

Pantheon Report

Generated at 2018-08-31 08:40:07 (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.

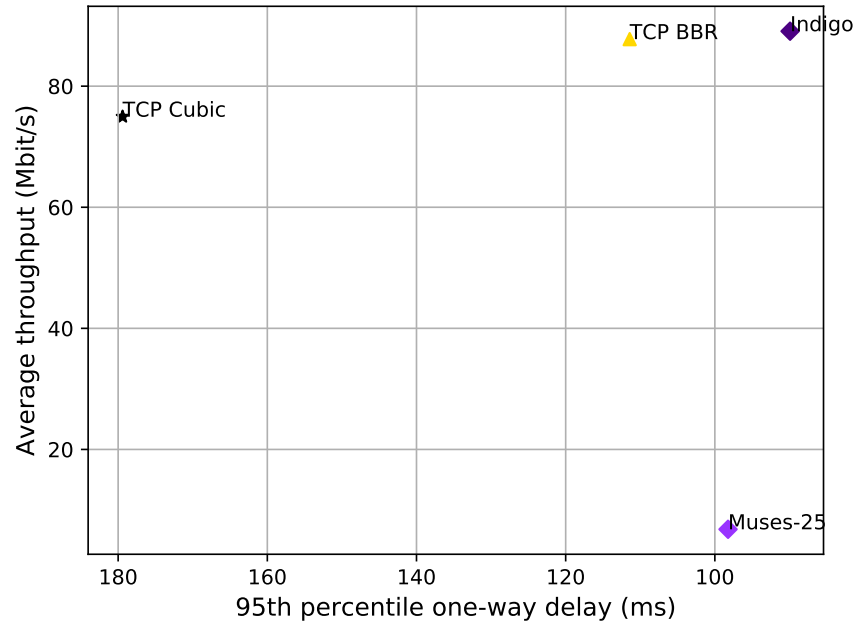
System info:

```
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
```

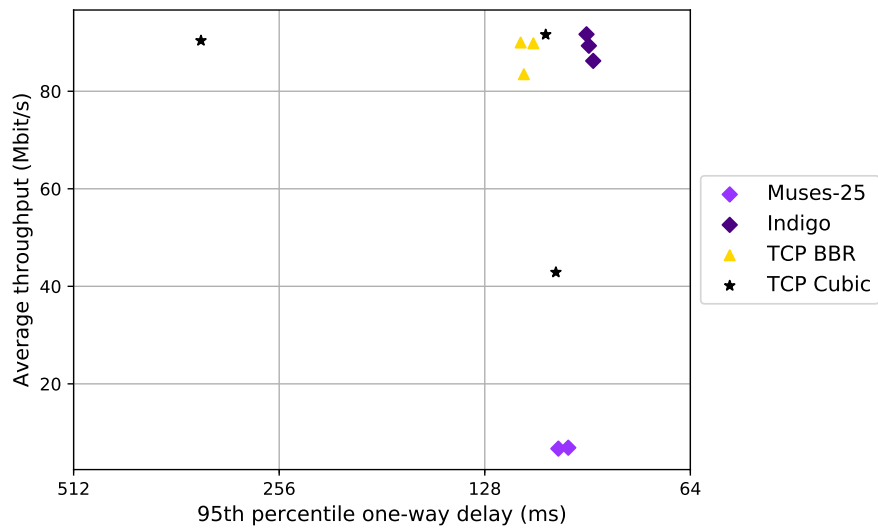
Git summary:

```
branch: muses @ e3c5aa19ca94c3066828fb83f16a8fb6b2731e7a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b59e0d118c50af3579569c462d33045741c85981
third_party/pantheon-tunnel @ cbfce6db5ff5740d4fe1771f813cd646339e1952
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	87.77	111.42	3.38
TCP Cubic	3	74.96	179.40	0.38
Indigo	3	89.08	89.91	3.01
Muses-25	2	6.81	98.23	71.64

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 08:26:19

End at: 2018-08-31 08:26:49

Local clock offset: 2.995 ms

Remote clock offset: 1.92 ms

Below is generated by plot.py at 2018-08-31 08:39:57

Datalink statistics

-- Total of 1 flow:

Average throughput: 83.49 Mbit/s

95th percentile per-packet one-way delay: 112.181 ms

Loss rate: 4.62%

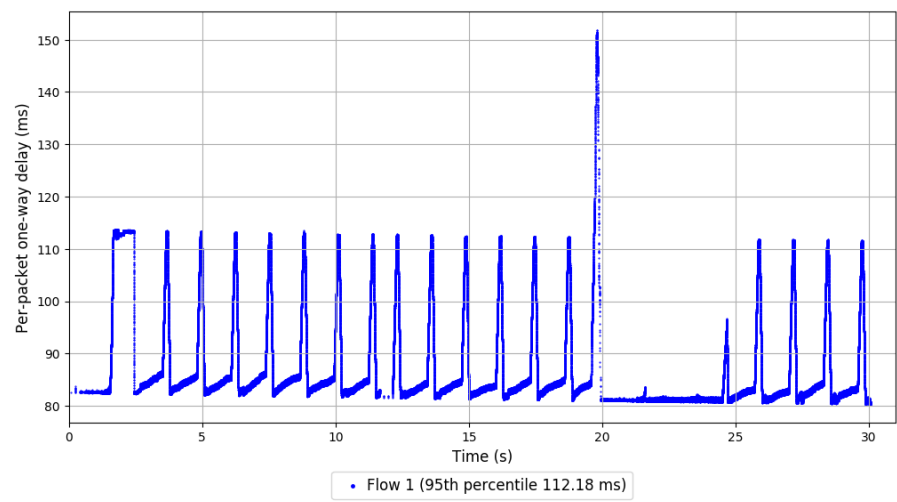
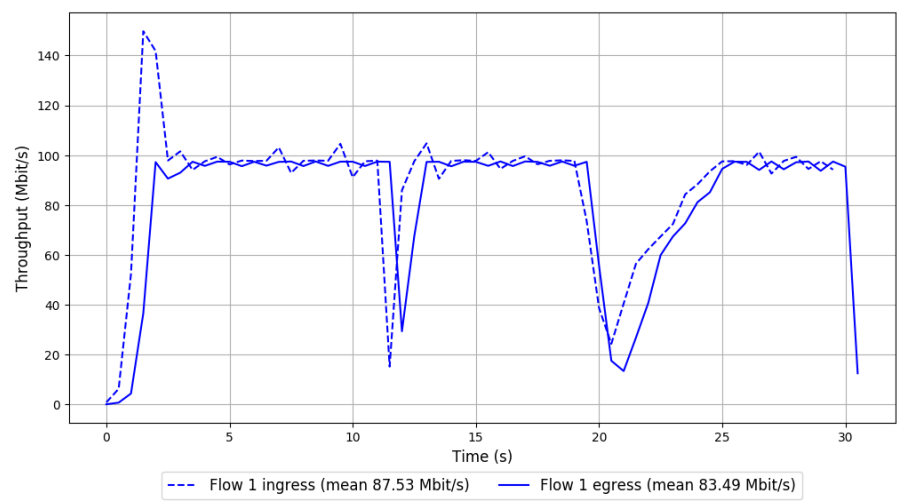
-- Flow 1:

Average throughput: 83.49 Mbit/s

95th percentile per-packet one-way delay: 112.181 ms

Loss rate: 4.62%

Run 1: Report of TCP BBR — Data Link

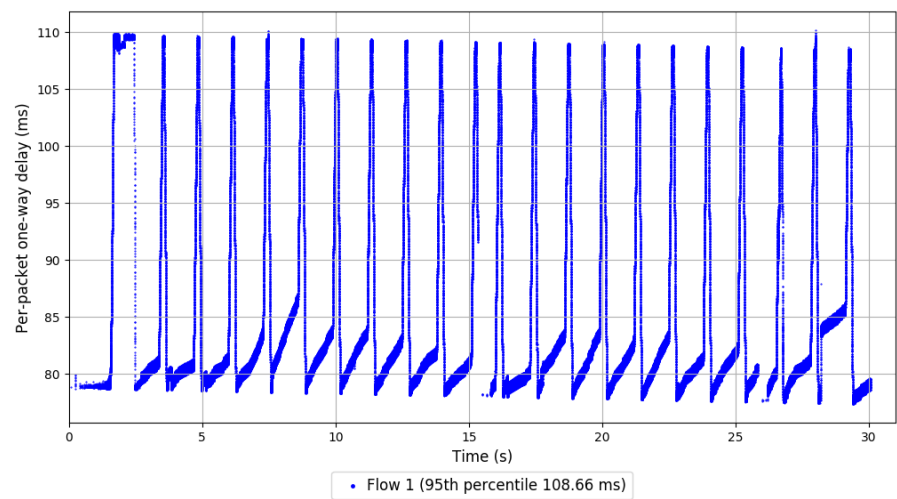
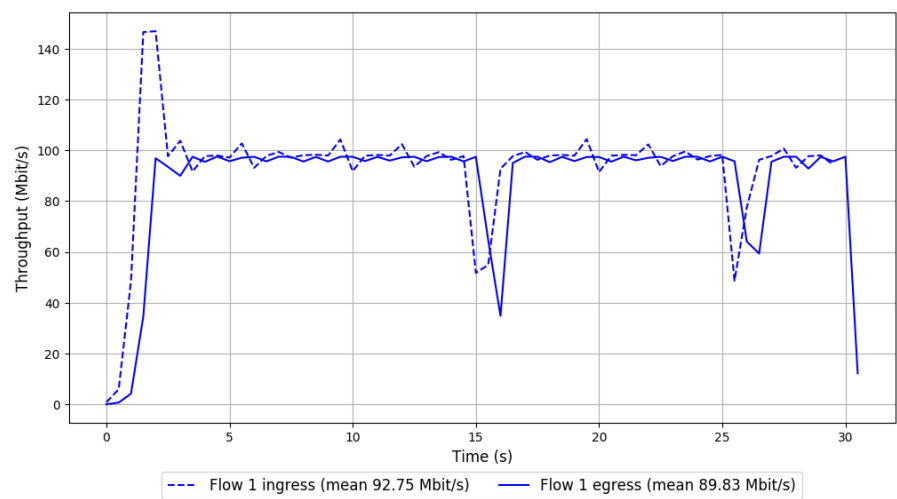


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 08:30:59
End at: 2018-08-31 08:31:29
Local clock offset: -10.616 ms
Remote clock offset: -2.936 ms

Below is generated by plot.py at 2018-08-31 08:40:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 89.83 Mbit/s
95th percentile per-packet one-way delay: 108.656 ms
Loss rate: 3.15%
-- Flow 1:
Average throughput: 89.83 Mbit/s
