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| CHANGE REQUEST |
| Meeting ID:\* | SEC#31 |
| Source:\* | Saïd GHAROUT, Orange, said.gharout@orange.com |
| Date:\* | 2017-09-17 |
| Reason for Change/s:\* | Add of new elliptic curves to allow global acceptance  |
| CR against: Release\* | 3 |
| CR against: WI\* | [ ]  Active <Work Item number> [ ]  MNT maintenance / < Work Item number(optional)>Is this a mirror CR? Yes [ ]  No [ ] mirror CR number: (Note to Rapporteur - use latest agreed revision)[x]  STE Small Technical EnhancementsOnly ONE of the above shall be ticked |
| CR against: TS/TR\* | TS-0003 v3.5.0  |
| Clauses \* | 2.1, 8.5.3.3 |
| Type of change: \* | [ ]  Editorial change[ ]  Bug Fix or Correction[x]  Change to existing feature or functionality[ ]  New feature or functionalityOnly ONE of the above shall be ticked |
| Impacted other TS/TR(s) |  |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES [x]  NO [ ] This CR may break backwards compatibility with the last approved version of the TS? YES [ ]  NO [x]  |
| Template Version: January 2017 (Do not modify) |

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## Introduction

To accommodate different regulations, it is necessary to support different elliptic curves, in addition to the existing ones.

### -----------------------Start of change 1-------------------------------------------

# 2 References

## 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

The following referenced documents are necessary for the application of the present document.

[1] oneM2M TS-0001: "Functional Architecture".

[2] oneM2M TS-0011: "Common Terminology".

[3] Void.

[4] oneM2M TS-0004: "Service Layer Core Protocol Specification".

[5] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[6] IETF RFC 6347: "Datagram Transport Layer Security Version 1.2".

[7] ETSI TS 102 225 (V11.0.0): "Smart Cards; Secured packet structure for UICC based applications (Release 11)".

[8] ETSI TS 102 226 (V11.0.0): "Smart Cards; Remote APDU structure for UICC based applications (Release 11)".

[9] 3GPP TS 31.115 (V10.1.0): "Remote APDU Structure for (U)SIM Toolkit applications (Release 10)".

[10] 3GPP TS 31.116 (V10.2.0): "Remote APDU Structure for (Universal) Subscriber Identity Module (U)SIM Toolkit applications (Release 10)".

[11] 3GPP2 C.S0078-0 (V1.0): "Secured packet structure for CDMA Card Application Toolkit (CCAT) applications".

[12] 3GPP2 C.S0079-0 (V1.0): "Remote APDU Structure for CDMA Card Application Toolkit (CCAT) applications".

[13] 3GPP TS 33.220: "Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)".

[14] 3GPP2 S.S0109-A: "Generic Bootstrapping Architecture (GBA) Framework".

[15] IETF RFC 4279: "Pre-Shared Key Ciphersuites for Transport Layer Security (TLS)".

[16] Void.

[17] Void.

[18] IETF RFC 5705: "Keying Material Exporters for Transport Layer Security (TLS)".

[19] IETF RFC 3629: "UTF-8, a transformation format of ISO 10646".

[20] "Unicode Standard Annex #15; Unicode Normalization Forms", Unicode 5.1.0, March 2008.

NOTE: Available at <http://www.unicode.org>.

[21] GlobalPlatform Device Technology TEE Administration framework, DRAFT.

[22] GlobalPlatform Device Technology TEE System Architecture, Version 1.0.

[23] ETSI TS 102 671: "Smart Cards; Machine to Machine UICC; Physical and logical characteristics".

[24] ETSI TS 102 221: "Smart Cards; UICC-Terminal interface; Physical and logical characteristics".

[25] ETSI TS 102 484: "Smart Cards; Secure channel between a UICC and an end-point terminal".

[26] ISO/IEC 7816-4: "Identification cards - Integrated circuit cards - Part 4: Organization, security and commands for interchange".

[27] ETSI TS 101 220: "Smart Cards; ETSI numbering system for telecommunication application providers".

[28] Void.

[29] Void.

[30] Void.

[31] IETF RFC 6655: "AES-CCM Cipher Suites for Transport Layer Security (TLS)".

[32] IETF RFC 5289: "TLS Elliptic Curve Cipher Suites with SHA-256/384 and AES Galois Counter Mode (GCM)".

