

Pantheon Report

Generated at 2018-08-31 07:20:43 (UTC).

Data path: AWS Brazil 1 on `ens5` (*local*) → Brazil on `p4p1` (*remote*).

Repeated the test of 4 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

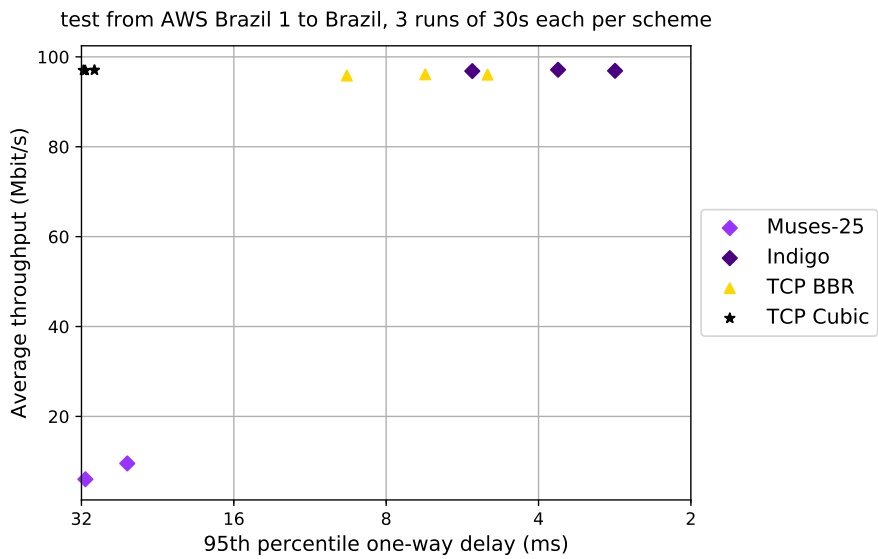
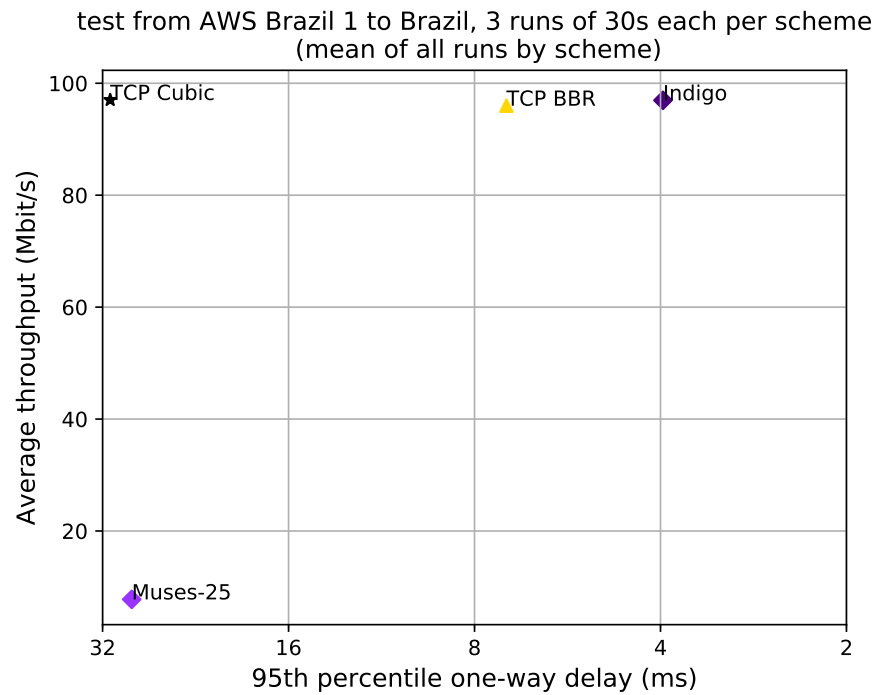
NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

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
```



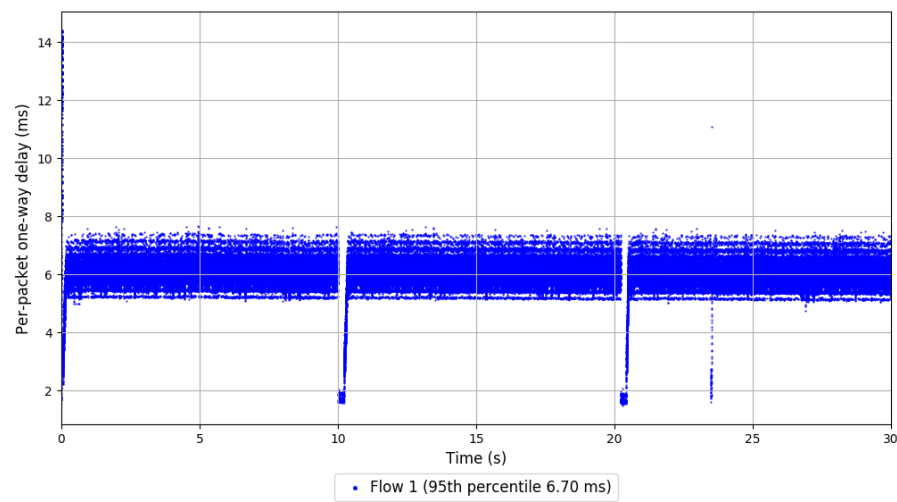
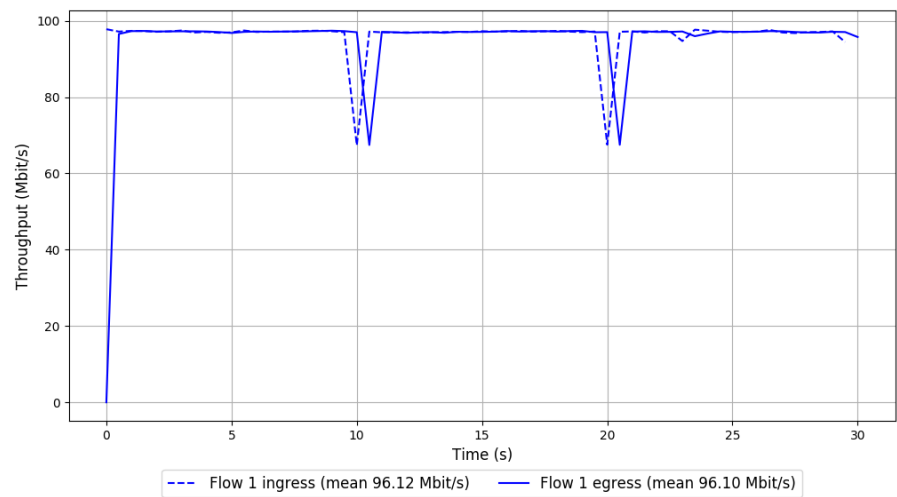
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	95.99	7.10	0.00
TCP Cubic	3	97.01	31.11	0.02
Indigo	3	96.95	3.96	0.00
Muses-25	2	7.78	28.70	34.09

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 07:08:39
End at: 2018-08-31 07:09:09
Local clock offset: -10.616 ms
Remote clock offset: -0.085 ms

Below is generated by plot.py at 2018-08-31 07:20:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.10 Mbit/s
