

Abstract

With the ever growing demand for optimal performance of a network, a solution to provide consistent speeds and low latency is through the introduction of new congestion control methods in the transportation of packets across a network. In this work, the second version of Bottleneck Bandwidth and Round Trip Time, a congestion control algorithm developed by Google, is evaluated to see if it stays true to its claims of achieving an optimal use of network resources. This evaluation is performed using the network simulation tool NS-3. This new congestion control algorithm was implemented in NS-3 along with the original version and other variations of the algorithm developed from studies of the original Bottleneck Bandwidth and Round Trip Time algorithm. A network topology was setup in NS-3 and simulations with multiple different network scenarios were tested. The findings from these simulations where that this new version of BBR improved on its predecessor in situations involving networks with multiple flows of the same congestion control algorithm and in contention with a delay-based congestion control algorithm. The new BBR algorithm failed to validate its claims in scenarios with a competing flow consisting of a loss-based algorithm. This evaluation shows that there is a positive progression in the new version of BBR in achieving its goals, however, since it is still in development, there are still some issues that have to be addressed.

Electronic Resources: <https://github.com/lanigan23/BBRv2-Eval-ns-3>