

SAC130

SSAC Comments on Name Collision Guidelines in the
Proposed Language for the Draft Next Round Applicant
Guidebook

Preface

This is a public comment to the ICANN organization and Subsequent Procedures Implementation Review Team from the ICANN Security and Stability Advisory Committee (SSAC) in response to a call for comments for the Final Proceeding for Proposed Language for the Draft Next Round Applicant Guidebook.

The SSAC focuses on matters relating to the security and integrity of the Internet's naming and address allocation systems. This includes operational matters (e.g., pertaining to the correct and reliable operation of the root zone publication system), technical administration matters (e.g., pertaining to address allocation and Internet number assignment), and registration matters (e.g., pertaining to registry and registrar services). SSAC engages in ongoing threat assessment and risk analysis of the Internet naming and address allocation services to assess where the principal threats to stability and security lie, and advises the ICANN community accordingly. The SSAC has no authority to regulate, enforce, or adjudicate. Those functions belong to other parties, and the advice offered here should be evaluated on its merits. SSAC members participate as individuals, not as representatives of their employers or other organizations. SSAC consensus on a document occurs when the listed authors agree on the content and recommendations with no final objections from the remainder of the SSAC, with the exception of any withdrawals included at the end of the document.

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1 Introduction

On 30 May 2025, ICANN opened a public comment proceeding to obtain input on the Draft Applicant Guidebook (AGB) for the New Generic Top-Level Domain (gTLD) Program: Next Round.¹ The draft AGB outlines the proposed rules and procedures for applicants in the upcoming program. The Security and Stability Advisory Committee (SSAC) welcomes this opportunity to provide input and thanks the Subsequent Procedures Implementation Review Team and the ICANN organization for their work in developing this comprehensive document.

The SSAC's goal is to ensure that a clear and transparent process exists to evaluate the technical risks of name collisions, particularly when they occur between the Domain Name System (DNS) and alternative, publicly-available naming systems (e.g., blockchain-based naming systems) as opposed to private, internal naming systems. In this comment, the SSAC provides specific recommendations to improve the AGB, focusing on the mechanisms related to the identification, evaluation, and mitigation of name collisions, primarily drawing on the Name Collision Risk Assessment Framework detailed in the Name Collision Analysis Project (NCAP) Study 2 Report (NCAP2).

2 Problem Statement

Name collisions are defined in NCAP2 as follows:

Name Collision refers to the situation where a name that is defined and used in one namespace may also appear in another. Users and applications intending to use a name in one namespace may actually use it in a different one, and unexpected behavior may result where the intended use of the name is not the same in both namespaces. The circumstances that lead to a name collision could be accidental or malicious. In the context of top-level domains (TLDs), the conflicting namespaces are the global Internet Domain Name System (DNS) namespace reflected in the root zone as published by the Root Zone Management Partners and any other namespace, **regardless of whether that other namespace is intended for use with the DNS or any other protocol** [emphasis added].²

In this comment, the SSAC focuses on a specific name collision scenario: when a new gTLD applicant applies for a string already in use in an alternative, non-DNS naming system (e.g., blockchain-based naming systems). Several alternative naming systems increasingly utilize the

¹ 'Final Proceeding for Proposed Language for the Draft Next Round Applicant Guidebook (AGB)', 30 May 2025. <https://www.icann.org/en/public-comment/proceeding/final-proceeding-for-proposed-language-for-the-draft-next-round-applicant-guidebook-agb-30-05-2025>.

² 'Name Collision Analysis Project Study Two Report'. ICANN, 5 April 2024. <https://www.icann.org/en/system/files/files/ncap-study-2-report-05apr24-en.pdf>.

syntax of DNS names.³ Without explicit guidelines and proactive management, these alternative naming systems may create collisions with new gTLDs delegated through the New gTLD Program: Next Round. The SSAC believes these collisions could cause the following problems:

- Security vulnerabilities stemming from misdirected traffic or unexpected system interactions.
- Operational instability for network operators and end-users.
- User confusion due to unpredictable resolution behavior.

The SSAC submits this comment to amplify and clarify key principles from NCAP2 that address these (previously identified) risks, so that the final AGB fully reflects this guidance.

