

Pantheon Report

Generated at 2018-08-28 15:25:24 (UTC).

Data path: GCE Tokyo on `ens4` (*remote*) → GCE Iowa on `ens4` (*local*).

Repeated the test of 4 congestion control schemes twice.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

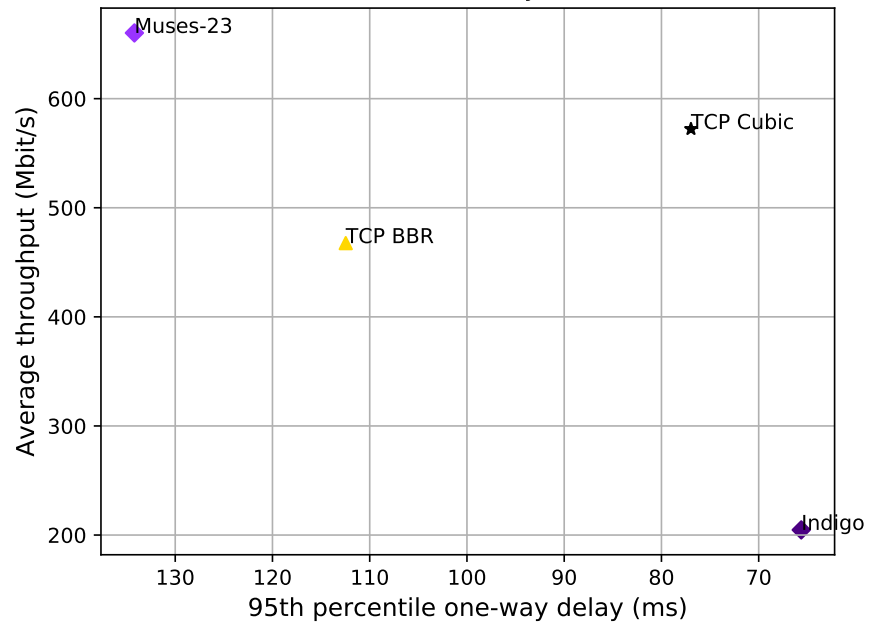
System info:

```
Linux 4.15.0-1017-gcp
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
```

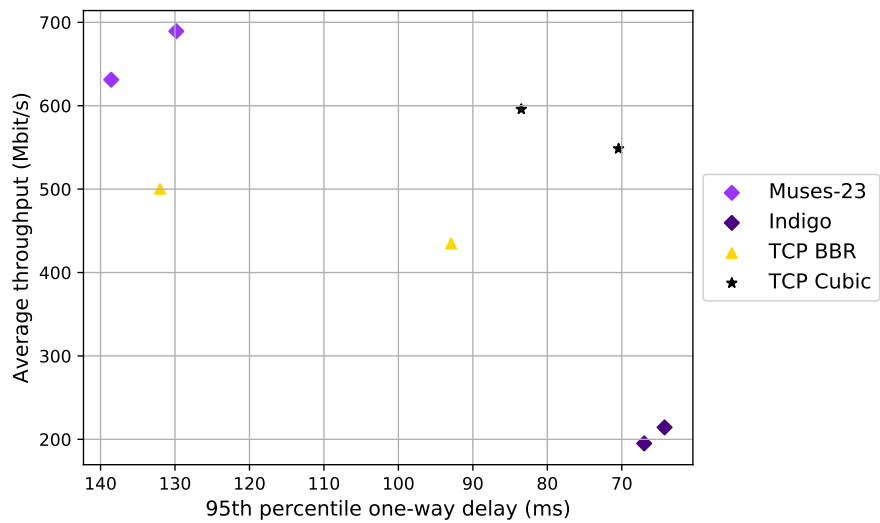
Git summary:

```
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 @ cbf6e6db5ff5740dafa1771f813cd646339e1952
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 GCE Tokyo to GCE Iowa, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Tokyo to GCE Iowa, 2 runs of 30s each per scheme



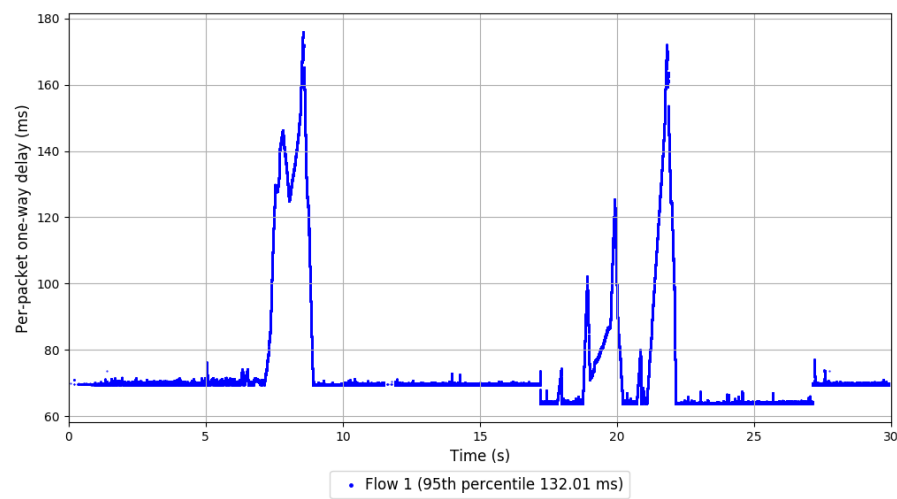
