

Pantheon Report

Generated at 2018-09-03 08:38:56 (UTC).

Data path: AWS California 2 on `ens5` (*local*) → Mexico on `em1` (*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 `time.stanford.edu` and have been applied to correct the timestamps in logs.

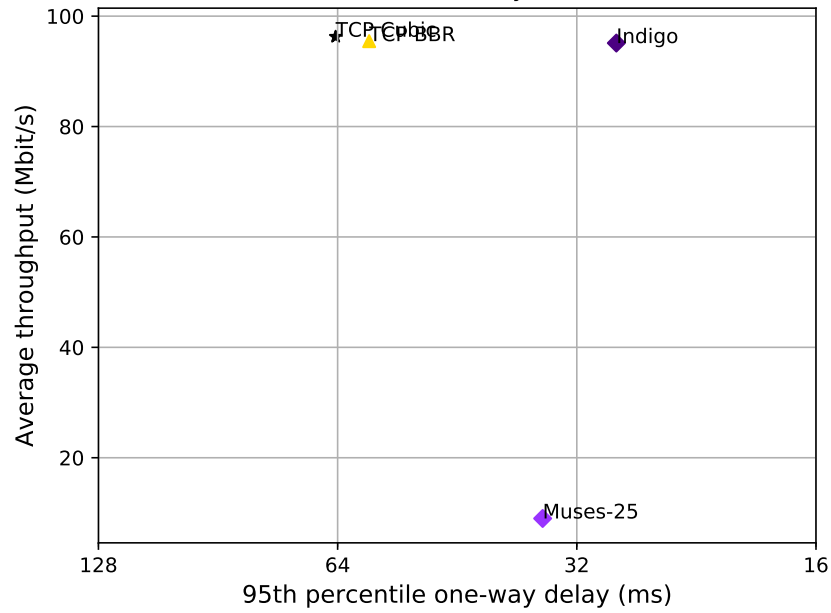
System info:

```
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
```

