

	<i>Expat</i>	<i>libXML</i>	<i>Xerces C</i>	<i>RXP</i>	<i>QT</i>	<i>XML4C</i>	<i>XDK 9i</i>	<i>J2EE</i>
SOAP Attachment								Apache SOAP
WSDL	Planned by EasySOAP ¹⁰							
UDDI								+
ebXML								+
XML GUI					+			
XSD -> Class Generator							+	

1. The XSLT C Library for Gnome (<http://xmlsoft.org/XSLT/>) is distributed under MIT license and claims to support all systems, supported by XML C Library for Gnome.
2. Gnome DOM Engine (<http://gdome2.cs.unibo.it/>) is distributed under LGPL license and claims to support all systems, supported by XML C Library for Gnome.
3. XML Security Library (<http://www.aleksey.com/xmlsec/>) is distributed under MIT license and requires OpenSSL 0.9.6c or 0.9.7 (preferred).
4. Sablotron (http://www.gingerall.com/charlie/ga/xml/p_sab.xml) is distributed under GPL and Mozilla Open License 1.1 licenses. Sablotron is written in C++ and depends on expat XML parser.
5. Arabica (<http://www.jezuk.co.uk/cgi-bin/view/arabica>) is distributed under BSD license, written in C++ and claims to support Linux, Windows and different Unixes equipped with GNU compiler 3.
6. Xalan for C++ (<http://xml.apache.org/xalan-c/index.html>) is distributed under Apache license and known to work on Windows, Linux, Solaris, HP-UX and AIX platforms.
7. Pathan (<http://software.decisionsoft.com/pathanIntro.html>) is distributed under BSD style license, written in C++ and known to support Windows, Linux and Solaris platforms.
8. Center Point XML (<http://www.cpointc.com/XML/>) is distributed under Netscape Public License and claims to support many platforms, including Windows, Linux, BSD, Solaris, HP-UX, MacOS X. Written in C++.
9. IBM alphaWorks LotusXSL (<http://www.alphaworks.ibm.com/tech/lotusxsl>) is IBM shipped version of xalan library.
10. EasySOAP++ (<http://easyssoap.sourceforge.net/>) is distributed under LGPL license, supports Linux and Windows platforms. And claims to be compatible with different SOAP implementations including, but not limited, Microsoft SOAP toolkit, Microsoft .NET platform, Apache, White Mesa, Phalanx..
11. iconv (<http://www.gnu.org/software/libiconv/>) is part of GNU c library and distributed under GPL license.
12. IBM International Components for Unicode (<http://oss.software.ibm.com/developerworks/opensource/icu/project/>) is written in pure C unicode 3.2 library, provided under X Open Source license. ICU claims to support Linux, Windows and variety of Unix platforms.

	<i>libxslt</i>	<i>GDome</i>	<i>xmlsec</i>	<i>sablotron</i>	<i>cslxml</i>	<i>arabica</i>	<i>xalan</i>	<i>Lotus XSL</i>	<i>pathan</i>
Author	Gnome	Gnome	Alexey Sanin	Ginger Alliance	Connective Software Engineering	Jez UK	Apache	IBM	Decision Soft
License	MIT	LGPL	MIT	GPL Mozilla	Netscape	BSD	Apache	?	BSD
Requirements	LibXML2	LibXML2	LibXML2 OpenSSL	Expat	Expat	Expat LibXML Xerces	Xerces	xml4c	Xerces
Language	C/C++	C/C++	C/C++	C++	C++	C++	C++ Java	C++ Java	C++ Java
Bindings	Perl Ruby Python Tcl/Tk Pascal	Perl Ruby Caml		Perl Ruby Python Php Tcl/Tk Pascal Ada Erlang					Perl
Used By	Gnome	Gnome		mozilla			Apache	Apache	
Library	Shared	Shared	Shared	Shared	Static	Static	Shared	Shared	shared
Library Size	764 KB	232 KB	242 KB	760 KB	962 KB	132 KB	3.3 MB	?	991 KB
Thread Safe	Yes	?	?	Partly ¹	Yes	?	Yes	Yes	Yes
Latest Version	1.0.24	0.7.2	0.0.12	0.97.0	2.1.3	Sept02	1.4	?	1.1 2.0 (CVS)
Release Date	14.01.03	20.11.02	27.01.03	30.12.02	28.11.02	19.09.02	12.09.02	?	18.09.02

1. Expect DOM Modification part

Benchmark Setup

1. Hardware

1. Intel Pentium IV 2200 (22x100) MHZ (Nothwood)
2. Intel D850MV motherboard (i850E + ICH2)
3. 4 x Samsung MR16R 256 MB PC800 Rambus DRAM
4. IBM GXP120 60GB hard drive

2. Software

1. DarkLin II.1.3 (Mandrake Based) Single User Mode
2. Kernel 2.4.21 pre3
3. GNU C Library 2.3.1
4. GNU C Compiler 3.2.1
5. Intel C++ Compiler 7.0
6. J2SE 1.4.1 + XML Pack Summer

