

Pantheon Report

Generated at 2018-09-03 08:37:19 (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.

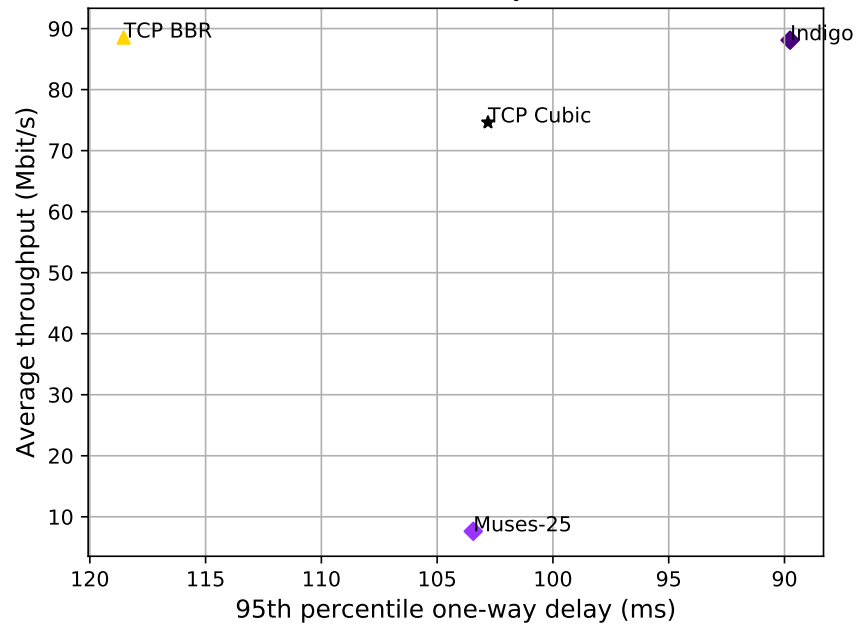
System info:

```
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
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

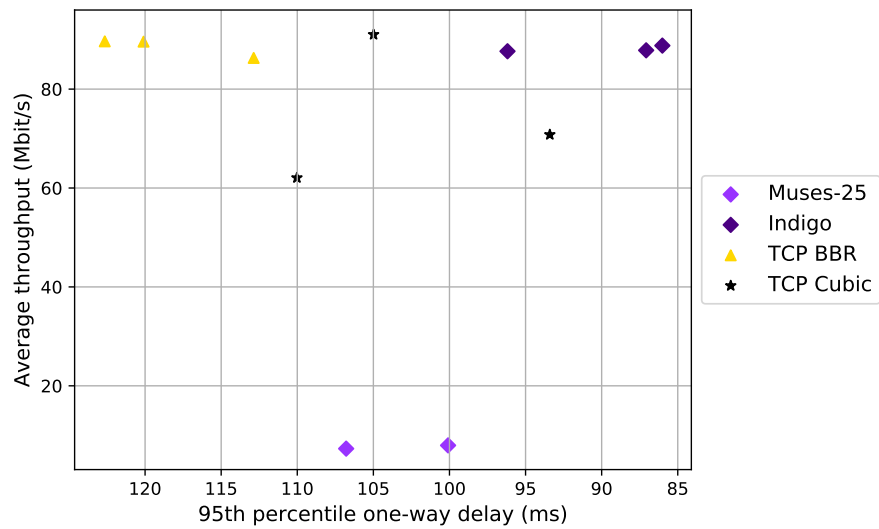
Git summary:

```
branch: muses @ f309f5459e2c5237279a184e52ece7a2b47ef1c9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b8d5019b83a3a678804d830fcfe1da7b3a63421b
third_party/pantheon-tunnel @ cbfce6db5ff5740dfe1771f813cd646339e1952
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	88.52	118.54	3.35
TCP Cubic	3	74.62	102.81	1.10
Indigo	3	88.10	89.76	3.38
Muses-25	2	7.62	103.44	71.02

Run 1: Statistics of TCP BBR

Start at: 2018-09-03 08:22:25

End at: 2018-09-03 08:22:55

Local clock offset: -3.924 ms

Remote clock offset: 2.046 ms

Below is generated by plot.py at 2018-09-03 08:37:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 86.31 Mbit/s

