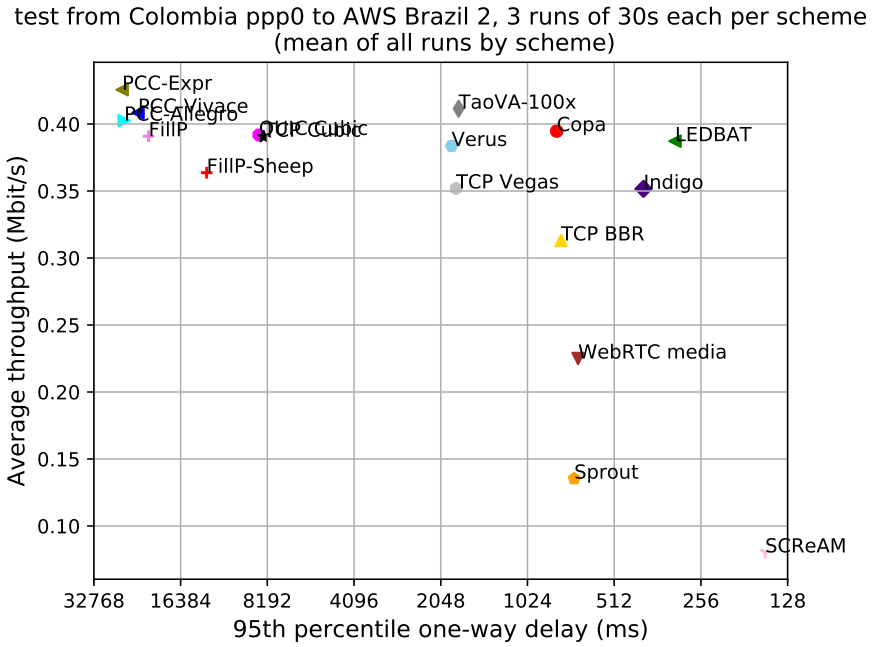
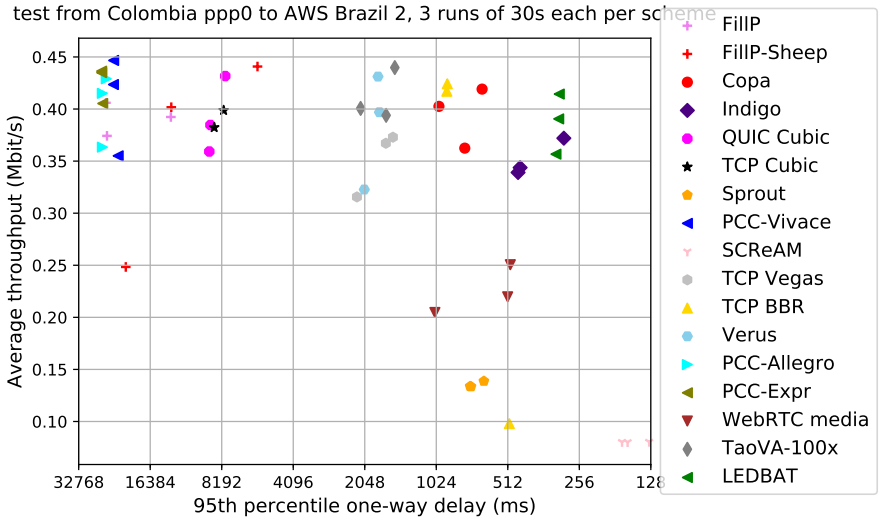
Pantheon Report

Generated at 2018-07-18 00:39:11 (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 1 flow.
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 @ f7befc2d8410f41949e0ad8143a9aab40bab7edb
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
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
(mean of all runs by scheme)
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
PCC-Expr
PCC-Vivace
PCC-Allegro
FillP
QUIC Cubic
TCP Cubic
FillP-Sheep
TaoVA-100x
Verus
Copa
LEDBAT
TCP Vegas
Indigo
TCP BBR
WebRTC media
Sprout
SCReAM
0.40
0.35
0.30
0.25
0.20
0.15
0.10
32768
16384
8192
4096
2048
1024
512
256
128


test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
32768
16384
8192
4096
2048
1024
512
256
FillP
FillP-Sheep
Copa
Indigo
QUIC Cubic
TCP Cubic
Sprout
PCC-Vivace
SCReAM
TCP Vegas
TCP BBR
Verus
PCC-Allegro
PCC-Expr
WebRTC media
TaoVA-100x
LEDBAT

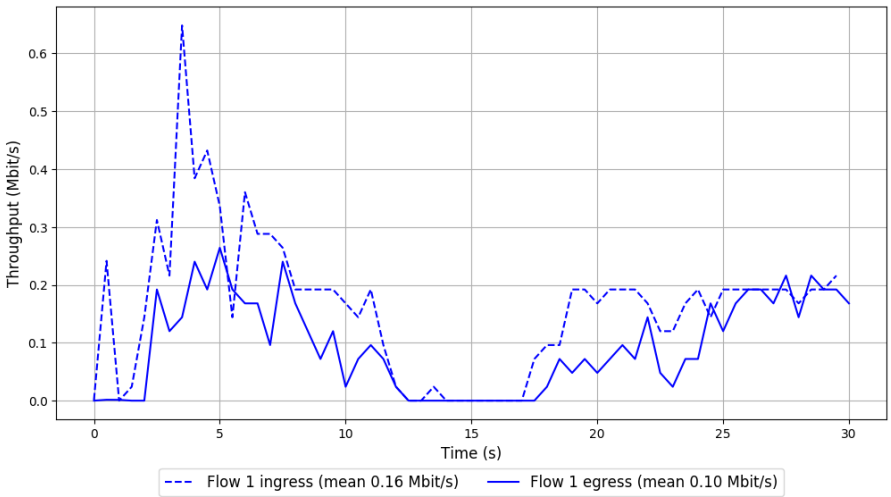
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.31	783.05	14.63
Copa	3	0.39	810.57	3.87
TCP Cubic	2	0.39	8430.05	31.89
FillP	3	0.39	21160.80	62.22
FillP-Sheep	3	0.36	13304.06	49.21
Indigo	3	0.35	405.05	1.43
LEDBAT	3	0.39	314.93	1.36
PCC-Allegro	3	0.40	25730.95	70.03
PCC-Expr	3	0.43	26148.18	92.54
QUIC Cubic	3	0.39	8766.41	33.26
SCReAM	3	0.08	153.21	0.74
Sprout	3	0.13	704.92	0.87
TaoVA-100x	3	0.41	1775.68	3.48
TCP Vegas	3	0.35	1812.46	2.13
Verus	3	0.38	1878.45	5.50
PCC-Vivace	3	0.41	23040.17	81.35
WebRTC media	3	0.22	683.32	0.59

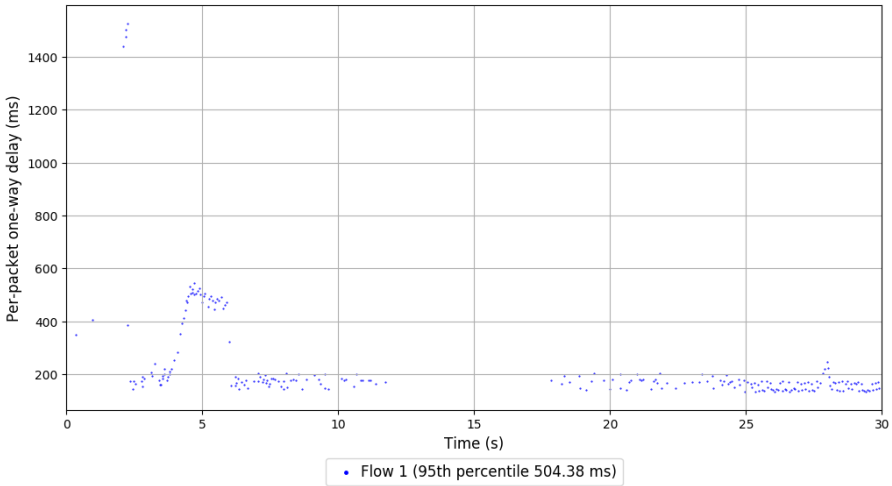
```
Run 1: Statistics of TCP BBR

Start at: 2018-07-17 23:50:13
End at: 2018-07-17 23:50:43
Local clock offset: -1.648 ms
Remote clock offset: 10.808 ms

# Below is generated by plot.py at 2018-07-18 00:38:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 504.378 ms
Loss rate: 40.48%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 504.378 ms
Loss rate: 40.48%
```

Run 1: Report of TCP BBR — Data Link



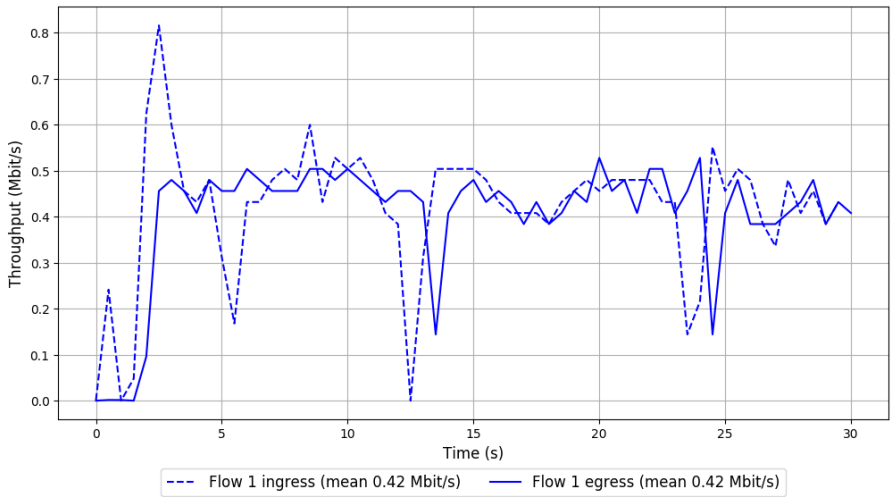


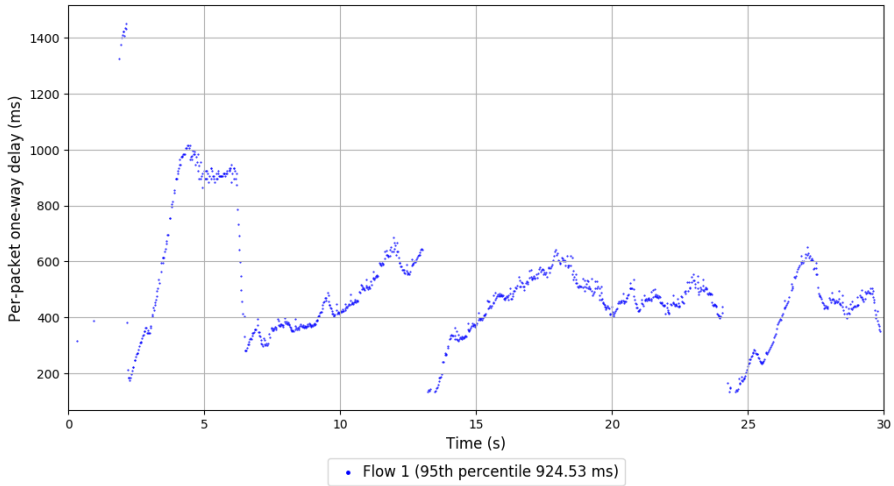
```
Run 2: Statistics of TCP BBR

Start at: 2018-07-18 00:09:52
End at: 2018-07-18 00:10:22
Local clock offset: -6.261 ms
Remote clock offset: 10.476 ms

# Below is generated by plot.py at 2018-07-18 00:38:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 924.528 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 924.528 ms
Loss rate: 1.63%
```

Run 2: Report of TCP BBR — Data Link



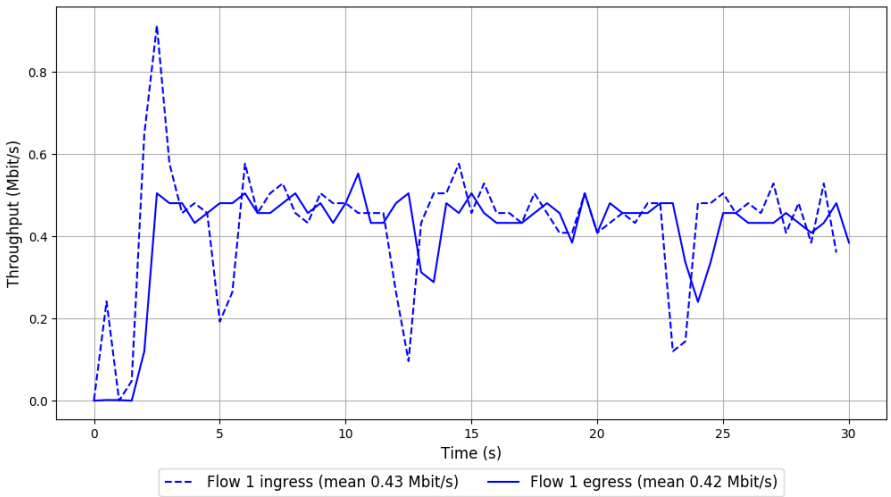


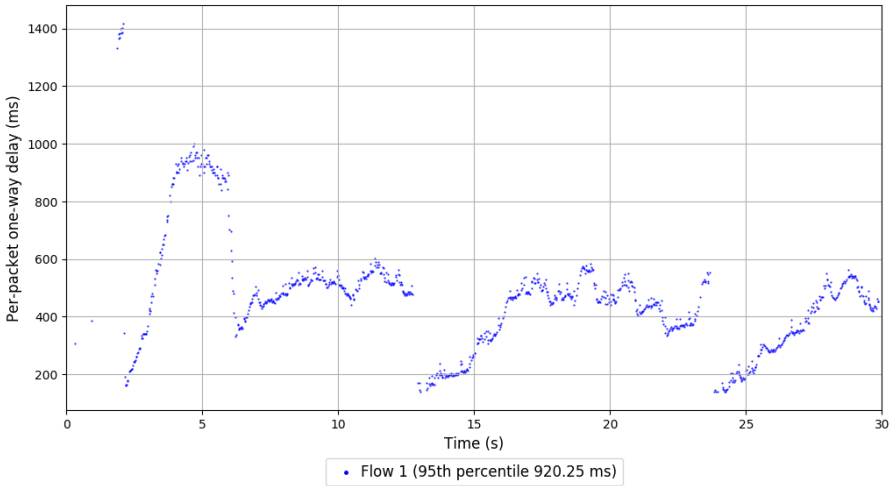
```
Run 3: Statistics of TCP BBR

Start at: 2018-07-18 00:29:55
End at: 2018-07-18 00:30:25
Local clock offset: -5.567 ms
Remote clock offset: 8.539 ms

# Below is generated by plot.py at 2018-07-18 00:38:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 920.245 ms
Loss rate: 1.79%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 920.245 ms
Loss rate: 1.79%
```

Run 3: Report of TCP BBR — Data Link



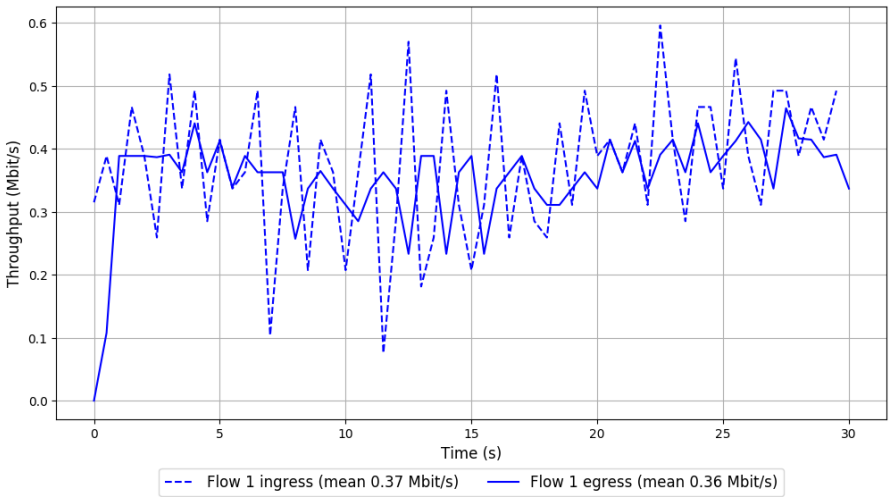


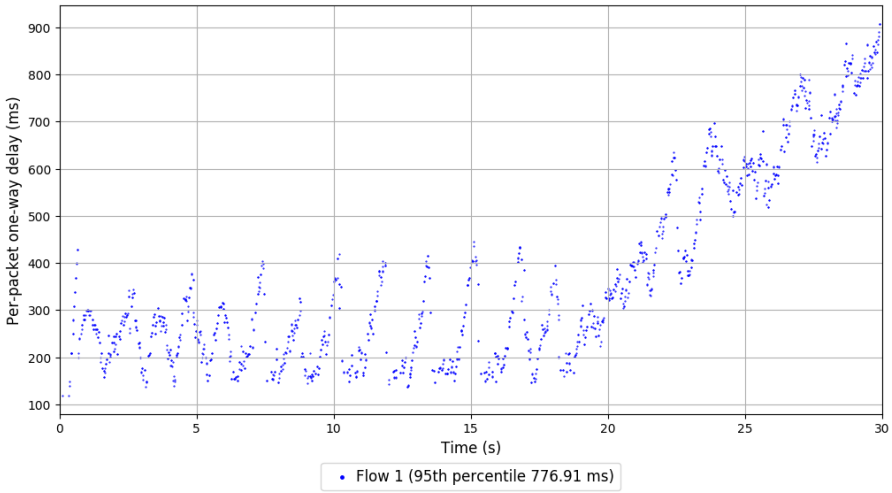
```
Run 1: Statistics of Copa

Start at: 2018-07-17 23:41:12
End at: 2018-07-17 23:41:42
Local clock offset: -1.827 ms
Remote clock offset: 10.001 ms

# Below is generated by plot.py at 2018-07-18 00:38:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 776.908 ms
Loss rate: 3.92%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 776.908 ms
Loss rate: 3.92%
```

Run 1: Report of Copa — Data Link



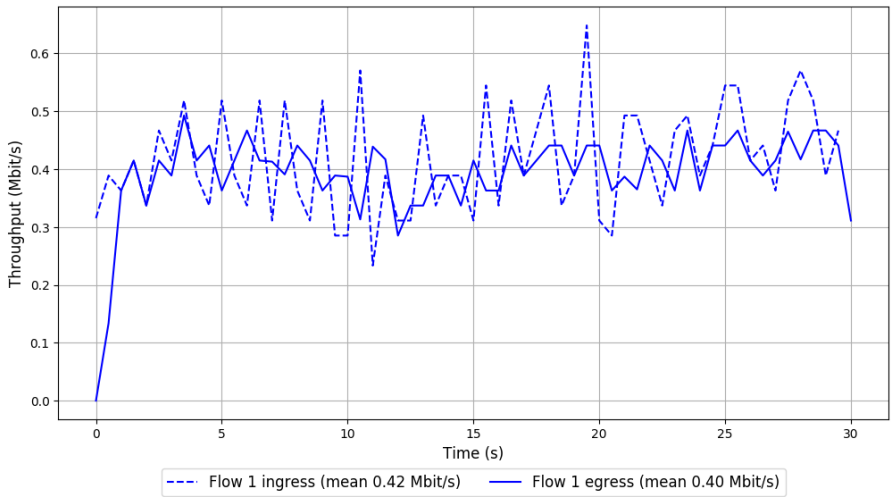


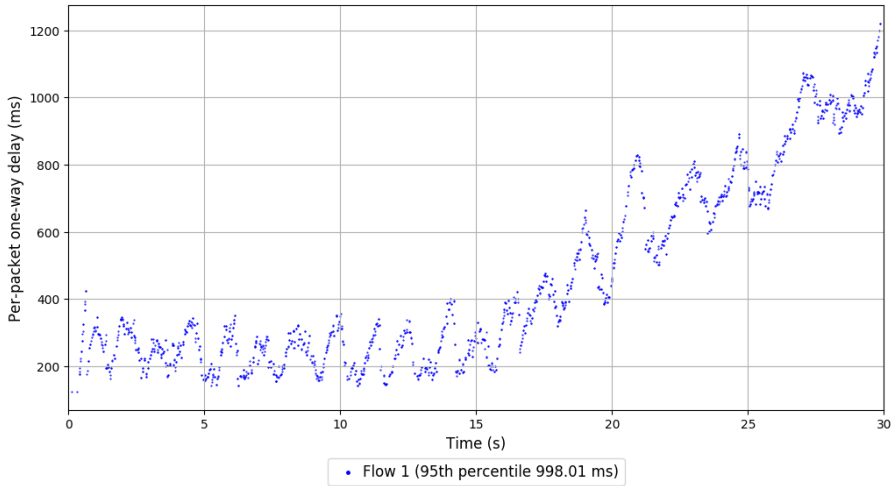
```
Run 2: Statistics of Copa

Start at: 2018-07-18 00:00:54
End at: 2018-07-18 00:01:24
Local clock offset: -4.099 ms
Remote clock offset: 5.002 ms

# Below is generated by plot.py at 2018-07-18 00:38:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 998.006 ms
Loss rate: 4.65%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 998.006 ms
Loss rate: 4.65%
```

