

Pantheon Report

Generated at 2018-08-31 07:21:21 (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.

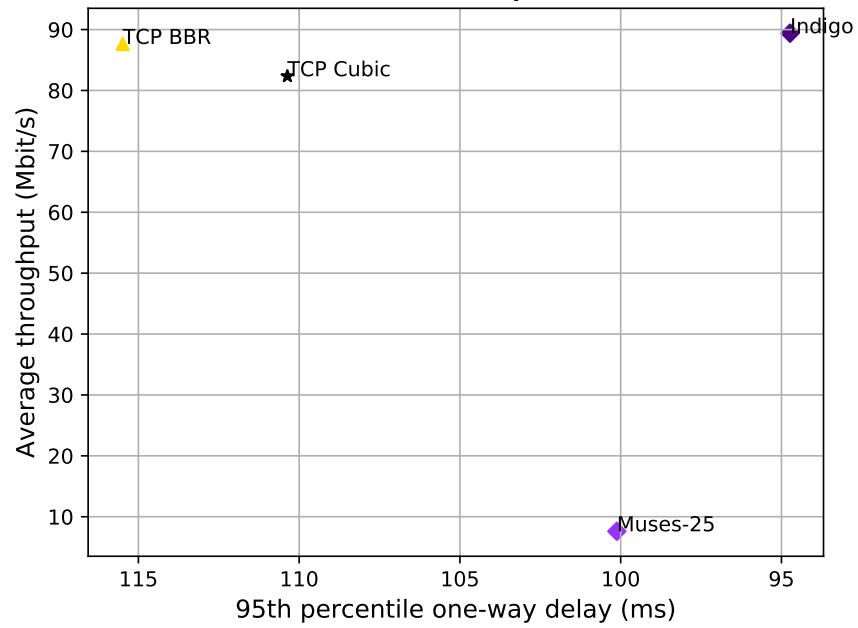
System info:

```
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
```

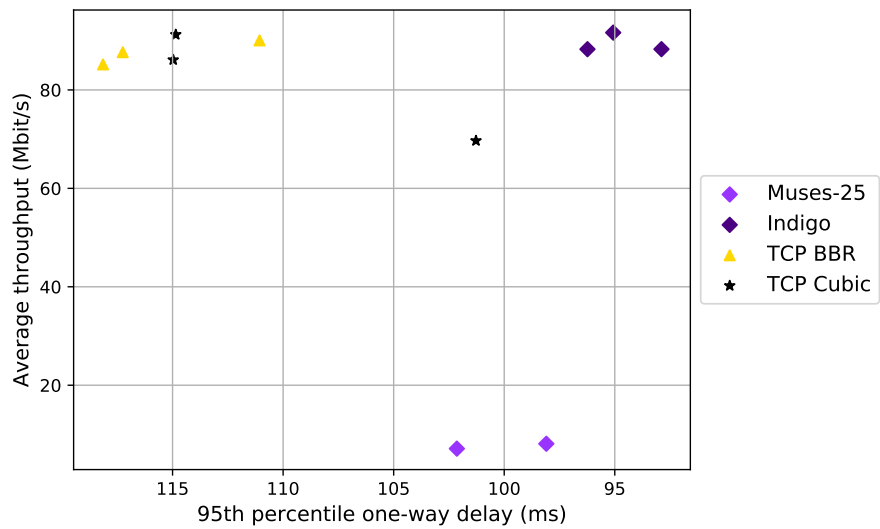
Git summary:

```
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	87.64	115.49	3.62
TCP Cubic	3	82.34	110.37	0.91
Indigo	3	89.40	94.73	2.85
Muses-25	2	7.61	100.12	67.91

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 07:10:00

End at: 2018-08-31 07:10:30

Local clock offset: 12.272 ms

Remote clock offset: 0.58 ms

Below is generated by plot.py at 2018-08-31 07:21:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 87.67 Mbit/s

95th percentile per-packet one-way delay: 117.251 ms

Loss rate: 3.83%

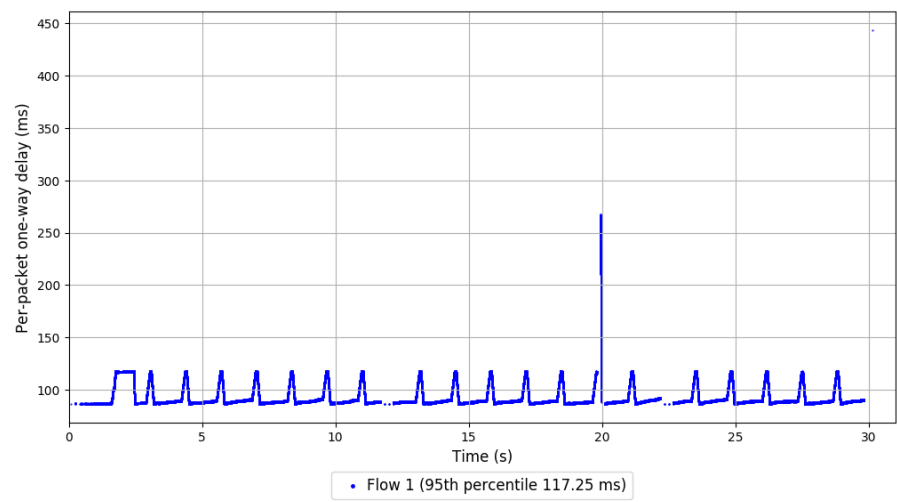
