

Pantheon Report

Generated at 2019-03-26 20:01:50 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) → Colombia cellular on `ppp0` (*remote*).

Repeated the test of 21 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:

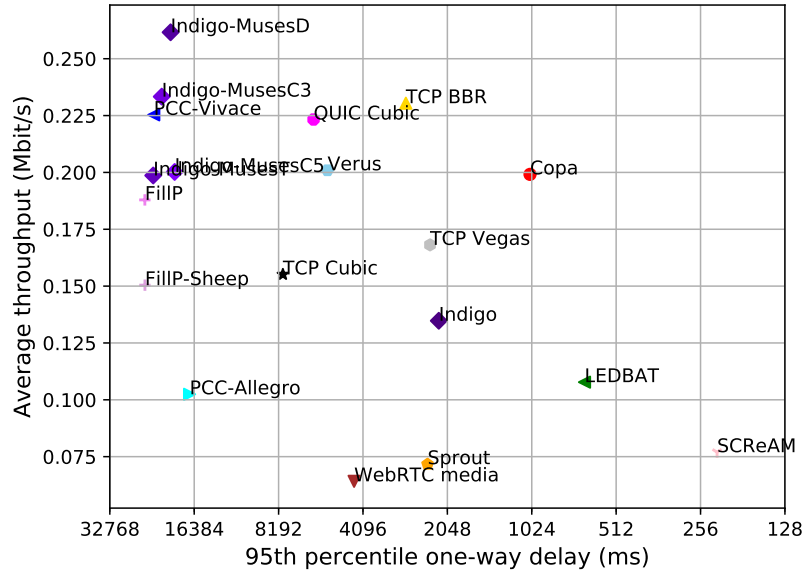
```
Linux 4.15.0-1034-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

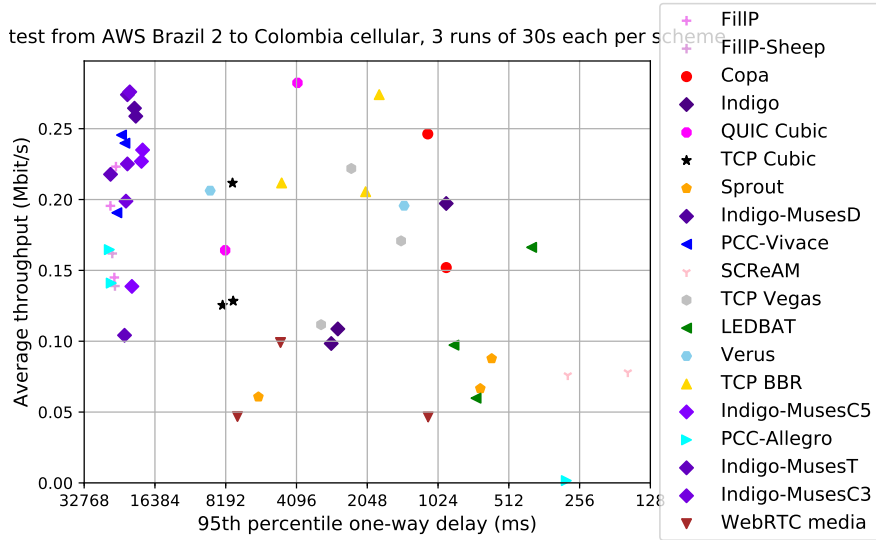
```
branch: muses @ 7a686f7c2ed0a333082c0bab1fa5c921ab47e6ee
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 5ce721187ad823da20955337730c746486ca4966
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
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 cellular, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS Brazil 2 to Colombia cellular, 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	0.23	2880.49	3.08
Copa	2	0.20	1038.74	2.21
TCP Cubic	3	0.16	7908.16	28.14
FillP	3	0.19	24574.81	87.28
FillP-Sheep	2	0.15	24557.40	96.87
Indigo	3	0.14	2197.71	0.13
Indigo-MusesC3	3	0.24	21394.72	83.15
Indigo-MusesC5	3	0.20	19241.14	80.86
Indigo-MusesD	2	0.26	19892.82	74.45
Indigo-MusesT	3	0.20	22943.85	86.25
LEDBAT	3	0.11	663.99	0.38
PCC-Allegro	3	0.10	17014.83	66.33
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	2	0.22	6147.04	22.71
SCReAM	2	0.08	223.50	0.49
Sprout	3	0.07	2410.04	0.85
TaoVA-100x	0	N/A	N/A	N/A
TCP Vegas	3	0.17	2361.66	3.33
Verus	2	0.21	5483.73	2.34
PCC-Vivace	3	0.23	22841.81	85.73
WebRTC media	3	0.07	4406.37	1.03

Run 1: Statistics of TCP BBR

Start at: 2019-03-26 18:50:46

End at: 2019-03-26 18:51:16

Local clock offset: -9.22 ms

Remote clock offset: 23.149 ms

Below is generated by plot.py at 2019-03-26 20:01:20

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 4738.067 ms

Loss rate: 3.48%

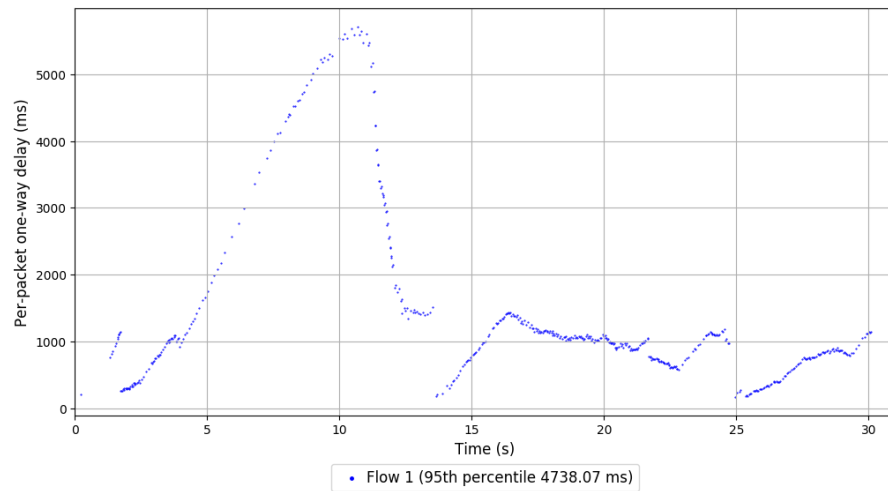
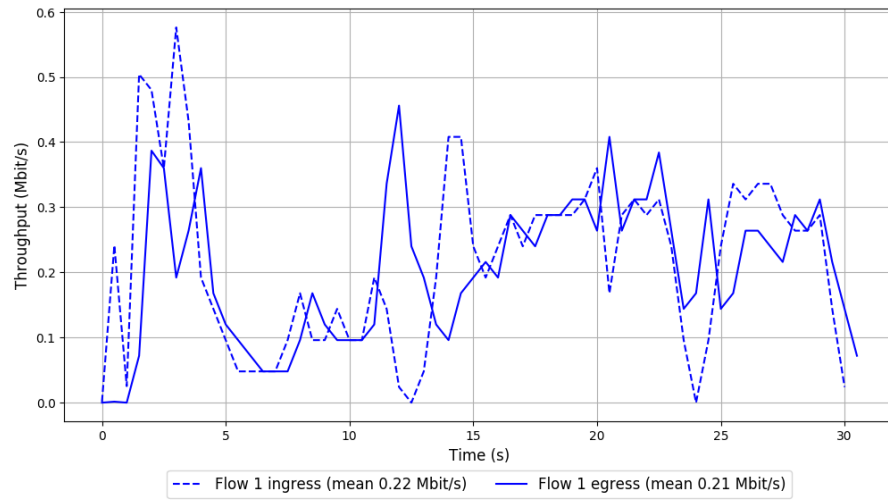
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 4738.067 ms

Loss rate: 3.48%

Run 1: Report of TCP BBR — Data Link

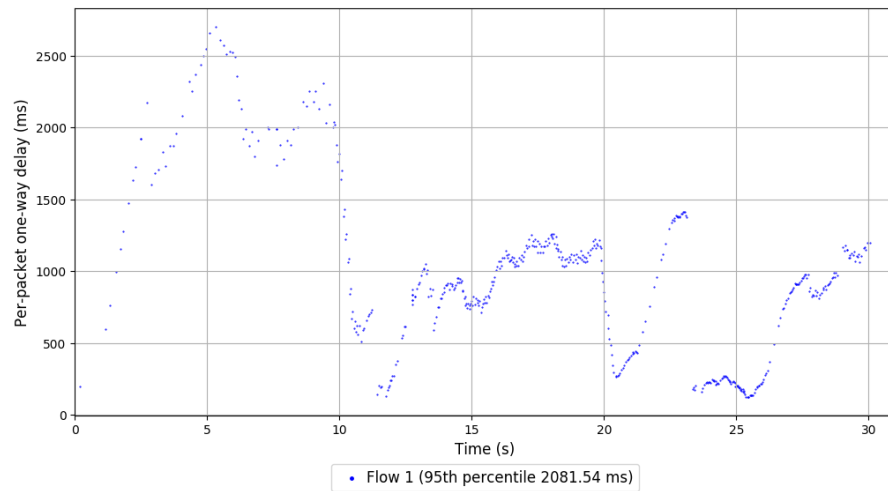
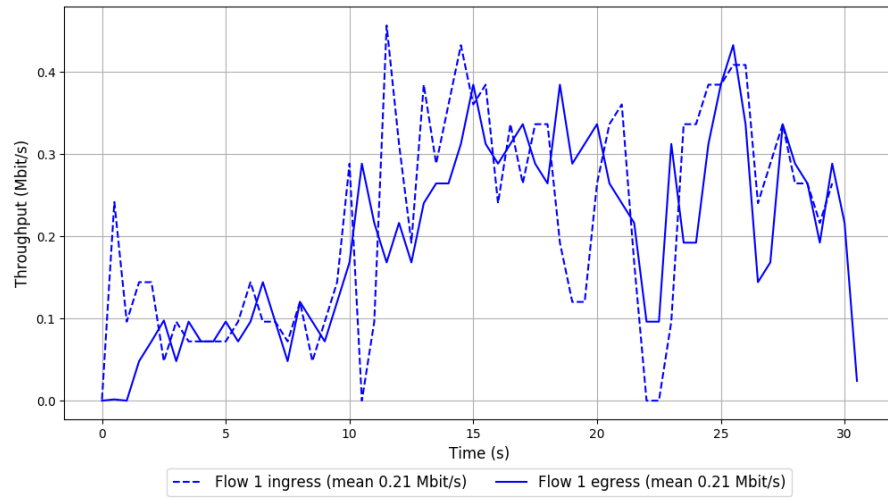


Run 2: Statistics of TCP BBR

Start at: 2019-03-26 19:16:33
End at: 2019-03-26 19:17:03
Local clock offset: -14.327 ms
Remote clock offset: 23.403 ms

Below is generated by plot.py at 2019-03-26 20:01:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 2081.544 ms
Loss rate: 4.31%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 2081.544 ms
Loss rate: 4.31%

Run 2: Report of TCP BBR — Data Link

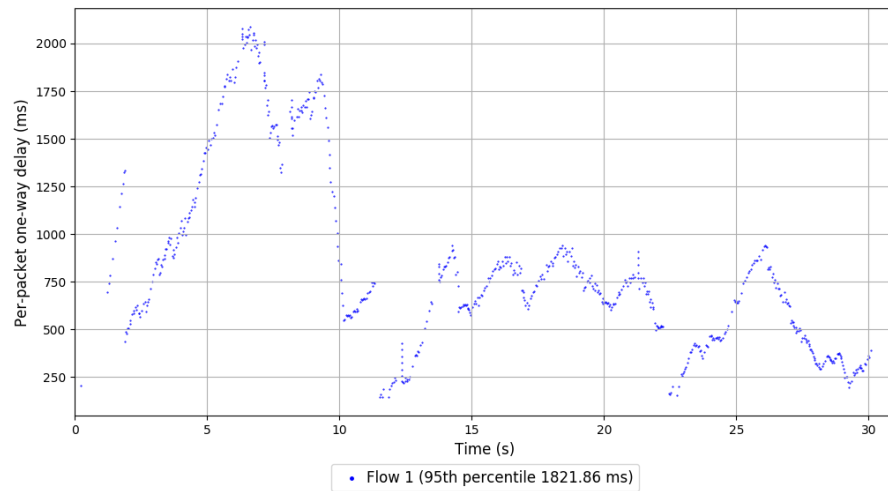
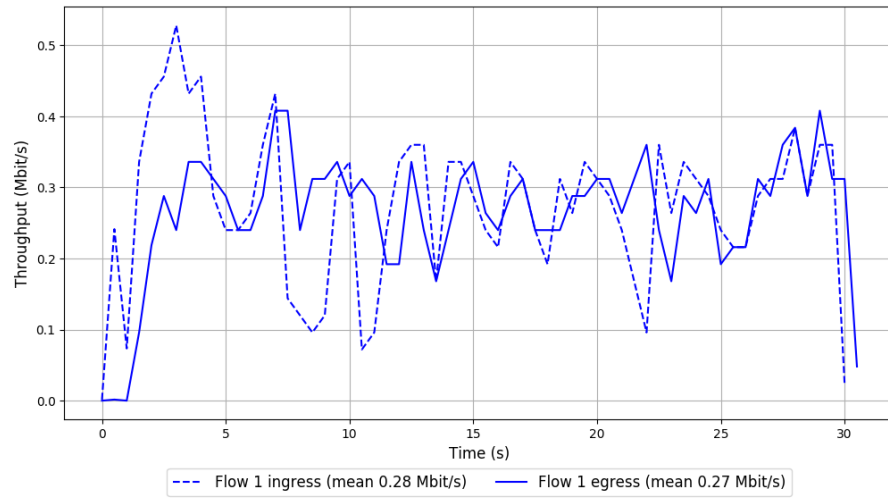


Run 3: Statistics of TCP BBR

Start at: 2019-03-26 19:40:51
End at: 2019-03-26 19:41:22
Local clock offset: -16.095 ms
Remote clock offset: 6.322 ms

Below is generated by plot.py at 2019-03-26 20:01:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 1821.856 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 1821.856 ms
Loss rate: 1.44%

Run 3: Report of TCP BBR — Data Link

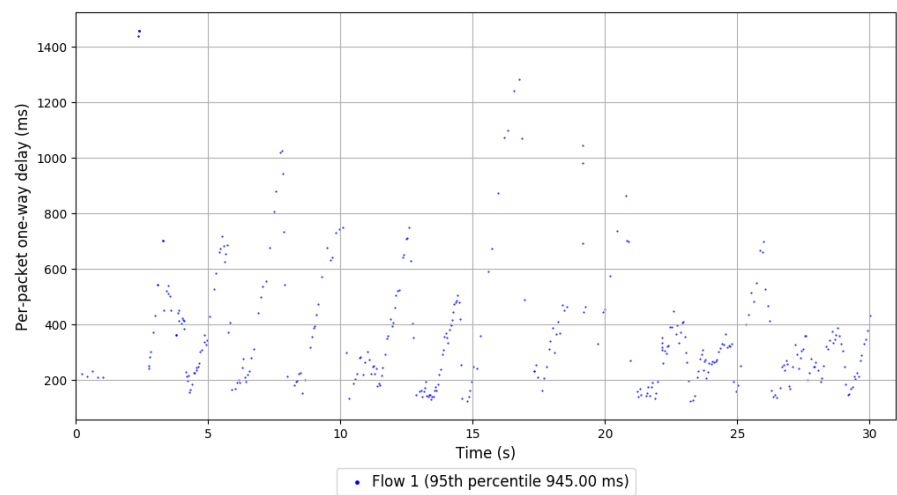
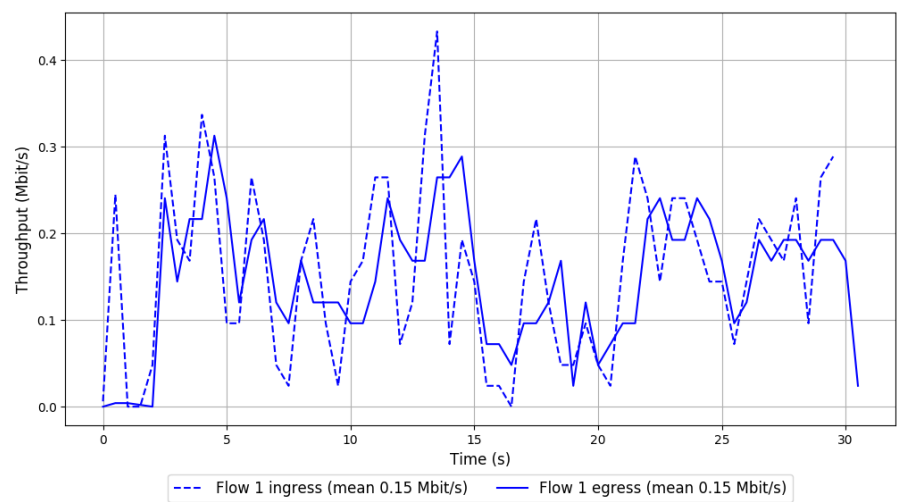


Run 1: Statistics of Copa

Start at: 2019-03-26 19:02:53
End at: 2019-03-26 19:03:23
Local clock offset: -13.495 ms
Remote clock offset: 17.791 ms

Below is generated by plot.py at 2019-03-26 20:01:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 945.000 ms
Loss rate: 2.34%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 945.000 ms
Loss rate: 2.34%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

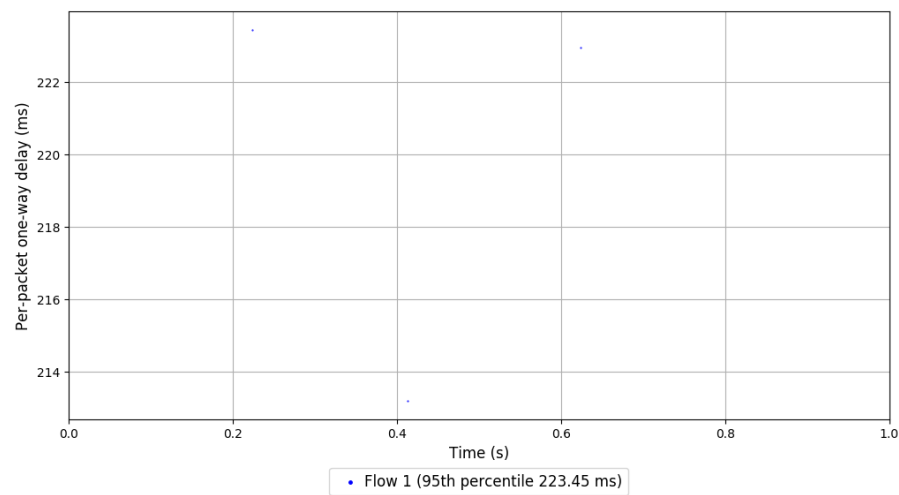
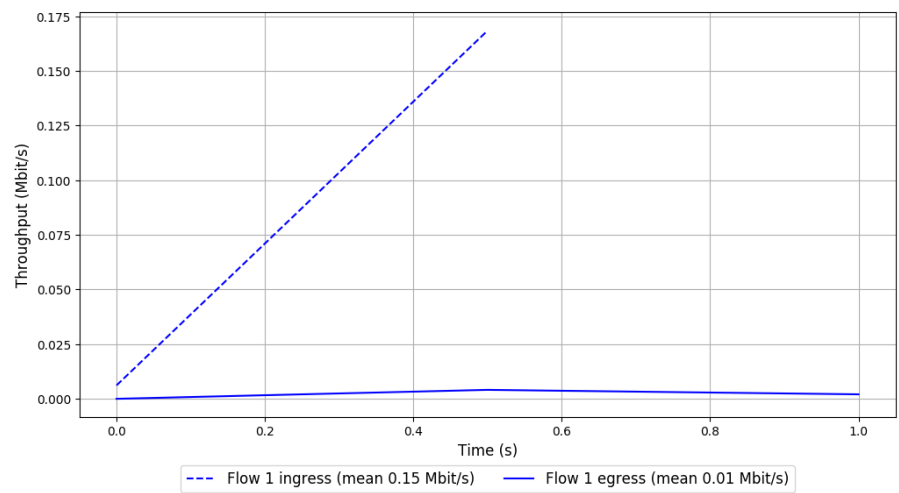
Start at: 2019-03-26 19:28:23

End at: 2019-03-26 19:28:53

Local clock offset: -11.715 ms

Remote clock offset: 19.192 ms

Run 2: Report of Copa — Data Link

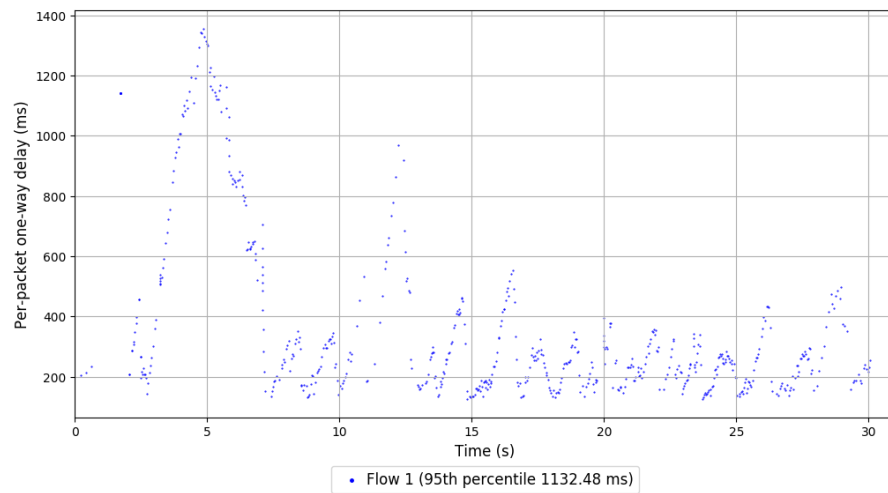
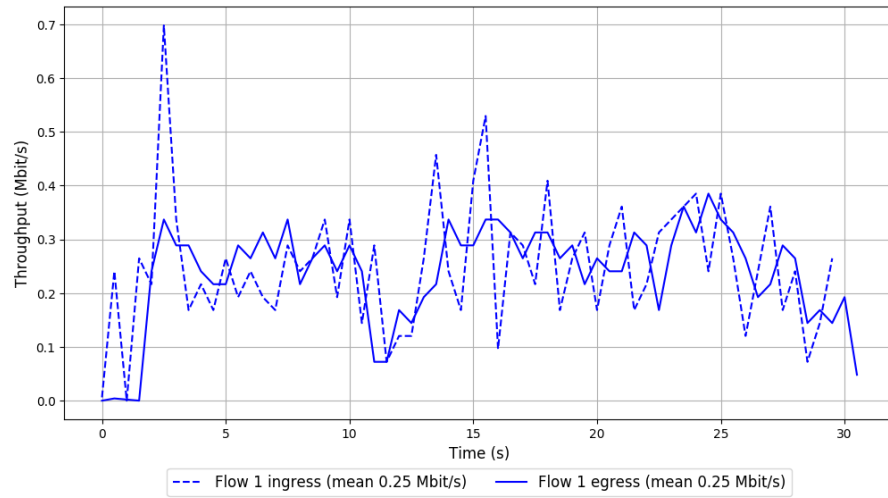


