Performance of Bandwidth Intensive Applications
Under SUNMOS on the Intel Paragon*

B. J. Sohn1 and E. L. Leiss
Department of Computer Science
University of Houston
Houston, TX 77204-3475
c-mail: sohn@cs.uh.edu, eoecl@cs.uh.edu

Key words: Massively Parallel Computer, Message Passing, Packetization, congestion.

Abstract
SUNMOS is an operating system which runs on the Intel Paragon mesh architecture. This operating system can attain up to ninety-seven percent of the hardware bandwidth for large messages, mainly because messages are not packetized. However, bandwidth intensive applications (I/O intensive applications) can be a threat to unrelated independent applications in massively parallel machines since bandwidth intensive applications tend to monopolize access to communication channels by sending and receiving large messages and data over the links. We developed tests on the Intel Paragon to quantify the effects of a bandwidth intensive application's interference with other applications. Through these experiments, we investigated the channel domination effect by the bandwidth intensive applications. These results allow one to determine a maximum length for the packets to alleviate the channel monopolization problem.

*Research supported by Sandia National Laboratories, Albuquerque, NM.
1The author is also with Aerial Communications, Inc., Houston, TX