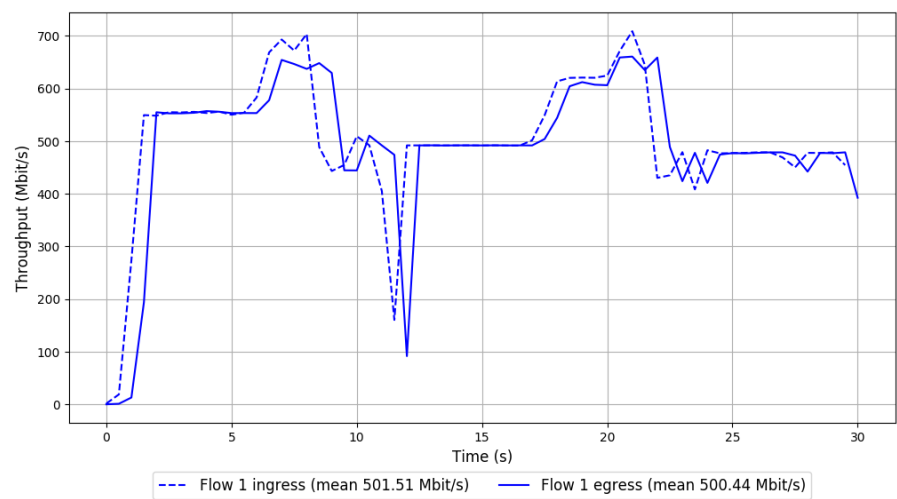
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	467.59	112.47	0.79
TCP Cubic	2	572.17	76.97	0.49
Indigo	2	204.72	65.62	0.45
Muses-23	2	660.24	134.20	1.86

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 15:04:49
End at: 2018-08-28 15:05:19
Local clock offset: -0.081 ms
Remote clock offset: -2.813 ms

Below is generated by plot.py at 2018-08-28 15:23:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 500.44 Mbit/s
95th percentile per-packet one-way delay: 132.010 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 500.44 Mbit/s
95th percentile per-packet one-way delay: 132.010 ms
Loss rate: 0.66%

Run 1: Report of TCP BBR — Data Link

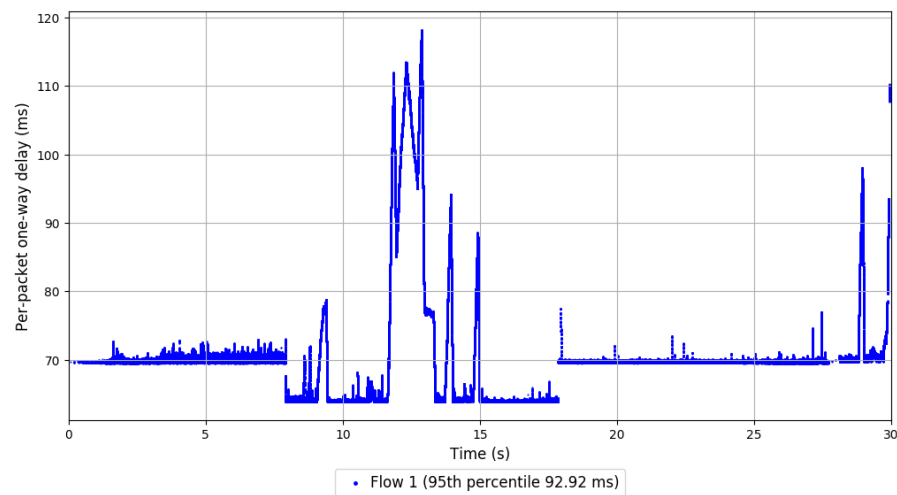
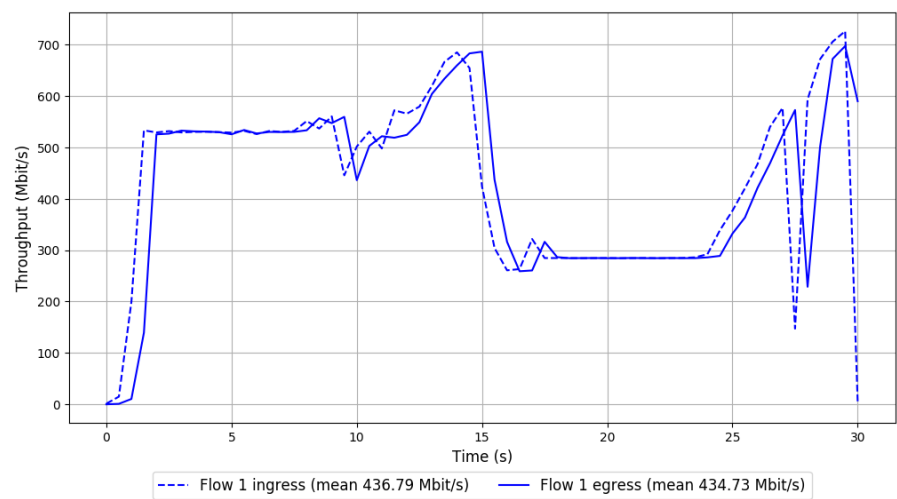


