

Pantheon Report

Generated at 2018-08-28 12:39:57 (UTC).

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

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.

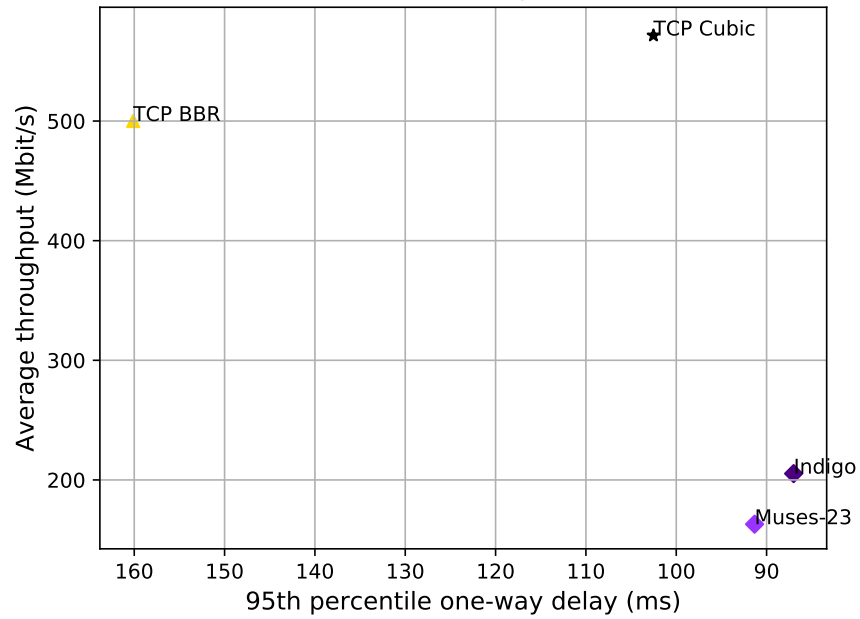
System info:

```
Linux 4.15.0-1015-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
```

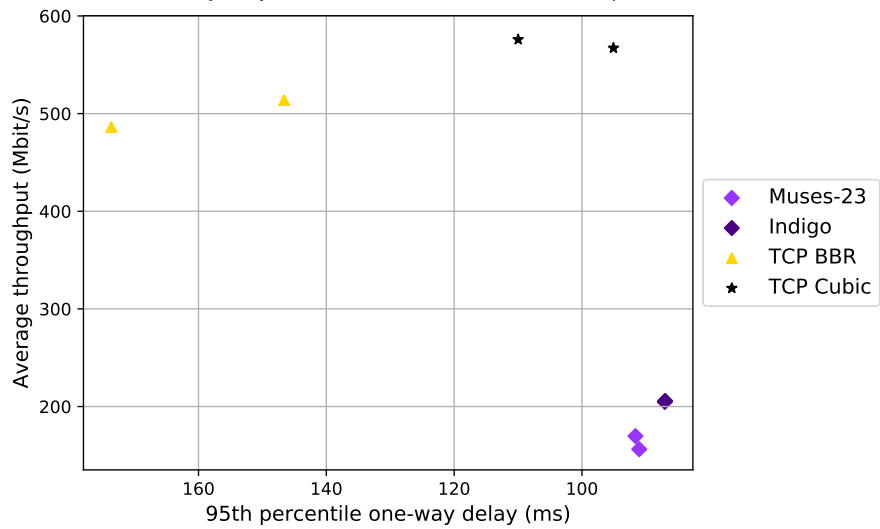
Git summary:

```
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 @ cbf6e6db5ff5740dfe1771f813cd646339e1952
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 Sydney to GCE Iowa, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Sydney 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	500.04	160.12	0.71
TCP Cubic	2	571.52	102.53	0.01
Indigo	2	205.28	87.01	0.00
