Entity Seal Profile of the OASIS Digital Signature Service

Committee Specification

13 February 2007

This Version:
http://docs.oasis-open.org/dss/v1.0/oasis-dss-profiles-eseal-spec-cs-v0.1-r1.html
http://docs.oasis-open.org/dss/v1.0/oasis-dss-profiles-eseal-spec-cs-v0.1-r1.pdf

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Technical Committee:
OASIS Digital Signature Services TC

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Abstract:
This document defines a profile of the OASIS DSS protocol and XML signature for the purpose of creating and verifying entity seals.

Status:
This document was last revised or approved by the OASIS Digital Signature Services TC on the above date. The level of approval is also listed above. Check the current location noted above for possible later revisions of this document. This document is updated periodically on no particular schedule.

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Table of Contents

1 Introduction

The DSS signing and verifying protocols are defined in **[DSSCore]**. As defined in that document, these protocols have a fair degree of flexibility and extensibility. This document profiles the core to support creation and validation of a “seal” created by a given Entity or Organization on electronic data.

The seal is a form of electronic signature which:

a) protects the integrity of the document,

b) includes the time at which the seal was applied proving that the data existed at the given time,

c) includes the identity of the entity requesting the seal,

d) may include a statement of intent for applying the seal.

This profile includes a few options that require further profiling for implementing interoperable systems.

1.1 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this specification are to be interpreted as described in IETF RFC 2119 **[RFC 2119]**. These keywords are capitalized when used to unambiguously specify requirements over protocol features and behavior that affect the interoperability and security of implementations. When these words are not capitalized, they are meant in their natural-language sense.

This specification uses the following typographical conventions in text: `<ns:Element>`, `Attribute`, **Datatype**, `OtherCode`.

1.2 Namespaces

Conventional XML namespace prefixes are used in this document:

- The prefix `dss:` (or no prefix) stands for the DSS core namespace **[Core-XSD]**.
- The prefix `ds:` stands for the W3C XML Signature namespace **[XMLSig]**.
- The prefix xades: stands for the ETSI XML Advanced Electronic Signature namespace **[XAdES]**

Applications MAY use different namespace prefixes, and MAY use whatever namespace defaulting/scoping conventions they desire, as long as they are compliant with the Namespaces in XML specification **[XML-ns]**.

1.3 Normative References

[Core-XSD] S. Drees et al. *DSS Schema*. OASIS, February, 2007

[DSSCore] S. Drees et al. *Digital Signature Service Core Protocols and Elements*. OASIS, February, 2007

[DSS-XAdES] Juan Carlos Cruellas et al. *XAdES Profile of the OASIS Digital Signature Service*

[RFC 2119] S. Bradner. *Key words for use in RFCs to Indicate Requirement Levels.* IETF RFC 2396, August 1998. http://www.ietf.org/rfc/rfc2396.txt.

[XAdES] XML Advanced Electronic Signatures ETSI TS 101 903, February 2002 *(shortly to be re-issued)*

http://pda.etsi.org/pda/home.asp?wki_id=1UFEyx7ORuBCDGED3IiJH

[XML-ns] T. Bray, D. Hollander, A. Layman. *Namespaces in XML.* W3C Recommendation, January 1999.
http://www.w3.org/TR/1999/REC-xml-names-19990114

[XMLSig] D. Eastlake et al. *XML-Signature Syntax and Processing.* W3C Recommendation, February 2002.
http://www.w3.org/TR/1999/REC-xml-names-19990114

2 Profile Features

2.1 Identifier

urn:oasis:names:tc:dss:1.0:profiles:eseal

2.2 Scope

This document profiles the DSS signing and verifying protocols defined in **[DSSCore]** and profiles the XML signature format for entity seals created by a given Entity or Organization on electronic data.

2.3 Relationship To Other Profiles

This document profiles the DSS signing and verifying protocols defined in **[DSSCore]**.

2.4 Signature Object

This profile supports the creation and verification of [XMLSig] signatures as defined in section 5.

