



XACML Intellectual Property Control (IPC) profile

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Technical Committee:

[OASIS eXtensible Access Control Markup Language \(XACML\) TC](#)

Chair(s):

Bill Parducci, <bill@parducci.net>
Hal Lockhart, Oracle <hal.lockhart@oracle.com>

Editor(s):

John Tolbert, The Boeing Company

Related work:

This specification is related to:

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

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Abstract:

This specification defines a profile for the use of XACML in expressing policies for intellectual property control (IPC). It defines standard attribute identifiers useful in such policies, and recommends attribute value ranges for certain attributes.

Status:

This document was last revised or approved by the 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

{Non-normative}

This specification defines a profile for the use of the OASIS eXtensible Access Control Markup Language (XACML) [XACML] to write and enforce policies for the purpose of providing access control for resources deemed intellectual property (hereinafter referred to as IP). Use of this profile requires no changes or extensions to the [XACML] standard.

This specification begins with a non-normative discussion of the topics and terms of interest in this profile. The normative section of the specification describes the attributes defined by this profile and provides recommended usage patterns for attribute values.

This specification assumes the reader is somewhat familiar with XACML. A brief overview sufficient to understand these examples is available in [XACMLIntro].

For our purposes, IP may be defined as legal property rights over mental creations. IP owners can receive exclusive rights to their creations, if certain conditions are met. These exclusive rights can be exploited by the owner for profit, either directly through sales of products, or indirectly through licensing.

IP is an asset; perhaps the most valuable asset an organization has. IP can be licensed to other organizations in cases of outsourcing and/or to generate revenue from IP sharing arrangements.

IP value tends to increase when properly protected, though there are differing points of diminishing returns. IP protection doesn't guarantee security; it just provides a compensation mechanism for cases of unlawful exploitation. IP valuation and protection are often criteria for venture capital investors.

Broadly speaking, there are four main categories of intellectual property: copyrights, trademarks, trade secrets, and patents. Copyrights confer time-limited exclusive rights of ownership and/or use to the creator of the work. A copyright is typically used to protect artistic works such as photographs, music, books, etc. Copyrights are internationally recognized, though there are differences in the terms and enforcement.

Trademarks are the IP protection scheme of names, logos, symbols, products, etc. For example, in the U.S. there are 2 main types:

- For general usage, or for not-yet-registered trademarks ™
- For trademarks registered with the USPTO ®

Trademarks are also internationally recognized through the Madrid system, which requires registration through the World Intellectual Property Organization (WIPO), a United Nations agency. The World Trade Organization also sets legal minimum standards for IP protection among member nations.

Patents are property rights granted to an inventor to prevent others from profiting from the invention for a limited time in exchange for public disclosure of the invention when the patent is granted. Patents apply to processes, machines, articles of manufacture, or composition of matter (including biological), or derived innovations. Patents require detailed disclosure of information, designs, processes, etc. Patents are administered in U.S. by the USPTO, and are internationally recognized by WTO TRIPS, WIPO, and European Patent Convention.

Trade secrets are IP protection of formulae, processes, designs, information, etc. that are not easily obtainable that a business uses for competitive advantage. They are often protected by legal contracts such as non-disclosure agreements, non-compete agreements, or proprietary information agreements. Trade secrets are the most common form of industrial IP protection, and outnumber patents. However, trade secrets are often categorized as "proprietary" information, and may not be discovered as trade secrets unless litigated. They are not federally protected in the U.S., though most states have adopted the Uniform Trade Secrets Act. However, theft of trade secrets is prohibited by U.S. Economic Espionage Act of 1996. Trade secret status requires less disclosure than patents. Trade secrets are well protected by European Patent Convention as "know how". No international treaties protect trade secrets, though WTO TRIPS, GATT, and NAFTA have provisions for trade secret protection.

Other IP related concepts, such as **public domain**, **Pll**, **proprietary**, and **third-party proprietary** will be defined in the glossary section.

50 The attributes and glossary terms defined below are not an exclusive or comprehensive list of all the
51 attributes that may be required for rendering authorization decisions concerning IP. For example, PDPs
52 would have to evaluate other entitlements, such as group membership, from PIPs. This profile is meant
53 as a point of reference for implementing IP controls, and may be extended as needed for organizational
54 purposes. Software vendors who choose to implement this profile should take the attributes herein as a
55 framework for IP controls, but allow individual implementers some flexibility in constructing their own
56 XACML-based authorization policies and PDPs.

57 The goal of this profile is to create a framework of common IP-related attributes upon which authorization
58 decisions can be rendered. This profile will also provide XACML software developers and authorization
59 policy writers guidance on supporting IP control use cases.

60 1.1 Glossary

61 Authority

62 The entity which is responsible for authorizing the transaction. This can be a particular company,
63 organization, or contract.