Run 2: Report of Copa — Data Link



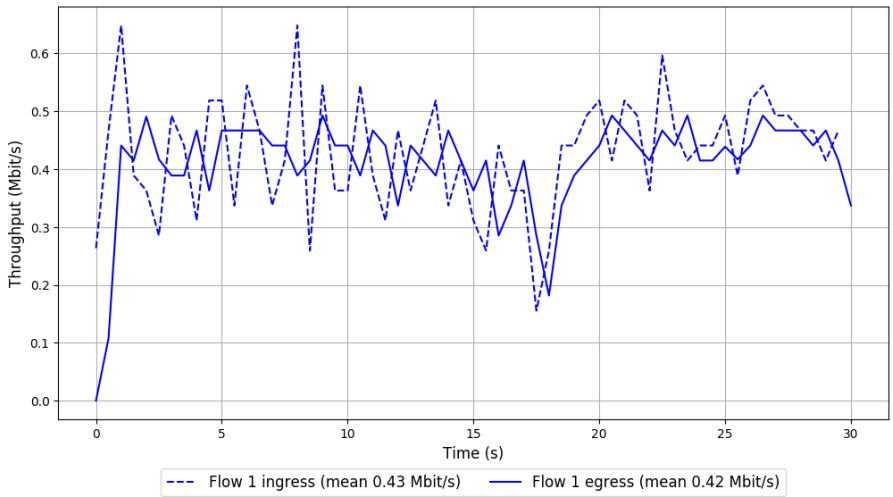


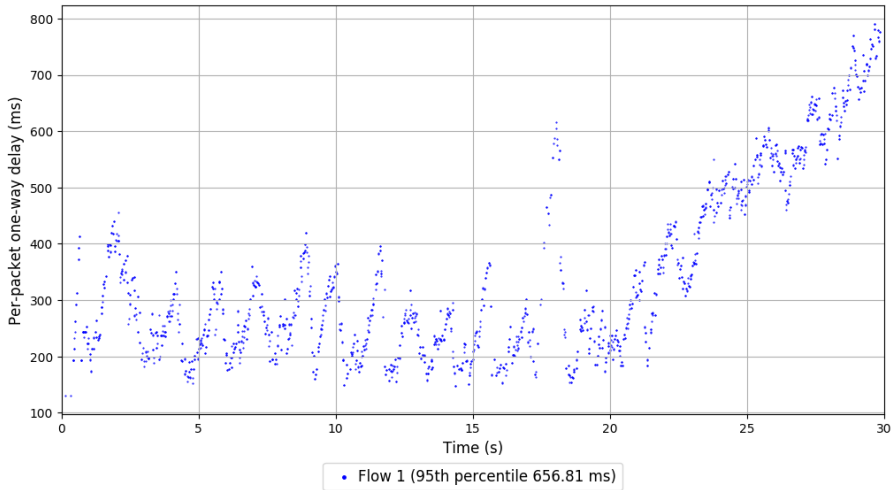
```
Run 3: Statistics of Copa

Start at: 2018-07-18 00:20:57
End at: 2018-07-18 00:21:27
Local clock offset: -7.403 ms
Remote clock offset: 10.568 ms

# Below is generated by plot.py at 2018-07-18 00:38:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 656.809 ms
Loss rate: 3.03%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 656.809 ms
Loss rate: 3.03%
```

Run 3: Report of Copa — Data Link

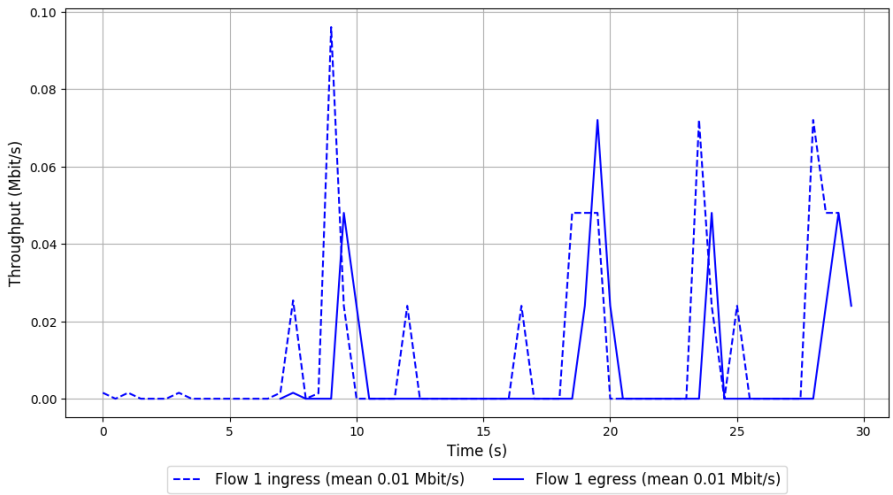


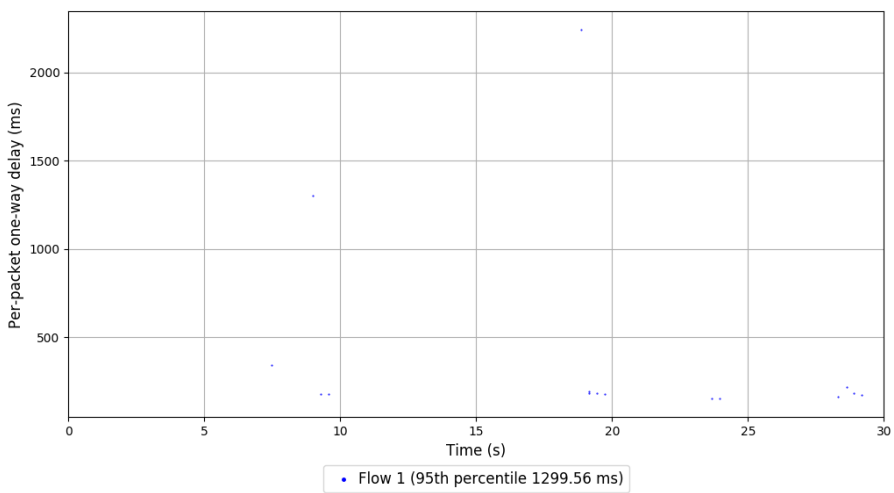


```
Run 1: Statistics of TCP Cubic

Start at: 2018-07-17 23:49:06
End at: 2018-07-17 23:49:36
Local clock offset: -1.69 ms
Remote clock offset: 9.714 ms
```

Run 1: Report of TCP Cubic — Data Link



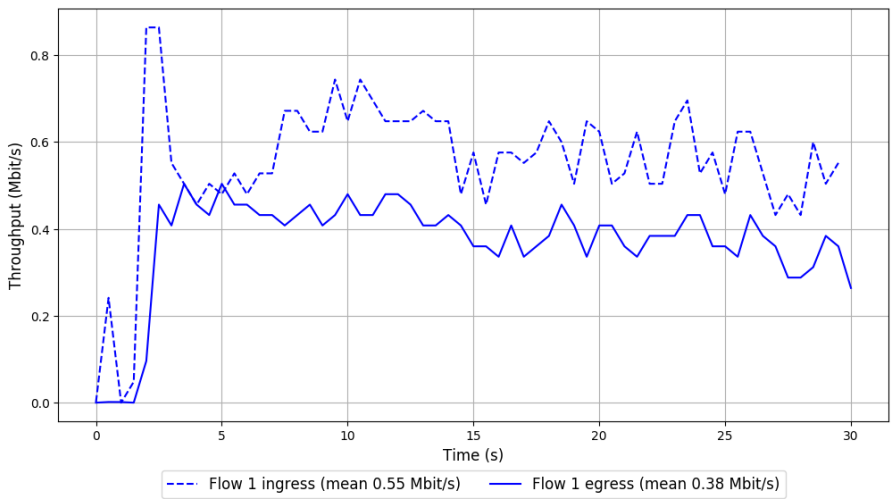


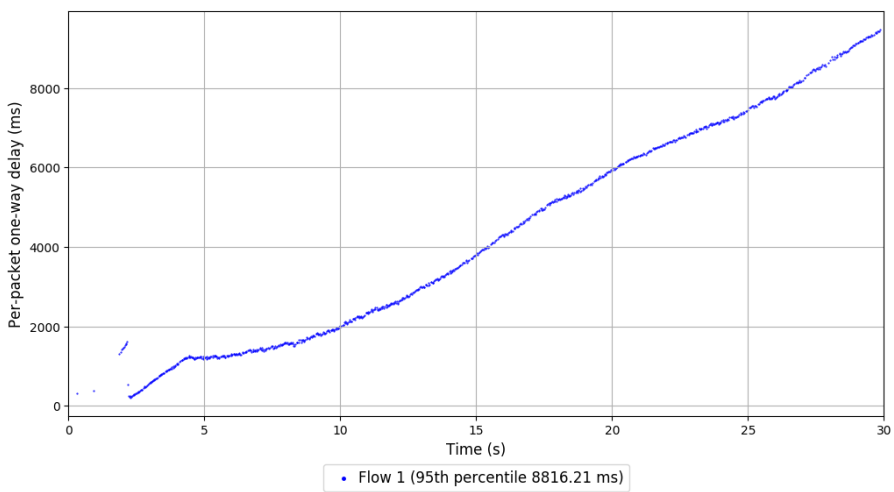
```
Run 2: Statistics of TCP Cubic

Start at: 2018-07-18 00:08:45
End at: 2018-07-18 00:09:15
Local clock offset: -6.155 ms
Remote clock offset: 6.541 ms

# Below is generated by plot.py at 2018-07-18 00:38:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 8816.207 ms
Loss rate: 31.76%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 8816.207 ms
Loss rate: 31.76%
```

Run 2: Report of TCP Cubic — Data Link



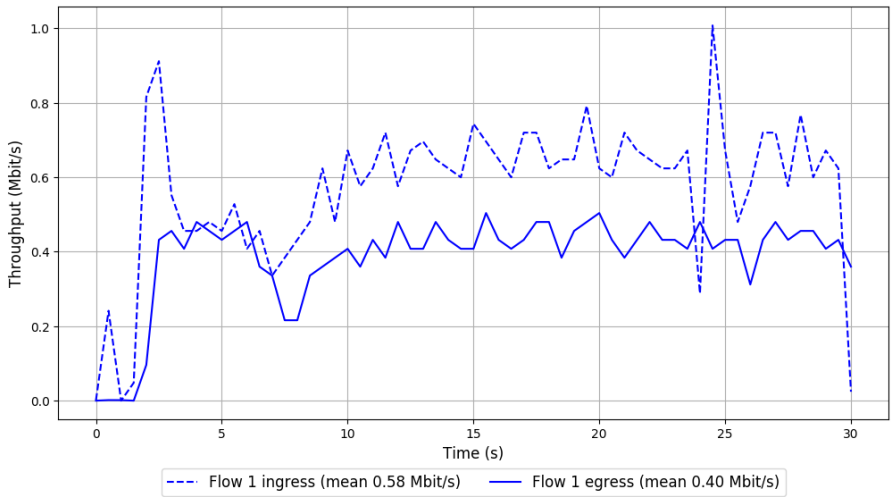


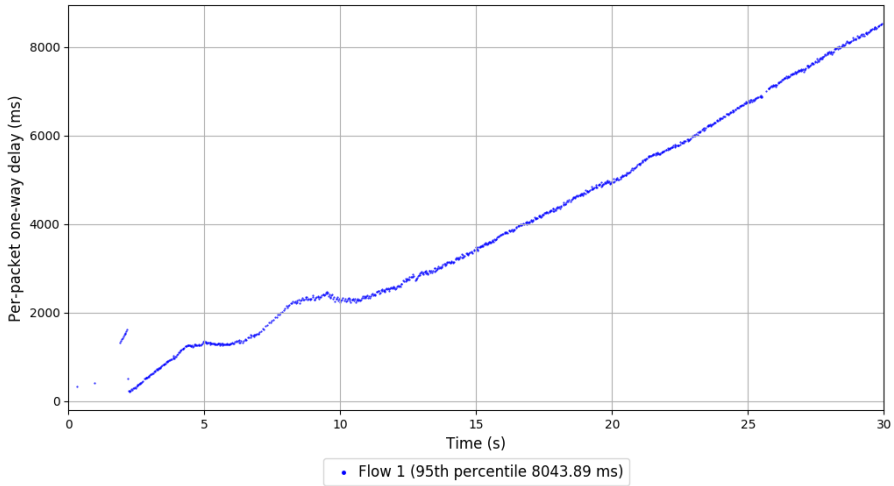
```
Run 3: Statistics of TCP Cubic

Start at: 2018-07-18 00:28:48
End at: 2018-07-18 00:29:18
Local clock offset: -5.988 ms
Remote clock offset: 4.66 ms

# Below is generated by plot.py at 2018-07-18 00:38:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 8043.885 ms
Loss rate: 32.02%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 8043.885 ms
Loss rate: 32.02%
```

Run 3: Report of TCP Cubic — Data Link



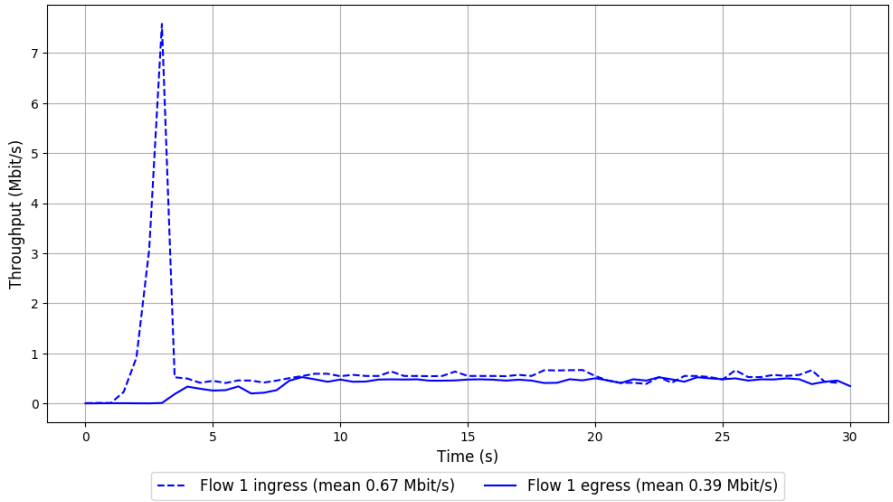


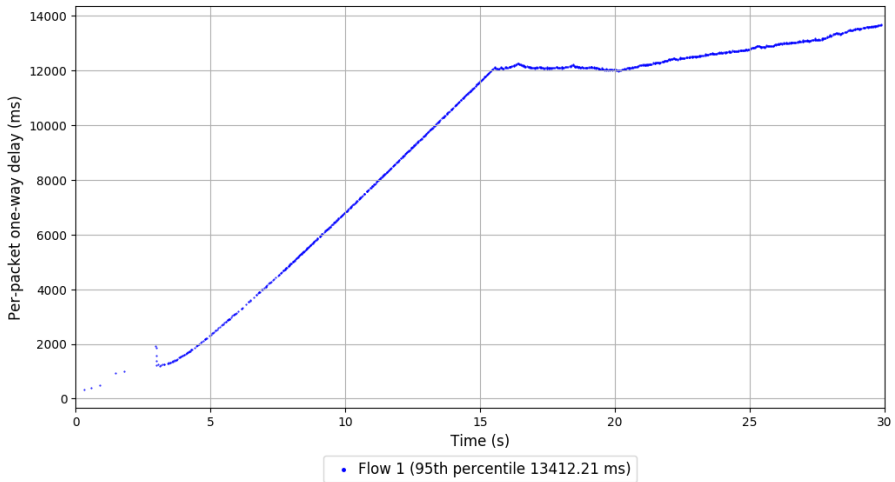
```
Run 1: Statistics of FillP

Start at: 2018-07-17 23:57:00
End at: 2018-07-17 23:57:30
Local clock offset: -2.585 ms
Remote clock offset: 5.908 ms

# Below is generated by plot.py at 2018-07-18 00:38:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 13412.212 ms
Loss rate: 41.86%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 13412.212 ms
Loss rate: 41.86%
```

Run 1: Report of FillP — Data Link



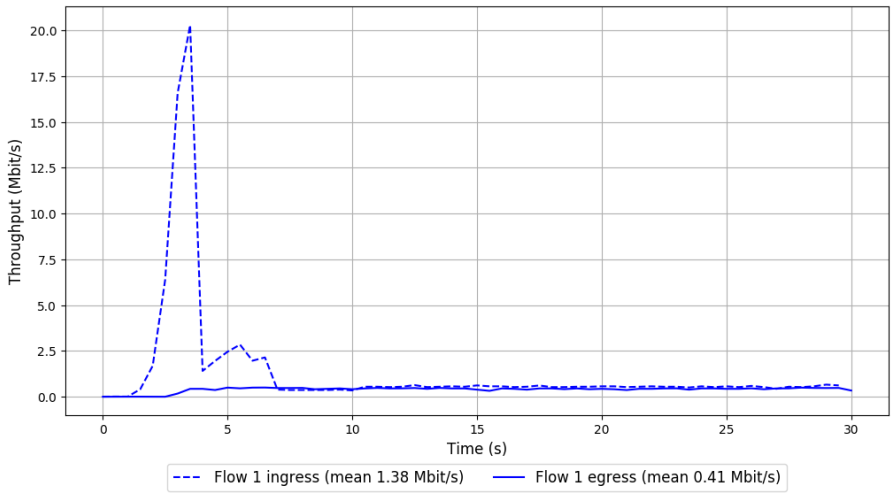


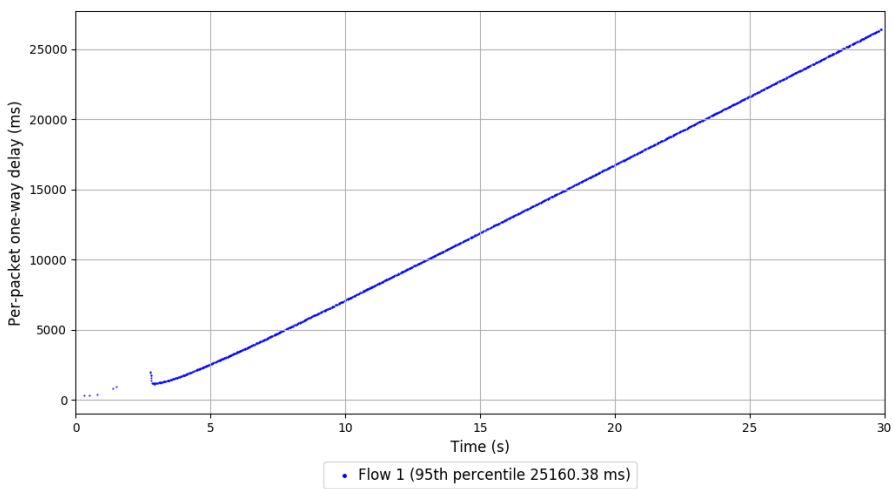
```
Run 2: Statistics of FillP

Start at: 2018-07-18 00:16:53
End at: 2018-07-18 00:17:23
Local clock offset: -7.011 ms
Remote clock offset: 11.445 ms

# Below is generated by plot.py at 2018-07-18 00:38:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 25160.383 ms
Loss rate: 70.87%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 25160.383 ms
Loss rate: 70.87%
```

