ALAC Statement on SAC053
SSAC Report on Dotless Domains

1. Introduction

The New gTLD Program will introduce a significant number of new top level domain names into the Domain Name System (DNS)[1].

This prospect has generated considerable interest, and sometimes confusion, in how top level names can be used.

The SSAC053 report poses a doubt that we, Internet users, usually have in the face of the new gTLD phenomenon, and which leads us to be on the alert in view of possible future registrations of dotless domain names.

Having reviewed the SSAC report, the At-Large Advisory Committee (ALAC), thanks the Working Group members for their contributions and echoes the contents of the report in this document.

It is our understanding that trust in the Domain Name System, as well as its stability and accessibility, is one of the pillars upon which the Internet is based.

We believe that the set of measures proposed by the Working Group will contribute to tracking the New gTLD Program and we recommend that these measures be presented to the Board for the purpose of their implementation.

[1] Internet Corporation for Assigned Names and Numbers (ICANN) (2011), gTLD Applicant Guidebook, Version 2012-01011 <http://newgtlds.icann.org/en/applicants/agb/guidebook-full-11jan12-en.pdf>.

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The At-Large Advisory Committee (ALAC) understands that the only completely unambiguous representation of a domain name is that of a **"fully qualified domain name"**, in which every label is explicitly included, adjacent labels are separated from each other by a "dot" (period or full-stop symbol), and the sequence of labels is terminated at the top level by a final dot, which represents the DNS root.[2] We understand this characterization is unambiguous, because it contains all the information necessary to identify the domain it names and leaves no room for doubt.

The SSAC report clearly describes the issues that may derive from this, on the basis of IETF standards, recommended or existing practices, the operation of name resolvers, the operation of web browsers, and the operation of email software.
It is in relation to these measures that the ALAC agrees with the referred document, as it outlines issues concerning a number of potential ambiguities regarding the management of dotless domains, which poses the issue of protecting the stability and usability of the Internet. These ambiguities are described below:

- **One instance of ambiguous behavior may arise in web browsers,** where the algorithm checks whether the domain has two or more labels separated by at least one "dot". The "dotless" domain in this case would not be considered a complete domain, since it is a single label without the dot.
- **Another instance of ambiguous behavior is that of LAN configurations**, where a "dotless" domain is essentially a single name or label, that is, a single string of characters. Without the context that the **"fully qualified domain name"** representation offers, a device connected to a LAN may not always query the DNS "first". Thus, in this case the dotless domain would not be resolved to the correct location. Finally, operating systems do not search these available name spaces in standard order; users could therefore get different results in different contexts.
- **Another instance to be considered is that of DNS stub resolvers,** where even if end user applications (browsers, for instance) did not rewrite domain name entries to "fill in the missing pieces", it is not

[2] Paul Mockapetris, "Domain Names - Implementation and Specification", STD 13, RFC 1035, November 1987

guaranteed that DNS stub resolvers would always return the same result. This is caused by what is known as the “search path” option.

The issue described above is one of those associated with dotless domain names.

- **Finally, electronic mail** poses a serious and prevalent concern that dotless domains would not work with protocols that specify additional rules of what constitutes a legal domain. The most prominent example is the Simple Mail Transfer Protocol (SMTP) to deliver electronic mail[3], which requires at least two labels in the **"fully qualified domain name”** of a mail address. Thus, it is not compatible with mail standards, as standard-compliant mail servers would reject emails to addresses such as “user@brand”.

Conclusions and Recommendations

Conclusions

The At-Large Advisory Committee concludes that the combined effect of these potential ambiguities makes it difficult in practice to predict how a dotless domain name will be resolved in different situations.

Additionally, this ambiguous behavior could be used to develop methodologies to compromise the session and allow for malicious activities with it. For instance, with DNS redirection.

The resolution of these names is not consistent or universal, and in particular, applications behave differently when presented with “dotless” responses. These behaviors occur for reasons illustrated in this paper.

We understand this may also lead to serious security issues.

Recommendation

It is the ALAC’s recommendation that dotless domains will not be universally reachable, and we recommend strongly against their use.

Hence, the ALAC also recommends that the use of DNS resource records such as A, AAAA, and MX in the apex of a Top-Level Domain (TLD) be contractually prohibited.

[3] John Klensin, "Simple Mail Transfer Protocol", RFC 2821, <http://www.ietf.org/rfc/rfc2821.txt>.

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We find there are serious and well-grounded issues derived from the use of “dotless domains". Therefore, we recommend that ICANN should explicitly prohibit dotless domains in contracts with organizations that obtain the delegation of a new gTLD.
We understand that ICANN has the necessary mechanisms to monitor the observance of this rule and penalize instances of breach through the tools contained in its contracts, on the basis of the contractual review conducted by ICANN’s Contractual Compliance Team.

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