TCP Usage Guidance in the Internet of Things

draft-ietf-lwig-tcp-constrained-node-networks-04

Carles Gomez
Universitat Politècnica de Catalunya

Jon Crowcroft
University of Cambridge

Michael Scharf
Hochschule Esslingen

IETF 103 – Bangkok, November 2018
Status

• Since IETF 102
  – draft-ietf-lwig-tcp-constrained-...-04
    • Feedback from IETF 102
    • Addresses the authors’ last remaining TODOs
  – Review of -04 by Yoshifumi Nishida (TCPM co-chair)

• In IETF 103
  – Longer presentation in TCPM
    • WGLC request
    • Comments received by Gorry Fairhurst, David Black
Updates (I/III)

• Section 4.2.3. Delayed ACKs for single-MSS
  – The peer that a constrained device communicates with may be a general purpose system
    • Not specific for talking to constrained devices only
  – Delayed ACKs typically configured through system-wide parameters
  – Such a peer will typically have delayed ACKs enabled
Updates (II/III)

• Section 5
  – Reorganized content

– 5.2. Concurrent connections
  • May help avoid head-of-line blocking problems
  • May be harmful in congested networks
  • Being conservative is recommended
## Updates (III/III)

### 8. Annex

<table>
<thead>
<tr>
<th>Memory</th>
<th>Code size (kB)</th>
<th>&lt;5 (9 to 14)</th>
<th>~40</th>
<th>&lt;7</th>
<th>N/A</th>
<th>&lt;9.2</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a) (T1)</td>
<td>(b) (T2)</td>
<td>(T3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slow start</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Fast rec/retrans</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Keep-alive</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Win. Scale</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>TCP timest.</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>SACK</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Del. ACKs</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Socket</td>
<td>No</td>
<td>No</td>
<td>Optional (I)</td>
<td>Subset</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Concur. Conn.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

(T1) = TCP-only, on x86 and AVR platforms
(T2) = TCP-only, on ARM Cortex-M platform
(T3) = TCP-only, on ARM Cortex-M0+ platform (NOTE: RAM usage for the same platform is ~2.5 kB for one TCP connection plus ~1.2 kB for each additional connection)
(a) = includes IP, ICMP and TCP on x86 and AVR platforms
(b) = the whole protocol stack on mbed
(I) = interface inspired by POSIX
Mult. = Multiple
N/A = Not Available

Removed OpenWSN
Post-cutoff comments (I/II)

• Yoshifumi Nishida (TCPM co-chair, on the ML)
  – “… the draft looks fine and mostly ready… ”
  – Comments:
    • Section 4.2.4. Cite draft-ietf-tcpm-rto-consider
    • Section 4.3.1. Need to clarify need of window size of 5 MSS to get 3 duplicate ACKs
    • Section 5.3. A typo
    • Section 5.3. TFO deviation from TCP semantics
    • Section 5.3. Discuss reducing TCP keep-alive interval
Post-cutoff comments (II/II)

• David Black (in the TCPM session, IETF 103)
  – Mentioning TCP MD5 is not a good idea
    • No longer considered secure

• Gorry Fairhurst (in the TCPM session, IETF 103)
  – Will provide comments
  – In good shape for WGLC

• Yoshifumi Nishida (in the TCPM session, IETF 103)
  – Suggestion to request WGLC after -05
WGLC ?