The formulation of mean queuing delay Dqueuing and losses rate Pblock are depicted below:

 

the service rate ρ depends on the parameters λ and μ. λ denotes the number of data flows, arriving every second and μ denotes the number of data flows that are accommodated every second. Load/service rate is equal to λ/μ and during the simulation test load “ρ” was varied from 0.05 to 0.45, towards evaluating the node queue under different loads

Additionally, the evaluation of Dswitching and Dbackoff is crucial in such simulation scenario. Then, cumulative delay at an intermediate node i is based on them and is computed as follows:



Finally, end-to-end delay from the source user up to the destination one is computed as the overall sum of Dqueuing and ND:

