Network Working Group Mark Crispin
Request for Comments 752 SU-AI
NIC nnnnn 2 January 1979

# A Universal Host Table

ABSTRACT:

The network host table in use at MIT and Stanford is described. This host table is superior to the NIC and Tenex host tables in several ways. A binary file, compiled from this host table, is also described. This file is used by subsystems on MIT's ITS and Stanford's WAITS timesharing systems for efficiency in host and network lookups.

HISTORY:

As with many other sites on the Arpanet, we found the NIC's host table unsuited to our needs. Part of the problem was because the NIC host table was often inaccurate and all too often failed to include several nicknames in common usage in our communities. In addition, the NIC host table's format was awkward for user programs to use, especially those which wanted to have the host table mapped into memory in some sort of structured binary form for efficient lookups. Finally, the NIC host table neglects to include some essential information.

The ITS host table was originally designed to be compiled along with a network handling program (MIDAS, the PDP-10 assembler used, has a pseudo-op to insert a file into an assembly). In order to make the host table palatable to the assembler, every comment line began with a semicolon, and every actual data line began with the word HOST. Each program which used the host table defined HOST as an assembly macro before inserting the host table into the assembly.

This worked well for a long while, but as the network grew, hosts changed their status more frequently and more network programs required reassembly when the host table was updated. If the appropriate person for a particular subsystem was not around, it could be a while before that subsystem updated its host table.

In the spring of 1977, design started on a binary file which would be placed on a system directory and which all subsystems which wanted to access host table information would read in. The format was carefully designed to be general enough to satisfy the needs of all the diverse subsystems. All of these subsystems required modification to use the new format but these modifications turned out to be trivial compared to the benefits from not having to recompile every subsystem.

Later the host table and binary file were imported to the WAITS


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system at Stanford, where it eventually replaced the former host table. Recently, support for multiple networks has been added, including allowing hosts to be on more than one network, and a more flexible compiler than assembler macros was written (the program which generates the binary file now does the compiling).

THE HOST TABLE:

In the descriptions below, angle brackets and lower case are used as a meta-linguistic device. It should be noted that spaces and tabs are often ignored and may be used freely in the source format, while commas are always explicit delimiters. In addition, semicolon always begins a commentary and everything after the semicolon on the line is ignored; however, any text before the semicolon on the line is processed as usual. The syntax rules should be obvious by examining the text of the host table in the appendix. Names are alphanumeric strings, consisting of the set (A-Z, 0-9, and - (i.e., dash)). Quoting is used to separate examples from the text and is not part of the example.

The host table consists of commentary and two types of text lines. The commentary lines begin with a semicolon and are ignored by the compiler. They are intended to provide information for a human reader or editor of the host table. The commentary lines may be in mixed case, however the text lines are by tradition entirely in upper case. There are two kinds of text lines: host and network.

Network text lines begin with the word "NET" followed by a space or tab. These specify a network name and the network number (as assigned by Postel) for that network. As there currently are no officially assigned network names, suitable names were assigned more or less based on the English names in Postel’s "Assigned Numbers", RFC 750. These names may be changed in the future (however, some software has come to depend on the names ARPA, CHAOS, and DIAL for the ARPANET, Chaos net, and Dialnet).

The format of a network text line is:

NET <name>,<decimal-number>

For example, the ARPANET’s entry would look something like:

NET ARPA,10

Host text lines begin with the word "HOST" followed by a space or tab. These specify a host name, a host address list, whether this host is a "user" or a "server", the name of the host’s operating system, the name of the host’s machine type, and a nick name list. The operating system, machine type, and/or nick name list may be omitted, in which case they default to unknown or null.


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The host name is a unique name string for that host. For ARPANET sites, it is the official name for that host as assigned by the NIC. For other networks, it is whatever name is in common use on that network. So far there haven't been any naming conflicts on multiple-network hosts.