95th percentile per-packet one-way delay: 108.656 ms
Loss rate: 3.15%

Run 2: Report of TCP BBR — Data Link

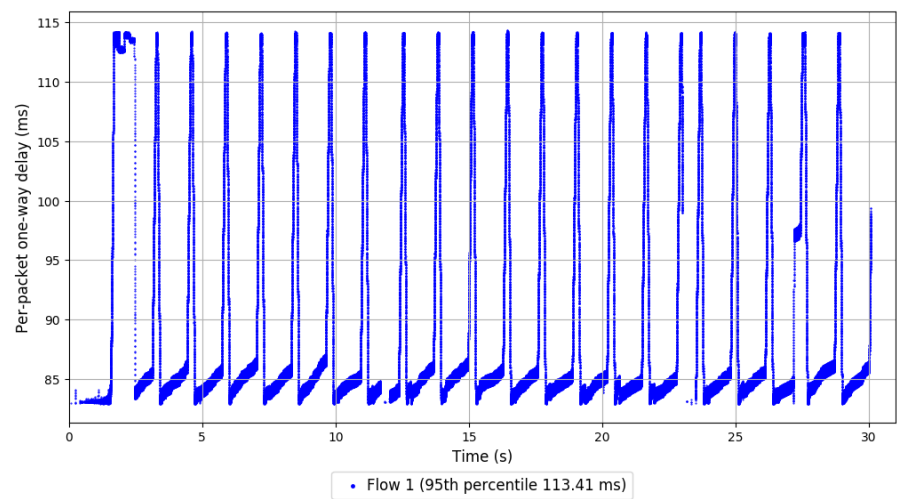
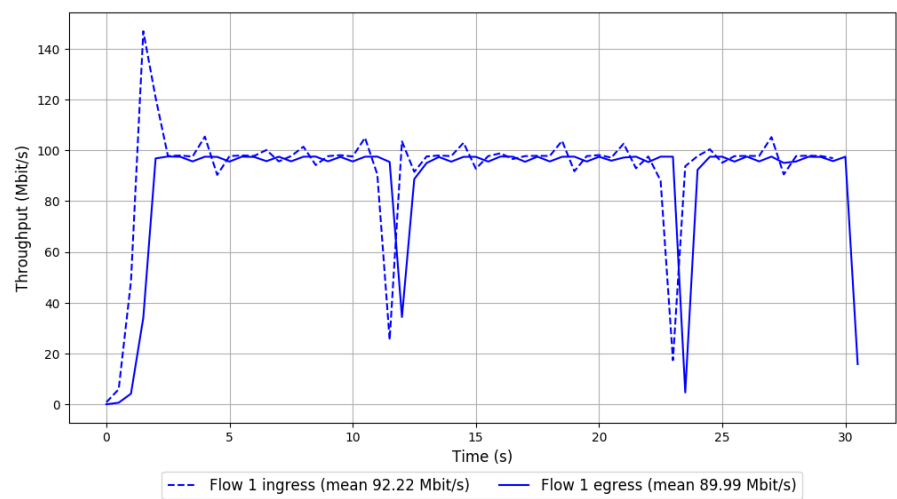


Run 3: Statistics of TCP BBR

Start at: 2018-08-31 08:35:49
End at: 2018-08-31 08:36:19
Local clock offset: -8.14 ms
Remote clock offset: -1.765 ms

Below is generated by plot.py at 2018-08-31 08:40:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 89.99 Mbit/s
95th percentile per-packet one-way delay: 113.414 ms
Loss rate: 2.37%
-- Flow 1:
Average throughput: 89.99 Mbit/s
95th percentile per-packet one-way delay: 113.414 ms
Loss rate: 2.37%

Run 3: Report of TCP BBR — Data Link

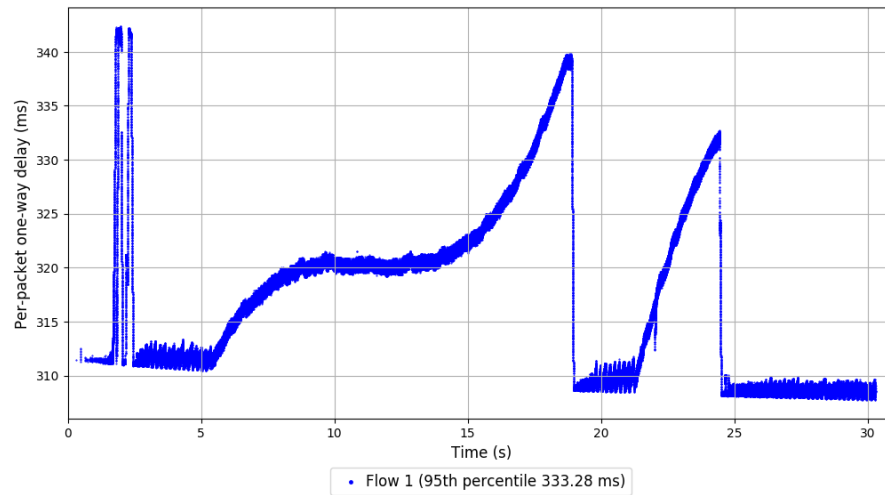
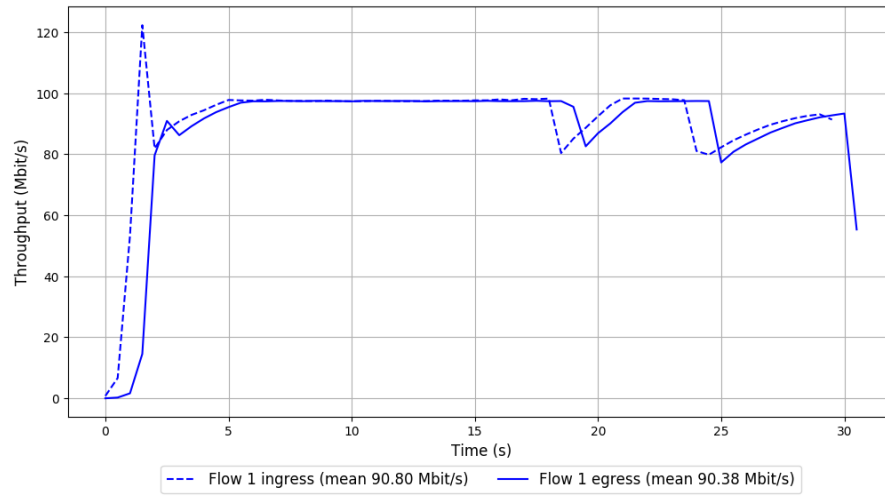


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 08:25:07
End at: 2018-08-31 08:25:37
Local clock offset: -218.366 ms