Muses-23	2	163.00	91.33	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 12:22:20

End at: 2018-08-28 12:22:50

Local clock offset: -0.086 ms

Remote clock offset: 0.055 ms

Below is generated by plot.py at 2018-08-28 12:39:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 513.80 Mbit/s

95th percentile per-packet one-way delay: 146.595 ms

Loss rate: 0.81%

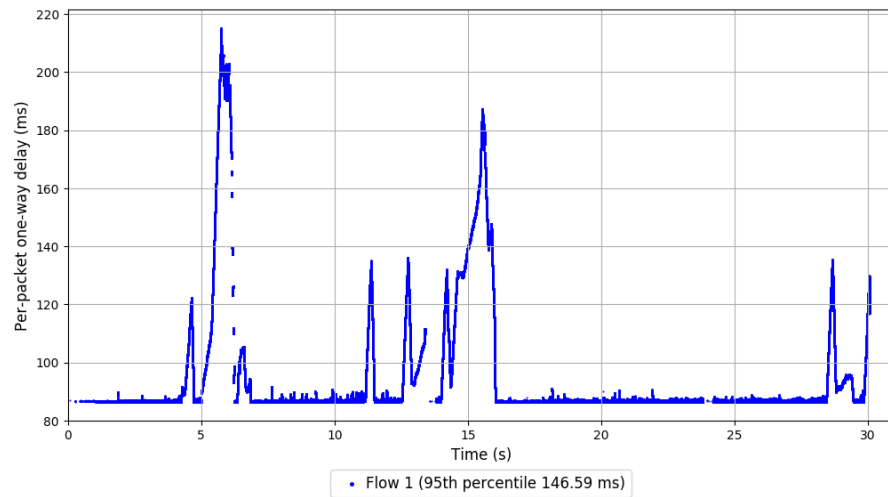
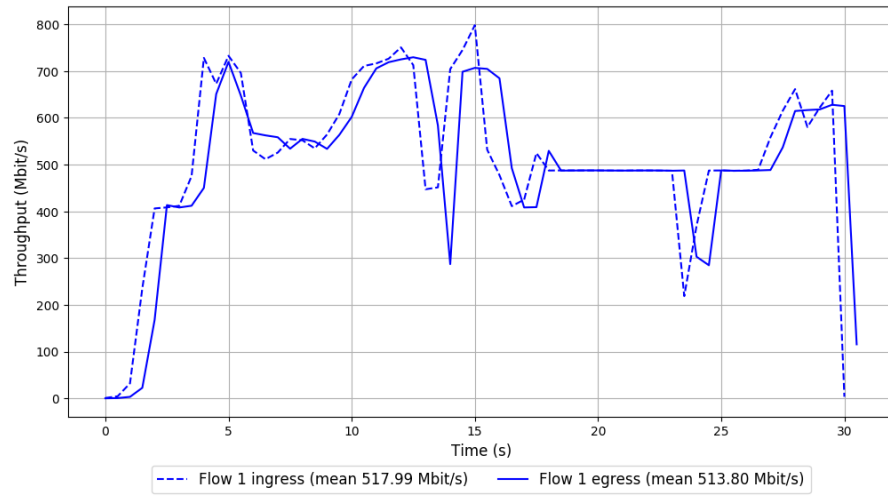
-- Flow 1:

Average throughput: 513.80 Mbit/s

95th percentile per-packet one-way delay: 146.595 ms

Loss rate: 0.81%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 12:28:11

End at: 2018-08-28 12:28:41

Local clock offset: -0.184 ms

Remote clock offset: 0.03 ms

