



Version 2.5

A professional XML editor for Windows.

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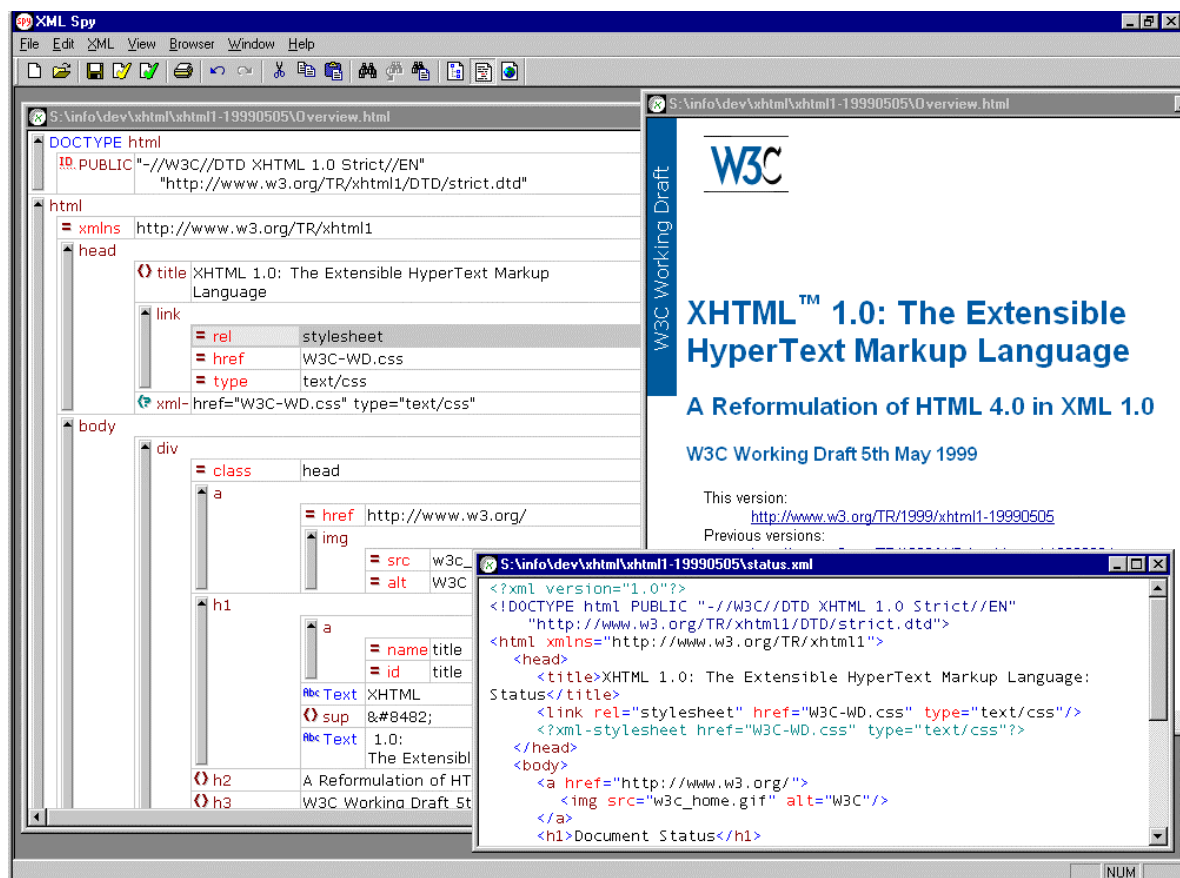
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1. Introduction

XML is revolutionizing the way we handle information - both on the Internet and for business data exchange applications. The complexity and vast capabilities of XML call for a new generation of tools that provide multiple views on an XML document and offer user-friendly editing capabilities to hide the underlying complexity from the casual user, yet enable the advanced user to perform the most complicated operations with ease.

XML Spy is a professional *validating* XML editor that supports three integrated views on XML documents:

- The **Enhanced Grid View** is what made XML Spy versions 1.4 and 2.0 so popular with our customers. It shows the entire structure of an XML document in a hierarchical presentation that allows *in-place* editing of all elements.
- The new **Source View** gives you the option to view the XML document in source form with customizable syntax-coloring and allows you to directly edit the source for low-level tasks.
- The integrated **Browser View** uses Internet Explorer 5 to render your XML document inside XML Spy. This view fully supports CSS and XSL and can be displayed in a separate window so that you can keep one of the above editing views and the browser view side-by-side for maximum editing comfort.





With this three-view architecture, XML Spy is perfectly suited for IT professionals, web designers, content authors, database administrators and software developers alike. It offers a huge score of editing, find/replace, and printing options as well as advanced drag&drop support.

Unlike the many Java-based tools available today, XML Spy is written entirely in C++ and is therefore much faster and better integrated with the Windows environment.

In addition to the new three-view architecture, XML Spy 2.5 contains a series of other new features that we have added in response to customer feedback:

- DTD-Validation
- Improved Parser:
 - better Error Messages for mal-formed or invalid documents
 - optimized resulting in huge speed gain when opening large files
 - up to 3 times smaller memory requirements when opening large files
- Attribute preview for collapsed elements in enhanced grid
- New popup area for error messages and well-formedness check
- Can now optionally save non-wellformed or invalid files for temporarily suspending your work
- Settings dialog has been reorganized into a tabbed dialog:
 - improved configuration for fonts and styles
 - open file in source-view or grid-view
 - open grid-view without tree
 - activate attribute preview in enhanced grid
 - automatically "Expand All" when opening grid-view
 - automatically apply "Optimum Widhts" when opening grid-view
 - save files without the "Edited with..." comment (licensed users only)
 - save empty elements as <E/> or <E></E>
 - activate and customize syntax coloring
 - live updating of syntax coloring while typing
 - automatically validate file upon open/save
 - open browser view in a separate window
- Support for RDF (Resource Description Framework) files
- Additional Encoding support (US-ASCII, EBCDIC)
- Takes advantage of new RichEdit 3.0 (available in Windows 2000 Beta 3):
 - more advanced undo functionality
 - faster display updates
 - better multi-language and foreign writing system support

XML Spy 2.5 also builds on the huge international success of version 2.0 and continues to fully support Unicode (UTF-7, UTF-8, ISO-10646-UCS-2, ISO-10646-UCS-4) and all major character-set encodings (ISO-8859-x, EUC-JP, ISO-2022, Shift-JIS, Big5, GB2312, TIS).

XML Spy is available via electronic distribution: you may download and evaluate the software for a period of up to 30 days free of charge. If you would like to continue using the program after the evaluation period, you have to purchase a license from Icon (for further details please refer to the separate Electronic Distribution Notice at the end of this document).

For information on multiple users per company, site-license issues and educational discounts, please contact us via e-mail at sales@xmlspy.com.



2. XML Overview

The Extensible Markup Language (XML) is a subset of SGML that has been defined by the World Wide Web Consortium (W3C) in <http://www.w3.org/TR/REC-xml>. Its goal is to enable generic SGML to be served, received, and processed on the Web in the way that is now possible with HTML. XML has been designed for ease of implementation and for interoperability with both SGML and HTML.

2.1 XML Documents

XML documents are made up of storage units called entities, which contain either parsed or unparsed data. Parsed data is made up of characters, some of which form character data, and some of which form markup. Markup encodes a description of the document's storage layout and logical structure. XML provides a mechanism to impose constraints on the storage layout and logical structure.

A data object is an XML document if it is well-formed, as defined in the XML specification. A well-formed XML document may in addition be valid if it meets certain further constraints. Each XML document has both a logical and a physical structure. Physically, the document is composed of units called entities. An entity may refer to other entities to cause their inclusion in the document. A document begins in a root or document entity. Logically, the document is composed of declarations, elements, comments, character references, and processing instructions, all of which are indicated in the document by explicit markup. A document type definition (DTD) may define some rules for checking for the validity of XML documents.

The individual characters making up an XML document are by definition always Unicode characters – each possible glyph of all the different writing systems of the world is represented as a unique 16-bit Unicode value (e.g. the new European currency symbol € is denoted as U+20AC).

2.2 XML Files & Encoding

XML documents are commonly stored in files on a computer system or transferred through the Internet by means of various transport protocols. In each case, the XML document has to be transferred into a sequence of individual bytes – a process called encoding. The XML specification gives the user much freedom in how an XML document can be encoded. However, the encoding being used must be stored in the XML declaration at the very beginning of the XML document so that any XML processor opening the file can determine the encoding and hence will be able to correctly decode the file to regenerate the sequence of Unicode characters making up the XML document.



XML Spy implements and supports the following character-set encodings:

Unicode	ISO-8859	Single-Byte	CJK (Double-Byte)
UTF-7	ISO-8859-1 (Latin-1)	US-ASCII	Shift-JIS (Japan)
UTF-8	ISO-8859-2 (Latin-2)	US-EBCDIC	MS-Kanji (Japan)
UTF-16	ISO-8859-3 (Latin-3)	TIS-620 (Thai)	ISO-2022-JP (Japan)
ISO-10646-UCS-2	ISO-8859-4 (Latin-4)		EUC-JP (Japan)
ISO-10646-UCS-4	ISO-8859-5 (Cyrillic)		EUC-KR (Korea)
	ISO-8859-6 (Arabic)		GB2312 (China)
	ISO-8859-7 (Greek)		Big5 (Taiwan)
	ISO-8859-8 (Hebrew)		
	ISO-8895-9 (Latin-5)		
	ISO-8859-11 (Thai)		
	ISO-8859-14 (Latin-8)		
	ISO-8859-15 (Latin-9)		

XML Spy follows the W3C recommendation to automatically detect the encoding being used – sometimes even in the absence of an encoding declaration in the file – and transforms the file into an internal Unicode representation for further processing.

However, only Windows NT (and the upcoming Windows 2000) do support Unicode on the operating system layer. XML Spy 2.5 therefore ships with two separate executables – one with full Unicode support for the Windows NT & 2000 platforms and one for Windows 95/98 that works with the single- and multi-byte character sets supported by these versions of Windows (for further details see [Unicode Support](#)).

For an overview of the entire family of ISO-8859-x character-set encodings, please refer to <http://czyborra.com/charsets/iso8859.html>. To learn more about far-east character-set encodings, please refer to the excellent book "CJKV Information Processing" by Ken Lunde (O'Reilly, 1999).

2.3 XML Resources on the Internet

To stay current with future XML developments, here are some sites on the Internet that we can highly recommend:

Open Directory Project

http://dmoz.org/Computers/Data_Formats/Markup_Languages/XML/

Web Developer Virtual Library

<http://wdvl.com/Authoring/Languages/XML/>

W3C Official XML site

<http://www.w3.org/xml/>

Microsoft Developer Network XML site

<http://msdn.microsoft.com/xml/>

3. Using XML Spy

XML Spy comes with an integrated setup program that installs the XML Spy application, documentation, samples, and required files. An uninstaller is also included and can be used to remove XML Spy from your computer if you do not need the software any longer.

3.1 Installation

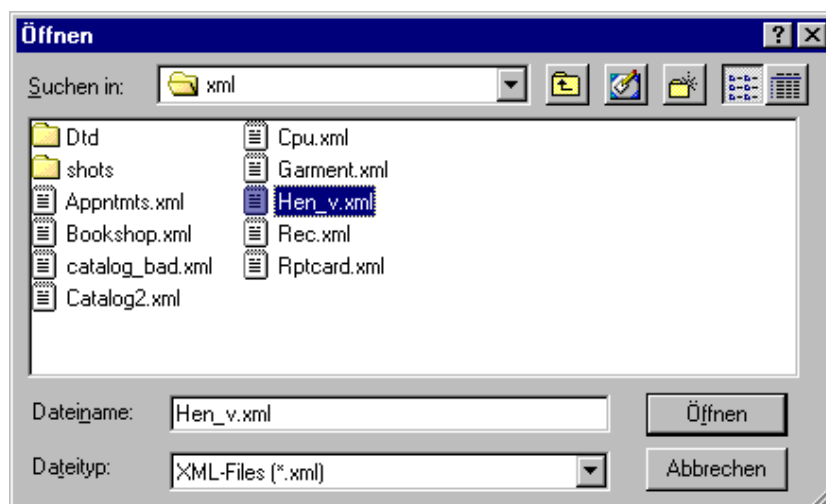
When you run the setup program, you are asked to specify an installation directory as well as a program folder in your "Start" menu. The setup program will then copy the entire software and samples to the designated installation directory and register XML Spy to be the default editor for all files with extensions *.xml, *.html, *.xsl, *.rdf, *.3dml, and *.dtd.

3.2 Opening Files

To start XML Spy you can either double-click on any XML file or select XML Spy from the program folder on the "Start" menu. While XML Spy starts up you'll see a splash screen with the program logo. In the unlicensed version of the software, this may be followed by a brief reminder message that invites you to purchase a license.

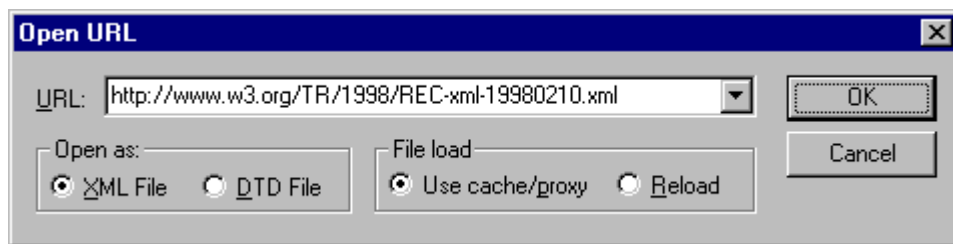
On the "File" menu you will find commands to open a file from your computer ("Open...") or directly from the Internet ("Open URL...").

The "Open..." command brings up the common Windows Dialog that allows you to choose a file from any drive and directory available on your PC.



The extension "*.xml" or "*.dtd" automatically determines if the file will be interpreted as an Extended Markup Language (XML) or Document Type Definition (DTD) document. Starting with version 2.0 of XML Spy you can also open "*.html", "*.xsl" and "*.3dml" documents and version 2.5 now further adds support for "*.rdf".

To open a file directly from the Internet, you may use the "Open URL..." command:

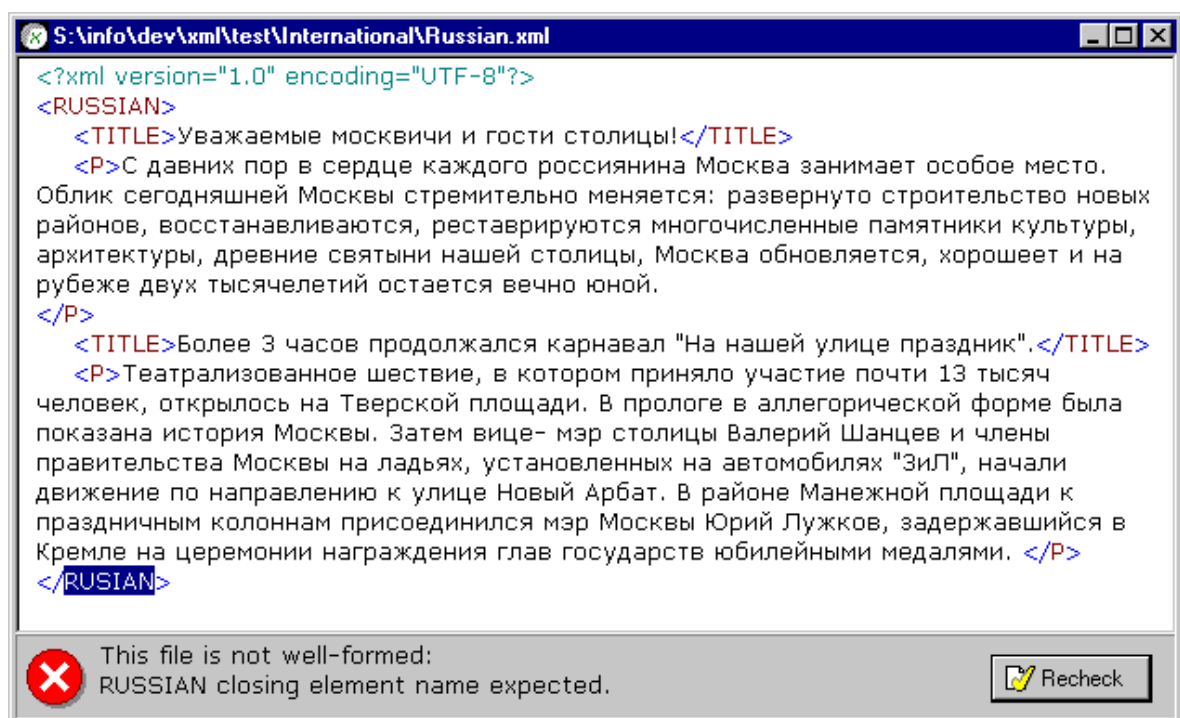


Since the specific kind of a file on the Internet can't always be determined from the URL, you must specify if the document is to be interpreted as an XML or DTD. You can also choose to load the file using a local cache or proxy server, or force a reload from its original source on the Internet.

