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Revised IANA Considerations for DNSSEC

Abstract

This document changes the review requirements needed to get DNSSEC algorithms and resource records added to IANA registries. It updates RFC 6014 to include hash algorithms for DS records and NSEC3 parameters. It also updates RFC 5155 and RFC 6014, which have requirements for DNSSEC algorithms, and updates RFC 8624 to say that algorithms that are described in RFCs that are not on standards track are only at the "MAY" level of implementation recommendation. The rationale for these changes is to bring the requirements for DS records and for the hash algorithms used in NSEC3 in line with the requirements for all other DNSSEC algorithms.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 20 March 2022.

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1. Introduction

DNSSEC is primarily described in [RFC4033], [RFC4034], and [RFC4035]. DNSSEC commonly uses two resource records beyond those defined in RFC 4034: DS [RFC3658] (which was obsoleted by RFC 4034) and NSEC3 [RFC5155].

[RFC6014] updated the requirements for how DNSSEC cryptographic algorithm identifiers in the IANA registries are assigned, reducing the requirements from being "Standards Action" to "RFC Required". However, the IANA registry requirements for hash algorithms for DS records [RFC3658] and for the hash algorithms used in NSEC3 [RFC5155] are still "Standards Action". This document updates those IANA registry requirements. (For reference on how IANA registries can be updated in general, see [RFC8126].)

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Update to RFC 6014

Section 4 updates RFC 6014 to bring the requirements for DS records and NSEC3 hash algorithms in line with the rest of the DNSSEC cryptographic algorithms by allowing any DS or NSEC3 hash algorithms that are fully described in an RFC to have identifiers assigned in the IANA registries. This is an addition to the IANA considerations in RFC 6014.

3. Update to RFC 8624

This document updates [RFC8624] for all DNSKEY and DS algorithms that are not on standards track.

The second paragraph of Section 1.2 of RFC 8624 currently says:

This document only provides recommendations with respect to mandatory-to-implement algorithms or algorithms so weak that they cannot be recommended. Any algorithm listed in the [DNSKEY-IANA] and [DS-IANA] registries that are not mentioned in this document MAY be implemented. For clarification and consistency, an algorithm will be specified as MAY in this document only when it has been downgraded from a MUST or a RECOMMENDED to a MAY.

That paragraph is now replaced with the following:

This document provides recommendations with respect to mandatory-to-implement algorithms, algorithms so weak that they cannot be recommended, and algorithms that are defined in RFCs that are not on standards track. Any algorithm listed in the [DNSKEY-IANA] and [DS-IANA] registries that are not mentioned in this document MAY be implemented. For clarification and consistency, an algorithm will be specified as MAY in this document only when it has been downgraded from a MUST or a RECOMMENDED to a MAY.

This update is also reflected in the IANA considerations in Section 4.

4. IANA Considerations

In the "Domain Name System Security (DNSSEC) NextSECure3 (NSEC3) Parameters" registry, the registration procedure for "DNSSEC NSEC3 Flags", "DNSSEC NSEC3 Hash Algorithms", and "DNSSEC NSEC3PARAM Flags" are changed from "Standards Action" to "RFC Required".

In the "Delegation Signer (DS) Resource Record (RR) Type Digest Algorithms" registry, the registration procedure for "Digest Algorithms" is changed from "Standards Action" to "RFC Required".

5. Security Considerations

Changing the requirements for getting security algorithms added to IANA registries as described in this document will make it easier to get good algorithms added to the registries, and will make it easier to get bad algorithms added to the registries. It is impossible to weigh the security impact of those two changes.

Administrators of DNSSEC-signed zones, and of validating resolvers, may have been making security decisions based on the contents of the IANA registries. This was a bad idea in the past, and now is an even worse idea because there will be more algorithms in those registries that may not have gone through IETF review. Security decisions about which algorithms are safe and not safe should be made by reading the security literature, not by looking in IANA registries.

6. References

6.1. Normative References

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6.2. Informative References

[RFC3658] Gudmundsson, O., "Delegation Signer (DS) Resource Record (RR)", RFC 3658, DOI 10.17487/RFC3658, December 2003, <https://www.rfc-editor.org/info/rfc3658>.

Appendix A. Acknowledgements

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