

Network Working Group  
Request for Comments: 790

J. Postel  
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Obsoletes RFCs: 776, 770, 762, 758,  
755, 750, 739, 604, 503, 433, 349  
Obsoletes IENs: 127, 117, 93

#### ASSIGNED NUMBERS

This Network Working Group Request for Comments documents the currently assigned values from several series of numbers used in network protocol implementations. This RFC will be updated periodically, and in any case current information can be obtained from Jon Postel. The assignment of numbers is also handled by Jon. If you are developing a protocol or application that will require the use of a link, socket, port, protocol, or network number please contact Jon to receive a number assignment.

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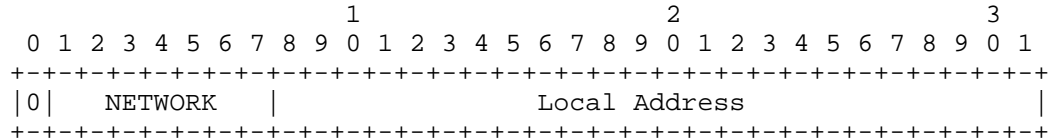
Most of the protocols mentioned here are documented in the RFC series of notes. The more prominent and more generally used are documented in the Protocol Handbook [17] prepared by the Network Information Center (NIC). Some of the items listed are undocumented. In all cases the name and mailbox of the responsible individual is indicated. In the lists that follow, a bracketed entry, e.g., [17,iii], at the right hand margin of the page indicates a reference for the listed protocol, where the number cites the document and the "iii" cites the person.

Network Numbers

ASSIGNED NETWORK NUMBERS

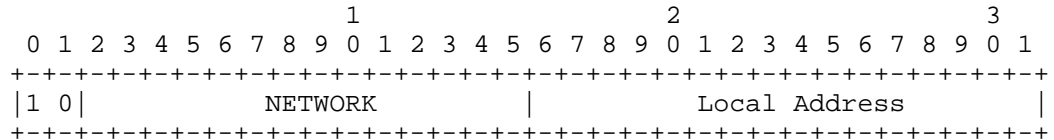
This list of network numbers is used in the internet address [33]. The Internet Protocol (IP) uses a 32 bit address and divides that address into a network part and a "rest" or local address part. The division takes 3 forms or classes.

The first type, or class a, of address has a 7-bit network number and a 24-bit local address. This allows 128 class a networks.



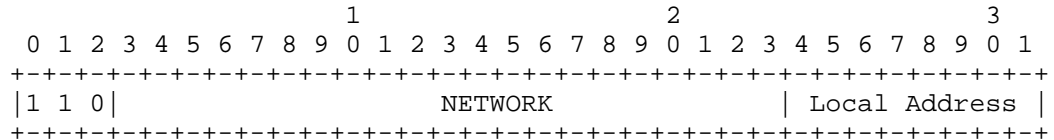
Class A Address

The second type, or class b, of address has a 14-bit network number and a 16-bit local address. This allows 16,384 class b networks.



Class B Address

The third type, or class c, of address has a 21-bit network number and a 8-bit local address. This allows 2,097,152 class c networks.



Class C Address

One notation for internet host addresses commonly used divides the 32-bit address into four 8-bit fields and specifies the value of each field as a decimal number with the fields separated by periods. For example, the internet address of ISIF is 010.020.000.052.

This notation will be used in the listing of assigned network

## Network Numbers

numbers. The class a networks will have nnn.rrr.rrr.rrr, the class b networks will have nnn.nnn.rrr.rrr, and the class c networks will have nnn.nnn.nnn.rrr, where nnn represents part or all of a network number and rrr represents part or all of a local address or rest field.

