XML Timestamping Profile of the OASIS Digital Signature Services

Working Draft 06 (Committee Draft), 28 June 2004

Document identifier:
oasis-dss-1.0-profiles-timestamping-spec-wd-06

Location:
http://www.oasis-open.org/committees/dss

Editor:
Trevor Perrin, individual <trevp@trevp.net>

Contributors:
Dimitri Andivahis, Surety
Juan Carlos Cruellas, individual
Frederick Hirsch, Nokia
Pieter Kasselman, Betrusted
Andreas Kuehne, individual
Paul Madsen, Entrust
John Messing, American Bar Association
Tim Moses, Entrust
Nick Pope, individual
Rich Salz, DataPower
Ed Shallow, Universal Postal Union

Abstract:
This document profiles the OASIS DSS core protocols for the purpose of creating and verifying XML-encoded time-stamps.

Status:
This is a Committee Draft produced by the OASIS Digital Signature Service Technical Committee. Committee members should send comments on this draft to dss@lists.oasis-open.org.

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>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>1 Introduction .......................................................... 3</td>
</tr>
<tr>
<td>36</td>
<td>1.1 Notation .................................................................. 3</td>
</tr>
<tr>
<td>37</td>
<td>1.2 Namespaces ............................................................ 3</td>
</tr>
<tr>
<td>38</td>
<td>2 Profile Features.......................................................... 4</td>
</tr>
<tr>
<td>39</td>
<td>2.1 Identifier .................................................................. 4</td>
</tr>
<tr>
<td>40</td>
<td>2.2 Scope ....................................................................... 4</td>
</tr>
<tr>
<td>41</td>
<td>2.3 Relationship To Other Profiles ..................................... 4</td>
</tr>
<tr>
<td>42</td>
<td>2.4 Signature Object.......................................................... 4</td>
</tr>
<tr>
<td>43</td>
<td>2.5 Transport Binding ............................................................ 4</td>
</tr>
<tr>
<td>44</td>
<td>2.6 Security Binding ............................................................. 4</td>
</tr>
<tr>
<td>45</td>
<td>3 Profile of Signing Protocol ............................................ 5</td>
</tr>
<tr>
<td>46</td>
<td>3.1 Element &lt;SignRequest&gt; .................................................... 5</td>
</tr>
<tr>
<td>47</td>
<td>3.1.1 Element &lt;OptionalInputs&gt; .......................................... 5</td>
</tr>
<tr>
<td>48</td>
<td>3.1.2 Element &lt;InputDocuments&gt; .......................................... 5</td>
</tr>
<tr>
<td>49</td>
<td>3.2 Element &lt;SignResponse&gt; .................................................... 5</td>
</tr>
<tr>
<td>50</td>
<td>3.2.1 Element &lt;Result&gt; ......................................................... 5</td>
</tr>
<tr>
<td>51</td>
<td>3.2.2 Element &lt;OptionalOutputs&gt; .......................................... 5</td>
</tr>
<tr>
<td>52</td>
<td>3.2.3 Element &lt;SignatureObject&gt; .......................................... 5</td>
</tr>
<tr>
<td>53</td>
<td>4 Profile of Verifying Protocol ............................................ 6</td>
</tr>
<tr>
<td>54</td>
<td>4.1 Element &lt;VerifyRequest&gt; .................................................... 6</td>
</tr>
<tr>
<td>55</td>
<td>4.1.1 Element &lt;OptionalInputs&gt; .......................................... 6</td>
</tr>
<tr>
<td>56</td>
<td>4.1.2 Element &lt;SignatureObject&gt; .......................................... 6</td>
</tr>
<tr>
<td>57</td>
<td>4.1.3 Element &lt;InputDocuments&gt; .......................................... 6</td>
</tr>
<tr>
<td>58</td>
<td>4.2 Element &lt;VerifyResponse&gt; .................................................... 6</td>
</tr>
<tr>
<td>59</td>
<td>4.2.1 Element &lt;Result&gt; ......................................................... 6</td>
</tr>
<tr>
<td>60</td>
<td>4.2.2 Element &lt;OptionalOutputs&gt; .......................................... 6</td>
</tr>
<tr>
<td>61</td>
<td>5 Editorial Issues ................................................................. 7</td>
</tr>
<tr>
<td>62</td>
<td>6 References ................................................................... 8</td>
</tr>
<tr>
<td>63</td>
<td>6.1 Normative .................................................................. 8</td>
</tr>
<tr>
<td>64</td>
<td>Appendix A. Revision History .............................................. 9</td>
</tr>
<tr>
<td>65</td>
<td>Appendix B. Notices ............................................................... 10</td>
</tr>
</tbody>
</table>
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 these protocols to limit their flexibility and extend them in concrete ways. The resulting profile is suitable for implementation and interoperability.