Run 2: Report of FillP — Data Link



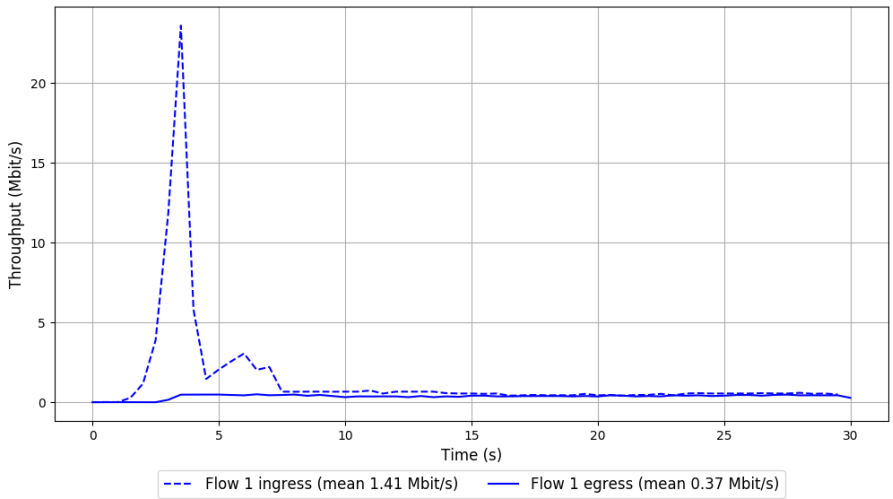


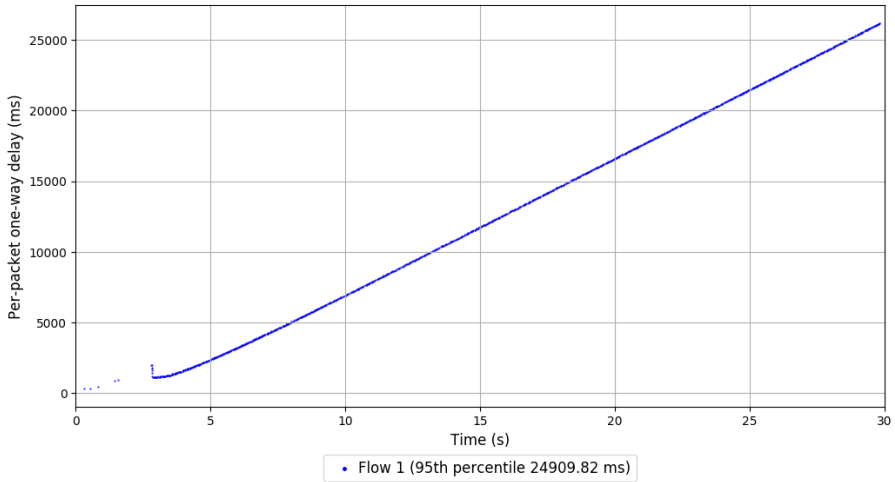
```
Run 3: Statistics of FillP

Start at: 2018-07-18 00:36:44
End at: 2018-07-18 00:37:14
Local clock offset: -3.89 ms
Remote clock offset: 7.459 ms

# Below is generated by plot.py at 2018-07-18 00:38:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 24909.816 ms
Loss rate: 73.92%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 24909.816 ms
Loss rate: 73.92%
```

Run 3: Report of FillP — Data Link



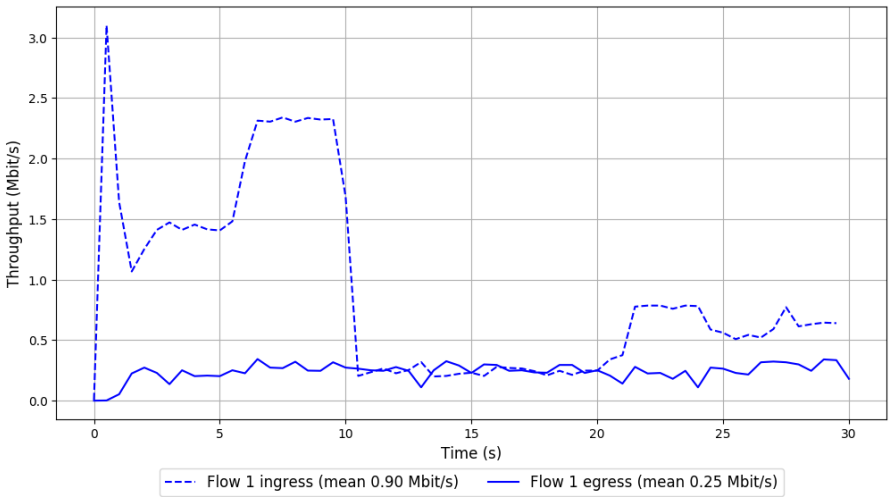


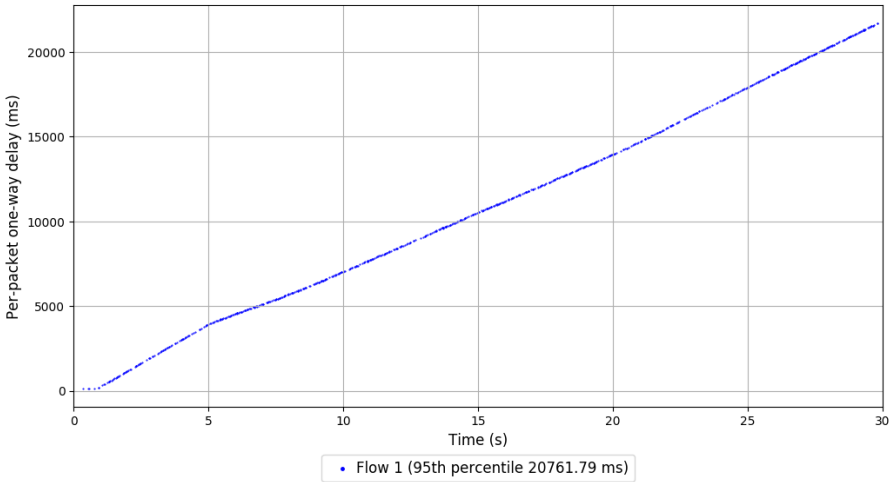
```
Run 1: Statistics of FillP-Sheep

Start at: 2018-07-17 23:55:52
End at: 2018-07-17 23:56:22
Local clock offset: -1.792 ms
Remote clock offset: 10.888 ms

# Below is generated by plot.py at 2018-07-18 00:38:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 20761.789 ms
Loss rate: 72.82%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 20761.789 ms
Loss rate: 72.82%
```

Run 1: Report of FillP-Sheep — Data Link



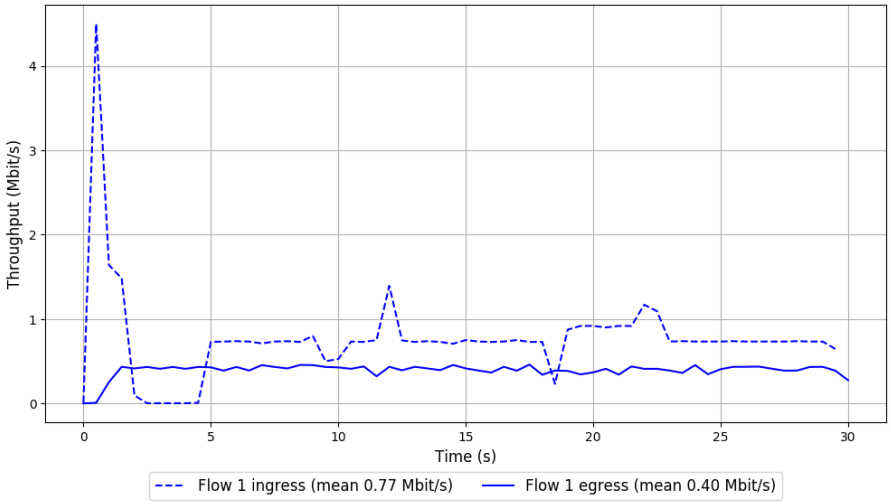


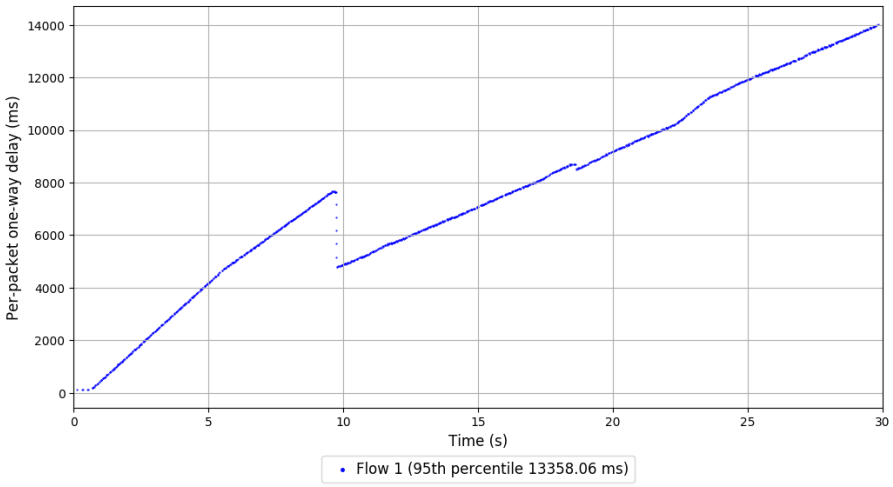
```
Run 2: Statistics of FillP-Sheep

Start at: 2018-07-18 00:15:46
End at: 2018-07-18 00:16:16
Local clock offset: -6.971 ms
Remote clock offset: 10.699 ms

# Below is generated by plot.py at 2018-07-18 00:38:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 13358.063 ms
Loss rate: 48.04%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 13358.063 ms
Loss rate: 48.04%
```

Run 2: Report of FillP-Sheep — Data Link



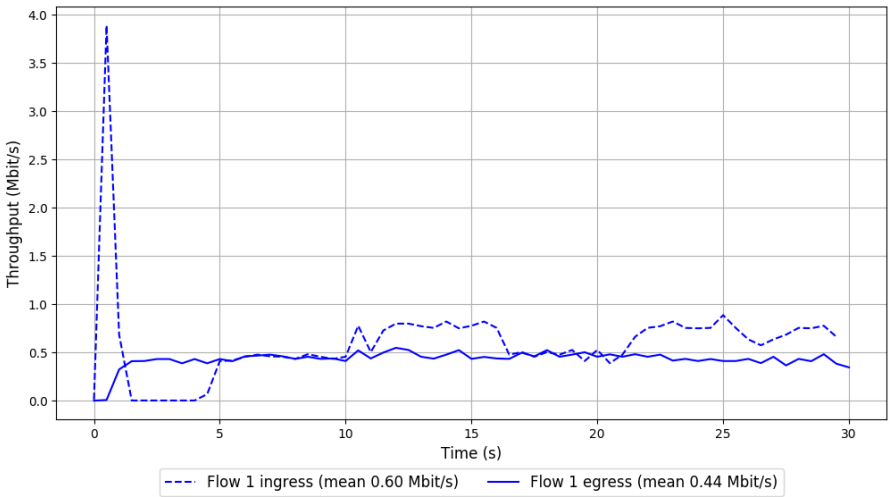


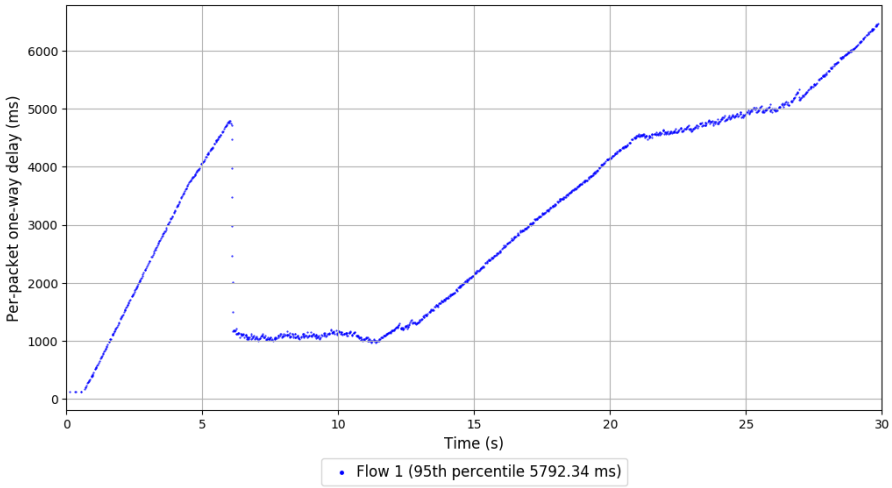
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-07-18 00:35:36
End at: 2018-07-18 00:36:06
Local clock offset: -4.09 ms
Remote clock offset: 8.204 ms

# Below is generated by plot.py at 2018-07-18 00:38:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 5792.341 ms
Loss rate: 26.76%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 5792.341 ms
Loss rate: 26.76%
```

Run 3: Report of FillP-Sheep — Data Link



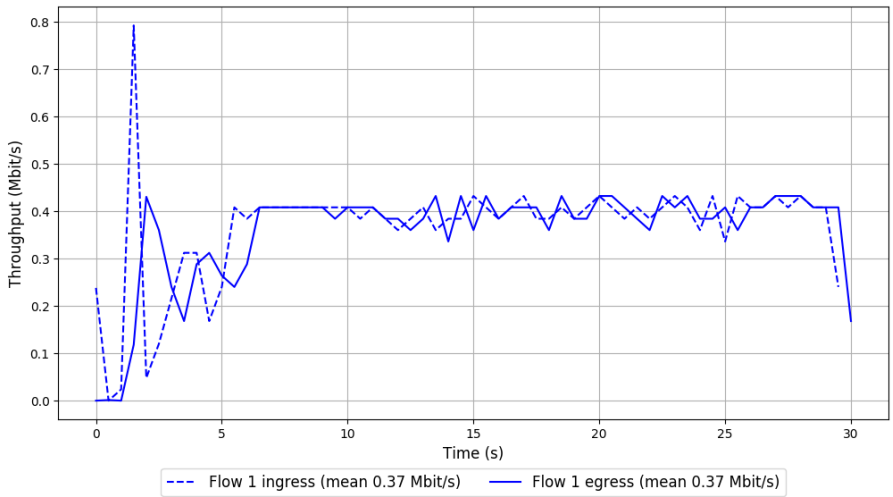


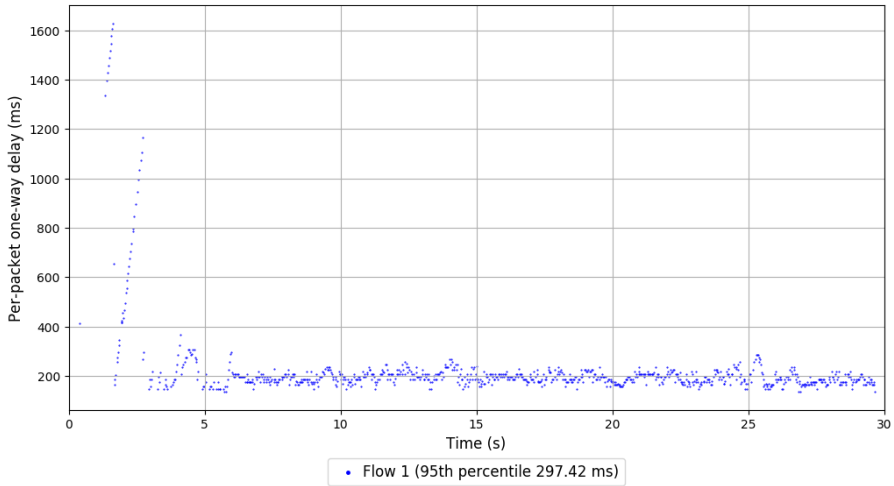
```
Run 1: Statistics of Indigo

Start at: 2018-07-17 23:42:19
End at: 2018-07-17 23:42:49
Local clock offset: -1.887 ms
Remote clock offset: 8.866 ms

# Below is generated by plot.py at 2018-07-18 00:38:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 297.423 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 297.423 ms
Loss rate: 0.98%
```

Run 1: Report of Indigo — Data Link



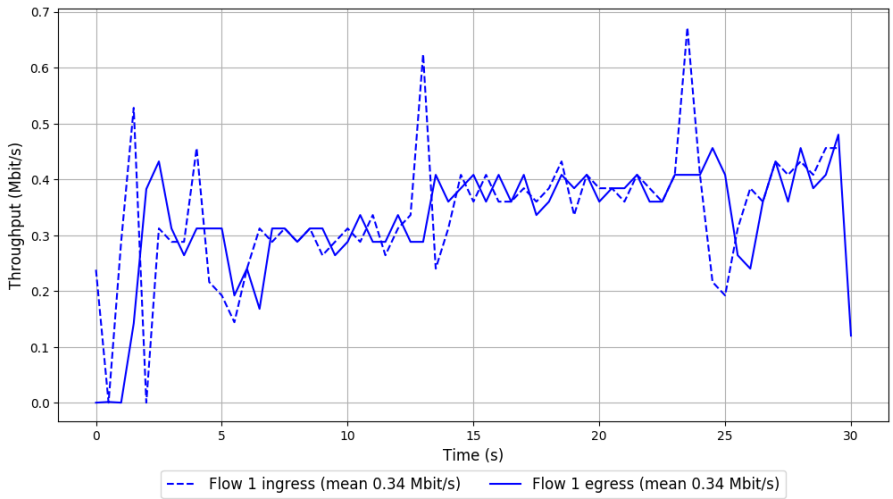


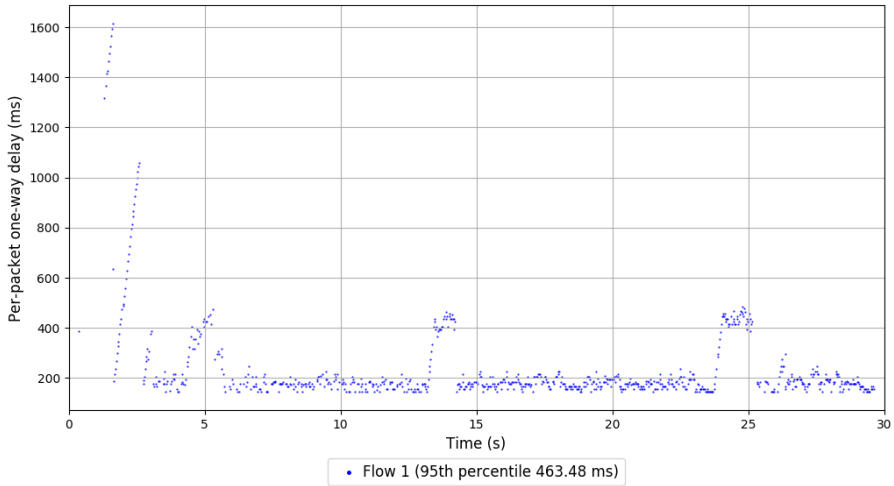
```
Run 2: Statistics of Indigo

Start at: 2018-07-18 00:02:01
End at: 2018-07-18 00:02:31
Local clock offset: -4.645 ms
Remote clock offset: 6.216 ms

# Below is generated by plot.py at 2018-07-18 00:38:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 463.482 ms
Loss rate: 2.36%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 463.482 ms
Loss rate: 2.36%
```

Run 2: Report of Indigo — Data Link



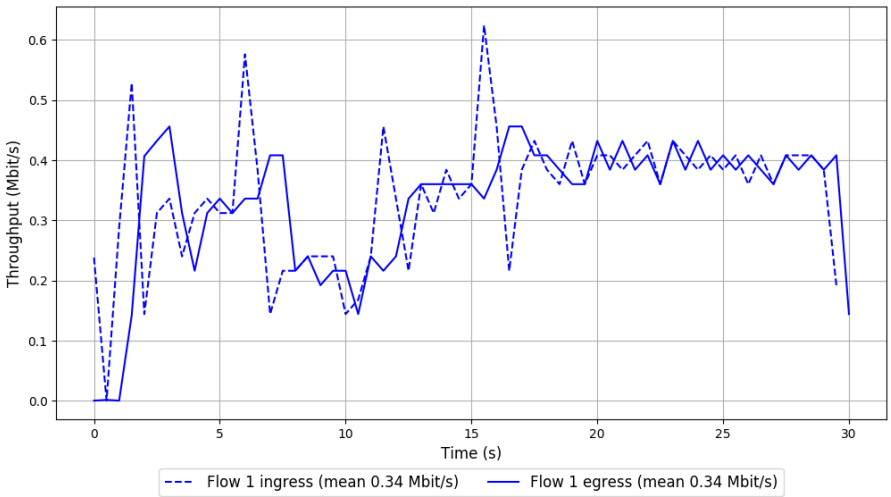


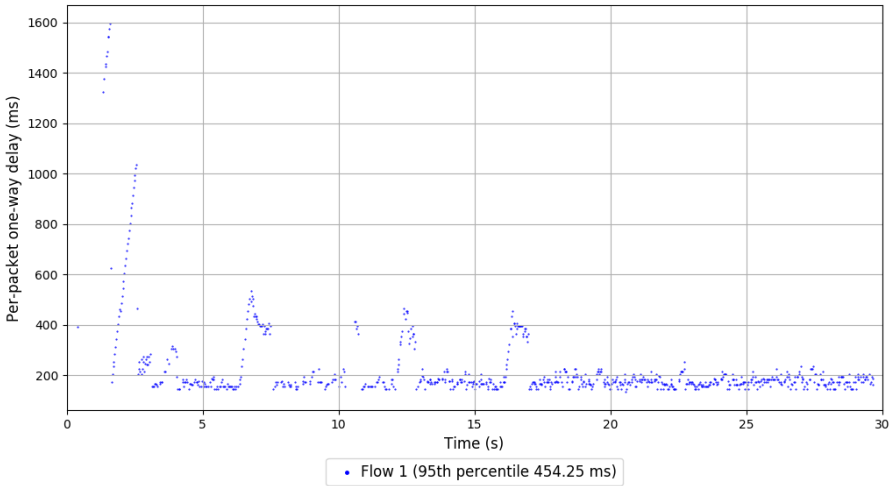
```
Run 3: Statistics of Indigo

