Pantheon Report

Generated at 2018-09-07 18:53:08 (UTC).

Data path: Colombia cellular on `ppp0` (*remote*) →AWS Brazil 2 on `ens5` (*local*).

Repeated the test of 18 congestion control schemes 3 times.

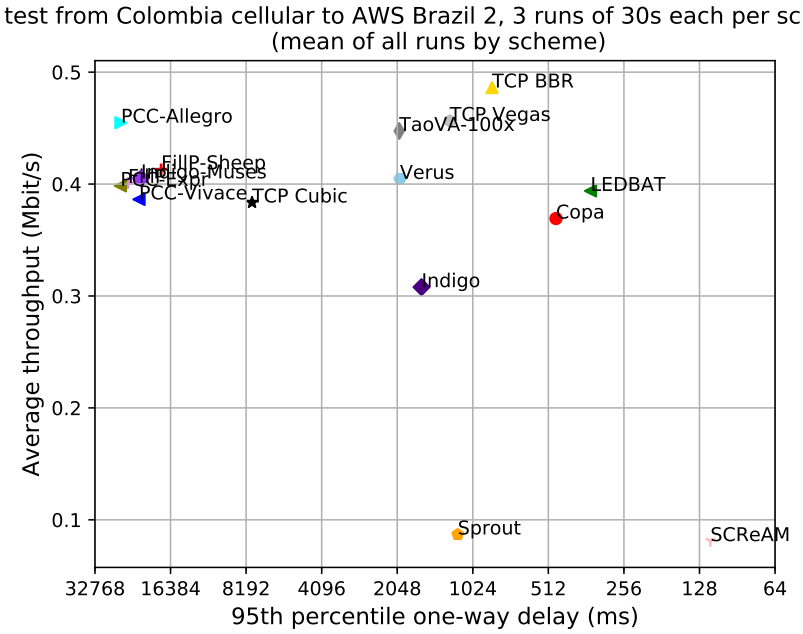
Each test lasted for 30 seconds running 1 flow.

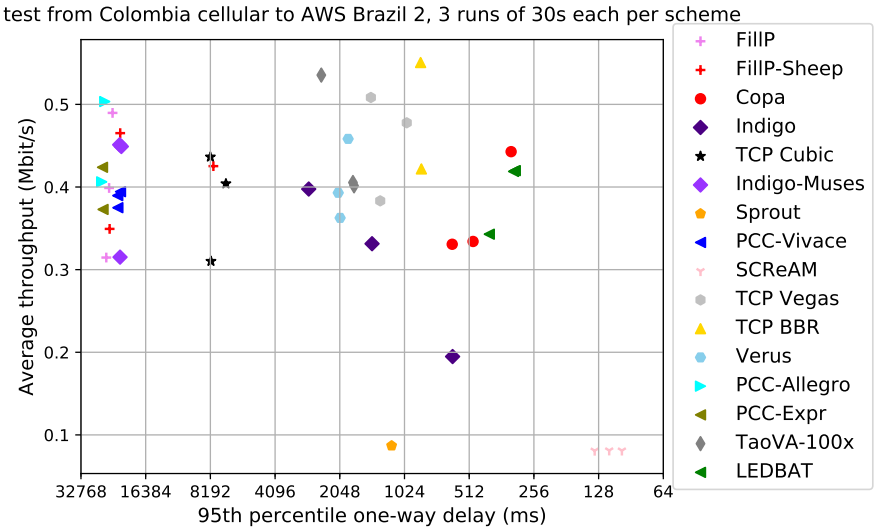
NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912

Git summary:
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 7631aea3923a3598767c87765ae5103aca0678d3
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
```

```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```


test from Colombia cellular 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)
TCP BBR
PCC-Allegro
TCP Vegas
TaoVA-100x
FillP-Sheep
Verus
LEDBAT
PCC-Vivace
TCP Cubic
Copa
Indigo
Sprout
SCReAM
0.5
0.4
0.3
0.2
0.1
32768
16384
8192
4096
2048
1024
512
256
128
64


test from Colombia cellular to AWS Brazil 2, 3 runs of 30s each per scheme
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
FillP
FillP-Sheep
Copa
Indigo
TCP Cubic
Indigo-Muses
Sprout
PCC-Vivace
SCReAM
TCP Vegas
TCP BBR
Verus
PCC-Allegro
PCC-Expr
TaoVA-100x
LEDBAT
0.5
0.4
0.3
0.2
0.1
32768
16384
8192
4096
2048
1024
512
256
128
64

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	0.48	858.14	2.40
Copa	3	0.37	477.42	1.57
TCP Cubic	3	0.38	7756.50	31.97
FillP	3	0.40	24195.36	83.75
FillP-Sheep	3	0.42	17855.47	45.27
Indigo	3	0.31	1639.45	0.96
LEDBAT	3	0.39	347.98	1.25
Indigo-Muses	3	0.41	21490.55	94.82
PCC-Allegro	2	0.45	25816.94	98.60
PCC-Expr	2	0.40	25950.10	93.31
QUIC Cubic	0	N/A	N/A	N/A
SCReAM	3	0.08	115.83	0.79
Sprout	1	0.09	1175.48	0.55
TaoVA-100x	3	0.45	2010.92	3.11
TCP Vegas	3	0.46	1265.18	2.13
Verus	3	0.40	1998.75	5.30
PCC-Vivace	3	0.38	21881.04	83.06
WebRTC media	0	N/A	N/A	N/A

Run 1: Statistics of TCP BBR

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/bbr_sta

Run 1: Report of TCP BBR — Data Link

Figure is missing

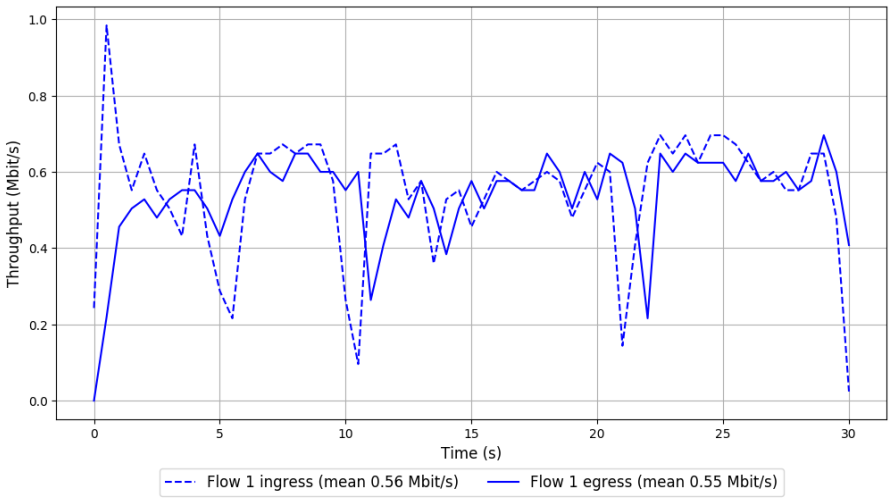
Figure is missing

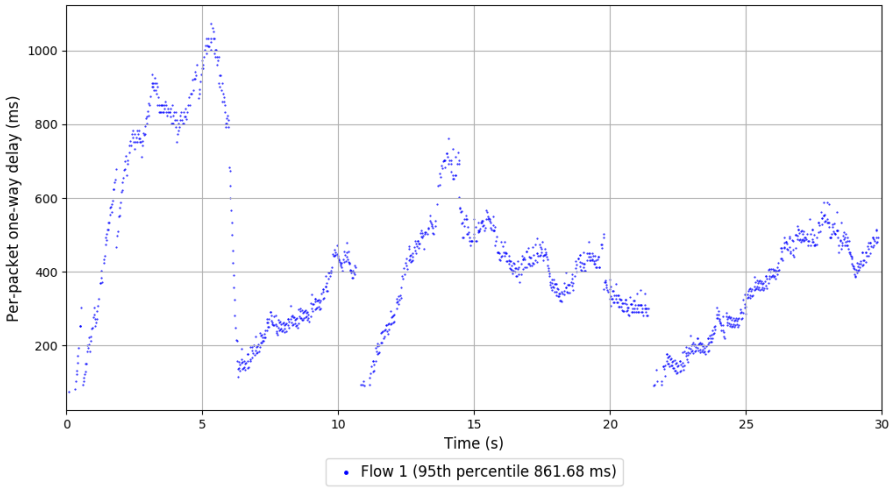
```
Run 2: Statistics of TCP BBR

Start at: 2018-09-07 18:11:23
End at: 2018-09-07 18:11:53
Local clock offset: -61.716 ms
Remote clock offset: 11.249 ms

# Below is generated by plot.py at 2018-09-07 18:52:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 861.685 ms
Loss rate: 2.01%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 861.685 ms
Loss rate: 2.01%
```

Run 2: Report of TCP BBR — Data Link



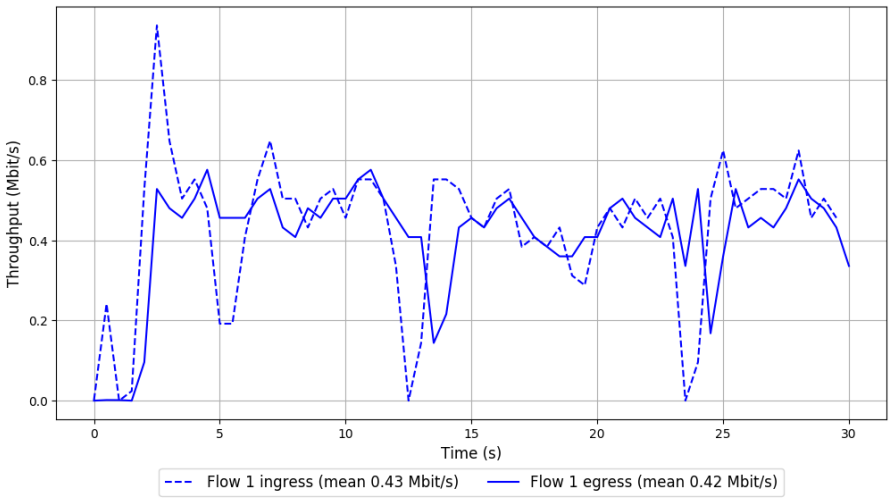


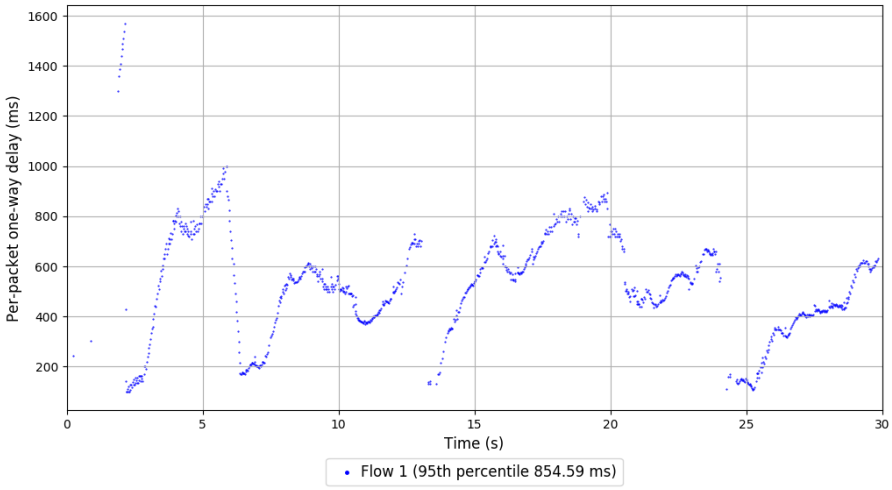
```
Run 3: Statistics of TCP BBR

Start at: 2018-09-07 18:33:44
End at: 2018-09-07 18:34:14
Local clock offset: -61.916 ms
Remote clock offset: 9.99 ms

# Below is generated by plot.py at 2018-09-07 18:52:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 854.589 ms
Loss rate: 2.80%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 854.589 ms
Loss rate: 2.80%
```

Run 3: Report of TCP BBR — Data Link



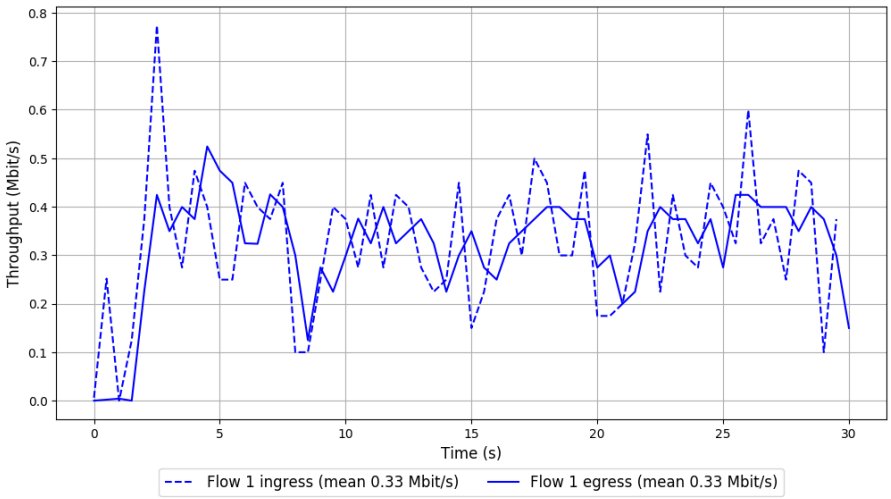


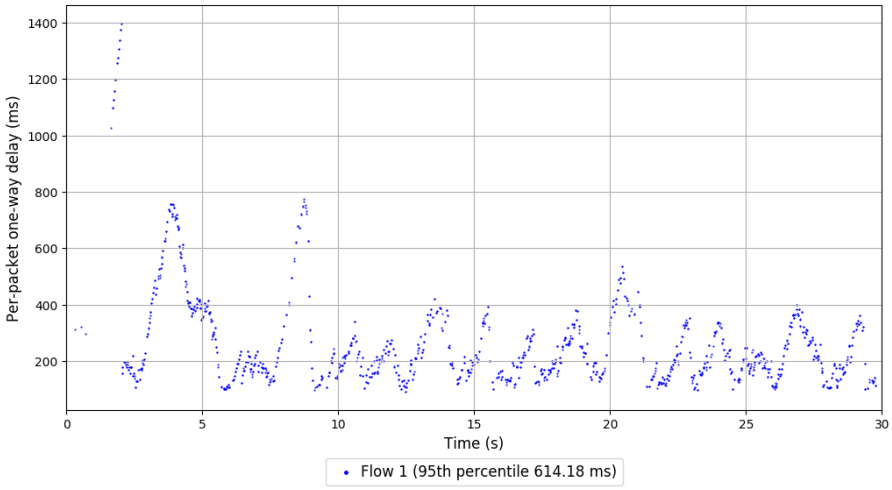
```
Run 1: Statistics of Copa

Start at: 2018-09-07 17:55:40
End at: 2018-09-07 17:56:10
Local clock offset: -59.144 ms
Remote clock offset: 6.77 ms

# Below is generated by plot.py at 2018-09-07 18:52:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 614.180 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 614.180 ms
Loss rate: 1.27%
```

Run 1: Report of Copa — Data Link



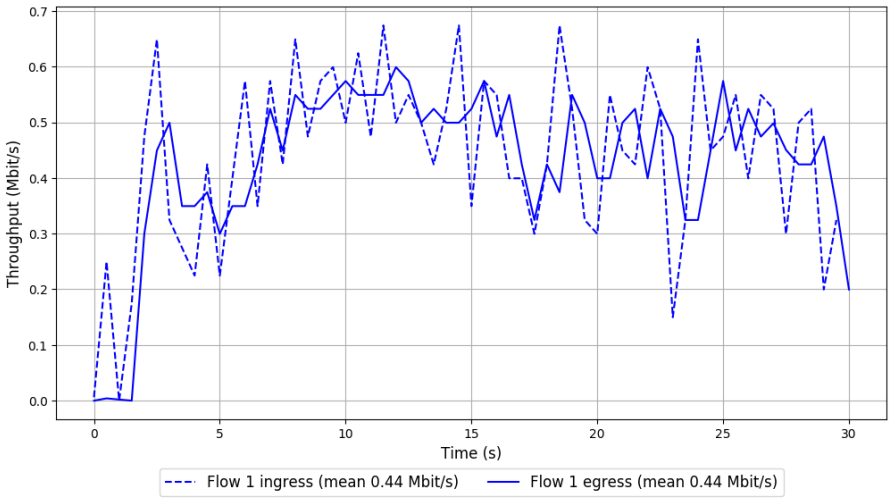


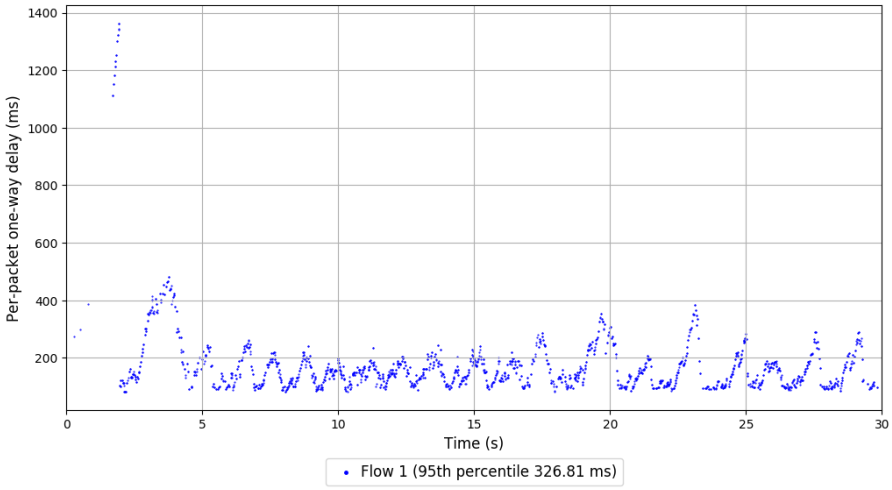
```
Run 2: Statistics of Copa

Start at: 2018-09-07 18:17:27
End at: 2018-09-07 18:17:57
Local clock offset: -61.613 ms
Remote clock offset: 11.01 ms

# Below is generated by plot.py at 2018-09-07 18:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 326.806 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 326.806 ms
Loss rate: 0.76%
```

