

Pantheon Report

Generated at 2018-08-28 08:56:24 (UTC).

Data path: AWS Brazil 2 on **ens5** (*local*) → Colombia on **p4p1** (*remote*).

Repeated the test of 4 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.

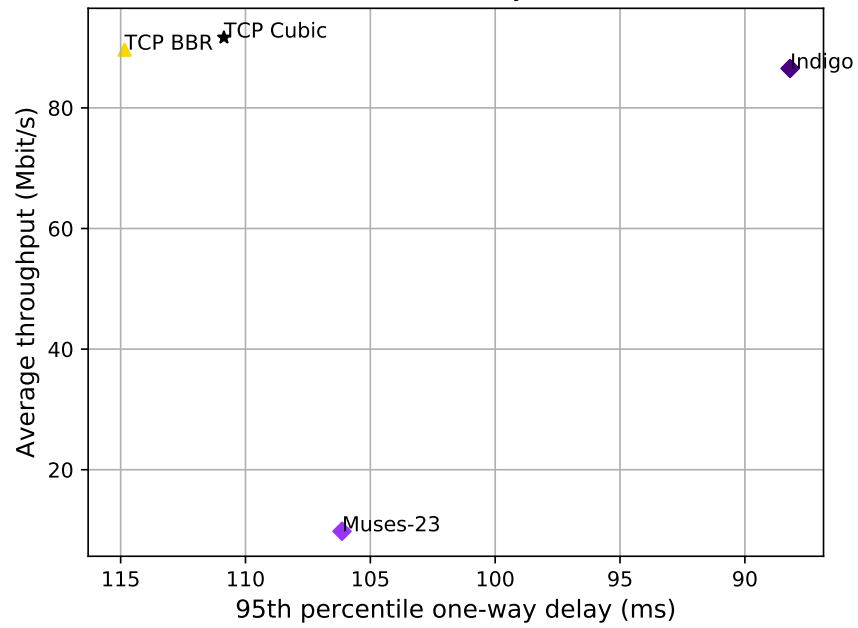
System info:

```
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
```

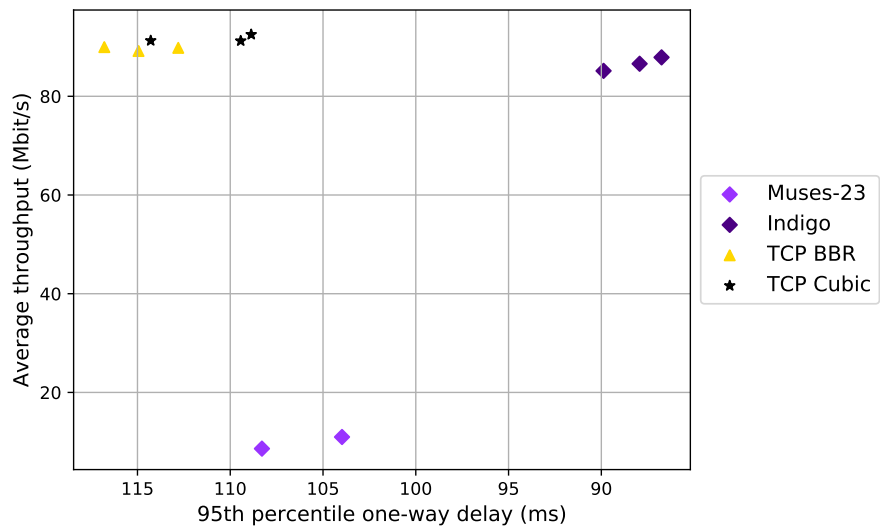
Git summary:

```
branch: muses-23 @ 88af05c5b0b7531637ca401951507a2fde628df6
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbf6e6db5ff5740dfe1771f813cd646339e1952
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 AWS Brazil 2 to Colombia, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS Brazil 2 to Colombia, 3 runs of 30s each per scheme



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	89.66	114.84	3.46
TCP Cubic	3	91.67	110.86	0.43
Indigo	3	86.54	88.19	1.14
Muses-23	2	9.79	106.13	66.22

