



Conformance Program Specification for the OASIS Security Assertion Markup Language (SAML) V1.1

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Editors:

Eve Maler, Sun Microsystems (eve.maler@sun.com)
Prateek Mishra, Netegrity, Inc. (pmishra@netegrity.com)
Robert Philpott, RSA Security (rphilpott@rsasecurity.com)

Contributors:

Irving Reid, Baltimore Technologies
Hal Lockhart, BEA Systems
Krishna Sankar, Cisco Systems
Mike Myers, former member
Marc Chanliau, Netegrity
Lynne Rosenthal, NIST
Mark Skall, NIST
Robert Griffin, RSA Security (former editor)
Darren Platt, formerly of RSA Security
Charles Norwood, Science Applications International Corporation
Sai Allarvarpu, Sun Microsystems
Emily Xu, Sun Microsystems
Mark O'Neill, Vordel
Tony Palmer, Vordel

Abstract:

This specification describes the program and technical requirements for SAML conformance.

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38 other OASIS-supported means of submitting comments. The committee will publish vetted errata
39 on the Security Services TC web page (<http://www.oasis-open.org/committees/security/>).

40 For information on whether any patents have been disclosed that may be essential to
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43 [open.org/committees/security/ipr.php](http://www.oasis-open.org/committees/security/ipr.php)).

Table of Contents

45	1	Introduction.....	5
46	1.1	Scope of the Conformance Program	5
47	1.2	Notation.....	5
48	2	Conformance Clause.....	6
49	2.1	SAML Specification Set	6
50	2.2	Declaration of SAML Conformance	6
51	2.3	Mandatory/Optional Elements in SAML Conformance	8
52	2.4	Impact of Extensions on SAML Conformance	9
53	2.5	Maximum Values of Unbounded Elements.....	9
54	3	Conformance Process.....	11
55	3.1	Implementation and Application Conformance	11
56	3.2	Process for Declaring Conformance.....	12
57	4	Technical Requirements for SAML Conformance.....	13
58	4.1	Test Group 1 – SOAP over HTTP Protocol Binding	13
59	4.1.1	Test Case 1-1: SOAP Binding: Implementation-Under-Test Produces Valid Authentication Assertion in Valid Response to Authentication Query	13
60	4.1.2	Test Case 1-2: SOAP Binding: Implementation-Under-Test Consumes Valid Authentication Assertion, Requested in Valid Authentication Query	14
61	4.1.3	Test Case 1-3: SOAP Binding: Implementation-Under-Test Produces Valid Attribute Assertion in Valid Response to Attribute Query.....	14
62	4.1.4	Test Case 1-4: SOAP Binding: Implementation-Under-Test Consumes Valid Attribute Assertion, Requested in Valid Attribute Query	14
63	4.1.5	Test Case 1-5: SOAP Binding: Implementation-Under-Test Produces Valid Authorization Decision Assertion in Valid Response to Authorization Decision Query	15
64	4.1.6	Test Case 1-6: SOAP Binding: Implementation-Under-Test Consumes Valid Authorization Decision Assertion, Requested in Valid Authorization Decision Query	15
65	4.1.7	Test Case 1-7: SOAP Binding: Implementation-Under-Test Produces Valid Assertions in Valid Response to AssertionIDReference Request.....	15
66	4.1.8	Test Case 1-8: SOAP Binding: Implementation-Under-Test Consumes Valid Assertions, Requested in Valid AssertionIDReference Request.....	16
67	4.2	Test Group 2 – Web Browser SSO Profiles	16
68	4.2.1	Test Case 2-1: Browser/Artifact Profile: Valid Assertions Produced in Response to Valid AssertionArtifact Request.....	16
69	4.2.2	Test Case 2-2: Browser/Artifact Profile: Valid Assertions Request Corresponding to Valid Artifacts Sent in Valid HTTP Message	16
70	4.2.3	Test Case 2-3: Browser/POST Profile: Valid Assertions Received in Valid HTTP POST	17
71	4.2.4	Test Case 2-4: Browser/Post Profile: Valid Assertions Sent in Valid HTTP POST	17

82 5 Test Suite 18
83 6 Conformance Services 19
84 7 References 20
85 Appendix A. Acknowledgments 21
86 Appendix B. Notices 22
87

88 1 Introduction

89 This document describes the program and technical requirements for the SAML conformance system.

90 1.1 Scope of the Conformance Program

91 SAML deals with a rich set of functionalities ranging from assertions about acts of authentication to
92 assertions for policy enforcement. Not all implementers will choose to implement all aspects of the SAML
93 specifications. In order to achieve compatibility and interoperability, applications and software need to be
94 measured for conformance in a uniform manner. The SAML conformance effort aims at fulfilling this need.