Run 2: Report of Copa — Data Link



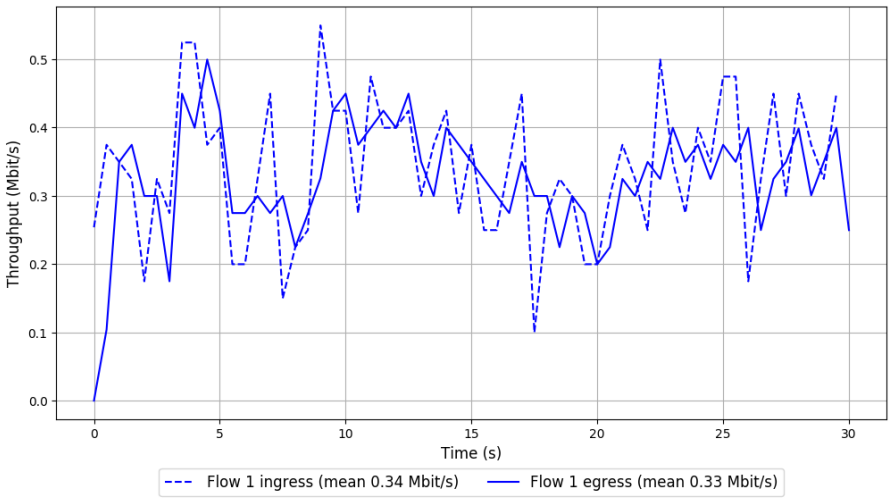


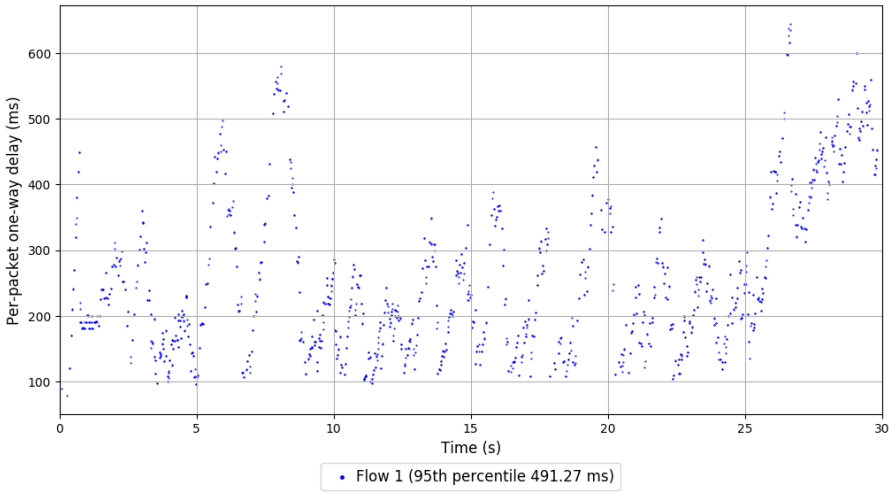
```
Run 3: Statistics of Copa

Start at: 2018-09-07 18:39:50
End at: 2018-09-07 18:40:20
Local clock offset: -61.074 ms
Remote clock offset: 6.033 ms

# Below is generated by plot.py at 2018-09-07 18:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 491.268 ms
Loss rate: 2.69%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 491.268 ms
Loss rate: 2.69%
```

Run 3: Report of Copa — Data Link



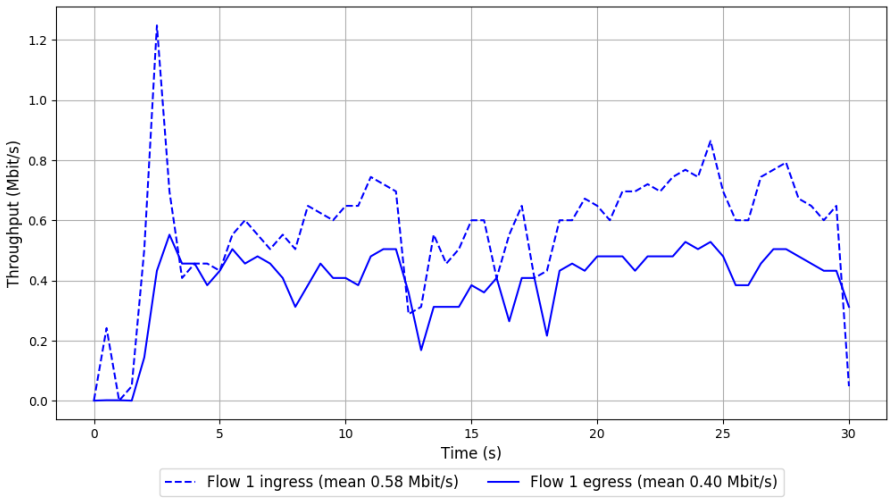


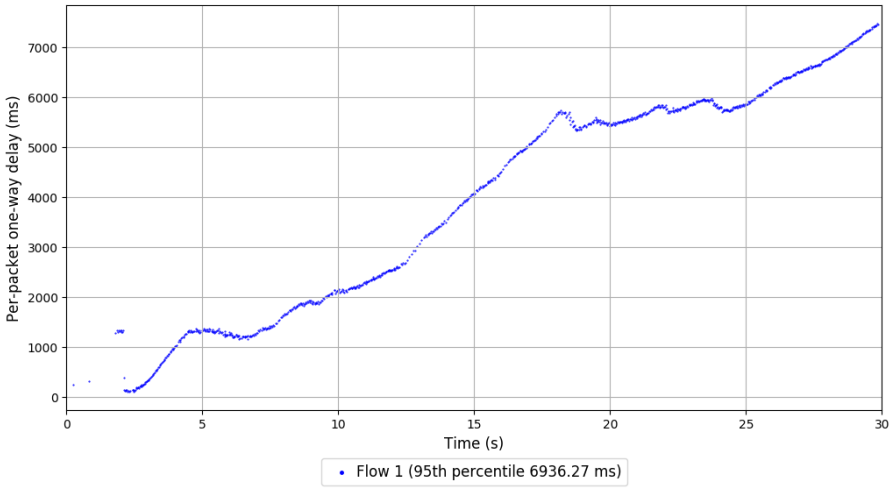
```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-07 17:56:49
End at: 2018-09-07 17:57:19
Local clock offset: -59.612 ms
Remote clock offset: 10.995 ms

# Below is generated by plot.py at 2018-09-07 18:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 6936.268 ms
Loss rate: 31.05%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 6936.268 ms
Loss rate: 31.05%
```

Run 1: Report of TCP Cubic — Data Link



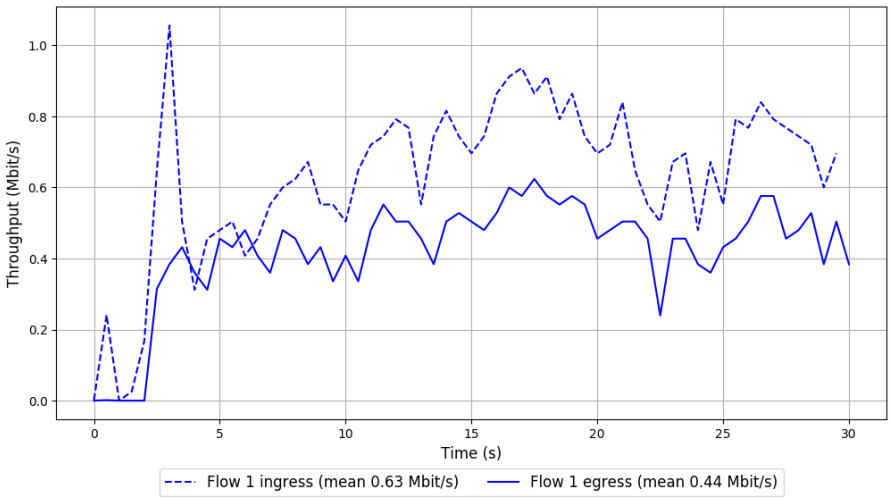


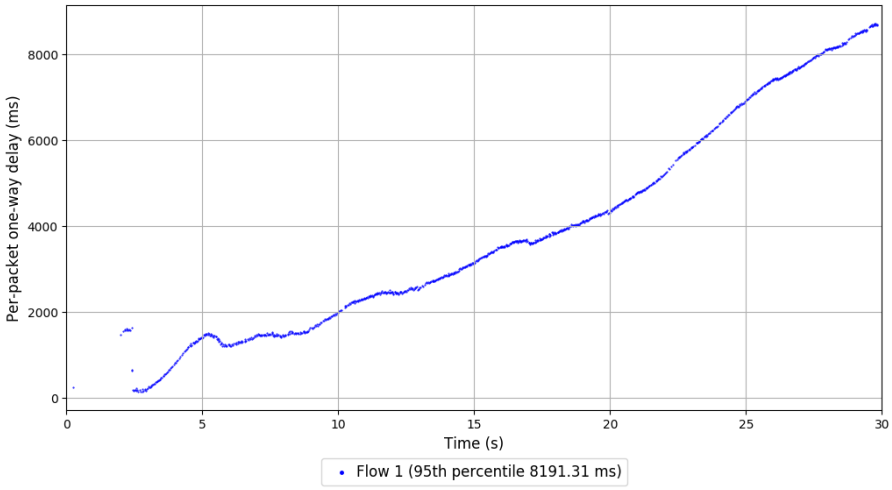
```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-07 18:18:35
End at: 2018-09-07 18:19:05
Local clock offset: -61.217 ms
Remote clock offset: 6.652 ms

# Below is generated by plot.py at 2018-09-07 18:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 8191.315 ms
Loss rate: 31.90%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 8191.315 ms
Loss rate: 31.90%
```

Run 2: Report of TCP Cubic — Data Link



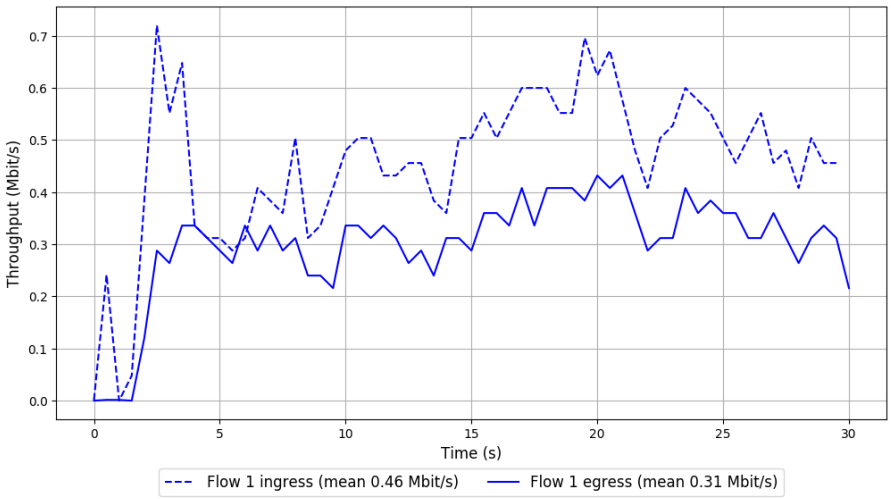


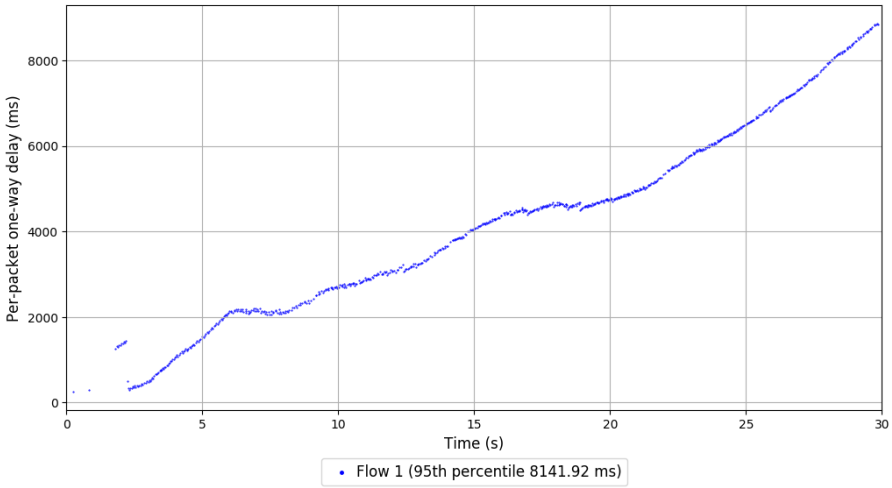
```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-07 18:40:58
End at: 2018-09-07 18:41:28
Local clock offset: -61.122 ms
Remote clock offset: 6.136 ms

# Below is generated by plot.py at 2018-09-07 18:52:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 8141.922 ms
Loss rate: 32.95%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 8141.922 ms
Loss rate: 32.95%
```

Run 3: Report of TCP Cubic — Data Link



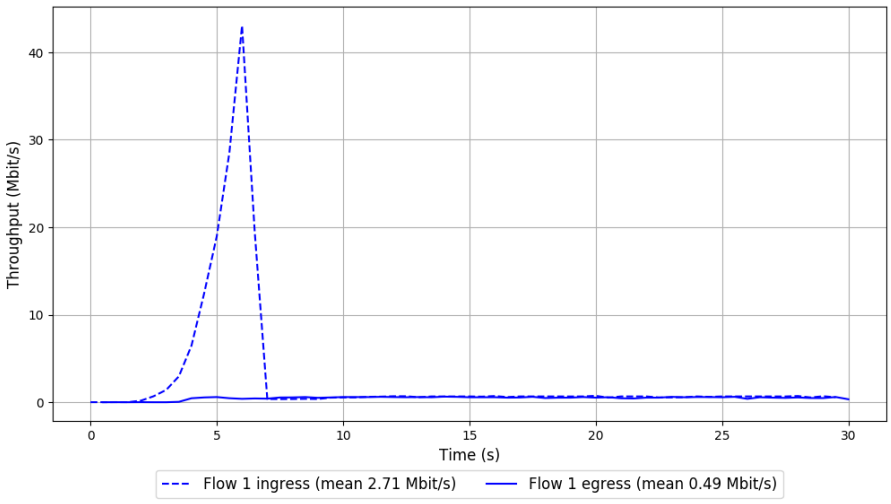


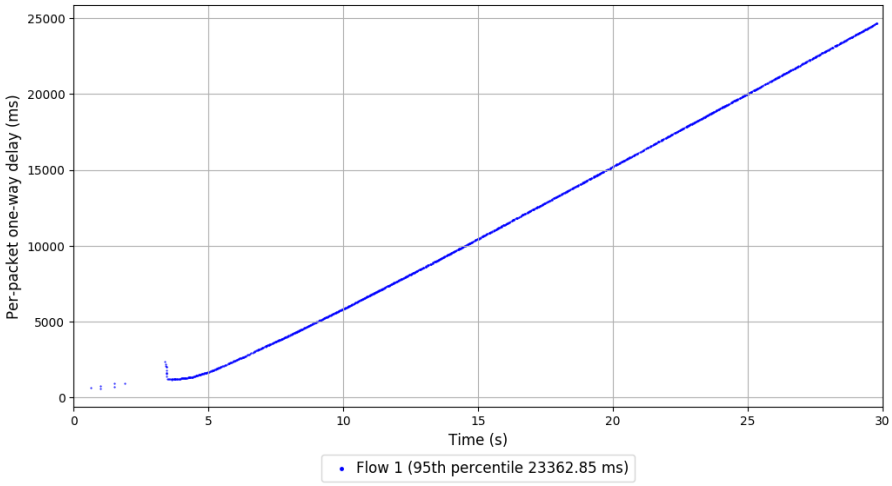
```
Run 1: Statistics of FillP

Start at: 2018-09-07 18:05:13
End at: 2018-09-07 18:05:43
Local clock offset: -62.041 ms
Remote clock offset: 10.971 ms

# Below is generated by plot.py at 2018-09-07 18:52:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 23362.853 ms
Loss rate: 82.41%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 23362.853 ms
Loss rate: 82.41%
```

Run 1: Report of FillP — Data Link



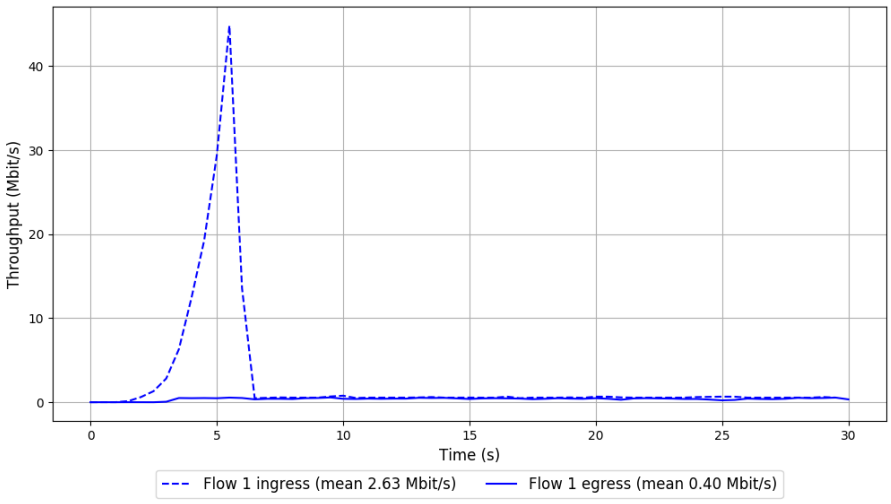


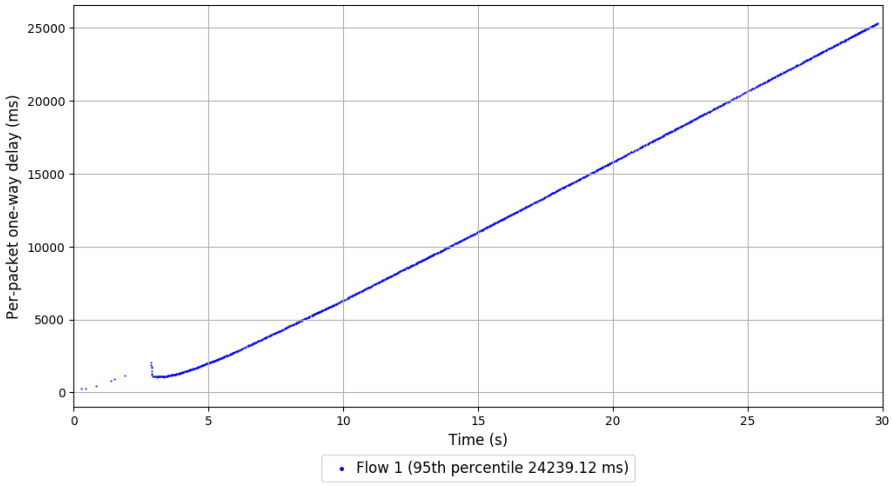
```
Run 2: Statistics of FillP

Start at: 2018-09-07 18:27:16
End at: 2018-09-07 18:27:46
Local clock offset: -62.017 ms
Remote clock offset: 10.303 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 24239.122 ms
Loss rate: 85.03%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 24239.122 ms
Loss rate: 85.03%
```

