Intel® XML Software Suite 1.0 for Java* Environments Release Notes

Release Note Version:317578-002US

Contents

Overview

Intel® XML Software Suite for Java* Environments is a collection of high-performance components for optimized XML Processing. It is compliant with industry standard Java* XML APIs, such as JAXP. There are four main components within the package:

- Intel® XML Parsing Accelerator - optimized XML parsing
- Intel® XML Schema Accelerator - optimized schema validation
- Intel® XSLT Accelerator - optimized transformation of XML documents using stylesheets
- Intel® XPath Accelerator - optimized XPath navigation

This package represents the release of the 1.0 Suite. It is the first time Intel has offered these 4 components as an optimized and unified product. Intel® XSLT Accelerator for Java* Environments was previously released as a standalone library.

Compatibility

Intel® XML Software Suite 1.0 is compatible with the following industry standard interfaces:

- Java API for XML Processing (JAXP) 1.3 and 1.4
- Simple API for XML (SAX) 2.0.2 Core and partially with SAX 2.0.2 extensions and helpers, see Known Limitations
- Document Object Model (DOM) Level 2 Core

Conformance

Intel® XML Software Suite 1.0 conforms to the following W3C* XML recommendations:

- XML 1.0
- Namespaces in XML 1.0
- XML Schema 1.0

- XSLT 1.0
- XPath 1.0

Conformance is measured using the publicly available W3C* and OASIS test suites, indicating a superior 98% pass rate. Full details may be obtained by contacting your technical representative.

Upgrade Path

If you installed Intel® XSLT Accelerator 1.0 or 1.1, please remove it before installing Intel® XML Software Suite 1.0. Otherwise, to avoid continuing to use prior products, adjust the environment variable CLASSPATH to make sure that `intel-xss.jar` appears before `intel-xslt*.jar`.

This is the first release for all other components in the suite.

Evaluation Limitation

Please note that a free evaluation version of the product is available, which installs a subset of component libraries on a system. This version will expire after the expiration of the evaluation license.

Related Products and Services

Information on Intel software development products is available at http://www.intel.com/software/products. Some of the related products include:

- Intel® XML Software Suite 1.0 is also available with a C/C++ API. It can be obtained in the same manner as the product for Java* environments.
- The Intel® Software College provides training for developers on leading-edge software development technologies. Training consists of online and instructor-led courses covering all Intel architectures, platforms, tools, and technologies.
- The Intel® C++ and Fortran Compilers are an important part of making software run at top speeds with full multithreading support for the latest Intel IA-32 (including 64-bit architectural extensions) and Itanium® processors.
- The VTune(TM) Performance Analyzer enables you to evaluate how your application is utilizing the CPU and helps you determine if there are modifications you can make to improve your application's performance.
- The Intel® Performance Library Suite provides a set of routines optimized for various Intel processors. The Intel® Math Kernel Library provides developers of scientific and engineering software with a set of linear algebra, fast Fourier transforms and vector math functions optimized for the latest Intel Pentium® and Intel Itanium processors. The Intel® Integrated Performance Primitives consists of cross-platform tools to build high performance software for several Intel architectures and several operating systems.
- The Intel® Threading Analysis Tools including the Intel® Thread Checker, Intel® Thread Profiler and Intel® Threading Building Blocks are the fastest way to thread your application correctly and unleash its true performance on Intel® multi-core processor systems.

- The Intel® Cluster Tools including the Intel® Cluster Toolkit for Linux*, the Intel® MPI Library for Linux*, the Intel® Trace Analyzer and Collector for Linux*, the Intel® Math Kernel Library Cluster Edition for Windows* and Linux* and the Cluster OpenMP for Intel® Compilers help to create, analyze, and optimize high-performance applications on clusters of Intel® processor-based systems.

What's New

Resolved Issues

The following issues in the Beta release of this product have been resolved.

Bug Number	Description
579	With a JDK* 1.5 on IA-32 architectures, when a user application uses Java* DOM parser or XPath through DOM repeatedly, memory may not be released promptly by the JVM garbage collector, and an out-of-memory exception may be thrown. As a workaround, use JDK* 1.6, run your code on the Intel® 64 architecture, or periodically call `system.gc()`.
1620	Intel® XML Schema Accelerator does not support validation for elements with "fixed" attribute and the type of this element is Union or List.
1697	When running the SPEC JVM* `xmltransform` test, an out-of-memory exception may be thrown when handling large result tree fragmentations.
1709	Intel® XML Schema Accelerator considers the string following `[a-zA-Z0-9-]*` as a valid language string. In fact, the specification requires the language to follow the pattern `[a-zA-Z]{1,8}(-[a-zA-Z0-9]{0,8})*`. So, Intel XML Schema Accelerator takes a loose restriction on "language" string validation.
1734	Intel® XML Schema Accelerator does not check a requirement in specification: "no element has more than one attribute of type ID".
2189	Currently, when two elements or attributes belong to two disjoint atomic types according to W3C Schema specification on simple data type section, the internal implementation might trigger an error message.
2243	When user code calls `validator.setFeature("http://apache.org/xml/features/honour-all-schemaLocations",true)`, not all features take effect.
2288	On Windows* OS, when using Intel® XSLT Accelerator, XSL transformation does not support a relative path well in XSLT document, such as "../../.." or "\", etc. Please use an absolute file path or the file name under current directory in an XSLT file.
2343	If a XSL stylesheet contains `attributeset` instructions and transformation is repeated hundreds of times, an internal exception may be thrown.

2344	Calculation of nested global variables with depth of 3 or more may cause incorrect results when the compiled stylesheet is used for hundreds of times.
2395	Intel® XML Schema Accelerator cannot resolve URI filenames longer than 256 bytes. Please use shorter path and file names.
2456	Using EXSLT functions may get the result in different formats from Apache* Xalan* results, such as different precision or notations.
2475	Intel® XPath Accelerator returns NULL when the value of the given variable is NULL, instead of throwing an exception. As a workaround, user applications should check the null pointer.
2481	If a XSL stylesheet contains external functions `str:split`, `str:tokenlize` and transformation is repeated hundreds of times, an internal exception may be thrown.
2486	The SAX parser does not process exceptions raised in `resolveEntity()` if user uses it.
2496	When using a badly formed XSL stylesheet or a wrong statement in XSLT, user code may suffer segment fault instead of an expected exception. Use valid XSLT stylesheets, which is more meaningful.
2511	Intel XML Software Suite for Java* Environments supports five major encodings: UTF-8, UTF-16, UTF-32, ASCII, ISO-8859-1.
2515	If an XML file contains a rarely used 4-byte UTF-8 encoding, Intel XML Parsing Accelerator for Java* Environments cannot recognize it.
2552	When an XML file contains a Japanese character but the Japanese encoding is not declared, the DOM parser would fail to parse the content with a UTF-8 decoding error. Suggest using encodings supported by the parser.
2561	Intel® XPath Accelerator does not completely enumerate all types when comparing two values. If they are of different types, the comparison result might be wrong.
2570	The SAX parser ignores the SAX feature `http://xml.org/sax/features/namespace-prefixes` and sets the feature to FALSE by default. Suggest avoiding this feature or trying to keep the namespace information from the SAX callback API `startPrefixMapping()` defined in `ContentHandler`.
2573	Parallel acceleration for XSL transformation is contending with Java* threads, probably causing random failures or performance degradation. Suggest not enabling it in `config.xml`; the feature is off by default.
2574	When a path name contains spaces, Java* will convert the space into `%20`. Some input source functions do not support namespace conversion, so `%20` will cause that file not to be found when using Java* APIs for schema validation.
2576	On Linux* OS running on the Intel® 64 architecture, using EXSLT function `str:tokenize()` may cause signal 11 errors.

2599	If you feed a special user-defined input stream into Intel® Schema Accelerator and intentionally do not fill enough data in the buffer of the read function, the Java* virtual machine might crash after calling the schema validator API for many times.

System Requirements

Intel® XML Software Suite runs on Windows* and Linux* operating systems on IA-32 and Intel® 64 architectures. The package contains Java* jar files and native dynamic libraries for each environment. The user may select which to use based on the application. For Linux* OS on Intel 64 architectures, two libraries are shipped that support the gcc compiler 3.3.3 or 3.4.2 and above respectively. For details, please consult the Installation Guide. For a list of supported platforms, please consult the Installation Guide distributed with the product.

The library runs best on a system based on either the Intel® Xeon® processor series, or the Intel® Pentium 4 processor. At least 1GB of RAM is recommended for optimal performance.

The following Java* Runtime Environments (JRE*) are recommended:

- Sun J2SE* 5 or 6 (Windows*/Linux* OS) http://java.sun.com/j2se/
- BEA JRockit* 5 or 6 (Windows*/Linux* OS - 32 bit) http://dev2dev.bea.com/jrockit/versions.html
- IBM JDK 5 or SDK for Java 6 (Linux* OS only) http://www.ibm.com/developerworks/java/

Documentation

For a complete list of documents distributed with Intel® XML Software Suite, consult the Documentation Index.

Known Limitations

The current version of Intel® XML Software Suite has several limitations that are grouped by component.

Intel® XML Parsing Accelerator

SAX 2.0.2 Core Partial Compatibility

- In the `javax.xml.parsers` package, the following methods are not supported:
  - `SAXParser::getParser()`
  - `SAXParserFactory::setXIncludeAware()`
  - `SAXParserFactory::setNamespaceAware(false)`, though `setNamespaceAware(true)` is supported
- In the event handler interface, the following methods are not supported:
  - `ContentHandler::ignorableWhitespace()`
  - `Locator::getColumnNumber()`

- Classes `DocumentHandler` and `EntityResolver2` are not implemented.
- The interface Parser in the package `org.xml.sax` is not supported.
- The following SAX features set by calling `SAXParserFactory::setFeature()` are not supported:
  - `xml-1.1`
  - `use-entity-resolver2`
  - `unicode-normalization-checking`
  - `lexical-handler/parameter-entities`
- SAX properties `dom-node` and `xml-string` are not supported.

SAX 2.0.2 Extensions and Helpers Partial Compatibility

- In the `org.xml.sax.ext` package, the `Locator2` and `EntityResolver2` classes are not supported.
- In the `org.xml.sax.helper` package, the `XMLReaderAdapter` and `ParserFactory` classes are not supported.

DOM Limitations

- In class `DocumentBuilderFactory` of the JAXP interface, methods `isNamespace()`, `isIgnoringComments()` and `isIgnoringElementContentWhitespace()` are not supported.
- Child nodes in `Entity` and JAXP `EntityReference` classes cannot be retrieved. The value of those nodes is not parsed as XML content.
- DTD validation is not supported.
- `XInculde` is not supported.
- Classes `ErrorHandler` and `EntityResolver` are not supported.

Intel® XML Schema Accelerator

The current version of Intel® XML Schema Accelerator has the following limitations:

- PSVI (post-schema-validation infoset) is not supported.
- Classes `ValidatorHandlerImpl` and `TypeInfoProvider` are not supported.
- Methods `SchemaImpl::newValidatorHandler()` and `ValidatorImpl::Validate (Source source, Result result)` are not supported because PSVI is not supported.
- Class `SchemaFactoryImpl` class limitations:
  - in method `setFeature()`, the feature `XMLConstants.FEATURE_SECURE_PROCESSING` is not supported.
  - in method `isSchemaLanguageSupported()`, only W3C* Schema language supported.
  - in method `newSchema()`, processing large files is not supported if the Source is from a 3rd party.

Intel® XSLT Accelerator

Encoding

The IBM-1208 and EBCDIC-Latin-0 encoding names in the XML declaration of stylesheets are not supported in this release. IBM-1208 is the alias of UTF-8 that is supported, and EBCDIC-Latin-0 is the alias of IBM1047 that is supported.

The product supports external entities only in UTF-8 and UTF-16 encoding; supplying an external entity in a different encoding reports an error.

Identity Transformation

The output encoding of identity transformation is fixed to UTF-8.

Threading

The library is validated with about 150 application threads to successfully execute transformation and show adequate response. The most performance-efficient threading configuration is when the thread number equals the number of logical CPUs. Currently the maximum concurrent thread number is set to 30.

In highly multi-threaded systems, creating a new thread for each transformation can cause an out-of-memory condition. To avoid this situation, re-use existing threads by means of a thread pool mechanism. Alternatively, you can create the new Transformer instance using a single static Templates object, not a Factory object. This problem does not occur in JRE* 1.6.0.

EXSLT

Intel® XML Software Suite provides a compliant implementation of the following EXSLT extension modules:

- Common functions
- Dates and times
- Math
- Sets
- Strings

The EXSLT specification, http://www.exslt.org, defines Core and Other functions for each module. Only Core functions are required for compliance. For a listing of the Other functions which may be provided in this product, please refer to the user guide. Some of these are declared to be unstable by the specification and should be used with caution. As an example, the number type used in the EXSLT specification follows the definition in XPath 1.0, which is a double-precision 64-bit format IEEE 754 value. For the `date:duration()` function this limits precision. The result returned by `date:duration()` may not be accurate enough to hold all significant digits.

Redirect element

Redirect element output is UTF-8 only.

Other

The following transformer output properties are ignored:

- `transformer.setOutputProperty(OutputKeys.MEDIA_TYPE, media_type_property)`

- `transformer.setOutputProperty(OutputKeys.VERSION, version_property)`

Intel® XPath Accelerator

Read-only DOM
Updateable DOM is not supported. The DOM source or DOM node passed as input to XPath or returned by an external function must be read-only.

Context nodeset
To comply with W3C* XPath 1.0 recommendation and with JAXP 1.4, the context for an XPath expression cannot be a node set.

Type Limitation
Five types are supported: DOM node, node list, string, double, and Boolean. Objects not belonging to these types cannot act as context, variable values or arguments/return values of external functions.

Evaluation of 3rd party DOM tree
Performance is reduced when 3rd party DOM source is passed as input to XPath, due to the need to convert between two data models.

Namespace axis compatibility
For performance reasons, namespace nodes of an element are not copied to its descendants. The expressions querying in-scope namespace nodes of an element may return incorrect results, and expressions with multiple namespace queries in a single expression will get undefined results.

For example, querying the following XML document can produce incorrect results:

```
<a xmlns:ns1="http://www.my.com">
<b/>
</a>
```

- Query `/a/b/namespace::ns1` returns the correct result `ns1`, but this namespace node is from element `a`.
- Query `/a/b/namespace::ns1/..` returns incorrect `a`, and the correct answer is `b`.
- Query `count(//namespace::*)` returns the wrong number 2, the correct answer is 4 including the default namespace nodes.

This behavior is compatible with Apache* Xalan* Java* 2.7.0.

Thread Safety
The `XPathFactory`, `XPath` and `XPathExpression` classes are not expected to be thread-safe. If a programmer is creating a multi-threading application, they should make sure that only one thread has access to any given `XPathFactory`, `XPath` or `XPathExpression` instance.

Known Issues

ID	Description

719	Intel XSLT Accelerator: The attribute specified on the literal result element does not override an attribute specified in the attribute set.
1230	Intel XSLT Accelerator: The function `xsl:number` may generate an incorrect alphabetic sequence for Greek numbers.
1533	Intel XSLT Accelerator: When an XML document is transformed to `DOMResult`, the left angle bracket, the ampersand, and other delimiters defined in the XML specification are always escaped in spite of the value of `disable-output-escaping`.
1934	Uninstall limitation for Linux* OS: In certain cases, the uninstall procedure does not remove installation folders completely and leaves empty folder(s). The issue occurs when the installation procedure created two levels of new folders, for example: install into `/intel/xslt/1.1`, when `/intel`, `/xslt` and `/1.1` did not exist before the install.
2893	Intel XML Schema Accelerator: The implementation does not allow that a NULL value is returned from `LSResourceResolver#resolveResource()`. As a workaround, check the return value in `LSResourceResolver#resolveResource()` and do not return NULL.
2899	Intel XSLT Accelerator: After each transformation, Intel XSLT Accelerator invokes the `close()` method on the byte streams associated with input source and output result to avoid them being left un-closed which might cause the system ran out of file handles resources. User's application may not rely on this behavior.
2901	Intel XSLT Accelerator: In very rare cases, an incorrect handling in UTF-8 to UTF-16 conversion code in Intel XSLT Accelerator may cause abnormal exception to be thrown and transformation stopped when input byte streams contain character entity references.
2907	Intel XSLT Accelerator: Because running in the parallel XSL transformation mode requires creating extra resources, more memory needs to be allocated, which may cause an out-of-memory error in the Java* environment. As a workaround, reduce the number of transformation threads or, if possible, call the `System.gc()` method to release more memory for XSL transformation purposes.
2911	Intel XML Parsing Accelerator: When a node with the CLEAN status is appended to a newly created `DocumentFragement` object, `NullPointException` might be raised when the `DocumentFragement` tries to modify the relationship of the appended node.
2921	Intel XSLT Accelerator: On Intel® 64 platforms, when a reference of a Java* object returned by a user-defined function is assigned to a variable in XSLT, the string value of the XSLT variable may be incorrect.

