                          The US Domain

Status of this Memo

   This memo provides information for the Internet community. It does
   not specify an Internet standard. Distribution of this memo is
   unlimited.

Table of Contents

1. INTRODUCTION

   1.1 The Internet Domain Name System

   The Domain Name System (DNS) provides for the translation between
   host names and addresses. Within the Internet, this means
   translating from a name such as "venera.isi.edu", to an IP address
   such as "128.9.0.32". The DNS is a set of protocols and databases.
   The protocols define the syntax and semantics for a query language to
   ask questions about information located by DNS-style names. The
   databases are distributed and replicated. There is no dependence on
   a single central server, and each part of the database is provided in
   at least two servers.

   The assignment of the 32-bit IP addresses is a separate activity. IP
   addresses are assigned by the Network Information Center
   (Hostmaster@NIC.DDN.MIL).

   In addition to translating names to addresses for hosts that are on
   the Internet, the DNS provides for registering DNS-style names for
   other hosts reachable (via electronic mail) through gateways or mail
   relays. The records for such name registration point to an Internet
   host (one with an IP address) that acts as a mail forwarder for the
   registered host. For example, the host "bah.rochester.ny.us" is
   registered in the DNS with a pointer to the mail relay
   "relay1.uu.net". This type of pointer is called an MX record.

   This gives electronic mail users a uniform mail addressing syntax and
   avoids making users aware of the underlying network boundaries.

   The reason for the development of the domain system was growth in the
   Internet. The host name to address mappings were maintained by the
   Network Information Center (NIC) in a single file, called HOSTS.TXT,
   which was FTPed by all the hosts on the Internet. The network
   population was changing in character. The timeshared hosts that made
   up the original ARPANET were being replaced with local networks of
   workstations. Local organizations were administering their own names
   and addresses, but had to wait for the NIC to make changes in
   HOSTS.TXT to make the changes visible to the Internet at large.
   Organizations also wanted some local structure on the name space.
   The applications on the Internet were getting more sophisticated and
   creating a need for general purpose name service. The idea of a
   hierarchical name space, with the hierarchy roughly corresponding to
   organizational structure, and names using "." as the character to
   mark the boundary between hierarcy levels. A design using a
   distributed database and generalized resources was implemented.

   The domain system provides standard formats for resource data,

standard methods for querying the database, and standard methods for
name servers to refresh local data from other name servers.

1.2 Top-Level Domains

The top-level domains in the DNS are EDU, COM, GOV, MIL, ORG, INT,
and NET, and all the 2-letter country codes from the list of
countries in ISO-3166.

Even though the intention was that any educational institution any
where in the world could be registered under the EDU domain, in
practice it has turned out with few exceptions only those in the
United States have registered under EDU, similiary with COM (for
commercial). In other countries, everything is registered under the
2-letter country code, often with some subdivision. For example, in
Korea (KR) the second level names are AC for academic community, CO
for commercial, GO for government, and RE for research. However each
country may go it's own way about organizing its domain, and many
have.

Their are no plans of putting all of the organizational domains .EDU
 .GOV .COM etc., under .US.

However, there are some states registered in the .GOV domain (11 by 2
letter code), and 3 by full names)

          ca.gov   la.gov   ohio.gov   va.gov
          co.gov   md.gov   or.gov   wa.gov
          hawaii.gov   nc.gov   sc.gov
          ia.gov   ny.gov   texas.gov

Other names sometimes appear as top-level domain names. Some people
have made up names in the DNS style without coordinating or
registering with the DNS management. Some names that typically
appear are ".BITNET", ".UUCP", and two-letter codes for continents,
such as ".NA" for North America (this conflicts with the official
Internet code for Namibia).

For example, the DNS style name "KA7EEJ.CO.USA.NA" is used in the
amateur radio network. These addresses are never supposed to show up
on the Internet but they do occasionally. The amateur radio network
people created their own naming scheme, and it interferes sometimes
with Internet addresses.

   1.3 The US Domain

   The US Domain is an official top-level domain in the DNS of the
   Internet community. It is registered with the Network Information
   Center. The domain administrators are Jon Postel and Ann Westine
   Cooper at the Information Sciences Institute of the University of
   Southern California (USC-ISI).

   US is the ISO-3166 2-letter country code for the United States and
   thus the US Domain is established as a top-level domain and
   registered with the NIC the same way other country domains are.

   Because organizations in the United States have registered primarily
   in the EDU and COM domains, little use was initially made of the US
   domain.

   In the past, the computers registered in the US Domain were primarily
   owned by small companies or individuals with computers at home.
   However, the US Domain has grown and currently registers hosts in
   federal government agencies, state government agencies, K12 schools,
   community colleges, private schools, libraries, county agencies, and
   city utilities, to name a few.

   The administration of the US Domain was managed solely by the Domain
   Registrar in the past. However, due to the increase of hosts,
   administration of subdomains is being delegated to others.

   Any computer in the United States may be registered in the US Domain.

2. NAMING STRUCTURE

   The US Domain hierarchy is based on political geography. The
   namespace under .US is the state namespace, then the city namespace,
   then organization or computer name and so on.

   For example:

        SPK.WA.US
       VANC.WA.US

   There is of course no problem with running out of names.

   The things that are named are individual computers.

   If you register now in one city and then move, the database can be
   updated with a new name in your new city, and a pointer can be set up
   from your old name to your new name. This type of pointer is called
   a CNAME record.

The use of un-registered names is not effective and causes problems
for other users. Inventing your own name and using it without
registering is not a good idea.

2.1 State Codes

The state codes are the two letter US Postal abbreviations.

2.2 City Codes or Locality Names

Cities may be named (designated) by their full name (spelled out with
hyphens replacing spaces (e.g., Los-Angeles or New-York)), or by a
city code. The first choice is the full city name, the second choice
is the city codes from Western Union's "City Mnemonics" list, and a
third choice is a code for your city chosen by the applicant.
However, it is very desirable that all users in the same city use the
same designator for the city.

