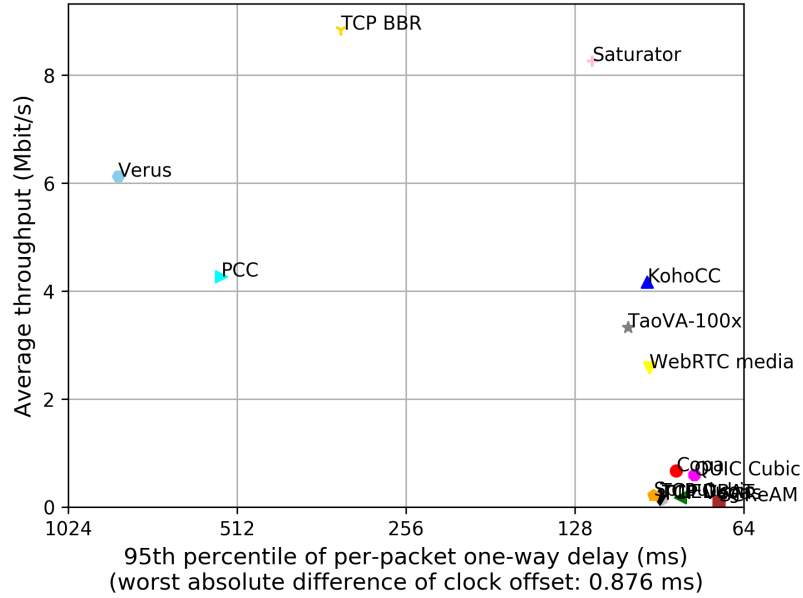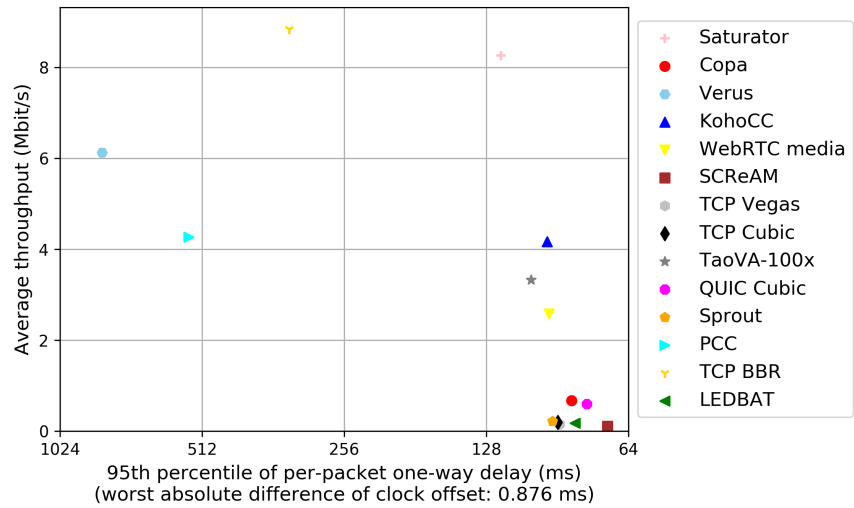**Pantheon Summary** (Generated at Mon, 10 Jul 2017 22:09:35 +0000 with pantheon version `c3610718e2bbac84102e8ac47b889a75d4392d79`)

    Repeated the test of 15 congestion control schemes once.

    Each test lasted for 30 seconds running 1 flow.

    Data path **from** AWS Korea Ethernet **to** China ppp0.

