IETF-106 Hackathon

Low Loss
Low Latency
Scalable throughput
L4S

16-17 Nov 2019, Singapore
L4S Background

- Low Loss Low Latency Scalable throughput
- Pre-existing L4S code via: https://riteproject.eu/dctth/#code
  - DualPI2 Linux qdisc
  - BBRv2
  - DCTCP
  - TCP Prague
  - Accurate ECN
- Specs via https://riteproject.eu/dctth/#stds-specs:
  - RFC8257 (DCTCP)
  - RFC8311 (ECN Experimentation)
  - draft-ietf-tsvwg-l4s-arch (architecture)
  - draft-ietf-tsvwg-aqm-dualq-coupled (coupled AQMs)
  - draft-ietf-tsvwg-ecn-l4s-id (L4S-ECN identifier)
  - draft-ietf-tcpm-accurate-ecn (TCP ECN feedback)
## People & Projects

<table>
<thead>
<tr>
<th>Name</th>
<th>Project/Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olivier Tilmans</td>
<td>testbed interop: TCP Prague v BBRv2</td>
</tr>
<tr>
<td>Bob Briscoe</td>
<td>The management</td>
</tr>
<tr>
<td>Richard Scheffenegger</td>
<td>FreeBSD Accurate ECN</td>
</tr>
<tr>
<td>Ilpo Järvinen</td>
<td>Accurate ECN TCP feedback: upstream prep</td>
</tr>
<tr>
<td>Asad Ahmed</td>
<td>TCP Prague Testbed for Classic ECN fallback</td>
</tr>
<tr>
<td>Tom Henderson (remote)</td>
<td>ns3 L4S Coupled DualQ – update to draft-10</td>
</tr>
<tr>
<td>Mohit Tahilini (remote)</td>
<td>ns3 DCTCP maintenance</td>
</tr>
<tr>
<td>Vivek Jain (remote)</td>
<td>ns3 AccECN &amp; ECN++ maintenance</td>
</tr>
<tr>
<td>Viyom Mittal (remote)</td>
<td>ns3 DCTCP maintenance</td>
</tr>
<tr>
<td>Ankit Deepak (remote)</td>
<td>ns3 DualPI2 &amp; PI2 maintenance</td>
</tr>
<tr>
<td>Joakim Misund (remote)</td>
<td>ns3 TCP Prague adding paced chirping</td>
</tr>
</tbody>
</table>
What got achieved

- Newbie build of testbed, to verify README
- TCP Prague v BBRv2: ran through full test regime
- Accurate ECN TCP feedback
  - Linux code review, sequencing patches for upstreaming
  - how to add a new feedback mechanism
- ns-3 L4S implementation
  - Fast-start (paced chirping) added to TCP Prague implementation - running
  - Updated DualQ Coupled AQM implementation to draft-10
  - Cleanup of public DCTCP, AccECN and ECN++ implementations
  - DCTCP & ECN config code
  - see https://www.nsnam.org/wiki/Sprints#Results_of_past_sprints
What we learned

● Missing steps in README for setting up L4S testbed

● AccECN TCP feedback
  – more flexible than it appears

● ns-3
  – hackathon is a useful event to get code done