
Subject: Renegade @ Port Forward.com
Posted by [mision08](#) on Mon, 22 May 2006 18:39:20 GMT
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I have not read all the information yet. I figured, if it has Renegade on the site it can't be all bad.
http://www.portforward.com/english/applications/port_forwarding/CnCR/CnCRindex.htm

I love to read stuff that is way over my head. As I am sure we all do.

Transmission Control Protocol (TCP) is the reliable, connection-oriented, transport layer service used by numerous applications today. The services it provides range from reliable file transfer to Web-based transaction services to remote backup, and so on. Fundamental to TCP is its ability to provide sequenced and ordered delivery of data in the face of varying path characteristics such as transmission rates, delays and data loss.

The design of TCP was flexible enough to cater to varying transmission rates in the range of 300 bps to 800 Mbps. However, with the arrival of high bandwidth technologies such as fiber optic networks, TCP was pushed to its design limits and needed to be enhanced to optimally utilize the bandwidth available on these networks. This enhancement came in the form of a standard set of TCP extensions, provided by the Internet Engineering Task Force (IETF).

At the outset, you need to understand the nature of these high bandwidth/long delay networks. A "network" here refers to a collection of connected networks, such as the Internet, through which a TCP connection traces a path. It is the path's characteristics as a whole that define the throughput of the TCP connection, rather than the characteristics of each of the networks lying in the path. When the path has high bandwidth and long delay, then effectively the maximum number of bytes that can be sent on this TCP connection at any time is given by the product of the bandwidth and delay. The path is also known as a pipe, and sending (bandwidth * delay) amount of data bytes at any given point of time is referred to as "filling the pipe." Networks with very high (bandwidth * delay) products are also known as LFN networks (long fat networks, pronounced something like "elephant").

The original design of TCP allows a maximum of only 64 KB of data to be sent at any point in time for a given connection. This amount is not sufficient to fill large pipes of size greater than 64 KB. In order to work around this problem and provide greater performance, TCP was extended to support transfer of data sizes greater than 64 KB. This extension is called the Large Window (LW) option, or "window scale" option.

Another issue with the original design of TCP was that the occurrence of multiple (two or more) segment loss caused entire pipes of data to be drained and retransmissions to be resumed at a far lower rate than before loss detection. This grossly underutilized the fat pipes and degraded performance. To work around this problem, TCP was extended to support Selective Acknowledgements (SACK) of transmitted data.

In the TCP protocol, along with the basic control information that is sent in a TCP header of a TCP segment, optional information can be sent as add-ons to the basic header. These add-ons are termed as TCP "options." LW and SACK are provided as TCP options.

