

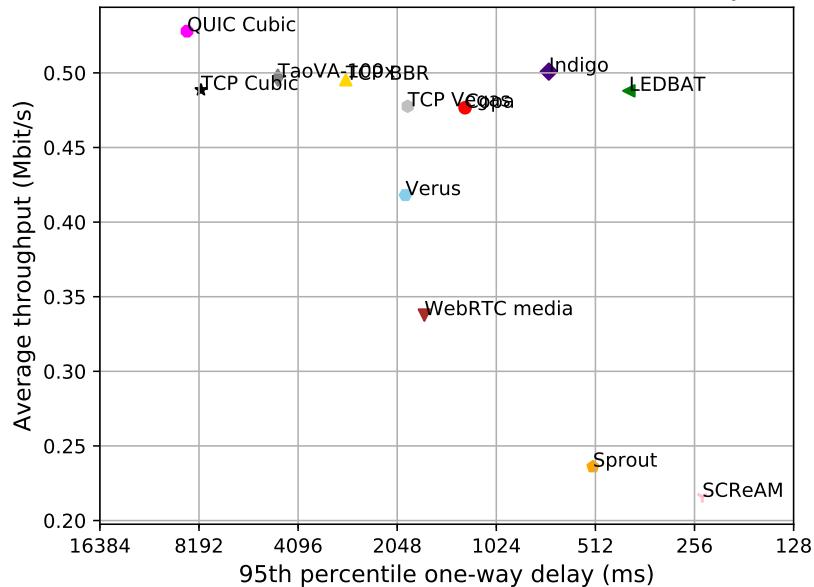
Pantheon Report

Generated at 2018-08-01 23:49:22 (UTC).
Data path: Colombia ppp0 ppp0 (*remote*) → AWS Brazil 2 Ethernet (*local*).
Repeated the test of 17 congestion control schemes 3 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

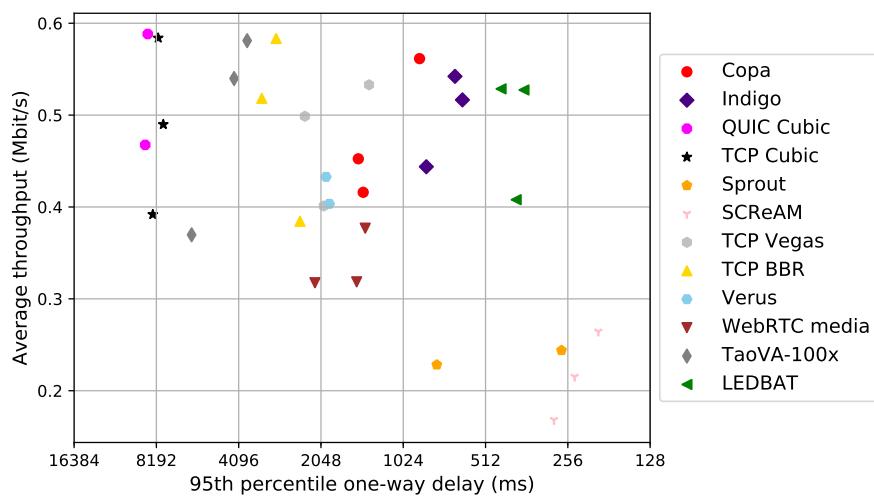
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
Git summary:  
branch: master @ 640164b5b17c7c6561fff57729b3b5935d8596ce  
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834  
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe  
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4  
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d  
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf  
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39  
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1  
  M receiver/src/buffer.h  
  M receiver/src/core.cpp  
  M sender/src/buffer.h  
  M sender/src/core.cpp  
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab  
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42  
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2  
  M src/ScreamClient  
  M src/ScreamServer  
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26  
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494  
  M src/verus.hpp  
  M tools/plot.py  
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4  
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
 3 flows with 10s interval between flows



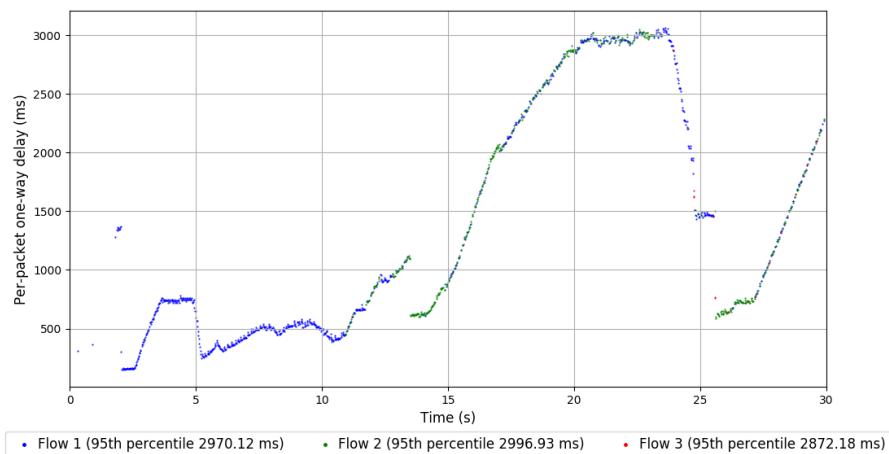
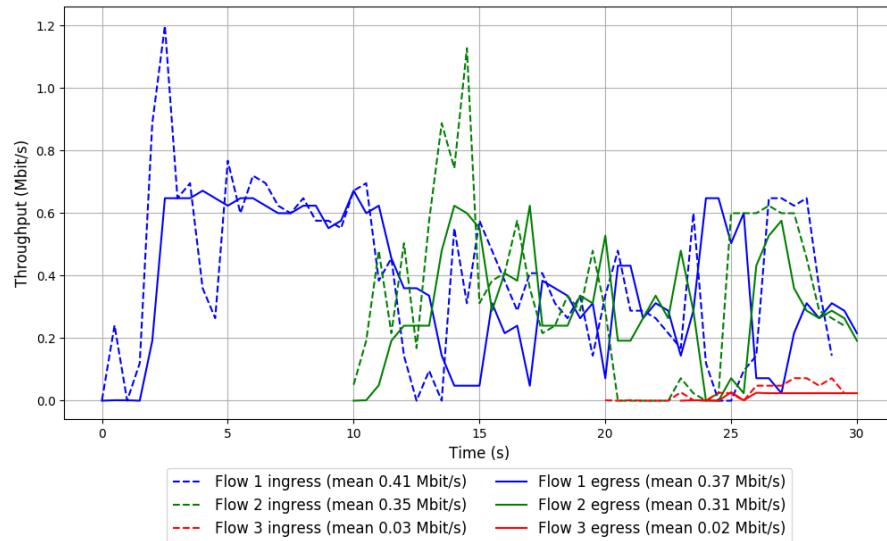
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.30	0.27	0.04	2836.05	2975.79	2833.45	4.50	6.95	39.63
Copa		0.29	0.20	0.16	1215.99	1242.46	1325.71	3.00	6.22	13.23
TCP Cubic		0.48	0.02	0.00	8089.82	6670.33	8327.18	31.51	53.17	90.68
FillP		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FillP-Sheep		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indigo		0.27	0.22	0.28	648.31	694.46	781.75	0.52	0.86	2.32
LEDBAT		0.23	0.26	0.29	365.64	399.02	421.08	0.04	0.40	5.88
PCC-Allegro		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCC-Expr		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
QUIC Cubic		0.52	0.02	0.01	8908.43	8482.55	9360.53	32.09	0.00	58.34
SCReAM		0.08	0.13	0.14	223.18	239.32	297.08	0.75	1.02	1.86
Sprout		0.12	0.11	0.14	472.41	319.86	752.65	0.99	1.48	2.29
TaoVA-100x		0.31	0.24	0.16	3744.58	4749.66	4415.78	14.20	10.61	43.58
TCP Vegas		0.27	0.23	0.22	1523.23	1953.32	1989.52	1.46	4.89	21.42
Verus		0.39	0.03	0.04	1935.99	1807.23	1744.27	2.53	22.48	29.21
PCC-Vivace		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WebRTC media		0.15	0.12	0.07	1669.57	1726.29	1638.41	0.26	0.67	7.94

Run 1: Statistics of TCP BBR

```
Start at: 2018-08-01 23:02:59
End at: 2018-08-01 23:03:29
Local clock offset: -5.812 ms
Remote clock offset: 4.719 ms

# Below is generated by plot.py at 2018-08-01 23:48:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2987.065 ms
Loss rate: 9.39%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 2970.118 ms
Loss rate: 6.77%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 2996.935 ms
Loss rate: 12.32%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 2872.181 ms
Loss rate: 51.48%
```

Run 1: Report of TCP BBR — Data Link

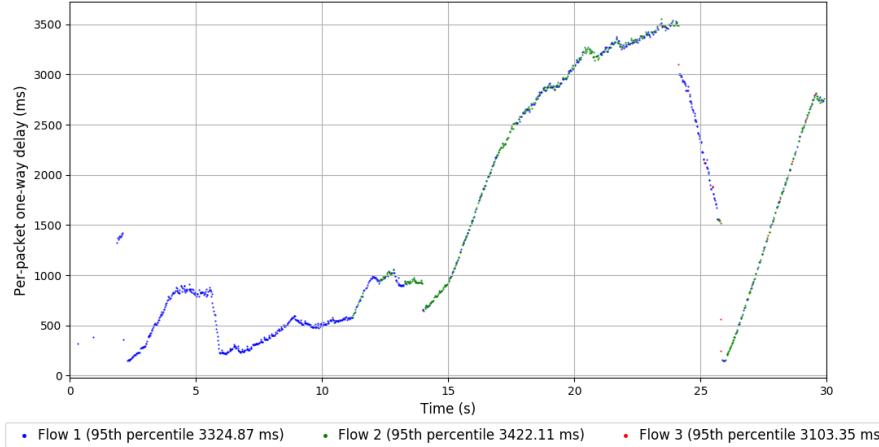
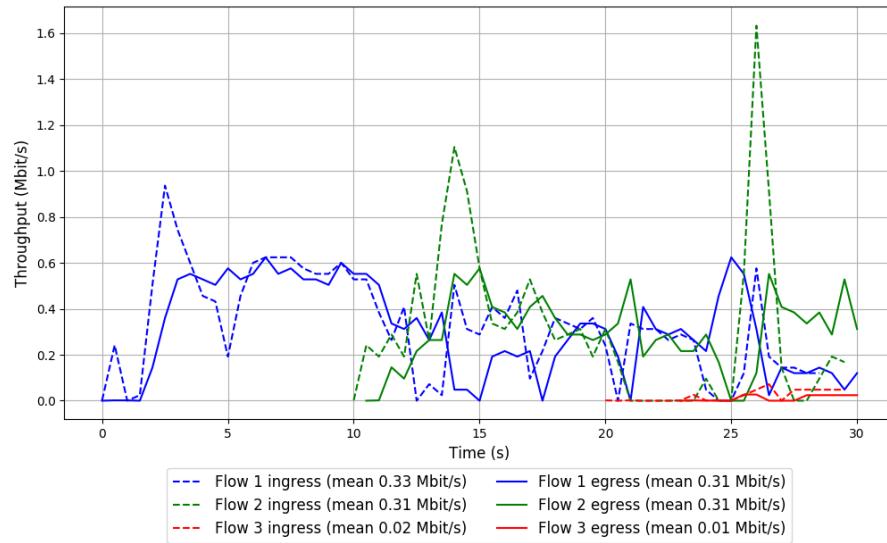


Run 2: Statistics of TCP BBR

```
Start at: 2018-08-01 23:23:52
End at: 2018-08-01 23:24:22
Local clock offset: -6.369 ms
Remote clock offset: 9.057 ms

# Below is generated by plot.py at 2018-08-01 23:48:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 3371.722 ms
Loss rate: 3.77%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 3324.866 ms
Loss rate: 2.52%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 3422.105 ms
Loss rate: 3.88%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 3103.350 ms
Loss rate: 57.58%
```

Run 2: Report of TCP BBR — Data Link

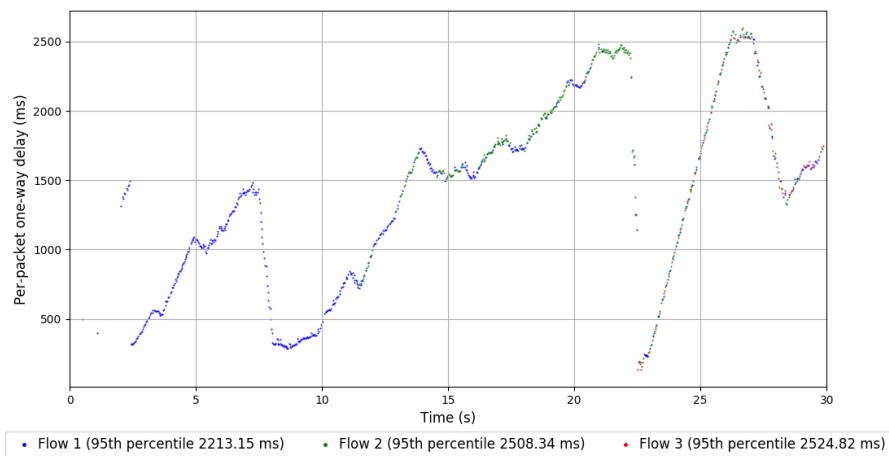
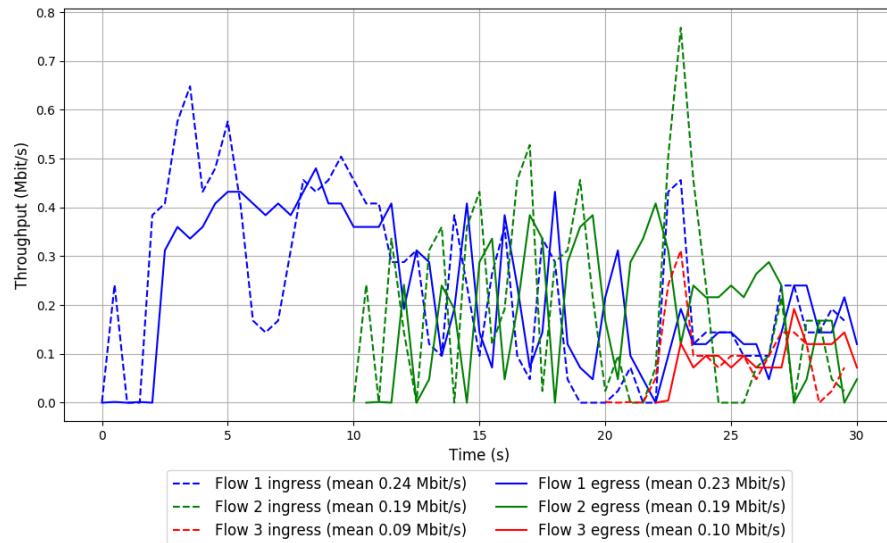


Run 3: Statistics of TCP BBR

```
Start at: 2018-08-01 23:44:33
End at: 2018-08-01 23:45:03
Local clock offset: -6.193 ms
Remote clock offset: 14.458 ms

# Below is generated by plot.py at 2018-08-01 23:48:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 2442.980 ms
Loss rate: 4.75%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 2213.151 ms
Loss rate: 4.20%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 2508.344 ms
Loss rate: 4.66%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 2524.818 ms
Loss rate: 9.83%
```

Run 3: Report of TCP BBR — Data Link

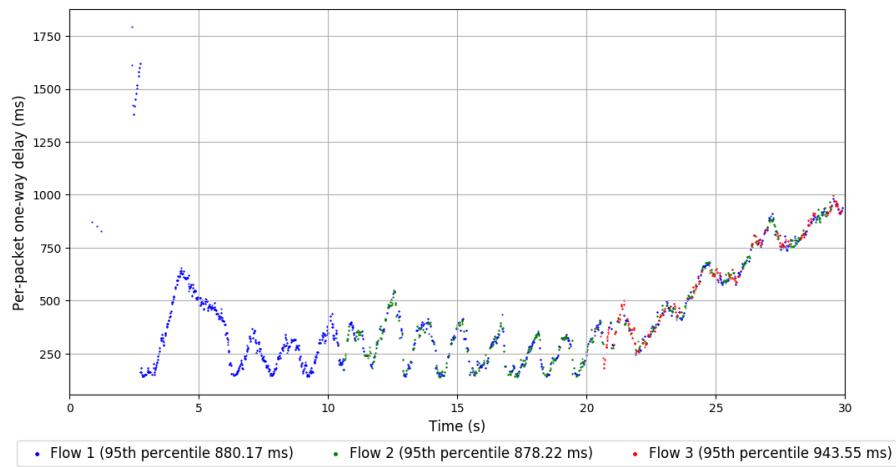
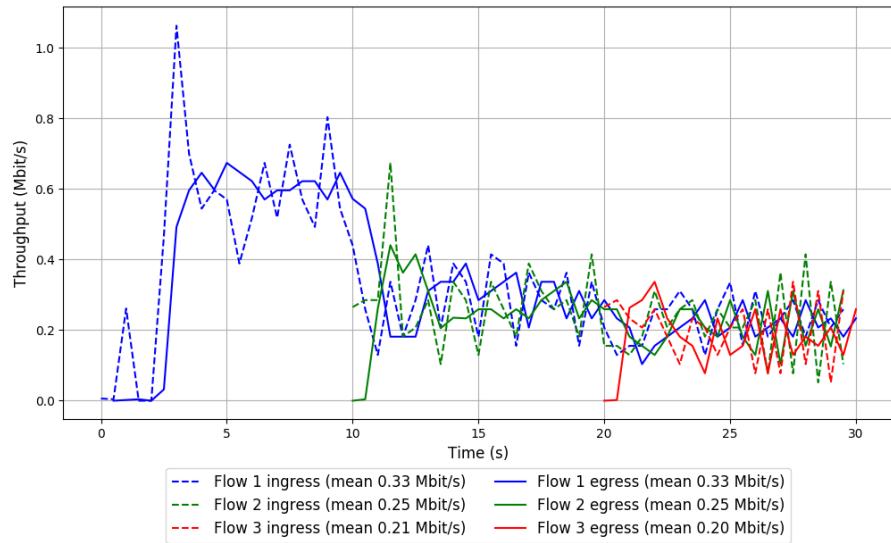


Run 1: Statistics of Copa

```
Start at: 2018-08-01 23:01:48
End at: 2018-08-01 23:02:18
Local clock offset: -5.762 ms
Remote clock offset: 9.557 ms

# Below is generated by plot.py at 2018-08-01 23:48:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 892.685 ms
Loss rate: 3.97%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 880.169 ms
Loss rate: 2.47%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 878.220 ms
Loss rate: 4.71%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 943.549 ms
Loss rate: 9.48%
```

Run 1: Report of Copa — Data Link

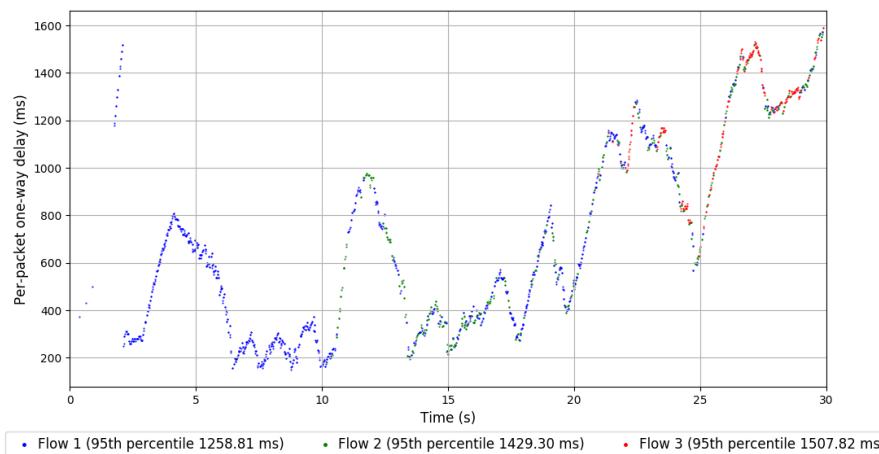
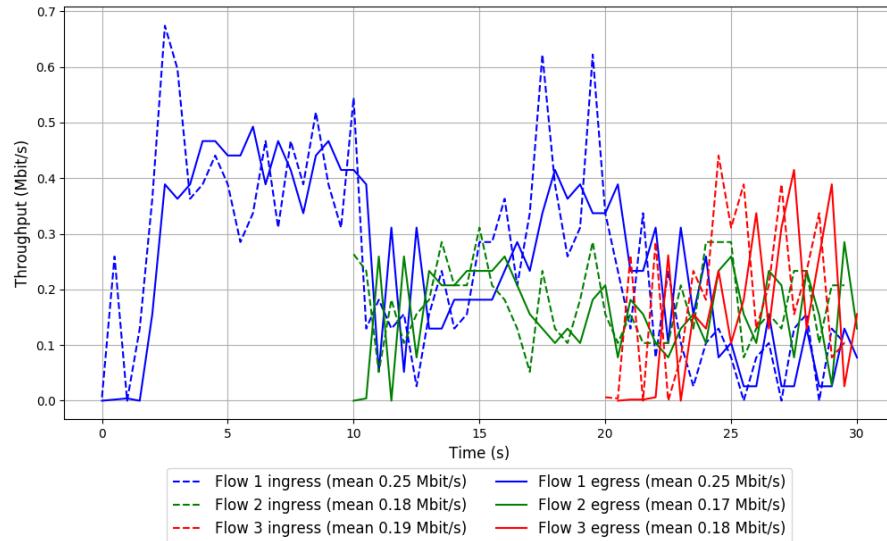


