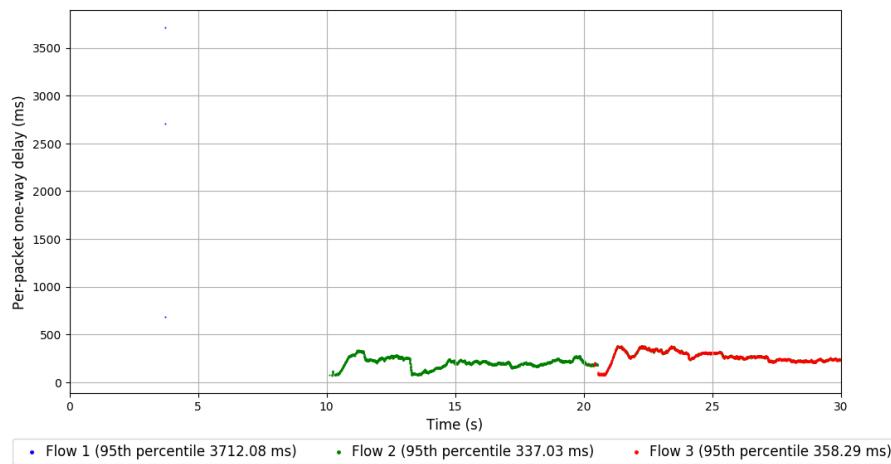
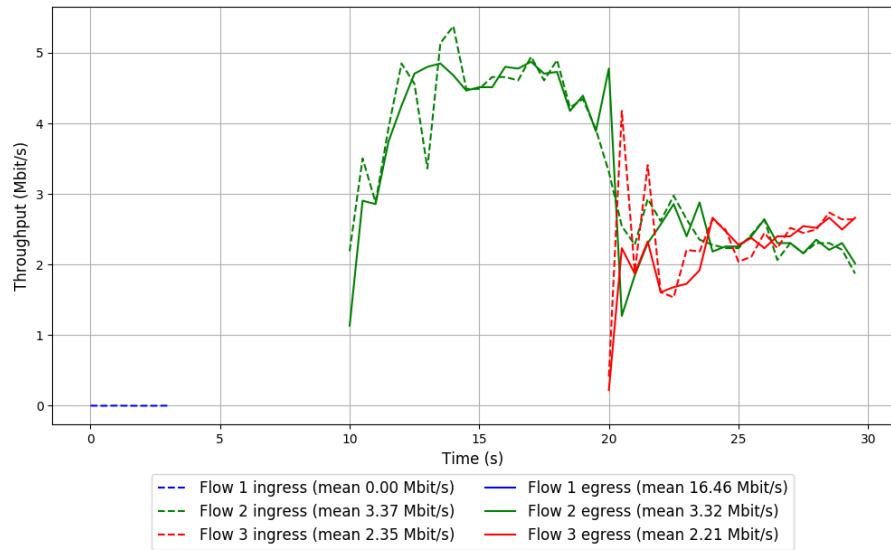
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	2	9.61	2.52	2.06	2033.23	348.26	359.10	0.56	1.76	7.21
TCP Cubic		3.58	1.19	0.64	342.55	336.28	292.68	0.96	2.13	3.54
LEDBAT		2.43	1.94	1.73	187.64	184.69	189.81	1.27	1.39	1.87
PCC		1.92	1.91	1.67	366.77	366.04	373.67	10.67	11.46	28.52
QUIC Cubic		3.32	1.42	1.22	360.34	362.74	365.33	2.14	3.87	7.36
SCReAM		0.22	0.21	0.22	81.33	79.24	82.64	0.47	0.54	1.00
WebRTC media		1.78	0.70	0.27	230.03	267.50	280.81	0.74	1.34	3.62
Sprout		0.71	0.67	0.57	97.66	99.78	99.32	1.69	1.41	1.24
TaoVA-100x		2.71	2.10	1.68	265.13	275.63	279.50	0.77	4.21	16.28
TCP Vegas		2.67	1.32	1.44	182.51	175.30	187.05	1.20	0.92	1.92
Verus		3.80	0.61	0.28	398.39	430.04	418.65	58.37	57.95	53.24
Copa		2.34	1.88	1.45	135.43	159.24	177.30	0.32	0.62	1.67
FillP		2.77	1.77	2.19	392.49	819.68	731.35	91.63	96.40	97.79
Indigo	2	1.54	2.69	1.64	144.49	147.70	137.75	0.92	2.38	2.21

Run 1: Statistics of TCP BBR

```
Start at: 2018-01-16 00:39:03
End at: 2018-01-16 00:39:33
Local clock offset: -13.023 ms
Remote clock offset: -18.016 ms

# Below is generated by plot.py at 2018-01-16 02:02:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 343.382 ms
Loss rate: 3.22%
-- Flow 1:
Average throughput: 16.46 Mbit/s
95th percentile per-packet one-way delay: 3712.082 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.32 Mbit/s
95th percentile per-packet one-way delay: 337.027 ms
Loss rate: 1.68%
-- Flow 3:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 358.288 ms
Loss rate: 7.63%
```

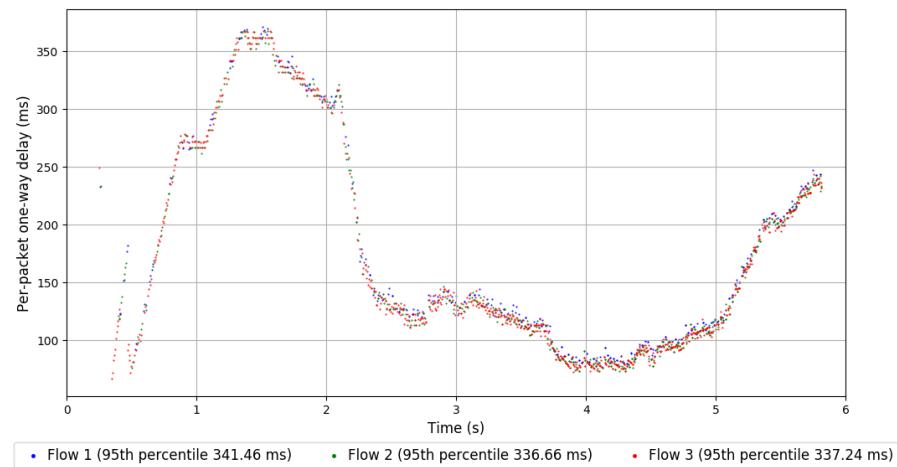
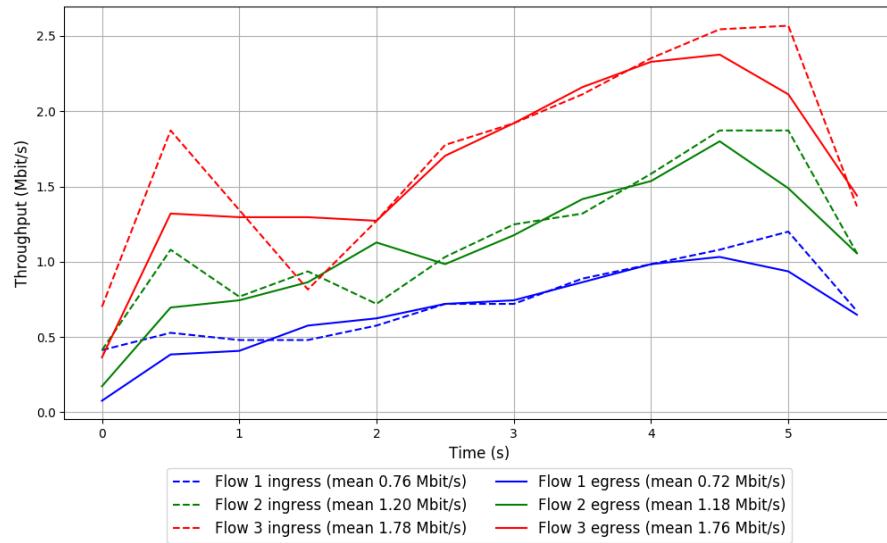
Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-01-16 00:55:38
End at: 2018-01-16 00:56:08
Local clock offset: -14.267 ms
Remote clock offset: -16.96 ms

Run 2: Report of TCP BBR — Data Link

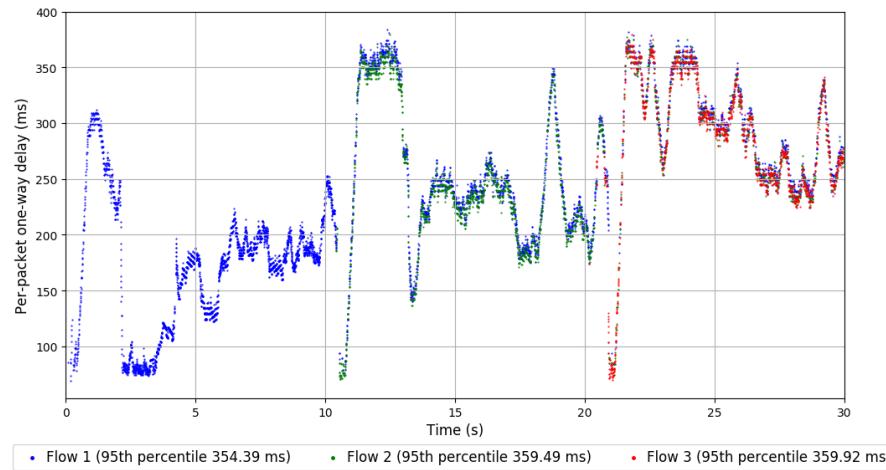
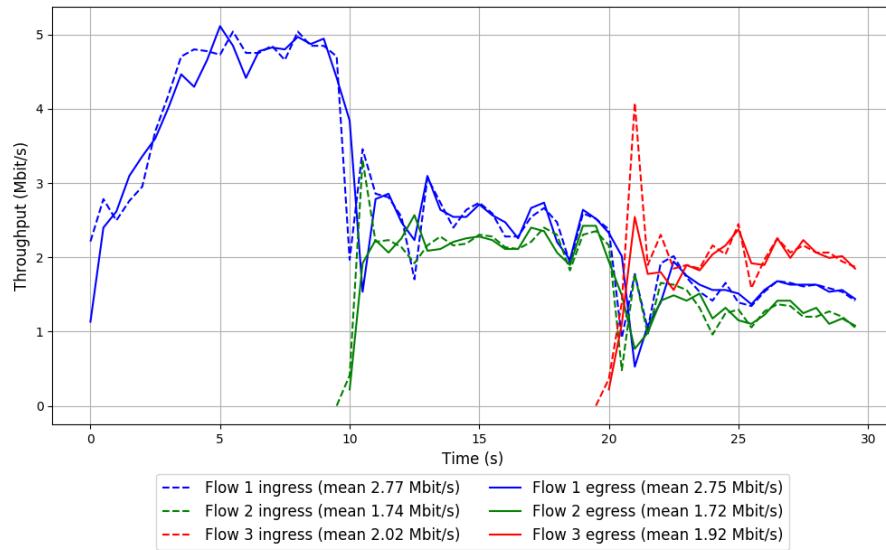


Run 3: Statistics of TCP BBR

```
Start at: 2018-01-16 01:12:11
End at: 2018-01-16 01:12:41
Local clock offset: -17.478 ms
Remote clock offset: -16.328 ms

# Below is generated by plot.py at 2018-01-16 02:02:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.52 Mbit/s
95th percentile per-packet one-way delay: 358.104 ms
Loss rate: 2.13%
-- Flow 1:
Average throughput: 2.75 Mbit/s
95th percentile per-packet one-way delay: 354.388 ms
Loss rate: 1.13%
-- Flow 2:
Average throughput: 1.72 Mbit/s
95th percentile per-packet one-way delay: 359.490 ms
Loss rate: 1.84%
-- Flow 3:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 359.916 ms
Loss rate: 6.80%
```

Run 3: Report of TCP BBR — Data Link

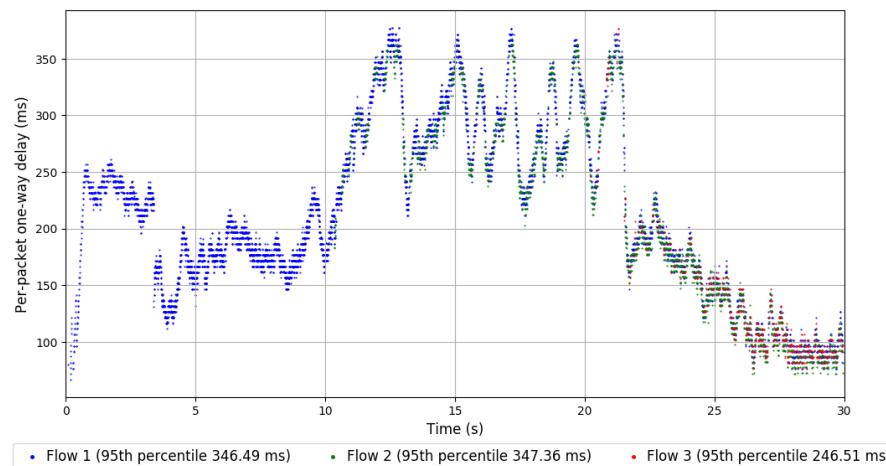
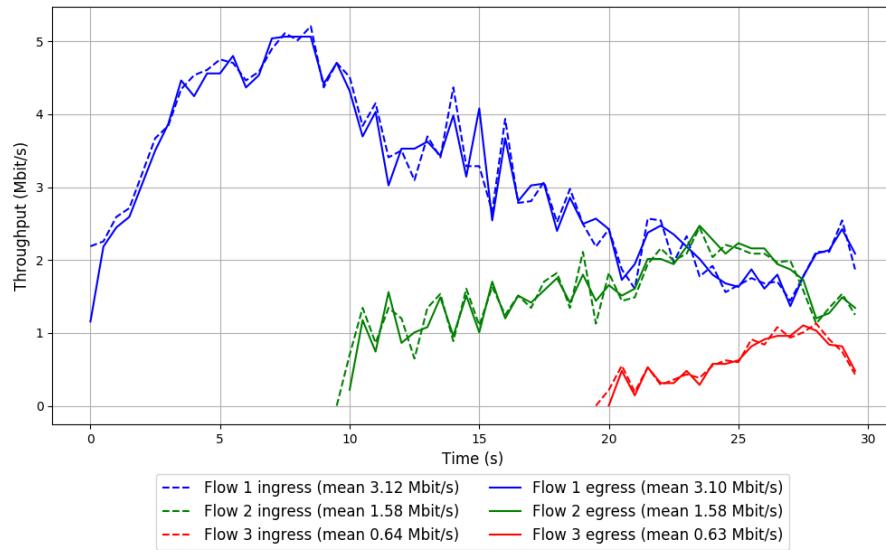


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2018-01-16 00:32:23
End at: 2018-01-16 00:32:53
Local clock offset: -12.632 ms
Remote clock offset: -15.049 ms

# Below is generated by plot.py at 2018-01-16 02:02:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.36 Mbit/s
95th percentile per-packet one-way delay: 346.485 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 346.486 ms
Loss rate: 0.91%
-- Flow 2:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 347.362 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 0.63 Mbit/s
95th percentile per-packet one-way delay: 246.506 ms
Loss rate: 3.77%
```

Run 1: Report of TCP Cubic — Data Link

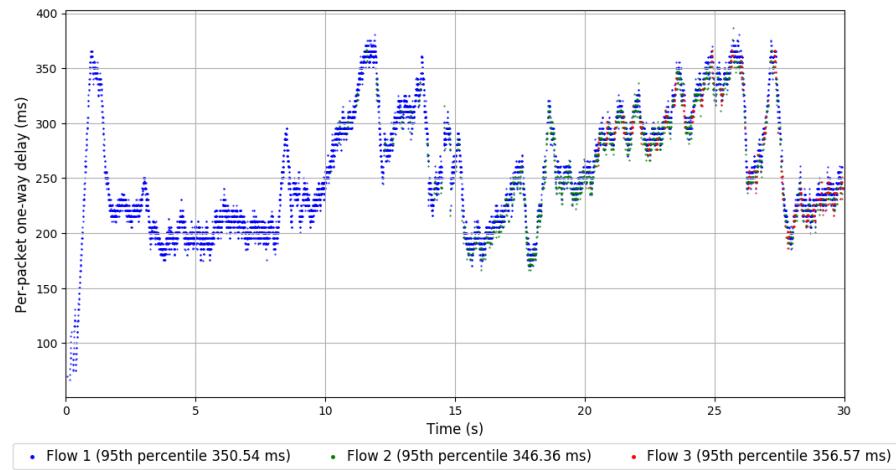
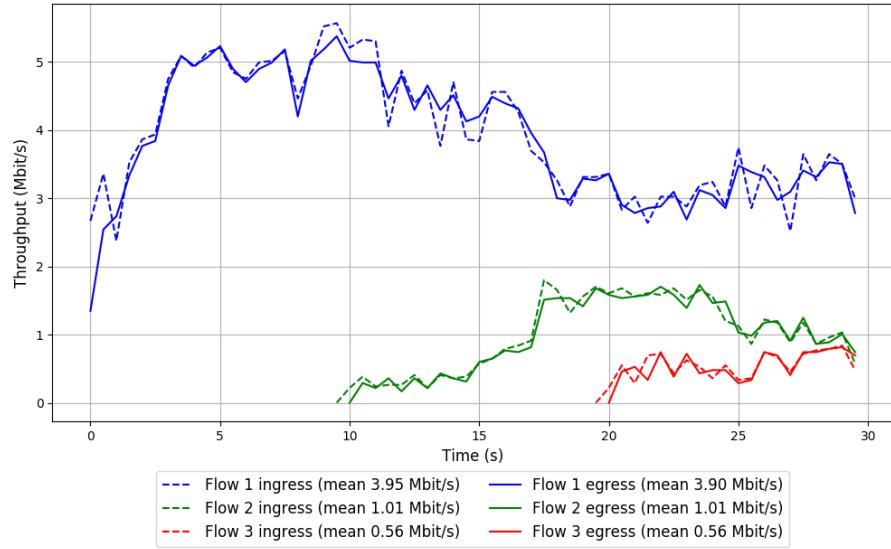


Run 2: Statistics of TCP Cubic

