



**Electronic Signatures and Infrastructures (ESI);
Procedures for Creation and Validation of
AdES Digital Signatures;
Part 2: Signature Validation Report**

iTeh (Standards) Review
Full Standard ETSI TS 119 102-2 v1.1.1 (2018-08)
<https://standards.iteh.ai/catalog/2018-08-30-1b06-4b5f-953a-5deec7b6934/etsi-ts-119-102-2-v1.1.1-2018-08>



ReferenceDTS/ESI-0019102-2

Keywords

electronic signature, trust services, validation

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.
Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2018.
All rights reserved.

DECT™, PLUGTESTS™, UMTS™ and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are trademarks of ETSI registered for the benefit of its Members and
of the 3GPP Organizational Partners.

oneM2M logo is protected for the benefit of its Members.
GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	9
Foreword.....	9
Modal verbs terminology.....	9
1 Scope	10
2 References	10
2.1 Normative references	10
2.2 Informative references.....	10
3 Definitions and abbreviations.....	11
3.1 Definitions	11
3.2 Abbreviations	13
4 Signature Validation Report Structure	13
4.1 General provisions.....	13
4.1.1 Report Structure	13
4.1.1.1 General.....	13
4.1.1.2 Validation Object Reference Element.....	17
4.1.1.2.1 General	17
4.1.1.2.2 XML	17
4.1.1.3 Typed Data Type.....	17
4.1.1.3.1 General	17
4.1.1.3.2 XML	18
4.1.1.4 Signature Reference	18
4.1.1.4.1 General	18
4.1.1.4.2 XML	18
4.2 Validation-Report-Element	18
4.2.1 General.....	18
4.2.2 XML	19
4.3 Signature-Validation-Report-Element	19
4.3.1 General.....	19
4.3.2 XML	19
4.3.3 Signature Identification Element	20
4.3.3.1 Element Semantics	20
4.3.3.2 XML representation	20
4.3.4 Signature Validation Status Indication	21
4.3.4.1 General	21
4.3.4.2 Main Status Indication Element	21
4.3.4.3 Status Sub-Indication Element	22
4.3.4.4 XML representation	23
4.3.5 Validation Constraints Evaluation Report	24
4.3.5.1 General	24
4.3.5.2 XML	24
4.3.5.3 Formal Policy Element	24
4.3.5.3.1 General	24
4.3.5.3.2 XML	25
4.3.5.4 Individual Validation Constraint Report Element	25
4.3.5.4.1 General	25
4.3.5.4.2 XML	26
4.3.6 Signature Validation Time Info	27
4.3.6.1 General	27
4.3.6.2 XML	27
4.3.7 Signer's Document Element	27
4.3.7.1 General	27
4.3.7.2 XML	28
4.3.8 Signature Attribute Element	28
4.3.8.1 General	28

