Maintaining Top-Level Domain Health

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ICANN

Welcome and Opening Remarks

Agenda Item 1

ICANN

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Agenda

- ◉ Welcome and Opening Remarks

- ◉ Internet Assigned Numbers Authority (IANA) process for making Top-Level Domain (TLD) changes, keeping records up to date and what to do in the case of an emergency
  - About the IANA Functions
  - How to Submit a Root Zone Change Request
  - Keeping Your Contact Information Up to Date
  - Contacting IANA in case of an emergency
  - Domain Name System Security Extensions (DNSSEC) Key Rollovers

- ◉ Knowledge-sharing and Instantiating Norms for Domain Name System and Naming Security (KINDNS) Requirements for TLD Operators

- ◉ Q&A/Open discussion

# IANA process for making TLD changes, keeping records up to date and what to do in the case of an emergency

Agenda Item 2

What are the IANA functions?

- The record keeper for the unique names and numbers used by Internet technologies to interoperate

- The IANA functions pre-date ICANN. In 1998, ICANN was established to be the home of the IANA functions

- The unique identifiers include protocol parameters, Internet numbers and domain names

- The IANA team maintains these records according to policies adopted by Internet names, numbers and protocol standards communities
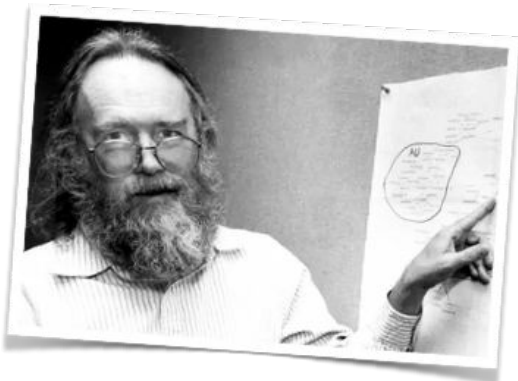
Jon Postel (L) started the IANA; with Steve Crocker and Vint Cerf (R)
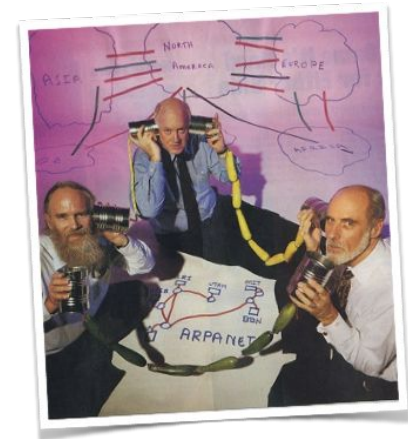
Why do the IANA functions exist?

◉ Coordinating the Internet unique identifier systems is needed to ensure the Internet interoperates globally

◉ If Internet-connected devices do not use the same system of identifiers and numbers to communicate to each other, the system will not interoperate (i.e. speak a common language)