Run 2: Statistics of Copa

```
Start at: 2018-08-01 23:22:40
End at: 2018-08-01 23:23:10
Local clock offset: -6.386 ms
Remote clock offset: 11.314 ms

# Below is generated by plot.py at 2018-08-01 23:48:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 1434.881 ms
Loss rate: 5.58%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 1258.807 ms
Loss rate: 1.89%
-- Flow 2:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1429.298 ms
Loss rate: 8.05%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 1507.822 ms
Loss rate: 15.60%
```

Run 2: Report of Copa — Data Link

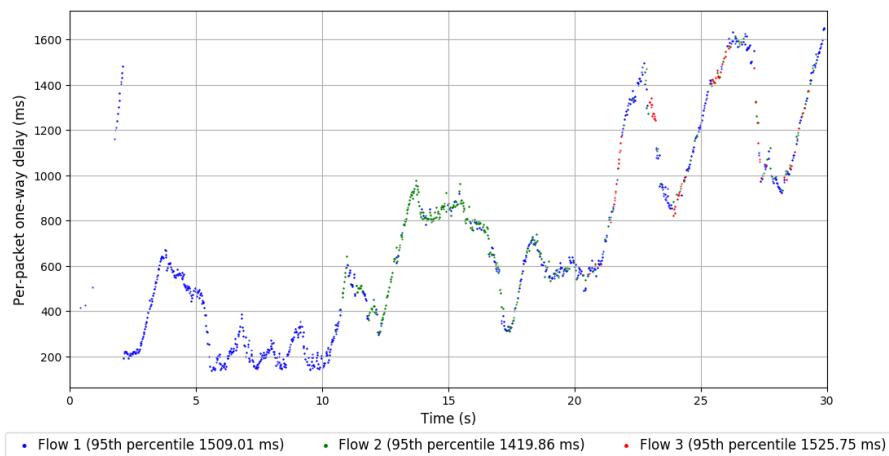
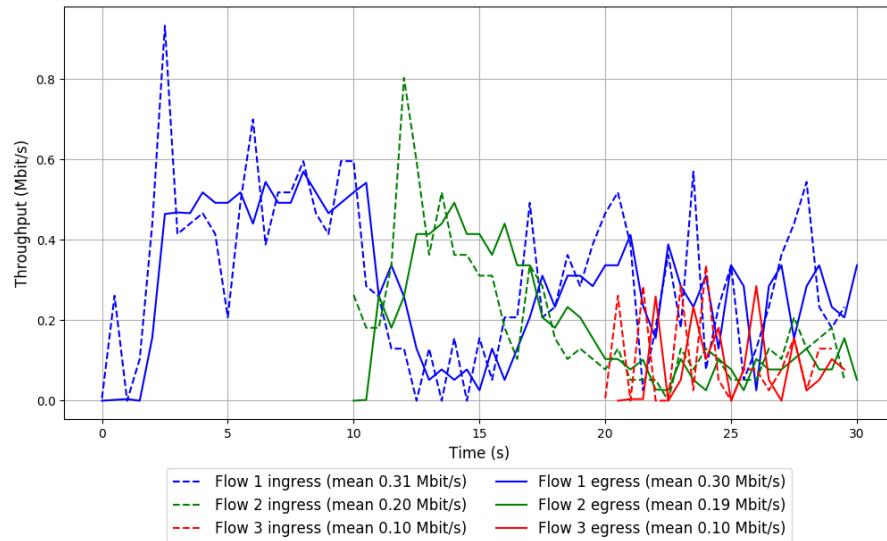


Run 3: Statistics of Copa

```
Start at: 2018-08-01 23:43:21
End at: 2018-08-01 23:43:51
Local clock offset: -6.208 ms
Remote clock offset: 16.95 ms

# Below is generated by plot.py at 2018-08-01 23:48:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 1495.091 ms
Loss rate: 5.68%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 1509.006 ms
Loss rate: 4.65%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1419.856 ms
Loss rate: 5.90%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 1525.751 ms
Loss rate: 14.61%
```

Run 3: Report of Copa — Data Link

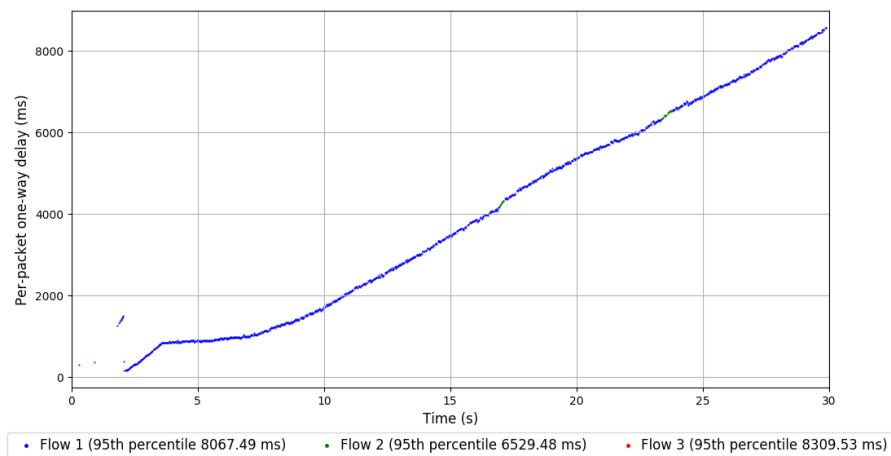
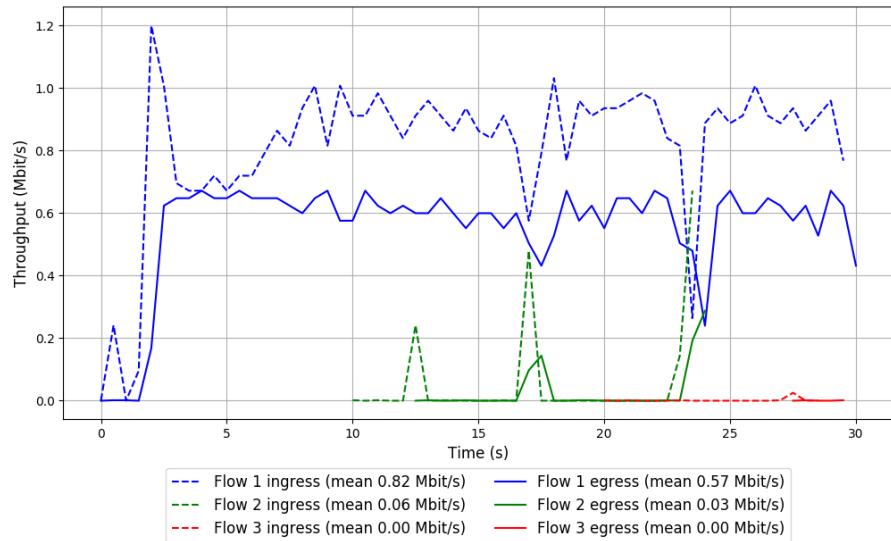


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2018-08-01 23:04:11
End at: 2018-08-01 23:04:41
Local clock offset: -5.964 ms
Remote clock offset: 5.848 ms

# Below is generated by plot.py at 2018-08-01 23:48:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 8067.486 ms
Loss rate: 31.52%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 8067.492 ms
Loss rate: 30.81%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 6529.481 ms
Loss rate: 52.83%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8309.535 ms
Loss rate: 90.68%
```

Run 1: Report of TCP Cubic — Data Link

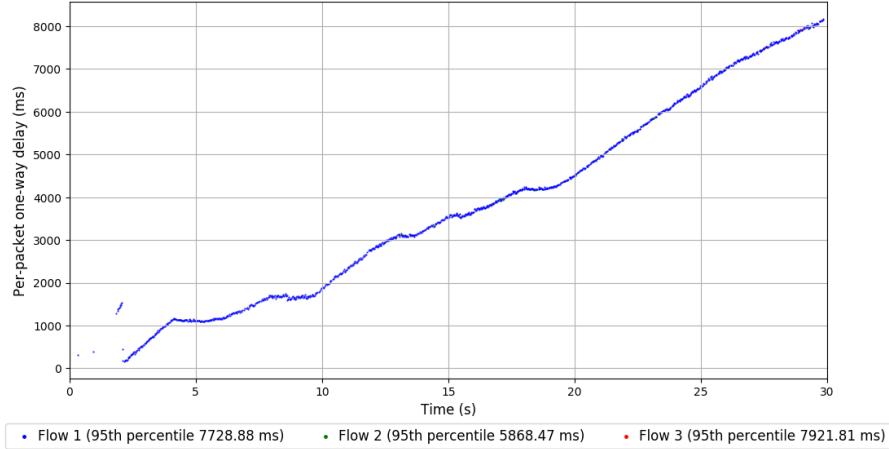
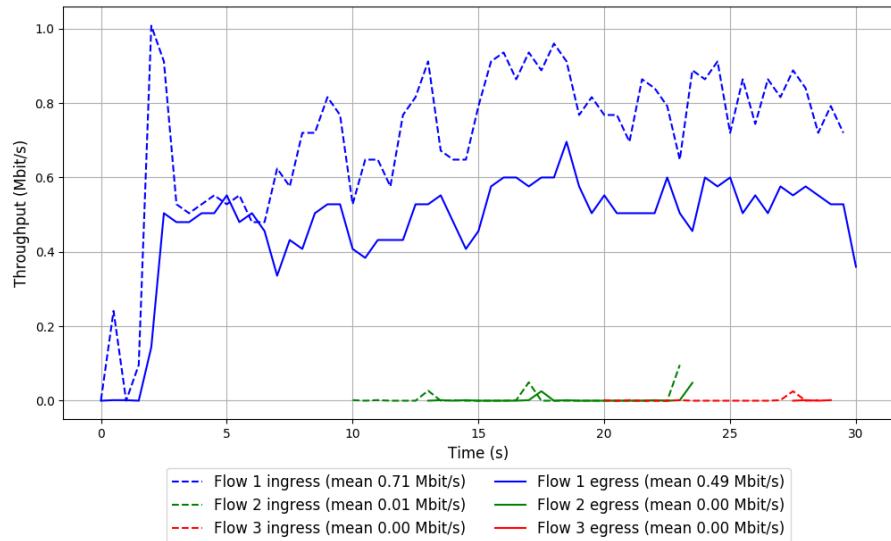


Run 2: Statistics of TCP Cubic

```
Start at: 2018-08-01 23:25:04
End at: 2018-08-01 23:25:34
Local clock offset: -6.304 ms
Remote clock offset: 12.366 ms

# Below is generated by plot.py at 2018-08-01 23:48:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 7728.880 ms
Loss rate: 31.92%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 7728.880 ms
Loss rate: 31.78%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 5868.470 ms
Loss rate: 53.86%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7921.810 ms
Loss rate: 90.68%
```

Run 2: Report of TCP Cubic — Data Link

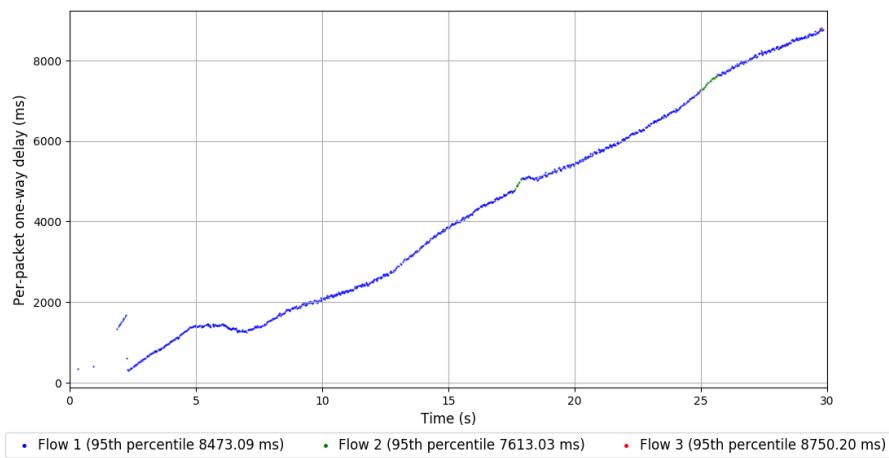
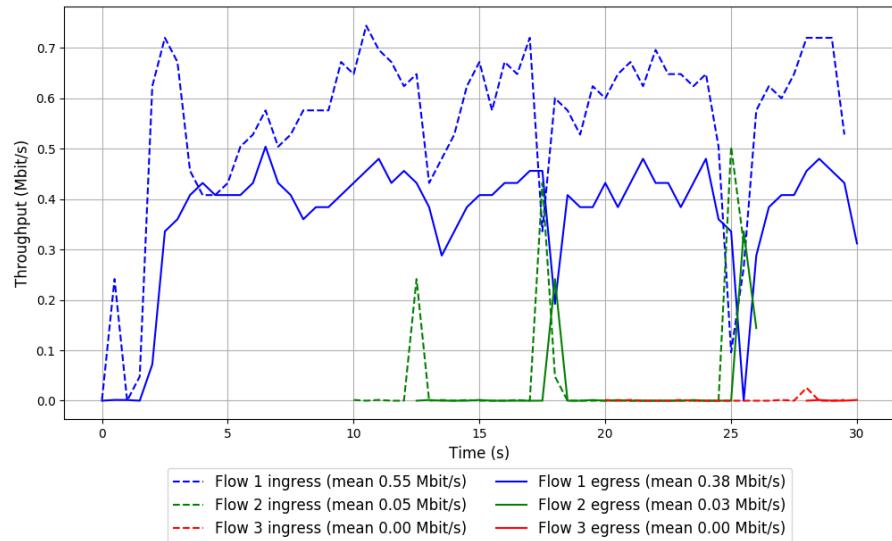


Run 3: Statistics of TCP Cubic

```
Start at: 2018-08-01 23:45:44
End at: 2018-08-01 23:46:14
Local clock offset: -6.264 ms
Remote clock offset: 18.304 ms