4.3.8.2	XML.....	28
4.3.9	Signer Information Element.....	29
4.3.9.1	General.....	29
4.3.9.2	XML.....	29
4.3.10	Signature Quality Element.....	29
4.3.10.1	General.....	29
4.3.10.2	XML.....	30
4.3.11	Signature Validation Process Information Element.....	30
4.3.11.1	General.....	30
4.3.11.1	XML.....	30
4.3.12	Associated Validation Report Data Element	31
4.3.12.1	General	31
4.3.12.2	XML.....	31
4.3.12.3	Trust Anchor Element.....	31
4.3.12.3.1	General	31
4.3.12.3.2	XML	31
4.3.12.4	Certificate Chain Element	31
4.3.12.4.1	General	31
4.3.12.4.2	XML	32
4.3.12.5	Signed Data Objects Element.....	32
4.3.12.5.1	General	32
4.3.12.5.2	XML	32
4.3.12.6	Revocation Status Information Element.....	32
4.3.12.6.1	General	32
4.3.12.6.2	XML	33
4.3.12.7	Crypto Information Element	33
4.3.12.7.1	General	33
4.3.12.7.2	XML	34
4.3.12.8	Additional Validation Report Data	34
4.3.12.8.1	General	34
4.3.12.8.2	XML	35
4.4	Signature Validation Objects.....	35
4.4.1	General.....	35
4.4.2	XML	35
4.4.3	Object Identifier.....	36
4.4.4	Object Type	36
4.4.5	Validation Object.....	36
4.4.5.1	General	36
4.4.5.2	XML.....	37
4.4.6	Proof of Existence (POE)	37
4.4.6.1	General	37
4.4.6.2	XML.....	37
4.4.7	POE Provisioning	38
4.4.7.1	General	38
4.4.7.2	XML.....	38
4.4.8	Validation Object validation report.....	38
4.5	Validator Information.....	38
4.5.1	General.....	38
4.5.2	XML	39
4.6	Validation Report Signature	39
Annex A (normative):	Signature attribute representation.....	40
A.1	SignatureAttributesType	40
A.1.1	General	40
A.1.2	XML.....	40
A.2	SigningTime	41
A.2.1	General	41
A.2.2	XML.....	41
A.2.3	CAdES.....	41
A.2.4	XAdES	42
A.2.5	PAdES	42

A.3	SigningCertificate.....	42
A.3.1	General	42
A.3.2	XML.....	42
A.3.3	CAdES.....	43
A.3.4	XAdES	43
A.3.5	PAdES	43
A.4	DataObjectFormat.....	44
A.4.1	General	44
A.4.2	XML.....	44
A.4.3	CAdES.....	44
A.4.4	XAdES	44
A.4.5	PAdES	44
A.5	CommitmentTypeIndication	44
A.5.1	General	44
A.5.2	XML.....	45
A.5.3	CAdES.....	45
A.5.4	XAdES	45
A.5.5	PAdES	45
A.6	AllDataObjectsTimeStamp	45
A.6.1	General	45
A.6.2	XML.....	45
A.6.3	CAdES.....	46
A.6.4	XAdES	46
A.6.5	PAdES	46
A.7	IndividualDataObjectsTimeStamp	46
A.7.1	General	46
A.7.2	XML.....	46
A.7.3	XAdES	46
A.7.4	PAdES	47
A.8	SignaturePolicyIdentifier.....	47
A.8.1	General	47
A.8.2	XML.....	47
A.8.3	CAdES.....	47
A.8.4	XAdES	47
A.8.5	PAdES	47
A.9	SignatureProductionPlace	47
A.9.1	General	47
A.9.2	XML.....	48
A.9.3	CAdES.....	48
A.9.4	XAdES	48
A.9.5	PAdES	48
A.10	SignerRole	48
A.10.1	General	48
A.10.2	XML.....	48
A.10.3	CAdES.....	49
A.10.4	XAdES	49
A.10.5	PAdES	50
A.11	CounterSignature.....	50
A.11.1	General	50
A.11.2	XML.....	50
A.11.3	CAdES.....	50
A.11.4	XAdES	50
A.11.5	PAdES	50
A.12	SignatureTimeStamp.....	50
A.12.1	General	50
A.12.2	XML.....	51

