

# TCG Platform Certificate Profile

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## Change Log

Date	Version	Comment
2018-01-11	1.0	Initial Release
2020-04-03	1.1	<p>Addition of Delta Platform Certificate and tree hierarchy.</p> <p>Section “Revocation of a Platform Certificate” has been modified to include multiple causes of revocation.</p> <p>Section “EK Certificates” clarifies which EK Certificates must be included as reference.</p> <p>Section “Holder” clarifies use of the TargettingInformation extension to reference additional EK Certificates.</p> <p>Section “X.509 ASN.1 Structures and OIDs” includes the correct CertificateIdentifier sequence.</p> <p>Section “Assertions Made by a Platform Certificate” includes additional assertions.</p> <p>Section “Platform Configuration Attributes” was updated to include additional attributes.</p> <p>Section “Targeting Information” was added.</p> <p>Sample certificates were added to Appendix.</p> <p>The following sections were removed:</p> <ul style="list-style-type: none"> <li>• Platform Attribute Credential Privacy Protection Requirements</li> <li>• Security Qualities</li> <li>• Conformance Attributes</li> </ul>



# 1 Introduction

## 1.1 Purpose

The purpose of this document is to define the Platform Certificate profile. This specification contains the description of the certificate and sample X.509 instances of the certificate which vendors and customers could use with their products. This specification defines the Platform Certificate for use with any TPM Family 1.2 and 2.0 version. This specification defines the abstract definition of the certificate and specifically how it would appear as an X.509 certificate.

This specification builds upon the Platform Attribute Credential Profile version 1.0 [14] by incorporating the following changes:

- Fixed errors identified in the Platform Attribute Certificate specification version 1.0 errata document [14].
- Modified the ComponentIdentifier field of the Platform Configuration attribute to include a reference to the component's Platform Certificate. This change enables the issuer to construct a certificate tree of platform components and subcomponents.
- Added the field componentClass to the ComponentIdentifier element to unambiguously identify the type of component being referenced.
- Introduced the definition for the Delta Platform Certificate, modified the TCG Attributes definitions to identify applicability to the Delta Platform Certificate.
- Removed the Platform Certificate public key certificate format since it was considered redundant.
- Added support for multiple TPM EK Certificates by allowing the issuer to include multiple references using the TargetingInformation extension.
- Incorporated ComponentClass registry OID and value in the ComponentIdentifier field.

This specification replaces the existing Platform Credential Specification version 1.2 [6]. This certificate attests that a specific manufactured platform, identified by the platform serial number and TPM EK certificates, contains a unique TPM and Trusted Building Block (TBB). TBB is defined in the TCG Generic Server Specification [9].

## 1.2 Document Scope

This document specifies a complete definition of the Platform Certificate for use with any TPM Family version. This specification describes the abstract definition of the certificate and specifically how it would appear as an X.509 certificate.

## 1.3 Relationship to Other TCG Specifications

This specification references the TCG Infrastructure Working Group Reference Architecture for Interoperability [2], the TCG TPM Main Specification [3], the TCG Credential Profiles for TPM Family 1.2 [6], the EK Credential Profile Specification [7], the PC Client Platform TPM Profile Specification [10], the Generic Server Platform Specification [9], and the TCG Algorithm Registry Specification [12]. This specification replaces the Platform Credential Specification defined in the TCG Credential Profiles for TPM Family 1.2 [6].

## 40 1.4 Keywords

41 The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”,  
42 “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be  
43 interpreted as described in RFC 2119 [4].

## 44 1.5 Intended Audiences

45 The intended audience for this document is people who work for the entities, such as Privacy-  
46 CAs (AKA Attestation CAs), who are expected to participate in the TCG infrastructure. People  
47 who work for computer OEMs and the companies in the OEM supply chain, such as TPM  
48 vendors and software vendors, are also intended audiences for this document.

## 49 1.6 Definition of Terms

50 The TCG Glossary [1] contains definitions that are fundamental to this specification. Rather  
51 than repeat those definitions, the reader is assumed to be familiar with the terms in the TCG  
52 glossary.

53 The following operational definitions, however, are specific to this specification.

54 **Certificate** – An artifact that cryptographically binds a subject’s identity to its public key or  
55 attributes using the industry-standard certificate structure from ISO/IEC/ITU-T X.509  
56 version 3. Certificate generation consists of (a) assembling values for the certificate fields and  
57 (b) signing over the assembled fields.

58

59 **NOTE:** The term “Credential” has been replaced with “Certificate” throughout the document.  
60 Certificate is a more precise term to describe this artifact. Any uses of the word “Credential”  
61 in this document refer to titles of previously published specifications, attributes, or  
62 extensions.

## 63 **2. Certificate Overview**

64 This section describes the Platform Certificate type. The Platform Certificate provides the  
65 foundation for binding the identity of the platform to the TPM and the Trusted Building Block  
66 of the platform.

### 67 **2.1 Platform Certificate**

68 A Platform Certificate attests that a specific platform contains a unique TPM and Trusted  
69 Building Block (TBB).

70 A TBB consists of the parts of the Root of Trust that do not have shielded locations or  
71 protected capabilities. Normally, this includes just the Core Root of Trust for Measurement  
72 (CRTM) and the TPM initialization functions. The definition of a TBB is typically platform  
73 specific. One example of a TBB, specific to the PC Client platform, is the combination of  
74 CRTM, connection of the CRTM storage to the motherboard, and mechanisms for determining  
75 Physical Presence.

76 Platform Certificates contain assertions about trust made by a platform manufacturer. The  
77 certificate asserts the platform's security properties and configuration as shipped. Delta  
78 Platform Certificates are used to reflect platform changes made by system integrators,  
79 resellers, and other entities after the platform has left the manufacturer's facility.

#### 80 **2.1.1 Who Uses a Platform Certificate?**

81 A consumer of a Platform Certificate is a Privacy-CA. A Platform Certificate contains  
82 information that the Privacy-CA can use in attesting to the integrity characteristics of a  
83 platform. The Privacy-CA can copy field entries from the Platform Certificate to a new AK  
84 Certificate that the Privacy-CA creates for a trusted platform.

85 Another consumer of the Platform Certificate is an Enterprise, which wishes to remotely  
86 provision multiple devices that belong to it. Typically, in this case, the Enterprise knows the  
87 serial number of the systems it owns, and the Platform Certificate is used to associate those  
88 serial numbers with particular EK certificates [6][7]. This way, for example, a VPN can be  
89 provisioned using the TPM to provide keys securely to clients of an Enterprise. In order to  
90 support this use case, the optional Platform Serial Number attribute **MUST** be included in  
91 the certificate. In addition, an Enterprise could use the Platform Certificate to assert non-  
92 security related properties, such as platform components, included optionally by the platform  
93 manufacturer in the certificate.

94 For other users of the Platform Certificate, refer to section 6.2 Platform Endorsement  
95 Credential of Reference Architecture for Interoperability Specification [2].

#### 96 **2.1.2 Who Issues a Platform Certificate?**

97 In general, the issuer of a Platform Certificate is the platform manufacturer (for example, an  
98 OEM). An entity should not generate a Platform Certificate unless the entity is satisfied that  
99 the platform contains the TPM referenced inside the certificate. Other types of entities in the  
100 platform manufacturing supply chain could issue a Platform Certificate. For more  
101 information, refer to section 3 The Trusted Platform Lifecycle of Reference Architecture for  
102 Interoperability Specification [2].

### 103 2.1.3 Revocation of a Platform Certificate

104 A Platform Certificate could be revoked by the platform manufacturer if there is evidence of  
105 CA compromise. Other reasons for revocation include replacement of a platform's TPM,  
106 replacement of the Endorsement Key, or reissuance of the EK certificate. Platform  
107 configuration changes made after the platform is shipped can be addressed by the issuance  
108 of a Delta Platform Certificate.

### 109 2.1.4 Validity Period of a Platform Certificate

110 A Platform Certificate is not expected to expire during the normal life expectancy of the  
111 platform.

### 112 2.1.5 Assertions Made by a Platform Certificate

113 The following table lists all the fields that are central to the use of this certificate and which  
114 MUST or MAY be in a Platform Certificate.

115

Field Name	Description	Field Status
Certificate Type Label	Distinguish certificate types issued under a shared key	MUST
EK Certificates	Identifies the associated EK Certificates	MUST
Platform Manufacturer String	Name of platform manufacturer as a string	MUST
Platform Model	Manufacturer-specific identifier	MUST
Platform Version	Manufacturer-specific identifier	MUST
Issuer	Identifies the issuer of the certificate	MUST
Platform Specification	Platform Specification to which this platform is built	MUST
Certificate Specification	Platform Certificate Specification Version, Level, and Revision	MUST
Validity Period	Time period when certificate is valid	MUST
Signature Value	Signature of the issuer over the other fields	MUST
Platform Serial Number	Platform's unique serial number	MAY
Platform Assertions	Security assertions about the platform	MAY

Platform Configuration	Non-security related platform properties	MAY
Platform Manufacturer Identifier	Platform manufacturer unique identifier as an IANA identifier	MAY
Platform Configuration Uri	URI where PCR information can be obtained	MAY
Policy Reference	Certificate policy reference	MAY
Revocation Locator	Identifies source of revocation status information	MAY

**Table 1: Platform Certificate Fields**

116

### 117 **2.1.5.1 Certificate Type Label**

118 The label enables the issuer to sign the certificate with a key that is not reserved exclusively  
119 for signing a Platform Certificate. It allows different types of certificates to be reliably  
120 distinguished from each other by this label instead of based on which signer key was used.  
121 TCG [3] reserved this flexible key re-purposing capability and the certificate labels have been  
122 retained for compatibility.

123 For Platform Certificates, the value of this field MUST be the string, “TCG Trusted Platform  
124 Endorsement”.

### 125 **2.1.5.2 EK Certificates**

126 This assertion is used by the Privacy-CA to verify that the platform contains a unique TPM  
127 referenced by this Platform Certificate.

128 This SHALL be an unambiguous indication of the EK Certificates of the TPM incorporated  
129 into the platform. The Platform Certificate SHALL contain references to all TCG required  
130 Endorsement Key (EK) Certificates. The “TCG Infrastructure Working Group Reference  
131 Architecture for Interoperability (Part I)” [2] requires the TPM Manufacturer to issue an EK  
132 Certificate for each TPM Endorsement Key. The Platform Certificate MAY also contain  
133 references to optional EK Certificates, such as those issued by the Platform OEM or Platform  
134 Owner.

### 135 **2.1.5.3 Platform Manufacturer String**

136 This assertion identifies the platform manufacturer using a Platform Manufacturer assigned  
137 string.

### 138 **2.1.5.4 Platform Manufacturer Identifier**

139 This assertion identifies the platform manufacturer with a globally unique and verifiable  
140 value. If included, the issuer SHALL use the manufacturer’s Internet Assigned Numbers  
141 Authority (IANA) Private Enterprise Number as the identifier [8].

### 142 **2.1.5.5 Platform Model**

143 This assertion identifies the specific platform model implementation. This is used by a  
144 Privacy-CA to verify that the platform contains a specific root of trust implementation.

145 The platform model is encoded as a string and is manufacturer-specific.

### 146 **2.1.5.6 Platform Version**

147 This assertion identifies the specific version of the platform. This is used by a Privacy-CA to  
148 verify that the platform contains a specific root of trust implementation.

149 The platform version is encoded as a string and is the manufacturer-specific implementation  
150 version of the platform.

### 151 **2.1.5.7 Issuer**

152 This assertion identifies the entity that signed and issued the Platform Certificate.

### 153 **2.1.5.8 Platform Specification**

154 This assertion identifies the relevant TCG platform specific specification to which the platform  
155 was designed. This describes the platform class as well as the major and minor version  
156 number and the revision level.

### 157 **2.1.5.9 Certificate Specification**

158 This assertions identifies the Platform Certificate Profile Specification version. Includes this  
159 specification's Version, Level, and Revision.

### 160 **2.1.5.10 Validity Period**

161 This assertion enables the certificate user to determine whether the Platform Certificate has  
162 begun to be valid or has expired.

### 163 **2.1.5.11 Signature Value**

164 This assertion is the signature of the issuer over the other fields in the certificate.

### 165 **2.1.5.12 Platform Serial Number**

166 This assertion is a value that uniquely identifies the platform. This is used by the verifier to  
167 correlate the certificate to a physical platform. The manufacturer SHALL use a customer  
168 visible serial number as the identifier. Even though this attribute is OPTIONAL, the field  
169 MUST be included when enabling Enterprise use cases such as remote provisioning using  
170 the platform TPM.

171 The Platform Serial Number is encoded as a string and is manufacturer specific.

### 172 **2.1.5.13 Platform Assertions**

173 This field contains assertions about the general security properties of the platform. This could  
174 be used by the certificate user to verify that the platform implements acceptable security  
175 policies.

176 For more information, see section 5 Entities, Assertions and Signed Structures [2].

#### 177 **2.1.5.14 Platform Configuration**

178 This field contains assertions of properties that are not security related. These properties MAY  
179 include the platform's component serial numbers, network adapter MAC addresses, and  
180 motherboard serial number.

#### 181 **2.1.5.15 Platform Configuration Uri**

182 This assertion provides an optional Uniform Resource Identifier where valid PCR and platform  
183 configuration information can be obtained.

#### 184 **2.1.5.16 Policy Reference**

185 This assertion enables the certificate user to identify the certificate issuance policy of the  
186 Platform Certificate issuer.

#### 187 **2.1.5.17 Revocation Locator**

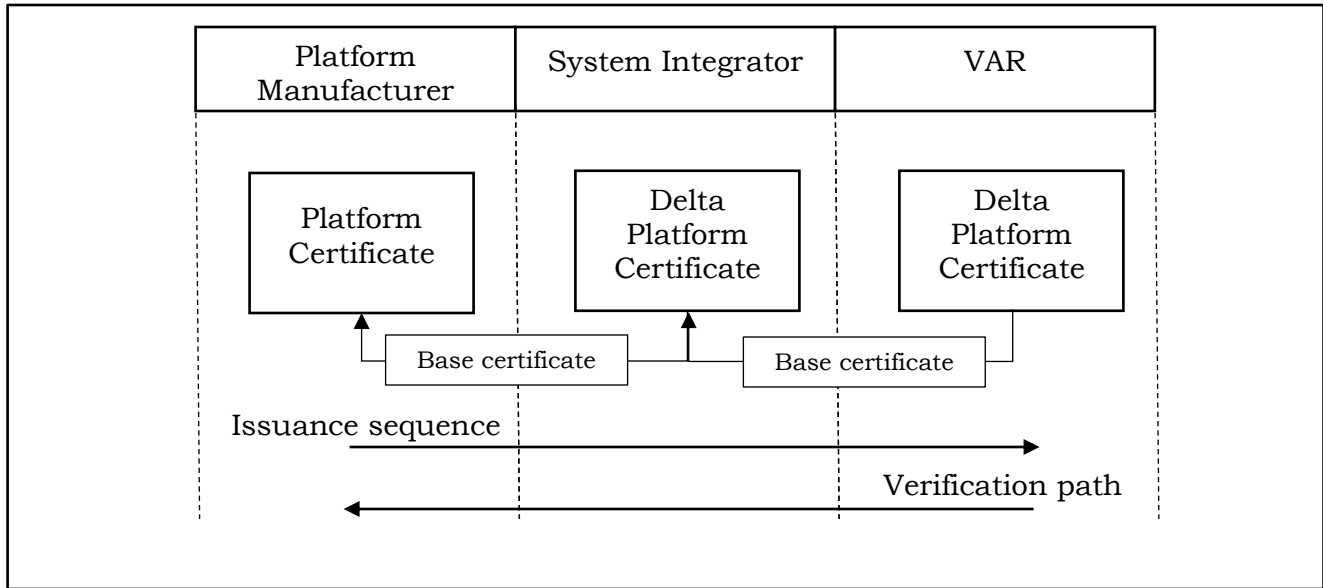
188 This assertion enables the certificate consumer to determine whether the Platform Certificate  
189 has been revoked and should no longer be used as the basis for a trust decision.

