Network Working Group
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ISI

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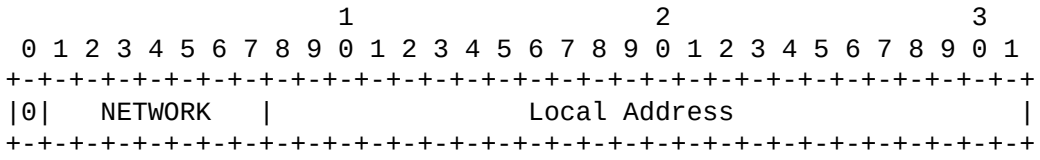
ADDRESS MAPPINGS

Internet Addresses

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

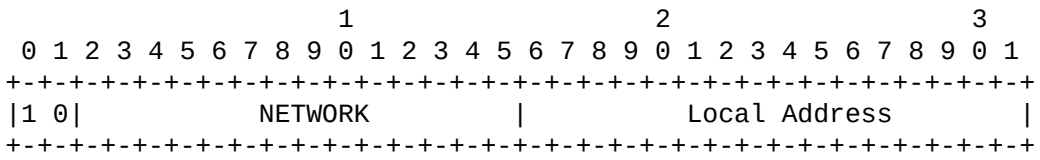
An internet address is a 32 bit quantity, with several codings as shown below.

The first type (or class a) of address has a 7-bit network number and a 24-bit local address.



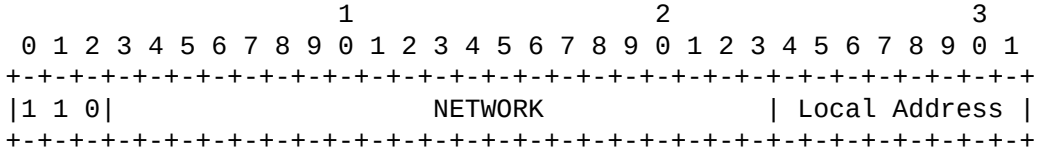
Class A Address

The second type (or class b) of address has a 14-bit network number and a 16-bit local address.



Class B Address

The third type (or class c) of address has a 21-bit network number and a 8-bit local address.



Class C 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.

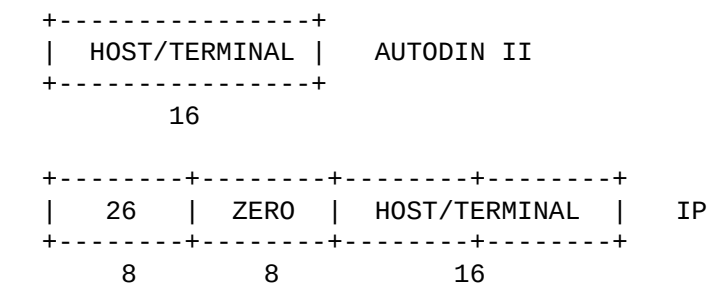
Internet to Local Net Address Mappings

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

AUTODIN II

The AUTODIN II has 16 bit subscriber addresses which identify either a host or a terminal. These addresses may be assigned independent of location. The 16 bit AUTODIN II address is located in the 24 bit internet local address as shown below.

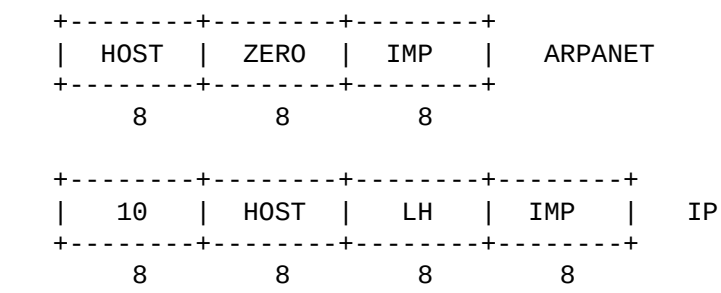
The network number of the AUTODIN II is 26 (Class A).



ARPANET

The ARPANET (with 96 bit leaders) has 24 bit addresses. The 24 bits are assigned to host, logical host, and IMP leader fields as illustrated below. These 24 bit addresses are used directly for the 24 bit local address of the internet address. However, the ARPANET IMPs do not yet support this form of logical addressing so the logical host field is set to zero in the leader.

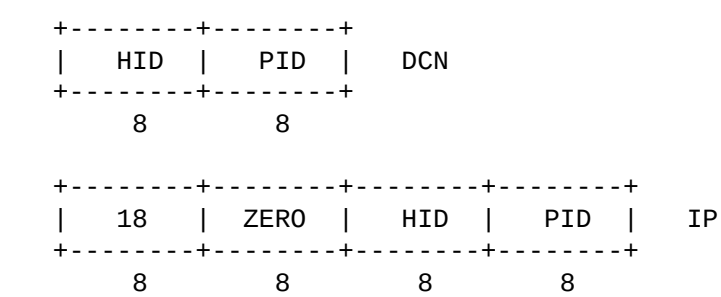
The network number of the ARPANET is 10 (Class A).