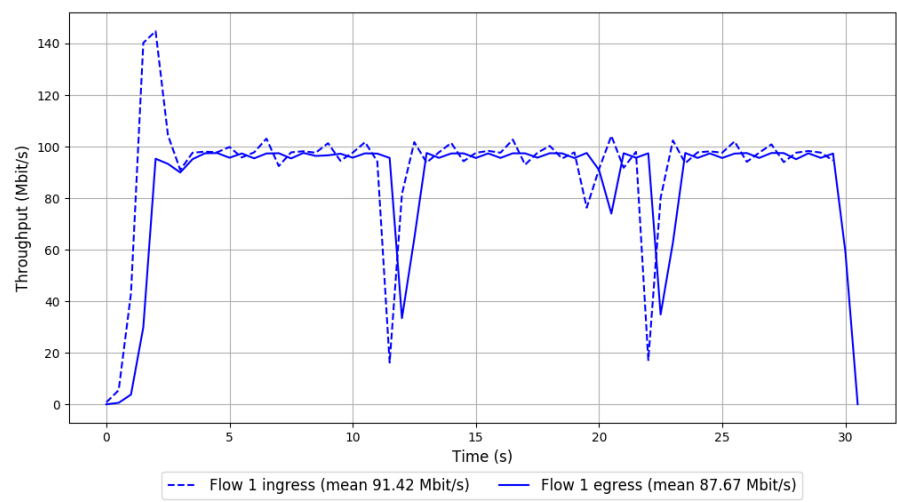
-- Flow 1:

Average throughput: 87.67 Mbit/s

95th percentile per-packet one-way delay: 117.251 ms

Loss rate: 3.83%

Run 1: Report of TCP BBR — Data Link

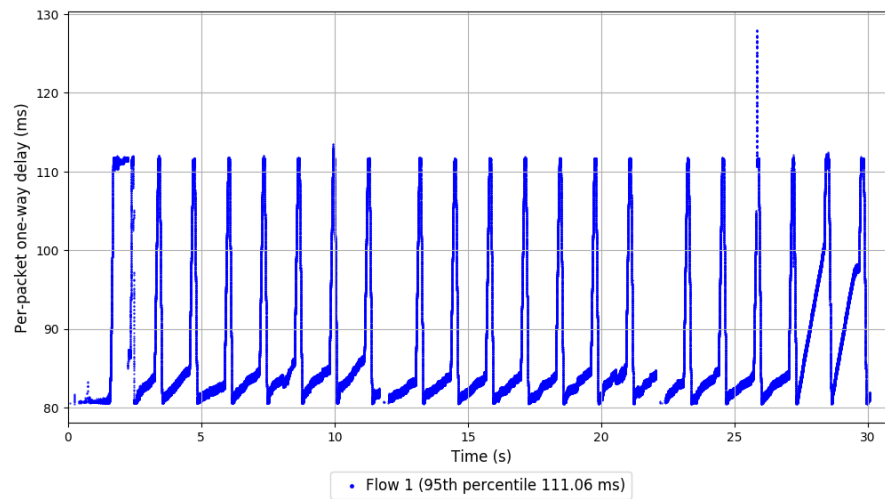
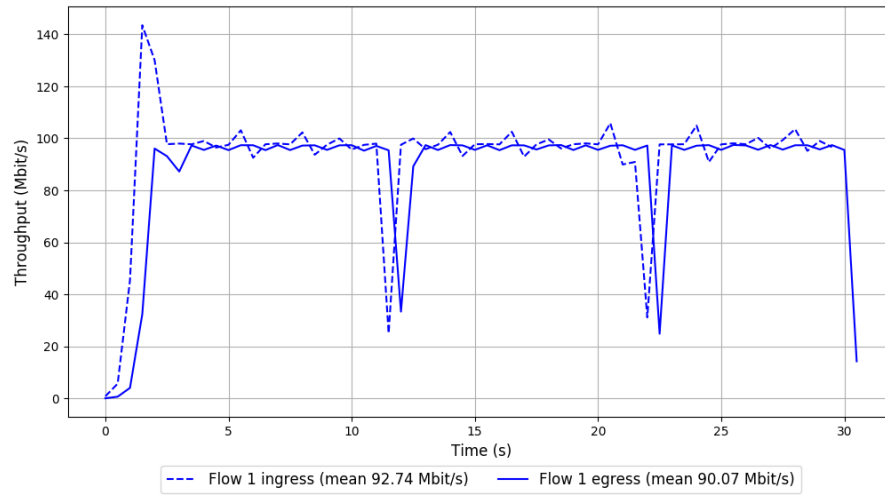


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 07:14:40
End at: 2018-08-31 07:15:10
Local clock offset: 10.466 ms
Remote clock offset: -3.678 ms

Below is generated by plot.py at 2018-08-31 07:21:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 90.07 Mbit/s
95th percentile per-packet one-way delay: 111.065 ms
Loss rate: 2.88%
-- Flow 1:
Average throughput: 90.07 Mbit/s
95th percentile per-packet one-way delay: 111.065 ms
Loss rate: 2.88%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-31 07:19:21

End at: 2018-08-31 07:19:51

Local clock offset: 9.202 ms