3. Libraries

1. Expat 1.95.5
2. Sablotron 0.97.0
3. Arabica 02.09.2002
4. CenterPoint XML 2.1.3
5. Gnome XML Library 2.4.30
6. Gnome XML DOM Library 0.7.2
7. Gnome XSLT Library 1.0.24
8. XML Security Library 0.0.12
9. Xerces for C++ 2.1.0
10. Xalan for C++ 1.4
11. IBM XML4C 5.0.0
12. LTG RXP Parser 1.2.8
13. Trolltech QT 3.1.0
14. Oracle XML Developers Kit for C 9.0.1.0.0
15. Oracle XML Developers Kit for Java 9.2.0.4.0
16. Apache XML Security 1.0.4

4. XML Files

1. **XMLGEN** - autogenerated simple XML file filled with random values, have 3 levels of deep and very simple XSD schema. Examples and schema can be accessed in XML Benchmark source package.
2. **OPCGEN** – autogenerated sequence of OPC(<http://www.opcfoundation.org>) messages filled with random data. This messages have 1-5 levels of deep and complex xsd schema. There are 15 different type messages wich dramatically differs from each other. Examples and schema can be accessed in XML Benchmark source pakage.
3. 12 MB Resource Description File (RDF) from Dmoz.org

Parsing Benchmarks

	Executable Size	OPCGEN 4KB	XMLGEN 256KB	Dmoz RDF
Expat	25	8804	7,18	271,9
Expat + Arabica (DOM)	552	Failed	Failed	Failed
Expat + Arabica (SAX)	210	134387	164,03	2504
Expat + CSLXML (DOM)	369	126052	96,2	2421
Expat + CSLXML (SAX)	238	52372	27,73	1011,86
Expat + Sablotron (DOM)	25	80900	90,82	2108
LibXML	25	24706	27,66	1056,74
LibXML + LibGDome (DOM)	25	28450	27,82	1048,99
LibXML (SAX)	25	8691	9,17	409,3
Xerces (DOM)	33	79980	57,32	1950,28
Xerces (SAX)	37	36053	23,4	975,51
IBM XML4C (DOM)	33	79947	57,51	1941,32
IBM XML4C (SAX)	37	36038	23,22	975,46
RXP Parser	250	22670	35,89	1017,11
QT XML Module (DOM)	30	262572	273,78	6651,95
QT XML Module (SAX)	40	285622	326,22	7295,12
Oracle XDK for C (DOM)	1074	54009	13,25	2549,14
Oracle XDK for C (SAX)	1075	62023	14,32	2732,31
Oracle XDK for C++ (DOM)	1049	56404	13,29	2603,06
Oracle XDK for C++ (SAX)	1049	65321	14,37	2590,44
Oracle XDK for Java (DOM)	1	74895	78,08	1794,8
Oracle XDK for Java (SAX)	2	42511	22,54	981,92
Sun XML Pack (DOM)	2	184300	65,62	1944,44

Validating Benchmark

	Executable Size	OPCGEN 4KB	XMLGEN 4KB	XMLGEN 256KB
LibXML	26	Failed	Failed	Failed
Xerces	36	25695	3,33	94,73
IBM XML4C	36	25816	3,33	94,32
Oracle XDK for C	1137	Failed	0,06	6,48
Sun XML Pack	3	35754	4,62	153,94

DOM Benchmark

	Executable Size	OPCMsg 5KB	OPCMsg 500KB	OPCMsg 9MB
Expat + CSLXML	256	3,42	426,06	19273
Expat + Sablotron	20	3,08	313,29	95556
LibXML	17	0,57	74,35	1494
LibXML + LibGDome	18	6,16	667	13378
Xerces	36	1,81	177,58	3542
IBM XML4C	36	1,81	177,65	3542
QT XML Module	34	2,49	253,29	5168
Oracle XDK for C	1071	0,47	19,69	368
Oracle XDK for C++	1045	0,46	17,9	345
Oracle XDK for Java	4	1,41	220,5	Failed
Sun XML Pack	4	1,48	151,6	Failed

XSLT Transformation Benchmark

	Executable Size	XMLGEN 4KB	XMLGEN 256KB	XMLGEN 4MB
Expat + Sablotron	26	11,37	543,75	8954
LibXML + LibXSLT	25	1,86	85,2	1337
Xerces	66	6,11	276,66	5506
Oracle XDK for C	1074	5,91	204,4	3172
Sun XML Pack	3	7,03	316,7	Failed

XML Security Benchmark

	Executable Size	OPCGEN 4KB	XMLGEN 256KB	Dmoz RDF 11MB
LibXML + XMLSec (Signature)	35	13927	100,2	1951,82
LibXML + XMLSec (Encryption)	35	19545	195,9	7198,03
Apache XML Security (Signature)	4	1691546	Failed	Failed

Stress Test

Parsers able process 64MB file: expat, arabica (SAX), cslexml (DOM,SAX), libxml (DOM,SAX), oracle (DOM,SAX), QT (SAX), RXP, Xerces (DOM,SAX), xml4c (DOM,SAX)

Parsers able process 128MB file: expat, arabica (SAX), cslexml (DOM,SAX), libxml (SAX), oracle (SAX), QT (SAX), Xerces (SAX), xml4c (SAX)

Parsers able process 256MB file: expat, arabica (SAX), cslexml (SAX), libxml (SAX), oracle (SAX), Xerces (SAX), xml4c (SAX)

Parsers able process 512MB file: Xerces (SAX), xml4c (SAX)

Standards Violations Notes

- Oracle have very old schema support and can't work with OPC schema file.
- Xerces for C 2.1 don't catch schema implementation (xsi) type violations
- Oracle have some problems with serialization XML documents with namespaces