3 Comments on AGB §6.7: Name Collision

In this section, the SSAC identifies four areas in AGB §6.7 that are inconsistent with the framework detailed in NCAP2 and makes recommendations on how to better align the AGB text with the framework detailed in NCAP2 and accepted by the ICANN Board.⁴

3.1 Ambiguity of TRT Involvement in Initial Assessment

The AGB creates a procedural ambiguity by not explicitly stating who is responsible for the Name Collision Initial Assessment in AGB §6.7.2. This section states that "ICANN will publish an initial assessment," but only later, in AGB §6.7.3, does it formally introduce the "Technical Review Team (TRT), which consists of internal experts from relevant ICANN departments."

While it is possible that "ICANN" in AGB §6.7.2 refers to the same group of experts who will later form the TRT, this is not explicitly stated. Clarifying this point is important, as the current text obscures who is responsible for the initial analysis of a string's risk profile. The SSAC believes that clarifying the TRT's involvement from the outset would enhance the transparency of the AGB and provide applicants with a clearer understanding of the name collision risk assessment process.

The following passages from NCAP2 support the SSAC's interpretation that the TRT is responsible for the entire assessment process, starting with the initial review:

³ Security and Stability Advisory Committee. 'SAC123: SSAC Report on the Evolution of Internet Name Resolution'. ICANN, 15 December 2023.

<https://itp.cdn.icann.org/en/files/security-and-stability-advisory-committee-ssac-reports/sac-123-15-12-2023-en.pdf>.

⁴ 'Approved Resolutions | Regular Meeting of the ICANN Board: Name Collisions: SAC124 Advice and NCAP Discussion Group Recommendations', 7 September 2024.

<https://www.icann.org/en/board-activities-and-meetings/materials/approved-resolutions-regular-meeting-of-the-icann-board-07-09-2024-en#section2.c>.

- NCAP2, Appendix 3: "The main purpose of the TRT is to identify high risk strings. Their evaluation would happen at various points in time during the application process...**During the initial assessment of Name Collision Data, the TRT would examine the data available prior to the delegation** [emphasis added]... to look for evidence of name collisions."
- NCAP2 §5.8: "When an applicant applies for a new gTLD string, the Technical Review Team... **will start the evaluation process with their own review** [emphasis added] of the publicly available data sets."
- NCAP2 §5.7: The responsibilities of the TRT, including "assessing the visibility of name collisions" and "documenting the results," are foundational and should apply to all stages of assessment, starting with the initial review.

Recommendation 1: The AGB should explicitly state that the TRT is responsible for conducting the Name Collision Initial Assessment described in AGB §6.7.2.

3.2 Addressing High-Risk Strings Prior to Any Delegation

The AGB's workflow for name collision assessment is ambiguous regarding the TRT's authority to act on high-risk strings *before* temporary delegation. AGB §6.7.3 states that "The TRT will evaluate the data collected during Temporary Delegation... to determine whether the string will be...designated as high-risk, in which case the string will be immediately removed from the root zone." This text implies that a string *must* be added to the root zone in order for the TRT to conduct its evaluation. However, temporary delegation is not an absolute requirement in the NCAP2 workflow.

The following passages from NCAP2 support the SSAC's interpretation that the TRT's workflow begins with an initial assessment using pre-existing data, with significant latitude in determining what restrictions are appropriate for a given string, including before any delegation occurs:

- NCAP2 §5.7: "It is the responsibility of the Technical Review Team (TRT) function to identify high-risk strings to ensure that their delegation is restricted."

- NCAP2 §5.8:

When an applicant applies for a new gTLD string, the Technical Review Team (see Recommendation 7) will start the evaluation process with their own review of the publicly available data sets. If, based on the qualitative and quantitative data available, the string is determined to be at a high risk of name collisions that may cause harm, they will recommend to the Board that the string be withdrawn from consideration and added to a Collision String List (see Recommendation 9). If the string is not considered to be at a high risk of name collisions or if the Board requests additional review, the TRT will take additional steps (See Figure 6).