95th percentile per-packet one-way delay: 6.698 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.10 Mbit/s
95th percentile per-packet one-way delay: 6.698 ms
Loss rate: 0.00%

Run 1: Report of TCP BBR — Data Link

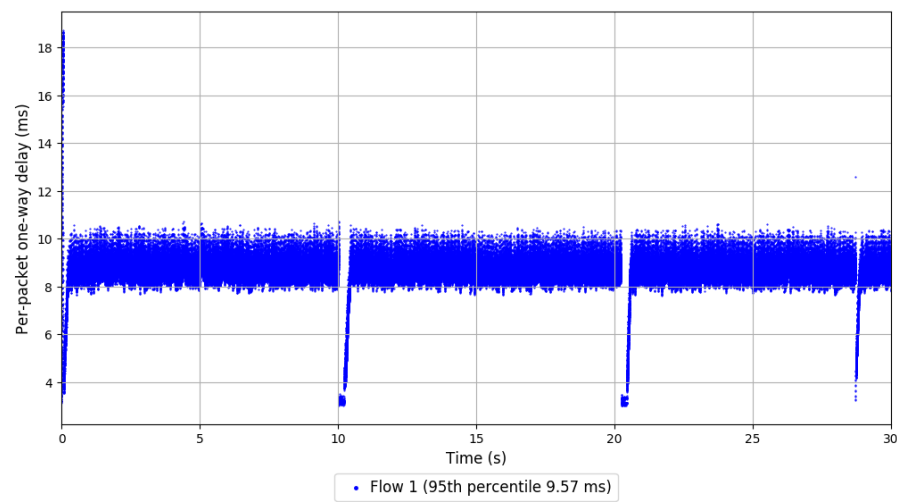
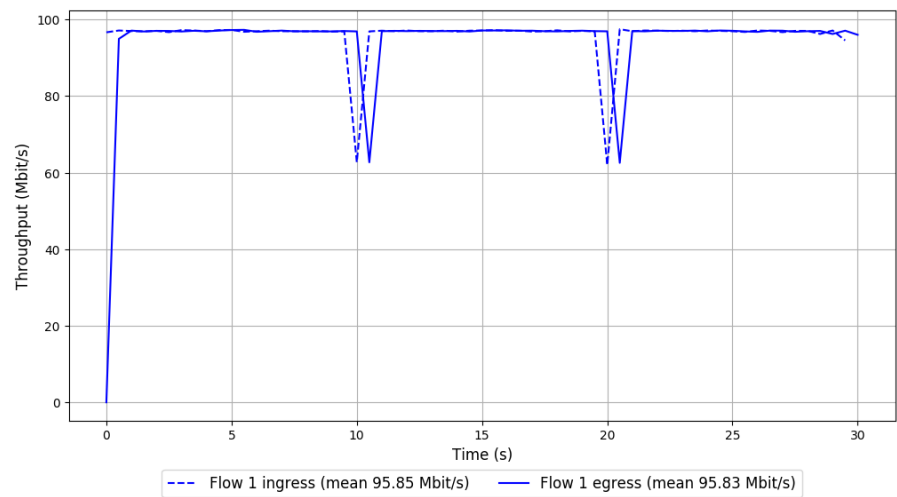


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 07:13:06
End at: 2018-08-31 07:13:36
Local clock offset: -11.596 ms
Remote clock offset: -0.026 ms

Below is generated by plot.py at 2018-08-31 07:20:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.83 Mbit/s
95th percentile per-packet one-way delay: 9.566 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 95.83 Mbit/s
95th percentile per-packet one-way delay: 9.566 ms
Loss rate: 0.01%

Run 2: Report of TCP BBR — Data Link

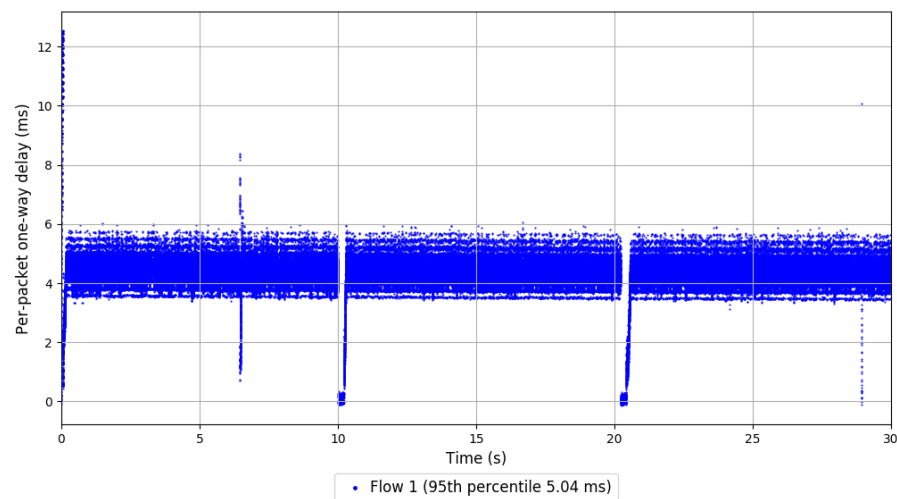