A.12.3	CAdES	51
A.12.4	XAdES	51
A.12.5	PAdES	51
A.13	CompleteCertificateRefs	51
A.13.1	General	51
A.13.2	XML	51
A.13.3	CAdES	51
A.13.4	XAdES	52
A.13.5	PAdES	52
A.14	CompleteRevocationRefs	52
A.14.1	General	52
A.14.2	XML	53
A.14.3	CAdES	53
A.14.4	XAdES	53
A.14.5	PAdES	54
A.15	AttributeCertificateRefs	54
A.15.1	General	54
A.15.2	XML	54
A.15.3	CAdES	54
A.15.4	XAdES	55
A.15.5	PAdES	55
A.16	AttributeRevocationRefs	55
A.16.1	General	55
A.16.2	XML	55
A.16.3	CAdES	55
A.16.4	XAdES	56
A.16.5	PAdES	56
A.17	SigAndRefsTimeStamp	56
A.17.1	General	56
A.17.2	XML	56
A.17.3	CAdES	56
A.17.4	XAdES	56
A.17.5	PAdES	57
A.18	RefsOnlyTimeStamp	57
A.18.1	General	57
A.18.2	XML	57
A.18.3	CAdES	57
A.18.4	XAdES	57
A.18.5	PAdES	57
A.19	CertificateValues	58
A.19.1	General	58
A.19.2	XML	58
A.19.3	CAdES	58
A.19.4	XAdES	58
A.19.5	PAdES	58
A.20	RevocationValues	58
A.20.1	General	58
A.20.2	XML	58
A.20.3	CAdES	58
A.20.4	XAdES	59
A.20.5	PAdES	59
A.21	AttrAuthoritiesCertValues	59
A.21.1	General	59
A.21.2	XML	59
A.21.3	XAdES	59
A.21.4	PAdES	59

A.22 AttributeRevocationValues	60
A.22.1 General	60
A.22.2 XML	60
A.22.3 XAdES	60
A.22.4 PAdES	60
A.23 TimeStampValidationData	60
A.23.1 General	60
A.23.2 XML	60
A.23.3 XAdES	61
A.23.4 PAdES	61
A.24 ArchiveTimeStamp	61
A.24.1 General	61
A.24.2 XML	61
A.24.3 CAdES	61
A.24.4 XAdES	62
A.24.5 PAdES	62
A.25 RenewedDigests	62
A.25.1 General	62
A.25.2 XML	62
A.25.3 XAdES	62
A.26 MessageDigest	63
A.26.1 General	63
A.26.2 XML	63
A.26.3 CAdES	63
A.26.4 PAdES	63
A.27 DSS	63
A.27.1 General	63
A.27.2 XML	63
A.27.3 PAdES	64
A.28 VRI	64
A.28.1 General	64
A.28.2 XML	64
A.28.3 PAdES	65
A.29 DocTimeStamp	65
A.29.1 General	65
A.29.2 XML	65
A.29.3 PAdES	65
A.30 Reason	66
A.30.1 General	66
A.30.2 XML	66
A.30.3 PAdES	66
A.31 Name	66
A.31.1 General	66
A.31.2 XML	66
A.31.3 PAdES	66
A.32 ContactInfo	67
A.32.1 General	67
A.32.2 XML	67
A.32.3 PAdES	67
A.33 SubFilter	67
A.33.1 General	67
A.33.2 XML	67
A.33.3 PAdES	68
A.34 ByteRange	68

A.34.1	General	68
A.34.2	XML.....	68
A.34.3	PAdES	68
A.35	Filter	68
A.35.1	General	68
A.35.2	XML.....	68
A.35.3	PAdES	69
Annex B (normative):	XML Schema.....	70
History		71

iTeh STANDARD PREVIEW
(Standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/8b0b2e30-1b06-4b5f-953a-5dceec7b6934/etsi-ts-119-102-2-v1.1.1-2018-08>

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Electronic Signatures and Infrastructures (ESI).

The present document is part 2 of a multi-part deliverable covering Procedures for Creation and Validation of AdES Digital Signatures, as identified below:

Part 1: "Creation and Validation":

Part 2: "Signature Validation Report".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

1 Scope

The present document specifies a general structure and an XML format for reporting the validation of AdES digital signatures (specified in ETSI EN 319 122-1 [i.1], ETSI EN 319 132-1 [4], ETSI EN 319 142-1 [i.3] respectively). The present document is aligned with the requirements specified in ETSI TS 119 102-1 [1].

2 References

2.1 Normative references

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

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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

[1] ETSI TS 119 102-1 (V1.2.1): "Electronic Signatures and Infrastructures (ESI); Procedures for Creation and Validation of AdES Digital Signatures; Part 1: Creation and Validation".

