RSSAC026
RSSAC Lexicon

Preface

This is an Advisory to the Internet Corporation for Assigned Names and Numbers (ICANN) Board of Directors and the Internet community more broadly from the ICANN Root Server System Advisory Committee (RSSAC). In this Advisory, the RSSAC defines terms related to root server operations for the ICANN Community.

The RSSAC seeks to advise the ICANN community and Board on matters relating to the operation, administration, security and integrity of the Internet's Root Server System. This includes communicating on matters relating to the operation of the Root Servers and their multiple instances with the technical and ICANN community, gathering and articulating requirements to offer to those engaged in technical revisions of the protocols and best common practices related to the operational of DNS servers, engaging in ongoing threat assessment and risk analysis of the Root Server System and recommend any necessary audit activity to assess the current status of root servers and root zone. The RSSAC has no authority to regulate, enforce, or adjudicate. Those functions belong to others, and the advice offered here should be evaluated on its merits.

A list of the contributors to this Advisory, references to RSSAC Caucus members' statement of interest, and RSSAC members' objections to the findings or recommendations in this Report are at end of this document.

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1. Introduction

The precise technical language often found in RFCs, while often providing consistency and clarity to technical communities, can sometimes be incomprehensible or misleading when used in a non-technical setting. The purpose of this document is to increase the understanding of terms used commonly when discussing the root server system to the broader ICANN community. It is not to redefine or provide guidance to any technical communities on the correct use of these terms.

This document and its terms should be useful to anyone discussing the DNS root server system. This includes RSSAC members, RSSAC Caucus members, ICANN staff, and the larger ICANN community. It will be updated by the RSSAC as the vocabulary used to discuss the root server system evolves.

2. Terms

instance
When anycast routing is used to allow more than one server to have the same IP address, each one of those servers is commonly referred to as an **instance**. For root servers, one refers to "an **instance** of J-root" to mean one of the network locations answering to J-root's IP address.

Anycast instance[1]
An instance of a server, such as a root server, is often referred to as an **Anycast instance**. There is no hierarchy among **Anycast instances** of root servers; each instance has the same level of authority.

The term *mirror* is deprecated in the context of the root server system. We speak of root server instances, not root server mirrors, as it more accurately defines the technology used to provide root service.

root server
A **root server** is the name of an entry point (instance) to the root server system cloud. Within the DNS technical community, a root server is a particular anycast instance, i.e. an authoritative name server that answers queries for the contents of the root zone.

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[1] We capitalize *Anycast* because most DNS technical documents capitalize it, even though that capitalization is not supported by standard published style guides. The capitalization is so pervasive within the DNS community that we copy that convention here.

root server operator

A **root server operator** is an organization responsible for managing the root
service on IP addresses specified in the root zone and the root hints file.

root server system

The **root server system** is the set of root servers that collectively implements the root
service.

root service

The **root service** refers to the collective services provided by all the anycast instances
managed by all of the root server operators. These instances respond to DNS queries
about the root zone. It doesn't matter which instance responds to a query. All root
servers serving the same version/edition of the zone provide equivalent answers.

root zone (aka **DNS root**)

The DNS is a hierarchy; the **root zone** is the zone that has no parent, as it stands at
the top of the DNS hierarchy (aka inverted tree). The root zone contains all the
information needed to find top-level domains. Each edition of the **root zone** has a
unique serial number, and every root server is expected to have (and serve queries
about) the current edition of the **root zone**.

root zone administrator

The **root zone administrator** manages the data contained within the root zone, which
involves assigning the operators of top-level domains, such as .uk and .com, and
maintaining their technical and administrative details.

root zone maintainer

The **root zone maintainer** is responsible for accepting service data from the root
zone administrator, formatting it into zone file format, cryptographically signing it
using the Zone Signing Key (ZSK) for the root zone, and putting it into the root zone
distribution system.

root zone distribution system

Root servers must have a reliable and tamper-proof means of acquiring the latest
version of the root zone. The **root zone distribution system** is the collection of
systems and procedures by which root servers acquire it.

The terms *master and hidden master* are deprecated in the context of the root zone
distribution system and we recommend that they not be used. We speak of the root

zone distribution system, not root zone distribution master, as it more accurately defines the technology used to provide the root zone to the root server operators. Other deprecated terms include *primary, secondary, slave*, *stealth master*, *stealth distribution* and *Secondary Name Server* (SNS).

publish, serve

The words **publish** and **serve** have very different meanings that are often conflated. **Publishing** the root zone is the activity performed by the root zone maintainer of preparing a new version of the root zone and entering it into the root zone distribution system. **Serving** the root zone is the activity performed by the root server system using the acquired information.

3. Acknowledgments, Disclosures of Interest, Dissents, and Withdrawals

In the interest of transparency, these sections provide the reader with information about four aspects of the RSSAC process. The Acknowledgments section lists the RSSAC caucus members, outside experts, and ICANN staff who contributed directly to this particular document. The Statement of Interest section points to the biographies of all RSSAC caucus members. The Dissents section provides a place for individual members to describe any disagreement that they may have with the content of this document or the process for preparing it. The Withdrawals section identifies individual members who have recused themselves from discussion of the topic with which this Advisory is concerned. Except for members listed in the Dissents and Withdrawals sections, this document has the consensus approval of the RSSAC.

3.1 Acknowledgments

RSSAC thanks the following members for their time, contributions, and review in producing this Report.

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3.2   Statements of Interest

RSSAC caucus member biographical information and Statements of Interests are available at:
https://community.icann.org/display/RSI/RSSAC+Caucus+Statements+of+Interest.

3.3   Dissents

There were no dissents.

3.4   Withdrawals

There were no withdrawals.

4.   Revision History

4.1   Version 1