



# Cross-Enterprise Security and Privacy Authorization (XSPA) Profile of XACML v2.0 for Healthcare Version 1.0

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### Related work:

This specification is related to:

- [eXtensible Access Control Markup Language\(XACML\) Version 2.0](#)

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N/A

### Abstract:

A profile of XACML used to support cross-enterprise security and privacy authorization.

### Status:

This document was last revised or approved by the OASIS eXtensible Access Control Markup Language (XACML) TC on the above date. The level of approval is also listed above. Check the "Latest Version" or "Latest Approved Version" location noted above for possible later revisions of this document.

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# 1 Introduction

Enterprises, including the healthcare enterprise, need a mechanism to exchange security and privacy policies, evaluate consent directives and determine authorizations in an interoperable manner. This document provides a cross-enterprise security and privacy profile that describes how to use eXtensible Access Control Markup Language (XACML) to provide these functions in an interoperable manner.

The Cross-Enterprise Security and Privacy Authorization (XSPA) profile of XACML describes several mechanisms to authenticate, administer, and enforce authorization policies controlling access to protected information residing within or across enterprise boundaries. The policies being administered and enforced relate to security, privacy, and consent directives. This profile MAY be used in coordination with additional standards including Web Services Trust Language (WS-Trust) and Security Assertion Markup Language (SAML).

This profile specifies the use of XACML 2.0 to promote interoperability within the healthcare community by providing common semantics and vocabularies for interoperable policy request/response, policy lifecycle, and policy enforcement.

## 1.1 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].

The following definitions establish additional terminology and usage in this profile:

**Access Control Service (ACS)** – The enterprise security service that supports and implements user-side and service-side access control capabilities. The service would be utilized by the Service and/or Service User.

**Entity** – A principal and/or subject, which represents an application, a machine, or any other type of entity that may act as a requester in a transaction.

**Object** – An entity that contains or receives information. Objects can represent information containers (e.g., files or directories in an operating system, and/or columns, rows, tables, and views within a database management system) or represent exhaustible system resources, such as printers, disk space, and central processing unit (CPU) cycles.

**Operation** - An executable image of a program, which upon invocation executes some function for the user. Within a file system, operations might include read, write, and execute. Within a database management system, operations might include insert, delete, append, and update. An operation is also known as an action or privilege.

**Permission** - An approval to perform an operation on one or more protected objects.

**Policy Administration Point (PAP)** – Manages and makes available policies that may be stored in and retrieved from the Policy Repository.

**Policy Decision Point (PDP)** – Accepts information from an Authorization Decision Request and returns an access control decision based on evaluation of XACML policy. PDPs MAY be hierarchical.

**Policy Enforcement Point (PEP)** – Performs access control by making decision requests and enforcing authorization decisions. It facilitates passing XACML authorization request attributes and enforcing XACML response decisions and obligations. This module MAY be used for obtaining attributes required for authorization from a Policy Information Point (PIP) by an application. Typical attributes collected at this level include ANSI RBAC (American National Standards Institute Role Based Access Control) attributes, Health Level Seven (HL7) provider permissions, HL7 resource permission, and HL7 patient privacy constraints.

**Policy Information Point (PIP)** – Repository of attribute data that is made available to support authorization decisions.

47 **Structural Role** - A job function within the context of an organization whose permissions are defined by  
48 operations on workflow objects consistent with the definition of structural role found in ASTM (American  
49 Society for Testing and Materials) [E2595-2007]  
50 **Service Provider (SP)** - The service provider represents the system providing a protected resource and  
51 relies on the provided security service.  
52 **Service User** – The service user represents any individual entity [such as on an Electronic Health Record  
53 (EHR)/personal health record (PHR) system] that needs to make a service request of a Service Provider.

