Digital Signature Service Core Protocols, Elements, and Bindings Version 2.0

Working Draft 01

DD Month YYYY

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Additional artifacts:

This prose specification is one component of a Work Product that also includes:

* JSON and XML schemas: <http://docs.oasis-open.org/dss-x/dss-core/v2.0/csd01/schemas/>

Related work:

This specification replaces or supersedes:

* Stefan Drees et al., Digital Signature Service Core Protocols, Elements, and Bindings, Version 1.0, OASIS Standard, 11 April 2007,  
  <http://docs.oasis-open.org/dss/v1.0/oasis-dss-core-spec-v1.0-os.pdf>

This specification is related to:

* Related specifications (hyperlink, if available)

Declared XML namespaces:

* <http://docs.oasis-open.org/dss-x/ns/dss-core/v2.0/dss>

Abstract:

This document defines JSON and XML based request/response protocols for signing and verifying documents and other data. It also defines a timestamp format, and a signature property for use with these protocols. Finally, it defines transport and security bindings for the protocols.

Status:

This [Working Draft](https://www.oasis-open.org/policies-guidelines/tc-process) (WD) has been produced by one or more TC Members; it has not yet been voted on by the TC or [approved](https://www.oasis-open.org/policies-guidelines/tc-process) as a Committee Draft (Committee Specification Draft or a Committee Note Draft). The OASIS document [Approval Process](https://www.oasis-open.org/policies-guidelines/tc-process) begins officially with a TC vote to approve a WD as a Committee Draft. A TC may approve a Working Draft, revise it, and re-approve it any number of times as a Committee Draft.

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# Introduction

## Organization of DSS Core Protocols, Elements, and Bindings

The specification is split into twelve chapters.

## Terminology

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

### Terms and Definitions

For the purposes of this document, the following applies:

**Term** — meaning and maybe ref

### Abbreviated Terms

**Acronym** — Spelled out

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**[XML-PROLOG]** Tim Bray, Jean Paoli, C. M. Sperberg-McQueen, et al. *Prolog and Document Type Declaration* in *Extensible Markup Language (XML) 1.0 (Third Edition)*, W3C Recommendation, 04 February 2004, <http://www.w3.org/TR/REC-xml/#sec-prolog-dtd>

**[XMLDSIG]** *D. Eastlake et al. XML-Signature Syntax and Processing. W3C Recommendation, February 2002.*<http://www.w3.org/TR/2002/REC-xmldsig-core-20020212/>

[XML] Extensible Markup Language (XML) 1.0 (Fifth Edition), T. Bray, J. Paoli, M. Sperberg-McQueen, E. Maler, F. Yergeau, Editors, W3C Recommendation, November 26, 2008, <http://www.w3.org/TR/2008/REC-xml-20081126/>.   
Latest version available at <http://www.w3.org/TR/xml>.

[XML-Schema-1] W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures, S. Gao, M. Sperberg-McQueen, H. Thompson, N. Mendelsohn, D. Beech, M. Maloney, Editors, W3C Recommendation, April 5, 2012,   
<http://www.w3.org/TR/2012/REC-xmlschema11-1-20120405/>.   
Latest version available at <http://www.w3.org/TR/xmlschema11-1/>.

[XML-Schema-2] W3C XML Schema Definition Language (XSD) 1.1 Part 2: DatatypesW3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes, D. Peterson, S. Gao, A. Malhotra, M. Sperberg-McQueen, H. Thompson, Paul V. Biron, Editors, W3C Recommendation, April 5, 2012,   
<http://www.w3.org/TR/2012/REC-xmlschema11-2-20120405/>.   
Latest version available at <http://www.w3.org/TR/xmlschema11-2/>.

**[XPATH]** XML Path Language (XPath) Version 1.0. W3C Recommendation 16 November 1999 <http://www.w3.org/TR/xpath>

## Non-Normative References

[ISO8601] Data elements and interchange formats — Information interchange — Representation of dates and times, International Standard, ISO 8601:2004(E), December 1, 2004, <https://www.iso.org/standard/40874.html>.

## Typographical Conventions

Keywords defined by this specification use this monospaced font.

Normative source code uses this paragraph style.

Text following the special symbol («) – an opening Guillemet (or French quotation mark) – within this specification identifies conformance statements. Every conformance statement is separated from the following text with the special end symbol (») – a closing Guillemet, and has been assigned a reference that follows that end symbol in the format [dSS-section#-local#].

Some sections of this specification are illustrated with non-normative examples.

Example 1: text describing an example uses this paragraph style

Non-normative examples use this paragraph style.

All examples in this document are non-normative and informative only.

Representation-specific text is indented and marked with vertical lines.

Representation-Specific Headline

Normative representation-specific text

All other text is normative unless otherwise labeled e.g. like:

Non-normative Comment:

This is a pure informative comment that may be present, because the information conveyed is deemed useful advice or common pitfalls learned from implementer or operator experience and often given including the rationale.

# Design Considerations

Blurb

## Construction Principles

## Domain Models

### Date and Time Model

The specific concept of date and time used in this document is defined in this section and noted in subsequent usage as**:**

DateTime

« All date time values inside a DSS document MUST adhere to the ISO 8601 [[ISO8601](#refISO8601)] basic or extended Format (as given there in section 4.3.2 “Complete representations” and with the addition of decimal fractions for seconds, similar to ibid. section 4.2.2.4 “Representations with decimal fraction” but with the full stop (.) being the preferred separator for DSS). » [DSS-2.2.1-1].

## Schema Organization and Namespaces

The structures described in this specification are contained in the schema file **[Core2.0-XSD]**. All schema listings in the current document are excerpts from the schema file. In the case of a disagreement between the schema file and this document, the schema file takes precedence.

This schema is associated with the following XML namespace:

urn:oasis:names:tc:dss:2.0:core:schema

If a future version of this specification is needed, it will use a different namespace.

Conventional XML namespace prefixes are used in the schema:

* The prefix dss2: stands for the DSS core namespace **[DSS2XSD]**.
* The prefix ds: stands for the W3C XML Signature namespace **[XMLDSIG]**.
* The prefix xs: stands for the W3C XML Schema namespace **[Schema1]**.
* The prefix saml: stands for the OASIS SAML Schema namespace **[SAMLCore1.1]**.

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]**.

The following schema fragment defines the XML namespaces and other header information for the DSS core schema:

<xs:schema xmlns:dss2="urn:oasis:names:tc:dss:2.0:core:schema"

xmlns:ds="http://www.w3.org/2000/09/xmldsig#"

xmlns:xs="http://www.w3.org/2001/XMLSchema"

xmlns:saml="urn:oasis:names:tc:SAML:1.0:assertion"

targetNamespace="urn:oasis:names:tc:dss:2.0:core:schema"

elementFormDefault="qualified"

attributeFormDefault="unqualified">

<xs:annotation>

<xs:documentation xml:lang="en">This Schema defines the Digital Signature Service Core Protocols, Elements, and Bindings Committee Draft 1 for Public Review</xs:documentation>

</xs:annotation>

<xs:import namespace="http://www.w3.org/2000/09/xmldsig#" schemaLocation="http://www.w3.org/TR/xmldsig-core/xmldsig-core-schema.xsd"/>

<xs:import namespace="urn:oasis:names:tc:SAML:1.0:assertion" schemaLocation="http://www.oasis-open.org/committees/download.php/3408/oasis-sstc-saml-schema-protocol-1.1.xsd"/>

<xs:import namespace="http://www.w3.org/XML/1998/namespace" schemaLocation="http://www.w3.org/2001/xml.xsd"/>

## DSS Overview (Non-normative)

This specification describes two request/response protocols:

1. a signing protocol and
2. a verifying protocol.

Through these protocols a client can send documents (or document hashes) to a server and receive back a signature on the documents; or send documents (or document hashes) and a signature to a server, and receive back an answer on whether the signature verifies the documents.

The elements in which the protocols are formulated are provided in a format agnostic language and also in JSON and XML format. Provided are additional mappings from the generic to the specific entities.

These protocol operations could be useful in a variety of contexts – for example, they could allow clients to access a single corporate key for signing press releases, with centralized access control, auditing, and archiving of signature requests. They could also allow clients to create and verify signatures without needing complex client software and configuration.

The signing and verifying protocols are chiefly designed to support the creation and verification of XML signatures **[XMLDSIG]**, XML timestamps (see section 5.1), binary timestamps **[RFC 3161]** and CMS signatures **[RFC 3852]**. These protocols may also be extensible to other types of signatures and timestamps, such as PGP signatures **[RFC 2440]**.

It is expected that the signing and verifying protocols will be *profiled* to meet many different application scenarios. In anticipation of this, these protocols have only a minimal set of required elements, which deal with transferring “input documents” and signatures back and forth between client and server. The input documents to be signed or verified can be transferred in their entirety or the client can hash the documents themselves and only send the hash values to save bandwidth and protect the confidentiality of the document content.

All functionality besides transferring input documents and signatures is relegated to a framework of “optional inputs” and “optional outputs”. This document defines a number of optional inputs and outputs. Profiles of these protocols can pick and choose which optional inputs and outputs to support and can introduce their own optional inputs and outputs when they need functionality not anticipated by this specification.

Examples of optional inputs to the signing protocol include: what type of signature to produce, which key to sign with, who the signature is intended for, and what signed and unsigned properties to place in the signature. Examples of optional inputs to the verifying protocol include: the time for which the client would like to know the signature’s validity status, additional validation data necessary to verify the signature (such as certificates and CRLs), and requests for the server to return information such as the signer’s name or the signing time.

The signing and verifying protocol messages must be transferred over some underlying protocol(s) which provide message transport and security. A *binding* specifies how to use the signing and verifying protocols with some underlying protocol such as HTTP POST or TLS. Section 6 provides an initial set of bindings.

In addition to defining the signing and verifying protocols, this specification defines two elements that are related to these protocols. First, an XML timestamp element is defined in section 5.1. The signing and verifying protocols can be used to create and verify both XML and binary timestamps; a profile for doing so is defined in **[XML-TSP]**. Second, a RequesterIdentity element is defined in section 5.2. This element can be used as a signature property in an XML signature, to give the name of the end-user who requested the signature.

## Version 2.0 motivation [non-normative]

The main changes of this version of the DSS/X core document compared to version 1.0 are:

1. include requirements that became known only after publication of version 1.0
2. simplify the core schema, e.g. by dropping elements seldom used.
3. support other transport formats than SOAP.

To guide the implementation and to ease the use of the protocol with common frameworks the following list of requirements was compiled:

* Focus on Base64 as the most versatile way to transport documents and signatures
* Avoid the use of XML specifics (like e.g. mixed content)
* Avoid xs:any by replacing it with an enumeration of possible types, and if that is not feasible, use base64 blobs as a fallback.
* Define cardinality of OptionalInputs and OptionalOutputs child elements explicitly
* Rearrange sequences and choices to produce a strongly typed object model
* The set of comments and bug reports arrived since version DSS 1.0 became standard were respected.

## Syntax variants

This version of the DSS/X core document handles the representation of requests and response elements according to the JSON and XML syntax. The general semantics of the elements is discussed in the element’s main section. Details of the JSON or XML formats are discussed in specific subsections

* JSON syntax
* XML syntax

# Structure Models

## Structure Models defined in this document

### Element AnyType

**Semantics**

The AnyType element holds blobs of arbitrary content .

Below follows a list of the sub-components that MAY be present within this component:

* The Content element MUST occur 1 or more instances containing sub-components.The content element holds one or more data containers described by the same MimeType.
* The Base64Content element MUST contain one instance of base64 encoded binary data.This element holds arbitrary content using the base64 encoding.
* The optional MimeType element MUST contain one instance of a string.The MimeType element gives a hint of the type of content that is encoded within the Base64Content element.

Non-normative Comment:

Non-normative comment related to the InternationalStringType

#### XML Syntax

The XML element SHALL implement in XML syntax the AnyType component.

The AnyType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="AnyType">

<xs:sequence>

<xs:element maxOccurs="unbounded" minOccurs="1" name="Content">

<xs:complexType>

<xs:sequence>

<xs:element name="Base64Content" type="xs:base64Binary"/>

<xs:any maxOccurs="unbounded" minOccurs="0" processContents="lax"/>

</xs:sequence>

<xs:attribute name="MimeType" type="xs:string" use="optional"/>

</xs:complexType>

</xs:element>

</xs:sequence>

</xs:complexType>

Each child element of AnyType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The AnyType XML element SHALL NOT be empty.

[component AnyType XML schema details]

#### JSON Syntax

The AnyType JSON object SHALL implement in JSON syntax the AnyType component.

The AnyType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-AnyType": {

"type": "object",

"properties": {

"content": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-AnyType:Content"

}

}

},

"required": ["content"]

}

"dss-AnyType:Content": {

"type": "object",

"properties": {

"b64Content": {

"type": "string"

},

"mimeType": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Content | content | Holder element for a sub structure. |
| Base64Content | b64Content | [] |
| MimeType | mimeType | [] |

[component AnyType JSON schema details]

### Element InternationalStringType

**Semantics**

The element InternationalStringType attaches an xml:lang attribute to the human-readable string to specify the string’s language.

Below follows a list of the sub-components that MAY be present within this component:

* The value element MUST contain one instance of a string.[sub component value details]
* The lang element MUST contain one instance of an ISO language descriptor.[sub component lang details]

Non-normative Comment:

Non-normative comment related to the InternationalStringType

#### XML Syntax

The XML element SHALL implement in XML syntax the InternationalStringType component.

The InternationalStringType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="InternationalStringType">

<xs:simpleContent>

<xs:extension base="xs:string">

<xs:attribute ref="xml:lang" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

Each child element of InternationalStringType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name. The element 'value' is represented by the component's XML tag text content.

The InternationalStringType XML element SHALL NOT be empty.

[component InternationalStringType XML schema details]

#### JSON Syntax

The InternationalStringType JSON object SHALL implement in JSON syntax the InternationalStringType component.

The InternationalStringType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-InternationalStringType": {

"type": "object",

"properties": {

"value": {

"type": "string"

},

"lang": {

"type": "string"

}

},

"required": ["lang"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | [] |
| lang | lang | [] |

[component InternationalStringType JSON schema details]

### Element InputDocumentsType

**Semantics**

The element InputDocumentsType is used to send input documents to a DSS server, whether for signing or verifying. An input document can be any piece of data that can be used as input to a signature or timestamp calculation. An input document can even be a signature or timestamp (for example, a pre-existing signature can be counter-signed or timestamped). An input document could also be a <ds:Manifest>, allowing the client to handle manifest creation while using the server to create the rest of the signature. Manifest validation is supported by an optional input / output.

Below follows a list of the sub-components that MAY be present within this component:

* The Document element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section DocumentType.[sub component Document details]
* The TransformedData element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section TransformedDataType.This element contains the binary output of a chain of transforms applied by a client as specified in section 4.3.2 of this document.
* The DocumentHash element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section DocumentHashType.This element contains the hash value of an XML document or some other data after a client has applied a sequence of transforms and also computed a hash value as specified in section XXX of this document.

Non-normative Comment:

Any number and combination of input artefacts can be present.

#### XML Syntax

The XML element SHALL implement in XML syntax the InputDocumentsType component.

The InputDocumentsType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="InputDocumentsType">

<xs:choice>

<xs:sequence maxOccurs="unbounded">

<xs:element name="Document" type="dss:DocumentType"/>

</xs:sequence>

<xs:sequence maxOccurs="unbounded">

<xs:element name="TransformedData" type="dss:TransformedDataType"/>

</xs:sequence>

<xs:sequence maxOccurs="unbounded">

<xs:element name="DocumentHash" type="dss:DocumentHashType"/>

</xs:sequence>

</xs:choice>

</xs:complexType>

Each child element of InputDocumentsType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The InputDocumentsType XML element SHALL NOT be empty.

[component InputDocumentsType XML schema details]

#### JSON Syntax

The InputDocumentsType JSON object SHALL implement in JSON syntax the InputDocumentsType component.

The InputDocumentsType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-InputDocumentsType": {

"type": "object",

"properties": {

"doc": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

}

},

"transformed": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-TransformedDataType"

}

},

"docHash": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DocumentHashType"

}

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Document | doc | [] |
| TransformedData | transformed | [] |
| DocumentHash | docHash | [] |

[component InputDocumentsType JSON schema details]

### Element DocumentBaseType

**Semantics**

he element DocumentBaseType defines components used by the elements DocumentType , TransformedData Type and DocumentHash Type . It contains the basic information shared by subclasses and remaining persistent during the process from input document retrieval until digest calculation for the relevant document.

Below follows a list of the sub-components that MAY be present within this component:

* The optional ID element MUST contain one instance of a unique identifier.This identifier gives the input document a unique label within a particular request message. Through this identifier, an optional input (see sections XXX) can refer to a particular input document.
* The optional RefURI element MUST contain one instance of an URI.This specifies the value for a <ds:Reference> element’s URI attribute when referring to this input document. The RefURI element SHOULD be specified; no more than one RefURI attribute ma y be omitted in a single signing request for XML target format.
* The optional RefType element MUST contain one instance of an URI.This element specifies the value for a n XML <ds:Reference> element’s Type attribute when referring to this input document.
* The optional SchemaRefs element MUST contain one instance of a unique identifier reference.The identified schemas are to be used to identify ID attributes during parsing and for XPath evaluation in sections while processing of XM L objects. If anything else but <Schema> are referred to, the server MUST report an error. If a referred to <Schema> is not used by the XML document instance this MAY be ignored or reported to the client in the Result Type element.

Non-normative Comment:

When processing XML documents It is recommended to use xml:id as defined in [xml:id] as id in the payload being referenced by a <ds:Reference>, because the schema then does not have to be supplied for identifying the ID attributes.

#### XML Syntax

The XML element SHALL implement in XML syntax the DocumentBaseType component.

The DocumentBaseType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType abstract="true" name="DocumentBaseType">

<xs:attribute name="ID" type="xs:ID" use="optional"/>

<xs:attribute name="RefURI" type="xs:anyURI" use="optional"/>

<xs:attribute name="RefType" type="xs:anyURI" use="optional"/>

<xs:attribute name="SchemaRefs" type="xs:IDREFS" use="optional"/>

</xs:complexType>

Each child element of DocumentBaseType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The DocumentBaseType XML element SHALL NOT be empty.

[component DocumentBaseType XML schema details]

#### JSON Syntax

The DocumentBaseType JSON object SHALL implement in JSON syntax the DocumentBaseType component.

The DocumentBaseType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-DocumentBaseType": {

"type": "object",

"properties": {

"ID": {

"type": "string"

},

"refURI": {

"type": "string"

},

"refType": {

"type": "string"

},

"schemaRefs": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

}

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ID | ID | [] |
| RefURI | refURI | [] |
| RefType | refType | [] |
| SchemaRefs | schemaRefs | [] |

[component DocumentBaseType JSON schema details]

### Element DocumentType

**Semantics**

[component DocumentType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional ID element MUST contain one instance of a unique identifier.[sub component ID details]
* The optional RefURI element MUST contain one instance of an URI.[sub component RefURI details]
* The optional RefType element MUST contain one instance of an URI.[sub component RefType details]
* The optional SchemaRefs element MUST contain one instance of a unique identifier reference.[sub component SchemaRefs details]
* The Base64Data element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section Base64DataType.[sub component Base64Data details]

Non-normative Comment:

[component DocumentType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the DocumentType component.

The DocumentType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="DocumentType">

<xs:complexContent>

<xs:extension base="dss:DocumentBaseType">

<xs:choice>

<xs:element name="Base64Data" type="dss:Base64DataType"/>

</xs:choice>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of DocumentType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The DocumentType XML element SHALL NOT be empty.

[component DocumentType XML schema details]

#### JSON Syntax

The DocumentType JSON object SHALL implement in JSON syntax the DocumentType component.

The DocumentType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-DocumentType": {

"type": "object",

"properties": {

"ID": {

"type": "string"

},

"refURI": {

"type": "string"

},

"refType": {

"type": "string"

},

"schemaRefs": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

}

},

"b64Data": {

"type": "object",

"$ref": "#/definitions/dss-Base64DataType"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ID | ID | [] |
| RefURI | refURI | [] |
| RefType | refType | [] |
| SchemaRefs | schemaRefs | [] |
| Base64Data | b64Data | [] |

[component DocumentType JSON schema details]

### Element Base64DataType

**Semantics**

[component Base64DataType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The value element MUST contain one instance of base64 encoded binary data.[sub component value details]
* The optional MimeType element MUST contain one instance of a string.[sub component MimeType details]
* The optional AttRefURI element MUST contain one instance of an URI.[sub component AttRefURI details]
* The optional ID element MUST contain one instance of a unique identifier.[sub component ID details]
* The optional IDREF element MUST contain one instance of a unique identifier reference.[sub component IDREF details]

Non-normative Comment:

[component Base64DataType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the Base64DataType component.

The Base64DataType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="Base64DataType">

<xs:simpleContent>

<xs:extension base="xs:base64Binary">

<xs:attribute name="MimeType" type="xs:string" use="optional"/>

<xs:attribute name="AttRefURI" type="xs:anyURI" use="optional"/>

<xs:attribute name="ID" type="xs:ID" use="optional"/>

<xs:attribute name="IDREF" type="xs:IDREF" use="optional"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

Each child element of Base64DataType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name. The element 'value' holding the base64 content is represented by the component's XML tag text content.

The Base64DataType XML element SHALL NOT be empty.

[component Base64DataType XML schema details]

#### JSON Syntax

The Base64DataType JSON object SHALL implement in JSON syntax the Base64DataType component.

The Base64DataType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-Base64DataType": {

"type": "object",

"properties": {

"ID": {

"type": "string"

},

"value": {

"type": "string"

},

"mimeType": {

"type": "string"

},

"attRef": {

"type": "string"

},

"IDREF": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | [] |
| MimeType | mimeType | [] |
| AttRefURI | attRef | [] |
| ID | ID | [] |
| IDREF | IDREF | [] |

[component Base64DataType JSON schema details]

### Element TransformedDataType

**Semantics**

[component TransformedDataType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional ID element MUST contain one instance of a unique identifier.[sub component ID details]
* The optional RefURI element MUST contain one instance of an URI.[sub component RefURI details]
* The optional RefType element MUST contain one instance of an URI.[sub component RefType details]
* The optional SchemaRefs element MUST contain one instance of a unique identifier reference.[sub component SchemaRefs details]
* The optional Transforms element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section TransformsType.[sub component Transforms details]
* The Base64Data element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section Base64DataType.[sub component Base64Data details]
* The optional WhichReference element MUST contain one instance of an integer.[sub component WhichReference details]

Non-normative Comment:

[component TransformedDataType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the TransformedDataType component.

The TransformedDataType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="TransformedDataType">

<xs:complexContent>

<xs:extension base="dss:DocumentBaseType">

<xs:sequence>

<xs:element minOccurs="0" name="Transforms" type="ds:TransformsType"/>

<xs:element name="Base64Data" type="dss:Base64DataType"/>

</xs:sequence>

<xs:attribute name="WhichReference" type="xs:integer" use="optional"/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of TransformedDataType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The TransformedDataType XML element SHALL NOT be empty.

[component TransformedDataType XML schema details]

#### JSON Syntax

The TransformedDataType JSON object SHALL implement in JSON syntax the TransformedDataType component.

The TransformedDataType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-TransformedDataType": {

"type": "object",

"properties": {

"ID": {

"type": "string"

},

"refURI": {

"type": "string"

},

"refType": {

"type": "string"

},

"schemaRefs": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

}

},

"transforms": {

"type": "object",

"$ref": "#/definitions/dsig-TransformsType"

},

"b64Data": {

"type": "object",

"$ref": "#/definitions/dss-Base64DataType"

},

"whichRef": {

"type": "integer"

}

},

"required": ["b64Data"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ID | ID | [] |
| RefURI | refURI | [] |
| RefType | refType | [] |
| SchemaRefs | schemaRefs | [] |
| Transforms | transforms | [] |
| Base64Data | b64Data | [] |
| WhichReference | whichRef | [] |

[component TransformedDataType JSON schema details]

### Element DocumentHashType

**Semantics**

[component DocumentHashType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional ID element MUST contain one instance of a unique identifier.[sub component ID details]
* The optional RefURI element MUST contain one instance of an URI.[sub component RefURI details]
* The optional RefType element MUST contain one instance of an URI.[sub component RefType details]
* The optional SchemaRefs element MUST contain one instance of a unique identifier reference.[sub component SchemaRefs details]
* The optional Transforms element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section TransformsType.[sub component Transforms details]
* The DigestInfos element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section DigestInfoType.[sub component DigestInfos details]
* The optional WhichReference element MUST contain one instance of an integer.[sub component WhichReference details]

Non-normative Comment:

[component DocumentHashType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the DocumentHashType component.

The DocumentHashType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="DocumentHashType">

<xs:complexContent>

<xs:extension base="dss:DocumentBaseType">

<xs:sequence>

<xs:element minOccurs="0" name="Transforms" type="ds:TransformsType"/>

<xs:element maxOccurs="unbounded" minOccurs="1" name="DigestInfos" type="dss:DigestInfoType"/>

</xs:sequence>

<xs:attribute name="WhichReference" type="xs:integer" use="optional"/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of DocumentHashType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The DocumentHashType XML element SHALL NOT be empty.

[component DocumentHashType XML schema details]

#### JSON Syntax

The DocumentHashType JSON object SHALL implement in JSON syntax the DocumentHashType component.