Remote clock offset: 0.827 ms

Below is generated by plot.py at 2018-08-31 08:40:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 90.38 Mbit/s
95th percentile per-packet one-way delay: 333.277 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 90.38 Mbit/s
95th percentile per-packet one-way delay: 333.277 ms
Loss rate: 0.47%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 08:29:48

End at: 2018-08-31 08:30:18

Local clock offset: -9.083 ms

Remote clock offset: 0.936 ms

Below is generated by plot.py at 2018-08-31 08:40:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.62 Mbit/s

95th percentile per-packet one-way delay: 104.228 ms

Loss rate: 0.56%

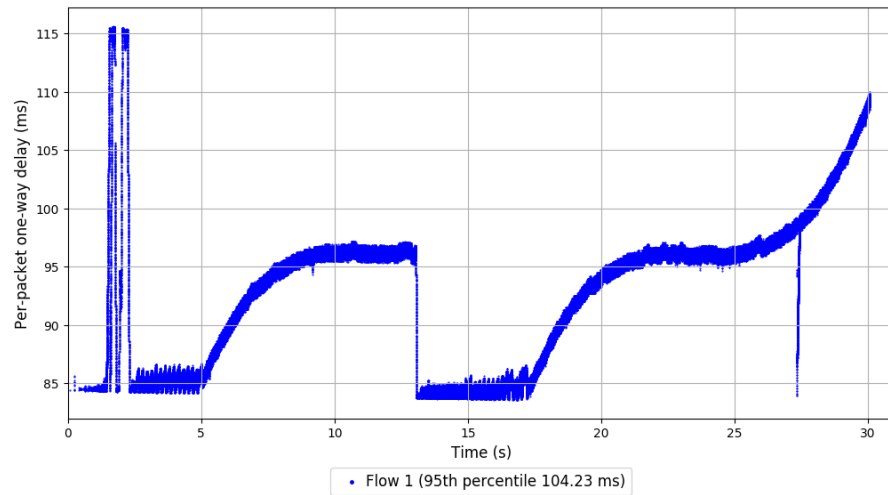
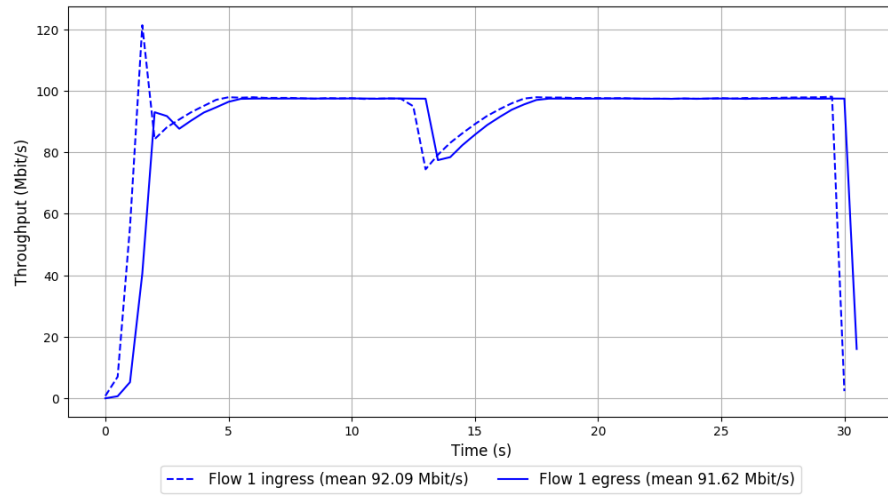
-- Flow 1:

Average throughput: 91.62 Mbit/s

95th percentile per-packet one-way delay: 104.228 ms