Below is generated by plot.py at 2018-08-28 12:39:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 486.28 Mbit/s

95th percentile per-packet one-way delay: 173.639 ms

Loss rate: 0.60%

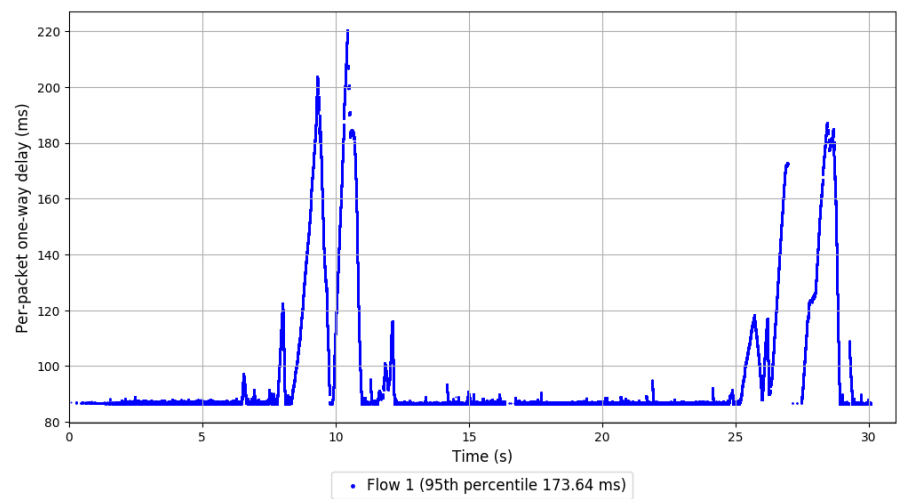
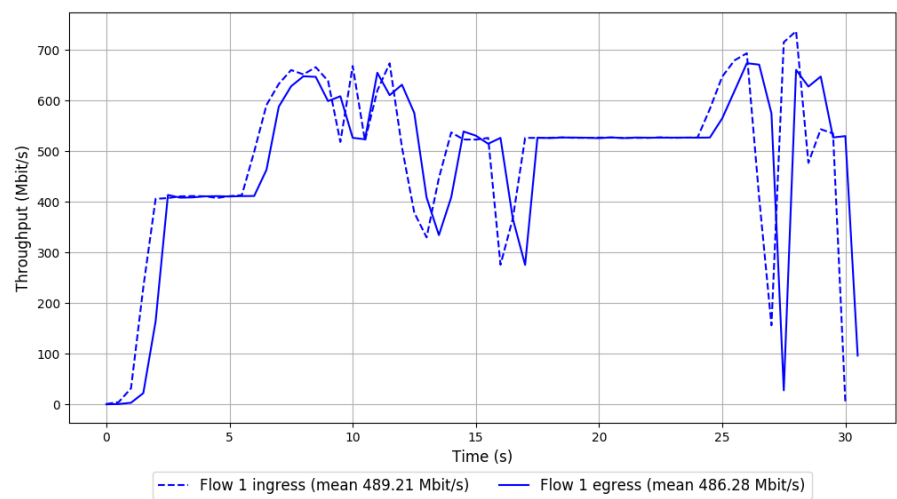
-- Flow 1:

Average throughput: 486.28 Mbit/s

95th percentile per-packet one-way delay: 173.639 ms

Loss rate: 0.60%

Run 2: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 12:25:10

End at: 2018-08-28 12:25:40

Local clock offset: -0.043 ms

Remote clock offset: 0.079 ms

Below is generated by plot.py at 2018-08-28 12:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 575.88 Mbit/s

95th percentile per-packet one-way delay: 109.985 ms

Loss rate: 0.02%