### 190 **2.2 Delta Platform Certificate**

191 A Delta Platform Certificate attests to specific changes made to the platform that are not  
192 reflected in the original Platform Certificate. A system integrator or value added retailer (VAR)  
193 can make modifications to a platform resulting in the Platform Certificate inaccurately  
194 reflecting its current configuration.

195 The entity making platform modifications could issue a Delta Platform Certificate to reflect  
196 those changes. A chain consisting of a Platform Certificate followed by multiple Delta Platform  
197 Certificates is supported in cases where multiple entities make valid modifications to a  
198 platform. A Delta Platform Certificate MUST only include additions, modifications and  
199 deletions of certain platform attributes. The issuer of the Delta Platform Certificate MUST  
200 verify that the changes made to the platform are adequately represented by the Delta Platform  
201 Certificate and that the Delta Platform Certificate references the appropriate base Platform or  
202 Delta Certificate.

203 Figure 1 illustrates how a chain of Platform and Delta Platform certificates can be constructed  
204 by linking the certificates using a base certificate reference.



205  
206  
207

**Figure 1: Delta Platform Certificate chain**

208 **2.2.1 Who Uses a Delta Platform Certificate?**

209 A Delta Platform Certificate will be used by Privacy-CAs and Enterprises wanting to verify  
210 changes in platform attributes. This certificate allows a verifier to attest changes made to the  
211 platform as it progresses through the supply chain.

212 **2.2.2 Who Issues a Delta Platform Certificate?**

213 In addition to the entities that traditionally issue Platform Certificates, a system integrator or  
214 value added reseller could issue a Delta Platform Certificate to reflect platform attribute  
215 changes.

216 **2.2.3 Conditions for Issuing a Delta Platform Certificate**

217 Any authorized entity, typically a system integrator or value added retailer, modifying a  
218 platform’s configuration can issue a Delta Platform Certificate. This certificate MAY be issued  
219 as long as the following conditions are maintained:

- 220 • Changes made to the platform do not invalidate the TBB security claims made by the  
221 original platform manufacturer.
- 222 • Changes made to the platform do not invalidate the TCG Platform Specification  
223 compliance claims made by the platform manufacturer.
- 224 • The platform TPM is not altered or replaced (including replacement of EK keys or EK  
225 certificates).

226 **2.2.4 Requirements for Issuing a Delta Platform Certificate**

227 An entity wanting to issue a Delta Platform Certificate MUST adhere to the following set of  
228 requirements:



- 229 • The Delta Platform Certificate issuer MUST NOT invalidate platform security assertions  
230 made by the base Platform Certificate.
- 231 • Platform changes made by the issuer MUST NOT introduce non-compliances to the  
232 TCG Platform Specification identified in the TCG Specification Attribute (Section 3.1.3).
- 233 • The issuing entity MUST NOT modify the TPM embedded in the platform, including  
234 invalidating the EK keys or EK certificates. For example, the issuer may not call  
235 ChangeEPS on the TPM. Doing so would break the binding between the base Platform  
236 Certificate and the TPM.
- 237 • The issuing entity MAY issue new EK keys and certificates, and include references to  
238 these certificates in the Delta Platform Certificate.

## 239 2.2.5 Revocation of a Delta Platform Certificate

240 If the platform is modified such that the chain of the Platform Certificate and the sequence of  
241 Delta Platform Certificates no longer reflects the configuration of the platform, a new Delta  
242 Platform Certificate can be issued. The current Delta Platform Certificate becomes the new  
243 base certificate.

244 A Delta Certificate could be revoked if there is evidence of CA compromise, or in cases where  
245 the base Platform Certificate or base Delta Platform Certificate are revoked.

## 246 2.2.6 Assertions Made by a Delta Platform Certificate

247 The following table lists all the fields that are central to the use of this certificate type and  
248 which MUST or MAY be in a Delta Platform Certificate.

249

Field Name	Description	Field Status
Certificate Type Label	Distinguishes certificate types issued under a shared key	MUST
Base Platform Certificate	Identifies the base Platform or Delta Platform certificate	MUST
Platform Manufacturer String	Name of platform manufacturer as a string	MUST
Platform Model	Manufacturer-specific identifier	MUST
Platform Version	Manufacturer-specific identifier	MUST
Issuer	Identifies the issuer of certificate	MUST
Certificate Specification	Platform Certificate Specification Version, Level, and Revision	MUST
Validity Period	Time period when the certificate is valid	MUST

Signature Value	Signature of the issuer over the other fields	MUST
Platform Serial Number	Platform's unique serial number	MAY
Platform Configuration	Non-security related platform properties	MAY
Platform Manufacturer Identifier	Platform manufacturer unique identifier as an IANA identifier	MAY
Platform Configuration Uri	URI where PCR information can be obtained	MAY
Policy Reference	Certificate policy reference	MAY
Revocation Locator	Identifies source of revocation status information	MAY
EK Certificates	Identifies newly issued EK Certificates	MAY

250 **Table 2: Delta Platform Certificate Fields**

251 **2.2.6.1 Certificate Type Label**

252 For Platform Certificates, the value of this field MUST be the string, "TCG Trusted Platform  
253 Endorsement".

254 **2.2.6.2 EK Certificates**

255 This assertion is used to reference additional EK certificates issued by the Delta Platform  
256 Certificate issuer.

257 This SHALL be an unambiguous indication of the EK certificates of the TPM incorporated into  
258 the platform.

259 **2.2.6.3 Base Platform Certificate**

260 This assertion is used by the verifier to bind the certificate to the previously issued Platform  
261 Certificate or Delta Platform Certificate. The base certificate is the previously issued Platform  
262 Certificate or Delta Platform Certificate amended by this certificate.

263 This SHALL be an unambiguous indication of the base Platform Certificate.

264 **2.2.6.4 Platform Manufacturer String**

265 This assertion identifies the platform manufacturer using a Platform Manufacturer assigned  
266 string. This field MUST equal that of the base Platform Certificate or base Delta Platform  
267 Certificate.

### 268 **2.2.6.5 Platform Manufacturer Identifier**

269 This assertion identifies the platform manufacturer with a globally unique and verifiable  
270 value. If included, the issuer SHALL use the manufacturer's Internet Assigned Numbers  
271 Authority (IANA) Private Enterprise Number as the identifier [8]. This field MUST equal that  
272 of the base Platform Certificate or base Delta Platform Certificate.

### 273 **2.2.6.6 Platform Model**

274 This assertion identifies the specific platform model implementation. This is used by a  
275 Privacy-CA to verify that the platform contains a specific root of trust implementation. This  
276 field MUST equal that of the base Platform Certificate or base Delta Platform Certificate.

277 The platform model is encoded as a string and is manufacturer-specific.

### 278 **2.2.6.7 Platform Version**

279 This assertion identifies the specific version of the platform. This is used by a Privacy-CA to  
280 verify that the platform contains a specific root of trust implementation. This field MUST equal  
281 that of the base Platform Certificate or base Delta Platform Certificate.

282 The platform version is encoded as a string and is the manufacturer-specific implementation  
283 version of the platform.

### 284 **2.2.6.8 Issuer**

285 This assertion identifies the entity that signed and issued the Delta Platform Certificate.

### 286 **2.2.6.9 Certificate Specification**

287 This assertion identifies the Platform Certificate Profile Specification version. This assertion  
288 includes the Platform Certificate Profile specification's Version, Level, and Revision. Included  
289 only if the delta certificate is issued under an updated version of this specification.

### 290 **2.2.6.10 Validity Period**

291 The validity period's "Not After" date MUST match that of the base certificate.

### 292 **2.2.6.11 Signature Value**

293 This assertion is the signature of the issuer over the other fields in the certificate.

### 294 **2.2.6.12 Platform Serial Number**

295 This assertion is a value that uniquely identifies the platform. This is used by the verifier to  
296 correlate the certificate to a physical platform. The issuer SHALL use a customer visible serial  
297 number as the identifier. This field MUST equal that of the base Platform Certificate or base  
298 Delta Platform Certificate.

299 The Platform Serial Number is encoded as a string and is manufacturer specific.

**300 2.2.6.13 Platform Configuration**

301 This field contains assertions of properties that are not security related. The Delta Platform  
302 Certificate MUST only include platform properties that have changed (added, modified, or  
303 deleted) with respect to the base certificate.

**304 2.2.6.14 Platform Configuration Uri**

305 This assertion provides an optional Uniform Resource Identifier where valid PCR and platform  
306 configuration information can be obtained. This field MAY be included only if the Platform  
307 Configuration Uri has changed.

**308 2.2.6.15 Policy Reference**

309 This assertion enables the certificate user to identify the certificate issuance policy of the  
310 Delta Platform Certificate issuer.

**311 2.2.6.16 Revocation Locator**

312 This assertion enables the certificate consumer to determine whether the Delta Platform  
313 Certificate has been revoked and should no longer be used as the basis for a trust decision.

### 314 3. X.509 ASN.1 Definitions

315 This section contains the format for the Platform Attribute Certificate instantiated as an X.509  
316 certificate for all the common and information fields in this specification. All fields are defined  
317 in ASN.1 and encoded using DER.

### 318 3.1 TCG Attributes

#### 319 3.1.1 TPM and Platform Assertions

320 These attributes describe security-related assertions about the TPM or platform TBB.

321 Each attribute begins with a version number that identifies the version of the assertion  
322 syntax. Future versions of this profile could add new assertions by appending new fields at  
323 the end of the ASN.1 SEQUENCE and increasing the version number to identify which version  
324 of the assertion syntax is encoded.

325 The **MeasurementRootType** indicates which types of Root of Trust for Measurement are  
326 implemented as part of the platform TBB. A Static RTM is required and support for a dynamic  
327 RTM is optional.

328 In the **CommonCriteriaMeasures**, the profile and target for the evaluation can be described  
329 by either an OID, a URI to a document describing the value, or both. If both are present, they  
330 MUST represent consistent values. The URI values are included in an **URIReference** which  
331 describes the URI to the document and a cryptographic hash value which identifies a specific  
332 version of the document.

333 The **tBBSecurityAssertions** attribute MUST NOT be included in the Delta Platform  
334 Certificate.

335  
336 **URIMAX** is a constant used to provide an upper bound on the length of a URI included in the  
337 certificate. This upper bound is helpful to consumers of the extension and also helps limit  
338 the overall size of the certificate. In order to provide a reasonable upper bound for ASN.1  
339 parsers, **URIMAX** SHOULD NOT exceed a value of 1024. This value was selected as it matches  
340 the length limit for <A> anchors in HTML as specified by the SGML declaration (LITLEN) for  
341 HTML[5].

342 **STRMAX** is a constant defining the upper bound on the length of a string type. Like the **URIMAX**  
343 this is to aid ASN.1 parsers and help limit the upper bound on the length of the certificate.  
344 Based on the expected sizes of the strings in the ASN.1 in this document an upper bound of  
345 256 was selected. **STRMAX** SHOULD NOT exceed a value of 256.

```
346     Version ::= INTEGER { v1(0) }
347
348     tBBSecurityAssertions ATTRIBUTE ::= {
349         WITH SYNTAX TBBSecurityAssertions
350         ID tcg-at-tbbSecurityAssertions }
351
352     TBBSecurityAssertions ::= SEQUENCE {
353         version Version DEFAULT v1,
354         ccInfo [0] IMPLICIT CommonCriteriaMeasures OPTIONAL,
355         fipsLevel [1] IMPLICIT FIPSLevel OPTIONAL,
356         rtmType [2] IMPLICIT MeasurementRootType OPTIONAL,
357         iso9000Certified BOOLEAN DEFAULT FALSE,
358         iso9000Uri IA5STRING (SIZE (1..URIMAX) OPTIONAL )
359
360     -- Hybrid means the measurement root is capable of static AND dynamic
361     -- Physical means that the root is anchored by a physical TPM
```

```

362 -- Virtual means the TPM is virtualized (possibly running in a VMM).
363 -- TPMs or RTMs might leverage other lower layer RTMs to virtualize the
364 -- the capabilities of the platform.
365 MeasurementRootType ::= ENUMERATED {
366     static (0),
367     dynamic (1),
368     nonHost (2),
369     hybrid (3),
370     physical (4),
371     virtual (5) }
372
373
374 -- common criteria evaluation
375
376 CommonCriteriaMeasures ::= SEQUENCE {
377     version IA5STRING (SIZE (1..STRMAX)), -- "2.2" or "3.1"; future syntax defined by CC
378     assurancelevel EvaluationAssuranceLevel,
379     evaluationStatus EvaluationStatus,
380     plus BOOLEAN DEFAULT FALSE,
381     strengthOfFunction [0] IMPLICIT StrengthOfFunction OPTIONAL,
382     profileOid [1] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
383     profileUri [2] IMPLICIT URIReference OPTIONAL,
384     targetOid [3] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
385     targetUri [4] IMPLICIT URIReference OPTIONAL }
386
387 EvaluationAssuranceLevel ::= ENUMERATED {
388     level1 (1),
389     level2 (2),
390     level3 (3),
391     level4 (4),
392     level5 (5),
393     level6 (6),
394     level7 (7) }
395
396 StrengthOfFunction ::= ENUMERATED {
397     basic (0),
398     medium (1),
399     high (2) }
400
401 -- Reference to external document containing information relevant to this subject.
402 -- The hashAlgorithm and hashValue MUST both exist in each reference if either
403 -- appear at all.
404 URIReference ::= SEQUENCE {
405     uniformResourceIdentifier IA5String (SIZE (1..URIMAX)),
406     hashAlgorithm AlgorithmIdentifier OPTIONAL,
407     hashValue BIT STRING OPTIONAL }
408
409 EvaluationStatus ::= ENUMERATED {
410     designedToMeet (0),
411     evaluationInProgress (1),
412     evaluationCompleted (2) }
413
414 -- fips evaluation
415
416 FIPSLevel ::= SEQUENCE {
417     version IA5STRING (SIZE (1..STRMAX)), -- "140-1", "140-2", or "140-3"
418     level SecurityLevel,
419     plus BOOLEAN DEFAULT FALSE }
420
421 SecurityLevel ::= ENUMERATED {
422     level1 (1),
423     level2 (2),
424     level3 (3),
425     level4 (4) }
426

```

### 427 3.1.2 Name Attributes

428 The following definitions define the syntax of the relative distinguished names (RDNs) used  
429 in the subject alternative name extension to identify the type of the TPM and the platform.

430 The value of the **PlatformManufacturerStr** attribute is a UTF 8 string with the name of  
431 platform manufacturing company.

432 The **PlatformModel** attribute is a UTF 8 string with the manufacturer-specific model.

433 The **PlatformVersion** attribute is a UTF 8 string with manufacturer-specific platform version  
434 value.

435 The **PlatformSerial** optional attribute is a UTF 8 string with manufacturer-specific platform  
436 serial number value.

