Pantheon Report

Generated at 2018-09-08 03:32:19 (UTC).
Data path: GCE Tokyo on ens4 (remote) → GCE Iowa on ens4 (local).
Repeated the test of 18 congestion control schemes 5 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
NTP offsets were measured against time.google.com and have been applied to correct the timestamps in logs.

System info:
Linux 4.15.0-1018-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 190986 254651 381972

Git summary:
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbde58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179e4a906ce6bb7cfc3cf
third_party/muses @ 7631aea3923a3598767c87765ae5103aca0678d3
third_party/pantheon-tunnel @ cbfcede6db5ff5740dafe1771f813cd646d339e1952
third_party/pcc @ 1af598fa0d66d8b63c091a55fe872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e684d08fabad24eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc81434c978f3c94f2
third_party/scream-reproduce @ f099118d421aa3131bf11ff1964974e1da3ebdb2
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

1
tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9d770d143a1fa2851
test from GCE Tokyo to GCE Iowa, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)
<table>
<thead>
<tr>
<th>scheme</th>
<th># runs</th>
<th>mean avg tput (Mbit/s)</th>
<th>mean 95th-%ile delay (ms)</th>
<th>mean loss rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>flow 1</td>
<td>flow 2</td>
<td>flow 3</td>
</tr>
<tr>
<td>TCP BBR</td>
<td>5</td>
<td>539.25</td>
<td>509.95</td>
<td>446.85</td>
</tr>
<tr>
<td>Copa</td>
<td>5</td>
<td>322.70</td>
<td>279.08</td>
<td>272.97</td>
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<tr>
<td>TCP Cubic</td>
<td>5</td>
<td>591.28</td>
<td>528.57</td>
<td>460.81</td>
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<tr>
<td>FillP</td>
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<td>801.69</td>
<td>782.10</td>
<td>664.68</td>
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<tr>
<td>FillP-Sheep</td>
<td>5</td>
<td>769.22</td>
<td>715.65</td>
<td>561.90</td>
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<tr>
<td>Indigo</td>
<td>5</td>
<td>216.61</td>
<td>222.86</td>
<td>180.18</td>
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<td>LEBAT</td>
<td>5</td>
<td>23.15</td>
<td>14.90</td>
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<td>Indigo-Muses</td>
<td>5</td>
<td>541.68</td>
<td>468.83</td>
<td>350.14</td>
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<tr>
<td>PCC-Allegro</td>
<td>5</td>
<td>425.15</td>
<td>375.80</td>
<td>285.33</td>
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<tr>
<td>PCC-Expr</td>
<td>5</td>
<td>323.41</td>
<td>282.60</td>
<td>228.64</td>
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<tr>
<td>QUIC Cubic</td>
<td>5</td>
<td>59.46</td>
<td>47.47</td>
<td>24.97</td>
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<td>SCReAM</td>
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<td>0.22</td>
<td>0.22</td>
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<td>Sprout</td>
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<td>6.76</td>
<td>6.70</td>
<td>6.32</td>
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<td>TaoVA-100x</td>
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<td>236.09</td>
<td>230.62</td>
<td>213.26</td>
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<td>TCP Vegas</td>
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<td>548.70</td>
<td>382.58</td>
<td>437.61</td>
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<td>Verus</td>
<td>5</td>
<td>167.89</td>
<td>143.12</td>
<td>104.76</td>
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<td>PCC-Vivace</td>
<td>5</td>
<td>342.46</td>
<td>300.65</td>
<td>163.02</td>
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<td>WebRTC media</td>
<td>5</td>
<td>1.75</td>
<td>1.21</td>
<td>0.47</td>
</tr>
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</table>
Run 1: Statistics of TCP BBR

Start at: 2018-09-07 22:14:50
End at: 2018-09-07 22:15:20
Local clock offset: -0.024 ms
Remote clock offset: -1.885 ms

# Below is generated by plot.py at 2018-09-08 01:11:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1024.63 Mbit/s
95th percentile per-packet one-way delay: 192.226 ms
Loss rate: 3.74%
-- Flow 1:
Average throughput: 550.56 Mbit/s
95th percentile per-packet one-way delay: 188.803 ms
Loss rate: 3.83%
-- Flow 2:
Average throughput: 493.01 Mbit/s
95th percentile per-packet one-way delay: 221.015 ms
Loss rate: 4.49%
-- Flow 3:
Average throughput: 443.27 Mbit/s
95th percentile per-packet one-way delay: 105.796 ms
Loss rate: 1.70%
Run 1: Report of TCP BBR — Data Link

Throughput (Mb/s)

Time (s)

Flow 1 ingress (mean 570.01 Mb/s)  Flow 1 egress (mean 550.56 Mb/s)
Flow 2 ingress (mean 512.86 Mb/s)  Flow 2 egress (mean 493.01 Mb/s)
Flow 3 ingress (mean 444.82 Mb/s)  Flow 3 egress (mean 443.27 Mb/s)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 188.80 ms)  Flow 2 (95th percentile 221.01 ms)  Flow 3 (95th percentile 105.80 ms)
Run 2: Statistics of TCP BBR

Start at: 2018-09-07 22:47:33
End at: 2018-09-07 22:48:03
Local clock offset: -0.009 ms
Remote clock offset: -0.399 ms

# Below is generated by plot.py at 2018-09-08 01:11:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1028.40 Mbit/s
95th percentile per-packet one-way delay: 181.379 ms
Loss rate: 2.63%
-- Flow 1:
Average throughput: 571.07 Mbit/s
95th percentile per-packet one-way delay: 184.758 ms
Loss rate: 3.78%
-- Flow 2:
Average throughput: 474.25 Mbit/s
95th percentile per-packet one-way delay: 178.205 ms
Loss rate: 1.16%
-- Flow 3:
Average throughput: 430.91 Mbit/s
95th percentile per-packet one-way delay: 150.447 ms
Loss rate: 1.16%
Run 2: Report of TCP BBR — Data Link

![Graph showing the throughput and packet delay for three different flows over time.]

Legend:
- Flow 1 ingress (mean 590.82 Mb/s)
- Flow 1 egress (mean 571.07 Mb/s)
- Flow 2 ingress (mean 476.74 Mb/s)
- Flow 2 egress (mean 474.25 Mb/s)
- Flow 3 ingress (mean 430.08 Mb/s)
- Flow 3 egress (mean 430.91 Mb/s)

![Graph showing the packet delay for three different flows over time.]

Legend:
- Flow 1 (95th percentile 184.76 ms)
- Flow 2 (95th percentile 178.21 ms)
- Flow 3 (95th percentile 150.45 ms)
Run 3: Statistics of TCP BBR

Start at: 2018-09-07 23:20:29
End at: 2018-09-07 23:20:59
Local clock offset: -0.008 ms
Remote clock offset: -0.665 ms

# Below is generated by plot.py at 2018-09-08 01:11:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1022.74 Mbit/s
95th percentile per-packet one-way delay: 195.134 ms
Loss rate: 3.27%
-- Flow 1:
Average throughput: 504.16 Mbit/s
95th percentile per-packet one-way delay: 201.438 ms
Loss rate: 3.62%
-- Flow 2:
Average throughput: 563.91 Mbit/s
95th percentile per-packet one-way delay: 181.716 ms
Loss rate: 3.32%
-- Flow 3:
Average throughput: 436.21 Mbit/s
95th percentile per-packet one-way delay: 120.697 ms
Loss rate: 1.90%
Run 3: Report of TCP BBR — Data Link
Run 4: Statistics of TCP BBR

Start at: 2018-09-07 23:53:06
End at: 2018-09-07 23:53:36
Local clock offset: -0.003 ms
Remote clock offset: -0.88 ms

# Below is generated by plot.py at 2018-09-08 01:11:03
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1028.89 Mbit/s
  95th percentile per-packet one-way delay: 186.864 ms
  Loss rate: 3.59%
-- Flow 1:
  Average throughput: 529.60 Mbit/s
  95th percentile per-packet one-way delay: 188.714 ms
  Loss rate: 4.06%
-- Flow 2:
  Average throughput: 515.43 Mbit/s
  95th percentile per-packet one-way delay: 184.115 ms
  Loss rate: 3.36%
-- Flow 3:
  Average throughput: 475.43 Mbit/s
  95th percentile per-packet one-way delay: 172.298 ms
  Loss rate: 2.50%
Run 4: Report of TCP BBR — Data Link

![Graph showing network throughput and delay over time for different flows.]

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 549.54 Mbps)
  - Flow 1 egress (mean 529.60 Mbps)
  - Flow 2 ingress (mean 529.95 Mbps)
  - Flow 2 egress (mean 515.43 Mbps)
  - Flow 3 ingress (mean 481.05 Mbps)
  - Flow 3 egress (mean 475.43 Mbps)

- **Packet delay (ms):**
  - Flow 1 (95th percentile 188.71 ms)
  - Flow 2 (95th percentile 184.12 ms)
  - Flow 3 (95th percentile 172.30 ms)
Run 5: Statistics of TCP BBR

Start at: 2018-09-08 00:25:43
End at: 2018-09-08 00:26:13
Local clock offset: 0.025 ms
Remote clock offset: -0.73 ms

# Below is generated by plot.py at 2018-09-08 01:11:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1023.06 Mbit/s
95th percentile per-packet one-way delay: 187.641 ms
Loss rate: 3.14%
-- Flow 1:
Average throughput: 540.87 Mbit/s
95th percentile per-packet one-way delay: 182.563 ms
Loss rate: 3.15%
-- Flow 2:
Average throughput: 503.16 Mbit/s
95th percentile per-packet one-way delay: 192.361 ms
Loss rate: 2.57%
-- Flow 3:
Average throughput: 448.43 Mbit/s
95th percentile per-packet one-way delay: 198.229 ms
Loss rate: 4.37%
Run 5: Report of TCP BBR — Data Link

Throughput (Mbit/s)

0 5 10 15 20 25 30

Time (s)

Flow 1 ingress (mean 556.04 Mbit/s) — Flow 1 egress (mean 540.87 Mbit/s)
Flow 2 ingress (mean 512.93 Mbit/s) — Flow 2 egress (mean 503.16 Mbit/s)
Flow 3 ingress (mean 462.84 Mbit/s) — Flow 3 egress (mean 448.43 Mbit/s)

Per-packet one-way delay (ms)

0 5 10 15 20 25 30

Time (s)

Flow 1 (95th percentile 182.56 ms) — Flow 2 (95th percentile 192.36 ms) — Flow 3 (95th percentile 198.23 ms)
Run 1: Statistics of Copa

Start at: 2018-09-07 22:20:29
End at: 2018-09-07 22:20:59
Local clock offset: -0.04 ms
Remote clock offset: -0.759 ms

# Below is generated by plot.py at 2018-09-08 01:12:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 589.60 Mbit/s
95th percentile per-packet one-way delay: 96.030 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 325.50 Mbit/s
95th percentile per-packet one-way delay: 88.930 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 265.23 Mbit/s
95th percentile per-packet one-way delay: 105.289 ms
Loss rate: 0.55%
-- Flow 3:
Average throughput: 266.10 Mbit/s
95th percentile per-packet one-way delay: 93.906 ms
Loss rate: 1.48%
Run 1: Report of Copa — Data Link

![Graph showing throughput and per-packet one-way delay over time for different flows.]

- Flow 1 ingress (mean 325.31 Mbps)
- Flow 1 egress (mean 325.50 Mbps)
- Flow 2 ingress (mean 265.00 Mbps)
- Flow 2 egress (mean 265.23 Mbps)
- Flow 3 ingress (mean 266.80 Mbps)
- Flow 3 egress (mean 266.10 Mbps)

![Graph showing per-packet one-way delay over time for different flows.]