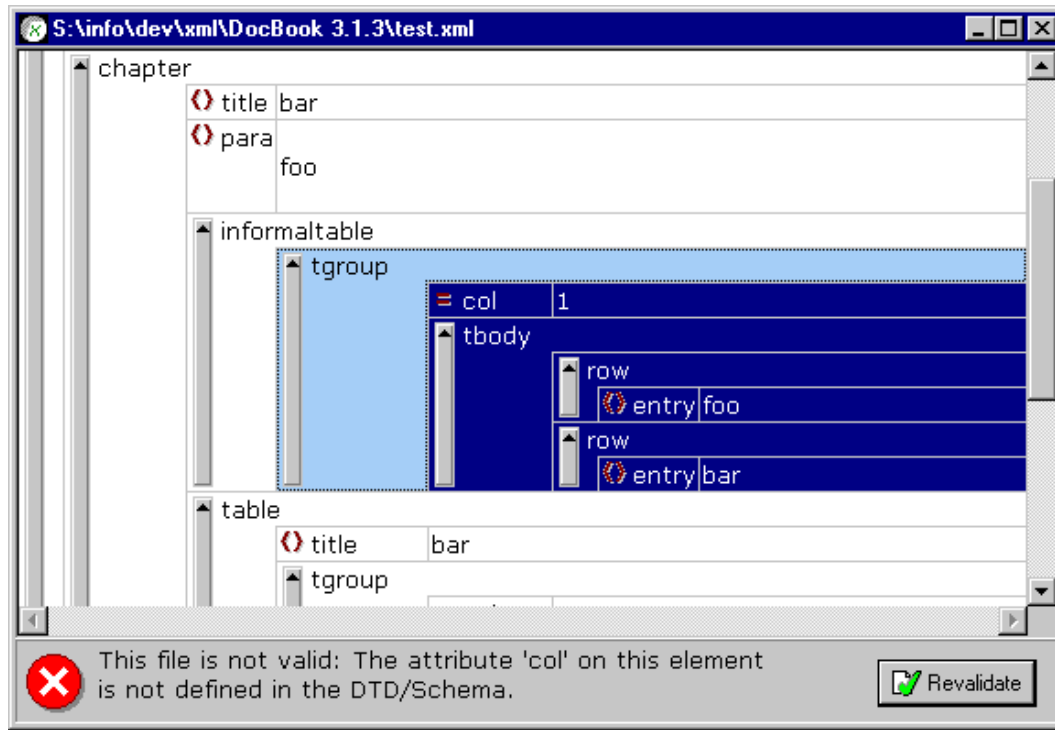
If you are using the Windows 95/98 version of XML Spy and have chosen to open a Unicode encoded file, you will be asked to select a single- or multi-byte character set to display and edit the XML document on your screen (for further details see [Unicode Support](#)).

Whenever a document is opened, it is automatically checked for well-formedness and parsed according to the XML grammar specification. If you have chosen to automatically perform DTD-validation upon opening, the file is also immediately validated. If an error is detected by XML Spy, the error message and document is displayed inside a text editor window and the offending item is hilited.

If the file is not well-formed, the error is always displayed in the source view:



If the file is well-formed but invalid, the error will be displayed in the enhanced grid view, if you have chosen to automatically open files into the grid view :



You can now easily correct the error and click on the "Recheck" or "Revalidate" button to check the modified document for well-formedness or validity and try to open it again.

As with any other XML processor, only well-formed XML documents can ever be edited by XML Spy in the enhanced grid view. It is, however, possible to edit mal-formed files in the source view, which dramatically reduces the time required to get a bad XML file fixed! Furthermore version 2.5 now also allows you to optionally save mal-formed or invalid files, if you need to interrupt your work and want to save an unfinished document or if you keep fragments of XML documents in separate files for later reuse.



3.3 Viewing XML, XHTML, XSL, RDF, and 3DML Files

XML Spy displays each document as a window and lets you choose between three different views. The Enhanced Grid View and the Source View can be used for editing the file, whereas the Browser View uses Internet Explorer to render the XML document and makes full use of available CSS or XSL style-sheets.

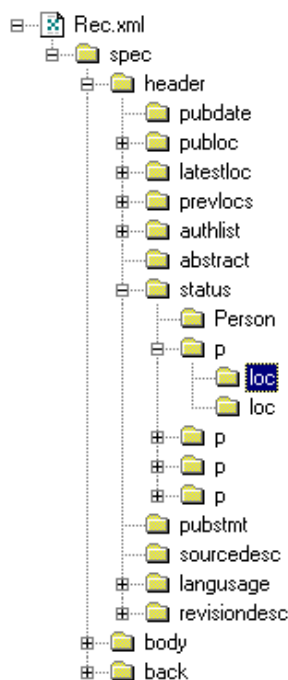
3.3.1 Enhanced Grid View

The enhanced grid view includes an optional tree that outlines the overall structure of the file, and a grid that shows each entity with as much detail, as requested: if an element acts as a container for other elements, it can be expanded or collapsed by clicking on the tiny down-arrow button to the left of the element name. For each element the attributes are shown first, followed by child elements and any character data the element may contain.

In addition to the elements, all other entities (e.g. processing instructions, comments, document type definitions, and even the "<?xml" version info at the beginning of each file) are also shown in the enhanced grid where they can be edited as well.

3.3.1.1 Tree

Just like the familiar directory tree in the Explorer, the element tree in XML Spy gives you an overview of the overall structure of an XML document and lets you quickly browse to any element of interest. Each element that contains child elements is automatically included in the tree view.



The element hierarchy can be expanded and collapsed using the small + and – symbols in front of each element name. In addition, the "Expand", "Collapse" and "Expand Fully" commands in the "View" menu are available for navigation in the tree. Three toolbar buttons serve as a shortcut to these commands as well.

Double-clicking on any element will navigate to the corresponding element in the enhanced grid view, where the element details can be viewed and edited.

The elements that form the hierarchical structure of an XML document, can also be directly modified in the tree view. Elements can easily be renamed, moved to a new position, copied to the clipboard or deleted. If you right-click on any element in the tree view, you can furthermore insert or append new entities on the same level or add child entities for the currently selected item. Please refer to the section [Editing XML, XHTML, XSL and 3DML Files](#) for more details.

Please note that for DTD documents there is no tree view, as document type definitions do not contain elements. If you do not wish to use the tree view, you can also turn it off for all other file-types in the Settings dialog.



3.3.1.2 Grid

In the enhanced grid view the main portion of a window is occupied by the enhanced grid. All entities contained in an XML document are displayed in a structured way that allows for easy manipulation of contents and structure at the same time. Any hierarchical entity (such as the XML declaration, document type declaration, or any element that contains child elements) is represented with a gray side bar and a tiny arrow at the top that can be expanded and collapsed as needed.

XML	
DOCTYPE html	
html	
xmlns	http://www.w3.org/Profiles/xhtml1-strict
head	
body	
bgcolor	#ffffff
h1	When the world wants to talk, it speaks Unicode
ICDIK	load-cd-header
p	
lang	Chinese (Simplified) [zh-cn]
Text	当世界需要沟通时, 请用Unicode !
p	
lang	French [fr]
Text	Quand le monde veut communiquer, il parle en Unicode
p	
lang	German [de]
Text	Wenn die Welt miteinander spricht, spricht sie Unicode
p	
lang	Italian [it]
Text	Quando il mondo vuole comunicare, parla Unicode
p	
lang	Japanese [ja]
Text	世界的に話すなら、Unicode です。
p	
lang	Korean [ko]
Text	세계를 향한 대화, 유니코드로 하십시오

The contents of such a hierarchical entity depend on its kind and – in the case of elements – mostly consist of attributes, character data, comments and child elements. To emphasize the strong coupling between attributes and the respective parent element, all attributes are always listed first and cannot be preceded by comments, character data or child elements. The order of the individual attributes is, however, preserved from the input file and can be modified if necessary.

Following the attributes, the remaining entities within an element appear exactly in the order found in the file and can be rearranged without limitations using drag & drop.

If an element contains only character data, the data will be shown in the same line as the element and the element will not be considered hierarchical by nature (and will therefore



not be included in the tree view). The character data for any other element will be shown indented with the attributes and potential child elements and will be labeled as "Text" (see example screenshot above).

If an element is collapsed, its attributes can be shown in the same line in a different color. This attribute preview is especially helpful, when editing XML documents that contain a huge number of elements of the same kind that only differ by their contents and attributes (e.g. database-like applications).

The grid view can easily be customized using the mouse to adjust column widths. To resize a column to the width of its largest entry, just double-click on the grid line to the right of that column. Furthermore the "Optimal widths" command on the "View" menu automatically adjusts *all* columns so that the currently visible contents of all items can be fully displayed. The heights of the cells are determined by their contents alone and cannot be adjusted by the user.

As an orientation aide, a special "Synchronize" command is also available on the "View" menu that will automatically synchronize the tree and grid within the enhanced grid view of the document.

Whenever the frontmost window is displaying an enhanced grid view, a special grid toolbar is available that includes buttons for the most frequently used grid commands.

3.3.1.3 Navigating

In addition to moving about with the mouse, you can also use the keyboard for navigating through an XML document in the enhanced grid view. The arrow keys move the selection in the tree and grid views and the + and – keys on the numeric keypad allow you to expand and collapse items.

In the tree only one item at a time can be selected and the keys only expand and collapse the selected item. In the grid, however, the selection can encompass many items at once. Therefore, when expanding an item, all subitems are automatically selected. This enables you to press the + key once more to expand all items on the second level, and so forth....

3.3.2 Source View

The source view is a fully featured text editor with customizable syntax coloring and lets you directly view or edit the XML source text. This can sometimes be very helpful for certain complex editing operations, for pasting XML text from another program, for turning some part of an XML file into a comment, or may simply suit your personal working style.

Furthermore the source view is fully Unicode-enabled (in the Windows NT version) and therefore allows you to edit files using any possible mixture of languages or writing-system and store them in all supported character-set encodings. It is, therefore, much better suited for editing XML on the textual level, than any available plain text editor for programmers!