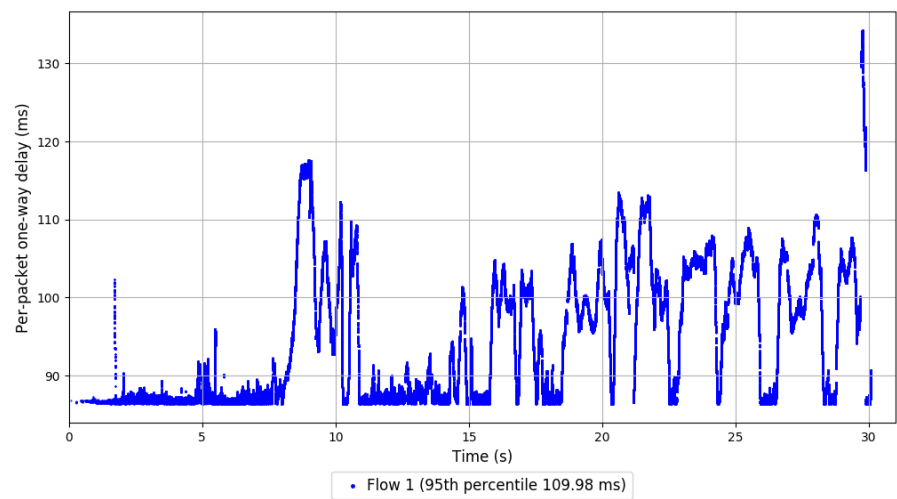
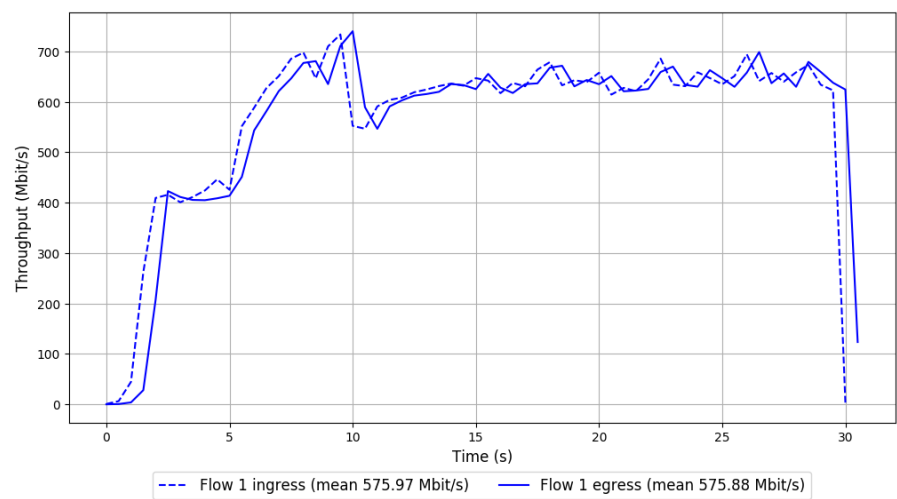
-- Flow 1:

Average throughput: 575.88 Mbit/s

95th percentile per-packet one-way delay: 109.985 ms

Loss rate: 0.02%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 12:31:02

End at: 2018-08-28 12:31:32

Local clock offset: -0.117 ms

Remote clock offset: 0.039 ms

Below is generated by plot.py at 2018-08-28 12:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 567.17 Mbit/s

95th percentile per-packet one-way delay: 95.071 ms

Loss rate: 0.00%

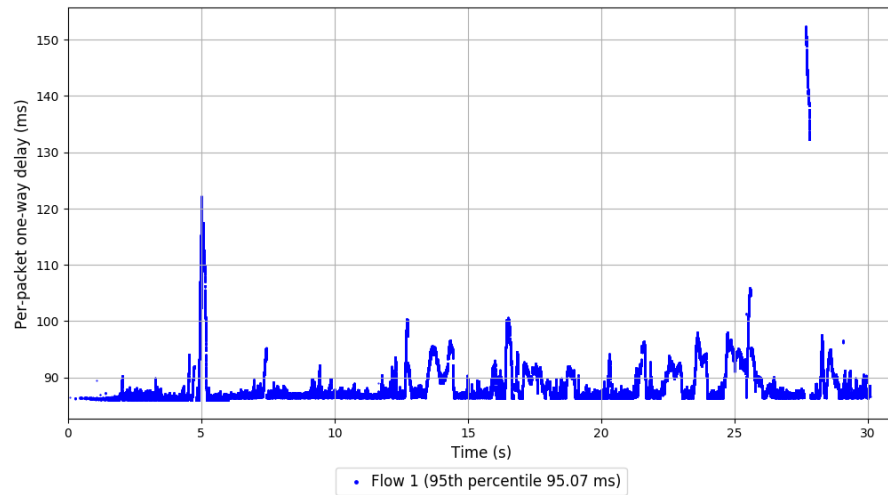
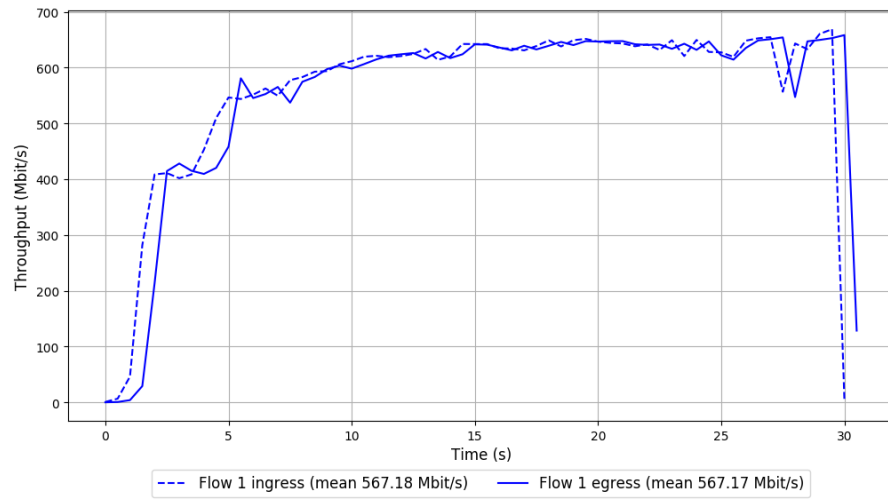
-- Flow 1:

Average throughput: 567.17 Mbit/s

95th percentile per-packet one-way delay: 95.071 ms

