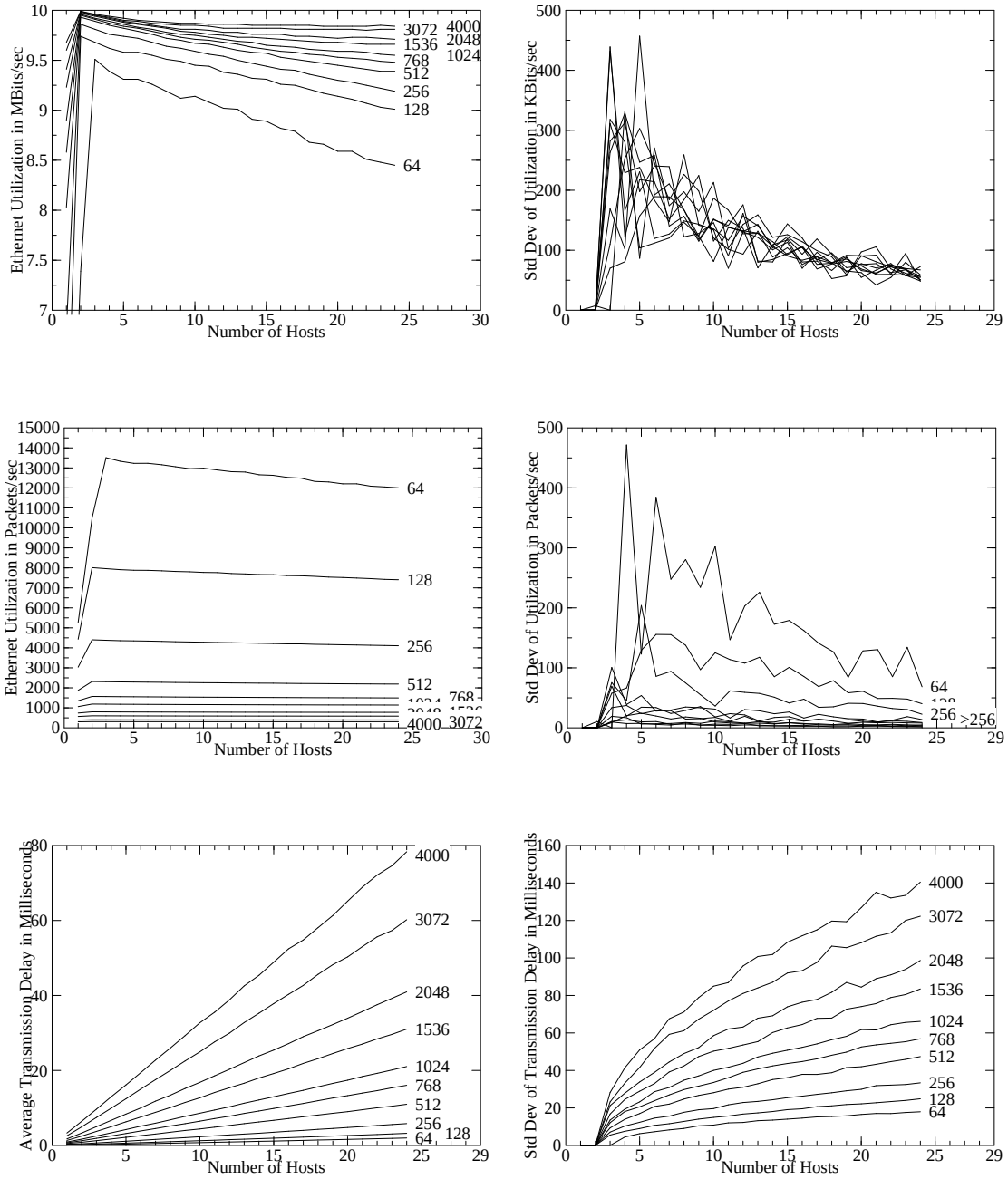

Figure 1: Published measurement data on Ethernet performance under overload conditions. Graphs shown above correspond to Figures 3-3 through 3-8 from [6], in top-to-bottom, left-to-right order, and are copyright 1988 by Digital Equipment Corporation. Used by permission.