Abbreviated city names are a good idea, particularly when the city
name is long, as there is much to type already. One of the problems
is that the city codes in the Western Union City Mnemonics list are
sometimes not very good abbreviations. Users sometimes tend to
prefer abbreviations that are commonly used already from that region.
Such as SF for San Francisco, MPK for Menlo Park.

Exceptions have been made in the abbreviations, even though this
causes extra work to keep track of these abbreviations. One
abbreviation for one city. Applicants are told what codes are
currently in use, however, if a city code is not used yet, and they
would prefer to use a different code that is more common among the
natives, then the new code is allowed. However, once it's
registered, then everyone else who registers in that city will have
to use that code or spell out the full city name.

Some applicants have tried to get a copy of the Western Union City
Mnemonics code list but it is no longer available from Western Union.
However, we do have a copy but it is not online. If you are
requesting an abbreviated city code please let us know and we will
gladly look it up for you.

2.3 Examples of Names

For small entities like individuals or small businesses there is
usually no problem with selecting locality based names.

        For example: Zuckys.Santa-Monica.CA.US

For large entities like large corporations with multiple facilities
in several cities or states this often seems like a unreasonable
constraint (especially when compared with the alternative of
registering directly in the .COM domain). However, a company does
have a headquarters office in a particular locality and so could
register with that name.

        For example: IBM.Armonk.NY.US

            EXAMPLES OF THE NAMING STRUCTURE IN THE US DOMAIN

PRIVATE (business or individual)
===============================

```
Camp-Curry.Yosemite.CA.US        <====  a business
IBM.Armonk.NY.US                 <====  a business
Dogwood.atl.GA.US                <====  a business
Geo-Petrellis.Culver-City.CA.US <====  a restaurant
Zuckys-Santa-Monica.CA.US        <====  a restaurant
Joe-Josts.Long-Beach.CA.US       <====  a bar
Holodek.Santa-Cruz.CA.US         <====  a personal computer
```

FEDERAL
=======

```
Senate.FED.US           <====  US Senate
DOD.FED.US              <====  US Defense Dept.
DOT.FED.US              <====  US Transportation Dept.
USPS.FED.US             <====  US Postal Service
VA.FED.US               <====  US Veterans Administration
IRS.FED.US              <====  US Internal Revenue Service
Yosemite.NPS.Interior.FED.US    <====  a federal agency
```

STATE
=====

```
Senate.STATE.MN.US      <====  state Senate
House.STATE.MN.US       <====  state House of Reps
MDH.STATE.MN.US         <====  state Health Dept.
HUD.STATE.CA.US         <====  state House and Urban Dev. Dept.
DOT.STATE.MN.US         <====  state Transportation Dept.
Caltrans.STATE.CA.US    <====  state Transportation Dept.
DMV.STATE.CA.US         <====  state Motor Vehicles Dept.
Culver-City.DMV.STATE.CA.US  <====  a local office of DMV
```

```
CITY | COUNTY
==============

Police.CITY.Culver-City.CA.US        <====  a city department
Fire-Dept.CITY.Los-Angeles.CA.US     <====  a city department
Fire-Dept.COUNTY.Los-Angeles.CA.US   <====  a county department

REGIONAL | DISTRICT | LIBRARY
=============================

SCAQMD.DISTRICT.CA.US                      <====  a regional district
Bunker-Hill-Improvement.DISTRICT.LA.CA.US  <====  a local district

Huntington.LIB.LA.US                       <====  a private library
Venice.LA-City.LIB.CA.US                   <====  a city library
MDR.LA-County.LIB.CA.US                    <====  a county library

K12 | CC | STATE UNIV | PRIVATE SCHOOLS
=======================================

Los-Angeles.UC.STATE.CA.US       <====   UCLA
Berkeley.UC.STATE.CA.US          <====   "CAL"
Irvine.UC.STATE.CA.US            <====   University of Calif. Irvine
Santa-Cruz.UC.STATE.CA.US        <====   University of Calif. Santa Cruz
Northridge.CSU.STATE.CA.US       <====   Calif. State. Univ. Northridge
Fullerton.CSU.STATE.CA.US        <====   Calif. State. Univ. Fullerton
Sonoma.CSU.STATE.CA.US           <====   Calif. State. Univ. Sonoma

SMCC.Santa-Monica.CC.CA.US       <====   a public community college
Trade-Tech.Los-Angeles.CC.CA.US  <====   a public community college

Hamilton.High.LA-Unified.K12.CA.US       <====   a public K12 school
Sherman-Oaks.Elem.LA-Unified.K12.CA.US   <====   a public K12 school
John-Muir.Middle.Santa-Monica.K12.CA.US  <====   a public K12 school

St-Monica.High.Santa-Monica.CA.US        <====  a private high school
St-Monica.Elem.Santa-Monica.CA.US        <====  a private elem. school
Crossroads-School.Santa-Monica.CA.US     <====  a private school
Mary-Ellens.Montessori-School.LA.CA.US   <====  a private school
Leland-Stanford-Jr-Univ.Stanford.CA.US   <====  a private school
Loyola-Marymount-Univ.Los-Angeles.CA.US  <====  a private school
```

When appropriate, subdomains are delegated and partioned in various
categories, such as:

```
              K12.<state>.US   =   kindegarten thru 12th grade
               CC.<state>.US   =   community colleges
              LIB.<state>.US   =   libraries
            STATE.<state>.US   =   state government agencies
        <org-name>.FED.US      =   federal government agencies
```

The Appendix-I contains the current US Domain Names BNF, but in
actuality, the names under these subdomains may vary according to the
decision of the administrators of these subdomains.

Some users would like names associated with a greater metropolitan
area or region like the "Bay Area" or "Tri-Cities". One problem with
this is that these names are not necessarily unique within a state.
The best thing to do in this case is to use the larger metropolitan
city in your host name. Cities and in some cases counties are used.