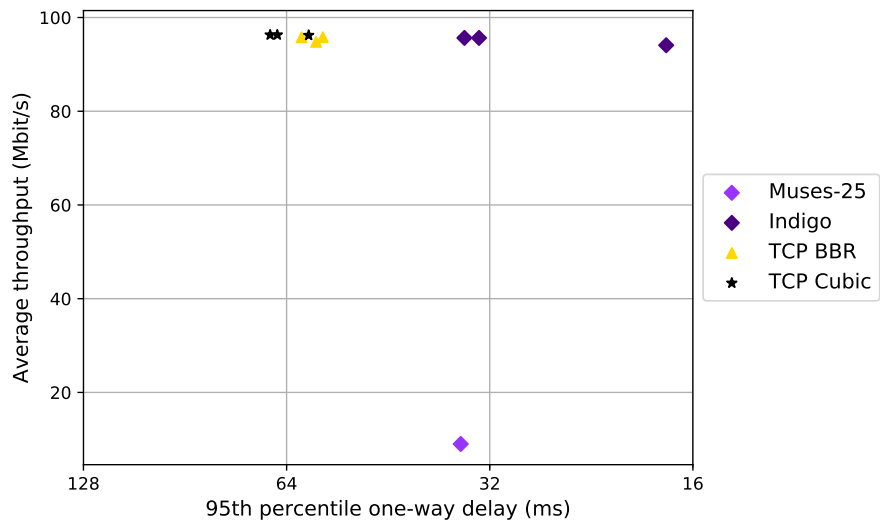
Git summary:

```
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 California 2 to Mexico, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS California 2 to Mexico, 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	95.47	58.41	0.92
TCP Cubic	3	96.27	64.37	0.58
Indigo	3	95.12	28.54	0.01
Muses-25	1	9.00	35.33	48.34

Run 1: Statistics of TCP BBR

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

End at: 2018-09-03 08:25:38

Local clock offset: 1.661 ms

Remote clock offset: 2.9 ms

Below is generated by plot.py at 2018-09-03 08:38:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.82 Mbit/s

95th percentile per-packet one-way delay: 56.553 ms

Loss rate: 0.93%

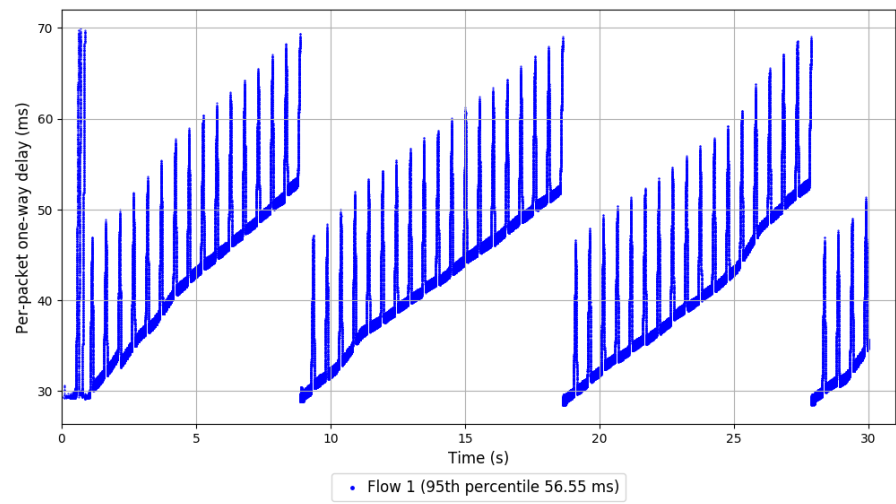
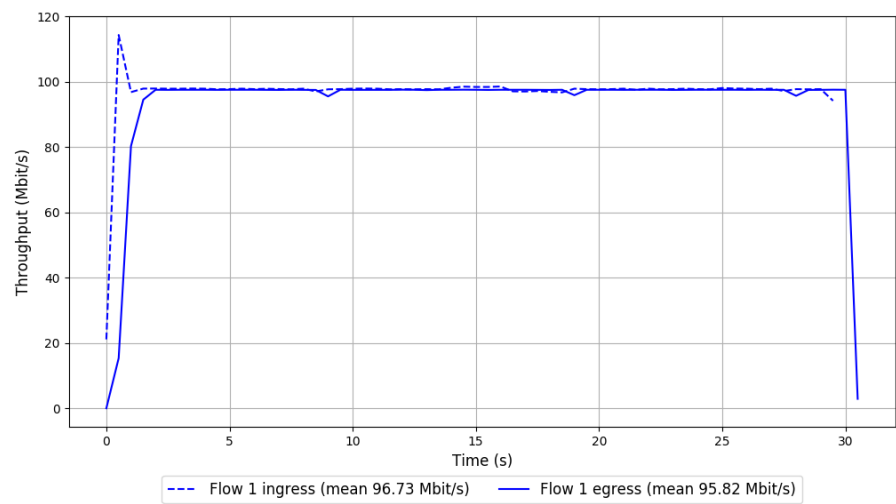
-- Flow 1:

Average throughput: 95.82 Mbit/s

95th percentile per-packet one-way delay: 56.553 ms

