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FORUM

Inside IROS: Identifier Research, Operations, and Security Function

Who We Are & What We Do



IROS (Identifier Research, Operations and Security)

The IROS function
an umbrella that covers two teams:

**Office of the Chief Technology Officer
(OCTO)**

Collecting data, researching and writing papers, providing training and capacity building, and trying to help identify and measure DNS security threats and abuse.

IANA Functions

Delivering the names, numbers, and protocol parameters functions that the community depends upon for the Internet to work.

OCTO functions in a nutshell

- **Operations:** Liaise between OCTO and other ICANN functional teams and facilitate OCTO-specific meetings and activities - ICANN DNS Symposium (IDS), Registry Operators Workshop (ROW), as well as provide project management support to OCTO and IANA (as requested).
- **Technical Engagement (TE):** Develop framework for organizations to cooperate, coordinate, and collaborate with ICANN on technical matters. Ensure a coherent technical engagement across ICANN by framing and communicating the organization's technical position.
- **Research:** Provide trusted and verifiable information to the Internet community regarding the system of unique identifiers. Perform studies or analyze data to better understand the health and well-being of the DNS ecosystem.
- **Security Stability and Resiliency (SSR) Research:** Leads cybersecurity discussions and contributes subject matter expertise, research and tooling that, in one form or another, helps to maintain secure and resilient identifier systems.

Technical Engagement

Adiel Akplogan - VP, Technical Engagement

Technical Engagement in a nutshell

- Develop and sustain relationships with other technical organizations who share the vision and responsibility for secure, stable, and resilient unique identifier system coordination.
 - *Involve building a proper framework for organizations to cooperate, coordinate, and collaborate with ICANN on technical matters.*
- Coordinate ICANN the Knowledge-Sharing and Instantiating Norms for DNS and Naming Security (KINDNS - kindns.org) initiative.
- Lead and coordinate global ICANN's technical engagement programs.

Two Tracks for Technical Engagement

- Technical capacity building and outreach:
 - Regional/local training and capacity development programs
 - Technical content for online training platform (ICANN-Learn)
 - Training partnerships

- Engagement with the broader technical community:
 - Promote ICANN's technical initiatives
 - Technical assessment of policies, regulations, and technology trends
 - Support regional communities on technical topics (IDNs, DNS, DNSSEC, security best practices for Internet Identifiers System)
 - Support SSAC, RSSAC, UASG, and other advising constituencies engagement efforts
 - Engage with Law Enforcement and Public Safety Community on DNS technical related matters.
 - Support CDA technical Tracks (DNSSEC Roadshow, IXP, IMRS & ccTLD Capacity Building)

TE Regional Coverage



Adiel Akplogan,
Vice President for
Technical Engagement



Technical Engagement



TECHNICAL
TRAINING
EUROPE

Advanced DNSSEC

*Prerequisites: Basic knowledge of
DNS and DNSSEC*

18 September 2024

12:00 - 13:30 UTC

REGISTER NOW

ULRICH WISSER
Regional Technical
Engagement Manager
for Europe, ICANN



WHAT WE DO

**STRENGTHENING
ICANN'S ENGAGEMENT
WITH THE GLOBAL
TECHNICAL COMMUNITY**



Research

Matt Larson, VP, Research

Research Goals

- Provide trusted and verifiable information to the Internet community regarding the system of unique identifiers
- Engage actively with the DNS technology communities to identify issues that fall within ICANN's remit and will benefit from the focused attention our researchers can bring to bear on the issue
- Facilitate or participate with these same communities in preparedness activities to protect against or mitigate threats to DNS ecosystem
- Perform studies or analyze data to better understand the health and well-being of the DNS ecosystem
- Root server traffic research
- Represent ICANN org on RSSAC

Research Activities

- Identifier Technology Health Indicators (ITHI)
 - Develop metrics to measure the health of the Internet's unique identifier system
- DNS authoritative servers and resolvers
 - Concentration and distribution
- Resource Public Key Infrastructure (RPKI)
 - Coverage of DNS servers and resolvers by Route Origin Authorizations (ROAs)
- DNSSEC error reporting
 - Develop protocol and facilitate and encourage implementation
- ICANN L-root root server behavior
 - Tracking round trip times from various locations