Loss rate: 0.56%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 08:34:39

End at: 2018-08-31 08:35:09

Local clock offset: -9.941 ms

Remote clock offset: 1.161 ms

Below is generated by plot.py at 2018-08-31 08:40:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 42.87 Mbit/s

95th percentile per-packet one-way delay: 100.707 ms

Loss rate: 0.10%

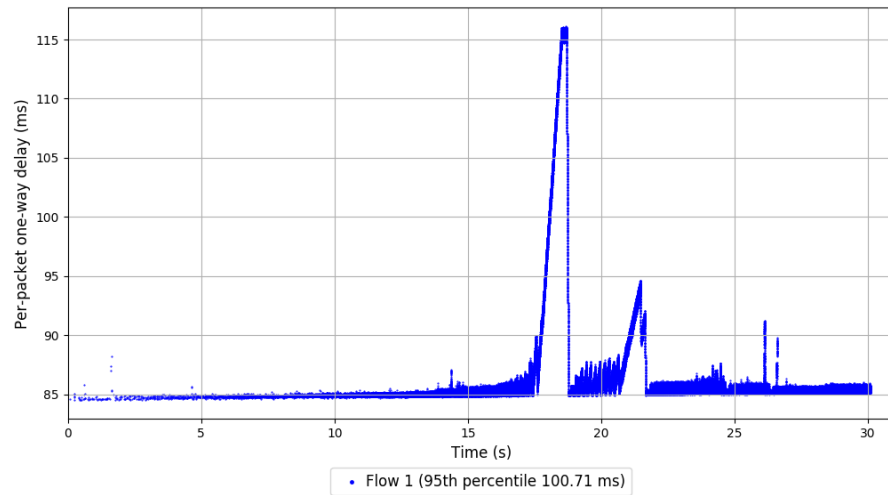
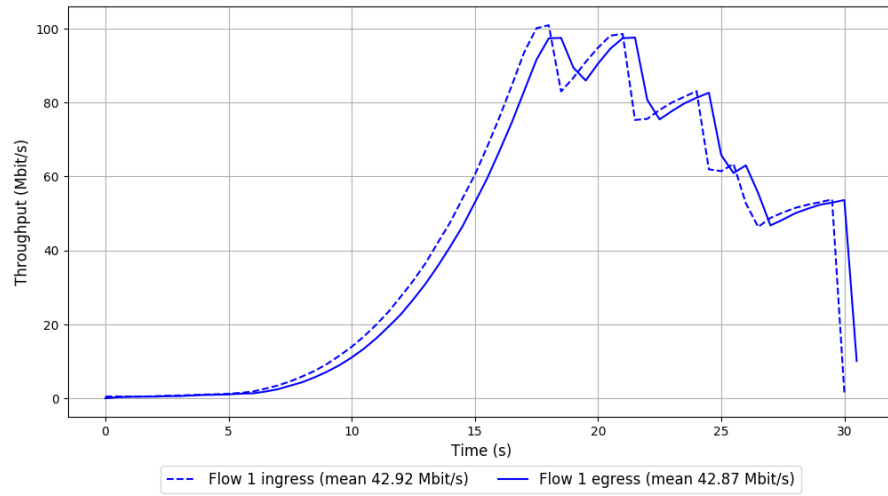
-- Flow 1:

Average throughput: 42.87 Mbit/s

95th percentile per-packet one-way delay: 100.707 ms

Loss rate: 0.10%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-08-31 08:27:30

End at: 2018-08-31 08:28:00

Local clock offset: -1.872 ms

Remote clock offset: 2.047 ms

Below is generated by plot.py at 2018-08-31 08:40:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.33 Mbit/s

95th percentile per-packet one-way delay: 90.110 ms