Loss rate: 0.93%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-03 08:30:21

End at: 2018-09-03 08:30:51

Local clock offset: -7.475 ms

Remote clock offset: 3.216 ms

Below is generated by plot.py at 2018-09-03 08:38:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.78 Mbit/s

95th percentile per-packet one-way delay: 60.804 ms

Loss rate: 0.94%

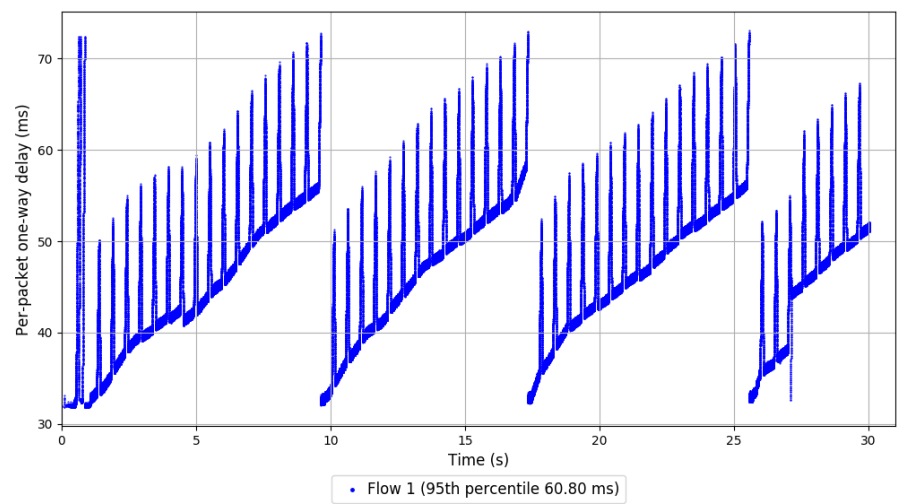
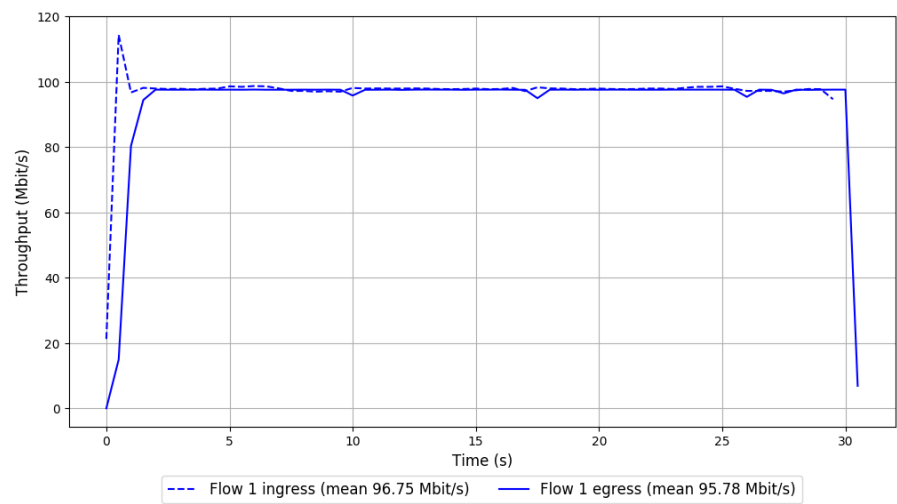
-- Flow 1:

Average throughput: 95.78 Mbit/s

95th percentile per-packet one-way delay: 60.804 ms

Loss rate: 0.94%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-03 08:35:34

End at: 2018-09-03 08:36:04

Local clock offset: -7.862 ms

Remote clock offset: 3.517 ms

Below is generated by plot.py at 2018-09-03 08:38:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 94.81 Mbit/s

95th percentile per-packet one-way delay: 57.875 ms

Loss rate: 0.90%

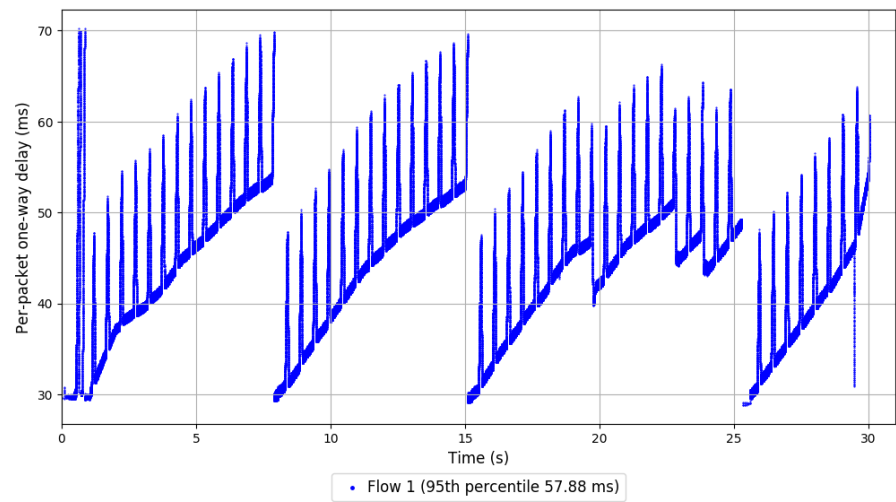
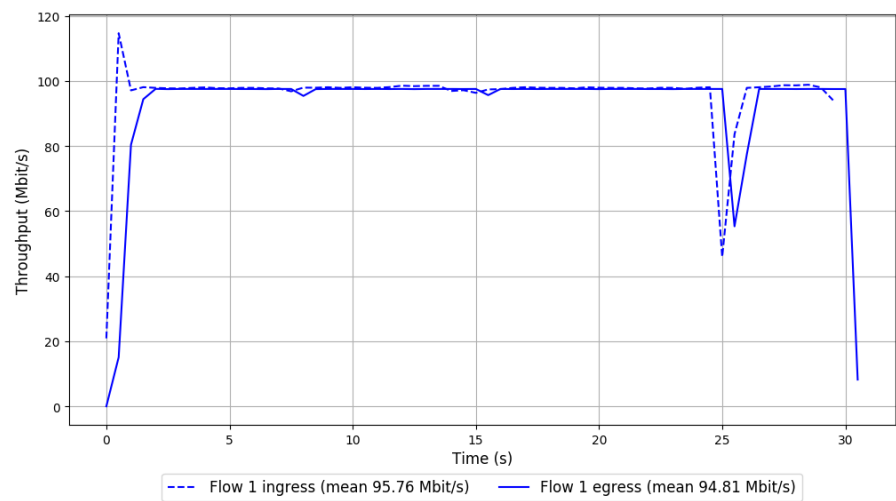