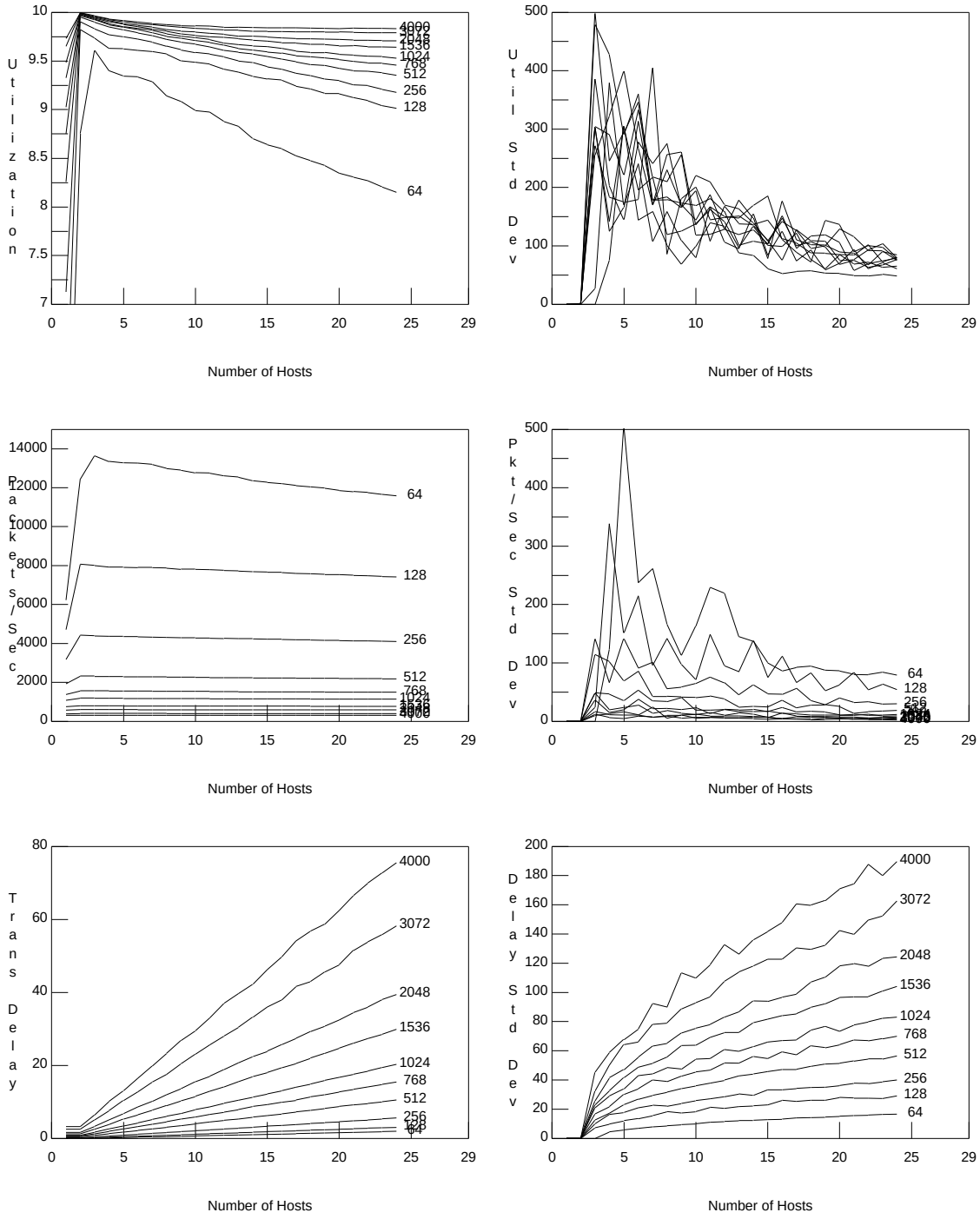

Figure 2: Reproduction of the data from Figure 1 via a detailed simulation model.

