



# Identifier Technologies Health Indicators

**What Does a Healthy Identifier System Look Like?**

Kick-Off

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# Identifier Technologies Health Indicators

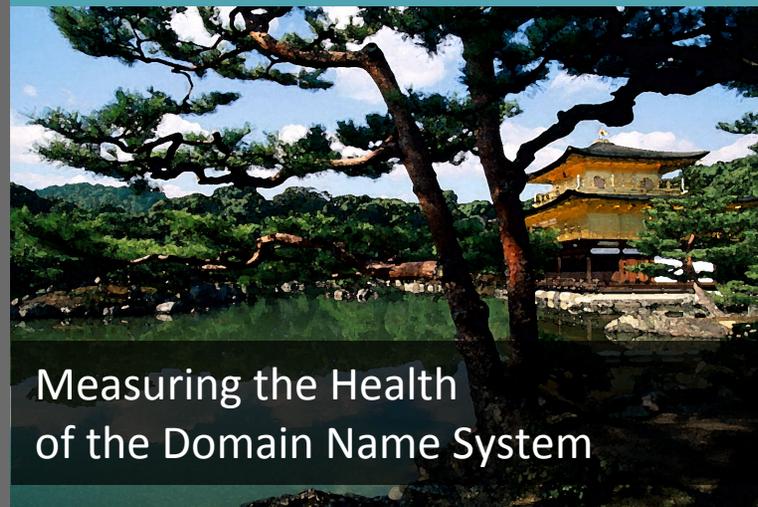
## Kick-off meeting:

- Looking for input from the community
- Preliminary thoughts about potential health indicators

# Previous ICANN Effort:

## SSR study about DNS system in 2010:

<https://www.icann.org/en/system/files/files/dns-ssr-symposium-report-1-03feb10-en.pdf>



### Measuring the Health of the Domain Name System

Report of the  
2nd Annual Global Symposium on  
DNS Security, Stability and Resiliency

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1-3 February 2010  
Kyoto University  
Kyoto, Japan

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# Scope

## 2009 Affirmation of Commitment:

[https://www.ntia.doc.gov/files/ntia/publications/affirmation\\_of\\_commitments\\_2009.pdf](https://www.ntia.doc.gov/files/ntia/publications/affirmation_of_commitments_2009.pdf)

“For the purpose of this Affirmation the Internet’s domain name and addressing system (DNS) is defined as: domain names; Internet protocol addresses and autonomous system numbers; protocol port and parameter numbers. ICANN coordinates these identifiers at the overall level, consistent with its mission.”

Scope of this new effort:

**All the identifiers that ICANN helps coordinate.**

# ICANN Mission

## Current:

- The **mission** of The Internet Corporation for Assigned Names and Numbers ("ICANN") is to coordinate, at the overall level, the global Internet's systems of unique identifiers, and in particular to ensure the **stable and secure** operation of the Internet's unique identifier systems.

## Post Transition:

- The **Mission** of the Internet Corporation for Assigned Names and Numbers ("ICANN") is to ensure the **stable and secure** operation of the Internet's unique identifier systems as described below. [...]

# ICANN Strategic Plan 2016-2020

<https://www.icann.org/en/system/files/files/strategic-plan-2016-2020-10oct14-en.pdf>

## 2.1 Foster and coordinate a healthy, secure, stable, and resilient identifier ecosystem.

### KEY SUCCESS FACTORS (OUTCOMES)

- Increased collaboration with the global community that improves the security, stability and resiliency of the **unique identifier ecosystem** (including updates of the root zone, Internet numbers registries, and protocol parameter registries, operation of the “L” root server, and other operational infrastructure supporting the identifier ecosystem).
- Ecosystem is able to withstand attacks or other events without loss of confidence in the operation of the unique identifier system.
- Unquestionable, globally recognized legitimacy as coordinator of unique identifiers.
- Reduction of government/industry/other stakeholders’ concerns regarding availability of IP addresses.
- ...

# ICANN Strategic Plan 2016-2020 /2

## STRATEGIC RISKS

- Major attack or event results in failure of the DNS root name server system, TLD(s) of substantial size, routing system, or other significant identifier systems in which ICANN plays a role that causes loss of confidence in the administration of the IANA functions, Internet identifier ecosystem, or internationalization of ICANN.
- Ecosystem members' resistance to collaboration leads to gaps in DNS or other identifier administration best practices.
- Fragmentation of the Internet as a result of insufficient/incomplete technology transition.
- User confusion or routing system failure due to widespread unauthorized reuse of allocated IPv4 addresses.
- Failure of the identifier registration data services to gain acceptance by, or meet the needs of, the users of the identifier ecosystem.
- ...

# Defining “Health” is really hard...

## **2010 SSS report:**

“Although there is broad consensus that certain sets of existing measurements form a baseline, **there is no consensus on what precise set of parameters define a ‘healthy DNS.’** “

## **SSAC SAC077:**

“Developing a Key Performance Indicator (KPI) must first start with the insight into the ecosystem that the KPI is intended to convey, then drill down on what metrics best convey that insight, which actors have access to data or measurement capability to contribute to those metrics, and how to incentivize those actors to provide that data and measurement. The SSAC warns that, at least for metrics related to security, including consumer trust, and stability of the marketplace, relevant KPIs will require access to data that is not currently being shared (or perhaps not even being collected) by registrars or registries....”

# Straw Man Proposal: What Does a Healthy Indicator System Look Like?

ICANN is:

- **Looking** for **input** from the community
- Presenting (very) **preliminary** thoughts about potential health indicators by first looking at what a healthy system could look like.

# What Does a Healthy Indicator System Look Like?

## Root Server System:

- ✓ **“Well formed queries” are resolved according to TBD Service Level Observations (SLOs)**
- ✓ Updates to the root zone by IANA matches determined **SLAs**
- ✓ Root server system supports new technologies in a timely fashion
- ✓ Queries to the root show timely adoption of new technologies

# What Does a Healthy Indicator System Look Like?

## DNS Registries/Registrars Operation

### ✓ **TLD Industry market is robust:**

- There is a large enough variety of registry back-end (Avoid technology failure)
- There is a large enough choice of registrars per TLD (Avoid market failure)
- Registries and Registrars are neither incompetent, complacent nor complicit (Avoid Abuse/Breach)

### ✓ **Operational Practices:**

- Registries/Registrars facilitate the adoption of IPv6 & DNSsec

# What Does a Healthy Indicator System Look Like? IP Addresses

We'll be looking to collaborate with the RIRs to identify health indicators for the Internet numbers.

# What Does a Healthy Indicator System Look Like? IANA Protocol Parameters Registries

We'll be looking to collaborate with the IETF to identify health indicators for the Internet Protocol Parameters.

**Note:** there are other Protocol Parameter registries maintained outside of IETF, e.g., IEEE, Cablelabs,...

# Summary

Looking for input from **you**