```
Start at: 2018-01-16 00:48:57
End at: 2018-01-16 00:49:27
Local clock offset: -17.374 ms
Remote clock offset: -17.256 ms

# Below is generated by plot.py at 2018-01-16 02:02:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.75 Mbit/s
95th percentile per-packet one-way delay: 350.583 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 3.90 Mbit/s
95th percentile per-packet one-way delay: 350.539 ms
Loss rate: 1.41%
-- Flow 2:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 346.357 ms
Loss rate: 2.07%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 356.572 ms
Loss rate: 2.80%
```

Run 2: Report of TCP Cubic — Data Link

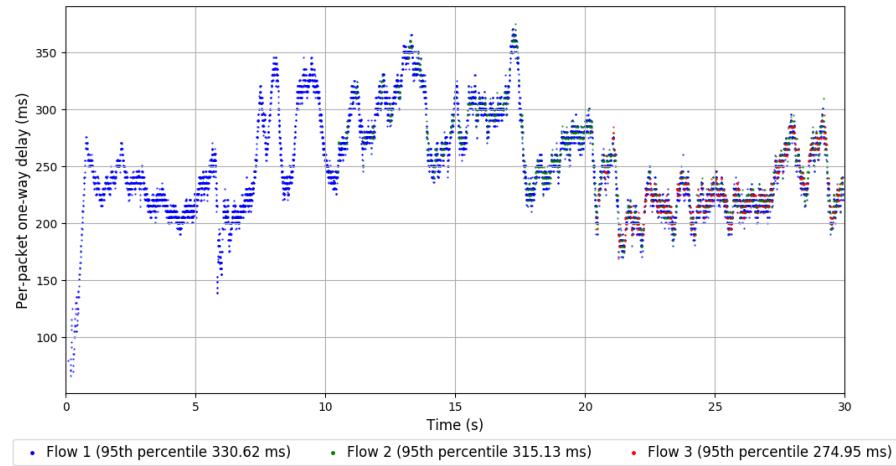
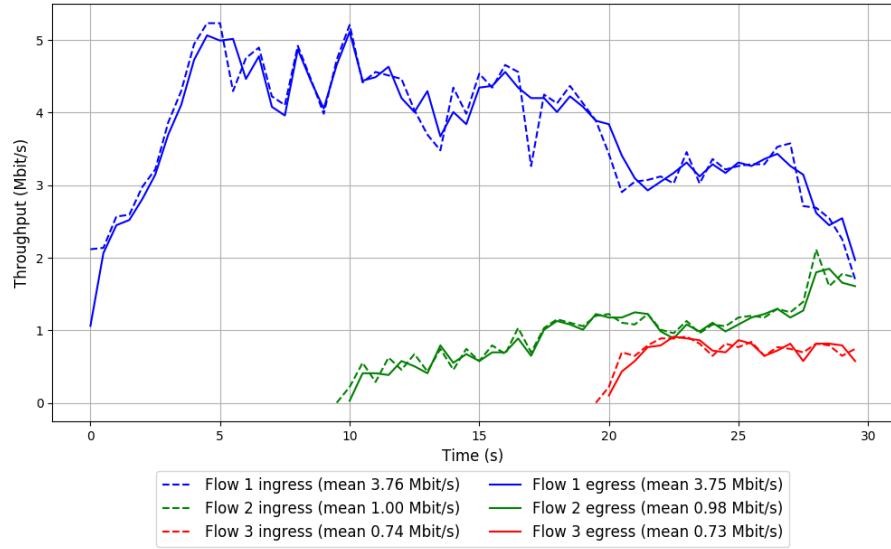


Run 3: Statistics of TCP Cubic

```
Start at: 2018-01-16 01:05:33
End at: 2018-01-16 01:06:03
Local clock offset: -17.705 ms
Remote clock offset: -16.584 ms

# Below is generated by plot.py at 2018-01-16 02:02:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.63 Mbit/s
95th percentile per-packet one-way delay: 329.838 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 330.621 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 315.130 ms
Loss rate: 3.42%
-- Flow 3:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 274.954 ms
Loss rate: 4.06%
```

Run 3: Report of TCP Cubic — Data Link

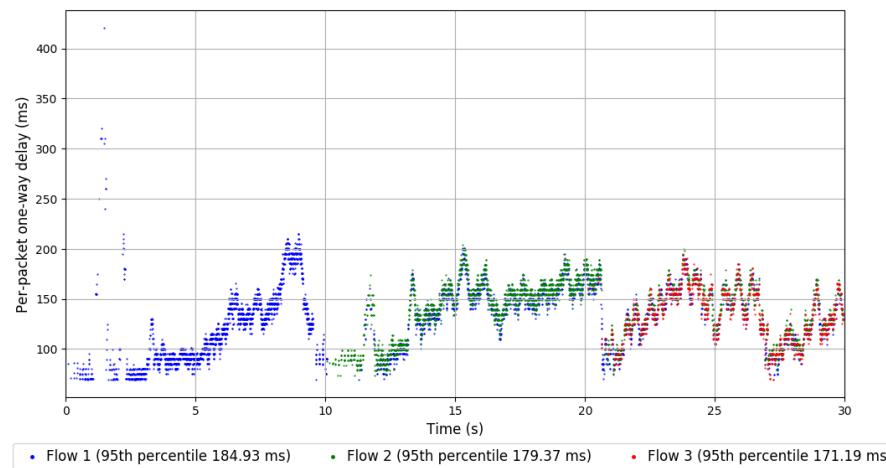
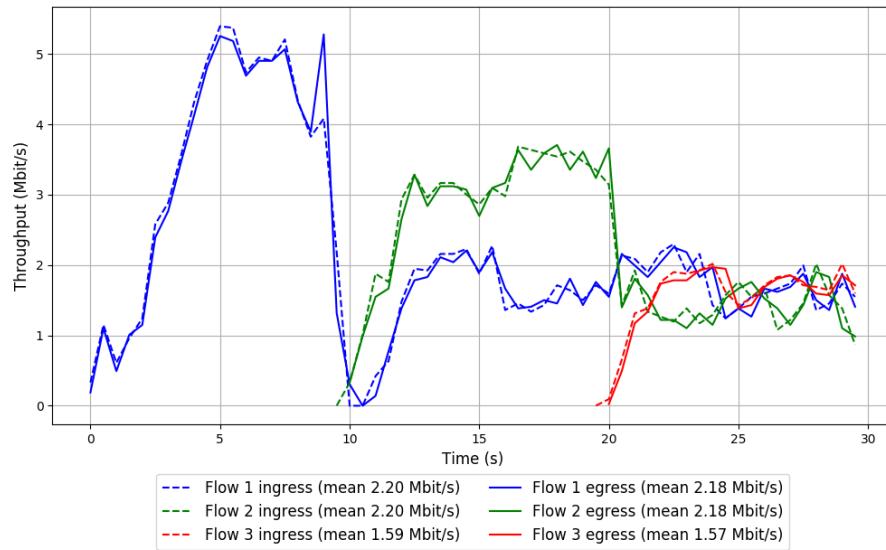


```
Run 1: Statistics of LEDBAT
```

```
Start at: 2018-01-16 00:37:57
End at: 2018-01-16 00:38:27
Local clock offset: -14.616 ms
Remote clock offset: -15.975 ms

# Below is generated by plot.py at 2018-01-16 02:02:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.15 Mbit/s
95th percentile per-packet one-way delay: 180.053 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 184.934 ms
Loss rate: 1.26%
-- Flow 2:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 179.371 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 171.187 ms
Loss rate: 2.30%
```

Run 1: Report of LEDBAT — Data Link

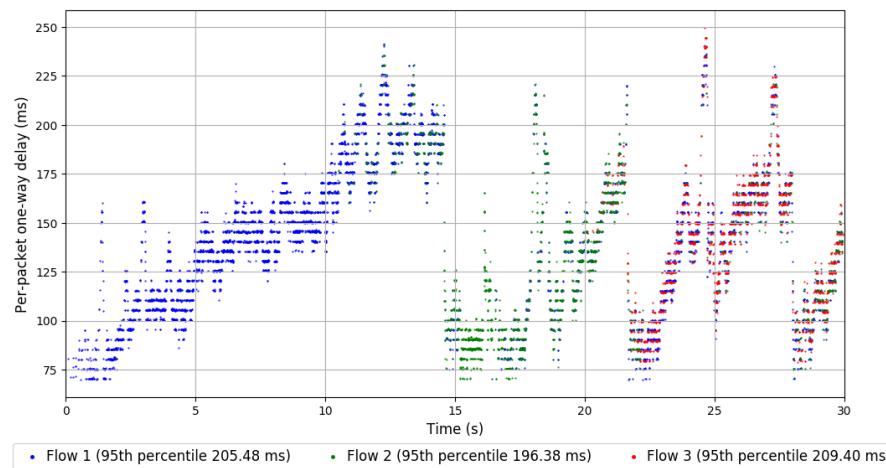
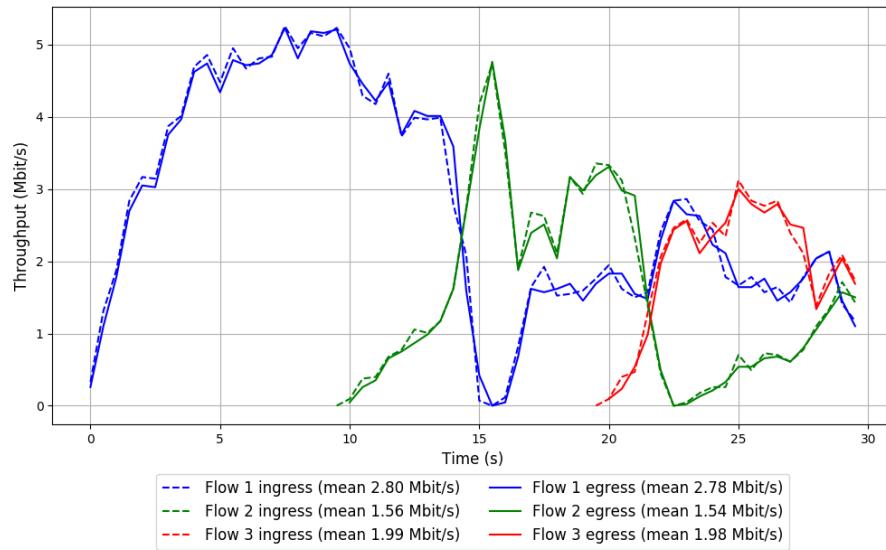


Run 2: Statistics of LEDBAT

```
Start at: 2018-01-16 00:54:32
End at: 2018-01-16 00:55:02
Local clock offset: -16.215 ms
Remote clock offset: -17.028 ms

# Below is generated by plot.py at 2018-01-16 02:02:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.45 Mbit/s
95th percentile per-packet one-way delay: 205.362 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 2.78 Mbit/s
95th percentile per-packet one-way delay: 205.478 ms
Loss rate: 0.91%
-- Flow 2:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 196.380 ms
Loss rate: 1.81%
-- Flow 3:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 209.397 ms
Loss rate: 2.01%
```

Run 2: Report of LEDBAT — Data Link

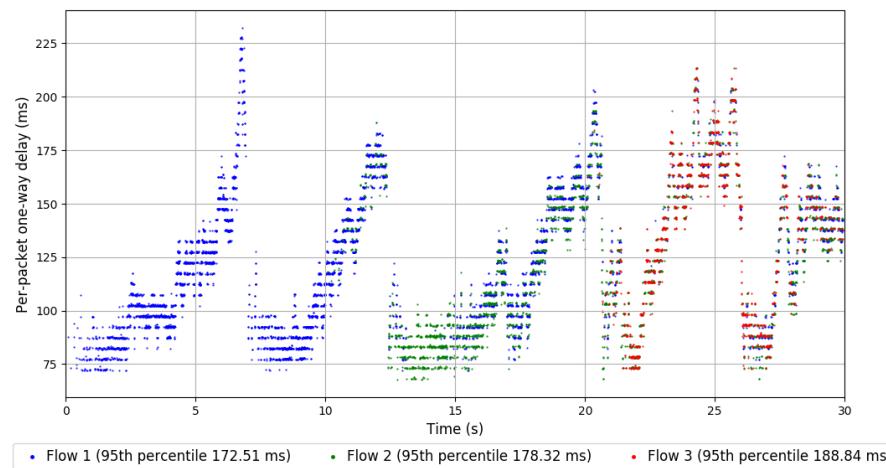
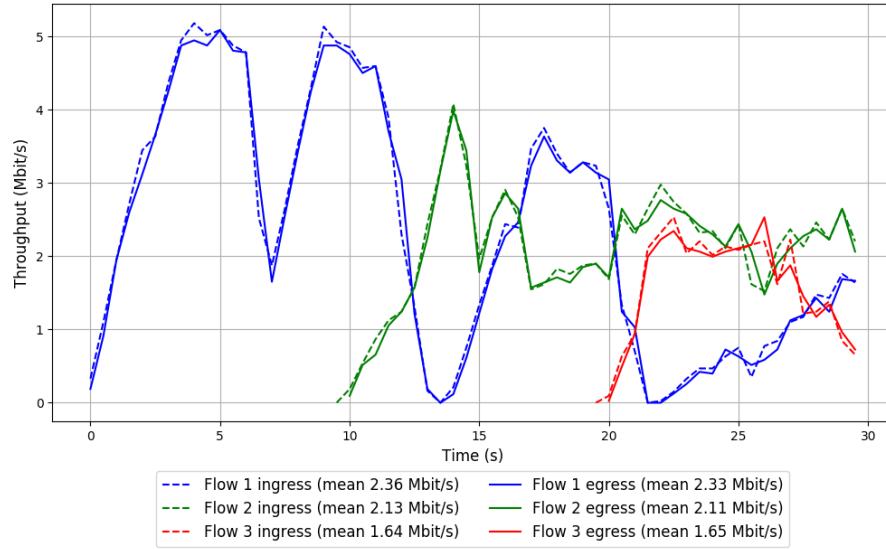


Run 3: Statistics of LEDBAT

```
Start at: 2018-01-16 01:11:05
End at: 2018-01-16 01:11:36
Local clock offset: -20.731 ms
Remote clock offset: -17.862 ms

# Below is generated by plot.py at 2018-01-16 02:02:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 178.202 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 172.514 ms
Loss rate: 1.64%
-- Flow 2:
Average throughput: 2.11 Mbit/s
95th percentile per-packet one-way delay: 178.325 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 188.838 ms
Loss rate: 1.29%
```

Run 3: Report of LEDBAT — Data Link

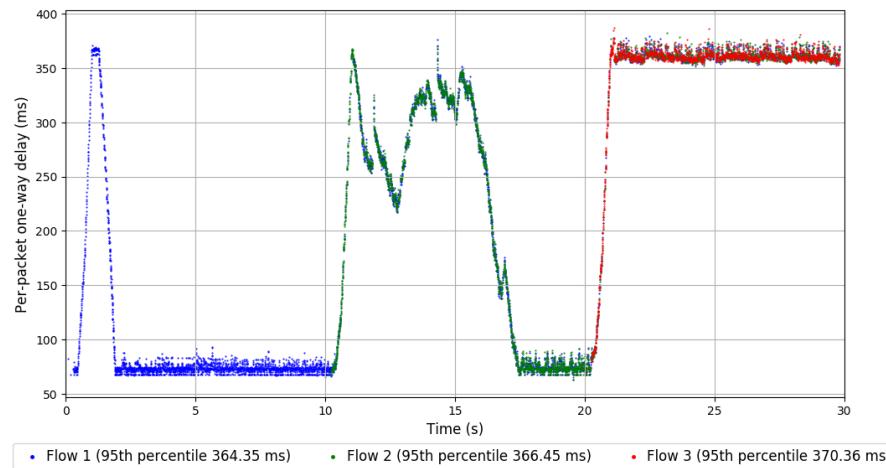
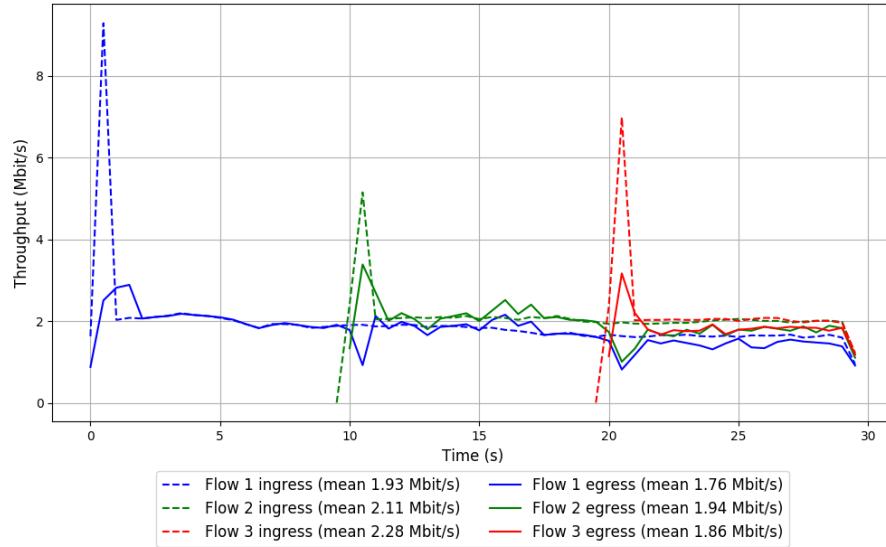


Run 1: Statistics of PCC

```
Start at: 2018-01-16 00:30:11
End at: 2018-01-16 00:30:41
Local clock offset: -17.008 ms
Remote clock offset: -15.117 ms