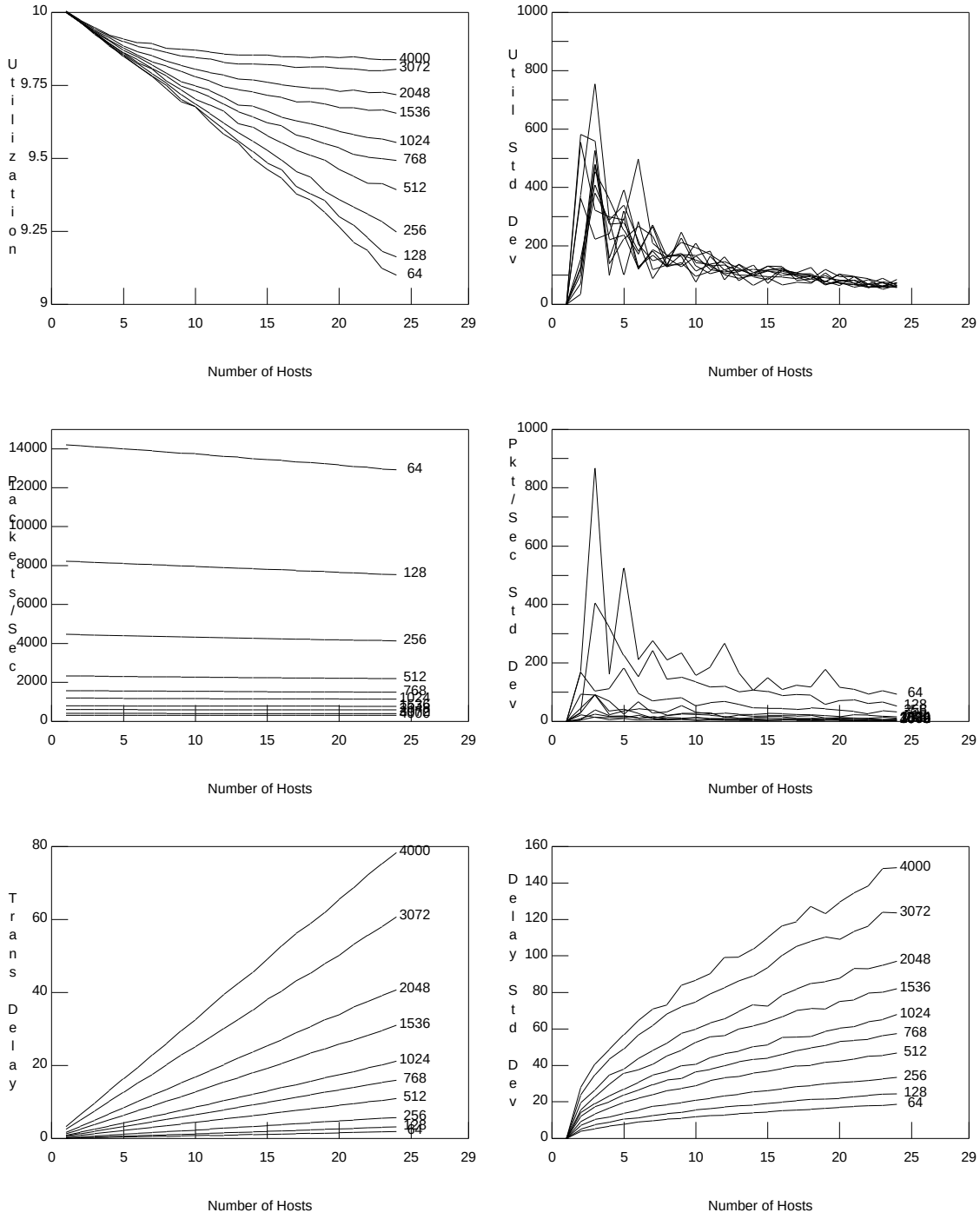

Figure 3: Effect of reducing the time required to reset the transmit process to 0 in the simulation model from Figure 2. (Notice the significant changes of scale in the bitwise utilization and both standard deviation of Utilization graphs.)

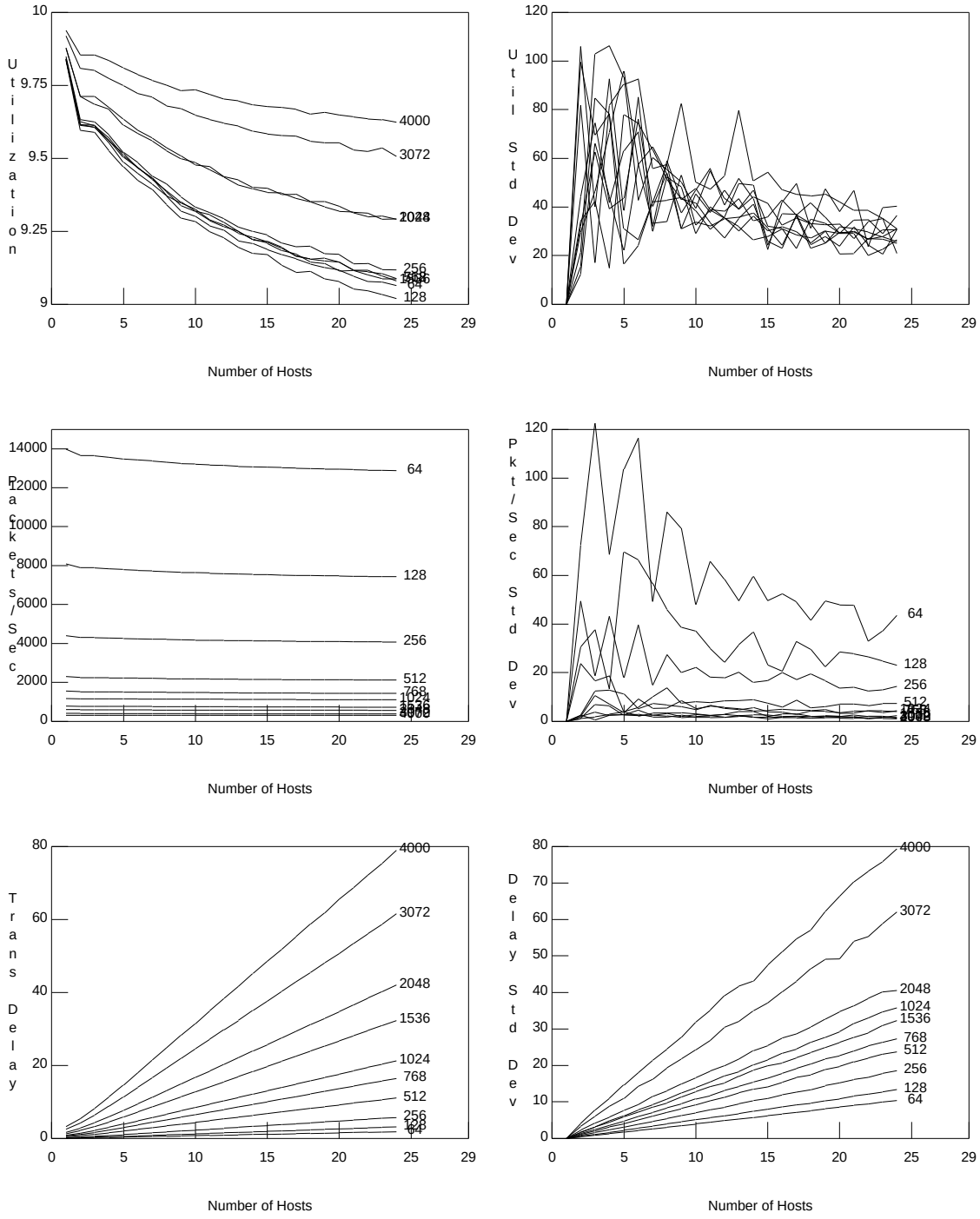

Figure 11: Effect of introducing the new Binary Logarithmic Arbitration Method into the simulation model from Figure 3. (Notice the significant scale changes in the bitwise utilization and standard deviation graphs.)