Remote clock offset: 0.753 ms

Below is generated by plot.py at 2018-08-31 07:21:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 85.18 Mbit/s

95th percentile per-packet one-way delay: 118.145 ms

Loss rate: 4.16%

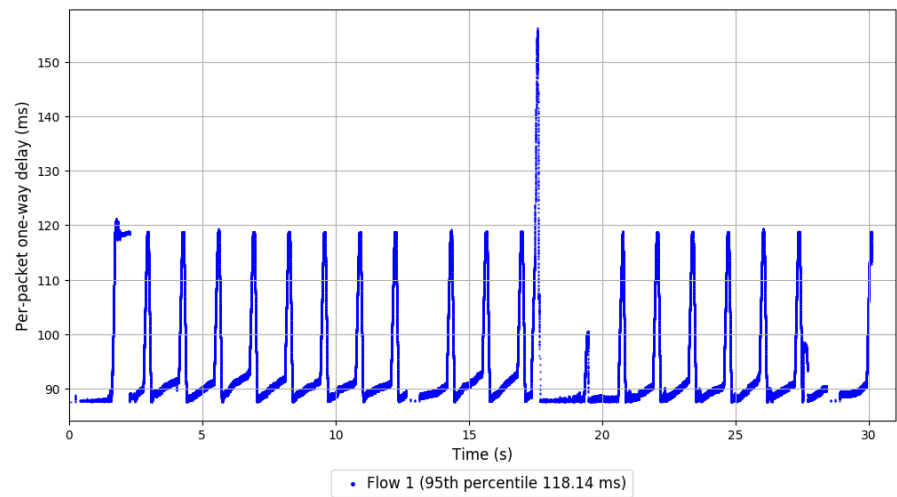
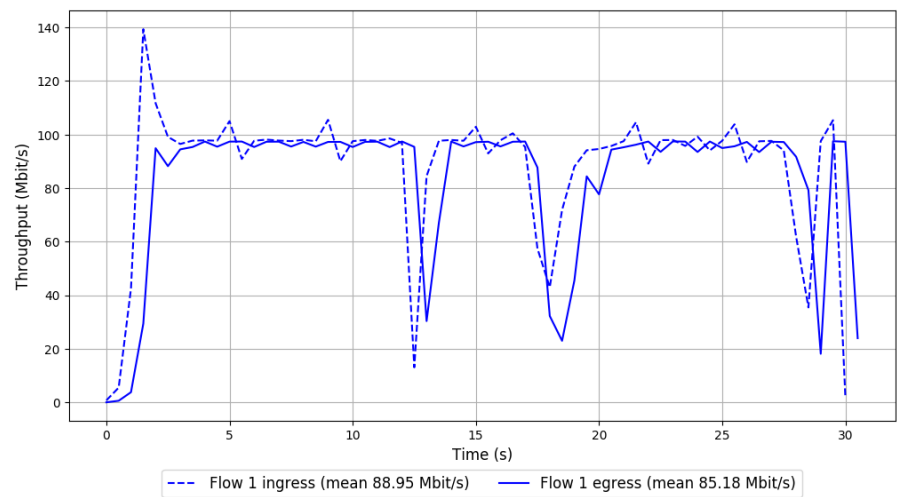
-- Flow 1:

Average throughput: 85.18 Mbit/s

95th percentile per-packet one-way delay: 118.145 ms

Loss rate: 4.16%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 07:08:48

End at: 2018-08-31 07:09:18

Local clock offset: 12.219 ms

Remote clock offset: 0.58 ms

Below is generated by plot.py at 2018-08-31 07:21:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.24 Mbit/s

95th percentile per-packet one-way delay: 114.855 ms

Loss rate: 0.44%

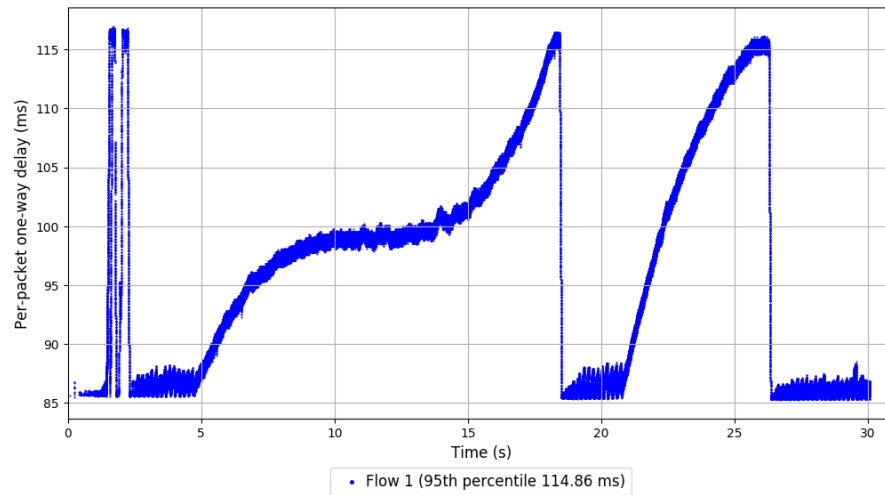
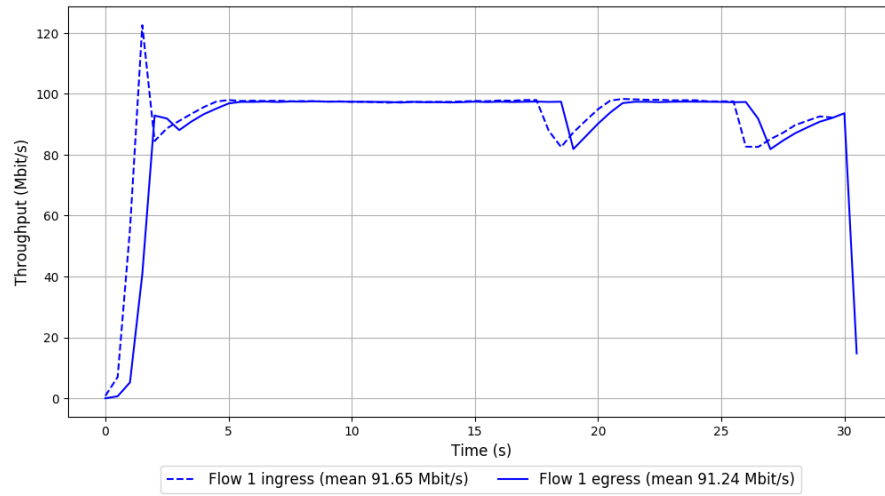