# Below is generated by plot.py at 2018-01-16 02:03:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.67 Mbit/s
95th percentile per-packet one-way delay: 366.863 ms
Loss rate: 10.49%
-- Flow 1:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 364.347 ms
Loss rate: 9.04%
-- Flow 2:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 366.446 ms
Loss rate: 7.94%
-- Flow 3:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 370.356 ms
Loss rate: 18.96%
```

Run 1: Report of PCC — Data Link

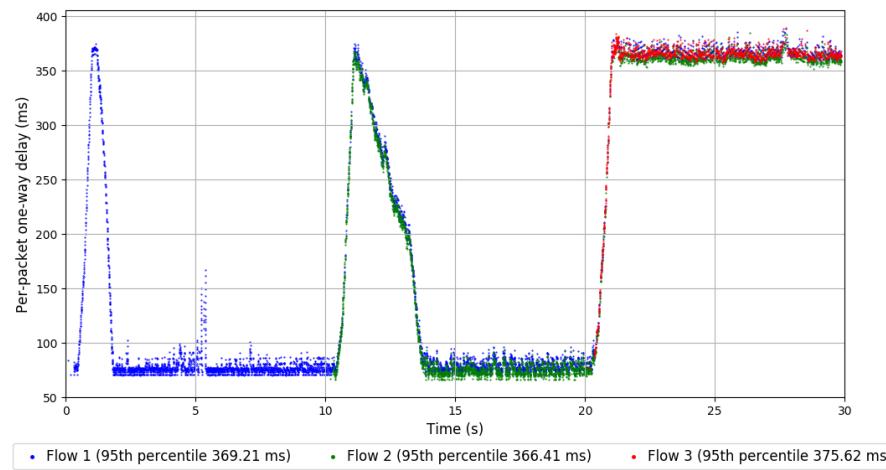
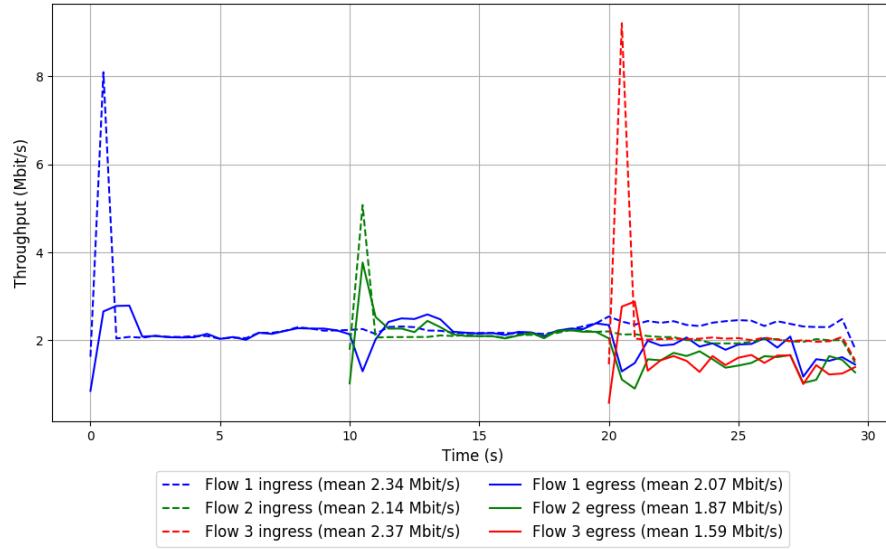


Run 2: Statistics of PCC

```
Start at: 2018-01-16 00:46:45
End at: 2018-01-16 00:47:15
Local clock offset: -17.131 ms
Remote clock offset: -16.846 ms

# Below is generated by plot.py at 2018-01-16 02:03:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.84 Mbit/s
95th percentile per-packet one-way delay: 370.092 ms
Loss rate: 15.86%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 369.209 ms
Loss rate: 11.83%
-- Flow 2:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 366.407 ms
Loss rate: 12.82%
-- Flow 3:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 375.625 ms
Loss rate: 33.50%
```

Run 2: Report of PCC — Data Link

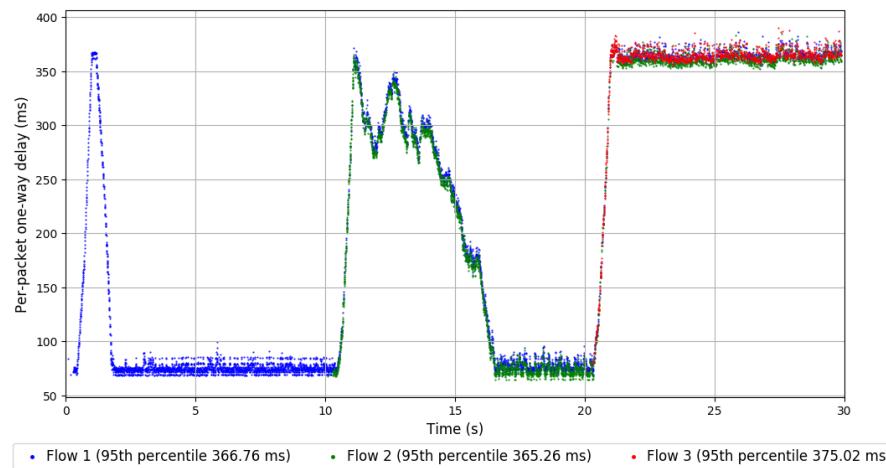
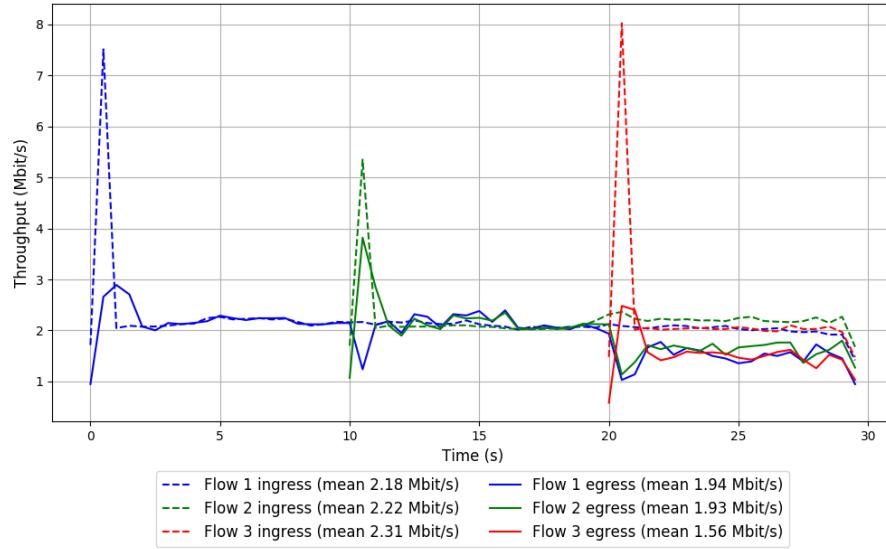


Run 3: Statistics of PCC

```
Start at: 2018-01-16 01:03:20
End at: 2018-01-16 01:03:50
Local clock offset: -17.29 ms
Remote clock offset: -15.268 ms

# Below is generated by plot.py at 2018-01-16 02:03:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.73 Mbit/s
95th percentile per-packet one-way delay: 368.557 ms
Loss rate: 15.75%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 366.757 ms
Loss rate: 11.13%
-- Flow 2:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 365.262 ms
Loss rate: 13.61%
-- Flow 3:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 375.016 ms
Loss rate: 33.11%
```

Run 3: Report of PCC — Data Link

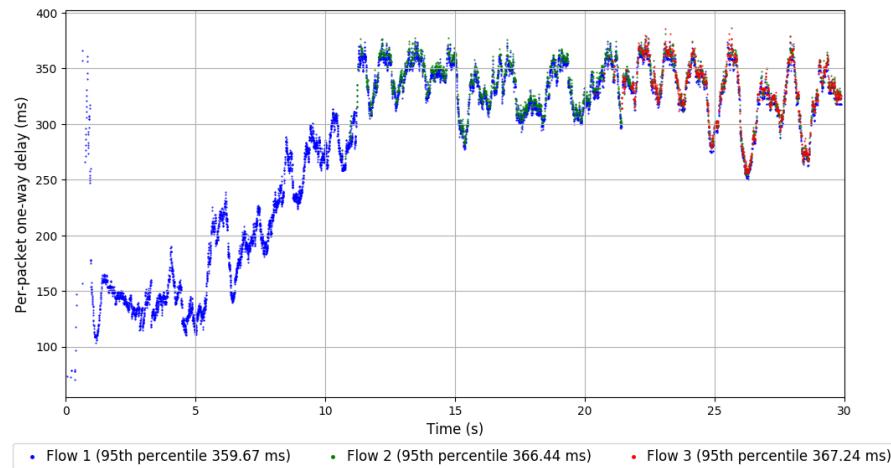
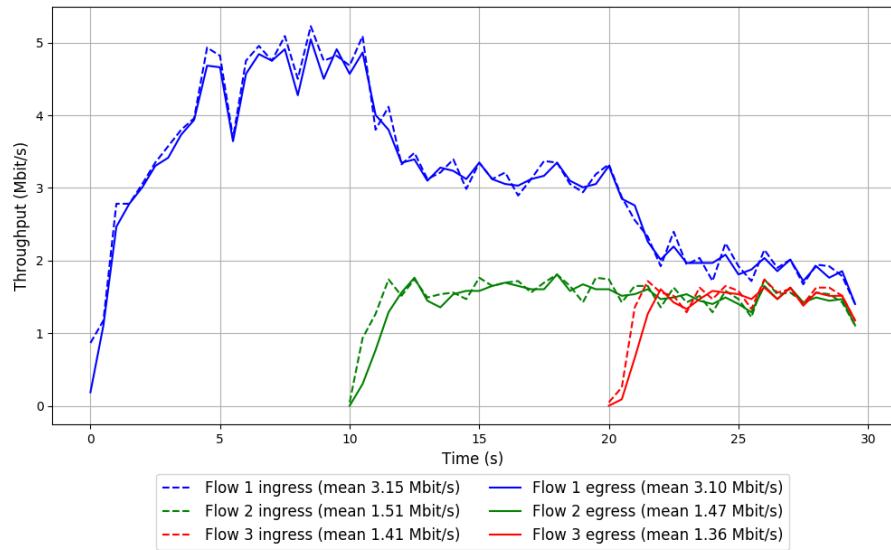


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2018-01-16 00:25:46
End at: 2018-01-16 00:26:16
Local clock offset: -15.719 ms
Remote clock offset: -17.806 ms

# Below is generated by plot.py at 2018-01-16 02:03:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.50 Mbit/s
95th percentile per-packet one-way delay: 362.883 ms
Loss rate: 2.87%
-- Flow 1:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 359.668 ms
Loss rate: 2.02%
-- Flow 2:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 366.438 ms
Loss rate: 3.89%
-- Flow 3:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 367.243 ms
Loss rate: 6.46%
```

Run 1: Report of QUIC Cubic — Data Link

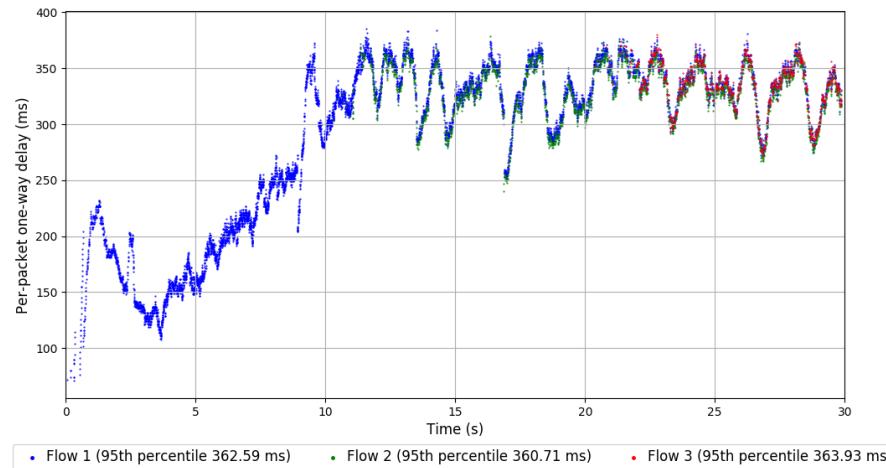
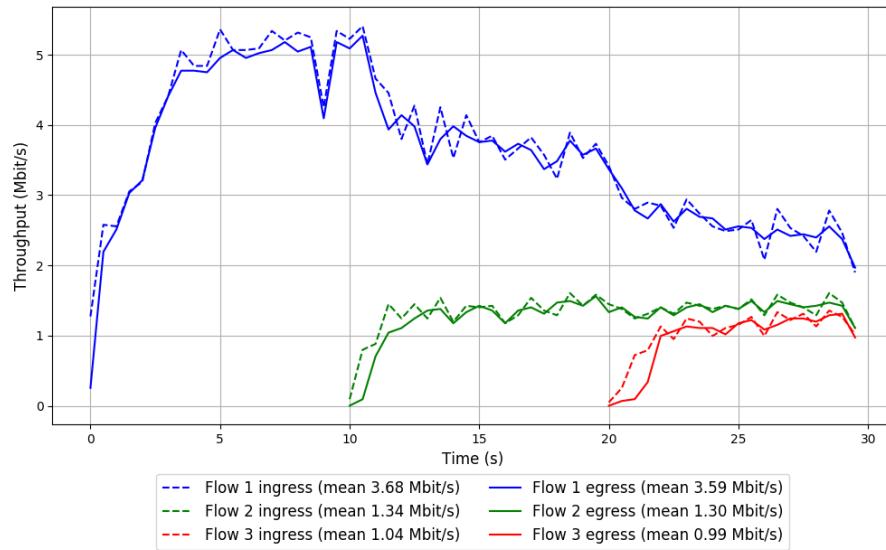


Run 2: Statistics of QUIC Cubic

```
Start at: 2018-01-16 00:42:21
End at: 2018-01-16 00:42:51
Local clock offset: -17.171 ms
Remote clock offset: -17.194 ms

# Below is generated by plot.py at 2018-01-16 02:03:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.77 Mbit/s
95th percentile per-packet one-way delay: 362.203 ms
Loss rate: 3.18%
-- Flow 1:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 362.594 ms
Loss rate: 2.40%
-- Flow 2:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 360.709 ms
Loss rate: 4.45%
-- Flow 3:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 363.932 ms
Loss rate: 8.17%
```

Run 2: Report of QUIC Cubic — Data Link

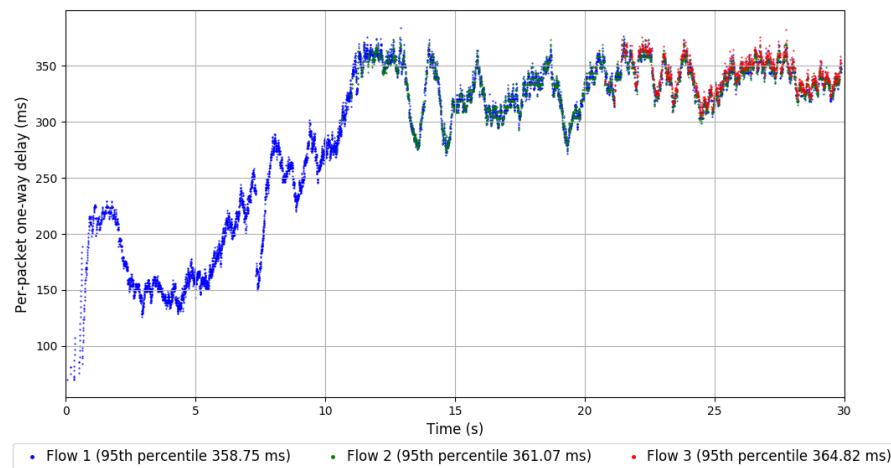
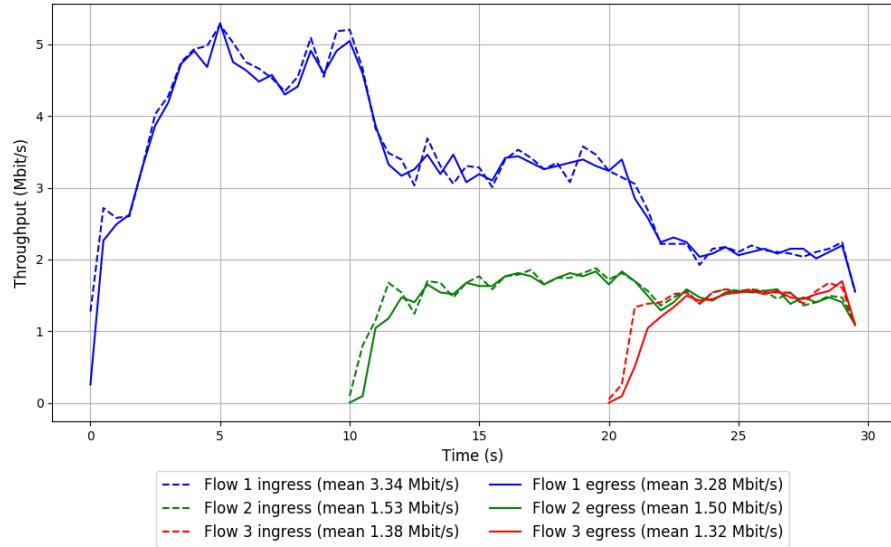


Run 3: Statistics of QUIC Cubic

```
Start at: 2018-01-16 00:58:56
End at: 2018-01-16 00:59:26
Local clock offset: -16.647 ms
Remote clock offset: -17.309 ms

# Below is generated by plot.py at 2018-01-16 02:03:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.69 Mbit/s
95th percentile per-packet one-way delay: 359.967 ms
Loss rate: 2.77%
-- Flow 1:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 358.752 ms
Loss rate: 1.99%
-- Flow 2:
Average throughput: 1.50 Mbit/s
95th percentile per-packet one-way delay: 361.069 ms
Loss rate: 3.27%
-- Flow 3:
Average throughput: 1.32 Mbit/s
95th percentile per-packet one-way delay: 364.823 ms
Loss rate: 7.45%
```