- Flow 1 (95th percentile 88.91 ms)
- Flow 2 (95th percentile 105.29 ms)
- Flow 3 (95th percentile 93.91 ms)
Run 2: Statistics of Copa

Start at: 2018-09-07 22:53:16
End at: 2018-09-07 22:53:46
Local clock offset: -0.003 ms
Remote clock offset: -0.727 ms

# Below is generated by plot.py at 2018-09-08 01:12:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 613.47 Mbit/s
95th percentile per-packet one-way delay: 87.691 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 330.35 Mbit/s
95th percentile per-packet one-way delay: 82.359 ms
Loss rate: 0.40%
-- Flow 2:
Average throughput: 298.17 Mbit/s
95th percentile per-packet one-way delay: 79.103 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 257.63 Mbit/s
95th percentile per-packet one-way delay: 111.966 ms
Loss rate: 1.51%
Run 2: Report of Copa — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 330.24 Mbps) — Flow 1 egress (mean 330.35 Mbps)
Flow 2 ingress (mean 298.29 Mbps) — Flow 2 egress (mean 298.17 Mbps)
Flow 3 ingress (mean 258.09 Mbps) — Flow 3 egress (mean 257.63 Mbps)

Per-packet core max delay (ms)

Time (s)

Flow 1 (95th percentile 82.36 ms) — Flow 2 (95th percentile 79.10 ms) — Flow 3 (95th percentile 111.97 ms)
Run 3: Statistics of Copa

Start at: 2018-09-07 23:26:13
End at: 2018-09-07 23:26:43
Local clock offset: 0.022 ms
Remote clock offset: 0.303 ms

# Below is generated by plot.py at 2018-09-08 01:12:47
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 594.69 Mbit/s
  95th percentile per-packet one-way delay: 86.140 ms
  Loss rate: 0.64%
-- Flow 1:
  Average throughput: 346.47 Mbit/s
  95th percentile per-packet one-way delay: 76.330 ms
  Loss rate: 0.38%
-- Flow 2:
  Average throughput: 230.96 Mbit/s
  95th percentile per-packet one-way delay: 104.731 ms
  Loss rate: 0.76%
-- Flow 3:
  Average throughput: 287.67 Mbit/s
  95th percentile per-packet one-way delay: 76.471 ms
  Loss rate: 1.42%
Run 3: Report of Copa — Data Link

![Graph showing throughput and packet delay for different flows.]

- Flow 1 ingress (mean 346.31 Mbit/s)
- Flow 1 egress (mean 346.47 Mbit/s)
- Flow 2 ingress (mean 231.16 Mbit/s)
- Flow 2 egress (mean 230.96 Mbit/s)
- Flow 3 ingress (mean 288.23 Mbit/s)
- Flow 3 egress (mean 287.67 Mbit/s)

- Flow 1 (95th percentile 76.33 ms)
- Flow 2 (95th percentile 104.73 ms)
- Flow 3 (95th percentile 76.47 ms)
Run 4: Statistics of Copa

Start at: 2018-09-07 23:58:54
End at: 2018-09-07 23:59:24
Local clock offset: 0.012 ms
Remote clock offset: -0.065 ms

# Below is generated by plot.py at 2018-09-08 01:29:40
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 597.43 Mbit/s
  95th percentile per-packet one-way delay: 93.476 ms
  Loss rate: 0.60%
-- Flow 1:
  Average throughput: 311.03 Mbit/s
  95th percentile per-packet one-way delay: 94.083 ms
  Loss rate: 0.39%
-- Flow 2:
  Average throughput: 291.48 Mbit/s
  95th percentile per-packet one-way delay: 94.569 ms
  Loss rate: 0.50%
-- Flow 3:
  Average throughput: 281.27 Mbit/s
  95th percentile per-packet one-way delay: 83.652 ms
  Loss rate: 1.47%
Run 4: Report of Copa — Data Link

[Graphs showing network performance metrics such as throughput and packet delay over time.]
Run 5: Statistics of Copa

Start at: 2018-09-08 00:31:27
End at: 2018-09-08 00:31:57
Local clock offset: -0.038 ms
Remote clock offset: -0.241 ms

# Below is generated by plot.py at 2018-09-08 01:29:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 595.50 Mbit/s
95th percentile per-packet one-way delay: 91.109 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 300.15 Mbit/s
95th percentile per-packet one-way delay: 73.795 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 309.56 Mbit/s
95th percentile per-packet one-way delay: 86.512 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 272.18 Mbit/s
95th percentile per-packet one-way delay: 133.184 ms
Loss rate: 1.69%
Run 5: Report of Copa — Data Link

![Graph showing network throughput and packet delay over time for different flows.](image)
Run 1: Statistics of TCP Cubic

Start at: 2018-09-07 22:05:33
End at: 2018-09-07 22:06:03
Local clock offset: -0.043 ms
Remote clock offset: 0.082 ms

# Below is generated by plot.py at 2018-09-08 01:29:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1061.28 Mbit/s
95th percentile per-packet one-way delay: 176.093 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 555.34 Mbit/s
95th percentile per-packet one-way delay: 171.903 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 538.85 Mbit/s
95th percentile per-packet one-way delay: 182.988 ms
Loss rate: 1.10%
-- Flow 3:
Average throughput: 448.94 Mbit/s
95th percentile per-packet one-way delay: 123.611 ms
Loss rate: 2.01%
Run 1: Report of TCP Cubic — Data Link

![Graph showing throughput and packet delay over time for different flows]

Flow 1 ingress (mean 556.64 Mbit/s)
Flow 1 egress (mean 555.34 Mbit/s)
Flow 2 ingress (mean 541.21 Mbit/s)
Flow 2 egress (mean 538.85 Mbit/s)
Flow 3 ingress (mean 492.04 Mbit/s)
Flow 3 egress (mean 448.94 Mbit/s)

![Graph showing packet delay over time for different flows]

Flow 1 (95th percentile 171.90 ms)
Flow 2 (95th percentile 182.99 ms)
Flow 3 (95th percentile 123.61 ms)
Run 2: Statistics of TCP Cubic

Start at: 2018-09-07 22:37:49
End at: 2018-09-07 22:38:19
Local clock offset: -0.027 ms
Remote clock offset: -1.036 ms

# Below is generated by plot.py at 2018-09-08 01:30:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1156.96 Mbit/s
95th percentile per-packet one-way delay: 165.232 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 622.39 Mbit/s
95th percentile per-packet one-way delay: 146.910 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 538.80 Mbit/s
95th percentile per-packet one-way delay: 175.226 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 535.11 Mbit/s
95th percentile per-packet one-way delay: 185.547 ms
Loss rate: 2.71%
Run 2: Report of TCP Cubic — Data Link
Run 3: Statistics of TCP Cubic

Start at: 2018-09-07 23:10:43
End at: 2018-09-07 23:11:13
Local clock offset: -0.027 ms
Remote clock offset: -0.566 ms

# Below is generated by plot.py at 2018-09-08 01:30:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1074.26 Mbit/s
95th percentile per-packet one-way delay: 143.648 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 614.19 Mbit/s
95th percentile per-packet one-way delay: 140.597 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 491.05 Mbit/s
95th percentile per-packet one-way delay: 145.593 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 405.96 Mbit/s
95th percentile per-packet one-way delay: 170.105 ms
Loss rate: 1.87%
Run 3: Report of TCP Cubic — Data Link

![Graph showing throughput and packet delay over time for different flows.]
Run 4: Statistics of TCP Cubic

Start at: 2018-09-07 23:43:32
End at: 2018-09-07 23:44:02
Local clock offset: -0.003 ms
Remote clock offset: -1.076 ms

# Below is generated by plot.py at 2018-09-08 01:30:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1072.29 Mbit/s
95th percentile per-packet one-way delay: 156.291 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 559.55 Mbit/s
95th percentile per-packet one-way delay: 162.619 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 544.42 Mbit/s
95th percentile per-packet one-way delay: 149.081 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 456.91 Mbit/s
95th percentile per-packet one-way delay: 135.636 ms
Loss rate: 2.43%
Run 4: Report of TCP Cubic — Data Link
Run 5: Statistics of TCP Cubic

Start at: 2018-09-08 00:16:13
End at: 2018-09-08 00:16:43
Local clock offset: 0.003 ms
Remote clock offset: -0.519 ms

# Below is generated by plot.py at 2018-09-08 01:30:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1107.64 Mbit/s
95th percentile per-packet one-way delay: 147.682 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 604.95 Mbit/s
95th percentile per-packet one-way delay: 142.826 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 529.72 Mbit/s
95th percentile per-packet one-way delay: 136.119 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 457.12 Mbit/s
95th percentile per-packet one-way delay: 203.415 ms
Loss rate: 2.52%
Run 5: Report of TCP Cubic — Data Link

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**Graph 1:**
- **Y-axis:** Throughput (Mbit/s)
- **X-axis:** Time (s)
- Lines represent:
  - Flow 1 ingress (mean 608.01 Mbit/s)
  - Flow 1 egress (mean 664.95 Mbit/s)
  - Flow 2 ingress (mean 531.46 Mbit/s)
  - Flow 2 egress (mean 529.72 Mbit/s)
  - Flow 3 ingress (mean 462.93 Mbit/s)
  - Flow 3 egress (mean 457.12 Mbit/s)

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**Graph 2:**
- **Y-axis:** Per-packet one-way delay (ms)
- **X-axis:** Time (s)
- Markers represent:
  - Flow 1 (95th percentile 142.93 ms)
  - Flow 2 (95th percentile 136.12 ms)
  - Flow 3 (95th percentile 203.41 ms)
Run 1: Statistics of FillP

Start at: 2018-09-07 22:17:01
End at: 2018-09-07 22:17:31
Local clock offset: -0.023 ms
Remote clock offset: -1.152 ms

# Below is generated by plot.py at 2018-09-08 01:41:54
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1495.94 Mbit/s
  95th percentile per-packet one-way delay: 132.663 ms
  Loss rate: 3.98%
-- Flow 1:
  Average throughput: 765.21 Mbit/s
  95th percentile per-packet one-way delay: 135.014 ms
  Loss rate: 4.94%
-- Flow 2:
  Average throughput: 771.76 Mbit/s
  95th percentile per-packet one-way delay: 127.159 ms
  Loss rate: 2.76%
-- Flow 3:
  Average throughput: 664.14 Mbit/s
  95th percentile per-packet one-way delay: 138.809 ms
  Loss rate: 3.41%
Run 1: Report of FillP — Data Link
Run 2: Statistics of FillP

Start at: 2018-09-07 22:49:44  
End at: 2018-09-07 22:50:14  
Local clock offset: -0.03 ms  
Remote clock offset: 0.223 ms

# Below is generated by plot.py at 2018-09-08 01:59:42  
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1493.19 Mbit/s  
95th percentile per-packet one-way delay: 138.728 ms  
Loss rate: 4.78%
-- Flow 1:
Average throughput: 767.03 Mbit/s  
95th percentile per-packet one-way delay: 145.659 ms  
Loss rate: 5.01%
-- Flow 2:
Average throughput: 757.87 Mbit/s  
95th percentile per-packet one-way delay: 130.271 ms  
Loss rate: 4.47%
-- Flow 3:
Average throughput: 674.91 Mbit/s  
95th percentile per-packet one-way delay: 135.130 ms  
Loss rate: 4.66%
Run 2: Report of FillP — Data Link

![Graph showing throughput and packet delay over time for different flows.]

Legend:
- Flow 1 ingress (mean 803.89 Mb/s)
- Flow 1 egress (mean 767.03 Mb/s)
- Flow 2 ingress (mean 787.94 Mb/s)
- Flow 2 egress (mean 757.87 Mb/s)
- Flow 3 ingress (mean 698.32 Mb/s)
- Flow 3 egress (mean 674.91 Mb/s)

Legend for packet delay:
- Flow 1 (95th percentile 145.66 ms)
- Flow 2 (95th percentile 130.27 ms)
- Flow 3 (95th percentile 135.13 ms)
Run 3: Statistics of FillP

End at: 2018-09-07 23:23:09
Local clock offset: -0.009 ms
Remote clock offset: -0.13 ms

# Below is generated by plot.py at 2018-09-08 02:01:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1579.01 Mbit/s
95th percentile per-packet one-way delay: 139.771 ms
Loss rate: 3.51%
-- Flow 1:
Average throughput: 834.17 Mbit/s
95th percentile per-packet one-way delay: 135.003 ms
Loss rate: 3.53%
-- Flow 2:
Average throughput: 763.41 Mbit/s
95th percentile per-packet one-way delay: 144.839 ms
Loss rate: 3.29%
-- Flow 3:
Average throughput: 723.54 Mbit/s
95th percentile per-packet one-way delay: 136.898 ms
Loss rate: 3.93%
Run 3: Report of FillP — Data Link

![Graph 1: Throughput vs Time](image1.png)

- Blue dashed line: Flow 1 Ingress (mean 861.02 Mbps)
- Blue solid line: Flow 1 Egress (mean 834.17 Mbps)
- Green dashed line: Flow 2 Ingress (mean 784.04 Mbps)
- Green solid line: Flow 2 Egress (mean 763.43 Mbps)
- Red dashed line: Flow 3 Ingress (mean 743.02 Mbps)
- Red solid line: Flow 3 Egress (mean 723.54 Mbps)

![Graph 2: Per-Packet Delay vs Time](image2.png)

- Blue dots: Flow 1 (95th percentile 135.00 ms)
- Green dots: Flow 2 (95th percentile 144.84 ms)
- Red dots: Flow 3 (95th percentile 136.90 ms)
Run 4: Statistics of FillP

Start at: 2018-09-07 23:55:18
End at: 2018-09-07 23:55:48
Local clock offset: -0.015 ms
Remote clock offset: -1.788 ms