2.5 Transport Binding

This profile is transported using the HTTP POST Transport Binding defined in **[DSSCore]**.

2.6 Security Binding

2.6.1 Security Requirements

This profile MUST use security bindings that:

- Authenticates the requester to the DSS server
- Authenticates the DSS server to the DSS client
- Protects the integrity or a request, response and the association of response to the request.
- Optionally, protects the confidentiality of a request and response

The following is recommended to meet these requirements..

2.6.2 TLS X.509 Mutual Authentication

This profile is secured using the TLS X.509 Mutual Authentication Binding defined in **[DSSCore]**.

3 Profile of Signing Protocol

3.1 Element <SignRequest>

3.1.1 Element <OptionalInputs>

The optional inputs from **[DSSCore]:**

- `<dss:ClaimedIdentity>` MUST be supported by the DSS server. This MAY be sent by the client to provide the claimed identity of the requester. If present the `<Name>` element of `<dss:ClaimedIdentity>` MUST be authenticated by the Security Binding.
- `<dss:SignedProperties>` MAY be supported by the DSS server. If present this MAY be used by the client to request the CommitmentTypeIndication property. The CommitmentTypeIndication property is requested using the identifier and value as defined in [DSS-XAdES].

3.1.2 Element <InputDocuments>

At least one of the following types of InputDocuments from **[DSSCore]:**

- `<dss:DocumentHash>`
- `<dss:TransformedData>`

MUST be supported by the DSS server. The DSS client may use either form.

If the client uses an element that is not supported by the server, the server SHOULD return `ResultMinor` set to indicate `NotSupported` and ResultMessage set to text providing further details.

3.2 Element <SignResponse>

3.2.1 Element <Result>

This profile defines no additional `<ResultMinor>` codes.

3.2.2 Element <OptionalOutputs>

This profile requires no optional options.

3.2.3 Element <SignatureObject>

If successful, the server MUST return a <ds:Signature> with the signature properties as defined in section 5.

4 Profile of Verifying Protocol

4.1 Element <VerifyRequest>

4.1.1 Element <OptionalInputs>

This profile places no specific requirements on the optional inputs.

4.1.2 Element <SignatureObject>

The server MUST support `<ds:Signature>`.

4.1.3 Element <InputDocuments>

The at least one of the input document element from **[DSSCore]:**

- `<dss:DocumentHash>`
- `<dss:TransformedData>`

MUST be supported by the DSS server. The DSS client may use either form. Other elements MAY be supported.

4.2 Element <VerifyResponse>

4.2.1 Element <Result>

This profile defines no additional `<ResultMinor>` codes.

4.2.2 Element <OptionalOutputs>

This profile places no specific requirements on the optional outputs.

5 Profile of ESeal Signatures

The signature form used by the profile is an XML Signature as defined in **[XMLSig]**.

The XML signature MUST contain the element `<xades:SignedProperties>` within the element `<xades:QualifyingProperties>` as defined in **[XAdES]** within the `<ds:object>` element of the XML signature.

The following property must be present within the `<xades:SignedProperties>` element:

- `<xades:SigningTime>`

In addition, the following may be present:

- `<xades:CommitmentTypeIndication>`

The following property must be present within a `<ds:SignatureProperty>` element:

- `<dss:RequesterIdentity>`

The digest value of the `<ds:SignatureProperty>` and the `<xades:SignedProperties>` elements shall be included in the signature references.

6 Server Processing Rules

6.1 Sign

In addition to the processing rules define in **[Core-XSD]** the server MUST:

a) ensure that the requester is authorized to request an ESeal,

b) authenticate that requester is as identified in `<dss:RequesterIdentity>` and, if present, `<dss:ClaimedIdentity>`

6.2 Verify

In addition to the processing rules define in **[Core-XSD]** the server MUST:

a) ensure that the properties required in section 5 are present.

A. Acknowledgements

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

Participants:

John Messing, *American Bar Association*
Dallas Powell, *Individual*
Juan Carlos Cruellas, *Individual*
Trevor Perrin, *individual*