The host address list is either a single host address, or a list of host addresses in square brackets and delimited by commas. A host address consists of a network name, a space, and the host's address on that network. If the network name is not specified, it defaults to ARPA (i.e., "ARPA 0/11" and "0/11" are equivalent). Different networks parse host addresses in different ways:

> ARPANET addresses are in BBN-style host number slash IMP number notation, with both numbers being decimal. Hence host 2 on IMP 6 is represented as "2/6". Of course, this format is backwards, but it has become enough of a network standard to force its use. Old-style octal addresses are allowed (e.g. "206" for "2/6") but are no longer used or supported.
>
> CHAOS net addresses are a single octal number, e.g. "CHAOS 2026", and specify the host's address on the CHAOS net.
>
> Dialnet addresses are a ten-digit decimal number, and specify the TelCo (phone) number of the host's Dialnet port.

The definition of user vs. server is generally taken to mean "according to the NIC" for ARPANET hosts. A server is considered to be a host for which making a connection to a remote service is a meaningful operation. For some hosts with limited servers, the definition often is changed from the official one, depending upon the individual circumstances. For example, "users" who have an FTP server and occasionally a TELNET server may be called "servers". On the other hand a "server" which does not accept MAIL and rejects MAIL in a pathological way (e.g. by hanging) might be labelled a "user".

The name of the host's operating system is a string much as the host name is, such as "ITS", "TOPS-20", or "MULTICS". Some subsystems use this information to predict certain behavior of the remote server. For example, a MAIL user subsystem knows that for operating system "MULTICS" it has to log in as user NETML before attempting to deliver the mail.

The name of the host's machine type is a string as well. For the convenience of several subsystems, all DEC "PDP-n" machines are entered without the dash, and all PDP-10 like machines (e.g., KL-20, MAXC, etc.) are considered to be PDP-10's, which by the way gets entered as "PDP10" since that is a single 36-bit word in 7-bit ASCII. Like the operating system name, several subsystems use this information as well. For example, a PDP-10 FTP user process will try to negotiate 36-bit image


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mode with another PDP-10; or a Tenex or Tops-20 site will try to negotiate paged transfers with another Tenex or Tops-20.

The nick name list is in square brackets and consists of a series of names delimited by commas. There may be any number of nick names.

The format of a host text line is:

HOST <name>,<address-list>,<status>,<system>,<machine>,<nickname-list>

For example, an entry might look something like:

HOST MIT-AI,[ARPA 2/6,CHAOS 2026],SERVER,ITS,PDP10,[AI,MITAI]

this entry describes a host named "MIT-AI" on two networks (ARPANET and CHAOS net), with ARPANET address "2/6" and CHAOS net address "2026". It is a server site, running an operating system called "ITS" on "PDP10" hardware. It has two nicknames, "AI" and "MITAI".

## THE HOST TABLE BINARY FILE:

The host table binary file is a 36-bit data file; consequently it probably is only of interest to PDP-10 sites. The format of the file is:

FILE HEADER:

| | |
|---|---|
| word 0 | The name of this file in SIXBIT. Currently HOSTS2. |
| word 1 | The name of the source file in SIXBIT. Always HOSTS. |
| word 2 | The version of the source file in SIXBIT if compiled on an ITS site, otherwise the name of the site in SIXBIT. |
| word 3 | The directory name of the source, usually in SIXBIT. |
| word 4 | The name of the site in SIXBIT. |
| word 5 | The user name who compiled the file, usually in SIXBIT. |
| word 6 | Date of compilation as SIXBIT YYMMDD. |
| word 7 | Time of compilation as SIXBIT HHMMSS. |
| word 8 | Address in file of NAME table. |
| word 9 | Address in file of SITE table. |
| word 10 | Address in file of NETWORK table. |
| | <words after this are reserved for future use> |

NETWORK table:

| | |
|---|---|
| word 0 | Number of entries in table. |
| word 1 | Number of words per entry, currently 2. |
| entry word 0 | Network number assigned by Postel. |
| entry word 1 | Left half: Address in file of name of network in ASCIZ.<br>Right half: Address in file of network’s ADDRESS table (zero means no ADDRESS table, i.e. no hosts). |