When you switch between the source and enhanced grid views, the currently selected element and scrolling position within the XML file will be retained so that you can continue editing the same element after switching from one view to the other.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/Profiles/xhtml1-transitional">
  <head>
    <meta http-equiv="Content-Type" content="text/xhtml;" />
    <title>When the world wants to talk, it speaks Unicode</title>
  </head>
  <body bgcolor="#ffffff">
    <h1>When the world wants to talk, it speaks Unicode</h1>
    <p lang="Arabic [ar]">عندما يريد العالم أن يتكلم، فهو يتحدث بلغة يونيكود.</p>
    <p lang="Catalan [ca]">Quan el món vol conversar, parla Unicode</p>
    <p lang="Chinese (Simplified) [zh-cn]">当世界需要沟通时，请用Unicode！</p>
    <p lang="Chinese (Traditional) [zh-tw]">當世界需要溝通時，請用統一碼 (Unicode) </p>
    <p lang="Danish [da]">Når verden vil tale, taler den Unicode</p>
    <p lang="Dutch [nl]">Als de wereld wil praten, spreekt hij Unicode</p>
    <p lang="English [en]">When the world wants to talk, it speaks Unicode</p>
    <p lang="Esperanto [eo]">Kiam la mondo volas paroli, ĝi parolas Unicode</p>
    <p lang="French [fr]">Quand le monde veut communiquer, il parle en Unicode</p>
    <p lang="German [de]">Wenn die Welt miteinander spricht, spricht sie Unicode</p>
    <p lang="Hebrew [he]">כאשר העולם רוצה לדבר, אזי Unicode-ul mondja</p>
    <p lang="Hungarian [hu]">Ha a világ beszélni akar, azt Unicode-ul mondja</p>
    <p lang="Italian [it]">Quando il mondo vuole comunicare, parla Unicode</p>
    <p lang="Japanese [ja]">世界的に話すなら、Unicode です。</p>
    <p lang="Korean [ko]">세계를 향한 대화, 유니코드로 하십시오</p>
    <p lang="Norwegian [no]">Når verda ønskjer å snakke, talar ho Unicode</p>
    <p lang="Romanian [ro]">Când lumea vrea să comunice, vorbește Unicode</p>
    <p lang="Russian [ru]">Если мир хочет общаться, он общается на Unicode</p>
    <p lang="Slovenian [sl]">Ko se želi svet pogovarjati, govori Unicode</p>
```

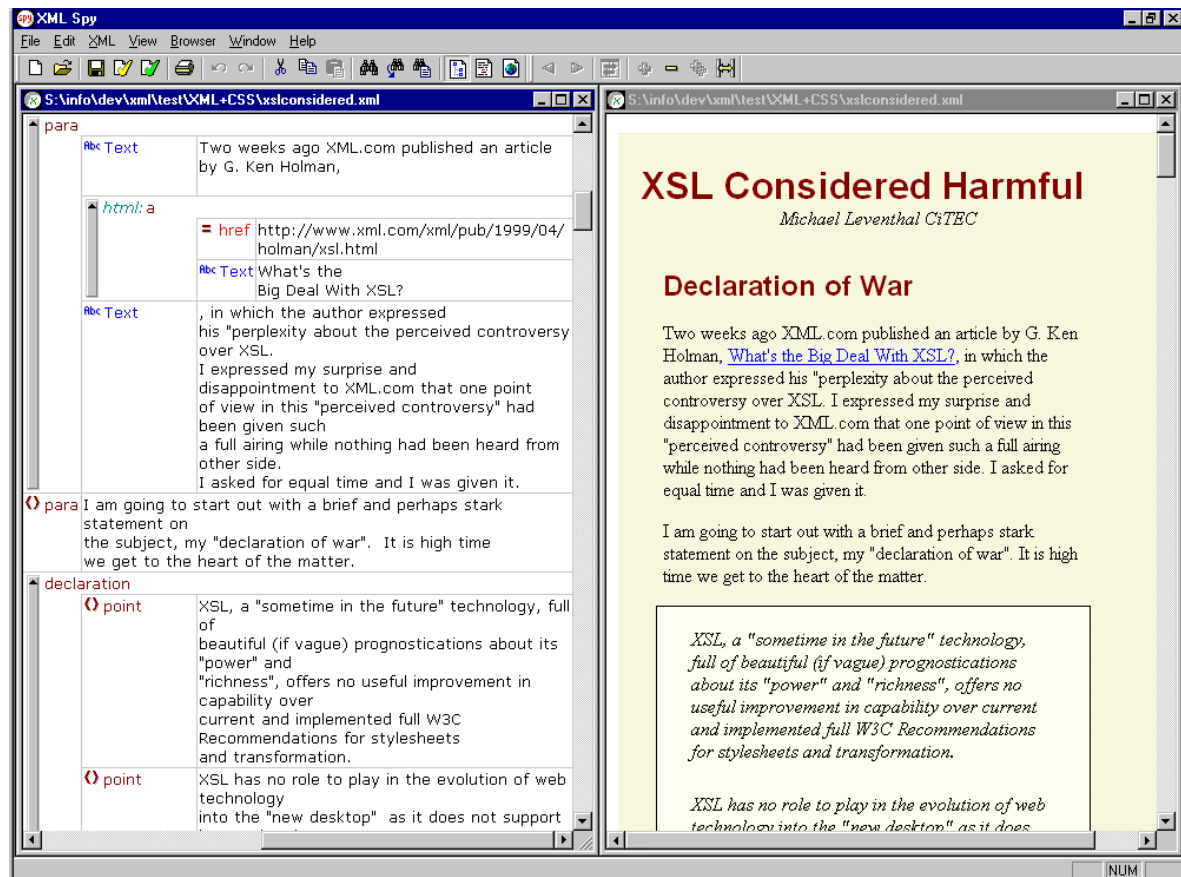
You can use the Settings dialog to control both the colors used for syntax-coloring as well as if you want to entirely disable this feature. You can also choose to automatically update the syntax coloring while typing. This is extremely useful for smaller files, but can cause unexpected behavior in connection with the Undo-command when your Windows system is still using RichEdit 2.0 (see the special background chapter on the RichEdit Component for more details on how you can already take advantage of RichEdit 3.0 today).

The source view also supports find/replace operations and printing and is automatically used when you open a file that is not well-formed and can therefore not be displayed in the enhanced grid view.

3.3.3 Browser View

If you have installed an XML-capable browser (such as Internet Explorer 5), XML Spy is able to render the XML document as the browser would display it (including CSS and XSL Style-Sheet support). When the browser view is selected, an additional browser toolbar is displayed that contains the familiar "Back", "Forward", and "Refresh" commands.

For your convenience the browser view of a document can be shown in a separate window. This allows for side-by-side placement of an editing view (enhanced grid or source) and the browser view.



In this configuration you can make changes to a document and immediately press the F5 key (Refresh) in the *editing* window to refresh the *browser* window and update its contents accordingly.

The browser view can also come in handy when developing XSL style-sheets. You can edit your XSL document in one window and have an example XML document that uses this style-sheet opened in the browser view. This allows you to see changes to your XSL style-sheet by switching to the browser window and refreshing the view.

The browser view also supports a find command and printing capabilities, which are especially useful when you want to document XML files that use CSS or XSL style-sheets.



3.4 Editing XML, XHTML, XSL and 3DML Files

When editing files with XML Spy, several commands are available that facilitate the creation and manipulation of all entities permitted by the XML 1.0 specification. These commands and operations are described in detail in this chapter.

While editing an XML document, it is possible to modify the entities in such a way that the corresponding XML file would not be well-formed according to the XML specification. XML Spy does, however, warn you when saving such a malformed document and will flag any error and ask you to correct it. It is also possible to explicitly check a document for well-formedness anytime by using the "Check well-formedness" command on the "XML" menu.

Starting with version 2.5 it is now also possible to perform validity checking in the sense of the XML specification (i.e. check the XML document against the rules set forth in its document type definition). Please refer to the new chapter DTD Validation for further information.

Editing an XML document in the source view is a rather low-level and straight-forward matter. It is sometimes either desirable or necessary (e.g. turning large sections of an XML document into a comment or pasting XML text from another program) to edit files on this level and the dynamic syntax coloring is very helpful for this task.

It is, however, worth mentioning that XML Spy internally uses the enhanced grid view as its central representation of an XML document. Consequently, whenever you switch between the source and grid views, the XML source text is actually regenerated from the grid representation and thus any manual "formatting" of the indentation of an XML document you may have performed is not preserved.

XML Spy enables you to switch seamlessly between the source and enhanced grid views by automatically selecting the current element in the other view.

But there is actually not much more to be said about editing the XML source directly. Therefore, the remainder of this chapter focuses on editing documents in the enhanced grid view, which provides much more advanced and comfortable editing capabilities.

3.4.1 Modifying items

You can easily modify any item by clicking on the element name or its contents in the tree view or enhanced grid view. If you have been navigating inside the grid view using the keyboard, you can also use the <ENTER> or <RETURN> keys to start editing. A blinking text cursor will appear and you may change the text.



While editing an item, the arrow keys operate within the text of that element. You can also use the <Home> and <End> keys to jump to the beginning or end of a line. By pressing and holding down the <Ctrl> key the effect of the other navigation keys is modified according to this table:

Key	Normal	Ctrl + Key
<i>Left arrow</i>	Left one character	Left one word
<i>Right arrow</i>	Right one character	Right one word
<i>Down arrow</i>	Down one line	
<i>Up arrow</i>	Up one line	
<i>Home</i>	Start of line	Start of text
<i>End</i>	End of line	End of text
<i>Return/Enter</i>	Enter/Leave editing mode	Insert carriage return char
<i>Tab</i>	Jump to next editable item	Insert Tab character

To select text, you can use the mouse as usual or any of the above navigation keys while holding down the <Shift> key. The selected text can be cut, copied and deleted by using the familiar commands on the "Edit" menu.

The "Undo" command is supported for all modifications and keeps track of an unlimited number of steps. This means that you can easily step back and forth through all your modifications using the "Undo" and "Redo" commands, if you wish to check or review the changes you have made.

To quit editing, simply press the <RETURN> or <ENTER> key to commit your changes or press <ESC> to cancel any modifications you have made. You can also use <TAB> to jump to the next editable item in sequence and immediately enter the editing mode there. As you would expect, <Shift>-<TAB> jumps to the previous editable item.

If you need to insert a line-break (i.e. <CR>, <LF>, or both) inside the text of an element, you'll have to use <Ctrl>-<RETURN>. The actual characters stored in the resulting file are determined by the line-break options in the [Settings](#) dialog.

In a similar way you must use <Ctrl>-<TAB> to insert a Tab character into the text, because <TAB> alone is used for navigating between the different items in the grid view, when you want to edit each item in sequence. Please note that the original function of <Ctrl>-<TAB> (i.e. switching between open document windows) is, of course, still available when you are not in editing mode!

3.4.2 Adding items

To add a new item, first select an existing item or location where you want the new item to be added. Then use one of these commands on the XML menu which are also available on the context-menu of the right mouse button.

3.4.2.1 Insert item

Inserts the specified item before the location of the selected one. The kind of item inserted can be chosen from a submenu. Depending on the position in the XML document, not all item types can be inserted in all places (e.g. an Attribute-List, which is part of the DTD, can only be inserted inside the DTD).

Please note that in case of an attribute, the inserted item may appear to be inserted some lines above the current selection if an element or text item was selected as the location for the insertion operation. This is due to the fact that attributes always appear first below the parent element and can not be physically appear in any other place inside an element according to the XML specifications. The Structure Normalization function of XML Spy ensures that these constraints are also applied while editing an XML document.

3.4.2.2 Append item

Appends the item to the end of the parent's item list. This is useful if you want to add a large number of items in sequence and would like to add an item as the last one in the list.

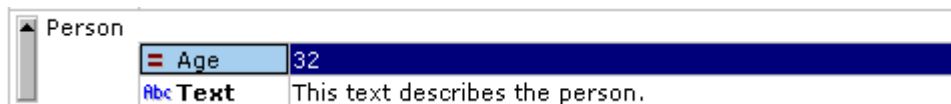
3.4.2.3 Add child

Adds the item as a child of the currently selected item. This allows you to directly add attributes and child-elements to an item without having to select another one of its child-items first.

Please note that an element that contains only character data (i.e. text) is shown in one line only to reduce the amount of space required to display that item.



Therefore, when you choose to add a child attribute or element to such an element, that element will henceforth have to be displayed in a hierarchical manner, so that the child items can be shown. The previous text of the element will now appear in a sub-item that is entitled "Text".



3.4.3 Converting items

Under rare circumstances you will also find that you have created an item of the wrong type but have already entered some data so that you simply don't want to delete it and create it anew. Or you may find that in your application you are sometimes modifying the structure so that it becomes necessary to change sub-elements into attributes.

To enable such operations, the "XML" menu as well as the context-menu (using the right mouse button) contain a command for converting the type of an item. Please note, however, that not all conversions are possible at all times. It is simply impossible to convert an element, that already contains child-items into any other type of item, because that operation would result in the loss of all child-item data.

Sometimes you may also receive a warning that the name or contents of an item will be lost in the conversion process (e.g. when converting from attribute to comment).



3.4.4 Copying items

You may at any time use the clipboard to copy items to and from an XML document. While copying and pasting items within XML Spy, all information about content and structure is retained in an internal format.

If you would like to use the items in any outside application (such as your word processor or spreadsheet) you can choose to copy the items as tagged XML-text or in a structured, TAB-separated form that is suitable for pasting into tables. The format used by the copy command can be adjusted in the Settings dialog.

3.4.5 Pasting items

If you want to paste an item within XML Spy, the item is per default just pasted at the specified location as you would intuitively expect. Sometimes, however, this behavior can be undesirable. As an example consider this XML document:

```
<drawing>
  <shapelist>
    <rect color="black">
      <point x="10" y="50">
      <point x="80" y="90">
    </shapelist>
  </drawing>
```

If you copied just the attribute `color="black"` and were later to paste it directly at the top-level on another drawing element, XML Spy would insert it as an attribute of the `<drawing>` element – which could potentially be in violation of the DTD.

Therefore XML Spy can optionally be instructed to insert an item with the appropriate parent structure for the location that you pasted it into (this is selectable in the Settings dialog). Activating this function for the above example would automatically create a new empty `<rect>` element inside a new `<shapelist>` element inside the `<drawing>` and paste the attribute into the `<rect>` element – thereby attempting to preserve the parent structure of the element that was originally copied (it was, after all, a color attribute of a `<rect>`, not of a `<drawing>`).

3.4.6 Rearranging

There are two options for rearranging items in an XML document: using the clipboard (Cut/Copy/Paste) menu commands or using the mouse to drag and drop items.

Please note that XML Spy does not check for conformance with any DTD while you are restructuring your document. XML Spy provides a separate "Validate" command that lets you enforce the validity of the resulting document after all your editing operations have been completed.

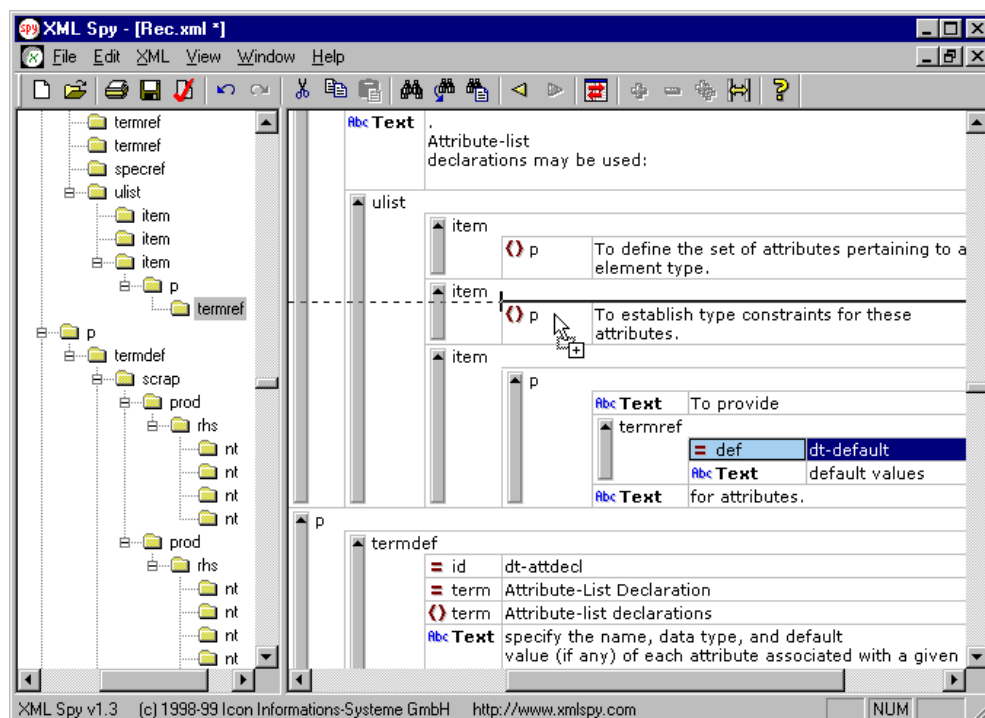
During editing XML Spy does, however, try to help you in keeping a document conforming to a DTD when you move or duplicate items by inserting as many parent elements as necessary (depending on the target location) together with the item actually copied.

3.4.6.1 Cut & Paste

Moving items about with Cut & Paste has the one benefit of being accessible by keyboard alone. In most other circumstances it is easier to use the mouse to drag and drop items in a graphic fashion. Also, drag & drop allows for more fine control when deciding what is to be dropped in the target location, whereas with pasting you can only adjust one global setting to determine whether you intend to paste with the parent structure or without (see [Pasting items](#) for details).

3.4.6.2 Drag & Drop

To move items about, just drag them to their new location with the mouse and drop them there. To duplicate an item, hold down the <Ctrl> key while dropping the item:

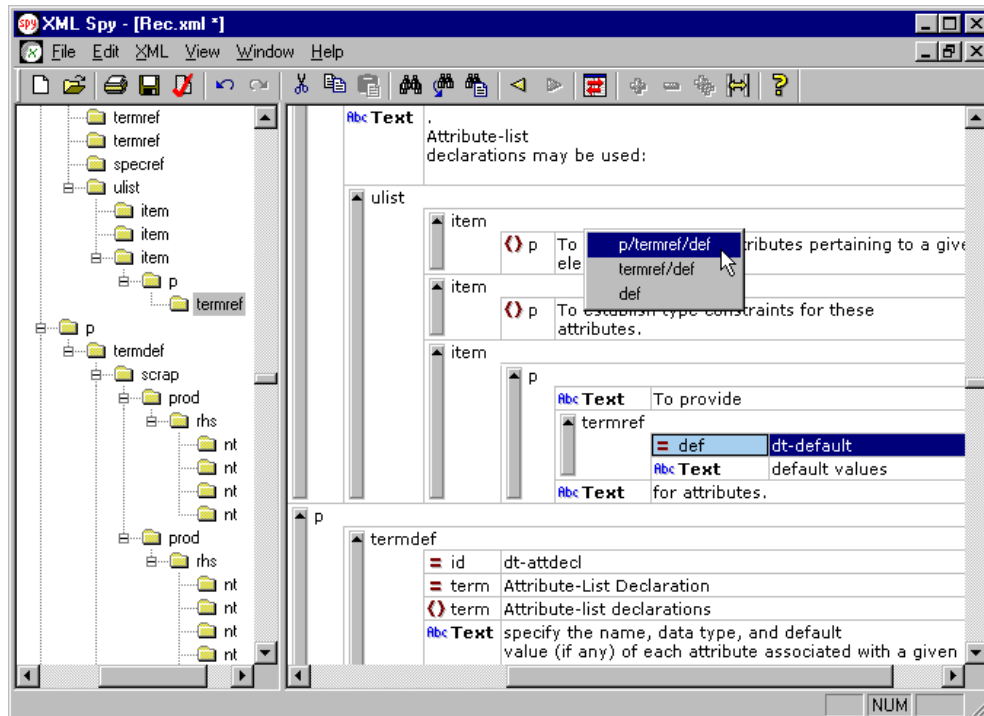


While dragging an item, the current target location for the "drop" is always hilited using a cross-hair that shows the exact spot where the item will be inserted. This gives you precise control over the position where the item is moved to and thereby reduces the amount of work incurred by unsuccessful attempts.

When dropping an item, it is again created "as is" or with the required parent element structure to fit into the target hierarchy – depending on the options in the [Settings](#) dialog (see [Pasting items](#) for details).

If you need more fine-control over the insertion process, you can drag an item using the right mouse button (with or without the <Ctrl> key depending on whether you intend to move or copy the item).

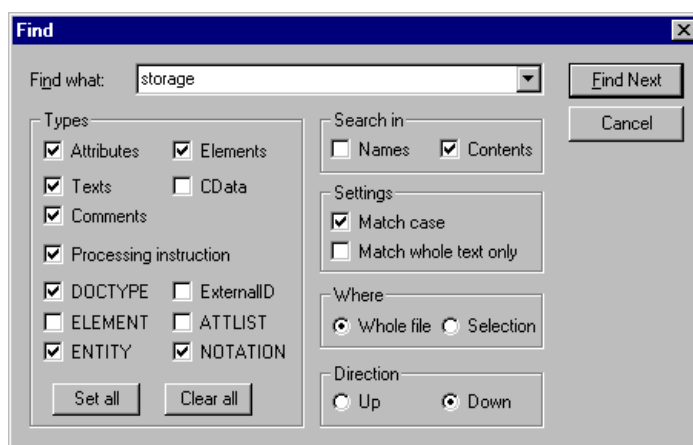
When you drop off an item using the right mouse button, a small menu appears that allows you to select exactly up to what level the parent elements should be created for the item:



This way you can easily keep a document conforming to its DTD and furthermore save a lot of time which would normally be spent on creating elements within elements within elements.

3.4.7 Finding Text

While the find command in the source and browser views will only allow you to find a simple string inside the file, only the enhanced grid view offers you the precision controls to find exactly what you are looking for. To quickly locate any text inside an XML file, the "Find" command on the "Edit" menu offers a multitude of options for specifying where the text should be located and what is to be considered a match.

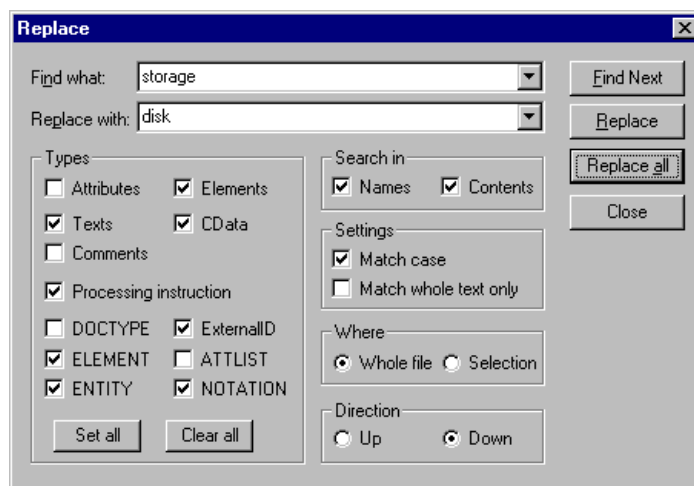


You can restrict the search operation to certain types of entities and can specify whether you want to find matches in names, contents or both. Furthermore it is possible to search for the any item of a specified type (e.g. the first Processing instruction) by leaving the "Find what" field empty. The other options are familiar from most development tools and are explained in detail in the [Reference](#) section.

If the find window should ever obstruct the found item in the grid view, the find window will automatically be relocated to a different position on the screen, so that you can easily continue to search for further occurrences with the "Find Next" button.

3.4.8 Replacing Text

Sometimes the need arises to replace some or all occurrences of a certain word or phrase with another text. Again XML Spy offers many options for replacing the text.

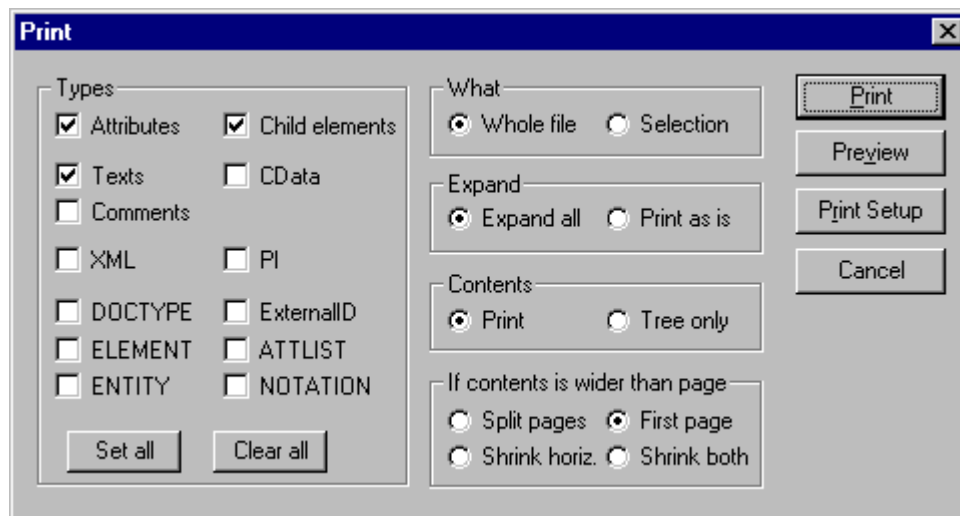


As a security precaution the "Replace all" command shows each individual replacement operation in the grid view so that you can interrupt the operation by pressing <ESC> anytime. Furthermore, each replacement is recorded as one operation that can be undone individually.

3.5 Printing XML, XHTML, XSL, RDF, and 3DML Files

While XML documents are normally used for electronic distribution, sometimes there is still a need for producing a printed copy for meeting notes, documentation or other presentation purposes.

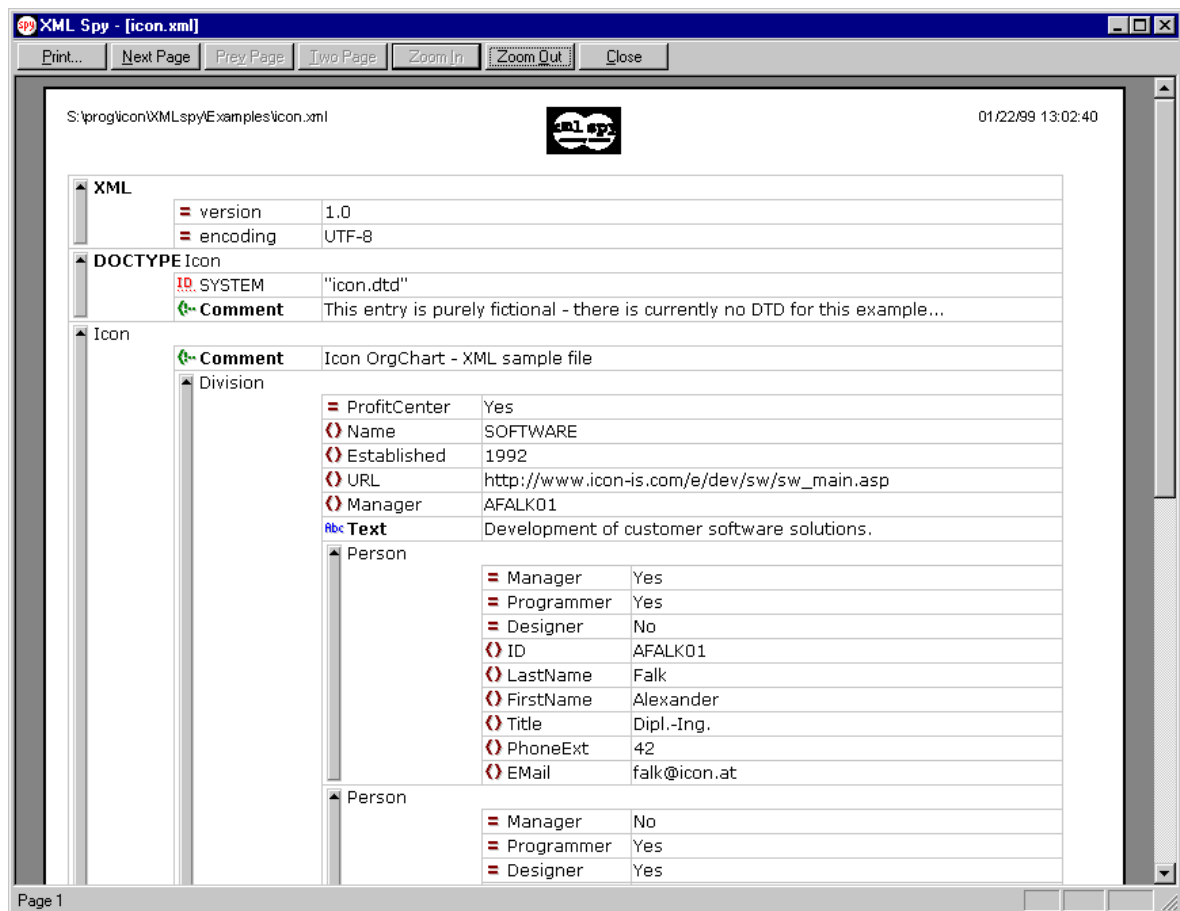
To aid in this task, XML Spy offers several flags in the enhanced grid view that can be set to control what is to be printed and in which form.



Each type of item can be turned on and off individually to select just what kind of information is to appear on the printed page. You can choose to print the element tree only or the whole contents of the file and you can expand all levels as necessary.

Depending on your objective for the printout, you may split larger documents over several pages in order to glue them together to produce an impressive poster, or you can reduce the size of the printout to shrink the whole document down to exactly one page.

To save the environment and preserve natural resources, XML Spy includes a "Preview" command right in the Print dialog that lets you view the final result before committing it to paper.



In this preview you can view any page in various zoom levels and directly print the document once you are satisfied with your results.

For the source and browser views a regular print command is also available, that simply prints the document as is and doesn't provide that much fine control.

3.6 DTD Validation