95th percentile per-packet one-way delay: 112.864 ms

Loss rate: 4.58%

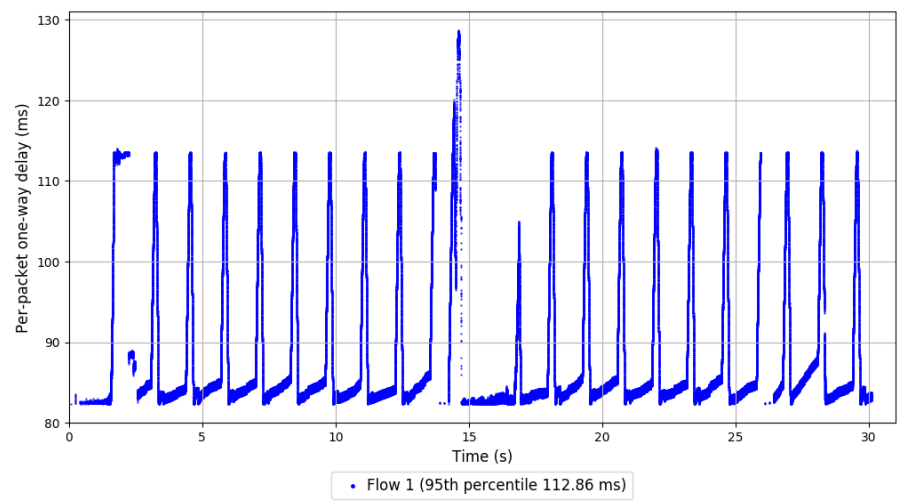
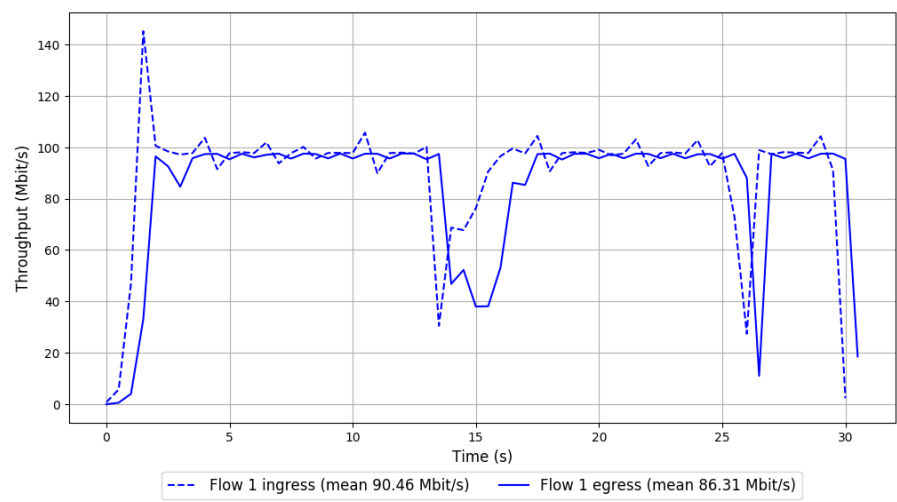
-- Flow 1:

Average throughput: 86.31 Mbit/s

95th percentile per-packet one-way delay: 112.864 ms

Loss rate: 4.58%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-03 08:27:05

End at: 2018-09-03 08:27:35

Local clock offset: -4.672 ms

Remote clock offset: 2.199 ms

Below is generated by plot.py at 2018-09-03 08:37:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.60 Mbit/s

95th percentile per-packet one-way delay: 120.100 ms

Loss rate: 3.05%

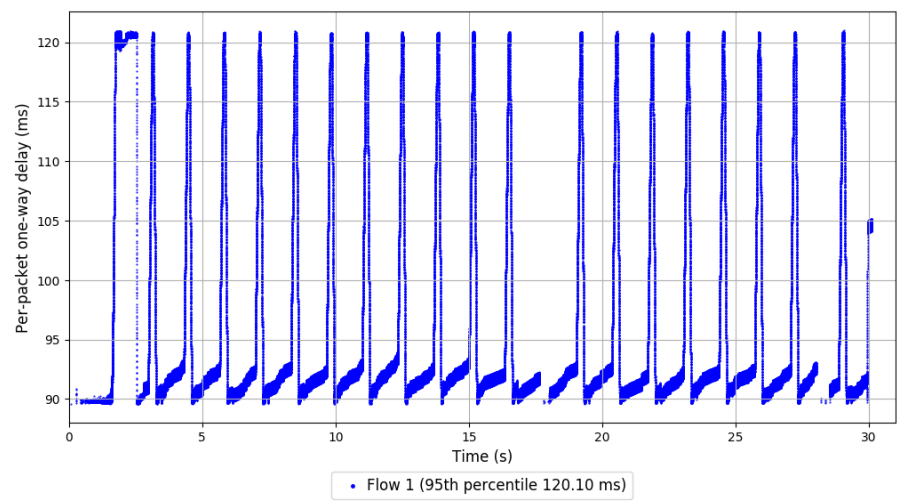
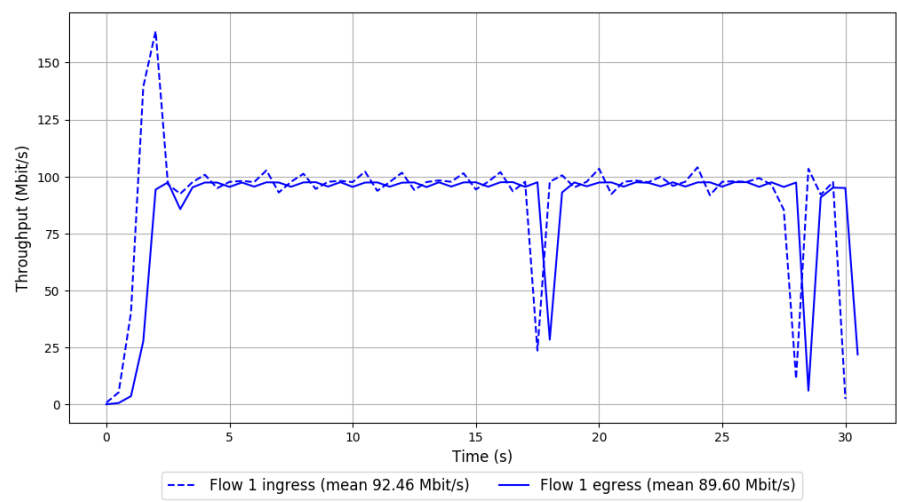
-- Flow 1:

Average throughput: 89.60 Mbit/s

95th percentile per-packet one-way delay: 120.100 ms

Loss rate: 3.05%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-03 08:31:50

End at: 2018-09-03 08:32:20

Local clock offset: -3.505 ms

Remote clock offset: 4.344 ms

Below is generated by plot.py at 2018-09-03 08:37:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.66 Mbit/s

95th percentile per-packet one-way delay: 122.649 ms

Loss rate: 2.42%

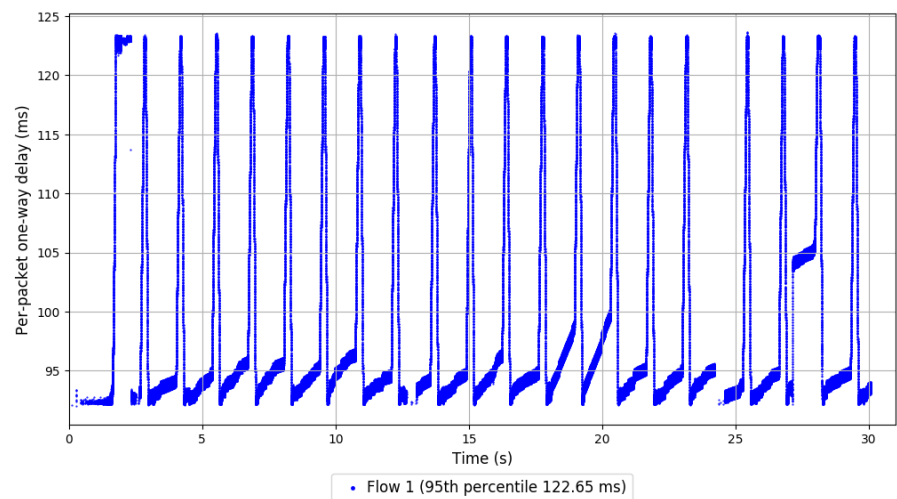
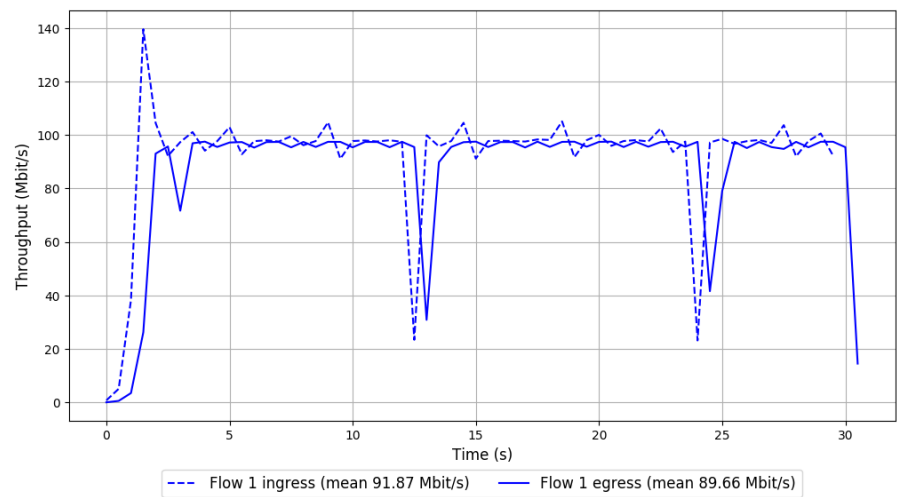
-- Flow 1:

Average throughput: 89.66 Mbit/s

95th percentile per-packet one-way delay: 122.649 ms

Loss rate: 2.42%

Run 3: Report of TCP BBR — Data Link

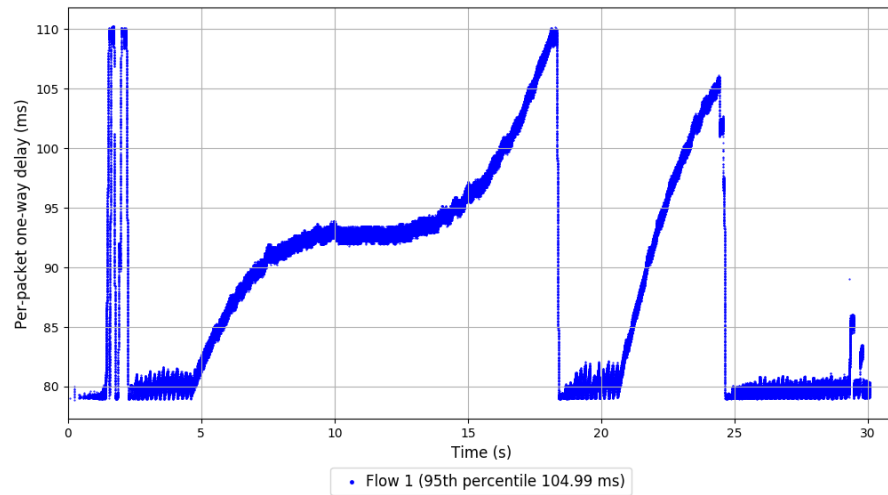
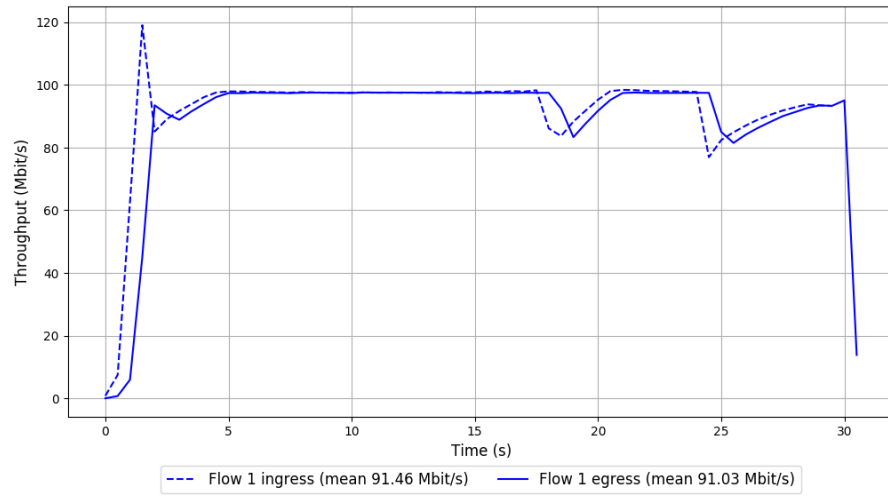


Run 1: Statistics of TCP Cubic

Start at: 2018-09-03 08:25:54
End at: 2018-09-03 08:26:24
Local clock offset: -3.936 ms
Remote clock offset: -1.891 ms

Below is generated by plot.py at 2018-09-03 08:37:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 91.03 Mbit/s
95th percentile per-packet one-way delay: 104.986 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 91.03 Mbit/s
95th percentile per-packet one-way delay: 104.986 ms
Loss rate: 0.47%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-03 08:30:35

End at: 2018-09-03 08:31:05

Local clock offset: -3.569 ms

Remote clock offset: 3.268 ms

Below is generated by plot.py at 2018-09-03 08:37:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 62.06 Mbit/s

95th percentile per-packet one-way delay: 110.024 ms

Loss rate: 1.48%

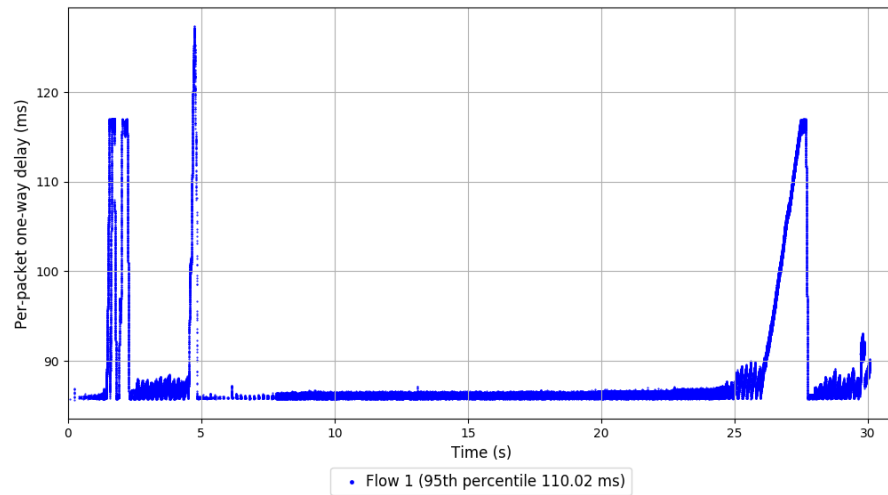
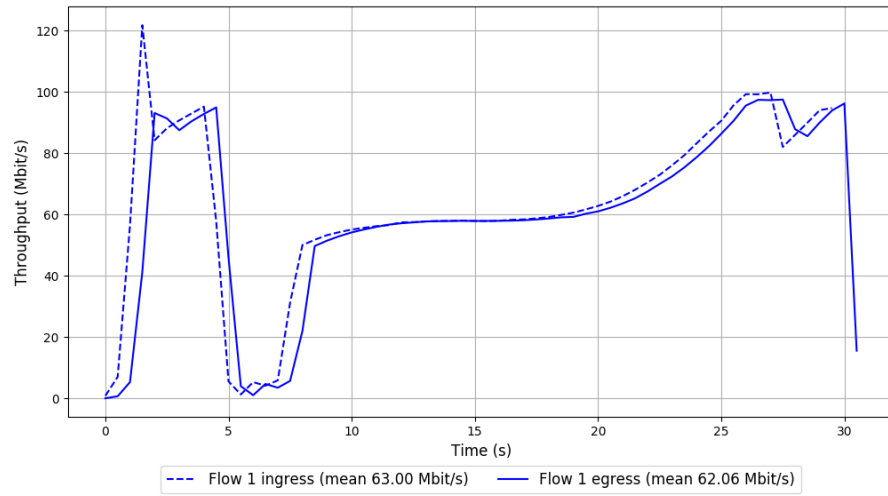
-- Flow 1:

Average throughput: 62.06 Mbit/s

95th percentile per-packet one-way delay: 110.024 ms

Loss rate: 1.48%

Run 2: Report of TCP Cubic — Data Link

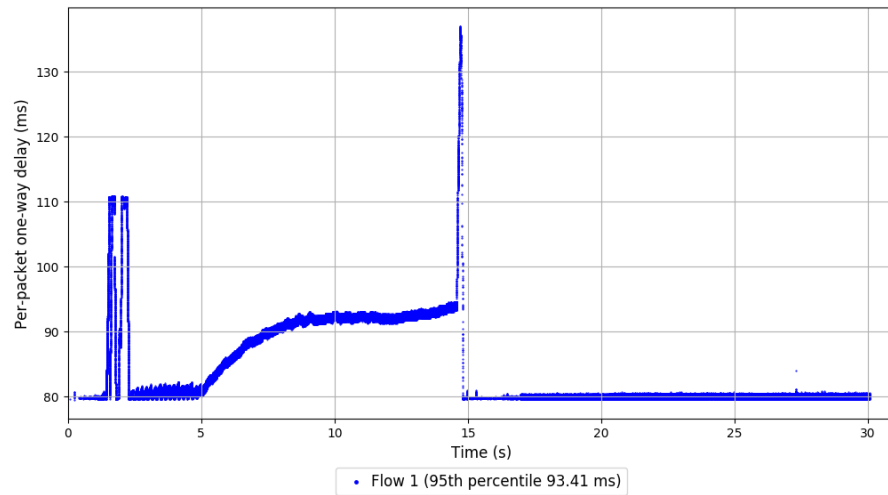
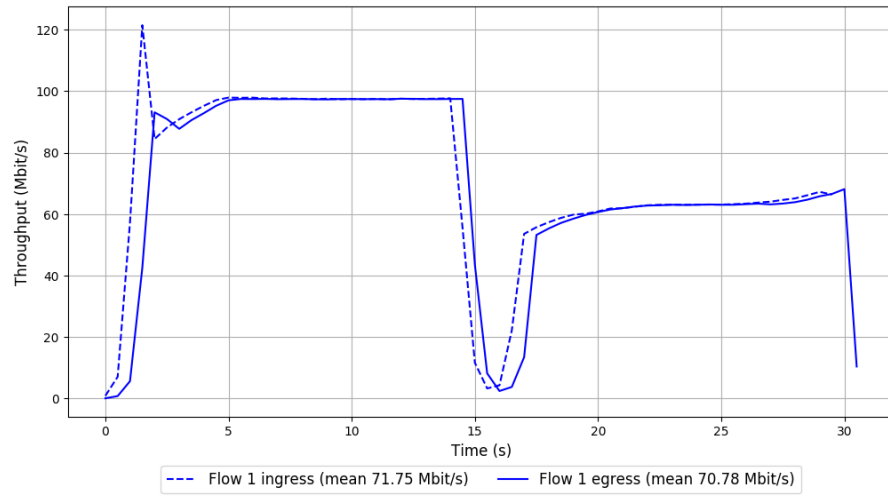


Run 3: Statistics of TCP Cubic

Start at: 2018-09-03 08:35:24
End at: 2018-09-03 08:35:54
Local clock offset: -3.241 ms
Remote clock offset: -0.473 ms

Below is generated by plot.py at 2018-09-03 08:37:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 70.78 Mbit/s
95th percentile per-packet one-way delay: 93.407 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 70.78 Mbit/s
95th percentile per-packet one-way delay: 93.407 ms
Loss rate: 1.34%