Run 3: Report of QUIC Cubic — Data Link

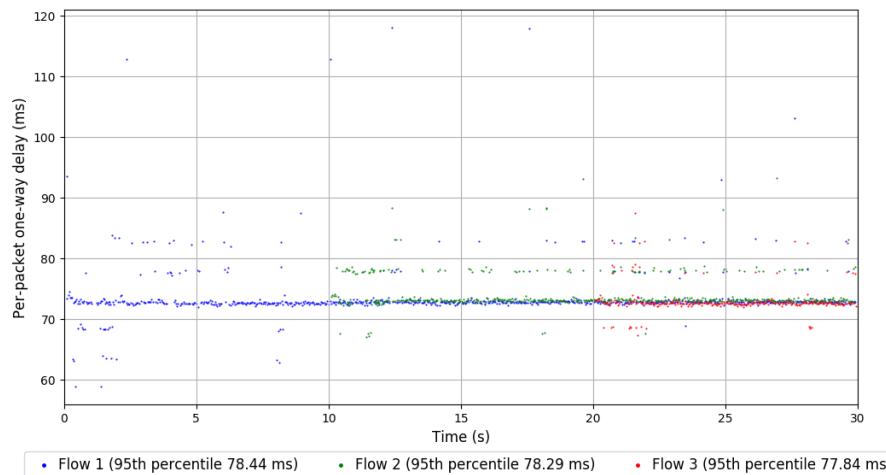
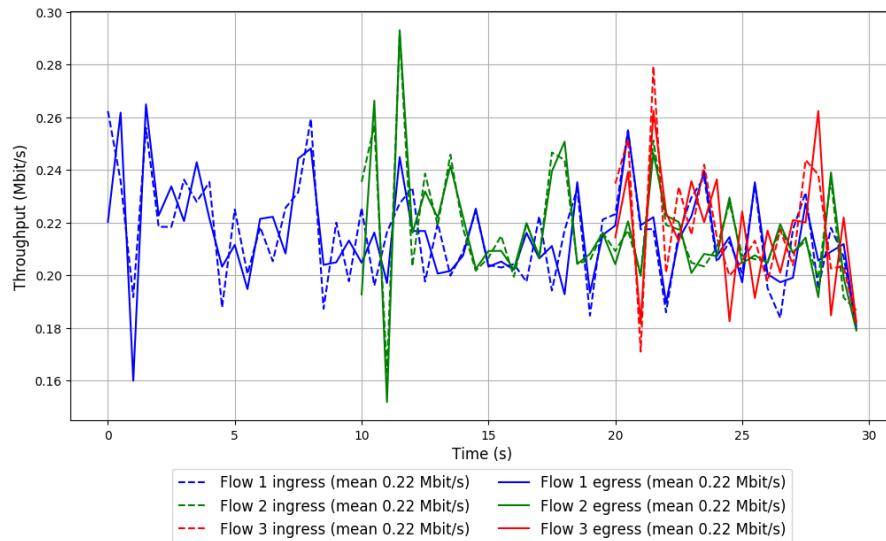


Run 1: Statistics of SCReAM

```
Start at: 2018-01-16 00:24:37
End at: 2018-01-16 00:25:07
Local clock offset: -14.293 ms
Remote clock offset: -16.546 ms

# Below is generated by plot.py at 2018-01-16 02:03:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 78.317 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 78.436 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 78.290 ms
Loss rate: 0.42%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 77.842 ms
Loss rate: 0.35%
```

Run 1: Report of SCReAM — Data Link

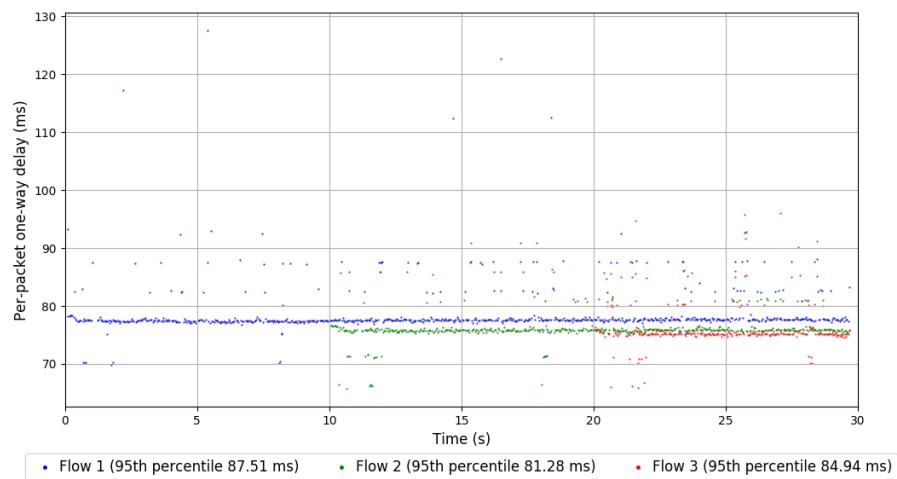
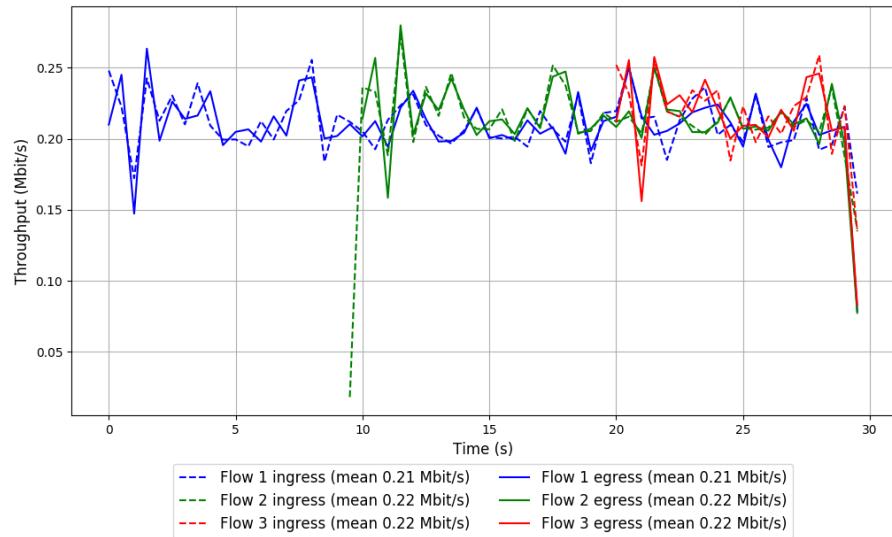


Run 2: Statistics of SCReAM

```
Start at: 2018-01-16 00:41:15
End at: 2018-01-16 00:41:45
Local clock offset: -13.166 ms
Remote clock offset: -16.969 ms

# Below is generated by plot.py at 2018-01-16 02:03:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 85.723 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 87.508 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 81.277 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.936 ms
Loss rate: 1.93%
```

Run 2: Report of SCReAM — Data Link

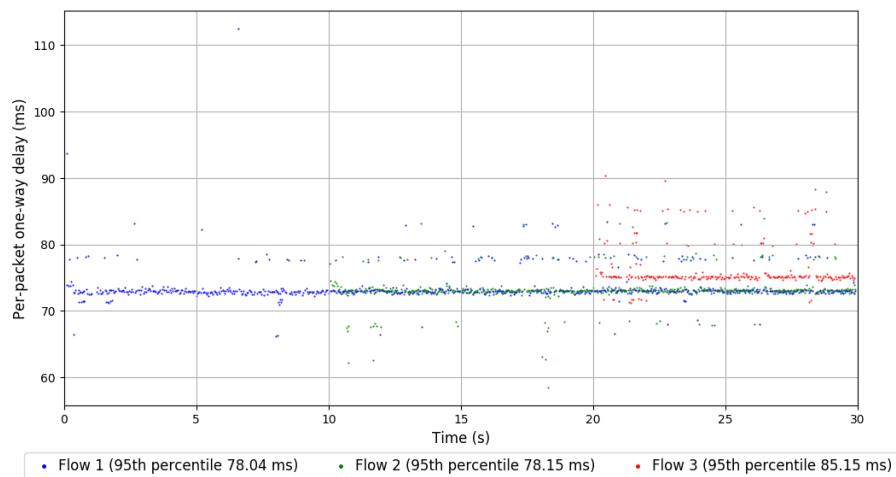
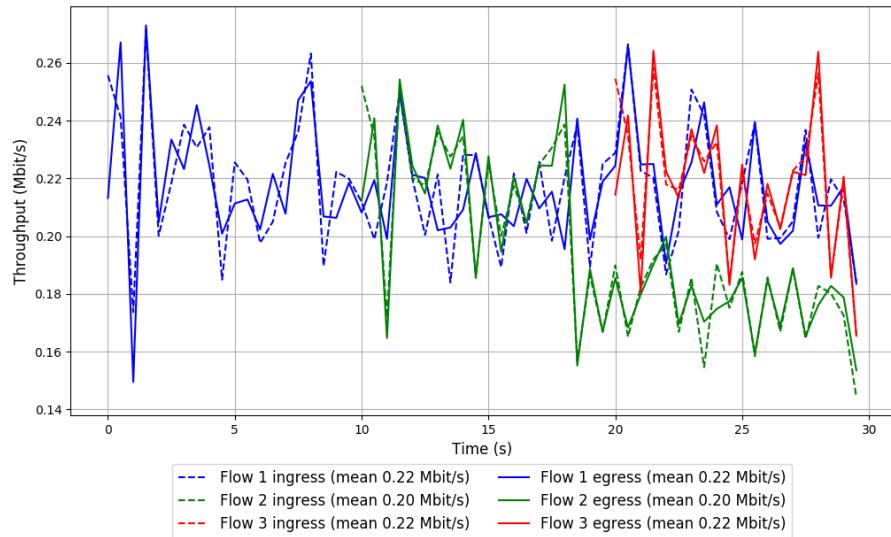


Run 3: Statistics of SCReAM

```
Start at: 2018-01-16 00:57:50
End at: 2018-01-16 00:58:20
Local clock offset: -17.701 ms
Remote clock offset: -17.158 ms

# Below is generated by plot.py at 2018-01-16 02:03:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 78.543 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 78.040 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 78.151 ms
Loss rate: 0.19%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.149 ms
Loss rate: 0.73%
```

Run 3: Report of SCReAM — Data Link

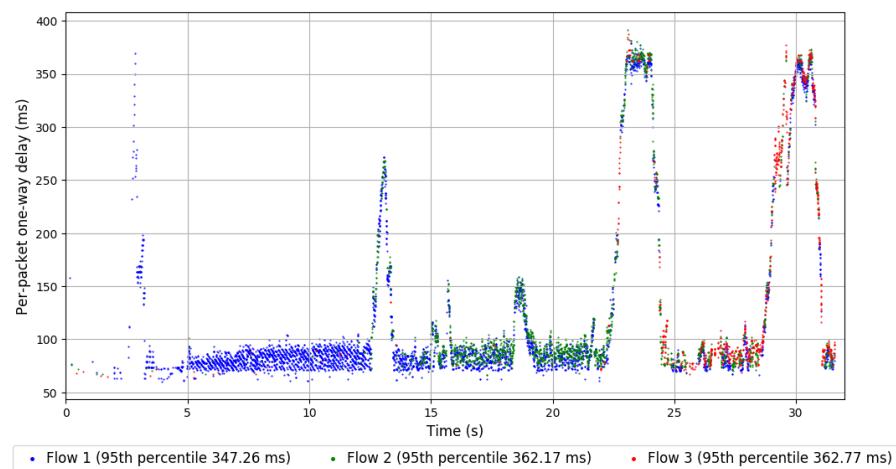
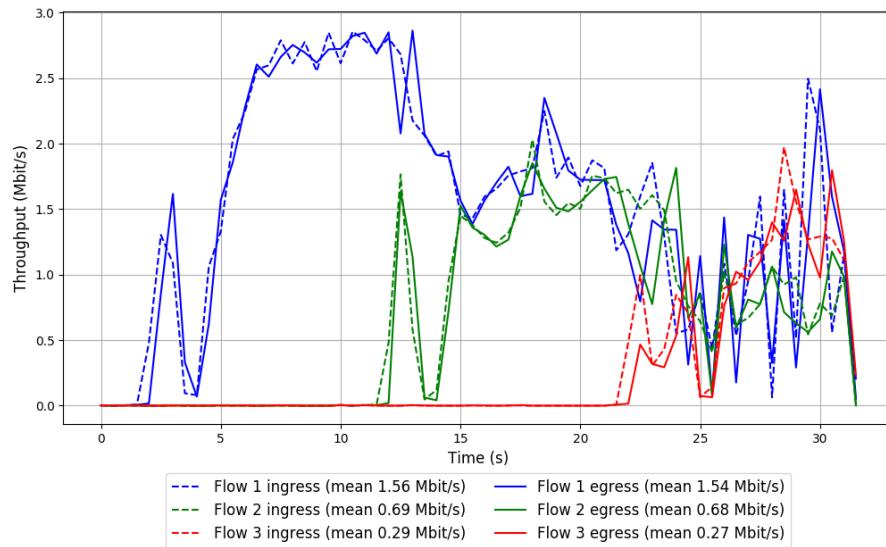


```
Run 1: Statistics of WebRTC media

Start at: 2018-01-16 00:27:59
End at: 2018-01-16 00:28:29
Local clock offset: -14.061 ms
Remote clock offset: -16.662 ms

# Below is generated by plot.py at 2018-01-16 02:03:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 356.109 ms
Loss rate: 2.33%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 347.262 ms
Loss rate: 1.39%
-- Flow 2:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 362.168 ms
Loss rate: 2.45%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 362.770 ms
Loss rate: 7.15%
```

Run 1: Report of WebRTC media — Data Link

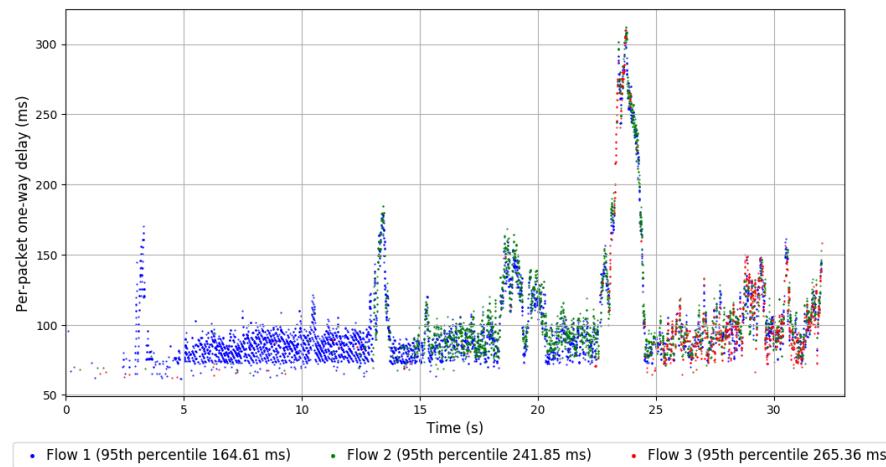
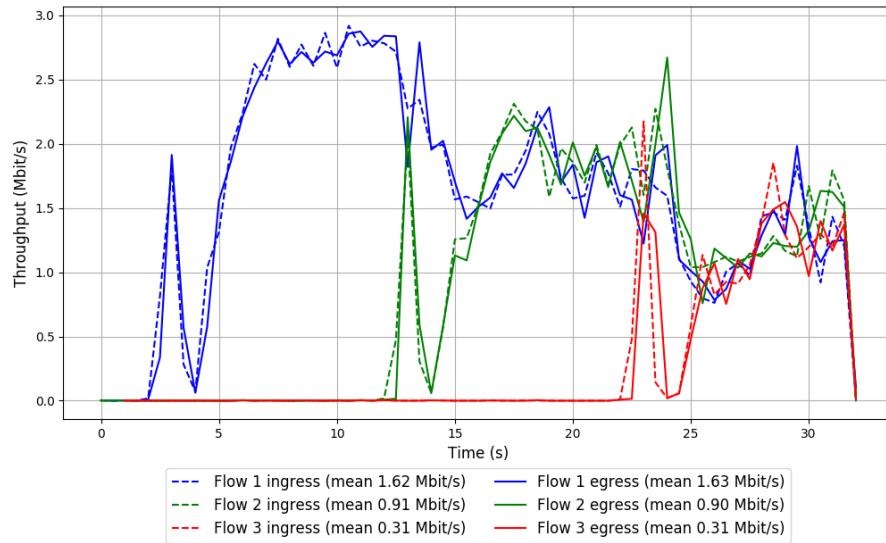


Run 2: Statistics of WebRTC media

```
Start at: 2018-01-16 00:44:33
End at: 2018-01-16 00:45:03
Local clock offset: -15.612 ms
Remote clock offset: -18.893 ms

# Below is generated by plot.py at 2018-01-16 02:03:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 208.953 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 164.608 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 241.846 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 265.359 ms
Loss rate: 1.79%
```