Loss rate: 0.00%

Run 2: Report of TCP Cubic — Data Link

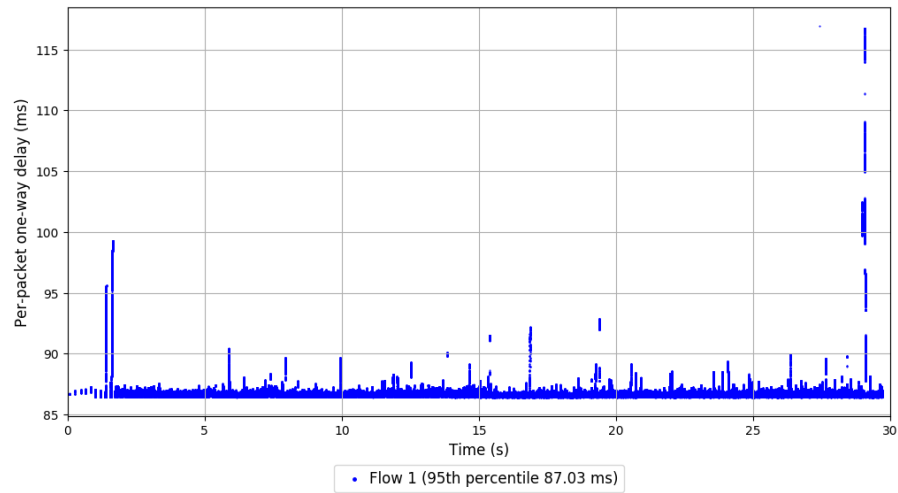
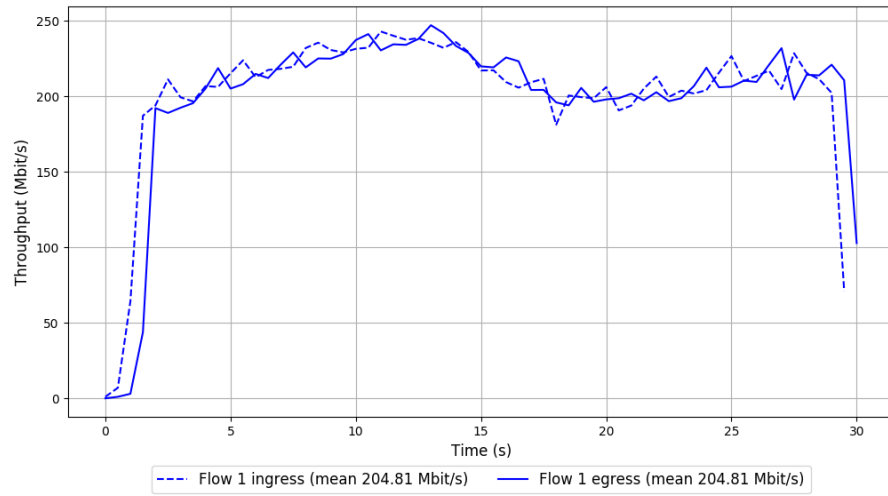


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 12:20:54
End at: 2018-08-28 12:21:24
Local clock offset: -0.14 ms
Remote clock offset: 0.083 ms

# Below is generated by plot.py at 2018-08-28 12:39:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 204.81 Mbit/s
95th percentile per-packet one-way delay: 87.032 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 204.81 Mbit/s
95th percentile per-packet one-way delay: 87.032 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 12:26:45

End at: 2018-08-28 12:27:15

Local clock offset: -0.155 ms

Remote clock offset: 0.021 ms