The DocumentHashType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-DocumentHashType": {

"type": "object",

"properties": {

"ID": {

"type": "string"

},

"refURI": {

"type": "string"

},

"refType": {

"type": "string"

},

"schemaRefs": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

}

},

"transforms": {

"type": "object",

"$ref": "#/definitions/dsig-TransformsType"

},

"di": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DigestInfoType"

}

},

"whichRef": {

"type": "integer"

}

},

"required": ["di"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ID | ID | [] |
| RefURI | refURI | [] |
| RefType | refType | [] |
| SchemaRefs | schemaRefs | [] |
| Transforms | transforms | [] |
| DigestInfos | di | [] |
| WhichReference | whichRef | [] |

[component DocumentHashType JSON schema details]

### Element DigestInfoType

**Semantics**

[component DigestInfoType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The DigestMethod element MUST contain one instance of a string.[sub component DigestMethod details]
* The DigestValue element MUST contain one instance of base64 encoded binary data.[sub component DigestValue details]

Non-normative Comment:

[component DigestInfoType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the DigestInfoType component.

The DigestInfoType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="DigestInfoType">

<xs:sequence>

<xs:element name="DigestMethod" type="xs:string"/>

<xs:element name="DigestValue" type="xs:base64Binary"/>

</xs:sequence>

</xs:complexType>

Each child element of DigestInfoType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The DigestInfoType XML element SHALL NOT be empty.

[component DigestInfoType XML schema details]

#### JSON Syntax

The DigestInfoType JSON object SHALL implement in JSON syntax the DigestInfoType component.

The DigestInfoType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-DigestInfoType": {

"type": "object",

"properties": {

"alg": {

"type": "string"

},

"value": {

"type": "string"

}

},

"required": ["alg","value"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| DigestMethod | alg | [] |
| DigestValue | value | [] |

[component DigestInfoType JSON schema details]

### Element SignatureObjectType

**Semantics**

[component SignatureObjectType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Base64Signature element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section Base64DataType.[sub component Base64Signature details]
* The SignaturePtr element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section SignaturePtrType.[sub component SignaturePtr details]
* The optional SchemaRefs element MUST contain one instance of a unique identifier reference.[sub component SchemaRefs details]

Non-normative Comment:

[component SignatureObjectType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SignatureObjectType component.

The SignatureObjectType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SignatureObjectType">

<xs:sequence>

<xs:choice>

<xs:element name="Base64Signature" type="dss:Base64DataType"/>

<xs:element name="SignaturePtr" type="dss:SignaturePtrType"/>

</xs:choice>

</xs:sequence>

<xs:attribute name="SchemaRefs" type="xs:IDREFS" use="optional"/>

</xs:complexType>

Each child element of SignatureObjectType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SignatureObjectType XML element SHALL NOT be empty.

[component SignatureObjectType XML schema details]

#### JSON Syntax

The SignatureObjectType JSON object SHALL implement in JSON syntax the SignatureObjectType component.

The SignatureObjectType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SignatureObjectType": {

"type": "object",

"properties": {

"b64Sig": {

"type": "object",

"$ref": "#/definitions/dss-Base64DataType"

},

"sigPtr": {

"type": "object",

"$ref": "#/definitions/dss-SignaturePtrType"

},

"schemaRefs": {

"type": "array"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Base64Signature | b64Sig | [] |
| SignaturePtr | sigPtr | [] |
| SchemaRefs | schemaRefs | [] |

[component SignatureObjectType JSON schema details]

### Element SignaturePtrType

**Semantics**

[component SignaturePtrType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional WhichDocument element MUST contain one instance of a unique identifier reference.[sub component WhichDocument details]
* The optional XPath element MUST contain one instance of a string.[sub component XPath details]

Non-normative Comment:

[component SignaturePtrType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SignaturePtrType component.

The SignaturePtrType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SignaturePtrType">

<xs:attribute name="WhichDocument" type="xs:IDREF"/>

<xs:attribute name="XPath" type="xs:string" use="optional"/>

</xs:complexType>

Each child element of SignaturePtrType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SignaturePtrType XML element SHALL NOT be empty.

[component SignaturePtrType XML schema details]

#### JSON Syntax

The SignaturePtrType JSON object SHALL implement in JSON syntax the SignaturePtrType component.

The SignaturePtrType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SignaturePtrType": {

"type": "object",

"properties": {

"whichDoc": {

"type": "object",

"$ref": "#/definitions/dss-DocumentBaseType"

},

"xPath": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| WhichDocument | whichDoc | [] |
| XPath | xPath | [] |

[component SignaturePtrType JSON schema details]

### Element ResultType

**Semantics**

[component ResultType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The ResultMajor element MUST contain one instance of a sub\_component () .[sub component ResultMajor details]
* The optional ResultMinor element MUST contain an URI if present.[sub component ResultMinor details]
* The optional ResultMessage element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section InternationalStringType.[sub component ResultMessage details]

Non-normative Comment:

[component ResultType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the ResultType component.

The ResultType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="ResultType">

<xs:sequence>

<xs:element name="ResultMajor">

<xs:simpleType>

<xs:restriction base="xs:anyURI">

<xs:enumeration value="urn:oasis:names:tc:dss:1.0:resultmajor:Success"/>

<xs:enumeration value="urn:oasis:names:tc:dss:1.0:resultmajor:RequesterError"/>

<xs:enumeration value="urn:oasis:names:tc:dss:1.0:resultmajor:ResponderError"/>

<xs:enumeration value="urn:oasis:names:tc:dss:1.0:resultmajor:InsufficientInformation"/>

</xs:restriction>

</xs:simpleType>

</xs:element>

<xs:element minOccurs="0" name="ResultMinor" type="xs:anyURI"/>

<xs:element minOccurs="0" name="ResultMessage" type="dss:InternationalStringType"/>

</xs:sequence>

</xs:complexType>

Each child element of ResultType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The ResultType XML element SHALL NOT be empty.

[component ResultType XML schema details]

#### JSON Syntax

The ResultType JSON object SHALL implement in JSON syntax the ResultType component.

The ResultType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-ResultType": {

"type": "object",

"properties": {

"maj": {

"type": "string"

},

"min": {

"type": "string"

},

"msg": {

"type": "object",

"$ref": "#/definitions/dss-InternationalStringType"

}

},

"required": ["maj"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ResultMajor | maj | [] |
| ResultMinor | min | [] |
| ResultMessage | msg | [] |

[component ResultType JSON schema details]

### Element OptionalInputsBaseType

**Semantics**

[component OptionalInputsBaseType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Profile element MAY occur zero or more instances containing an URI.[sub component Profile details]
* The optional ServicePolicy element MAY occur zero or more instances containing an URI.[sub component ServicePolicy details]
* The optional ClaimedIdentity element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section ClaimedIdentityType.[sub component ClaimedIdentity details]
* The optional Language element MUST contain an ISO language descriptor if present.[sub component Language details]
* The optional Schemas element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SchemasType.[sub component Schemas details]
* The optional AddTimestamp element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section UpdateSignatureInstructionType.[sub component AddTimestamp details]
* The optional Other element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section PropertyType.[sub component Other details]
* The optional SignatureForm element MUST contain an URI if present.[sub component SignatureForm details]

Non-normative Comment:

[component OptionalInputsBaseType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the OptionalInputsBaseType component.

The OptionalInputsBaseType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="OptionalInputsBaseType">

<xs:sequence>

<xs:element maxOccurs="unbounded" minOccurs="0" name="Profile" type="xs:anyURI"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="ServicePolicy" type="xs:anyURI"/>

<xs:element maxOccurs="1" minOccurs="0" name="ClaimedIdentity" type="dss:ClaimedIdentityType"/>

<xs:element maxOccurs="1" minOccurs="0" name="Language" type="xs:language"/>

<xs:element maxOccurs="1" minOccurs="0" name="Schemas" type="dss:SchemasType"/>

<xs:element maxOccurs="1" minOccurs="0" name="AddTimestamp" type="dss:UpdateSignatureInstructionType"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="Other" type="dss:PropertyType"/>

<xs:element maxOccurs="1" minOccurs="0" name="SignatureForm" type="xs:anyURI"/>

</xs:sequence>

</xs:complexType>

Each child element of OptionalInputsBaseType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The OptionalInputsBaseType XML element SHALL NOT be empty.

[component OptionalInputsBaseType XML schema details]

#### JSON Syntax

For component OptionalInputsBaseType no JSON schema representation is defined as it is not used directly.

[component OptionalInputsBaseType JSON schema details]

### Element OptionalInputsSignType

**Semantics**

[component OptionalInputsSignType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Profile element MAY occur zero or more instances containing an URI.[sub component Profile details]
* The optional ServicePolicy element MAY occur zero or more instances containing an URI.[sub component ServicePolicy details]
* The optional ClaimedIdentity element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section ClaimedIdentityType.[sub component ClaimedIdentity details]
* The optional Language element MUST contain an ISO language descriptor if present.[sub component Language details]
* The optional Schemas element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SchemasType.[sub component Schemas details]
* The optional AddTimestamp element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section UpdateSignatureInstructionType.[sub component AddTimestamp details]
* The optional Other element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section PropertyType.[sub component Other details]
* The optional SignatureForm element MUST contain an URI if present.[sub component SignatureForm details]
* The optional SignatureType element MUST contain an URI if present.[sub component SignatureType details]
* The optional IntendedAudience element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section IntendedAudienceType.[sub component IntendedAudience details]
* The optional KeySelector element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section KeyInfoType.[sub component KeySelector details]
* The optional Properties element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section PropertiesHolderType.[sub component Properties details]
* The optional IncludeObject element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section IncludeObjectType.[sub component IncludeObject details]
* The optional SignaturePlacement element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SignaturePlacementType.[sub component SignaturePlacement details]
* The optional SignedReferences element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SignedReferencesType.[sub component SignedReferences details]
* The optional Nonce element MUST contain an integer if present.[sub component Nonce details]
* The optional SignatureAlgorithm element MUST contain an URI if present.[sub component SignatureAlgorithm details]
* The optional SignatureActivationData element MUST contain a string if present.[sub component SignatureActivationData details]

Non-normative Comment:

[component OptionalInputsSignType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the OptionalInputsSignType component.

The OptionalInputsSignType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="OptionalInputsSignType">

<xs:complexContent>

<xs:extension base="dss:OptionalInputsBaseType">

<xs:sequence>

<xs:element maxOccurs="1" minOccurs="0" name="SignatureType" type="xs:anyURI"/>

<xs:element maxOccurs="1" minOccurs="0" name="IntendedAudience" type="dss:IntendedAudienceType"/>

<xs:element maxOccurs="1" minOccurs="0" name="KeySelector" type="dss:KeyInfoType"/>

<xs:element maxOccurs="1" minOccurs="0" name="Properties" type="dss:PropertiesHolderType"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="IncludeObject" type="dss:IncludeObjectType"/>

<xs:element maxOccurs="1" minOccurs="0" name="SignaturePlacement" type="dss:SignaturePlacementType"/>

<xs:element maxOccurs="1" minOccurs="0" name="SignedReferences" type="dss:SignedReferencesType"/>

<xs:element maxOccurs="1" minOccurs="0" name="Nonce" type="xs:integer"/>

<xs:element maxOccurs="1" minOccurs="0" name="SignatureAlgorithm" type="xs:anyURI"/>

<xs:element maxOccurs="1" minOccurs="0" name="SignatureActivationData" type="xs:string"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of OptionalInputsSignType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The OptionalInputsSignType XML element SHALL NOT be empty.

[component OptionalInputsSignType XML schema details]

#### JSON Syntax

The OptionalInputsSignType JSON object SHALL implement in JSON syntax the OptionalInputsSignType component.

The OptionalInputsSignType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-OptionalInputsSignType": {

"type": "object",

"properties": {

"profile": {

"type": "array",

"items": {

"type": "string"

}

},

"policy": {

"type": "array",

"items": {

"type": "string"

}

},

"claimedIdentity": {

"type": "object",

"$ref": "#/definitions/dss-ClaimedIdentityType"

},

"lang": {

"type": "string"

},

"schemas": {

"type": "object",

"$ref": "#/definitions/dss-SchemasType"

},

"addTimestamp": {

"type": "object",

"$ref": "#/definitions/dss-UpdateSignatureInstructionType"

},

"other": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-PropertyType"

}

},

"sigForm": {

"type": "string"

},

"sigType": {

"type": "string"

},

"audience": {

"type": "object",

"$ref": "#/definitions/dss-IntendedAudienceType"

},

"keySel": {

"type": "object",

"$ref": "#/definitions/dss-KeyInfoType"

},

"props": {

"type": "object",

"$ref": "#/definitions/dss-PropertiesHolderType"

},

"includeObj": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-IncludeObjectType"

}

},

"sigPlacement": {

"type": "object",

"$ref": "#/definitions/dss-SignaturePlacementType"

},

"sigRefs": {

"type": "object",

"$ref": "#/definitions/dss-SignedReferencesType"

},

"nonce": {

"type": "integer"

},

"sigAlgo": {

"type": "string"

},

"sad": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Profile | profile | [] |
| ServicePolicy | policy | [] |
| ClaimedIdentity | claimedIdentity | [] |
| Language | lang | [] |
| Schemas | schemas | [] |
| AddTimestamp | addTimestamp | [] |
| Other | other | [] |
| SignatureForm | sigForm | [] |
| SignatureType | sigType | [] |
| IntendedAudience | audience | [] |
| KeySelector | keySel | [] |
| Properties | props | [] |
| IncludeObject | includeObj | [] |
| SignaturePlacement | sigPlacement | [] |
| SignedReferences | sigRefs | [] |
| Nonce | nonce | [] |
| SignatureAlgorithm | sigAlgo | [] |
| SignatureActivationData | sad | [] |

[component OptionalInputsSignType JSON schema details]

### Element OptionalInputsVerifyType

**Semantics**

[component OptionalInputsVerifyType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Profile element MAY occur zero or more instances containing an URI.[sub component Profile details]
* The optional ServicePolicy element MAY occur zero or more instances containing an URI.[sub component ServicePolicy details]
* The optional ClaimedIdentity element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section ClaimedIdentityType.[sub component ClaimedIdentity details]
* The optional Language element MUST contain an ISO language descriptor if present.[sub component Language details]
* The optional Schemas element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SchemasType.[sub component Schemas details]
* The optional AddTimestamp element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section UpdateSignatureInstructionType.[sub component AddTimestamp details]
* The optional Other element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section PropertyType.[sub component Other details]
* The optional SignatureForm element MUST contain an URI if present.[sub component SignatureForm details]
* The optional UseVerificationTime element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section UseVerificationTimeType.[sub component UseVerificationTime details]
* The optional ReturnVerificationTimeInfo element MUST contain a boolean if present.[sub component ReturnVerificationTimeInfo details]
* The optional AdditionalKeyInfo element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section AdditionalKeyInfoType.[sub component AdditionalKeyInfo details]
* The optional ReturnProcessingDetails element MUST contain a boolean if present.[sub component ReturnProcessingDetails details]
* The optional ReturnSigningTimeInfo element MUST contain a boolean if present.[sub component ReturnSigningTimeInfo details]
* The optional ReturnSignerIdentity element MUST contain a boolean if present.[sub component ReturnSignerIdentity details]
* The optional ReturnUpdatedSignature element MUST contain a boolean if present.[sub component ReturnUpdatedSignature details]
* The optional ReturnTransformedDocument element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section ReturnTransformedDocumentType.[sub component ReturnTransformedDocument details]
* The optional ReturnTimestampedSignature element MUST contain a boolean if present.[sub component ReturnTimestampedSignature details]

Non-normative Comment:

[component OptionalInputsVerifyType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the OptionalInputsVerifyType component.

The OptionalInputsVerifyType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="OptionalInputsVerifyType">

<xs:complexContent>

<xs:extension base="dss:OptionalInputsBaseType">

<xs:sequence>

<xs:element maxOccurs="1" minOccurs="0" name="UseVerificationTime" type="dss:UseVerificationTimeType"/>

<xs:element default="false" maxOccurs="1" minOccurs="0" name="ReturnVerificationTimeInfo" type="xs:boolean"/>

<xs:element maxOccurs="1" minOccurs="0" name="AdditionalKeyInfo" type="dss:AdditionalKeyInfoType"/>

<xs:element default="false" maxOccurs="1" minOccurs="0" name="ReturnProcessingDetails" type="xs:boolean"/>

<xs:element default="false" maxOccurs="1" minOccurs="0" name="ReturnSigningTimeInfo" type="xs:boolean"/>

<xs:element default="false" maxOccurs="1" minOccurs="0" name="ReturnSignerIdentity" type="xs:boolean"/>

<xs:element default="false" maxOccurs="1" minOccurs="0" name="ReturnUpdatedSignature" type="xs:boolean"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="ReturnTransformedDocument" type="dss:ReturnTransformedDocumentType"/>

<xs:element default="false" maxOccurs="1" minOccurs="0" name="ReturnTimestampedSignature" type="xs:boolean"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of OptionalInputsVerifyType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The OptionalInputsVerifyType XML element SHALL NOT be empty.

[component OptionalInputsVerifyType XML schema details]

#### JSON Syntax

The OptionalInputsVerifyType JSON object SHALL implement in JSON syntax the OptionalInputsVerifyType component.

The OptionalInputsVerifyType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-OptionalInputsVerifyType": {

"type": "object",

"properties": {

"profile": {

"type": "array",

"items": {

"type": "string"

}

},

"policy": {

"type": "array",

"items": {

"type": "string"

}

},

"claimedIdentity": {

"type": "object",

"$ref": "#/definitions/dss-ClaimedIdentityType"

},

"lang": {

"type": "string"

},

"schemas": {

"type": "object",

"$ref": "#/definitions/dss-SchemasType"

},

"addTimestamp": {

"type": "object",

"$ref": "#/definitions/dss-UpdateSignatureInstructionType"

},

"other": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-PropertyType"

}

},

"sigForm": {

"type": "string"

},

"useVerificationTime": {

"type": "object",

"$ref": "#/definitions/dss-UseVerificationTimeType"

},

"returnVerificationTime": {

"type": "boolean"

},

"addKeyInfo": {

"type": "object",

"$ref": "#/definitions/dss-AdditionalKeyInfoType"

},

"returnProcDetails": {

"type": "boolean"

},

"returnSigningTime": {

"type": "boolean"

},

"returnSigner": {

"type": "boolean"

},

"returnUpdated": {

"type": "boolean"

},

"returnTransformed": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-ReturnTransformedDocumentType"

}

},

"returnTimestamped": {

"type": "boolean"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Profile | profile | [] |
| ServicePolicy | policy | [] |
| ClaimedIdentity | claimedIdentity | [] |
| Language | lang | [] |
| Schemas | schemas | [] |
| AddTimestamp | addTimestamp | [] |
| Other | other | [] |
| SignatureForm | sigForm | [] |
| UseVerificationTime | useVerificationTime | [] |
| ReturnVerificationTimeInfo | returnVerificationTime | [] |
| AdditionalKeyInfo | addKeyInfo | [] |
| ReturnProcessingDetails | returnProcDetails | [] |
| ReturnSigningTimeInfo | returnSigningTime | [] |
| ReturnSignerIdentity | returnSigner | [] |
| ReturnUpdatedSignature | returnUpdated | [] |
| ReturnTransformedDocument | returnTransformed | [] |
| ReturnTimestampedSignature | returnTimestamped | [] |

[component OptionalInputsVerifyType JSON schema details]

### Element OptionalOutputsBaseType

**Semantics**

[component OptionalOutputsBaseType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional AppliedProfile element MAY occur zero or more instances containing an URI.[sub component AppliedProfile details]
* The optional AppliedPolicy element MAY occur zero or more instances containing an URI.[sub component AppliedPolicy details]
* The optional TransformedDocument element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section TransformedDocumentType.[sub component TransformedDocument details]
* The optional Schemas element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SchemasType.[sub component Schemas details]
* The optional DocumentWithSignature element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section DocumentWithSignatureType.[sub component DocumentWithSignature details]
* The optional Other element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section PropertyType.[sub component Other details]

Non-normative Comment:

[component OptionalOutputsBaseType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the OptionalOutputsBaseType component.

The OptionalOutputsBaseType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="OptionalOutputsBaseType">

<xs:sequence>

<xs:element maxOccurs="unbounded" minOccurs="0" name="AppliedProfile" type="xs:anyURI"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="AppliedPolicy" type="xs:anyURI"/>

<xs:element maxOccurs="1" minOccurs="0" name="TransformedDocument" type="dss:TransformedDocumentType"/>

<xs:element maxOccurs="1" minOccurs="0" name="Schemas" type="dss:SchemasType"/>

<xs:element maxOccurs="1" minOccurs="0" name="DocumentWithSignature" type="dss:DocumentWithSignatureType"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="Other" type="dss:PropertyType"/>

</xs:sequence>

</xs:complexType>

Each child element of OptionalOutputsBaseType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The OptionalOutputsBaseType XML element SHALL NOT be empty.

[component OptionalOutputsBaseType XML schema details]

#### JSON Syntax

For component OptionalOutputsBaseType no JSON schema representation is defined as it is not used directly.

[component OptionalOutputsBaseType JSON schema details]

### Element OptionalOutputsSignType

**Semantics**

[component OptionalOutputsSignType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional AppliedProfile element MAY occur zero or more instances containing an URI.[sub component AppliedProfile details]
* The optional AppliedPolicy element MAY occur zero or more instances containing an URI.[sub component AppliedPolicy details]
* The optional TransformedDocument element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section TransformedDocumentType.[sub component TransformedDocument details]
* The optional Schemas element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SchemasType.[sub component Schemas details]
* The optional DocumentWithSignature element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section DocumentWithSignatureType.[sub component DocumentWithSignature details]
* The optional Other element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section PropertyType.[sub component Other details]

Non-normative Comment:

[component OptionalOutputsSignType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the OptionalOutputsSignType component.

The OptionalOutputsSignType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="OptionalOutputsSignType">

<xs:complexContent>

<xs:extension base="dss:OptionalOutputsBaseType">

<xs:sequence/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of OptionalOutputsSignType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The OptionalOutputsSignType XML element SHALL NOT be empty.

[component OptionalOutputsSignType XML schema details]

#### JSON Syntax

The OptionalOutputsSignType JSON object SHALL implement in JSON syntax the OptionalOutputsSignType component.

The OptionalOutputsSignType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-OptionalOutputsSignType": {

"type": "object",

"properties": {

"profile": {

"type": "array",

"items": {

"type": "string"

}

},

"policy": {

"type": "array",

"items": {

"type": "string"

}

},

"transformed": {

"type": "object",

"$ref": "#/definitions/dss-TransformedDocumentType"

},

"schemas": {

"type": "object",

"$ref": "#/definitions/dss-SchemasType"

},

"docWithSignature": {

"type": "object",

"$ref": "#/definitions/dss-DocumentWithSignatureType"

},

"other": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-PropertyType"

}

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| AppliedProfile | profile | [] |
| AppliedPolicy | policy | [] |
| TransformedDocument | transformed | [] |
| Schemas | schemas | [] |
| DocumentWithSignature | docWithSignature | [] |
| Other | other | [] |

[component OptionalOutputsSignType JSON schema details]

### Element OptionalOutputsVerifyType

**Semantics**

[component OptionalOutputsVerifyType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional AppliedProfile element MAY occur zero or more instances containing an URI.[sub component AppliedProfile details]
* The optional AppliedPolicy element MAY occur zero or more instances containing an URI.[sub component AppliedPolicy details]
* The optional TransformedDocument element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section TransformedDocumentType.[sub component TransformedDocument details]
* The optional Schemas element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SchemasType.[sub component Schemas details]
* The optional DocumentWithSignature element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section DocumentWithSignatureType.[sub component DocumentWithSignature details]
* The optional Other element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section PropertyType.[sub component Other details]
* The optional VerifyManifestResults element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section VerifyManifestResultsType.[sub component VerifyManifestResults details]
* The optional SigningTimeInfo element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section SigningTimeInfoType.[sub component SigningTimeInfo details]
* The optional VerificationTimeInfo element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section VerificationTimeInfoType.[sub component VerificationTimeInfo details]
* The optional ProcessingDetails element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section ProcessingDetailsType.[sub component ProcessingDetails details]
* The optional SignerIdentity element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section NameIDType.[sub component SignerIdentity details]
* The optional UpdatedSignature element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section UpdatedSignatureType.[sub component UpdatedSignature details]
* The optional TimestampedSignature element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section UpdatedSignatureType.[sub component TimestampedSignature details]

Non-normative Comment:

[component OptionalOutputsVerifyType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the OptionalOutputsVerifyType component.

The OptionalOutputsVerifyType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="OptionalOutputsVerifyType">

<xs:complexContent>

<xs:extension base="dss:OptionalOutputsBaseType">

<xs:sequence>

<xs:element maxOccurs="1" minOccurs="0" name="VerifyManifestResults" type="dss:VerifyManifestResultsType"/>

<xs:element maxOccurs="1" minOccurs="0" name="SigningTimeInfo" type="dss:SigningTimeInfoType"/>

<xs:element maxOccurs="1" minOccurs="0" name="VerificationTimeInfo" type="dss:VerificationTimeInfoType"/>

<xs:element maxOccurs="1" minOccurs="0" name="ProcessingDetails" type="dss:ProcessingDetailsType"/>

<xs:element maxOccurs="1" minOccurs="0" name="SignerIdentity" type="saml2:NameIDType"/>

<xs:element maxOccurs="1" minOccurs="0" name="UpdatedSignature" type="dss:UpdatedSignatureType"/>

<xs:element maxOccurs="1" minOccurs="0" name="TimestampedSignature" type="dss:UpdatedSignatureType"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of OptionalOutputsVerifyType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The OptionalOutputsVerifyType XML element SHALL NOT be empty.