-- Flow 1:

Average throughput: 91.24 Mbit/s

95th percentile per-packet one-way delay: 114.855 ms

Loss rate: 0.44%

Run 1: Report of TCP Cubic — Data Link

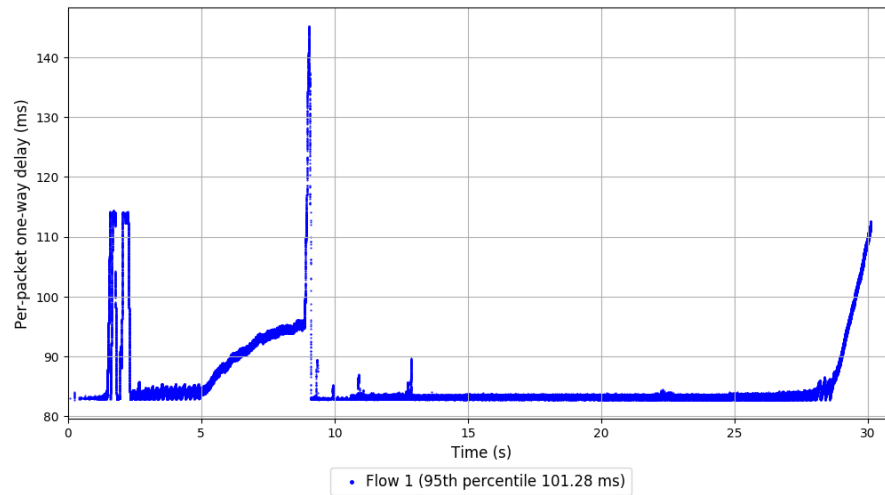
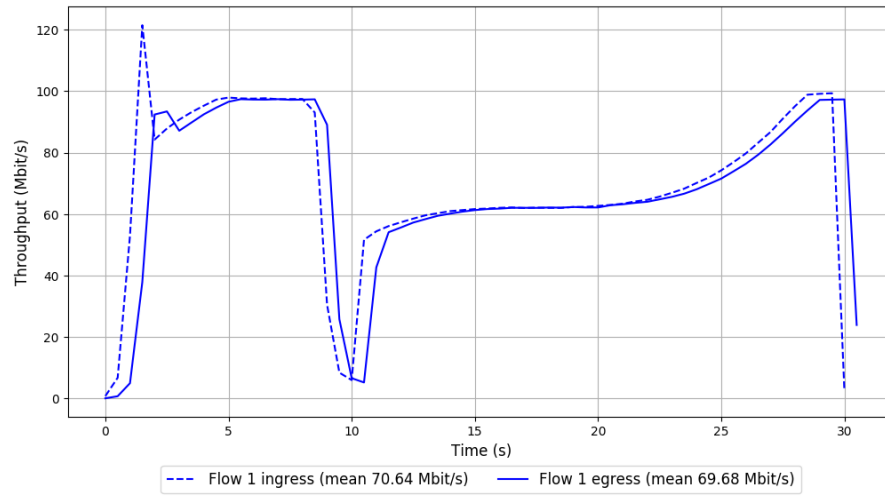


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 07:13:30
End at: 2018-08-31 07:14:00
Local clock offset: 9.998 ms
Remote clock offset: -3.641 ms

Below is generated by plot.py at 2018-08-31 07:21:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 69.68 Mbit/s
95th percentile per-packet one-way delay: 101.277 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 69.68 Mbit/s
95th percentile per-packet one-way delay: 101.277 ms
Loss rate: 1.27%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 07:18:11

End at: 2018-08-31 07:18:41

Local clock offset: 10.009 ms

Remote clock offset: 0.049 ms