Run 2: Report of FillP — Data Link



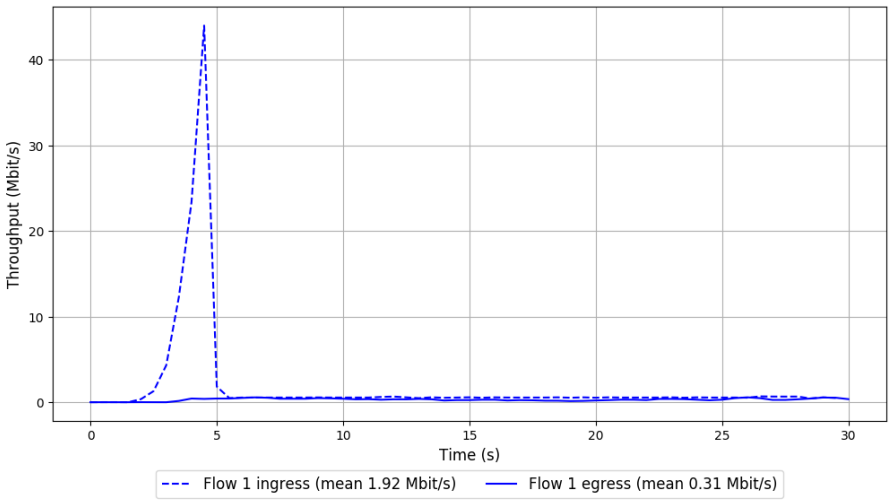


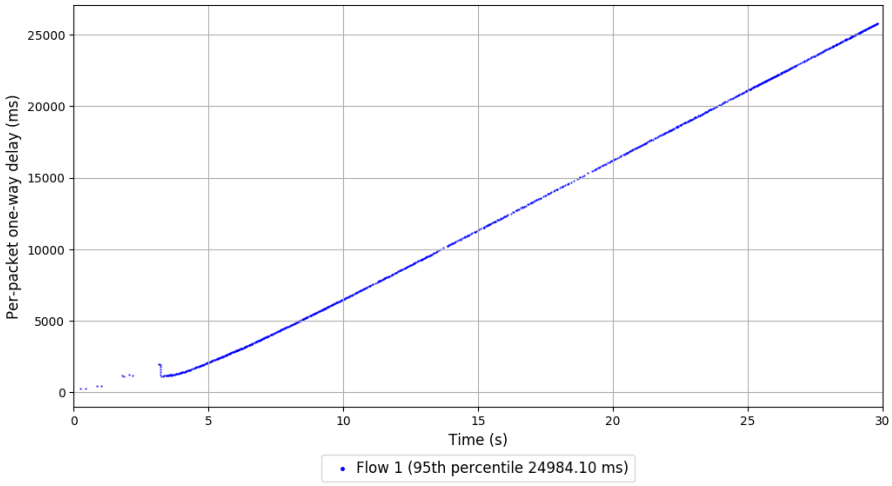
```
Run 3: Statistics of FillP

Start at: 2018-09-07 18:49:24
End at: 2018-09-07 18:49:54
Local clock offset: -62.566 ms
Remote clock offset: 10.082 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 24984.104 ms
Loss rate: 83.81%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 24984.104 ms
Loss rate: 83.81%
```

Run 3: Report of FillP — Data Link



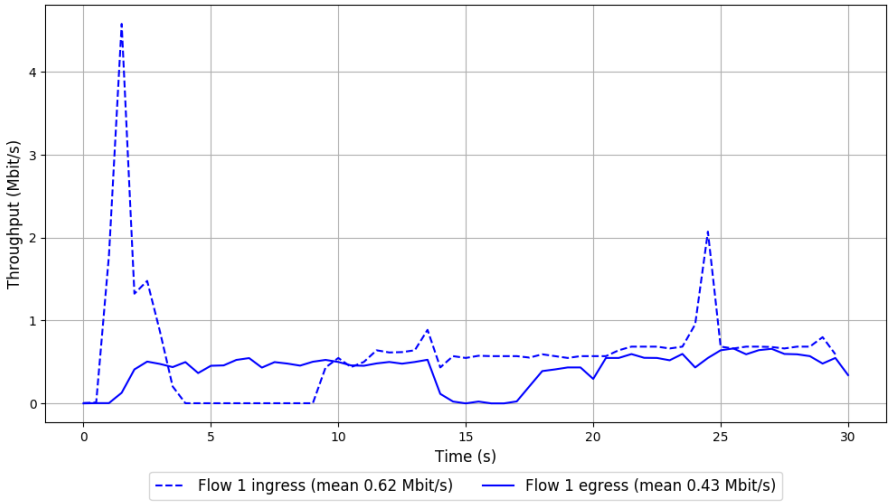


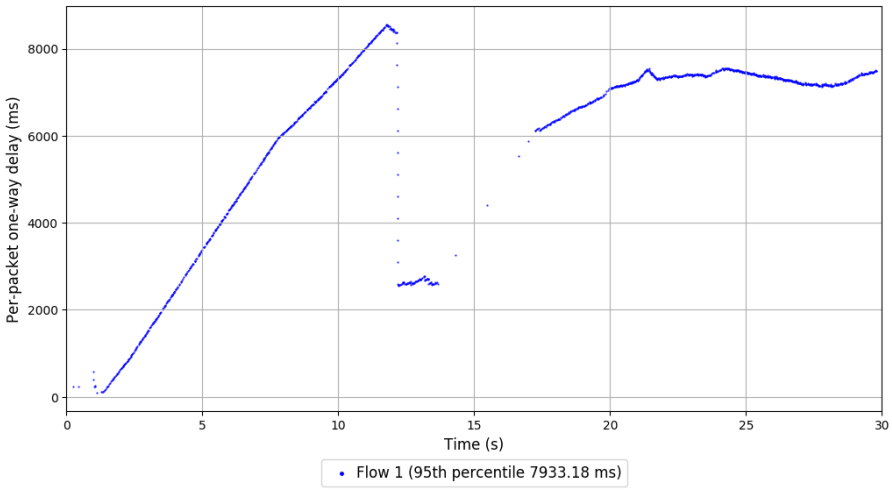
```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-07 18:07:53
End at: 2018-09-07 18:08:23
Local clock offset: -61.222 ms
Remote clock offset: 6.819 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 7933.181 ms
Loss rate: 32.53%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 7933.181 ms
Loss rate: 32.53%
```

Run 1: Report of FillP-Sheep — Data Link



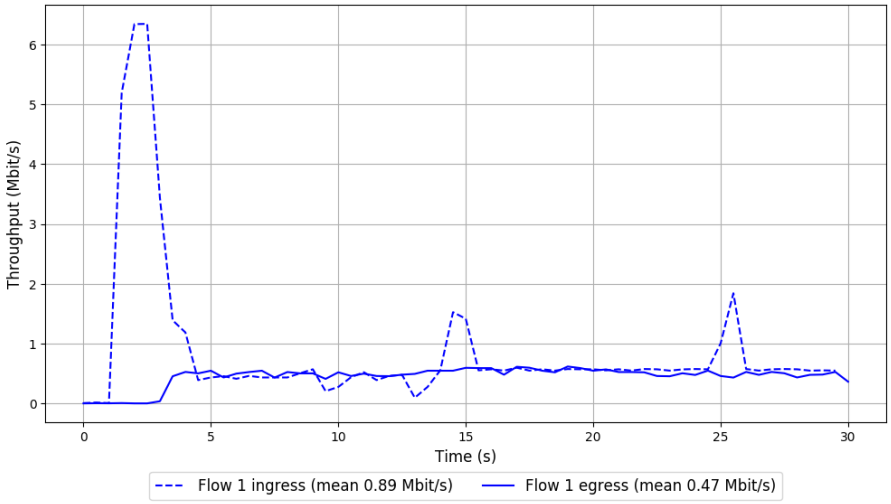


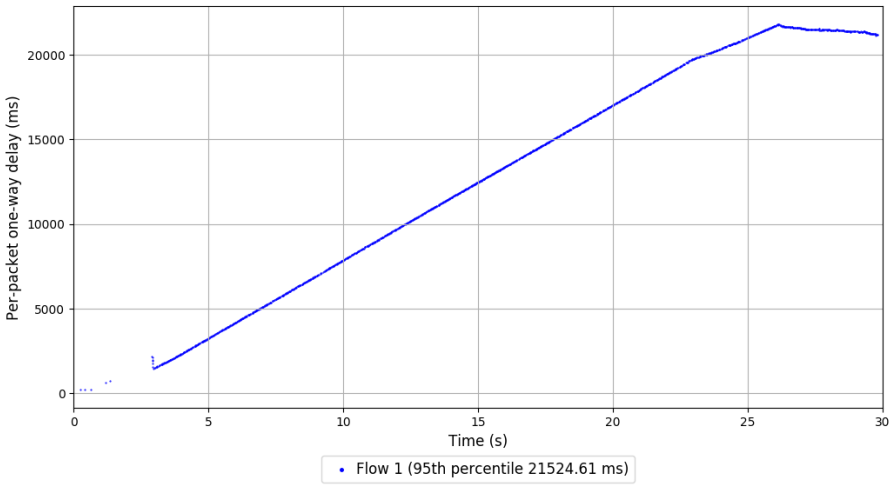
```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-07 18:29:56
End at: 2018-09-07 18:30:26
Local clock offset: -60.961 ms
Remote clock offset: 6.271 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 21524.608 ms
Loss rate: 48.22%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 21524.608 ms
Loss rate: 48.22%
```

Run 2: Report of FillP-Sheep — Data Link



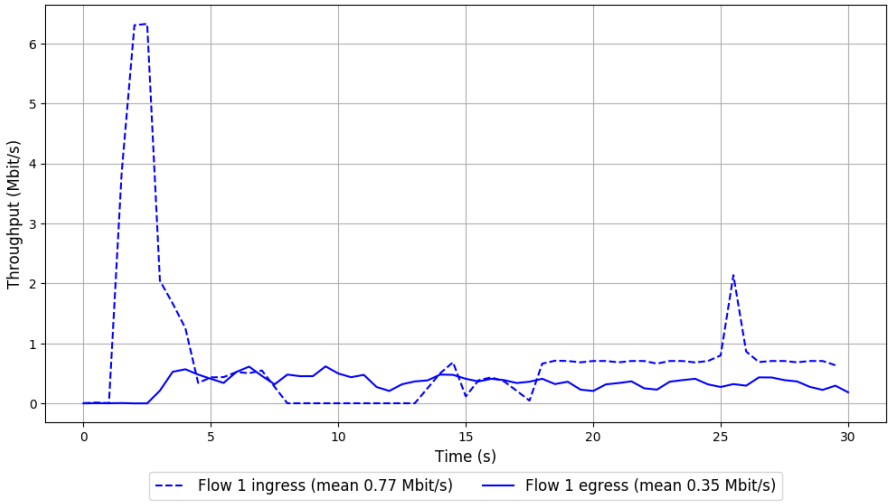


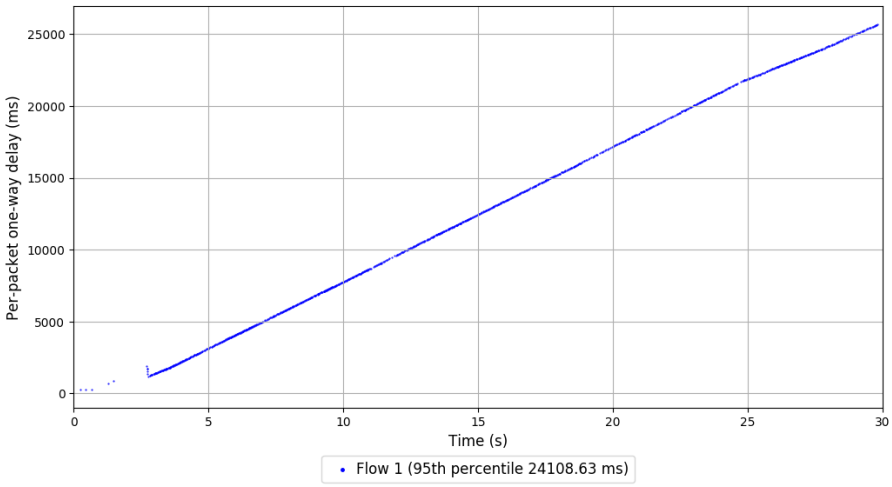
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-07 18:52:03
End at: 2018-09-07 18:52:34
Local clock offset: -61.486 ms
Remote clock offset: 10.714 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 24108.626 ms
Loss rate: 55.05%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 24108.626 ms
Loss rate: 55.05%
```

Run 3: Report of FillP-Sheep — Data Link



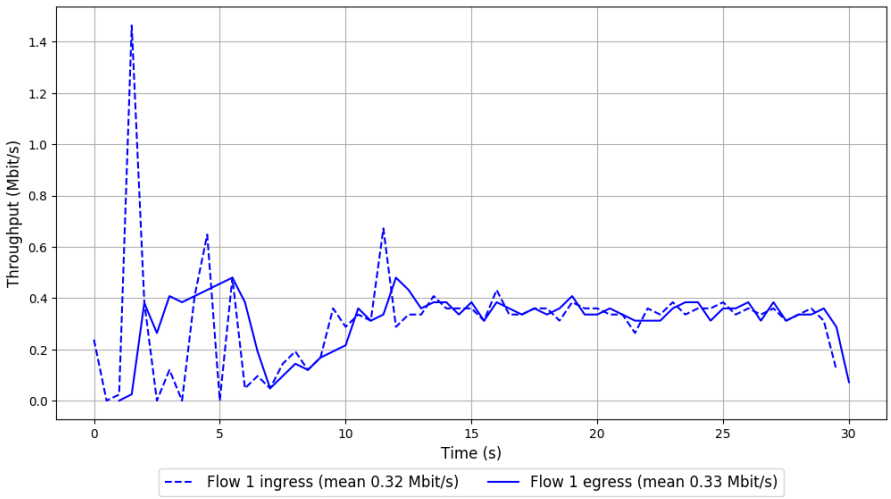


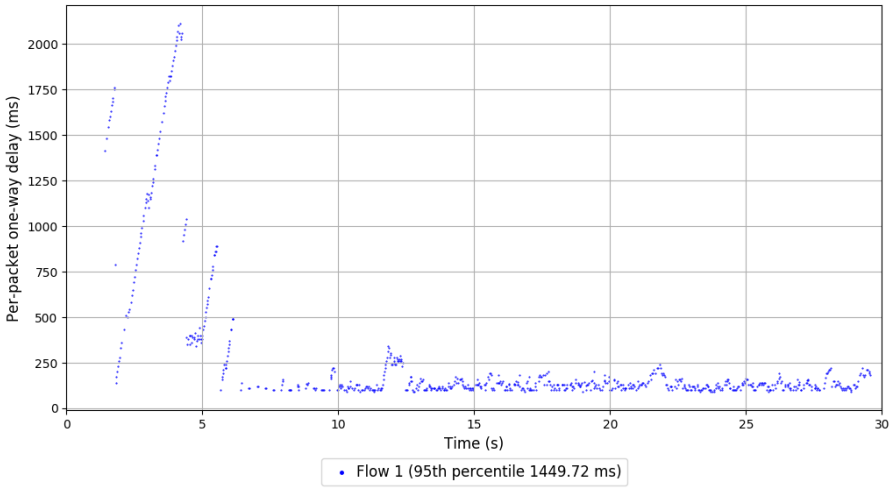
```
Run 1: Statistics of Indigo

Start at: 2018-09-07 17:54:32
End at: 2018-09-07 17:55:02
Local clock offset: -59.984 ms
Remote clock offset: 6.681 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 1449.717 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 1449.717 ms
Loss rate: 0.89%
```

Run 1: Report of Indigo — Data Link



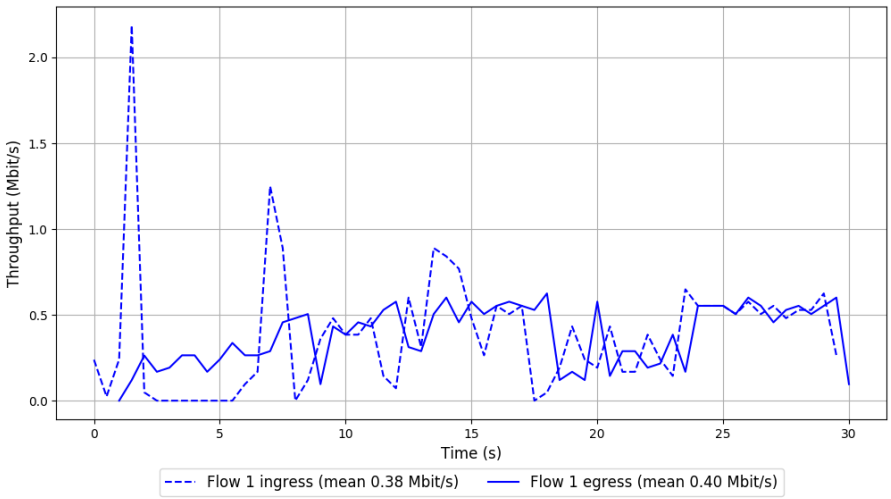


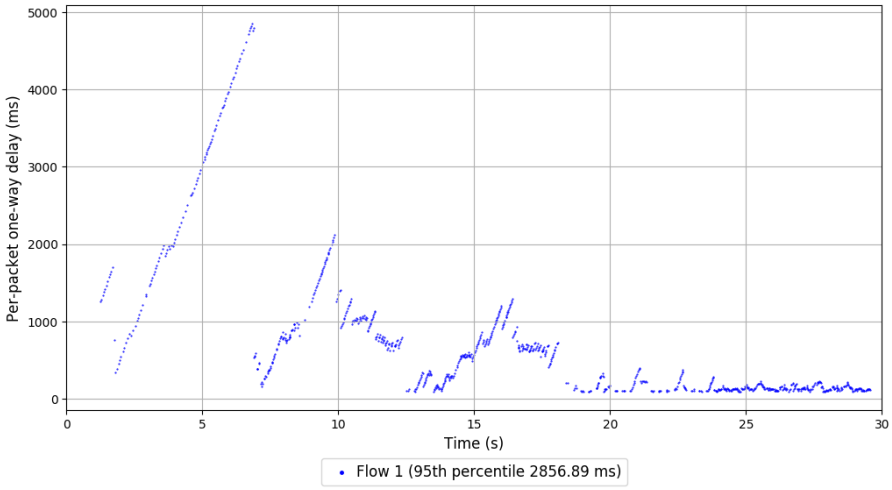
```
Run 2: Statistics of Indigo