3. REGISTRATION

   3.1 Requirements

   Anyone requesting to register a host in the US Domain is sent a copy
   of the US Domain policy and procedure, and must fill out a US Domain
   questionnaire.

   The US Domain template, is similar to the NIC Domain template
   however, it is not the same. To request a copy of the US Domain
   questionnaire, send a message to the US Domain registrar (us-
   domain@isi.edu).

      Note: If you are registering a name in a delegated zone
             (see Section 3.3.6). Please register with the
             contact for that zone.

   The key people must have electronic mailboxes (that work). Please
   provide all the information indicated in the "Administrator" and
   "Technical Contact" slot. This person will be the point of contact
   for any administrative and policy questions about the domain.

   The administrator is usually the person who manages the organization
   being registered. The technical contact can also be administrator, or
   the systems person, or someone who is familiar with the technical
   details of the Internet. The technical contact should have a valid
   working e-mail address. This is necessary in case something goes
   wrong.

It is important that your "Return-Path" and "From" field indicate an
Internet style address. UUCP style addresses such as "host1!user"
will not work. This is fine within the UUCP world, but not the
Internet. If you want people on the Internet to be able to send mail
to you, your return path needs to be an Internet style address: such
as host1!user@internet.gateway.host or user@internet.gateway.host.

It is also possible to register through one of the Internet service
providers that have established working relationships with the US
domain administrator.

If everything checks out, turn around time for registering a host is
usually a day or two. The nameservers are updated anywhere from 12
to 24 hours later.

There are two ways to be registered in the US Domain, directly, or by
delegation.

3.2 Direct Entries

Direct entry in the database of the US Domain appeals most to
individuals and small companies. Fill out the application and send
it directly to the US Domain administrator. If you are in an area
where the zone is delegated to someone else your request will be
forwarded to the zone administrator for your registration.

3.2.1 UUCP Hosts

Many applicants have hosts in the UUCP world. Some are one hop away,
some two and three hops away from their "Internet Forwarder", this is
ok. What is important is getting an Internet host to be your
forwarder. If you do not already have an Internet forwarder, there
are several businesses that provide this service for a fee, such as
UUNET.UU.NET (postmaster@uunet.uu.net), PSI (postmaster@UU2.PSI.COM)
and CERFNET (help@cerf.net). Sometimes local colleges in your area
are already on the Internet and may be willing to act as an Internet
Forwarder. You would need to work this out with the systems
administrator we cannot make these arrangements for you.

Although we work with UUCP service providers, the Internet US Domain
registration is not affiliated with the registration of UUCP Map
entries. The UUCP map entry does not provide us with sufficient
information. If you do not have a copy of the US Domain
questionnaire template, please send a message to: us-domain@isi.edu
and request one. See Appendix-II.

This is not an appropriate registration for the US Domain.

```
#N starl
#S Amiga 2500; AmigaDOS 2.04; Dillon's AmigaUUCP 1.15D
#O Starlight BBS
#C Stephen Baker
#E starl!sbaker
#T +1 305 378 1161
#P 1107 SW 200th St #303B Miami, Fl. 33157
#L 25 47 N / 88 10 W [city]
#R
#U mthvax
#W starl!sbaker (Stephen Baker); Mon Feb 24 19:58:24 EST 1992
 starl          mthvax(DAILY)
```

If you are registering your host as a central site for a USENET group
where other UUCP sites will feed from you, that's fine. These UUCP
sites do not need to register. If however, the other sites become a
subdomain of your hostname, then we will need to register them
individually or add a wildcard record.

```
        For example:           bah.rochester.ny.us
                          host1.bah.rochester.ny.us
                          host2.bah.rochester.ny.us
```

3.2.2 NON-IP Hosts

To use US Domain names for non-IP hosts, there must be a forwarder
host that is an IP host. There must be an adminstrative agreement
and a technical procedure for relaying mail between the non-IP host
and the forwarder host.

Case 1:

Your host is not an IP host but does talk directly with a host that
is an IP host.
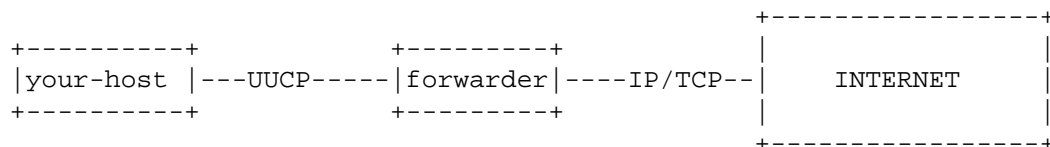
```
                                      +-----------------+
+----------+             +---------+  |                 |
|your-host |---UUCP-----|forwarder|----IP/TCP--|    INTERNET     |
+----------+             +---------+  |                 |
                                      +-----------------+
```
"Forwarder" must be an IP host on the Internet.

You must ask "forwarder" if they are willing to be the internet
forwarder for "your-host".

In the US Domain of the DNS data base there must be an entry like

this:

```
        "your-host"  MX  10  "forwarder"
```

This must be entered by the US Domain administrator.

In the "forwarder" routing tables there must be information about
"your-host" with a rule like: If I see mail for "your-host" I will
send it via uucp by calling phone number "123-4567".

Case 2:

In this case your hosts talks to another host that ... that talks to
an IP host. In other words, there are multiple hops between your host
and the Internet.

```
                                            +-----------------+
+----------+             +---------+        |                 |
|path-host |---UUCP-----|forwarder|----IP/TCP--|    INTERNET     |
+----------+             +---------+        |                 |
    |                                       +-----------------+
   UUCP
    |
+----------+
|your-host |
+----------+
```

"Forwarder" must be an IP host on the internet.

You must ask "forwarder" if they are willing to be the Internet
Forwarder for "Your-Host". You must ask "path-host" to relay your
mail.