◉ The authoritative registries are used by vendors, service providers, businesses, application developers and others to innovate and expand the use of the Internet
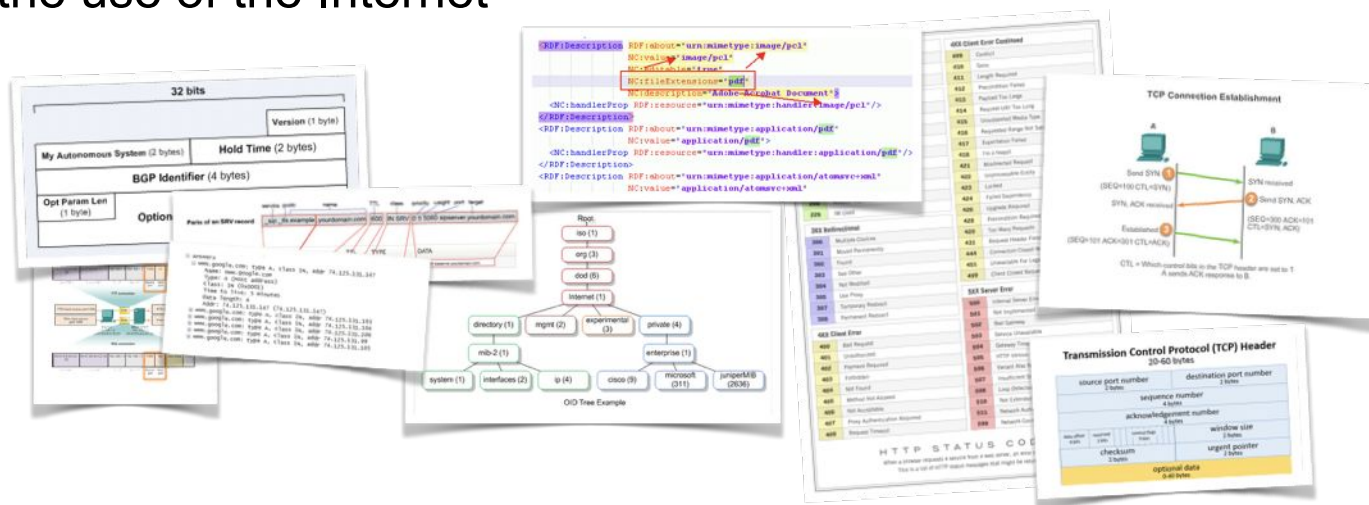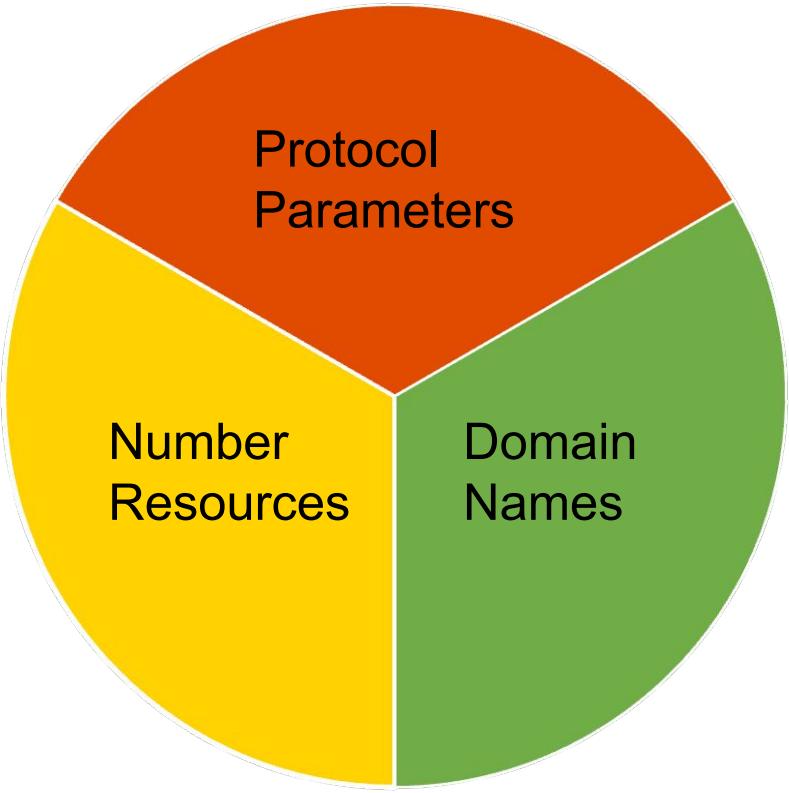
The IANA Department does

✓ Create registries based on policies from the community

✓ Maintain existing registries

✓ Allocate number resources

✓ Publish all registries for general public use

The IANA Department does not

✗ Create or interpret policies

✗ Determine what can be a domain name
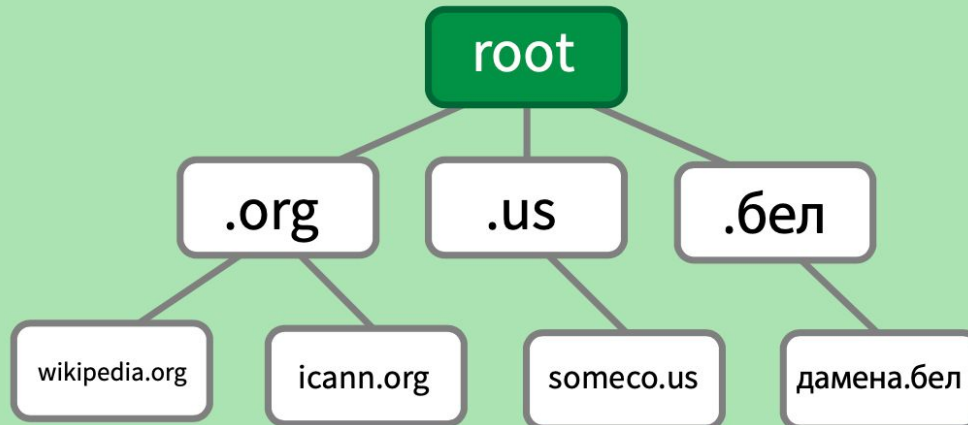
✗ Choose TLD managers

