

SAC 048

SSAC Comment on Orphan Glue Records in the Draft Applicant Guidebook



A Comment from the ICANN
Security and Stability
Advisory Committee
(SSAC)
12 May 2011

Preface

This is a Comment of the Security and Stability Advisory Committee (SSAC). The SSAC advises the ICANN community and Board on matters relating to the security and integrity of the Internet's naming and address allocation systems. This includes operational matters (e.g., matters pertaining to the correct and reliable operation of the root name system), administrative matters (e.g., matters pertaining to address allocation and Internet number assignment), and registration matters (e.g., matters pertaining to registry and registrar services). The SSAC engages in ongoing threat assessment and risk analysis of the Internet naming and address allocation services to assess where the principal threats to stability and security lie, and advises the ICANN community accordingly. The SSAC has no official authority to regulate, enforce or adjudicate. Those functions belong to others, and the advice offered here should be evaluated on its merits.

The contributors to this Comment, reference to the committee members' biographies and statements of interest, and committee members' objections to the findings or recommendations in this report, are at end of this Comment.

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1. Introduction

In April 2011, ICANN published a draft guidebook for the new Generic Top Level Domain (gTLD) Applicants (Applicant Guidebook). This SSAC Comment considers a specific issue in the guidebook: the management and removal of orphan glue records. The Comment prepares a definition of orphan glue and recommends it be included for reference in the Applicant Guidebook. It also asks that ICANN considering refining the language of proposed policy regarding orphan glue.

2. Background

Question 28 of the Evaluation Questions and Criteria Section (Attachment to Module 2) of the draft applicant guidebook¹ states that:

Applicants should describe the proposed policies and procedures to minimize abusive registrations and other activities that have a negative impact on Internet users. A complete answers (sic) should include, but is not limited to:

- * An implementation plan to establish and publish on its website a single abuse point of contact responsible for addressing matters requiring expedited attention and providing a timely response to abuse complaints concerning all names registered in the TLD through all registrars of record, including those involving a reseller;
- * Policies for handling complaints regarding abuse;
- * Proposed measures for management and removal of orphan glue records for names removed from the zone; and
- * Resourcing plans for the initial implementation of, and ongoing maintenance for, this aspect of the criteria (number and description of description of personnel roles allocated to this area).

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The SSAC thanks ICANN for the opportunity to comment on this section of the draft applicant guidebook.

¹ Applicant Guidebook, April 2011. < <http://www.icann.org/en/topics/new-gtlds/draft-rfp-redline-15apr11-en.pdf>>.

3. SSAC Comments

The SSAC offers the following comments for consideration on the removal of orphan glue records:

1. Orphaned glue is an ambiguous term for which no definitive definition exists. The SSAC has prepared a definition that we recommend be included for reference in the Applicant Guidebook (see below for the proposed definition).
2. Orphaned glue can be used for abusive purposes; however, the dominant use of orphaned glue supports the correct and ordinary operation of the DNS. Thus it is inappropriate to include the management of orphaned glue under the rubric of "abuse prevention and mitigation" and we suggest that it be removed.
3. Finally, to mitigate the *actual* abuse of orphaned glue, registry operators should take action to remove these records when provided with evidence that the glue is indeed present to abet malicious conduct.

4. Definitions

4.1 Glue Records

Glue records (address records such as A and AAAA) are related to delegations. An address record in a zone is a glue record when its name appears in the right hand side of a delegation point NS record also in that zone, and if the address record's owner name is at or below the delegated name. Glue records are necessary to guide an iterative resolver to a delegated name server.

For instance, if an NS record lists NS.EXAMPLE.TLD as an authoritative name server for the EXAMPLE.TLD zone, an iterative resolver would need to know the address of NS.EXAMPLE.TLD to contact that server.

However, without glue records, the address record for NS.EXAMPLE.TLD would only reside in the EXAMPLE.TLD zone. Thus a circular dependency would exist: an iterative resolver attempting to contact the authoritative server NS.EXAMPLE.TLD for the EXAMPLE.TLD zone would only be able to resolve NS.EXAMPLE.TLD by contacting NS.EXAMPLE.TLD, the address of which it does not yet have.

Glue records solve this dependency problem. By including the name server's address record in the delegating zone along with the NS records, the authoritative server for TLD can add the address record for NS.EXAMPLE.TLD in the response that contains the NS record set for EXAMPLE.TLD. In this example, the NS.EXAMPLE.TLD address record is a glue record in the TLD zone.

4.2 Orphan Glue Records

By definition, orphan records used to be glue records. A glue record becomes an "orphan" when the delegation point NS record referencing it is removed without also removing the corresponding glue record. The delegation point NS record is sometimes referred to as the parent NS record.

For instance, continuing the example from the previous section, if the EXAMPLE.TLD delegation is removed from the TLD zone but the NS.EXAMPLE.TLD glue record remains in the zone, NS.EXAMPLE.TLD has now become an orphan record because the parent NS record is no longer present in the zone but the address record remains.

The term "orphan" is chosen to signify that this record no longer has a parent NS record. Usually registrars and registrants no longer have administrative control over the orphan record in the registry when its parent NS record is removed.

Other delegated domains (not necessarily under the same TLD) might still rely on the orphan record. This situation may lead to inconsistencies and even abuse because of the lack of administrative control and lack of attribution for this orphan record.

4.3 Existing Policy Regarding Management of Glue Records

Policy regarding glue records varies across registries. At least three policies exist as of the date of this publication:

1. The registry allows direct registration of glue records without requiring the parent domain to be delegated.
2. The registry allows orphan records to exist until the last association with the record has been removed, i.e., until the last delegating NS record in the zone referencing the name is removed.
3. The registry does not allow orphan records. Glue records are removed when (or required to be removed before) the delegation point NS record is removed. Other domains that need the glue record for correct DNS operation may become unreachable or less reachable depending on their overall DNS service architecture.

5. Acknowledgments, Statements of Interests, and Objections, and Withdrawals

These sections provide the reader information on three aspects of our process. The Acknowledgments section lists the members who contributed to this particular document. The Statements of Interest section points to the biographies of the Committee members

and any conflicts of interest, real, apparent or potential, that may bear on the material in this document. The Objections and Withdrawals section provides a place for individual members to disagree with the content of this document or the process for preparing it.

5.1 Acknowledgments

The committee wishes to thank the following SSAC members for their time, contributions, and review in producing this Report.

Roy Arends
Jeff Bedser
Steve Crocker
Patrik Fältström
Jim Galvin
Jeremy Hitchcock
Matt Larson
Ram Mohan
Dave Piscitello
Steve Sheng

5.2 Statements of Interest

SSAC member biographical information and Statements of Interest are available at:
<http://www.icann.org/en/committees/security/biographies-25mar11-en.htm>.

5.3 Objections and Withdrawals

There were no objections or withdrawals.