Start at: 2018-07-18 00:22:04
End at: 2018-07-18 00:22:34
Local clock offset: -7.489 ms
Remote clock offset: 4.268 ms

# Below is generated by plot.py at 2018-07-18 00:38:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 454.253 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 454.253 ms
Loss rate: 0.94%
```

Run 3: Report of Indigo — Data Link



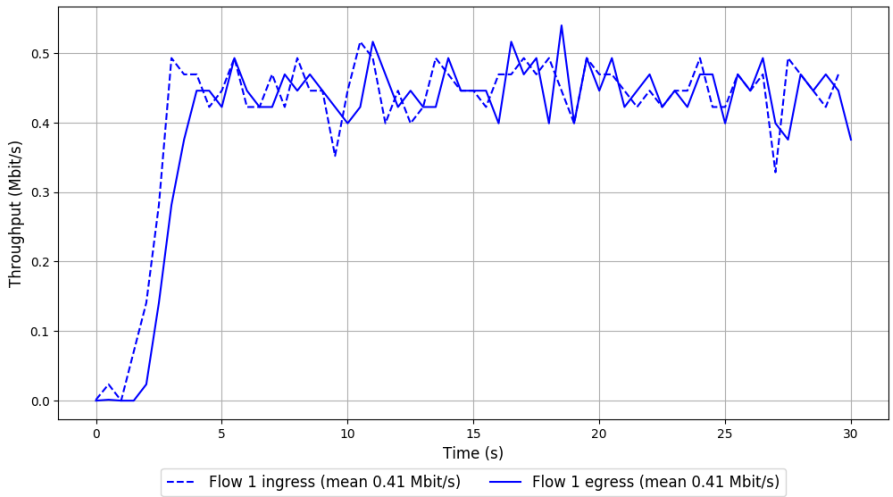


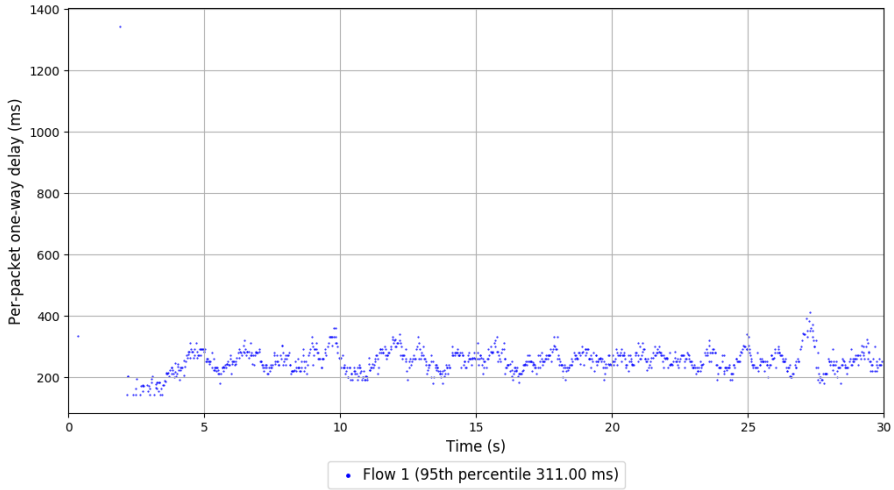
```
Run 1: Statistics of LEDBAT

Start at: 2018-07-17 23:43:27
End at: 2018-07-17 23:43:57
Local clock offset: -1.798 ms
Remote clock offset: 9.935 ms

# Below is generated by plot.py at 2018-07-18 00:38:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 311.005 ms
Loss rate: 1.23%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 311.005 ms
Loss rate: 1.23%
```

Run 1: Report of LEDBAT — Data Link



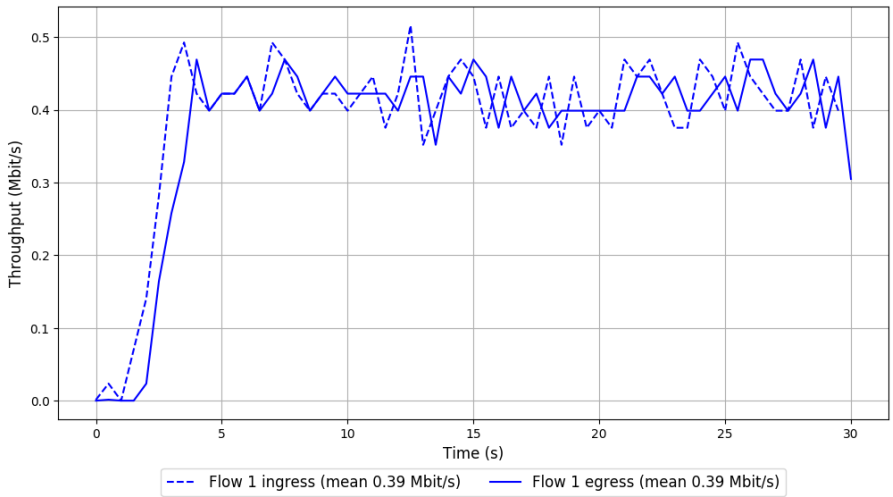


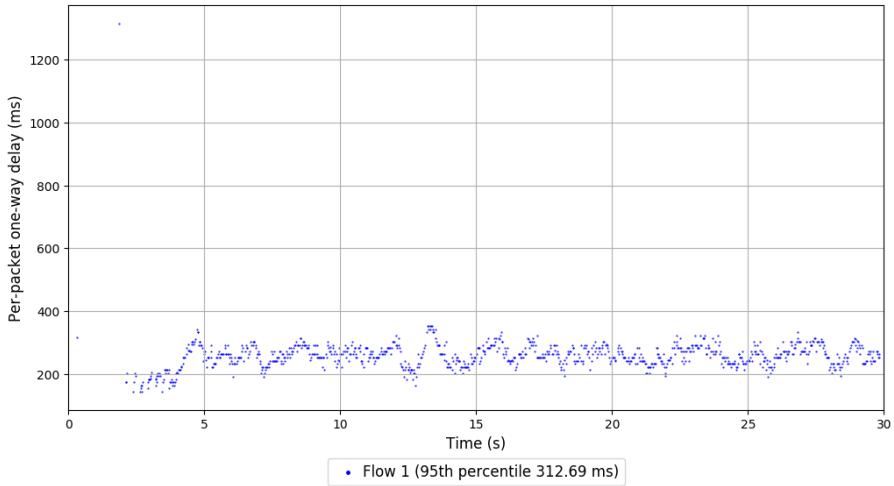
```
Run 2: Statistics of LEDBAT

Start at: 2018-07-18 00:03:08
End at: 2018-07-18 00:03:38
Local clock offset: -4.859 ms
Remote clock offset: 6.048 ms

# Below is generated by plot.py at 2018-07-18 00:38:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 312.686 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 312.686 ms
Loss rate: 1.31%
```

Run 2: Report of LEDBAT — Data Link



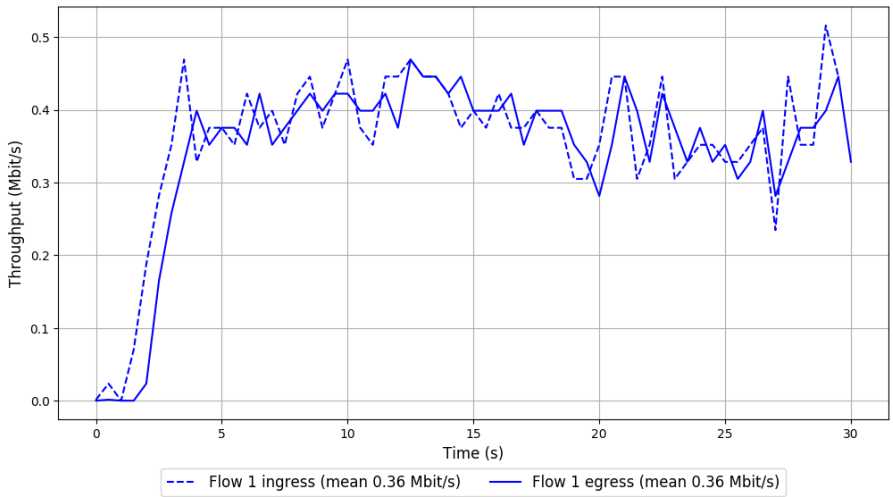


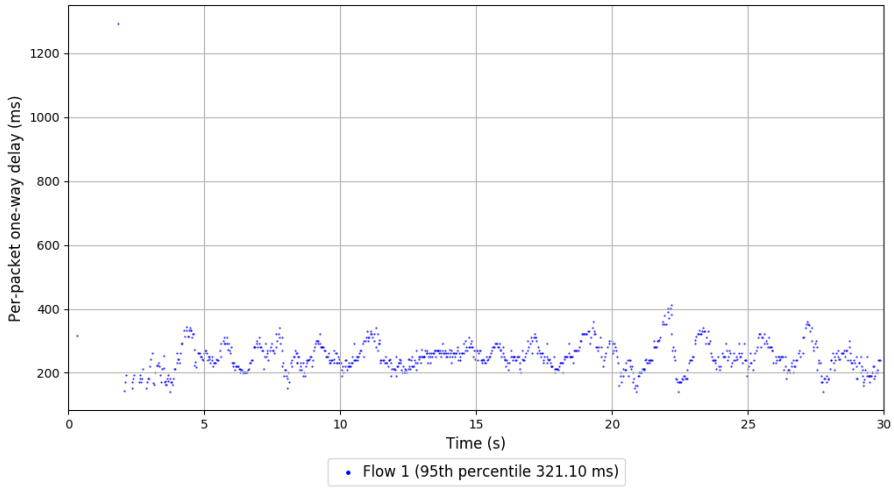
```
Run 3: Statistics of LEDBAT

Start at: 2018-07-18 00:23:12
End at: 2018-07-18 00:23:42
Local clock offset: -7.473 ms
Remote clock offset: 8.143 ms

# Below is generated by plot.py at 2018-07-18 00:38:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 321.095 ms
Loss rate: 1.53%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 321.095 ms
Loss rate: 1.53%
```

Run 3: Report of LEDBAT — Data Link



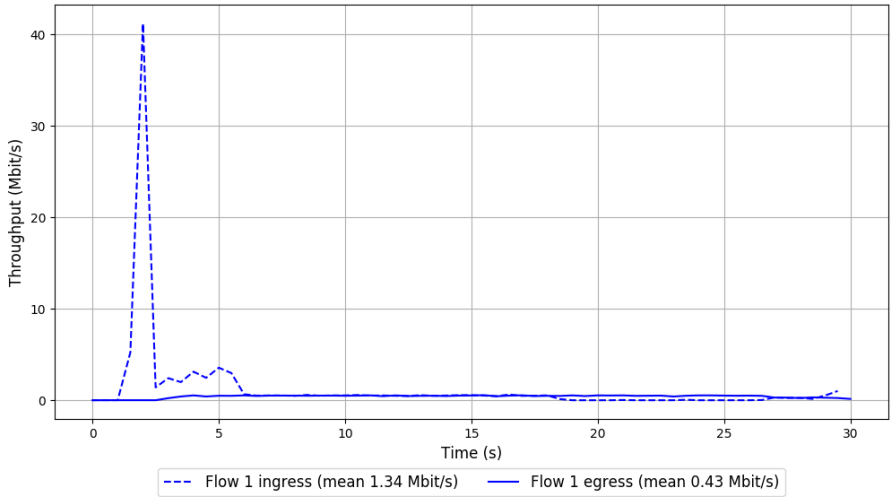


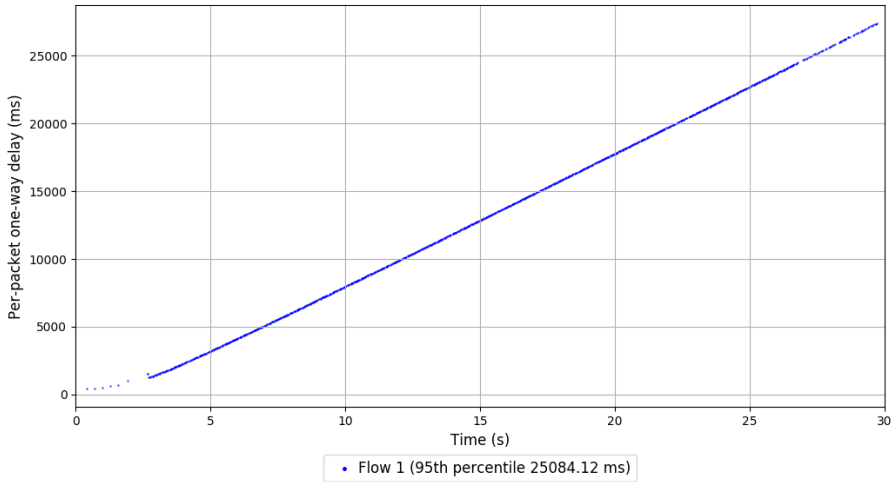
```
Run 1: Statistics of PCC-Allegro

Start at: 2018-07-17 23:54:42
End at: 2018-07-17 23:55:12
Local clock offset: -1.53 ms
Remote clock offset: 8.806 ms

# Below is generated by plot.py at 2018-07-18 00:38:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 25084.116 ms
Loss rate: 68.58%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 25084.116 ms
Loss rate: 68.58%
```

Run 1: Report of PCC-Allegro — Data Link



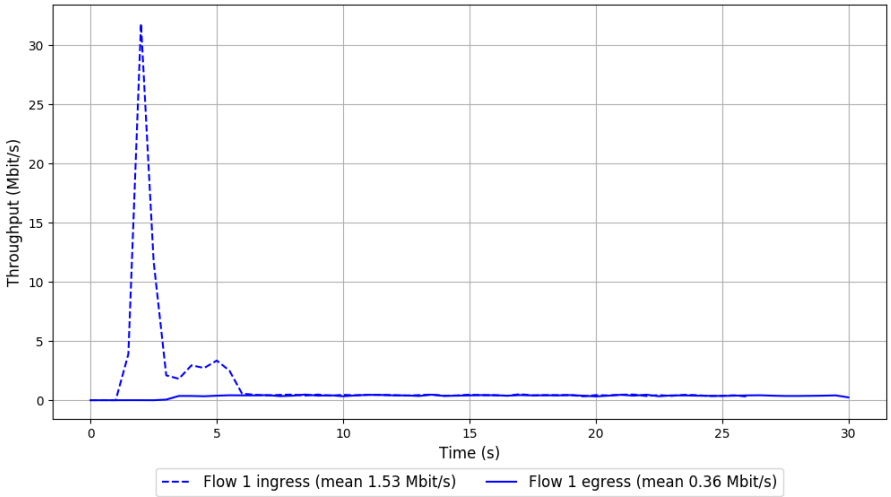


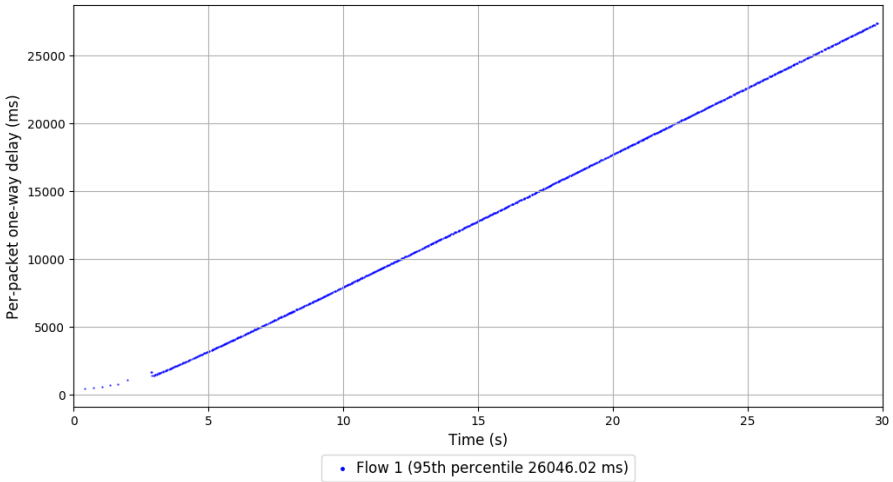
```
Run 2: Statistics of PCC-Allegro

Start at: 2018-07-18 00:14:21
End at: 2018-07-18 00:14:51
Local clock offset: -6.882 ms
Remote clock offset: 5.61 ms

# Below is generated by plot.py at 2018-07-18 00:38:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 26046.018 ms
Loss rate: 73.42%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 26046.018 ms
Loss rate: 73.42%
```

Run 2: Report of PCC-Allegro — Data Link



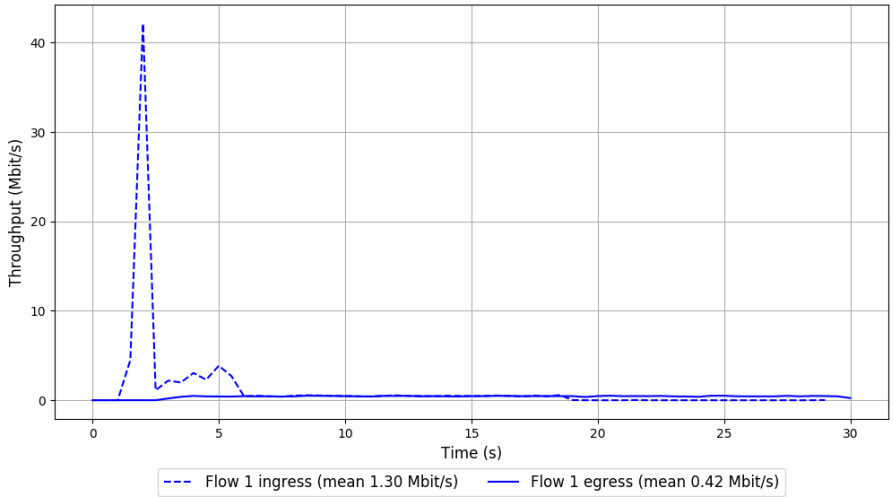


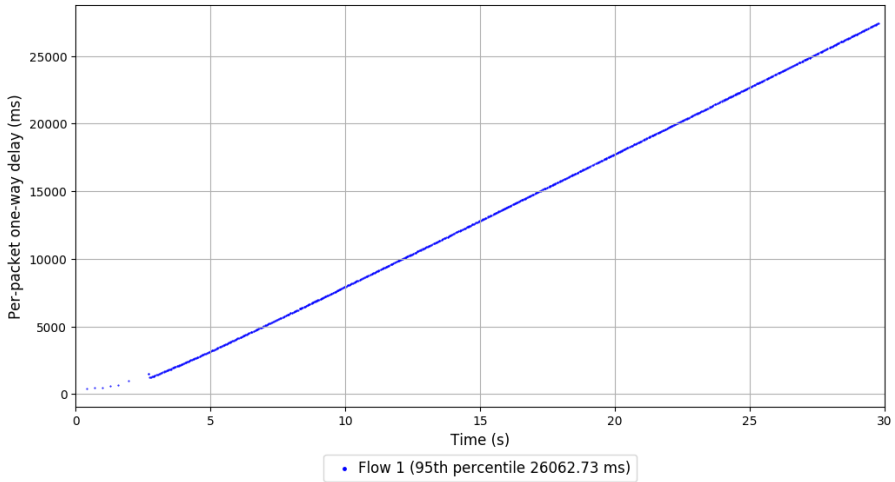
```
Run 3: Statistics of PCC-Allegro

Start at: 2018-07-18 00:34:24
End at: 2018-07-18 00:34:54
Local clock offset: -4.384 ms
Remote clock offset: 8.298 ms

