22 October 2020

Re: Clarifying domain namespace responsibilities

To: Alissa Cooper, Chair, Internet Engineering Task Force;
        Mirja Kühlewind, Chair, Internet Architecture Board

Cc: Rod Rasmussen, Chair, ICANN Security and Stability Advisory Committee

Dear Alissa and Mirja,

As you may be aware, ICANN's Security and Stability Advisory Committee (SSAC) recently published SAC113, "*SSAC Advisory on Private-Use TLDs*". It recommends:

> [T]he ICANN Board ensures a string is identified using the criteria specified in Section 4.1 and reserved at the top level for private use. This particular string must never be delegated.

This advisory and its recommendation resurfaces the outstanding issue of the lack of clarity on the responsibility for the definition of what is and is not in the top-most level of the global domain name namespace. I am making the distinction between what is in the global DNS root and thus resolvable by the DNS, and the universe of all potential TLDs that comprise the top-level domain name namespace. This lack of clarity concerns the latter — I do not think there is any question about who is responsible for inserting domain names into the root of the DNS (i.e., the IANA Naming Function performed by ICANN).

A bit of background may be helpful in highlighting the issue.

RFC 1591, "*Domain Name System Structure and Delegation*" is considered by many to be the base document in the context of the structure of the domain name namespace. Written in 1994, section 2 of the document defines "top-level domain names" to be the set of "generic TLDS", exhaustively listed as "EDU, COM, NET, ORG, GOV, MIL, and INT" and the two-letter country codes from ISO-3166. Section 3 of RFC 1591 states:

> The Internet Assigned Numbers Authority (IANA) is responsible for the overall coordination and management of the Domain Name System (DNS), and especially the delegation of portions of the name space called top-level domains.

Effective Jan 1, 1999, the transition agreement between the University of Southern California - Information Sciences Institute (USC-ISI) and ICANN resulted in USC-ISI relinquishing to ICANN the performance of the IANA functions, with section 1(b) of that agreement stating:

Establishment, oversight, and implementation of policy for the Internet Domain Name System ("DNS"), including delegation of responsibilities to DNS registries and registrars;

In June 2000, RFC 2860, "*Memorandum of Understanding Concerning the Technical Work of the Internet Assigned Numbers Authority*" was published. This RFC documented the agreement between ICANN and the IETF with respect to the operation of the IANA functions. Section 4.3 of that MoU states:

> *Two particular assigned spaces present policy issues in addition to the technical considerations specified by the IETF: the assignment of domain names, and the assignment of IP address blocks. These policy issues are outside the scope of this MOU.*

> *Note that (a) assignments of domain names for technical uses (such as domain names for inverse DNS lookup), (b) assignments of specialized address blocks (such as multicast or anycast blocks), and (c) experimental assignments are not considered to be policy issues, and shall remain subject to the provisions of this Section 4.*

However, beyond the parenthetical that discusses inverse domain lookup, no detail is provided as to what "technical uses" might entail or describe.

Earlier, in June 1999, after ICANN assumed the performance of the IANA functions but prior to the publication of RFC 2860, RFC 2606, "*Reserved Top Level DNS Names*" added TEST, EXAMPLE, INVALID, and LOCALHOST to the list of TLDs. RFC 2606 did not specify how those TLDs were to be handled, other than that they be "reserved."

In October 2007, ICANN delegated 11 internationalized TLDs – the word "test" encoded in 11 different scripts – for the purpose of testing the use of Internationalizing Domain Names in Applications (IDNA) in the root zone and within those domains. In October 2013, after the tests were complete, these delegations were removed from the root zone.

In February 2013, RFC 6761, "*Special-Use Domain Names*" was published. The RFC clarified what it means to say that a domain name is reserved for special use and directed the creation of a registry for those names. Additions of names to the "Special-Use Domain Names" registry is specified to have a registration procedure of "Standards Action or IESG Approval". In the same month, RFC 6762, "*Multicast DNS*" was published, which resulted in the addition of the LOCAL TLD to the Special-Use Domain Names registry.

In Sep 2014, following the publication of RFCs 6761 and 6762, the Internet Architecture Board transmitted a "*Liaison Statement from the IAB to the ICANN Board on Technical Use of Domain Names*" to ICANN, which in part states:

> *Under its current charter, the DNSOP working group in the IETF is responsible to review and clarify the overlap between (among other things) the special names registry from RFC 6761 and the public DNS root. This could include consideration of the problem of existing name collisions, provision of additional guidelines, or further modification to the process in RFC 6761 to reduce the potential for collisions in the future. Any changes are to be kept within the constraints of RFC 2860 (or any future modification to RFC 2860).*

The latest TLD created outside the context of ICANN policy/process was ONION. This was as a result of RFC 7686, "*The ".onion" Special-Use Domain Name*", published in October 2015. While RFC 8244, "*Special-Use Domain Names Problem Statement*", also published in October 2015, identifies a number of issues with RFC 6761, no revision has been published to date.

As this background and chronology may suggest, there appear to be a few questions that remain unanswered:

- What constitutes "technical use" in the context of RFC 2860?
- Does a string's potential for being placed in the "public DNS root" constitute a discriminator between the IAB/IETF and ICANN realms of responsibility for TLDs?
- Does "private use" of a TLD as envisioned in SAC113 imply a "special use" in the context of RFC 6761?
- What mutual obligations, apart from the obvious prevention of colliding usage, exist between the namespace policy-setting forums in both ICANN and the IETF to coordinate the evolution of these potentially conflicting namespace usages?

We look forward to further discussions between the IAB, the IETF, and ICANN aimed at gaining clarity and consensus on these questions.

Sincerely,

Göran Marby
President and Chief Executive Officer
Internet Corporation for Assigned Names and Numbers (ICANN)