    NTP offset measured against ntp.nict.jp.

```
git branch: master @ c3610718e2bbac84102e8ac47b889a75d4392d79
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/genericCC @ dae96123232f1bcb37725348fa2378691ce26725
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-stimuli @ fc73a85ca16c34366d1888dc8a0d0d88d4ebf2a7
third_party/pantheon-tunnel @ c792f8e8e0704b1646a0e024766675d8e9a835f1
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 AWS Korea Ethernet to China ppp0, 1 run of 30s each per scheme
(mean of all runs by scheme)

test from AWS Korea Ethernet to China ppp0, 1 run 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	1	8.84	334.79	7.43
CalibratedKoho	1	nan	nan	nan
Copa	1	0.67	84.44	1.75
TCP Cubic	1	0.19	90.28	7.48
KohoCC	1	4.16	95.10	2.24
LEDBAT	1	0.17	83.11	9.15
PCC	1	4.27	546.54	2.05
QUIC Cubic	1	0.59	78.48	8.08
Saturator	1	8.26	119.17	2.29
SCReAM	1	0.11	70.90	2.44
Sprout	1	0.22	92.75	2.08
TaoVA-100x	1	3.33	103.02	1.98
TCP Vegas	1	0.15	89.59	7.19
Verus	1	6.13	834.47	5.29
WebRTC media	1	2.58	94.25	7.13

Run 1: Statistics of TCP BBR

Start at: Mon, 10 Jul 2017 21:38:10 +0000
End at: Mon, 10 Jul 2017 21:38:40 +0000
Local clock offset: -2.128 ms
Remote clock offset: -1.486 ms

Below is generated by plot.py at Mon, 10 Jul 2017 22:09:25 +0000
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.84 Mbit/s
95th percentile per-packet one-way delay: 334.788 ms
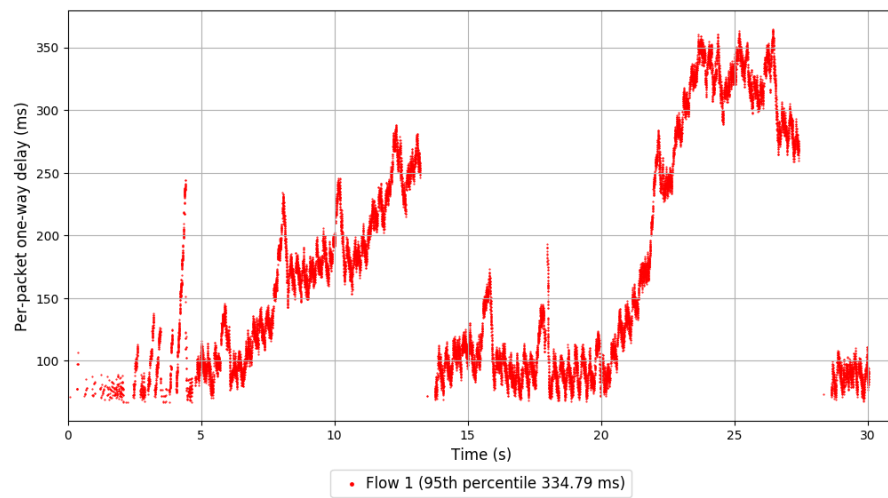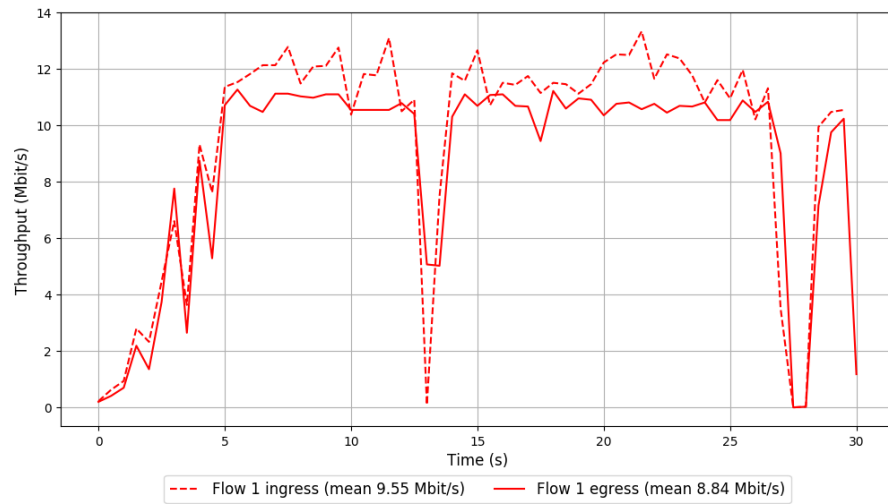Loss rate: 7.43%
-- Flow 1:
Average throughput: 8.84 Mbit/s
95th percentile per-packet one-way delay: 334.788 ms
Loss rate: 7.43%

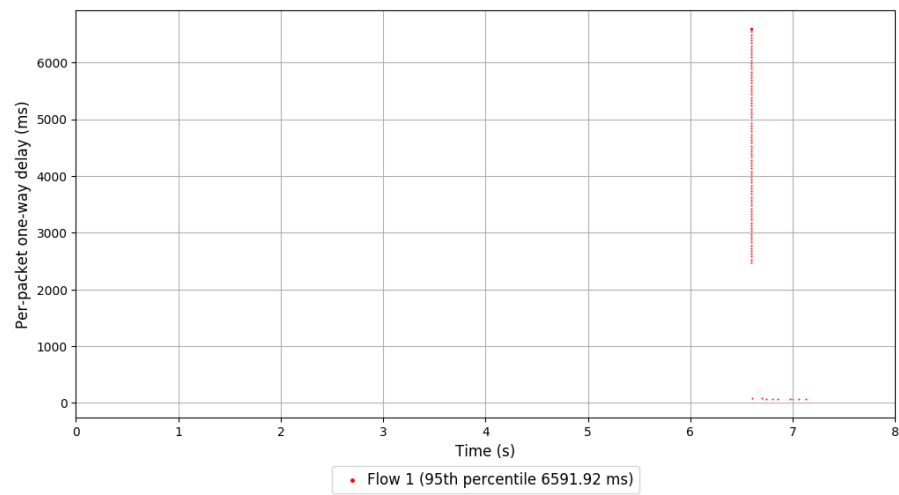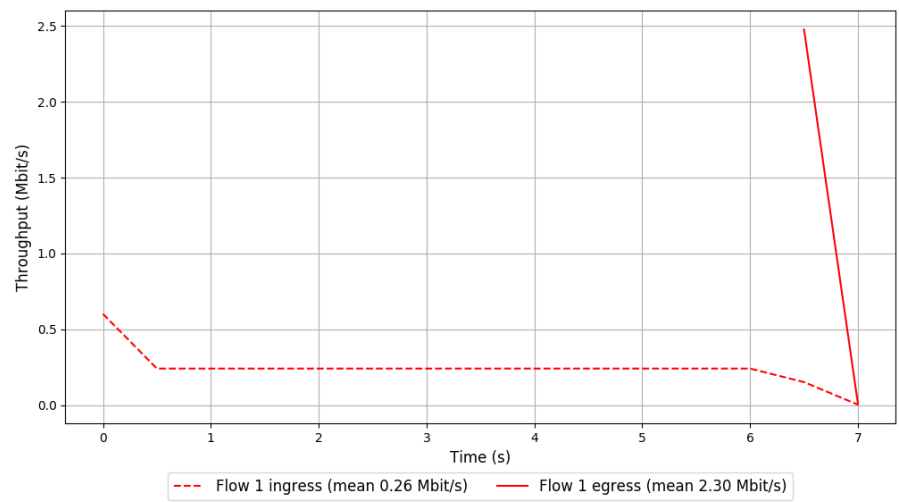Run 1: Report of TCP BBR — Data Link

```
Run 1: Statistics of CalibratedKoho

Start at: Mon, 10 Jul 2017 21:49:55 +0000
End at: Mon, 10 Jul 2017 21:50:25 +0000
Local clock offset: -1.945 ms
Remote clock offset: -1.811 ms
```

Run 1: Report of CalibratedKoho — Data Link