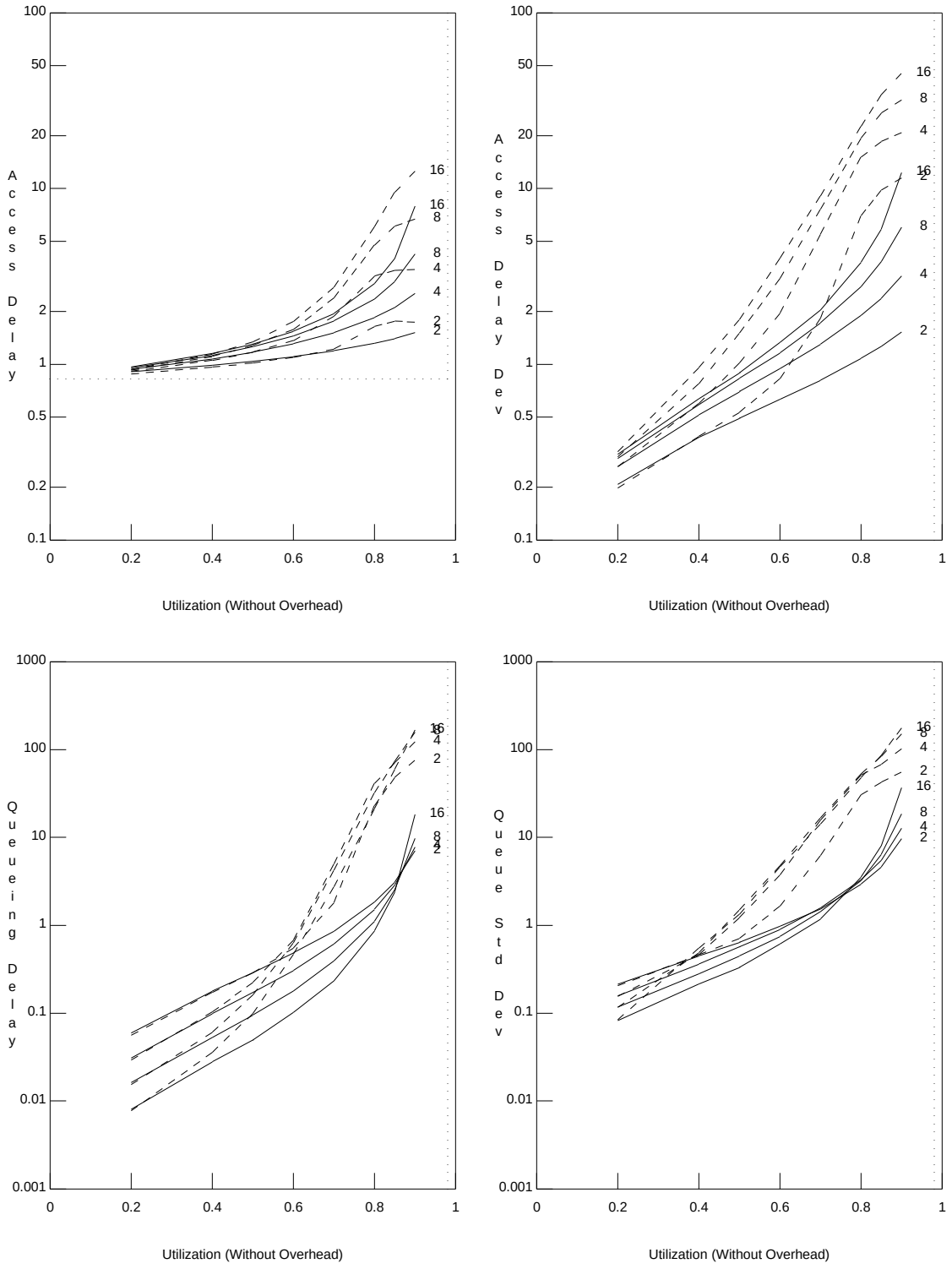

Figure 14: Comparison of the Mean and Standard Deviation of the Access Time and Queueing Delay between the Standard Ethernent and the Binary Logarithmic Arbitration Method, assuming 1024 byte packets, symmetric Poisson arrivals, and various numbers of hosts. Network topology follows the experimental setup in [6]. Dashed lines represent a system with only Standard Ethernet hosts, while solid lines represent the same system using BLAM.

