Issues List for Security Assertion Markup Language (SAML) V2.0

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Abstract:
  This document catalogues issues for Security Assertion Markup Language (SAML) V2.0, which is
developed by the OASIS Security Services Technical Committee. It is intended to record specific
issues that potentially need to be implemented as changes or additions to a SAML specification.
Also see the SAML V2.0 work items document, which provides information on the overall scope of
the V2.0 effort and general work items that have been adopted.

Status:
  This document is a non-normative working document of the OASIS Security Services Technical
Committee. It is not a formal part of the SAML specification suite. The intention is to update it
frequently until V2.0 is completed. See the Revision History for details of changes made in
this revision.

  Committee members should send comments on this specification to the security-
services@lists.oasis-open.org list. Others should subscribe to and send comments to the
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the message.

  For information on whether any patents have been disclosed that may be essential to
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open.org/committees/security/).
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1 Introduction

This document catalogues issues for Security Assertion Markup Language (SAML) V2.0, which is developed by the OASIS Security Services Technical Committee. It is intended to record specific issues that potentially need to be implemented as changes or additions to a SAML specification. Also see the SAML V2.0 work items document, which provides information on the overall scope of the V2.0 effort and general work items that have been adopted.

Each issue includes the following information:

- A unique issue ID, such as TECH-42. This appears in the section heading. The possible categories are OVER for the technical overview, CORE for the assertions and protocol and their governing schemas, BIND for bindings and profiles, META for the metadata exchange format and protocol, TECH for other technical issues, OUT for the outreach materials, and MISC for all other issues.
- A short name for the issue. This appears in the section heading.
- The issue's status. This appears in the section heading. The possible statuses are Open for issues that still need a resolution, Deferred for issues that we have put off dealing with until the next version of SAML, Resolved for issues that we have resolved but that remain to be implemented, and Closed for issues that have a resolution and require no further action (for example, because the resolution has been implemented or because no action at all is necessary).
- The source of the issue, indicating where it was first raised or reported.
- The assigned owner of the issue. This person is responsible for proposing options and a preferred resolution.
- An arbitrarily long description of the issue, including any discussion history.
- Numbered options for resolving the issue, as appropriate.
- The resolution of the issue, once this information is available. It should include the date and circumstances of the resolution.
2 Technical Deliverable Issues

The following are issues related to the SAML V2.0 technical deliverables.

2.1 OVER: Technical Overview Issues

The following are issues related to the technical overview.

@@TBS

2.2 CORE: Assertions, Protocol, and Schema Issues

The following are issues related to the assertions and protocol and their governing schemas.

CORE-6 Remove AuthorityBinding Element (Closed)

Source: oasis-sstc-saml-core-1.1.pdf lines 746-747.

Owner: Eve Maler.

Description: This impacts the core spec and the assertion schema. Section 2.4.3, Element
<AuthenticationStatement>, needs to change to remove mention of
<AuthorityBinding> from the text and the schema snippet and to note the element's removal
in a comment, Section 2.4.3.2, Element <AuthorityBinding>, needs to be removed, and the
assertion schema needs to change correspondingly.

Resolution: This is a backwards-incompatible change decided and promised in the V1.0 timeframe but unable
to be implemented until V2.0. Implemented in core-01.

CORE-7 Remove RespondWith Element (Closed)

Source: oasis-sstc-saml-core-1.1.pdf lines 1012-1013.

Owner: Eve Maler.

Description: This impacts the core spec and the assertion schema. Section 3.2.1, Element Complex Type
RequestAbstractType, needs to change to remove mention of <RespondWith> from the text and
the schema snippet and to note the element's removal in a comment, Section 3.2.1.1, Element
<RespondWith>, needs to be removed, and the assertion schema needs to change

Resolution: This is a backwards-incompatible change promised in the V1.0 timeframe but unable to be
implemented until V2.0. Implemented in core-01.

CORE-8 Remove Deprecated NameIdentifier URIs (Closed)


Owner: Eve Maler.
Description:
This impacts the core spec. Section 7.3, NamelIdentifier Format Identifiers, needs to change to merely mention that a few URIs have been deprecated in this version, and Sections 7.3.2 through 7.3.4, Email Address through Windows Domain Qualified Name, need to winnow down the URI choices to just the recommended URI in each case.