[component OptionalOutputsVerifyType XML schema details]

#### JSON Syntax

The OptionalOutputsVerifyType JSON object SHALL implement in JSON syntax the OptionalOutputsVerifyType component.

The OptionalOutputsVerifyType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-OptionalOutputsVerifyType": {

"type": "object",

"properties": {

"profile": {

"type": "array",

"items": {

"type": "string"

}

},

"policy": {

"type": "array",

"items": {

"type": "string"

}

},

"transformed": {

"type": "object",

"$ref": "#/definitions/dss-TransformedDocumentType"

},

"schemas": {

"type": "object",

"$ref": "#/definitions/dss-SchemasType"

},

"docWithSignature": {

"type": "object",

"$ref": "#/definitions/dss-DocumentWithSignatureType"

},

"other": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-PropertyType"

}

},

"result": {

"type": "object",

"$ref": "#/definitions/dss-VerifyManifestResultsType"

},

"signingTimeInfo": {

"type": "object",

"$ref": "#/definitions/dss-SigningTimeInfoType"

},

"verificationTimeInfo": {

"type": "object",

"$ref": "#/definitions/dss-VerificationTimeInfoType"

},

"procDetails": {

"type": "object",

"$ref": "#/definitions/dss-ProcessingDetailsType"

},

"signerIdentity": {

"type": "object",

"$ref": "#/definitions/saml2-NameIDType"

},

"updSignature": {

"type": "object",

"$ref": "#/definitions/dss-UpdatedSignatureType"

},

"timestampedSignature": {

"type": "object",

"$ref": "#/definitions/dss-UpdatedSignatureType"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| AppliedProfile | profile | [] |
| AppliedPolicy | policy | [] |
| TransformedDocument | transformed | [] |
| Schemas | schemas | [] |
| DocumentWithSignature | docWithSignature | [] |
| Other | other | [] |
| VerifyManifestResults | result | [] |
| SigningTimeInfo | signingTimeInfo | [] |
| VerificationTimeInfo | verificationTimeInfo | [] |
| ProcessingDetails | procDetails | [] |
| SignerIdentity | signerIdentity | [] |
| UpdatedSignature | updSignature | [] |
| TimestampedSignature | timestampedSignature | [] |

[component OptionalOutputsVerifyType JSON schema details]

### Element ClaimedIdentityType

**Semantics**

[component ClaimedIdentityType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Name element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section NameIDType.[sub component Name details]
* The optional SupportingInfo element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section AnyType.[sub component SupportingInfo details]

Non-normative Comment:

[component ClaimedIdentityType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the ClaimedIdentityType component.

The ClaimedIdentityType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="ClaimedIdentityType">

<xs:sequence>

<xs:element name="Name" type="saml2:NameIDType"/>

<xs:element minOccurs="0" name="SupportingInfo" type="dss:AnyType"/>

</xs:sequence>

</xs:complexType>

Each child element of ClaimedIdentityType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The ClaimedIdentityType XML element SHALL NOT be empty.

[component ClaimedIdentityType XML schema details]

#### JSON Syntax

The ClaimedIdentityType JSON object SHALL implement in JSON syntax the ClaimedIdentityType component.

The ClaimedIdentityType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-ClaimedIdentityType": {

"type": "object",

"properties": {

"name": {

"type": "object",

"$ref": "#/definitions/saml2-NameIDType"

},

"suppInfo": {

"type": "object",

"$ref": "#/definitions/dss-AnyType"

}

},

"required": ["name"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Name | name | [] |
| SupportingInfo | suppInfo | [] |

[component ClaimedIdentityType JSON schema details]

### Element SchemasType

**Semantics**

[component SchemasType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Schema element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section DocumentType.[sub component Schema details]

Non-normative Comment:

[component SchemasType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SchemasType component.

The SchemasType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SchemasType">

<xs:sequence>

<xs:element maxOccurs="unbounded" name="Schema" type="dss:DocumentType"/>

</xs:sequence>

</xs:complexType>

Each child element of SchemasType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SchemasType XML element SHALL NOT be empty.

[component SchemasType XML schema details]

#### JSON Syntax

The SchemasType JSON object SHALL implement in JSON syntax the SchemasType component.

The SchemasType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SchemasType": {

"type": "object"

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Schema |  | [] |

[component SchemasType JSON schema details]

### Element RequestBaseType

**Semantics**

[component RequestBaseType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional InputDocuments element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section InputDocumentsType.[sub component InputDocuments details]
* The optional RequestID element MUST contain one instance of a string.[sub component RequestID details]

Non-normative Comment:

[component RequestBaseType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the RequestBaseType component.

The RequestBaseType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="RequestBaseType">

<xs:sequence>

<xs:element minOccurs="0" name="InputDocuments" type="dss:InputDocumentsType"/>

</xs:sequence>

<xs:attribute name="RequestID" type="xs:string" use="optional"/>

</xs:complexType>

Each child element of RequestBaseType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The RequestBaseType XML element SHALL NOT be empty.

[component RequestBaseType XML schema details]

#### JSON Syntax

For component RequestBaseType no JSON schema representation is defined as it is not used directly.

[component RequestBaseType JSON schema details]

### Element ResponseBaseType

**Semantics**

[component ResponseBaseType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Result element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section ResultType.[sub component Result details]
* The optional RequestID element MUST contain one instance of a string.[sub component RequestID details]

Non-normative Comment:

[component ResponseBaseType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the ResponseBaseType component.

The ResponseBaseType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="ResponseBaseType">

<xs:sequence>

<xs:element name="Result" type="dss:ResultType"/>

</xs:sequence>

<xs:attribute name="RequestID" type="xs:string" use="optional"/>

</xs:complexType>

Each child element of ResponseBaseType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The ResponseBaseType XML element SHALL NOT be empty.

[component ResponseBaseType XML schema details]

#### JSON Syntax

For component ResponseBaseType no JSON schema representation is defined as it is not used directly.

[component ResponseBaseType JSON schema details]

### Element TimeSignatureInstructionType

**Semantics**

[component TimeSignatureInstructionType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Type element MUST contain one instance of an URI.[sub component Type details]
* The optional TimeStampTheGivenSignature element MUST contain one instance of a boolean.[sub component TimeStampTheGivenSignature details]

Non-normative Comment:

[component TimeSignatureInstructionType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the TimeSignatureInstructionType component.

The TimeSignatureInstructionType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="TimeSignatureInstructionType">

<xs:complexContent>

<xs:extension base="dss:UpdateSignatureInstructionType">

<xs:attribute default="false" name="TimeStampTheGivenSignature" type="xs:boolean" use="optional"/>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of TimeSignatureInstructionType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The TimeSignatureInstructionType XML element SHALL NOT be empty.

[component TimeSignatureInstructionType XML schema details]

#### JSON Syntax

For component TimeSignatureInstructionType no JSON schema representation is defined as it is not used directly.

[component TimeSignatureInstructionType JSON schema details]

### Element UpdateSignatureInstructionType

**Semantics**

[component UpdateSignatureInstructionType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Type element MUST contain one instance of an URI.[sub component Type details]

Non-normative Comment:

[component UpdateSignatureInstructionType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the UpdateSignatureInstructionType component.

The UpdateSignatureInstructionType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="UpdateSignatureInstructionType">

<xs:attribute name="Type" type="xs:anyURI" use="optional"/>

</xs:complexType>

Each child element of UpdateSignatureInstructionType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The UpdateSignatureInstructionType XML element SHALL NOT be empty.

[component UpdateSignatureInstructionType XML schema details]

#### JSON Syntax

The UpdateSignatureInstructionType JSON object SHALL implement in JSON syntax the UpdateSignatureInstructionType component.

The UpdateSignatureInstructionType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-UpdateSignatureInstructionType": {

"type": "object",

"properties": {

"type": {

"type": "string",

"format": "uri"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Type | type | [] |

[component UpdateSignatureInstructionType JSON schema details]

### Element IntendedAudienceType

**Semantics**

[component IntendedAudienceType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Recipient element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section NameIDType.[sub component Recipient details]

Non-normative Comment:

[component IntendedAudienceType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the IntendedAudienceType component.

The IntendedAudienceType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="IntendedAudienceType">

<xs:sequence>

<xs:element maxOccurs="unbounded" name="Recipient" type="saml2:NameIDType"/>

</xs:sequence>

</xs:complexType>

Each child element of IntendedAudienceType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The IntendedAudienceType XML element SHALL NOT be empty.

[component IntendedAudienceType XML schema details]

#### JSON Syntax

The IntendedAudienceType JSON object SHALL implement in JSON syntax the IntendedAudienceType component.

The IntendedAudienceType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-IntendedAudienceType": {

"type": "object",

"properties": {

"recipient": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/saml2-NameIDType"

}

}

},

"required": ["recipient"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Recipient | recipient | [] |

[component IntendedAudienceType JSON schema details]

### Element KeyInfoType

**Semantics**

[component KeyInfoType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The value element MUST contain one instance of base64 encoded binary data.[sub component value details]
* The X509Digest element MUST contain one instance of sub-components.[sub component X509Digest details]
* The Algorithm element MUST contain one instance of an URI.[sub component Algorithm details]
* The X509SubjectName element MUST contain one instance of a string.[sub component X509SubjectName details]
* The X509SKI element MUST contain one instance of base64 encoded binary data.[sub component X509SKI details]
* The X509Certificate element MUST contain one instance of base64 encoded binary data.[sub component X509Certificate details]
* The KeyName element MUST contain one instance of a string.[sub component KeyName details]

Non-normative Comment:

[component KeyInfoType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the KeyInfoType component.

The KeyInfoType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="KeyInfoType">

<xs:choice>

<xs:element name="X509Digest">

<xs:complexType>

<xs:simpleContent>

<xs:extension base="xs:base64Binary">

<xs:attribute name="Algorithm" type="xs:anyURI" use="required"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

</xs:element>

<xs:element name="X509SubjectName" type="xs:string"/>

<xs:element name="X509SKI" type="xs:base64Binary"/>

<xs:element name="X509Certificate" type="xs:base64Binary"/>

<xs:element name="KeyName" type="xs:string"/>

</xs:choice>

</xs:complexType>

Each child element of KeyInfoType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name. The element 'value' holding the base64 content is represented by the component's XML tag text content.

The KeyInfoType XML element SHALL NOT be empty.

[component KeyInfoType XML schema details]

#### JSON Syntax

The KeyInfoType JSON object SHALL implement in JSON syntax the KeyInfoType component.

The KeyInfoType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-KeyInfoType": {

"type": "object",

"properties": {

"x509Digest": {

"type": "object",

"$ref": "#/definitions/dss-KeyInfoType:X509Digest"

},

"subject": {

"type": "string"

},

"ski": {

"type": "string"

},

"cert": {

"type": "string"

},

"name": {

"type": "string"

}

},

"minProperties": 1,

"maxProperties": 1

}

"dss-KeyInfoType:X509Digest": {

"type": "object",

"properties": {

"value": {

"type": "string"

},

"algo": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | [] |
| X509Digest | x509Digest | [] |
| Algorithm | algo | [] |
| X509SubjectName | subject | [] |
| X509SKI | ski | [] |
| X509Certificate | cert | [] |
| KeyName | name | [] |

[component KeyInfoType JSON schema details]

### Element PropertiesHolderType

**Semantics**

[component PropertiesHolderType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional SignedProperties element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section PropertiesType.[sub component SignedProperties details]
* The optional UnsignedProperties element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section PropertiesType.[sub component UnsignedProperties details]

Non-normative Comment:

[component PropertiesHolderType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the PropertiesHolderType component.

The PropertiesHolderType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="PropertiesHolderType">

<xs:sequence>

<xs:element minOccurs="0" name="SignedProperties" type="dss:PropertiesType"/>

<xs:element minOccurs="0" name="UnsignedProperties" type="dss:PropertiesType"/>

</xs:sequence>

</xs:complexType>

Each child element of PropertiesHolderType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The PropertiesHolderType XML element SHALL NOT be empty.

[component PropertiesHolderType XML schema details]

#### JSON Syntax

The PropertiesHolderType JSON object SHALL implement in JSON syntax the PropertiesHolderType component.

The PropertiesHolderType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-PropertiesHolderType": {

"type": "object",

"properties": {

"signedProps": {

"type": "object",

"$ref": "#/definitions/dss-PropertiesType"

},

"unsignedProps": {

"type": "object",

"$ref": "#/definitions/dss-PropertiesType"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| SignedProperties | signedProps | [] |
| UnsignedProperties | unsignedProps | [] |

[component PropertiesHolderType JSON schema details]

### Element PropertiesType

**Semantics**

[component PropertiesType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Property element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section PropertyType.[sub component Property details]

Non-normative Comment:

[component PropertiesType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the PropertiesType component.

The PropertiesType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="PropertiesType">

<xs:sequence>

<xs:element maxOccurs="unbounded" name="Property" type="dss:PropertyType"/>

</xs:sequence>

</xs:complexType>

Each child element of PropertiesType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The PropertiesType XML element SHALL NOT be empty.

[component PropertiesType XML schema details]

#### JSON Syntax

The PropertiesType JSON object SHALL implement in JSON syntax the PropertiesType component.

The PropertiesType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-PropertiesType": {

"type": "object",

"properties": {

"prop": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-PropertyType"

}

}

},

"required": ["prop"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Property | prop | [] |

[component PropertiesType JSON schema details]

### Element PropertyType

**Semantics**

[component PropertyType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Identifier element MUST contain one instance of an URI.[sub component Identifier details]
* The optional Value element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section AnyType.[sub component Value details]

Non-normative Comment:

[component PropertyType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the PropertyType component.

The PropertyType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="PropertyType">

<xs:sequence>

<xs:element name="Identifier" type="xs:anyURI"/>

<xs:element minOccurs="0" name="Value" type="dss:AnyType"/>

</xs:sequence>

</xs:complexType>

Each child element of PropertyType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The PropertyType XML element SHALL NOT be empty.

[component PropertyType XML schema details]

#### JSON Syntax

The PropertyType JSON object SHALL implement in JSON syntax the PropertyType component.

The PropertyType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-PropertyType": {

"type": "object",

"properties": {

"id": {

"type": "string"

},

"value": {

"type": "object",

"$ref": "#/definitions/dss-AnyType"

}

},

"required": ["id"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Identifier | id | [] |
| Value | value | [] |

[component PropertyType JSON schema details]

### Element IncludeObjectType

**Semantics**

[component IncludeObjectType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional WhichDocument element MUST contain one instance of a unique identifier reference.[sub component WhichDocument details]
* The optional hasObjectTagsAndAttributesSet element MUST contain one instance of a boolean.[sub component hasObjectTagsAndAttributesSet details]
* The optional ObjId element MUST contain one instance of a string.[sub component ObjId details]
* The optional createReference element MUST contain one instance of a boolean.[sub component createReference details]

Non-normative Comment:

[component IncludeObjectType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the IncludeObjectType component.

The IncludeObjectType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="IncludeObjectType">

<xs:attribute name="WhichDocument" type="xs:IDREF"/>

<xs:attribute default="false" name="hasObjectTagsAndAttributesSet" type="xs:boolean"/>

<xs:attribute name="ObjId" type="xs:string" use="optional"/>

<xs:attribute default="true" name="createReference" type="xs:boolean" use="optional"/>

</xs:complexType>

Each child element of IncludeObjectType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The IncludeObjectType XML element SHALL NOT be empty.

[component IncludeObjectType XML schema details]

#### JSON Syntax

The IncludeObjectType JSON object SHALL implement in JSON syntax the IncludeObjectType component.

The IncludeObjectType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-IncludeObjectType": {

"type": "object",

"properties": {

"whichDoc": {

"type": "object",

"$ref": "#/definitions/dss-DocumentBaseType"

},

"hasObjectTagsAndAttributesSet": {

"type": "boolean"

},

"objId": {

"type": "string"

},

"createRef": {

"type": "boolean"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| WhichDocument | whichDoc | [] |
| hasObjectTagsAndAttributesSet | hasObjectTagsAndAttributesSet | [] |
| ObjId | objId | [] |
| createReference | createRef | [] |

[component IncludeObjectType JSON schema details]

### Element SignaturePlacementType

**Semantics**

[component SignaturePlacementType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The XPathAfter element MUST contain one instance of a string.[sub component XPathAfter details]
* The XPathFirstChildOf element MUST contain one instance of a string.[sub component XPathFirstChildOf details]
* The optional WhichDocument element MUST contain one instance of a unique identifier reference.[sub component WhichDocument details]
* The optional CreateEnvelopedSignature element MUST contain one instance of a boolean.[sub component CreateEnvelopedSignature details]

Non-normative Comment:

[component SignaturePlacementType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SignaturePlacementType component.

The SignaturePlacementType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SignaturePlacementType">

<xs:choice>

<xs:element name="XPathAfter" type="xs:string"/>

<xs:element name="XPathFirstChildOf" type="xs:string"/>

</xs:choice>

<xs:attribute name="WhichDocument" type="xs:IDREF"/>

<xs:attribute default="true" name="CreateEnvelopedSignature" type="xs:boolean"/>

</xs:complexType>

Each child element of SignaturePlacementType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SignaturePlacementType XML element SHALL NOT be empty.

[component SignaturePlacementType XML schema details]

#### JSON Syntax

The SignaturePlacementType JSON object SHALL implement in JSON syntax the SignaturePlacementType component.

The SignaturePlacementType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SignaturePlacementType": {

"type": "object",

"properties": {

"xPathAfter": {

"type": "string"

},

"xPathFirstChildOf": {

"type": "string"

},

"whichDoc": {

"type": "object",

"$ref": "#/definitions/dss-DocumentBaseType"

},

"createEnvelopedSignature": {

"type": "boolean"

}

},

"minProperties": 1

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| XPathAfter | xPathAfter | [] |
| XPathFirstChildOf | xPathFirstChildOf | [] |
| WhichDocument | whichDoc | [] |
| CreateEnvelopedSignature | createEnvelopedSignature | [] |

[component SignaturePlacementType JSON schema details]

### Element DocumentWithSignatureType

**Semantics**

[component DocumentWithSignatureType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Document element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section DocumentType.[sub component Document details]

Non-normative Comment:

[component DocumentWithSignatureType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the DocumentWithSignatureType component.

The DocumentWithSignatureType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="DocumentWithSignatureType">

<xs:sequence>

<xs:element name="Document" type="dss:DocumentType"/>

</xs:sequence>

</xs:complexType>

Each child element of DocumentWithSignatureType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The DocumentWithSignatureType XML element SHALL NOT be empty.

[component DocumentWithSignatureType XML schema details]

#### JSON Syntax

The DocumentWithSignatureType JSON object SHALL implement in JSON syntax the DocumentWithSignatureType component.

The DocumentWithSignatureType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-DocumentWithSignatureType": {

"type": "object",

"properties": {

"doc": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

}

},

"required": ["doc"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Document | doc | [] |

[component DocumentWithSignatureType JSON schema details]

### Element SignedReferencesType

**Semantics**

[component SignedReferencesType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The SignedReference element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section SignedReferenceType.[sub component SignedReference details]

Non-normative Comment:

[component SignedReferencesType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SignedReferencesType component.

The SignedReferencesType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SignedReferencesType">

<xs:sequence>

<xs:element maxOccurs="unbounded" name="SignedReference" type="dss:SignedReferenceType"/>

</xs:sequence>

</xs:complexType>

Each child element of SignedReferencesType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SignedReferencesType XML element SHALL NOT be empty.

[component SignedReferencesType XML schema details]

#### JSON Syntax

The SignedReferencesType JSON object SHALL implement in JSON syntax the SignedReferencesType component.

The SignedReferencesType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SignedReferencesType": {

"type": "object",

"properties": {

"signedRef": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-SignedReferenceType"

}

}

},

"required": ["signedRef"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| SignedReference | signedRef | [] |

[component SignedReferencesType JSON schema details]

### Element SignedReferenceType

**Semantics**

[component SignedReferenceType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Transforms element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section TransformsType.[sub component Transforms details]
* The WhichDocument element MUST contain one instance of a unique identifier reference.[sub component WhichDocument details]
* The optional RefURI element MUST contain one instance of an URI.[sub component RefURI details]
* The optional RefId element MUST contain one instance of a string.[sub component RefId details]

Non-normative Comment:

[component SignedReferenceType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SignedReferenceType component.

The SignedReferenceType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SignedReferenceType">

<xs:sequence>

<xs:element minOccurs="0" name="Transforms" type="ds:TransformsType"/>

</xs:sequence>

<xs:attribute name="WhichDocument" type="xs:IDREF" use="required"/>

<xs:attribute name="RefURI" type="xs:anyURI" use="optional"/>

<xs:attribute name="RefId" type="xs:string" use="optional"/>

</xs:complexType>

Each child element of SignedReferenceType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SignedReferenceType XML element SHALL NOT be empty.

[component SignedReferenceType XML schema details]

#### JSON Syntax

The SignedReferenceType JSON object SHALL implement in JSON syntax the SignedReferenceType component.

The SignedReferenceType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SignedReferenceType": {

"type": "object",

"properties": {

"transforms": {

"type": "object",

"$ref": "#/definitions/dsig-TransformsType"

},

"whichDoc": {

"type": "object",

"$ref": "#/definitions/dss-DocumentBaseType"

},

"refURI": {

"type": "string"

},

"refId": {

"type": "string"

}

},

"required": ["whichDoc"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Transforms | transforms | [] |
| WhichDocument | whichDoc | [] |
| RefURI | refURI | [] |
| RefId | refId | [] |

[component SignedReferenceType JSON schema details]

### Element VerifyManifestResultsType

**Semantics**

[component VerifyManifestResultsType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The ManifestResult element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section ManifestResultType.[sub component ManifestResult details]

Non-normative Comment:

[component VerifyManifestResultsType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the VerifyManifestResultsType component.

The VerifyManifestResultsType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="VerifyManifestResultsType">

<xs:sequence>

<xs:element maxOccurs="unbounded" name="ManifestResult" type="dss:ManifestResultType"/>

</xs:sequence>

</xs:complexType>

Each child element of VerifyManifestResultsType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The VerifyManifestResultsType XML element SHALL NOT be empty.

[component VerifyManifestResultsType XML schema details]

#### JSON Syntax

The VerifyManifestResultsType JSON object SHALL implement in JSON syntax the VerifyManifestResultsType component.

The VerifyManifestResultsType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-VerifyManifestResultsType": {

"type": "object",

"properties": {

"signedRef": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-ManifestResultType"

}

}

},

"required": ["signedRef"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ManifestResult | signedRef | [] |

[component VerifyManifestResultsType JSON schema details]

### Element ManifestResultType

**Semantics**

[component ManifestResultType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The ReferenceXpath element MUST contain one instance of a string.[sub component ReferenceXpath details]
* The Status element MUST contain one instance of an URI.[sub component Status details]

Non-normative Comment:

[component ManifestResultType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the ManifestResultType component.

The ManifestResultType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="ManifestResultType">

<xs:sequence>

<xs:element name="ReferenceXpath" type="xs:string"/>

<xs:element name="Status" type="xs:anyURI"/>

</xs:sequence>

</xs:complexType>

Each child element of ManifestResultType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The ManifestResultType XML element SHALL NOT be empty.

[component ManifestResultType XML schema details]

#### JSON Syntax

The ManifestResultType JSON object SHALL implement in JSON syntax the ManifestResultType component.

The ManifestResultType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-ManifestResultType": {

"type": "object",

"properties": {

"xPath": {

"type": "string"

},

"status": {

"type": "string"

}

},

"required": ["xPath","status"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ReferenceXpath | xPath | [] |
| Status | status | [] |

[component ManifestResultType JSON schema details]

### Element UseVerificationTimeType

**Semantics**

[component UseVerificationTimeType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The CurrentTime element MUST contain one instance of a boolean.[sub component CurrentTime details]
* The SpecificTime element MUST contain one instance of a date/time value.[sub component SpecificTime details]
* The optional Base64Content element MUST contain base64 encoded binary data if present.[sub component Base64Content details]

Non-normative Comment:

[component UseVerificationTimeType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the UseVerificationTimeType component.

The UseVerificationTimeType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="UseVerificationTimeType">

<xs:choice>

<xs:element default="false" name="CurrentTime" type="xs:boolean"/>

<xs:element name="SpecificTime" type="xs:dateTime"/>

<xs:element maxOccurs="1" minOccurs="0" name="Base64Content" type="xs:base64Binary"/>

</xs:choice>

</xs:complexType>

Each child element of UseVerificationTimeType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The UseVerificationTimeType XML element SHALL NOT be empty.

[component UseVerificationTimeType XML schema details]

#### JSON Syntax

The UseVerificationTimeType JSON object SHALL implement in JSON syntax the UseVerificationTimeType component.

The UseVerificationTimeType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-UseVerificationTimeType": {

"type": "object",

"properties": {

"currTime": {

"type": "boolean"

},

"specTime": {

"type": "integer",

"format": "utc-millisec"

},

"b64Content": {

"type": "string"

}

},

"minProperties": 1,

"maxProperties": 1

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| CurrentTime | currTime | [] |
| SpecificTime | specTime | [] |
| Base64Content | b64Content | [] |

[component UseVerificationTimeType JSON schema details]

### Element AdditionalTimeInfoType

**Semantics**

[component AdditionalTimeInfoType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The value element MUST contain one instance of a date/time value.[sub component value details]
* The Type element MUST contain one instance of an URI.[sub component Type details]
* The optional Ref element MUST contain one instance of a string.[sub component Ref details]

Non-normative Comment:

[component AdditionalTimeInfoType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the AdditionalTimeInfoType component.