437 The **PlatformManufacturerId** optional attribute is the OID of the IANA Private Enterprise  
438 Number [8] assigned to the platform manufacturer.

439 These attributes MUST be included in the Delta Platform Certificate.

440

441

```
442 PlatformManufacturerStr ATTRIBUTE ::= {  
443     WITH SYNTAX UTF8String (SIZE (1..STRMAX))  
444     ID tcg-at-platformManufacturerStr }
```

445

```
446 PlatformModel ATTRIBUTE ::= {  
447     WITH SYNTAX UTF8String (SIZE (1..STRMAX))  
448     ID tcg-at-platformModel }
```

449

```
450 PlatformVersion ATTRIBUTE ::= {  
451     WITH SYNTAX UTF8String (SIZE (1..STRMAX))  
452     ID tcg-at-platformVersion }
```

453

```
454 PlatformSerial ATTRIBUTE ::= {  
455     WITH SYNTAX UTF8String (SIZE (1..STRMAX))  
456     ID tcg-at-platformSerial }
```

457

```
458 PlatformManufacturerId ATTRIBUTE ::= {  
459     WITH SYNTAX ManufacturerId  
460     ID tcg-at-platformManufacturerId  
461 }
```

462

```
463 ManufacturerId ::= SEQUENCE {  
464     manufacturerIdentifier PrivateEnterpriseNumber  
465 }
```

466

```
467 enterprise OBJECT IDENTIFIER ::= {  
468     iso(1) identified-organization(3) dod(6) internet(1) private(4) enterprise(1) }
```

469

```
470 PrivateEnterpriseNumber OBJECT IDENTIFIER ::= { enterprise private-enterprise-number }
```

471

472 All assigned private enterprise numbers are listed at the Internet Assigned Numbers  
473 Authority (IANA) web site [8].

### 474 3.1.3 TCG Specification Attributes

475 The following definitions define the syntax of the TPM and platform-specific specification  
476 attributes.

477 The **TCGPlatformSpecification** attribute identifies the platform class, version and revision  
478 of the platform-specific specification with which a platform implementation is compliant. The  
479 platform specification refers either to the PC Client Platform Specification [10] or the Server

480 Specification [9]. Standardized platform class values are defined in section 4 Platform Class  
481 of the Registry of Reserved TPM 2.0 Handles and Localities [22]. This attribute MUST NOT be  
482 included in the Delta Platform Certificate.

```
483
484     tcgPlatformSpecification ATTRIBUTE ::= {
485         WITH SYNTAX TCGPlatformSpecification
486         ID tcg-at-tcgPlatformSpecification }
487
488     TCGSpecificationVersion ::= SEQUENCE {
489         majorVersion INTEGER,
490         minorVersion INTEGER,
491         revision INTEGER }
492
493     TCGPlatformSpecification ::= SEQUENCE {
494         Version TCGSpecificationVersion,
495         platformClass OCTET STRING SIZE(4) }
```

### 496 3.1.4 TCG Certificate Type Attributes

497 The following defines the syntax of the certificate type attribute.

498 The **TCGCredentialType** attribute identifies the type of Platform Certificate. Values  
499 supported are Platform Certificate and Delta Platform Certificate in both attribute and public  
500 key formats. Values are encoded as TCG registered OIDs. This attribute MUST be included  
501 in the Delta Platform Certificate to differentiate from a Platform Certificate.

```
502     tcgCredentialType ATTRIBUTE ::= {
503         WITH SYNTAX TCGCredentialType
504         ID tcg-at-tcgCredentialType}
505
506     TCGCredentialType ::= SEQUENCE {
507         certificateType CredentialType}
508
509     CredentialType ::= OBJECT IDENTIFIER (tcg-kp-PlatformAttributeCertificate | tcg-kp-
510         DeltaPlatformAttributeCertificate )
511
```

### 512 3.1.5 TCG Certificate Specification Attributes

513 The following defines the syntax of the certificate specification attributes.

514 The **TCGCredentialSpecification** attribute identifies the major version, minor version, and  
515 revision of the certificate specification with which a certificate is compliant. Values are  
516 encoded as three integers in this attribute. This attribute MAY be included in the Delta  
517 Platform Certificate if issued under a different specification version than the base certificate.

```
518     tcgCredentialSpecification ATTRIBUTE ::= {
519         WITH SYNTAX TCGSpecificationVersion
520         ID tcg-at-tcgCredentialSpecification }
521
522     TCGSpecificationVersion ::= SEQUENCE {
523         majorVersion INTEGER,
524         minorVersion INTEGER,
525         revision INTEGER }
```

### 526 3.1.6 Platform Configuration Attributes

527 The following defines the syntax of the platform configuration attribute.

528 The **platformConfiguration** attribute contains optional lists of platform component  
529 identifiers, component identifier URI, platform properties, and platform property URI. The  
530 **componentIdentifier** field contains a list of individual components that constitute the



531 platform. The issuer MUST include the component class, manufacturer and model, and  
532 optionally provide the component serial number, revision, and the component manufacturer's  
533 IANA **PrivateEnterpriseNumber**. In addition, each component identifier MAY contain  
534 information such as whether it is field replaceable, its network address, platform certificate,  
535 and platform certificate URI.

536 The **componentClass** sequence is used to identify the type of component. The  
537 **componentClass** field consists of a **componentClassRegistry** OID and the  
538 **componentClassValue**. The **componentClassRegistry** OID allows the issuer to convey  
539 which component class registry is used to identify the component. The  
540 **componentClassValue** is the specific registry value for the component.

541 The **componentPlatformCert** field contains information about the component's Platform  
542 Certificate. This field allows the issuer to create a hierarchy of platforms by constructing a  
543 general tree of Platform Certificates. The issuer MUST include **attributeCertificateIdentifier** or  
544 **genericCertIdentifier** to provide a reference to the component's Platform Certificate. The  
545 verifier can use the **componentPlatformCert** attribute to cryptographically verify the  
546 constituent components and subcomponents of a platform. In order to verify the certificate  
547 hierarchy, the verifier can use the **attributeCertIdentifier** or **genericCertIdentifier**  
548 fields to identify the component Platform Certificate. This operation would have to be repeated  
549 for any component of the platform, and subsequently down the hierarchical tree. The verifier  
550 can use this information to effectively confirm a platform's components remain unchanged  
551 from the as-built configuration.

552 The platform manufacturer can use the **componentPlatformCertificateUri** to identify the  
553 public distribution point of the component platform certificate.

554 The **status** field contained within the **componentIdentifier** field MUST be used only in  
555 Delta Platform Certificates.

556 The optional **platformProperties** field SHALL contain characteristics of the platform that  
557 the issuer considers of interest to the consumer. Such properties are not prescribed by this  
558 specification and the certificate issuer is free to choose which information to include in this  
559 field. The manufacturer MAY use the **platformPropertiesUri** to publish information about  
560 the Properties included in the **platformProperties** field. This MAY include the list of  
561 **propertyName** and their semantics.

562 The **status** field contained within the **Properties** field MUST be used only in Delta Platform  
563 Certificates.

564 The **platformConfiguration** attribute MAY be included in the Delta Platform Certificate to  
565 reflect changes made to the **componentIdentifiers**, **componentIdentifiersUri**,  
566 **platformProperties**, and **platformPropertiesUri** fields. In this case, the **status**  
567 enumerator MUST be included to indicate whether the field was added, modified, or removed  
568 from the base certificate.

569

```
570 platformConfiguration ATTRIBUTE ::= {  
571   WITH SYNTAX PlatformConfiguration  
572   ID tcg-at-platformConfiguration-v2  
573 }
```

```
574  
575 PlatformConfiguration ::= SEQUENCE {  
576   componentIdentifiers [0] IMPLICIT SEQUENCE(SIZE(1..MAX)) OF ComponentIdentifier OPTIONAL,  
577   componentIdentifiersUri [1] IMPLICIT URIReference OPTIONAL,
```

```

578     platformProperties [2] IMPLICIT SEQUENCE(SIZE(1..MAX)) OF Property OPTIONAL,
579     platformPropertiesUri [3] IMPLICIT URIReference OPTIONAL
580 }
581
582 ComponentIdentifier ::= SEQUENCE {
583     componentClass ComponentClass,
584     componentManufacturer UTF8String (SIZE (1..STRMAX)),
585     componentModel UTF8String (SIZE (1..STRMAX)),
586     componentSerial[0] IMPLICIT UTF8String (SIZE (1..STRMAX)) OPTIONAL,
587     componentRevision [1] IMPLICIT UTF8String (SIZE (1..STRMAX)) OPTIONAL,
588     componentManufacturerId [2] IMPLICIT PrivateEnterpriseNumber OPTIONAL,
589     fieldReplaceable [3] IMPLICIT BOOLEAN OPTIONAL,
590     componentAddresses [4] IMPLICIT SEQUENCE(SIZE(1.. MAX)) OF ComponentAddress OPTIONAL
591     componentPlatformCert [5] IMPLICIT CertificateIdentifier OPTIONAL,
592     componentPlatformCertUri [6] IMPLICIT URIReference OPTIONAL,
593     status [7] IMPLICIT AttributeStatus OPTIONAL }
594
595 ComponentClass ::= SEQUENCE {
596     componentClassRegistry ComponentClassRegistry,
597     componentClassValue OCTET STRING SIZE(4) }
598
599 ComponentClassRegistry ::= OBJECT IDENTIFIER ( tcg-registry-componentClass-tcg | tcg-registry-
600 componentClass-ietf | tcg-registry-componentClass-dmtf )
601
602 ComponentAddress ::= SEQUENCE {
603     addressType AddressType,
604     addressValue UTF8String (SIZE (1..STRMAX)) }
605
606 AddressType ::= OBJECT IDENTIFIER (tcg-address-ethernetmac | tcg-address-wlanmac | tcg-address-
607 bluetoothmac)
608
609 Property ::= SEQUENCE {
610     propertyName UTF8String (SIZE (1..STRMAX)),
611     propertyValue UTF8String (SIZE (1..STRMAX)),
612     status [0] IMPLICIT AttributeStatus OPTIONAL }
613
614 CertificateIdentifier ::= SEQUENCE {
615     attributeCertIdentifier [0] IMPLICIT AttributeCertificateIdentifier OPTIONAL,
616     genericCertIdentifier [1] IMPLICIT IssuerSerial OPTIONAL }
617
618 AttributeCertificateIdentifier ::= SEQUENCE {
619     hashAlgorithm AlgorithmIdentifier,
620     hashOverSignatureValue OCTET STRING
621 }
622
623 IssuerSerial ::= SEQUENCE {
624     issuer GeneralNames,
625     serial CertificateSerialNumber
626 }
627
628 AttributeStatus ::= ENUMERATED {
629     added (0),
630     modified (1),
631     removed (2) }
632

```

633 Three **ComponentClassRegistry** OIDs have been defined by the TCG. The **tcg-registry-**  
634 **componentClass-tcg** is a placeholder that refers to a future TCG Component Class  
635 Registry. The **tcg-registry-componentClass-ietf** refers to the IETF RFC8348 [19] IANA  
636 Hardware Class. The **tcg-registry-componentClass-dmtf** is a placeholder to refer to a  
637 future SMBIOS based registry.

638  
639 The **AttributeCertificateIdentifier** sequence is comprised of the **hashAlgorithm** field  
640 and the **hashOverSignatureValue**. The **hashAlgorithm** field is of type **AlgorithmIdentifier** as  
641 defined in RFC5280 [13]. This field identifies the hashing algorithm used in  
642 **hashOverSignatureValue** field. The **hashOverSignatureValue** is calculated over the Platform

643 Certificate's BIT STRING signatureValue (excluding the tag, length, and number of unused  
644 bits).

645 The definition of AlgorithmIdentifier from RFC5280 [13] is provided here for convenience:

```
646     AlgorithmIdentifier ::= SEQUENCE {  
647         algorithm OBJECT IDENTIFIER,  
648         parameters ANY DEFINED BY algorithm OPTIONAL }  
649
```

650 Since the algorithms used are all hashing algorithms, the parameters field SHOULD not be  
651 used. The issuer MAY utilize any of the hash algorithm OIDs found in RFC3279 [15], RFC4055  
652 [16], SHA-3 Related Algorithms and Identifiers for PKIX [17], and GB/T 33560-2017 [18].

653 **MAX** is to be interpreted, as described in RFC 5280[13], to mean the upper bound is  
654 unspecified.

655 **NOTE:** Parsers and verifiers should be version aware, and make the necessary adjustments  
656 to support current and prior versions of the **platformConfiguration** attribute. Future  
657 versions of this specification could introduce modifications to the **platformConfiguration**  
658 attribute. If such changes impact the structure and semantics of existing fields  
659 (componentIdentifiers, componentIdentifiersURI, platformProperties, and  
660 platformPropertiesURI) the attribute's OID will be updated to the next version (**tcg-at-**  
661 **platformConfiguration-v3**).

### 662 3.1.7 Platform Configuration Uri Attribute

663 The following defines the syntax of the platform configuration Uri attribute.

664 The **PlatformConfigUri** attribute contains the URI where the reference integrity  
665 measurements could be obtained by the verifier. The format used to convey the reference  
666 measurement values is vendor specific and not defined by the TCG. This field uses an  
667 **URIReference** sequence.

```
668     PlatformConfigUri ATTRIBUTE ::= {  
669         WITH SYNTAX URIReference  
670         ID tcg-at-platformConfigUri }  
671
```

672 The **PlatformConfigUri** attribute MAY be included in the Delta Platform Certificate to assert  
673 changes to the URI where PCR values are published.

## 674 3.2 Platform Certificate

675 This section contains the format for a Platform Certificate conforming to version 1.0 of this  
676 specification.

677 The Platform Certificate makes the assertions listed in section 2.1.6. This certificate format  
678 adheres to RFC 5755 [11] and all requirements and limitations from that specification apply  
679 unless otherwise noted.

680 **NOTE:** some fields are assigned a value even though the certificate user performs no action  
681 with that value. In such cases, the intention is to inhibit non-TCG implementations from  
682 making inappropriate use of the certificate.