## 54 1.2 Normative References

- 55 **[RFC2119]** S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*,  
56 <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- 57 **[XACML CORE]** OASIS Standard, “XACML 2.0 Core: eXtensible Access Control Markup  
58 Language (XACML) Version 2.0”, March 2005  
59 [http://docs.oasis-open.org/xacml/2.0/access\\_control-xacml-2.0-core-spec-os.pdf](http://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-core-spec-os.pdf)
- 60 **[SAML-XACML20]** OASIS Working Draft, “SAML 2.0 profile of XACML 2.0 Errata”, November 2005,  
61 <http://www.oasis-open.org/committees/download.php/15447/xacml-2.0-saml-errata-wd.zip>  
62
- 63 **[SX20-ASSN-SCH]** OASIS Standard, schema (assertion), [http://www.oasis-](http://www.oasis-open.org/committees/download.php/11474/access_control-xacml-2.0-saml-assertion-schema-os.xsd)  
64 [open.org/committees/download.php/11474/access\\_control-xacml-2.0-saml-](http://www.oasis-open.org/committees/download.php/11474/access_control-xacml-2.0-saml-assertion-schema-os.xsd)  
65 [assertion-schema-os.xsd](http://www.oasis-open.org/committees/download.php/11474/access_control-xacml-2.0-saml-assertion-schema-os.xsd)
- 66 **[SX20-PROT-SCH]** OASIS Standard, schema (protocol), [http://www.oasis-](http://www.oasis-open.org/committees/download.php/11475/access_control-xacml-2.0-saml-protocol-schema-os.xsd)  
67 [open.org/committees/download.php/11475/access\\_control-xacml-2.0-saml-](http://www.oasis-open.org/committees/download.php/11475/access_control-xacml-2.0-saml-protocol-schema-os.xsd)  
68 [protocol-schema-os.xsd](http://www.oasis-open.org/committees/download.php/11475/access_control-xacml-2.0-saml-protocol-schema-os.xsd)
- 69 **[HL7-PERM]** HL7 Security Technical Committee, HL7 Version 3 Standard: Role-based Access  
70 Control Healthcare Permission Catalog, (Available through  
71 <http://www.hl7.org/library/standards.cfm>), Release 1, Designation: ANSI/HL7 V3  
72 RBAC, R1-2008.
- 73 **[HL7-CONSENT]** HL7 Consent Related Vocabulary Confidentiality Codes Recommendation,  
74 <http://lists.oasis-open.org/archives/xacml-demo-tech/200712/doc00003.doc>, from  
75 project submission: [http://lists.oasis-open.org/archives/xacml-demo-](http://lists.oasis-open.org/archives/xacml-demo-tech/200712/msg00015.html)  
76 [tech/200712/msg00015.html](http://lists.oasis-open.org/archives/xacml-demo-tech/200712/msg00015.html)
- 77 **[ASTM E1986-98 (2005)]** Standard Guide for Information Access Privileges to Health Information.  
78 **[ASTM E2595 (2007)]** Standard Guide for Privilege Management Infrastructure

## 79 1.3 Non-Normative References

- 80 **[SAML-XACML20V2]** OASIS Working Draft, “SAML 2.0 profile of XACML Version 2”, July 2007  
81 (current working draft covers all versions of XACML).  
82 [http://www.oasis-open.org/committees/download.php/24681/xacml-profile-](http://www.oasis-open.org/committees/download.php/24681/xacml-profile-saml2.0-v2-spec-wd-5-en.pdf)  
83 [saml2.0-v2-spec-wd-5-en.pdf](http://www.oasis-open.org/committees/download.php/24681/xacml-profile-saml2.0-v2-spec-wd-5-en.pdf)
- 84 **[XACML-RBAC]** OASIS Standard, “Core and hierarchical role based access control (RBAC)  
85 profile of XACML v2.0”, February 2005  
86 [http://docs.oasis-open.org/xacml/2.0/access\\_control-xacml-2.0-rbac-profile1-](http://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-rbac-profile1-spec-os.pdf)  
87 [spec-os.pdf](http://docs.oasis-open.org/xacml/2.0/access_control-xacml-2.0-rbac-profile1-spec-os.pdf)
- 88 **[HITSP]** Healthcare Information Technology Standards Panel (HITSP) at [www.hitsp.org](http://www.hitsp.org)
- 89 **[XSPA-XACML-EXAMPLES]** Cross-Enterprise Security and Privacy Authorization (XSPA)  
90 Profile of XACML v2.0 for Healthcare, Implementation Examples.  
91 [http://www.oasis-open.org/committees/document.php?document\\_id=30430](http://www.oasis-open.org/committees/document.php?document_id=30430)  
92

## 2 XSPA profile of XACML

### 2.1 Interactions between Parties

Figure 1 displays an overview of interactions between parties in the exchange of healthcare information. Elements described in the figure are explained in the subsections below.