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 08:42:45

End at: 2018-08-28 08:43:16

Local clock offset: 0.424 ms

Remote clock offset: 1.754 ms

Below is generated by plot.py at 2018-08-28 08:56:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.18 Mbit/s

95th percentile per-packet one-way delay: 114.943 ms

Loss rate: 3.28%

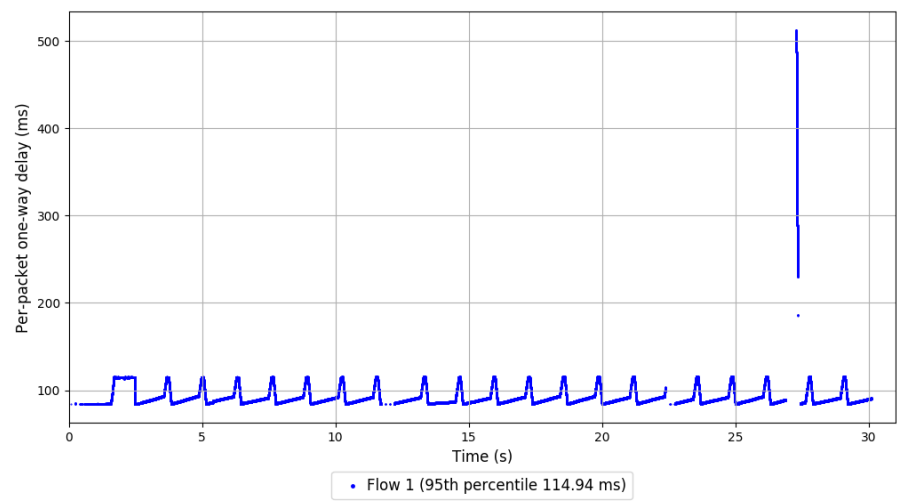
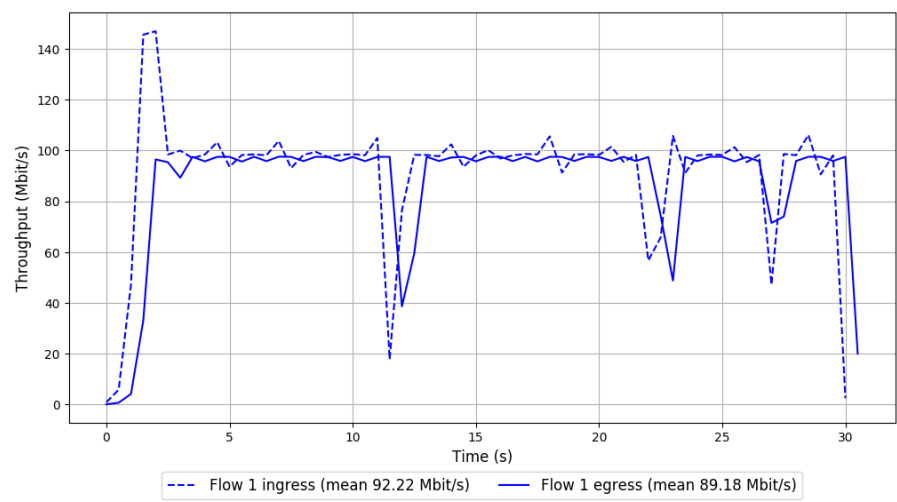
-- Flow 1:

Average throughput: 89.18 Mbit/s

95th percentile per-packet one-way delay: 114.943 ms

Loss rate: 3.28%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 08:47:26

End at: 2018-08-28 08:47:56

Local clock offset: 1.571 ms

Remote clock offset: 2.691 ms

Below is generated by plot.py at 2018-08-28 08:56:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.97 Mbit/s

95th percentile per-packet one-way delay: 116.787 ms

Loss rate: 3.51%

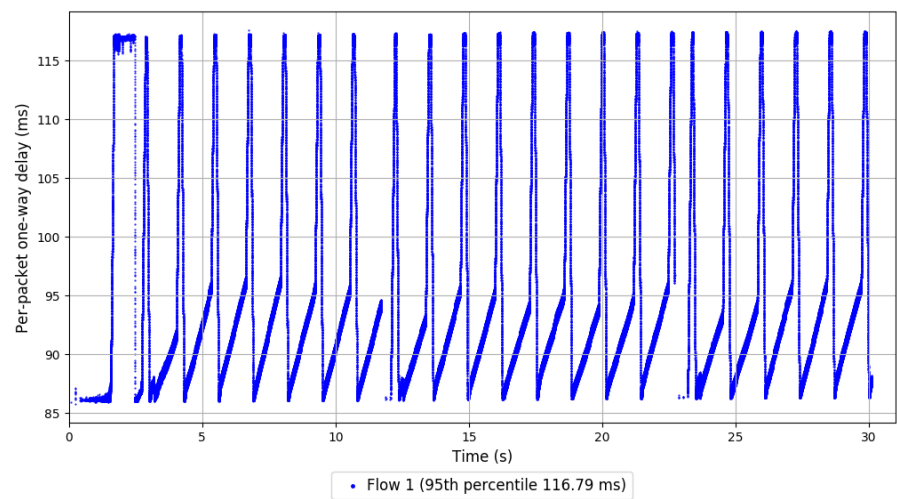
