4.6.3 Name Collisions

- *4.6.3.1 Explanation of the Subject*

  Name collisions are not a new concept and not exclusive to new gTLDs. The Security and Stability Advisory Committee (SSAC) identified the potential for name collisions in November of 2010 in SAC 045 "Invalid Top Level Domain Queries at the Root Level"[1]:

  > *In this report, we call attention to the potential problems that may arise should a new TLD applicant use a string that has been seen with measurable (and meaningful) frequency in a query for resolution by the root system and the root system has previously generated a response. We find that any new TLD registry operator may experience unanticipated queries and that some TLDs may experience a non-trivial load of unanticipated queries if the label it chooses corresponds to TLDs that have historically seen queries. We recommend that ICANN inform new TLD applicants of the problems that can arise when a previously seen string is added to the root zone as a TLD label and that ICANN should coordinate with the community to identify principles that can serve as the basis for prohibiting the delegation of strings that may introduce security or stability problems at the root level of the DNS.*

  After the application submission window was complete and the population of applied-for TLDs that may be delegated into the root zone was known, it was possible to have a more focused analysis of potential name collisions.

  In March 2013, ICANN's Security and Stability Advisory Committee (SSAC) issued a report SAC 057: SSAC Advisory on Internal Name Certificates, wherein the SSAC referred to the issue of "name collision" and provided ICANN with steps for mitigating the issue.[2] Broad community participation was enlisted to develop a solution and to further study the impact on applied-for strings since the SSAC's list was not exhaustive.

  Although it was considered to be unlikely that domain name collisions would affect significant numbers of corporate network operators or Internet users, ICANN acted conservatively and took numerous steps to minimize the potential impact of name collision.

  Final "Phase One Report on Mitigating the Risk of DNS Namespace Collisions"[3] [4]

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[1] See report: https://www.icann.org/en/system/files/files/sac-045-en.pdf
[2] See the report here: https://www.icann.org/en/system/files/files/sac-057-en.pdf
[3] See "Phase One Report on Mitigating the Risk of DNS Namespace Collisions"[3] at https://www.icann.org/en/system/files/files/name-collision-mitigation-study-06jun14-en.pdf
[4] Note, the "Mitigating the Risk of DNS Namespace Collisions Final Report" was published on 30 November 2015: https://www.icann.org/news/announcement-2-2015-11-30-en

On 04 June 2014 ICANN published the Final "Phase One Report on Mitigating the Risk of DNS Namespace Collisions" This report noted that, "collisions in the global Domain Name System (DNS) namespace have the potential to expose serious security-related issues for users of the DNS." The authors stated that they:

> did not find that the addition of new Top Level Domains (TLDs) fundamentally or significantly increases or changes the risks associated with DNS namespace collisions. The modalities, risks, and etiologies of the inevitable DNS namespace collisions in new TLD namespaces will resemble the collisions that already occur routinely in the other parts of the DNS. The addition of multiple new TLDs over the past decade (generic and country code) has not suggested that new failure modalities might exist; rather, the indication is that the failure modalities are similar in all parts of the DNS namespace. Our research has shown that a very few root causes are responsible for nearly all collisions, and these root causes appear in nearly every classification of TLD, albeit in varying proportions.

The recommendations in the report describe a comprehensive approach to reducing current and future DNS namespace collisions, alerting operators of potential DNS namespace related issues, and providing emergency response capabilities in the event that critical (e.g., life safety) systems are adversely impacted.

Over the course of the study, JAS found no evidence to suggest that the security and stability of the global Internet DNS itself is at risk. This finding confirms the results of the *DNS Stability String Review* performed on each string during Initial Evaluation pursuant to Section 2.2.1.3.1 of the Applicant Guidebook (AGB). The remainder of their research is focused on issues from the perspective of end-systems as consumers of the global DNS. To date, neither JAS nor ICANN has identified any instances where "a newly delegated gTLD creates a clear and present danger to human life as a result of colliding use as a dotless name...", which is the unlikely case where an emergency response would be needed, per the Name Collision Occurrence Management Framework[5].