<b>Field Name</b>	<b>RFC 5755 Type</b>	<b>Value</b>	<b>Field Status</b>
Version	INTEGER	V2 (encoded as value 1)	Standard
Serial Number	INTEGER	Positive integer value unique relative to the issuer	Standard
Signature Algorithm	AlgorithmIdentifier	Algorithm used by the issuer to sign this certificate	Standard
Holder	Holder	Identity of the associated TPM EK Certificate, use BaseCertificateID. Additional EK Certificates can be referenced using the TargetingInformation extension.	Standard
Issuer	Name	Distinguished name of the platform certificate issuer	Standard
Validity	notBefore notAfter	Beginning and end of validity period	Standard
<b>Attributes</b>			Standard
TBB Security Assertions	version ccInfo fipsLevel rtmType iso9000Certified iso9000Uri	Describes security-related assertions about the platform TBB	SHOULD
TCG Platform Specification	majorVersion minorVersion revision platformClass	Identifies platform class, version, and revision of the platform-specific specification	SHOULD
TCG Certificate Type	credentialType	Identifies the Platform Certificate in attribute certificate format	SHOULD
TCG Certificate Specification	majorVersion minorVersion revision	Major, minor, and revision of the Platform Certificate spec under which the Platform Certificate was issued	SHOULD

<b>Field Name</b>	<b>RFC 5755 Type</b>	<b>Value</b>	<b>Field Status</b>
Platform Configuration	componentIdentifier platformProperties platformPropertiesUri	Platform components and properties MAY be reflected by this attribute	MAY
Platform Configuration URI	URIReference	Points to the PCR list	MAY
<b>Extensions</b>			
Certificate Policies	CertificatePolicies	CertPolicyId CPSuri UserNotice	MUST Non-critical
Subject Alternative Names	GeneralName directoryName	PlatformManufacturerStr PlatformModel PlatformVersion PlatformSerial (optional) PlatformManufacturerId (optional)	MUST non-critical
Targeting Information	TargetingInformation	Additional TPM EK Certificates not included in Holder. Use targetName option.	MAY critical
Authority Key Id	AuthorityKeyIdentifier	Key identifier Issuer name and serial number (optional)	MUST non-critical
Authority Info Access	AuthorityInfoAccessSyntax	id-ad-caIssuers URI to issuing CA id-ad-ocsp (optional) URI to OCSP responder	SHOULD non-critical
CRL Distribution	CRLDistributionPoints	URI to CRL	MAY non-critical
Issuer Unique Id	UniqueIdentifier	Unique value when using a shared issuer name	SHOULD NOT

**Table 3: Attribute Certificate Format Fields**

683

### 684 3.2.1 Version

685 This field contains the version of the certificate syntax. Since Platform Certificates always  
686 contain mandatory extensions the version number MUST be set to 2 (which is encoded as the  
687 value 1 in ASN.1).

### 688 3.2.2 Serial Number

689 The serial number MUST be a positive integer which is uniquely assigned to each certificate  
690 by the issuer. The combination of an issuer's DN and the serial number MUST uniquely  
691 describe a single certificate.

692 Assign a value unique per instance of a TBB amongst all certificates issued by "issuer".

### 693 3.2.3 Signature Algorithm

694 This OID identifies the algorithm used by the platform certificate issuer to sign the certificate.  
695 Platform Certificate verifiers MUST support certificates signed with algorithms available in  
696 the TCG Algorithm Registry [12].

### 697 3.2.4 Holder

698 This field contains a reference to one of the required X.509 TPM EK certificates. The  
699 BaseCertificateID choice MUST be used. Additional required TPM EK certificates MUST be  
700 referenced using the TargetingInformation extension. Optional EK certificates MAY be  
701 referenced using the TargetingInformation extension.

702 **NOTE:** This specification does not stipulate the order in which the EK certificate references  
703 must appear in the Platform Certificate. Certificates will appear in any order.

### 704 3.2.5 Issuer

705 This field contains the distinguished name of the entity that issued this Platform Certificate.  
706 This is the entity that asserts that the platform incorporates a TPM and RTM in a manner  
707 that conforms to the relevant TCG Platform Specific specification.

### 708 3.2.6 Validity

709 This field contains the period during which the binding between the attributes and TPM EK  
710 certificates is considered valid. It is represented by two date values named notBefore and  
711 notAfter. Issuers SHOULD assign notBefore to the current time when the certificate is issued  
712 and notAfter to the last date that the certificate will be considered valid. Both notBefore and  
713 notAfter MUST use the appropriate time format as indicated by RFC 5755 [11], section 4.2.6  
714 Validity Period.

### 715 3.2.7 Certificate Policies

716 This extension indicates policy terms under which the certificate was issued.

717 Assign "critical" the value FALSE. Assign **policyIdentifier** at least one object identifier.  
718 Assign the **cPSuri** policy qualifier the value of an HTTP URL at which a plain language version  
719 of the platform endorsement entity's certificate policy could be obtained. Assign the explicit  
720 text **userNotice** policy qualifier the value "TCG Trusted Platform Endorsement".

721 During certificate path validation, check that at least one acceptable **policyIdentifier**  
722 value is present.

### 723 **3.2.8 Subject Alternative Names**

724 This extension contains the alternative name of the entity associated with this certificate.  
725 Assign "critical" the value FALSE. Include the platform model, using the directory name-form  
726 with RDNs for the platform manufacturer, model, version number, and optionally, the serial  
727 number, and manufacturer ID. The "Platform Manufacturer Identifier" optional field uniquely  
728 identifies the platform's manufacturer using the IANA Private Enterprise Number OID [8].

729 During certificate validation, the Privacy-CA MUST check that the platform manufacturer,  
730 model, version, serial numbers, and manufacturer ID are acceptable.

### 731 **3.2.9 Targeting Information**

732 This extension contains references to additional EK certificates not included in the Holder  
733 field. This extension is implemented using AC Targeting extension defined in RFC5755 [11].  
734 This extension is OPTIONAL, but if included, assign "critical" the value of TRUE. Use the  
735 targetName option. The EK certificate serial number MUST be included by adding the RDN  
736 attribute serialNumber to the GeneralName. Attribute serialNumber is defined in ITU-T X.520  
737 specification [19].

### 738 **3.2.10 Attributes**

739 The following attributes SHOULD be included:

- 740 • The "TCG Platform Specification" attribute references the platform class, version and  
741 revision level of the TCG platform-specific specification to which the platform was  
742 designed.
- 743 • The "TCG Certificate Type" attribute identifies the type of certificate and its format.
- 744 • The "TCG Certificate Specification" attribute references the version, level, and revision  
745 of this specification.
- 746 • The platform "TBB Security Assertions" attribute describes various assertions about  
747 the security properties of the TBB of the platform.

748 The following attributes MAY be included:

- 749 • The "Platform Configuration" attribute describes various assertions of platform  
750 properties that are not security related. Including CPU and motherboard serial  
751 numbers, network adapter MAC addresses.
- 752 • The "Platform Configuration Uri" attribute which provides the URI to the manufacturer  
753 published list of valid PCR values.

754 The following attributes are documented for compatibility with previous published TCG or  
755 TCGA specifications but SHOULD NOT be included in Platform Certificates:

- 756 • The "TCGA Specification Version" attribute, with field values correctly reflecting the  
757 highest version of the TCG specification with which the TPM implementation conforms.
- 758 • If the TPM has been successfully evaluated against a Common Criteria protection  
759 profile, then include the TPM protection profile identifier attribute.
- 760 • If the TPM has been successfully evaluated against a Common Criteria security target,  
761 then include the TPM security target identifier attribute.

- 762       • If the RTM and the means by which the TPM and RTM have been incorporated into the  
763 platform have been successfully evaluated against a Common Criteria protection  
764 profile, then include the "TBB protection profile" identifier attribute.
- 765       • If the RTM and the means by which the TPM and RTM have been incorporated into the  
766 platform have been successfully evaluated against a Common Criteria security target,  
767 then include the "TBB security target" identifier attribute.
- 768       • Optionally, include the "security qualities" attribute with a text string reflecting the  
769 security qualities of the platform.

### 770 **3.2.11 Authority Key Identifier**

771 This extension identifies the subject public key of the certificate issuer. Assign "critical" the  
772 value FALSE. Assign the value of "subject key identifier" from the issuer's public-key  
773 certificate, if available, else omit.

### 774 **3.2.12 Authority Info Access**

775 This extension contains additional information about the issuer. Assign "critical" the value  
776 FALSE. It MAY be omitted. If included, then the accessMethod OID SHOULD be set to id-ad-  
777 ocsp (RFC 5755 [11]) and the accessLocation value SHOULD point to the access value of the  
778 OCSP responder (HTTP URI).

779 The relying party can access the certificate status for this certificate by sending a properly  
780 formatted OCSPRequest to the URI. If both a CRL Distribution Point (CDP) and OCSP AIA  
781 extension are present in the certificate, then the relying parties SHOULD use OCSP as the  
782 primary validation mechanism.

### 783 **3.2.13 CRL Distribution**

784 This extension provides the location of the subject's revocation information. Assign "critical"  
785 the value FALSE. The relying party can access the CRL for this certificate from this URI. If  
786 both a CDP and OCSP AIA extension are present in the certificate, then relying parties  
787 SHOULD use OCSP as the primary validation mechanism.

### 788 **3.2.14 Issuer Unique Id**

789 These fields uniquely identify certificates which share names with other certificates issued by  
790 the same issuer. These fields MUST be omitted.

## 791 **3.3 Delta Platform Certificate**

792 This section contains the format for a Delta Platform Certificate. The Delta Platform Certificate  
793 makes the assertions listed in section 2.2.6. This certificate format adheres to RFC 5755 [11]  
794 and all requirements and limitations from that specification apply unless otherwise noted.

795 **NOTE:** some fields are assigned a value even though the certificate user performs no action  
796 with that value. In such cases, the intention is to inhibit non-TCG implementations from  
797 making inappropriate use of the certificate.



<b>Field Name</b>	<b>RFC 5755 Type</b>	<b>Value</b>	<b>Field Status</b>
Version	INTEGER	V2 (encoded as value 1)	Standard
Serial Number	INTEGER	Positive integer value unique relative to the issuer	Standard
Signature Algorithm	AlgorithmIdentifier	Algorithm used by the issuer to sign this certificate	Standard
Holder	Holder	Identity of the associated base Platform/Delta Platform Certificate, use BaseCertificateID.	Standard
Issuer	Name	Distinguished name of the delta platform certificate issuer	Standard
Validity	notBefore notAfter	Beginning and end of validity period	Standard
<b>Attributes</b>			Standard
TCG Certificate Type	credentialType	Identifies the Delta Platform Certificate	MUST
TCG Certificate Specification	majorVersion minorVersion revision	Major, minor, and revision of the Platform Certificate spec under which this certificate was issued	MAY (If different from base Platform Certificate)
Platform Configuration	componentIdentifier platformProperties platformPropertiesUri	Changes to platform components and properties MAY be reflected by this attribute	MAY (If different from base Platform Certificate)
Platform Configuration URI	URIReference	Points to the PCR list	MAY (If different from base Platform Certificate)
<b>Extensions</b>			
Certificate Policies	CertificatePolicies	CertPolicyId CPSuri UserNotice	MUST Non-critical

Field Name	RFC 5755 Type	Value	Field Status
Subject Alternative Names	GeneralName directoryName	PlatformManufacturerStr PlatformModel PlatformVersion PlatformSerial (optional) PlatformManufacturerId (optional)	MUST non-critical  (Must not differ from base Platform Certificate)
Targeting Information	TargetingInformation	TPM EK Certificates issued and not included in base certificate. Use targetName option.	MAY critical
Authority Key Id	AuthorityKeyIdentifier	Key identifier Issuer name and serial number (optional)	MUST non-critical
Authority Info Access	AuthorityInfoAccessSyntax	id-ad-caIssuers URI to issuing CA id-ad-ocsp (optional) URI to OCSP responder	SHOULD non-critical
CRL Distribution	CRLDistributionPoints	URI to CRL	MAY non-critical

798 **Table 4: Delta Attribute Certificate Format Fields**

799 **3.3.1 Version**

800 This field contains the version of the certificate syntax. The Delta Platform Certificate version  
801 number MUST be set to 2 (which is encoded as the value 1 in ASN.1).

802 **3.3.2 Serial Number**

803 The serial number MUST be a positive integer which is uniquely assigned to each certificate  
804 by the issuer. The combination of an issuer's DN and the serial number MUST uniquely  
805 describe a single certificate.

806 Assign a value unique per instance amongst all certificates issued by "issuer".

807 **3.3.3 Signature Algorithm**

808 This OID identifies the algorithm used by the Delta Platform Certificate issuer to sign the  
809 certificate. Delta Platform Certificate verifiers MUST support certificates signed with  
810 algorithms available in the TCG Algorithm Registry [12].

811 **3.3.4 Holder**

812 This field contains a reference to the base Platform Certificate or base Delta Platform  
813 Certificate. The BaseCertificateID choice MUST be used.

### 814 **3.3.5 Issuer**

815 This field contains the distinguished name of the entity that issued this Delta Platform  
816 Certificate. This is the entity that asserts that the changes made to the platform are correctly  
817 reflected in this certificate, and that it references the appropriate base Platform or Delta  
818 Certificate.

### 819 **3.3.6 Validity**

820 This field contains the period during which the assertions made by the issuer about the  
821 platform are considered valid. Issuers SHOULD assign notBefore to the current time when  
822 the certificate is issued and notAfter to the last date that the certificate will be considered  
823 valid. The notAfter date SHOULD not precede that of the base certificate. Both notBefore and  
824 notAfter MUST use the appropriate time format as indicated by RFC 5755 [11], section 4.2.6  
825 Validity Period.

### 826 **3.3.7 Certificate Policies**

827 This extension indicates policy terms under which the certificate was issued.

828 Assign "critical" the value FALSE. Assign policyIdentifier at least one object identifier. Assign  
829 the cPSuri policy qualifier the value of an HTTP URL at which a plain language version of the  
830 platform endorsement entity's certificate policy could be obtained. Assign the explicit text  
831 userNotice policy qualifier the value "TCG Trusted Platform Endorsement".

832 During certificate path validation, check that at least one acceptable policyIdentifier value is  
833 present.

### 834 **3.3.8 Subject Alternative Names**

835 This extension contains the platform name attributes. This extension MUST equal that of the  
836 base Platform or Delta Platform Certificate, the issuer MUST NOT introduce any changes.  
837 Assign "critical" the value FALSE. Include the platform model, using the directory name-form  
838 with RDNs for the platform manufacturer, model, version number, and optionally, the serial  
839 number, and manufacturer ID. The "Platform Manufacturer Identifier" optional field uniquely  
840 identifies the platform's manufacturer using the IANA Private Enterprise Number OID [8].

841 During certificate validation, the Privacy-CA MUST check that the platform manufacturer,  
842 model, version, serial numbers, and manufacturer ID are acceptable.

### 843 **3.3.9 Targeting Information**

844 This extension contains references to additional EK certificates issued by the Delta Platform  
845 Certificate issuer. Refer to section 3.2.9 for details on how to implement this extension.

### 846 **3.3.10 Attributes**

847 The following attributes SHOULD be included:

- 848 • The "TCG Certificate Type" attribute identifies the type of certificate and its format.
- 849 • The "TCG Certificate Specification" attribute references the version, level, and revision  
850 of this specification.

851 The following attributes MAY be included:

- 852       • The “Platform Configuration” attribute describes various assertions of platform  
853       properties that are not security related, including CPU and motherboard serial  
854       numbers, and network adapter MAC addresses.
- 855       • The “Platform Configuration Uri” attribute which provides the URI to the manufacturer  
856       published list of valid PCR values.

### 857   **3.3.11   Authority Key Identifier**

858   This extension identifies the subject public key of the certificate issuer. Assign “critical” the  
859   value FALSE. Assign the value of “subject key identifier” from the issuer’s public-key  
860   certificate, if available, else omit.

### 861   **3.3.12   Authority Info Access**

862   This extension contains additional information about the issuer. Assign “critical” the value  
863   FALSE. This extension MAY be omitted. If included, then the accessMethod OID SHOULD be  
864   set to id-ad-ocsp (RFC 5755 [11]) and the accessLocation value SHOULD point to the access  
865   value of the OCSP responder (HTTP URI).

866   The relying party can access the certificate status for this certificate by sending a properly  
867   formatted OCSPRequest to the URI. If both a CRL Distribution Point (CDP) and OCSP AIA  
868   extension are present in the certificate, then the relying parties SHOULD use OCSP as the  
869   primary validation mechanism.