Run 3: Statistics of Copa

Start at: 2019-03-26 19:52:35
End at: 2019-03-26 19:53:05
Local clock offset: -14.779 ms
Remote clock offset: -0.978 ms

Below is generated by plot.py at 2019-03-26 20:01:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 1132.483 ms
Loss rate: 2.08%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 1132.483 ms
Loss rate: 2.08%

Run 3: Report of Copa — Data Link

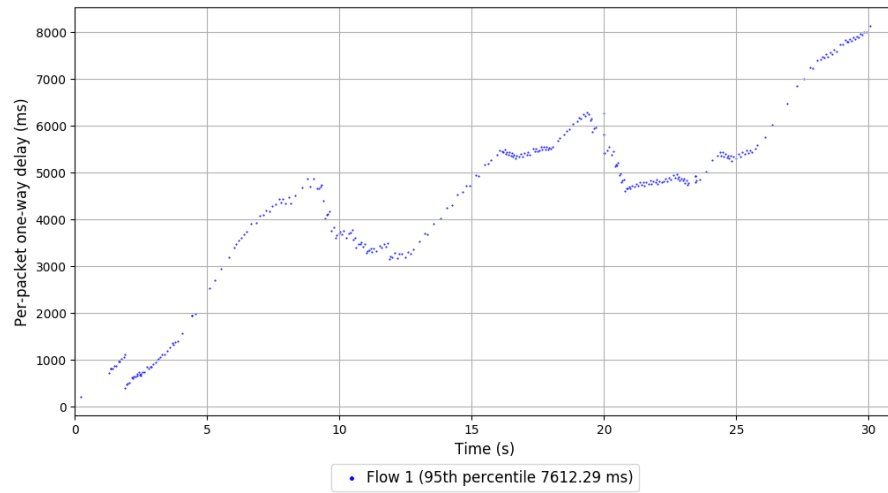
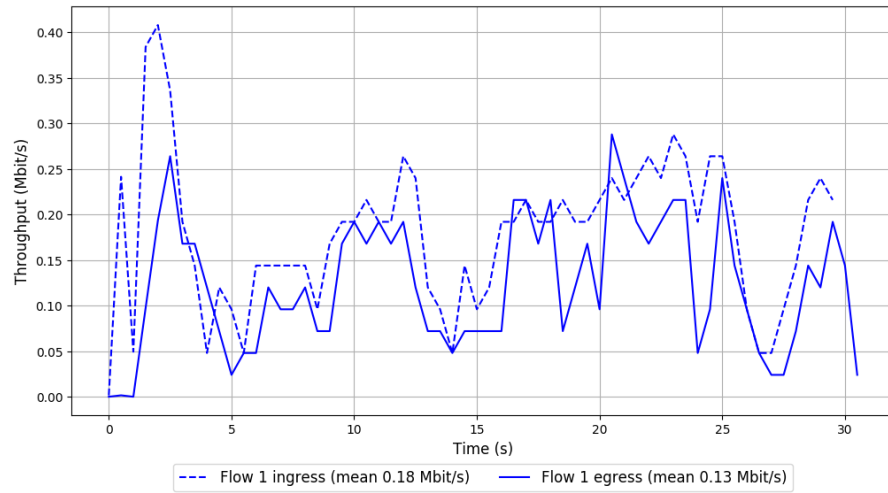


Run 1: Statistics of TCP Cubic

Start at: 2019-03-26 19:08:57
End at: 2019-03-26 19:09:28
Local clock offset: -12.229 ms
Remote clock offset: 23.121 ms

Below is generated by plot.py at 2019-03-26 20:01:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 7612.289 ms
Loss rate: 28.62%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 7612.289 ms
Loss rate: 28.62%

Run 1: Report of TCP Cubic — Data Link

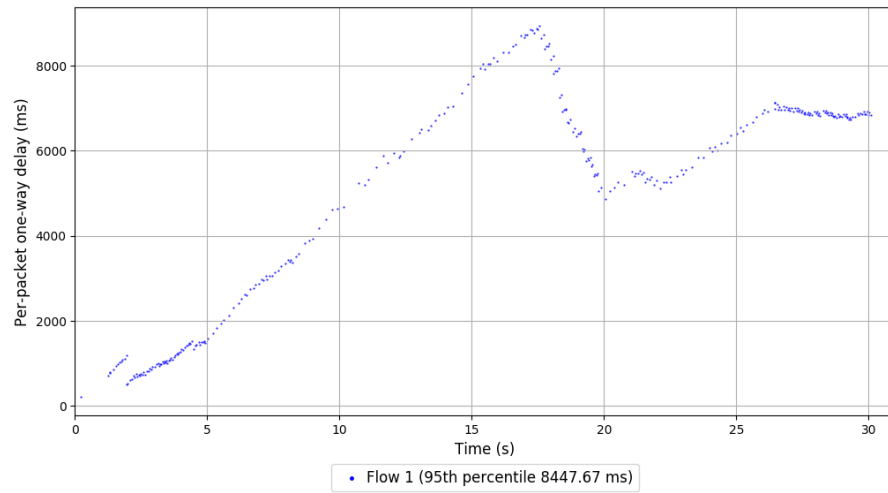
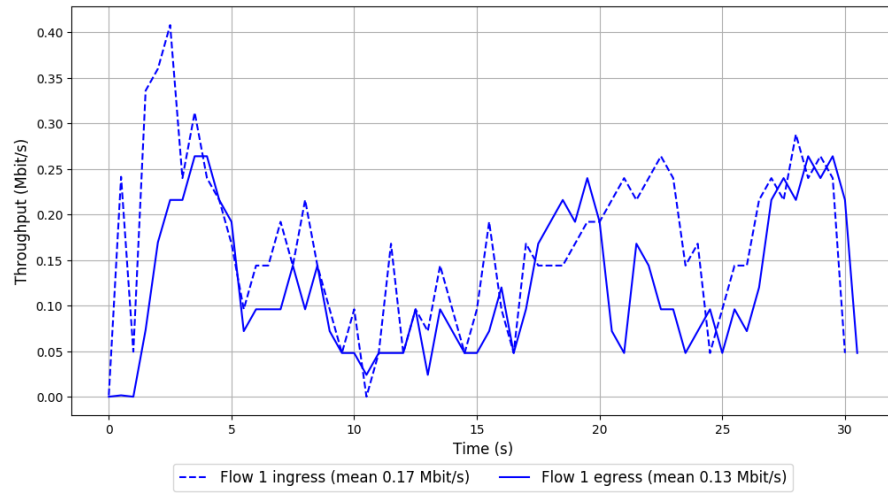


Run 2: Statistics of TCP Cubic

Start at: 2019-03-26 19:34:03
End at: 2019-03-26 19:34:33
Local clock offset: -13.279 ms
Remote clock offset: 20.864 ms

Below is generated by plot.py at 2019-03-26 20:01:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 8447.675 ms
Loss rate: 25.88%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 8447.675 ms
Loss rate: 25.88%

Run 2: Report of TCP Cubic — Data Link

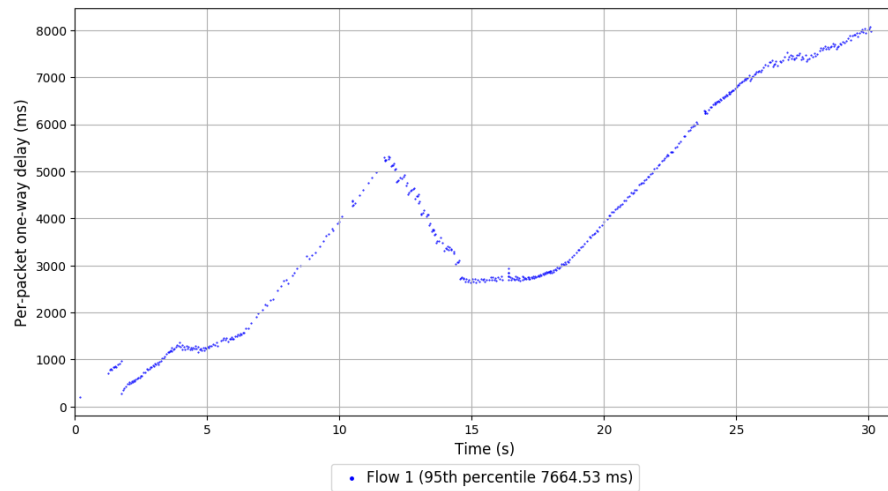
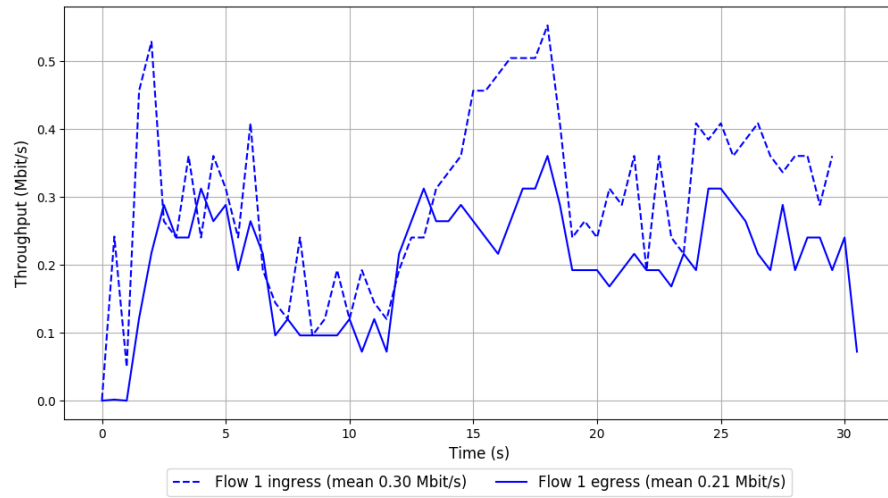


Run 3: Statistics of TCP Cubic

Start at: 2019-03-26 19:58:22
End at: 2019-03-26 19:58:52
Local clock offset: -13.213 ms
Remote clock offset: 0.631 ms

Below is generated by plot.py at 2019-03-26 20:01:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 7664.530 ms
Loss rate: 29.91%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 7664.530 ms
Loss rate: 29.91%

Run 3: Report of TCP Cubic — Data Link

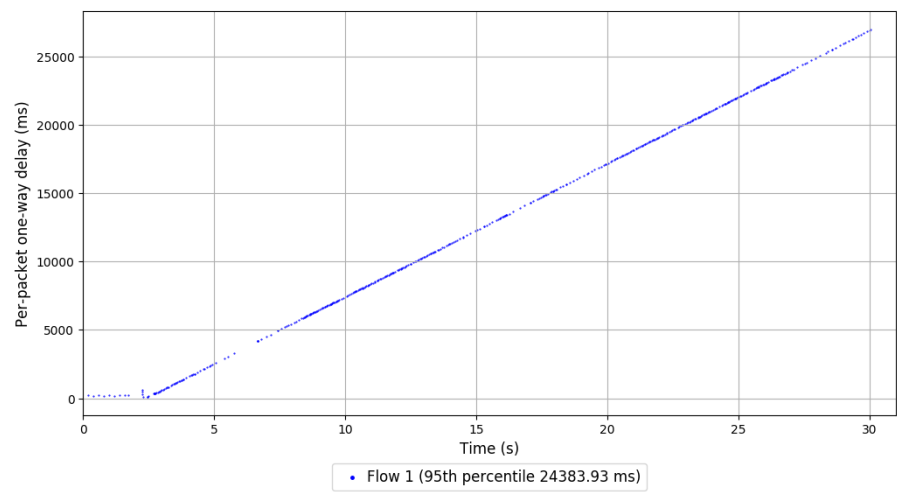
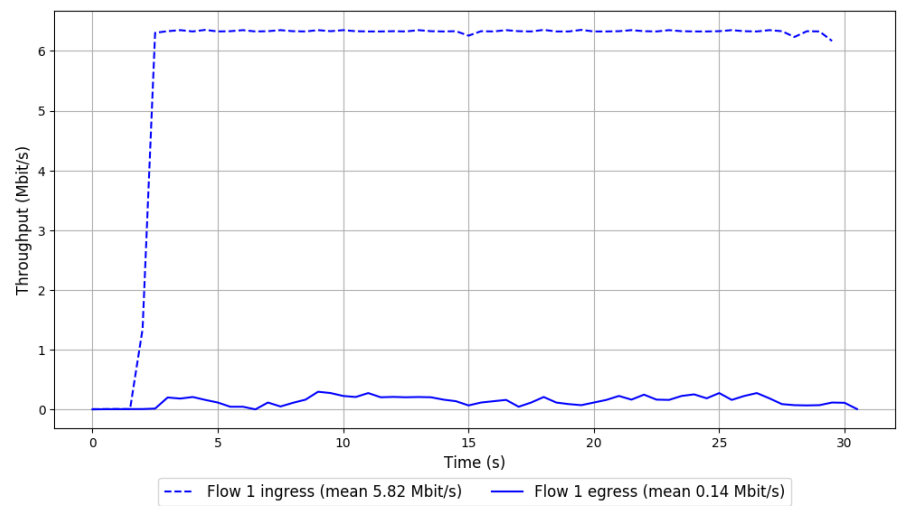


Run 1: Statistics of FillP

Start at: 2019-03-26 18:54:33
End at: 2019-03-26 18:55:03
Local clock offset: -9.851 ms
Remote clock offset: 17.199 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 24383.929 ms
Loss rate: 97.52%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 24383.929 ms
Loss rate: 97.52%

Run 1: Report of FillP — Data Link

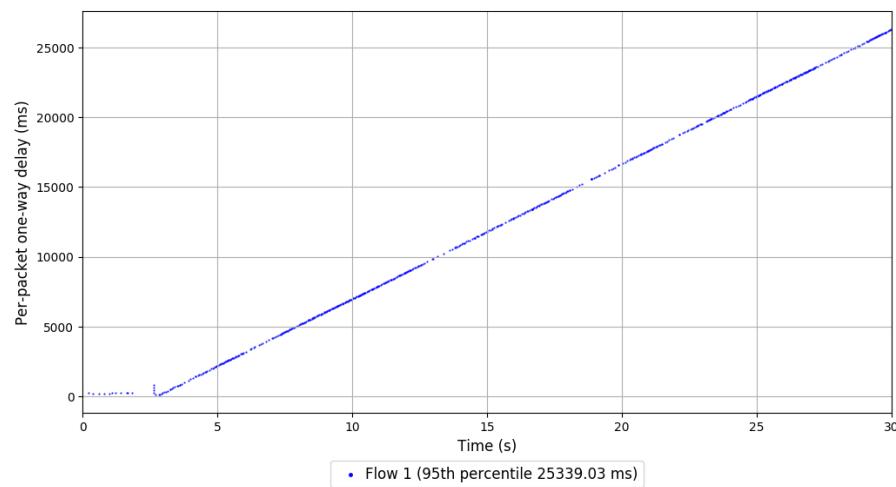
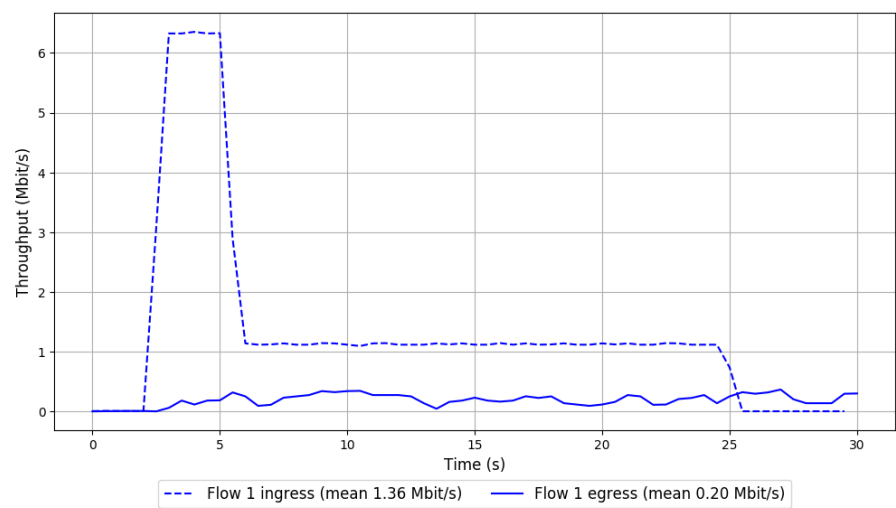


Run 2: Statistics of FillP

Start at: 2019-03-26 19:20:00
End at: 2019-03-26 19:20:30
Local clock offset: -12.559 ms
Remote clock offset: 18.623 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 25339.028 ms
Loss rate: 85.65%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 25339.028 ms
Loss rate: 85.65%

Run 2: Report of FillP — Data Link

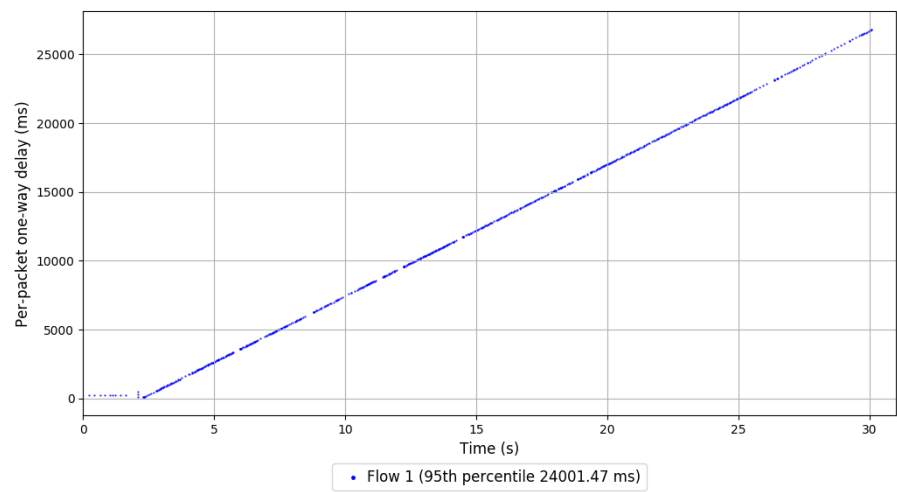
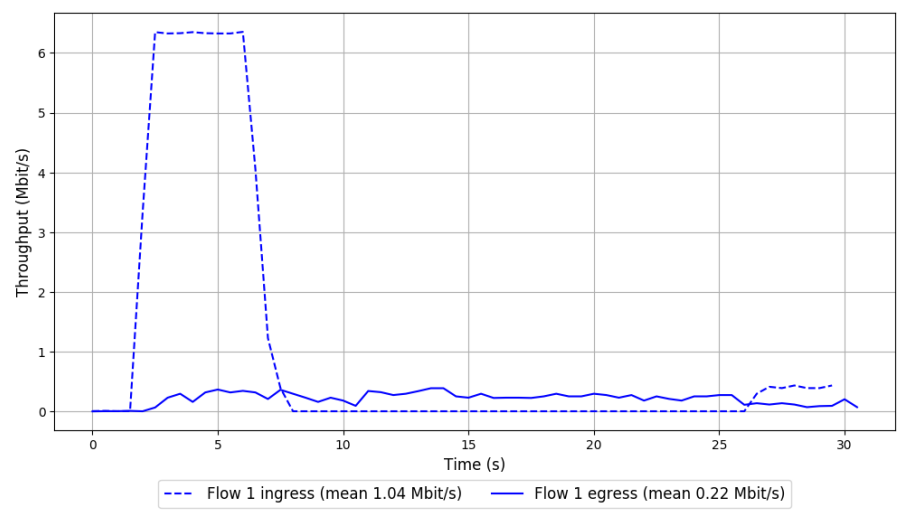


Run 3: Statistics of FillP

Start at: 2019-03-26 19:44:16
End at: 2019-03-26 19:44:46
Local clock offset: -17.016 ms
Remote clock offset: 9.472 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24001.472 ms
Loss rate: 78.68%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 24001.472 ms
Loss rate: 78.68%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/fillp_s

Run 1: Report of FillP-Sheep — Data Link

Figure is missing

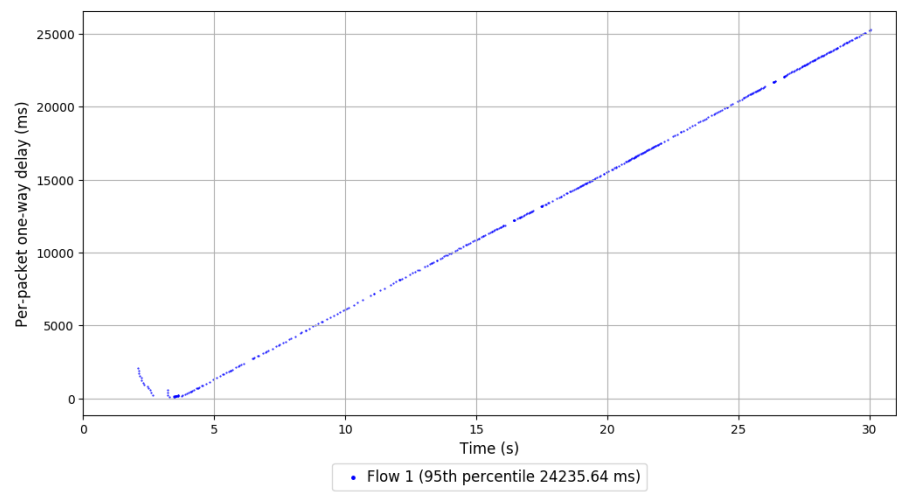
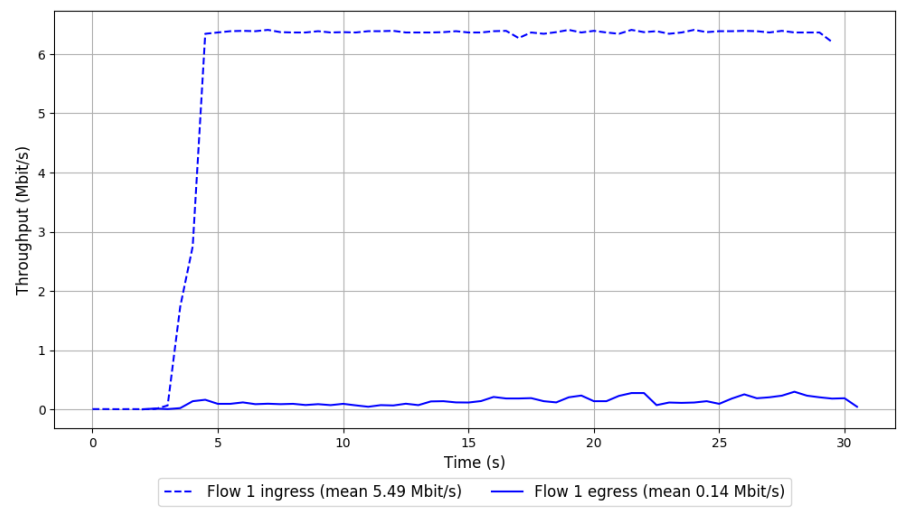
Figure is missing

Run 2: Statistics of FillP-Sheep

Start at: 2019-03-26 19:21:10
End at: 2019-03-26 19:21:40
Local clock offset: -11.313 ms
Remote clock offset: 24.839 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 24235.636 ms
Loss rate: 97.64%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 24235.636 ms
Loss rate: 97.64%

Run 2: Report of FillP-Sheep — Data Link

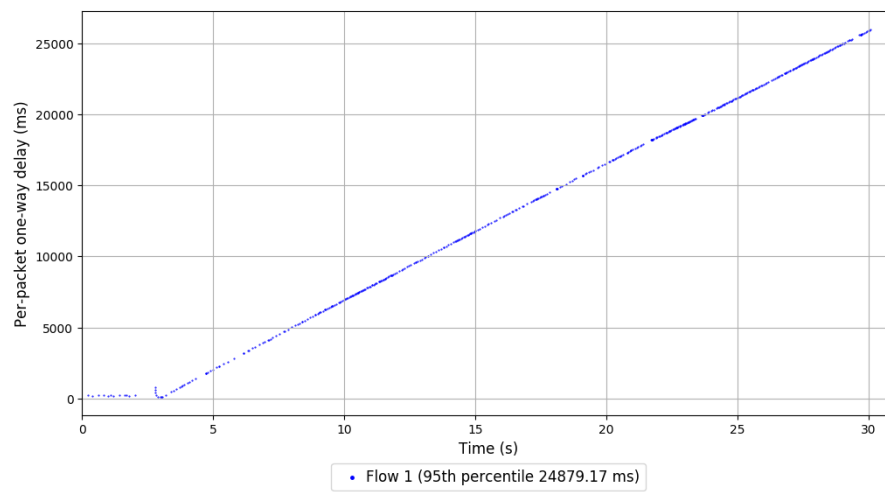
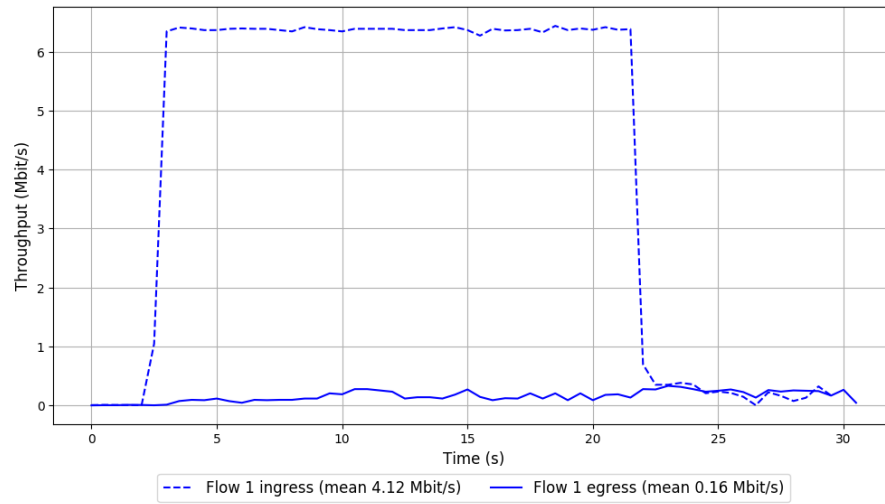


Run 3: Statistics of FillP-Sheep

Start at: 2019-03-26 19:45:24
End at: 2019-03-26 19:45:54
Local clock offset: -18.325 ms
Remote clock offset: 2.799 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 24879.170 ms
Loss rate: 96.09%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 24879.170 ms
Loss rate: 96.09%

Run 3: Report of FillP-Sheep — Data Link

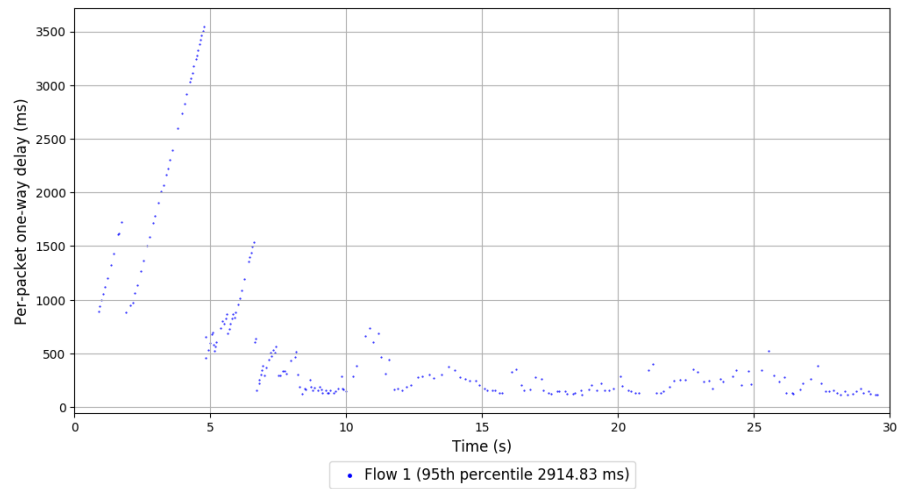
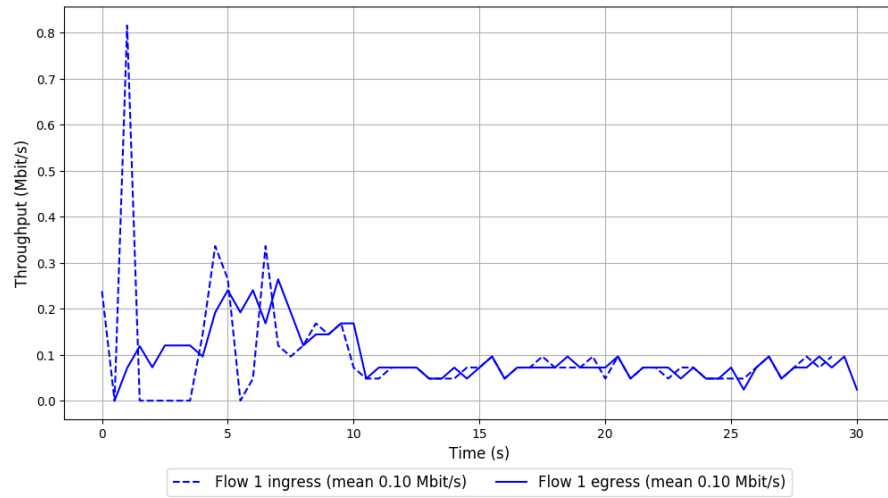


Run 1: Statistics of Indigo

Start at: 2019-03-26 18:58:20
End at: 2019-03-26 18:58:50
Local clock offset: -9.645 ms
Remote clock offset: 17.683 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 2914.832 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 2914.832 ms
Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

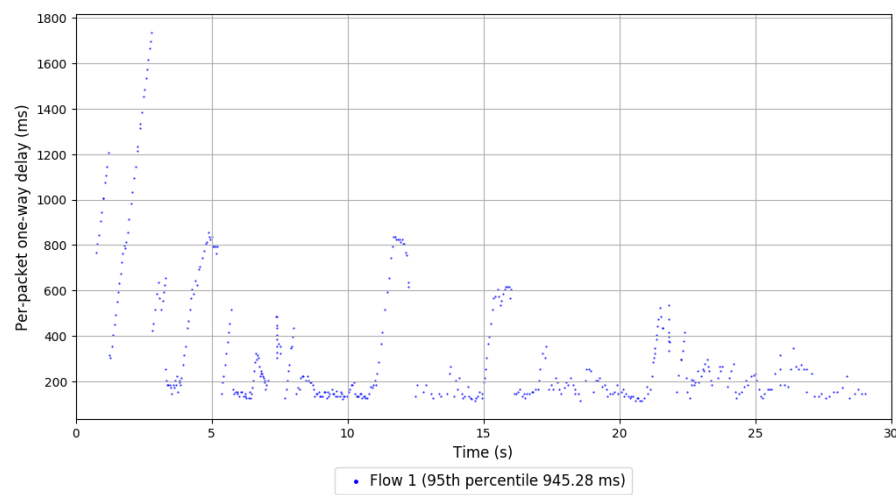
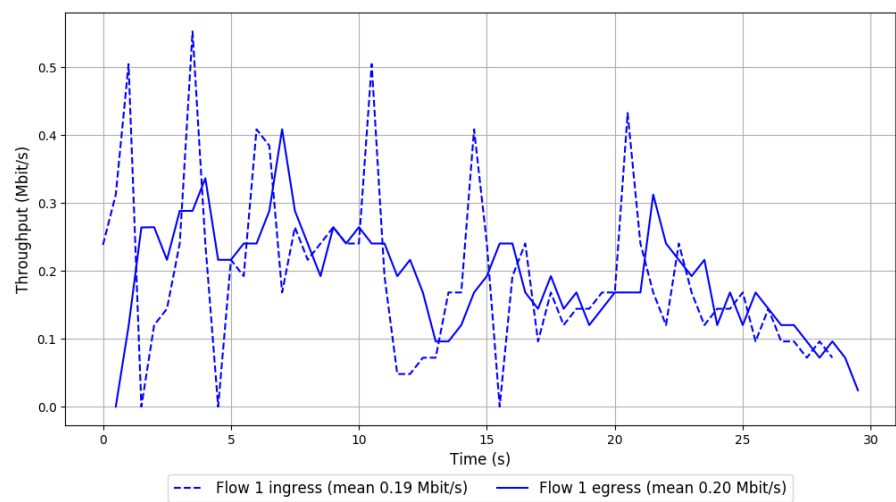


Run 2: Statistics of Indigo

Start at: 2019-03-26 19:23:49
End at: 2019-03-26 19:24:19
Local clock offset: -11.461 ms
Remote clock offset: 20.022 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 945.278 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 945.278 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

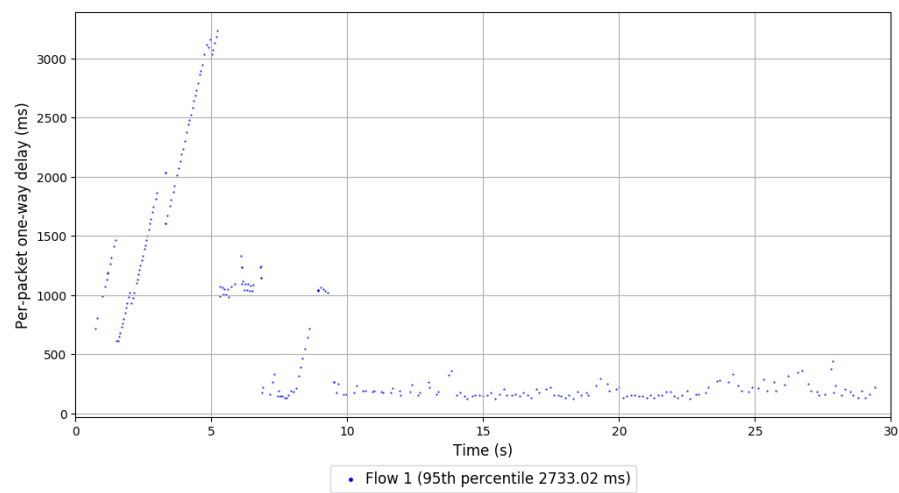
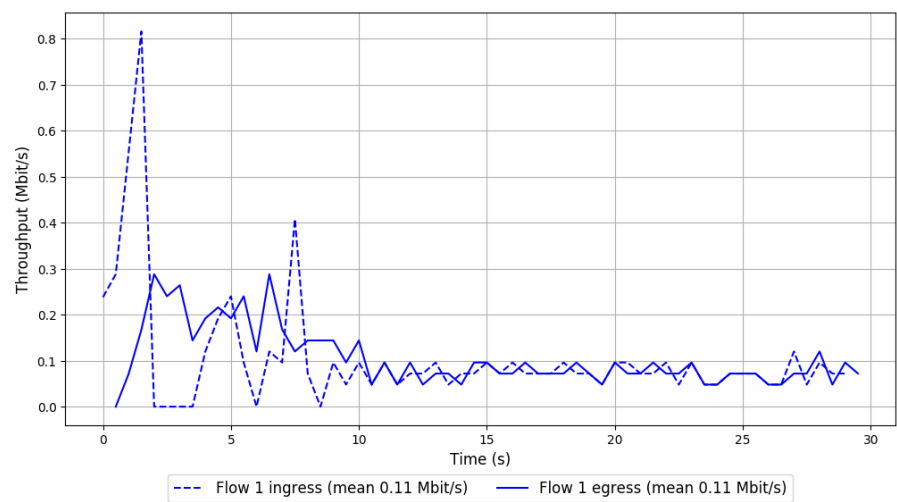


Run 3: Statistics of Indigo

Start at: 2019-03-26 19:48:03
End at: 2019-03-26 19:48:33
Local clock offset: -17.041 ms
Remote clock offset: 1.23 ms

Below is generated by plot.py at 2019-03-26 20:01:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 2733.016 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 2733.016 ms
Loss rate: 0.38%

Run 3: Report of Indigo — Data Link

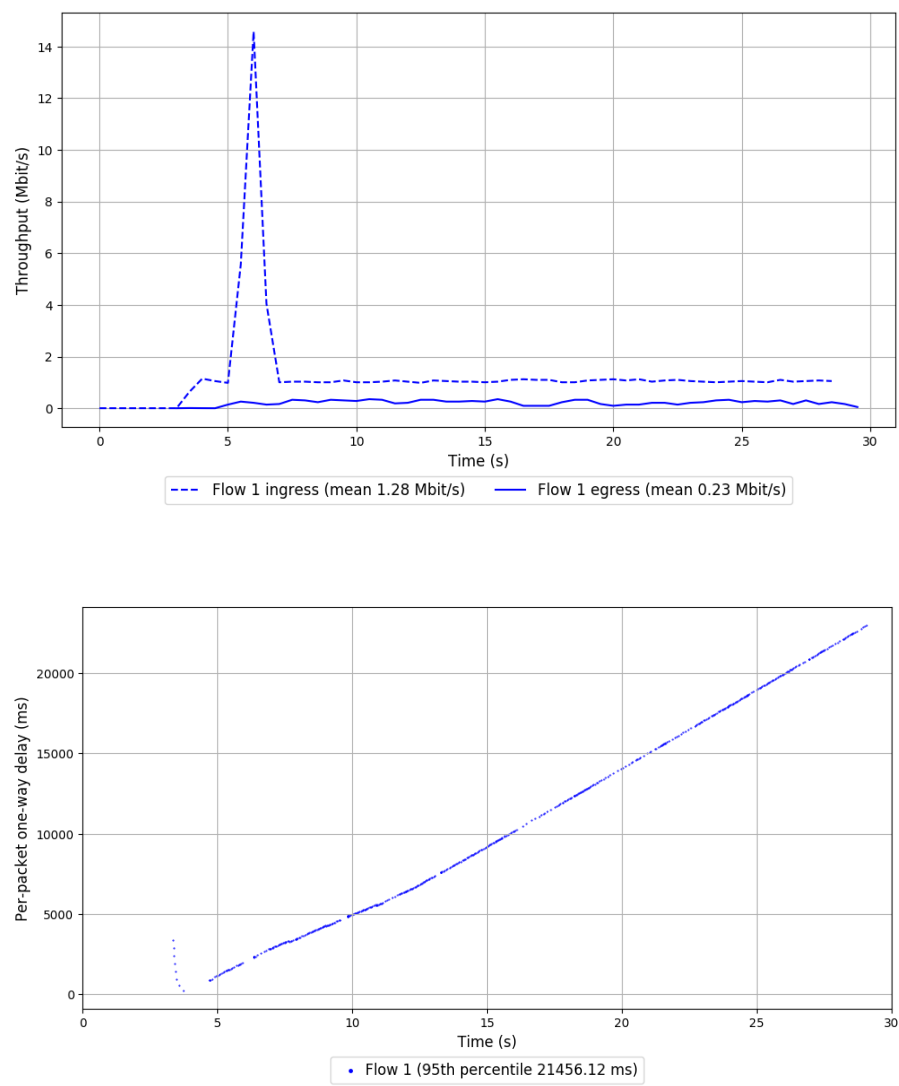


Run 1: Statistics of Indigo-MusesC3

Start at: 2019-03-26 18:51:54
End at: 2019-03-26 18:52:24
Local clock offset: -8.062 ms
Remote clock offset: 18.465 ms

Below is generated by plot.py at 2019-03-26 20:01:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 21456.121 ms
Loss rate: 84.38%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 21456.121 ms
Loss rate: 84.38%

Run 1: Report of Indigo-MusesC3 — Data Link

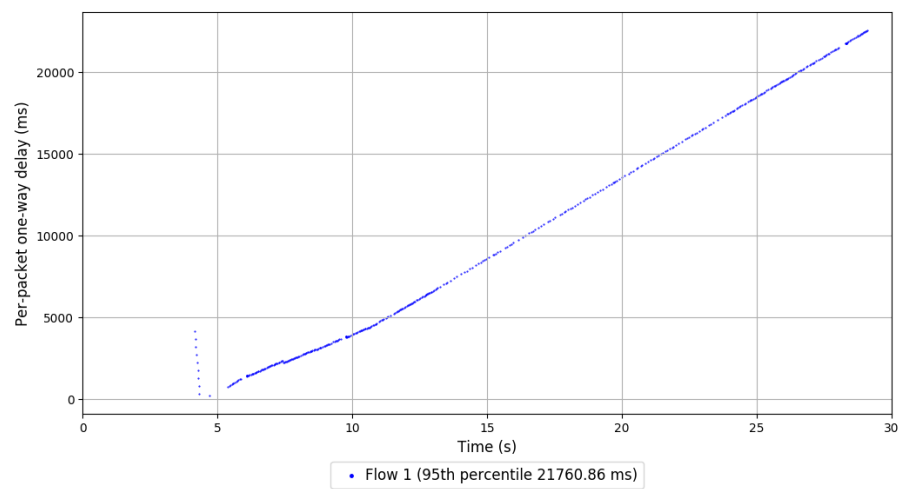
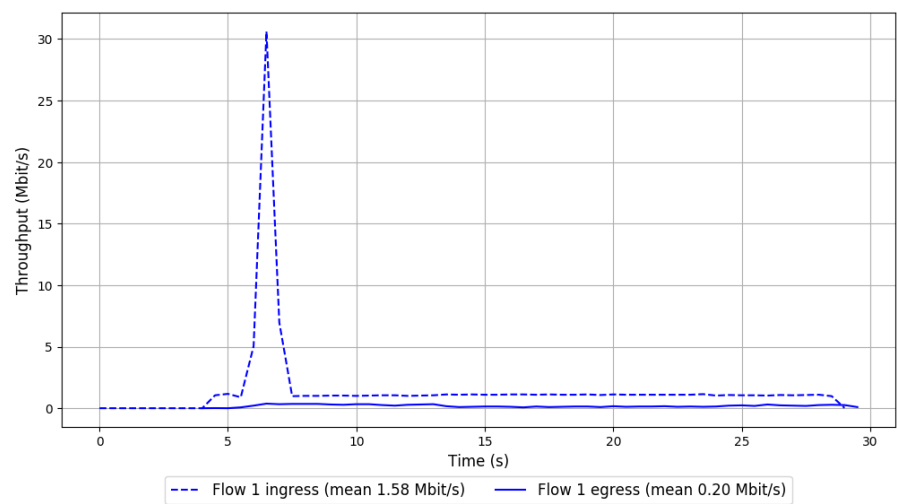


Run 2: Statistics of Indigo-MusesC3

Start at: 2019-03-26 19:17:41
End at: 2019-03-26 19:18:11
Local clock offset: -13.233 ms
Remote clock offset: 23.725 ms

Below is generated by plot.py at 2019-03-26 20:01:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 21760.863 ms
Loss rate: 89.19%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 21760.863 ms
Loss rate: 89.19%

Run 2: Report of Indigo-MusesC3 — Data Link

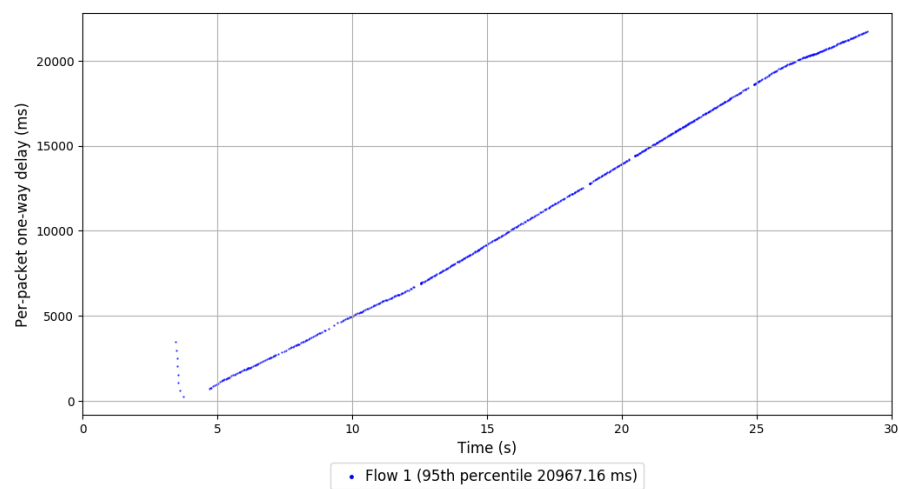
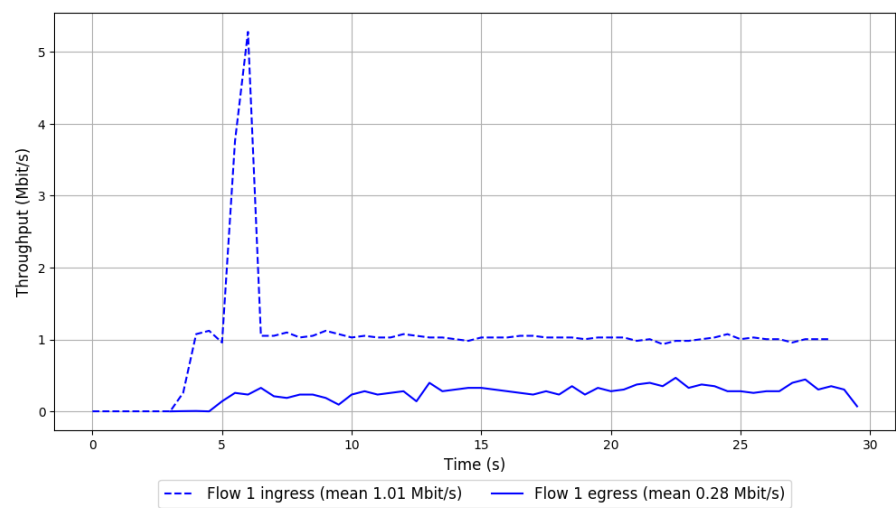