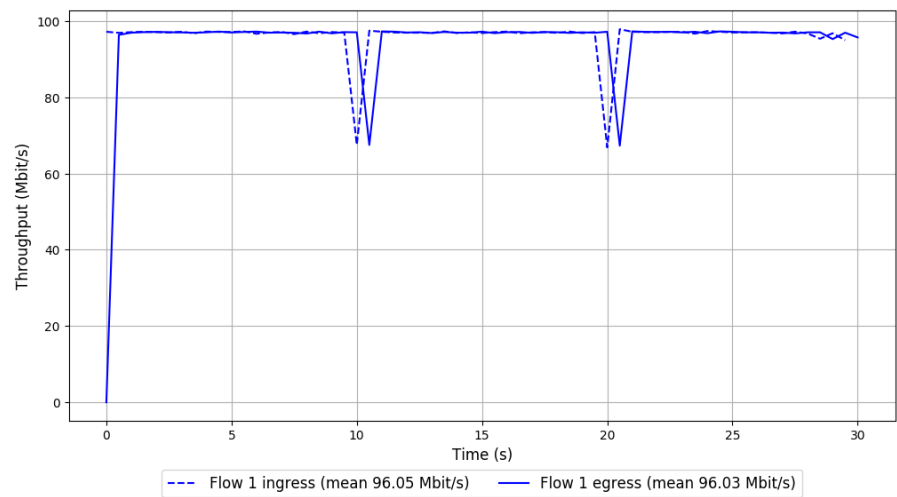


Run 3: Statistics of TCP BBR

Start at: 2018-08-31 07:17:32
End at: 2018-08-31 07:18:02
Local clock offset: -11.081 ms
Remote clock offset: -0.107 ms

Below is generated by plot.py at 2018-08-31 07:20:34
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.03 Mbit/s
95th percentile per-packet one-way delay: 5.044 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.03 Mbit/s
95th percentile per-packet one-way delay: 5.044 ms
Loss rate: 0.00%

Run 3: Report of TCP BBR — Data Link

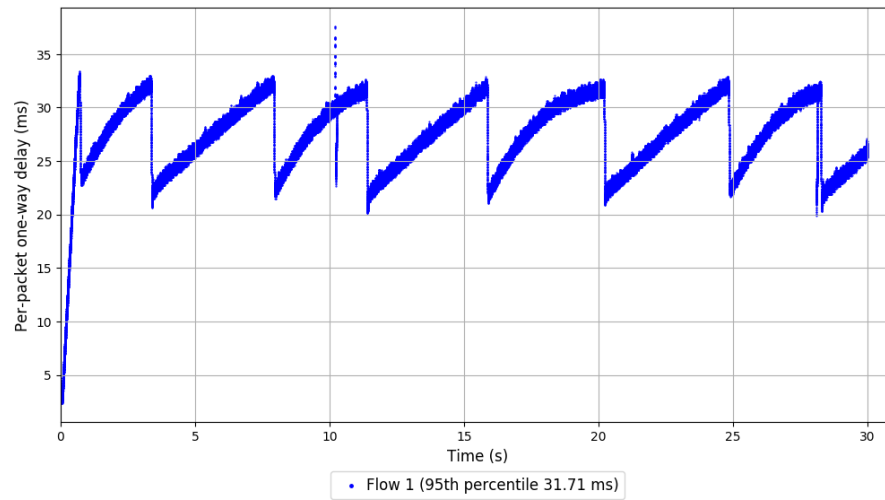
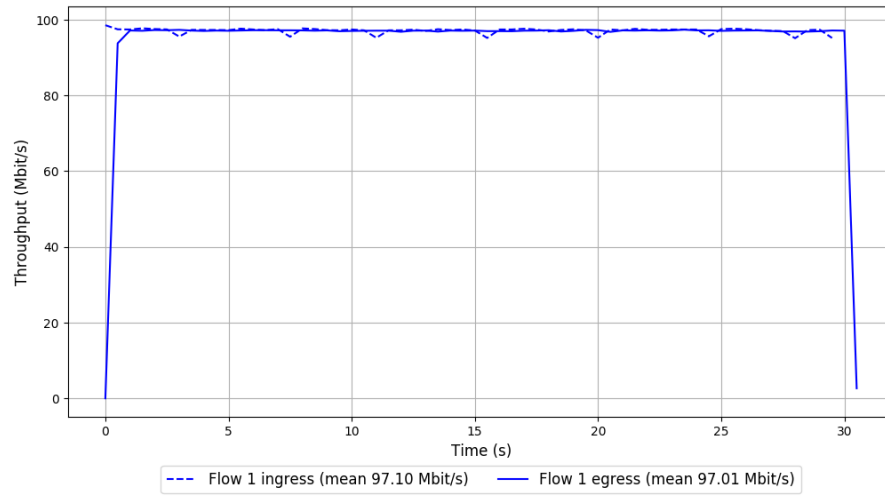


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 07:09:46
End at: 2018-08-31 07:10:16
Local clock offset: -10.119 ms
Remote clock offset: -0.064 ms

Below is generated by plot.py at 2018-08-31 07:20:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 97.01 Mbit/s