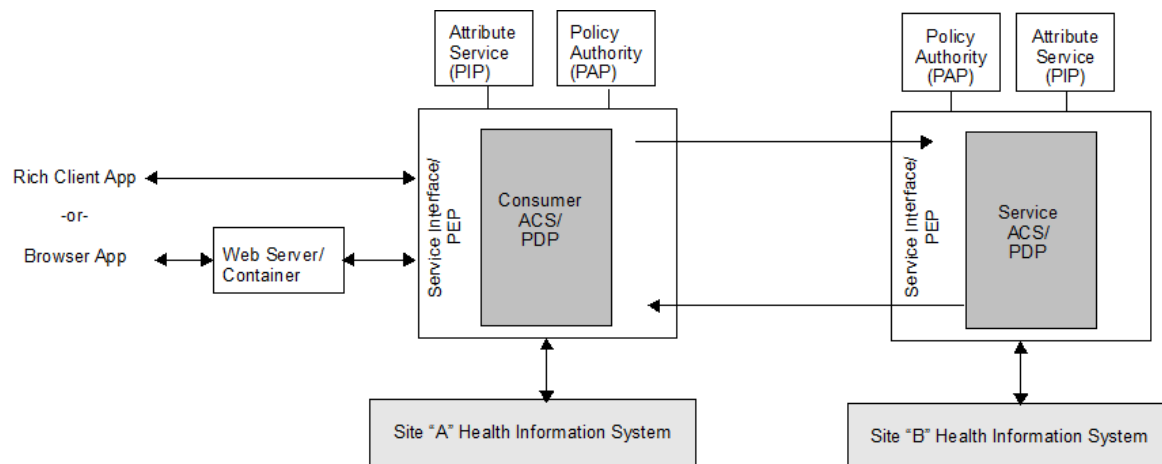


Figure 1: Interaction between Parties

#### 2.1.1 Service Interface

XACML functions of the Policy Enforcement Point (PEP) are carried out by the Service Interface. The PEP interacts with the Policy Information Point (PIP) of the Attribute Service and the Policy Decision Point (PDP) functionality of the Access Control Service (ACS), in enforcing authorization decisions.

#### 2.1.2 Access Control Service (Service Consumer)

The XSPA profile of XACML supports sending all Service User requests through an ACS. XACML functions of the PDP are carried out by the ACS. The Service Consumer ACS MAY serve as an enterprise gateway.

Attributes necessary to make a local access control decision are determined and HL7 Permission [HL7-PERM] are granted to the Service User based on their role, purpose of use (POU), the service endpoint of the external resource, and any site specific operational attributes.

#### 2.1.3 Attribute Service

XACML functions of the Policy Information Point (PIP) are carried out by the Attribute Service. The Attribute Service has access to attribute information (e.g., location, purpose of use), object preferences, consent directives and other privacy conditions (object masking, object filtering, user, role, purpose, etc.) that constrain enforcement.

#### 2.1.4 Policy Authority

XACML functions of the Policy Administration Point (PAP) are carried out by the Policy Authority. The Policy Authority has access to security policies that include rules regarding authorizations required to access a protected resource and additional security conditions (location, time of day, cardinality, separation of duty purpose, etc.) that constrain enforcement.

## 121 **2.1.5 Access Control Service (Service Provider)**

122 The Service ACS is responsible for the parsing of assertions, evaluating the assertions against the  
123 security and privacy policy, and making and enforcing a decision on behalf of the Service Provider. The  
124 Service ACS MAY serve as an enterprise gateway.

## 125 **2.2 Transmission Integrity**

126 The XSPA profile of XACML recommends the use of reliable transmission protocols. Where transmission  
127 integrity is required, this profile makes no specific recommendations regarding mechanism or assurance  
128 level.

## 129 **2.3 Transmission Confidentiality**

130 The XSPA profile of XACML recommends the use of secure transmission protocols. Where transmission  
131 confidentiality is required, this profile makes no specific recommendations regarding mechanisms.

## 132 **2.4 Error States**

133 This profile adheres to error states described in **[XACML-CORE]**.

## 134 **2.5 Security Considerations**

135 The following security considerations are established for the XSPA profile of XACML:

- 136 • Entities MUST be members of defined information domains under the authorization control of a  
137 defined set of policies,
- 138 • Entities MUST have been identified and provisioned (credentials issued, privileges granted, etc.) in  
139 accordance with policy,
- 140 • Privacy policies MUST have been identified and provisioned (consents, user preferences, etc.) in  
141 accordance with policy,
- 142 • Pre-existing security and privacy policies MUST have been provisioned to Access Control Services,
- 143 • The capabilities and location of requested information/document repository services MUST be known,
- 144 • Secure channels MUST be established as required by policy,
- 145 • Audit services MUST be operational and initialized, and
- 146 • Entities MUST have pre-asserted membership in an information domain by successful and unique  
147 authentication.