-- Flow 1:

Average throughput: 94.81 Mbit/s

95th percentile per-packet one-way delay: 57.875 ms

Loss rate: 0.90%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-09-03 08:26:27

End at: 2018-09-03 08:26:57

Local clock offset: -0.601 ms

Remote clock offset: 2.724 ms

Below is generated by plot.py at 2018-09-03 08:38:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.30 Mbit/s

95th percentile per-packet one-way delay: 66.059 ms

Loss rate: 0.58%

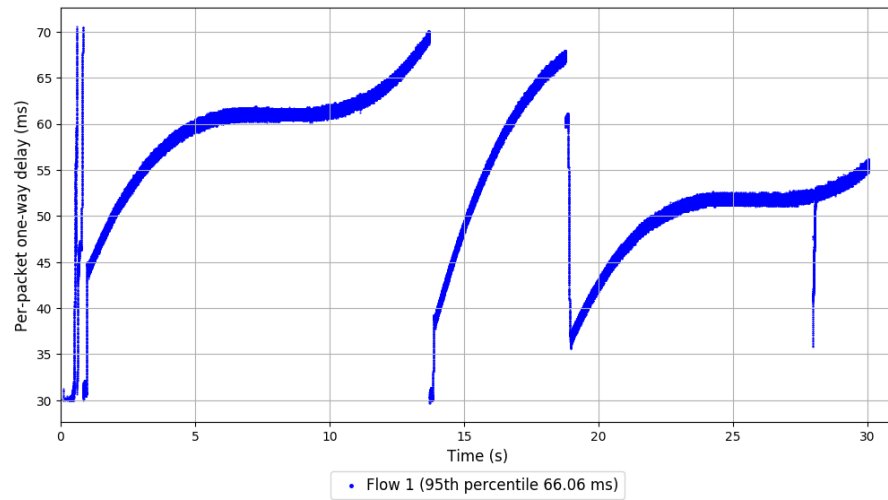
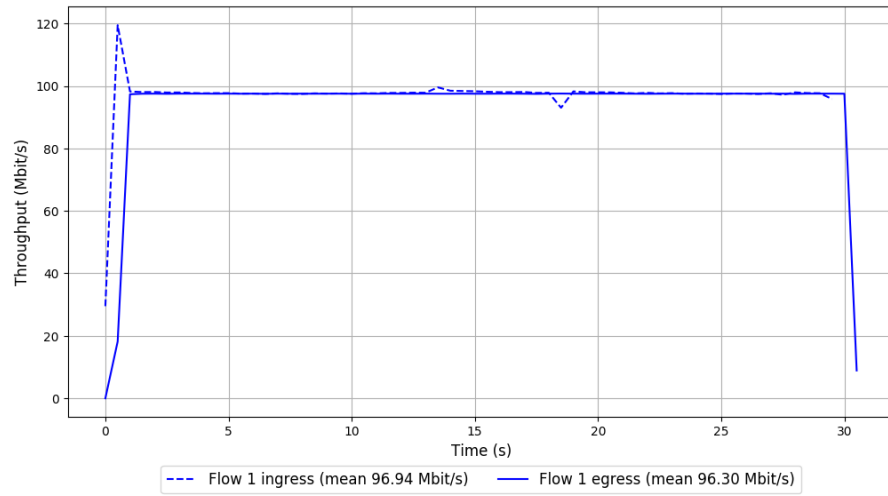
-- Flow 1:

Average throughput: 96.30 Mbit/s

95th percentile per-packet one-way delay: 66.059 ms

Loss rate: 0.58%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-03 08:31:40

End at: 2018-09-03 08:32:10

Local clock offset: -5.391 ms

Remote clock offset: 3.384 ms

Below is generated by plot.py at 2018-09-03 08:38:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.21 Mbit/s