# Below is generated by plot.py at 2018-09-08 02:02:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1602.34 Mbit/s
95th percentile per-packet one-way delay: 132.401 ms
Loss rate: 2.89%
-- Flow 1:
Average throughput: 847.74 Mbit/s
95th percentile per-packet one-way delay: 132.977 ms
Loss rate: 2.99%
-- Flow 2:
Average throughput: 807.59 Mbit/s
95th percentile per-packet one-way delay: 125.701 ms
Loss rate: 2.18%
-- Flow 3:
Average throughput: 664.43 Mbit/s
95th percentile per-packet one-way delay: 147.078 ms
Loss rate: 4.22%
Run 4: Report of FillP — Data Link

[Graph 1: Throughput (Mbps) vs. Time (s)]
- Flow 1 Ingress (mean 869.91 Mbps)
- Flow 1 Egress (mean 847.74 Mbps)
- Flow 2 Ingress (mean 820.28 Mbps)
- Flow 2 Egress (mean 807.59 Mbps)
- Flow 3 Ingress (mean 684.45 Mbps)
- Flow 3 Egress (mean 664.43 Mbps)

[Graph 2: Per-packet one-way delay (ms) vs. Time (s)]
- Flow 1 (95th percentile 132.98 ms)
- Flow 2 (95th percentile 125.70 ms)
- Flow 3 (95th percentile 147.08 ms)
Run 5: Statistics of FillP

Start at: 2018-09-08 00:27:55
End at: 2018-09-08 00:28:25
Local clock offset: -0.027 ms
Remote clock offset: 0.696 ms

# Below is generated by plot.py at 2018-09-08 02:02:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1528.72 Mbit/s
95th percentile per-packet one-way delay: 138.399 ms
Loss rate: 5.18%
-- Flow 1:
Average throughput: 794.29 Mbit/s
95th percentile per-packet one-way delay: 139.752 ms
Loss rate: 5.48%
-- Flow 2:
Average throughput: 809.86 Mbit/s
95th percentile per-packet one-way delay: 126.162 ms
Loss rate: 3.63%
-- Flow 3:
Average throughput: 596.38 Mbit/s
95th percentile per-packet one-way delay: 143.493 ms
Loss rate: 8.09%
Run 5: Report of FillP — Data Link

---

**Throughput (Mbit/s)**

- **Flow 1 ingress** (mean 856.73 Mbit/s)
- **Flow 1 egress** (mean 794.29 Mbit/s)
- **Flow 2 ingress** (mean 834.98 Mbit/s)
- **Flow 2 egress** (mean 809.86 Mbit/s)
- **Flow 3 ingress** (mean 640.49 Mbit/s)
- **Flow 3 egress** (mean 596.38 Mbit/s)

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**Per-packet one way delay (ms)**

- **Flow 1** (95th percentile 139.75 ms)
- **Flow 2** (95th percentile 126.16 ms)
- **Flow 3** (95th percentile 143.49 ms)
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-07 22:12:41
Local clock offset: -0.003 ms
Remote clock offset: -0.299 ms

# Below is generated by plot.py at 2018-09-08 02:02:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1389.06 Mbit/s
95th percentile per-packet one-way delay: 120.657 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 771.00 Mbit/s
95th percentile per-packet one-way delay: 114.777 ms
Loss rate: 1.07%
-- Flow 2:
Average throughput: 649.35 Mbit/s
95th percentile per-packet one-way delay: 134.202 ms
Loss rate: 2.14%
-- Flow 3:
Average throughput: 569.49 Mbit/s
95th percentile per-packet one-way delay: 85.644 ms
Loss rate: 1.78%
Run 1: Report of FillP-Sheep — Data Link
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-07 22:45:21
End at: 2018-09-07 22:45:51
Local clock offset: 0.021 ms
Remote clock offset: -0.529 ms

# Below is generated by plot.py at 2018-09-08 02:02:45
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1454.37 Mbit/s
  95th percentile per-packet one-way delay: 147.097 ms
  Loss rate: 3.12%
-- Flow 1:
  Average throughput: 778.00 Mbit/s
  95th percentile per-packet one-way delay: 141.697 ms
  Loss rate: 3.02%
-- Flow 2:
  Average throughput: 733.21 Mbit/s
  95th percentile per-packet one-way delay: 150.686 ms
  Loss rate: 2.73%
-- Flow 3:
  Average throughput: 576.58 Mbit/s
  95th percentile per-packet one-way delay: 159.320 ms
  Loss rate: 4.56%
Run 2: Report of FillP-Sheep — Data Link

![Graph 1: Throughput](image1)

![Graph 2: Round-trip time](image2)

Legend:
- Flow 1 Ingress (mean 798.77 Mb/s)
- Flow 1 Egress (mean 778.00 Mb/s)
- Flow 2 Ingress (mean 748.68 Mb/s)
- Flow 2 Egress (mean 733.23 Mb/s)
- Flow 3 Ingress (mean 596.27 Mb/s)
- Flow 3 Egress (mean 576.58 Mb/s)

Legend:
- Flow 1 (95th percentile 141.70 ms)
- Flow 2 (95th percentile 150.69 ms)
- Flow 3 (95th percentile 159.32 ms)
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-07 23:18:14
End at: 2018-09-07 23:18:44
Local clock offset: -0.012 ms
Remote clock offset: 0.904 ms

# Below is generated by plot.py at 2018-09-08 02:02:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1511.35 Mbit/s
95th percentile per-packet one-way delay: 135.179 ms
Loss rate: 2.30%
-- Flow 1:
Average throughput: 810.34 Mbit/s
95th percentile per-packet one-way delay: 133.235 ms
Loss rate: 2.30%
-- Flow 2:
Average throughput: 791.07 Mbit/s
95th percentile per-packet one-way delay: 114.014 ms
Loss rate: 1.66%
-- Flow 3:
Average throughput: 533.11 Mbit/s
95th percentile per-packet one-way delay: 158.465 ms
Loss rate: 4.22%
Run 3: Report of FillP-Sheep — Data Link

Throughput (Mbps)

Time (s)

Flow 1 Ingress (mean 825.86 Mbps)  Flow 1 Egress (mean 810.34 Mbps)
Flow 2 Ingress (mean 799.46 Mbps)  Flow 2 Egress (mean 793.07 Mbps)
Flow 3 Ingress (mean 549.42 Mbps)  Flow 3 Egress (mean 533.11 Mbps)

Percentage mean delay (ms)

Time (s)

Flow 1 (95th percentile 133.24 ms)  Flow 2 (95th percentile 114.01 ms)  Flow 3 (95th percentile 158.47 ms)
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-07 23:50:56
End at: 2018-09-07 23:51:26
Local clock offset: 0.007 ms
Remote clock offset: -1.57 ms

# Below is generated by plot.py at 2018-09-08 02:15:32
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1398.00 Mbit/s
  95th percentile per-packet one-way delay: 126.330 ms
  Loss rate: 0.96%
-- Flow 1:
  Average throughput: 778.08 Mbit/s
  95th percentile per-packet one-way delay: 121.399 ms
  Loss rate: 0.65%
-- Flow 2:
  Average throughput: 674.57 Mbit/s
  95th percentile per-packet one-way delay: 127.011 ms
  Loss rate: 0.95%
-- Flow 3:
  Average throughput: 523.74 Mbit/s
  95th percentile per-packet one-way delay: 162.857 ms
  Loss rate: 2.35%
Run 4: Report of FillP-Sheep — Data Link

![Diagram showing throughput and packet delay over time for different flows.]

- Flow 1 Ingress (mean 779.79 Mbit/s)
- Flow 1 Egress (mean 778.08 Mbit/s)
- Flow 2 Ingress (mean 676.67 Mbit/s)
- Flow 2 Egress (mean 674.57 Mbit/s)
- Flow 3 Ingress (mean 529.09 Mbit/s)
- Flow 3 Egress (mean 523.74 Mbit/s)

![Diagram showing packet delay over time for different flows.]

- Flow 1 95th percentile 121.40 ms
- Flow 2 95th percentile 127.01 ms
- Flow 3 95th percentile 162.86 ms
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-08 00:23:34
End at: 2018-09-08 00:24:04
Local clock offset: 0.006 ms
Remote clock offset: -1.356 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1392.94 Mbit/s
95th percentile per-packet one-way delay: 144.611 ms
Loss rate: 3.06%
-- Flow 1:
Average throughput: 708.68 Mbit/s
95th percentile per-packet one-way delay: 146.567 ms
Loss rate: 2.57%
-- Flow 2:
Average throughput: 730.03 Mbit/s
95th percentile per-packet one-way delay: 123.924 ms
Loss rate: 2.31%
-- Flow 3:
Average throughput: 606.57 Mbit/s
95th percentile per-packet one-way delay: 169.419 ms
Loss rate: 6.49%
Run 5: Report of FillP-Sheep — Data Link

![Throughput Graph] (Throughput Graph showing data for different flows with mean speeds and 5th percentile delays)

![Delay Graph] (Delay graph showing 5th percentile delays for different flows)
Run 1: Statistics of Indigo

End at: 2018-09-07 21:56:05
Local clock offset: -0.073 ms
Remote clock offset: -0.184 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 438.20 Mbit/s
95th percentile per-packet one-way delay: 66.543 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 221.50 Mbit/s
95th percentile per-packet one-way delay: 61.240 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 221.86 Mbit/s
95th percentile per-packet one-way delay: 62.761 ms
Loss rate: 0.69%
-- Flow 3:
Average throughput: 180.48 Mbit/s
95th percentile per-packet one-way delay: 67.005 ms
Loss rate: 1.73%
Run 1: Report of Indigo — Data Link
Run 2: Statistics of Indigo

Start at: 2018-09-07 22:27:54
End at: 2018-09-07 22:28:24
Local clock offset: -0.033 ms
Remote clock offset: 0.912 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 427.86 Mbit/s
95th percentile per-packet one-way delay: 66.284 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 219.07 Mbit/s
95th percentile per-packet one-way delay: 66.329 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 229.44 Mbit/s
95th percentile per-packet one-way delay: 61.753 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 175.58 Mbit/s
95th percentile per-packet one-way delay: 67.055 ms
Loss rate: 1.75%
Run 2: Report of Indigo — Data Link
Run 3: Statistics of Indigo

Start at: 2018-09-07 23:00:44
End at: 2018-09-07 23:01:14
Local clock offset: -0.064 ms
Remote clock offset: -1.765 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 429.52 Mbit/s
95th percentile per-packet one-way delay: 69.800 ms
Loss rate: 0.72%
-- Flow 1:
  Average throughput: 214.84 Mbit/s
  95th percentile per-packet one-way delay: 69.794 ms
  Loss rate: 0.48%
-- Flow 2:
  Average throughput: 226.81 Mbit/s
  95th percentile per-packet one-way delay: 70.225 ms
  Loss rate: 0.68%
-- Flow 3:
  Average throughput: 198.27 Mbit/s
  95th percentile per-packet one-way delay: 64.674 ms
  Loss rate: 1.60%
Run 3: Report of Indigo — Data Link
Run 4: Statistics of Indigo

Start at: 2018-09-07 23:33:36
End at: 2018-09-07 23:34:06
Local clock offset: -0.015 ms
Remote clock offset: -1.104 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 416.51 Mbit/s
95th percentile per-packet one-way delay: 68.632 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 216.52 Mbit/s
95th percentile per-packet one-way delay: 68.705 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 215.22 Mbit/s
95th percentile per-packet one-way delay: 68.569 ms
Loss rate: 0.69%
-- Flow 3:
Average throughput: 176.35 Mbit/s
95th percentile per-packet one-way delay: 68.603 ms
Loss rate: 1.80%
Run 5: Statistics of Indigo

Start at: 2018-09-08 00:06:22
End at: 2018-09-08 00:06:52
Local clock offset: -0.01 ms
Remote clock offset: -1.333 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 411.68 Mbit/s
95th percentile per-packet one-way delay: 69.374 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 211.12 Mbit/s
95th percentile per-packet one-way delay: 69.995 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 220.95 Mbit/s
95th percentile per-packet one-way delay: 68.988 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 170.20 Mbit/s
95th percentile per-packet one-way delay: 62.882 ms
Loss rate: 1.68%
Run 1: Statistics of LEDBAT

Start at: 2018-09-07 22:19:14
End at: 2018-09-07 22:19:44
Local clock offset: -0.036 ms
Remote clock offset: 0.906 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 34.54 Mbit/s
  95th percentile per-packet one-way delay: 66.104 ms
  Loss rate: 1.11%
-- Flow 1:
  Average throughput: 22.72 Mbit/s
  95th percentile per-packet one-way delay: 61.111 ms
  Loss rate: 0.85%
-- Flow 2:
  Average throughput: 13.80 Mbit/s
  95th percentile per-packet one-way delay: 66.411 ms
  Loss rate: 1.35%
-- Flow 3:
  Average throughput: 8.18 Mbit/s
  95th percentile per-packet one-way delay: 60.537 ms
  Loss rate: 2.47%
Run 1: Report of LEDBAT — Data Link

![Graph showing throughput and round-trip time over time for different flows.]