64 Copyright

65 A form of limited and temporary government-granted monopoly which gives the creator of an
66 original work some rights for a certain time period in relation to that work, including its publication,
67 distribution and adaptation; after which time the work is said to enter the public domain. Copyright
68 applies to concrete expressions of information, but not the information itself.

69 Country

70 A national political administrative unit recognized for diplomatic and trade purposes by
71 governments and other international organizations.

72 IP-Designee

73 A designation for the persons or entities with designated intellectual property rights.

74 IP-Owner

75 A designation for the entity which owns the intellectual property.

76 License

77 An agreement granting rights in Intellectual Property.

78 Location

79 The **location** of the requesting principal. Values of acceptable locations may be specified by
80 legal contract, and may be specific to implementations. PDPs and PEPs SHOULD be configured
81 for mutual understanding of said values.

82 Nationality

83 A country of which a person is a citizen.

84 Organization

85 A company or other legal entity of which a person can be an employee or agent.

86 Patent

87 A set of exclusive rights granted by a government to an inventor or his assignee for a limited
88 period of time in exchange for a disclosure of an invention.

89 PII

90 Personally identifiable information. For example, U.S. Social Security Numbers.

91 Proprietary

92 Information protected by an organization by technical controls. May sometimes be used
93 synonymously with "trade secret".

94 **Public domain (PUB)**

95 Information that has been demoted from copyright, trademark, trade secret, or patented status.
96 No intellectual property controls are usually necessary for items considered public domain.

97 **Third-party proprietary**

98 Intellectual property which has been legally entrusted to the care and use of another organization.

99 **Trademark**

100 A distinctive sign or indicator used by an individual, business organization, or other legal entity to
101 identify that the products, and/or services to consumers with which the trademark appears
102 originate from a unique source of origin, and to distinguish its products or services from those of
103 other entities.

104 **Trade secret**

105 A formula, practice, process, design, instrument, pattern, or compilation of information which is
106 not generally known or reasonably ascertainable, by which a business can obtain an economic
107 advantage over competitors or customers. In some jurisdictions, such secrets are referred to as
108 "confidential information" or "classified information".

109 **1.2 Terminology**

110 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD
111 NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described
112 in [RFC2119].

113 **1.3 Normative References**

- 114 [RFC2119] S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*,
115 <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.
- 116 [XACML] E. Rissanen, ed., *eXtensible Access Control Markup Language (XACML) Version*
117 *3.0*, Working draft 10, [http://www.oasis-](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml)
118 [open.org/committees/tc_home.php?wg_abbrev=xacml](http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml)

119 **1.4 Non-Normative References**

- 120 [XACMLIntro] OASIS XACML TC, *A Brief Introduction to XACML*, 14 March 2003,
121 [http://www.oasis-](http://www.oasis-open.org/committees/download.php/2713/Brief_Introduction_to_XACML.html)
122 [open.org/committees/download.php/2713/Brief_Introduction_to_XACML.html](http://www.oasis-open.org/committees/download.php/2713/Brief_Introduction_to_XACML.html)
123 <http://www.myersbigel.com/library/viewdoc.php?id=26>
124 <http://www.uspto.gov>
125 <http://www.wipo.int>
126 http://www.wto.org/english/tratop_E/TRIPS_e/trips_e.htm
- 127 [ISO3166] ISO 3166 Maintenance agency (ISO 3166/MA),
128 http://www.iso.org/iso/country_codes.htm
129

130 **1.5 Scope**

131 Many intellectual property access control decisions can be made on the basis of the resource's
132 **copyright**, **trademark**, **patent**, **trade secret**, or other **custom** classification. This profile defines standard
133 XACML attributes for these properties, and recommends the use of standardized attribute values.

134 In practice, an organization's intellectual property protection policies will be a mixture of rules derived
135 from laws and regulations, along with enterprise-specific rules derived from government-approved
136 bilateral or multilateral agreements with other organizations.

137 **1.6 Use cases**

138 PDPs may need to consider intellectual property protection schemes when evaluating authorization
139 decisions. This profile is designed to provide a framework of additional <Attributes> for such decisions.

140

141 Copyright use case: an authorization decision depends on whether or not the resource in question is
142 protected by copyright.

143

144 Trademark use case: an authorization decision depends on whether or not the resource in question is a
145 designated trademark.

146

147 Patent use case: an authorization decision depends whether or not the resource in question is protected
148 by a patent. Patent designation may follow.

149

150 Trade secret use case: an authorization decision depends whether or not the resource in question is
151 designated as a trade secret.

152

153 PII use case: an authorization decision depends whether or not the resource in question is designated as
154 personally identifiable information.

155

156 Third-party proprietary: an authorization decision depends whether or not the resource in question is
157 designated as a third-party proprietary resource.