## Assigned Network Numbers

## Class A Networks

| Internet Address | Name         | Network                       | References   |
|------------------|--------------|-------------------------------|--------------|
| -----            | ----         | -----                         | -----        |
| 000.rrr.rrr.rrr  |              | Reserved                      | [JBP]        |
| 001.rrr.rrr.rrr  | BBN-PR       | BBN Packet Radio Network      | [DCA2]       |
| 002.rrr.rrr.rrr  | SF-PR-1      | SF Packet Radio Network (1)   | [JEM]        |
| 003.rrr.rrr.rrr  | BBN-RCC      | BBN RCC Network               | [SGC]        |
| 004.rrr.rrr.rrr  | SATNET       | Atlantic Satellite Network    | [DM11]       |
| 005.rrr.rrr.rrr  | SILL-PR      | Ft. Sill Packet Radio Network | [JEM]        |
| 006.rrr.rrr.rrr  | SF-PR-2      | SF Packet Radio Network (2)   | [JEM]        |
| 007.rrr.rrr.rrr  | CHAOS        | MIT CHAOS Network             | [MOON]       |
| 008.rrr.rrr.rrr  | CLARKNET     | SATNET subnet for Clarksburg  | [DM11]       |
| 009.rrr.rrr.rrr  | BRAGG-PR     | Ft. Bragg Packet Radio Net    | [JEM]        |
| 010.rrr.rrr.rrr  | ARPANET      | ARPANET                       | [17,1,VGC]   |
| 011.rrr.rrr.rrr  | UCLNET       | University College London     | [PK]         |
| 012.rrr.rrr.rrr  | CYCLADES     | CYCLADES                      | [VGC]        |
| 013.rrr.rrr.rrr  |              | Unassigned                    | [JBP]        |
| 014.rrr.rrr.rrr  | TELENET      | TELENET                       | [VGC]        |
| 015.rrr.rrr.rrr  | EPSS         | British Post Office EPSS      | [PK]         |
| 016.rrr.rrr.rrr  | DATAPAC      | DATAPAC                       | [VGC]        |
| 017.rrr.rrr.rrr  | TRANSPAC     | TRANSPAC                      | [VGC]        |
| 018.rrr.rrr.rrr  | LCSNET       | MIT LCS Network               | [43,10,DDC2] |
| 019.rrr.rrr.rrr  | TYMNET       | TYMNET                        | [VGC]        |
| 020.rrr.rrr.rrr  | DC-PR        | D.C. Packet Radio Network     | [VGC]        |
| 021.rrr.rrr.rrr  | EDN          | DCEC EDN                      | [EC5]        |
| 022.rrr.rrr.rrr  | DIALNET      | DIALNET                       | [26,16,MRC]  |
| 023.rrr.rrr.rrr  | MITRE        | MITRE Cablenet                | [44,APS]     |
| 024.rrr.rrr.rrr  | BBN-LOCAL    | BBN Local Network             | [SGC]        |
| 025.rrr.rrr.rrr  | RSRE-PPSN    | RSRE / PPSN                   | [BD2]        |
| 026.rrr.rrr.rrr  | AUTODIN-II   | AUTODIN II                    | [EC5]        |
| 027.rrr.rrr.rrr  | NOSC-LCCN    | NOSC / LCCN                   | [KTP]        |
| 028.rrr.rrr.rrr  | WIDEBAND     | Wide Band Satellite Network   | [CJW2]       |
| 029.rrr.rrr.rrr  | DCN-COMSAT   | COMSAT Dist. Comp. Network    | [DLM1]       |
| 030.rrr.rrr.rrr  | DCN-UCL      | UCL Dist. Comp. Network       | [PK]         |
| 031.rrr.rrr.rrr  | BBN-SAT-TEST | BBN SATNET Test Network       | [DM11]       |
| 032.rrr.rrr.rrr  | UCL-CR1      | UCL Cambridge Ring 1          | [PK]         |
| 033.rrr.rrr.rrr  | UCL-CR2      | UCL Cambridge Ring 2          | [PK]         |
| 034.rrr.rrr.rrr  | MATNET       | Mobile Access Terminal Net    | [DM11]       |
| 035.rrr.rrr.rrr  | NULL         | UCL/RSRE Null Network         | [BD2]        |

## Network Numbers

|                                 |             |                              |        |
|---------------------------------|-------------|------------------------------|--------|
| 036.rrr.rrr.rrr                 | SU-NET      | Stanford University Ethernet | [MRC]  |
| 037.rrr.rrr.rrr                 | DECNET      | Digital Equipment Network    | [DRL]  |
| 038.rrr.rrr.rrr                 | DECNET-TEST | Test Digital Equipment Net   | [DRL]  |
| 039.rrr.rrr.rrr                 | SRINET      | SRI Local Network            | [GEOF] |
| 040.rrr.rrr.rrr                 | CISLNET     | CISL Multics Network         | [CH2]  |
| 041.rrr.rrr.rrr                 | BBN-LN-TEST | BBN Local Network Testbed    | [KTP]  |
| 042.rrr.rrr.rrr                 | SINET       | LLL-S1-NET                   | [EAK]  |
| 043.rrr.rrr.rrr                 | INTELPOST   | COMSAT INTELPOST             | [DLM1] |
| 044.rrr.rrr.rrr                 | AMPRNET     | Amature Radio Experiment Net | [HM]   |
| 044.rrr.rrr.rrr-126.rrr.rrr.rrr |             | Unassigned                   | [JBP]  |
| 127.rrr.rrr.rrr                 |             | Reserved                     | [JBP]  |