Run 2: Report of WebRTC media — Data Link

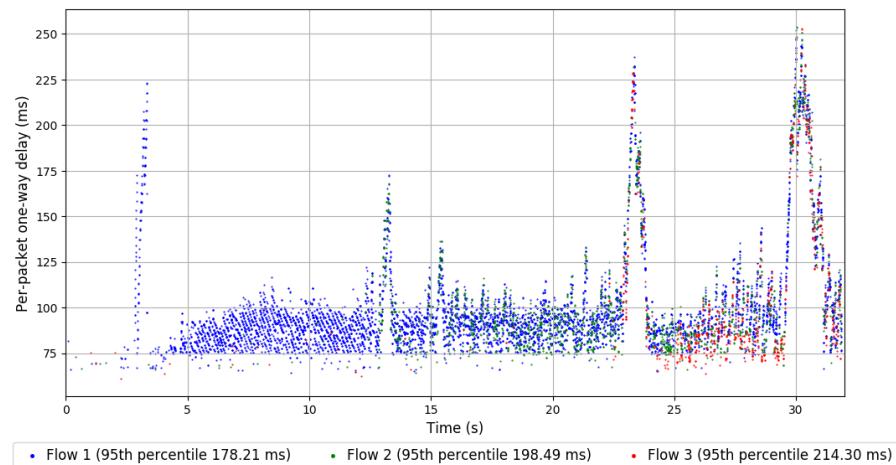
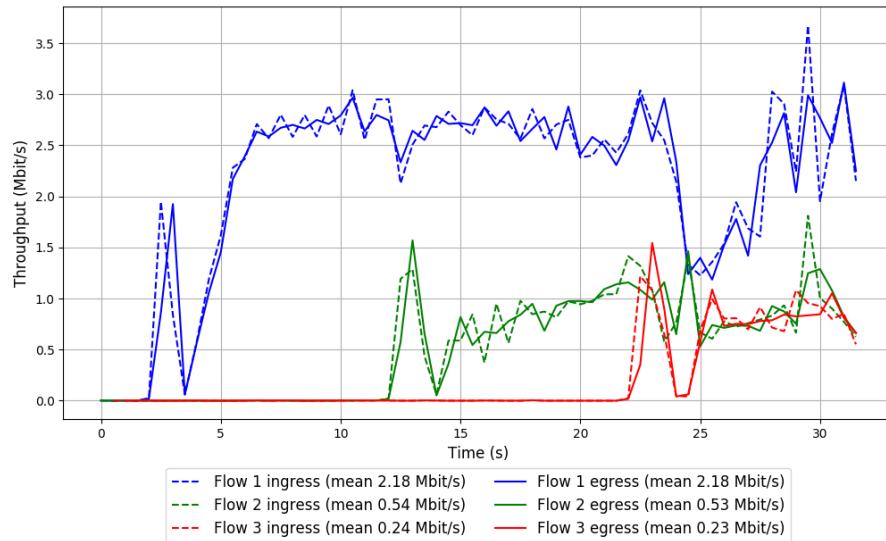


Run 3: Statistics of WebRTC media

```
Start at: 2018-01-16 01:01:08
End at: 2018-01-16 01:01:38
Local clock offset: -16.817 ms
Remote clock offset: -17.916 ms

# Below is generated by plot.py at 2018-01-16 02:03:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 192.321 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 178.208 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 198.493 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 214.301 ms
Loss rate: 1.92%
```

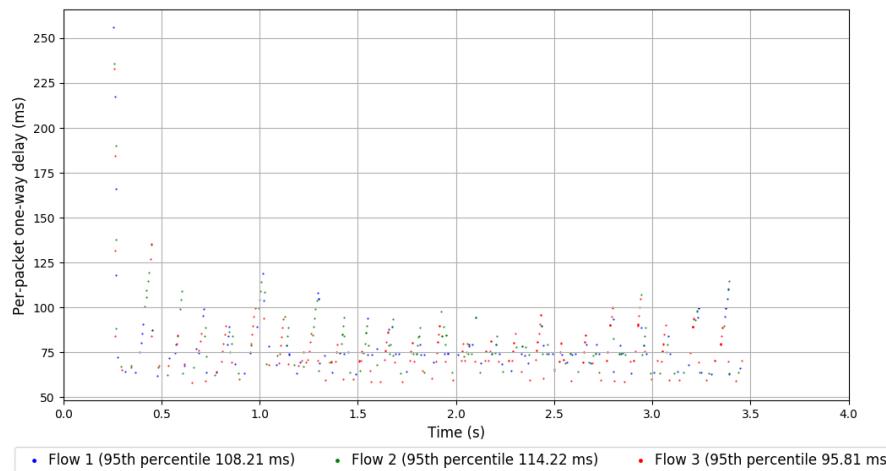
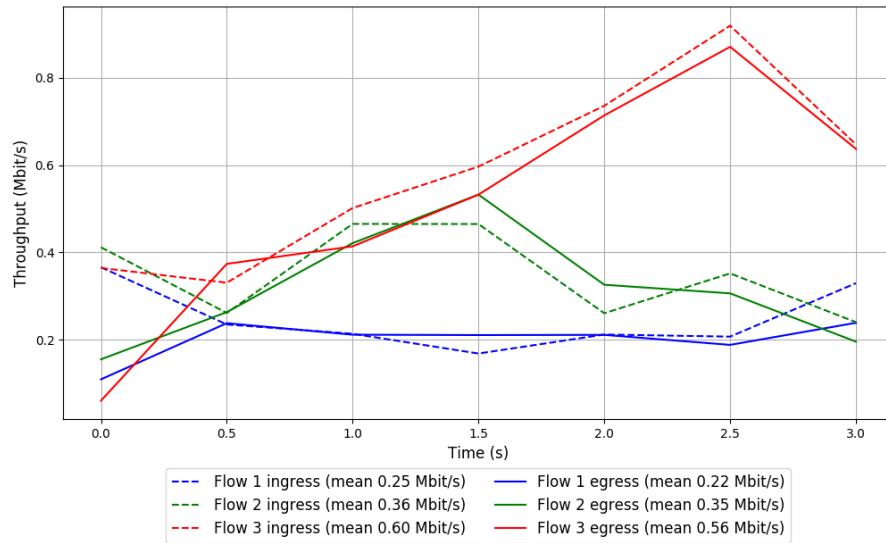
Run 3: Report of WebRTC media — Data Link



Run 1: Statistics of Sprout

Start at: 2018-01-16 00:31:17
End at: 2018-01-16 00:31:47
Local clock offset: -14.589 ms
Remote clock offset: -15.257 ms

Run 1: Report of Sprout — Data Link

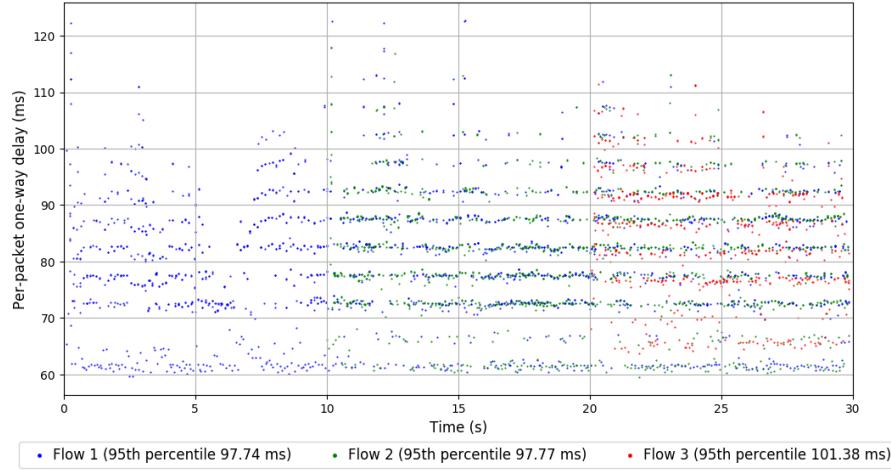
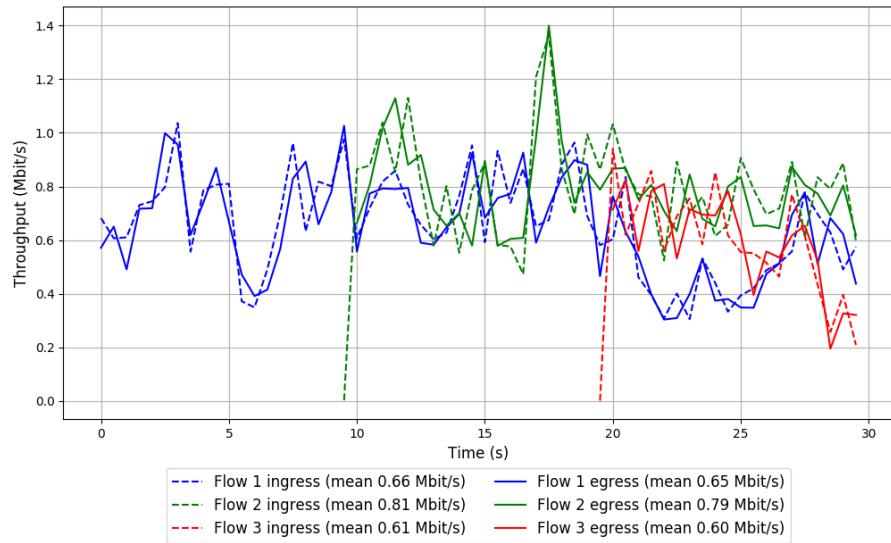


Run 2: Statistics of Sprout

```
Start at: 2018-01-16 00:47:51
End at: 2018-01-16 00:48:21
Local clock offset: -16.349 ms
Remote clock offset: -17.746 ms

# Below is generated by plot.py at 2018-01-16 02:03:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.38 Mbit/s
95th percentile per-packet one-way delay: 97.846 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 97.739 ms
Loss rate: 1.49%
-- Flow 2:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 97.774 ms
Loss rate: 2.07%
-- Flow 3:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 101.383 ms
Loss rate: 1.07%
```

Run 2: Report of Sprout — Data Link

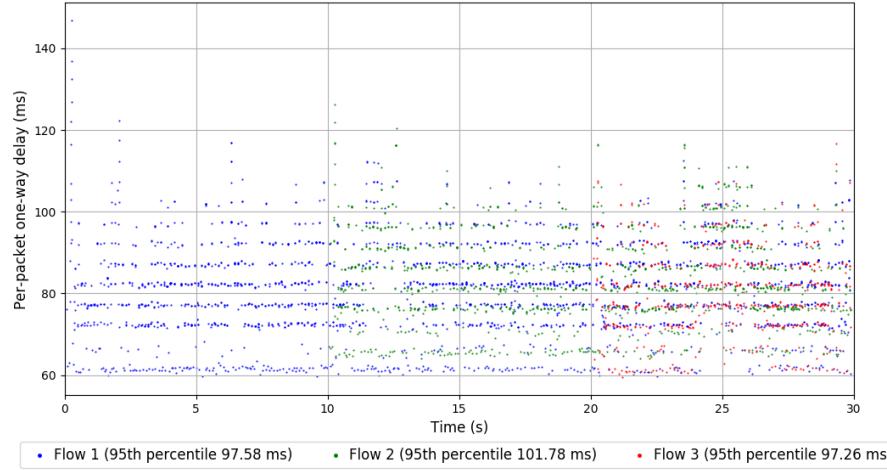
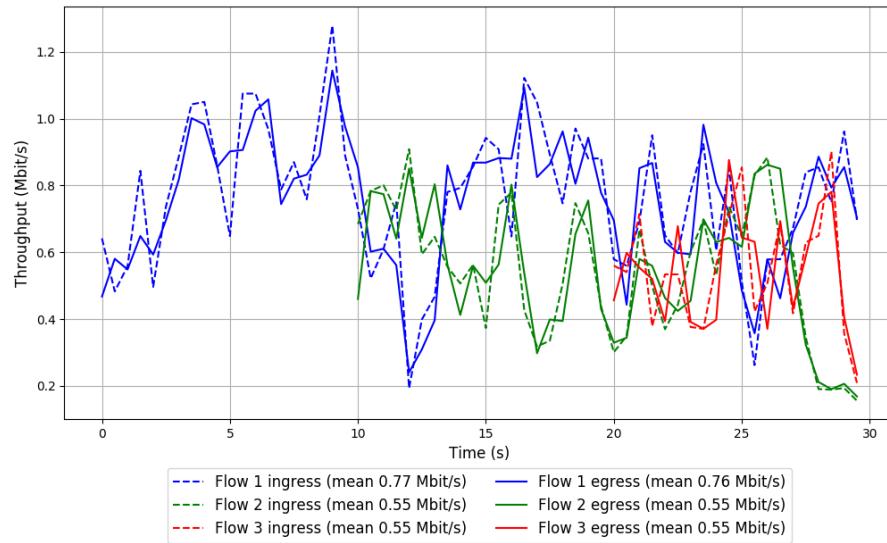


Run 3: Statistics of Sprout

```
Start at: 2018-01-16 01:04:26
End at: 2018-01-16 01:04:57
Local clock offset: -16.317 ms
Remote clock offset: -17.228 ms

# Below is generated by plot.py at 2018-01-16 02:03:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 101.298 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 97.575 ms
Loss rate: 1.89%
-- Flow 2:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 101.782 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 97.261 ms
Loss rate: 1.41%
```

Run 3: Report of Sprout — Data Link

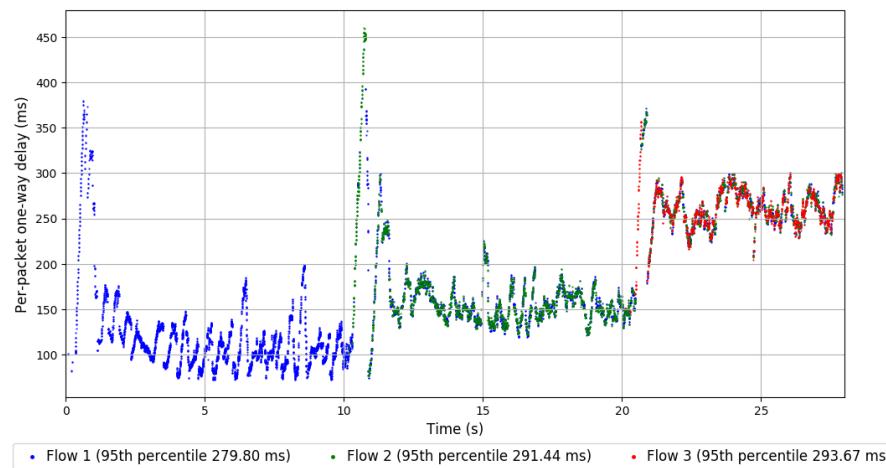
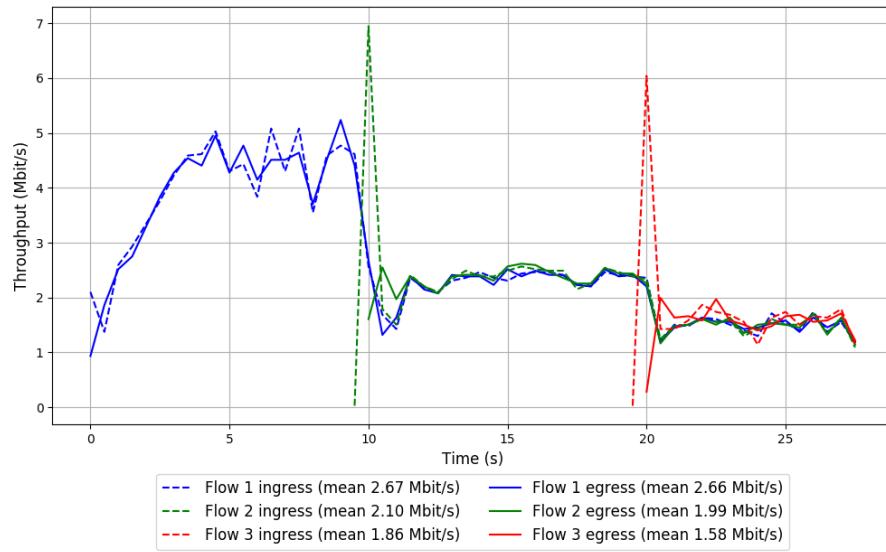


Run 1: Statistics of TaoVA-100x

```
Start at: 2018-01-16 00:26:53
End at: 2018-01-16 00:27:23
Local clock offset: -14.778 ms
Remote clock offset: -15.823 ms

# Below is generated by plot.py at 2018-01-16 02:03:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.38 Mbit/s
95th percentile per-packet one-way delay: 287.043 ms
Loss rate: 4.11%
-- Flow 1:
Average throughput: 2.66 Mbit/s
95th percentile per-packet one-way delay: 279.804 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 1.99 Mbit/s
95th percentile per-packet one-way delay: 291.435 ms
Loss rate: 5.57%
-- Flow 3:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 293.670 ms
Loss rate: 17.20%
```

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

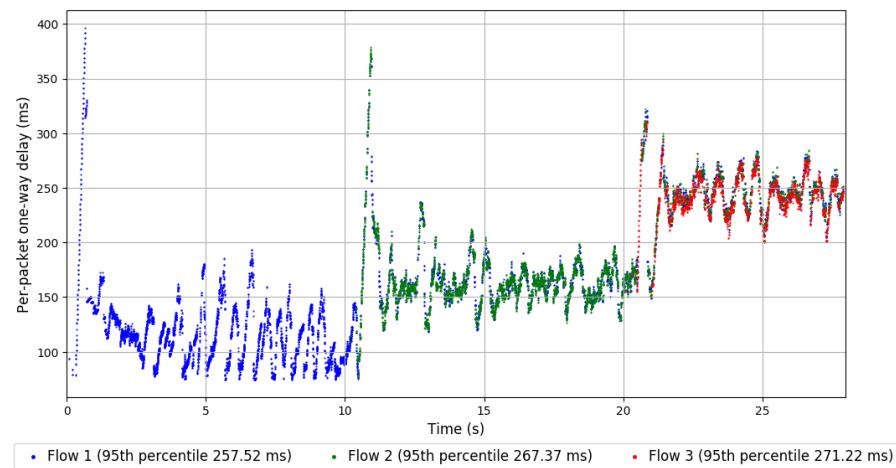
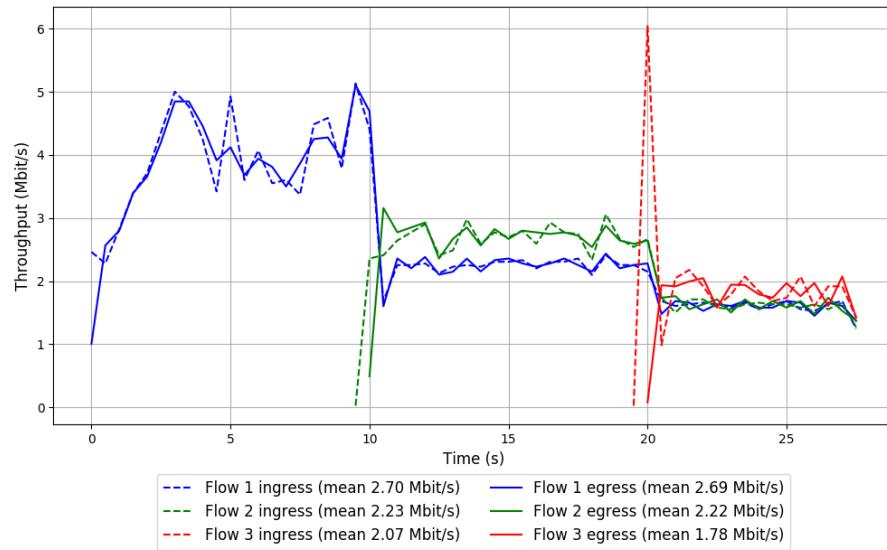