95th percentile per-packet one-way delay: 59.359 ms

Loss rate: 0.46%

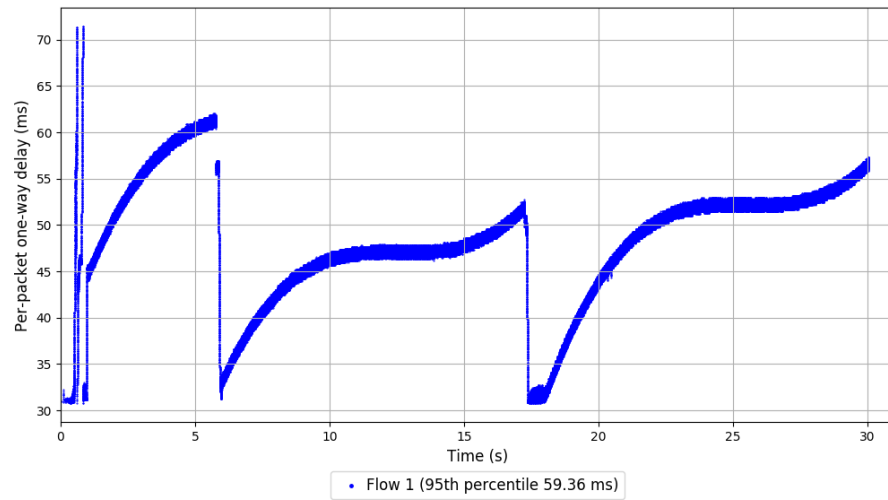
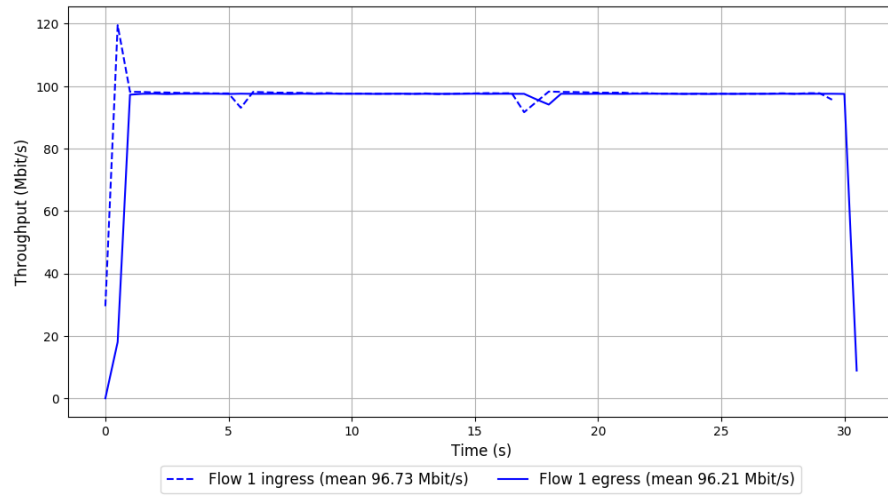
-- Flow 1:

Average throughput: 96.21 Mbit/s

95th percentile per-packet one-way delay: 59.359 ms

Loss rate: 0.46%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-09-03 08:36:52

End at: 2018-09-03 08:37:22

Local clock offset: -9.908 ms

Remote clock offset: 3.784 ms

Below is generated by plot.py at 2018-09-03 08:38:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.29 Mbit/s

95th percentile per-packet one-way delay: 67.693 ms

Loss rate: 0.69%

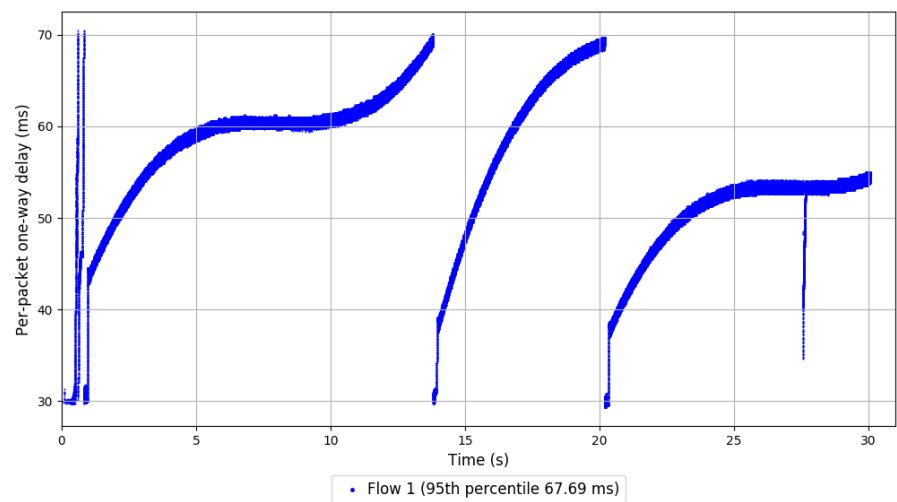
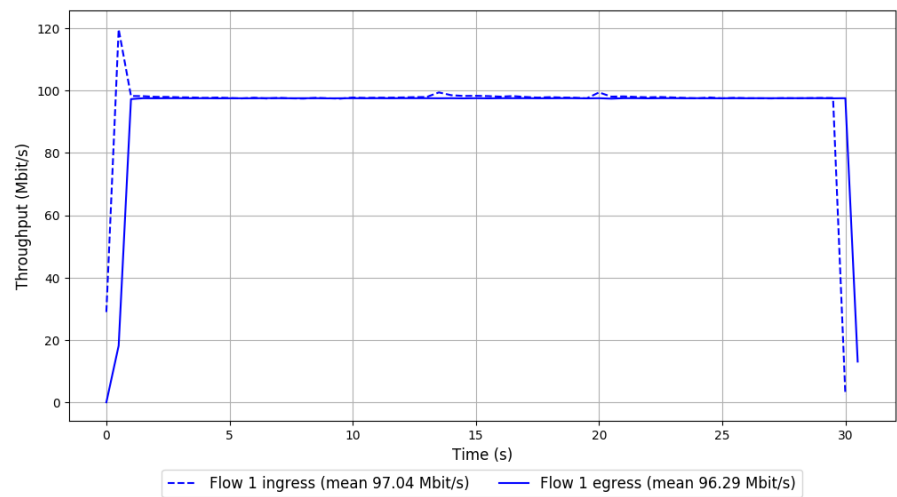
-- Flow 1:

Average throughput: 96.29 Mbit/s

95th percentile per-packet one-way delay: 67.693 ms

Loss rate: 0.69%

Run 3: Report of TCP Cubic — Data Link

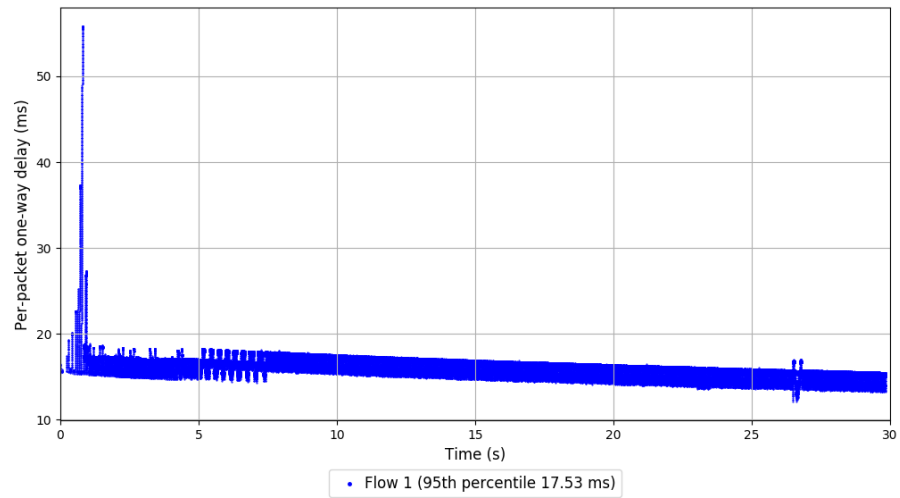
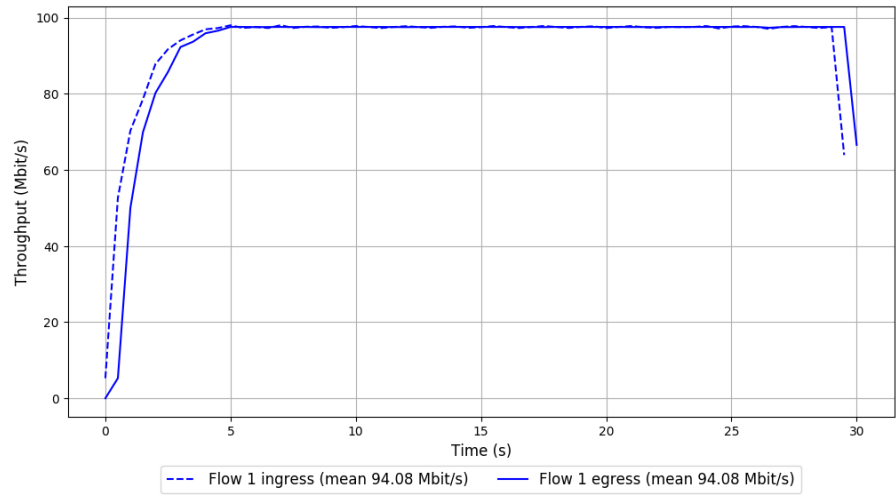