# Below is generated by plot.py at 2018-07-18 00:38:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 26062.728 ms
Loss rate: 68.09%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 26062.728 ms
Loss rate: 68.09%
```

Run 3: Report of PCC-Allegro — Data Link



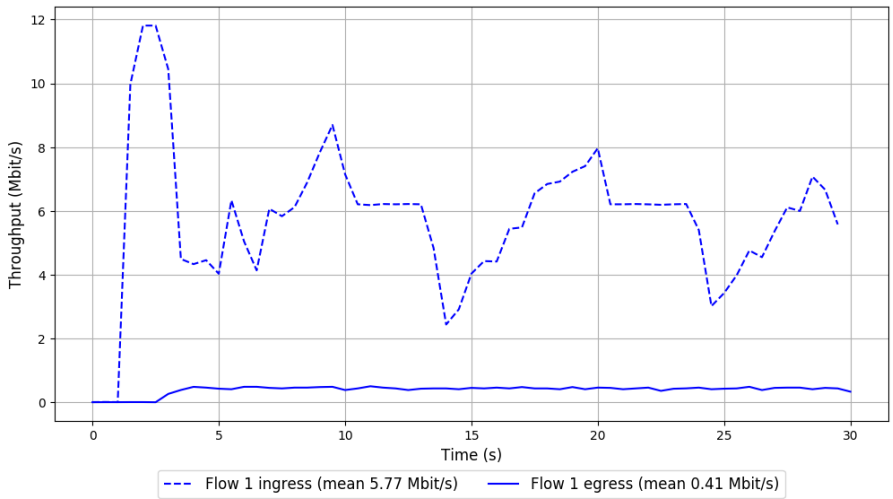


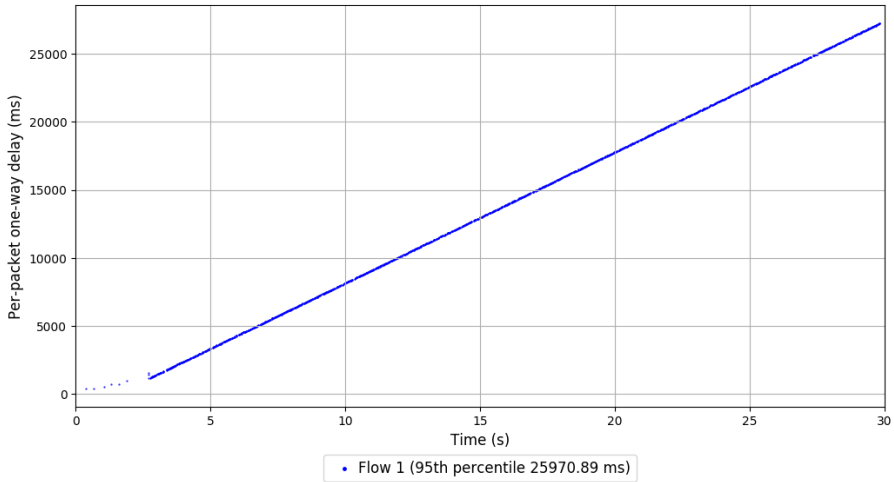
```
Run 1: Statistics of PCC-Expr

Start at: 2018-07-17 23:58:07
End at: 2018-07-17 23:58:37
Local clock offset: -3.133 ms
Remote clock offset: 6.112 ms

# Below is generated by plot.py at 2018-07-18 00:39:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 25970.894 ms
Loss rate: 93.09%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 25970.894 ms
Loss rate: 93.09%
```

Run 1: Report of PCC-Expr — Data Link



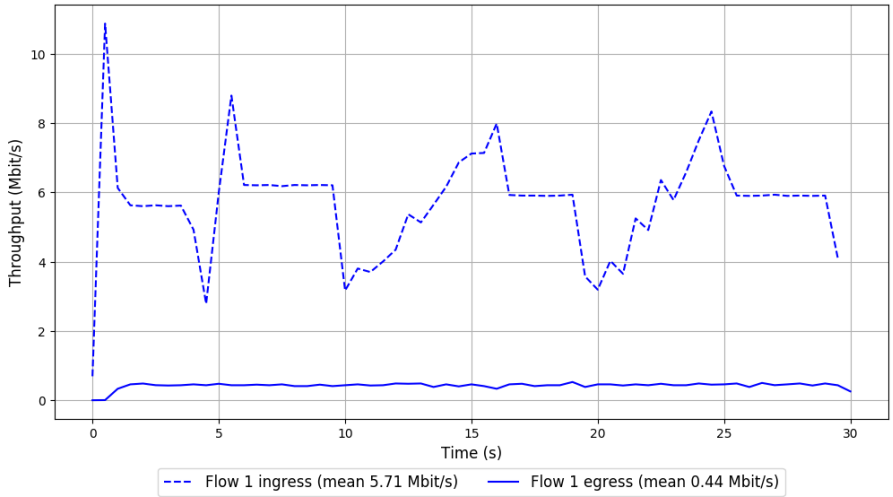


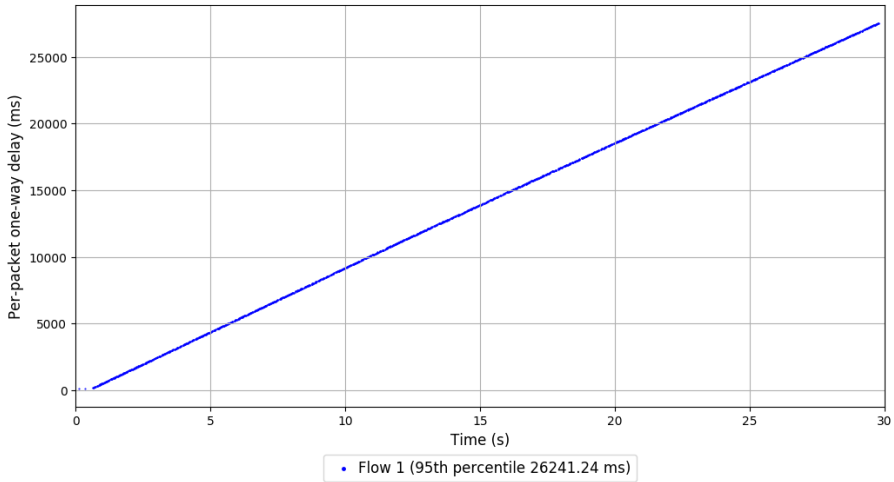
```
Run 2: Statistics of PCC-Expr

Start at: 2018-07-18 00:18:14
End at: 2018-07-18 00:18:44
Local clock offset: -7.148 ms
Remote clock offset: 11.159 ms

# Below is generated by plot.py at 2018-07-18 00:39:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 26241.237 ms
Loss rate: 92.42%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 26241.237 ms
Loss rate: 92.42%
```

Run 2: Report of PCC-Expr — Data Link



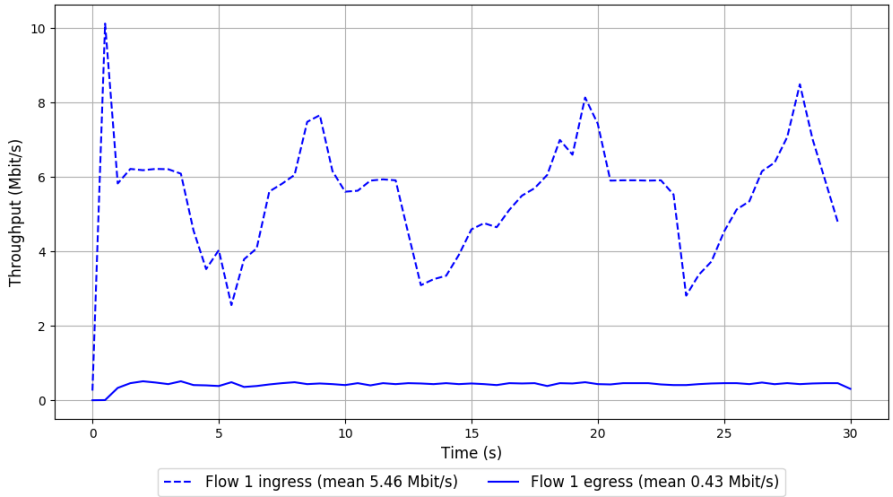


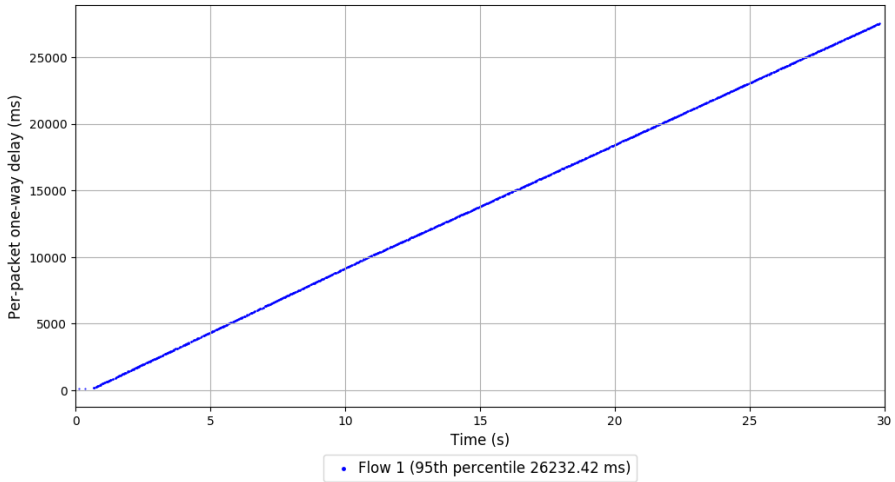
```
Run 3: Statistics of PCC-Expr

Start at: 2018-07-18 00:38:04
End at: 2018-07-18 00:38:34
Local clock offset: -3.674 ms
Remote clock offset: 3.127 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 26232.423 ms
Loss rate: 92.10%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 26232.423 ms
Loss rate: 92.10%
```

Run 3: Report of PCC-Expr — Data Link



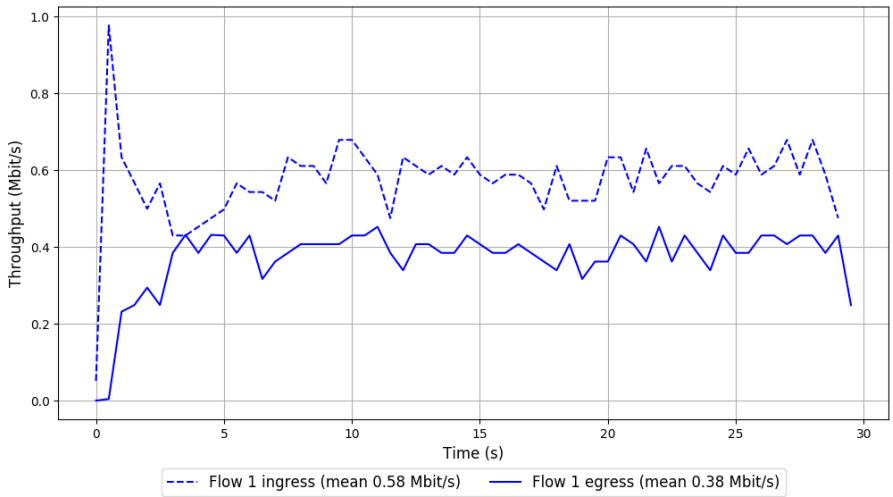


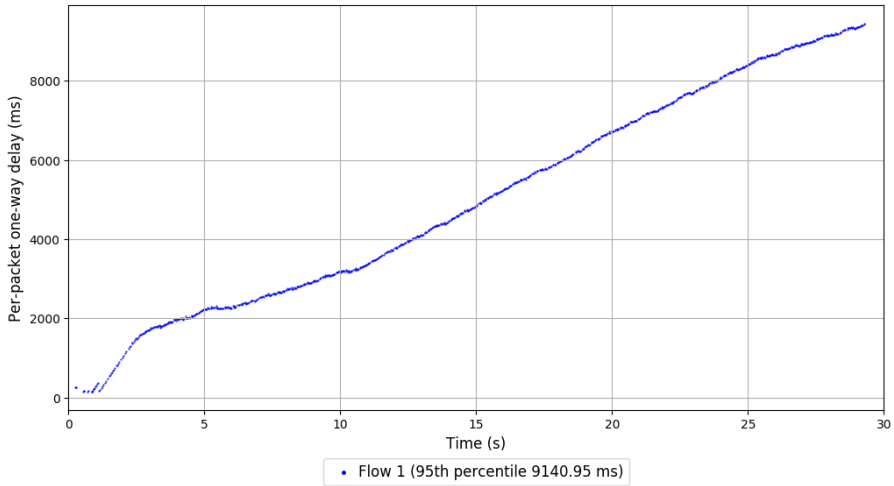
```
Run 1: Statistics of QUIC Cubic

Start at: 2018-07-17 23:46:48
End at: 2018-07-17 23:47:18
Local clock offset: -1.731 ms
Remote clock offset: 4.626 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 9140.949 ms
Loss rate: 34.12%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 9140.949 ms
Loss rate: 34.12%
```

Run 1: Report of QUIC Cubic — Data Link



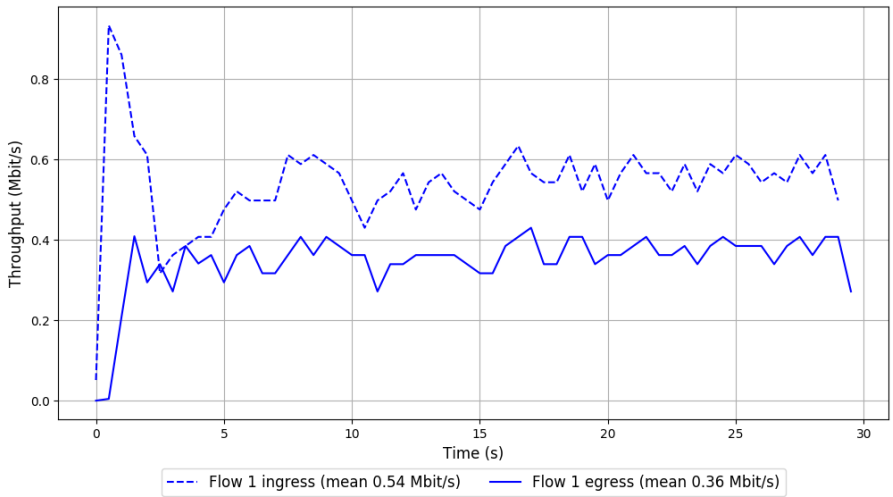


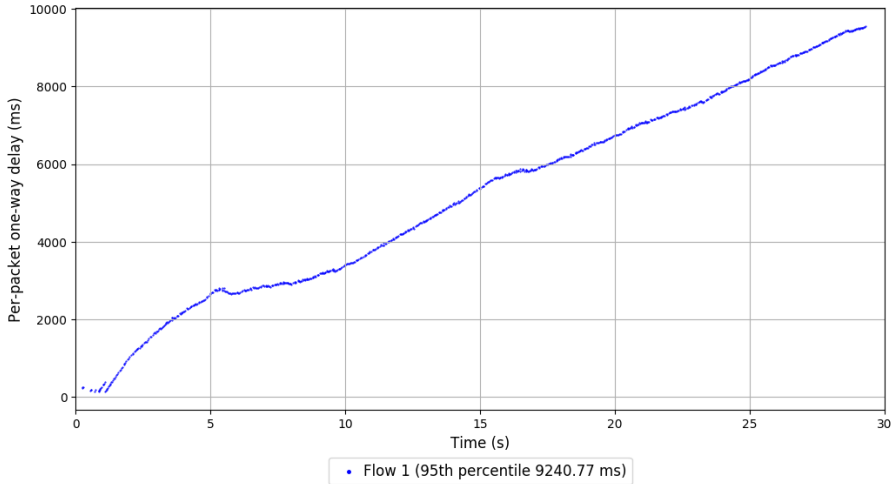
```
Run 2: Statistics of QUIC Cubic

Start at: 2018-07-18 00:06:30
End at: 2018-07-18 00:07:00
Local clock offset: -5.667 ms
Remote clock offset: 5.286 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 9240.775 ms
Loss rate: 34.62%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 9240.775 ms
Loss rate: 34.62%
```

Run 2: Report of QUIC Cubic — Data Link



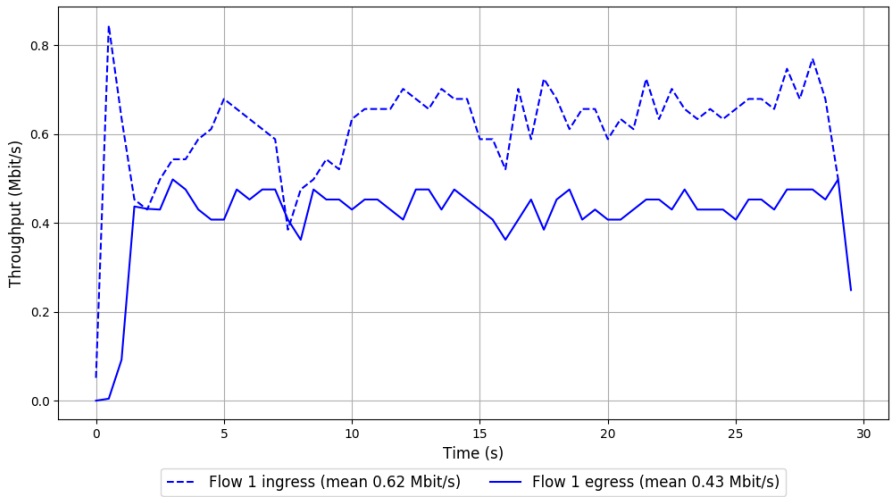


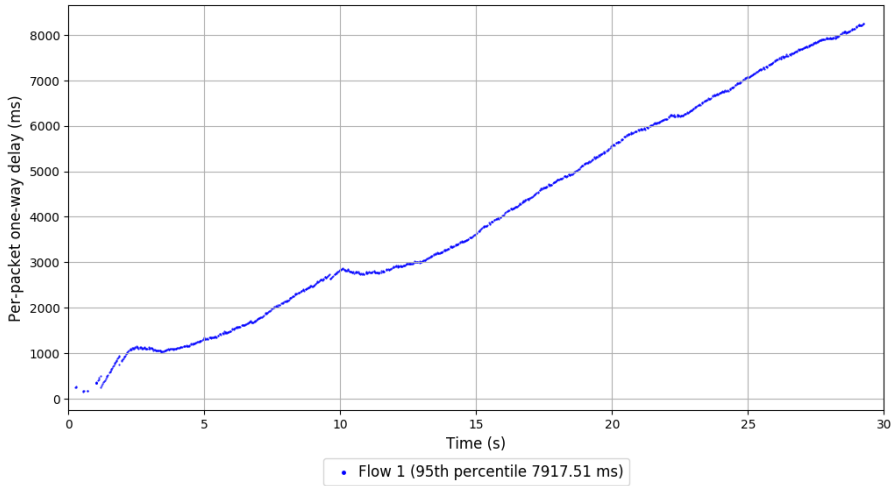
```
Run 3: Statistics of QUIC Cubic

Start at: 2018-07-18 00:26:33
End at: 2018-07-18 00:27:03
Local clock offset: -6.947 ms
Remote clock offset: 4.741 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 7917.510 ms
Loss rate: 31.03%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 7917.510 ms
Loss rate: 31.03%
```

Run 3: Report of QUIC Cubic — Data Link



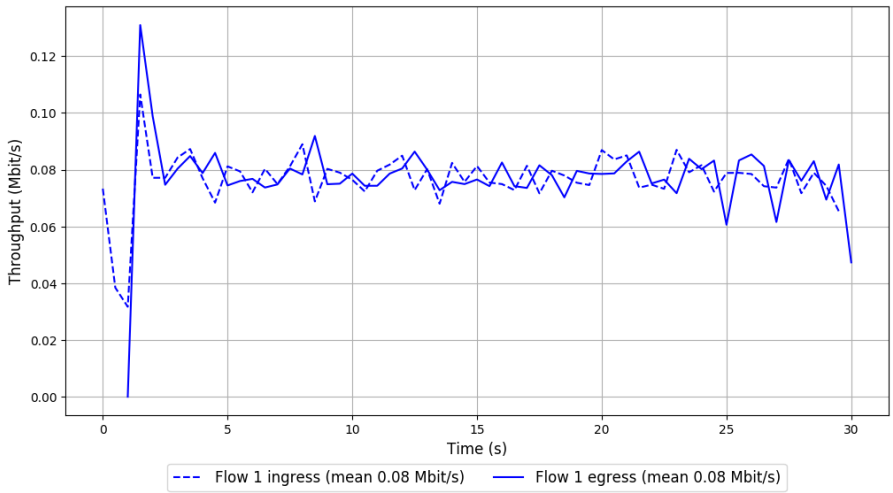


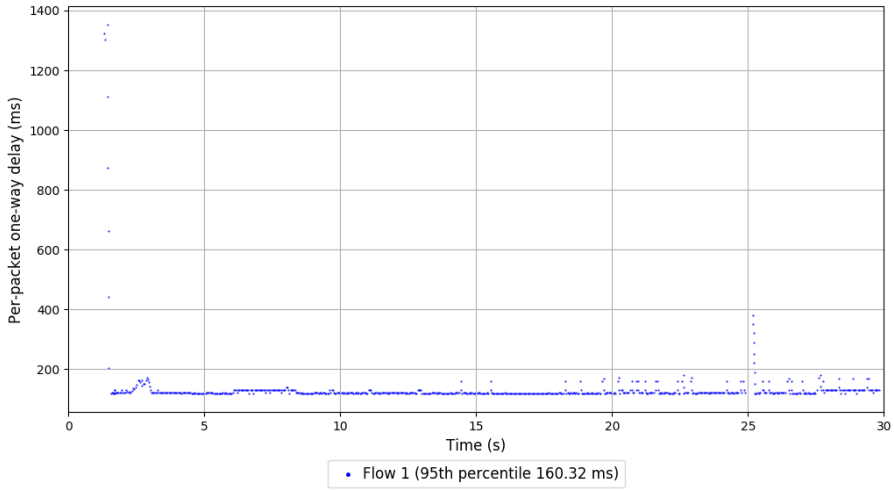
```
Run 1: Statistics of SCReAM