[33] IETF RFC 2104: "HMAC: Keyed-Hashing for Message Authentication".

[34] IETF RFC 5280: "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile".

[35] IETF RFC 6960: "X.509 Internet Public Key Infrastructure Online Certificate Status Protocol - OCSP".

[36] IETF RFC 6961: "The Transport Layer Security (TLS) Multiple Certificate Status Request Extension".

[37] IETF RFC 7250: "Using Raw Public Keys in Transport Layer Security (TLS) and Datagram Transport Layer Security (DTLS)".

[38] IETF RFC 7252: "The Constrained Application Protocol (CoAP)".

[39] National Institute of Standards and Technology (July 1999): "Recommended Elliptic Curves for Federal Government user".

NOTE: Available at <http://csrc.nist.gov/groups/ST/toolkit/documents/dss/NISTReCur.pdf>.

[40] IETF RFC 6920: "Naming Things with Hashes".

[41] IETF RFC 3548: "The Base16, Base32, and Base64 Data Encodings".

[42] IETF RFC 5487: "Pre-Shared Key Cipher Suites for TLS with SHA-256/384 and AES Galois Counter Mode".

[43] IETF RFC 4492: "Elliptic Curve Cryptography (ECC) Cipher Suites for Transport Layer Security (TLS)".

[44] IETF RFC 6066: "Transport Layer Security (TLS) Extensions: Extension Definitions".

[45] IETF RFC 7251: "AES-CCM Elliptic Curve Cryptography (ECC) Cipher Suites for Transport Layer Security (TLS)".

[46] IETF RFC 5480: "Elliptic Curve Cryptography Subject Public Key Information".

[47] GlobalPlatform Device Technology Secure Element Remote Application Management v1.0 GPD\_SPE\_008.

[48] IETF RFC 5869: HMAC-based Extract-and-Expand Key Derivation Function (HKDF).

[49] IETF RFC 7518 (2015): "JSON Web Algorithms (JWA)".

[50] IETF RFC 7516: "JSON Web Encryption (JWE)", 2015.

[51] IETF RFC 7515: "JSON Web Signature (JWS)", 2015.

[52] W3C Recommendation: "XML Signature Syntax and Processing v1.1", 2013.

NOTE: Available at <http://www.w3.org/TR/xmlsig-core1/>.

[53] IETF RFC 7519: "JSON Web Token (JWT)", 2015.

[54] OpenID Foundation: "OpenID Connect Core 1.0", 2014.

[55] W3C Recommendation: "XML Encryption Syntax and Processing v1.1", 2013.

NOTE: Available at <http://www.w3.org/TR/xmlenc-core1/>.

[56] IETF RFC 5652: "Cryptographic Message Syntax (CMS)", September 2009.

[57] oneM2M TS-0022: "Field Device Configuration”.

[58] oneM2M TS-0032: "MAF and MEF Interface Specification”.

[59] IETF RFC 7030, “Enrollment over Secure Transport”.

[60] ISO/IEC 7816-6: "Identification cards - Integrated circuit cards - Part 6: Interindustry data elements”.

[61] ISO/IEC 7816-8: "Identification cards - Integrated circuit cards - Part 8:Security related interindustry commands”.

[62] ISO/IEC 7816-9: "Identification cards - Integrated circuit cards - Part 9: Additional interindustry commands and security attributes”.

[63] GlobalPlatform Card Specification, Version 2.3 (including Amendments A, D, F and G).

[64] EN 419 212, Application Interface for Secure Signature Creation Devices, 2014.

[65] IETF Historic draft: “Simple Certificate Enrollment Protocol”, draft-nourse-scep-23.

NOTE: Available at <https://tools.ietf.org/html/draft-nourse-scep-23>.

[66] IETF Historic draft: “Simple Certificate Enrollment Protocol”, draft-gutmann-scep-05.

NOTE: Available at: <https://www.ietf.org/id/draft-gutmann-scep-05.txt>.[67] oneM2M TS-0016: "Secure Environment Abstraction Layer".

[68] BSI TR 03109 Smart Meter Gateway specification.

[69] NIST Federal Information Processing Standard 201-2, Personal Identity Verification (PIV) of Federal Employees and Contractors, August 2013.