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ADDRESS table (one per network):

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word 0          Number of entries in table.
word 1          Number of words per entry, currently 2.
 entry word 0   Network address of this entry, including network number.
                 For ARPANET addresses this is in the format:
                  xxx000,,000000  Network number
                  000xxx,,xxx000  IMP number
                  000000,,000xxx  Host number
                  Each number is right justified.
                 For CHAOS net addresses it is an octal number.
                 For Dialnet addresses it is the address in the file  of
                 the TelCo number in ASCIZ.
 entry word 1   Left half: Address in file of SITE table entry.
                Right half: Address in file of next ADDRESS table  entry
                 for this site (zero means end of list).
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SITE table:

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word 0          Number of entries in table.
word 1          Number of words per entry, currently 3.
 entry word 0   Left half: Address in file of official name in ASCIZ.
                Right half: Address in file of first ADDRESS table entry
                 for this site.
 entry word 1   Left half: Address in file of  operating system name  in
                 ASCIZ (zero means unknown).
                Right half: Address in file of  machine  type  in  ASCIZ
                 (zero means unknown).
 entry word 2   Left half: Flags.  The 400000 bit means a server site.
                Right half: reserved
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NAMES table:

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word 0          Number of entries in table.
word 1          Number of words per entry, currently 1.
 entry word 0   Left half: Address in file of SITE table entry for  this
                 host.
                Right half: Address in file of host name in ASCIZ.
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CONCLUSION:

A host table capable of supporting the full host addressing of the ARPANET and additional networks has been presented, along with a binary file format for efficient manipulation of this host table data.

We are documenting this format in order to present it to the outside world as a suggested replacement for the current host table. The advantage of our host table is that it has already been implemented and is in use at MIT and Stanford. We have established some conventions


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for network names, as there are currently no network names assigned. So this RFC is also a request for some discussion about getting some names assigned for the networks for the benefit of host tables.

Anybody who is interested in importing our host table to their own system should contact David Moon (MOON@MIT-MC) or me (MRC@SU-AI) for more information.

ACKNOWLEDGEMENTS:

Many people have been involved in the design and implementation of the current host table. They include, in no particular order, Richard Stallman, David Moon, Ken Harrenstien, and Mark Crispin. I won’t bother to list the contributions individually, since it’s hard to determine who did what and that sort of stuff is boring to read anyway.


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## APPENDIX

The host table as of this writing is listed in this appendix.

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;                   ITS/SAIL Host Table

; Last updated: MRC 1/2/79

;  Although the file <NETINFO>HOSTS.TXT at SRI-KL is the
; official NIC host table, it is occasionally delayed in
; reflecting actual network status, and does not include
; colloquial-usage nicknames, operating system names,
; machine types, or networks...

;  Hence this file, which is manually updated as necessary.
; The "official" version is maintained as AI:SYSENG;HOSTS >
; and copies are kept on SYSENG;HOSTS > on the other ITS
; systems.  SAIL's version is kept on HOSTS.TXT[NET,MRC].

;  Modifications should be made to the AI file and a note of
; the change sent to Info-Hosts@AI and Info-Net@SAIL.  If
; you're going to modify it, you should warn MRC@SAIL and
; SWG@DM, who normally maintain it, to avoid timing errors.

;  The easy way to compile the binary file and install it is
; to run the batch command files:

; :XFILE SYSENG;HOSTS XFILE at AI or

; .BATCH /NOW @HOSTS.[NET,MRC] at SAIL.

;  If you want to do it the hard way, read those files.