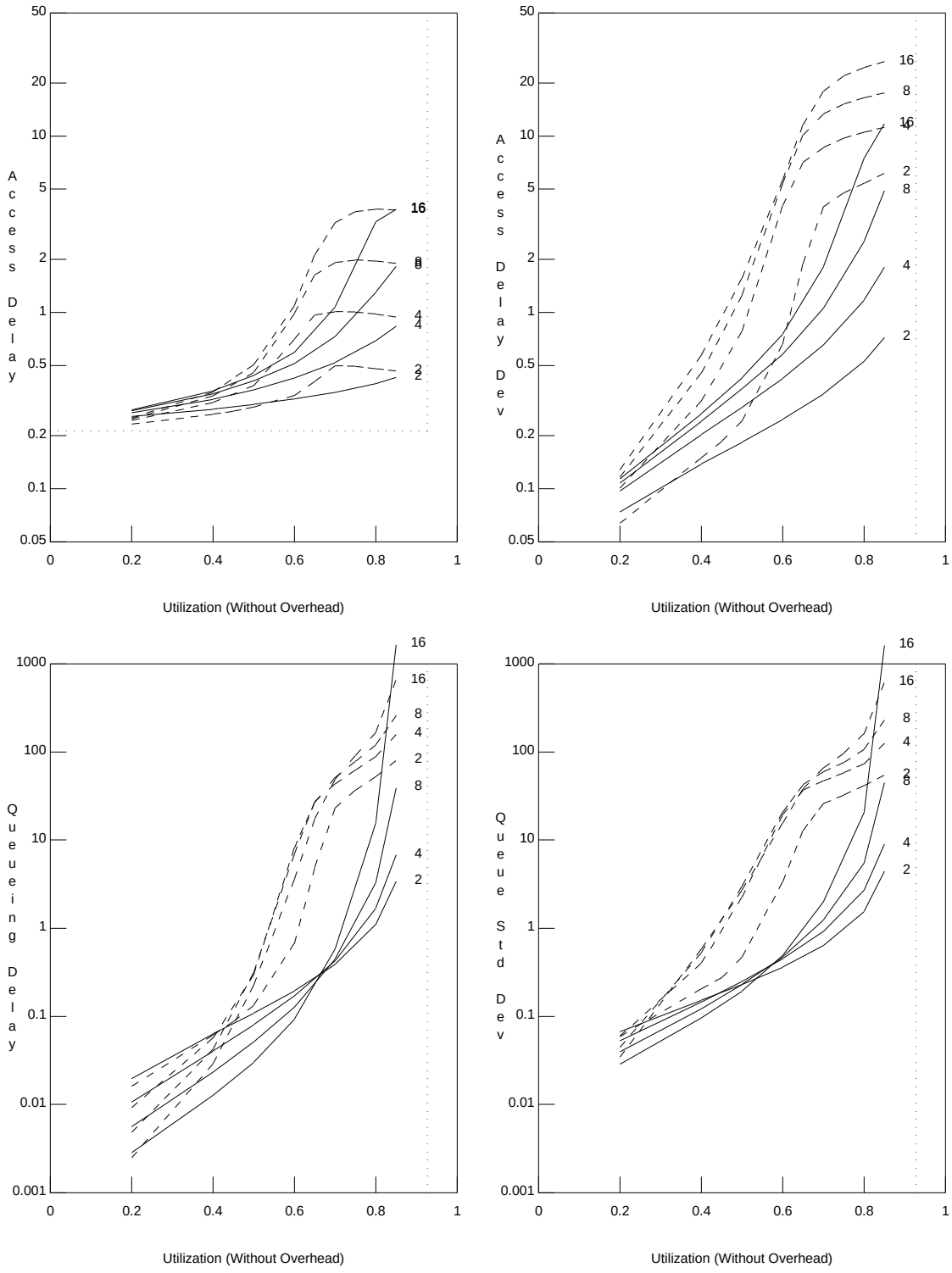

Figure 15: Repeat of Figure 14 using 256 byte packets.

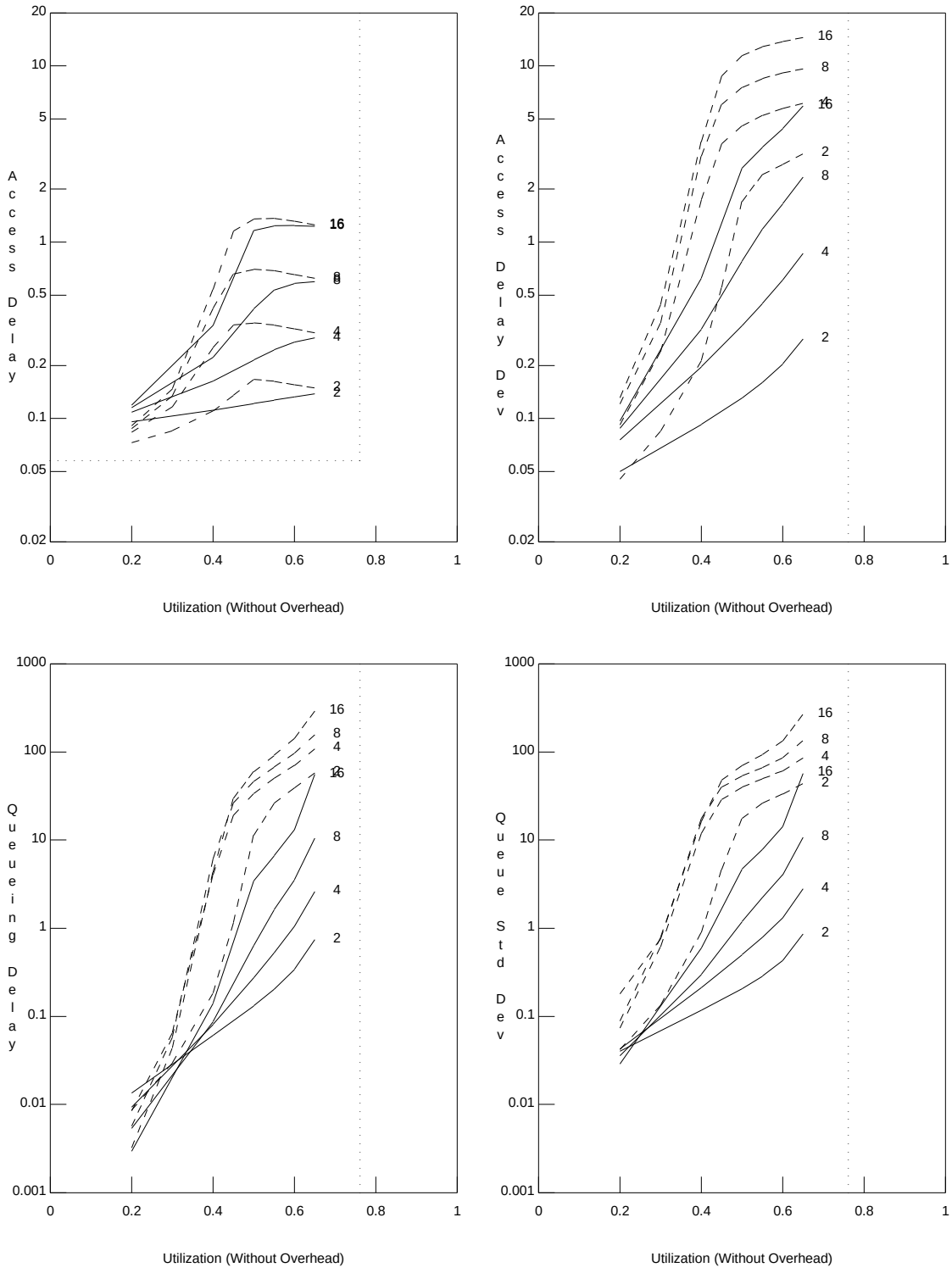

Figure 16: Repeat of Figure 14 using 64 byte packets.

