



SSAC and alternative naming systems

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This talk, explores SSAC perspectives on alternative naming systems and their implications for the DNS and highlight possible actions previously suggested by SSAC

What is an alternative naming system?

SAC 123: SSAC Report on the Evolution of Internet Name Resolution

SAC 123: This report explores the effects and implications of alternative naming systems (**Dec. 2023**)

- **alternative naming system:** Any naming system other than the global DNS used by computers to resolve a name
- **namespace:** A set of names used to identify and refer to objects
- **domain namespace:** The set of all possible names that could be assembled using a common syntax defined for domain names
- **name resolution:** The process of translating a name to a network resource such as an address
- **DNS name:** A domain name that could exist in the global DNS

Impact of alternative naming systems on the global DNS?

SAC 123: SSAC Advisory on the Stability of the Domain Namespace

SAC 123: This report explores the effects and implications of alternative naming systems (**Dec. 2023**)

- When the global DNS was not only the clear default resolution protocol, but also the only one that almost all users and developers knew about, Internet naming application designers could safely assume that the DNS was the correct resolution protocol for names
- A name by itself can include context that can signal which resolution protocol should be used
- The intended resolution protocol of a name is implied from the environment in which the name appears

Understanding alternative naming systems

SAC 123: SSAC Report on the Evolution of Internet Name Resolution

SAC 123: This report explores the effects and implications of alternative naming systems **(Dec. 2023)**

- Most new alternative naming systems adopt the same syntax for names as the DNS
- The same name can resolve in different ways
- The application developer makes the choice of which naming system to use without the user even knowing that they are using an alternative naming system nor understanding potential implications
- Name resolution within computers can now follow different paths and the resolution path chosen can sometimes determine the service that is actually reached
- A new distinction is now required that previously did not exist

Impact of alternative naming systems on global the global DNS?

SAC062: SSAC Advisory
Concerning the Mitigation
of Name Collision Risk

SAC062 discusses the risk of name collisions that can arise through the delegation of new top-level domains (TLDs) and how ICANN might mitigate the risk of new TLD delegations through trial delegations. (Nov. 2013)

- Recommendation 3: ICANN should explicitly consider under what circumstances un-delegation of a TLD is the appropriate mitigation for a security or stability issue. In the case where a TLD has an established namespace, ICANN should clearly identify why the risk and harm of the TLD remaining in the root zone is greater than the risk and harm of removing a viable and in-use namespace from the DNS.....

The context of the above recommendation was trial delegation prior to the first round of new gTLDs however, the logic still applies.

Impact of alternative naming systems on the global DNS?

SAC 90: SSAC Advisory on the Stability of the Domain Namespace

SAC 90: discusses the main issues that arise from domain namespace ambiguity (**Dec. 2016**)

- Finding 1: The SSAC finds that uncoordinated use of the domain namespace in overlapping environments can lead to ambiguity when those environments overlap
 - Alternative naming systems are not about overlapping environments. But are about resolving the domain in a wrong way and thus leading to a service different than the intended
- Finding 2: More specifically, the SSAC finds that the lack of adequate coordination among the activities of several different groups contributes to the domain namespace instability identified in Finding 1.

The context was different, however, the above logic and findings are still valid

Impact of alternative naming systems on the global DNS?

SAC130: SSAC
Comments on Name
Collision Guidelines in
the Proposed Language
for the Draft Next Round
Applicant Guidebook

SAC130:

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 **(July 2025)**)

- Name collisions can happen due to overlapping environments where name from one environment leaks into another or due to using the wrong resolution protocol
- Users and applications intending to use a name in one namespace end up using it in a different namespace
- User confusion due to unpredictable resolution behaviour
- Malicious registrants exploiting the existence of the same TLD in two different namespaces

Impact of alternative naming systems on the global DNS?

SAC130: SSAC
Comments on Name Collision Guidelines in the Proposed Language for the Draft Next Round Applicant Guidebook

SAC130:

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) (July 2025)

- 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
- 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. 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.

Conclusion

- The intended resolution protocol of a name is implied from the environment in which the name appears (SAC123)
- What if similar domain names exist in the global DNS and the blockchain DNS and the opensource DNS software is modified to support non-DNS protocols (ex. Blockchain queries) – **how will the name resolve?**
- A user can install the Tor Browser, and it will use the Tor naming system for names ending in .ONION, while forwarding any other names to the local DNS library (SAC 123) – **what if .ONION exists in the global DNS as well?**

Conclusion

- Evaluating new gTLD strings needs to include 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. Where the harm happens in the global DNS environment.
- The need for coordination among different types of DNS systems (Blockchain DNS and global DNS)
- Simply not registering widely known alternative systems is not the solution



Thank you!