Start at: 2018-09-07 18:16:19
End at: 2018-09-07 18:16:49
Local clock offset: -63.026 ms
Remote clock offset: 7.329 ms

# Below is generated by plot.py at 2018-09-07 18:52:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 2856.895 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 2856.895 ms
Loss rate: 1.37%
```

Run 2: Report of Indigo — Data Link



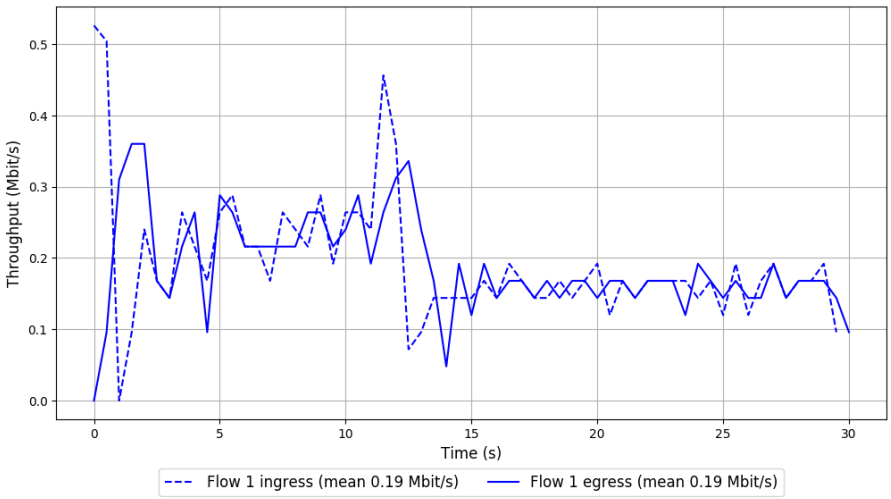


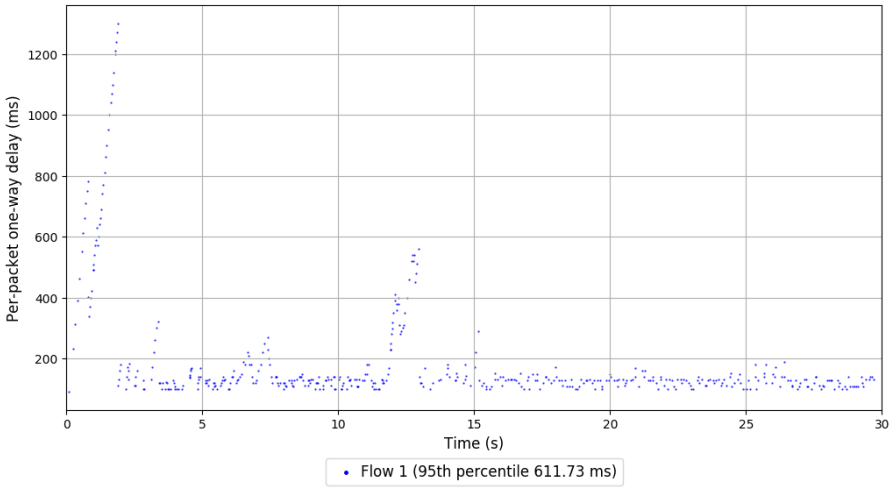
```
Run 3: Statistics of Indigo

Start at: 2018-09-07 18:38:41
End at: 2018-09-07 18:39:11
Local clock offset: -61.149 ms
Remote clock offset: 9.845 ms

# Below is generated by plot.py at 2018-09-07 18:52:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 611.727 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 611.727 ms
Loss rate: 0.62%
```

Run 3: Report of Indigo — Data Link



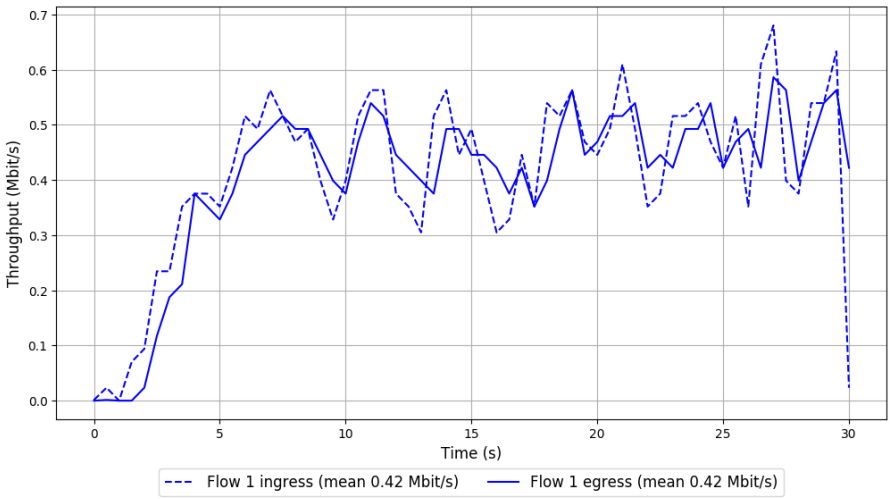


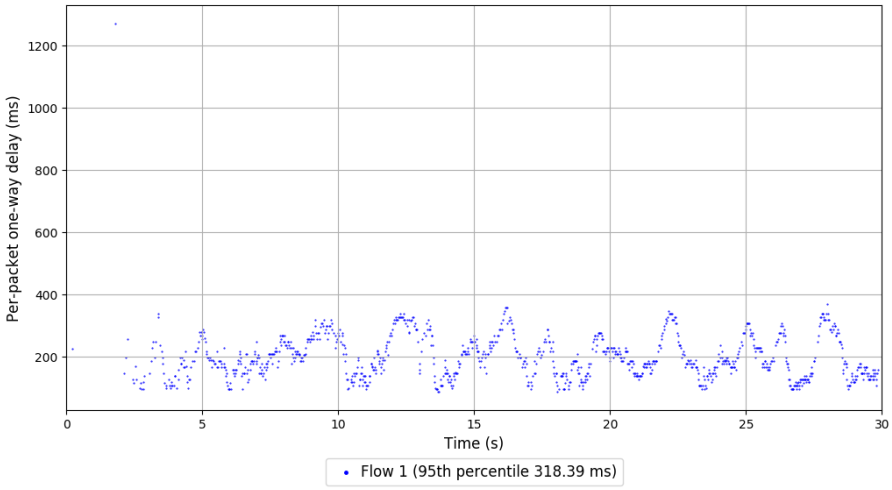
```
Run 1: Statistics of LEDBAT

Start at: 2018-09-07 18:01:47
End at: 2018-09-07 18:02:17
Local clock offset: -60.402 ms
Remote clock offset: 10.83 ms

# Below is generated by plot.py at 2018-09-07 18:52:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 318.389 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 318.389 ms
Loss rate: 1.58%
```

Run 1: Report of LEDBAT — Data Link



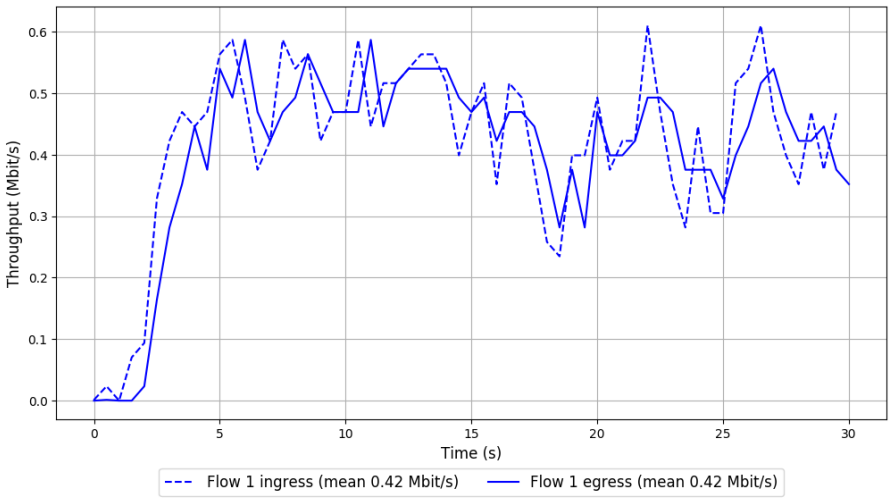


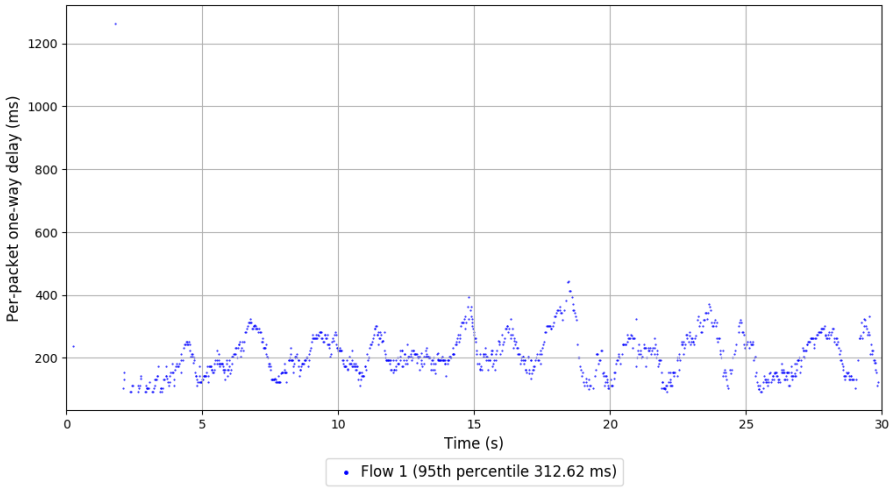
```
Run 2: Statistics of LEDBAT

Start at: 2018-09-07 18:23:50
End at: 2018-09-07 18:24:20
Local clock offset: -61.137 ms
Remote clock offset: 10.508 ms

# Below is generated by plot.py at 2018-09-07 18:52:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 312.615 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 312.615 ms
Loss rate: 1.12%
```

Run 2: Report of LEDBAT — Data Link



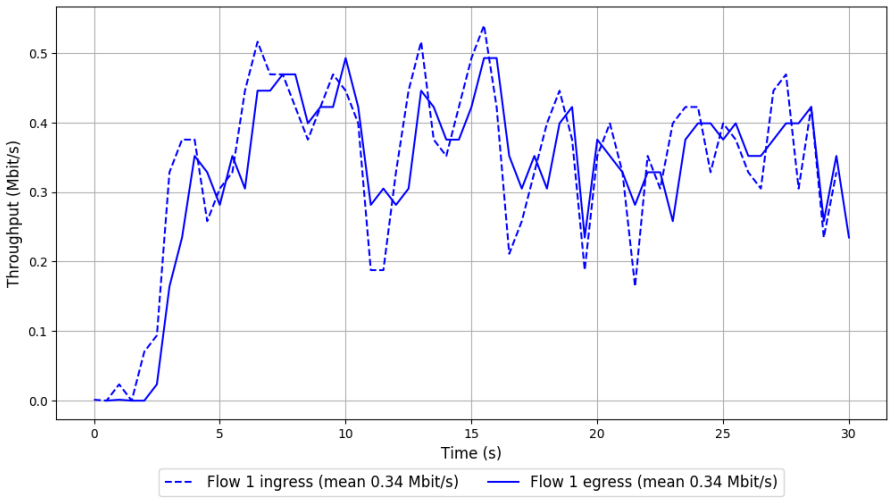


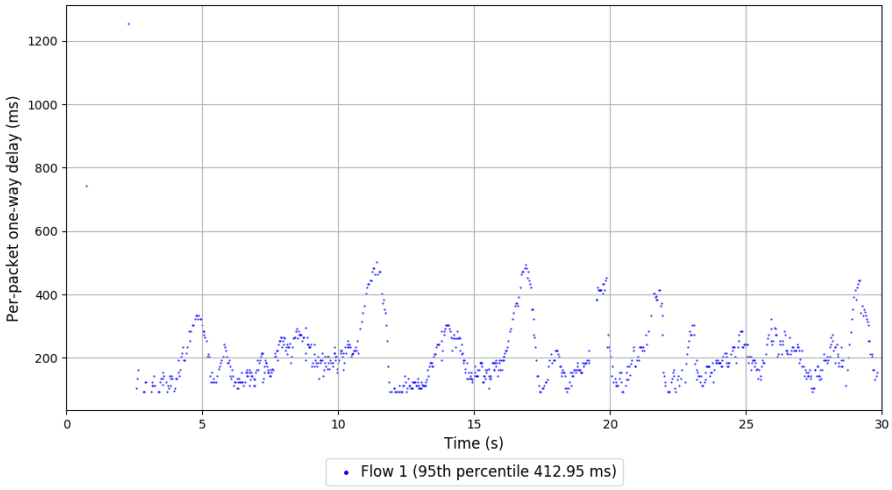
```
Run 3: Statistics of LEDBAT

Start at: 2018-09-07 18:45:58
End at: 2018-09-07 18:46:28
Local clock offset: -61.123 ms
Remote clock offset: 10.255 ms

# Below is generated by plot.py at 2018-09-07 18:52:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 412.949 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 412.949 ms
Loss rate: 1.05%
```

Run 3: Report of LEDBAT — Data Link



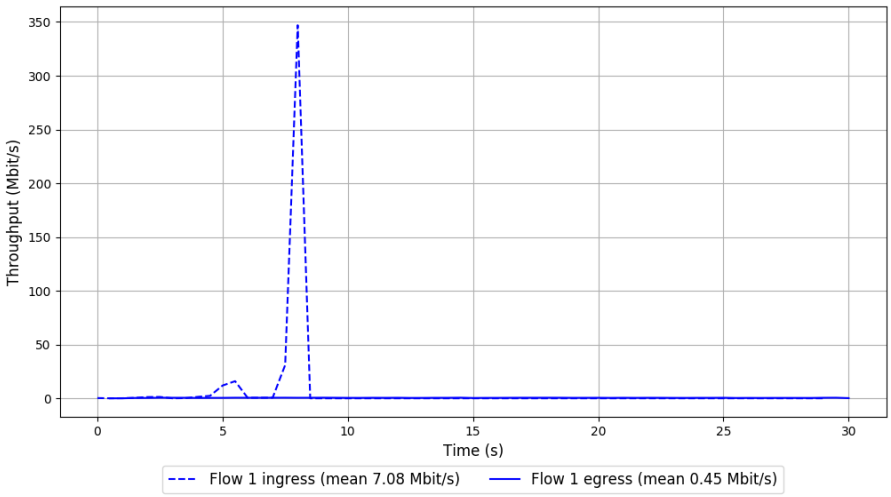


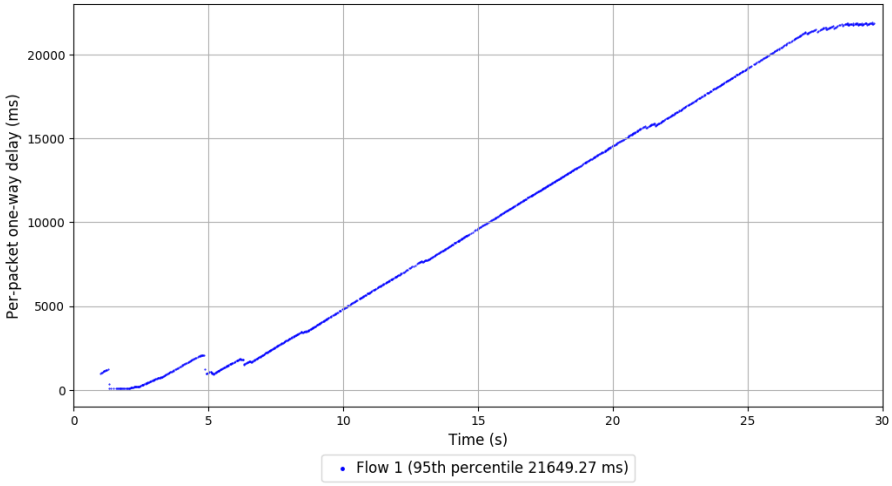
```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-07 17:57:56
End at: 2018-09-07 17:58:26
Local clock offset: -59.673 ms
Remote clock offset: 6.7 ms

