Congestion Control Testing

IETF 120 Hackathon
July 20-21
Vancouver, Canada
Hackathon Plan

High-level

Congestion control proposals in CCWG, TSVWG, ICCRG

Testing: Simulation, Testbeds, AB testing, …

Hack on tooling or test cases

Hack on the congestion control algorithm implementation itself

At IETF 120

Test draft-ietf-tsvwg-careful-resume
What got done: Setup

Careful Resume Interop

- client
- ns-3 simulator
- quiche server +Careful Resume

600ms delay
10 Mbps
(1 only 5Mbps achieved due to ns-3 limitations)

Previous RTT: 600ms
Jump of 400 packets
## What got done: Results

<table>
<thead>
<tr>
<th></th>
<th>quiche</th>
<th>aioquic</th>
<th>kwic</th>
<th>mvfst</th>
<th>ngtcp</th>
<th>picoquic</th>
<th>quic-go</th>
<th>chrome</th>
<th>lsquic</th>
<th>neqo</th>
<th>msquic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Jump happens?</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Sends Unvalidated Packets</strong></td>
<td>773</td>
<td>191</td>
<td>212</td>
<td>200</td>
<td>191</td>
<td>201</td>
<td>270</td>
<td>95</td>
<td>181</td>
<td>210</td>
<td>138</td>
</tr>
<tr>
<td><strong>Validates CWND</strong></td>
<td>SR</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Final CWND</strong></td>
<td>320,323</td>
<td>310,740</td>
<td>258,213</td>
<td>255,655</td>
<td>438,278</td>
<td>469,988</td>
<td>503,106</td>
<td>154,197</td>
<td>411,908</td>
<td>492,626</td>
<td>225,801</td>
</tr>
</tbody>
</table>
What we learned

Careful Resume

All clients worked and benefited from Careful Resume

Different receiver behavior $\rightarrow$ Different Congestion Windows

Getting more people involved

Clear and concise: What is congestion control and why does it matter

Reach out to potential participants, e.g., academics
Thank You

Team members:

- Gorry Fairhurst
- Ana Custura (remote)
- Mihail Yanev (remote)
- Reese Enghardt

References:

- draft-ietf-tsvwg-careful-resume
- 50333bis: Proposed BCP on Specifying New Congestion Control Algorithms
- Internet Congestion Control Working Group (ICCRG)
- Congestion Control Working Group (CCWG)