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#
#   SYS:\ETC\PROTOCOL
#
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#   File last updated 12/05/2002
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#In the Internet Protocol version 4 (IPv4) [RFC791] there is a field,
#called "Protocol", to identify the next level protocol. This is an 8
#bit field. In Internet Protocol version 6 (IPv6) [RFC1883] this field
#is called the "Next Header" field.
```

```
#
#Assigned Internet Protocol Numbers
```

|         |    |             |                                 |  |                                  |
|---------|----|-------------|---------------------------------|--|----------------------------------|
| ip      | 0  | HOPOPT      | IP                              |  |                                  |
| #       | 0  |             | #IPv6 Hop-by-Hop Option         |  | [RFC1883]                        |
| icmp    | 1  | ICMP        | #Internet Control Message       |  | [RFC792]                         |
| igmp    | 2  | IGMP        | #Internet Group Management      |  | [RFC1112]                        |
| ggp     | 3  | GGP         | #Gateway-to-Gateway             |  | [RFC823]                         |
| ipencap | 4  | IP-ENCAP    | #IP in IP (encapsulation)       |  | [RFC2003]                        |
| st      | 5  | ST          | #Stream                         |  |                                  |
|         |    |             |                                 |  | [RFC1190,RFC1819]                |
| tcp     | 6  | TCP         | #Transmission Control           |  | [RFC793]                         |
| cbt     | 7  | CBT         | #CBT                            |  | [Ballardie]                      |
| egp     | 8  | EGP         | #Exterior Gateway Protocol      |  | [RFC888,DLM1]                    |
| igp     | 9  | IGP         | #any private interior gateway   |  | [IANA]                           |
|         |    |             |                                 |  | [(used by Cisco for their IGRP)] |
| bbn-rcc | 10 | BBN-RCC-MON | #BBN RCC Monitoring             |  | [SGC]                            |
| nvp     | 11 | NVP-II      | #Network Voice Protocol         |  |                                  |
|         |    |             |                                 |  | [RFC741,SC3]                     |
| pup     | 12 | PUP         | #PUP                            |  |                                  |
|         |    |             |                                 |  | [PUP,XEROX]                      |
| argus   | 13 | ARGUS       | #ARGUS                          |  | [RWS4]                           |
| emcon   | 14 | EMCON       | #EMCON                          |  | [BN7]                            |
| xnet    | 15 | XNET        | #Cross Net Debugger             |  | [IEN158,JFH2]                    |
| chaos   | 16 | CHAOS       | #Chaos                          |  | [NC3]                            |
| udp     | 17 | UDP         | #User Datagram                  |  |                                  |
|         |    |             |                                 |  | [RFC768,JBP]                     |
| mux     | 18 | MUX         | #Multiplexing                   |  |                                  |
|         |    |             |                                 |  | [IEN90,JBP]                      |
| dcn     | 19 | DCN-MEAS    | #DCN Measurement Subsystems     |  |                                  |
|         |    |             |                                 |  | [DLM1]                           |
| hmp     | 20 | HMP         | #Host Monitoring                |  |                                  |
|         |    |             |                                 |  | [RFC869,RH6]                     |
| prm     | 21 | PRM         | #Packet Radio Measurement       |  |                                  |
|         |    |             |                                 |  | [ZSU]                            |
| xns-idp | 22 | XNS-IDP     | #XEROX NS IDP                   |  | [ETHERNET,XEROX]                 |
| trunk-1 | 23 | TRUNK-1     | #Trunk-1                        |  | [BWB6]                           |
| trunk-2 | 24 | TRUNK-2     | #Trunk-2                        |  | [BWB6]                           |
| leaf-1  | 25 | LEAF-1      | #Leaf-1                         |  | [BWB6]                           |
| leaf-2  | 26 | LEAF-2      | #Leaf-2                         |  | [BWB6]                           |