See also SAC066, "SSAC Comment Concerning JAS Phase One Report on Mitigating the Risk of DNS Namespace Collisions."[6] In its Comment the SSAC noted that it had reviewed the Draft Report prepared for ICANN by JAS Global Advisors entitled "Mitigating the Risk of DNS Namespace Collisions: A Study on Namespace Collisions in the Global Internet DNS Namespace and a Framework for Risk Mitigation, Phase One Report." The Draft Report was

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[5] ICANN. (30 July 2014). Name Collision Occurrence Management Framework. Retrieved from https://www.icann.org/en/system/files/files/name-collision-framework-30jul14-en.pdf
[6] See SAC066, "SSAC Comment Concerning JAS Phase One Report on Mitigating the Risk of DNS Namespace Collisions."at https://www.icann.org/en/system/files/files/sac-066-en.pdf

published by ICANN on 24 February 2014 and put out for public comment.[7] The SSAC Comment identified eight issues with the Draft Report, and made recommendations in relation to each of them.

ICANN, the community, and the SSAC worked together on a mitigation plan, reviewing historical query traffic, identifying mitigation steps, and developing educational materials for IT administrators. On 30 July 2014, the NGPC passed a resolution directing staff to defer delegation of the high-risk strings (i.e., HOME, CORP, MAIL) indefinitely, and outlined procedures for Controlled Interruption for new gTLDs[8]. In addition, the NGPC asked that ICANN "work with the GNSO to consider whether policy work on developing a long-term plan to manage gTLD name collision issues should be undertaken."

In August 2014, ICANN published the Name Collision Management Framework[9], which provides a long-term solution for registry operators to mitigate risks of name collision in the future.

- *4.6.3.2 Questions and Concerns Related to Subject*

The DG did not highlight specific concerns as it relates to name collisions, other than noting that it was not mentioned in the AGB and was therefore not something that could have been adequately planned for. However, there is the possibly for additional work related to name collisions, including:

  o Developing a process to identify high-risk strings for future procedures.
  o As most measures under the framework cease after two years of delegation, are additional measures needed to manage name collision risks that may pose a risk for 2012-round gTLDs beyond that timeframe?
  o Are measures needed for gTLDs delegated prior to the 2012 New gTLD Program round?
  o Are there suggested data points that should be collected to help determine the effectiveness of current mitigation measures?

- *4.6.3.3 Relevant Guidance*

  o Recommendation 4
  o Name Collision Occurrence Management Framework: https://www.icann.org/en/system/files/files/name-collision-framework-30jul14-en.pdf

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[7] See "Mitigating the Risk of DNS Namespace Collisions: A Study on Namespace Collisions in the Global Internet DNS Namespace and a Framework for Risk Mitigation, Phase One Report" at https://www.icann.org/en/system/files/files/name-collision-mitigation-26feb14-en.pdf
[8] ICANN Board resolution: https://features.icann.org/name-collision-occurrence-management-framework
[9] Ibid.

- *4.6.3.4 Rationale for Policy Development*

  In late 2014, the GNSO considered whether policy work was needed to develop a long-term plan to manage gTLD name collisions. The GNSO Council determined:

  > *…that policy work by the Council on the name collision issue at this time would be premature, particularly as the Name Collision framework has only recently been implemented and as such there is limited data available about whether this has been successful or otherwise.*

  > *We appreciate that situation could rapidly change as new gTLDs continue to be introduced and if that were the case, then the GNSO would then reconsider this issue. Further, it should be noted that any policy process undertaken would not impact 2012 gTLD registry operators given the time it takes to conduct a formal policy process.*

  > *Therefore, this issue may be best discussed in the broader context of future rounds of new gTLDs.[10]*

  A potential PDP-WG on New gTLD Subsequent Procedures may want to determine what data points should be collected and analyzed to help drive next steps, if any, to develop a long-term plan to mitigate issues that may arise from gTLD name collisions.

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[10] GNSO Correspondence to Cyrus Namazi regarding name collisions:
http://gnso.icann.org/en/correspondence/robinson-to-namazi-28jan15-en.pdf