Pantheon Report

Generated at 2017-09-22 09:25:13 (UTC).

Data path: Colombia ppp0 (*remote*) →AWS Brazil 2 Ethernet (*local*).

Repeated the test of 13 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

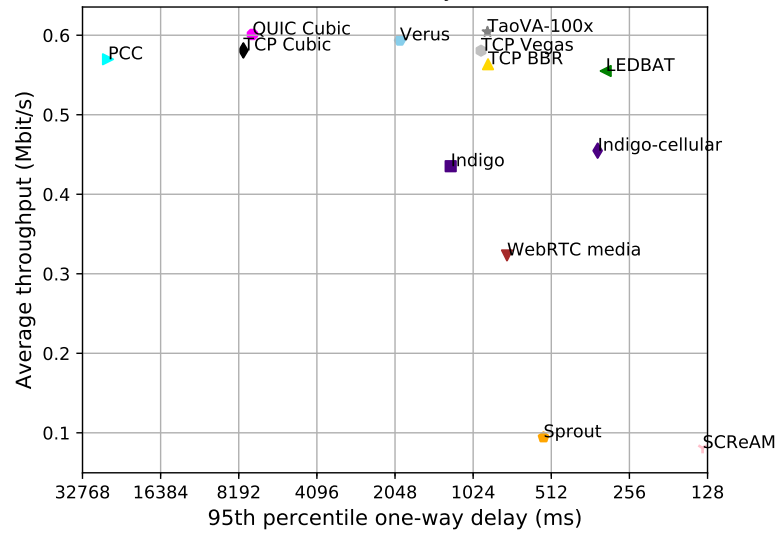Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

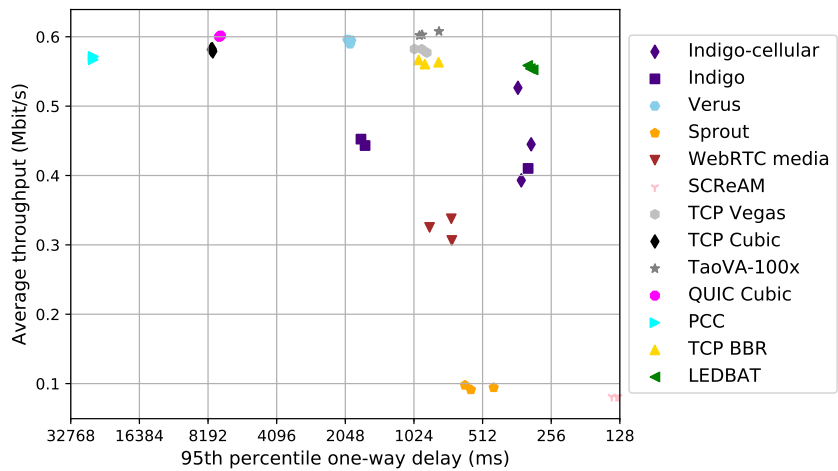NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: indigos @ 46c7c812d4acb71eea4f5fb0b03b3657cea3062f
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/genericCC @ f7ca42f251bf49b432bb71de6d13fa903515c366
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fabb936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme (mean of all runs by scheme)

test from Colombia ppp0 to AWS Brazil 2 Ethernet, 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	0.56	897.50	2.16
TCP Cubic	3	0.58	7863.33	30.94
LEDBAT	3	0.55	316.01	1.36
PCC	3	0.57	26125.60	98.58
QUIC Cubic	3	0.60	7256.09	29.38
SCReAM	3	0.08	133.75	0.66
WebRTC media	3	0.33	758.39	1.17
Sprout	3	0.09	548.60	1.24
TaoVA-100x	3	0.60	901.90	2.88
TCP Vegas	3	0.58	955.01	1.47
Verus	3	0.59	1962.08	6.71
Indigo	3	0.43	1249.77	11.53
Indigo-cellular	3	0.45	339.41	0.95

```
Run 1: Statistics of TCP BBR

Start at: 2017-09-22 08:00:48
End at: 2017-09-22 08:01:18
Local clock offset: 0.285 ms
Remote clock offset: -1.002 ms


# Below is generated by plot.py at 2017-09-22 09:24:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 976.659 ms
Loss rate: 2.31%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 976.659 ms
Loss rate: 2.31%
```
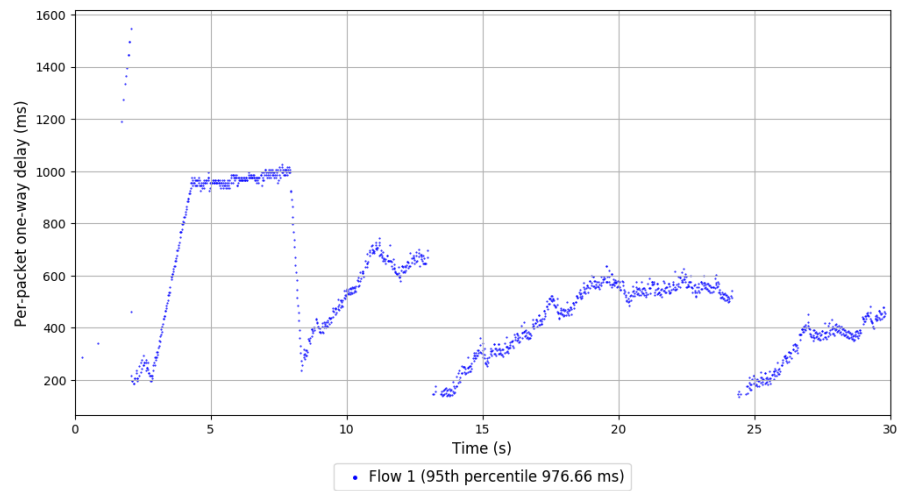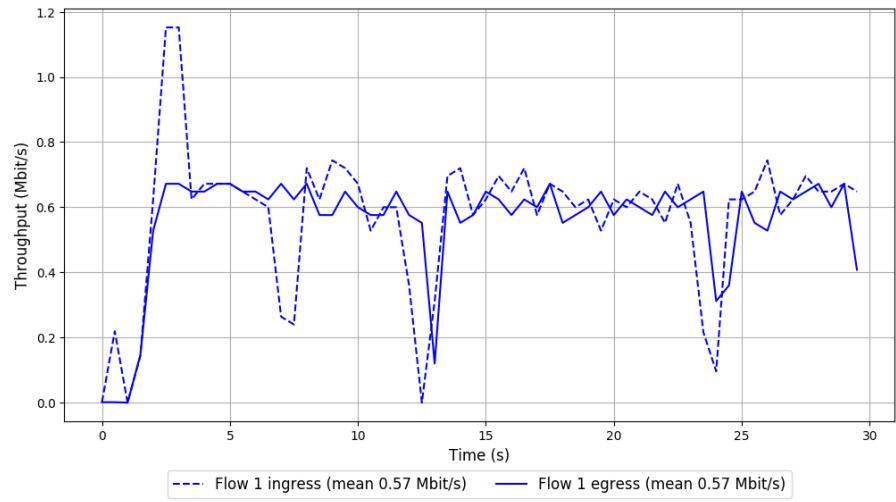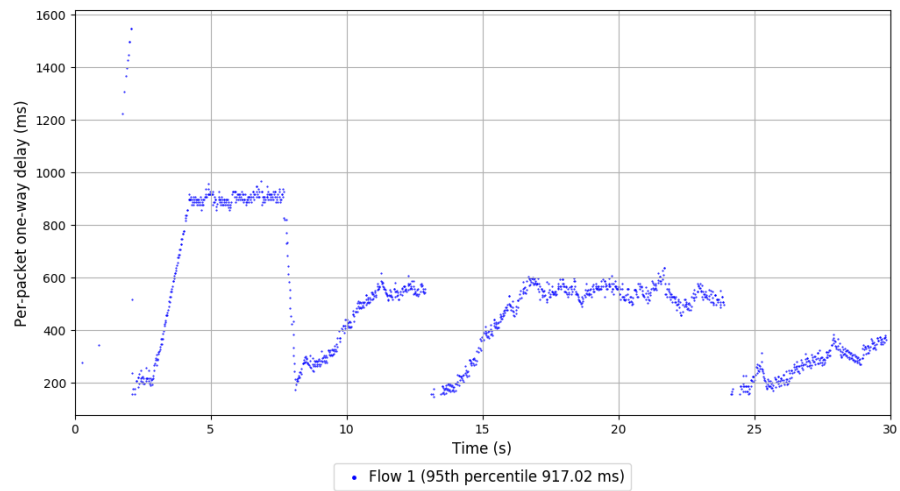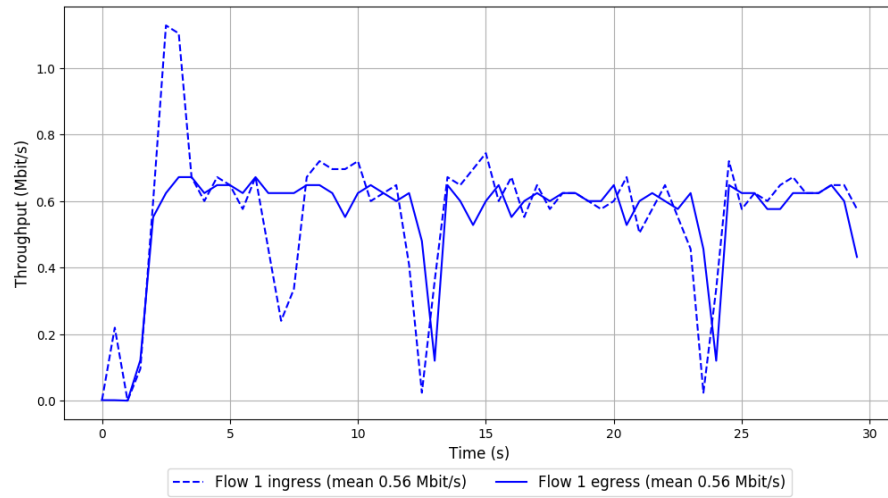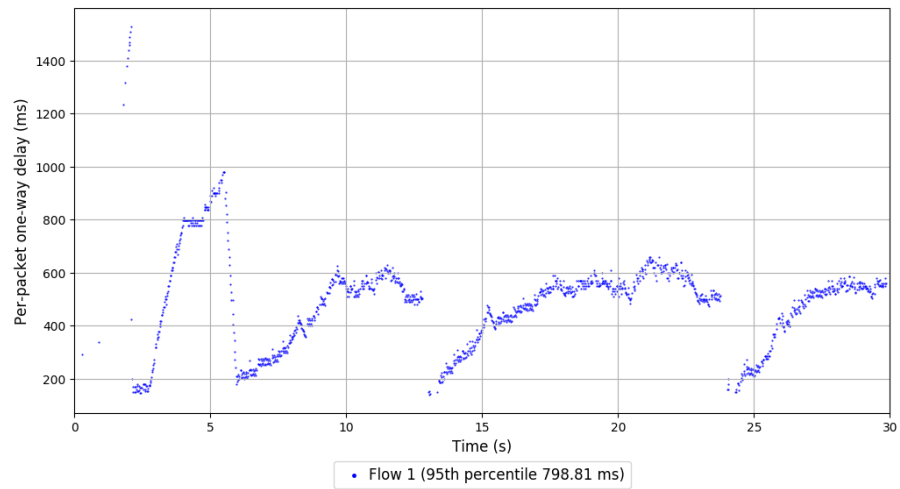
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.57 Mbit/s)   Flow 1 egress (mean 0.57 Mbit/s)

Flow 1 (95th percentile 976.66 ms)

```
Run 2: Statistics of TCP BBR

Start at: 2017-09-22 08:16:02
End at: 2017-09-22 08:16:32
Local clock offset: 0.039 ms
Remote clock offset: -1.349 ms


# Below is generated by plot.py at 2017-09-22 09:24:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 917.017 ms
Loss rate: 1.78%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 917.017 ms
Loss rate: 1.78%
```

Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.56 Mbit/s) --- Flow 1 egress (mean 0.56 Mbit/s)

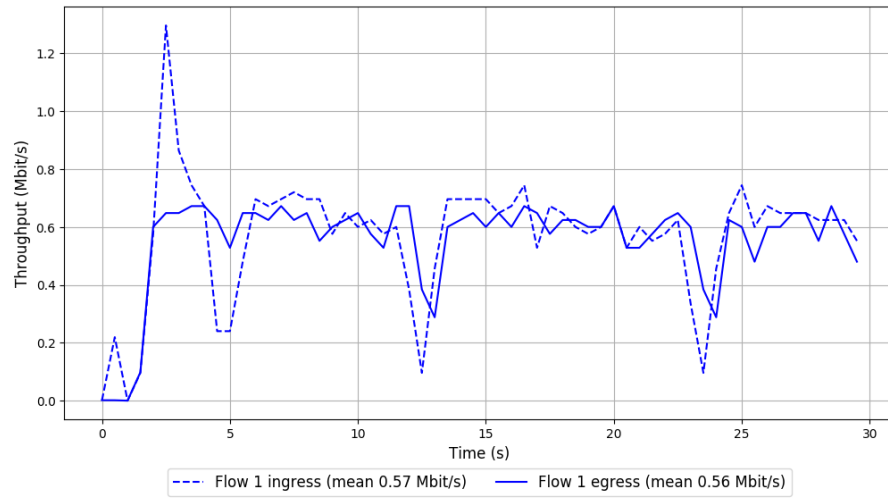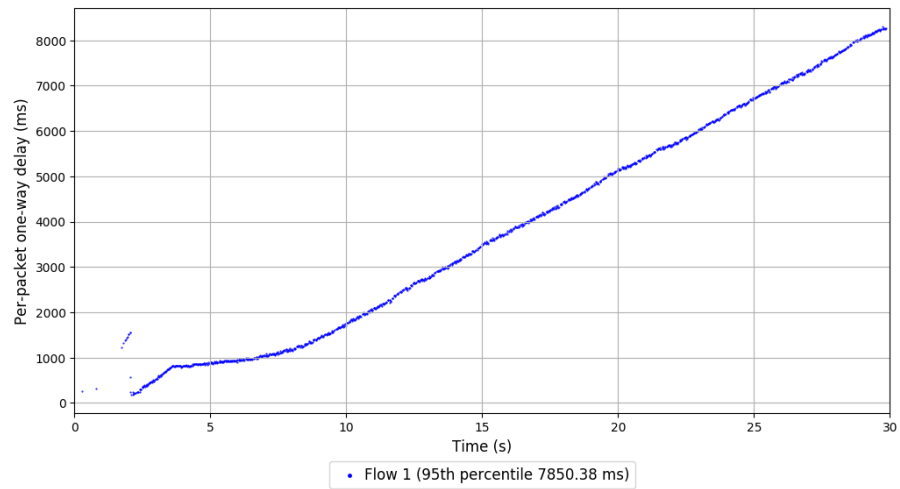Flow 1 (95th percentile 917.02 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2017-09-22 08:31:15
End at: 2017-09-22 08:31:45
Local clock offset: 0.055 ms
Remote clock offset: -1.871 ms