The AdditionalTimeInfoType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="AdditionalTimeInfoType">

<xs:simpleContent>

<xs:extension base="xs:dateTime">

<xs:attribute name="Type" type="xs:anyURI" use="required"/>

<xs:attribute name="Ref" type="xs:string" use="optional"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

Each child element of AdditionalTimeInfoType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name. The element 'value' holding the date/time is represented by the component's XML tag text content.

The AdditionalTimeInfoType XML element SHALL NOT be empty.

[component AdditionalTimeInfoType XML schema details]

#### JSON Syntax

The AdditionalTimeInfoType JSON object SHALL implement in JSON syntax the AdditionalTimeInfoType component.

The AdditionalTimeInfoType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-AdditionalTimeInfoType": {

"type": "object",

"properties": {

"value": {

"type": "integer",

"format": "utc-millisec"

},

"type": {

"type": "string",

"format": "uri"

},

"ref": {

"type": "string"

}

},

"required": ["type"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | [] |
| Type | type | [] |
| Ref | ref | [] |

[component AdditionalTimeInfoType JSON schema details]

### Element VerificationTimeInfoType

**Semantics**

[component VerificationTimeInfoType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The VerificationTime element MUST contain one instance of a date/time value.[sub component VerificationTime details]
* The optional AdditionalTimeInfo element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section AdditionalTimeInfoType.[sub component AdditionalTimeInfo details]

Non-normative Comment:

[component VerificationTimeInfoType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the VerificationTimeInfoType component.

The VerificationTimeInfoType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="VerificationTimeInfoType">

<xs:sequence>

<xs:element name="VerificationTime" type="xs:dateTime"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="AdditionalTimeInfo" type="dss:AdditionalTimeInfoType"/>

</xs:sequence>

</xs:complexType>

Each child element of VerificationTimeInfoType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The VerificationTimeInfoType XML element SHALL NOT be empty.

[component VerificationTimeInfoType XML schema details]

#### JSON Syntax

The VerificationTimeInfoType JSON object SHALL implement in JSON syntax the VerificationTimeInfoType component.

The VerificationTimeInfoType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-VerificationTimeInfoType": {

"type": "object",

"properties": {

"verificationTime": {

"type": "integer",

"format": "utc-millisec"

},

"additionalTimeInfo": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-AdditionalTimeInfoType"

}

}

},

"required": ["verificationTime"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| VerificationTime | verificationTime | [] |
| AdditionalTimeInfo | additionalTimeInfo | [] |

[component VerificationTimeInfoType JSON schema details]

### Element AdditionalKeyInfoType

**Semantics**

[component AdditionalKeyInfoType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The KeyName element MUST contain one instance of a string.[sub component KeyName details]
* The KeyValue element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section KeyValueType.[sub component KeyValue details]
* The RetrievalMethod element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section RetrievalMethodType.[sub component RetrievalMethod details]
* The X509Data element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section X509DataType.[sub component X509Data details]
* The PGPData element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section PGPDataType.[sub component PGPData details]
* The SPKIData element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section SPKIDataType.[sub component SPKIData details]
* The MgmtData element MUST contain one instance of a string.[sub component MgmtData details]
* The optional Base64Content element MUST contain base64 encoded binary data if present.[sub component Base64Content details]
* The optional Id element MUST contain one instance of a unique identifier.[sub component Id details]
* The value element MUST contain one instance of base64 encoded binary data.[sub component value details]
* The X509Digest element MUST contain one instance of sub-components.[sub component X509Digest details]
* The Algorithm element MUST contain one instance of an URI.[sub component Algorithm details]
* The X509SubjectName element MUST contain one instance of a string.[sub component X509SubjectName details]
* The X509SKI element MUST contain one instance of base64 encoded binary data.[sub component X509SKI details]
* The X509Certificate element MUST contain one instance of base64 encoded binary data.[sub component X509Certificate details]
* The KeyName element MUST contain one instance of a string.[sub component KeyName details]
* The X509CRL element MUST contain one instance of base64 encoded binary data.[sub component X509CRL details]

Non-normative Comment:

[component AdditionalKeyInfoType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the AdditionalKeyInfoType component.

The AdditionalKeyInfoType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="AdditionalKeyInfoType">

<xs:complexContent>

<xs:extension base="dss:KeyInfoType">

<xs:choice>

<xs:element name="X509CRL" type="xs:base64Binary"/>

</xs:choice>

</xs:extension>

</xs:complexContent>

</xs:complexType>

Each child element of AdditionalKeyInfoType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The AdditionalKeyInfoType XML element SHALL NOT be empty.

[component AdditionalKeyInfoType XML schema details]

#### JSON Syntax

The AdditionalKeyInfoType JSON object SHALL implement in JSON syntax the AdditionalKeyInfoType component.

The AdditionalKeyInfoType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-AdditionalKeyInfoType": {

"type": "object",

"properties": {

"x509Digest": {

"type": "object",

"$ref": "#/definitions/dss-KeyInfoType:X509Digest"

},

"subject": {

"type": "string"

},

"ski": {

"type": "string"

},

"cert": {

"type": "string"

},

"name": {

"type": "string"

},

"X509CRL": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | [] |
| X509Digest | x509Digest | [] |
| Algorithm | algo | [] |
| X509SubjectName | subject | [] |
| X509SKI | ski | [] |
| X509Certificate | cert | [] |
| KeyName | name | [] |
| X509CRL | X509CRL | [] |

[component AdditionalKeyInfoType JSON schema details]

### Element ProcessingDetailsType

**Semantics**

[component ProcessingDetailsType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional ValidDetail element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section DetailType.[sub component ValidDetail details]
* The optional IndeterminateDetail element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section DetailType.[sub component IndeterminateDetail details]
* The optional InvalidDetail element MAY occur zero or more instances containing a sub-component . If present each one MUST satisfy the requirements specified in section DetailType.[sub component InvalidDetail details]

Non-normative Comment:

[component ProcessingDetailsType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the ProcessingDetailsType component.

The ProcessingDetailsType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="ProcessingDetailsType">

<xs:sequence>

<xs:element maxOccurs="unbounded" minOccurs="0" name="ValidDetail" type="dss:DetailType"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="IndeterminateDetail" type="dss:DetailType"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="InvalidDetail" type="dss:DetailType"/>

</xs:sequence>

</xs:complexType>

Each child element of ProcessingDetailsType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The ProcessingDetailsType XML element SHALL NOT be empty.

[component ProcessingDetailsType XML schema details]

#### JSON Syntax

The ProcessingDetailsType JSON object SHALL implement in JSON syntax the ProcessingDetailsType component.

The ProcessingDetailsType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-ProcessingDetailsType": {

"type": "object",

"properties": {

"valid": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DetailType"

}

},

"indeterminate": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DetailType"

}

},

"invalid": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dss-DetailType"

}

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| ValidDetail | valid | [] |
| IndeterminateDetail | indeterminate | [] |
| InvalidDetail | invalid | [] |

[component ProcessingDetailsType JSON schema details]

### Element DetailType

**Semantics**

[component DetailType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional Code element MUST contain an URI if present.[sub component Code details]
* The optional Message element MUST contain a sub-component if present. If present this MUST satisfy the requirements specified in section InternationalStringType.[sub component Message details]
* The optional Base64Content element MUST contain base64 encoded binary data if present.[sub component Base64Content details]
* The Type element MUST contain one instance of an URI.[sub component Type details]

Non-normative Comment:

[component DetailType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the DetailType component.

The DetailType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="DetailType">

<xs:sequence>

<xs:element minOccurs="0" name="Code" type="xs:anyURI"/>

<xs:element minOccurs="0" name="Message" type="dss:InternationalStringType"/>

<xs:element maxOccurs="1" minOccurs="0" name="Base64Content" type="xs:base64Binary"/>

</xs:sequence>

<xs:attribute name="Type" type="xs:anyURI" use="required"/>

</xs:complexType>

Each child element of DetailType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The DetailType XML element SHALL NOT be empty.

[component DetailType XML schema details]

#### JSON Syntax

The DetailType JSON object SHALL implement in JSON syntax the DetailType component.

The DetailType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-DetailType": {

"type": "object",

"properties": {

"code": {

"type": "string"

},

"msg": {

"type": "object",

"$ref": "#/definitions/dss-InternationalStringType"

},

"b64Content": {

"type": "string"

},

"type": {

"type": "string",

"format": "uri"

}

},

"required": ["type"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Code | code | [] |
| Message | msg | [] |
| Base64Content | b64Content | [] |
| Type | type | [] |

[component DetailType JSON schema details]

### Element SigningTimeInfoType

**Semantics**

[component SigningTimeInfoType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The SigningTime element MUST contain one instance of a date/time value.[sub component SigningTime details]
* The optional SigningTimeBoundaries element MUST contain sub-components if present.[sub component SigningTimeBoundaries details]
* The optional LowerBoundary element MUST contain a date/time value if present.[sub component LowerBoundary details]
* The optional UpperBoundary element MUST contain a date/time value if present.[sub component UpperBoundary details]

Non-normative Comment:

[component SigningTimeInfoType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the SigningTimeInfoType component.

The SigningTimeInfoType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="SigningTimeInfoType">

<xs:sequence>

<xs:element name="SigningTime" type="xs:dateTime"/>

<xs:element minOccurs="0" name="SigningTimeBoundaries">

<xs:complexType>

<xs:sequence>

<xs:element minOccurs="0" name="LowerBoundary" type="xs:dateTime"/>

<xs:element minOccurs="0" name="UpperBoundary" type="xs:dateTime"/>

</xs:sequence>

</xs:complexType>

</xs:element>

</xs:sequence>

</xs:complexType>

Each child element of SigningTimeInfoType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The SigningTimeInfoType XML element SHALL NOT be empty.

[component SigningTimeInfoType XML schema details]

#### JSON Syntax

The SigningTimeInfoType JSON object SHALL implement in JSON syntax the SigningTimeInfoType component.

The SigningTimeInfoType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-SigningTimeInfoType": {

"type": "object",

"properties": {

"signingTime": {

"type": "integer",

"format": "utc-millisec"

},

"signingTimeBounds": {

"type": "object",

"$ref": "#/definitions/dss-SigningTimeInfoType:SigningTimeBoundaries"

}

},

"required": ["signingTime"]

}

"dss-SigningTimeInfoType:SigningTimeBoundaries": {

"type": "object",

"properties": {

"lowerBound": {

"type": "integer",

"format": "utc-millisec"

},

"upperBound": {

"type": "integer",

"format": "utc-millisec"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| SigningTime | signingTime | [] |
| SigningTimeBoundaries | signingTimeBounds | [] |
| LowerBoundary | lowerBound | [] |
| UpperBoundary | upperBound | [] |

[component SigningTimeInfoType JSON schema details]

### Element UpdatedSignatureType

**Semantics**

[component UpdatedSignatureType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The SignatureObject element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section SignatureObjectType.[sub component SignatureObject details]
* The optional Type element MUST contain one instance of an URI.[sub component Type details]

Non-normative Comment:

[component UpdatedSignatureType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the UpdatedSignatureType component.

The UpdatedSignatureType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="UpdatedSignatureType">

<xs:sequence>

<xs:element name="SignatureObject" type="dss:SignatureObjectType"/>

</xs:sequence>

<xs:attribute name="Type" type="xs:anyURI" use="optional"/>

</xs:complexType>

Each child element of UpdatedSignatureType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The UpdatedSignatureType XML element SHALL NOT be empty.

[component UpdatedSignatureType XML schema details]

#### JSON Syntax

The UpdatedSignatureType JSON object SHALL implement in JSON syntax the UpdatedSignatureType component.

The UpdatedSignatureType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-UpdatedSignatureType": {

"type": "object",

"properties": {

"sigObj": {

"type": "object",

"$ref": "#/definitions/dss-SignatureObjectType"

},

"type": {

"type": "string",

"format": "uri"

}

},

"required": ["sigObj"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| SignatureObject | sigObj | [] |
| Type | type | [] |

[component UpdatedSignatureType JSON schema details]

### Element ReturnTransformedDocumentType

**Semantics**

[component ReturnTransformedDocumentType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The WhichReference element MUST contain one instance of an integer.[sub component WhichReference details]

Non-normative Comment:

[component ReturnTransformedDocumentType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the ReturnTransformedDocumentType component.

The ReturnTransformedDocumentType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="ReturnTransformedDocumentType">

<xs:attribute name="WhichReference" type="xs:integer" use="required"/>

</xs:complexType>

Each child element of ReturnTransformedDocumentType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The ReturnTransformedDocumentType XML element SHALL NOT be empty.

[component ReturnTransformedDocumentType XML schema details]

#### JSON Syntax

The ReturnTransformedDocumentType JSON object SHALL implement in JSON syntax the ReturnTransformedDocumentType component.

The ReturnTransformedDocumentType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-ReturnTransformedDocumentType": {

"type": "object",

"properties": {

"whichRef": {

"type": "integer"

}

},

"required": ["whichRef"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| WhichReference | whichRef | [] |

[component ReturnTransformedDocumentType JSON schema details]

### Element TransformedDocumentType

**Semantics**

[component TransformedDocumentType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Document element MUST contain one instance of a sub-component . This MUST satisfy the requirements specified in section DocumentType.[sub component Document details]
* The WhichReference element MUST contain one instance of an integer.[sub component WhichReference details]

Non-normative Comment:

[component TransformedDocumentType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the TransformedDocumentType component.

The TransformedDocumentType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="TransformedDocumentType">

<xs:sequence>

<xs:element name="Document" type="dss:DocumentType"/>

</xs:sequence>

<xs:attribute name="WhichReference" type="xs:integer" use="required"/>

</xs:complexType>

Each child element of TransformedDocumentType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The TransformedDocumentType XML element SHALL NOT be empty.

[component TransformedDocumentType XML schema details]

#### JSON Syntax

The TransformedDocumentType JSON object SHALL implement in JSON syntax the TransformedDocumentType component.

The TransformedDocumentType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dss-TransformedDocumentType": {

"type": "object",

"properties": {

"doc": {

"type": "object",

"$ref": "#/definitions/dss-DocumentType"

},

"whichRef": {

"type": "integer"

}

},

"required": ["doc","whichRef"]

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Document | doc | [] |
| WhichReference | whichRef | [] |

[component TransformedDocumentType JSON schema details]

## Referenced Structure Models from other documents

### Element TransformsType

**Semantics**

[component TransformsType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The Transform element MUST occur 1 or more instances containing a sub-component . Each one MUST satisfy the requirements specified in section TransformType.[sub component Transform details]

Non-normative Comment:

[component TransformsType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the TransformsType component.

The TransformsType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<complexType name="TransformsType">

<sequence>

<xs:element maxOccurs="unbounded" name="Transform" type="ds:TransformType"/>

</sequence>

</complexType>

Each child element of TransformsType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The TransformsType XML element SHALL NOT be empty.

[component TransformsType XML schema details]

#### JSON Syntax

The TransformsType JSON object SHALL implement in JSON syntax the TransformsType component.

The TransformsType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dsig-TransformsType": {

"type": "object",

"properties": {

"transform": {

"type": "array",

"items": {

"type": "object",

"$ref": "#/definitions/dsig-TransformType"

}

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| Transform | transform | [] |

[component TransformsType JSON schema details]

### Element TransformType

**Semantics**

[component TransformType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The optional value element MUST contain a string if present.[sub component value details]
* The optional Base64Content element MUST contain base64 encoded binary data if present.[sub component Base64Content details]
* The optional XPath element MAY occur zero or more instances containing a string.[sub component XPath details]
* The Algorithm element MUST contain one instance of an URI.[sub component Algorithm details]

Non-normative Comment:

[component TransformType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the TransformType component.

The TransformType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:complexType name="TransformType">

<xs:sequence>

<xs:element maxOccurs="1" minOccurs="0" name="value" type="string"/>

<xs:element maxOccurs="1" minOccurs="0" name="Base64Content" type="xs:base64Binary"/>

<xs:element maxOccurs="unbounded" minOccurs="0" name="XPath" type="string"/>

</xs:sequence>

<xs:attribute name="Algorithm" type="anyURI" use="required"/>

</xs:complexType>

Each child element of TransformType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The TransformType XML element SHALL NOT be empty.

[component TransformType XML schema details]

#### JSON Syntax

The TransformType JSON object SHALL implement in JSON syntax the TransformType component.

The TransformType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"dsig-TransformType": {

"type": "object",

"properties": {

"value": {

"type": "string"

},

"b64Content": {

"type": "string"

},

"xPath": {

"type": "array",

"items": {

"type": "string"

}

},

"algo": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | Some comment on the ‘value’ element. |
| Base64Content | b64Content | [] |
| XPath | xpath | [] |
| Algorithm | algo | [] |

[component TransformType JSON schema details]

### Element NameIDType

**Semantics**

[component NameIDType normative details]

Below follows a list of the sub-components that MAY be present within this component:

* The value element MUST contain one instance of a string.[sub component value details]
* The optional Format element MUST contain one instance of an URI.[sub component Format details]
* The optional SPProvidedID element MUST contain one instance of a string.[sub component SPProvidedID details]

Non-normative Comment:

[component NameIDType non normative details]

#### XML Syntax

The XML element SHALL implement in XML syntax the NameIDType component.

The NameIDType XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<complexType name="NameIDType">

<simpleContent>

<extension base="string">

<attributeGroup ref="saml:IDNameQualifiers"/>

<xs:attribute name="Format" type="anyURI" use="optional"/>

<xs:attribute name="SPProvidedID" type="string" use="optional"/>

</extension>

</simpleContent>

</complexType>

Each child element of NameIDType XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name. The element 'value' is represented by the component's XML tag text content.

The NameIDType XML element SHALL NOT be empty.

[component NameIDType XML schema details]

#### JSON Syntax

The NameIDType JSON object SHALL implement in JSON syntax the NameIDType component.

The NameIDType JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"saml2-NameIDType": {

"type": "object",

"properties": {

"value": {

"type": "string"

},

"Format": {

"type": "string"

},

"SPProvidedID": {

"type": "string"

},

"NameQualifier": {

"type": "string"

},

"SPNameQualifier": {

"type": "string"

}

}

}

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |  |
| --- | --- | --- |
| Element | Implementing JSON member name | Comments |
| value | value | [] |
| Format | format | [] |
| SPProvidedID | provId | [] |

[component NameIDType JSON schema details]

# The DSS Signing Protocol

## Element SignRequest

The SignRequest element is sent by the client to request a signature or timestamp on some input documents. It contains the following attributes and elements inherited from RequestBaseType:

RequestID [Optional]

This attribute is used to correlate requests with responses. When present in a request, the server MUST return it in the response.

InputDocuments [Optional]

The input documents, which the signature will be calculated over. This element, while optional in RequestBaseType, is REQUIRED for the SignRequest element.

OptionalInputs [Optional]

Defined in the SignRequest this element defines any additional inputs to the request.

### XML Syntax

The following schema fragment defines the <SignRequest> element:

<xs:element name="SignRequest">

<xs:complexType>

<xs:complexContent>

<xs:extension base="dss:RequestBaseType">

<xs:sequence>

<xs:element name="OptionalInputs" type="dss:OptionalInputsSignType" minOccurs="0"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

</xs:element>

### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| OptionalInputs | optInp |

## Element SignResponse

The SignResponse element contains the following attributes and elements inherited from ResponseBaseType:

RequestID [Optional]

This attribute is used to correlate requests with responses. When present in a request, the server MUST return it in the response.

Result [Required]

A code representing the status of the request.

In addition to ResponseBaseType the SignResponse element defines the following elements:

OptionalOutputs [Optional]

Any additional outputs returned by the server.

SignatureObject [Optional]

The result signature or timestamp or, in the case of a signature being enveloped in an output document (see section 3.5.8), a pointer to the signature.

In the case of SignaturePlacement being used this MUST contain a SignaturePtr, having the same XPath expression as in SignaturePlacement and pointing to a DocumentWithSignature using it’s WhichDocument attribute.

### XML Syntax

The following schema fragment defines the <SignResponse> element:

<xs:element name="SignResponse">

<xs:complexType>

<xs:complexContent>

<xs:extension base="dss:ResponseBaseType">

<xs:sequence>

<xs:element name="OptionalOutputs" type="dss:OptionalOutputsSignType" minOccurs="0"/>

<xs:element ref="dss:SignatureObject" minOccurs="0"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

</xs:element>

### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| OptionalOutputs | optOutp |
| SignatureObject | sigObj |

## Processing for XML Signatures

### Basic Process for XML

A DSS server that produces XML signatures SHOULD perform the following steps, upon receiving a SignRequest.

These steps may be changed or overridden by procedures defined for the optional inputs (for example, see section 3.5.6), or by the profile or policy the server is operating under.

The ordering of the Document elements inside the InputDocuments MAY be ignored by the server.

1. For each Document in InputDocuments the server MUST perform the following steps:

In the case of Base64Data contains XML according to the MimeType, profile, configuration or other means (see later sub-sections for other cases), the server base64-decodes the data contained within <Document> into an octet stream. This data MUST be a well formed XML Document as defined in **[XML]** section 2.1. If the RefURI attribute references within the same input document then the server parses the octet stream to NodeSetDat**a** (see **[XMLDSIG]** section 4.3.3.3) before proceeding to the next step. If the content of Base64Data is expected to be XML (e.g. required by the usage context) the base64-decoded data will to be parsed. If in this case the content is not parseable XML data then the server MUST return a Result (section 2.6) issuing a ResultMajor of RequesterError qualified by a ResultMinor of NotParseableXMLDocument.For XML content the server MUST use the Schema referred by SchemaRefs for validation if specified.

* 1. The data is processed and transforms applied by the server to produce a canonicalized octet string as required in **[XMLDSIG]** section 4.3.3.2.   
     Note: Transforms can be applied as a server implementation MAY choose to increase robustness of the Signatures created. These Transforms may reflect idiosyncrasies of different parsers or solve encoding issues or the like. Servers MAY choose not to apply transforms in basic processing and extract the binary data for direct hashing or canonicalize the data directly if certain optional inputs (see sections 3.5.8 point 2 and d.v, 3.5.9 ) are not to be implemented.   
     Note: As required in **[XMLDSIG]** if the end result is an XML node set, the server MUST attempt to convert the node set back into an octet stream using Canonical XML **[XML-C14N]**.
  2. The hash of the resulting octet stream is calculated.
  3. The server forms a <ds:Reference> with the elements and attributes set as follows:
     1. If the Document has a RefURI attribute, the <ds:Reference> element’s URI attribute is set to the value of the RefURI attribute, else this attribute is omitted.   
        A signature MUST NOT be created if more than one RefURI is omitted in the set of input documents and the server MUST report a RequesterError by setting ResultMajor RequesterError qualified by a ResultMinor.
     2. If the Document has a RefType attribute, the <ds:Reference> element’s Type attribute is set to the value of the RefType attribute, else this attribute is omitted.
     3. The <ds:DigestMethod> element is set to the hash method used.
     4. The <ds:DigestValue> element is set to the hash value that is to be calculated as per **[XMLDSIG]**.
     5. The <ds:Transforms> element is set to the sequence of transforms applied by the server in step b. This sequence MUST describe the effective transform as a reproducible procedure from parsing until hash.

1. References resulting from processing of optional inputs MUST be included. In doing so, the server MAY reflect the ordering of the Document elements.
2. The server creates an XML signature using the <ds:Reference> elements created in Step 1.d, according to the processing rules in **[XMLDSIG]**.

Note: If the RefURI references within the same input document the Document MUST also be referenced by IncludeObject in section 3.5.6 to include the object as base64 data inside a <ds:Object> otherwise a Result (section 3.6) issuing a ResultMajor RequesterError qualified by a ResultMinor NotParseableXMLDocument.

### Process Variant for TransformedData

In the case of an input document which contains TransformedData Step 4.3.1 1 is replaced with the following:

1. For each TransformedData in InputDocuments the server MUST perform the following steps:
   1. The server base64-decodes the data contained within Base64Data of TransformedData into an octet string.
   2. Omitted.
   3. The hash over of the octet stream extracted in step a is calculated.
   4. as in 4.3.1 step 1d updated as follows

replace the word "Document" by TransformedData otherwise as in as 4.3.1 step 1d.i.

replace the word "Document" by TransformedData otherwise as in as 4.3.1 step 1d.ii.

same as 4.3.1 step 1d.iii.

The <ds:Transforms> element is set to the sequence of transforms indicated by the client in the Transforms element within the TransformedData. This sequence MUST describe the effective transform as a reproducible procedure from parsing until digest input.

### Process Variant for DocumentHash

In the case of an input document which is provided in the form of a hash value in DocumentHash Step 3.3.1 1 is replaced with the following:

1. For each DocumentHash in InputDocuments the server MUST perform the following steps:
   1. Omitted.
   2. Omitted.
   3. Omitted.
   4. as in 3.3.1 step 1d updated as follows
      1. replace the word "Document" by DocumentHash otherwise as in as 4.3.1 step 1d.i.
      2. replace the word "Document" by DocumentHash otherwise as in as 4.3.1 step 1d.ii.
      3. The <ds:DigestMethod> element is set to the value of DigestMethod in DocumentHash
      4. The <ds:DigestValue> element is set to the value of DigestValue in DocumentHash.
      5. The <ds:Transforms> element is set to the sequence of transforms indicated by the client in the Transforms element within DocumentHash, if any such transforms are indicated by the client. This sequence MUST describe the effective transform as a reproducible procedure from parsing until hash.