Run 3: Statistics of Indigo-MusesC3

Start at: 2019-03-26 19:41:59
End at: 2019-03-26 19:42:30
Local clock offset: -15.873 ms
Remote clock offset: 10.115 ms

Below is generated by plot.py at 2019-03-26 20:01:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 20967.161 ms
Loss rate: 75.87%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 20967.161 ms
Loss rate: 75.87%

Run 3: Report of Indigo-MusesC3 — Data Link

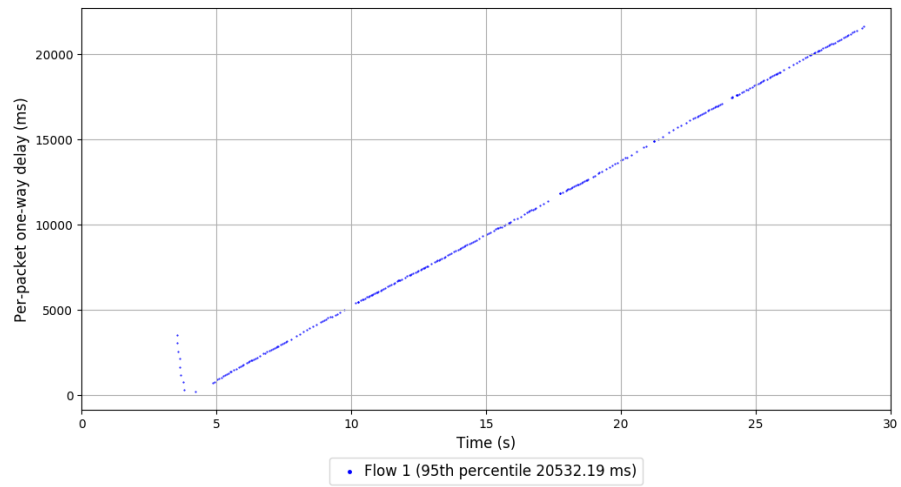
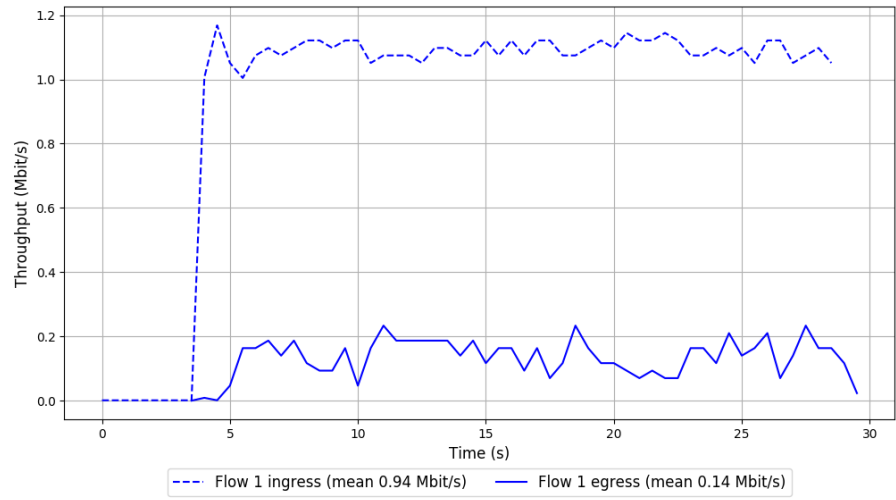


Run 1: Statistics of Indigo-MusesC5

Start at: 2019-03-26 19:10:05
End at: 2019-03-26 19:10:35
Local clock offset: -12.414 ms
Remote clock offset: 18.167 ms

Below is generated by plot.py at 2019-03-26 20:01:28
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20532.193 ms
Loss rate: 87.06%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 20532.193 ms
Loss rate: 87.06%

Run 1: Report of Indigo-MusesC5 — Data Link

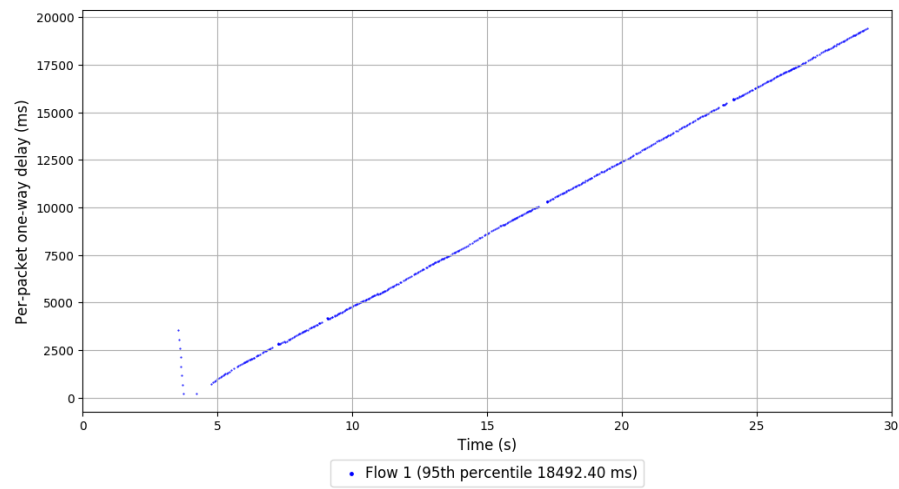
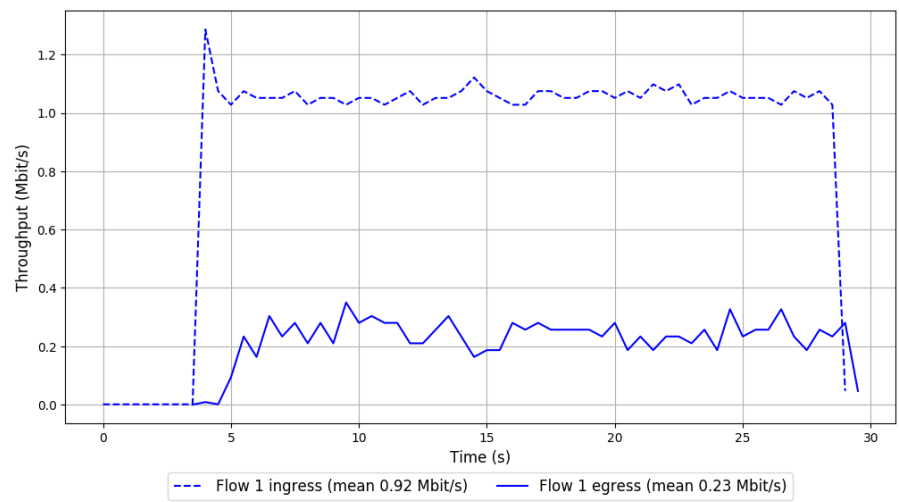


Run 2: Statistics of Indigo-MusesC5

Start at: 2019-03-26 19:35:11
End at: 2019-03-26 19:35:41
Local clock offset: -12.931 ms
Remote clock offset: 14.982 ms

Below is generated by plot.py at 2019-03-26 20:01:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 18492.395 ms
Loss rate: 77.43%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 18492.395 ms
Loss rate: 77.43%

Run 2: Report of Indigo-MusesC5 — Data Link

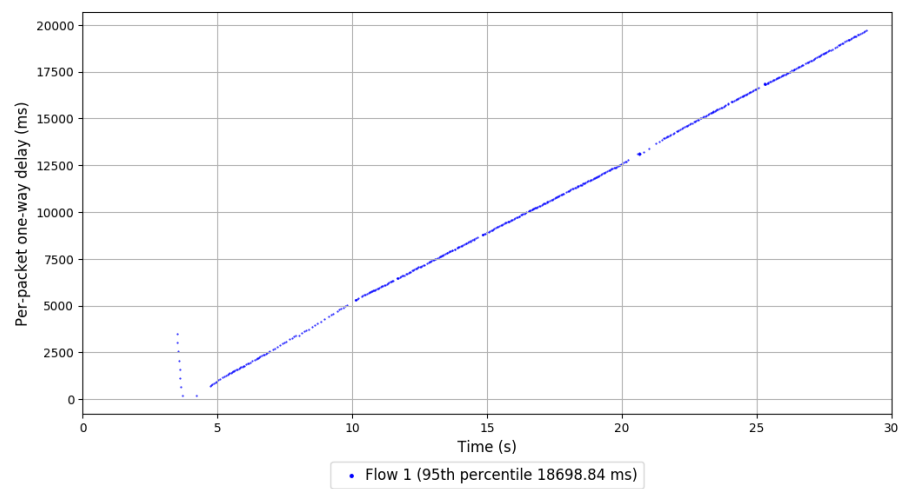
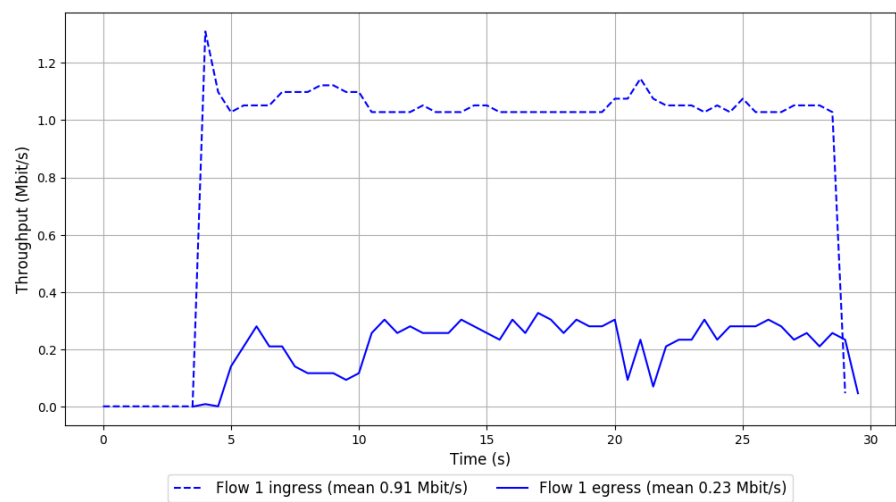


Run 3: Statistics of Indigo-MusesC5

Start at: 2019-03-26 19:59:30
End at: 2019-03-26 20:00:00
Local clock offset: -14.12 ms
Remote clock offset: 0.301 ms

Below is generated by plot.py at 2019-03-26 20:01:31
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 18698.844 ms
Loss rate: 78.10%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 18698.844 ms
Loss rate: 78.10%

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/indigo.

Run 1: Report of Indigo-MusesD — Data Link

Figure is missing

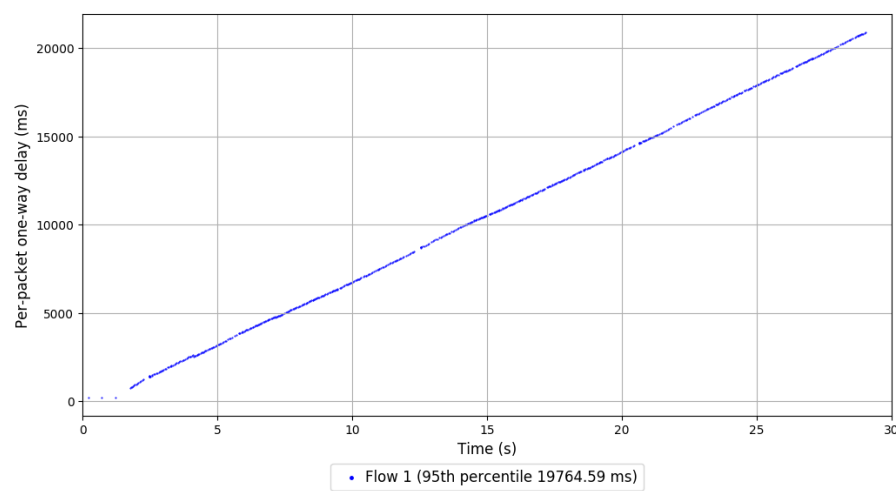
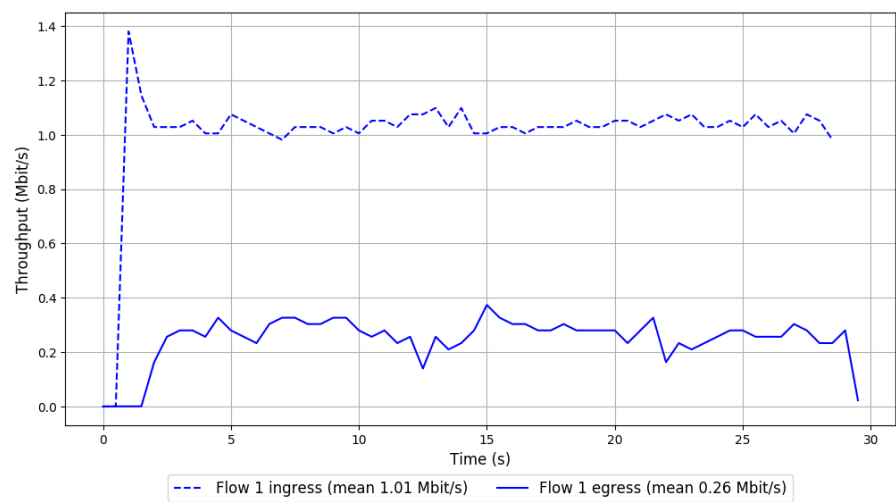
Figure is missing

Run 2: Statistics of Indigo-MusesD

Start at: 2019-03-26 19:36:19
End at: 2019-03-26 19:36:49
Local clock offset: -13.399 ms
Remote clock offset: 16.741 ms

Below is generated by plot.py at 2019-03-26 20:01:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 19764.591 ms
Loss rate: 74.51%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 19764.591 ms
Loss rate: 74.51%

Run 2: Report of Indigo-MusesD — Data Link

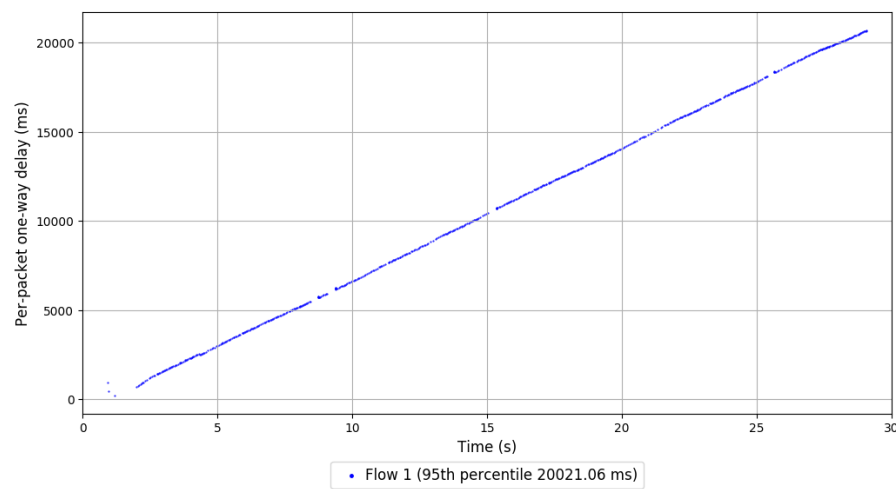
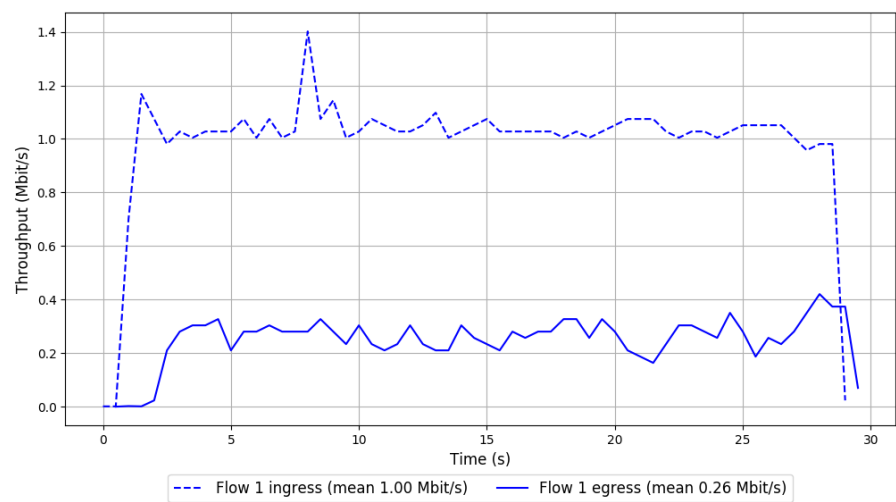


Run 3: Statistics of Indigo-MusesD

Start at: 2019-03-26 20:00:41
End at: 2019-03-26 20:01:11
Local clock offset: -14.184 ms
Remote clock offset: -3.75 ms

Below is generated by plot.py at 2019-03-26 20:01:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 20021.056 ms
Loss rate: 74.39%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 20021.056 ms
Loss rate: 74.39%

Run 3: Report of Indigo-MusesD — Data Link

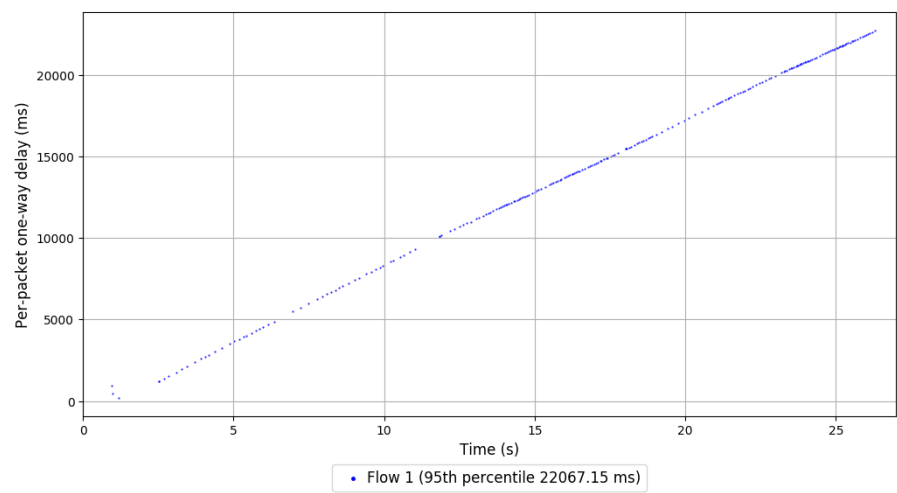
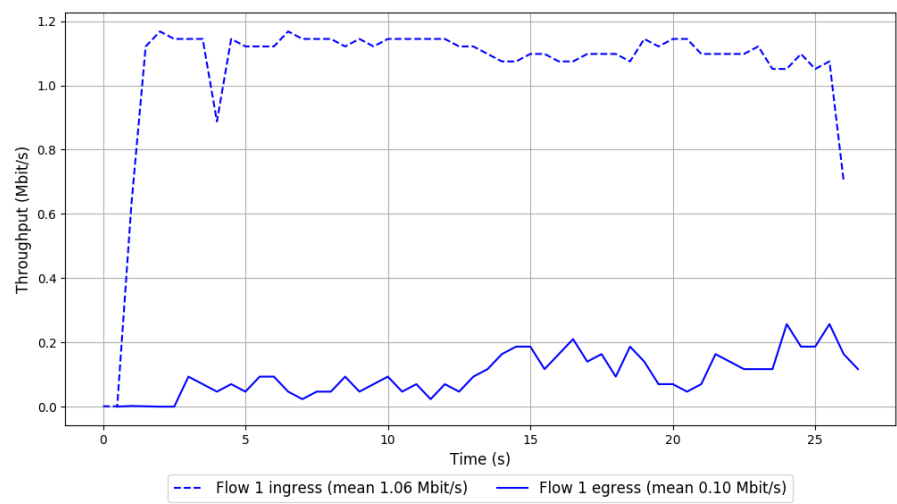


Run 1: Statistics of Indigo-MusesT

Start at: 2019-03-26 18:48:30
End at: 2019-03-26 18:49:00
Local clock offset: -6.926 ms
Remote clock offset: 18.252 ms

Below is generated by plot.py at 2019-03-26 20:01:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 22067.154 ms
Loss rate: 90.53%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 22067.154 ms
Loss rate: 90.53%

Run 1: Report of Indigo-MusesT — Data Link

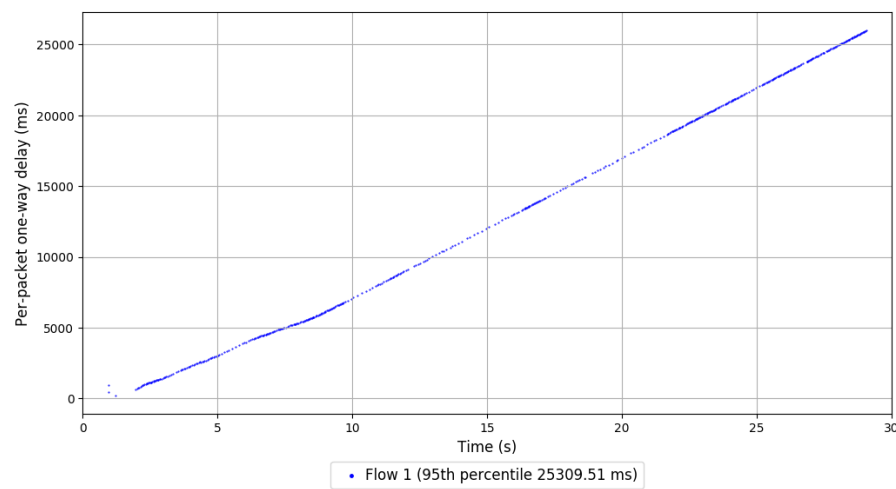
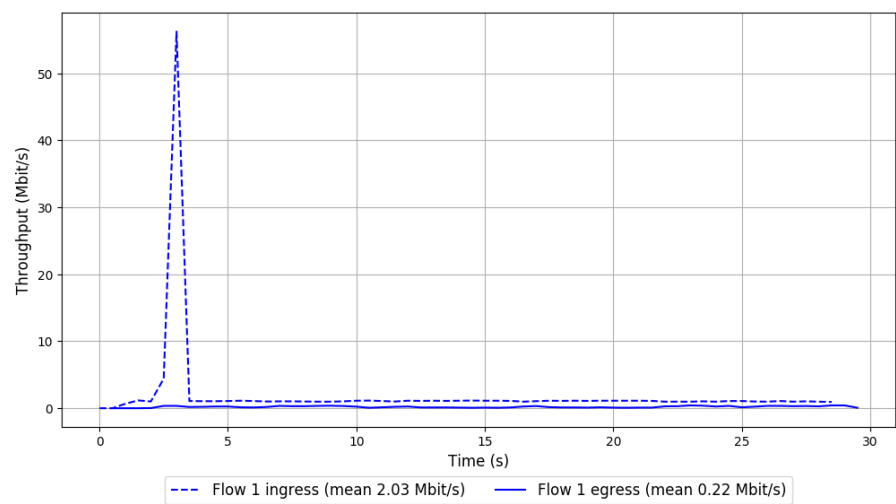