# Below is generated by plot.py at 2017-09-22 09:24:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 798.810 ms
Loss rate: 2.39%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 798.810 ms
Loss rate: 2.39%
```

Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.57 Mbit/s)   Flow 1 egress (mean 0.56 Mbit/s)

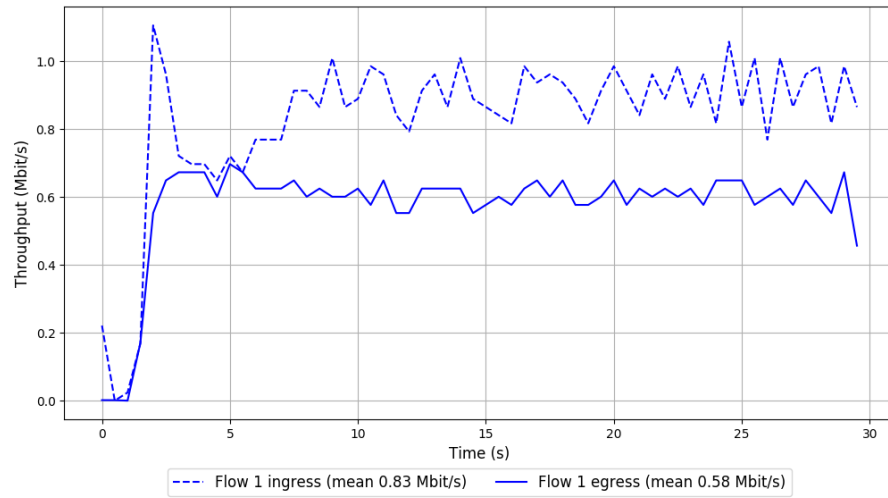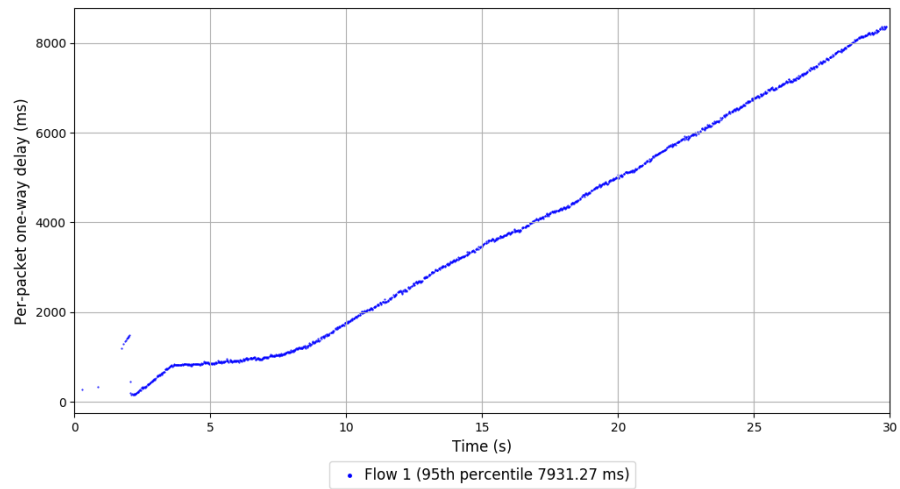Flow 1 (95th percentile 798.81 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2017-09-22 07:57:17
End at: 2017-09-22 07:57:47
Local clock offset: 0.377 ms
Remote clock offset: -0.978 ms


# Below is generated by plot.py at 2017-09-22 09:24:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7850.376 ms
Loss rate: 31.01%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7850.376 ms
Loss rate: 31.01%
```
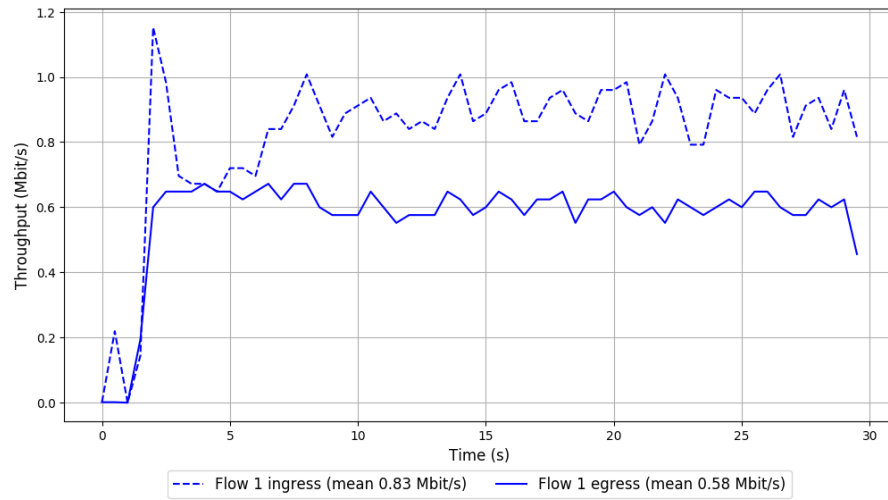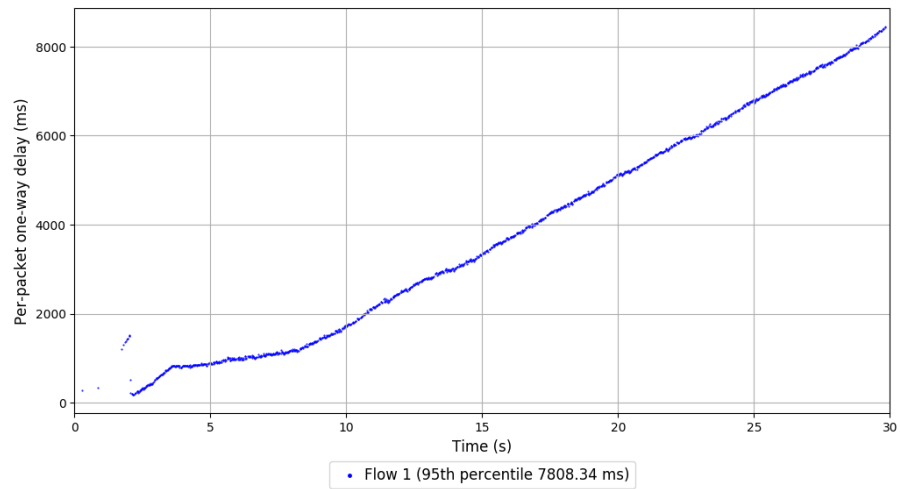
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2017-09-22 08:12:31
End at: 2017-09-22 08:13:01
Local clock offset: 0.177 ms
Remote clock offset: -5.952 ms


# Below is generated by plot.py at 2017-09-22 09:24:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7931.275 ms
Loss rate: 30.82%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7931.275 ms
Loss rate: 30.82%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.83 Mbit/s) ---- Flow 1 egress (mean 0.58 Mbit/s) ——
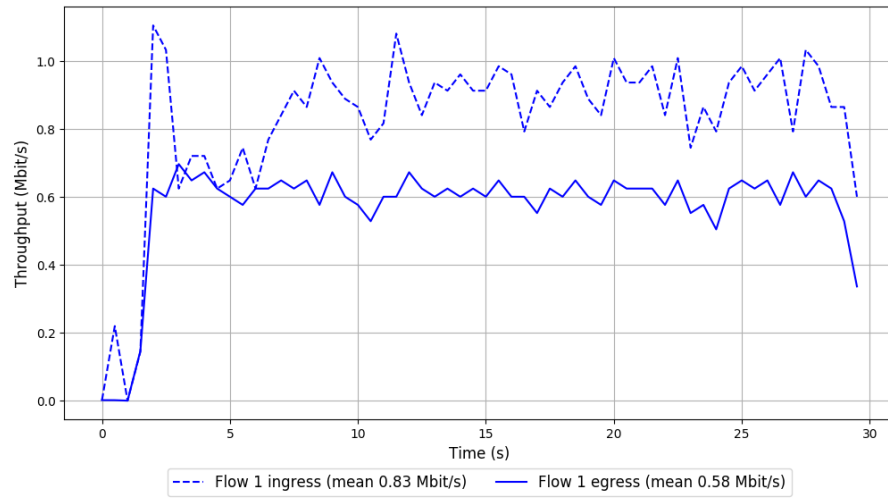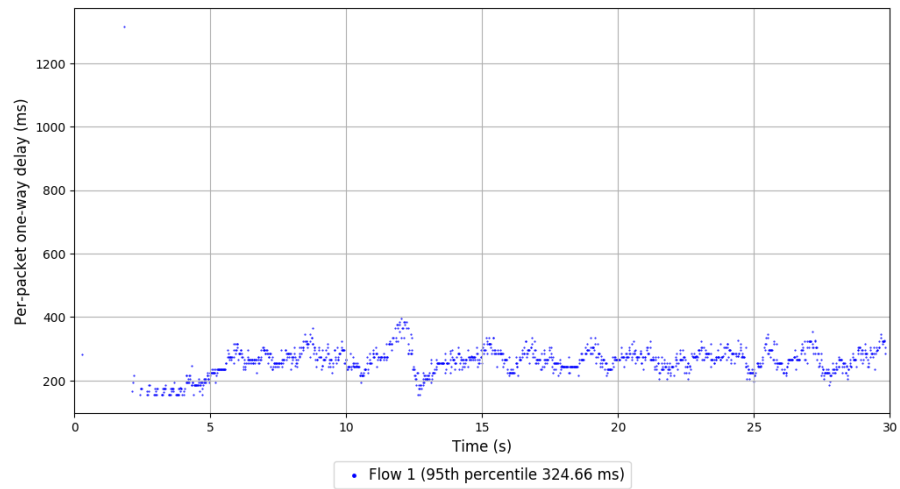

Flow 1 (95th percentile 7931.27 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2017-09-22 08:27:44
End at: 2017-09-22 08:28:14
Local clock offset: -0.007 ms
Remote clock offset: -6.653 ms


# Below is generated by plot.py at 2017-09-22 09:24:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7808.344 ms
Loss rate: 30.99%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7808.344 ms
Loss rate: 30.99%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.83 Mbit/s)   Flow 1 egress (mean 0.58 Mbit/s)

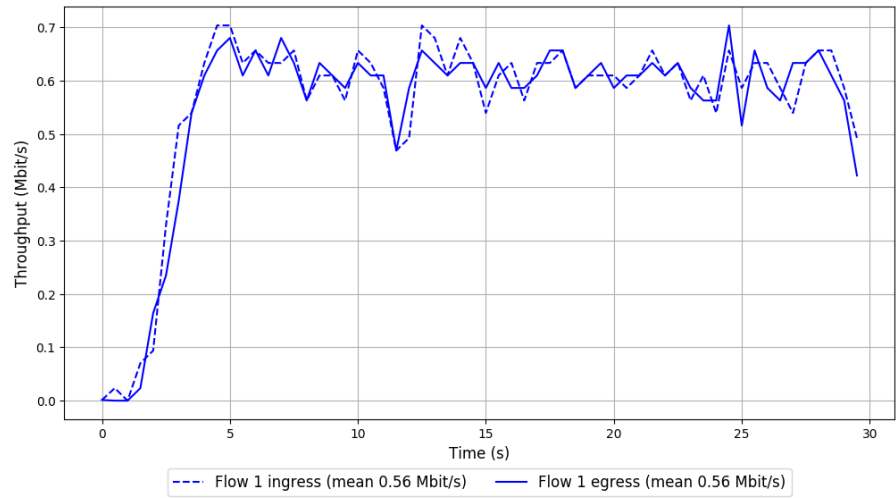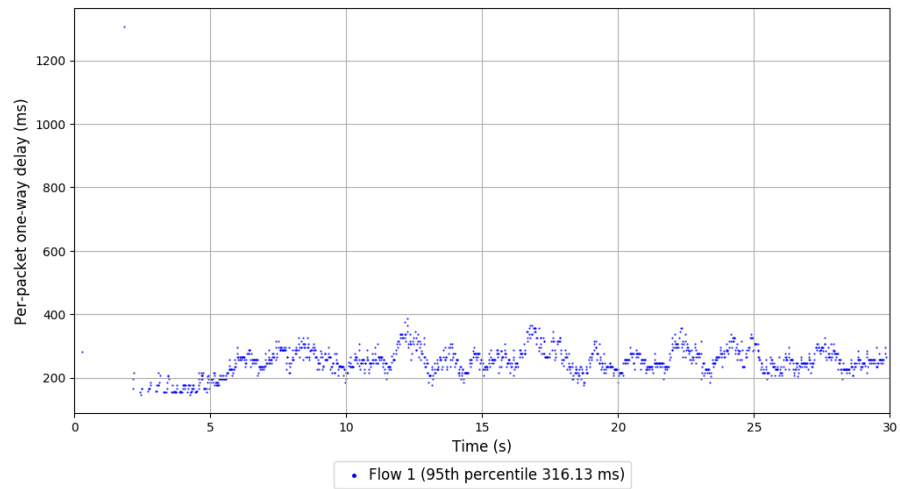

Flow 1 (95th percentile 7808.34 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2017-09-22 08:05:30
End at: 2017-09-22 08:06:00
Local clock offset: 0.25 ms
Remote clock offset: -5.83 ms


# Below is generated by plot.py at 2017-09-22 09:24:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 324.662 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 324.662 ms
Loss rate: 1.33%
```

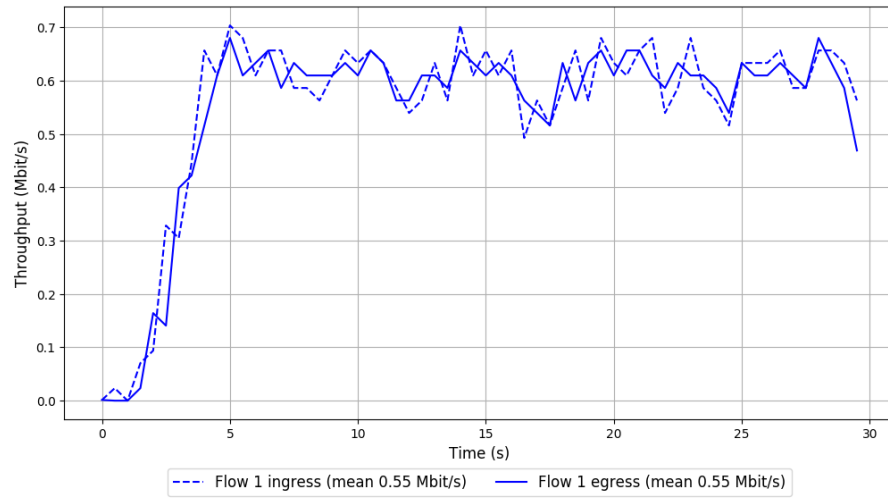Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2017-09-22 08:20:44
End at: 2017-09-22 08:21:14
Local clock offset: -0.011 ms
Remote clock offset: -6.361 ms

# Below is generated by plot.py at 2017-09-22 09:24:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 316.129 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 316.129 ms
Loss rate: 1.41%
```

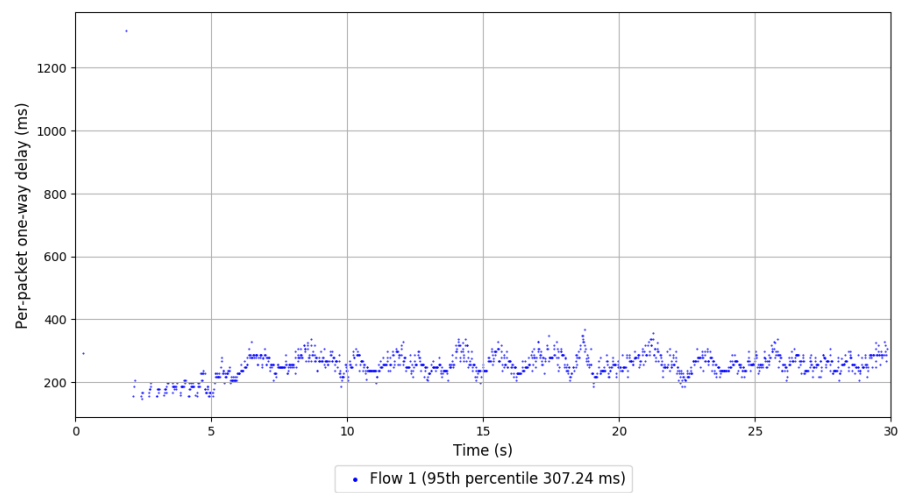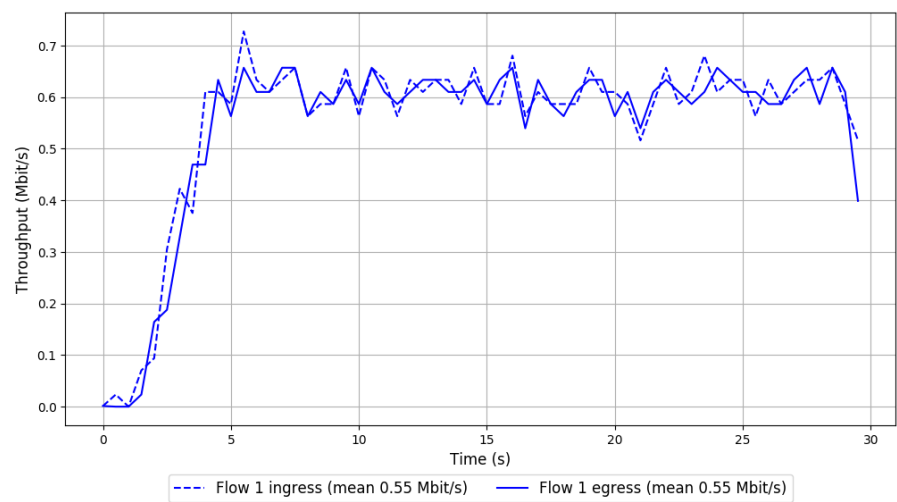Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2017-09-22 08:35:57
End at: 2017-09-22 08:36:27
Local clock offset: 0.059 ms
Remote clock offset: -2.062 ms