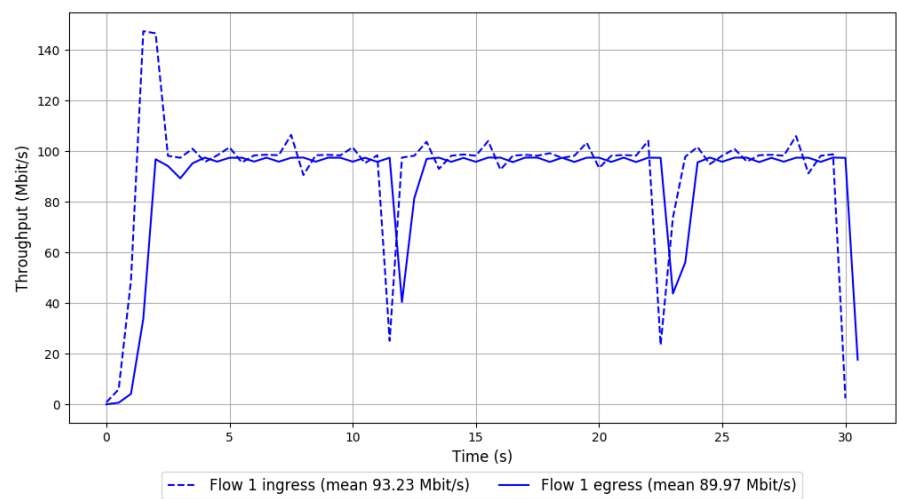
-- Flow 1:

Average throughput: 89.97 Mbit/s

95th percentile per-packet one-way delay: 116.787 ms

Loss rate: 3.51%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 08:52:06

End at: 2018-08-28 08:52:36

Local clock offset: 2.253 ms

Remote clock offset: -1.13 ms

Below is generated by plot.py at 2018-08-28 08:56:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.82 Mbit/s

95th percentile per-packet one-way delay: 112.802 ms

Loss rate: 3.58%

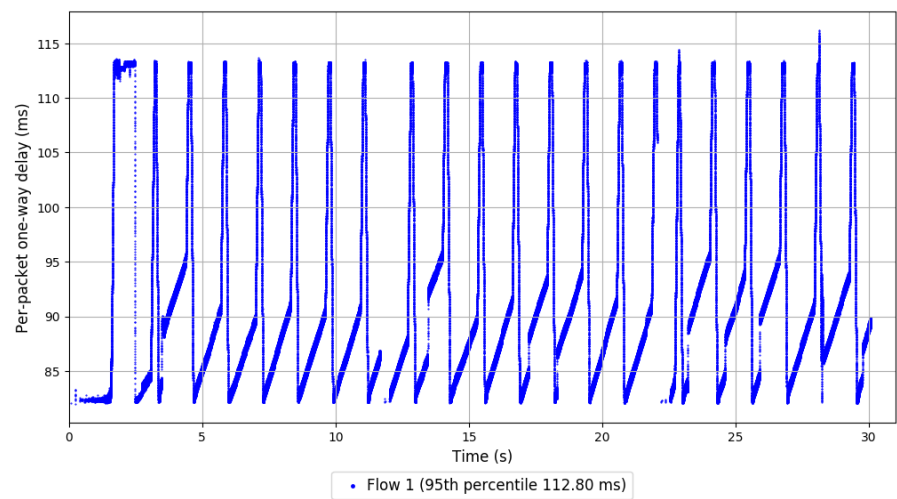
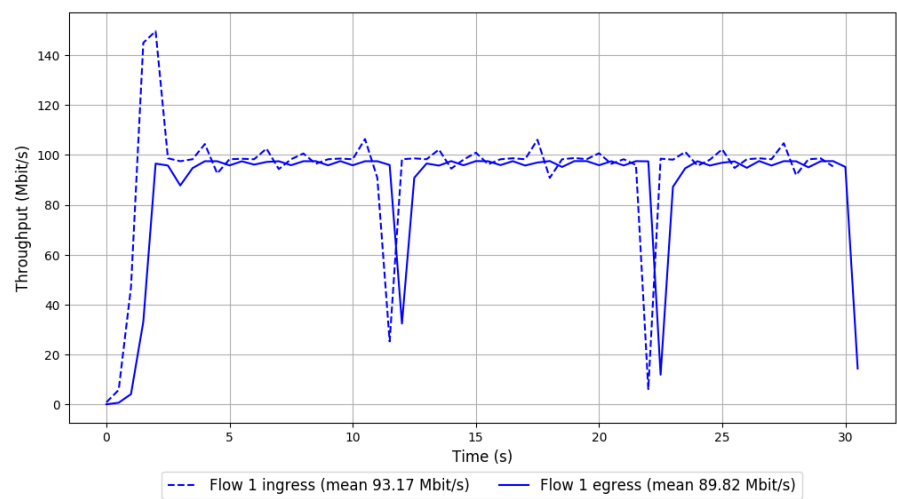
-- Flow 1:

Average throughput: 89.82 Mbit/s

95th percentile per-packet one-way delay: 112.802 ms

Loss rate: 3.58%

Run 3: Report of TCP BBR — Data Link

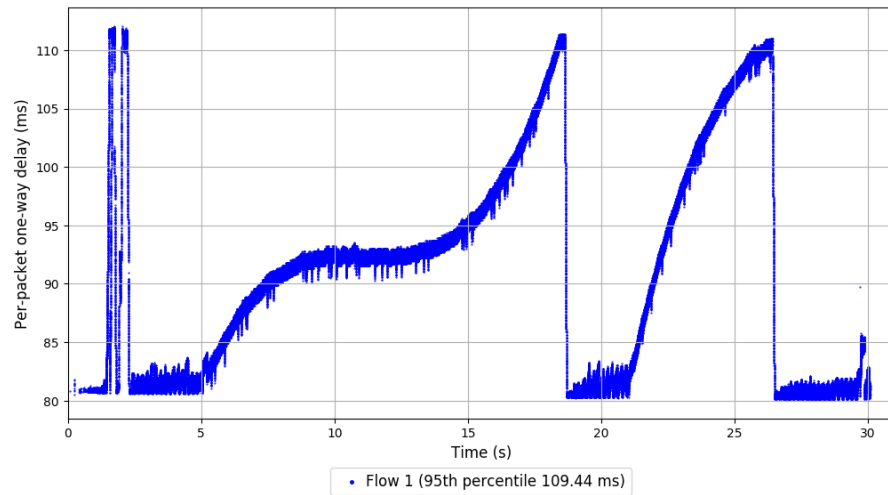
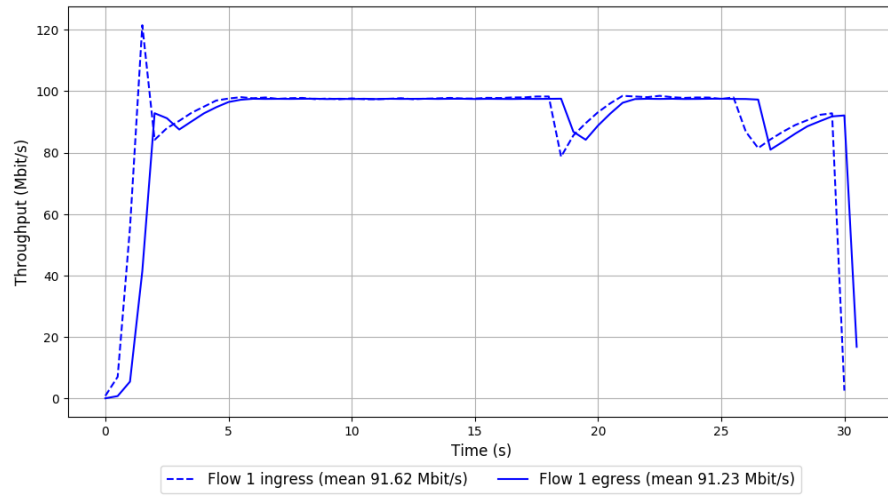


Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 08:41:34