95 The deliverables of the SAML conformance effort include:

- 96 • Conformance clause, defining at a high level what conformance means for the SAML standard.
- 97 • Conformance program specification, defining how an implementation or application establishes
98 conformance.
- 99 • Input to the creation of a conformance test suite. This is a high-level specification for a set of test
100 programs, result files, and report generation tools that can be used by vendors of SAML-compliant
101 software, buyers interested in confirming SAML compliance of software, and testing labs running
102 conformance tests on behalf of vendors or buyers.

103 Section 2 of this document provides the SAML Conformance Clause. Section 3 deals with defining and
104 specifying the process by which conformance to the SAML specification set can be demonstrated and
105 certified. Section 4 elucidates the technical requirements that constitute conformance; this includes both
106 the levels of conformance that can be demonstrated and the requirements for each of those levels of
107 conformance. Section 5 describes what a test suite for SAML should include. Section 6 defines the
108 services that may become available to assist in establishing conformance. Section 7 gives information for
109 documents referenced in this specification.

110 1.2 Notation

111 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD
112 NOT", "RECOMMENDED", "DOES", and "OPTIONAL" in this specification are to be interpreted as
113 described in IETF RFC 2119 [**RFC2119**]:

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

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

119 2 Conformance Clause

120 The objectives of the SAML Conformance Clause are to:

- 121 • Ensure a common understanding of conformance and what is required to claim conformance
- 122 • Promote interoperability in the exchange of authentication and authorization information
- 123 • Promote uniformity in the development of conformance tests

124 The SAML Conformance Clause explicitly specifies all of the requirements that have to be satisfied to
125 claim conformance to the SAML standard.

126 2.1 SAML Specification Set

127 The following four specifications, in addition to this SAML conformance program specification, comprise
128 the Version 1.1 specification set for SAML:

- 129 • Assertions and Protocol for the OASIS Security Assertion Markup Language (SAML) [**SAMLCore**]
- 130 • Security Considerations for the OASIS Security Assertion Markup Language (SAML) [**SAMLSec**]
- 131 • Bindings and Profiles for the OASIS Security Assertion Markup Language (SAML) [**SAMLBind**]
- 132 • Glossary for the OASIS Security Assertion Markup Language (SAML) [**SAMLGloss**]

133 The SAML Core document also references the schema definitions for SAML assertions and protocols:

- 134 • Assertion schema [**SAMLAssertion**]
- 135 • Protocol schema [**SAMLProtocol**]

136 Although additional documents might use or reference the SAML standard (such as white papers,
137 descriptions of custom profiles, and position papers referencing particular issues), they do not constitute
138 part of the standard.

139 2.2 Declaration of SAML Conformance

140 Conformance to the SAML standard can be declared either for the entire standard or for a subset of the
141 standard, based on the requirements that a given implementation or application claims to meet. That is,
142 requirements can be applied at varying levels, so that a given implementation or application of the SAML
143 standard can achieve clearly defined conformance with all or part of the entire set of specifications.

144 SAML conformance **MUST** be expressed in terms of which SAML bindings and profiles are supported by
145 a given application or implementation. The application or implementation claiming conformance to the
146 SAML standard **MUST** support the SOAP protocol binding for assertions containing at least one statement
147 type. An application or implementation **MAY** also support the web browser profiles.

148 For any binding for which an application or implementation claims conformance, the level of conformance
149 **MUST** then be specified in each of these dimensions:

- 150 • Whether the application or implementation acts as producer, consumer, or both producer and
151 consumer of the SAML messages in the supported bindings and profiles.
- 152 • Which assertions and statements the application or implementation supports for each supported
153 binding.

154 Table 1 shows the protocols, protocol bindings, and profiles applicable to each SAML assertion/statement
 155 type. For each SAML binding or profile to which an application or implementation claims conformance, the
 156 claim MUST stipulate whether the producer and/or consumer roles are supported and for which assertions
 157 and statements for those roles.

158 Note that the OASIS Web Services Security Technical Committee has produced a draft “SAML token
 159 profile” of the WSS specification [WSS-SAML], which describes how to use SAML assertions to secure a
 160 web service message. This specification does not discuss conformance to that profile of SAML.