# Below is generated by plot.py at 2018-09-07 18:52:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 21649.273 ms
Loss rate: 93.76%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 21649.273 ms
Loss rate: 93.76%
```

Run 1: Report of Indigo-Muses — Data Link



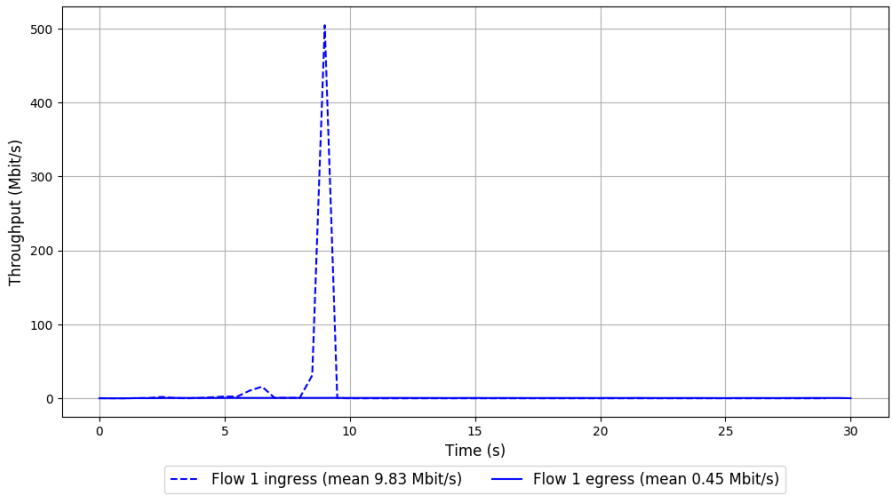


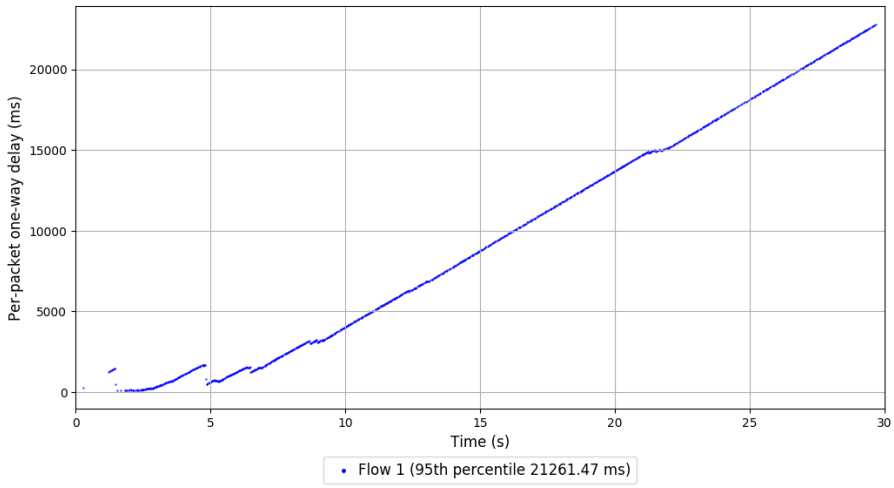
```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-07 18:19:44
End at: 2018-09-07 18:20:14
Local clock offset: -62.18 ms
Remote clock offset: 7.1 ms

# Below is generated by plot.py at 2018-09-07 18:52:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 21261.471 ms
Loss rate: 95.40%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 21261.471 ms
Loss rate: 95.40%
```

Run 2: Report of Indigo-Muses — Data Link



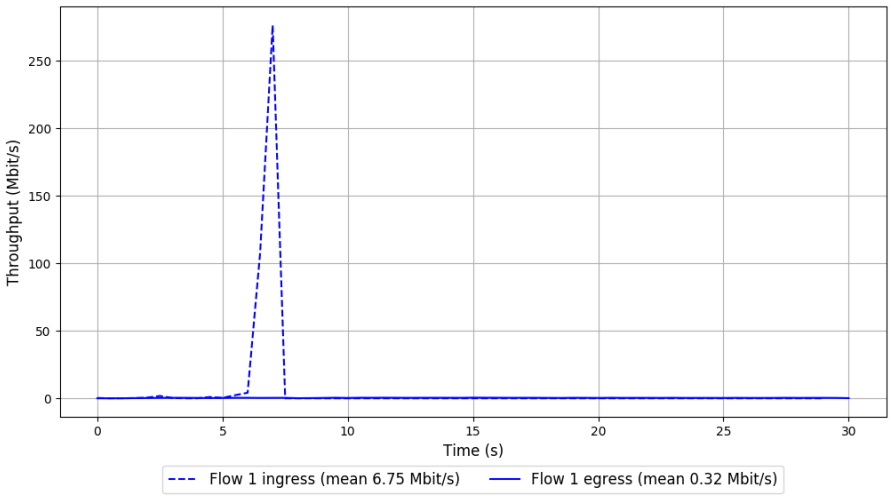


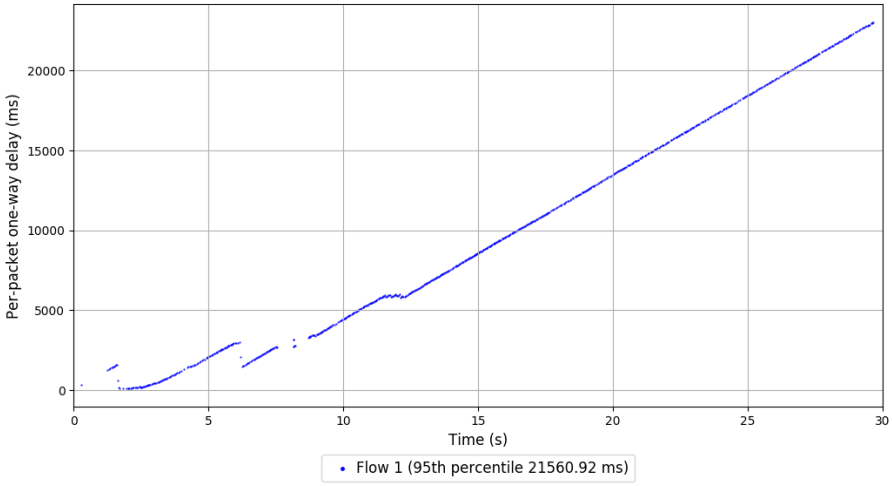
```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-07 18:42:06
End at: 2018-09-07 18:42:36
Local clock offset: -62.209 ms
Remote clock offset: 10.039 ms

# Below is generated by plot.py at 2018-09-07 18:52:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 21560.918 ms
Loss rate: 95.31%
-- Flow 1:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 21560.918 ms
Loss rate: 95.31%
```

Run 3: Report of Indigo-Muses — Data Link



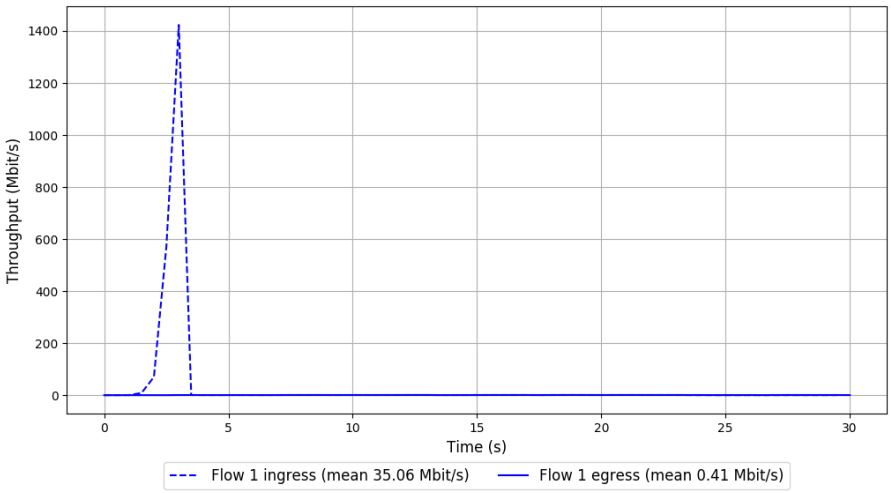


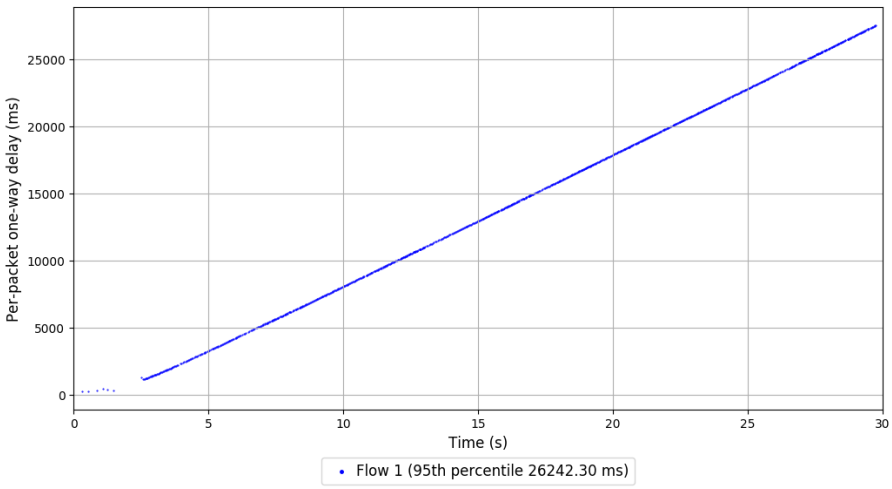
```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-07 17:48:03
End at: 2018-09-07 17:48:33
Local clock offset: -57.566 ms
Remote clock offset: 6.4 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 26242.299 ms
Loss rate: 98.86%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 26242.299 ms
Loss rate: 98.86%
```

Run 1: Report of PCC-Allegro — Data Link



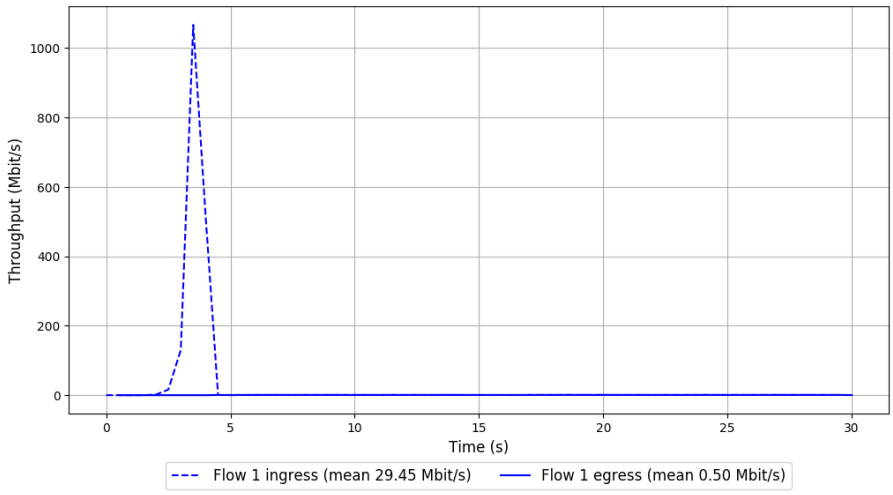


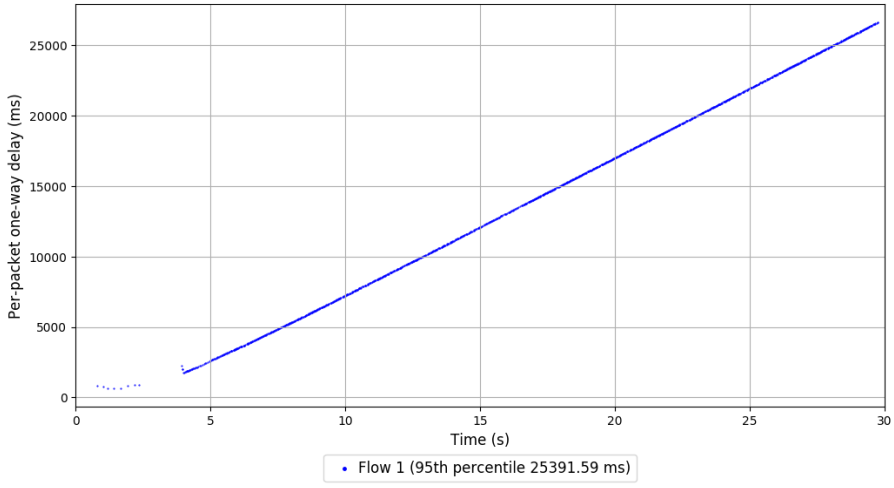
```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-07 18:10:11
End at: 2018-09-07 18:10:41
Local clock offset: -61.47 ms
Remote clock offset: 7.37 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 25391.591 ms
Loss rate: 98.35%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 25391.591 ms
Loss rate: 98.35%
```

Run 2: Report of PCC-Allegro — Data Link





Run 3: Statistics of PCC-Allegro

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/pcc_sta

Run 3: Report of PCC-Allegro — Data Link

Figure is missing

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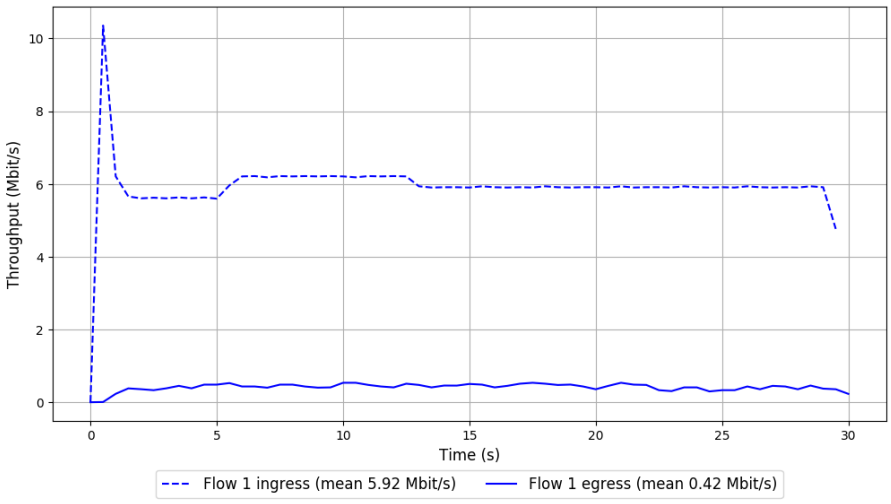
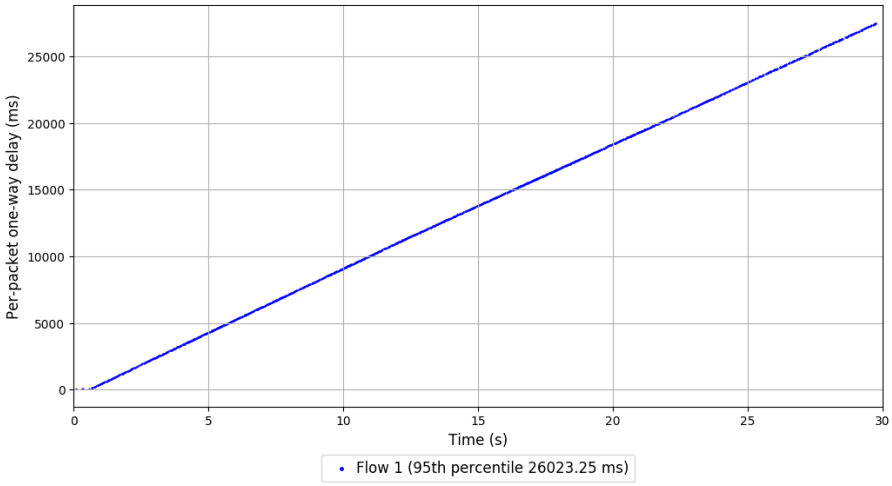
```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-07 17:59:06
End at: 2018-09-07 17:59:36
Local clock offset: -60.951 ms
Remote clock offset: 11.312 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 26023.250 ms
Loss rate: 92.90%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 26023.250 ms
Loss rate: 92.90%
```

Run 1: Report of PCC-Expr — Data Link

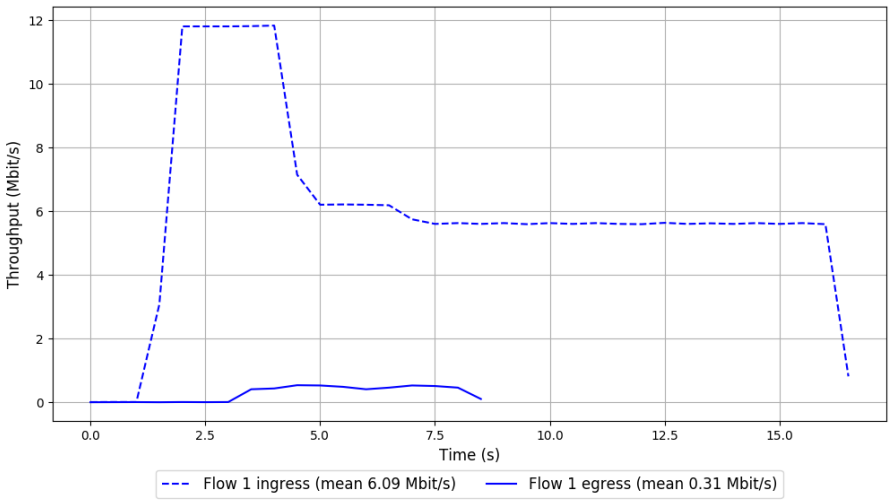


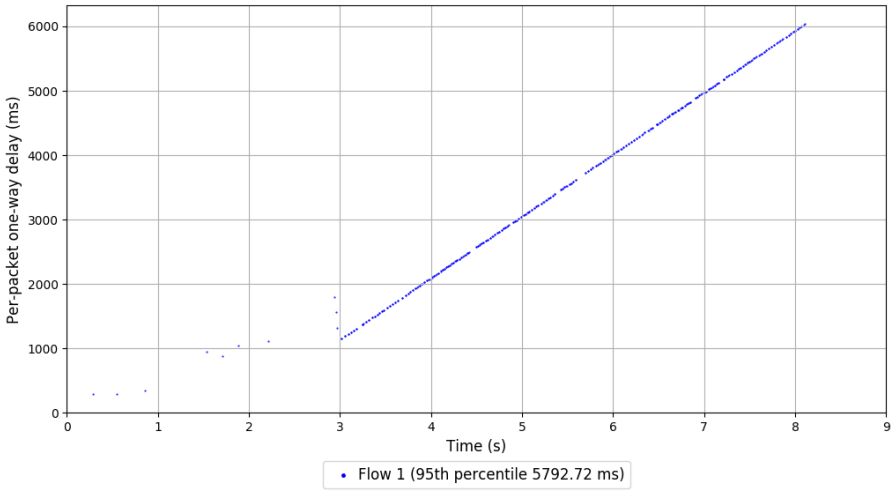