## 148 **2.6 Confirmation Identifiers**

149 The manner used by the relying party to confirm that the requester message came from a system entity  
150 that is associated with the subject of the assertion will depend upon the context and sensitivity of the  
151 data. For confirmations requiring a specific level of assurance, this profile specifies the use of National  
152 Institute of Standards and Technology (NIST) Special Publication 800-63 Electronic Authentication  
153 Guideline. In addition, this profile specifies the Liberty Identity Access Framework (LIAF) criteria for  
154 evaluating and approving credential service providers.

## 155 **2.7 Metadata Definitions**

156 A XACML extension is used to enable the SAML protocol layer. This is described in the **[SAML-XACML-**  
157 **20]** specification and in the **[SX20-PROT-SCH]** schema.

## 158 **2.8 Naming Syntax, Restrictions and Acceptable Values**

159 This profile will support the namespace requirements described in **[XACML-CORE]**.

160 **2.9 Namespace Requirements**

161 This profile will support the namespace requirements described in [XACML-CORE].

162 **2.10 Attribute Rules of Equality**

163 This profile will support the attribute evaluation requirements described in [XACML-CORE].

164 **2.11 Attribute Naming Syntax, Restrictions and Acceptable Values**

165 *Table 1: Standard Attributes (Normative)*

Attribute ID*	Identifier	Type	Valid Values
subject:subject-id	urn:oasis:names:tc:xacml:2.0:subject:subject-id	String	Unique identifier of subject, if in the US domain, a National Provider Identifier issued by HHS/CMS and mandated by HIPAA.
subject:locality	urn:oasis:names:tc:xacml:2.0:subject:locality	String	Unique identifier of the consuming organization and/or facility.
subject:hl7:permission	urn:oasis:names:tc:xspa:1.0:subject:hl7:permission	String	Refer to [HL7-PERM] and its OID representation.
subject:role	urn:oasis:names:tc:xacml:2.0:subject:role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
subject:purposeofuse	urn:oasis:names:tc:xspa:1.0:subject:purposeofuse	String	Healthcare Treatment, Emergency Treatment, System Administration, Operations, Payment, Research, Marketing, Public Health
resource:resource-id	urn:oasis:names:tc:xacml:2.0:resource:resource-id	String	Unique identifier of the resource defined by and controlled by the servicing organization. In healthcare this is the patient unique identifier.
resource:hl7:type	urn:oasis:names:tc:xspa:1.0:resource:hl7:type	String	For minimum interoperability set of objects and supporting actions refer to [HL7-PERM] and their OID representations.
resource:org:permission	urn:oasis:names:tc:xspa:1.0:resource:org:hl7:permissions	String	Refer to [HL7-PERM] and its OID representation. This attribute holds permissions required by the servicing organization to grant access to a specific resource.

Attribute ID*	Identifier	Type	Valid Values
resource:org:role	urn:oasis:names:tc:xspa:1.0:resource:org:role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation. This attribute holds roles required by the servicing organization to grant access to a specific resource.
resource:patient:confidentiality-code	urn:oasis:names:tc:xspa:1.0:resource:patient:hl7:confidentiality-code	String	Refer to [HL7-CONSENT] The default value for this attribute is N (normal operations.)
resource:hl7:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:dissenting-subject-id	String	US domain specific is National Provider issued by HHS/CMS and mandated by HIPAA.
resource:hl7:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
environment:locality	urn:oasis:names:tc:xspa:1.0:environment:locality	String	Unique identifier of the servicing organization.

166 \*Note: Attribute-ID is provided for mapping to pseudo-code in the [XSPA-XACML-EXAMPLES] document.

167 The confidentiality-code may be used to identify sensitive information, such as records relating to drug  
168 abuse, alcoholism, or alcohol abuse, infection with the human immunodeficiency virus (HIV) or sickle cell  
169 anemia.

170 The mechanism used to identify the patient in a standardized way, e.g. resource:resource-id, is outside  
171 the scope of the profile.