```
Run 1: Statistics of Copa

Start at: Mon, 10 Jul 2017 21:40:33 +0000
End at: Mon, 10 Jul 2017 21:41:03 +0000
Local clock offset: -2.017 ms
Remote clock offset: -1.552 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:25 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 84.439 ms
Loss rate: 1.75%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 84.439 ms
Loss rate: 1.75%
```
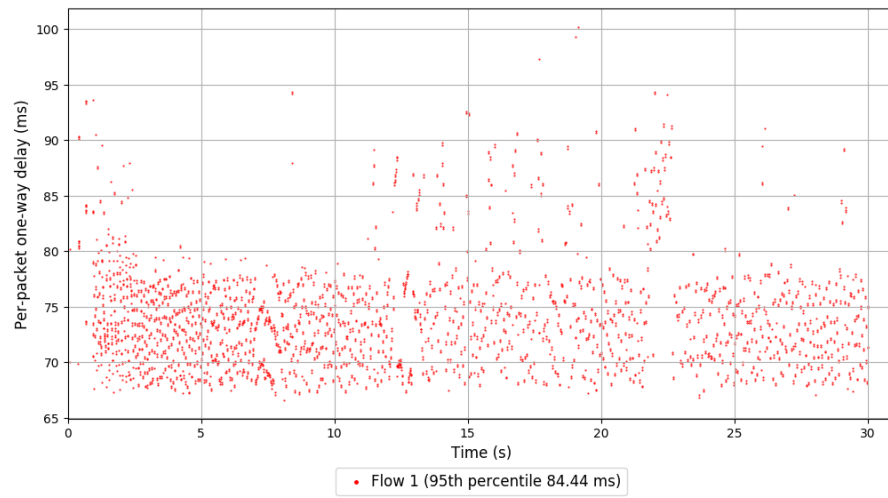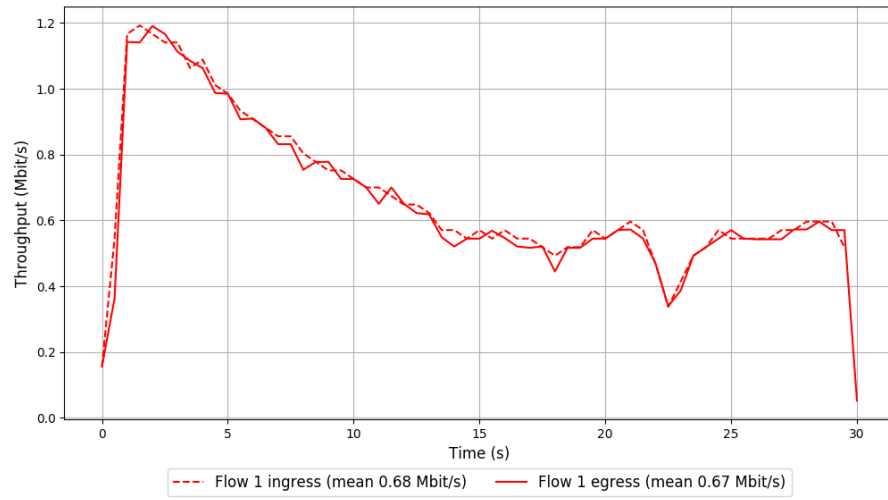
Run 1: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: Mon, 10 Jul 2017 21:47:34 +0000
End at: Mon, 10 Jul 2017 21:48:04 +0000
Local clock offset: -0.8 ms
Remote clock offset: -1.676 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:25 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 90.282 ms
Loss rate: 7.48%
-- Flow 1:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 90.282 ms
Loss rate: 7.48%
```
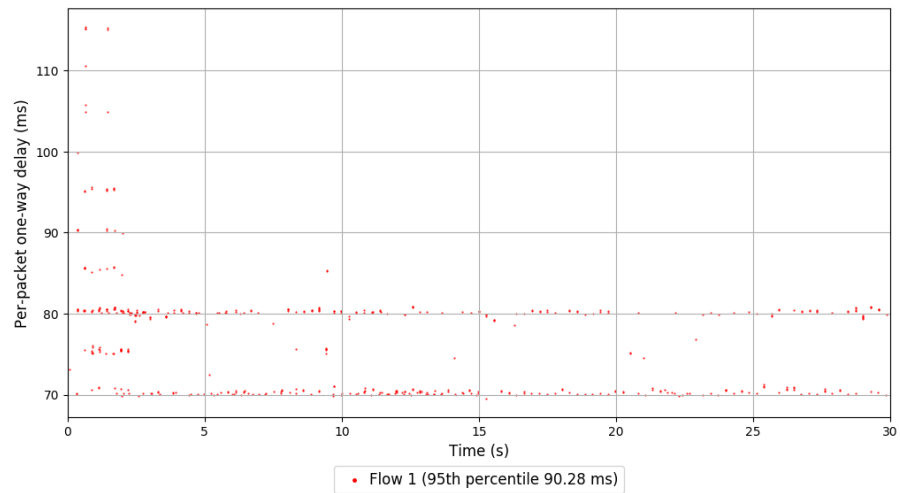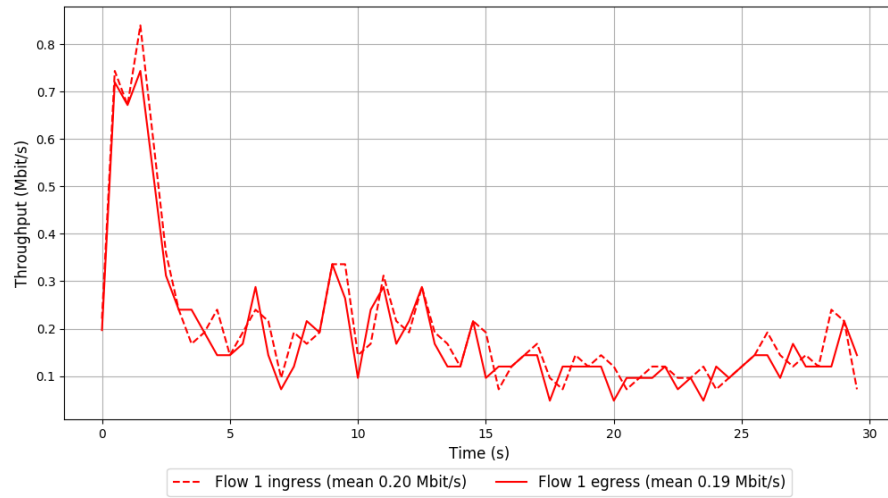
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.20 Mbit/s) --- Flow 1 egress (mean 0.19 Mbit/s)