Below is generated by plot.py at 2018-08-28 12:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 205.76 Mbit/s

95th percentile per-packet one-way delay: 86.980 ms

Loss rate: 0.00%

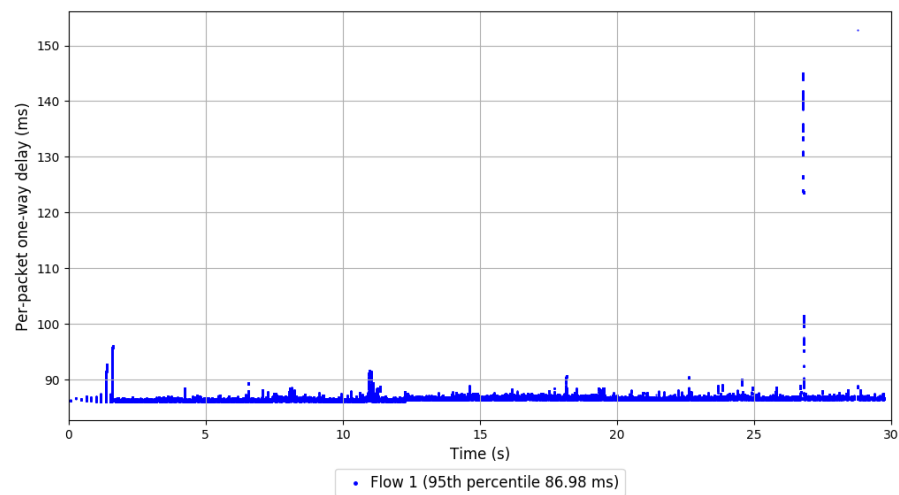
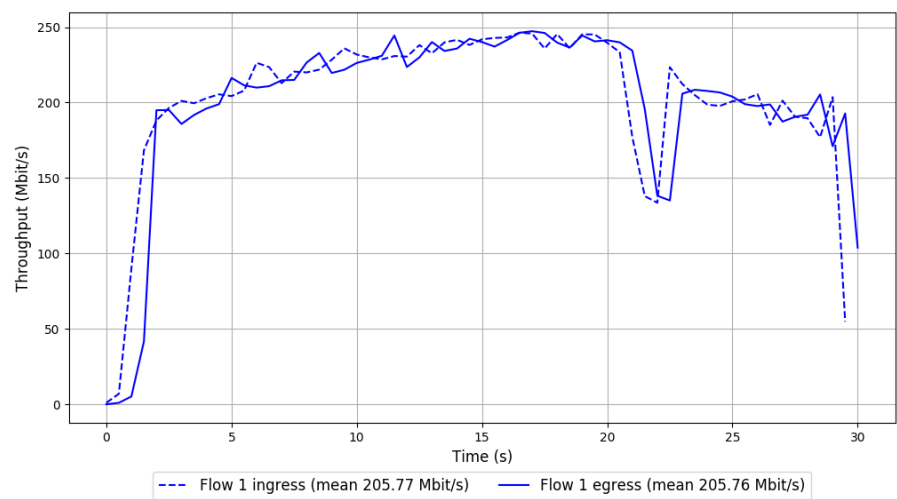
-- Flow 1:

Average throughput: 205.76 Mbit/s

95th percentile per-packet one-way delay: 86.980 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 1: Statistics of Muses-23

Start at: 2018-08-28 12:23:54

End at: 2018-08-28 12:24:24

Local clock offset: -0.123 ms

Remote clock offset: 0.014 ms

Below is generated by plot.py at 2018-08-28 12:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 156.28 Mbit/s

95th percentile per-packet one-way delay: 91.034 ms