Below is generated by plot.py at 2018-08-31 07:21:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 86.11 Mbit/s

95th percentile per-packet one-way delay: 114.969 ms

Loss rate: 1.02%

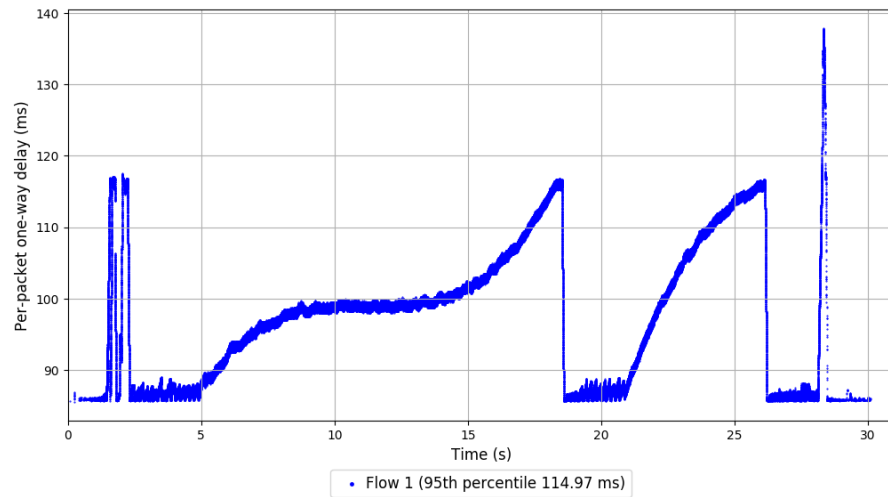
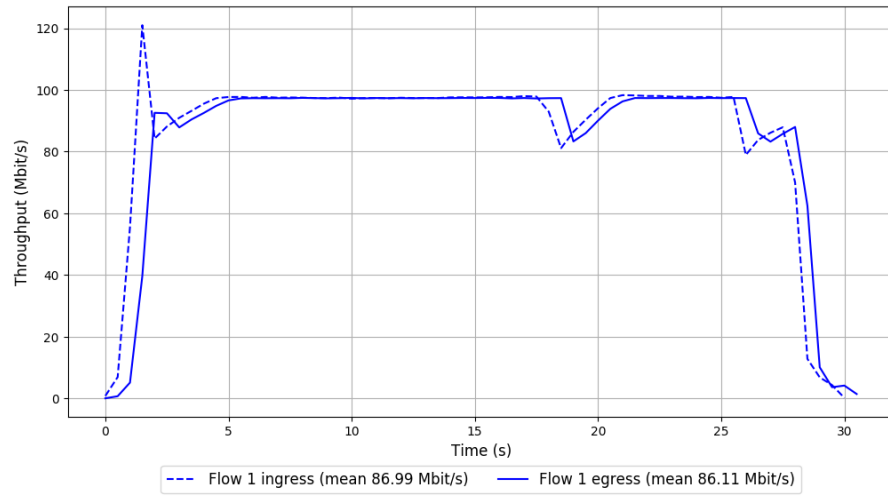
-- Flow 1:

Average throughput: 86.11 Mbit/s

95th percentile per-packet one-way delay: 114.969 ms

Loss rate: 1.02%

Run 3: Report of TCP Cubic — Data Link

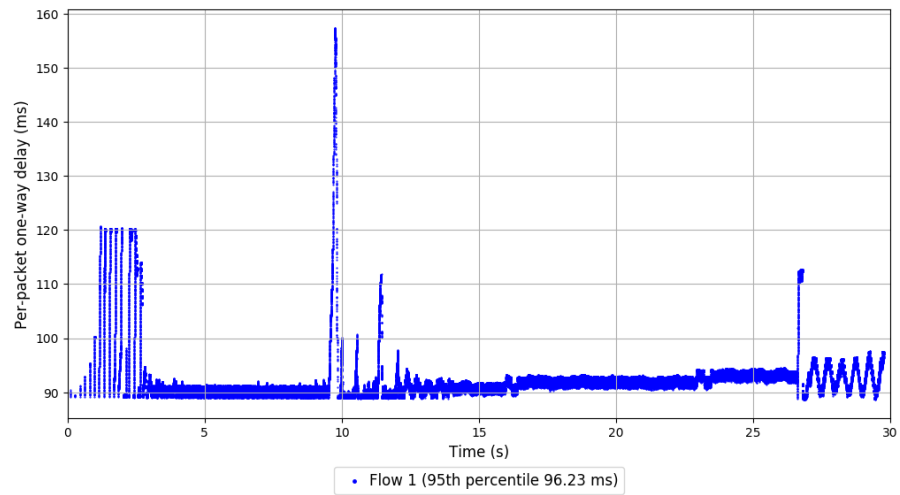
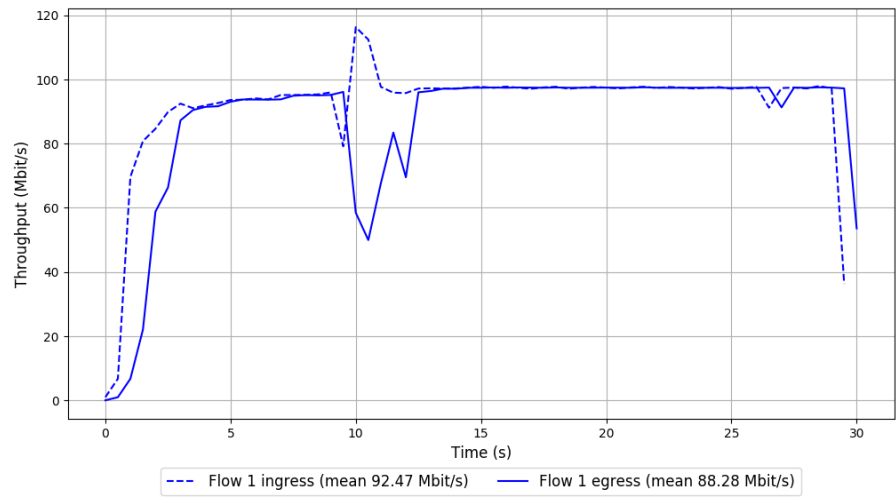


```
Run 1: Statistics of Indigo

Start at: 2018-08-31 07:06:29
End at: 2018-08-31 07:06:59
Local clock offset: 15.895 ms
Remote clock offset: 0.162 ms

# Below is generated by plot.py at 2018-08-31 07:21:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.28 Mbit/s
95th percentile per-packet one-way delay: 96.235 ms