Service Areas

Domain Name Space

Unique Identifiers

Domain Name System

Domain Name Space

root

.org   .us   .бел

wikipedia.org   icann.org   someco.us   дамена.бел

How to Submit a Root Zone Change Request

◉ **Web Service**

- Primary method to submit changes is online through the Root Zone Management System (RZMS) at https://rzm.iana.org

◉ **Email:**

- If there are issues accessing RZMS, send an email to <root-mgmt@iana.org> using the online template at https://iana.org/domains/root/manage

◉ **Application Programming Interface (API) – Coming Soon**

- Programmatic interface to submit and interact with the RZMS
- First version targeted for bulk operations (e.g., RSPs with large portfolios)

The Change Request Process
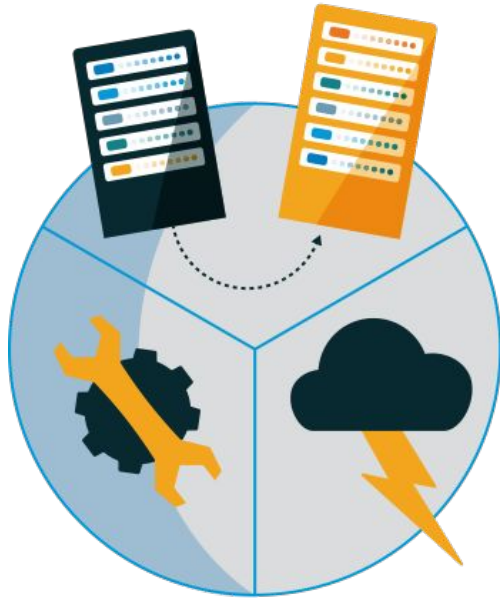
Event Triggers Request

An event such as a change in TLD operator, routine maintenance (technical or staffing change) or a natural disaster triggers the need for a change request.

REGISTRY ENTRY FOR .HAMBURG

Operator	**Hamburg Top-Level-Domain GmbH** Gertigstrasse 28, Hamburg, 22303 Germany

Contacts

Oliver Joachim Sueme	**Martin Schlicksbier**
Hamburg Top-Level-Domain GmbH	TLD-BOX Registrydienstleistungen
Gertigstrasse 28, Hamburg, 22303	Jakob-Haringer-Strasse 8
Germany	5020 Salzburg
Email: os@dothamburg.de	Austria
Voice: +49 40 27806736	Email: iana@tld-box.at
Fax: +49 40 380 89 810	Voice: +43 662 2345 48730

Technical configuration

NS a.dns.nic.hamburg (194.0.25.21 2001:678:20:0:0:0:0:21)
NS b.dns.nic.hamburg (193.170.61.10 2001:62a:a:2000:0:0:0:10)
NS c.dns.nic.hamburg (193.170.187.10 2001:62a:a:3000:0:0:0:10)
DS 53866 8 2 AF2F53F6B523F31C04A741B3826D27CBAE16F4BA6F...
DS 26479 8 1 1C9F5D68C413E8A9A2C8E1C1637B8A4DA2CA6827
DS 26479 8 2 4A48334EF87D7FC156E886E5A2B2682FCF0679ED6FC...
DS 53866 8 1 D26808AE1E19086BCF5FC88D59066C3AD22F2E56

Metadata

http://www.dothamburg.de
whois.nic.hamburg

Submit a Change Request

A TLD operator submits a change request to IANA. This is typically done through an automated web service IANA provides called the Root Zone Management System (RZMS).

② Technical Verification *if Applicable*

VERIFIED

Technical checks are performed when there are technical changes in order to cross-verify that errors are not introduced into the system and negatively impact the root zone.

Tech Checks

Requirement for Name Servers
- ✓ Minimum number of name servers
- ✓ Valid hostnames
- ✓ Name server reachability
- ✓ Answer authoritatively
- ✓ Network diversity
- ✓ Consistency between glue and authoritative data
- ✓ Consistency between delegation and zone
- ✓ Consistency between authoritative name servers
- ✓ No truncation of referrals
- ✓ Prohibited networks
- ✓ No open recursive name service
- ✓ Same source address
- ✓ DS record format
- ✓ Supported signing algorithm
- ✓ Supported digest type
- ✓ Matching DNSKEY records
- ✓ Validation of RRSIG

For more information on Technical Checks go to:
https://www.iana.org/help/nameserver-requirements

③ Consent

IANA confirms consent from the appropriate parties. This is typically the administrative and technical contacts for most change requests.

