

软件、算法与仿真

基于接收方信用量调整的TCP新算法

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摘要:

传输控制协议(transport control protocol, TCP)发送窗口的大小由拥塞窗口和接收方确认窗口中较小的值来确定。在高速网络中, 通过合理地增加拥塞窗口, 可以提高TCP的性能。然而, 一个相对较小的接收方确认窗口将限制发送窗口的增加, 如果根据TCP接收方的数据变化率恰当地增加接收方确认窗口赋予发送方的信用量, 就能减少这种限制。提出一种增强的TCP算法, 命名为接收方信用量调整传输控制协议(receiver credit adjustment transport control protocol, RCA-TCP), 该算法根据TCP接收方缓冲区的动态数据变化率和TCP连接的最小往返时间之间的乘积的估计值来获得信用量增量。在ns-2(network simulator, version 2)下仿真表明, 该算法能获得更好的性能。

关键词: 高速网络 传输控制协议 拥塞控制 接收方信用量调整

New scheme of TCP based on receiver credit adjustment

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Abstract:

The sending window size of transport control protocol (TCP) is decided by the minor value between congestion window and receiver's affirmance window. In a high-speed network, the TCP performance can be improved by increasing the congestion window properly. However, a smaller receiver's affirmance window will limit the increase of the sending window. The limitation can be reduced by increasing, appropriately, the credit admitted by the receiver's affirmance window according to the data variational rate in TCP receiver. An enhanced TCP scheme named RCA-TCP (receiver credit adjustment transport control protocol) is proposed, which obtains credit increments according to the estimated product of the dynamic data variational rate in TCP receiver's buffer and the minimal round trip time of the TCP connection. Simulation on ns-2(network simulator, version 2) shows that the scheme can get better performance.

Keywords: high-speed network transport control protocol congestion control receiver credit adjustment

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2010.08.50

基金项目:

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