# Below is generated by plot.py at 2017-09-22 09:24:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 307.243 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 307.243 ms
Loss rate: 1.35%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.55 Mbit/s)   Flow 1 egress (mean 0.55 Mbit/s)

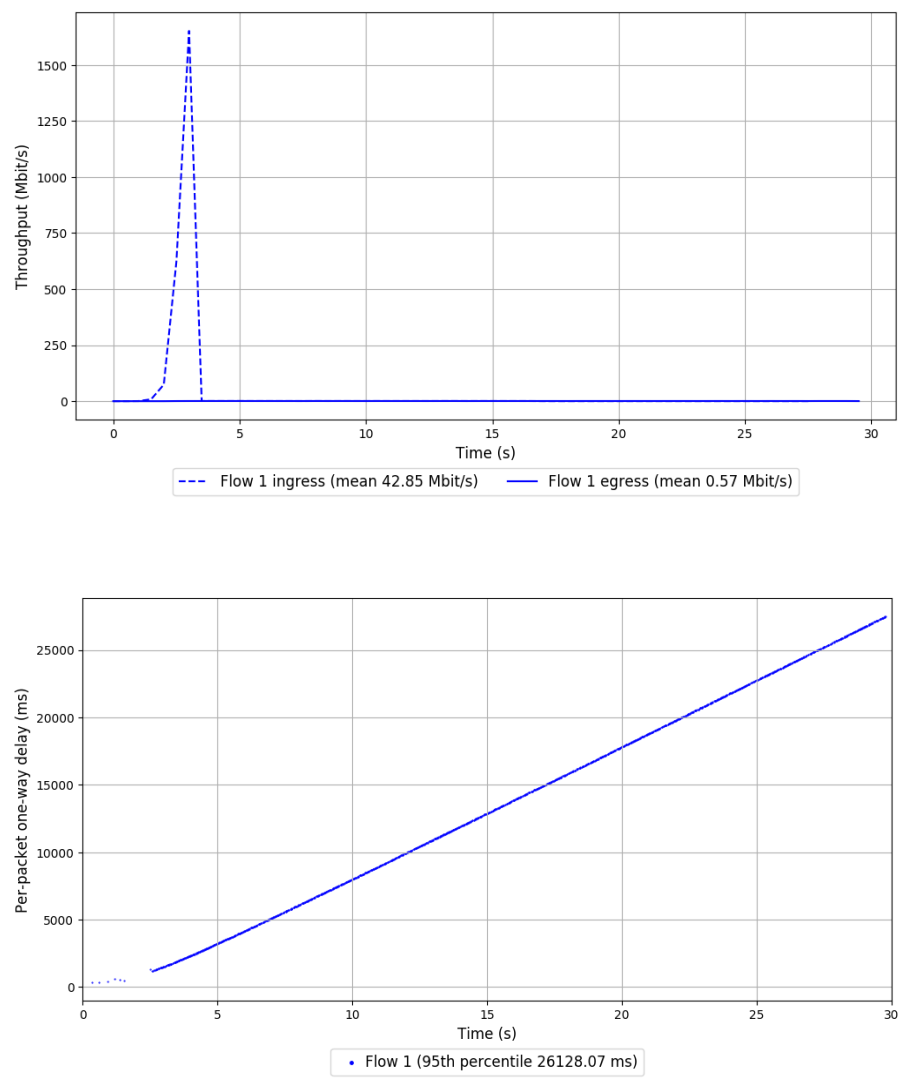Flow 1 (95th percentile 307.24 ms)

```
Run 1: Statistics of PCC

Start at: 2017-09-22 08:04:19
End at: 2017-09-22 08:04:49
Local clock offset: 0.23 ms
Remote clock offset: -5.851 ms


# Below is generated by plot.py at 2017-09-22 09:25:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26128.071 ms
Loss rate: 98.59%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26128.071 ms
Loss rate: 98.59%
```

Run 1: Report of PCC — Data Link

Flow 1 ingress (mean 42.85 Mbit/s) --- Flow 1 egress (mean 0.57 Mbit/s)

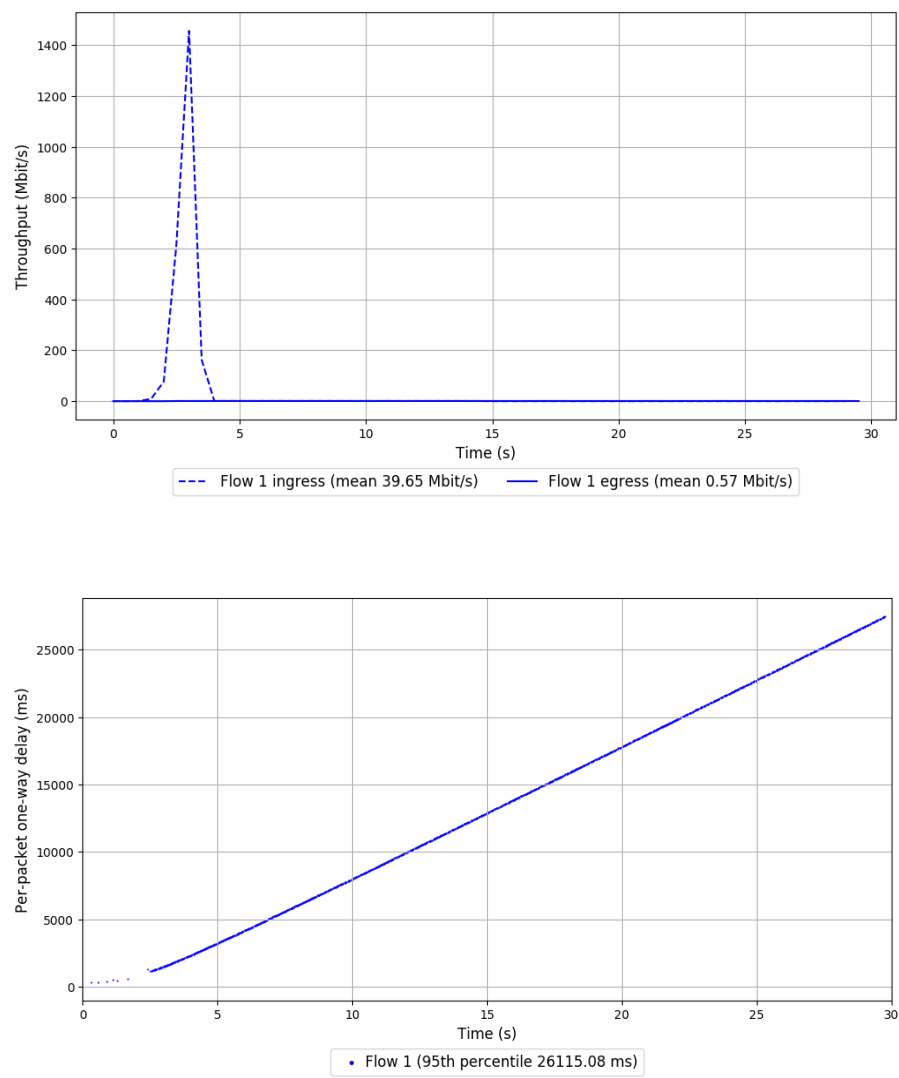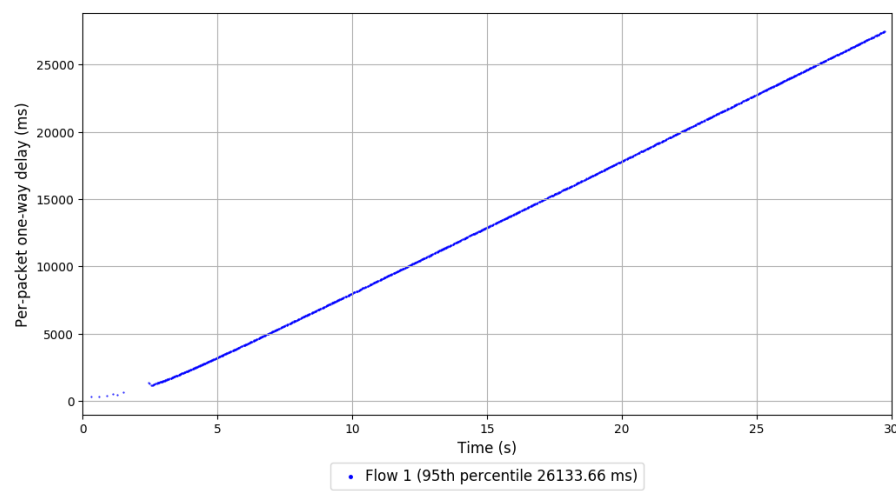Flow 1 (95th percentile 26128.07 ms)

```
Run 2: Statistics of PCC

Start at: 2017-09-22 08:19:32
End at: 2017-09-22 08:20:02
Local clock offset: 0.045 ms
Remote clock offset: -1.534 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26115.081 ms
Loss rate: 98.56%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26115.081 ms
Loss rate: 98.56%
```

Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 39.65 Mbit/s) --- Flow 1 egress (mean 0.57 Mbit/s)

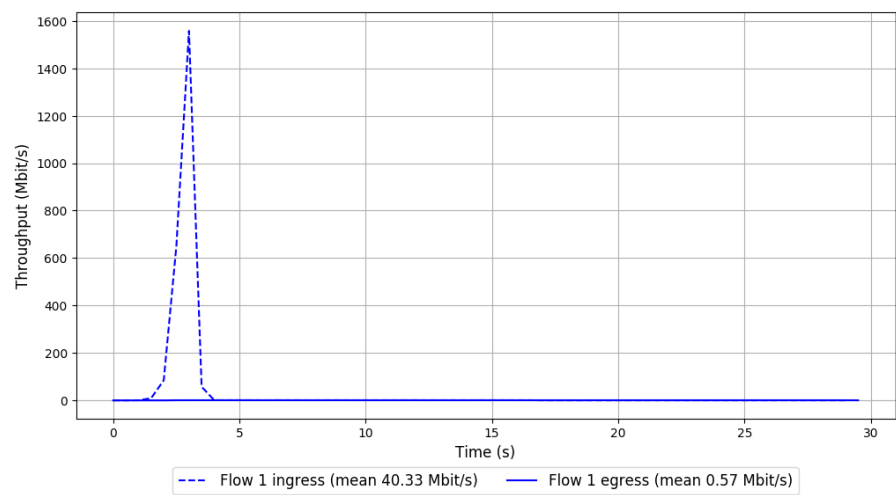Flow 1 (95th percentile 26115.08 ms)

```
Run 3: Statistics of PCC

Start at: 2017-09-22 08:34:45
End at: 2017-09-22 08:35:15
Local clock offset: 0.092 ms
Remote clock offset: -2.024 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26133.659 ms
Loss rate: 98.60%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26133.659 ms
Loss rate: 98.60%
```
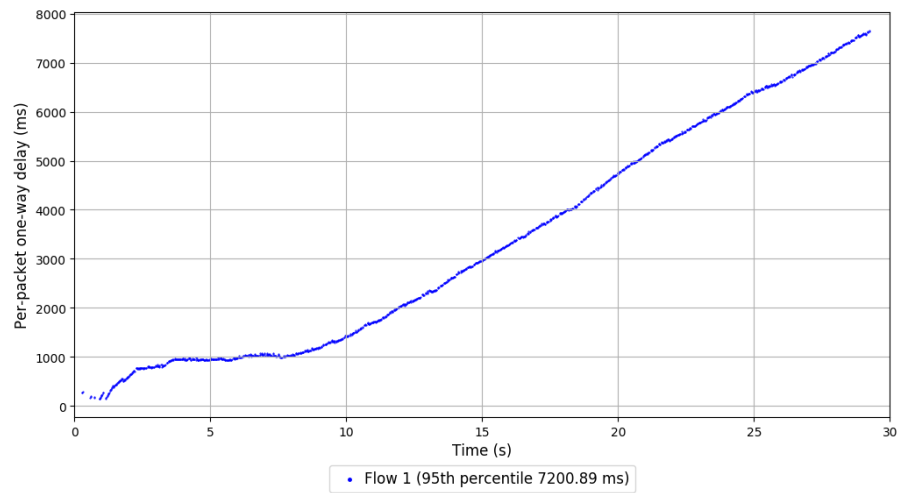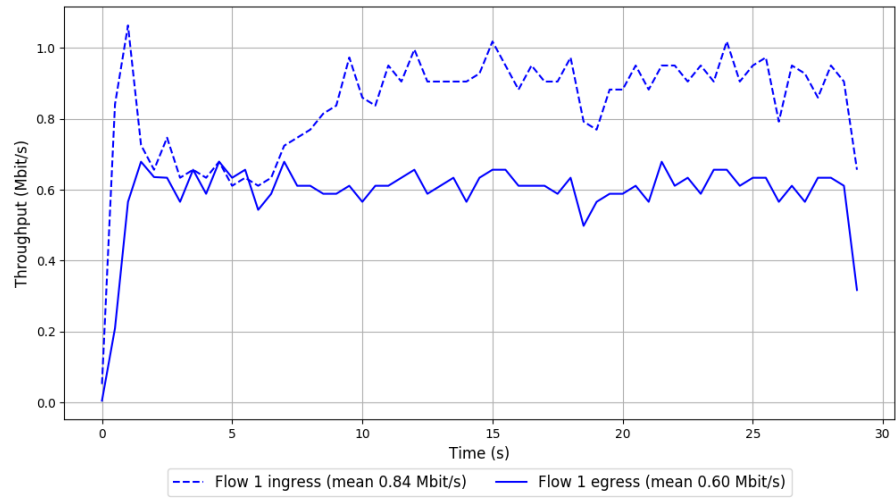
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 40.33 Mbit/s) --- Flow 1 egress (mean 0.57 Mbit/s)

