

# Product Description for Saxon-EE-V (Enterprise Edition, Validation Package)



Version 9.6 released Oct 2014

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This document lists the features provided by Saxon 9.6 Enterprise Edition, Validation Package (Saxon-EE-V) - a license that enables all the facilities of Saxon Professional Edition, plus XSD schema validation; it does not include Schema Aware XSLT or XQuery.

This document does not form part of any contract unless expressly incorporated.

## Language Support

### 1. XSLT (Transformation Processing)

#### 1.1 XSLT 2.0 (Basic)

Provides a basic XSLT 2.0 processor as defined in section 21 of the XSLT 2.0 Recommendation: it is a conformance level that includes all features of the language other than those that involve schema processing.

For more details see: [XSLT 2.0 conformance](#).

Relevant W3C Specification: [XSLT 2.0 Recommendation \(23 January 2007\)](#).

#### 1.2 XSLT 3.0 (Basic)

Provides selected features from the XSLT 3.0 specification - including try/catch, evaluate, iterate, accumulators, maps, named modes, content value templates, and extended patterns, as well as XPath 3.0 features such as higher-order functions; with the notable exceptions of schema-awareness, streaming, and packages.

XSLT 3.0 is currently a working draft and is subject to change.

For more details see: [XSLT 3.0 conformance](#).

Relevant W3C Specification: [XSLT 3.0 Working Draft \(2 October 2014\)](#).

### 2. XPath

#### 2.1 XPath 2.0 (Schema Aware)

Provides all XPath 2.0 features, including those that require schema processing: specifically, any use of source documents with type annotations, and any use of XPath expressions that contain the names of schema components such as element declarations and types, other than the built-in types.

For more details see: [XPath 2.0 conformance](#).

Relevant W3C Specification: [XPath 2.0 Recommendation \(14 December 2010\)](#).

## 2.2 XPath 3.0 (Schema Aware)

Provides all XPath 3.0 features. This includes features that require schema processing - specifically, any use of source documents with type annotations, and any use of XPath expressions that contain the names of schema components such as element declarations and types, other than the built-in types; and features that require higher-order functions - specifically, the ability to use functions as values, including dynamic function calls, inline functions, partial function application, and specific higher-order functions such as `fn:filter` and `fn:fold-left`. Saxon XPath 3.0 processing also allows selected XPath 3.1 features to be used: the main feature being the implementation of maps.

For more details see: [XPath 3.0 conformance](#).

Relevant W3C Specification: [XPath 3.0 Recommendation \(08 April 2014\)](#).

## 3. XQuery

### 3.1 XQuery 1.0 (Basic)

Provides the following features, as defined in section 5 of the XQuery 1.0 specification: Minimal Conformance; Full Axis Feature; Module Feature; and Serialization Feature.

For more details see: [XQuery 1.0 conformance](#).

Relevant W3C Specification: [XQuery 1.0 Recommendation \(14 December 2010\)](#).

### 3.2 XQuery 3.0 (Higher-Order Functions)

Provides the following features, as defined in section 5 of the XQuery 3.0 specification: Minimal Conformance (including try/catch and "group-by"); Module Feature; Serialization Feature; and Higher-Order Function Feature.

For more details see: [XQuery 3.0 conformance](#).

Relevant W3C Specification: [XQuery 3.0 Recommendation \(08 April 2014\)](#).

## 4. XSD (XML Schema Validation)

### 4.1 XML Schema 1.0 Validation

Saxon includes a complete implementation of XML Schema 1.0. This provides the ability to process XSD 1.0 schema documents and use them to validate instance documents. Note that Saxon does not expose the full PSVI, as required by the conformance rules in the XSD 1.0 Recommendation.

For more details see: [XML Schema 1.0 conformance](#).

Relevant W3C Specification: [XML Schema 1.0 Validation Recommendation \(28 October 2004\)](#).

## 4.2 XML Schema 1.1 Validation

Saxon includes a complete implementation of XML Schema 1.1. This provides the ability to process schema documents that use the new features of XSD 1.1, and use them to validate instance documents. More specifically, in the language of section 2.4 of the specification, it is a General-Purpose Web-Aware Validator.

For more details see: [XML Schema 1.1 conformance](#).

Relevant W3C Specification: [XML Schema 1.1 Validation Recommendation \(05 April 2012\)](#).