Security, Stability, & Resiliency Research

Dr. Samaneh Tajalizadehkhoob, Director SSR Research

SSR Research Goals

Support ICANN's commitment to ensure the security, stability, and resiliency of the topmost levels of the Internet's system of unique identifiers by:

- Understanding the state-of-the-art research
- Leading and carrying out research in the areas that is relevant to the SSR of DNS
- Creating tools, visuals and data that helps the community to understand and measure events related to SSR of DNS
- Facilitating cyber security discussions
- Contributing subject matter expertise or data that helps maintain secure and resilient identifier systems
- Educating the community on the topics related to SSR of DNS
- Providing funding to projects/conferences that require support to conduct innovative research or have discussions around SSR of DNS

Key SSR Research Activities

- ICANN Domain Metrics **Keep an eye for the updates in the Techday - Try the platform**
- Inferential Analysis of Maliciously Registered Domains (INFERMAL) - final report out on ICANN website
- Quantifying the prevalence and implications of “**Active**” Domains
 - [Paper](#) accepted and presented at IEEE Security & Privacy EUROPE 2023
- Developing a **classifier** for **unsolicited** email, based on data from APWG
 - Paper accepted and presented at TRUSTCOM 2023
- Developing Metrics that allows for Reputation Block Lists **Evaluations**
 - [Paper](#) accepted and presented at APWG e-crime 2023 conference
- Blockchain based domains based on **root data observations**
 - Initial research results presented at IDS
- **DNS Abuse prediction** research
 - Flag potentially malicious domain names using ML techs
- Estimating malicious domains’ **uptime**

OCTO Document Series

- OCTO publishes technical documents written by OCTO authors in the OCTO document series
 - Series started in 2019
 - Published 41 documents and counting
- Recent examples:
 - A Verifiable and Reproducible Random Candidate Selection Process (OCTO-041)
 - Introduction to Blockchain Technologies (OCTO-040)
 - Introduction to Blockchain Name System Technologies (OCTO-039)
 - Methodology to Classify Unsolicited Email Threats (OCTO-038)
 - RBL Evaluation Methodology (OCTO-037)
- Links to all documents at <https://www.icann.org/octo/publications>

The work of the OCTO team

Where can you find it?

External work of the OCTO team

ICANN Blog



ICANN Trains More than 200 Students During Grenada ICT Week

13 March 2023

By David Huberman and Naela Sarras

One of the big success stories for the Internet Corporation for Assigned Names and Numbers



ICANN Mobile Network Operator Day 2023: Strengthening the DNS Ecosystem Security

30 November 2023

By Yazid Akanho

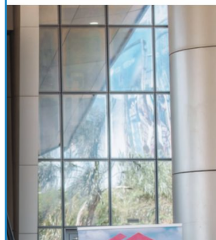


ICANN Publishes Paper on Defense Mechanisms Against Harmful Internet Content

18 December 2023

By Carlos Hernandez Ganan, Siôn Lloyd, and Samaneh Tajalizadehkhoob, Ph.D.

Reputation Block Lists (RBLs) serve as a common defense against harmful and unwanted Internet content. These lists contain the Internet Protocol addresses, domain names, or full uniform resource locators of known spam sources, phishing pages, malicious sites, or other unwanted content. We use these data sources for producing metrics in systems like [ICANN's Domain Abuse Activity Reporting \(DAAR\) system](#) for research, and as training sets for machine learning models, among other uses. Organizations may use RBLs to block incoming or outgoing access to domain names, filter spam, warn about phishing or other activities, all of which protect users from online threats.



Speaking engagements



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ANNUAL GENERAL MEETING

DURING ICANN81

INTERNET SERVICE PROVIDERS AND CONNECTIVITY PROVIDERS (ISPCP) CAPACITY BUILDING WITH OCTO



ULRICH WISSER
REGIONAL MANAGER
EUROPE



YAZID AKANHO
REGIONAL MANAGER
MIDDLE EAST AND AFRICA



9 NOVEMBER 2024
07:30 UTC



DIVE INTO ICANN'S OCTO TEAM AND ITS INITIATIVES

