



The Internet Corporation for Assigned Names and Numbers

16 August 2017

RESPONSE to REQUEST FOR ICANN TO CREATE AN LIGHTWEIGHT DIRECTORY ACCESS PROTOCOL MASTER SERVER to MITIGATE LIMITED INTERNET ACCESS FOR CITIZENS IN LOW-BANDWIDTH AREAS

VIA EMAIL

Dear James Danforth,

Thank you for your submitting your concern that search engines have a monopoly power over visibility into registered domain names and that the purported monopoly limits Internet access for citizens of the world in low-bandwidth areas. Thank you also for your suggestion that ICANN create a Lightweight Directory Access Protocol Master Server to mitigate your concern. I appreciate that you took the time to submit not only your concern, but a proposed solution that includes a diagram. Thank you for that. I've researched this issue with various departments inside the ICANN organization and worked with the team from the Office of the Chief Technology Officer to provide you with this response.

To start, I'd like to explain more about ICANN, its role, where it gets its authority and what ICANN has authority over. ICANN is not a governmental agency but instead a private sector, non-profit organization with limited technical responsibility for coordinating the assignment of Internet domain names and IP addresses. This coordination is provided using a bottom-up, consensus-driven, multi-stakeholder model comprised of three parts: [the ICANN Community, the ICANN Board, and the ICANN Organization](#). The ICANN community is a volunteer-based group of diverse stakeholders from across the world. They work together to give advice and develop policy within ICANN's mission. In order to create new policies or amend existing ones, the [Policy Development Process](#) described in [ICANN's Bylaws](#) must be utilized and driven by the ICANN community. The ICANN board is a group of representatives from the ICANN community that oversees the ICANN organization. The ICANN organization provides staff and resources to support the ICANN community and board, and implements policies developed by the community.

The ICANN organization accredits registrars and registries to provide certain domain name registration services. ICANN's authority is purely contractual, and limited to [registrar agreements](#), [registry agreements](#), and [ICANN community developed policies](#). The agreements between ICANN and registrars and registries outline certain responsibilities for both ICANN, the registrar and the registry. The ICANN organization is responsible for overseeing and enforcing these contracts.

There are several other organizations that work in partnership with ICANN to ensure the security, stability, resiliency and integrity of the Internet's logical infrastructure. One such organization is the Internet Engineering Task Force, or the IETF. The IETF is an open international community of network designers, operators, vendors, and researchers specializing in networking protocols, software, and networking hardware. The IETF develops and promotes a wide range of Internet standards dealing in



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particular with standards of the Internet protocol suite. Their technical documents influence the way people design, use, and manage the Internet

The IETF is concerned with the evolution of the Internet architecture and the smooth operation of the Internet. The IETF's mission is "to make the Internet work better from an engineering point of view. I mention the IETF here because your concern and proposed solution appear to be about the evolution of the Internet architecture. Like ICANN, the IETF is open to any interested individual who wishes to participate.

The Domain Name System architecture is the system the Internet currently relies upon to map human-preferred names (also known as 'domain names') into machine-preferred numbers and other data. The Domain Name System architecture was defined by the IETF in 1983 and the Internet has been operating using this architecture ever since.

The Domain Name System is comprised of countless domains that are independently administered by different entities (individuals, companies or organizations, Universities, etc.) around the world. ICANN's authority is limited to only the Generic Top-Level Domain zones and the entities who administer them. All of the other domains, including child-domains of generic top-level domains and country-code top-level domains, are administered and/or controlled by entities that ICANN does not have authority over or, often, visibility into. These entities control their own portion of the global domain name namespace, which means there's no centralized access to the contents of the hundreds of millions or billions of domains. In fact, in order to allow the Domain Name System to support the unlimited growth of the global domain name namespace, the IETF deliberately designed the Domain Name System to be decentralized with each subset of the global domain namespace being independently and autonomously managed.

If we understand your suggestion correctly, you are encouraging ICANN to create a Lightweight Directory Access Protocol Master Server that would act to make all domain names available to any requester in order to mitigate limited Internet access for citizens of the world in low-bandwidth areas. This is essentially asking ICANN to replace or re-architect the Domain Name System into a centralized system with all names managed within the Lightweight Directory Access Protocol Master Server. ICANN is not able to make such changes for these primary reasons:

1. ICANN does not have authority over the architecture of the Domain Name System. ICANN's role is limited to the coordination of the assignment of domain names, Internet Protocol addresses, and other identifiers which are a part of the Domain Name System architecture, but not the only part.
2. ICANN does not administer all of the zones of the Domain Name System. In fact, our visibility – not control – is essentially limited to the top-level domains and the second-level domains of generic top-level domains. Meaning, ICANN doesn't have visibility into Country-Code Top-Level Domains such as .FR (France), or .MX (Mexico), nor does ICANN generally have



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visibility into Generic Top-Level Domains beyond the second-level, e.g., the names within a .COM, .INFO, etc., domain.

3. Because of the deliberate decentralized nature of the Internet, it's impossible for any one entity – ICANN included – to collect all the data from each zone to create one comprehensive, centralized zone/naming system – like the one described in your proposal. Very few name servers, which are independently operated and outside ICANN's purview, allow for the extraction of all names within the domains they serve as this is viewed as a security and privacy risk.
4. Even if it were possible to collect all the names and associated data of the entire global domain name namespace, that information would be out of date by the time it was collected and require immense resources, in terms of hardware and network bandwidth, to store and update.

It is probably worth noting that your proposal essentially recreates the original naming architecture of the Internet of the day (ARPANet), which had a single central Network Information Center that maintained a file known as "HOSTS.TXT" that listed every name on the then-Internet. The reason the Domain Name System was invented was to replace HOSTS.TXT as experience demonstrated (as far back as the late 1970s) that it was unscalable

Although ICANN does not have the authority to re-architect the Domain Name System, the IETF, mentioned earlier, is where these types of discussions occur. I would encourage you to raise your thoughts and ideas there. To learn more about the IETF and how to participate, please visit:

The IETF home page: <https://www.ietf.org/>

The IETF page for newcomers: <https://www.ietf.org/newcomers.html>

Thank you again for your submission regarding a purported monopoly power that search engines have over visibility into registered domain names and that it limits Internet for citizens of the world in low-bandwidth areas, and for the thoughtful proposed solution. For the reasons mentioned in our response, the ICANN organization is unable to re-architect the implementation of the Internet's namespace to create a compendium of all domain names that would be accessible via a Lightweight Directory Access Protocol Master Server. While I suspect this is not the exact answer you were hoping for, I hope the information and guidance is useful to you.

I appreciate the opportunity to provide you with this information and encourage you to consider participating in the IETF.

Kind regards,
Krista Papac
Complaints Officer
ICANN