Run 2: Statistics of TCP BBR

Start at: 2018-08-28 15:10:58
End at: 2018-08-28 15:11:29
Local clock offset: -0.106 ms
Remote clock offset: -2.993 ms

Below is generated by plot.py at 2018-08-28 15:23:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 434.73 Mbit/s
95th percentile per-packet one-way delay: 92.920 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 434.73 Mbit/s
95th percentile per-packet one-way delay: 92.920 ms
Loss rate: 0.92%

Run 2: Report of TCP BBR — Data Link

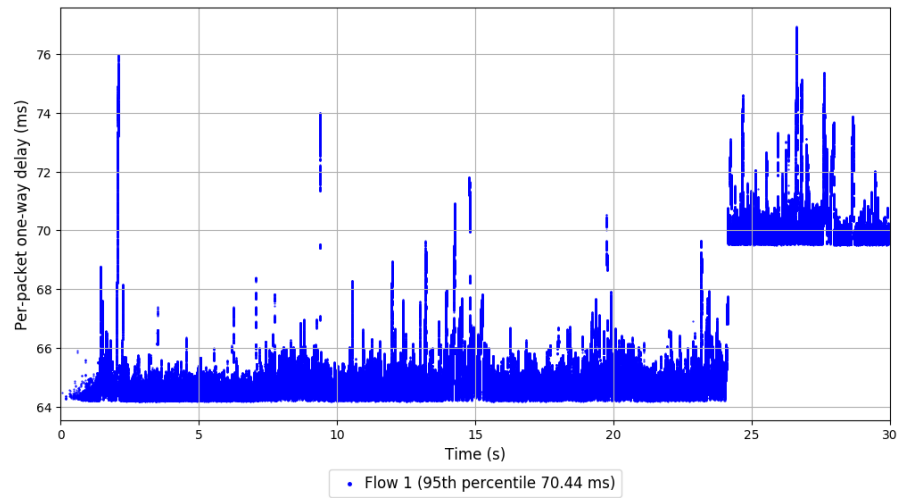
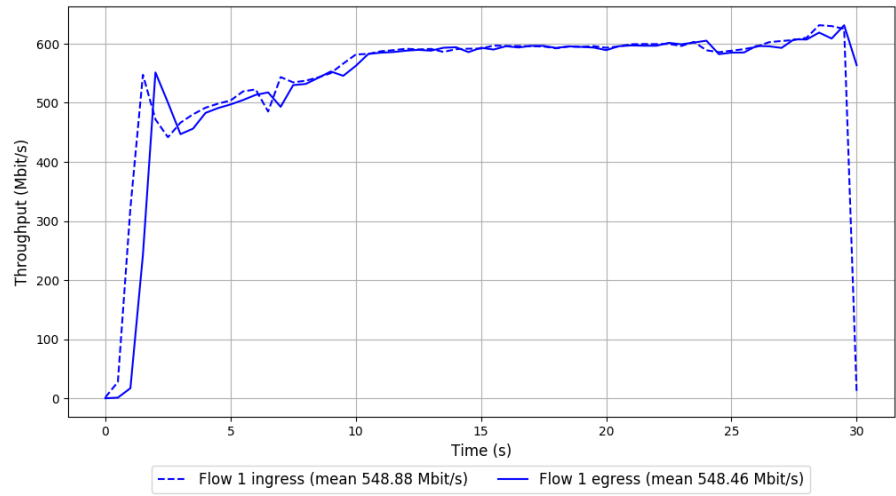


Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 15:08:02
End at: 2018-08-28 15:08:32
Local clock offset: -0.136 ms
Remote clock offset: -2.839 ms