Resolution:
This is a backwards-incompatible change decided and promised in the V1.0 timeframe but unable to be implemented until V2.0. Implemented in core-01.

CORE-9 Require URI References to Be Absolute (Closed)

Source:
oasis-sstc-saml-core-1.1.pdf line 219.

Owner:
Eve Maler.

Description:
This impacts the core spec. Section 1.2.1, String and URI Values, needs to change to say “all URI reference values ... and are REQUIRED to be absolute [RFC 2396].” rather than “... strongly RECOMMENDED ...”.

Resolution:
This is a backwards-incompatible change decided in the V1.0 timeframe but unable to be implemented until V2.0. Implemented in core-01.

CORE-10 Null Attribute Values (Closed)

Source:

Owner:
Rob Philpott.

Description:
How should an implementation send an empty value (i.e. like a NO-VALUE value in a database) for an attribute?

Options:
A number of reasonable options have already been proposed in the email thread.

Resolution:
This has been implemented in core-05 as follows: If the attribute exists but has no value, then the <AttributeValue> element MUST be omitted.” It was later revised as follows: “If the attribute exists but has no value, then the <AttributeValue> element MUST be omitted.”

CORE-11 Assertion-Level Subject (Closed)

Source:
Conor Cahill on the security-services list (see thread at http://lists.oasis-open.org/archives/security-services/200310/msg00135.html).

Owner:
Scott Cantor, Eve Maler

Description:
When all statements within an assertion have the same subject, is it possible to factor out that subject information and provide it instead at the assertion level? The thinking is that it is extremely inefficient to have to do subject confirmation processing for each statement individually, when the typical (only?) use case is for the same subject to apply to all statements.
Options:
Conor lists two possibilities:
• Add an <Assertion>-level <Subject> element that applies to all statements without a
  <Statement>-level <Subject>.
• Barring this, add a subject reference mechanism so that a statement could refer to the
  <Subject> in another statement.

Resolution:
A largely complete solution has been implemented in core-07. At the March 2004 F2F meeting,
we made the final decisions on how to support assertion-level-only subjects, along with support
for subjectless assertions according to XACML’s needs.

CORE-12 SOAP Version in Protocol Binding (Open)

Source:
Scott Cantor, comment at SAML F2F 22-24 October 2003.

Owner:
@@

Description:
The current protocol binding to SOAP is based on SOAP V1.1, but now SOAP V1.2 has been
published as a W3C Recommendation. Should we use it? Concerns have been expressed about
SOAP V1.2’s inability to do signatures properly.

Options:
The obvious options are:
1. Leave the binding as it is.
2. Change the current binding to use SOAP V1.2.
3. Keep the current binding and add an additional binding to SOAP V1.2.
There may be additional actions needed based on the fact that the protocol is being extended to
encompass the new identity federation features. In the cases of options 2 and 3, the security
considerations may be impacted.

Resolution:
@@

CORE-13 Signing Assertions vs. Responses (Open)

Source:

Owner:
@@(we think this will get addressed as part of the new profile work)

Description:
Currently we advise signing the whole response rather than individual assertions, but this is too
inflexible to allow for the passing through of assertions from elsewhere (“the intermediary
problem”). We need to consider the signing of individual assertions.

Options:
@@

Resolution:
@@

CORE-14 Wildcarding and Extensibility in the SAML Schemas (Open)

Source:
SAML telecon of 28 October 2003, as part of the discussion of the nameid-05 proposal.
Currently, the SAML assertion and protocol schemas allow for type-based extensibility, but have so far been extremely judicious about XML markup extensibility features that do not require the definition of derived types in an extension schema. Although NameIdentifier URIs – for example – provide extensibility of element string content, the schemas have no `<xsd:attribute>` and few `<xsd:any>` wildcards.

Should we be adding `<xsd:attribute>` everywhere on principle? Should we be adding `<xsd:any>` to additional (or all) complex types? This issue came up again in the March-April 2004 F2F because of a comment received from Anne Anderson on the W-28a attribute work.