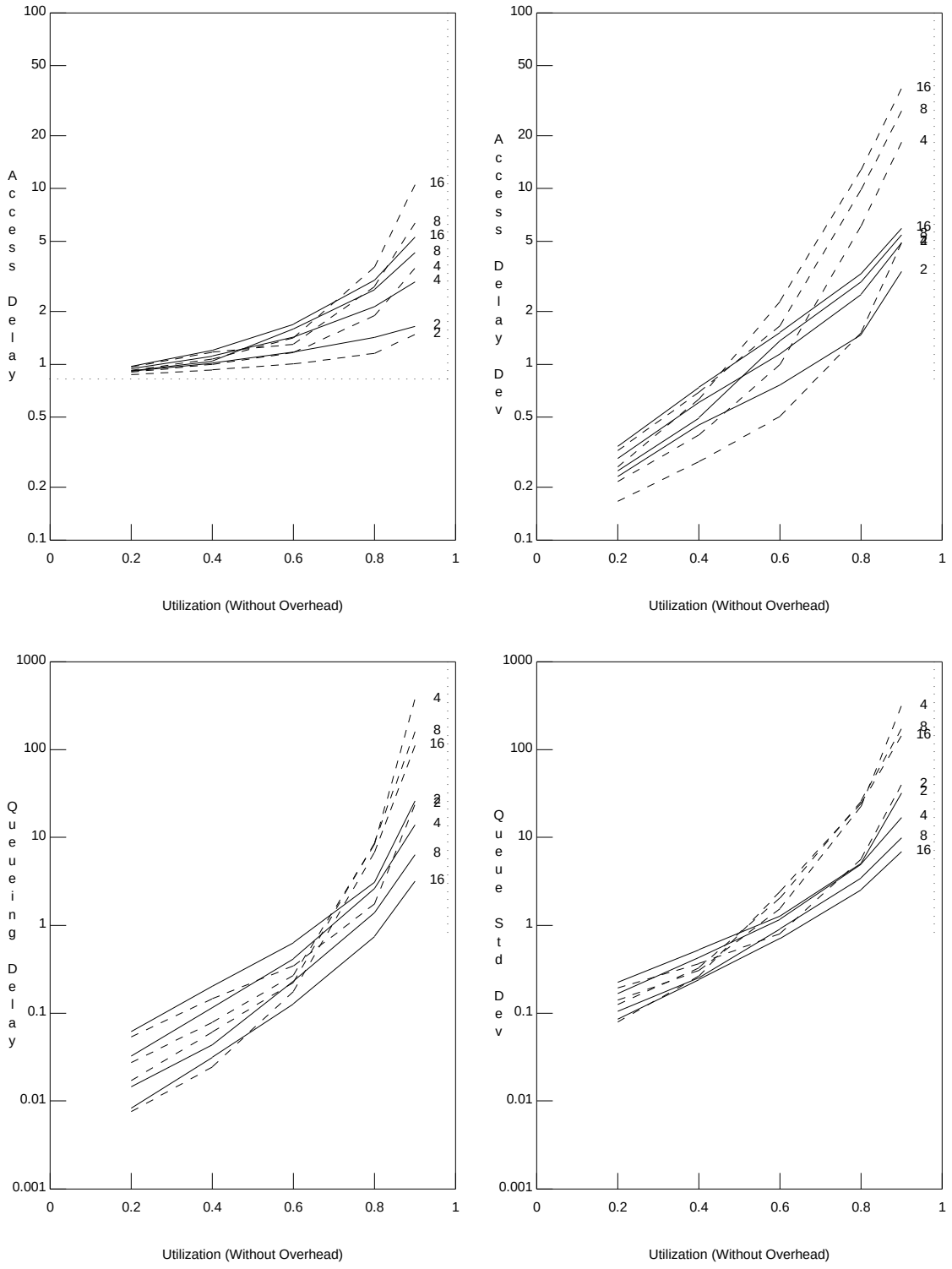

Figure 19: Effects of mixing hosts using the Standard Ethernet algorithm and the Binary Logarithmic Arbitration Method on the same network. Same setup as Figure 14, but this time, half the hosts use the Standard Ethernet protocol (dashed lines) and the other half use BLAM.