161 For example, an implementation consisting solely of an authentication authority responsible for generating
 162 assertions containing authentication statements and returning those assertions in response to a SOAP-
 163 over-HTTP request for assertion would correspond to the “producer role” for the SOAP over HTTP
 164 binding. If the implementation also supported the return of the assertion in the browser/artifact profile, then
 165 the “producer role” for that profile would also be supported.

166 A SAML protocol <Request> element may contain any one of <AuthenticationQuery>,
 167 <AttributeQuery>, or <AuthorizationDecisionQuery> elements, or, it may contain any number
 168 of <AssertionIDReference> or <AssertionArtifact> elements. For convenience, this document
 169 refers to a SAML request with an <AuthenticationQuery> element as an “authentication query”, a
 170 request with an <AttributeQuery> element as an “attribute query”, and a request with an
 171 <AuthorizationDecisionQuery> element as an “authorization decision query”. SAML requests
 172 containing <AssertionIDReference> or <AssertionArtifact> elements are referred to simply as
 173 requests of those types.

174
 175 **Table 1: Protocol Bindings and Profiles for SAML Assertions**

Binding or Profile	Consumer Role	Producer Role
SOAP over HTTP protocol binding	Send an authentication query to solicit an assertion containing an authentication statement from a producer; consume the returned response and assertion.	Produce an assertion containing an authentication statement and return a response containing the assertion to the consumer.
	Send an attribute query to solicit an assertion containing an attribute statement from a producer; consume the returned assertion.	Produce an assertion containing an attribute statement and return a response containing the assertion to the consumer.
	Send an authorization decision query to solicit an assertion containing an authorization decision statement from a producer; consume the returned assertion.	Produce an assertion containing an authorization decision statement and return a response containing the assertion to the consumer.
	Send an <AssertionIDReference> request to solicit one or more assertions with the associated assertion identifiers from a producer; consume the returned assertions.	Produce a response containing existing assertions with the requested assertion identifiers; send response to the consumer.
Browser/Artifact Profile	Receive one or more artifacts; send an <AssertionArtifact> request; ensure that returned assertions	Produce assertions including an SSO assertion and send corresponding artifacts to a consumer; on receiving

	include a single sign-on assertion; consume the returned assertions.	an <AssertionArtifact> request, produce a response containing the associated assertions; send response to the consumer.
Browser/POST Profile	Receive a response message containing one or more assertions including an SSO assertion in a POST message and consume the assertions.	Produce assertions including an SSO assertion; produce a response message containing the assertions; transfer the response to a consumer via a POST message

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177 An application or implementation should express its level of conformance in terminology such as the
178 following:

179 [Application or implementation] as both producer and consumer supports all SAML protocol
180 bindings and profiles, for all assertions, statements, and required elements. No optional
181 elements for the assertions, statements, bindings, and profiles are produced.

182 [Application or implementation] as both producer and consumer supports the SOAP protocol
183 binding for all queries, assertions, and statements. It produces the <Conditions> optional
184 elements for all assertions in the SOAP protocol binding. It does not support the browser
185 profiles for any assertion.

186 [Application or implementation] as both producer and consumer supports the SOAP protocol
187 binding for all assertions and statements. It also supports the browser/artifact profile and all
188 required elements. No optional elements for the assertions, statements, bindings, and profiles
189 are produced.

190 An application or implementation that claims conformance for a particular binding or profile MUST support
191 all required elements of that binding or profile and of the assertions supported with that binding or profile.
192 It MUST also state which assertions and statements are supported and which, if any, optional elements for
193 that binding or profile and corresponding assertions and statements are supported.

194 2.3 Mandatory/Optional Elements in SAML Conformance

195 The SOAP protocol binding MUST be implemented by all implementations or applications claiming SAML
196 conformance, for each assertion and statement type claimed as supported through a binding or profile.

197 The SAML schema and binding specifications include both mandatory and optional elements. A
198 conforming application or implementation MUST be able to handle all valid SAML elements, including
199 those that are optional. However, it does not have to produce those optional elements.

200 For example:

- 201 • An application or implementation that consumes assertions must be able to handle assertions that
202 include the optional <Condition> element, such as by rejecting any conditions that it does not
203 recognize.
- 204 • An application or implementation that produces assertions may, but is not required to, include the
205 optional <Condition> element in those assertions.
- 206 • An application or implementation claiming support for an assertion must support the SOAP over HTTP
207 protocol binding. It can also, optionally, implement the protocol by means of another binding.