```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-07 18:20:53
End at: 2018-09-07 18:21:23
Local clock offset: -60.928 ms
Remote clock offset: 6.474 ms
```

Run 2: Report of PCC-Expr — Data Link



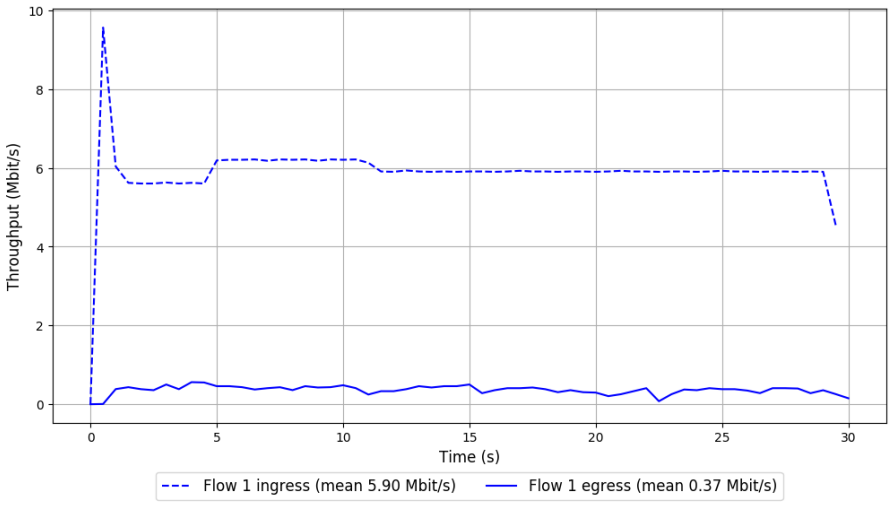


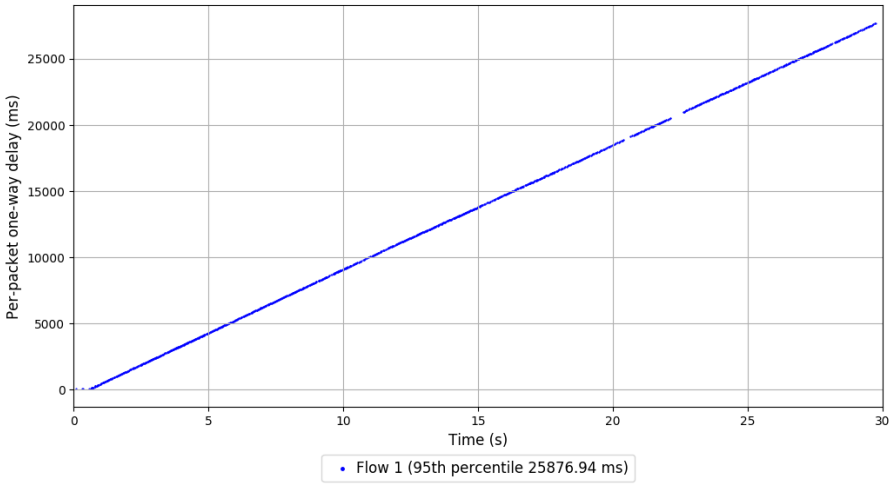
```
Run 3: Statistics of PCC-Expr

Start at: 2018-09-07 18:43:18
End at: 2018-09-07 18:43:48
Local clock offset: -62.335 ms
Remote clock offset: 10.149 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 25876.941 ms
Loss rate: 93.73%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 25876.941 ms
Loss rate: 93.73%
```

Run 3: Report of PCC-Expr — Data Link





Run 1: Statistics of QUIC Cubic

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/quic_st

Run 1: Report of QUIC Cubic — Data Link

Figure is missing

Figure is missing

Run 2: Statistics of QUIC Cubic

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/quic_st

Run 2: Report of QUIC Cubic — Data Link

Figure is missing

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Run 3: Statistics of QUIC Cubic

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/quic_st

Run 3: Report of QUIC Cubic — Data Link

Figure is missing

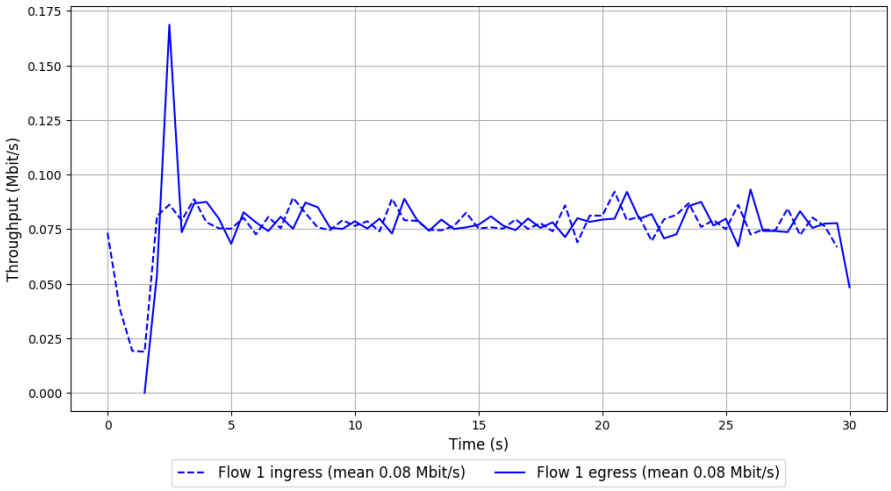
Figure is missing

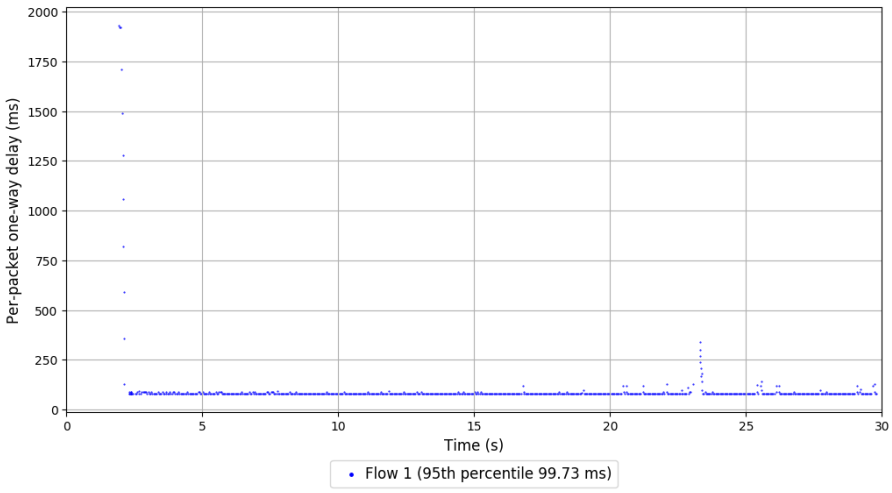
```
Run 1: Statistics of SCReAM

Start at: 2018-09-07 17:50:44
End at: 2018-09-07 17:51:14
Local clock offset: -56.961 ms
Remote clock offset: 10.439 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 99.732 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 99.732 ms
Loss rate: 0.67%
```

Run 1: Report of SCReAM — Data Link



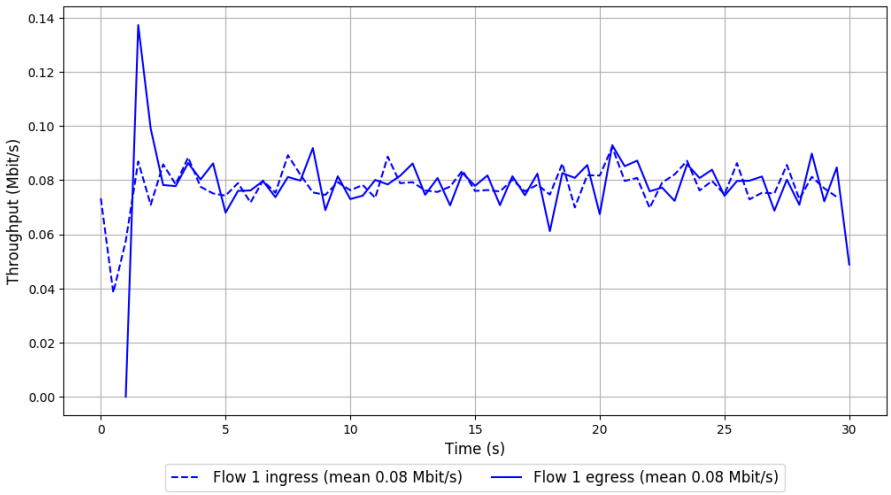


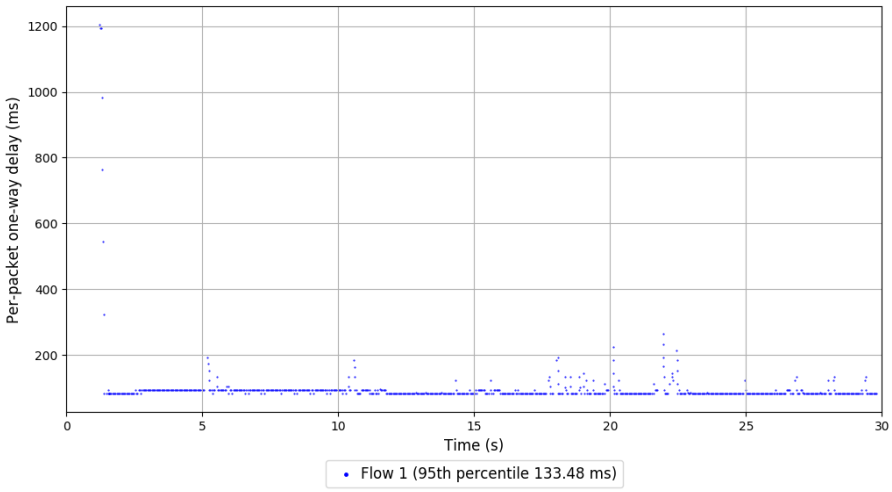
```
Run 2: Statistics of SCReAM

Start at: 2018-09-07 18:12:31
End at: 2018-09-07 18:13:01
Local clock offset: -62.941 ms
Remote clock offset: 6.932 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 133.484 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 133.484 ms
Loss rate: 0.79%
```

Run 2: Report of SCReAM — Data Link



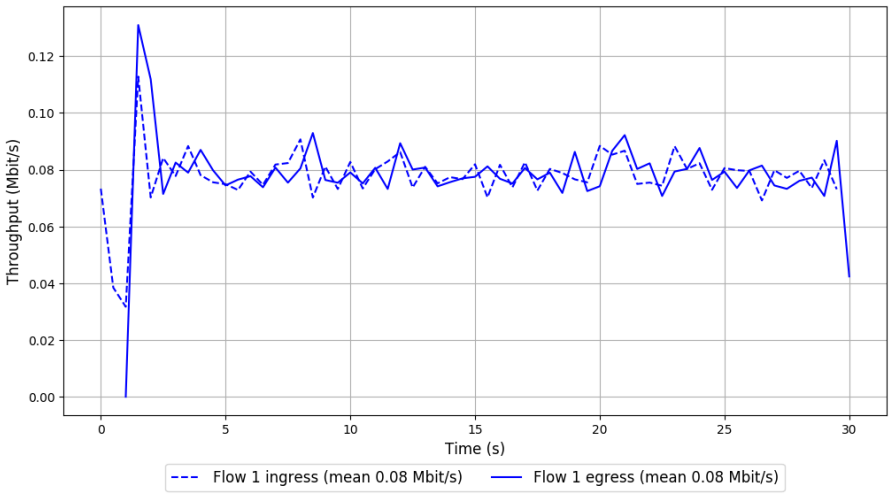


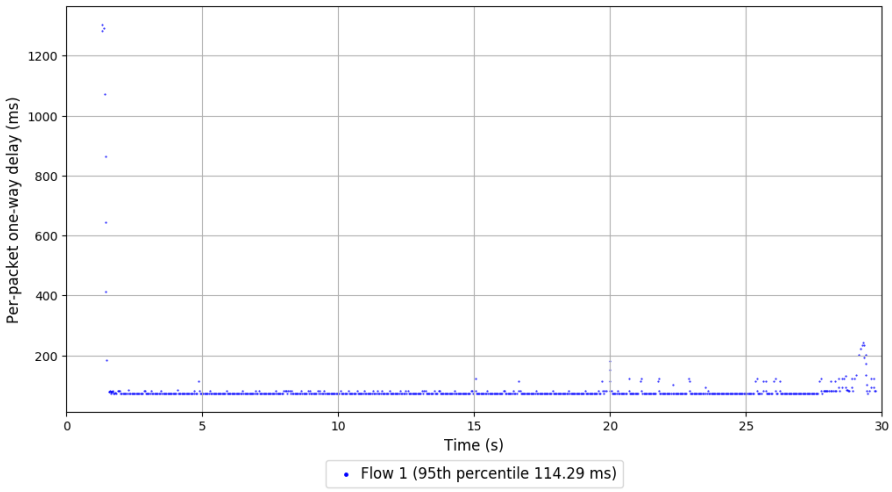
```
Run 3: Statistics of SCReAM

Start at: 2018-09-07 18:34:52
End at: 2018-09-07 18:35:22
Local clock offset: -61.08 ms
Remote clock offset: 10.067 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 114.288 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 114.288 ms
Loss rate: 0.92%
```

Run 3: Report of SCReAM — Data Link





Run 1: Statistics of Sprout

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/sprout_

Run 1: Report of Sprout — Data Link

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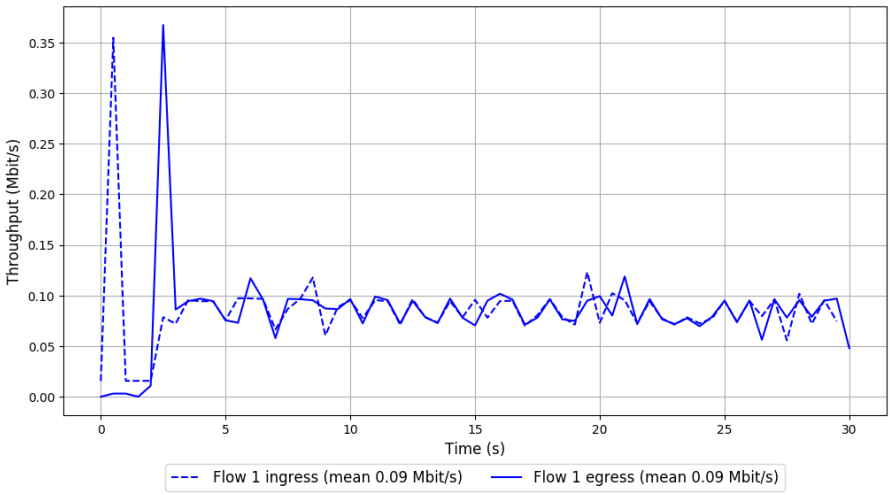
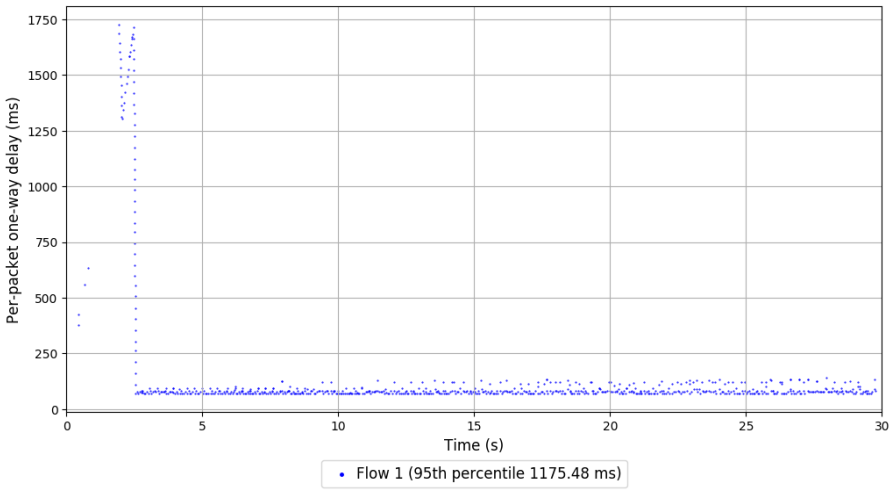
```
Run 2: Statistics of Sprout

Start at: 2018-09-07 18:22:42
End at: 2018-09-07 18:23:12
Local clock offset: -61.1 ms
Remote clock offset: 11.142 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 1175.483 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 1175.483 ms
Loss rate: 0.55%
```

Run 2: Report of Sprout — Data Link





Run 3: Statistics of Sprout

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/sprout_

Run 3: Report of Sprout — Data Link

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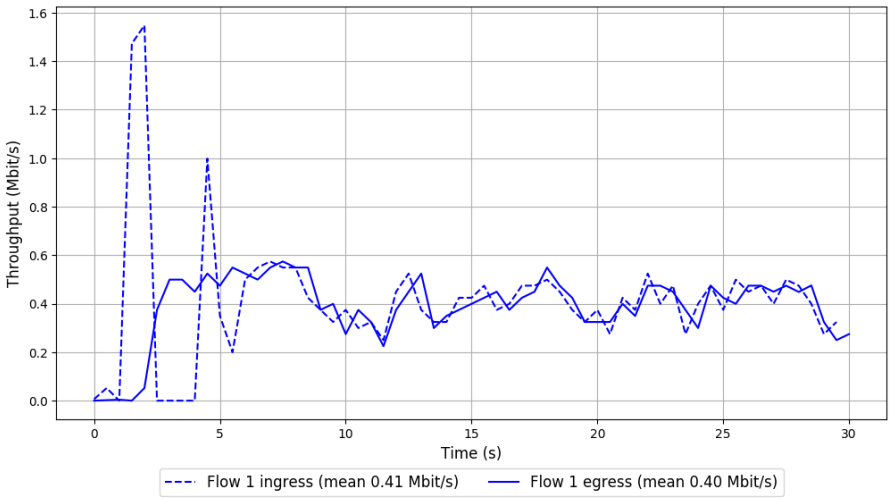
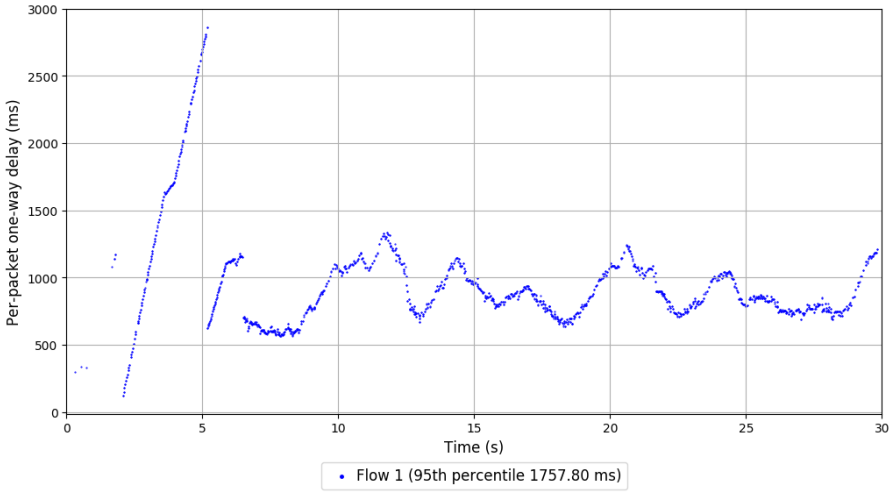
```
Run 1: Statistics of TaoVA-100x