Start at: 2018-07-17 23:51:20
End at: 2018-07-17 23:51:50
Local clock offset: -1.617 ms
Remote clock offset: 9.733 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 160.316 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 160.316 ms
Loss rate: 0.78%
```

Run 1: Report of SCReAM — Data Link



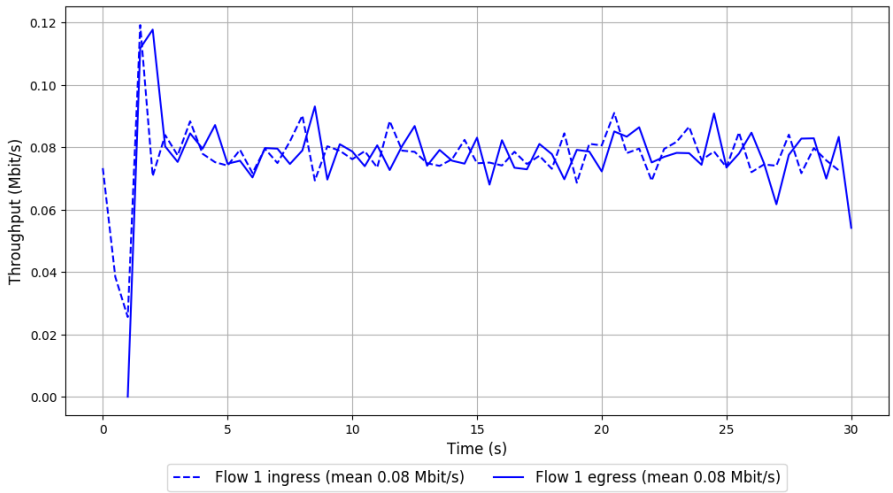


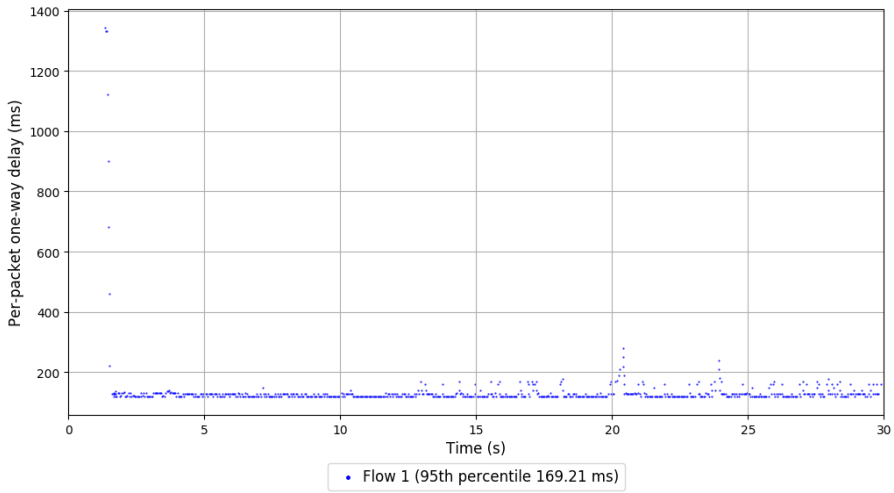
```
Run 2: Statistics of SCReAM

Start at: 2018-07-18 00:10:59
End at: 2018-07-18 00:11:29
Local clock offset: -6.496 ms
Remote clock offset: 6.466 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 169.209 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 169.209 ms
Loss rate: 0.79%
```

Run 2: Report of SCReAM — Data Link



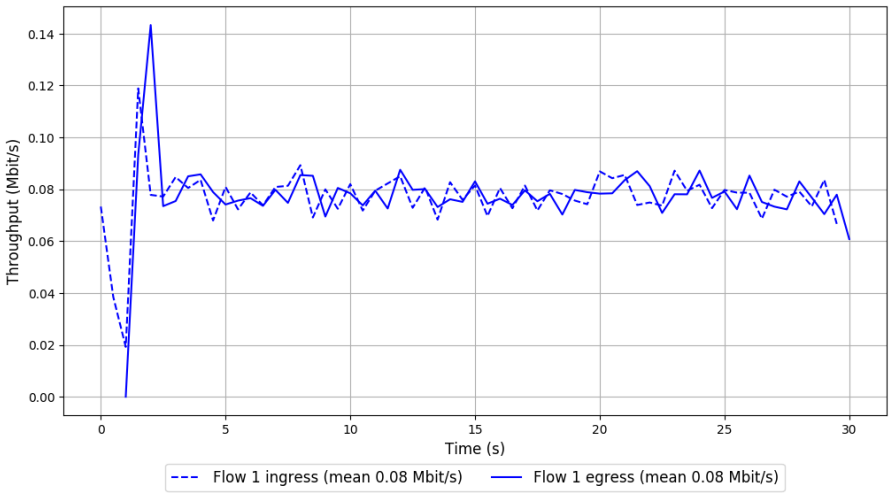


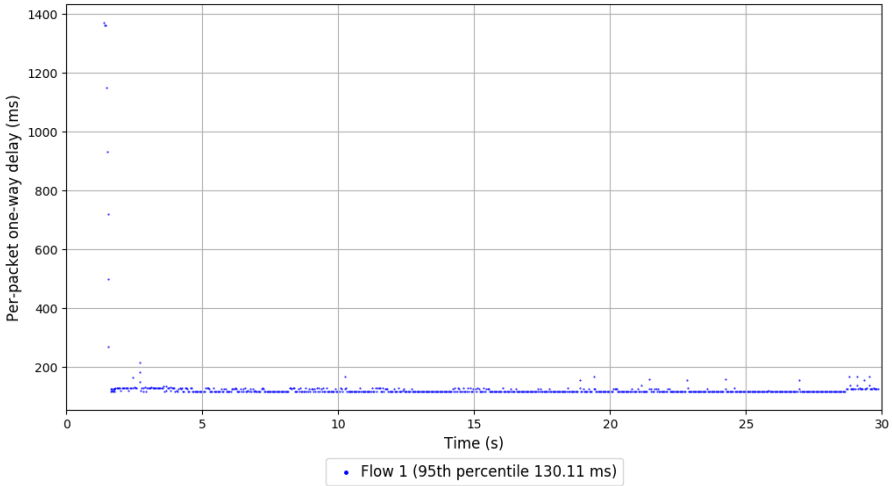
```
Run 3: Statistics of SCReAM

Start at: 2018-07-18 00:31:02
End at: 2018-07-18 00:31:32
Local clock offset: -5.222 ms
Remote clock offset: 7.438 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 130.113 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 130.113 ms
Loss rate: 0.66%
```

Run 3: Report of SCReAM — Data Link



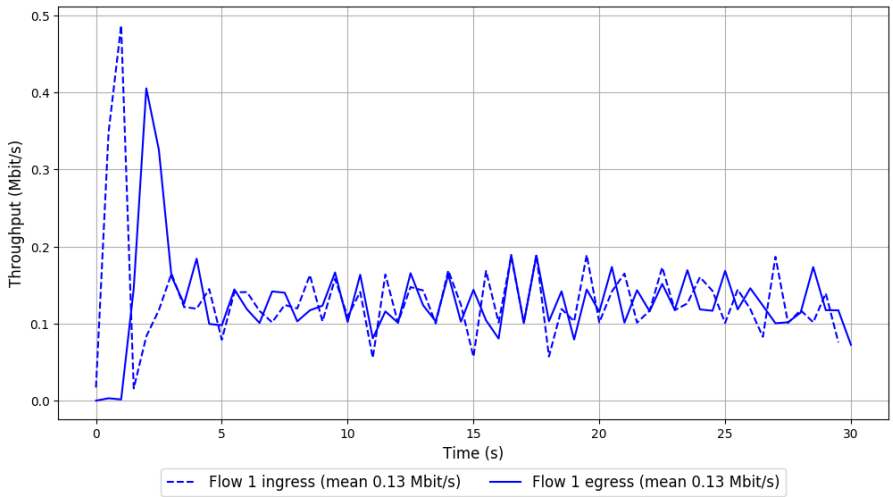


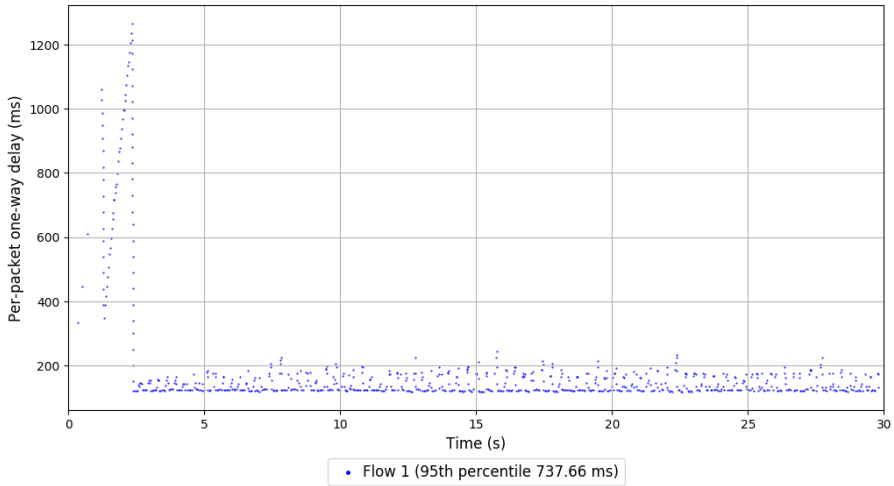
```
Run 1: Statistics of Sprout

Start at: 2018-07-17 23:53:35
End at: 2018-07-17 23:54:05
Local clock offset: -1.562 ms
Remote clock offset: 5.882 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 737.658 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 737.658 ms
Loss rate: 0.38%
```

Run 1: Report of Sprout — Data Link



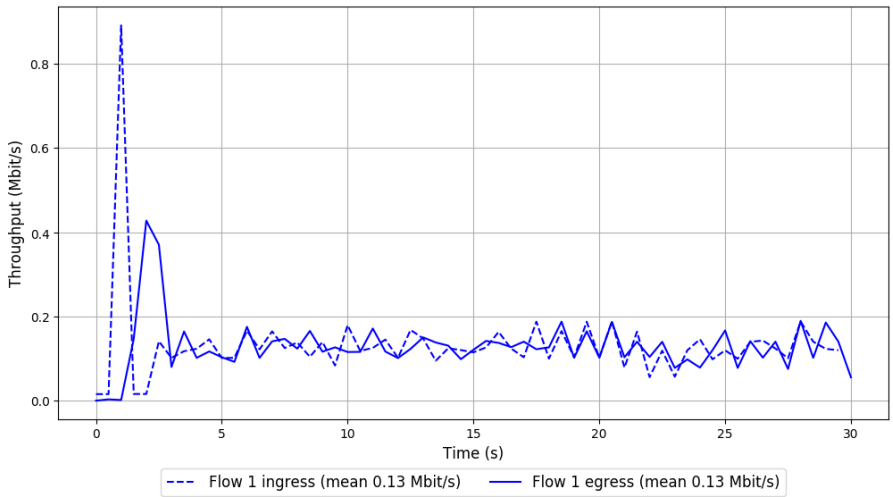


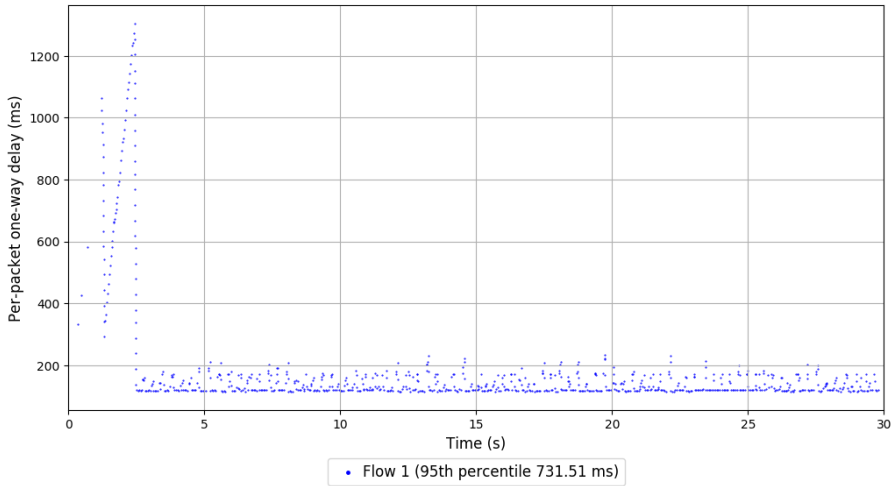
```
Run 2: Statistics of Sprout

Start at: 2018-07-18 00:13:14
End at: 2018-07-18 00:13:44
Local clock offset: -6.661 ms
Remote clock offset: 10.524 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 731.510 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 731.510 ms
Loss rate: 1.15%
```

Run 2: Report of Sprout — Data Link



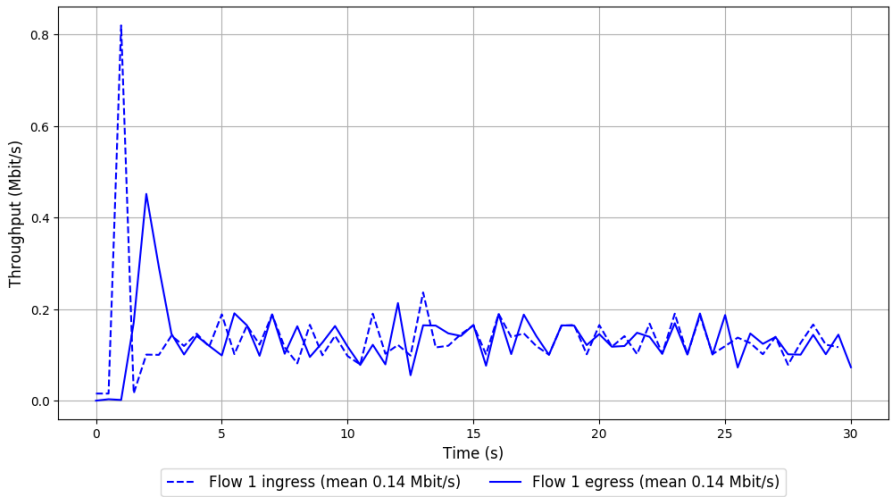


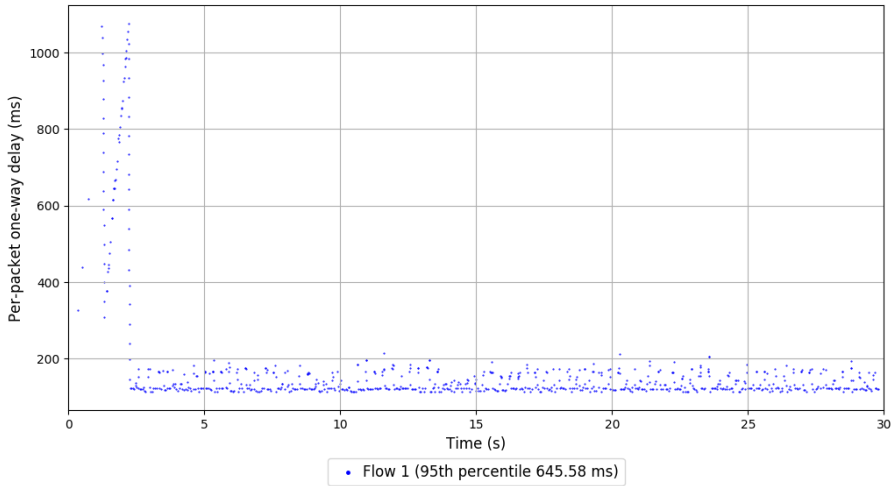
```
Run 3: Statistics of Sprout

Start at: 2018-07-18 00:33:17
End at: 2018-07-18 00:33:47
Local clock offset: -4.544 ms
Remote clock offset: 9.491 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 645.580 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 645.580 ms
Loss rate: 1.09%
```

Run 3: Report of Sprout — Data Link



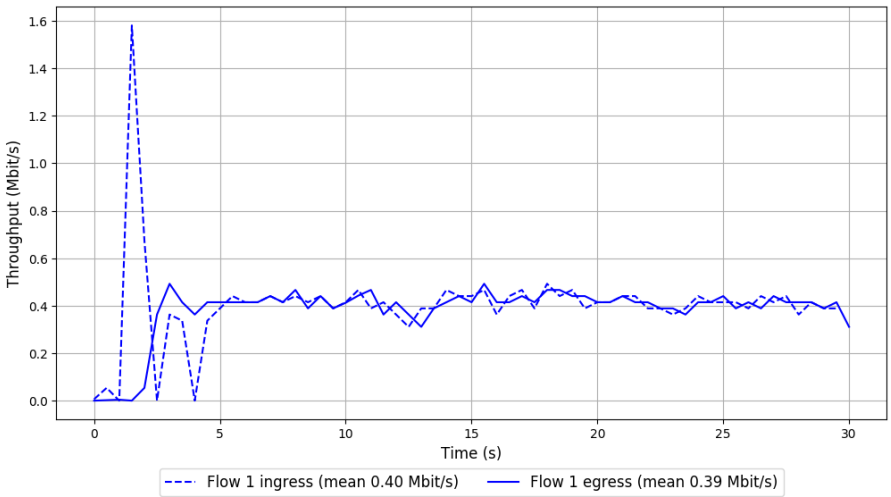


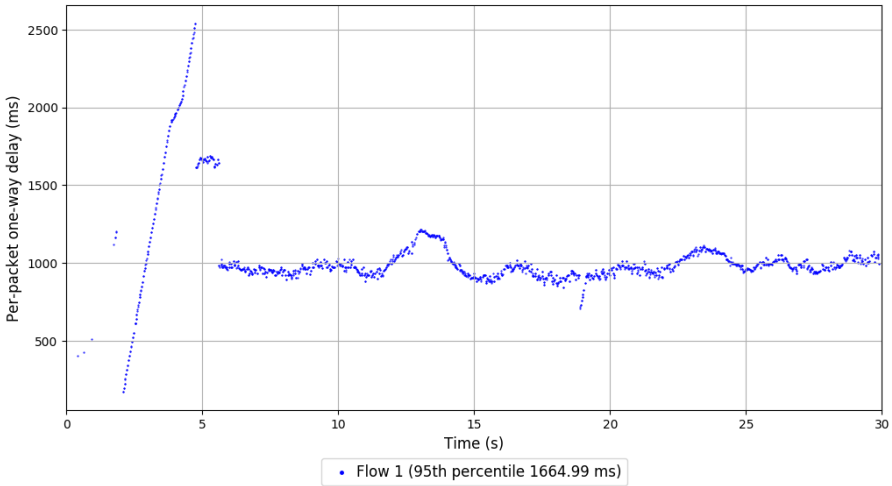
```
Run 1: Statistics of TaoVA-100x