XML Spy supports separate commands to check a document for well-formedness (i.e. conformance with the XML 1.0 Specification) and for validity (i.e. conformance with its Document Type Definition [DTD]).

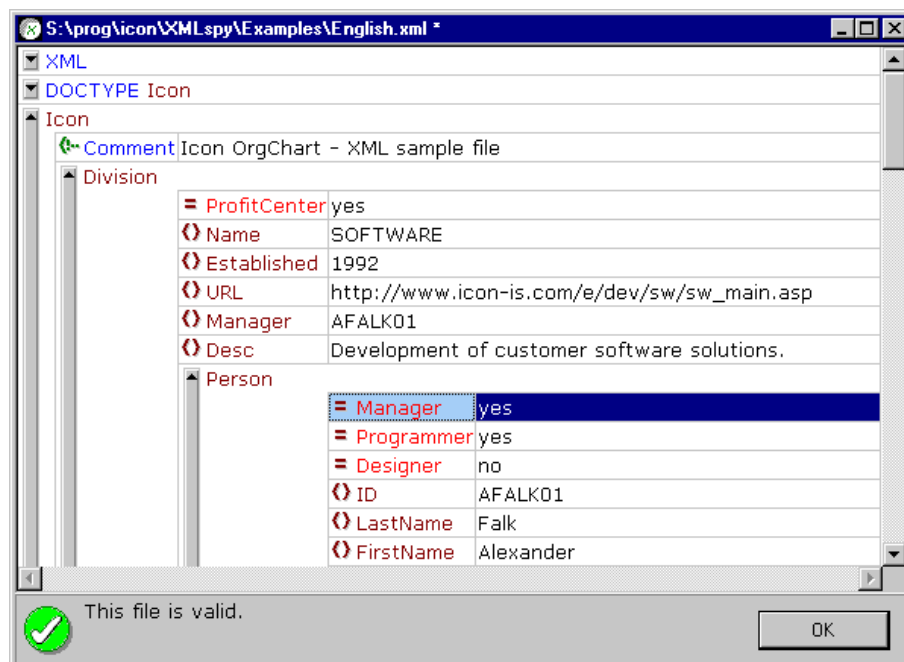
Both checks are available as menu commands, symbols on the toolbar, or can be performed automatically upon opening or saving a document or when switching between views (this is controlled from the Settings dialog).

If a well-formedness or validity violation is detected, the offending item is hilited and a popup area at the bottom of the window shows the detailed error message.

If the document is found to be well-formed, the popup area shows the status of the document using a yellow check-mark symbol:



If the document is found to be valid, the popup area shows the status of the document using a green check-mark symbol:



When using the Validate command on an XML document it is also possible that an error inside an external DTD (used by the XML document) is detected. In this case a second window will open up and show you the error inside the external DTD file, while the error message in the first window will inform you that the validation operation could not be completed because of an error in the DTD file.

3.7 Editing DTD Files

Document type definitions (DTDs) can be embedded inside XML documents or can be contained in external DTD files. XML Spy can edit DTDs in either place, but does not include support for structured display of element-type, attribute-list or other DTD declaration items. These are all, of course, checked for well-formedness according to the XML specification, but otherwise have to be edited in a rather textual representation.

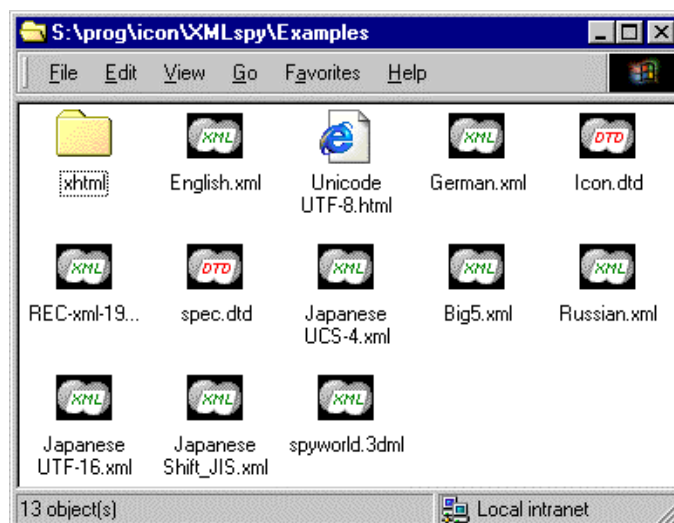
Experimental support for editing full SGML-type DTDs is available separately for registered users. Please send an e-mail message to support@xmlspy.com to request a grammar description file that accepts these extended DTDs.

3.8 Examples

We have now guided you through the main features of XML Spy. Included with the application are a couple of example documents to get you started with XML editing.

Some examples (german.xml, english.xml, the XML specification and the XHTML working draft) include or use a document type definition (DTD) and can therefore be used to test the validation capabilities of XML Spy. Several .html files are included to demonstrate the XHTML support included with XML Spy. Please note that XML Spy can only properly display and edit an HTML file, if it conforms with the XHTML 1.0 working draft, which is also included as an example document (xhtml/overview.html).

Other files demonstrate the foreign writing-system and Unicode capabilities of XML Spy. These may require that you have Japanese language support or Unicode-fonts installed on your PC.



Please feel free to use these example files to play around with the various XML capabilities of XML Spy and get acquainted with our software. For further information, please refer to the following [Reference](#) section of this manual or send an e-mail message to support@xmlspy.com.

4. Reference

The reference section contains a complete description of all XML Spy commands and explains their use in general. We've tried to make this user manual as comprehensive as possible. In many cases, however, the operation of a command is rather self-evident so we've kept the description to a minimum in order to reduce the time required to study this documentation.

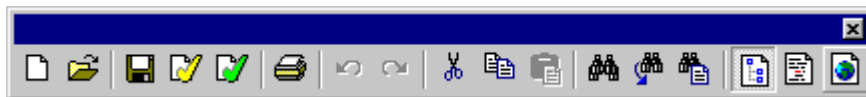
If you have questions which are not covered by this documentation and you are a registered user, please don't hesitate to contact us at support@xmlspy.com.

4.1 Toolbars

The XML Spy toolbars contains symbols for the most frequently used menu commands. For each symbol you'll get a brief "tool tip" explanation when the mouse cursor is directly over the item. You can also drag the toolbar from its standard position to any location on the screen, where it will be available as a floating palette window.

4.1.1 Main Toolbar

The main toolbar contains all commands that are available in most views.



The commands available on this toolbar are (in order from left to right):

- New.....Create a new XML file
- Open...Open an existing XML file
- Save.....Save current file
- Check well-formednessCheck current file for well-formedness
- ValidateValidate against Document Type Definition
- Print...Print current file
- Undo (multi-level)Undo last command
- Redo (multi-level)Redo the command last undone
- CutCut selected text/entities
- Copy.....Copy selected text/entities
- PastePaste contents of clipboard
- Find........Find text
- Find Next.....Repeat last find command
- Replace........Replace text
- Enhanced Grid ViewSwitch to Enhanced Grid View
- Source ViewSwitch to Source View
- Browser ViewSwitch to Browser View

4.1.2 Enhanced Grid Toolbar

When the frontmost window is using the enhanced grid view, an additional toolbar is displayed that contains the most-frequently used commands for the grid view.



The commands available on this toolbar are (in order from left to right):

- Move left.....Move element to the left (promote)
- Move right.....Move element to the right (demote)
- SynchronizeSynchronize tree and grid views
- Expand.....Expand one level of selected entities
- Collapse.....Collapse selected entities
- Expand fullyExpand all levels of selected entities
- Optimal widths.....Adjust column widths for optimal display

4.1.3 Browser Toolbar

When the frontmost window is using the browser view, an additional toolbar is displayed that contains the most-frequently used commands for the browser view.



The commands available on the toolbar are (in order from left to right):

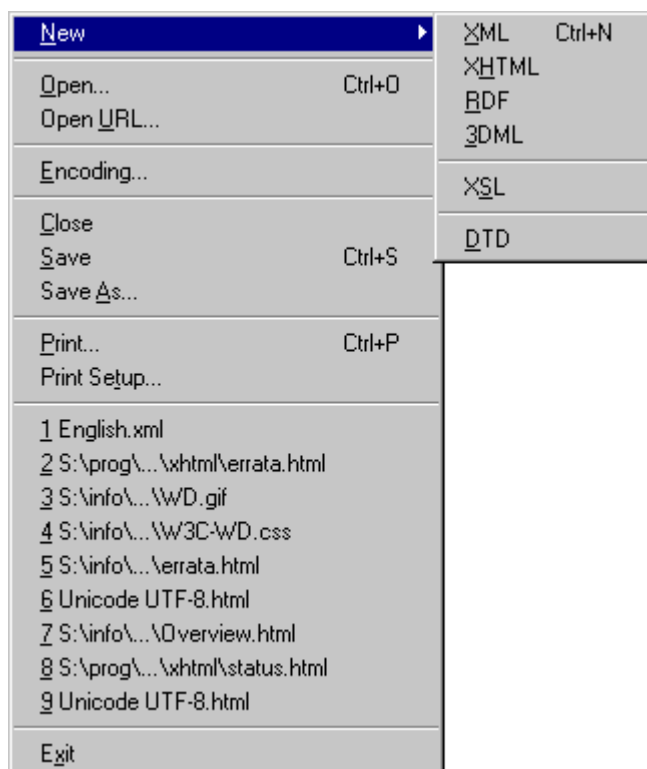
- BackGo to previous page
- ForwardGo to next page
- Stop.....Stop loading document
- Refresh.....Reload document and update window
- Separate WindowShow browser view in a separate window

4.2 Command Reference

XML Spy supports all standard Windows commands on the "File" and "Edit" menus to enable the user to quickly exploit all capabilities of the program. Wherever appropriate, additional commands have been added to support special XML- or Internet-related features (such as opening documents directly from an URL).

4.2.1 File Menu

The "File" menu contains all commands required to manipulate XML and DTD file in XML Spy. Furthermore a list of the nine most recently used files (MRUs) is kept on the "File" menu to facilitate the quick opening of frequently used documents in a project.



4.2.1.1 New

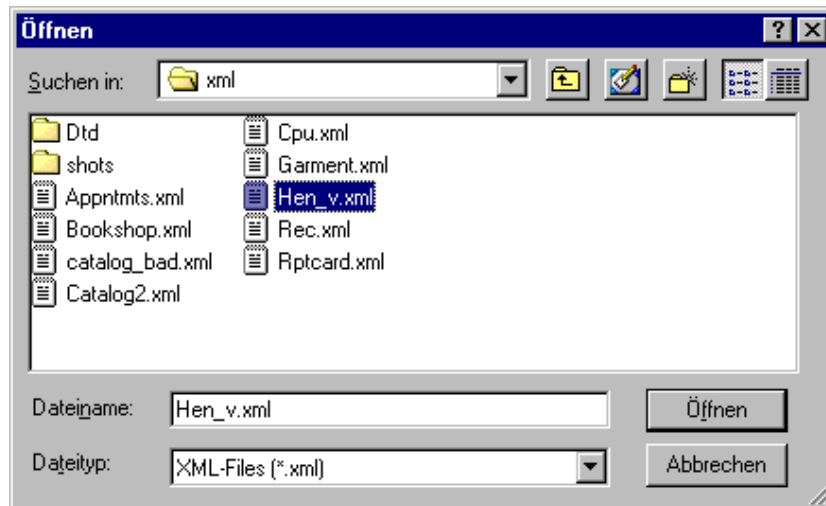
Creates a new empty document window of the kind you select from the submenu. For XML documents the following XML version info tag is automatically inserted for your convenience :