Below is generated by plot.py at 2018-08-28 15:23:51
Datalink statistics
-- Total of 1 flow:
Average throughput: 548.46 Mbit/s
95th percentile per-packet one-way delay: 70.435 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 548.46 Mbit/s
95th percentile per-packet one-way delay: 70.435 ms
Loss rate: 0.51%

Run 1: Report of TCP Cubic — Data Link

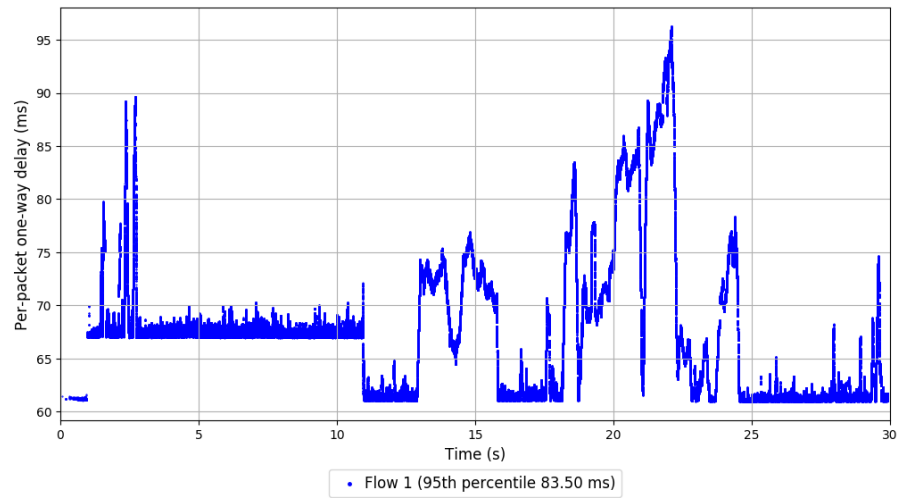
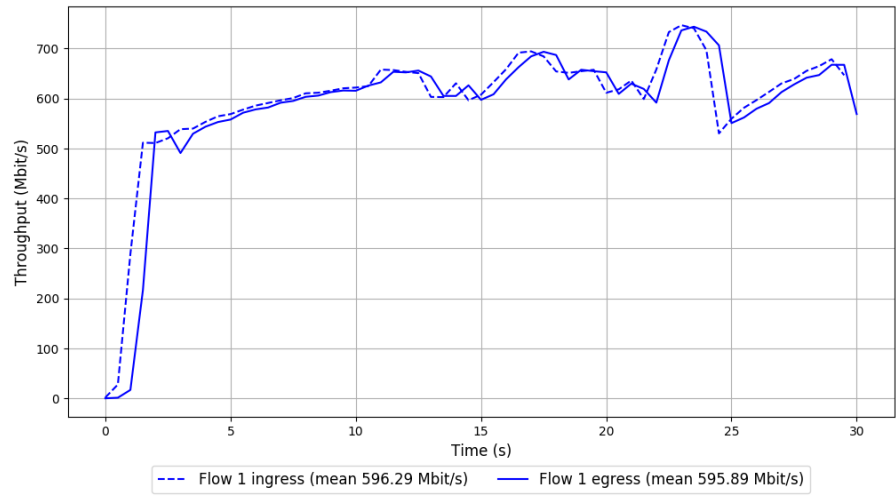


Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 15:14:05
End at: 2018-08-28 15:14:35
Local clock offset: -0.146 ms
Remote clock offset: -0.053 ms

Below is generated by plot.py at 2018-08-28 15:23:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 595.89 Mbit/s
95th percentile per-packet one-way delay: 83.496 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 595.89 Mbit/s