Loss rate: 4.53%
-- Flow 1:
Average throughput: 88.28 Mbit/s
95th percentile per-packet one-way delay: 96.235 ms
Loss rate: 4.53%
```


Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-31 07:11:11

End at: 2018-08-31 07:11:41

Local clock offset: 12.423 ms

Remote clock offset: 0.256 ms

Below is generated by plot.py at 2018-08-31 07:21:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 88.28 Mbit/s

95th percentile per-packet one-way delay: 92.888 ms

Loss rate: 2.93%

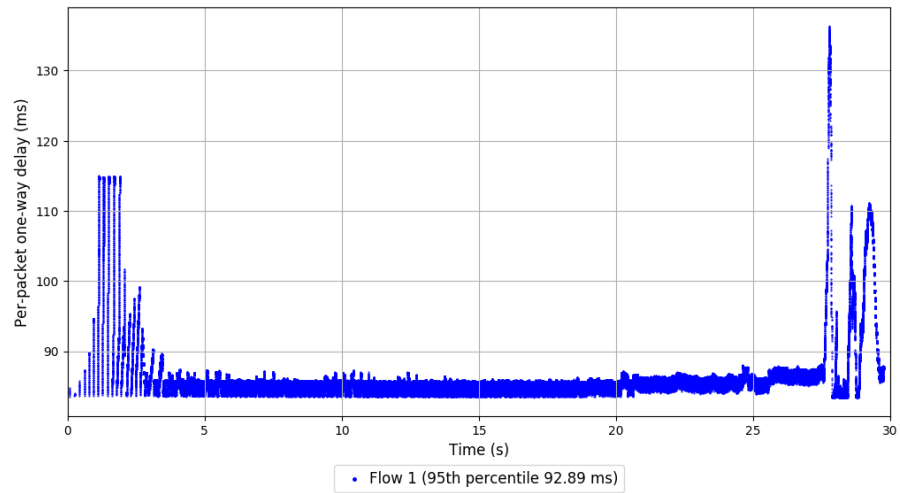
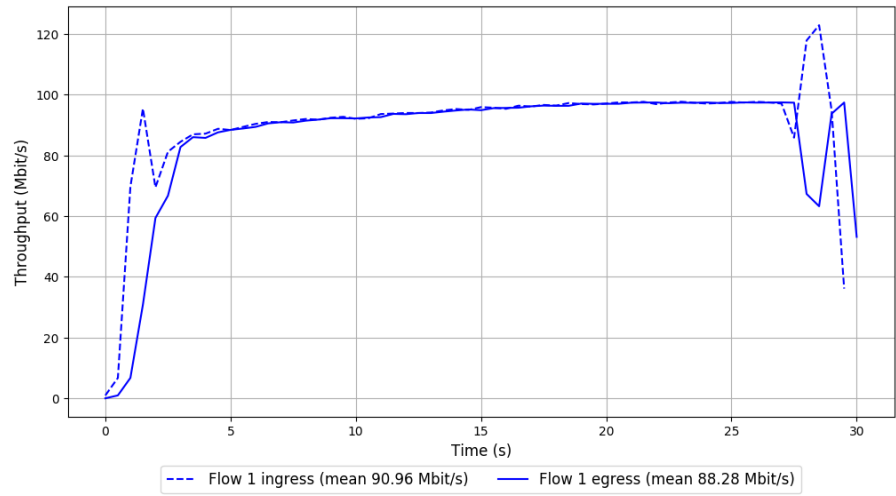
-- Flow 1:

Average throughput: 88.28 Mbit/s

95th percentile per-packet one-way delay: 92.888 ms

Loss rate: 2.93%

Run 2: Report of Indigo — Data Link

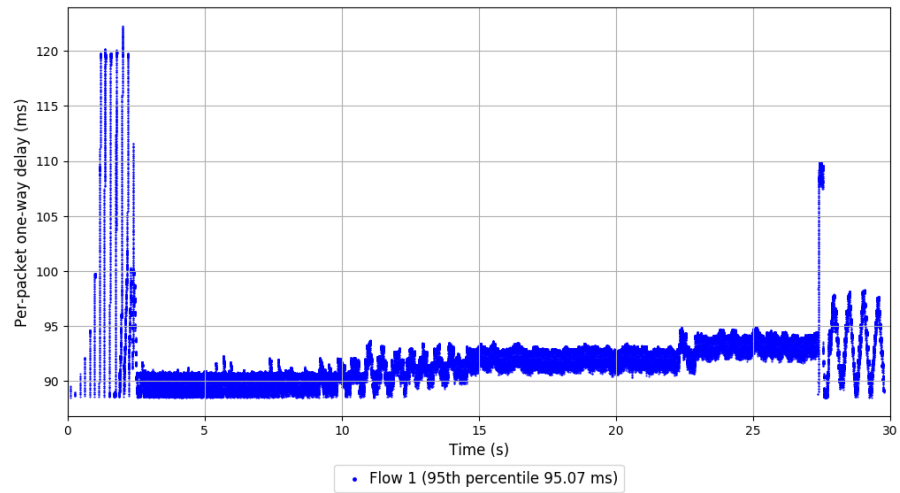
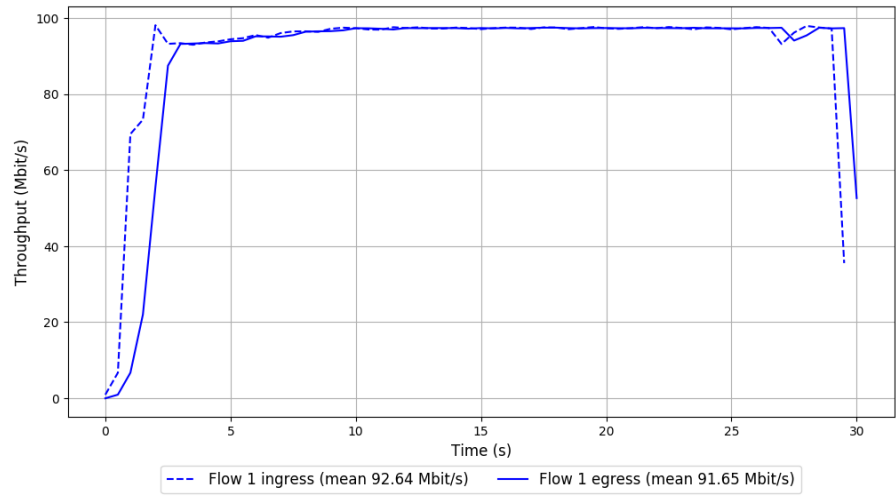


Run 3: Statistics of Indigo

