REVELATIONS IN NETWORK HOST MEASUREMENTS

The purpose of RFC 392 was to identify a problem we had encountered
in using the ARPANET at Utah. The primary thrust of the paper was
supposed to be: "Here is a place to make the Network better" rather
than: "Look, isn't the Network terrible." The accepted use of 392
seems to be the latter rather than the former. A second purpose of
392 was to stimulate the undertaking of measurement experiments on
other computers and operating systems in addition to TENEX. Very
little in the way of measurements has been reported (other than Hal
Murray's RFC 415 measuring TENEX).

Since the Publication of RFC 392, BBN has done a considerable amount
of work to improve Host-Net performance on TENEX. They reported new
measurement results in their April 1973 Quarterly Progress Report No.
10. I feel it is important to circulate those results to the RFC
community.

Don Allen at BBN borrowed Greg Hicks' RJS program and 1) updated it
to take advantage of recent changes in TENEX, 2) improved the code
near the input/output JSYs and 3) used considerably faster network
monitor code. The result was approximately 400% improvement from
75-85 seconds of CPU time per megabit (~$10) to 19 seconds per
megabit (~$2.50). Of the 19 seconds, 13 were spent in the RJS
program and 6 in TENEX network output. The six seconds seem to
relate very well to BBN FTP requirements where 8.2 cpu seconds per
megabit were required (~$1.08) for 8 bit byte transfers. (Going to
32 or 36 bit bytes improves this figure by a factor of 4, resulting
in a cost of $.33 per megabit.)

Of the 13 seconds left in RJS no attempt was made to improve or even
discover where the time was spent. This extra effort was not
expended because RJS is soon to be replaced by the RJE protocol which
uses FTP as its transfer mechanism.

In summary, I believe that the original RFC #392 and the recent BBN
results show that the Network including the Host cost, is
intrinsically effective. If care is not taken in monitor and user
code the system may not look very attractive. I hope everyone now
goes out and measures how good (or bad) they are doing vis a vis

network transfers. Please send me the results personally if they are too embarrassing to distribute via RFC. It would be nice to hear from all systems.

All the data is courtesy of Don Allen and Jerry Burchfiel at BNN.

                [This RFC was put into machine readable form for entry]
                  [into the online RFC archives by Lorrie Shiota]