158

159 License: a calling PEP may need to log that a particular license applies to the authorization decision
160 rendered by the PDP.

161

162 **1.7 Disclaimer**

163 NOTHING IN THIS PROFILE IS INTENDED TO BE A LEGALLY CORRECT INTERPRETATION OR
164 APPLICATION OF U.S. OR ANY GOVERNMENT INTELLECTUAL PROPERTY LAWS OR
165 REGULATIONS. USE OF THIS PROFILE IN AN ACCESS CONTROL SYSTEM DOES NOT
166 CONSTITUTE COMPLIANCE WITH ANY INTELLECTUAL PROPERTY RESTRICTIONS. THIS
167 PROFILE HAS NOT BEEN REVIEWED OR ENDORSED BY THE U.S. OR ANY OTHER GOVERNMENT
168 AGENCIES RESPONSIBLE FOR ENFORCING INTELLECTUAL PROPERTY LAWS, NOR BY ANY
169 LEGAL EXPERT IN THIS FIELD.

170 Organizations that use this profile should ensure their intellectual property protection by engaging
171 qualified professional legal services.

172 2 Profile

173 2.1 Resource Attributes

174 2.1.1 IPC-Type

175 The IPC-Type classification value shall be designated with the following attribute identifier:

176 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ipc-type`

177 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. Examples of
178 acceptable values of the attribute SHALL be “PUB”, “PII”, “EC-US”, “COPYRIGHT”, “TRADEMARK”,
179 “PATENT”, “TRADESECRET”, “PROPRIETARY”, or “THIRD-PARTY PROPRIETARY”. Other values
180 may also be defined later, depending on an organization’s authorization needs.

181 The use of “THIRD-PARTY PROPRIETARY” may introduce ambiguity in a federated authorization model.
182 In that case, “PROPRIETARY” with a corresponding **IP-Owner** value SHOULD be used to distinguish IP
183 owned by an entity other than the PDP’s home organization.

184 2.1.2 IPC-Data

185 IPC-Data classification values shall be designated with the following attribute identifier:

186 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ipc-data`

187 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. The purpose of
188 this attribute is to convey additional data about the intellectual property resource, such as author names,
189 patent numbers, proprietary tracking information, etc.

190 2.1.3 IP-Owner

191 IP-Owner classification values shall be designated with the following attribute identifier:

192 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-owner`

193 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. This attribute
194 names the owner of the IP.

195 2.1.4 IP-Designee

196 IP-Designee classification values shall be designated with the following attribute identifier:

197 `urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-designee`

198 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. This attribute
199 names the designated custodian of the IP.

200 2.1.5 License

201 License classification values shall be designated with the following attribute identifier:

202 `urn:oasis:names:tc:xacml:3.0:ipc:resource:license`

203 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

204 This attribute can be used to indicate whether or not a specific resource is governed by a particular
205 license arrangement.

206 2.2 Subject Attributes

207 2.2.1 Nationality

208 Nationality classification values shall be designated with the following attribute identifier:

209 `urn:oasis:names:tc:xacml:3.0:ipc:subject:nationality`

210 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. The value of this
211 attribute MUST be in the range of 2-letter country codes defined by **[ISO3166]**.

212 Nationality shall denote the country in which the subject currently has legal status as a “national” or
213 citizen.

214 2.2.2 Organization

215 Organization classification values shall be designated with the following attribute identifier:

216 `urn:oasis:names:tc:xacml:3.0:ipc:subject:organization`

217 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

218 Organization shall denote the organization to which the subject in the request belongs. A common
219 scheme such as DUNS SHOULD be used to promote interoperability.

220 2.3 Environment Attributes

221 2.3.1 Location

222 Location classification values shall be designated with the following attribute identifier:

223 `urn:oasis:names:tc:xacml:3.0:ipc:environment:location`

224 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

225 2.4 Action Attributes

226 2.4.1 Read

227 Read classification values shall be designated with the following attribute identifier:

228 `urn:oasis:names:tc:xacml:3.0:ipc:action:read`

229 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#boolean>.

230 2.4.2 Edit

231 Edit classification values shall be designated with the following attribute identifier:

232 `urn:oasis:names:tc:xacml:3.0:ipc:action:edit`

233 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#boolean>.

234 2.4.3 Storage

235 Storage classification values shall be designated with the following attribute identifier:

236 `urn:oasis:names:tc:xacml:3.0:ipc:action:storage`

237 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#boolean>.

238 2.4.4 Physical transmission

239 Physical transmission classification values shall be designated with the following attribute identifier:

240 `urn:oasis:names:tc:xacml:3.0:ipc:action:physical-transmission`

241 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#boolean>. The best
242 example of this type of action would be printing.

243 **2.4.5 Electronic transmission**

244 Electronic transmission classification values shall be designated with the following attribute identifier:

245 `urn:oasis:names:tc:xacml:3.0:ipc:action:electronic-transmission`

246 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. Examples of this
247 action would be emailing, file transfer, or moving from one electronic location to another.