Run 2: Statistics of TaoVA-100x

```
Start at: 2018-01-16 00:43:27
End at: 2018-01-16 00:43:57
Local clock offset: -16.726 ms
Remote clock offset: -18.428 ms

# Below is generated by plot.py at 2018-01-16 02:03:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.62 Mbit/s
95th percentile per-packet one-way delay: 264.394 ms
Loss rate: 2.62%
-- Flow 1:
Average throughput: 2.69 Mbit/s
95th percentile per-packet one-way delay: 257.518 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 267.367 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 271.222 ms
Loss rate: 15.49%
```

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

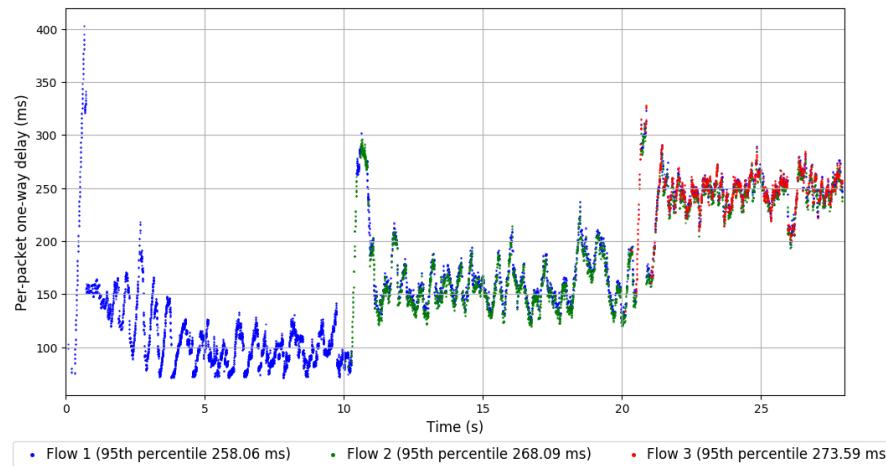
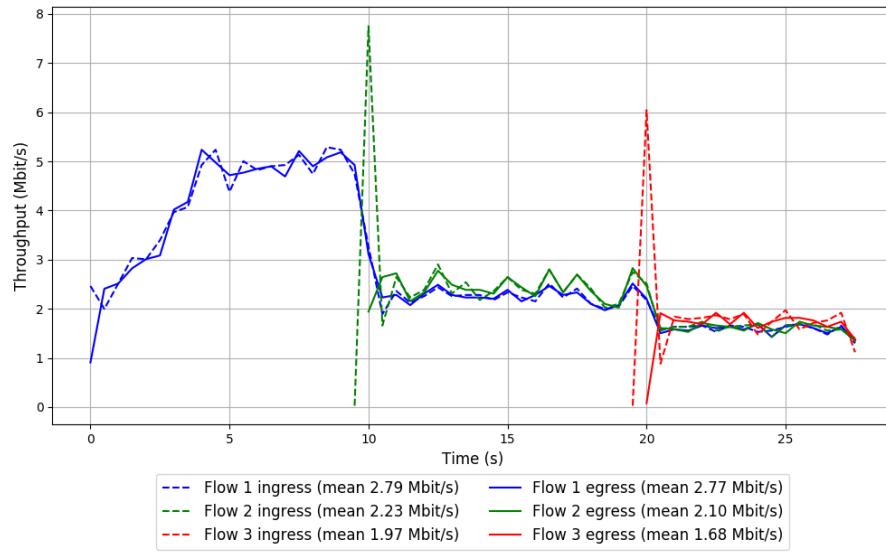


Run 3: Statistics of TaoVA-100x

```
Start at: 2018-01-16 01:00:02
End at: 2018-01-16 01:00:32
Local clock offset: -19.03 ms
Remote clock offset: -17.133 ms

# Below is generated by plot.py at 2018-01-16 02:03:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.59 Mbit/s
95th percentile per-packet one-way delay: 264.248 ms
Loss rate: 4.21%
-- Flow 1:
Average throughput: 2.77 Mbit/s
95th percentile per-packet one-way delay: 258.056 ms
Loss rate: 0.82%
-- Flow 2:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 268.089 ms
Loss rate: 6.16%
-- Flow 3:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 273.594 ms
Loss rate: 16.14%
```

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

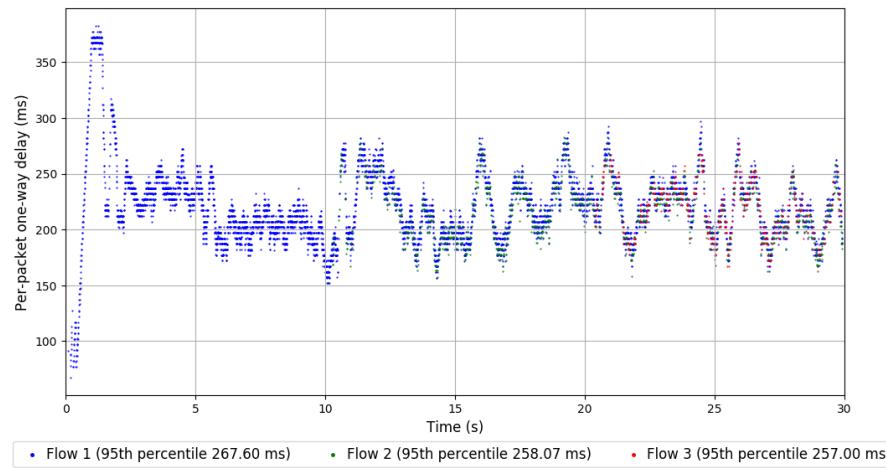
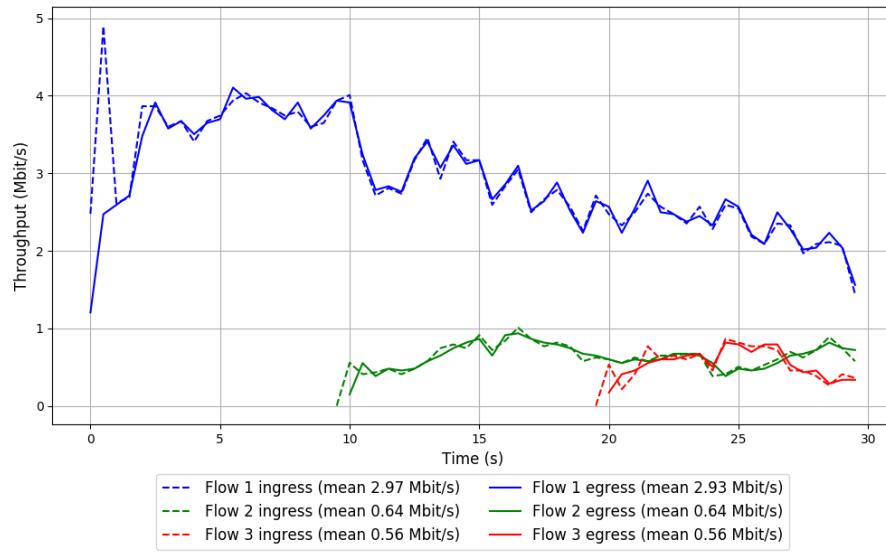


Run 1: Statistics of TCP Vegas

```
Start at: 2018-01-16 00:35:44
End at: 2018-01-16 00:36:14
Local clock offset: -12.313 ms
Remote clock offset: -16.188 ms

# Below is generated by plot.py at 2018-01-16 02:03:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 267.157 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 267.598 ms
Loss rate: 1.69%
-- Flow 2:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 258.067 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 257.004 ms
Loss rate: 2.58%
```

Run 1: Report of TCP Vegas — Data Link

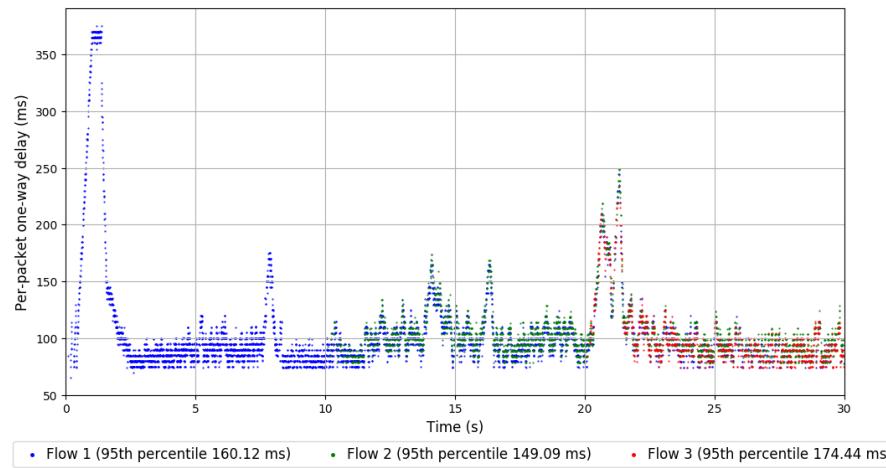
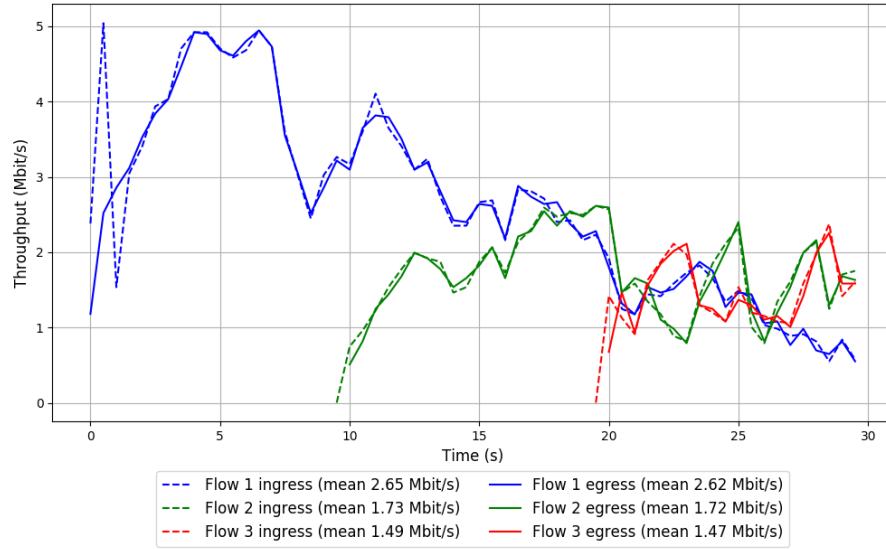


Run 2: Statistics of TCP Vegas

```
Start at: 2018-01-16 00:52:20
End at: 2018-01-16 00:52:50
Local clock offset: -13.762 ms
Remote clock offset: -18.04 ms

# Below is generated by plot.py at 2018-01-16 02:03:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.24 Mbit/s
95th percentile per-packet one-way delay: 160.050 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 160.117 ms
Loss rate: 1.47%
-- Flow 2:
Average throughput: 1.72 Mbit/s
95th percentile per-packet one-way delay: 149.086 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 174.438 ms
Loss rate: 2.03%
```

Run 2: Report of TCP Vegas — Data Link

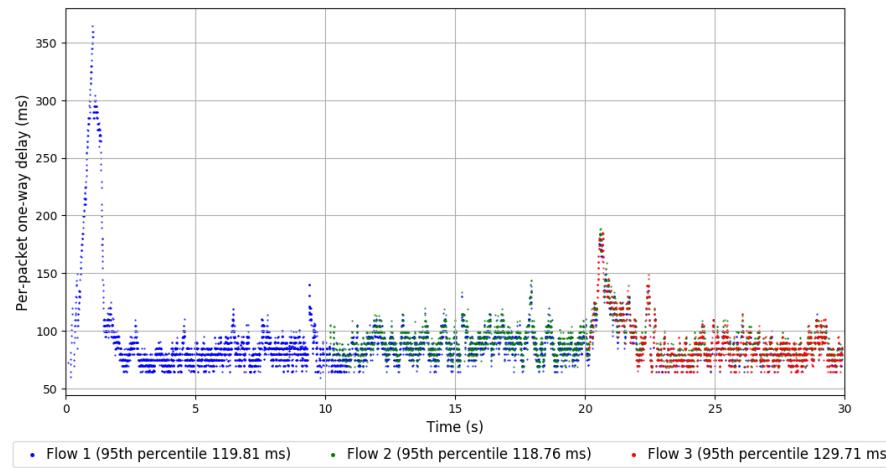
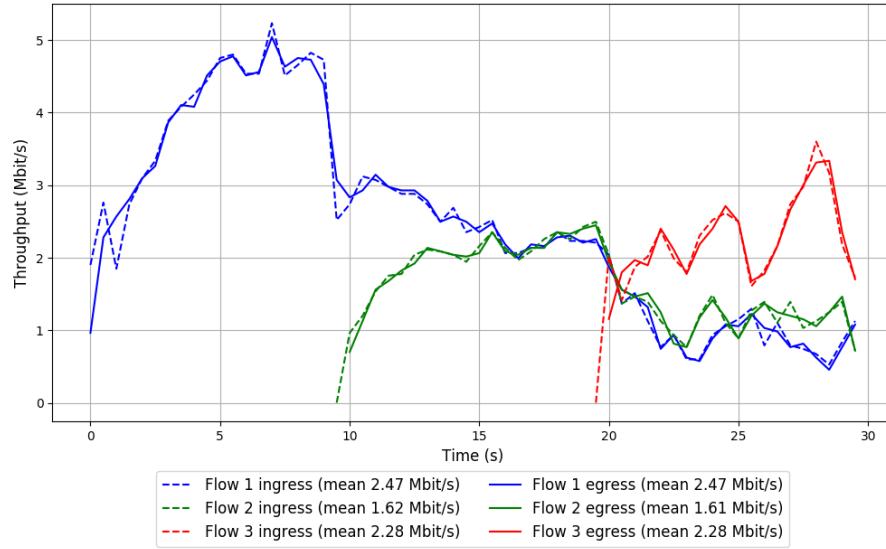


Run 3: Statistics of TCP Vegas

```
Start at: 2018-01-16 01:08:53
End at: 2018-01-16 01:09:23
Local clock offset: -23.315 ms
Remote clock offset: -16.659 ms

# Below is generated by plot.py at 2018-01-16 02:03:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.29 Mbit/s
95th percentile per-packet one-way delay: 124.001 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 2.47 Mbit/s
95th percentile per-packet one-way delay: 119.812 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 118.760 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 129.710 ms
Loss rate: 1.16%
```

Run 3: Report of TCP Vegas — Data Link

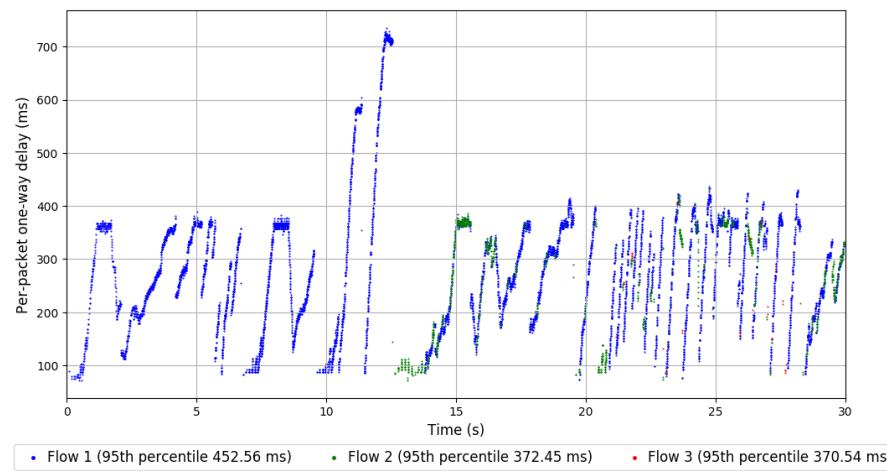
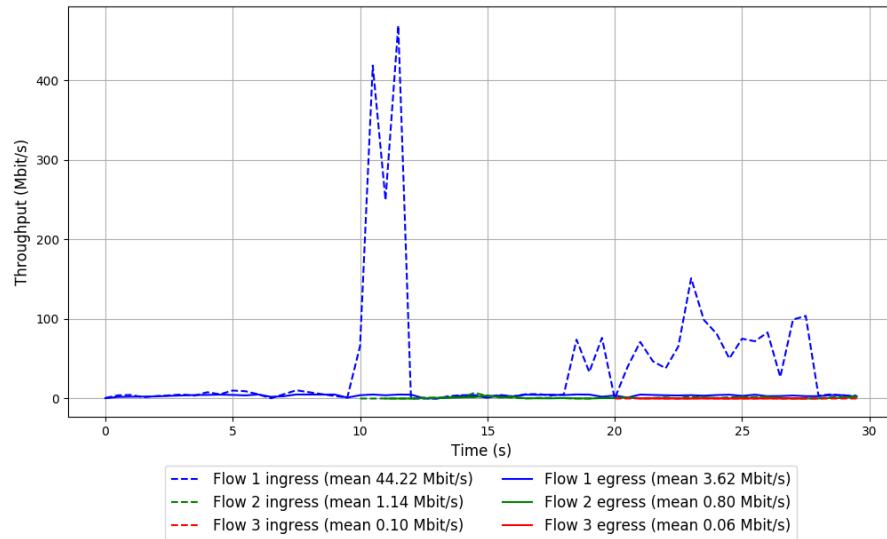


