ルートDNSサーバーシステムに関する報告
- RSSAC と RSS GWG -

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RSSAC
(Root Server System Advisory Committee)

- ICANN設立時より諮問委員会(AC)として存在
  - ICANN理事会とコミュニティにRSSの運用、管理、セキュリティ、完全性に関連する事柄につき助言する。
  - 2018年発表のRSSAC037とRSSAC038に基づき以下を具体化中
    - RSSのガバナンスに関する枠組み：RSS GWGが議論
    - RSS/RSOの活動指針：RSSACが議論
  - RSSACがICANN75～ICANN77で議論した主なトピック
    ->RSS/RSOの組織及び活動がインターネットの安定・信頼に足るものであることを非技術者に(も)伝えるためのメッセージ
    ->RSS/RSOセキュリティインシデント発生時の共有・広報方法
    ->ICANN理事会との会合で、新gTLD次回ラウンドでも新TLD導入は徐々に実施すべきとの見解を共有
    ->RSSACから外部への代表者選定
    - NomCom(指名委員会)リエゾン
    - CSC(IANAの常設顧客委員会)リエゾン：堀田をalternateに指名
    - RZERC(Root Zone Evolution Review Committee)リエゾン

RSS : Root Server System / RSO : Root Server Operator / RSS GWG : RSS Governance Working Group

RSS GWG
（Root Server System Governance Working Group）

- 2020年にRSS GWGが創設され検討開始
- RSSACが文書RSSAC058及びRSSAC059を2021年11月に発表
  - RSSのガバナンス構造の良否基準に関する2文書
  - ICANN理事会がRSSAC058とRSSAC059の内容を受け入れ、それらをベースに検討を進めるようにRSS GWGに指示
- 2021年にRSS GWGがメンバー追加
  - 各RSOが多様であることがRSSの安定性・堅牢さにつながっているため、RSO総体としての意見だけでなく、各RSOの意見を取り入れるべき
- ガバナンス構造が持つべき要求条件を具体記述
  - 文書「Governance Principles for the Root Server System」
  - その合意に時間がかかっている
    - 例：ガバナンスに関連して意見を言えるべきステークホルダーは誰か？

ルートDNSサーバー運用組織

name		Operator	Organizational type
A-Root		Verisign, Inc.	Company (domain name registry)
B-Root		Univ. of Sothern California, Information Sciences Inst.	University（laboratory）
C-Root		Cogent Communications	Company（ISP）
D-Root		Univ. of Maryland	University
E-Root		NASA Ames Research Renter	Government (laboratory)
F-Root		Internet Systems Consortium（ISC）	Nonprofit organization（DNS soft. developer）
G-Root		U.S. DoD Network Information Center	Government
H-Root		U.S. Army Research laboratory	Army（laboratory）
I-Root		Netnod	Nonprofit organization（operator of IX）
J-Root		Verisign, Inc.	Company (domain name registry)
K-Root		RIPE NCC	European Regional Internet Registry
L-Root		ICANN	Nonprofit organization
M-Root		WIDE project & JPRS	Research project & Company (domain name registry)

対外的には、村井純と堀田博文がM-Root運用者を代表

RSS/RSOの力の入れどころ

- ステークホルダー達に
  - 重要さ、堅牢さの基本的な部分を理解してもらう
  - 政争の道具でない（してはいけない・しても意味がない）ことを理解してもらう

そのための一つの手段として、
ほぼ毎ICANN会合でチュートリアルセッションを実施

次ページ以降にプレゼンテーション教材(39ページもの)の一部を抜粋
Sunday, October 22 13:15 - 14:30
How it Works: Root Server Operations
https://static.sched.com/hosted_files/icann78/59/RSSAC_%20ICANN%2078%20RSS%20Tutorial%20-%20How%20it%20Works.pdf

