Network Working Group
Request for Comments: 1401

Internet Architecture Board
Lyman Chapin, Chair

January 1993

Correspondence between the IAB and DISA on the use of DNS throughout the Internet

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.

Abstract

This memo reproduces three letters exchanged between the Internet Activities Board (IAB) and the Defense Information Systems Agency (DISA) regarding the importance of using the Domain Name System (DNS) throughout the Internet, and phasing out the use of older host name to address tables, such as "hosts.txt".

1. Letter from the IAB to DISA

30 March, 1992

To: Members of the Federal Networking Council,
Members of the Federal Networking Advisory Council,
Colonel Ken Thomas, Chairman,
DoD Protocol Standards Steering Group, DISA/Center for Standards

CC: C. J. Pasquariello, Associate Director, Center for Standards,
LCDR, David Chappell, Executive Secretary,
PSSG, DISA/Center for Standards
Eduardo Schonborn, Dep Director/DDN PMO

As the IAB, together with others in the Internet Engineering and Research Task Forces, contemplates the challenges inherent in dealing with an exponentially expanding Internet, the critical need for widespread adoption of a uniform Domain Name service is very apparent.

The attached memorandum is offered by the Internet Activities Board for your consideration regarding technical policy concerning domain naming in the US portion of the Internet. The proposed technical policy is recommended world-wide and will be offered as an RFC for that purpose. Adoption of such a policy would, we believe, much enhance the operational efficiency of the existing world-wide Internet backbone and major networks dependent upon it, including the DDN Milnet.

Your consideration of this policy question is urged in the strongest possible terms. We would much appreciate hearing the views of the Protocol Standards Steering Group by April 20, 1992.

Regards,

A. Lyman Chapin
Chairman, Internet Activities Board

Attachment

The Domain Name System is an Internet Necessity

Internet Activities Board

February 1992

Over the last several years, the Internet has evolved in size so extensively that it has become infeasible to provide directory services through a database maintained at a single, central repository. Both the size and the dynamics of the required data make such an approach impractical. Recognizing this problem several years ago [1], the Internet community has adopted the Domain Name System [2-5] as the principal means of achieving host name to IP address mappings. During this time, almost the entire Internet has converted from the use of the static name-to-address mapping tables thus far centrally maintained at the DDN Network Information Center, to the use of the more dynamic, up-to-date address mapping provided by DNS mechanism.

There are still large fractions of the Internet community which rely on the use of a centrally-maintained file ("hosts.txt") to accomplish this mapping function. The MILNET community appears to have substantial pockets of dependence on table-driven mappings, for example. Although a plan for achieving a MILNET transition to use of the Domain Name System was worked out in 1987, the transition is incomplete and, as a result, naming services (i.e., host name lookups on the MILNET) are many times still provided via static tables rather than the distributed, and far more accurate, Domain Name System. Ironically, most of the commercial, off-the-shelf software for TCP/IP supports the user of the Domain Name System, so a policy of uniform support and application of DNS would go a long way toward improving the Defense Department data communication infrastructure, insofar as it is dependent on TCP/IP to interconnect hosts on LANs and WANs.

The use of different means for name-to-address mappings by different parties in the network community leads to unsynchronized and inconsistent databases, which inevitably result in reachability failures by users attempting to connect to network resources. Moreover, the special facilities of the Domain Name System, such as the MX (Mail eXchange) record, make it possible to include systems not directly on the Internet into the universe of addressable parties. MX records also allow a network administrator to prioritize a list of alternative e-mail relays in case the final destination is not reachable. Systems which do not support MX records, but rather still depend on the "hosts.txt" information, pose a serious obstacle to network connectivity, as well as to the operation and management

of the highly connected Internet.