Run 1: Statistics of Verus

```
Start at: 2018-01-16 00:23:30
End at: 2018-01-16 00:24:00
Local clock offset: -11.024 ms
Remote clock offset: -16.01 ms

# Below is generated by plot.py at 2018-01-16 02:03:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.13 Mbit/s
95th percentile per-packet one-way delay: 419.450 ms
Loss rate: 90.85%
-- Flow 1:
Average throughput: 3.62 Mbit/s
95th percentile per-packet one-way delay: 452.556 ms
Loss rate: 91.84%
-- Flow 2:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 372.446 ms
Loss rate: 34.55%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 370.538 ms
Loss rate: 58.82%
```

Run 1: Report of Verus — Data Link

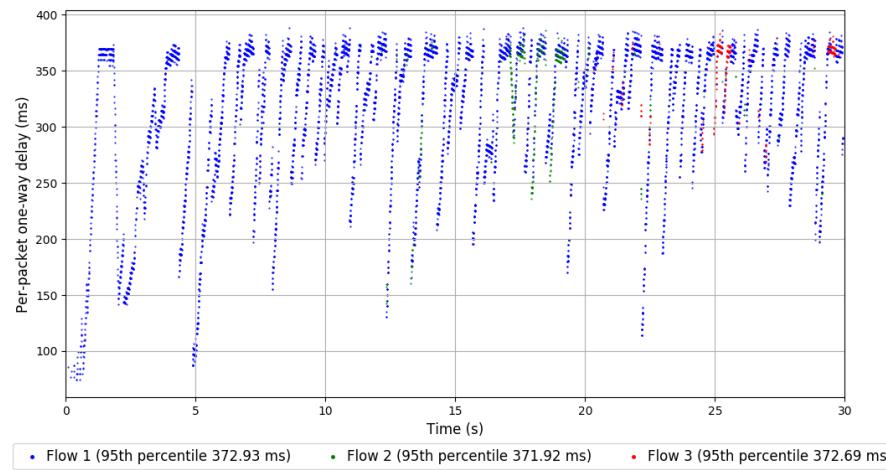
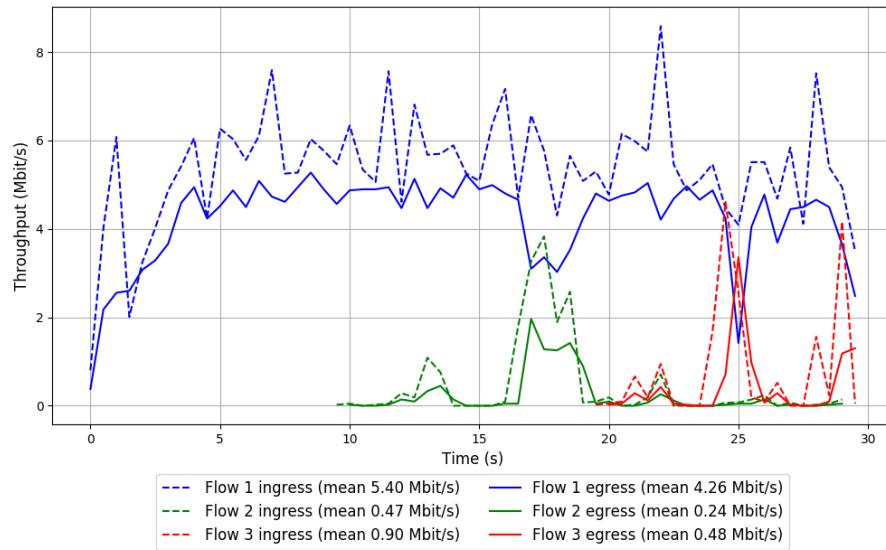


Run 2: Statistics of Verus

```
Start at: 2018-01-16 00:40:09
End at: 2018-01-16 00:40:39
Local clock offset: -16.819 ms
Remote clock offset: -18.571 ms

# Below is generated by plot.py at 2018-01-16 02:03:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.57 Mbit/s
95th percentile per-packet one-way delay: 372.916 ms
Loss rate: 23.83%
-- Flow 1:
Average throughput: 4.26 Mbit/s
95th percentile per-packet one-way delay: 372.934 ms
Loss rate: 21.00%
-- Flow 2:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 371.917 ms
Loss rate: 49.67%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 372.689 ms
Loss rate: 49.20%
```

Run 2: Report of Verus — Data Link

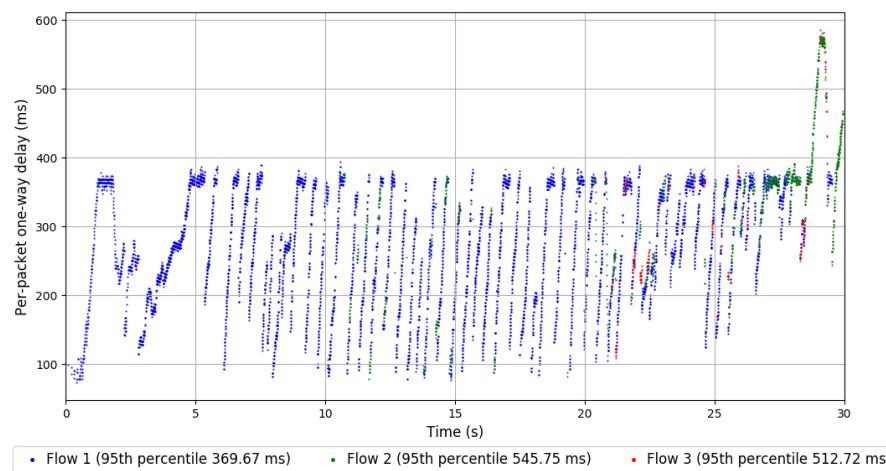
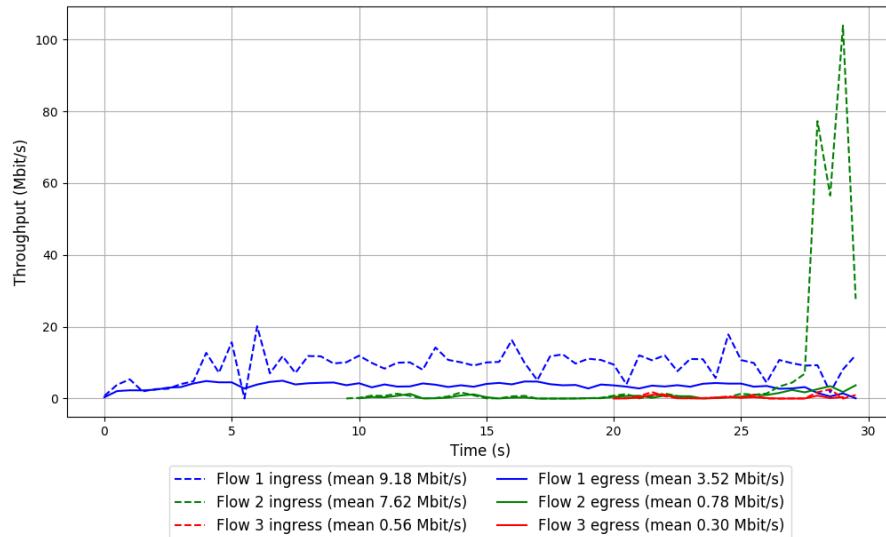


Run 3: Statistics of Verus

```
Start at: 2018-01-16 00:56:44
End at: 2018-01-16 00:57:14
Local clock offset: -17.545 ms
Remote clock offset: -17.165 ms

# Below is generated by plot.py at 2018-01-16 02:03:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.08 Mbit/s
95th percentile per-packet one-way delay: 374.281 ms
Loss rate: 71.66%
-- Flow 1:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 369.672 ms
Loss rate: 62.28%
-- Flow 2:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 545.753 ms
Loss rate: 89.63%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 512.721 ms
Loss rate: 51.71%
```

Run 3: Report of Verus — Data Link

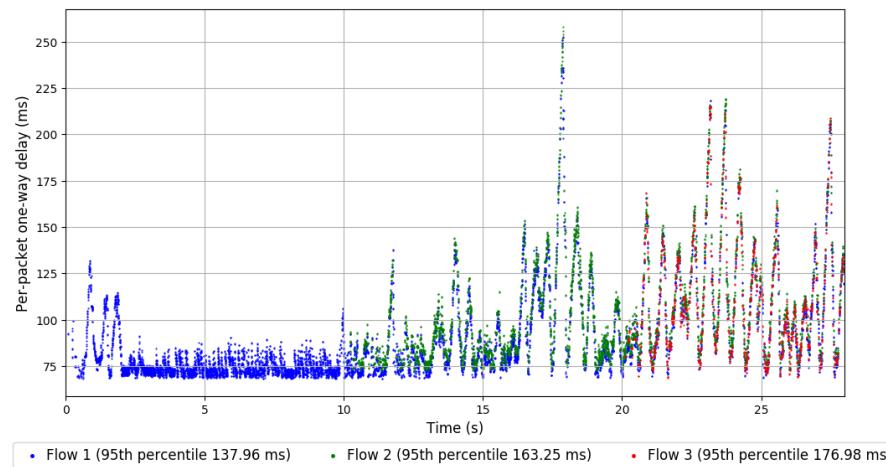
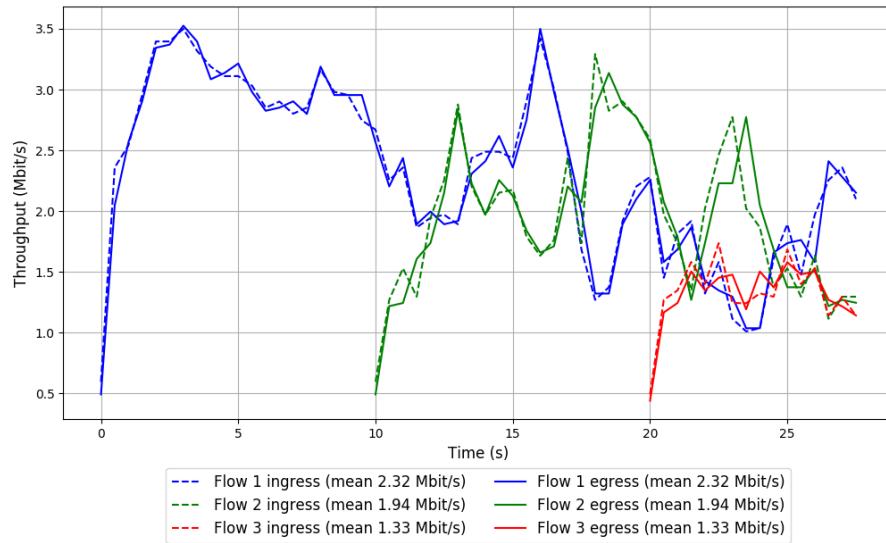


Run 1: Statistics of Copa

```
Start at: 2018-01-16 00:36:51
End at: 2018-01-16 00:37:21
Local clock offset: -16.776 ms
Remote clock offset: -17.624 ms

# Below is generated by plot.py at 2018-01-16 02:03:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.94 Mbit/s
95th percentile per-packet one-way delay: 150.966 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 137.959 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 163.253 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 1.33 Mbit/s
95th percentile per-packet one-way delay: 176.980 ms
Loss rate: 1.10%
```

Run 1: Report of Copa — Data Link

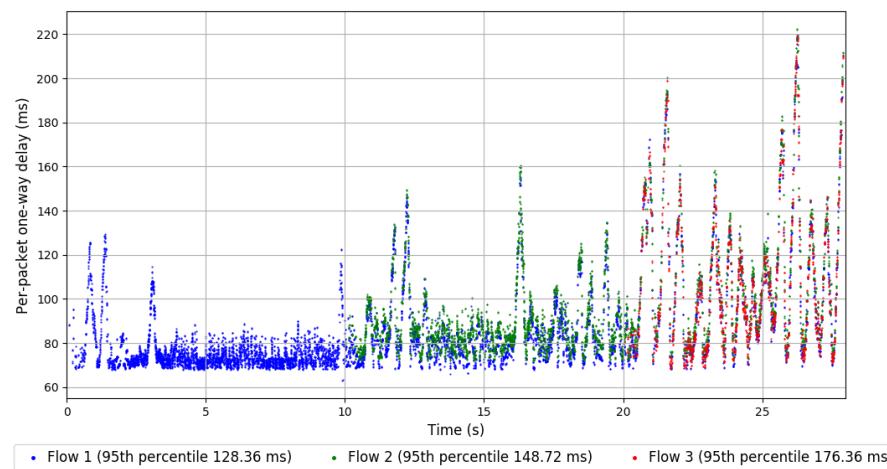
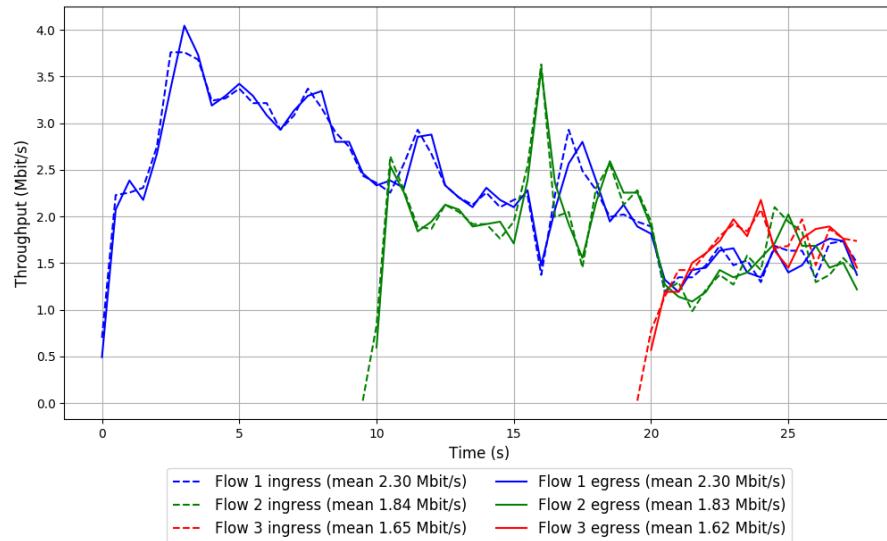


Run 2: Statistics of Copa

```
Start at: 2018-01-16 00:53:26
End at: 2018-01-16 00:53:56
Local clock offset: -17.246 ms
Remote clock offset: -15.988 ms

# Below is generated by plot.py at 2018-01-16 02:03:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.94 Mbit/s
95th percentile per-packet one-way delay: 143.155 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: 128.361 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 148.724 ms
Loss rate: 0.79%
-- Flow 3:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 176.363 ms
Loss rate: 2.38%
```

Run 2: Report of Copa — Data Link

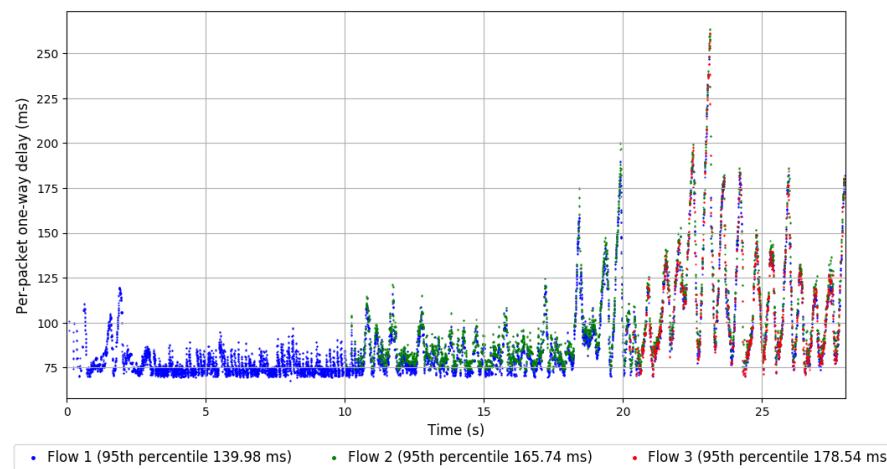
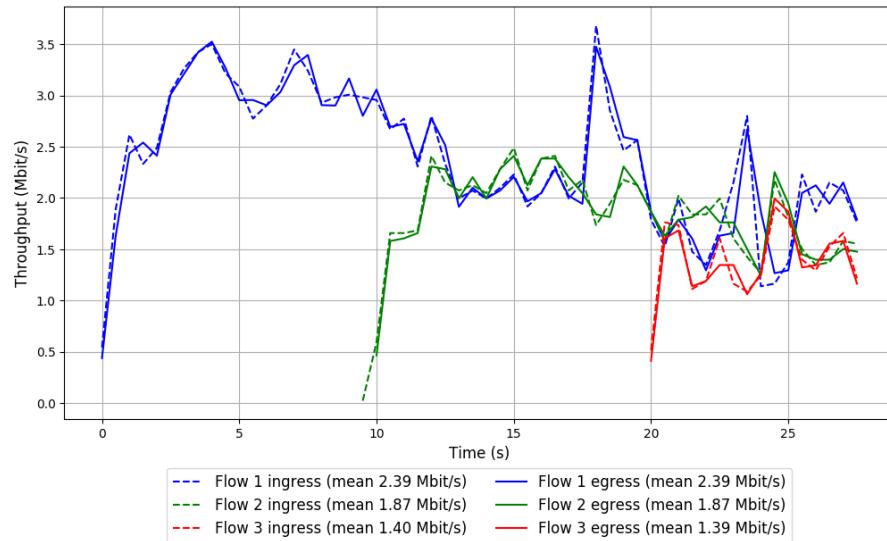


Run 3: Statistics of Copa

```
Start at: 2018-01-16 01:09:59
End at: 2018-01-16 01:10:29
Local clock offset: -16.741 ms
Remote clock offset: -16.06 ms

# Below is generated by plot.py at 2018-01-16 02:03:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.98 Mbit/s
95th percentile per-packet one-way delay: 153.350 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 139.978 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 165.742 ms
Loss rate: 0.54%
-- Flow 3:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 178.543 ms
Loss rate: 1.52%
```

