Poor network utilization for large TCP data transfers is often a symptom of an overly small [ConnectionBufferSize](http://blogs.msdn.com/drnick/archive/2006/03/10/547568.aspx). The ConnectionBufferSize is the size of the send and receive buffers used by the connection oriented transports, and in particular the TCP transport where the default size is 8 KB.

If all of the following factors are present, then you might want to investigate whether tuning the connection buffer size will improve the performance of your application:

* Using the TCP transport in a binding
* Bottleneck is in data transfer rather than data computation
* Regularly transferring large messages or experiencing high connection latency
* Network utilization is noticeably lower than file copies or other data transfers between the same two machines

On the other hand, the following factors might discourage you from increasing the connection buffer size:

* Memory pressure
* Interactive applications

I’ve previously [recommended increasing the ConnectionBufferSize](http://blogs.msdn.com/drnick/archive/2008/02/04/tcp-throttling.aspx) up to 64 KB once the network speed exceeds 100 Mbps and keeping the default for slower networks. I’ve found recently though several deployments where performance has benefited from bumping up the connection buffer size more aggressively. The exact optimal values for a deployment depend on many factors besides the bandwidth, such as the frequency of dropped packets, transmission latency, and the presence of routers or bridges.

I’m now considering recommended ranges of 8 KB-32 KB for connection up to 100 Mbps and 32 KB-256 KB for faster connections. If you’ve tried tuning the ConnectionBufferSize of a WCF application and seen optimal values significantly outside these ranges, I’d be interested in hearing from you.