Start at: 2018-07-17 23:52:27
End at: 2018-07-17 23:52:57
Local clock offset: -1.647 ms
Remote clock offset: 9.73 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1664.992 ms
Loss rate: 3.65%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 1664.992 ms
Loss rate: 3.65%
```

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



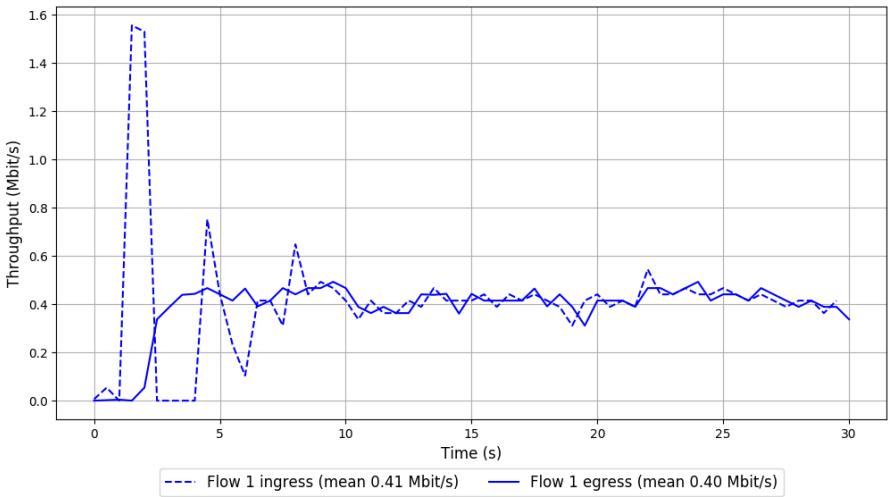


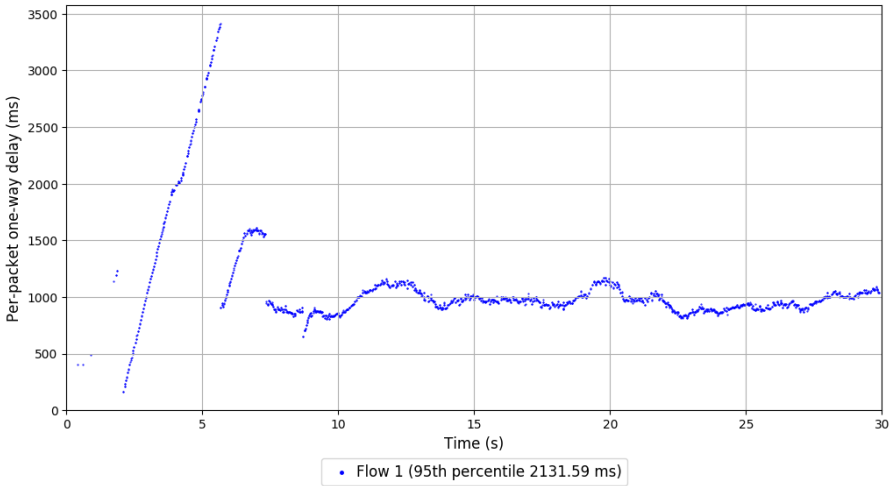
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-07-18 00:12:06
End at: 2018-07-18 00:12:36
Local clock offset: -6.549 ms
Remote clock offset: 10.455 ms

# Below is generated by plot.py at 2018-07-18 00:39:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 2131.585 ms
Loss rate: 3.60%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 2131.585 ms
Loss rate: 3.60%
```

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



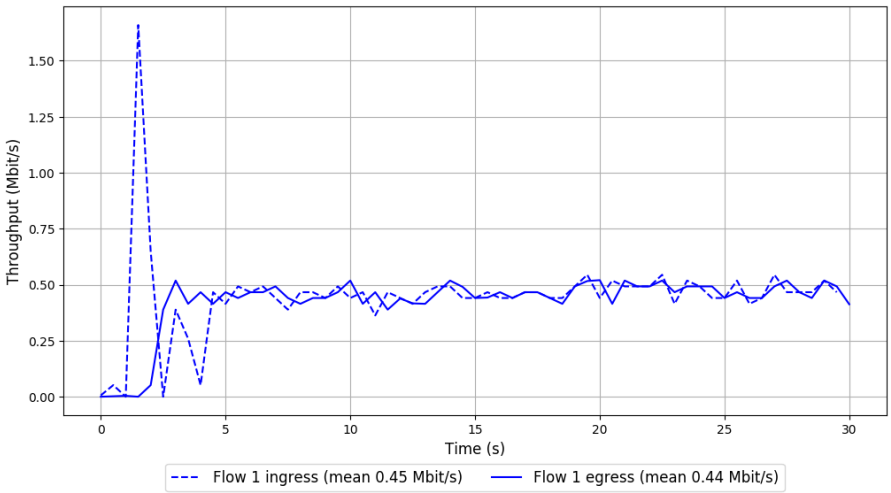


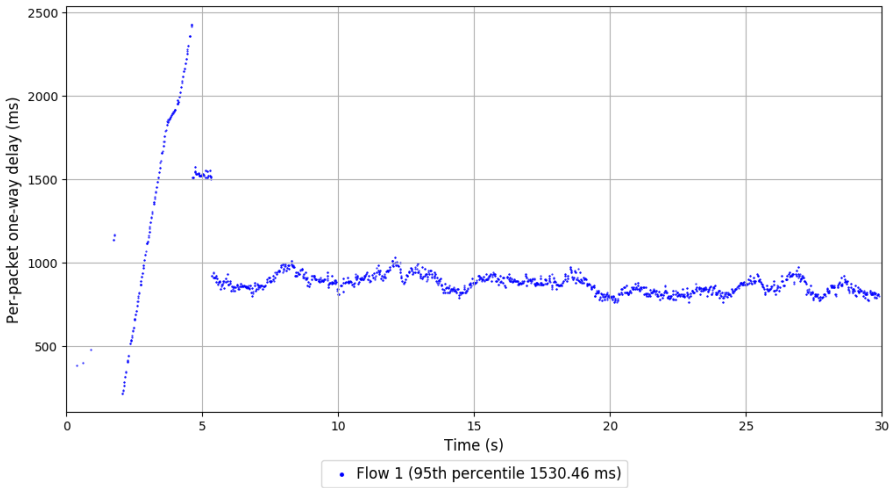
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-07-18 00:32:09
End at: 2018-07-18 00:32:39
Local clock offset: -4.839 ms
Remote clock offset: 4.526 ms

# Below is generated by plot.py at 2018-07-18 00:39:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1530.457 ms
Loss rate: 3.20%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1530.457 ms
Loss rate: 3.20%
```

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



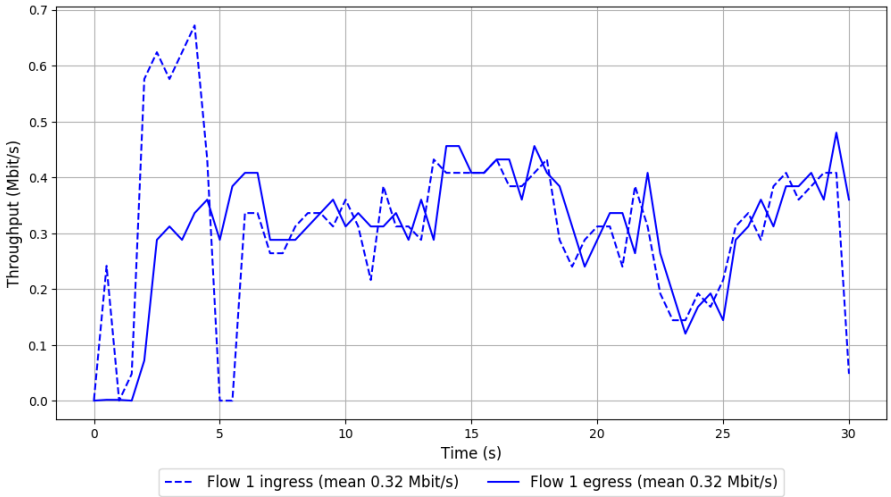


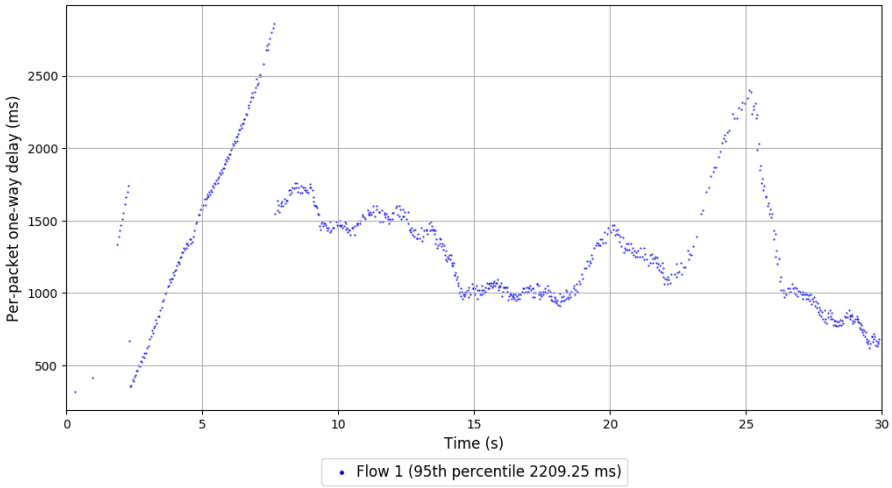
```
Run 1: Statistics of TCP Vegas

Start at: 2018-07-17 23:47:56
End at: 2018-07-17 23:48:26
Local clock offset: -1.788 ms
Remote clock offset: 9.638 ms

# Below is generated by plot.py at 2018-07-18 00:39:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 2209.248 ms
Loss rate: 3.47%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 2209.248 ms
Loss rate: 3.47%
```

Run 1: Report of TCP Vegas — Data Link



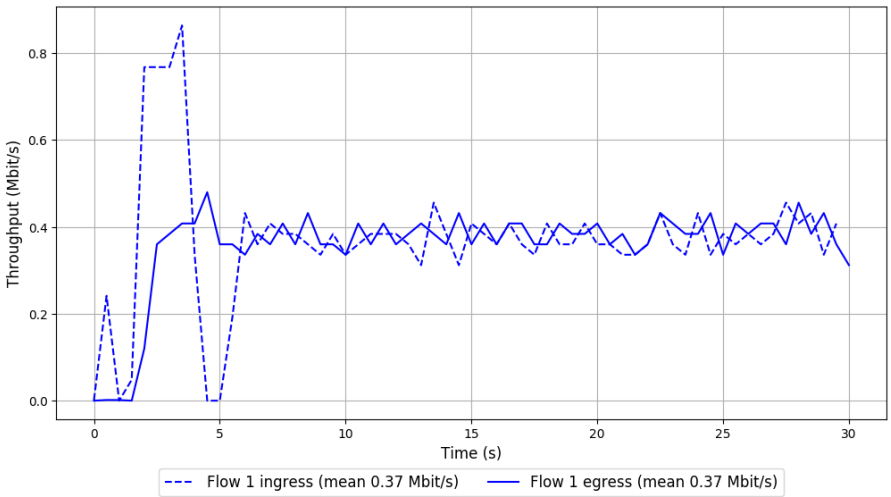


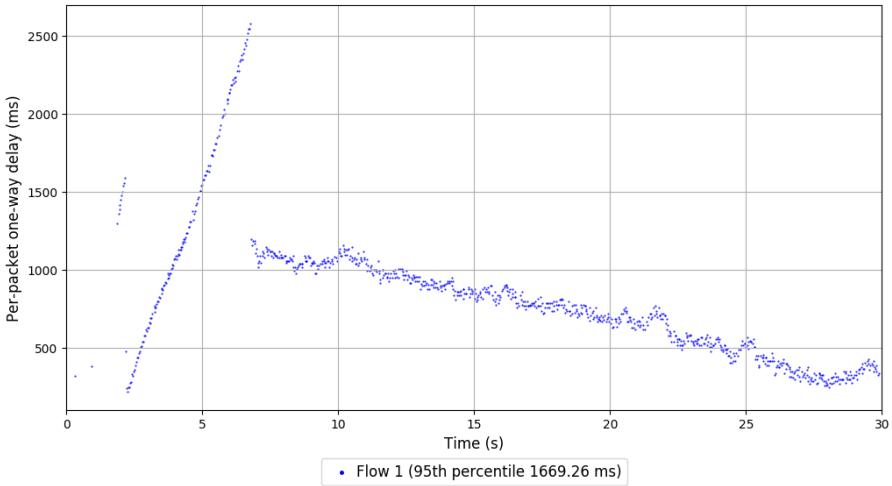
```
Run 2: Statistics of TCP Vegas

Start at: 2018-07-18 00:07:38
End at: 2018-07-18 00:08:08
Local clock offset: -5.908 ms
Remote clock offset: 6.283 ms

# Below is generated by plot.py at 2018-07-18 00:39:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 1669.261 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 1669.261 ms
Loss rate: 1.63%
```

Run 2: Report of TCP Vegas — Data Link



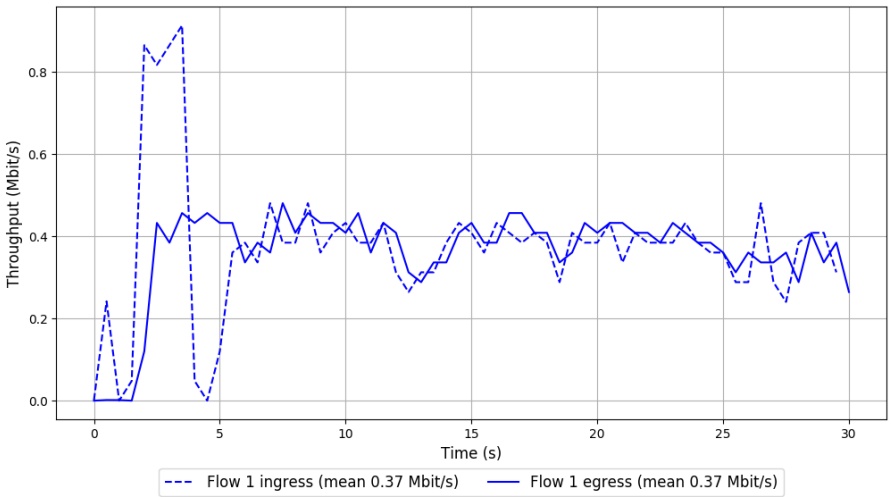


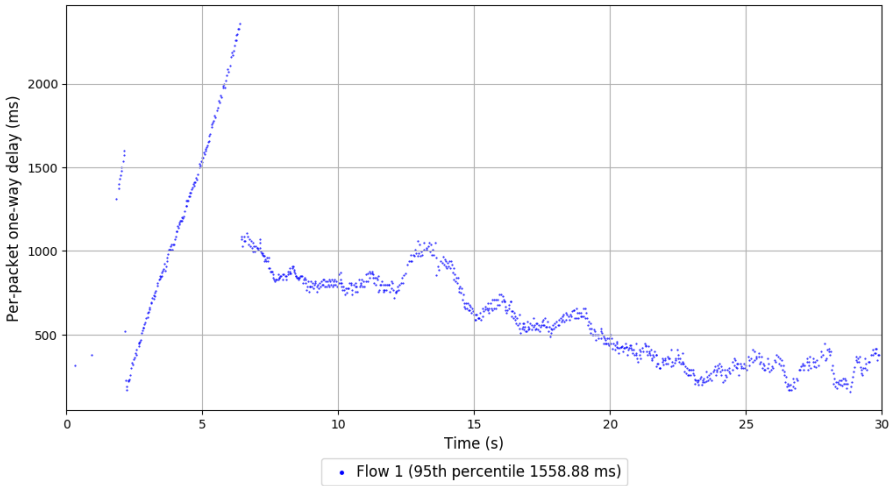
```
Run 3: Statistics of TCP Vegas

Start at: 2018-07-18 00:27:40
End at: 2018-07-18 00:28:10
Local clock offset: -6.468 ms
Remote clock offset: 4.717 ms

# Below is generated by plot.py at 2018-07-18 00:39:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 1558.884 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 1558.884 ms
Loss rate: 1.29%
```

Run 3: Report of TCP Vegas — Data Link



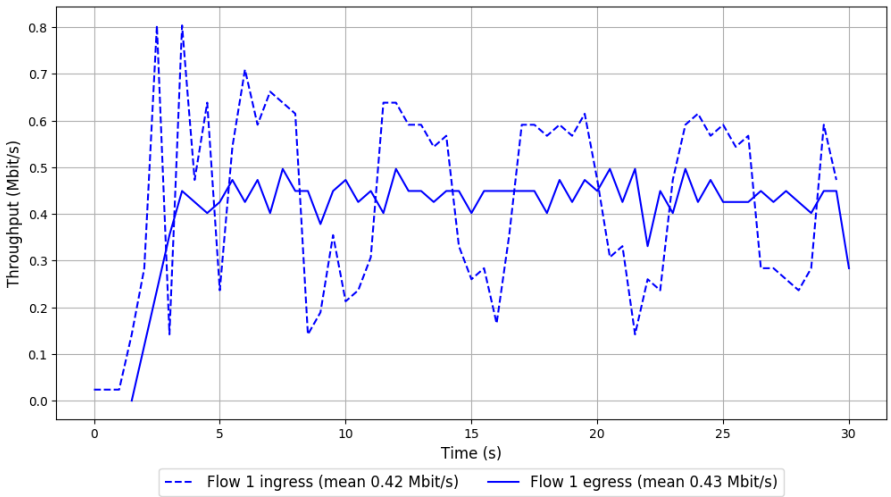


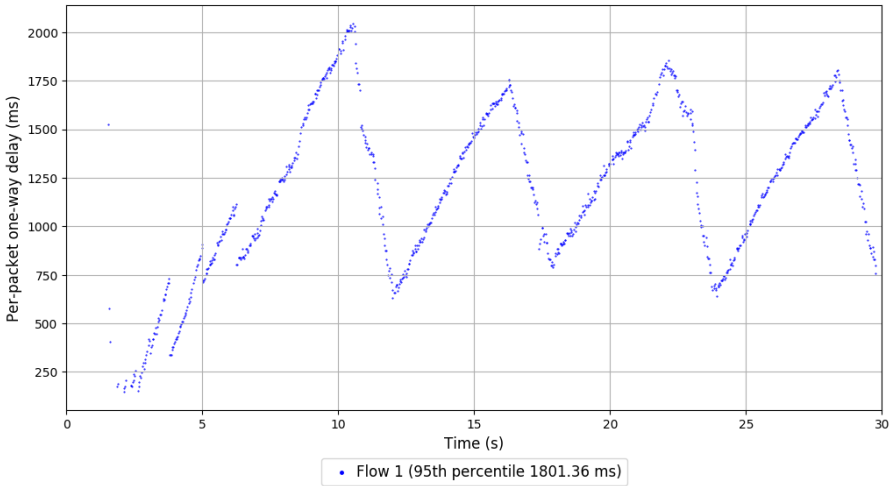
```
Run 1: Statistics of Verus

Start at: 2018-07-17 23:45:41
End at: 2018-07-17 23:46:11
Local clock offset: -1.754 ms
Remote clock offset: 5.865 ms

# Below is generated by plot.py at 2018-07-18 00:39:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 1801.364 ms
Loss rate: 4.10%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 1801.364 ms
Loss rate: 4.10%
```

Run 1: Report of Verus — Data Link



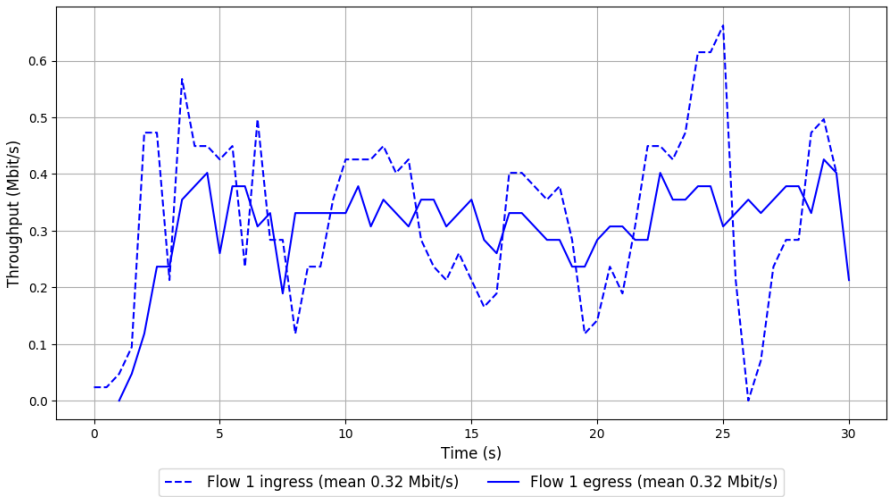


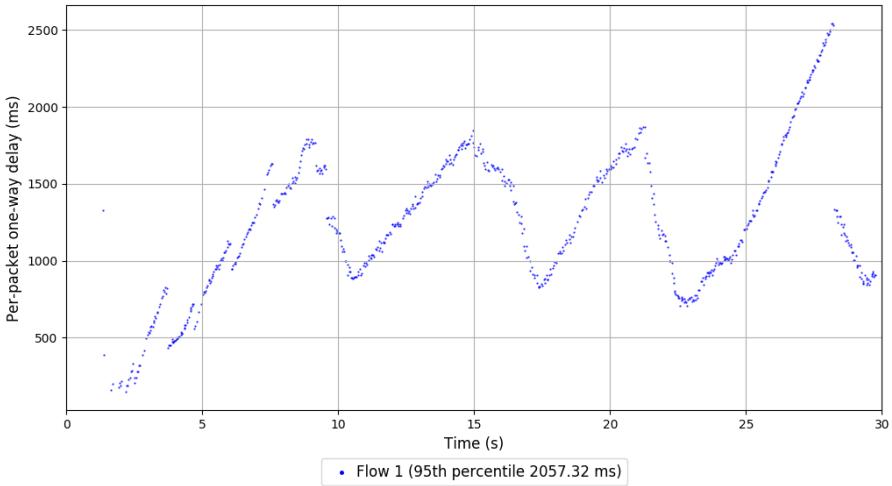
```
Run 2: Statistics of Verus