### 870   **3.3.13   CRL Distribution**

871   This extension provides the location of the subject’s revocation information. Assign “critical”  
872   the value FALSE. The relying party can access the CRL for this certificate from this URI. If  
873   both a CDP and OCSP AIA extension are present in the certificate, then relying parties  
874   SHOULD use OCSP as the primary validation mechanism.

### 875   **3.3.14   Issuer Unique Id**

876   These fields uniquely identify certificates which share names with other certificates issued by  
877   the same issuer. These fields MUST be omitted.

878

## 4. X.509 ASN.1 Structures and OIDs

879

TCG has registered an object identifier (OID) namespace as an “international body” in the ISO registration hierarchy. This leads to shorter OIDs and gives TCG the ability to manage its own namespace. The OID namespace is inherited from TCPA specifications. These definitions are intended to be used within the context of an X.509 v3 certificate specifically leveraging the profile described in RFC 5755.

880

881

882

883

884

```
-- TCG specific OIDs
```

885

```
tcg OBJECT IDENTIFIER ::= {  
    joint-iso-itu-t(2) international-organizations(23) tcg(133) }
```

886

887

888

```
tcg-tcpaSpecVersion OBJECT IDENTIFIER ::= {tcg 1}
```

889

```
tcg-attribute OBJECT IDENTIFIER ::= {tcg 2}
```

890

```
tcg-protocol OBJECT IDENTIFIER ::= {tcg 3}
```

891

```
tcg-algorithm OBJECT IDENTIFIER ::= {tcg 4}
```

892

```
tcg-platformClass OBJECT IDENTIFIER ::= {tcg 5}
```

893

```
tcg-ce OBJECT IDENTIFIER ::= {tcg 6}
```

894

```
tcg-kp OBJECT IDENTIFIER ::= {tcg 8}
```

895

```
tcg-address OBJECT IDENTIFIER ::= {tcg 17}
```

896

```
tcg-registry OBJECT IDENTIFIER ::= {tcg 18}
```

897

898

```
-- TCG Attribute OIDs
```

899

```
tcg-at-tpmManufacturer OBJECT IDENTIFIER ::= {tcg-attribute 1}
```

900

```
tcg-at-tpmModel OBJECT IDENTIFIER ::= {tcg-attribute 2}
```

901

```
tcg-at-tpmVersion OBJECT IDENTIFIER ::= {tcg-attribute 3}
```

902

```
tcg-at-securityQualities OBJECT IDENTIFIER ::= {tcg-attribute 10}
```

903

```
tcg-at-tpmProtectionProfile OBJECT IDENTIFIER ::= {tcg-attribute 11}
```

904

```
tcg-at-tpmSecurityTarget OBJECT IDENTIFIER ::= {tcg-attribute 12}
```

905

```
tcg-at-tbbProtectionProfile OBJECT IDENTIFIER ::= {tcg-attribute 13}
```

906

```
tcg-at-tbbSecurityTarget OBJECT IDENTIFIER ::= {tcg-attribute 14}
```

907

```
tcg-at-tpmIdLabel OBJECT IDENTIFIER ::= {tcg-attribute 15}
```

908

```
tcg-at-tpmSpecification OBJECT IDENTIFIER ::= {tcg-attribute 16}
```

909

```
tcg-at-tcgPlatformSpecification OBJECT IDENTIFIER ::= {tcg-attribute 17}
```

910

```
tcg-at-tpmSecurityAssertions OBJECT IDENTIFIER ::= {tcg-attribute 18}
```

911

```
tcg-at-tbbSecurityAssertions OBJECT IDENTIFIER ::= {tcg-attribute 19}
```

912

```
tcg-at-tcgCredentialSpecification OBJECT IDENTIFIER ::= {tcg-attribute 23}
```

913

```
tcg-at-tcgCredentialType OBJECT IDENTIFIER ::= {tcg-attribute 25}
```

914

```
-- TCG Platform Class Common OIDs
```

915

```
tcg-common OBJECT IDENTIFIER ::= { tcg-platformClass 1}
```

916

917

```
-- TCG Common Attribute OIDs
```

918

```
tcg-at-platformManufacturerStr OBJECT IDENTIFIER ::= {tcg-common 1}
```

919

```
tcg-at-platformManufacturerId OBJECT IDENTIFIER ::= {tcg-common 2}
```

920

```
tcg-at-platformConfigUri OBJECT IDENTIFIER ::= {tcg-common 3}
```

921

```
tcg-at-platformModel OBJECT IDENTIFIER ::= {tcg-common 4}
```

922

```
tcg-at-platformVersion OBJECT IDENTIFIER ::= {tcg-common 5}
```

923

```
tcg-at-platformSerial OBJECT IDENTIFIER ::= { tcg-common 6}
```

924

```
tcg-at-platformConfiguration OBJECT IDENTIFIER ::= {tcg-common 7}
```

925

```
-- TCG Platform Configuration OIDs
```

926

```
tcg-at-platformConfiguration-v1 OBJECT IDENTIFIER ::= {tcg-at-platformConfiguration 1}
```

927

```
tcg-at-platformConfiguration-v2 OBJECT IDENTIFIER ::= {tcg-at-platformConfiguration 2}
```

928

```
-- TCG Algorithm OIDs
```

929

```
tcg-algorithm-null OBJECT IDENTIFIER ::= {tcg-algorithm 1}
```

930

```
-- TCG Key Purposes OIDs
```

931

```
tcg-kp-EKCertificate OBJECT IDENTIFIER ::= {tcg-kp 1}
```

932

```
tcg-kp-PlatformAttributeCertificate OBJECT IDENTIFIER ::= {tcg-kp 2}
```

933

```
tcg-kp-AIKCertificate OBJECT IDENTIFIER ::= {tcg-kp 3}
```

934

```
tcg-kp-PlatformKeyCertificate OBJECT IDENTIFIER ::= {tcg-kp 4}
```

935

```
tcg-kp-DeltaPlatformAttributeCertificate OBJECT IDENTIFIER ::= {tcg-kp 5}
```

936

```
-- TCG Certificate Extensions
```

937

```
tcg-ce-relevantCredentials OBJECT IDENTIFIER ::= {tcg-ce 2}
```

938

```

945 tcg-ce-relevantManifests OBJECT IDENTIFIER ::= {tcg-ce 3}
946 tcg-ce-virtualPlatformAttestationService OBJECT IDENTIFIER ::= {tcg-ce 4}
947 tcg-ce-migrationControllerAttestationService OBJECT IDENTIFIER ::= {tcg-ce 5}
948 tcg-ce-migrationControllerRegistrationService OBJECT IDENTIFIER ::= {tcg-ce 6}
949 tcg-ce-virtualPlatformBackupService OBJECT IDENTIFIER ::= {tcg-ce 7}
950
951 -- TCG Protocol OIDs
952 tcg-prt-tpmIdProtocol OBJECT IDENTIFIER ::= {tcg-protocol 1}
953
954 -- TCG Address OIDs
955 tcg-address-ethernetmac OBJECT IDENTIFIER ::= {tcg-address 1}
956 tcg-address-wlanmac OBJECT IDENTIFIER ::= {tcg-address 2}
957 tcg-address-bluetoothmac OBJECT IDENTIFIER ::= {tcg-address 3}
958
959 -- TCG Registry OIDs
960 tcg-registry-componentClass OBJECT IDENTIFIER ::= {tcg-registry 3}
961 tcg-registry-componentClass-tcg OBJECT IDENTIFIER ::= {tcg-registry-componentClass 1}
962 tcg-registry-componentClass-ietf OBJECT IDENTIFIER ::= {tcg-registry-componentClass 2}
963 tcg-registry-componentClass-dmtf OBJECT IDENTIFIER ::= {tcg-registry-componentClass 3}
964
965
966 -- tcg specification attributes for platform
967 TCGPlatformSpecification ATTRIBUTE ::= {
968   WITH SYNTAX TCGPlatformSpecification
969   ID tcg-at-tcgPlatformSpecification }
970
971 TCGSpecificationVersion ::= SEQUENCE {
972   majorVersion INTEGER,
973   minorVersion INTEGER,
974   revision INTEGER }
975
976 TCGPlatformSpecification ::= SEQUENCE {
977   Version TCGSpecificationVersion,
978   platformClass OCTET STRING SIZE(4) }
979
980 -- TCG Credential type attribute
981 tCGCredentialType ATTRIBUTE ::= {
982   WITH SYNTAX TCGCredentialType
983   ID tcg-at-tcgCredentialType}
984
985 TCGCredentialType ::= SEQUENCE {
986   certificateType CredentialType}
987
988 CredentialType ::= OBJECT IDENTIFIER (tcg-kp-PlatformAttributeCertificate | tcg-kp-
989   DeltaPlatformAttributeCertificate )
990
991 -- manufacturer implementation model and version attributes
992 PlatformManufacturerStr ATTRIBUTE ::= {
993   WITH SYNTAX UTF8String (SIZE (1..STRMAX))
994   ID tcg-at-platformManufacturerStr }
995
996 PlatformModel ATTRIBUTE ::= {
997   WITH SYNTAX UTF8String (SIZE (1..STRMAX))
998   ID tcg-at-platformModel }
999
1000 PlatformVersion ATTRIBUTE ::= {
1001   WITH SYNTAX UTF8String (SIZE (1..STRMAX))
1002   ID tcg-at-platformVersion }
1003
1004 PlatformSerial ATTRIBUTE ::= {
1005   WITH SYNTAX UTF8String (SIZE (1..STRMAX))
1006   ID tcg-at-platformSerial }
1007
1008 PlatformManufacturerId ATTRIBUTE ::= {
1009   WITH SYNTAX ManufacturerId
1010   ID tcg-at-platformManufacturerId
1011 }
1012
1013 ManufacturerId ::= SEQUENCE {
1014   manufacturerIdentifier PrivateEnterpriseNumber
1015 }

```

```

1016 enterprise OBJECT IDENTIFIER ::= {
1017     iso(1) identified-organization(3) dod(6) internet(1) private(4) enterprise(1) }
1018
1019 PrivateEnterpriseNumber OBJECT IDENTIFIER ::= { enterprise private-enterprise-number }
1020
1021
1022
1023 -- platform tbb security assertions
1024
1025 tBBSecurityAssertions ATTRIBUTE ::= {
1026     WITH SYNTAX TBBSecurityAssertions
1027     ID tcg-at-tbbSecurityAssertions }
1028
1029 TBBSecurityAssertions ::= SEQUENCE {
1030     version Version DEFAULT v1,
1031     ccInfo [0] IMPLICIT CommonCriteriaMeasures OPTIONAL,
1032     fipsLevel [1] IMPLICIT FIPSLevel OPTIONAL,
1033     rtmType [2] IMPLICIT MeasurementRootType OPTIONAL,
1034     iso9000Certified BOOLEAN DEFAULT FALSE,
1035     iso9000Uri IA5STRING (SIZE (1..URIMAX)) OPTIONAL }
1036
1037
1038 -- Hybrid means the measurement root is capable of static AND dynamic
1039 -- Physical means that the root is anchored by a physical TPM
1040 -- Virtual means the TPM is virtualized (possibly running in a VMM)
1041
1042 -- TPMs or RTMs might leverage other lower layer RTMs to virtualize the
1043 -- the capabilities of the platform.
1044 MeasurementRootType ::= ENUMERATED {
1045     static (0),
1046     dynamic (1),
1047     nonHost (2),
1048     hybrid (3),
1049     physical (4),
1050     virtual (5) }
1051
1052
1053 -- common criteria evaluation
1054 CommonCriteriaMeasures ::= SEQUENCE {
1055     version IA5STRING (SIZE (1..STRMAX)), -- "2.2" or "3.1"; future syntax defined by CC
1056     assurancelevel EvaluationAssuranceLevel,
1057     evaluationStatus EvaluationStatus,
1058     plus BOOLEAN DEFAULT FALSE,
1059     strengthOfFunction [0] IMPLICIT StrengthOfFunction OPTIONAL,
1060     profileOid [1] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
1061     profileUri [2] IMPLICIT URIReference OPTIONAL,
1062     targetOid [3] IMPLICIT OBJECT IDENTIFIER OPTIONAL,
1063     targetUri [4] IMPLICIT URIReference OPTIONAL }
1064
1065 EvaluationAssuranceLevel ::= ENUMERATED {
1066     level1 (1),
1067     level2 (2),
1068     level3 (3),
1069     level4 (4),
1070     level5 (5),
1071     level6 (6),
1072     level7 (7) }
1073
1074 StrengthOfFunction ::= ENUMERATED {
1075     basic (0),
1076     medium (1),
1077     high (2) }
1078
1079 URIReference ::= SEQUENCE {
1080     uniformResourceIdentifier IA5String (SIZE (1..URIMAX)),
1081     hashAlgorithm AlgorithmIdentifier OPTIONAL,
1082     hashValue BIT STRING OPTIONAL }
1083
1084 EvaluationStatus ::= ENUMERATED {
1085     designedToMeet (0),
1086     evaluationInProgress (1),

```

```

1087     evaluationCompleted (2) }
1088
1089 -- fips evaluation
1090 FIPSLevel ::= SEQUENCE {
1091     version IA5STRING (SIZE (1..STRMAX)), -- "140-1", "140-2", or "140-3"
1092     level SecurityLevel,
1093     plus BOOLEAN DEFAULT FALSE }
1094
1095 SecurityLevel ::= ENUMERATED {
1096     level1 (1),
1097     level2 (2),
1098     level3 (3),
1099     level4 (4) }
1100
1101
1102 -- platform configuration
1103 platformConfiguration ATTRIBUTE ::= {
1104     WITH SYNTAX PlatformConfiguration
1105     ID tcg-at-platformConfiguration-v2
1106 }
1107
1108 PlatformConfiguration ::= SEQUENCE {
1109     componentIdentifiers [0] IMPLICIT SEQUENCE(SIZE(1..MAX)) OF ComponentIdentifier OPTIONAL,
1110     componentIdentifiersUri [1] IMPLICIT URIReference OPTIONAL,
1111     platformProperties [2] IMPLICIT SEQUENCE(SIZE(1..MAX)) OF Properties OPTIONAL,
1112     platformPropertiesUri [3] IMPLICIT URIReference OPTIONAL
1113 }
1114
1115 ComponentIdentifier ::= SEQUENCE {
1116     componentClass ComponentClass,
1117     componentManufacturer UTF8String (SIZE (1..STRMAX)),
1118     componentModel UTF8String (SIZE (1..STRMAX)),
1119     componentSerial[0] IMPLICIT UTF8String (SIZE (1..STRMAX)) OPTIONAL,
1120     componentRevision [1] IMPLICIT UTF8String (SIZE (1..STRMAX)) OPTIONAL,
1121     componentManufacturerId [2] IMPLICIT PrivateEnterpriseNumber OPTIONAL,
1122     fieldReplaceable [3] IMPLICIT BOOLEAN OPTIONAL,
1123     componentAddresses [4] IMPLICIT SEQUENCE(SIZE(1.. MAX)) OF ComponentAddress OPTIONAL
1124     componentPlatformCert [5] IMPLICIT CertificateIdentifier OPTIONAL,
1125     componentPlatformCertUri [6] IMPLICIT URIReference OPTIONAL,
1126     status [7] IMPLICIT AttributeStatus OPTIONAL }
1127
1128 ComponentClass ::= SEQUENCE {
1129     componentClassRegistry ComponentClassRegistry,
1130     componentClassValue OCTET STRING SIZE(4) }
1131
1132 ComponentClassRegistry ::= OBJECT IDENTIFIER ( tcg-registry-componentClass-tcg | tcg-registry-
1133 componentClass-ietf | tcg-registry-componentClass-dmtf )
1134
1135 ComponentAddress ::= SEQUENCE {
1136     addressType AddressType,
1137     addressValue UTF8String (SIZE (1..STRMAX)) }
1138
1139 AddressType ::= OBJECT IDENTIFIER (tcg-address-ethernetmac | tcg-address-wlanmac | tcg-address-
1140 bluetoothmac)
1141
1142 Properties ::= SEQUENCE {
1143     propertyName UTF8String (SIZE (1..STRMAX)),
1144     propertyValue UTF8String (SIZE (1..STRMAX)),
1145     status [0] IMPLICIT AttributeStatus OPTIONAL }
1146
1147 CertificateIdentifier ::= SEQUENCE {
1148     attributeCertIdentifier [0] IMPLICIT AttributeCertificateIdentifier OPTIONAL,
1149     genericCertIdentifier [1] IMPLICIT IssuerSerial OPTIONAL }
1150
1151 AttributeCertificateIdentifier ::= SEQUENCE {
1152     hashAlgorithm AlgorithmIdentifier,
1153     hashOverSignatureValue OCTET STRING
1154 }
1155
1156 AttributeStatus ::= ENUMERATED {
1157     added (0),

```



```
1158         modified (1),
1159         removed (2) }
1160
1161     -- platform configuration Uri attribute
1162 PlatformConfigUri ATTRIBUTE ::= {
1163     WITH SYNTAX URIReference
1164     ID tcg-at-platformConfigUri }
1165
1166
1167
1168
1169
1170
```

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1223 **A. Certificate Examples**1224 **A.1 Example 1 (Platform Certificate in Attribute Certificate Format)**

1225 The following section provides an example of a Platform Certificate in Attribute Certificate  
1226 format (RFC 5755) [11]. The PEM encoded version of the certificate as well as the ASN.1  
1227 certificate text are included for convenience. The values used in this example are for  
1228 illustrative purposes and must be replaced with manufacturer-specific data.