; The network table is in the format of one line entries looking like:

; NET <name>,<network #>

; sorted alphabetically by network name.  All fields should be
; in upper case.  The fields are:

; <name>        official name of this network (whenever such
;                names get assigned; currently whatever sounds
;                good).
;
;               The convention I have established is to
;                abbreviate "packet radio network" to "-PR".
;                "NET" is generally not part of the name unless
;                it is a proper name.  The three networks
;                currently used by MIT and Stanford don't have
;                "NET" in them.
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; <network #>   A single network number, in DECIMAL.  These
;                numbers are assigned by Jon Postel.

; The host table is in the format of one line entries looking like:

; HOST <name>,<host #s>,<status>,<system>,<machine>,[<nicknames>]

; sorted alphabetically by host name.  All fields should be
; in upper case.  The fields are:

; <name>        official name of this site according to the
;                NIC.

; <host #s>     A single <host #> or a list of them in
;                brackets and separated by commas, with no
;                spaces in between.
;
;               A <host #> is an OCTAL number, optionally
;                preceded by a network name (ARPA, CHAOS, DIAL)
;                and a space.  The default network name if none
;                is supplied is ARPA.
;
;               Arpanet host numbers are represented in
;                BBN's backwards host slash IMP notation with
;                both numbers in DECIMAL.  This gets compiled
;                into the 1.1 through 1.8 bits being the host
;                number, and the 2.1 through 3.7 bits being
;                the IMP number.  For example, MIT-AI (host 2
;                on IMP 6 or 2/6) is compiled as 6002.  Note
;                that the 1.9 and the 3.7 through 4.9 bits are
;                always zero!  The HOSTS1 program compiles
;                into the old style 8 bit format (1.1-1.3 for
;                host number, 1.4-1.8 IMP number) whenever
;                possible; HOSTS2 and future programs only use
;                the new format.
;
;               Chaosnet host numbers are in octal.
;
;               Dialnet host "numbers" are really pointers to
;                an ASCII string.  In the source, they are
;                represented as a 10-digit TelCo number.

; <status>      whether USER or SERVER.  This is usually the
;                status "according to the NIC".

; <system>      operating system name (e.g., TENEX, ITS,
;                MULTICS, etc).  Many elves actually have
;                other systems behind them; if possible, the
;                system behind the ELF is used rather than
;                the ELF.  Also, TOPS-10 is used rather than
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;                TOPS10.

; <machine>     actual machine type (e.g., PDP10, 370, PDP11,
;                etc).  By convention, KA-10, KI-10, KL-10,
;                KL-20 and MAXC are all considered to be
;                PDP-10s.  No - should be after "PDP"; this
;                is so it fits in one 36-bit word.

; <nicknames>   nick names for this host (whether NIC
;                nicknames or local ones).  The list is in
;                square brackets and each name is delimited
;                by a comma.

; Network table...

NET ARPA,                         10     ; Supported by HOSTS2
NET ATLANTIC-SATTELITE,            4
NET BBN-PR,                        1
NET BBN-RCC,                       3
NET BBN-SATNET,                    8
NET CHAOS,                         7     ; Supported by HOSTS2
NET CYCLADES,                     12
NET DATAPAC,                      16
NET DCEC-EDN,                     21
NET DIAL,                         22     ; Supported by HOSTS2
NET EPSS,                         15
NET FORT-BRAGG-PR,                 9
NET FORT-SILL-PR,                 20
NET LCS,                          18
NET NATIONAL-PHYSICAL-LAB,        13
NET SF-BAY-AREA-PR-1,              2
NET SF-BAY-AREA-PR-2,              6
NET TELENET,                      14
NET TRANSPAC,                     17
NET TYMNET,                       19
NET UC-LONDON,                    11
NET WASHINGTON-DC-PR,              5

; Host table...