The options have been outlined in the schema extensibility paper (latest revision is at http://www.oasis-open.org/committees/download.php/5227/sstc-maler-schema-extension-02-diff.pdf), and actions have been taken on the recommendations therein. There is only a little more work to be done to close out this issue.

Small changes related to schema extensibility have been done in an ongoing manner; these will all be documented in future versions of the position paper.

CORE-15 Fix Description of Evidence Element's Contents (Closed)

The description of the contents of the `<Evidence>` element is incorrect. The schema allows an unbounded number of `<AssertionIDReference>` and `<Assertion>` elements in any order, but the description says that it can contain only one subelement.

Correct the description on lines 912-917 in oasis-sstc-saml-core-1.1 to reflect the correct occurrence of these subelements.

CORE-16 Validity Period of Identifiers (Open)

The new `NotBefore` and `NotOnOrAfter` attributes on the new NameIdentifierAbstractType may not be effective/necessary, depending on what happens with our W-2 (Session Support) solution. Indicating the time of encryption when you don't have integrity protection above that level doesn't do you any good. And providing a validity period for transient name identifiers may not be necessary. However, some think there may be use cases for keeping the attributes anyway.

It has been suggested that what should appear when you decrypt the identifier is an assertion.
CORE-17 Consider Changing Name Identifier Format Default for Issuer (Open)

Source: SAML F2F meeting 3-5 February 2004, discussion on work item W-28d

Owner: Scott Cantor

Description: Currently, the default (not enforced in the schema) is the "unspecified" URI. Should it be Provider? Something else?

Options: @@

Resolution: @@

CORE-18 Use of Non-Federated Identifiers in Name Identifier Registration Protocol (Closed)

Source: SAML F2F meeting 3-5 February 2004, discussion on work item W-2

Owner: Scott Cantor

Description: How do you ensure that the kind of identifier supplied when requesting a federated new one is compatible?

Options: Either we could allow non-federated identifiers in unrestricted fashion, or allow them in some kind of restricted fashion, or disallow them entirely. The core-08 language proposes disallowing them entirely.

Resolution: In the March-April 2004 F2F, we agreed that disallowing them serves no purpose, and allowing them doesn't require any restrictions. The relevant paragraph will simply be deleted in core-09.

CORE-19 Indicating the Authority Binding (Open)

Source: SAML F2F meeting 3-5 February 2004, discussion on work item W-19, HTTP-Based Assertion Referencing

Owner: Scott Cantor

Description: The WSS TC will need our advice on how to indicate the location of an authority (along with the assertion ID), now that we've yanked the AuthorityBinding attribute.

Options: @@

Resolution: @@
CORE-20 Health Warning on xsi:type Extensions of AttributeValue (Closed)

Source:  
SAML F2F meeting 3-5 February 2004, discussion on work item W-28a*

Owner:  
Eve Maler

Description:  
It was noted that using xsi:type on AttributeValue in order to further constrain its contents (from xs:anyType to some specific type) can result in problems because xsi:type requires that the extension schema be present. We agreed that we should add a note to the core spec warning people about this.

Resolution:  
The TC agreed to do this at the F2F. Implemented in core-08. “Note: Specifying a datatype on <AttributeValue> using xsi:type will require the presence of the extension schema that defines the datatype in order for schema processing to proceed.”

CORE-21 Inconsistent Naming (Open)

Source:  

Owner:  
Eve Maler

Description:  
“SAML previously used long names; Liberty shortened some for efficiency reasons. So we now have <AuthenticationStatement> but <AuthnRequest>, and <NameIdentifier> but NameIDPolicy. We need to decide whether (a) the inconsistency is okay, (b) if not, which way we go for what reasons, and (c) whether we want to do a full-on succinctness assault.”