1229 **A.1.1 PEM Format**

```

1230 -----BEGIN ATTRIBUTE CERTIFICATE-----
1231 MIIJmDCCCIACAQEwgZagqZMwgYqkgYcwqYQxCzAJBgNVBAYTA1VTMQswCQYDVQQI
1232 DAJDQTEUMBIGAlUEBwwLU2FudGEgQ2xhcmExGjAYBgNVBAoMEUluGVsIENvcnBv
1233 cmF0aW9uMR4wHAYDVQQQLDBVFSyBDZXJ0aWZpY2F0ZSBJc3N1ZXIxXjFjAUBgNVBAMM
1234 DXd3dy5pbmR1bC5jb20CBDDAg3SggZ0wgZqkgZcwqZQxCzAJBgNVBAYTA1VTMQsw
1235 CQYDVQQIDAJDQTEUMBIGAlUEBwwLU2FudGEgQ2xhcmExGjAYBgNVBAoMEUluGVs
1236 IENvcnBvcnF0aW9uMS4wLAYDVQQQLDQVQVbGF0Zm9ybSBDbHRyaWJ1dGUgQ2VydGlm
1237 aWNhdGUgSXNzdWVYMRwYFAyDVQQDDA13d3cuaW50ZWwuY29tMA0GCSqGSIb3DQEB
1238 CwUAAHRgKwfqeST97mzBULkeg3d9H0J5mTAiGA8yMDE3MDgyMDIxMDc0OFoYDzIw
1239 MjAwODIwMjEwNzQ4WjCCBK4wHAYFZ4EFAhExEzARMAkCAQICAQACASsEBAAAAAEw
1240 EgYFZ4EFAhKxCTAHBgVngQUIAjAUBgVngQUFCzELMAkCAQECAQswGccGBWeB
1241 BQITMYG9MIG6AgEAoHQWAZmUMQoBBwoBAGEBAlIABAYEFKgmEBQailRYraHR0cHM6
1242 Ly93d3cuaW50ZWwuY29tL3Byb3R1Y3Rpb25wcm9maWx1LnBkZ0MFUwQFBgekJBYi
1243 aHR0cHM6Ly93d3cuaW50ZWwuY29tL2NjdGFyZ2V0LnBkZqENFgUxNDAtMgoBBAEB
1244 AIBAwEBABYqaHR0cHM6Ly93d3cuaW50ZWwuY29tL2lzb2N1cnRpb24u
1245 cGRmMIIDagYHZ4EFBQEHAjGCA10wggnZoIIC1zCCAXYwDgYGZ4EFEgMBBAQAAAAK
1246 DAdBQkMgT0VNDAxXUjA2WDC4NzFGVEyACUE1NTU1LTk5OYEDMS4xggcrBgEEAYIs
1247 gwH/pDIwFwYFZ4EFEQEMDKFG0jNBOjk00jEwOke1MBcGBWeBBRECD45BRj0zNzox
1248 MDpEMjpbBOKWBz6AxMA0GCysGAQQBgbAaAQIBBCBgA6M0Mv2RS2ADozQy/ZFLYAOj
1249 NDl9kUtga6M0Mv2RS6GBmTCBj6SBjDCBiTELMaKGA1UEBhMCVVMxXzAJBgNVBAGM
1250 AkZMMRcwFQYDVQQHDA5GdC4gTGF1ZGVyZGFsZTEYMBYGA1UECgwPQUJDIENvcnBv
1251 cmF0aW9uMSQwIgwYDVQQQLDBtQVbGF0Zm9ybSBDbDZXJ0aWZpY2F0ZSBJc3N1ZXIxXjFj
1252 BgNVBAMMC3d3dy5hYmMuY29tAgUKNUZn26YrFilodHRwczovL3d3dy5hYmMuY29t
1253 L2N1cnRzLzQzODQzODk4ODQzLmN1cjcCAVkwDgYGZ4EFEgMBBAQAAAAvDAdYVWog
1254 T0VNDA5MTUJUMzkwNERXMQXR4AJQzU1NTU1NTU1gQMzLjGCBysGAQQBgiyDAQck
1255 MjAXBgVngQURAQWOOODI6ODk6Rke6RDM6NjEwFwYFZ4EFEQIMDKQ00jgzOkI0OkYy
1256 Ojc4pYGl0cUwDQYLLKwYBBAGBsBoBAGEEFDQy4UFLYJc0NDI0MuFBS2CXNDQyoYGL
1257 MIGDpIGAMH4xCzAJBgNVBAYTA1VTMQswCQYDVQQIDAjBwjeQMA4GA1UEBwwHUGhv
1258 ZW5peDEUMBIGAlUECgwLWFlDIENvbXBhbnkxJDAiBgNVBAsMG1BsYXRmb3JtIENl
1259 cnRpb24uYXR1IElzc3VlcjEUMBIGAlUEAwLd3d3Lnh5ei5jb20CAw5TSkYmFiRo
1260 dHRwczovL3d3dy54eXouY29tL2N1cnRzLzlkzODkyOC5jZXXkLxYtaHR0cHM6Ly93
1261

```

1262 d3cuaW50ZWwuY29tL3BsYXRmb3JtaWRlbnRpZml1cnMueG1sohswDAwEdlBybwwE  
1263 dHJ1ZTALDANBTVQMBHRydWWjLhYsaHR0cHM6Ly93d3cuaW50ZWwuY29tL3BsYXRm  
1264 b3JtcHJvcGVydGllcy54bWwwLAYGZ4EFBQEDMSIwIBYeaHR0cHM6Ly93d3cuaW50  
1265 ZWwuY29tL1BDUnMueG1sMIICRTB8BgNVHSAEdTBzMHEGCIqGSIB4TQEFAGQwYzAx  
1266 BggrBgEFBQcCARYlaHR0cHM6Ly93d3cuaW50ZWwuY29tL3BsYXRjZXJ0Y3BzLnBk  
1267 ZjAuBggrBgEFBQcCAjAidCBUQ0cgVHJ1c3RlZCBQbGF0Zm9ybSBFbmrvcnNlbWVu  
1268 dDB+BgNVHREEdzB1pHMwcTERMA8GBmeBBQUBAQwFSW50ZWwxFTATBgZngQUFAQIw  
1269 CQYHKwYBBAGCVzETMBEGBmeBBQUUBBAwHUzI2MDBLUDEWMBQGBmeBBQUUBBQwKSDc2  
1270 OTYyLTM1MDEYMBYGBmeBBQUUBBGMQ1FLUDk5OTQwNjQzMIGYBgNVHTcBAf8Egacw  
1271 gaQwgaGggZ6kgZswgZgxCzAJBgNVBAYTAlVTMQswCQYDVQQIDAJDQTEUMBIGAlUE  
1272 BwwLU2FudGEGQ2xhcmlExGjAYBgNVBAoMEUludGVsIENvcnBvcmlF0aW9uMR4wHAYD  
1273 VQQLDBVFSyBDZXJ0aWZpY2F0ZSBKc3N1ZXIxFjAUBGNVBAMMDXd3dy5pbnR1bC5j  
1274 b20xEjAQBGNVBAUTCTEYODk0Mzc4NzAfBgNVHSMEGDAWgBTUaZAmAoHVXoNLA5du  
1275 q4qfj4TJgzA2BggrBgEFBQcBAQQqMCgwJgYIKwYBBQUHMAGGGmh0dHBzOi8vd3d3  
1276 LmludGVsLmNvbS9vY3NwMdcGA1UdHwQwMC4wLkAqoCiGJmh0dHBzOi8vd3d3Lmlu  
1277 dGVsLmNvbS9wbGF0Zm9ybWN1cnQuY3JsMA0GCSqGSIB3DQEBcWUAA4IBAQCq6w/S  
1278 /cuB8mUjI1Vli2JPfkbS+v2TmBf0sIUPdPfu/aH16NPctavfiEvpP11uWGty7/oY  
1279 8sAq5ChEU3/KbI0zaY7X0Yjpcp5YfYqZZFqgrDmye+o5T5+sAnJOjNrHdIEUGyYH  
1280 G47IsogmJj7i1lRcF7JVCJTUOGQpWqVMKF3/VffWJ84XKE+nbTYCYufyYHRxUQ1T  
1281 rSx5sQn0dAnW8BdljczpaNJBdxd1CdhKefZSwf3Yc550d3QDqMekH/3++9MJhJO  
1282 79BiL0CkXi5gAYLi5NU14X9S/Jv+hcaDwi/gEtB5s7c3rtEyoYByj//QycQhxMIb  
1283 L2ciOd1FDte7CSyC  
1284 -----END ATTRIBUTE CERTIFICATE-----  
1285

1286 **A.1.2 DER Format**  
1287

1288 SEQUENCE :  
1289     SEQUENCE :  
1290         INTEGER : 1  
1291         SEQUENCE :  
1292             CONTEXT SPECIFIC (0) :  
1293                 SEQUENCE :  
1294                     CONTEXT SPECIFIC (4) :  
1295                         SEQUENCE :  
1296                             SET :  
1297                                 SEQUENCE :  
1298                                     OBJECT IDENTIFIER : countryName [2.5.4.6]  
1299                                     PRINTABLE STRING : 'US'  
1300                             SET :  
1301                                 SEQUENCE :  
1302                                     OBJECT IDENTIFIER : stateOrProvinceName [2.5.4.8]  
1303                                     UTF8 STRING : 'CA'  
1304                             SET :  
1305                                 SEQUENCE :  
1306                                     OBJECT IDENTIFIER : localityName [2.5.4.7]  
1307                                     UTF8 STRING : 'Santa Clara'  
1308                             SET :

```

1309         SEQUENCE :
1310             OBJECT IDENTIFIER : organizationName [2.5.4.10]
1311             UTF8 STRING : 'Intel Corporation'
1312     SET :
1313         SEQUENCE :
1314             OBJECT IDENTIFIER : organizationalUnitName [2.5.4.11]
1315             UTF8 STRING : 'EK Certificate Issuer'
1316     SET :
1317         SEQUENCE :
1318             OBJECT IDENTIFIER : commonName [2.5.4.3]
1319             UTF8 STRING : 'www.intel.com'
1320     INTEGER : 926974836
1321     CONTEXT SPECIFIC (0) :
1322     SEQUENCE :
1323         CONTEXT SPECIFIC (4) :
1324             SEQUENCE :
1325                 SET :
1326                     SEQUENCE :
1327                         OBJECT IDENTIFIER : countryName [2.5.4.6]
1328                         PRINTABLE STRING : 'US'
1329                 SET :
1330                     SEQUENCE :
1331                         OBJECT IDENTIFIER : stateOrProvinceName [2.5.4.8]
1332                         UTF8 STRING : 'CA'
1333                 SET :
1334                     SEQUENCE :
1335                         OBJECT IDENTIFIER : localityName [2.5.4.7]
1336                         UTF8 STRING : 'Santa Clara'
1337                 SET :
1338                     SEQUENCE :
1339                         OBJECT IDENTIFIER : organizationName [2.5.4.10]
1340                         UTF8 STRING : 'Intel Corporation'
1341                 SET :
1342                     SEQUENCE :
1343                         OBJECT IDENTIFIER : organizationalUnitName [2.5.4.11]
1344                         UTF8 STRING : 'Platform Attribute Certificate Issuer'
1345                 SET :
1346                     SEQUENCE :
1347                         OBJECT IDENTIFIER : commonName [2.5.4.3]
1348                         UTF8 STRING : 'www.intel.com'
1349     SEQUENCE :
1350         OBJECT IDENTIFIER : [1.2.840.113549.1.1.11]
1351     NULL :
1352     INTEGER : 602967EA7924FDEE6CC150B91E83777D1F427999
1353     SEQUENCE :
1354         GENERALIZED TIME : '20170820210748Z'
1355         GENERALIZED TIME : '20200820210748Z'
1356     SEQUENCE :
1357         SEQUENCE :
1358             OBJECT IDENTIFIER : [2.23.133.2.17]
1359         SET :
1360             SEQUENCE :
1361                 SEQUENCE :
1362                     INTEGER : 2
1363                     INTEGER : 0
1364                     INTEGER : 43
1365                 OCTET STRING : 00000001
1366     SEQUENCE :
1367         OBJECT IDENTIFIER : [2.23.133.2.25]
1368     SET :
1369         SEQUENCE :
1370             OBJECT IDENTIFIER : [2.23.133.8.2]
1371     SEQUENCE :