95th percentile per-packet one-way delay: 83.496 ms
Loss rate: 0.48%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-08-28 15:03:24

End at: 2018-08-28 15:03:54

Local clock offset: -0.038 ms

Remote clock offset: -2.755 ms

Below is generated by plot.py at 2018-08-28 15:23:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 214.34 Mbit/s

95th percentile per-packet one-way delay: 64.256 ms

Loss rate: 0.43%

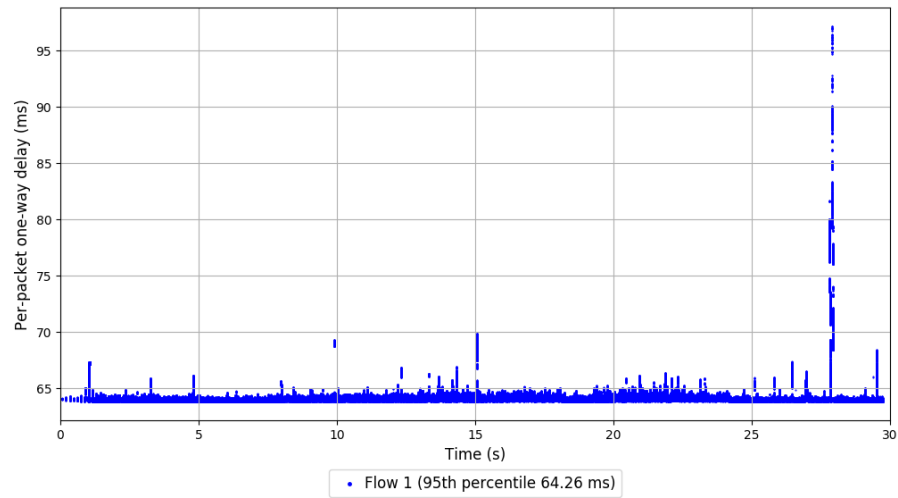
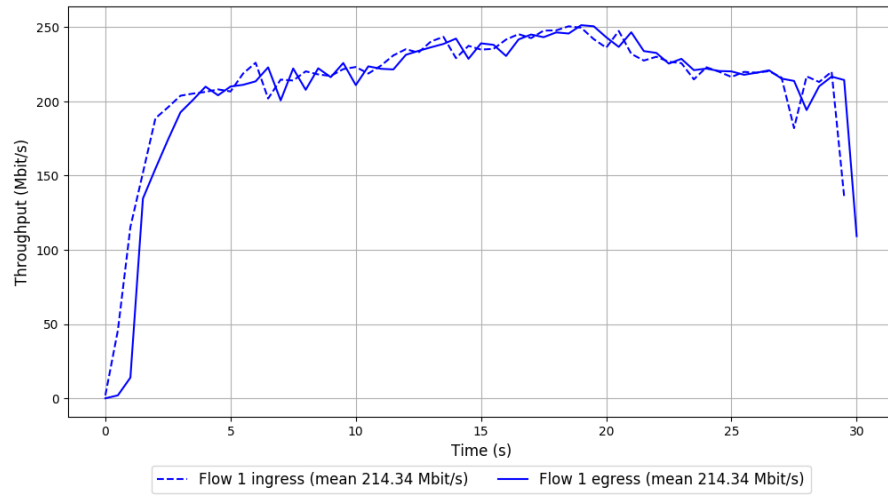
-- Flow 1:

Average throughput: 214.34 Mbit/s

95th percentile per-packet one-way delay: 64.256 ms

Loss rate: 0.43%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 15:09:35

End at: 2018-08-28 15:10:05