Run 2: Statistics of Indigo-MusesT

Start at: 2019-03-26 19:13:54
End at: 2019-03-26 19:14:24
Local clock offset: -13.136 ms
Remote clock offset: 18.455 ms

Below is generated by plot.py at 2019-03-26 20:01:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 25309.506 ms
Loss rate: 89.58%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 25309.506 ms
Loss rate: 89.58%

Run 2: Report of Indigo-MusesT — Data Link

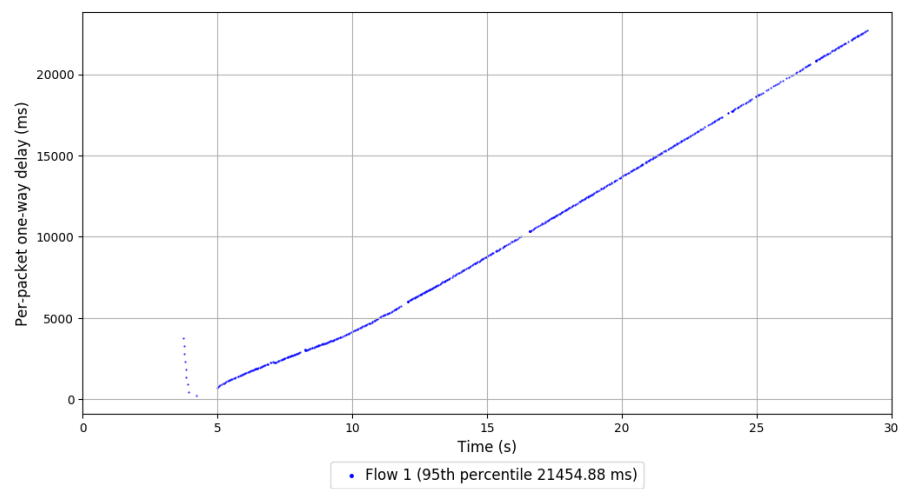
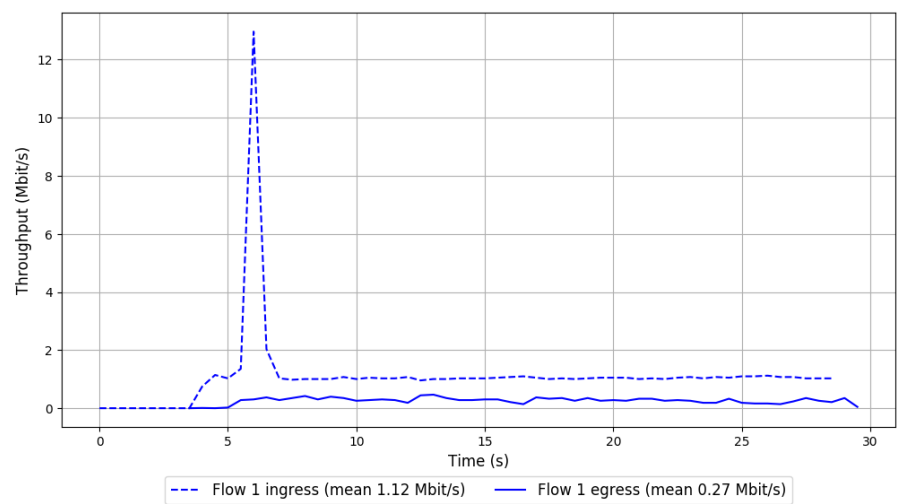


Run 3: Statistics of Indigo-MusesT

Start at: 2019-03-26 19:38:36
End at: 2019-03-26 19:39:06
Local clock offset: -15.053 ms
Remote clock offset: 12.744 ms

Below is generated by plot.py at 2019-03-26 20:01:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 21454.880 ms
Loss rate: 78.63%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 21454.880 ms
Loss rate: 78.63%

Run 3: Report of Indigo-MusesT — Data Link

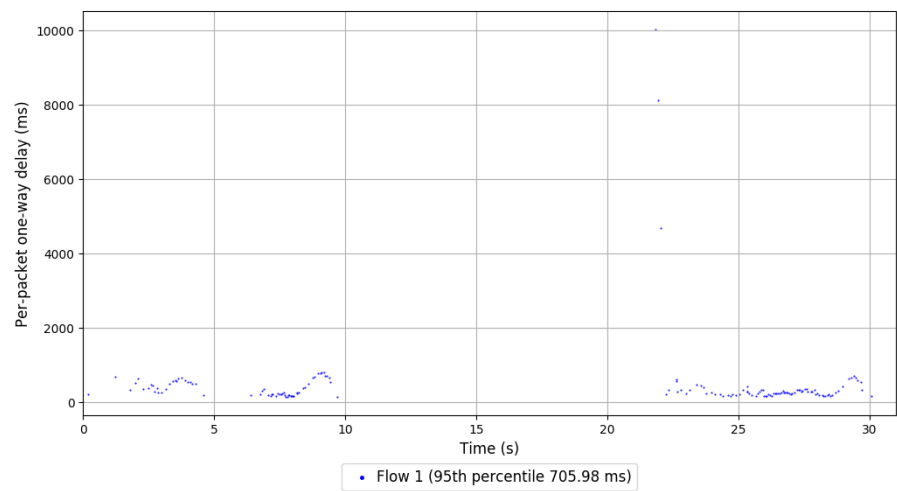
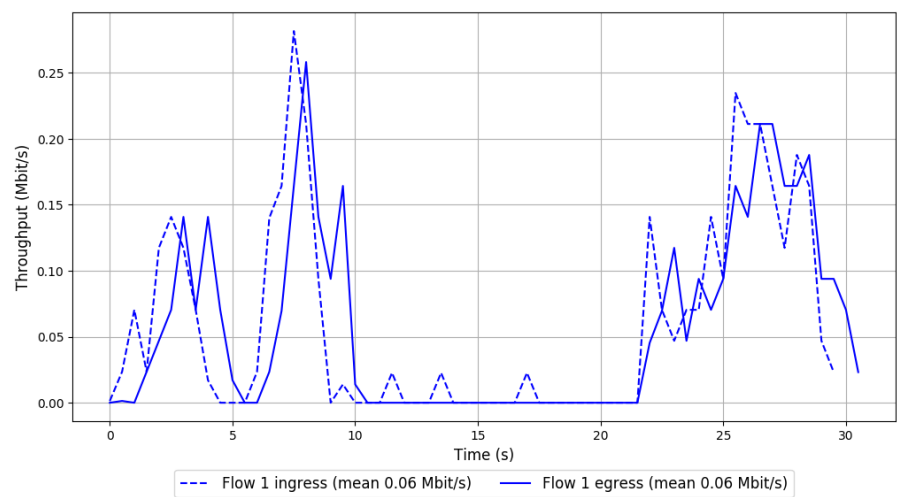


```
Run 1: Statistics of LEDBAT

Start at: 2019-03-26 18:59:28
End at: 2019-03-26 18:59:58
Local clock offset: -10.197 ms
Remote clock offset: 23.81 ms

# Below is generated by plot.py at 2019-03-26 20:01:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 705.982 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 705.982 ms
Loss rate: 0.00%
```

Run 1: Report of LEDBAT — Data Link

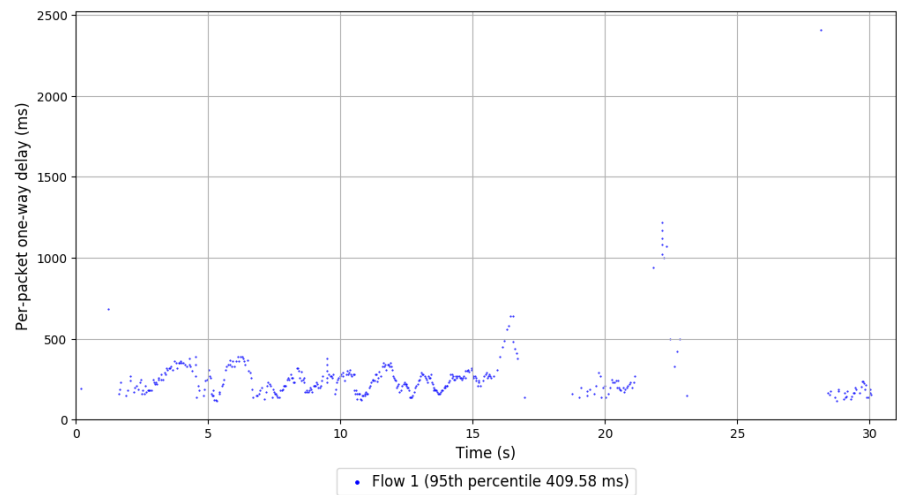
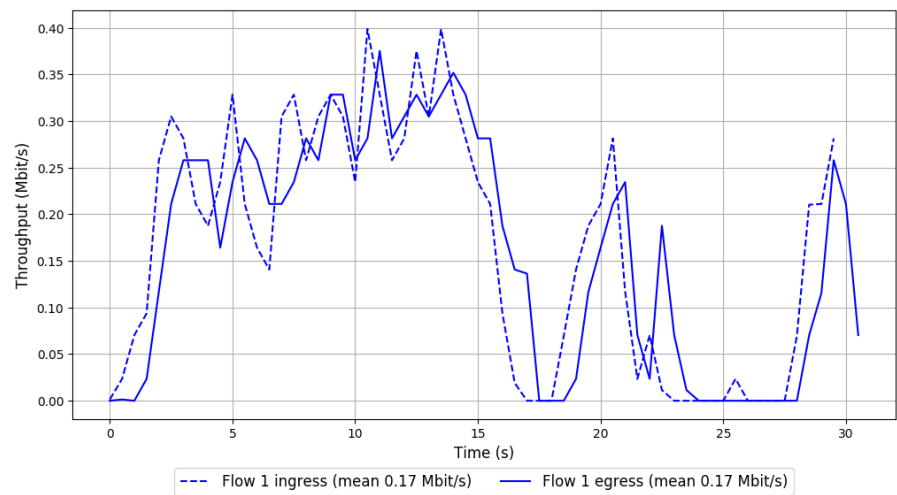


Run 2: Statistics of LEDBAT

Start at: 2019-03-26 19:24:59
End at: 2019-03-26 19:25:29
Local clock offset: -10.671 ms
Remote clock offset: 18.857 ms

Below is generated by plot.py at 2019-03-26 20:01:33
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 409.578 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 409.578 ms
Loss rate: 0.70%

Run 2: Report of LEDBAT — Data Link

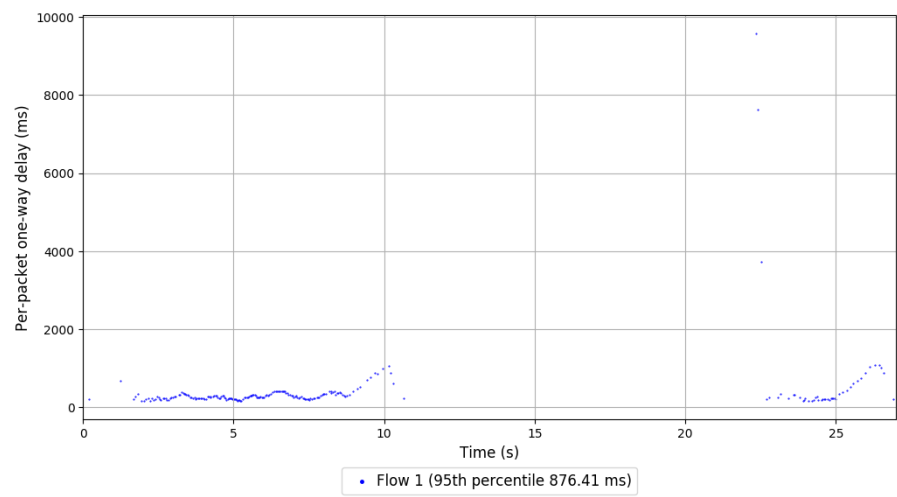
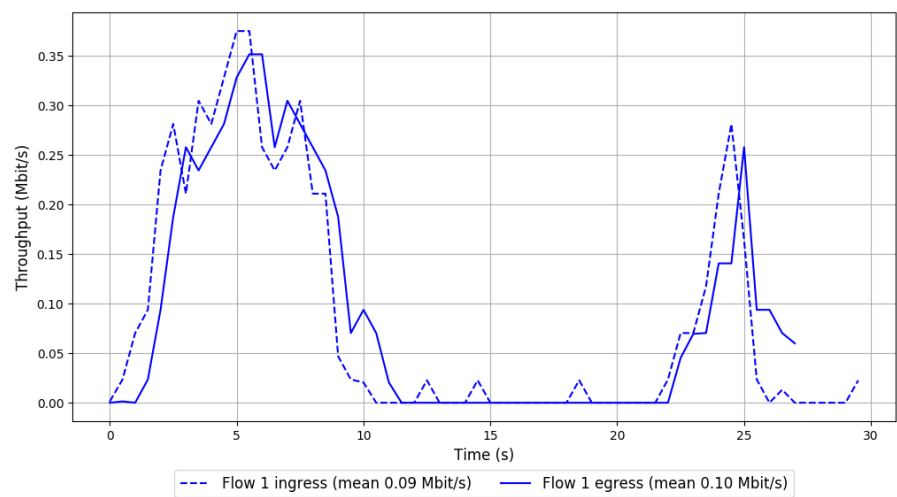


Run 3: Statistics of LEDBAT

Start at: 2019-03-26 19:49:12
End at: 2019-03-26 19:49:42
Local clock offset: -16.201 ms
Remote clock offset: 5.503 ms

Below is generated by plot.py at 2019-03-26 20:01:35
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 876.411 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 876.411 ms
Loss rate: 0.43%

Run 3: Report of LEDBAT — Data Link

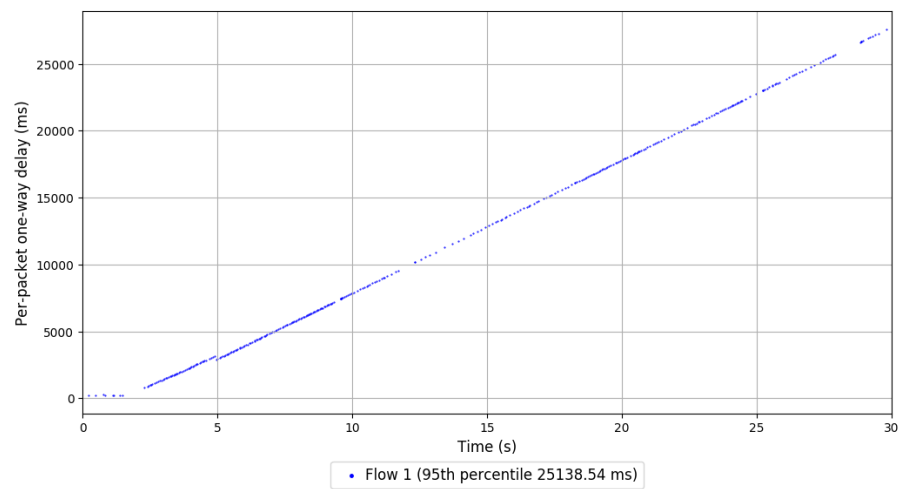
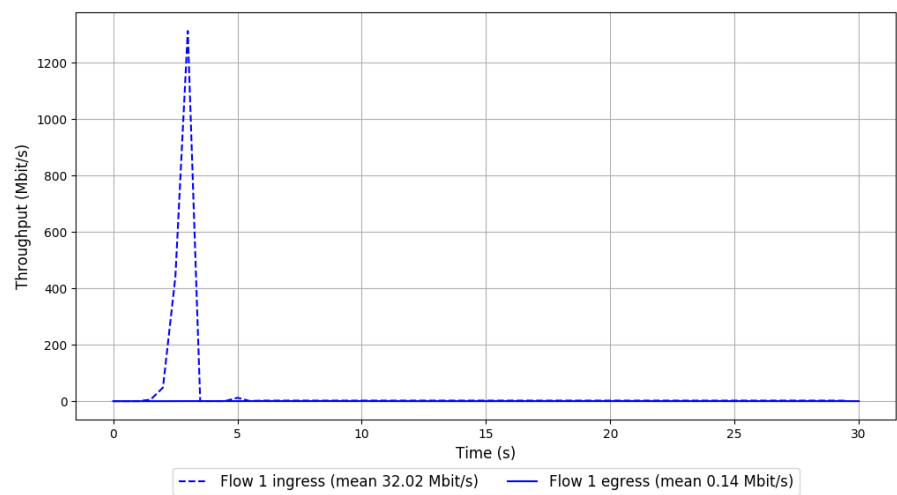


Run 1: Statistics of PCC-Allegro

Start at: 2019-03-26 19:05:09
End at: 2019-03-26 19:05:39
Local clock offset: -12.487 ms
Remote clock offset: 22.653 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 25138.537 ms
Loss rate: 99.56%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 25138.537 ms
Loss rate: 99.56%

Run 1: Report of PCC-Allegro — Data Link

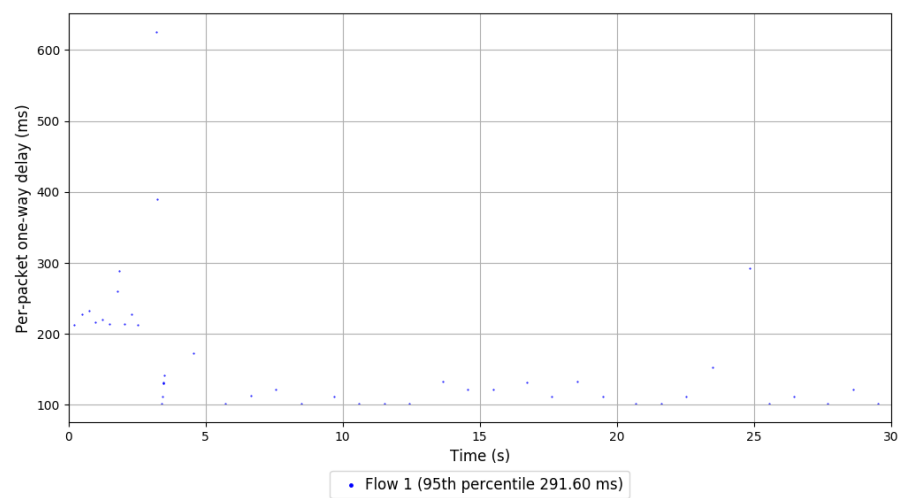
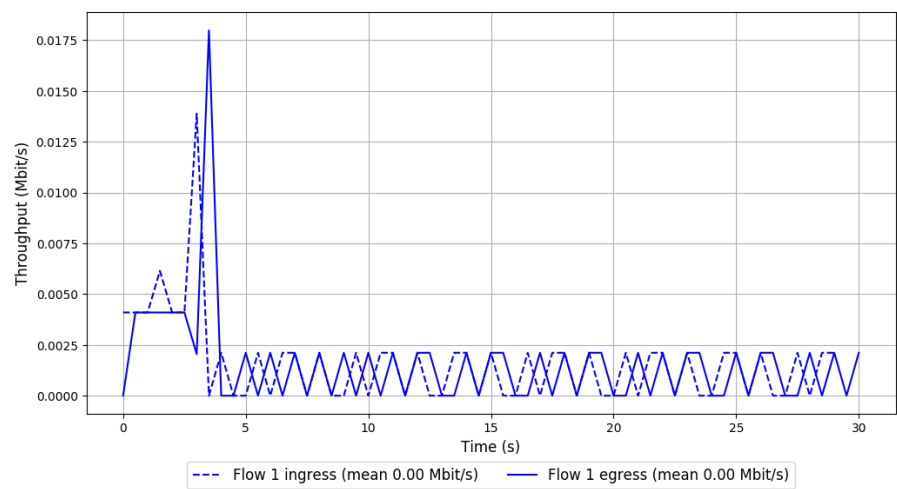


Run 2: Statistics of PCC-Allegro

Start at: 2019-03-26 19:30:38
End at: 2019-03-26 19:31:08
Local clock offset: -12.275 ms
Remote clock offset: 21.68 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 291.600 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 291.600 ms
Loss rate: 0.00%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2019-03-26 19:54:54

End at: 2019-03-26 19:55:24

Local clock offset: -13.4 ms

Remote clock offset: -1.777 ms

Below is generated by plot.py at 2019-03-26 20:01:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 25614.350 ms

Loss rate: 99.44%

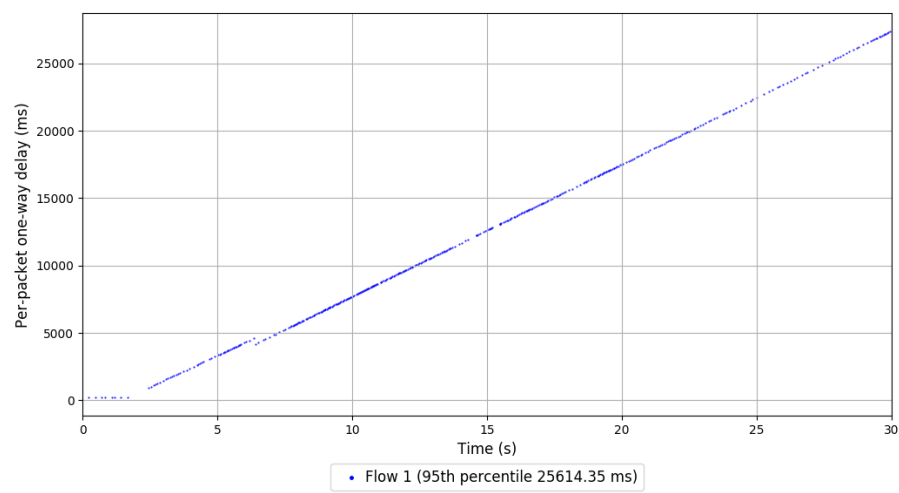
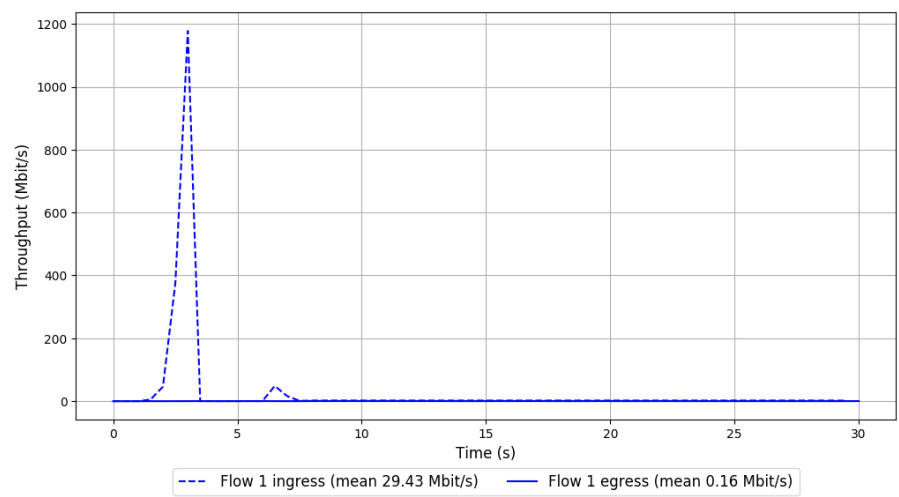
-- Flow 1:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 25614.350 ms