HOST ACCAT-TIP,         2/35,USER,TIP,H316,[NELC-TIP]
HOST AFWL,              0/48,SERVER,SCOPE,CDC-6600,[AWFUL]
HOST AFWL-TIP,          2/48,USER,TIP,H316,[AWFUL-TIP]
HOST AI-CHAOS-11,       CHAOS 426,USER,,PDP11
HOST ALMSA-TIP,         2/61,USER,TIP,H316
HOST AMES-11,           3/16,USER,ELF,PDP11
HOST AMES-67,           0/16,SERVER,TSS/360,360/67,[AMES]
HOST AMES-TIP,          2/16,USER,TIP,H316
HOST ANL,               0/55,SERVER,OS-MVT,370/195,[ARGONNE]
HOST ARPA-DMS,          0/28,SERVER,DMS,PDP15
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HOST ARPA-TIP,          2/28,USER,TIP,H316
HOST ARPA-XGP11,        3/28,USER,ELF,PDP11
HOST ASL,               1/48,USER,ELF,PDP11
HOST BBN-GATEWAY,       3/40,USER,ELF,PDP11
HOST BBN-INLAT,         1/5,USER,ELF,PDP11,[INLAT]
HOST BBN-NCC,           0/40,USER,NCC,H316,[NCC]
HOST BBN-PTIP,          2/5,USER,TIP,PLURIBUS,[PTIP]
HOST BBN-SPEECH-11,     2/49,USER,ELF,PDP11,[BBN-SPEECH11]
HOST BBN-TENEX,         3/49,SERVER,TENEX,PDP10,[BBN,BBNC,BBN-C,BBN-TENEXC]
HOST BBN-TENEXA,        3/5,SERVER,TOPS-20,PDP10,[BBNA,BBN-A,BBN-TWENEXA]
HOST BBN-TENEXB,        0/49,SERVER,TENEX,PDP10,[BBNB,BBN-B]
HOST BBN-TENEXD,        1/49,SERVER,TOPS-20,PDP10,[BBND,BBN-D,BBN-TWENEXD]
HOST BBN-TENEXE,        0/5,SERVER,TENEX,PDP10,[BBNE,BBN-E] ;Worse than wabbits!
HOST BBN-TESTIP,        2/30,USER,TIP,H316
HOST BBN-UNIX,          0/63,SERVER,UNIX,PDP11
HOST BELVOIR,           0/27,USER,ANTS,PDP11
HOST BNL,               1/58,SERVER,SCOPE,CDC-7600,[BROOKHAVEN]
HOST BRAGG-TIP,         2/38,USER,TIP,H316
HOST BRL,               0/29,USER,ANTS,PDP11
HOST CCA-SDMS,          2/31,SERVER,UNIX,PDP11
HOST CCA-SIP,           3/31,USER,SIP,PDP11,[SIP]
HOST CCA-SPEECH,        1/31,SERVER,RSX-11M,PDP11
HOST CCA-TENEX,         0/31,SERVER,TENEX,PDP10,[CCA,DC,DATACOMPUTER]
HOST CCTC,              0/20,SERVER,GCOS,H6000
HOST CHII,              2/54,USER,MP-32A,AP90
HOST CINCPAC-TIP,       2/36,USER,TIP,H316,[SIXPAC-TIP]
HOST CMU-10A,           1/14,SERVER,TOPS-10,PDP10,[CMUA,CMU-A,CMU]
HOST CMU-10B,           0/14,SERVER,TOPS-10,PDP10,[CMUB,CMU-B]
HOST CMU-10D,           2/14,SERVER,TOPS-10,PDP10,[CMUD,CMU-D]
HOST CMU-CMMP,          3/14,SERVER,HYDRA,PDP11,[HYDRA]
;;;This host will replace LCSR-TIP in January '79.
;;;HOST COLLINS-TIP,    2/46,USER,TIP,H316
HOST CTO-DDS,           1/17,SERVER,UNIX,PDP11
HOST DARCOM-TIP,        2/50,USER,TIP,H316
;;;This host name is listed in HOSTS.TXT with the same address as EDN-UNIX.