# Below is generated by plot.py at 2018-08-01 23:48:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 8442.843 ms
Loss rate: 32.94%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 8473.095 ms
Loss rate: 31.94%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 7613.030 ms
Loss rate: 52.83%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8750.202 ms
Loss rate: 90.68%
```

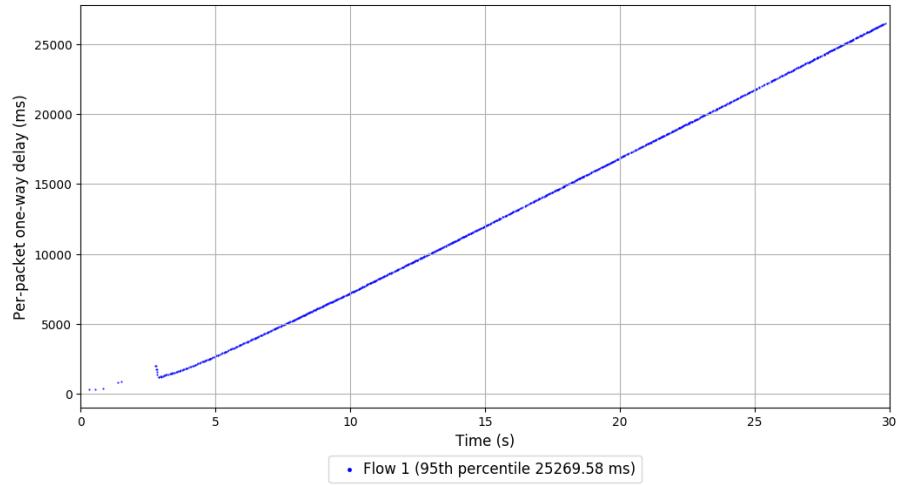
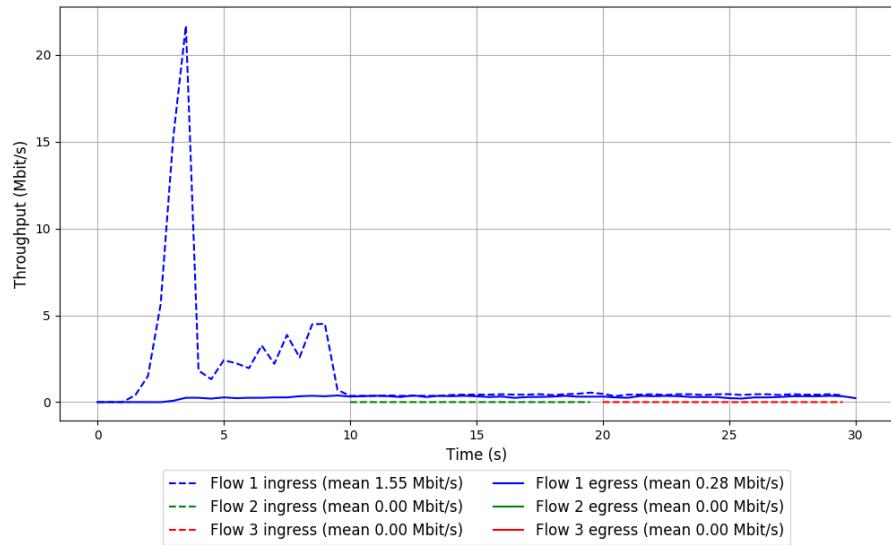
Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-08-01 22:55:10
End at: 2018-08-01 22:55:40
Local clock offset: -5.114 ms
Remote clock offset: 5.368 ms

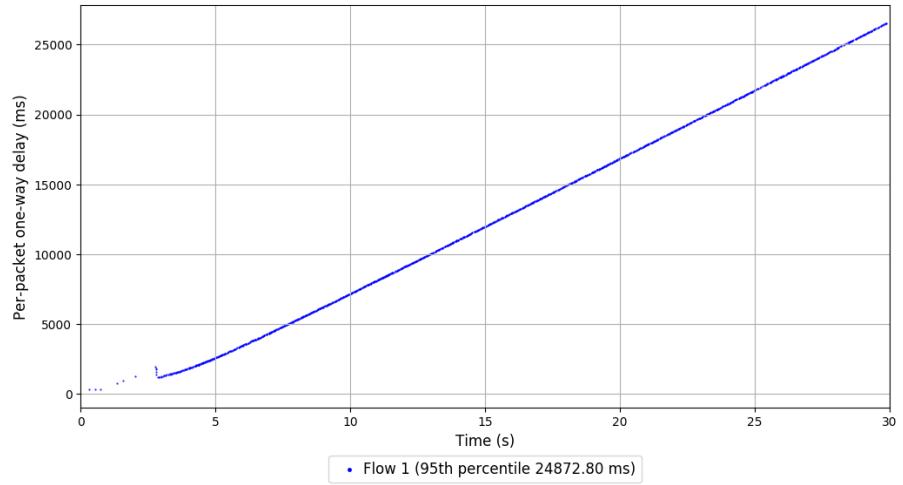
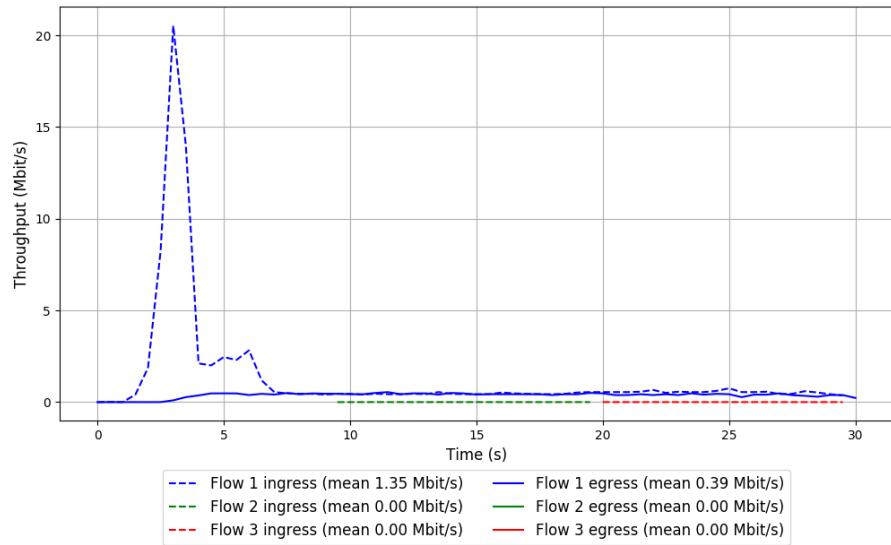
Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-08-01 23:16:16
End at: 2018-08-01 23:16:46
Local clock offset: -6.277 ms
Remote clock offset: 10.057 ms

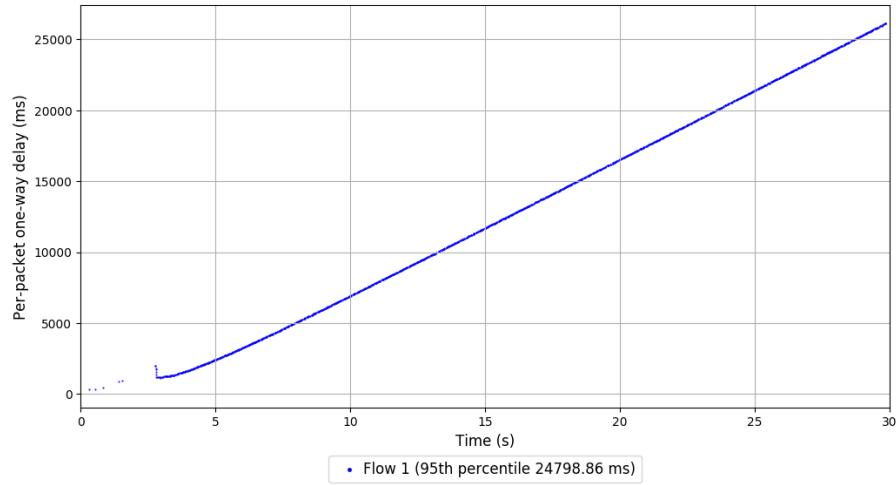
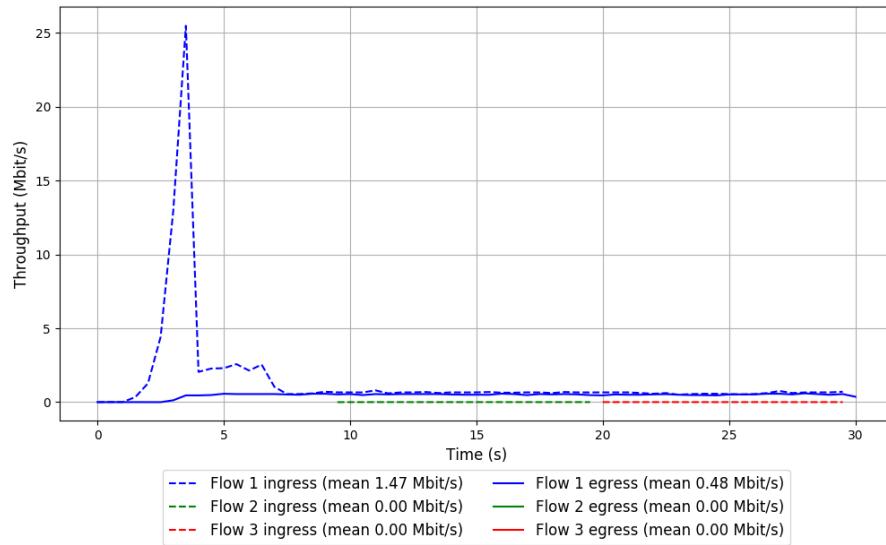
Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-08-01 23:37:14
End at: 2018-08-01 23:37:44
Local clock offset: -6.267 ms
Remote clock offset: 17.126 ms

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

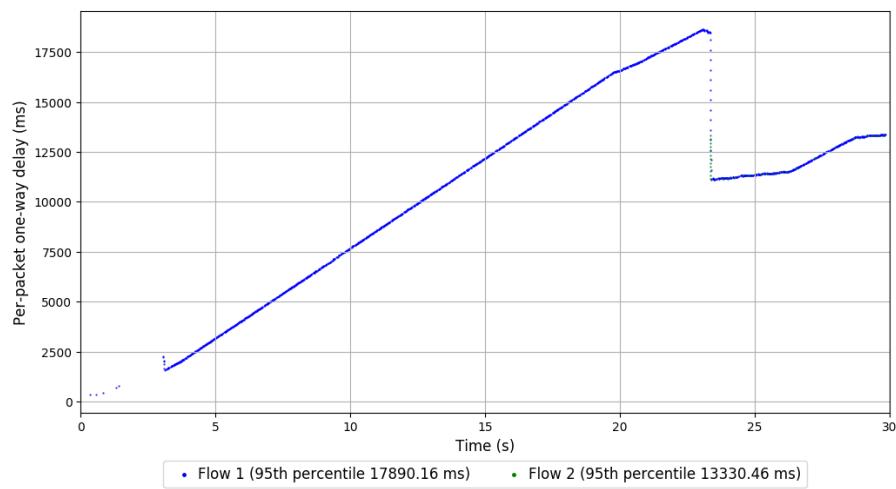
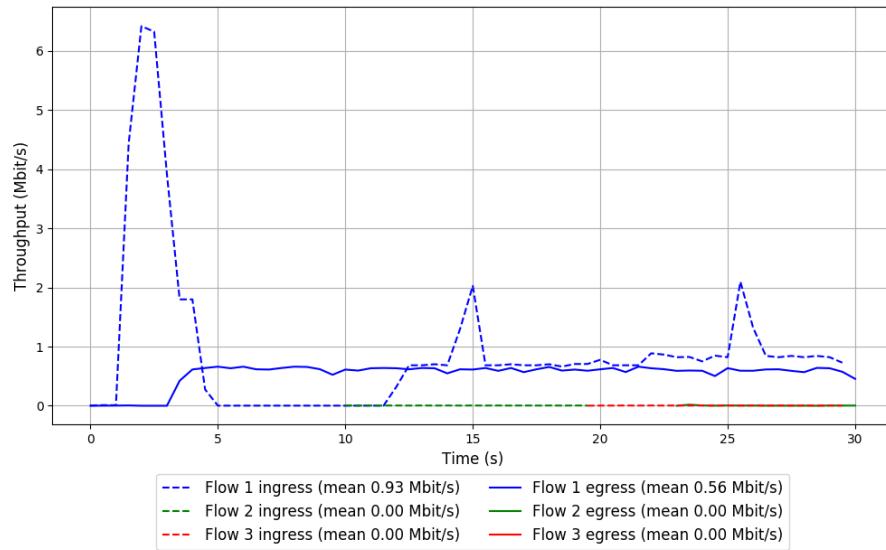
Start at: 2018-08-01 23:06:34

End at: 2018-08-01 23:07:04

Local clock offset: -6.022 ms

Remote clock offset: 8.735 ms

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

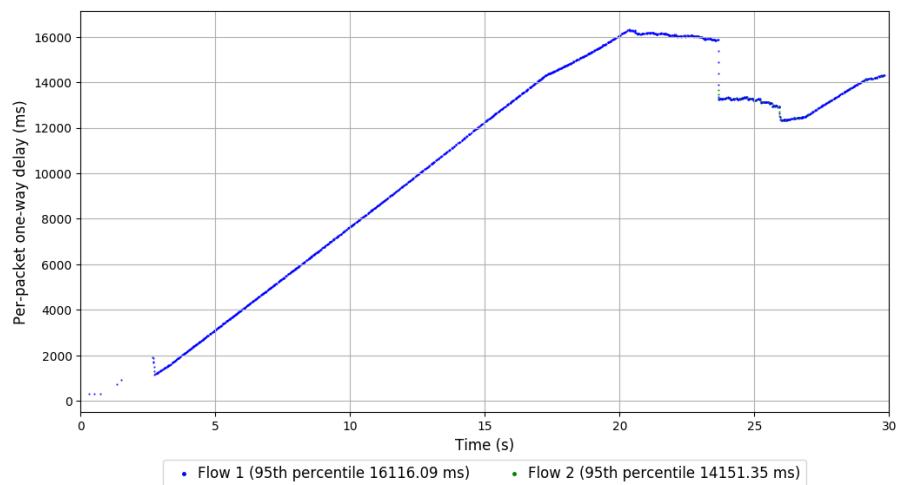
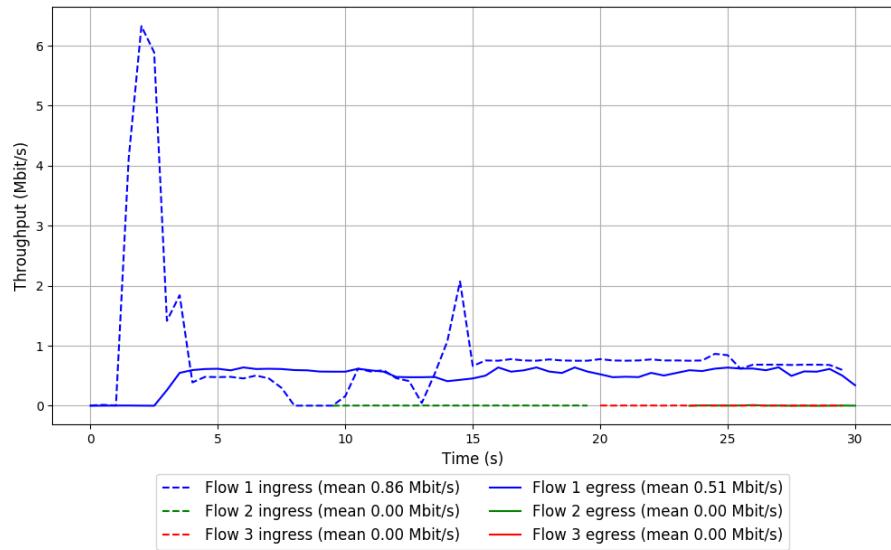
Start at: 2018-08-01 23:27:27

End at: 2018-08-01 23:27:57

Local clock offset: -6.26 ms

Remote clock offset: 14.587 ms

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

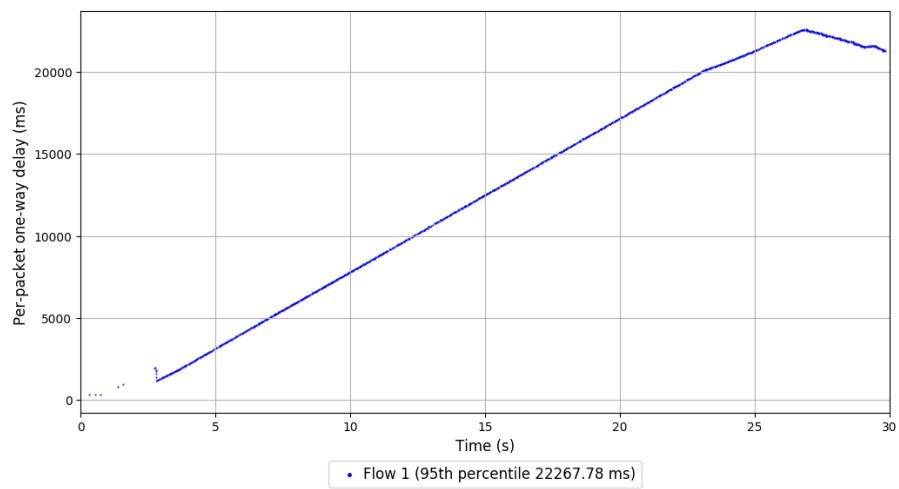
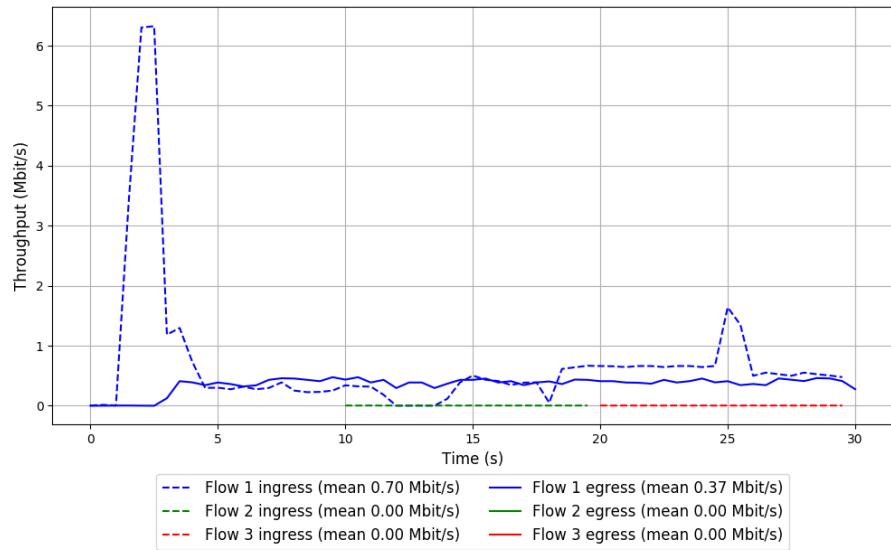
Start at: 2018-08-01 23:48:08

End at: 2018-08-01 23:48:38

Local clock offset: -6.173 ms

Remote clock offset: 18.479 ms

Run 3: Report of FillP-Sheep — Data Link

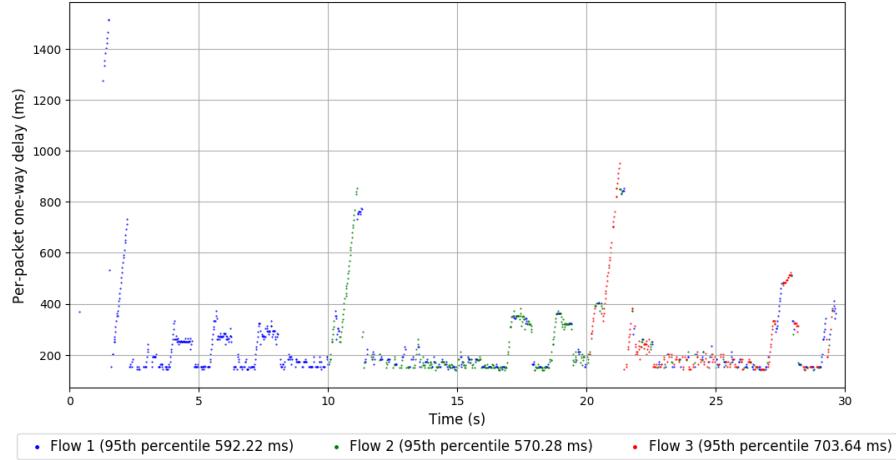
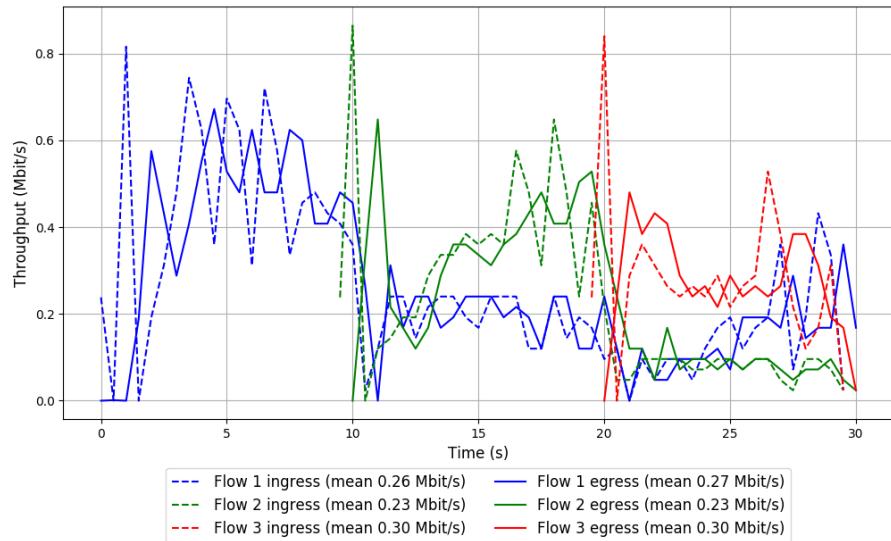


Run 1: Statistics of Indigo

```
Start at: 2018-08-01 22:47:57
End at: 2018-08-01 22:48:27
Local clock offset: -4.743 ms
Remote clock offset: 7.636 ms

# Below is generated by plot.py at 2018-08-01 23:48:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 622.053 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 592.222 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 570.276 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 703.638 ms
Loss rate: 2.46%
```

Run 1: Report of Indigo — Data Link

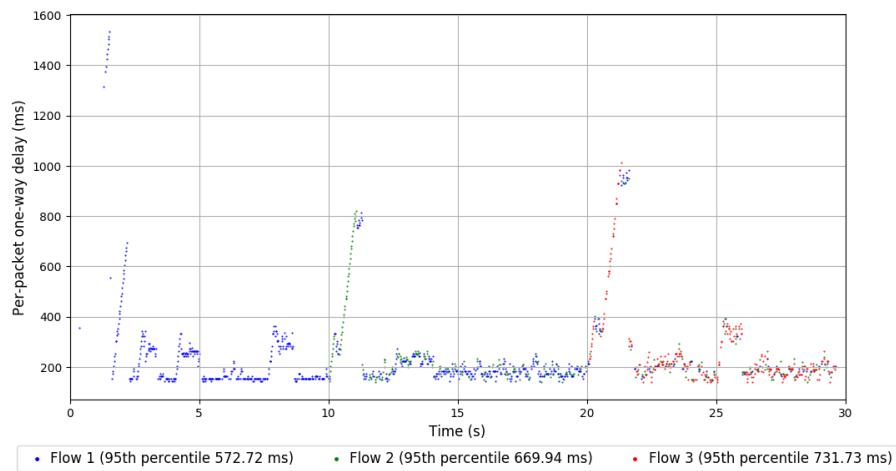
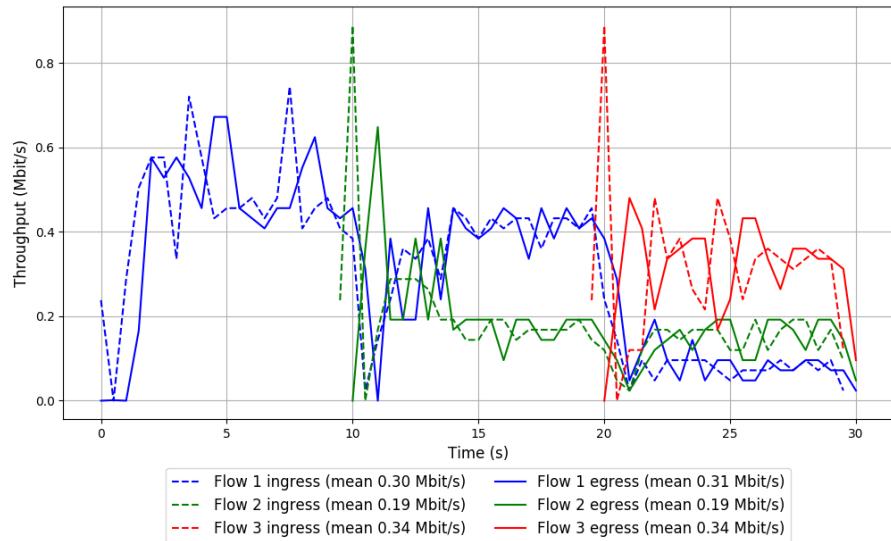


Run 2: Statistics of Indigo

```
Start at: 2018-08-01 23:08:57
End at: 2018-08-01 23:09:27
Local clock offset: -6.097 ms
Remote clock offset: 9.866 ms