Following are some ideas about places to shorten names, if we decide to shorten across the board:

1. Identifier becomes ID: various old element names would become BaseID, NameID, SPPProvidedID, EncryptedID, NewID, RegisterNameIDRequest, RegisterNameIDResponse, NameIDMappingRequest, NameIDMappingResponse (note that we already have AssertionIDReference, AssertionID, RequestID, ResponseID), and the corresponding types would do the same

2. ID attributes become simply ID: old names AssertionID, RequestID, ResponseID all become ID (AssertionConsumerServiceID and RequesterID should stay the same since it's not the ID of the element it's on; IDPEntry has an ID attribute of type anyURI, so maybe this name should change entirely)

3. Authentication becomes Authn: various old element names would become AuthnStatement, AuthnMethod, AuthnInstant, AuthnQuery (note that we already have AuthnContext, AuthnContextClassRef, AuthnContextStatement, AuthnContextStatementRef, AuthnRequest, RequestAuthnContext, ForceAuthn, and the type name AuthnContextComparisonType), and the corresponding types would do the same

4. Authorization becomes Authz: various old element names would become AuthzDecisionStatement, AuthzDecisionQuery, and the corresponding types would do the same

5. Subelements and attributes of an element would lose any duplicated prefixes or suffixes: SubjectConfirmation would contain Method and Data rather than prefixed versions of same; the subelements of Conditions would not repeat the word Condition in their names; the elements inside AuthnContext would not start with AuthnContext; inside StatusCode would appear simply Message and Detail
There are probably other opportunities not listed here.

**CORE-22 Bag of Conditions (Open)**

**Source:**

**Owner:**
Eve Maler

**Description:**
"The proposal for the new <ProxyRestrictionCondition> brings to light an old SAML ugliness: <Conditions> contains a repeatable bag of subelements, necessitating verbiage about what to do when more than one subelement appears (which has been done in the case of the new subelement, but not the old ones). Options: (1) Add prose requirements (not expressible in XSD) that subelements MUST appear a maximum of once in <Conditions> (the simplest); (2) change <Conditions> backwards-incompatibly to contain an ordered list of 0..1 of each subelement (my favorite); (3) add lots more SHOULD prose to the old subelement descriptions, similar to what's in the new one (yuck)."

**CORE-23 KeyInfo as Special Case of Subject Confirmation Data (Closed)**

**Source:**

**Owner:**
Eve Maler

**Description:**
In this telecon it was noted that KeyInfo is allowed alongside the more general SubjectConfirmationData, but was intended to be a more-specific alternative to it. Should we put them in a choice group, or put more prose around them to explain what it means when both are present, or disallow them together just using prose?

**Resolution:**
It was decided at the March-April 2004 F2F to remove the explicit mention of KeyInfo, and explain that people should put this element inside SubjectConfirmationData whenever they want it.

**CORE-24 Multiple Encryption Keys and Recipient Information (Open)**

**Source:**
March-April 2004 F2F

**Owner:**
@@

**Description:**
@@

**Resolution:**
@@

**CORE-25 Change AuthnContextStatement Element Name (Open)**

**Source:**
March-April 2004 F2F
Description: The Authentication Context spec defines an element called AuthnContextStatement, which appears as a descendant of a SAML statement element. This is confusing. Several renamings were suggested: AuthnContextClaim, ...Declaration, ...Pronouncement, etc.

Resolution:

CORE-26 Consent vs. Reason (Open)

Source: March-April 2004 F2F

Description: A potential problem was discovered in the SAML interop event held at the RSA 2004 conference: Although the SAML core spec requires there to be a namespace prefix on status code QNames, one vendor defaulted the prefix. Some have commented that it's inappropriate to require the prefix rather than allowing the natural XML namespace defaulting mechanism to be used, but others felt that since "QNames in content" are considered evil, it's hard to improve on its evilness around the edges. One possibility is to move away from a SOAP V1.1-like Qnames-in-content mechanism for status codes, and instead use URIs.

Resolution:

CORE-27 URIs vs. Prefixed QNames in Status Codes (Open)

Source: March-April 2004 F2F

Description: John Kemp noted that the pattern of element vs. attribute usage throughout the SAML schemas is not entirely consistent. We need to do a review and decide whether to sync up our usage.