208 The test cases for SAML conformance are intended to check for support of all valid SAML elements. They
209 also check whether an implementation or application accepts and properly handles optional assertion
210 elements (such as <Condition>) whose value the implementation or application does not recognize.

211 **2.4 Impact of Extensions on SAML Conformance**

212 SAML supports extensions to assertions, statements, protocols, protocol bindings, and profiles. An
213 application or implementation MAY claim conformance to SAML only if its extensions (if any) meet the
214 following requirements:

- 215 • Extensions MUST NOT re-define semantics for existing functions.
 - 216 • Extensions MUST NOT alter the specified behavior of interfaces defined in the SAML specification
217 set.
 - 218 • Extensions MAY add additional behaviors.
 - 219 • Extensions MUST NOT cause standard-conforming functions (i.e., functions that do not use the
220 extensions) to execute incorrectly.
- 221 SAML bindings and profiles MAY be extended so long as the above conditions are met. If a system is
222 extending SAML assertions or statements:
- 223 • The mechanism for determining application conformance and the extensions MUST be clearly
224 described in the documentation, and the extensions MUST be marked as such;
 - 225 • Extensions MUST follow the spirit, principles, and guidelines of the SAML specification set, that is, the
226 specifications MUST be extended in a standard manner as defined in the extension fields.
 - 227 • In the case where an implementation has added additional behaviors, the implementation MUST
228 provide a mechanism whereby a conforming application shall be recognized as such, and be
229 executed in an environment that supports the functional behavior defined in this specification set.

230 Extensions are outside the scope of conformance. There are no mechanisms specified to validate and
231 verify the extensions.

232 **2.5 Maximum Values of Unbounded Elements**

233 The SAML schema supports a number of elements that can be specified multiple times in an assertion,
234 request or response. An application or implementation claiming conformance MUST support at least the
235 values listed in Table 2 below for each of the elements defined as “unbounded” in the SAML schema. In
236 those cases where the maximum value is greater than the listed values, the application or implementation
237 SHOULD state what that maximum supported value is.

238 However, some of the elements in the table can be nested, such that repeated elements have a
239 multiplicative effect on the number of elements. For example, trees of nested unbounded elements
240 include the following:

- 241 Response > Assertion > Statement (of various types)
- 242 Response > Assertion > Advice > Assertion
- 243 Response > Assertion > Conditions > AudienceRestrictionCondition > Audience
- 244 Response > Assertion > Statement > SubjectConfirmation > ConfirmationMethod
- 245 Response > Assertion > AttributeStatement > Attribute > AttributeValue

246 In a response containing 10 assertions, each with 10 AttributeStatements, each with 10 Attributes, each
247 with 10 AttributeValues, this tree alone comprises 10,000 elements.

248 Therefore, in order to minimize the potential impact of nested unbounded elements, an application or
249 implementation MAY limit the total number of elements supported in a given request, response or (when
250 this is used in the POST profile) assertion to no more than 1000 total elements and still claim
251 conformance to the SAML V1.1 specification set.

Table 2: Unbounded Elements

Element	Parent Element	Maximum Value
Statement (various types)	Assertion	1000
DoNotCacheCondition	Conditions	1000
AudienceRestrictionCondition	Conditions	1000
Audience	AudienceRestrictionCondition	1000
AssertionIDReference	Advice	1000
Assertion	Advice	1000
ConfirmationMethod	SubjectConfirmation	1000
AuthorityBinding	AuthenticationStatement	1000
Attribute	AttributeStatement	1000
AttributeValue	Attribute	1000
Action	AuthorizationDecisionStatement	1000
AssertionIDReference	Evidence	1000
Assertion	Evidence	1000
RespondWith	Request	1000
AssertionIDReference	Request	1000
AssertionArtifact	Request	1000
AttributeDesignator	AttributeQuery	1000
Action	AuthorizationDecisionQuery	1000
Assertion	Response	1000

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3 Conformance Process

255 As discussed in the article “What is this thing called conformance” [NIST/ITL], conformance can comprise
256 any of several levels of formal process:

- 257 • **Conformance testing** (also called conformity assessment) is the execution of automated or non-
258 automated scripts, processes, or other mechanisms to determine whether an application or
259 implementation of a specification deviates from that specification. Conformance testing performed by
260 implementors early on in the development process can find and correct their errors before the
261 software reaches the marketplace, without necessarily being part of either a validation or a
262 certification process.
- 263 • **Validation** is the process of testing software for compliance with applicable specifications or
264 standards. The validation process consists of the steps necessary to perform the conformance testing
265 by using an official test suite in a prescribed manner.
- 266 • **Certification** is the acknowledgment that a validation has been completed and the criteria established
267 by the certifying organization for issuing a certificate have been met. Successful completion of
268 certification results in the issuance of a certificate (or brand) indicating that the implementation
269 conforms to the appropriate specification. It is important to note that certification cannot exist without
270 validation, but validation can exist without certification.