- **Throughput:**
  - Flow 1 ingress (mean 22.82 Mbit/s)
  - Flow 1 egress (mean 22.72 Mbit/s)
  - Flow 2 ingress (mean 13.90 Mbit/s)
  - Flow 2 egress (mean 13.80 Mbit/s)
  - Flow 3 ingress (mean 8.28 Mbit/s)
  - Flow 3 egress (mean 8.18 Mbit/s)

- **Round-Trip Time:**
  - Flow 1 (95th percentile 61.11 ms)
  - Flow 2 (95th percentile 66.41 ms)
  - Flow 3 (95th percentile 60.54 ms)
Run 2: Statistics of LEDBAT

Start at: 2018-09-07 22:52:01
End at: 2018-09-07 22:52:31
Local clock offset: -0.023 ms
Remote clock offset: -0.533 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 34.36 Mbit/s
  95th percentile per-packet one-way delay: 67.146 ms
  Loss rate: 1.11%
-- Flow 1:
  Average throughput: 22.71 Mbit/s
  95th percentile per-packet one-way delay: 62.424 ms
  Loss rate: 0.85%
-- Flow 2:
  Average throughput: 13.93 Mbit/s
  95th percentile per-packet one-way delay: 67.458 ms
  Loss rate: 1.34%
-- Flow 3:
  Average throughput: 7.40 Mbit/s
  95th percentile per-packet one-way delay: 61.909 ms
  Loss rate: 2.61%
Run 2: Report of LEDBAT — Data Link

![Graph showing throughput and packet delay over time for different flows.]

Throughput (Mbit/s)

- Flow 1 ingress (mean 22.81 Mbit/s)
- Flow 1 egress (mean 22.71 Mbit/s)
- Flow 2 ingress (mean 14.02 Mbit/s)
- Flow 2 egress (mean 13.93 Mbit/s)
- Flow 3 ingress (mean 7.50 Mbit/s)
- Flow 3 egress (mean 7.40 Mbit/s)

Packet delay (ms)

- Flow 1 (95th percentile 62.42 ms)
- Flow 2 (95th percentile 67.46 ms)
- Flow 3 (95th percentile 61.91 ms)
Run 3: Statistics of LEDBAT

Start at: 2018-09-07 23:24:57
End at: 2018-09-07 23:25:27
Local clock offset: -0.018 ms
Remote clock offset: -0.529 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.31 Mbit/s
95th percentile per-packet one-way delay: 66.657 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 24.88 Mbit/s
95th percentile per-packet one-way delay: 62.437 ms
Loss rate: 0.81%
-- Flow 2:
Average throughput: 15.10 Mbit/s
95th percentile per-packet one-way delay: 61.870 ms
Loss rate: 1.29%
-- Flow 3:
Average throughput: 7.41 Mbit/s
95th percentile per-packet one-way delay: 67.077 ms
Loss rate: 2.61%
Run 3: Report of LEDBAT — Data Link
Run 4: Statistics of LEDBAT

Start at: 2018-09-07 23:57:38
End at: 2018-09-07 23:58:08
Local clock offset: -0.012 ms
Remote clock offset: -1.393 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 35.01 Mbit/s
95th percentile per-packet one-way delay: 67.596 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 22.73 Mbit/s
95th percentile per-packet one-way delay: 63.505 ms
Loss rate: 0.85%
-- Flow 2:
Average throughput: 15.14 Mbit/s
95th percentile per-packet one-way delay: 63.119 ms
Loss rate: 1.28%
-- Flow 3:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 68.609 ms
Loss rate: 2.70%
Run 4: Report of LEDBAT — Data Link
Run 5: Statistics of LEDBAT

Start at: 2018-09-08 00:30:11
End at: 2018-09-08 00:30:41
Local clock offset: -0.067 ms
Remote clock offset: 0.177 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 36.07 Mbit/s
  95th percentile per-packet one-way delay: 67.302 ms
  Loss rate: 1.09%
-- Flow 1:
  Average throughput: 22.69 Mbit/s
  95th percentile per-packet one-way delay: 67.480 ms
  Loss rate: 0.85%
-- Flow 2:
  Average throughput: 16.52 Mbit/s
  95th percentile per-packet one-way delay: 61.830 ms
  Loss rate: 1.23%
-- Flow 3:
  Average throughput: 7.41 Mbit/s
  95th percentile per-packet one-way delay: 66.632 ms
  Loss rate: 2.61%
Run 5: Report of LEDBAT — Data Link

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1. **Throughput (Mbps)**
   - **Flow 1 ingress** (mean 22.79 Mbps)
   - **Flow 1 egress** (mean 22.69 Mbps)
   - **Flow 2 ingress** (mean 16.62 Mbps)
   - **Flow 2 egress** (mean 16.52 Mbps)
   - **Flow 3 ingress** (mean 7.51 Mbps)
   - **Flow 3 egress** (mean 7.41 Mbps)

2. **Per-packet round-trip delay (ms)**
   - **Flow 1** (95th percentile 67.48 ms)
   - **Flow 2** (95th percentile 61.83 ms)
   - **Flow 3** (95th percentile 66.63 ms)
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-07 22:10:42
End at: 2018-09-07 22:11:12
Local clock offset: -0.041 ms
Remote clock offset: -1.861 ms

# Below is generated by plot.py at 2018-09-08 02:29:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 957.88 Mbit/s
95th percentile per-packet one-way delay: 75.356 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 552.46 Mbit/s
95th percentile per-packet one-way delay: 73.470 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 437.81 Mbit/s
95th percentile per-packet one-way delay: 80.907 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 348.55 Mbit/s
95th percentile per-packet one-way delay: 74.409 ms
Loss rate: 1.40%
Run 1: Report of Indigo-Muses — Data Link
Run 2: Statistics of Indigo-Muses

End at: 2018-09-07 22:43:50
Local clock offset: -0.025 ms
Remote clock offset: -1.794 ms

# Below is generated by plot.py at 2018-09-08 02:31:01
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 962.80 Mbit/s
  95th percentile per-packet one-way delay: 80.841 ms
  Loss rate: 0.66%
-- Flow 1:
  Average throughput: 544.56 Mbit/s
  95th percentile per-packet one-way delay: 74.344 ms
  Loss rate: 0.48%
-- Flow 2:
  Average throughput: 458.85 Mbit/s
  95th percentile per-packet one-way delay: 88.663 ms
  Loss rate: 0.70%
-- Flow 3:
  Average throughput: 352.47 Mbit/s
  95th percentile per-packet one-way delay: 84.089 ms
  Loss rate: 1.44%
Run 2: Report of Indigo-Muses — Data Link

![Graph showing throughput and packet loss over time for different flows.](image-url)
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-07 23:16:13
End at: 2018-09-07 23:16:43
Local clock offset: 0.008 ms
Remote clock offset: 0.751 ms

# Below is generated by plot.py at 2018-09-08 02:31:51
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 957.05 Mbit/s
  95th percentile per-packet one-way delay: 78.690 ms
  Loss rate: 0.72%
-- Flow 1:
  Average throughput: 517.60 Mbit/s
  95th percentile per-packet one-way delay: 74.337 ms
  Loss rate: 0.43%
-- Flow 2:
  Average throughput: 468.15 Mbit/s
  95th percentile per-packet one-way delay: 82.564 ms
  Loss rate: 0.72%
-- Flow 3:
  Average throughput: 395.42 Mbit/s
  95th percentile per-packet one-way delay: 83.214 ms
  Loss rate: 1.91%
Run 3: Report of Indigo-Muses — Data Link

![Graphs showing data throughput and packet delay over time for different flows.]

- Flow 1 ingress (mean 517.69 Mbit/s)
- Flow 1 egress (mean 517.60 Mbit/s)
- Flow 2 ingress (mean 468.30 Mbit/s)
- Flow 2 egress (mean 468.15 Mbit/s)
- Flow 3 ingress (mean 397.63 Mbit/s)
- Flow 3 egress (mean 395.42 Mbit/s)

Per-packet one-way delay (ms):
- Flow 1 (95th percentile 74.34 ms)
- Flow 2 (95th percentile 82.56 ms)
- Flow 3 (95th percentile 83.21 ms)
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-07 23:48:52
End at: 2018-09-07 23:49:22
Local clock offset: -0.014 ms
Remote clock offset: -0.747 ms

# Below is generated by plot.py at 2018-09-08 02:32:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 984.57 Mbit/s
95th percentile per-packet one-way delay: 75.596 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 544.34 Mbit/s
95th percentile per-packet one-way delay: 77.429 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 490.78 Mbit/s
95th percentile per-packet one-way delay: 73.131 ms
Loss rate: 0.40%
-- Flow 3:
Average throughput: 354.36 Mbit/s
95th percentile per-packet one-way delay: 74.768 ms
Loss rate: 2.17%
Run 4: Report of Indigo-Muses — Data Link

![Graph showing throughput and packet delay over time](image-url)

**Throughput (Mbps)**

- Flow 1 ingress (mean 544.10 Mbps)
- Flow 2 ingress (mean 590.61 Mbps)
- Flow 3 ingress (mean 360.50 Mbps)
- Flow 1 egress (mean 544.34 Mbps)
- Flow 2 egress (mean 590.78 Mbps)
- Flow 3 egress (mean 354.36 Mbps)

**Per-packet one-way delay (ms)**

- Flow 1 (95th percentile 77.43 ms)
- Flow 2 (95th percentile 73.13 ms)
- Flow 3 (95th percentile 74.77 ms)
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-08 00:21:32
End at: 2018-09-08 00:22:02
Local clock offset: -0.017 ms
Remote clock offset: -0.93 ms

# Below is generated by plot.py at 2018-09-08 02:32:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 969.86 Mbit/s
95th percentile per-packet one-way delay: 78.923 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 549.45 Mbit/s
95th percentile per-packet one-way delay: 75.231 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 488.55 Mbit/s
95th percentile per-packet one-way delay: 81.826 ms
Loss rate: 0.69%
-- Flow 3:
Average throughput: 299.92 Mbit/s
95th percentile per-packet one-way delay: 74.801 ms
Loss rate: 2.18%
Run 5: Report of Indigo-Muses — Data Link
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-07 21:50:16
End at: 2018-09-07 21:50:46
Local clock offset: -0.089 ms
Remote clock offset: -0.332 ms

# Below is generated by plot.py at 2018-09-08 02:42:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 805.88 Mbit/s
95th percentile per-packet one-way delay: 184.420 ms
Loss rate: 3.38%
-- Flow 1:
Average throughput: 401.21 Mbit/s
95th percentile per-packet one-way delay: 191.261 ms
Loss rate: 3.31%
-- Flow 2:
Average throughput: 470.42 Mbit/s
95th percentile per-packet one-way delay: 170.705 ms
Loss rate: 3.49%
-- Flow 3:
Average throughput: 284.29 Mbit/s
95th percentile per-packet one-way delay: 145.688 ms
Loss rate: 3.28%
Run 2: Statistics of PCC-Allegro

End at: 2018-09-07 22:23:07
Local clock offset: -0.048 ms
Remote clock offset: 0.748 ms

# Below is generated by plot.py at 2018-09-08 02:42:20
# Datalink statistics
-- Total of 3 flows:
Average throughput: 764.25 Mbit/s
95th percentile per-packet one-way delay: 208.637 ms
Loss rate: 9.05%
-- Flow 1:
Average throughput: 423.36 Mbit/s
95th percentile per-packet one-way delay: 212.583 ms
Loss rate: 8.30%
-- Flow 2:
Average throughput: 342.19 Mbit/s
95th percentile per-packet one-way delay: 197.438 ms
Loss rate: 7.19%
-- Flow 3:
Average throughput: 348.27 Mbit/s
95th percentile per-packet one-way delay: 200.216 ms
Loss rate: 15.02%
Run 2: Report of PCC-Allegro — Data Link

![Graph 1: Throughput (Mbps)](image1)

- Flow 1 ingress (mean 459.61 Mbps)
- Flow 1 egress (mean 423.36 Mbps)
- Flow 2 ingress (mean 366.24 Mbps)
- Flow 2 egress (mean 342.19 Mbps)
- Flow 3 ingress (mean 404.47 Mbps)
- Flow 3 egress (mean 348.27 Mbps)