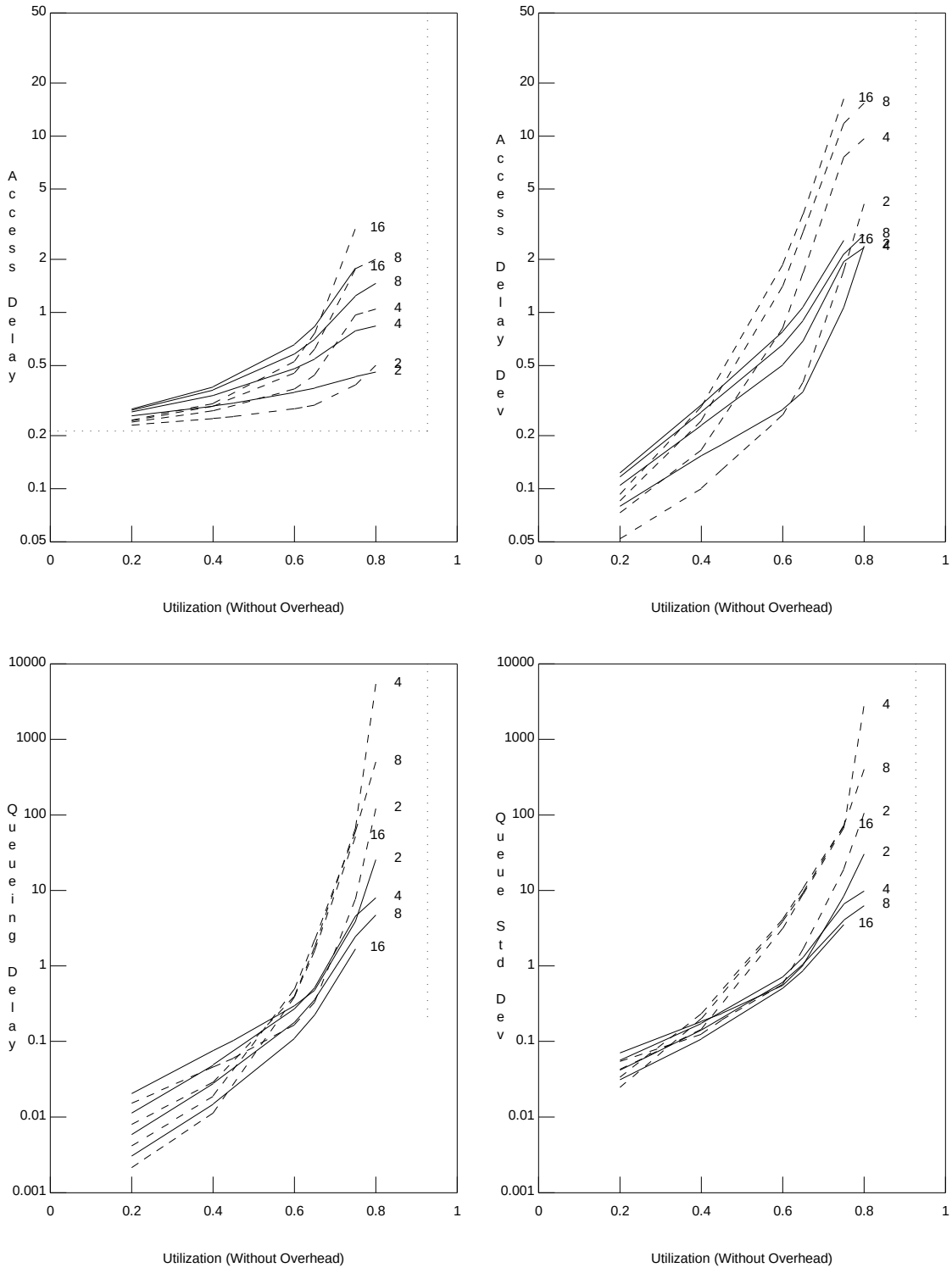

Figure 20: Repeat of Figure 19, assuming 256 byte packets.