## Class B Networks

| Internet Address                | Name | Network    | References |
|---------------------------------|------|------------|------------|
| -----                           | ---- | -----      | -----      |
| 128.000.rrr.rrr                 |      | Reserved   | [JBP]      |
| 128.001.rrr.rrr-128.254.rrr.rrr |      | Unassigned | [JBP]      |
| 191.255.rrr.rrr                 |      | Reserved   | [JBP]      |

## Class C Networks

| Internet Address                | Name | Network    | References |
|---------------------------------|------|------------|------------|
| -----                           | ---- | -----      | -----      |
| 192.000.001.rrr                 |      | Reserved   | [JBP]      |
| 192.000.001.rrr-223.255.254.rrr |      | Unassigned | [JBP]      |
| 223.255.255.rrr                 |      | Reserved   | [JBP]      |

## Other Reserved Internet Addresses

| Internet Address                | Name | Network  | References |
|---------------------------------|------|----------|------------|
| -----                           | ---- | -----    | -----      |
| 224.000.000.000-255.255.255.255 |      | Reserved | [JBP]      |

## Internet Version Numbers

## ASSIGNED INTERNET VERSION NUMBERS

In the Internet Protocol (IP) [33] there is a field to identify the version of the internetwork general protocol. This field is 4 bits in size.

## Assigned Internet Version Numbers

| Decimal | Octal | Version           | References |
|---------|-------|-------------------|------------|
| -----   | ----- | -----             | -----      |
| 0       | 0     | Reserved          | [JBP]      |
| 1-3     | 1-3   | Unassigned        | [JBP]      |
| 4       | 4     | Internet Protocol | [33,JBP]   |
| 5       | 5     | ST Datagram Mode  | [20,JWF]   |
| 6-14    | 6-16  | Unassigned        | [JBP]      |
| 15      | 17    | Reserved          | [JBP]      |

## Internet Protocol Numbers

## ASSIGNED INTERNET PROTOCOL NUMBERS

In the Internet Protocol (IP) [33] there is a field, called Protocol, to identify the the next level protocol. This is an 8 bit field.

## Assigned Internet Protocol Numbers

| Decimal | Octal   | Protocol Numbers                | References  |
|---------|---------|---------------------------------|-------------|
| -----   | -----   | -----                           | -----       |
| 0       | 0       | Reserved                        | [JBP]       |
| 1       | 1       | ICMP                            | [53,JBP]    |
| 2       | 2       | Unassigned                      | [JBP]       |
| 3       | 3       | Gateway-to-Gateway              | [48,49,VMS] |
| 4       | 4       | CMCC Gateway Monitoring Message | [18,19,DFP] |
| 5       | 5       | ST                              | [20,JWF]    |
| 6       | 6       | TCP                             | [34,JBP]    |
| 7       | 7       | UCL                             | [PK]        |
| 8       | 10      | Unassigned                      | [JBP]       |
| 9       | 11      | Secure                          | [VGC]       |
| 10      | 12      | BBN RCC Monitoring              | [VMS]       |
| 11      | 13      | NVP                             | [12,DC]     |
| 12      | 14      | PUP                             | [4,EAT3]    |
| 13      | 15      | Pluribus                        | [RDB2]      |
| 14      | 16      | Telenet                         | [RDB2]      |
| 15      | 17      | XNET                            | [25,JFH2]   |
| 16      | 20      | Chaos                           | [MOON]      |
| 17      | 21      | User Datagram                   | [42,JBP]    |
| 18      | 22      | Multiplexing                    | [13,JBP]    |
| 19      | 23      | DCN                             | [DLM1]      |
| 20      | 24      | TAC Monitoring                  | [55,RH6]    |
| 21-62   | 25-76   | Unassigned                      | [JBP]       |
| 63      | 77      | any local network               | [JBP]       |
| 64      | 100     | SATNET and Backroom EXPAK       | [DM11]      |
| 65      | 101     | MIT Subnet Support              | [NC3]       |
| 66-68   | 102-104 | Unassigned                      | [JBP]       |
| 69      | 105     | SATNET Monitoring               | [DM11]      |
| 70      | 106     | Unassigned                      | [JBP]       |
| 71      | 107     | Internet Packet Core Utility    | [DM11]      |
| 72-75   | 110-113 | Unassigned                      | [JBP]       |
| 76      | 114     | Backroom SATNET Monitoring      | [DM11]      |
| 77      | 115     | Unassigned                      | [JBP]       |
| 78      | 116     | WIDEBAND Monitoring             | [DM11]      |
| 79      | 117     | WIDEBAND EXPAK                  | [DM11]      |
| 80-254  | 120-376 | Unassigned                      | [JBP]       |
| 255     | 377     | Reserved                        | [JBP]       |

