Entity Seal Profile of the OASIS Digital Signature Service

2nd Committee Draft, 11 September 2006 (wd-07)

Document identifier: oasis-dss-1.0-profiles-eseal-spec-cd-r2
Location: http://docs.oasis-open.org/dss/
Editor: Nick Pope, individual

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

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

Status:
This is a Public review Draft produced by the OASIS Digital Signature Service Technical Committee. Comments may be submitted to the TC by any person by clicking on "Send A Comment" on the TC home page at: http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=dss.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the Digital Signature Service TC web page at http://www.oasis-open.org/committees/dss/ipr.php.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>1.1</td>
<td>Notation</td>
<td>4</td>
</tr>
<tr>
<td>1.2</td>
<td>Namespaces</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Profile Features</td>
<td>5</td>
</tr>
<tr>
<td>2.1</td>
<td>Identifier</td>
<td>5</td>
</tr>
<tr>
<td>2.2</td>
<td>Scope</td>
<td>5</td>
</tr>
<tr>
<td>2.3</td>
<td>Relationship To Other Profiles</td>
<td>5</td>
</tr>
<tr>
<td>2.4</td>
<td>Signature Object</td>
<td>5</td>
</tr>
<tr>
<td>2.5</td>
<td>Transport Binding</td>
<td>5</td>
</tr>
<tr>
<td>2.6</td>
<td>Security Binding</td>
<td>5</td>
</tr>
<tr>
<td>2.6.1</td>
<td>Security Requirements</td>
<td>5</td>
</tr>
<tr>
<td>2.6.2</td>
<td>TLS X.509 Mutual Authentication</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Profile of Signing Protocol</td>
<td>6</td>
</tr>
<tr>
<td>3.1</td>
<td>Element &lt;SignRequest&gt;</td>
<td>6</td>
</tr>
<tr>
<td>3.1.1</td>
<td>Element &lt;OptionalInputs&gt;</td>
<td>6</td>
</tr>
<tr>
<td>3.1.2</td>
<td>Element &lt;InputDocuments&gt;</td>
<td>6</td>
</tr>
<tr>
<td>3.2</td>
<td>Element &lt;SignResponse&gt;</td>
<td>6</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Element &lt;Result&gt;</td>
<td>6</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Element &lt;OptionalOutputs&gt;</td>
<td>6</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Element &lt;SignatureObject&gt;</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Profile of Verifying Protocol</td>
<td>7</td>
</tr>
<tr>
<td>4.1</td>
<td>Element &lt;VerifyRequest&gt;</td>
<td>7</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Element &lt;OptionalInputs&gt;</td>
<td>7</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Element &lt;SignatureObject&gt;</td>
<td>7</td>
</tr>
<tr>
<td>4.1.3</td>
<td>Element &lt;InputDocuments&gt;</td>
<td>7</td>
</tr>
<tr>
<td>4.2</td>
<td>Element &lt;VerifyResponse&gt;</td>
<td>7</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Element &lt;Result&gt;</td>
<td>7</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Element &lt;OptionalOutputs&gt;</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Profile of ESeal Signatures</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>Server Processing Rules</td>
<td>9</td>
</tr>
<tr>
<td>6.1</td>
<td>Sign</td>
<td>9</td>
</tr>
<tr>
<td>6.2</td>
<td>Verify</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Editorial Issues</td>
<td>Error! Bookmark not defined.</td>
</tr>
<tr>
<td>8</td>
<td>References</td>
<td>10</td>
</tr>
<tr>
<td>8.1</td>
<td>Normative</td>
<td>10</td>
</tr>
</tbody>
</table>

---

Copyright © OASIS Open 2006. All Rights Reserved.
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 Notation

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].
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.
7 References

7.1 Normative

[Core-XSD] T. Perrin et al. DSS Schema. OASIS, (MONTH/YEAR TBD)


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


(XMLSig] D. Eastlake et al. XML-Signature Syntax and Processing. W3C

•
## Appendix A. Revision History

<table>
<thead>
<tr>
<th>Rev</th>
<th>Date</th>
<th>By Whom</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>wd-01</td>
<td>2004-03-07</td>
<td>Nick Pope</td>
<td>Initial version</td>
</tr>
<tr>
<td>wd-02</td>
<td>2004-03-14</td>
<td>Nick Pope</td>
<td>Filling in further details</td>
</tr>
<tr>
<td>wd-03</td>
<td>2004-04-12</td>
<td>Nick Pope</td>
<td>Completing details</td>
</tr>
<tr>
<td>wd-04</td>
<td>2004-06-13</td>
<td>Nick Pope</td>
<td>Updating technical details of carrying &quot;RequesterIdentity&quot;</td>
</tr>
<tr>
<td>wd-05</td>
<td>2004-11-13</td>
<td>Nick Pope</td>
<td>Updating in line with comments from Trevor</td>
</tr>
<tr>
<td>wd-06 / cd-01</td>
<td>2004-12-24</td>
<td>Nick Pope</td>
<td>CD text</td>
</tr>
<tr>
<td>wd-07</td>
<td>2006-06-12</td>
<td>Nick Pope</td>
<td>Revised to align with Core cd-r03. Uses TransformedData instead of Document</td>
</tr>
</tbody>
</table>
Appendix B. Notices

OASIS takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on OASIS's procedures with respect to rights in OASIS specifications can be found at the OASIS website. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementors or users of this specification, can be obtained from the OASIS Executive Director.

OASIS invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights which may cover technology that may be required to implement this specification. Please address the information to the OASIS Executive Director.

Copyright © OASIS Open 2006. All Rights Reserved.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this paragraph are included on all such copies and derivative works.

However, this document itself does not be modified in any way, such as by removing the copyright notice or references to OASIS, except as needed for the purpose of developing OASIS specifications, in which case the procedures for copyrights defined in the OASIS Intellectual Property Rights document must be followed, or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by OASIS or its successors or assigns.

This document and the information contained herein is provided on an “AS IS” basis and OASIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.