Run 3: Report of Copa — Data Link

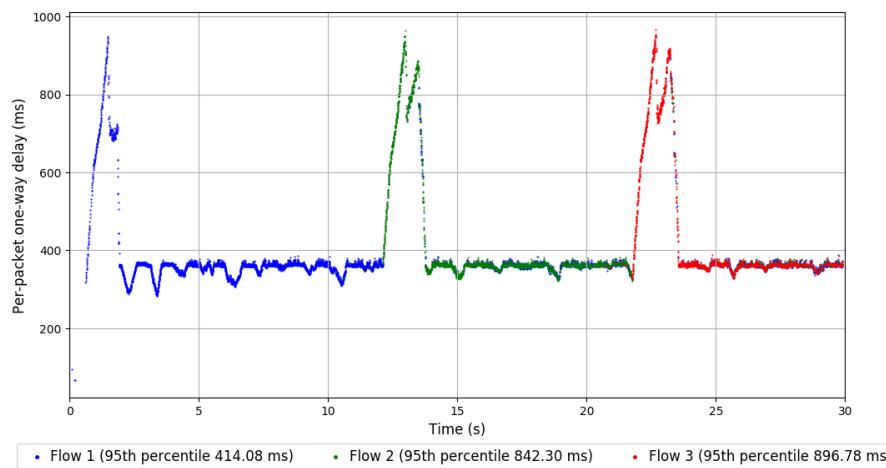
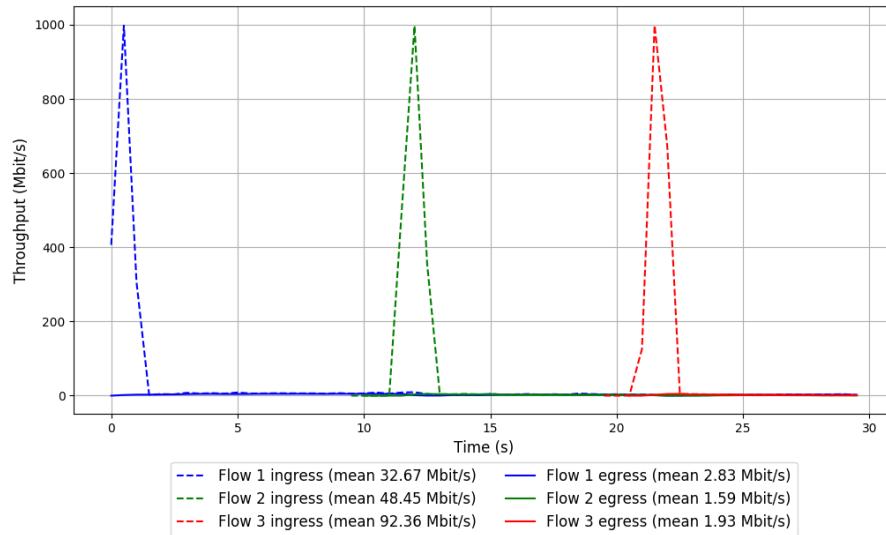


```
Run 1: Statistics of FillP

Start at: 2018-01-16 00:33:29
End at: 2018-01-16 00:33:59
Local clock offset: -14.52 ms
Remote clock offset: -16.917 ms

# Below is generated by plot.py at 2018-01-16 02:03:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 785.185 ms
Loss rate: 95.33%
-- Flow 1:
Average throughput: 2.83 Mbit/s
95th percentile per-packet one-way delay: 414.084 ms
Loss rate: 91.35%
-- Flow 2:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 842.297 ms
Loss rate: 96.78%
-- Flow 3:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 896.784 ms
Loss rate: 98.05%
```

Run 1: Report of FillP — Data Link

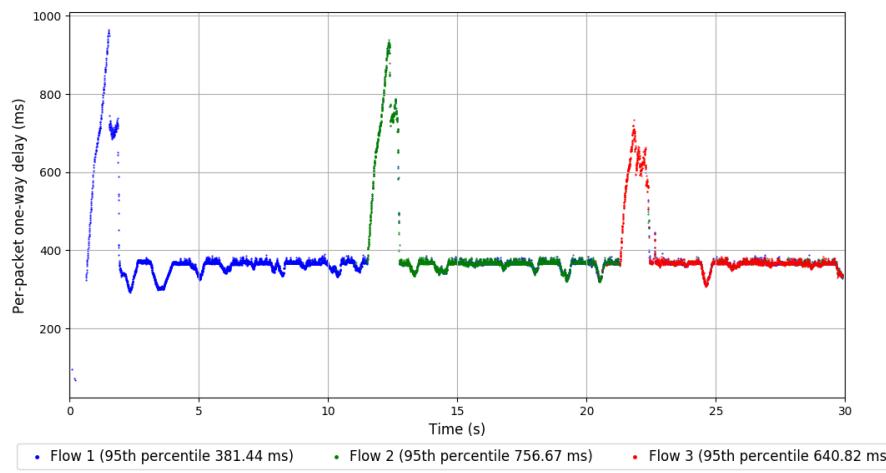
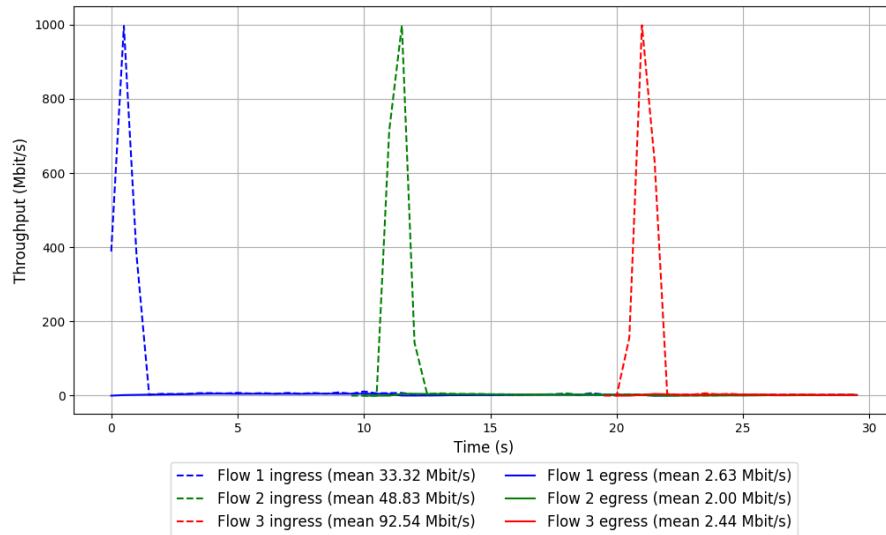


Run 2: Statistics of FillP

```
Start at: 2018-01-16 00:50:03
End at: 2018-01-16 00:50:33
Local clock offset: -14.334 ms
Remote clock offset: -17.664 ms

# Below is generated by plot.py at 2018-01-16 02:03:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.73 Mbit/s
95th percentile per-packet one-way delay: 656.492 ms
Loss rate: 95.12%
-- Flow 1:
Average throughput: 2.63 Mbit/s
95th percentile per-packet one-way delay: 381.444 ms
Loss rate: 92.13%
-- Flow 2:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 756.674 ms
Loss rate: 95.97%
-- Flow 3:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 640.815 ms
Loss rate: 97.47%
```

Run 2: Report of FillP — Data Link

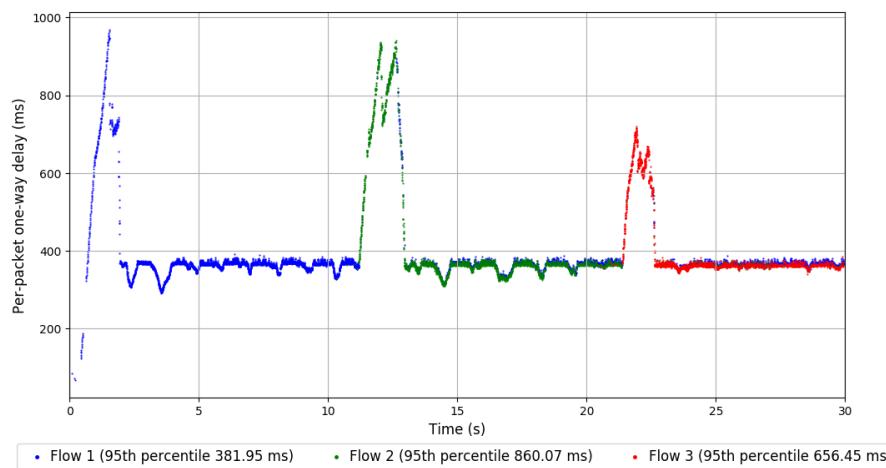
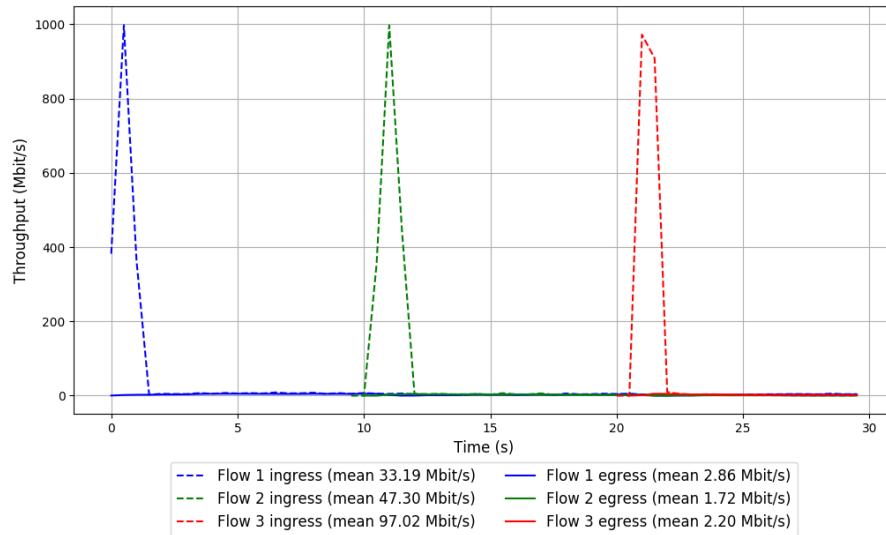


Run 3: Statistics of FillP

```
Start at: 2018-01-16 01:06:38
End at: 2018-01-16 01:07:08
Local clock offset: -15.689 ms
Remote clock offset: -17.707 ms

# Below is generated by plot.py at 2018-01-16 02:03:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.67 Mbit/s
95th percentile per-packet one-way delay: 701.588 ms
Loss rate: 95.19%
-- Flow 1:
Average throughput: 2.86 Mbit/s
95th percentile per-packet one-way delay: 381.954 ms
Loss rate: 91.41%
-- Flow 2:
Average throughput: 1.72 Mbit/s
95th percentile per-packet one-way delay: 860.072 ms
Loss rate: 96.45%
-- Flow 3:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 656.449 ms
Loss rate: 97.85%
```

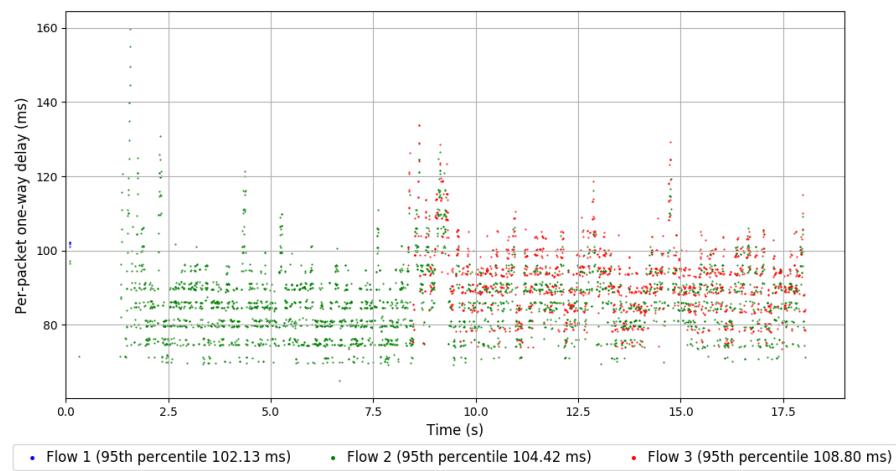
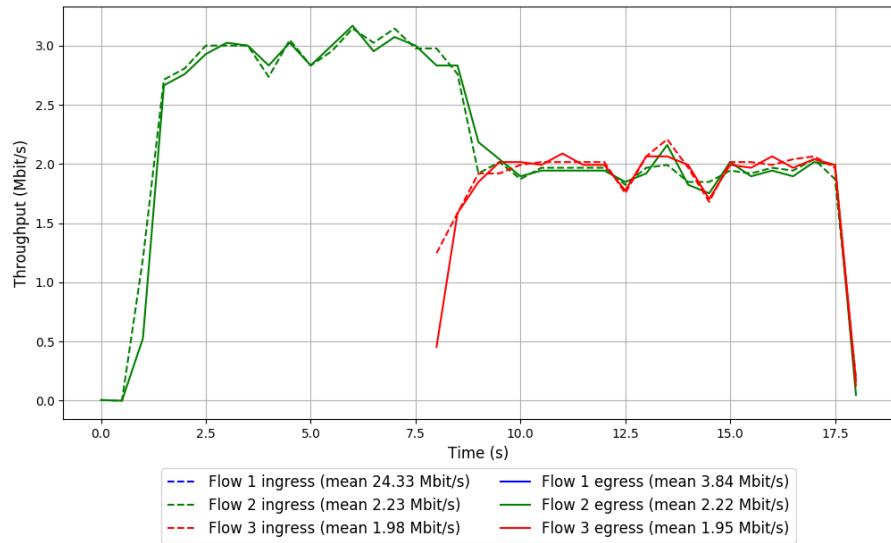
Run 3: Report of FillP — Data Link



Run 1: Statistics of Indigo

Start at: 2018-01-16 00:34:38
End at: 2018-01-16 00:35:08
Local clock offset: -13.979 ms
Remote clock offset: -15.735 ms

Run 1: Report of Indigo — Data Link

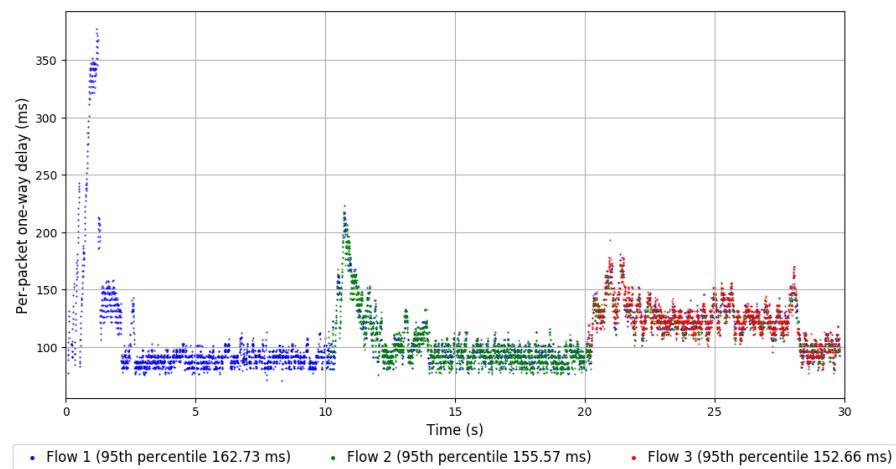
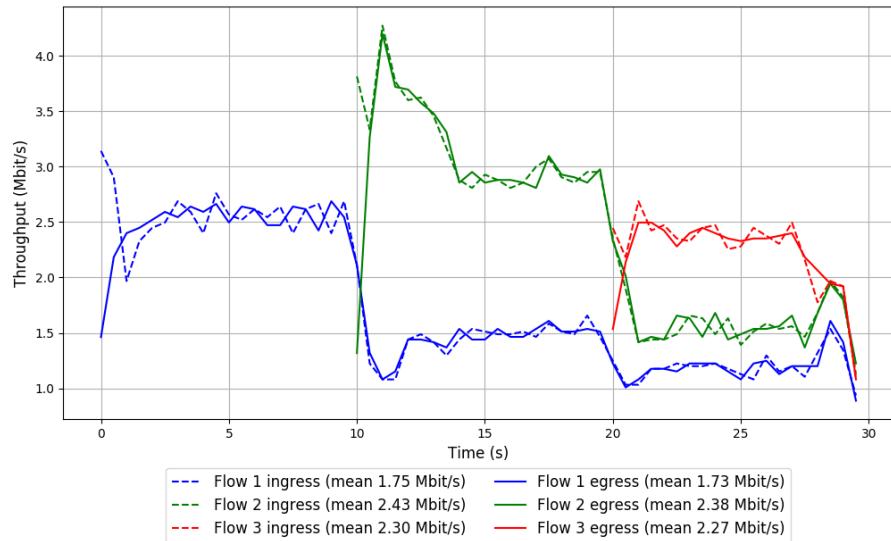


Run 2: Statistics of Indigo

```
Start at: 2018-01-16 00:51:14
End at: 2018-01-16 00:51:44
Local clock offset: -15.252 ms
Remote clock offset: -18.07 ms

# Below is generated by plot.py at 2018-01-16 02:03:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.05 Mbit/s
95th percentile per-packet one-way delay: 156.530 ms
Loss rate: 1.93%
-- Flow 1:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 162.731 ms
Loss rate: 1.47%
-- Flow 2:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 155.570 ms
Loss rate: 2.37%
-- Flow 3:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 152.662 ms
Loss rate: 2.03%
```

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

```
Start at: 2018-01-16 01:07:47
End at: 2018-01-16 01:08:18
Local clock offset: -14.849 ms
Remote clock offset: -19.83 ms

# Below is generated by plot.py at 2018-01-16 02:03:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 134.566 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 126.258 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 3.01 Mbit/s
95th percentile per-packet one-way delay: 139.827 ms
Loss rate: 2.40%
-- Flow 3:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 122.829 ms
Loss rate: 2.38%
```

Run 3: Report of Indigo — Data Link

