Transport Protocol Trade-offs for Reconfigurable Architectures*

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Abstract

TCP is the dominant transport protocol of the Internet and performs well in many aspects. However, there are applications where a transport protocol with lower code complexity, but still implementing the reliability criteria of TCP, would be advantageous. In sensor networks and distributed measurement systems, for example, the data sender (i.e., sensor or probe) is a device with limited resources. It transmits data towards the collector device (server) having more resources and a complex software environment. In similar infrastructures simplifying the sender side of the transport protocol allows allocating more resources for other tasks in the device's hardware. In our paper, we investigate protocol-related trade-offs between throughput and resource requirement, and the challenges of data transmission in embedded systems.

Keywords: transport protocol, reliable transmission, sensor networks, embedded hardware, distributed systems