Start at: 2018-08-31 07:15:51
End at: 2018-08-31 07:16:21
Local clock offset: 9.453 ms
Remote clock offset: -3.553 ms

Below is generated by plot.py at 2018-08-31 07:21:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 91.65 Mbit/s
95th percentile per-packet one-way delay: 95.071 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 91.65 Mbit/s
95th percentile per-packet one-way delay: 95.071 ms
Loss rate: 1.10%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

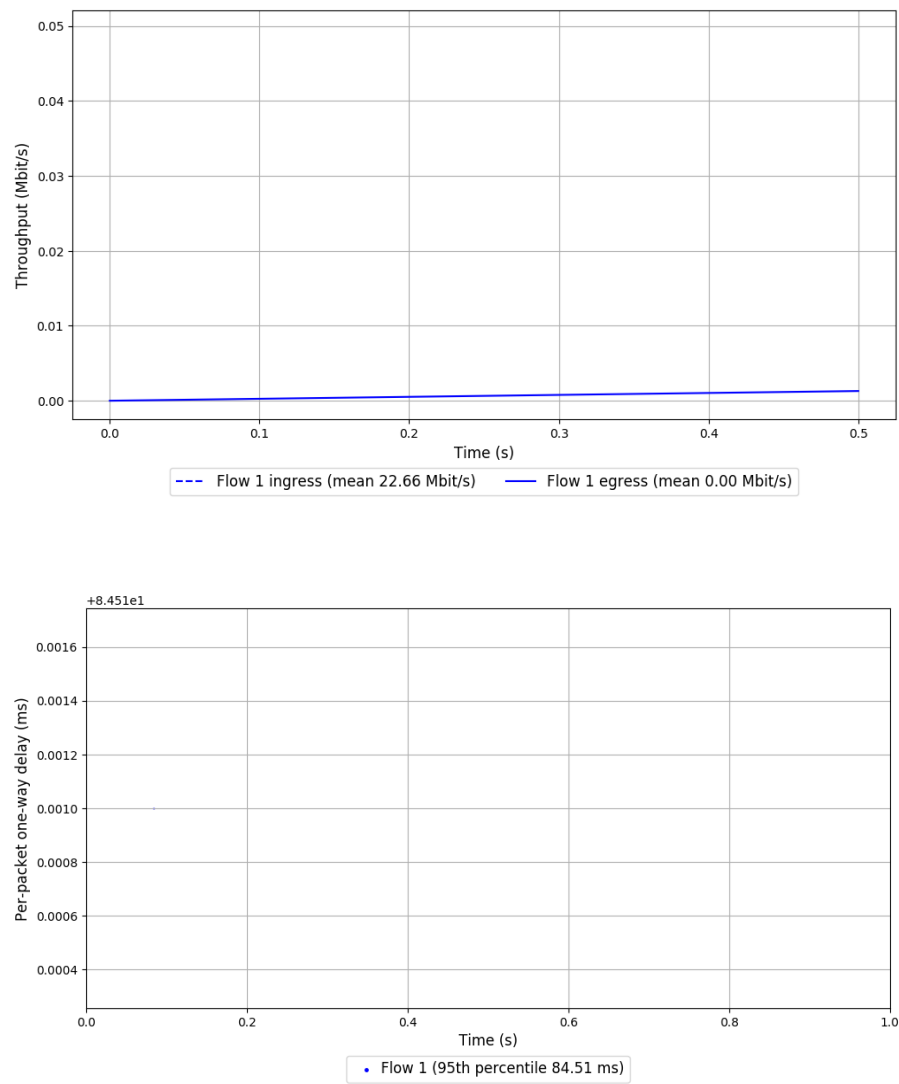
Start at: 2018-08-31 07:07:42

End at: 2018-08-31 07:08:12

Local clock offset: 13.99 ms

Remote clock offset: 0.604 ms

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-08-31 07:12:23

End at: 2018-08-31 07:12:53

Local clock offset: 10.378 ms

Remote clock offset: 0.767 ms

Below is generated by plot.py at 2018-08-31 07:21:20

