

IMP/Host and Host/IMP Protocol Change

This note sketches the design of an expansion to the IMP/host and host/IMP protocol which will include among other things the possibility of addressing hosts on more than 63 IMPs. Our intention in this expansion is to correct certain existing limits without fundamental changes in the philosophy of the IMP/host protocol; i.e., while many issues which would represent fundamental changes to the IMP/host protocol are presently under discussion in the world-wide packet-switching community, we are not able to undertake massive fundamental changes on a time scale compatible with the short term needs for network improvement (e.g., already there are almost 60 IMPs).

The following paragraphs cover each of the major characteristics of the expanded protocol. A knowledge of Section 3 of BBN Report 1822 is assumed. As is discussed below, the expanded protocol is backwards compatible.

1. Expanded Leader Size. The leader will be expanded from two to five 16-bit words. This will provide space for necessary field expansions and additions.
2. Expanded Address Field. The address field will be expanded to 24 bits, 16 bits of IMP address and 8 bits of host address. This expansion is more than adequate for any foreseeable ARPA Network growth.
3. New Message Length Field. A new field will be added which will allow the source host to optionally specify the message length (in bits) to the IMP subnetwork. The IMP subnetwork may be able to use this information (when available) to better utilize network buffer storage. The destination host may also be able to use this information to better utilize its buffer storage. This field will be 13 bits wide.
4. Expanded Handling Type Field. The handling type field which now is used to distinguish between priority and non-priority message streams, etc., will be expanded to eight bits. This expanded field will provide for the possibility of a number of parallel message streams having different handling characteristics between pairs of hosts; e.g., priority, non-priority, varying numbers of packets per message (see below), unordered messages (i.e., the present type-3 messages), a message stream requiring guaranteed capacity, etc. Note that only some of these facilities will be available in the near term.
5. Source Host Control of Packets per Message. The possibility will exist for the source host to specify a message stream which

will use a given number of packets per multi-packet message (e.g,

We are presently working out the details of an implementation plan for making the above changes to the IMP software. We will distribute an implementation schedule and other necessary information (e.g., format details) in plenty of time for hosts desiring to use the new protocol as soon as it is available to implement in time.