- NCAP2, Appendix 3: "During the initial assessment of Name Collision Data, the TRT would examine the data available prior to the delegation... to look for evidence of name collisions."
- NCAP2, Appendix 3: The workflow diagrams in Appendix 3 of the NCAP report (Figures 9 and 10) explicitly show "TRT Research" as the first step in the assessment process, occurring prior to any "TRT Delegated" work.

Recommendation 2: The AGB should explicitly state that the TRT has the authority to recommend a string be placed on the Collision String List and not proceed to temporary delegation if the TRT's initial analysis indicates an unacceptably high risk of name collision.

3.3 TRT's Assessment Scope

The AGB's description of the name collision assessment could be interpreted as limiting the TRT's scope to signals found only within the DNS, potentially ignoring foreseeable risks to DNS users originating from other namespaces or protocols. AGB §6.7.2 lists the data sources for the Initial Assessment as "root server logs, and DNS recursive server logs," along with ITHI data sets.

This focus on DNS-based data sources is too narrow because it fails to account for a collision scenario where the source of a user's expectation is external, but the resulting DNS query and potential harm occur directly within the DNS ecosystem. For example, a user can become accustomed to a name like mywallet.example from its use in an alternative name system. When that user later types the name into a DNS-native application, such as a web browser, the application will typically query the public DNS.⁵ If .example has been delegated as a gTLD, and mywallet.example is delegated in the DNS to a malicious registrant, the user can be misdirected to a fraudulent site. Constraining the TRT to only DNS query data prevents it from identifying collisions of this type.

NCAP2 explicitly states that the TRT's assessment must go beyond DNS query volume and incorporate external intelligence:

- NCAP2 §3.4:
As highlighted in the Case Study of Collision Strings (hereinafter referred to as "Case Study"), recommendations regarding any course of action in handling name collisions is based on a set of CDMs and no single class of measurement is sufficient to assess the full scale of name collision risks.* **The different measurements must be taken as a whole to understand how their interactions inform any technical analysis** [emphasis added] [...]

⁵ We say "typically" here because alternative query algorithms are possible, via both plug-ins for mainstream web browsers or niche web browsers.

The four (4) major classes of measurement that should help assess the scope, impact, and potential harm of name collisions include, in no particular order:

- Query Volume – The number of queries each RSI receives
- Query Origin Diversity – The number of unique query source IP addresses (resolvers)
- Query Type Diversity – The type of query (i.e., resource record type) being requested
- Label Diversity – Diversity of labels under a Collision String

Along with these four (4) major classes of measurement, **other characteristics identified as Critical Diagnostic Measurements include**:**

- **Open-Source Intelligence (OSINT)**
- **Qualitative assessments** [emphasis added]

*Footnote 61: See Case Study of Collision Strings, <https://www.icann.org/en/system/files/files/case-study-collision-strings-13jul22-en.pdf>

**Footnote 62: Open-Source Intelligence (OSINT) and qualitative assessments are mentioned in the Case Study as other characteristics but for those strings that require a qualitative rather than a quantitative assessment. OSINT strings require research to understand the semantic meaning of the string and what that string could be associated with.

- NCAP2, Appendix 3:

During the initial assessment of Name Collision Data, the TRT would examine the data available prior to the delegation it will request for the next step (e.g., ICANN Managed Root Server (IMRS) logs, ITHI data, DITL data, human-submitted reports, and any other contextual data as may be available) to look for evidence of name collisions. During the evaluation for high-risk strings, the TRT will collect all available CDMs and any other contextual data as may be available, such as unique strings or labels that might help the TRT understand or identify whether a string should be moved to the String Collision List for additional review. The evaluation at this stage is expected to expand over time as the TRT builds a record of previous research. Part of the evaluation would then include comparing the string against a historical baseline to look for known trends.

Recommendation 3: The AGB should explicitly state that the TRT is allowed to include evaluating potential collisions with known, widely used alternative naming systems and other external sources, as these can create foreseeable security and stability risks for DNS users.

3.4 TRT's Discretion to Evolve its Assessment Framework

AGB §6.7.3 states:

Four different assessment methods for notification and data generation will be used during Temporary Delegation. These are outlined in the Appendix 2 of the Name Collision Analysis Project Study Two Report and are named: No Interruption (NI); Controlled Interruption (CI); Visible Interruption (VI); and Visible Interruption and Notification (VIN).

