Abstract:
This profiles the use of SAML attributes for using XPath URI's as attribute names. This lets Attribute Authorities map XML documents, associated with a user, into SAML attributes. In particular, this profile enables Attribute Authorities to map Liberty Alliance data services into SAML attributes. XPath attributes can then be queried, asserted and published in metadata.

Status:
This is a Draft.

Committee members should submit comments and potential errata to the security-services@lists.oasis-open.org list. Others should submit them to the security-services-comment@lists.oasis-open.org list (to post, you must subscribe; to subscribe, send a message to security-services-comment-request@lists.oasis-open.org with "subscribe" in the body) or use other OASIS-supported means of submitting comments. The committee will publish vetted errata on the Security Services TC web page (http://www.oasis-open.org/committees/security/).

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights web page for the Security Services TC (http://www.oasis-open.org/committees/security/ipr.php).
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1 Introduction

This document defines a profile of SAML v2 attributes using XPath as attribute names.

1.1 Notation

This specification uses normative text to describe the use of SAML attribute queries and assertions.

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 [RFC 2119]:

…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.

This specification uses the following typographical conventions in text: <SAMLElement>, <ns:ForeignElement>, Attribute, Datatype, OtherKeyword.
2 XPath Attribute Profile

This section defines a profile of SAML v2 attributes using XPath as attribute names and XPath query results as attribute values.

2.1 Required Information

Contact information: security-services-comment@lists.oasis-open.org
Description: Given below.
Updates: N/A
Extends: N/A

2.2 Motivating Use Case

Attribute authorities may have available XML documents and web services that describe a user, such as services that implement the Data Services Template [DST] as defined by Liberty Alliance. The attribute authority uses XPath to extract information out of XML and place the information in assertions as attribute values. The XPath expression itself names the attribute. The attribute authority configures XPath attributes that it will assert. Attribute requesters discover possible XPath attributes via metadata.

2.3 SAML Attribute Naming

The NameFormat XML attribute in <Attribute> elements MUST be http://www.w3.org/TR/1999/REC-XPath-19991116. This indicates that the format of Name conforms to the XPath version 1 specification.

An attribute authority MAY constrain the allowable XPath expressions. Attribute Authorities MAY publish the allowable XPath expressions in metadata [SAMLMeta] by enumerating each allowed expression.

2.4 Profile-Specific XML Attributes

An <Attribute> with an XPath formatted name must have, within its scope, namespace declarations (xmlns:) for all prefixes used in the XPath.

The attribute ResourceIndicator MAY appear in <Attribute> to specify the URI of a specific document. This attribute applies when the <Subject> element and the XPath expression do not uniquely identify to which resource the XPath should apply. An <Attribute> without ResourceIndicator implies that the attribute authority can uniquely identify the resource to which the XPath applies with the <Subject> and XPath expression.

Schema for the ResourceIndicator attribute follows:

```xml
<schema

targetNamespace="urn:oasis:names:tc:SAML:profiles:attribute:XPath"
xmlns="http://www.w3.org/2001/XMLSchema"

elementFormDefault="unqualified"
attributeFormDefault="unqualified"
blockDefault="substitution"
version="2.0">
<annotation>
<documentation>
Document identifier: draft-saml-xpath-attribute-profile
Location: http://docs.oasis-open.org/security/saml
```
2.5 Interoperability

Since implementations and configurations may support different subsets of XPath attributes, the following sections provide rules to achieve some level of interoperability.

Text Nodes

To encourage interoperability, supported XPaths SHOULD include all possible text nodes. This helps requesting parties since they do not need to parse an asserted attribute value. XPaths to these leaf nodes MUST contain slash separated, absolute paths. However, some documents may not allow the enumeration of all text nodes in metadata, simply because the arbitrary structure of these documents.

Liberty Alliance Data Services Template

The data services template, defined by Liberty Alliance [LAP], recommends that conforming implementation use XPath to query documents or services related to an identity. Several of these services [EP][PP] define a minimum set of XPaths a service must allow. This defines one inter-operable set supported XPath expressions implementations must support. Similarly, implementations that map these documents to attributes of this profile MUST allow queries for the text nodes of the XPaths defined by these data services. Note, that these services usually list the elements that directly contain text nodes.

For example, if the Liberty service requires support of the XPath expression of 
"/pp:PP/pp:LegalIdentity/pp:LegalName", then implementations of this profile must support the value of "/pp:PP/pp:LegalIdentity/pp:LegalName/text()".
3 Examples

3.1 Personal Profile Text Node Example:

```xml
<saml:Attribute Name="/pp:PP/pp:LegalIdentity/pp:LegalName/text()"
NameFormat="http://www.w3.org/TR/1999/RECXPath-199911169"
xmlns:pp="urn:liberty:id-sis-pp:2003-08"
xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion">
  <saml:AttributeValue>John Q. Doe</saml:AttributeValue>
  <saml:AttributeValue>John Quincy Doe</saml:AttributeValue>
</saml:Attribute>
```

3.2 Resource Indicator Example:

```xml
<saml:Attribute Name="/r:Resume/r:PreviousEmployement/r:Employeer/text()"
NameFormat="http://www.w3.org/TR/1999/RECXPath-199911169"
xattr:ResourceIndicator="http://oasis-open.org/~jdoe/resume.xml"
xmlns:r="urn:oasis:names:sample:resume"
xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion">
  <saml:AttributeValue>Acme, Incorporated</saml:AttributeValue>
  <saml:AttributeValue>Local Grocery Company</saml:AttributeValue>
</saml:Attribute>
```

3.3 XML Value Example:

```xml
<saml:Attribute Name="/r:Resume/r:PreviousEmployement/r:Employeer"
NameFormat="http://www.w3.org/TR/1999/RECXPath-199911169"
xattr:ResourceIndicator="http://oasis-open.org/~jdoe/resume.xml"
xmlns:r="urn:oasis:names:sample:resume"
xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion">
  <saml:AttributeValue>
    <r:Employeer current="true">Acme, Incorporated</r:Employeer>
    <r:Employeer current="false">Local Grocery</r:Employeer>
  </saml:AttributeValue>
</saml:Attribute>
```
4 References


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