Run 3: Report of TCP Cubic — Data Link

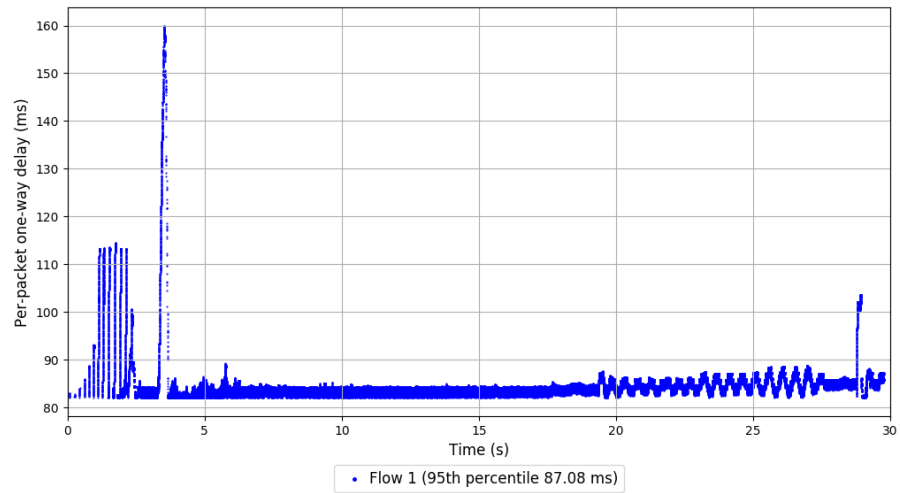
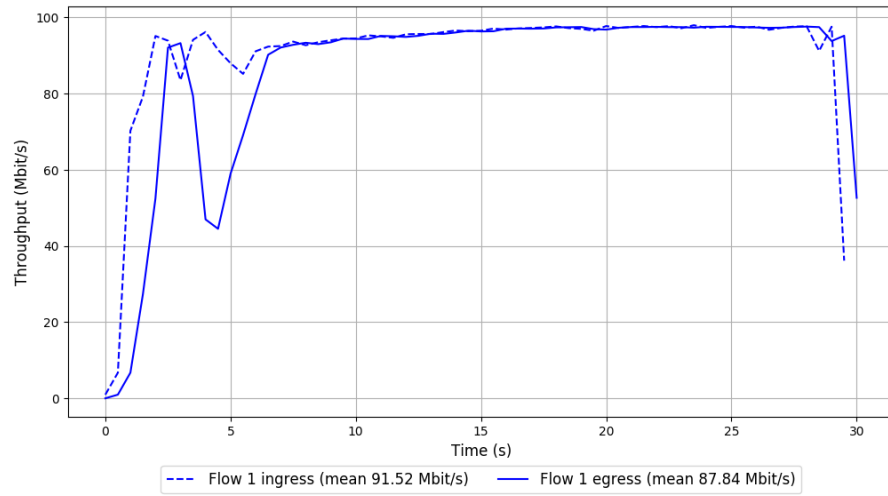


```
Run 1: Statistics of Indigo

Start at: 2018-09-03 08:23:36
End at: 2018-09-03 08:24:06
Local clock offset: -4.77 ms
Remote clock offset: -0.79 ms

# Below is generated by plot.py at 2018-09-03 08:37:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.84 Mbit/s
95th percentile per-packet one-way delay: 87.076 ms
Loss rate: 4.01%
-- Flow 1:
Average throughput: 87.84 Mbit/s
95th percentile per-packet one-way delay: 87.076 ms
Loss rate: 4.01%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-03 08:28:16

End at: 2018-09-03 08:28:46

Local clock offset: -3.685 ms

Remote clock offset: 4.282 ms

Below is generated by plot.py at 2018-09-03 08:37:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 87.66 Mbit/s

95th percentile per-packet one-way delay: 96.187 ms

Loss rate: 5.44%

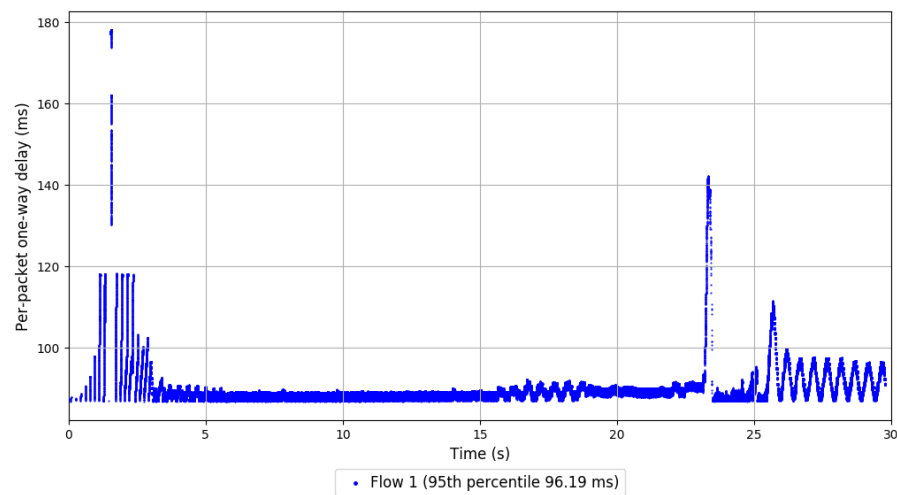
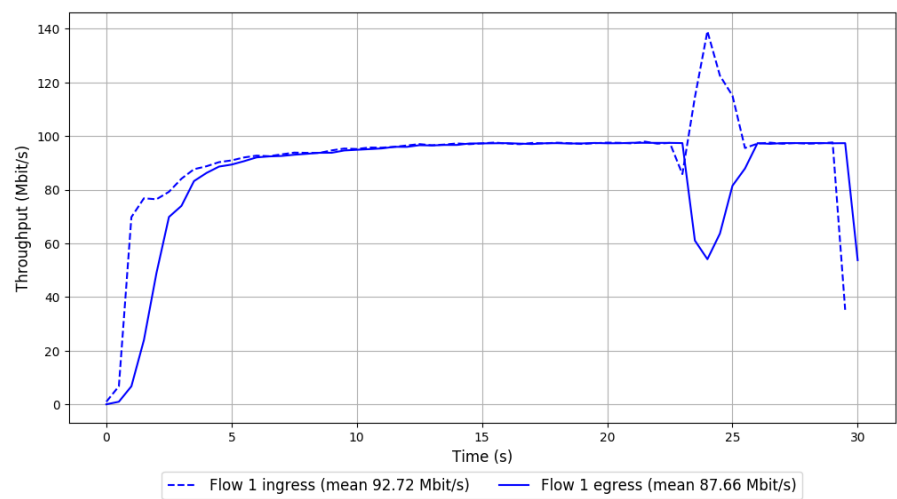