Start at: 2018-09-07 17:46:55
End at: 2018-09-07 17:47:25
Local clock offset: -55.902 ms
Remote clock offset: 10.119 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1757.804 ms
Loss rate: 3.45%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 1757.804 ms
Loss rate: 3.45%
```

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



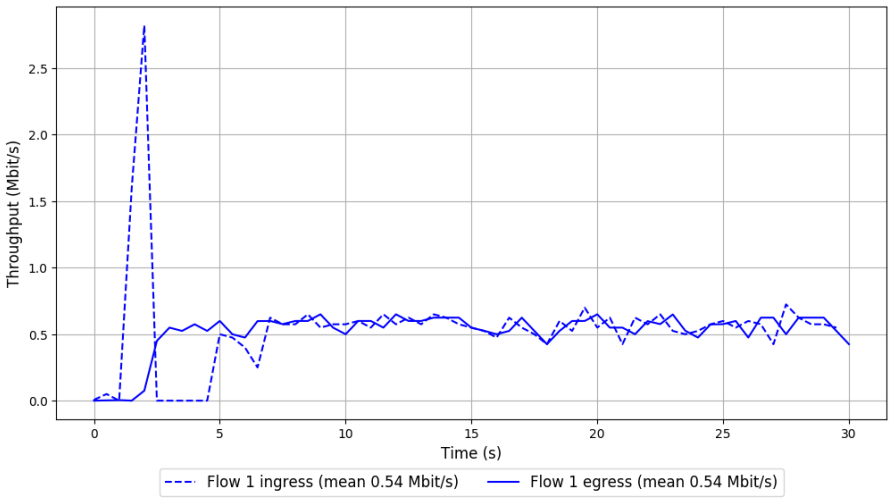


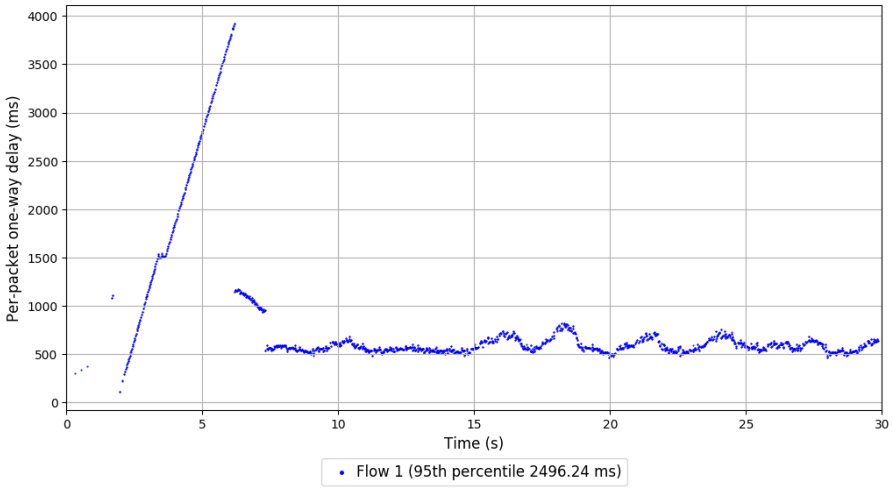
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-09-07 18:09:01
End at: 2018-09-07 18:09:31
Local clock offset: -61.427 ms
Remote clock offset: 7.199 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 2496.236 ms
Loss rate: 2.46%
-- Flow 1:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 2496.236 ms
Loss rate: 2.46%
```

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



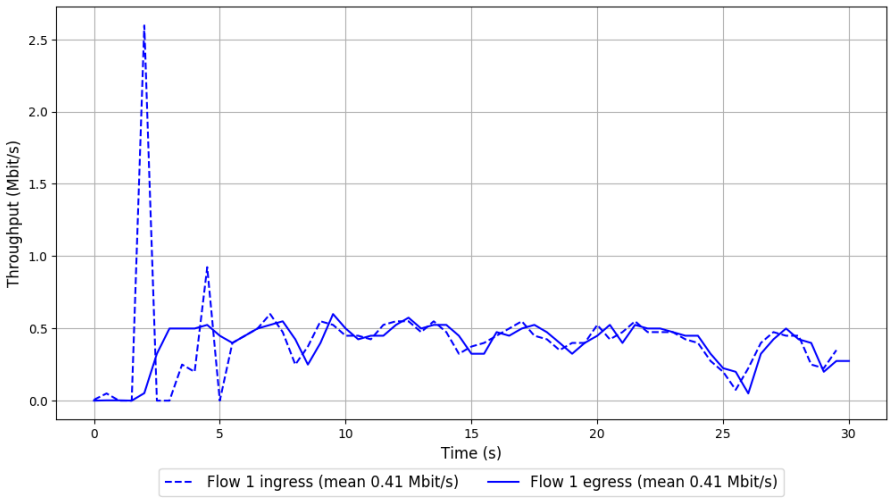


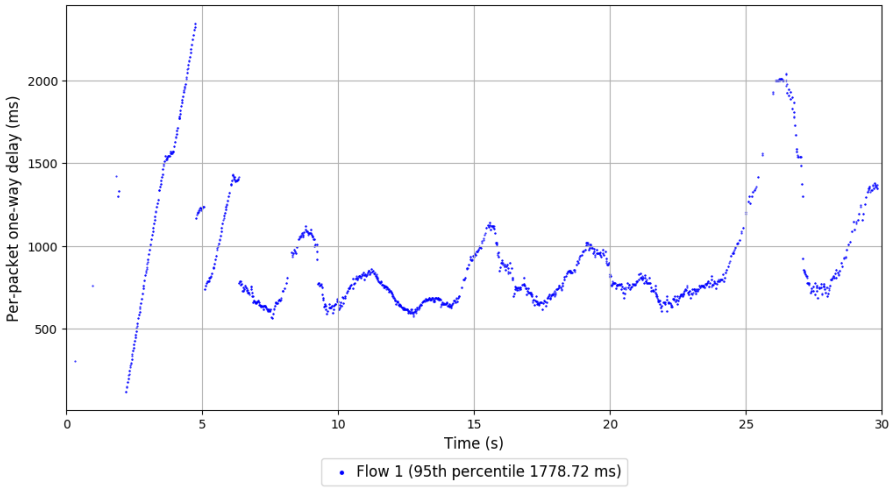
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-09-07 18:31:04
End at: 2018-09-07 18:31:34
Local clock offset: -60.803 ms
Remote clock offset: 9.777 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 1778.725 ms
Loss rate: 3.42%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 1778.725 ms
Loss rate: 3.42%
```

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



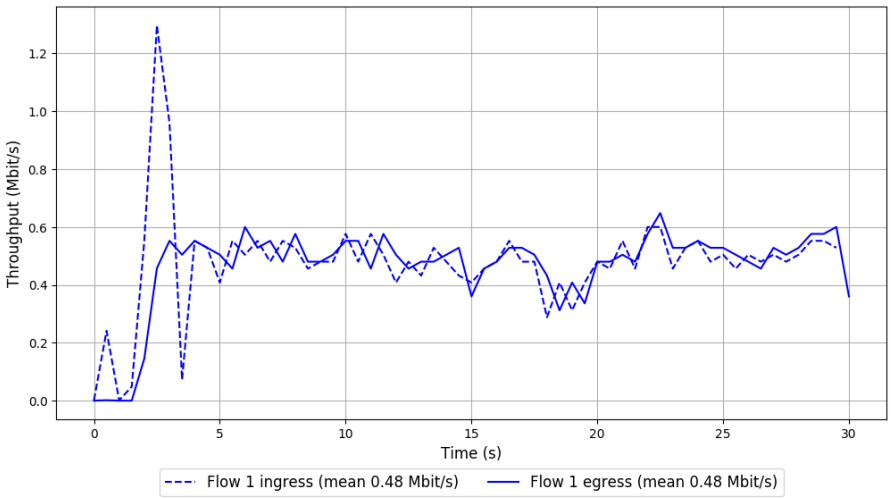


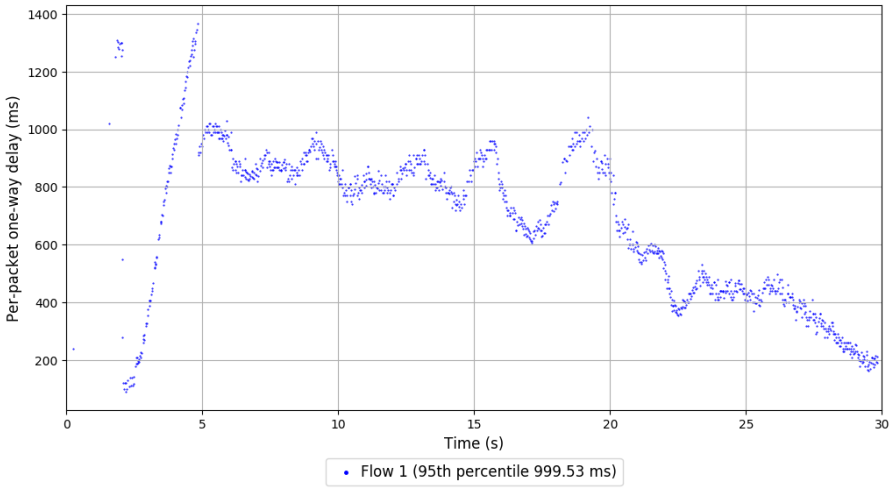
```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-07 18:04:04
End at: 2018-09-07 18:04:34
Local clock offset: -61.611 ms
Remote clock offset: 6.963 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 999.529 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 999.529 ms
Loss rate: 1.26%
```

Run 1: Report of TCP Vegas — Data Link



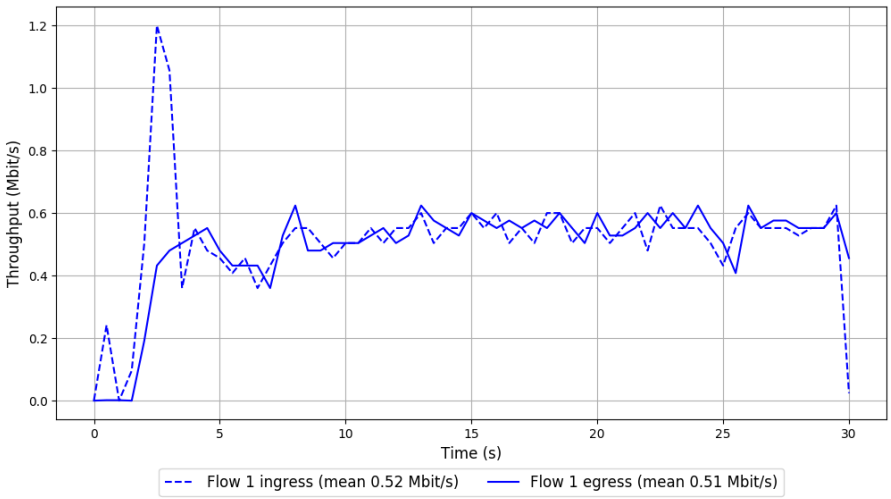


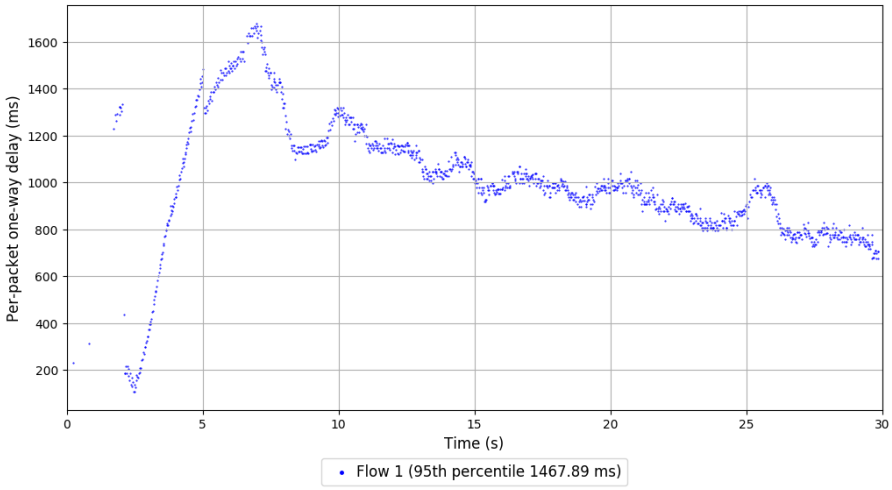
```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-07 18:26:07
End at: 2018-09-07 18:26:37
Local clock offset: -61.968 ms
Remote clock offset: 6.198 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 1467.891 ms
Loss rate: 3.16%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 1467.891 ms
Loss rate: 3.16%
```

Run 2: Report of TCP Vegas — Data Link



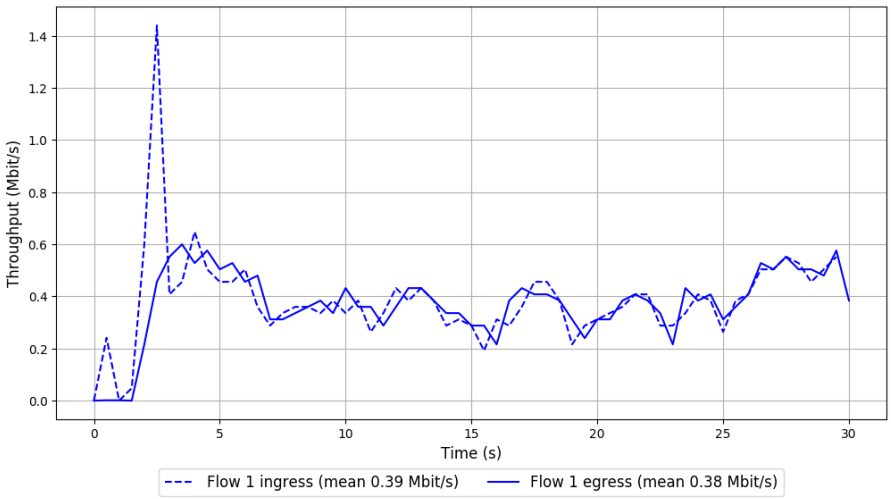


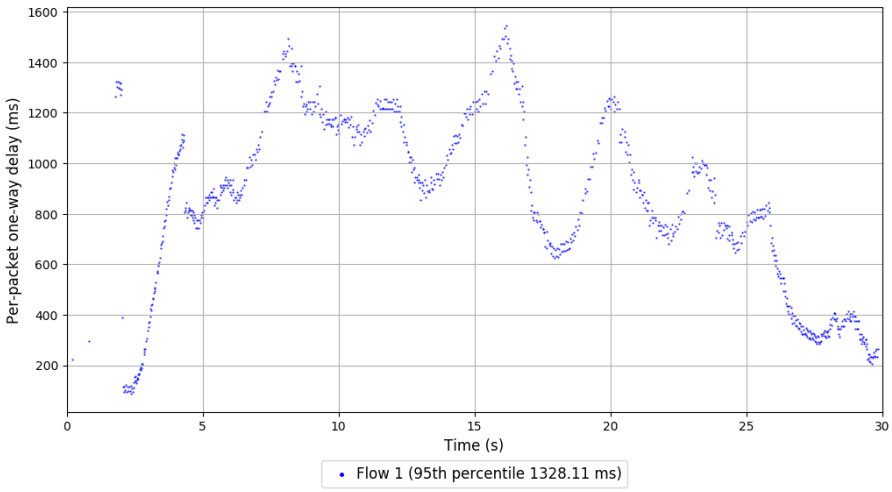
```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-07 18:48:16
End at: 2018-09-07 18:48:46
Local clock offset: -62.455 ms
Remote clock offset: 10.573 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 1328.108 ms
Loss rate: 1.97%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 1328.108 ms
Loss rate: 1.97%
```

Run 3: Report of TCP Vegas — Data Link



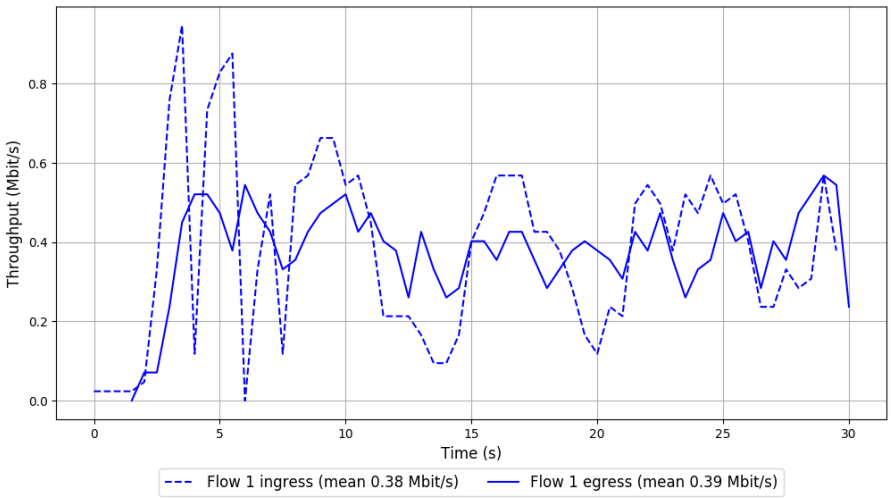


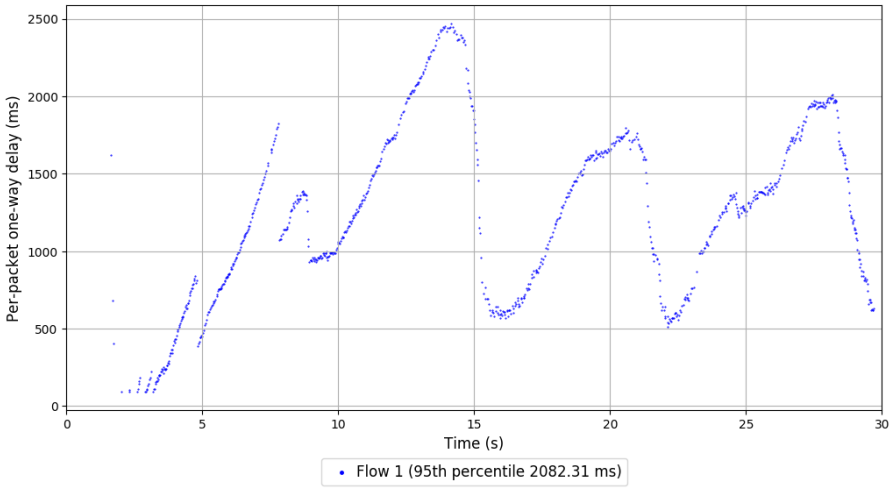
```
Run 1: Statistics of Verus