Local clock offset: -0.112 ms

Remote clock offset: 0.001 ms

Below is generated by plot.py at 2018-08-28 15:23:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 195.09 Mbit/s

95th percentile per-packet one-way delay: 66.992 ms

Loss rate: 0.47%

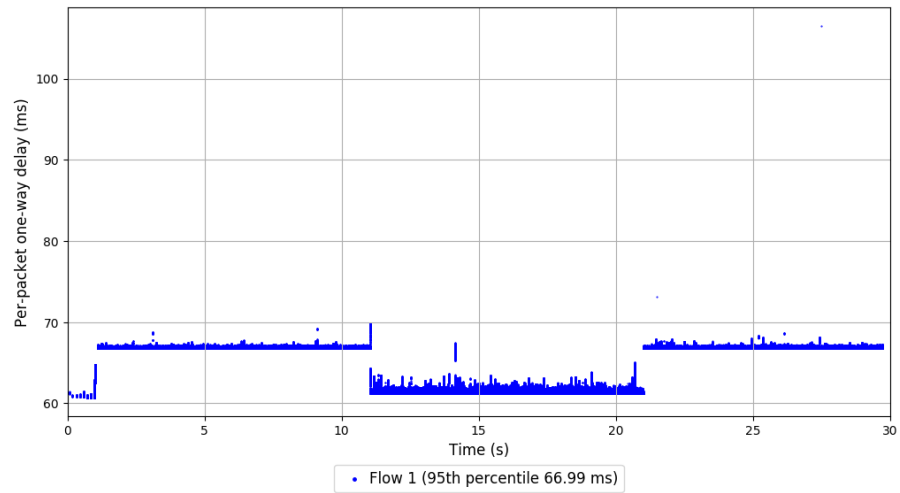
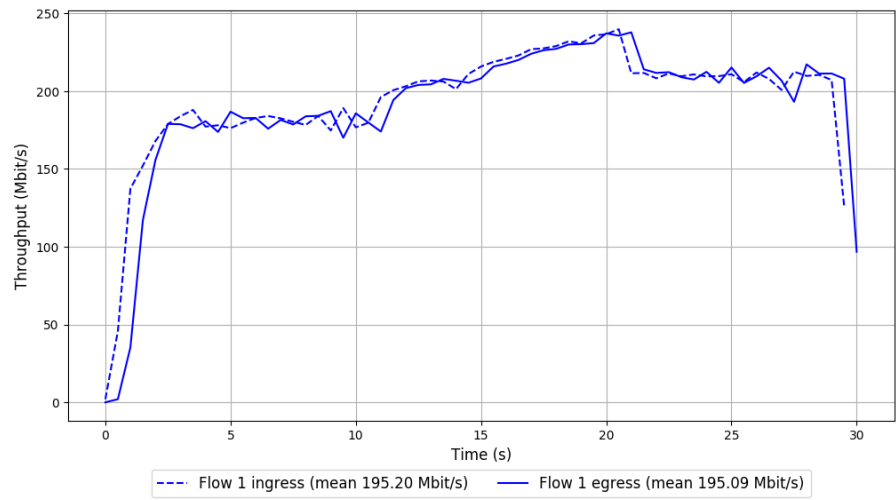
-- Flow 1:

Average throughput: 195.09 Mbit/s

95th percentile per-packet one-way delay: 66.992 ms

Loss rate: 0.47%

Run 2: Report of Indigo — Data Link

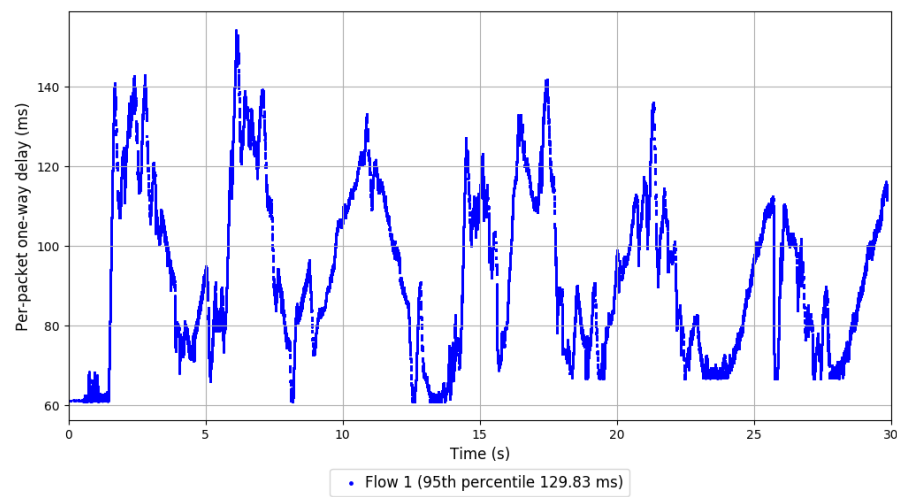
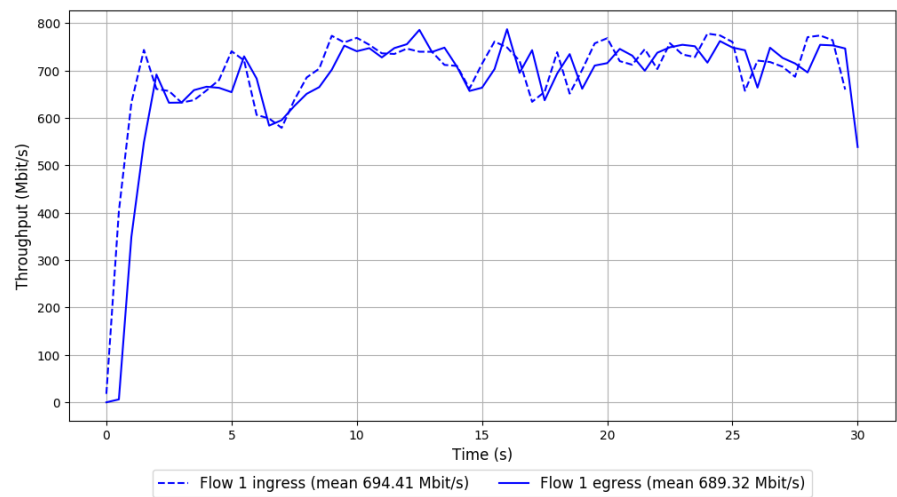


Run 1: Statistics of Muses-23

Start at: 2018-08-28 15:06:20
End at: 2018-08-28 15:06:50
Local clock offset: -0.09 ms
Remote clock offset: -0.015 ms

Below is generated by plot.py at 2018-08-28 15:25:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 689.32 Mbit/s
95th percentile per-packet one-way delay: 129.829 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 689.32 Mbit/s
95th percentile per-packet one-way delay: 129.829 ms
Loss rate: 1.16%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 15:12:26

End at: 2018-08-28 15:12:56

Local clock offset: -0.123 ms

Remote clock offset: -0.05 ms

Below is generated by plot.py at 2018-08-28 15:25:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 631.16 Mbit/s

95th percentile per-packet one-way delay: 138.568 ms

Loss rate: 2.56%

-- Flow 1:

Average throughput: 631.16 Mbit/s

95th percentile per-packet one-way delay: 138.568 ms

Loss rate: 2.56%

Run 2: Report of Muses-23 — Data Link

