| | [**Overview**](http://docs.google.com/overview-summary.html) | **Package** | Class | [**Use**](http://docs.google.com/package-use.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
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## Package javax.xml.xpath

This package provides an *object-model neutral* API for the evaluation of XPath expressions and access to the evaluation environment.

**See:**

[**Description**](#3znysh7)

| **Interface Summary** | |
| --- | --- |
| [**XPath**](http://docs.google.com/javax/xml/xpath/XPath.html) | XPath provides access to the XPath evaluation environment and expressions. |
| [**XPathExpression**](http://docs.google.com/javax/xml/xpath/XPathExpression.html) | XPathExpression provides access to compiled XPath expressions. |
| [**XPathFunction**](http://docs.google.com/javax/xml/xpath/XPathFunction.html) | XPathFunction provides access to XPath functions. |
| [**XPathFunctionResolver**](http://docs.google.com/javax/xml/xpath/XPathFunctionResolver.html) | XPathFunctionResolver provides access to the set of user defined XPathFunctions. |
| [**XPathVariableResolver**](http://docs.google.com/javax/xml/xpath/XPathVariableResolver.html) | XPathVariableResolver provides access to the set of user defined XPath variables. |

| **Class Summary** | |
| --- | --- |
| [**XPathConstants**](http://docs.google.com/javax/xml/xpath/XPathConstants.html) | XPath constants. |
| [**XPathFactory**](http://docs.google.com/javax/xml/xpath/XPathFactory.html) | An XPathFactory instance can be used to create [XPath](http://docs.google.com/javax/xml/xpath/XPath.html) objects. |

| **Exception Summary** | |
| --- | --- |
| [**XPathException**](http://docs.google.com/javax/xml/xpath/XPathException.html) | XPathException represents a generic XPath exception. |
| [**XPathExpressionException**](http://docs.google.com/javax/xml/xpath/XPathExpressionException.html) | XPathExpressionException represents an error in an XPath expression. |
| [**XPathFactoryConfigurationException**](http://docs.google.com/javax/xml/xpath/XPathFactoryConfigurationException.html) | XPathFactoryConfigurationException represents a configuration error in a XPathFactory environment. |
| [**XPathFunctionException**](http://docs.google.com/javax/xml/xpath/XPathFunctionException.html) | XPathFunctionException represents an error with an XPath function. |

## Package javax.xml.xpath Description

This package provides an *object-model neutral* API for the evaluation of XPath expressions and access to the evaluation environment.

The following XML standards apply:

* [XML Path Language (XPath) Version 1.0](http://www.w3.org/TR/xpath)

## XPath Overview

The XPath language provides a simple, concise syntax for selecting nodes from an XML document. XPath also provides rules for converting a node in an XML document object model (DOM) tree to a boolean, double, or string value. XPath is a W3C-defined language and an official W3C recommendation; the W3C hosts the XML Path Language (XPath) Version 1.0 specification.

XPath started in life in 1999 as a supplement to the XSLT and XPointer languages, but has more recently become popular as a stand-alone language, as a single XPath expression can be used to replace many lines of DOM API code.

### XPath Expressions

An XPath *expression* is composed of a *location path* and one or more optional *predicates*. Expressions may also include XPath variables.

The following is an example of a simple XPath expression:

/foo/bar

This example would select the <bar> element in an XML document such as the following:

<foo>  
<bar/>  
</foo>

The expression /foo/bar is an example of a location path. While XPath location paths resemble Unix-style file system paths, an important distinction is that XPath expressions return *all* nodes that match the expression. Thus, all three <bar> elements in the following document would be selected by the /foo/bar expression:

<foo>  
<bar/>  
<bar/>  
<bar/>  
</foo>

A special location path operator, //, selects nodes at any depth in an XML document. The following example selects all <bar> elements regardless of their location in a document:

//bar

A wildcard operator, \*, causes all element nodes to be selected. The following example selects all children elements of a <foo> element:

/foo/\*

In addition to element nodes, XPath location paths may also address attribute nodes, text nodes, comment nodes, and processing instruction nodes. The following table gives examples of location paths for each of these node types:

| Location Path | Description |
| --- | --- |
| /foo/bar/**@id** | Selects the attribute id of the <bar> element |
| /foo/bar/**text()** | Selects the text nodes of the <bar> element. No distinction is made between escaped and non-escaped character data. |
| /foo/bar/**comment()** | Selects all comment nodes contained in the <bar> element. |
| /foo/bar/**processing-instruction()** | Selects all processing-instruction nodes contained in the <bar> element. |

Predicates allow for refining the nodes selected by an XPath location path. Predicates are of the form [*expression*]. The following example selects all <foo> elements that contain an include attribute with the value of true:

//foo[@include='true']

Predicates may be appended to each other to further refine an expression, such as:

//foo[@include='true'][@mode='bar']

### Using the XPath API

The following example demonstrates using the XPath API to select one or more nodes from an XML document:

XPath xpath = XPathFactory.newInstance().newXPath();  
String expression = "/widgets/widget";  
InputSource inputSource = new InputSource("widgets.xml");  
NodeList nodes = (NodeList) xpath.evaluate(expression, inputSource, XPathConstants.NODESET);

### XPath Expressions and Types

While XPath expressions select nodes in the XML document, the XPath API allows the selected nodes to be coalesced into one of the following other data types:

* Boolean
* Number
* String

The desired return type is specified by a [QName](http://docs.google.com/javax/xml/namespace/QName.html) parameter in method call used to evaluate the expression, which is either a call to XPathExpression.evalute(...) or to one of the XPath.evaluate(...) convenience methods. The allowed QName values are specified as constants in the [XPathConstants](http://docs.google.com/javax/xml/xpath/XPathConstants.html) class; they are:

* [XPathConstants.NODESET](http://docs.google.com/javax/xml/xpath/XPathConstants.html#NODESET)
* [XPathConstants.NODE](http://docs.google.com/javax/xml/xpath/XPathConstants.html#NODE)
* [XPathConstants.STRING](http://docs.google.com/javax/xml/xpath/XPathConstants.html#STRING)
* [XPathConstants.BOOLEAN](http://docs.google.com/javax/xml/xpath/XPathConstants.html#BOOLEAN)
* [XPathConstants.NUMBER](http://docs.google.com/javax/xml/xpath/XPathConstants.html#NUMBER)

When a Boolean return type is requested, Boolean.TRUE is returned if one or more nodes were selected; otherwise, Boolean.FALSE is returned.

The String return type is a convenience for retrieving the character data from a text node, attribute node, comment node, or processing-instruction node. When used on an element node, the value of the child text nodes is returned.

The Number return type attempts to coalesce the text of a node to a double data type.

### XPath Context

XPath location paths may be relative to a particular node in the document, known as the context. Consider the following XML document:

<widgets>  
<widget>  
<manufacturer/>  
<dimensions/>  
</widget>  
</widgets>

The <widget> element can be selected with the following XPath API code:

// parse the XML as a W3C Document  
DocumentBuilder builder = DocumentBuilderFactory.newInstance().newDocumentBuilder();  
Document document = builder.parse(new File("/widgets.xml"));  
  
XPath xpath = XPathFactory.newInstance().newXPath();  
String expression = "/widgets/widget";  
Node widgetNode = (Node) xpath.evaluate(expression, document, XPathConstants.NODE);

With a reference to the <widget> element, a relative XPath expression can now written to select the <manufacturer> child element:

XPath xpath = XPathFactory.newInstance().newXPath();  
**String expression = "manufacturer";**  
Node manufacturerNode = (Node) xpath.evaluate(expression, **widgetNode**, XPathConstants.NODE);

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* Author [Jeff Suttor](mailto:Jeff.Suttor@Sun.com)
* See [XML Path Language (XPath) Version 1.0](http://www.w3.org/TR/xpath)
* Since 1.5

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[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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