Loss rate: 4.43%

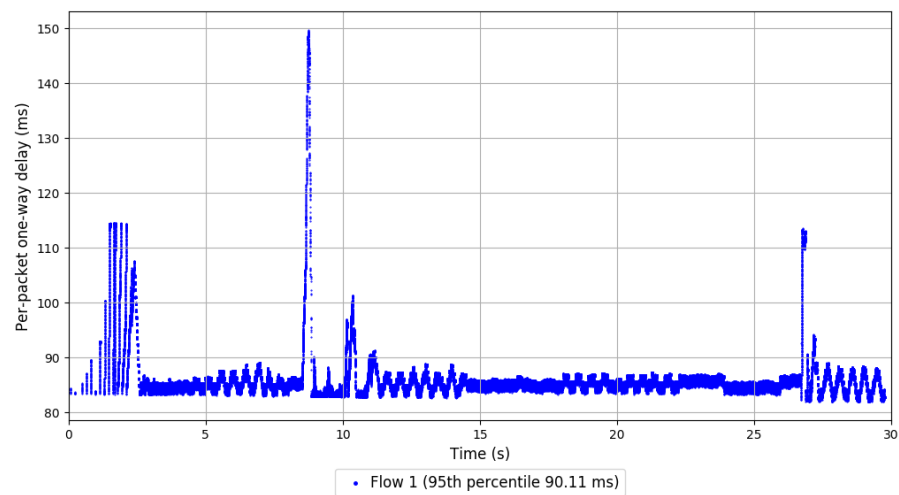
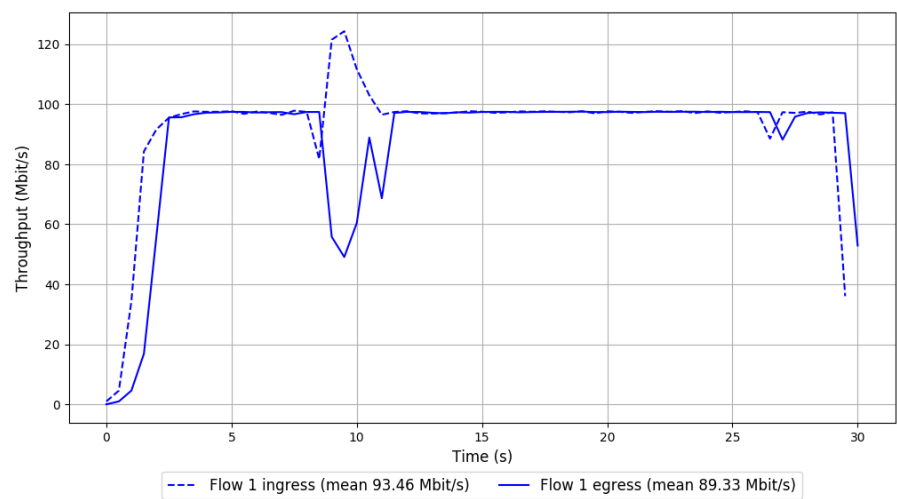
-- Flow 1:

Average throughput: 89.33 Mbit/s

95th percentile per-packet one-way delay: 90.110 ms

Loss rate: 4.43%

Run 1: Report of Indigo — Data Link

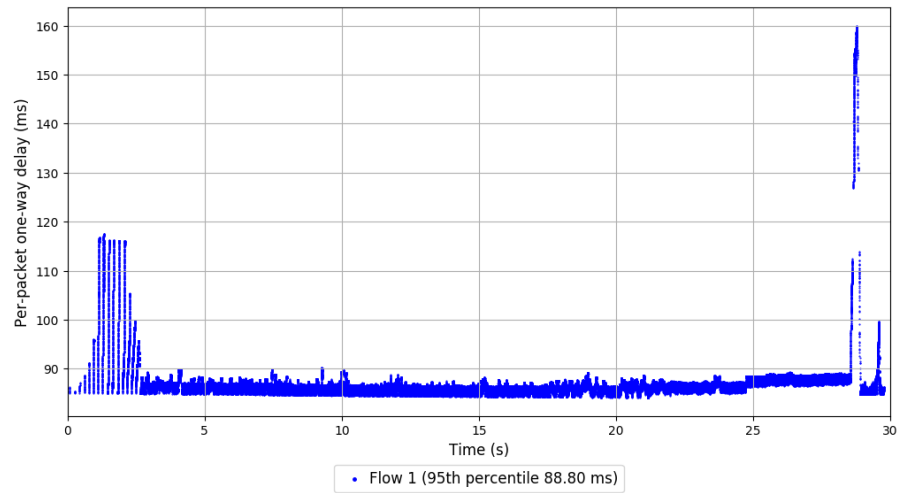
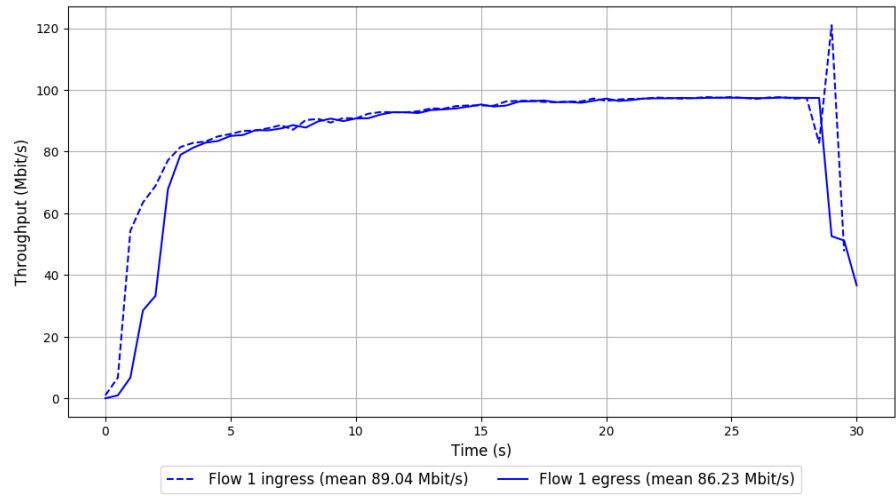


Run 2: Statistics of Indigo

Start at: 2018-08-31 08:32:10
End at: 2018-08-31 08:32:40
Local clock offset: -16.236 ms
Remote clock offset: 2.109 ms

Below is generated by plot.py at 2018-08-31 08:40:03
Datalink statistics
-- Total of 1 flow:
Average throughput: 86.23 Mbit/s
95th percentile per-packet one-way delay: 88.803 ms
Loss rate: 3.16%
-- Flow 1:
Average throughput: 86.23 Mbit/s
95th percentile per-packet one-way delay: 88.803 ms
Loss rate: 3.16%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-31 08:37:00

