

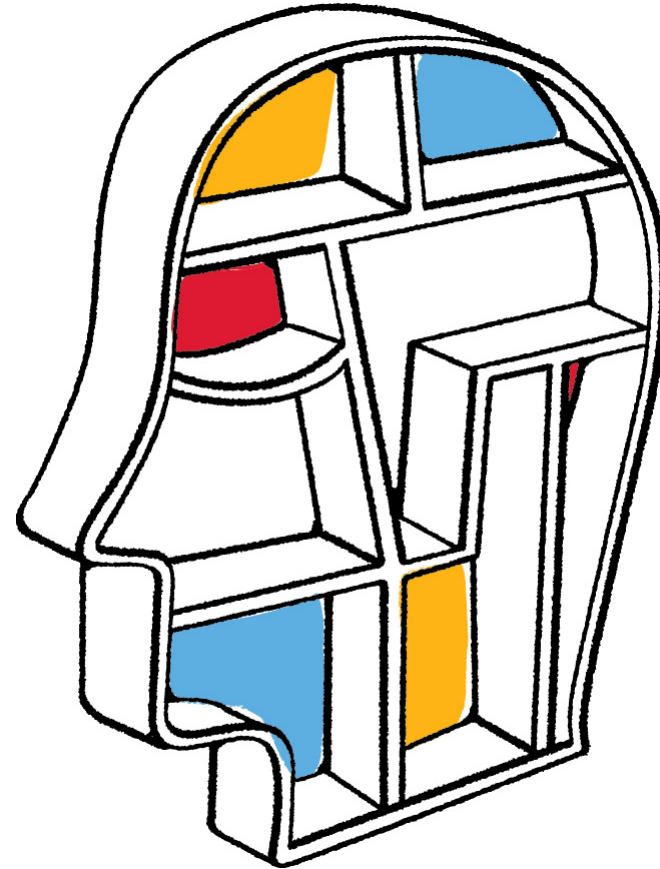


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TCP Roadmap 2.0

Alexander Zimmermann





Document history (1/4)

- **draft-zimmermann-tcpm-tcp-rfc4614bis-00**
 - No content-related updates
 - Only xml code were updated → new boilerplate and new structure of reference section

- **draft-zimmermann-tcpm-tcp-rfc4614bis-01**
 - Includes all “old” RFCs that were apparently forgotten in first roadmap (see appendix)
 - Includes all “new” RFCs up to RFC 6897 (MPTCP API Considerations, March 2013) (see appendix)
 - Update classification of an RFC if the status of the RFC is changed (e.g. Experimental → STD)



Document history (2/4)

- **draft-zimmermann-tcpm-tcp-rfc4614bis-01 (cont.)**
 - Update document structure: new sections introduced
 - Section 3: Recommended Enhancements
 - 3.1. Fundamental Changes
 - 3.4. Detection and Prevention of Spurious Retransmissions
 - 3.5. Router Cooperative Signaling
 - 3.6. Header Compression
 - 3.7. Defending Spoofing and Flooding Attacks (replace old Sec. 3.3)
 - Section 4: Experimental Extensions
 - 4.1. Architectural Guidelines
 - 4.2. Congestion Control and Loss Recovery Extensions
 - 4.3. Detection and Prevention of Spurious Retransmissions
 - 4.4. Router Cooperative Signaling
 - 4.5. Defending Spoofing and Flooding Attacks



Document history (3/4)

- **draft-zimmermann-tcpm-tcp-rfc4614bis-01 (cont.)**
 - Update document structure: new sections introduced
 - Section 6: Support Documents
 - 6.2. Architectural Guidelines
 - 6.4. Guidance for Developing, Analyzing, and Evaluating TCP
 - New structure is aligned with RFC 5783 (Congestion Control in the RFC Series)
 - Update description and RFC number whenever a new successor exists



Document history (4/4)

- **draft-zimmermann-tcpm-tcp-rfc4614bis-02**
 - “Router Cooperative Signaling” section is replaced by “Path MTU Discovery” section (feedback from Wes)
 - Both security sections are combined (feedback from Wes)
 - Added dedicated section about Multipath TCP (feedback from Oliver)
 - Added comments about FACK and High Speed CC (feedback from Richard)
 - Added “Errata” indication per RFC if an Errata exists (feedback from Richard)
 - Update description and RFC number whenever a new successor exists; added missing RFC 6349