```
Run 1: Statistics of Indigo

Start at: 2018-09-03 08:22:34
End at: 2018-09-03 08:23:04
Local clock offset: 21.026 ms
Remote clock offset: 2.473 ms

# Below is generated by plot.py at 2018-09-03 08:38:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.08 Mbit/s
95th percentile per-packet one-way delay: 17.527 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 94.08 Mbit/s
95th percentile per-packet one-way delay: 17.527 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-03 08:27:46

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

Local clock offset: -2.453 ms

Remote clock offset: 3.103 ms

Below is generated by plot.py at 2018-09-03 08:38:51

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.64 Mbit/s

95th percentile per-packet one-way delay: 33.193 ms

Loss rate: 0.00%

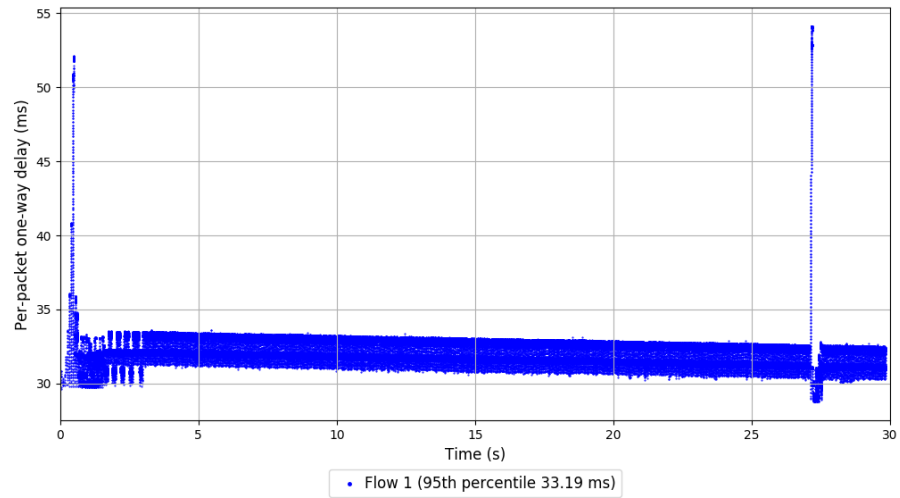
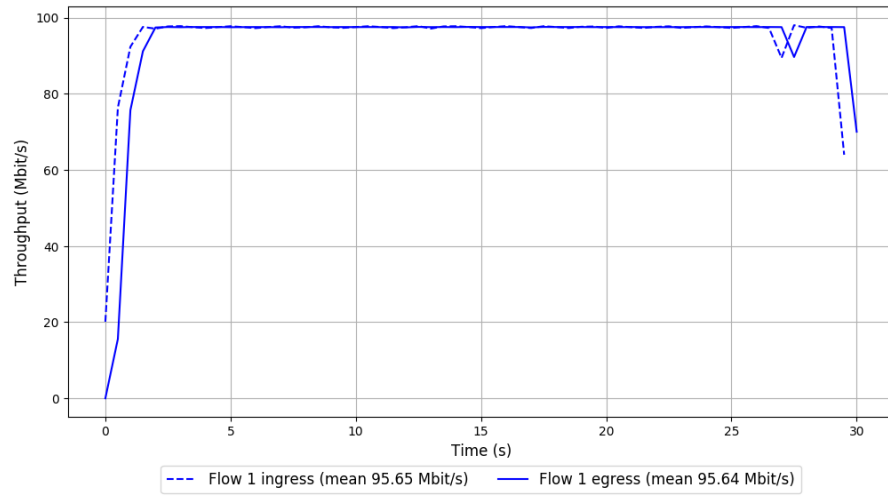
-- Flow 1:

Average throughput: 95.64 Mbit/s

95th percentile per-packet one-way delay: 33.193 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-09-03 08:32:59