;;;HOST DCEC,           3/20,USER
HOST DCEC-TIP,          2/20,USER,TIP,H316
HOST DEC-2136,          0/37,SERVER,TOPS-20,PDP10
HOST DEC-MARLBORO,      1/37,SERVER,TOPS-20,PDP10,[DEC,DEC-TWENEX]
HOST DOCB-TIP,          2/25,USER,TIP,H316
HOST DTI,               1/12,SERVER,UNIX,PDP11
HOST DTNSRDC,           1/8,SERVER,,CDC-6400,[NSRDC]
HOST EDN-UNIX,          3/20,SERVER,UNIX,PDP11
HOST EGLIN,             0/53,SERVER,SCOPE,CDC-6600
HOST ETAC,              0/59,USER,ELF,PDP11
HOST GOONHILLY,         0/60,USER
HOST GUNTER-TIP,        2/13,USER,TIP,H316,[GUNT]
HOST GUNTER-UNIX,       0/13,SERVER,UNIX,PDP11,[GAFS]
HOST GWC-TIP,           2/24,USER,TIP,H316
HOST HARV-10,           0/9,SERVER,TOPS-10,PDP10,[ACL]
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HOST I4-TENEX,            0/15,SERVER,TENEX,PDP10,[I4,KI4A-TENEX,I4A]
HOST I4B-TENEX,           2/15,SERVER,TENEX,PDP10,[KI4B-TENEX,I4B]
HOST ISI-SPEECH11,        0/22,SERVER,ELF,PDP11
HOST ISI-XGP11,           0/52,USER,ELF,PDP11
HOST LBL,                 0/34,SERVER,BKY,CDC-7600
HOST LBL-UNIX,            1/34,SERVER,UNIX,PDP11
HOST LCSR-TIP,            2/46,USER,TIP,H316
HOST LISP-MACHINE-1,      CHAOS 434,USER,LISPM,LISPM,[CADR-1]
HOST LISP-MACHINE-2,      CHAOS 433,USER,LISPM,LISPM,[CADR-2]
HOST LISP-MACHINE-3,      CHAOS 432,USER,LISPM,LISPM,[CADR-3]
HOST LISP-MACHINE-4,      CHAOS 431,USER,LISPM,LISPM,[CADR-4]
HOST LL,                  0/10,SERVER,VM-370,370/168
HOST LL-11,               3/10,SERVER,DOS,PDP11
HOST LL-ASG,              1/44,SERVER,UNIX,PDP11
HOST LL-XN,               2/10,SERVER,UNIX,PDP11
HOST LLL-COMP,            0/21,SERVER,UNIX,PDP11,[LLL,LLL-UNIX]
HOST LLL-MFE,             1/21,SERVER,TOPS-10,PDP10
HOST LOGICON,             1/35,USER,UNIX,PDP11
HOST LONDON,              0/42,SERVER,OS-MVT,370,[UKICS-370]
HOST LONDON-GATEWAY,      3/42,USER,ELF,PDP11,[SATNET,LON-SAT-GATE]
HOST LONDON-TIP,          2/42,USER,TIP,H316
HOST LONDON-VDH,          1/42,SERVER,GATEWAY,PDP9,[LON-EPS-GATE]
HOST MC-IO-11,            CHAOS 440,USER,,PDP11
HOST MIT-AI,              [2/6,CHAOS 2026],SERVER,ITS,PDP10,[AI,MITAI]
HOST MIT-DEVMULTICS,      4/31,SERVER,MULTICS,H68/80,[CISL,DEVMULTICS,HONEYWELL]
HOST MIT-DMS,             1/6,SERVER,ITS,PDP10,[DM,MITDM,MIT-DM,DMS]
HOST MIT-MC,              [3/44,CHAOS 1440],SERVER,ITS,PDP10,[MC,MITMC]
HOST MIT-ML,              3/6,SERVER,ITS,PDP10,[ML,MITML]
HOST MIT-MULTICS,         0/6,SERVER,MULTICS,H6180,[MULTICS]
