TO: Distribution

FROM: M. A. Padlipsky

DATE: June 27, 1972

SUBJECT: Network/Graphics Group Status Report

Although it finally was known as system 16.9 instead of 16.7, the NCP in ring 0 system was installed last month. Because of budgeting confusion, extensive metering has not yet been performed. However, rough checks show that the expected performance improvements have materialized. Nothing commands were down to about 1.6 (Network/local), from 2.5; this is slightly better than the anticipated 1/3 saving. Another interesting result was the performing of the same "script" (including such IO-bound commands as list and who) from the Network and locally. In this case the ratio was about 1.2 (15+seconds local, 18+ seconds Network). These results were gratifying, but do not indicate that the Network software is "finished". Further investigation should lead to somewhat better performance on the server process side, and the Network Daemon process is also still under scrutiny.

In the Daemon area, it has been noted that a good deal of the overhead lies in the block/wakeup mechanism. Therefore, as soon as the fast IPC became available, we switched to it. An apparent bug in timer-manager has caused problems on this score, unfortunately, so no figures are available yet on the performance of the fast IPC Daemon (in which a program called "net_driver" replaces "net_super"). It appears that the combined effects of net_driver

(during those periods while it was run) and the ring 4 (ring 0 basis for the Daemon (which replaced the ring 1/ring 0 basis when the NCP went to ring 0) have had beneficial results, though, as the Daemon bills for June will be considerable lower than for May. When the June figures are available, we plan to get packet traffic figures from BBN to determine Daemon costs per pocket for the last few months. Another new Daemon feature recently installed is the sounding of this operator's audible alarm when the Network software goes down, so that it may be reinitialized promptly.

Variuous bugs have been fixed in the ring 4 user/server process software. One is potentially of general interest: the combination of TECO's using the end of a segment and PL/I's extracting two words when an indexed character is required can lead to out of bounds errors. Details on request.

Work currently in progress is primarily focused on cleaning up the handling of Network error statuses. The need for work in this areas was brought home by the confusion which resulted when the Network Control Center began attempting to install new IMP software remotely, and it was discovered that our software did not respond properly to the "IMP going down" message from the IMP. As part of the general cleanup, IMP DIM status handling will become table driven, IMP going down and coming up statuses will be explicitly communicated to the Network Daemon and illegal DCW/CCW statuses will be retried or ignored where appropriate, rather than always resulting in bringing the Network software down.

Other IMP DIM changes in progress include the separating out of all hardware-specific code (into a module called "imp_dcm") in order to facilitate changeover to the IOM. That is, rather than having the IOM version of the IMP DIM involve changes to "imp_gioc" and "imp_status" (both coalesced into imp_dcm) and potentially any of several other modules of the IMP DIM, the GIOC and IOM versions will differ only in the imp_dcm module. Also, the read and write link will expand as needed rather than being of fixed size, and various include files have been split up to minimize the need for recompilations.

Work in progress in the NCP area includes adding the ability to handle multiple RFC's for a given socket (mainly to avoid closing a new request while the logger socket is servicing an old request), cleaning up of the logic for handling the situation when a foreign host goes down, and improved recording and retrieval of error information.

The handling of allocates at interrupt remains our most important pending task.