End at: 2018-08-28 08:42:05
Local clock offset: 3.165 ms
Remote clock offset: -2.127 ms

Below is generated by plot.py at 2018-08-28 08:56:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 91.23 Mbit/s
95th percentile per-packet one-way delay: 109.436 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 91.23 Mbit/s
95th percentile per-packet one-way delay: 109.436 ms
Loss rate: 0.44%

Run 1: Report of TCP Cubic — Data Link

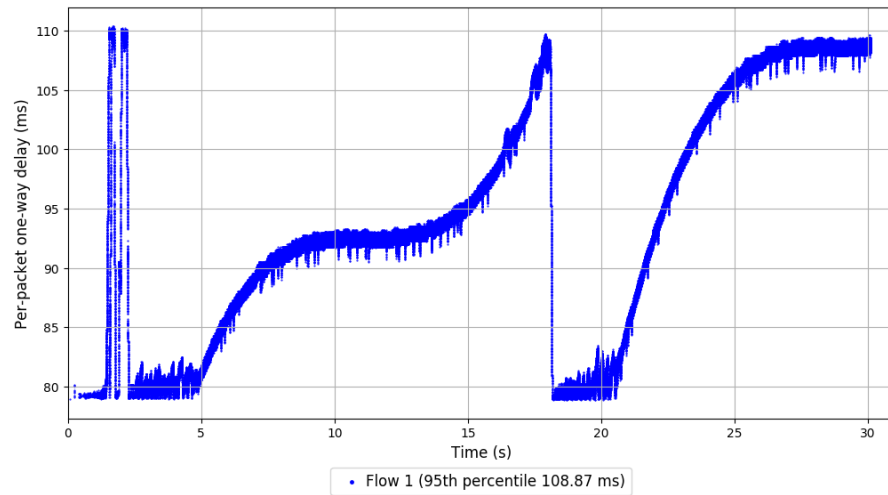
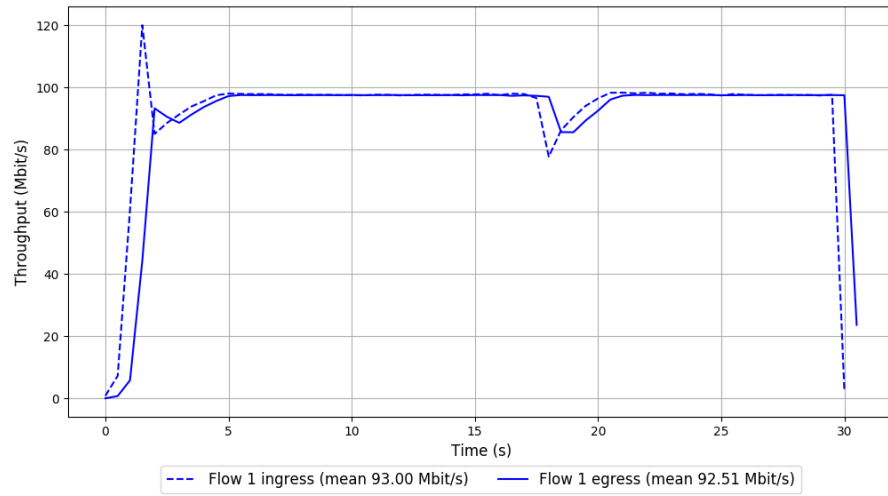


Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 08:46:15
End at: 2018-08-28 08:46:45
Local clock offset: 1.678 ms
Remote clock offset: -2.392 ms

Below is generated by plot.py at 2018-08-28 08:56:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.51 Mbit/s
95th percentile per-packet one-way delay: 108.870 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 92.51 Mbit/s
