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ECS 152: Computer Networks

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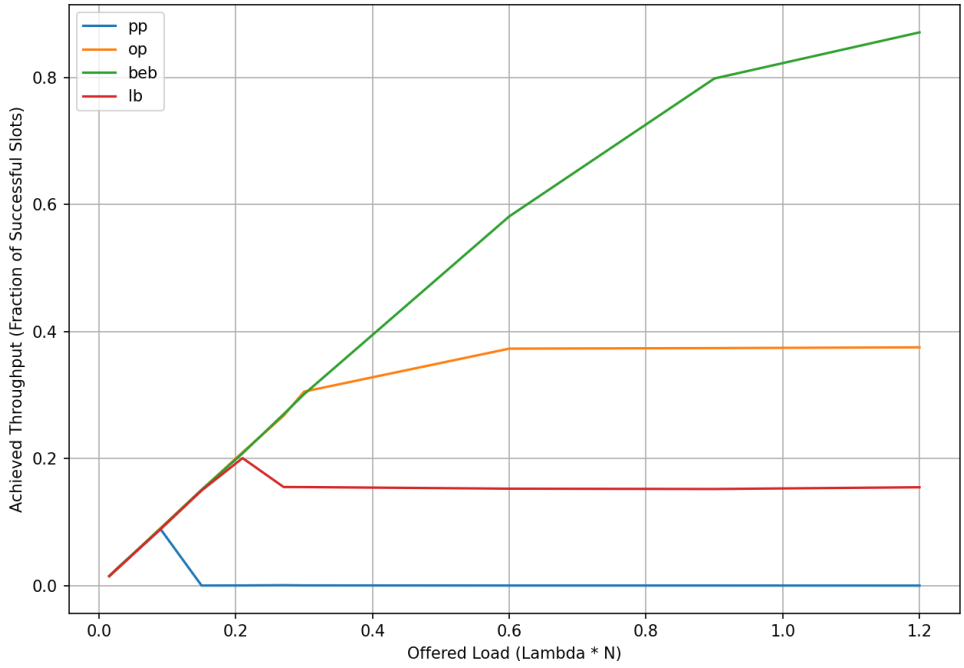
Ethernet Simulation Project Write Up



The graph shows the relationship between the throughput and the load of the network. To understand what is being shown in this graph, one must understand what throughput is. Throughput is the value that denotes how much data is transferred from one source to another such as from a client to a server or vice versa. The load of a network is the amount of traffic that is on the network. One of the most important tasks of any network is to maximize the throughput on a heavy load. From these plots we are able to determine which of retransmission policies will be able to optimize the throughput of the network. We are looking for the policy that has the

maximum throughput on increasing traffic loads. The green curve has the best possible trend because it provides the most throughput at each incrementation of the network load. This tells us that the binary exponential backoff provides the optimal retransmission policy that at the traffic loads that we are simulating. binary exponential backoff is also known as the truncated binary exponential backoff. The way the binary exponential backoff works is when a collision first occurs it will send a signal to stop remaining data from being transmitted. After a random amount of time the system will retransmit the data. This behavior continuously occurs on repeated collisions. The second-best retransmission policy on the simulated network is the persistent aloha with the probability of transmission being one over the number of nodes in the network. The third-best retransmission policy is the linear backoff which is denoted by the red curve on the graph. As you can see from the graph this policy has a constant throughput at around 0.2 units of throughput as the network load increases.