[2] W3C Recommendation: "XML-Signature Syntax and Processing Version 1.1", D. Eastlake et al., April 2013.

NOTE: Available at <http://www.w3.org/TR/xmldsig-core/>.

[3] ETSI TS 101 903 (V1.3.2): "XML Advanced Electronic Signatures (XAdES)".

[4] ETSI EN 319 132-1: "Electronic Signatures and Infrastructures (ESI); XAdES digital signatures; Part 1: Building blocks and XAdES baseline signatures".

[5] ETSI EN 319 132-2: "Electronic Signatures and Infrastructures (ESI); XAdES digital signatures; Part 2: Extended XAdES signatures".

[6] ETSI TS 119 612: "Electronic Signatures and Infrastructures (ESI); Trusted Lists".

[7] ETSI TS 119 312: "Electronic Signatures and Infrastructures (ESI); Cryptographic Suites".

[8] IETF RFC 3061: "A URN Namespace of Object Identifiers".

[9] ISO 32000-1:2008: "Document management - Portable document format - Part 1: PDF 1.7".

[10] W3C Recommendation: "XML Schema Definition Language (XSD) 1.1 Part 1: Structures".

NOTE: Available at <https://www.w3.org/TR/xmlschema11-1/>.

[11] ETSI TS 119 172-1: "Electronic Signatures and Infrastructures (ESI); Signature Policies; Part 1: Building blocks and table of contents for human readable signature policy documents".

[12] IETF RFC 5035: "Enhanced Security Services (ESS) Update: Adding CertID Algorithm Agility".

2.2 Informative references

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

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI EN 319 122-1: "Electronic Signatures and Infrastructures (ESI); CAdES digital signatures; Part 1: Building blocks and CAdES baseline signatures".
- [i.2] ETSI EN 319 122-2: "Electronic Signatures and Infrastructures (ESI); CAdES digital signatures; Part 2: Extended CAdES signatures".
- [i.3] ETSI EN 319 142-1: "ETSI EN 319 142 1: "Electronic Signatures and Infrastructures (ESI); PAdES digital signatures; Part 1: Building blocks and PAdES baseline signatures".
- [i.4] ETSI EN 319 142-2: "Electronic Signatures and Infrastructures (ESI); PAdES digital signatures; Part 2: Additional PAdES signatures profiles".
- [i.6] IETF RFC 4998: "Evidence Record Syntax (ERS)".
- [i.7] IETF RFC 6283: "Extensible Markup Language Evidence Record Syntax (XMLERS)".
- [i.8] Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.
- [i.9] Recommendation ITU-R TF.460-6: "Standard-frequency and time-signal emissions".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

AdES (digital) signature: digital signature that is either a CAdES signature, or a PAdES signature or a XAdES signature

advanced electronic signature: As defined in Regulation (EU) No 910/2014 [i.8].

CAdES signature: digital signature that satisfies the requirements specified within ETSI EN 319 122-1 [i.1] or ETSI EN 319 122-2 [i.2]

certificate: See public key certificate.

certificate revocation list: signed list indicating a set of certificates that are no longer considered valid by the certificate issuer

claimed signing time: time of signing claimed by the signer which on its own does not provide independent evidence of the actual signing time

Coordinated Universal Time (UTC): time scale based on the second as defined in Recommendation ITU-R TF.460-6 [i.9]

data object: actual binary/octet data being operated on (transformed, digested, or signed) by an application

data to be signed formatted: data created from the data to be signed objects by formatting them and placing them in the correct sequence for the computation of the data to be signed representation

data to be signed representation: hash of the data to be signed formatted, which is used to compute the digital signature value

digital signature: data appended to, or a cryptographic transformation of a data unit that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against forgery e.g. by the recipient

digital signature value: result of the cryptographic transformation of a data unit that allows a recipient of the data unit to prove the source and integrity of the data unit and protect against forgery e.g. by the recipient

evidence record: unit of data, which can be used to prove the existence of an archived data object or an archived data object group at a certain time

NOTE: See IETF RFC 4998 [i.6] and IETF RFC 6283 [i.7].