271 The conformance process for SAML is based on validation rather than certification. That is, no certifying
272 organization has been established with the responsible for issuing a statement of conformance with regard
273 to an application or implementation. Therefore, an implementor who has validated SAML conformance by
274 means of conformance testing MUST NOT use the term “certified for SAML conformance”. Until and if a
275 certification process is in place, vendor declaration of validation will be the only means of asserting that
276 conformance testing has been performed.

277 The conformance process does not stipulate whether validation is performed by the implementor, by a
278 third party, or by the customer of an application or implementation. Rather, the conformance process
279 describes the way in which conformance testing should be done in order to demonstrate that an
280 application or implementation correctly performs the functionality specified in the standard. Validation
281 achieved through the SAML conformance process provides software developers and users assurance and
282 confidence that the product behaves as expected, performs functions in a known manner, and possesses
283 the prescribed interface or format.

284 The Security Services Technical Committee is responsible for generating the materials that allow vendors,
285 customers, and third parties to evaluate software for SAML conformance. These materials include
286 documentation describing test cases, linked to use cases and requirements, included in this specification.

287 The test cases can be used to create a test suite that can be run against an implementation to
288 demonstrate any of the several levels of conformance defined in the conformance clause of the SAML
289 specification. The Security Services Technical Committee is not responsible for developing the test suite
290 nor for testing of particular implementations.

3.1 Implementation and Application Conformance

292 SAML Conformance is applicable to:

- 293 • Implementations of SAML assertions, statements, protocols and bindings. These could be in the form
294 of toolkits, products incorporating SAML components, or reference implementations that demonstrate
295 the use of SAML components.

- 296 • Applications that produce or consume SAML protocol bindings or that execute on SAML
297 implementations (for example, using a SAML toolkit to support multi-domain single sign-on)

298 A conforming **implementation** MUST meet all the following criteria:

- 299 1. The implementation MUST support all the required interfaces defined within the specification set for a
300 given binding or profile. It MUST also specify which assertions and statements relevant to that binding
301 or profile are supported. The implementation MUST support the functional behavior described in the
302 specification.
- 303 2. The implementation MAY provide additional or enhanced facilities not required by this specification
304 set. These nonstandard extensions MUST NOT alter the specified behavior of interfaces defined in
305 this specification. They MAY add additional behaviors. In these circumstances, the implementation
306 MUST provide a mechanism whereby a SAML conforming application shall be recognized as such,
307 and be executed in an environment that supports the functional behavior defined in this specification
308 set.

309 A conforming **application** MUST meet all the following criteria:

- 310 1. The application MUST be able to execute on any conforming implementation.
- 311 2. If an application requires a particular feature set that is not available on a specific implementation,
312 then the application MUST act within the bounds of the SAML specification set, even though that
313 means that the application does not perform any useful function. Specifically, the application MUST
314 do no harm, and MUST correctly return resources and vacate memory upon discovery that a required
315 element is not present.

316 **3.2 Process for Declaring Conformance**

317 The following process is to be followed in declaring that an application or implementation conforms to the
318 SAML standard:

- 319 1. Determine which bindings and protocols will be asserted as conforming.
- 320 2. Implement the test suite for the conformance tests relevant to the conformance being claimed.
- 321 3. Validate the application or implementation by executing those conformance tests.
- 322 4. Send the statement claiming conformance to the Security Services Technical Committee so that it can
323 be posted on the SAML web site. A statement of any bindings and profiles being used that are not part
324 of the SAML standard should also be sent to the Security Services Technical Committee at the same
325 time for posting on the SAML web site.

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4 Technical Requirements for SAML Conformance

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This section defines the technical criteria that apply to declaring conformance to the SAML standard. The requirements are specified as test cases, corresponding to the 12 possible subsets of conformance defined in Table 1.