Flow 1 (95th percentile 90.28 ms)

```
Run 1: Statistics of KohoCC

Start at: Mon, 10 Jul 2017 21:46:24 +0000
End at: Mon, 10 Jul 2017 21:46:54 +0000
Local clock offset: -1.908 ms
Remote clock offset: -1.661 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.16 Mbit/s
95th percentile per-packet one-way delay: 95.099 ms
Loss rate: 2.24%
-- Flow 1:
Average throughput: 4.16 Mbit/s
95th percentile per-packet one-way delay: 95.099 ms
Loss rate: 2.24%
```
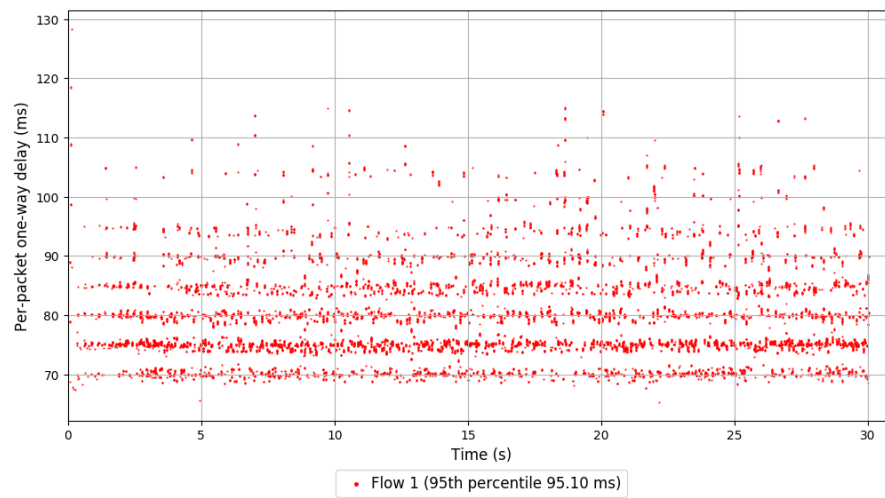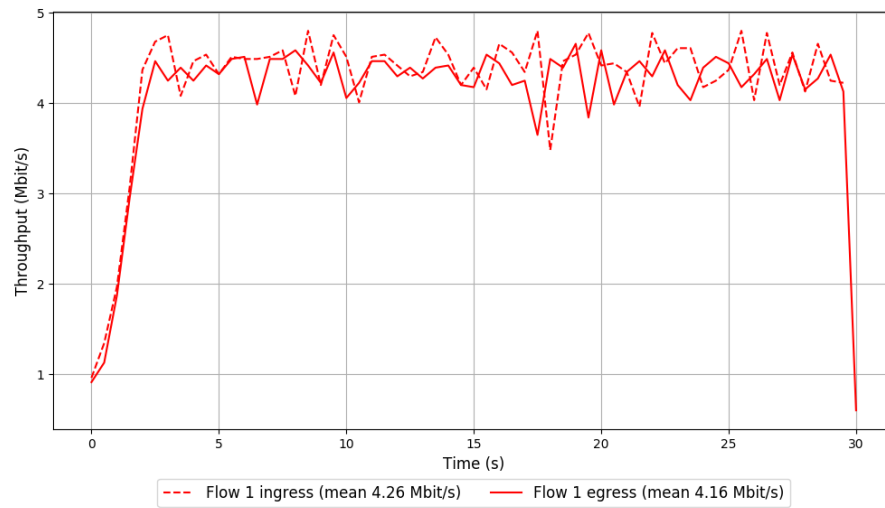
Run 1: Report of KohoCC — Data Link

```
Run 1: Statistics of LEDBAT

Start at: Mon, 10 Jul 2017 21:35:50 +0000
End at: Mon, 10 Jul 2017 21:36:20 +0000
Local clock offset: -2.038 ms
Remote clock offset: -1.377 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 83.105 ms
Loss rate: 9.15%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 83.105 ms
Loss rate: 9.15%
```
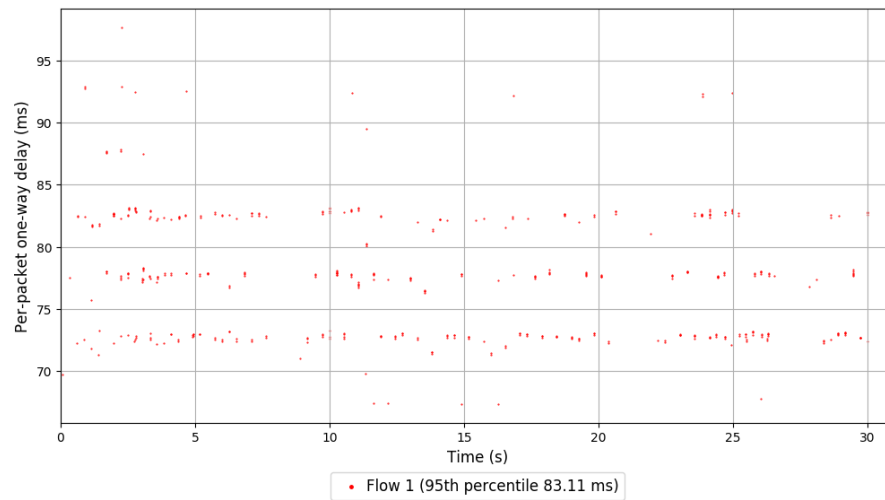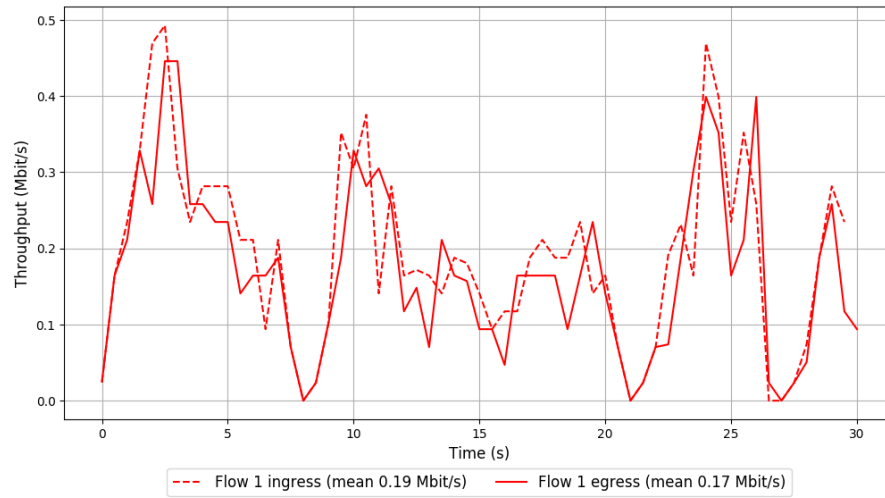
Run 1: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC

Start at: Mon, 10 Jul 2017 21:51:05 +0000
End at: Mon, 10 Jul 2017 21:51:35 +0000
Local clock offset: -1.954 ms
Remote clock offset: -1.788 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:28 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.27 Mbit/s
95th percentile per-packet one-way delay: 546.542 ms
Loss rate: 2.05%
-- Flow 1:
Average throughput: 4.27 Mbit/s
95th percentile per-packet one-way delay: 546.542 ms
Loss rate: 2.05%
```
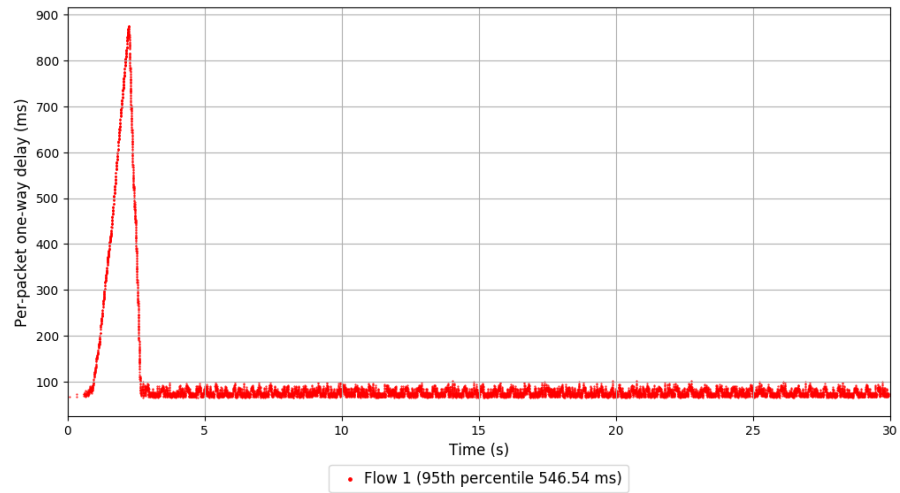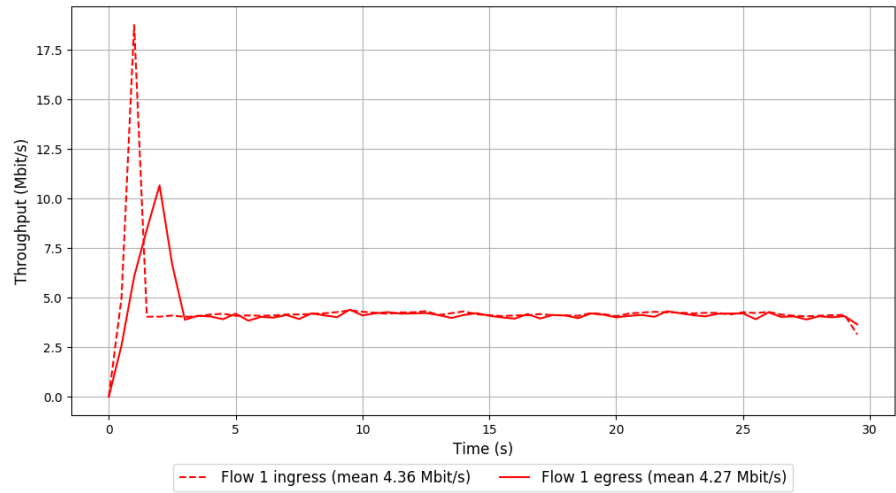
Run 1: Report of PCC — Data Link

Flow 1 ingress (mean 4.36 Mbit/s) — Flow 1 egress (mean 4.27 Mbit/s)

• Flow 1 (95th percentile 546.54 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: Mon, 10 Jul 2017 21:44:04 +0000
End at: Mon, 10 Jul 2017 21:44:34 +0000
Local clock offset: -1.829 ms
Remote clock offset: -1.64 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:28 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 78.485 ms
Loss rate: 8.08%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 78.485 ms
Loss rate: 8.08%
```
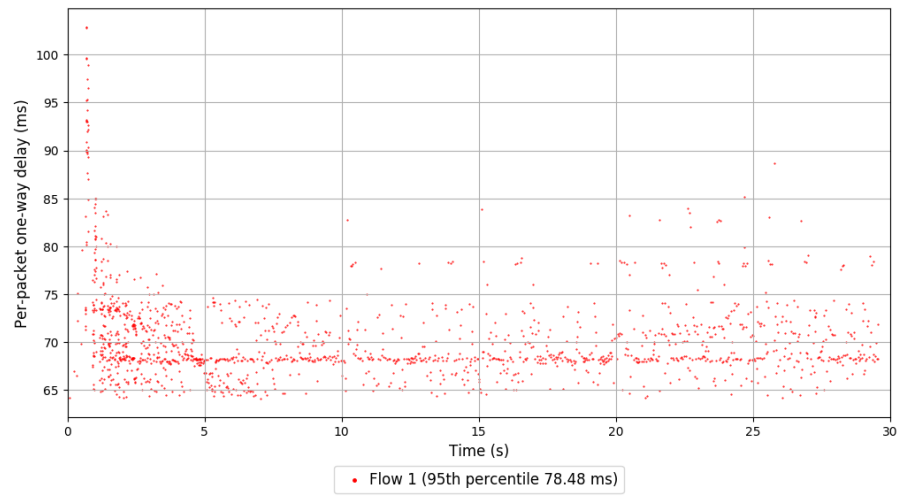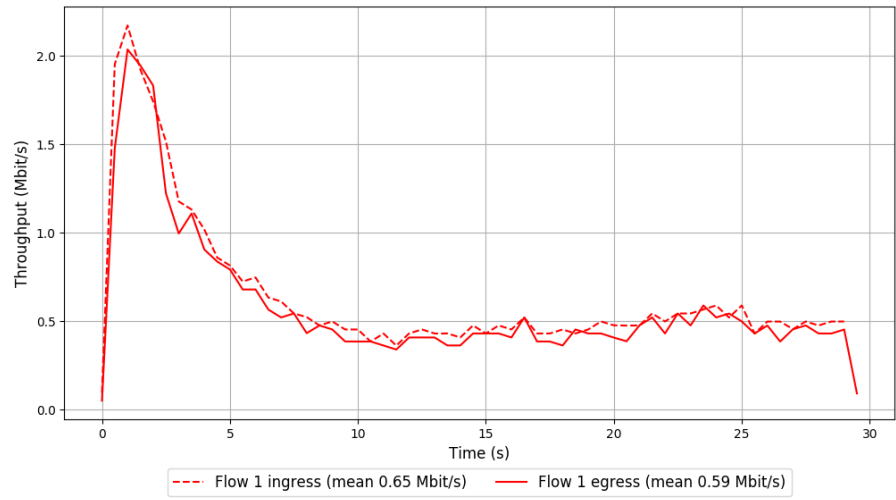
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.65 Mbit/s) --- Flow 1 egress (mean 0.59 Mbit/s)