Resolution:

CORE-28 Review Element vs. Attribute Choices (Open)

Source: March-April 2004 F2F

Description: John Kemp noted that the pattern of element vs. attribute usage throughout the SAML schemas is not entirely consistent. We need to do a review and decide whether to sync up our usage.

Resolution:

2.3 BIND: Binding and Profile Issues

The following are issues related to the Technical Overview deliverable.
BIND-1 Disallow Status as Only Child of SOAP Body (Closed)

Source:  
oasis-sstc-saml-bindings-1.1.pdf lines 316-317.

Owner:  
Frederick Hirsch.

Description:  
This impacts the bindings spec. Section 3.1.3.6, Error Reporting, needs to change to winnow the two choices for inclusion of a `<Status>` element in a SOAP message down to the recommended one, and mention that one method was removed.

Resolution:  
This is a backwards-incompatible change decided and promised in the V1.0 timeframe but unable to be implemented until V2.0. Implemented in bindings-02.

BIND-2 Remove Deprecated Artifact URI (Closed)

Source:  
oasis-sstc-saml-bindings-1.1.pdf line 426.

Owner:  
Frederick Hirsch.

Description:  
This impacts the bindings spec. Section 4.1.1.1, Required Information (for Browser/Artifact Profile of SAML), needs to change to remove the deprecated URI, and several subsequent subsections need to be edited (search for the word “deprecated”) to remove mention of the deprecated option.

Resolution:  
This is a backwards-incompatible change decided and promised in the V1.0 timeframe but unable to be implemented until V2.0. Implemented in bindings-02.

BIND-3 Establish a Mandatory Profile (Open)

Source:  

Owner:  
@@

Description:  
Dan actually made several suggestions in his blog entry:

"1) OASIS, or an appropriate third party, should arrange for a reference implementation, or test harness, of SAML to be created against which all implementers can freely test over the network. This alone may be sufficient to solve the brunt of the interoperability issue, and it should be possible to create such an implementation using OpenSAML or SourceID in less than 90 days. As a follow up OASIS or an appropriate third party could also arrange for recurring interoperability testing events similar to those Liberty Alliance has announced.

"2) Since the majority of vendors we surveyed so far support unsigned SAML 1.0 requests using the artifact profile over SSL connections with client and server authentication, the test harness should support this use case ASAP, then the others. We also believe the SSTC should consider making the described use case mandatory so that all customers can be assured of a "lowest common denominator" SAML interaction mode regardless of the vendor they pick."
3) In addition, customers are generally finding federated identity business issues difficult. OASIS should publish a “SAML cookbook” that customers can read to categorize their required pattern of federation, assess their risks, and compose a workable strategy going forward."

This issue specifically relates to the second part of suggestion #2. His other suggestions are being taken up in other fashions: The co-chairs are looking into #1, and the editors are looking into #3 as an editorial matter. This is also related to conformance.

Resolution:
@@

2.4 META: Metadata Issues
The following are issues related to the metadata exchange format and protocol deliverable.
@@TBS

2.5 TECH: Other Technical Issues
The following are technical issues related to areas not already covered above.

**TECH-1 Identity/Service Provider Terminology and Domain Model (Open)**

Owner: Eve Maler

Description: Currently we introduce terminology in the bindings spec about “source” and “destination” sites, which we’ve never been entirely happy with. Liberty uses “identity provider” and “service provider”, which are more meaningful. (Note that “identity provider” is broader than “authentication authority”.) We need to consider a wholesale change to our terminology, either in the Liberty direction or in some other direction. The solution should be able to be used globally across the specs, and not be specific just to the bindings. (We will likely still need the “asserting party”/”relying party” terminology because it has a different purpose.)

At the March-April 2004 F2F, we agreed that this issue should also include the related issue of creating an overall “domain model” or similar conceptual model that encompasses the new features of SAML V2.0 in general, as well as the question of whether a SAML authority exactly equals an IdP.

Options:
The obvious options are:
1. Keep the current terminology.
2. Change it over to an identity provider/service provider frame of reference in just the bindings document
3. Change it over in both bindings and core
4. Change it to yet another set of terms.

