                A Standard for the Transmission of IP Datagrams
                    over Experimental Ethernet Networks

Status of this Memo

    This RFC specifies a standard method of encapsulating Internet
    Protocol (IP) [1] datagrams on an Experimental Ethernet [2]. This
    RFC specifies a standard protocol for the ARPA Internet community.

Introduction

    This memo applies to the Experimental Ethernet (3-megabit/second,
    8-bit addresses). The procedure for transmission of IP datagrams on
    the Ethernet (10-megabit/second, 48-bit addresses) is described in
    [3].

Frame Format

    IP datagrams are transmitted in standard Experimental Ethernet
    frames. The type field of the Ethernet frame must contain the value
    513 (1001 octal). The data field contains the IP header followed
    immediately by the IP data.

    If necessary, the data field should be padded to meet the
    Experimental Ethernet minimum frame size. This padding is not part
    of the IP packet and is not included in the total length field of the
    IP header.

    The maximum length of an IP datagram sent over an Experimental
    Ethernet is 1536 octets. Implementations are encouraged to support
    full-length packets. Gateway implementations MUST be prepared to
    accept full-length packets and fragment them if necessary. If a
    system cannot receive full-length packets, it should take steps to
    discourage others from sending them, such as using the TCP Maximum
    Segment Size option [4].

    Note: Datagrams on the Ethernet may be longer than the general
    Internet default maximum packet size of 576 octets. Hosts connected
    to an Ethernet should keep this in mind when sending datagrams to
    hosts not on the same Ethernet. It may be appropriate to send
    smaller datagrams to avoid unnecessary fragmentation at intermediate
    gateways. Please see [4] for further information on this point.

Address Mappings

   The mapping between 32-bit Internet addresses to 8-bit Experimental
   Ethernet addresses can be done several ways.

   The easiest thing to do is to use the last eight bits of host number
   part of the Internet address as the host's address on the
   Experimental Ethernet. This is the recommended approach.

   Broadcast Address

      The broadcast Internet address (the address on that network with a
      host part of all binary ones) should be mapped to the broadcast
      Experimental Ethernet address (address zero).

Trailer Formats

   Some versions of Unix 4.2bsd use a different encapsulation method in
   order to get better network performance with the VAX virtual memory
   architecture. Consenting systems on the same Ethernet may use this
   format between themselves.

   No host is required to implement it, and no datagrams in this format
   should be sent to any host unless the sender has positive knowledge
   that the recipient will be able to interpret them. Details of the
   trailer encapsulation may be found in [6].

   (Note: At the present time Unix 4.2bsd will either always use
   trailers or never use them (per interface), depending on a boot-time
   option. This is expected to be changed in the future. Unix 4.2bsd
   also uses a non-standard Internet broadcast address with a host part
   of all zeroes, this will also be changed in the future.)

Byte Order

   As described in Appendix B of the Internet Protocol
   specification [1], the IP datagram is transmitted over the Ethernet
   as a series of 8-bit bytes.

References

   [1] Postel, J., "Internet Protocol", RFC-791, USC/Information
   Sciences Institute, September 1981.

   [2] Metcalfe, R. and D. Boggs, "Ethernet: Distributed Packet
   Switching for Local Computer Networks", Communications of the ACM,
   V.19, N.7, pp 395-402, July 1976.

   [3] Hornig, C., "A Standard for the Transmission of IP Datagrams
   over Ethernet Networks", RFC-894, Symbolics Cambridge Research
   Center, April 1984.

   [4] Postel, J., "The TCP Maximum Segment Size Option and Related
   Topics", RFC-879, USC/Information Sciences Institute, November 1983.

   [5] Plummer, D., "An Ethernet Address Resolution Protocol", RFC-826,
   Symbolics Cambridge Research Center, November 1982.

   [6] Leffler, S., and M. Karels, "Trailer Encapsulations", RFC-893,
   University of California at Berkeley, April 1984.