## Port or Socket Numbers

## ASSIGNED PORT or SOCKET NUMBERS

Ports are used in the TCP [34] and sockets are used in the AHHP [28,17] to name the ends of logical connections which carry long term conversations. For the purpose of providing services to unknown callers a service contact socket is defined. This list specifies the port or socket used by the server process as its contact socket. In the AHHP an Initial Connection Procedure ICP [39,17] is used between the user process and the server process to make the initial contact and establish the long term connections leaving the contact socket free to handle other callers. In the TCP no ICP is necessary since a port may engage in many simultaneous connections.

To the extent possible these same port assignments are used with UDP [42].

The assigned ports/sockets use a small part of the possible port/socket numbers. The assigned ports/sockets have all except the low order eight bits cleared to zero. The low order eight bits are specified here.

## Socket Assignments:

## General Assignments:

| Decimal | Octal   | Description                    |
|---------|---------|--------------------------------|
| -----   | -----   | -----                          |
| 0-63    | 0-77    | Network Wide Standard Function |
| 64-131  | 100-203 | Hosts Specific Functions       |
| 132-223 | 204-337 | Reserved for Future Use        |
| 224-255 | 340-377 | Any Experimental Function      |

## Port or Socket Numbers

## Specific Assignments:

## Network Standard Functions

| Decimal<br>----- | Octal<br>----- | Description<br>-----             | References<br>----- |
|------------------|----------------|----------------------------------|---------------------|
| 1                | 1              | Old Telnet                       | [40,JBP]            |
| 3                | 3              | Old File Transfer                | [27,11,24,JBP]      |
| 5                | 5              | Remote Job Entry                 | [6,17,JBP]          |
| 7                | 7              | Echo                             | [35,JBP]            |
| 9                | 11             | Discard                          | [32,JBP]            |
| 11               | 13             | Who is on or SYSTAT              | [JBP]               |
| 13               | 15             | Date and Time                    | [JBP]               |
| 15               | 17             | Who is up or NETSTAT             | [JBP]               |
| 17               | 21             | Short Text Message               | [JBP]               |
| 19               | 23             | Character generator or TTYTST    | [31,JBP]            |
| 21               | 25             | New File Transfer                | [36,JBP]            |
| 23               | 27             | New Telnet                       | [41,JBP]            |
| 25               | 31             | SMTP                             | [54,JBP]            |
| 27               | 33             | NSW User System w/COMPASS FE     | [14,RHT]            |
| 29               | 35             | MSG-3 ICP                        | [29,RHT]            |
| 31               | 37             | MSG-3 Authentication             | [29,RHT]            |
| 33               | 41             | Unassigned                       | [JBP]               |
| 35               | 43             | IO Station Spooler               | [JBP]               |
| 37               | 45             | Time Server                      | [22,JBP]            |
| 39               | 47             | Unassigned                       | [JBP]               |
| 41               | 51             | Graphics                         | [46,17,JBP]         |
| 42               | 52             | Name Server                      | [38,JBP]            |
| 43               | 53             | WhoIs                            | [JAKE]              |
| 45               | 55             | Message Processing Module        | [37,JBP]            |
| 47               | 57             | NI FTP                           | [50,CJB]            |
| 49               | 61             | RAND Network Graphics Conference | [30,MO2]            |
| 51               | 63             | Message Generator Control        | [52,DFP]            |
| 53               | 65             | AUTODIN II FTP                   | [21,EC5]            |
| 55               | 67             | ISI Graphics Language            | [3,RB6]             |
| 57               | 71             | MTP                              | [45,JBP]            |
| 59               | 73             | New MIT Host Status              | [SWG]               |
| 61-63            | 75-77          | Unassigned                       | [JBP]               |