| rdp     | 27 | RDP         | #Reliable Data Protocol         |  | [RFC908,RH6]                     |
| irtp    | 28 | IRTP        | #Internet Reliable Transaction  |  | [RFC938,TXM]                     |
| iso-tp4 | 29 | ISO-TP4     | #ISO Transport Protocol Class 4 |  |                                  |
|         |    |             |                                 |  | [RFC905,RC77]                    |
| netblt  | 30 | NETBLT      | #Bulk Data Transfer Protocol    |  |                                  |
|         |    |             |                                 |  | [RFC969,DDC1]                    |

|                |    |            |                                       |                 |
|----------------|----|------------|---------------------------------------|-----------------|
| mfe-nsp        | 31 | MFE-NSP    | #MFE Network Services Protocol        |                 |
| [MFENET, BCH2] |    |            |                                       |                 |
| merit-inp      | 32 | MERIT-INP  | #MERIT Internodal Protocol            | [HWB]           |
| sep            | 33 | SEP        | #Sequential Exchange Protocol         |                 |
| [JC120]        |    |            |                                       |                 |
| 3pc            | 34 | 3PC        | #Third Party Connect Protocol         |                 |
| [SAF3]         |    |            |                                       |                 |
| idpr           | 35 | IDPR       | #Inter-Domain Policy Routing Protocol | [MXS1]          |
| xtp            | 36 | XTP        | #XTP                                  |                 |
| [GXC]          |    |            |                                       |                 |
| ddp            | 37 | DDP        | #Datagram Delivery Protocol           |                 |
| [WXC]          |    |            |                                       |                 |
| idpr-cmtp      | 38 | IDPR-CMTP  | #IDPR Control Message Transport Proto | [MXS1]          |
| tp++           | 39 | TP++       | #TP++ Transport Protocol              | [DXF]           |
| il             | 40 | IL         | #IL Transport Protocol                |                 |
| [Presotto]     |    |            |                                       |                 |
| ipv6           | 41 | IPv6       | #Ipv6                                 | [Deering]       |
| sdrp           | 42 | SDRP       | #Source Demand Routing Protocol       | [DXE1]          |
| ipv6-route     | 43 | IPv6-Route | #Routing Header for IPv6              | [Deering]       |
| ipv6-frag      | 44 | IPv6-Frag  | #Fragment Header for IPv6             | [Deering]       |
| idrp           | 45 | IDRP       | #Inter-Domain Routing Protocol        | [Sue Hares]     |
| rsvp           | 46 | RSVP       | #Reservation Protocol                 | [Bob Braden]    |
| gre            | 47 | GRE        | #General Routing Encapsulation        |                 |
| [Tony Li]      |    |            |                                       |                 |
| mhrp           | 48 | MHRP       | #Mobile Host Routing Protocol         | [David Johnson] |
| bn             | 49 | BNA        | #BNA                                  | [Gary Salamon]  |
| esp            | 50 | ESP        | #Encap Security Payload for IPv6      |                 |
| [RFC1827]      |    |            |                                       |                 |
| ah             | 51 | AH         | #Authentication Header for IPv6       |                 |
| [RFC1826]      |    |            |                                       |                 |
| i-nlsp         | 52 | I-NLSP     | #Integrated Net Layer Security TUBA   | [GLENN]         |
| swipe          | 53 | SWIPE      | #IP with Encryption                   | [JI6]           |
| narp           | 54 | NARP       | #NBMA Address Resolution Protocol     | [RFC1735]       |
| mobile         | 55 | MOBILE     | #IP Mobility                          | [Perkins]       |
| tlsp           | 56 | TLSP       | #Transport Layer Security Protocol    | [Ober]          |
|                |    |            | #using Kryptonet key management       |                 |
| skip           | 57 | SKIP       | #SKIP                                 | [Markson]       |
| ipv6-icmp      | 58 | IPv6-ICMP  | #ICMP for IPv6                        | [RFC1883]       |