• Flow 1 (95th percentile 26133.66 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2017-09-22 08:03:08
End at: 2017-09-22 08:03:38
Local clock offset: 0.339 ms
Remote clock offset: -5.749 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7200.885 ms
Loss rate: 29.48%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7200.885 ms
Loss rate: 29.48%
```
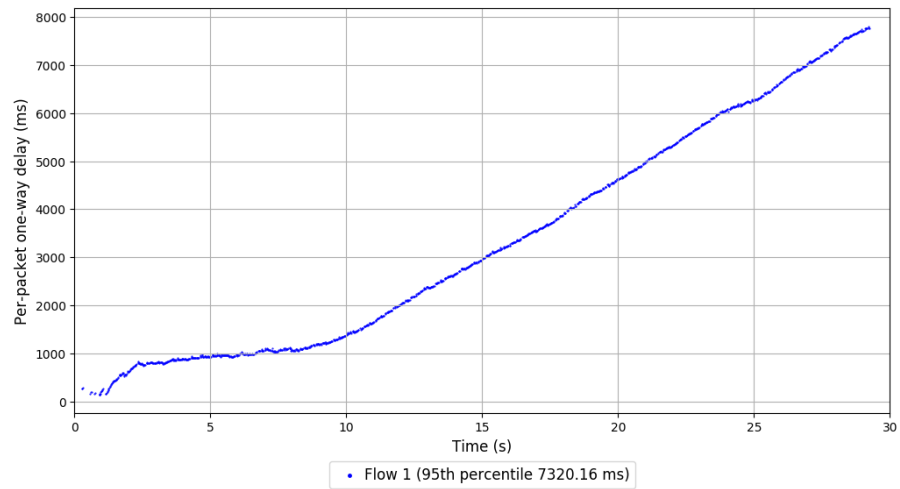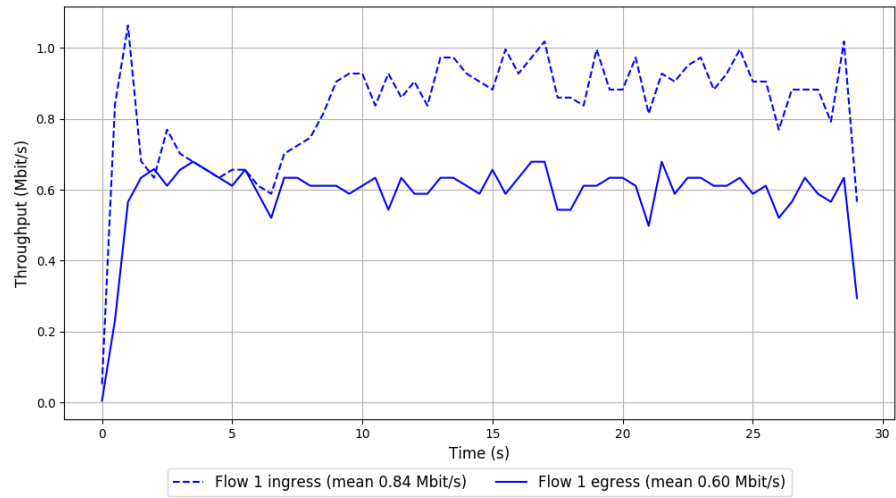
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.84 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 7200.89 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2017-09-22 08:18:22
End at: 2017-09-22 08:18:52
Local clock offset: -0.022 ms
Remote clock offset: -1.431 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7320.158 ms
Loss rate: 29.31%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7320.158 ms
Loss rate: 29.31%
```
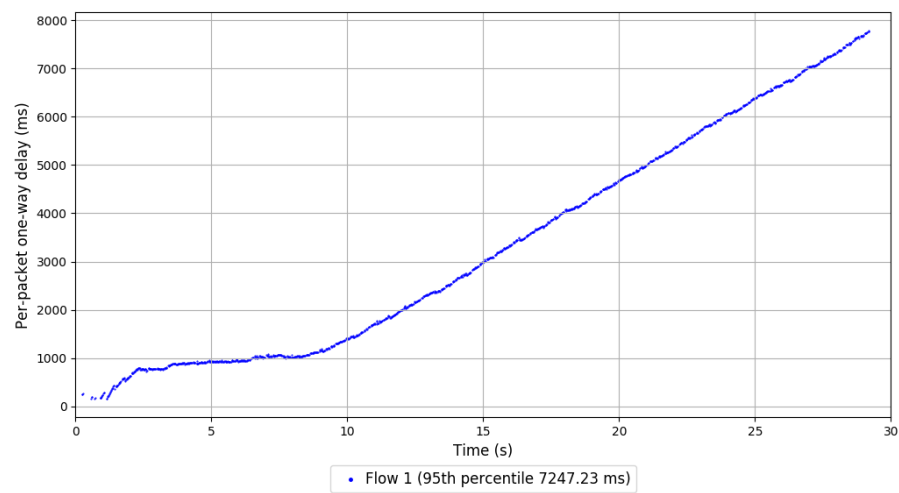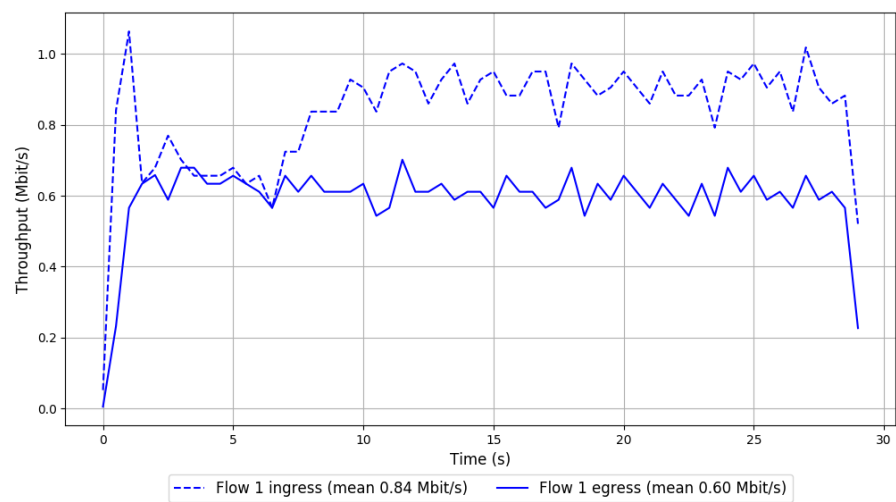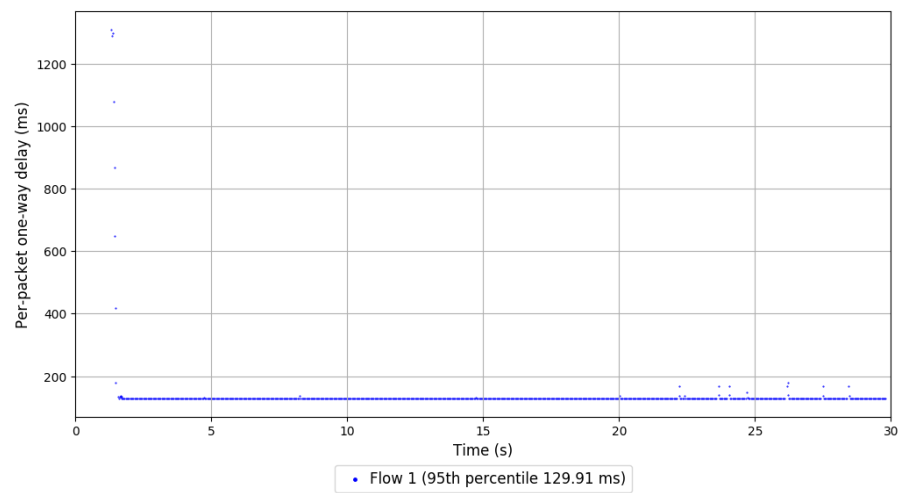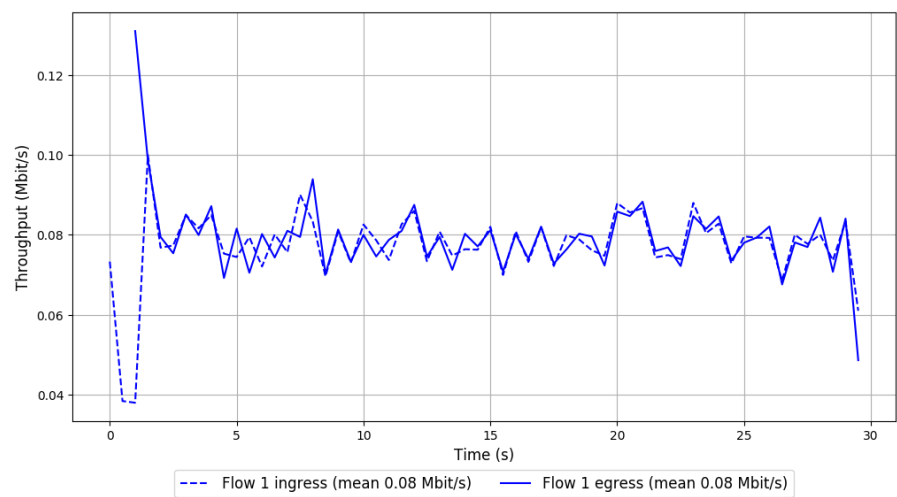
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.84 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 7320.16 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2017-09-22 08:33:35
End at: 2017-09-22 08:34:05
Local clock offset: 0.052 ms
Remote clock offset: -2.028 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7247.226 ms
Loss rate: 29.35%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7247.226 ms
Loss rate: 29.35%
```

Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.84 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)
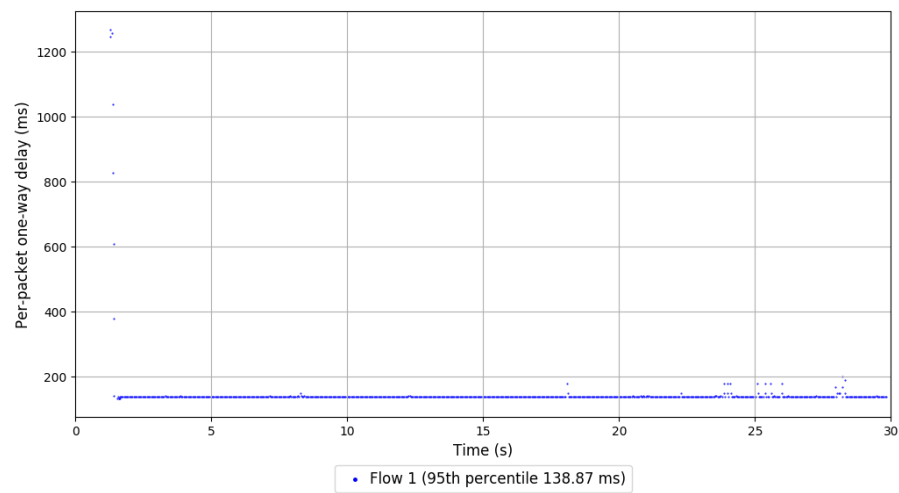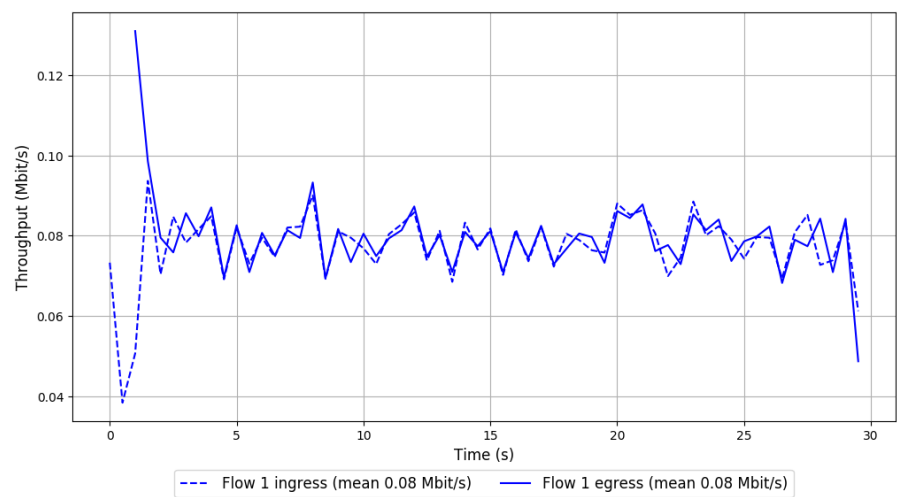

Flow 1 (95th percentile 7247.23 ms)

```
Run 1: Statistics of SCReAM

Start at: 2017-09-22 07:54:57
End at: 2017-09-22 07:55:27
Local clock offset: 0.46 ms
Remote clock offset: -5.825 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 129.912 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 129.912 ms
Loss rate: 0.66%
```
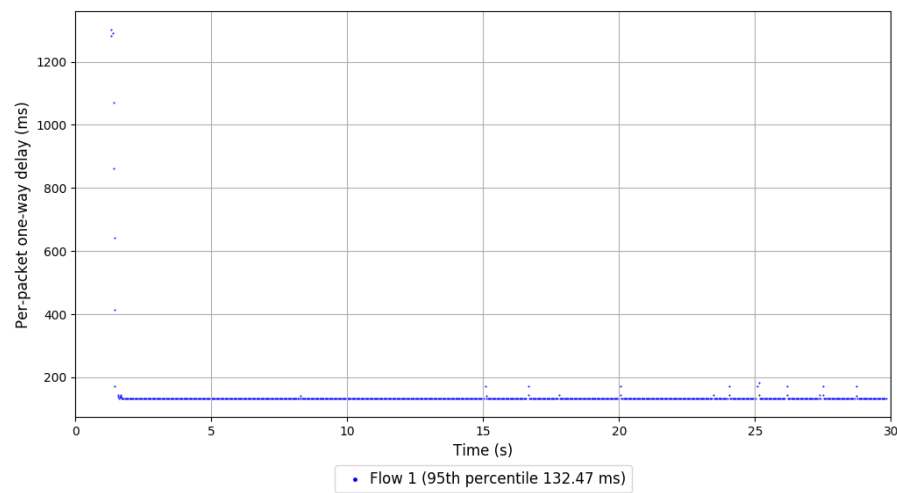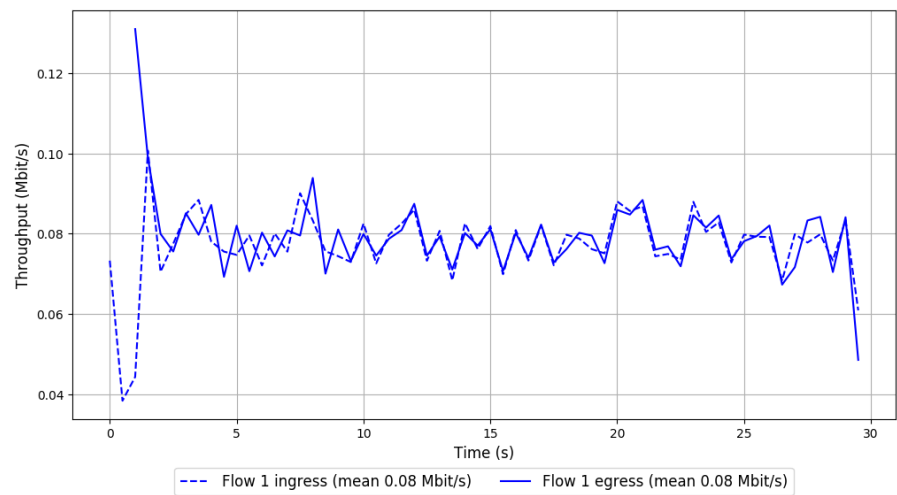
Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.08 Mbit/s)   Flow 1 egress (mean 0.08 Mbit/s)

Flow 1 (95th percentile 129.91 ms)

```
Run 2: Statistics of SCReAM

Start at: 2017-09-22 08:10:11
End at: 2017-09-22 08:10:41
Local clock offset: 0.22 ms
Remote clock offset: -5.881 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 138.869 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 138.869 ms
Loss rate: 0.66%
```
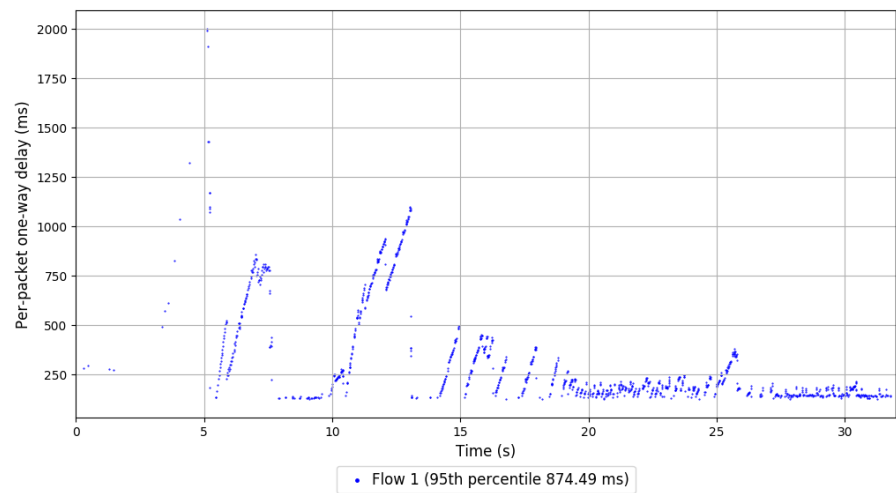
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2017-09-22 08:25:24
End at: 2017-09-22 08:25:54
Local clock offset: -0.008 ms
Remote clock offset: -6.598 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 132.469 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 132.469 ms
Loss rate: 0.66%
```

Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.08 Mbit/s) --- Flow 1 egress (mean 0.08 Mbit/s)

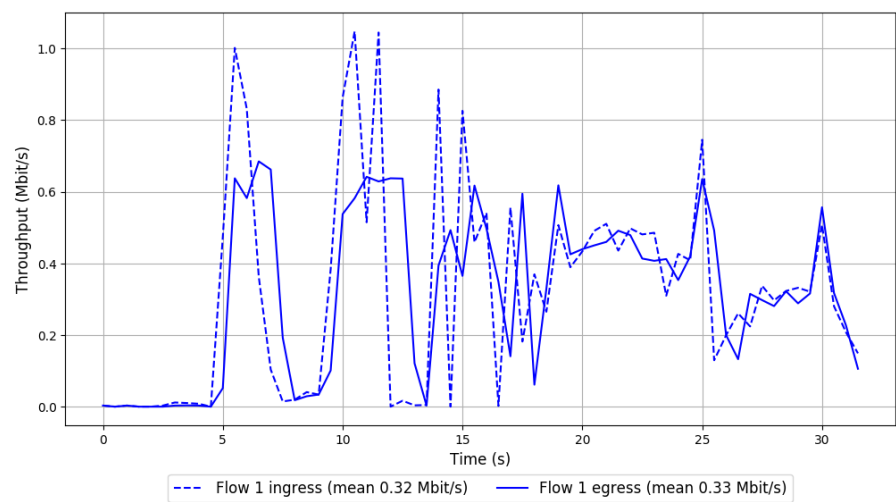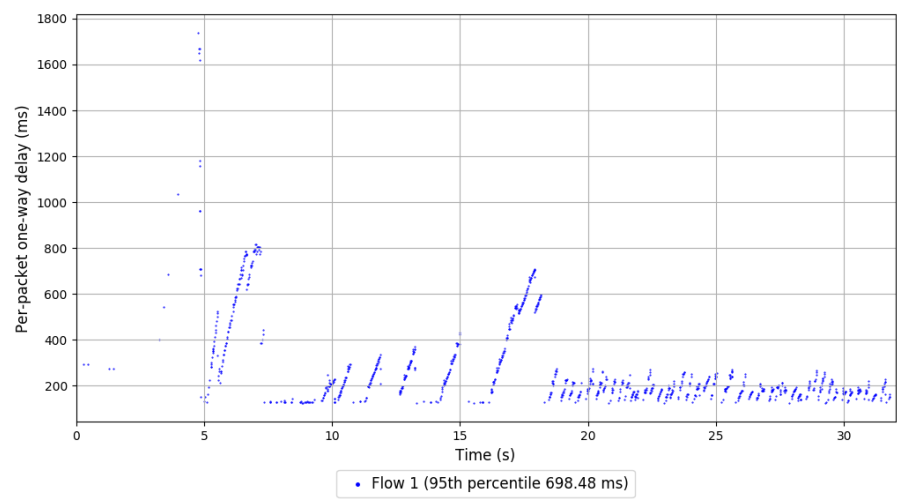Flow 1 (95th percentile 132.47 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2017-09-22 08:07:50
End at: 2017-09-22 08:08:20
Local clock offset: 0.19 ms
Remote clock offset: -0.954 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 874.492 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 874.492 ms
Loss rate: 0.39%
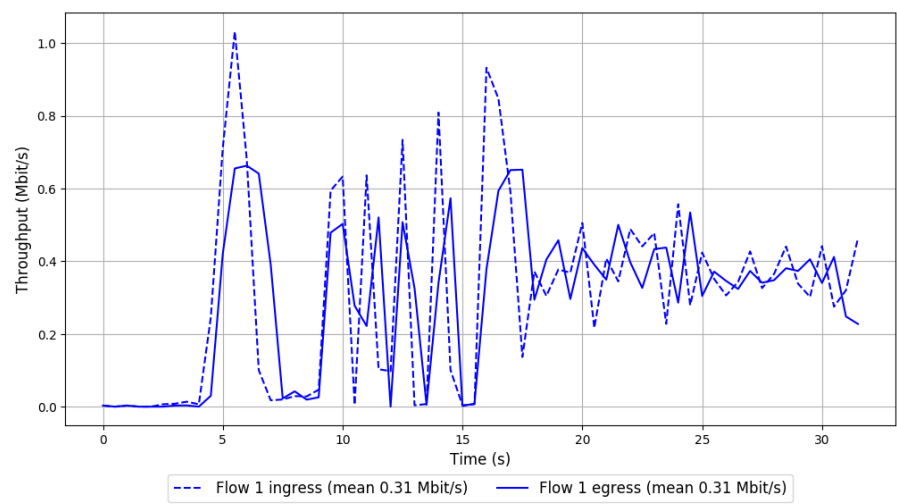```
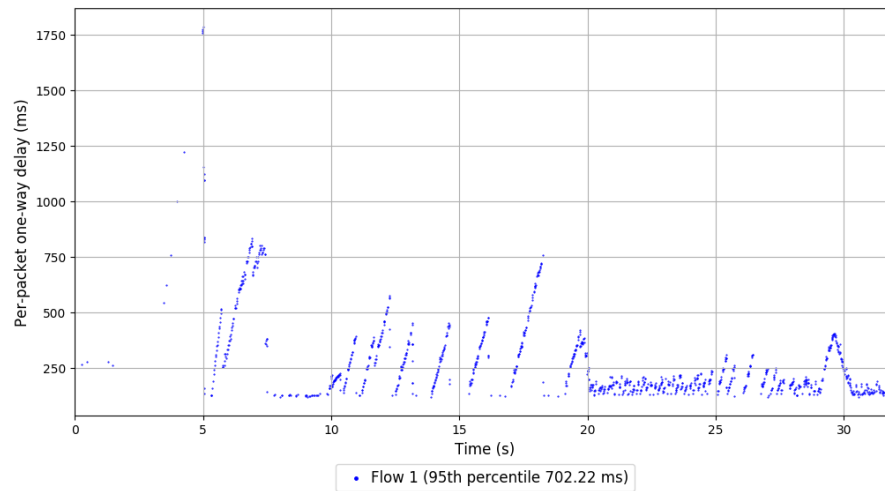
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2017-09-22 08:23:04
End at: 2017-09-22 08:23:34
Local clock offset: 0.008 ms
Remote clock offset: -6.417 ms

Below is generated by plot.py at 2017-09-22 09:25:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 698.478 ms
Loss rate: 1.96%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 698.478 ms
Loss rate: 1.96%
```
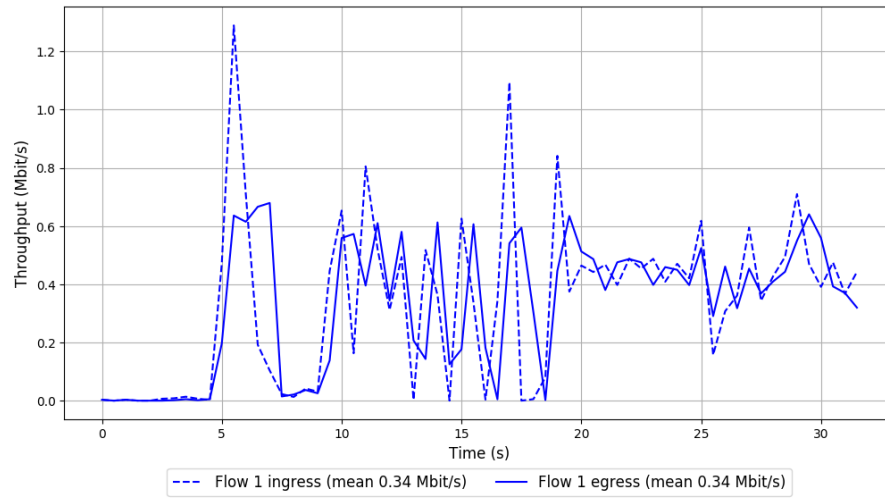
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2017-09-22 08:38:17
End at: 2017-09-22 08:38:47
Local clock offset: 0.081 ms
Remote clock offset: -2.127 ms

Below is generated by plot.py at 2017-09-22 09:25:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 702.215 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 702.215 ms
Loss rate: 1.17%
```
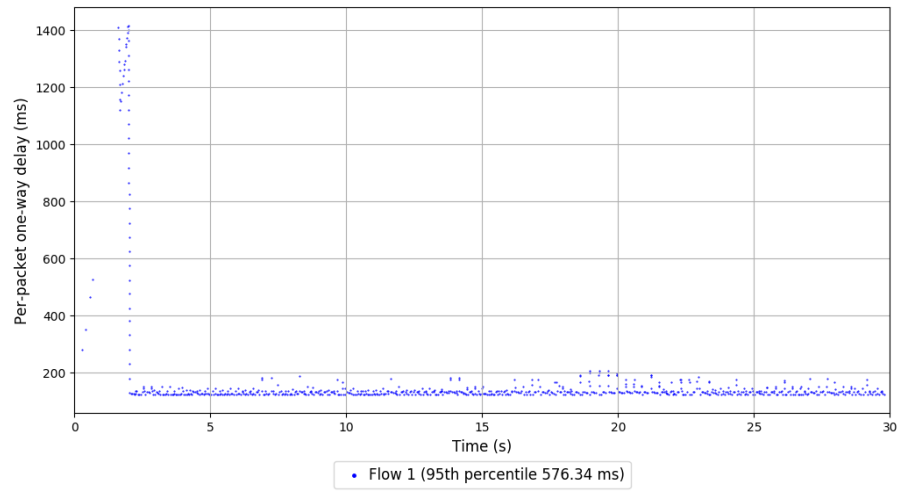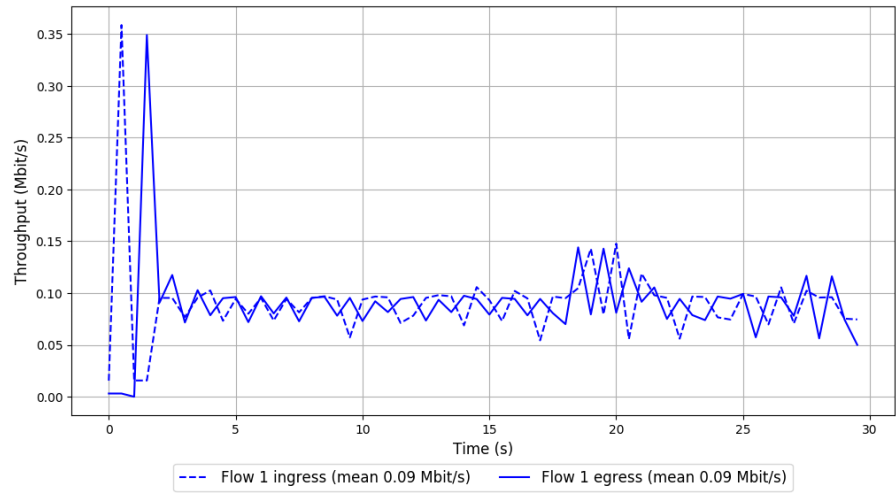
Run 3: Report of WebRTC media — Data Link

```
Run 1: Statistics of Sprout

Start at: 2017-09-22 08:06:40
End at: 2017-09-22 08:07:10
Local clock offset: 0.275 ms
Remote clock offset: -5.755 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 576.343 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 576.343 ms
Loss rate: 1.12%
```

Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2017-09-22 08:21:54
End at: 2017-09-22 08:22:24
Local clock offset: -0.05 ms
Remote clock offset: -6.439 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 457.733 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 457.733 ms
Loss rate: 1.63%
```
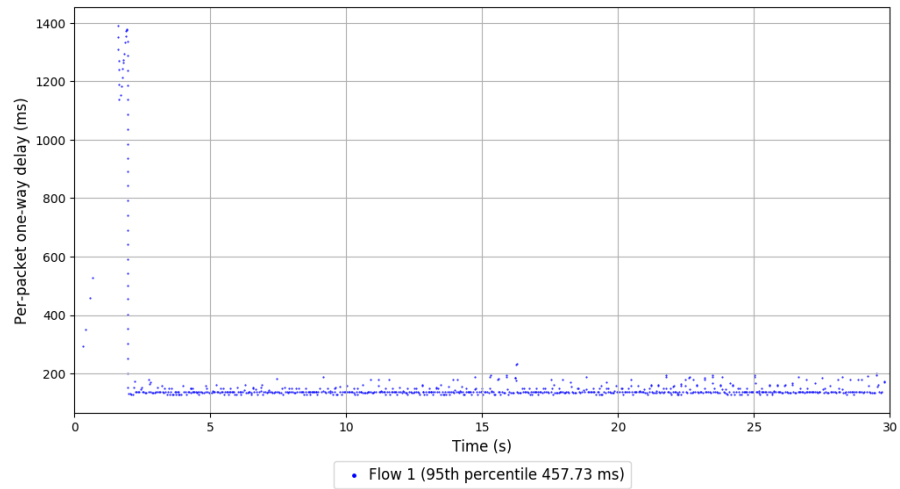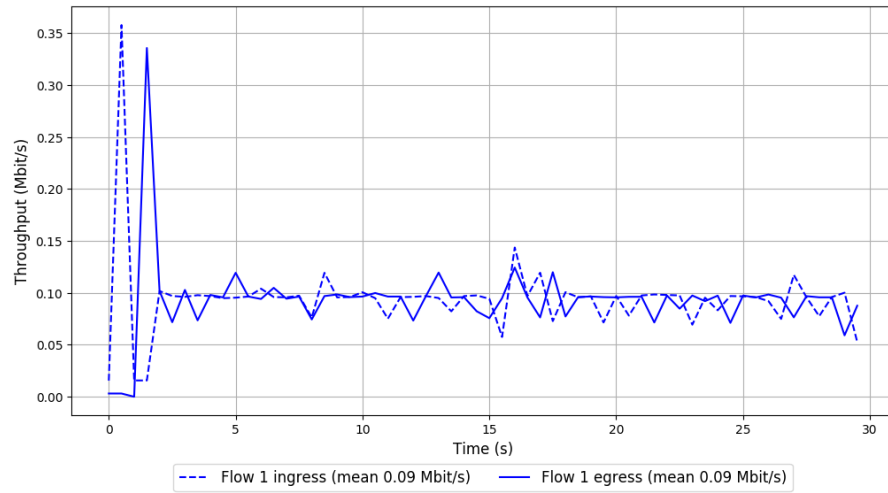
Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 0.09 Mbit/s) --- Flow 1 egress (mean 0.09 Mbit/s)

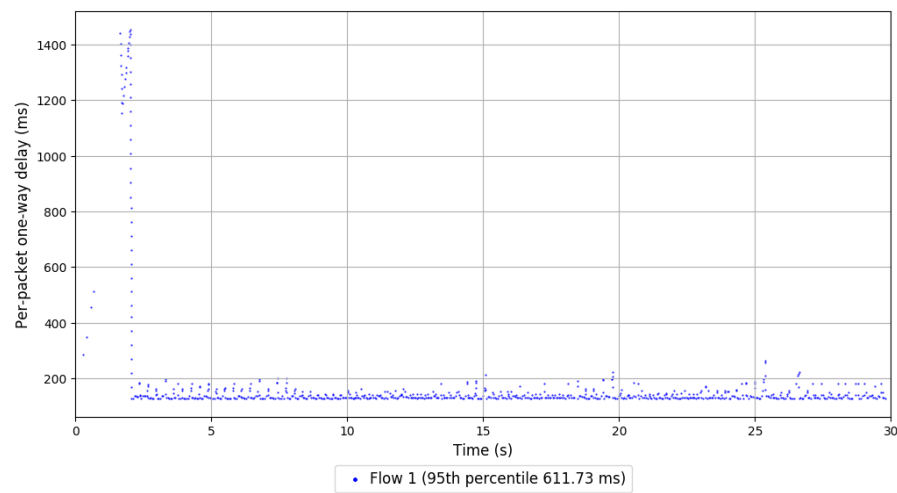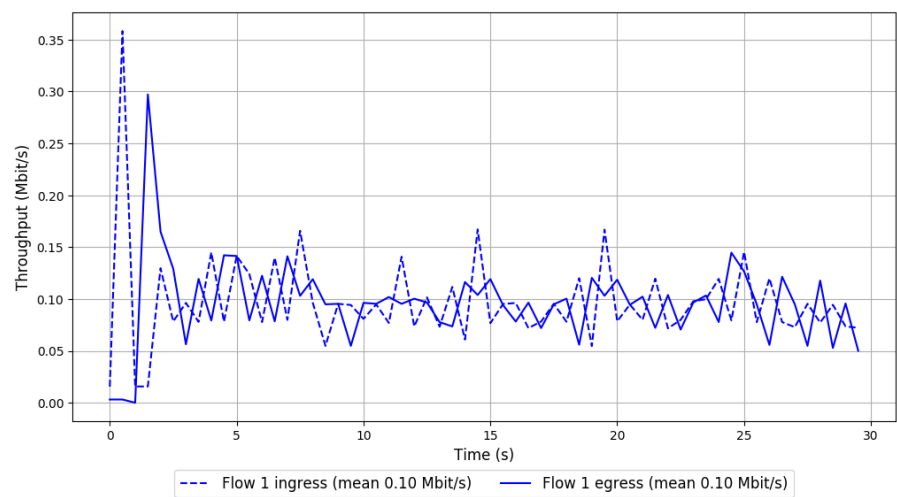Flow 1 (95th percentile 457.73 ms)