Start at: 2018-09-07 18:02:56
End at: 2018-09-07 18:03:26
Local clock offset: -61.778 ms
Remote clock offset: 10.567 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 2082.314 ms
Loss rate: 3.72%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 2082.314 ms
Loss rate: 3.72%
```

Run 1: Report of Verus — Data Link



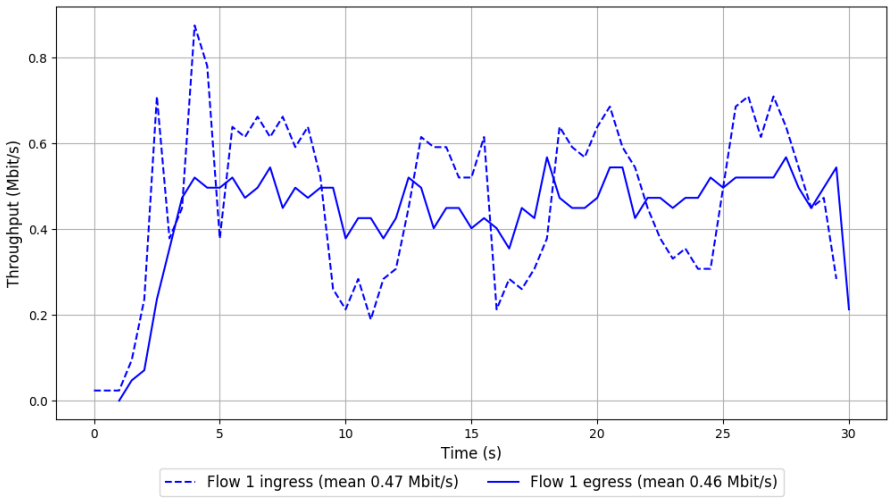


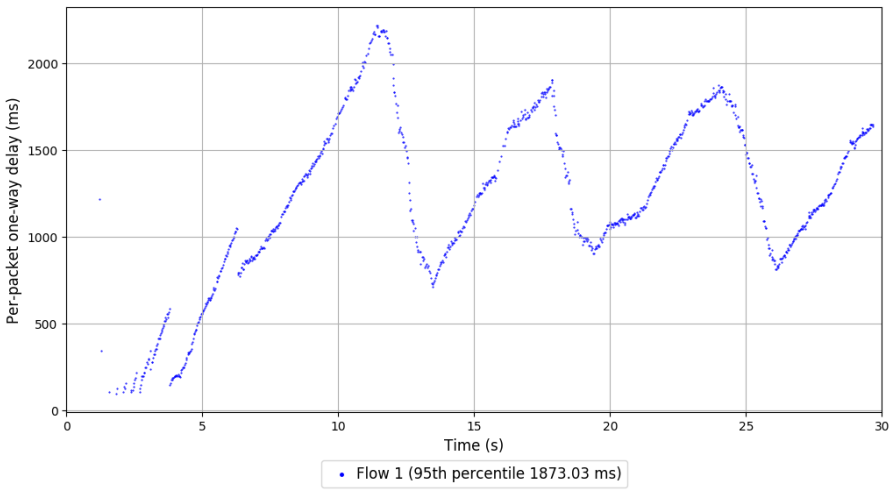
```
Run 2: Statistics of Verus

Start at: 2018-09-07 18:24:58
End at: 2018-09-07 18:25:28
Local clock offset: -60.902 ms
Remote clock offset: 6.659 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 1873.031 ms
Loss rate: 6.13%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 1873.031 ms
Loss rate: 6.13%
```

Run 2: Report of Verus — Data Link



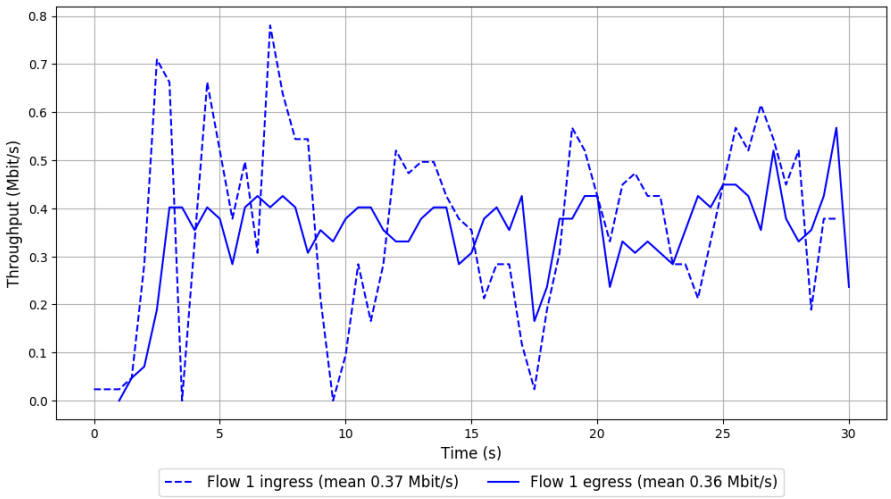


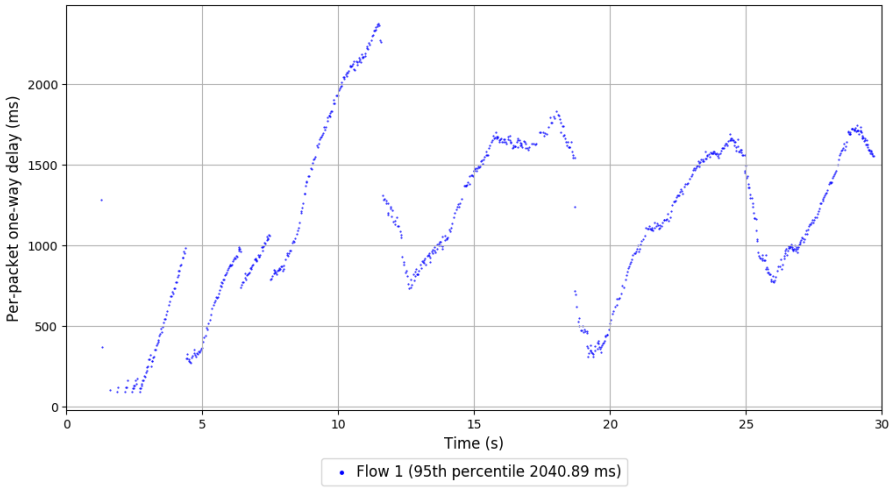
```
Run 3: Statistics of Verus

Start at: 2018-09-07 18:47:06
End at: 2018-09-07 18:47:36
Local clock offset: -61.71 ms
Remote clock offset: 10.449 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 2040.893 ms
Loss rate: 6.04%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 2040.893 ms
Loss rate: 6.04%
```

Run 3: Report of Verus — Data Link



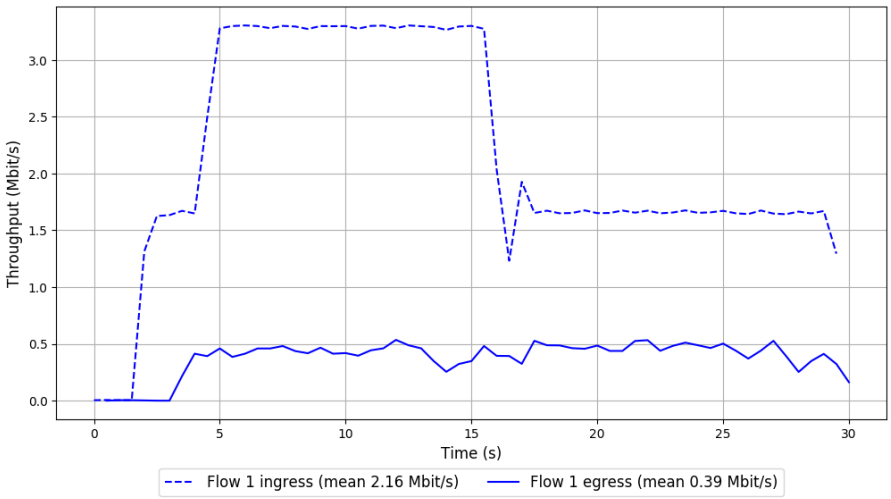


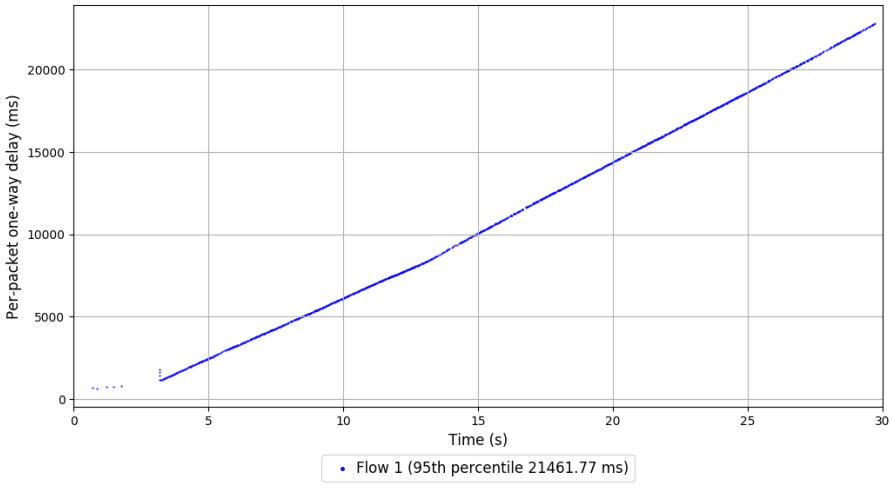
```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-07 17:51:52
End at: 2018-09-07 17:52:22
Local clock offset: -57.931 ms
Remote clock offset: 10.48 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 21461.772 ms
Loss rate: 82.27%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 21461.772 ms
Loss rate: 82.27%
```

Run 1: Report of PCC-Vivace — Data Link



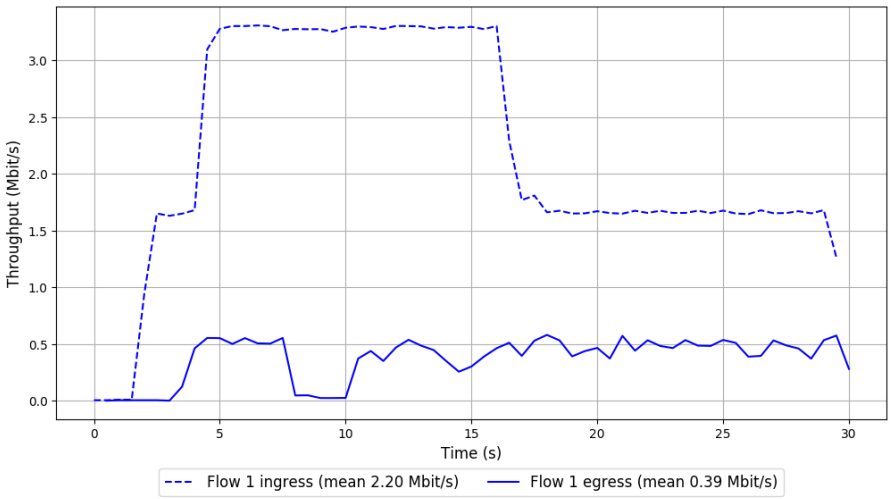


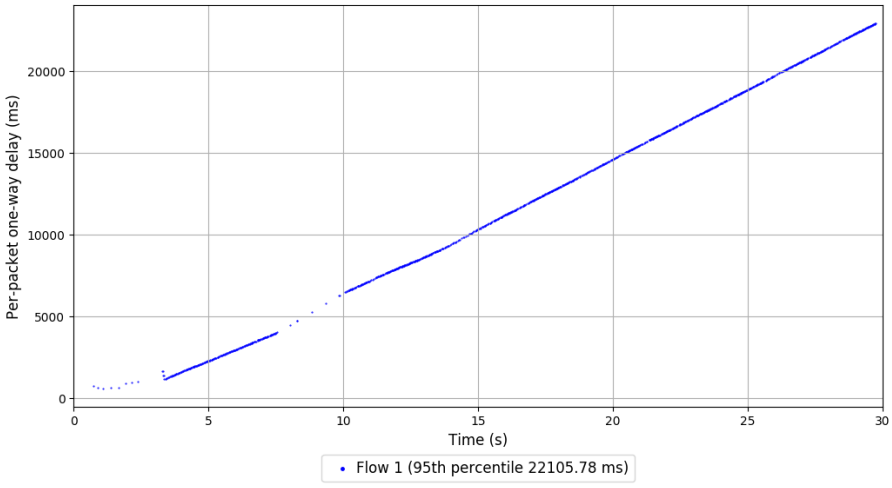
```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-07 18:13:39
End at: 2018-09-07 18:14:09
Local clock offset: -61.873 ms
Remote clock offset: 7.441 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 22105.777 ms
Loss rate: 82.84%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 22105.777 ms
Loss rate: 82.84%
```

Run 2: Report of PCC-Vivace — Data Link



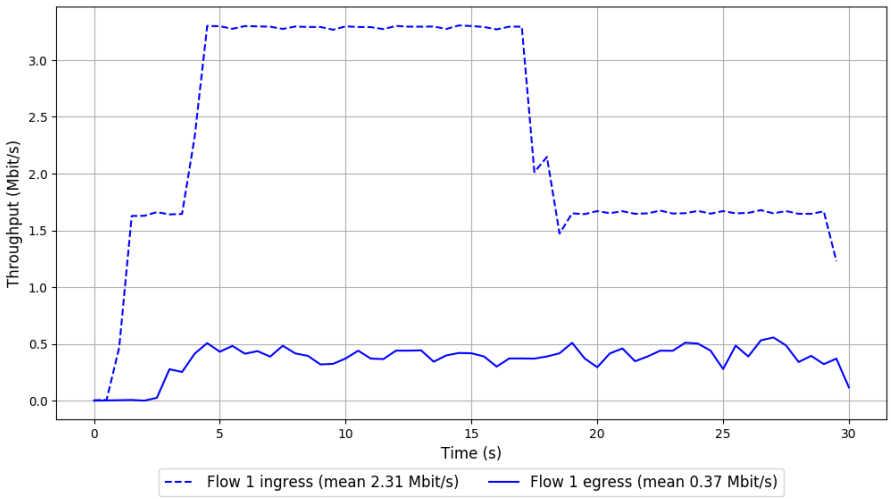


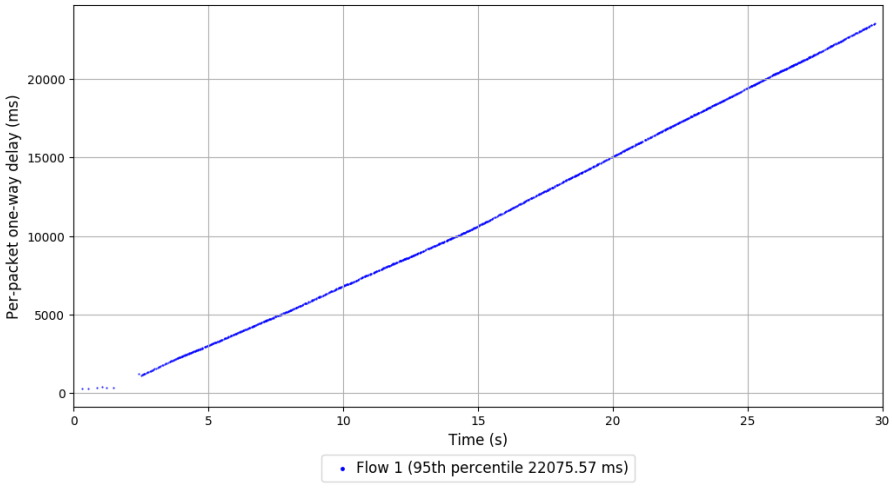
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-07 18:36:00
End at: 2018-09-07 18:36:30
Local clock offset: -61.941 ms
Remote clock offset: 9.782 ms

# Below is generated by plot.py at 2018-09-07 18:53:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 22075.570 ms
Loss rate: 84.06%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 22075.570 ms
Loss rate: 84.06%
```

Run 3: Report of PCC-Vivace — Data Link





Run 1: Statistics of WebRTC media

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/webrtc_

Run 1: Report of WebRTC media — Data Link

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Run 2: Statistics of WebRTC media

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/webrtc_

Run 2: Report of WebRTC media — Data Link

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Figure is missing

Run 3: Statistics of WebRTC media

/home/ubuntu/pantheon/data/2018-09-07T17-46-Colombia-cellular-to-AWS-Brazil-2-3-runs/webrtc_

Run 3: Report of WebRTC media — Data Link

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