The SSAC views the AGB's inclusion of the four data collection and notification methods from NCAP2 as a positive and essential starting point for the TRT's work. To further strengthen this framework, the SSAC recommends clarifying the TRT's capacity to adapt to emerging and future challenges.

The four data collection methods listed in NCAP2 were based on the technological landscape of the DNS during the NCAP Discussion Group's deliberations (2019–2024). By codifying *only* these specific methods in §6.7.3, the AGB could be interpreted as preventing the TRT from adapting its approach in response to new technologies or unforeseen collision vectors that may emerge during the multi-year course of the Next Round. Without sufficient information, applicants may not understand that the exact assessment circumstances may evolve based on the TRT's expert analysis.

NCAP2 anticipates this need, recommending in the following passages that the TRT have the ability to adapt its methods to meet new challenges:

- NCAP2 §5.7: "The data collection methods proposed for the TRT are a small sampling of known and tested methods. **Other methods may be used, but they remain untested and are out of scope within this report. Ultimately, which methods to use should be critically considered during the operationalization of the TRT.** [emphasis added]"

- NCAP2, Appendix 3:

During the evaluation for high-risk strings, the TRT will collect all available CDMs and any other contextual data as may be available, such as unique strings or labels that might help the TRT understand or identify whether a string should be moved to the String Collision List for additional review. The evaluation at this stage is expected to expand over time as the TRT builds a record of previous research. **The evaluation at this stage is expected to expand over time as the TRT builds a record of previous research** [emphasis added].

- NCAP2 §1:

This report cannot assess all risk factors, as some of the relevant risks are not technical or operational, which means it cannot provide final answers on what techniques should be applied or what the final outcome of analysis should be.

There is an element of judgment in applying all of the Findings and Recommendations in Sections 4 and 5, respectively [emphasis added]. The NCAP DG has provided facts and analysis within its remit and the understanding available to the participants. However, the purpose of this report is to provide advice that will be further refined by input from—and ultimately implemented by—other parties. **The proposed Technical Review Team (TRT), as described later in this report, will be expected to provide some of that judgment.** [emphasis added]

Recommendation 4: The AGB should explicitly state that while the TRT may utilize the four data collection methods described in NCAP2, it is authorized to evolve its testing and analysis framework as needed to address new and unforeseen sources of data that inform name collision risk analysis.

4 Recommendations

Recommendation 1: The AGB should explicitly state that the TRT is responsible for conducting the Name Collision Initial Assessment described in AGB §6.7.2.

Recommendation 2: The AGB should explicitly state that the TRT has the authority to recommend a string be placed on the Collision String List and not proceed to temporary delegation if its initial analysis indicates an unacceptably high risk of name collision.

Recommendation 3: The AGB should explicitly state that the TRT is allowed to include evaluating potential collisions with known, widely used alternative naming systems and other external sources, as these can create foreseeable security and stability risks for DNS users.

Recommendation 4: The AGB should explicitly state that while the TRT may utilize the four data collection methods described in NCAP2, it is authorized to evolve its testing and analysis framework as needed to address new and unforeseen sources of data that inform name collision risk analysis.

5 Acknowledgments, Disclosures of Interests, and Withdrawals

In the interest of transparency, these sections provide the reader with information about aspects of the SSAC process. The Acknowledgements section lists the SSAC members, outside experts,

and ICANN staff who co-authored or contributed directly to this particular document or who provided reviews. The Disclosures of Interest section points to the biographies of all SSAC members, which disclose any interests that might represent a conflict—real, apparent, or potential—with a member's participation in the preparation of this report. The Withdrawals section identifies individuals who have recused themselves from the discussion of the topic with which this report is concerned. Except for members listed in the Withdrawals section, this document has the consensus approval of all of the members of SSAC.

5.1 Acknowledgments

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5.2 Disclosures of Interest

SSAC member biographical information and Disclosures of Interest at the time of publication are available at <https://www.icann.org/en/ssac/members/archive/16-05-2025>.

5.3 Withdrawals

There were no withdrawals.