| ipv6-nonxt     | 59 | IPv6-NoNxt | #No Next Header for IPv6              | [RFC1883]       |
| ipv6-opts      | 60 | IPv6-Opts  | #Destination Options for IPv6         | [RFC1883]       |
| cftp           | 62 | CFTP       | #CFTP                                 | [CFTP, HCF2]    |
| sat-expak      | 64 | SAT-EXPAK  | #SATNET and Backroom EXPAK            | [SHB]           |
| kryptolan      | 65 | KRYPTOLAN  | #Kryptolan                            | [PXL1]          |
| r              | 66 | RVD        | #MIT Remote Virtual Disk Protocol     |                 |
| [MBG]          |    |            |                                       |                 |
| ippc           | 67 | IPPC       | #Internet Pluribus Packet Core        | [SHB]           |
| sat-mon        | 69 | SAT-MON    | #SATNET Monitoring                    | [SHB]           |
| visa           | 70 | VISA       | #VISA Protocol                        | [GXT1]          |
| ipcv           | 71 | IPCV       | #Internet Packet Core Utility         | [SHB]           |
| cpnx           | 72 | CPNX       | #Computer Protocol Network Executive  | [DXM2]          |
| cphb           | 73 | CPHB       | #Computer Protocol Heart Beat         | [DXM2]          |
| wsn            | 74 | WSN        | #Wang Span Network                    |                 |
| [VXD]          |    |            |                                       |                 |
| pvp            | 75 | PVP        | #Packet Video Protocol                |                 |
| [SC3]          |    |            |                                       |                 |
| br-sat-mon     | 76 | BR-SAT-MON | #Backroom SATNET Monitoring           | [SHB]           |

|             |     |       |             |                                      |                |
|-------------|-----|-------|-------------|--------------------------------------|----------------|
| sun-nd      | 77  |       | SUN-ND      | #SUN ND PROTOCOL-Temporary           | [WM3]          |
| wb-mon      | 78  |       | WB-MON      | #WIDEBAND Monitoring                 | [SHB]          |
| wb-expak    | 79  |       | WB-EXPAK    | #WIDEBAND EXPAK                      | [SHB]          |
| iso-ip      | 80  |       | ISO-IP      | #ISO Internet Protocol               | [MTR]          |
| vmtp        | 81  | VMTP  |             | #VMTP                                | [DRC3]         |
| secure-vmtp | 82  |       | SECURE-VMTP | #SECURE-VMTP                         | [DRC3]         |
| vines       | 83  | VINES |             | #VINES                               | [BXH]          |
| ttp         |     | 84    | TTP         | #TTP                                 |                |
| [JXS]       |     |       |             |                                      |                |
| nsfnet-igp  | 85  |       | NSFNET-IGP  | #NSFNET-IGP                          | [HWB]          |
| dgp         |     | 86    | DGP         | #Dissimilar Gateway Protocol         | [DGP,ML109]    |
| tcf         | 87  |       | TCF         | #TCF                                 | [GAL5]         |
| eigrp       | 88  | EIGRP |             | #EIGRP                               | [CISCO,GXS]    |
| ospfigp     |     | 89    | OSPFIGP     | #OSPFIGP                             | [RFC1583,JTM4] |
| sprite-rpc  | 90  |       | Sprite-RPC  | #Sprite RPC Protocol                 | [SPRITE,BXW]   |
| larp        | 91  | LARP  |             | #Locus Address Resolution Protocol   | [BXH]          |
| mtp         |     | 92    | MTP         | #Multicast Transport Protocol        | [SXA]          |
| ax.25       | 93  | AX.25 |             | #AX.25 Frames                        | [BK29]         |
| ipip        | 94  | IPIP  |             | #IP-within-IP Encapsulation Protocol | [JI6]          |
| micp        | 95  | MICP  |             | #Mobile Internetworking Control Pro. | [JI6]          |
| scc-sp      |     | 96    | SCC-SP      | #Semaphore Communications Sec. Pro.  | [HXH]          |
| etherip     |     | 97    | ETHERIP     | #Ethernet-within-IP Encapsulation    | [RFC3378]      |
| encap       | 98  | ENCAP |             | #Encapsulation Header                | [RFC1241,RXB3] |
| gmtp        | 100 | GMTP  |             | #GMTP                                | [RXB5]         |
| ifmp        | 101 | IFMP  |             | #Ipsilon Flow Management Protocol    | [Hinden]       |
| pnni        | 102 | PNNI  |             | #PNNI over IP                        | [Callon]       |
