

Network Working Group
Internet-Draft
Updates: [5155](#), [6014](#), [8624](#) (if approved)
Intended status: Standards Track
Expires: 10 April 2022

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ICANN
7 October 2021

Revised IANA Considerations for DNSSEC
draft-ietf-dnsop-dnssec-iana-cons-05

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 (Delegation Signer) records and NSEC3 (Hashed Authenticated Denial of Existence) 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.

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[1.](#) Introduction

DNSSEC is primarily described in [[RFC4033](#)], [[RFC4034](#)], and [[RFC4035](#)]. DNSSEC commonly uses another resource record beyond those defined in [RFC 4034](#): NSEC3 [[RFC5155](#)]. DS resource records were originally defined in [[RFC3658](#)], and that definition was obsoleted by [RFC 4034](#).

[[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 records [[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.

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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 hash algorithms, NSEC3 hash algorithms, NSEC3 parameters, and NSEC3 flags 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".

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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

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.

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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,

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Appendix A. Acknowledgements

Donald Eastlake, Murray Kucherawy, Dan Harkins, Martin Duke, and Benjamin Kaduk contributed to this document.

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