Working Group Draft for TCPCLv4

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Overview

- Background

- Current state of TCPCL

- Late Changes to Draft

- Way Forward for TCPCL

Motivations for Updates to TCPCL

1. During implementation of TCPCLv3, Scott Burleigh found an ambiguity in bundle acknowledgment and refusal.

2. For use in a terrestrial WAN, author has a need for TLS-based authentication and integrity. TCPCLv3 mentions TLS but does not specify its use. IETF strongly in favor of TLS for new general-use protocols.

3. Reduced sequencing variability from TCPCLv3

4. Allow an endpoint to positively reject a message (rather than simply ignoring it).

Goals for TCPCLv4

- Do not change scope or workflow of TCPCL!
  - As much as possible, keep existing requirements and behaviors. The baseline spec was a copy-paste of TCPCLv3.
  - Still using single-phase contact negotiation, re-using existing headers and message type codes.
  - Allow existing implementations to be adapted for TCPCLv4.

- Re-use existing encoding, type and reason codes.
  - New IANA registries are requested but where purpose is identical to TCPCLv3 the registries and codes are re-used.
  - Since workflow is preserved, majority of message types are retained.

Draft Edits for Review Comments

- These were included in draft-ietf-dtn-tcpclv4-06.

- Edits to the draft have been made in response to all review comments received to-date.

- Added an introduction subsection "Convergence Layer Services" to explicitly identify what services the CL provides to the BP agent.

- Many of these edits were to simplify or reconcile requirements inherited from TCPCLv3, making the new draft more easily understandable and hopefully more easily implementable.
  - Moved requirements out of Section 3 to allow that section to be purely descriptive.

Late Draft Edits

- These changes did not come soon enough to make the IETF101 I-D cutoff on March 5; are now in in
draft-ietf-dtn-tcpclv4-07.

- Updated CL services listing to add missing items.

- Added contact header extension item to negotiate use of BP-agent-layer reactive fragmentation.
  - This is using an extension type because TCPCL is used to signal the negotiation of the capability, but not the actual fragmentation behavior.

- Simplified session shutdown behavior.
  - After a SHUTDOWN is sent or received, any in-progress transfer can be completed but no new transfer begun.
  - If a node chooses to simply shutdown the TCP connection (and cause any in-progress transfer to fail) that is always an implementation option.

Way Forward for TCPCLv4

- Current specification draft is complete
  - All comments to-date have been addressed and many have led to draft edits.

- Working implementation exists and is available for interoperability testing
  - Updated to current I-D content
  - Implemented in `scapy/python` for ease of understanding
  - Handles concurrent sessions
  - Does not implement BP agent behavior, only CL behavior