| pim         |     | 103   | PIM         | #Protocol Independent Multicast      | [Farinacci]    |
| aris        | 104 | ARIS  |             | #ARIS                                | [Feldman]      |
| scps        | 105 | SCPS  |             | #SCPS                                | [Durst]        |
| qnx         |     | 106   | QNX         | #QNX                                 | [Hunter]       |
| a/n         |     | 107   | A/N         | #Active Networks                     |                |
| [Braden]    |     |       |             |                                      |                |
| ipcomp      |     | 108   | IPComp      | #IP Payload Compression Protocol     |                |
| [RFC2393]   |     |       |             |                                      |                |
| snp         |     | 109   | SNP         | #Sitara Networks Protocol            |                |
| [Sridhar]   |     |       |             |                                      |                |
| compaq-peer | 110 |       | Compaq-Peer | #Compaq Peer Protocol                | [Volpe]        |
| ipx-in-ip   | 111 |       | IPX-in-IP   | #IPX in IP                           | [Lee]          |
| rrrp        | 112 | VRRP  |             | #Virtual Router Redundancy Protocol  | [Hinden]       |
| pgm         |     | 113   | PGM         | #PGM Reliable Transport Protocol     | [Speakman]     |
| l2tp        | 115 | L2TP  |             | #Layer Two Tunneling Protocol        | [Aboba]        |
| ddx         |     | 116   | DDX         | #D-II Data Exchange (DDX)            |                |
| [Worley]    |     |       |             |                                      |                |
| iatp        | 117 |       | IATP        | #Interactive Agent Transfer Protocol |                |
| [Murphy]    |     |       |             |                                      |                |
| stp         |     | 118   | STP         | #Schedule Transfer Protocol          | [JMP]          |
| srp         |     | 119   | SRP         | #SpectraLink Radio Protocol          |                |
| [Hamilton]  |     |       |             |                                      |                |
| uti         |     | 120   | UTI         | #UTI                                 | [Lothberg]     |
| smp         |     | 121   | SMP         | #Simple Message Protocol             |                |
| [Ekblad]    |     |       |             |                                      |                |
| sm          |     | 122   | SM          | #SM                                  | [Crowcroft]    |
| ptp         |     | 123   | PTP         | #Performance Transparency Protocol   |                |
| [Welzl]     |     |       |             |                                      |                |
| isis        | 124 | IS    |             | #over IPv4                           | [Przygienda]   |
| fire        | 125 | FIRE  |             | #                                    | [Partridge]    |
| crtp        | 126 |       | CRTP        | #Combat Radio Transport Protocol     | [Sautter]      |

|                 |         |                 |                                       |            |
|-----------------|---------|-----------------|---------------------------------------|------------|
| crudp           | 127     | CRUDP           | #Combat Radio User Datagram           | [Sautter]  |
| sscopmce        | 128     | SSCOPMCE        | #                                     | [Waber]    |
| iplt            | 129     | IPLT            | #                                     | [Hollbach] |
| sps             | 130     | SPS             | #Secure Packet Shield                 | [McIntosh] |
| pipe            | 131     | PIPE            | #Private IP Encapsulation within IP   | [Petri]    |
| sctp            | 132     | SCTP            | #Stream Control Transmission Protocol | [Stewart]  |
| fc              | 133     | FC              | #Fibre Channel                        |            |
| [Rajagopal]     |         |                 |                                       |            |
| rsvp-e2e-ignore | 134     | RSVP-E2E-IGNORE | #                                     |            |
| [RFC3175]       |         |                 |                                       |            |
| #               | 135-254 | Unassigned      |                                       | [IANA]     |
| #               | 255     | Reserved        |                                       | #[IANA]    |