![Graph 2: Per-packet one-way delay (ms)](image2)

- Flow 1 (95th percentile 212.58 ms)
- Flow 2 (95th percentile 197.44 ms)
- Flow 3 (95th percentile 200.22 ms)
Run 3: Statistics of PCC-Allegro

Local clock offset: -0.069 ms
Remote clock offset: -1.966 ms

# Below is generated by plot.py at 2018-09-08 02:53:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 760.56 Mbit/s
95th percentile per-packet one-way delay: 193.606 ms
Loss rate: 7.25%
-- Flow 1:
Average throughput: 454.51 Mbit/s
95th percentile per-packet one-way delay: 197.325 ms
Loss rate: 10.56%
-- Flow 2:
Average throughput: 329.37 Mbit/s
95th percentile per-packet one-way delay: 71.415 ms
Loss rate: 1.45%
-- Flow 3:
Average throughput: 267.88 Mbit/s
95th percentile per-packet one-way delay: 123.707 ms
Loss rate: 2.85%
Run 3: Report of PCC-Allegro — Data Link

![Throughput Graph]

- Flow 1 ingress (mean 506.02 Mbit/s)
- Flow 1 egress (mean 454.51 Mbit/s)
- Flow 2 ingress (mean 332.09 Mbit/s)
- Flow 2 egress (mean 329.37 Mbit/s)
- Flow 3 ingress (mean 272.22 Mbit/s)
- Flow 3 egress (mean 267.88 Mbit/s)

![Packet Delay Graph]

- Flow 1 (95th percentile 197.32 ms)
- Flow 2 (95th percentile 71.42 ms)
- Flow 3 (95th percentile 123.71 ms)
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-07 23:28:21
End at: 2018-09-07 23:28:51
Local clock offset: -0.007 ms
Remote clock offset: -0.404 ms

# Below is generated by plot.py at 2018-09-08 02:54:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 721.48 Mbit/s
95th percentile per-packet one-way delay: 184.864 ms
Loss rate: 3.48%
-- Flow 1:
Average throughput: 387.31 Mbit/s
95th percentile per-packet one-way delay: 177.419 ms
Loss rate: 4.35%
-- Flow 2:
Average throughput: 371.30 Mbit/s
95th percentile per-packet one-way delay: 191.943 ms
Loss rate: 2.62%
-- Flow 3:
Average throughput: 269.49 Mbit/s
95th percentile per-packet one-way delay: 110.001 ms
Loss rate: 1.92%
Run 4: Report of PCC-Allegro — Data Link

![Graph of Throughput vs Time for different flows]

- Flow 1 ingress (mean 403.10 Mbit/s)
- Flow 1 egress (mean 387.31 Mbit/s)
- Flow 2 ingress (mean 378.70 Mbit/s)
- Flow 2 egress (mean 371.59 Mbit/s)
- Flow 3 ingress (mean 270.99 Mbit/s)
- Flow 3 egress (mean 269.49 Mbit/s)

![Graph of Per-packet one-way delay vs Time for different flows]

- Flow 1 (95th percentile 177.42 ms)
- Flow 2 (95th percentile 191.94 ms)
- Flow 3 (95th percentile 110.00 ms)
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-08 00:01:03
End at: 2018-09-08 00:01:33
Local clock offset: -0.017 ms
Remote clock offset: -0.142 ms

# Below is generated by plot.py at 2018-09-08 02:58:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 785.73 Mbit/s
95th percentile per-packet one-way delay: 188.243 ms
Loss rate: 3.74%
-- Flow 1:
Average throughput: 459.34 Mbit/s
95th percentile per-packet one-way delay: 190.833 ms
Loss rate: 5.06%
-- Flow 2:
Average throughput: 365.71 Mbit/s
95th percentile per-packet one-way delay: 174.738 ms
Loss rate: 1.77%
-- Flow 3:
Average throughput: 256.70 Mbit/s
95th percentile per-packet one-way delay: 133.927 ms
Loss rate: 1.94%
Run 5: Report of PCC-Allegro — Data Link

![Graph showing data link network performance metrics over time, with various lines indicating different flows and their throughput and delay statistics.]

Flow 1 ingress (mean 481.63 Mbit/s) - Flow 1 egress (mean 459.34 Mbit/s)
Flow 2 ingress (mean 369.87 Mbit/s) - Flow 2 egress (mean 365.71 Mbit/s)
Flow 3 ingress (mean 258.30 Mbit/s) - Flow 3 egress (mean 256.70 Mbit/s)

Flow 1 (95th percentile 190.83 ms) - Flow 2 (95th percentile 174.74 ms) - Flow 3 (95th percentile 132.93 ms)
Run 1: Statistics of PCC-Expr

Start at: 2018-09-07 22:01:30
End at: 2018-09-07 22:02:00
Local clock offset: -0.051 ms
Remote clock offset: 0.28 ms

# Below is generated by plot.py at 2018-09-08 02:58:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 588.15 Mbit/s
95th percentile per-packet one-way delay: 172.142 ms
Loss rate: 2.26%
-- Flow 1:
Average throughput: 322.12 Mbit/s
95th percentile per-packet one-way delay: 174.884 ms
Loss rate: 2.41%
-- Flow 2:
Average throughput: 257.54 Mbit/s
95th percentile per-packet one-way delay: 167.859 ms
Loss rate: 1.92%
-- Flow 3:
Average throughput: 290.47 Mbit/s
95th percentile per-packet one-way delay: 140.997 ms
Loss rate: 2.38%
Run 1: Report of PCC-Expr — Data Link

Throughput (Mb/s)

Time (s)

Flow 1 ingress (mean 328.65 Mb/s)
Flow 2 ingress (mean 260.88 Mb/s)
Flow 3 ingress (mean 293.66 Mb/s)
Flow 1 egress (mean 322.12 Mb/s)
Flow 2 egress (mean 257.54 Mb/s)
Flow 3 egress (mean 290.47 Mb/s)

Per packet one way delay (ms)

Time (s)

Flow 1 (95th percentile 174.88 ms)
Flow 2 (95th percentile 167.86 ms)
Flow 3 (95th percentile 141.00 ms)
Run 2: Statistics of PCC-Expr

Start at: 2018-09-07 22:33:46
End at: 2018-09-07 22:34:16
Local clock offset: -0.036 ms
Remote clock offset: -0.509 ms

# Below is generated by plot.py at 2018-09-08 02:58:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 607.30 Mbit/s
95th percentile per-packet one-way delay: 176.188 ms
Loss rate: 3.08%
-- Flow 1:
Average throughput: 310.13 Mbit/s
95th percentile per-packet one-way delay: 166.189 ms
Loss rate: 1.85%
-- Flow 2:
Average throughput: 307.65 Mbit/s
95th percentile per-packet one-way delay: 141.038 ms
Loss rate: 2.13%
-- Flow 3:
Average throughput: 284.01 Mbit/s
95th percentile per-packet one-way delay: 201.523 ms
Loss rate: 8.85%
Run 2: Report of PCC-Expr — Data Link
Run 3: Statistics of PCC-Expr

Start at: 2018-09-07 23:06:45
End at: 2018-09-07 23:07:15
Local clock offset: -0.027 ms
Remote clock offset: 0.902 ms

# Below is generated by plot.py at 2018-09-08 02:58:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 566.19 Mbit/s
95th percentile per-packet one-way delay: 183.147 ms
Loss rate: 3.05%
-- Flow 1:
Average throughput: 333.13 Mbit/s
95th percentile per-packet one-way delay: 179.631 ms
Loss rate: 3.77%
-- Flow 2:
Average throughput: 266.38 Mbit/s
95th percentile per-packet one-way delay: 187.852 ms
Loss rate: 2.11%
-- Flow 3:
Average throughput: 172.12 Mbit/s
95th percentile per-packet one-way delay: 63.271 ms
Loss rate: 1.62%
Run 3: Report of PCC-Expr — Data Link

![Graph showing throughput and per-packet one-way delay over time for different flows.]

- Flow 1 ingress (mean 344.69 Mbps)
- Flow 1 egress (mean 333.13 Mbps)
- Flow 2 ingress (mean 270.28 Mbps)
- Flow 2 egress (mean 266.38 Mbps)
- Flow 3 ingress (mean 172.68 Mbps)
- Flow 3 egress (mean 172.12 Mbps)

- Flow 1 (95th percentile 179.63 ms)
- Flow 2 (95th percentile 187.85 ms)
- Flow 3 (95th percentile 63.27 ms)
Run 4: Statistics of PCC-Expr

Start at: 2018-09-07 23:39:34
End at: 2018-09-07 23:40:04
Local clock offset: -0.014 ms
Remote clock offset: 0.069 ms

# Below is generated by plot.py at 2018-09-08 03:02:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 567.32 Mbit/s
95th percentile per-packet one-way delay: 182.409 ms
Loss rate: 3.79%
-- Flow 1:
Average throughput: 303.53 Mbit/s
95th percentile per-packet one-way delay: 184.338 ms
Loss rate: 5.59%
-- Flow 2:
Average throughput: 302.73 Mbit/s
95th percentile per-packet one-way delay: 162.789 ms
Loss rate: 1.55%
-- Flow 3:
Average throughput: 192.37 Mbit/s
95th percentile per-packet one-way delay: 97.026 ms
Loss rate: 1.88%
Run 4: Report of PCC-Expr — Data Link
Run 5: Statistics of PCC-Expr

Start at: 2018-09-08 00:12:15
End at: 2018-09-08 00:12:45
Local clock offset: 0.005 ms
Remote clock offset: -0.622 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 599.85 Mbit/s
95th percentile per-packet one-way delay: 161.425 ms
Loss rate: 3.24%
-- Flow 1:
Average throughput: 348.13 Mbit/s
95th percentile per-packet one-way delay: 161.683 ms
Loss rate: 3.78%
-- Flow 2:
Average throughput: 278.69 Mbit/s
95th percentile per-packet one-way delay: 162.850 ms
Loss rate: 2.61%
-- Flow 3:
Average throughput: 204.22 Mbit/s
95th percentile per-packet one-way delay: 74.698 ms
Loss rate: 2.09%
Run 5: Report of PCC-Expr — Data Link
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-07 21:54:18
End at: 2018-09-07 21:54:48
Local clock offset: -0.047 ms
Remote clock offset: -1.089 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.78 Mbit/s
95th percentile per-packet one-way delay: 67.502 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 49.27 Mbit/s
95th percentile per-packet one-way delay: 67.520 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 46.20 Mbit/s
95th percentile per-packet one-way delay: 67.352 ms
Loss rate: 1.53%
-- Flow 3:
Average throughput: 29.49 Mbit/s
95th percentile per-packet one-way delay: 62.314 ms
Loss rate: 0.56%
Run 1: Report of QUIC Cubic — Data Link

![Graph showing throughput and per-packet one-way delay over time for different flows.]