*If a contact is unresponsive or unable to consent to a change, the TLD manager can provide IANA with a letter to authorize the request and/or replace contacts.

Consent

✔ Existing contacts agree to change

✔ New contacts agree to their new responsibilities

✔ Other impacted TLDs agree

4 Policy Review and Processing

IANA checks that the change request meets policy and contractual requirements. If issues are found, IANA clarifies them with the TLD operator.

Regulatory

✓ Request meets legal requirements

Transfer of responsibility

✓ Meets policy requirements for transfers (differs between ccTLDs and gTLDs)

Well-formedness

✓ Supplied data is clear, well-formed and consistent

5 **Supplemental Technical Verification if Applicable**

For technical changes, another technical check is performed prior to implementation to cross-verify that errors are not introduced into the system and negatively impact the root zone.

Tech Checks

Requirement for Name Servers
- ✓ Minimum number of name servers
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6 **Implement changes**

Technical changes to the root zone are implemented. This includes applying a tamper-evident seal using DNSSEC, and distributing the updated root zone file to root server operators. The Root Zone Database is updated with the changes.

Service Level Agreements (SLAs)

SLAs are metrics defined by the naming community for root zone management performance.

Each step in processing a change request has corresponding SLAs that the IANA function must meet.

SLAs defined in the naming agreement can be found here: **https://pti.icann.org/agreements**

| Metric	Threshold	Type	Compliance	Period
Submission				
Time for ticket confirmation to be sent to requester following receipt of change request via automated submission interface	≤ 60 secs	Max	95%	Month
Technical Checks				
Time to return results for technical checks following submission of request via automated submission interface	≤ 50 mins	Max	95%	Month
Contact Confirmation				
Time for authorization contacts to be asked to approve change request after completing previous process phase	≤ 60 secs	Max	95%	Month
Review and Processing				
Time to complete all other validations and reviews by Contractor and release request for implementation	≤ 5 days	Max	90%	Month

Reporting on SLAs

A monthly report compares IANA performance against the SLAs. This performance report is available online here:

iana.org/performance/csc-reports

Our Dashboard provides real-time reporting of performance metrics and can be viewed at:

sle-dashboard.iana.org
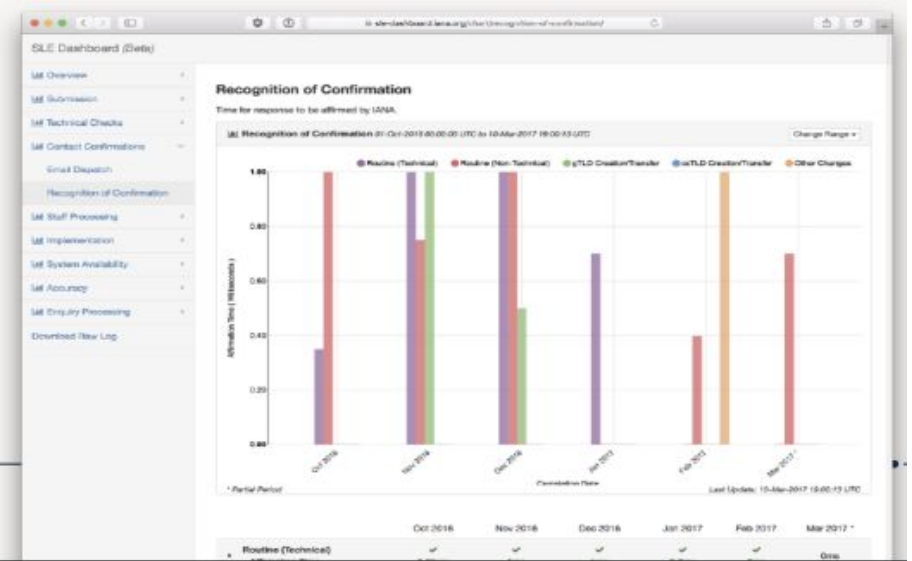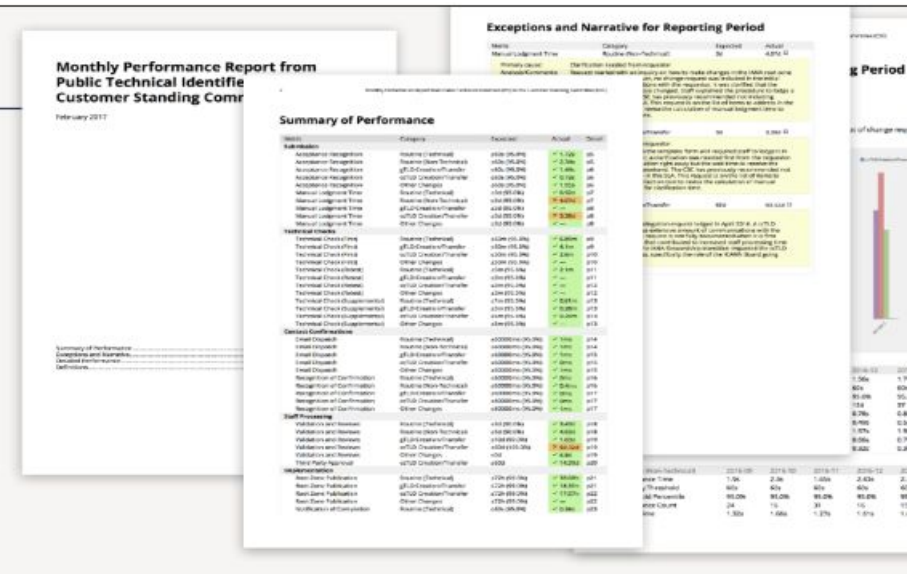
Keeping Contact Information Up to Date