Start at: 2018-07-18 00:05:23
End at: 2018-07-18 00:05:53
Local clock offset: -5.392 ms
Remote clock offset: 5.01 ms

# Below is generated by plot.py at 2018-07-18 00:39:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 2057.315 ms
Loss rate: 5.37%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 2057.315 ms
Loss rate: 5.37%
```

Run 2: Report of Verus — Data Link



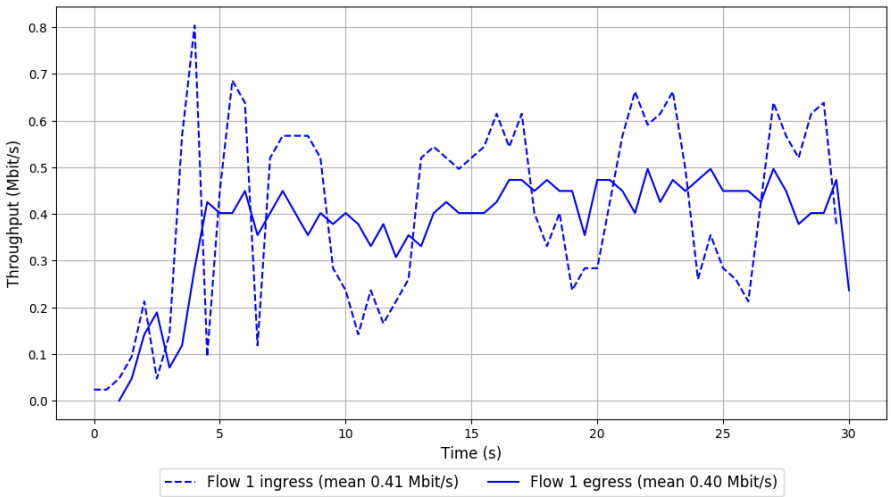


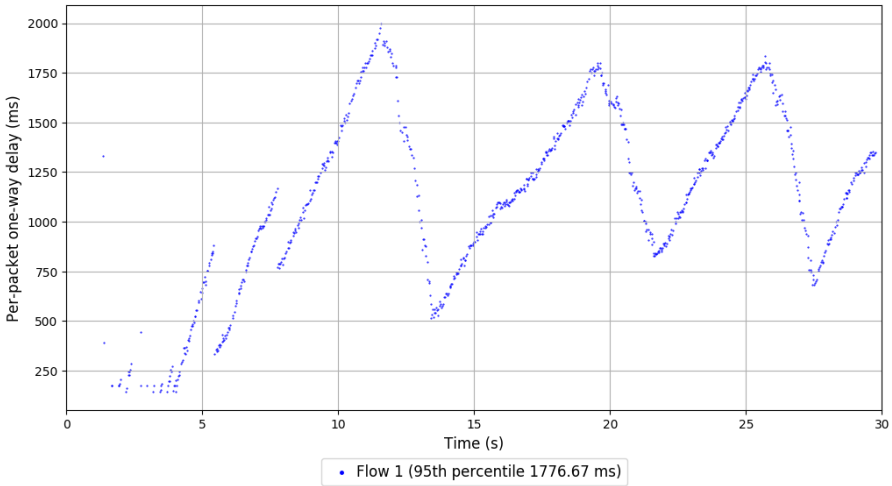
```
Run 3: Statistics of Verus

Start at: 2018-07-18 00:25:26
End at: 2018-07-18 00:25:56
Local clock offset: -7.56 ms
Remote clock offset: 5.014 ms

# Below is generated by plot.py at 2018-07-18 00:39:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1776.667 ms
Loss rate: 7.02%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1776.667 ms
Loss rate: 7.02%
```

Run 3: Report of Verus — Data Link



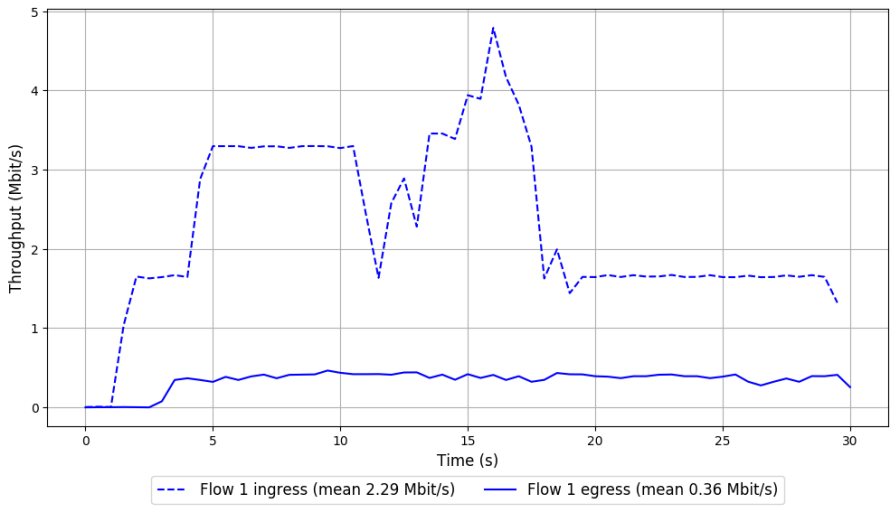


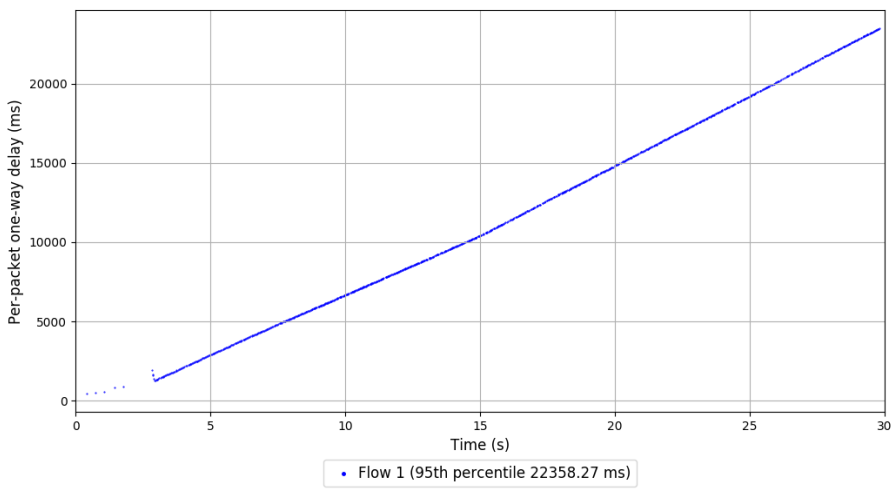
```
Run 1: Statistics of PCC-Vivace

Start at: 2018-07-17 23:39:46
End at: 2018-07-17 23:40:16
Local clock offset: -1.848 ms
Remote clock offset: 4.882 ms

# Below is generated by plot.py at 2018-07-18 00:39:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 22358.272 ms
Loss rate: 84.79%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 22358.272 ms
Loss rate: 84.79%
```

Run 1: Report of PCC-Vivace — Data Link



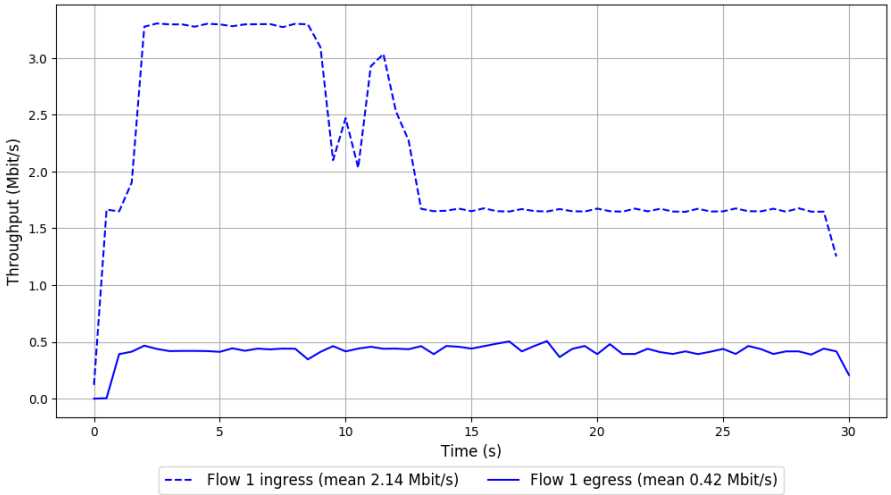


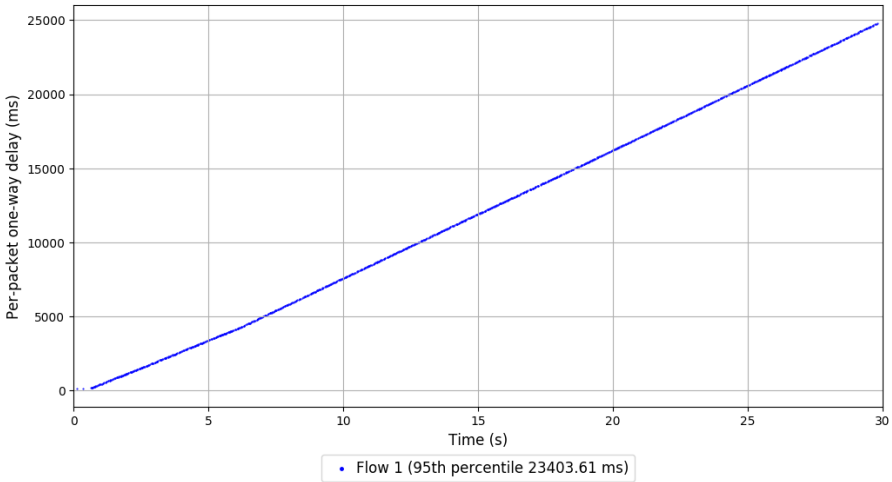
```
Run 2: Statistics of PCC-Vivace

Start at: 2018-07-17 23:59:27
End at: 2018-07-17 23:59:57
Local clock offset: -3.538 ms
Remote clock offset: 6.014 ms

# Below is generated by plot.py at 2018-07-18 00:39:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 23403.606 ms
Loss rate: 80.34%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 23403.606 ms
Loss rate: 80.34%
```

Run 2: Report of PCC-Vivace — Data Link



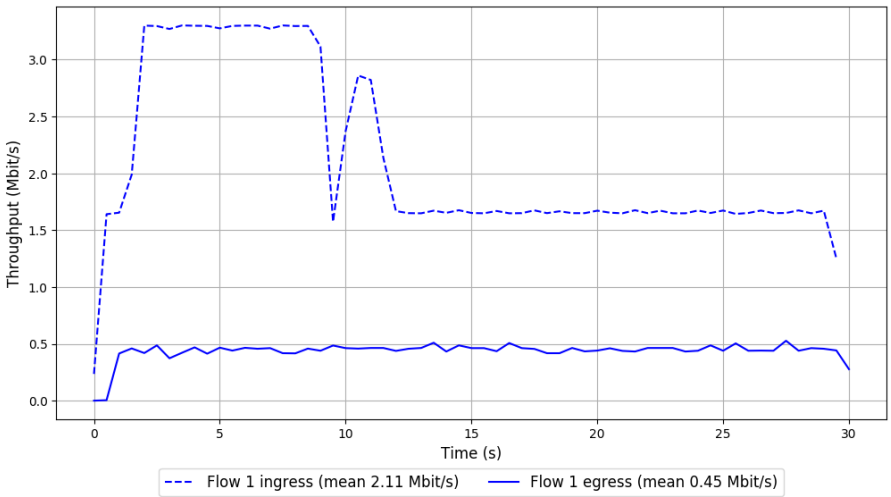


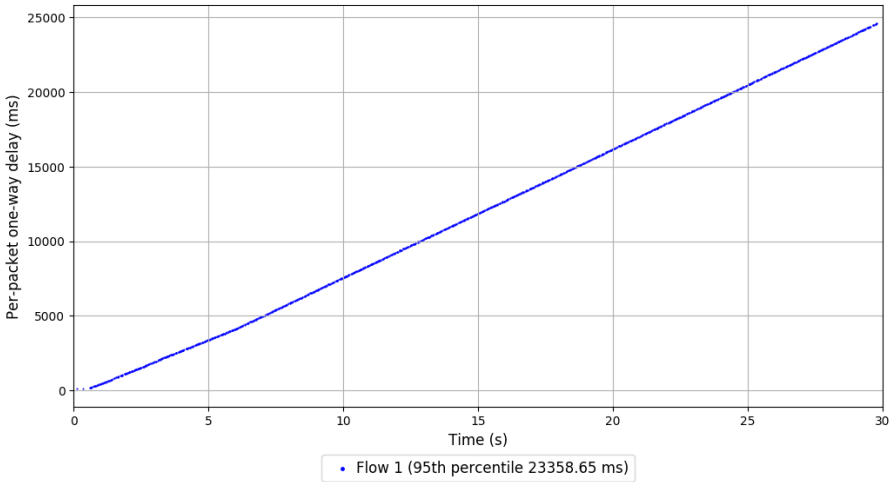
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-07-18 00:19:33
End at: 2018-07-18 00:20:03
Local clock offset: -7.21 ms
Remote clock offset: 9.761 ms

# Below is generated by plot.py at 2018-07-18 00:39:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 23358.647 ms
Loss rate: 78.93%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 23358.647 ms
Loss rate: 78.93%
```

Run 3: Report of PCC-Vivace — Data Link



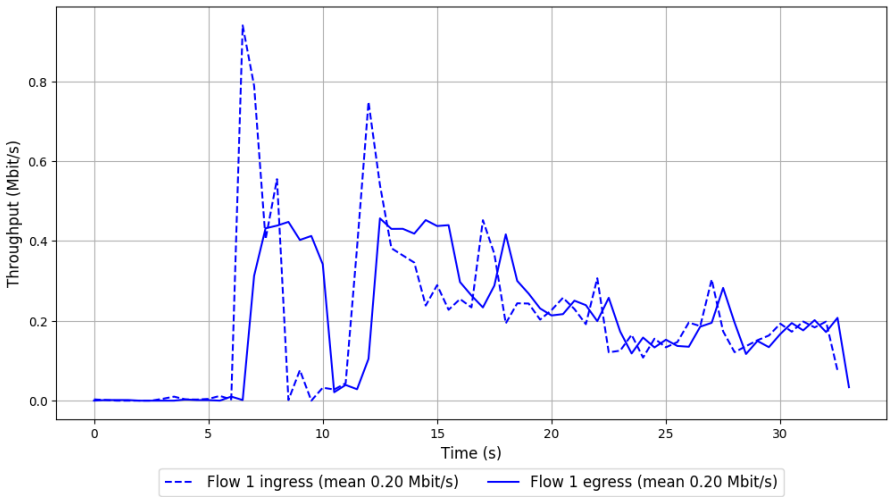


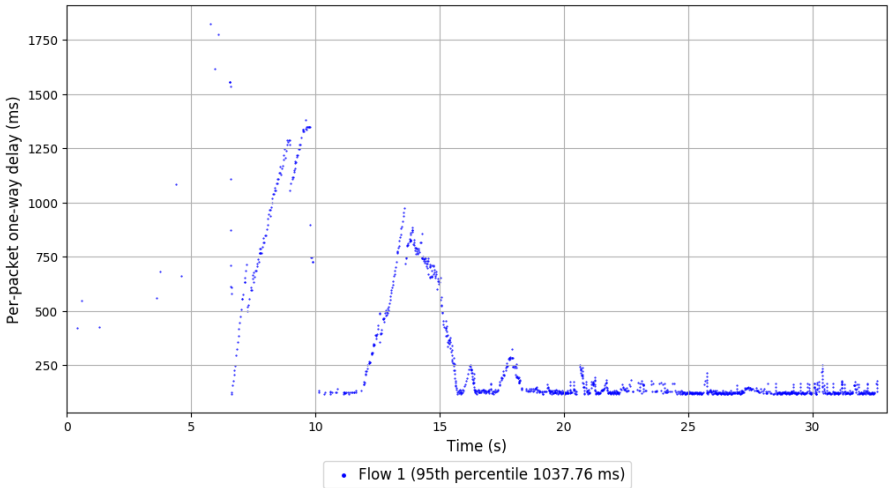
```
Run 1: Statistics of WebRTC media

Start at: 2018-07-17 23:44:34
End at: 2018-07-17 23:45:04
Local clock offset: -1.768 ms
Remote clock offset: 6.017 ms

# Below is generated by plot.py at 2018-07-18 00:39:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1037.763 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1037.763 ms
Loss rate: 0.63%
```

Run 1: Report of WebRTC media — Data Link



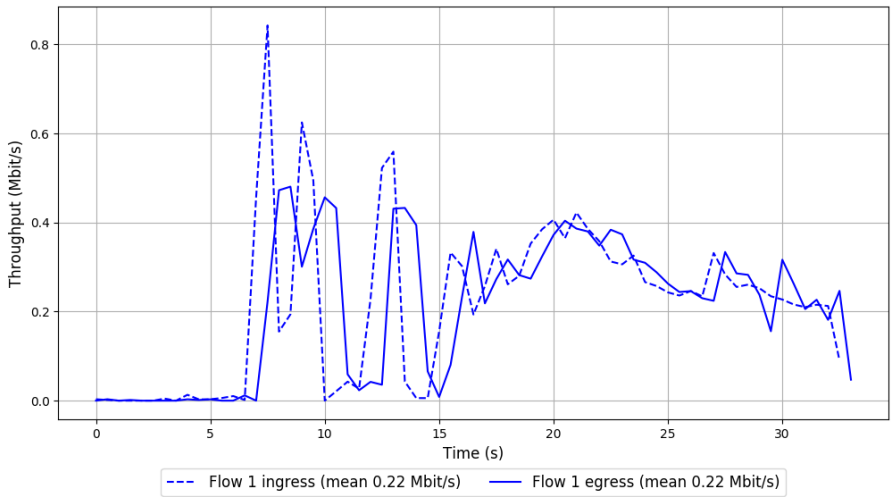


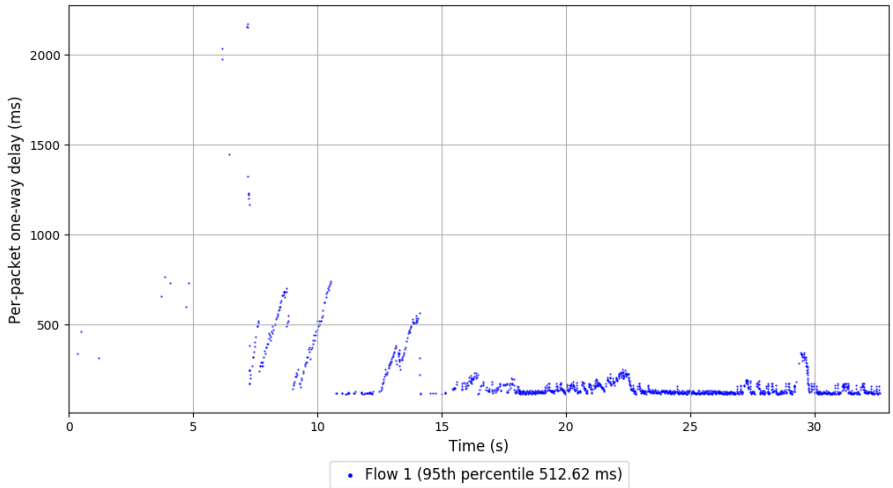
```
Run 2: Statistics of WebRTC media

Start at: 2018-07-18 00:04:16
End at: 2018-07-18 00:04:46
Local clock offset: -5.187 ms
Remote clock offset: 11.132 ms

# Below is generated by plot.py at 2018-07-18 00:39:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 512.622 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 512.622 ms
Loss rate: 0.58%
```

Run 2: Report of WebRTC media — Data Link





```
Run 3: Statistics of WebRTC media

Start at: 2018-07-18 00:24:19
End at: 2018-07-18 00:24:49
Local clock offset: -7.625 ms
Remote clock offset: 4.054 ms

# Below is generated by plot.py at 2018-07-18 00:39:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 499.566 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 499.566 ms
Loss rate: 0.56%
```

Run 3: Report of WebRTC media — Data Link