```
Run 3: Statistics of Sprout

Start at: 2017-09-22 08:37:07
End at: 2017-09-22 08:37:37
Local clock offset: 0.081 ms
Remote clock offset: -6.931 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 611.734 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 611.734 ms
Loss rate: 0.96%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 0.10 Mbit/s)   Flow 1 egress (mean 0.10 Mbit/s)

Flow 1 (95th percentile 611.73 ms)

```
Run 1: Statistics of TaoVA-100x

Start at: 2017-09-22 07:58:28
End at: 2017-09-22 07:58:58
Local clock offset: 0.361 ms
Remote clock offset: -5.791 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 795.346 ms
Loss rate: 3.38%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 795.346 ms
Loss rate: 3.38%
```
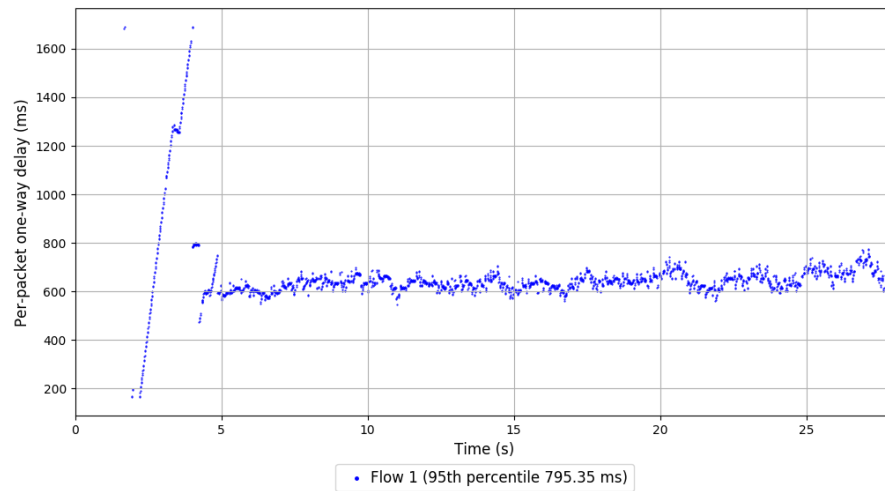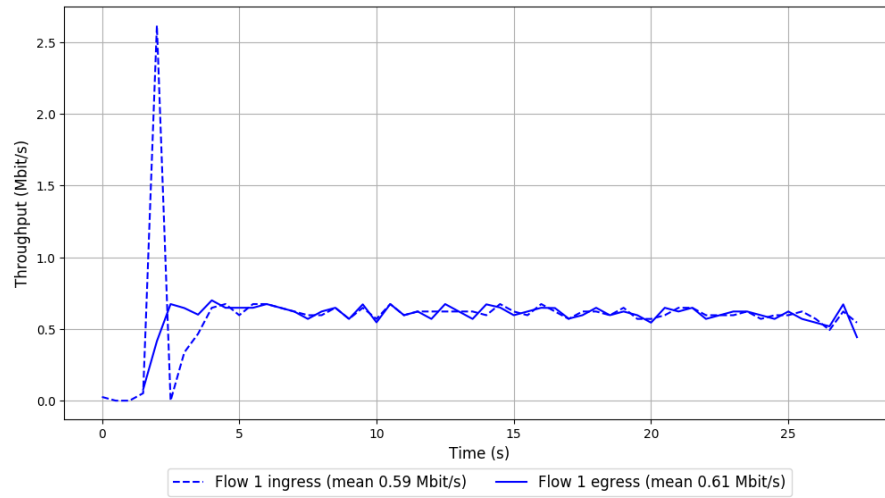
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.59 Mbit/s) ---- Flow 1 egress (mean 0.61 Mbit/s) ——
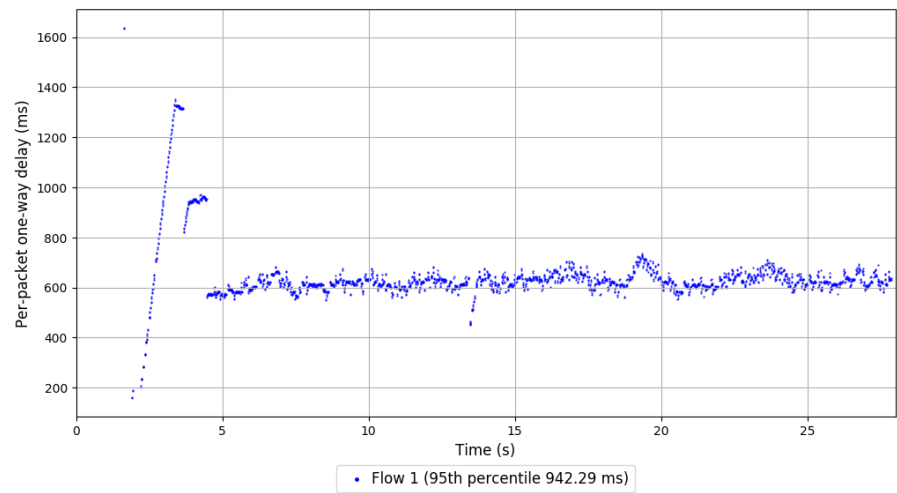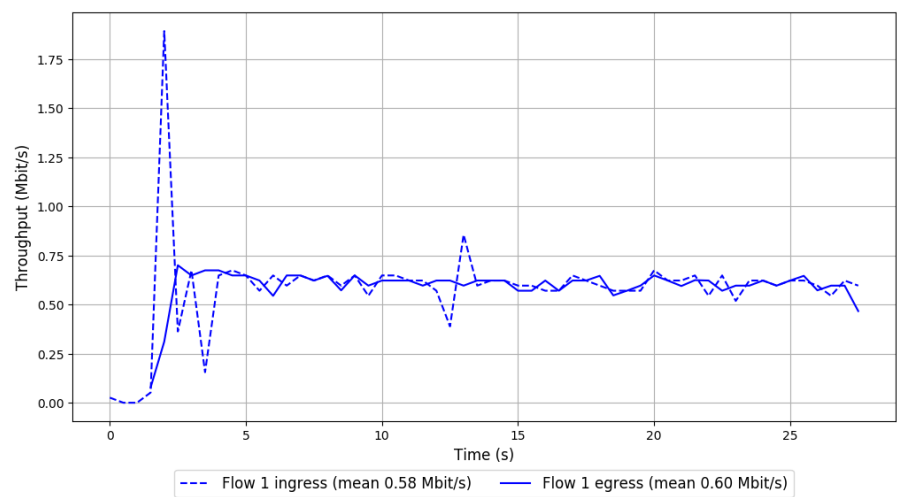

Flow 1 (95th percentile 795.35 ms)

```
Run 2: Statistics of TaoVA-100x

Start at: 2017-09-22 08:13:41
End at: 2017-09-22 08:14:11
Local clock offset: 0.16 ms
Remote clock offset: -5.997 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 942.286 ms
Loss rate: 2.63%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 942.286 ms
Loss rate: 2.63%
```

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

```
Run 3: Statistics of TaoVA-100x

Start at: 2017-09-22 08:28:55
End at: 2017-09-22 08:29:25
Local clock offset: 0.075 ms
Remote clock offset: -6.652 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 968.081 ms
Loss rate: 2.64%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 968.081 ms
Loss rate: 2.64%
```
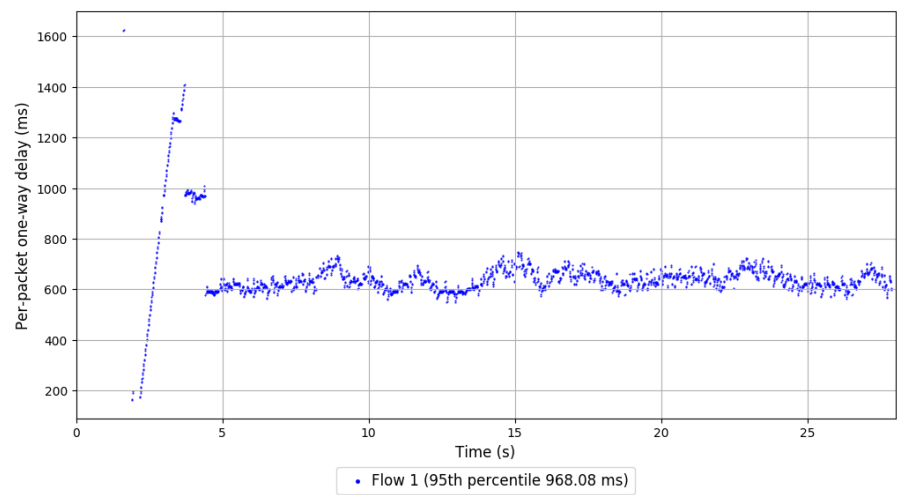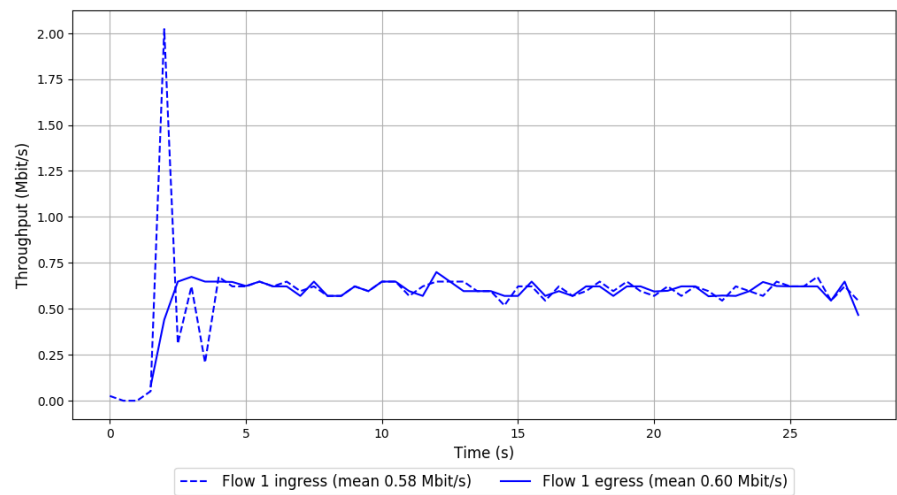
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.58 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