95th percentile per-packet one-way delay: 108.870 ms
Loss rate: 0.42%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 08:50:55

End at: 2018-08-28 08:51:26

Local clock offset: 3.063 ms

Remote clock offset: 3.73 ms

Below is generated by plot.py at 2018-08-28 08:56:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.27 Mbit/s

95th percentile per-packet one-way delay: 114.287 ms

Loss rate: 0.43%

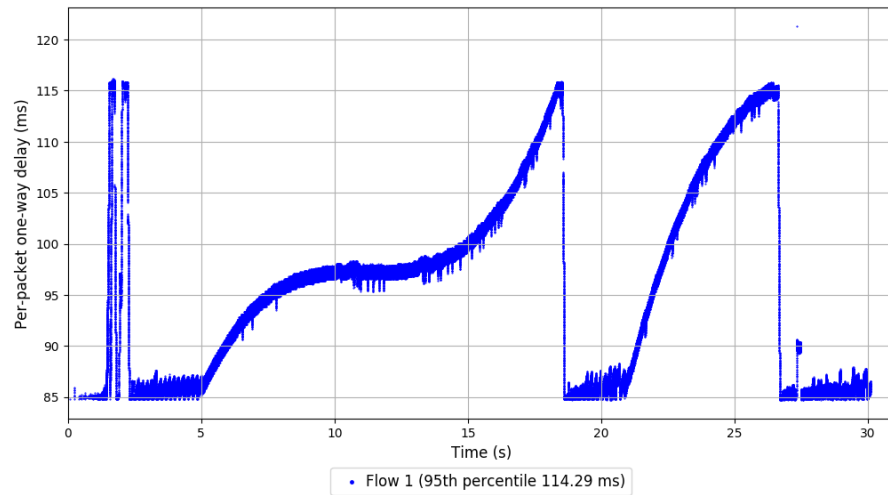
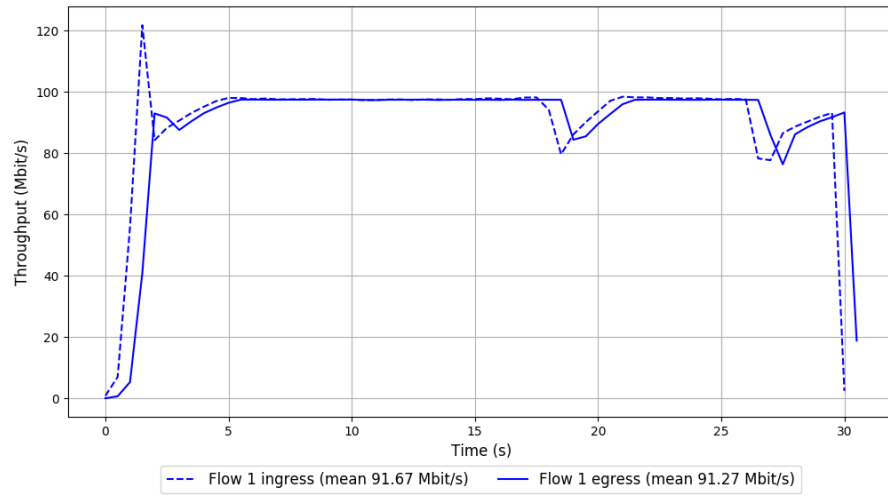
-- Flow 1:

Average throughput: 91.27 Mbit/s

95th percentile per-packet one-way delay: 114.287 ms

Loss rate: 0.43%

Run 3: Report of TCP Cubic — Data Link

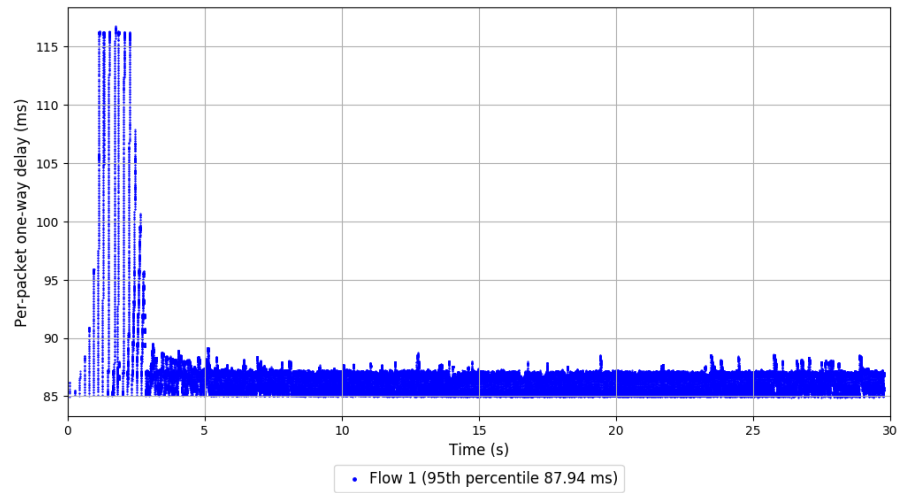
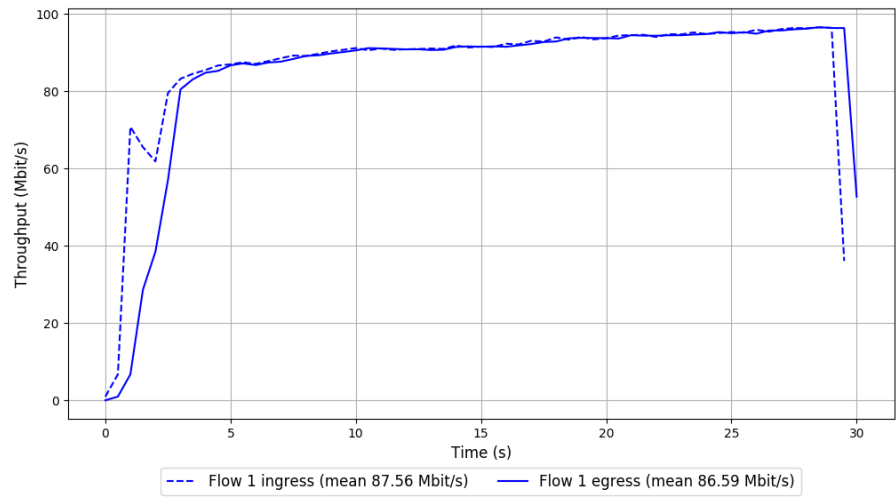


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 08:45:04
End at: 2018-08-28 08:45:34
Local clock offset: 1.342 ms
Remote clock offset: 2.782 ms