95th percentile per-packet one-way delay: 31.710 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 97.01 Mbit/s
95th percentile per-packet one-way delay: 31.710 ms
Loss rate: 0.02%

Run 1: Report of TCP Cubic — Data Link

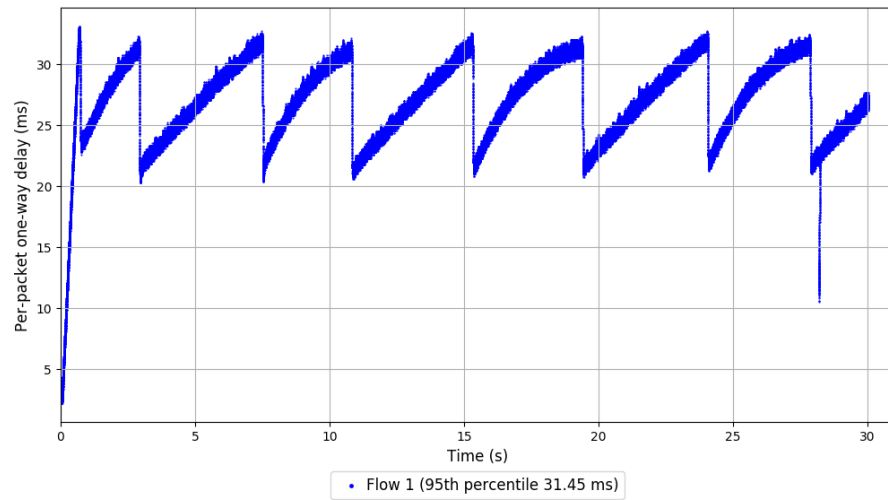
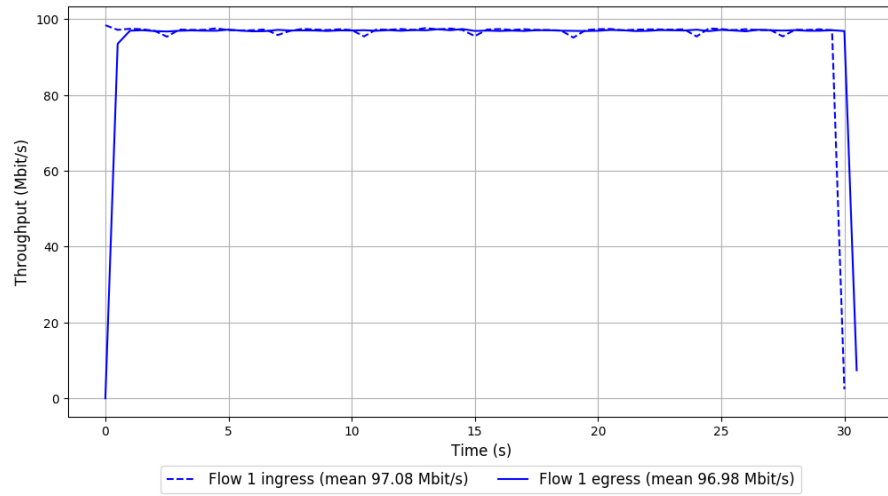


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 07:14:13
End at: 2018-08-31 07:14:43
Local clock offset: -11.014 ms
Remote clock offset: -0.075 ms

Below is generated by plot.py at 2018-08-31 07:20:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.98 Mbit/s
95th percentile per-packet one-way delay: 31.452 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 96.98 Mbit/s
95th percentile per-packet one-way delay: 31.452 ms
Loss rate: 0.02%

Run 2: Report of TCP Cubic — Data Link

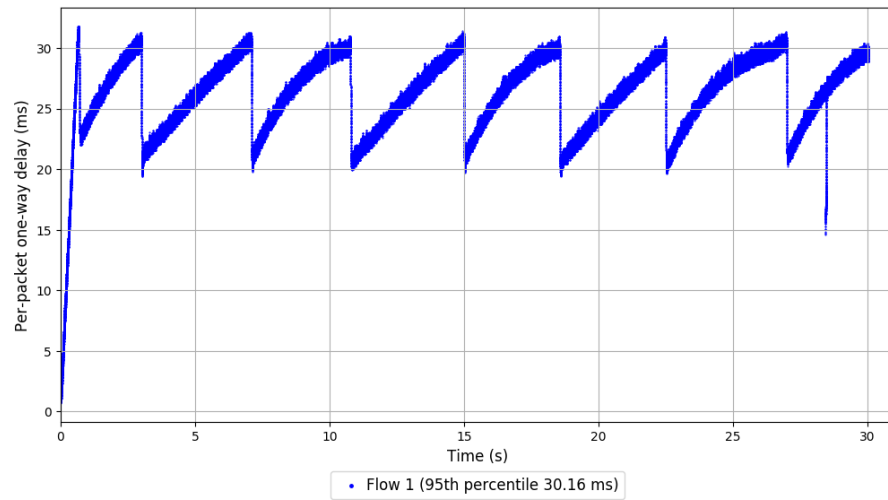
