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What is the Internet Domain Name System
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Abstract

The DNS work inside the IETF has suffered from mission-creep since a clear scoping of what was DNS and what was not has not been easy to find. This document attempts to clarify what is within scope of DNS work and what is not.

1. What is the Internet Domain Name System (DNS)?

The DNS was created to provide a scalable system for providing a mapping between the name of an instance and the location or address of that instance usually for other applications use [[RFC830](#)]. It has

three essential elements; an ephemeral namespace, servers which instantiate the namespace; a suite of protocols that allow a client or resolver to ask the servers questions about the namespace.

All three of these are required to say that the system is or is part of DNS. A fourth presumption is that there is always on, always connected reachability across the DNS namespace.

The suite of protocols used between resolvers and servers, as well as server and cache behaviour are within the purview of the IETF and its working groups.

The Namespace is designed as an inverted tree, with a single root context per protocol. Although other protocols and domain name systems were envisioned at the outset, today they are primarily vestigial, at least as far as the IETF is concerned. There is a single root, and one namespace for the Internet DNS, as far as the IETF is concerned.

Traditionally, the IETF did not concern itself with the contents of the namespace, leaving the management of the delegation points to the zone maintainers, since this was always going to be a matter of local preference.

These four constructs, in unison, have created the global Internet DNS, as we know it. However, the tools are so useful, others have borrowed from them for other work. Recently other domain name systems have emerged, as predicted 35 years ago, but they do not meet the criteria for the Internet DNS.

2. What is NOT (strictly) the DNS.

It is possible, and has been implemented for decades, to change out parts of the DNS namespace for one's own version. [RFC 1035](#) 2.2 clearly suggests a goal is transport agility, but the use of a single, common, namespace. [[RFC1035](#)] Split-DNS enables DNS-like services for private spaces not connected to the Internet. Often these private namespaces augment the Internet namespace with other, non-Internet names. As far as the servers and resolvers are concerned, they still use the default DNS protocols. It is hard to tell if one is or is not using the DNS or a facsimile just from the resolver side.

Others want to use the DNS namespace, but invent their own protocols for server/resolver communication. These can be viewed as a domain name system, but not an Internet DNS. Some want to change out the concept of servers/resolvers, but use the namespace.

NONE of these hybrids is Internet DNS. They are DNS-like, some are parasitic some are symbiotic, but they are not Internet DNS.

It is a mistake for the IETF to treat these non-DNS issues as Internet DNS related and it is a mistake for the IETF to get involved in dictating to zone maintainers what labels they may or may not choose

to put into their delegations as long as the communications protocols are ok with the labels the specific domain name system returns.

Those involved with the DNS should also avoid mission creep into how other applications may or may not chose to utilize the names/labels returned from a DNS query. If the DNS working groups stay focused on staying within their remit, other application developers will not have to be so concerned with what the DNS does or does not, and if they have to develop their own systems.

3. Security Considerations

This document has no explicit security considerations.

4. IANA Considerations

This document requires no IANA consideration.

5. References

5.1. Normative References

[RFC830] Su, Z., "A Distributed System for Internet Name Service", [RFC 830](http://www.rfc-editor.org/info/rfc830), October 1982, <<http://www.rfc-editor.org/info/rfc830>>.

[RFC1035] Mockapetris, P., "Domain names - implementation and specification", STD 13, [RFC 1035](http://www.rfc-editor.org/info/rfc1035), DOI 10.17487/RFC1035, November 1987, <<http://www.rfc-editor.org/info/rfc1035>>.

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