- Flow 1 ingress (mean 49.32 Mbit/s)
- Flow 1 egress (mean 49.27 Mbit/s)
- Flow 2 ingress (mean 46.60 Mbit/s)
- Flow 2 egress (mean 46.50 Mbit/s)
- Flow 3 ingress (mean 29.27 Mbit/s)
- Flow 3 egress (mean 29.49 Mbit/s)
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-07 22:26:37
End at: 2018-09-07 22:27:07
Local clock offset: -0.032 ms
Remote clock offset: -0.393 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 97.26 Mbit/s
  95th percentile per-packet one-way delay: 66.863 ms
  Loss rate: 0.84%
-- Flow 1:
  Average throughput: 57.45 Mbit/s
  95th percentile per-packet one-way delay: 66.902 ms
  Loss rate: 0.77%
-- Flow 2:
  Average throughput: 46.46 Mbit/s
  95th percentile per-packet one-way delay: 66.862 ms
  Loss rate: 1.10%
-- Flow 3:
  Average throughput: 27.36 Mbit/s
  95th percentile per-packet one-way delay: 61.115 ms
  Loss rate: 0.43%
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-07 22:59:26
End at: 2018-09-07 22:59:56
Local clock offset: -0.001 ms
Remote clock offset: -0.615 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.95 Mbit/s
95th percentile per-packet one-way delay: 66.991 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 61.95 Mbit/s
95th percentile per-packet one-way delay: 60.956 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 41.29 Mbit/s
95th percentile per-packet one-way delay: 67.027 ms
Loss rate: 1.21%
-- Flow 3:
Average throughput: 20.11 Mbit/s
95th percentile per-packet one-way delay: 61.004 ms
Loss rate: 4.24%
Run 3: Report of QUIC Cubic — Data Link
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-07 23:32:18
End at: 2018-09-07 23:32:48
Local clock offset: -0.034 ms
Remote clock offset: 0.666 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 105.71 Mbit/s
  95th percentile per-packet one-way delay: 65.574 ms
  Loss rate: 0.81%
-- Flow 1:
  Average throughput: 63.16 Mbit/s
  95th percentile per-packet one-way delay: 65.591 ms
  Loss rate: 0.61%
-- Flow 2:
  Average throughput: 52.41 Mbit/s
  95th percentile per-packet one-way delay: 59.906 ms
  Loss rate: 1.23%
-- Flow 3:
  Average throughput: 21.53 Mbit/s
  95th percentile per-packet one-way delay: 65.506 ms
  Loss rate: 0.45%
Run 4: Report of QUIC Cubic — Data Link

![Graphs showing network performance metrics for different flows.](image-url)
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-08 00:05:04
End at: 2018-09-08 00:05:34
Local clock offset: 0.023 ms
Remote clock offset: -1.764 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 107.97 Mbit/s
95th percentile per-packet one-way delay: 68.272 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 65.48 Mbit/s
95th percentile per-packet one-way delay: 68.332 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 50.97 Mbit/s
95th percentile per-packet one-way delay: 62.240 ms
Loss rate: 1.16%
-- Flow 3:
Average throughput: 26.35 Mbit/s
95th percentile per-packet one-way delay: 62.227 ms
Loss rate: 0.76%
Run 5: Report of QUIC Cubic — Data Link

[Graph showing throughput and packet loss over time for different flows]

Flow 1 ingress (mean 65.53 Mbit/s)  
Flow 1 egress (mean 65.48 Mbit/s)  
Flow 2 ingress (mean 51.26 Mbit/s)  
Flow 2 egress (mean 50.97 Mbit/s)  
Flow 3 ingress (mean 26.21 Mbit/s)  
Flow 3 egress (mean 26.35 Mbit/s)
Run 1: Statistics of SCReAM

Start at: 2018-09-07 21:57:25
End at: 2018-09-07 21:57:55
Local clock offset: -0.048 ms
Remote clock offset: -0.651 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 67.295 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.237 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 61.542 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.435 ms
Loss rate: 1.45%
Run 1: Report of SCReAM — Data Link
Run 2: Statistics of SCReAM

Start at: 2018-09-07 22:29:47  
End at: 2018-09-07 22:30:17  
Local clock offset: -0.017 ms  
Remote clock offset: 0.026 ms  

# Below is generated by plot.py at 2018-09-08 03:03:55  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 0.44 Mbit/s  
95th percentile per-packet one-way delay: 66.599 ms  
Loss rate: 0.58%  
-- Flow 1:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 66.498 ms  
Loss rate: 0.38%  
-- Flow 2:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 66.620 ms  
Loss rate: 0.61%  
-- Flow 3:  
Average throughput: 0.22 Mbit/s  
95th percentile per-packet one-way delay: 60.799 ms  
Loss rate: 1.08%
Run 2: Report of SCReAM — Data Link

[Graph showing network throughput and packet delay over time for different flows]

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Run 3: Statistics of SCReAM

Start at: 2018-09-07 23:02:37
End at: 2018-09-07 23:03:07
Local clock offset: -0.044 ms
Remote clock offset: 0.824 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 65.581 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 65.599 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 59.996 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 65.537 ms
Loss rate: 1.45%
Run 3: Report of SCReAM — Data Link
Run 4: Statistics of SCReAM

Start at: 2018-09-07 23:35:28
End at: 2018-09-07 23:35:58
Local clock offset: -0.006 ms
Remote clock offset: -0.74 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.44 Mbit/s
  95th percentile per-packet one-way delay: 66.832 ms
  Loss rate: 0.58%
-- Flow 1:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 61.431 ms
  Loss rate: 0.38%
-- Flow 2:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 66.896 ms
  Loss rate: 0.61%
-- Flow 3:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 61.077 ms
  Loss rate: 1.08%
Run 4: Report of SCReAM — Data Link

![Throughput Graph]

![Packet Drop Graph]
Run 5: Statistics of SCReAM

Start at: 2018-09-08 00:08:13
End at: 2018-09-08 00:08:43
Local clock offset: -0.031 ms
Remote clock offset: -1.367 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.43 Mbit/s
  95th percentile per-packet one-way delay: 67.670 ms
  Loss rate: 0.71%
-- Flow 1:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 62.095 ms
  Loss rate: 0.38%
-- Flow 2:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 67.708 ms
  Loss rate: 0.82%
-- Flow 3:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 67.629 ms
  Loss rate: 1.45%
Run 5: Report of SCReAM — Data Link

![Graph showing throughput and packet loss over time for different flows.]

- Flow 1 ingress (mean 0.22 Mb/s)
- Flow 1 egress (mean 0.22 Mb/s)
- Flow 2 ingress (mean 0.22 Mb/s)
- Flow 2 egress (mean 0.22 Mb/s)
- Flow 3 ingress (mean 0.22 Mb/s)
- Flow 3 egress (mean 0.22 Mb/s)

- Flow 1 (95th percentile 62.09 ms)
- Flow 2 (95th percentile 67.71 ms)
- Flow 3 (95th percentile 67.63 ms)
Run 1: Statistics of Sprout

Start at: 2018-09-07 22:09:29
End at: 2018-09-07 22:09:59
Local clock offset: -0.021 ms
Remote clock offset: -0.65 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.22 Mbit/s
95th percentile per-packet one-way delay: 67.287 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 6.67 Mbit/s
95th percentile per-packet one-way delay: 67.364 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 6.58 Mbit/s
95th percentile per-packet one-way delay: 62.337 ms
Loss rate: 0.79%
-- Flow 3:
Average throughput: 6.66 Mbit/s
95th percentile per-packet one-way delay: 61.786 ms
Loss rate: 0.21%
Run 1: Report of Sprout — Data Link

---

**Throughput (Mb/s) vs Time (s)**

- **Flow 1 Ingress (mean 6.68 Mb/s)**
- **Flow 1 Egress (mean 6.67 Mb/s)**
- **Flow 2 Ingress (mean 6.60 Mb/s)**
- **Flow 2 Egress (mean 6.58 Mb/s)**
- **Flow 3 Ingress (mean 6.61 Mb/s)**
- **Flow 3 Egress (mean 6.66 Mb/s)**

---

**Per packet one way delay (ms) vs Time (s)**

- **Flow 1 (95th percentile 67.36 ms)**
- **Flow 2 (95th percentile 62.34 ms)**
- **Flow 3 (95th percentile 61.79 ms)**

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Run 2: Statistics of Sprout

Start at: 2018-09-07 22:42:08
End at: 2018-09-07 22:42:38
Local clock offset: -0.034 ms
Remote clock offset: 0.053 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.33 Mbit/s
95th percentile per-packet one-way delay: 67.051 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 6.98 Mbit/s
95th percentile per-packet one-way delay: 61.615 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 6.62 Mbit/s
95th percentile per-packet one-way delay: 67.215 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 5.97 Mbit/s
95th percentile per-packet one-way delay: 66.953 ms
Loss rate: 1.71%
Run 2: Report of Sprout — Data Link

![Graph showing throughput and packet delay over time for different flows.]

- **Flow 1 throughput:** Mean 6.99 Mbps (6.98 Mbps egress)
- **Flow 2 throughput:** Mean 6.63 Mbps (6.62 Mbps egress)
- **Flow 3 throughput:** Mean 6.00 Mbps (5.97 Mbps egress)

![Graph showing packet delay for different flows.]

- **Flow 1 delay:** 61.62 ms (95th percentile)
- **Flow 2 delay:** 67.22 ms (95th percentile)
- **Flow 3 delay:** 66.95 ms (95th percentile)
Run 3: Statistics of Sprout

Start at: 2018-09-07 23:15:00
End at: 2018-09-07 23:15:30
Local clock offset: -0.008 ms
Remote clock offset: -0.58 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.28 Mbit/s
95th percentile per-packet one-way delay: 67.081 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 6.76 Mbit/s
95th percentile per-packet one-way delay: 61.815 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 6.73 Mbit/s
95th percentile per-packet one-way delay: 61.600 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 6.31 Mbit/s
95th percentile per-packet one-way delay: 67.347 ms
Loss rate: 1.41%
Run 3: Report of Sprout — Data Link

---

**Throughput (Mbps):**
- Blue dashed line: Flow 1 ingress (mean 6.76 Mbps)
- Blue solid line: Flow 1 egress (mean 6.76 Mbps)
- Green dashed line: Flow 2 ingress (mean 6.74 Mbps)
- Green solid line: Flow 2 egress (mean 6.73 Mbps)
- Red dashed line: Flow 3 ingress (mean 6.30 Mbps)
- Red solid line: Flow 3 egress (mean 6.31 Mbps)

**Per-packet one-way delay (ms):**
- Blue circles: Flow 1 (95th percentile 61.81 ms)
- Green circles: Flow 2 (95th percentile 61.60 ms)
- Red circles: Flow 3 (95th percentile 67.35 ms)
Run 4: Statistics of Sprout

Start at: 2018-09-07 23:47:39
End at: 2018-09-07 23:48:09
Local clock offset: -0.021 ms
Remote clock offset: -0.567 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.32 Mbit/s
95th percentile per-packet one-way delay: 61.925 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 6.71 Mbit/s
95th percentile per-packet one-way delay: 61.898 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 6.77 Mbit/s
95th percentile per-packet one-way delay: 61.995 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 6.45 Mbit/s
95th percentile per-packet one-way delay: 61.836 ms
Loss rate: 0.36%
Run 4: Report of Sprout — Data Link

Throughput (Mbps)

Time (s)

0 5 10 15 20 25 30

Flow 1 ingress (mean 6.72 Mbit/s) — Flow 1 egress (mean 6.71 Mbit/s)
Flow 2 ingress (mean 6.79 Mbit/s) — Flow 2 egress (mean 6.77 Mbit/s)
Flow 3 ingress (mean 6.42 Mbit/s) — Flow 3 egress (mean 6.45 Mbit/s)

Packet delivery one-way delay (ms)

Time (s)

0 5 10 15 20 25 30

Flow 1 (95th percentile 61.90 ms) — Flow 2 (95th percentile 61.99 ms) — Flow 3 (95th percentile 61.04 ms)
Run 5: Statistics of Sprout

Start at: 2018-09-08 00:20:19
End at: 2018-09-08 00:20:49
Local clock offset: 0.001 ms
Remote clock offset: -0.569 ms

# Below is generated by plot.py at 2018-09-08 03:03:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.25 Mbit/s
95th percentile per-packet one-way delay: 67.228 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 6.69 Mbit/s
95th percentile per-packet one-way delay: 67.334 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 61.834 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 6.23 Mbit/s
95th percentile per-packet one-way delay: 61.660 ms
Loss rate: 1.36%
Run 5: Report of Sprout — Data Link

Throughput (Mbit/s) vs Time (s)

- Flow 1 ingress (mean 6.69 Mbit/s)
- Flow 1 egress (mean 6.69 Mbit/s)
- Flow 2 ingress (mean 6.81 Mbit/s)
- Flow 2 egress (mean 6.81 Mbit/s)
- Flow 3 ingress (mean 6.26 Mbit/s)
- Flow 3 egress (mean 6.23 Mbit/s)

Per packet one way delay (ms)

- Flow 1 (95th percentile 67.33 ms)
- Flow 2 (95th percentile 61.83 ms)
- Flow 3 (95th percentile 61.66 ms)
Run 1: Statistics of TaoVA-100x

Start at: 2018-09-07 21:52:22
End at: 2018-09-07 21:52:52
Local clock offset: -0.033 ms
Remote clock offset: -1.22 ms

# Below is generated by plot.py at 2018-09-08 03:10:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 460.43 Mbit/s
95th percentile per-packet one-way delay: 62.266 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 232.95 Mbit/s
95th percentile per-packet one-way delay: 62.255 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 232.67 Mbit/s
95th percentile per-packet one-way delay: 62.466 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 221.03 Mbit/s
95th percentile per-packet one-way delay: 62.150 ms
Loss rate: 1.54%
Run 1: Report of TaoVA-100x — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 233.01 Mbps)
Flow 1 egress (mean 232.95 Mbps)
Flow 2 ingress (mean 232.83 Mbps)
Flow 2 egress (mean 232.67 Mbps)
Flow 3 ingress (mean 221.59 Mbps)
Flow 3 egress (mean 221.03 Mbps)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 62.26 ms)
Flow 2 (95th percentile 62.47 ms)
Flow 3 (95th percentile 62.15 ms)
Run 2: Statistics of TaoVA-100x

Start at: 2018-09-07 22:24:41
End at: 2018-09-07 22:25:11
Local clock offset: -0.044 ms
Remote clock offset: -0.447 ms

# Below is generated by plot.py at 2018-09-08 03:11:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 466.61 Mbit/s
95th percentile per-packet one-way delay: 66.869 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 237.84 Mbit/s
95th percentile per-packet one-way delay: 66.920 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 238.81 Mbit/s
95th percentile per-packet one-way delay: 66.721 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 212.38 Mbit/s
95th percentile per-packet one-way delay: 61.583 ms
Loss rate: 1.56%
Run 2: Report of TaoVA-100x — Data Link
Run 3: Statistics of TaoVA-100x

Start at: 2018-09-07 22:57:30
End at: 2018-09-07 22:58:01
Local clock offset: -0.043 ms
Remote clock offset: -0.38 ms

# Below is generated by plot.py at 2018-09-08 03:11:11
# Datalink statistics

-- Total of 3 flows:
Average throughput: 453.86 Mbit/s
95th percentile per-packet one-way delay: 62.296 ms
Loss rate: 0.71%

-- Flow 1:
Average throughput: 237.77 Mbit/s
95th percentile per-packet one-way delay: 61.472 ms
Loss rate: 0.45%

-- Flow 2:
Average throughput: 223.85 Mbit/s
95th percentile per-packet one-way delay: 61.703 ms
Loss rate: 0.73%

-- Flow 3:
Average throughput: 204.25 Mbit/s
95th percentile per-packet one-way delay: 74.943 ms
Loss rate: 1.58%
Run 3: Report of TaoVA-100x — Data Link

![Graph showing throughput and packet round-trip delay over time for different flows.]