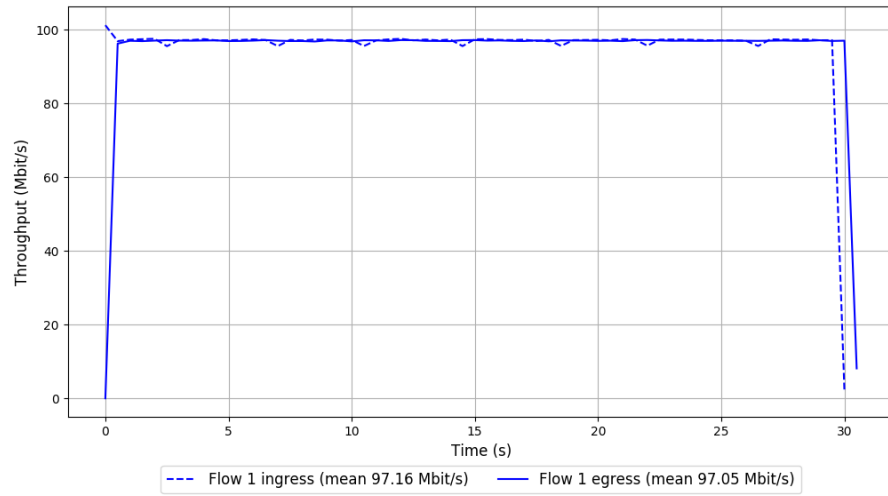


Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 07:18:39
End at: 2018-08-31 07:19:09
Local clock offset: -12.162 ms
Remote clock offset: -0.148 ms

Below is generated by plot.py at 2018-08-31 07:20:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 97.05 Mbit/s
95th percentile per-packet one-way delay: 30.160 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 97.05 Mbit/s
95th percentile per-packet one-way delay: 30.160 ms
Loss rate: 0.01%

Run 3: Report of TCP Cubic — Data Link

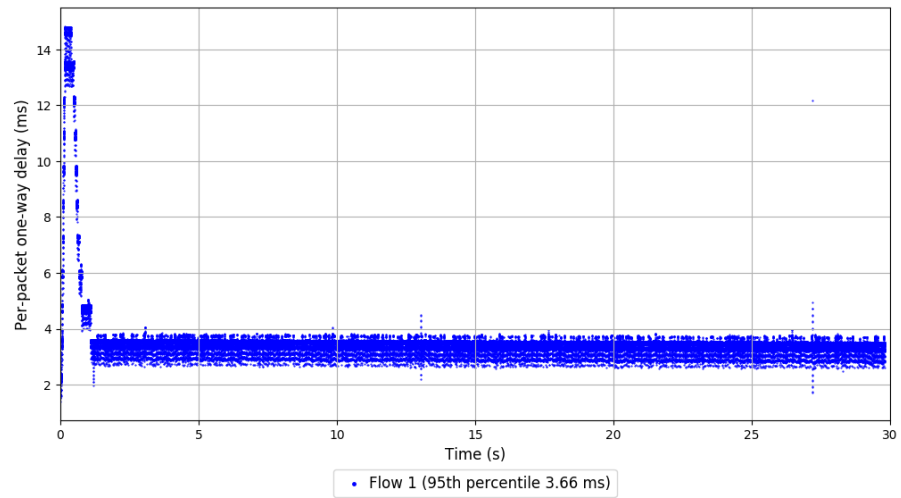
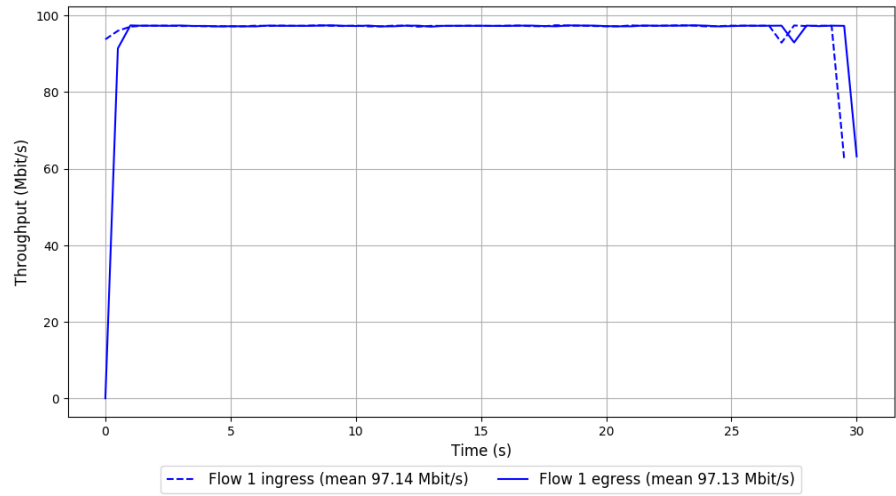


Run 1: Statistics of Indigo

Start at: 2018-08-31 07:06:27
End at: 2018-08-31 07:06:58
Local clock offset: -10.12 ms
Remote clock offset: -0.074 ms

Below is generated by plot.py at 2018-08-31 07:20:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 97.13 Mbit/s