HOST MIT-TIP,             2/44,USER,TIP,H316
HOST MIT-XX,              0/44,SERVER,TOPS-20,PDP10,[XX,MITXX]
HOST MITRE,               0/17,SERVER,UNIX,PDP11
HOST MITRE-TIP,           2/17,USER,TIP,H316
HOST MOFFETT-ARC,         0/45,SERVER,TENEX,PDP10,[MOFFETT,SCI]
HOST MOFFETT-SUBNET,      1/45,USER,PLI,PLURIBUS
HOST NADC,                3/8,SERVER,,CDC-6500,[NALCON]
HOST NBS-10,              0/19,SERVER,TOPS-10,PDP10,[NBS]
HOST NBS-TIP,             2/19,USER,TIP,H316
HOST NBS-UNIX,            3/19,SERVER,UNIX,PDP11
HOST NCC-TIP,             2/40,USER,TIP,H316
HOST NCSC,                1/53,SERVER,MCP,B-5500,[NCSL]
HOST NDRE,                1/41,SERVER,SINTRAN,NORD-10
HOST NDRE-GATEWAY,        3/41,USER,ELF,PDP11
HOST NORSAR-40A,          0/41,USER,DOS/360,360/40
HOST NORSAR-TIP,          2/41,USER,TIP,H316
HOST NOSC-CC,             0/3,SERVER,,UNIVAC-1110,[NUC-CC,NOSC-ELF]
HOST NOSC-SDL,            2/3,SERVER,UNIX,PDP11,[NELC-ELF,NELC]
HOST NOSC-SECURE1,        1/3,SERVER,UNIX,PDP11,[NUC-SECURE]
HOST NOSC-SECURE2,        0/35,USER,TENEX,PDP10,[USC-ISIR1,ISIR1]
HOST NOSC-SECURE3,        3/35,USER,UNIX,PDP11
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HOST NPRDC-11,          4/3,SERVER,UNIX,PDP11
HOST NPS,               0/33,USER
HOST NPS-TIP,           2/33,USER,TIP,H316
HOST NRL,               0/8,USER,ELF,PDP11
HOST NSA,               0/57,USER
HOST NSWC-DL,           4/8,USER,,CDC-6700
HOST NSWC-WO,           2/8,SERVER,NOS,CDC-6500
HOST NTIA-ITS,          1/25,SERVER,UNIX,PDP11,[OT-ITS]
HOST NUSC,              3/46,SERVER,,UNIVAC-1108
HOST NUSC-NPT,          2/9,SERVER,,,[NPT]
HOST NWC,               3/3,SERVER,EXEC-8,UNIVAC-1110
HOST NYU,               0/58,SERVER,SCOPE,CDC-6600
HOST OFFICE-1,          0/43,SERVER,TENEX,PDP10,[OF1]
HOST OFFICE-2,          1/43,SERVER,TENEX,PDP10,[OF2]
HOST PARC-GATEWAY,      1/32,USER,,NOVA-800,[PORTOLA]
HOST PARC-MAXC,         0/32,SERVER,TENEX,PDP10,[PARC,MAXC,MAXC1,XEROX-PARC]
HOST PARC-MAXC2,        2/32,SERVER,TENEX,PDP10,[MAXC2]
HOST PENT-UNIX,         3/26,USER,UNIX,PDP11
HOST PENTAGON-TIP,      2/26,USER,TIP,H316
HOST PLASMA,            CHAOS 500,USER,,PDP11
HOST RADC-MULTICS,      0/18,SERVER,MULTICS,H6180,[RADC,GAFB]
HOST RADC-TIP,          2/18,USER,TIP,H316
HOST RADC-TOPS20,       3/18,SERVER,TOPS-20,PDP10,[RADC-TWENEX,RADC-20]
HOST RADC-XPER,         1/18,SERVER,UNIX,PDP11,[ROCHESTER]
HOST RAND-RCC,          0/7,SERVER,OS-MVT,370/158