# Below is generated by plot.py at 2018-08-01 23:48:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 662.350 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 572.724 ms
Loss rate: 0.27%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 669.944 ms
Loss rate: 1.29%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 731.728 ms
Loss rate: 2.53%
```

Run 2: Report of Indigo — Data Link

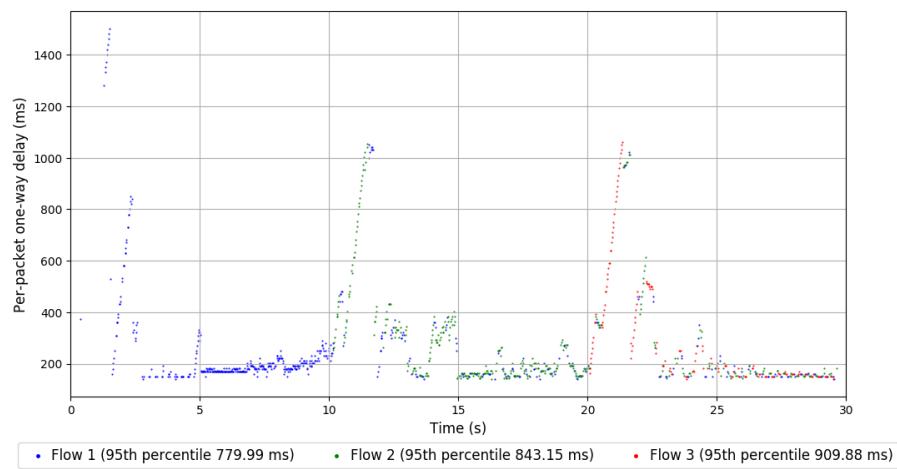
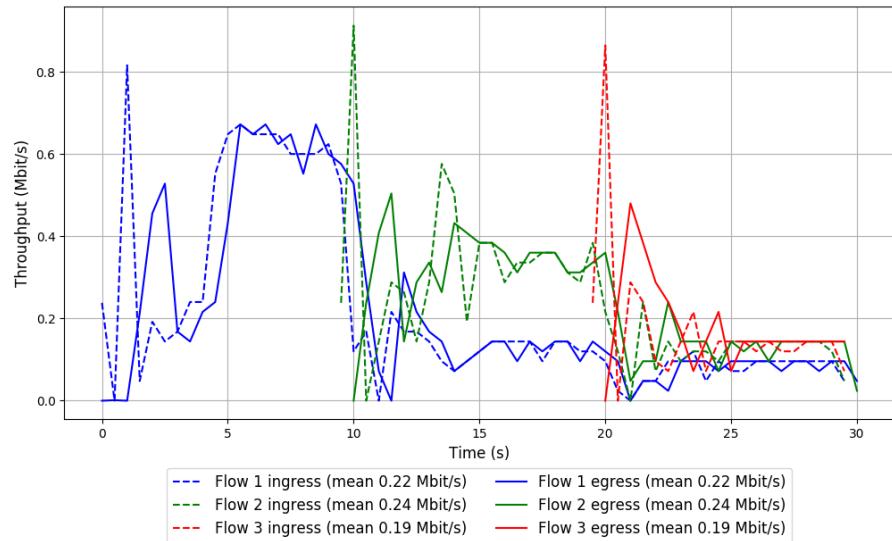


Run 3: Statistics of Indigo

```
Start at: 2018-08-01 23:29:51
End at: 2018-08-01 23:30:21
Local clock offset: -6.255 ms
Remote clock offset: 11.465 ms

# Below is generated by plot.py at 2018-08-01 23:48:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 843.146 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 779.989 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 843.146 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 909.883 ms
Loss rate: 1.96%
```

Run 3: Report of Indigo — Data Link

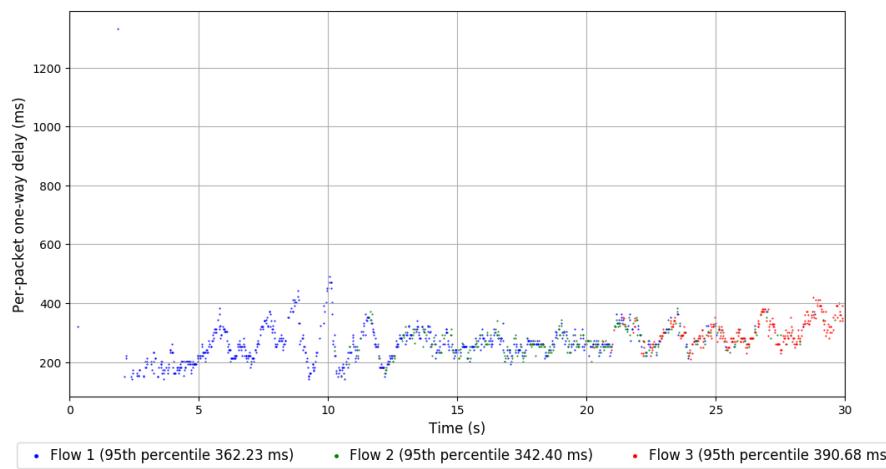
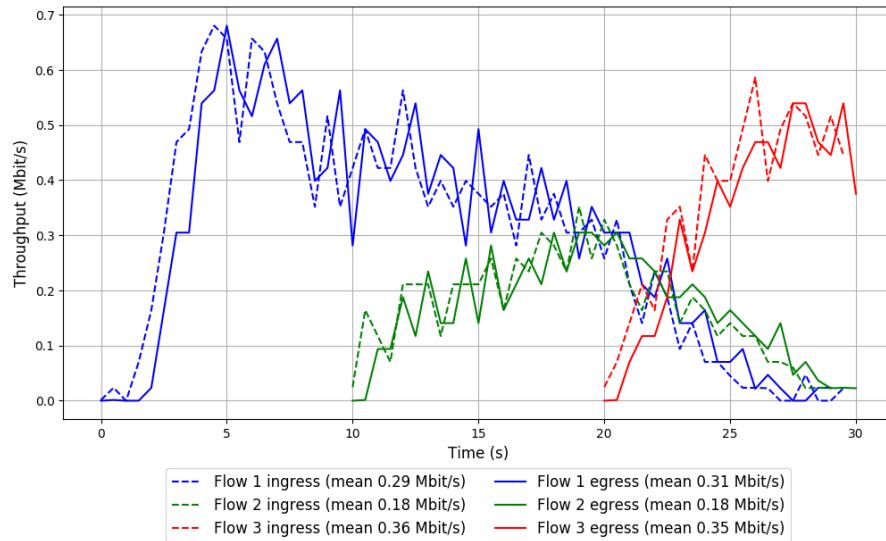


```
Run 1: Statistics of LEDBAT

Start at: 2018-08-01 22:51:31
End at: 2018-08-01 22:52:01
Local clock offset: -4.727 ms
Remote clock offset: 4.101 ms

# Below is generated by plot.py at 2018-08-01 23:49:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 370.532 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 362.231 ms
Loss rate: 0.13%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 342.397 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 390.681 ms
Loss rate: 5.54%
```

Run 1: Report of LEDBAT — Data Link

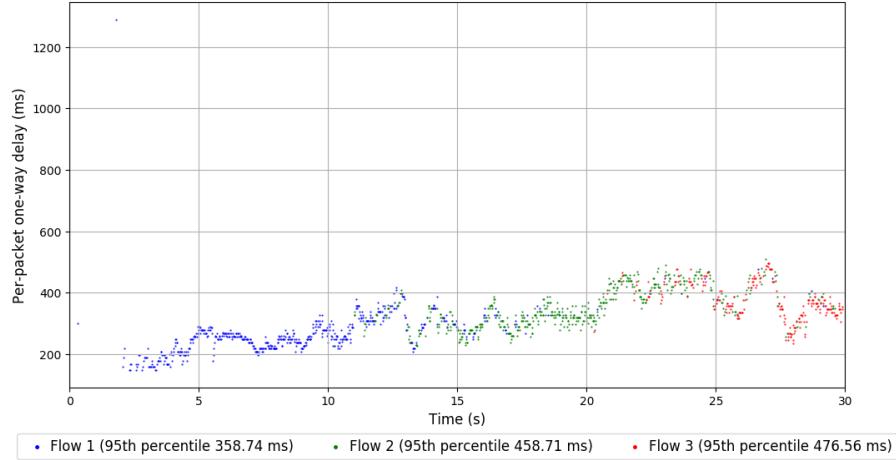
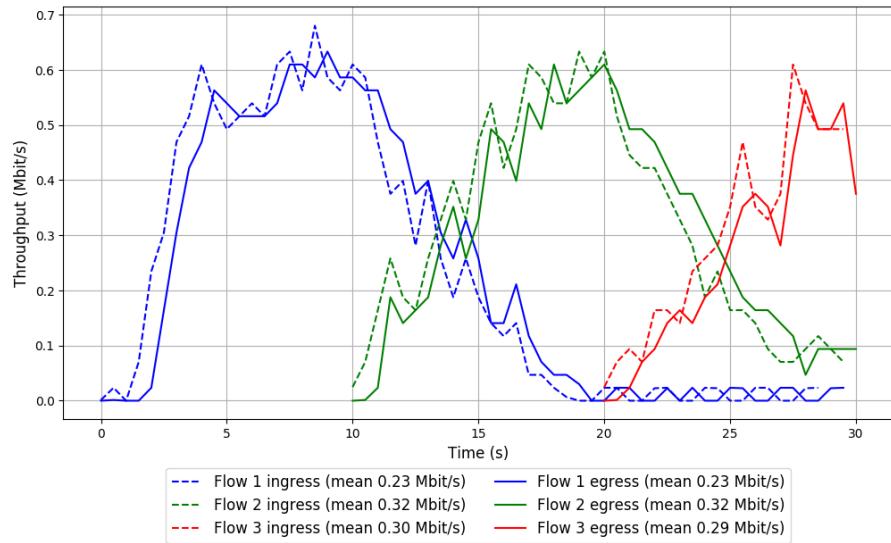


Run 2: Statistics of LEDBAT

```
Start at: 2018-08-01 23:12:32
End at: 2018-08-01 23:13:02
Local clock offset: -6.173 ms
Remote clock offset: 9.922 ms

# Below is generated by plot.py at 2018-08-01 23:49:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 449.394 ms
Loss rate: 1.55%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 358.741 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 458.706 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 476.559 ms
Loss rate: 7.03%
```

Run 2: Report of LEDBAT — Data Link

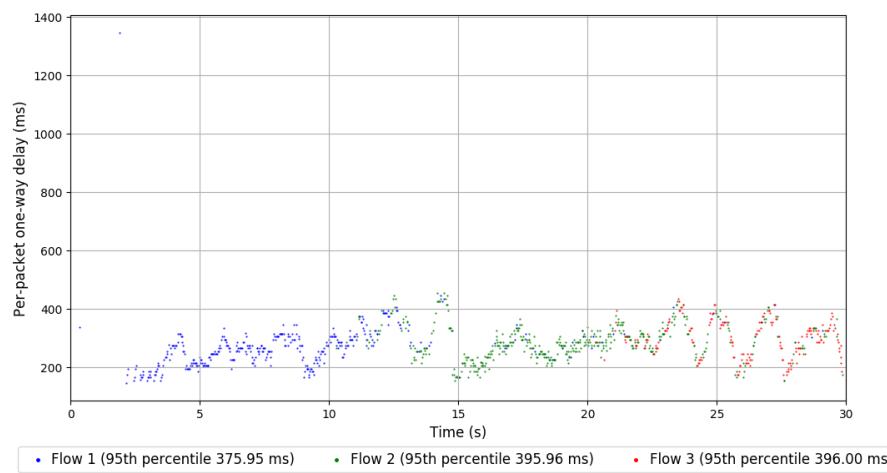
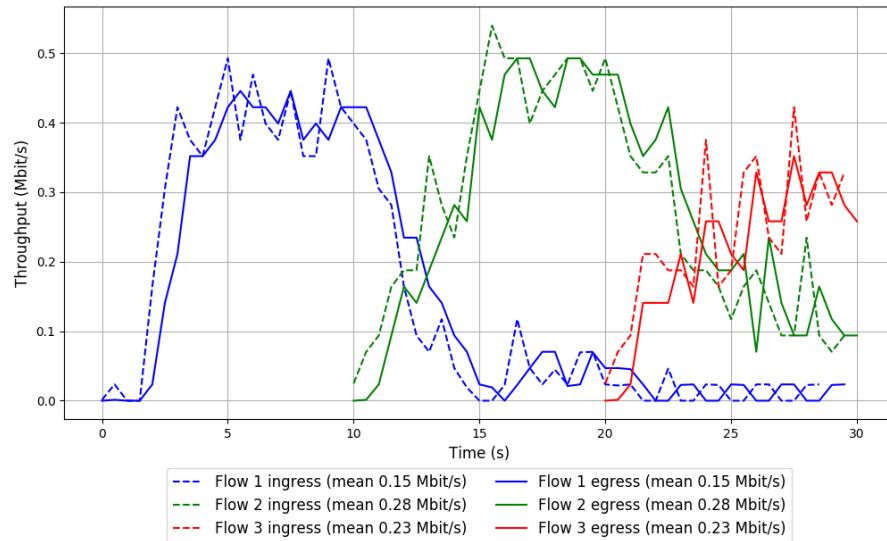


Run 3: Statistics of LEDBAT

```
Start at: 2018-08-01 23:33:32
End at: 2018-08-01 23:34:02
Local clock offset: -6.233 ms
Remote clock offset: 16.327 ms