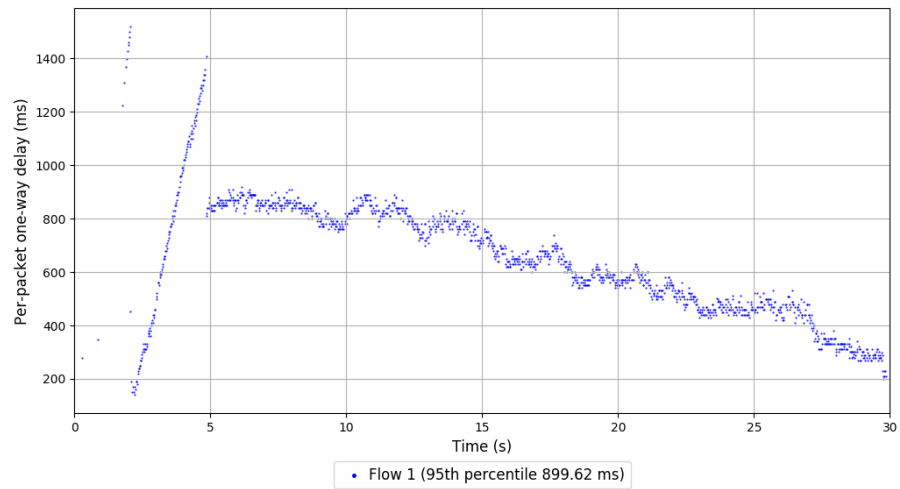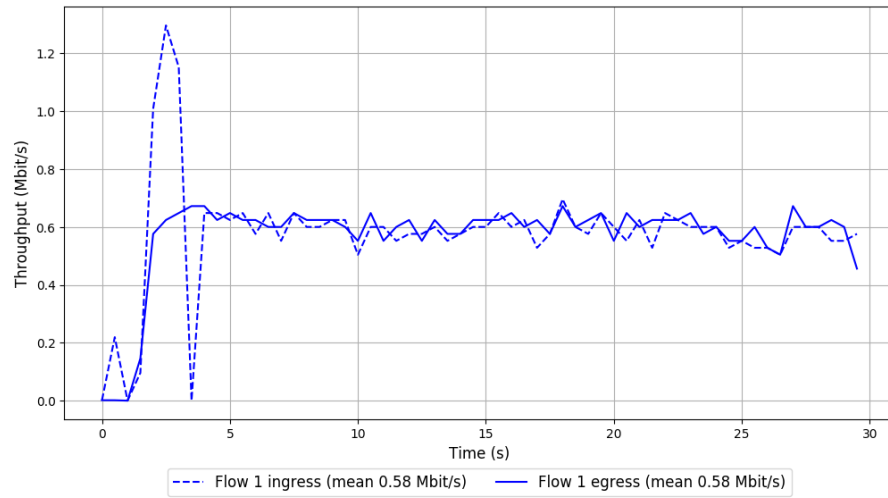
Flow 1 (95th percentile 968.08 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2017-09-22 07:56:07
End at: 2017-09-22 07:56:37
Local clock offset: 0.468 ms
Remote clock offset: -1.011 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 899.615 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 899.615 ms
Loss rate: 1.18%
```
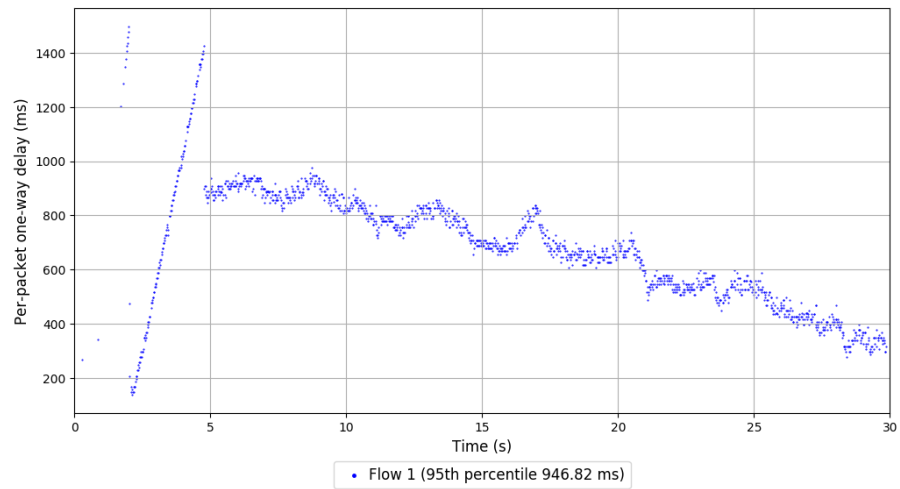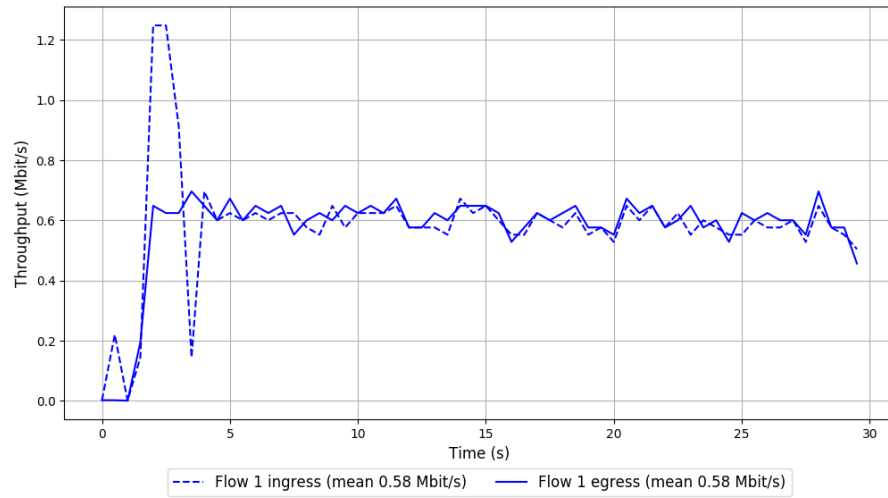
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2017-09-22 08:11:21
End at: 2017-09-22 08:11:51
Local clock offset: 0.215 ms
Remote clock offset: -1.088 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 946.823 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 946.823 ms
Loss rate: 1.24%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.58 Mbit/s) Flow 1 egress (mean 0.58 Mbit/s)

Flow 1 (95th percentile 946.82 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2017-09-22 08:26:34
End at: 2017-09-22 08:27:04
Local clock offset: 0.036 ms
Remote clock offset: -6.53 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1018.598 ms
Loss rate: 1.98%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1018.598 ms
Loss rate: 1.98%
```
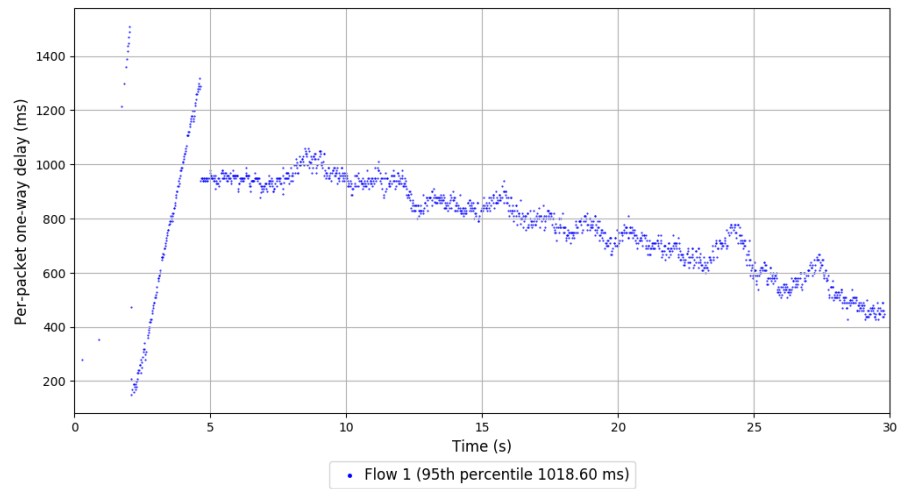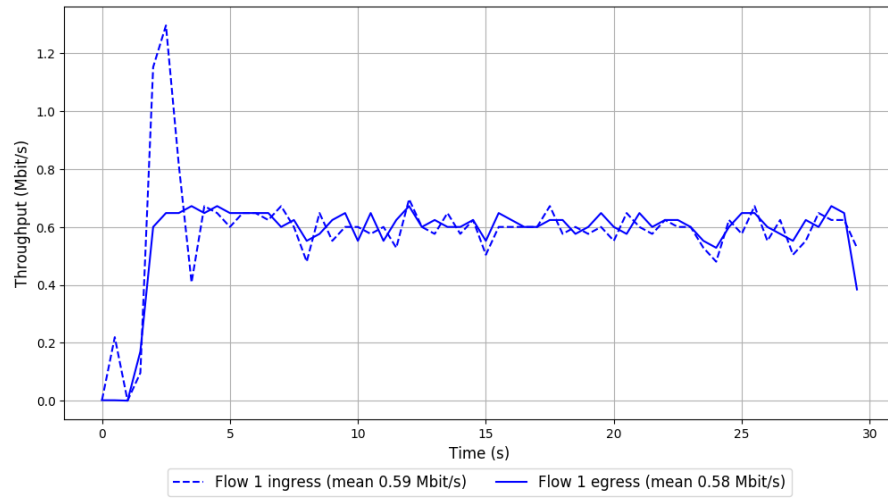
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.59 Mbit/s)   Flow 1 egress (mean 0.58 Mbit/s)

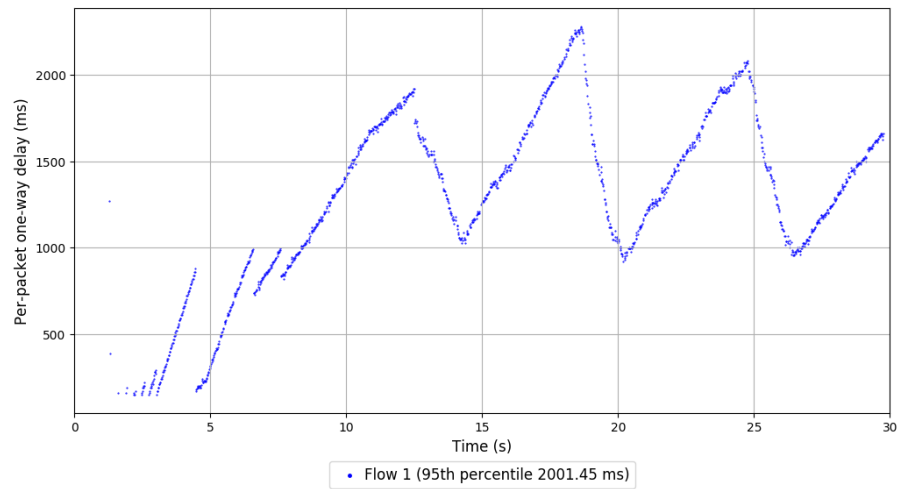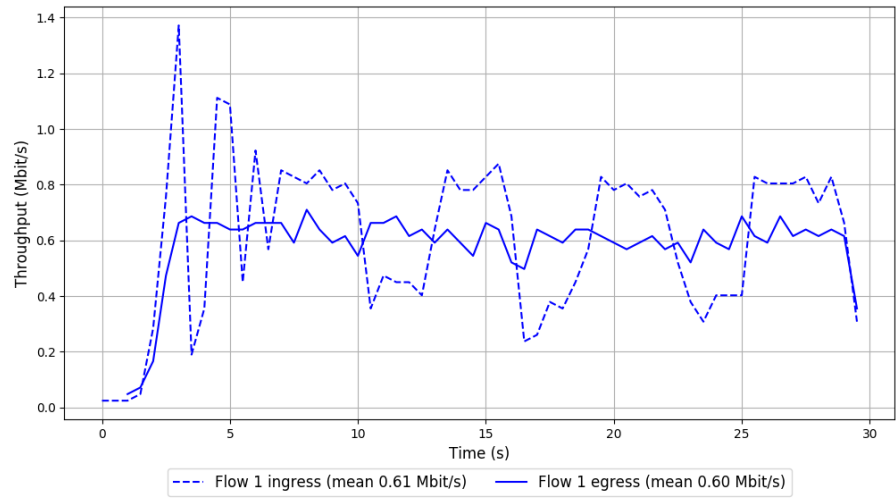Flow 1 (95th percentile 1018.60 ms)

```
Run 1: Statistics of Verus

Start at: 2017-09-22 08:01:58
End at: 2017-09-22 08:02:28
Local clock offset: 0.273 ms
Remote clock offset: -0.901 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 2001.454 ms
Loss rate: 6.57%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 2001.454 ms
Loss rate: 6.57%
```

Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 0.61 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

Flow 1 (95th percentile 2001.45 ms)

```
Run 2: Statistics of Verus

Start at: 2017-09-22 08:17:12
End at: 2017-09-22 08:17:42
Local clock offset: 0.077 ms
Remote clock offset: -6.23 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1952.627 ms
Loss rate: 6.78%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1952.627 ms
Loss rate: 6.78%
```
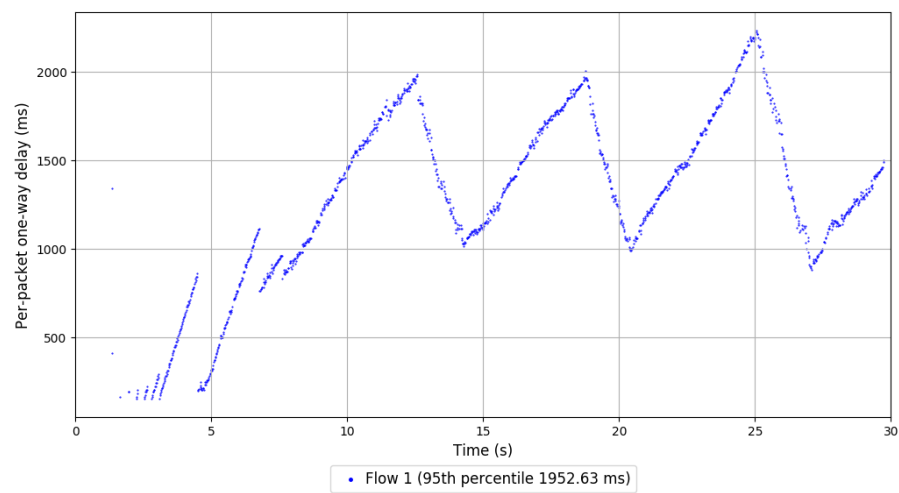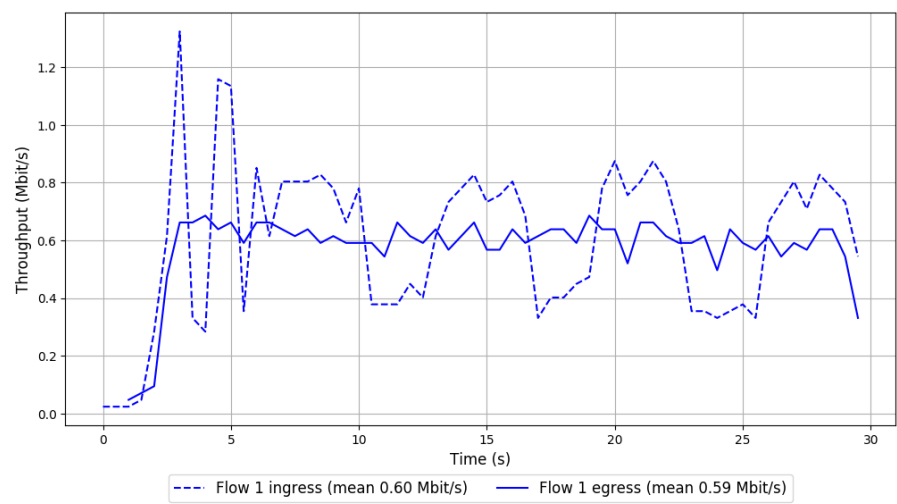
Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 0.60 Mbit/s)   Flow 1 egress (mean 0.59 Mbit/s)

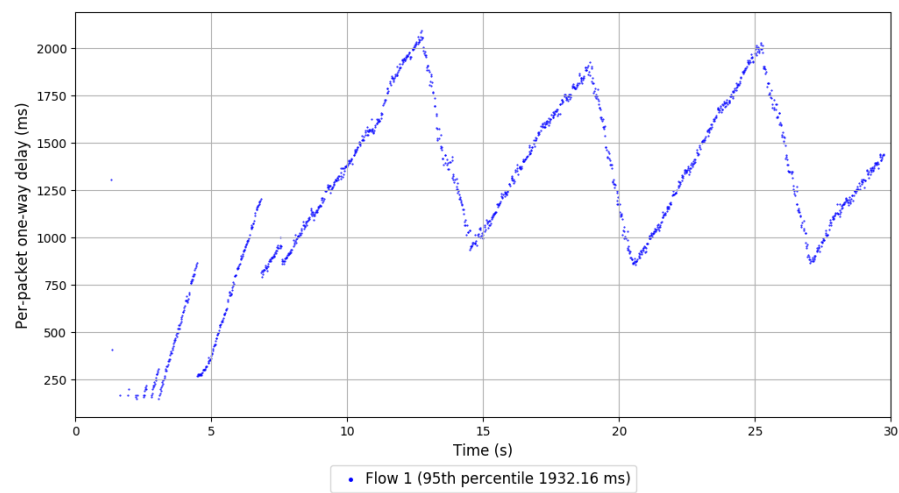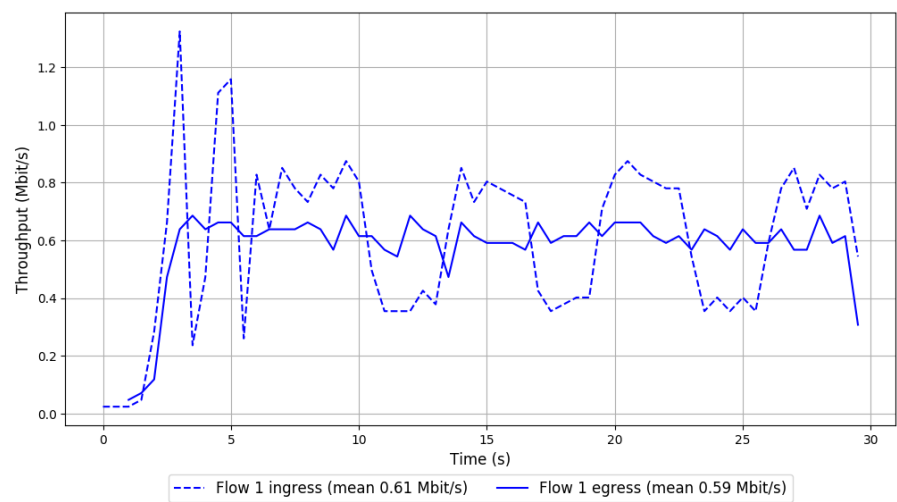Flow 1 (95th percentile 1952.63 ms)

```
Run 3: Statistics of Verus

Start at: 2017-09-22 08:32:25
End at: 2017-09-22 08:32:55
Local clock offset: 0.056 ms
Remote clock offset: -1.898 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1932.160 ms
Loss rate: 6.78%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1932.160 ms
Loss rate: 6.78%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 0.61 Mbit/s) --- Flow 1 egress (mean 0.59 Mbit/s)

Flow 1 (95th percentile 1932.16 ms)