```
<?XML version="1.0" encoding="UTF-8"?>
```

This information can, of course, be edited or deleted later on. Other kinds of documents (e.g. RDF) are automatically created using templates with the most-often used header information.

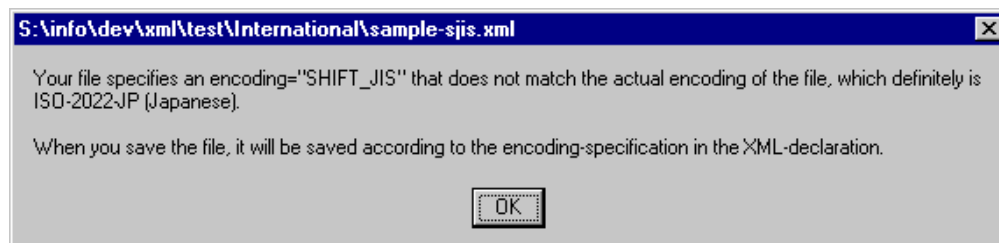
4.2.1.2 Open...

Opens an XML or DTD file from your PC. The familiar Windows "Open" dialog will appear and allow you to select one ore more files for editing.



You can select which kind of files you want to be displayed in the dialog (XML, XHTML, XSL, 3DML, DTD or all files).

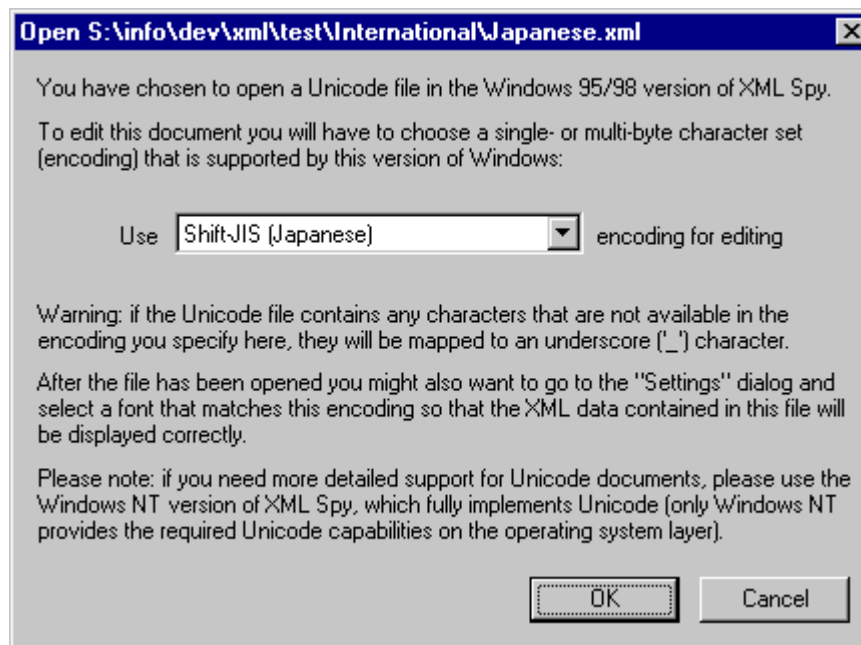
After the file has been read into memory, the character-set in use will be detected and the file decoded accordingly. If the actual character-set used to encode the file differs from the encoding-specification in the XML-declaration at the beginning of the file, an error message is displayed and the file is automatically opened using the correct encoding.



You may also get an error message if your file is either not well-formed or invalid and you have selected to perform automatic validation upon opening. In this case the document will be opened in the appropriate view, an error message popup will be displayed with the details about the error detected and the offending item will be hilited in the window.

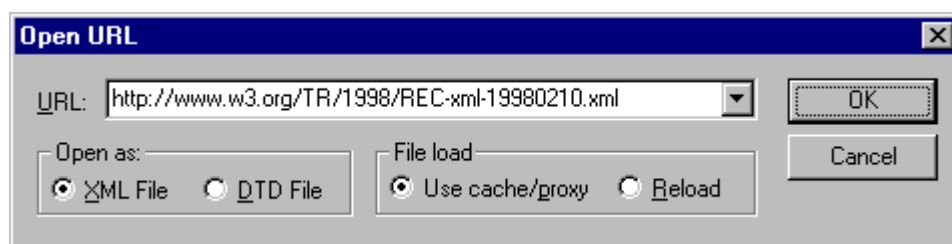
In such a case you can simply fix the error and click on the "Recheck" or "Revalidate" button to continue opening the file.

If you are using the Windows 95/98 version of XML Spy and have chosen to open a Unicode file, it becomes necessary to select a code-page to be used for viewing and editing the file, because Windows 95/98 doesn't support Unicode on the operating system layer:



4.2.1.3 Open URL

If you don't have the required file on your hard disk, you can also open a document directly from a URL (uniform resource locator) address.

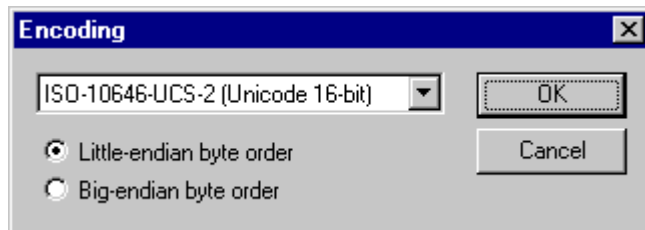


Due to the nature of URLs it is not possible to detect the file type by looking at the extension. You will, therefore, have to specify if the targeted file is an XML or DTD document.

To give you more control over the loading process, you can choose to load the file through the local cache or a proxy server (which will considerably speed up the time required for opening the file, if it has already been loaded before). Under other circumstances you may want to reload the file anew in every case (e.g. when you are working with an electronic publishing or database system and wish to view the life output from the software using XML Spy).

4.2.1.4 Encoding

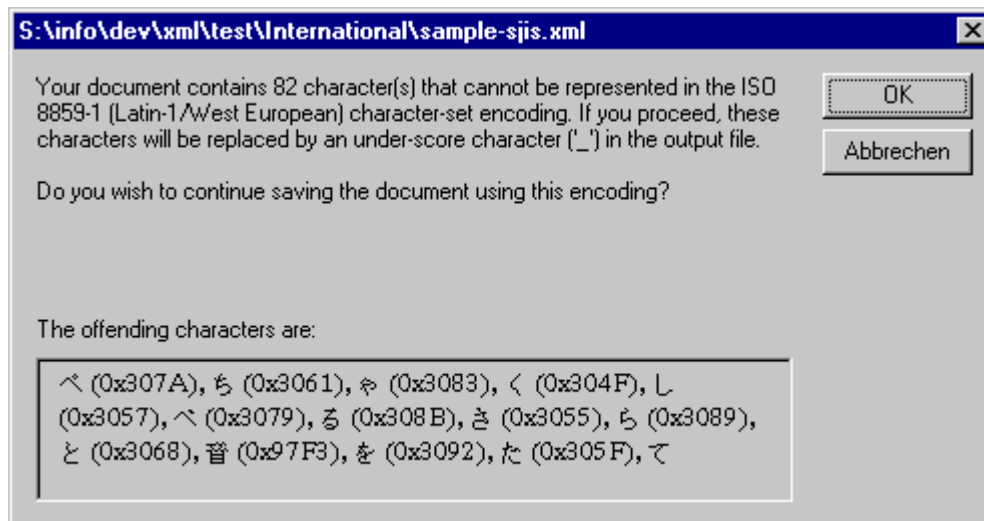
This lets you view the current encoding of a file and choose the encoding to be used for the current document the next time it is being saved to a file.



If you select a different encoding than the one in use before, the encoding-specification in the XML-declaration at the beginning of the file will automatically be adjusted accordingly. For 16-bit and 32-bit per character encodings (UTF-16, UCS-2, and UCS-4) you can also specify the byte-order to be used for the file.

Alternatively you can also simply enter the desired new encoding into the encoding-specification of the XML-declaration. When saving a document, XML Spy automatically checks the encoding-specification and brings up a dialog, if it cannot recognize the desired encoding name entered by the user.

If your document contains any characters that cannot be represented in the selected encoding, you will get a warning message as soon as you save your file:



4.2.1.5 Close

Closes the frontmost document. If the file has been modified (i.e. the window title show the file name with an asterisk [*] in the end), you will be asked if you wish to save the file first.



4.2.1.6 Save

Saves the contents of the frontmost document window to the file it has been opened from. If the document has been opened from a URL, the "Save as..." dialog is presented instead.

When saving a document, it is automatically checked for well-formedness, because all XML documents must be well-formed – otherwise they could not be interpreted by any other XML application. Also the XML-Declaration is checked for an encoding specification and the encoding is applied to the document when writing out the file.

You can optionally have XML Spy automatically validate a document upon saving (this can be defined in the Settings dialog). If a validation error occurs, XML Spy will bring up a popup message with a detailed error explanation and will hilite the offending item. You can then choose to fix the problem or save the document as is. In the latter case you will be prompted to correct the error the next time you open the file with XML Spy.

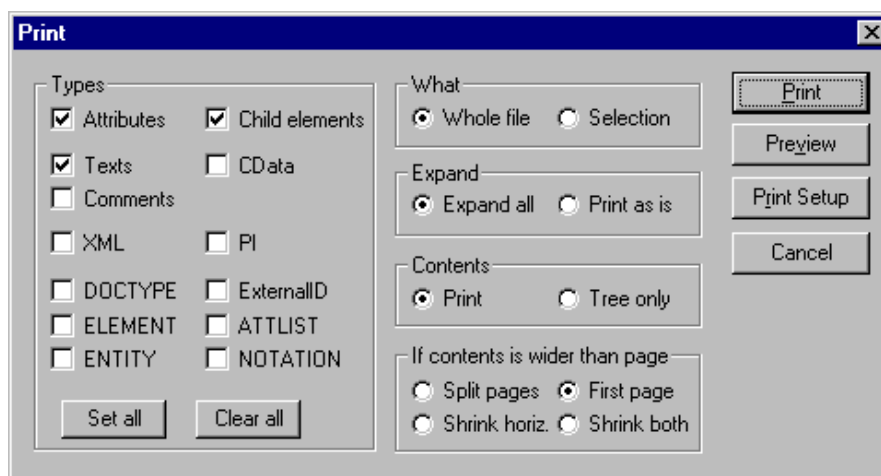
If you save a Unicode file in the Windows 95/98 version of XML Spy, you will get a dialog that asks you what code-page you have used to edit this file. This information is required, so that XML Spy can perform the necessary character-set decoding process to write a pure Unicode file.

4.2.1.7 Save as...

Shows the familiar Windows "Save as..." dialog to ask for the name and location of the file that is to be saved. Then it proceeds to the Save operation as described above.

4.2.1.8 Print...

Bring up the "Print" dialog where you can adjust certain options to control what appears on the printed representation. Depending on the view mode this dialog will contain different items. For the enhanced grid view you have these options:





- In the "Types" area you can select what kind of items you wish to appear in the output. This allows you to hide comments as well as processing instructions or DTD items. For an explanation of the item types, please refer to the XML specification.
- In the "What" area you can choose to print the entire file or just the current selection.
- In the "Expand" area you can elect to print the document as it has been expanded on the screen, or to print the entire document with all child elements expanded fully.
- In the "Contents" area you can decide to print the contents of all elements in a document, or you may also print only those elements that form the hierarchical "tree" structure of the document. This should, however, not be confused with the tree view on the left side of each document window, which is only used as a navigation aide on the screen and cannot be printed.
- In the "If contents is wider than page" area you can decide what to do if the document is larger than one page of paper.
 - The "Split pages" option will print the entire document in its regular size and split the contents on as many pages (both horizontally and vertically) as are required. These pages can later be glued together to form a huge poster of the document.
 - The "First page" option is especially useful if you believe that your page is only a bit too narrow and that most of the important information is contained on the left side, anyway. This will result in a printed output that is split into pages vertically (as necessary), but will only print the first page horizontally so that the document is printed as one huge vertical strip.
 - The "Shrink horizontally" option reduces the size of the printed output, until it fits on one page horizontally. The output may, however, still span several pages vertically and is split accordingly.
 - The "Shrink both" option shrinks the document in both directions until it fits exactly on one sheet, thus making it useful for overviews.
- The "Print" button prints the document with the selected options.
- The "Preview" button opens a print preview window that lets you view the final output before committing it to paper.
- The "Print Setup" button opens the "Print Setup" dialog and allows you to adjust the paper format, orientation, and other printer options for this print job only.

4.2.1.9 Print Setup

Shows the printer-specific "Print Setup" dialog to allow setting the paper format, orientation, and other printer options for all further print jobs.

4.2.1.10 Most recently used files (MRU)

Shows the file name and path information for the nine most recently used files so that they can be accessed more quickly and easily the next time XML Spy is started.



4.2.1.11 Exit

Closes all open windows – asking to save their contents, if necessary – and quits the XML Spy application program.

4.2.2 Edit Menu

The "Edit" menu contains all necessary commands used for manipulating item text or XML items. The Cut, Copy, Paste, Delete and Select All commands can be applied while editing text as well as while operating on whole items or even selections of more than one item.

For a discussion of the clipboard contents in foreign applications and the parent element hierarchy upon pasting please refer to the sections [Copying items](#) and [Pasting items](#).

<u>U</u> ndo	Ctrl+Z
<u>R</u> edo	Ctrl+Y
<hr/>	
C <u>u</u> t	Ctrl+X
<u>C</u> opy	Ctrl+C
<u>P</u> aste	Ctrl+V
<u>D</u> elete	Del
<hr/>	
S <u>e</u> lect <u>A</u> ll	Ctrl+A
<hr/>	
<u>F</u> ind...	Ctrl+F
Find <u>n</u> ext	F3
<u>R</u> eplace...	Ctrl+H
<hr/>	
<u>S</u> ettings...	

4.2.2.1 Undo

XML Spy contains support for unlimited levels of Undo! Every action in XML Spy can be undone and it is possible to undo one command after another. The Undo history is even kept after using the "Save" command, so you can still go back to a state the document was in before you saved your changes.

Please note that when you have turned on dynamic syntax coloring updates in the source view and your operating system is using RichEdit 2.0, you will see all syntax coloring changes as undoable operations. If this should turn out to be too disturbing for you, please update to RichEdit 3.0 or disable the dynamic syntax coloring update feature (for further information please see the chapter on the RichEdit Component).

4.2.2.2 Redo

Until you don't apply any other new changes, the previously undone commands can also be redone again – thereby giving you a complete history of the work you have completed. You can step back and forward through this history using the Undo and Redo commands.

4.2.2.3 Cut

The Cut command copies the selected text or items to the clipboard and then deletes them from their present location.

4.2.2.4 Copy

The Copy command copies the selected text or items to the clipboard.

4.2.2.5 Paste

The Paste command inserts the contents of the clipboard at the current insertion point.

4.2.2.6 Delete

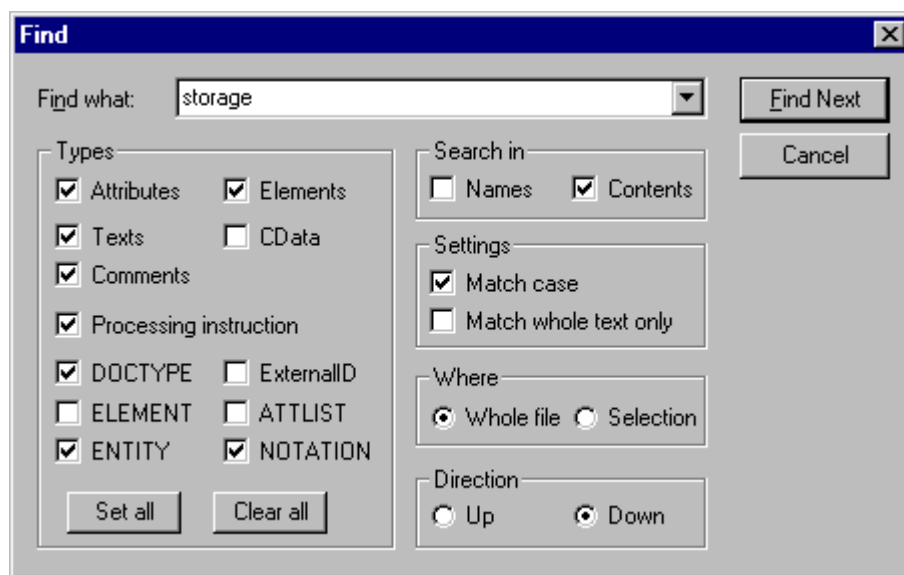
The Delete command removes the currently selected text or items without placing them on the Clipboard first.

4.2.2.7 Select All

The Select All command selects all the text of an item or all the items in an XML document so that forthcoming commands can operate on the entire text or document at once.

4.2.2.8 Find...

The Find command allows you to quickly locate any occurrence of a text string in your XML document. Depending on the view you are using, the Find command will have different options. This is what the Find dialog in the enhanced grid view looks like:



- Enter the text to be searched for in the "Find what:" field. For your convenience the corresponding combo-box popup contains the last ten terms that have been searched for. You can also leave this field empty to search for any item of the specified type.

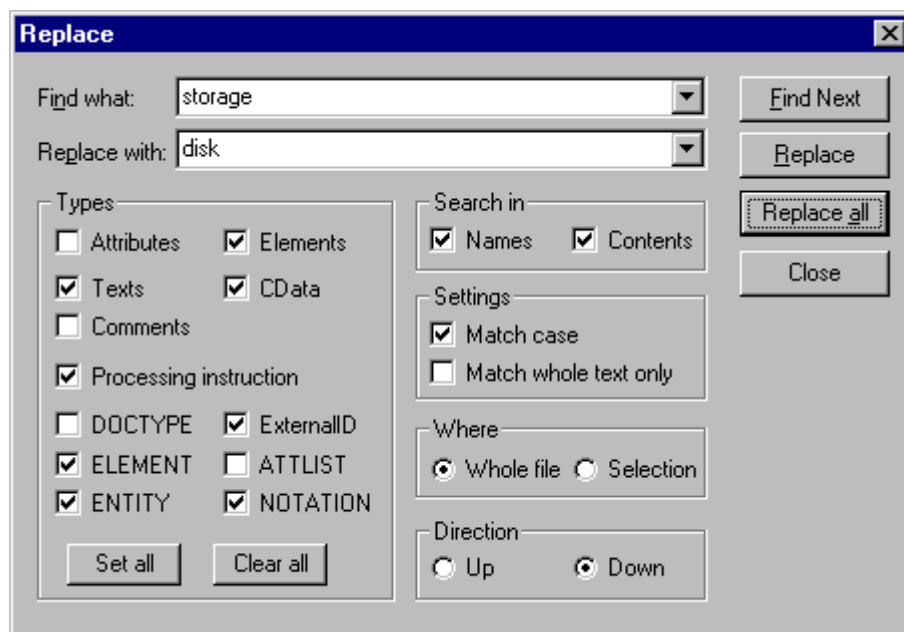
- In the "Types" area you can select what kind of items you wish to have included in the search. This allows you to e.g. skip comments as well as processing instructions or DTD items. For an explanation of the item types, please refer to the XML specification.
- In the "Search in" area you can specify whether you want to search for the specified text in the names of items, in their contents, or in both.
- In the "Settings" area you can choose to perform a case-sensitive search and to match the entered string as any part of an item or as the whole item only.
- In the "Where" area you may optionally restrict your search to the current selection.
- In the "Direction" area you can specify the direction of your search.

4.2.2.9 Find Next

This repeats the last Find command to find the next occurrence of the requested text.

4.2.2.10 Replace...

The Replace command is only available in the source and enhanced grid views, features the same options as the respective Find... commands and allows you to replace the found text by any other text string of your choice.



You may replace each found item individually, or you can use the "Replace All" button to perform a global search and replace operation.

As a security precaution the "Replace all" command shows each individual replacement operation in the grid view so that you can interrupt the operation by pressing <ESC> anytime. Furthermore, each replacement is recorded as one operation that can be undone individually.

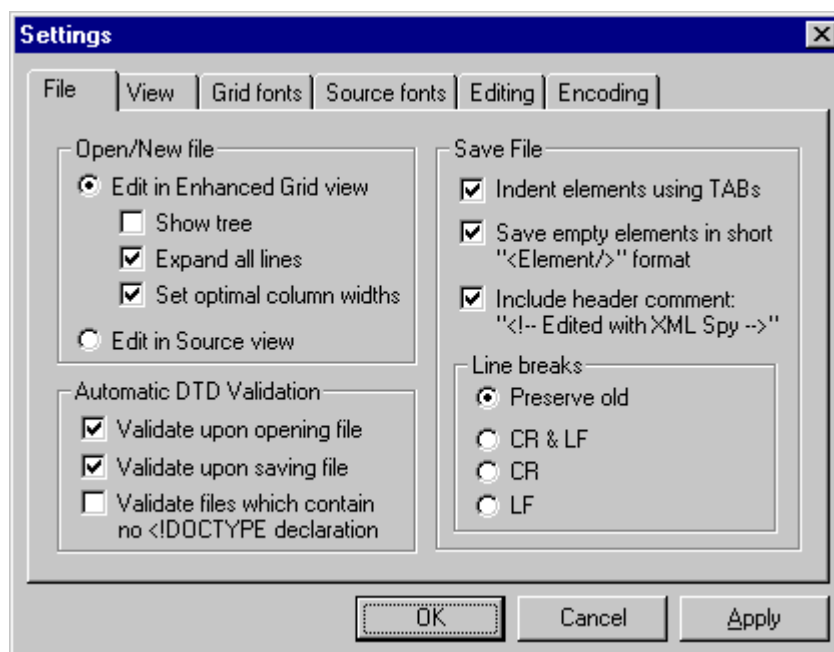
4.2.2.11 Settings

The Settings command allows you to adjust the global program setting in a tabbed dialog. These settings will be remembered in the registry and apply to all current and future document windows.

For your convenience, an Apply button is available that lets you dynamically look at the changes you have made in the currently opened document windows. Whenever you click the Apply button, the current settings are made permanent and you immediately see the effect in the background windows. This is especially useful when changing the font settings for the enhanced grid and source views.

4.2.2.11.1 File

The file settings define the way XML Spy handles opening and saving of documents. You will also find related settings in the Encoding tab.



- You can choose to open an existing file or create a new file either in the enhanced grid view or in the source view. If you select the grid view, you can optionally show the tree structure, automatically expand all lines and set the optimum columns widths for the grid view at the same time.
- If you are using document type definitions (DTDs) to define the structure of your XML documents, you can automatically check the document for validity whenever it is opened or saved. If you also sometimes edit XML files that don't refer to a DTD, you may want to avoid unnecessary validation runs on those files by leaving the corresponding third option turned off.
- Line-breaks in the document file can be preserved so that the same characters will be used that were found when opening the file. Alternatively you can elect to always

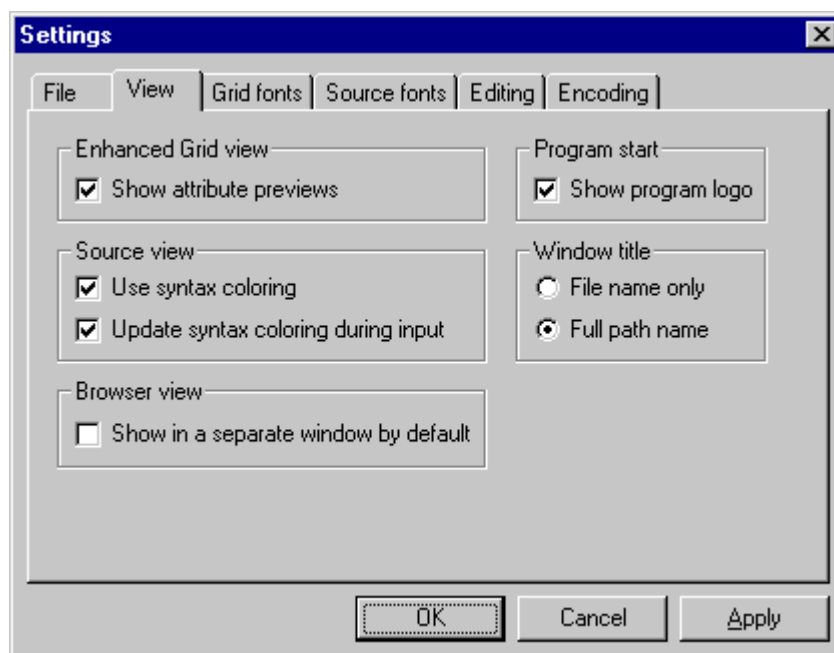


encode line breaks in any of the three possible forms (CR&LF for PCs, CR for the MacOS, or LF for Unix).

- Normally XML Spy will use TAB-characters (0x09) to indent the individual elements forming the structure of the XML document so that it will be easily recognizable when viewed with a regular text editor. In certain situations this may, however, be undesirable and can therefore be turned off.
- Some other XML tools may have problems understanding the short `<Element/>` form for empty elements defined in the XML 1.0 Specification. For your convenience you can instruct XML Spy to save elements in the longer (but nonetheless also valid) `<Element></Element>` form.