# Below is generated by plot.py at 2018-08-28 08:56:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.59 Mbit/s
95th percentile per-packet one-way delay: 87.936 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 86.59 Mbit/s
95th percentile per-packet one-way delay: 87.936 ms
Loss rate: 1.11%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 08:49:44

End at: 2018-08-28 08:50:14

Local clock offset: 2.906 ms

Remote clock offset: 3.768 ms

Below is generated by plot.py at 2018-08-28 08:56:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 85.15 Mbit/s

95th percentile per-packet one-way delay: 89.879 ms

Loss rate: 1.57%

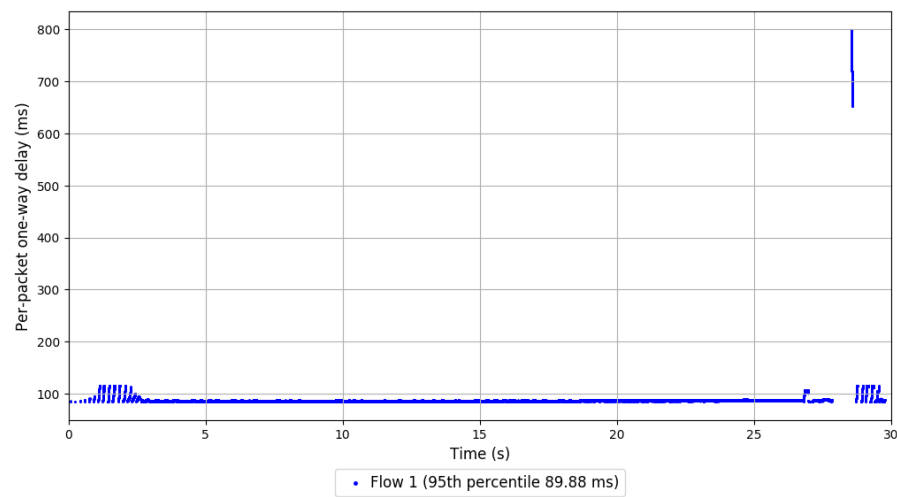
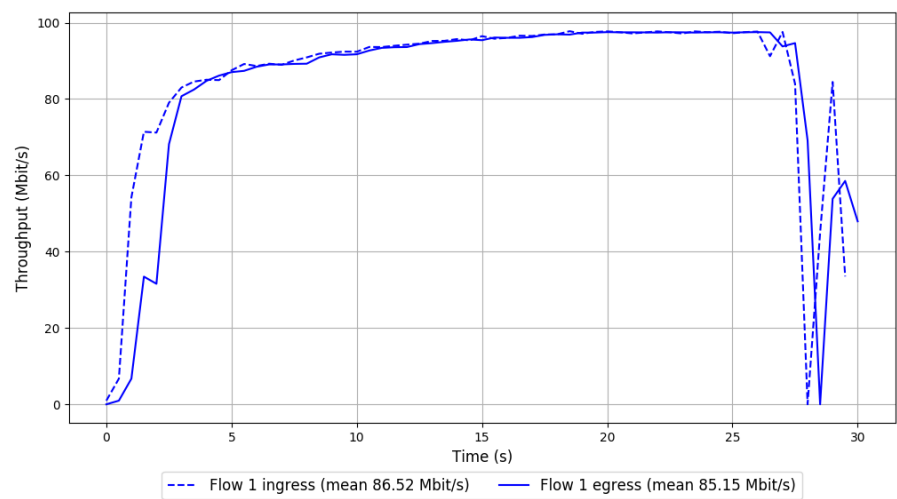
-- Flow 1:

Average throughput: 85.15 Mbit/s

95th percentile per-packet one-way delay: 89.879 ms

Loss rate: 1.57%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-28 08:54:23

End at: 2018-08-28 08:54:53