In the US Domain of the DNS DataBase there must be an entry like this:

```
        "your-host"  MX  10  "forwarder"
```
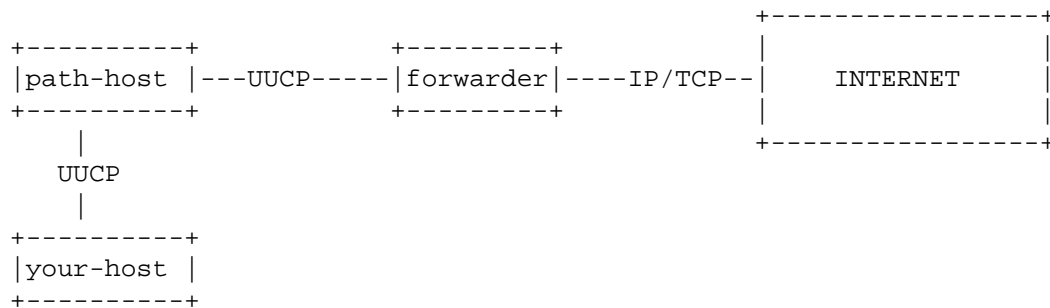
This must be entered by the US Domain Administrator.

In the "forwarder" routing tables there must be information about
"your-host" with a rule like: If I see mail for "your-host" I will
send it via UUCP to "path-host" by calling phone number "123-4567".
and "path-host" must also know how to relay the mail to "your-host".

Note: It is assumed that "path-host" is already MXed to "forwarder".
It is not appropriate to ask to MX "your-host" to "path-host" (this
is sometimes called double MXing). The host on the right hand side
of an MX entry must be a host on the Internet with an IP address
(e.g., 128.9.2.32).

3.3 Delegated Subdomains

The administrator of the US Domain is responsible for the assignment
of all the DNS names that end with ".US". Of course, one person or
even one group can't handle all this in the long run so portions of
the name space are delegated to others.

Delegation of cities, companies within cities, schools (K12),
community colleges (CC), libraries (LIB), state government (STATE),
and federal government agencies, departments, etc., is acceptable and
practical.

For a delegated portion of the namespace, for example a city, no
alterations can be made to that name, no abbreviations added, etc.
unless applied for.

Sometimes there may be two people running name servers in the same
city because different portions of the name space has been delegated
to them. For example, someone may be delegated the <city>.<state>.US
name space, and someone else from a state government agency may have
the .STATE.<state>.US, portion. For example, Fred may run the name
servers for Sacramento.CA.US and Joe may run the name servers for
STATE.CA.US in Sacramento.

If a company would like to have wildcard records added, or run their
own name servers in a city that we have delegated name space to, this
is ok.

Delegation of the whole State namespace is not yet implemented. The
delegated part of the name space is in the form of:

                    .STATE.<state>.US.
                      .K12.<state>.US.
                       .CC.<state>.US.
                      .LIB.<state>.US.
        .<org-name>.<city>.<state>.US.
        .CITY.<city-name>.<state>.US.
                   .<org-name>.FED.US.

3.3.1 Schools

As schools begin to join the Internet, there ought to be a consistent
scheme for naming them. A "K12" name branch has been established in
each state in the US Domain for this purpose.

Public schools are usually organized by districts which can be larger
or smaller than a city or county.

It makes sense to name schools within districts. However districts
often have the same name as a city or county so there has to be a way
to distinguish a public school district name from some other type of
locality name. The keyword "K12" is used for this.

In some districts, the same school name is used at different levels,
for example, Washington Elementary School and Washington High School.
We suggest that when necessary the keywords "Elementary", "Middle",
and "High" be used to distinguish these schools. These keywords
would only be used when they are needed, if the school's name is
unique without such keywords don't use them.

Typical K12 school names currently used are like:

        IVY.PRS.K12.NJ.US
        DMHS.JCPS.K12.KY.US
        OHS.EUNION.K12.CA.US
        BOHS.BREA.K12.CA.US

These names could be long. Given the large number of schools,
organizing by school district and state seems appropriate. When
there are many things to name some of the names must be long.

In some cases there may be appropriate abbreviations that can be
used. For example Hamilton High School in Los Angeles could be:

        Hami.Hi.LA.K12.CA.US

    Some School Examples:

    Hamilton.High.LA-Unified.K12.CA.US   <== a public school
    Sherman-Oaks.Elem.LA-Unified.K12.CA.US   <== a public school
    John-Muir.Middle.Santa-Monica.K12.CA.US   <== a public school
    Crossroads-School.Santa-Monica.CA.US   <== a private school
    SMCC.CC.CA.US   <== a community college
    Northridge.CSU.STATE.CA.US   <== a state university

If a school has a bunch of PCs, then each PC should have a name.
Suppose they are named "alpha", "beta", ... then if they belong to a
school named "Lincoln.High.Lakewood.K12.CA.US" their names would be:

        alpha.Lincoln.High.Lakewood.K12.CA.US.
        beta.Lincoln.High.Lakewood.K12.CA.US
     ...

3.2.2 State Agencies

US Domain namespace has been delegated to the state goverment
agencies. For example, in the State of Minnesota, the subdomain is
STATE.MN.US

This means that the person running the namservers for state.mn.us are
responsible for naming agencies, of the state govermnent. For
example:

        State Agencies:

        Senate.STATE.MN.US   <== State Senate
        MDH.STATE.MN.US   <== Dept. of Health
        CALTRANS.STATE.CA.US   <== Dept. of Transportation
        DMV.STATE.CA.US   <== Dept. of Motor Vehicles

3.3.3 Federal Agencies

A federal namespace has been delegated to the federal government
agencies. For example the subdomain for the Federal Reserve Bank of
Minneapolis is MNPL.FRB.FED.US. Other examples are listed below.