- When saving an XML document, XML Spy includes a short comment `<!-- Edited with XML Spy 2.5 http://www.xmlspy.com -->` near the top of the file. This option can be turned off only by licensed users.

4.2.2.11.2 View

The view settings let you customize some of the details of the presentation of XML documents in the three-view architecture of XML Spy.

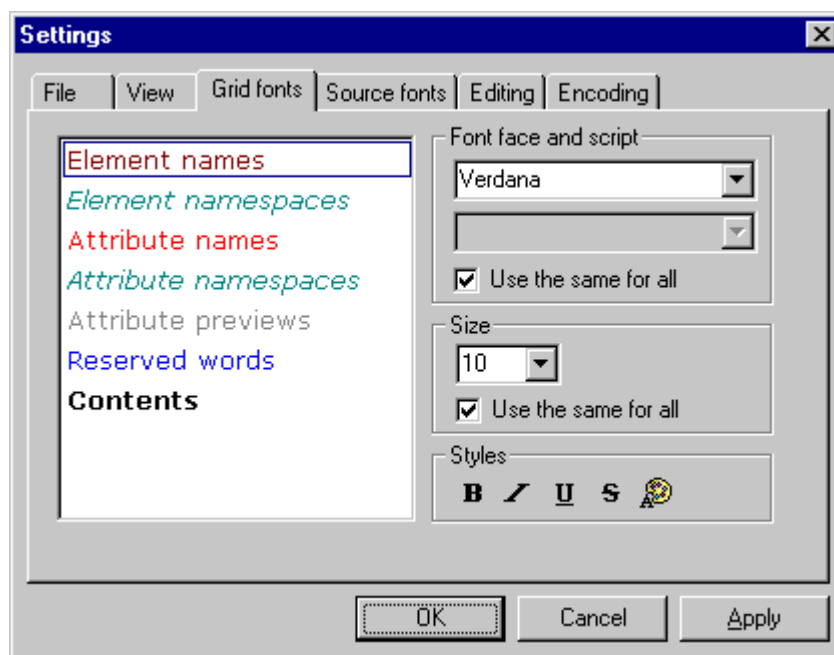


- For collapsed elements in the enhanced grid view you can choose to activate the attribute preview, which will show the attributes and their values in gray in the same line as the element.
- The integrated Source View supports syntax-coloring, which can be updated dynamically as you are typing or can also optionally be disabled entirely.
- For your convenience you can show the browser view in a separate window, which makes side-by-side placement of an editing view and the browser view possible.

- If you frequently use XML Spy, you may want to turn off the splash screen upon program startup so that XML Spy can launch a couple milliseconds faster (☺).
- The window title for each document window can be shown using the file name only, or using the full path name.

4.2.2.11.3 Grid fonts

The Grid Font settings allow you to customize the appearance of text in the enhanced grid view.



You can select the font face and size to be used for displaying the various items in the enhanced grid view. The same fonts are also being used for printing and consequently only TrueType fonts can be selected.

If you want to use the same font face or size for all items, you can enforce this by clicking on the appropriate check box.

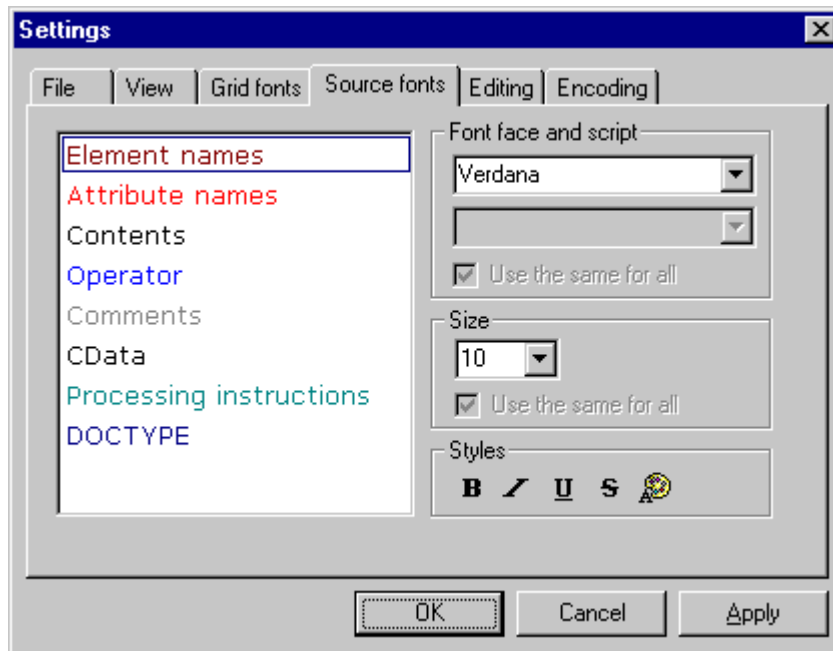
The style and color can be set using the buttons on the right. The current settings are immediately reflected in the list so that you can easily preview the way your document is going to look.

In the Windows 95/98 version of XML Spy it is also possible to select a "Script" for some fonts. This is especially necessary when editing documents with a non-Roman writing systems. The script selected in the font settings dialog needs to match the character set code-page selected when opening a document (i.e. when editing a Cyrillic ISO-8859-5 document, the code-page being used to edit the file should be set to 1251 and the font script needs to be set to "Cyrillic").

For the editing of 3DML document it is recommended that you choose a fixed-width font (such as "Courier New") so that you can correctly see the structure information for each <LEVEL>.

4.2.2.11.4 Source fonts

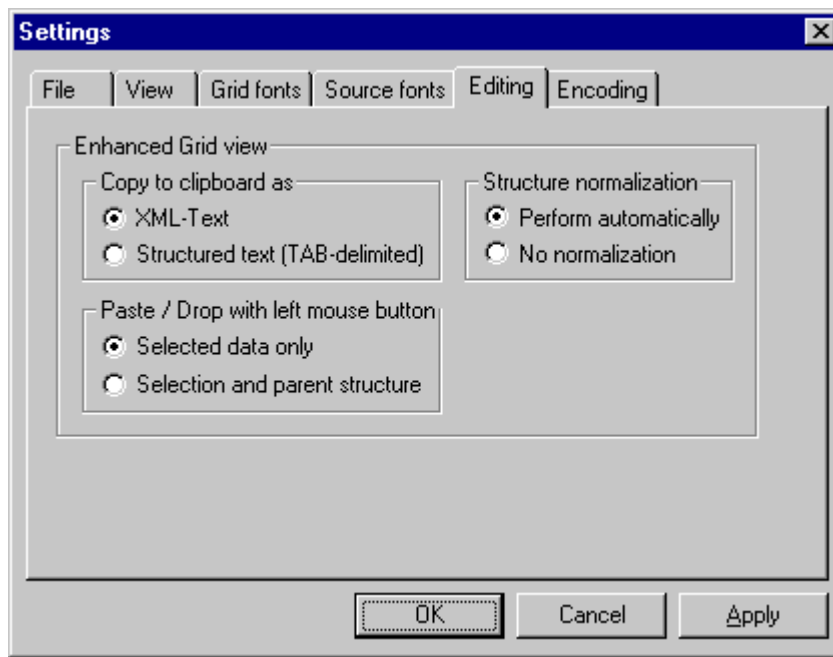
A similar settings tab is available for adjusting the text display in the source view.



Again you can choose the font face, style and size, but this time the same font, style and size is always being used for all elements. Only the color can be adjusted individually to provide full customization of the syntax coloring option.

4.2.2.11.5 Editing

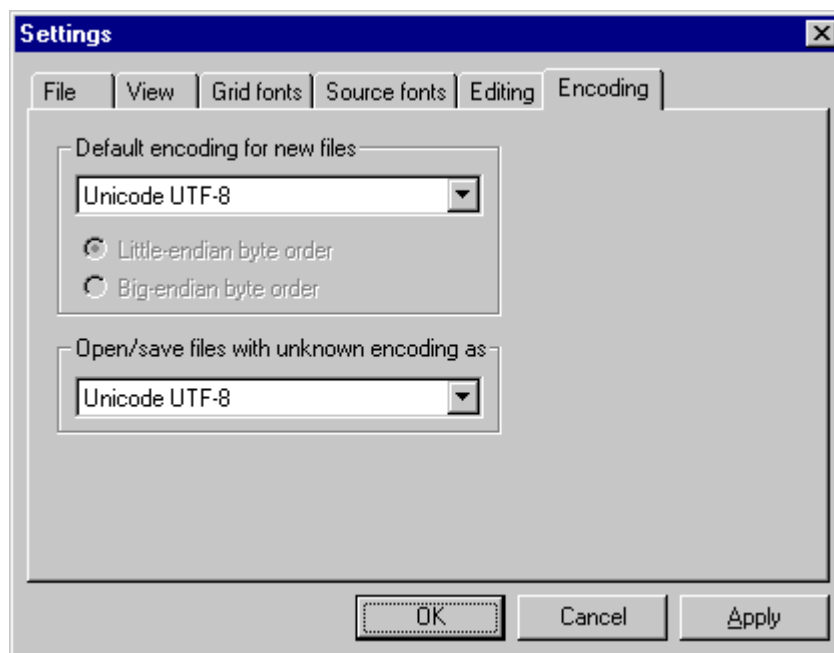
The editing settings define the behavior of the enhanced grid view when exchanging data with the clipboard and moving items using drag & drop.



- You can choose the format in which data will be exported to foreign applications using the clipboard. If you select XML-Text the contents of the clipboard will be formatted and tagged just like the resulting XML file itself. The structured text mode attempts to format the clipboard contents as a table so that it can easily be used in a spreadsheet or database application. This option does, however, not effect the internal clipboard format that XML Spy uses for copying and pasting within the application itself.
- The Paste/Drop setting determines how an item will be created when pasted or dropped into a different location. You can choose to either create the new item as it is or you can let XML Spy automatically create the required element parent structure to match the location the item is being created in.
- If structure normalization is turned on, XML Spy will enforce several structure rules so that a document looks exactly the same when it is saved to disk and reopened. Please refer to [Structure Normalization](#) for further details.

4.2.2.11.6 Encoding

The encoding settings specify the kind of character-set encoding to be used when creating new files as well as the encoding to be assumed when opening files that lack an encoding declaration.



- The default encoding for new files can be pre-determined in the Settings dialog so that each new document is automatically created with a proper XML-declaration and includes the encoding-specification that you most commonly need. The encoding for existing files will, of course, always be remembered independently of this setting and can only be changed by the "Encoding" command on the "File" menu.
- If a two- or four-byte encoding is selected as the default encoding (i.e. UTF-16, UCS-2, or UCS-4) you can also choose between little-endian and big-endian byte-ordering for the XML files.
- You may also choose how an XML file is to be interpreted that is missing an encoding-specification and whose encoding also cannot be auto-detected. In most cases this will very likely be UTF-8 or ISO-8895-1, even though the XML specification theoretically only allows UTF-8 files to come without an encoding-specification.



4.2.2.12 Structure Normalization

In order to make sure that a document looks exactly the same after being saved and reopened, XML Spy performs several automatic “normalization” adjustments to its structure during editing:

- An element that contains only text and one other item (e.g. an attribute) will automatically be converted from a hierarchical element to a plain element, whenever you happen to delete that one other item.
- If an element between two text items is deleted the text items are automatically being merged into one.
- Attributes are automatically inserted above all child elements.
- The XML Declaration (`<?xml version=...?>`) always is the first item in a file.
- The Document Type Declaration (`<!DOCTYPE ...>`) always is located before the first element.

This automatic normalization process can be turned off in the Settings dialog.

4.2.3 XML Menu

The XML menu contains all commands specific to the Extensible Markup Language (XML).



4.2.3.1 Insert

Inserts a new item directly before the currently selected one. In case of an attribute, the new item may appear a few lines before the current item because all attributes must immediately follow their parent element.

4.2.3.2 Append

Appends a new item as the last item inside the parent of the currently selected item. This is handy whenever you want to add more than one item in sequence.

4.2.3.3 Add child

Adds a child item to the currently selected element. This is especially useful for adding attributes to an item or creating child elements.

4.2.3.4 Convert to

Converts an item to a different item type. Depending on the location of the item (not on its current kind), some or all options on the item type submenu may or may not be available. This operation can only be performed on one individual item, not on an element that contains many children.

If the operation would result in the loss of data (e.g. converting an attribute to a comment loses the attribute name), a brief warning dialog will appear.

4.2.3.5 Move left

Moves the current element to the left one level, thereby turning a child element into a sibling of its parent. This is also often referred to as the "Promote" command.

4.2.3.6 Move right

Moves the current element to the right one level, thereby turning it into a child element to the element directly above. This is also often referred to as the "Demote" command.

4.2.3.7 Check well-formedness

This command checks the document for well-formedness by the definitions of the XML 1.0 specification. Every XML document must be well-formed and therefore XML Spy also automatically checks for well-formedness whenever a document is opened, saved, or the view mode is switched from source to grid or browser.

Normally it is not permitted to save a mal-formed XML document, but XML Spy 2.5 now gives you a "Save anyway" option when the automatic well-formedness check upon saving fails. This is useful, when you temporarily want to suspend your work and later resume it without being able to make the intermediate version of the file well-formed.

4.2.3.8 Validate

Starting with version 2.5 XML Spy can validate an XML document against the rules set forth in its Document Type Description (DTD). XML Spy uses the external Microsoft XML parser that is part of Internet Explorer 5 and therefore this option is only available, when Internet Explorer 5 is installed.

The Validate command also automatically includes a well-formedness check, so there is no need to first use the Check well-formedness command manually before validating a file.

4.2.3.9 Namespace prefix

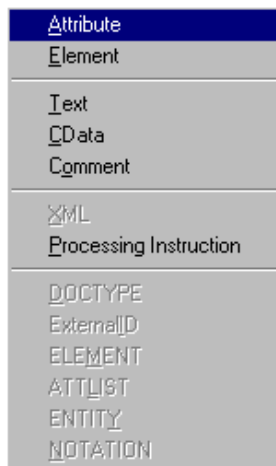
To make working with XML namespaces a bit easier, XML Spy provides a "Set Namespace" command that lets you set the namespace identifier for a group of selected elements (including their children).



You can choose to set the namespace prefix on either elements, attributes, or both.

4.2.4 Item Type Submenu

When inserting, appending, adding a child, or converting an item, the item type submenu is shown when the mouse pointer hovers over the main command in the menu.

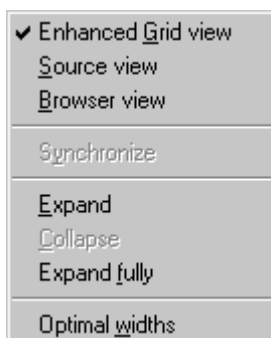


This menu allows you to choose what kind of item you wish to add to the document. For your convenience we have added several keyboard shortcuts for the most frequently used items on this menu. Depending on the current selection or insertion point, some or all choices may not be available in the menu and are displayed in gray.

The items are grouped by their importance and typical frequency of use when editing documents. For an explanation of the various item types, please refer to the XML specification.

4.2.5 View Menu

The "View" menu controls the display of the frontmost document window as well as certain global options.



4.2.5.1 Enhanced Grid View

Switches the current document into Enhanced Grid View. This view includes an (optional) tree and structured grid display and is the preferred view for editing XML



documents. If the previous view was the Source View, the document is automatically checked for well-formedness.

4.2.5.2 Source View

Switches the current document into Source View. This view allows you to edit the XML source in a text editor fashion and includes syntax-coloring.

4.2.5.3 Browser View

Switches the current document into Browser View. This view uses an XML-enabled browser (preferably Internet Explorer 5) to render the XML document using information from potential CSS or XSL style-sheets. When switching to browser view, the document is checked for validity first, if you have selected to automatically perform validation upon saving.

4.2.5.4 Synchronize

To quickly locate an item in a larger document, the combination of tree and grid in the Enhanced Grid View can be very helpful in navigating. The "Synchronize" command allows you to quickly locate the selected item in the tree or grid by opening the element hierarchy in the other one to exactly the same level and highlighting the selected item.

As a shortcut you may also double-click on an element in the tree to navigate to that very item in the grid.

4.2.5.5 Expand

Expands the selected element by one level. This command can be used in the tree and grid views and can also be used from the keyboard by using the + key on the numeric keypad.

In the grid view the element and all its children remain selected after expansion. This allows you to repeatedly expand a large element one level after another by pressing the + key on the keyboard again and again.

4.2.5.6 Collapse

Collapses the selected element in the tree or grid view. The – key on the numeric keypad can be used as a shortcut for this command.

4.2.5.7 Expand fully

Expands all child items of the selected element down to the last level of nesting. While this command does not have a keyboard shortcut, it is available on the toolbar and can also be achieved by repeatedly using the + key on the numeric keypad on an element in the grid view.

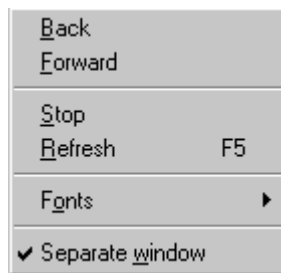
4.2.5.8 Optimal widths

Adjusts the widths of all columns so that the text of the entire document comfortably fits into the designated columns. If you expand and collapse several elements, it can be

helpful to again choose the "Optimal widths" command, because only those items visible through expansion are used when calculating the optimum column widths.

4.2.6 Browser Menu

This menu contains commands that are only available in the Browser View of an XML document.



4.2.6.1 Back

Go back to the previously displayed page. This can be useful if you accidentally click on a link in your XML document and want to return to it.

4.2.6.2 Forward

Once you have used the Back command, you can later decide to go forward again, which simply follows the last link you have clicked on.

4.2.6.3 Stop

Instructs the browser to stop loading your document. This can be useful if large external files or graphics would be loaded over a slow Internet connection.

4.2.6.4 Refresh

Updates the Browser View by reloading the XML document and potential external CSS or XSL style-sheets as well as DTDs. You can also use the F5 key to trigger this command.

4.2.6.5 Fonts

Let's you choose the default font size for rendering the text of your XML document. This is similar to the Font-Size command in most browsers.

4.2.6.6 Separate Window

Sometimes it can be convenient to see the document side-by-side in a browser and editing (i.e. source or enhanced grid) view. This command lets you open the browser view in a separate window so that side-by-side viewing is possible.

If you have separated the browser view, you can now press F5 in the editing view to automatically refresh the corresponding browser view.

4.2.7 Window Menu

To organize the individual document windows in an XML Spy session, the "Window" menu contains some standard commands that we are all familiar with from many other applications.



You can cascade all open document windows, place them on the screen as tiles or arrange document icons once you have minimized them. Furthermore you can switch to each open window directly from the menu.

4.2.8 Mouse Menu

Whenever you right-click in the tree or enhanced grid views, you'll get a "mouse menu" that allows you to directly manipulate the currently selected entities.



This menu contains the most frequently used commands from the "Edit", "View", and "XML" menus to let you modify entities in a document without having to move the mouse to the menu bar each time you select an entity in the display.

The commands available on the mouse menu are explained in detail in the corresponding menu sections above.

4.2.9 Help Menu