## Performance Features

### 5. Binary XML

Saxon's PTree format is a serialized binary representation of Saxon's internal tree format. It occupies around the same amount of disk space as the original XML, but is faster to serialize and faster to reparse.

For more details see: [The PTree file format](#).

### 6. Byte code generation

Allows code generation for XSLT, XQuery, and XPath. Available for both Java and .NET platforms, typically giving a 25% performance boost (at the cost of increased compile time).

### 7. Multi-threading (XPath)

Takes advantage of multi-core CPUs by providing automatic parallel execution of the `collection()` function.

### 8. Optimizer (Basic)

The Basic optimizer provided with all Saxon editions provides a wide range of static and dynamic optimizations including full pipelining of list operations, lazy evaluation of variables, elimination of redundant sorting operations, etc.

## 9. Reading W3C schemas and DTDs

The W3C web server now routinely rejects requests for commonly-referenced files such as the DTD for XHTML, causing parsing failures. In response to this, Saxon now includes copies of these documents within the issued JAR file, and recognizes requests for these documents, satisfying the request using the local copy.

## Extensibility

### 10. EXSLT and EXPath extension functions

A selection of EXSLT and EXPath extension functions are provided (in the modules Common, Dates and Times, Math, Random, and Sets; and Archive, Binary, and File, respectively), as listed in the documentation.

For more details see: [EXSLT extensions](#), [EXPath extensions](#).

### 11. Extensibility using custom classes

Ability to write extension functions (for use in XSLT, XQuery, or XPath) by implementing a Saxon-defined interface and registering the implementation with the Saxon Configuration.

For more details see: [Extensibility](#).

### 12. Extensibility using reflexion

Ability to access existing Java or .NET methods dynamically and invoke them as extension functions by means of dynamic loading and reflexion.

For more details see: [Extensibility](#).

### 13. Saxon extension functions (Advanced)

Extension functions, as listed in the documentation, in the Saxon namespace. The Advanced level includes those that depend on streaming. Many Saxon extension functions have over the years become superseded by facilities in the W3C standards or in EXPath libraries, but some such as the ability to access the line number of an element remain available only through this library.

For more details see: [Saxon extension functions](#).

### 14. SQL extension

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XSLT extension instructions providing access to SQL databases. Available on the Java platform only (not .NET).

For more details see: [Saxon SQL extension](#).

## 15. XSLT element extensibility

Ability to implement XSLT extension instructions by implementing a Saxon-defined interface and registering the implementation with the Saxon Configuration.

For more details see: [Writing XSLT extension instructions](#).

## Localization

### 16. Localization (Advanced)

All the interfaces for developers are in English, but there is some localization support in transformation to enable dates and numbers to be formatted and collations performed in other languages (so end-user output can be localized, but developer output cannot). The Advanced level includes number and date formatting for a variety of languages, as well as support for the Unicode Collation Algorithm using features from the [ICU - International Components for Unicode](#). The Advanced level also includes APIs which allow support for additional languages to be developed.

For more details see: [Unicode collation](#), [Localizing numbers and dates](#).

## Interfaces and APIs

### 17. JAXP API

Implementations of the standard JAXP interfaces for XSLT transformation, XPath evaluation, and XML Schema validation. Applies to the Java platform only.

For more details see: [JAXP API conformance](#).

### 18. S9API API

Saxon's native interface for processing XSLT, XQuery, XPath, and XML Schema. Available in slightly different forms on the Java and .NET platforms.

### 19. Support for DOM

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Ability to use a DOM (Document Object Model) for the input and output of transformations and queries. On the .NET platform this includes the System.XML DOM classes.

For more details see: [Object models](#).

### 20. Support for JDOM, JDOM2, AXIOM, DOM4J, and XOM

Ability to use a JDOM, JDOM2, AXIOM, DOM4J, and XOM for the input or output of transformations and queries. Applies to the Java platform only. Note that the code for these interfaces is open source and can be compiled to work with Saxon-HE, but it does not come packaged with the Saxon-HE download.

For more details see: [Object models](#).

### 21. XQJ API

Implementations of the standard XQJ interfaces for XQuery processing. Applies to the Java platform only. Note that the XQJ interfaces have been removed from the standard download of Saxon-HE because the Oracle specification license is not open source, but they are available on request.

For more details see: [XQJ API conformance](#).