## Basic Processing for CMS Signatures

A DSS server that produces CMS signatures **[RFC 3852]** SHOULD perform the following steps, upon receiving a SignRequest. These steps may be changed or overridden by the optional inputs, or by the profile or policy the server is operating under. With regard to the compatibility issues in validation / integration of PKCS#7 signatures and CMS implementations please refer to **[RFC 3852]** section 1.1.1 “Changes Since PKCS #7 Version 1.5”.

The SignRequest MUST contain either a single Document not having RefURI, RefType set or a single DocumentHash not having RefURI, RefType, Transforms set:

1. If a Document is present, the server hashes its contents as follows:
   1. The server base64-decodes the text content of the Base64Data into an octet stream.
   2. The server hashes the resultant octet stream.
2. The server forms a SignerInfo structure based on the input document. The components of the SignerInfo are set as follows:
   1. The digestAlgorithm field is set to the OID value for the hash method that was used in step 1.c (for a Document), or to the OID value that is equivalent to the input document’s DigestMethod (for a DocumentHash).
   2. The signedAttributes field’s message-digest attribute contains the hash value that was calculated in step 1.e (for a Document), or that was sent in the input document’s DigestValue (for a DocumentHash). Other signedAttributes may be added by the server, according to its profile or policy, or according to the Properties optional input (see section 3.5.5).
   3. The remaining fields (sid, signatureAlgorithm, and signature) are filled in as per a normal CMS signature.
3. The server creates a CMS signature (i.e. a SignedData structure) containing the SignerInfo that was created in Step 2. The resulting SignedData should be detached (i.e. external or “without eContent”) unless the client sends the IncludeEContent optional input (see section 3.5.9).

### Process Variant for DocumentHash

In the case of a DocumentHash the processing by the server is as follows:

1. Omitted.
   1. Omitted.
   2. Omitted.
   3. Omitted.
   4. Omitted.
   5. Omitted.
2. Same as in 4.4 step 2
   1. Unchanged.
   2. Unchanged.
   3. Unchanged.
3. As in 4.4 step 3, with the requirement that the signature has to be external/detached/"without eContent", since DocumentHash is incompatible with optional input IncludeEContent (see 3.5.7).

## Optional Inputs and Outputs

This section defines some optional inputs and outputs that profiles of the DSS signing protocol might find useful. Section 2.8 defines some common optional inputs that can also be used with the signing protocol. Profiles of the signing protocol can define their own optional inputs and outputs, as well. General handling of optional inputs and outputs is discussed in section 3.7.

### Optional Input SignatureType

The SignatureType element indicates the type of signature or timestamp to produce (such as a XML signature, a XML timestamp, a RFC 3161 timestamp, a CMS signature, etc.). See section 9.1 for some URI references that MAY be used as the value of this element.

#### XML Syntax

The following schema fragment defines the <SignatureType> element:

<xs:element name=”SignatureType” type=”xs:anyURI”/>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON member name |
| SignatureType | sigType |

### Optional Input AddTimestamp

The AddTimestamp element indicates that the client wishes the server to embed a timestamp token as a property or attribute of the resultant or the supplied signature. The timestamp token will be applied to the signature value in the case of CMS/PKCS7 signatures or the <ds:SignatureValue> element in the case of XML signatures.

Note: Procedures for handling other forms of timestamp may be defined in profiles of the Core. In particular, the DSS AdES profile **[DSS-AdES-P]** defines procedures for generating timestamps over the content which is about to be signed (sometimes called content timestamps), and the DSS Timestamp profile **[DSS-TS-P]** defines procedures for handling standalone timestamps.

#### XML Syntax

The schema definition of this optional input is as follows:

<xs:element name=”AddTimestamp” type=”dss:UpdateSignatureInstructionType”/>

<xs:complexType name=”UpdateSignatureInstructionType”>

<xs:attribute name=”Type” type=”xs:anyURI” use=”optional”/>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON member name |
| Type | type |

#### Processing of signatures time-stamping

The Type attribute, if present, indicates what type of timestamp to apply. Profiles that use this optional input MUST define the allowed values, and the default value, for the Type attribute (unless only a single type of timestamp is supported, in which case the Type attribute can be omitted).

Two scenarios for the timestamping of both CMS and XML signatures are supported by this Optional Input. They are as follows:

a) Create and embed a timestamp token into the signature being created as part of this SignRequest.

b) Create and embed a timestamp token into an existing signature, without verification, which is passed in the InputDocuments element of this SignRequest.

The following subsections specify the use of RFC 3161 timestamps with CMS signatures and the use of XML Timestamps or RFC 3161 timestamps with XML Signature. These subsections address both scenarios.

##### Processing for CMS signatures time-stamping

In both scenarios, the timestamp token created by the server SHALL be created according to **[RFC 3161]**. The MessageImprint field within the TstInfo structure of the timestamp token will be derived from the signature value of the just-created or incoming signature depending on the scenario. The timestamp SHALL be embedded in the CMS signature as an unsigned attribute with the object identifier (see Appendix A of **[RFC 3161]**):

{ iso(1) member-body(2) us(840) rsadsi(113549) pkcs(1) pkcs-9(9) smime(16) id-aa(2) 14}

The signature and its embedded timestamp is returned in the SignatureObject of the SignResponse.

In scenario b) the incoming signature is passed in a Base64Data element, with the MimeType attribute set to application/pkcs7-signature.

The Type attribute of the AddTimestamp optional input SHALL be set to:

"urn:ietf:rfc:3161".

Note: In scenario b) the server SHOULD not verify the signature before adding the timestamp. If a client wishes that its signatures be verified as a condition of time stamping, the client SHOULD use the AddTimestamp optional input of the Verify protocol.

##### Processing for XML Timestamps on XML signatures

If the type attribute in this optional input is   
urn:oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken and signature being timestamped is an XML signature, then the XML signature MUST contain <dss:timestamp> as defined in 5.1, placed in a <xades:XMLTimestamp> within a   
<xades:SignatureTimeStamp> as defined in **[XAdES]**.

The <dss:timestamp> MUST contain <ds:Signature> with at least two <ds:Reference> elements:

- One with the Type attribute set to "urn:oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken". and referencing a <ds:Object> element whose content is a TSTInfo element.

- The other referencing the <ds:SignatureValue> being timestamped.

The present specification defines a format for XML timestamp tokens. In addition XAdES defines a mechanism for incorporating signature timestamps in XML signatures. The present document mandates that signature timestamps in XML format MUST follow the syntax defined in section 5.1 of this document. These time-stamp tokens MUST be added to XML signatures as specified by XAdES.

The signature and its embedded timestamp SHALL be returned in the SignatureObject of the SignResponse.

Note: In scenario b) the server SHOULD not verify the signature before adding the timestamp. If a client wishes that its signatures be verified as a condition of time stamping, the client SHOULD use the AddTimestamp optional input of the Verify protocol.

The Type attribute of the AddTimestamp optional input SHALL be set to:   
 "urn: oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken”.

#### Processing for RFC 3161 Timestamps on XML signatures

If the type attribute in this optional input is urn:ietf:rfc:3161 and signature being timestamped is an XML signature then the XML signature MUST contain an RFC 3161, placed in a <xades:EncapsulatedTimeStamp> within a <xades:SignatureTimeStamp> as defined in **[XAdES]**.

Note: In scenario b) the server SHOULD not verify the signature before adding the timestamp. If a client wishes that its signatures be verified as a condition of time stamping, the client SHOULD use the AddTimestamp optional input of the Verify protocol.

### Optional Input IntendedAudience

The IntendedAudience element tells the server who the target audience of this signature is. The server MAY use this to parameterize any aspect of its processing (for example, the server MAY choose to sign with a key that it knows a particular recipient trusts).

#### XML Syntax

The schema definition of this optional input is as follows:

<xs:element name=”IntendedAudience”>

<xs:complexType>

<xs:sequence>

<xs:element name=”Recipient” type=”saml:NameIdentifierType”

maxOccurs=”unbounded”/>

</xs:sequence>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Recipient | recipient |

### Optional Input KeySelector

The KeySelector element tells the server which key to use. It uses the KeyInfoType (see section 3.4) to identify the key.

#### XML Syntax

The schema definition of this optional input is as follows:

<xs:element name=”KeySelector” type="dss:KeyInfoType "/>

#### JSON Syntax

This element requires no mapping.

### Optional Input Properties

The Properties element is used to request that the server add certain signed or unsigned properties (aka “signature attributes”) into the signature. The client can send the server a particular value to use for each property, or leave the value up to the server to determine. The server can add additional properties, even if these aren’t requested by the client.

The Properties element contains:

SignedProperties [Optional]

These properties will be covered by the signature.

UnsignedProperties [Optional]

These properties will not be covered by the signature.

Each <Property> element contains:

<Identifier> [Required]

A URI reference identifying the property.

<Value> [Optional]

If present, the value the server should use for the property.

This specification does not define any properties. Profiles that make use of this element MUST define the allowed property URIs and their allowed values.

#### XML Syntax

The schema definition of Properties, PropertiesType and Property are as follows:

<xs:element name=”Properties”>

<xs:complexType>

<xs:sequence>

<xs:element name=”SignedProperties”

type=”dss:PropertiesType” minOccurs=”0”/>

<xs:element name=”UnsignedProperties”

type=”dss: PropertiesType” minOccurs=”0”/>

</xs:sequence>

</xs:complexType>

</xs:element>

<xs:complexType name=”PropertiesType”>

<xs:sequence>

<xs:element ref=”dss:Property” maxOccurs=”unbounded”/>

</xs:sequence>

</xs:complexType>

<xs:element name=”Property”>

<xs:complexType>

<xs:sequence>

<xs:element name=”Identifier” type=”xs:anyURI”/>

<xs:element name=”Value” type=”dss:AnyType”

minOccurs=”0”/>

</xs:sequence>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| SignedProperties | signedProps |
| UnsignedProperties | unsignedProps |
| Property | prop |
| Identifier | id |
| Value | value |

### Optional Input IncludeObject

Optional input IncludeObject is used to request the creation of an XMLSig enveloping signature as follows. Multiple occurrences of this optional input can be present in a single SignRequest message. Each occurrence will cause the inclusion of an object inside the signature being created.

The attributes of IncludeObject are:

WhichDocument [Required]

Identifies the input document which will be inserted into the returned signature (see the ID attribute in section 2.4.1).

hasObjectTagsAndAttributesSet

If True indicates that the Document contains a <ds:Object> element which has been prepared ready for direct inclusion in the <ds:Signature>.

ObjId [optional]

Sets the Id attribute on the returned <ds:Object>.

createReference

This attribute set to false inhibits the creation, carried by the Basic Processing specified in section 3.3.1, of the <ds:Reference> associated to the RefURI attribute of the input document referred by the WhichDocument attribute, effectively allowing clients to include <ds:Object> elements not covered/protected by the signature being created.

#### XML Syntax

The schema definition of IncludeObject is as follows:

<xs:element name="IncludeObject">

<xs:complexType>

<xs:attribute name="WhichDocument" type="xs:IDREF"/>

<xs:attribute name="hasObjectTagsAndAttributesSet"   
 type="xs:boolean" default="false"/>

<xs:attribute name="ObjId" type="xs:string"   
 use="optional"/>

<xs:attribute name="createReference" type="xs:boolean"   
 use="optional" default="true"/>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| WhichDocument | whichDoc |
| hasObjectTagsAndAttributesSet | hasObjectTagsAndAttributesSet |
| ObjId | objId |
| createReference | createRef |
| Value | value |

#### XML Signatures Variant Optional Input IncludeObject

An enveloping signature is a signature having <ds:Object>s which are referenced by <ds:Reference>s having a same-document URI.

For each IncludeObject the server creates a new <ds:Object> element containing the document, as identified using the WhichDocument attribute, as its child. This object is carried within the enveloping signature. The ordering of the IncludeObject optional inputs MAY be ignored by the server.

This Document MUST include a “same-document” RefURI attribute (having a value starting with “#”) which references either:

* *The whole newly-created* <ds:Object>.
* *The relevant parts of the newly-created* <ds:Object>*’s contents to be covered/protected by the signature*

If the result of evaluating the expression included in the RefURI attribute doesn’t fit in any of the options described above, the server MUST reject the request using a ResultMajor RequesterError which MAY be qualified by a ResultMinor

urn:oasis:names:tc:dss:1.0:resultminor:InvalidRefURI

Note :If the server does not support the ordering of <ds:Object>, it is recommended either to use ID-based referencing to the <ds:Object> (using the client-generated ID included in the ObjId attribute) or to rely on expressions based on <ds:Object>'s contents that allow to unambiguously refer to the included object or their relevant parts.

The URI in the RefURI attribute of this Document should at least reference the relevant parts of the Object to be included in the calculation for the corresponding reference. Clients MUST generate requests in a way that some <ds:Reference>’s URI values actually will reference the <ds:Object> generated by the server once this element will have been included in the <ds:Signature> produced by the server.

1. For each IncludeObject the server MUST carry out the following steps before performing Basic Processing (as specified in section 4.3.1):
   1. The server identifies the Document that is to be placed into a <ds:Object> as indicated by the WhichDocument attribute.
   2. The data to be carried in the enveloping signature is extracted and decoded as described in 4.3.1 Step 1 a (or equivalent step in variants of the basic process as defined in 4.3.2 onwards depending of the form of the input document).
   3. if the hasObjectTagsAndAttributesSet attribute is false or not present the server builds the <ds:Object> as follows:
      1. The server generates the new <ds:Object> and sets its Id attribute to the value indicated in ObjId attribute of the optional input if present.
      2. In the case of the Document pointed at by WhichDocument having Base64Data, <ds:Object>('s) MIME Type is to be set to the value of Base64Data('s) MIME Type value and the Encoding is to be set to [http://www.w3.org/TR/xmlschema-2/#base64Binary](http://www.w3.org/TR/xmlschema-2/)
   4. The server splices the to-be-enveloped documents as <ds:Object>(s) into the <ds:Signature>, which is to be returned.
   5. If CreateReference is set to true generate a ds:Reference element referencing the spliced <ds:Object> and exclude this Document from the set of Documents ready for further processing. Otherwise just exclude this Document from the set of Documents ready for further processing.
2. The server then continues with processing as specified in section 4.3.1 for the rest of the documents.

### Optional Input IncludeEContent

In the case of the optional input IncludeEContent (that stands for include enveloped or encapsulated content) section 3.4 step 3 is overridden as follows.

1. The server creates a CMS signature (i.e. a SignedData structure) containing the SignerInfo that was created in Step 3. The resulting SignedData is now internal, as the document is enveloped in the signature.

For CMS details in this context please refer to **[RFC 3852]** sections 5.1 “SignedData Type” and 5.2 “EncapsulatedContentInfo Type”.

Missing in 1.0 schema!

### Enveloped Signatures, Optional Input SignaturePlacement and Output DocumentWithSignature

Optional input SignaturePlacement is used to request the creation of an XMLSig enveloped signature placed within an input document. The resulting document with the enveloped signature is placed in the optional output DocumentWithSignature.

The server places the signature in the document identified using the WhichDocument attribute.

In the case of a non-XML input document then the server will return an error unless alternative procedures are defined by a profile or in the server policy for handling such a situation.

The SignaturePlacement element contains the following attributes and elements:

WhichDocument [Required]

Identifies the input document which the signature will be inserted into (see the ID attribute in section 2.4.1).

CreateEnvelopedSignature

If this is set to true a reference having an enveloped signature transform is created.

XpathAfter [Optional]

Identifies an element, inside the XML input document, after which the signature will be inserted. (The rules for XPath evaluation are those stated in section 2.5 SignatureObject)

XpathFirstChildOf [Optional]

Identifies an element, in the XML input document, which the signature will be inserted as the first child of. For details on the evaluation of The XPath expression see above (XpathAfter). The signature is placed immediately after the start tag of the specified element.

The DocumentWithSignature optional output contains the input document with the signature inserted. It has one child element:

Document [Required]

This contains the input document with a signature inserted in some fashion.

For an XMLSig enveloped signature the client produces a request including elements set as follows:

1. The WhichDocument attribute is set to identify the Document to envelope the signature.
2. The RefURI attribute MUST be set to include a “same-document” URI which references either:  
   - The whole Document containing the signature (by using a RefURI=””)  
   - The relevant parts of the Document to be covered/protected by the signature (by using a “same-document” RefURI attribute having a value starting with “#”, like RefURI=”#some-id”, RefURI=”#xpointer(/)”, RefURI=”#xpointer(/DocumentElement/ToBeSignedElement)” or the like).  
   If the result of evaluating the expression included in the RefURI attribute doesn’t fit in any of the options described above, the server MUST reject the request using a ResultMajor RequesterError which MAY be qualified by a ResultMinor urn:oasis:names:tc:dss:1.0:resultminor:InvalidRefURI.
3. The createEnvelopedSignature is set to true (or simply omitted).

If the SignaturePlacement element is present the server processes it as follows before performing Basic Processing (as specified in section 4.3.1):

1. The server identifies the Document in which the signature is to be enveloped as indicated by the WhichDocument attribute.
2. This document is extracted and decoded as described in 4.3.1 Step 1.a (or equivalent step in variants of the basic process as defined in 4.3.2 onwards depending of the form of the input document).
3. The server splices the <ds:Signature> to-be-enveloped into the document.
4. If createEnvelopedSignature equals true,   
   a. Perform Basic Processing for the enveloping Document, as described in section 4.3.1 with the following amendments:
   1. Omitted
   2. As in 4.3.1 1.b, with the additional requirement of adding an EnvelopedSignatureTransform as the first transform in the <ds:Transforms> list (even preceding transforms used for extraction).   
      Note: This is necessary because the EnvelopedSignatureTransform would not work if there was a Canonicalization before it. Similar problems apply to transforms using the here() function.
   3. Unchanged
   4. Unchanged
      1. Unchanged
      2. Unchanged
      3. Unchanged
      4. Unchanged
      5. Unchanged (Note: the requirement imposed in 1.b of having the EnvelopedSignatureTransform as the first transform in the <ds:Transforms> list MUST be observed).
5. Omitted
6. Omitted

b. After creating the <ds:Reference> due to the modified Basic Processing, make it available for the Basic Processing, as required in 4.3.1 Step 2.

1. Add the returned <ds:Reference> as required in 4.3.1 Step 2 of Basic processing.

#### XML Syntax

The schema definition of SignaturePlacement and DocumentWithSignature are as follows:

<xs:element name="SignaturePlacement">

<xs:complexType>

<xs:choice>

<xs:element name="XPathAfter" type="xs:string"/>

<xs:element name="XPathFirstChildOf"   
 type="xs:string"/>

</xs:choice>

<xs:attribute name="WhichDocument" type="xs:IDREF"/>

<xs:attribute name="CreateEnvelopedSignature"   
 type="xs:boolean" default="true"/>

</xs:complexType>

</xs:element>

<xs:element name=”DocumentWithSignature”>

<xs:complexType>

<xs:sequence>

<xs:element ref=”dss:Document”/>

<xs:sequence>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| XPathAfter | xPathAfter |
| XPathFirstChildOf | xPathFirstChildOf |
| WhichDocument | whichDoc |
| CreateEnvelopedSignature | createEnvelopedSignature |
| Document | doc |

### Optional Input SignedReferences

The SignedReferences element gives the client greater control over how the <ds:Reference> elements are formed. When this element is present, step 1 of Basic Processing (section 3.3.1) is overridden. Instead of there being a one-to-one correspondence between input documents and <ds:Reference> elements, now each SignedReference element controls the creation of a corresponding <ds:Reference>.

Since each SignedReference refers to an input document, this allows multiple <ds:Reference> elements to be based on a single input document. Furthermore, the client can request additional transforms to be applied to each <ds:Reference>, and can set each <ds:Reference> element’s Id or URI attribute. These aspects of the <ds:Reference> can only be set through the SignedReferences optional input; they cannot be set through the input documents, since they are aspects of the reference to the input document, not the input document itself.

Each SignedReference element contains:

WhichDocument [Required]

Which input document this reference refers to (see the ID attribute in section 2.4.1).

RefId [Optional]

Sets the Id attribute of the corresponding <ds:Reference>.

RefURI [Optional]

If this attribute is present, the corresponding <ds:Reference> element’s URI attribute is set to its value. If it is not present, the URI attribute is omitted in the corresponding <ds:Reference>

RefType [Optional]

overrides the RefType of Document

ds:Transforms [Optional]

Requests the server to perform additional transforms on this reference.

When the SignedReferences optional input is present, basic processing 4.3.1step 1 is performed for each SignedReference overriding steps a., b., c. and d.:

If the SignaturePlacement element is present the server processes it as follows:

For each SignedReference in SignedReferences

1. The server identifies the Document referenced as indicated by the WhichDocument attribute.
2. If RefURI is present create an additional <ds:Reference> for the document in question by performing basic processing as in section 4.3.1 Step 1 amended as follows:
   1. Unchanged.
   2. Applies the transforms indicated in ds:Transforms. Afterwards, the server may apply any other transform it considers appropriate as per its policy and then generates a canonicalized octet string as required in step b. of basic Processing before hashing.
   3. Unchanged.
   4. The server forms a <ds:Reference> with the elements and attributes set as follows:
      1. Use this RefURI attribute from the SignedReference if presentinstead of RefURI from Documentin step i. of Basic Processing.   
         The Id attribute is set to the SignedReference element’s RefId attribute. If the SignedReference has no RefId attribute, the <ds:Reference> element’s Id attribute is omitted.
      2. Unchanged.
      3. Unchanged.
      4. Unchanged.
      5. The <ds:Transforms> used here will have to be added to <ds:Transforms> of step v. of basic processing so that this element describes the sequence of transforms applied by the server and describing the effective transform as a reproducible procedure from parsing until hash.
3. Add the returned <ds:Reference> as required in 3.3.1 Step 2 of Basic processing.
4. If RefURI is not present perform basic processing for the input document not creating an additional <ds:Reference> amending Step 1 as follows:
   1. Unchanged.
   2. Applies the transforms indicated in ds:Transforms. Afterwards, the server may apply any other transform it considers as appropriate as per its policy and then generates generating a canonicalized octet string as required in step b. of basic Processing before hashing.
   3. Unchanged.
   4. The server forms a <ds:Reference> with the elements and attributes set as follows:
      1. Perform step i. of Basic Processing and the Id attribute is set to the SignedReference element’s RefId attribute. If the SignedReference has no RefId attribute, the <ds:Reference> element’s Id attribute is omitted.
      2. Unchanged
      3. Unchanged
      4. Unchanged
      5. The ds:Transforms used here will have to be added to <ds:Transforms> of step v. of basic processing so that this element describes the sequence of transforms applied by the server and describing the effective transform as a reproducible procedure from parsing until hash.
5. The server continues with processing as specified in section 4.3.1 for the rest of the documents.

#### XML Syntax

The schema definition of SignedReferences and SignedReference are as follows:

<xs:element name=”SignedReferences”>

<xs:complexType>

<xs:sequence>

<xs:element ref=”dss:SignedReference”

maxOccurs=”unbounded”/>

</xs:sequence>

</xs:complexType>

</xs:element>

<xs:element name="SignedReference">

<xs:complexType>

<xs:sequence>

<xs:element ref="ds:Transforms" minOccurs="0"/>

</xs:sequence>

<xs:attribute name="WhichDocument" type="xs:IDREF" use="required"/>

<xs:attribute name="RefURI" type="xs:anyURI" use="optional"/>

<xs:attribute name="RefId" type="xs:string" use="optional"/>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| SignedReference | sigRef |
| Transforms | transforms |
| WhichDocument | whichDoc |
| RefURI | refURI |
| RefId | refId |

## OptionalInputsSignType

The OptionalInputsSignType is derived from OptionalInputsBaseType and contains the optional input elements specific for signing requests. All of the elements are optional, IncludeObject may occur more than once. It contains the following elements:

SignatureType [Optional]

The element SignatureType (see section 4.5.1) indicates the type of signature to be created by a request.

IntendedAudience [Optional]

The element IntendedAudience (see section 4.5.2) informs about the audience of the signature to be created by a request.

KeySelector [Optional]

This element specifies the language (see section 4.5.3) that will be used for human readable messages in response to a request.

Properties [Optional]:

The element Properties (see section 4.5.4) provides a set of signed and unsigned to be included in the signature.

IncludeObject [Optional]:

The element IncludeObject (see section 4.5.5) advises the server to create an enveloping XML.

SignaturePlacement [Optional]:

The element SignaturePlacement (see section 4.5.7) is used to advise the server to create an enveloped XML signature.

SignedReferences [Optional]:

The element SignedReferences (see section 4.5.8) enables the caller to take detailed control over the details of a XML signature.

Nonce [Optional]:

The element Nonce allows the caller to provide an integer value that can be used in timestamp creation (see **[RFC 3161]**).

SignatureAlgorithm [Optional]:

The element SignatureAlgorithm allows the caller to provide a hint regarding the signing algorithm to be used. Regarding the format of algorithms see section xxx.

#### XML Syntax

XML schema snippet defining OptionalInputsSignType:

<xs:complexType name="OptionalInputsSignType">

<xs:complexContent>

<xs:extension base="dss:OptionalInputsBaseType">

<xs:sequence>

<xs:element ref="dss:SignatureType" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:IntendedAudience" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:KeySelector" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:Properties" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:IncludeObject" minOccurs="0" maxOccurs="unbounded"/>

<xs:element ref="dss:SignaturePlacement" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:SignedReferences" minOccurs="0" maxOccurs="1"/>

<xs:element name="Nonce" type="xs:integer" minOccurs="0" maxOccurs="1"/>

<xs:element name="SignatureAlgorithm" type="xs:anyURI" minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| SignatureType | sigType |
| IntendedAudience | audience |
| KeySelector | keySel |
| Properties | props |
| IncludeObject | includeObj |
| SignaturePlacement | sigPlacement |
| SignedReferences | sigRefs |
| Nonce | nonce |
| SignatureAlgorithm | sigAlgo |

## OptionalOutputsSignType

The OptionalOutputsSignType is derived from OptionalOutputsBaseType and contains the DocumentWithSignature optional input elements specific for signing requests. The element is optional and MUST NOT occur more than once.