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Each test case includes:

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- A description of the test purpose (that is, what is being tested – the conditions, requirements, or capabilities which are to be addressed by a particular test)

333

- The pass/fail criteria

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- A reference to the requirement in the requirements document relevant to the test case

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- A reference to the section in the specification set from which the test case is derived (that is, traceability back to the specification)

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For each assertion and statement type, both required tests for producing and consuming the assertion, as well as tests related to protocols, bindings, and profiles, are specified.

339

4.1 Test Group 1 – SOAP over HTTP Protocol Binding

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The test cases in this test group check for conformance to the SAML SOAP protocol binding. Any implementation or application claiming conformance to SAML MUST be able to execute these test cases successfully for the claimed assertion or assertions and role (producer or consumer), even if support for this protocol binding is incidental to the primary purposes of the application or implementation.

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For convenience, assertions containing an authentication statement will be referred to in this section as *authentication assertions*, assertions containing an attribute statement as *attribute assertions*, and assertions containing an authorization decision statement as *authorization decision assertions*.

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4.1.1 Test Case 1-1: SOAP Binding: Implementation-Under-Test Produces Valid Authentication Assertion in Valid Response to Authentication Query

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Description: This test case requests and receives an authentication assertion created by an implementation-under-test using an authentication query in the SOAP binding. It then confirms that the authentication assertion returned by the implementation-under-test is valid for all required functionality.

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Pass/Fail Criteria: The authentication assertion contains all required elements in the correct format and sequence, the authentication query is accepted by implementation-under-test, and the response contains all required elements in correct sequence.

357

Requirements Reference: R-AUTHN and R-MULTIDOMAIN

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Specification Reference: [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

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Implementation Notes: The implementation-under-test executes the authentication assertion producer role.

361 **4.1.2 Test Case 1-2: SOAP Binding: Implementation-Under-Test Consumes**
362 **Valid Authentication Assertion, Requested in Valid Authentication Query**

363 **Description:** This test case receives an authentication query created by an implementation-under-test in
364 the SOAP binding. It confirms that the authentication query is valid for all required functionality. The test
365 case returns an authentication assertion and confirms that the assertion is consumed.

366 **Pass/Fail Criteria:** The authentication query contains all required elements in the correct format and
367 sequence; the authentication response and assertion are consumed.

368 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

369 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

370 **Implementation Notes:** The implementation-under-test executes the authentication assertion consumer
371 role. It is up to the test program and implementation-under-test to determine how to validate that the
372 assertion was consumed.

373 **4.1.3 Test Case 1-3: SOAP Binding: Implementation-Under-Test Produces**
374 **Valid Attribute Assertion in Valid Response to Attribute Query**

375 **Description:** This test case requests and receives an attribute assertion created by an implementation-
376 under-test using an attribute query in the SOAP binding. It then confirms that the attribute assertion
377 returned by the implementation-under-test is valid for all required functionality.

378 **Pass/Fail Criteria:** The attribute assertion contains all required elements in the correct format and
379 sequence, the attribute query is accepted by implementation-under-test, and the response contains all
380 required elements in correct sequence.

381 **Requirements Reference:** R-AUTHZ and R-MULTIDOMAIN

382 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

383 **Implementation Notes:** The implementation-under-test executes the attribute assertion producer role.

384 **4.1.4 Test Case 1-4: SOAP Binding: Implementation-Under-Test Consumes**
385 **Valid Attribute Assertion, Requested in Valid Attribute Query**

386 **Description:** This test case receives an attribute query sent by an implementation-under-test in the SOAP
387 binding. It confirms that the attribute query is valid for all required functionality. The test case then returns
388 an attribute assertion and confirms that the assertion is consumed.

389 **Pass/Fail Criteria:** The attribute query contains all required elements in the correct format and sequence;
390 attribute response and assertion are consumed.

391 **Requirements Reference:** R-AUTHZ and R-MULTIDOMAIN

392 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

393 **Implementation Notes:** The implementation-under-test executes the attribute assertion consumer role. It
394 is up to the test program and implementation-under-test to determine how to validate that assertion was
395 consumed.

396 **4.1.5 Test Case 1-5: SOAP Binding: Implementation-Under-Test Produces**
397 **Valid Authorization Decision Assertion in Valid Response to**
398 **Authorization Decision Query**

399 **Description:** This test case requests and receives an authorization decision assertion created by an
400 implementation-under-test using an authorization decision query in the SOAP binding. It then confirms
401 that the authorization decision assertion returned by the implementation-under-test is valid for all required
402 functionality.

