
Standardization and Market Trends of Web Services Security Technologies

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가,
XML
, XML
XML
XML
XML
XML
XML
XML
XML
XML

I.

가,
XML
XML
IT839 / /
XML
XML
가,
XML
XML
XML
XML
XML
XML
XML
XML
XML
XML

II.

XML 가 XML
XML
가
URI
가
XML 가
XML XML
가 XML

. < 1> XML XML

< 1> XML

XML	XML
XML	XML /
XML	XML
	(/ 가 ,) XML
XML	XML XML

, XML
XML
가
XML W3C IETF
XML 가 XML Signa-
ture Syntax and Processing XML
, Canonical
XML Exclusive Canonical XML XML
XML , XPath Filter

1. XML

XML XML
XML XML ,
XML XML , XML
XML 가 ,

XML [1],[2].
XML XML
XML XML 가 ,
XML
W3C XML XML
/

가. XML
XML XML XML
XML XML ,

XML XML . XML
SSL TLS, VPNs(Vir-
tual Private Networks)

XML (<ds: KeyInfo>)

XML

[4],[5].

XML

[3].

XML

XKMS W3C 가

XML W3C Mi-

crosoft Verisign, Web Methods가 (authori-

, Baltimore, Entrust Technologies, Citigroup, zation)

IBM, IONA Technologies, PureEdge Solution, (access

Hewlett Packard, Reuters Limited, Science RSA control) XML

Security, Application International

XML

XKMS 가 W3C [6].

(, ,) XACML (, SAML assertions, Java

XML permission, WS-Security tokens)

XKMS , J2EE

, XML Parthenon Com-

XML computing(Jiffy Software), Sun Microsystems, La-

, XML , WS-Security, SAML gash Systems XACML 1.0 1.1

PKI PKI

API

가 XKMS

XKMS XML (XKISS) XML SAML

(XKRSS) SSO

가
 SAML assertion
 XML
 assertion
 , 가 ,
 가
 XML
 SAML
 SAML
 SAML
 OASIS Security Services Technical
 Committee(SSTC) 2001 Se-
 curity Assertion Markup Language Specifica-
 tion V1.0 2002 11 OASIS
 SAML 2.0 Working draft
 Entegrity AssureAccess, HP
 Select Access, Computer Associates eTrust
 SSO, Entrust GetAccess 가
 SAML (SSO)
 [7]-[9].
2.
 XML
 가 , SOAP
 (WS-
 Security),
 (WS-
 Policy),
 (WS-
 Privacy),
 가 가

< 2>

	SOAP
	가 가

(WS-Trust)
 < 2>
 가. (WS - Security)
 SOAP
 2004 OASIS
 W3C XML XML
 (security to-
 ken)
 (replay attack)
 (timestamp)
 (multi-hop) SOAP
 (end-to-end)
 X.509 Certificate Token Profile X.509
 WS-Security
 , username token profile
 가 ID(username)
 , security token
 [10]-[12].

(WS - Trust) 가
 IBM Microsoft
 2004 WS-Trust V1.1 WS-
 Security

가
 WS-Privacy
 WS-Authorization

[13].
 WSDL
 , UDDI business-services binding-
 templates SOAP
 가 ,

III.

1.

가.

2003 Gartner

2007 445
 (< 3>).

(WS - Policy)
 , BEA, IBM,
 Microsoft, SAP
 1.1 , , ,

112%

81%

, 2007

6%

< 3> (:)

	2003	2004	2005	2006	2007	
	1,307	2,612	4,273	6,441	8,447	61%
	4,914	8,814	16,235	24,593	36,098	112%
	6,221	11,426	20,508	31,034	44,545	-

< >: Gartner Dataquest, 2003. 10.

[14].
 (WS - Secure
 Conversation)

< 4>

(:)

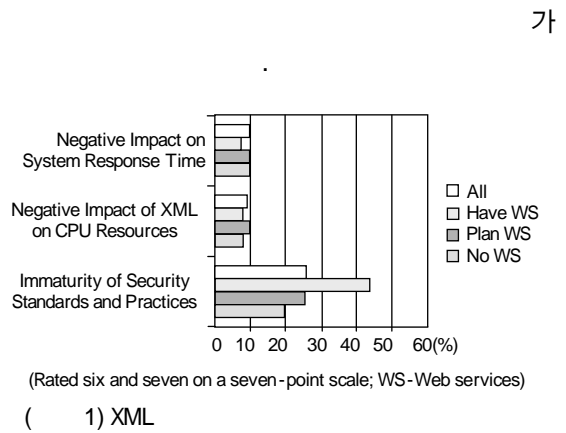
, IBM Microsoft
 2004 WS-Secure Con-
 versation V1.1
 가
 , WS-
 Trust가

	2003	2004	2005	2006	2007	
	82,313	87,534	93,976	100,679	107,741	6%
	6,221	11,426	20,508	31,034	44,545	133%
	8%	13%	22%	31%	41%	-

< >: Gartner Dataquest, 2003. 10.