End at: 2018-08-31 08:37:30

Local clock offset: -7.873 ms

Remote clock offset: 2.33 ms

Below is generated by plot.py at 2018-08-31 08:40:07

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.68 Mbit/s

95th percentile per-packet one-way delay: 90.827 ms

Loss rate: 1.44%

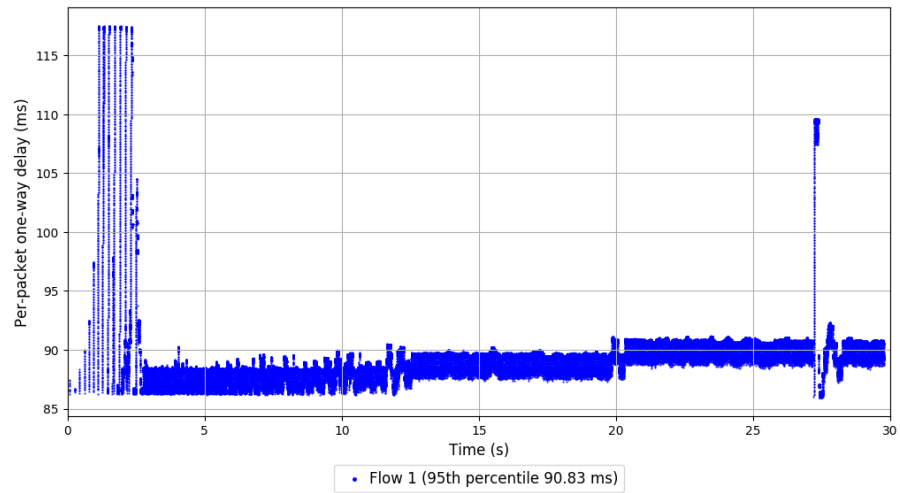
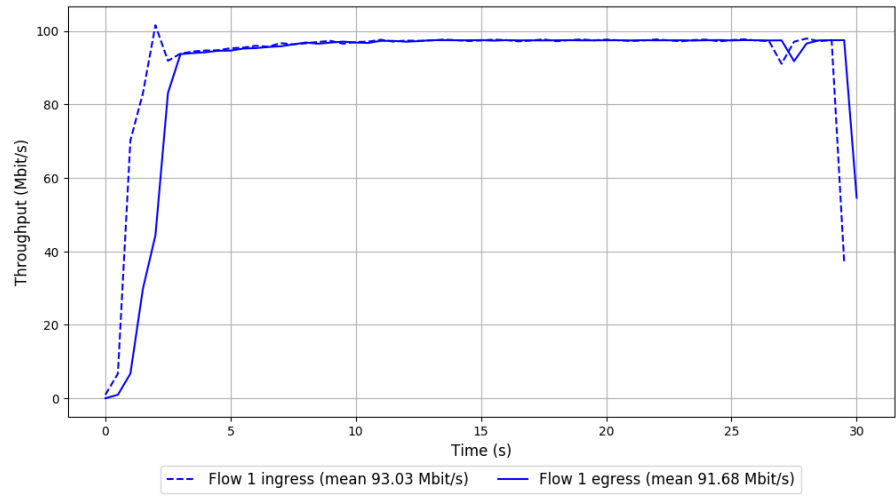
-- Flow 1:

Average throughput: 91.68 Mbit/s

95th percentile per-packet one-way delay: 90.827 ms

Loss rate: 1.44%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

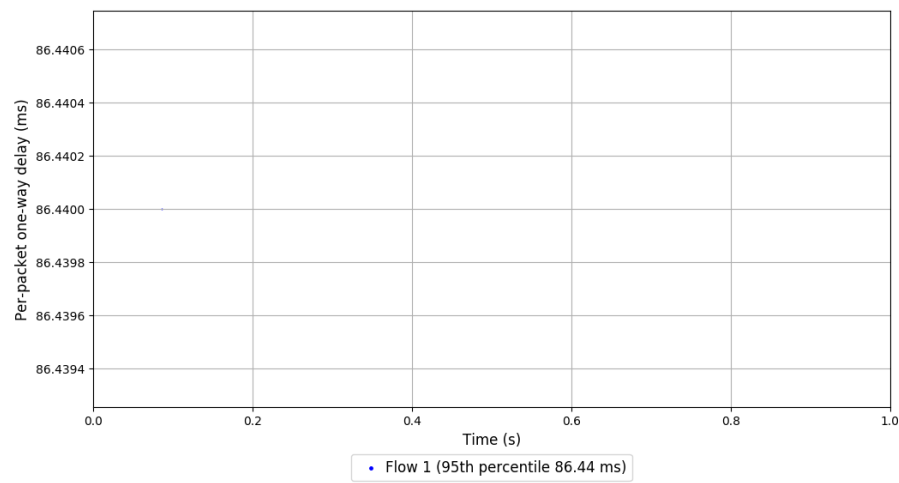
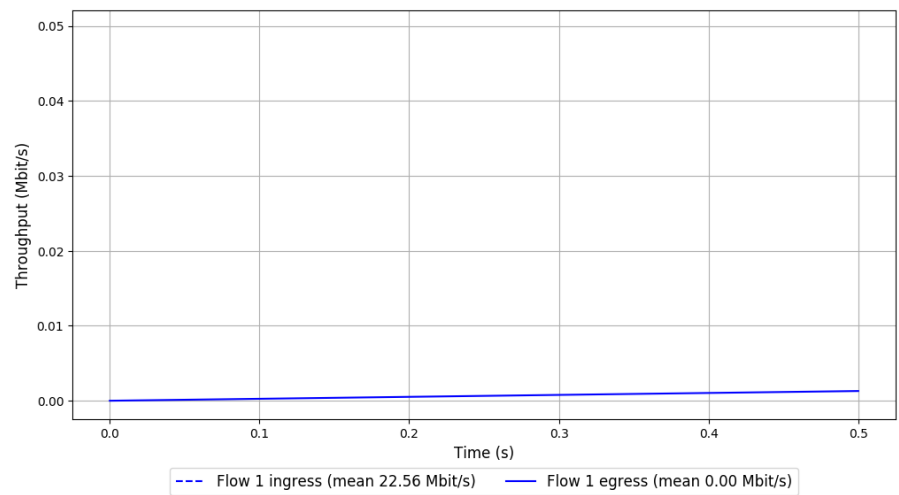
Start at: 2018-08-31 08:28:42

End at: 2018-08-31 08:29:12

Local clock offset: -5.949 ms

Remote clock offset: 3.119 ms

Run 1: Report of Muses-25 — Data Link

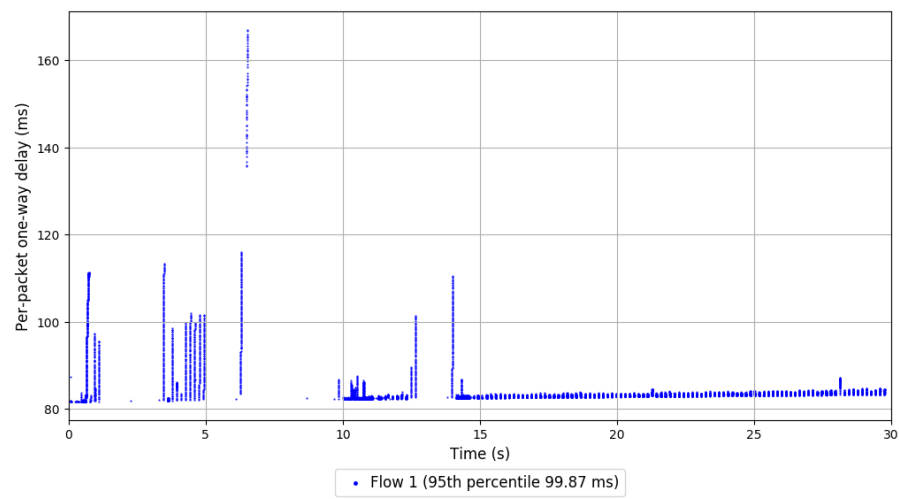
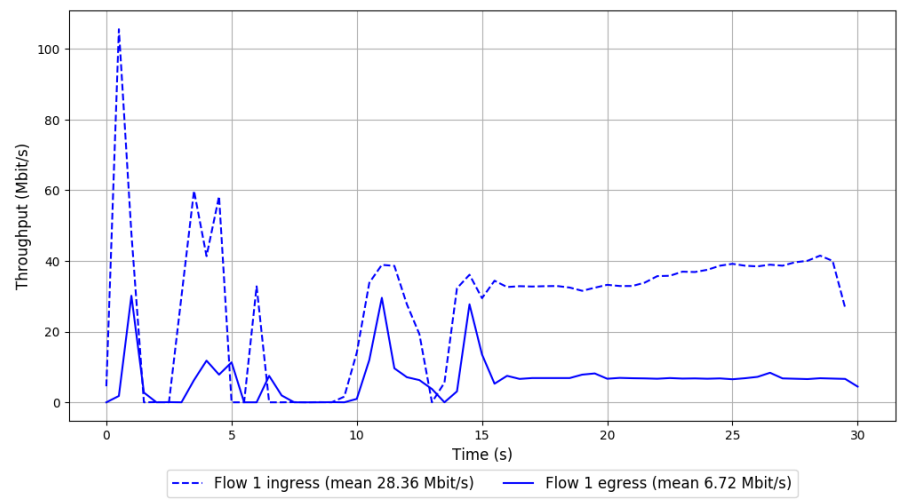


Run 2: Statistics of Muses-25

Start at: 2018-08-31 08:33:32
End at: 2018-08-31 08:34:02
Local clock offset: -14.116 ms
Remote clock offset: -2.831 ms

Below is generated by plot.py at 2018-08-31 08:40:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 99.871 ms
Loss rate: 76.38%
-- Flow 1:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 99.871 ms
Loss rate: 76.38%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 08:38:12
End at: 2018-08-31 08:38:42
Local clock offset: -8.72 ms
Remote clock offset: -2.821 ms

Below is generated by plot.py at 2018-08-31 08:40:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.91 Mbit/s
95th percentile per-packet one-way delay: 96.593 ms
Loss rate: 66.90%
-- Flow 1:
Average throughput: 6.91 Mbit/s
95th percentile per-packet one-way delay: 96.593 ms
Loss rate: 66.90%

Run 3: Report of Muses-25 — Data Link