403 **Pass/Fail Criteria:** The authorization decision assertion contains all required elements in the correct
404 format and sequence, the authorization decision query is accepted by implementation-under-test, and the
405 response contains all required elements in correct sequence.

406 **Requirements Reference:** R-AUTHZDECISION and R-MULTIDOMAIN

407 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

408 **Implementation Notes:** The implementation-under-test executes the authorization decision assertion
409 producer role.

410 **4.1.6 Test Case 1-6: SOAP Binding: Implementation-Under-Test Consumes**
411 **Valid Authorization Decision Assertion, Requested in Valid Authorization**
412 **Decision Query**

413 **Description:** This test case receives an authorization decision query created by an implementation-under-
414 test in the SOAP binding. It confirms that the received authorization decision query is valid for all required
415 functionality. It returns an authorization decision assertion to the implementation-under-test and confirms
416 that the assertion is consumed.

417 **Pass/Fail Criteria:** The authorization decision query contains all required elements in the correct format
418 and sequence; authorization decision response and assertion are consumed.

419 **Requirements Reference:** R-AUTHZDECISION and R-MULTIDOMAIN

420 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

421 **Implementation Notes:** The implementation-under-test executes the authorization decision assertion
422 consumer role. It is up to the test program and implementation-under-test to determine how to validate
423 that assertion was consumed.

424 **4.1.7 Test Case 1-7: SOAP Binding: Implementation-Under-Test Produces**
425 **Valid Assertions in Valid Response to AssertionIDReference Request**

426 **Description:** This test case requests and receives assertions created by an implementation-under-test
427 using an AssertionIDReference request in the SOAP binding. It then confirms that the assertions returned
428 by the implementation-under-test are valid for all required functionality.

429 **Pass/Fail Criteria:** The returned assertions contain all required elements in the correct format and
430 sequence, the AssertionIDReference request is accepted by implementation-under-test, and the response
431 contains all required elements in correct sequence.

432 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

433 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

434 **Implementation Notes:** The implementation-under-test executes the assertion producer role.

435 **4.1.8 Test Case 1-8: SOAP Binding: Implementation-Under-Test Consumes**
436 **Valid Assertions, Requested in Valid AssertionIDReference Request**

437 **Description:** This test case receives an AssertionIDReference request in the SOAP binding created by an
438 implementation-under-test. It confirms that the received AssertionIDReference request is valid for all
439 required functionality. The test case returns the requested assertions and confirms that the assertions are
440 consumed.

441 **Pass/Fail Criteria:** The AssertionIDReference request contains all required elements in the correct format
442 and sequence; the response and assertions are consumed.

443 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

444 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 3.1

445 **Implementation Notes:** The implementation-under-test executes the assertion consumer role. It is up to
446 the test program and implementation-under-test to determine how to validate that assertions were
447 consumed.

448 **4.2 Test Group 2 – Web Browser SSO Profiles**

449 The test cases in this test group check for conformance to the web browser single sign-on (SSO) profiles
450 of the SAML standard. Both the browser/artifact and browser/POST profiles are optional. Any
451 implementation or application claiming conformance to the browser/artifact profile MUST be able to
452 execute Test Case 2-1 successfully for the assertion producer role and/or Test Case 2-2 successfully for
453 the assertion consumer role. Any implementation or application claiming conformance to the
454 browser/POST profile MUST be able to execute Test Case 2-3 successfully for the assertion producer role
455 and/or Test Case 2-4 successfully for the assertion consumer role.

456 **4.2.1 Test Case 2-1: Browser/Artifact Profile: Valid Assertions Produced in**
457 **Response to Valid AssertionArtifact Request**

458 **Description:** This test case receives artifacts in a valid HTTP message from an implementation-under-
459 test. The test case confirms that the artifacts are valid for all required functionality. It then uses the
460 AssertionArtifact request in the SOAP binding to request and receive assertions created by an
461 implementation-under-test corresponding to the artifacts. It then confirms that the returned assertions
462 include an SSO assertion and is valid for all required functionality.

463 **Pass/Fail Criteria:** .Received artifacts have expected formats. AssertionArtifact request contains all
464 required elements in correct format and sequence and is accepted by the implementation-under-test; An
465 assertion is returned for every artifact in the AssertionArtifact request. Returned assertions include an
466 SSO assertion.

467 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

468 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 4.1.1

469 **Implementation Notes:** Test program performs the destination site (consumer) operations for the profile;
470 implementation-under-test performs source site (producer) operations.