95th percentile per-packet one-way delay: 3.660 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 97.13 Mbit/s
95th percentile per-packet one-way delay: 3.660 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

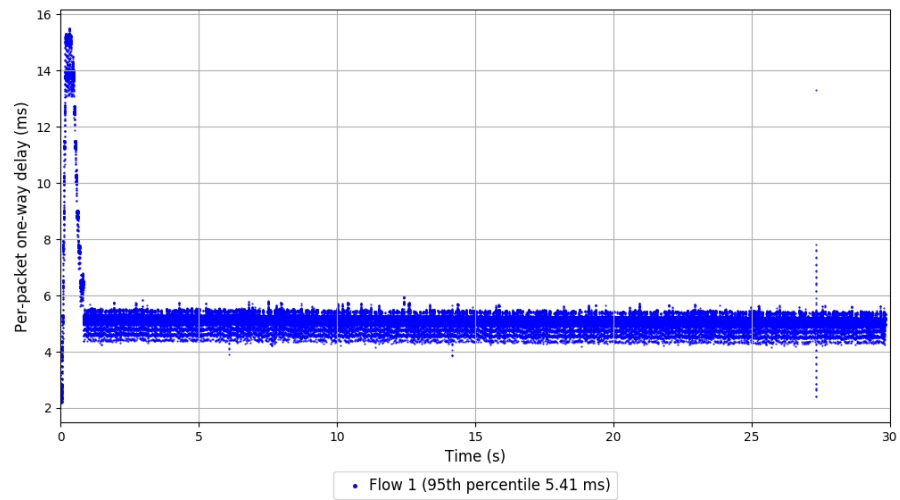
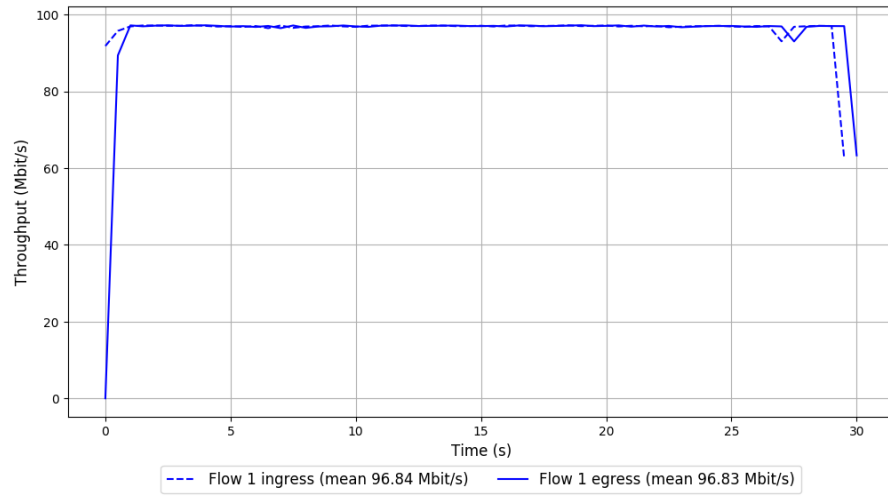


Run 2: Statistics of Indigo

Start at: 2018-08-31 07:10:54
End at: 2018-08-31 07:11:24
Local clock offset: -10.248 ms
Remote clock offset: -0.07 ms

Below is generated by plot.py at 2018-08-31 07:20:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.83 Mbit/s
95th percentile per-packet one-way delay: 5.407 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.83 Mbit/s
95th percentile per-packet one-way delay: 5.407 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

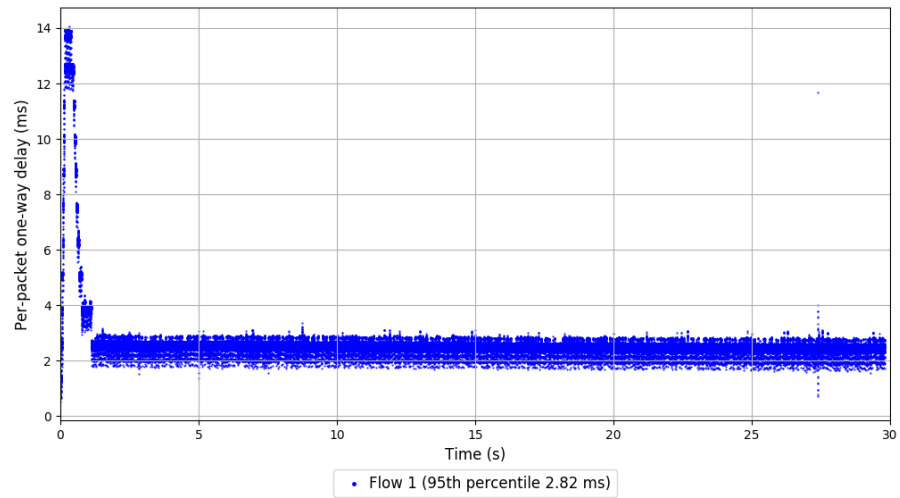
