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Clarifications for Elliptic Curve Cryptogtaphy Subject Public Key Information
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Abstract

This document updates RFC 5480 to specify semantics for the keyEncipherment and dataEncipherment key usage bits when used in certificates that support Elliptic Curve Cryptography.

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 July 11, 2020.

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1. Introduction

[RFC5480] specifies the syntax and semantics for the Subject Public Key Information field in certificates that support Elliptic Curve Cryptography. As part of these semantics, it defines what combinations are permissible for the values of the key usage extensions [RFC5280]. [RFC5480] specifies 7 of the 9 values; it makes no mention of keyEncipherment and dataEncipherment key usage bits. This document corrects this omission, by updating Section 3 of [RFC5480] to make it clear that neither keyEncipherment nor the dataEncipherment key usage bits are set for key agreement algorithms.

2. Terminology

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.

3. Updates to Section 3

If the keyUsage extension is present in a certificate that indicates id-ecPublicKey as algorithm of AlgorithmIdentifier [RFC2986] in SubjectPublicKeyInfo, then following values MUST NOT be present:

keyEncipherment; and
dataEncipherment.

If the keyUsage extension is present in a certificate that indicates id-ecDH or id-ecMQV in SubjectPublicKeyInfo, then the following values also MUST NOT be present:

keyEncipherment; and
dataEncipherment.

4. Security Considerations

This document introduces no new security considerations beyond those found in [RFC5480].

5. IANA Considerations

This document makes no request of IANA.

6. 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>.

[RFC2986] Nystrom, M. and B. Kaliski, "PKCS #10: Certification Request Syntax Specification Version 1.7", RFC 2986, DOI 10.17487/RFC2986, November 2000, <https://www.rfc-editor.org/info/rfc2986>.

[RFC5280] Cooper, D., Santesson, S., Farrell, S., Boeyen, S., Housley, R., and W. Polk, "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile", RFC 5280, DOI 10.17487/RFC5280, May 2008, <https://www.rfc-editor.org/info/rfc5280>.

[RFC5480] Turner, S., Brown, D., Yiu, K., Housley, R., and T. Polk, "Elliptic Curve Cryptography Subject Public Key Information", RFC 5480, DOI 10.17487/RFC5480, March 2009, <https://www.rfc-editor.org/info/rfc5480>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

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