The help menu contains information about XML Spy, registration data, and useful hyperlinks to information sites on the Internet:



4.2.9.1 Spy manual

This command opens the XML Spy online documentation, which is included as a PDF file with the setup program. This PDF file is useful for printing to a laser printer to get a bound paper manual for this program

You can also access the most current documentation as an on-line manual (HTML) on our web-server: <http://www.xmlspy.com/manual/>

4.2.9.2 Registration

This brings up the registration dialog, which lets you modify the personalization information that you entered when you started XML Spy for the first time. It also displays your personal order-code that you need to place an order in our on-line shop and lets you enter your key-code to unlock XML Spy, once you have purchased a license and received the key-code from Icon via e-mail.

Please do not edit the personalization information after you have ordered your license, as this will result in the generation of a new order-code and thereby will invalidate your key-code.

4.2.9.3 Order form

This opens your web browser and gets you directly to the Icon on-line shop, where you can conveniently order your XML Spy license from our secure server in Austria. Payment can be made using any major credit card (Visa, MasterCard, Diners Club, and JCB). For your protection all transactions are performed over a secure and encrypted channel.

In the future our shop will also include links to distributors or resellers in other countries, who may be accepting different forms of payment.



4.2.9.4 Japanese Distributor

For our customers in Japan we offer a direct link to Toshiba Advanced Systems (TAS), our Japanese distributor. TAS also operates an on-line shop where you can purchase XML Spy and they offer more customized payment options for the Japanese market.

4.2.9.5 Support area

This takes you directly to the support form on our web server, where you can request assistance with any problem you may encounter while using XML Spy. Due to the high demand for our product we most, however, reserve the right to give technical support only to licensed customers or to give requests from licensed users priority over other inquiries.

4.2.9.6 Questionnaire

If you have any comments or feature requests for future versions, please help us improve our product by filling out this customer questionnaire.

4.2.9.7 XML Spy Web

This takes you to the XML Spy product page on the Internet, where you will find all information about future product releases and bug-fixes. We do also regularly send out update information to all licensed users via e-mail.

4.2.9.8 Icon Web

This takes you to the main web server for Icon Information-Systems, the company that develops and publishes XML Spy.

4.2.9.9 Microsoft Internet Explorer 5

To get the latest news and download the most current version, we also provide a direct link to the Internet Explorer 5 section of the Microsoft web server.

4.2.9.10 Open Directory Project XML

The Open Directory Project (<http://dmoz.org/>) is a huge human-edited directory of the Internet the relies on volunteers to review and rate web sites. It contains a very detailed section on XML and XML Spy lets you directly go there from this menu.

4.2.9.11 About XML Spy

This shows the product logo that is also displayed as a splash screen when the software is started.



5. Background Information

5.1 Electronic Distribution Notice

XML Spy is available via electronic distribution: you may download, install and evaluate the software for a period of up to 30 days free of charge. During this evaluation period the software will start to remind you after about 20 days that it has not been licensed yet. The reminder message will, however, only be displayed once every time you start the program.

If you would like to continue using the program after the 30 day evaluation period, you have to purchase a license from Icon. A single-user license sells for 49,- € (Euro) or approximately US\$ 54.-. You can register and purchase your license on-line by directing your browser to access our web-shop at <http://www.xmlspy.com/order/>. On this page you will in the future also find a list of authorized distributors or resellers and are free to choose the one closest to you.

When you place your order with us you can pay using any major credit card. After processing your order you'll receive a key-code that you can enter into the Registration dialog in XML Spy to unlock your software. Please be advised that you are not allowed to ever distribute this key-code to others, post it on the Internet (or any other comparable media) or share it with a colleague, because you have purchased a non-transferable single-user license.

For multiple users per company, site-licensing issues and educational discounts please contact us by e-mail to sales@xmlspy.com.

As a licensed user you are entitled to free technical support via e-mail and automatically will be notified of any updates or new versions. You will also get discounts on upgrades for forthcoming versions of XML Spy.

If you want to share XML Spy with others, please make sure that only the installation program is ever distributed. It contains the application program, grammar description, sample files, and this online manual as well as a quick Read-Me file in one neat package. Any person that receives the XML Spy software from you is also automatically entitled to a 30 day evaluation period. After the expiration of said period, any other user must also purchase a license in order to be able to use XML Spy.

If you try to use an unlicensed version of XML Spy after the end of the evaluation period, you will be asked to purchase a license every time you open or save a file. The software will otherwise remain fully functional.

For further details, please refer to the SOFTWARE PRODUCT LICENSE at the end of this manual.



5.2 About the authors

XML Spy has been produced by Icon EDV Informations-Systeme GmbH, an independent software development and consulting company based in Vienna, Austria (EU). Icon offers custom Software, Hardware and CD-ROM solutions for the innovative information-technology products of tomorrow. Please visit our web-site at <http://www.icon-is.com> for more information.

The development team for XML Spy is:

- Vladislav Gavrielov Lead C++ Development
- Alexander Falk..... Grammar & Parser, Encodings, User Manual
- Thomas Kefer Software Quality Management
- Joachim Legat..... Graphic Design & Web-Development
- Michael Pallinger Testing

For comments and suggestions about this product and for technical assistance (registered users only) please use the on-line support form at <http://www.xmlspy.com/support/> or send your e-mail to support@xmlspy.com.

5.3 XML Parsing

When opening any XML, XHTML, XSL, 3DML or DTD file, XML Spy uses two different XML parsers for separate tasks. An integrated parsing module called "Parso" is used to interpret the structure of the document, build the enhanced grid view and check a document for well-formedness (Parso is a very fast non-validating parser written in C++ that is entirely controlled by an EBNF-like external grammar description file). For validating an XML document against its DTD, XML Spy uses the MSXML parser that is a part of Internet Explorer 5.

5.4 OS & Memory Requirements

XML Spy is a modern 32-bit Windows application that runs on Windows 95, 98 and NT. It assumes a fair amount of memory to be installed in the system, because it loads each document fully into memory. This is necessary in order to completely parse and analyze each document and also greatly improves the viewing and editing speed during normal work. While editing a small to medium sized document (up to 512kB) is possible in as little as 2MB of RAM, opening a 5MB document can consume up to 20MB during the initial parsing process. The memory footprint required for large XML documents has been considerably reduced in version 2.5.

Memory requirements are also influenced by the unlimited Undo history. When repeatedly cutting and pasting large selections in huge documents, memory can rapidly be exhausted.



5.5 Unicode Support

5.5.1 Windows NT 4.0 & Windows 2000

Starting with version 2.0 XML Spy provides full Unicode support in the Windows NT and Windows 2000 version of the software. To edit any XML document from a non-roman writing system you will, however, also need a font that supports the Unicode characters being used by that document.

Windows NT typically includes support for all common single-byte writing-systems in its Arial, Times, and Courier New fonts and will additionally include all required fonts for the writing-system in your own country (i.e. if you install the Japanese version of Windows NT you will automatically have fonts that support the Katakana, Hiragana, and Kanji writing-systems as well as the input-methods and dictionaries to enter Kanji and to switch between Katakana and Hiragana). If you wish to edit any document from a foreign writing-system, you may want to install additional Windows NT components for that writing-system or purchase special Unicode fonts for these writing-systems (such fonts are available from all leading type vendors).

Please note that there is no such thing as a single font that contains all Unicode characters. The most universal font we have seen so far is a typeface called “Cyberbit” that has been created by Bitstream, Inc. This font contains over 8.500 glyphs and measures about 13MB (in its version 1.1). Bitstream will also create custom fonts for specific applications when a combination of various non-Roman scripts is required in one particular font.

In the “Examples” folder you will also find a new XHTML file called “Unicode-UTF8.xml” that contains the sentence “When the world wants to talk, it speaks Unicode” in many different languages (“Wenn die Welt miteinander spricht, spricht sie Unicode”) and writing-systems (“世界的に話すなら、Unicode です”) - this line has been adopted from the 10th Unicode conference in 1997 and is a beautiful illustration of the importance of Unicode for the XML standard. Opening this file will give you a quick impression on what is possible with Unicode and what writing systems are supported by the fonts available on your PC installation. Since this file is an XHTML document you should also be able to open this using your favorite browser (we’ve tested it with Internet Explorer 4.01 and 5.0beta and it worked perfectly).

5.5.2 Windows 95 & Windows 98

Unfortunately these Windows versions do not include full Unicode capabilities on the operating system layer. Instead support for non-roman writing-systems is provided through so-called code-pages that contain all the required characters mapped to either the available byte-values in the range of 0x80 to 0xFF (in case of single-byte systems, such as Cyrillic or Hebrew) or as double-byte values, where the first most significant bit of the first byte is typically used to indicate that this is a so-called “wide character” (in case of CJK writing-systems).



Therefore we are providing a special Windows 95/98 version of XML Spy 2.5 that is automatically installed whenever you are using the Setup program on these operating systems. This version of XML Spy supports the following code-pages for viewing and editing XML documents (for excellent background information about code-pages please refer to <http://czyborra.com/charsets/codepages.html>):

Code-page	Equivalent XML Encoding
1252	ISO-8859-1 (Western, Latin-1)
1250	ISO-8859-2 (Eastern Europe, Latin-2)
1251	ISO-8859-5 (Cyrillic)
1253	ISO-8859-7 (Greek)
1254	ISO-8859-9 (Turkish)
1255	ISO-8859-8 (Hebrew)
1256	ISO-8859-6 (Arabic)
874	ISO-8859-11/TIS-620 (Thai)
932	Shift-JIS (Japanese)
936	GB2312 (Chinese)
949	EUC-KR (Korean)
950	Big5 (Taiwanese)

Whenever you open an XML file, XML Spy detects the character-set encoding used in that file, expands the file to an internal full Unicode representation and then transforms the document to a code-page supported by Windows 95/98 in order to enable viewing and editing of the document.

In most cases this process will be entirely automatic, as the available ISO-8895-x encodings as well as some of the CJK encodings often correspond with a certain code-page. However, if you open a Unicode encoded file (e.g. UTF-8 or UTF-16) XML Spy will be unable to determine which code-page to use and will thus bring up a dialog that asks you to specify a code-page to be used for editing.

In order to correctly view and edit a Unicode file under Windows 95/98 it is extremely important that you use this dialog to:

- a) choose the correct code-page that includes all characters contained in the file and
- b) later select a font and script from the settings dialog that also supports the same code-page.

If the file contains any characters that are not available in the selected code-page, the user will receive an error message including a detailed list of offending characters before they will be replaced by a '_' (under-score). We therefore highly recommend using only the Windows NT version of XML Spy for editing XML files that make full use of Unicode!

5.5.3 Right-to-left writing-systems

Please note that even under Windows NT 4.0 any text from a right-to-left writing-system (such as Hebrew or Arabic) is not rendered correctly except in those countries that actually use right-to-left writing-systems. This is due to the fact that only the Hebrew and Arabic versions of Windows NT contains support for rendering and editing right-to-left text on the operating system layer.



5.6 RichEdit Component

XML Spy uses the Microsoft-supplied "RichEdit" component for editing text in the source view. The version of RichEdit that is currently available in Windows 98 and Windows NT 4.0 is called RichEdit 2.0 and contains many known limitations.

Windows 2000 will contain a new and vastly improved version called RichEdit 3.0, that not only fixes most known bugs, but also contains special support for finer Undo-Control as well as better international capabilities with foreign writing systems.

XML Spy already contains full support for RichEdit 3.0 and takes advantage of the new features, if it detects the presence of RichEdit 3.0.

But even though Icon is a registered Microsoft ISV (Independent Software Vendor), we are unfortunately not allowed to distribute the RichEdit 3.0 component to our customers.

We are, however, allowed to suggest that if you have access to a Windows 2000 Beta 3 CD-ROM you should install Windows 2000 on some machine and copy the file "riched20.dll" from the Windows\System directory of that machine to the Windows NT 4.0 or Windows 98 Windows installation (thereby replacing the old RichEdit 2.0 version) that you wish to use XML Spy on.

This will already get you all the benefits of RichEdit 3.0 now and will - in our experience - not cause any compatibility problems, since the RichEdit 3.0 component in the Windows 2000 Beta 3 is already very stable.



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