HOST RAND-TIP,          2/7,USER,TIP,H316
HOST RAND-UNIX,         3/7,SERVER,UNIX,PDP11,[RAND-ISD,ISD]
HOST RUTGERS,           0/46,SERVER,TOPS-20,PDP10,[RUTGERS-10,RUTGERS-20]
HOST SAT-VDH,           3/63,USER
HOST SCRL-RSX,          1/54,USER,ELF,PDP11
HOST SDAC-44,           3/39,SERVER,DOS/360,360/44
HOST SDAC-CCP,          0/39,USER,TIP,PLURIBUS
HOST SDAC-NEP,          2/39,USER,DOS/360,360/40
HOST SDAC-UNIX,         1/39,SERVER,UNIX,PDP11
HOST SPEECH-TWENEX,     CHAOS 435,SERVER,TOPS-20,PDP10,[SPEECH]
HOST SRI-C3PO,          3/51,USER,ELF,PDP11,[PKT40,C3PO] ; What about Darth Vader?
HOST SRI-KA,            0/51,SERVER,TENEX,PDP10,[SRI-TENEX,KA]
HOST SRI-KL,            1/2,SERVER,TOPS-20,PDP10,[SRI,NIC,KL,AIC,SRI-AI,SRI-TWENEX]
HOST SRI-NSC11,         3/2,USER,ELF,PDP11,[NSC11]
HOST SRI-R2D2,          1/51,USER,ELF,PDP11,[PKT34,R2D2] ; or the princess?
HOST SRI-TSC,           0/2,USER,ELF,PDP11,[ARC,ARC-RD]
HOST SRI-UNIX,          2/51,SERVER,UNIX,PDP11,[THX-1145]
HOST SRI-VIS11,         2/2,USER,ELF,PDP11,[VIS11,SRI-CBC11,CBC11]
HOST SU-AI,             [0/11,DIAL 4154941659],SERVER,WAITS,PDP10,[SAIL,SU-WAITS]
HOST SU-GSB,            DIAL 4153261639,SERVER,TOPS-20,PDP10,[GSB,BIZ-SKOOL]
HOST SU-ISL,            1/56,SERVER,UNIX,PDP11,[ISL]
HOST SU-LOTS,           DIAL 4153291870,SERVER,TOPS-20,PDP10,[LOTS]
HOST SU-TIP,            2/11,USER,TIP,H316,[FELT-TIP,ILSJUM-TIP,Q-TIP]
HOST SUMEX-AIM,         0/56,SERVER,TENEX,PDP10,[AIM,SUMEX]
HOST UCLA-ATS,          0/1,SERVER,UNIX,PDP11,[ATS]
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HOST UCLA-CCN,          1/1,SERVER,OS-MVT,360/91,[CCN]
HOST UCLA-SECURITY,     2/1,SERVER,UNIX,PDP11,[INSECURITY,UCLA,UCLA-S]
HOST USC-ECL,           3/23,SERVER,TENEX,PDP10,[ECL]
HOST USC-ISI,           1/22,SERVER,TENEX,PDP10,[ISIA,ISI,USC-ISIA]
HOST USC-ISIB,          3/52,SERVER,TENEX,PDP10,[ISIB,ISI-DEVTENEX]
HOST USC-ISIC,          2/22,SERVER,TENEX,PDP10,[ISIC]
HOST USC-ISIE,          1/52,SERVER,TOPS-20,PDP10,[ISIE,ISI-TWENEX]
HOST USC-TIP,           2/23,USER,TIP,H316
HOST UTAH-11,           0/4,USER,RSX-11M,PDP11
HOST UTAH-TIP,          2/4,USER,TIP,H316
HOST UTEXAS,            0/62,SERVER,UNIX,PDP11,[UTEX,TEXAS]
HOST WHARTON,           1/46,SERVER,TOPS-10,PDP10,[WARTON]
HOST WPAFB,             0/47,SERVER,SCOPE,CDC-6600
HOST WPAFB-AFAL,        1/47,SERVER,TOPS-10,PDP10,[AVSAIL]
HOST WPAFB-TIP,         2/47,USER,TIP,H316
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