• Flow 1 (95th percentile 78.48 ms)

```
Run 1: Statistics of Saturator

Start at: Mon, 10 Jul 2017 21:41:43 +0000
End at: Mon, 10 Jul 2017 21:42:13 +0000
Local clock offset: -2.065 ms
Remote clock offset: -1.565 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:30 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 119.175 ms
Loss rate: 2.29%
-- Flow 1:
Average throughput: 8.26 Mbit/s
95th percentile per-packet one-way delay: 119.175 ms
Loss rate: 2.29%
```
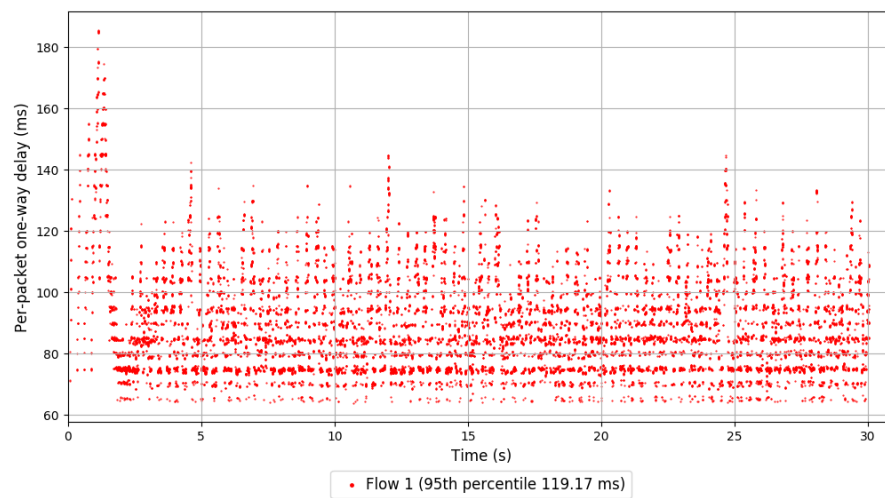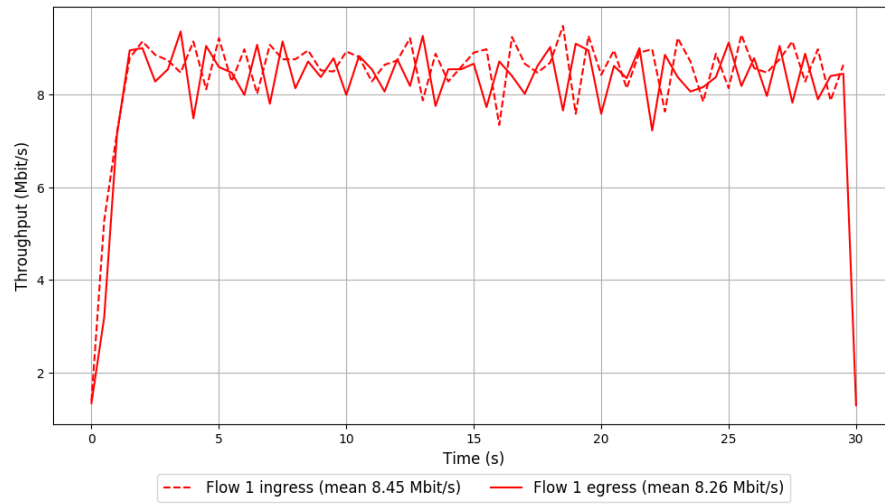
Run 1: Report of Saturator — Data Link

```
Run 1: Statistics of SCReAM

Start at: Mon, 10 Jul 2017 21:42:54 +0000
End at: Mon, 10 Jul 2017 21:43:24 +0000
Local clock offset: -1.866 ms
Remote clock offset: -1.624 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:30 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 70.902 ms
Loss rate: 2.44%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 70.902 ms
Loss rate: 2.44%
```
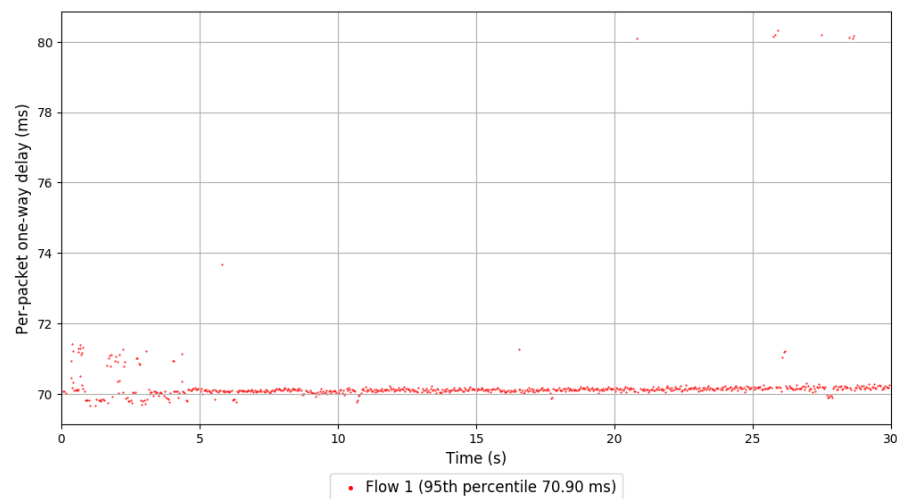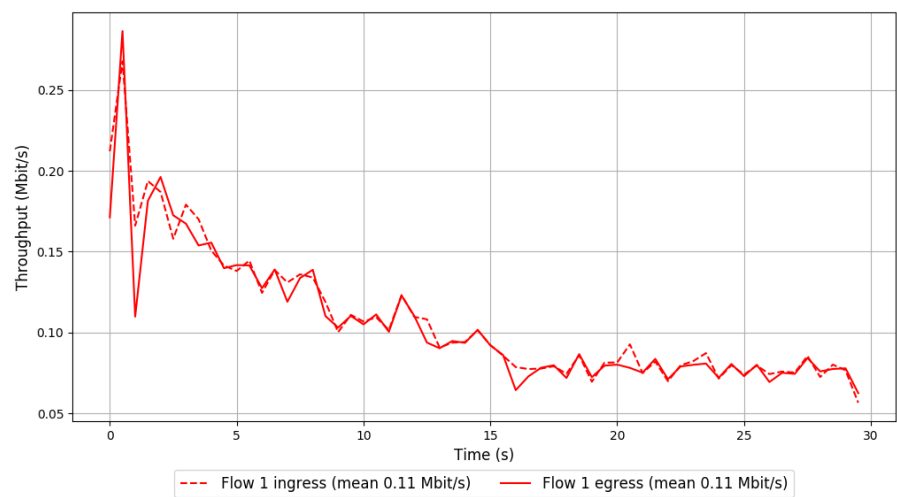
Run 1: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: Mon, 10 Jul 2017 21:34:40 +0000
End at: Mon, 10 Jul 2017 21:35:10 +0000
Local clock offset: -2.133 ms
Remote clock offset: -1.395 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:30 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 92.746 ms
Loss rate: 2.08%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 92.746 ms