[15].

가 , 2004
 133%
 (< 4>) [16].
 IT
 가
 가 2003
 2007
 41%
 가가
 (,
)
 ,
 5%
 가 , 2007
 18
 ,
 가
 , / , 가 , ,
 IT
 가 IDC, 가
 (251)
 , 2007 1000
 1900 2400 , 2
 ,
 가
 ,
 가
 Gartner ((1))



가
 2001 , 2002
 가 . 2003

2.

가.

XML

XML

XML, SAML, XACML, XKMS

IBM, MS, Verisign, Baltimore, RSA, Phaos

XML, Apache XML

Entegrity AssureAccess, HP Select Access, Computer Associates eTrust SSO, Entrust GetAccess 가 SAML v1.1

Parthenon Computing, Sun, Lagash Systems XACML 1.0 1.1

Verisign TSIK(Trust Services Integration Kit) XKMS, Baltimore 'X-BULK(XKMS Bulk Operation)' XKMS

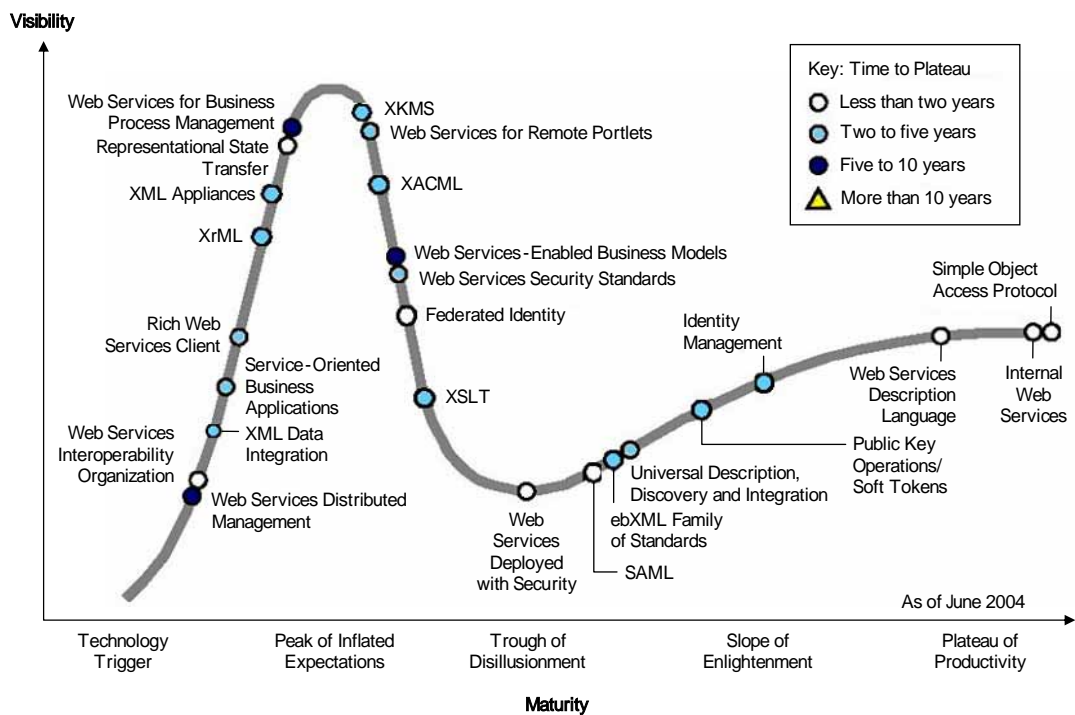
IBM WSDK(Web Service Tool Kit) XKMS, Microsoft .NET Framework XKMS, DataPower XS40 XML Security Gateway, XML/SOAP Filtering, Field Level XML, SAML, XACML, WS-Security 가 XML

SAML, XACML, XKMS, WS-Security XML (가

2) 2~5 가

[17].

