                         SERVICE MAPPINGS

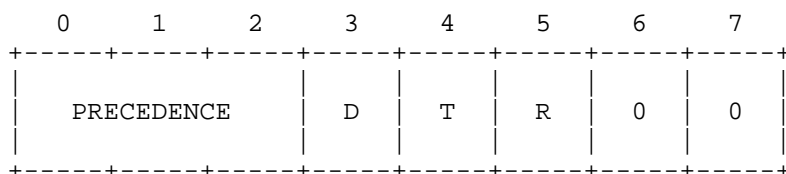

This memo describes the relationship between the Internet
Protocol (IP) [1] Type of Service and the service parameters of specific
networks.

The IP Type of Service has the following fields:

    Bits 0-2: Precedence.
    Bit   3: 0 = Normal Delay,   1 = Low Delay.
    Bits 4: 0 = Normal Throughput, 1 = High Throughput.
    Bits 5: 0 = Normal Relibility, 1 = High Relibility.
    Bit 6-7: Reserved for Future Use.

        0   1   2   3   4   5   6   7
     +-----+-----+-----+-----+-----+-----+-----+-----+
     | | | | | | | | |
     | PRECEDENCE | D | T | R | 0 | 0 |
     | | | | | | | | |
     +-----+-----+-----+-----+-----+-----+-----+-----+

    111 - Network Control
    110 - Internetwork Control
    101 - CRITIC/ECP
    100 - Flash Override
    011 - Flash
    010 - Immediate
    001 - Priority
    000 - Routine

The individual networks listed here have very different and specific
service choices.

AUTODIN II

   The service choices are in two parts: Traffic Acceptance Catagories,
   and Application Type. The Traffic Acceptance Catagories can be
   mapped into and out of the IP TOS precedence reasonably directly.
   The Application types can be mapped into the remaining IP TOS fields
   as follows.

        TA   DELAY   THROUGHPUT   RELIABILITY
        ---   -----   ----------   -----------
        I/A   1   0   0
        Q/R   0   0   0
        B1   0   1   0
        B2   0   1   1

        DTR   TA
        ---   ---
        000   Q/R
        001   Q/R
        010   B1
        011   B2
        100   I/A
        101   I/A
        110   I/A
        111   error

     ARPANET

        The service choices are in quite limited. There is one priority bit
        that can be mapped to the high order bit of the IP TOS precedence.
        The other choices are to use the regular ("Type 0") messages vs. the
        uncontrolled ("Type 3") messages, or to use single packet vs.
        multipacket messages. The mapping of ARPANET parameters into IP TOS
        parameters can be as follows.

```
          Type    Size    DELAY    THROUGHPUT    RELIABILITY
          ----    ----    -----    ----------    -----------
           0       S        1          0              0
           0       M        0          0              0
           3       S        1          0              0
           3       M      not allowed

          DTR     Type    Size
          ---     ----    ----
          000      0        M
          001      0        M
          010      0        M
          011      0        M
          100      3        S
          101      0        S
          110      3        S
          111       error
```

PRNET

   There is no priority indication. The two choices are to use the
   station routing vs. point-to-point routing, or to require
   acknowledgments vs. having no acknowledgments. The mapping of PRNET
   parameters into IP TOS parameters can be as follows.

        Routing   Acks   DELAY   THROUGHPUT   RELIABILITY
        -------   ----   -----   ----------   -----------
          ptp   no   1   0   0
          ptp   yes   1   0   1
        station   no   0   0   0
        station   yes   0   0   1

        DTR   Routing   Acks
        ---   -------   ----
        000   station   no
        001   station   yes
        010   station   no
        011   station   yes
        100   ptp   no
        101   ptp   yes
        110   ptp   no
        111   ptp   yes

SATNET

   There is no priority indication. The four choices are to use the
   block vs. stream type, to select one of four delay catagories, to
   select one of two holding time strategies, or to request one of three
   reliability levels. The mapping of SATNET parameters into IP TOS
   parameters can thus quite complex there being 2*4*2*3=48 distinct
   possibilities.

References
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   [1] Postel, J. (ed.), "Internet Protocol - DARPA Internet Program
        Protocol Specification," RFC 791, USC/Information Sciences
        Institute, September 1981.