SAML V2.0 Condition for Delegation Restriction

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Technical Committee:
OASIS Security Services TC

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Abstract:
This document defines a `<saml:Condition>` type for expressing a chain of intermediaries acting on behalf of the subject of an assertion, requring relying parties to distinguish between direct and indirect access.

Status

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

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1 Introduction

Some advanced SAML use cases involve a single logical transaction that spans one or more intermediate clients or servers. An example includes a web site acting on behalf of a logged-in user while accessing a third service. Generalizing this example, a number of intermediaries might be transited before the final point of access. If a SAML assertion is used as a security token to authenticate and authorize such access, it is important that the identity and order of intermediaries, if any, be expressed within the token in some fashion.

Existing mechanisms designed for this purpose, such as the `<saml:SubjectConfirmation>` element definition in the SAML V2.0 core specification [SAML2Core], or the extended syntax found in the Liberty ID-WSF Security Mechanisms specification [LibSecMech20], suffer from the drawback that they have advisory semantics for a relying party and are likey to be ignored by delegation-unaware SAML processing. While backward compatibility can be an advantage, ignoring security-relevant details that might impact upon a relying party's policy is unacceptable in some scenarios.

This specification provides for the expression of delegation information with normative SAML processing semantics through the use of a `<saml:Condition>` extension type.

1.1 Notation

This specification uses normative text.

The keywords "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this specification are to be interpreted as described in [RFC2119]:

> …they MUST only be used where it is actually required for interoperation or to limit behavior which has potential for causing harm (e.g., limiting retransmissions)…

These keywords are thus capitalized when used to unambiguously specify requirements over protocol and application features and behavior that affect the interoperability and security of implementations. When these words are not capitalized, they are meant in their natural-language sense.

```
Listings of XML schemas appear like this.
```

```
Example code listings appear like this.
```

Conventional XML namespace prefixes are used throughout the listings in this specification to stand for their respective namespaces as follows, whether or not a namespace declaration is present in the example:

Prefix	XML Namespace	Comments
`saml:`	urn:oasis:names:tc:SAML:2.0:assertion	This is the SAML V2.0 assertion namespace defined in the SAML V2.0 core specification [SAML2Core].
`del:`	urn:oasis:names:tc:SAML:2.0:conditions:delegation	This is the namespace defined by this specification.
`xsd:`	http://www.w3.org/2001/XMLSchema	This namespace is defined in the W3C XML Schema specification [Schema1]. In schema listings, this is the default namespace and no prefix is shown.
`xsi:`	http://www.w3.org/2001/XMLSchema-instance	This is the XML Schema namespace for schema-related markup that appears in XML instances [Schema1].

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

1.2 Normative References

[RFC2119] S. Bradner. *Key words for use in RFCs to Indicate Requirement Levels*. IETF RFC 2119, March 1997. http://www.ietf.org/rfc/rfc2119.txt.

[SAML2Core] S. Cantor et al. *Assertions and Protocols for the OASIS Security Assertion Markup Language (SAML) V2.0*. OASIS Standard, March 2005. Document ID saml-core-2.0-os. See http://docs.oasis-open.org/security/saml/v2.0/saml-core-2.0-os.pdf.

[Schema1] H. S. Thompson et al. *XML Schema Part 1: Structures.* World Wide Web Consortium Recommendation, May 2001. See http://www.w3.org/TR/2001/REC-xmlschema-1-20010502/. Note that this specification normatively references [Schema2], listed below.

[Schema2] Paul V. Biron, Ashok Malhotra. *XML Schema Part 2: Datatypes*. World Wide Web Consortium Recommendation, May 2001. See http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/.

1.3 Non-Normative References

[LibSecMech20] F.Hirsch. *Liberty ID-WSF Security Mechanisms Core*. November 2006. http://www.projectliberty.org/specs.

1.4 Conformance

1.4.1 SAML V2.0 Condition for Delegation Restriction

An assertion issuer conforms to this specification if it can generate assertions containing a `<saml:Condition>` of type **DelegationRestrictionType**, per section 2.

A relying party conforms to this specification if it can successfully process assertions containing a `<saml:Condition>` of type **DelegationRestrictionType**, per section 2.