Local clock offset: 2.699 ms

Remote clock offset: -0.954 ms

Below is generated by plot.py at 2018-08-28 08:56:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 87.88 Mbit/s

95th percentile per-packet one-way delay: 86.754 ms

Loss rate: 0.74%

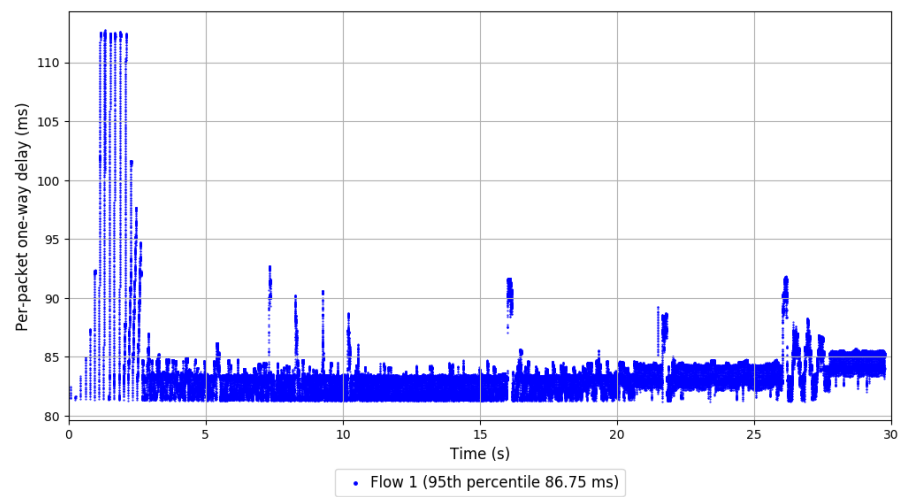
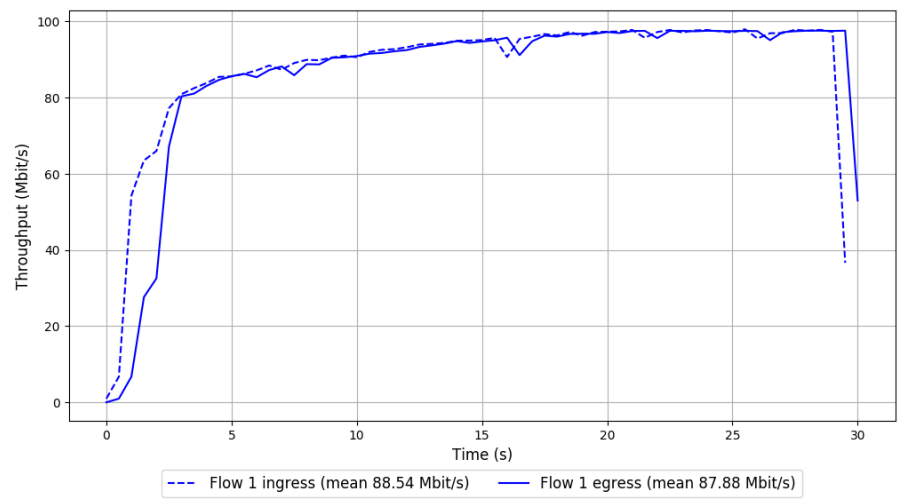
-- Flow 1:

Average throughput: 87.88 Mbit/s

95th percentile per-packet one-way delay: 86.754 ms

Loss rate: 0.74%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-23

Start at: 2018-08-28 08:43:57

End at: 2018-08-28 08:44:27

Local clock offset: 0.626 ms

Remote clock offset: 2.881 ms

Below is generated by plot.py at 2018-08-28 08:56:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 10.97 Mbit/s

95th percentile per-packet one-way delay: 103.976 ms

Loss rate: 61.95%

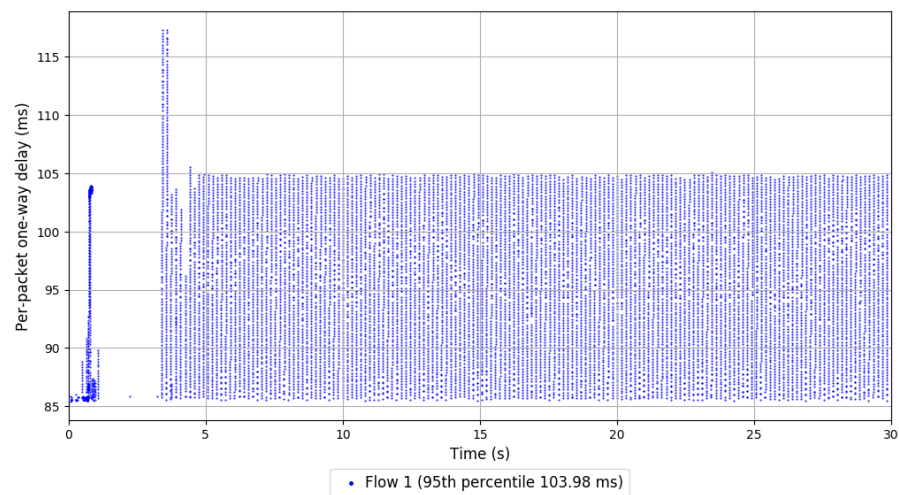
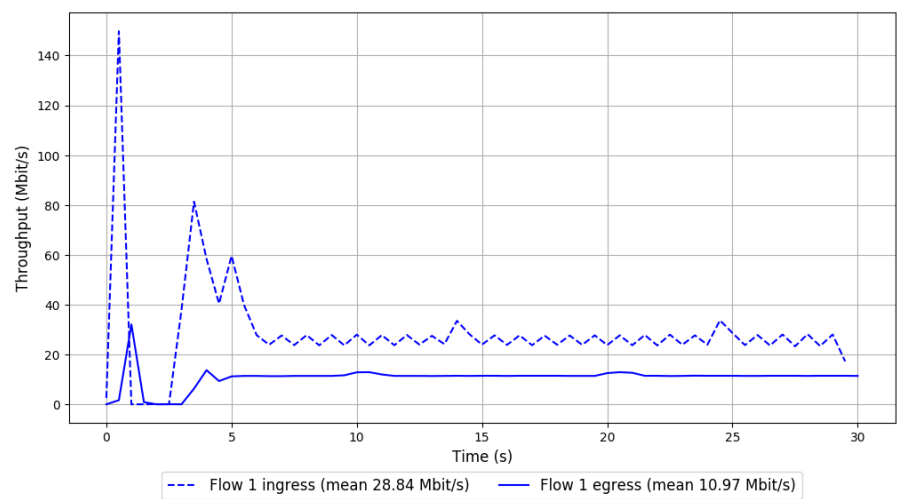