End at: 2018-09-03 08:33:29

Local clock offset: -5.271 ms

Remote clock offset: 3.627 ms

Below is generated by plot.py at 2018-09-03 08:38:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.65 Mbit/s

95th percentile per-packet one-way delay: 34.887 ms

Loss rate: 0.02%

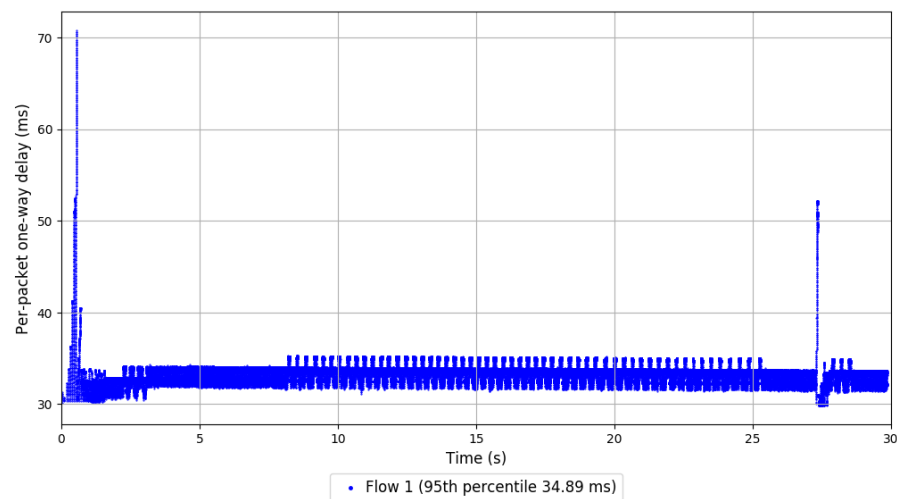
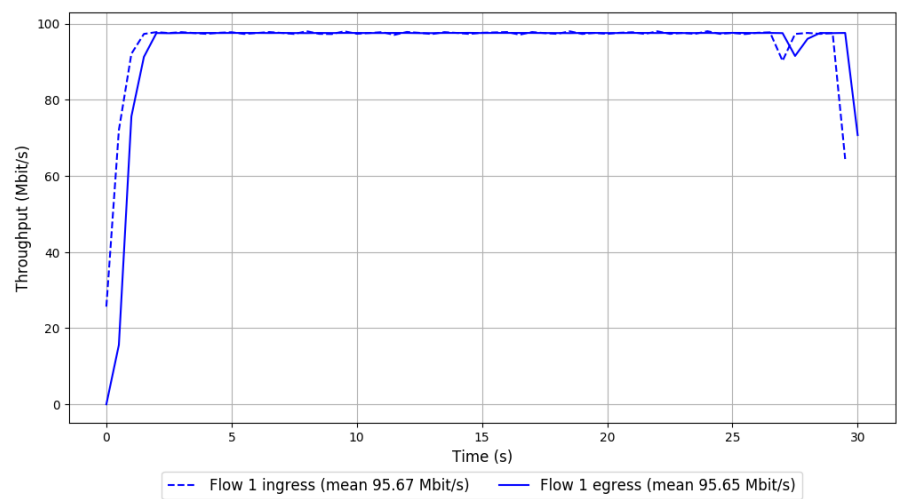
-- Flow 1:

Average throughput: 95.65 Mbit/s

95th percentile per-packet one-way delay: 34.887 ms

Loss rate: 0.02%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

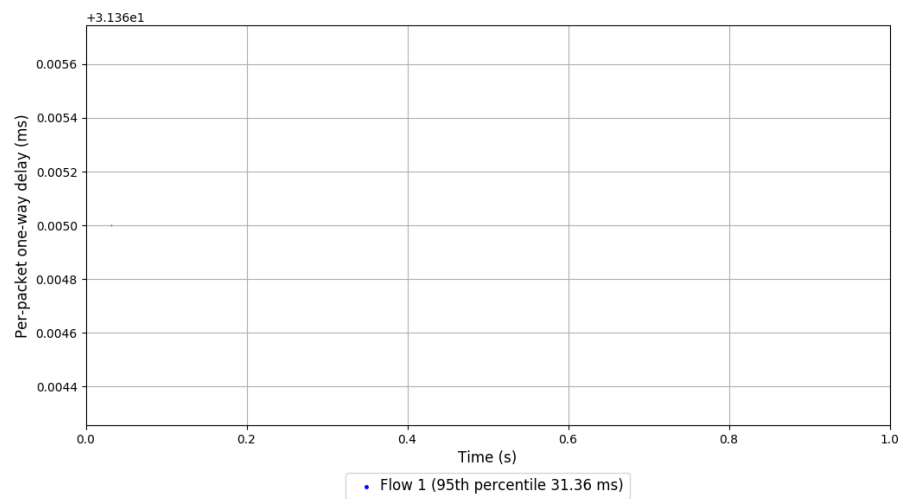
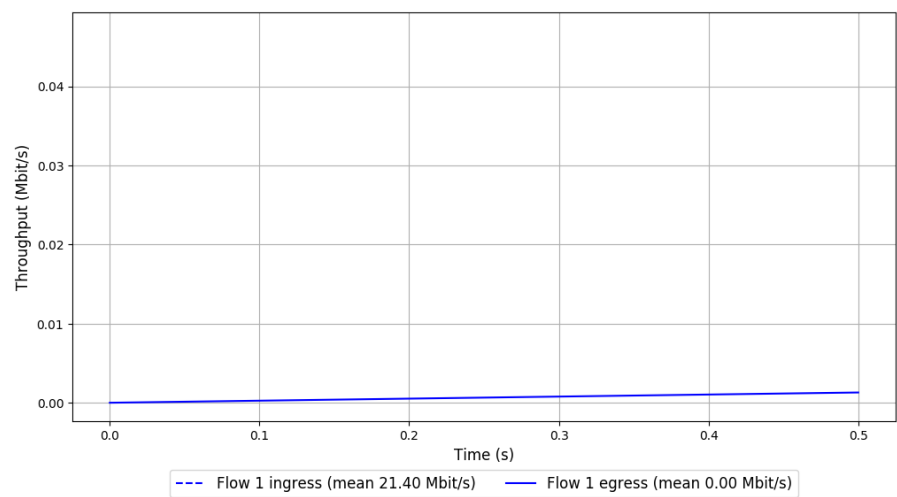
Start at: 2018-09-03 08:23:54