172 The dissenting-subject-id identifies those denied access to a protected resource based on a patient's  
173 consent directive. The format of dissenting-subject-id MUST be consistent with the format of the subject-  
174 id.

175 HL7 RBAC Permission Catalog [HL7-PERM] represents a conformant minimum interoperability set for  
176 object/action pairings.

177

Table 2: Standard Attributes (Non-Normative)

Attribute ID*	Identifier	Type	Valid Values
subject:npi	urn:oasis:names:tc:xspa:1.0:subject:npi	String	National Provider ID provided by U.S. Government for all active providers.
subject:functional-role	urn:oasis:names:tc:xspa:1.0:subject:functional-role	String	Functional roles provide a placeholder to group permissions required for fine grain access control. There MUST be mutual agreement of there use and definition between participating organizations.
resource:org:allowed-organizations	urn:oasis:names:tc:xspa:1.0:resource:org:allowed-organizations	String	Holds identification of allowed trading partners.

Attribute ID*	Identifier	Type	Valid Values
resource:org:hoursofoperations:start	urn:oasis:names:tc:xspa:1.0:resource:org:hoursofoperations:start	Time	Time plus locale
resource:org:hoursofoperations:end	urn:oasis:names:tc:xspa:1.0:resource:org:hoursofoperations:end	Time	Time plus locale
resource:patient:opt-in	urn:gov:hhs:fhinc:patient-opt-in	String	Yes or No. US realm specific and required for v2.1 of NHIN connect.
resource:patient:allowed-organizations	urn:oasis:names:tc:xspa:1.0:resource:patient:allowed-organizations	String	Holds identification of organizations allowed to access patients medical record as defined by patient's consent directive.
obligation:patient:mask:advancedirectives:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:advancedirectives:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask>alerts:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked>alerts:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:encounters:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:encounters:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:familyhistory:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:familyhistory:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:functionalstatus:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:functionalstatus:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:immunizations:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:immunizations:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:medicalequipment:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medicalequipment:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:medications:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medications:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:payayers:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:payayers:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:planofcare:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:planofcare:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.

Attribute ID*	Identifier	Type	Valid Values
obligation:patient:mask:problems:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:problems:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:procedures:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:procedures:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:purpose:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:purpose:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:results:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:results:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:socialhistory:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:socialhistory:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:vitals:dissenting-role	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:vitals:dissenting-role	String	Structural Role refer to [ASTM E1986-98 (2005)] and its OID representation.
obligation:patient:mask:advancedirectives:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:advancedirectives:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask>alerts:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked>alerts:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:encounters:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:encounters:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:familyhistory:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:familyhistory:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:functionalstatus:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:functionalstatus:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:immunizations:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:immunizations:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:medicalequipment:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medicalequipment:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.

Attribute ID*	Identifier	Type	Valid Values
obligation:patient:mask:medications:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medications:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:payers:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:payers:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:planofcare:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:planofcare:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:problems:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:problems:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:procedures:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:procedures:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:purpose:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:purpose:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:results:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:results:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:socialhistory:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:socialhistory:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
obligation:patient:mask:vitals:dissenting-subject-id	urn:oasis:names:tc:xspa:1.0:resource:patient:masked:vitals:dissenting-subject-id	String	Provider unique identifier. US Domain this is National Provider Identifier NPI.
resource:snomedct:type	urn:oasis:names:tc:xspa:2.0:resource:snomedct:type	String	For full implementation information on healthcare objects refer to [SNOMED CT].

178 \*Note: Attribute-ID is provided for mapping to pseudo-code in the [XSPA-XACML Example] document.

## 179 2.12 Standard Rules (Normative)

180 At this time no Standard Rule requirements have been defined for this profile.

## 181 2.13 Standard Rules (Non-normative)

182 At this time no optional Rules have been defined for this profile.

## 183 2.14 Obligations (Normative)

184 This profile describes the use of <Obligation> element as optional.

## 185 2.15 Obligations (Non-normative)

186 The <Obligation> element will be used in the XACML response to notify requestor that additional  
187 processing requirements are needed. This profile focuses on the use of obligations to enforce patient  
188 privacy election. The XACML response may contains one or more obligations. Processing of an  
189 obligation is application specific. An <Obligation> may contain the object(resource) action pairing  
190 information. If multiple vocabularies are used for resource definitions the origin of the vocabulary MUST  
191 be identified.