Non-DNS systems on the Internet will eventually be confronted with the need to decide whether they want to continue as a part of the larger Internet community, or remain a rather small, non-conforming subset. Should they choose not to conform to the otherwise accepted Domain Name System, they will have to accept the ramifications of this decision. In particular, they will have to accept that the rest of the community may, indeed has already started to, essentially ignore those static files which reflect the principal non-DNS naming service. The larger community has evolved so extensively beyond these configurations, that these files are not only obsolete as a technology, but also incomplete and often inaccurate in the present implementation. Upon connecting a new host to the Internet, the great majority of the Internet community no longer considers the registration of host name/address updates to the NIC database a necessity, and rather focuses on updating the Domain name System. Therefore, today's NIC database, and the "hosts.txt" file generated from it, largely reflects only the non-DNS community, a tiny subset of the hundreds of thousands of entities configured into the Internet name space via the DNS.

If the non-DNS users maintain a requirement for the use of static mapping tables, at least some mechanism should exist to augment the NIC data sets with additional information represented by the Domain Name System. These more comprehensive tables, accompanied by a method to guarantee synchronization with the DNS, would significantly improve the accuracy of the information which non-DNS users apply to map between names and addresses. However, this solution will not address the need for support of the richer DNS functionality by the NIC's system. At a minimum, the incorporation of MX information into the NIC database is imperative for compatibility between the "hosts.txt" file and the DNS. Network subcommunities which choose to maintain a separate and incompatible mapping system will have a partitioning effect on the subcommunities themselves, but also a detrimental impact on overall Internet operations. Both end-users and system and network administrators will inevitably find themselves devoting considerable attention to tracing inconsistency problems arising from the discrepancy in mapping methods.

The Internet Activities Board, recognizing the need for universal interoperability and consistent naming mechanisms, and benefitting from several years of experience with the Domain Name System, is advocating a policy that all connected components of the Internet community should adopt the DNS, and urges parties having policy-setting authority to adopt the same position and undertake to set deadlines for conversion to uniform use of DNS.

References

1. J.B. Postel and J.K. Reynolds, Domain Requirements, RFC 920, October 1984.

2. P.V. Mockapetris, Domain Names - Concepts and Facilities, RFC 1034, November 1987.

3. P.V. Mockapetris, Domain Names - Implementation and Specification, RFC 1035, November 1987.

4. M.K. Stahl, Domain Administrators Guide, RFC 1032, November 1987.

5. M. Lottor, Domain Administrators Operations Guide, RFC 1033, November 1987.

6. W.D. Lazear, MILNET Name Domain Transition, RFC 1031, November 1987.

2. Letter from DISA to the IAB

16 APR 1992

Mr. Lyman Chapin
Chairman, Internet Activities Board
BBN Communications
Division of Bolt Beranek and Newman, Inc.
150 Cambridge Park Dr.
Chambridge, MA 02140

Dear Mr. Chapin:

We have received you letter concerning the adoption and use of the Domain Name System (DNS) throughout the Internet. Since the DoD makes significant use of the Internet, we are very concerned with issues such as the DNS that potentially affect both performance and interoperability. We have agreed to staff this issue to consider all the technical and economical impacts on DoD systems. We will inform you of the decisions reached as the result of our reviews as son as they are completed.

Sincerely,

Kenneth A. Thomas
Colonel, USA
Chairman, Protocol Standards
Steering Group (PSSG)

Copy to:
Mr. Pasquariello, Associate Director, Center for Standards
Mr. Schonborn, Deputy Director/DDN PMO

3. Letter from the IAB to DISA

19 May, 1992

Colonel Kenneth Thomas
Chairman, Protocol Standards Steering Group
Defense Information Systems Agency
Fort Monmouth, NJ 07703-5613

Dear Colonel Thomas,

Thank you for your response to my letter concerning the adoption and use of the Domain Name System throughout the Internet. I appreciate your willingness to devote resources to consider this issue, and look forward to hearing the results of the study.

As LCDR David Chappell has suggested, it would be useful for us to arrange a meeting to discuss issues of mutual concern to DISA and the IAB. I do not yet know if it will be feasible for me to arrange to meet with you in Ft. Monmouth in the near future (my travel schedule being somewhat oversubscribed), but will get in touch with you soon to find a suitable date and location.

Regards,

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Security Considerations

Security issues are not discussed in this memo.

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