End at: 2018-09-03 08:24:24

Local clock offset: 1.569 ms

Remote clock offset: 2.615 ms

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-03 08:29:06

End at: 2018-09-03 08:29:36

Local clock offset: -4.959 ms

Remote clock offset: 2.914 ms

Below is generated by plot.py at 2018-09-03 08:38:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 9.00 Mbit/s

95th percentile per-packet one-way delay: 35.329 ms

Loss rate: 48.34%

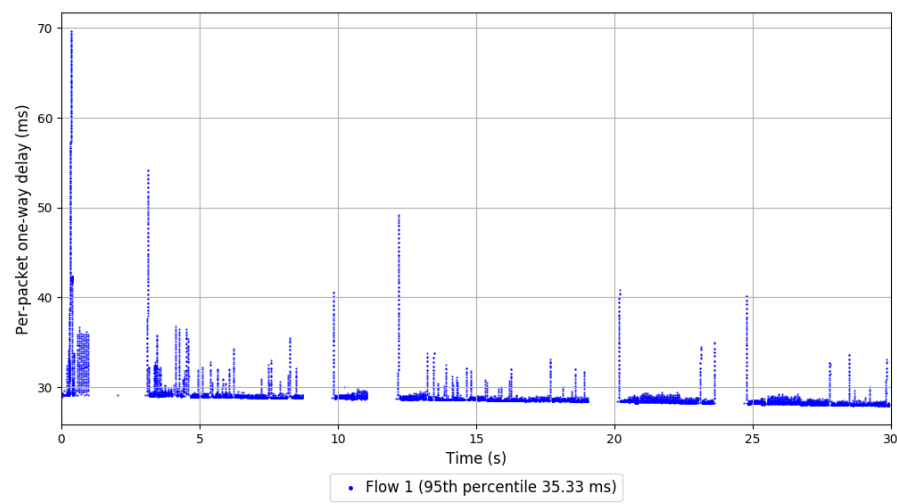
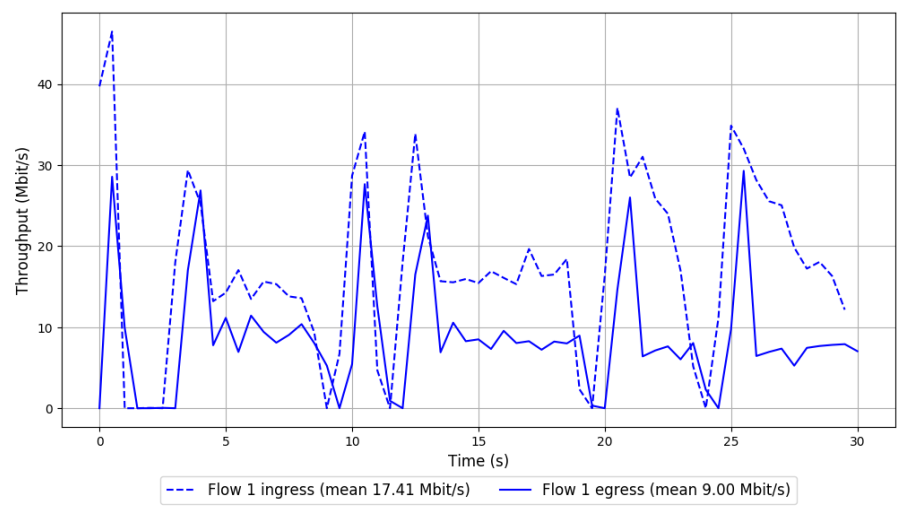
-- Flow 1:

Average throughput: 9.00 Mbit/s

95th percentile per-packet one-way delay: 35.329 ms

Loss rate: 48.34%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-03 08:34:19

End at: 2018-09-03 08:34:49

Local clock offset: -6.402 ms

Remote clock offset: 3.524 ms

Run 3: Report of Muses-25 — Data Link