Loss rate: 99.44%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

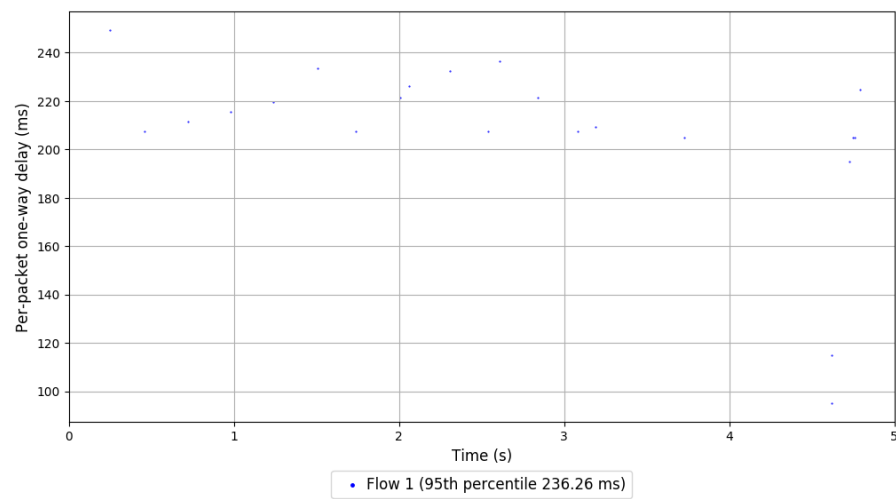
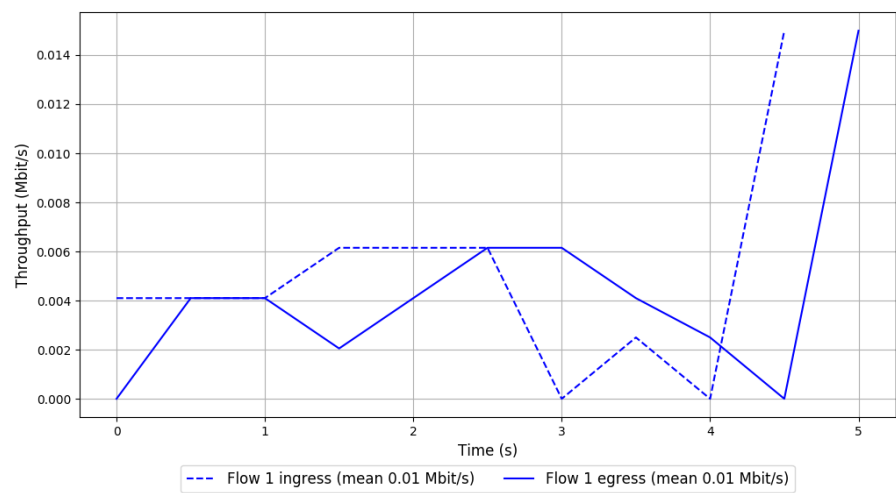
Start at: 2019-03-26 19:01:44

End at: 2019-03-26 19:02:15

Local clock offset: -11.947 ms

Remote clock offset: 17.729 ms

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

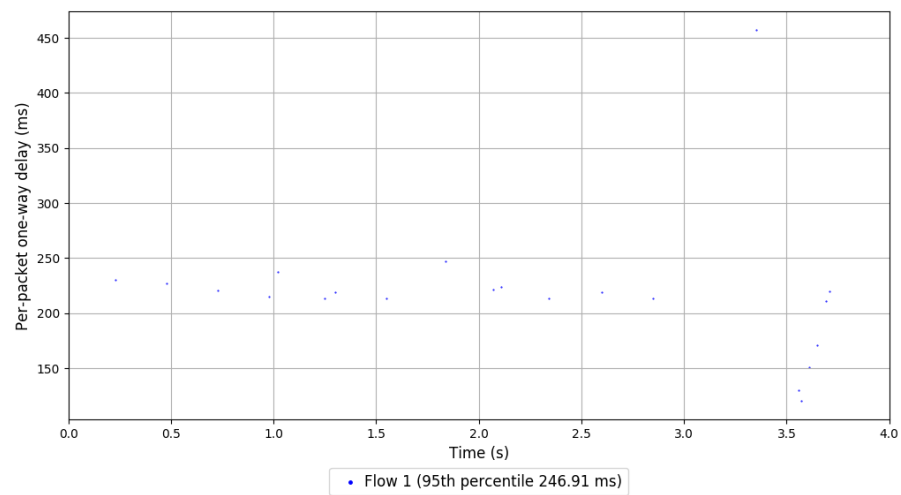
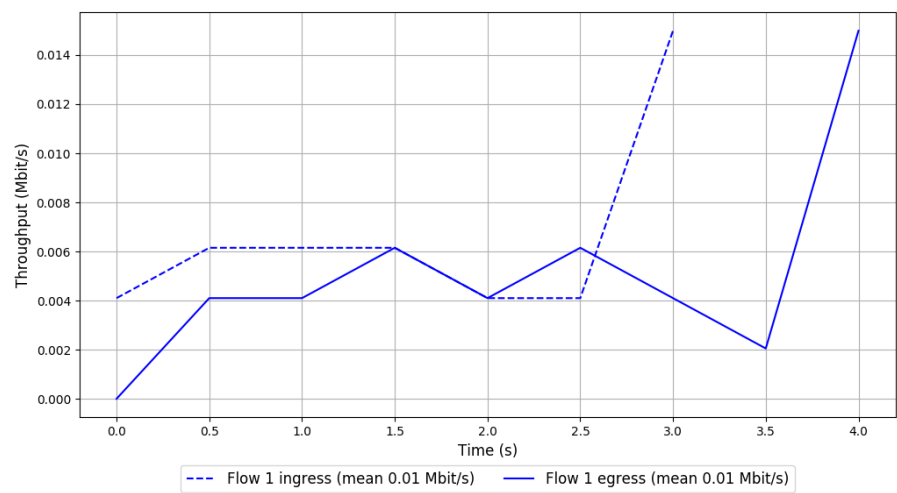
Start at: 2019-03-26 19:27:15

End at: 2019-03-26 19:27:45

Local clock offset: -11.531 ms

Remote clock offset: 22.887 ms

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

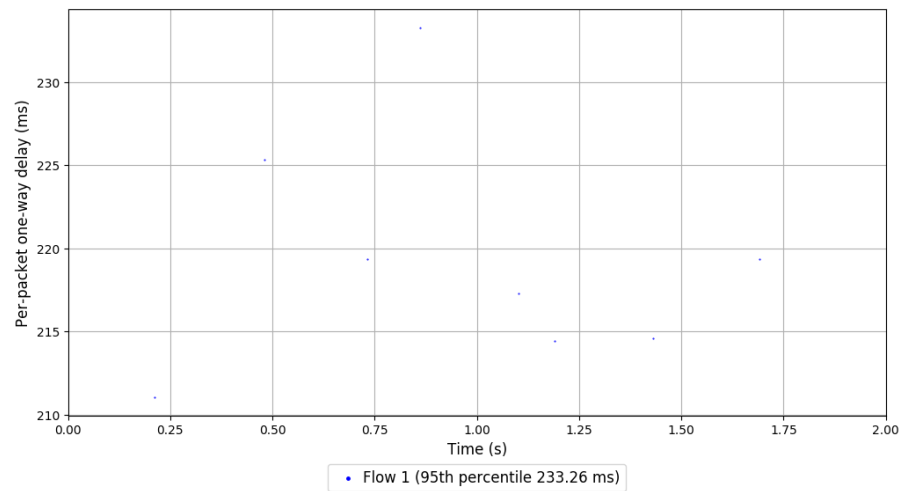
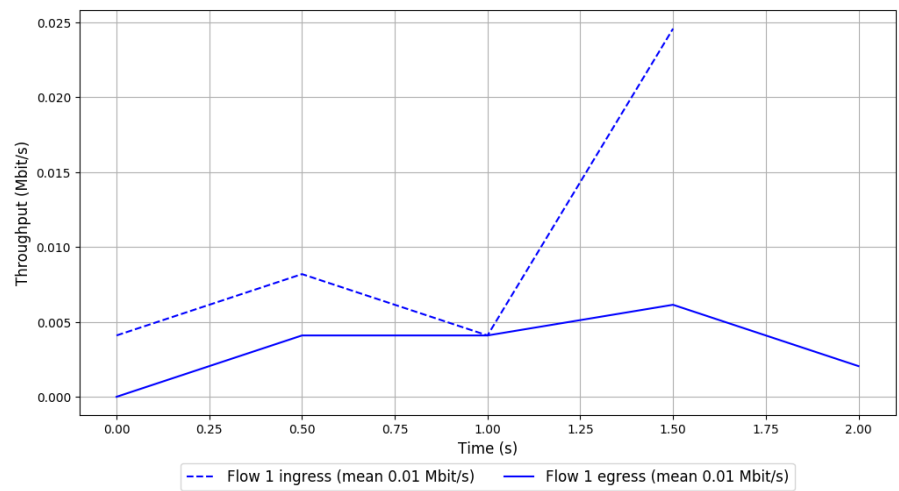
Start at: 2019-03-26 19:51:27

End at: 2019-03-26 19:51:57

Local clock offset: -15.043 ms

Remote clock offset: 3.136 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-03-26 18:49:38

End at: 2019-03-26 18:50:08

Local clock offset: -8.014 ms

Remote clock offset: 17.199 ms

Below is generated by plot.py at 2019-03-26 20:01:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 8236.077 ms

Loss rate: 28.04%

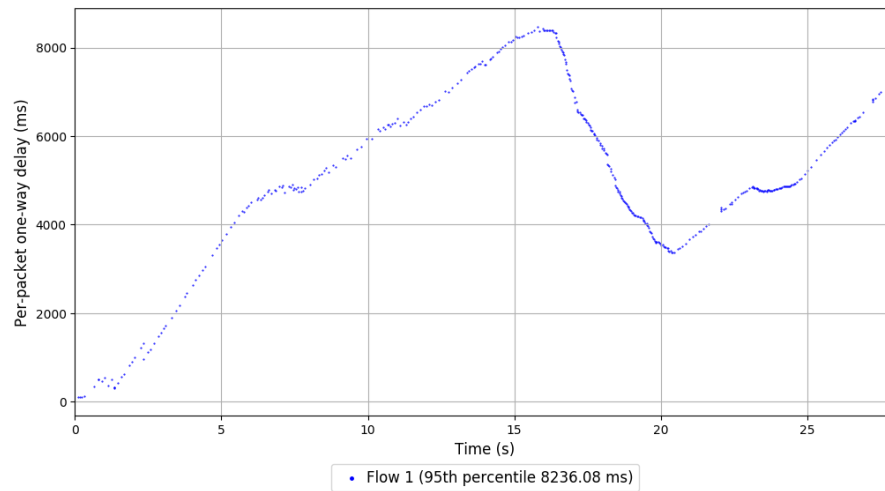
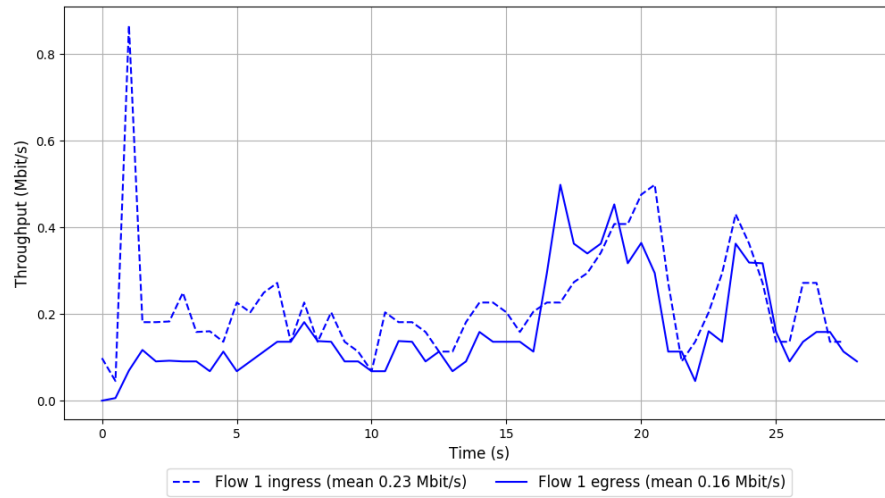
-- Flow 1:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 8236.077 ms

Loss rate: 28.04%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/quic_st

Run 2: Report of QUIC Cubic — Data Link

Figure is missing

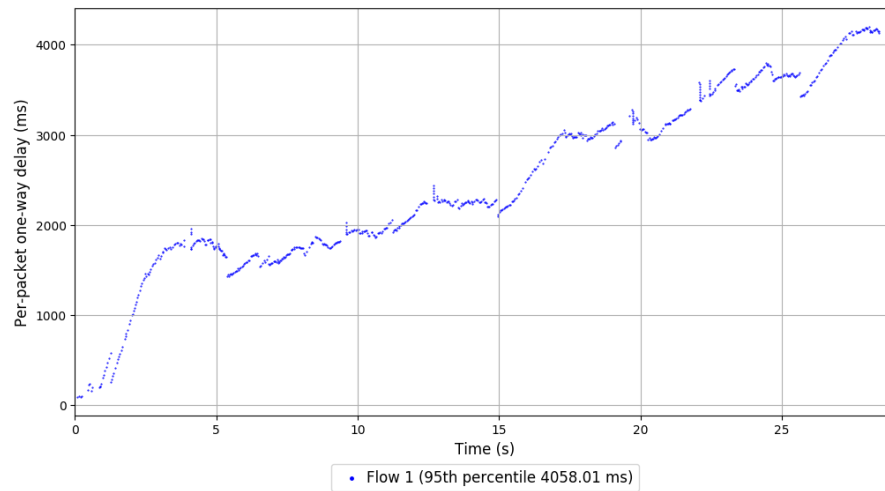
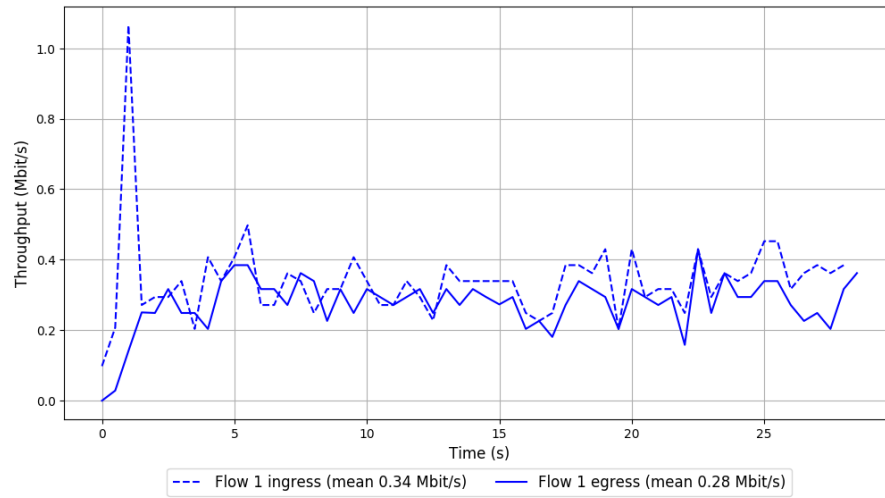
Figure is missing

Run 3: Statistics of QUIC Cubic

Start at: 2019-03-26 19:39:43
End at: 2019-03-26 19:40:13
Local clock offset: -15.563 ms
Remote clock offset: 8.715 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 4058.006 ms
Loss rate: 17.39%
-- Flow 1:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 4058.006 ms
Loss rate: 17.39%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/scream.

Run 1: Report of SReAM — Data Link

Figure is missing

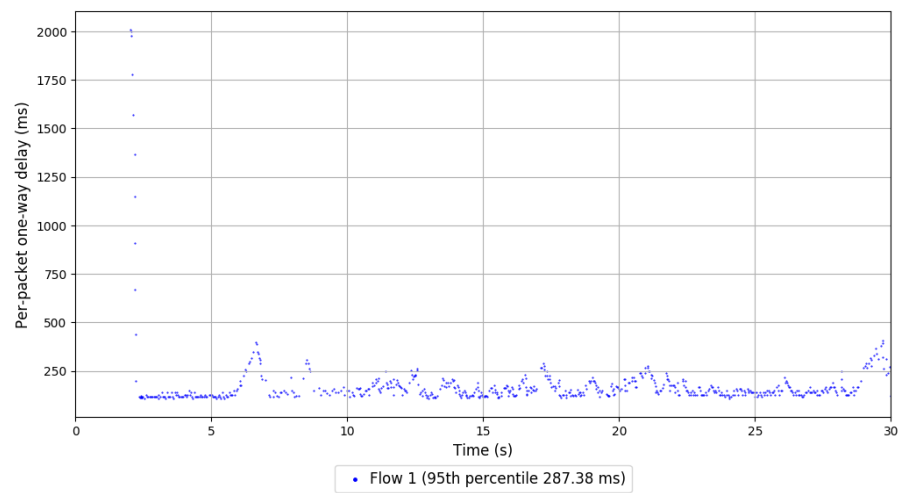
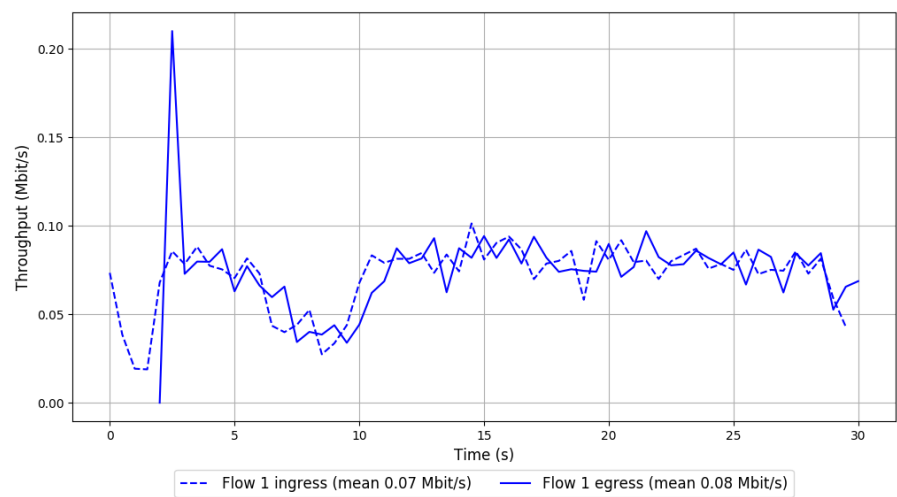
Figure is missing

Run 2: Statistics of SCReAM

Start at: 2019-03-26 19:18:52
End at: 2019-03-26 19:19:22
Local clock offset: -12.362 ms
Remote clock offset: 23.642 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 287.384 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 287.384 ms
Loss rate: 0.86%

Run 2: Report of SReAM — Data Link

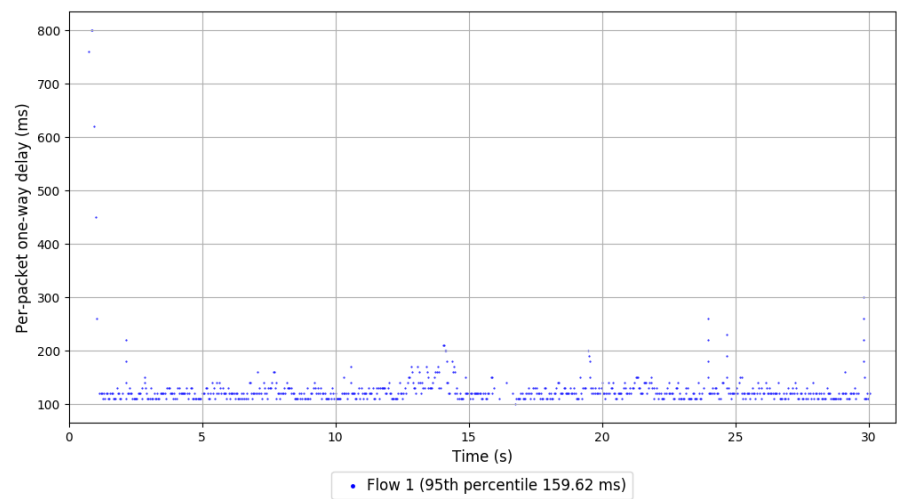
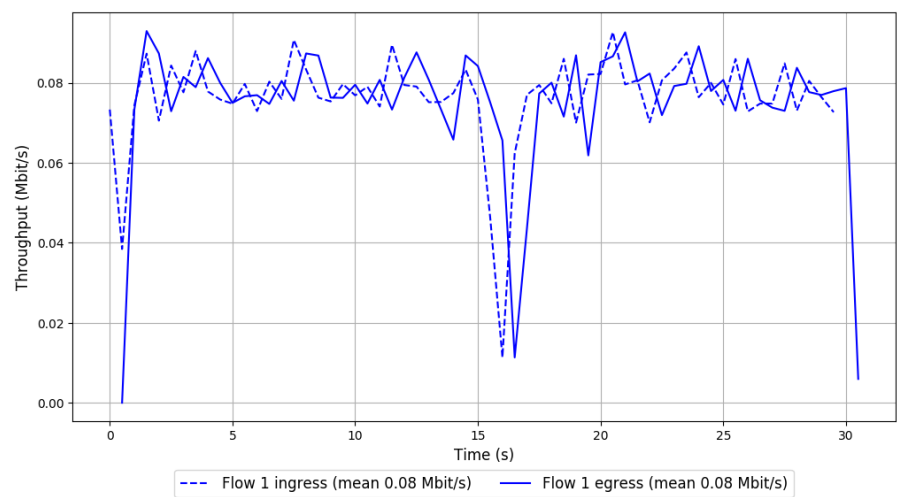