192 The obligation should conform to following structure:

193 urn:oasis:names:tc:xspa:1.0:patient:<action>:<healthcareobject>:<constraint-identifier>

194 The following is an example response obligation segment.

```
195 <xacml:Obligations  
196 xmlns:xacml="urn:oasis:names:tc:xacml:2.0:policy:schema:os" >  
197   <xacml:Obligation  
198     ObligationId="urn:oasis:names:tc:xspa:1.0:patient:masked:vitals:dissenting-  
199     subject-id" FulfillOn="Permit">  
200     </xacml:Obligation>  
201   </xacml:Obligations>
```

## 202 2.16 Examples of Use

203 The following section of this profile provides examples of XACML request and response messages. The  
204 examples are intended to provide additional guidance to implementers of this profile.

205 All XACML request and response attributes are identified by a Uniform Resource Name (URN) from the  
206 vocabulary. This enables seamless mapping of data values between the client interface and policy  
207 services.

208 It is recommended that the SAML 2.0 profile of XACML v2.0 [**SAML-XACML20**] be used for PEP-PDP  
209 communications. (Note: use [**SX20-ASSN-SCH**] and [**SX20-PROT-SCH**] schema files and specification  
210 in 17-Nov-05 Errata version.)

211 Following are the expected SOAP-wrapped request and response messages. Note that request MUST  
212 have a unique ID which is used to map to a unique response as specified in [XACML-CORE]. The  
213 request MAY be returned with the response.

### 214 Sample SOAP SAML XACML Request wrapper:

```
215 <?xml version="1.0" encoding="UTF-8"?>  
216 <soapenv:Envelope  
217   xmlns:soapenv ="http://schemas.xmlsoap.org/soap/envelope/"  
218   xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
219   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">  
220   <soapenv:Body>  
221     <xacml-samlp:XACMLAuthzDecisionQuery  
222       xmlns:xacml-samlp="urn:oasis:xacml:2.0:saml:protocol:schema:os"  
223       ID="_e064bd912f83c1544fea110307000acf"  
224       IssueInstant="2007-05-21T22:00:36Z"  
225       Version="2.0">  
226       <xacml-context:Request  
227         xmlns:xacml-  
228         context="urn:oasis:names:tc:xacml:2.0:context:schema:os">  
229         <!-- See [XACML-Request-01] for sample content of this element -->  
230         </xacml-context:Request>  
231       </xacml-samlp:XACMLAuthzDecisionQuery>  
232     </soapenv:Body>  
233   </soapenv:Envelope>
```

234 The request message above contains three protocol layers:

- 235 • **soapenv:** is the SOAP layer. A SOAP Envelope contains a SOAP Body.
- 236 • **xacml-samlp:** is the SAML protocol layer, which is enabled by the XACML extension to the SAML  
237 protocol, which is described in **[SAML-XACML-20]** specification and in the **[SX20-PROT-SCH]**  
238 schema. Note that the usual `samlp:` is not declared here because `xacml-samlp:` extends `samlp:` and  
239 will transparently include the `samlp:` base declarations.
- 240 • **xacml-context:** is the XACML request/response layer which is described in **[XACML-CORE]**.

#### 241 **Sample SOAP SAML XACML response wrapper:**

```

242 <soapenv:Envelope
243   xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
244   xmlns:xsd="http://www.w3.org/2001/XMLSchema"
245   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
246   <soapenv:Body>
247     <samlp:Response
248       xmlns:samlp="urn:oasis:names:tc:SAML:2.0:protocol"
249       ID="A12345602"
250       Version="2.0"
251       IssueInstant="2007-05-09T00:00:01Z">
252     <samlp:Status>
253       <samlp:StatusCode
254         Value="urn:oasis:names:tc:SAML:2.0:status:Success"/>
255     </samlp:Status>
256     <saml:Assertion
257       xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion"
258       Version="2.0"
259       ID="A12345603"
260       IssueInstant="2007-05-09T00:00:01Z">
261     <saml:Issuer>xacml.interop.com</saml:Issuer>
262     <saml:Statement
263       xmlns:xacml-saml="urn:oasis:xacml:2.0:saml:assertion:schema:os"
264       xsi:type="xacml-saml:XACMLAuthzDecisionStatementType">
265       <xacml-context:Response
266         xmlns:xacml-
267 context="urn:oasis:names:tc:xacml:2.0:context:schema:os">
268         <!-- See [XACML-Response-01] for sample content of this element --
269 >
270       </xacml-context:Response>
271     </saml:Statement>
272   </saml:Assertion>
273 </samlp:Response>
274 </soapenv:Body>
275 </soapenv:Envelope>

