

# TCP Usage Guidance in the Internet of Things

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

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# 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

4.3.3. Delayed Acknowledgments . . . . .	11	4.3.3. Delayed Acknowledgments . . . . .	11
5. TCP usage recommendations in CNNs . . . . .	11	5. TCP usage recommendations in CNNs . . . . .	11
5.1. TCP connection initiation . . . . .	12	5.1. TCP connection initiation . . . . .	12
5.2. TCP connection lifetime . . . . .	12	5.2. Number of concurrent connections . . . . .	12
5.2.1. Long TCP connection lifetime . . . . .	12	5.3. TCP connection lifetime . . . . .	13
5.2.2. Short TCP connection lifetime . . . . .	12	6. Security Considerations . . . . .	13
5.3. Number of parallel connections . . . . .	13		
6. Security Considerations . . . . .	13		

## – 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

Removed  
OpenWSN

		uIP	lwIP orig	lwIP 2.0	RIOT	TinyOS	FreeRTOS	uC/OS
Memory	Code size (kB)	<5	~9 to ~14 (a)	~40 (b)	<7 (T3)	N/A	<9.2 (T2)	N/A
	Win size (MSS)	1	Mult.	Mult.	1	Mult.	Mult.	Mult.
	Slow start	No	Yes	Yes	No	Yes	No	Yes
T	Fast rec/retx	No	Yes	Yes	No	Yes	No	Yes
C	Keep-alive	No	No	Yes	No	No	Yes	Yes
P	Win. Scale	No	No	Yes	No	No	Yes	No
f	TCP timest.	No	No	Yes	No	No	Yes	No
e	SACK	No	No	Yes	No	No	Yes	No
a	Del. ACKs	No	Yes	Yes	No	No	Yes	Yes
t	Socket	No	No	Optional	(I)	Subset	Yes	Yes
u	Concur. Conn.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
r								
e								
s								

- (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

# 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 TCCPM session, IETF 103)
  - Mentioning TCP MD5 is not a good idea
    - No longer considered secure
- Gorry Fairhurst (in the TCCPM session, IETF 103)
  - Will provide comments
  - In good shape for WGLC
- Yoshifumi Nishida (in the TCCPM session, IETF 103)
  - Suggestion to request WGLC after -05

# WGLC ?