-- Flow 1:

Average throughput: 87.66 Mbit/s

95th percentile per-packet one-way delay: 96.187 ms

Loss rate: 5.44%

Run 2: Report of Indigo — Data Link

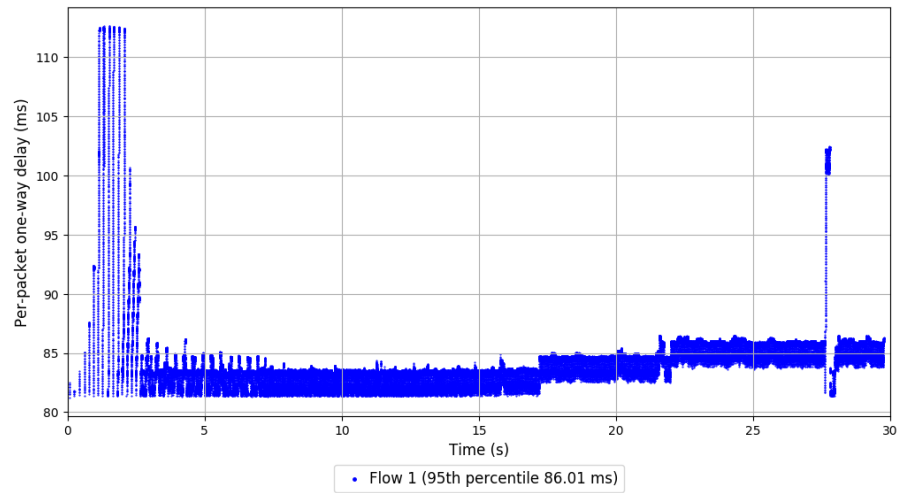
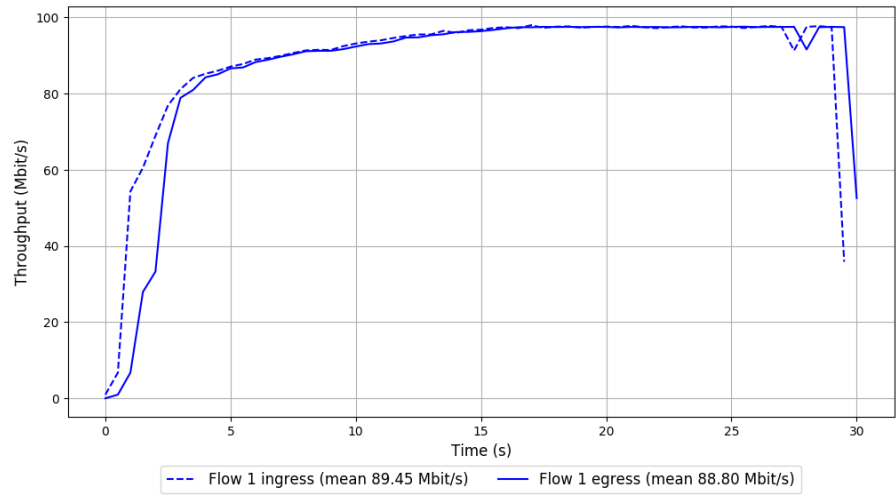


Run 3: Statistics of Indigo

Start at: 2018-09-03 08:33:05
End at: 2018-09-03 08:33:36
Local clock offset: -3.358 ms
Remote clock offset: -0.576 ms

Below is generated by plot.py at 2018-09-03 08:37:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 88.80 Mbit/s
95th percentile per-packet one-way delay: 86.012 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 88.80 Mbit/s
95th percentile per-packet one-way delay: 86.012 ms
Loss rate: 0.70%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

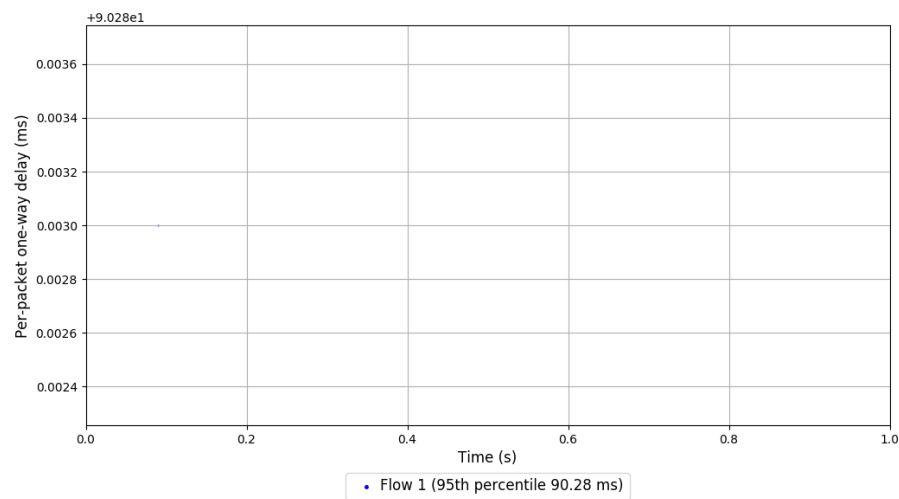
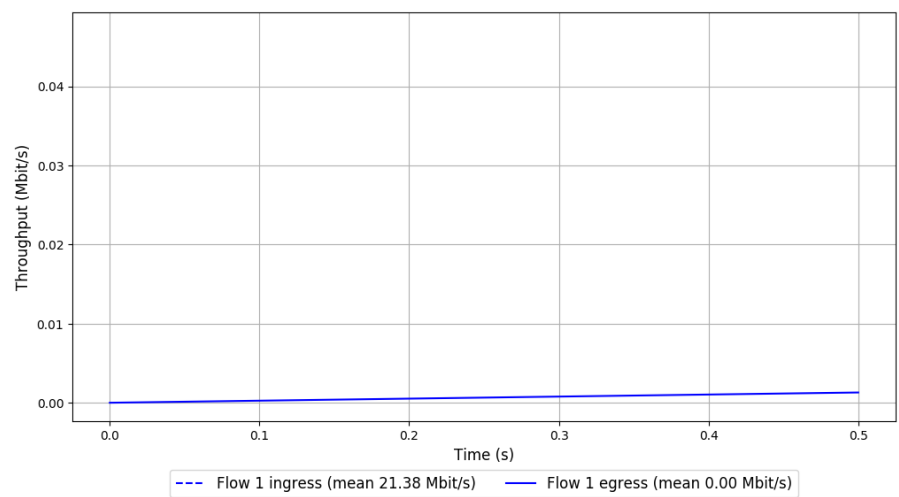
Start at: 2018-09-03 08:24:48

End at: 2018-09-03 08:25:18

Local clock offset: -4.784 ms

Remote clock offset: 3.202 ms

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-03 08:29:28