Loss rate: 2.08%
```
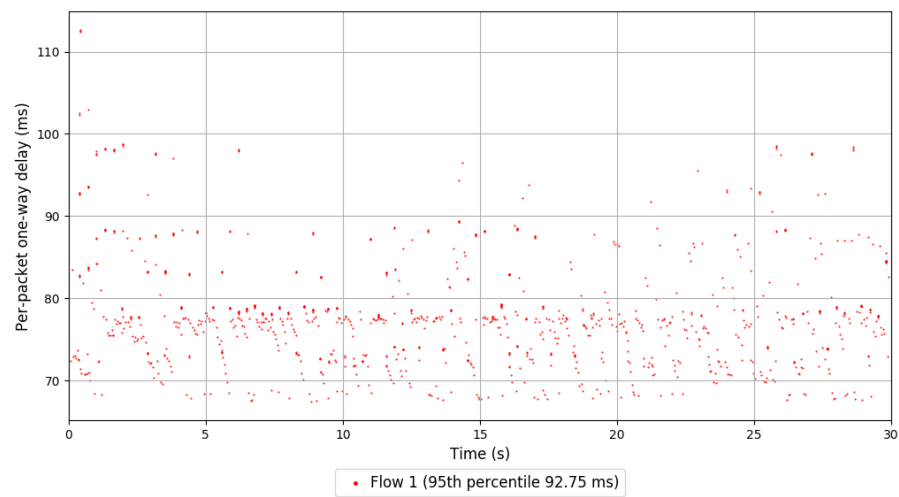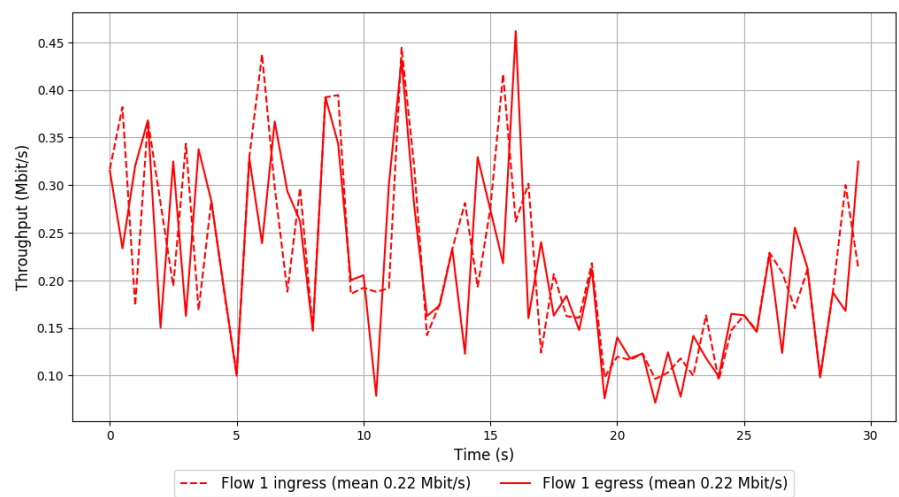
Run 1: Report of Sprout — Data Link

Flow 1 ingress (mean 0.22 Mbit/s) ------ Flow 1 egress (mean 0.22 Mbit/s) ——

Flow 1 (95th percentile 92.75 ms)

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

Start at: Mon, 10 Jul 2017 21:39:22 +0000
End at: Mon, 10 Jul 2017 21:39:52 +0000
Local clock offset: -1.953 ms
Remote clock offset: -1.486 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:32 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 103.016 ms
Loss rate: 1.98%
-- Flow 1:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 103.016 ms
Loss rate: 1.98%
```
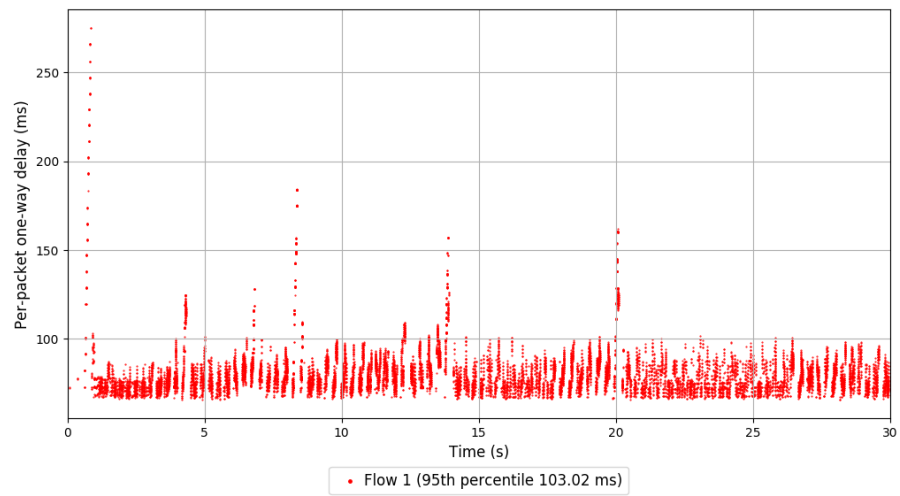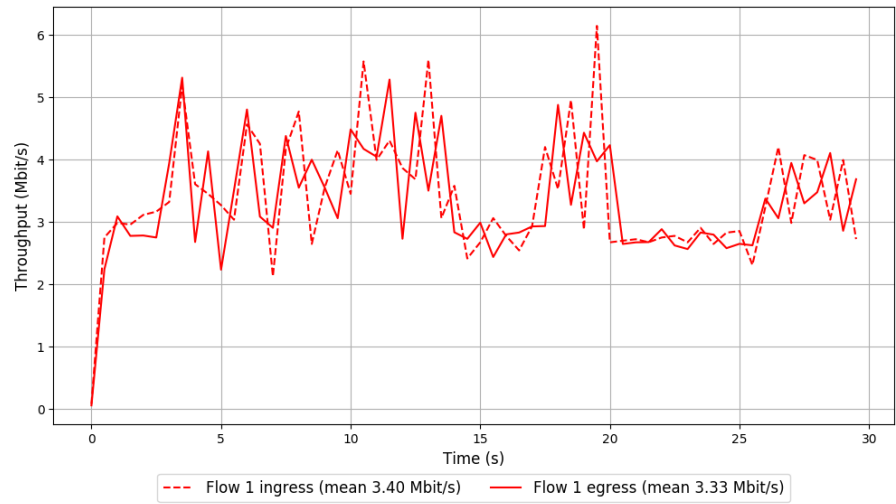
Run 1: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: Mon, 10 Jul 2017 21:45:14 +0000
End at: Mon, 10 Jul 2017 21:45:44 +0000
Local clock offset: -1.798 ms
Remote clock offset: -1.648 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:32 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 89.586 ms
Loss rate: 7.19%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 89.586 ms
Loss rate: 7.19%
```
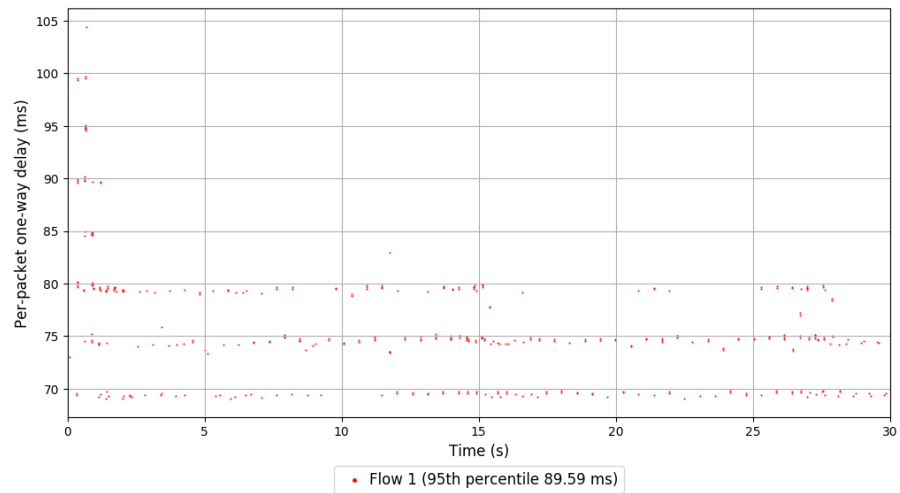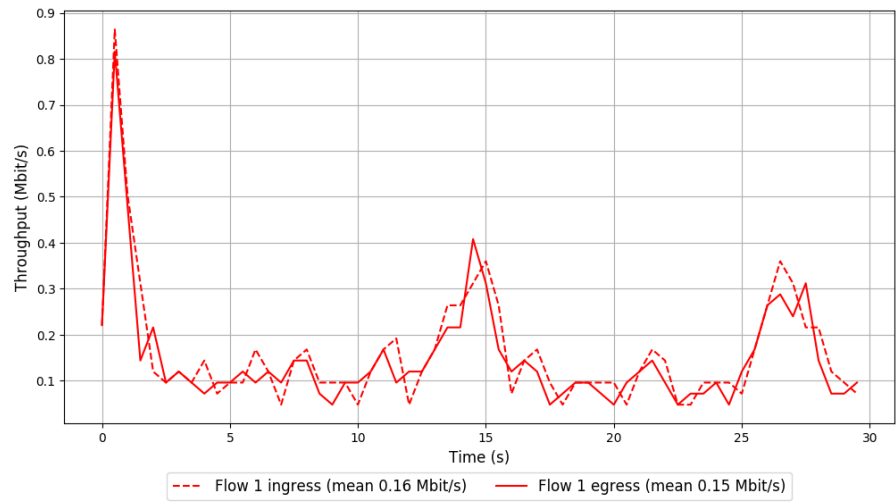
Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.16 Mbit/s)   Flow 1 egress (mean 0.15 Mbit/s)

Flow 1 (95th percentile 89.59 ms)