        Federal Government Agencies:

        Senate.FED.US   <==== US Senate
        DOD.FED.US   <==== US Defense Dept.
        USPS.FED.US   <==== US Postal Service
        VA.FED.US   <==== US Veterans Administration
        IRS.FED.US   <==== US Internal Revenue Service
        Yosemite.NPS.Interior.FED.US   <==== A Federal agency

3.3.4 Delegation Requirements

When a subdomain is delegated, the following requirements must be
met:

    1) There must be a knowledgeable and competent technical contact,
        familiar with the Internet Domain Name System. This
        requirement is easily satisified if the technical contact
        already runs some other nameservers.

    2) Organizations requesting delegations must provide at least two
        independent (robust and reliable) DNS name servers in
        physically separate locations on the Internet.

3) The subdomain must accept all applicants on an equal basis.

4) The subdomain must provide timely processing of requests. To
    do this it is helpful to have several individuals
    knowledgeable about the procedures so that the operations are
    not delayed due to one persons unavailability (for example by
    being on vacation).

3.3.5 Delegation Procedures

The procedure that is followed when a subdomain is delegated includes
the following steps:

1) Evaluate the technical contact's experience with DNS. Make
    sure there is a need for the proposed delegation. Make sure
    the technical contact has the information about the US Domain
    and the suggested naming structure.

2) Note: In the past there was the concept of a "coordinator" for
    a group or a club or "Domain Park". They would arrange to
    coordinate the registration of all the computers used by
    members of the club and forward all the information for the
    group to the US Domain Administrator. Most coordinators have
    moved into the position of administrator of that now delegated
    subdomain.

3) Add the new technical contact to the "us-dom-adm" mailing list
    for distributing updates to the US Domain policies and
    procedures, or other pertinent information.

4) Delete any hosts from our zone file that belongs in the newly
    delegated subdomain and make sure they now have the hosts in
    their zone file.

     5) Send them a copy of the zone file so their initial zone file
         is identical to ours. For example:

       mil.wi.us.   86400   SOA spool.mu.edu. manager.spool.mu.edu. (
                                    920904 ;serial
                                    28800   ;refresh
                                    14400   ;retry
                                    3600000 ;expire
                                    86400) ;minim

       mil.wi.us.   86400   NS   spool.mu.edu.
       spool.mu.edu.   50400   A   134.48.1.31
       mil.wi.us.   86400   NS   sophie.mscs.mu.edu.

       sophie.mscs.mu.edu.   50400   A   134.48.4.6
       solaria.mil.wi.us.   86400   HINFO   Sun 3/60 SunOs
       solaria.mil.wi.us.   86400   MX   10 spool.mu.edu.
       nthomas.mil.wi.us.   86400   HINFO   386 Clone DOS
       nthomas.mil.wi.us.   86400   MX   10 spool.mu.edu.
       rwmke.mil.wi.us.   86400   HINFO   UNIX PC UNIX
       rwmke.mil.wi.us.   86400   MX   10 spool.mu.edu.
       milestn.mil.wi.us.   86400   HINFO   PC AT ENIX
       milestn.mil.wi.us.   86400   MX   10 spool.mu.edu.
       dawley.mil.wi.us.   86400   HINFO   386 Clone DOS
       dawley.mil.wi.us.   86400   MX   10 spool.mu.edu.
       ...
                       ----

   6) The US Domain zone file must have the following records,
       showing the name, address, e-mail, and phone number of the
       technical contact for the delegated subdomain and the name of
       the delegated name space and the names of the nameservers.

```
          ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
          ;
          ;Delegated zone: .mil.wi.us
          ;Contact:  Steven Goodman
          ;          manager@spool.mu.edu
          ;          Marquette University
          ;          (414) 288-6734

        mil.wi.us.      604800  NS      SPOOL.MU.EDU.
                        604800  NS      SOPHIE.MSCS.MU.EDU.

          ; A glue record is not needed this time. Glue records are
          ; needed when the name of the server is a subdomain of the
          ; delegated domain.
          ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

   7) Check to see that delegated subdomain name servers are up and
       running, and make sure the delegated hosts are installed in
       their zone file. Now delete any hosts from the US Domain zone
       file that belongs in the newly delegated subdomain.

   8) Inform the technical contact of the newly delegated subdomain
       that wildcard records are allowed in the zone file under the
       organizational subdomain but no wildcard records are allowed
       under the "city" or "state" domain.

   3.3.6   Subdomain Contacts

   Approximately 680 individual hosts are registered, but we have
   delegated the following portions of the namespace. We do not know
   how many hosts are registered under each of these subsdomains.

```
           DELEGATED ZONE              CONTACT
           ==============              =======

           TUCSON.AZ.US                leonard@arizona.edu
           SF.CA.US                    sf-hostmaster@apple.com
           PREMENOS.SF.CA.US           jenkins@premenos.sf.ca.us
           SCVL.CA.US                  sinster@scintilla.capitola.ca.us
           SANTA-CRUZ.CA.US            sinster@scintilla.capitola.ca.us
           APTOS.CA.US                 sinster@scintilla.capitola.ca.us
           CAMPBELL.CA.US              sinster@scintilla.capitola.ca.us
           CAPITOLA.CA.US              sinster@scintilla.capitola.ca.us
           FELTON.CA.US                sinster@scintilla.capitola.ca.us
           ZAYANTE.CA.US               sinster@scintilla.capitola.ca.us
           BOULDER-CREEK.CA.US         sinster@scintilla.capitola.ca.us
           DARWIN.PTVY.CA.US           brian@angband.stanford.edu
           LOGAN-HS.UNIONCITY.CA.US    cjw@marmot.nersc.gov
           BOULDER.CO.US               trent@XOR.COM
           COLOSPGS.CO.US              trent@XOR.COM
           DENVER.CO.US                trent@XOR.COM
           DVR.CO.US                   trent@XOR.COM
           CHI.IL.US                   matt@oddjob.uchicago.edu
           EUGENE.OR.US                meyer@oregon.uoregon.edu
           SPRINGFIELD.OR.US           meyer@oregon.uoregon.edu
           MULTNOMAH.LIB.OR.US         brianw@polaris.admin.ogi.edu
           PGH.PA.US                   ecd@CERT.ORG
           SPK.WA.US                   root@dogear.spk.wa.us
           MIL.WI.US                   manager@spool.mu.edu
           ATL.GA.US                   charvey@gatech.gatech.edu
           Mt-PARK.GA.US               charvey@gatech.gatech.edu
           CLARKSTON.GA.US             charvey@gatech.gatech.edu
           STATE.MN.US                 dfazio@mr.net
           MNPL.FRB.FED.US             dfazio@mr.net