-- Flow 1:

Average throughput: 10.97 Mbit/s

95th percentile per-packet one-way delay: 103.976 ms

Loss rate: 61.95%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 08:48:37

End at: 2018-08-28 08:49:07

Local clock offset: 0.914 ms

Remote clock offset: 3.767 ms

Below is generated by plot.py at 2018-08-28 08:56:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.61 Mbit/s

95th percentile per-packet one-way delay: 108.292 ms

Loss rate: 70.49%

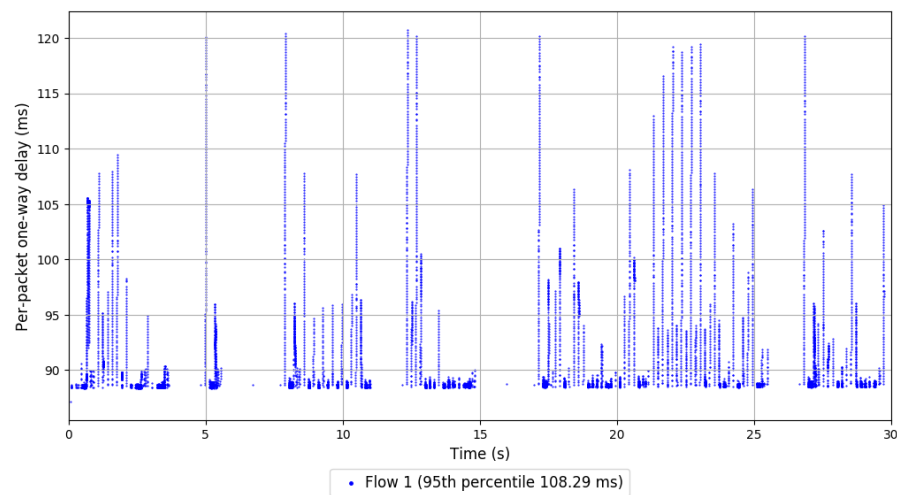
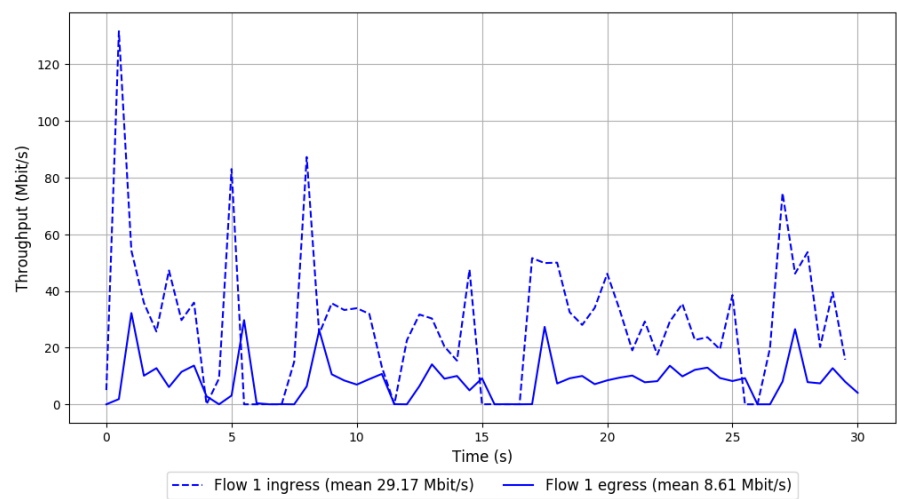
-- Flow 1:

Average throughput: 8.61 Mbit/s

95th percentile per-packet one-way delay: 108.292 ms

Loss rate: 70.49%

Run 2: Report of Muses-23 — Data Link



Run 3: Statistics of Muses-23

Start at: 2018-08-28 08:53:17

End at: 2018-08-28 08:53:47

Local clock offset: 2.044 ms

Remote clock offset: 2.886 ms

Run 3: Report of Muses-23 — Data Link