248 **2.4.6 Encryption type**

249 Encryption type classification values shall be designated with the following attribute identifier:

250 `urn:oasis:names:tc:xacml:3.0:ipc:action:encryption-type`

251 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. Examples of
252 valid data would be AES128-CBC, RSA2048, etc.

253 **2.4.7 Marking**

254 Marking classification values shall be designated with the following attribute identifier:

255 `urn:oasis:names:tc:xacml:3.0:ipc:action:marking`

256 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. Examples of
257 marks could be "Proprietary", "Confidential", etc. Other schemes may refer to this activity as "labeling",
258 but marking and labeling are considered synonymous for these purposes.

259 **2.4.8 Disposal**

260 Disposal classification values shall be designated with the following attribute identifier:

261 `urn:oasis:names:tc:xacml:3.0:ipc:action:disposal`

262 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>. An example of a
263 disposal value would be "delete" in the case of electronic storage. Additional disposal related actions
264 may be defined as obligations.

265 **2.4.9 All**

266 "All" classification values shall be designated with the following attribute identifier:

267 `urn:oasis:names:tc:xacml:3.0:ipc:action:all`

268 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#boolean>. All
269 encompasses the Read, Edit, Storage, Physical transmission, Electronic transmission, Encryption type,
270 Marking, and Disposal, but not Authority.

271 **2.4.10 Authority**

272 Authority classification values shall be designated with the following attribute identifier:

273 `urn:oasis:names:tc:xacml:3.0:ipc:action:authority`

274 The `DataType` of this attribute is <http://www.w3.org/2001/XMLSchema#string>.

275 This attribute can be used to describe the associated contract or statement of work authorizing the
276 access. Other types of values could be used depending on an organization's needs.

277 **3 Identifiers**

278 This profile defines the following URN identifiers.

279 **3.1 Profile Identifier**

280 The following identifier SHALL be used as the identifier for this profile when an identifier in the form of a
281 URI is required.

282 `urn:oasis:names:tc:xacml:3.0:profiles:ipc`

283

284 4 Conformance

285 Conformance to this profile is defined for *policies* and *requests* generated and transmitted within and
286 between XACML systems.

287 4.1 Attribute Identifiers

288 Conformant XACML *policies* and *requests* SHALL use the attribute identifiers defined in Section 2 for
289 their specified purpose.

290 4.2 Attribute Values

291 Conformant XACML *policies* and *requests* SHALL use attribute values in the specified range or patterns
292 as defined for each attribute in Section 2 (when a range or pattern is specified).

293 NOTE: In order to process conformant XACML *policies* and *requests* correctly, *PIP* and
294 *PEP* modules may have to translate native data values into the datatypes and formats
295 specified in this profile.

296

297 **A. Acknowledgements**

298 The following individuals have participated in the creation of this specification and are gratefully
299 acknowledged:

300 **Participants:**

301 John Tolbert, The Boeing Company

302

303 **Committee members during profile development:**

Person	Organization	Role
Erik Rissanen	Axiomatics AB	Voting Member
Ludwig Seitz	Axiomatics AB	Member
Paul Tyson	Bell Helicopter Textron Inc.	Member
Ronald Jacobson	CA*	Member
Masum Hasan	Cisco Systems, Inc.*	Member
Anil Tappetla	Cisco Systems, Inc.*	Member
Tim Moses	Entrust*	Member
Guy Denton	IBM	Member
Craig Forster	IBM	Member
Richard Franck	IBM	Member
Michiharu Kudo	IBM	Member
Michael McIntosh	IBM	Member
Vernon Murdoch	IBM	Member
Ron Williams	IBM	Member
David Chadwick	Individual	Member
Bill Parducci*	Individual	Chair
Abbie Barbir	Nortel	Member
Harry Haury	NuParadigm Government Systems, Inc.	Member
Kamalendu Biswas	Oracle Corporation	Member
Willem de Pater	Oracle Corporation	Member
Rich Levinson	Oracle Corporation	Secretary
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Anil Saldhana	Red Hat	Voting Member
Darran Rolls	SailPoint Technologies	Member
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Aravindan Ranganathan	Sun Microsystems	Member
John Tolbert	The Boeing Company*	Voting Member
Martin Smith	US Department of Homeland Security*	Member
Duane DeCouteau	Veterans Health Administration	Voting Member
David Staggs	Veterans Health Administration	Voting Member

304

B. Non-Normative Text

306

C. Revision History

307

[optional; should not be included in OASIS Standards]

308

Revision	Date	Editor	Changes Made
CD 1	6/18/2009	John Tolbert	Initial committee draft.
CD 2	2/25/2010	John Tolbert	Revised committee draft.

309