## Port or Socket Numbers

## Host Specific Functions

| Decimal | Octal   | Description                   | References  |
|---------|---------|-------------------------------|-------------|
| -----   | -----   | -----                         | -----       |
| 65      | 101     | Unassigned                    | [JBP]       |
| 67      | 103     | Datacomputer at CCA           | [8,JZS]     |
| 69      | 105     | Unassigned                    | [JBP]       |
| 69      | 105     | Trivial File Transfer         | [47,KRS]    |
| 71      | 107     | NETRJS (EBCDIC) at UCLA-CCN   | [5,17,RTB]  |
| 73      | 111     | NETRJS (ASCII-68) at UCLA-CCN | [5,17,RTB]  |
| 75      | 113     | NETRJS (ASCII-63) at UCLA-CCN | [5,17,RTB]  |
| 77      | 115     | any private RJE server        | [JBP]       |
| 79      | 117     | Name or Finger                | [23,17,KLH] |
| 81      | 121     | Unassigned                    | [JBP]       |
| 83      | 123     | MIT ML Device                 | [MOON]      |
| 85      | 125     | MIT ML Device                 | [MOON]      |
| 87      | 127     | any terminal link             | [JBP]       |
| 89      | 131     | SU/MIT Telnet Gateway         | [MRC]       |
| 91      | 133     | MIT Dover Spooler             | [EBM]       |
| 93      | 135     | BBN RCC Accounting            | [DT]        |
| 95      | 137     | SUPDUP                        | [15,MRC]    |
| 97      | 141     | Datacomputer Status           | [8,JZS]     |
| 99      | 143     | CADC - NIFTP via UCL          | [PLH]       |
| 101     | 145     | NPL - NIFTP via UCL           | [PLH]       |
| 103     | 147     | BNPL - NIFTP via UCL          | [PLH]       |
| 105     | 151     | CAMBRIDGE - NIFTP via UCL     | [PLH]       |
| 107     | 153     | HARWELL - NIFTP via UCL       | [PLH]       |
| 109     | 155     | SWURCC - NIFTP via UCL        | [PLH]       |
| 111     | 157     | ESSEX - NIFTP via UCL         | [PLH]       |
| 113     | 161     | RUTHERFORD - NIFTP via UCL    | [PLH]       |
| 115-129 | 163-201 | Unassigned                    | [JBP]       |
| 131     | 203     | Datacomputer                  | [8,JZS]     |

## Reserved for Future Use

| Decimal | Octal   | Description | References |
|---------|---------|-------------|------------|
| -----   | -----   | -----       | -----      |
| 132-223 | 204-337 | Reserved    | [JBP]      |

## Port or Socket Numbers

## Experimental Functions

| Decimal | Octal   | Description        | References |
|---------|---------|--------------------|------------|
| -----   | -----   | -----              | -----      |
| 224-239 | 340-357 | Unassigned         | [JBP]      |
| 241     | 361     | NCP Measurement    | [9,JBP]    |
| 243     | 363     | Survey Measurement | [2,AV]     |
| 245     | 365     | LINK               | [7,RDB2]   |
| 247     | 367     | TIPSRV             | [RHT]      |
| 249-255 | 371-377 | RSEXEC             | [51,RHT]   |

## ASSIGNED LINK NUMBERS

The word "link" here refers to a field in the original ARPANET Host/IMP interface leader. The link was originally defined as an 8 bit field. Some time after the ARPANET Host-to-Host (AHHP) protocol was defined and, by now, some time ago the definition of this field was changed to "Message-ID" and the length to 12 bits. The name link now refers to the high order 8 bits of this 12 bit message-id field. The low order 4 bits of the message-id field are to be zero unless specifically specified otherwise for the particular protocol used on that link. The Host/IMP interface is defined in BBN report 1822 [1].

## Link Assignments:

| Decimal | Octal   | Description                      | References  |
|---------|---------|----------------------------------|-------------|
| -----   | -----   | -----                            | -----       |
| 0       | 0       | AHHP Control Messages            | [28,17,JBP] |
| 1       | 1       | Reserved                         | [JBP]       |
| 2-71    | 2-107   | AHHP Regular Messages            | [28,17,JBP] |
| 72-150  | 110-226 | Reserved                         | [JBP]       |
| 151     | 227     | CHAOS Protocol                   | [MOON]      |
| 152     | 230     | PARC Universal Protocol          | [4,EAT3]    |
| 153     | 231     | TIP Status Reporting             | [JGH]       |
| 154     | 232     | TIP Accounting                   | [JGH]       |
| 155     | 233     | Internet Protocol (regular)      | [33,JBP]    |
| 156-158 | 234-236 | Internet Protocol (experimental) | [33,JBP]    |
| 159-191 | 237-277 | Measurements                     | [9,VGC]     |
| 192-195 | 300-303 | Unassigned                       | [JBP]       |
| 196-255 | 304-377 | Experimental Protocols           | [JBP]       |
| 224-255 | 340-377 | NVP                              | [12,17,DC]  |
| 248-255 | 370-377 | Network Maintenance              | [JGH]       |

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