2 SAML V2.0 Condition for Delegation Restriction

2.1 Required Information

Identification: `urn:oasis:names:tc:SAML:2.0:conditions:delegation`

Contact information: security-services-comment@lists.oasis-open.org

Description: Given below.

Updates: None.

2.2 Overview

The SAML V2.0 core specification [SAML2Core] defines the **saml:ConditionAbstractType** complex type as a basis for extensions with mandatory processing semantics for relying parties. This specification defines such an extension as a supplement for the presence of an identifier within the `<saml:SubjectConfirmation>` element.

Rather than an advisory mechanism for identifying a single delegate, the extension provides for a normative mechanism that identifies an ordered sequence of delegates, along with optional detail about the acts of delegation.

2.3 Element <Delegate>

The `<Delegate>` element is a container for a single intermediary/delegate represented by the assertion. It contains the following elements and attributes:

`DelegationInstant` [Optional]

A timestamp indicating the approximate time at which the act of delegation occurred, if known.

`ConfirmationMethod` [Optional]

Identifies the subject confirmation method used, if the delegate presented a SAML assertion to authenticate itself to the issuing authority.

`<saml:BaseID>`, `<saml:NameID>`, `<saml:EncryptedID>` [Required]

Identifies the delegate.

The delegate is identified by a required child element in the usual SAML fashion. The optional attributes, if present, supply additional information about the act of delegation.

The following schema fragment defines the `<Delegate>` element and its **DelegateType** complex type:

```
<element name="Delegate" type="del:DelegateType"/>
<complexType name="DelegateType">
   <choice>
      <element ref="saml:BaseID"/>
      <element ref="saml:NameID"/>
      <element ref="saml:EncryptedID"/>
   </choice>
   <attribute name="DelegationInstant" type="dateTime" use="optional"/>
   <attribute name="ConfirmationMethod" type="anyURI" use="optional"/>
</complexType>
```

2.4 Complex Type DelegationRestrictionType

The **DelegationRestrictionType** complex type defines a subtype of **saml:ConditionType** representing one or more acts of delegation that are represented by the containing assertion. It contains the following elements:

`<Delegate>` [One or more]

An element identifying a delegate of the subject of the containing assertion. The delegates MUST be ordered from least to most recent; thus the earliest element is the farthest removed from the immediate use of the assertion.

A relying party MUST evaluate the list of delegates, and SHOULD NOT accept the assertion unless it wishes to permit each delegate to act on behalf of the subject of the containing assertion.

A SAML authority MUST NOT include more than one `<saml:Condition>` element of this type within a `<saml:Conditions>` element of an assertion.

For the purposes of determining the validity of the `<saml:Conditions>` element, this condition type is always considered to be valid. That is, this condition type does not affect assertion validity, but is a condition on use.

The following schema fragment defines the **DelegationRestrictionType** complex type:

```
<complexType name="DelegationRestrictionType">
   <complexContent>
      <extension base="saml:ConditionAbstractType">
         <sequence>
            <element ref="del:Delegate" maxOccurs="unbounded"/>
         </sequence>
      </extension>
   </complexContent>
</complexType>
```

2.5 Use of Identifiers Within <saml:SubjectConfirmation>

For consistency with the existing SAML-defined syntax, it is RECOMMENDED that the identifier of the most recent delegate (within the last element in the condition, per section 2.4) be duplicated within the relevant `<saml:SubjectConfirmation>` elements in the containing assertion.

2.6 Security Considerations

The content of this condition type is directly impacted by the security semantics of the flow of activity that leads to the issuance of the containing assertion. This specification does not define the exchanges that must take place, and relies on composition with other profiles that logically represent acts of delegation that require representation in an assertion.

Relying parties are not required to apply any particular policies with regard to the information represented by this condition type. Rather, it is expected that such information will naturally be significant in the enforcement of existing policies, and that the presence of delegation is significant enough to warrant the disruption of existing services designed to consume SAML assertions until those policies reflect a willingness to accept more indirect forms of access.

Appendix A. Acknowledgements

The editors would like to acknowledge the contributions of the OASIS Security Services Technical Committee, whose voting members at the time of publication were:

- TBD

Appendix B. Revision History

- Draft 01.