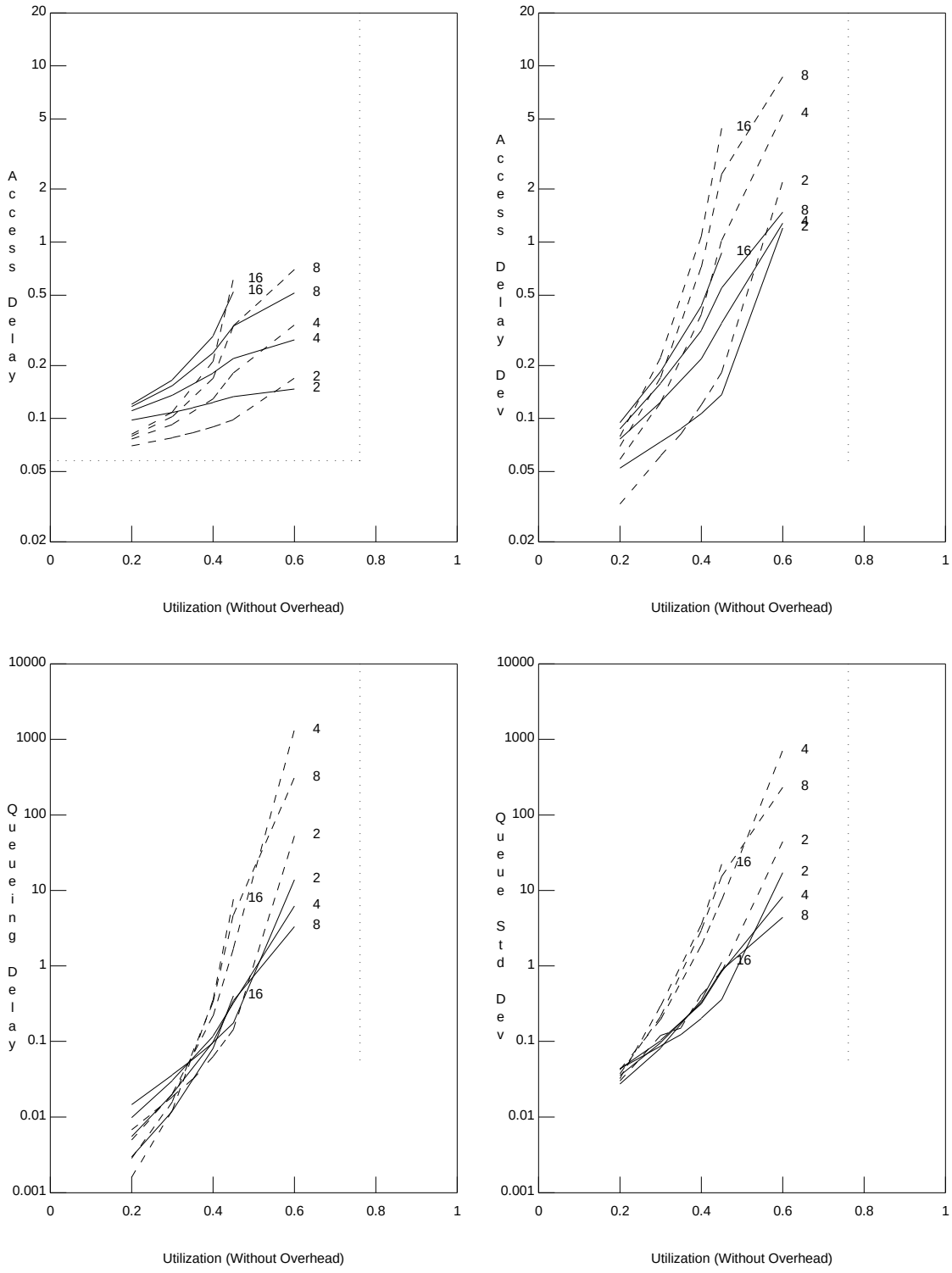

Figure 21: Repeat of Figure 19, assuming 64 byte packets.

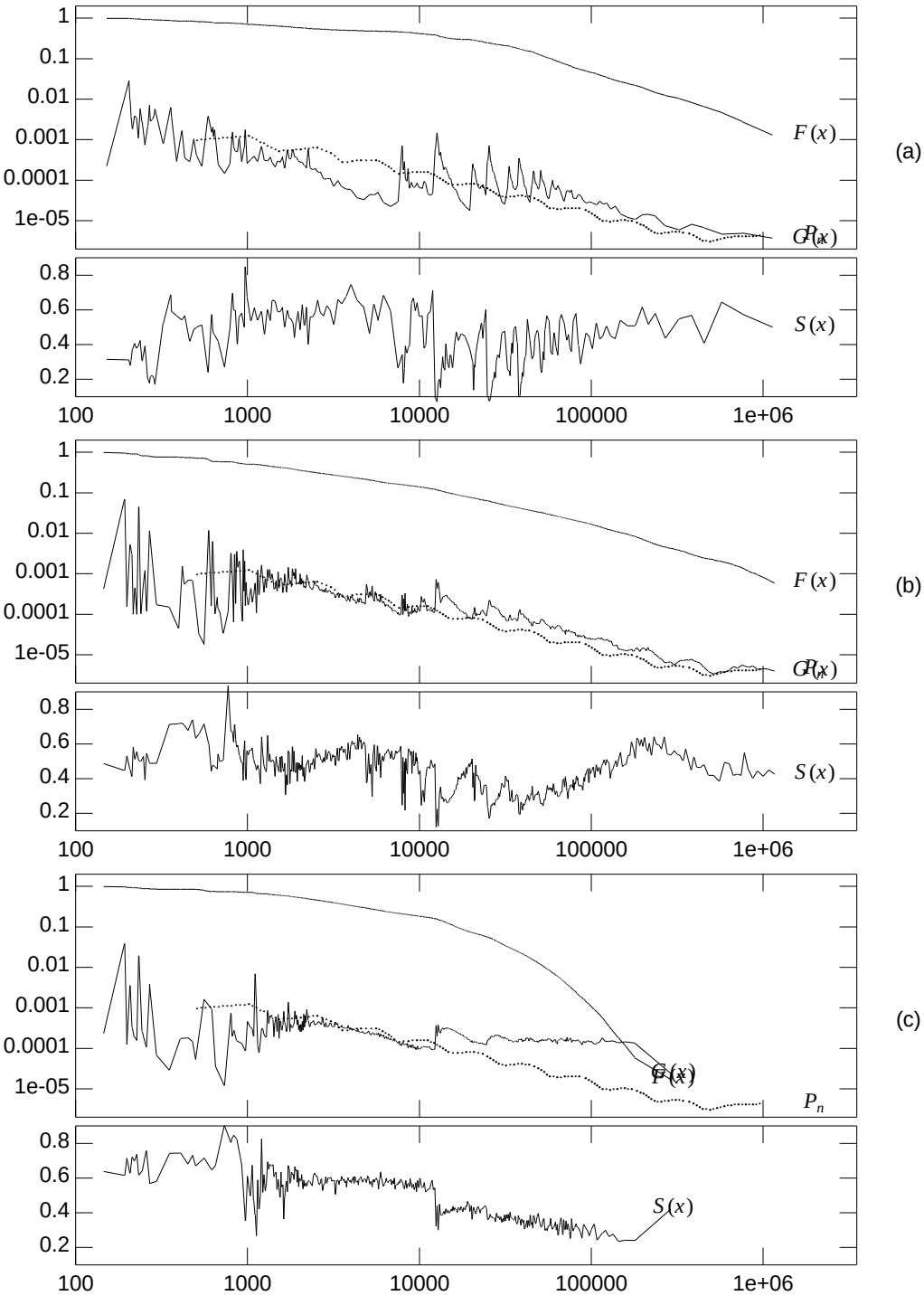

Figure 22: Repeat of Figure 10 using data from (top to bottom): (a) 20 hours of actual measurements from the hardware monitor attached to the author's workstation; (b) 1 hour of data from a trace-driven simulation of an entire 33-host standard Ethernet network operating at loading of 2 Mbit/sec.; (c) the same trace-driven input file applied to a 33-host BLAM network.

References