WS-Security



< >: Gartner Dataquest, 2004.

(2)

Sun Microsystems, Verisign, IBM WS- Security Security

3.

Microsoft WS-Security, WS-Trust, WS-Policy WSE(Web Services Enhancements) 2.0

가.

XML W3C OASIS 가

IBM, MS,

BEA, SUN

XML XML SAML, XACML, XKMS

W3C OASIS WS-Security OASIS

ETRI XML XML ESES(ETRI Secure E-commerce Services) STI Security,

WS-Trust, WS-Federation, WS-Secure Conversation

ETRI XKMS 1.0 API SAML 1.1 API XACML 2.0 API 2005

zation 2004

WS-Privacy WS-Authori-

SAML 1.1 XACML 1.0 e-Business XML

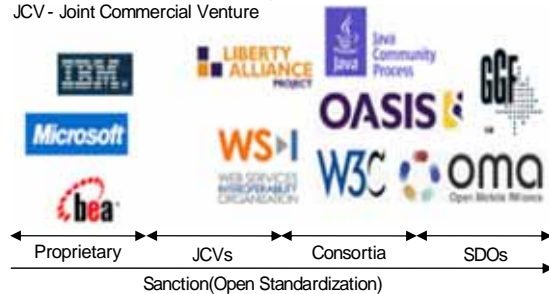
(3)

BizSafe XACML

SAML

SDO- Standards Development Organization JCV - Joint Commercial Venture

XACML XKMS IAXKMS KSign, BTWorks, NetTrust 1.0 1.1 SSO



(3)

WS-Security ETRI

1) W3C(World Wide Web Consortium)

WS-Security

XML

SOAP WSDL XML
 , XML , XML
 XML
 ECIF, KAIS W3C

2) OASIS(Organization for the Advancement of Structured Information Standards)

UDDI V2
 XML , XML
 XML

ETRI, ECIF, Korea CALS/EC Association, Korea Institute for Electronic Commerce, Korea Trade Network, Korean National Computerization Agency, Tmax Soft

3) WS-I

WS-I Security Scenarios Basic Security Profile V1.0 2004
 Tmax Soft가 [18].

4) Liberty Alliance

2001 150
 가 identity

(single sign-on) 가 federated identity

Liberty Alliance
 ID-FF(IDentity Federation Framework), ID-WSF(IDentity Web Services Framework), ID-SIS(IDentity Services Interface Specifications) ID-FF identity OASIS
 SAML SAML 2.0
 , ID-WSF federated identity identity 가
 [19],[20].

XML XML W3C
 XML signature, XML encryption

XML
 XML
 2.0 가

1) XML

XML Key Management
 2.0 , 2004 4
 W3C Candidate Recommendation
 , Editor's draft Pre PR (2004/05/30) 2 . Part1

XML , Part2

- XKMS application interoperability matrix 가

- OCSP , , asynchronous

2)

2.0 가 가

- (terminology) 4)
- SAML schema element attribute SOAP Message Security V1.0 (WS-Security 2004) 2004 3 OASIS
- Mandatory profile reference implementation test . SAML Profile V1.0 2004.3 OASIS , Username Token
- Core metadata attribute profile (represent) , OASIS TP “SAML ” 가
- Identity provider/Service provider - X.509 Token Profile V1.0: 2004. 3. OASIS V1.1
- Artifact, binding, profile - SAML Token Profile: 2004. 7. Working Draft 15
- Federation - REL(Rights Expression Language) Token Profile: 2004. 6. Draft
- Privacy consideration - Kerberos Token Profile: 2004. 7. Working Draft 05
- Instant example 가 - Minimalist Profile: 2003. 3. Working Draft 1.5 . 2003 3
- SAML WSDL - SOAP Messages with Attachments(SwA) Profile: 2004. 11. Draft 14 . 가
- 3) XML 가
- 2.0 가 ,
- 1.0 1.1 가
- XML IV.
- XML W3C OASIS , XML ,
- XML 가
- (role based access control) . XML ,
- XML 2.0 , XML 가
- 가
- BEA, IBM, MS 가
- 가 ,

-
- 가
- 가
- 가
- 가
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- [2] XML Signature WG, "Canonical XML Version 1.0," W3C, Mar. 2001.
- [3] XML Encryption WG, "XML Encryption Syntax and Processing," W3C, Dec. 2002.
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