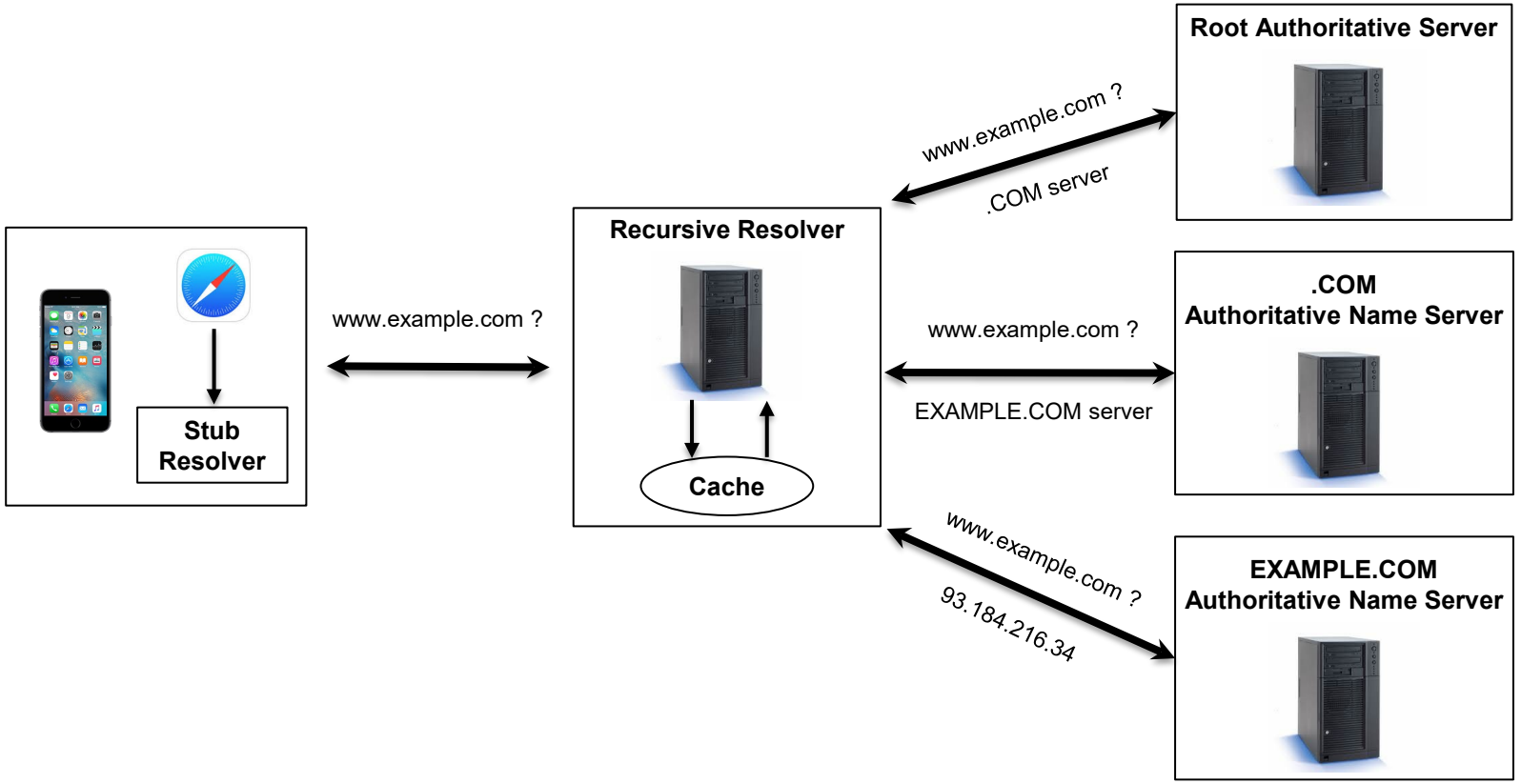
ICANN78 Root Server System Information Session

Root Server System Advisory Committee (RSSAC)