Run 3: Statistics of SCReAM

Start at: 2019-03-26 19:43:08
End at: 2019-03-26 19:43:38
Local clock offset: -16.487 ms
Remote clock offset: 8.213 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 159.625 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 159.625 ms
Loss rate: 0.13%

Run 3: Report of SReAM — Data Link

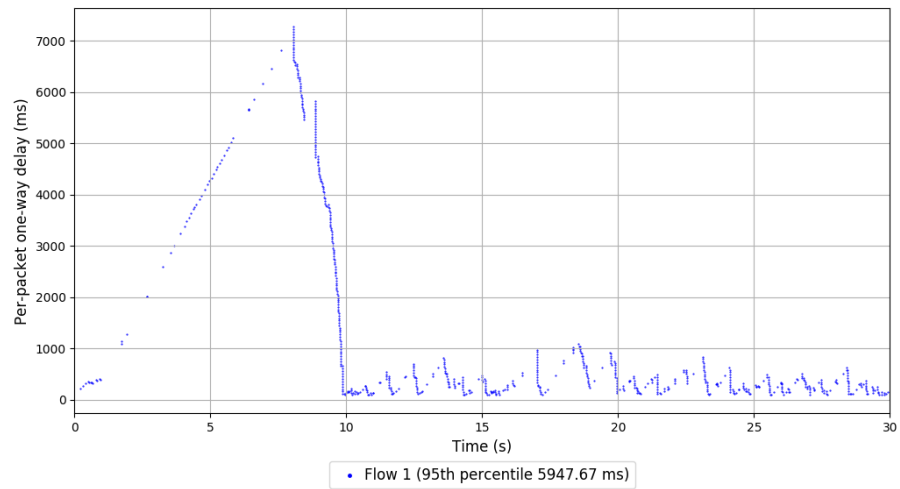
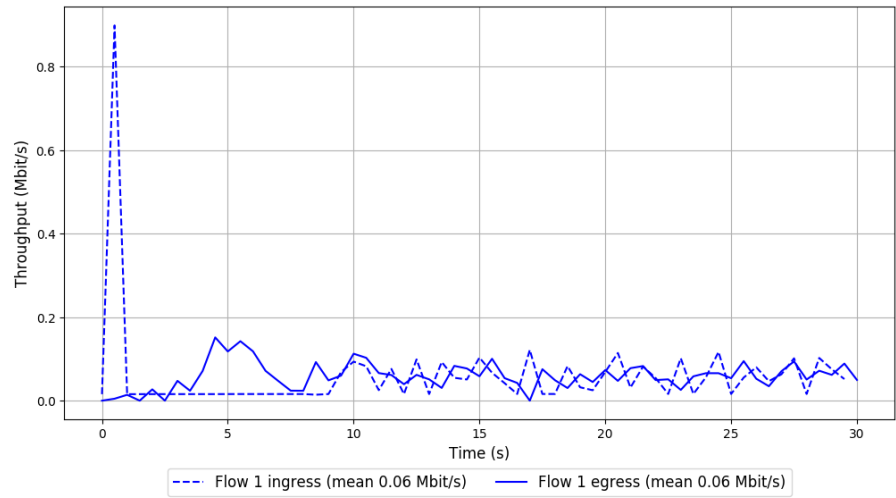


Run 1: Statistics of Sprout

Start at: 2019-03-26 19:07:49
End at: 2019-03-26 19:08:19
Local clock offset: -11.416 ms
Remote clock offset: 24.063 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 5947.668 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 5947.668 ms
Loss rate: 0.88%

Run 1: Report of Sprout — Data Link

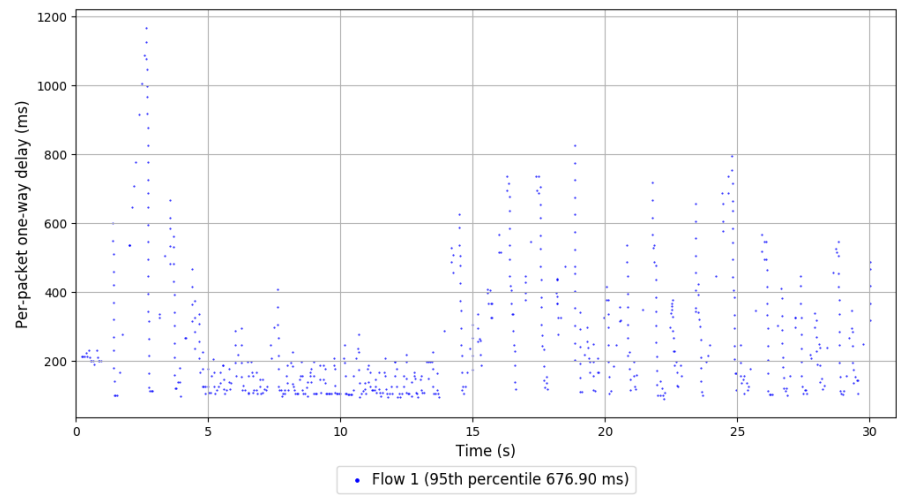
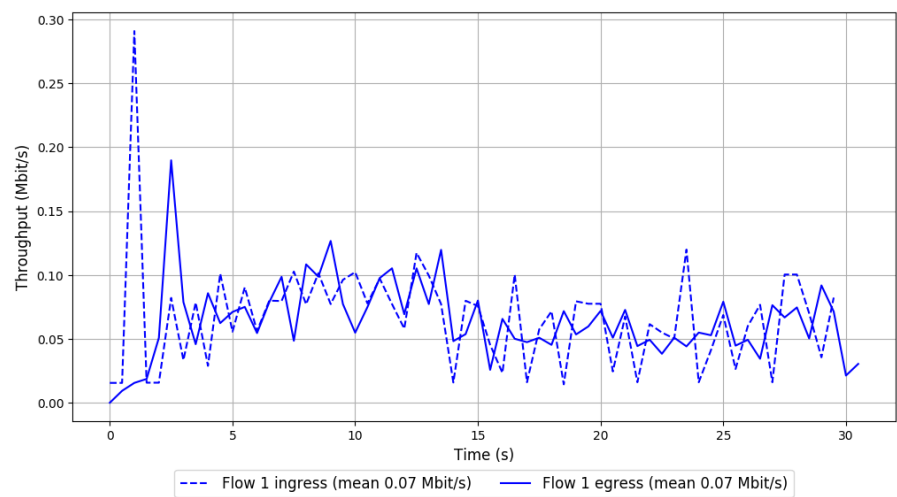


Run 2: Statistics of Sprout

Start at: 2019-03-26 19:32:55
End at: 2019-03-26 19:33:25
Local clock offset: -12.109 ms
Remote clock offset: 18.854 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 676.896 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 676.896 ms
Loss rate: 1.29%

Run 2: Report of Sprout — Data Link

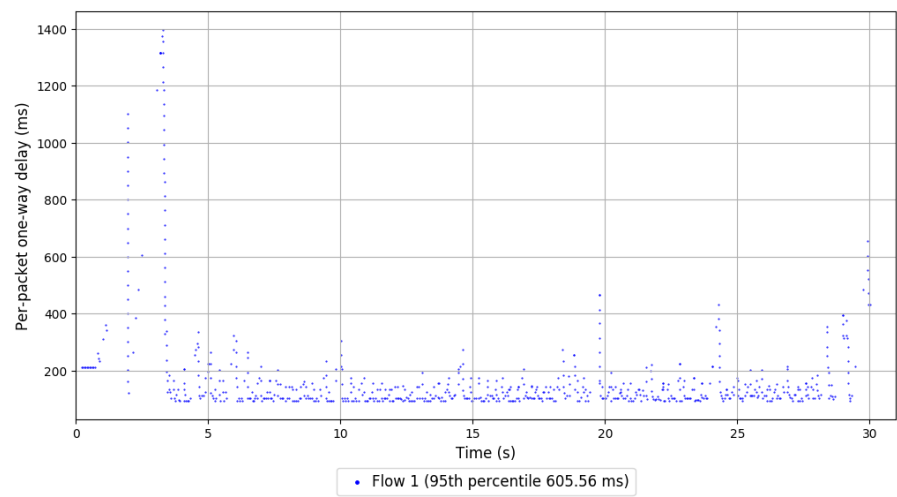
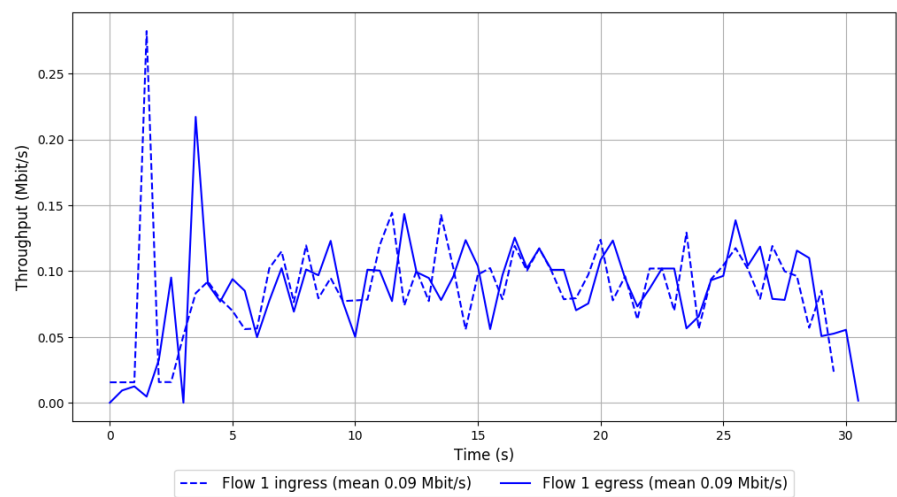


Run 3: Statistics of Sprout

Start at: 2019-03-26 19:57:13
End at: 2019-03-26 19:57:43
Local clock offset: -13.237 ms
Remote clock offset: -2.825 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 605.563 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 605.563 ms
Loss rate: 0.39%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

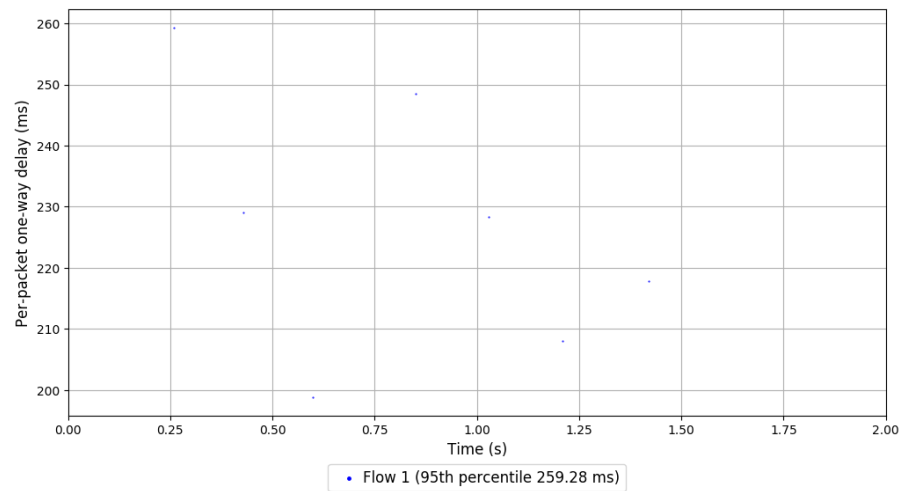
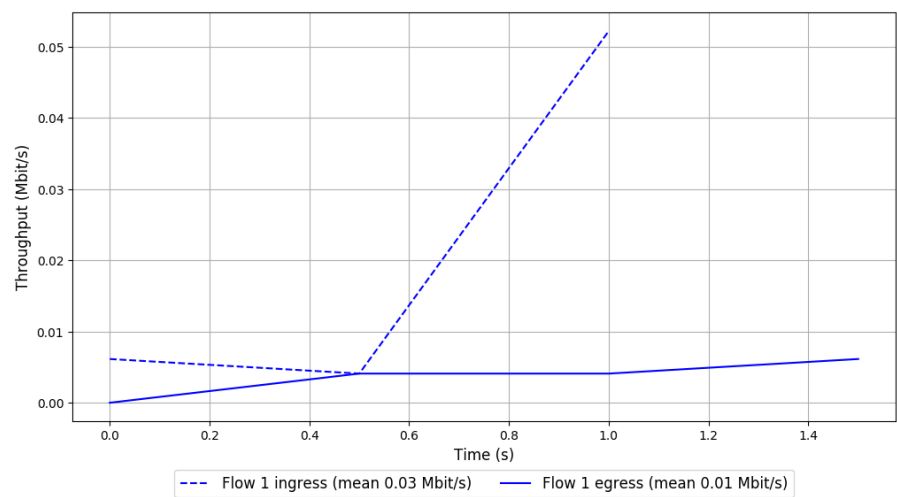
Start at: 2019-03-26 18:57:12

End at: 2019-03-26 18:57:42

Local clock offset: -9.55 ms

Remote clock offset: 17.552 ms

Run 1: Report of TaoVA-100x — Data Link



Run 2: Statistics of TaoVA-100x

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/taova_s

Run 2: Report of TaoVA-100x — Data Link

Figure is missing

Figure is missing

Run 3: Statistics of TaoVA-100x

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/taova_s

Run 3: Report of TaoVA-100x — Data Link

Figure is missing

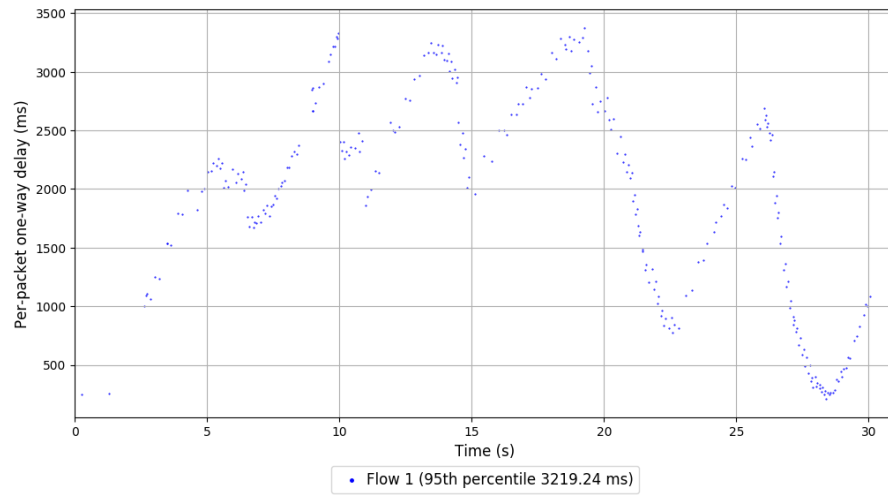
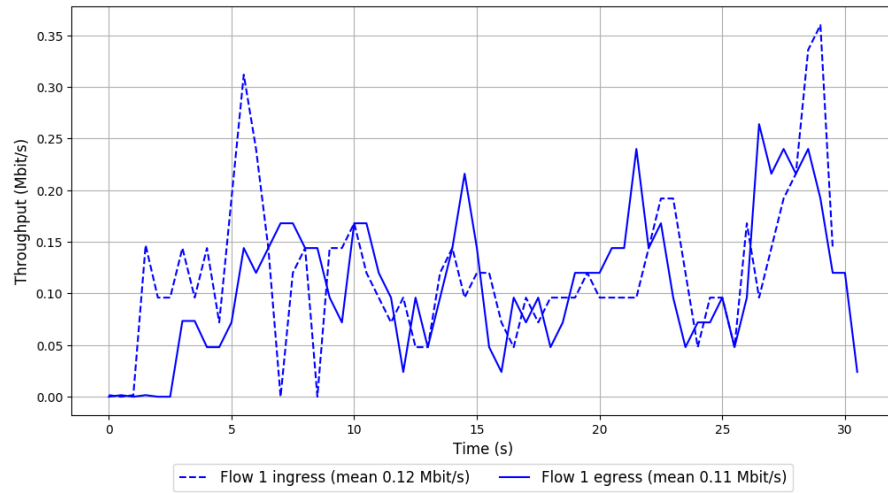
Figure is missing

Run 1: Statistics of TCP Vegas

Start at: 2019-03-26 19:04:01
End at: 2019-03-26 19:04:31
Local clock offset: -13.511 ms
Remote clock offset: 23.188 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 3219.236 ms
Loss rate: 7.04%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 3219.236 ms
Loss rate: 7.04%

Run 1: Report of TCP Vegas — Data Link

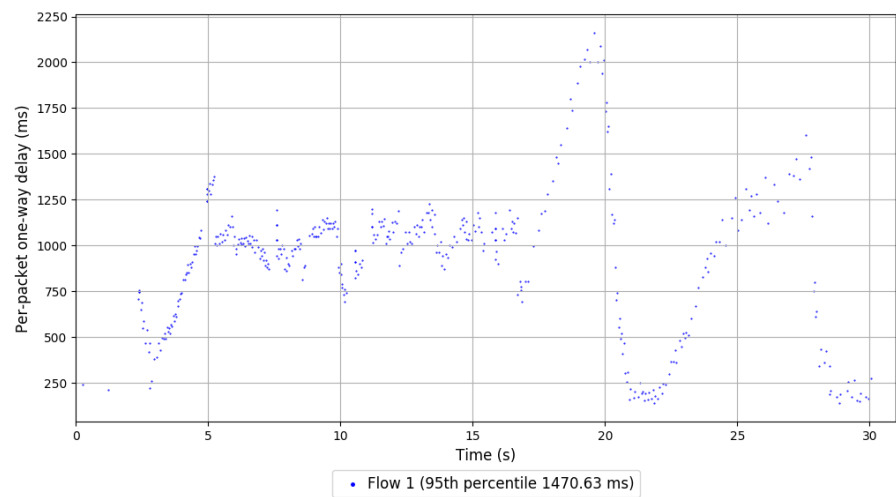
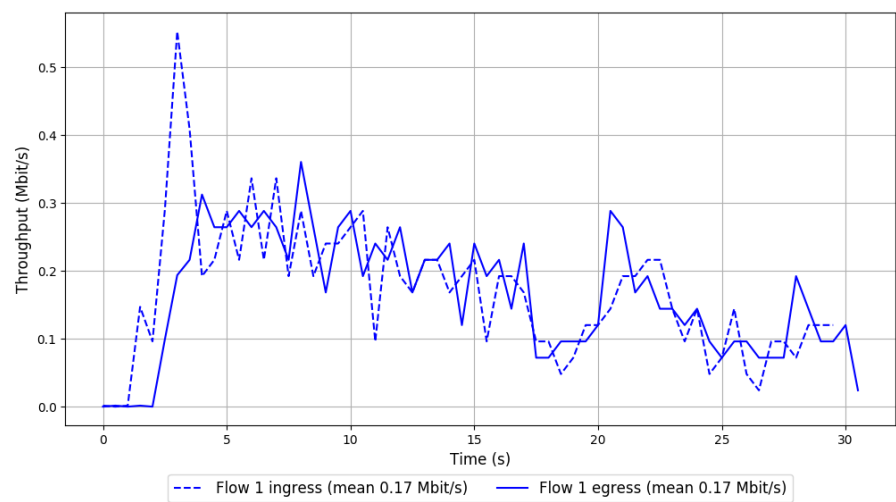


Run 2: Statistics of TCP Vegas

Start at: 2019-03-26 19:29:30
End at: 2019-03-26 19:30:01
Local clock offset: -11.108 ms
Remote clock offset: 24.093 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1470.635 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1470.635 ms
Loss rate: 0.47%

Run 2: Report of TCP Vegas — Data Link

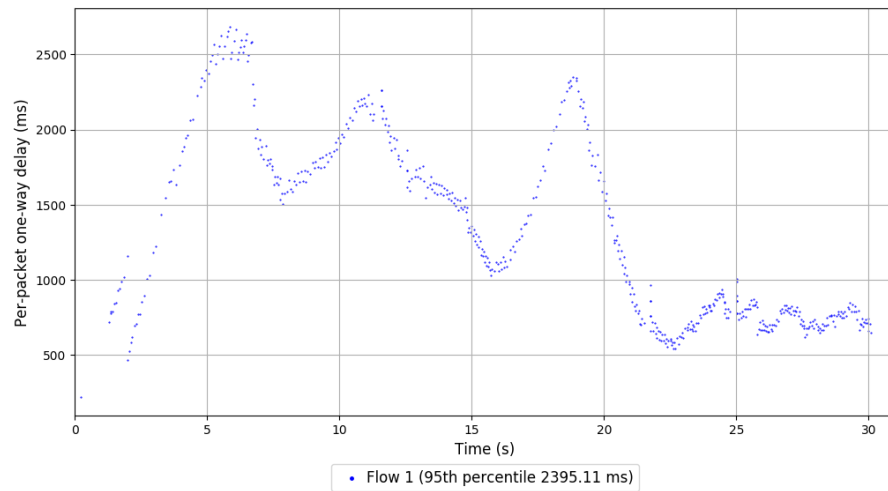
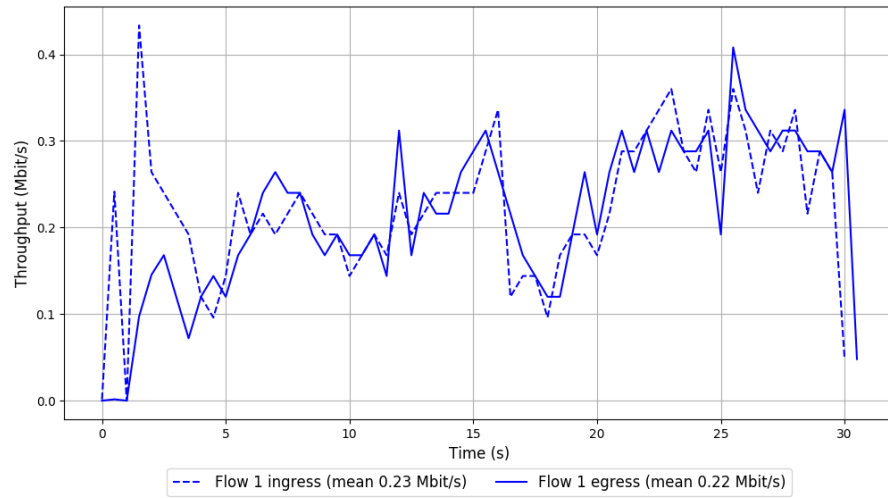


Run 3: Statistics of TCP Vegas

Start at: 2019-03-26 19:53:43
End at: 2019-03-26 19:54:13
Local clock offset: -13.638 ms
Remote clock offset: -0.212 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 2395.111 ms
Loss rate: 2.47%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 2395.111 ms
Loss rate: 2.47%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

/home/ubuntu/pantheon/data/2019-03-26T18-46-AWS-Brazil-2-to-Colombia-cellular-3-runs/verus_s