```
Run 1: Statistics of Verus

Start at: Mon, 10 Jul 2017 21:48:44 +0000
End at: Mon, 10 Jul 2017 21:49:14 +0000
Local clock offset: -1.871 ms
Remote clock offset: -1.685 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:33 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.13 Mbit/s
95th percentile per-packet one-way delay: 834.467 ms
Loss rate: 5.29%
-- Flow 1:
Average throughput: 6.13 Mbit/s
95th percentile per-packet one-way delay: 834.467 ms
Loss rate: 5.29%
```
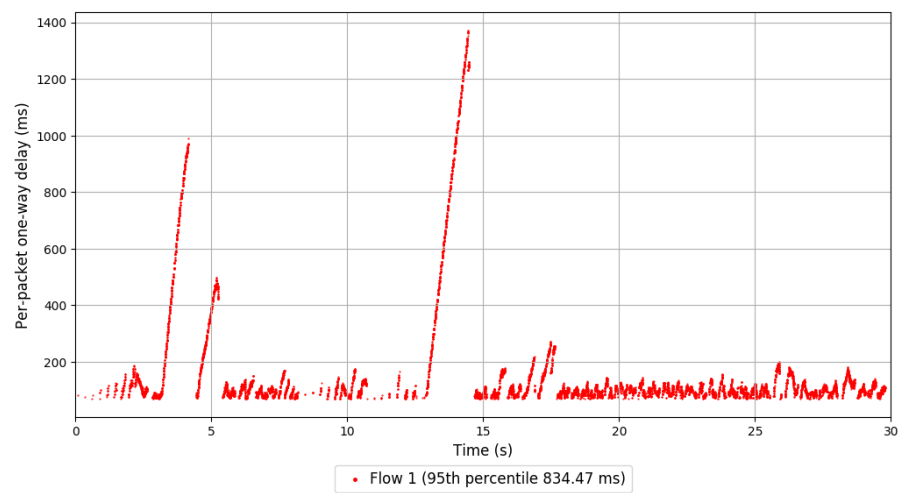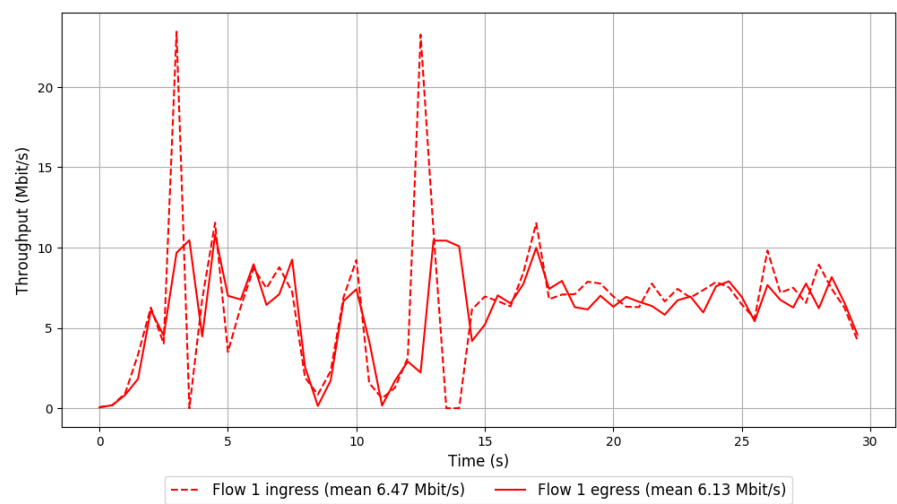
Run 1: Report of Verus — Data Link

```
Run 1: Statistics of WebRTC media

Start at: Mon, 10 Jul 2017 21:37:00 +0000
End at: Mon, 10 Jul 2017 21:37:30 +0000
Local clock offset: -0.897 ms
Remote clock offset: -1.427 ms


# Below is generated by plot.py at Mon, 10 Jul 2017 22:09:33 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 94.253 ms
Loss rate: 7.13%
-- Flow 1:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 94.253 ms
Loss rate: 7.13%
```

Run 1: Report of WebRTC media — Data Link