# Below is generated by plot.py at 2018-08-01 23:49:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 395.728 ms
Loss rate: 1.25%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 375.953 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 395.962 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 395.997 ms
Loss rate: 5.07%
```

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

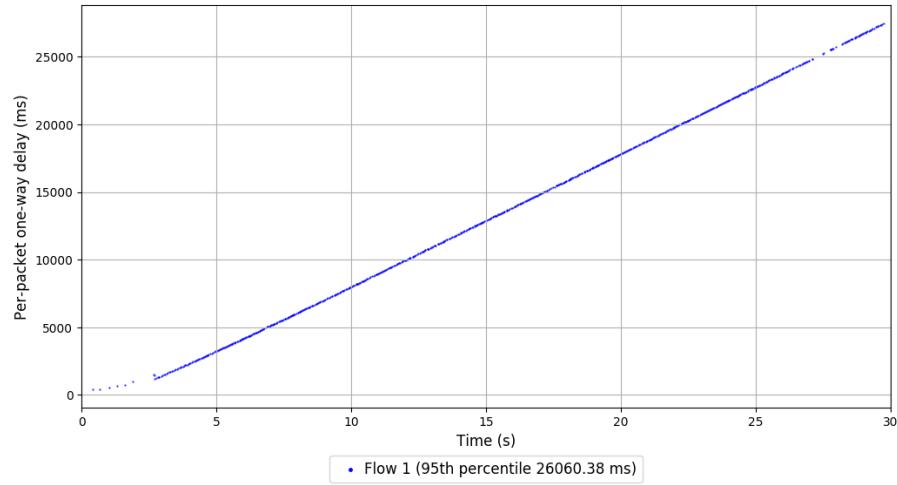
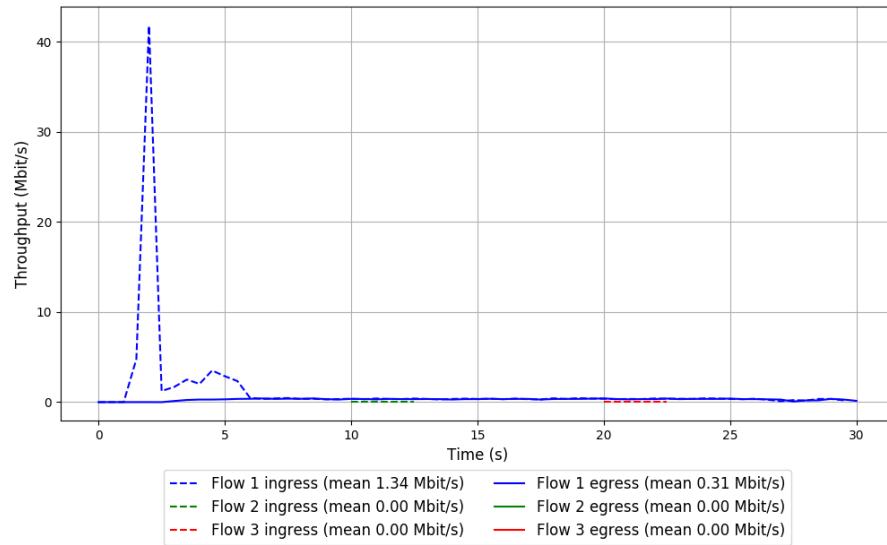
Start at: 2018-08-01 22:57:53

End at: 2018-08-01 22:58:23

Local clock offset: -5.418 ms

Remote clock offset: 4.506 ms

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

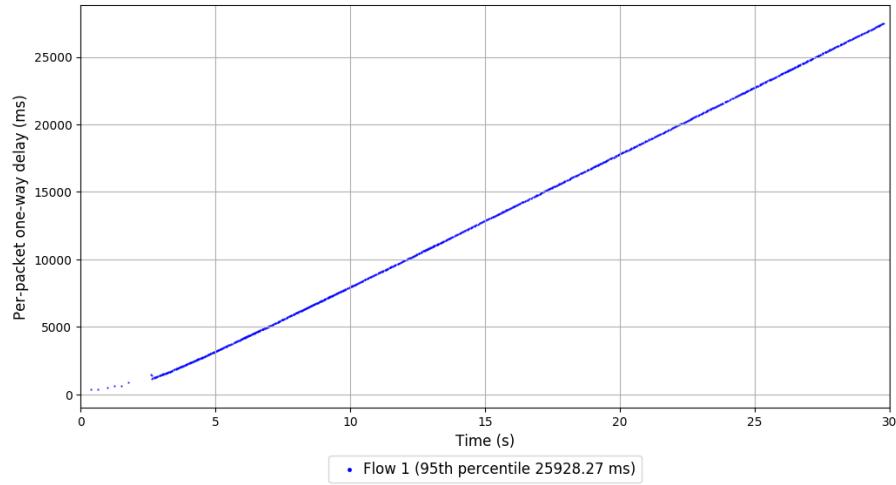
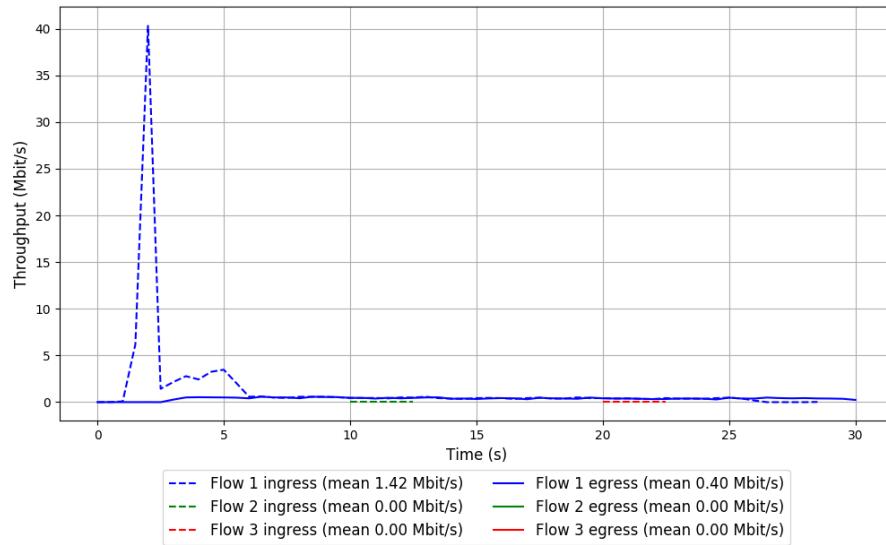
Start at: 2018-08-01 23:18:51

End at: 2018-08-01 23:19:21

Local clock offset: -6.276 ms

Remote clock offset: 6.448 ms

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

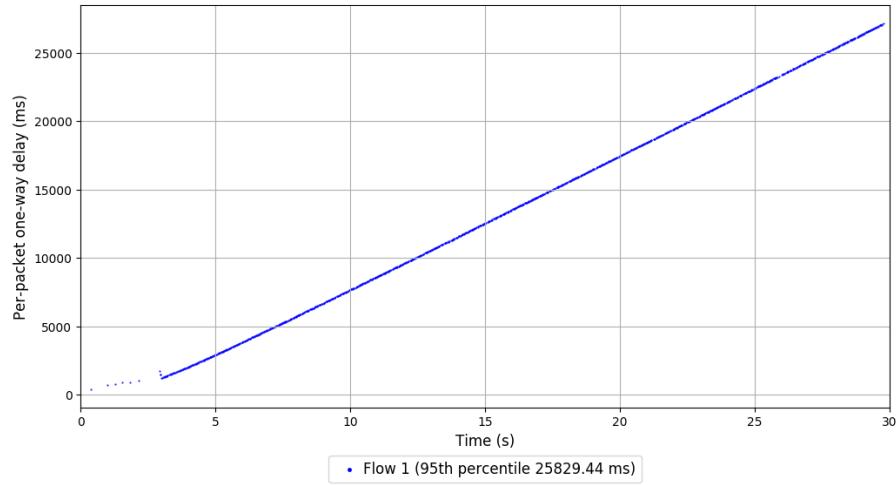
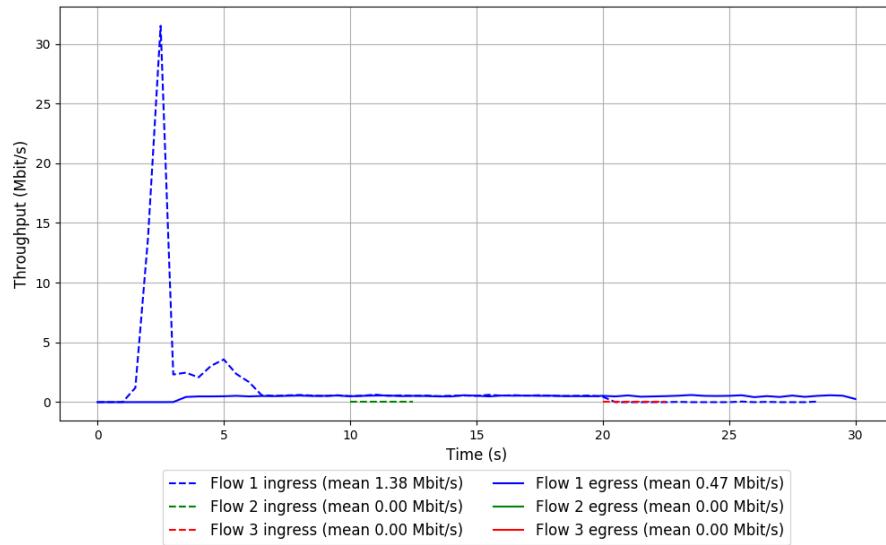
Start at: 2018-08-01 23:39:47

End at: 2018-08-01 23:40:17

Local clock offset: -6.197 ms

Remote clock offset: 18.641 ms

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

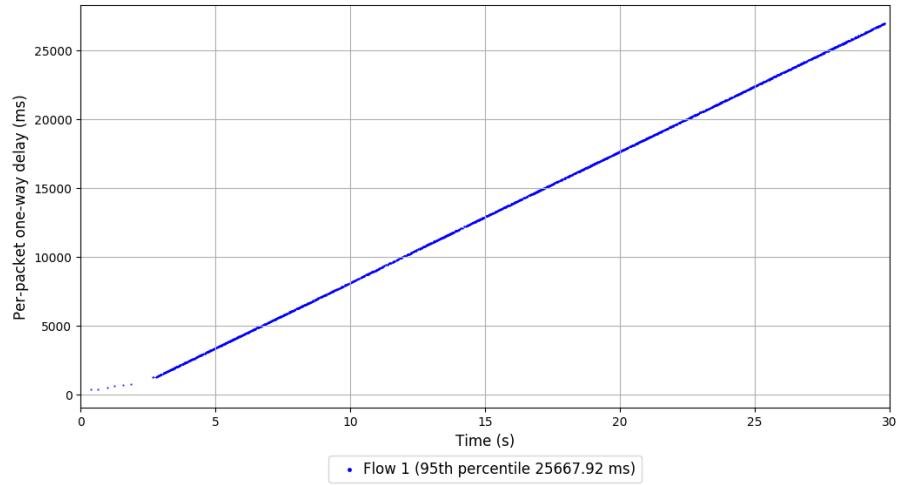
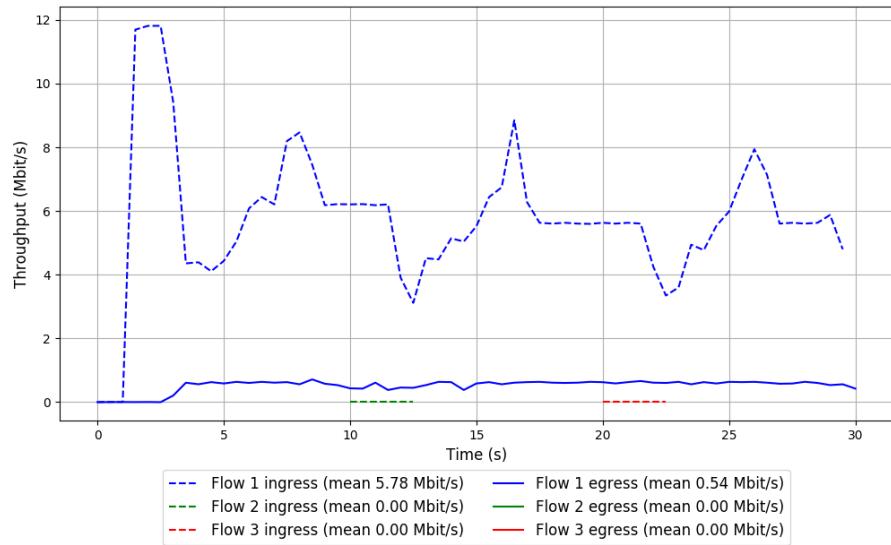
Start at: 2018-08-01 22:49:08

End at: 2018-08-01 22:49:38

Local clock offset: -4.694 ms

Remote clock offset: 4.919 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

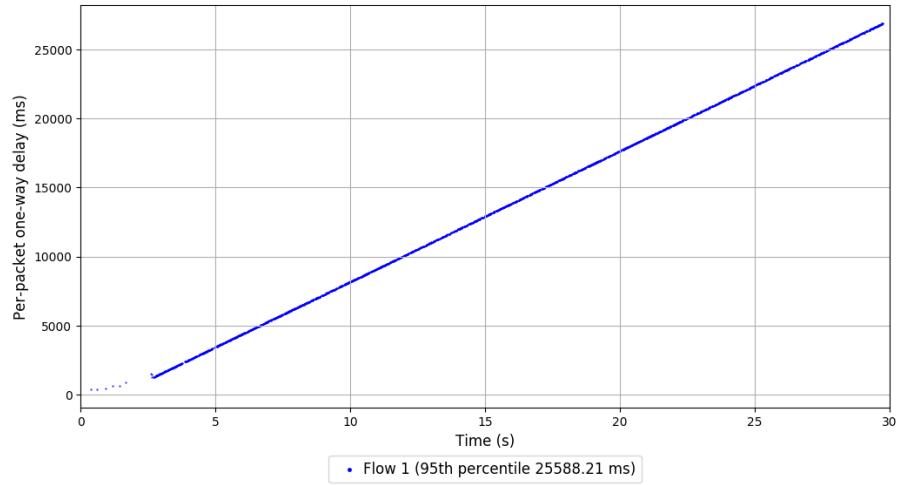
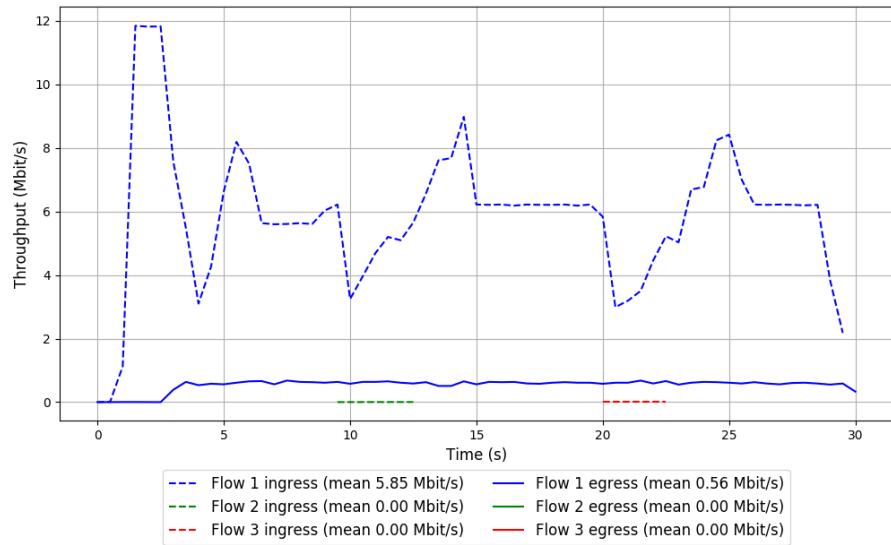
Start at: 2018-08-01 23:10:09

End at: 2018-08-01 23:10:39

Local clock offset: -6.136 ms

Remote clock offset: 6.154 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

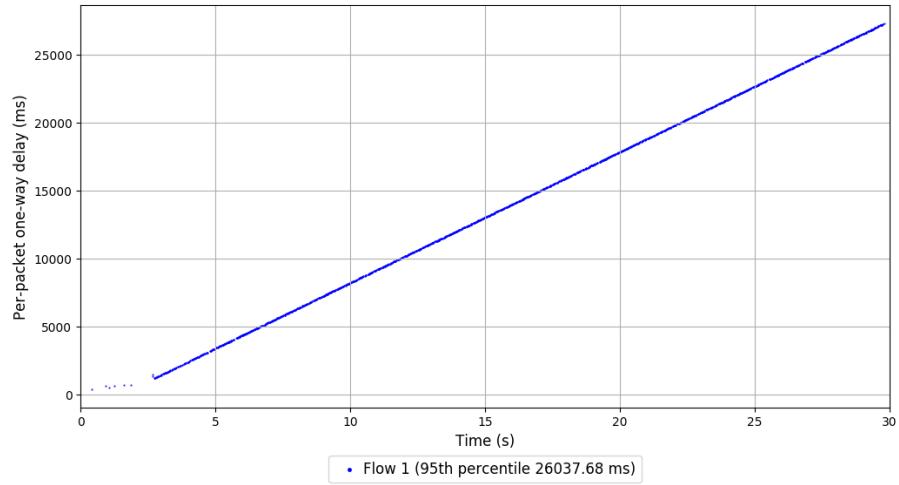
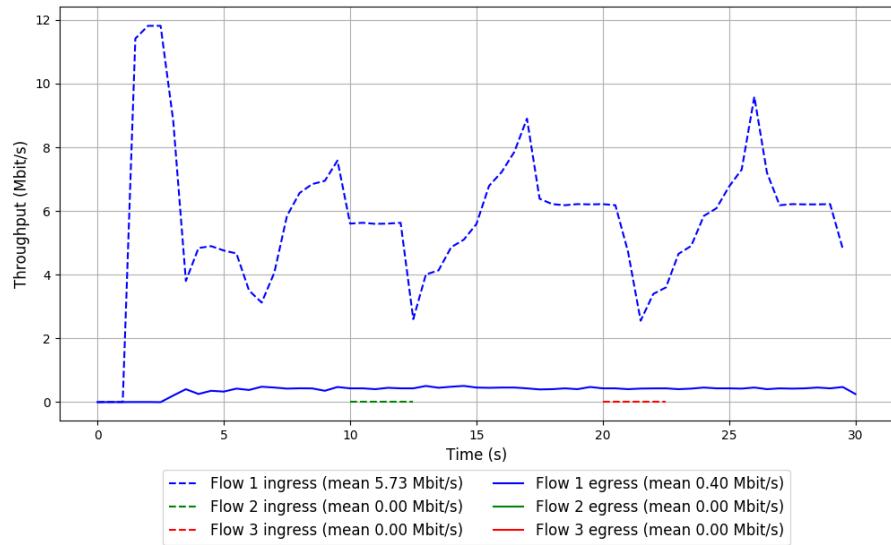
Start at: 2018-08-01 23:31:03

End at: 2018-08-01 23:31:33

Local clock offset: -6.287 ms

Remote clock offset: 10.739 ms

Run 3: Report of PCC-Expr — Data Link

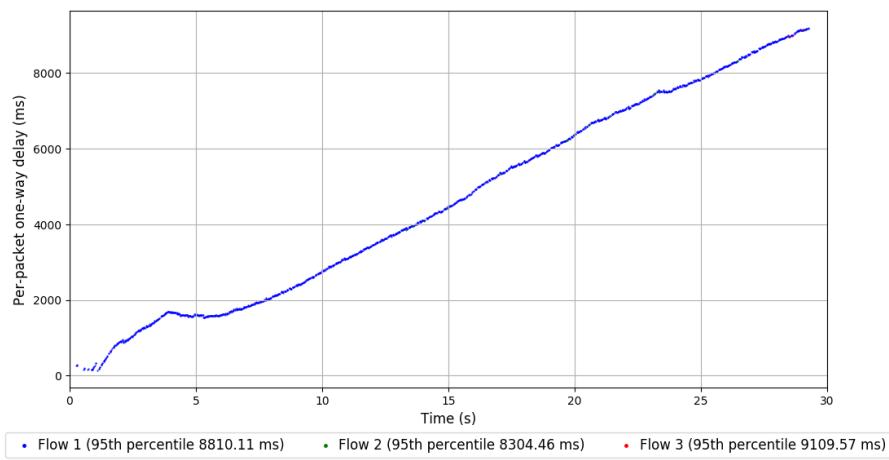
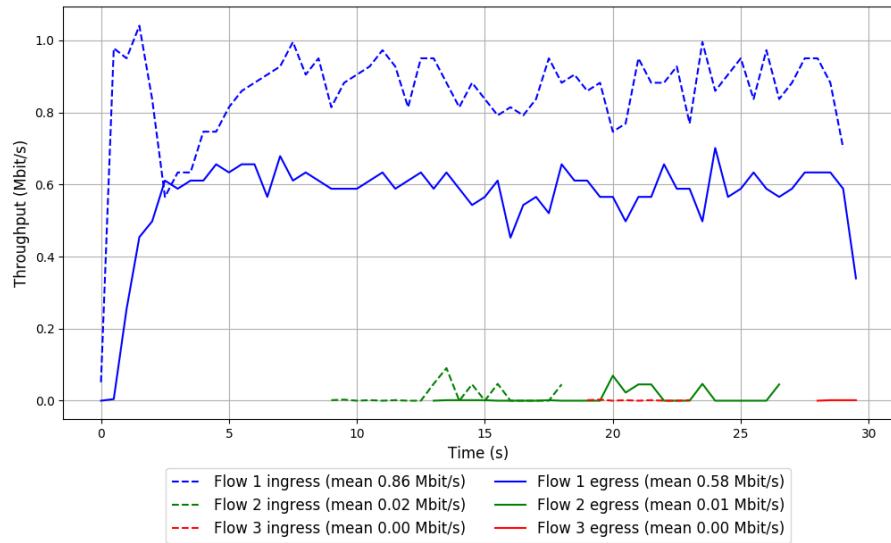


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2018-08-01 23:00:36
End at: 2018-08-01 23:01:06
Local clock offset: -5.671 ms
Remote clock offset: 10.45 ms

# Below is generated by plot.py at 2018-08-01 23:49:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 8811.472 ms
Loss rate: 32.67%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 8810.113 ms
Loss rate: 32.85%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 8304.457 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 9109.569 ms
Loss rate: 50.00%
```

Run 1: Report of QUIC Cubic — Data Link

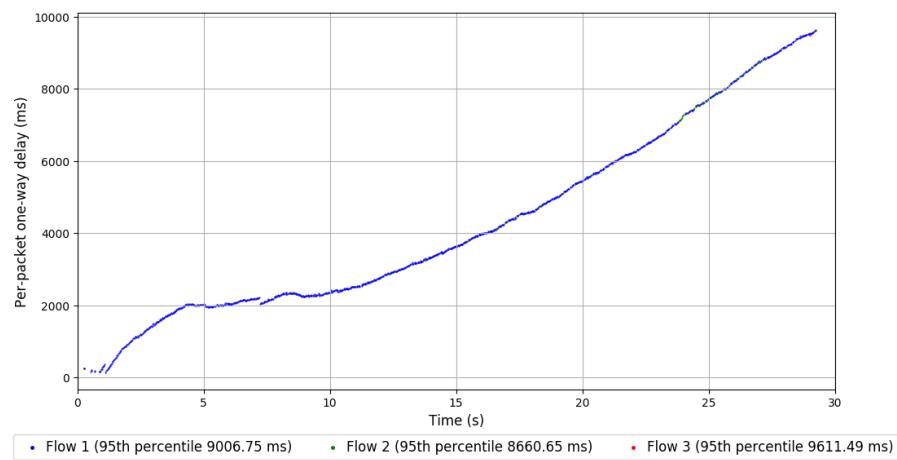
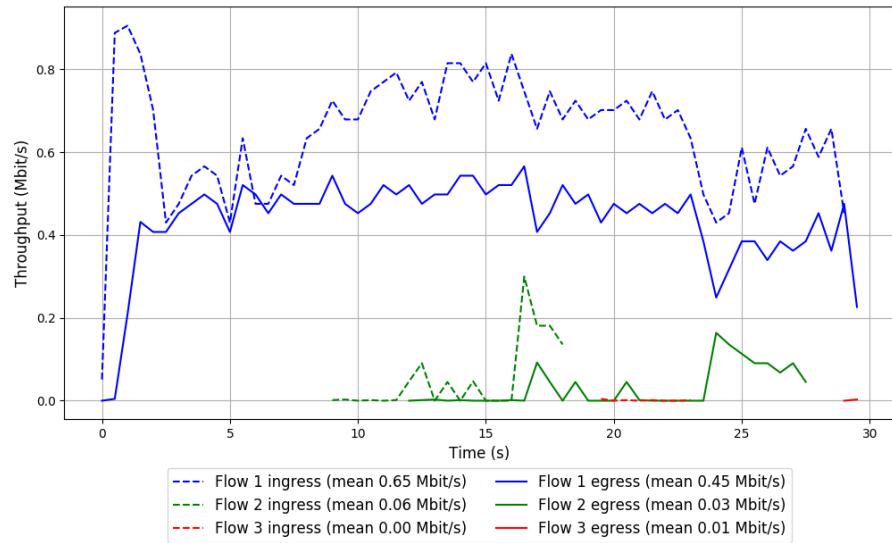


Run 2: Statistics of QUIC Cubic

```
Start at: 2018-08-01 23:21:29
End at: 2018-08-01 23:21:59
Local clock offset: -6.307 ms
Remote clock offset: 10.383 ms

# Below is generated by plot.py at 2018-08-01 23:49:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 8999.021 ms
Loss rate: 30.51%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 9006.752 ms
Loss rate: 31.34%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 8660.645 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 9611.490 ms
Loss rate: 66.67%
```

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

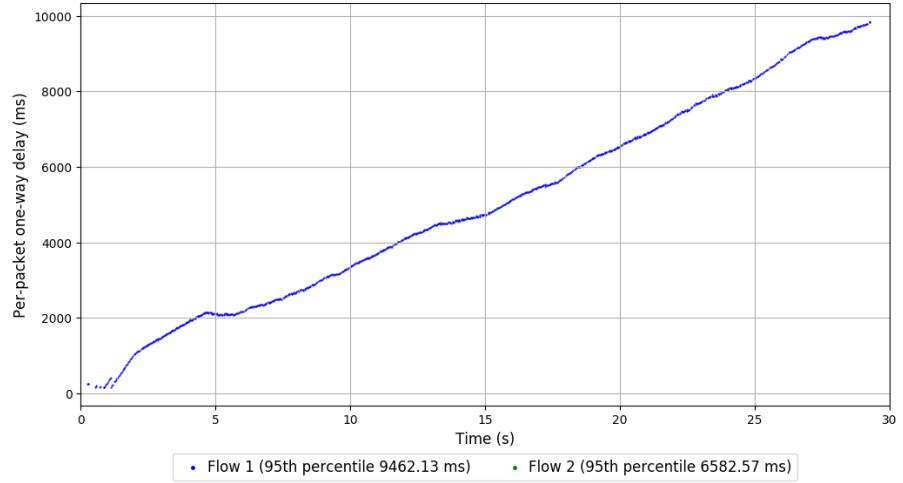
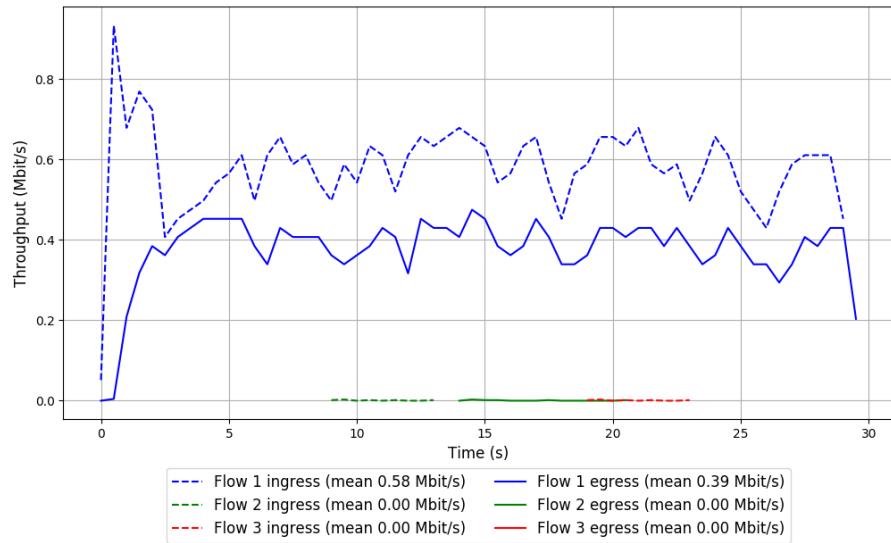
Start at: 2018-08-01 23:42:10