DocumentWithSignature [Optional]

The element DocumentWithSignature (see section 4.5.8) may hold an enveloped signature.

#### XML Syntax

XML schema snippet defining OptionalOutputsSignType:

<xs:complexType name="OptionalOutputsSignType">

<xs:complexContent>

<xs:extension base="dss:OptionalOutputsBaseType">

<xs:sequence>

<xs:element ref="dss:DocumentWithSignature"

minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| DocumentWithSignature | docWithSignature |

# The DSS Verifying Protocol

## Element VerifyRequest

The VerifyRequest inherits from RequestBaseType. This element is sent by the client to verify a signature or timestamp on some input documents. It contains the following additional elements:

SignatureObject [Optional]

This element contains a signature or timestamp, or else contains a SignaturePtr that points to an XML signature in one of the input documents. If this element is omitted, there must be only a single InputDocument which the server will search to find the to-be-verified signature(s). Either a SignaturePtr or a single InputDocument and no SignatureObject MUST be used whenever the to-be-verified signature is an XML signature which uses an Enveloped Signature Transform; otherwise the server would have difficulty locating the signature and applying the Enveloped Signature Transform.

OptionalInputs [Optional]

The VerifyRequest element defines any additional inputs to the request.

### XML Syntax

XML schema snippet defining VerifyRequest:

<xs:element name="VerifyRequest">

<xs:complexType>

<xs:complexContent>

<xs:extension base="dss:RequestBaseType">

<xs:sequence>

<xs:element name="OptionalInputs" type="dss:OptionalInputsVerifyType" minOccurs="0"/>

<xs:element ref="dss:SignatureObject" minOccurs="0"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

</xs:element>

### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| OptionalInputs | optIn |
| SignatureObject | sigObj |

## Element VerifyResponse

The VerifyResponse inherits from ResponseBaseType. This element defines the additional element OptionalOutputs:

OptionalOutputs [Optional]

Defined in the VerifyRequest this element defines any additional inputs to the request.

<xs:element name="VerifyResponse">

<xs:complexType>

<xs:complexContent>

<xs:extension base="dss:ResponseBaseType">

<xs:sequence>

<xs:element name="OptionalOutputs" type="dss:OptionalOutputsVerifyType" minOccurs="0"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

</xs:element>

### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| OptionalOutputs | optOutp |

## Basic Processing for XML Signatures

A DSS server that verifies XML signatures SHOULD perform the following steps, upon receiving a VerifyRequest. These steps may be changed or overridden by the optional inputs, or by the profile or policy the server is operating under. For more details on multi-signature verification, see section 5.3.1.

1. The server retrieves one or more <ds:Signature> objects, as follows: If the SignatureObject is present, the server retrieves either the <ds:Signature> that is a child element of the SignatureObject (see: Note at the end of this section), or those <ds:Signature> objects which are pointed to by the SignaturePtr in the SignatureObject.
   1. If the SignaturePtr points to an input document but not a specific element in that document, the pointed-to input document must be a Document element containing XML.   
      If the SignatureObject is omitted, there MUST be only a single Document element. This case is handled as if a SignaturePtr pointing to the single Document was present: the server will search and find every <ds:Signature> element in this input document, and verify each <ds:Signature> according to the steps below.
2. For each <ds:Reference> in the <ds:Signature>, the server finds the input document with matching RefURI and RefType values (omitted attributes match omitted attributes). If the <ds:Reference> uses a same-document URI, the XPointer should be evaluated against the input document the <ds:Signature> is contained within, or against the <ds:Signature> itself if it is contained within the SignatureObject element. The SchemaRef element or optional input Schema of the input document or SignatureObject will be used, if present, to identify ID attributes when evaluating the XPointer expression. If the <ds:Reference> uses an external URI and the corresponding input document is not present, the server will skip the <ds:Reference>, and later return a result code such as ReferencedDocumentNotPresent to indicate this. The RefURI MAY be omitted in at most one of the set of Input documents.
   1. If the input document is a Document, the server extracts and decodes as described in 4.3.1 Step 1.a (or equivalent step in variants of the basic process as defined in 4.3.2 onwards depending of the form of the input document).
   2. If the input document is a TransformedData, the server MAY check that the <ds:Transforms> (if supplied) match between the TransformedData and the <ds:Reference> and then hashes the resultant data object according to <ds:DigestMethod>, and MUST check that the result matches <ds:DigestValue>.
   3. If the input document is a DocumentHash, the server MAY check that the <ds:Transforms>, <ds:DigestMethod> (if supplied) and <ds:DigestValue> elements match between the DocumentHash and the <ds:Reference>.
   4. If the combination of RefURI and RefType matches more than one input document all of them MUST be either a TransformedData or a DocumentHash otherwise a RequesterError is issued qualified by result minor of ReferencedDocumentNotPresent.  
      Only one of them is allowed to have a WhichReference value that matches the order of the <ds:Reference> within the <ds:SignedInfo> in question otherwise a RequesterError is issued qualified by result minor of ReferencedDocumentNotPresent. Using this input document either variant b. or c. is applied respectively before continuing with step 3.
3. The server shall verify the validity of the signature at a particular time (i.e. current time, assumed signing time or other time), depending on the server policy. This behavior MAY be altered by using the optional input UseVerificationTime (see section 5.5.2).
4. If the signature validates correctly, the server returns one of the first three ResultMinor codes listed in section 5.4, depending on the relationship of the signature to the input documents (not including the relationship of the signature to those XML elements that were resolved through XPointer evaluation; the client will have to inspect those relationships manually). If the signature fails to validate correctly, the server returns some other code; either one defined in section 5.4 of this specification, or one defined by some profile of this specification.

### Multi-Signature Verification

If a client requests verification of an entire input document, either using a SignaturePtr without an XPath or a missing SignaturePtr (see section 5.3 step 1), then the server MUST determine whether the input document contains zero, one, or more than one <ds:Signature> elements. If zero, the server should return a ResultMajor code of RequesterError.

If more than one <ds:Signature> elements are present, the server MUST either reject the request with a ResultMajor code of RequesterError and a ResultMinor code of NotSupported, or accept the request and try to verify all of the signatures.

If the server accepts the request in the multi-signature case (or if only a single signature is present) and one of the signatures fails to verify, the server should return one of the error codes in section 5.4, reflecting the first error encountered.

If all of the signatures verify correctly, the server should return the Success ResultMajor code and the following ResultMinor code:

urn:oasis:names:tc:dss:1.0:resultminor:ValidMultiSignatures

Note: These procedures only define procedures for handling of multiple signatures on one input document. The procedures for handling multiple signatures on multiple documents are not defined in this core specification, but however such procedures, along with any optional elements that may be required, may be defined in profiles of this specification.

Only certain optional inputs and outputs are allowed when performing multi-signature verification. See section 5.5 for details.

### Signature Timestamp verification procedure

The following sub-sections will describe the processing rules for verifying:

- RFC 3161 timestamp tokens on CMS Signatures

- XML timestamp tokens on XML Signatures

- RFC 3161 timestamp tokens on XML Signatures

This section describes signature timestamp processing when the timestamp is embedded in the incoming signature.

Note: procedures for handling other forms of timestamp may be defined in profiles of the Core. In particular, the DSS AdES profile **[DSS-AdES-P]** defines procedures for handling timestamps against the document being signed, and the DSS Timestamp profile defines procedures for handling standalone timestamps.

For a definition of the Timestamp element see section 5.1 Details of the XML timestamp token can be found in subsection 5.1.1.

#### Processing for RFC 3161 Timestamp tokens on CMS Signatures.

The present section describes the processing rules for verifying a CMS RFC3161 timestamp token passed in on a Verify call within the SignatureObject of the VerifyRequest element. In the CMS case, since the "signature timestamp" is embedded in the signature as an unsigned attribute, only the time stamped signature is required for verification processing. As such, no additional input is required.

The processing by the server is broken down into the following steps:

1. The signature timestamp is embedded in the incoming signature as an unsigned attribute whose object identifier is 1.2.840.11359.1.9.16.2.14. Extract and verify the timestamp token.
2. Verify that the token's public verification certificate is authorized for time stamping by examining the Extended Key Usage field for the presence of the time stamping OID "1.3.6.1.5.5.7.3.8".
3. Validate that the TstInfo structure has a valid layout as defined in **[RFC 3161]**.
4. Extract the MessageImprint hash value and associated algorithm from the TstInfo structure which will be compared against the hash value derived in the next step.
5. Recalculate the hash of the signature value field of the signature in which the timestamp is embedded.
6. Compare the hash values from the two previous steps, and if they are equivalent, then this timestamp is valid for the signature that was time stamped.
7. Verify that the public verification certificate conforms to all relevant aspects of the relying-party's policy including algorithm usage, policy OIDs, time accuracy tolerances, and the Nonce value.
8. Set the Result element as defined in this specification. Minor Error   
   urn:oasis:names:tc:dss:1.0:resultminor:valid:signature:InvalidSignatureTimestamp MAY be used to indicate that the signature is valid but the timestamp against that signature is invalid.

#### Processing for XML timestamp tokens on XML signatures

The present section describes the processing rules for verifying and XML Signature timestamp token embedded within an XML signature using the incorporation mechanisms specified in XAdES (i.e., in the <xades:XMLTimeStamp> <xades:SignatureTimeStamp> element's child). This XML signature may be passed in on a Verify call within the SignatureObject or embedded within a Document’s child.

The server shall verify the timestamp token performing the steps detailed below. If any one of them results in failure, then the timestamp token SHOULD be rejected.

1. Extract the timestamp token embedded in the incoming signature as defined in 4.5.2.3.
2. Verify that the verification key and algorithms used conforms to all relevant aspects of the applicable policy. Should this key come within a public certificate, verify that the certificate conforms to all relevant aspects of the applicable policy including algorithm usage, policy OIDs, and time accuracy tolerances.
3. Verify that the aforementioned verification key is consistent with the ds:SignedInfo/SignatureMethod/@Algorithm attribute value.
4. Verify the timestamp token signature in accordance with the rules defined in **[XMLDSIG]**.
5. Verify that the <ds:SignedInfo> element contains at least two <ds:Reference> elements.
6. Verify that one of the <ds:Reference> elements has its Type attribute set to “urn:oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken”. Take this one and proceed as indicated below:
   1. Retrieve the referenced data object. Verify that it references a <ds:Object> element, which in turn envelopes a <TSTInfo> element.
   2. Verify that the <TSTInfo> element has a valid layout as per the present specification.
   3. Extract the digest value and associated algorithm from its <ds:DigestValue> and <ds:DigestMethod> elements respectively.
   4. Recalculate the digest of the retrieved data object as specified by **[XMLDSIG]** with the digest algorithm indicated in <ds:DigestMethod>, and compare this result with the contents of <ds:DigestValue>.
7. Take each of the other <ds:Reference> elements and for each validate the hash as specified in **[XMLDSIG]**.
8. Check that for one of the <ds:Reference> elements the retrieved data object is actually the <ds:SignatureValue> element and that it contains its digest after canonicalization.
9. Set the Result element as appropriate. Minor Error   
   urn:oasis:names:tc:dss:1.0:resultminor:valid:signature:InvalidSignatureTimestamp MAY be used to indicate that the signature is valid but the timestamp against that signature is invalid.

#### Processing for RFC 3161 timestamp tokens on XML Signatures

The present section describes the processing rules for verifying an RFC 3161 timestamp token embedded within an XML signature as an unsigned property. This XML signature may be passed in on a Verify call within the SignatureObject or embedded within a Document’s child.

The server shall verify the timestamp token performing the steps detailed below. If any one of them results in failure, then the timestamp token SHOULD be rejected.

1. Extract the timestamp token embedded in the incoming signature as defined in 3.5.2.3.
2. Verify that the token's public verification certificate is authorized for time stamping by examining the Extended Key Usage field for the presence of the time stamping OID "1.3.6.1.5.5.7.3.8".
3. Process the signature timestamp as defined in **[XAdES]** Annex G.2.2.16.1.3.
4. Verify that the public verification certificate conforms to all relevant aspects of the relying-party's policy including algorithm usage, policy OIDs, time accuracy tolerances, and the Nonce value.
5. Set the Result element as appropriate.   
   urn:oasis:names:tc:dss:1.0:resultminor:valid:signature:InvalidSignatureTimestamp MAY be used to indicate that the signature is valid but the timestamp against that signature is invalid.

## Basic Processing for CMS Signatures

A DSS server that verifies CMS signatures SHOULD perform the following steps, upon receiving a VerifyRequest. These steps may be changed or overridden by the optional inputs, or by the profile or policy the server is operating under.

1. The server retrieves the CMS signature by decoding the Base64Signature child of SignatureObject.
2. The server retrieves the input data. If the CMS signature is detached, there must be a single input document: i.e. a single Document or DocumentHash element. Otherwise, if the CMS signature is enveloping, it contains its own input data and there MUST NOT be any input documents present.
3. The CMS signature and input data are verified in the conventional way (see **[RFC 3852]** for details).
4. If the signature validates correctly, the server returns the first ResultMinor code listed in section 5.4. If the signature fails to validate correctly, the server returns some other code; either one defined in section 5.4 of this specification, or one defined by some profile of this specification.

## Optional Inputs and Outputs

This section defines some optional inputs and outputs that profiles of the DSS verifying protocol might find useful. Section 2.8 defines some common optional inputs that can also be used with the verifying protocol. Profiles of the verifying protocol can define their own optional inputs and outputs, as well. General handling of optional inputs and outputs is discussed in section 2.7.

### Optional Input VerifyManifests and Output VerifyManifestResults

The presence of this element instructs the server to validate manifests in an XML signature.

On encountering such a document in step 2 of basic processing, the server shall repeat step 2 for all the <ds:Reference> elements within the manifest. In accordance with **[XMLDSIG]** section 5.1, DSS Manifest validation does not affect a signature's core validation. The results of verifying individual <ds:Reference>'s within a <ds:Manifest> are returned in the VerifyManifestResults optional output.   
For example, a client supplies the optional input VerifyManifests, then the returned ResultMinor is urn:oasis:names:tc:dss:1.0:resultminor:valid:hasManifestResults if XMLSig core validation succeeds and the optional output VerifyManifestResults is returned indicating the status of the manifest reference verification. In case of a negative XMLSig core validation no attempt is made to verify manifests.

The VerifyManifests optional input is allowed in multi-signature verification. The VerifyManifestResults is comprised of one or more ManifestResults that contain the following:

ReferenceXpath [Required]

Identifies the manifest reference, in the XML signature, to which this result pertains.

Status [Required]

Indicates the manifest validation result. It takes one of the values urn:oasis:names:tc:dss:1.0:manifeststatus:Valid or urn:oasis:names:tc:dss:1.0:manifeststatus:Invalid.

#### XML Syntax

XML schema snippet defining VerifyManifestResults:

<xs:element name="VerifyManifestResults" type="dss:VerifyManifestResultsType"/>

<xs:complexType name="VerifyManifestResultsType">

<xs:sequence>

<xs:element ref="dss:ManifestResult" maxOccurs="unbounded"/>

</xs:sequence>

</xs:complexType>

<xs:element name="ManifestResult">

<xs:complexType>

<xs:sequence>

<xs:element name="ReferenceXpath" type="xs:string"/>

<xs:element name="Status" type="xs:anyURI"/>

</xs:sequence>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| ManifestResult | result |
| ReferenceXpath | refXpath |
| Status | status |

### Optional Input UseVerificationTime

This element instructs the server to attempt to determine the signature’s validity at the specified time, instead of a time determined by the server policy.

Note: In order to perform the verification of the signature at a certain time, the server MUST obtain the information necessary to carry out this verification (e.g. CA certificates, CRLs) applicable at that time.

CurrentTime [Optional]

Instructs the server to use its current time (normally the time associated with the server-side request processing).

SpecificTime [Optional]

Allows the client to manage manually the time instant used in the verification process. It SHOULD be expressed as UTC time (Coordinated Universal Time) to reduce confusion with the local time zone use.

Profiles MAY define new child elements associated to other different behaviors.

If the verification time is a significant period in the past the server MAY need to take specific steps for this, and MAY need to ensure that any cryptographic weaknesses over the period do not affect the validation.

This optional input is allowed in multi-signature verification.

#### XML Syntax

XML schema snippet defining VerifyManifestResults:

<xs:element name="UseVerificationTime"/>

<xs:complexType name="UseVerificationTimeType">

<xs:choice>

<xs:element name="CurrentTime"/>

<xs:element name="SpecificTime" type="xs:dateTime"/>

<xs:sequence>

<xs:element name="Base64Content" type="xs:base64Binary" minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:choice>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| CurrentTime | currTime |
| SpecificTime | specTime |
| Base64Content | b64Content |

### Optional Input/Output ReturnVerificationTimeInfo / VerificationTimeInfo

These elements allow the client to obtain the time instant used by the server to validate the signature.

Optionally, in addition to the verification time, the server MAY include in the VerificationTimeInfo response any other relevant time instants that may have been used when determining the verification time or that may be useful for its qualification.

VerificationTime [Required]

The time instant used by the server when verifying the signature. It SHOULD be expressed as UTC time (Coordinated Universal Time) to reduce confusion with the local time zone use.

AdditionalTimeInfo [Optional]

Any other time instant(s) relevant in the context of the verification time determination.

The Type attribute qualifies the kind of time information included in the response. The Ref attribute allows to establish references to the source of the time information, and SHOULD be used when there is a need to disambiguate several AdditionalTimeInfo elements with the same Type attribute.

This specification defines the following base types, whose values MUST be of type xs:dateTime and SHOULD be expressed as UTC time (Coordinated Universal Time). Profiles MAY include and define new values for the Type attribute.

urn:oasis:names:tc:dss:1.0:additionaltimeinfo:signatureTimestamp

The time carried inside a timestamp applied over the signature value.

urn:oasis:names:tc:dss:1.0:additionaltimeinfo:signatureTimemark

The time instant associated to the signature stored in a secure record in the server.

urn:oasis:names:tc:dss:1.0:additionaltimeinfo:signedObjectTimestamp

The time carried inside a timestamp applied over a signed object.

Note that XML Signatures can be produced over multiple objects (via multiple ds:Reference elements), and therefore it's possible to have multiple timestamps, each one applied over each object. In this case, the Ref attribute MUST include the value of the Id attribute of the ds:Reference element.

urn:oasis:names:tc:dss:1.0:additionaltimeinfo:claimedSigningTime

The time claimed by the signer to be the signature creation time.

In the case of multi-signature verification, it’s a matter of server policy as to whether this element is supported.

This optional input is not allowed in multi-signature verification.

#### XML Syntax

XML schema snippet defining VerificationTimeInfo and related structures:

<xs:element type="xs:boolean" name="ReturnVerificationTimeInfo" default="false"/>

<xs:element name="AdditionalTimeInfo" type="dss:AdditionalTimeInfoType"/>

<xs:complexType name="AdditionalTimeInfoType">

<xs:simpleContent>

<xs:extension base="xs:dateTime">

<xs:attribute name="Type" type="xs:anyURI" use="required"/>

<xs:attribute name="Ref" type="xs:string" use="optional"/>

</xs:extension>

</xs:simpleContent>

</xs:complexType>

<xs:element name="VerificationTimeInfo"

type="dss:VerificationTimeInfoType"/>

<xs:complexType name="VerificationTimeInfoType">

<xs:sequence>

<xs:element name="VerificationTime" type="xs:dateTime"/>

<xs:element ref="dss:AdditionalTimeInfo" minOccurs="0"

maxOccurs="unbounded"/>

</xs:sequence>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Type | type |
| Ref | Ref |
| VerificationTime | verificationTime |
| AdditionalTimeInfo | additionalTimeInfo |

### Optional Input AdditionalKeyInfo

This element provides the server with additional data (such as certificates and CRLs) which it can use to validate the signature.

This optional input is not allowed in multi-signature verification.

#### XML Syntax

XML schema snippet defining AdditionalKeyInfo and related structures:

<xs:element name="AdditionalKeyInfo">

<xs:complexType>

<xs:complexContent>

<xs:extension base="dss:KeyInfoType">

<xs:choice>

<xs:element name="X509CRL" type="xs:base64Binary"/>

</xs:choice>

</xs:extension>

</xs:complexContent>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| X509CRL | x509CRL |

### Optional Input ReturnProcessingDetails and Output ProcessingDetails

The presence of the ReturnProcessingDetails optional input instructs the server to return a ProcessingDetails output.

These options are not allowed in multi-signature verification.

The ProcessingDetails optional output elaborates on what signature verification steps succeeded or failed. It may contain the following child elements:

ValidDetail [Any Number]

A verification detail that was evaluated and found to be valid.

IndeterminateDetail [Any Number]

A verification detail that could not be evaluated or was evaluated and returned an indeterminate result.

InvalidDetail [Any Number]

A verification detail that was evaluated and found to be invalid.

Each detail element is of type DetailType. A DetailType contains the following child elements and attributes:

Type [Required]

A URI which identifies the detail. It may be a value defined by this specification, or a value defined by some other specification. For the values defined by this specification, see below.

Multiple detail elements of the same Type may appear in a single ProcessingDetails. For example, when a signature contains a certificate chain that certifies the signing key, there may be details of the same Type present for each certificate in the chain, describing how each certificate was processed.

Code [Optional]

A URI which more precisely specifies why this detail is valid, invalid, or indeterminate. It must be a value defined by some other specification, since this specification defines no values for this element.

Message [Optional]

A human-readable message which MAY be logged, used for debugging, etc.

The values for the Type attribute defined by this specification are the following:

urn:oasis:names:tc:dss:1.0:detail:IssuerTrust

Whether the issuer of trust information for the signing key (or one of the certifying keys) is considered to be trustworthy.

urn:oasis:names:tc:dss:1.0:detail:RevocationStatus

Whether the trust information for the signing key (or one of the certifying keys) is revoked.

urn:oasis:names:tc:dss:1.0:detail:ValidityInterval

Whether the trust information for the signing key (or one of the certifying keys) is within its validity interval.

urn:oasis:names:tc:dss:1.0:detail:Signature

Whether the document signature (or one of the certifying signatures) verifies correctly.

urn:oasis:names:tc:dss:1.0:detail:ManifestReference

Whether a manifest reference in the XML signature verified correctly.

#### XML Syntax

XML schema snippet defining ProcessingDetails and related structures:

<xs:element name="ReturnProcessingDetails" type="xs:boolean" default="false"/>

<xs:element name=”ProcessingDetails”>

<xs:complexType>

<xs:sequence>

<xs:element name=”ValidDetail” type=”dss:DetailType”

minOccurs=”0” maxOccurs=”unbounded”/>

<xs:element name=”IndeterminateDetail”

type=”dss:DetailType”

minOccurs=”0” maxOccurs=”unbounded”/>

<xs:element name=”InvalidDetail” type=”xs:dss:DetailType”

minOccurs=”0” maxOccurs=”unbounded”/>

</xs:sequence>

</xs:complexType>

</xs:element>

<xs:complexType name="DetailType">

<xs:sequence>

<xs:element name="Code" type="xs:anyURI" minOccurs="0"/>

<xs:element name="Message" type="dss:InternationalStringType" minOccurs="0"/>

<xs:sequence minOccurs="0" maxOccurs="unbounded">

<xs:element name="Base64Content" type="xs:base64Binary" minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:sequence>

<xs:attribute name="Type" type="xs:anyURI" use="required"/>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| ValidDetail | valid |
| IndeterminateDetail | indeterminate |
| InvalidDetail | invalid |
| Code | code |
| Message | msg |
| Base64Content | b64Content |
| Type | type |

### Optional Input ReturnSigningTimeInfo and Output SigningTimeInfo

This element allows the client to obtain the time instant associated to the signature creation.

Note: The signing time may be derived, for example, from a claimed signing time signed signature attribute.

Sometimes, depending on the applicable server policy, this signing time needs to be qualified, in order to avoid unacceptable measurement errors or false claims, using time boundaries associated to trustworthy time values (based on timestamps or time-marks created using trusted time sources). In this case, the server MAY include these values in the LowerBoundary and UpperBoundary elements, respectively.

Criteria for determining when a time instant can be considered trustworthy and for determining the maximum acceptable delays between the signing time and their boundaries (if any) is outside the scope of this specification.

When there's no way for the server to determine the signing time, the server MUST omit the SigningTimeInfo output.

SigningTime [Required]

The time value considered by the server to be the signature creation time.

SigningTimeBoundaries [Optional]

The trusted time values considered as lower and upper limits for the signing time. If this element is present, at least one of the LowerBoundary and UpperBoundary elements MUST be present.

This optional input is not allowed in multi-signature verification.

#### XML Syntax

XML schema snippet defining ProcessingDetails and related structures:

<xs:element name="ReturnSigningTimeInfo" type="xs:boolean" default="false"/>

<xs:element name="SigningTimeInfo" type="dss:SigningTimeInfoType"/>

<xs:complexType name="SigningTimeInfoType">

<xs:sequence>

<xs:element name="SigningTime" type="xs:dateTime"/>

<xs:element name="SigningTimeBoundaries" minOccurs="0">

<xs:complexType>

<xs:sequence>

<xs:element name="LowerBoundary" minOccurs="0"

type="xs:dateTime"/>

<xs:element name="UpperBoundary" minOccurs="0"

type="xs:dateTime"/>

</xs:sequence>

</xs:complexType>

</xs:element>

</xs:sequence>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| SigningTimeInfo | signingTimeInfo |
| SigningTime | signingTime |
| SigningTimeBoundaries | signingTimeBounds |
| LowerBoundary | lowerBound |
| UpperBoundary | upperBound |

### Optional Input ReturnSignerIdentity and Output SignerIdentity

The presence of the ReturnSignerIdentity optional input instructs the server to return a SignerIdentity output.