Legend:
- Flow 1 ingress (mean 237.81 Mbit/s)
- Flow 1 egress (mean 237.77 Mbit/s)
- Flow 2 ingress (mean 224.04 Mbit/s)
- Flow 2 egress (mean 223.85 Mbit/s)
- Flow 3 ingress (mean 204.84 Mbit/s)
- Flow 3 egress (mean 204.25 Mbit/s)
Run 4: Statistics of TaoVA-100x

Start at: 2018-09-07 23:30:22
End at: 2018-09-07 23:30:52
Local clock offset: ~0.033 ms
Remote clock offset: ~1.273 ms

# Below is generated by plot.py at 2018-09-08 03:11:34
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 468.12 Mbit/s
  95th percentile per-packet one-way delay: 67.486 ms
  Loss rate: 0.62%
-- Flow 1:
  Average throughput: 237.11 Mbit/s
  95th percentile per-packet one-way delay: 61.848 ms
  Loss rate: 0.47%
-- Flow 2:
  Average throughput: 239.75 Mbit/s
  95th percentile per-packet one-way delay: 61.623 ms
  Loss rate: 0.65%
-- Flow 3:
  Average throughput: 217.67 Mbit/s
  95th percentile per-packet one-way delay: 67.814 ms
  Loss rate: 1.01%
Run 4: Report of TaoVA-100x — Data Link

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**Graph 1:**
Throughput (Mbps) over time (s) for different flows:
- **Flow 1 ingress (mean 237.21 Mbps):** Blue dashed line
- **Flow 1 egress (mean 237.11 Mbps):** Blue solid line
- **Flow 2 ingress (mean 239.79 Mbps):** Green dashed line
- **Flow 2 egress (mean 239.75 Mbps):** Green solid line
- **Flow 3 ingress (mean 216.93 Mbps):** Red dashed line
- **Flow 3 egress (mean 217.67 Mbps):** Red solid line

**Graph 2:**
Per-packet one-way delay (ms) over time (s) for different flows:
- **Flow 1 (95th percentile 61.85 ms):** Blue dotted line
- **Flow 2 (95th percentile 61.62 ms):** Green dotted line
- **Flow 3 (95th percentile 67.81 ms):** Red dotted line
Run 5: Statistics of TaoVA-100x

Start at: 2018-09-08 00:03:09
End at: 2018-09-08 00:03:39
Local clock offset: -0.001 ms
Remote clock offset: -0.736 ms

# Below is generated by plot.py at 2018-09-08 03:11:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 449.08 Mbit/s
95th percentile per-packet one-way delay: 61.751 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 234.79 Mbit/s
95th percentile per-packet one-way delay: 61.404 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 218.00 Mbit/s
95th percentile per-packet one-way delay: 62.003 ms
Loss rate: 0.70%
-- Flow 3:
Average throughput: 210.95 Mbit/s
95th percentile per-packet one-way delay: 61.340 ms
Loss rate: 1.52%
Run 5: Report of TaoVA-100x — Data Link

Graph 1: Throughput (Mbps)
- Flow 1 ingress (mean 234.79 Mbps)
- Flow 1 egress (mean 234.79 Mbps)
- Flow 2 ingress (mean 218.12 Mbps)
- Flow 2 egress (mean 218.00 Mbps)
- Flow 3 ingress (mean 211.44 Mbps)
- Flow 3 egress (mean 210.95 Mbps)

Graph 2: Per-packet one-way delay (ms)
- Flow 1 (95th percentile 61.40 ms)
- Flow 2 (95th percentile 62.00 ms)
- Flow 3 (95th percentile 61.34 ms)
Run 1: Statistics of TCP Vegas

Start at: 2018-09-07 22:07:38
End at: 2018-09-07 22:08:08
Local clock offset: -0.041 ms
Remote clock offset: -0.556 ms

# Below is generated by plot.py at 2018-09-08 03:12:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 754.18 Mbit/s
95th percentile per-packet one-way delay: 111.510 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 465.41 Mbit/s
95th percentile per-packet one-way delay: 64.598 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 183.96 Mbit/s
95th percentile per-packet one-way delay: 123.950 ms
Loss rate: 0.24%
-- Flow 3:
Average throughput: 505.75 Mbit/s
95th percentile per-packet one-way delay: 121.644 ms
Loss rate: 1.85%
Run 1: Report of TCP Vegas — Data Link
Run 2: Statistics of TCP Vegas

Start at: 2018-09-07 22:40:00
End at: 2018-09-07 22:40:30
Local clock offset: -0.001 ms
Remote clock offset: -0.316 ms

# Below is generated by plot.py at 2018-09-08 03:23:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1091.67 Mbit/s
95th percentile per-packet one-way delay: 134.832 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 632.64 Mbit/s
95th percentile per-packet one-way delay: 139.701 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 463.78 Mbit/s
95th percentile per-packet one-way delay: 91.381 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 457.58 Mbit/s
95th percentile per-packet one-way delay: 75.564 ms
Loss rate: 1.55%
Run 2: Report of TCP Vegas — Data Link

![Graph of Throughput](image1)

![Graph of Per-packet one-way delay](image2)
Run 3: Statistics of TCP Vegas

Start at: 2018-09-07 23:12:50
End at: 2018-09-07 23:13:20
Local clock offset: 0.006 ms
Remote clock offset: 0.533 ms

# Below is generated by plot.py at 2018-09-08 03:25:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1116.94 Mbit/s
95th percentile per-packet one-way delay: 122.357 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 671.58 Mbit/s
95th percentile per-packet one-way delay: 127.615 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 457.06 Mbit/s
95th percentile per-packet one-way delay: 80.529 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 430.04 Mbit/s
95th percentile per-packet one-way delay: 84.250 ms
Loss rate: 1.36%
Run 3: Report of TCP Vegas — Data Link

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**Throughput (Mbps):**

- **Flow 1 ingress (mean 672.70 Mbps)**
- **Flow 1 egress (mean 671.58 Mbps)**
- **Flow 2 ingress (mean 457.60 Mbps)**
- **Flow 2 egress (mean 457.06 Mbps)**
- **Flow 3 ingress (mean 430.37 Mbps)**
- **Flow 3 egress (mean 430.04 Mbps)**

**Per-packet round trip delay (ms):**

- **Flow 1 (95th percentile 127.61 ms)**
- **Flow 2 (95th percentile 80.53 ms)**
- **Flow 3 (95th percentile 84.25 ms)**
Run 4: Statistics of TCP Vegas

Start at: 2018-09-07 23:45:40
End at: 2018-09-07 23:46:10
Local clock offset: -0.02 ms
Remote clock offset: -0.257 ms

# Below is generated by plot.py at 2018-09-08 03:27:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 911.93 Mbit/s
  95th percentile per-packet one-way delay: 140.385 ms
  Loss rate: 0.50%
-- Flow 1:
  Average throughput: 519.03 Mbit/s
  95th percentile per-packet one-way delay: 146.644 ms
  Loss rate: 0.37%
-- Flow 2:
  Average throughput: 415.41 Mbit/s
  95th percentile per-packet one-way delay: 108.809 ms
  Loss rate: 0.39%
-- Flow 3:
  Average throughput: 354.10 Mbit/s
  95th percentile per-packet one-way delay: 100.769 ms
  Loss rate: 1.34%
Run 4: Report of TCP Vegas — Data Link
Run 5: Statistics of TCP Vegas

Start at: 2018-09-08 00:18:22
End at: 2018-09-08 00:18:52
Local clock offset: 0.017 ms
Remote clock offset: -0.316 ms

# Below is generated by plot.py at 2018-09-08 03:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 861.06 Mbit/s
95th percentile per-packet one-way delay: 115.911 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 454.84 Mbit/s
95th percentile per-packet one-way delay: 151.103 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 392.68 Mbit/s
95th percentile per-packet one-way delay: 77.022 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 440.57 Mbit/s
95th percentile per-packet one-way delay: 158.950 ms
Loss rate: 1.29%
Run 5: Report of TCP Vegas — Data Link
Run 1: Statistics of Verus

Start at: 2018-09-07 21:59:48
End at: 2018-09-07 22:00:18
Local clock offset: 0.005 ms
Remote clock offset: -0.603 ms

# Below is generated by plot.py at 2018-09-08 03:27:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 311.36 Mbit/s
  95th percentile per-packet one-way delay: 223.199 ms
  Loss rate: 3.40%
-- Flow 1:
  Average throughput: 195.12 Mbit/s
  95th percentile per-packet one-way delay: 222.439 ms
  Loss rate: 3.96%
-- Flow 2:
  Average throughput: 104.74 Mbit/s
  95th percentile per-packet one-way delay: 148.627 ms
  Loss rate: 0.64%
-- Flow 3:
  Average throughput: 141.74 Mbit/s
  95th percentile per-packet one-way delay: 246.389 ms
  Loss rate: 4.99%
Run 1: Report of Verus — Data Link

![Graph of throughput and per-packet one-way delay over time for different flows.](image-url)
Run 2: Statistics of Verus

Start at: 2018-09-07 22:32:09
End at: 2018-09-07 22:32:39
Local clock offset: -0.063 ms
Remote clock offset: 0.17 ms

# Below is generated by plot.py at 2018-09-08 03:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 261.97 Mbit/s
95th percentile per-packet one-way delay: 112.150 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 130.37 Mbit/s
95th percentile per-packet one-way delay: 90.135 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 129.90 Mbit/s
95th percentile per-packet one-way delay: 85.014 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 138.02 Mbit/s
95th percentile per-packet one-way delay: 155.472 ms
Loss rate: 0.62%
Run 2: Report of Verus — Data Link
Run 3: Statistics of Verus

Start at: 2018-09-07 23:05:01
End at: 2018-09-07 23:05:31
Local clock offset: -0.035 ms
Remote clock offset: -1.873 ms

# Below is generated by plot.py at 2018-09-08 03:27:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 314.16 Mbit/s
95th percentile per-packet one-way delay: 165.479 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 165.30 Mbit/s
95th percentile per-packet one-way delay: 149.108 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 175.17 Mbit/s
95th percentile per-packet one-way delay: 179.892 ms
Loss rate: 0.83%
-- Flow 3:
Average throughput: 101.47 Mbit/s
95th percentile per-packet one-way delay: 110.804 ms
Loss rate: 1.14%
Run 4: Statistics of Verus

Start at: 2018-09-07 23:37:51
End at: 2018-09-07 23:38:21
Local clock offset: -0.02 ms
Remote clock offset: -0.855 ms

# Below is generated by plot.py at 2018-09-08 03:27:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 321.58 Mbit/s
  95th percentile per-packet one-way delay: 218.860 ms
  Loss rate: 4.39%
  -- Flow 1:
  Average throughput: 193.64 Mbit/s
  95th percentile per-packet one-way delay: 218.386 ms
  Loss rate: 4.94%
  -- Flow 2:
  Average throughput: 149.90 Mbit/s
  95th percentile per-packet one-way delay: 235.948 ms
  Loss rate: 4.10%
  -- Flow 3:
  Average throughput: 85.70 Mbit/s
  95th percentile per-packet one-way delay: 102.594 ms
  Loss rate: 1.49%
Run 4: Report of Verus — Data Link

![Graph of Throughput vs Time showing data for different flows with mean and 95th percentile delays](image1)