End at: 2018-08-01 23:42:40

Local clock offset: -6.2 ms

Remote clock offset: 16.817 ms

Run 3: Report of QUIC Cubic — Data Link

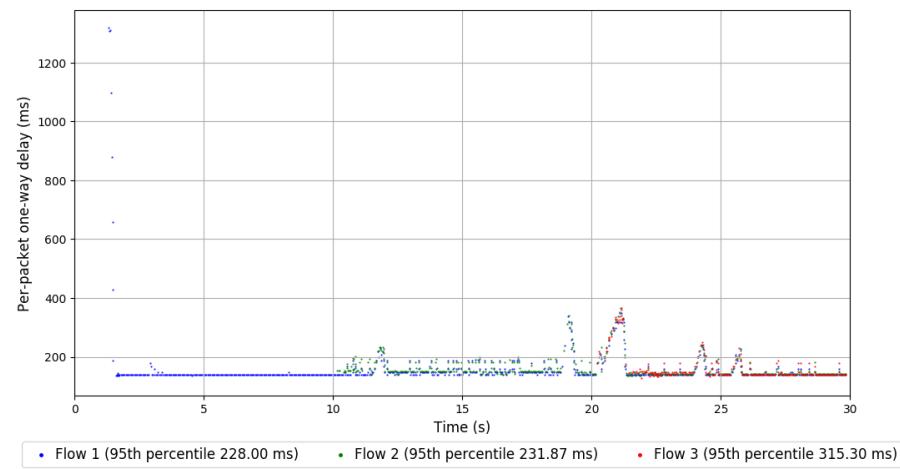
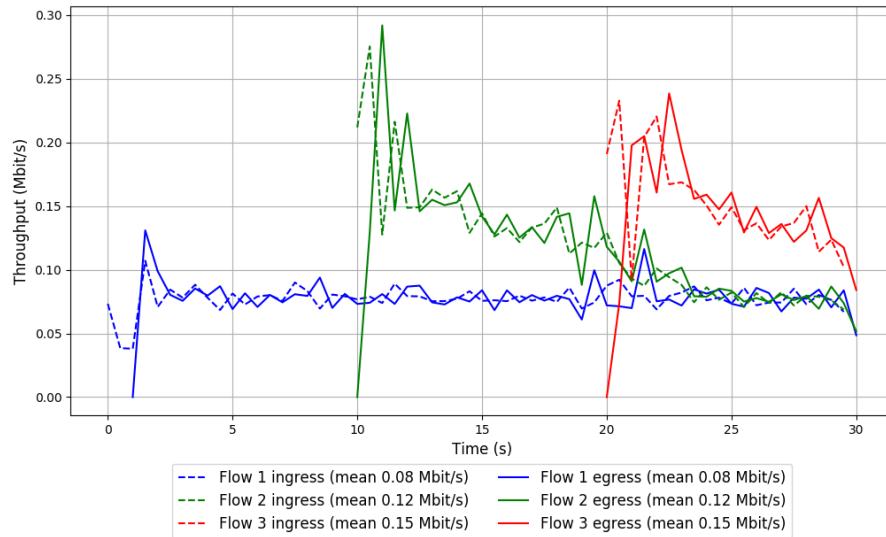


```
Run 1: Statistics of SCReAM

Start at: 2018-08-01 22:46:45
End at: 2018-08-01 22:47:15
Local clock offset: -4.848 ms
Remote clock offset: 4.89 ms

# Below is generated by plot.py at 2018-08-01 23:49:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 241.668 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 227.996 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 231.867 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 315.301 ms
Loss rate: 1.81%
```

Run 1: Report of SCReAM — Data Link

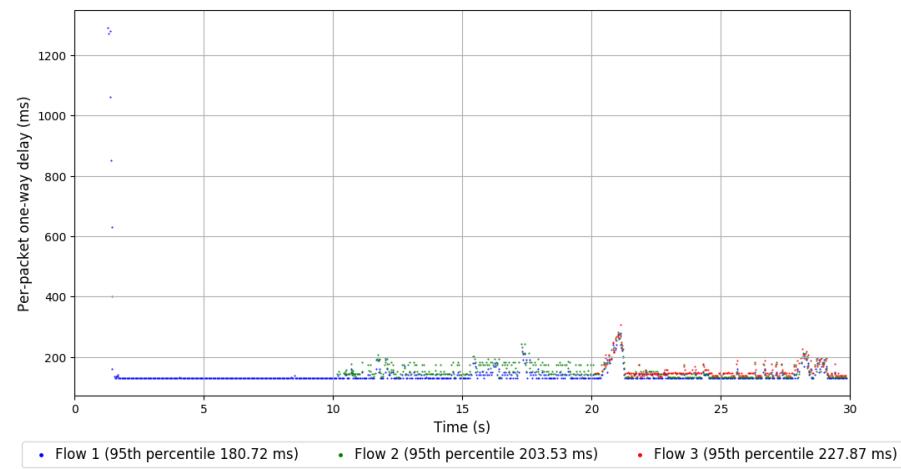
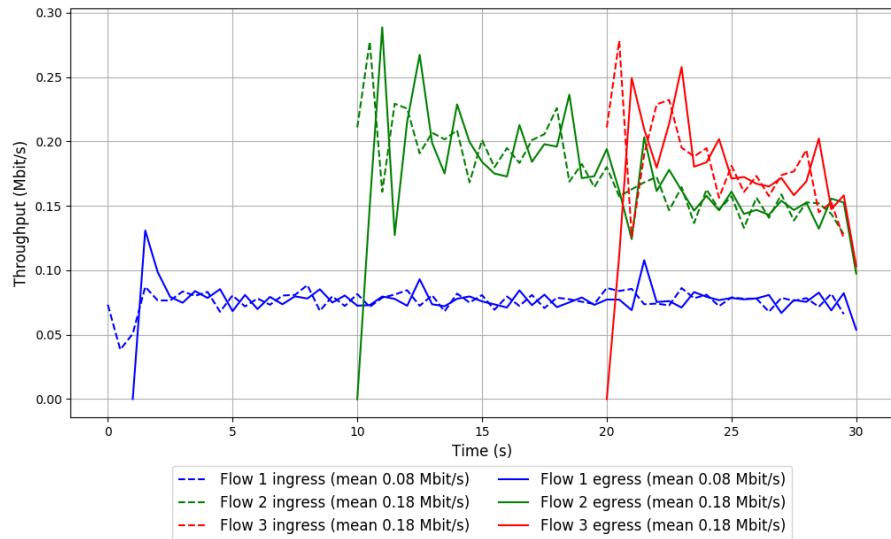


Run 2: Statistics of SCReAM

```
Start at: 2018-08-01 23:07:46
End at: 2018-08-01 23:08:16
Local clock offset: -6.118 ms
Remote clock offset: 4.877 ms

# Below is generated by plot.py at 2018-08-01 23:49:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 198.055 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 180.715 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 203.526 ms
Loss rate: 1.02%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 227.866 ms
Loss rate: 1.83%
```

Run 2: Report of SCReAM — Data Link

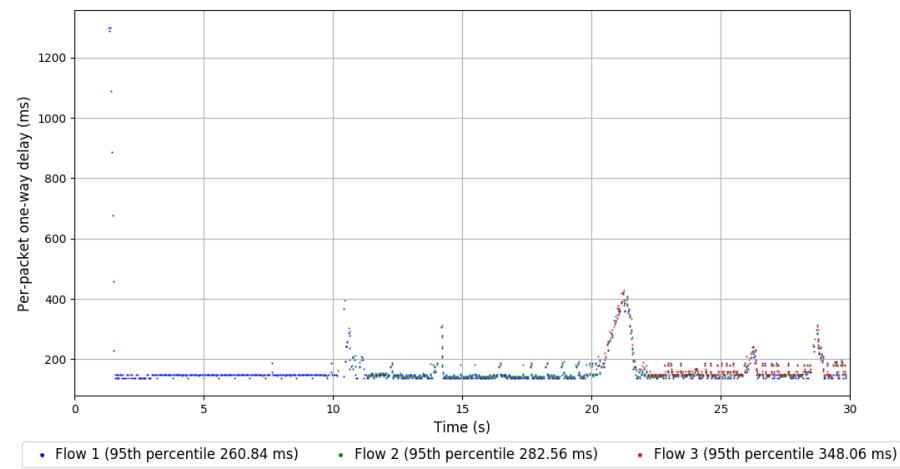
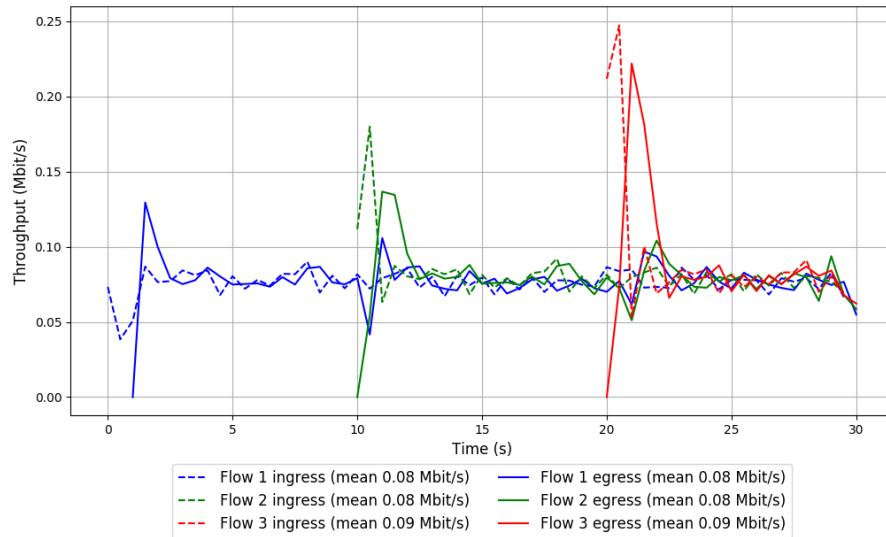


Run 3: Statistics of SCReAM

```
Start at: 2018-08-01 23:28:39
End at: 2018-08-01 23:29:09
Local clock offset: -6.333 ms
Remote clock offset: 11.081 ms

# Below is generated by plot.py at 2018-08-01 23:49:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 287.726 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 260.843 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 282.558 ms
Loss rate: 1.21%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 348.064 ms
Loss rate: 1.94%
```

Run 3: Report of SCReAM — Data Link



Run 1: Statistics of Sprout

/home/ubuntu/pantheon/data/2018-08-01T22-46-Colombia-ppp0-to-AWS-Brazil-2-3-runs-3-flows/spr

Run 1: Report of Sprout — Data Link

Figure is missing

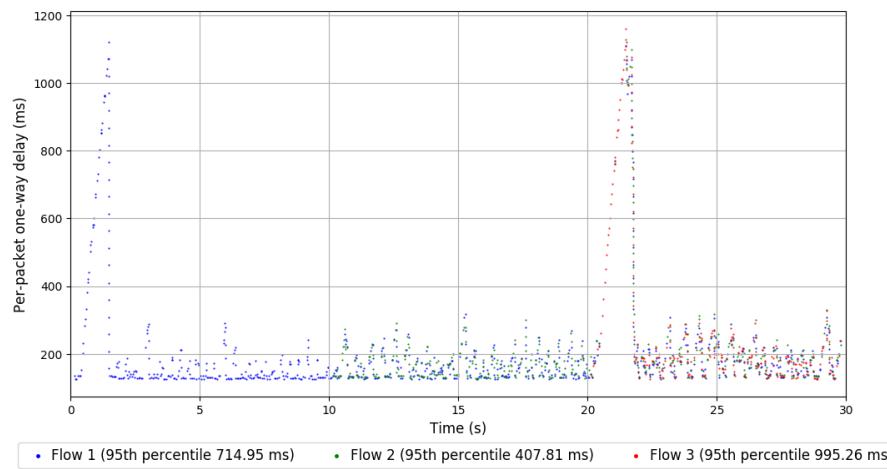
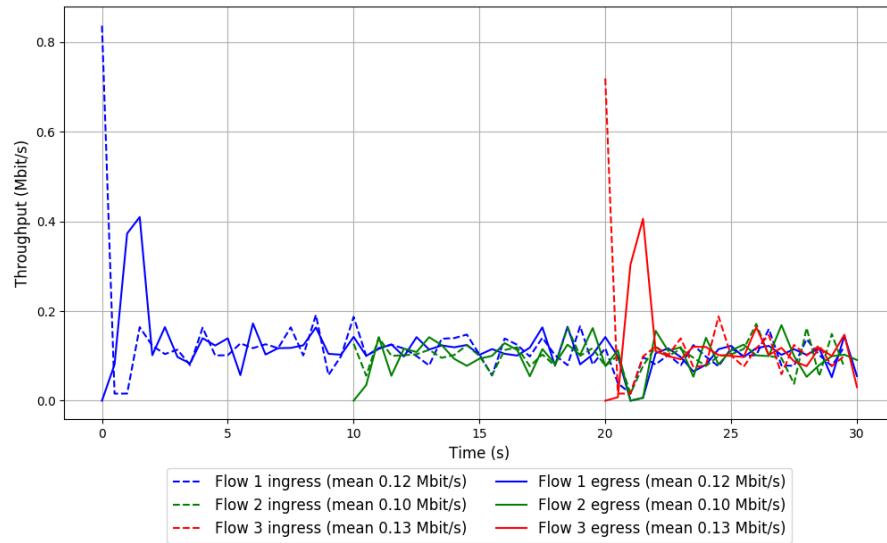
Figure is missing

Run 2: Statistics of Sprout

```
Start at: 2018-08-01 23:17:39
End at: 2018-08-01 23:18:09
Local clock offset: -6.259 ms
Remote clock offset: 9.069 ms

# Below is generated by plot.py at 2018-08-01 23:49:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 772.011 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 714.953 ms
Loss rate: 1.02%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 407.806 ms
Loss rate: 1.79%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 995.257 ms
Loss rate: 2.88%
```

Run 2: Report of Sprout — Data Link

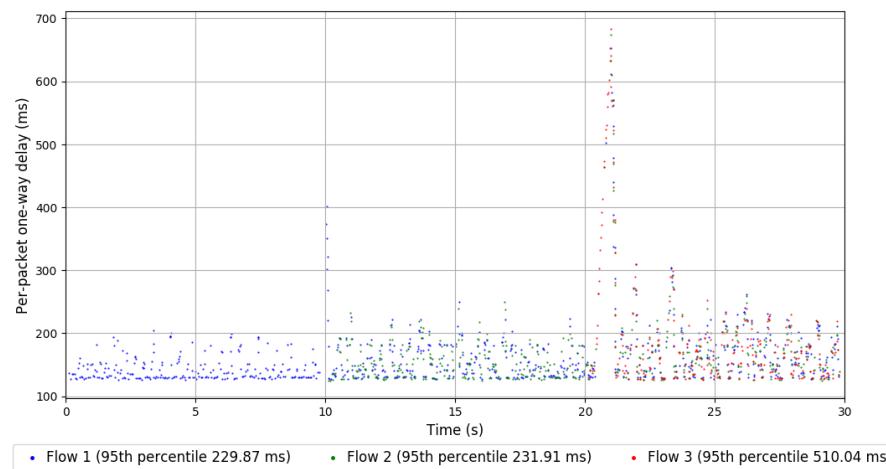
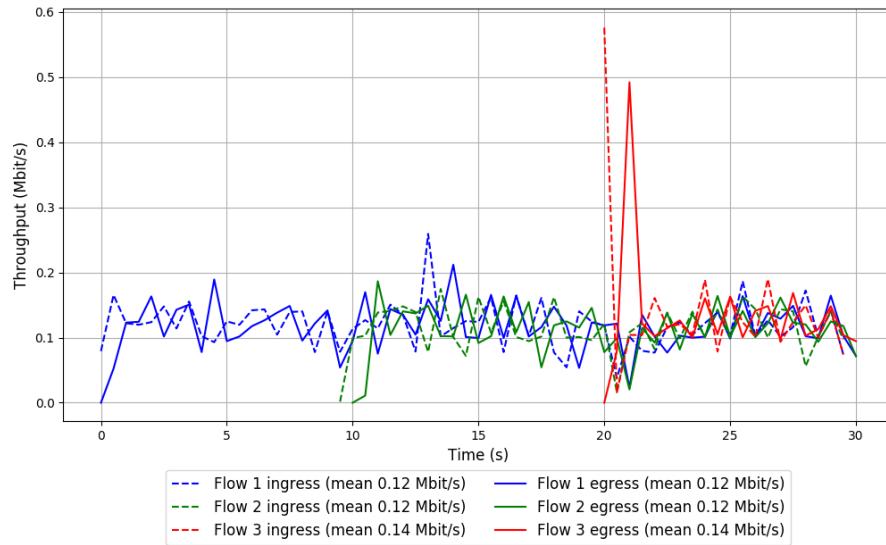


Run 3: Statistics of Sprout

```
Start at: 2018-08-01 23:38:30
End at: 2018-08-01 23:39:00
Local clock offset: -6.203 ms
Remote clock offset: 17.37 ms

# Below is generated by plot.py at 2018-08-01 23:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 270.046 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 229.865 ms
Loss rate: 0.96%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 231.910 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 510.044 ms
Loss rate: 1.69%
```

Run 3: Report of Sprout — Data Link

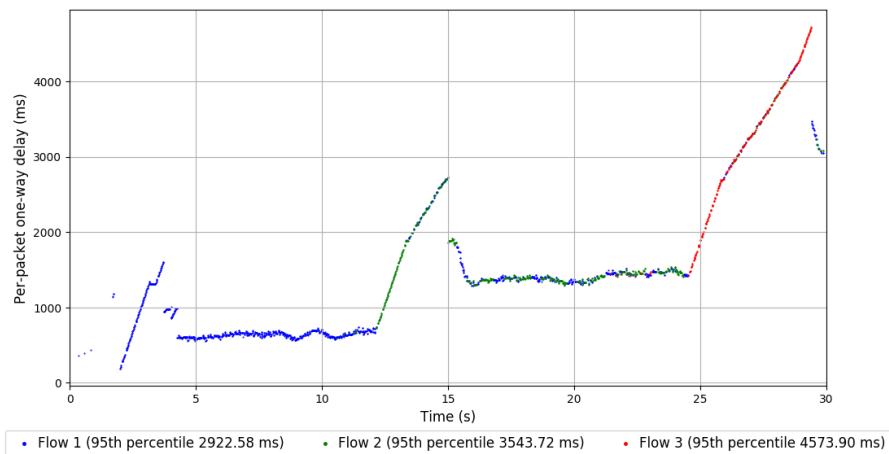
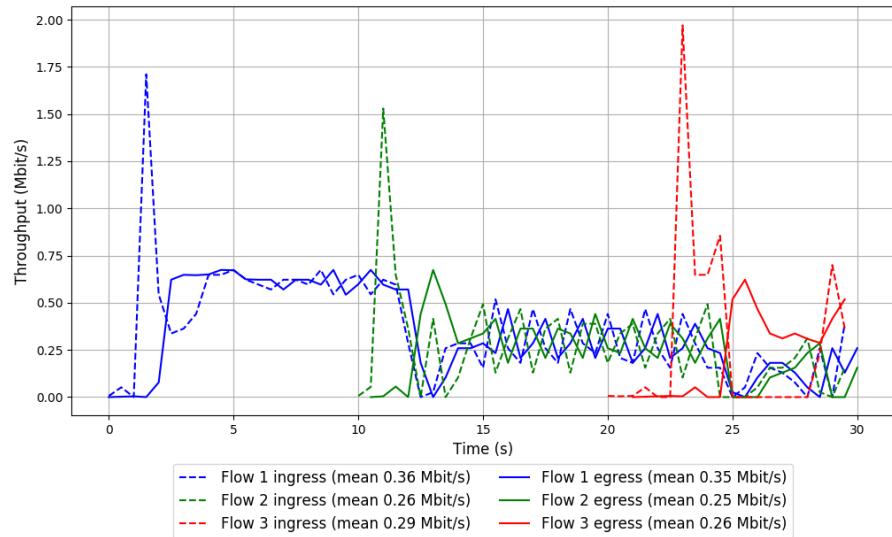