471 **4.2.2 Test Case 2-2: Browser/Artifact Profile: Valid Assertions Request**
472 **Corresponding to Valid Artifacts Sent in Valid HTTP Message**

473 **Description:** This test case sends valid artifacts in a valid HTTP message to an implementation-under-
474 test. The test case then receives an AssertionArtifact request containing the artifacts from the

475 implementation-under-test. It confirms that the AssertionArtifact request is valid for all required
476 functionality, then returns the requested assertions to the implementation-under-test, and confirms that the
477 assertion was consumed.

478 **Pass/Fail Criteria:** AssertionArtifact request contains all required elements in the correct format and
479 sequence.

480 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

481 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 4.1.1

482 **Implementation Notes:** Test program performs the source site (producer) operations for the profile;
483 implementation-under-test performs destination site (consumer) operations.

484 **4.2.3 Test Case 2-3: Browser/POST Profile: Valid Assertions Received in** 485 **Valid HTTP POST**

486 **Description:** This test case receives an HTTP POST message from an implementation-under-test
487 containing a SAML protocol response message with one or more assertions and including an SSO
488 assertion and checks that the assertions are valid.

489 **Pass/Fail Criteria:** SSO assertion sent by implementation-under-test MUST contain all required
490 information in the right sequence and format. Any optional information included (including conditions)
491 MUST NOT compromise the validity of the required information.

492 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

493 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 4.1.2

494 **Implementation Notes:** Test program (consumer role) implementing this test case establishes
495 successful execution of the test case by inspection of the format of the returned assertion.

496 **4.2.4 Test Case 2-4: Browser/Post Profile: Valid Assertions Sent in Valid** 497 **HTTP POST**

498 **Description:** This test case sends a SAML protocol response message in an HTTP POST message to an
499 implementation-under-test containing an SSO and other assertions and checks that the assertions are
500 consumed.

501 **Pass/Fail Criteria:** Implementation-under-test allows access based on assertions it receives and
502 consumes.

503 **Requirements Reference:** R-AUTHN and R-MULTIDOMAIN

504 **Specification Reference:** [SAMLCore] Sections 2.3, 2.4, and 3; [SAMLBind] Section 4.1.2

505 **Implementation Notes:** It is up to the test program and implementation-under-test to determine how to
506 validate that assertion was consumed.

507

5 Test Suite

508 A test suite, which is the combination of test cases and test documentation, is used to check whether an
509 implementation or application satisfies the requirements in the standard. The test cases, implemented by
510 a test tool or a set of files (such as data, programs, scripts, or instructions for manual action), check each
511 requirement in the specification to determine whether the results produced by the implementation or
512 application match the expected results, as defined by the specification.

513 The test documentation describes how the testing is to be done and the directions for the tester to follow.
514 Additionally, the documentation should be detailed enough so that testing of a given implementation can
515 be repeated with no change in test results.

516 Conformance testing is black-box testing to test the functionality of an implementation. This means that
517 the internal structure or the source code of a candidate implementation is not available to the tester.
518 However, content and format of received or returned messages can be inspected as part of the
519 determination of conformance.

520 Any test suite for SAML should consist of platform independent, non-biased, objective tests. Generally, a
521 conformance test suite is a collection of combinations of legal and illegal inputs to the implementation
522 being tested, together with a corresponding collection of expected results. Only the requirements
523 specified in the standard are testable. A test suite should not check any implementation properties that
524 are not described by the standard or set of standards. A test suite cannot require features that are optional
525 in a standard, but if such features are present, a test suite could include tests for those features. A test
526 suite does not assess the performance of an implementation unless performance requirements are
527 specified in the specification, although implementation dependencies or machine dependencies can be
528 demonstrated through the execution of the test cases.

529 The results of conformance testing apply only to the implementation and environment for which the tests
530 are run. Test suites can be provided as a web-based system executed on a remote server, downloadable
531 files for local execution, or a combination of remote and local access and execution. The method for
532 providing and delivering the test suite depends on what is being tested as well as the objective for test
533 suite use – that is, providing self-test capability or formal certification testing.

534

6 Conformance Services

535 The OASIS Security Services Technical Committee does not itself provide conformance services. As
536 SAML test suites become available and experience with SAML identified appropriate conformance testing
537 approaches, the Conformance Specification will describe the services which a conformance services
538 organization should provide, including software services, releases, self-test kit, actual computer systems,
539 facilities, web based interfaces, and availability.

540

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597

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