Resolution:
@@

**TECH-2 Versioning of Elements (Open)**

Source: Ongoing issue.
We need to decide whether to support mixing, say, older-version assertions inside newer-version responses. The current relationship between the protocol and assertion schemas is relatively static regarding version association. This was discussed at the March-April 2004 F2F, and the tentative conclusion was that, since assertions have such a relatively short lifetime, it shouldn't be necessary to allow for mixing of (e.g.) old assertions with new wrappers. However, we haven't made a formal decision on this matter yet.

**TECH-3 Impersonation Using SubjectConfirmation and KeyInfo
(Open)**

**Source:**

Ron says:

676: <ds:KeyInfo> [Optional]

676: An XML Signature [XMLSig] element that provides access to a cryptographic key held by the subject.

677: An XML Signature [XMLSig] element that identifies a cryptographic key.

Furthur, I think we should take a closer look at what the SAML BIND says about hok

863 5.1 Holder of Key

864 URI: urn:oasis:names:tc:SAML:1.0:cm:holder-of-key

865 A <ds:KeyInfo> element MUST be present within the <SubjectConfirmation> element.

866 As described in [XMLSig], the <ds:KeyInfo> element holds a key or information that enables an application to obtain a key. The subject of the statement(s) in the assertion is the party that can demonstrate that it is the holder of the key.
I can guess the intent of the last sentence, but it seems to me that its interpretation depends on what one thinks was meant by the 2 uses of "is" in this sentence. For example, the party that can demonstrate ... the key "is" the subject of the assertion; as in, is to be recognized as the subject, vs. must be the subject.

Resolution:

@@Mostly closed; the Holder of Key issue is still open.

TECH-4 Glossary Additions: Artifact, Binding, Profile (Open)

Source:

Jeff Hodges and others in message thread starting at http://lists.oasis-open.org/archives/security-services/200402/msg00061.html

Owner:

Rob Philpott

Description:

These terms are not formally defined, and in fact there is some vagueness around "profile".

Options:

@@

Resolution:

@@Bindings are now better characterized. We need a proposal around profiles.

TECH-5 Improve Federation Terminology (Open)

Source:

March-April 2004 F2F

Owner:

@@

Description:

@@

Resolution:

@@

TECH-6 Highlight Privacy Considerations (Open)

Source:

March-April 2004 F2F

Owner:

@@

Description:

Rather than implicitly assume that privacy is always a goal, the specs should explicitly call out which design features exist to support privacy considerations.

Resolution:

@@
3 OUT: Outreach Deliverable Issues

The following are issues related to the outreach deliverables.

@@TBS
4 MISC: Miscellaneous Issues

The following are issues related to areas of the SAML V2.0 effort not already covered above.

@@TBS
A. Acknowledgments

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

@@TBS
## B. Revision History

<table>
<thead>
<tr>
<th>Rev</th>
<th>Date</th>
<th>By Whom</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>13 Oct 2003</td>
<td>Eve Maler</td>
<td>Initial draft.</td>
</tr>
<tr>
<td>02</td>
<td>20 Oct 2003</td>
<td>Eve Maler</td>
<td>Marked CORE-1 through CORE-4 and BIND-1 through BIND-2 as closed because they have been implemented. Added CORE-6.</td>
</tr>
<tr>
<td>03</td>
<td>26 Oct 2003</td>
<td>Eve Maler</td>
<td>Added CORE-7, CORE-8, TECH-1, and TECH-2.</td>
</tr>
<tr>
<td>04</td>
<td>21 Nov 2003</td>
<td>Eve Maler</td>
<td>Added CORE-9 and BIND-3.</td>
</tr>
<tr>
<td>05</td>
<td>22 Dec 2003</td>
<td>Eve Maler</td>
<td>Added CORE-10 (and promptly closed it).</td>
</tr>
<tr>
<td>06</td>
<td>10 Feb 2004</td>
<td>Eve Maler</td>
<td>As a result of the F2F on 3-5 February 2004 and related discussions, added CORE-11 through CORE-15 and TECH-3 through TECH-4.</td>
</tr>
</tbody>
</table>
C. Notices

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