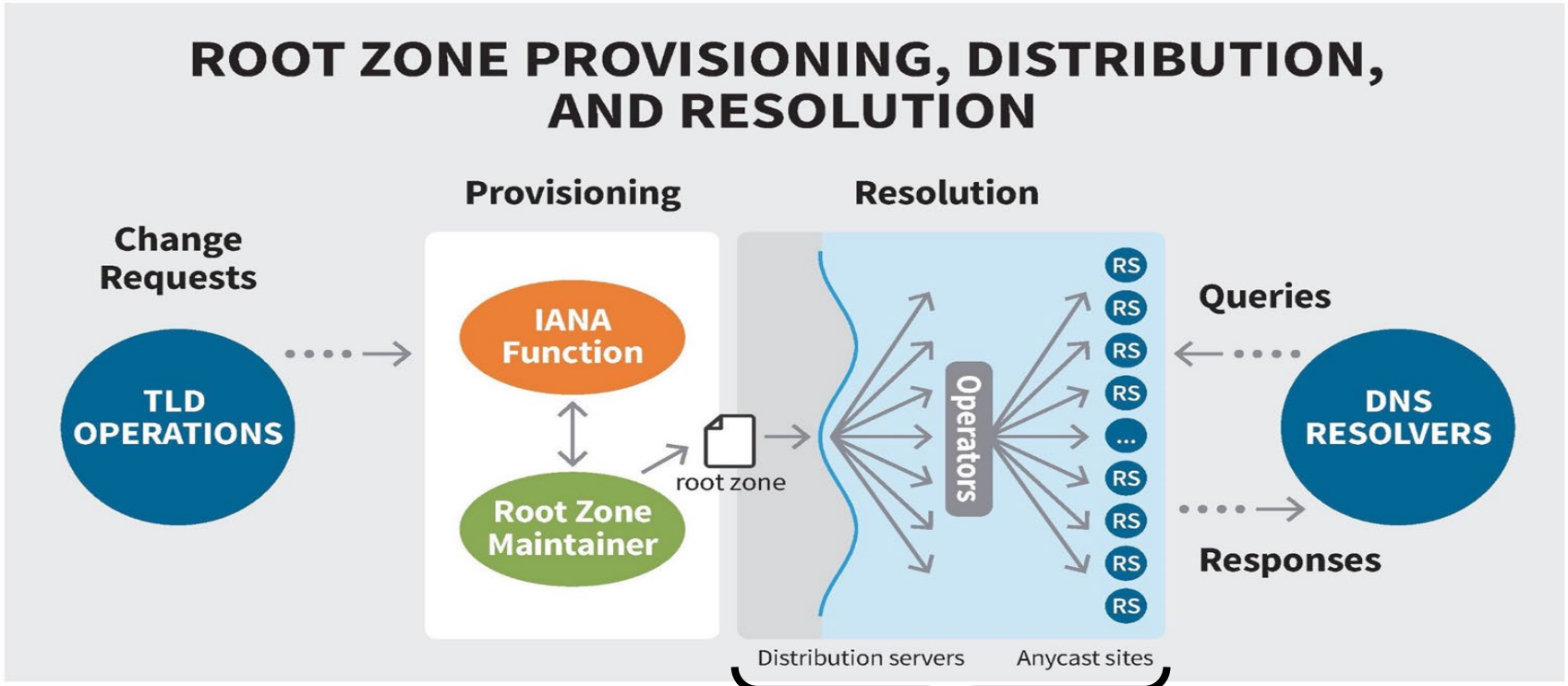
Agenda

- Overview of the Domain Name System
- Root Server System Today
- Explanation of Anycast
- RSSAC and RSSAC Caucus
- Root Server System Governance Evolution

Domain Name Resolution Process



Root Zone Administration and Resolution



Growth of the Root Server System

1984 - 1985	4 Root Servers	USC-ISI (x2), SRI (DDN NIC), BRL (now ARL)
1987	7 Root Servers	Growth of NSFNet (UMD, NASA, RPI)
1991	8 Root Servers	First RSO based outside of North America (KTH)
1993	9 Root Servers	Registration duties assigned by NSF (NSI)
1998	13 Root Servers	Renaming of root servers to accommodate up to 13 identifiers
2001 - Present	Anycast introduced	13 physical instances grew to >1500

Changes Over Time

- Responding to technical demands
- Scaling issues are now addressed with anycast
- See RSSAC023 for a detailed history of the RSS

Root Server System Principles

- To remain a global network, the Internet requires a globally unique public

Principle 2
- IANA is the source of DNS root data.

Principle 3
- The RSS must be a stable, reliable, and resilient platform for the DNS service to all users.

Principle 4
- Diversity of the root server operations is a strength of the overall system.

Principle 5
- Architectural changes should result from technical evolution and demonstrated technical need.

Principle 6
- The IETF defines technical operation of the DNS protocol.

Principle 7
- RSOs must operate with integrity and an ethos demonstrating a commitment to the common good of the Internet.

Principle 8
- RSOs must be transparent.

Principle 9
- RSOs must collaborate and engage with the stakeholder community.

Principle 10
- RSOs must be autonomous and independent.

Principle 11
- RSOs must be neutral and impartial.

See RSSAC037 and RSSAC055 for more details on these principles

Principles 2 and 4

2. IANA is the source of DNS root data
   - Every instance of the root server system serves the same data
   - That data originates from the IANA
   - The DNS is a hierarchy with a single globally unique root
   - All clients of the root server system are treated equally

4. Diversity of the root server operations is a strength of the overall system
   - Diversity in RSOs' operational models and organizational structures increases the resiliency of the overall system

Principles 9 and 10

9. RSOs must **collaborate** and **engage** with their stakeholder community

- An RSO must collaborate openly with other operators, participate in group meetings and activities, engage at the IETF in the technical standardization process, and respond to stakeholder questions in a timely manner.

10. RSOs must be autonomous and **independent**

- An RSO should have autonomy and independence in architecting and operating their service, while also adhering to standards and service expectations.

Myths of the Root Server System

Myth	Reality
Root servers control where Internet traffic goes.	Routers control where Internet traffic goes.
Most DNS queries ARE handled by a root server.	Most DNS queries are NOT even seen by a root server.
Administration of the root zone and service provision are the same thing.	Administration of the root zone is separate from service provision.
The root server identifiers have special meaning.	None of the root server identifiers are special.
There are only 13 root servers.	There are more than 1500 instances globally, but only 13 technical identifiers.
The root server operators conduct operations independently.	The collective root server operators coordinate root service operation as a whole.
Root server instances receive the entire DNS query	With increased deployment of QNAME Minimization, root servers frequently only receive the TLD portion of a query.

Evolution of Root Server System Governance

- There is currently no process for adding or removing RSOs
- In June 2018 the RSSAC published RSSAC037
  - A proposed approach to governance of the RSS, including the ability to add/remove RSOs to the RSS
  - Stated the Principles Guiding the Operation of the Root Server System
- Root Server System Governance Working Group (RSS GWG)
  - Developing a governance model that preserves the 11 guiding principles, including diversity, collaboration, and independence
  - Includes representation from many root server system stakeholders, including the RSOs
  - The eventual model will be open for public comment via ICANN
  - RSS GWG sessions are open to observers at ICANN meetings

Q&A

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