

IEN 91

Address Mappings

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ADDRESS MAPPINGS

Internet Address

This memo describes the relationship between address fields used in the Internet Protocol (IN) [1] and several specific networks.

An internet address is a 32 bit quantity, divided into an 8 bit network number and a 24 bit local address as shown below.

+-----+-----+-----+-----+
! Net ! Local Address !

+-----+-----+-----+-----+

The local address carries information to address a host in the network identified by the network number. Since each network has a particular address format and length, the following section describes the mapping between internet local addresses and the actual address format used in the particular network.

Internet to Local Net Address Mappings

The following transformations are used to convert internet addresses to local net addresses and vice versa:

ARPANET

The ARPANET (with 96 bit leaders) has 24 bit addresses. The 24 bits are assigned to host, logical host, and IMP fields as illustrated below. These 24 bit addresses are used directly for the 24 bit local address of the internet address.

The network number of the ARPANET is 10.

```
+-----+-----+-----+
!  HOST  !    LH   !  IMP   !
+-----+-----+-----+
      8         8         8
```

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SATNET

The Atlantic Satellite Packet Network has 16 bit addresses for hosts. These addresses may be assigned independent of location (i.e., ground station). It is also possible to assign several addresses to one physical host, so the addresses are logical addresses. The 16 bit SATNET address is located in the 24 bit internet local address as shown below.

The network number of the SATNET is 4.

```
+-----+-----+
!  ZERO  !          HOST   !
+-----+-----+
      8         16
```

PRNET

The Packet Radio networks use 16 bit addresses. These are independent of location (indeed the hosts may be mobile). The 16 bit PRNET addresses are located in the 24 bit internet local address as shown below.

The network numbers of the PRNETs are:

BBN-PR	1
SF-PR-1	2
SILL-PR	5
SF-PR-2	6
BRAGG-PR	9
DC-PR	20

```

+-----+-----+
!  ZERO  !      HOST      !
+-----+-----+
      8           16

```

LCSNET

The LCS NET at MIT's Laboratory for Computer Science uses 32 bit addresses of several formats. Please see [2] for more details. The most common format locates the low order 24 bits of the 32 bit LCS NET address in the 24 bit internet local address, as shown below.

The network number of the LCS NET is 18.

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```

+-----+-----+-----+
!  SUB  !RESERVED!  HOST  !
!  NET  !      !      !
+-----+-----+-----+
      8           8           8

```

EDN

The Experimental Data Network at the Defense Communication Engineering Center (DCEC) uses the old 1822 32 bit leader, and so has 8 bit addresses. These 8 bit EDN addresses are located in the 24 bit internet local address as shown below.

The network number of the EDN is 21.

```

+-----+--+-----+-----+
!      ! H!      !      !
! ZERO ! O!  ZERO  ! IMP !
!      ! S!      !      !
!      ! T!      !      !
+-----+--+-----+-----+
      6      2      10      6

```

References

- [1] Jonathan B. Postel, "Internetwork Datagram Protocol - Version 4," Information Sciences Institute, IEN 80, February 1979.
- [2] Noel Chiappa, David Clark, David Reed, "LCS Net Address Format," M.I.T. Laboratory for Computer Science Network Implementation, Note No.5, IEN 82, February 1979.