[70] GSMA: “SGP.01 - Embedded SIM Remote Provisioning Architecture”.

[71] NIST Federal Information Processing Standard 186-2, Digital Signature Standard (DSS).

[72] IETF RFC 5116, “An interface and algorithms for authenticated Encryption”, 2008-01.

[73] ISO 9797 “Information Technology – Security Techniques – Message Authentication Codes (MACs)”, 2011.

[74] SOG-IS: “SOG-IS Crypto Evaluation Scheme Agreed Cryptographic Mechanisms”, Version 1.0, May 2016.

[75] ANSSI ECC FRP256V1. Avis relatif aux paramètres de courbes elliptiques définis par l'Etat français. JORF n°0241 du 16 octobre 2011 page 17533. texte n° 30. 2011.

[76] RFC 5639 . Elliptic Curve Cryptography (ECC) Brainpool Standard Curves and Curve Generation.

### -----------------------End of change 1---------------------------------------------

### -----------------------Start of change 2-------------------------------------------

#### 8.5.3.3 Signature-Only ESData Security Class Protocol Details

To maintain consistency, signature types are provided which are available in both XML-Signature [] and JSON Web Signature (JWS) [51].

* HMAC using SHA-256, SHA-384 or SHA-512.
* RSA signature using PKCS1-v1.5 and MGF1with SHA-256, SHA-384 or SHA-512.
* ECDSA signature using P-256, P-384 or P-512 with SHA-256, SHA-284 or SHA-512 respectively.
* ECDSA signature using FRP256v1 and brainpoolP256r1 curves [74] with SHA-256 for both curves.

Table 8.5.3.3-1 identifies the algorithms that are supported in XML-SIG for Signature-only ESData Security Class.

Table 8.5.3.3-1: Algorithms that are supported in XML-Signature for
Signature-only ESData Security Class

|  |  |  |
| --- | --- | --- |
| Signature Type | Algorithm | <SignatureMethod Algorithm=".."> |
| HMAC | SHA-256 | <http://www.w3.org/2001/04/xmldsigmore#hmacsha256> |
| SHA-384 | <http://www.w3.org/2001/04/xmldsigmore#hmacsha384> |
| SHA-512 | <http://www.w3.org/2001/04/xmldsigmore#hmacsha512> |
| RSA | RSA PKCS1-v1.5 and MGF1 with: | SHA-256 | <http://www.w3.org/2001/04/xmldsigmore#rsasha256> |
| SHA-384 | <http://www.w3.org/2001/04/xmldsigmore#rsasha384> |
| SHA-512 | <http://www.w3.org/2001/04/xmldsigmore#rsasha512> |
| ECDSA | P-256 and SHA-256 | http://www.w3.org/2001/04/xmldsigmore#ecdsasha256 |
| P-384and SHA-384 | http://www.w3.org/2001/04/xmldsigmore#ecdsasha384 |
| P-512 and SHA-512 | http://www.w3.org/2001/04/xmldsigmore#ecdsasha512 |
| FRP256v1 and SHA-256 | See |75] |
| brainpoolP256r1 and SHA-256 | See [76] |

The XML-Signature object may be transported "plain" - with no encoding, or may be encoded in base64.

Table 8.5.3.3-2 identifies the algorithms that are supported in JWS for Signature-only ESData Security Class.

Table 8.5.3.3-2: Algorithms that are supported in JSON Web Signature (JWS) for
Signature-only ESData Security Class

|  |  |  |
| --- | --- | --- |
| Signature Type | Algorithm | "alg":".." |
| HMAC | SHA-256 | HS256 |
| SHA-384 | HS384 |
| SHA-512 | HS512 |
| RSA | RSA PKCS1-v1.5 and MGF1 with: | SHA-256 | RS256 |
| SHA-384 | RS384 |
| SHA-512 | RS512 |
| ECDSA | P-256 and SHA-256 | ES256 |
| P-384and SHA-384 | ES384 |
| P-512 and SHA-512 | ES512 |

The output generated by JWS conforms to either the JWS JSON Serialization or a URI-safe JWS Compact Serialization. The JWS JSON Serialization may be transported "plain" – with no encoding, or may be encoded in base64. oneM2M TS-0004 [4] defines the datatype m2m:e2eCompactJWS for the JWS Compact Serialization.

### -----------------------End of change 2---------------------------------------------