Run 1: Report of Verus — Data Link

Figure is missing

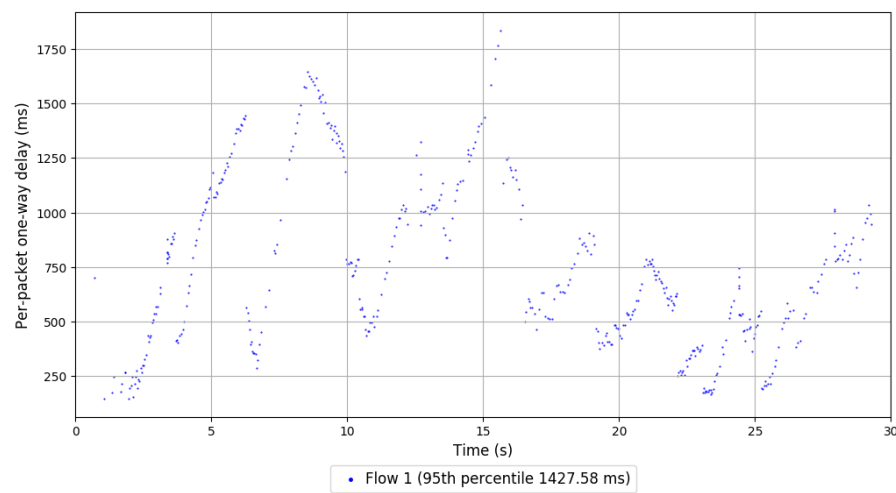
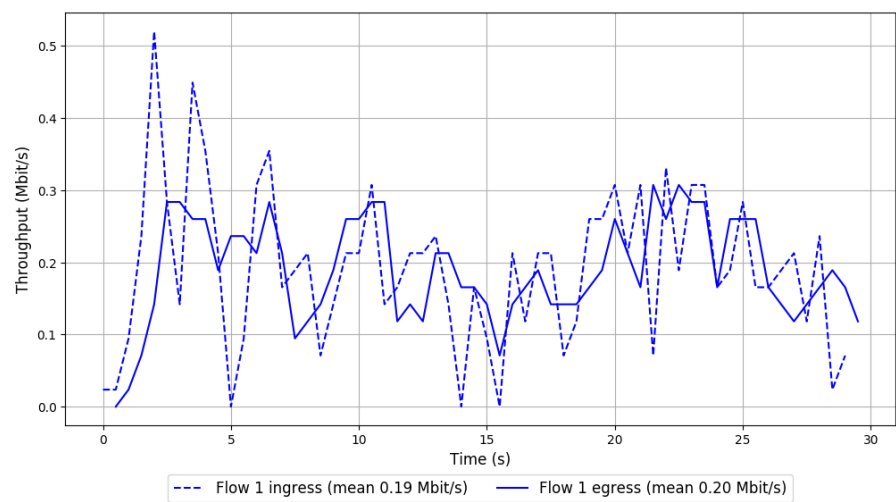
Figure is missing

Run 2: Statistics of Verus

Start at: 2019-03-26 19:31:47
End at: 2019-03-26 19:32:17
Local clock offset: -12.493 ms
Remote clock offset: 19.982 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1427.583 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 1427.583 ms
Loss rate: 1.05%

Run 2: Report of Verus — Data Link

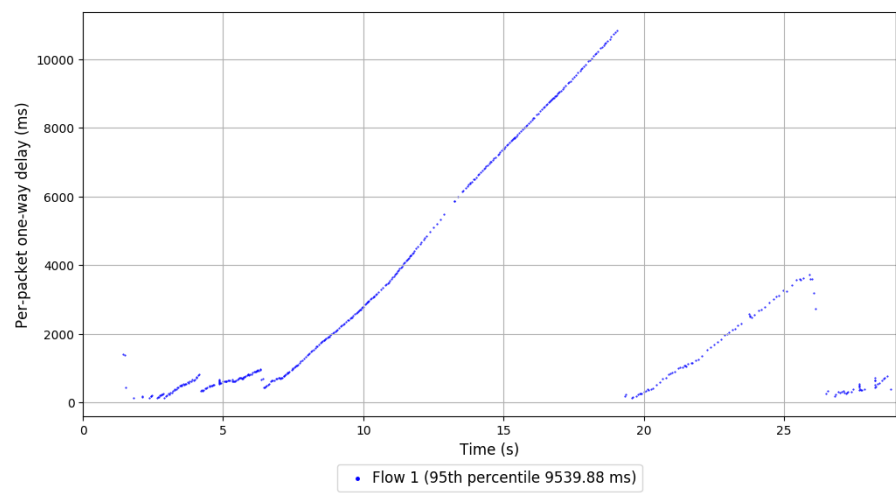
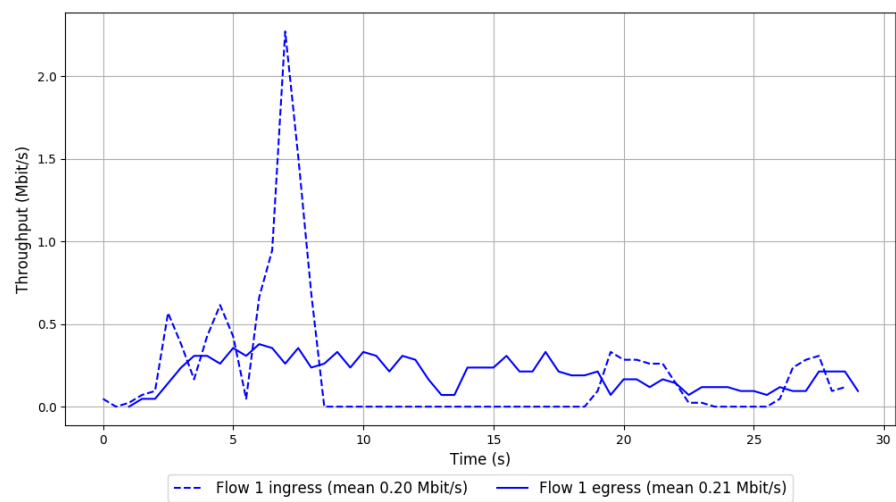


Run 3: Statistics of Verus

Start at: 2019-03-26 19:56:06
End at: 2019-03-26 19:56:36
Local clock offset: -13.293 ms
Remote clock offset: 3.787 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 9539.877 ms
Loss rate: 3.63%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 9539.877 ms
Loss rate: 3.63%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-03-26 18:47:22

End at: 2019-03-26 18:47:52

Local clock offset: 3.336 ms

Remote clock offset: 23.092 ms

Below is generated by plot.py at 2019-03-26 20:01:48

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.24 Mbit/s

95th percentile per-packet one-way delay: 21993.971 ms

Loss rate: 84.33%

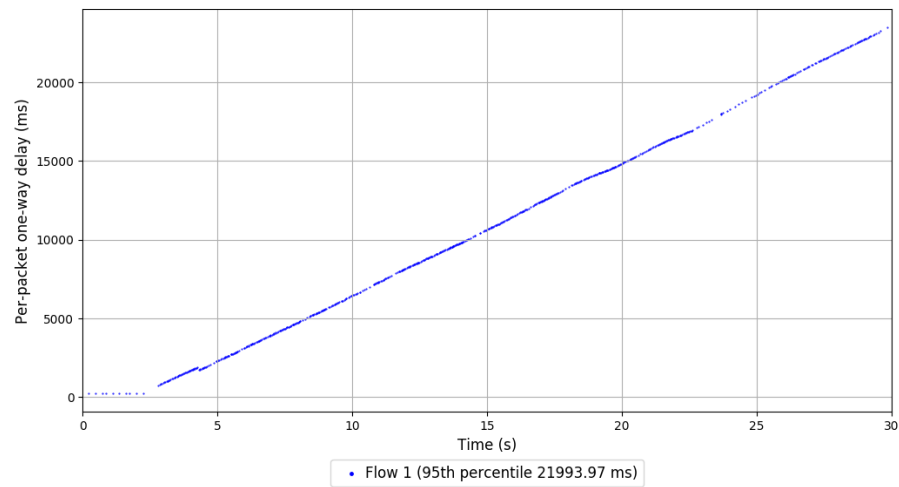
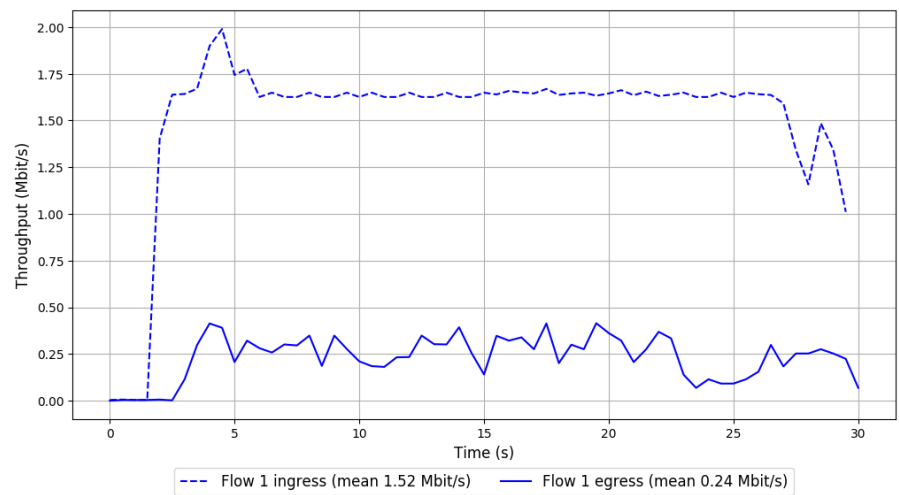
-- Flow 1:

Average throughput: 0.24 Mbit/s

95th percentile per-packet one-way delay: 21993.971 ms

Loss rate: 84.33%

Run 1: Report of PCC-Vivace — Data Link

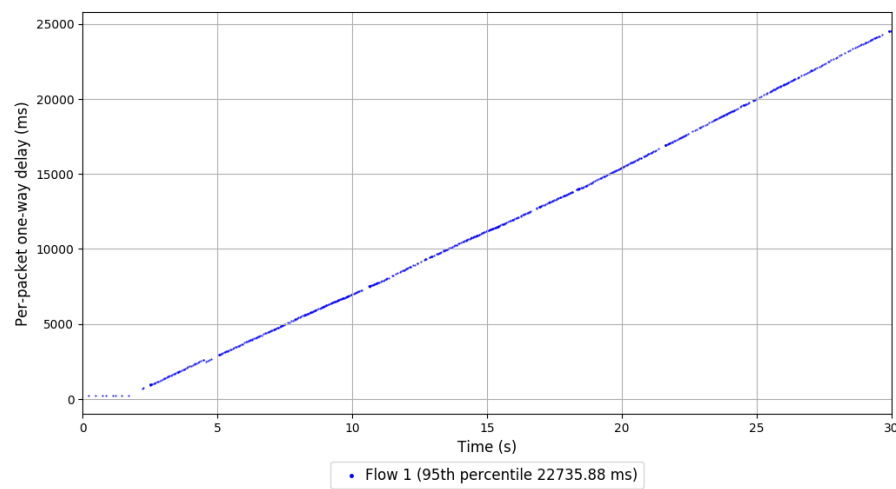
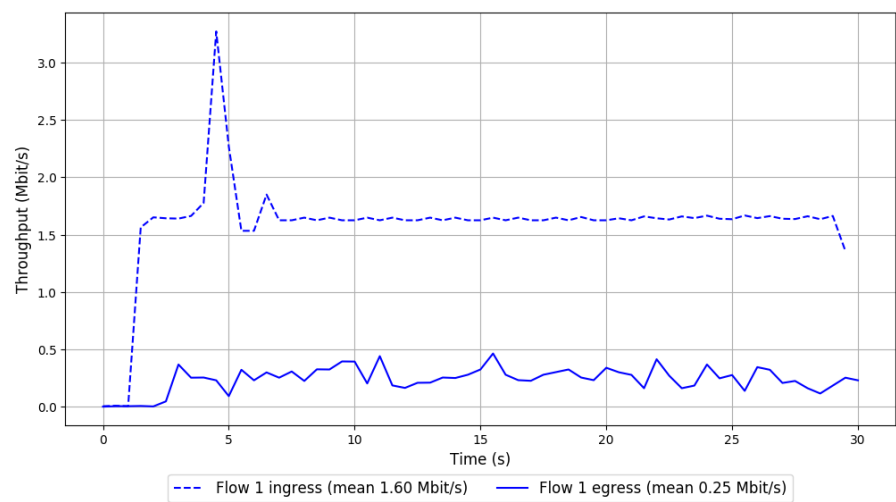


Run 2: Statistics of PCC-Vivace

Start at: 2019-03-26 19:12:44
End at: 2019-03-26 19:13:14
Local clock offset: -12.603 ms
Remote clock offset: 24.235 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 22735.882 ms
Loss rate: 84.71%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 22735.882 ms
Loss rate: 84.71%

Run 2: Report of PCC-Vivace — Data Link

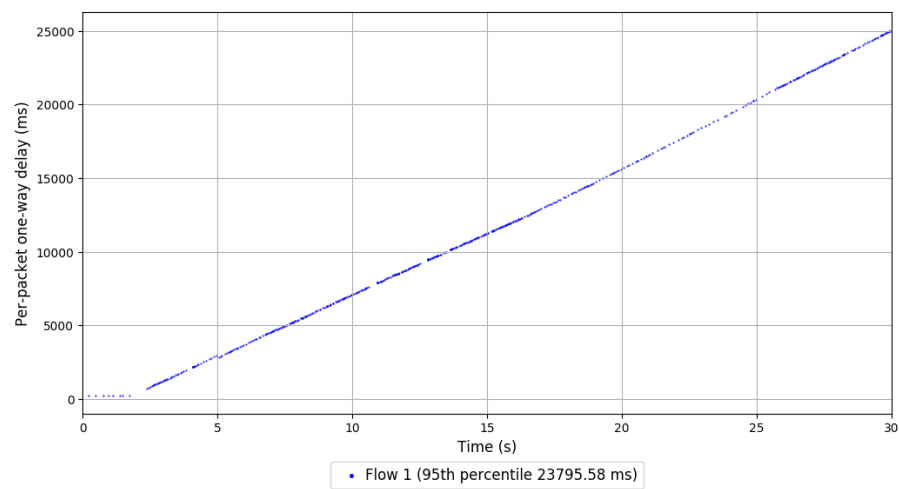
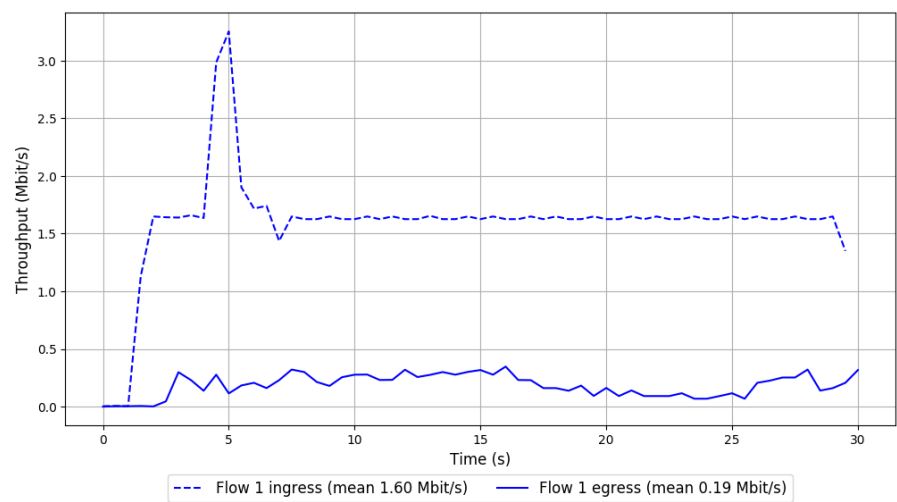


Run 3: Statistics of PCC-Vivace

Start at: 2019-03-26 19:37:27
End at: 2019-03-26 19:37:57
Local clock offset: -13.862 ms
Remote clock offset: 15.411 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 23795.575 ms
Loss rate: 88.14%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 23795.575 ms
Loss rate: 88.14%

Run 3: Report of PCC-Vivace — Data Link

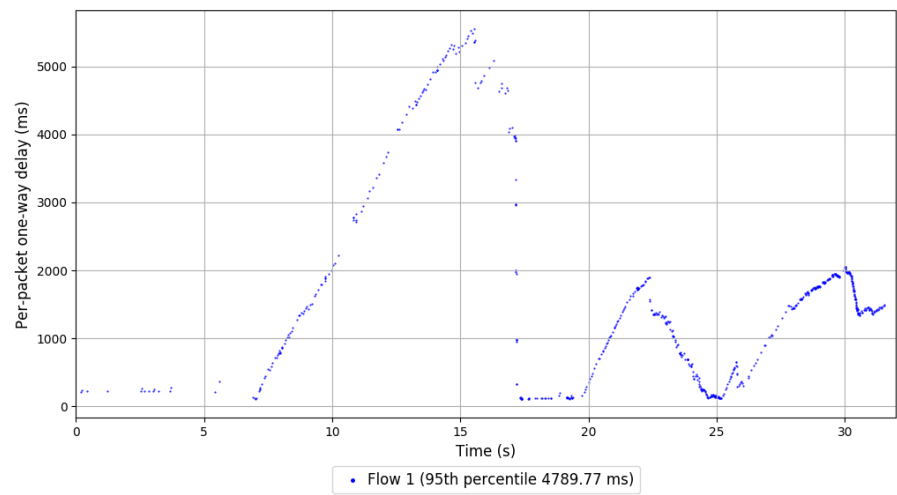
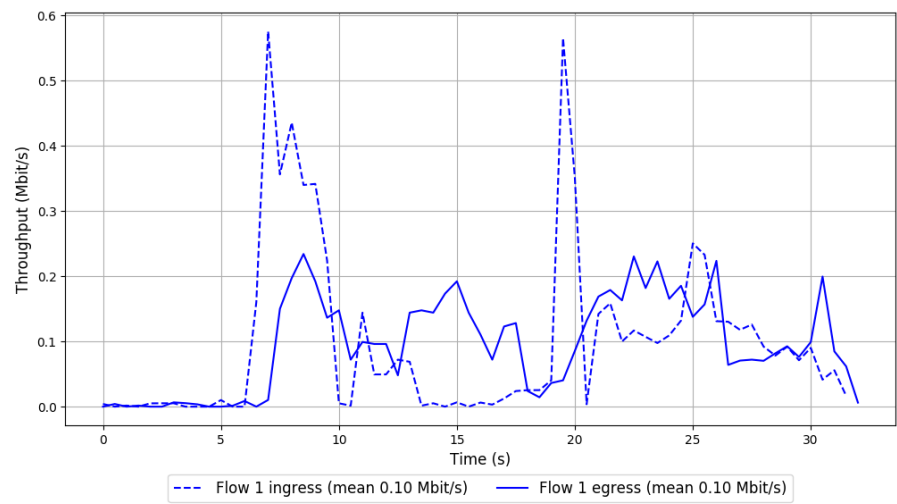


```
Run 1: Statistics of WebRTC media

Start at: 2019-03-26 19:00:36
End at: 2019-03-26 19:01:06
Local clock offset: -10.974 ms
Remote clock offset: 23.892 ms

# Below is generated by plot.py at 2019-03-26 20:01:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 4789.774 ms
Loss rate: 3.09%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 4789.774 ms
Loss rate: 3.09%
```

Run 1: Report of WebRTC media — Data Link

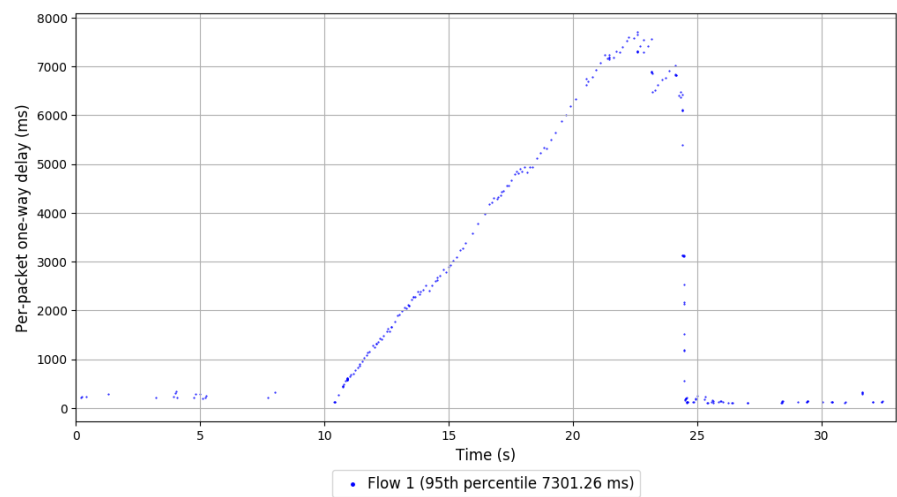
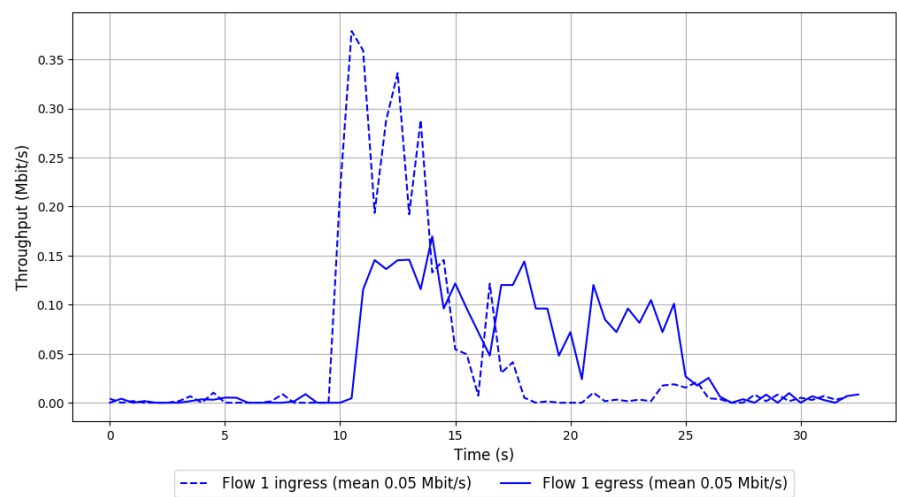


Run 2: Statistics of WebRTC media

Start at: 2019-03-26 19:26:07
End at: 2019-03-26 19:26:37
Local clock offset: -11.472 ms
Remote clock offset: 22.766 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 7301.260 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 7301.260 ms
Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-03-26 19:50:19
End at: 2019-03-26 19:50:49
Local clock offset: -14.823 ms
Remote clock offset: 0.017 ms

Below is generated by plot.py at 2019-03-26 20:01:48
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1128.077 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1128.077 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