           K12.CA.US                   mdm@NIC.CSU.NET
           CC.CA.US                    mdm@NIC.CSU.NET
           K12.MI.US                   sandra.s.waite@um.cc.umich.edu
           K12.TX.US                   bmanning@is.rice.edu
           K12.NJ.US                   becker@nisc.jvnc.net
           K12.MS.US                   fwp@msstate.edu
           dmhs.jcps.K12.KY.US         lentner@sura.net
           TIES.K12.MN.US              dfazio@mr.net
```

The following MD.US counties have been delegated to
(butler@brl.mil).

```
AL.MD.US.        Allegany
AA.MD.US.        Anne Arundel
BA.MD.US.        Baltimore
CAL.MD.US.       Calvert
CAR.MD.US.       Caroline
CE.MD.US.        Cecil
CH.MD.US.        Charles
DO.MD.US.        Dorchester
FR.MD.US.        Frederick
GA.MD.US.        Garrett
HA.MD.US.        Harford
HO.MD.US.        Howard
KE.MD.US.        Kent
MO.MD.US.        Montgomery
PG.MD.US.        Prince George"s
QA.MD.US.        Queen Anne's
SM.MD.US.        St. Mary's
SO.MD.US.        Somerset
TA.MD.US.        Talbot
WA.MD.US.        Washington
WI.MD.US.        Wicomico
WO.MD.US.        Worcester
```

4. DATABASE INFORMATION

   4.1. Name Servers

   Name servers are the repositories of information that make up the
   domain database. The database is divided up into sections called
   zones, which are distributed among the name servers. While name
   servers can have several optional functions and sources of data, the
   essential task of a name server is to answer queries using data in
   its zones. The response to a query can always be generated using
   only local data, and either contains the answer to the question or a
   referral to other name servers "closer" to the desired information.

   A given zone will be available from several name servers to insure
   its availability in spite of host or communication link failure.
   Every zone is required to be available on at least two servers, and
   many zones have more redundancy than that.

The US Domain is currently supported by six name servers.

        venera.isi.edu
        ns.isi.edu
        ns.hercules.csl.sri.com
        nnsc.nsf.net
        ns.uu.net
        adm.brl.mil

4.2 Zone Files

A "zone" is a registry of domains kept by a particular organization.
A zone registry is "authoritative", that is, the master copy of the
registry is kept by the zone organization, and this copy is, by
definition, always up-to-date. Copies of this registry may be
distributed to other places and kept in caches, but these caches are
not authoritative, and may be out-of-date.

Every zone has at least one node, and hence domain name, for which it
is authoritative, and all of the nodes in a particular zone are
connected. Given the tree structure, every zone has a highest node
which is closer to the root than any other node in the zone. The
name of this node is often used to identify the zone. The data that
describes a zone has four major parts:

    1) Authoritative data for all nodes within the zone.

    2) Data that defines the top node of the zone
       (can be thought of as part of the authoritative data).

    3) Data that describes delegated subzones, i.e., cuts
       around the bottom of the zone,

    4) Data that allows access to name servers for subzones
       (sometimes called "glue" data).

The zone administrator has to maintain the zones at all the
namservers which are authoritative for the zone. When the changes
are made they must be distributed to all of the name servers.

Copies of the zone files are not available unless you are on the
Internet. To look at the zone files use the "dig" program of the DNS
domain name system.

    dig   @nshost host-your-checking axfr

   4.3 Resource Records

Records in the zone data files are called resource records (RRs).
The standard Resource records (RR) are specified in STD 13, RFC 1034
and STD 13, RFC 1035 (3,4). An RR has a standard format as shown.

                  <name> [<ttl>] [<class>] <type> <data>

The first field is always the name of the domain record. The second
field is an optional time to live field. This specifies how long
this data will be stored in the data base. The third field is the
address class; the class field specifies the protocol group most
often this is the Internet class "IN". The fourth field states the
type of the resource record. The fields after that are dependent on
the Type of RR. The fifth field is the data field which is defined
differently for each type and class of data. Here is a list of the
current commonly used types.

        SOA   Start of Authority
        NS   Name Server
        A   Internet Address
        CNAME   Canonical Name (nickname pointer)
        HINFO   Host Information
        WKS   Well Known Services
        MX   Mail Exchanger
        PTR   Pointer

What do the fields mean?

        foo.LA.CA.US.   604800   MX   10   Venera.ISI.EDU.
        (1)   (2)   (3) (4)   (5)

        1) domain name
        2) time to live information
        3) mail exchanger record
        4) preference value to determine (if more than one
            forwarder) which mailer to use first, lower number
            higher preference
        5) the Internet forwarding host.

4.3.1 A Records

Internet (IP) Address. The data for an "A" record is an Internet
address in a dotted decimal form. A sample "A" record might look
like:

             venera.isi.edu.   A   128.9.0.32
               (name)   (A)   (address)

The name field is the machine name, and the address is the network
address. There should be only one "A" record for each address of a
host.

4.3.2 CNAME Records

Canonical Name resource record, CNAME, specifies an alias for a
canonical name. This is essentially a pointer to the official name
for the requested name. All other RRs appear under this official
name. A machine named FERNWOOD.MPK.CA.US may want to have the
nickname ANTERIOR.MPK.CA.US. In that case, the following RR would be
used:

             anterior.mpk.ca.us.   CNAME   fernwood.mpk.ca.us.
               (alias nickname)   (canonical name)

Nicknames (the name associated with the RR is the nickname) may be
added for awhile when a host changes its name, usually because it
moves to another state. It helps to have this CNAME pointer so if
any mail comes to the old address it will get forwarded to the new
one. There cannot be any other RRs associated with a nickname of the
same class.

4.3.3 MX Records

Mail Exchanger records, MX, are used to specify a machine that knows
how to deliver mail to a machine that is not directly connected to
the Internet. For example, venera.isi.edu is the mail gateway that
knows how to deliver mail to foo.la.ca.us, but other machines on the
network cannot deliver mail directly to foo.la.ca.us. These two
machines may have a private connection or use a different transport
medium (such as uucp). The preference value (10) is the order that a
mailer should follow when there is more than one way to deliver mail
to a single machine. The lower the number the higher the preference.

             foo.LA.CA.US. 604800 MX 10 Venera.ISI.EDU.
             foo.LA.CA.US. 604800 MX 20 relay1.uu.net.

4.3.4   HINFO Records

Host information resource records, HINFO is for host specific data.
This lists the hardware and operating system that are running at the
listed host. It should be noted that a space separates the hardware
information and the operating system information. If you want to
include a space in the machine name you must quote the name. Host
information is not specific to any class, so ANY may be used for the
address class. There should be one HINFO record for each host.