Loss rate: 0.00%

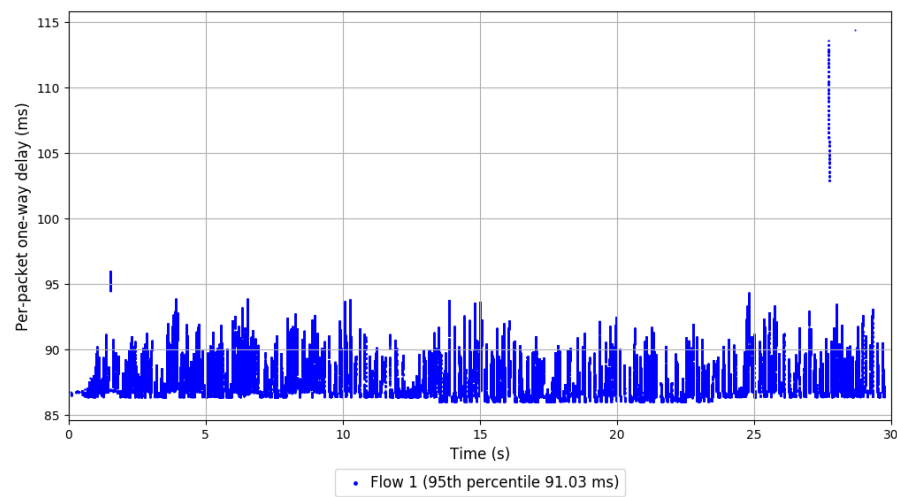
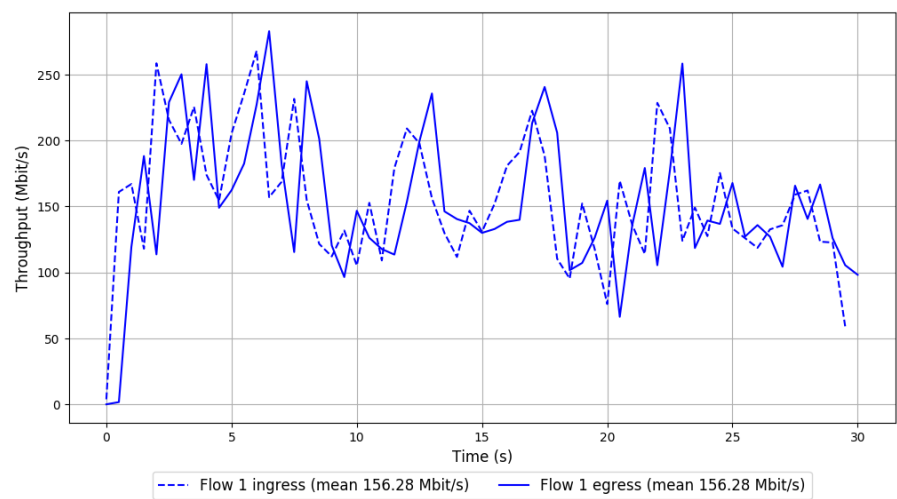
-- Flow 1:

Average throughput: 156.28 Mbit/s

95th percentile per-packet one-way delay: 91.034 ms

Loss rate: 0.00%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 12:29:45

End at: 2018-08-28 12:30:15

Local clock offset: -0.26 ms

Remote clock offset: 0.028 ms

Below is generated by plot.py at 2018-08-28 12:39:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 169.72 Mbit/s

95th percentile per-packet one-way delay: 91.623 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 169.72 Mbit/s

95th percentile per-packet one-way delay: 91.623 ms

Loss rate: 0.00%

Run 2: Report of Muses-23 — Data Link