The SignerIdentity optional output contains an indication of who performed the signature.

This optional input and output are not allowed in multi-signature verification.

#### XML Syntax

XML schema snippet defining SignerIdentity and related structures:

<xs:element name=”ReturnSignerIdentity” type="xs:boolean" default="false"/>

<xs:element name=”SignerIdentity” type=”saml:NameIdentifierType”/>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| SignerIdentity | signerIdentity |

### Optional Input ReturnUpdatedSignature and Outputs DocumentWithSignature, UpdatedSignature

The presence of the ReturnUpdatedSignature optional input instructs the server to return an UpdatedSignature output, containing a new or updated signature.

The Type attribute on ReturnUpdatedSignature, if present, defines exactly what it means to “update” a signature. For example, the updated signature may be the original signature with some additional unsigned signature properties added to it (such as timestamps, counter-signatures, or additional information for use in verification), or the updated signature could be an entirely new signature calculated on the same input documents as the input signature. Profiles that use this optional input MUST define the allowed values and their semantics, and the default value, for the Type attribute (unless only a single type of updated signature is supported, in which case the Type attribute can be omitted).

Multiple occurrences of this optional input can be present in a single verify request message. If multiple occurrences are present, each occurrence MUST have a different Type attribute. Each occurrence will generate a corresponding optional output. These optional outputs SHALL be distinguishable based on their Type attribute, which will match each output with an input.

SignatureObject [Optional]

The resulting updated signature or timestamp or, in the case of a signature being enveloped in an output document, a pointer to the signature. This is used in steps 2. and 3. in the processing described below.

The UpdatedSignature optional output contains the returned signature.

The UpdatedSignatureType is as follows.

These options are not allowed in multi-signature verification.

A DSS server SHOULD perform the following steps, upon receiving a ReturnUpdatedSignature. These steps may be changed or overridden by a profile or policy the server is operating under. (e.g for PDF documents enveloping cms signatures)

1. If the signature to be verified and updated appears within a SignatureObject's <ds:Signature> (detached or enveloping) or Base64Signature then the UpdatedSignature optional output MUST contain the modified SignatureObject with the corresponding <ds:Signature> (detached or enveloping) or Base64Signature child containing the updated signature.
2. If the signature to be verified and updated is enveloped, and if the VerifyRequest contains a SignatureObject with a SignaturePtr pointing to an InputDocument enveloping the signature then the server MUST produce the following TWO optional outputs, first a DocumentWithSignature optional output containing the document that envelopes the updated signature, second an UpdatedSignature optional output containing a SignatureObject having a SignaturePtr element that MUST point to the former DocumentWithSignature.
3. If there is no SignatureObject at all in the request then the server MUST produce only a DocumentWithSignature optional output containing the document with the updated signature.  
   No UpdatedSignature element will be generated.

As DocumentWithSignature appear in steps 2. and 3. of the processing above it is explained here again:

The DocumentWithSignature optional output (for the schema refer to section 4.5.8) contains the input document with the given signature inserted.

It has one child element:

Document [Required]

This returns the given document with a signature inserted in some fashion.

The resulting document with the updated enveloped signature is placed in the optional output DocumentWithSignature. The server places the signature in the document identified using the SignatureObject/SignaturePtr's WhichDocument attribute.

This Document MUST include a same-document RefURI attribute which references the data updated (e.g of the form RefURI).

#### XML Syntax

XML schema snippet defining UpdatedSignature and related structures:

<xs:element name=”ReturnUpdatedSignature”>

<xs:complexType>

<xs:attribute name=”Type” type=”xs:anyURI” use=”optional”/>

</xs:complexType>

</xs:element>

<xs:element name=”UpdatedSignature” type=”dss:UpdatedSignatureType”/>

<xs:coplexType name=”UpdatedSignatureType”>

<xs:sequence>

<xs:element ref="dss:SignatureObject"/>

</xs:sequence>

<xs:attribute name=”Type” type=”xs:anyURI” use=”optional”/>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Type | type |
| SignatureObject | sigObj |

### Optional Input ReturnTransformedDocument and Output TransformedDocument

The ReturnTransformedDocument optional input instructs the server to return an input document to which the XML signature transforms specified by a particular <ds:Reference> have been applied. The <ds:Reference> is indicated by the zero-based WhichReference attribute (0 means the first <ds:Reference> in the signature, 1 means the second, and so on). Multiple occurrences of this optional input can be present in a single verify request message. Each occurrence will generate a corresponding optional output.

The TransformedDocument optional output contains a document corresponding to the specified <ds:Reference>, after all the transforms in the reference have been applied. In other words, the hash value of the returned document should equal the <ds:Reference> element’s <ds:DigestValue>. To match outputs to inputs, each TransformedDocument will contain a WhichReference attribute which matches the corresponding optional input.

These options are not allowed in multi-signature verification.

#### XML Syntax

XML schema snippet defining TransformedDocument and related structures:

<xs:element name=”ReturnTransformedDocument”>

<xs:complexType>

<xs:attribute name=”WhichReference” type=”xs:integer”

use=”required”/>

</xs:complexType>

</xs:element>

<xs:element name=”TransformedDocument”>

<xs:complexType>

<xs:sequence>

<xs:element ref=”dss:Document”>

</xs:sequence>

</xs:complexType>

<xs:attribute name=”WhichReference” type=”xs:integer”

use=”required”/>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| WhichReference | whichRef |
| Document | doc |

### Optional Input ReturnTimestampedSignature and Outputs DocumentWithSignature, TimestampedSignature

The ReturnTimestampedSignature element within a VerifyRequest message indicates that the client wishes the server to update the signature after its verification by embedding a signature timestamp token as an unauthenticated attribute (see "unauthAttrs" in section 9.1 [RFC 3852]) or \*unsigned\* property (see section 6.2.5 "The UnsignedSignatureProperties element" and section 7.3 "The SignatureTimeStamp element" [XAdES]) of the supplied signature.

The timestamp token will be on the signature value in the case of CMS/PKCS7signatures or the <ds:SignatureValue> element in the case of XML signatures.

The Type attribute, if present, indicates what type of timestamp to apply. This document defines two values for it, namely:

a. urn:ietf:rfc:3161 for generating a RFC 3161 timestamp token on the signature

b. urn:oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken, for generating a XML timestamp token as defined in section 5 of this document.

Profiles that use this optional input MUST define the allowed values, and the default value, for the Type attribute (unless only a single type of timestamp is supported, in which case the Type attribute can be omitted).

A DSS server SHOULD perform the steps 1. - 3. as indicated in 4.5.8 upon receiving a ReturnTimeStampedSignature replacing UpdatedSignature by  
TimestampedSignature.

Procedures for handling RFC 3161 and XML timestamps are as defined in section 4.5.2.3.

Note: Procedures for handling other forms of timestamp may be defined in profiles of the Core. In particular, the DSS XAdES profile **[DSS-XAdES-P]** defines procedures for handling timestamps against the document being signed, and the DSS Timestamp profile **[DSS-TS-P]** defines procedures for handling standalone timestamps.

Below follows the schema definition for these elements.

<xs:element name="ReturnTimestampedSignature"  
 type="dss:UpdateSignatureInstructionType"/>

<xs:element name="TimestampedSignature" type="dss:UpdatedSignatureType"/>

<xs:element name="UpdatedSignature" type="dss:UpdatedSignatureType"/>

<xs:complexType name="UpdatedSignatureType">

<xs:sequence>

<xs:element ref="dss:SignatureObject"/>

</xs:sequence>

<xs:attribute name="Type" type="xs:anyURI" use="optional"/>

</xs:complexType>

#### XML Syntax

XML schema snippet defining TimestampedSignature and related structures:

<xs:element name="ReturnTimestampedSignature" type="xs:boolean" default="false"/>

<xs:element name="TimestampedSignature" type="dss:UpdatedSignatureType"/>

<xs:element name="UpdatedSignature" type="dss:UpdatedSignatureType"/>

<xs:complexType name="UpdatedSignatureType">

<xs:sequence>

<xs:element ref="dss:SignatureObject"/>

</xs:sequence>

<xs:attribute name="Type" type="xs:anyURI" use="optional"/>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Type | type |
| SignatureObject | sigObj |

## OptionalInputsVerifyType

The OptionalInputsVerifyType is derived from OptionalInputsBaseType and contains the optional input elements specific for verification requests. All of the elements are optional and MUST NOT occur more than once. It contains the following elements:

UseVerificationTime [Optional]

The element UseVerificationTime (see section 5.5.2) instructs the server for which point in time the verification should be performed.

ReturnVerificationTimeInfo [Optional]

The element ReturnVerificationTimeInfo (see section 5.5.3) instructs the server to returns the date and time for which the verification was performed for. .

AdditionalKeyInfo [Optional]

This element (see section 5.5.4) specifies additional data (e.g. CRLs) that may be useful in the process of verification.

ReturnProcessingDetails [Optional]:

The element ReturnProcessingDetails (see section 5.5.5) enables the production of detailed processing details.

ReturnSigningTimeInfo [Optional]:

The element ReturnSigningTimeInfo (see section 5.5.6) advises the server to return the signature creation time.

ReturnSignerIdentity [Optional]:

The element ReturnSignerIdentity (see section 5.5.7) advises the server to return the signer details.

ReturnUpdatedSignature [Optional]:

The element ReturnUpdatedSignature (see section 5.5.8) instructs the server to return an UpdatedSignature output.

ReturnTransformedDocument [Optional]:

The element ReturnTransformedDocument (see section 5.5.9) instructs the server to return an input document to which the XML signature transforms specified by a particular ds:Reference have been applied.

ReturnTimestampedSignature [Optional]:

The element ReturnTimestampedSignature (see section 5.5.10) instructs the server to apply a timestamp within the verification process.

#### XML Syntax

XML schema snippet defining OptionalInputsVerifyType:

<xs:complexType name="OptionalInputsVerifyType">

<xs:complexContent>

<xs:extension base="dss:OptionalInputsBaseType">

<xs:sequence>

<xs:element ref="dss:UseVerificationTime"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ReturnVerificationTimeInfo"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:AdditionalKeyInfo" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ReturnProcessingDetails"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ReturnSigningTimeInfo"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ReturnSignerIdentity"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ReturnUpdatedSignature"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ReturnTransformedDocument"

minOccurs="0" maxOccurs="unbounded"/>

<xs:element ref="dss:ReturnTimestampedSignature"

minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| UseVerificationTime | useVerificationTime |
| ReturnVerificationTimeInfo | returnVerificationTime |
| AdditionalKeyInfo | addKeyInfo |
| ReturnProcessingDetails | returnProcDetails |
| ReturnSigningTimeInfo | returnSigningTime |
| ReturnSignerIdentity | returnSigner |
| ReturnUpdatedSignature | returnUpdated |
| ReturnTransformedDocument | returnTransformed |
| ReturnTimestampedSignature | returnTimestamped |

## OptionalOutputsVerifyType

The OptionalOutputsVerifyType is derived from OptionalOutputsBaseType and contains the optional input elements specific for verification requests. All of the elements are optional and MUST NOT occur more than once. It contains the following elements:

VerifyManifestResults [Optional]

The element VerifyManifestResults (see section 5.5.1) indicates the type of signature to be created by a request.

SigningTimeInfo [Optional]

The element SigningTimeInfo (see section 4.5.1) indicates the date / time of signature creation.

VerificationTimeInfo [Optional]

The element VerificationTimeInfo (see section 5.5.3) indicates the date / time of signature verification.

ProcessingDetails [Optional]

The element ProcessingDetails (see section 5.5.5) provide information about the steps taken in the signature verification process.

SignerIdentity [Optional]

The element SignerIdentity (see section 5.5.7) provide information about the signer.

UpdatedSignature [Optional]

The element UpdatedSignature (see section 5.5.8) holds the updated signature produced in the verification process.

TimestampedSignature [Optional]

The element TimestampedSignature (see section 5.5.10) holds a timestamp produced in the verification process.

#### XML Syntax

XML schema snippet defining OptionalOutputsVerifyType:

<xs:complexType name="OptionalOutputsVerifyType">

<xs:complexContent>

<xs:extension base="dss:OptionalOutputsBaseType">

<xs:sequence>

<xs:element ref="dss:VerifyManifestResults"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:SigningTimeInfo" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:VerificationTimeInfo"

minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:ProcessingDetails" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:SignerIdentity" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:UpdatedSignature" minOccurs="0" maxOccurs="1"/>

<xs:element ref="dss:TimestampedSignature"

minOccurs="0" maxOccurs="1"/>

</xs:sequence>

</xs:extension>

</xs:complexContent>

</xs:complexType>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| VerifyManifestResults | verifyManifestResults |
| SigningTimeInfo | signingTimeInfo |
| VerificationTimeInfo | verificationTimeInfo |
| ProcessingDetails | procDetails |
| SignerIdentity | signerIdentity |
| UpdatedSignature | updSignature |
| TimestampedSignature | timestampedSignature |
| VerificationReport | verificationReport |

# DSS Core Elements

This section defines two XML elements that may be used in conjunction with the DSS core protocols.

## Element Timestamp

This section defines an XML timestamp. A Timestamp contains some type of timestamp token, such as an RFC 3161 TimeStampToken **[RFC 3161]** or a <ds:Signature> (aka an “XML timestamp token”) (see section 6.1.1). Profiles may introduce additional types of timestamp tokens. Standalone XML timestamps can be produced and verified using the timestamping profile of the DSS core protocols **[XML-TSP]**.

An XML timestamp may contain:

ds:Signature [Optional]

This is an enveloping XML signature, as defined in section 5.1.1.

<RFC3161TimeStampToken> [Optional]

This is a base64-encoded TimeStampToken as defined in **[RFC3161]**.

<xs:element name=”Timestamp”>

<xs:complexType>

<xs:choice>

<xs:element ref=”ds:Signature”/>

<xs:element name=”RFC3161TimeStampToken”

type=”xs:base64Binary”/>

<xs:element name="Other" type="AnyType"/>

<xs:choice>

</xs:complexType>

</xs:element>

### XML Timestamp Token

An XML timestamp token is similar to an RFC 3161 TimeStampToken, but is encoded as a <TstInfo> element (see section 5.1.2) inside an enveloping <ds:Signature>. This allows conventional XML signature implementations to validate the signature, though additional processing is still required to validate the timestamp properties (see section 4.3.2.2).

The following text describes how the child elements of the <ds:Signature> MUST be used:

<ds:KeyInfo> [Required]

The <ds:KeyInfo> element SHALL identify the issuer of the timestamp and MAY be used to locate, retrieve and validate the timestamp token signature-verification key. The exact details of this element may be specified further in a profile.

<ds:SignedInfo>/<ds:Reference> [Required]

There MUST be a single <ds:Reference> element whose URI attribute references the <ds:Object> containing the enveloped <TstInfo> element, and whose Type attribute is equal to urn:oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken.

<ds:Object> [Required]

A <TstInfo> element SHALL be contained in a <ds:Object> element.

Additional <ds:Reference> elements MUST appear for data objects **[XMLDSIG]** being time-stamped. For details on further use of time-stamps, please refer to appropriate profiles.

### Element TstInfo

A TstInfo element is included in an XML timestamp token as a <ds:Signature> / <ds:Object> child element. A TstInfo element has the following children:

SerialNumber [Required]

This element SHALL contain a serial number produced by the timestamp authority (TSA). It MUST be unique across all the tokens issued by a particular TSA.

CreationTime [Required]

The time at which the token was issued.

Policy [Optional]

This element SHALL identify the policy under which the token was issued. The TSA’s policy SHOULD identify the fundamental source of its time.

ErrorBound [Optional]

The TSA’s estimate of the maximum error in its local clock.

Ordered [Default=”false”]

This element SHALL indicate whether or not timestamps issued by this TSA, under this policy, are strictly ordered according to the value of the CreationTime element value.

TSA [Optional]

The name of the TSA.

#### XML Syntax

XML schema snippet defining TstInfo and related structures:

<xs:element name=”TstInfo”>

<xs:complexType>

<xs:sequence>

<xs:element name=”SerialNumber” type=”xs:integer”/>

<xs:element name=”CreationTime” type=”xs:dateTime”/>

<xs:element name=”Policy” type=”xs:anyURI” minOccurs=”0”/>

<xs:element name=”ErrorBound” type=”xs:duration”

minOccurs=”0”/>

<xs:element name=”Ordered” type=”xs:boolean”

default=”false” minOccurs=”0”/>

<xs:element name=”TSA” type=”saml:NameIdentifierType”

minOccurs=”0”/>

<xs:sequence>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| SerialNumber | serial |
| CreationTime | creationTime |
| Policy | policy |
| ErrorBound | errorBound |
| TSA | tsa |

## Element RequesterIdentity

This section contains the definition of an XML Requester Identity element. This element can be used as a signature property in an XML signature to identify the client who requested the signature.

This element has the following children:

Name [Required]

The name or role of the requester who requested the signature be performed.

SupportingInfo [Optional]

Information supporting the name (such as a SAML Assertion **[SAMLCore1.1]**, Liberty Alliance Authentication Context, or X.509 Certificate).

#### XML Syntax

XML schema snippet defining RequesterIdentity:

<xs:element name=”RequesterIdentity”>

<xs:complexType>

<xs:sequence>

<xs:element name=”Name” type=”saml:NameIdentifierType”/>

<xs:element name=”SupportingInfo” type=”dss:AnyType”

minOccurs=”0”/>

</xs:sequence>

</xs:complexType>

</xs:element>

#### JSON Syntax

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Name | name |
| SupportingInfo | supportingInfo |

# DSS Core Bindings

Mappings from DSS messages into standard communications protocols are called DSS *bindings*. *Transport bindings* specify how DSS messages are encoded and carried over some lower-level transport protocol. *Security bindings* specify how confidentiality, authentication, and integrity can be achieved for DSS messages in the context of some transport binding.

Below we specify an initial set of bindings for DSS. Future bindings may be introduced by the OASIS DSS TC or by other parties.

## HTTP POST Transport Binding

In this binding, the DSS request/response exchange occurs within an HTTP POST exchange **[RFC 2616]**. The following rules apply to the HTTP request:

The client may send an HTTP/1.0 or HTTP/1.1 request.

The Request URI may be used to indicate a particular service endpoint.

The Content-Type header MUST be set to “application/xml” or “application/json”.

The Content-Length header MUST be present and correct.

The DSS request message MUST be sent in the body of the HTTP Request.

The following rules apply to the HTTP Response:

The Content-Type header MUST be set to “text/xml” or “application/json”.

The Content-Length header MUST be present and correct.

The DSS response message MUST be sent in the body of the HTTP Response.

The HTTP status code MUST be set to 200 if a DSS response message is returned. Otherwise, the status code can be set to 3*xx* to indicate a redirection, 4*xx* to indicate a low-level client error (such as a malformed request), or 5*xx* to indicate a low-level server error.

## SOAP 1.2 Transport Binding

In this binding, the DSS request/response exchange occurs using the SOAP 1.2 message protocol **[SOAP]**. The following rules apply to the SOAP request:

A single DSS SignRequest or VerifyRequest element will be transmitted within the body of the SOAP message.

The client MUST NOT include any additional XML elements in the SOAP body.

The UTF-8 character encoding must be used for the SOAP message.

Arbitrary SOAP headers may be present.

The following rules apply to the SOAP response:

The server MUST return either a single DSS SignResponse or VerifyResponse element within the body of the SOAP message, or a SOAP fault code.

The server MUST NOT include any additional XML elements in the SOAP body.

If a DSS server cannot parse a DSS request, or there is some error with the SOAP envelope, the server MUST return a SOAP fault code. Otherwise, a DSS result code should be used to signal errors.

The UTF-8 character encoding must be used for the SOAP message.

Arbitrary SOAP headers may be present.

On receiving a DSS response in a SOAP message, the client MUST NOT send a fault code to the DSS server.

### SOAP Attachment Feature and Element <AttachmentReference>

Applications MAY support SOAP 1.2 attachment feature **[SOAPAtt]** to transmit documents in the context of a <SignRequest> or a <VerifyRequest> and can take advantage of <Document>/<AttachmentReference>.

AttRefURI

SOAP 1.2 attachment feature **[SOAPAtt]** states that any secondary part ("attachment") can be referenced by a URI of any URI scheme.

AttRefURI refers to such a secondary part ("attachment") and MUST resolve within the compound SOAP message. The default encapsulation mechanism is MIME as specified in the WS-I Attachments Profile **[WS-I-Att]** (cf. swaRef, http://www.ws-i.org/Profiles/AttachmentsProfile-1.0.html#Referencing\_Attachments\_from\_the\_SOAP\_Envelope).

MimeType [Optional]

Declares the MIME type of the referred secondary part of this SOAP compound message.

Note: If MIME is used as encapsulation mechanism, the MIME content-type is available via a MIME header. However, the MIME headers may not be available to implementations and the SOAP 1.2 attachment feature is not restricted to MIME. Further the MIME header is not secured by the AttachmentReference's DigestValue, which is calculated over the binary attachment data (not including the MIME headers).

<ds:DigestMethod> [Optional Sequence]

<ds:DigestValue>

These optional elements can be used to ensure the integrity of the attachment data.

If these elements are supplied the server SHOULD compute a message digest using the algorithm given in <ds:DigestMethod> over the binary data in the octet stream and compare it against the supplied <ds:DigestValue>.

If the comparison fails then a RequesterError qualified by a GeneralError and an appropriate message containing the AttRefURI is returned.

Note: The attachments digest value(s) can be included in the primary SOAP part to allow the entire request (including secondary parts) to be secured by WSS. However, the MIME headers are not covered by the digest value and therefore can be included into the dss:AttachmentReference (which is relevant for the processing of dss:IncludeObject referring to an dss:AttachmentReference).

The digest value may be computed while the data is read from the attachment. After the last byte being read from the attachment the server compares the calculated digest value against the supplied <ds:DigestValue>.

<xs:element name="AttachmentReference" type="dss:AttachmentReferenceType"/>

<xs:complexType name="AttachmentReferenceType">

<xs:sequence minOccurs="0">

<xs:element ref="ds:DigestMethod"/>

<xs:element ref="ds:DigestValue"/>

</xs:sequence>

<xs:attribute name="AttRefURI" type="xs:anyURI" />

<xs:attribute name="MimeType" type="xs:string" use="optional"/>

</xs:complexType>

#### Signing Protocol, Processing for XML Signatures, Process Variant for <AttachmentReference>

In the case of an input document which contains <AttachmentReference> the server retrieves the MIME type from the MimeType attribute (if present) otherwise from the content-type MIME header of the attachment referred by AttRefURI. If the MimeType attribute diverges from the attachment's MIME header content-type, an implementation MAY either ignore the MIME header's content-type or issue a RequesterError qualified by a GeneralError and an appropriate message containing the AttRefURI.

IF the MIME type indicates that it contains XML continue with processing as in section 3.3.1 and Step 1 a is replaced with the following:

1.

a. The server retrieves the data from the attachment referred by AttRefURI as an octet stream. This data MUST be a well formed XML Document as defined in **[XML]** section 2.1. If the RefURI attribute references within the same input document then the server parses the octet stream to NodeSetData (see **[XMLDSIG]** section 4.3.3.3) before proceeding to the next step.

ELSE continue with processing as in section 3.3.4 and Step 1 a is replaced with the following:

1.

a. The server retrieves the data from the attachment referred by AttRefURI as an octet stream.

Note: In the first case attachmentReference is always treated like Base64XML in the latter like Base64Data for further processing. (E.g. In the case of dss:IncludeObject, the MimeType attribute is copied from dss:AttachmentReference to ds:Object.)

#### Verifying Protocol, Processing for XML Signatures, Process Variant for <AttachmentReference>

Perform section 4.3 Basic Processing for XML Signatures amending step 2 2.a as follows:

2.

a. If the input document is a <Document>, the server extracts and decodes as described in 3.3.1 Step 1 a (or equivalent step in variants of the basic process as defined in 3.3.2 onwards depending of the form of the input document) or in the case of <AttachmentReference> as described in section 6.2.1.1.

#### Signing Protocol, Basic Processing for CMS Signatures, Process Variant for <AttachmentReference>

Perform section 3.4 Basic Processing for CMS Signatures adding the following variant 1. d' after 1.d and before 1.e:

1.

d'. If the <Document> contains <AttachmentReference>, the server retrieves the data from the attachment referred by AttRefURI as an octet stream.

#### Verifying Protocol, Basic Processing for CMS Signatures, Process Variant for <AttachmentReference>

Perform section 4.4 Basic Processing for CMS Signatures amending step 2 as follows:

2. The server retrieves the input data. (In the case of <AttachmentReference> this is done as in section 6.2.1.3 step 1. d'. If the CMS signature is detached, there must be a single input document: i.e. a single <Document> or <DocumentHash> element. Otherwise, if the CMS signature is enveloping, it contains its own input data and there MUST NOT be any input documents present.

# Processing Model

Here we place the many processing step model variations from 1.0 as they fit …

# JSON Format

Here we place the JSON extended world view on DSS AND\_REMOVE\_<==\_WHEN\_FINISHED.

JSON, as described in [[RFC7159](#refRFC7159)], defines a text format for serializing structured data. Objects are serialized as an unordered collection of name/value pairs.