![Graph of Packet Delay vs Time showing data for different flows with 95th percentile delays](image2)
Run 5: Statistics of Verus

Start at: 2018-09-08 00:10:36
End at: 2018-09-08 00:11:06
Local clock offset: -0.019 ms
Remote clock offset: -0.862 ms

# Below is generated by plot.py at 2018-09-08 03:28:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 276.73 Mbit/s
95th percentile per-packet one-way delay: 133.062 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 155.00 Mbit/s
95th percentile per-packet one-way delay: 118.476 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 155.89 Mbit/s
95th percentile per-packet one-way delay: 156.809 ms
Loss rate: 0.26%
-- Flow 3:
Average throughput: 56.88 Mbit/s
95th percentile per-packet one-way delay: 74.920 ms
Loss rate: 3.47%
Run 5: Report of Verus — Data Link

[Graphs showing network traffic and delay over time]
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-07 22:03:36
End at: 2018-09-07 22:04:06
Local clock offset: 0.428 ms
Remote clock offset: 0.367 ms

# Below is generated by plot.py at 2018-09-08 03:31:55
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 657.49 Mbit/s
  95th percentile per-packet one-way delay: 127.858 ms
  Loss rate: 1.33%
-- Flow 1:
  Average throughput: 343.46 Mbit/s
  95th percentile per-packet one-way delay: 91.835 ms
  Loss rate: 0.45%
-- Flow 2:
  Average throughput: 333.92 Mbit/s
  95th percentile per-packet one-way delay: 183.840 ms
  Loss rate: 2.53%
-- Flow 3:
  Average throughput: 282.74 Mbit/s
  95th percentile per-packet one-way delay: 158.130 ms
  Loss rate: 1.68%
Run 1: Report of PCC-Vivace — Data Link

![Graphs showing throughput and one-way delay for different flows over time.](image-url)

Legend:
- Flow 1 ingress (mean 343.53 Mbit/s)
- Flow 1 egress (mean 343.46 Mbit/s)
- Flow 2 ingress (mean 340.27 Mbit/s)
- Flow 2 egress (mean 333.92 Mbit/s)
- Flow 3 ingress (mean 283.84 Mbit/s)
- Flow 3 egress (mean 282.74 Mbit/s)

![Graphs showing per-packet one-way delay for different flows over time.](image-url)

Legend:
- Flow 1 (95th percentile 91.83 ms)
- Flow 2 (95th percentile 183.84 ms)
- Flow 3 (95th percentile 158.13 ms)
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-07 22:35:55
End at: 2018-09-07 22:36:25
Local clock offset: -0.031 ms
Remote clock offset: 0.729 ms

# Below is generated by plot.py at 2018-09-08 03:31:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 598.46 Mbit/s
95th percentile per-packet one-way delay: 119.227 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 319.93 Mbit/s
95th percentile per-packet one-way delay: 135.294 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 284.22 Mbit/s
95th percentile per-packet one-way delay: 69.165 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 274.82 Mbit/s
95th percentile per-packet one-way delay: 180.249 ms
Loss rate: 2.83%
Run 2: Report of PCC-Vivace — Data Link
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-07 23:08:49
End at: 2018-09-07 23:09:19
Local clock offset: 0.01 ms
Remote clock offset: 0.753 ms

# Below is generated by plot.py at 2018-09-08 03:32:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 598.43 Mbit/s
95th percentile per-packet one-way delay: 72.199 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 357.48 Mbit/s
95th percentile per-packet one-way delay: 74.879 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 290.42 Mbit/s
95th percentile per-packet one-way delay: 72.429 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 147.37 Mbit/s
95th percentile per-packet one-way delay: 67.326 ms
Loss rate: 1.71%
Run 3: Report of PCC-Vivace — Data Link

![Graph of throughput and packet loss over time]

- **Throughput (Mbps)**
  - Flow 1 ingress (mean 357.67 Mbps)
  - Flow 1 egress (mean 357.48 Mbps)
  - Flow 2 ingress (mean 290.42 Mbps)
  - Flow 2 egress (mean 290.42 Mbps)
  - Flow 3 ingress (mean 147.91 Mbps)
  - Flow 3 egress (mean 147.37 Mbps)

- **Per-packet one-way delay (ms)**
  - Flow 1 (95th percentile 74.88 ms)
  - Flow 2 (95th percentile 72.43 ms)
  - Flow 3 (95th percentile 67.33 ms)
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-07 23:41:39
End at: 2018-09-07 23:42:09
Local clock offset: -0.013 ms
Remote clock offset: -0.641 ms

# Below is generated by plot.py at 2018-09-08 03:32:05
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 581.39 Mbit/s
  95th percentile per-packet one-way delay: 68.327 ms
  Loss rate: 0.61%
-- Flow 1:
  Average throughput: 343.21 Mbit/s
  95th percentile per-packet one-way delay: 68.165 ms
  Loss rate: 0.38%
-- Flow 2:
  Average throughput: 328.54 Mbit/s
  95th percentile per-packet one-way delay: 81.438 ms
  Loss rate: 0.72%
-- Flow 3:
  Average throughput: 61.74 Mbit/s
  95th percentile per-packet one-way delay: 61.552 ms
  Loss rate: 3.37%
Run 4: Report of PCC-Vivace — Data Link
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-08 00:14:24
End at: 2018-09-08 00:14:54
Local clock offset: -0.018 ms
Remote clock offset: -0.276 ms

# Below is generated by plot.py at 2018-09-08 03:32:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 540.58 Mbit/s
95th percentile per-packet one-way delay: 67.688 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 348.20 Mbit/s
95th percentile per-packet one-way delay: 66.501 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 266.14 Mbit/s
95th percentile per-packet one-way delay: 104.171 ms
Loss rate: 1.59%
-- Flow 3:
Average throughput: 48.43 Mbit/s
95th percentile per-packet one-way delay: 60.692 ms
Loss rate: 1.83%
Run 5: Report of PCC-Vivace — Data Link

![Graph 1: Throughput](image1)

*Legend for Graph 1:*
- Flow 1 ingress (mean 348.18 Mbit/s)
- Flow 1 egress (mean 348.20 Mbit/s)
- Flow 2 ingress (mean 268.68 Mbit/s)
- Flow 2 egress (mean 266.14 Mbit/s)
- Flow 3 ingress (mean 48.70 Mbit/s)
- Flow 3 egress (mean 48.43 Mbit/s)

![Graph 2: Per-packet one way delay](image2)

*Legend for Graph 2:*
- Flow 1 (95th percentile 66.50 ms)
- Flow 2 (95th percentile 104.17 ms)
- Flow 3 (95th percentile 60.69 ms)
Run 1: Statistics of WebRTC media

Start at: 2018-09-07 21:58:36
End at: 2018-09-07 21:59:07
Local clock offset: -0.03 ms
Remote clock offset: -0.412 ms

# Below is generated by plot.py at 2018-09-08 03:32:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 66.983 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 67.015 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 66.950 ms
Loss rate: 0.84%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 61.338 ms
Loss rate: 2.28%
Run 1: Report of WebRTC media — Data Link

![Graph showing throughput over time for different flows.]

![Graph showing per-packet one-way delay over time for different flows.]

- Flow 1 ingress (mean 1.19 Mbit/s)
- Flow 1 egress (mean 1.18 Mbit/s)
- Flow 2 ingress (mean 1.19 Mbit/s)
- Flow 2 egress (mean 1.18 Mbit/s)
- Flow 3 ingress (mean 0.49 Mbit/s)
- Flow 3 egress (mean 0.48 Mbit/s)
Run 2: Statistics of WebRTC media

Start at: 2018-09-07 22:30:58
End at: 2018-09-07 22:31:28
Local clock offset: -0.023 ms
Remote clock offset: 0.374 ms

# Below is generated by plot.py at 2018-09-08 03:32:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 66.303 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 60.586 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 66.352 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 66.227 ms
Loss rate: 1.63%
Run 2: Report of WebRTC media — Data Link
Run 3: Statistics of WebRTC media

Start at: 2018-09-07 23:03:48
End at: 2018-09-07 23:04:18
Local clock offset: -0.026 ms
Remote clock offset: -0.256 ms

# Below is generated by plot.py at 2018-09-08 03:32:15
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 3.57 Mbit/s
  95th percentile per-packet one-way delay: 66.617 ms
  Loss rate: 0.83%
-- Flow 1:
  Average throughput: 1.91 Mbit/s
  95th percentile per-packet one-way delay: 61.151 ms
  Loss rate: 0.59%
-- Flow 2:
  Average throughput: 1.21 Mbit/s
  95th percentile per-packet one-way delay: 61.546 ms
  Loss rate: 0.82%
-- Flow 3:
  Average throughput: 0.46 Mbit/s
  95th percentile per-packet one-way delay: 66.736 ms
  Loss rate: 1.86%
Run 3: Report of WebRTC media — Data Link

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**Throughput (Mbit/s)**

- **Flow 1 ingress (mean 1.92 Mbit/s)**
- **Flow 1 egress (mean 1.91 Mbit/s)**
- **Flow 2 ingress (mean 1.22 Mbit/s)**
- **Flow 2 egress (mean 1.21 Mbit/s)**
- **Flow 3 ingress (mean 0.47 Mbit/s)**
- **Flow 3 egress (mean 0.46 Mbit/s)**

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**Per-packet one-way delay [ms]**

- **Flow 1 (95th percentile 61.15 ms)**
- **Flow 2 (95th percentile 61.55 ms)**
- **Flow 3 (95th percentile 66.74 ms)**
Run 4: Statistics of WebRTC media

Start at: 2018-09-07 23:36:39
End at: 2018-09-07 23:37:09
Local clock offset: 0.013 ms
Remote clock offset: 0.786 ms

# Below is generated by plot.py at 2018-09-08 03:32:15
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 3.52 Mbit/s
  95th percentile per-packet one-way delay: 65.669 ms
  Loss rate: 0.70%
-- Flow 1:
  Average throughput: 1.83 Mbit/s
  95th percentile per-packet one-way delay: 65.702 ms
  Loss rate: 0.50%
-- Flow 2:
  Average throughput: 1.23 Mbit/s
  95th percentile per-packet one-way delay: 59.789 ms
  Loss rate: 0.80%
-- Flow 3:
  Average throughput: 0.47 Mbit/s
  95th percentile per-packet one-way delay: 65.650 ms
  Loss rate: 1.21%
Run 4: Report of WebRTC media — Data Link

![Graph 1: Throughput vs Time](image)

- Flow 1 ingress (mean 1.83 Mbit/s)
- Flow 1 egress (mean 1.83 Mbit/s)
- Flow 2 ingress (mean 1.24 Mbit/s)
- Flow 2 egress (mean 1.23 Mbit/s)
- Flow 3 ingress (mean 0.48 Mbit/s)
- Flow 3 egress (mean 0.47 Mbit/s)

![Graph 2: Per-packet round-trip delay vs Time](image)

- Flow 1 (95th percentile 65.70 ms)
- Flow 2 (95th percentile 59.79 ms)
- Flow 3 (95th percentile 65.65 ms)
Run 5: Statistics of WebRTC media

Start at: 2018-09-08 00:09:25
End at: 2018-09-08 00:09:55
Local clock offset: -0.007 ms
Remote clock offset: -0.692 ms

# Below is generated by plot.py at 2018-09-08 03:32:15
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 3.57 Mbit/s
  95th percentile per-packet one-way delay: 67.042 ms
  Loss rate: 0.93%
-- Flow 1:
  Average throughput: 1.92 Mbit/s
  95th percentile per-packet one-way delay: 67.058 ms
  Loss rate: 0.83%
-- Flow 2:
  Average throughput: 1.21 Mbit/s
  95th percentile per-packet one-way delay: 61.967 ms
  Loss rate: 1.11%
-- Flow 3:
  Average throughput: 0.46 Mbit/s
  95th percentile per-packet one-way delay: 67.073 ms
  Loss rate: 0.84%
Run 5: Report of WebRTC media — Data Link

The first diagram shows the throughput over time for different flows, with labels indicating the mean throughput for ingress and egress traffic for each flow.

The second diagram illustrates the per-packet one way delay over time, with markers indicating the 95th percentile delay for each flow.

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 1.93 Mbps)  Flow 1 egress (mean 1.92 Mbps)
Flow 2 ingress (mean 1.21 Mbps)  Flow 2 egress (mean 1.21 Mbps)
Flow 3 ingress (mean 0.46 Mbps)  Flow 3 egress (mean 0.46 Mbps)

Per-packet one way delay (ms)

Time (s)

Flow 1 (95th percentile 67.06 ms)  Flow 2 (95th percentile 61.97 ms)  Flow 3 (95th percentile 67.07 ms)