```
Run 1: Statistics of Indigo

Start at: 2017-09-22 07:53:47
End at: 2017-09-22 07:54:17
Local clock offset: 0.493 ms
Remote clock offset: -5.817 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1677.634 ms
Loss rate: 15.81%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1677.634 ms
Loss rate: 15.81%
```
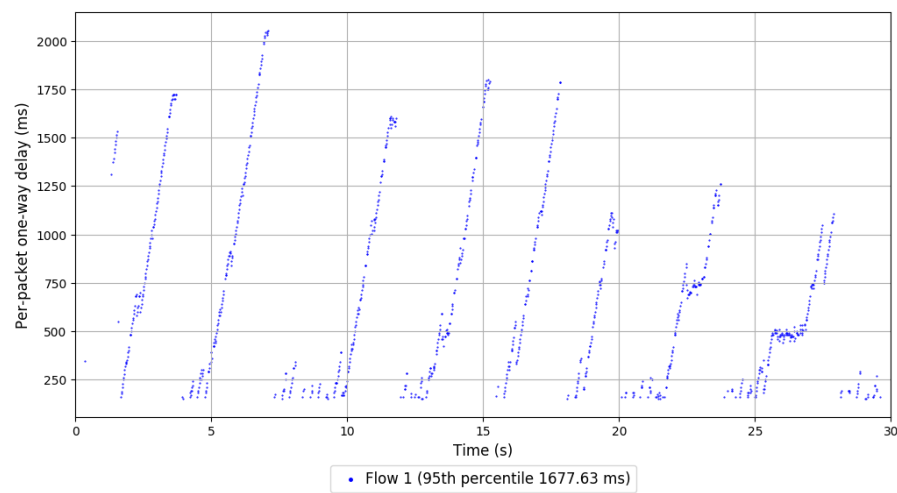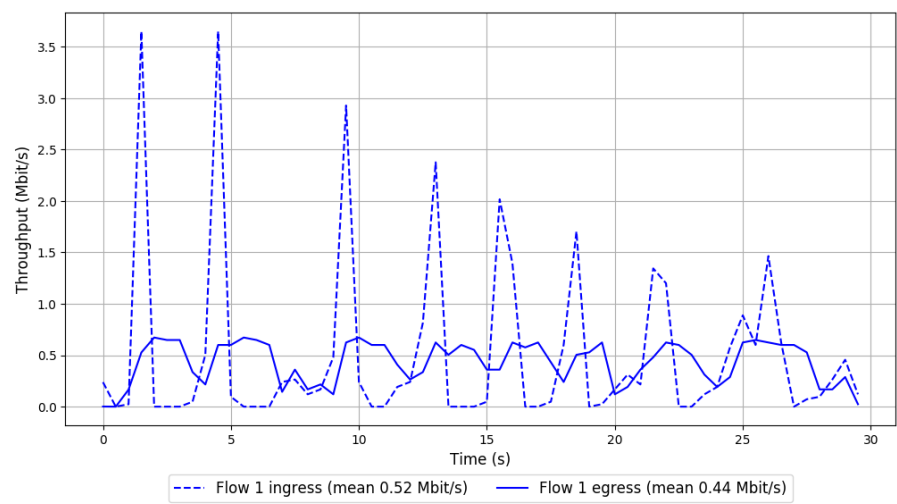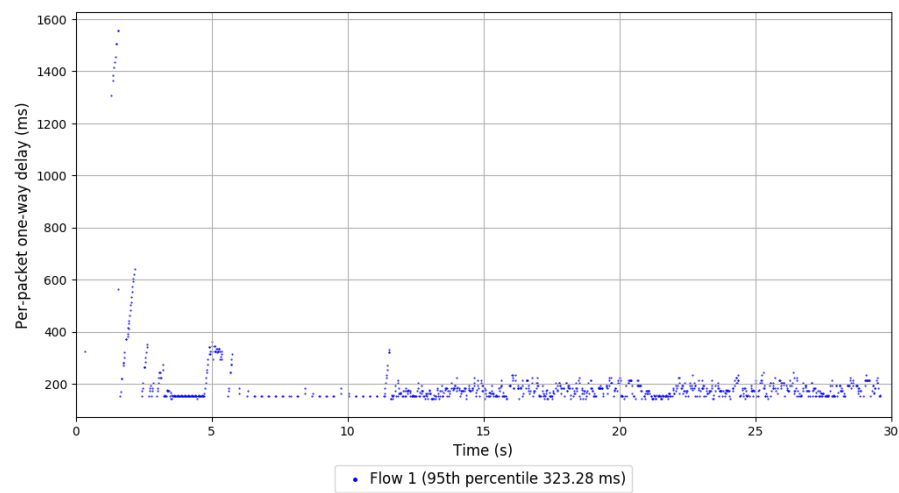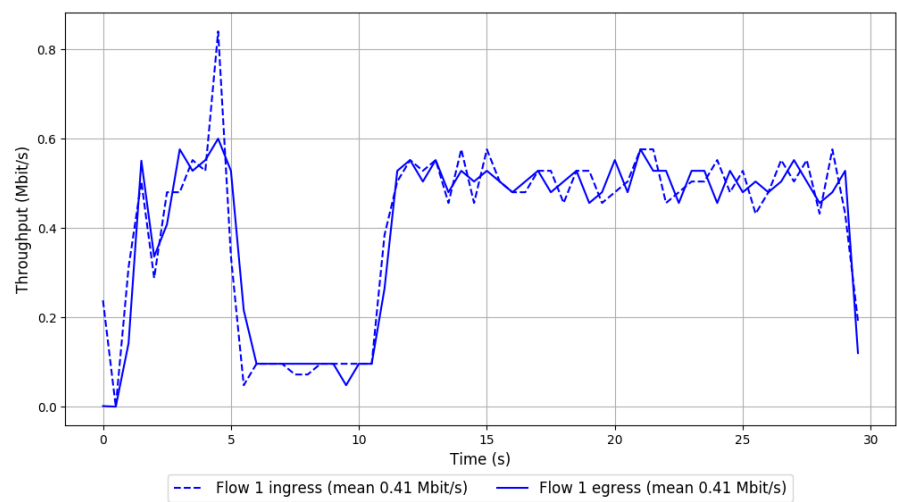
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2017-09-22 08:09:01
End at: 2017-09-22 08:09:31
Local clock offset: 0.159 ms
Remote clock offset: -0.913 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 323.284 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 323.284 ms
Loss rate: 1.48%
```

Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2017-09-22 08:24:14
End at: 2017-09-22 08:24:44
Local clock offset: 0.006 ms
Remote clock offset: -1.658 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 1748.396 ms
Loss rate: 17.30%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 1748.396 ms
Loss rate: 17.30%
```
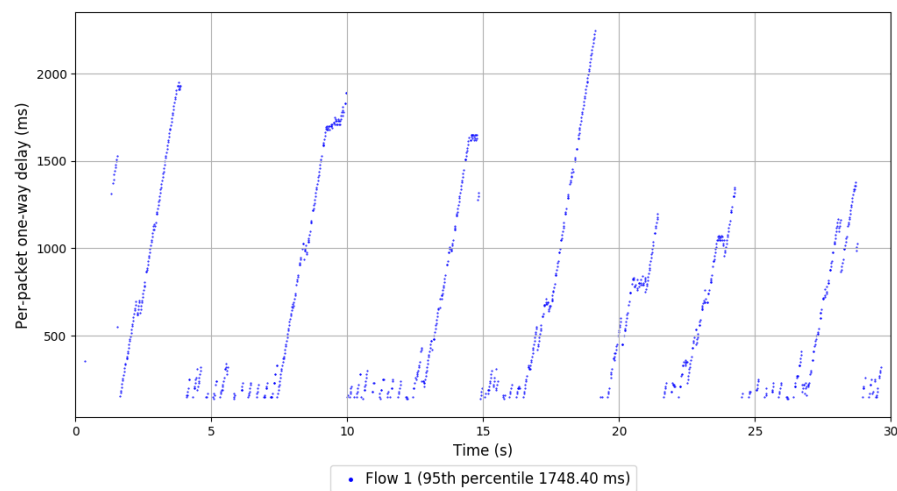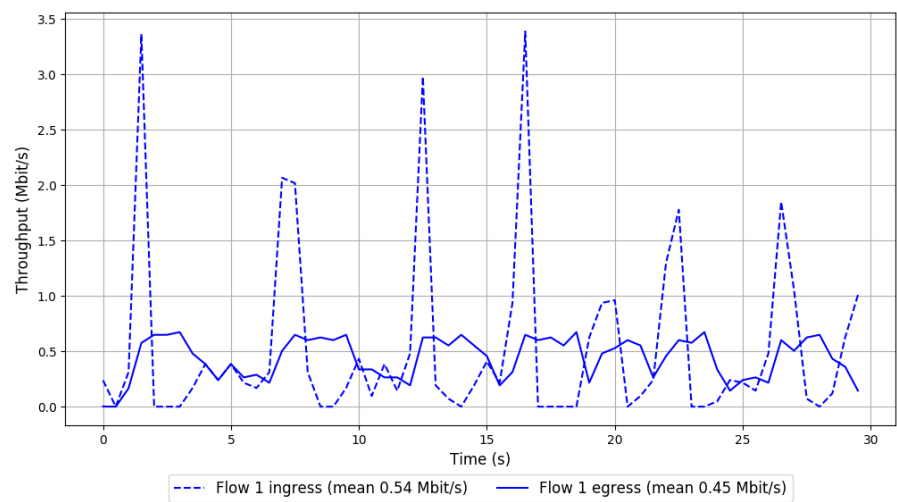
Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-cellular

Start at: 2017-09-22 07:59:38
End at: 2017-09-22 08:00:08
Local clock offset: 0.373 ms
Remote clock offset: -0.962 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 346.377 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 346.377 ms
Loss rate: 0.93%
```
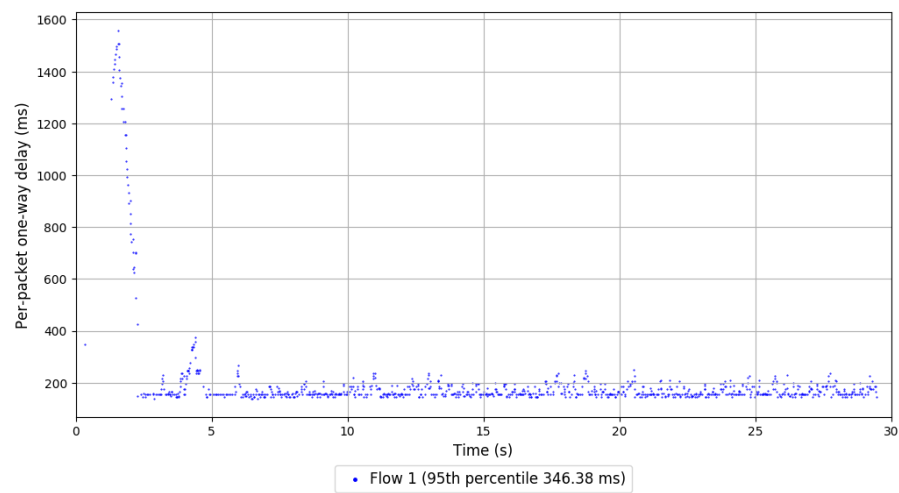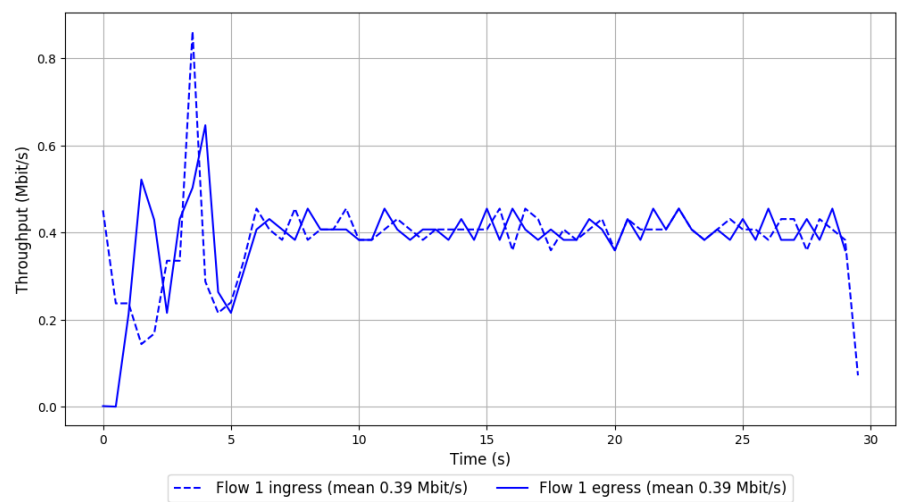
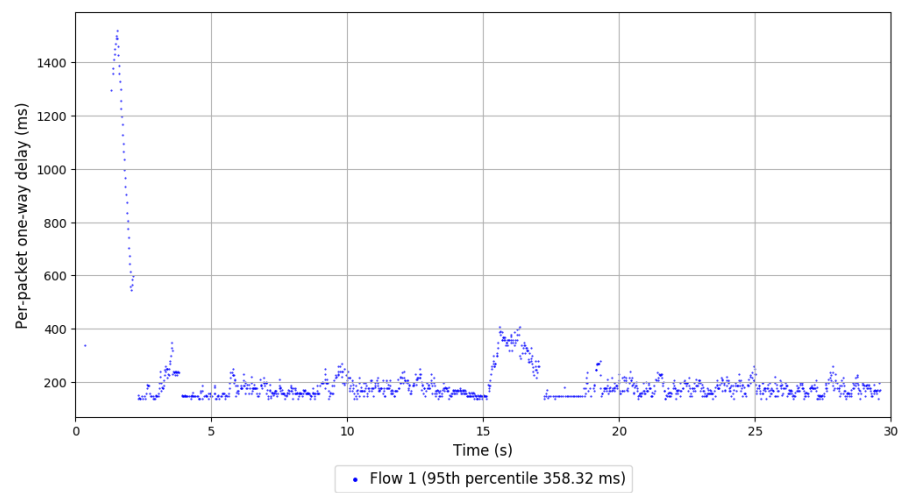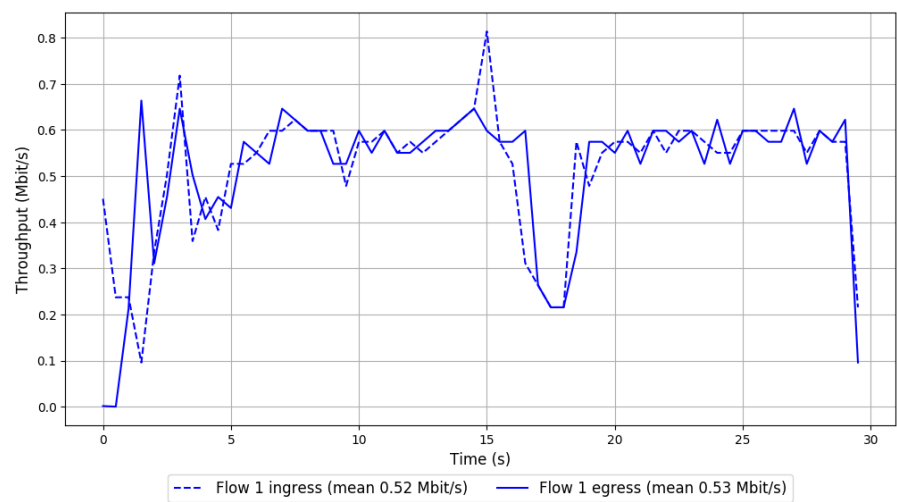## Run 1: Report of Indigo-cellular — Data Link

```
Run 2: Statistics of Indigo-cellular

Start at: 2017-09-22 08:14:51
End at: 2017-09-22 08:15:21
Local clock offset: 0.141 ms
Remote clock offset: -1.261 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 358.321 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 358.321 ms
Loss rate: 0.92%
```

Run 2: Report of Indigo-cellular — Data Link

Flow 1 ingress (mean 0.52 Mbit/s) --- Flow 1 egress (mean 0.53 Mbit/s) ———

Flow 1 (95th percentile 358.32 ms)

```
Run 3: Statistics of Indigo-cellular

Start at: 2017-09-22 08:30:05
End at: 2017-09-22 08:30:35
Local clock offset: 0.001 ms
Remote clock offset: -1.839 ms


# Below is generated by plot.py at 2017-09-22 09:25:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 313.522 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 313.522 ms
Loss rate: 1.00%
```

Run 3: Report of Indigo-cellular — Data Link