DCNs

The Distributed Computing Networks (DCNs) at COMSAT and UCL use 16 bit addresses divided into an 8 bit host identifier (HID), and an 8 bit process identifier (PID). The format locates these 16 bits in the low order 16 bits of the 24 bit internet address, as shown below.

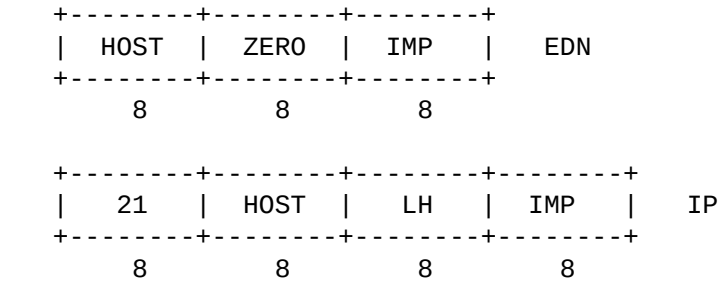
The network number of the COMSAT-DCN is 29 (Class A), and of the UCL-DCN is 30 (Class A).



EDN

The Experimental Data Network at the Defense Communication Engineering Center (DCEC) uses the same type of addresses as the ARPANET (with 96 bit leaders) and has 24 bit addresses. The 24 bits are assigned to host, logical host, and IMP leader fields as illustrated below. These 24 bit addresses are used directly for the 24 bit local address of the internet address. However, the IMPs do not yet support this form of logical addressing so the logical host field is set to zero in the leader.

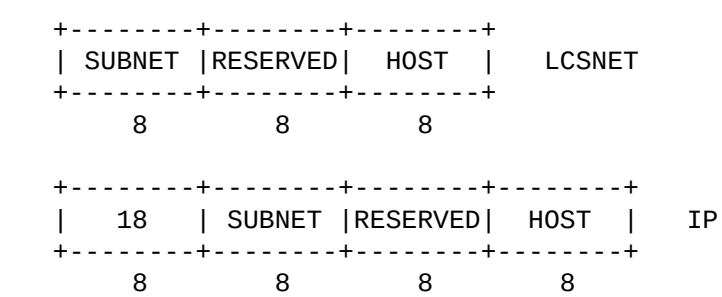
The network number of the EDN is 21 (Class A).



LCSNET

The LCS NET at MIT's Laboratory for Computer Science uses 32 bit addresses of several formats. Please see [3] 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 (Class A).

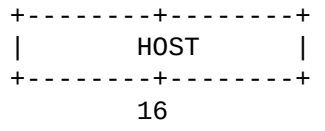


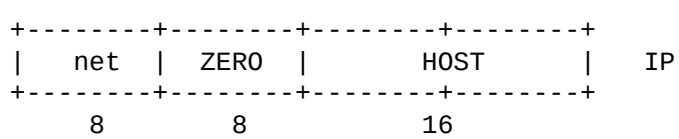
PRNET

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 (Class A)
SF-PR-1	2 (Class A)
SILL-PR	5 (Class A)
SF-PR-2	6 (Class A)
BRAGG-PR	9 (Class A)
DC-PR	20 (Class A)

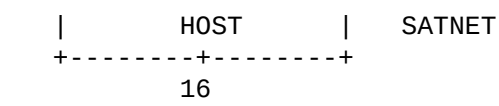


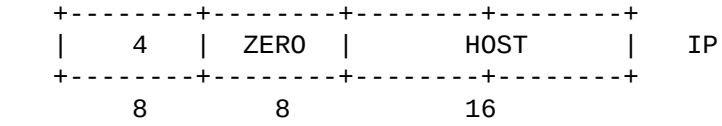


SATNET

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 (Class A).

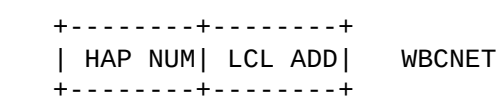


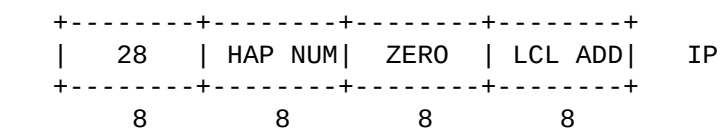


WBCNET

The Wideband Communication Satellite Packet Network (WBCNET) Host Access Protocol (HAP) has 16 bit addresses for hosts. It is possible to assign several addresses to one physical host, so the addresses are logical addresses. The 16 bit WBCNET address is divided into a HAP Number field and a Local Address field, and is located in the 24 bit internet local address as shown below. Please see [2] for more details.

The network number of the WBCNET is 28 (Class A).





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

[2] Pershing J., "Addressing Revisited," Bolt Beranek and Newman Inc., W Note 27, May 1981.

[3] 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.