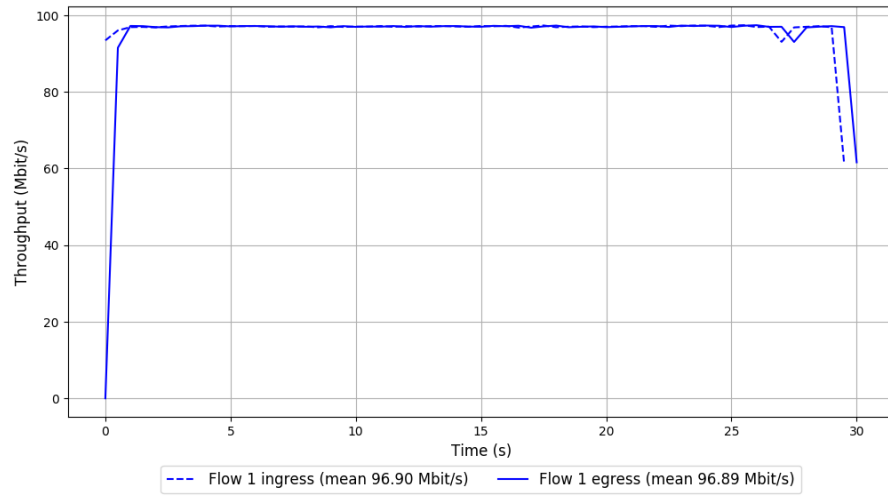


Run 3: Statistics of Indigo

Start at: 2018-08-31 07:15:20
End at: 2018-08-31 07:15:50
Local clock offset: -11.269 ms
Remote clock offset: -0.132 ms

Below is generated by plot.py at 2018-08-31 07:20:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.89 Mbit/s
95th percentile per-packet one-way delay: 2.824 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.89 Mbit/s
95th percentile per-packet one-way delay: 2.824 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

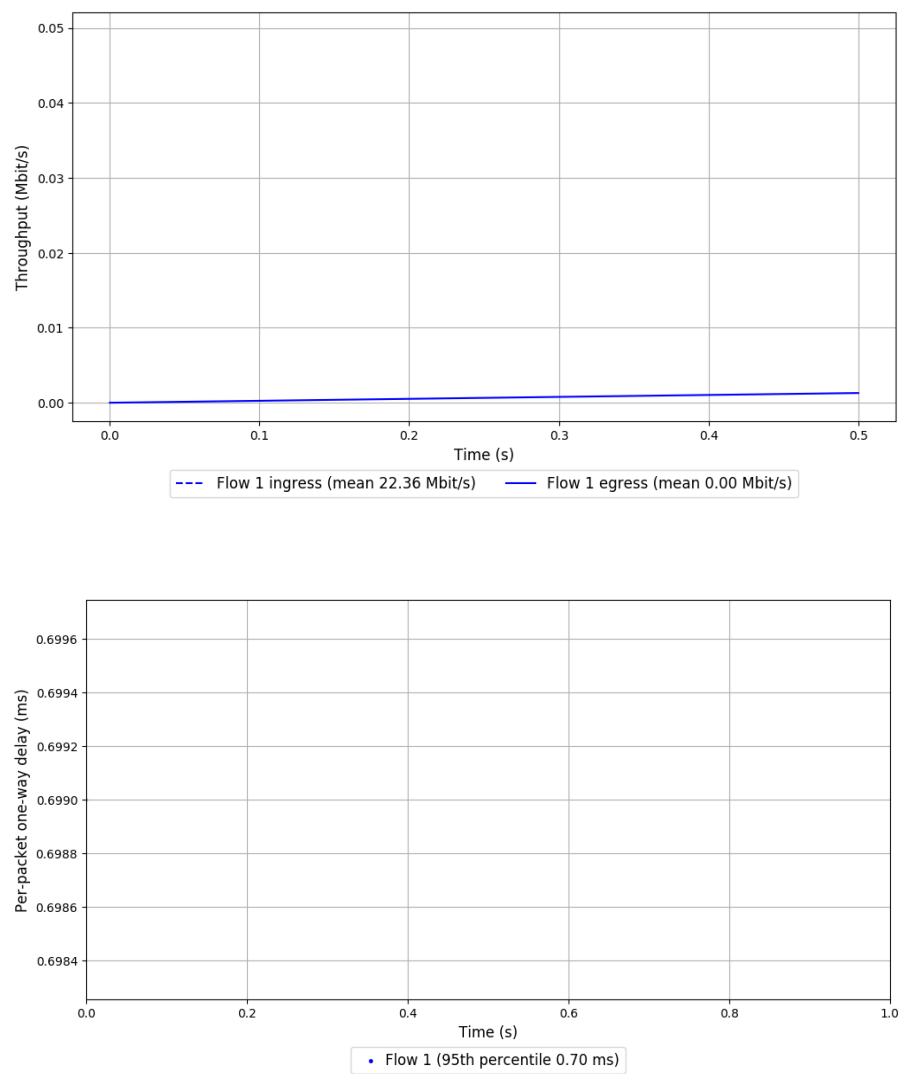
Start at: 2018-08-31 07:07:36

End at: 2018-08-31 07:08:06

Local clock offset: -9.578 ms

Remote clock offset: -0.143 ms

Run 1: Report of Muses-25 — Data Link

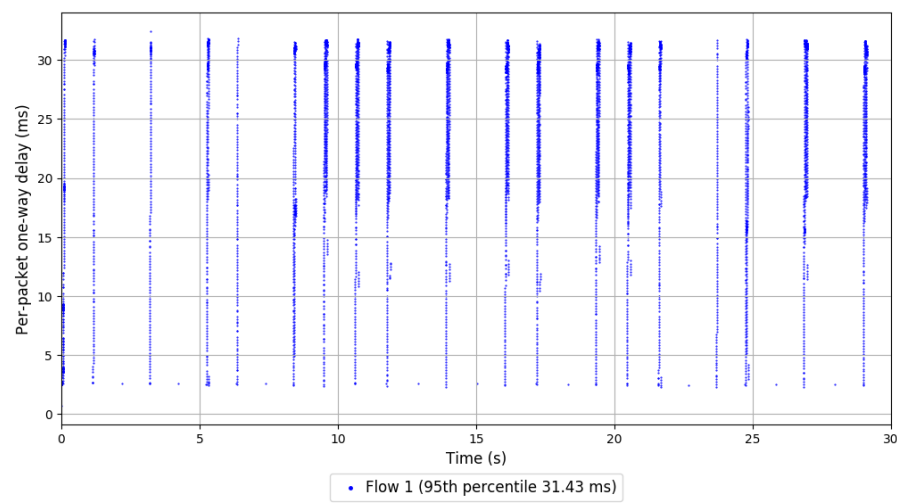
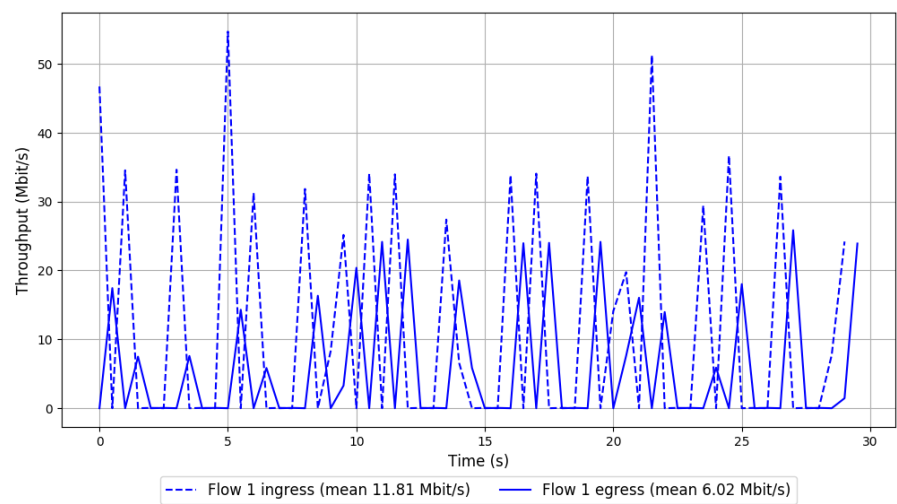


Run 2: Statistics of Muses-25

Start at: 2018-08-31 07:12:02
End at: 2018-08-31 07:12:32
Local clock offset: -10.515 ms
Remote clock offset: -0.058 ms

Below is generated by plot.py at 2018-08-31 07:20:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 6.02 Mbit/s
95th percentile per-packet one-way delay: 31.432 ms
Loss rate: 48.97%
-- Flow 1:
Average throughput: 6.02 Mbit/s
95th percentile per-packet one-way delay: 31.432 ms
Loss rate: 48.97%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 07:16:28
End at: 2018-08-31 07:16:58
Local clock offset: -11.546 ms
Remote clock offset: -0.046 ms

Below is generated by plot.py at 2018-08-31 07:20:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.54 Mbit/s
95th percentile per-packet one-way delay: 25.977 ms
Loss rate: 19.21%
-- Flow 1:
Average throughput: 9.54 Mbit/s
95th percentile per-packet one-way delay: 25.977 ms
Loss rate: 19.21%

Run 3: Report of Muses-25 — Data Link