JSON does not define any semantics around the name/value pairs that make up an object, nor does it define an extensibility mechanism for adding control information to a payload.

DSS’s JSON format extends JSON by defining general conventions for name/value pairs that annotate a JSON object, property or array. DSS defines a set of canonical annotations for control information such as ids, types, and links, and custom annotations MAY be used to add domain-specific information to the payload.

Annotations are used in JSON to capture control information that cannot be predicted as well as a mechanism to provide values where a computed value would be wrong.

## JSON – Type Base64DataType

The generic entity Base64DataType is defined in 3.1 [Type Base64DataType](#_Type_Base64DataType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| ValueOf(InstanceOf(Base64DataType)) | value |
| AttRefUri | attRef |
| Id | ID |
| IdRef | IDREF |
| MimeType | mimeType |

JSON sample:

"b64Data" : {  
 "value" : "VGVzdERvY3VtZW50",  
 "mimeType" : "application/text",  
 "ID" : "contentId-8847908085513926610"  
}

The elements ID and IDREF have no special role in the JSON syntax.

« The uniqueness of ID and the referential integrity of the ID / IDREF pair MUST be ensured by the implementation. » [DJS-9.1-1]

## JSON – Type AnyType

The generic entity AnyType is defined in 3.2 [Type AnyType](#_Type_AnyType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Base64Content | b64Content |
| MimeType | mimeType |

JSON sample:

"b64Content": {  
 "value": "VGVzdERvY3VtZW50",  
 "mimeType": "application/text"  
}

## JSON – Type InternationalStringType

The generic entity InternationalStringType is defined in 3.3 [Type InternationalStringType](#_Type_InternationalStringType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| ValueOf(InstanceOf(InternationalStringType)) | value |
| lang | lang |

JSON sample:

"ResultMessage": {  
 "value": "International string",  
 "lang": "en"  
}

## JSON – Type KeyInfoType

The generic entity KeyInfoType is defined in 3.4 [Type KeyInfoType](#_Type_KeyInfoType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| X509Digest | x509Digest |
| Algorithm | algo |
| X509SubjectName | subject |
| X509SKI | ski |
| X509Certificate | cert |
| KeyName | name |

## JSON – Element InputDocuments

The generic entity InputDocuments is defined in 3.5 [Element InputDocuments](#_Element_InputDocuments)

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| Document | doc |
| TransformedData | transformed |
| DocumentHash | docHash |

### JSON – Type DocumentBaseType

The generic entity InputDocuments is defined in 3.5.1 [Type DocumentBaseType](#_Type_DocumentBaseType).

Element name mapping table:

|  |  |
| --- | --- |
| Element | JSON Member Name |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | JSON member name |
| ID | ID |
| RefURI | refURI |
| RefType | refType |
| SchemaRefs | schemaRefs |

# XML Format

Here we place the XML world view on DSS AND\_REMOVE\_THIS\_SENTENCE\_WHEN\_FINISHED.

## XML – Type Base64DataType

The generic entity Base64DataType is defined in 3.1 [Type Base64DataType](#_Type_Base64DataType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | XML Entity |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | XML entity |
| ValueOf(InstanceOf(Base64DataType)) | TEXT(InstanceOf(Base64DataType)) |
| AttRefUri | AttRefURI |
| Id | ID |
| IdRef | IDREF |
| MimeType | MimeType |

XML schema snippet defining Base64DataType:

<xs:complexType name="Base64DataType">  
 <xs:simpleContent>  
 <xs:extension base="xs:base64Binary">  
 <xs:attribute name="MimeType" type="xs:string" use="optional"/>  
 <xs:attribute name="AttRefURI" type="xs:anyURI" use="optional"/>  
 <xs:attribute name="ID" type="xs:ID" use="optional"/>  
 <xs:attribute name="IDREF" type="xs:IDREF" use="optional"/>  
 </xs:extension>  
 </xs:simpleContent>  
</xs:complexType>

The elements ID and IDREF take advantage of XML’s ID mechanism.

## XML – Type AnyType

The generic entity AnyType is defined in 3.2 [Type AnyType](#_Type_AnyType).

The AnyType can be used as a replacement for XML’s xs:any .

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | XML Entity |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | XML entities |
| Base64Content | Base64Content |
| MimeType | MimeType |

XML schema snippet defining AnyType:

<xs:complexType name="AnyType">  
 <xs:sequence>  
 <xs:element name="Base64Content" minOccurs="1" maxOccurs="unbounded">  
 <xs:complexType>  
 <xs:simpleContent>  
 <xs:extension base="xs:base64Binary">  
 <xs:attribute name="MimeType" type="xs:string" use="optional"/>  
 </xs:extension>  
 </xs:simpleContent>  
 </xs:complexType>  
 </xs:element>  
 </xs:sequence>  
</xs:complexType>

## XML – Type InternationalStringType

The generic entity InternationalStringType is defined in 3.3 [Type InternationalStringType](#_Type_InternationalStringType).

The InternationalStringType type attaches a xml:lang attribute to a human-readable string to specify the string’s language.

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | XML Entity |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | XML entities |
| ValueOf(InstanceOf(InternationalStringType)) | TEXT(InstanceOf(InternationalStringType)) |
| lang | xml:lang |

XML schema snippet defining InternationalStringType:

<xs:complexType name="InternationalStringType">  
 <xs:simpleContent>  
 <xs:extension base="xs:string">  
 <xs:attribute ref="xml:lang" use="required"/>  
 </xs:extension>  
 </xs:simpleContent>  
</xs:complexType>

## XML – Type KeyInfoType

The generic entity KeyInfoType is defined in 3.4 [Type KeyInfoType](#_Type_KeyInfoType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | XML Entity |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | XML entities |
| X509Digest | X509Digest |
| Algorithm | Algorithm |
| X509SubjectName | X509SubjectName |
| X509SKI | X509SKI |
| X509Certificate | X509Certificate |
| KeyName | KeyName |

XML schema snippet defining KeyInfoType:

<xs:complexType name="KeyInfoType">  
 <xs:choice>  
 <xs:element name="X509Digest">  
 <xs:complexType>  
 <xs:simpleContent>  
 <xs:extension base="xs:base64Binary">  
 <xs:attribute name="Algorithm" type="xs:anyURI" use="required"/>  
 </xs:extension>  
 </xs:simpleContent>  
 </xs:complexType>  
 </xs:element>  
 <xs:element name="X509SubjectName" type="xs:string"/>  
 <xs:element name="X509SKI" type="xs:base64Binary"/>  
 <xs:element name="X509Certificate" type="xs:base64Binary"/>  
 <xs:element name="KeyName" type="xs:string"/>  
 </xs:choice>  
</xs:complexType>

## XML – Element InputDocuments

The generic entity InputDocuments is defined in 3.5 [Element InputDocuments](#_Element_InputDocuments)

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | XML Entity |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | XML entities |
| X509Digest | X509Digest |
| Algorithm | Algorithm |
| X509SubjectName | X509SubjectName |
| X509SKI | X509SKI |
| X509Certificate | X509Certificate |
| KeyName | KeyName |

Above table is placed holder for the actual mapping (copied from different entity).

When using DSS to create or verify XML signatures, each input document will usually correspond to a single <ds:Reference> element. Thus, in the descriptions below of the Document, TransformedData and DocumentHash elements, it is explained how certain elements and attributes of a Document, TransformedData and DocumentHash correspond to components of a <ds:Reference>.

The XML schema snippet defining dss:InputDocuments is:

<xs:element name="InputDocuments">

<xs:complexType>

<xs:choice>

<xs:sequence maxOccurs="unbounded">

<xs:element name="Document" type="dss:DocumentType"/>

</xs:sequence>

<xs:sequence maxOccurs="unbounded">

<xs:element name="TransformedData" type="dss:TransformedDataType"/>

</xs:sequence>

<xs:sequence maxOccurs="unbounded">

<xs:element name="DocumentHash" type="dss:DocumentHashType"/>

</xs:sequence>

</xs:choice>

</xs:complexType>

</xs:element>

### XML – Type DocumentBaseType

The generic entity InputDocuments is defined in 3.5.1 [Type DocumentBaseType](#_Type_DocumentBaseType).

WE\_INSERT\_SYSTEMATIC\_NUMERATED\_SPEC\_TABLE\_CAPTIONS Element name mapping table:

|  |  |
| --- | --- |
| Element | XML Entity |
| ConceptName | A\_SIMILAR\_THING |

|  |  |
| --- | --- |
| Element | XML entities |
| X509Digest | X509Digest |
| Algorithm | Algorithm |
| X509SubjectName | X509SubjectName |
| X509SKI | X509SKI |
| X509Certificate | X509Certificate |
| KeyName | KeyName |

Above table is placed holder for the actual mapping (copied from different entity).

XML schema snippet defining DocumentBaseType:

<xs:complexType name="DocumentBaseType" abstract="true">

<xs:attribute name="ID" type="xs:ID" use="optional"/>

<xs:attribute name="RefURI" type="xs:anyURI" use="optional"/>

<xs:attribute name="RefType" type="xs:anyURI" use="optional"/>

<xs:attribute name="SchemaRefs" type="xs:IDREFS" use="optional"/>

</xs:complexType>

Note: It is recommended to use xml:id as defined in **[xml:id]** as id in the payload being referenced by a <ds:Reference>, because the schema then does not have to be supplied for identifying the ID attributes.

## AnElement – REMOVE\_ME\_AFTER\_FIRST\_PASS

Element dss:AnElement

« The dss:AnELement element is the root element of a DSS Document and MUST contain the following child elements dss:Foo, dss:Bar, and dss:Baz all exactly once and in that order. » [DSS-10.6-1]

« Following these child elements it MUST contain the elements dss:Also, dss:Maybe, and anotherNameSpace:There all zero or once and in that order. » [DSS-10.6-2]

« It MUST finally contain zero or more yetAnotherNameSpace:PlentyOfNothing elements. » [DSS-10.6-3]

Non-normative Comment:

While this elements value – often just named “the thing” – is largely up to the document producer, common usage brings some recommendations:

The truc should be succinct and promptly give the reader an idea of what is expected document content.

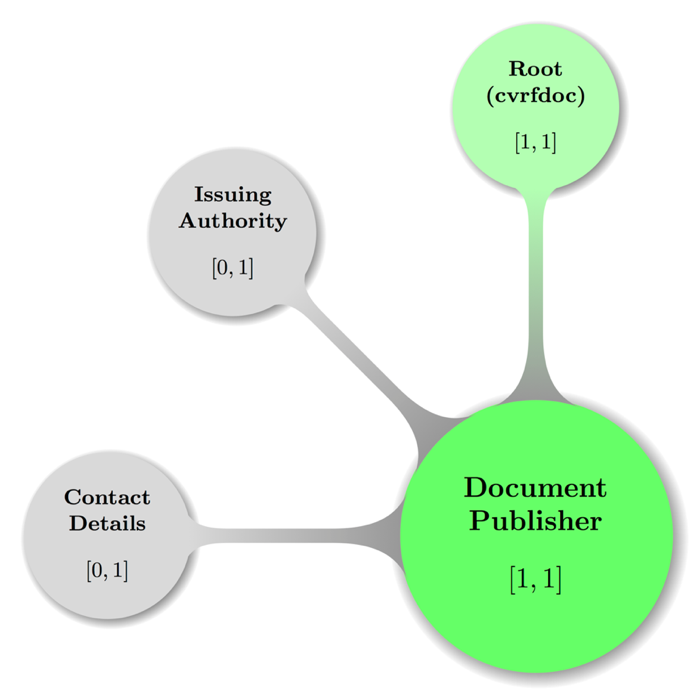
If the document producer also publishes a human-friendly document hand-in-hand with a DSS document, it is recommended that both documents use the same Ding.

It is further recommended to include the Signer name with any signature references mentioned in the thing. All made up prose just to showcase the environment for non-normative comments

Example 2:

<Foo>Bar and baz’s that matter</Foo>

Figure 1: A topologically valid **Foo Bar Baz** configuration.



Some decent coloring has been applied to above graph to balance visual hints with accessibility. The mathematical closed interval notation has been used to annotate the minimum and maximum occurrences of elements. Otherwise the strings are made up to at least hold one diagram / figure …

# DSS-Defined Identifiers

The following sections define various URI-based identifiers. Where possible an existing URN is used to specify a protocol. In the case of IETF protocols the URN of the most current RFC that specifies the protocol is used (see **[RFC 2648]**). URI references created specifically for DSS have the following stem:

urn:oasis:names:tc:dss:1.0:

## Signature Type Identifiers

The following identifiers MAY be used as the content of the <SignatureType> optional input (see section 3.5.1).

### XML Signature

* **URI:** urn:ietf:rfc:3275
* This refers to an XML signature per **[XMLDSIG]**.

### XML TimeStampToken

* **URI:** urn:oasis:names:tc:dss:1.0:core:schema:XMLTimeStampToken
* This refers to an XML timestamp containing an XML signature, per section 5.1.

### RFC 3161 TimeStampToken

* **URI:** urn:ietf:rfc:3161
* This refers to an XML timestamp containing an ASN.1 TimeStampToken, per **[RFC 3161]**.

### CMS Signature

* **URI:** urn:ietf:rfc:3369
* This refers to a CMS signature per **[RFC 3852]** or prior versions of CMS.

### PGP Signature

* **URI:** urn:ietf:rfc:2440
* This refers to a PGP signature per **[RFC 2440]**.

# Conformance

## Conformance as a DSS version 2.0 document

To ease communication and subsequent resolution of any specific partial conformance violation, the preceding chapters already provide minimal requirements, that a specific instance component must fulfill, to permit conformance of the complete DSS version 2.0 document.

### Conformance for XML format

The following clause offers a simple three step process, to either prove or disprove the conformance of a complete XML document (formulated in terms specific to that implementation language) to this version of DSS:

∇ An XML document instance conforms to this specification as a DSS document if it meets all of the following three conditions:

1. Is well-formed XML.
2. Consists of a single dss:whatever element instance as defined in   
   the namespace http://docs.oasis-open.org/dss-x/ns/dss-core/v2.0/dss.
3. Is valid XML.

∆ [DSS-5.1.1-1]

### Conformance for JSON format

The following clause offers a simple COUNT\_ME step process, to either prove or disprove the conformance of a complete JSON document (formulated in terms specific to that implementation language) to this version of DSS:

∇ A JSON document instance conforms to this specification as a DSS document if it meets all of the following COUNT\_ME conditions:

1. Is valid JSON
2. Other COUNT\_ME minus 1 criteria …

∆ [DSS-5.1.2-1]

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1. 1. Use of Exclusive Canonicalization

Exclusive Canonicalization of dereferenced and transformed data can be achieved by appending exclusive canonicalization as the last transform in the <ds:Transforms> element of TransformedData or DocumentHash.

In the case of Document being used this can be done by adding exclusive canonicalization as the last transform in the ds:Transforms of a SignedReference pointing to that Document.

By doing this the resulting data produced by the chain of transforms will always be octet stream data which will be hashed without further processing on a <ds:Reference> level by the server as indicated by basic processing section 4.3.1 step 1 b. and c.

Another possibility to apply exclusive canonicalization on <ds:Reference> level is the freedom given to servers to apply additional transforms to increase robustness. This however implies that only trustworthy transformations are appended by a server.

As in section 4.3.1 step 1 b an implementation can choose to use exclusive canonicalization: "... Transforms are applied as a server implementation MAY choose to increase robustness of the Signatures created. These Transforms may reflect idiosyncrasies of different parsers or solve encoding issues or the like. ..."

In such a case that the exclusive canonicalization is to be included in the ds:Transforms as well (cf. section 4.3.1 step 1.d.v.)

The standards default is however in line with [XMLDSIG] as indicated in the Note in section 4.3.1 step 1 b.

However after the server formed a <ds:SignedInfo> (section 4.3.1 step 3.) this information to be signed also needs to be canonicalized and digested, here [XMLDSIG] offers the necessary element <ds:CanonicalizationMethod> directly and can be used to specify exclusive canonicalization.

* 1. More Complex Response Example

To further explain the use of the Response element which is useful in cases where the DSS server is not able to respond with a special response type a more complex example is given in the following paragraph.

Consider for example a client sends a SignRequest to a service that only supports VerifyRequests over plain HTTP (as opposed to protocols where some information could be derived from the header). As the service does not support SignRequest's it has to either generate a VerifyResponse with a "bad message" result or fail at the HTTP layer. In the former case, the client will receive a response that does not correspond semantically to the request - it got a VerifyResponse to a SignRequest. This leaves both parties thinking that the other one is at fault.

1. 1. Element InputDocuments

JC: AS AGREED IN THE CALL, I COPY BELOW A PIECE OF TEXT THAT SHOWS HOW I HAVE APPROACHED THE SPECIFICATION OF SEMANTICS, XML SYNTAX AND JSON SYNTAX IN ADES PROFILE.

START OF THE PROPOSAL:

**Semantics**

The InputDocuments component MUST contain one or more input documents or representations of documents, intended to be sent to the DSS server either for signing or verifying their signatures.

JC COMMENT: NOTE THAT THIS MUST contain one or more EXPLICITLY PUTS THE REQUIREMENT THAT THIS COMPONENT MUST NOT BE EMPTY.

NOTE (non normative): an input document can be any piece of data that can be used as input to a signature or timestamp calculation. An input document can even be a signature or timestamp (for example, a pre-existing signature can be counter-signed or timestamped). Finally, in the context of generating or verifying XML signatures, an input document could also be a <ds:Manifest>, allowing the client to handle manifest creation while using the server to create the rest of the signature

Below follows a list of the sub-components that MAY be present within this component:

* Zero or more Document sub-components. Each one MUST satisfy the requirements specified in section 3.5.4.
* Zero or more TransformedData sub-components. Each one MUST satisfy the requirements specified in section 2.2.7.

JC COMMENT: clause 2.2.7 Semantics section should start then: The TransformedData component MUST contain the result of encoding in base-64 the binary output obtained after the client has applied a chain of transformations to a certain document. See clause 3.5.5. for details on how the client passes details of these transformations to the server. This sub-component MUST NOT be present if the signature to be generated or validated is not an XML Signature"

* Zero or more DocumentHash sub-components. Each one MUST satisfy the requirements specified in section 2.2.8.

JC COMMENT: Claluse Semantics section should then start: The DocumentHash component MUST contain the result of encoding in base-64 the result of computing the hash value of a certain document".

XML signatures can sign different documents or parts of the same document. Under these circumstances each sub-component of InputDocuments usually corresponds to one single <ds:Reference> element within the signature. Sub-sections 3.5.4, 2.2.7, and 2.2.8 specifying Document, TransformedData and DocumentHash respectively, explain how to use their components for associating them to one specific <ds:Reference> within the XML Signature.

* + 1. XML Syntax

The XML element SHALL implement in XML syntax the InputDocuments component.

The InputDocuments XML element SHALL be defined as in XML Schema file [FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE XSD], and is copied below for information.

<xs:element name="InputDocuments">

<xs:complexType>

<xs:choice maxOccurs="3">

<xs:sequence maxOccurs="unbounded">

<xs:element name="Document" type="dss:DocumentType"/>

</xs:sequence>

<xs:sequence maxOccurs="unbounded">

<xs:element name="TransformedData" type="dss:TransformedDataType"/>

</xs:sequence>

<xs:sequence maxOccurs="unbounded">

<xs:element name="DocumentHash" type="dss:DocumentHashType"/>

</xs:sequence>

</xs:choice>

</xs:complexType>

</xs:element>

Each child element of InputDocuments XML element SHALL implement in XML syntax the sub-component that has a name equal to its local name.

The InputDocuments XML element SHALL NOT be empty.

JC COMMENT: THIS REQUIREMENT IS REQUIRED FOR IMPLEMENTING THE SEMANTIC REQUIREMENT FOR THE SEMANTIC COMPONENT AS THIS PIECE OF XML SCHEMA DOES NOT IMPOSE IT.

* + 1. JSON Syntax

The inDocs JSON object SHALL implement in JSON syntax the InputDocuments component.

The inDocs JSON object SHALL be defined as in JSON Schema file [JSON SCHEMA FILE NAME] whose location is detailed in clause [CLAUSE FOR LINK TO THE JSON SCHEMA FILE], and is copied below for information.

"inDocs": {

"type": "object",

"id" : "urn:jsonschema:org:oasis:dss:\_2\_0:core:InputDocuments",

"properties" : {

"doc" : {"$ref": "#definitions/doc"},

"transformed" : {"$ref": "#definitions/transformed"},

"docHash" : {"$ref": "#definitions/docHash"},

}

"minProperties": 1

}

(NOTE FROM JC: THIS PIECE OF TEXT ASSUMES THAT WITHIN THE JSON SCHEMA THERE IS A ZONE "definitions" THAT DEFINES THE CONTENTS OF doc, transformed and docHash, see https://spacetelescope.github.io/understanding-json-schema/structuring.html for an example)….although its correctness must be checked, of course. The idea would be to define the types in the definitions zone and then make use of these definitions wherever is needed

Property doc SHALL implement in JSON syntax the sub-component Document.

Property transformed SHALL implement in JSON syntax the sub-component TransformedData.

Property docHash SHALL implement in JSON syntax the sub-component DocumentHash.

JC: AN ALTERNATIVE TO THESE THREE SENTENCES COULD HAVE BEEN THE MAPPING TABLE WITH SOME TEXT EXPLAINING ITS MEANING; MAYBE SOMETHING AS INDICATED BELOW:

Each property in the JSON schema above SHALL implement in JSON syntax one sub-component of InputDocuments component as shown in the table below.

|  |  |
| --- | --- |
| Component | Implementing JSON member name |
| Document | doc |
| TransformedData | transformed |
| DocumentHash | docHash |

JC: NOTE THAT THE minProperties IN THE JSON SCHEMA SATISFIES THE MUST NOT BE EMPTY REQUIREMENT FROM THE SEMANTIC COMPONENT.

JC: END OF THE PIECE OF TEXT

* + 1. Type TransformedDataType

JC: START OF THE PROPOSAL

**Semantics**

Any component of TransformedDataType MUST contain the result of encoding in base-64 the binary output obtained after the client has applied a chain of transformations to a certain document. See clause 3.5.5. for details on how the client passes details of these transformations to the server.

Components of this type MUST NOT be present if the signature to be generated or validated is not an XML Signature.

A component of this type MUST contain the following sub-components:

* One Transforms sub-component. This sub-component SHALL incorporate the details of the chain of transforms applied by the client to a certain document.
* One Base64Data sub-component. This sub-component SHALL contain the result of encoding in base-64 the binary output obtained after the client has applied the chain of transformations whose details are incorporated into the former sub-component, to a certain document.

A component of TransformedDataType MAY contain the following sub-components:

* One WhichReference sub-component. This sub-component MUST NOT be present in requests for generating or validating signatures that are not XML signatures. This sub-component MUST NOT be present in requests for generating XML signatures. This sub-component MAY be present in requests for verifying XML signatures. This sub-component MUST have an integer value. This value SHALL identify one of the <ds:Reference> elements within the XML Signature to be verified. Value 0 SHALL refer to the first <ds:Reference> element, 1 SHALL refer to the second <ds:Reference> element and so on.

NOTE (not normative): As there may be multiple TransformedData / DocumentHash elements resulting from the same document having the same URI [RFC 2396] and RefType on a SignRequest or VerifyRequest - their correspondence to an already existing <ds:Reference> however needs to be established on a VerifyRequest only. There is a need to disambiguate such cases. This element hence offers a way to clearly identify the ds:Reference when URI and RefType match multiple ds:References / TransformedData / DocumentHash. The corresponding ds:Reference is indicated by this zero-based WhichReference component. It may be possible to establish the ds:References / TransformedData / DocumentHash correspondence by comparing the optionally supplied chain of transforms to those of the ds:References having the same URI and RefType in the supplied ds:Signature if this chain of transform has been supplied. This can be quite expensive and even outweight the advantages of TransformedData / DocumentHash.

JC: END OF THE PROPOSAL

* + 1. Semantic to XML syntax mapping

If not defined otherwise the XML syntax for a given component can be derived by applying the following rules:

* Components defined in the semantic realm are mapped to XML elements with the local name given by the component name.
* Subcomponents are represented as XML elements. Other mappings (e.g. mapping to XML attributes) will be defined with each specific component’s XML mapping.
* Component and Subcomponents define a XML type with the type name derived from the component’s local name and the appendix ‘Type’ (e.g. Component ‘Document’ defines the type ‘DocumentType’).
* XML types of subcomponents are derived from the component referenced in the semantic section.
  + 1. Semantic to JSON syntax mapping

If not defined otherwise the JSON syntax for a given component can be derived by applying the following rules:

* Components defined in the semantic realm are mapped to JSON objects with the object name given by the component name.
* Subcomponents are represented as JSON properties. The name of JSON properties are usually chosen for brevity. A lookup table given in the component’s JSON syntax section maps the components’ names to JSON property names.
* Component and Subcomponents define a JSON type with the type id derived from the component’s local name, a specific prefix and the appendix ‘Type’ (e.g. Component ‘Base64Data’ defines the type id ‘urn:jsonschema:org:oasis:dss:\_2\_0:core:Base64DataType’).
* The ids of JSON types of subcomponents are derived from the component referenced in the semantic section.

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Attribute MimeType 16

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1. JSON Helpers

Here we may offer guidance on helping to make the DSS world look even more JSONesque

1. Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision** | **Date** | **Editor** | **Changes Made** |
| [Rev number] | [Rev Date] | Andreas Kuehne and Stefan Hagen | Initial Draft version with feedback from the TC |