End at: 2018-09-03 08:29:58

Local clock offset: -4.357 ms

Remote clock offset: 3.15 ms

Below is generated by plot.py at 2018-09-03 08:37:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.30 Mbit/s

95th percentile per-packet one-way delay: 106.788 ms

Loss rate: 76.18%

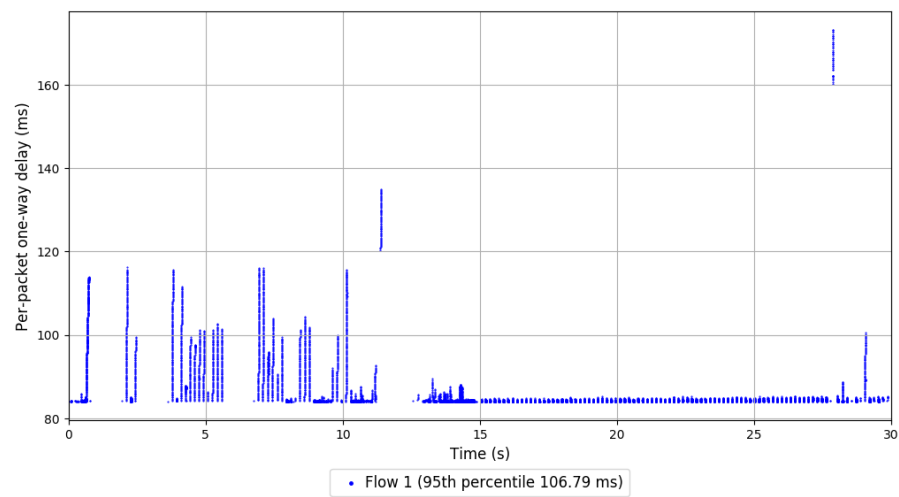
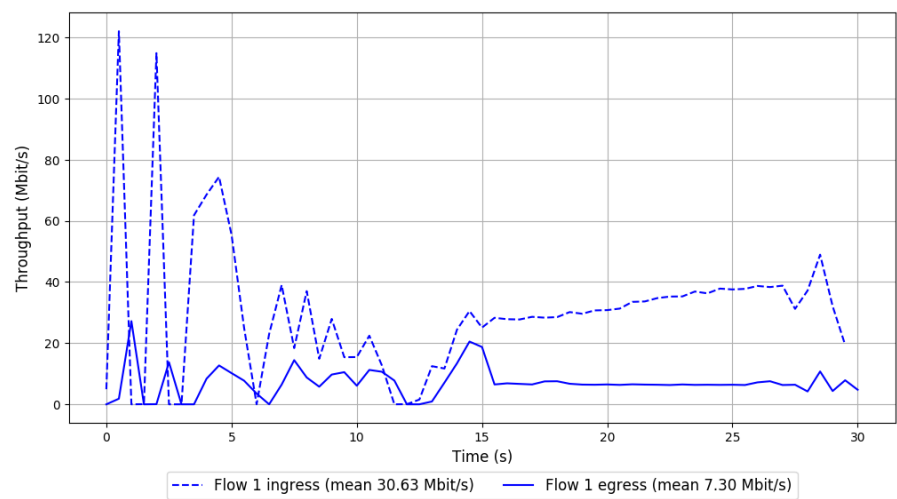
-- Flow 1:

Average throughput: 7.30 Mbit/s

95th percentile per-packet one-way delay: 106.788 ms

Loss rate: 76.18%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-03 08:34:17

End at: 2018-09-03 08:34:47

Local clock offset: -3.283 ms

Remote clock offset: 4.405 ms

Below is generated by plot.py at 2018-09-03 08:37:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.95 Mbit/s

95th percentile per-packet one-way delay: 100.092 ms

Loss rate: 65.86%

-- Flow 1:

Average throughput: 7.95 Mbit/s

95th percentile per-packet one-way delay: 100.092 ms

Loss rate: 65.86%

Run 3: Report of Muses-25 — Data Link