```

276 The response message above contains three protocol layers:

- 277 • **soapenv:** is the SOAP layer. A SOAP Envelope contains a SOAP Body.
- 278 • **samlp:** is the SAML Protocol layer, which is explicitly declared this time because in the response  
279 case the `xacml` extension is lower in the `samlp:` protocol. In particular, `samlp:` requires a  
280 `saml:Assertion`, which in turn includes a `saml:Statement`. It is within the `saml:Statement` that the  
281 `xacml` extension occurs and is referred to as `xacml-saml:` because it extends the  
282 `saml:Assertion/saml:Statement` with the `XACMLAuthzDecisionStatementType`. The details are  
283 described in the **[SAML-XACML-20]** specification and the **[SX20-ASSN-SCH]** schema.
- 284 • **xacml-context:** is the XACML request/response layer which is described in **[XACML-CORE]**

---

## 285 3 Conformance

### 286 3.1 Introduction

287 The XSPA profile of XACML addresses the following aspects of conformance:

288 This profile describes a minimum vocabulary that must be supported in order to claim conformance.

289 An Implementation of a PDP MUST conform to XACML v2.0 specification.

### 290 3.2 Conformance Tables

291 The following section identifies portions of the profile that MUST be adhered to in order to claim  
292 conformance.

293 Note: “M” is mandatory “O” is optional.

#### 294 3.2.1 Attributes

295 The implementation MUST use the attributes associated with the following identifiers in the way this  
296 profile has defined.

297

Table 3: Conformance Attributes

Identifiers	
urn:oasis:names:tc:xacml:2.0:subject:subject-id	M
urn:oasis:names:tc:xacml:2.0:subject:locality	M
urn:oasis:names:tc:xspa:1.0:subject:hl7:permission	M
urn:oasis:names:tc:xacml:2.0:subject:role	M
urn:oasis:names:tc:xspa:1.0:subject:purposeofuse	M
urn:oasis:names:tc:xacml:2.0:resource:resource-id	M
urn:oasis:names:tc:xspa:1.0:resource:hl7:type	M
urn:oasis:names:tc:xspa:1.0:resource:org:hl7:permissions	M
urn:oasis:names:tc:xspa:1.0:resource:org:role	M
urn:oasis:names:tc:xspa:1.0:resource:patient:hl7:confidentiality-code	M
urn:oasis:names:tc:xspa:1.0:resource:patient:dissenting-subject-id	M
urn:oasis:names:tc:xspa:1.0:resource:patient:dissenting-role	M
urn:oasis:names:tc:xspa:1.0:environment:locality	M
urn:oasis:names:tc:xspa:1.0:subject:npj	O
urn:oasis:names:tc:xspa:1.0:subject:functional-role	O

Identifiers	
urn:oasis:names:tc:xspa:1.0:resource:org:allowed-organizations	O
urn:oasis:names:tc:xspa:1.0:resource:org:hoursofoperation:start	O
urn:oasis:names:tc:xspa:1.0:resource:org:hoursofoperation:end	O
urn:gov:hhs:fha:nhinc:patient-opt-in	O
urn:oasis:names:tc:xspa:1.0:resource:patient:allowed-organizations	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:advancedirectives:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:alerts:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:encounters:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:familyhistory:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:functionalstatus:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:immunizations:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medicalequipment:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medications:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:payers:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:planofcare:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:problems:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:procedures:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:purpose:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:results:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:socialhistory:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:vitals:dissenting-role	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:advancedirectives:dissenting-subject-id	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:alerts:dissenting-subject-id	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:encounters:dissenting-subject-id	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:familyhistory:dissenting-subject-id	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:functionalstatus:dissenting-subject-id	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:immunizations:dissenting-subject-id	O
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medicalequipment:dissenting-subject-id	O

Identifiers	
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:medications:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:payers:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:planofcare:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:problems:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:procedures:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:purpose:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:results:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:socialhistory:dissenting-subject-id	○
urn:oasis:names:tc:xspa:1.0:resource:patient:masked:vitals:dissenting-subject-id	○

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299

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348

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349

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