Run 1: Statistics of TaoVA-100x

```
Start at: 2018-08-01 23:05:22
End at: 2018-08-01 23:05:52
Local clock offset: -5.97 ms
Remote clock offset: 5.872 ms

# Below is generated by plot.py at 2018-08-01 23:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3813.631 ms
Loss rate: 8.31%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 2922.576 ms
Loss rate: 4.22%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 3543.719 ms
Loss rate: 8.70%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 4573.902 ms
Loss rate: 23.63%
```

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

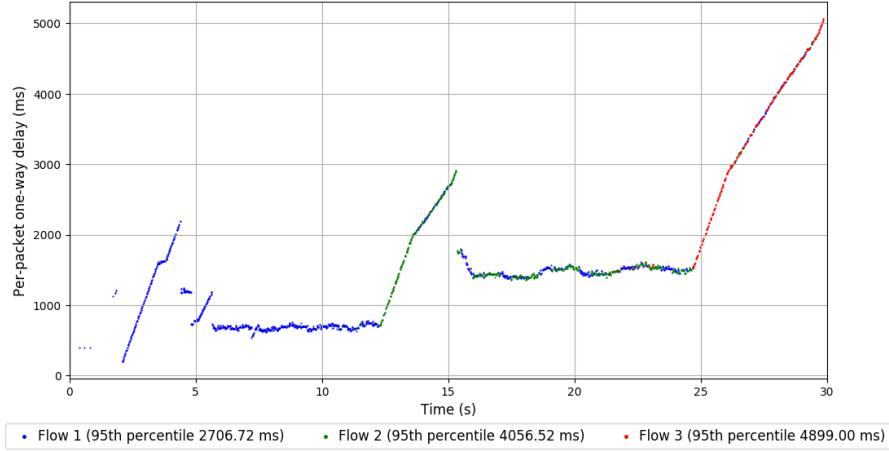
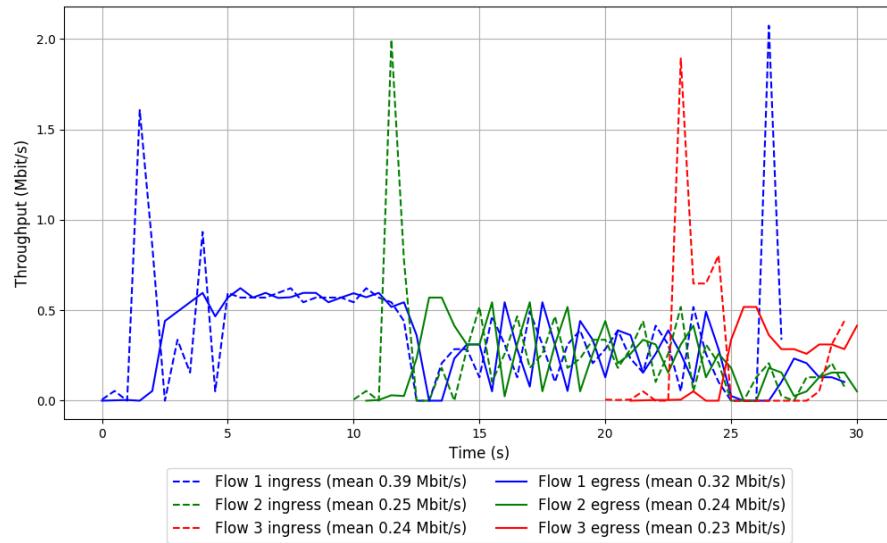


Run 2: Statistics of TaoVA-100x

```
Start at: 2018-08-01 23:26:15
End at: 2018-08-01 23:26:45
Local clock offset: -6.272 ms
Remote clock offset: 9.353 ms

# Below is generated by plot.py at 2018-08-01 23:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 4257.808 ms
Loss rate: 11.72%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 2706.715 ms
Loss rate: 11.34%
-- Flow 2:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 4056.523 ms
Loss rate: 9.15%
-- Flow 3:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 4899.000 ms
Loss rate: 18.65%
```

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

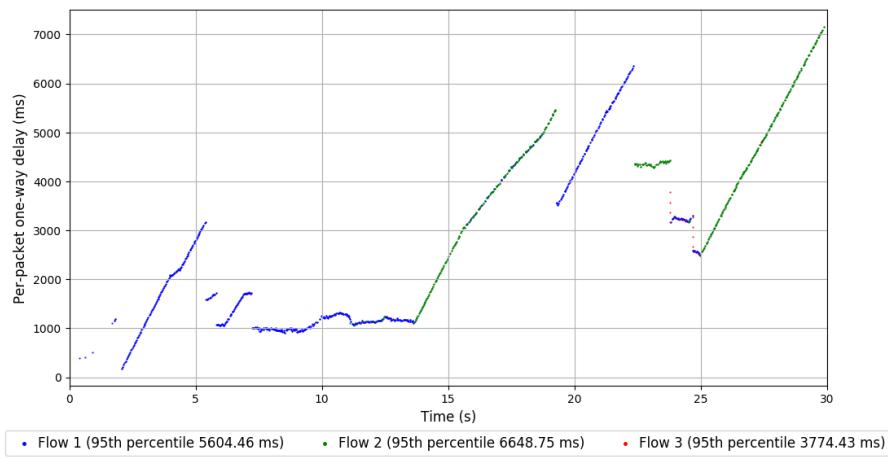
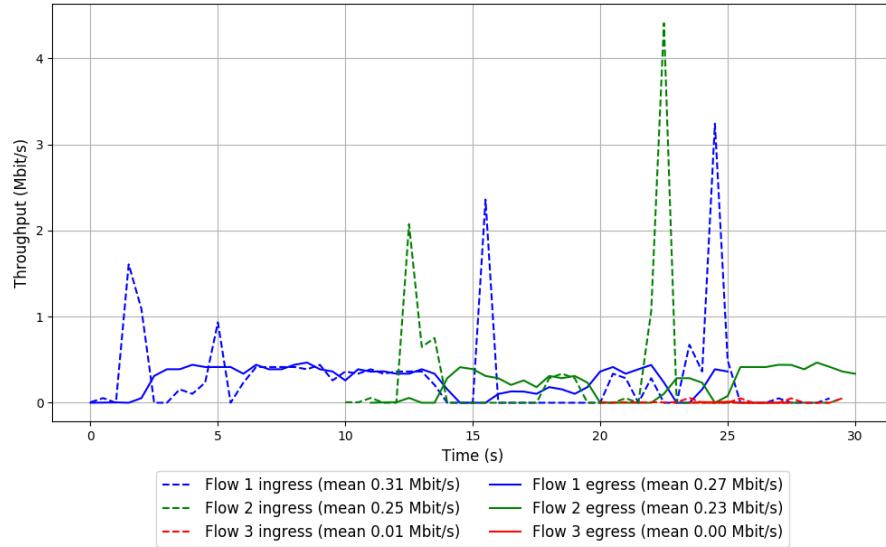


Run 3: Statistics of TaoVA-100x

```
Start at: 2018-08-01 23:46:56
End at: 2018-08-01 23:47:26
Local clock offset: -6.217 ms
Remote clock offset: 18.538 ms

# Below is generated by plot.py at 2018-08-01 23:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 6089.073 ms
Loss rate: 22.95%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 5604.457 ms
Loss rate: 27.04%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 6648.748 ms
Loss rate: 13.97%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 3774.433 ms
Loss rate: 88.45%
```

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

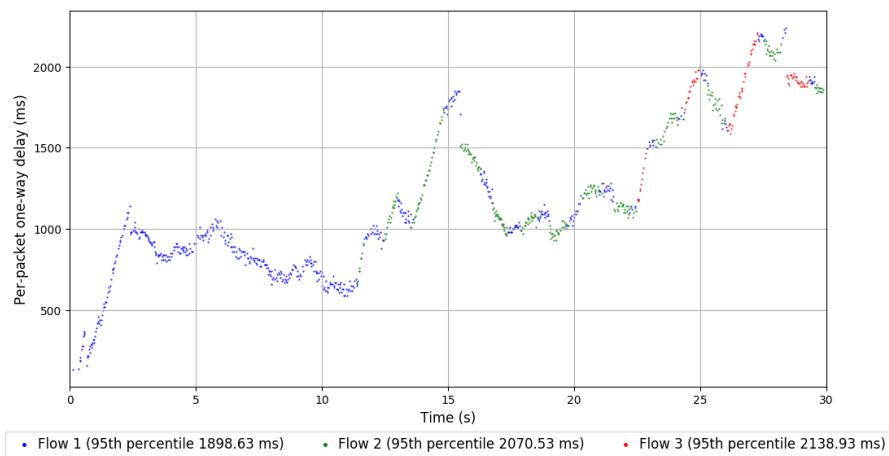
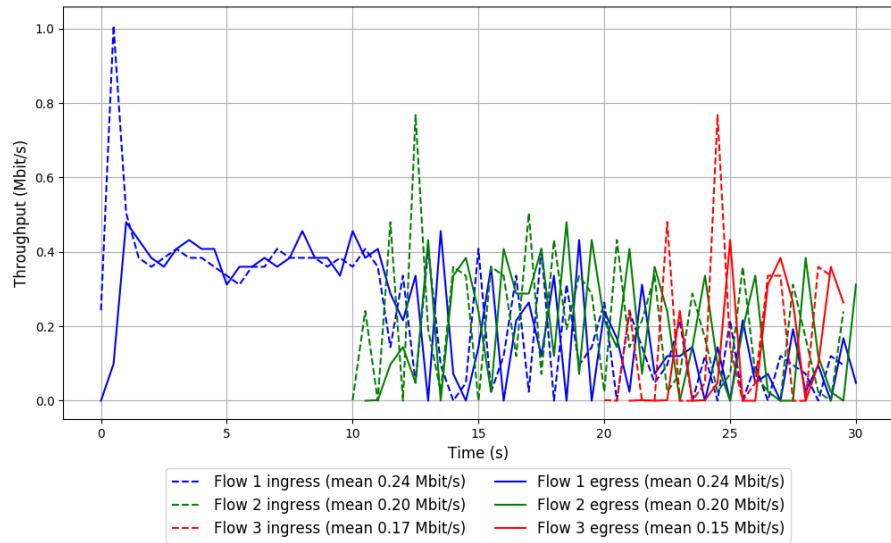


Run 1: Statistics of TCP Vegas

```
Start at: 2018-08-01 22:53:58
End at: 2018-08-01 22:54:28
Local clock offset: -4.923 ms
Remote clock offset: 5.359 ms

# Below is generated by plot.py at 2018-08-01 23:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1998.834 ms
Loss rate: 5.61%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 1898.629 ms
Loss rate: 2.04%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 2070.531 ms
Loss rate: 5.37%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 2138.928 ms
Loss rate: 22.44%
```

Run 1: Report of TCP Vegas — Data Link

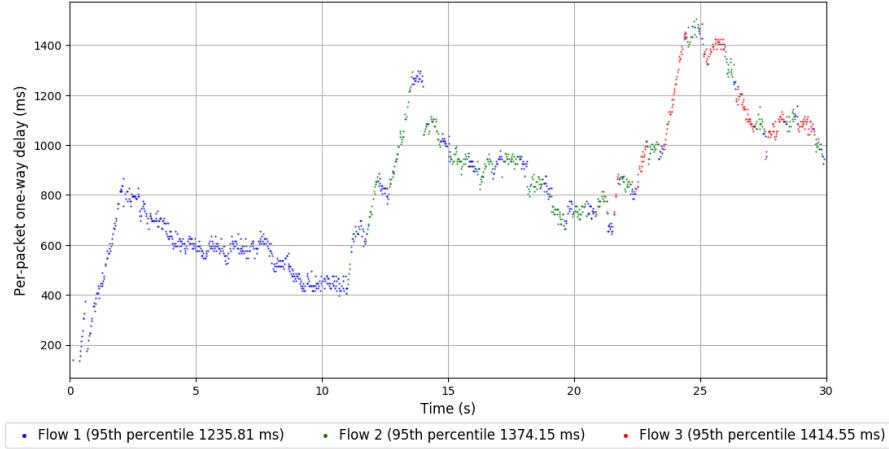
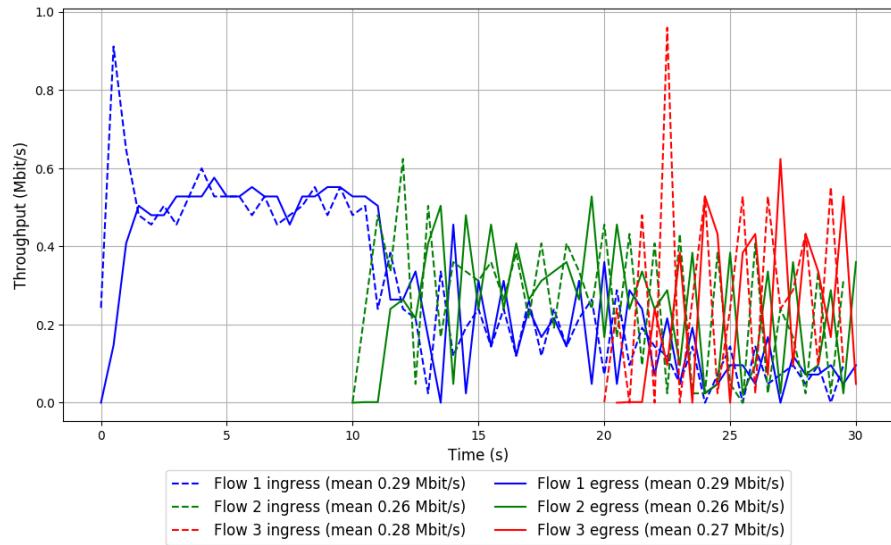


Run 2: Statistics of TCP Vegas

```
Start at: 2018-08-01 23:15:04
End at: 2018-08-01 23:15:34
Local clock offset: -6.237 ms
Remote clock offset: 6.273 ms

# Below is generated by plot.py at 2018-08-01 23:49:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 1366.044 ms
Loss rate: 3.51%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 1235.808 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 1374.153 ms
Loss rate: 3.28%
-- Flow 3:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 1414.545 ms
Loss rate: 13.04%
```

Run 2: Report of TCP Vegas — Data Link

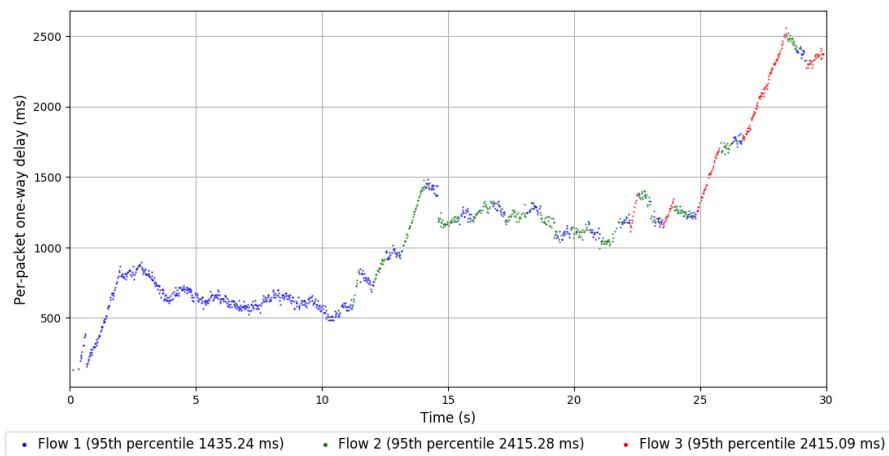
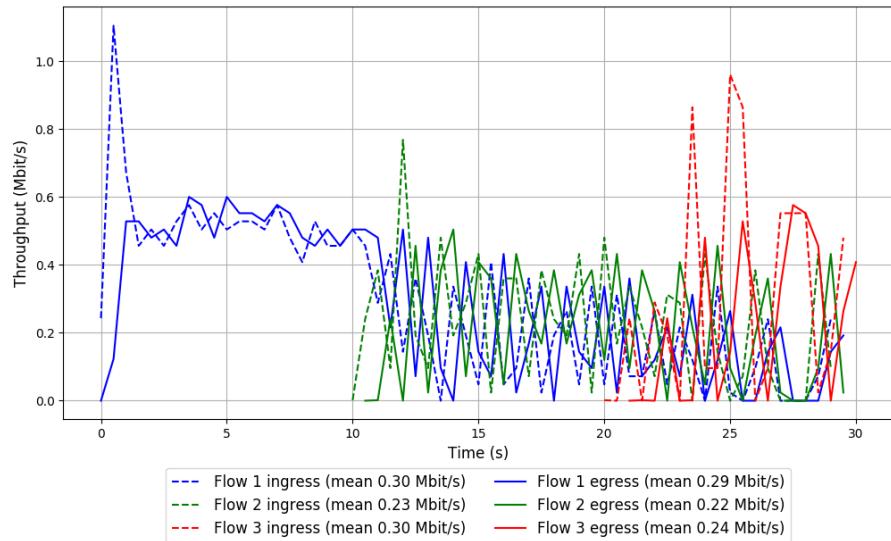


Run 3: Statistics of TCP Vegas

```
Start at: 2018-08-01 23:36:02
End at: 2018-08-01 23:36:32
Local clock offset: -6.25 ms
Remote clock offset: 13.194 ms

# Below is generated by plot.py at 2018-08-01 23:49:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 2345.181 ms
Loss rate: 7.96%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 1435.243 ms
Loss rate: 1.79%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 2415.282 ms
Loss rate: 6.01%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 2415.092 ms
Loss rate: 28.77%
```

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

/home/ubuntu/pantheon/data/2018-08-01T22-46-Colombia-ppp0-to-AWS-Brazil-2-3-runs-3-flows/ver

Run 1: Report of Verus — Data Link

Figure is missing

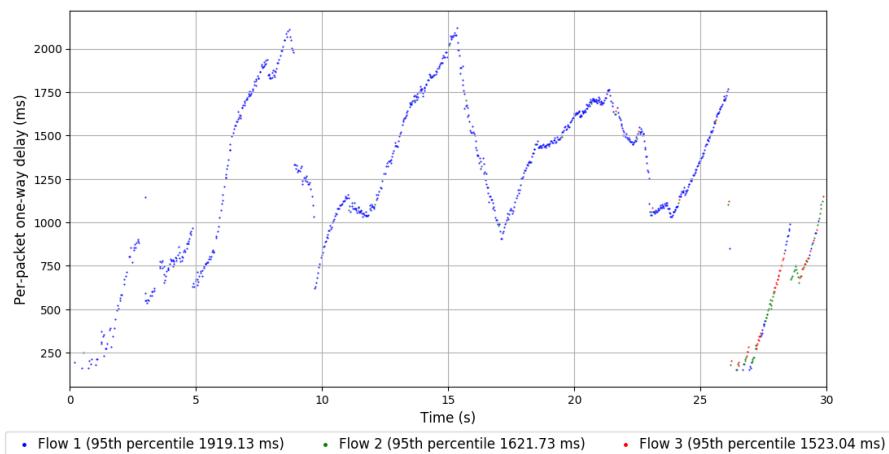
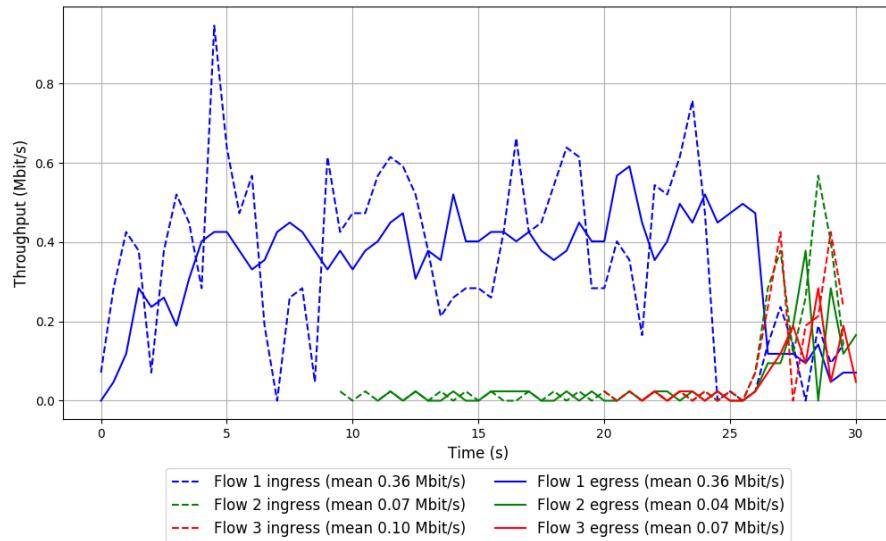
Figure is missing