2949	Intel XML Schema Accelerator: the parser will report an error if an XML file contains an external DTD file with location specified by HTTP URL. The parsing error is due to the failure to resolve HTTP link and, subsequently, inability to retrieve DTD content.

Technical Support

To receive technical support for the tools provided in this product and technical information including FAQ's and product updates, you need to register for an Intel Premier Support account at the Registration Center.

To register for an account, please visit the Intel® Registration Center web site at http://www.intel.com/software/products/registrationcenter/index.htm. If you have forgotten your password, please email a request to: quadsupport@mailbox.intel.com. Please do not email your technical issue to this email address.

Submitting Issues

If you have questions or problems getting started with Intel® XML Software Suite please contact support at https://registrationcenter.intel.com/support/.

Note:

Please notify your support representative prior to submitting source code where access needs to be restricted to certain countries to determine if this request can be accommodated.

To submit an issue via the Intel® Premier Support website, please perform the following steps:

1. Ensure that Java* and JavaScript* are enabled in your browser.
2. Go to http://premier.intel.com.
3. Type in your Login and Password. Both are case-sensitive.
4. Once you have logged in, the left channel will always have links to the various features of the tool.
5. Submit your issue by following these steps:
    1. Click **Submit Issues** in the left channel.
    2. Select the product type from the **Product Type** dropdown box. For Intel® Software Products, choose **Development Environment** (tools, SDV, EAP) as the product type.
       Please note that Intel Premier Support product type is for reporting problems with the Premier Support site itself and not for product support.
    3. Select the product, for which you want to submit the issue from the **Product Name** dropdown box.
    4. Enter a headline-type description of the problem or question in the **Issue Title** box.
    5. Enter a detailed question, or a detailed problem description in the **Question** box. See the guidelines after this list for requirements applicable to a problem statement.
    6. Select **Request Type** from the dropdown box, such as, Documentation

Error, Feature Request, or Problem Report.

7. Complete the submission process by clicking **Submit Issue** or **Submit Issue / Upload Files**, if you have a file to attach with the issue, such as a test case, or a screenshot.
   After submitting the issue, you will get an issue number that will enable you to track your problem.

Please follow these guidelines when forming your problem report or product suggestion:

1. Describe your difficulty or suggestion:
   For problem reports, please be as specific as possible, so that the problem can be reproduced. Please include a small test case if possible. Think about what you would need if you were trying to understand the other person's environment to help them solve a problem.
2. Describe your system configuration information:
   This description must contain sufficient information for engineering to characterize the problem, such as a description of the hardware and operating system used, versions of all software related to the problem, and an accurate description of the steps needed to reproduce the problem. Be sure to include everything that may be relevant to your concern.

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and before placing your product order.

Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's Web Site.

Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/products/processor_number for details.

Third-Party Attributions

This product includes software developed at the Apache Software Foundation (http://www.apache.org/).

Portions of this software were originally based on the following:

- dtoa module, http://src.opensolaris.org/source/xref//sfw/usr/src/cmd/gcc/gcc-3.4.3/libjava/java/lang/dtoa.c
- Google Open Source threading tools, http://sourceforge.net/projects/goog-perftools
- W3C DOM Level 2, (c) 1994-2000, World Wide Web Consortium, http://www.w3.org/
- Xalan-J
  - software copyright (c) 1999-2002, Lotus Development Corporation., http://www.lotus.com/.
  - software copyright (c) 2001-2002, Sun Microsystems., http://www.sun.com/.
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- Xerces-C, - software copyright (c) 1999, IBM Corporation., http://www.ibm.com/.
- Xerces-J

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As referenced in the End User License Agreement, attribution requires, at a minimum, prominently displaying the full Intel product name (e.g. "Intel® XML Software Suite 1.0 for Java* Environments") and providing a link/URL to the Intel XML products homepage http://www.intel.com/software/xml in both the product documentation and the website.

* Other names and brands may be claimed as the property of others.