Current Root Zone Database record

Delegation Record for .ABUDHABI

(Generic top-level domain)

Sponsoring Organisation

Abu Dhabi Systems and Information Centre
Abu Dhabi Systems & Information Centre
International Tower Al Karama Street
Abu Dhabi
United Arab Emirates

Administrative Contact

Khadeeja Mohsen Al Faqeeh
Abu Dhabi Systems & Information Centre
International Tower Al Karama Street
Abu Dhabi
United Arab Emirates
Email: adtld@adsic.abudhabi.ae
Voice: +97126961146
Fax: +97126717333

Technical Contact

Manager Systems, ae Domain Administration
Telecommunications Regulatory Authority of UAE
Al Waheeda street Al Memzar
P.O.Box 116688
Dubai
United Arab Emirates (AE)
United Arab Emirates
Email: gtldsupport@aeda.ae
Voice: +97142300018
Fax: +97142300011

**Management Organisation
"ccTLD Manager"/"Registry Operator"**
Legal entity responsible for the TLD, and
empowered to replace the existing
administrative and technical contacts

Administrative Contact
Listed in the WHOIS, and cross-authorizes
all changes to the TLD regardless of type.

Technical Contact
Listed in the WHOIS, and cross-authorizes
all changes to the TLD regardless of type.

- Update your contact information through the change process we outlined earlier.

- Or send an email to root-mgmt@iana.org for assistance.

Why Keep Your Contact Information Up to Date?

- All change requests must be approved by the administrative and technical contacts

  - Keep names/emails current so approvals happen swiftly

- WHOIS – ensure public facing contact information is current and reachable

- Keep in alignment with country code top-level domain (ccTLD) policies/generic top-level domain (gTLD) contracts

In Case Of An Emergency

- ⦿ An emergency is when a TLD is no longer resolving.

- ⦿ If possible submit your change request via RZMS first.

- ⦿ Call our 24x7 call center. They will take your contact details and our staff will call you back as soon as possible to talk to you about how to best handle your emergency.

- ⦿ Our regular email is <u>root-mgmt@iana.org</u> for any questions!

Upcoming: Upgrade to RZMS

◉ Find out more about the upgrade and new features at ICANN75

  ● Join IANA on Tuesday, 20 Sept, at 10:30 a.m. MYT (Malaysia Time)

◉ Additional information about the upcoming updates is available here:

  ● FAQs: https://www.iana.org/help/rzm-answers

  ● Blog: https://www.icann.org/en/blogs/details/ushering-in-the-next-generation-of-root-zone-management-19-05-2022-en

DNSSEC Key Rollovers

◉ Technical checks ensure proposed changes are consistent with the authoritative servers.

◉ Authoritative servers must reflect proposed changes prior to submitting a change request.

◉ Double-KSK Rollovers meet these requirements.

DNSSEC Key Rollovers

◉ Don't rely on the technical check service to catch all errors

◉ Plan for the rollover to take time

◉ Avoid going unsigned

◉ Design your system with the next rollover in mind

DNSSEC Key Rollovers

⦿   We are looking to understand your operational requirements

⦿   IANA is planning the next evolution of the technical check service

⦿   ICANN DNS Symposium 2022

KINDNS Requirements for TLD Operators

Agenda Item 3

Q&A/Open discussion

Agenda Item 4

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