PAdES signature: digital signature that satisfies the requirements specified within ETSI EN 319 142-1 [i.3] or ETSI EN 319 142-2 [i.4]

proof of existence: evidence that proves that an object existed at a specific date/time

public key: in a public key cryptographic system, that key of an entity's key pair which is publicly known

public key certificate: public key of an entity, together with some other information, rendered unforgeable by digital signature with the private key of the certification authority which issued it

qualified electronic signature: As defined in Regulation (EU) No 910/2014 [i.8].

signature attribute: signature property

signature validation application: application that validates a signature against a signature validation policy, and that outputs a status indication (i.e. the signature validation status) and a signature validation report

NOTE: The signature validation application (SVA) is specified in ETSI TS 119 102-1 [1].

signature validation constraint: technical criteria against which a digital signature can be validated, e.g. as specified in ETSI TS 119 102-1 [1].

signature validation policy: set of signature validation constraints processed or to be processed by the signature validation application

signature validation report: comprehensive report of the validation provided by the signature validation application to the driving application and allowing the driving application, and any party beyond the driving application, to inspect details of the decisions made during validation and investigate the detailed causes for the status indication provided by the signature validation application

NOTE: Clause 5.1.3 of ETSI TS 119 102-1 [1] specifies minimum requirements for the content of such a report.

signature validation status: One of the following indications: TOTAL-PASSED, TOTAL-FAILED or INDETERMINATE.

signature validation: process of verifying and confirming that a digital signature is technically valid

signer: entity being the creator of a digital signature

(electronic) time-stamp: data in electronic form which binds other electronic data to a particular time establishing evidence that these data existed at that time

trust anchor: entity that is trusted by a relying party and used for validating certificates in certification paths

trusted list: list that provides information about the status and the status history of the trust services from trust service providers regarding compliance with the applicable requirements and the relevant provisions of the applicable legislation

NOTE: In the context of European Union Member States, as specified in Regulation (EU) No 910/2014 [i.8], it refers to an EU Member State list including information related to the qualified trust service providers for which it is responsible, together with information related to the qualified trust services provided by them.

In the context of non-EU countries or international organizations, it refers to a list meeting the requirements of ETSI TS 119 612 [6] and providing assessment scheme based approval status information about trust services from trust service providers, for compliance with the relevant provisions of the applicable approval scheme and the relevant legislation.

XAdES signature: digital signature that satisfies the requirements specified within ETSI EN 319 132-1 [4] or ETSI EN 319 132-2 [5]

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AdES	Advanced Electronic Signature
CRL	Certificate Revocation List
DA	Driving Application
DSS	Digital Signature Service
DTBSF	Data To Be Signed Formatted
DTBSR	Data To Be Signed Representation
OCSP	Online Certificate Status Protocol
OID	Object IDentifier
POE	Proof Of Existence
SD	Signer's Document
SDR	Signer's Document Representation
SVA	Signature Validation Application
TSP	Trust Service Provider
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
URN	Uniform Resource Name
UTC	Coordinated Universal Time
VRI	Validation Related Information
W3C	World Wide Web Consortium
XML	eXtensible Markup Language

4 Signature Validation Report Structure

4.1 General provisions

4.1.1 Report Structure

4.1.1.1 General

The present document defines the structure of reporting the result of the validation of an AdES digital signature (specified in ETSI EN 319 122-1 [i.1], ETSI EN 319 132-1 [4], ETSI EN 319 142-1 [i.3] respectively). The signature validation application (SVA) is assumed to follow the signature validation model specified in ETSI TS 119 102-1 [1] and illustrated by Figure 1.