```

```
1372 OBJECT IDENTIFIER : [2.23.133.2.23]
1373 SET :
1374 SEQUENCE :
1375 INTEGER : 1
1376 INTEGER : 1
1377 INTEGER : 11
1378 SEQUENCE :
1379 OBJECT IDENTIFIER : [2.23.133.2.19]
1380 SET :
1381 SEQUENCE :
1382 INTEGER : 0
1383 CONTEXT SPECIFIC (0) :
1384 IA5 STRING : '3.1'
1385 ENUMERATED : '07'
1386 ENUMERATED : '02'
1387 BOOLEAN : '00'
1388 CONTEXT SPECIFIC (0) : 01
1389 CONTEXT SPECIFIC (1) : 2A03040506
1390 CONTEXT SPECIFIC (2) :
1391 IA5 STRING : 'https://www.intel.com/protectionprofile.pdf'
1392 CONTEXT SPECIFIC (3) : 5304050607
1393 CONTEXT SPECIFIC (4) :
1394 IA5 STRING : 'https://www.intel.com/cctarget.pdf'
1395 CONTEXT SPECIFIC (1) :
1396 IA5 STRING : '140-2'
1397 ENUMERATED : '04'
1398 BOOLEAN : '00'
1399 CONTEXT SPECIFIC (2) : 03
1400 BOOLEAN : '00'
1401 IA5 STRING : 'https://www.intel.com/isocertification.pdf'
1402 SEQUENCE :
1403 OBJECT IDENTIFIER : [2.23.133.5.1.7.2]
1404 SET :
1405 SEQUENCE :
1406 CONTEXT SPECIFIC (0) :
1407 SEQUENCE :
1408 SEQUENCE :
1409 OBJECT IDENTIFIER : [2.23.133.18.3.1]
1410 OCTET STRING : 0000000A
1411 UTF8 STRING : 'ABC OEM'
1412 UTF8 STRING : 'WR06X7871FTL'
1413 CONTEXT SPECIFIC (0) : 41353535352D393939
1414 CONTEXT SPECIFIC (1) : 312E31
1415 CONTEXT SPECIFIC (2) : 2B06010401822C
1416 CONTEXT SPECIFIC (3) : FF
1417 CONTEXT SPECIFIC (4) :
1418 SEQUENCE :
1419 OBJECT IDENTIFIER : [2.23.133.17.1]
1420 UTF8 STRING : 'AF:3A:94:10:A5'
1421 SEQUENCE :
1422 OBJECT IDENTIFIER : [2.23.133.17.2]
1423 UTF8 STRING : 'AF:37:10:D2:A8'
1424 CONTEXT SPECIFIC (5) :
1425 CONTEXT SPECIFIC (0) :
1426 SEQUENCE :
1427 OBJECT IDENTIFIER : [1.3.6.1.4.1.22554.1.2.1]
1428 OCTET STRING :
1429 6003A33432FD914B6003A33432FD914B6003A33432FD914B
1430 CONTEXT SPECIFIC (1) :
1431 SEQUENCE :
1432 CONTEXT SPECIFIC (4) :
1433 SEQUENCE :
1434 SET :
```

```

1435                               SEQUENCE :
1436                               OBJECT IDENTIFIER : countryName [2.5.4.6]
1437                               PRINTABLE STRING : 'US'
1438                               SET :
1439                               SEQUENCE :
1440                               OBJECT IDENTIFIER : stateOrProvinceName
1441 [2.5.4.8]
1442                               UTF8 STRING : 'FL'
1443                               SET :
1444                               SEQUENCE :
1445                               OBJECT IDENTIFIER : localityName [2.5.4.7]
1446                               UTF8 STRING : 'Ft. Lauderdale'
1447                               SET :
1448                               SEQUENCE :
1449                               OBJECT IDENTIFIER : organizationName
1450 [2.5.4.10]
1451                               UTF8 STRING : 'ABC Corporation'
1452                               SET :
1453                               SEQUENCE :
1454                               OBJECT IDENTIFIER : organizationalUnitName
1455 [2.5.4.11]
1456                               UTF8 STRING : 'Platform Certificate Issuer'
1457                               SET :
1458                               SEQUENCE :
1459                               OBJECT IDENTIFIER : commonName [2.5.4.3]
1460                               UTF8 STRING : 'www.abc.com'
1461                               INTEGER : 43843898843
1462                               CONTEXT SPECIFIC (6) :
1463                               IA5 STRING : 'https://www.abc.com/certs/43843898843.cer'
1464                               SEQUENCE :
1465                               SEQUENCE :
1466                               OBJECT IDENTIFIER : [2.23.133.18.3.1]
1467                               OCTET STRING : 0000002F
1468                               UTF8 STRING : 'XYZ OEM'
1469                               UTF8 STRING : 'LMBT3904DW1T1G'
1470                               CONTEXT SPECIFIC (0) : 43353535352D353535
1471                               CONTEXT SPECIFIC (1) : 332E31
1472                               CONTEXT SPECIFIC (2) : 2B06010401822C
1473                               CONTEXT SPECIFIC (3) : 00
1474                               CONTEXT SPECIFIC (4) :
1475                               SEQUENCE :
1476                               OBJECT IDENTIFIER : [2.23.133.17.1]
1477                               UTF8 STRING : '82:89:FA:D3:61'
1478                               SEQUENCE :
1479                               OBJECT IDENTIFIER : [2.23.133.17.2]
1480                               UTF8 STRING : 'D4:83:B4:F2:78'
1481                               CONTEXT SPECIFIC (5) :
1482                               CONTEXT SPECIFIC (0) :
1483                               SEQUENCE :
1484                               OBJECT IDENTIFIER : [1.3.6.1.4.1.22554.1.2.1]
1485                               OCTET STRING : 3432E1414B60973434323432E1414B6097343432
1486                               CONTEXT SPECIFIC (1) :
1487                               SEQUENCE :
1488                               CONTEXT SPECIFIC (4) :
1489                               SEQUENCE :
1490                               SET :
1491                               SEQUENCE :
1492                               OBJECT IDENTIFIER : countryName [2.5.4.6]
1493                               PRINTABLE STRING : 'US'
1494                               SET :
1495                               SEQUENCE :
1496                               OBJECT IDENTIFIER : stateOrProvinceName
1497 [2.5.4.8]

```



```

1498         UTF8 STRING : 'AZ'
1499     SET :
1500     SEQUENCE :
1501         OBJECT IDENTIFIER : localityName [2.5.4.7]
1502         UTF8 STRING : 'Phoenix'
1503     SET :
1504     SEQUENCE :
1505         OBJECT IDENTIFIER : organizationName
1506 [2.5.4.10]
1507         UTF8 STRING : 'XYZ Company'
1508     SET :
1509     SEQUENCE :
1510         OBJECT IDENTIFIER : organizationalUnitName
1511 [2.5.4.11]
1512         UTF8 STRING : 'Platform Certificate Issuer'
1513     SET :
1514     SEQUENCE :
1515         OBJECT IDENTIFIER : commonName [2.5.4.3]
1516         UTF8 STRING : 'www.xyz.com'
1517         INTEGER : 938928
1518     CONTEXT SPECIFIC (6) :
1519         IA5 STRING : 'https://www.xyz.com/certs/938928.cer'
1520     CONTEXT SPECIFIC (1) :
1521         IA5 STRING : 'https://www.intel.com/platformidentifiers.xml'
1522     CONTEXT SPECIFIC (2) :
1523     SEQUENCE :
1524         UTF8 STRING : 'vPro'
1525         UTF8 STRING : 'true'
1526     SEQUENCE :
1527         UTF8 STRING : 'AMT'
1528         UTF8 STRING : 'true'
1529     CONTEXT SPECIFIC (3) :
1530         IA5 STRING : 'https://www.intel.com/platformproperties.xml'
1531     SEQUENCE :
1532         OBJECT IDENTIFIER : [2.23.133.5.1.3]
1533     SET :
1534     SEQUENCE :
1535         IA5 STRING : 'https://www.intel.com/PCRs.xml'
1536     SEQUENCE :
1537     SEQUENCE :
1538         OBJECT IDENTIFIER : certificatePolicies [2.5.29.32]
1539     OCTET STRING :
1540     SEQUENCE :
1541     SEQUENCE :
1542         OBJECT IDENTIFIER : [1.2.840.113741.1.5.2.4]
1543     SEQUENCE :
1544     SEQUENCE :
1545         OBJECT IDENTIFIER : cps [1.3.6.1.5.5.7.2.1]
1546         IA5 STRING : 'https://www.intel.com/platcertcps.pdf'
1547     SEQUENCE :
1548         OBJECT IDENTIFIER : unnotice [1.3.6.1.5.5.7.2.2]
1549     SEQUENCE :
1550         UTF8 STRING : 'TCG Trusted Platform Endorsement'
1551     SEQUENCE :
1552         OBJECT IDENTIFIER : subjectAltName [2.5.29.17]
1553     OCTET STRING :
1554     SEQUENCE :
1555         CONTEXT SPECIFIC (4) :
1556         SEQUENCE :
1557         SET :
1558         SEQUENCE :
1559             OBJECT IDENTIFIER : [2.23.133.5.1.1]
1560             UTF8 STRING : 'Intel'

```

```

1561         SET :
1562             SEQUENCE :
1563                 OBJECT IDENTIFIER : [2.23.133.5.1.2]
1564                 SEQUENCE : OBJECT IDENTIFIER : [1.3.6.1.4.1.343]
1565         SET :
1566             SEQUENCE :
1567                 OBJECT IDENTIFIER : [2.23.133.5.1.4]
1568                 UTF8 STRING : 'S2600KP'
1569         SET :
1570             SEQUENCE :
1571                 OBJECT IDENTIFIER : [2.23.133.5.1.5]
1572                 UTF8 STRING : 'H76962-350'
1573         SET :
1574             SEQUENCE :
1575                 OBJECT IDENTIFIER : [2.23.133.5.1.6]
1576                 UTF8 STRING : 'BQKP99940643'
1577 SEQUENCE :
1578     OBJECT IDENTIFIER : [2.5.29.55]
1579     BOOLEAN : 'FF'
1580     OCTET STRING :
1581     SEQUENCE :
1582     SEQUENCE :
1583         CONTEXT SPECIFIC (0) :
1584         CONTEXT SPECIFIC (4) :
1585             SEQUENCE :
1586                 SET :
1587                     SEQUENCE :
1588                         OBJECT IDENTIFIER : countryName [2.5.4.6]
1589                         PRINTABLE STRING : 'US'
1590                 SET :
1591                     SEQUENCE :
1592                         OBJECT IDENTIFIER : stateOrProvinceName [2.5.4.8]
1593                         UTF8 STRING : 'CA'
1594                 SET :
1595                     SEQUENCE :
1596                         OBJECT IDENTIFIER : localityName [2.5.4.7]
1597                         UTF8 STRING : 'Santa Clara'
1598                 SET :
1599                     SEQUENCE :
1600                         OBJECT IDENTIFIER : organizationName [2.5.4.10]
1601                         UTF8 STRING : 'Intel Corporation'
1602                 SET :
1603                     SEQUENCE :
1604                         OBJECT IDENTIFIER : organizationalUnitName [2.5.4.11]
1605                         UTF8 STRING : 'EK Certificate Issuer'
1606                 SET :
1607                     SEQUENCE :
1608                         OBJECT IDENTIFIER : commonName [2.5.4.3]
1609                         UTF8 STRING : 'www.intel.com'
1610                 SET :
1611                     SEQUENCE :
1612                         OBJECT IDENTIFIER : serialNumber [2.5.4.5]
1613                         PRINTABLE STRING : '128943787'
1614 SEQUENCE :
1615     OBJECT IDENTIFIER : authorityKeyIdentifier [2.5.29.35]
1616     OCTET STRING :
1617     SEQUENCE :
1618         CONTEXT SPECIFIC (0) : D46990260281D55E834B03976EAB8A9F8F84C983
1619 SEQUENCE :
1620     OBJECT IDENTIFIER : authorityInfoAccess [1.3.6.1.5.5.7.1.1]
1621     OCTET STRING :
1622     SEQUENCE :
1623     SEQUENCE :

```

```

1624             OBJECT IDENTIFIER : ocsip [1.3.6.1.5.5.7.48.1]
1625             CONTEXT SPECIFIC (6) : 'https://www.intel.com/ocsip'
1626 SEQUENCE :
1627     OBJECT IDENTIFIER : cRLDistributionPoints [2.5.29.31]
1628     OCTET STRING :
1629         SEQUENCE :
1630             SEQUENCE :
1631                 CONTEXT SPECIFIC (0) :
1632                 CONTEXT SPECIFIC (0) :
1633                 CONTEXT SPECIFIC (6) : 'https://www.intel.com/platformcert.crl'
1634 SEQUENCE :
1635     OBJECT IDENTIFIER : [1.2.840.113549.1.1.11]
1636     NULL :
1637 BIT STRING UnusedBits:0 :
1638     AAEB0FD2FDCB81F265232255658B624F7E46D2FAFD939817F4B085
1639     0F74F7D4FDA1F5E8D3DCB5ABDF884BE93E5D6E586B72E9FA18F2C0
1640     2AE42844537FCA6C8D33698ED7D188E9729E587D8A99645AA0AC39
1641     B27BEA394F9FAC02724E8CDAC77481141B26071B8EC8B28826263E
1642     E2D6545C17B2550894D43864295AA54C285DFF55F7D627CE17284F
1643     A76D360262E7F2607471510D53AD2C79B109F47409D6F017658DCF
1644     B3A5A349043C5D94276129E7D94B07F761CE79D1DDD00EA31E907F
1645     F7FBEF4C26124EEFD0622F40A45E2E600182E2E4D525E17F52FC9B
1646     FE85C6835A2FE012D079B3B737AED132A180728FFF0C9C421C4C2
1647     1B2F672239DD450ED7BB092C82
1648
1649

```

## 1650 A.2 Example 2 (Delta Platform Certificate in Attribute Certificate 1651 Format)

1652 The following section provides an example of a Delta Platform Certificate in Attribute  
1653 Certificate format (RFC 5755) [11]. The PEM encoded version of the certificate as well as the  
1654 ASN.1 certificate text are included for convenience. The values used in this example are for  
1655 illustrative purposes and must be replaced with manufacturer-specific data.