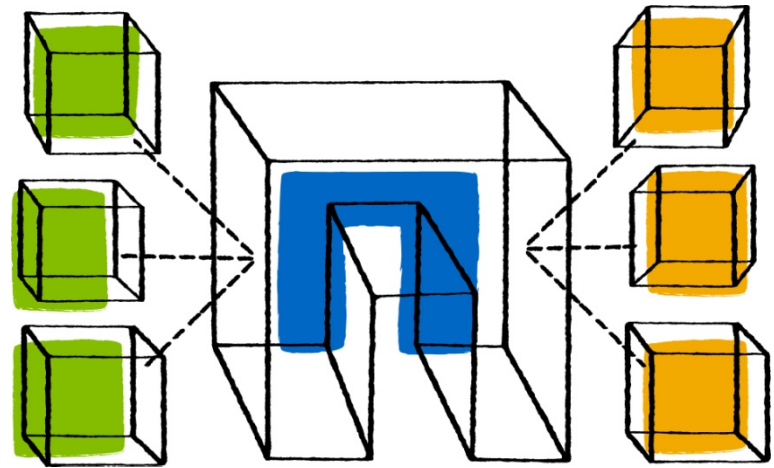
Going forward...

- **Status of the document**
 - Currently no update is planned → no open points

- **Main questions**
 - Who is willing to read the doc?
 - Ready for adaption?



Appendix





RFCs that were forgotten in RFC 4614 (*)

- RFC 675 – Specification of Internet Transmission Control Program
- RFC 700 – A Protocol Experiment
- RFC 721 – Out-of-Band Control Signals in a Host-to-Host Protocol
- RFC 761 – DoD standard Transmission Control Protocol
- RFC 794 – PRE-EMPTION
- RFC 879 – The TCP Maximum Segment Size and Related Topics
- RFC 889 – Internet Delay Experiments
- RFC 1078 – TCP Port Service Multiplexer (TCPMUX)
- RFC 1144 – Compressing TCP/IP Headers for Low-Speed Serial Links
- RFC 1191 – Path MTU Discovery
- RFC 1705 – Six Virtual Inches to the Left: The Problem with IPng
- RFC 1958 – Architectural Principles of the Internet
- RFC 1981 – Path MTU Discovery for IP version 6
- RFC 2582 – The New-Reno Modification to TCP's Fast Recovery Algorithm
- RFC 3439 – Some Internet Architectural Guidelines and Philosophy



New included RFCs (1/3) (*)

- RFC 4614 – A Roadmap for Transmission Control Protocol (TCP) Specification Documents
- RFC 4653 – Improving the Robustness of TCP to Non-Congestion Events
- RFC 4782 – Quick-Start for TCP and IP
- RFC 4774 – Specifying Alternate Semantics for the Explicit Congestion Notification (ECN) Field
- RFC 4821 – Packetization Layer Path MTU Discovery
- RFC 4987 – TCP SYN Flooding Attacks and Common Mitigations
- RFC 5033 – Specifying New Congestion Control Algorithms
- RFC 5166 – Metrics for the Evaluation of Congestion Control Mechanisms
- RFC 5461 – TCP's Reaction to Soft Errors
- RFC 5482 – TCP User Timeout Option
- RFC 5562 – Adding Explicit Congestion Notification (ECN) Capability to TCP's SYN/ACK Packets



New included RFCs (2/3) (*)

- RFC 5690 – Adding Acknowledgement Congestion Control to TCP
- RFC 5783 – Congestion Control in the RFC Series
- RFC 5827 – Early Retransmit for TCP and SCTP
- RFC 5925 – The TCP Authentication Option
- RFC 5926 – Cryptographic Algorithms for the TCP Authentication Option
- RFC 5927 – ICMP attacks against TCP
- RFC 5961 – Improving TCP's Robustness to Blind In-Window Attacks
- RFC 6013 – TCP Cookie Transactions (TCPCT)
- RFC 6181 – Threat Analysis for TCP Extensions for Multipath Operation with Multiple Addresses
- RFC 6056 – Recommendations for Transport-Protocol Port Randomization
- RFC 6069 – Making TCP more Robust to Long Connectivity Disruptions
- RFC 6077 – Open Research Issues in Internet Congestion Control



New included RFCs (3/3) (*)

- RFC 6093 – On the Implementation of the TCP Urgent Mechanism
- RFC 6182 – Architectural Guidelines for Multipath TCP Development
- RFC 6191 – Reducing the TIME-WAIT State Using TCP timestamps
- RFC 6356 – Coupled Congestion Control for Multipath Transport Protocols
- RFC 6429 – TCP Sender Clarification for Persist Condition
- RFC 6528 – Defending Against Sequence Number Attacks
- RFC 6633 – Deprecation of ICMP Source Quench Messages
- RFC 6691 – TCP Options and force you Maximum Segment Size (MSS)
- RFC 6824 – TCP Extensions for Multipath Operation with Multiple Addresses
- RFC 6846 – RObust Header Compression (ROHC): A Profile for TCP/IP
- RFC 6897 – Multipath TCP (MPTCP) Application Interface Considerations



Thank you