Datalink statistics

-- Total of 1 flow:

Average throughput: 7.11 Mbit/s

95th percentile per-packet one-way delay: 102.142 ms

Loss rate: 70.08%

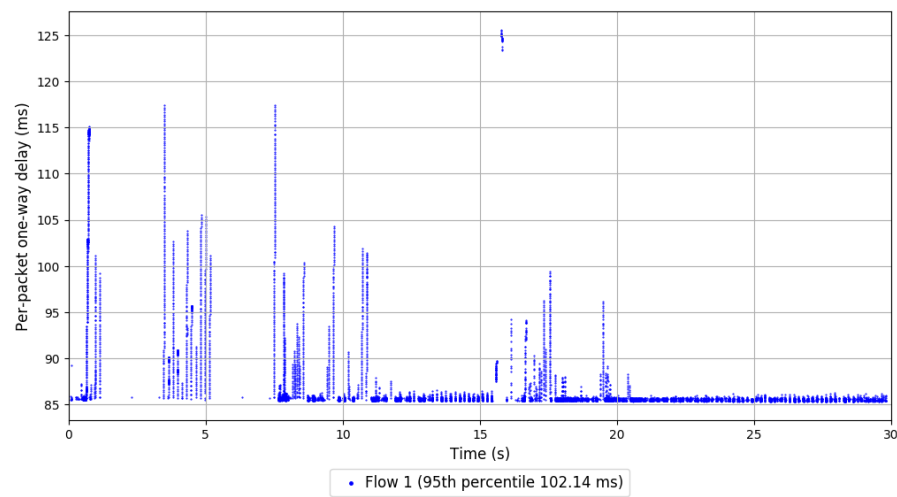
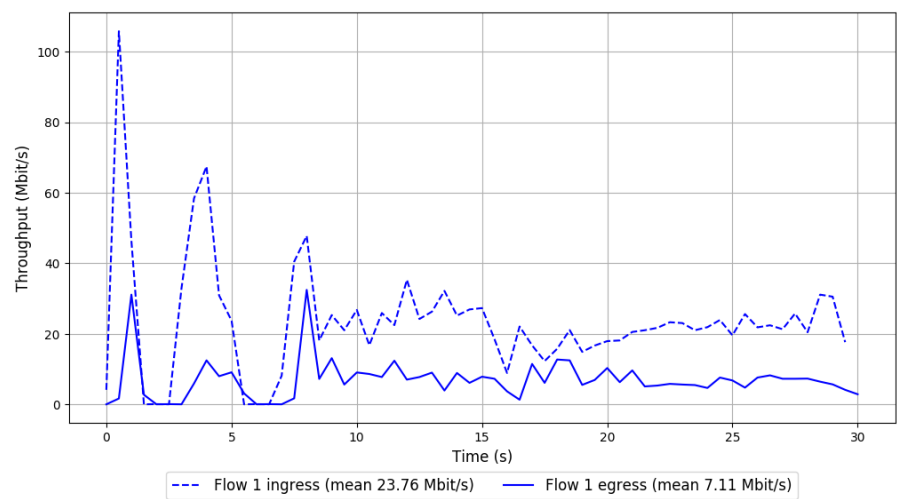
-- Flow 1:

Average throughput: 7.11 Mbit/s

95th percentile per-packet one-way delay: 102.142 ms

Loss rate: 70.08%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 07:17:04
End at: 2018-08-31 07:17:34
Local clock offset: 10.156 ms
Remote clock offset: -3.503 ms

Below is generated by plot.py at 2018-08-31 07:21:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.11 Mbit/s
95th percentile per-packet one-way delay: 98.096 ms
Loss rate: 65.74%
-- Flow 1:
Average throughput: 8.11 Mbit/s
95th percentile per-packet one-way delay: 98.096 ms
Loss rate: 65.74%

Run 3: Report of Muses-25 — Data Link