### 1656 A.2.1 PEM Format

```

1657 -----BEGIN ATTRIBUTE CERTIFICATE-----
1658
1659 MIIKkzCCCXsCAQEwgbaggbMwgZqkgZcwgZQxCzAJBgNVBAYTA1VTMQswCQYDVQQI
1660 DAJDQTEUMBIGAlUEBwwLU2FudGEgQ2xhcmlExGjAYBgNVBAoMEU1udGVsIENvcnBv
1661 cmF0aW9uMS4wLWVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1662 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1663 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1664 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1665 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1666 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1667 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1668 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1669 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1670 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1671 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu
1672 dGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVudGVu

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1772         SET :
1773             SEQUENCE :
1774                 OBJECT IDENTIFIER : organizationalUnitName [2.5.4.11]
1775                 UTF8 STRING : 'Delta Platform Attribute Certificate Issuer'
1776         SET :
1777             SEQUENCE :
1778                 OBJECT IDENTIFIER : commonName [2.5.4.3]
1779                 UTF8 STRING : 'www.xyzintegrators.com'
1780     SEQUENCE :
1781         OBJECT IDENTIFIER : [1.2.840.113549.1.1.11]
1782     NULL :
1783     INTEGER : 34928388
1784     SEQUENCE :
1785         GENERALIZED TIME : '20181015210811Z'
1786         GENERALIZED TIME : '20200820210811Z'
1787     SEQUENCE :
1788         SEQUENCE :
1789             OBJECT IDENTIFIER : [2.23.133.2.25]
1790         SET :
1791             SEQUENCE :
1792                 OBJECT IDENTIFIER : [2.23.133.8.5]
1793     SEQUENCE :
1794         OBJECT IDENTIFIER : [2.23.133.2.23]
1795     SET :
1796         SEQUENCE :
1797             INTEGER : 1
1798             INTEGER : 1
1799             INTEGER : 13
1800     SEQUENCE :
1801         OBJECT IDENTIFIER : [2.23.133.5.1.7.2]
1802     SET :
1803         SEQUENCE :
1804             CONTEXT SPECIFIC (0) :
1805                 SEQUENCE :
1806                     SEQUENCE :
1807                         OBJECT IDENTIFIER : [2.23.133.18.3.1]
1808                         OCTET STRING : 0000000A
1809                         UTF8 STRING : 'ABC OEM'
1810                         UTF8 STRING : 'WR06X7871FTL'
1811                         CONTEXT SPECIFIC (0) : 41353535352D393939
1812                         CONTEXT SPECIFIC (1) : 312E31
1813                         CONTEXT SPECIFIC (2) : 2B06010401822C
1814                         CONTEXT SPECIFIC (3) : FF
1815                         CONTEXT SPECIFIC (4) :
1816                             SEQUENCE :
1817                                 OBJECT IDENTIFIER : [2.23.133.17.1]
1818                                 UTF8 STRING : 'AF:3A:94:10:A5'
1819                             SEQUENCE :
1820                                 OBJECT IDENTIFIER : [2.23.133.17.2]
1821                                 UTF8 STRING : 'AF:37:10:D2:A8'
1822                         CONTEXT SPECIFIC (5) :
1823                             CONTEXT SPECIFIC (0) :
1824                                 SEQUENCE :
1825                                     OBJECT IDENTIFIER : [1.3.6.1.4.1.22554.1.2.1]
1826                                     OCTET STRING :
1827     6003A33432FD914B6003A33432FD914B6003A33432FD914B6003A33432FD914B
1828         CONTEXT SPECIFIC (1) :
1829             SEQUENCE :
1830                 CONTEXT SPECIFIC (4) :
1831                     SEQUENCE :
1832                         SET :
1833                             SEQUENCE :
1834                                 OBJECT IDENTIFIER : countryName [2.5.4.6]

```

```

1835             PRINTABLE STRING : 'US'
1836 SET :
1837     SEQUENCE :
1838         OBJECT IDENTIFIER : stateOrProvinceName
1839 [2.5.4.8]
1840             UTF8 STRING : 'FL'
1841 SET :
1842     SEQUENCE :
1843         OBJECT IDENTIFIER : localityName [2.5.4.7]
1844         UTF8 STRING : 'Ft. Lauderdale'
1845 SET :
1846     SEQUENCE :
1847         OBJECT IDENTIFIER : organizationName [2.5.4.10]
1848         UTF8 STRING : 'ABC Corporation'
1849 SET :
1850     SEQUENCE :
1851         OBJECT IDENTIFIER : organizationalUnitName
1852 [2.5.4.11]
1853             UTF8 STRING : 'Platform Certificate Issuer'
1854 SET :
1855     SEQUENCE :
1856         OBJECT IDENTIFIER : commonName [2.5.4.3]
1857         UTF8 STRING : 'www.abc.com'
1858     INTEGER : 43843898843
1859     CONTEXT SPECIFIC (6) :
1860         IA5 STRING : 'https://www.abc.com/certs/43843898843.cer'
1861     CONTEXT SPECIFIC (7) : 02
1862 SEQUENCE :
1863     SEQUENCE :
1864         OBJECT IDENTIFIER : [2.23.133.18.3.1]
1865         OCTET STRING : 00000041
1866         UTF8 STRING : 'Component Corp'
1867         UTF8 STRING : 'XT98287LL'
1868         CONTEXT SPECIFIC (0) : 463938312D3031
1869         CONTEXT SPECIFIC (1) : 322E31
1870         CONTEXT SPECIFIC (2) : 2B060104018348
1871         CONTEXT SPECIFIC (3) : FF
1872         CONTEXT SPECIFIC (4) :
1873             SEQUENCE :
1874                 OBJECT IDENTIFIER : [2.23.133.17.2]
1875                 UTF8 STRING : '73:9B:92:40:FA'
1876             SEQUENCE :
1877                 OBJECT IDENTIFIER : [2.23.133.17.3]
1878                 UTF8 STRING : '13:3F:98:C5:59'
1879         CONTEXT SPECIFIC (5) :
1880         CONTEXT SPECIFIC (0) :
1881             SEQUENCE :
1882                 OBJECT IDENTIFIER : [1.3.6.1.4.1.22554.1.2.1]
1883                 OCTET STRING :
1884 98AAD59183FAAB9198AAD59183FAAB9198AAD59183FAAB9198AAD59183FAAB91
1885         CONTEXT SPECIFIC (1) :
1886             SEQUENCE :
1887                 CONTEXT SPECIFIC (4) :
1888                     SEQUENCE :
1889                         SET :
1890                             SEQUENCE :
1891                                 OBJECT IDENTIFIER : countryName [2.5.4.6]
1892                                 PRINTABLE STRING : 'US'
1893                         SET :
1894                             SEQUENCE :
1895                                 OBJECT IDENTIFIER : stateOrProvinceName
1896 [2.5.4.8]
1897                                 UTF8 STRING : 'CA'

```

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1898
1899
1900
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1909 [2.5.4.11]
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1951
1952 [2.5.4.8]
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```

```

SET :
  SEQUENCE :
    OBJECT IDENTIFIER : localityName [2.5.4.7]
    UTF8 STRING : 'San Jose'
SET :
  SEQUENCE :
    OBJECT IDENTIFIER : organizationName [2.5.4.10]
    UTF8 STRING : 'Component Corp'
SET :
  SEQUENCE :
    OBJECT IDENTIFIER : organizationalUnitName
    UTF8 STRING : 'Platform Certificate Issuer'
SET :
  SEQUENCE :
    OBJECT IDENTIFIER : commonName [2.5.4.3]
    UTF8 STRING : 'www.component.com'
  INTEGER : 98472878
CONTEXT SPECIFIC (6) :
  IA5 STRING : 'https://www.component.com/certs/98472878.cer'
CONTEXT SPECIFIC (7) : 00
SEQUENCE :
  SEQUENCE :
    OBJECT IDENTIFIER : [2.23.133.18.3.1]
    OCTET STRING : 0000002F
    UTF8 STRING : 'XYZ OEM'
    UTF8 STRING : 'LMBT3904DW1T1G'
    CONTEXT SPECIFIC (0) : 43353535352D353535
    CONTEXT SPECIFIC (1) : 342E30
    CONTEXT SPECIFIC (2) : 2B06010401822C
    CONTEXT SPECIFIC (3) : 00
    CONTEXT SPECIFIC (4) :
      SEQUENCE :
        OBJECT IDENTIFIER : [2.23.133.17.1]
        UTF8 STRING : '82:89:FA:D3:61'
      SEQUENCE :
        OBJECT IDENTIFIER : [2.23.133.17.2]
        UTF8 STRING : 'D4:83:B4:F2:78'
    CONTEXT SPECIFIC (5) :
      CONTEXT SPECIFIC (0) :
        SEQUENCE :
          OBJECT IDENTIFIER : [1.3.6.1.4.1.22554.1.2.1]
          OCTET STRING : 3432E1414B60973434323432E1414B6097343432
          CONTEXT SPECIFIC (1) :
            SEQUENCE :
              CONTEXT SPECIFIC (4) :
                SEQUENCE :
                  SET :
                    SEQUENCE :
                      OBJECT IDENTIFIER : countryName [2.5.4.6]
                      PRINTABLE STRING : 'US'
                  SET :
                    SEQUENCE :
                      OBJECT IDENTIFIER : stateOrProvinceName
                      UTF8 STRING : 'AZ'
                SET :
                  SEQUENCE :
                    OBJECT IDENTIFIER : localityName [2.5.4.7]
                    UTF8 STRING : 'Phoenix'
                SET :
                  SEQUENCE :
                    OBJECT IDENTIFIER : organizationName [2.5.4.10]

```



```

1961                                     UTF8 STRING : 'XYC Company'
1962 SET :
1963 SEQUENCE :
1964     OBJECT IDENTIFIER : organizationalUnitName
1965 [2.5.4.11]
1966                                     UTF8 STRING : 'Platform Certificate Issuer'
1967 SET :
1968 SEQUENCE :
1969     OBJECT IDENTIFIER : commonName [2.5.4.3]
1970     UTF8 STRING : 'www.xyz.com'
1971     INTEGER : 938928
1972     CONTEXT SPECIFIC (6) :
1973         IA5 STRING : 'https://www.xyz.com/certs/938928.cer'
1974     CONTEXT SPECIFIC (7) : 01
1975     CONTEXT SPECIFIC (1) :
1976         IA5 STRING : 'https://www.xyzintegrators.com/platformidentifiers.xml'
1977     CONTEXT SPECIFIC (2) :
1978         SEQUENCE :
1979             UTF8 STRING : 'TSC Enabled'
1980             UTF8 STRING : 'true'
1981             CONTEXT SPECIFIC (0) : 00
1982         SEQUENCE :
1983             UTF8 STRING : 'AMT'
1984             UTF8 STRING : 'false'
1985             CONTEXT SPECIFIC (0) : 01
1986     CONTEXT SPECIFIC (3) :
1987         IA5 STRING : 'https://www.xyzintegrators.com/platformproperties.xml'
1988 SEQUENCE :
1989     OBJECT IDENTIFIER : [2.23.133.5.1.3]
1990 SET :
1991     SEQUENCE :
1992         IA5 STRING : 'https://www.xyzintegrators.com/PCRs_V2.xml'
1993 SEQUENCE :
1994     SEQUENCE :
1995         OBJECT IDENTIFIER : certificatePolicies [2.5.29.32]
1996         OCTET STRING :
1997             SEQUENCE :
1998                 SEQUENCE :
1999                     OBJECT IDENTIFIER : [1.2.840.2983.3.1.2]
2000                     SEQUENCE :
2001                         SEQUENCE :
2002                             OBJECT IDENTIFIER : cps [1.3.6.1.5.5.7.2.1]
2003                             IA5 STRING : 'https://www.xyzintegrators.com/platcertcps.pdf'
2004                         SEQUENCE :
2005                             OBJECT IDENTIFIER : unotice [1.3.6.1.5.5.7.2.2]
2006                             SEQUENCE :
2007                                 UTF8 STRING : 'TCG Trusted Platform Endorsement'
2008 SEQUENCE :
2009     OBJECT IDENTIFIER : subjectAltName [2.5.29.17]
2010     OCTET STRING :
2011         SEQUENCE :
2012             CONTEXT SPECIFIC (4) :
2013                 SEQUENCE :
2014                     SET :
2015                         SEQUENCE :
2016                             OBJECT IDENTIFIER : [2.23.133.5.1.1]
2017                             UTF8 STRING : 'Intel'
2018                     SET :
2019                         SEQUENCE :
2020                             OBJECT IDENTIFIER : [2.23.133.5.1.2]
2021                             SEQUENCE :
2022                                 OBJECT IDENTIFIER : [1.3.6.1.4.1.343]
2023                     SET :

```

```

2024          SEQUENCE :
2025              OBJECT IDENTIFIER : [2.23.133.5.1.4]
2026              UTF8 STRING : 'S2600KP'
2027          SET :
2028              SEQUENCE :
2029                  OBJECT IDENTIFIER : [2.23.133.5.1.5]
2030                  UTF8 STRING : 'H76962-350'
2031          SET :
2032              SEQUENCE :
2033                  OBJECT IDENTIFIER : [2.23.133.5.1.6]
2034                  UTF8 STRING : 'BQKP99940643'
2035          SEQUENCE :
2036              OBJECT IDENTIFIER : [2.5.29.55]
2037              BOOLEAN : 'FF'
2038              OCTET STRING :
2039                  SEQUENCE :
2040                      SEQUENCE :
2041                          CONTEXT SPECIFIC (0) :
2042                          CONTEXT SPECIFIC (4) :
2043                              SEQUENCE :
2044                                  SET :
2045                                      SEQUENCE :
2046                                          OBJECT IDENTIFIER : countryName [2.5.4.6]
2047                                          PRINTABLE STRING : 'US'
2048                                  SET :
2049                                      SEQUENCE :
2050                                          OBJECT IDENTIFIER : stateOrProvinceName [2.5.4.8]
2051                                          UTF8 STRING : 'TX'
2052                                  SET :
2053                                      SEQUENCE :
2054                                          OBJECT IDENTIFIER : localityName [2.5.4.7]
2055                                          UTF8 STRING : 'Austin'
2056                                  SET :
2057                                      SEQUENCE :
2058                                          OBJECT IDENTIFIER : organizationName [2.5.4.10]
2059                                          UTF8 STRING : 'XYZ Integrator'
2060                                  SET :
2061                                      SEQUENCE :
2062                                          OBJECT IDENTIFIER : organizationalUnitName [2.5.4.11]
2063                                          UTF8 STRING : 'EK Certificate Issuer'
2064                                  SET :
2065                                      SEQUENCE :
2066                                          OBJECT IDENTIFIER : commonName [2.5.4.3]
2067                                          UTF8 STRING : 'www.xyzintegrators.com'
2068                                  SET :
2069                                      SEQUENCE :
2070                                          OBJECT IDENTIFIER : serialNumber [2.5.4.5]
2071                                          PRINTABLE STRING : '32873872'
2072          SEQUENCE :
2073              OBJECT IDENTIFIER : authorityKeyIdentifier [2.5.29.35]
2074              OCTET STRING :
2075                  SEQUENCE :
2076                      CONTEXT SPECIFIC (0) : D46990260281D55E834B03976EAB8A9F8F84C983
2077          SEQUENCE :
2078              OBJECT IDENTIFIER : authorityInfoAccess [1.3.6.1.5.5.7.1.1]
2079              OCTET STRING :
2080                  SEQUENCE :
2081                      SEQUENCE :
2082                          OBJECT IDENTIFIER : ocsp [1.3.6.1.5.5.7.48.1]
2083                          CONTEXT SPECIFIC (6) : 'https://www.xyzintegrators.com/ocsp'
2084          SEQUENCE :
2085              OBJECT IDENTIFIER : cRLDistributionPoints [2.5.29.31]
2086              OCTET STRING :

```

```
2087          SEQUENCE :
2088          SEQUENCE :
2089          CONTEXT SPECIFIC (0) :
2090          CONTEXT SPECIFIC (0) :
2091          CONTEXT SPECIFIC (6) :
2092 'https://www.xyzintegrators.com/platformcert.crl'
2093 SEQUENCE :
2094   OBJECT IDENTIFIER : [1.2.840.113549.1.1.11]
2095   NULL :
2096   BIT STRING UnusedBits:0 :
2097   6C772B5ED10A2C44DF64CF078BB9D937A843195AF7344ECB04CE01
2098   50CB6B435AE267EA9ADDE64D8B8486409B627617F6CA9AD0A09898
2099   14D38E33BB2E774E3BB522B10B31F2F2930C3550E84DDEB7179EA9
2100   D898F20E11BFEB759C2F079DAF9467E2EFFAB5337BF15A3A25C7E2
2101   B9FA9312BB8EC19EDA55480BBAAF2335A78DC179920C4E4374AA16
2102   65895455E3D8552A6AE3F859B0D0107FC7F8582BF1053942AFE4EA
2103   73D95ECD421B770A65F7123907AB17B9D63A009D0A56D0A667D2F8
2104   F5B3D744566EFC7AB3DF8423EDCACB419742B7EADE499B33A3B099
2105   F82BF56324A07253881471F242BE6CE6DDEC68CD3931AF6EB1D84E
2106   C956145E5A0C1EFC99DFA327C0
2107
```