The following sections describe how to understand the rest of this document.

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: stands for the DSS core namespace [Core-XSD].

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:timestamping

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

2.3 Relationship To Other Profiles
This profile is based directly on the [DSSCore].

2.4 Signature Object
This profile supports the creation and verification of <dss:Timestamp> elements as defined in [DSSCore]. These elements can wrap different types of time-stamp tokens; this profile does not specify or constrain the internal structure of the <dss:Timestamp>, unless the <dss:SignatureType> optional input is used (see section 3.1.1).

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

2.6 Security Binding
This profile is secured using the TLS X.509 Server Authentication Binding defined in [DSSCore].
3 Profile of Signing Protocol

3.1 Element <SignRequest>

3.1.1 Element <OptionalInputs>

The <dss:SignatureType> optional input from [DSSCore] is supported and may be sent by
the client. No other optional inputs are supported.

The <dss:SignatureType> optional input may be one of these values, from section 7.2 of
[DSSCore]:

- oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken
- urn:ietf:rfc:3161

Servers may support other values. However, servers are under no obligation to support any
particular values. Thus, clients using the <dss:SignatureType> optional input may not
interoperate with certain servers.

3.1.2 Element <InputDocuments>

The client MUST only send <dss:DocumentHash> input documents. The client MUST NOT
send <dss:Document> input documents.

If the client is not sending the <dss:SignatureType> optional input, then the client SHOULD
only send a single input document, since some types of time-stamps (e.g. RFC 3161) can only
cover one document per time-stamp.

If the client is sending the <dss:SignatureType> optional input, then the client MAY send
multiple input documents, if the client knows that the specified time-stamp type can handle them.

3.2 Element <SignResponse>

3.2.1 Element <Result>

This profile defines no additional <ResultMinor> codes.

3.2.2 Element <OptionalOutputs>

The server MUST NOT return any optional outputs.

3.2.3 Element <SignatureObject>

The server MUST return a <dss:Timestamp> signature object.
4 Profile of Verifying Protocol

4.1 Element <VerifyRequest>

4.1.1 Element <OptionalInputs>
The client MUST NOT send any optional inputs.

4.1.2 Element <SignatureObject>
The client MUST send a <dss:Timestamp> signature object.

4.1.3 Element <InputDocuments>

4.2 Element <VerifyResponse>

4.2.1 Element <Result>
This profile defines no additional <dss:ResultMinor> codes.

4.2.2 Element <OptionalOutputs>
The server MUST return the <dss:SigningTime> optional output, as defined in [DSSCore], with its ThirdPartyTimestamp attribute set to False. The <dss:SigningTime> output will indicate when the time-stamp was performed.
The server MUST NOT return any other optional outputs.
5 Editorial Issues

1) What type of signature object should be supported? An <XMLTimeStampToken> (like now) or a more generic <Timestamp>?

This profile supports a generic Timestamp; a profile of this profile could make it more specific.

2) What bindings should be used? A SOAP binding (like now) or a simple HTTP POST binding?

We're referencing an HTTP POST binding, for now.

3) Are the clients required to verify received timestamps? Does this eliminate the need for an authenticated binding in the signing profile?

Right now it says no.
6 References

6.1 Normative

- [Core-XSD] T. Perrin et al. DSS Schema. OASIS, (MONTH/YEAR TBD)
- [DSSCore] T. Perrin et al. Digital Signature Service Core Protocols and Elements. OASIS, (MONTH/YEAR TBD)
## 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>2004-01-06</td>
<td>Trevor Perrin</td>
<td>Initial version</td>
</tr>
<tr>
<td>wd-02</td>
<td>2004-01-20</td>
<td>Trevor Perrin</td>
<td>Added “Type of Signature Object” section, and editorial issues 1-3; organized references</td>
</tr>
<tr>
<td>wd-03</td>
<td>2004-02-03</td>
<td>Trevor Perrin</td>
<td>Reorganized; based around &lt;dss:Timestamp&gt; instead of XMLTimeStampToken.</td>
</tr>
<tr>
<td>Wd-04</td>
<td>2004-02-29</td>
<td>Trevor Perrin</td>
<td>Changed Verify Response to use &lt;SigningTime&gt; optional output.</td>
</tr>
<tr>
<td>Wd-06</td>
<td>2004-06-28</td>
<td>Trevor Perrin</td>
<td>Mentioned as committee draft</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 2003. 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 need to 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.