```
acb.la.ca.us.        HINFO       VAX-11/780       UNIX
                                 (Hardware)       (Operating System)
```

The official HINFO types can be found in the latest Assigned Numbers
RFC, the most recent edition being RFC 1340. The hardware type is
called the Machine Name, and the software type is called the System
Name.

The information users supply about this is often inconsistent or
incomplete. Please follow the terms in the current "Assigned
Numbers".

4.3.5 PTR Records

A Domain Name Pointer record, PTR, allows special names to point to
some other location in the domain data base. These are typically
used in setting up reverse pointers for the special IN-ADDR.ARPA
domain. PTR names should be unique to the zone.

```
        0.0.9.128.in-addr.arpa     PTR     isi-net.isi.edu.
          (special name)                    (real name)
```

A PTR record is to be added to the IN-ADDR.ARPA domain for every A
record registered in the US Domain. These PTR records need to be
added by the administrator of the network where the host is
connected. The US Domain administration does not administer the
network and cannot make these entries in the DNS database.

4.4 Wildcards

The wildcard records are of the form "*.<anydomain>", where
<anydomain> is any domain name. The wildcards potentially apply to
descendents of <anydomain>, but not to <anydomain> itself.

For example, suppose a large company located in California with a
large, non-IP/TCP, network wanted to create a mail gateway. If the
company was called DWP.LA.CA.US, and the IP/TCP capable gateway
machine (Internet forwarder) was called ELROY.JPL.NASA.GOV, the

following RRs might be entered into the .US zone.

```
        dwp.la.ca.us    MX      10          ELROY.JPL.NASA.GOV
      *.dwp.la.ca.us    MX      10          ELROY.JPL.NASA.GOV
```

The wildcard record *.DWP.LA.CA.US would cause an MX query for any
domain name ending in DWP.LA.CA.US to return an MX RR pointing at
ELROY.JPL.NASA.GOV. The entry without the "*" is needed so the host
dwp can be found.

In the US Domain, wildcard records are allowed in our zone files
under the organizational subdomain (and where noted otherwise) but no
wildcard records are allowed under the "City" or "State" domain.

> The authors strongly believe that it is in everyone's
> interest and good for the Internet to have each host
> explicitly registered (that is, we believe that wildcards
> should not be used), we also realize that not everyone
> agrees with this belief. Thus, we will allow wildcard
> records in the US Domain under groups or organizations.
> For example, *.DWP.LA.CA.US.

> The reason we feel single entries are the best is by the mere
> fact that if anyone wanted to find one of the hosts in the
> domain name system it would be there, and problems can be
> detected more easily. When using wildcards records all the
> hosts under a subdomain are hidden.

5. REFERENCES

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         SRI International, November 1987.

   [3]   Mockapetris, P., "Domain Names - Concepts and Facilities",
         STD 13, RFC 1034, ISI, November 1987.

   [4]   Mockapetris, P., "Domain Names - Implementation and
         Specification", STD 13, RFC 1035, ISI, November 1987.

   [5]   Dunlap, K., "Name Server Operations Guide for Bind,
         Release 4.3", UC Berkeley, SMM:11-3.

   [6]   Partridge, C., "Mail Routing and the Domain Name System",
         STD 14, RFC 974, BBN, January 1986.

6. SECURITY CONSIDERATIONS

   Security issues are not discussed in this memo.

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                       APPENDIX-I: US DOMAIN NAMES BNF
                       ================================

    <us-domain-name>   ::= <us-name><dot><us>

    <us-name>   ::= <state-name><dot><state-code> |
                            <fed-name><dot><fed>

    <state-code>   ::= <the two-letter code of a state from the
                             zip code directory>

    <state-name>   ::= <local-name><dot><locality> |
                            <state-agency-name><dot><state> |
                            <regional-agency-name><dot><agency>

    <fed-name>   ::= <the dotted hierarchical name of a US
                             federal government agency>

    <locality>   ::= <the full name of a city from the
                              zip code directory> |
                            <a short code name for a city> |
                            <the full name of a county, township,
                             or parish> |
                            <other well known and commonly used
                             locality name>

    <local-name>   ::= <entity-name> |
                            <city-name><dot><city> |
                            <county-name><dot><county> |
                            <local-agency-name><dot><agency>

    <state-agency-name> ::= <the dotted hierarchical name of a state
                             government agency>

    <regional-agency-name> ::= <the dotted hierarchical name of a special
                                agency or district not an element of the
                                state government and typically larger than
                                a single city or county, for example, the
                                Southern California Air Quality Management
                                District>

    <entity-name>   ::= <the dotted hierarchical name of an entity
                             within a city, for example: a company,
                             business, private school, club, organization,
                             or individual>

    <city-name>   ::= <the dotted hierarchical name of a city
                             government agency>