Run 2: Statistics of Verus

```
Start at: 2018-08-01 23:20:17
End at: 2018-08-01 23:20:47
Local clock offset: -6.285 ms
Remote clock offset: 10.396 ms

# Below is generated by plot.py at 2018-08-01 23:49:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1907.510 ms
Loss rate: 7.66%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 1919.127 ms
Loss rate: 1.33%
-- Flow 2:
Average throughput: 0.04 Mbit/s
95th percentile per-packet one-way delay: 1621.734 ms
Loss rate: 35.45%
-- Flow 3:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 1523.041 ms
Loss rate: 40.24%
```

Run 2: Report of Verus — Data Link

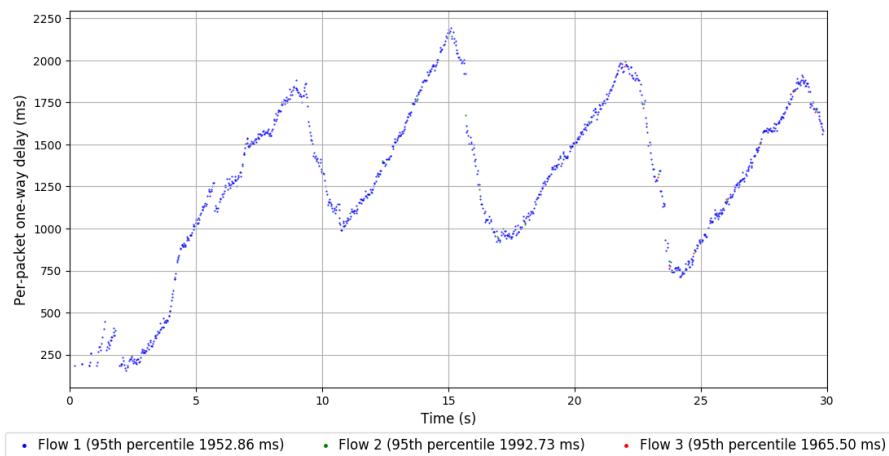
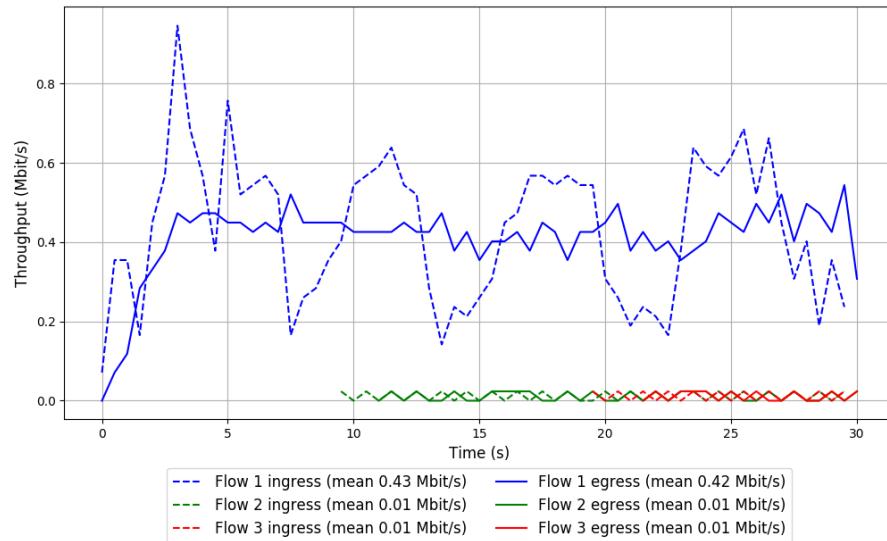


Run 3: Statistics of Verus

```
Start at: 2018-08-01 23:40:58
End at: 2018-08-01 23:41:28
Local clock offset: -6.195 ms
Remote clock offset: 13.96 ms

# Below is generated by plot.py at 2018-08-01 23:49:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 1961.390 ms
Loss rate: 3.98%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 1952.859 ms
Loss rate: 3.73%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1992.729 ms
Loss rate: 9.52%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1965.504 ms
Loss rate: 18.18%
```

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

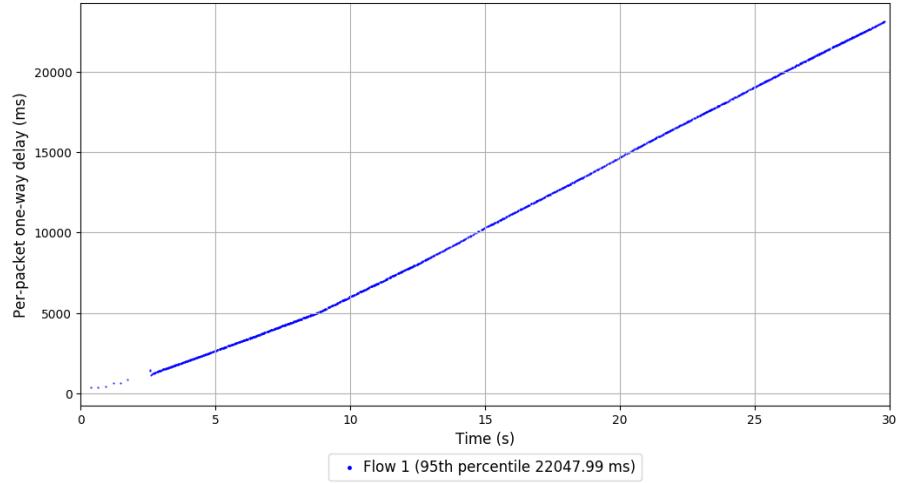
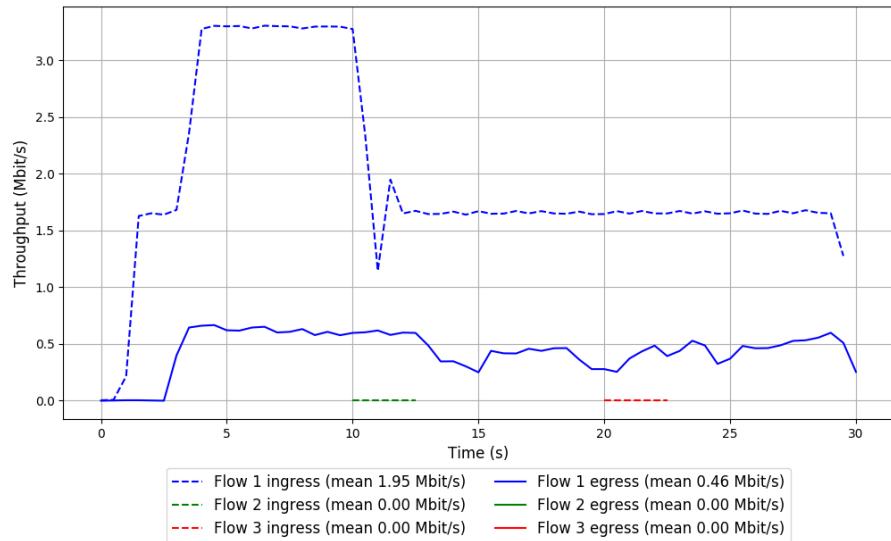
Start at: 2018-08-01 22:52:43

End at: 2018-08-01 22:53:13

Local clock offset: -4.73 ms

Remote clock offset: 7.995 ms

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

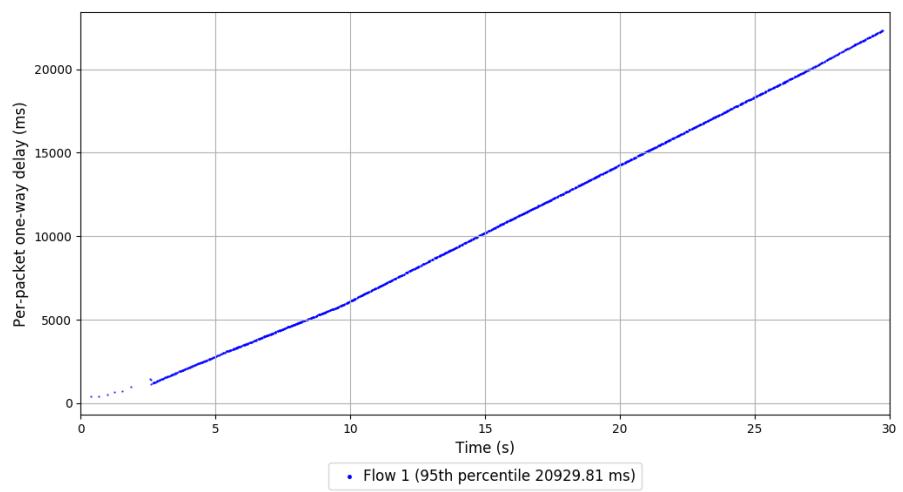
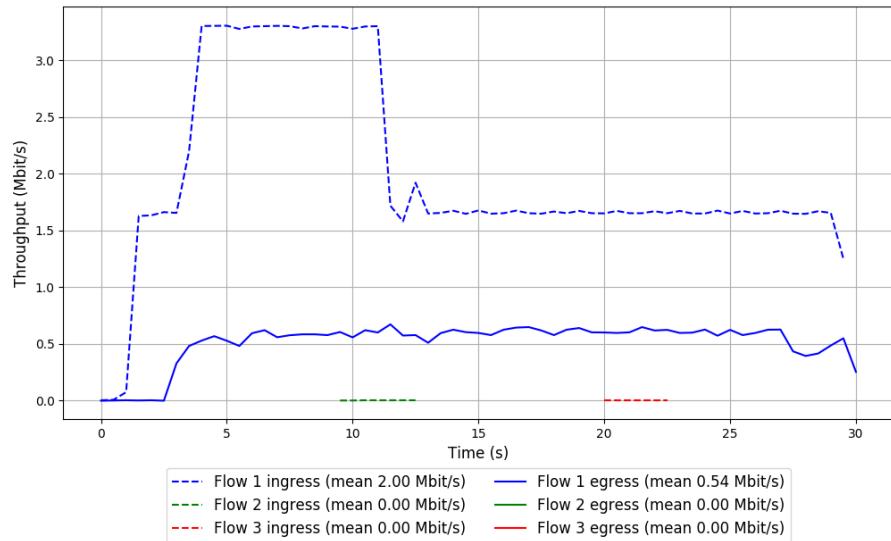
Start at: 2018-08-01 23:13:44

End at: 2018-08-01 23:14:14

Local clock offset: -6.202 ms

Remote clock offset: 8.818 ms

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

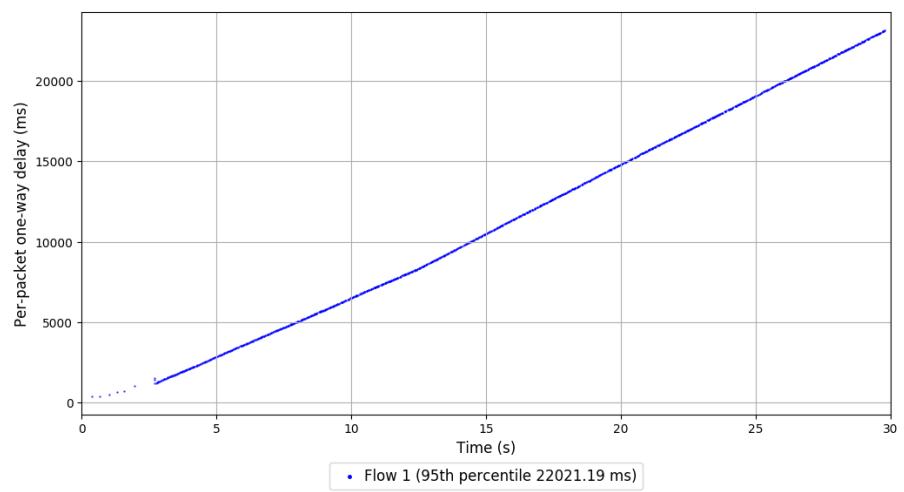
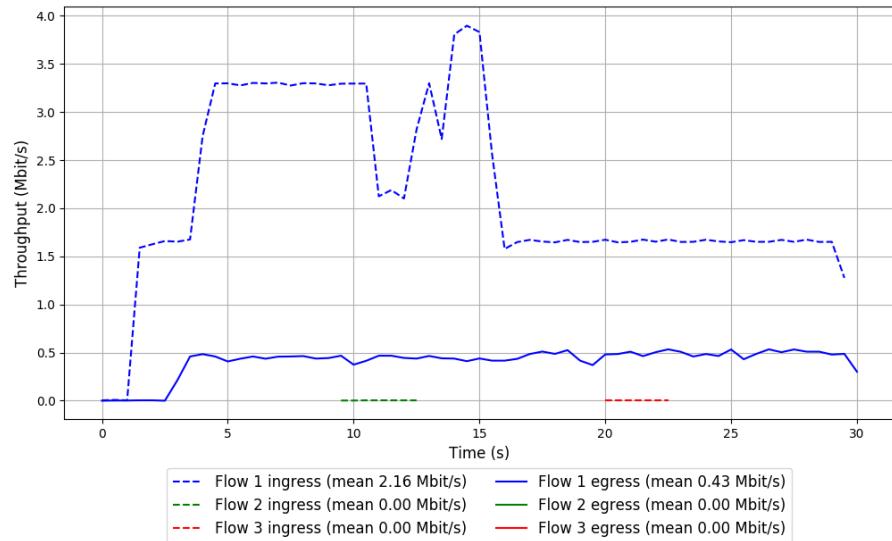
Start at: 2018-08-01 23:34:44

End at: 2018-08-01 23:35:14

Local clock offset: -6.212 ms

Remote clock offset: 16.667 ms

Run 3: Report of PCC-Vivace — Data Link

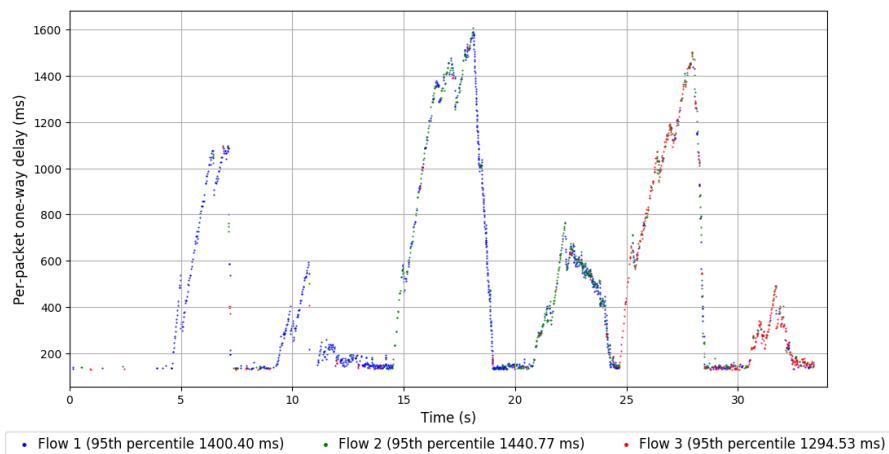
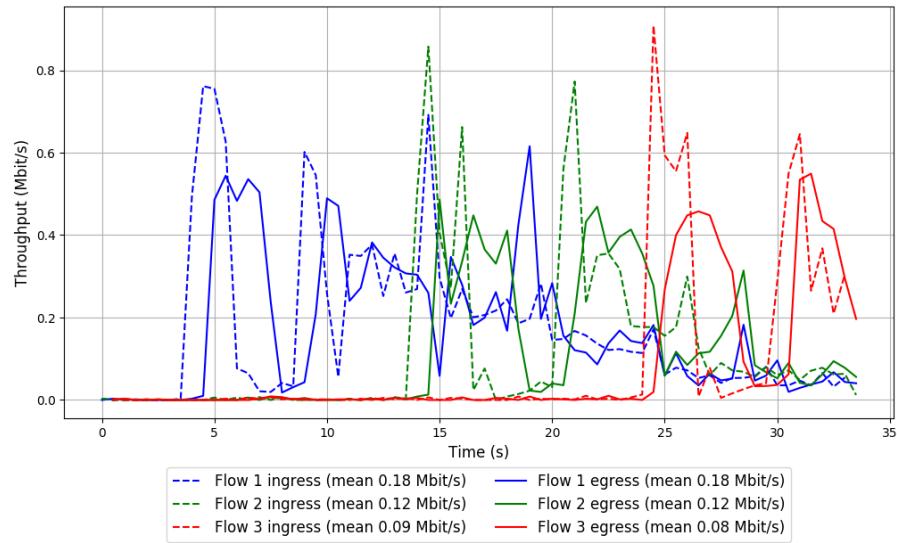


Run 1: Statistics of WebRTC media

```
Start at: 2018-08-01 22:50:20
End at: 2018-08-01 22:50:50
Local clock offset: -4.691 ms
Remote clock offset: 3.943 ms

# Below is generated by plot.py at 2018-08-01 23:49:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 1410.281 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 1400.396 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1440.772 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1294.527 ms
Loss rate: 2.77%
```

Run 1: Report of WebRTC media — Data Link

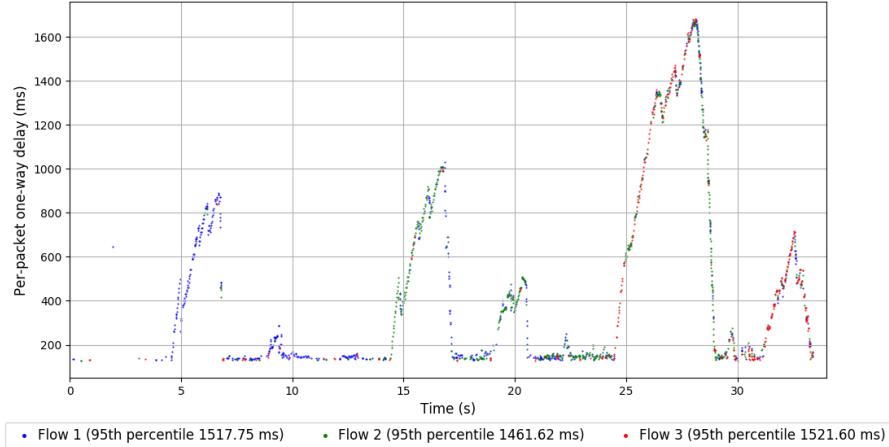
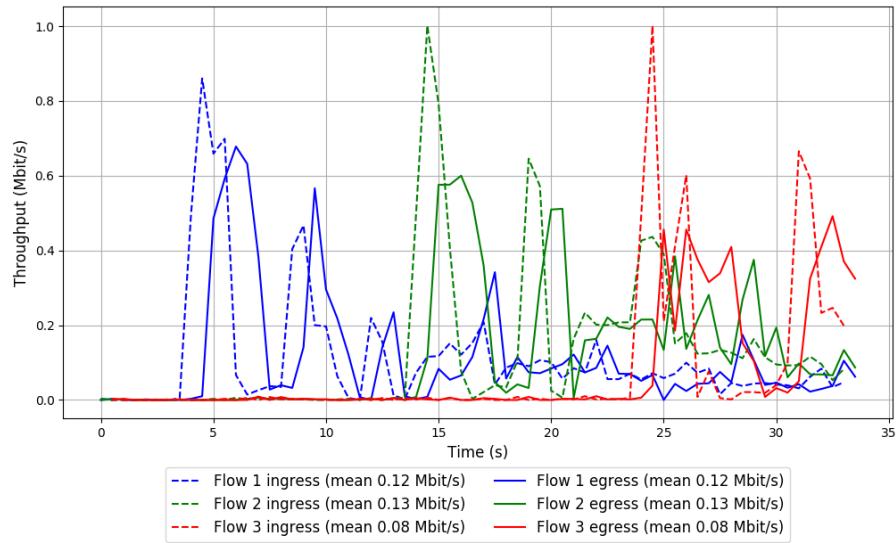


Run 2: Statistics of WebRTC media

```
Start at: 2018-08-01 23:11:21
End at: 2018-08-01 23:11:51
Local clock offset: -6.156 ms
Remote clock offset: 6.261 ms

# Below is generated by plot.py at 2018-08-01 23:49:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 1516.032 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1517.749 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 1461.620 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1521.604 ms
Loss rate: 1.66%
```

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

```
Start at: 2018-08-01 23:32:20
End at: 2018-08-01 23:32:50
Local clock offset: -6.229 ms
Remote clock offset: 12.323 ms

# Below is generated by plot.py at 2018-08-01 23:49:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 2154.471 ms
Loss rate: 4.70%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 2090.574 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 2276.483 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 2099.096 ms
Loss rate: 19.39%
```

Run 3: Report of WebRTC media — Data Link