```
   <county-name>        ::= <the dotted hierarchical name of a county,
                             township, or parish government agency>

   <local-agency-name> ::= <the dotted hierarchical name of a special
                             agency or district not an element of a
                             city or county government and typically
                             equal or smaller than a single city or
                             county, for example, the Bunker Hill
                             Improvement District>


   <city> ::= "CITY"

   <county> ::= "COUNTY" | "TOWNSHIP" | "PARISH"

   <dot> ::= "."

   <fed> ::= "FED"

   <agency> ::= "AGENCY" | "DISTRICT" | "K12" | "CC" | "LIB"

   <state> ::= "STATE" | "COMMONWEALTH"

   <us> ::= "US"


   Note:  "K12" may be used for public school districts, only.
          and "CC" may be used only for public community colleges,
          and "LIB" can only be used by libraries.
```

               APPENDIX-II: US DOMAIN QUESTIONNAIRE FOR HOST ENTRY

To register a host in the US domain, the following information must be
sent to the US Domain Registrar (Us-Domain@ISI.EDU). Questions may be
sent by electronic mail to the above address, or by phone to
Ann Cooper (310-822-1511).

(1) The name of the top-level domain to join.

          For example: US

(2) The name of the administrative head of the organization, including
     title, mailing address, phone number, organization, and network
     mailbox. This is the contact point for administrative and policy
     questions about the domain. In the case of a research project,
     this should be the principal investigator.

          For example:

          Administrator

               Organization The NetWorthy Corporation
               Name   Penelope Q. Sassafrass
               Title   President
               Mail Address The NetWorthy Corporation
                             4676 Andrews Way, Suite 100
                             Santa Clara, CA 94302-1212
               Phone Number (415) 123-4567
               Net Mailbox   Sassafrass@ECHO.TNC.COM

(3) The name of the technical contact for the entry, including title,
     mailing address, phone number, organization, and network mailbox.
     This is the contact point for problems concerning the domain or
     zone, as well as for updating information about the domain or zone.

             For example:

               Technical Contact

                   Organization The NetWorthy Corporation
                   Name   Ansel A. Aardvark
                   Title   Executive Director
                   Mail Address The NetWorthy Corporation
                                 4676 Andrews Way, Suite 100
                                 Santa Clara, CA. 94302-1212
                   Phone Number (415) 123-6789
                   Net Mailbox   Aardvark@ECHO.TNC.COM

(4) The name of the host. This is the name that will be used in tables
     and lists associating the domain with the domain server addresses.
     [While, from a technical standpoint, domain names can be quite long
     (programmers beware), shorter names are easier for people to cope
     with.]

             For example: NetWorthy.Santa-Clara.CA.US

              Or: Alpha.NetWorthy.Santa-Clara.CA.US
                   Beta.NetWorthy.Santa-Clara.CA.US

(5) If this machine is not directly on the internet, how does it
     communicate with the Internet. Through UUCP, CREN, etc? Which
     forwarding host?

             For example: The host "Networthy.Santa-Clara.CA.US" uses UUCP
             to connect to "RELAY.ISI.EDU" which is an Internet host.

             The administrator of RELAY.ISI.EDU must agree to be the
             forwarding host for Networthy.Santa-Clara.CA.US, and the
             forwarding host must know a delivery method and route to it.
             No double MXing.

     If you are requesting an indirect connection, that is, a Mail
     Exchanger (MX) record, what is the name and mailbox of the
     administrator of the forwarding host.

     For example:John Smith
          js@RELAY.ISI.EDU

(6) Please describe your organization briefly.

     For example: The NetWorthy Corporation is a consulting
     organization of people working with UNIX and the C language in an
     electronic networking environment. It sponsors two technical
     conferences annually and distributes a bimonthly newsletter.

(7) What Domain Name System (DNS) Resource Records (RR) and values are
     to be entered.

     a. A   Internet Address (internet hosts only)
     b. HINFO   Host Information, Machine System
     c. WKS   Well Known Services, Protocols, Ports (internet hosts only)
     d. MX   Mail Exchanger (required for UUCP, and CREN hosts)

     An example of RRs for an internet host.

     NetWorthy.Santa-Clara.CA.US   IN   A   128.9.3.123
                              IN   HINFO   SUN-3/11OC UNIX
                              IN   MX   10 ISI.EDU
                              IN   WKS   128.9.3.123. UDP (echo
                                                    tftp)
                              IN   WKS   128.9.3.133. TCP (telnet
                                                    ftp
                                                    tftp
                                                    finger)

     An example of RRs for a non-internet host.

     Beta.NetWorthy.Santa-Clara.CA.US   MX   10   RELAY.ISI.EDU
                                  HINFO   SUN-3/11OC UNIX

(8) Where is the IN-ADDR pointer record to be entered. (For internet
     hosts only.) It is your responsibility to see that this is done.
     Contact the administrator of the IP network your host is on. The
     US Domain administration does not administer the network and cannot
     make these entries in the DNS database.

          For example:

              123.3.9.128.IN-ADDR.ARPA.   PTR NetWorthy.Santa-Clara.CA.US

     Who is the contact for the zone of the IN-ADDR.ARPA data, where
     this record will be entered?

(9) What Time to Live (TTL)? TTL is the time (in seconds) that a
     resolver will use the data it got from the domain server before it
     asks it again for the data. A typical TTL is One Week 604800.
     (NOTE: TTL is not applicable to non-Internet hosts.)

          For example:

             One Week   604800